Computer algebra independent integration tests

1-Algebraic-functions/1.2-Trinomial-products/1.2.1-Quadratic/1.2.1.3-d+e-x-^m-f+g-x-a+b-x+c-x^2-^p

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Contents

Chapter 1

Introduction

Local contents

This report gives the result of running the computer algebra independent integration test. Elementary Algebraic integrals version.

The download section below contains links to download the problems in plain text format used for all CAS systems.

The number of integrals in this report is [2337]. This is test number [21].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.3.1 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12.3.1 on windows 10.
3. Maple 2021.1 (64 bit) on windows 10.
4. Maxima 5.45 on Linux. (via sagemath 9.3)
5. Fricas 1.3.7 on Linux (via sagemath 9.3)
6. Giac/Xcas 1.7 on Linux. (via sagemath 9.3)
7. Sympy 1.8 under Python 3.8.8 using Anaconda distribution on Ubuntu.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 under windows 10 (64 bit)
9. `IntegrateAlgebraic` under Mathematica 12.3.1 on windows 10. `https://github.com/stblake/algebraic_integration`. September 15, 2021 version.

Maxima, Fricas and Giac/Xcas were called from inside SageMath. This was done using SageMath integrate command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly using Python.

1.2 Results

Important note: A number of problems in this test suite have no antiderivative in closed form. This means the antiderivative of these integrals can not be expressed in terms of elementary, special functions or `Hypergeometric2F1` functions. `RootSum` and `RootOf` are not allowed.

If a CAS returns the above integral unevaluated within the time limit, then the result is counted as passed and assigned an A grade.

However, if CAS times out, then it is assigned an F grade even if the integral is not integrable, as this implies CAS could not determine that the integral is not integrable in the time limit.

If a CAS returns an antiderivative to such an integral, it is assigned an A grade automatically and this special result is listed in the introduction section of each individual test report to make it easy to identify as this can be important result to investigate.

The results given in in the table below reflects the above.

System	% solved	% Failed
Rubi	100.00 (2337)	0.00 (0)
Mathematica	100.00 (2337)	0.00 (0)
Maple	100.00 (2337)	0.00 (0)
Fricas	98.37 (2299)	1.63 (38)
Giac	92.13 (2153)	7.87 (184)
Maxima	73.60 (1720)	26.40 (617)
Mupad	72.06 (1684)	27.94 (653)
IntegrateAlgebraic	57.77 (1350)	42.23 (987)
Sympy	49.34 (1153)	% 50.66 (1184)

Table 1.1: Percentage solved for each CAS

The table below gives additional break down of the grading of quality of the antiderivatives generated by each CAS. The grading is given using the letters A,B,C and F with A being the best quality. The grading is accomplished by comparing the antiderivative generated with the optimal antiderivatives included in the test suite. The following table describes the meaning of these grades.

grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality. This can be due to one or more of the following reasons 1. antiderivative contains a hypergeometric function and the optimal antiderivative does not. 2. antiderivative contains a special function and the optimal antiderivative does not. 3. antiderivative contains the imaginary unit and the optimal antiderivative does not.
F	Integral was not solved. Either the integral was returned unevaluated within the time limit, or it timed out, or CAS hanged or crashed or an exception was raised.

Table 1.2: Description of grading applied to integration result

Grading is implemented for all CAS systems. Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	100.00	0.00	0.00	0.00
Mathematica	87.16	3.77	9.07	0.00
Fricas	68.42	29.95	0.00	1.63
Maple	67.09	32.52	0.39	0.00
Giac	60.63	31.49	0.00	7.87
Maxima	56.78	16.82	0.00	26.40
IntegrateAlgebraic	48.61	8.60	0.56	42.23
Sympy	37.61	11.60	0.13	50.66
Mupad	N/A	72.06	0.00	27.94

Table 1.3: Antiderivative Grade distribution of each CAS

The following is a Bar chart illustration of the data in the above table.

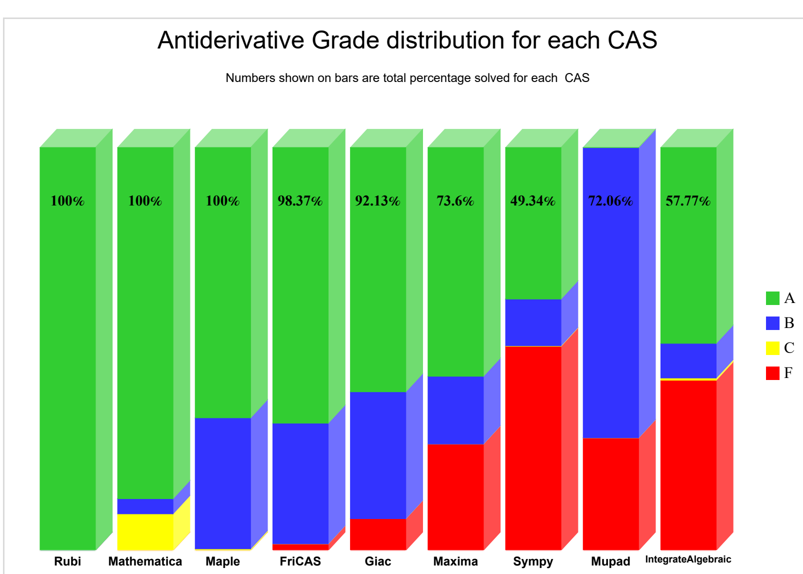

The figure below compares the CAS systems for each grade level.

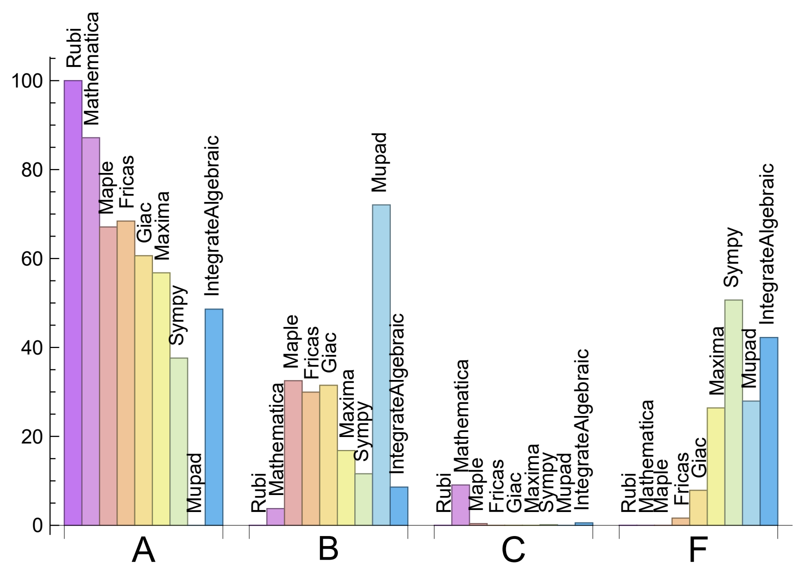

The following table shows the distribution of the different types of failure for each CAS. There are 3 types of reasons why it can fail. The first is when CAS returns back the input within the time limit, which means it could not solve it. This the typical normal failure **F** .

The second is due to time out. CAS could not solve the integral within the 3 minutes time limit which is assigned **F(-1)**.

The third is due to an exception generated. Assigned **F(-2)**. This most likely indicates an interface problem between sagemath and the CAS (applicable only to FriCAS, Maxima and Giac) or it could be an indication of an internal error in CAS. This type of error requires more investigations to determine the cause.

System	Number failed	Percentage normal failure	Percentage time-out failure	Percentage exception failure
Rubi	0	0.00 %	0.00 %	0.00 %
Mathematica	0	0.00 %	0.00 %	0.00 %
Maple	0	0.00 %	0.00 %	0.00 %
Fricas	38	0.00 %	100.00 %	0.00 %
IntegrateAlgebraic	987	88.75 %	11.25 %	0.00 %
Giac	184	41.30 %	29.89 %	28.80 %
Maxima	617	26.90 %	0.00 %	73.10 %
Sympy	1184	55.74 %	43.16 %	1.10 %
Mupad	653	99.85 %	0.15 %	0.00 %

Table 1.4: Failure statistics for each CAS

1.3 Performance

The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.20	173.76	1.00	138.00	1.00
Mathematica	0.26	169.14	0.96	107.00	0.90
Maple	0.06	565.63	2.21	156.00	1.21
Maxima	0.77	232.06	1.50	134.00	1.13
Fricas	2.24	592.35	2.62	200.00	1.62
Sympy	13.11	381.24	2.82	139.00	1.37
Giac	0.32	456.68	2.13	166.00	1.25
Mupad	1.74	1086.45	3.93	136.00	1.17
IntegrateAlgebraic	7.13	620.77	2.75	141.00	1.06

Table 1.5: Time and leaf size performance for each CAS

The following are bar charts for the normalized leafsize and time used columns from the above table.

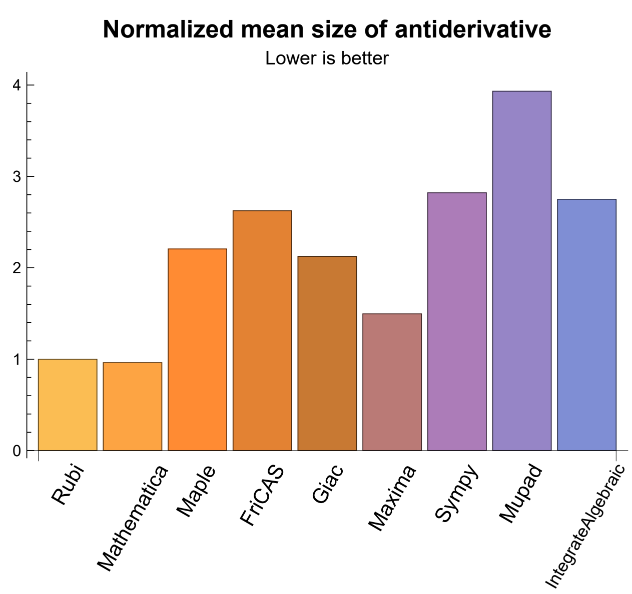

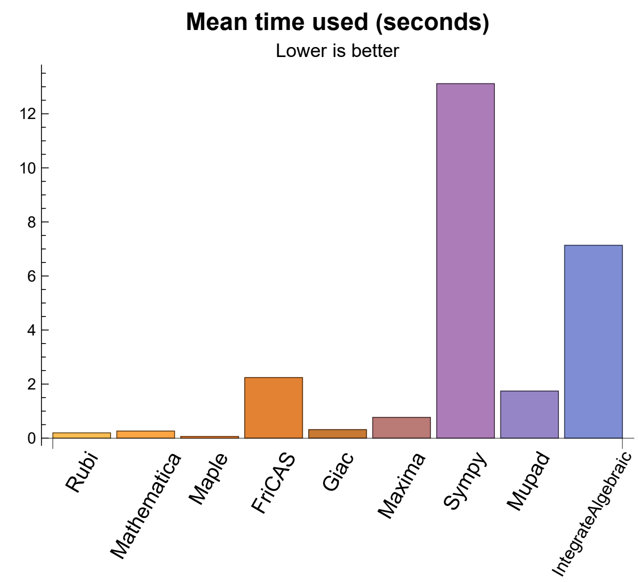
Mean time used (seconds)
Lower is better
0
2
4
6
8
10
12
Rubi
Mathematica
Maple
FriCAS
Giac
Maxima
Sympy
Mupad
IntegrateAlgebraic

1.4 list of integrals that has no closed form antiderivative

{}

1.5 list of integrals solved by CAS but has no known antiderivative

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

IntegrateAlgebraic {}

1.6 list of integrals solved by CAS but failed verification

The following are integrals solved by CAS but the verification phase failed to verify the anti-derivative produced is correct. This does not mean necessarily that the anti-derivative is wrong, as additional methods of verification might be needed, or more time is needed (3 minutes time limit was used). These integrals are listed here to make it easier to do further investigation to determine why it was not possible to verify the result produced.

Rubi {1297}

Mathematica {1297}

IntegrateAlgebraic {}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

The command `AboluteTiming[]` was used in Mathematica to obtain the elapsed time for each integrate call. In Maple, the command `Usage` was used as in the following example

```
cpu_time := Usage(assign ('result_of _int',int(expr,x)),output='realtime'
```

For all other CAS systems, the elapsed time to complete each integral was found by taking the difference between the time after the call has completed from the time before the call was made. This was done using Python's `time.time()` call.

All elapsed times shown are in seconds. A time limit of 3 minutes was used for each integral. If the integrate command did not complete within this time limit, the integral was aborted and considered to have failed and assigned an F grade. The time used by failed integrals due to time out is not counted in the final statistics.

1.8 Verification

A verification phase was applied on the result of integration for Rubi and Mathematica. Future version of this report will implement verification for the other CAS systems. For the integrals whose result was not run through a verification phase, it is assumed that the antiderivative produced was correct.

Verification phase has 3 minutes time out. An integral whose result was not verified could still be correct. Further investigation is needed on those integrals which failed verifications. Such integrals are marked in the summary table below and also in each integral separate section so they are easy to identify and locate.

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

Since these integrals are run in a batch mode, using an automated script, and by using sagemath (SageMath uses Maxima), then any integral where Maxima needs an interactive response from the user to answer a question during evaluation of the integral in order to complete the integration, will fail and is counted as failed.

The exception raised is `ValueError`. Therefore Maxima result below is lower than what could result if Maxima was run directly and each question Maxima asks was answered correctly.

The percentage of such failures were not counted for each test file, but for an example, for the Timofeev test file, there were about 14 such integrals out of total 705, or about 2 percent. This pecrentage can be higher or lower depending on the specific input test file.

Such integrals can be indentified by looking at the output of the integration in each section for Maxima. The exception message will indicate of the error is due to the interactive question being asked or not.

Maxima integrate was run using SageMath with the following settings set by default

```
'besselexpand : true'
'display2d : false'
'domain : complex'
'keepfloat : true'
'load(to_poly_solve)'
'load(simplify_sum)'
'load(abs_integrate)' 'load(diag)'
```

SageMath loading of Maxima `abs_integrate` was found to cause some problem. So the following code was added to disable this effect.

```
from sage.interfaces.maxima_lib import maxima_lib
maxima_lib.set('extra_definite_integration_methods', '[]')
maxima_lib.set('extra_integration_methods', '[]')
```

See https://ask.sagemath.org/question/43088/integrate-results-that-are-different-from-using-maxima/ for reference.

1.9.2 Important note about FriCAS and Giac/XCAS results

There are Few integrals which failed due to SageMath not able to translate the result back to SageMath syntax and not because these CAS system were not able to do the integrations.

These will fail With error `Exception raised: NotImplementedError`

The number of such cases seems to be very small. About 1 or 2 percent of all integrals.

Hopefully the next version of SageMath will have complete translation of FriCAS and XCAS syntax and I will re-run all the tests again when this happens.

1.9.3 Important note about finding leaf size of antiderivative

For Mathematica, Rubi and Maple, the buildin system function `LeafSize` is used to find the leaf size of each antiderivative.

The other CAS systems (SageMath and Sympy) do not have special buildin function for this purpose at this time. Therefore the leaf size for Fricas and Sympy and Giac antiderivatives is determined using the following function, thanks to user `slelievre` at `https://ask.sagemath.org/question/57123/could-we-have-a-leaf_count-function-in-base-sagemath/`

```
def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)
```

For Sympy, which is called directly from Python, the following code is used to obtain the leafsize of its result

```
try:
  # 1.7 is a fudge factor since it is low side from actual leaf count
  leafCount = round(1.7*count_ops(anti))

  except Exception as ee:
         leafCount =1
```

1.9.4 Important note about Mupad results

Matlab's symbolic toolbox does not have a leaf count function to measure the size of the antiderivative, Maple was used to determine the leaf size of Mupad output by post processing.

Currently no grading of the antiderivative for Mupad is implemented. If it can integrate the problem, it was assigned a B grade automatically as a placeholder. In the future, when grading function is implemented for Mupad, the tests will be rerun again.

The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

```
integrand = evalin(symengine,'cos(x)*sin(x)')
the_variable = evalin(symengine,'x')
anti = int(integrand,the_variable)
```

Which gives `sin(x)^2/2`

1.10 Design of the test system

The following diagram gives a high level view of the current test build system.

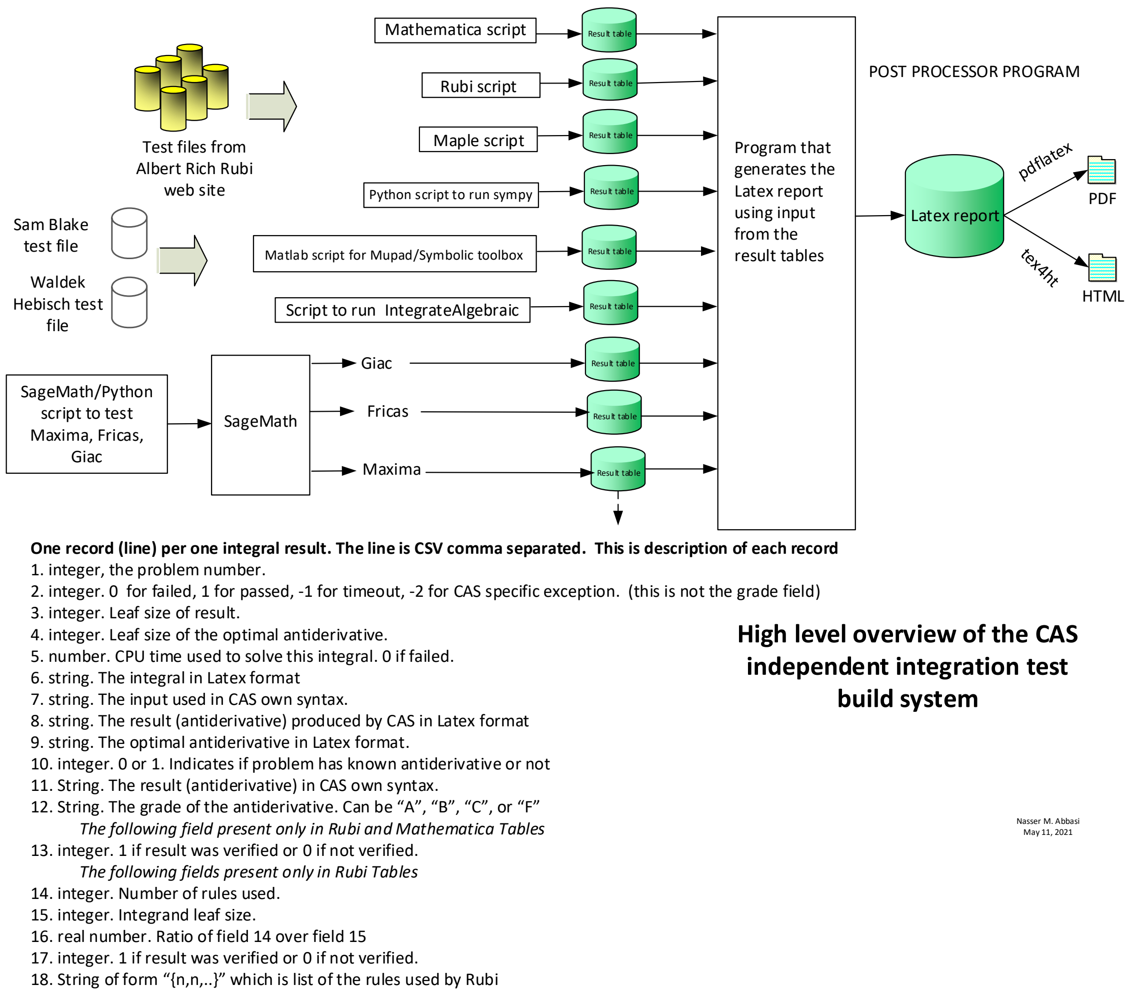

Chapter 2

detailed summary tables of results

Local contents

2.1 List of integrals sorted by grade for each CAS

Local contents

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 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B grade: { 454, 470, 471, 480, 490, 491, 492, 493, 506, 507, 508, 523, 524, 525, 539, 540, 541, 905, 954, 1023, 1032, 1033, 1034, 1043, 1044, 1045, 1110, 1284, 1298, 1316, 1326, 1431, 1432, 1433, 1434, 1436, 1439, 1440, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1466, 1467, 1468, 1511, 1518, 1532, 1533, 1670, 1671, 1680, 1681, 1682, 1683, 1684, 1685, 1691, 1692, 1693, 1694, 1695, 1696, 1699, 1700, 1721, 1756, 1763, 1780, 1781, 1953, 1954, 1965, 1966, 1967, 1968, 2077, 2092, 2131, 2241, 2248, 2249, 2250, 2335 }

C grade: { 73, 86, 87, 101, 102, 103, 129, 130, 173, 174, 175, 176, 181, 182, 183, 184, 185, 186, 187, 190, 191, 192, 193, 202, 210, 212, 213, 221, 222, 224, 232, 238, 239, 240, 241, 246, 247, 248, 249, 323, 324, 325, 332, 333, 334, 335, 337, 338, 345, 346, 347, 348, 349, 350, 352, 353, 363, 364, 416, 417, 418, 419, 424, 425, 431, 432, 689, 690, 691, 692, 693, 694, 696, 697, 698, 699, 700, 701, 703, 704, 705, 706, 707, 708, 742, 743, 744, 745, 746, 747, 750, 751, 752, 753, 754, 755, 757, 758, 759, 760, 761, 762, 1089, 1090, 1091, 1092, 1099, 1100, 1101, 1108, 1109, 1277, 1278, 1283, 1290, 1292, 1293, 1294, 1295, 1296, 1593, 1594, 1595, 1596, 1597, 1598, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1644, 1645, 1646, 1647, 1648, 1651, 1652, 1653, 1654, 1655, 1656, 1658, 1659, 1660, 1661, 1662, 1663, 1846, 1847, 1848, 1849, 1850, 1851, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1861, 1862, 1863, 1864, 1865, 1866, 1905, 1906, 1907, 1910, 1911, 1912, 1913, 1915, 1916, 1917, 1918, 1919, 1920, 1947, 1959, 1960, 1972, 1973, 1974, 1993, 1994, 2008, 2009, 2017, 2019, 2028, 2029, 2031, 2043, 2044, 2045, 2051, 2052, 2053, 2054, 2334 }

F grade: { }

2.1.3 Maple

A grade: { 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 83, 84, 88, 89, 90, 91, 92, 93, 94, 97, 98, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 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B grade: { 1, 14, 27, 34, 69, 81, 82, 85, 86, 87, 95, 96, 99, 100, 101, 102, 103, 129, 130, 131, 309, 335, 348, 349, 350, 433, 434, 435, 454, 461, 470, 471, 480, 490, 491, 492, 493, 506, 507, 508, 523, 524, 525, 526, 539, 540, 616, 624, 655, 756, 759, 763, 764, 765, 766, 767, 806, 807, 808, 809, 815, 816, 817, 820, 821, 822, 835, 836, 837, 838, 839, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 884, 885, 886, 887, 888, 889, 892, 893, 894, 895, 896, 900, 901, 902, 903, 904, 905, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 969, 974, 975, 982, 988, 989, 990, 993, 1001, 1002, 1009, 1010, 1011, 1017, 1018, 1019, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1050, 1051, 1052, 1053, 1054, 1058, 1059, 1060, 1061, 1062, 1063, 1066, 1067, 1084, 1085, 1086, 1087, 1093, 1094, 1095, 1096, 1097, 1098, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1110, 1123, 1147, 1148, 1149, 1150, 1151, 1152, 1163, 1165, 1166, 1170, 1171, 1172, 1174, 1178, 1179, 1202, 1203, 1204, 1205, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1251, 1273, 1274, 1275, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1292, 1293, 1297, 1298, 1299, 1300, 1302, 1306, 1312, 1316, 1318, 1319, 1320, 1321, 1322, 1323, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1338, 1339, 1340, 1341, 1345, 1346, 1347, 1348, 1349, 1350, 1353, 1354, 1355, 1356, 1357, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1377, 1378, 1379, 1380, 1381, 1382, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1394, 1395, 1396, 1397, 1401, 1402, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1424, 1425, 1426, 1427, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1445, 1446, 1447, 1448, 1449, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1481, 1482, 1483, 1500, 1501, 1502, 1503, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1546, 1547, 1548, 1549, 1552, 1553, 1554, 1555, 1556, 1557, 1561, 1562, 1563, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1639, 1640, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1670, 1671, 1672, 1673, 1674, 1675, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1711, 1712, 1720, 1721, 1729, 1738, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1756, 1757, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1780, 1781, 1782, 1783, 1790, 1800, 1808, 1809, 1815, 1816, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1849, 1850, 1851, 1858, 1859, 1860, 1865, 1866, 1905, 1906, 1907, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1929, 1942, 1943, 1944, 1945, 1946, 1947, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1979, 1980, 1981, 1987, 1988, 1989, 1992, 1993, 1994, 1995, 1998, 1999, 2000, 2007, 2008, 2009, 2015, 2016, 2017, 2018, 2019, 2026, 2027, 2028, 2029, 2030, 2031, 2036, 2037, 2043, 2044, 2045, 2051, 2052, 2053, 2054, 2057, 2065, 2077, 2083, 2084, 2085, 2086, 2087, 2088, 2092, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2109, 2123, 2124, 2125, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2135, 2136, 2186, 2187, 2196, 2201, 2202, 2203, 2204, 2211, 2217, 2218, 2219, 2220, 2221, 2222, 2224, 2225, 2226, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2236, 2237, 2238, 2239, 2240, 2241, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2276, 2280, 2335, 2336, 2337 }

C grade: { 585, 586, 587, 1493, 1494, 1495, 1735, 1736, 1737 }

F grade: { }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 83, 84, 85, 86, 87, 93, 94, 97, 98, 99, 100, 101, 102, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 133, 136, 137, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 203, 204, 225, 226, 227, 228, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 455, 456, 457, 458, 459, 460, 462, 463, 464, 465, 466, 467, 468, 469, 472, 473, 474, 475, 476, 477, 478, 479, 482, 483, 484, 485, 486, 487, 488, 489, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 574, 575, 577, 578, 579, 585, 595, 598, 611, 612, 617, 618, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 745, 746, 747, 751, 752, 753, 754, 755, 762, 763, 764, 765, 766, 767, 768, 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2074, 2075, 2076, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333 }

B grade: { 34, 69, 74, 81, 82, 88, 89, 90, 91, 92, 95, 96, 103, 104, 105, 106, 107, 108, 129, 130, 131, 132, 134, 135, 138, 139, 205, 206, 207, 214, 215, 216, 217, 218, 350, 454, 461, 470, 471, 480, 481, 490, 491, 492, 493, 506, 507, 508, 523, 524, 525, 539, 540, 573, 576, 580, 581, 582, 583, 584, 586, 587, 588, 589, 590, 591, 592, 593, 594, 596, 597, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 613, 614, 615, 616, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 651, 740, 741, 742, 743, 744, 748, 749, 750, 756, 757, 758, 759, 760, 761, 834, 905, 957, 969, 982, 988, 1000, 1001, 1007, 1008, 1009, 1015, 1016, 1018, 1019, 1027, 1028, 1029, 1038, 1039, 1040, 1061, 1062, 1063, 1064, 1065, 1110, 1123, 1174, 1179, 1203, 1204, 1205, 1206, 1217, 1218, 1219, 1220, 1221, 1222, 1243, 1298, 1299, 1436, 1437, 1438, 1439, 1440, 1441, 1449, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1479, 1480, 1481, 1482, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1500, 1501, 1502, 1503, 1504, 1505, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1539, 1547, 1548, 1555, 1556, 1557, 1558, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1615, 1623, 1624, 1625, 1631, 1632, 1633, 1634, 1635, 1664, 1665, 1666, 1667, 1670, 1671, 1673, 1674, 1680, 1681, 1682, 1683, 1684, 1685, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1698, 1699, 1700, 1701, 1706, 1709, 1710, 1716, 1717, 1718, 1719, 1720, 1721, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1790, 1791, 1792, 1793, 1800, 1801, 1802, 1803, 1808, 1809, 1810, 1811, 1812, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1867, 1875, 1876, 1877, 1878, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1921, 1922, 1923, 1924, 1925, 1929, 1930, 1931, 1933, 1934, 1939, 1940, 1941, 1969, 2010, 2011, 2012, 2020, 2021, 2022, 2023, 2024, 2025, 2077, 2092, 2186, 2187, 2188, 2189, 2190, 2201, 2202, 2203, 2204, 2205, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2274, 2275, 2276, 2313, 2335, 2336, 2337 }

C grade: { }

F grade: { 199, 200, 201, 202, 208, 209, 210, 211, 212, 213, 219, 220, 221, 222, 223, 224, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 1021, 1022, 1023, 1024, 1025, 1026, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1041, 1042, 1043, 1044, 1045, 1050, 1051, 1052, 1053, 1058, 1059, 1060, 1066, 1067, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1297, 1332, 1333, 1334, 1335, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1353, 1354, 1355, 1356, 1357, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1394, 1395, 1396, 1397, 1398, 1399, 1401, 1402, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1543, 1544, 1545, 1546, 1552, 1553, 1554, 1561, 1562, 1563, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1669, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1795, 1796, 1797, 1798, 1799, 1805, 1806, 1807, 1814, 1815, 1816, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1928, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2005, 2006, 2007, 2008, 2009, 2015, 2016, 2017, 2018, 2019, 2026, 2027, 2028, 2029, 2030, 2031, 2035, 2036, 2037, 2042, 2043, 2044, 2045, 2051, 2052, 2053, 2054, 2056, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2334 }

2.1.5 FriCAS

A grade: { 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 219, 220, 221, 222, 223, 224, 225, 226, 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B grade: { 1, 14, 27, 34, 64, 65, 104, 218, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 433, 434, 435, 454, 461, 470, 471, 480, 481, 490, 491, 492, 493, 506, 507, 508, 523, 524, 525, 526, 539, 540, 562, 566, 567, 568, 569, 570, 571, 572, 573, 576, 577, 578, 579, 763, 764, 765, 766, 767, 815, 816, 817, 818, 819, 820, 821, 822, 862, 863, 864, 872, 873, 887, 888, 889, 891, 892, 893, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 969, 975, 976, 977, 978, 982, 988, 989, 990, 991, 998, 999, 1000, 1001, 1002, 1003, 1004, 1006, 1007, 1009, 1010, 1011, 1012, 1013, 1014, 1022, 1023, 1024, 1025, 1026, 1032, 1033, 1034, 1035, 1036, 1037, 1043, 1044, 1045, 1052, 1053, 1058, 1059, 1060, 1063, 1066, 1067, 1068, 1069, 1076, 1077, 1089, 1090, 1091, 1092, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1110, 1111, 1123, 1130, 1131, 1132, 1133, 1139, 1146, 1147, 1148, 1149, 1150, 1151, 1163, 1164, 1165, 1166, 1170, 1171, 1172, 1173, 1174, 1175, 1178, 1189, 1237, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1292, 1298, 1299, 1300, 1302, 1306, 1312, 1316, 1318, 1319, 1320, 1321, 1322, 1326, 1328, 1329, 1330, 1331, 1339, 1340, 1341, 1342, 1343, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1360, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1373, 1374, 1375, 1376, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1409, 1410, 1415, 1416, 1417, 1421, 1423, 1424, 1426, 1427, 1428, 1429, 1431, 1432, 1433, 1436, 1437, 1438, 1439, 1440, 1441, 1446, 1447, 1448, 1449, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1479, 1480, 1481, 1482, 1483, 1486, 1487, 1500, 1511, 1512, 1518, 1519, 1520, 1521, 1522, 1523, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1538, 1545, 1546, 1547, 1548, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1561, 1562, 1563, 1564, 1565, 1566, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1623, 1624, 1631, 1632, 1633, 1634, 1645, 1649, 1650, 1651, 1652, 1653, 1654, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1709, 1710, 1711, 1712, 1716, 1717, 1718, 1719, 1720, 1721, 1724, 1725, 1726, 1727, 1728, 1738, 1743, 1744, 1756, 1757, 1758, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1775, 1776, 1777, 1778, 1780, 1781, 1782, 1783, 1807, 1808, 1811, 1814, 1815, 1816, 1817, 1818, 1819, 1825, 1826, 1827, 1828, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1847, 1848, 1849, 1850, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1885, 1911, 1912, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1929, 1930, 1933, 1934, 1935, 1940, 1941, 1948, 1949, 1953, 1954, 1955, 1960, 1961, 1965, 1966, 1967, 1968, 1974, 1985, 1990, 1991, 1992, 1995, 1997, 1998, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2030, 2031, 2036, 2037, 2042, 2043, 2044, 2045, 2051, 2052, 2053, 2054, 2056, 2057, 2065, 2077, 2078, 2084, 2085, 2086, 2087, 2092, 2093, 2099, 2100, 2101, 2102, 2103, 2104, 2109, 2128, 2130, 2131, 2132, 2133, 2134, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2247, 2248, 2249, 2250, 2251, 2252, 2314, 2315, 2316, 2319, 2320, 2321, 2322, 2323, 2324, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2335, 2336, 2337 }

C grade: { }

F grade: { 1008, 1015, 1016, 1041, 1093, 1109, 1179, 1288, 1361, 1369, 1371, 1372, 1377, 1378, 1379, 1380, 1425, 1430, 1434, 1435, 1950, 1951, 1952, 1962, 1963, 1964, 1975, 1976, 1977, 1978, 1986, 1999, 2000, 2129, 2135, 2136, 2246, 2253 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 51, 52, 53, 54, 55, 59, 60, 61, 62, 63, 66, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 179, 180, 181, 182, 183, 191, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 292, 293, 297, 298, 299, 300, 301, 306, 307, 308, 309, 310, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 337, 339, 340, 341, 342, 343, 344, 345, 346, 347, 354, 355, 356, 357, 359, 360, 361, 362, 363, 365, 366, 367, 368, 369, 372, 375, 377, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 420, 421, 422, 423, 424, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 455, 456, 457, 458, 459, 460, 462, 463, 464, 465, 466, 467, 468, 472, 473, 474, 475, 476, 477, 478, 479, 482, 483, 484, 485, 486, 487, 488, 489, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 559, 560, 561, 562, 563, 564, 565, 566, 569, 570, 571, 572, 574, 575, 577, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 694, 695, 696, 697, 698, 763, 764, 765, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 954, 955, 956, 957, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 983, 984, 985, 986, 987, 990, 991, 992, 996, 1068, 1069, 1071, 1072, 1073, 1074, 1075, 1076, 1079, 1080, 1081, 1082, 1083, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1168, 1169, 1175, 1176, 1177, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1194, 1195, 1196, 1197, 1198, 1207, 1208, 1209, 1210, 1211, 1223, 1224, 1225, 1226, 1227, 1238, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1271, 1272, 1291, 1293, 1296, 1300, 1303, 1304, 1305, 1307, 1308, 1309, 1310, 1311, 1313, 1314, 1315, 1317, 1318, 1319, 1320, 1321, 1323, 1324, 1325, 1327, 1328, 1329, 1336, 1344, 1384, 1393, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1438, 1442, 1443, 1444, 1445, 1446, 1447, 1474, 1475, 1476, 1477, 1484, 1485, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1539, 1540, 1541, 1542, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1665, 1676, 1677, 1678, 1679, 1688, 1702, 1703, 1704, 1705, 1706, 1711, 1712, 1713, 1714, 1722, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1739, 1740, 1741, 1742, 1750, 1772, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1804, 1813, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1837, 1839, 1844, 1845, 1846, 1847, 1848, 1923, 1932, 1933, 1934, 1940, 1941, 2055, 2058, 2059, 2060, 2061, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2095, 2096, 2097, 2098, 2109, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2287, 2288, 2289, 2290, 2294, 2295, 2296, 2297, 2298, 2299, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2320, 2337 }

B grade: { 34, 48, 49, 50, 56, 57, 58, 64, 65, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 294, 295, 296, 302, 303, 304, 305, 311, 312, 313, 334, 335, 336, 338, 348, 349, 350, 351, 352, 353, 358, 364, 370, 371, 373, 374, 376, 378, 379, 380, 381, 382, 383, 453, 454, 461, 469, 470, 471, 480, 481, 490, 491, 492, 493, 506, 507, 508, 522, 523, 524, 525, 526, 539, 540, 541, 556, 557, 558, 567, 568, 573, 576, 578, 806, 807, 808, 809, 810, 815, 816, 817, 818, 819, 936, 937, 958, 988, 989, 993, 994, 995, 1001, 1002, 1003, 1004, 1005, 1010, 1011, 1012, 1013, 1014, 1070, 1077, 1078, 1097, 1110, 1111, 1123, 1139, 1156, 1157, 1158, 1159, 1160, 1164, 1165, 1166, 1167, 1172, 1173, 1174, 1237, 1249, 1250, 1275, 1302, 1306, 1312, 1316, 1322, 1326, 1330, 1332, 1333, 1334, 1335, 1340, 1341, 1342, 1343, 1348, 1349, 1350, 1351, 1352, 1358, 1368, 1376, 1400, 1439, 1440, 1441, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1473, 1478, 1479, 1480, 1481, 1482, 1483, 1486, 1487, 1543, 1544, 1545, 1546, 1575, 1583, 1591, 1670, 1671, 1672, 1673, 1674, 1675, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1707, 1708, 1709, 1710, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1738, 1828, 1836, 1838, 2065, 2066, 2077, 2078, 2092, 2093, 2094, 2099, 2100, 2110, 2123, 2124, 2125, 2126, 2132, 2133, 2134, 2285, 2286, 2291, 2292, 2293, 2300 }

C grade: { 2062, 2063, 2064 }

F grade: { 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 177, 178, 184, 185, 186, 187, 188, 189, 190, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 419, 425, 426, 427, 428, 429, 430, 431, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 692, 693, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 766, 767, 804, 805, 811, 812, 813, 814, 820, 821, 822, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 934, 935, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 969, 980, 981, 982, 997, 998, 999, 1000, 1006, 1007, 1008, 1009, 1015,

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2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021,
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2334, 2335, 2336 }

2.1.7 Giac

A grade: { 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 79, 80, 81, 82, 83, 84, 85, 86, 93, 94, 95, 96, 97, 98, 99, 100, 101, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 124, 129, 130, 134, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 208, 209, 210, 211, 212, 213, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 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499, 500, 501, 502, 503, 504, 505, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 598, 599, 600, 601, 602, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 617, 618, 619, 620, 621, 622, 623, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 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1276, 1291, 1293, 1294, 1295, 1296, 1297, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1313, 1314, 1315, 1317, 1318, 1319, 1320, 1323, 1324, 1325, 1327, 1329, 1330, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1340, 1341, 1342, 1343, 1344, 1345, 1350, 1351, 1352, 1354, 1355, 1356, 1357, 1358, 1368, 1376, 1381, 1382, 1383, 1384, 1393, 1400, 1406, 1407, 1408, 1412, 1414, 1423, 1427, 1428, 1442, 1443, 1444, 1445, 1447, 1448, 1450, 1451, 1452, 1475, 1476, 1477, 1478, 1479, 1482, 1483, 1484, 1485, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1507, 1508, 1509, 1513, 1514, 1515, 1516, 1517, 1540, 1541, 1542, 1543, 1544, 1545, 1568, 1569, 1570, 1571, 1590, 1591, 1592, 1593, 1594, 1598, 1619, 1620, 1621, 1622, 1627, 1640, 1641, 1642, 1643, 1644, 1645, 1647, 1648, 1656, 1676, 1678, 1679, 1689, 1702, 1703, 1704, 1705, 1707, 1708, 1711, 1712, 1713, 1714, 1715, 1717, 1720, 1722, 1723, 1724, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1739, 1740, 1741, 1742, 1751, 1752, 1753, 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B grade: { 1, 14, 27, 34, 73, 74, 75, 76, 77, 78, 87, 88, 89, 90, 91, 92, 102, 103, 104, 105, 106, 107, 108, 132, 203, 204, 205, 206, 207, 214, 215, 216, 217, 218, 250, 321, 322, 323, 324, 325, 333, 334, 335, 336, 337, 338, 347, 348, 349, 350, 351, 352, 353, 361, 363, 364, 372, 373, 433, 434, 435, 436, 454, 461, 470, 471, 480, 481, 490, 491, 492, 493, 506, 507, 508, 523, 524, 525, 526, 539, 540, 597, 603, 615, 616, 624, 625, 763, 764, 765, 766, 767, 834, 842, 843, 844, 845, 846, 854, 855, 856, 857, 858, 859, 862, 863, 864, 867, 868, 869, 870, 871, 872, 873, 874, 882, 883, 884, 885, 893, 894, 897, 899, 902, 903, 904, 905, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 969, 974, 975, 978, 982, 988, 989, 998, 1001, 1007, 1008, 1009, 1011, 1015, 1016, 1023, 1024, 1025, 1026, 1032, 1033, 1034, 1035, 1036, 1037, 1043, 1044, 1051, 1052, 1053, 1059, 1060, 1063, 1066, 1067, 1068, 1069, 1070, 1071, 1076, 1077, 1078, 1079, 1084, 1085, 1092, 1093, 1094, 1095, 1096, 1099, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1123, 1133, 1149, 1174, 1188, 1189, 1190, 1191, 1192, 1193, 1200, 1201, 1202, 1204, 1205, 1206, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1228, 1229, 1230, 1231, 1233, 1240, 1241, 1242, 1252, 1254, 1255, 1256, 1261, 1273, 1274, 1275, 1277, 1279, 1280, 1281, 1282, 1283, 1285, 1286, 1287, 1289, 1298, 1299, 1300, 1302, 1312, 1316, 1321, 1322, 1326, 1328, 1331, 1339, 1346, 1347, 1348, 1349, 1353, 1362, 1364, 1365, 1366, 1367, 1373, 1374, 1375, 1387, 1388, 1389, 1390, 1391, 1392, 1394, 1396, 1397, 1398, 1399, 1401, 1402, 1403, 1404, 1405, 1409, 1410, 1411, 1413, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1424, 1425, 1426, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1446, 1449, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1480, 1481, 1486, 1487, 1488, 1489, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1510, 1511, 1512, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1546, 1553, 1562, 1564, 1565, 1566, 1567, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1595, 1596, 1597, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1623, 1624, 1625, 1626, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1646, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1677, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1706, 1709, 1710, 1716, 1718, 1719, 1721, 1725, 1726, 1727, 1728, 1729, 1730, 1738, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1756, 1757, 1758, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1780, 1781, 1782, 1783, 1802, 1803, 1805, 1806, 1807, 1815, 1817, 1818, 1819, 1820, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1849, 1850, 1855, 1856, 1857, 1858, 1859, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1875, 1876, 1877, 1885, 1886, 1887, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1905, 1909, 1910, 1911, 1912, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1928, 1929, 1930, 1931, 1933, 1935, 1937, 1938, 1939, 1940, 1953, 1954, 1955, 1960, 1965, 1966, 1967, 1987, 1988, 1989, 1993, 1994, 1995, 1996, 1997, 2055, 2056, 2057, 2065, 2077, 2078, 2084, 2087, 2092, 2093, 2098, 2099, 2101, 2102, 2106, 2107, 2108, 2109, 2130, 2131, 2132, 2135, 2136, 2171, 2172, 2173, 2175, 2176, 2183, 2184, 2185, 2187, 2188, 2189, 2190, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2212, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2230, 2231, 2236, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2260, 2261, 2262, 2264, 2271, 2272, 2273, 2281, 2313, 2334, 2335, 2336, 2337 }

C grade: { }

F grade: { 123, 125, 126, 127, 128, 131, 133, 135, 136, 137, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 840, 841, 852, 853, 865, 866, 880, 1021, 1022, 1030, 1031, 1041, 1042, 1045, 1050, 1278, 1284, 1288, 1290, 1292, 1301, 1359, 1360, 1361, 1363, 1369, 1370, 1371, 1372, 1377, 1378, 1379, 1380, 1385, 1386, 1395, 1547, 1548, 1549, 1550, 1551, 1552, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1563, 1804, 1808, 1809, 1810, 1811, 1812, 1814, 1816, 1927, 1934, 1936, 1941, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1964, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1982, 1983, 1984, 1985, 1986, 1990, 1991, 1992, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2228, 2229, 2237, 2253 }

2.1.8 Mupad

A grade: { }

B grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 74, 75, 76, 77, 78, 82, 88, 89, 90, 91, 92, 104, 105, 106, 107, 108, 113, 114, 115, 116, 117, 118, 119, 123, 124, 125, 126, 127, 128, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 318, 319, 320, 321, 322, 323, 324, 325, 330, 331, 332, 333, 336, 337, 338, 343, 344, 345, 346, 351, 352, 353, 356, 357, 358, 359, 360, 361, 362, 363, 364, 367, 368, 369, 370, 371, 372, 373, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 597, 603, 604, 605, 606, 607, 608, 609, 624, 625, 626, 627, 628, 629, 630, 635, 636, 637, 645, 651, 652, 653, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 713, 714, 715, 716, 717, 723, 732, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 851, 879, 880, 881, 889, 890, 897, 898, 899, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1029, 1049, 1056, 1057, 1063, 1064, 1065, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1368, 1376, 1384, 1392, 1393, 1398, 1399, 1400, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1496, 1497, 1498, 1499, 1505, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1542, 1551, 1558, 1559, 1560, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1619, 1620, 1621, 1622, 1627, 1628, 1629, 1630, 1635, 1636, 1637, 1638, 1664, 1665, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1738, 1739, 1740, 1741, 1742, 1750, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1772, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1794, 1796, 1797, 1798, 1799, 1804, 1811, 1812, 1813, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1871, 1872, 1873, 1874, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1901, 1902, 1903, 1904, 1921, 1922, 1923, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1948, 1949, 1950, 1951, 1952, 1961, 1962, 1963, 1964, 1975, 1976, 1977, 1983, 1984, 1985, 1986, 1989, 1990, 1991, 1992, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2010, 2011, 2012, 2013, 2014, 2020, 2021, 2022, 2023, 2024, 2025, 2032, 2033, 2034, 2038, 2039, 2040, 2041, 2046, 2047, 2048, 2049, 2050, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2181, 2227, 2234, 2235, 2241, 2242, 2243, 2248, 2249, 2250, 2251, 2252, 2258, 2268, 2269, 2277, 2278, 2279, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337 }

C grade: { }

F grade: { 72, 73, 79, 80, 81, 83, 84, 85, 86, 87, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 109, 110, 111, 112, 120, 121, 122, 129, 130, 131, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 314, 315, 316, 317, 326, 327, 328, 329, 334, 335, 339, 340, 341, 342, 347, 348, 349, 350, 354, 355, 365, 366, 374, 375, 592, 593, 594, 595, 596, 598, 599, 600, 601, 602, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 631, 632, 633, 634, 638, 639, 640, 641, 642, 643, 644, 646, 647, 648, 649, 650, 654, 655, 709, 710, 711, 712, 718, 719, 720, 721, 722, 724, 725, 726, 727, 728, 729, 730, 731, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 842, 843, 844, 845, 846, 847, 848, 849, 850, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 882, 883, 884, 885, 886, 887, 888, 891, 892, 893, 894, 895, 896, 900, 901, 902, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1050, 1051, 1052, 1053, 1054, 1055, 1058, 1059, 1060, 1061, 1062, 1066, 1067, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1394, 1395, 1396, 1397, 1401, 1402, 1493, 1494, 1495, 1500, 1501, 1502, 1503, 1504, 1506, 1507, 1508, 1509, 1510, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1539, 1540, 1541, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1552, 1553, 1554, 1555, 1556, 1557, 1561, 1562, 1563, 1615, 1616, 1617, 1618, 1623, 1624, 1625, 1626, 1631, 1632, 1633, 1634, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1666, 1667, 1668, 1735, 1736, 1737, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1751, 1752, 1753, 1754, 1755, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1790, 1791, 1792, 1793, 1795, 1800, 1801, 1802, 1803, 1805, 1806, 1807, 1808, 1809, 1810, 1814, 1815, 1816, 1867, 1868, 1869, 1870, 1875, 1876, 1877, 1885, 1886, 1887, 1897, 1898, 1899, 1900, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1924, 1925, 1926, 1927, 1945, 1946, 1947, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1978, 1979, 1980, 1981, 1982, 1987, 1988, 1993, 1994, 1995, 2005, 2006, 2007, 2008, 2009, 2015, 2016, 2017, 2018, 2019, 2026, 2027, 2028, 2029, 2030, 2031, 2035, 2036, 2037, 2042, 2043, 2044, 2045, 2051, 2052, 2053, 2054, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2228, 2229, 2230, 2231, 2232, 2233, 2236, 2237, 2238, 2239, 2240, 2244, 2245, 2246, 2247, 2253, 2254, 2255, 2256, 2257, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2280, 2281, 2282, 2283, 2284 }

2.1.9 IntegrateAlgebraic

A grade: { 6, 19, 20, 32, 33, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 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746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 865, 866, 867, 868, 869, 870, 871, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1027, 1028, 1029, 1030, 1031, 1032, 1038, 1039, 1040, 1041, 1042, 1046, 1047, 1048, 1049, 1050, 1052, 1054, 1055, 1056, 1057, 1058, 1059, 1061, 1062, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1105, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1291, 1294, 1295, 1296, 1297, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1367, 1368, 1369, 1376, 1381, 1382, 1383, 1384, 1385, 1386, 1389, 1390, 1391, 1392, 1393, 1394, 1397, 1398, 1399, 1400, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1423, 1424, 1425, 1429, 1430, 1435, 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B grade: { 34, 585, 586, 587, 588, 589, 590, 591, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 647, 648, 649, 650, 651, 652, 653, 863, 864, 872, 873, 904, 905, 1035, 1043, 1051, 1053, 1060, 1063, 1101, 1102, 1103, 1104, 1106, 1107, 1108, 1109, 1365, 1366, 1370, 1373, 1374, 1375, 1377, 1378, 1395, 1396, 1401, 1415, 1416, 1417, 1418, 1419, 1420, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1555, 1556, 1557, 1558, 1559, 1560, 1562, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1595, 1596, 1603, 1604, 1605, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1654, 1663, 1799, 1800, 1801, 1802, 1803, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1814, 1816, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1858, 1901, 1948, 1949, 1950, 1957, 1958, 1960, 1961, 1972, 1980, 1981, 1982, 1984, 1985, 1986, 1989, 1990, 1994, 1995, 1996, 1997, 2237, 2239, 2240, 2241, 2246, 2247, 2248, 2249, 2250, 2251, 2252 }

C grade: { 1289, 1290, 1292, 1293, 1421, 1422, 1426, 1427, 1428, 1431, 1432, 1433, 1434 }

F grade: { 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 592, 593, 594, 595, 596, 597, 610, 611, 612, 613, 614, 615, 616, 655, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 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1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1553, 1554, 1561, 1563, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 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2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2230, 2231, 2238, 2244, 2245, 2253, 2335, 2336, 2337 }

2.2 Detailed conclusion table per each integral for all CAS systems

Detailed conclusion table per each integral is given by table below. The elapsed time is in seconds. For failed result it is given as F(-1) if the failure was due to timeout. It is given as F(-2) if the failure was due to an exception being raised, which could indicate a bug in the system. If the failure was due to integral not being evaluated within the time limit, then it is given just an F.

In this table,the column `N.S.` in the table below, which stands for **normalized size** is defined as $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$. To help make the table fit, `Mathematica` was abbreviated to `MMA` and `IntegrateAlgebraic` to `I.A.`

Problem 1	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	57	98	53	94	394	149	97	0
N.S.	1	1.00	1.27	2.18	1.18	2.09	8.76	3.31	2.16	0.00
time (sec)	N/A	0.021	0.042	0.050	0.855	0.418	0.806	0.228	1.134	0.051

Problem 2	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	33	28	27	29	29	29	28	0
N.S.	1	1.00	1.00	0.85	0.82	0.88	0.88	0.88	0.85	0.00
time (sec)	N/A	0.044	0.006	0.049	0.861	0.355	0.065	0.146	0.041	0.000

Problem 3	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	33	28	27	29	29	29	28	0
N.S.	1	1.00	1.00	0.85	0.82	0.88	0.88	0.88	0.85	0.00
time (sec)	N/A	0.036	0.005	0.047	0.842	0.353	0.065	0.147	0.038	0.000

Problem 4	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	33	28	27	29	29	29	28	0
N.S.	1	1.00	1.00	0.85	0.82	0.88	0.88	0.88	0.85	0.00
time (sec)	N/A	0.026	0.005	0.045	0.811	0.335	0.066	0.146	0.038	0.000

Problem 5	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	29	28	27	29	29	29	28	0
N.S.	1	1.00	0.88	0.85	0.82	0.88	0.88	0.88	0.85	0.00
time (sec)	N/A	0.019	0.005	0.042	0.892	0.348	0.064	0.145	0.037	0.000

Problem 6	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	28	25	24	24	26	26	25	32
N.S.	1	1.00	1.00	0.89	0.86	0.86	0.93	0.93	0.89	1.14
time (sec)	N/A	0.018	0.005	0.049	0.846	0.389	0.064	0.147	0.035	0.017

Problem 7	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	24	24	24	22	22	22	22	22	22	0
N.S.	1	1.00	1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.00
time (sec)	N/A	0.013	0.005	0.043	0.900	0.394	0.113	0.145	0.035	0.000

Problem 8	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	22	22	22	23	22	26	19	23	22	0
N.S.	1	1.00	1.00	1.05	1.00	1.18	0.86	1.05	1.00	0.00
time (sec)	N/A	0.016	0.009	0.049	0.874	0.395	0.148	0.148	0.043	0.000

Problem 9	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	28	28	25	29	27	26	25	0
N.S.	1	1.00	1.04	1.04	0.93	1.07	1.00	0.96	0.93	0.00
time (sec)	N/A	0.017	0.010	0.052	0.842	0.398	0.224	0.150	1.017	0.000

Problem 10	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	31	31	28	28	27	27	31	27	27	0
N.S.	1	1.00	0.90	0.90	0.87	0.87	1.00	0.87	0.87	0.00
time (sec)	N/A	0.017	0.010	0.046	0.883	0.389	0.280	0.148	0.038	0.000

Problem 11	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	29	28	27	27	31	27	28	0
N.S.	1	1.00	0.88	0.85	0.82	0.82	0.94	0.82	0.85	0.00
time (sec)	N/A	0.017	0.008	0.046	0.904	0.387	0.338	0.152	0.036	0.000

Problem 12	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	31	28	27	27	31	27	28	0
N.S.	1	1.00	0.94	0.85	0.82	0.82	0.94	0.82	0.85	0.00
time (sec)	N/A	0.017	0.010	0.050	0.911	0.388	0.410	0.149	0.040	0.000

Problem 13	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	31	28	27	27	31	27	28	0
N.S.	1	1.00	0.94	0.85	0.82	0.82	0.94	0.82	0.85	0.00
time (sec)	N/A	0.016	0.009	0.054	0.879	0.374	0.485	0.146	0.039	0.001

Problem 14	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	71	246	91	217	1027	340	179	0
N.S.	1	1.00	1.00	3.46	1.28	3.06	14.46	4.79	2.52	0.00
time (sec)	N/A	0.042	0.096	0.057	0.859	0.420	1.552	0.173	1.199	0.088

Problem 15	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	52	51	53	54	53	51	0
N.S.	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.062	0.010	0.046	0.874	0.362	0.076	0.170	1.053	0.000

Problem 16	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	52	51	53	54	53	51	0
N.S.	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.056	0.009	0.047	0.888	0.349	0.081	0.170	0.047	0.000

Problem 17	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	52	51	53	54	53	51	0
N.S.	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.049	0.008	0.046	0.843	0.344	0.077	0.161	0.045	0.000

Problem 18	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	49	52	51	53	54	53	51	0
N.S.	1	1.00	0.89	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.034	0.011	0.043	0.922	0.338	0.076	0.147	0.047	0.000

Problem 19	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	49	52	51	51	54	53	51	65
N.S.	1	1.00	0.89	0.95	0.93	0.93	0.98	0.96	0.93	1.18
time (sec)	N/A	0.036	0.010	0.045	0.897	0.388	0.078	0.178	0.048	0.027

Problem 20	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	47	49	48	48	49	49	47	57
N.S.	1	1.00	1.24	1.29	1.26	1.26	1.29	1.29	1.24	1.50
time (sec)	N/A	0.027	0.010	0.042	0.945	0.391	0.078	0.150	0.047	0.027

Problem 21	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	46	46	43	46	46	46	46	46	45	0
N.S.	1	1.00	0.93	1.00	1.00	1.00	1.00	1.00	0.98	0.00
time (sec)	N/A	0.027	0.015	0.046	0.901	0.389	0.144	0.150	0.041	0.000

Problem 22	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	43	46	46	52	42	46	46	0
N.S.	1	1.00	0.98	1.05	1.05	1.18	0.95	1.05	1.05	0.00
time (sec)	N/A	0.032	0.028	0.052	0.888	0.403	0.187	0.161	0.045	0.001

Problem 23	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	44	48	46	53	46	47	46	0
N.S.	1	1.00	1.00	1.09	1.05	1.20	1.05	1.07	1.05	0.00
time (sec)	N/A	0.030	0.025	0.053	0.934	0.408	0.332	0.159	1.042	0.001

Problem 24	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	47	52	50	53	54	51	48	0
N.S.	1	1.00	0.96	1.06	1.02	1.08	1.10	1.04	0.98	0.00
time (sec)	N/A	0.028	0.025	0.049	0.875	0.395	0.534	0.165	1.118	0.001

Problem 25	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	50	48	51	51	56	51	49	0
N.S.	1	1.00	0.94	0.91	0.96	0.96	1.06	0.96	0.92	0.00
time (sec)	N/A	0.030	0.014	0.051	0.918	0.392	0.680	0.149	0.038	0.001

Problem 26	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	53	48	51	51	56	51	51	0
N.S.	1	1.00	0.96	0.87	0.93	0.93	1.02	0.93	0.93	0.00
time (sec)	N/A	0.028	0.014	0.046	0.843	0.388	0.857	0.164	0.036	0.001

Problem 27	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	87	454	129	381	2026	603	291	0
N.S.	1	1.00	0.91	4.73	1.34	3.97	21.10	6.28	3.03	0.00
time (sec)	N/A	0.059	0.106	0.049	0.908	0.421	2.761	0.255	1.282	0.416

Problem 28	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	76	73	77	80	77	69	0
N.S.	1	1.00	1.00	1.01	0.97	1.03	1.07	1.03	0.92	0.00
time (sec)	N/A	0.081	0.013	0.043	0.901	0.355	0.084	0.155	0.039	0.000

Problem 29	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	76	73	77	82	77	69	0
N.S.	1	1.00	1.00	1.01	0.97	1.03	1.09	1.03	0.92	0.00
time (sec)	N/A	0.065	0.011	0.049	0.854	0.346	0.083	0.179	0.032	0.000

Problem 30	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	76	73	77	82	77	69	0
N.S.	1	1.00	1.00	1.01	0.97	1.03	1.09	1.03	0.92	0.00
time (sec)	N/A	0.057	0.011	0.042	0.877	0.343	0.083	0.156	0.033	0.000

Problem 31	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	76	73	77	80	77	69	0
N.S.	1	1.00	1.00	1.01	0.97	1.03	1.07	1.03	0.92	0.00
time (sec)	N/A	0.055	0.010	0.040	0.881	0.349	0.083	0.150	0.032	0.000

Problem 32	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	76	73	73	82	77	69	93
N.S.	1	1.00	1.00	1.01	0.97	0.97	1.09	1.03	0.92	1.24
time (sec)	N/A	0.044	0.010	0.041	0.939	0.384	0.085	0.150	0.033	0.024

Problem 33	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	67	76	73	73	80	76	68	90
N.S.	1	1.00	1.08	1.23	1.18	1.18	1.29	1.23	1.10	1.45
time (sec)	N/A	0.042	0.014	0.049	0.815	0.388	0.084	0.147	0.031	0.034

Problem 34	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	67	73	69	69	73	72	65	82
N.S.	1	1.00	1.76	1.92	1.82	1.82	1.92	1.89	1.71	2.16
time (sec)	N/A	0.020	0.008	0.047	0.897	0.373	0.083	0.156	0.030	0.033

Problem 35	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	63	70	68	68	73	70	63	0
N.S.	1	1.00	0.95	1.06	1.03	1.03	1.11	1.06	0.95	0.00
time (sec)	N/A	0.041	0.025	0.048	0.932	0.393	0.172	0.149	0.035	0.001

Problem 36	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	67	71	69	75	70	71	65	0
N.S.	1	1.00	1.03	1.09	1.06	1.15	1.08	1.09	1.00	0.00
time (sec)	N/A	0.047	0.034	0.053	0.908	0.380	0.219	0.181	0.041	0.001

Problem 37	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	71	71	69	74	68	69	70	0
N.S.	1	1.00	1.09	1.09	1.06	1.14	1.05	1.06	1.08	0.00
time (sec)	N/A	0.045	0.020	0.061	0.897	0.415	0.361	0.151	1.058	0.001

Problem 38	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	73	72	69	75	73	70	70	0
N.S.	1	1.00	1.14	1.12	1.08	1.17	1.14	1.09	1.09	0.00
time (sec)	N/A	0.040	0.033	0.058	0.818	0.398	0.663	0.151	0.067	0.001

Problem 39	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	71	76	72	75	80	73	71	0
N.S.	1	1.00	1.03	1.10	1.04	1.09	1.16	1.06	1.03	0.00
time (sec)	N/A	0.038	0.031	0.047	0.921	0.400	0.993	0.181	0.078	0.001

Problem 40	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	72	66	73	73	82	75	71	0
N.S.	1	1.00	1.01	0.93	1.03	1.03	1.15	1.06	1.00	0.00
time (sec)	N/A	0.040	0.019	0.050	0.842	0.386	1.298	0.150	1.017	0.001

Problem 41	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	74	66	73	73	82	75	73	0
N.S.	1	1.00	0.99	0.88	0.97	0.97	1.09	1.00	0.97	0.00
time (sec)	N/A	0.037	0.019	0.046	0.805	0.387	1.630	0.175	0.043	0.001

Problem 42	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	66	73	73	82	75	74	0
N.S.	1	1.00	1.00	0.88	0.97	0.97	1.09	1.00	0.99	0.00
time (sec)	N/A	0.041	0.018	0.047	0.912	0.376	2.040	0.165	0.047	0.001

Problem 43	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	80	100	93	94	85	100	94	0
N.S.	1	1.00	0.92	1.15	1.07	1.08	0.98	1.15	1.08	0.00
time (sec)	N/A	0.089	0.030	0.046	0.891	0.389	0.243	0.157	0.049	0.001

Problem 44	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	61	76	69	71	61	74	72	0
N.S.	1	1.00	0.92	1.15	1.05	1.08	0.92	1.12	1.09	0.00
time (sec)	N/A	0.057	0.020	0.044	0.949	0.392	0.219	0.163	1.014	0.001

Problem 45	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	41	52	46	47	37	49	46	0
N.S.	1	1.00	0.91	1.16	1.02	1.04	0.82	1.09	1.02	0.00
time (sec)	N/A	0.040	0.013	0.053	0.894	0.391	0.188	0.149	1.021	0.001

Problem 46	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	25	25	25	32	25	24	20	28	26	0
N.S.	1	1.00	1.00	1.28	1.00	0.96	0.80	1.12	1.04	0.00
time (sec)	N/A	0.023	0.007	0.046	0.940	0.377	0.158	0.138	0.047	0.000

Problem 47	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	30	30	29	32	30	29	41	33	28	0
N.S.	1	1.00	0.97	1.07	1.00	0.97	1.37	1.10	0.93	0.00
time (sec)	N/A	0.020	0.009	0.049	0.853	0.399	0.416	0.148	0.096	0.000

Problem 48	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	42	51	43	41	95	53	33	0
N.S.	1	1.00	0.98	1.19	1.00	0.95	2.21	1.23	0.77	0.00
time (sec)	N/A	0.037	0.017	0.053	0.848	0.397	0.368	0.242	0.085	0.001

Problem 49	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	58	75	63	68	131	78	73	0
N.S.	1	1.00	0.94	1.21	1.02	1.10	2.11	1.26	1.18	0.00
time (sec)	N/A	0.048	0.031	0.049	0.916	0.408	0.445	0.184	0.085	0.001

Problem 50	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	81	101	89	94	165	103	97	0
N.S.	1	1.00	0.94	1.17	1.03	1.09	1.92	1.20	1.13	0.00
time (sec)	N/A	0.065	0.048	0.052	0.878	0.409	0.499	0.160	0.094	0.001

Problem 51	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	87	109	98	139	92	107	115	0
N.S.	1	1.00	0.97	1.21	1.09	1.54	1.02	1.19	1.28	0.00
time (sec)	N/A	0.094	0.053	0.055	0.926	0.404	0.423	0.160	1.026	0.001

Problem 52	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	66	84	75	111	68	81	77	0
N.S.	1	1.00	0.96	1.22	1.09	1.61	0.99	1.17	1.12	0.00
time (sec)	N/A	0.069	0.050	0.047	0.906	0.391	0.372	0.154	0.058	0.001

Problem 53	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	41	61	50	69	44	51	56	0
N.S.	1	1.00	0.91	1.36	1.11	1.53	0.98	1.13	1.24	0.00
time (sec)	N/A	0.043	0.023	0.052	0.825	0.378	0.289	0.173	1.030	0.001

Problem 54	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	32	32	31	39	35	39	27	35	31	0
N.S.	1	1.00	0.97	1.22	1.09	1.22	0.84	1.09	0.97	0.00
time (sec)	N/A	0.030	0.010	0.046	0.845	0.389	0.199	0.154	0.043	0.001

Problem 55	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	38	46	43	61	32	48	40	0
N.S.	1	1.00	0.90	1.10	1.02	1.45	0.76	1.14	0.95	0.00
time (sec)	N/A	0.031	0.025	0.054	0.851	0.388	0.294	0.149	1.021	0.001

Problem 56	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	56	78	69	111	128	77	57	0
N.S.	1	1.00	0.86	1.20	1.06	1.71	1.97	1.18	0.88	0.00
time (sec)	N/A	0.049	0.037	0.052	0.915	0.404	0.484	0.174	0.087	0.001

Problem 57	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	85	107	100	151	184	111	105	0
N.S.	1	1.00	1.00	1.26	1.18	1.78	2.16	1.31	1.24	0.00
time (sec)	N/A	0.076	0.066	0.056	0.898	0.398	0.593	0.159	0.110	0.001

Problem 58	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	106	134	129	180	219	139	132	0
N.S.	1	1.00	0.94	1.19	1.14	1.59	1.94	1.23	1.17	0.00
time (sec)	N/A	0.104	0.082	0.120	0.971	0.409	0.661	0.154	1.082	0.001

Problem 59	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	86	117	106	167	107	104	108	0
N.S.	1	1.00	0.91	1.24	1.13	1.78	1.14	1.11	1.15	0.00
time (sec)	N/A	0.099	0.052	0.072	0.813	0.390	0.677	0.151	1.038	0.001

Problem 60	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	75	94	83	131	83	74	87	0
N.S.	1	1.00	1.06	1.32	1.17	1.85	1.17	1.04	1.23	0.00
time (sec)	N/A	0.064	0.027	0.053	0.934	0.392	0.547	0.189	1.077	0.001

Problem 61	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	54	70	63	79	63	55	63	0
N.S.	1	1.00	0.98	1.27	1.15	1.44	1.15	1.00	1.15	0.00
time (sec)	N/A	0.047	0.016	0.048	0.914	0.384	0.357	0.153	1.050	0.001

Problem 62	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	36	36	26	35	38	38	39	26	39	0
N.S.	1	1.00	0.72	0.97	1.06	1.06	1.08	0.72	1.08	0.00
time (sec)	N/A	0.029	0.009	0.050	0.916	0.384	0.281	0.180	1.026	0.001

Problem 63	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	53	59	68	109	63	60	62	0
N.S.	1	1.00	0.93	1.04	1.19	1.91	1.11	1.05	1.09	0.00
time (sec)	N/A	0.044	0.040	0.051	0.921	0.392	0.411	0.167	0.067	0.001

Problem 64	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	88	88	81	105	104	195	168	107	84	0
N.S.	1	1.00	0.92	1.19	1.18	2.22	1.91	1.22	0.95	0.00
time (sec)	N/A	0.075	0.048	0.054	0.865	0.407	0.639	0.160	1.095	0.001

Problem 65	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	102	138	136	234	219	132	132	0
N.S.	1	1.00	0.93	1.25	1.24	2.13	1.99	1.20	1.20	0.00
time (sec)	N/A	0.093	0.075	0.055	0.946	0.408	0.737	0.205	1.117	0.000

Problem 66	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	129	168	165	263	262	165	163	0
N.S.	1	1.00	0.92	1.20	1.18	1.88	1.87	1.18	1.16	0.00
time (sec)	N/A	0.124	0.117	0.056	0.994	0.410	0.798	0.172	1.087	0.001

Problem 67	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	166	291	288	349	0	188	267	177
N.S.	1	1.00	0.83	1.46	1.44	1.74	0.00	0.94	1.34	0.88
time (sec)	N/A	0.191	0.282	0.053	0.899	0.434	0.000	0.218	1.822	0.602

Problem 68	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	165	165	148	245	242	302	0	160	215	153
N.S.	1	1.00	0.90	1.48	1.47	1.83	0.00	0.97	1.30	0.93
time (sec)	N/A	0.160	0.252	0.052	0.862	0.419	0.000	0.241	1.481	0.542

Problem 69	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	128	201	198	253	0	132	165	129
N.S.	1	1.00	1.13	1.78	1.75	2.24	0.00	1.17	1.46	1.14
time (sec)	N/A	0.050	0.214	0.053	0.899	0.430	0.000	0.431	1.517	0.423

Problem 70	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	108	157	154	204	0	102	127	105
N.S.	1	1.00	1.11	1.62	1.59	2.10	0.00	1.05	1.31	1.08
time (sec)	N/A	0.038	0.180	0.050	0.945	0.429	0.000	0.198	1.376	0.509

Problem 71	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	89	112	109	153	0	77	101	85
N.S.	1	1.00	0.97	1.22	1.18	1.66	0.00	0.84	1.10	0.92
time (sec)	N/A	0.072	0.144	0.051	0.885	0.424	0.000	0.233	1.318	0.446

Problem 72	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	75	113	89	138	0	82	-1	70
N.S.	1	1.00	0.90	1.36	1.07	1.66	0.00	0.99	-0.01	0.84
time (sec)	N/A	0.086	0.140	0.057	0.839	0.421	0.000	0.215	0.000	0.339

Problem 73	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	86	89	85	141	0	151	-1	72
N.S.	1	1.00	1.18	1.22	1.16	1.93	0.00	2.07	-0.01	0.99
time (sec)	N/A	0.075	0.063	0.067	0.953	0.421	0.000	0.255	0.000	0.317

Problem 74	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	36	40	100	55	0	191	100	60
N.S.	1	1.00	0.63	0.70	1.75	0.96	0.00	3.35	1.75	1.05
time (sec)	N/A	0.045	0.013	0.046	0.948	0.405	0.000	0.250	1.444	0.297

Problem 75	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	56	62	146	80	0	251	146	84
N.S.	1	1.00	0.62	0.69	1.62	0.89	0.00	2.79	1.62	0.93
time (sec)	N/A	0.087	0.031	0.047	0.927	0.404	0.000	0.228	1.665	0.336

Problem 76	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	78	86	192	105	0	311	192	108
N.S.	1	1.00	0.62	0.69	1.54	0.84	0.00	2.49	1.54	0.86
time (sec)	N/A	0.109	0.031	0.046	0.978	0.406	0.000	0.198	1.941	0.338

Problem 77	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	100	110	238	129	0	371	238	132
N.S.	1	1.00	0.62	0.69	1.49	0.81	0.00	2.32	1.49	0.82
time (sec)	N/A	0.157	0.045	0.049	0.979	0.408	0.000	0.196	2.227	0.404

Problem 78	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	123	134	284	153	0	431	284	156
N.S.	1	1.00	0.63	0.69	1.46	0.78	0.00	2.21	1.46	0.80
time (sec)	N/A	0.195	0.043	0.045	0.988	0.402	0.000	0.201	2.487	0.449

Problem 79	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	179	373	370	446	0	249	-1	225
N.S.	1	1.00	0.75	1.57	1.55	1.87	0.00	1.05	-0.00	0.95
time (sec)	N/A	0.248	0.433	0.053	0.950	0.427	0.000	0.225	0.000	0.838

Problem 80	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	203	203	167	327	324	399	0	222	-1	201
N.S.	1	1.00	0.82	1.61	1.60	1.97	0.00	1.09	-0.00	0.99
time (sec)	N/A	0.201	0.337	0.055	1.041	0.427	0.000	0.237	0.000	0.748

Problem 81	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	166	283	280	350	0	194	-1	177
N.S.	1	1.00	1.10	1.87	1.85	2.32	0.00	1.28	-0.01	1.17
time (sec)	N/A	0.071	0.291	0.048	0.955	0.437	0.000	0.217	0.000	0.661

Problem 82	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	146	239	236	297	0	162	208	152
N.S.	1	1.00	1.09	1.78	1.76	2.22	0.00	1.21	1.55	1.13
time (sec)	N/A	0.051	0.252	0.050	0.895	0.421	0.000	0.219	1.453	0.664

Problem 83	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	128	192	189	256	0	138	-1	129
N.S.	1	1.00	0.97	1.45	1.43	1.94	0.00	1.05	-0.01	0.98
time (sec)	N/A	0.100	0.220	0.051	0.858	0.419	0.000	0.209	0.000	0.682

Problem 84	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	109	187	147	205	0	109	-1	108
N.S.	1	1.00	0.87	1.48	1.17	1.63	0.00	0.87	-0.01	0.86
time (sec)	N/A	0.136	0.186	0.056	0.898	0.427	0.000	0.238	0.000	0.507

Problem 85	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	94	232	129	186	0	109	-1	90
N.S.	1	1.00	0.80	1.97	1.09	1.58	0.00	0.92	-0.01	0.76
time (sec)	N/A	0.120	0.170	0.064	0.866	0.429	0.000	0.259	0.000	0.495

Problem 86	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	84	284	146	170	0	181	-1	92
N.S.	1	1.00	0.70	2.37	1.22	1.42	0.00	1.51	-0.01	0.77
time (sec)	N/A	0.120	0.044	0.064	1.001	0.426	0.000	0.269	0.000	0.475

Problem 87	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	95	95	88	176	158	188	0	270	-1	96
N.S.	1	1.00	0.93	1.85	1.66	1.98	0.00	2.84	-0.01	1.01
time (sec)	N/A	0.104	0.078	0.053	0.952	0.425	0.000	0.247	0.000	0.393

Problem 88	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	36	40	176	78	0	311	142	84
N.S.	1	1.00	0.63	0.70	3.09	1.37	0.00	5.46	2.49	1.47
time (sec)	N/A	0.048	0.018	0.048	0.944	0.402	0.000	0.229	2.024	0.371

Problem 89	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	56	62	222	104	0	371	188	108
N.S.	1	1.00	0.62	0.69	2.47	1.16	0.00	4.12	2.09	1.20
time (sec)	N/A	0.086	0.027	0.048	0.978	0.402	0.000	0.225	2.396	0.410

Problem 90	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	79	86	268	130	0	431	234	132
N.S.	1	1.00	0.63	0.69	2.14	1.04	0.00	3.45	1.87	1.06
time (sec)	N/A	0.118	0.034	0.050	0.960	0.407	0.000	0.398	2.882	0.461

Problem 91	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	100	110	314	153	0	491	280	156
N.S.	1	1.00	0.62	0.69	1.96	0.96	0.00	3.07	1.75	0.98
time (sec)	N/A	0.165	0.039	0.045	1.011	0.417	0.000	0.215	3.271	0.485

Problem 92	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	122	134	360	177	0	551	326	180
N.S.	1	1.00	0.63	0.69	1.85	0.91	0.00	2.83	1.67	0.92
time (sec)	N/A	0.185	0.043	0.048	0.975	0.401	0.000	0.334	3.780	0.530

Problem 93	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	276	276	207	455	452	541	0	309	-1	273
N.S.	1	1.00	0.75	1.65	1.64	1.96	0.00	1.12	-0.00	0.99
time (sec)	N/A	0.298	0.356	0.048	0.971	0.428	0.000	0.259	0.000	1.204

Problem 94	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	241	241	197	409	406	496	0	282	-1	249
N.S.	1	1.00	0.82	1.70	1.68	2.06	0.00	1.17	-0.00	1.03
time (sec)	N/A	0.247	0.396	0.052	0.963	0.425	0.000	0.462	0.000	0.926

Problem 95	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	182	365	362	447	0	253	-1	225
N.S.	1	1.00	0.96	1.93	1.92	2.37	0.00	1.34	-0.01	1.19
time (sec)	N/A	0.087	0.406	0.058	0.998	0.433	0.000	0.256	0.000	1.026

Problem 96	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	171	171	171	321	318	392	0	221	-1	200
N.S.	1	1.00	1.00	1.88	1.86	2.29	0.00	1.29	-0.01	1.17
time (sec)	N/A	0.067	0.389	0.050	0.938	0.412	0.000	0.223	0.000	0.997

Problem 97	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	166	274	271	351	0	198	-1	177
N.S.	1	1.00	0.98	1.61	1.59	2.06	0.00	1.16	-0.01	1.04
time (sec)	N/A	0.129	0.291	0.054	0.967	0.448	0.000	0.234	0.000	0.889

Problem 98	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	147	266	226	304	0	170	-1	153
N.S.	1	1.00	0.87	1.57	1.34	1.80	0.00	1.01	-0.01	0.91
time (sec)	N/A	0.170	0.257	0.053	0.939	0.424	0.000	0.240	0.000	0.704

Problem 99	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	128	306	187	253	0	141	-1	132
N.S.	1	1.00	0.83	1.97	1.21	1.63	0.00	0.91	-0.01	0.85
time (sec)	N/A	0.173	0.224	0.063	0.910	0.428	0.000	0.224	0.000	0.577

Problem 100	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	117	358	172	240	0	141	-1	116
N.S.	1	1.00	0.76	2.34	1.12	1.57	0.00	0.92	-0.01	0.76
time (sec)	N/A	0.167	0.206	0.060	0.914	0.415	0.000	0.243	0.000	0.618

Problem 101	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	157	157	86	411	191	224	0	211	-1	119
N.S.	1	1.00	0.55	2.62	1.22	1.43	0.00	1.34	-0.01	0.76
time (sec)	N/A	0.164	0.053	0.052	0.960	0.415	0.000	0.282	0.000	0.545

Problem 102	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	87	460	244	224	0	304	-1	116
N.S.	1	1.00	0.56	2.97	1.57	1.45	0.00	1.96	-0.01	0.75
time (sec)	N/A	0.163	0.052	0.058	0.980	0.419	0.000	0.268	0.000	0.537

Problem 103	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	83	263	258	238	0	390	-1	120
N.S.	1	1.00	0.70	2.21	2.17	2.00	0.00	3.28	-0.01	1.01
time (sec)	N/A	0.139	0.059	0.060	0.908	0.427	0.000	0.275	0.000	0.457

Problem 104	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	43	40	258	102	0	431	188	108
N.S.	1	1.00	0.75	0.70	4.53	1.79	0.00	7.56	3.30	1.89
time (sec)	N/A	0.049	0.015	0.044	1.001	0.405	0.000	0.226	2.889	0.414

Problem 105	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	63	62	304	127	0	491	234	132
N.S.	1	1.00	0.70	0.69	3.38	1.41	0.00	5.46	2.60	1.47
time (sec)	N/A	0.089	0.024	0.048	0.969	0.407	0.000	0.224	3.464	0.468

Problem 106	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	86	86	350	153	0	551	280	156
N.S.	1	1.00	0.69	0.69	2.80	1.22	0.00	4.41	2.24	1.25
time (sec)	N/A	0.122	0.029	0.047	0.942	0.403	0.000	0.237	4.085	0.505

Problem 107	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	107	110	396	177	0	611	326	180
N.S.	1	1.00	0.67	0.69	2.48	1.11	0.00	3.82	2.04	1.12
time (sec)	N/A	0.164	0.034	0.049	0.934	0.399	0.000	0.236	4.761	0.545

Problem 108	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	130	134	442	202	0	671	372	204
N.S.	1	1.00	0.67	0.69	2.27	1.04	0.00	3.44	1.91	1.05
time (sec)	N/A	0.206	0.038	0.049	1.092	0.409	0.000	0.242	5.397	0.574

Problem 109	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	133	255	252	303	0	165	-1	153
N.S.	1	1.00	0.68	1.29	1.28	1.54	0.00	0.84	-0.01	0.78
time (sec)	N/A	0.200	0.346	0.052	0.958	0.436	0.000	0.231	0.000	0.621

Problem 110	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	129	209	206	256	0	137	-1	129
N.S.	1	1.00	0.80	1.29	1.27	1.58	0.00	0.85	-0.01	0.80
time (sec)	N/A	0.156	0.329	0.054	0.873	0.426	0.000	0.265	0.000	0.525

Problem 111	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	127	127	116	163	160	207	0	109	-1	105
N.S.	1	1.00	0.91	1.28	1.26	1.63	0.00	0.86	-0.01	0.83
time (sec)	N/A	0.118	0.083	0.058	0.924	0.447	0.000	0.231	0.000	0.550

Problem 112	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	96	118	115	158	0	83	-1	89
N.S.	1	1.00	1.28	1.57	1.53	2.11	0.00	1.11	-0.01	1.19
time (sec)	N/A	0.034	0.071	0.051	0.790	0.430	0.000	0.235	0.000	0.455

Problem 113	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	80	78	75	115	0	60	77	67
N.S.	1	1.00	1.45	1.42	1.36	2.09	0.00	1.09	1.40	1.22
time (sec)	N/A	0.022	0.058	0.056	0.904	0.411	0.000	0.224	1.348	0.359

Problem 114	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	52	52	69	51	49	116	0	59	50	58
N.S.	1	1.00	1.33	0.98	0.94	2.23	0.00	1.13	0.96	1.12
time (sec)	N/A	0.035	0.148	0.048	0.734	0.422	0.000	0.321	1.273	0.305

Problem 115	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	35	39	62	34	0	76	33	38
N.S.	1	1.00	0.61	0.68	1.09	0.60	0.00	1.33	0.58	0.67
time (sec)	N/A	0.043	0.019	0.052	0.871	0.414	0.000	0.224	1.090	0.302

Problem 116	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	54	62	106	57	0	133	56	60
N.S.	1	1.00	0.60	0.69	1.18	0.63	0.00	1.48	0.62	0.67
time (sec)	N/A	0.081	0.028	0.047	0.915	0.410	0.000	0.225	1.093	0.323

Problem 117	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	79	86	152	82	0	191	113	84
N.S.	1	1.00	0.63	0.69	1.22	0.66	0.00	1.53	0.90	0.67
time (sec)	N/A	0.109	0.030	0.046	0.926	0.413	0.000	0.219	1.122	0.349

Problem 118	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	100	110	198	106	0	251	146	108
N.S.	1	1.00	0.62	0.69	1.24	0.66	0.00	1.57	0.91	0.68
time (sec)	N/A	0.143	0.047	0.049	0.893	0.414	0.000	0.220	1.101	0.375

Problem 119	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	123	134	244	130	0	311	177	132
N.S.	1	1.00	0.63	0.69	1.25	0.67	0.00	1.59	0.91	0.68
time (sec)	N/A	0.177	0.039	0.049	0.954	0.413	0.000	0.223	1.117	0.406

Problem 120	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	137	215	212	313	0	163	-1	136
N.S.	1	1.00	0.81	1.26	1.25	1.84	0.00	0.96	-0.01	0.80
time (sec)	N/A	0.152	0.216	0.057	0.939	0.420	0.000	0.262	0.000	0.624

Problem 121	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	109	166	163	262	0	135	-1	116
N.S.	1	1.00	0.81	1.23	1.21	1.94	0.00	1.00	-0.01	0.86
time (sec)	N/A	0.117	0.093	0.051	0.944	0.413	0.000	0.305	0.000	0.548

Problem 122	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	88	118	115	202	0	106	-1	83
N.S.	1	1.00	0.89	1.19	1.16	2.04	0.00	1.07	-0.01	0.84
time (sec)	N/A	0.089	0.083	0.052	0.883	0.418	0.000	0.278	0.000	0.493

Problem 123	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	79	67	65	164	0	0	64	76
N.S.	1	1.00	1.32	1.12	1.08	2.73	0.00	0.00	1.07	1.27
time (sec)	N/A	0.028	0.066	0.052	0.873	0.421	0.000	0.000	1.328	0.370

Problem 124	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	30	37	55	44	0	33	31	42
N.S.	1	1.00	0.91	1.12	1.67	1.33	0.00	1.00	0.94	1.27
time (sec)	N/A	0.009	0.013	0.051	0.898	0.400	0.000	0.219	1.118	0.324

Problem 125	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	52	58	96	68	0	0	62	66
N.S.	1	1.00	0.87	0.97	1.60	1.13	0.00	0.00	1.03	1.10
time (sec)	N/A	0.032	0.020	0.046	0.908	0.399	0.000	0.000	1.159	0.342

Problem 126	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	75	86	142	93	0	0	87	91
N.S.	1	1.00	0.81	0.92	1.53	1.00	0.00	0.00	0.94	0.98
time (sec)	N/A	0.084	0.025	0.053	0.921	0.412	0.000	0.000	1.229	0.361

Problem 127	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	98	110	188	117	0	0	161	115
N.S.	1	1.00	0.77	0.86	1.47	0.91	0.00	0.00	1.26	0.90
time (sec)	N/A	0.115	0.030	0.055	0.922	0.405	0.000	0.000	1.290	0.388

Problem 128	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	163	163	123	134	234	142	0	0	191	139
N.S.	1	1.00	0.75	0.82	1.44	0.87	0.00	0.00	1.17	0.85
time (sec)	N/A	0.144	0.035	0.048	0.520	0.413	0.000	0.000	1.358	0.424

Problem 129	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	80	338	362	380	0	253	-1	140
N.S.	1	1.00	0.47	1.97	2.10	2.21	0.00	1.47	-0.01	0.81
time (sec)	N/A	0.168	0.059	0.054	0.684	0.434	0.000	0.493	0.000	0.606

Problem 130	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	136	136	80	283	310	321	0	224	-1	107
N.S.	1	1.00	0.59	2.08	2.28	2.36	0.00	1.65	-0.01	0.79
time (sec)	N/A	0.125	0.056	0.050	0.597	0.427	0.000	0.288	0.000	0.508

Problem 131	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	84	84	99	206	221	239	0	0	-1	92
N.S.	1	1.00	1.18	2.45	2.63	2.85	0.00	0.00	-0.01	1.10
time (sec)	N/A	0.085	0.095	0.046	0.666	0.434	0.000	0.000	0.000	0.437

Problem 132	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	35	39	134	51	0	119	37	41
N.S.	1	1.00	0.52	0.58	2.00	0.76	0.00	1.78	0.55	0.61
time (sec)	N/A	0.054	0.015	0.050	0.656	0.396	0.000	0.231	1.163	0.349

Problem 133	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	55	62	111	77	0	0	63	67
N.S.	1	1.00	0.79	0.89	1.59	1.10	0.00	0.00	0.90	0.96
time (sec)	N/A	0.031	0.024	0.048	0.515	0.423	0.000	0.000	1.183	0.364

Problem 134	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	72	83	130	101	0	82	76	90
N.S.	1	1.00	1.03	1.19	1.86	1.44	0.00	1.17	1.09	1.29
time (sec)	N/A	0.018	0.028	0.048	0.567	0.408	0.000	0.243	1.146	0.384

Problem 135	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	98	107	176	128	0	0	111	115
N.S.	1	1.00	1.02	1.11	1.83	1.33	0.00	0.00	1.16	1.20
time (sec)	N/A	0.068	0.032	0.047	0.712	0.413	0.000	0.000	1.255	0.417

Problem 136	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	123	134	224	153	0	0	235	139
N.S.	1	1.00	0.94	1.02	1.71	1.17	0.00	0.00	1.79	1.06
time (sec)	N/A	0.117	0.037	0.051	0.592	0.404	0.000	0.000	1.332	0.440

Problem 137	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	145	158	270	177	0	0	266	163
N.S.	1	1.00	0.87	0.95	1.63	1.07	0.00	0.00	1.60	0.98
time (sec)	N/A	0.150	0.047	0.052	0.505	0.412	0.000	0.000	1.414	0.481

Problem 138	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	105	132	210	164	0	147	125	139
N.S.	1	1.00	0.98	1.23	1.96	1.53	0.00	1.37	1.17	1.30
time (sec)	N/A	0.031	0.042	0.044	0.605	0.409	0.000	0.233	1.196	0.462

Problem 139	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	145	145	150	180	292	223	0	205	185	187
N.S.	1	1.00	1.03	1.24	2.01	1.54	0.00	1.41	1.28	1.29
time (sec)	N/A	0.045	0.057	0.068	0.629	0.423	0.000	0.332	1.198	0.562

Problem 140	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	33	28	27	32	46	29	27	41
N.S.	1	1.00	0.85	0.72	0.69	0.82	1.18	0.74	0.69	1.05
time (sec)	N/A	0.017	0.010	0.050	0.473	0.393	7.886	0.220	0.050	0.027

Problem 141	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	33	28	27	32	46	29	27	41
N.S.	1	1.00	0.85	0.72	0.69	0.82	1.18	0.74	0.69	1.05
time (sec)	N/A	0.017	0.011	0.046	0.556	0.401	3.857	0.195	0.041	0.024

Problem 142	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	33	28	27	32	46	29	27	41
N.S.	1	1.00	0.85	0.72	0.69	0.82	1.18	0.74	0.69	1.05
time (sec)	N/A	0.016	0.009	0.043	0.673	0.396	1.625	0.154	1.021	0.023

Problem 143	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	33	28	27	32	37	29	27	41
N.S.	1	1.00	0.85	0.72	0.69	0.82	0.95	0.74	0.69	1.05
time (sec)	N/A	0.015	0.011	0.041	0.583	0.406	2.333	0.147	0.044	0.020

Problem 144	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	33	28	27	30	46	29	27	41
N.S.	1	1.00	0.85	0.72	0.69	0.77	1.18	0.74	0.69	1.05
time (sec)	N/A	0.016	0.011	0.046	0.503	0.389	0.441	0.149	0.042	0.021

Problem 145	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	31	28	27	27	44	29	27	41
N.S.	1	1.00	0.84	0.76	0.73	0.73	1.19	0.78	0.73	1.11
time (sec)	N/A	0.015	0.011	0.043	0.584	0.410	0.475	0.174	0.043	0.023

Problem 146	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	35	35	29	28	27	26	41	29	27	30
N.S.	1	1.00	0.83	0.80	0.77	0.74	1.17	0.83	0.77	0.86
time (sec)	N/A	0.016	0.012	0.046	0.706	0.401	0.761	0.148	1.022	0.024

Problem 147	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	35	35	28	27	27	27	41	27	27	31
N.S.	1	1.00	0.80	0.77	0.77	0.77	1.17	0.77	0.77	0.89
time (sec)	N/A	0.016	0.010	0.046	0.589	0.397	1.345	0.151	1.018	0.028

Problem 148	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	30	28	27	27	46	27	28	31
N.S.	1	1.00	0.81	0.76	0.73	0.73	1.24	0.73	0.76	0.84
time (sec)	N/A	0.017	0.011	0.052	0.508	0.398	2.930	0.148	0.035	0.029

Problem 149	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	55	52	51	56	80	53	51	69
N.S.	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.033	0.019	0.050	0.507	0.384	14.982	0.152	1.033	0.039

Problem 150	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	55	52	51	56	80	53	51	69
N.S.	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.031	0.017	0.046	0.571	0.386	8.357	0.160	0.048	0.037

Problem 151	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	55	52	51	56	80	53	51	69
N.S.	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.029	0.016	0.050	0.542	0.393	4.487	0.151	0.051	0.039

Problem 152	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	55	52	51	56	66	53	51	69
N.S.	1	1.00	0.87	0.83	0.81	0.89	1.05	0.84	0.81	1.10
time (sec)	N/A	0.030	0.018	0.045	0.532	0.391	3.240	0.154	0.051	0.034

Problem 153	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	55	52	51	56	80	53	51	69
N.S.	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.030	0.017	0.055	0.558	0.390	1.573	0.155	0.046	0.033

Problem 154	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	54	52	51	54	80	53	51	69
N.S.	1	1.00	0.86	0.83	0.81	0.86	1.27	0.84	0.81	1.10
time (sec)	N/A	0.031	0.016	0.048	0.513	0.405	1.503	0.192	0.053	0.035

Problem 155	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	54	52	51	51	78	53	51	69
N.S.	1	1.00	0.89	0.85	0.84	0.84	1.28	0.87	0.84	1.13
time (sec)	N/A	0.030	0.016	0.052	0.511	0.407	1.838	0.151	0.052	0.037

Problem 156	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	54	52	51	51	75	53	51	55
N.S.	1	1.00	0.92	0.88	0.86	0.86	1.27	0.90	0.86	0.93
time (sec)	N/A	0.030	0.016	0.051	0.532	0.408	2.899	0.164	0.050	0.045

Problem 157	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	52	51	51	50	73	51	51	54
N.S.	1	1.00	0.88	0.86	0.86	0.85	1.24	0.86	0.86	0.92
time (sec)	N/A	0.030	0.016	0.046	0.526	0.407	3.958	0.196	0.052	0.041

Problem 158	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	78	114	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81	1.14
time (sec)	N/A	0.048	0.046	0.048	0.472	0.401	26.590	0.155	1.009	0.049

Problem 159	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	78	114	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81	1.14
time (sec)	N/A	0.045	0.045	0.049	0.493	0.406	15.917	0.152	0.033	0.046

Problem 160	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	78	114	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81	1.14
time (sec)	N/A	0.042	0.044	0.055	0.567	0.405	8.270	0.155	0.032	0.049

Problem 161	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	78	95	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.92	1.12	0.91	0.81	1.14
time (sec)	N/A	0.042	0.045	0.049	0.680	0.383	3.763	0.164	0.034	0.045

Problem 162	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	78	114	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81	1.14
time (sec)	N/A	0.041	0.047	0.046	0.565	0.392	3.513	0.173	0.033	0.048

Problem 163	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	78	114	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81	1.14
time (sec)	N/A	0.044	0.045	0.050	0.467	0.410	3.726	0.154	0.032	0.045

Problem 164	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	70	76	73	76	114	77	69	97
N.S.	1	1.00	0.82	0.89	0.86	0.89	1.34	0.91	0.81	1.14
time (sec)	N/A	0.044	0.042	0.045	0.647	0.400	4.352	0.152	0.032	0.044

Problem 165	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	63	76	73	73	110	77	69	97
N.S.	1	1.00	0.76	0.92	0.88	0.88	1.33	0.93	0.83	1.17
time (sec)	N/A	0.044	0.043	0.050	0.491	0.400	5.972	0.156	0.034	0.044

Problem 166	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	75	76	73	73	105	77	69	79
N.S.	1	1.00	0.95	0.96	0.92	0.92	1.33	0.97	0.87	1.00
time (sec)	N/A	0.042	0.023	0.052	0.617	0.393	7.852	0.154	0.037	0.062

Problem 167	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	74	76	73	73	105	75	70	79
N.S.	1	1.00	0.91	0.94	0.90	0.90	1.30	0.93	0.86	0.98
time (sec)	N/A	0.042	0.023	0.049	0.572	0.403	10.337	0.156	0.062	0.050

Problem 168	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	101	126	105	229	279	115	125	131
N.S.	1	1.00	0.89	1.12	0.93	2.03	2.47	1.02	1.11	1.16
time (sec)	N/A	0.071	0.063	0.053	1.275	0.422	45.394	0.193	1.038	0.111

Problem 169	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	81	102	82	180	245	91	101	88
N.S.	1	1.00	0.90	1.13	0.91	2.00	2.72	1.01	1.12	0.98
time (sec)	N/A	0.048	0.059	0.056	1.232	0.408	16.350	0.168	1.047	0.099

Problem 170	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	63	78	58	129	212	64	76	76
N.S.	1	1.00	0.91	1.13	0.84	1.87	3.07	0.93	1.10	1.10
time (sec)	N/A	0.039	0.032	0.054	1.509	0.423	6.703	0.157	0.078	0.069

Problem 171	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	49	53	39	102	218	39	37	49
N.S.	1	1.00	1.00	1.08	0.80	2.08	4.45	0.80	0.76	1.00
time (sec)	N/A	0.026	0.026	0.052	1.217	0.411	2.193	0.178	0.062	0.046

Problem 172	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	49	53	39	112	216	39	50	49
N.S.	1	1.00	1.00	1.08	0.80	2.29	4.41	0.80	1.02	1.00
time (sec)	N/A	0.029	0.032	0.061	1.195	0.420	3.399	0.151	0.072	0.055

Problem 173	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	44	78	56	146	248	55	54	68
N.S.	1	1.00	0.64	1.13	0.81	2.12	3.59	0.80	0.78	0.99
time (sec)	N/A	0.042	0.014	0.059	1.283	0.427	7.005	0.163	1.065	0.081

Problem 174	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	43	102	80	195	289	80	71	91
N.S.	1	1.00	0.48	1.13	0.89	2.17	3.21	0.89	0.79	1.01
time (sec)	N/A	0.053	0.016	0.063	1.361	0.422	18.367	0.156	1.091	0.106

Problem 175	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	44	126	103	246	326	104	90	115
N.S.	1	1.00	0.39	1.12	0.91	2.18	2.88	0.92	0.80	1.02
time (sec)	N/A	0.068	0.015	0.058	1.321	0.439	52.048	0.160	1.092	0.125

Problem 176	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	136	136	44	150	126	291	360	128	109	139
N.S.	1	1.00	0.32	1.10	0.93	2.14	2.65	0.94	0.80	1.02
time (sec)	N/A	0.080	0.014	0.066	1.155	0.425	126.307	0.162	1.108	0.139

Problem 177	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	110	139	115	290	0	122	146	119
N.S.	1	1.00	0.84	1.06	0.88	2.21	0.00	0.93	1.11	0.91
time (sec)	N/A	0.070	0.070	0.068	1.217	0.422	0.000	0.165	1.045	0.143

Problem 178	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	88	113	88	231	0	95	107	95
N.S.	1	1.00	0.81	1.04	0.81	2.12	0.00	0.87	0.98	0.87
time (sec)	N/A	0.056	0.057	0.071	1.201	0.414	0.000	0.160	1.091	0.133

Problem 179	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	88	88	69	87	65	198	782	65	62	67
N.S.	1	1.00	0.78	0.99	0.74	2.25	8.89	0.74	0.70	0.76
time (sec)	N/A	0.043	0.041	0.067	1.301	0.422	107.254	0.155	0.093	0.102

Problem 180	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	63	69	58	177	716	60	51	63
N.S.	1	1.00	0.98	1.08	0.91	2.77	11.19	0.94	0.80	0.98
time (sec)	N/A	0.031	0.036	0.068	1.352	0.406	55.268	0.162	1.080	0.095

Problem 181	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	59	87	65	215	884	60	65	67
N.S.	1	1.00	0.69	1.02	0.76	2.53	10.40	0.71	0.76	0.79
time (sec)	N/A	0.045	0.017	0.067	1.348	0.427	33.158	0.167	1.080	0.101

Problem 182	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	64	113	93	262	983	85	81	98
N.S.	1	1.00	0.58	1.03	0.85	2.38	8.94	0.77	0.74	0.89
time (sec)	N/A	0.055	0.020	0.068	1.234	0.424	42.917	0.260	1.088	0.125

Problem 183	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	64	139	118	319	1127	110	103	122
N.S.	1	1.00	0.49	1.07	0.91	2.45	8.67	0.85	0.79	0.94
time (sec)	N/A	0.070	0.018	0.065	1.169	0.417	81.928	0.165	1.105	0.147

Problem 184	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	64	163	143	372	0	136	121	146
N.S.	1	1.00	0.41	1.04	0.92	2.38	0.00	0.87	0.78	0.94
time (sec)	N/A	0.083	0.018	0.071	1.193	0.432	0.000	0.164	1.118	0.154

Problem 185	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	61	178	151	408	0	146	183	146
N.S.	1	1.00	0.36	1.05	0.89	2.41	0.00	0.86	1.08	0.86
time (sec)	N/A	0.089	0.023	0.071	1.127	0.415	0.000	0.215	1.073	0.211

Problem 186	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	61	152	124	349	0	119	143	122
N.S.	1	1.00	0.41	1.03	0.84	2.37	0.00	0.81	0.97	0.83
time (sec)	N/A	0.071	0.022	0.066	1.185	0.434	0.000	0.184	0.090	0.195

Problem 187	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	61	125	99	319	0	87	96	94
N.S.	1	1.00	0.48	0.99	0.79	2.53	0.00	0.69	0.76	0.75
time (sec)	N/A	0.059	0.022	0.070	1.461	0.430	0.000	0.160	0.112	0.165

Problem 188	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	85	94	94	291	0	82	84	86
N.S.	1	1.00	0.85	0.94	0.94	2.91	0.00	0.82	0.84	0.86
time (sec)	N/A	0.049	0.062	0.065	1.293	0.422	0.000	0.159	1.098	0.170

Problem 189	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	91	95	94	291	0	82	84	86
N.S.	1	1.00	0.91	0.95	0.94	2.91	0.00	0.82	0.84	0.86
time (sec)	N/A	0.048	0.098	0.071	1.234	0.417	0.000	0.159	1.087	0.152

Problem 190	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	123	123	59	125	98	331	0	86	116	96
N.S.	1	1.00	0.48	1.02	0.80	2.69	0.00	0.70	0.94	0.78
time (sec)	N/A	0.058	0.022	0.069	1.286	0.430	0.000	0.205	1.121	0.168

Problem 191	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	61	152	128	380	1880	108	114	125
N.S.	1	1.00	0.41	1.03	0.87	2.59	12.79	0.73	0.78	0.85
time (sec)	N/A	0.068	0.023	0.086	1.286	0.432	165.441	0.165	1.109	0.187

Problem 192	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	61	178	154	437	0	135	135	149
N.S.	1	1.00	0.36	1.05	0.91	2.59	0.00	0.80	0.80	0.88
time (sec)	N/A	0.087	0.023	0.079	1.559	0.431	0.000	0.175	1.140	0.203

Problem 193	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	61	202	178	490	0	159	154	173
N.S.	1	1.00	0.32	1.05	0.92	2.54	0.00	0.82	0.80	0.90
time (sec)	N/A	0.101	0.023	0.072	1.371	0.436	0.000	0.174	1.184	0.219

Problem 194	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	207	207	113	131	142	150	0	158	-1	131
N.S.	1	1.00	0.55	0.63	0.69	0.72	0.00	0.76	-0.00	0.63
time (sec)	N/A	0.194	0.088	0.051	0.648	0.409	0.000	0.215	0.000	0.162

Problem 195	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	94	107	120	126	0	134	-1	107
N.S.	1	1.00	0.55	0.63	0.71	0.74	0.00	0.79	-0.01	0.63
time (sec)	N/A	0.159	0.071	0.051	0.727	0.405	0.000	0.187	0.000	0.137

Problem 196	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	72	83	98	102	0	110	-1	83
N.S.	1	1.00	0.54	0.62	0.74	0.77	0.00	0.83	-0.01	0.62
time (sec)	N/A	0.095	0.053	0.085	0.579	0.412	0.000	0.193	0.000	0.120

Problem 197	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	56	59	75	78	0	86	-1	59
N.S.	1	1.00	0.58	0.61	0.78	0.81	0.00	0.90	-0.01	0.61
time (sec)	N/A	0.076	0.041	0.046	0.610	0.426	0.000	0.240	0.000	0.093

Problem 198	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	37	39	45	53	0	60	-1	39
N.S.	1	1.00	0.61	0.64	0.74	0.87	0.00	0.98	-0.02	0.64
time (sec)	N/A	0.043	0.026	0.047	0.520	0.412	0.000	0.167	0.000	0.081

Problem 199	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	80	79	0	148	0	103	-1	71
N.S.	1	1.00	0.99	0.98	0.00	1.83	0.00	1.27	-0.01	0.88
time (sec)	N/A	0.065	0.056	0.058	0.000	0.424	0.000	0.185	0.000	0.154

Problem 200	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	95	95	80	86	0	157	0	61	-1	68
N.S.	1	1.00	0.84	0.91	0.00	1.65	0.00	0.64	-0.01	0.72
time (sec)	N/A	0.091	0.048	0.067	0.000	0.422	0.000	0.278	0.000	0.199

Problem 201	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	83	108	0	187	0	110	-1	86
N.S.	1	1.00	0.79	1.03	0.00	1.78	0.00	1.05	-0.01	0.82
time (sec)	N/A	0.092	0.100	0.069	0.000	0.425	0.000	0.275	0.000	0.241

Problem 202	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	142	142	61	147	0	238	0	128	-1	111
N.S.	1	1.00	0.43	1.04	0.00	1.68	0.00	0.90	-0.01	0.78
time (sec)	N/A	0.120	0.026	0.093	0.000	0.429	0.000	0.273	0.000	0.331

Problem 203	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	207	207	110	131	318	174	0	343	-1	131
N.S.	1	1.00	0.53	0.63	1.54	0.84	0.00	1.66	-0.00	0.63
time (sec)	N/A	0.153	0.088	0.059	0.607	0.410	0.000	0.246	0.000	0.721

Problem 204	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	94	107	274	150	0	295	-1	107
N.S.	1	1.00	0.55	0.63	1.61	0.88	0.00	1.74	-0.01	0.63
time (sec)	N/A	0.161	0.075	0.054	0.593	0.410	0.000	0.288	0.000	0.652

Problem 205	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	75	83	229	127	0	247	-1	83
N.S.	1	1.00	0.56	0.62	1.72	0.95	0.00	1.86	-0.01	0.62
time (sec)	N/A	0.111	0.058	0.050	0.660	0.408	0.000	0.220	0.000	0.547

Problem 206	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	56	59	182	102	0	199	-1	59
N.S.	1	1.00	0.58	0.61	1.90	1.06	0.00	2.07	-0.01	0.61
time (sec)	N/A	0.079	0.044	0.062	0.625	0.408	0.000	0.206	0.000	0.489

Problem 207	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	37	39	129	76	0	149	-1	39
N.S.	1	1.00	0.61	0.64	2.11	1.25	0.00	2.44	-0.02	0.64
time (sec)	N/A	0.046	0.029	0.050	0.617	0.400	0.000	0.189	0.000	0.513

Problem 208	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	100	113	0	195	0	123	-1	93
N.S.	1	1.00	0.95	1.08	0.00	1.86	0.00	1.17	-0.01	0.89
time (sec)	N/A	0.086	0.081	0.056	0.000	0.418	0.000	0.199	0.000	0.682

Problem 209	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	94	122	0	184	0	93	-1	89
N.S.	1	1.00	0.73	0.95	0.00	1.44	0.00	0.73	-0.01	0.70
time (sec)	N/A	0.126	0.059	0.068	0.000	0.419	0.000	0.268	0.000	0.753

Problem 210	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	59	126	0	206	0	119	-1	90
N.S.	1	1.00	0.43	0.92	0.00	1.50	0.00	0.87	-0.01	0.66
time (sec)	N/A	0.128	0.032	0.068	0.000	0.422	0.000	0.419	0.000	0.801

Problem 211	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	142	142	107	147	0	239	0	145	-1	110
N.S.	1	1.00	0.75	1.04	0.00	1.68	0.00	1.02	-0.01	0.77
time (sec)	N/A	0.129	0.124	0.067	0.000	0.428	0.000	0.322	0.000	0.952

Problem 212	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	62	185	0	288	0	176	-1	135
N.S.	1	1.00	0.35	1.03	0.00	1.61	0.00	0.98	-0.01	0.75
time (sec)	N/A	0.169	0.034	0.084	0.000	0.424	0.000	0.320	0.000	1.071

Problem 213	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	61	223	0	335	0	192	-1	159
N.S.	1	1.00	0.28	1.03	0.00	1.55	0.00	0.89	-0.00	0.74
time (sec)	N/A	0.191	0.034	0.071	0.000	0.425	0.000	0.351	0.000	1.313

Problem 214	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	207	207	120	131	507	199	0	560	-1	131
N.S.	1	1.00	0.58	0.63	2.45	0.96	0.00	2.71	-0.00	0.63
time (sec)	N/A	0.203	0.093	0.051	0.853	0.402	0.000	0.309	0.000	0.713

Problem 215	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	101	107	441	174	0	488	-1	107
N.S.	1	1.00	0.59	0.63	2.59	1.02	0.00	2.87	-0.01	0.63
time (sec)	N/A	0.144	0.074	0.054	0.823	0.404	0.000	0.278	0.000	0.603

Problem 216	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	82	83	375	150	0	416	-1	83
N.S.	1	1.00	0.62	0.62	2.82	1.13	0.00	3.13	-0.01	0.62
time (sec)	N/A	0.111	0.058	0.053	0.709	0.404	0.000	0.267	0.000	0.534

Problem 217	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	63	59	305	125	0	344	-1	59
N.S.	1	1.00	0.66	0.61	3.18	1.30	0.00	3.58	-0.01	0.61
time (sec)	N/A	0.089	0.046	0.050	0.857	0.408	0.000	0.275	0.000	0.565

Problem 218	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	44	39	230	100	0	270	-1	39
N.S.	1	1.00	0.72	0.64	3.77	1.64	0.00	4.43	-0.02	0.64
time (sec)	N/A	0.049	0.031	0.044	0.609	0.406	0.000	0.236	0.000	0.576

Problem 219	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	95	151	0	245	0	139	-1	117
N.S.	1	1.00	0.73	1.15	0.00	1.87	0.00	1.06	-0.01	0.89
time (sec)	N/A	0.116	0.211	0.059	0.000	0.422	0.000	0.222	0.000	0.752

Problem 220	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	118	162	0	238	0	125	-1	113
N.S.	1	1.00	0.74	1.01	0.00	1.49	0.00	0.78	-0.01	0.71
time (sec)	N/A	0.160	0.077	0.071	0.000	0.426	0.000	0.347	0.000	0.872

Problem 221	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	67	167	0	238	0	155	-1	119
N.S.	1	1.00	0.39	0.97	0.00	1.38	0.00	0.90	-0.01	0.69
time (sec)	N/A	0.159	0.032	0.062	0.000	0.429	0.000	0.315	0.000	0.944

Problem 222	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	175	175	68	166	0	258	0	151	-1	116
N.S.	1	1.00	0.39	0.95	0.00	1.47	0.00	0.86	-0.01	0.66
time (sec)	N/A	0.170	0.033	0.073	0.000	0.423	0.000	0.352	0.000	1.039

Problem 223	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	129	185	0	289	0	177	-1	135
N.S.	1	1.00	0.72	1.03	0.00	1.61	0.00	0.99	-0.01	0.75
time (sec)	N/A	0.166	0.139	0.067	0.000	0.431	0.000	0.340	0.000	1.257

Problem 224	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	69	223	0	336	0	208	-1	199
N.S.	1	1.00	0.32	1.03	0.00	1.56	0.00	0.96	-0.00	0.92
time (sec)	N/A	0.206	0.036	0.074	0.000	0.434	0.000	0.440	0.000	0.465

Problem 225	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	94	107	120	103	0	135	-1	107
N.S.	1	1.00	0.55	0.63	0.71	0.61	0.00	0.79	-0.01	0.63
time (sec)	N/A	0.148	0.070	0.048	0.700	0.406	0.000	0.188	0.000	0.140

Problem 226	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	75	83	98	79	0	108	-1	83
N.S.	1	1.00	0.56	0.62	0.74	0.59	0.00	0.81	-0.01	0.62
time (sec)	N/A	0.108	0.056	0.049	0.641	0.409	0.000	0.252	0.000	0.125

Problem 227	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	55	59	75	55	0	81	-1	59
N.S.	1	1.00	0.57	0.61	0.78	0.57	0.00	0.84	-0.01	0.61
time (sec)	N/A	0.079	0.039	0.060	0.569	0.400	0.000	0.178	0.000	0.103

Problem 228	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	36	38	45	32	0	53	-1	38
N.S.	1	1.00	0.59	0.62	0.74	0.52	0.00	0.87	-0.02	0.62
time (sec)	N/A	0.041	0.026	0.048	0.622	0.399	0.000	0.177	0.000	0.079

Problem 229	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	71	72	0	166	0	103	-1	72
N.S.	1	1.00	0.99	1.00	0.00	2.31	0.00	1.43	-0.01	1.00
time (sec)	N/A	0.061	0.036	0.085	0.000	0.409	0.000	0.207	0.000	0.200

Problem 230	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	73	71	0	144	0	58	-1	64
N.S.	1	1.00	1.11	1.08	0.00	2.18	0.00	0.88	-0.02	0.97
time (sec)	N/A	0.051	0.035	0.062	0.000	0.432	0.000	0.229	0.000	0.186

Problem 231	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	92	109	0	188	0	111	-1	87
N.S.	1	1.00	0.88	1.04	0.00	1.79	0.00	1.06	-0.01	0.83
time (sec)	N/A	0.086	0.091	0.069	0.000	0.419	0.000	0.260	0.000	0.225

Problem 232	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	142	142	61	147	0	241	0	144	-1	111
N.S.	1	1.00	0.43	1.04	0.00	1.70	0.00	1.01	-0.01	0.78
time (sec)	N/A	0.120	0.027	0.065	0.000	0.414	0.000	0.281	0.000	0.345

Problem 233	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	178	178	93	107	0	116	0	156	-1	114
N.S.	1	1.00	0.52	0.60	0.00	0.65	0.00	0.88	-0.01	0.64
time (sec)	N/A	0.149	0.064	0.050	0.000	0.397	0.000	0.213	0.000	0.813

Problem 234	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	141	141	74	83	0	92	0	124	-1	90
N.S.	1	1.00	0.52	0.59	0.00	0.65	0.00	0.88	-0.01	0.64
time (sec)	N/A	0.111	0.048	0.048	0.000	0.389	0.000	0.192	0.000	0.720

Problem 235	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	54	58	0	67	0	89	-1	65
N.S.	1	1.00	0.51	0.55	0.00	0.63	0.00	0.84	-0.01	0.61
time (sec)	N/A	0.080	0.033	0.044	0.000	0.413	0.000	0.191	0.000	0.663

Problem 236	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	34	38	0	45	0	51	-1	43
N.S.	1	1.00	0.49	0.54	0.00	0.64	0.00	0.73	-0.01	0.61
time (sec)	N/A	0.045	0.020	0.047	0.000	0.403	0.000	0.202	0.000	0.663

Problem 237	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	68	68	69	63	0	192	0	96	-1	75
N.S.	1	1.00	1.01	0.93	0.00	2.82	0.00	1.41	-0.01	1.10
time (sec)	N/A	0.051	0.034	0.060	0.000	0.432	0.000	0.209	0.000	0.753

Problem 238	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	52	94	0	248	0	87	-1	85
N.S.	1	1.00	0.54	0.97	0.00	2.56	0.00	0.90	-0.01	0.88
time (sec)	N/A	0.075	0.023	0.091	0.000	0.414	0.000	0.240	0.000	0.953

Problem 239	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	60	124	0	304	0	125	-1	116
N.S.	1	1.00	0.43	0.89	0.00	2.17	0.00	0.89	-0.01	0.83
time (sec)	N/A	0.114	0.024	0.090	0.000	0.423	0.000	0.281	0.000	1.346

Problem 240	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	62	150	0	359	0	165	-1	142
N.S.	1	1.00	0.35	0.84	0.00	2.01	0.00	0.92	-0.01	0.79
time (sec)	N/A	0.152	0.023	0.111	0.000	0.422	0.000	0.328	0.000	1.933

Problem 241	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	62	174	0	406	0	197	-1	166
N.S.	1	1.00	0.29	0.81	0.00	1.88	0.00	0.91	-0.00	0.77
time (sec)	N/A	0.186	0.024	0.092	0.000	0.440	0.000	0.343	0.000	2.675

Problem 242	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	93	107	0	127	0	147	-1	107
N.S.	1	1.00	0.52	0.59	0.00	0.71	0.00	0.82	-0.01	0.59
time (sec)	N/A	0.159	0.068	0.049	0.000	0.405	0.000	0.206	0.000	0.968

Problem 243	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	70	82	0	102	0	112	-1	82
N.S.	1	1.00	0.49	0.57	0.00	0.71	0.00	0.78	-0.01	0.57
time (sec)	N/A	0.115	0.047	0.047	0.000	0.392	0.000	0.198	0.000	0.853

Problem 244	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	53	59	0	79	0	72	-1	59
N.S.	1	1.00	0.49	0.55	0.00	0.73	0.00	0.67	-0.01	0.55
time (sec)	N/A	0.090	0.035	0.045	0.000	0.394	0.000	0.221	0.000	0.823

Problem 245	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	36	38	0	56	0	45	-1	38
N.S.	1	1.00	0.49	0.52	0.00	0.77	0.00	0.62	-0.01	0.52
time (sec)	N/A	0.053	0.025	0.046	0.000	0.413	0.000	0.195	0.000	0.845

Problem 246	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	62	101	0	262	0	110	-1	88
N.S.	1	1.00	0.66	1.07	0.00	2.79	0.00	1.17	-0.01	0.94
time (sec)	N/A	0.077	0.027	0.070	0.000	0.421	0.000	0.289	0.000	1.258

Problem 247	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	55	175	0	367	0	90	-1	110
N.S.	1	1.00	0.38	1.20	0.00	2.51	0.00	0.62	-0.01	0.75
time (sec)	N/A	0.119	0.026	0.075	0.000	0.438	0.000	0.295	0.000	1.727

Problem 248	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	174	174	60	208	0	424	0	149	-1	140
N.S.	1	1.00	0.34	1.20	0.00	2.44	0.00	0.86	-0.01	0.80
time (sec)	N/A	0.147	0.027	0.076	0.000	0.421	0.000	0.304	0.000	2.436

Problem 249	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	62	234	0	477	0	200	-1	166
N.S.	1	1.00	0.29	1.09	0.00	2.23	0.00	0.93	-0.00	0.78
time (sec)	N/A	0.183	0.027	0.074	0.000	0.446	0.000	0.306	0.000	3.878

Problem 250	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	24	24	22	28	32	31	56	49	41	0
N.S.	1	1.00	0.92	1.17	1.33	1.29	2.33	2.04	1.71	0.00
time (sec)	N/A	0.012	0.014	0.044	0.797	0.417	43.344	0.266	1.174	0.126

Problem 251	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	37	30	29	29	32	29	29	0
N.S.	1	1.00	1.00	0.81	0.78	0.78	0.86	0.78	0.78	0.00
time (sec)	N/A	0.035	0.002	0.056	0.612	0.351	0.068	0.162	0.046	0.000

Problem 252	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	37	30	29	29	32	29	29	0
N.S.	1	1.00	1.00	0.81	0.78	0.78	0.86	0.78	0.78	0.00
time (sec)	N/A	0.029	0.002	0.048	0.499	0.346	0.068	0.166	0.042	0.000

Problem 253	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	37	30	29	29	32	29	29	0
N.S.	1	1.00	1.00	0.81	0.78	0.78	0.86	0.78	0.78	0.00
time (sec)	N/A	0.023	0.002	0.042	0.531	0.336	0.072	0.140	0.043	0.000

Problem 254	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	31	31	32	27	26	26	29	26	26	0
N.S.	1	1.00	1.03	0.87	0.84	0.84	0.94	0.84	0.84	0.00
time (sec)	N/A	0.006	0.001	0.050	0.558	0.347	0.066	0.168	0.046	0.000

Problem 255	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	28	25	24	24	27	25	24	0
N.S.	1	1.00	1.00	0.89	0.86	0.86	0.96	0.89	0.86	0.00
time (sec)	N/A	0.010	0.003	0.045	0.567	0.390	0.114	0.174	0.035	0.001

Problem 256	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	26	26	26	25	24	30	24	25	24	0
N.S.	1	1.00	1.00	0.96	0.92	1.15	0.92	0.96	0.92	0.00
time (sec)	N/A	0.014	0.003	0.049	0.600	0.375	0.136	0.164	0.036	0.000

Problem 257	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	26	26	26	25	24	31	27	25	24	0
N.S.	1	1.00	1.00	0.96	0.92	1.19	1.04	0.96	0.92	0.00
time (sec)	N/A	0.014	0.004	0.054	0.635	0.391	0.215	0.147	1.034	0.001

Problem 258	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	65	54	53	53	61	53	53	0
N.S.	1	1.00	1.00	0.83	0.82	0.82	0.94	0.82	0.82	0.00
time (sec)	N/A	0.062	0.003	0.042	0.550	0.349	0.076	0.152	0.029	0.000

Problem 259	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	65	54	53	53	61	53	53	0
N.S.	1	1.00	1.00	0.83	0.82	0.82	0.94	0.82	0.82	0.00
time (sec)	N/A	0.053	0.003	0.042	0.571	0.351	0.076	0.178	0.025	0.000

Problem 260	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	65	54	53	53	61	53	53	0
N.S.	1	1.00	1.00	0.83	0.82	0.82	0.94	0.82	0.82	0.00
time (sec)	N/A	0.044	0.002	0.045	0.781	0.359	0.075	0.150	0.024	0.000

Problem 261	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	60	51	50	50	58	50	50	0
N.S.	1	1.00	1.33	1.13	1.11	1.11	1.29	1.11	1.11	0.00
time (sec)	N/A	0.015	0.002	0.043	0.672	0.352	0.076	0.175	0.024	0.000

Problem 262	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	53	48	47	47	54	48	47	0
N.S.	1	1.00	1.00	0.91	0.89	0.89	1.02	0.91	0.89	0.00
time (sec)	N/A	0.021	0.006	0.049	0.564	0.394	0.147	0.149	0.030	0.000

Problem 263	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	52	52	52	49	48	55	51	49	48	0
N.S.	1	1.00	1.00	0.94	0.92	1.06	0.98	0.94	0.92	0.00
time (sec)	N/A	0.026	0.007	0.061	0.512	0.398	0.168	0.222	0.029	0.001

Problem 264	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	56	51	50	55	58	51	50	0
N.S.	1	1.00	1.00	0.91	0.89	0.98	1.04	0.91	0.89	0.00
time (sec)	N/A	0.026	0.007	0.056	0.618	0.396	0.249	0.167	0.028	0.000

Problem 265	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	93	78	77	77	90	77	77	0
N.S.	1	1.00	1.00	0.84	0.83	0.83	0.97	0.83	0.83	0.00
time (sec)	N/A	0.101	0.003	0.040	0.567	0.346	0.081	0.151	0.033	0.000

Problem 266	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	93	78	77	77	92	77	77	0
N.S.	1	1.00	1.00	0.84	0.83	0.83	0.99	0.83	0.83	0.00
time (sec)	N/A	0.088	0.003	0.043	0.506	0.346	0.083	0.155	0.032	0.000

Problem 267	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	93	78	77	77	92	77	77	0
N.S.	1	1.00	1.00	0.84	0.83	0.83	0.99	0.83	0.83	0.00
time (sec)	N/A	0.079	0.003	0.053	0.563	0.343	0.082	0.150	0.031	0.000

Problem 268	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	85	74	73	73	85	73	73	0
N.S.	1	1.00	1.52	1.32	1.30	1.30	1.52	1.30	1.30	0.00
time (sec)	N/A	0.021	0.003	0.040	0.507	0.344	0.082	0.152	0.031	0.000

Problem 269	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	81	72	71	71	85	72	71	0
N.S.	1	1.00	1.00	0.89	0.88	0.88	1.05	0.89	0.88	0.00
time (sec)	N/A	0.036	0.007	0.046	0.521	0.390	0.180	0.147	0.035	0.000

Problem 270	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	80	73	72	79	82	73	72	0
N.S.	1	1.00	1.00	0.91	0.90	0.99	1.02	0.91	0.90	0.00
time (sec)	N/A	0.041	0.007	0.053	0.550	0.397	0.203	0.176	0.037	0.000

Problem 271	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	81	74	73	79	85	74	73	0
N.S.	1	1.00	1.00	0.91	0.90	0.98	1.05	0.91	0.90	0.00
time (sec)	N/A	0.040	0.007	0.050	0.622	0.387	0.294	0.162	0.034	0.000

Problem 272	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	121	102	101	101	124	101	101	0
N.S.	1	1.00	1.00	0.84	0.83	0.83	1.02	0.83	0.83	0.00
time (sec)	N/A	0.141	0.004	0.041	0.488	0.352	0.090	0.178	0.050	0.000

Problem 273	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	121	102	101	101	124	101	101	0
N.S.	1	1.00	1.00	0.84	0.83	0.83	1.02	0.83	0.83	0.00
time (sec)	N/A	0.124	0.003	0.046	0.477	0.354	0.089	0.154	0.045	0.000

Problem 274	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	115	115	115	100	99	99	116	99	99	0
N.S.	1	1.00	1.00	0.87	0.86	0.86	1.01	0.86	0.86	0.00
time (sec)	N/A	0.116	0.003	0.050	0.601	0.360	0.091	0.191	0.047	0.000

Problem 275	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	110	97	96	96	112	96	96	0
N.S.	1	1.00	1.51	1.33	1.32	1.32	1.53	1.32	1.32	0.00
time (sec)	N/A	0.025	0.003	0.045	0.516	0.352	0.088	0.155	0.047	0.000

Problem 276	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	110	97	96	96	117	97	96	0
N.S.	1	1.00	1.00	0.88	0.87	0.87	1.06	0.88	0.87	0.00
time (sec)	N/A	0.052	0.007	0.043	0.482	0.399	0.219	0.152	0.051	0.000

Problem 277	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	107	98	97	103	112	98	97	0
N.S.	1	1.00	1.00	0.92	0.91	0.96	1.05	0.92	0.91	0.00
time (sec)	N/A	0.056	0.007	0.051	0.516	0.396	0.253	0.169	0.053	0.001

Problem 278	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	105	98	97	103	112	98	97	0
N.S.	1	1.00	1.00	0.93	0.92	0.98	1.07	0.93	0.92	0.00
time (sec)	N/A	0.055	0.007	0.054	0.493	0.394	0.329	0.166	0.047	0.001

Problem 279	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	75	77	72	176	189	85	71	0
N.S.	1	1.00	0.86	0.89	0.83	2.02	2.17	0.98	0.82	0.00
time (sec)	N/A	0.062	0.034	0.048	1.187	0.403	0.383	0.151	0.059	0.001

Problem 280	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	64	65	63	144	167	71	59	0
N.S.	1	1.00	0.88	0.89	0.86	1.97	2.29	0.97	0.81	0.00
time (sec)	N/A	0.047	0.039	0.052	1.263	0.393	0.359	0.165	0.053	0.001

Problem 281	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	56	53	52	127	151	56	49	0
N.S.	1	1.00	0.92	0.87	0.85	2.08	2.48	0.92	0.80	0.00
time (sec)	N/A	0.044	0.021	0.048	1.155	0.411	0.447	0.197	1.062	0.001

Problem 282	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	49	43	42	108	112	44	39	0
N.S.	1	1.00	1.00	0.88	0.86	2.20	2.29	0.90	0.80	0.00
time (sec)	N/A	0.027	0.021	0.044	1.155	0.407	0.302	0.149	1.067	0.000

Problem 283	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	42	32	31	98	124	32	32	0
N.S.	1	1.00	1.00	0.76	0.74	2.33	2.95	0.76	0.76	0.00
time (sec)	N/A	0.016	0.014	0.044	1.194	0.412	0.273	0.154	0.047	0.000

Problem 284	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	49	39	38	109	321	40	216	0
N.S.	1	1.00	1.00	0.80	0.78	2.22	6.55	0.82	4.41	0.00
time (sec)	N/A	0.042	0.020	0.059	1.250	0.420	1.470	0.153	1.409	0.000

Problem 285	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	59	53	52	124	326	55	131	0
N.S.	1	1.00	1.00	0.90	0.88	2.10	5.53	0.93	2.22	0.00
time (sec)	N/A	0.047	0.033	0.055	1.257	0.420	1.621	0.151	1.214	0.001

Problem 286	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	73	65	60	153	360	66	154	0
N.S.	1	1.00	1.00	0.89	0.82	2.10	4.93	0.90	2.11	0.00
time (sec)	N/A	0.059	0.028	0.053	1.370	0.419	1.703	0.153	1.254	0.001

Problem 287	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	77	75	72	170	408	76	177	0
N.S.	1	1.00	0.93	0.90	0.87	2.05	4.92	0.92	2.13	0.00
time (sec)	N/A	0.058	0.041	0.060	1.368	0.412	1.772	0.153	0.258	0.001

Problem 288	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	43	34	49	102	119	37	103	0
N.S.	1	1.00	1.00	0.79	1.14	2.37	2.77	0.86	2.40	0.00
time (sec)	N/A	0.015	0.015	0.045	1.283	0.418	0.283	0.150	0.212	0.000

Problem 289	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	77	88	81	248	189	87	81	0
N.S.	1	1.00	0.91	1.04	0.95	2.92	2.22	1.02	0.95	0.00
time (sec)	N/A	0.070	0.058	0.054	1.216	0.396	0.722	0.197	0.064	0.001

Problem 290	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	75	76	67	192	162	67	65	0
N.S.	1	1.00	0.96	0.97	0.86	2.46	2.08	0.86	0.83	0.00
time (sec)	N/A	0.045	0.050	0.053	1.160	0.414	0.672	0.155	1.077	0.001

Problem 291	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	62	61	61	186	162	62	72	0
N.S.	1	1.00	0.93	0.91	0.91	2.78	2.42	0.93	1.07	0.00
time (sec)	N/A	0.031	0.037	0.051	1.160	0.393	0.575	0.188	1.043	0.001

Problem 292	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	50	50	53	46	41	137	85	42	44	0
N.S.	1	1.00	1.06	0.92	0.82	2.74	1.70	0.84	0.88	0.00
time (sec)	N/A	0.015	0.033	0.053	1.211	0.407	0.357	0.170	0.051	0.000

Problem 293	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	57	49	48	140	90	48	44	0
N.S.	1	1.00	1.00	0.86	0.84	2.46	1.58	0.84	0.77	0.00
time (sec)	N/A	0.013	0.022	0.059	1.262	0.408	0.361	0.152	0.048	0.000

Problem 294	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	65	74	61	217	359	67	165	0
N.S.	1	1.00	0.89	1.01	0.84	2.97	4.92	0.92	2.26	0.00
time (sec)	N/A	0.062	0.060	0.054	1.277	0.425	1.712	0.152	1.261	0.001

Problem 295	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	81	85	78	225	389	80	165	0
N.S.	1	1.00	0.93	0.98	0.90	2.59	4.47	0.92	1.90	0.00
time (sec)	N/A	0.068	0.117	0.084	1.124	0.431	1.810	0.158	1.216	0.001

Problem 296	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	82	97	88	285	398	95	186	0
N.S.	1	1.00	0.85	1.01	0.92	2.97	4.15	0.99	1.94	0.00
time (sec)	N/A	0.084	0.103	0.065	1.175	0.588	2.035	0.158	1.256	0.001

Problem 297	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	95	95	86	106	90	89	129	102	89	0
N.S.	1	1.00	0.91	1.12	0.95	0.94	1.36	1.07	0.94	0.00
time (sec)	N/A	0.070	0.016	0.052	0.540	0.535	0.473	0.166	0.100	0.001

Problem 298	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	72	94	81	75	110	90	77	0
N.S.	1	1.00	0.89	1.16	1.00	0.93	1.36	1.11	0.95	0.00
time (sec)	N/A	0.067	0.014	0.055	0.554	0.409	0.443	0.174	1.087	0.001

Problem 299	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	56	78	61	59	88	72	61	0
N.S.	1	1.00	0.89	1.24	0.97	0.94	1.40	1.14	0.97	0.00
time (sec)	N/A	0.056	0.011	0.064	0.533	0.414	0.466	0.159	0.082	0.001

Problem 300	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	50	50	42	63	47	42	60	52	60	0
N.S.	1	1.00	0.84	1.26	0.94	0.84	1.20	1.04	1.20	0.00
time (sec)	N/A	0.038	0.009	0.050	0.499	0.413	0.353	0.153	1.102	0.001

Problem 301	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	46	46	37	60	46	41	71	50	45	0
N.S.	1	1.00	0.80	1.30	1.00	0.89	1.54	1.09	0.98	0.00
time (sec)	N/A	0.023	0.007	0.050	0.540	0.403	0.332	0.153	0.092	0.000

Problem 302	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	44	67	53	48	194	64	52	0
N.S.	1	1.00	0.79	1.20	0.95	0.86	3.46	1.14	0.93	0.00
time (sec)	N/A	0.049	0.013	0.050	0.546	0.433	1.594	0.168	1.149	0.001

Problem 303	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	51	72	56	54	221	74	55	0
N.S.	1	1.00	0.86	1.22	0.95	0.92	3.75	1.25	0.93	0.00
time (sec)	N/A	0.054	0.013	0.056	0.536	0.418	1.696	0.153	0.095	0.001

Problem 304	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	68	90	70	78	236	93	73	0
N.S.	1	1.00	0.91	1.20	0.93	1.04	3.15	1.24	0.97	0.00
time (sec)	N/A	0.066	0.016	0.056	0.557	0.432	1.863	0.155	0.106	0.001

Problem 305	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	84	106	91	93	279	104	89	0
N.S.	1	1.00	0.90	1.14	0.98	1.00	3.00	1.12	0.96	0.00
time (sec)	N/A	0.069	0.016	0.056	0.496	0.414	1.996	0.169	1.111	0.001

Problem 306	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	84	143	99	156	141	112	99	0
N.S.	1	1.00	0.89	1.52	1.05	1.66	1.50	1.19	1.05	0.00
time (sec)	N/A	0.099	0.046	0.064	0.536	0.402	0.805	0.157	1.090	0.001

Problem 307	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	84	84	64	126	81	129	110	88	81	0
N.S.	1	1.00	0.76	1.50	0.96	1.54	1.31	1.05	0.96	0.00
time (sec)	N/A	0.073	0.054	0.060	0.692	0.394	0.736	0.156	1.081	0.001

Problem 308	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	64	118	79	115	110	85	103	0
N.S.	1	1.00	0.83	1.53	1.03	1.49	1.43	1.10	1.34	0.00
time (sec)	N/A	0.049	0.036	0.052	0.580	0.392	0.625	0.179	0.109	0.001

Problem 309	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	42	96	58	80	46	63	46	0
N.S.	1	1.00	0.93	2.13	1.29	1.78	1.02	1.40	1.02	0.00
time (sec)	N/A	0.020	0.022	0.053	0.509	0.452	0.363	0.164	0.064	0.001

Problem 310	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	58	102	68	87	56	71	46	0
N.S.	1	1.00	1.05	1.85	1.24	1.58	1.02	1.29	0.84	0.00
time (sec)	N/A	0.016	0.013	0.051	0.568	0.455	0.326	0.156	1.067	0.001

Problem 311	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	84	84	65	129	80	139	231	94	82	0
N.S.	1	1.00	0.77	1.54	0.95	1.65	2.75	1.12	0.98	0.00
time (sec)	N/A	0.075	0.064	0.063	0.692	0.433	1.828	0.162	0.111	0.001

Problem 312	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	77	130	93	155	291	112	92	0
N.S.	1	1.00	0.83	1.40	1.00	1.67	3.13	1.20	0.99	0.00
time (sec)	N/A	0.095	0.081	0.063	0.474	0.491	1.946	0.157	1.107	0.001

Problem 313	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	91	155	115	184	311	139	116	0
N.S.	1	1.00	0.84	1.44	1.06	1.70	2.88	1.29	1.07	0.00
time (sec)	N/A	0.108	0.070	0.064	0.535	0.430	2.298	0.193	1.112	0.001

Problem 314	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	113	136	128	224	216	106	-1	116
N.S.	1	1.00	0.74	0.89	0.84	1.47	1.42	0.70	-0.01	0.76
time (sec)	N/A	0.129	0.211	0.056	0.560	0.495	8.364	0.187	0.000	0.307

Problem 315	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	127	127	107	115	107	206	192	93	-1	101
N.S.	1	1.00	0.84	0.91	0.84	1.62	1.51	0.73	-0.01	0.80
time (sec)	N/A	0.081	0.183	0.064	0.480	0.485	7.859	0.195	0.000	0.268

Problem 316	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	93	94	86	175	165	81	-1	92
N.S.	1	1.00	0.89	0.90	0.83	1.68	1.59	0.78	-0.01	0.88
time (sec)	N/A	0.047	0.168	0.058	0.481	0.511	5.460	0.526	0.000	0.233

Problem 317	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	86	75	67	157	124	68	-1	77
N.S.	1	1.00	1.08	0.94	0.84	1.96	1.55	0.85	-0.01	0.96
time (sec)	N/A	0.026	0.140	0.052	0.473	0.468	5.407	0.180	0.000	0.199

Problem 318	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	67	53	45	128	70	55	52	68
N.S.	1	1.00	1.00	0.79	0.67	1.91	1.04	0.82	0.78	1.01
time (sec)	N/A	0.019	0.044	0.052	0.574	0.474	3.384	0.200	1.277	0.245

Problem 319	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	100	78	59	341	107	78	68	95
N.S.	1	1.00	1.27	0.99	0.75	4.32	1.35	0.99	0.86	1.20
time (sec)	N/A	0.064	0.215	0.053	0.532	0.509	6.742	0.201	1.361	0.256

Problem 320	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	99	97	59	333	124	102	89	92
N.S.	1	1.00	1.32	1.29	0.79	4.44	1.65	1.36	1.19	1.23
time (sec)	N/A	0.058	0.154	0.056	0.538	0.518	4.556	0.190	1.797	0.255

Problem 321	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	108	121	83	377	107	163	94	96
N.S.	1	1.00	1.35	1.51	1.04	4.71	1.34	2.04	1.18	1.20
time (sec)	N/A	0.063	0.085	0.059	0.532	0.583	4.843	0.197	1.867	0.355

Problem 322	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	85	84	72	142	92	143	55	79
N.S.	1	1.00	1.20	1.18	1.01	2.00	1.30	2.01	0.77	1.11
time (sec)	N/A	0.041	0.035	0.069	0.591	0.468	4.212	0.216	1.888	0.403

Problem 323	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	53	107	95	171	144	267	75	91
N.S.	1	1.00	0.54	1.08	0.96	1.73	1.45	2.70	0.76	0.92
time (sec)	N/A	0.062	0.015	0.059	0.694	0.449	5.941	0.191	2.094	0.499

Problem 324	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	62	126	114	190	173	267	95	106
N.S.	1	1.00	0.51	1.03	0.93	1.56	1.42	2.19	0.78	0.87
time (sec)	N/A	0.086	0.022	0.064	0.752	0.484	6.249	0.190	2.372	0.539

Problem 325	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	64	147	135	219	201	325	116	115
N.S.	1	1.00	0.44	1.00	0.92	1.49	1.37	2.21	0.79	0.78
time (sec)	N/A	0.117	0.031	0.059	0.594	0.506	8.568	0.226	2.704	0.648

Problem 326	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	175	175	132	155	147	272	366	130	-1	140
N.S.	1	1.00	0.75	0.89	0.84	1.55	2.09	0.74	-0.01	0.80
time (sec)	N/A	0.135	0.246	0.058	0.666	0.522	19.240	0.215	0.000	0.375

Problem 327	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	150	150	126	134	126	254	318	115	-1	125
N.S.	1	1.00	0.84	0.89	0.84	1.69	2.12	0.77	-0.01	0.83
time (sec)	N/A	0.094	0.225	0.063	0.597	0.482	18.140	0.201	0.000	0.356

Problem 328	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	127	127	113	113	105	223	287	103	-1	116
N.S.	1	1.00	0.89	0.89	0.83	1.76	2.26	0.81	-0.01	0.91
time (sec)	N/A	0.057	0.210	0.054	0.503	0.454	12.447	0.198	0.000	0.420

Problem 329	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	107	94	86	205	223	89	-1	101
N.S.	1	1.00	1.04	0.91	0.83	1.99	2.17	0.86	-0.01	0.98
time (sec)	N/A	0.031	0.176	0.051	0.490	0.456	12.114	0.238	0.000	0.361

Problem 330	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	88	69	61	176	219	76	54	92
N.S.	1	1.00	1.01	0.79	0.70	2.02	2.52	0.87	0.62	1.06
time (sec)	N/A	0.026	0.060	0.047	0.489	0.442	7.618	0.187	1.281	0.372

Problem 331	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	118	107	88	439	218	100	83	114
N.S.	1	1.00	1.11	1.01	0.83	4.14	2.06	0.94	0.78	1.08
time (sec)	N/A	0.089	0.249	0.052	0.483	0.490	17.917	0.205	1.403	0.404

Problem 332	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	105	126	88	411	184	124	86	115
N.S.	1	1.00	0.97	1.17	0.81	3.81	1.70	1.15	0.80	1.06
time (sec)	N/A	0.082	0.164	0.057	0.555	0.488	7.071	0.202	1.976	0.399

Problem 333	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	90	150	112	425	182	191	91	115
N.S.	1	1.00	0.81	1.35	1.01	3.83	1.64	1.72	0.82	1.04
time (sec)	N/A	0.079	0.036	0.057	0.561	0.478	8.188	0.250	2.205	0.471

Problem 334	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	92	174	136	426	202	211	-1	113
N.S.	1	1.00	0.84	1.60	1.25	3.91	1.85	1.94	-0.01	1.04
time (sec)	N/A	0.086	0.037	0.056	0.529	0.488	7.328	0.217	0.000	0.492

Problem 335	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	114	202	164	474	236	285	-1	117
N.S.	1	1.00	1.03	1.82	1.48	4.27	2.13	2.57	-0.01	1.05
time (sec)	N/A	0.087	0.081	0.054	0.562	0.475	9.337	0.221	0.000	0.626

Problem 336	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	103	125	113	190	199	232	73	106
N.S.	1	1.00	1.11	1.34	1.22	2.04	2.14	2.49	0.78	1.14
time (sec)	N/A	0.057	0.081	0.059	0.650	0.451	8.952	0.222	2.762	0.632

Problem 337	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	54	146	134	219	201	379	94	115
N.S.	1	1.00	0.44	1.18	1.08	1.77	1.62	3.06	0.76	0.93
time (sec)	N/A	0.078	0.020	0.069	0.577	0.467	13.387	0.274	3.207	0.782

Problem 338	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	64	165	153	238	575	379	150	130
N.S.	1	1.00	0.44	1.12	1.04	1.62	3.91	2.58	1.02	0.88
time (sec)	N/A	0.105	0.028	0.068	0.491	0.482	13.985	0.220	3.767	0.835

Problem 339	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	151	174	166	320	541	155	-1	164
N.S.	1	1.00	0.76	0.88	0.84	1.62	2.73	0.78	-0.01	0.83
time (sec)	N/A	0.151	0.286	0.058	0.534	0.490	37.229	0.212	0.000	0.531

Problem 340	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	173	173	145	153	145	302	469	140	-1	149
N.S.	1	1.00	0.84	0.88	0.84	1.75	2.71	0.81	-0.01	0.86
time (sec)	N/A	0.105	0.268	0.055	0.587	0.517	34.716	0.223	0.000	0.463

Problem 341	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	150	150	131	132	124	271	442	128	-1	140
N.S.	1	1.00	0.87	0.88	0.83	1.81	2.95	0.85	-0.01	0.93
time (sec)	N/A	0.066	0.256	0.061	0.672	0.475	24.058	0.213	0.000	0.431

Problem 342	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	112	113	105	253	354	114	-1	125
N.S.	1	1.00	0.89	0.90	0.83	2.01	2.81	0.90	-0.01	0.99
time (sec)	N/A	0.040	0.488	0.053	0.558	0.473	22.221	0.197	0.000	0.436

Problem 343	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	108	85	77	224	348	101	54	116
N.S.	1	1.00	1.01	0.79	0.72	2.09	3.25	0.94	0.50	1.08
time (sec)	N/A	0.034	0.080	0.046	0.460	0.469	14.703	0.196	1.340	0.422

Problem 344	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	139	138	119	539	323	125	101	138
N.S.	1	1.00	1.05	1.05	0.90	4.08	2.45	0.95	0.77	1.05
time (sec)	N/A	0.122	0.327	0.049	0.583	0.479	29.890	0.213	1.434	0.470

Problem 345	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	136	136	117	158	120	519	318	150	104	141
N.S.	1	1.00	0.86	1.16	0.88	3.82	2.34	1.10	0.76	1.04
time (sec)	N/A	0.120	0.213	0.063	0.533	0.510	11.723	0.256	2.231	0.452

Problem 346	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	141	141	92	181	143	535	279	219	111	142
N.S.	1	1.00	0.65	1.28	1.01	3.79	1.98	1.55	0.79	1.01
time (sec)	N/A	0.118	0.028	0.058	0.694	0.507	12.579	0.221	2.510	0.517

Problem 347	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	94	207	169	529	277	239	-1	140
N.S.	1	1.00	0.69	1.51	1.23	3.86	2.02	1.74	-0.01	1.02
time (sec)	N/A	0.110	0.027	0.061	0.656	0.526	9.682	0.232	0.000	0.593

Problem 348	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	96	236	198	534	299	316	-1	144
N.S.	1	1.00	0.67	1.65	1.38	3.73	2.09	2.21	-0.01	1.01
time (sec)	N/A	0.116	0.029	0.063	0.646	0.538	12.865	0.245	0.000	0.640

Problem 349	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	A	A	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	96	257	219	534	294	331	-1	141
N.S.	1	1.00	0.69	1.84	1.56	3.81	2.10	2.36	-0.01	1.01
time (sec)	N/A	0.118	0.027	0.060	0.690	0.519	12.216	0.265	0.000	0.660

Problem 350	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	B	A	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	125	281	243	574	299	397	-1	141
N.S.	1	1.00	0.89	2.01	1.74	4.10	2.14	2.84	-0.01	1.01
time (sec)	N/A	0.122	0.118	0.067	0.758	0.517	17.159	0.257	0.000	0.828

Problem 351	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	115	115	123	164	152	238	605	316	150	130
N.S.	1	1.00	1.07	1.43	1.32	2.07	5.26	2.75	1.30	1.13
time (sec)	N/A	0.073	0.092	0.080	0.630	0.489	16.820	0.244	4.390	0.842

Problem 352	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	53	185	173	267	609	491	168	139
N.S.	1	1.00	0.36	1.24	1.16	1.79	4.09	3.30	1.13	0.93
time (sec)	N/A	0.099	0.018	0.129	0.513	0.525	25.768	0.236	5.350	1.007

Problem 353	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	64	204	192	286	1202	491	189	154
N.S.	1	1.00	0.37	1.19	1.12	1.66	6.99	2.85	1.10	0.90
time (sec)	N/A	0.123	0.024	0.091	0.587	0.564	25.672	0.251	6.337	1.079

Problem 354	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	129	129	86	117	109	176	173	87	-1	92
N.S.	1	1.00	0.67	0.91	0.84	1.36	1.34	0.67	-0.01	0.71
time (sec)	N/A	0.107	0.058	0.053	0.575	0.472	6.584	0.195	0.000	0.301

Problem 355	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	76	96	88	158	150	74	-1	77
N.S.	1	1.00	0.73	0.92	0.85	1.52	1.44	0.71	-0.01	0.74
time (sec)	N/A	0.069	0.041	0.055	0.476	0.450	6.225	0.218	0.000	0.259

Problem 356	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	64	75	67	127	94	61	93	68
N.S.	1	1.00	0.79	0.93	0.83	1.57	1.16	0.75	1.15	0.84
time (sec)	N/A	0.040	0.036	0.059	0.476	0.455	4.272	0.195	1.640	0.304

Problem 357	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	57	55	47	109	70	50	82	58
N.S.	1	1.00	1.02	0.98	0.84	1.95	1.25	0.89	1.46	1.04
time (sec)	N/A	0.018	0.032	0.051	0.493	0.490	4.202	0.200	1.431	0.244

Problem 358	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	46	37	29	92	102	39	36	46
N.S.	1	1.00	1.07	0.86	0.67	2.14	2.37	0.91	0.84	1.07
time (sec)	N/A	0.012	0.031	0.050	0.574	0.457	1.487	0.190	1.333	0.236

Problem 359	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	53	52	33	273	99	58	42	70
N.S.	1	1.00	1.00	0.98	0.62	5.15	1.87	1.09	0.79	1.32
time (sec)	N/A	0.039	0.015	0.051	0.543	0.500	3.328	0.209	1.514	0.201

Problem 360	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	47	49	37	101	41	65	39	61
N.S.	1	1.00	1.00	1.04	0.79	2.15	0.87	1.38	0.83	1.30
time (sec)	N/A	0.031	0.015	0.051	0.569	0.469	2.640	0.191	1.370	0.220

Problem 361	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	63	68	56	123	66	146	58	71
N.S.	1	1.00	0.88	0.94	0.78	1.71	0.92	2.03	0.81	0.99
time (sec)	N/A	0.051	0.101	0.057	0.646	0.459	3.664	0.197	1.494	0.325

Problem 362	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	73	87	75	142	97	151	66	80
N.S.	1	1.00	0.75	0.90	0.77	1.46	1.00	1.56	0.68	0.82
time (sec)	N/A	0.073	0.151	0.057	0.523	0.462	3.790	0.221	1.644	0.370

Problem 363	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	60	108	96	171	153	241	86	91
N.S.	1	1.00	0.49	0.89	0.79	1.40	1.25	1.98	0.70	0.75
time (sec)	N/A	0.100	0.021	0.059	0.636	0.480	5.715	0.211	1.717	0.442

Problem 364	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	72	129	117	190	408	241	99	106
N.S.	1	1.00	0.49	0.88	0.80	1.29	2.78	1.64	0.67	0.72
time (sec)	N/A	0.129	0.020	0.065	0.482	0.467	6.463	0.210	1.788	0.518

Problem 365	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	91	115	107	217	144	83	-1	90
N.S.	1	1.00	0.87	1.10	1.02	2.07	1.37	0.79	-0.01	0.86
time (sec)	N/A	0.071	0.047	0.052	0.488	0.479	12.307	0.198	0.000	0.412

Problem 366	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	72	93	85	197	117	70	-1	74
N.S.	1	1.00	0.89	1.15	1.05	2.43	1.44	0.86	-0.01	0.91
time (sec)	N/A	0.040	0.048	0.095	0.673	0.480	10.926	0.208	0.000	0.389

Problem 367	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	67	72	64	164	83	58	61	61
N.S.	1	1.00	1.02	1.09	0.97	2.48	1.26	0.88	0.92	0.92
time (sec)	N/A	0.034	0.034	0.052	0.533	0.458	8.869	0.209	1.470	0.359

Problem 368	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	48	48	64	54	46	147	66	48	53	53
N.S.	1	1.00	1.33	1.12	0.96	3.06	1.38	1.00	1.10	1.10
time (sec)	N/A	0.018	0.052	0.046	0.475	0.465	8.031	0.237	1.216	0.344

Problem 369	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	27	26	31	35	46	23	24	27
N.S.	1	1.00	0.96	0.93	1.11	1.25	1.64	0.82	0.86	0.96
time (sec)	N/A	0.007	0.014	0.047	0.465	0.455	7.227	0.198	1.076	0.315

Problem 370	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	47	60	48	146	206	59	50	61
N.S.	1	1.00	1.00	1.28	1.02	3.11	4.38	1.26	1.06	1.30
time (sec)	N/A	0.037	0.028	0.049	0.470	0.476	9.568	0.192	1.433	0.339

Problem 371	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	72	80	68	169	235	96	70	75
N.S.	1	1.00	1.03	1.14	0.97	2.41	3.36	1.37	1.00	1.07
time (sec)	N/A	0.053	0.037	0.056	0.613	0.463	13.930	0.207	1.582	0.352

Problem 372	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	95	95	75	101	89	211	124	171	94	87
N.S.	1	1.00	0.79	1.06	0.94	2.22	1.31	1.80	0.99	0.92
time (sec)	N/A	0.080	0.155	0.056	0.585	0.465	10.374	0.203	1.734	0.475

Problem 373	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	90	122	110	232	311	203	95	102
N.S.	1	1.00	0.75	1.02	0.92	1.93	2.59	1.69	0.79	0.85
time (sec)	N/A	0.106	0.135	0.051	0.499	0.459	28.083	0.205	1.851	0.555

Problem 374	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	89	111	122	258	445	82	-1	87
N.S.	1	1.00	0.90	1.12	1.23	2.61	4.49	0.83	-0.01	0.88
time (sec)	N/A	0.064	0.064	0.054	0.617	0.453	29.109	0.212	0.000	0.516

Problem 375	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	69	91	102	239	400	70	-1	72
N.S.	1	1.00	0.87	1.15	1.29	3.03	5.06	0.89	-0.01	0.91
time (sec)	N/A	0.041	0.069	0.051	0.622	0.461	15.979	0.224	0.000	0.505

Problem 376	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	44	41	70	63	141	36	51	44
N.S.	1	1.00	0.83	0.77	1.32	1.19	2.66	0.68	0.96	0.83
time (sec)	N/A	0.020	0.017	0.056	0.581	0.430	13.693	0.196	1.135	0.447

Problem 377	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	50	47	32	29	51	49	95	26	34	32
N.S.	1	0.94	0.64	0.58	1.02	0.98	1.90	0.52	0.68	0.64
time (sec)	N/A	0.015	0.017	0.048	0.549	0.433	13.255	0.240	1.093	0.422

Problem 378	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	51	51	43	40	48	62	146	37	41	43
N.S.	1	1.00	0.84	0.78	0.94	1.22	2.86	0.73	0.80	0.84
time (sec)	N/A	0.010	0.019	0.043	0.657	0.421	12.460	0.217	1.088	0.411

Problem 379	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	76	76	69	92	80	239	840	82	80	83
N.S.	1	1.00	0.91	1.21	1.05	3.14	11.05	1.08	1.05	1.09
time (sec)	N/A	0.064	0.055	0.052	0.595	0.447	25.672	0.204	1.512	0.525

Problem 380	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	95	112	100	264	910	119	96	101
N.S.	1	1.00	0.91	1.08	0.96	2.54	8.75	1.14	0.92	0.97
time (sec)	N/A	0.085	0.054	0.055	0.572	0.459	22.255	0.207	1.688	0.576

Problem 381	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	129	129	106	134	122	307	1034	197	123	111
N.S.	1	1.00	0.82	1.04	0.95	2.38	8.02	1.53	0.95	0.86
time (sec)	N/A	0.112	0.144	0.059	0.557	0.453	22.822	0.220	1.734	0.684

Problem 382	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	55	52	64	85	486	53	59	55
N.S.	1	1.00	0.77	0.73	0.90	1.20	6.85	0.75	0.83	0.77
time (sec)	N/A	0.015	0.027	0.052	0.530	0.428	23.374	0.250	1.181	0.540

Problem 383	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	91	91	67	64	80	108	1360	68	74	67
N.S.	1	1.00	0.74	0.70	0.88	1.19	14.95	0.75	0.81	0.74
time (sec)	N/A	0.021	0.032	0.049	0.607	0.436	39.861	0.227	1.184	0.646

Problem 384	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	35	30	29	34	46	29	29	41
N.S.	1	1.00	0.78	0.67	0.64	0.76	1.02	0.64	0.64	0.91
time (sec)	N/A	0.012	0.013	0.044	0.464	0.414	8.223	0.233	0.049	0.021

Problem 385	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	35	30	29	34	46	29	29	41
N.S.	1	1.00	0.78	0.67	0.64	0.76	1.02	0.64	0.64	0.91
time (sec)	N/A	0.012	0.013	0.063	0.621	0.425	3.764	0.152	0.044	0.022

Problem 386	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	37	30	29	34	46	29	29	41
N.S.	1	1.00	0.82	0.67	0.64	0.76	1.02	0.64	0.64	0.91
time (sec)	N/A	0.013	0.016	0.059	0.488	0.394	1.657	0.150	0.044	0.019

Problem 387	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	35	30	29	32	46	29	29	41
N.S.	1	1.00	0.78	0.67	0.64	0.71	1.02	0.64	0.64	0.91
time (sec)	N/A	0.012	0.012	0.049	0.600	0.393	2.383	0.150	0.044	0.019

Problem 388	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	34	30	29	29	44	29	29	41
N.S.	1	1.00	0.79	0.70	0.67	0.67	1.02	0.67	0.67	0.95
time (sec)	N/A	0.012	0.012	0.041	0.491	0.407	0.451	0.148	0.043	0.021

Problem 389	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	30	29	29	42	29	29	33
N.S.	1	1.00	0.78	0.73	0.71	0.71	1.02	0.71	0.71	0.80
time (sec)	N/A	0.012	0.014	0.043	0.515	0.406	0.622	0.152	0.052	0.032

Problem 390	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	29	29	28	42	29	29	32
N.S.	1	1.00	0.78	0.71	0.71	0.68	1.02	0.71	0.71	0.78
time (sec)	N/A	0.012	0.011	0.052	0.709	0.402	0.846	0.150	1.055	0.031

Problem 391	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	30	30	29	42	30	29	33
N.S.	1	1.00	0.78	0.73	0.73	0.71	1.02	0.73	0.71	0.80
time (sec)	N/A	0.012	0.014	0.045	0.508	0.411	1.441	0.151	0.036	0.033

Problem 392	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	33	30	29	29	46	29	29	33
N.S.	1	1.00	0.77	0.70	0.67	0.67	1.07	0.67	0.67	0.77
time (sec)	N/A	0.012	0.014	0.042	0.591	0.408	3.155	0.156	1.053	0.035

Problem 393	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	60	54	53	58	80	53	53	69
N.S.	1	1.00	0.78	0.70	0.69	0.75	1.04	0.69	0.69	0.90
time (sec)	N/A	0.025	0.024	0.047	0.585	0.405	16.122	0.157	0.030	0.036

Problem 394	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	60	54	53	58	80	53	53	69
N.S.	1	1.00	0.78	0.70	0.69	0.75	1.04	0.69	0.69	0.90
time (sec)	N/A	0.026	0.023	0.049	0.526	0.413	8.498	0.150	0.027	0.033

Problem 395	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	54	54	53	58	80	53	53	69
N.S.	1	1.00	0.70	0.70	0.69	0.75	1.04	0.69	0.69	0.90
time (sec)	N/A	0.024	0.020	0.046	0.505	0.404	4.264	0.153	0.027	0.032

Problem 396	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	60	54	53	56	80	53	53	69
N.S.	1	1.00	0.78	0.70	0.69	0.73	1.04	0.69	0.69	0.90
time (sec)	N/A	0.024	0.020	0.052	0.477	0.395	3.077	0.148	0.030	0.033

Problem 397	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	59	54	53	53	78	53	53	69
N.S.	1	1.00	0.79	0.72	0.71	0.71	1.04	0.71	0.71	0.92
time (sec)	N/A	0.025	0.027	0.049	0.534	0.421	1.443	0.150	0.026	0.033

Problem 398	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	52	54	53	53	76	53	53	57
N.S.	1	1.00	0.71	0.74	0.73	0.73	1.04	0.73	0.73	0.78
time (sec)	N/A	0.025	0.018	0.053	0.656	0.425	1.678	0.154	0.029	0.045

Problem 399	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	51	54	53	53	76	53	54	57
N.S.	1	1.00	0.70	0.74	0.73	0.73	1.04	0.73	0.74	0.78
time (sec)	N/A	0.024	0.018	0.047	0.528	0.406	2.120	0.170	0.027	0.041

Problem 400	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	53	54	54	53	76	54	54	57
N.S.	1	1.00	0.73	0.74	0.74	0.73	1.04	0.74	0.74	0.78
time (sec)	N/A	0.026	0.022	0.049	0.485	0.412	2.903	0.155	0.051	0.045

Problem 401	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	51	54	54	53	76	54	53	57
N.S.	1	1.00	0.70	0.74	0.74	0.73	1.04	0.74	0.73	0.78
time (sec)	N/A	0.024	0.022	0.046	0.479	0.414	4.021	0.153	0.048	0.049

Problem 402	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	83	78	77	82	114	77	77	97
N.S.	1	1.00	0.76	0.72	0.71	0.75	1.05	0.71	0.71	0.89
time (sec)	N/A	0.038	0.043	0.048	0.515	0.404	27.936	0.154	0.037	0.043

Problem 403	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	83	78	77	82	114	77	77	97
N.S.	1	1.00	0.76	0.72	0.71	0.75	1.05	0.71	0.71	0.89
time (sec)	N/A	0.040	0.039	0.049	0.600	0.407	16.451	0.155	0.034	0.041

Problem 404	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	83	78	77	82	114	77	77	97
N.S.	1	1.00	0.76	0.72	0.71	0.75	1.05	0.71	0.71	0.89
time (sec)	N/A	0.037	0.039	0.048	0.594	0.410	9.820	0.150	0.034	0.040

Problem 405	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	83	78	77	80	114	77	77	97
N.S.	1	1.00	0.76	0.72	0.71	0.73	1.05	0.71	0.71	0.89
time (sec)	N/A	0.037	0.044	0.046	0.523	0.404	4.415	0.156	0.036	0.040

Problem 406	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	72	78	77	77	112	77	77	97
N.S.	1	1.00	0.67	0.73	0.72	0.72	1.05	0.72	0.72	0.91
time (sec)	N/A	0.039	0.027	0.049	0.507	0.406	3.874	0.150	0.036	0.040

Problem 407	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	80	78	77	77	109	77	77	81
N.S.	1	1.00	0.78	0.76	0.75	0.75	1.06	0.75	0.75	0.79
time (sec)	N/A	0.038	0.039	0.047	0.509	0.411	4.260	0.154	0.038	0.065

Problem 408	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	78	78	77	77	109	77	78	81
N.S.	1	1.00	0.76	0.76	0.75	0.75	1.06	0.75	0.76	0.79
time (sec)	N/A	0.037	0.034	0.070	0.543	0.401	4.834	0.196	0.033	0.053

Problem 409	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	72	78	78	77	109	78	78	81
N.S.	1	1.00	0.70	0.76	0.76	0.75	1.06	0.76	0.76	0.79
time (sec)	N/A	0.039	0.027	0.048	0.530	0.395	6.486	0.157	0.032	0.063

Problem 410	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	70	78	78	77	107	78	78	81
N.S.	1	1.00	0.69	0.77	0.77	0.76	1.06	0.77	0.77	0.80
time (sec)	N/A	0.037	0.029	0.047	0.525	0.419	8.607	0.186	0.031	0.062

Problem 411	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	71	78	78	77	109	78	78	81
N.S.	1	1.00	0.69	0.76	0.76	0.75	1.06	0.76	0.76	0.79
time (sec)	N/A	0.039	0.027	0.051	0.521	0.404	11.242	0.189	0.060	0.049

Problem 412	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	292	292	290	302	265	862	403	262	665	173
N.S.	1	1.00	0.99	1.03	0.91	2.95	1.38	0.90	2.28	0.59
time (sec)	N/A	0.345	0.099	0.059	1.309	0.463	33.964	0.202	1.256	0.371

Problem 413	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	278	278	287	289	247	772	379	255	601	160
N.S.	1	1.00	1.03	1.04	0.89	2.78	1.36	0.92	2.16	0.58
time (sec)	N/A	0.272	0.065	0.052	1.287	0.465	10.060	0.186	0.248	0.344

Problem 414	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	265	265	266	277	246	764	359	249	566	149
N.S.	1	1.00	1.00	1.05	0.93	2.88	1.35	0.94	2.14	0.56
time (sec)	N/A	0.235	0.061	0.048	1.452	0.432	6.481	0.187	1.258	0.281

Problem 415	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	262	268	224	775	348	244	607	139
N.S.	1	1.00	1.03	1.06	0.88	3.05	1.37	0.96	2.39	0.55
time (sec)	N/A	0.185	0.057	0.068	1.149	0.458	7.034	0.178	1.265	0.232

Problem 416	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	265	265	177	277	246	767	355	249	602	149
N.S.	1	1.00	0.67	1.05	0.93	2.89	1.34	0.94	2.27	0.56
time (sec)	N/A	0.221	0.078	0.057	1.186	0.442	14.433	0.193	0.235	0.324

Problem 417	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	278	278	53	289	244	802	376	258	606	155
N.S.	1	1.00	0.19	1.04	0.88	2.88	1.35	0.93	2.18	0.56
time (sec)	N/A	0.273	0.014	0.054	1.227	0.450	34.451	0.238	1.254	0.346

Problem 418	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	292	292	54	302	263	869	398	265	664	167
N.S.	1	1.00	0.18	1.03	0.90	2.98	1.36	0.91	2.27	0.57
time (sec)	N/A	0.322	0.013	0.056	1.280	0.444	108.650	0.191	1.247	0.370

Problem 419	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	54	318	264	884	0	276	678	175
N.S.	1	1.00	0.18	1.04	0.86	2.89	0.00	0.90	2.22	0.57
time (sec)	N/A	0.368	0.014	0.070	1.243	0.444	0.000	0.222	1.266	0.411

Problem 420	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	344	314	283	884	1374	283	617	190
N.S.	1	1.00	1.13	1.03	0.93	2.91	4.52	0.93	2.03	0.62
time (sec)	N/A	0.311	0.521	0.075	1.357	0.441	170.566	0.197	1.275	0.805

Problem 421	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	289	289	323	307	259	888	1316	271	656	171
N.S.	1	1.00	1.12	1.06	0.90	3.07	4.55	0.94	2.27	0.59
time (sec)	N/A	0.244	0.234	0.075	1.212	0.467	90.986	0.203	1.286	0.813

Problem 422	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	292	292	315	316	272	901	1266	271	652	180
N.S.	1	1.00	1.08	1.08	0.93	3.09	4.34	0.93	2.23	0.62
time (sec)	N/A	0.226	0.229	0.054	1.239	0.455	52.794	0.192	1.277	1.050

Problem 423	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	287	287	304	313	256	877	1294	273	649	175
N.S.	1	1.00	1.06	1.09	0.89	3.06	4.51	0.95	2.26	0.61
time (sec)	N/A	0.246	0.222	0.066	1.141	0.457	77.783	0.218	1.277	0.685

Problem 424	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	256	314	280	877	1435	281	634	183
N.S.	1	1.00	0.84	1.03	0.92	2.88	4.72	0.92	2.09	0.60
time (sec)	N/A	0.299	0.461	0.076	1.194	0.451	149.465	0.223	0.248	1.005

Problem 425	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	317	317	85	327	280	916	0	291	638	191
N.S.	1	1.00	0.27	1.03	0.88	2.89	0.00	0.92	2.01	0.60
time (sec)	N/A	0.350	0.032	0.112	1.239	0.450	0.000	0.228	0.245	0.858

Problem 426	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	385	327	292	986	0	293	686	191
N.S.	1	1.00	1.20	1.02	0.91	3.08	0.00	0.92	2.14	0.60
time (sec)	N/A	0.306	0.475	0.061	1.335	0.456	0.000	0.219	1.293	1.189

Problem 427	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	325	325	372	335	312	1031	0	298	697	208
N.S.	1	1.00	1.14	1.03	0.96	3.17	0.00	0.92	2.14	0.64
time (sec)	N/A	0.282	0.342	0.058	1.222	0.466	0.000	0.201	1.285	1.290

Problem 428	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	315	315	360	334	289	982	0	289	695	198
N.S.	1	1.00	1.14	1.06	0.92	3.12	0.00	0.92	2.21	0.63
time (sec)	N/A	0.280	0.175	0.061	1.350	0.474	0.000	0.215	1.288	1.167

Problem 429	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	331	331	356	335	311	1022	0	297	690	207
N.S.	1	1.00	1.08	1.01	0.94	3.09	0.00	0.90	2.08	0.63
time (sec)	N/A	0.286	0.177	0.067	1.285	0.460	0.000	0.213	1.286	0.894

Problem 430	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	344	349	291	981	0	293	687	199
N.S.	1	1.00	1.08	1.09	0.91	3.07	0.00	0.92	2.15	0.62
time (sec)	N/A	0.306	0.172	0.056	1.496	0.474	0.000	0.231	1.278	0.584

Problem 431	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	333	333	300	354	313	958	0	304	673	206
N.S.	1	1.00	0.90	1.06	0.94	2.88	0.00	0.91	2.02	0.62
time (sec)	N/A	0.354	0.286	0.064	1.385	0.451	0.000	0.214	0.281	0.924

Problem 432	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	99	62	34	33	49	34	20	23
N.S.	1	1.00	2.20	1.38	0.76	0.73	1.09	0.76	0.44	0.51
time (sec)	N/A	0.031	0.036	0.048	1.248	0.426	0.692	0.151	0.125	0.038

Problem 433	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	128	1255	208	1051	8202	1778	1075	0
N.S.	1	1.00	0.59	5.78	0.96	4.84	37.80	8.19	4.95	0.00
time (sec)	N/A	0.165	0.303	0.051	0.782	0.555	5.167	0.244	1.793	0.627

Problem 434	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	101	765	162	649	4507	1102	695	0
N.S.	1	1.00	0.60	4.53	0.96	3.84	26.67	6.52	4.11	0.00
time (sec)	N/A	0.102	0.217	0.058	0.619	0.448	3.178	0.202	1.481	0.269

Problem 435	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	74	395	116	343	2076	586	371	0
N.S.	1	1.00	0.61	3.26	0.96	2.83	17.16	4.84	3.07	0.00
time (sec)	N/A	0.062	0.073	0.047	0.610	0.430	1.732	0.178	1.280	0.111

Problem 436	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	47	145	70	133	685	230	161	0
N.S.	1	1.00	0.64	1.99	0.96	1.82	9.38	3.15	2.21	0.00
time (sec)	N/A	0.033	0.041	0.047	0.613	0.434	0.861	0.163	1.146	0.072

Problem 437	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	52	51	53	54	53	51	0
N.S.	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.048	0.009	0.042	0.578	0.391	0.073	0.147	1.064	0.000

Problem 438	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	52	51	53	54	53	51	0
N.S.	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.039	0.007	0.046	0.556	0.369	0.074	0.211	0.045	0.000

Problem 439	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	50	52	51	53	54	53	51	0
N.S.	1	1.00	0.91	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.032	0.012	0.040	0.559	0.357	0.075	0.152	0.050	0.000

Problem 440	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	50	52	51	53	54	53	51	0
N.S.	1	1.00	0.91	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.029	0.010	0.042	0.524	0.360	0.073	0.150	0.044	0.000

Problem 441	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	46	49	48	49	49	49	47	0
N.S.	1	1.00	1.21	1.29	1.26	1.29	1.29	1.29	1.24	0.00
time (sec)	N/A	0.021	0.009	0.040	0.470	0.356	0.071	0.154	0.043	0.000

Problem 442	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	40	40	43	46	46	46	46	46	45	0
N.S.	1	1.00	1.08	1.15	1.15	1.15	1.15	1.15	1.12	0.00
time (sec)	N/A	0.013	0.015	0.059	0.596	0.406	0.137	0.149	0.040	0.001

Problem 443	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	43	46	46	52	42	46	46	0
N.S.	1	1.00	0.98	1.05	1.05	1.18	0.95	1.05	1.05	0.00
time (sec)	N/A	0.027	0.023	0.061	0.600	0.432	0.183	0.148	0.044	0.001

Problem 444	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	43	48	46	53	46	47	46	0
N.S.	1	1.00	0.98	1.09	1.05	1.20	1.05	1.07	1.05	0.00
time (sec)	N/A	0.024	0.025	0.047	0.563	0.431	0.325	0.150	1.070	0.001

Problem 445	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	48	52	50	53	54	51	48	0
N.S.	1	1.00	0.98	1.06	1.02	1.08	1.10	1.04	0.98	0.00
time (sec)	N/A	0.024	0.025	0.053	0.551	0.413	0.519	0.156	0.053	0.001

Problem 446	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	47	48	51	51	56	51	49	0
N.S.	1	1.00	1.07	1.09	1.16	1.16	1.27	1.16	1.11	0.00
time (sec)	N/A	0.011	0.016	0.048	0.566	0.390	0.661	0.148	0.036	0.001

Problem 447	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	50	48	51	51	56	51	51	0
N.S.	1	1.00	0.91	0.87	0.93	0.93	1.02	0.93	0.93	0.00
time (sec)	N/A	0.024	0.015	0.053	0.516	0.405	0.859	0.151	0.037	0.001

Problem 448	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	50	48	51	51	56	51	51	0
N.S.	1	1.00	0.91	0.87	0.93	0.93	1.02	0.93	0.93	0.00
time (sec)	N/A	0.024	0.016	0.051	0.588	0.392	1.008	0.190	0.035	0.001

Problem 449	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	50	48	51	51	56	51	51	0
N.S.	1	1.00	0.91	0.87	0.93	0.93	1.02	0.93	0.93	0.00
time (sec)	N/A	0.025	0.016	0.050	0.467	0.391	1.240	0.160	0.035	0.001

Problem 450	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	99	100	99	101	109	101	91	0
N.S.	1	1.00	1.00	1.01	1.00	1.02	1.10	1.02	0.92	0.00
time (sec)	N/A	0.084	0.014	0.043	0.483	0.349	0.087	0.164	0.046	0.000

Problem 451	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	99	100	99	100	105	100	91	0
N.S.	1	1.00	1.00	1.01	1.00	1.01	1.06	1.01	0.92	0.00
time (sec)	N/A	0.057	0.013	0.069	0.566	0.361	0.088	0.154	1.044	0.000

Problem 452	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	88	100	99	99	104	99	90	0
N.S.	1	1.00	1.01	1.15	1.14	1.14	1.20	1.14	1.03	0.00
time (sec)	N/A	0.053	0.026	0.047	0.519	0.364	0.087	0.165	0.035	0.000

Problem 453	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	88	100	99	100	107	100	91	0
N.S.	1	1.00	1.44	1.64	1.62	1.64	1.75	1.64	1.49	0.00
time (sec)	N/A	0.041	0.023	0.046	0.455	0.368	0.086	0.152	0.034	0.000

Problem 454	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	84	97	96	97	100	97	88	0
N.S.	1	1.00	2.21	2.55	2.53	2.55	2.63	2.55	2.32	0.00
time (sec)	N/A	0.014	0.015	0.040	0.480	0.365	0.088	0.183	0.034	0.000

Problem 455	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	83	94	93	93	95	94	84	0
N.S.	1	1.00	1.26	1.42	1.41	1.41	1.44	1.42	1.27	0.00
time (sec)	N/A	0.023	0.023	0.047	0.492	0.399	0.206	0.171	0.039	0.001

Problem 456	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	85	95	94	101	94	95	86	0
N.S.	1	1.00	0.99	1.10	1.09	1.17	1.09	1.10	1.00	0.00
time (sec)	N/A	0.051	0.035	0.051	0.535	0.396	0.257	0.157	0.042	0.001

Problem 457	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	86	96	96	101	97	96	91	0
N.S.	1	1.00	0.96	1.07	1.07	1.12	1.08	1.07	1.01	0.00
time (sec)	N/A	0.050	0.032	0.056	0.553	0.396	0.417	0.153	1.067	0.001

Problem 458	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	89	89	86	95	96	101	99	96	94	0
N.S.	1	1.00	0.97	1.07	1.08	1.13	1.11	1.08	1.06	0.00
time (sec)	N/A	0.054	0.034	0.051	0.485	0.394	0.731	0.160	1.075	0.001

Problem 459	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	85	96	95	101	99	96	93	0
N.S.	1	1.00	0.99	1.12	1.10	1.17	1.15	1.12	1.08	0.00
time (sec)	N/A	0.047	0.040	0.053	0.462	0.406	1.223	0.167	1.086	0.001

Problem 460	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	87	100	98	101	105	99	94	0
N.S.	1	1.00	1.23	1.41	1.38	1.42	1.48	1.39	1.32	0.00
time (sec)	N/A	0.029	0.044	0.059	0.461	0.406	1.750	0.165	1.090	0.001

Problem 461	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	85	88	99	99	107	99	95	0
N.S.	1	1.00	1.93	2.00	2.25	2.25	2.43	2.25	2.16	0.00
time (sec)	N/A	0.012	0.024	0.063	0.582	0.396	2.350	0.171	0.052	0.001

Problem 462	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	88	88	99	99	107	99	96	0
N.S.	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.97	0.00
time (sec)	N/A	0.048	0.023	0.051	0.590	0.393	2.852	0.156	1.080	0.001

Problem 463	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	88	88	99	99	107	99	95	0
N.S.	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.96	0.00
time (sec)	N/A	0.046	0.026	0.053	0.517	0.391	3.707	0.161	1.073	0.001

Problem 464	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	88	88	99	99	107	99	96	0
N.S.	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.97	0.00
time (sec)	N/A	0.048	0.026	0.054	0.470	0.394	4.555	0.184	0.053	0.001

Problem 465	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	88	88	99	99	107	99	97	0
N.S.	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.98	0.00
time (sec)	N/A	0.049	0.025	0.061	0.453	0.395	5.450	0.152	1.064	0.001

Problem 466	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	143	148	147	149	162	149	131	0
N.S.	1	1.00	1.00	1.03	1.03	1.04	1.13	1.04	0.92	0.00
time (sec)	N/A	0.142	0.024	0.046	0.478	0.350	0.102	0.167	0.064	0.000

Problem 467	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	139	139	143	148	147	148	162	148	130	0
N.S.	1	1.00	1.03	1.06	1.06	1.06	1.17	1.06	0.94	0.00
time (sec)	N/A	0.098	0.019	0.045	0.498	0.355	0.100	0.157	1.067	0.000

Problem 468	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	143	148	147	148	162	148	131	0
N.S.	1	1.00	1.28	1.32	1.31	1.32	1.45	1.32	1.17	0.00
time (sec)	N/A	0.077	0.019	0.040	0.531	0.408	0.100	0.203	0.048	0.000

Problem 469	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	143	148	147	149	163	149	131	0
N.S.	1	1.00	1.64	1.70	1.69	1.71	1.87	1.71	1.51	0.00
time (sec)	N/A	0.064	0.017	0.040	0.505	0.377	0.102	0.189	0.049	0.000

Problem 470	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	140	148	146	149	160	149	130	0
N.S.	1	1.00	2.30	2.43	2.39	2.44	2.62	2.44	2.13	0.00
time (sec)	N/A	0.050	0.017	0.041	0.459	0.352	0.099	0.151	0.048	0.000

Problem 471	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	122	145	142	145	148	145	126	0
N.S.	1	1.00	3.21	3.82	3.74	3.82	3.89	3.82	3.32	0.00
time (sec)	N/A	0.015	0.034	0.045	0.674	0.355	0.098	0.154	0.050	0.000

Problem 472	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	128	142	142	142	148	142	125	0
N.S.	1	1.00	1.33	1.48	1.48	1.48	1.54	1.48	1.30	0.00
time (sec)	N/A	0.037	0.050	0.041	0.506	0.486	0.281	0.171	1.077	0.001

Problem 473	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	129	143	143	149	148	143	127	0
N.S.	1	1.00	0.97	1.08	1.08	1.12	1.11	1.08	0.95	0.00
time (sec)	N/A	0.077	0.051	0.048	0.624	0.419	0.330	0.156	0.060	0.001

Problem 474	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	128	144	143	149	148	144	130	0
N.S.	1	1.00	0.98	1.10	1.09	1.14	1.13	1.10	0.99	0.00
time (sec)	N/A	0.080	0.057	0.058	0.562	0.421	0.513	0.172	1.078	0.001

Problem 475	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	127	144	145	149	150	145	135	0
N.S.	1	1.00	0.95	1.07	1.08	1.11	1.12	1.08	1.01	0.00
time (sec)	N/A	0.080	0.047	0.049	0.517	0.405	0.829	0.167	0.057	0.001

Problem 476	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	128	144	145	149	150	145	138	0
N.S.	1	1.00	0.96	1.07	1.08	1.11	1.12	1.08	1.03	0.00
time (sec)	N/A	0.082	0.048	0.058	0.548	0.419	1.347	0.185	0.056	0.001

Problem 477	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	128	143	144	149	150	144	140	0
N.S.	1	1.00	0.98	1.09	1.10	1.14	1.15	1.10	1.07	0.00
time (sec)	N/A	0.081	0.049	0.062	0.614	0.405	2.092	0.179	1.086	0.001

Problem 478	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	125	144	143	149	150	144	139	0
N.S.	1	1.00	0.95	1.09	1.08	1.13	1.14	1.09	1.05	0.00
time (sec)	N/A	0.076	0.069	0.053	0.474	0.493	3.160	0.156	0.084	0.001

Problem 479	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	132	148	146	149	156	147	140	0
N.S.	1	1.00	1.31	1.47	1.45	1.48	1.54	1.46	1.39	0.00
time (sec)	N/A	0.044	0.055	0.055	0.648	0.416	4.372	0.166	1.097	0.001

Problem 480	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	123	128	147	147	158	147	141	0
N.S.	1	1.00	2.80	2.91	3.34	3.34	3.59	3.34	3.20	0.00
time (sec)	N/A	0.013	0.033	0.053	0.544	0.389	5.523	0.154	1.093	0.001

Problem 481	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	126	128	147	147	158	147	143	0
N.S.	1	1.00	1.75	1.78	2.04	2.04	2.19	2.04	1.99	0.00
time (sec)	N/A	0.022	0.032	0.060	0.561	0.390	6.879	0.177	0.074	0.001

Problem 482	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	126	128	147	147	158	147	143	0
N.S.	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	1.00	0.00
time (sec)	N/A	0.076	0.033	0.061	0.585	0.392	9.001	0.162	0.072	0.001

Problem 483	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	126	128	147	147	158	147	142	0
N.S.	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	0.99	0.00
time (sec)	N/A	0.072	0.033	0.051	0.574	0.395	11.114	0.189	1.083	0.001

Problem 484	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	126	128	147	147	158	147	142	0
N.S.	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	0.99	0.00
time (sec)	N/A	0.069	0.032	0.048	0.576	0.407	13.841	0.157	0.074	0.001

Problem 485	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	126	128	147	147	158	147	143	0
N.S.	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	1.00	0.00
time (sec)	N/A	0.071	0.033	0.052	0.589	0.422	17.514	0.152	1.096	0.001

Problem 486	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	149	130	129	132	133	143	121	0
N.S.	1	1.00	1.14	0.99	0.98	1.01	1.02	1.09	0.92	0.00
time (sec)	N/A	0.128	0.026	0.046	0.479	0.368	0.098	0.169	1.118	0.000

Problem 487	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	150	130	128	133	134	144	123	0
N.S.	1	1.00	1.26	1.09	1.08	1.12	1.13	1.21	1.03	0.00
time (sec)	N/A	0.074	0.019	0.043	0.627	0.347	0.097	0.152	0.079	0.000

Problem 488	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	151	130	129	133	136	144	123	0
N.S.	1	1.00	1.53	1.31	1.30	1.34	1.37	1.45	1.24	0.00
time (sec)	N/A	0.064	0.019	0.045	0.676	0.420	0.098	0.193	0.079	0.000

Problem 489	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	153	130	129	133	139	144	123	0
N.S.	1	1.00	1.76	1.49	1.48	1.53	1.60	1.66	1.41	0.00
time (sec)	N/A	0.057	0.018	0.048	0.572	0.384	0.096	0.155	0.077	0.000

Problem 490	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	153	130	129	133	136	144	123	0
N.S.	1	1.00	2.22	1.88	1.87	1.93	1.97	2.09	1.78	0.00
time (sec)	N/A	0.047	0.019	0.039	0.540	0.358	0.096	0.154	0.080	0.000

Problem 491	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	148	130	128	133	133	144	123	0
N.S.	1	1.00	2.69	2.36	2.33	2.42	2.42	2.62	2.24	0.00
time (sec)	N/A	0.043	0.019	0.042	0.578	0.375	0.097	0.177	0.081	0.000

Problem 492	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	147	130	129	133	133	144	123	0
N.S.	1	1.00	3.77	3.33	3.31	3.41	3.41	3.69	3.15	0.00
time (sec)	N/A	0.035	0.016	0.043	0.560	0.361	0.097	0.154	0.082	0.000

Problem 493	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	25	25	113	127	126	129	119	140	118	0
N.S.	1	1.00	4.52	5.08	5.04	5.16	4.76	5.60	4.72	0.00
time (sec)	N/A	0.009	0.021	0.046	0.507	0.353	0.097	0.191	0.080	0.000

Problem 494	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	85	126	124	124	117	137	115	0
N.S.	1	1.00	0.98	1.45	1.43	1.43	1.34	1.57	1.32	0.00
time (sec)	N/A	0.022	0.033	0.043	0.633	0.401	0.313	0.171	0.084	0.000

Problem 495	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	139	139	139	127	125	131	121	137	118	0
N.S.	1	1.00	1.00	0.91	0.90	0.94	0.87	0.99	0.85	0.00
time (sec)	N/A	0.068	0.044	0.058	0.665	0.421	0.355	0.156	0.087	0.000

Problem 496	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	139	128	125	131	122	137	119	0
N.S.	1	1.00	1.01	0.93	0.91	0.95	0.88	0.99	0.86	0.00
time (sec)	N/A	0.070	0.041	0.084	0.508	0.399	0.453	0.157	0.078	0.000

Problem 497	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	140	128	127	131	124	139	121	0
N.S.	1	1.00	1.01	0.93	0.92	0.95	0.90	1.01	0.88	0.00
time (sec)	N/A	0.071	0.040	0.049	0.509	0.422	0.650	0.157	0.069	0.000

Problem 498	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	139	128	126	131	122	139	121	0
N.S.	1	1.00	1.01	0.93	0.92	0.96	0.89	1.01	0.88	0.00
time (sec)	N/A	0.068	0.036	0.054	0.639	0.403	1.000	0.194	0.064	0.000

Problem 499	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	142	128	127	131	124	139	121	0
N.S.	1	1.00	1.01	0.91	0.91	0.94	0.89	0.99	0.86	0.00
time (sec)	N/A	0.071	0.035	0.049	0.543	0.408	1.419	0.150	1.082	0.001

Problem 500	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	142	128	127	131	128	139	121	0
N.S.	1	1.00	1.01	0.91	0.91	0.94	0.91	0.99	0.86	0.00
time (sec)	N/A	0.072	0.038	0.061	0.539	0.401	2.167	0.154	1.068	0.000

Problem 501	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	139	128	127	131	128	139	121	0
N.S.	1	1.00	1.01	0.93	0.92	0.95	0.93	1.01	0.88	0.00
time (sec)	N/A	0.073	0.038	0.052	0.592	0.396	2.986	0.148	1.069	0.001

Problem 502	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	140	128	127	131	126	139	121	0
N.S.	1	1.00	1.01	0.93	0.92	0.95	0.91	1.01	0.88	0.00
time (sec)	N/A	0.074	0.041	0.056	0.469	0.423	4.273	0.158	1.080	0.001

Problem 503	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	139	127	126	131	126	138	119	0
N.S.	1	1.00	1.01	0.93	0.92	0.96	0.92	1.01	0.87	0.00
time (sec)	N/A	0.080	0.041	0.056	0.511	0.425	5.588	0.175	0.072	0.000

Problem 504	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	140	128	125	131	124	137	118	0
N.S.	1	1.00	1.01	0.93	0.91	0.95	0.90	0.99	0.86	0.00
time (sec)	N/A	0.071	0.040	0.059	0.498	0.421	7.763	0.153	1.094	0.000

Problem 505	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	143	132	128	131	129	140	118	0
N.S.	1	1.00	1.55	1.43	1.39	1.42	1.40	1.52	1.28	0.00
time (sec)	N/A	0.032	0.049	0.048	0.577	0.402	9.300	0.180	1.104	0.000

Problem 506	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	31	31	114	130	129	129	131	142	120	0
N.S.	1	1.00	3.68	4.19	4.16	4.16	4.23	4.58	3.87	0.00
time (sec)	N/A	0.006	0.026	0.055	0.559	0.390	11.461	0.156	0.119	0.000

Problem 507	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	52	52	115	130	129	129	131	142	123	0
N.S.	1	1.00	2.21	2.50	2.48	2.48	2.52	2.73	2.37	0.00
time (sec)	N/A	0.012	0.025	0.056	0.554	0.398	13.824	0.157	1.137	0.000

Problem 508	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	149	130	129	129	131	142	123	0
N.S.	1	1.00	2.10	1.83	1.82	1.82	1.85	2.00	1.73	0.00
time (sec)	N/A	0.017	0.037	0.054	0.724	0.403	16.090	0.175	0.116	0.000

Problem 509	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	153	130	129	129	131	142	123	0
N.S.	1	1.00	1.70	1.44	1.43	1.43	1.46	1.58	1.37	0.00
time (sec)	N/A	0.022	0.037	0.064	0.705	0.414	19.111	0.155	0.119	0.000

Problem 510	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	153	130	129	129	131	142	123	0
N.S.	1	1.00	1.40	1.19	1.18	1.18	1.20	1.30	1.13	0.00
time (sec)	N/A	0.027	0.035	0.053	0.712	0.434	21.699	0.156	0.119	0.000

Problem 511	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	151	130	129	129	131	142	123	0
N.S.	1	1.00	1.18	1.02	1.01	1.01	1.02	1.11	0.96	0.00
time (sec)	N/A	0.034	0.042	0.051	0.510	0.399	24.869	0.159	1.129	0.000

Problem 512	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	151	130	129	129	131	142	123	0
N.S.	1	1.00	1.00	0.86	0.85	0.85	0.87	0.94	0.81	0.00
time (sec)	N/A	0.075	0.046	0.054	0.567	0.378	27.789	0.163	0.117	0.000

Problem 513	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	149	130	129	129	131	142	121	0
N.S.	1	1.00	1.00	0.87	0.87	0.87	0.88	0.95	0.81	0.00
time (sec)	N/A	0.066	0.041	0.051	0.589	0.389	31.790	0.154	1.135	0.000

Problem 514	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	151	130	129	129	131	142	121	0
N.S.	1	1.00	1.00	0.86	0.85	0.85	0.87	0.94	0.80	0.00
time (sec)	N/A	0.064	0.047	0.048	0.598	0.395	35.330	0.179	0.123	0.001

Problem 515	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	83	62	61	61	73	61	61	0
N.S.	1	1.00	1.00	0.75	0.73	0.73	0.88	0.73	0.73	0.00
time (sec)	N/A	0.033	0.002	0.058	0.534	0.356	0.077	0.181	0.061	0.000

Problem 516	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	83	62	61	61	75	61	61	0
N.S.	1	1.00	1.00	0.75	0.73	0.73	0.90	0.73	0.73	0.00
time (sec)	N/A	0.026	0.002	0.043	0.600	0.357	0.073	0.169	0.060	0.000

Problem 517	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	91	91	81	60	59	59	73	59	59	0
N.S.	1	1.00	0.89	0.66	0.65	0.65	0.80	0.65	0.65	0.00
time (sec)	N/A	0.026	0.002	0.040	0.586	0.358	0.073	0.162	0.061	0.000

Problem 518	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	81	62	61	61	73	61	61	0
N.S.	1	1.00	1.01	0.78	0.76	0.76	0.91	0.76	0.76	0.00
time (sec)	N/A	0.025	0.002	0.082	0.627	0.350	0.071	0.150	0.060	0.000

Problem 519	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	79	62	61	61	71	61	61	0
N.S.	1	1.00	1.08	0.85	0.84	0.84	0.97	0.84	0.84	0.00
time (sec)	N/A	0.023	0.002	0.042	0.555	0.351	0.073	0.152	0.062	0.000

Problem 520	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	81	62	61	61	73	61	61	0
N.S.	1	1.00	1.27	0.97	0.95	0.95	1.14	0.95	0.95	0.00
time (sec)	N/A	0.021	0.002	0.038	0.660	0.352	0.071	0.150	0.060	0.000

Problem 521	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	81	62	61	61	73	61	61	0
N.S.	1	1.00	1.47	1.13	1.11	1.11	1.33	1.11	1.11	0.00
time (sec)	N/A	0.019	0.002	0.042	0.664	0.355	0.072	0.152	0.062	0.000

Problem 522	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	46	46	83	62	61	61	75	61	61	0
N.S.	1	1.00	1.80	1.35	1.33	1.33	1.63	1.33	1.33	0.00
time (sec)	N/A	0.018	0.002	0.040	0.694	0.352	0.071	0.148	0.061	0.000

Problem 523	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	83	62	61	61	75	61	61	0
N.S.	1	1.00	2.24	1.68	1.65	1.65	2.03	1.65	1.65	0.00
time (sec)	N/A	0.016	0.002	0.049	0.598	0.345	0.071	0.148	0.063	0.000

Problem 524	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	79	62	61	61	71	61	61	0
N.S.	1	1.00	2.82	2.21	2.18	2.18	2.54	2.18	2.18	0.00
time (sec)	N/A	0.014	0.002	0.048	0.610	0.338	0.071	0.150	0.063	0.000

Problem 525	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	19	19	77	62	61	61	70	61	61	0
N.S.	1	1.00	4.05	3.26	3.21	3.21	3.68	3.21	3.21	0.00
time (sec)	N/A	0.005	0.001	0.038	0.580	0.361	0.070	0.175	0.062	0.000

Problem 526	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	9	9	9	56	12	55	65	62	55	0
N.S.	1	1.00	1.00	6.22	1.33	6.11	7.22	6.89	6.11	0.00
time (sec)	N/A	0.001	0.001	0.045	0.666	0.361	0.077	0.149	0.060	0.000

Problem 527	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	96	57	56	56	68	57	56	0
N.S.	1	1.00	1.33	0.79	0.78	0.78	0.94	0.79	0.78	0.00
time (sec)	N/A	0.017	0.011	0.049	0.634	0.393	0.106	0.154	0.062	0.000

Problem 528	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	72	59	58	62	66	59	58	0
N.S.	1	1.00	1.00	0.82	0.81	0.86	0.92	0.82	0.81	0.00
time (sec)	N/A	0.021	0.003	0.052	0.488	0.402	0.110	0.156	0.064	0.000

Problem 529	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	59	58	62	66	59	58	0
N.S.	1	1.00	1.00	0.84	0.83	0.89	0.94	0.84	0.83	0.00
time (sec)	N/A	0.021	0.003	0.056	0.545	0.388	0.118	0.166	0.054	0.000

Problem 530	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	59	58	62	65	59	58	0
N.S.	1	1.00	1.00	0.84	0.83	0.89	0.93	0.84	0.83	0.00
time (sec)	N/A	0.022	0.003	0.056	0.519	0.416	0.125	0.148	0.043	0.000

Problem 531	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	59	58	62	63	59	58	0
N.S.	1	1.00	1.00	0.84	0.83	0.89	0.90	0.84	0.83	0.00
time (sec)	N/A	0.022	0.003	0.050	0.652	0.389	0.131	0.151	0.036	0.000

Problem 532	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	72	59	58	62	63	59	58	0
N.S.	1	1.00	1.00	0.82	0.81	0.86	0.88	0.82	0.81	0.00
time (sec)	N/A	0.022	0.003	0.048	0.615	0.395	0.137	0.162	0.032	0.000

Problem 533	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	72	59	58	62	65	59	58	0
N.S.	1	1.00	1.00	0.82	0.81	0.86	0.90	0.82	0.81	0.00
time (sec)	N/A	0.022	0.003	0.055	0.665	0.397	0.142	0.153	0.029	0.000

Problem 534	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	59	58	62	63	59	58	0
N.S.	1	1.00	1.00	0.84	0.83	0.89	0.90	0.84	0.83	0.00
time (sec)	N/A	0.021	0.003	0.053	0.484	0.403	0.147	0.150	0.026	0.000

Problem 535	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	59	58	62	61	59	58	0
N.S.	1	1.00	1.00	0.84	0.83	0.89	0.87	0.84	0.83	0.00
time (sec)	N/A	0.021	0.003	0.043	0.622	0.394	0.153	0.151	0.026	0.000

Problem 536	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	59	58	62	60	59	58	0
N.S.	1	1.00	1.00	0.84	0.83	0.89	0.86	0.84	0.83	0.00
time (sec)	N/A	0.022	0.003	0.056	0.547	0.409	0.162	0.168	0.031	0.000

Problem 537	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	70	57	56	62	58	57	62	0
N.S.	1	1.00	1.00	0.81	0.80	0.89	0.83	0.81	0.89	0.00
time (sec)	N/A	0.021	0.003	0.054	0.534	0.399	0.169	0.149	1.076	0.000

Problem 538	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	74	74	74	59	58	62	60	59	58	0
N.S.	1	1.00	1.00	0.80	0.78	0.84	0.81	0.80	0.78	0.00
time (sec)	N/A	0.021	0.003	0.052	0.578	0.385	0.176	0.189	1.083	0.000

Problem 539	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	12	12	75	62	60	60	61	60	56	0
N.S.	1	1.00	6.25	5.17	5.00	5.00	5.08	5.00	4.67	0.00
time (sec)	N/A	0.002	0.002	0.051	0.474	0.385	0.175	0.167	0.030	0.000

Problem 540	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	25	25	77	62	60	60	61	60	60	0
N.S.	1	1.00	3.08	2.48	2.40	2.40	2.44	2.40	2.40	0.00
time (sec)	N/A	0.003	0.003	0.045	0.518	0.377	0.181	0.178	0.031	0.000

Problem 541	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	79	62	60	60	61	60	60	0
N.S.	1	1.00	2.14	1.68	1.62	1.62	1.65	1.62	1.62	0.00
time (sec)	N/A	0.005	0.002	0.052	0.483	0.392	0.184	0.169	1.080	0.000

Problem 542	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	83	62	60	60	61	60	60	0
N.S.	1	1.00	1.69	1.27	1.22	1.22	1.24	1.22	1.22	0.00
time (sec)	N/A	0.009	0.003	0.048	0.557	0.389	0.190	0.154	1.066	0.000

Problem 543	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	83	62	60	60	61	60	60	0
N.S.	1	1.00	1.36	1.02	0.98	0.98	1.00	0.98	0.98	0.00
time (sec)	N/A	0.011	0.002	0.054	0.579	0.397	0.194	0.151	1.054	0.000

Problem 544	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	81	62	60	60	61	60	60	0
N.S.	1	1.00	1.11	0.85	0.82	0.82	0.84	0.82	0.82	0.00
time (sec)	N/A	0.016	0.002	0.051	0.530	0.393	0.199	0.153	0.033	0.000

Problem 545	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	81	62	60	60	61	60	60	0
N.S.	1	1.00	0.95	0.73	0.71	0.71	0.72	0.71	0.71	0.00
time (sec)	N/A	0.019	0.002	0.050	0.573	0.394	0.207	0.154	1.063	0.000

Problem 546	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	79	62	60	60	61	60	60	0
N.S.	1	1.00	0.81	0.64	0.62	0.62	0.63	0.62	0.62	0.00
time (sec)	N/A	0.027	0.003	0.054	0.583	0.394	0.207	0.164	0.033	0.000

Problem 547	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	81	62	60	60	61	60	60	0
N.S.	1	1.00	1.00	0.77	0.74	0.74	0.75	0.74	0.74	0.00
time (sec)	N/A	0.021	0.002	0.048	0.512	0.391	0.219	0.152	0.034	0.000

Problem 548	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	83	62	60	60	61	60	58	0
N.S.	1	1.00	1.00	0.75	0.72	0.72	0.73	0.72	0.70	0.00
time (sec)	N/A	0.022	0.004	0.053	0.575	0.388	0.223	0.159	1.069	0.000

Problem 549	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	127	156	149	188	143	152	279	0
N.S.	1	1.00	0.95	1.16	1.11	1.40	1.07	1.13	2.08	0.00
time (sec)	N/A	0.158	0.065	0.059	0.547	0.404	0.506	0.164	1.102	0.001

Problem 550	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	107	133	123	164	119	126	173	0
N.S.	1	1.00	0.95	1.18	1.09	1.45	1.05	1.12	1.53	0.00
time (sec)	N/A	0.109	0.054	0.054	0.716	0.404	0.460	0.163	0.056	0.001

Problem 551	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	87	109	101	140	92	104	115	0
N.S.	1	1.00	0.97	1.21	1.12	1.56	1.02	1.16	1.28	0.00
time (sec)	N/A	0.082	0.053	0.059	0.570	0.407	0.416	0.176	0.052	0.001

Problem 552	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	66	84	74	113	68	75	77	0
N.S.	1	1.00	0.96	1.22	1.07	1.64	0.99	1.09	1.12	0.00
time (sec)	N/A	0.056	0.056	0.061	0.472	0.416	0.363	0.157	0.061	0.001

Problem 553	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	41	61	53	72	44	51	54	0
N.S.	1	1.00	0.91	1.36	1.18	1.60	0.98	1.13	1.20	0.00
time (sec)	N/A	0.036	0.024	0.059	0.486	0.406	0.278	0.179	1.100	0.001

Problem 554	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	32	32	31	39	34	37	27	32	32	0
N.S.	1	1.00	0.97	1.22	1.06	1.16	0.84	1.00	1.00	0.00
time (sec)	N/A	0.023	0.010	0.062	0.476	0.402	0.189	0.154	1.080	0.001

Problem 555	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	38	46	44	62	32	48	39	0
N.S.	1	1.00	0.90	1.10	1.05	1.48	0.76	1.14	0.93	0.00
time (sec)	N/A	0.029	0.025	0.056	0.607	0.423	0.291	0.154	0.066	0.001

Problem 556	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	56	78	67	107	128	71	58	0
N.S.	1	1.00	0.86	1.20	1.03	1.65	1.97	1.09	0.89	0.00
time (sec)	N/A	0.051	0.039	0.061	0.532	0.405	0.491	0.151	1.123	0.001

Problem 557	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	85	107	99	150	184	106	104	0
N.S.	1	1.00	1.00	1.26	1.16	1.76	2.16	1.25	1.22	0.00
time (sec)	N/A	0.071	0.067	0.058	0.587	0.410	0.593	0.157	1.142	0.001

Problem 558	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	106	134	128	179	219	133	131	0
N.S.	1	1.00	0.94	1.19	1.13	1.58	1.94	1.18	1.16	0.00
time (sec)	N/A	0.092	0.084	0.056	0.497	0.415	0.646	0.156	0.109	0.001

Problem 559	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	129	158	152	203	243	157	150	0
N.S.	1	1.00	0.97	1.19	1.14	1.53	1.83	1.18	1.13	0.00
time (sec)	N/A	0.114	0.090	0.056	0.503	0.400	0.728	0.181	1.147	0.001

Problem 560	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	147	174	168	257	168	149	180	0
N.S.	1	1.00	1.03	1.22	1.17	1.80	1.17	1.04	1.26	0.00
time (sec)	N/A	0.160	0.053	0.055	0.569	0.404	1.253	0.154	1.114	0.001

Problem 561	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	129	149	143	231	144	124	141	0
N.S.	1	1.00	1.07	1.23	1.18	1.91	1.19	1.02	1.17	0.00
time (sec)	N/A	0.123	0.045	0.060	0.503	0.408	1.148	0.160	0.079	0.001

Problem 562	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	97	126	120	193	119	96	118	0
N.S.	1	1.00	1.00	1.30	1.24	1.99	1.23	0.99	1.22	0.00
time (sec)	N/A	0.088	0.036	0.061	0.543	0.401	0.957	0.158	1.121	0.001

Problem 563	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	73	101	100	128	100	76	96	0
N.S.	1	1.00	1.01	1.40	1.39	1.78	1.39	1.06	1.33	0.00
time (sec)	N/A	0.033	0.027	0.070	0.625	0.402	0.657	0.154	0.078	0.001

Problem 564	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	42	56	71	71	75	45	68	0
N.S.	1	1.00	0.71	0.95	1.20	1.20	1.27	0.76	1.15	0.00
time (sec)	N/A	0.042	0.015	0.070	0.710	0.400	0.445	0.192	0.041	0.001

Problem 565	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	27	35	50	50	53	25	52	0
N.S.	1	1.00	0.71	0.92	1.32	1.32	1.39	0.66	1.37	0.00
time (sec)	N/A	0.022	0.010	0.056	0.512	0.417	0.355	0.149	0.030	0.001

Problem 566	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	65	72	91	156	90	71	84	0
N.S.	1	1.00	0.90	1.00	1.26	2.17	1.25	0.99	1.17	0.00
time (sec)	N/A	0.049	0.048	0.053	0.594	0.441	0.527	0.150	1.106	0.001

Problem 567	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	102	132	134	267	204	122	118	0
N.S.	1	1.00	0.92	1.19	1.21	2.41	1.84	1.10	1.06	0.00
time (sec)	N/A	0.104	0.064	0.056	0.543	0.408	0.757	0.169	1.149	0.001

Problem 568	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	123	168	172	318	264	157	168	0
N.S.	1	1.00	0.91	1.24	1.27	2.36	1.96	1.16	1.24	0.00
time (sec)	N/A	0.121	0.117	0.053	0.615	0.421	0.882	0.154	1.162	0.001

Problem 569	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	148	200	193	333	291	175	195	0
N.S.	1	1.00	0.89	1.20	1.16	2.01	1.75	1.05	1.17	0.00
time (sec)	N/A	0.169	0.142	0.067	0.666	0.413	0.943	0.154	1.185	0.001

Problem 570	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	171	171	151	213	213	349	216	172	210	0
N.S.	1	1.00	0.88	1.25	1.25	2.04	1.26	1.01	1.23	0.00
time (sec)	N/A	0.216	0.095	0.069	0.697	0.396	2.753	0.161	1.163	0.001

Problem 571	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	130	190	190	311	190	144	187	0
N.S.	1	1.00	0.89	1.30	1.30	2.13	1.30	0.99	1.28	0.00
time (sec)	N/A	0.163	0.077	0.069	0.644	0.403	2.484	0.155	0.125	0.001

Problem 572	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	113	165	170	222	172	124	161	0
N.S.	1	1.00	1.07	1.56	1.60	2.09	1.62	1.17	1.52	0.00
time (sec)	N/A	0.062	0.041	0.053	0.604	0.406	1.953	0.153	1.166	0.001

Problem 573	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	76	102	139	139	150	93	128	0
N.S.	1	1.00	1.33	1.79	2.44	2.44	2.63	1.63	2.25	0.00
time (sec)	N/A	0.014	0.031	0.050	0.654	0.385	1.474	0.169	0.054	0.001

Problem 574	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	63	80	119	119	126	70	113	0
N.S.	1	1.00	0.72	0.92	1.37	1.37	1.45	0.80	1.30	0.00
time (sec)	N/A	0.066	0.023	0.046	0.609	0.386	1.009	0.164	0.044	0.001

Problem 575	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	46	56	95	95	100	46	93	0
N.S.	1	1.00	0.75	0.92	1.56	1.56	1.64	0.75	1.52	0.00
time (sec)	N/A	0.042	0.016	0.047	0.629	0.402	0.681	0.176	1.104	0.001

Problem 576	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	27	35	72	72	76	25	74	0
N.S.	1	1.00	0.71	0.92	1.89	1.89	2.00	0.66	1.95	0.00
time (sec)	N/A	0.023	0.010	0.051	0.687	0.403	0.541	0.155	1.078	0.001

Problem 577	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	102	102	89	98	137	250	141	95	130	0
N.S.	1	1.00	0.87	0.96	1.34	2.45	1.38	0.93	1.27	0.00
time (sec)	N/A	0.074	0.065	0.059	0.906	0.419	0.766	0.155	1.129	0.001

Problem 578	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	157	157	142	186	202	427	275	168	180	0
N.S.	1	1.00	0.90	1.18	1.29	2.72	1.75	1.07	1.15	0.00
time (sec)	N/A	0.165	0.092	0.059	0.751	0.432	1.063	0.164	0.149	0.001

Problem 579	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	177	177	162	228	242	484	335	205	230	0
N.S.	1	1.00	0.92	1.29	1.37	2.73	1.89	1.16	1.30	0.00
time (sec)	N/A	0.203	0.177	0.080	0.776	0.441	1.189	0.160	1.206	0.001

Problem 580	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	49	44	361	27	29	78	431	0
N.S.	1	1.00	0.43	0.39	3.17	0.24	0.25	0.68	3.78	0.00
time (sec)	N/A	0.067	0.019	0.055	0.581	0.442	0.098	0.197	1.870	0.820

Problem 581	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	49	44	301	27	29	78	340	0
N.S.	1	1.00	0.43	0.39	2.64	0.24	0.25	0.68	2.98	0.00
time (sec)	N/A	0.059	0.016	0.044	0.589	0.432	0.099	0.154	1.304	0.752

Problem 582	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	49	44	241	27	29	78	271	0
N.S.	1	1.00	0.43	0.39	2.11	0.24	0.25	0.68	2.38	0.00
time (sec)	N/A	0.057	0.016	0.047	0.574	0.408	0.098	0.216	1.301	0.684

Problem 583	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	47	44	183	27	29	77	176	0
N.S.	1	1.00	0.41	0.39	1.61	0.24	0.25	0.68	1.54	0.00
time (sec)	N/A	0.046	0.016	0.046	0.509	0.414	0.098	0.191	1.282	0.572

Problem 584	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	45	42	125	24	26	74	77	0
N.S.	1	1.00	0.65	0.61	1.81	0.35	0.38	1.07	1.12	0.00
time (sec)	N/A	0.022	0.015	0.046	0.628	0.393	0.096	0.219	1.254	0.589

Problem 585	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	44	53	133	22	22	46	122	239
N.S.	1	1.00	0.42	0.50	1.27	0.21	0.21	0.44	1.16	2.28
time (sec)	N/A	0.040	0.020	0.070	0.507	0.395	0.131	0.164	1.366	0.502

Problem 586	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	44	42	175	26	19	47	207	1028
N.S.	1	1.00	0.43	0.41	1.70	0.25	0.18	0.46	2.01	9.98
time (sec)	N/A	0.042	0.018	0.062	0.716	0.407	0.170	0.184	1.464	1.133

Problem 587	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	48	37	172	29	27	50	134	270
N.S.	1	1.00	0.44	0.34	1.59	0.27	0.25	0.46	1.24	2.50
time (sec)	N/A	0.043	0.017	0.064	0.547	0.406	0.251	0.193	1.330	1.216

Problem 588	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	46	44	195	27	31	77	43	403
N.S.	1	1.00	0.61	0.59	2.60	0.36	0.41	1.03	0.57	5.37
time (sec)	N/A	0.045	0.014	0.049	0.490	0.408	0.298	0.161	1.114	6.413

Problem 589	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	47	44	255	27	31	77	43	911
N.S.	1	1.00	0.41	0.39	2.24	0.24	0.27	0.68	0.38	7.99
time (sec)	N/A	0.043	0.012	0.055	0.537	0.398	0.366	0.159	1.125	24.775

Problem 590	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	49	44	315	27	31	77	43	448
N.S.	1	1.00	0.43	0.39	2.76	0.24	0.27	0.68	0.38	3.93
time (sec)	N/A	0.046	0.015	0.053	0.650	0.396	0.425	0.223	1.122	1.523

Problem 591	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	49	44	375	27	31	77	43	518
N.S.	1	1.00	0.43	0.39	3.29	0.24	0.27	0.68	0.38	4.54
time (sec)	N/A	0.042	0.014	0.046	0.615	0.401	0.511	0.156	1.145	1.783

Problem 592	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	421	73	0	150	-1	0
N.S.	1	1.00	0.41	0.44	2.00	0.35	0.00	0.71	-0.00	0.00
time (sec)	N/A	0.126	0.034	0.058	0.697	0.423	0.000	0.181	0.000	1.088

Problem 593	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	361	73	0	150	-1	0
N.S.	1	1.00	0.41	0.44	1.72	0.35	0.00	0.71	-0.00	0.00
time (sec)	N/A	0.093	0.031	0.052	0.567	0.388	0.000	0.214	0.000	1.033

Problem 594	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	301	73	0	149	-1	0
N.S.	1	1.00	0.41	0.44	1.43	0.35	0.00	0.71	-0.00	0.00
time (sec)	N/A	0.088	0.029	0.047	0.565	0.412	0.000	0.196	0.000	0.967

Problem 595	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	241	73	0	150	-1	0
N.S.	1	1.00	0.41	0.44	1.15	0.35	0.00	0.71	-0.00	0.00
time (sec)	N/A	0.087	0.030	0.051	0.537	0.411	0.000	0.162	0.000	0.937

Problem 596	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	87	92	183	73	0	148	-1	0
N.S.	1	1.00	0.72	0.76	1.51	0.60	0.00	1.22	-0.01	0.00
time (sec)	N/A	0.068	0.028	0.054	0.658	0.421	0.000	0.162	0.000	0.910

Problem 597	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	83	90	125	69	0	144	42	0
N.S.	1	1.00	1.20	1.30	1.81	1.00	0.00	2.09	0.61	0.00
time (sec)	N/A	0.021	0.029	0.051	0.607	0.411	0.000	0.170	1.220	0.867

Problem 598	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	182	182	83	91	186	68	0	118	-1	361
N.S.	1	1.00	0.46	0.50	1.02	0.37	0.00	0.65	-0.01	1.98
time (sec)	N/A	0.062	0.037	0.059	0.477	0.419	0.000	0.162	0.000	0.719

Problem 599	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	89	96	283	75	0	119	-1	543
N.S.	1	1.00	0.44	0.48	1.42	0.38	0.00	0.60	-0.00	2.72
time (sec)	N/A	0.086	0.033	0.058	0.541	0.420	0.000	0.183	0.000	1.294

Problem 600	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	85	95	351	74	0	117	-1	1061
N.S.	1	1.00	0.42	0.48	1.76	0.37	0.00	0.58	-0.00	5.30
time (sec)	N/A	0.088	0.041	0.063	0.627	0.408	0.000	0.159	0.000	1.579

Problem 601	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	199	199	88	96	443	75	0	118	-1	511
N.S.	1	1.00	0.44	0.48	2.23	0.38	0.00	0.59	-0.01	2.57
time (sec)	N/A	0.086	0.033	0.063	0.665	0.413	0.000	0.167	0.000	2.037

Problem 602	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	187	187	88	94	379	75	0	121	-1	544
N.S.	1	1.00	0.47	0.50	2.03	0.40	0.00	0.65	-0.01	2.91
time (sec)	N/A	0.065	0.032	0.064	0.760	0.400	0.000	0.175	0.000	40.393

Problem 603	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	84	92	315	73	0	149	196	544
N.S.	1	1.00	1.09	1.19	4.09	0.95	0.00	1.94	2.55	7.06
time (sec)	N/A	0.046	0.028	0.049	0.805	0.419	0.000	0.161	1.172	1.932

Problem 604	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	375	73	0	149	195	614
N.S.	1	1.00	0.41	0.44	1.79	0.35	0.00	0.71	0.93	2.92
time (sec)	N/A	0.079	0.027	0.047	0.571	0.417	0.000	0.161	1.180	2.338

Problem 605	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	435	73	0	149	196	684
N.S.	1	1.00	0.41	0.44	2.07	0.35	0.00	0.71	0.93	3.26
time (sec)	N/A	0.078	0.028	0.048	0.554	0.410	0.000	0.233	1.193	2.469

Problem 606	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	495	73	0	149	196	754
N.S.	1	1.00	0.41	0.44	2.36	0.35	0.00	0.71	0.93	3.59
time (sec)	N/A	0.081	0.028	0.050	0.522	0.422	0.000	0.173	1.174	2.847

Problem 607	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	555	73	0	149	196	824
N.S.	1	1.00	0.41	0.44	2.64	0.35	0.00	0.71	0.93	3.92
time (sec)	N/A	0.078	0.029	0.051	0.570	0.416	0.000	0.183	1.165	2.897

Problem 608	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	615	73	0	149	196	894
N.S.	1	1.00	0.41	0.44	2.93	0.35	0.00	0.71	0.93	4.26
time (sec)	N/A	0.078	0.028	0.046	0.691	0.419	0.000	0.162	1.176	3.442

Problem 609	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	87	92	675	73	0	149	196	964
N.S.	1	1.00	0.41	0.44	3.21	0.35	0.00	0.71	0.93	4.59
time (sec)	N/A	0.079	0.029	0.058	0.653	0.408	0.000	0.197	1.163	3.806

Problem 610	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	303	303	125	140	481	118	0	220	-1	0
N.S.	1	1.00	0.41	0.46	1.59	0.39	0.00	0.73	-0.00	0.00
time (sec)	N/A	0.177	0.045	0.056	0.660	0.406	0.000	0.184	0.000	1.506

Problem 611	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	125	140	421	119	0	220	-1	0
N.S.	1	1.00	0.41	0.46	1.38	0.39	0.00	0.72	-0.00	0.00
time (sec)	N/A	0.141	0.042	0.073	0.524	0.438	0.000	0.173	0.000	1.356

Problem 612	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	125	140	361	119	0	222	-1	0
N.S.	1	1.00	0.41	0.46	1.18	0.39	0.00	0.73	-0.00	0.00
time (sec)	N/A	0.127	0.041	0.055	0.597	0.419	0.000	0.169	0.000	1.356

Problem 613	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	212	212	125	140	301	119	0	221	-1	0
N.S.	1	1.00	0.59	0.66	1.42	0.56	0.00	1.04	-0.00	0.00
time (sec)	N/A	0.119	0.040	0.048	0.754	0.416	0.000	0.171	0.000	1.338

Problem 614	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	125	140	241	118	0	220	-1	0
N.S.	1	1.00	0.75	0.84	1.44	0.71	0.00	1.32	-0.01	0.00
time (sec)	N/A	0.102	0.043	0.051	0.605	0.411	0.000	0.192	0.000	1.270

Problem 615	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	125	140	183	119	0	221	-1	0
N.S.	1	1.00	1.03	1.16	1.51	0.98	0.00	1.83	-0.01	0.00
time (sec)	N/A	0.076	0.039	0.051	0.678	0.406	0.000	0.169	0.000	1.249

Problem 616	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	121	138	125	115	0	217	-1	0
N.S.	1	1.00	1.75	2.00	1.81	1.67	0.00	3.14	-0.01	0.00
time (sec)	N/A	0.021	0.040	0.049	0.519	0.487	0.000	0.198	0.000	1.160

Problem 617	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	122	139	236	114	0	190	-1	485
N.S.	1	1.00	0.47	0.53	0.90	0.44	0.00	0.73	-0.00	1.85
time (sec)	N/A	0.077	0.057	0.060	0.535	0.425	0.000	0.209	0.000	0.811

Problem 618	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	294	294	128	144	386	121	0	191	-1	639
N.S.	1	1.00	0.44	0.49	1.31	0.41	0.00	0.65	-0.00	2.17
time (sec)	N/A	0.123	0.047	0.062	0.593	0.415	0.000	0.220	0.000	1.615

Problem 619	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	297	297	126	144	461	121	0	191	-1	719
N.S.	1	1.00	0.42	0.48	1.55	0.41	0.00	0.64	-0.00	2.42
time (sec)	N/A	0.121	0.059	0.066	0.580	0.409	0.000	0.167	0.000	2.200

Problem 620	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	297	297	127	144	557	121	0	190	-1	1633
N.S.	1	1.00	0.43	0.48	1.88	0.41	0.00	0.64	-0.00	5.50
time (sec)	N/A	0.122	0.052	0.065	0.638	0.414	0.000	0.204	0.000	16.568

Problem 621	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	296	296	126	144	615	121	0	188	-1	859
N.S.	1	1.00	0.43	0.49	2.08	0.41	0.00	0.64	-0.00	2.90
time (sec)	N/A	0.129	0.042	0.365	0.617	0.423	0.000	0.170	0.000	2.904

Problem 622	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	293	293	127	144	673	121	0	188	-1	911
N.S.	1	1.00	0.43	0.49	2.30	0.41	0.00	0.64	-0.00	3.11
time (sec)	N/A	0.116	0.057	0.069	0.642	0.414	0.000	0.193	0.000	3.714

Problem 623	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	127	142	554	121	0	191	-1	2809
N.S.	1	1.00	0.48	0.53	2.07	0.45	0.00	0.72	-0.00	10.52
time (sec)	N/A	0.084	0.045	0.064	0.571	0.409	0.000	0.169	0.000	5.563

Problem 624	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	122	140	435	119	0	221	284	780
N.S.	1	1.00	1.58	1.82	5.65	1.55	0.00	2.87	3.69	10.13
time (sec)	N/A	0.047	0.039	0.082	0.578	0.402	0.000	0.223	1.327	2.800

Problem 625	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	125	140	495	119	0	221	284	850
N.S.	1	1.00	0.96	1.08	3.81	0.92	0.00	1.70	2.18	6.54
time (sec)	N/A	0.073	0.038	0.052	0.632	0.439	0.000	0.171	1.308	3.290

Problem 626	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	125	140	555	119	0	221	284	920
N.S.	1	1.00	0.41	0.46	1.83	0.39	0.00	0.73	0.93	3.03
time (sec)	N/A	0.117	0.038	0.053	0.735	0.406	0.000	0.174	1.303	3.515

Problem 627	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	125	140	615	119	0	221	283	990
N.S.	1	1.00	0.41	0.46	2.01	0.39	0.00	0.72	0.92	3.24
time (sec)	N/A	0.112	0.038	0.050	0.661	0.413	0.000	0.218	1.309	3.801

Problem 628	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	125	140	675	119	0	221	284	1060
N.S.	1	1.00	0.41	0.46	2.21	0.39	0.00	0.72	0.93	3.46
time (sec)	N/A	0.117	0.037	0.056	0.736	0.412	0.000	0.203	1.387	4.080

Problem 629	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	125	140	735	119	0	221	284	1130
N.S.	1	1.00	0.41	0.46	2.40	0.39	0.00	0.72	0.93	3.69
time (sec)	N/A	0.113	0.038	0.055	0.832	0.409	0.000	0.221	2.191	4.965

Problem 630	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	125	140	795	119	0	221	284	1200
N.S.	1	1.00	0.41	0.46	2.62	0.39	0.00	0.73	0.93	3.95
time (sec)	N/A	0.117	0.041	0.055	0.743	0.392	0.000	0.200	1.232	4.787

Problem 631	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	258	258	116	138	272	117	109	185	-1	378
N.S.	1	1.00	0.45	0.53	1.05	0.45	0.42	0.72	-0.00	1.47
time (sec)	N/A	0.154	0.059	0.059	0.569	0.407	0.290	0.164	0.000	0.940

Problem 632	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	212	212	96	114	212	94	85	148	-1	330
N.S.	1	1.00	0.45	0.54	1.00	0.44	0.40	0.70	-0.00	1.56
time (sec)	N/A	0.115	0.044	0.054	0.748	0.405	0.265	0.160	0.000	0.712

Problem 633	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	77	90	125	71	61	113	-1	279
N.S.	1	1.00	0.46	0.54	0.75	0.43	0.37	0.68	-0.01	1.68
time (sec)	N/A	0.090	0.036	0.051	0.537	0.412	0.241	0.153	0.000	0.619

Problem 634	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	57	66	72	47	37	75	-1	231
N.S.	1	1.00	0.48	0.55	0.60	0.39	0.31	0.62	-0.01	1.92
time (sec)	N/A	0.061	0.026	0.051	0.759	0.394	0.209	0.152	0.000	0.460

Problem 635	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	40	43	52	25	20	45	79	196
N.S.	1	1.00	0.58	0.62	0.75	0.36	0.29	0.65	1.14	2.84
time (sec)	N/A	0.025	0.017	0.049	0.608	0.410	0.180	0.163	1.466	0.424

Problem 636	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	44	49	53	28	41	49	68	186
N.S.	1	1.00	0.55	0.61	0.66	0.35	0.51	0.61	0.85	2.32
time (sec)	N/A	0.050	0.019	0.058	0.558	0.425	0.436	0.156	1.447	0.435

Problem 637	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	57	61	106	41	95	81	117	480
N.S.	1	1.00	0.50	0.54	0.94	0.36	0.84	0.72	1.04	4.25
time (sec)	N/A	0.065	0.033	0.064	0.512	0.432	0.398	0.157	1.489	0.878

Problem 638	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	79	92	164	69	131	117	-1	1251
N.S.	1	1.00	0.49	0.57	1.01	0.43	0.81	0.72	-0.01	7.72
time (sec)	N/A	0.085	0.041	0.064	0.593	0.495	0.477	0.155	0.000	3.819

Problem 639	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	211	211	102	119	224	94	165	153	-1	3036
N.S.	1	1.00	0.48	0.56	1.06	0.45	0.78	0.73	-0.00	14.39
time (sec)	N/A	0.104	0.050	0.066	0.667	0.427	0.527	0.160	0.000	27.259

Problem 640	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	256	256	121	143	284	117	189	188	-1	4265
N.S.	1	1.00	0.47	0.56	1.11	0.46	0.74	0.73	-0.00	16.66
time (sec)	N/A	0.120	0.060	0.073	0.539	0.421	0.594	0.231	0.000	144.242

Problem 641	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	249	249	140	217	303	197	0	0	-1	3062
N.S.	1	1.00	0.56	0.87	1.22	0.79	0.00	0.00	-0.00	12.30
time (sec)	N/A	0.181	0.062	0.072	0.589	0.424	0.000	0.000	0.000	2.456

Problem 642	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	202	202	117	191	242	171	0	0	-1	2737
N.S.	1	1.00	0.58	0.95	1.20	0.85	0.00	0.00	-0.00	13.55
time (sec)	N/A	0.138	0.052	0.105	0.512	0.410	0.000	0.000	0.000	2.185

Problem 643	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	89	153	154	134	0	0	-1	2422
N.S.	1	1.00	0.58	0.99	1.00	0.87	0.00	0.00	-0.01	15.73
time (sec)	N/A	0.106	0.059	0.092	0.532	0.407	0.000	0.000	0.000	2.002

Problem 644	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	65	83	89	81	0	0	-1	1415
N.S.	1	1.00	0.58	0.73	0.79	0.72	0.00	0.00	-0.01	12.52
time (sec)	N/A	0.074	0.027	0.063	0.501	0.426	0.000	0.000	0.000	1.323

Problem 645	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	39	32	56	38	0	0	42	178
N.S.	1	1.00	0.57	0.46	0.81	0.55	0.00	0.00	0.61	2.58
time (sec)	N/A	0.022	0.015	0.053	0.458	0.414	0.000	0.000	1.192	0.729

Problem 646	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	80	116	96	109	0	0	-1	241
N.S.	1	1.00	0.57	0.83	0.69	0.78	0.00	0.00	-0.01	1.72
time (sec)	N/A	0.089	0.036	0.067	0.473	0.430	0.000	0.000	0.000	0.755

Problem 647	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	196	196	110	221	191	187	0	0	-1	1428
N.S.	1	1.00	0.56	1.13	0.97	0.95	0.00	0.00	-0.01	7.29
time (sec)	N/A	0.136	0.063	0.073	0.521	0.437	0.000	0.000	0.000	5.356

Problem 648	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	243	243	133	262	250	225	0	0	-1	1948
N.S.	1	1.00	0.55	1.08	1.03	0.93	0.00	0.00	-0.00	8.02
time (sec)	N/A	0.161	0.074	0.063	0.487	0.425	0.000	0.000	0.000	5.970

Problem 649	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	245	245	127	273	211	252	0	0	-1	4635
N.S.	1	1.00	0.52	1.11	0.86	1.03	0.00	0.00	-0.00	18.92
time (sec)	N/A	0.179	0.066	0.072	0.788	0.419	0.000	0.000	0.000	4.999

Problem 650	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	188	188	103	168	201	175	0	0	-1	2849
N.S.	1	1.00	0.55	0.89	1.07	0.93	0.00	0.00	-0.01	15.15
time (sec)	N/A	0.099	0.048	0.061	0.652	0.428	0.000	0.000	0.000	3.345

Problem 651	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	73	77	156	105	0	0	201	381
N.S.	1	1.00	0.95	1.00	2.03	1.36	0.00	0.00	2.61	4.95
time (sec)	N/A	0.051	0.033	0.050	0.517	0.439	0.000	0.000	1.270	1.294

Problem 652	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	56	52	90	80	0	0	62	333
N.S.	1	1.00	0.46	0.43	0.74	0.66	0.00	0.00	0.51	2.75
time (sec)	N/A	0.072	0.023	0.051	0.551	0.436	0.000	0.000	1.248	1.074

Problem 653	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	39	33	56	61	0	0	43	281
N.S.	1	1.00	0.55	0.46	0.79	0.86	0.00	0.00	0.61	3.96
time (sec)	N/A	0.021	0.020	0.055	0.519	0.416	0.000	0.000	1.203	0.981

Problem 654	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	104	205	138	203	0	0	-1	391
N.S.	1	1.00	0.50	0.98	0.66	0.97	0.00	0.00	-0.00	1.86
time (sec)	N/A	0.120	0.062	0.071	0.486	0.410	0.000	0.000	0.000	1.170

Problem 655	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	282	282	148	397	276	347	0	0	-1	0
N.S.	1	1.00	0.52	1.41	0.98	1.23	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.207	0.108	0.061	0.465	0.445	0.000	0.000	0.000	180.067

Problem 656	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	52	52	51	56	80	53	51	69
N.S.	1	1.00	0.83	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.028	0.022	0.053	0.586	0.420	8.080	0.150	0.061	0.042

Problem 657	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	52	52	51	56	80	53	51	69
N.S.	1	1.00	0.83	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.028	0.017	0.048	0.570	0.418	3.979	0.164	0.047	0.034

Problem 658	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	52	52	51	56	80	53	51	69
N.S.	1	1.00	0.83	0.83	0.81	0.89	1.27	0.84	0.81	1.10
time (sec)	N/A	0.028	0.021	0.052	0.526	0.401	1.774	0.152	0.048	0.033

Problem 659	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	52	52	51	54	66	53	51	69
N.S.	1	1.00	0.83	0.83	0.81	0.86	1.05	0.84	0.81	1.10
time (sec)	N/A	0.029	0.017	0.053	0.553	0.399	2.900	0.153	0.053	0.039

Problem 660	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	51	52	51	51	78	53	51	69
N.S.	1	1.00	0.84	0.85	0.84	0.84	1.28	0.87	0.84	1.13
time (sec)	N/A	0.027	0.021	0.052	0.478	0.424	0.463	0.180	0.047	0.033

Problem 661	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	49	52	51	51	75	53	51	55
N.S.	1	1.00	0.83	0.88	0.86	0.86	1.27	0.90	0.86	0.93
time (sec)	N/A	0.027	0.015	0.051	0.517	0.411	0.665	0.158	0.053	0.038

Problem 662	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	47	51	51	50	73	51	51	54
N.S.	1	1.00	0.80	0.86	0.86	0.85	1.24	0.86	0.86	0.92
time (sec)	N/A	0.026	0.016	0.052	0.525	0.429	0.803	0.151	1.126	0.037

Problem 663	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	47	52	52	51	75	52	52	55
N.S.	1	1.00	0.80	0.88	0.88	0.86	1.27	0.88	0.88	0.93
time (sec)	N/A	0.026	0.018	0.048	0.506	0.421	1.472	0.152	0.056	0.043

Problem 664	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	50	52	51	51	80	51	51	55
N.S.	1	1.00	0.82	0.85	0.84	0.84	1.31	0.84	0.84	0.90
time (sec)	N/A	0.027	0.017	0.051	0.542	0.407	3.067	0.177	1.118	0.040

Problem 665	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	81	100	99	104	148	101	91	125
N.S.	1	1.00	0.73	0.90	0.89	0.94	1.33	0.91	0.82	1.13
time (sec)	N/A	0.058	0.069	0.054	0.602	0.429	15.901	0.188	0.049	0.058

Problem 666	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	81	100	99	104	148	101	91	125
N.S.	1	1.00	0.73	0.90	0.89	0.94	1.33	0.91	0.82	1.13
time (sec)	N/A	0.055	0.076	0.052	0.592	0.412	8.746	0.156	0.037	0.051

Problem 667	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	81	100	99	104	148	101	91	125
N.S.	1	1.00	0.73	0.90	0.89	0.94	1.33	0.91	0.82	1.13
time (sec)	N/A	0.052	0.064	0.055	0.497	0.412	4.299	0.153	0.038	0.055

Problem 668	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	81	100	99	102	124	101	91	125
N.S.	1	1.00	0.73	0.90	0.89	0.92	1.12	0.91	0.82	1.13
time (sec)	N/A	0.054	0.059	0.056	0.556	0.423	4.383	0.152	0.037	0.055

Problem 669	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	89	100	99	99	146	101	91	125
N.S.	1	1.00	0.82	0.92	0.91	0.91	1.34	0.93	0.83	1.15
time (sec)	N/A	0.055	0.033	0.054	0.474	0.426	1.583	0.154	0.038	0.053

Problem 670	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	87	100	99	99	141	101	91	103
N.S.	1	1.00	0.81	0.93	0.93	0.93	1.32	0.94	0.85	0.96
time (sec)	N/A	0.051	0.026	0.053	0.616	0.410	1.799	0.198	0.041	0.065

Problem 671	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	86	100	99	99	139	99	92	103
N.S.	1	1.00	0.80	0.93	0.93	0.93	1.30	0.93	0.86	0.96
time (sec)	N/A	0.050	0.034	0.052	0.512	0.424	2.156	0.163	0.042	0.072

Problem 672	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	85	100	100	99	141	100	95	103
N.S.	1	1.00	0.79	0.93	0.93	0.93	1.32	0.93	0.89	0.96
time (sec)	N/A	0.052	0.029	0.054	0.485	0.405	3.137	0.194	0.066	0.065

Problem 673	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	85	100	100	99	139	100	98	103
N.S.	1	1.00	0.79	0.93	0.93	0.93	1.30	0.93	0.92	0.96
time (sec)	N/A	0.052	0.028	0.052	0.581	0.420	4.103	0.174	0.065	0.067

Problem 674	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	131	148	147	152	214	149	131	181
N.S.	1	1.00	0.82	0.93	0.92	0.96	1.35	0.94	0.82	1.14
time (sec)	N/A	0.090	0.100	0.054	0.535	0.408	28.782	0.165	0.065	0.080

Problem 675	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	128	148	147	152	214	149	131	181
N.S.	1	1.00	0.81	0.93	0.92	0.96	1.35	0.94	0.82	1.14
time (sec)	N/A	0.080	0.088	0.059	0.569	0.410	19.548	0.156	0.052	0.072

Problem 676	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	103	148	147	152	214	149	131	181
N.S.	1	1.00	0.65	0.93	0.92	0.96	1.35	0.94	0.82	1.14
time (sec)	N/A	0.085	0.086	0.061	0.537	0.415	10.107	0.159	0.051	0.072

Problem 677	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	103	148	147	150	182	149	131	181
N.S.	1	1.00	0.65	0.93	0.92	0.94	1.14	0.94	0.82	1.14
time (sec)	N/A	0.081	0.084	0.052	0.505	0.423	5.908	0.174	0.051	0.070

Problem 678	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	157	157	103	148	147	147	211	149	131	181
N.S.	1	1.00	0.66	0.94	0.94	0.94	1.34	0.95	0.83	1.15
time (sec)	N/A	0.080	0.088	0.054	0.605	0.405	4.110	0.158	0.050	0.071

Problem 679	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	101	148	147	147	204	149	131	151
N.S.	1	1.00	0.67	0.98	0.97	0.97	1.35	0.99	0.87	1.00
time (sec)	N/A	0.079	0.077	0.053	0.556	0.402	4.601	0.162	0.054	0.083

Problem 680	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	97	148	147	147	204	147	132	151
N.S.	1	1.00	0.63	0.97	0.96	0.96	1.33	0.96	0.86	0.99
time (sec)	N/A	0.079	0.070	0.056	0.662	0.395	5.441	0.166	0.054	0.093

Problem 681	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	124	148	148	147	204	148	135	151
N.S.	1	1.00	0.80	0.95	0.95	0.95	1.32	0.95	0.87	0.97
time (sec)	N/A	0.083	0.040	0.049	0.542	0.411	7.323	0.195	0.054	0.084

Problem 682	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	123	148	148	147	202	148	138	151
N.S.	1	1.00	0.81	0.98	0.98	0.97	1.34	0.98	0.91	1.00
time (sec)	N/A	0.082	0.039	0.055	0.561	0.417	9.615	0.179	1.147	0.084

Problem 683	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	123	148	148	147	204	148	141	151
N.S.	1	1.00	0.79	0.95	0.95	0.95	1.32	0.95	0.91	0.97
time (sec)	N/A	0.080	0.039	0.053	0.463	0.420	12.625	0.160	1.157	0.101

Problem 684	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	128	163	139	341	1197	146	209	143
N.S.	1	1.00	0.83	1.06	0.90	2.21	7.77	0.95	1.36	0.93
time (sec)	N/A	0.083	0.089	0.069	1.321	0.433	153.514	0.186	0.072	0.163

Problem 685	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	110	139	115	290	1068	122	146	119
N.S.	1	1.00	0.85	1.07	0.88	2.23	8.22	0.94	1.12	0.92
time (sec)	N/A	0.066	0.071	0.096	1.208	0.428	52.862	0.181	1.147	0.143

Problem 686	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	88	113	88	231	932	95	107	95
N.S.	1	1.00	0.81	1.05	0.81	2.14	8.63	0.88	0.99	0.88
time (sec)	N/A	0.048	0.059	0.133	1.350	0.435	14.338	0.190	0.083	0.125

Problem 687	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	67	87	65	198	782	65	62	67
N.S.	1	1.00	0.79	1.02	0.76	2.33	9.20	0.76	0.73	0.79
time (sec)	N/A	0.037	0.041	0.076	1.330	0.441	10.573	0.156	0.094	0.105

Problem 688	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	63	63	63	69	58	177	716	60	51	64
N.S.	1	1.00	1.00	1.10	0.92	2.81	11.37	0.95	0.81	1.02
time (sec)	N/A	0.025	0.037	0.069	1.433	0.432	8.357	0.188	1.179	0.098

Problem 689	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	88	88	59	87	65	215	884	60	65	67
N.S.	1	1.00	0.67	0.99	0.74	2.44	10.05	0.68	0.74	0.76
time (sec)	N/A	0.037	0.017	0.086	1.411	0.435	19.074	0.157	1.166	0.098

Problem 690	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	64	113	93	262	983	85	81	98
N.S.	1	1.00	0.60	1.06	0.87	2.45	9.19	0.79	0.76	0.92
time (sec)	N/A	0.049	0.018	0.073	1.507	0.437	53.229	0.158	1.181	0.123

Problem 691	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	64	139	118	319	1127	110	103	122
N.S.	1	1.00	0.49	1.06	0.90	2.44	8.60	0.84	0.79	0.93
time (sec)	N/A	0.063	0.019	0.069	1.317	0.430	155.213	0.162	1.194	0.143

Problem 692	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	64	163	143	372	0	136	121	146
N.S.	1	1.00	0.42	1.07	0.93	2.43	0.00	0.89	0.79	0.95
time (sec)	N/A	0.079	0.019	0.076	1.355	0.422	0.000	0.166	1.265	0.157

Problem 693	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	173	173	61	190	161	467	0	143	176	146
N.S.	1	1.00	0.35	1.10	0.93	2.70	0.00	0.83	1.02	0.84
time (sec)	N/A	0.078	0.031	0.073	1.173	0.435	0.000	0.169	1.224	0.264

Problem 694	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	61	163	136	437	2649	111	131	118
N.S.	1	1.00	0.40	1.07	0.89	2.86	17.31	0.73	0.86	0.77
time (sec)	N/A	0.065	0.027	0.071	1.200	0.444	151.180	0.165	1.245	0.228

Problem 695	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	105	111	130	411	2547	107	112	111
N.S.	1	1.00	0.81	0.85	1.00	3.16	19.59	0.82	0.86	0.85
time (sec)	N/A	0.056	0.081	0.095	1.104	0.462	84.208	0.162	1.252	0.222

Problem 696	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	127	127	60	111	128	399	2550	106	107	110
N.S.	1	1.00	0.47	0.87	1.01	3.14	20.08	0.83	0.84	0.87
time (sec)	N/A	0.057	0.024	0.095	1.226	0.444	49.696	0.161	1.236	0.212

Problem 697	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	59	112	129	409	2548	107	112	111
N.S.	1	1.00	0.45	0.86	0.99	3.15	19.60	0.82	0.86	0.85
time (sec)	N/A	0.057	0.025	0.065	1.239	0.444	70.821	0.207	1.226	0.180

Problem 698	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	157	157	59	163	132	445	2917	110	147	120
N.S.	1	1.00	0.38	1.04	0.84	2.83	18.58	0.70	0.94	0.76
time (sec)	N/A	0.065	0.035	0.086	1.148	0.448	144.728	0.165	1.277	0.215

Problem 699	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	178	178	61	190	158	482	0	136	145	148
N.S.	1	1.00	0.34	1.07	0.89	2.71	0.00	0.76	0.81	0.83
time (sec)	N/A	0.079	0.028	0.076	1.396	0.452	0.000	0.168	1.250	0.264

Problem 700	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	61	266	231	703	0	191	246	194
N.S.	1	1.00	0.25	1.11	0.96	2.93	0.00	0.80	1.02	0.81
time (sec)	N/A	0.117	0.035	0.079	1.183	0.474	0.000	0.182	1.241	0.413

Problem 701	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	213	213	61	239	206	673	0	159	200	166
N.S.	1	1.00	0.29	1.12	0.97	3.16	0.00	0.75	0.94	0.78
time (sec)	N/A	0.096	0.032	0.080	1.340	0.452	0.000	0.169	0.177	0.393

Problem 702	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	190	190	134	150	198	639	0	155	173	159
N.S.	1	1.00	0.71	0.79	1.04	3.36	0.00	0.82	0.91	0.84
time (sec)	N/A	0.085	0.179	0.064	1.381	0.453	0.000	0.169	1.275	0.364

Problem 703	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	61	154	205	657	0	156	175	160
N.S.	1	1.00	0.31	0.79	1.05	3.37	0.00	0.80	0.90	0.82
time (sec)	N/A	0.090	0.031	0.073	1.545	0.458	0.000	0.168	1.241	0.354

Problem 704	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	185	185	60	143	194	619	0	154	161	158
N.S.	1	1.00	0.32	0.77	1.05	3.35	0.00	0.83	0.87	0.85
time (sec)	N/A	0.093	0.029	0.067	1.187	0.459	0.000	0.164	1.230	0.332

Problem 705	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	61	154	205	657	0	156	174	160
N.S.	1	1.00	0.31	0.79	1.05	3.37	0.00	0.80	0.89	0.82
time (sec)	N/A	0.089	0.029	0.075	1.381	0.465	0.000	0.180	1.256	0.281

Problem 706	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	190	190	59	150	198	637	0	155	172	184
N.S.	1	1.00	0.31	0.79	1.04	3.35	0.00	0.82	0.91	0.97
time (sec)	N/A	0.084	0.030	0.073	1.187	0.451	0.000	0.177	1.239	0.244

Problem 707	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	219	219	59	239	200	673	0	158	209	168
N.S.	1	1.00	0.27	1.09	0.91	3.07	0.00	0.72	0.95	0.77
time (sec)	N/A	0.098	0.030	0.107	1.252	0.478	0.000	0.207	1.360	0.385

Problem 708	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	61	266	233	734	0	180	207	197
N.S.	1	1.00	0.25	1.11	0.97	3.06	0.00	0.75	0.86	0.82
time (sec)	N/A	0.116	0.031	0.096	1.442	0.457	0.000	0.176	1.330	0.434

Problem 709	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	51	44	35	32	0	53	-1	59
N.S.	1	1.00	0.42	0.37	0.29	0.27	0.00	0.44	-0.01	0.49
time (sec)	N/A	0.047	0.032	0.053	0.544	0.419	0.000	0.182	0.000	9.969

Problem 710	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	51	44	35	32	0	53	-1	59
N.S.	1	1.00	0.42	0.37	0.29	0.27	0.00	0.44	-0.01	0.49
time (sec)	N/A	0.046	0.026	0.048	0.621	0.405	0.000	0.226	0.000	8.401

Problem 711	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	51	44	35	32	0	53	-1	59
N.S.	1	1.00	0.42	0.37	0.29	0.27	0.00	0.44	-0.01	0.49
time (sec)	N/A	0.043	0.027	0.048	0.517	0.414	0.000	0.209	0.000	6.657

Problem 712	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	51	44	35	30	0	53	-1	59
N.S.	1	1.00	0.42	0.37	0.29	0.25	0.00	0.44	-0.01	0.49
time (sec)	N/A	0.045	0.026	0.052	0.592	0.406	0.000	0.155	0.000	5.825

Problem 713	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	49	44	34	27	0	53	56	59
N.S.	1	1.00	0.42	0.37	0.29	0.23	0.00	0.45	0.47	0.50
time (sec)	N/A	0.042	0.029	0.049	0.496	0.409	0.000	0.163	1.312	5.143

Problem 714	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	47	44	33	26	0	53	53	48
N.S.	1	1.00	0.41	0.38	0.28	0.22	0.00	0.46	0.46	0.41
time (sec)	N/A	0.043	0.026	0.051	0.621	0.421	0.000	0.184	1.321	5.040

Problem 715	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	46	43	33	27	0	51	54	49
N.S.	1	1.00	0.40	0.37	0.28	0.23	0.00	0.44	0.47	0.42
time (sec)	N/A	0.044	0.026	0.054	0.637	0.421	0.000	0.161	1.364	9.418

Problem 716	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	48	44	34	27	0	51	54	49
N.S.	1	1.00	0.41	0.37	0.29	0.23	0.00	0.43	0.46	0.42
time (sec)	N/A	0.043	0.025	0.058	0.568	0.404	0.000	0.174	1.358	16.102

Problem 717	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	51	44	35	27	0	51	54	49
N.S.	1	1.00	0.42	0.37	0.29	0.22	0.00	0.42	0.45	0.41
time (sec)	N/A	0.043	0.025	0.049	0.664	0.418	0.000	0.192	1.354	22.222

Problem 718	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	220	220	89	92	137	78	0	125	-1	115
N.S.	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00	0.52
time (sec)	N/A	0.089	0.042	0.054	0.568	0.418	0.000	0.197	0.000	13.748

Problem 719	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	220	220	89	92	137	78	0	125	-1	115
N.S.	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00	0.52
time (sec)	N/A	0.081	0.036	0.049	0.625	0.421	0.000	0.172	0.000	11.470

Problem 720	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	220	220	89	92	137	78	0	125	-1	115
N.S.	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00	0.52
time (sec)	N/A	0.084	0.036	0.053	0.537	0.428	0.000	0.161	0.000	10.277

Problem 721	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	220	220	89	92	137	76	0	125	-1	115
N.S.	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00	0.52
time (sec)	N/A	0.083	0.035	0.056	0.623	0.413	0.000	0.332	0.000	8.775

Problem 722	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	88	92	136	73	0	125	-1	115
N.S.	1	1.00	0.40	0.42	0.62	0.33	0.00	0.57	-0.00	0.53
time (sec)	N/A	0.080	0.038	0.049	0.619	0.414	0.000	0.190	0.000	7.339

Problem 723	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	85	92	133	73	0	125	107	97
N.S.	1	1.00	0.40	0.43	0.62	0.34	0.00	0.58	0.50	0.45
time (sec)	N/A	0.086	0.032	0.050	0.557	0.432	0.000	0.169	1.635	6.453

Problem 724	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	84	92	130	73	0	123	-1	97
N.S.	1	1.00	0.39	0.43	0.60	0.34	0.00	0.57	-0.00	0.45
time (sec)	N/A	0.083	0.033	0.048	0.646	0.421	0.000	0.164	0.000	9.929

Problem 725	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	83	92	131	73	0	124	-1	97
N.S.	1	1.00	0.38	0.43	0.61	0.34	0.00	0.57	-0.00	0.45
time (sec)	N/A	0.079	0.034	0.067	0.649	0.415	0.000	0.170	0.000	14.378

Problem 726	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	84	92	134	73	0	124	-1	97
N.S.	1	1.00	0.39	0.43	0.63	0.34	0.00	0.58	-0.00	0.45
time (sec)	N/A	0.080	0.036	0.059	0.602	0.413	0.000	0.179	0.000	16.920

Problem 727	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	110	140	241	124	0	197	-1	171
N.S.	1	1.00	0.34	0.44	0.75	0.39	0.00	0.62	-0.00	0.53
time (sec)	N/A	0.134	0.090	0.054	0.677	0.429	0.000	0.208	0.000	20.505

Problem 728	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	110	140	241	124	0	197	-1	171
N.S.	1	1.00	0.34	0.44	0.75	0.39	0.00	0.62	-0.00	0.53
time (sec)	N/A	0.122	0.082	0.051	0.728	0.430	0.000	0.186	0.000	16.131

Problem 729	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	127	140	241	124	0	197	-1	171
N.S.	1	1.00	0.40	0.44	0.75	0.39	0.00	0.62	-0.00	0.53
time (sec)	N/A	0.120	0.051	0.051	0.690	0.439	0.000	0.169	0.000	13.341

Problem 730	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	127	140	241	122	0	197	-1	171
N.S.	1	1.00	0.40	0.44	0.75	0.38	0.00	0.62	-0.00	0.53
time (sec)	N/A	0.120	0.049	0.050	0.778	0.429	0.000	0.171	0.000	11.350

Problem 731	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	316	316	126	140	240	119	0	197	-1	171
N.S.	1	1.00	0.40	0.44	0.76	0.38	0.00	0.62	-0.00	0.54
time (sec)	N/A	0.119	0.057	0.050	0.769	0.416	0.000	0.170	0.000	10.451

Problem 732	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	314	314	124	140	238	119	0	197	140	145
N.S.	1	1.00	0.39	0.45	0.76	0.38	0.00	0.63	0.45	0.46
time (sec)	N/A	0.119	0.044	0.059	0.640	0.466	0.000	0.179	1.853	9.360

Problem 733	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	314	314	122	140	236	119	0	195	-1	145
N.S.	1	1.00	0.39	0.45	0.75	0.38	0.00	0.62	-0.00	0.46
time (sec)	N/A	0.122	0.044	0.056	0.572	0.605	0.000	0.178	0.000	11.697

Problem 734	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	316	316	122	140	234	119	0	196	-1	145
N.S.	1	1.00	0.39	0.44	0.74	0.38	0.00	0.62	-0.00	0.46
time (sec)	N/A	0.119	0.045	0.052	0.576	0.557	0.000	0.177	0.000	15.279

Problem 735	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	316	316	122	140	234	119	0	196	-1	145
N.S.	1	1.00	0.39	0.44	0.74	0.38	0.00	0.62	-0.00	0.46
time (sec)	N/A	0.120	0.046	0.052	0.631	0.438	0.000	0.176	0.000	17.440

Problem 736	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	286	286	139	197	257	276	0	205	-1	153
N.S.	1	1.00	0.49	0.69	0.90	0.97	0.00	0.72	-0.00	0.53
time (sec)	N/A	0.135	0.080	0.061	1.517	0.467	0.000	0.374	0.000	17.416

Problem 737	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	120	163	203	229	0	169	-1	148
N.S.	1	1.00	0.50	0.68	0.85	0.96	0.00	0.71	-0.00	0.62
time (sec)	N/A	0.108	0.063	0.073	1.743	0.465	0.000	0.199	0.000	11.696

Problem 738	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	190	190	100	129	147	180	0	133	-1	105
N.S.	1	1.00	0.53	0.68	0.77	0.95	0.00	0.70	-0.01	0.55
time (sec)	N/A	0.086	0.052	0.060	1.592	0.452	0.000	0.173	0.000	10.357

Problem 739	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	82	94	122	129	0	94	-1	84
N.S.	1	1.00	0.57	0.65	0.85	0.90	0.00	0.65	-0.01	0.58
time (sec)	N/A	0.070	0.040	0.066	1.342	0.430	0.000	0.159	0.000	9.266

Problem 740	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	72	65	140	102	0	57	-1	66
N.S.	1	1.00	0.73	0.66	1.41	1.03	0.00	0.58	-0.01	0.67
time (sec)	N/A	0.052	0.036	0.057	1.540	0.447	0.000	0.160	0.000	6.898

Problem 741	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	79	71	180	112	0	57	-1	66
N.S.	1	1.00	0.80	0.72	1.82	1.13	0.00	0.58	-0.01	0.67
time (sec)	N/A	0.057	0.031	0.064	1.607	0.459	0.000	0.158	0.000	5.916

Problem 742	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	59	97	244	146	0	85	-1	85
N.S.	1	1.00	0.41	0.67	1.69	1.01	0.00	0.59	-0.01	0.59
time (sec)	N/A	0.075	0.021	0.064	1.671	0.454	0.000	0.169	0.000	15.801

Problem 743	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	190	190	60	131	305	195	0	122	-1	108
N.S.	1	1.00	0.32	0.69	1.61	1.03	0.00	0.64	-0.01	0.57
time (sec)	N/A	0.094	0.023	0.064	1.653	0.555	0.000	0.165	0.000	24.835

Problem 744	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	60	165	357	246	0	158	-1	132
N.S.	1	1.00	0.25	0.69	1.50	1.03	0.00	0.66	-0.00	0.55
time (sec)	N/A	0.116	0.022	0.074	1.509	0.656	0.000	0.182	0.000	34.258

Problem 745	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	302	302	79	283	273	408	0	170	-1	163
N.S.	1	1.00	0.26	0.94	0.90	1.35	0.00	0.56	-0.00	0.54
time (sec)	N/A	0.151	0.034	0.074	1.859	0.475	0.000	0.222	0.000	28.480

Problem 746	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	255	255	79	247	252	349	0	143	-1	139
N.S.	1	1.00	0.31	0.97	0.99	1.37	0.00	0.56	-0.00	0.55
time (sec)	N/A	0.121	0.030	0.070	1.702	0.428	0.000	0.258	0.000	21.470

Problem 747	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	79	208	237	319	0	111	-1	111
N.S.	1	1.00	0.38	1.01	1.15	1.55	0.00	0.54	-0.00	0.54
time (sec)	N/A	0.111	0.032	0.067	1.579	0.441	0.000	0.207	0.000	14.462

Problem 748	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	105	194	218	291	0	98	-1	103
N.S.	1	1.00	0.66	1.23	1.38	1.84	0.00	0.62	-0.01	0.65
time (sec)	N/A	0.086	0.050	0.070	1.680	0.449	0.000	0.302	0.000	10.318

Problem 749	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	106	194	234	291	0	98	-1	103
N.S.	1	1.00	0.67	1.23	1.48	1.84	0.00	0.62	-0.01	0.65
time (sec)	N/A	0.086	0.049	0.066	1.710	0.450	0.000	0.233	0.000	12.604

Problem 750	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	77	214	280	331	0	110	-1	113
N.S.	1	1.00	0.37	1.02	1.34	1.58	0.00	0.53	-0.00	0.54
time (sec)	N/A	0.109	0.032	0.073	1.653	0.426	0.000	0.209	0.000	17.128

Problem 751	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	255	255	79	253	341	380	0	132	-1	142
N.S.	1	1.00	0.31	0.99	1.34	1.49	0.00	0.52	-0.00	0.56
time (sec)	N/A	0.129	0.031	0.069	1.663	0.447	0.000	0.207	0.000	27.609

Problem 752	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	302	302	79	289	404	437	0	159	-1	166
N.S.	1	1.00	0.26	0.96	1.34	1.45	0.00	0.53	-0.00	0.55
time (sec)	N/A	0.146	0.031	0.069	1.676	0.462	0.000	0.211	0.000	33.987

Problem 753	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	404	404	80	443	401	644	0	218	-1	211
N.S.	1	1.00	0.20	1.10	0.99	1.59	0.00	0.54	-0.00	0.52
time (sec)	N/A	0.202	0.038	0.097	1.871	0.454	0.000	0.293	0.000	48.622

Problem 754	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	357	357	80	407	381	585	0	191	-1	187
N.S.	1	1.00	0.22	1.14	1.07	1.64	0.00	0.54	-0.00	0.52
time (sec)	N/A	0.182	0.031	0.084	1.762	0.559	0.000	0.228	0.000	42.604

Problem 755	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	79	368	374	555	0	159	-1	159
N.S.	1	1.00	0.26	1.20	1.22	1.81	0.00	0.52	-0.00	0.52
time (sec)	N/A	0.150	0.033	0.082	1.618	0.466	0.000	0.384	0.000	32.092

Problem 756	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	258	258	146	357	376	525	0	147	-1	152
N.S.	1	1.00	0.57	1.38	1.46	2.03	0.00	0.57	-0.00	0.59
time (sec)	N/A	0.133	0.079	0.069	1.751	0.469	0.000	0.357	0.000	23.554

Problem 757	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	79	357	372	537	0	148	-1	153
N.S.	1	1.00	0.30	1.36	1.42	2.05	0.00	0.56	-0.00	0.58
time (sec)	N/A	0.147	0.032	0.070	1.797	0.447	0.000	0.266	0.000	20.950

Problem 758	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	79	357	368	537	0	148	-1	153
N.S.	1	1.00	0.30	1.36	1.40	2.05	0.00	0.56	-0.00	0.58
time (sec)	N/A	0.139	0.033	0.074	1.528	0.470	0.000	0.217	0.000	18.733

Problem 759	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	258	258	77	357	390	523	0	147	-1	152
N.S.	1	1.00	0.30	1.38	1.51	2.03	0.00	0.57	-0.00	0.59
time (sec)	N/A	0.138	0.035	0.070	1.866	0.429	0.000	0.240	0.000	20.728

Problem 760	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	311	311	79	374	427	559	0	158	-1	161
N.S.	1	1.00	0.25	1.20	1.37	1.80	0.00	0.51	-0.00	0.52
time (sec)	N/A	0.158	0.034	0.070	1.935	0.438	0.000	0.267	0.000	23.475

Problem 761	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	B	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	357	357	80	413	495	616	0	180	-1	190
N.S.	1	1.00	0.22	1.16	1.39	1.73	0.00	0.50	-0.00	0.53
time (sec)	N/A	0.186	0.034	0.082	2.026	0.439	0.000	0.241	0.000	31.430

Problem 762	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	404	404	80	449	550	673	0	207	-1	214
N.S.	1	1.00	0.20	1.11	1.36	1.67	0.00	0.51	-0.00	0.53
time (sec)	N/A	0.211	0.034	0.083	2.125	0.461	0.000	0.230	0.000	43.639

Problem 763	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	135	1438	243	1191	7745	1808	729	0
N.S.	1	1.00	0.75	8.03	1.36	6.65	43.27	10.10	4.07	0.00
time (sec)	N/A	0.119	0.198	0.058	0.477	0.451	5.082	0.267	1.770	0.917

Problem 764	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	103	722	167	607	3417	926	417	0
N.S.	1	1.00	0.82	5.78	1.34	4.86	27.34	7.41	3.34	0.00
time (sec)	N/A	0.074	0.133	0.051	0.610	0.446	2.544	0.195	1.476	0.416

Problem 765	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	71	246	91	215	1020	332	177	0
N.S.	1	1.00	1.00	3.46	1.28	3.03	14.37	4.68	2.49	0.00
time (sec)	N/A	0.037	0.089	0.055	0.458	0.431	1.133	0.175	1.293	0.092

Problem 766	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	119	1096	143	757	0	1560	1459	0
N.S.	1	1.00	0.83	7.66	1.00	5.29	0.00	10.91	10.20	0.00
time (sec)	N/A	0.043	0.052	0.050	0.594	0.434	0.000	0.238	2.066	0.070

Problem 767	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	135	2246	283	1569	0	3224	1515	0
N.S.	1	1.00	0.65	10.75	1.35	7.51	0.00	15.43	7.25	0.00
time (sec)	N/A	0.097	0.663	0.054	0.576	0.455	0.000	0.335	2.454	0.415

Problem 768	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	47	40	39	43	42	43	41	0
N.S.	1	1.00	1.00	0.85	0.83	0.91	0.89	0.91	0.87	0.00
time (sec)	N/A	0.062	0.011	0.044	0.484	0.343	0.070	0.171	0.046	0.000

Problem 769	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	47	40	39	43	42	43	41	0
N.S.	1	1.00	1.00	0.85	0.83	0.91	0.89	0.91	0.87	0.00
time (sec)	N/A	0.050	0.015	0.038	0.600	0.359	0.069	0.215	0.042	0.000

Problem 770	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	41	40	39	43	42	43	41	0
N.S.	1	1.00	0.87	0.85	0.83	0.91	0.89	0.91	0.87	0.00
time (sec)	N/A	0.037	0.014	0.079	0.528	0.350	0.069	0.151	0.040	0.000

Problem 771	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	42	37	36	40	39	40	38	0
N.S.	1	1.00	1.00	0.88	0.86	0.95	0.93	0.95	0.90	0.00
time (sec)	N/A	0.028	0.013	0.065	0.558	0.345	0.068	0.147	0.041	0.000

Problem 772	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	38	36	34	34	36	36	35	0
N.S.	1	1.00	1.00	0.95	0.89	0.89	0.95	0.95	0.92	0.00
time (sec)	N/A	0.020	0.011	0.044	0.526	0.396	0.130	0.146	0.036	0.001

Problem 773	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	36	36	36	34	34	40	31	34	34	0
N.S.	1	1.00	1.00	0.94	0.94	1.11	0.86	0.94	0.94	0.00
time (sec)	N/A	0.025	0.017	0.051	0.532	0.392	0.168	0.181	0.040	0.001

Problem 774	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	36	36	37	37	34	41	36	35	34	0
N.S.	1	1.00	1.03	1.03	0.94	1.14	1.00	0.97	0.94	0.00
time (sec)	N/A	0.024	0.020	0.051	0.500	0.399	0.312	0.150	1.166	0.001

Problem 775	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	41	42	38	41	44	39	38	0
N.S.	1	1.00	1.00	1.02	0.93	1.00	1.07	0.95	0.93	0.00
time (sec)	N/A	0.025	0.027	0.053	0.617	0.395	0.577	0.166	1.176	0.000

Problem 776	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	42	40	39	39	46	41	40	0
N.S.	1	1.00	0.93	0.89	0.87	0.87	1.02	0.91	0.89	0.00
time (sec)	N/A	0.024	0.015	0.055	0.647	0.391	1.036	0.166	0.028	0.000

Problem 777	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	44	40	39	39	46	41	41	0
N.S.	1	1.00	0.94	0.85	0.83	0.83	0.98	0.87	0.87	0.00
time (sec)	N/A	0.024	0.015	0.050	0.671	0.388	1.701	0.152	0.029	0.001

Problem 778	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	45	40	39	39	46	41	41	0
N.S.	1	1.00	0.96	0.85	0.83	0.83	0.98	0.87	0.87	0.00
time (sec)	N/A	0.023	0.016	0.046	0.593	0.382	2.675	0.148	0.029	0.000

Problem 779	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	46	40	39	39	46	41	41	0
N.S.	1	1.00	0.98	0.85	0.83	0.83	0.98	0.87	0.87	0.00
time (sec)	N/A	0.025	0.018	0.059	0.490	0.383	3.868	0.166	0.030	0.001

Problem 780	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	101	94	93	103	105	103	93	0
N.S.	1	1.00	1.00	0.93	0.92	1.02	1.04	1.02	0.92	0.00
time (sec)	N/A	0.142	0.027	0.050	0.557	0.368	0.087	0.151	1.158	0.000

Problem 781	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	101	94	93	103	105	103	93	0
N.S.	1	1.00	1.00	0.93	0.92	1.02	1.04	1.02	0.92	0.00
time (sec)	N/A	0.101	0.022	0.043	0.537	0.358	0.086	0.153	0.031	0.000

Problem 782	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	96	91	90	99	100	99	89	0
N.S.	1	1.00	1.00	0.95	0.94	1.03	1.04	1.03	0.93	0.00
time (sec)	N/A	0.069	0.020	0.040	0.524	0.367	0.089	0.151	0.031	0.000

Problem 783	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	92	95	88	88	95	95	86	0
N.S.	1	1.00	1.00	1.03	0.96	0.96	1.03	1.03	0.93	0.00
time (sec)	N/A	0.052	0.034	0.050	0.454	0.421	0.209	0.159	0.036	0.001

Problem 784	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	87	92	88	95	88	92	86	0
N.S.	1	1.00	0.97	1.02	0.98	1.06	0.98	1.02	0.96	0.00
time (sec)	N/A	0.072	0.060	0.052	0.580	0.395	0.257	0.196	0.038	0.001

Problem 785	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	86	92	88	95	94	89	87	0
N.S.	1	1.00	0.96	1.02	0.98	1.06	1.04	0.99	0.97	0.00
time (sec)	N/A	0.067	0.050	0.055	0.527	0.417	0.441	0.159	1.154	0.001

Problem 786	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	90	95	89	95	99	89	87	0
N.S.	1	1.00	1.00	1.06	0.99	1.06	1.10	0.99	0.97	0.00
time (sec)	N/A	0.061	0.050	0.057	0.499	0.396	1.074	0.167	0.050	0.001

Problem 787	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	92	98	89	95	99	90	86	0
N.S.	1	1.00	1.02	1.09	0.99	1.06	1.10	1.00	0.96	0.00
time (sec)	N/A	0.059	0.049	0.051	0.751	0.409	3.049	0.152	0.066	0.001

Problem 788	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	95	95	92	102	92	95	105	93	89	0
N.S.	1	1.00	0.97	1.07	0.97	1.00	1.11	0.98	0.94	0.00
time (sec)	N/A	0.054	0.057	0.054	0.718	0.400	7.106	0.184	0.067	0.001

Problem 789	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	97	90	93	93	107	101	91	0
N.S.	1	1.00	0.98	0.91	0.94	0.94	1.08	1.02	0.92	0.00
time (sec)	N/A	0.054	0.035	0.054	0.461	0.398	14.089	0.152	0.047	0.001

Problem 790	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	100	90	93	93	107	101	93	0
N.S.	1	1.00	0.99	0.89	0.92	0.92	1.06	1.00	0.92	0.00
time (sec)	N/A	0.053	0.036	0.047	0.634	0.399	24.022	0.155	1.168	0.001

Problem 791	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	99	90	93	93	107	101	93	0
N.S.	1	1.00	0.98	0.89	0.92	0.92	1.06	1.00	0.92	0.00
time (sec)	N/A	0.052	0.038	0.054	0.600	0.392	41.523	0.193	0.046	0.001

Problem 792	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	166	226	166	192	201	192	168	0
N.S.	1	1.00	1.00	1.36	1.00	1.16	1.21	1.16	1.01	0.00
time (sec)	N/A	0.264	0.048	0.044	0.708	0.360	0.105	0.204	0.067	0.000

Problem 793	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	166	226	166	191	199	191	167	0
N.S.	1	1.00	1.00	1.36	1.00	1.15	1.20	1.15	1.01	0.00
time (sec)	N/A	0.203	0.040	0.042	0.660	0.364	0.103	0.153	1.158	0.000

Problem 794	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	158	223	162	187	190	187	163	0
N.S.	1	1.00	1.00	1.41	1.03	1.18	1.20	1.18	1.03	0.00
time (sec)	N/A	0.151	0.034	0.046	0.577	0.346	0.105	0.153	0.047	0.000

Problem 795	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	157	157	157	185	161	161	192	185	162	0
N.S.	1	1.00	1.00	1.18	1.03	1.03	1.22	1.18	1.03	0.00
time (sec)	N/A	0.111	0.062	0.053	0.485	0.389	0.309	0.153	0.051	0.000

Problem 796	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	156	183	162	168	184	183	163	0
N.S.	1	1.00	1.00	1.17	1.04	1.08	1.18	1.17	1.04	0.00
time (sec)	N/A	0.108	0.085	0.056	0.520	0.401	0.356	0.154	1.186	0.001

Problem 797	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	153	179	161	168	175	174	162	0
N.S.	1	1.00	1.00	1.17	1.05	1.10	1.14	1.14	1.06	0.00
time (sec)	N/A	0.125	0.077	0.056	0.584	0.410	0.601	0.166	0.056	0.001

Problem 798	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	160	179	162	168	187	169	164	0
N.S.	1	1.00	1.03	1.15	1.05	1.08	1.21	1.09	1.06	0.00
time (sec)	N/A	0.136	0.061	0.049	0.493	0.418	1.360	0.167	0.057	0.001

Problem 799	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	154	183	163	168	189	166	164	0
N.S.	1	1.00	0.99	1.17	1.04	1.08	1.21	1.06	1.05	0.00
time (sec)	N/A	0.123	0.059	0.072	0.489	0.411	4.206	0.184	1.170	0.001

Problem 800	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	161	186	163	168	182	162	162	0
N.S.	1	1.00	1.05	1.21	1.06	1.09	1.18	1.05	1.05	0.00
time (sec)	N/A	0.116	0.088	0.054	0.622	0.401	11.617	0.161	1.184	0.001

Problem 801	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	169	188	162	168	187	162	163	0
N.S.	1	1.00	1.09	1.21	1.05	1.08	1.21	1.05	1.05	0.00
time (sec)	N/A	0.109	0.088	0.058	0.539	0.398	28.647	0.152	0.094	0.001

Problem 802	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	175	192	165	168	194	165	165	0
N.S.	1	1.00	1.09	1.20	1.03	1.05	1.21	1.03	1.03	0.00
time (sec)	N/A	0.106	0.080	0.045	0.537	0.392	57.145	0.193	1.217	0.001

Problem 803	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	172	154	166	166	196	191	165	0
N.S.	1	1.00	1.06	0.95	1.02	1.02	1.21	1.18	1.02	0.00
time (sec)	N/A	0.105	0.058	0.047	0.564	0.405	119.400	0.172	1.183	0.001

Problem 804	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	175	154	166	166	0	191	167	0
N.S.	1	1.00	1.05	0.93	1.00	1.00	0.00	1.15	1.01	0.00
time (sec)	N/A	0.105	0.060	0.062	0.523	0.412	0.000	0.157	1.189	0.001

Problem 805	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	176	154	166	166	0	191	168	0
N.S.	1	1.00	1.06	0.93	1.00	1.00	0.00	1.15	1.01	0.00
time (sec)	N/A	0.104	0.062	0.058	0.455	0.402	0.000	0.156	1.190	0.001

Problem 806	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	229	229	222	445	0	730	1100	247	302	0
N.S.	1	1.00	0.97	1.94	0.00	3.19	4.80	1.08	1.32	0.00
time (sec)	N/A	0.421	0.135	0.056	0.000	0.450	3.919	0.182	0.233	0.001

Problem 807	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	165	335	0	563	840	178	221	0
N.S.	1	1.00	0.98	1.98	0.00	3.33	4.97	1.05	1.31	0.00
time (sec)	N/A	0.236	0.102	0.047	0.000	0.447	2.960	0.162	1.301	0.001

Problem 808	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	119	241	0	414	609	122	168	0
N.S.	1	1.00	0.98	1.99	0.00	3.42	5.03	1.01	1.39	0.00
time (sec)	N/A	0.148	0.081	0.044	0.000	0.444	2.036	0.171	0.172	0.001

Problem 809	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	86	161	0	289	423	88	127	0
N.S.	1	1.00	1.01	1.89	0.00	3.40	4.98	1.04	1.49	0.00
time (sec)	N/A	0.078	0.083	0.044	0.000	0.430	1.345	0.159	1.336	0.001

Problem 810	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	66	93	0	204	280	65	162	0
N.S.	1	1.00	1.00	1.41	0.00	3.09	4.24	0.98	2.45	0.00
time (sec)	N/A	0.034	0.056	0.048	0.000	0.442	0.741	0.171	0.117	0.000

Problem 811	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	71	100	0	228	0	72	375	0
N.S.	1	1.00	1.00	1.41	0.00	3.21	0.00	1.01	5.28	0.00
time (sec)	N/A	0.094	0.109	0.058	0.000	0.525	0.000	0.163	1.952	0.001

Problem 812	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	100	180	0	361	0	105	791	0
N.S.	1	1.00	0.96	1.73	0.00	3.47	0.00	1.01	7.61	0.00
time (sec)	N/A	0.147	0.083	0.059	0.000	0.681	0.000	0.153	2.962	0.001

Problem 813	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	145	145	141	273	0	517	0	152	814	0
N.S.	1	1.00	0.97	1.88	0.00	3.57	0.00	1.05	5.61	0.00
time (sec)	N/A	0.230	0.135	0.066	0.000	0.826	0.000	0.184	2.495	0.001

Problem 814	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	204	204	196	381	0	687	0	214	1063	0
N.S.	1	1.00	0.96	1.87	0.00	3.37	0.00	1.05	5.21	0.00
time (sec)	N/A	0.286	0.144	0.066	0.000	1.539	0.000	0.178	2.747	0.001

Problem 815	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	249	809	0	1696	1572	297	427	0
N.S.	1	1.00	0.95	3.09	0.00	6.47	6.00	1.13	1.63	0.00
time (sec)	N/A	0.638	0.361	0.063	0.000	0.481	7.711	0.162	1.979	0.001

Problem 816	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	192	192	190	639	0	1283	1248	235	360	0
N.S.	1	1.00	0.99	3.33	0.00	6.68	6.50	1.22	1.88	0.00
time (sec)	N/A	0.312	0.286	0.064	0.000	0.458	5.404	0.162	1.854	0.001

Problem 817	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	146	270	0	813	901	169	895	0
N.S.	1	1.00	1.11	2.05	0.00	6.16	6.83	1.28	6.78	0.00
time (sec)	N/A	0.105	0.194	0.069	0.000	0.462	2.837	0.203	1.536	0.001

Problem 818	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	99	147	0	521	379	113	177	0
N.S.	1	1.00	1.00	1.48	0.00	5.26	3.83	1.14	1.79	0.00
time (sec)	N/A	0.047	0.076	0.055	0.000	0.431	1.048	0.164	1.279	0.001

Problem 819	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	88	118	0	459	359	99	159	0
N.S.	1	1.00	1.01	1.36	0.00	5.28	4.13	1.14	1.83	0.00
time (sec)	N/A	0.038	0.074	0.049	0.000	0.468	0.951	0.155	0.110	0.001

Problem 820	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	134	337	0	955	0	160	920	0
N.S.	1	1.00	0.99	2.50	0.00	7.07	0.00	1.19	6.81	0.00
time (sec)	N/A	0.199	0.204	0.060	0.000	0.845	0.000	0.160	2.420	0.001

Problem 821	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	211	211	192	582	0	1615	0	245	1366	0
N.S.	1	1.00	0.91	2.76	0.00	7.65	0.00	1.16	6.47	0.00
time (sec)	N/A	0.357	0.341	0.063	0.000	2.034	0.000	0.160	3.092	0.001

Problem 822	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	283	283	253	770	0	2003	0	345	1661	0
N.S.	1	1.00	0.89	2.72	0.00	7.08	0.00	1.22	5.87	0.00
time (sec)	N/A	0.613	0.447	0.072	0.000	4.078	0.000	0.169	3.056	0.001

Problem 823	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	9	9	9	10	9	9	8	10	9	0
N.S.	1	1.00	1.00	1.11	1.00	1.00	0.89	1.11	1.00	0.00
time (sec)	N/A	0.003	0.002	0.039	0.491	0.380	0.097	0.191	0.045	0.000

Problem 824	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	17	17	17	14	13	13	14	15	13	0
N.S.	1	1.00	1.00	0.82	0.76	0.76	0.82	0.88	0.76	0.00
time (sec)	N/A	0.005	0.004	0.057	0.445	0.387	0.109	0.147	0.046	0.000

Problem 825	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	14	15	14	14	14	14	14	0
N.S.	1	1.00	1.00	1.07	1.00	1.00	1.00	1.00	1.00	0.00
time (sec)	N/A	0.011	0.004	0.051	1.419	0.411	0.116	0.148	1.177	0.000

Problem 826	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	35	29	26	26	39	26	30	0
N.S.	1	1.00	1.06	0.88	0.79	0.79	1.18	0.79	0.91	0.00
time (sec)	N/A	0.022	0.014	0.056	1.356	0.397	0.152	0.152	1.167	0.001

Problem 827	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	51	51	49	29	39	49	49	42	36	0
N.S.	1	1.00	0.96	0.57	0.76	0.96	0.96	0.82	0.71	0.00
time (sec)	N/A	0.019	0.027	0.053	1.319	0.414	0.124	0.149	0.124	0.000

Problem 828	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	44	31	41	51	42	46	36	0
N.S.	1	1.00	0.90	0.63	0.84	1.04	0.86	0.94	0.73	0.00
time (sec)	N/A	0.026	0.023	0.043	1.140	0.440	0.123	0.155	0.174	0.000

Problem 829	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	16	15	14	14	12	14	14	0
N.S.	1	1.00	1.00	0.94	0.88	0.88	0.75	0.88	0.88	0.00
time (sec)	N/A	0.004	0.006	0.047	0.528	0.436	0.107	0.149	1.160	0.000

Problem 830	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	24	24	24	23	22	31	19	22	19	0
N.S.	1	1.00	1.00	0.96	0.92	1.29	0.79	0.92	0.79	0.00
time (sec)	N/A	0.009	0.011	0.049	1.176	0.432	0.121	0.165	0.032	0.000

Problem 831	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	39	33	32	37	42	32	34	0
N.S.	1	1.00	1.00	0.85	0.82	0.95	1.08	0.82	0.87	0.00
time (sec)	N/A	0.013	0.024	0.043	1.297	0.422	0.139	0.150	0.041	0.000

Problem 832	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	58	58	49	52	54	71	61	44	53	0
N.S.	1	1.00	0.84	0.90	0.93	1.22	1.05	0.76	0.91	0.00
time (sec)	N/A	0.021	0.029	0.083	1.265	0.445	0.160	0.150	0.048	0.001

Problem 833	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	10	10	10	11	10	10	7	11	10	0
N.S.	1	1.00	1.00	1.10	1.00	1.00	0.70	1.10	1.00	0.00
time (sec)	N/A	0.002	0.001	0.045	0.476	0.415	0.072	0.146	1.150	0.000

Problem 834	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	10	10	10	11	22	10	7	22	10	0
N.S.	1	1.00	1.00	1.10	2.20	1.00	0.70	2.20	1.00	0.00
time (sec)	N/A	0.002	0.001	0.085	0.710	0.467	0.074	0.152	0.017	0.000

Problem 835	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	367	367	312	872	0	843	0	414	992	423
N.S.	1	1.00	0.85	2.38	0.00	2.30	0.00	1.13	2.70	1.15
time (sec)	N/A	0.508	0.543	0.061	0.000	0.563	0.000	0.241	3.908	1.817

Problem 836	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	280	280	241	671	0	667	0	323	781	326
N.S.	1	1.00	0.86	2.40	0.00	2.38	0.00	1.15	2.79	1.16
time (sec)	N/A	0.323	0.362	0.063	0.000	0.530	0.000	0.258	1.955	1.289

Problem 837	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	205	205	179	497	0	517	0	245	463	244
N.S.	1	1.00	0.87	2.42	0.00	2.52	0.00	1.20	2.26	1.19
time (sec)	N/A	0.196	0.230	0.057	0.000	0.500	0.000	0.226	1.724	0.937

Problem 838	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	127	352	0	393	0	178	256	177
N.S.	1	1.00	0.88	2.44	0.00	2.73	0.00	1.24	1.78	1.23
time (sec)	N/A	0.064	0.133	0.054	0.000	0.483	0.000	0.250	1.511	0.629

Problem 839	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	114	229	0	291	0	123	145	125
N.S.	1	1.00	1.01	2.03	0.00	2.58	0.00	1.09	1.28	1.11
time (sec)	N/A	0.046	0.105	0.047	0.000	0.479	0.000	0.245	1.433	0.516

Problem 840	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	129	129	127	184	0	651	0	0	146	135
N.S.	1	1.00	0.98	1.43	0.00	5.05	0.00	0.00	1.13	1.05
time (sec)	N/A	0.104	0.166	0.061	0.000	1.412	0.000	0.000	1.372	0.570

Problem 841	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	118	207	0	648	0	0	166	117
N.S.	1	1.00	0.98	1.71	0.00	5.36	0.00	0.00	1.37	0.97
time (sec)	N/A	0.089	0.175	0.080	0.000	0.907	0.000	0.000	1.560	0.540

Problem 842	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	129	304	0	699	0	359	-1	131
N.S.	1	1.00	0.97	2.29	0.00	5.26	0.00	2.70	-0.01	0.98
time (sec)	N/A	0.102	0.354	0.059	0.000	0.955	0.000	0.303	0.000	0.696

Problem 843	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	116	386	0	317	0	524	-1	173
N.S.	1	1.00	0.96	3.19	0.00	2.62	0.00	4.33	-0.01	1.43
time (sec)	N/A	0.066	0.161	0.060	0.000	0.701	0.000	0.220	0.000	0.985

Problem 844	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	153	569	0	425	0	991	-1	229
N.S.	1	1.00	0.89	3.31	0.00	2.47	0.00	5.76	-0.01	1.33
time (sec)	N/A	0.143	0.182	0.062	0.000	1.025	0.000	0.274	0.000	1.493

Problem 845	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	235	235	206	777	0	553	0	1407	-1	300
N.S.	1	1.00	0.88	3.31	0.00	2.35	0.00	5.99	-0.00	1.28
time (sec)	N/A	0.270	0.390	0.066	0.000	1.950	0.000	0.262	0.000	2.112

Problem 846	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	310	310	262	1014	0	709	0	1955	-1	388
N.S.	1	1.00	0.85	3.27	0.00	2.29	0.00	6.31	-0.00	1.25
time (sec)	N/A	0.357	0.443	0.069	0.000	3.395	0.000	0.324	0.000	3.049

Problem 847	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	455	455	338	1311	0	1263	0	639	-1	662
N.S.	1	1.00	0.74	2.88	0.00	2.78	0.00	1.40	-0.00	1.45
time (sec)	N/A	0.628	0.822	0.063	0.000	0.719	0.000	0.324	0.000	3.498

Problem 848	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	356	356	267	1061	0	1037	0	524	-1	535
N.S.	1	1.00	0.75	2.98	0.00	2.91	0.00	1.47	-0.00	1.50
time (sec)	N/A	0.397	0.519	0.063	0.000	0.618	0.000	0.274	0.000	2.500

Problem 849	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	269	269	206	838	0	845	0	422	-1	423
N.S.	1	1.00	0.77	3.12	0.00	3.14	0.00	1.57	-0.00	1.57
time (sec)	N/A	0.248	0.327	0.062	0.000	0.590	0.000	0.243	0.000	1.798

Problem 850	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	156	644	0	669	0	332	-1	326
N.S.	1	1.00	0.79	3.25	0.00	3.38	0.00	1.68	-0.01	1.65
time (sec)	N/A	0.095	0.206	0.049	0.000	0.530	0.000	0.273	0.000	1.262

Problem 851	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	144	469	0	515	0	251	305	243
N.S.	1	1.00	0.91	2.97	0.00	3.26	0.00	1.59	1.93	1.54
time (sec)	N/A	0.067	0.283	0.048	0.000	0.473	0.000	0.229	1.613	0.853

Problem 852	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	206	390	0	1023	0	0	-1	226
N.S.	1	1.00	0.94	1.79	0.00	4.69	0.00	0.00	-0.00	1.04
time (sec)	N/A	0.254	0.339	0.053	0.000	5.168	0.000	0.000	0.000	0.954

Problem 853	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	183	365	0	917	0	0	-1	197
N.S.	1	1.00	0.95	1.89	0.00	4.75	0.00	0.00	-0.01	1.02
time (sec)	N/A	0.177	0.322	0.057	0.000	2.345	0.000	0.000	0.000	0.997

Problem 854	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	162	463	0	921	0	412	-1	166
N.S.	1	1.00	0.91	2.59	0.00	5.15	0.00	2.30	-0.01	0.93
time (sec)	N/A	0.167	0.444	0.062	0.000	1.903	0.000	0.377	0.000	1.278

Problem 855	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	182	635	0	953	0	630	-1	193
N.S.	1	1.00	0.88	3.08	0.00	4.63	0.00	3.06	-0.00	0.94
time (sec)	N/A	0.223	0.502	0.062	0.000	2.014	0.000	0.436	0.000	1.510

Problem 856	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	202	838	0	1083	0	1019	-1	229
N.S.	1	1.00	0.93	3.86	0.00	4.99	0.00	4.70	-0.00	1.06
time (sec)	N/A	0.248	0.631	0.081	0.000	2.572	0.000	0.591	0.000	1.735

Problem 857	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	157	978	0	555	0	1357	-1	300
N.S.	1	1.00	0.92	5.75	0.00	3.26	0.00	7.98	-0.01	1.76
time (sec)	N/A	0.098	0.259	0.090	0.000	1.930	0.000	0.293	0.000	2.513

Problem 858	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	230	230	182	1264	0	709	0	2059	-1	388
N.S.	1	1.00	0.79	5.50	0.00	3.08	0.00	8.95	-0.00	1.69
time (sec)	N/A	0.203	0.327	0.077	0.000	3.578	0.000	0.359	0.000	3.649

Problem 859	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	303	303	234	1575	0	889	0	2713	-1	489
N.S.	1	1.00	0.77	5.20	0.00	2.93	0.00	8.95	-0.00	1.61
time (sec)	N/A	0.386	0.564	0.085	0.000	4.544	0.000	0.357	0.000	4.655

Problem 860	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	543	543	386	1848	0	1775	0	908	-1	961
N.S.	1	1.00	0.71	3.40	0.00	3.27	0.00	1.67	-0.00	1.77
time (sec)	N/A	0.718	1.007	0.067	0.000	0.849	0.000	0.309	0.000	7.381

Problem 861	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	432	432	315	1549	0	1511	0	769	-1	804
N.S.	1	1.00	0.73	3.59	0.00	3.50	0.00	1.78	-0.00	1.86
time (sec)	N/A	0.486	0.763	0.067	0.000	0.764	0.000	0.323	0.000	5.172

Problem 862	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	333	333	254	1277	0	1263	0	643	-1	662
N.S.	1	1.00	0.76	3.83	0.00	3.79	0.00	1.93	-0.00	1.99
time (sec)	N/A	0.309	0.450	0.059	0.000	0.660	0.000	0.270	0.000	3.547

Problem 863	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	252	252	205	1034	0	1039	0	528	-1	535
N.S.	1	1.00	0.81	4.10	0.00	4.12	0.00	2.10	-0.00	2.12
time (sec)	N/A	0.125	0.603	0.056	0.000	0.587	0.000	0.309	0.000	2.449

Problem 864	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	203	203	179	807	0	843	0	425	-1	422
N.S.	1	1.00	0.88	3.98	0.00	4.15	0.00	2.09	-0.00	2.08
time (sec)	N/A	0.095	0.289	0.051	0.000	0.523	0.000	0.307	0.000	1.715

Problem 865	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	350	350	349	694	0	1575	0	0	-1	369
N.S.	1	1.00	1.00	1.98	0.00	4.50	0.00	0.00	-0.00	1.05
time (sec)	N/A	0.420	0.460	0.059	0.000	16.451	0.000	0.000	0.000	1.942

Problem 866	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	310	310	288	615	0	1393	0	0	-1	329
N.S.	1	1.00	0.93	1.98	0.00	4.49	0.00	0.00	-0.00	1.06
time (sec)	N/A	0.313	0.520	0.063	0.000	8.465	0.000	0.000	0.000	1.865

Problem 867	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	273	273	254	663	0	1269	0	527	-1	287
N.S.	1	1.00	0.93	2.43	0.00	4.65	0.00	1.93	-0.00	1.05
time (sec)	N/A	0.259	0.460	0.062	0.000	5.677	0.000	0.415	0.000	2.119

Problem 868	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	255	255	236	840	0	1293	0	784	-1	246
N.S.	1	1.00	0.93	3.29	0.00	5.07	0.00	3.07	-0.00	0.96
time (sec)	N/A	0.322	0.716	0.068	0.000	3.271	0.000	0.622	0.000	2.532

Problem 869	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	284	284	255	1094	0	1305	0	1163	-1	319
N.S.	1	1.00	0.90	3.85	0.00	4.60	0.00	4.10	-0.00	1.12
time (sec)	N/A	0.386	0.691	0.071	0.000	4.508	0.000	0.669	0.000	2.907

Problem 870	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	346	346	289	1371	0	1445	0	1526	-1	327
N.S.	1	1.00	0.84	3.96	0.00	4.18	0.00	4.41	-0.00	0.95
time (sec)	N/A	0.491	0.845	0.073	0.000	6.848	0.000	0.990	0.000	4.111

Problem 871	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	332	332	308	1677	0	1659	0	2089	-1	388
N.S.	1	1.00	0.93	5.05	0.00	5.00	0.00	6.29	-0.00	1.17
time (sec)	N/A	0.466	0.978	0.086	0.000	8.718	0.000	1.450	0.000	3.618

Problem 872	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	219	219	198	1874	0	887	0	2598	-1	487
N.S.	1	1.00	0.90	8.56	0.00	4.05	0.00	11.86	-0.00	2.22
time (sec)	N/A	0.134	0.471	0.113	0.000	4.401	0.000	0.427	0.000	5.144

Problem 873	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	288	288	242	2263	0	1091	0	3603	-1	607
N.S.	1	1.00	0.84	7.86	0.00	3.79	0.00	12.51	-0.00	2.11
time (sec)	N/A	0.247	0.747	0.174	0.000	8.074	0.000	0.471	0.000	6.926

Problem 874	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	375	375	292	2677	0	1315	0	4427	-1	738
N.S.	1	1.00	0.78	7.14	0.00	3.51	0.00	11.81	-0.00	1.97
time (sec)	N/A	0.478	0.728	0.164	0.000	9.922	0.000	0.583	0.000	9.936

Problem 875	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	281	281	225	531	0	519	0	249	-1	244
N.S.	1	1.00	0.80	1.89	0.00	1.85	0.00	0.89	-0.00	0.87
time (sec)	N/A	0.422	0.390	0.071	0.000	0.525	0.000	0.256	0.000	0.922

Problem 876	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	169	379	0	395	0	183	-1	183
N.S.	1	1.00	0.82	1.84	0.00	1.92	0.00	0.89	-0.00	0.89
time (sec)	N/A	0.243	0.269	0.054	0.000	0.516	0.000	0.265	0.000	0.680

Problem 877	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	126	254	0	295	0	128	-1	125
N.S.	1	1.00	0.88	1.78	0.00	2.06	0.00	0.90	-0.01	0.87
time (sec)	N/A	0.120	0.148	0.059	0.000	0.457	0.000	0.248	0.000	0.520

Problem 878	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	90	155	0	213	0	90	-1	96
N.S.	1	1.00	0.98	1.68	0.00	2.32	0.00	0.98	-0.01	1.04
time (sec)	N/A	0.040	0.121	0.051	0.000	0.474	0.000	0.239	0.000	0.443

Problem 879	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	66	81	0	162	0	62	80	69
N.S.	1	1.00	0.99	1.21	0.00	2.42	0.00	0.93	1.19	1.03
time (sec)	N/A	0.024	0.084	0.058	0.000	0.454	0.000	0.236	1.559	0.360

Problem 880	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	75	67	0	468	0	0	66	80
N.S.	1	1.00	0.97	0.87	0.00	6.08	0.00	0.00	0.86	1.04
time (sec)	N/A	0.048	0.023	0.053	0.000	0.575	0.000	0.000	1.470	0.313

Problem 881	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	70	94	0	177	0	110	87	70
N.S.	1	1.00	0.97	1.31	0.00	2.46	0.00	1.53	1.21	0.97
time (sec)	N/A	0.039	0.085	0.075	0.000	0.531	0.000	0.232	1.459	0.365

Problem 882	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	95	176	0	235	0	303	-1	131
N.S.	1	1.00	0.82	1.52	0.00	2.03	0.00	2.61	-0.01	1.13
time (sec)	N/A	0.089	0.130	0.058	0.000	0.618	0.000	0.287	0.000	0.591

Problem 883	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	132	283	0	321	0	511	-1	174
N.S.	1	1.00	0.79	1.69	0.00	1.92	0.00	3.06	-0.01	1.04
time (sec)	N/A	0.162	0.140	0.070	0.000	0.730	0.000	0.243	0.000	0.849

Problem 884	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	231	231	176	417	0	425	0	884	-1	229
N.S.	1	1.00	0.76	1.81	0.00	1.84	0.00	3.83	-0.00	0.99
time (sec)	N/A	0.277	0.229	0.056	0.000	0.996	0.000	0.297	0.000	1.244

Problem 885	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	233	578	0	557	0	1266	-1	300
N.S.	1	1.00	0.76	1.89	0.00	1.82	0.00	4.14	-0.00	0.98
time (sec)	N/A	0.397	0.299	0.066	0.000	1.936	0.000	0.267	0.000	1.820

Problem 886	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	280	280	300	800	0	1035	0	367	-1	324
N.S.	1	1.00	1.07	2.86	0.00	3.70	0.00	1.31	-0.00	1.16
time (sec)	N/A	0.267	0.428	0.072	0.000	0.810	0.000	0.310	0.000	1.347

Problem 887	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	221	576	0	793	0	268	-1	235
N.S.	1	1.00	1.12	2.92	0.00	4.03	0.00	1.36	-0.01	1.19
time (sec)	N/A	0.135	0.275	0.060	0.000	0.715	0.000	0.252	0.000	0.972

Problem 888	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	148	382	0	603	0	177	-1	148
N.S.	1	1.00	0.97	2.50	0.00	3.94	0.00	1.16	-0.01	0.97
time (sec)	N/A	0.135	0.231	0.055	0.000	0.635	0.000	0.259	0.000	0.705

Problem 889	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	102	216	0	405	0	110	111	101
N.S.	1	1.00	1.06	2.25	0.00	4.22	0.00	1.15	1.16	1.05
time (sec)	N/A	0.041	0.282	0.053	0.000	0.595	0.000	0.247	1.641	0.510

Problem 890	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	44	45	0	74	0	55	44	44
N.S.	1	1.00	0.98	1.00	0.00	1.64	0.00	1.22	0.98	0.98
time (sec)	N/A	0.011	0.161	0.050	0.000	0.526	0.000	0.239	1.389	0.394

Problem 891	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	104	153	0	412	0	125	-1	103
N.S.	1	1.00	1.08	1.59	0.00	4.29	0.00	1.30	-0.01	1.07
time (sec)	N/A	0.058	0.125	0.053	0.000	0.661	0.000	0.269	0.000	0.529

Problem 892	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	150	330	0	657	0	220	-1	153
N.S.	1	1.00	0.95	2.09	0.00	4.16	0.00	1.39	-0.01	0.97
time (sec)	N/A	0.119	0.183	0.060	0.000	0.856	0.000	0.272	0.000	0.774

Problem 893	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	231	231	214	506	0	869	0	467	-1	278
N.S.	1	1.00	0.93	2.19	0.00	3.76	0.00	2.02	-0.00	1.20
time (sec)	N/A	0.200	0.289	0.073	0.000	1.124	0.000	0.257	0.000	1.250

Problem 894	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	317	317	294	708	0	1093	0	798	-1	380
N.S.	1	1.00	0.93	2.23	0.00	3.45	0.00	2.52	-0.00	1.20
time (sec)	N/A	0.388	0.430	0.067	0.000	2.056	0.000	0.275	0.000	2.109

Problem 895	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	285	285	414	1262	0	1601	0	458	-1	371
N.S.	1	1.00	1.45	4.43	0.00	5.62	0.00	1.61	-0.00	1.30
time (sec)	N/A	0.268	0.793	0.060	0.000	1.476	0.000	0.288	0.000	2.353

Problem 896	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	201	860	0	1061	0	314	-1	246
N.S.	1	1.00	1.06	4.55	0.00	5.61	0.00	1.66	-0.01	1.30
time (sec)	N/A	0.133	0.394	0.061	0.000	1.486	0.000	0.279	0.000	1.733

Problem 897	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	110	141	0	248	0	195	131	134
N.S.	1	1.00	1.17	1.50	0.00	2.64	0.00	2.07	1.39	1.43
time (sec)	N/A	0.038	0.250	0.057	0.000	1.157	0.000	0.260	1.732	1.178

Problem 898	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	114	138	0	244	0	196	128	130
N.S.	1	1.00	1.00	1.21	0.00	2.14	0.00	1.72	1.12	1.14
time (sec)	N/A	0.044	0.170	0.051	0.000	1.197	0.000	0.253	1.570	0.986

Problem 899	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	99	132	0	245	0	193	121	123
N.S.	1	1.00	1.10	1.47	0.00	2.72	0.00	2.14	1.34	1.37
time (sec)	N/A	0.021	0.101	0.056	0.000	1.140	0.000	0.306	1.521	0.882

Problem 900	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	184	184	179	390	0	1077	0	333	-1	241
N.S.	1	1.00	0.97	2.12	0.00	5.85	0.00	1.81	-0.01	1.31
time (sec)	N/A	0.128	0.128	0.053	0.000	2.371	0.000	0.255	0.000	1.467

Problem 901	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	288	288	285	709	0	1655	0	483	-1	380
N.S.	1	1.00	0.99	2.46	0.00	5.75	0.00	1.68	-0.00	1.32
time (sec)	N/A	0.312	0.435	0.070	0.000	3.323	0.000	0.267	0.000	2.197

Problem 902	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	381	381	343	1051	0	2057	0	765	-1	574
N.S.	1	1.00	0.90	2.76	0.00	5.40	0.00	2.01	-0.00	1.51
time (sec)	N/A	0.461	0.732	0.081	0.000	8.991	0.000	0.283	0.000	3.654

Problem 903	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	119	288	0	550	0	448	395	267
N.S.	1	1.00	0.88	2.13	0.00	4.07	0.00	3.32	2.93	1.98
time (sec)	N/A	0.038	0.240	0.062	0.000	5.312	0.000	0.282	1.951	2.177

Problem 904	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	181	181	159	500	0	941	0	788	599	470
N.S.	1	1.00	0.88	2.76	0.00	5.20	0.00	4.35	3.31	2.60
time (sec)	N/A	0.059	0.189	0.057	0.000	26.442	0.000	0.321	2.468	4.354

Problem 905	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	19	19	49	38	48	47	0	56	41	40
N.S.	1	1.00	2.58	2.00	2.53	2.47	0.00	2.95	2.16	2.11
time (sec)	N/A	0.015	0.007	0.055	0.711	0.422	0.000	0.198	1.829	0.158

Problem 906	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	47	42	39	44	70	43	41	59
N.S.	1	1.00	0.85	0.76	0.71	0.80	1.27	0.78	0.75	1.07
time (sec)	N/A	0.026	0.047	0.050	0.599	0.421	8.079	0.150	1.263	0.034

Problem 907	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	48	42	39	44	70	43	41	59
N.S.	1	1.00	0.87	0.76	0.71	0.80	1.27	0.78	0.75	1.07
time (sec)	N/A	0.024	0.048	0.053	0.568	0.411	3.972	0.188	0.045	0.026

Problem 908	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	48	42	39	44	70	43	41	59
N.S.	1	1.00	0.87	0.76	0.71	0.80	1.27	0.78	0.75	1.07
time (sec)	N/A	0.025	0.046	0.055	0.484	0.420	1.751	0.151	0.044	0.027

Problem 909	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	47	42	39	42	53	43	41	59
N.S.	1	1.00	0.85	0.76	0.71	0.76	0.96	0.78	0.75	1.07
time (sec)	N/A	0.024	0.045	0.053	0.497	0.409	2.792	0.219	0.044	0.027

Problem 910	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	46	42	39	39	68	43	41	59
N.S.	1	1.00	0.87	0.79	0.74	0.74	1.28	0.81	0.77	1.11
time (sec)	N/A	0.024	0.045	0.046	0.500	0.422	0.469	0.156	0.045	0.026

Problem 911	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	51	51	44	42	39	39	65	43	41	45
N.S.	1	1.00	0.86	0.82	0.76	0.76	1.27	0.84	0.80	0.88
time (sec)	N/A	0.024	0.043	0.058	0.555	0.415	0.638	0.151	0.049	0.029

Problem 912	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	51	51	42	41	39	38	63	41	41	44
N.S.	1	1.00	0.82	0.80	0.76	0.75	1.24	0.80	0.80	0.86
time (sec)	N/A	0.023	0.055	0.058	0.662	0.423	0.809	0.152	0.045	0.035

Problem 913	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	51	51	42	42	40	39	65	42	42	45
N.S.	1	1.00	0.82	0.82	0.78	0.76	1.27	0.82	0.82	0.88
time (sec)	N/A	0.022	0.043	0.052	0.690	0.414	1.428	0.166	1.295	0.040

Problem 914	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	45	42	39	39	70	41	41	45
N.S.	1	1.00	0.85	0.79	0.74	0.74	1.32	0.77	0.77	0.85
time (sec)	N/A	0.029	0.045	0.061	0.524	0.418	3.089	0.150	0.040	0.038

Problem 915	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	102	102	93	98	162	103	93	131
N.S.	1	1.00	0.90	0.90	0.82	0.87	1.43	0.91	0.82	1.16
time (sec)	N/A	0.063	0.102	0.056	0.520	0.425	16.112	0.153	1.285	0.064

Problem 916	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	102	102	93	98	162	103	93	131
N.S.	1	1.00	0.90	0.90	0.82	0.87	1.43	0.91	0.82	1.16
time (sec)	N/A	0.060	0.096	0.051	0.458	0.408	9.004	0.164	0.034	0.057

Problem 917	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	102	102	93	98	162	103	93	131
N.S.	1	1.00	0.90	0.90	0.82	0.87	1.43	0.91	0.82	1.16
time (sec)	N/A	0.059	0.117	0.050	0.535	0.413	5.770	0.158	0.034	0.062

Problem 918	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	102	102	93	96	121	103	93	131
N.S.	1	1.00	0.90	0.90	0.82	0.85	1.07	0.91	0.82	1.16
time (sec)	N/A	0.057	0.093	0.054	0.498	0.416	5.598	0.158	0.039	0.063

Problem 919	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	100	102	93	93	160	103	93	131
N.S.	1	1.00	0.90	0.92	0.84	0.84	1.44	0.93	0.84	1.18
time (sec)	N/A	0.056	0.119	0.049	0.531	0.415	2.050	0.157	0.034	0.063

Problem 920	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	97	102	93	93	156	103	93	105
N.S.	1	1.00	0.89	0.94	0.85	0.85	1.43	0.94	0.85	0.96
time (sec)	N/A	0.061	0.119	0.054	0.564	0.436	2.295	0.160	0.039	0.089

Problem 921	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	94	102	93	93	153	101	94	105
N.S.	1	1.00	0.86	0.94	0.85	0.85	1.40	0.93	0.86	0.96
time (sec)	N/A	0.055	0.117	0.059	0.574	0.422	2.886	0.168	0.039	0.112

Problem 922	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	95	102	94	93	151	102	94	105
N.S.	1	1.00	0.87	0.94	0.86	0.85	1.39	0.94	0.86	0.96
time (sec)	N/A	0.056	0.113	0.051	0.623	0.426	3.940	0.203	0.060	0.093

Problem 923	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	95	102	94	93	153	102	94	105
N.S.	1	1.00	0.87	0.94	0.86	0.85	1.40	0.94	0.86	0.96
time (sec)	N/A	0.056	0.085	0.052	0.478	0.412	5.881	0.161	1.282	0.093

Problem 924	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	182	182	178	192	166	171	294	193	169	237
N.S.	1	1.00	0.98	1.05	0.91	0.94	1.62	1.06	0.93	1.30
time (sec)	N/A	0.125	0.199	0.049	0.559	0.418	36.591	0.226	0.070	0.123

Problem 925	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	182	182	178	192	166	171	294	193	169	237
N.S.	1	1.00	0.98	1.05	0.91	0.94	1.62	1.06	0.93	1.30
time (sec)	N/A	0.116	0.225	0.051	0.682	0.416	17.201	0.205	1.267	0.120

Problem 926	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	182	182	178	192	166	171	294	193	169	237
N.S.	1	1.00	0.98	1.05	0.91	0.94	1.62	1.06	0.93	1.30
time (sec)	N/A	0.112	0.192	0.054	0.663	0.437	9.586	0.185	0.052	0.101

Problem 927	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	182	182	178	192	166	169	216	193	169	237
N.S.	1	1.00	0.98	1.05	0.91	0.93	1.19	1.06	0.93	1.30
time (sec)	N/A	0.115	0.203	0.054	0.532	0.428	9.168	0.163	0.049	0.118

Problem 928	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	176	192	166	166	291	193	169	237
N.S.	1	1.00	0.98	1.07	0.92	0.92	1.62	1.07	0.94	1.32
time (sec)	N/A	0.111	0.196	0.054	0.562	0.436	5.896	0.165	0.050	0.129

Problem 929	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	176	176	173	192	166	166	284	193	169	195
N.S.	1	1.00	0.98	1.09	0.94	0.94	1.61	1.10	0.96	1.11
time (sec)	N/A	0.117	0.194	0.054	0.593	0.433	5.811	0.170	0.055	0.158

Problem 930	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	178	178	170	192	166	166	280	191	170	195
N.S.	1	1.00	0.96	1.08	0.93	0.93	1.57	1.07	0.96	1.10
time (sec)	N/A	0.112	0.160	0.048	0.574	0.425	7.051	0.179	0.051	0.188

Problem 931	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	178	178	169	192	167	166	275	192	170	195
N.S.	1	1.00	0.95	1.08	0.94	0.93	1.54	1.08	0.96	1.10
time (sec)	N/A	0.115	0.184	0.053	0.500	0.414	10.670	0.198	0.053	0.154

Problem 932	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	174	174	168	192	167	166	270	192	170	195
N.S.	1	1.00	0.97	1.10	0.96	0.95	1.55	1.10	0.98	1.12
time (sec)	N/A	0.115	0.187	0.061	0.518	0.431	12.899	0.171	0.057	0.164

Problem 933	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	178	178	172	192	167	166	275	192	170	195
N.S.	1	1.00	0.97	1.08	0.94	0.93	1.54	1.08	0.96	1.10
time (sec)	N/A	0.112	0.195	0.058	0.527	0.429	15.376	0.168	0.079	0.146

Problem 934	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	347	347	480	1141	0	7707	0	5319	14120	510
N.S.	1	1.00	1.38	3.29	0.00	22.21	0.00	15.33	40.69	1.47
time (sec)	N/A	4.545	0.884	0.147	0.000	8.655	0.000	1.359	3.188	1.102

Problem 935	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	275	275	413	855	0	5148	0	4399	10204	405
N.S.	1	1.00	1.50	3.11	0.00	18.72	0.00	16.00	37.11	1.47
time (sec)	N/A	1.481	0.639	0.096	0.000	3.215	0.000	1.376	2.641	1.033

Problem 936	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	221	221	264	581	0	2642	14158	3186	6401	302
N.S.	1	1.00	1.19	2.63	0.00	11.95	64.06	14.42	28.96	1.37
time (sec)	N/A	0.812	0.221	0.083	0.000	0.959	22.134	1.177	2.420	0.573

Problem 937	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	181	337	0	1577	4663	1404	4141	202
N.S.	1	1.00	1.01	1.87	0.00	8.76	25.91	7.80	23.01	1.12
time (sec)	N/A	0.285	0.278	0.107	0.000	0.677	24.864	0.952	2.181	0.423

Problem 938	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	199	199	216	362	0	2925	0	2809	6367	221
N.S.	1	1.00	1.09	1.82	0.00	14.70	0.00	14.12	31.99	1.11
time (sec)	N/A	0.546	0.206	0.117	0.000	0.940	0.000	1.231	2.497	0.579

Problem 939	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	284	284	258	630	0	5453	0	2874	10133	361
N.S.	1	1.00	0.91	2.22	0.00	19.20	0.00	10.12	35.68	1.27
time (sec)	N/A	0.806	0.582	0.116	0.000	1.382	0.000	1.290	3.345	0.896

Problem 940	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	307	307	337	913	0	7971	0	5013	13983	486
N.S.	1	1.00	1.10	2.97	0.00	25.96	0.00	16.33	45.55	1.58
time (sec)	N/A	1.959	0.789	0.096	0.000	3.417	0.000	2.147	4.146	1.109

Problem 941	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	381	381	430	1210	0	10514	0	4086	17910	631
N.S.	1	1.00	1.13	3.18	0.00	27.60	0.00	10.72	47.01	1.66
time (sec)	N/A	1.671	1.069	0.102	0.000	5.376	0.000	1.863	5.148	1.587

Problem 942	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	411	411	413	1537	0	7251	0	5691	16631	568
N.S.	1	1.00	1.00	3.74	0.00	17.64	0.00	13.85	40.46	1.38
time (sec)	N/A	4.166	1.399	0.098	0.000	8.894	0.000	2.127	5.143	3.459

Problem 943	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	321	321	339	1059	0	4653	0	4544	12408	372
N.S.	1	1.00	1.06	3.30	0.00	14.50	0.00	14.16	38.65	1.16
time (sec)	N/A	1.431	1.080	0.098	0.000	2.841	0.000	1.831	6.475	2.343

Problem 944	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	276	276	295	755	0	3462	0	3781	9434	344
N.S.	1	1.00	1.07	2.74	0.00	12.54	0.00	13.70	34.18	1.25
time (sec)	N/A	0.958	0.682	0.094	0.000	1.598	0.000	1.597	5.599	1.748

Problem 945	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	285	1796	0	4884	0	4434	12364	403
N.S.	1	1.00	0.94	5.91	0.00	16.07	0.00	14.59	40.67	1.33
time (sec)	N/A	0.834	0.634	0.367	0.000	3.793	0.000	1.811	5.996	1.560

Problem 946	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	406	406	367	1273	0	7597	0	5405	17623	483
N.S.	1	1.00	0.90	3.14	0.00	18.71	0.00	13.31	43.41	1.19
time (sec)	N/A	0.977	0.996	0.104	0.000	13.288	0.000	2.215	6.704	2.934

Problem 947	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	521	521	473	1679	0	10203	0	6335	21585	726
N.S.	1	1.00	0.91	3.22	0.00	19.58	0.00	12.16	41.43	1.39
time (sec)	N/A	1.555	1.834	0.184	0.000	29.203	0.000	2.562	6.804	4.798

Problem 948	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	528	528	745	2061	0	9631	0	3997	22943	804
N.S.	1	1.00	1.41	3.90	0.00	18.24	0.00	7.57	43.45	1.52
time (sec)	N/A	9.319	2.582	0.130	0.000	21.839	0.000	2.415	5.961	11.046

Problem 949	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	459	459	589	1669	0	7056	0	7586	19073	578
N.S.	1	1.00	1.28	3.64	0.00	15.37	0.00	16.53	41.55	1.26
time (sec)	N/A	4.687	2.146	0.180	0.000	7.254	0.000	3.364	4.976	8.742

Problem 950	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	414	414	558	1312	0	5646	0	3170	16720	529
N.S.	1	1.00	1.35	3.17	0.00	13.64	0.00	7.66	40.39	1.28
time (sec)	N/A	2.037	1.661	0.114	0.000	4.778	0.000	2.335	4.706	9.965

Problem 951	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	426	426	510	1364	0	7267	0	7277	19024	625
N.S.	1	1.00	1.20	3.20	0.00	17.06	0.00	17.08	44.66	1.47
time (sec)	N/A	1.246	1.435	0.109	0.000	9.405	0.000	3.195	5.049	6.680

Problem 952	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	468	468	440	11936	0	9907	0	4621	22946	699
N.S.	1	1.00	0.94	25.50	0.00	21.17	0.00	9.87	49.03	1.49
time (sec)	N/A	1.660	1.685	0.835	0.000	23.769	0.000	2.465	5.813	3.891

Problem 953	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	664	664	628	2918	0	12534	0	9534	29137	986
N.S.	1	1.00	0.95	4.39	0.00	18.88	0.00	14.36	43.88	1.48
time (sec)	N/A	1.710	2.311	0.125	0.000	71.078	0.000	3.357	8.044	15.139

Problem 954	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	672	1903	408	1350	11388	2736	769	0
N.S.	1	1.00	2.80	7.93	1.70	5.62	47.45	11.40	3.20	0.00
time (sec)	N/A	0.190	1.418	0.051	1.009	0.458	5.524	0.338	2.028	0.877

Problem 955	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	289	759	230	573	4150	1142	405	0
N.S.	1	1.00	1.86	4.90	1.48	3.70	26.77	7.37	2.61	0.00
time (sec)	N/A	0.097	0.479	0.051	0.787	0.438	2.629	0.249	1.656	0.185

Problem 956	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	91	205	104	171	1022	338	171	0
N.S.	1	1.00	1.10	2.47	1.25	2.06	12.31	4.07	2.06	0.00
time (sec)	N/A	0.042	0.114	0.044	0.688	0.425	1.018	0.173	1.440	0.086

Problem 957	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	136	136	118	402	288	427	4537	847	400	0
N.S.	1	1.00	0.87	2.96	2.12	3.14	33.36	6.23	2.94	0.00
time (sec)	N/A	0.098	0.117	0.050	0.763	0.429	4.746	0.182	1.644	0.088

Problem 958	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	177	200	178	218	230	210	182	0
N.S.	1	1.00	1.50	1.69	1.51	1.85	1.95	1.78	1.54	0.00
time (sec)	N/A	0.175	0.060	0.045	0.476	0.355	0.104	0.168	0.096	0.000

Problem 959	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	135	152	137	168	177	164	146	0
N.S.	1	1.00	1.14	1.29	1.16	1.42	1.50	1.39	1.24	0.00
time (sec)	N/A	0.137	0.043	0.049	0.609	0.352	0.093	0.157	1.374	0.000

Problem 960	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	91	104	96	117	121	117	102	0
N.S.	1	1.00	0.92	1.05	0.97	1.18	1.22	1.18	1.03	0.00
time (sec)	N/A	0.101	0.042	0.046	0.523	0.358	0.084	0.161	0.047	0.000

Problem 961	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	55	56	55	65	66	69	57	0
N.S.	1	1.00	0.90	0.92	0.90	1.07	1.08	1.13	0.93	0.00
time (sec)	N/A	0.063	0.022	0.040	0.555	0.361	0.073	0.154	1.355	0.000

Problem 962	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	29	28	27	29	29	29	28	0
N.S.	1	1.00	0.88	0.85	0.82	0.88	0.88	0.88	0.85	0.00
time (sec)	N/A	0.023	0.005	0.043	0.576	0.358	0.065	0.147	1.337	0.000

Problem 963	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	88	138	105	106	95	117	113	0
N.S.	1	1.00	1.01	1.59	1.21	1.22	1.09	1.34	1.30	0.00
time (sec)	N/A	0.098	0.044	0.040	0.542	0.399	0.341	0.163	0.075	0.001

Problem 964	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	93	155	109	170	121	167	116	0
N.S.	1	1.00	0.94	1.57	1.10	1.72	1.22	1.69	1.17	0.00
time (sec)	N/A	0.115	0.078	0.056	0.608	0.391	0.658	0.161	1.395	0.001

Problem 965	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	96	174	120	186	138	113	123	0
N.S.	1	1.00	0.92	1.67	1.15	1.79	1.33	1.09	1.18	0.00
time (sec)	N/A	0.107	0.082	0.055	0.488	0.399	1.491	0.158	0.113	0.001

Problem 966	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	112	182	137	168	158	119	134	0
N.S.	1	1.00	1.01	1.64	1.23	1.51	1.42	1.07	1.21	0.00
time (sec)	N/A	0.106	0.053	0.048	0.550	0.402	3.200	0.151	1.405	0.001

Problem 967	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	101	118	140	140	168	177	134	0
N.S.	1	1.00	0.87	1.02	1.21	1.21	1.45	1.53	1.16	0.00
time (sec)	N/A	0.099	0.044	0.047	0.589	0.394	6.109	0.235	0.068	0.001

Problem 968	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	104	118	156	156	185	115	154	0
N.S.	1	1.00	0.88	1.00	1.32	1.32	1.57	0.97	1.31	0.00
time (sec)	N/A	0.100	0.048	0.058	0.625	0.395	10.373	0.151	0.078	0.001

Problem 969	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	282	282	309	1616	755	1417	0	2827	1176	0
N.S.	1	1.00	1.10	5.73	2.68	5.02	0.00	10.02	4.17	0.00
time (sec)	N/A	0.227	0.444	0.057	0.757	0.456	0.000	0.268	2.100	0.144

Problem 970	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	228	228	228	247	239	291	301	285	234	0
N.S.	1	1.00	1.00	1.08	1.05	1.28	1.32	1.25	1.03	0.00
time (sec)	N/A	0.248	0.081	0.039	0.580	0.361	0.113	0.155	0.110	0.000

Problem 971	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	162	172	171	205	212	205	161	0
N.S.	1	1.00	1.00	1.06	1.06	1.27	1.31	1.27	0.99	0.00
time (sec)	N/A	0.224	0.055	0.044	0.642	0.349	0.101	0.150	0.056	0.000

Problem 972	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	101	97	103	117	121	123	102	0
N.S.	1	1.00	1.01	0.97	1.03	1.17	1.21	1.23	1.02	0.00
time (sec)	N/A	0.112	0.030	0.044	0.489	0.361	0.086	0.155	0.048	0.000

Problem 973	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	49	52	51	53	54	53	51	0
N.S.	1	1.00	0.89	0.95	0.93	0.96	0.98	0.96	0.93	0.00
time (sec)	N/A	0.044	0.013	0.039	0.473	0.352	0.076	0.159	1.343	0.000

Problem 974	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	161	161	156	369	282	283	280	322	308	0
N.S.	1	1.00	0.97	2.29	1.75	1.76	1.74	2.00	1.91	0.00
time (sec)	N/A	0.226	0.141	0.047	0.536	0.406	0.621	0.155	1.368	0.001

Problem 975	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	194	194	184	394	291	420	316	380	371	0
N.S.	1	1.00	0.95	2.03	1.50	2.16	1.63	1.96	1.91	0.00
time (sec)	N/A	0.278	0.077	0.053	0.527	0.411	1.386	0.169	1.430	0.001

Problem 976	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	232	232	219	420	302	483	362	307	334	0
N.S.	1	1.00	0.94	1.81	1.30	2.08	1.56	1.32	1.44	0.00
time (sec)	N/A	0.321	0.159	0.057	0.622	0.408	4.072	0.159	0.145	0.001

Problem 977	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	220	446	311	505	374	299	328	0
N.S.	1	1.00	0.92	1.87	1.31	2.12	1.57	1.26	1.38	0.00
time (sec)	N/A	0.300	0.161	0.069	0.541	0.394	11.733	0.158	0.141	0.001

Problem 978	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	275	465	321	475	381	474	338	0
N.S.	1	1.00	1.15	1.94	1.34	1.98	1.59	1.98	1.41	0.00
time (sec)	N/A	0.282	0.142	0.063	0.580	0.410	32.260	0.177	1.470	0.001

Problem 979	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	248	248	269	472	340	407	405	301	343	0
N.S.	1	1.00	1.08	1.90	1.37	1.64	1.63	1.21	1.38	0.00
time (sec)	N/A	0.240	0.125	0.063	0.672	0.410	94.462	0.158	1.465	0.001

Problem 980	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	253	253	257	307	340	340	0	318	337	0
N.S.	1	1.00	1.02	1.21	1.34	1.34	0.00	1.26	1.33	0.00
time (sec)	N/A	0.227	0.111	0.052	0.643	0.397	0.000	0.179	0.133	0.001

Problem 981	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	255	255	260	307	359	359	0	320	357	0
N.S.	1	1.00	1.02	1.20	1.41	1.41	0.00	1.25	1.40	0.00
time (sec)	N/A	0.224	0.110	0.051	0.705	0.380	0.000	0.157	0.120	0.001

Problem 982	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	484	484	525	4138	1527	3254	0	6663	2500	0
N.S.	1	1.00	1.08	8.55	3.15	6.72	0.00	13.77	5.17	0.00
time (sec)	N/A	0.407	0.980	0.072	0.981	0.487	0.000	0.390	2.881	0.660

Problem 983	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	412	412	412	444	428	540	564	524	445	0
N.S.	1	1.00	1.00	1.08	1.04	1.31	1.37	1.27	1.08	0.00
time (sec)	N/A	0.510	0.155	0.045	0.508	0.365	0.147	0.160	0.160	0.000

Problem 984	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	305	305	305	342	329	416	430	408	340	0
N.S.	1	1.00	1.00	1.12	1.08	1.36	1.41	1.34	1.11	0.00
time (sec)	N/A	0.475	0.116	0.044	0.589	0.375	0.131	0.200	1.419	0.000

Problem 985	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	225	240	242	292	303	292	235	0
N.S.	1	1.00	1.00	1.07	1.08	1.30	1.35	1.30	1.04	0.00
time (sec)	N/A	0.298	0.078	0.042	0.466	0.396	0.115	0.176	0.092	0.000

Problem 986	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	139	139	141	138	149	169	177	177	147	0
N.S.	1	1.00	1.01	0.99	1.07	1.22	1.27	1.27	1.06	0.00
time (sec)	N/A	0.163	0.044	0.040	0.527	0.388	0.094	0.190	1.372	0.000

Problem 987	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	75	76	73	77	80	77	69	0
N.S.	1	1.00	1.00	1.01	0.97	1.03	1.07	1.03	0.92	0.00
time (sec)	N/A	0.074	0.012	0.041	0.553	0.372	0.083	0.150	0.038	0.000

Problem 988	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	257	257	248	708	530	531	578	629	560	0
N.S.	1	1.00	0.96	2.75	2.06	2.07	2.25	2.45	2.18	0.00
time (sec)	N/A	0.449	0.102	0.055	0.554	0.431	1.008	0.183	1.387	0.001

Problem 989	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	287	287	274	742	541	722	619	673	997	0
N.S.	1	1.00	0.95	2.59	1.89	2.52	2.16	2.34	3.47	0.00
time (sec)	N/A	0.545	0.119	0.066	0.532	0.423	2.288	0.198	1.444	0.001

Problem 990	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	359	359	342	775	550	819	660	599	828	0
N.S.	1	1.00	0.95	2.16	1.53	2.28	1.84	1.67	2.31	0.00
time (sec)	N/A	0.583	0.146	0.096	0.670	0.426	7.266	0.186	0.190	0.001

Problem 991	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	422	422	400	807	561	910	700	581	676	0
N.S.	1	1.00	0.95	1.91	1.33	2.16	1.66	1.38	1.60	0.00
time (sec)	N/A	0.636	0.160	0.073	0.570	0.407	23.065	0.165	0.202	0.001

Problem 992	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	207	207	187	396	309	331	396	330	322	0
N.S.	1	1.00	0.90	1.91	1.49	1.60	1.91	1.59	1.56	0.00
time (sec)	N/A	0.263	0.133	0.050	0.502	0.417	7.180	0.156	1.675	0.001

Problem 993	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	118	252	200	216	264	207	208	0
N.S.	1	1.00	0.92	1.97	1.56	1.69	2.06	1.62	1.62	0.00
time (sec)	N/A	0.156	0.078	0.056	0.607	0.412	4.588	0.152	1.582	0.001

Problem 994	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	74	144	115	125	163	117	122	0
N.S.	1	1.00	0.96	1.87	1.49	1.62	2.12	1.52	1.58	0.00
time (sec)	N/A	0.086	0.044	0.050	0.589	0.417	2.803	0.151	0.193	0.001

Problem 995	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	46	68	57	57	88	59	58	0
N.S.	1	1.00	1.02	1.51	1.27	1.27	1.96	1.31	1.29	0.00
time (sec)	N/A	0.045	0.023	0.046	0.504	0.417	1.364	0.146	0.177	0.001

Problem 996	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	29	29	29	32	29	28	41	31	28	0
N.S.	1	1.00	1.00	1.10	1.00	0.97	1.41	1.07	0.97	0.00
time (sec)	N/A	0.020	0.010	0.049	0.471	0.401	0.412	0.180	1.400	0.000

Problem 997	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	68	68	63	94	68	65	0	85	67	0
N.S.	1	1.00	0.93	1.38	1.00	0.96	0.00	1.25	0.99	0.00
time (sec)	N/A	0.073	0.043	0.058	0.529	1.541	0.000	0.160	1.671	0.001

Problem 998	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	106	169	150	260	0	323	141	0
N.S.	1	1.00	0.96	1.54	1.36	2.36	0.00	2.94	1.28	0.00
time (sec)	N/A	0.134	0.136	0.060	0.626	10.348	0.000	0.238	1.809	0.001

Problem 999	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	171	171	169	275	312	644	0	308	284	0
N.S.	1	1.00	0.99	1.61	1.82	3.77	0.00	1.80	1.66	0.00
time (sec)	N/A	0.225	0.203	0.054	0.707	37.442	0.000	0.160	1.965	0.001

Problem 1000	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	245	245	241	415	553	1133	0	475	471	0
N.S.	1	1.00	0.98	1.69	2.26	4.62	0.00	1.94	1.92	0.00
time (sec)	N/A	0.302	0.338	0.081	0.784	127.907	0.000	0.169	2.248	0.001

Problem 1001	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	155	403	310	517	644	315	331	0
N.S.	1	1.00	0.99	2.58	1.99	3.31	4.13	2.02	2.12	0.00
time (sec)	N/A	0.225	0.088	0.062	0.504	0.455	15.978	0.155	1.737	0.001

Problem 1002	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	128	286	225	362	502	229	212	0
N.S.	1	1.00	1.00	2.23	1.76	2.83	3.92	1.79	1.66	0.00
time (sec)	N/A	0.159	0.070	0.062	0.514	0.442	9.384	0.189	1.594	0.001

Problem 1003	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	101	199	165	258	367	167	154	0
N.S.	1	1.00	0.94	1.84	1.53	2.39	3.40	1.55	1.43	0.00
time (sec)	N/A	0.121	0.112	0.051	0.474	0.416	3.861	0.155	0.267	0.001

Problem 1004	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	80	133	106	184	233	112	117	0
N.S.	1	1.00	0.93	1.55	1.23	2.14	2.71	1.30	1.36	0.00
time (sec)	N/A	0.082	0.101	0.056	0.470	0.434	1.221	0.156	1.438	0.001

Problem 1005	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	56	78	67	107	128	71	58	0
N.S.	1	1.00	0.90	1.26	1.08	1.73	2.06	1.15	0.94	0.00
time (sec)	N/A	0.050	0.045	0.055	0.644	0.402	0.474	0.160	1.416	0.000

Problem 1006	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	146	248	227	450	0	268	201	0
N.S.	1	1.00	0.99	1.69	1.54	3.06	0.00	1.82	1.37	0.00
time (sec)	N/A	0.199	0.164	0.058	0.707	34.689	0.000	0.163	2.044	0.001

Problem 1007	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	201	201	201	357	467	1034	0	670	410	0
N.S.	1	1.00	1.00	1.78	2.32	5.14	0.00	3.33	2.04	0.00
time (sec)	N/A	0.331	0.315	0.076	0.713	134.900	0.000	0.282	2.405	0.001

Problem 1008	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	F(-1)	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	283	283	279	528	813	0	0	745	726	0
N.S.	1	1.00	0.99	1.87	2.87	0.00	0.00	2.63	2.57	0.00
time (sec)	N/A	0.462	0.488	0.105	1.111	0.000	0.000	0.204	2.937	0.001

Problem 1009	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	257	257	254	661	513	889	0	511	498	0
N.S.	1	1.00	0.99	2.57	2.00	3.46	0.00	1.99	1.94	0.00
time (sec)	N/A	0.428	0.129	0.072	0.802	0.521	0.000	0.161	1.835	0.001

Problem 1010	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	235	235	228	536	430	736	881	428	403	0
N.S.	1	1.00	0.97	2.28	1.83	3.13	3.75	1.82	1.71	0.00
time (sec)	N/A	0.332	0.158	0.057	0.596	0.456	77.980	0.163	1.803	0.001

Problem 1011	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	185	185	177	440	347	627	653	391	345	0
N.S.	1	1.00	0.96	2.38	1.88	3.39	3.53	2.11	1.86	0.00
time (sec)	N/A	0.246	0.123	0.056	0.550	0.458	28.928	0.176	1.617	0.001

Problem 1012	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	190	365	293	558	660	324	319	0
N.S.	1	1.00	0.96	1.84	1.48	2.82	3.33	1.64	1.61	0.00
time (sec)	N/A	0.245	0.267	0.060	0.590	0.417	10.666	0.193	0.257	0.001

Problem 1013	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	168	168	162	261	217	410	449	225	223	0
N.S.	1	1.00	0.96	1.55	1.29	2.44	2.67	1.34	1.33	0.00
time (sec)	N/A	0.210	0.145	0.058	0.499	0.417	2.867	0.157	1.532	0.001

Problem 1014	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	106	138	131	225	219	124	136	0
N.S.	1	1.00	0.97	1.27	1.20	2.06	2.01	1.14	1.25	0.00
time (sec)	N/A	0.099	0.078	0.048	0.510	0.416	0.716	0.154	0.107	0.001

Problem 1015	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	F(-1)	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	279	279	276	490	612	0	0	649	512	0
N.S.	1	1.00	0.99	1.76	2.19	0.00	0.00	2.33	1.84	0.00
time (sec)	N/A	0.502	1.052	0.072	0.708	0.000	0.000	0.242	2.613	0.001

Problem 1016	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	F(-1)	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	331	331	328	598	1043	0	0	1292	879	0
N.S.	1	1.00	0.99	1.81	3.15	0.00	0.00	3.90	2.66	0.00
time (sec)	N/A	0.672	0.551	0.084	0.909	0.000	0.000	0.365	3.260	0.001

Problem 1017	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	404	404	422	1027	760	1022	0	521	827	559
N.S.	1	1.00	1.04	2.54	1.88	2.53	0.00	1.29	2.05	1.38
time (sec)	N/A	0.547	1.076	0.062	0.763	0.495	0.000	0.232	3.839	2.136

Problem 1018	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	293	671	512	684	0	349	537	361
N.S.	1	1.00	1.10	2.51	1.92	2.56	0.00	1.31	2.01	1.35
time (sec)	N/A	0.274	0.585	0.059	0.614	0.475	0.000	0.216	3.030	1.419

Problem 1019	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	177	372	295	408	0	205	299	199
N.S.	1	1.00	1.15	2.42	1.92	2.65	0.00	1.33	1.94	1.29
time (sec)	N/A	0.141	0.431	0.050	0.537	0.441	0.000	0.232	2.441	0.763

Problem 1020	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	108	157	154	204	0	102	127	105
N.S.	1	1.00	1.11	1.62	1.59	2.10	0.00	1.05	1.31	1.08
time (sec)	N/A	0.039	0.183	0.047	0.561	0.453	0.000	0.271	1.695	0.001

Problem 1021	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	208	1069	0	800	0	0	-1	214
N.S.	1	1.00	1.04	5.34	0.00	4.00	0.00	0.00	-0.00	1.07
time (sec)	N/A	0.276	0.695	0.057	0.000	1.229	0.000	0.000	0.000	1.006

Problem 1022	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	185	185	252	2285	0	1513	0	0	-1	191
N.S.	1	1.00	1.36	12.35	0.00	8.18	0.00	0.00	-0.01	1.03
time (sec)	N/A	0.186	1.261	0.059	0.000	0.845	0.000	0.000	0.000	1.412

Problem 1023	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	235	235	690	4316	0	2234	0	819	-1	250
N.S.	1	1.00	2.94	18.37	0.00	9.51	0.00	3.49	-0.00	1.06
time (sec)	N/A	0.323	3.647	0.066	0.000	1.948	0.000	0.397	0.000	2.712

Problem 1024	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	199	6956	0	1216	0	1555	-1	0
N.S.	1	1.00	1.00	34.78	0.00	6.08	0.00	7.78	-0.00	0.00
time (sec)	N/A	0.181	0.386	0.066	0.000	0.453	0.000	0.344	0.000	180.104

Problem 1025	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	310	310	279	10550	0	2190	0	1720	-1	0
N.S.	1	1.00	0.90	34.03	0.00	7.06	0.00	5.55	-0.00	0.00
time (sec)	N/A	0.405	0.747	0.099	0.000	0.489	0.000	1.368	0.000	180.081

Problem 1026	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	449	449	387	15015	0	3454	0	4102	-1	0
N.S.	1	1.00	0.86	33.44	0.00	7.69	0.00	9.14	-0.00	0.00
time (sec)	N/A	0.782	2.708	0.089	0.000	0.543	0.000	0.544	0.000	180.006

Problem 1027	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	345	345	415	949	728	987	0	518	-1	537
N.S.	1	1.00	1.20	2.75	2.11	2.86	0.00	1.50	-0.00	1.56
time (sec)	N/A	0.337	1.597	0.061	0.598	0.460	0.000	0.249	0.000	2.259

Problem 1028	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	245	544	434	603	0	317	-1	303
N.S.	1	1.00	1.17	2.60	2.08	2.89	0.00	1.52	-0.00	1.45
time (sec)	N/A	0.191	0.590	0.056	0.538	0.451	0.000	0.239	0.000	1.272

Problem 1029	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	146	239	236	297	0	162	208	152
N.S.	1	1.00	1.09	1.78	1.76	2.22	0.00	1.21	1.55	1.13
time (sec)	N/A	0.053	0.251	0.048	0.550	0.457	0.000	0.218	1.849	0.001

Problem 1030	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	392	392	386	2334	0	1695	0	0	-1	487
N.S.	1	1.00	0.98	5.95	0.00	4.32	0.00	0.00	-0.00	1.24
time (sec)	N/A	0.590	1.409	0.051	0.000	32.555	0.000	0.000	0.000	8.700

Problem 1031	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	323	323	353	4283	0	2017	0	0	-1	437
N.S.	1	1.00	1.09	13.26	0.00	6.24	0.00	0.00	-0.00	1.35
time (sec)	N/A	0.424	1.641	0.064	0.000	3.863	0.000	0.000	0.000	2.945

Problem 1032	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	314	314	1358	7365	0	3342	0	936	-1	348
N.S.	1	1.00	4.32	23.46	0.00	10.64	0.00	2.98	-0.00	1.11
time (sec)	N/A	0.427	6.125	0.064	0.000	1.846	0.000	0.522	0.000	5.218

Problem 1033	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	426	426	1533	11396	0	5005	0	1788	-1	0
N.S.	1	1.00	3.60	26.75	0.00	11.75	0.00	4.20	-0.00	0.00
time (sec)	N/A	0.530	6.192	0.071	0.000	6.422	0.000	0.667	0.000	180.055

Problem 1034	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	421	421	1984	16396	0	5781	0	1255	-1	0
N.S.	1	1.00	4.71	38.95	0.00	13.73	0.00	2.98	-0.00	0.00
time (sec)	N/A	0.539	6.206	0.077	0.000	21.407	0.000	1.191	0.000	180.020

Problem 1035	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	269	269	268	22107	0	2338	0	4214	-1	606
N.S.	1	1.00	1.00	82.18	0.00	8.69	0.00	15.67	-0.00	2.25
time (sec)	N/A	0.231	1.043	0.092	0.000	0.485	0.000	0.704	0.000	14.029

Problem 1036	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	402	402	352	29243	0	3734	0	5748	-1	0
N.S.	1	1.00	0.88	72.74	0.00	9.29	0.00	14.30	-0.00	0.00
time (sec)	N/A	0.578	1.326	0.096	0.000	0.518	0.000	0.811	0.000	180.010

Problem 1037	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	565	565	505	37630	0	5398	0	7914	-1	0
N.S.	1	1.00	0.89	66.60	0.00	9.55	0.00	14.01	-0.00	0.00
time (sec)	N/A	1.015	3.505	0.406	0.000	0.566	0.000	0.981	0.000	180.010

Problem 1038	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	423	423	417	1227	944	1292	0	681	-1	713
N.S.	1	1.00	0.99	2.90	2.23	3.05	0.00	1.61	-0.00	1.69
time (sec)	N/A	0.433	1.450	0.076	0.598	0.458	0.000	0.304	0.000	3.277

Problem 1039	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	315	716	573	802	0	425	-1	407
N.S.	1	1.00	1.19	2.71	2.17	3.04	0.00	1.61	-0.00	1.54
time (sec)	N/A	0.250	0.798	0.053	0.544	0.455	0.000	0.270	0.000	1.764

Problem 1040	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	171	171	171	321	318	392	0	221	-1	200
N.S.	1	1.00	1.00	1.88	1.86	2.29	0.00	1.29	-0.01	1.17
time (sec)	N/A	0.073	0.344	0.046	0.623	0.433	0.000	0.256	0.000	0.001

Problem 1041	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	703	703	650	4097	0	0	0	0	-1	905
N.S.	1	1.00	0.92	5.83	0.00	0.00	0.00	0.00	-0.00	1.29
time (sec)	N/A	1.125	2.466	0.056	0.000	0.000	0.000	0.000	0.000	11.420

Problem 1042	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	574	574	618	7095	0	3709	0	0	-1	852
N.S.	1	1.00	1.08	12.36	0.00	6.46	0.00	0.00	-0.00	1.48
time (sec)	N/A	0.928	3.197	0.062	0.000	77.269	0.000	0.000	0.000	6.619

Problem 1043	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	508	508	2047	11558	0	4075	0	1425	-1	9706
N.S.	1	1.00	4.03	22.75	0.00	8.02	0.00	2.81	-0.00	19.11
time (sec)	N/A	0.748	6.174	0.072	0.000	11.438	0.000	0.630	0.000	153.921

Problem 1044	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	495	495	2233	17133	0	5934	0	1907	-1	0
N.S.	1	1.00	4.51	34.61	0.00	11.99	0.00	3.85	-0.00	0.00
time (sec)	N/A	0.662	6.261	0.087	0.000	5.199	0.000	0.801	0.000	180.064

Problem 1045	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	633	633	2680	23819	0	8045	0	0	-1	0
N.S.	1	1.00	4.23	37.63	0.00	12.71	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.902	6.288	0.089	0.000	15.835	0.000	0.000	0.000	180.053

Problem 1046	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	305	305	278	646	474	621	0	311	-1	322
N.S.	1	1.00	0.91	2.12	1.55	2.04	0.00	1.02	-0.00	1.06
time (sec)	N/A	0.443	0.790	0.063	0.587	0.452	0.000	0.329	0.000	1.217

Problem 1047	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	190	395	299	391	0	196	-1	196
N.S.	1	1.00	1.01	2.09	1.58	2.07	0.00	1.04	-0.01	1.04
time (sec)	N/A	0.190	0.224	0.059	0.678	0.434	0.000	0.282	0.000	1.222

Problem 1048	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	115	202	159	217	0	110	-1	112
N.S.	1	1.00	1.16	2.04	1.61	2.19	0.00	1.11	-0.01	1.13
time (sec)	N/A	0.076	0.327	0.049	0.698	0.430	0.000	0.281	0.000	0.535

Problem 1049	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	80	78	75	115	0	60	77	67
N.S.	1	1.00	1.45	1.42	1.36	2.09	0.00	1.09	1.40	1.22
time (sec)	N/A	0.033	0.059	0.047	0.592	0.424	0.000	0.267	2.120	0.002

Problem 1050	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	113	113	131	298	0	534	0	0	-1	124
N.S.	1	1.00	1.16	2.64	0.00	4.73	0.00	0.00	-0.01	1.10
time (sec)	N/A	0.082	0.166	0.049	0.000	0.494	0.000	0.000	0.000	0.482

Problem 1051	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	133	849	0	399	0	509	-1	930
N.S.	1	1.00	1.04	6.63	0.00	3.12	0.00	3.98	-0.01	7.27
time (sec)	N/A	0.085	0.070	0.062	0.000	0.436	0.000	1.096	0.000	2.951

Problem 1052	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	217	1821	0	954	0	769	-1	217
N.S.	1	1.00	1.00	8.43	0.00	4.42	0.00	3.56	-0.00	1.00
time (sec)	N/A	0.263	0.390	0.060	0.000	0.456	0.000	0.310	0.000	2.032

Problem 1053	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	331	331	345	3242	0	1781	0	1667	-1	12551
N.S.	1	1.00	1.04	9.79	0.00	5.38	0.00	5.04	-0.00	37.92
time (sec)	N/A	0.497	1.716	0.128	0.000	0.490	0.000	0.385	0.000	166.049

Problem 1054	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	229	450	367	694	0	251	-1	287
N.S.	1	1.00	0.96	1.89	1.54	2.92	0.00	1.05	-0.00	1.21
time (sec)	N/A	0.215	0.234	0.063	0.723	0.439	0.000	0.314	0.000	0.793

Problem 1055	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	150	252	227	446	0	155	-1	179
N.S.	1	1.00	0.99	1.67	1.50	2.95	0.00	1.03	-0.01	1.19
time (sec)	N/A	0.150	0.199	0.061	0.586	0.431	0.000	0.318	0.000	0.547

Problem 1056	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	101	113	125	254	0	95	101	107
N.S.	1	1.00	1.19	1.33	1.47	2.99	0.00	1.12	1.19	1.26
time (sec)	N/A	0.038	0.067	0.053	0.571	0.442	0.000	0.305	2.273	0.437

Problem 1057	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	30	37	55	44	0	33	31	42
N.S.	1	1.00	0.91	1.12	1.67	1.33	0.00	1.00	0.94	1.27
time (sec)	N/A	0.010	0.012	0.046	0.601	0.410	0.000	0.281	1.646	0.002

Problem 1058	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	141	141	144	837	0	543	0	187	-1	156
N.S.	1	1.00	1.02	5.94	0.00	3.85	0.00	1.33	-0.01	1.11
time (sec)	N/A	0.121	0.159	0.064	0.000	0.427	0.000	0.279	0.000	0.616

Problem 1059	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	245	245	226	2069	0	1240	0	1181	-1	312
N.S.	1	1.00	0.92	8.44	0.00	5.06	0.00	4.82	-0.00	1.27
time (sec)	N/A	0.313	0.593	0.064	0.000	0.466	0.000	1.618	0.000	1.506

Problem 1060	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	374	374	377	3735	0	2282	0	1095	-1	10583
N.S.	1	1.00	1.01	9.99	0.00	6.10	0.00	2.93	-0.00	28.30
time (sec)	N/A	0.590	1.503	0.069	0.000	0.529	0.000	0.391	0.000	58.960

Problem 1061	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	341	341	237	1026	795	974	0	370	-1	435
N.S.	1	1.00	0.70	3.01	2.33	2.86	0.00	1.09	-0.00	1.28
time (sec)	N/A	0.458	5.372	0.059	0.648	0.463	0.000	0.299	0.000	1.028

Problem 1062	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	220	220	199	680	550	671	0	289	-1	333
N.S.	1	1.00	0.90	3.09	2.50	3.05	0.00	1.31	-0.00	1.51
time (sec)	N/A	0.203	5.482	0.062	0.721	0.430	0.000	0.308	0.000	0.956

Problem 1063	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	149	197	347	189	0	176	190	204
N.S.	1	1.00	1.62	2.14	3.77	2.05	0.00	1.91	2.07	2.22
time (sec)	N/A	0.052	0.075	0.054	0.515	0.428	0.000	0.293	1.908	0.566

Problem 1064	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	107	141	211	152	0	132	134	149
N.S.	1	1.00	0.96	1.27	1.90	1.37	0.00	1.19	1.21	1.34
time (sec)	N/A	0.098	0.048	0.052	0.544	0.410	0.000	0.297	1.733	0.457

Problem 1065	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	72	83	130	101	0	82	76	90
N.S.	1	1.00	1.03	1.19	1.86	1.44	0.00	1.17	1.09	1.29
time (sec)	N/A	0.022	0.023	0.054	0.531	0.397	0.000	0.236	1.629	0.002

Problem 1066	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	287	287	277	2000	0	1390	0	853	-1	437
N.S.	1	1.00	0.97	6.97	0.00	4.84	0.00	2.97	-0.00	1.52
time (sec)	N/A	0.354	0.767	0.055	0.000	0.464	0.000	0.275	0.000	1.806

Problem 1067	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	449	449	557	4295	0	2582	0	2413	-1	796
N.S.	1	1.00	1.24	9.57	0.00	5.75	0.00	5.37	-0.00	1.77
time (sec)	N/A	0.720	0.828	0.069	0.000	0.538	0.000	2.299	0.000	5.828

Problem 1068	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	113	121	112	271	683	1383	111	141
N.S.	1	1.00	0.90	0.96	0.89	2.15	5.42	10.98	0.88	1.12
time (sec)	N/A	0.089	0.141	0.049	0.569	0.410	9.271	0.242	0.101	0.091

Problem 1069	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	113	121	112	230	581	999	111	141
N.S.	1	1.00	0.90	0.96	0.89	1.83	4.61	7.93	0.88	1.12
time (sec)	N/A	0.079	0.123	0.046	0.464	0.398	4.639	0.215	0.072	0.091

Problem 1070	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	114	121	112	190	434	667	111	141
N.S.	1	1.00	0.90	0.96	0.89	1.51	3.44	5.29	0.88	1.12
time (sec)	N/A	0.073	0.112	0.049	0.493	0.404	17.816	0.190	0.073	0.090

Problem 1071	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	113	121	112	148	146	386	111	141
N.S.	1	1.00	0.90	0.96	0.89	1.17	1.16	3.06	0.88	1.12
time (sec)	N/A	0.077	0.099	0.045	0.508	0.397	4.182	0.172	0.070	0.080

Problem 1072	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	113	121	112	108	430	167	111	141
N.S.	1	1.00	0.91	0.98	0.90	0.87	3.47	1.35	0.90	1.14
time (sec)	N/A	0.076	0.086	0.048	0.597	0.404	47.605	0.179	0.072	0.079

Problem 1073	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	110	121	120	118	126	167	124	141
N.S.	1	1.00	0.90	0.99	0.98	0.97	1.03	1.37	1.02	1.16
time (sec)	N/A	0.076	0.046	0.057	0.570	0.406	24.164	0.180	1.553	0.083

Problem 1074	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	110	121	116	128	539	156	137	138
N.S.	1	1.00	0.90	0.99	0.95	1.05	4.42	1.28	1.12	1.13
time (sec)	N/A	0.074	0.046	0.049	0.641	0.410	1.556	0.180	0.086	0.092

Problem 1075	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	111	121	117	141	784	152	120	141
N.S.	1	1.00	0.91	0.99	0.96	1.16	6.43	1.25	0.98	1.16
time (sec)	N/A	0.075	0.047	0.047	0.582	0.415	3.427	0.189	0.092	0.098

Problem 1076	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	273	341	291	562	1352	2710	254	399
N.S.	1	1.00	1.02	1.28	1.09	2.10	5.06	10.15	0.95	1.49
time (sec)	N/A	0.214	0.232	0.072	0.492	0.422	15.939	0.340	1.618	0.190

Problem 1077	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	273	341	291	494	1556	2007	254	399
N.S.	1	1.00	1.02	1.28	1.09	1.85	5.83	7.52	0.95	1.49
time (sec)	N/A	0.152	0.204	0.051	0.612	0.419	52.785	0.287	1.619	0.185

Problem 1078	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	272	341	291	425	937	1382	254	399
N.S.	1	1.00	1.02	1.28	1.09	1.59	3.51	5.18	0.95	1.49
time (sec)	N/A	0.158	0.195	0.047	0.535	0.424	33.458	0.239	0.061	0.176

Problem 1079	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	273	341	291	357	377	835	254	399
N.S.	1	1.00	1.02	1.28	1.09	1.34	1.41	3.13	0.95	1.49
time (sec)	N/A	0.153	0.183	0.050	0.507	0.428	7.013	0.208	1.527	0.166

Problem 1080	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	265	265	273	341	291	290	944	378	254	399
N.S.	1	1.00	1.03	1.29	1.10	1.09	3.56	1.43	0.96	1.51
time (sec)	N/A	0.158	0.203	0.054	0.481	0.423	106.601	0.186	1.507	0.165

Problem 1081	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	263	263	273	341	299	299	321	441	296	399
N.S.	1	1.00	1.04	1.30	1.14	1.14	1.22	1.68	1.13	1.52
time (sec)	N/A	0.159	0.173	0.053	0.489	0.400	62.035	0.561	1.527	0.169

Problem 1082	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	263	263	271	341	297	310	292	427	316	399
N.S.	1	1.00	1.03	1.30	1.13	1.18	1.11	1.62	1.20	1.52
time (sec)	N/A	0.154	0.161	0.064	0.535	0.415	75.511	0.262	0.073	0.173

Problem 1083	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	263	263	272	341	298	322	1833	427	312	399
N.S.	1	1.00	1.03	1.30	1.13	1.22	6.97	1.62	1.19	1.52
time (sec)	N/A	0.157	0.154	0.057	0.576	0.410	4.863	0.234	1.560	0.199

Problem 1084	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	228	228	212	741	0	1474	0	476	6515	311
N.S.	1	1.00	0.93	3.25	0.00	6.46	0.00	2.09	28.57	1.36
time (sec)	N/A	0.561	0.501	0.115	0.000	15.890	0.000	0.297	2.358	0.303

Problem 1085	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	173	173	174	516	0	1006	199	316	5138	202
N.S.	1	1.00	1.01	2.98	0.00	5.82	1.15	1.83	29.70	1.17
time (sec)	N/A	0.362	0.227	0.075	0.000	4.204	136.765	0.239	2.189	0.209

Problem 1086	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	123	335	0	646	134	197	3810	136
N.S.	1	1.00	0.94	2.56	0.00	4.93	1.02	1.50	29.08	1.04
time (sec)	N/A	0.296	0.147	0.088	0.000	1.061	82.049	0.186	0.586	0.162

Problem 1087	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	101	196	0	450	104	116	2368	111
N.S.	1	1.00	1.00	1.94	0.00	4.46	1.03	1.15	23.45	1.10
time (sec)	N/A	0.175	0.114	0.064	0.000	0.519	17.771	0.204	1.910	0.178

Problem 1088	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	84	101	0	489	87	79	1130	96
N.S.	1	1.00	0.98	1.17	0.00	5.69	1.01	0.92	13.14	1.12
time (sec)	N/A	0.180	0.150	0.058	0.000	0.492	69.748	0.194	1.918	0.158

Problem 1089	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	89	168	0	835	107	129	3674	132
N.S.	1	1.00	0.75	1.42	0.00	7.08	0.91	1.09	31.14	1.12
time (sec)	N/A	0.302	0.030	0.066	0.000	0.729	61.492	0.225	3.123	0.328

Problem 1090	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	91	243	0	1709	160	217	6340	191
N.S.	1	1.00	0.55	1.48	0.00	10.42	0.98	1.32	38.66	1.16
time (sec)	N/A	0.325	0.031	0.069	0.000	2.060	66.516	0.219	3.918	0.480

Problem 1091	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	91	350	0	3081	228	386	13404	329
N.S.	1	1.00	0.40	1.56	0.00	13.69	1.01	1.72	59.57	1.46
time (sec)	N/A	0.450	0.034	0.066	0.000	7.484	78.316	0.234	4.722	0.655

Problem 1092	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	301	301	91	489	0	4757	311	615	11601	531
N.S.	1	1.00	0.30	1.62	0.00	15.80	1.03	2.04	38.54	1.76
time (sec)	N/A	0.552	0.039	0.095	0.000	25.167	92.506	0.278	5.646	0.935

Problem 1093	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	386	386	376	1075	0	0	0	846	12636	669
N.S.	1	1.00	0.97	2.78	0.00	0.00	0.00	2.19	32.74	1.73
time (sec)	N/A	1.194	2.363	0.098	0.000	0.000	0.000	0.314	6.713	0.963

Problem 1094	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	292	292	341	823	0	2104	0	639	7328	501
N.S.	1	1.00	1.17	2.82	0.00	7.21	0.00	2.19	25.10	1.72
time (sec)	N/A	0.882	1.547	0.087	0.000	73.697	0.000	0.305	3.293	0.769

Problem 1095	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	302	614	0	1589	0	468	5878	387
N.S.	1	1.00	1.34	2.73	0.00	7.06	0.00	2.08	26.12	1.72
time (sec)	N/A	0.582	1.226	0.070	0.000	10.826	0.000	0.237	2.700	1.055

Problem 1096	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	181	181	171	443	0	1146	0	334	4391	280
N.S.	1	1.00	0.94	2.45	0.00	6.33	0.00	1.85	24.26	1.55
time (sec)	N/A	0.337	0.331	0.069	0.000	1.262	0.000	0.213	2.608	0.811

Problem 1097	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	232	299	0	1574	1431	234	2558	194
N.S.	1	1.00	1.47	1.89	0.00	9.96	9.06	1.48	16.19	1.23
time (sec)	N/A	0.314	0.548	0.069	0.000	0.879	147.846	0.221	2.561	0.745

Problem 1098	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	188	188	231	370	0	1540	0	315	5828	249
N.S.	1	1.00	1.23	1.97	0.00	8.19	0.00	1.68	31.00	1.32
time (sec)	N/A	0.339	0.430	0.071	0.000	2.919	0.000	0.237	4.278	1.300

Problem 1099	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	191	427	0	3240	0	500	8946	429
N.S.	1	1.00	0.75	1.68	0.00	12.76	0.00	1.97	35.22	1.69
time (sec)	N/A	0.556	0.176	0.080	0.000	18.119	0.000	0.257	6.076	0.807

Problem 1100	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	344	344	194	535	0	5665	0	603	18450	672
N.S.	1	1.00	0.56	1.56	0.00	16.47	0.00	1.75	53.63	1.95
time (sec)	N/A	0.917	0.193	0.079	0.000	49.598	0.000	0.319	6.095	1.054

Problem 1101	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	457	457	194	707	0	8537	0	867	20597	994
N.S.	1	1.00	0.42	1.55	0.00	18.68	0.00	1.90	45.07	2.18
time (sec)	N/A	1.283	0.198	0.095	0.000	131.537	0.000	0.490	7.157	1.362

Problem 1102	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	461	461	589	1421	0	3989	0	1245	16542	1306
N.S.	1	1.00	1.28	3.08	0.00	8.65	0.00	2.70	35.88	2.83
time (sec)	N/A	1.215	5.223	0.088	0.000	141.137	0.000	0.363	5.051	2.012

Problem 1103	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	363	363	554	1218	0	3378	0	1047	11072	1116
N.S.	1	1.00	1.53	3.36	0.00	9.31	0.00	2.88	30.50	3.07
time (sec)	N/A	0.827	4.051	0.115	0.000	34.354	0.000	0.341	6.397	2.670

Problem 1104	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	344	344	516	1004	0	2754	0	841	7001	746
N.S.	1	1.00	1.50	2.92	0.00	8.01	0.00	2.44	20.35	2.17
time (sec)	N/A	0.698	3.045	0.084	0.000	4.026	0.000	0.340	3.852	2.211

Problem 1105	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	346	346	472	785	0	3471	0	661	5796	568
N.S.	1	1.00	1.36	2.27	0.00	10.03	0.00	1.91	16.75	1.64
time (sec)	N/A	0.869	2.853	0.078	0.000	2.067	0.000	0.279	4.465	2.186

Problem 1106	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	317	317	449	829	0	3396	0	841	8411	730
N.S.	1	1.00	1.42	2.62	0.00	10.71	0.00	2.65	26.53	2.30
time (sec)	N/A	0.700	2.216	0.076	0.000	7.840	0.000	0.286	5.716	3.096

Problem 1107	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	394	394	408	1009	0	4310	0	1046	11338	888
N.S.	1	1.00	1.04	2.56	0.00	10.94	0.00	2.65	28.78	2.25
time (sec)	N/A	0.900	1.480	0.079	0.000	34.570	0.000	0.309	7.110	2.474

Problem 1108	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	506	506	387	1022	0	7400	0	1313	23541	1208
N.S.	1	1.00	0.76	2.02	0.00	14.62	0.00	2.59	46.52	2.39
time (sec)	N/A	1.451	0.549	0.100	0.000	116.349	0.000	0.411	9.527	2.314

Problem 1109	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	F(-1)	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	644	644	388	1130	0	0	0	1600	24572	1590
N.S.	1	1.00	0.60	1.75	0.00	0.00	0.00	2.48	38.16	2.47
time (sec)	N/A	1.791	0.573	0.090	0.000	0.000	0.000	1.095	6.933	2.698

Problem 1110	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	233	247	237	268	287	256	231	0
N.S.	1	1.00	2.16	2.29	2.19	2.48	2.66	2.37	2.14	0.00
time (sec)	N/A	0.176	0.058	0.046	0.550	0.387	0.113	0.156	0.123	0.000

Problem 1111	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	194	199	194	215	226	207	185	0
N.S.	1	1.00	1.80	1.84	1.80	1.99	2.09	1.92	1.71	0.00
time (sec)	N/A	0.138	0.048	0.042	0.473	0.364	0.102	0.155	0.093	0.000

Problem 1112	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	150	151	148	164	173	160	141	0
N.S.	1	1.00	1.39	1.40	1.37	1.52	1.60	1.48	1.31	0.00
time (sec)	N/A	0.114	0.038	0.043	0.641	0.354	0.093	0.149	0.064	0.000

Problem 1113	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	106	103	102	113	119	113	98	0
N.S.	1	1.00	0.98	0.95	0.94	1.05	1.10	1.05	0.91	0.00
time (sec)	N/A	0.085	0.027	0.044	0.579	0.509	0.084	0.160	0.041	0.000

Problem 1114	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	62	55	56	62	66	66	55	0
N.S.	1	1.00	1.00	0.89	0.90	1.00	1.06	1.06	0.89	0.00
time (sec)	N/A	0.058	0.021	0.044	0.490	0.391	0.072	0.155	1.667	0.000

Problem 1115	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	31	31	32	27	26	26	29	26	26	0
N.S.	1	1.00	1.03	0.87	0.84	0.84	0.94	0.84	0.84	0.00
time (sec)	N/A	0.007	0.001	0.039	0.493	0.372	0.063	0.151	0.041	0.000

Problem 1116	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	80	116	97	98	82	97	100	0
N.S.	1	1.00	0.93	1.35	1.13	1.14	0.95	1.13	1.16	0.00
time (sec)	N/A	0.076	0.040	0.046	0.619	0.406	0.328	0.149	1.684	0.001

Problem 1117	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	89	89	86	131	101	152	104	151	105	0
N.S.	1	1.00	0.97	1.47	1.13	1.71	1.17	1.70	1.18	0.00
time (sec)	N/A	0.078	0.061	0.056	0.538	0.424	0.588	0.156	0.076	0.001

Problem 1118	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	88	144	111	168	117	96	111	0
N.S.	1	1.00	0.94	1.53	1.18	1.79	1.24	1.02	1.18	0.00
time (sec)	N/A	0.072	0.075	0.049	0.629	0.411	1.267	0.150	1.764	0.001

Problem 1119	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	98	151	129	160	138	103	122	0
N.S.	1	1.00	0.97	1.50	1.28	1.58	1.37	1.02	1.21	0.00
time (sec)	N/A	0.073	0.049	0.055	0.460	0.407	2.605	0.158	0.095	0.001

Problem 1120	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	87	110	132	132	150	151	128	0
N.S.	1	1.00	0.82	1.04	1.25	1.25	1.42	1.42	1.21	0.00
time (sec)	N/A	0.069	0.044	0.053	0.573	0.402	4.894	0.159	1.711	0.001

Problem 1121	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	90	110	148	148	165	95	145	0
N.S.	1	1.00	0.83	1.02	1.37	1.37	1.53	0.88	1.34	0.00
time (sec)	N/A	0.071	0.042	0.065	0.624	0.406	8.414	0.178	0.075	0.001

Problem 1122	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	87	110	153	153	173	93	150	0
N.S.	1	1.00	0.81	1.02	1.42	1.42	1.60	0.86	1.39	0.00
time (sec)	N/A	0.068	0.042	0.049	0.589	0.400	13.570	0.172	1.781	0.001

Problem 1123	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	390	402	410	465	495	447	374	0
N.S.	1	1.00	1.89	1.95	1.99	2.26	2.40	2.17	1.82	0.00
time (sec)	N/A	0.391	0.097	0.039	0.534	0.365	0.137	0.186	1.863	0.000

Problem 1124	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	314	327	332	377	398	365	298	0
N.S.	1	1.00	1.52	1.59	1.61	1.83	1.93	1.77	1.45	0.00
time (sec)	N/A	0.273	0.078	0.040	0.513	0.355	0.125	0.194	0.128	0.000

Problem 1125	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	244	252	260	287	303	281	229	0
N.S.	1	1.00	1.18	1.22	1.26	1.39	1.47	1.36	1.11	0.00
time (sec)	N/A	0.217	0.066	0.043	0.626	0.363	0.112	0.189	1.753	0.000

Problem 1126	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	174	177	184	200	211	200	168	0
N.S.	1	1.00	0.84	0.86	0.89	0.97	1.02	0.97	0.82	0.00
time (sec)	N/A	0.171	0.044	0.043	0.566	0.357	0.101	0.164	1.731	0.000

Problem 1127	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	95	99	106	114	124	120	98	0
N.S.	1	1.00	0.90	0.93	1.00	1.08	1.17	1.13	0.92	0.00
time (sec)	N/A	0.128	0.044	0.043	0.568	0.354	0.085	0.161	1.683	0.000

Problem 1128	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	60	51	50	50	58	50	50	0
N.S.	1	1.00	1.33	1.13	1.11	1.11	1.29	1.11	1.11	0.00
time (sec)	N/A	0.016	0.002	0.040	0.655	0.350	0.073	0.150	0.025	0.000

Problem 1129	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	174	285	242	243	207	244	260	0
N.S.	1	1.00	1.03	1.69	1.43	1.44	1.22	1.44	1.54	0.00
time (sec)	N/A	0.192	0.098	0.046	0.557	0.395	0.576	0.164	0.066	0.001

Problem 1130	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	175	309	249	354	246	317	311	0
N.S.	1	1.00	0.97	1.72	1.38	1.97	1.37	1.76	1.73	0.00
time (sec)	N/A	0.215	0.138	0.054	0.579	0.407	1.191	0.230	0.088	0.001

Problem 1131	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	185	185	174	331	258	394	282	237	275	0
N.S.	1	1.00	0.94	1.79	1.39	2.13	1.52	1.28	1.49	0.00
time (sec)	N/A	0.199	0.162	0.059	0.555	0.397	3.333	0.187	1.752	0.001

Problem 1132	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	232	346	270	411	294	237	268	0
N.S.	1	1.00	1.23	1.83	1.43	2.17	1.56	1.25	1.42	0.00
time (sec)	N/A	0.190	0.113	0.055	0.606	0.407	9.161	0.154	1.766	0.001

Problem 1133	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	221	356	279	405	304	372	277	0
N.S.	1	1.00	1.17	1.88	1.48	2.14	1.61	1.97	1.47	0.00
time (sec)	N/A	0.168	0.106	0.058	0.581	0.395	21.566	0.175	1.843	0.001

Problem 1134	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	212	362	298	365	326	239	243	0
N.S.	1	1.00	1.08	1.84	1.51	1.85	1.65	1.21	1.23	0.00
time (sec)	N/A	0.152	0.106	0.051	0.641	0.401	54.057	0.204	1.776	0.001

Problem 1135	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	204	204	198	249	292	292	337	238	273	0
N.S.	1	1.00	0.97	1.22	1.43	1.43	1.65	1.17	1.34	0.00
time (sec)	N/A	0.141	0.095	0.051	0.656	0.397	125.889	0.175	0.110	0.001

Problem 1136	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	202	249	317	317	0	242	299	0
N.S.	1	1.00	0.98	1.21	1.54	1.54	0.00	1.17	1.45	0.00
time (sec)	N/A	0.139	0.093	0.048	0.577	0.404	0.000	0.176	1.730	0.001

Problem 1137	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	202	249	328	328	0	242	310	0
N.S.	1	1.00	0.98	1.21	1.59	1.59	0.00	1.17	1.50	0.00
time (sec)	N/A	0.137	0.094	0.058	0.548	0.397	0.000	0.188	0.115	0.001

Problem 1138	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	202	249	339	339	0	242	321	0
N.S.	1	1.00	0.98	1.21	1.65	1.65	0.00	1.17	1.56	0.00
time (sec)	N/A	0.137	0.095	0.052	0.776	0.390	0.000	0.194	1.757	0.001

Problem 1139	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	334	542	557	584	658	694	634	542	0
N.S.	1	1.00	1.62	1.67	1.75	1.97	2.08	1.90	1.62	0.00
time (sec)	N/A	0.603	0.145	0.049	0.655	0.345	0.163	0.192	1.862	0.000

Problem 1140	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	334	436	455	478	536	564	520	438	0
N.S.	1	1.00	1.31	1.36	1.43	1.60	1.69	1.56	1.31	0.00
time (sec)	N/A	0.449	0.121	0.050	0.633	0.356	0.152	0.206	0.189	0.000

Problem 1141	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	334	323	353	363	411	435	403	317	0
N.S.	1	1.00	0.97	1.06	1.09	1.23	1.30	1.21	0.95	0.00
time (sec)	N/A	0.375	0.093	0.041	0.489	0.365	0.137	0.184	0.151	0.000

Problem 1142	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	334	238	251	262	287	306	287	227	0
N.S.	1	1.00	0.71	0.75	0.78	0.86	0.92	0.86	0.68	0.00
time (sec)	N/A	0.307	0.057	0.043	0.490	0.359	0.114	0.154	1.726	0.000

Problem 1143	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	135	143	154	165	182	173	140	0
N.S.	1	1.00	0.91	0.97	1.04	1.11	1.23	1.17	0.95	0.00
time (sec)	N/A	0.211	0.048	0.044	0.530	0.374	0.094	0.170	0.067	0.000

Problem 1144	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	85	74	73	73	85	73	73	0
N.S.	1	1.00	1.52	1.32	1.30	1.30	1.52	1.30	1.30	0.00
time (sec)	N/A	0.022	0.003	0.041	0.637	0.359	0.077	0.174	0.033	0.000

Problem 1145	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	290	290	311	526	447	448	410	459	494	0
N.S.	1	1.00	1.07	1.81	1.54	1.54	1.41	1.58	1.70	0.00
time (sec)	N/A	0.400	0.178	0.049	0.557	0.386	0.919	0.179	0.076	0.001

Problem 1146	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	309	309	405	558	456	621	454	539	826	0
N.S.	1	1.00	1.31	1.81	1.48	2.01	1.47	1.74	2.67	0.00
time (sec)	N/A	0.435	0.175	0.056	0.563	0.420	1.958	0.196	1.741	0.001

Problem 1147	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	300	300	414	589	464	691	490	440	681	0
N.S.	1	1.00	1.38	1.96	1.55	2.30	1.63	1.47	2.27	0.00
time (sec)	N/A	0.417	0.195	0.057	0.689	0.399	6.096	0.163	0.144	0.001

Problem 1148	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	310	310	294	611	478	732	530	435	548	0
N.S.	1	1.00	0.95	1.97	1.54	2.36	1.71	1.40	1.77	0.00
time (sec)	N/A	0.396	0.134	0.068	0.660	0.407	18.980	0.158	1.780	0.001

Problem 1149	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	314	314	405	632	487	746	537	647	501	0
N.S.	1	1.00	1.29	2.01	1.55	2.38	1.71	2.06	1.60	0.00
time (sec)	N/A	0.382	0.210	0.066	0.606	0.418	63.111	0.183	1.797	0.001

Problem 1150	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	388	646	499	730	0	429	494	0
N.S.	1	1.00	1.24	2.06	1.59	2.33	0.00	1.37	1.58	0.00
time (sec)	N/A	0.345	0.200	0.061	0.791	0.414	0.000	0.163	0.165	0.001

Problem 1151	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	320	320	377	656	511	695	0	426	505	0
N.S.	1	1.00	1.18	2.05	1.60	2.17	0.00	1.33	1.58	0.00
time (sec)	N/A	0.320	0.213	0.062	0.773	0.411	0.000	0.163	1.862	0.001

Problem 1152	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	327	327	366	662	527	624	0	431	448	0
N.S.	1	1.00	1.12	2.02	1.61	1.91	0.00	1.32	1.37	0.00
time (sec)	N/A	0.297	0.196	0.055	0.676	0.412	0.000	0.193	1.812	0.001

Problem 1153	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	330	330	357	448	532	532	0	457	570	0
N.S.	1	1.00	1.08	1.36	1.61	1.61	0.00	1.38	1.73	0.00
time (sec)	N/A	0.274	0.172	0.053	0.663	0.388	0.000	0.192	0.159	0.001

Problem 1154	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	334	359	449	546	546	0	457	513	0
N.S.	1	1.00	1.07	1.34	1.63	1.63	0.00	1.37	1.54	0.00
time (sec)	N/A	0.264	0.181	0.051	0.600	0.386	0.000	0.197	1.802	0.001

Problem 1155	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	334	357	449	557	557	0	457	524	0
N.S.	1	1.00	1.07	1.34	1.67	1.67	0.00	1.37	1.57	0.00
time (sec)	N/A	0.261	0.172	0.049	0.702	0.404	0.000	0.169	1.905	0.001

Problem 1156	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	217	345	230	550	908	245	249	0
N.S.	1	1.00	0.90	1.44	0.96	2.29	3.78	1.02	1.04	0.00
time (sec)	N/A	0.261	0.178	0.046	1.174	0.441	3.505	0.161	0.236	0.001

Problem 1157	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	151	238	160	398	641	165	175	0
N.S.	1	1.00	0.90	1.43	0.96	2.38	3.84	0.99	1.05	0.00
time (sec)	N/A	0.179	0.146	0.051	1.159	0.420	2.146	0.153	1.823	0.001

Problem 1158	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	99	148	100	235	425	101	114	0
N.S.	1	1.00	0.92	1.37	0.93	2.18	3.94	0.94	1.06	0.00
time (sec)	N/A	0.095	0.089	0.054	1.275	0.423	1.407	0.162	0.138	0.001

Problem 1159	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	65	78	56	147	212	59	75	0
N.S.	1	1.00	1.02	1.22	0.88	2.30	3.31	0.92	1.17	0.00
time (sec)	N/A	0.043	0.051	0.050	1.146	0.429	0.726	0.154	1.732	0.001

Problem 1160	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	42	32	31	98	124	31	32	0
N.S.	1	1.00	1.00	0.76	0.74	2.33	2.95	0.74	0.76	0.00
time (sec)	N/A	0.015	0.013	0.058	1.159	0.409	0.260	0.154	0.049	0.000

Problem 1161	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	91	159	98	200	0	104	535	0
N.S.	1	1.00	0.83	1.46	0.90	1.83	0.00	0.95	4.91	0.00
time (sec)	N/A	0.106	0.061	0.055	1.306	1.348	0.000	0.158	3.132	0.001

Problem 1162	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	173	173	148	312	216	562	0	229	810	0
N.S.	1	1.00	0.86	1.80	1.25	3.25	0.00	1.32	4.68	0.00
time (sec)	N/A	0.170	0.181	0.053	1.308	6.944	0.000	0.163	3.322	0.001

Problem 1163	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	251	251	223	509	419	1350	0	383	1680	0
N.S.	1	1.00	0.89	2.03	1.67	5.38	0.00	1.53	6.69	0.00
time (sec)	N/A	0.323	0.357	0.061	1.354	35.124	0.000	0.167	3.643	0.001

Problem 1164	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	297	297	307	553	356	1190	1091	347	370	0
N.S.	1	1.00	1.03	1.86	1.20	4.01	3.67	1.17	1.25	0.00
time (sec)	N/A	0.339	0.175	0.059	1.340	0.432	14.772	0.159	0.318	0.001

Problem 1165	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	220	220	231	414	268	849	836	261	276	0
N.S.	1	1.00	1.05	1.88	1.22	3.86	3.80	1.19	1.25	0.00
time (sec)	N/A	0.275	0.202	0.054	1.506	0.426	10.536	0.204	1.906	0.001

Problem 1166	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	161	161	171	296	188	609	583	179	193	0
N.S.	1	1.00	1.06	1.84	1.17	3.78	3.62	1.11	1.20	0.00
time (sec)	N/A	0.208	0.120	0.054	1.149	0.421	6.041	0.195	0.187	0.001

Problem 1167	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	119	151	130	384	382	127	203	0
N.S.	1	1.00	1.06	1.35	1.16	3.43	3.41	1.13	1.81	0.00
time (sec)	N/A	0.073	0.099	0.059	1.281	0.423	2.960	0.161	1.804	0.001

Problem 1168	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	78	86	72	225	133	74	70	0
N.S.	1	1.00	0.99	1.09	0.91	2.85	1.68	0.94	0.89	0.00
time (sec)	N/A	0.032	0.071	0.056	1.204	0.406	0.923	0.155	1.773	0.001

Problem 1169	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	57	49	48	140	90	47	44	0
N.S.	1	1.00	1.00	0.86	0.84	2.46	1.58	0.82	0.77	0.00
time (sec)	N/A	0.017	0.026	0.052	1.157	0.422	0.298	0.173	0.051	0.000

Problem 1170	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	158	495	243	795	0	268	1086	0
N.S.	1	1.00	0.81	2.54	1.25	4.08	0.00	1.37	5.57	0.00
time (sec)	N/A	0.281	0.159	0.064	1.336	16.505	0.000	0.183	3.760	0.001

Problem 1171	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	290	290	251	661	511	1940	0	494	2029	0
N.S.	1	1.00	0.87	2.28	1.76	6.69	0.00	1.70	7.00	0.00
time (sec)	N/A	0.411	0.359	0.070	1.352	57.638	0.000	0.180	4.047	0.001

Problem 1172	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	341	678	438	1403	1044	403	424	0
N.S.	1	1.00	1.12	2.23	1.44	4.62	3.43	1.33	1.39	0.00
time (sec)	N/A	0.422	0.246	0.060	1.149	0.456	97.928	0.162	0.291	0.001

Problem 1173	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	263	359	352	1055	816	312	763	0
N.S.	1	1.00	1.22	1.66	1.63	4.88	3.78	1.44	3.53	0.00
time (sec)	N/A	0.209	0.211	0.053	1.341	0.447	46.139	0.162	2.560	0.001

Problem 1174	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	186	260	248	752	468	233	265	0
N.S.	1	1.00	1.49	2.08	1.98	6.02	3.74	1.86	2.12	0.00
time (sec)	N/A	0.058	0.097	0.056	1.508	0.442	20.046	0.194	0.223	0.001

Problem 1175	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	142	142	158	180	184	537	274	169	154	0
N.S.	1	1.00	1.11	1.27	1.30	3.78	1.93	1.19	1.08	0.00
time (sec)	N/A	0.125	0.108	0.053	1.183	0.428	7.838	0.158	1.808	0.001

Problem 1176	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	101	108	114	355	180	102	100	0
N.S.	1	1.00	0.92	0.98	1.04	3.23	1.64	0.93	0.91	0.00
time (sec)	N/A	0.044	0.083	0.061	1.124	0.425	1.927	0.157	1.773	0.001

Problem 1177	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	71	65	74	212	124	60	64	0
N.S.	1	1.00	0.95	0.87	0.99	2.83	1.65	0.80	0.85	0.00
time (sec)	N/A	0.021	0.047	0.049	1.301	0.427	0.450	0.193	0.075	0.000

Problem 1178	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	307	307	263	1087	525	1797	0	534	2415	0
N.S.	1	1.00	0.86	3.54	1.71	5.85	0.00	1.74	7.87	0.00
time (sec)	N/A	0.505	0.283	0.101	1.269	135.503	0.000	0.187	4.443	0.001

Problem 1179	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	F(-1)	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	443	443	378	1410	997	0	0	836	3015	0
N.S.	1	1.00	0.85	3.18	2.25	0.00	0.00	1.89	6.81	0.00
time (sec)	N/A	0.724	0.488	0.115	1.390	0.000	0.000	0.224	5.514	0.001

Problem 1180	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	29	29	31	22	21	21	26	24	19	0
N.S.	1	1.00	1.07	0.76	0.72	0.72	0.90	0.83	0.66	0.00
time (sec)	N/A	0.023	0.010	0.049	0.570	0.418	0.141	0.171	0.066	0.001

Problem 1181	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	28	29	32	40	27	27	29	0
N.S.	1	1.00	0.72	0.74	0.82	1.03	0.69	0.69	0.74	0.00
time (sec)	N/A	0.015	0.015	0.045	1.175	0.410	0.134	0.152	0.043	0.000

Problem 1182	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	65	91	90	70	131	64	55	76
N.S.	1	1.00	0.53	0.75	0.74	0.57	1.07	0.52	0.45	0.62
time (sec)	N/A	0.069	0.077	0.052	1.390	0.428	3.127	0.185	1.706	0.361

Problem 1183	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	60	77	76	65	150	57	50	71
N.S.	1	1.00	0.60	0.77	0.76	0.65	1.50	0.57	0.50	0.71
time (sec)	N/A	0.047	0.050	0.056	1.103	0.420	20.718	0.172	1.693	0.303

Problem 1184	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	55	63	62	60	95	54	45	66
N.S.	1	1.00	0.71	0.81	0.79	0.77	1.22	0.69	0.58	0.85
time (sec)	N/A	0.030	0.045	0.046	1.283	0.411	0.931	0.165	1.707	0.223

Problem 1185	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	50	49	48	55	94	48	40	61
N.S.	1	1.00	0.89	0.88	0.86	0.98	1.68	0.86	0.71	1.09
time (sec)	N/A	0.014	0.038	0.056	1.462	0.417	8.076	0.221	0.032	0.179

Problem 1186	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	43	37	36	50	61	44	33	54
N.S.	1	1.00	0.88	0.76	0.73	1.02	1.24	0.90	0.67	1.10
time (sec)	N/A	0.010	0.021	0.054	1.377	0.425	0.264	0.160	0.030	0.131

Problem 1187	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	68	72	70	90	0	104	66	99
N.S.	1	1.00	0.94	1.00	0.97	1.25	0.00	1.44	0.92	1.38
time (sec)	N/A	0.043	0.041	0.062	1.081	0.426	0.000	0.252	0.175	0.397

Problem 1188	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	71	98	76	109	0	285	80	102
N.S.	1	1.00	0.97	1.34	1.04	1.49	0.00	3.90	1.10	1.40
time (sec)	N/A	0.043	0.094	0.053	1.250	0.427	0.000	0.567	0.110	0.593

Problem 1189	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	80	119	99	126	0	205	92	106
N.S.	1	1.00	1.01	1.51	1.25	1.59	0.00	2.59	1.16	1.34
time (sec)	N/A	0.042	0.099	0.059	1.252	0.433	0.000	0.268	1.898	0.701

Problem 1190	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	82	82	65	128	115	104	0	232	106	81
N.S.	1	1.00	0.79	1.56	1.40	1.27	0.00	2.83	1.29	0.99
time (sec)	N/A	0.034	0.052	0.059	1.346	0.423	0.000	0.308	1.810	0.844

Problem 1191	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	70	149	148	119	0	181	140	86
N.S.	1	1.00	0.67	1.43	1.42	1.14	0.00	1.74	1.35	0.83
time (sec)	N/A	0.052	0.080	0.059	1.173	0.409	0.000	0.219	1.864	1.048

Problem 1192	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	75	170	186	134	0	322	178	91
N.S.	1	1.00	0.60	1.35	1.48	1.06	0.00	2.56	1.41	0.72
time (sec)	N/A	0.071	0.087	0.066	1.227	0.420	0.000	0.262	1.799	1.299

Problem 1193	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	80	191	229	149	0	367	223	96
N.S.	1	1.00	0.54	1.29	1.55	1.01	0.00	2.48	1.51	0.65
time (sec)	N/A	0.092	0.088	0.067	1.228	0.423	0.000	0.267	0.129	1.611

Problem 1194	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	75	103	102	80	162	72	65	86
N.S.	1	1.00	0.54	0.75	0.74	0.58	1.17	0.52	0.47	0.62
time (sec)	N/A	0.073	0.082	0.053	1.276	0.433	22.519	0.189	2.100	0.420

Problem 1195	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	70	89	88	75	144	66	60	81
N.S.	1	1.00	0.60	0.77	0.76	0.65	1.24	0.57	0.52	0.70
time (sec)	N/A	0.054	0.063	0.059	1.356	0.417	14.074	0.177	0.045	0.390

Problem 1196	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	65	75	74	70	129	62	55	76
N.S.	1	1.00	0.69	0.80	0.79	0.74	1.37	0.66	0.59	0.81
time (sec)	N/A	0.036	0.053	0.061	1.326	0.422	8.155	0.169	0.044	0.313

Problem 1197	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	60	61	60	65	110	56	50	71
N.S.	1	1.00	0.83	0.85	0.83	0.90	1.53	0.78	0.69	0.99
time (sec)	N/A	0.019	0.057	0.050	1.368	0.432	5.004	0.193	1.739	0.261

Problem 1198	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	55	49	48	60	97	53	45	66
N.S.	1	1.00	0.82	0.73	0.72	0.90	1.45	0.79	0.67	0.99
time (sec)	N/A	0.014	0.024	0.043	1.332	0.412	2.756	0.174	0.037	0.187

Problem 1199	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	80	117	93	102	0	116	76	109
N.S.	1	1.00	0.87	1.27	1.01	1.11	0.00	1.26	0.83	1.18
time (sec)	N/A	0.057	0.040	0.047	1.400	0.469	0.000	0.266	0.133	0.446

Problem 1200	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	87	131	99	121	0	475	108	116
N.S.	1	1.00	0.90	1.35	1.02	1.25	0.00	4.90	1.11	1.20
time (sec)	N/A	0.061	0.098	0.049	1.344	0.445	0.000	0.733	0.122	0.584

Problem 1201	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	89	152	122	136	0	219	117	116
N.S.	1	1.00	0.86	1.46	1.17	1.31	0.00	2.11	1.12	1.12
time (sec)	N/A	0.061	0.113	0.052	1.300	0.431	0.000	0.281	1.824	0.751

Problem 1202	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	89	173	150	151	0	265	133	116
N.S.	1	1.00	0.84	1.63	1.42	1.42	0.00	2.50	1.25	1.09
time (sec)	N/A	0.058	0.121	0.055	1.431	0.444	0.000	0.278	0.123	0.931

Problem 1203	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	90	194	183	166	0	106	155	116
N.S.	1	1.00	0.85	1.83	1.73	1.57	0.00	1.00	1.46	1.09
time (sec)	N/A	0.062	0.148	0.066	1.449	0.438	0.000	0.236	0.123	1.167

Problem 1204	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	112	203	209	134	0	318	179	91
N.S.	1	1.00	1.03	1.86	1.92	1.23	0.00	2.92	1.64	0.83
time (sec)	N/A	0.049	0.095	0.070	1.323	0.429	0.000	0.267	1.978	1.366

Problem 1205	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	137	224	252	149	0	367	223	96
N.S.	1	1.00	1.05	1.71	1.92	1.14	0.00	2.80	1.70	0.73
time (sec)	N/A	0.069	0.199	0.065	1.321	0.440	0.000	0.314	1.858	1.685

Problem 1206	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	161	245	300	164	0	408	272	101
N.S.	1	1.00	1.05	1.60	1.96	1.07	0.00	2.67	1.78	0.66
time (sec)	N/A	0.100	0.147	0.082	1.430	0.429	0.000	0.280	0.138	2.084

Problem 1207	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	85	115	114	90	199	82	75	96
N.S.	1	1.00	0.55	0.75	0.74	0.58	1.29	0.53	0.49	0.62
time (sec)	N/A	0.082	0.089	0.073	1.100	0.422	113.005	0.179	1.752	0.425

Problem 1208	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	80	101	100	85	180	76	70	91
N.S.	1	1.00	0.61	0.77	0.76	0.64	1.36	0.58	0.53	0.69
time (sec)	N/A	0.062	0.077	0.055	1.161	0.418	77.880	0.234	1.745	0.404

Problem 1209	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	75	87	86	80	162	72	65	86
N.S.	1	1.00	0.68	0.79	0.78	0.73	1.47	0.65	0.59	0.78
time (sec)	N/A	0.043	0.072	0.050	1.320	0.427	50.467	0.192	0.065	0.384

Problem 1210	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	88	88	70	73	72	75	143	63	60	81
N.S.	1	1.00	0.80	0.83	0.82	0.85	1.62	0.72	0.68	0.92
time (sec)	N/A	0.025	0.061	0.047	1.155	0.418	34.005	0.206	1.865	0.339

Problem 1211	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	65	61	60	70	131	61	55	76
N.S.	1	1.00	0.78	0.73	0.72	0.84	1.58	0.73	0.66	0.92
time (sec)	N/A	0.020	0.043	0.046	1.126	0.422	20.989	0.168	1.743	0.254

Problem 1212	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	90	162	116	112	0	125	86	119
N.S.	1	1.00	0.80	1.45	1.04	1.00	0.00	1.12	0.77	1.06
time (sec)	N/A	0.076	0.055	0.051	1.308	0.438	0.000	0.283	1.806	0.540

Problem 1213	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	117	117	97	164	122	131	0	665	138	126
N.S.	1	1.00	0.83	1.40	1.04	1.12	0.00	5.68	1.18	1.08
time (sec)	N/A	0.078	0.133	0.054	1.244	0.440	0.000	1.021	0.131	0.662

Problem 1214	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	97	185	145	146	0	230	147	126
N.S.	1	1.00	0.77	1.47	1.15	1.16	0.00	1.83	1.17	1.00
time (sec)	N/A	0.079	0.148	0.064	1.320	0.434	0.000	0.290	0.126	0.749

Problem 1215	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	97	206	173	167	0	275	161	128
N.S.	1	1.00	0.73	1.55	1.30	1.26	0.00	2.07	1.21	0.96
time (sec)	N/A	0.079	0.162	0.066	1.438	0.441	0.000	0.365	0.124	1.055

Problem 1216	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	97	227	206	176	0	440	180	126
N.S.	1	1.00	0.73	1.71	1.55	1.32	0.00	3.31	1.35	0.95
time (sec)	N/A	0.080	0.160	0.066	1.537	0.456	0.000	0.823	0.133	1.308

Problem 1217	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	100	248	244	191	0	355	206	126
N.S.	1	1.00	0.75	1.86	1.83	1.44	0.00	2.67	1.55	0.95
time (sec)	N/A	0.081	0.200	0.057	1.240	0.435	0.000	0.324	1.945	1.567

Problem 1218	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	100	269	287	206	0	389	238	126
N.S.	1	1.00	0.75	2.02	2.16	1.55	0.00	2.92	1.79	0.95
time (sec)	N/A	0.078	0.235	0.068	1.561	0.447	0.000	0.340	0.144	1.869

Problem 1219	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	136	136	122	278	323	164	0	408	272	101
N.S.	1	1.00	0.90	2.04	2.38	1.21	0.00	3.00	2.00	0.74
time (sec)	N/A	0.065	0.177	0.074	1.288	0.441	0.000	0.316	2.026	2.089

Problem 1220	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	144	299	376	179	0	457	326	106
N.S.	1	1.00	0.91	1.89	2.38	1.13	0.00	2.89	2.06	0.67
time (sec)	N/A	0.083	0.210	0.086	1.450	0.461	0.000	0.328	1.887	2.640

Problem 1221	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	185	320	434	194	0	502	385	111
N.S.	1	1.00	1.03	1.78	2.41	1.08	0.00	2.79	2.14	0.62
time (sec)	N/A	0.109	0.306	0.102	1.707	0.450	0.000	0.306	0.160	3.125

Problem 1222	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	202	202	207	341	497	209	0	547	449	116
N.S.	1	1.00	1.02	1.69	2.46	1.03	0.00	2.71	2.22	0.57
time (sec)	N/A	0.134	0.265	0.150	1.466	0.446	0.000	0.530	1.896	3.637

Problem 1223	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	55	79	78	60	97	53	45	66
N.S.	1	1.00	0.52	0.75	0.74	0.57	0.92	0.50	0.42	0.62
time (sec)	N/A	0.058	0.059	0.058	1.418	0.427	1.934	0.194	0.043	0.342

Problem 1224	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	84	84	50	65	64	55	80	49	40	61
N.S.	1	1.00	0.60	0.77	0.76	0.65	0.95	0.58	0.48	0.73
time (sec)	N/A	0.043	0.044	0.061	1.464	0.432	1.078	0.247	0.036	0.316

Problem 1225	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	45	51	50	50	63	42	35	56
N.S.	1	1.00	0.73	0.82	0.81	0.81	1.02	0.68	0.56	0.90
time (sec)	N/A	0.025	0.039	0.049	1.404	0.414	0.542	0.176	0.034	0.236

Problem 1226	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	40	40	38	37	36	43	44	37	28	51
N.S.	1	1.00	0.95	0.92	0.90	1.08	1.10	0.92	0.70	1.28
time (sec)	N/A	0.012	0.022	0.049	1.290	0.420	0.299	0.169	0.032	0.178

Problem 1227	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	33	25	24	40	29	34	25	44
N.S.	1	1.00	1.00	0.76	0.73	1.21	0.88	1.03	0.76	1.33
time (sec)	N/A	0.007	0.019	0.047	1.302	0.417	0.184	0.191	0.026	0.133

Problem 1228	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	52	52	52	44	47	76	0	90	49	77
N.S.	1	1.00	1.00	0.85	0.90	1.46	0.00	1.73	0.94	1.48
time (sec)	N/A	0.027	0.017	0.051	1.599	0.427	0.000	0.248	0.121	0.312

Problem 1229	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	53	53	74	0	125	53	71
N.S.	1	1.00	1.00	0.96	0.96	1.35	0.00	2.27	0.96	1.29
time (sec)	N/A	0.025	0.022	0.057	1.350	0.422	0.000	0.271	1.919	0.451

Problem 1230	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	60	74	76	89	0	183	77	76
N.S.	1	1.00	0.78	0.96	0.99	1.16	0.00	2.38	1.00	0.99
time (sec)	N/A	0.039	0.066	0.058	1.453	0.413	0.000	0.295	1.861	0.598

Problem 1231	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	65	95	104	104	0	232	106	81
N.S.	1	1.00	0.66	0.96	1.05	1.05	0.00	2.34	1.07	0.82
time (sec)	N/A	0.057	0.068	0.055	1.377	0.445	0.000	0.319	0.112	0.781

Problem 1232	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	70	116	137	118	0	191	146	86
N.S.	1	1.00	0.58	0.96	1.13	0.98	0.00	1.58	1.21	0.71
time (sec)	N/A	0.075	0.079	0.069	1.296	0.443	0.000	0.255	0.213	0.989

Problem 1233	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	75	137	175	133	0	322	160	91
N.S.	1	1.00	0.52	0.96	1.22	0.93	0.00	2.25	1.12	0.64
time (sec)	N/A	0.096	0.091	0.069	1.164	0.448	0.000	0.271	1.925	1.257

Problem 1234	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	89	89	58	79	78	78	0	54	110	66
N.S.	1	1.00	0.65	0.89	0.88	0.88	0.00	0.61	1.24	0.74
time (sec)	N/A	0.043	0.055	0.058	1.411	0.415	0.000	0.188	0.057	0.378

Problem 1235	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	53	65	64	73	0	47	105	61
N.S.	1	1.00	0.79	0.97	0.96	1.09	0.00	0.70	1.57	0.91
time (sec)	N/A	0.027	0.044	0.049	1.304	0.490	0.000	0.181	1.759	0.362

Problem 1236	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	48	51	50	68	0	44	100	56
N.S.	1	1.00	0.80	0.85	0.83	1.13	0.00	0.73	1.67	0.93
time (sec)	N/A	0.022	0.041	0.050	1.116	0.422	0.000	0.172	1.750	0.325

Problem 1237	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	40	40	43	37	36	62	99	39	88	51
N.S.	1	1.00	1.08	0.92	0.90	1.55	2.48	0.98	2.20	1.28
time (sec)	N/A	0.011	0.027	0.051	1.236	0.417	14.978	0.181	1.776	0.261

Problem 1238	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	20	20	20	17	24	16	27	16	15	20
N.S.	1	1.00	1.00	0.85	1.20	0.80	1.35	0.80	0.75	1.00
time (sec)	N/A	0.004	0.008	0.042	0.539	0.405	14.369	0.167	0.040	0.199

Problem 1239	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	53	77	58	83	0	84	106	69
N.S.	1	1.00	1.00	1.45	1.09	1.57	0.00	1.58	2.00	1.30
time (sec)	N/A	0.027	0.025	0.052	1.242	0.427	0.000	0.209	1.809	0.425

Problem 1240	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	82	82	65	86	86	104	0	168	157	0
N.S.	1	1.00	0.79	1.05	1.05	1.27	0.00	2.05	1.91	0.00
time (sec)	N/A	0.042	0.036	0.052	1.425	0.469	0.000	0.266	0.123	0.695

Problem 1241	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	70	107	128	119	0	199	181	86
N.S.	1	1.00	0.67	1.03	1.23	1.14	0.00	1.91	1.74	0.83
time (sec)	N/A	0.057	0.078	0.076	1.424	0.444	0.000	0.255	1.784	0.703

Problem 1242	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	75	128	184	134	0	248	210	91
N.S.	1	1.00	0.60	1.02	1.46	1.06	0.00	1.97	1.67	0.72
time (sec)	N/A	0.076	0.083	0.060	1.295	0.419	0.000	0.288	1.793	0.915

Problem 1243	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	80	149	254	149	0	234	244	96
N.S.	1	1.00	0.54	1.01	1.72	1.01	0.00	1.58	1.65	0.65
time (sec)	N/A	0.094	0.093	0.100	1.304	0.435	0.000	0.293	0.144	1.170

Problem 1244	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	73	119	133	98	0	60	222	76
N.S.	1	1.00	0.63	1.03	1.15	0.84	0.00	0.52	1.91	0.66
time (sec)	N/A	0.061	0.076	0.060	1.443	0.419	0.000	0.184	1.708	0.477

Problem 1245	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	68	105	119	93	0	55	217	71
N.S.	1	1.00	0.72	1.12	1.27	0.99	0.00	0.59	2.31	0.76
time (sec)	N/A	0.044	0.068	0.068	1.308	0.420	0.000	0.246	0.047	0.465

Problem 1246	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	63	91	105	87	0	52	212	66
N.S.	1	1.00	0.72	1.05	1.21	1.00	0.00	0.60	2.44	0.76
time (sec)	N/A	0.039	0.063	0.058	1.355	0.408	0.000	0.182	1.722	0.445

Problem 1247	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	58	77	91	81	0	48	200	61
N.S.	1	1.00	0.87	1.15	1.36	1.21	0.00	0.72	2.99	0.91
time (sec)	N/A	0.027	0.060	0.050	1.177	0.419	0.000	0.203	1.702	0.420

Problem 1248	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	48	48	30	27	50	40	0	25	185	30
N.S.	1	1.00	0.62	0.56	1.04	0.83	0.00	0.52	3.85	0.62
time (sec)	N/A	0.018	0.127	0.045	0.527	0.405	0.000	0.180	1.697	0.379

Problem 1249	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	25	22	36	35	122	23	161	25
N.S.	1	1.00	0.68	0.59	0.97	0.95	3.30	0.62	4.35	0.68
time (sec)	N/A	0.010	0.016	0.040	0.503	0.410	58.399	0.183	0.043	0.324

Problem 1250	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	37	37	25	22	36	35	90	21	161	25
N.S.	1	1.00	0.68	0.59	0.97	0.95	2.43	0.57	4.35	0.68
time (sec)	N/A	0.007	0.010	0.041	0.451	0.426	43.078	0.183	1.691	0.283

Problem 1251	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	63	122	81	103	0	93	218	0
N.S.	1	1.00	0.86	1.67	1.11	1.41	0.00	1.27	2.99	0.00
time (sec)	N/A	0.043	0.040	0.054	1.281	0.438	0.000	0.213	0.136	0.992

Problem 1252	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	101	119	109	134	0	233	270	0
N.S.	1	1.00	0.93	1.09	1.00	1.23	0.00	2.14	2.48	0.00
time (sec)	N/A	0.059	0.047	0.058	1.223	0.435	0.000	0.307	1.883	0.940

Problem 1253	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	80	140	151	149	0	208	301	96
N.S.	1	1.00	0.61	1.07	1.15	1.14	0.00	1.59	2.30	0.73
time (sec)	N/A	0.077	0.107	0.053	1.231	0.441	0.000	0.275	1.829	0.861

Problem 1254	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	85	161	207	164	0	257	330	101
N.S.	1	1.00	0.56	1.05	1.35	1.07	0.00	1.68	2.16	0.66
time (sec)	N/A	0.098	0.117	0.066	1.417	0.450	0.000	0.467	1.862	1.095

Problem 1255	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	99	101	104	190	379	580	100	117
N.S.	1	1.00	0.85	0.87	0.90	1.64	3.27	5.00	0.86	1.01
time (sec)	N/A	0.062	0.089	0.049	0.636	0.406	15.780	0.347	0.091	0.078

Problem 1256	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	116	96	101	104	143	131	327	100	117
N.S.	1	1.00	0.83	0.87	0.90	1.23	1.13	2.82	0.86	1.01
time (sec)	N/A	0.051	0.068	0.049	0.768	0.422	3.738	0.164	1.744	0.066

Problem 1257	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	96	101	104	100	374	138	100	117
N.S.	1	1.00	0.84	0.89	0.91	0.88	3.28	1.21	0.88	1.03
time (sec)	N/A	0.049	0.078	0.046	0.576	0.434	36.488	0.196	0.068	0.067

Problem 1258	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	97	101	112	110	112	135	111	117
N.S.	1	1.00	0.87	0.90	1.00	0.98	1.00	1.21	0.99	1.04
time (sec)	N/A	0.050	0.072	0.048	0.512	0.418	21.210	0.170	0.075	0.070

Problem 1259	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	94	100	108	120	449	126	113	114
N.S.	1	1.00	0.84	0.89	0.96	1.07	4.01	1.12	1.01	1.02
time (sec)	N/A	0.050	0.070	0.049	0.500	0.408	1.439	0.173	1.766	0.075

Problem 1260	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	95	101	109	133	653	122	100	117
N.S.	1	1.00	0.85	0.90	0.97	1.19	5.83	1.09	0.89	1.04
time (sec)	N/A	0.050	0.072	0.049	0.521	0.410	3.221	0.173	1.745	0.069

Problem 1261	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	214	259	248	320	308	670	197	301
N.S.	1	1.00	0.98	1.19	1.14	1.47	1.41	3.07	0.90	1.38
time (sec)	N/A	0.127	0.193	0.054	0.537	0.418	5.557	0.190	1.791	0.139

Problem 1262	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	213	259	248	247	772	295	197	301
N.S.	1	1.00	0.99	1.20	1.15	1.14	3.57	1.37	0.91	1.39
time (sec)	N/A	0.095	0.160	0.047	0.462	0.393	79.704	0.177	1.711	0.129

Problem 1263	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	214	259	256	257	253	331	237	301
N.S.	1	1.00	1.00	1.21	1.20	1.20	1.18	1.55	1.11	1.41
time (sec)	N/A	0.093	0.145	0.054	0.484	0.406	48.985	0.193	0.067	0.141

Problem 1264	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	214	259	254	269	231	319	249	301
N.S.	1	1.00	1.00	1.21	1.19	1.26	1.08	1.49	1.16	1.41
time (sec)	N/A	0.092	0.143	0.046	0.680	0.400	61.952	0.275	1.726	0.140

Problem 1265	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	212	259	255	280	1426	319	251	301
N.S.	1	1.00	0.99	1.21	1.19	1.31	6.66	1.49	1.17	1.41
time (sec)	N/A	0.092	0.141	0.050	0.570	0.416	4.403	0.206	1.793	0.139

Problem 1266	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	214	259	255	290	1855	316	258	301
N.S.	1	1.00	1.00	1.21	1.19	1.36	8.67	1.48	1.21	1.41
time (sec)	N/A	0.097	0.153	0.051	0.681	0.420	8.150	0.223	1.821	0.180

Problem 1267	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	348	348	373	489	453	454	1284	504	324	573
N.S.	1	1.00	1.07	1.41	1.30	1.30	3.69	1.45	0.93	1.65
time (sec)	N/A	0.205	0.354	0.049	0.560	0.413	139.187	0.217	0.138	0.246

Problem 1268	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	344	344	373	489	461	463	461	615	394	573
N.S.	1	1.00	1.08	1.42	1.34	1.35	1.34	1.79	1.15	1.67
time (sec)	N/A	0.163	0.290	0.051	0.549	0.428	101.301	0.286	1.839	0.236

Problem 1269	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	346	346	375	489	459	475	406	599	434	573
N.S.	1	1.00	1.08	1.41	1.33	1.37	1.17	1.73	1.25	1.66
time (sec)	N/A	0.162	0.280	0.055	0.651	0.418	113.122	0.233	1.832	0.229

Problem 1270	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	346	346	373	489	461	487	0	599	455	573
N.S.	1	1.00	1.08	1.41	1.33	1.41	0.00	1.73	1.32	1.66
time (sec)	N/A	0.162	0.277	0.054	0.642	0.433	0.000	0.225	1.843	0.242

Problem 1271	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	342	342	372	489	460	496	3218	597	452	573
N.S.	1	1.00	1.09	1.43	1.35	1.45	9.41	1.75	1.32	1.68
time (sec)	N/A	0.156	0.289	0.049	0.631	0.428	9.860	0.251	1.847	0.296

Problem 1272	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	346	346	375	489	461	509	3952	595	454	573
N.S.	1	1.00	1.08	1.41	1.33	1.47	11.42	1.72	1.31	1.66
time (sec)	N/A	0.162	0.300	0.046	0.579	0.402	16.440	0.242	1.890	0.274

Problem 1273	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	237	237	223	981	0	7410	0	655	11383	307
N.S.	1	1.00	0.94	4.14	0.00	31.27	0.00	2.76	48.03	1.30
time (sec)	N/A	0.642	0.460	0.095	0.000	9.105	0.000	0.438	3.127	0.801

Problem 1274	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	202	202	194	689	0	4480	0	528	7560	275
N.S.	1	1.00	0.96	3.41	0.00	22.18	0.00	2.61	37.43	1.36
time (sec)	N/A	0.437	0.241	0.085	0.000	1.858	0.000	0.413	2.715	0.601

Problem 1275	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	B	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	178	427	0	1538	396	303	4276	259
N.S.	1	1.00	0.99	2.39	0.00	8.59	2.21	1.69	23.89	1.45
time (sec)	N/A	0.317	0.149	0.073	0.000	0.465	38.486	0.372	0.436	0.428

Problem 1276	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	155	203	0	2385	0	177	2065	207
N.S.	1	1.00	1.02	1.34	0.00	15.69	0.00	1.16	13.59	1.36
time (sec)	N/A	0.163	0.182	0.075	0.000	0.514	0.000	0.259	3.306	0.402

Problem 1277	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	271	588	0	6448	0	920	10288	265
N.S.	1	1.00	1.38	2.98	0.00	32.73	0.00	4.67	52.22	1.35
time (sec)	N/A	0.402	0.328	0.078	0.000	2.762	0.000	0.702	5.669	0.628

Problem 1278	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	243	243	266	973	0	11231	0	0	17610	325
N.S.	1	1.00	1.09	4.00	0.00	46.22	0.00	0.00	72.47	1.34
time (sec)	N/A	0.536	0.142	0.082	0.000	15.759	0.000	0.000	7.425	1.201

Problem 1279	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	269	269	279	1055	0	5611	0	728	9253	489
N.S.	1	1.00	1.04	3.92	0.00	20.86	0.00	2.71	34.40	1.82
time (sec)	N/A	0.541	0.563	0.096	0.000	8.660	0.000	0.783	3.020	1.644

Problem 1280	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	244	694	0	2327	0	533	5212	378
N.S.	1	1.00	1.03	2.92	0.00	9.78	0.00	2.24	21.90	1.59
time (sec)	N/A	0.392	0.374	0.111	0.000	0.645	0.000	0.707	0.916	1.192

Problem 1281	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	375	432	0	3195	0	436	5062	337
N.S.	1	1.00	1.67	1.92	0.00	14.20	0.00	1.94	22.50	1.50
time (sec)	N/A	0.397	0.473	0.089	0.000	2.428	0.000	0.536	4.102	1.408

Problem 1282	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	250	250	353	635	0	7506	0	1156	10862	368
N.S.	1	1.00	1.41	2.54	0.00	30.02	0.00	4.62	43.45	1.47
time (sec)	N/A	0.498	0.448	0.290	0.000	30.615	0.000	0.914	6.239	0.987

Problem 1283	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	303	303	365	1392	0	12458	0	1895	19787	461
N.S.	1	1.00	1.20	4.59	0.00	41.12	0.00	6.25	65.30	1.52
time (sec)	N/A	0.686	0.611	0.100	0.000	113.383	0.000	2.068	8.116	3.139

Problem 1284	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	396	396	802	1828	0	6669	0	0	11687	717
N.S.	1	1.00	2.03	4.62	0.00	16.84	0.00	0.00	29.51	1.81
time (sec)	N/A	0.877	2.960	0.113	0.000	11.785	0.000	0.000	3.693	4.778

Problem 1285	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	372	372	569	1447	0	3382	0	728	7702	669
N.S.	1	1.00	1.53	3.89	0.00	9.09	0.00	1.96	20.70	1.80
time (sec)	N/A	0.686	1.563	0.108	0.000	1.217	0.000	0.604	3.001	4.536

Problem 1286	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	350	350	550	1060	0	4176	0	754	7239	523
N.S.	1	1.00	1.57	3.03	0.00	11.93	0.00	2.15	20.68	1.49
time (sec)	N/A	0.801	1.424	0.090	0.000	1.856	0.000	0.743	8.081	3.171

Problem 1287	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	372	372	522	1733	0	8803	0	1637	13200	656
N.S.	1	1.00	1.40	4.66	0.00	23.66	0.00	4.40	35.48	1.76
time (sec)	N/A	0.761	1.044	0.098	0.000	60.096	0.000	1.247	7.833	2.614

Problem 1288	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	417	417	536	1778	0	0	0	0	19125	727
N.S.	1	1.00	1.29	4.26	0.00	0.00	0.00	0.00	45.86	1.74
time (sec)	N/A	0.926	1.060	0.712	0.000	0.000	0.000	0.000	9.230	2.260

Problem 1289	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	302	223	0	236	0	2892	310	273
N.S.	1	1.00	1.95	1.44	0.00	1.52	0.00	18.66	2.00	1.76
time (sec)	N/A	0.211	1.233	0.193	0.000	0.443	0.000	1.851	0.315	0.941

Problem 1290	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	F(-2)	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	142	128	0	164	0	0	206	145
N.S.	1	1.00	1.07	0.96	0.00	1.23	0.00	0.00	1.55	1.09
time (sec)	N/A	0.430	0.176	0.330	0.000	0.441	0.000	0.000	0.220	0.354

Problem 1291	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	66	95	0	451	78	68	773	85
N.S.	1	1.00	1.00	1.44	0.00	6.83	1.18	1.03	11.71	1.29
time (sec)	N/A	0.102	0.074	0.094	0.000	0.493	57.364	0.192	1.986	0.102

Problem 1292	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F	F(-1)	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	440	440	89	3511	0	7715	0	0	1244	115
N.S.	1	1.00	0.20	7.98	0.00	17.53	0.00	0.00	2.83	0.26
time (sec)	N/A	0.656	0.091	0.277	0.000	3.557	0.000	0.000	2.172	0.204

Problem 1293	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	A	A	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	202	202	58	429	0	294	36	157	233	66
N.S.	1	1.00	0.29	2.12	0.00	1.46	0.18	0.78	1.15	0.33
time (sec)	N/A	0.234	0.046	0.139	0.000	0.456	10.717	0.931	1.807	0.117

Problem 1294	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	63	52	0	22	0	63	38	36
N.S.	1	1.00	1.40	1.16	0.00	0.49	0.00	1.40	0.84	0.80
time (sec)	N/A	0.054	0.045	0.156	0.000	0.423	0.000	0.241	1.758	0.092

Problem 1295	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	63	48	0	37	0	53	21	30
N.S.	1	1.00	1.19	0.91	0.00	0.70	0.00	1.00	0.40	0.57
time (sec)	N/A	0.054	0.029	0.067	0.000	0.421	0.000	0.218	1.837	0.046

Problem 1296	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	29	29	41	22	21	14	26	21	26	24
N.S.	1	1.00	1.41	0.76	0.72	0.48	0.90	0.72	0.90	0.83
time (sec)	N/A	0.033	0.019	0.052	1.202	0.432	99.083	0.185	0.144	0.028

Problem 1297	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F	A	B	A
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD	NO
size	45	57	69	119	0	19	0	23	39	37
N.S.	1	1.27	1.53	2.64	0.00	0.42	0.00	0.51	0.87	0.82
time (sec)	N/A	0.075	0.137	0.439	0.000	0.402	0.000	0.184	2.035	0.214

Problem 1298	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	372	372	773	3176	1104	3116	0	5560	2585	0
N.S.	1	1.00	2.08	8.54	2.97	8.38	0.00	14.95	6.95	0.00
time (sec)	N/A	0.251	1.616	0.074	0.872	0.501	0.000	0.384	3.275	0.192

Problem 1299	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	234	234	355	1271	575	1373	0	2435	1229	0
N.S.	1	1.00	1.52	5.43	2.46	5.87	0.00	10.41	5.25	0.00
time (sec)	N/A	0.136	0.534	0.057	0.739	0.442	0.000	0.262	2.457	0.096

Problem 1300	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	122	338	238	434	3958	770	446	0
N.S.	1	1.00	0.97	2.68	1.89	3.44	31.41	6.11	3.54	0.00
time (sec)	N/A	0.069	0.199	0.049	0.668	0.450	4.753	0.180	2.037	0.068

Problem 1301	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	31	31	31	30	58	47	0	0	98	0
N.S.	1	1.00	1.00	0.97	1.87	1.52	0.00	0.00	3.16	0.00
time (sec)	N/A	0.019	0.061	0.048	1.279	0.445	0.000	0.000	1.899	0.092

Problem 1302	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	229	290	231	280	279	270	238	0
N.S.	1	1.00	1.85	2.34	1.86	2.26	2.25	2.18	1.92	0.00
time (sec)	N/A	0.189	0.074	0.040	0.599	0.356	0.115	0.157	0.107	0.000

Problem 1303	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	175	221	174	211	211	206	179	0
N.S.	1	1.00	1.41	1.78	1.40	1.70	1.70	1.66	1.44	0.00
time (sec)	N/A	0.142	0.055	0.046	0.526	0.371	0.102	0.156	0.070	0.000

Problem 1304	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	133	152	126	146	146	146	124	0
N.S.	1	1.00	1.07	1.23	1.02	1.18	1.18	1.18	1.00	0.00
time (sec)	N/A	0.109	0.040	0.041	0.511	0.370	0.090	0.180	0.049	0.000

Problem 1305	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	79	83	73	80	82	85	71	0
N.S.	1	1.00	1.00	1.05	0.92	1.01	1.04	1.08	0.90	0.00
time (sec)	N/A	0.064	0.018	0.043	0.525	0.363	0.077	0.189	0.033	0.000

Problem 1306	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	21	33	14	33	31	25	32	0
N.S.	1	1.00	1.31	2.06	0.88	2.06	1.94	1.56	2.00	0.00
time (sec)	N/A	0.004	0.005	0.041	0.604	0.368	0.066	0.149	0.040	0.000

Problem 1307	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	95	146	116	117	100	118	121	0
N.S.	1	1.00	0.91	1.40	1.12	1.12	0.96	1.13	1.16	0.00
time (sec)	N/A	0.112	0.039	0.047	0.531	0.420	0.346	0.151	1.782	0.001

Problem 1308	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	102	102	97	166	117	172	126	177	127	0
N.S.	1	1.00	0.95	1.63	1.15	1.69	1.24	1.74	1.25	0.00
time (sec)	N/A	0.103	0.064	0.090	0.493	0.421	0.666	0.166	0.073	0.001

Problem 1309	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	118	179	128	187	139	116	135	0
N.S.	1	1.00	1.06	1.61	1.15	1.68	1.25	1.05	1.22	0.00
time (sec)	N/A	0.094	0.048	0.049	0.645	0.407	1.710	0.149	0.114	0.001

Problem 1310	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	111	188	146	179	158	123	144	0
N.S.	1	1.00	0.93	1.58	1.23	1.50	1.33	1.03	1.21	0.00
time (sec)	N/A	0.095	0.045	0.046	0.476	0.411	3.820	0.151	1.835	0.001

Problem 1311	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	100	131	150	150	170	186	151	0
N.S.	1	1.00	0.82	1.07	1.23	1.23	1.39	1.52	1.24	0.00
time (sec)	N/A	0.090	0.039	0.047	0.534	0.438	7.372	0.194	1.811	0.001

Problem 1312	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	433	554	430	561	552	543	454	0
N.S.	1	1.00	1.80	2.31	1.79	2.34	2.30	2.26	1.89	0.00
time (sec)	N/A	0.416	0.157	0.040	0.539	0.384	0.160	0.173	1.884	0.000

Problem 1313	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	351	428	343	429	430	420	349	0
N.S.	1	1.00	1.46	1.78	1.43	1.79	1.79	1.75	1.45	0.00
time (sec)	N/A	0.316	0.123	0.039	0.491	0.370	0.142	0.160	0.111	0.000

Problem 1314	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	240	240	244	302	241	298	294	298	242	0
N.S.	1	1.00	1.02	1.26	1.00	1.24	1.22	1.24	1.01	0.00
time (sec)	N/A	0.232	0.084	0.038	0.603	0.400	0.121	0.167	1.833	0.000

Problem 1315	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	153	176	151	167	168	176	144	0
N.S.	1	1.00	1.00	1.15	0.99	1.09	1.10	1.15	0.94	0.00
time (sec)	N/A	0.131	0.043	0.038	0.546	0.372	0.102	0.195	0.062	0.000

Problem 1316	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	36	86	14	71	65	40	62	0
N.S.	1	1.00	2.25	5.38	0.88	4.44	4.06	2.50	3.88	0.00
time (sec)	N/A	0.004	0.010	0.046	0.534	0.372	0.094	0.162	0.033	0.000

Problem 1317	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	229	229	228	406	307	308	280	337	326	0
N.S.	1	1.00	1.00	1.77	1.34	1.34	1.22	1.47	1.42	0.00
time (sec)	N/A	0.275	0.112	0.053	0.502	0.400	0.749	0.156	1.805	0.001

Problem 1318	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	223	223	241	444	310	444	325	420	387	0
N.S.	1	1.00	1.08	1.99	1.39	1.99	1.46	1.88	1.74	0.00
time (sec)	N/A	0.290	0.185	0.057	0.643	0.414	1.824	0.173	1.841	0.001

Problem 1319	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	219	219	233	471	317	487	360	317	358	0
N.S.	1	1.00	1.06	2.15	1.45	2.22	1.64	1.45	1.63	0.00
time (sec)	N/A	0.250	0.081	0.049	0.680	0.416	6.706	0.159	1.842	0.001

Problem 1320	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	300	495	327	487	379	314	349	0
N.S.	1	1.00	1.38	2.28	1.51	2.24	1.75	1.45	1.61	0.00
time (sec)	N/A	0.226	0.128	0.051	0.631	0.409	21.025	0.157	1.856	0.001

Problem 1321	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	227	227	292	507	338	458	401	525	369	0
N.S.	1	1.00	1.29	2.23	1.49	2.02	1.77	2.31	1.63	0.00
time (sec)	N/A	0.209	0.175	0.060	0.655	0.426	58.011	0.202	1.918	0.001

Problem 1322	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	411	411	735	1052	729	936	935	908	768	0
N.S.	1	1.00	1.79	2.56	1.77	2.28	2.27	2.21	1.87	0.00
time (sec)	N/A	0.723	0.237	0.040	0.548	0.442	0.207	0.167	0.236	0.000

Problem 1323	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	411	411	562	830	565	719	726	705	589	0
N.S.	1	1.00	1.37	2.02	1.37	1.75	1.77	1.72	1.43	0.00
time (sec)	N/A	0.588	0.198	0.045	0.540	0.391	0.178	0.177	0.184	0.000

Problem 1324	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	411	411	413	608	417	502	503	502	414	0
N.S.	1	1.00	1.00	1.48	1.01	1.22	1.22	1.22	1.01	0.00
time (sec)	N/A	0.455	0.135	0.041	0.550	0.377	0.153	0.157	1.889	0.000

Problem 1325	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	251	251	251	386	261	286	291	300	243	0
N.S.	1	1.00	1.00	1.54	1.04	1.14	1.16	1.20	0.97	0.00
time (sec)	N/A	0.229	0.057	0.044	0.594	0.482	0.119	0.175	0.106	0.000

Problem 1326	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	51	218	14	126	121	56	112	0
N.S.	1	1.00	3.19	13.62	0.88	7.88	7.56	3.50	7.00	0.00
time (sec)	N/A	0.005	0.019	0.048	0.492	0.379	0.097	0.150	1.888	0.000

Problem 1327	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	399	399	483	872	644	645	641	742	697	0
N.S.	1	1.00	1.21	2.19	1.61	1.62	1.61	1.86	1.75	0.00
time (sec)	N/A	0.581	0.244	0.057	0.659	0.442	1.361	0.170	0.098	0.001

Problem 1328	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	396	396	637	930	649	903	688	828	1090	0
N.S.	1	1.00	1.61	2.35	1.64	2.28	1.74	2.09	2.75	0.00
time (sec)	N/A	0.568	0.251	0.059	0.710	0.423	4.109	0.198	1.820	0.001

Problem 1329	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	390	390	403	978	656	990	733	694	936	0
N.S.	1	1.00	1.03	2.51	1.68	2.54	1.88	1.78	2.40	0.00
time (sec)	N/A	0.513	0.165	0.067	0.694	0.417	17.281	0.170	1.879	0.001

Problem 1330	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	396	396	404	1023	670	1031	821	678	807	0
N.S.	1	1.00	1.02	2.58	1.69	2.60	2.07	1.71	2.04	0.00
time (sec)	N/A	0.512	0.155	0.063	0.645	0.420	71.722	0.170	1.873	0.001

Problem 1331	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	389	389	614	1056	679	1017	0	1057	763	0
N.S.	1	1.00	1.58	2.71	1.75	2.61	0.00	2.72	1.96	0.00
time (sec)	N/A	0.483	0.303	0.061	0.662	0.415	0.000	0.220	1.880	0.001

Problem 1332	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	299	299	297	781	0	709	1056	401	726	0
N.S.	1	1.00	0.99	2.61	0.00	2.37	3.53	1.34	2.43	0.00
time (sec)	N/A	0.397	0.223	0.049	0.000	0.435	12.739	0.159	2.091	0.001

Problem 1333	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	188	188	177	492	0	458	561	251	433	0
N.S.	1	1.00	0.94	2.62	0.00	2.44	2.98	1.34	2.30	0.00
time (sec)	N/A	0.236	0.182	0.050	0.000	0.438	4.805	0.156	2.004	0.001

Problem 1334	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	111	264	0	282	335	144	230	0
N.S.	1	1.00	0.97	2.32	0.00	2.47	2.94	1.26	2.02	0.00
time (sec)	N/A	0.133	0.094	0.047	0.000	0.434	1.799	0.177	0.255	0.001

Problem 1335	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	70	70	72	113	0	176	134	81	129	0
N.S.	1	1.00	1.03	1.61	0.00	2.51	1.91	1.16	1.84	0.00
time (sec)	N/A	0.090	0.063	0.056	0.000	0.421	0.706	0.158	0.321	0.001

Problem 1336	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	11	11	10	12	11	11	10	12	11	0
N.S.	1	1.00	0.91	1.09	1.00	1.00	0.91	1.09	1.00	0.00
time (sec)	N/A	0.004	0.002	0.049	0.714	0.408	0.154	0.148	0.040	0.000

Problem 1337	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	116	233	0	229	0	149	515	0
N.S.	1	1.00	0.89	1.79	0.00	1.76	0.00	1.15	3.96	0.00
time (sec)	N/A	0.176	0.115	0.067	0.000	0.524	0.000	0.158	4.377	0.001

Problem 1338	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	177	560	0	745	0	362	1637	0
N.S.	1	1.00	0.84	2.67	0.00	3.55	0.00	1.72	7.80	0.00
time (sec)	N/A	0.300	0.287	0.053	0.000	2.256	0.000	0.264	4.080	0.001

Problem 1339	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	303	303	268	1033	0	1961	0	710	2608	0
N.S.	1	1.00	0.88	3.41	0.00	6.47	0.00	2.34	8.61	0.00
time (sec)	N/A	0.476	0.374	0.063	0.000	14.969	0.000	0.195	10.980	0.001

Problem 1340	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	241	618	0	1701	1071	285	358	0
N.S.	1	1.00	1.40	3.59	0.00	9.89	6.23	1.66	2.08	0.00
time (sec)	N/A	0.216	0.277	0.057	0.000	0.465	25.124	0.164	0.323	0.001

Problem 1341	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	161	363	0	1050	733	173	226	0
N.S.	1	1.00	1.28	2.88	0.00	8.33	5.82	1.37	1.79	0.00
time (sec)	N/A	0.145	0.172	0.056	0.000	0.453	11.140	0.160	1.948	0.001

Problem 1342	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	98	141	0	573	340	114	248	0
N.S.	1	1.00	1.13	1.62	0.00	6.59	3.91	1.31	2.85	0.00
time (sec)	N/A	0.058	0.114	0.051	0.000	0.441	4.354	0.175	0.181	0.001

Problem 1343	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	58	58	0	269	158	57	73	0
N.S.	1	1.00	1.05	1.05	0.00	4.89	2.87	1.04	1.33	0.00
time (sec)	N/A	0.030	0.028	0.051	0.000	0.445	1.197	0.158	0.063	0.001

Problem 1344	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	13	15	14	14	12	14	14	0
N.S.	1	1.00	0.93	1.07	1.00	1.00	0.86	1.00	1.00	0.00
time (sec)	N/A	0.005	0.004	0.044	0.563	0.409	0.382	0.170	0.031	0.001

Problem 1345	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	236	236	173	668	0	1834	0	357	1833	0
N.S.	1	1.00	0.73	2.83	0.00	7.77	0.00	1.51	7.77	0.00
time (sec)	N/A	0.358	0.243	0.099	0.000	3.156	0.000	0.210	7.933	0.001

Problem 1346	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	327	327	275	1177	0	4494	0	741	3631	0
N.S.	1	1.00	0.84	3.60	0.00	13.74	0.00	2.27	11.10	0.00
time (sec)	N/A	0.534	0.602	0.082	0.000	43.721	0.000	0.241	8.681	0.001

Problem 1347	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	293	293	480	1921	0	3618	0	636	1148	0
N.S.	1	1.00	1.64	6.56	0.00	12.35	0.00	2.17	3.92	0.00
time (sec)	N/A	0.677	0.804	0.087	0.000	0.524	0.000	0.210	3.018	0.001

Problem 1348	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	334	649	0	2400	1545	439	753	0
N.S.	1	1.00	1.70	3.29	0.00	12.18	7.84	2.23	3.82	0.00
time (sec)	N/A	0.335	0.545	0.064	0.000	0.466	133.502	0.180	2.920	0.001

Problem 1349	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	216	365	0	1455	762	292	412	0
N.S.	1	1.00	1.71	2.90	0.00	11.55	6.05	2.32	3.27	0.00
time (sec)	N/A	0.083	0.276	0.059	0.000	0.438	40.976	0.184	2.134	0.001

Problem 1350	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	143	229	0	1004	530	183	284	0
N.S.	1	1.00	1.28	2.04	0.00	8.96	4.73	1.63	2.54	0.00
time (sec)	N/A	0.062	0.182	0.054	0.000	0.434	12.584	0.171	2.000	0.001

Problem 1351	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	91	93	146	0	681	377	122	213	0
N.S.	1	0.97	0.99	1.55	0.00	7.24	4.01	1.30	2.27	0.00
time (sec)	N/A	0.042	0.124	0.057	0.000	0.433	3.396	0.164	1.906	0.001

Problem 1352	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	15	15	14	39	44	14	43	0
N.S.	1	1.00	0.94	0.94	0.88	2.44	2.75	0.88	2.69	0.00
time (sec)	N/A	0.004	0.005	0.044	0.691	0.407	0.821	0.156	0.057	0.001

Problem 1353	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	397	397	356	3233	0	6667	0	1117	2461	0
N.S.	1	1.00	0.90	8.14	0.00	16.79	0.00	2.81	6.20	0.00
time (sec)	N/A	0.823	1.111	0.085	0.000	83.849	0.000	0.283	5.462	0.001

Problem 1354	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	431	431	549	1537	0	1445	0	759	2712	827
N.S.	1	1.00	1.27	3.57	0.00	3.35	0.00	1.76	6.29	1.92
time (sec)	N/A	0.789	0.848	0.072	0.000	0.585	0.000	0.252	13.549	2.050

Problem 1355	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	312	312	270	992	0	985	0	506	1679	533
N.S.	1	1.00	0.87	3.18	0.00	3.16	0.00	1.62	5.38	1.71
time (sec)	N/A	0.419	0.513	0.086	0.000	0.589	0.000	0.244	5.084	2.013

Problem 1356	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	177	535	0	617	0	308	876	307
N.S.	1	1.00	0.91	2.74	0.00	3.16	0.00	1.58	4.49	1.57
time (sec)	N/A	0.328	0.251	0.110	0.000	0.490	0.000	0.235	3.626	1.114

Problem 1357	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	134	235	0	343	0	170	395	151
N.S.	1	1.00	1.10	1.93	0.00	2.81	0.00	1.39	3.24	1.24
time (sec)	N/A	0.090	0.145	0.053	0.000	0.446	0.000	0.222	2.792	0.625

Problem 1358	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	18	18	17	15	14	14	60	14	14	18
N.S.	1	1.00	0.94	0.83	0.78	0.78	3.33	0.78	0.78	1.00
time (sec)	N/A	0.006	0.010	0.051	0.624	0.425	0.174	0.168	1.830	0.013

Problem 1359	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	199	199	195	1302	0	1196	0	0	-1	197
N.S.	1	1.00	0.98	6.54	0.00	6.01	0.00	0.00	-0.01	0.99
time (sec)	N/A	0.256	0.252	0.056	0.000	12.658	0.000	0.000	0.000	0.829

Problem 1360	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	203	203	280	3088	0	1964	0	0	-1	282
N.S.	1	1.00	1.38	15.21	0.00	9.67	0.00	0.00	-0.00	1.39
time (sec)	N/A	0.209	0.407	0.061	0.000	21.081	0.000	0.000	0.000	1.314

Problem 1361	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	280	280	389	5046	0	0	0	0	-1	0
N.S.	1	1.00	1.39	18.02	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.321	1.214	0.069	0.000	0.000	0.000	0.000	0.000	180.321

Problem 1362	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	214	7916	0	2040	0	2611	-1	0
N.S.	1	1.00	0.99	36.48	0.00	9.40	0.00	12.03	-0.00	0.00
time (sec)	N/A	0.226	0.469	0.136	0.000	3.661	0.000	0.767	0.000	180.035

Problem 1363	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	307	307	290	10723	0	3996	0	0	-1	0
N.S.	1	1.00	0.94	34.93	0.00	13.02	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.459	0.736	0.110	0.000	19.569	0.000	0.000	0.000	180.014

Problem 1364	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	430	430	401	15192	0	6858	0	10103	-1	0
N.S.	1	1.00	0.93	35.33	0.00	15.95	0.00	23.50	-0.00	0.00
time (sec)	N/A	0.645	3.113	0.091	0.000	86.813	0.000	73.159	0.000	180.012

Problem 1365	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	379	379	297	1607	0	1587	0	856	-1	928
N.S.	1	1.00	0.78	4.24	0.00	4.19	0.00	2.26	-0.00	2.45
time (sec)	N/A	0.514	0.689	0.075	0.000	0.631	0.000	0.271	0.000	4.917

Problem 1366	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	242	242	204	895	0	1015	0	534	-1	549
N.S.	1	1.00	0.84	3.70	0.00	4.19	0.00	2.21	-0.00	2.27
time (sec)	N/A	0.447	0.341	0.079	0.000	0.551	0.000	0.251	0.000	2.510

Problem 1367	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	147	401	0	559	0	294	-1	267
N.S.	1	1.00	0.92	2.51	0.00	3.49	0.00	1.84	-0.01	1.67
time (sec)	N/A	0.123	0.190	0.058	0.000	0.482	0.000	0.258	0.000	1.163

Problem 1368	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	18	18	17	15	14	49	136	14	14	18
N.S.	1	1.00	0.94	0.83	0.78	2.72	7.56	0.78	0.78	1.00
time (sec)	N/A	0.006	0.015	0.044	0.509	0.424	0.605	0.189	1.921	0.017

Problem 1369	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	342	3119	0	0	0	0	-1	500
N.S.	1	1.00	0.95	8.66	0.00	0.00	0.00	0.00	-0.00	1.39
time (sec)	N/A	0.601	0.742	0.061	0.000	0.000	0.000	0.000	0.000	2.476

Problem 1370	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	303	303	395	6898	0	2231	0	0	-1	6952
N.S.	1	1.00	1.30	22.77	0.00	7.36	0.00	0.00	-0.00	22.94
time (sec)	N/A	0.481	1.057	0.068	0.000	127.988	0.000	0.000	0.000	11.548

Problem 1371	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	309	309	544	10362	0	0	0	0	-1	0
N.S.	1	1.00	1.76	33.53	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.369	2.305	0.082	0.000	0.000	0.000	0.000	0.000	180.041

Problem 1372	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	462	462	485	15982	0	0	0	0	-1	0
N.S.	1	1.00	1.05	34.59	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.626	2.965	0.087	0.000	0.000	0.000	0.000	0.000	180.058

Problem 1373	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	446	446	345	2387	0	2343	0	1302	-1	1446
N.S.	1	1.00	0.77	5.35	0.00	5.25	0.00	2.92	-0.00	3.24
time (sec)	N/A	0.624	1.101	0.072	0.000	0.850	0.000	0.320	0.000	10.581

Problem 1374	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	289	289	252	1358	0	1523	0	824	-1	875
N.S.	1	1.00	0.87	4.70	0.00	5.27	0.00	2.85	-0.00	3.03
time (sec)	N/A	0.548	0.677	0.065	0.000	0.756	0.000	0.298	0.000	4.859

Problem 1375	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	194	616	0	841	0	452	-1	428
N.S.	1	1.00	0.98	3.11	0.00	4.25	0.00	2.28	-0.01	2.16
time (sec)	N/A	0.169	0.517	0.057	0.000	0.525	0.000	0.269	0.000	1.967

Problem 1376	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	18	18	17	15	14	86	243	14	14	18
N.S.	1	1.00	0.94	0.83	0.78	4.78	13.50	0.78	0.78	1.00
time (sec)	N/A	0.006	0.012	0.049	0.471	0.441	2.900	0.153	2.034	0.017

Problem 1377	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	627	627	607	6077	0	0	0	0	-1	28910
N.S.	1	1.00	0.97	9.69	0.00	0.00	0.00	0.00	-0.00	46.11
time (sec)	N/A	1.144	1.630	0.061	0.000	0.000	0.000	0.000	0.000	85.976

Problem 1378	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	508	508	659	13167	0	0	0	0	-1	20827
N.S.	1	1.00	1.30	25.92	0.00	0.00	0.00	0.00	-0.00	41.00
time (sec)	N/A	0.749	2.452	0.066	0.000	0.000	0.000	0.000	0.000	55.193

Problem 1379	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	464	464	535	18705	0	0	0	0	-1	0
N.S.	1	1.00	1.15	40.31	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.845	2.134	0.077	0.000	0.000	0.000	0.000	0.000	180.055

Problem 1380	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	473	473	823	28593	0	0	0	0	-1	0
N.S.	1	1.00	1.74	60.45	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.747	2.624	0.319	0.000	0.000	0.000	0.000	0.000	180.054

Problem 1381	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	245	245	302	539	0	545	0	252	-1	263
N.S.	1	1.00	1.23	2.20	0.00	2.22	0.00	1.03	-0.00	1.07
time (sec)	N/A	0.329	0.393	0.069	0.000	0.719	0.000	0.264	0.000	0.983

Problem 1382	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	185	280	0	335	0	146	-1	154
N.S.	1	1.00	1.25	1.89	0.00	2.26	0.00	0.99	-0.01	1.04
time (sec)	N/A	0.199	0.182	0.063	0.000	0.811	0.000	0.283	0.000	0.639

Problem 1383	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	84	84	82	117	0	197	0	84	-1	86
N.S.	1	1.00	0.98	1.39	0.00	2.35	0.00	1.00	-0.01	1.02
time (sec)	N/A	0.053	0.124	0.054	0.000	0.747	0.000	0.436	0.000	0.472

Problem 1384	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	15	15	14	14	14	14	14	16
N.S.	1	1.00	0.94	0.94	0.88	0.88	0.88	0.88	0.88	1.00
time (sec)	N/A	0.006	0.007	0.048	0.557	0.555	0.156	0.153	1.886	0.015

Problem 1385	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	127	350	0	1048	0	0	-1	152
N.S.	1	1.00	0.95	2.63	0.00	7.88	0.00	0.00	-0.01	1.14
time (sec)	N/A	0.091	0.144	0.056	0.000	2.622	0.000	0.000	0.000	0.559

Problem 1386	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	141	141	138	860	0	686	0	0	-1	140
N.S.	1	1.00	0.98	6.10	0.00	4.87	0.00	0.00	-0.01	0.99
time (sec)	N/A	0.115	0.107	0.062	0.000	0.642	0.000	0.000	0.000	0.829

Problem 1387	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	220	1588	0	1500	0	1046	-1	0
N.S.	1	1.00	0.98	7.06	0.00	6.67	0.00	4.65	-0.00	0.00
time (sec)	N/A	0.272	0.318	0.064	0.000	1.310	0.000	0.393	0.000	180.319

Problem 1388	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	328	328	323	2659	0	2998	0	2666	-1	0
N.S.	1	1.00	0.98	8.11	0.00	9.14	0.00	8.13	-0.00	0.00
time (sec)	N/A	0.449	0.559	0.078	0.000	5.895	0.000	0.775	0.000	180.008

Problem 1389	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	202	202	248	1320	0	965	0	545	-1	314
N.S.	1	1.00	1.23	6.53	0.00	4.78	0.00	2.70	-0.00	1.55
time (sec)	N/A	0.206	0.332	0.066	0.000	0.907	0.000	0.368	0.000	4.524

Problem 1390	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	164	788	0	615	0	347	-1	191
N.S.	1	1.00	1.07	5.15	0.00	4.02	0.00	2.27	-0.01	1.25
time (sec)	N/A	0.154	0.219	0.062	0.000	0.771	0.000	0.324	0.000	2.350

Problem 1391	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	95	427	0	363	0	197	-1	105
N.S.	1	1.00	1.02	4.59	0.00	3.90	0.00	2.12	-0.01	1.13
time (sec)	N/A	0.052	0.166	0.055	0.000	0.661	0.000	0.332	0.000	0.799

Problem 1392	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	56	158	0	211	0	101	161	58
N.S.	1	1.00	0.93	2.63	0.00	3.52	0.00	1.68	2.68	0.97
time (sec)	N/A	0.029	0.271	0.054	0.000	0.571	0.000	0.304	2.620	0.472

Problem 1393	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	16	16	15	15	14	14	15	14	14	16
N.S.	1	1.00	0.94	0.94	0.88	0.88	0.94	0.88	0.88	1.00
time (sec)	N/A	0.006	0.007	0.049	0.508	0.427	0.920	0.205	1.890	0.020

Problem 1394	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	166	166	133	1084	0	918	0	501	-1	139
N.S.	1	1.00	0.80	6.53	0.00	5.53	0.00	3.02	-0.01	0.84
time (sec)	N/A	0.129	0.191	0.058	0.000	0.920	0.000	0.308	0.000	0.906

Problem 1395	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	248	248	215	2293	0	2102	0	0	-1	5483
N.S.	1	1.00	0.87	9.25	0.00	8.48	0.00	0.00	-0.00	22.11
time (sec)	N/A	0.273	0.538	0.065	0.000	2.551	0.000	0.000	0.000	22.853

Problem 1396	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	208	208	354	1692	0	1493	0	754	-1	455
N.S.	1	1.00	1.70	8.13	0.00	7.18	0.00	3.62	-0.00	2.19
time (sec)	N/A	0.225	1.008	0.066	0.000	1.635	0.000	0.375	0.000	3.975

Problem 1397	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	285	865	0	958	0	492	-1	273
N.S.	1	1.00	1.80	5.47	0.00	6.06	0.00	3.11	-0.01	1.73
time (sec)	N/A	0.116	0.490	0.064	0.000	1.412	0.000	0.349	0.000	2.674

Problem 1398	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	74	74	110	123	0	194	0	289	122	123
N.S.	1	1.00	1.49	1.66	0.00	2.62	0.00	3.91	1.65	1.66
time (sec)	N/A	0.039	0.786	0.056	0.000	1.264	0.000	0.322	2.265	1.612

Problem 1399	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	64	67	0	145	0	205	66	68
N.S.	1	1.00	1.08	1.14	0.00	2.46	0.00	3.47	1.12	1.15
time (sec)	N/A	0.022	0.204	0.046	0.000	1.155	0.000	0.279	2.064	1.054

Problem 1400	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	18	18	17	15	14	51	58	14	14	18
N.S.	1	1.00	0.94	0.83	0.78	2.83	3.22	0.78	0.78	1.00
time (sec)	N/A	0.006	0.010	0.056	0.532	0.574	1.700	0.280	1.994	0.021

Problem 1401	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	291	291	249	2451	0	3858	0	8417	-1	6882
N.S.	1	1.00	0.86	8.42	0.00	13.26	0.00	28.92	-0.00	23.65
time (sec)	N/A	0.293	0.420	0.067	0.000	2.785	0.000	2.404	0.000	95.695

Problem 1402	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	423	423	384	4855	0	7442	0	6103	-1	0
N.S.	1	1.00	0.91	11.48	0.00	17.59	0.00	14.43	-0.00	0.00
time (sec)	N/A	0.572	1.347	0.114	0.000	10.037	0.000	3.182	0.000	180.062

Problem 1403	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	111	123	121	272	643	1087	118	143
N.S.	1	1.00	0.84	0.93	0.92	2.06	4.87	8.23	0.89	1.08
time (sec)	N/A	0.082	0.136	0.046	0.549	0.399	4.915	0.227	0.095	0.102

Problem 1404	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	109	123	121	220	457	711	118	143
N.S.	1	1.00	0.83	0.93	0.92	1.67	3.46	5.39	0.89	1.08
time (sec)	N/A	0.066	0.127	0.048	0.806	0.400	20.229	0.195	1.881	0.085

Problem 1405	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	110	123	121	167	155	400	118	143
N.S.	1	1.00	0.83	0.93	0.92	1.27	1.17	3.03	0.89	1.08
time (sec)	N/A	0.070	0.119	0.050	0.522	0.402	5.144	0.270	0.066	0.077

Problem 1406	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	109	123	121	116	427	166	118	143
N.S.	1	1.00	0.84	0.95	0.93	0.89	3.28	1.28	0.91	1.10
time (sec)	N/A	0.062	0.112	0.046	0.533	0.394	45.951	0.267	0.067	0.076

Problem 1407	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	106	123	129	126	128	163	133	143
N.S.	1	1.00	0.84	0.98	1.02	1.00	1.02	1.29	1.06	1.13
time (sec)	N/A	0.068	0.105	0.048	0.717	0.408	28.767	0.193	0.071	0.076

Problem 1408	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	108	122	126	137	536	153	139	142
N.S.	1	1.00	0.84	0.95	0.98	1.07	4.19	1.20	1.09	1.11
time (sec)	N/A	0.064	0.115	0.044	0.600	0.412	1.653	0.203	0.086	0.081

Problem 1409	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	252	252	291	359	308	590	1860	2447	267	425
N.S.	1	1.00	1.15	1.42	1.22	2.34	7.38	9.71	1.06	1.69
time (sec)	N/A	0.173	0.410	0.057	0.600	0.412	70.394	0.327	0.097	0.204

Problem 1410	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	252	252	291	359	308	495	1093	1648	267	425
N.S.	1	1.00	1.15	1.42	1.22	1.96	4.34	6.54	1.06	1.69
time (sec)	N/A	0.129	0.357	0.055	0.528	0.404	43.463	0.289	0.065	0.191

Problem 1411	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	252	252	291	359	308	399	405	966	267	425
N.S.	1	1.00	1.15	1.42	1.22	1.58	1.61	3.83	1.06	1.69
time (sec)	N/A	0.125	0.363	0.055	0.538	0.393	8.783	0.221	1.923	0.167

Problem 1412	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	250	250	290	359	308	306	1025	421	267	425
N.S.	1	1.00	1.16	1.44	1.23	1.22	4.10	1.68	1.07	1.70
time (sec)	N/A	0.126	0.391	0.051	0.530	0.407	121.363	0.183	1.853	0.168

Problem 1413	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	248	248	287	359	316	316	316	460	333	425
N.S.	1	1.00	1.16	1.45	1.27	1.27	1.27	1.85	1.34	1.71
time (sec)	N/A	0.127	0.344	0.052	0.641	0.400	90.272	0.212	0.072	0.174

Problem 1414	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	246	246	289	359	314	327	274	440	329	425
N.S.	1	1.00	1.17	1.46	1.28	1.33	1.11	1.79	1.34	1.73
time (sec)	N/A	0.127	0.334	0.049	0.534	0.411	113.802	0.221	1.887	0.173

Problem 1415	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	427	427	600	795	645	1113	3529	4552	444	951
N.S.	1	1.00	1.41	1.86	1.51	2.61	8.26	10.66	1.04	2.23
time (sec)	N/A	0.303	0.616	0.054	0.541	0.421	126.018	0.594	1.959	0.385

Problem 1416	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	427	427	600	795	645	958	2122	3123	444	951
N.S.	1	1.00	1.41	1.86	1.51	2.24	4.97	7.31	1.04	2.23
time (sec)	N/A	0.243	0.616	0.049	0.545	0.422	77.354	0.372	0.124	0.364

Problem 1417	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	427	427	601	795	645	802	843	1876	444	951
N.S.	1	1.00	1.41	1.86	1.51	1.88	1.97	4.39	1.04	2.23
time (sec)	N/A	0.238	0.602	0.053	0.649	0.416	13.406	0.284	0.128	0.338

Problem 1418	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	425	425	599	795	645	648	0	841	444	1186
N.S.	1	1.00	1.41	1.87	1.52	1.52	0.00	1.98	1.04	2.79
time (sec)	N/A	0.234	0.618	0.057	0.553	0.407	0.000	0.226	1.931	0.367

Problem 1419	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	421	421	594	795	653	657	0	1000	581	951
N.S.	1	1.00	1.41	1.89	1.55	1.56	0.00	2.38	1.38	2.26
time (sec)	N/A	0.239	0.540	0.056	0.538	0.407	0.000	0.311	1.938	0.339

Problem 1420	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	421	421	598	795	651	669	0	972	677	951
N.S.	1	1.00	1.42	1.89	1.55	1.59	0.00	2.31	1.61	2.26
time (sec)	N/A	0.228	0.593	0.055	0.665	0.417	0.000	0.304	1.957	0.347

Problem 1421	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	422	422	782	1494	0	2909	0	813	6933	583
N.S.	1	1.00	1.85	3.54	0.00	6.89	0.00	1.93	16.43	1.38
time (sec)	N/A	2.229	2.422	0.105	0.000	0.536	0.000	0.480	0.963	1.681

Problem 1422	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	291	291	288	724	0	368	0	614	2611	332
N.S.	1	1.00	0.99	2.49	0.00	1.26	0.00	2.11	8.97	1.14
time (sec)	N/A	0.888	0.348	0.088	0.000	0.443	0.000	0.458	2.145	0.885

Problem 1423	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	175	175	165	158	0	1317	0	254	205	173
N.S.	1	1.00	0.94	0.90	0.00	7.53	0.00	1.45	1.17	0.99
time (sec)	N/A	0.176	0.631	0.073	0.000	0.442	0.000	0.297	2.371	0.641

Problem 1424	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	354	354	317	927	0	8557	0	1366	33147	416
N.S.	1	1.00	0.90	2.62	0.00	24.17	0.00	3.86	93.64	1.18
time (sec)	N/A	0.704	0.498	0.112	0.000	0.715	0.000	0.999	9.404	1.255

Problem 1425	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	F(-1)	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	518	518	481	1962	0	0	0	1255	50695	690
N.S.	1	1.00	0.93	3.79	0.00	0.00	0.00	2.42	97.87	1.33
time (sec)	N/A	1.902	1.674	0.137	0.000	0.000	0.000	4.004	11.380	2.285

Problem 1426	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	350	350	297	1333	0	2928	0	772	8776	925
N.S.	1	1.00	0.85	3.81	0.00	8.37	0.00	2.21	25.07	2.64
time (sec)	N/A	1.287	1.836	0.207	0.000	0.523	0.000	1.670	1.442	6.717

Problem 1427	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	A	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	224	224	221	590	0	828	0	288	841	597
N.S.	1	1.00	0.99	2.63	0.00	3.70	0.00	1.29	3.75	2.67
time (sec)	N/A	0.344	0.418	0.089	0.000	0.447	0.000	1.107	0.468	3.397

Problem 1428	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F(-1)	A	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	223	223	221	232	0	2750	0	351	4814	283
N.S.	1	1.00	0.99	1.04	0.00	12.33	0.00	1.57	21.59	1.27
time (sec)	N/A	0.320	0.755	0.086	0.000	0.483	0.000	1.080	2.926	1.453

Problem 1429	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	364	364	278	469	0	11482	0	1534	18615	398
N.S.	1	1.00	0.76	1.29	0.00	31.54	0.00	4.21	51.14	1.09
time (sec)	N/A	0.761	1.211	0.084	0.000	0.714	0.000	1.533	5.325	1.647

Problem 1430	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	F(-1)	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	469	469	381	1758	0	0	0	1441	58573	655
N.S.	1	1.00	0.81	3.75	0.00	0.00	0.00	3.07	124.89	1.40
time (sec)	N/A	1.721	2.633	0.145	0.000	0.000	0.000	8.041	10.414	5.020

Problem 1431	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F	B	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	543	543	1403	3503	0	5701	0	1749	22151	1354
N.S.	1	1.00	2.58	6.45	0.00	10.50	0.00	3.22	40.79	2.49
time (sec)	N/A	5.723	6.746	0.149	0.000	0.887	0.000	6.053	6.065	84.884

Problem 1432	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F	B	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	398	398	1197	2126	0	2773	0	1425	12750	2045
N.S.	1	1.00	3.01	5.34	0.00	6.97	0.00	3.58	32.04	5.14
time (sec)	N/A	1.704	6.586	0.148	0.000	0.532	0.000	3.655	7.653	176.996

Problem 1433	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F	B	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	322	322	1069	1231	0	6728	0	1189	16393	1493
N.S.	1	1.00	3.32	3.82	0.00	20.89	0.00	3.69	50.91	4.64
time (sec)	N/A	0.789	6.461	0.178	0.000	0.649	0.000	3.705	7.151	113.318

Problem 1434	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F	F(-1)	F(-1)	B	B	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	463	463	1080	3056	0	0	0	3071	46559	873
N.S.	1	1.00	2.33	6.60	0.00	0.00	0.00	6.63	100.56	1.89
time (sec)	N/A	1.890	6.412	0.115	0.000	0.000	0.000	5.527	9.030	17.620

Problem 1435	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	F(-1)	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	673	673	1033	2743	0	0	0	5779	84064	1184
N.S.	1	1.00	1.53	4.08	0.00	0.00	0.00	8.59	124.91	1.76
time (sec)	N/A	5.256	6.200	0.620	0.000	0.000	0.000	10.016	11.821	16.078

Problem 1436	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	449	449	1226	5439	1772	4607	0	9689	4573	0
N.S.	1	1.00	2.73	12.11	3.95	10.26	0.00	21.58	10.18	0.00
time (sec)	N/A	0.345	3.365	0.079	1.028	0.541	0.000	0.504	4.203	0.176

Problem 1437	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	270	270	408	1852	802	1750	0	3633	1825	0
N.S.	1	1.00	1.51	6.86	2.97	6.48	0.00	13.46	6.76	0.00
time (sec)	N/A	0.189	1.078	0.062	0.748	0.497	0.000	0.315	2.823	0.105

Problem 1438	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	134	424	287	511	4760	980	554	0
N.S.	1	1.00	0.94	2.97	2.01	3.57	33.29	6.85	3.87	0.00
time (sec)	N/A	0.092	0.204	0.048	0.552	0.439	4.713	0.194	2.253	0.075

Problem 1439	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	330	394	369	463	481	445	381	0
N.S.	1	1.00	2.75	3.28	3.08	3.86	4.01	3.71	3.18	0.00
time (sec)	N/A	0.286	0.114	0.052	0.579	0.356	0.132	0.154	0.172	0.000

Problem 1440	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	283	319	304	374	384	362	305	0
N.S.	1	1.00	2.36	2.66	2.53	3.12	3.20	3.02	2.54	0.00
time (sec)	N/A	0.214	0.097	0.046	0.497	0.370	0.118	0.158	2.053	0.000

Problem 1441	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	216	244	236	287	296	281	231	0
N.S.	1	1.00	1.80	2.03	1.97	2.39	2.47	2.34	1.92	0.00
time (sec)	N/A	0.163	0.074	0.048	0.487	0.368	0.106	0.167	0.091	0.000

Problem 1442	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	157	169	168	199	202	199	157	0
N.S.	1	1.00	1.33	1.43	1.42	1.69	1.71	1.69	1.33	0.00
time (sec)	N/A	0.129	0.054	0.047	0.588	0.357	0.094	0.157	0.066	0.000

Problem 1443	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	96	94	100	113	116	119	98	0
N.S.	1	1.00	1.28	1.25	1.33	1.51	1.55	1.59	1.31	0.00
time (sec)	N/A	0.076	0.028	0.039	0.523	0.356	0.078	0.170	0.044	0.000

Problem 1444	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	46	49	48	49	49	49	47	0
N.S.	1	1.00	1.21	1.29	1.26	1.29	1.29	1.29	1.24	0.00
time (sec)	N/A	0.028	0.010	0.043	0.558	0.360	0.069	0.151	1.953	0.000

Problem 1445	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	102	197	152	153	117	162	159	0
N.S.	1	1.00	1.11	2.14	1.65	1.66	1.27	1.76	1.73	0.00
time (sec)	N/A	0.063	0.058	0.046	0.542	0.419	0.433	0.187	1.975	0.001

Problem 1446	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	98	223	156	238	151	227	165	0
N.S.	1	1.00	0.97	2.21	1.54	2.36	1.50	2.25	1.63	0.00
time (sec)	N/A	0.103	0.103	0.053	0.457	0.418	0.882	0.159	0.102	0.001

Problem 1447	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	143	242	166	247	187	156	170	0
N.S.	1	1.00	1.35	2.28	1.57	2.33	1.76	1.47	1.60	0.00
time (sec)	N/A	0.092	0.078	0.053	0.480	0.398	2.415	0.152	0.139	0.001

Problem 1448	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	138	251	184	221	211	163	178	0
N.S.	1	1.00	1.37	2.49	1.82	2.19	2.09	1.61	1.76	0.00
time (sec)	N/A	0.080	0.063	0.063	0.527	0.413	5.764	0.156	0.123	0.001

Problem 1449	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	125	166	187	187	223	245	184	0
N.S.	1	1.00	1.45	1.93	2.17	2.17	2.59	2.85	2.14	0.00
time (sec)	N/A	0.035	0.055	0.056	0.584	0.405	11.665	0.201	0.092	0.001

Problem 1450	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	129	166	203	203	238	160	201	0
N.S.	1	1.00	1.08	1.38	1.69	1.69	1.98	1.33	1.68	0.00
time (sec)	N/A	0.097	0.057	0.048	0.614	0.400	21.111	0.154	2.226	0.001

Problem 1451	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	126	166	208	208	246	158	206	0
N.S.	1	1.00	1.05	1.38	1.73	1.73	2.05	1.32	1.72	0.00
time (sec)	N/A	0.084	0.063	0.054	0.569	0.408	36.794	0.153	0.113	0.001

Problem 1452	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	129	166	225	225	262	160	223	0
N.S.	1	1.00	1.08	1.38	1.88	1.88	2.18	1.33	1.86	0.00
time (sec)	N/A	0.081	0.057	0.053	0.603	0.423	60.721	0.154	0.103	0.001

Problem 1453	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	823	950	929	1175	1210	1125	980	0
N.S.	1	1.00	4.00	4.61	4.51	5.70	5.87	5.46	4.76	0.00
time (sec)	N/A	0.804	0.281	0.039	0.647	0.362	0.218	0.167	2.296	0.000

Problem 1454	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	737	821	810	1015	1035	975	845	0
N.S.	1	1.00	3.58	3.99	3.93	4.93	5.02	4.73	4.10	0.00
time (sec)	N/A	0.661	0.247	0.044	0.784	0.379	0.197	0.164	2.223	0.000

Problem 1455	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	615	692	686	856	884	826	711	0
N.S.	1	1.00	2.99	3.36	3.33	4.16	4.29	4.01	3.45	0.00
time (sec)	N/A	0.539	0.203	0.045	0.663	0.367	0.179	0.200	0.252	0.000

Problem 1456	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	204	204	512	563	562	696	717	676	576	0
N.S.	1	1.00	2.51	2.76	2.75	3.41	3.51	3.31	2.82	0.00
time (sec)	N/A	0.459	0.162	0.046	0.561	0.366	0.160	0.162	2.169	0.000

Problem 1457	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	402	434	444	534	546	524	439	0
N.S.	1	1.00	2.53	2.73	2.79	3.36	3.43	3.30	2.76	0.00
time (sec)	N/A	0.313	0.137	0.043	0.504	0.375	0.140	0.174	0.151	0.000

Problem 1458	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	288	305	322	374	384	374	305	0
N.S.	1	1.00	2.44	2.58	2.73	3.17	3.25	3.17	2.58	0.00
time (sec)	N/A	0.222	0.092	0.050	0.523	0.373	0.121	0.168	2.062	0.000

Problem 1459	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	172	176	198	216	226	226	182	0
N.S.	1	1.00	2.29	2.35	2.64	2.88	3.01	3.01	2.43	0.00
time (sec)	N/A	0.138	0.054	0.041	0.515	0.362	0.099	0.190	0.091	0.000

Problem 1460	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	84	97	96	97	100	97	88	0
N.S.	1	1.00	2.21	2.55	2.53	2.55	2.63	2.55	2.32	0.00
time (sec)	N/A	0.016	0.017	0.047	0.618	0.346	0.083	0.167	2.004	0.000

Problem 1461	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	258	521	403	404	352	442	411	0
N.S.	1	1.00	1.65	3.34	2.58	2.59	2.26	2.83	2.63	0.00
time (sec)	N/A	0.119	0.134	0.049	0.722	0.405	0.920	0.199	0.082	0.001

Problem 1462	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	188	188	354	564	410	598	396	526	486	0
N.S.	1	1.00	1.88	3.00	2.18	3.18	2.11	2.80	2.59	0.00
time (sec)	N/A	0.316	0.148	0.058	0.512	0.424	2.088	0.192	0.105	0.001

Problem 1463	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	187	601	419	652	444	418	451	0
N.S.	1	1.00	0.97	3.11	2.17	3.38	2.30	2.17	2.34	0.00
time (sec)	N/A	0.246	0.101	0.057	0.685	0.414	7.275	0.166	2.052	0.001

Problem 1464	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	351	626	431	650	486	415	451	0
N.S.	1	1.00	1.86	3.31	2.28	3.44	2.57	2.20	2.39	0.00
time (sec)	N/A	0.224	0.163	0.059	0.638	0.409	21.584	0.160	0.173	0.001

Problem 1465	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	189	189	338	641	440	602	518	652	462	0
N.S.	1	1.00	1.79	3.39	2.33	3.19	2.74	3.45	2.44	0.00
time (sec)	N/A	0.198	0.167	0.055	0.620	0.411	62.239	0.181	2.402	0.001

Problem 1466	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	332	651	459	526	0	415	465	0
N.S.	1	1.00	2.14	4.20	2.96	3.39	0.00	2.68	3.00	0.00
time (sec)	N/A	0.155	0.148	0.059	0.614	0.398	0.000	0.164	0.199	0.001

Problem 1467	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	317	430	453	453	0	438	460	0
N.S.	1	1.00	3.69	5.00	5.27	5.27	0.00	5.09	5.35	0.00
time (sec)	N/A	0.034	0.132	0.057	0.796	0.393	0.000	0.161	2.223	0.001

Problem 1468	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	323	430	478	478	0	440	479	0
N.S.	1	1.00	2.39	3.19	3.54	3.54	0.00	3.26	3.55	0.00
time (sec)	N/A	0.059	0.131	0.056	0.741	0.396	0.000	0.159	2.363	0.001

Problem 1469	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	185	185	320	430	489	489	0	440	490	0
N.S.	1	1.00	1.73	2.32	2.64	2.64	0.00	2.38	2.65	0.00
time (sec)	N/A	0.090	0.134	0.052	0.770	0.403	0.000	0.163	2.257	0.001

Problem 1470	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	322	430	500	500	0	440	501	0
N.S.	1	1.00	1.56	2.09	2.43	2.43	0.00	2.14	2.43	0.00
time (sec)	N/A	0.195	0.136	0.054	0.693	0.410	0.000	0.161	0.195	0.001

Problem 1471	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	320	430	501	501	0	438	502	0
N.S.	1	1.00	1.55	2.09	2.43	2.43	0.00	2.13	2.44	0.00
time (sec)	N/A	0.160	0.146	0.051	0.636	0.404	0.000	0.167	0.307	0.001

Problem 1472	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	323	430	522	522	0	440	523	0
N.S.	1	1.00	1.57	2.09	2.53	2.53	0.00	2.14	2.54	0.00
time (sec)	N/A	0.168	0.138	0.054	0.698	0.398	0.000	0.160	0.265	0.001

Problem 1473	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	187	187	365	564	411	610	396	433	486	0
N.S.	1	1.00	1.95	3.02	2.20	3.26	2.12	2.32	2.60	0.00
time (sec)	N/A	0.265	0.165	0.056	0.601	0.433	2.078	0.165	2.149	0.001

Problem 1474	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	145	145	250	376	273	417	257	282	293	0
N.S.	1	1.00	1.72	2.59	1.88	2.88	1.77	1.94	2.02	0.00
time (sec)	N/A	0.176	0.119	0.056	0.534	0.427	1.430	0.165	0.104	0.001

Problem 1475	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	99	99	153	223	158	249	151	162	165	0
N.S.	1	1.00	1.55	2.25	1.60	2.52	1.53	1.64	1.67	0.00
time (sec)	N/A	0.098	0.071	0.061	0.462	0.416	0.879	0.155	2.107	0.001

Problem 1476	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	56	106	77	109	71	74	75	0
N.S.	1	1.00	0.93	1.77	1.28	1.82	1.18	1.23	1.25	0.00
time (sec)	N/A	0.056	0.046	0.052	0.561	0.406	0.433	0.158	0.104	0.001

Problem 1477	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	32	32	31	39	34	37	27	32	32	0
N.S.	1	1.00	0.97	1.22	1.06	1.16	0.84	1.00	1.00	0.00
time (sec)	N/A	0.022	0.011	0.051	0.524	0.404	0.179	0.152	2.047	0.001

Problem 1478	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	82	82	69	123	118	157	355	141	94	0
N.S.	1	1.00	0.84	1.50	1.44	1.91	4.33	1.72	1.15	0.00
time (sec)	N/A	0.063	0.059	0.051	0.486	0.424	1.188	0.155	2.137	0.001

Problem 1479	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	117	117	103	208	256	396	706	195	263	0
N.S.	1	1.00	0.88	1.78	2.19	3.38	6.03	1.67	2.25	0.00
time (sec)	N/A	0.104	0.112	0.059	0.542	0.440	2.287	0.221	2.237	0.001

Problem 1480	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	157	157	146	289	479	801	1066	393	454	0
N.S.	1	1.00	0.93	1.84	3.05	5.10	6.79	2.50	2.89	0.00
time (sec)	N/A	0.154	0.119	0.063	0.801	0.444	3.583	0.163	2.662	0.001

Problem 1481	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	186	186	362	626	434	671	486	415	451	0
N.S.	1	1.00	1.95	3.37	2.33	3.61	2.61	2.23	2.42	0.00
time (sec)	N/A	0.228	0.191	0.061	0.611	0.434	21.382	0.180	0.192	0.001

Problem 1482	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	217	419	292	427	337	266	301	0
N.S.	1	1.00	1.51	2.91	2.03	2.97	2.34	1.85	2.09	0.00
time (sec)	N/A	0.152	0.121	0.058	0.635	0.414	12.682	0.191	2.336	0.001

Problem 1483	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	138	251	189	226	211	161	178	0
N.S.	1	1.00	1.37	2.49	1.87	2.24	2.09	1.59	1.76	0.00
time (sec)	N/A	0.078	0.068	0.054	0.638	0.418	5.772	0.158	2.253	0.001

Problem 1484	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	61	79	97	97	107	75	91	0
N.S.	1	1.00	0.84	1.08	1.33	1.33	1.47	1.03	1.25	0.00
time (sec)	N/A	0.059	0.029	0.049	0.558	0.416	1.494	0.162	0.054	0.001

Problem 1485	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	27	35	50	50	53	25	52	0
N.S.	1	1.00	0.71	0.92	1.32	1.32	1.39	0.66	1.37	0.00
time (sec)	N/A	0.023	0.010	0.057	0.519	0.393	0.334	0.151	0.033	0.001

Problem 1486	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	136	220	452	643	818	364	398	0
N.S.	1	1.00	0.93	1.51	3.10	4.40	5.60	2.49	2.73	0.00
time (sec)	N/A	0.128	0.088	0.055	0.705	0.452	2.811	0.186	2.543	0.001

Problem 1487	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	199	199	189	365	757	1228	1445	411	711	0
N.S.	1	1.00	0.95	1.83	3.80	6.17	7.26	2.07	3.57	0.00
time (sec)	N/A	0.250	0.130	0.063	0.759	0.439	5.354	0.225	2.815	0.001

Problem 1488	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	208	232	1002	175	226	328	1400	0
N.S.	1	1.00	1.32	1.47	6.34	1.11	1.43	2.08	8.86	0.00
time (sec)	N/A	0.185	0.079	0.046	0.586	0.413	0.154	0.171	4.253	2.951

Problem 1489	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	163	180	698	134	168	255	935	0
N.S.	1	1.00	1.03	1.14	4.42	0.85	1.06	1.61	5.92	0.00
time (sec)	N/A	0.145	0.065	0.043	0.617	0.406	0.139	0.178	3.323	2.105

Problem 1490	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	120	128	456	93	116	185	564	0
N.S.	1	1.00	0.76	0.81	2.89	0.59	0.73	1.17	3.57	0.00
time (sec)	N/A	0.118	0.045	0.046	0.596	0.410	0.123	0.161	3.017	1.547

Problem 1491	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	74	76	254	52	63	114	223	0
N.S.	1	1.00	0.45	0.46	1.55	0.32	0.38	0.70	1.36	0.00
time (sec)	N/A	0.085	0.036	0.046	0.636	0.413	0.105	0.160	2.917	1.119

Problem 1492	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	45	42	125	24	26	74	77	0
N.S.	1	1.00	0.65	0.61	1.81	0.35	0.38	1.07	1.12	0.00
time (sec)	N/A	0.022	0.015	0.039	0.557	0.416	0.092	0.211	2.416	0.001

Problem 1493	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	74	146	0	68	53	119	-1	0
N.S.	1	1.00	0.56	1.11	0.00	0.52	0.40	0.90	-0.01	0.00
time (sec)	N/A	0.086	0.041	0.069	0.000	0.425	0.283	0.165	0.000	1.538

Problem 1494	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	96	158	0	102	71	123	-1	0
N.S.	1	1.00	0.67	1.10	0.00	0.71	0.49	0.85	-0.01	0.00
time (sec)	N/A	0.101	0.046	0.070	0.000	0.423	0.459	0.182	0.000	2.420

Problem 1495	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	89	117	0	105	94	127	-1	0
N.S.	1	1.00	0.59	0.77	0.00	0.70	0.62	0.84	-0.01	0.00
time (sec)	N/A	0.098	0.048	0.086	0.000	0.439	0.840	0.183	0.000	3.212

Problem 1496	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	104	104	81	87	0	93	107	117	86	0
N.S.	1	1.00	0.78	0.84	0.00	0.89	1.03	1.12	0.83	0.00
time (sec)	N/A	0.059	0.037	0.048	0.000	0.412	1.513	0.164	2.135	2.249

Problem 1497	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	80	86	0	102	117	116	85	0
N.S.	1	1.00	0.51	0.54	0.00	0.65	0.74	0.73	0.54	0.00
time (sec)	N/A	0.099	0.035	0.046	0.000	0.419	2.619	0.201	2.155	181.132

Problem 1498	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	83	89	0	117	134	119	88	0
N.S.	1	1.00	0.53	0.56	0.00	0.74	0.85	0.75	0.56	0.00
time (sec)	N/A	0.093	0.038	0.046	0.000	0.417	4.360	0.160	2.166	180.423

Problem 1499	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	82	88	0	126	144	118	87	0
N.S.	1	1.00	0.52	0.56	0.00	0.80	0.91	0.75	0.55	0.00
time (sec)	N/A	0.096	0.039	0.047	0.000	0.424	6.566	0.159	2.159	180.553

Problem 1500	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	496	676	1330	518	0	922	-1	0
N.S.	1	1.00	1.66	2.27	4.46	1.74	0.00	3.09	-0.00	0.00
time (sec)	N/A	0.508	0.205	0.052	0.631	0.439	0.000	0.219	0.000	6.650

Problem 1501	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	410	552	1004	425	0	758	-1	0
N.S.	1	1.00	1.38	1.85	3.37	1.43	0.00	2.54	-0.00	0.00
time (sec)	N/A	0.399	0.157	0.052	0.792	0.420	0.000	0.198	0.000	5.330

Problem 1502	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	259	259	320	428	698	325	0	594	-1	0
N.S.	1	1.00	1.24	1.65	2.69	1.25	0.00	2.29	-0.00	0.00
time (sec)	N/A	0.322	0.141	0.054	0.561	0.431	0.000	0.206	0.000	3.912

Problem 1503	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	233	304	456	239	0	431	-1	0
N.S.	1	1.00	1.18	1.54	2.30	1.21	0.00	2.18	-0.01	0.00
time (sec)	N/A	0.236	0.090	0.050	0.566	0.409	0.000	0.177	0.000	2.814

Problem 1504	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	144	180	254	146	0	267	-1	0
N.S.	1	1.00	1.07	1.33	1.88	1.08	0.00	1.98	-0.01	0.00
time (sec)	N/A	0.144	0.086	0.053	0.539	0.412	0.000	0.169	0.000	1.952

Problem 1505	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	83	90	125	69	0	144	42	0
N.S.	1	1.00	1.20	1.30	1.81	1.00	0.00	2.09	0.61	0.00
time (sec)	N/A	0.024	0.028	0.041	0.527	0.412	0.000	0.188	2.212	0.001

Problem 1506	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	236	236	187	358	0	260	0	428	-1	0
N.S.	1	1.00	0.79	1.52	0.00	1.10	0.00	1.81	-0.00	0.00
time (sec)	N/A	0.168	0.115	0.058	0.000	0.428	0.000	0.178	0.000	3.052

Problem 1507	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	285	285	262	540	0	396	0	425	-1	0
N.S.	1	1.00	0.92	1.89	0.00	1.39	0.00	1.49	-0.00	0.00
time (sec)	N/A	0.267	0.141	0.066	0.000	0.422	0.000	0.194	0.000	5.639

Problem 1508	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	280	280	256	566	0	420	0	417	-1	0
N.S.	1	1.00	0.91	2.02	0.00	1.50	0.00	1.49	-0.00	0.00
time (sec)	N/A	0.234	0.148	0.066	0.000	0.430	0.000	0.242	0.000	6.359

Problem 1509	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	284	284	251	512	0	406	0	411	-1	0
N.S.	1	1.00	0.88	1.80	0.00	1.43	0.00	1.45	-0.00	0.00
time (sec)	N/A	0.212	0.146	0.062	0.000	0.423	0.000	0.189	0.000	6.505

Problem 1510	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	257	257	240	394	0	354	0	419	-1	0
N.S.	1	1.00	0.93	1.53	0.00	1.38	0.00	1.63	-0.00	0.00
time (sec)	N/A	0.179	0.138	0.065	0.000	0.426	0.000	0.232	0.000	180.315

Problem 1511	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	229	315	0	304	0	425	577	0
N.S.	1	1.00	2.16	2.97	0.00	2.87	0.00	4.01	5.44	0.00
time (sec)	N/A	0.059	0.104	0.056	0.000	0.407	0.000	0.185	2.197	180.016

Problem 1512	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	229	316	0	317	0	426	577	0
N.S.	1	1.00	1.19	1.64	0.00	1.64	0.00	2.21	2.99	0.00
time (sec)	N/A	0.147	0.101	0.052	0.000	0.423	0.000	0.183	2.175	180.027

Problem 1513	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	233	317	0	332	0	427	577	0
N.S.	1	1.00	0.78	1.06	0.00	1.11	0.00	1.43	1.94	0.00
time (sec)	N/A	0.218	0.101	0.067	0.000	0.412	0.000	0.230	2.219	180.025

Problem 1514	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	229	315	0	335	0	425	577	0
N.S.	1	1.00	0.77	1.06	0.00	1.12	0.00	1.43	1.94	0.00
time (sec)	N/A	0.181	0.105	0.056	0.000	0.435	0.000	0.192	2.273	180.031

Problem 1515	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	232	317	0	354	0	427	577	0
N.S.	1	1.00	0.78	1.06	0.00	1.19	0.00	1.43	1.94	0.00
time (sec)	N/A	0.177	0.108	0.057	0.000	0.435	0.000	0.195	2.578	180.212

Problem 1516	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	232	317	0	365	0	427	577	0
N.S.	1	1.00	0.78	1.06	0.00	1.22	0.00	1.43	1.94	0.00
time (sec)	N/A	0.177	0.101	0.049	0.000	0.426	0.000	0.241	2.389	180.068

Problem 1517	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	233	317	0	376	0	427	577	0
N.S.	1	1.00	0.78	1.06	0.00	1.26	0.00	1.43	1.94	0.00
time (sec)	N/A	0.178	0.112	0.055	0.000	0.415	0.000	0.197	2.359	180.095

Problem 1518	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	436	436	876	1264	1744	964	0	1702	-1	0
N.S.	1	1.00	2.01	2.90	4.00	2.21	0.00	3.90	-0.00	0.00
time (sec)	N/A	1.011	0.365	0.053	0.698	0.431	0.000	0.269	0.000	13.749

Problem 1519	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	383	383	740	1068	1330	813	0	1446	-1	0
N.S.	1	1.00	1.93	2.79	3.47	2.12	0.00	3.78	-0.00	0.00
time (sec)	N/A	0.795	0.315	0.051	0.810	0.425	0.000	0.280	0.000	10.369

Problem 1520	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	324	324	611	872	1004	677	0	1192	-1	0
N.S.	1	1.00	1.89	2.69	3.10	2.09	0.00	3.68	-0.00	0.00
time (sec)	N/A	0.624	0.236	0.053	0.646	0.442	0.000	0.253	0.000	7.908

Problem 1521	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	259	259	478	676	698	532	0	934	-1	0
N.S.	1	1.00	1.85	2.61	2.69	2.05	0.00	3.61	-0.00	0.00
time (sec)	N/A	0.461	0.196	0.049	0.544	0.442	0.000	0.224	0.000	7.156

Problem 1522	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	347	480	456	384	0	679	-1	0
N.S.	1	1.00	1.75	2.42	2.30	1.94	0.00	3.43	-0.01	0.00
time (sec)	N/A	0.339	0.145	0.052	0.611	0.415	0.000	0.196	0.000	4.570

Problem 1523	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	214	284	254	239	0	425	-1	0
N.S.	1	1.00	1.59	2.10	1.88	1.77	0.00	3.15	-0.01	0.00
time (sec)	N/A	0.204	0.098	0.050	0.568	0.406	0.000	0.183	0.000	2.916

Problem 1524	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	121	138	125	115	0	217	-1	0
N.S.	1	1.00	1.75	2.00	1.81	1.67	0.00	3.14	-0.01	0.00
time (sec)	N/A	0.022	0.044	0.063	0.566	0.423	0.000	0.210	0.000	0.001

Problem 1525	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	340	340	386	754	0	555	0	920	-1	0
N.S.	1	1.00	1.14	2.22	0.00	1.63	0.00	2.71	-0.00	0.00
time (sec)	N/A	0.254	0.235	0.068	0.000	0.418	0.000	0.237	0.000	5.502

Problem 1526	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	423	423	506	1084	0	797	0	905	-1	0
N.S.	1	1.00	1.20	2.56	0.00	1.88	0.00	2.14	-0.00	0.00
time (sec)	N/A	0.563	0.308	0.071	0.000	0.435	0.000	0.223	0.000	10.797

Problem 1527	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	424	424	501	1205	0	871	0	887	-1	0
N.S.	1	1.00	1.18	2.84	0.00	2.05	0.00	2.09	-0.00	0.00
time (sec)	N/A	0.479	0.288	0.073	0.000	0.446	0.000	0.262	0.000	13.135

Problem 1528	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	425	425	504	1233	0	899	0	874	-1	0
N.S.	1	1.00	1.19	2.90	0.00	2.12	0.00	2.06	-0.00	0.00
time (sec)	N/A	0.429	0.319	0.072	0.000	0.432	0.000	0.223	0.000	13.342

Problem 1529	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	421	421	497	1163	0	871	0	870	-1	0
N.S.	1	1.00	1.18	2.76	0.00	2.07	0.00	2.07	-0.00	0.00
time (sec)	N/A	0.393	0.299	0.074	0.000	0.461	0.000	0.226	0.000	180.423

Problem 1530	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	422	422	490	1012	0	802	0	863	-1	0
N.S.	1	1.00	1.16	2.40	0.00	1.90	0.00	2.05	-0.00	0.00
time (sec)	N/A	0.359	0.287	0.073	0.000	0.435	0.000	0.271	0.000	180.074

Problem 1531	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	365	365	477	809	0	703	0	871	-1	0
N.S.	1	1.00	1.31	2.22	0.00	1.93	0.00	2.39	-0.00	0.00
time (sec)	N/A	0.285	0.287	0.074	0.000	0.422	0.000	0.298	0.000	180.009

Problem 1532	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	465	687	0	621	0	917	1489	0
N.S.	1	1.00	4.39	6.48	0.00	5.86	0.00	8.65	14.05	0.00
time (sec)	N/A	0.060	0.204	0.058	0.000	0.432	0.000	0.219	2.590	180.041

Problem 1533	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	466	688	0	634	0	918	1489	0
N.S.	1	1.00	2.41	3.56	0.00	3.28	0.00	4.76	7.72	0.00
time (sec)	N/A	0.142	0.213	0.049	0.000	0.433	0.000	0.220	2.536	180.021

Problem 1534	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	468	688	0	645	0	918	1489	0
N.S.	1	1.00	1.79	2.63	0.00	2.46	0.00	3.50	5.68	0.00
time (sec)	N/A	0.192	0.213	0.049	0.000	0.433	0.000	0.241	2.639	180.140

Problem 1535	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	438	438	468	689	0	662	0	919	1488	0
N.S.	1	1.00	1.07	1.57	0.00	1.51	0.00	2.10	3.40	0.00
time (sec)	N/A	0.390	0.215	0.056	0.000	0.438	0.000	0.225	2.570	180.066

Problem 1536	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	438	438	471	689	0	673	0	919	1489	0
N.S.	1	1.00	1.08	1.57	0.00	1.54	0.00	2.10	3.40	0.00
time (sec)	N/A	0.323	0.228	0.053	0.000	0.445	0.000	0.364	2.596	180.098

Problem 1537	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	438	438	465	687	0	672	0	917	1489	0
N.S.	1	1.00	1.06	1.57	0.00	1.53	0.00	2.09	3.40	0.00
time (sec)	N/A	0.296	0.210	0.058	0.000	0.435	0.000	0.225	2.634	180.126

Problem 1538	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	435	435	471	689	0	695	0	919	1489	0
N.S.	1	1.00	1.08	1.58	0.00	1.60	0.00	2.11	3.42	0.00
time (sec)	N/A	0.294	0.214	0.061	0.000	0.446	0.000	0.219	2.622	180.168

Problem 1539	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	248	248	185	356	438	269	221	431	-1	959
N.S.	1	1.00	0.75	1.44	1.77	1.08	0.89	1.74	-0.00	3.87
time (sec)	N/A	0.139	0.126	0.063	0.576	0.418	0.705	0.189	0.000	1.834

Problem 1540	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	191	191	118	212	244	158	117	254	-1	610
N.S.	1	1.00	0.62	1.11	1.28	0.83	0.61	1.33	-0.01	3.19
time (sec)	N/A	0.108	0.083	0.058	0.624	0.434	0.493	0.220	0.000	1.108

Problem 1541	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	72	104	101	75	53	122	-1	344
N.S.	1	1.00	0.54	0.78	0.75	0.56	0.40	0.91	-0.01	2.57
time (sec)	N/A	0.079	0.041	0.059	0.494	0.431	0.292	0.167	0.000	0.718

Problem 1542	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	40	43	52	25	20	45	79	196
N.S.	1	1.00	0.58	0.62	0.75	0.36	0.29	0.65	1.14	2.84
time (sec)	N/A	0.027	0.017	0.049	0.564	0.414	0.169	0.154	2.471	0.002

Problem 1543	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	66	76	0	53	226	87	-1	352
N.S.	1	1.00	0.62	0.71	0.00	0.50	2.11	0.81	-0.01	3.29
time (sec)	N/A	0.077	0.039	0.056	0.000	0.422	1.448	0.167	0.000	0.810

Problem 1544	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	97	161	0	148	355	190	-1	449
N.S.	1	1.00	0.66	1.09	0.00	1.00	2.40	1.28	-0.01	3.03
time (sec)	N/A	0.081	0.124	0.062	0.000	0.435	1.222	0.174	0.000	2.085

Problem 1545	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	212	212	131	321	0	343	558	306	-1	8976
N.S.	1	1.00	0.62	1.51	0.00	1.62	2.63	1.44	-0.00	42.34
time (sec)	N/A	0.148	0.154	0.068	0.000	0.435	1.989	0.183	0.000	85.086

Problem 1546	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	271	271	168	545	0	608	818	494	-1	3774
N.S.	1	1.00	0.62	2.01	0.00	2.24	3.02	1.82	-0.00	13.93
time (sec)	N/A	0.177	0.160	0.063	0.000	0.457	2.859	0.231	0.000	119.528

Problem 1547	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	329	329	373	858	761	668	0	0	-1	10330
N.S.	1	1.00	1.13	2.61	2.31	2.03	0.00	0.00	-0.00	31.40
time (sec)	N/A	0.372	0.228	0.079	0.534	0.435	0.000	0.000	0.000	16.693

Problem 1548	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	249	249	256	556	487	442	0	0	-1	7046
N.S.	1	1.00	1.03	2.23	1.96	1.78	0.00	0.00	-0.00	28.30
time (sec)	N/A	0.223	0.159	0.136	0.511	0.433	0.000	0.000	0.000	9.479

Problem 1549	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	186	186	151	303	277	258	0	0	-1	4158
N.S.	1	1.00	0.81	1.63	1.49	1.39	0.00	0.00	-0.01	22.35
time (sec)	N/A	0.150	0.093	0.067	0.605	0.437	0.000	0.000	0.000	5.248

Problem 1550	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	127	127	86	109	120	110	0	0	-1	1723
N.S.	1	1.00	0.68	0.86	0.94	0.87	0.00	0.00	-0.01	13.57
time (sec)	N/A	0.099	0.048	0.058	0.574	0.432	0.000	0.000	0.000	2.137

Problem 1551	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	39	32	56	38	0	0	42	178
N.S.	1	1.00	0.57	0.46	0.81	0.55	0.00	0.00	0.61	2.58
time (sec)	N/A	0.023	0.016	0.044	0.592	0.421	0.000	0.000	2.053	0.002

Problem 1552	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	196	196	132	315	0	361	0	0	-1	6129
N.S.	1	1.00	0.67	1.61	0.00	1.84	0.00	0.00	-0.01	31.27
time (sec)	N/A	0.157	0.111	0.066	0.000	0.429	0.000	0.000	0.000	16.343

Problem 1553	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	266	266	174	828	0	803	0	708	-1	0
N.S.	1	1.00	0.65	3.11	0.00	3.02	0.00	2.66	-0.00	0.00
time (sec)	N/A	0.246	0.185	0.073	0.000	0.442	0.000	0.531	0.000	180.254

Problem 1554	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	332	332	220	1271	0	1215	0	0	-1	0
N.S.	1	1.00	0.66	3.83	0.00	3.66	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.319	0.272	0.069	0.000	0.468	0.000	0.000	0.000	180.014

Problem 1555	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	373	373	513	1153	1010	914	0	0	-1	14568
N.S.	1	1.00	1.38	3.09	2.71	2.45	0.00	0.00	-0.00	39.06
time (sec)	N/A	0.426	0.325	0.072	1.189	0.446	0.000	0.000	0.000	48.392

Problem 1556	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	310	310	331	735	755	619	0	0	-1	8741
N.S.	1	1.00	1.07	2.37	2.44	2.00	0.00	0.00	-0.00	28.20
time (sec)	N/A	0.304	0.218	0.082	0.946	0.425	0.000	0.000	0.000	36.517

Problem 1557	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	227	227	239	385	533	359	0	0	-1	4832
N.S.	1	1.00	1.05	1.70	2.35	1.58	0.00	0.00	-0.00	21.29
time (sec)	N/A	0.174	0.135	0.060	0.673	0.423	0.000	0.000	0.000	9.659

Problem 1558	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	142	174	279	189	0	0	302	837
N.S.	1	1.00	1.34	1.64	2.63	1.78	0.00	0.00	2.85	7.90
time (sec)	N/A	0.062	0.075	0.049	0.630	0.461	0.000	0.000	2.360	2.576

Problem 1559	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	75	77	121	106	0	0	87	497
N.S.	1	1.00	0.56	0.57	0.90	0.79	0.00	0.00	0.64	3.68
time (sec)	N/A	0.101	0.044	0.048	0.677	0.439	0.000	0.000	2.238	1.594

Problem 1560	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	71	71	39	33	56	61	0	0	43	281
N.S.	1	1.00	0.55	0.46	0.79	0.86	0.00	0.00	0.61	3.96
time (sec)	N/A	0.021	0.018	0.046	0.559	0.429	0.000	0.000	2.124	0.002

Problem 1561	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	302	302	182	777	0	969	0	0	-1	0
N.S.	1	1.00	0.60	2.57	0.00	3.21	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.258	0.150	0.077	0.000	0.448	0.000	0.000	0.000	180.003

Problem 1562	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	388	388	250	1652	0	1724	0	1136	-1	11295
N.S.	1	1.00	0.64	4.26	0.00	4.44	0.00	2.93	-0.00	29.11
time (sec)	N/A	0.455	0.274	0.076	0.000	0.464	0.000	0.596	0.000	74.783

Problem 1563	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	460	460	302	2420	0	2466	0	0	-1	0
N.S.	1	1.00	0.66	5.26	0.00	5.36	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.557	0.388	0.082	0.000	0.524	0.000	0.000	0.000	180.022

Problem 1564	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	107	169	159	424	1020	1913	115	193
N.S.	1	1.00	0.84	1.32	1.24	3.31	7.97	14.95	0.90	1.51
time (sec)	N/A	0.072	0.152	0.055	0.538	0.428	9.096	0.293	2.043	0.111

Problem 1565	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	107	169	159	356	857	1368	115	193
N.S.	1	1.00	0.84	1.32	1.24	2.78	6.70	10.69	0.90	1.51
time (sec)	N/A	0.057	0.121	0.049	0.553	0.434	4.629	0.258	2.112	0.106

Problem 1566	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	107	169	159	289	586	901	115	193
N.S.	1	1.00	0.84	1.32	1.24	2.26	4.58	7.04	0.90	1.51
time (sec)	N/A	0.057	0.109	0.051	0.563	0.400	22.383	0.233	0.069	0.111

Problem 1567	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	107	169	159	220	201	511	115	193
N.S.	1	1.00	0.84	1.32	1.24	1.72	1.57	3.99	0.90	1.51
time (sec)	N/A	0.056	0.098	0.055	0.471	0.414	4.910	0.184	0.074	0.100

Problem 1568	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	107	169	159	155	583	215	115	193
N.S.	1	1.00	0.85	1.34	1.26	1.23	4.63	1.71	0.91	1.53
time (sec)	N/A	0.052	0.085	0.049	0.544	0.421	53.775	0.170	0.075	0.098

Problem 1569	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	107	169	167	165	150	219	154	193
N.S.	1	1.00	0.86	1.36	1.35	1.33	1.21	1.77	1.24	1.56
time (sec)	N/A	0.055	0.086	0.051	0.531	0.409	33.869	0.205	0.084	0.109

Problem 1570	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	105	168	163	175	709	206	189	190
N.S.	1	1.00	0.85	1.35	1.31	1.41	5.72	1.66	1.52	1.53
time (sec)	N/A	0.054	0.093	0.047	0.575	0.414	1.706	0.211	1.987	0.126

Problem 1571	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	107	169	164	188	1015	202	168	193
N.S.	1	1.00	0.86	1.36	1.32	1.52	8.19	1.63	1.35	1.56
time (sec)	N/A	0.055	0.089	0.055	0.644	0.403	3.639	0.208	0.097	0.122

Problem 1572	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	183	469	409	894	2091	3913	197	543
N.S.	1	1.00	0.84	2.15	1.88	4.10	9.59	17.95	0.90	2.49
time (sec)	N/A	0.145	0.203	0.053	0.741	0.422	16.307	0.461	1.977	0.262

Problem 1573	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	183	469	409	772	2193	2860	197	543
N.S.	1	1.00	0.84	2.15	1.88	3.54	10.06	13.12	0.90	2.49
time (sec)	N/A	0.097	0.171	0.051	0.596	0.431	74.115	0.516	1.921	0.241

Problem 1574	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	183	469	409	649	1297	1937	197	543
N.S.	1	1.00	0.84	2.15	1.88	2.98	5.95	8.89	0.90	2.49
time (sec)	N/A	0.099	0.158	0.054	0.499	0.422	45.217	0.315	0.061	0.249

Problem 1575	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	218	218	183	469	409	527	517	1144	197	543
N.S.	1	1.00	0.84	2.15	1.88	2.42	2.37	5.25	0.90	2.49
time (sec)	N/A	0.098	0.138	0.072	0.529	0.410	9.115	0.235	1.933	0.228

Problem 1576	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	183	469	409	408	1311	503	197	543
N.S.	1	1.00	0.85	2.17	1.89	1.89	6.07	2.33	0.91	2.51
time (sec)	N/A	0.094	0.120	0.049	0.603	0.412	127.179	0.196	0.058	0.227

Problem 1577	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	183	469	417	418	394	587	296	543
N.S.	1	1.00	0.86	2.19	1.95	1.95	1.84	2.74	1.38	2.54
time (sec)	N/A	0.095	0.121	0.068	0.618	0.410	120.613	0.248	1.954	0.230

Problem 1578	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	183	469	415	430	304	567	367	543
N.S.	1	1.00	0.86	2.19	1.94	2.01	1.42	2.65	1.71	2.54
time (sec)	N/A	0.094	0.106	0.051	0.613	0.407	139.123	0.241	1.944	0.227

Problem 1579	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	183	469	416	441	2440	567	413	543
N.S.	1	1.00	0.86	2.19	1.94	2.06	11.40	2.65	1.93	2.54
time (sec)	N/A	0.092	0.110	0.050	0.654	0.412	5.279	0.250	1.996	0.138

Problem 1580	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	259	913	767	1470	5414	6433	279	1069
N.S.	1	1.00	0.84	2.96	2.49	4.77	17.58	20.89	0.91	3.47
time (sec)	N/A	0.209	0.349	0.051	0.641	0.435	163.184	0.739	2.022	0.474

Problem 1581	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	259	913	767	1293	3728	4768	279	1069
N.S.	1	1.00	0.84	2.96	2.49	4.20	12.10	15.48	0.91	3.47
time (sec)	N/A	0.146	0.262	0.061	0.546	0.433	113.732	0.506	1.933	0.437

Problem 1582	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	259	913	767	1118	2252	3285	279	1069
N.S.	1	1.00	0.84	2.96	2.49	3.63	7.31	10.67	0.91	3.47
time (sec)	N/A	0.141	0.239	0.055	0.535	0.450	69.777	0.407	1.933	0.457

Problem 1583	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	259	913	767	942	969	1984	279	1069
N.S.	1	1.00	0.84	2.96	2.49	3.06	3.15	6.44	0.91	3.47
time (sec)	N/A	0.144	0.244	0.057	0.654	0.429	13.350	0.286	1.935	0.402

Problem 1584	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	259	913	767	769	0	895	279	1310
N.S.	1	1.00	0.85	2.98	2.51	2.51	0.00	2.92	0.91	4.28
time (sec)	N/A	0.146	0.195	0.056	0.610	0.482	0.000	0.243	0.080	0.409

Problem 1585	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	300	300	259	913	775	778	0	1131	438	1069
N.S.	1	1.00	0.86	3.04	2.58	2.59	0.00	3.77	1.46	3.56
time (sec)	N/A	0.145	0.201	0.056	0.769	0.491	0.000	0.323	1.938	0.227

Problem 1586	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	302	302	259	913	773	790	0	1103	569	1069
N.S.	1	1.00	0.86	3.02	2.56	2.62	0.00	3.65	1.88	3.54
time (sec)	N/A	0.145	0.190	0.055	0.527	0.447	0.000	0.308	1.968	0.228

Problem 1587	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	259	913	775	802	0	1103	675	1069
N.S.	1	1.00	0.85	3.00	2.55	2.64	0.00	3.63	2.22	3.52
time (sec)	N/A	0.146	0.192	0.051	0.631	0.440	0.000	0.328	1.965	0.226

Problem 1588	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	256	256	193	915	0	1006	0	604	562	663
N.S.	1	1.00	0.75	3.57	0.00	3.93	0.00	2.36	2.20	2.59
time (sec)	N/A	0.324	0.637	0.078	0.000	0.468	0.000	0.252	0.156	0.703

Problem 1589	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	166	626	0	666	0	400	363	391
N.S.	1	1.00	0.78	2.93	0.00	3.11	0.00	1.87	1.70	1.83
time (sec)	N/A	0.201	0.358	0.069	0.000	0.476	0.000	0.199	0.133	0.600

Problem 1590	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	174	174	136	381	0	392	0	239	174	222
N.S.	1	1.00	0.78	2.19	0.00	2.25	0.00	1.37	1.00	1.28
time (sec)	N/A	0.150	0.225	0.071	0.000	0.440	0.000	0.190	0.192	0.466

Problem 1591	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	119	186	0	393	1251	126	108	128
N.S.	1	1.00	0.85	1.33	0.00	2.81	8.94	0.90	0.77	0.91
time (sec)	N/A	0.115	0.138	0.070	0.000	0.453	107.952	0.222	2.010	0.419

Problem 1592	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	102	195	0	397	0	135	99	123
N.S.	1	1.00	0.99	1.89	0.00	3.85	0.00	1.31	0.96	1.19
time (sec)	N/A	0.095	0.077	0.063	0.000	0.431	0.000	0.174	0.154	0.410

Problem 1593	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	95	253	0	775	0	204	156	178
N.S.	1	1.00	0.68	1.81	0.00	5.54	0.00	1.46	1.11	1.27
time (sec)	N/A	0.145	0.040	0.069	0.000	0.454	0.000	0.189	2.085	0.505

Problem 1594	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	181	181	94	328	0	1106	0	297	210	296
N.S.	1	1.00	0.52	1.81	0.00	6.11	0.00	1.64	1.16	1.64
time (sec)	N/A	0.171	0.037	0.070	0.000	0.460	0.000	0.221	2.100	0.601

Problem 1595	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	221	221	94	403	0	1749	0	435	261	449
N.S.	1	1.00	0.43	1.82	0.00	7.91	0.00	1.97	1.18	2.03
time (sec)	N/A	0.229	0.039	0.073	0.000	0.472	0.000	0.228	2.157	0.732

Problem 1596	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	332	332	100	1285	0	1514	0	829	790	678
N.S.	1	1.00	0.30	3.87	0.00	4.56	0.00	2.50	2.38	2.04
time (sec)	N/A	0.333	0.106	0.086	0.000	0.460	0.000	0.295	2.121	1.678

Problem 1597	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	284	284	99	905	0	1026	0	577	513	496
N.S.	1	1.00	0.35	3.19	0.00	3.61	0.00	2.03	1.81	1.75
time (sec)	N/A	0.242	0.088	0.080	0.000	0.462	0.000	0.248	2.158	2.133

Problem 1598	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	250	250	99	573	0	1075	0	370	416	317
N.S.	1	1.00	0.40	2.29	0.00	4.30	0.00	1.48	1.66	1.27
time (sec)	N/A	0.201	0.079	0.075	0.000	0.464	0.000	0.274	0.234	1.763

Problem 1599	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	177	487	0	1115	0	381	325	325
N.S.	1	1.00	0.85	2.33	0.00	5.33	0.00	1.82	1.56	1.56
time (sec)	N/A	0.181	0.448	0.102	0.000	0.491	0.000	0.231	2.124	1.668

Problem 1600	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	98	494	0	1218	0	386	310	312
N.S.	1	1.00	0.47	2.36	0.00	5.83	0.00	1.85	1.48	1.49
time (sec)	N/A	0.177	0.065	0.085	0.000	0.474	0.000	0.250	2.131	1.390

Problem 1601	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	97	679	0	1337	0	429	331	325
N.S.	1	1.00	0.46	3.25	0.00	6.40	0.00	2.05	1.58	1.56
time (sec)	N/A	0.201	0.053	0.076	0.000	0.477	0.000	0.209	2.129	0.894

Problem 1602	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	250	250	99	768	0	2114	0	516	420	453
N.S.	1	1.00	0.40	3.07	0.00	8.46	0.00	2.06	1.68	1.81
time (sec)	N/A	0.242	0.056	0.076	0.000	0.492	0.000	0.256	2.340	1.686

Problem 1603	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	291	291	100	853	0	2648	0	750	483	638
N.S.	1	1.00	0.34	2.93	0.00	9.10	0.00	2.58	1.66	2.19
time (sec)	N/A	0.303	0.062	0.081	0.000	0.500	0.000	0.288	2.511	2.064

Problem 1604	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	339	339	100	935	0	3685	0	779	547	900
N.S.	1	1.00	0.29	2.76	0.00	10.87	0.00	2.30	1.61	2.65
time (sec)	N/A	0.381	0.070	0.083	0.000	0.509	0.000	0.340	2.651	2.424

Problem 1605	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	393	393	100	1633	0	1862	0	1066	996	1180
N.S.	1	1.00	0.25	4.16	0.00	4.74	0.00	2.71	2.53	3.00
time (sec)	N/A	0.364	0.080	0.089	0.000	0.487	0.000	0.360	0.479	3.796

Problem 1606	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	352	352	99	1173	0	1955	0	770	838	667
N.S.	1	1.00	0.28	3.33	0.00	5.55	0.00	2.19	2.38	1.89
time (sec)	N/A	0.296	0.071	0.084	0.000	0.494	0.000	0.303	2.276	5.333

Problem 1607	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	260	959	0	2041	0	781	594	676
N.S.	1	1.00	0.83	3.06	0.00	6.52	0.00	2.50	1.90	2.16
time (sec)	N/A	0.259	0.946	0.073	0.000	0.488	0.000	0.296	0.441	4.927

Problem 1608	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	99	872	0	2238	0	805	572	676
N.S.	1	1.00	0.32	2.79	0.00	7.15	0.00	2.57	1.83	2.16
time (sec)	N/A	0.273	0.062	0.080	0.000	0.504	0.000	0.305	0.346	4.637

Problem 1609	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	98	871	0	2349	0	814	535	660
N.S.	1	1.00	0.31	2.78	0.00	7.50	0.00	2.60	1.71	2.11
time (sec)	N/A	0.269	0.061	0.086	0.000	0.507	0.000	0.268	2.232	3.192

Problem 1610	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	99	1037	0	2580	0	857	564	676
N.S.	1	1.00	0.32	3.31	0.00	8.24	0.00	2.74	1.80	2.16
time (sec)	N/A	0.288	0.059	0.090	0.000	0.497	0.000	0.272	2.243	2.721

Problem 1611	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	97	1274	0	2715	0	881	567	676
N.S.	1	1.00	0.31	4.07	0.00	8.67	0.00	2.81	1.81	2.16
time (sec)	N/A	0.315	0.053	0.075	0.000	0.519	0.000	0.300	2.294	2.029

Problem 1612	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	352	352	97	1568	0	3876	0	994	683	891
N.S.	1	1.00	0.28	4.45	0.00	11.01	0.00	2.82	1.94	2.53
time (sec)	N/A	0.382	0.072	0.093	0.000	0.548	0.000	0.366	2.840	4.870

Problem 1613	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	400	400	99	1653	0	4664	0	1103	755	1185
N.S.	1	1.00	0.25	4.13	0.00	11.66	0.00	2.76	1.89	2.96
time (sec)	N/A	0.448	0.076	0.093	0.000	0.574	0.000	0.417	3.150	5.485

Problem 1614	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	435	435	100	1735	0	6033	0	1676	802	1471
N.S.	1	1.00	0.23	3.99	0.00	13.87	0.00	3.85	1.84	3.38
time (sec)	N/A	0.490	0.069	0.098	0.000	0.610	0.000	0.437	3.500	5.825

Problem 1615	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	88	89	263	230	0	1228	-1	112
N.S.	1	1.00	0.54	0.54	1.60	1.40	0.00	7.49	-0.01	0.68
time (sec)	N/A	0.095	0.084	0.048	0.564	0.426	0.000	0.290	0.000	51.487

Problem 1616	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	88	89	214	189	0	874	-1	112
N.S.	1	1.00	0.54	0.54	1.30	1.15	0.00	5.33	-0.01	0.68
time (sec)	N/A	0.082	0.081	0.044	0.584	0.424	0.000	0.255	0.000	51.048

Problem 1617	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	88	89	167	149	0	571	-1	112
N.S.	1	1.00	0.54	0.54	1.02	0.91	0.00	3.48	-0.01	0.68
time (sec)	N/A	0.084	0.067	0.046	0.612	0.425	0.000	0.268	0.000	50.772

Problem 1618	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	88	89	120	108	0	322	-1	112
N.S.	1	1.00	0.54	0.54	0.73	0.66	0.00	1.96	-0.01	0.68
time (sec)	N/A	0.084	0.059	0.050	0.600	0.424	0.000	0.241	0.000	36.582

Problem 1619	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	86	89	119	70	0	133	156	112
N.S.	1	1.00	0.53	0.55	0.73	0.43	0.00	0.82	0.96	0.69
time (sec)	N/A	0.088	0.068	0.050	0.707	0.423	0.000	0.169	2.266	22.769

Problem 1620	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	85	89	75	79	0	148	109	111
N.S.	1	1.00	0.53	0.56	0.47	0.49	0.00	0.92	0.68	0.69
time (sec)	N/A	0.081	0.060	0.045	0.771	0.424	0.000	0.180	2.412	20.633

Problem 1621	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	86	88	96	91	0	136	146	110
N.S.	1	1.00	0.54	0.55	0.60	0.57	0.00	0.85	0.91	0.69
time (sec)	N/A	0.086	0.067	0.041	0.609	0.414	0.000	0.215	2.479	26.320

Problem 1622	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	86	89	118	101	0	135	174	112
N.S.	1	1.00	0.53	0.55	0.73	0.62	0.00	0.83	1.07	0.69
time (sec)	N/A	0.077	0.064	0.047	0.582	0.438	0.000	0.294	2.525	39.999

Problem 1623	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	163	317	697	633	0	3088	-1	374
N.S.	1	1.00	0.53	1.03	2.26	2.06	0.00	10.03	-0.00	1.21
time (sec)	N/A	0.185	0.250	0.053	0.754	0.444	0.000	0.536	0.000	53.769

Problem 1624	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	163	317	592	539	0	2254	-1	374
N.S.	1	1.00	0.53	1.03	1.92	1.75	0.00	7.32	-0.00	1.21
time (sec)	N/A	0.139	0.197	0.050	0.729	0.425	0.000	0.416	0.000	53.448

Problem 1625	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	163	317	488	446	0	1524	-1	374
N.S.	1	1.00	0.53	1.03	1.58	1.45	0.00	4.95	-0.00	1.21
time (sec)	N/A	0.144	0.176	0.051	0.632	0.430	0.000	0.344	0.000	53.018

Problem 1626	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	163	317	384	353	0	898	-1	374
N.S.	1	1.00	0.53	1.03	1.25	1.15	0.00	2.92	-0.00	1.21
time (sec)	N/A	0.142	0.170	0.058	0.614	0.437	0.000	0.273	0.000	52.818

Problem 1627	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	306	306	163	317	382	263	0	393	434	374
N.S.	1	1.00	0.53	1.04	1.25	0.86	0.00	1.28	1.42	1.22
time (sec)	N/A	0.148	0.100	0.059	0.633	0.433	0.000	0.234	2.745	38.835

Problem 1628	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	302	302	240	317	282	272	0	525	327	374
N.S.	1	1.00	0.79	1.05	0.93	0.90	0.00	1.74	1.08	1.24
time (sec)	N/A	0.145	0.138	0.053	0.772	0.431	0.000	0.305	2.969	23.905

Problem 1629	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	241	317	304	284	0	509	362	374
N.S.	1	1.00	0.79	1.04	1.00	0.93	0.00	1.67	1.19	1.23
time (sec)	N/A	0.143	0.175	0.052	0.646	0.425	0.000	0.254	3.093	27.945

Problem 1630	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	304	244	317	326	294	0	508	377	374
N.S.	1	1.00	0.80	1.04	1.07	0.97	0.00	1.67	1.24	1.23
time (sec)	N/A	0.137	0.153	0.053	0.744	0.447	0.000	0.256	3.079	33.991

Problem 1631	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	452	452	239	689	1241	1137	0	5468	-1	812
N.S.	1	1.00	0.53	1.52	2.75	2.52	0.00	12.10	-0.00	1.80
time (sec)	N/A	0.283	0.309	0.054	0.688	0.466	0.000	0.775	0.000	55.804

Problem 1632	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	452	452	239	689	1080	993	0	4050	-1	812
N.S.	1	1.00	0.53	1.52	2.39	2.20	0.00	8.96	-0.00	1.80
time (sec)	N/A	0.216	0.241	0.050	0.845	0.451	0.000	0.615	0.000	55.029

Problem 1633	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	452	452	239	689	921	848	0	2788	-1	812
N.S.	1	1.00	0.53	1.52	2.04	1.88	0.00	6.17	-0.00	1.80
time (sec)	N/A	0.217	0.221	0.055	0.774	0.438	0.000	0.479	0.000	54.547

Problem 1634	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	452	452	239	689	760	702	0	1682	-1	812
N.S.	1	1.00	0.53	1.52	1.68	1.55	0.00	3.72	-0.00	1.80
time (sec)	N/A	0.206	0.203	0.052	0.808	0.434	0.000	0.394	0.000	53.718

Problem 1635	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	448	448	239	689	758	560	0	758	826	812
N.S.	1	1.00	0.53	1.54	1.69	1.25	0.00	1.69	1.84	1.81
time (sec)	N/A	0.218	0.193	0.058	0.737	0.436	0.000	0.247	3.260	53.119

Problem 1636	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	446	446	239	689	603	569	0	1125	659	812
N.S.	1	1.00	0.54	1.54	1.35	1.28	0.00	2.52	1.48	1.82
time (sec)	N/A	0.216	0.196	0.059	0.659	0.426	0.000	0.335	3.738	38.158

Problem 1637	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	446	446	239	689	625	581	0	1101	695	812
N.S.	1	1.00	0.54	1.54	1.40	1.30	0.00	2.47	1.56	1.82
time (sec)	N/A	0.205	0.290	0.054	0.875	0.423	0.000	0.397	3.887	30.076

Problem 1638	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	448	448	239	689	647	592	0	1101	718	812
N.S.	1	1.00	0.53	1.54	1.44	1.32	0.00	2.46	1.60	1.81
time (sec)	N/A	0.205	0.312	0.056	0.784	0.429	0.000	0.355	3.946	33.335

Problem 1639	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	289	289	154	671	0	591	0	497	-1	346
N.S.	1	1.00	0.53	2.32	0.00	2.04	0.00	1.72	-0.00	1.20
time (sec)	N/A	0.223	0.300	0.063	0.000	0.458	0.000	0.234	0.000	51.235

Problem 1640	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	230	230	127	414	0	373	0	306	-1	186
N.S.	1	1.00	0.55	1.80	0.00	1.62	0.00	1.33	-0.00	0.81
time (sec)	N/A	0.145	0.172	0.058	0.000	0.429	0.000	0.216	0.000	43.106

Problem 1641	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	173	173	114	226	0	211	0	168	-1	136
N.S.	1	1.00	0.66	1.31	0.00	1.22	0.00	0.97	-0.01	0.79
time (sec)	N/A	0.102	0.089	0.062	0.000	0.429	0.000	0.242	0.000	28.929

Problem 1642	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	111	110	0	209	0	87	-1	116
N.S.	1	1.00	0.90	0.89	0.00	1.69	0.00	0.70	-0.01	0.94
time (sec)	N/A	0.076	0.065	0.058	0.000	0.452	0.000	0.170	0.000	22.485

Problem 1643	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	128	148	0	363	0	117	-1	130
N.S.	1	1.00	0.93	1.07	0.00	2.63	0.00	0.85	-0.01	0.94
time (sec)	N/A	0.110	0.085	0.064	0.000	0.434	0.000	0.292	0.000	23.226

Problem 1644	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	194	194	102	235	0	506	0	209	-1	173
N.S.	1	1.00	0.53	1.21	0.00	2.61	0.00	1.08	-0.01	0.89
time (sec)	N/A	0.134	0.050	0.073	0.000	0.438	0.000	0.207	0.000	40.292

Problem 1645	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	251	251	102	386	0	902	0	368	-1	264
N.S.	1	1.00	0.41	1.54	0.00	3.59	0.00	1.47	-0.00	1.05
time (sec)	N/A	0.156	0.052	0.079	0.000	0.490	0.000	0.273	0.000	60.560

Problem 1646	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	407	407	111	1873	0	1060	0	685	-1	509
N.S.	1	1.00	0.27	4.60	0.00	2.60	0.00	1.68	-0.00	1.25
time (sec)	N/A	0.377	0.121	0.111	0.000	0.470	0.000	0.439	0.000	64.933

Problem 1647	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	341	341	111	1150	0	680	0	478	-1	372
N.S.	1	1.00	0.33	3.37	0.00	1.99	0.00	1.40	-0.00	1.09
time (sec)	N/A	0.304	0.105	0.078	0.000	0.464	0.000	0.366	0.000	59.939

Problem 1648	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	280	280	110	608	0	703	0	312	-1	236
N.S.	1	1.00	0.39	2.17	0.00	2.51	0.00	1.11	-0.00	0.84
time (sec)	N/A	0.229	0.086	0.072	0.000	0.444	0.000	0.300	0.000	53.938

Problem 1649	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	215	215	167	555	0	721	0	337	-1	243
N.S.	1	1.00	0.78	2.58	0.00	3.35	0.00	1.57	-0.00	1.13
time (sec)	N/A	0.188	0.334	0.066	0.000	0.462	0.000	0.359	0.000	42.642

Problem 1650	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	215	215	170	556	0	808	0	402	-1	243
N.S.	1	1.00	0.79	2.59	0.00	3.76	0.00	1.87	-0.00	1.13
time (sec)	N/A	0.205	0.257	0.072	0.000	0.549	0.000	0.300	0.000	39.589

Problem 1651	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	281	280	110	681	0	1410	0	616	-1	328
N.S.	1	1.00	0.39	2.42	0.00	5.02	0.00	2.19	-0.00	1.17
time (sec)	N/A	0.256	0.068	0.079	0.000	0.548	0.000	0.400	0.000	52.407

Problem 1652	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	348	348	111	928	0	1776	0	785	-1	490
N.S.	1	1.00	0.32	2.67	0.00	5.10	0.00	2.26	-0.00	1.41
time (sec)	N/A	0.319	0.069	0.129	0.000	0.551	0.000	0.493	0.000	63.318

Problem 1653	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	414	414	111	1230	0	2675	0	1011	-1	687
N.S.	1	1.00	0.27	2.97	0.00	6.46	0.00	2.44	-0.00	1.66
time (sec)	N/A	0.373	0.074	0.083	0.000	0.491	0.000	0.574	0.000	70.056

Problem 1654	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	557	557	117	3768	0	2006	0	1167	-1	1196
N.S.	1	1.00	0.21	6.76	0.00	3.60	0.00	2.10	-0.00	2.15
time (sec)	N/A	0.521	0.212	0.162	0.000	0.473	0.000	0.612	0.000	69.406

Problem 1655	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	489	489	117	2430	0	1414	0	872	-1	726
N.S.	1	1.00	0.24	4.97	0.00	2.89	0.00	1.78	-0.00	1.48
time (sec)	N/A	0.420	0.182	0.135	0.000	0.455	0.000	0.523	0.000	69.125

Problem 1656	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	424	424	114	1390	0	1485	0	620	-1	502
N.S.	1	1.00	0.27	3.28	0.00	3.50	0.00	1.46	-0.00	1.18
time (sec)	N/A	0.351	0.162	0.082	0.000	0.472	0.000	0.488	0.000	64.726

Problem 1657	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	359	359	219	1273	0	1547	0	647	-1	511
N.S.	1	1.00	0.61	3.55	0.00	4.31	0.00	1.80	-0.00	1.42
time (sec)	N/A	0.315	1.001	0.072	0.000	0.481	0.000	0.480	0.000	61.065

Problem 1658	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	359	359	116	1273	0	1706	0	715	-1	511
N.S.	1	1.00	0.32	3.55	0.00	4.75	0.00	1.99	-0.00	1.42
time (sec)	N/A	0.324	0.120	0.075	0.000	0.464	0.000	0.448	0.000	58.582

Problem 1659	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	359	359	116	1296	0	1841	0	787	-1	511
N.S.	1	1.00	0.32	3.61	0.00	5.13	0.00	2.19	-0.00	1.42
time (sec)	N/A	0.350	0.100	0.076	0.000	0.492	0.000	0.443	0.000	57.401

Problem 1660	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	359	359	114	1296	0	1980	0	851	-1	511
N.S.	1	1.00	0.32	3.61	0.00	5.52	0.00	2.37	-0.00	1.42
time (sec)	N/A	0.348	0.084	0.081	0.000	0.491	0.000	0.411	0.000	59.746

Problem 1661	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	424	424	114	1493	0	2968	0	1132	-1	682
N.S.	1	1.00	0.27	3.52	0.00	7.00	0.00	2.67	-0.00	1.61
time (sec)	N/A	0.437	0.088	0.118	0.000	0.504	0.000	0.625	0.000	63.854

Problem 1662	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	496	496	115	1860	0	3596	0	1301	-1	932
N.S.	1	1.00	0.23	3.75	0.00	7.25	0.00	2.62	-0.00	1.88
time (sec)	N/A	0.546	0.094	0.131	0.000	0.537	0.000	0.711	0.000	71.081

Problem 1663	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	564	564	115	2282	0	4833	0	1527	-1	1217
N.S.	1	1.00	0.20	4.05	0.00	8.57	0.00	2.71	-0.00	2.16
time (sec)	N/A	0.572	0.100	0.139	0.000	0.559	0.000	0.851	0.000	79.195

Problem 1664	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	234	234	208	2355	957	2274	0	4381	2117	0
N.S.	1	1.00	0.89	10.06	4.09	9.72	0.00	18.72	9.05	0.00
time (sec)	N/A	0.167	0.216	0.138	0.909	0.477	0.000	0.319	3.103	0.502

Problem 1665	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	122	576	364	660	6186	1267	676	0
N.S.	1	1.00	0.88	4.17	2.64	4.78	44.83	9.18	4.90	0.00
time (sec)	N/A	0.084	0.102	0.056	0.764	0.476	6.648	0.264	2.398	0.150

Problem 1666	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	471	471	269	3931	1864	3485	0	8708	-1	0
N.S.	1	1.00	0.57	8.35	3.96	7.40	0.00	18.49	-0.00	0.00
time (sec)	N/A	0.332	0.311	0.069	0.818	0.513	0.000	0.845	0.000	5.505

Problem 1667	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	321	321	183	1286	756	1282	0	3208	-1	0
N.S.	1	1.00	0.57	4.01	2.36	3.99	0.00	9.99	-0.00	0.00
time (sec)	N/A	0.208	0.270	0.058	0.655	0.469	0.000	0.425	0.000	3.758

Problem 1668	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	171	171	121	205	177	256	0	659	-1	0
N.S.	1	1.00	0.71	1.20	1.04	1.50	0.00	3.85	-0.01	0.00
time (sec)	N/A	0.097	0.116	0.046	0.587	0.436	0.000	0.216	0.000	2.083

Problem 1669	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F(-2)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	97	174	0	348	0	1352	375	0
N.S.	1	1.00	0.82	1.46	0.00	2.92	0.00	11.36	3.15	0.00
time (sec)	N/A	0.069	0.077	0.051	0.000	0.452	0.000	0.342	2.435	0.267

Problem 1670	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	267	394	277	303	308	291	261	0
N.S.	1	1.00	2.90	4.28	3.01	3.29	3.35	3.16	2.84	0.00
time (sec)	N/A	0.155	0.035	0.038	0.580	0.404	0.128	0.154	0.108	0.000

Problem 1671	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	217	319	225	245	243	237	208	0
N.S.	1	1.00	2.36	3.47	2.45	2.66	2.64	2.58	2.26	0.00
time (sec)	N/A	0.120	0.031	0.043	0.501	0.364	0.110	0.162	0.081	0.000

Problem 1672	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	161	244	167	188	190	184	152	0
N.S.	1	1.00	1.75	2.65	1.82	2.04	2.07	2.00	1.65	0.00
time (sec)	N/A	0.095	0.023	0.040	0.516	0.394	0.100	0.150	0.067	0.000

Problem 1673	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	122	169	124	130	133	130	115	0
N.S.	1	1.00	1.88	2.60	1.91	2.00	2.05	2.00	1.77	0.00
time (sec)	N/A	0.067	0.018	0.046	0.528	0.386	0.089	0.152	0.050	0.000

Problem 1674	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	67	94	69	72	73	76	65	0
N.S.	1	1.00	1.76	2.47	1.82	1.89	1.92	2.00	1.71	0.00
time (sec)	N/A	0.017	0.010	0.040	0.541	0.352	0.076	0.166	0.035	0.000

Problem 1675	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	14	32	23	31	32	31	31	0
N.S.	1	1.00	1.00	2.29	1.64	2.21	2.29	2.21	2.21	0.00
time (sec)	N/A	0.002	0.001	0.046	0.486	0.371	0.068	0.153	0.038	0.000

Problem 1676	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	74	74	74	133	114	115	83	113	118	0
N.S.	1	1.00	1.00	1.80	1.54	1.55	1.12	1.53	1.59	0.00
time (sec)	N/A	0.030	0.029	0.049	0.683	0.407	0.316	0.182	2.027	0.001

Problem 1677	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	75	75	114	149	117	172	102	164	123	0
N.S.	1	1.00	1.52	1.99	1.56	2.29	1.36	2.19	1.64	0.00
time (sec)	N/A	0.062	0.035	0.053	0.596	0.418	0.658	0.158	0.073	0.001

Problem 1678	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	114	160	125	188	128	110	130	0
N.S.	1	1.00	1.46	2.05	1.60	2.41	1.64	1.41	1.67	0.00
time (sec)	N/A	0.055	0.039	0.049	0.487	0.401	0.831	0.162	2.042	0.001

Problem 1679	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	79	166	143	177	148	117	138	0
N.S.	1	1.00	0.92	1.93	1.66	2.06	1.72	1.36	1.60	0.00
time (sec)	N/A	0.057	0.039	0.051	0.459	0.422	1.184	0.165	0.093	0.001

Problem 1680	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	501	817	517	579	580	555	492	0
N.S.	1	1.00	3.50	5.71	3.62	4.05	4.06	3.88	3.44	0.00
time (sec)	N/A	0.311	0.068	0.038	0.488	0.380	0.163	0.223	2.132	0.000

Problem 1681	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	413	688	427	488	500	470	405	0
N.S.	1	1.00	2.83	4.71	2.92	3.34	3.42	3.22	2.77	0.00
time (sec)	N/A	0.251	0.048	0.043	0.532	0.366	0.149	0.180	2.084	0.000

Problem 1682	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	301	559	360	396	401	384	340	0
N.S.	1	1.00	2.53	4.70	3.03	3.33	3.37	3.23	2.86	0.00
time (sec)	N/A	0.216	0.085	0.041	0.637	0.494	0.137	0.160	2.074	0.000

Problem 1683	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	235	430	277	303	308	297	261	0
N.S.	1	1.00	2.55	4.67	3.01	3.29	3.35	3.23	2.84	0.00
time (sec)	N/A	0.150	0.066	0.043	0.614	0.373	0.125	0.173	0.099	0.000

Problem 1684	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	189	301	197	212	218	212	181	0
N.S.	1	1.00	2.91	4.63	3.03	3.26	3.35	3.26	2.78	0.00
time (sec)	N/A	0.105	0.030	0.048	0.628	0.359	0.109	0.156	0.076	0.000

Problem 1685	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	109	172	115	121	129	127	103	0
N.S.	1	1.00	2.87	4.53	3.03	3.18	3.39	3.34	2.71	0.00
time (sec)	N/A	0.017	0.015	0.040	0.597	0.362	0.096	0.150	2.025	0.000

Problem 1686	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	14	54	23	53	60	51	53	0
N.S.	1	1.00	1.00	3.86	1.64	3.79	4.29	3.64	3.79	0.00
time (sec)	N/A	0.003	0.002	0.039	0.484	0.384	0.077	0.151	0.027	0.000

Problem 1687	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	167	302	258	259	209	259	280	0
N.S.	1	1.00	1.37	2.48	2.11	2.12	1.71	2.12	2.30	0.00
time (sec)	N/A	0.056	0.061	0.046	0.546	0.395	0.506	0.155	1.988	0.001

Problem 1688	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	228	326	264	373	231	328	327	0
N.S.	1	1.00	1.75	2.51	2.03	2.87	1.78	2.52	2.52	0.00
time (sec)	N/A	0.147	0.067	0.048	0.511	0.401	0.904	0.190	2.018	0.001

Problem 1689	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	230	346	271	416	258	250	291	0
N.S.	1	1.00	1.73	2.60	2.04	3.13	1.94	1.88	2.19	0.00
time (sec)	N/A	0.127	0.074	0.056	0.723	0.418	1.648	0.159	0.095	0.001

Problem 1690	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	229	361	282	425	284	249	285	0
N.S.	1	1.00	1.76	2.78	2.17	3.27	2.18	1.92	2.19	0.00
time (sec)	N/A	0.115	0.077	0.055	0.757	0.402	3.059	0.158	0.120	0.001

Problem 1691	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	173	173	581	1165	706	798	796	766	683	0
N.S.	1	1.00	3.36	6.73	4.08	4.61	4.60	4.43	3.95	0.00
time (sec)	N/A	0.441	0.170	0.041	0.607	0.366	0.195	0.270	2.261	0.000

Problem 1692	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	493	982	594	670	673	646	570	0
N.S.	1	1.00	3.45	6.87	4.15	4.69	4.71	4.52	3.99	0.00
time (sec)	N/A	0.359	0.140	0.048	0.571	0.386	0.177	0.164	2.167	0.000

Problem 1693	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	405	799	489	546	549	530	470	0
N.S.	1	1.00	3.40	6.71	4.11	4.59	4.61	4.45	3.95	0.00
time (sec)	N/A	0.276	0.125	0.049	0.592	0.370	0.160	0.188	0.178	0.000

Problem 1694	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	360	616	376	420	427	412	356	0
N.S.	1	1.00	3.91	6.70	4.09	4.57	4.64	4.48	3.87	0.00
time (sec)	N/A	0.220	0.048	0.040	0.584	0.437	0.142	0.174	2.173	0.000

Problem 1695	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	229	433	273	294	303	294	249	0
N.S.	1	1.00	3.52	6.66	4.20	4.52	4.66	4.52	3.83	0.00
time (sec)	N/A	0.154	0.069	0.049	0.558	0.396	0.124	0.186	2.091	0.000

Problem 1696	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	151	250	163	169	178	177	143	0
N.S.	1	1.00	3.97	6.58	4.29	4.45	4.68	4.66	3.76	0.00
time (sec)	N/A	0.018	0.022	0.039	0.552	0.380	0.104	0.210	0.071	0.000

Problem 1697	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	14	76	23	75	83	71	75	0
N.S.	1	1.00	1.00	5.43	1.64	5.36	5.93	5.07	5.36	0.00
time (sec)	N/A	0.003	0.001	0.039	0.478	0.376	0.084	0.183	0.034	0.000

Problem 1698	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	304	539	458	459	408	469	510	0
N.S.	1	1.00	1.79	3.17	2.69	2.70	2.40	2.76	3.00	0.00
time (sec)	N/A	0.083	0.108	0.051	0.655	0.455	0.826	0.169	0.073	0.001

Problem 1699	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	186	186	387	571	466	629	428	542	839	0
N.S.	1	1.00	2.08	3.07	2.51	3.38	2.30	2.91	4.51	0.00
time (sec)	N/A	0.258	0.113	0.056	0.793	0.441	1.501	0.214	2.002	0.001

Problem 1700	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	185	185	388	599	473	701	447	448	690	0
N.S.	1	1.00	2.10	3.24	2.56	3.79	2.42	2.42	3.73	0.00
time (sec)	N/A	0.223	0.120	0.059	0.668	0.437	3.019	0.212	2.025	0.001

Problem 1701	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	187	187	199	622	485	737	474	442	558	0
N.S.	1	1.00	1.06	3.33	2.59	3.94	2.53	2.36	2.98	0.00
time (sec)	N/A	0.210	0.094	0.069	0.670	0.435	6.272	0.177	2.120	0.001

Problem 1702	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	97	97	114	209	179	181	136	174	188	0
N.S.	1	1.00	1.18	2.15	1.85	1.87	1.40	1.79	1.94	0.00
time (sec)	N/A	0.042	0.045	0.048	0.480	0.393	0.442	0.184	0.053	0.001

Problem 1703	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	74	133	114	116	83	110	118	0
N.S.	1	1.00	1.01	1.82	1.56	1.59	1.14	1.51	1.62	0.00
time (sec)	N/A	0.029	0.030	0.047	0.496	0.384	0.330	0.158	1.989	0.001

Problem 1704	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	43	74	61	63	44	59	62	0
N.S.	1	1.00	0.88	1.51	1.24	1.29	0.90	1.20	1.27	0.00
time (sec)	N/A	0.020	0.016	0.047	0.486	0.386	0.258	0.153	0.066	0.001

Problem 1705	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	25	25	25	32	25	24	20	28	26	0
N.S.	1	1.00	1.00	1.28	1.00	0.96	0.80	1.12	1.04	0.00
time (sec)	N/A	0.021	0.008	0.046	0.553	0.379	0.190	0.164	0.044	0.001

Problem 1706	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	10	10	10	11	22	10	7	22	10	0
N.S.	1	1.00	1.00	1.10	2.20	1.00	0.70	2.20	1.00	0.00
time (sec)	N/A	0.002	0.001	0.040	0.525	0.391	0.094	0.153	0.023	0.001

Problem 1707	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	36	36	26	37	36	26	128	49	40	0
N.S.	1	1.00	0.72	1.03	1.00	0.72	3.56	1.36	1.11	0.00
time (sec)	N/A	0.008	0.012	0.048	0.617	0.403	0.380	0.157	0.084	0.001

Problem 1708	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	56	56	53	58	90	92	233	82	77	0
N.S.	1	1.00	0.95	1.04	1.61	1.64	4.16	1.46	1.38	0.00
time (sec)	N/A	0.035	0.029	0.055	0.481	0.422	0.708	0.170	2.320	0.001

Problem 1709	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	82	82	67	81	202	242	381	166	183	0
N.S.	1	1.00	0.82	0.99	2.46	2.95	4.65	2.02	2.23	0.00
time (sec)	N/A	0.048	0.049	0.052	0.467	0.407	1.080	0.158	2.256	0.001

Problem 1710	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	106	104	362	425	570	238	313	0
N.S.	1	1.00	1.00	0.98	3.42	4.01	5.38	2.25	2.95	0.00
time (sec)	N/A	0.067	0.039	0.095	0.618	0.401	1.533	0.172	0.215	0.001

Problem 1711	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	102	102	163	245	190	292	185	172	197	0
N.S.	1	1.00	1.60	2.40	1.86	2.86	1.81	1.69	1.93	0.00
time (sec)	N/A	0.094	0.055	0.071	0.542	0.411	1.243	0.157	0.103	0.001

Problem 1712	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	114	160	125	188	128	107	130	0
N.S.	1	1.00	1.46	2.05	1.60	2.41	1.64	1.37	1.67	0.00
time (sec)	N/A	0.064	0.042	0.057	0.530	0.405	0.854	0.156	0.099	0.001

Problem 1713	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	49	92	79	99	80	67	77	0
N.S.	1	1.00	0.83	1.56	1.34	1.68	1.36	1.14	1.31	0.00
time (sec)	N/A	0.044	0.024	0.056	0.581	0.407	0.476	0.153	0.069	0.001

Problem 1714	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	26	35	38	38	39	26	39	0
N.S.	1	1.00	0.93	1.25	1.36	1.36	1.39	0.93	1.39	0.00
time (sec)	N/A	0.004	0.009	0.045	0.499	0.393	0.278	0.156	2.006	0.001

Problem 1715	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	14	13	23	24	26	23	26	0
N.S.	1	1.00	1.00	0.93	1.64	1.71	1.86	1.64	1.86	0.00
time (sec)	N/A	0.002	0.003	0.048	0.519	0.388	0.191	0.152	0.028	0.001

Problem 1716	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	82	82	67	81	202	242	381	162	182	0
N.S.	1	1.00	0.82	0.99	2.46	2.95	4.65	1.98	2.22	0.00
time (sec)	N/A	0.051	0.054	0.052	0.557	0.409	1.092	0.162	2.157	0.001

Problem 1717	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	109	109	98	109	386	494	634	212	330	0
N.S.	1	1.00	0.90	1.00	3.54	4.53	5.82	1.94	3.03	0.00
time (sec)	N/A	0.074	0.070	0.056	0.660	0.442	1.730	0.187	2.210	0.001

Problem 1718	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	128	140	594	760	881	332	542	0
N.S.	1	1.00	0.90	0.98	4.15	5.31	6.16	2.32	3.79	0.00
time (sec)	N/A	0.110	0.104	0.059	0.704	0.427	2.422	0.201	2.342	0.001

Problem 1719	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	170	170	154	165	890	1151	1221	435	798	0
N.S.	1	1.00	0.91	0.97	5.24	6.77	7.18	2.56	4.69	0.00
time (sec)	N/A	0.153	0.151	0.059	1.065	0.434	3.363	0.166	2.583	0.001

Problem 1720	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	120	260	219	267	230	174	213	0
N.S.	1	1.00	1.08	2.34	1.97	2.41	2.07	1.57	1.92	0.00
time (sec)	N/A	0.099	0.059	0.054	0.587	0.405	3.340	0.179	2.086	0.001

Problem 1721	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	91	122	143	143	155	106	135	0
N.S.	1	1.00	3.25	4.36	5.11	5.11	5.54	3.79	4.82	0.00
time (sec)	N/A	0.005	0.028	0.047	0.524	0.393	1.832	0.162	0.055	0.001

Problem 1722	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	65	65	56	71	98	98	104	60	96	0
N.S.	1	1.00	0.86	1.09	1.51	1.51	1.60	0.92	1.48	0.00
time (sec)	N/A	0.042	0.019	0.056	0.672	0.398	0.799	0.155	0.042	0.001

Problem 1723	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	27	35	61	61	65	27	63	0
N.S.	1	1.00	0.71	0.92	1.61	1.61	1.71	0.71	1.66	0.00
time (sec)	N/A	0.024	0.008	0.093	0.525	0.391	0.455	0.156	2.009	0.001

Problem 1724	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	14	14	14	13	23	46	49	23	48	0
N.S.	1	1.00	1.00	0.93	1.64	3.29	3.50	1.64	3.43	0.00
time (sec)	N/A	0.003	0.003	0.059	0.564	0.382	0.320	0.152	1.992	0.001

Problem 1725	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	130	130	130	125	558	657	802	322	505	0
N.S.	1	1.00	1.00	0.96	4.29	5.05	6.17	2.48	3.88	0.00
time (sec)	N/A	0.085	0.047	0.056	0.778	0.408	2.141	0.179	2.268	0.001

Problem 1726	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	144	155	858	1083	1178	358	763	0
N.S.	1	1.00	0.91	0.97	5.40	6.81	7.41	2.25	4.80	0.00
time (sec)	N/A	0.138	0.074	0.059	0.859	0.430	3.553	0.206	0.517	0.001

Problem 1727	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	192	192	179	189	1200	1565	1571	547	1098	0
N.S.	1	1.00	0.93	0.98	6.25	8.15	8.18	2.85	5.72	0.00
time (sec)	N/A	0.192	0.098	0.062	1.270	0.453	5.063	0.174	2.692	0.001

Problem 1728	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	222	222	204	215	1587	2090	2009	673	1469	0
N.S.	1	1.00	0.92	0.97	7.15	9.41	9.05	3.03	6.62	0.00
time (sec)	N/A	0.261	0.129	0.061	1.579	0.488	7.633	0.176	3.016	0.001

Problem 1729	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	196	230	1323	197	218	311	1541	0
N.S.	1	1.00	1.34	1.58	9.06	1.35	1.49	2.13	10.55	0.00
time (sec)	N/A	0.152	0.061	0.051	0.577	0.405	0.165	0.167	4.770	2.238

Problem 1730	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	163	189	996	156	168	254	1095	0
N.S.	1	1.00	1.12	1.29	6.82	1.07	1.15	1.74	7.50	0.00
time (sec)	N/A	0.133	0.047	0.049	0.697	0.393	0.165	0.183	3.593	1.621

Problem 1731	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	130	148	693	124	133	199	734	0
N.S.	1	1.00	0.89	1.01	4.75	0.85	0.91	1.36	5.03	0.00
time (sec)	N/A	0.109	0.040	0.052	0.613	0.398	0.134	0.159	3.007	1.289

Problem 1732	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	97	107	452	81	87	143	438	0
N.S.	1	1.00	0.78	0.86	3.62	0.65	0.70	1.14	3.50	0.00
time (sec)	N/A	0.097	0.032	0.046	0.550	0.395	0.124	0.159	2.579	1.070

Problem 1733	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	64	66	251	48	49	88	219	0
N.S.	1	1.00	0.82	0.85	3.22	0.62	0.63	1.13	2.81	0.00
time (sec)	N/A	0.058	0.022	0.053	0.641	0.405	0.108	0.159	2.499	0.840

Problem 1734	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	18	38	14	20	19	18	76	18
N.S.	1	1.00	0.67	1.41	0.52	0.74	0.70	0.67	2.81	0.67
time (sec)	N/A	0.008	0.008	0.049	0.704	0.422	0.088	0.148	2.169	0.022

Problem 1735	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	122	122	61	102	0	62	44	97	-1	0
N.S.	1	1.00	0.50	0.84	0.00	0.51	0.36	0.80	-0.01	0.00
time (sec)	N/A	0.068	0.029	0.077	0.000	0.419	0.245	0.156	0.000	1.101

Problem 1736	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	87	131	0	92	60	101	-1	0
N.S.	1	1.00	0.66	0.99	0.00	0.70	0.45	0.77	-0.01	0.00
time (sec)	N/A	0.079	0.048	0.066	0.000	0.423	0.366	0.154	0.000	1.487

Problem 1737	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	C	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	73	112	0	100	80	105	-1	0
N.S.	1	1.00	0.52	0.80	0.00	0.71	0.57	0.75	-0.01	0.00
time (sec)	N/A	0.081	0.034	0.066	0.000	0.427	0.478	0.155	0.000	2.127

Problem 1738	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	71	76	0	84	88	94	75	0
N.S.	1	1.00	1.73	1.85	0.00	2.05	2.15	2.29	1.83	0.00
time (sec)	N/A	0.023	0.031	0.047	0.000	0.408	0.654	0.156	2.099	1.135

Problem 1739	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	73	78	0	98	104	96	77	0
N.S.	1	1.00	0.50	0.53	0.00	0.67	0.71	0.66	0.53	0.00
time (sec)	N/A	0.082	0.027	0.050	0.000	0.396	0.988	0.170	2.139	181.154

Problem 1740	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	73	78	0	109	116	96	77	0
N.S.	1	1.00	0.50	0.53	0.00	0.75	0.79	0.66	0.53	0.00
time (sec)	N/A	0.081	0.034	0.043	0.000	0.417	1.019	0.206	2.123	180.147

Problem 1741	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	73	78	0	120	128	96	77	0
N.S.	1	1.00	0.50	0.53	0.00	0.82	0.88	0.66	0.53	0.00
time (sec)	N/A	0.081	0.028	0.051	0.000	0.403	1.220	0.160	2.118	180.022

Problem 1742	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	73	78	0	131	139	96	77	0
N.S.	1	1.00	0.50	0.53	0.00	0.90	0.95	0.66	0.53	0.00
time (sec)	N/A	0.080	0.031	0.055	0.000	0.402	1.427	0.204	2.130	180.029

Problem 1743	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	432	564	2152	489	0	761	-1	0
N.S.	1	1.00	1.70	2.22	8.47	1.93	0.00	3.00	-0.00	0.00
time (sec)	N/A	0.352	0.132	0.048	0.754	0.399	0.000	0.208	0.000	4.465

Problem 1744	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	377	489	1736	418	0	660	-1	0
N.S.	1	1.00	1.48	1.93	6.83	1.65	0.00	2.60	-0.00	0.00
time (sec)	N/A	0.303	0.121	0.052	0.640	0.427	0.000	0.220	0.000	3.774

Problem 1745	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	322	414	1323	360	0	561	-1	0
N.S.	1	1.00	1.27	1.63	5.21	1.42	0.00	2.21	-0.00	0.00
time (sec)	N/A	0.271	0.100	0.049	0.771	0.411	0.000	0.190	0.000	3.233

Problem 1746	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	219	219	267	339	998	285	0	461	-1	0
N.S.	1	1.00	1.22	1.55	4.56	1.30	0.00	2.11	-0.00	0.00
time (sec)	N/A	0.218	0.084	0.052	0.736	0.424	0.000	0.195	0.000	2.432

Problem 1747	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	212	264	693	225	0	360	-1	0
N.S.	1	1.00	1.23	1.53	4.03	1.31	0.00	2.09	-0.01	0.00
time (sec)	N/A	0.180	0.069	0.051	0.649	0.412	0.000	0.205	0.000	1.947

Problem 1748	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	157	189	452	156	0	260	-1	0
N.S.	1	1.00	1.26	1.51	3.62	1.25	0.00	2.08	-0.01	0.00
time (sec)	N/A	0.135	0.054	0.048	0.572	0.413	0.000	0.175	0.000	1.477

Problem 1749	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	102	114	251	96	0	162	-1	0
N.S.	1	1.00	1.31	1.46	3.22	1.23	0.00	2.08	-0.01	0.00
time (sec)	N/A	0.045	0.034	0.053	0.606	0.393	0.000	0.181	0.000	1.009

Problem 1750	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	25	60	23	42	158	86	30	18
N.S.	1	1.00	0.93	2.22	0.85	1.56	5.85	3.19	1.11	0.67
time (sec)	N/A	0.008	0.007	0.052	0.477	0.406	0.928	0.199	2.162	0.028

Problem 1751	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	133	225	0	179	0	266	-1	0
N.S.	1	1.00	0.63	1.07	0.00	0.85	0.00	1.27	-0.00	0.00
time (sec)	N/A	0.103	0.063	0.065	0.000	0.414	0.000	0.173	0.000	1.876

Problem 1752	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	239	239	183	327	0	267	0	268	-1	0
N.S.	1	1.00	0.77	1.37	0.00	1.12	0.00	1.12	-0.00	0.00
time (sec)	N/A	0.163	0.123	0.063	0.000	0.411	0.000	0.208	0.000	2.113

Problem 1753	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	185	350	0	291	0	265	-1	0
N.S.	1	1.00	0.78	1.47	0.00	1.22	0.00	1.11	-0.00	0.00
time (sec)	N/A	0.149	0.119	0.082	0.000	0.439	0.000	0.175	0.000	2.835

Problem 1754	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	238	238	181	330	0	292	0	260	-1	0
N.S.	1	1.00	0.76	1.39	0.00	1.23	0.00	1.09	-0.00	0.00
time (sec)	N/A	0.140	0.086	0.063	0.000	0.463	0.000	0.198	0.000	6.610

Problem 1755	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	246	246	144	276	0	268	0	268	-1	0
N.S.	1	1.00	0.59	1.12	0.00	1.09	0.00	1.09	-0.00	0.00
time (sec)	N/A	0.135	0.092	0.059	0.000	0.428	0.000	0.174	0.000	180.118

Problem 1756	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	158	197	0	215	0	260	449	0
N.S.	1	1.00	3.85	4.80	0.00	5.24	0.00	6.34	10.95	0.00
time (sec)	N/A	0.023	0.060	0.058	0.000	0.445	0.000	0.205	2.149	180.019

Problem 1757	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	98	98	162	201	0	236	0	264	449	0
N.S.	1	1.00	1.65	2.05	0.00	2.41	0.00	2.69	4.58	0.00
time (sec)	N/A	0.052	0.058	0.049	0.000	0.424	0.000	0.208	2.135	180.028

Problem 1758	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	162	201	0	247	0	264	449	0
N.S.	1	1.00	1.09	1.35	0.00	1.66	0.00	1.77	3.01	0.00
time (sec)	N/A	0.066	0.058	0.053	0.000	0.452	0.000	0.173	2.154	180.028

Problem 1759	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	252	252	162	201	0	258	0	264	449	0
N.S.	1	1.00	0.64	0.80	0.00	1.02	0.00	1.05	1.78	0.00
time (sec)	N/A	0.131	0.057	0.072	0.000	0.426	0.000	0.205	2.168	180.028

Problem 1760	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	162	201	0	269	0	264	449	0
N.S.	1	1.00	0.64	0.79	0.00	1.06	0.00	1.04	1.77	0.00
time (sec)	N/A	0.132	0.060	0.056	0.000	0.476	0.000	0.172	2.173	180.033

Problem 1761	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	162	201	0	280	0	264	449	0
N.S.	1	1.00	0.64	0.79	0.00	1.10	0.00	1.04	1.77	0.00
time (sec)	N/A	0.136	0.056	0.055	0.000	0.433	0.000	0.198	2.201	180.058

Problem 1762	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	254	254	162	201	0	291	0	264	449	0
N.S.	1	1.00	0.64	0.79	0.00	1.15	0.00	1.04	1.77	0.00
time (sec)	N/A	0.133	0.070	0.055	0.000	0.439	0.000	0.172	2.200	180.075

Problem 1763	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	756	1034	3175	892	0	1387	-1	0
N.S.	1	1.00	2.09	2.86	8.77	2.46	0.00	3.83	-0.00	0.00
time (sec)	N/A	0.687	0.232	0.051	0.797	0.476	0.000	0.288	0.000	7.945

Problem 1764	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	679	925	2653	797	0	1242	-1	0
N.S.	1	1.00	1.88	2.56	7.33	2.20	0.00	3.43	-0.00	0.00
time (sec)	N/A	0.594	0.219	0.051	0.819	0.440	0.000	0.236	0.000	7.881

Problem 1765	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	602	816	2153	706	0	1099	-1	0
N.S.	1	1.00	1.66	2.25	5.95	1.95	0.00	3.04	-0.00	0.00
time (sec)	N/A	0.525	0.188	0.050	0.719	0.437	0.000	0.282	0.000	6.807

Problem 1766	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	311	311	525	707	1736	599	0	955	-1	0
N.S.	1	1.00	1.69	2.27	5.58	1.93	0.00	3.07	-0.00	0.00
time (sec)	N/A	0.447	0.160	0.049	0.703	0.429	0.000	0.215	0.000	5.481

Problem 1767	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	263	263	448	598	1323	517	0	810	-1	0
N.S.	1	1.00	1.70	2.27	5.03	1.97	0.00	3.08	-0.00	0.00
time (sec)	N/A	0.377	0.138	0.057	0.642	0.434	0.000	0.211	0.000	4.480

Problem 1768	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	219	219	371	489	998	418	0	666	-1	0
N.S.	1	1.00	1.69	2.23	4.56	1.91	0.00	3.04	-0.00	0.00
time (sec)	N/A	0.304	0.118	0.056	0.532	0.416	0.000	0.194	0.000	3.440

Problem 1769	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	294	380	693	327	0	523	-1	0
N.S.	1	1.00	1.71	2.21	4.03	1.90	0.00	3.04	-0.01	0.00
time (sec)	N/A	0.244	0.097	0.053	0.597	0.401	0.000	0.224	0.000	2.566

Problem 1770	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	125	125	217	271	452	234	0	379	-1	0
N.S.	1	1.00	1.74	2.17	3.62	1.87	0.00	3.03	-0.01	0.00
time (sec)	N/A	0.180	0.076	0.050	0.756	0.415	0.000	0.175	0.000	1.905

Problem 1771	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	140	162	251	142	0	236	-1	0
N.S.	1	1.00	1.79	2.08	3.22	1.82	0.00	3.03	-0.01	0.00
time (sec)	N/A	0.049	0.049	0.053	0.631	0.400	0.000	0.168	0.000	1.316

Problem 1772	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	25	82	23	64	226	120	14	18
N.S.	1	1.00	0.93	3.04	0.85	2.37	8.37	4.44	0.52	0.67
time (sec)	N/A	0.008	0.009	0.043	0.675	0.397	5.515	0.187	2.239	0.030

Problem 1773	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	298	298	248	428	0	351	0	522	-1	0
N.S.	1	1.00	0.83	1.44	0.00	1.18	0.00	1.75	-0.00	0.00
time (sec)	N/A	0.163	0.113	0.064	0.000	0.407	0.000	0.219	0.000	3.115

Problem 1774	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	345	345	320	601	0	496	0	519	-1	0
N.S.	1	1.00	0.93	1.74	0.00	1.44	0.00	1.50	-0.00	0.00
time (sec)	N/A	0.299	0.201	0.071	0.000	0.416	0.000	0.196	0.000	3.490

Problem 1775	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	347	347	321	669	0	548	0	509	-1	0
N.S.	1	1.00	0.93	1.93	0.00	1.58	0.00	1.47	-0.00	0.00
time (sec)	N/A	0.259	0.143	0.067	0.000	0.433	0.000	0.188	0.000	4.840

Problem 1776	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	345	345	320	692	0	576	0	503	-1	0
N.S.	1	1.00	0.93	2.01	0.00	1.67	0.00	1.46	-0.00	0.00
time (sec)	N/A	0.250	0.148	0.112	0.000	0.412	0.000	0.189	0.000	6.411

Problem 1777	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	344	344	318	670	0	571	0	504	-1	0
N.S.	1	1.00	0.92	1.95	0.00	1.66	0.00	1.47	-0.00	0.00
time (sec)	N/A	0.242	0.147	0.085	0.000	0.427	0.000	0.230	0.000	180.020

Problem 1778	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	344	344	315	603	0	542	0	499	-1	0
N.S.	1	1.00	0.92	1.75	0.00	1.58	0.00	1.45	-0.00	0.00
time (sec)	N/A	0.227	0.157	0.112	0.000	0.421	0.000	0.199	0.000	180.117

Problem 1779	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	A	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	356	356	258	507	0	492	0	507	-1	0
N.S.	1	1.00	0.72	1.42	0.00	1.38	0.00	1.42	-0.00	0.00
time (sec)	N/A	0.210	0.171	0.071	0.000	0.418	0.000	0.190	0.000	180.263

Problem 1780	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	289	386	0	398	0	514	1010	0
N.S.	1	1.00	7.05	9.41	0.00	9.71	0.00	12.54	24.63	0.00
time (sec)	N/A	0.025	0.109	0.053	0.000	0.419	0.000	0.194	2.379	180.026

Problem 1781	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	98	98	295	392	0	430	0	520	1010	0
N.S.	1	1.00	3.01	4.00	0.00	4.39	0.00	5.31	10.31	0.00
time (sec)	N/A	0.053	0.109	0.053	0.000	0.414	0.000	0.240	2.298	180.018

Problem 1782	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	295	392	0	441	0	520	1010	0
N.S.	1	1.00	1.98	2.63	0.00	2.96	0.00	3.49	6.78	0.00
time (sec)	N/A	0.065	0.109	0.056	0.000	0.414	0.000	0.194	2.264	180.025

Problem 1783	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	295	392	0	452	0	520	1010	0
N.S.	1	1.00	1.48	1.96	0.00	2.26	0.00	2.60	5.05	0.00
time (sec)	N/A	0.085	0.106	0.056	0.000	0.453	0.000	0.203	2.530	180.060

Problem 1784	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	359	359	295	392	0	463	0	520	1010	0
N.S.	1	1.00	0.82	1.09	0.00	1.29	0.00	1.45	2.81	0.00
time (sec)	N/A	0.198	0.106	0.069	0.000	0.434	0.000	0.199	2.530	180.081

Problem 1785	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	295	392	0	474	0	520	1010	0
N.S.	1	1.00	0.81	1.08	0.00	1.31	0.00	1.44	2.79	0.00
time (sec)	N/A	0.198	0.101	0.064	0.000	0.435	0.000	0.242	2.374	180.109

Problem 1786	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	295	392	0	485	0	520	1010	0
N.S.	1	1.00	0.82	1.09	0.00	1.35	0.00	1.44	2.81	0.00
time (sec)	N/A	0.193	0.115	0.060	0.000	0.410	0.000	0.205	2.390	180.143

Problem 1787	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	295	392	0	496	0	520	1010	0
N.S.	1	1.00	0.81	1.08	0.00	1.37	0.00	1.44	2.79	0.00
time (sec)	N/A	0.198	0.109	0.058	0.000	0.433	0.000	0.203	2.399	180.183

Problem 1788	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-1)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	295	392	0	507	0	520	1010	0
N.S.	1	1.00	0.81	1.08	0.00	1.40	0.00	1.44	2.79	0.00
time (sec)	N/A	0.197	0.115	0.072	0.000	0.437	0.000	0.193	2.447	180.241

Problem 1789	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F(-2)	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	362	362	295	392	0	518	0	520	1010	0
N.S.	1	1.00	0.81	1.08	0.00	1.43	0.00	1.44	2.79	0.00
time (sec)	N/A	0.201	0.103	0.056	0.000	0.423	0.000	0.225	2.450	180.311

Problem 1790	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	30	58	688	42	42	18	-1	0
N.S.	1	1.00	0.77	1.49	17.64	1.08	1.08	0.46	-0.03	0.00
time (sec)	N/A	0.029	0.016	0.050	0.572	0.416	0.122	0.152	0.000	0.810

Problem 1791	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	30	47	432	31	32	18	-1	0
N.S.	1	1.00	0.77	1.21	11.08	0.79	0.82	0.46	-0.03	0.00
time (sec)	N/A	0.030	0.010	0.051	0.535	0.418	0.111	0.169	0.000	0.667

Problem 1792	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	30	36	239	20	19	18	-1	0
N.S.	1	1.00	0.77	0.92	6.13	0.51	0.49	0.46	-0.03	0.00
time (sec)	N/A	0.030	0.010	0.040	0.494	0.406	0.103	0.184	0.000	0.605

Problem 1793	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	28	25	95	10	8	19	-1	0
N.S.	1	1.00	0.45	0.40	1.53	0.16	0.13	0.31	-0.02	0.00
time (sec)	N/A	0.030	0.011	0.048	0.761	0.420	0.095	0.148	0.000	0.313

Problem 1794	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	24	24	18	17	13	1	0	20	76	15
N.S.	1	1.00	0.75	0.71	0.54	0.04	0.00	0.83	3.17	0.62
time (sec)	N/A	0.007	0.004	0.048	0.545	0.410	0.084	0.150	2.382	0.021

Problem 1795	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	35	35	26	25	0	10	7	17	-1	0
N.S.	1	1.00	0.74	0.71	0.00	0.29	0.20	0.49	-0.03	0.00
time (sec)	N/A	0.028	0.008	0.049	0.000	0.442	0.099	0.164	0.000	0.539

Problem 1796	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	28	27	0	13	10	18	28	0
N.S.	1	1.00	0.74	0.71	0.00	0.34	0.26	0.47	0.74	0.00
time (sec)	N/A	0.023	0.010	0.047	0.000	0.425	0.165	0.170	2.101	0.491

Problem 1797	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	39	30	27	0	24	26	18	28	0
N.S.	1	0.93	0.71	0.64	0.00	0.57	0.62	0.43	0.67	0.00
time (sec)	N/A	0.028	0.011	0.049	0.000	0.419	0.224	0.151	2.168	0.754

Problem 1798	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	39	30	27	0	35	37	18	28	0
N.S.	1	0.93	0.71	0.64	0.00	0.83	0.88	0.43	0.67	0.00
time (sec)	N/A	0.028	0.011	0.047	0.000	0.469	0.283	0.160	2.143	1.030

Problem 1799	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	39	30	27	0	46	49	18	28	4872
N.S.	1	0.93	0.71	0.64	0.00	1.10	1.17	0.43	0.67	116.00
time (sec)	N/A	0.028	0.012	0.054	0.000	0.423	0.343	0.153	2.171	87.246

Problem 1800	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	170	321	754	268	0	237	-1	3569
N.S.	1	1.00	0.81	1.53	3.59	1.28	0.00	1.13	-0.00	17.00
time (sec)	N/A	0.107	0.082	0.071	0.641	0.419	0.000	0.333	0.000	2.798

Problem 1801	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	120	209	481	173	0	185	-1	2469
N.S.	1	1.00	0.74	1.29	2.97	1.07	0.00	1.14	-0.01	15.24
time (sec)	N/A	0.087	0.051	0.068	0.627	0.449	0.000	0.339	0.000	1.912

Problem 1802	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	106	106	74	116	272	92	0	148	-1	924
N.S.	1	1.00	0.70	1.09	2.57	0.87	0.00	1.40	-0.01	8.72
time (sec)	N/A	0.057	0.034	0.066	0.565	0.483	0.000	0.357	0.000	1.370

Problem 1803	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	36	48	117	39	0	114	-1	435
N.S.	1	1.00	0.54	0.72	1.75	0.58	0.00	1.70	-0.01	6.49
time (sec)	N/A	0.029	0.015	0.059	0.548	0.447	0.000	0.332	0.000	0.761

Problem 1804	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	25	25	16	22	23	13	34	0	23	16
N.S.	1	1.00	0.64	0.88	0.92	0.52	1.36	0.00	0.92	0.64
time (sec)	N/A	0.008	0.007	0.042	0.672	0.421	0.846	0.000	2.145	0.031

Problem 1805	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	120	120	57	77	0	93	0	203	-1	1732
N.S.	1	1.00	0.48	0.64	0.00	0.78	0.00	1.69	-0.01	14.43
time (sec)	N/A	0.084	0.036	0.065	0.000	0.438	0.000	0.245	0.000	2.474

Problem 1806	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	92	181	0	241	0	486	-1	4119
N.S.	1	1.00	0.54	1.07	0.00	1.43	0.00	2.88	-0.01	24.37
time (sec)	N/A	0.112	0.065	0.087	0.000	0.440	0.000	0.464	0.000	18.075

Problem 1807	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	223	223	135	331	0	495	0	461	-1	5578
N.S.	1	1.00	0.61	1.48	0.00	2.22	0.00	2.07	-0.00	25.01
time (sec)	N/A	0.147	0.095	0.069	0.000	0.447	0.000	2.846	0.000	53.000

Problem 1808	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	252	252	232	495	1010	426	0	0	-1	6538
N.S.	1	1.00	0.92	1.96	4.01	1.69	0.00	0.00	-0.00	25.94
time (sec)	N/A	0.193	0.114	0.061	1.180	0.419	0.000	0.000	0.000	8.170

Problem 1809	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	201	201	170	322	755	292	0	0	-1	4330
N.S.	1	1.00	0.85	1.60	3.76	1.45	0.00	0.00	-0.00	21.54
time (sec)	N/A	0.144	0.079	0.069	0.985	0.493	0.000	0.000	0.000	4.765

Problem 1810	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	91	179	533	176	0	0	-1	2559
N.S.	1	1.00	0.59	1.16	3.46	1.14	0.00	0.00	-0.01	16.62
time (sec)	N/A	0.109	0.047	0.059	0.777	0.494	0.000	0.000	0.000	3.210

Problem 1811	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	60	69	274	84	0	0	77	348
N.S.	1	1.00	1.46	1.68	6.68	2.05	0.00	0.00	1.88	8.49
time (sec)	N/A	0.024	0.029	0.050	0.727	0.438	0.000	0.000	2.245	1.132

Problem 1812	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	68	68	32	35	118	50	0	0	43	235
N.S.	1	1.00	0.47	0.51	1.74	0.74	0.00	0.00	0.63	3.46
time (sec)	N/A	0.028	0.019	0.055	0.597	0.438	0.000	0.000	2.159	0.835

Problem 1813	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	18	22	23	35	97	23	30	18
N.S.	1	1.00	0.67	0.81	0.85	1.30	3.59	0.85	1.11	0.67
time (sec)	N/A	0.008	0.008	0.048	0.587	0.426	1.568	0.200	2.091	0.031

Problem 1814	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	116	251	0	425	0	0	-1	7693
N.S.	1	1.00	0.55	1.20	0.00	2.02	0.00	0.00	-0.00	36.63
time (sec)	N/A	0.140	0.085	0.065	0.000	0.455	0.000	0.000	0.000	20.145

Problem 1815	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	260	260	144	483	0	751	0	774	-1	0
N.S.	1	1.00	0.55	1.86	0.00	2.89	0.00	2.98	-0.00	0.00
time (sec)	N/A	0.186	0.105	0.072	0.000	0.440	0.000	0.506	0.000	180.003

Problem 1816	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	323	323	184	753	0	1151	0	0	-1	9902
N.S.	1	1.00	0.57	2.33	0.00	3.56	0.00	0.00	-0.00	30.66
time (sec)	N/A	0.238	0.120	0.075	0.000	0.484	0.000	0.000	0.000	178.085

Problem 1817	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	79	116	118	320	654	1270	87	132
N.S.	1	1.00	0.79	1.16	1.18	3.20	6.54	12.70	0.87	1.32
time (sec)	N/A	0.044	0.077	0.049	0.602	0.422	9.575	0.258	0.084	0.075

Problem 1818	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	79	116	118	268	549	908	87	132
N.S.	1	1.00	0.79	1.16	1.18	2.68	5.49	9.08	0.87	1.32
time (sec)	N/A	0.037	0.062	0.054	0.569	0.432	4.586	0.219	2.067	0.070

Problem 1819	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	79	116	118	216	386	598	87	132
N.S.	1	1.00	0.79	1.16	1.18	2.16	3.86	5.98	0.87	1.32
time (sec)	N/A	0.034	0.057	0.059	0.550	0.441	16.767	0.184	0.061	0.068

Problem 1820	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	79	116	118	164	146	339	87	132
N.S.	1	1.00	0.79	1.16	1.18	1.64	1.46	3.39	0.87	1.32
time (sec)	N/A	0.032	0.054	0.049	0.620	0.413	4.576	0.244	0.063	0.061

Problem 1821	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	79	116	118	115	394	143	87	132
N.S.	1	1.00	0.82	1.21	1.23	1.20	4.10	1.49	0.91	1.38
time (sec)	N/A	0.034	0.048	0.050	0.539	0.424	38.314	0.192	0.061	0.063

Problem 1822	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	78	116	125	124	109	150	114	131
N.S.	1	1.00	0.83	1.23	1.33	1.32	1.16	1.60	1.21	1.39
time (sec)	N/A	0.033	0.049	0.049	0.591	0.439	22.105	0.188	2.065	0.067

Problem 1823	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	76	115	122	136	461	142	128	130
N.S.	1	1.00	0.79	1.20	1.27	1.42	4.80	1.48	1.33	1.35
time (sec)	N/A	0.033	0.051	0.048	0.514	0.419	1.552	0.175	0.075	0.074

Problem 1824	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	77	115	121	148	665	136	114	131
N.S.	1	1.00	0.82	1.22	1.29	1.57	7.07	1.45	1.21	1.39
time (sec)	N/A	0.032	0.050	0.046	0.706	0.421	3.446	0.185	2.063	0.074

Problem 1825	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	123	273	259	579	1187	2325	137	315
N.S.	1	1.00	0.78	1.73	1.64	3.66	7.51	14.72	0.87	1.99
time (sec)	N/A	0.074	0.107	0.053	0.506	0.441	15.958	0.311	0.068	0.119

Problem 1826	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	123	273	259	497	1292	1698	137	315
N.S.	1	1.00	0.78	1.73	1.64	3.15	8.18	10.75	0.87	1.99
time (sec)	N/A	0.057	0.080	0.051	0.525	0.441	48.316	0.274	2.045	0.118

Problem 1827	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	123	273	259	418	763	1149	137	315
N.S.	1	1.00	0.78	1.73	1.64	2.65	4.83	7.27	0.87	1.99
time (sec)	N/A	0.057	0.111	0.049	0.558	0.408	30.565	0.225	0.051	0.113

Problem 1828	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	123	273	259	338	314	678	137	315
N.S.	1	1.00	0.79	1.75	1.66	2.17	2.01	4.35	0.88	2.02
time (sec)	N/A	0.054	0.105	0.046	0.485	0.432	7.699	0.187	0.049	0.103

Problem 1829	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	123	273	259	261	740	298	137	315
N.S.	1	1.00	0.80	1.77	1.68	1.69	4.81	1.94	0.89	2.05
time (sec)	N/A	0.057	0.066	0.044	0.565	0.434	84.600	0.175	0.049	0.101

Problem 1830	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	123	273	267	271	243	346	192	315
N.S.	1	1.00	0.81	1.80	1.76	1.78	1.60	2.28	1.26	2.07
time (sec)	N/A	0.058	0.090	0.050	0.525	0.425	49.192	0.196	2.036	0.081

Problem 1831	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	123	273	265	283	196	334	229	315
N.S.	1	1.00	0.81	1.80	1.74	1.86	1.29	2.20	1.51	2.07
time (sec)	N/A	0.055	0.090	0.058	0.520	0.430	59.861	0.206	2.020	0.085

Problem 1832	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	123	273	265	294	1428	333	255	315
N.S.	1	1.00	0.80	1.77	1.72	1.91	9.27	2.16	1.66	2.05
time (sec)	N/A	0.055	0.094	0.065	0.541	0.433	4.348	0.202	0.083	0.087

Problem 1833	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	167	498	456	891	3046	3640	187	582
N.S.	1	1.00	0.77	2.31	2.11	4.12	14.10	16.85	0.87	2.69
time (sec)	N/A	0.108	0.175	0.049	0.580	0.445	101.433	0.409	2.082	0.207

Problem 1834	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	216	216	167	498	456	783	2096	2696	187	582
N.S.	1	1.00	0.77	2.31	2.11	3.62	9.70	12.48	0.87	2.69
time (sec)	N/A	0.076	0.130	0.046	0.649	0.431	70.414	0.429	0.064	0.199

Problem 1835	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	167	498	456	676	1265	1856	187	582
N.S.	1	1.00	0.78	2.33	2.13	3.16	5.91	8.67	0.87	2.72
time (sec)	N/A	0.075	0.123	0.047	0.596	0.415	45.364	0.274	2.044	0.182

Problem 1836	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	167	498	456	568	544	1119	187	582
N.S.	1	1.00	0.78	2.33	2.13	2.65	2.54	5.23	0.87	2.72
time (sec)	N/A	0.073	0.114	0.048	0.600	0.429	10.163	0.222	2.055	0.166

Problem 1837	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	212	212	167	498	456	463	1217	505	187	582
N.S.	1	1.00	0.79	2.35	2.15	2.18	5.74	2.38	0.88	2.75
time (sec)	N/A	0.074	0.098	0.055	0.705	0.424	140.052	0.193	2.066	0.163

Problem 1838	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	167	498	464	472	439	625	270	582
N.S.	1	1.00	0.81	2.42	2.25	2.29	2.13	3.03	1.31	2.83
time (sec)	N/A	0.079	0.096	0.049	0.501	0.429	99.355	0.226	2.068	0.115

Problem 1839	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	208	208	167	498	462	484	360	609	335	582
N.S.	1	1.00	0.80	2.39	2.22	2.33	1.73	2.93	1.61	2.80
time (sec)	N/A	0.076	0.098	0.051	0.581	0.430	113.695	0.339	2.048	0.117

Problem 1840	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	167	498	463	496	0	608	388	582
N.S.	1	1.00	0.80	2.37	2.20	2.36	0.00	2.90	1.85	2.77
time (sec)	N/A	0.079	0.104	0.046	0.548	0.431	0.000	0.231	0.075	0.122

Problem 1841	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	132	380	0	424	0	264	165	190
N.S.	1	1.00	0.96	2.75	0.00	3.07	0.00	1.91	1.20	1.38
time (sec)	N/A	0.125	0.216	0.055	0.000	0.443	0.000	0.185	2.059	0.142

Problem 1842	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	105	263	0	290	0	180	130	130
N.S.	1	1.00	0.94	2.35	0.00	2.59	0.00	1.61	1.16	1.16
time (sec)	N/A	0.059	0.115	0.054	0.000	0.486	0.000	0.171	0.072	0.121

Problem 1843	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	86	86	77	167	0	188	0	112	93	90
N.S.	1	1.00	0.90	1.94	0.00	2.19	0.00	1.30	1.08	1.05
time (sec)	N/A	0.043	0.056	0.053	0.000	0.470	0.000	0.188	0.074	0.129

Problem 1844	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	62	92	0	143	61	67	50	72
N.S.	1	1.00	1.00	1.48	0.00	2.31	0.98	1.08	0.81	1.16
time (sec)	N/A	0.029	0.024	0.053	0.000	0.445	58.917	0.162	0.059	0.073

Problem 1845	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	47	37	0	119	44	41	38	57
N.S.	1	1.00	1.00	0.79	0.00	2.53	0.94	0.87	0.81	1.21
time (sec)	N/A	0.022	0.012	0.050	0.000	0.467	96.515	0.229	2.047	0.058

Problem 1846	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	46	68	0	214	60	75	57	79
N.S.	1	1.00	0.67	0.99	0.00	3.10	0.87	1.09	0.83	1.14
time (sec)	N/A	0.041	0.010	0.055	0.000	0.465	121.044	0.175	2.074	0.100

Problem 1847	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	93	93	48	90	0	398	83	119	100	97
N.S.	1	1.00	0.52	0.97	0.00	4.28	0.89	1.28	1.08	1.04
time (sec)	N/A	0.046	0.010	0.056	0.000	0.430	136.913	0.175	2.090	0.152

Problem 1848	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	48	112	0	706	109	189	137	137
N.S.	1	1.00	0.40	0.94	0.00	5.93	0.92	1.59	1.15	1.15
time (sec)	N/A	0.059	0.011	0.056	0.000	0.444	140.180	0.213	0.124	0.232

Problem 1849	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	175	175	52	543	0	730	0	374	361	306
N.S.	1	1.00	0.30	3.10	0.00	4.17	0.00	2.14	2.06	1.75
time (sec)	N/A	0.106	0.021	0.102	0.000	0.444	0.000	0.221	0.143	0.801

Problem 1850	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	52	380	0	520	0	265	268	253
N.S.	1	1.00	0.36	2.60	0.00	3.56	0.00	1.82	1.84	1.73
time (sec)	N/A	0.076	0.018	0.074	0.000	0.446	0.000	0.196	0.142	0.726

Problem 1851	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	52	238	0	344	0	174	199	155
N.S.	1	1.00	0.44	2.00	0.00	2.89	0.00	1.46	1.67	1.30
time (sec)	N/A	0.056	0.016	0.071	0.000	0.428	0.000	0.232	2.159	0.509

Problem 1852	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	90	121	0	383	0	112	135	116
N.S.	1	1.00	0.90	1.21	0.00	3.83	0.00	1.12	1.35	1.16
time (sec)	N/A	0.049	0.092	0.066	0.000	0.432	0.000	0.177	0.121	0.412

Problem 1853	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	52	111	0	456	0	132	135	125
N.S.	1	1.00	0.47	1.01	0.00	4.15	0.00	1.20	1.23	1.14
time (sec)	N/A	0.055	0.013	0.062	0.000	0.445	0.000	0.177	0.101	0.418

Problem 1854	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	50	115	0	549	0	152	142	124
N.S.	1	1.00	0.44	1.01	0.00	4.82	0.00	1.33	1.25	1.09
time (sec)	N/A	0.049	0.011	0.054	0.000	0.435	0.000	0.170	2.148	0.250

Problem 1855	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	140	140	50	179	0	782	0	235	205	163
N.S.	1	1.00	0.36	1.28	0.00	5.59	0.00	1.68	1.46	1.16
time (sec)	N/A	0.063	0.014	0.109	0.000	0.451	0.000	0.182	2.321	0.542

Problem 1856	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	52	206	0	1226	0	295	243	223
N.S.	1	1.00	0.31	1.23	0.00	7.34	0.00	1.77	1.46	1.34
time (sec)	N/A	0.083	0.016	0.067	0.000	0.468	0.000	0.209	2.536	0.658

Problem 1857	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	196	196	52	231	0	1858	0	379	284	304
N.S.	1	1.00	0.27	1.18	0.00	9.48	0.00	1.93	1.45	1.55
time (sec)	N/A	0.139	0.021	0.071	0.000	0.468	0.000	0.233	2.542	0.770

Problem 1858	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	52	701	0	968	0	476	535	436
N.S.	1	1.00	0.26	3.54	0.00	4.89	0.00	2.40	2.70	2.20
time (sec)	N/A	0.123	0.026	0.069	0.000	0.457	0.000	0.243	2.252	1.812

Problem 1859	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	171	171	52	497	0	680	0	343	436	296
N.S.	1	1.00	0.30	2.91	0.00	3.98	0.00	2.01	2.55	1.73
time (sec)	N/A	0.081	0.020	0.071	0.000	0.439	0.000	0.232	2.254	1.342

Problem 1860	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	152	318	0	765	0	239	337	215
N.S.	1	1.00	1.00	2.09	0.00	5.03	0.00	1.57	2.22	1.41
time (sec)	N/A	0.073	0.206	0.069	0.000	0.449	0.000	0.222	0.181	1.140

Problem 1861	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	52	246	0	894	0	265	309	226
N.S.	1	1.00	0.32	1.52	0.00	5.52	0.00	1.64	1.91	1.40
time (sec)	N/A	0.089	0.017	0.067	0.000	0.456	0.000	0.209	2.117	1.207

Problem 1862	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	172	172	52	222	0	1043	0	289	296	226
N.S.	1	1.00	0.30	1.29	0.00	6.06	0.00	1.68	1.72	1.31
time (sec)	N/A	0.091	0.016	0.068	0.000	0.448	0.000	0.198	2.144	1.116

Problem 1863	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	182	182	52	248	0	1176	0	313	297	226
N.S.	1	1.00	0.29	1.36	0.00	6.46	0.00	1.72	1.63	1.24
time (sec)	N/A	0.095	0.014	0.063	0.000	0.456	0.000	0.193	0.148	1.163

Problem 1864	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	50	179	0	1325	0	331	307	223
N.S.	1	1.00	0.28	0.99	0.00	7.36	0.00	1.84	1.71	1.24
time (sec)	N/A	0.095	0.011	0.060	0.000	0.464	0.000	0.182	2.147	0.522

Problem 1865	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	50	446	0	1734	0	440	398	304
N.S.	1	1.00	0.24	2.17	0.00	8.42	0.00	2.14	1.93	1.48
time (sec)	N/A	0.124	0.015	0.071	0.000	0.480	0.000	0.253	2.393	1.406

Problem 1866	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	233	233	52	473	0	2494	0	500	436	406
N.S.	1	1.00	0.22	2.03	0.00	10.70	0.00	2.15	1.87	1.74
time (sec)	N/A	0.205	0.017	0.078	0.000	0.493	0.000	0.270	2.643	1.582

Problem 1867	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	79	79	263	212	0	930	-1	100
N.S.	1	1.00	0.52	0.52	1.73	1.39	0.00	6.12	-0.01	0.66
time (sec)	N/A	0.074	0.062	0.056	0.664	0.417	0.000	0.271	0.000	51.002

Problem 1868	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	79	79	214	174	0	663	-1	100
N.S.	1	1.00	0.52	0.52	1.41	1.14	0.00	4.36	-0.01	0.66
time (sec)	N/A	0.070	0.054	0.046	0.705	0.419	0.000	0.241	0.000	48.842

Problem 1869	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	79	79	167	137	0	434	-1	100
N.S.	1	1.00	0.52	0.52	1.10	0.90	0.00	2.86	-0.01	0.66
time (sec)	N/A	0.067	0.045	0.049	0.620	0.402	0.000	0.213	0.000	33.671

Problem 1870	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	79	79	120	99	0	246	-1	100
N.S.	1	1.00	0.52	0.52	0.79	0.65	0.00	1.62	-0.01	0.66
time (sec)	N/A	0.066	0.041	0.047	0.665	0.408	0.000	0.174	0.000	20.430

Problem 1871	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	150	150	78	79	119	64	0	103	127	100
N.S.	1	1.00	0.52	0.53	0.79	0.43	0.00	0.69	0.85	0.67
time (sec)	N/A	0.069	0.045	0.046	0.662	0.424	0.000	0.191	2.414	14.944

Problem 1872	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	78	79	75	73	0	119	90	99
N.S.	1	1.00	0.53	0.53	0.51	0.49	0.00	0.80	0.61	0.67
time (sec)	N/A	0.066	0.041	0.050	0.656	0.409	0.000	0.175	2.653	10.073

Problem 1873	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	79	78	96	85	0	111	126	100
N.S.	1	1.00	0.53	0.53	0.65	0.57	0.00	0.75	0.85	0.68
time (sec)	N/A	0.067	0.043	0.069	0.814	0.402	0.000	0.205	2.721	13.883

Problem 1874	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	150	150	79	79	118	95	0	108	151	100
N.S.	1	1.00	0.53	0.53	0.79	0.63	0.00	0.72	1.01	0.67
time (sec)	N/A	0.069	0.042	0.049	0.612	0.420	0.000	0.197	2.630	22.688

Problem 1875	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	172	202	592	377	0	1397	-1	241
N.S.	1	1.00	0.65	0.77	2.24	1.43	0.00	5.29	-0.00	0.91
time (sec)	N/A	0.128	0.116	0.053	0.845	0.440	0.000	0.316	0.000	51.189

Problem 1876	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	172	202	488	311	0	944	-1	241
N.S.	1	1.00	0.65	0.77	1.85	1.18	0.00	3.58	-0.00	0.91
time (sec)	N/A	0.103	0.085	0.049	0.703	0.435	0.000	0.271	0.000	49.351

Problem 1877	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	172	202	384	245	0	556	-1	241
N.S.	1	1.00	0.65	0.77	1.45	0.93	0.00	2.11	-0.00	0.91
time (sec)	N/A	0.105	0.081	0.049	0.647	0.431	0.000	0.209	0.000	34.976

Problem 1878	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	171	202	382	182	0	244	285	241
N.S.	1	1.00	0.65	0.77	1.46	0.69	0.00	0.93	1.09	0.92
time (sec)	N/A	0.101	0.093	0.059	0.633	0.429	0.000	0.186	2.500	21.788

Problem 1879	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	258	258	169	202	282	192	0	327	218	241
N.S.	1	1.00	0.66	0.78	1.09	0.74	0.00	1.27	0.84	0.93
time (sec)	N/A	0.106	0.096	0.049	0.808	0.421	0.000	0.216	2.810	20.000

Problem 1880	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	260	260	171	202	304	203	0	319	254	241
N.S.	1	1.00	0.66	0.78	1.17	0.78	0.00	1.23	0.98	0.93
time (sec)	N/A	0.104	0.093	0.048	0.729	0.428	0.000	0.256	2.892	21.376

Problem 1881	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	260	260	172	202	326	213	0	316	283	241
N.S.	1	1.00	0.66	0.78	1.25	0.82	0.00	1.22	1.09	0.93
time (sec)	N/A	0.100	0.085	0.051	0.685	0.421	0.000	0.221	2.978	23.227

Problem 1882	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	258	258	173	202	348	225	0	310	309	241
N.S.	1	1.00	0.67	0.78	1.35	0.87	0.00	1.20	1.20	0.93
time (sec)	N/A	0.104	0.085	0.051	0.727	0.443	0.000	0.234	3.003	26.598

Problem 1883	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	262	262	172	202	371	235	0	307	333	241
N.S.	1	1.00	0.66	0.77	1.42	0.90	0.00	1.17	1.27	0.92
time (sec)	N/A	0.101	0.079	0.051	0.779	0.425	0.000	0.227	2.930	36.394

Problem 1884	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	172	202	393	247	0	307	353	241
N.S.	1	1.00	0.65	0.77	1.49	0.94	0.00	1.16	1.34	0.91
time (sec)	N/A	0.104	0.086	0.061	0.765	0.417	0.000	0.237	2.951	42.948

Problem 1885	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	374	374	163	393	1080	635	0	2339	-1	466
N.S.	1	1.00	0.44	1.05	2.89	1.70	0.00	6.25	-0.00	1.25
time (sec)	N/A	0.167	0.203	0.044	0.785	0.432	0.000	0.458	0.000	51.965

Problem 1886	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	376	376	163	393	921	541	0	1609	-1	466
N.S.	1	1.00	0.43	1.05	2.45	1.44	0.00	4.28	-0.00	1.24
time (sec)	N/A	0.137	0.165	0.052	0.818	0.436	0.000	0.385	0.000	50.752

Problem 1887	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	376	376	163	393	760	447	0	970	-1	466
N.S.	1	1.00	0.43	1.05	2.02	1.19	0.00	2.58	-0.00	1.24
time (sec)	N/A	0.143	0.151	0.063	0.955	0.436	0.000	0.268	0.000	49.737

Problem 1888	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	370	370	163	393	758	356	0	437	491	466
N.S.	1	1.00	0.44	1.06	2.05	0.96	0.00	1.18	1.33	1.26
time (sec)	N/A	0.140	0.097	0.052	0.703	0.423	0.000	0.229	2.776	35.214

Problem 1889	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	368	368	163	393	603	365	0	642	396	466
N.S.	1	1.00	0.44	1.07	1.64	0.99	0.00	1.74	1.08	1.27
time (sec)	N/A	0.139	0.143	0.059	0.634	0.411	0.000	0.276	3.093	22.287

Problem 1890	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	370	370	163	393	625	377	0	630	432	466
N.S.	1	1.00	0.44	1.06	1.69	1.02	0.00	1.70	1.17	1.26
time (sec)	N/A	0.144	0.147	0.050	0.879	0.422	0.000	0.276	3.154	25.507

Problem 1891	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	368	368	163	393	647	388	0	626	455	466
N.S.	1	1.00	0.44	1.07	1.76	1.05	0.00	1.70	1.24	1.27
time (sec)	N/A	0.143	0.152	0.053	0.856	0.429	0.000	0.299	3.182	31.478

Problem 1892	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	368	368	163	393	668	399	0	625	489	466
N.S.	1	1.00	0.44	1.07	1.82	1.08	0.00	1.70	1.33	1.27
time (sec)	N/A	0.141	0.157	0.053	0.823	0.419	0.000	0.276	3.232	31.374

Problem 1893	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	370	370	163	393	687	409	0	623	508	466
N.S.	1	1.00	0.44	1.06	1.86	1.11	0.00	1.68	1.37	1.26
time (sec)	N/A	0.146	0.147	0.046	0.923	0.434	0.000	0.269	3.278	28.743

Problem 1894	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	368	368	163	393	712	421	0	617	532	466
N.S.	1	1.00	0.44	1.07	1.93	1.14	0.00	1.68	1.45	1.27
time (sec)	N/A	0.143	0.152	0.055	0.977	0.438	0.000	0.279	3.367	36.783

Problem 1895	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	370	370	163	393	735	431	0	614	561	466
N.S.	1	1.00	0.44	1.06	1.99	1.16	0.00	1.66	1.52	1.26
time (sec)	N/A	0.141	0.161	0.050	0.903	0.442	0.000	0.293	3.485	42.880

Problem 1896	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	376	376	163	393	757	443	0	614	588	398
N.S.	1	1.00	0.43	1.05	2.01	1.18	0.00	1.63	1.56	1.06
time (sec)	N/A	0.142	0.157	0.051	0.969	0.433	0.000	0.288	3.533	0.318

Problem 1897	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	27	50	50	0	226	-1	44
N.S.	1	1.00	0.78	0.66	1.22	1.22	0.00	5.51	-0.02	1.07
time (sec)	N/A	0.030	0.027	0.044	1.007	0.403	0.000	0.178	0.000	46.558

Problem 1898	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	27	39	39	0	154	-1	44
N.S.	1	1.00	0.78	0.66	0.95	0.95	0.00	3.76	-0.02	1.07
time (sec)	N/A	0.030	0.022	0.047	0.974	0.409	0.000	0.238	0.000	35.019

Problem 1899	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	27	28	28	0	95	-1	44
N.S.	1	1.00	0.78	0.66	0.68	0.68	0.00	2.32	-0.02	1.07
time (sec)	N/A	0.029	0.017	0.046	0.954	0.426	0.000	0.162	0.000	16.163

Problem 1900	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	27	12	12	0	49	-1	44
N.S.	1	1.00	0.78	0.66	0.29	0.29	0.00	1.20	-0.02	1.07
time (sec)	N/A	0.029	0.013	0.046	0.843	0.407	0.000	0.165	0.000	11.445

Problem 1901	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	30	27	12	12	0	18	50	105
N.S.	1	1.00	0.77	0.69	0.31	0.31	0.00	0.46	1.28	2.69
time (sec)	N/A	0.030	0.012	0.048	0.739	0.415	0.000	0.158	2.422	1.824

Problem 1902	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	39	39	30	27	20	20	0	18	41	42
N.S.	1	1.00	0.77	0.69	0.51	0.51	0.00	0.46	1.05	1.08
time (sec)	N/A	0.029	0.014	0.046	0.802	0.421	0.000	0.160	2.501	9.591

Problem 1903	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	27	31	31	0	18	75	44
N.S.	1	1.00	0.78	0.66	0.76	0.76	0.00	0.44	1.83	1.07
time (sec)	N/A	0.029	0.015	0.053	0.822	0.405	0.000	0.161	2.561	20.545

Problem 1904	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	41	41	32	27	42	42	0	18	103	44
N.S.	1	1.00	0.78	0.66	1.02	1.02	0.00	0.44	2.51	1.07
time (sec)	N/A	0.029	0.017	0.045	0.834	0.417	0.000	0.167	2.564	36.682

Problem 1905	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	250	250	66	662	0	486	0	359	-1	241
N.S.	1	1.00	0.26	2.65	0.00	1.94	0.00	1.44	-0.00	0.96
time (sec)	N/A	0.173	0.035	0.075	0.000	0.467	0.000	0.304	0.000	51.182

Problem 1906	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	198	198	66	409	0	330	0	269	-1	181
N.S.	1	1.00	0.33	2.07	0.00	1.67	0.00	1.36	-0.01	0.91
time (sec)	N/A	0.122	0.030	0.063	0.000	0.440	0.000	0.275	0.000	38.567

Problem 1907	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	66	222	0	210	0	198	-1	140
N.S.	1	1.00	0.45	1.50	0.00	1.42	0.00	1.34	-0.01	0.95
time (sec)	N/A	0.092	0.028	0.069	0.000	0.434	0.000	0.328	0.000	21.397

Problem 1908	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	81	108	0	232	0	128	-1	121
N.S.	1	1.00	0.75	1.00	0.00	2.15	0.00	1.19	-0.01	1.12
time (sec)	N/A	0.070	0.082	0.063	0.000	0.446	0.000	0.224	0.000	13.454

Problem 1909	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	85	112	0	280	0	189	-1	130
N.S.	1	1.00	0.75	0.98	0.00	2.46	0.00	1.66	-0.01	1.14
time (sec)	N/A	0.089	0.084	0.064	0.000	0.447	0.000	0.238	0.000	13.880

Problem 1910	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	162	162	64	167	0	423	0	289	-1	148
N.S.	1	1.00	0.40	1.03	0.00	2.61	0.00	1.78	-0.01	0.91
time (sec)	N/A	0.101	0.022	0.069	0.000	0.446	0.000	0.274	0.000	28.003

Problem 1911	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	212	212	66	242	0	782	0	494	-1	189
N.S.	1	1.00	0.31	1.14	0.00	3.69	0.00	2.33	-0.00	0.89
time (sec)	N/A	0.110	0.025	0.068	0.000	0.458	0.000	0.363	0.000	45.551

Problem 1912	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	66	343	0	1218	0	640	-1	249
N.S.	1	1.00	0.25	1.30	0.00	4.61	0.00	2.42	-0.00	0.94
time (sec)	N/A	0.133	0.028	0.070	0.000	0.462	0.000	0.395	0.000	60.859

Problem 1913	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	241	241	68	638	0	498	0	320	-1	257
N.S.	1	1.00	0.28	2.65	0.00	2.07	0.00	1.33	-0.00	1.07
time (sec)	N/A	0.137	0.037	0.074	0.000	0.456	0.000	0.350	0.000	48.232

Problem 1914	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	132	316	0	563	0	213	-1	187
N.S.	1	1.00	0.67	1.60	0.00	2.86	0.00	1.08	-0.01	0.95
time (sec)	N/A	0.113	0.157	0.106	0.000	0.454	0.000	0.288	0.000	36.533

Problem 1915	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	207	207	68	326	0	666	0	279	-1	198
N.S.	1	1.00	0.33	1.57	0.00	3.22	0.00	1.35	-0.00	0.96
time (sec)	N/A	0.138	0.027	0.067	0.000	0.454	0.000	0.284	0.000	32.123

Problem 1916	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	68	326	0	785	0	343	-1	198
N.S.	1	1.00	0.31	1.50	0.00	3.62	0.00	1.58	-0.00	0.91
time (sec)	N/A	0.148	0.025	0.069	0.000	0.459	0.000	0.288	0.000	38.466

Problem 1917	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	66	334	0	884	0	409	-1	205
N.S.	1	1.00	0.29	1.48	0.00	3.93	0.00	1.82	-0.00	0.91
time (sec)	N/A	0.141	0.025	0.065	0.000	0.450	0.000	0.296	0.000	40.415

Problem 1918	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	276	276	66	431	0	1204	0	654	-1	255
N.S.	1	1.00	0.24	1.56	0.00	4.36	0.00	2.37	-0.00	0.92
time (sec)	N/A	0.180	0.026	0.071	0.000	0.471	0.000	0.411	0.000	50.231

Problem 1919	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	328	328	68	563	0	1840	0	691	-1	336
N.S.	1	1.00	0.21	1.72	0.00	5.61	0.00	2.11	-0.00	1.02
time (sec)	N/A	0.244	0.033	0.086	0.000	0.484	0.000	0.474	0.000	59.244

Problem 1920	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	382	382	68	722	0	2550	0	932	-1	448
N.S.	1	1.00	0.18	1.89	0.00	6.68	0.00	2.44	-0.00	1.17
time (sec)	N/A	0.250	0.038	0.079	0.000	0.501	0.000	0.555	0.000	65.859

Problem 1921	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	239	239	203	3244	1108	3201	0	5639	2653	0
N.S.	1	1.00	0.85	13.57	4.64	13.39	0.00	23.59	11.10	0.00
time (sec)	N/A	0.139	0.209	0.074	0.842	0.483	0.000	0.367	3.670	0.793

Problem 1922	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	175	175	149	1345	581	1460	0	2525	1291	0
N.S.	1	1.00	0.85	7.69	3.32	8.34	0.00	14.43	7.38	0.00
time (sec)	N/A	0.085	0.133	0.056	0.673	0.470	0.000	0.249	2.777	0.460

Problem 1923	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	95	386	246	496	4058	835	478	0
N.S.	1	1.00	0.86	3.48	2.22	4.47	36.56	7.52	4.31	0.00
time (sec)	N/A	0.051	0.069	0.052	0.661	0.437	4.733	0.182	2.433	0.150

Problem 1924	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	395	395	193	2173	1864	2230	0	4885	-1	0
N.S.	1	1.00	0.49	5.50	4.72	5.65	0.00	12.37	-0.00	0.00
time (sec)	N/A	0.220	0.179	0.067	0.851	0.471	0.000	0.663	0.000	1.916

Problem 1925	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	277	277	139	784	756	901	0	1949	-1	0
N.S.	1	1.00	0.50	2.83	2.73	3.25	0.00	7.04	-0.00	0.00
time (sec)	N/A	0.150	0.162	0.053	0.760	0.451	0.000	0.325	0.000	1.415

Problem 1926	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	159	159	113	175	177	237	0	508	-1	0
N.S.	1	1.00	0.71	1.10	1.11	1.49	0.00	3.19	-0.01	0.00
time (sec)	N/A	0.084	0.086	0.056	0.581	0.440	0.000	0.219	0.000	0.886

Problem 1927	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	34	33	21	20	0	0	-1	0
N.S.	1	1.00	0.79	0.77	0.49	0.47	0.00	0.00	-0.02	0.00
time (sec)	N/A	0.034	0.020	0.045	0.745	0.445	0.000	0.000	0.000	0.591

Problem 1928	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F(-2)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	51	51	42	59	0	99	0	305	178	0
N.S.	1	1.00	0.82	1.16	0.00	1.94	0.00	5.98	3.49	0.00
time (sec)	N/A	0.026	0.028	0.048	0.000	0.460	0.000	0.274	2.250	0.224

Problem 1929	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	183	183	104	407	679	715	0	1805	683	0
N.S.	1	1.00	0.57	2.22	3.71	3.91	0.00	9.86	3.73	0.00
time (sec)	N/A	0.119	0.088	0.054	0.745	0.468	0.000	0.291	2.490	0.688

Problem 1930	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	134	109	179	404	353	0	903	355	0
N.S.	1	1.00	0.81	1.34	3.01	2.63	0.00	6.74	2.65	0.00
time (sec)	N/A	0.086	0.070	0.049	0.641	0.454	0.000	0.320	2.272	0.335

Problem 1931	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	51	67	206	142	0	353	142	0
N.S.	1	1.00	0.61	0.81	2.48	1.71	0.00	4.25	1.71	0.00
time (sec)	N/A	0.054	0.034	0.047	0.540	0.455	0.000	0.222	2.151	0.157

Problem 1932	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	32	32	23	36	30	43	119	30	53	0
N.S.	1	1.00	0.72	1.12	0.94	1.34	3.72	0.94	1.66	0.00
time (sec)	N/A	0.008	0.011	0.050	0.646	0.439	0.475	0.155	2.067	0.058

Problem 1933	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	58	58	48	71	2113	350	1488	695	319	0
N.S.	1	1.00	0.83	1.22	36.43	6.03	25.66	11.98	5.50	0.00
time (sec)	N/A	0.042	0.045	0.046	1.014	0.441	7.825	0.277	2.552	0.269

Problem 1934	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	48	73	216	212	1268	0	113	0
N.S.	1	1.00	0.75	1.14	3.38	3.31	19.81	0.00	1.77	0.00
time (sec)	N/A	0.049	0.038	0.044	0.739	0.448	5.733	0.000	2.202	0.217

Problem 1935	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	59	62	180	219	0	545	254	0
N.S.	1	1.00	0.53	0.55	1.61	1.96	0.00	4.87	2.27	0.00
time (sec)	N/A	0.076	0.061	0.051	0.679	0.448	0.000	0.270	2.305	3.040

Problem 1936	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	55	62	117	113	0	0	105	0
N.S.	1	1.00	0.49	0.55	1.04	1.01	0.00	0.00	0.94	0.00
time (sec)	N/A	0.085	0.058	0.051	0.750	0.444	0.000	0.000	2.303	2.103

Problem 1937	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	67	96	128	155	0	404	178	0
N.S.	1	1.00	0.67	0.96	1.28	1.55	0.00	4.04	1.78	0.00
time (sec)	N/A	0.078	0.053	0.050	0.671	0.431	0.000	0.211	2.214	0.193

Problem 1938	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	61	61	49	55	101	52	0	221	106	49
N.S.	1	1.00	0.80	0.90	1.66	0.85	0.00	3.62	1.74	0.80
time (sec)	N/A	0.043	0.030	0.046	0.583	0.435	0.000	0.259	2.135	0.771

Problem 1939	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	32	48	127	60	0	100	90	0
N.S.	1	1.00	0.71	1.07	2.82	1.33	0.00	2.22	2.00	0.00
time (sec)	N/A	0.028	0.021	0.045	0.566	0.448	0.000	0.194	2.123	0.122

Problem 1940	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	24	24	25	45	1221	102	270	183	139	0
N.S.	1	1.00	1.04	1.88	50.88	4.25	11.25	7.62	5.79	0.00
time (sec)	N/A	0.017	0.020	0.051	0.915	0.421	3.925	0.214	2.183	0.150

Problem 1941	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	25	45	216	101	136	0	61	0
N.S.	1	1.00	0.93	1.67	8.00	3.74	5.04	0.00	2.26	0.00
time (sec)	N/A	0.018	0.013	0.047	0.846	0.427	4.178	0.000	2.178	0.146

Problem 1942	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	414	414	527	2217	0	1469	0	699	3311	0
N.S.	1	1.00	1.27	5.36	0.00	3.55	0.00	1.69	8.00	0.00
time (sec)	N/A	0.830	5.928	0.112	0.000	1.585	0.000	0.467	8.142	180.055

Problem 1943	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	339	339	464	1618	0	1117	0	526	1732	0
N.S.	1	1.00	1.37	4.77	0.00	3.29	0.00	1.55	5.11	0.00
time (sec)	N/A	0.463	3.933	0.068	0.000	0.899	0.000	0.354	5.553	180.027

Problem 1944	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	223	223	391	1114	0	825	0	381	801	0
N.S.	1	1.00	1.75	5.00	0.00	3.70	0.00	1.71	3.59	0.00
time (sec)	N/A	0.281	2.444	0.072	0.000	0.598	0.000	0.386	4.159	180.032

Problem 1945	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	192	192	174	697	0	395	0	0	-1	312
N.S.	1	1.00	0.91	3.63	0.00	2.06	0.00	0.00	-0.01	1.62
time (sec)	N/A	0.220	0.513	0.059	0.000	0.471	0.000	0.000	0.000	2.686

Problem 1946	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	200	200	185	880	0	399	0	0	-1	265
N.S.	1	1.00	0.92	4.40	0.00	2.00	0.00	0.00	-0.00	1.32
time (sec)	N/A	0.339	0.706	0.064	0.000	0.968	0.000	0.000	0.000	2.288

Problem 1947	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	168	168	146	404	0	579	0	0	-1	290
N.S.	1	1.00	0.87	2.40	0.00	3.45	0.00	0.00	-0.01	1.73
time (sec)	N/A	0.319	0.222	0.069	0.000	1.502	0.000	0.000	0.000	2.412

Problem 1948	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	102	128	0	307	0	0	1022	5369
N.S.	1	1.00	0.74	0.93	0.00	2.24	0.00	0.00	7.46	39.19
time (sec)	N/A	0.207	0.060	0.071	0.000	7.008	0.000	0.000	4.289	26.198

Problem 1949	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	154	236	0	540	0	0	2325	9683
N.S.	1	1.00	0.73	1.12	0.00	2.57	0.00	0.00	11.07	46.11
time (sec)	N/A	0.339	0.118	0.056	0.000	47.058	0.000	0.000	6.891	53.107

Problem 1950	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	285	285	232	382	0	0	0	0	4962	15269
N.S.	1	1.00	0.81	1.34	0.00	0.00	0.00	0.00	17.41	53.58
time (sec)	N/A	0.457	0.173	0.057	0.000	0.000	0.000	0.000	13.955	108.878

Problem 1951	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	335	564	0	0	0	0	10084	0
N.S.	1	1.00	0.93	1.57	0.00	0.00	0.00	0.00	28.01	0.00
time (sec)	N/A	0.576	0.256	0.058	0.000	0.000	0.000	0.000	28.093	180.041

Problem 1952	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	439	439	176	782	0	0	0	0	19572	0
N.S.	1	1.00	0.40	1.78	0.00	0.00	0.00	0.00	44.58	0.00
time (sec)	N/A	0.718	0.446	0.066	0.000	0.000	0.000	0.000	55.430	180.038

Problem 1953	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	488	488	1418	3576	0	2337	0	1138	-1	0
N.S.	1	1.00	2.91	7.33	0.00	4.79	0.00	2.33	-0.00	0.00
time (sec)	N/A	1.066	6.476	0.085	0.000	6.772	0.000	0.641	0.000	180.124

Problem 1954	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	413	413	1329	2799	0	1877	0	910	-1	0
N.S.	1	1.00	3.22	6.78	0.00	4.54	0.00	2.20	-0.00	0.00
time (sec)	N/A	0.603	6.301	0.073	0.000	3.350	0.000	0.467	0.000	180.221

Problem 1955	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	297	297	504	2117	0	1473	0	708	-1	0
N.S.	1	1.00	1.70	7.13	0.00	4.96	0.00	2.38	-0.00	0.00
time (sec)	N/A	0.440	5.720	0.066	0.000	1.584	0.000	0.454	0.000	180.133

Problem 1956	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	266	266	361	1817	0	809	0	0	-1	0
N.S.	1	1.00	1.36	6.83	0.00	3.04	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.333	2.565	0.058	0.000	0.586	0.000	0.000	0.000	180.257

Problem 1957	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	278	278	228	2174	0	567	0	0	-1	21808
N.S.	1	1.00	0.82	7.82	0.00	2.04	0.00	0.00	-0.00	78.45
time (sec)	N/A	0.420	0.874	0.073	0.000	0.585	0.000	0.000	0.000	23.179

Problem 1958	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	271	271	208	2535	0	635	0	0	-1	14673
N.S.	1	1.00	0.77	9.35	0.00	2.34	0.00	0.00	-0.00	54.14
time (sec)	N/A	0.467	0.845	0.068	0.000	1.282	0.000	0.000	0.000	53.951

Problem 1959	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	276	276	150	2773	0	593	0	0	-1	322
N.S.	1	1.00	0.54	10.05	0.00	2.15	0.00	0.00	-0.00	1.17
time (sec)	N/A	0.454	0.198	0.069	0.000	2.153	0.000	0.000	0.000	4.552

Problem 1960	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	214	214	150	1023	0	879	0	849	-1	13691
N.S.	1	1.00	0.70	4.78	0.00	4.11	0.00	3.97	-0.00	63.98
time (sec)	N/A	0.443	0.280	0.069	0.000	9.807	0.000	1.749	0.000	153.127

Problem 1961	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	104	128	0	464	0	0	3763	10737
N.S.	1	1.00	0.75	0.93	0.00	3.36	0.00	0.00	27.27	77.80
time (sec)	N/A	0.227	0.079	0.057	0.000	47.455	0.000	0.000	9.502	80.882

Problem 1962	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	168	236	0	0	0	0	8039	0
N.S.	1	1.00	0.80	1.12	0.00	0.00	0.00	0.00	38.28	0.00
time (sec)	N/A	0.346	0.117	0.054	0.000	0.000	0.000	0.000	19.833	180.198

Problem 1963	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	285	285	249	382	0	0	0	0	16485	0
N.S.	1	1.00	0.87	1.34	0.00	0.00	0.00	0.00	57.84	0.00
time (sec)	N/A	0.448	0.178	0.052	0.000	0.000	0.000	0.000	42.704	180.173

Problem 1964	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	349	564	0	0	0	0	33375	0
N.S.	1	1.00	0.97	1.57	0.00	0.00	0.00	0.00	92.71	0.00
time (sec)	N/A	0.572	0.256	0.057	0.000	0.000	0.000	0.000	82.706	180.142

Problem 1965	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	562	562	1600	5287	0	3437	0	1686	-1	0
N.S.	1	1.00	2.85	9.41	0.00	6.12	0.00	3.00	-0.00	0.00
time (sec)	N/A	1.215	6.778	0.115	0.000	25.578	0.000	0.944	0.000	180.647

Problem 1966	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	487	487	1511	4332	0	2861	0	1402	-1	0
N.S.	1	1.00	3.10	8.90	0.00	5.87	0.00	2.88	-0.00	0.00
time (sec)	N/A	0.811	6.564	0.069	0.000	12.061	0.000	0.721	0.000	180.307

Problem 1967	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	371	371	1422	3472	0	2345	0	1144	-1	0
N.S.	1	1.00	3.83	9.36	0.00	6.32	0.00	3.08	-0.00	0.00
time (sec)	N/A	0.619	6.379	0.069	0.000	6.590	0.000	0.656	0.000	180.313

Problem 1968	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	346	346	1230	3533	0	1457	0	0	-1	0
N.S.	1	1.00	3.55	10.21	0.00	4.21	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.528	6.204	0.061	0.000	1.593	0.000	0.000	0.000	180.077

Problem 1969	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	354	354	379	4215	1751	1097	0	0	-1	0
N.S.	1	1.00	1.07	11.91	4.95	3.10	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.609	4.408	0.075	1.760	0.925	0.000	0.000	0.000	180.207

Problem 1970	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	354	354	294	4726	0	813	0	0	-1	0
N.S.	1	1.00	0.83	13.35	0.00	2.30	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.751	1.366	0.074	0.000	0.973	0.000	0.000	0.000	180.141

Problem 1971	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	F(-2)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	342	342	309	4987	0	931	0	0	-1	0
N.S.	1	1.00	0.90	14.58	0.00	2.72	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.598	1.887	0.071	0.000	2.172	0.000	0.000	0.000	180.097

Problem 1972	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	350	350	173	5227	0	951	0	0	-1	41121
N.S.	1	1.00	0.49	14.93	0.00	2.72	0.00	0.00	-0.00	117.49
time (sec)	N/A	0.627	0.197	0.072	0.000	3.722	0.000	0.000	0.000	56.657

Problem 1973	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	352	352	175	5440	0	917	0	0	-1	0
N.S.	1	1.00	0.50	15.45	0.00	2.61	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.571	0.198	0.115	0.000	13.896	0.000	0.000	0.000	181.090

Problem 1974	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	B	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	162	1905	0	1239	0	0	-1	0
N.S.	1	1.00	0.61	7.22	0.00	4.69	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.568	0.377	0.067	0.000	64.623	0.000	0.000	0.000	180.194

Problem 1975	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	138	138	104	128	0	0	0	0	12294	0
N.S.	1	1.00	0.75	0.93	0.00	0.00	0.00	0.00	89.09	0.00
time (sec)	N/A	0.221	0.099	0.056	0.000	0.000	0.000	0.000	26.336	180.171

Problem 1976	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	169	236	0	0	0	0	25236	0
N.S.	1	1.00	0.80	1.12	0.00	0.00	0.00	0.00	120.17	0.00
time (sec)	N/A	0.327	0.151	0.053	0.000	0.000	0.000	0.000	53.397	180.066

Problem 1977	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	285	285	250	382	0	0	0	0	51074	0
N.S.	1	1.00	0.88	1.34	0.00	0.00	0.00	0.00	179.21	0.00
time (sec)	N/A	0.437	0.221	0.111	0.000	0.000	0.000	0.000	105.183	180.211

Problem 1978	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	351	564	0	0	0	0	-1	0
N.S.	1	1.00	0.98	1.57	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	0.581	0.298	0.065	0.000	0.000	0.000	0.000	0.000	180.612

Problem 1979	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	340	340	375	1208	0	825	0	383	-1	0
N.S.	1	1.00	1.10	3.55	0.00	2.43	0.00	1.13	-0.00	0.00
time (sec)	N/A	0.609	1.742	0.067	0.000	1.149	0.000	1.135	0.000	180.922

Problem 1980	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	265	265	251	786	0	585	0	264	-1	22293
N.S.	1	1.00	0.95	2.97	0.00	2.21	0.00	1.00	-0.00	84.12
time (sec)	N/A	0.354	1.278	0.064	0.000	0.868	0.000	0.548	0.000	26.397

Problem 1981	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	218	460	0	403	0	179	-1	327
N.S.	1	1.00	1.46	3.09	0.00	2.70	0.00	1.20	-0.01	2.19
time (sec)	N/A	0.157	0.788	0.060	0.000	0.634	0.000	0.540	0.000	3.643

Problem 1982	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	189	134	0	405	0	0	-1	250
N.S.	1	1.00	1.56	1.11	0.00	3.35	0.00	0.00	-0.01	2.07
time (sec)	N/A	0.156	0.472	0.058	0.000	1.221	0.000	0.000	0.000	1.632

Problem 1983	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	89	127	0	182	0	0	101	105
N.S.	1	1.00	0.65	0.93	0.00	1.33	0.00	0.00	0.74	0.77
time (sec)	N/A	0.197	0.072	0.050	0.000	2.440	0.000	0.000	2.794	1.060

Problem 1984	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	166	236	0	368	0	0	471	4603
N.S.	1	1.00	0.79	1.12	0.00	1.75	0.00	0.00	2.24	21.92
time (sec)	N/A	0.330	0.098	0.056	0.000	8.447	0.000	0.000	3.320	18.382

Problem 1985	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	285	285	247	382	0	606	0	0	624	8629
N.S.	1	1.00	0.87	1.34	0.00	2.13	0.00	0.00	2.19	30.28
time (sec)	N/A	0.442	0.144	0.054	0.000	59.827	0.000	0.000	4.752	43.858

Problem 1986	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	F(-1)	F	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	348	564	0	0	0	0	949	13927
N.S.	1	1.00	0.97	1.57	0.00	0.00	0.00	0.00	2.64	38.69
time (sec)	N/A	0.558	0.213	0.054	0.000	0.000	0.000	0.000	8.011	111.175

Problem 1987	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	287	287	250	2032	0	745	0	623	-1	0
N.S.	1	1.00	0.87	7.08	0.00	2.60	0.00	2.17	-0.00	0.00
time (sec)	N/A	0.443	0.898	0.065	0.000	1.333	0.000	0.598	0.000	180.191

Problem 1988	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	213	213	201	1320	0	503	0	427	-1	285
N.S.	1	1.00	0.94	6.20	0.00	2.36	0.00	2.00	-0.00	1.34
time (sec)	N/A	0.284	0.581	0.064	0.000	0.954	0.000	0.616	0.000	6.384

Problem 1989	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	129	148	173	710	0	483	0	282	344	267
N.S.	1	1.15	1.34	5.50	0.00	3.74	0.00	2.19	2.67	2.07
time (sec)	N/A	0.173	0.440	0.056	0.000	0.887	0.000	0.564	4.041	1.705

Problem 1990	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	136	136	149	228	0	407	0	0	872	20130
N.S.	1	1.00	1.10	1.68	0.00	2.99	0.00	0.00	6.41	148.01
time (sec)	N/A	0.145	0.098	0.049	0.000	7.158	0.000	0.000	3.200	127.735

Problem 1991	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	F	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	233	382	0	649	0	0	2126	0
N.S.	1	1.00	1.11	1.83	0.00	3.11	0.00	0.00	10.17	0.00
time (sec)	N/A	0.285	0.135	0.056	0.000	28.895	0.000	0.000	4.591	180.164

Problem 1992	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-2)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	284	284	331	564	0	974	0	0	4339	0
N.S.	1	1.00	1.17	1.99	0.00	3.43	0.00	0.00	15.28	0.00
time (sec)	N/A	0.390	0.202	0.056	0.000	137.523	0.000	0.000	7.860	180.238

Problem 1993	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	364	364	139	6704	0	1233	0	1460	-1	0
N.S.	1	1.00	0.38	18.42	0.00	3.39	0.00	4.01	-0.00	0.00
time (sec)	N/A	0.555	0.291	0.094	0.000	5.803	0.000	0.944	0.000	180.847

Problem 1994	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F(-2)	A	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	291	291	139	5032	0	881	0	1116	-1	24206
N.S.	1	1.00	0.48	17.29	0.00	3.03	0.00	3.84	-0.00	83.18
time (sec)	N/A	0.428	0.251	0.078	0.000	3.549	0.000	0.866	0.000	39.873

Problem 1995	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	177	177	228	3485	0	785	0	841	-1	2956
N.S.	1	1.00	1.29	19.69	0.00	4.44	0.00	4.75	-0.01	16.70
time (sec)	N/A	0.302	1.234	0.076	0.000	2.386	0.000	0.891	0.000	29.217

Problem 1996	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	100	128	0	227	0	587	107	1380
N.S.	1	1.00	0.68	0.88	0.00	1.55	0.00	4.02	0.73	9.45
time (sec)	N/A	0.172	0.065	0.048	0.000	2.461	0.000	0.733	3.299	10.032

Problem 1997	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	165	165	151	227	0	431	0	521	795	7201
N.S.	1	1.00	0.92	1.38	0.00	2.61	0.00	3.16	4.82	43.64
time (sec)	N/A	0.179	0.092	0.059	0.000	9.472	0.000	0.667	3.443	43.044

Problem 1998	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-2)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	208	208	345	557	0	1028	0	0	3326	0
N.S.	1	1.00	1.66	2.68	0.00	4.94	0.00	0.00	15.99	0.00
time (sec)	N/A	0.199	0.187	0.060	0.000	93.101	0.000	0.000	5.128	180.261

Problem 1999	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	F	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	283	283	468	782	0	0	0	0	11539	0
N.S.	1	1.00	1.65	2.76	0.00	0.00	0.00	0.00	40.77	0.00
time (sec)	N/A	0.395	0.301	0.052	0.000	0.000	0.000	0.000	10.349	180.843

Problem 2000	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	F(-2)	B	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	358	358	598	1036	0	0	0	0	33819	0
N.S.	1	1.00	1.67	2.89	0.00	0.00	0.00	0.00	94.47	0.00
time (sec)	N/A	0.511	0.356	0.058	0.000	0.000	0.000	0.000	22.914	180.256

Problem 2001	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	347	347	262	367	501	499	0	0	501	401
N.S.	1	1.00	0.76	1.06	1.44	1.44	0.00	0.00	1.44	1.16
time (sec)	N/A	0.624	0.229	0.046	1.017	0.491	0.000	0.000	3.090	0.884

Problem 2002	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	179	235	354	352	0	0	337	248
N.S.	1	1.00	0.67	0.88	1.33	1.32	0.00	0.00	1.26	0.93
time (sec)	N/A	0.435	0.157	0.048	0.822	0.709	0.000	0.000	2.894	0.452

Problem 2003	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	191	191	119	139	236	233	0	0	219	139
N.S.	1	1.00	0.62	0.73	1.24	1.22	0.00	0.00	1.15	0.73
time (sec)	N/A	0.302	0.100	0.043	0.788	0.673	0.000	0.000	2.652	0.301

Problem 2004	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	76	79	112	140	0	0	100	74
N.S.	1	1.00	0.64	0.67	0.95	1.19	0.00	0.00	0.85	0.63
time (sec)	N/A	0.174	0.064	0.043	0.671	0.574	0.000	0.000	2.499	0.249

Problem 2005	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	186	186	154	330	0	419	0	0	-1	171
N.S.	1	1.00	0.83	1.77	0.00	2.25	0.00	0.00	-0.01	0.92
time (sec)	N/A	0.352	0.187	0.089	0.000	0.809	0.000	0.000	0.000	0.894

Problem 2006	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	223	223	173	359	0	659	0	0	-1	165
N.S.	1	1.00	0.78	1.61	0.00	2.96	0.00	0.00	-0.00	0.74
time (sec)	N/A	0.358	0.232	0.068	0.000	0.547	0.000	0.000	0.000	0.870

Problem 2007	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	231	231	222	630	0	1043	0	0	-1	238
N.S.	1	1.00	0.96	2.73	0.00	4.52	0.00	0.00	-0.00	1.03
time (sec)	N/A	0.368	0.598	0.075	0.000	0.567	0.000	0.000	0.000	1.184

Problem 2008	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	307	307	128	1033	0	1604	0	0	-1	347
N.S.	1	1.00	0.42	3.36	0.00	5.22	0.00	0.00	-0.00	1.13
time (sec)	N/A	0.532	0.133	0.108	0.000	0.454	0.000	0.000	0.000	1.892

Problem 2009	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	387	387	128	1541	0	2256	0	0	-1	500
N.S.	1	1.00	0.33	3.98	0.00	5.83	0.00	0.00	-0.00	1.29
time (sec)	N/A	0.760	0.145	0.086	0.000	0.507	0.000	0.000	0.000	2.125

Problem 2010	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	419	419	364	535	875	880	0	0	863	598
N.S.	1	1.00	0.87	1.28	2.09	2.10	0.00	0.00	2.06	1.43
time (sec)	N/A	0.726	0.347	0.053	1.100	0.449	0.000	0.000	3.927	8.646

Problem 2011	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	347	347	264	367	676	678	0	0	637	401
N.S.	1	1.00	0.76	1.06	1.95	1.95	0.00	0.00	1.84	1.16
time (sec)	N/A	0.601	0.256	0.054	0.991	0.420	0.000	0.000	3.630	3.970

Problem 2012	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	267	183	235	502	505	0	0	441	248
N.S.	1	1.00	0.69	0.88	1.88	1.89	0.00	0.00	1.65	0.93
time (sec)	N/A	0.428	0.174	0.046	0.936	0.421	0.000	0.000	3.342	7.016

Problem 2013	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	121	139	320	354	0	0	239	139
N.S.	1	1.00	0.63	0.72	1.66	1.83	0.00	0.00	1.24	0.72
time (sec)	N/A	0.308	0.119	0.049	0.841	0.411	0.000	0.000	3.049	1.298

Problem 2014	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	78	79	197	229	0	0	133	74
N.S.	1	1.00	0.66	0.67	1.67	1.94	0.00	0.00	1.13	0.63
time (sec)	N/A	0.191	0.085	0.049	0.751	0.404	0.000	0.000	2.808	1.586

Problem 2015	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	250	250	199	601	0	656	0	0	-1	238
N.S.	1	1.00	0.80	2.40	0.00	2.62	0.00	0.00	-0.00	0.95
time (sec)	N/A	0.449	0.277	0.076	0.000	0.439	0.000	0.000	0.000	4.132

Problem 2016	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	288	288	195	695	0	639	0	0	-1	246
N.S.	1	1.00	0.68	2.41	0.00	2.22	0.00	0.00	-0.00	0.85
time (sec)	N/A	0.482	0.256	0.082	0.000	0.438	0.000	0.000	0.000	4.317

Problem 2017	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	305	305	129	665	0	998	0	0	-1	228
N.S.	1	1.00	0.42	2.18	0.00	3.27	0.00	0.00	-0.00	0.75
time (sec)	N/A	0.483	0.178	0.076	0.000	0.464	0.000	0.000	0.000	4.451

Problem 2018	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	307	307	254	999	0	1454	0	0	-1	346
N.S.	1	1.00	0.83	3.25	0.00	4.74	0.00	0.00	-0.00	1.13
time (sec)	N/A	0.482	1.281	0.088	0.000	0.448	0.000	0.000	0.000	5.650

Problem 2019	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	387	387	128	1517	0	2104	0	0	-1	500
N.S.	1	1.00	0.33	3.92	0.00	5.44	0.00	0.00	-0.00	1.29
time (sec)	N/A	0.652	0.208	0.085	0.000	0.503	0.000	0.000	0.000	6.875

Problem 2020	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	501	501	284	739	1364	1370	0	0	1307	839
N.S.	1	1.00	0.57	1.48	2.72	2.73	0.00	0.00	2.61	1.67
time (sec)	N/A	0.960	0.698	0.050	1.027	0.497	0.000	0.000	5.389	4.964

Problem 2021	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	424	424	367	535	1108	1112	0	0	1023	598
N.S.	1	1.00	0.87	1.26	2.61	2.62	0.00	0.00	2.41	1.41
time (sec)	N/A	0.764	0.384	0.051	1.030	0.466	0.000	0.000	4.643	4.437

Problem 2022	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	343	343	264	367	878	881	0	0	769	401
N.S.	1	1.00	0.77	1.07	2.56	2.57	0.00	0.00	2.24	1.17
time (sec)	N/A	0.575	0.287	0.053	0.997	0.432	0.000	0.000	4.025	7.434

Problem 2023	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	270	270	183	235	638	675	0	0	491	248
N.S.	1	1.00	0.68	0.87	2.36	2.50	0.00	0.00	1.82	0.92
time (sec)	N/A	0.439	0.210	0.049	0.751	0.422	0.000	0.000	3.723	1.640

Problem 2024	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	F	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	121	139	465	500	0	0	320	139
N.S.	1	1.00	0.63	0.72	2.41	2.59	0.00	0.00	1.66	0.72
time (sec)	N/A	0.340	0.149	0.043	0.892	0.405	0.000	0.000	3.229	2.162

Problem 2025	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	B	F(-1)	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	118	118	78	79	314	345	0	0	170	74
N.S.	1	1.00	0.66	0.67	2.66	2.92	0.00	0.00	1.44	0.63
time (sec)	N/A	0.191	0.113	0.051	0.737	0.408	0.000	0.000	2.897	3.658

Problem 2026	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	316	316	197	956	0	949	0	0	-1	347
N.S.	1	1.00	0.62	3.03	0.00	3.00	0.00	0.00	-0.00	1.10
time (sec)	N/A	0.588	0.572	0.071	0.000	0.429	0.000	0.000	0.000	4.617

Problem 2027	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	A	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	360	360	221	1136	0	990	0	0	-1	382
N.S.	1	1.00	0.61	3.16	0.00	2.75	0.00	0.00	-0.00	1.06
time (sec)	N/A	0.610	0.662	0.085	0.000	0.432	0.000	0.000	0.000	4.757

Problem 2028	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	372	372	130	1189	0	959	0	0	-1	360
N.S.	1	1.00	0.35	3.20	0.00	2.58	0.00	0.00	-0.00	0.97
time (sec)	N/A	0.604	0.246	0.082	0.000	0.451	0.000	0.000	0.000	5.366

Problem 2029	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	A	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	383	383	127	1070	0	1388	0	0	-1	339
N.S.	1	1.00	0.33	2.79	0.00	3.62	0.00	0.00	-0.00	0.89
time (sec)	N/A	0.590	0.139	0.087	0.000	0.510	0.000	0.000	0.000	5.432

Problem 2030	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	383	383	303	1517	0	1910	0	0	-1	499
N.S.	1	1.00	0.79	3.96	0.00	4.99	0.00	0.00	-0.00	1.30
time (sec)	N/A	0.594	3.531	0.113	0.000	0.496	0.000	0.000	0.000	6.713

Problem 2031	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	464	464	129	2087	0	2650	0	0	-1	897
N.S.	1	1.00	0.28	4.50	0.00	5.71	0.00	0.00	-0.00	1.93
time (sec)	N/A	0.751	0.163	0.089	0.000	0.533	0.000	0.000	0.000	3.559

Problem 2032	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	270	270	181	235	319	235	0	0	246	248
N.S.	1	1.00	0.67	0.87	1.18	0.87	0.00	0.00	0.91	0.92
time (sec)	N/A	0.455	0.149	0.051	0.721	0.405	0.000	0.000	2.770	0.314

Problem 2033	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	193	193	118	139	201	143	0	0	149	139
N.S.	1	1.00	0.61	0.72	1.04	0.74	0.00	0.00	0.77	0.72
time (sec)	N/A	0.324	0.091	0.046	0.868	0.402	0.000	0.000	2.553	0.234

Problem 2034	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	117	117	63	79	110	79	0	0	89	72
N.S.	1	1.00	0.54	0.68	0.94	0.68	0.00	0.00	0.76	0.62
time (sec)	N/A	0.180	0.065	0.051	0.741	0.389	0.000	0.000	2.524	0.172

Problem 2035	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	148	161	0	442	0	0	-1	144
N.S.	1	1.00	1.13	1.23	0.00	3.37	0.00	0.00	-0.01	1.10
time (sec)	N/A	0.196	0.140	0.061	0.000	0.427	0.000	0.000	0.000	0.450

Problem 2036	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	153	153	328	0	698	0	0	-1	167
N.S.	1	1.00	1.00	2.14	0.00	4.56	0.00	0.00	-0.01	1.09
time (sec)	N/A	0.229	0.165	0.082	0.000	0.442	0.000	0.000	0.000	0.727

Problem 2037	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F	B	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	233	233	209	630	0	1168	0	0	-1	238
N.S.	1	1.00	0.90	2.70	0.00	5.01	0.00	0.00	-0.00	1.02
time (sec)	N/A	0.374	0.541	0.087	0.000	0.447	0.000	0.000	0.000	0.963

Problem 2038	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	369	369	245	367	317	374	0	0	398	418
N.S.	1	1.00	0.66	0.99	0.86	1.01	0.00	0.00	1.08	1.13
time (sec)	N/A	0.555	0.218	0.046	0.737	0.410	0.000	0.000	3.095	5.583

Problem 2039	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-2)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	292	292	168	235	203	257	0	0	267	265
N.S.	1	1.00	0.58	0.80	0.70	0.88	0.00	0.00	0.91	0.91
time (sec)	N/A	0.414	0.132	0.049	0.729	0.408	0.000	0.000	2.947	5.146

Problem 2040	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	105	139	112	165	0	0	167	155
N.S.	1	1.00	0.48	0.64	0.52	0.76	0.00	0.00	0.77	0.71
time (sec)	N/A	0.288	0.078	0.044	0.717	0.411	0.000	0.000	2.760	4.545

Problem 2041	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	148	148	60	78	62	102	0	0	107	88
N.S.	1	1.00	0.41	0.53	0.42	0.69	0.00	0.00	0.72	0.59
time (sec)	N/A	0.156	0.050	0.046	0.737	0.412	0.000	0.000	2.776	3.676

Problem 2042	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	155	155	147	207	0	776	0	0	-1	187
N.S.	1	1.00	0.95	1.34	0.00	5.01	0.00	0.00	-0.01	1.21
time (sec)	N/A	0.171	0.137	0.071	0.000	0.424	0.000	0.000	0.000	2.796

Problem 2043	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	223	223	117	479	0	1351	0	0	-1	231
N.S.	1	1.00	0.52	2.15	0.00	6.06	0.00	0.00	-0.00	1.04
time (sec)	N/A	0.354	0.075	0.071	0.000	0.455	0.000	0.000	0.000	3.635

Problem 2044	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	308	308	129	824	0	1976	0	0	-1	362
N.S.	1	1.00	0.42	2.68	0.00	6.42	0.00	0.00	-0.00	1.18
time (sec)	N/A	0.467	0.105	0.092	0.000	0.481	0.000	0.000	0.000	6.519

Problem 2045	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	387	387	127	1224	0	2832	0	0	-1	517
N.S.	1	1.00	0.33	3.16	0.00	7.32	0.00	0.00	-0.00	1.34
time (sec)	N/A	0.629	0.112	0.086	0.000	0.544	0.000	0.000	0.000	9.195

Problem 2046	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	448	448	366	535	511	578	0	0	596	598
N.S.	1	1.00	0.82	1.19	1.14	1.29	0.00	0.00	1.33	1.33
time (sec)	N/A	0.705	0.310	0.050	1.096	0.419	0.000	0.000	3.499	9.483

Problem 2047	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	371	371	263	367	363	428	0	0	435	401
N.S.	1	1.00	0.71	0.99	0.98	1.15	0.00	0.00	1.17	1.08
time (sec)	N/A	0.546	0.203	0.048	0.965	0.429	0.000	0.000	3.292	7.089

Problem 2048	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	291	291	180	235	246	308	0	0	314	247
N.S.	1	1.00	0.62	0.81	0.85	1.06	0.00	0.00	1.08	0.85
time (sec)	N/A	0.413	0.153	0.047	0.964	0.413	0.000	0.000	3.206	5.960

Problem 2049	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	217	217	117	138	157	216	0	0	214	139
N.S.	1	1.00	0.54	0.64	0.72	1.00	0.00	0.00	0.99	0.64
time (sec)	N/A	0.287	0.093	0.043	0.929	0.399	0.000	0.000	2.888	5.830

Problem 2050	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	F(-1)	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	152	152	76	78	103	154	0	0	154	73
N.S.	1	1.00	0.50	0.51	0.68	1.01	0.00	0.00	1.01	0.48
time (sec)	N/A	0.160	0.058	0.044	0.971	0.400	0.000	0.000	2.854	6.223

Problem 2051	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	221	221	146	485	0	1437	0	0	-1	252
N.S.	1	1.00	0.66	2.19	0.00	6.50	0.00	0.00	-0.00	1.14
time (sec)	N/A	0.304	0.081	0.072	0.000	0.439	0.000	0.000	0.000	8.775

Problem 2052	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	313	313	135	904	0	2106	0	0	-1	354
N.S.	1	1.00	0.43	2.89	0.00	6.73	0.00	0.00	-0.00	1.13
time (sec)	N/A	0.435	0.077	0.082	0.000	0.459	0.000	0.000	0.000	9.311

Problem 2053	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	378	378	129	1528	0	3096	0	0	-1	514
N.S.	1	1.00	0.34	4.04	0.00	8.19	0.00	0.00	-0.00	1.36
time (sec)	N/A	0.590	0.109	0.083	0.000	0.563	0.000	0.000	0.000	9.229

Problem 2054	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	B	F	B	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	457	457	128	2011	0	4084	0	0	-1	713
N.S.	1	1.00	0.28	4.40	0.00	8.94	0.00	0.00	-0.00	1.56
time (sec)	N/A	0.753	0.112	0.112	0.000	0.711	0.000	0.000	0.000	11.438

Problem 2055	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	34	56	64	66	173	173	79	0
N.S.	1	1.00	0.81	1.33	1.52	1.57	4.12	4.12	1.88	0.00
time (sec)	N/A	0.053	0.138	0.055	0.796	0.440	16.860	0.461	2.579	0.496

Problem 2056	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	48	98	0	132	0	444	138	0
N.S.	1	1.00	0.75	1.53	0.00	2.06	0.00	6.94	2.16	0.00
time (sec)	N/A	0.035	0.134	0.048	0.000	0.441	0.000	0.507	2.631	0.527

Problem 2057	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	143	143	153	449	268	448	0	297	224	0
N.S.	1	1.00	1.07	3.14	1.87	3.13	0.00	2.08	1.57	0.00
time (sec)	N/A	0.209	0.127	0.058	0.649	0.438	0.000	0.168	2.735	0.001

Problem 2058	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	73	73	73	58	57	57	70	57	57	0
N.S.	1	1.00	1.00	0.79	0.78	0.78	0.96	0.78	0.78	0.00
time (sec)	N/A	0.053	0.002	0.042	0.562	0.348	0.083	0.236	0.056	0.000

Problem 2059	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	60	47	46	46	56	46	46	0
N.S.	1	1.00	1.00	0.78	0.77	0.77	0.93	0.77	0.77	0.00
time (sec)	N/A	0.038	0.002	0.043	0.555	0.345	0.076	0.166	0.030	0.000

Problem 2060	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	44	44	44	35	34	34	37	34	34	0
N.S.	1	1.00	1.00	0.80	0.77	0.77	0.84	0.77	0.77	0.00
time (sec)	N/A	0.028	0.002	0.041	0.551	0.347	0.071	0.172	0.023	0.000

Problem 2061	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	28	28	28	23	22	22	22	22	22	0
N.S.	1	1.00	1.00	0.82	0.79	0.79	0.79	0.79	0.79	0.00
time (sec)	N/A	0.017	0.002	0.039	0.515	0.343	0.064	0.168	0.039	0.000

Problem 2062	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	C	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	54	54	49	74	47	47	201	53	78	0
N.S.	1	1.00	0.91	1.37	0.87	0.87	3.72	0.98	1.44	0.00
time (sec)	N/A	0.066	0.027	0.064	1.318	0.403	0.432	0.154	2.345	0.001

Problem 2063	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	C	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	72	116	71	103	238	101	97	0
N.S.	1	1.00	0.91	1.47	0.90	1.30	3.01	1.28	1.23	0.00
time (sec)	N/A	0.067	0.043	0.057	1.355	0.402	0.587	0.192	2.293	0.001

Problem 2064	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	C	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	94	154	92	160	292	88	114	0
N.S.	1	1.00	0.93	1.52	0.91	1.58	2.89	0.87	1.13	0.00
time (sec)	N/A	0.097	0.061	0.063	1.269	0.408	0.709	0.168	0.135	0.001

Problem 2065	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	133	251	283	244	324	332	312	270	0
N.S.	1	0.99	1.87	2.11	1.82	2.42	2.48	2.33	2.01	0.00
time (sec)	N/A	0.263	0.137	0.044	0.479	0.331	0.114	0.177	0.130	0.000

Problem 2066	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	133	192	214	188	247	252	241	206	0
N.S.	1	0.99	1.43	1.60	1.40	1.84	1.88	1.80	1.54	0.00
time (sec)	N/A	0.185	0.086	0.046	0.495	0.343	0.102	0.155	2.355	0.000

Problem 2067	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	133	137	145	132	171	172	171	143	0
N.S.	1	0.99	1.02	1.08	0.99	1.28	1.28	1.28	1.07	0.00
time (sec)	N/A	0.135	0.060	0.042	0.558	0.341	0.093	0.169	2.324	0.000

Problem 2068	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	80	76	76	94	94	100	79	0
N.S.	1	1.00	1.00	0.95	0.95	1.18	1.18	1.25	0.99	0.00
time (sec)	N/A	0.081	0.029	0.042	0.461	0.346	0.076	0.153	0.034	0.000

Problem 2069	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	42	42	42	37	36	40	39	40	38	0
N.S.	1	1.00	1.00	0.88	0.86	0.95	0.93	0.95	0.90	0.00
time (sec)	N/A	0.036	0.014	0.046	0.541	0.339	0.068	0.149	0.042	0.000

Problem 2070	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	109	100	171	122	123	107	136	130	0
N.S.	1	0.98	0.90	1.54	1.10	1.11	0.96	1.23	1.17	0.00
time (sec)	N/A	0.133	0.051	0.044	0.459	0.386	0.433	0.173	2.365	0.001

Problem 2071	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	114	106	195	126	192	143	200	137	0
N.S.	1	0.98	0.91	1.68	1.09	1.66	1.23	1.72	1.18	0.00
time (sec)	N/A	0.134	0.074	0.062	0.543	0.375	1.040	0.172	0.091	0.001

Problem 2072	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	135	217	136	203	162	129	142	0
N.S.	1	1.00	1.13	1.82	1.14	1.71	1.36	1.08	1.19	0.00
time (sec)	N/A	0.133	0.068	0.051	0.520	0.389	4.703	0.176	0.123	0.001

Problem 2073	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	127	126	130	225	154	185	184	138	154	0
N.S.	1	0.99	1.02	1.77	1.21	1.46	1.45	1.09	1.21	0.00
time (sec)	N/A	0.120	0.070	0.053	0.458	0.391	16.198	0.197	2.374	0.001

Problem 2074	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	131	118	142	157	157	194	220	158	0
N.S.	1	0.99	0.89	1.08	1.19	1.19	1.47	1.67	1.20	0.00
time (sec)	N/A	0.121	0.056	0.052	0.652	0.370	45.730	0.182	0.075	0.001

Problem 2075	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	133	122	142	173	173	212	135	180	0
N.S.	1	0.99	0.91	1.06	1.29	1.29	1.58	1.01	1.34	0.00
time (sec)	N/A	0.108	0.061	0.053	0.572	0.372	114.504	0.167	0.087	0.001

Problem 2076	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	134	133	119	142	178	178	0	132	182	0
N.S.	1	0.99	0.89	1.06	1.33	1.33	0.00	0.99	1.36	0.00
time (sec)	N/A	0.102	0.059	0.053	0.516	0.364	0.000	0.164	2.361	0.001

Problem 2077	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	302	665	671	648	919	957	883	739	0
N.S.	1	0.99	2.19	2.21	2.13	3.02	3.15	2.90	2.43	0.00
time (sec)	N/A	0.822	0.300	0.040	0.488	0.344	0.237	0.165	0.274	0.000

Problem 2078	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	302	550	545	532	743	765	719	594	0
N.S.	1	0.99	1.81	1.79	1.75	2.44	2.52	2.37	1.95	0.00
time (sec)	N/A	0.629	0.244	0.039	0.523	0.357	0.175	0.163	2.481	0.000

Problem 2079	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	302	421	419	416	568	583	556	450	0
N.S.	1	0.99	1.38	1.38	1.37	1.87	1.92	1.83	1.48	0.00
time (sec)	N/A	0.494	0.189	0.045	0.473	0.356	0.151	0.184	0.137	0.000

Problem 2080	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	302	301	293	300	396	405	396	310	0
N.S.	1	0.99	0.99	0.96	0.99	1.30	1.33	1.30	1.02	0.00
time (sec)	N/A	0.443	0.143	0.041	0.471	0.361	0.129	0.156	2.331	0.000

Problem 2081	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	180	180	180	167	184	225	231	237	184	0
N.S.	1	1.00	1.00	0.93	1.02	1.25	1.28	1.32	1.02	0.00
time (sec)	N/A	0.297	0.078	0.044	0.479	0.337	0.104	0.157	2.334	0.000

Problem 2082	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	96	91	90	99	100	99	89	0
N.S.	1	1.00	1.00	0.95	0.94	1.03	1.04	1.03	0.93	0.00
time (sec)	N/A	0.093	0.024	0.046	0.621	0.347	0.085	0.153	2.239	0.000

Problem 2083	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	257	257	298	558	378	379	372	463	423	0
N.S.	1	1.00	1.16	2.17	1.47	1.47	1.45	1.80	1.65	0.00
time (sec)	N/A	0.538	0.179	0.046	0.666	0.383	1.139	0.161	0.083	0.001

Problem 2084	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	267	264	250	609	387	567	442	551	499	0
N.S.	1	0.99	0.94	2.28	1.45	2.12	1.66	2.06	1.87	0.00
time (sec)	N/A	0.490	0.113	0.056	0.610	0.387	4.412	0.174	0.121	0.001

Problem 2085	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	281	280	262	654	397	620	534	430	468	0
N.S.	1	1.00	0.93	2.33	1.41	2.21	1.90	1.53	1.67	0.00
time (sec)	N/A	0.440	0.124	0.053	0.628	0.399	28.799	0.176	2.392	0.001

Problem 2086	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	286	284	263	690	409	618	547	424	465	0
N.S.	1	0.99	0.92	2.41	1.43	2.16	1.91	1.48	1.63	0.00
time (sec)	N/A	0.409	0.114	0.056	0.657	0.401	152.976	0.164	2.371	0.001

Problem 2087	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	289	287	391	710	417	572	0	719	475	0
N.S.	1	0.99	1.35	2.46	1.44	1.98	0.00	2.49	1.64	0.00
time (sec)	N/A	0.362	0.264	0.052	0.779	0.381	0.000	0.212	2.418	0.001

Problem 2088	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	297	295	386	715	438	505	0	426	483	0
N.S.	1	0.99	1.30	2.41	1.47	1.70	0.00	1.43	1.63	0.00
time (sec)	N/A	0.344	0.207	0.056	0.686	0.394	0.000	0.194	2.503	0.001

Problem 2089	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	302	300	372	453	438	438	0	460	485	0
N.S.	1	0.99	1.23	1.50	1.45	1.45	0.00	1.52	1.61	0.00
time (sec)	N/A	0.323	0.182	0.052	0.633	0.385	0.000	0.220	0.156	0.001

Problem 2090	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	302	377	453	457	457	0	462	505	0
N.S.	1	0.99	1.24	1.49	1.50	1.50	0.00	1.52	1.66	0.00
time (sec)	N/A	0.319	0.201	0.051	0.681	0.391	0.000	0.166	0.173	0.001

Problem 2091	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	304	302	375	453	468	468	0	462	516	0
N.S.	1	0.99	1.23	1.49	1.54	1.54	0.00	1.52	1.70	0.00
time (sec)	N/A	0.317	0.189	0.047	0.948	0.395	0.000	0.161	2.433	0.001

Problem 2092	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	555	553	1178	1263	1114	1663	1731	1603	1348	0
N.S.	1	1.00	2.12	2.28	2.01	3.00	3.12	2.89	2.43	0.00
time (sec)	N/A	1.747	0.599	0.040	0.744	0.349	0.277	0.181	2.656	0.000

Problem 2093	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	555	553	957	1041	919	1353	1401	1313	1093	0
N.S.	1	1.00	1.72	1.88	1.66	2.44	2.52	2.37	1.97	0.00
time (sec)	N/A	1.378	0.473	0.049	0.568	0.329	0.235	0.198	0.293	0.000

Problem 2094	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	555	553	715	819	713	1040	1080	1020	835	0
N.S.	1	1.00	1.29	1.48	1.28	1.87	1.95	1.84	1.50	0.00
time (sec)	N/A	1.110	0.353	0.043	0.734	0.336	0.202	0.167	0.217	0.000

Problem 2095	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	555	553	526	597	529	727	753	727	578	0
N.S.	1	1.00	0.95	1.08	0.95	1.31	1.36	1.31	1.04	0.00
time (sec)	N/A	0.863	0.275	0.046	0.647	0.329	0.166	0.164	2.493	0.000

Problem 2096	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	310	310	310	375	334	417	435	437	338	0
N.S.	1	1.00	1.00	1.21	1.08	1.35	1.40	1.41	1.09	0.00
time (sec)	N/A	0.640	0.161	0.039	0.595	0.348	0.126	0.163	0.127	0.000

Problem 2097	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	158	223	162	187	190	187	163	0
N.S.	1	1.00	1.00	1.41	1.03	1.18	1.20	1.18	1.03	0.00
time (sec)	N/A	0.206	0.044	0.037	0.532	0.354	0.100	0.152	0.070	0.000

Problem 2098	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	544	541	700	1319	842	843	979	1130	968	0
N.S.	1	0.99	1.29	2.42	1.55	1.55	1.80	2.08	1.78	0.00
time (sec)	N/A	1.195	0.457	0.049	0.547	0.392	2.133	0.201	2.369	0.001

Problem 2099	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	525	522	922	1404	853	1189	1056	1200	1483	0
N.S.	1	0.99	1.76	2.67	1.62	2.26	2.01	2.29	2.82	0.00
time (sec)	N/A	1.093	0.571	0.059	0.579	0.402	10.136	0.246	2.441	0.001

Problem 2100	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	531	530	503	1483	861	1311	1149	1048	1297	0
N.S.	1	1.00	0.95	2.79	1.62	2.47	2.16	1.97	2.44	0.00
time (sec)	N/A	1.085	0.277	0.061	0.787	0.403	86.430	0.197	2.506	0.001

Problem 2101	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	521	519	488	1545	875	1369	0	1021	1151	0
N.S.	1	1.00	0.94	2.97	1.68	2.63	0.00	1.96	2.21	0.00
time (sec)	N/A	0.990	0.261	0.066	0.789	0.420	0.000	0.175	2.528	0.001

Problem 2102	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	533	531	496	1605	884	1343	0	1567	1106	0
N.S.	1	1.00	0.93	3.01	1.66	2.52	0.00	2.94	2.08	0.00
time (sec)	N/A	0.943	0.254	0.066	0.719	0.396	0.000	0.415	2.537	0.001

Problem 2103	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	534	532	885	1637	898	1247	0	998	1106	0
N.S.	1	1.00	1.66	3.07	1.68	2.34	0.00	1.87	2.07	0.00
time (sec)	N/A	0.901	0.560	0.059	0.663	0.401	0.000	0.179	0.261	0.001

Problem 2104	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	541	539	868	1656	905	1145	0	989	1598	0
N.S.	1	1.00	1.60	3.06	1.67	2.12	0.00	1.83	2.95	0.00
time (sec)	N/A	0.810	0.655	0.063	0.714	0.394	0.000	0.227	2.543	0.001

Problem 2105	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	548	546	863	1661	926	1023	0	1001	1353	0
N.S.	1	1.00	1.57	3.03	1.69	1.87	0.00	1.83	2.47	0.00
time (sec)	N/A	0.768	0.487	0.056	1.006	0.391	0.000	0.183	2.577	0.001

Problem 2106	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	550	548	847	1067	922	922	0	1127	1115	0
N.S.	1	1.00	1.54	1.94	1.68	1.68	0.00	2.05	2.03	0.00
time (sec)	N/A	0.706	0.470	0.053	1.060	0.383	0.000	0.184	0.279	0.001

Problem 2107	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	555	553	852	1067	945	945	0	1129	1142	0
N.S.	1	1.00	1.54	1.92	1.70	1.70	0.00	2.03	2.06	0.00
time (sec)	N/A	0.744	0.488	0.054	1.050	0.389	0.000	0.205	2.568	0.001

Problem 2108	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	555	553	849	1067	956	956	0	1129	1153	0
N.S.	1	1.00	1.53	1.92	1.72	1.72	0.00	2.03	2.08	0.00
time (sec)	N/A	0.673	0.504	0.050	1.017	0.386	0.000	0.183	2.680	0.001

Problem 2109	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	142	281	215	342	3267	606	300	0
N.S.	1	1.00	1.17	2.32	1.78	2.83	27.00	5.01	2.48	0.00
time (sec)	N/A	0.081	0.244	0.046	0.650	0.404	3.379	0.198	2.548	0.071

Problem 2110	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	166	172	168	186	192	177	160	0
N.S.	1	1.00	1.61	1.67	1.63	1.81	1.86	1.72	1.55	0.00
time (sec)	N/A	0.163	0.040	0.040	0.569	0.349	0.096	0.151	2.358	0.000

Problem 2111	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	140	139	138	149	153	143	132	0
N.S.	1	1.00	1.36	1.35	1.34	1.45	1.49	1.39	1.28	0.00
time (sec)	N/A	0.126	0.031	0.040	0.730	0.346	0.088	0.164	0.056	0.000

Problem 2112	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	109	106	105	114	116	111	104	0
N.S.	1	1.00	1.06	1.03	1.02	1.11	1.13	1.08	1.01	0.00
time (sec)	N/A	0.103	0.027	0.042	0.497	0.354	0.082	0.173	2.237	0.000

Problem 2113	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	78	78	70	73	72	79	80	79	73	0
N.S.	1	1.00	0.90	0.94	0.92	1.01	1.03	1.01	0.94	0.00
time (sec)	N/A	0.073	0.023	0.039	0.565	0.336	0.075	0.151	0.033	0.000

Problem 2114	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	41	40	39	43	42	46	41	0
N.S.	1	1.00	0.87	0.85	0.83	0.91	0.89	0.98	0.87	0.00
time (sec)	N/A	0.037	0.014	0.041	0.603	0.323	0.066	0.166	0.043	0.000

Problem 2115	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	25	25	25	20	19	19	19	19	19	0
N.S.	1	1.00	1.00	0.80	0.76	0.76	0.76	0.76	0.76	0.00
time (sec)	N/A	0.008	0.001	0.038	0.654	0.338	0.058	0.151	0.029	0.000

Problem 2116	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	74	95	81	82	71	82	85	0
N.S.	1	1.00	0.94	1.20	1.03	1.04	0.90	1.04	1.08	0.00
time (sec)	N/A	0.073	0.028	0.039	0.496	0.390	0.238	0.182	2.344	0.001

Problem 2117	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	84	84	79	108	85	131	82	131	88	0
N.S.	1	1.00	0.94	1.29	1.01	1.56	0.98	1.56	1.05	0.00
time (sec)	N/A	0.090	0.057	0.050	0.506	0.390	0.419	0.199	2.336	0.001

Problem 2118	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	89	89	80	121	96	147	97	82	96	0
N.S.	1	1.00	0.90	1.36	1.08	1.65	1.09	0.92	1.08	0.00
time (sec)	N/A	0.083	0.052	0.049	0.626	0.383	0.759	0.155	2.351	0.001

Problem 2119	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	96	96	86	128	113	141	114	88	107	0
N.S.	1	1.00	0.90	1.33	1.18	1.47	1.19	0.92	1.11	0.00
time (sec)	N/A	0.078	0.034	0.050	0.607	0.394	1.330	0.157	0.085	0.001

Problem 2120	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	101	101	77	93	116	116	126	128	111	0
N.S.	1	1.00	0.76	0.92	1.15	1.15	1.25	1.27	1.10	0.00
time (sec)	N/A	0.073	0.027	0.053	0.468	0.365	2.214	0.159	0.057	0.001

Problem 2121	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	79	93	132	132	141	80	128	0
N.S.	1	1.00	0.77	0.90	1.28	1.28	1.37	0.78	1.24	0.00
time (sec)	N/A	0.075	0.029	0.049	0.532	0.392	3.659	0.174	0.064	0.001

Problem 2122	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	77	93	137	137	150	78	133	0
N.S.	1	1.00	0.75	0.90	1.33	1.33	1.46	0.76	1.29	0.00
time (sec)	N/A	0.073	0.028	0.049	0.621	0.372	5.833	0.152	2.345	0.001

Problem 2123	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	357	357	352	946	0	1139	2759	402	539	0
N.S.	1	1.00	0.99	2.65	0.00	3.19	7.73	1.13	1.51	0.00
time (sec)	N/A	0.652	0.293	0.049	0.000	0.542	25.809	0.178	3.106	0.001

Problem 2124	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	205	205	203	543	0	673	1532	219	316	0
N.S.	1	1.00	0.99	2.65	0.00	3.28	7.47	1.07	1.54	0.00
time (sec)	N/A	0.371	0.165	0.048	0.000	0.448	11.088	0.161	2.783	0.001

Problem 2125	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	108	261	0	369	677	112	163	0
N.S.	1	1.00	1.00	2.42	0.00	3.42	6.27	1.04	1.51	0.00
time (sec)	N/A	0.128	0.089	0.047	0.000	0.425	3.445	0.157	2.704	0.001

Problem 2126	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	66	93	0	207	280	63	162	0
N.S.	1	1.00	1.03	1.45	0.00	3.23	4.38	0.98	2.53	0.00
time (sec)	N/A	0.039	0.052	0.043	0.000	0.395	0.690	0.183	0.115	0.000

Problem 2127	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	125	343	0	409	0	155	1027	0
N.S.	1	1.00	0.86	2.35	0.00	2.80	0.00	1.06	7.03	0.00
time (sec)	N/A	0.224	0.124	0.051	0.000	4.812	0.000	0.158	8.696	0.001

Problem 2128	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	255	255	219	729	0	1594	0	383	2650	0
N.S.	1	1.00	0.86	2.86	0.00	6.25	0.00	1.50	10.39	0.00
time (sec)	N/A	0.444	0.343	0.059	0.000	62.067	0.000	0.174	7.218	0.001

Problem 2129	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	414	414	413	1339	0	0	0	797	7042	0
N.S.	1	1.00	1.00	3.23	0.00	0.00	0.00	1.93	17.01	0.00
time (sec)	N/A	0.803	0.472	0.062	0.000	0.000	0.000	0.185	26.751	0.001

Problem 2130	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	543	543	897	2221	0	5676	0	1316	1763	0
N.S.	1	1.00	1.65	4.09	0.00	10.45	0.00	2.42	3.25	0.00
time (sec)	N/A	1.214	1.857	0.066	0.000	1.205	0.000	0.254	5.593	0.001

Problem 2131	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	550	1458	0	3941	0	979	1167	0
N.S.	1	1.00	2.82	7.48	0.00	20.21	0.00	5.02	5.98	0.00
time (sec)	N/A	0.162	0.978	0.062	0.000	0.515	0.000	0.206	3.356	0.001

Problem 2132	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	305	303	408	1014	0	2906	2076	645	913	0
N.S.	1	0.99	1.34	3.32	0.00	9.53	6.81	2.11	2.99	0.00
time (sec)	N/A	0.380	0.668	0.063	0.000	0.457	128.603	0.180	3.226	0.001

Problem 2133	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	221	219	216	591	0	1879	1234	369	555	0
N.S.	1	0.99	0.98	2.67	0.00	8.50	5.58	1.67	2.51	0.00
time (sec)	N/A	0.209	0.402	0.055	0.000	0.470	15.170	0.215	0.594	0.001

Problem 2134	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	B	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	128	242	0	1116	651	199	353	0
N.S.	1	1.00	0.98	1.85	0.00	8.52	4.97	1.52	2.69	0.00
time (sec)	N/A	0.056	0.127	0.053	0.000	0.453	1.681	0.170	2.571	0.001

Problem 2135	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	666	664	668	9360	0	0	0	2288	25467	0
N.S.	1	1.00	1.00	14.05	0.00	0.00	0.00	3.44	38.24	0.00
time (sec)	N/A	2.551	2.822	0.085	0.000	0.000	0.000	0.266	8.102	0.001

Problem 2136	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	1043	1043	1409	13679	0	0	0	3417	40079	0
N.S.	1	1.00	1.35	13.12	0.00	0.00	0.00	3.28	38.43	0.00
time (sec)	N/A	6.294	6.749	0.107	0.000	0.000	0.000	2.139	12.999	0.001

Problem 2137	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	43	34	33	33	41	35	31	0
N.S.	1	1.00	1.00	0.79	0.77	0.77	0.95	0.81	0.72	0.00
time (sec)	N/A	0.024	0.021	0.048	0.492	0.596	0.132	0.161	0.054	0.001

Problem 2138	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	36	36	35	29	28	28	34	30	26	0
N.S.	1	1.00	0.97	0.81	0.78	0.78	0.94	0.83	0.72	0.00
time (sec)	N/A	0.024	0.015	0.052	0.505	0.499	0.125	0.150	2.305	0.000

Problem 2139	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	29	29	34	24	23	23	27	25	21	0
N.S.	1	1.00	1.17	0.83	0.79	0.79	0.93	0.86	0.72	0.00
time (sec)	N/A	0.023	0.014	0.060	0.561	0.474	0.123	0.171	0.034	0.000

Problem 2140	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	22	22	22	19	18	18	20	20	16	0
N.S.	1	1.00	1.00	0.86	0.82	0.82	0.91	0.91	0.73	0.00
time (sec)	N/A	0.015	0.007	0.049	0.484	0.384	0.115	0.213	0.038	0.001

Problem 2141	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	17	17	17	16	15	15	15	17	13	0
N.S.	1	1.00	1.00	0.94	0.88	0.88	0.88	1.00	0.76	0.00
time (sec)	N/A	0.006	0.004	0.049	0.727	0.376	0.104	0.150	2.323	0.000

Problem 2142	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	27	27	27	24	23	23	26	26	19	0
N.S.	1	1.00	1.00	0.89	0.85	0.85	0.96	0.96	0.70	0.00
time (sec)	N/A	0.026	0.008	0.053	0.553	0.378	0.137	0.148	0.053	0.001

Problem 2143	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	38	33	32	48	32	40	28	0
N.S.	1	1.00	1.00	0.87	0.84	1.26	0.84	1.05	0.74	0.00
time (sec)	N/A	0.029	0.026	0.056	0.727	0.395	0.163	0.187	2.289	0.000

Problem 2144	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	49	49	47	42	42	71	41	40	36	0
N.S.	1	1.00	0.96	0.86	0.86	1.45	0.84	0.82	0.73	0.00
time (sec)	N/A	0.035	0.027	0.050	0.578	0.394	0.181	0.164	0.042	0.000

Problem 2145	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	60	60	62	51	52	96	51	45	46	0
N.S.	1	1.00	1.03	0.85	0.87	1.60	0.85	0.75	0.77	0.00
time (sec)	N/A	0.038	0.033	0.054	0.548	0.393	0.198	0.170	0.041	0.000

Problem 2146	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	50	50	56	40	42	68	42	44	38	0
N.S.	1	1.00	1.12	0.80	0.84	1.36	0.84	0.88	0.76	0.00
time (sec)	N/A	0.056	0.036	0.051	0.823	0.387	0.163	0.155	0.039	0.000

Problem 2147	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	43	43	47	35	37	63	36	39	33	0
N.S.	1	1.00	1.09	0.81	0.86	1.47	0.84	0.91	0.77	0.00
time (sec)	N/A	0.047	0.031	0.053	0.564	0.384	0.158	0.193	2.258	0.000

Problem 2148	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	38	32	34	53	31	36	30	0
N.S.	1	1.00	1.00	0.84	0.89	1.39	0.82	0.95	0.79	0.00
time (sec)	N/A	0.036	0.027	0.051	0.471	0.387	0.152	0.194	0.050	0.001

Problem 2149	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	36	36	34	32	34	53	29	36	26	0
N.S.	1	1.00	0.94	0.89	0.94	1.47	0.81	1.00	0.72	0.00
time (sec)	N/A	0.015	0.017	0.049	0.607	0.377	0.134	0.160	2.270	0.000

Problem 2150	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	34	34	33	32	34	53	29	36	26	0
N.S.	1	1.00	0.97	0.94	1.00	1.56	0.85	1.06	0.76	0.00
time (sec)	N/A	0.010	0.014	0.052	0.531	0.380	0.126	0.149	2.261	0.000

Problem 2151	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	48	48	48	40	42	71	41	45	36	0
N.S.	1	1.00	1.00	0.83	0.88	1.48	0.85	0.94	0.75	0.00
time (sec)	N/A	0.038	0.031	0.051	0.464	0.381	0.182	0.152	0.040	0.000

Problem 2152	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	57	49	52	96	51	77	46	0
N.S.	1	1.00	0.86	0.74	0.79	1.45	0.77	1.17	0.70	0.00
time (sec)	N/A	0.047	0.032	0.056	0.562	0.382	0.189	0.169	2.322	0.000

Problem 2153	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	66	58	62	121	60	62	56	0
N.S.	1	1.00	0.86	0.75	0.81	1.57	0.78	0.81	0.73	0.00
time (sec)	N/A	0.050	0.032	0.058	0.617	0.393	0.211	0.151	2.315	0.000

Problem 2154	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	88	88	75	67	72	146	71	67	66	0
N.S.	1	1.00	0.85	0.76	0.82	1.66	0.81	0.76	0.75	0.00
time (sec)	N/A	0.056	0.043	0.059	0.514	0.391	0.234	0.174	2.366	0.001

Problem 2155	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	81	51	57	103	58	49	52	0
N.S.	1	1.00	1.27	0.80	0.89	1.61	0.91	0.77	0.81	0.00
time (sec)	N/A	0.080	0.032	0.056	0.547	0.393	0.195	0.153	2.439	0.002

Problem 2156	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	59	59	62	48	54	93	53	46	49	0
N.S.	1	1.00	1.05	0.81	0.92	1.58	0.90	0.78	0.83	0.00
time (sec)	N/A	0.049	0.035	0.053	0.494	0.383	0.190	0.165	2.447	0.001

Problem 2157	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	59	48	54	93	51	46	45	0
N.S.	1	1.00	0.86	0.70	0.78	1.35	0.74	0.67	0.65	0.00
time (sec)	N/A	0.030	0.028	0.052	0.547	0.385	0.172	0.178	0.048	0.001

Problem 2158	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	56	48	54	93	51	46	45	0
N.S.	1	1.00	0.98	0.84	0.95	1.63	0.89	0.81	0.79	0.00
time (sec)	N/A	0.043	0.029	0.052	0.542	0.377	0.168	0.157	2.837	0.001

Problem 2159	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	57	48	54	93	51	46	45	0
N.S.	1	1.00	1.00	0.84	0.95	1.63	0.89	0.81	0.79	0.00
time (sec)	N/A	0.021	0.018	0.052	0.483	0.374	0.162	0.200	2.302	0.000

Problem 2160	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	57	48	54	93	51	46	45	0
N.S.	1	1.00	1.00	0.84	0.95	1.63	0.89	0.81	0.79	0.00
time (sec)	N/A	0.015	0.014	0.048	0.496	0.386	0.155	0.156	0.045	0.000

Problem 2161	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	69	69	68	56	62	121	63	55	55	0
N.S.	1	1.00	0.99	0.81	0.90	1.75	0.91	0.80	0.80	0.00
time (sec)	N/A	0.053	0.046	0.051	0.587	0.397	0.214	0.152	2.321	0.001

Problem 2162	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	78	65	72	146	73	95	65	0
N.S.	1	1.00	0.83	0.69	0.77	1.55	0.78	1.01	0.69	0.00
time (sec)	N/A	0.060	0.045	0.053	0.688	0.396	0.230	0.158	0.045	0.001

Problem 2163	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	86	74	82	171	83	70	75	0
N.S.	1	1.00	0.82	0.70	0.78	1.63	0.79	0.67	0.71	0.00
time (sec)	N/A	0.070	0.051	0.055	0.587	0.394	0.238	0.161	2.294	0.001

Problem 2164	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	33	33	22	20	32	32	31	20	20	0
N.S.	1	1.00	0.67	0.61	0.97	0.97	0.94	0.61	0.61	0.00
time (sec)	N/A	0.013	0.008	0.040	0.520	0.367	0.121	0.150	0.038	0.000

Problem 2165	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	82	130	138	83	0	79	170	84
N.S.	1	1.00	0.51	0.81	0.86	0.52	0.00	0.49	1.06	0.52
time (sec)	N/A	0.095	0.060	0.055	1.241	0.418	0.000	0.196	3.648	0.908

Problem 2166	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	77	113	121	78	0	74	153	79
N.S.	1	1.00	0.57	0.84	0.90	0.58	0.00	0.55	1.13	0.59
time (sec)	N/A	0.074	0.043	0.052	1.354	0.411	0.000	0.204	3.470	0.653

Problem 2167	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	110	110	72	96	104	73	0	69	136	74
N.S.	1	1.00	0.65	0.87	0.95	0.66	0.00	0.63	1.24	0.67
time (sec)	N/A	0.049	0.035	0.051	1.316	0.399	0.000	0.189	3.508	0.526

Problem 2168	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	67	79	87	68	0	64	119	69
N.S.	1	1.00	0.79	0.93	1.02	0.80	0.00	0.75	1.40	0.81
time (sec)	N/A	0.027	0.029	0.051	1.334	0.405	0.000	0.250	0.698	0.414

Problem 2169	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	80	80	62	64	72	63	0	59	104	64
N.S.	1	1.00	0.78	0.80	0.90	0.79	0.00	0.74	1.30	0.80
time (sec)	N/A	0.023	0.049	0.049	1.349	0.383	0.000	0.178	2.664	0.298

Problem 2170	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	93	127	99	109	0	126	-1	94
N.S.	1	1.00	0.93	1.27	0.99	1.09	0.00	1.26	-0.01	0.94
time (sec)	N/A	0.062	0.042	0.049	1.115	0.412	0.000	0.292	0.000	0.481

Problem 2171	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	98	121	105	127	0	291	-1	101
N.S.	1	1.00	0.93	1.15	1.00	1.21	0.00	2.77	-0.01	0.96
time (sec)	N/A	0.060	0.067	0.059	1.219	0.416	0.000	0.745	0.000	0.491

Problem 2172	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	107	107	100	142	131	143	0	240	-1	101
N.S.	1	1.00	0.93	1.33	1.22	1.34	0.00	2.24	-0.01	0.94
time (sec)	N/A	0.061	0.080	0.064	1.189	0.403	0.000	0.311	0.000	0.513

Problem 2173	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	74	132	135	111	0	257	-1	71
N.S.	1	1.00	0.79	1.40	1.44	1.18	0.00	2.73	-0.01	0.76
time (sec)	N/A	0.044	0.033	0.061	1.303	0.413	0.000	0.318	0.000	0.471

Problem 2174	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	119	153	171	126	0	183	-1	76
N.S.	1	1.00	1.00	1.29	1.44	1.06	0.00	1.54	-0.01	0.64
time (sec)	N/A	0.064	0.046	0.059	1.253	0.413	0.000	0.268	0.000	0.585

Problem 2175	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	146	174	212	141	0	363	-1	81
N.S.	1	1.00	1.01	1.21	1.47	0.98	0.00	2.52	-0.01	0.56
time (sec)	N/A	0.090	0.107	0.061	1.422	0.418	0.000	0.409	0.000	0.581

Problem 2176	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	169	195	258	156	0	410	-1	86
N.S.	1	1.00	1.00	1.15	1.53	0.92	0.00	2.43	-0.01	0.51
time (sec)	N/A	0.109	0.091	0.056	1.292	0.410	0.000	0.340	0.000	0.654

Problem 2177	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	183	183	92	149	167	93	0	89	-1	94
N.S.	1	1.00	0.50	0.81	0.91	0.51	0.00	0.49	-0.01	0.51
time (sec)	N/A	0.108	0.062	0.056	1.175	0.410	0.000	0.213	0.000	0.870

Problem 2178	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	87	132	150	88	0	84	-1	89
N.S.	1	1.00	0.55	0.84	0.95	0.56	0.00	0.53	-0.01	0.56
time (sec)	N/A	0.083	0.053	0.051	1.339	0.402	0.000	0.214	0.000	0.794

Problem 2179	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	82	115	133	83	0	79	-1	84
N.S.	1	1.00	0.62	0.86	1.00	0.62	0.00	0.59	-0.01	0.63
time (sec)	N/A	0.061	0.055	0.049	1.310	0.411	0.000	0.212	0.000	0.709

Problem 2180	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	108	108	77	98	116	78	0	74	-1	79
N.S.	1	1.00	0.71	0.91	1.07	0.72	0.00	0.69	-0.01	0.73
time (sec)	N/A	0.039	0.037	0.046	1.348	0.399	0.000	0.241	0.000	0.607

Problem 2181	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	103	103	72	83	101	73	0	69	130	74
N.S.	1	1.00	0.70	0.81	0.98	0.71	0.00	0.67	1.26	0.72
time (sec)	N/A	0.029	0.059	0.082	1.330	0.398	0.000	0.193	2.870	0.457

Problem 2182	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	123	123	103	183	128	119	0	136	-1	104
N.S.	1	1.00	0.84	1.49	1.04	0.97	0.00	1.11	-0.01	0.85
time (sec)	N/A	0.079	0.044	0.051	1.513	0.420	0.000	0.303	0.000	0.611

Problem 2183	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	110	158	134	139	0	481	-1	111
N.S.	1	1.00	0.86	1.23	1.05	1.09	0.00	3.76	-0.01	0.87
time (sec)	N/A	0.083	0.073	0.055	1.240	0.417	0.000	1.132	0.000	0.637

Problem 2184	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	135	135	110	179	160	153	0	259	-1	111
N.S.	1	1.00	0.81	1.33	1.19	1.13	0.00	1.92	-0.01	0.82
time (sec)	N/A	0.082	0.094	0.056	1.186	0.421	0.000	0.340	0.000	0.590

Problem 2185	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	110	200	191	169	0	305	-1	111
N.S.	1	1.00	0.80	1.46	1.39	1.23	0.00	2.23	-0.01	0.81
time (sec)	N/A	0.081	0.100	0.056	1.359	0.420	0.000	0.343	0.000	0.628

Problem 2186	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	110	221	227	183	0	106	-1	111
N.S.	1	1.00	0.80	1.61	1.66	1.34	0.00	0.77	-0.01	0.81
time (sec)	N/A	0.080	0.111	0.063	1.337	0.425	0.000	0.286	0.000	0.606

Problem 2187	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	128	211	241	140	0	359	-1	81
N.S.	1	1.00	1.03	1.70	1.94	1.13	0.00	2.90	-0.01	0.65
time (sec)	N/A	0.062	0.076	0.059	1.287	0.423	0.000	0.310	0.000	0.564

Problem 2188	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	151	232	287	155	0	410	-1	86
N.S.	1	1.00	1.01	1.56	1.93	1.04	0.00	2.75	-0.01	0.58
time (sec)	N/A	0.082	0.091	0.064	1.202	0.416	0.000	0.357	0.000	0.620

Problem 2189	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	174	174	157	253	338	170	0	461	-1	91
N.S.	1	1.00	0.90	1.45	1.94	0.98	0.00	2.65	-0.01	0.52
time (sec)	N/A	0.107	0.148	0.074	1.302	0.420	0.000	0.325	0.000	0.720

Problem 2190	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	199	199	182	274	394	185	0	512	-1	96
N.S.	1	1.00	0.91	1.38	1.98	0.93	0.00	2.57	-0.01	0.48
time (sec)	N/A	0.135	0.125	0.138	1.307	0.422	0.000	0.351	0.000	0.783

Problem 2191	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	206	206	102	168	196	103	0	99	-1	104
N.S.	1	1.00	0.50	0.82	0.95	0.50	0.00	0.48	-0.00	0.50
time (sec)	N/A	0.118	0.071	0.060	1.316	0.412	0.000	0.220	0.000	1.314

Problem 2192	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	181	181	97	151	179	98	0	94	-1	99
N.S.	1	1.00	0.54	0.83	0.99	0.54	0.00	0.52	-0.01	0.55
time (sec)	N/A	0.098	0.062	0.050	1.204	0.415	0.000	0.239	0.000	0.932

Problem 2193	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	156	156	92	134	162	93	0	89	-1	94
N.S.	1	1.00	0.59	0.86	1.04	0.60	0.00	0.57	-0.01	0.60
time (sec)	N/A	0.070	0.054	0.049	1.304	0.405	0.000	0.435	0.000	0.834

Problem 2194	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	131	131	101	117	145	88	0	84	-1	89
N.S.	1	1.00	0.77	0.89	1.11	0.67	0.00	0.64	-0.01	0.68
time (sec)	N/A	0.046	0.079	0.052	1.262	0.407	0.000	0.219	0.000	0.742

Problem 2195	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	108	102	130	83	0	79	-1	84
N.S.	1	1.00	0.86	0.81	1.03	0.66	0.00	0.63	-0.01	0.67
time (sec)	N/A	0.041	0.064	0.044	1.215	0.400	0.000	0.231	0.000	0.648

Problem 2196	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	146	146	113	239	157	129	0	146	-1	114
N.S.	1	1.00	0.77	1.64	1.08	0.88	0.00	1.00	-0.01	0.78
time (sec)	N/A	0.100	0.061	0.044	1.227	0.410	0.000	0.333	0.000	0.758

Problem 2197	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	151	151	120	195	163	149	0	671	-1	121
N.S.	1	1.00	0.79	1.29	1.08	0.99	0.00	4.44	-0.01	0.80
time (sec)	N/A	0.102	0.088	0.061	1.461	0.431	0.000	1.168	0.000	0.850

Problem 2198	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	160	160	120	216	189	163	0	269	-1	121
N.S.	1	1.00	0.75	1.35	1.18	1.02	0.00	1.68	-0.01	0.76
time (sec)	N/A	0.104	0.094	0.059	1.326	0.420	0.000	0.336	0.000	0.752

Problem 2199	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	165	165	120	237	220	179	0	315	-1	121
N.S.	1	1.00	0.73	1.44	1.33	1.08	0.00	1.91	-0.01	0.73
time (sec)	N/A	0.110	0.098	0.061	1.363	0.422	0.000	0.339	0.000	0.752

Problem 2200	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	120	258	256	193	0	445	-1	121
N.S.	1	1.00	0.72	1.54	1.53	1.16	0.00	2.66	-0.01	0.72
time (sec)	N/A	0.104	0.129	0.061	1.263	0.425	0.000	1.055	0.000	0.769

Problem 2201	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	120	279	297	209	0	407	-1	121
N.S.	1	1.00	0.72	1.67	1.78	1.25	0.00	2.44	-0.01	0.72
time (sec)	N/A	0.106	0.144	0.064	1.526	0.426	0.000	0.401	0.000	0.792

Problem 2202	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	167	167	120	300	343	223	0	444	-1	121
N.S.	1	1.00	0.72	1.80	2.05	1.34	0.00	2.66	-0.01	0.72
time (sec)	N/A	0.103	0.149	0.072	1.324	0.435	0.000	0.371	0.000	0.754

Problem 2203	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	154	290	367	171	0	461	-1	91
N.S.	1	1.00	1.00	1.88	2.38	1.11	0.00	2.99	-0.01	0.59
time (sec)	N/A	0.078	0.078	0.070	1.477	0.420	0.000	0.330	0.000	0.669

Problem 2204	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	182	311	423	186	0	512	-1	96
N.S.	1	1.00	1.02	1.74	2.36	1.04	0.00	2.86	-0.01	0.54
time (sec)	N/A	0.102	0.176	0.078	1.627	0.434	0.000	0.348	0.000	0.769

Problem 2205	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	204	204	207	332	484	201	0	563	-1	101
N.S.	1	1.00	1.01	1.63	2.37	0.99	0.00	2.76	-0.00	0.50
time (sec)	N/A	0.129	0.150	0.097	1.396	0.429	0.000	0.347	0.000	0.864

Problem 2206	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	229	229	184	187	225	113	0	109	-1	114
N.S.	1	1.00	0.80	0.82	0.98	0.49	0.00	0.48	-0.00	0.50
time (sec)	N/A	0.141	0.219	0.057	1.342	0.415	0.000	0.233	0.000	1.304

Problem 2207	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	204	204	163	170	208	108	0	104	-1	109
N.S.	1	1.00	0.80	0.83	1.02	0.53	0.00	0.51	-0.00	0.53
time (sec)	N/A	0.107	0.148	0.054	1.257	0.412	0.000	0.333	0.000	1.175

Problem 2208	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	179	179	138	153	191	103	0	99	-1	104
N.S.	1	1.00	0.77	0.85	1.07	0.58	0.00	0.55	-0.01	0.58
time (sec)	N/A	0.084	0.143	0.056	1.311	0.418	0.000	0.225	0.000	1.004

Problem 2209	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	154	154	111	136	174	98	0	94	-1	99
N.S.	1	1.00	0.72	0.88	1.13	0.64	0.00	0.61	-0.01	0.64
time (sec)	N/A	0.058	0.055	0.046	1.233	0.409	0.000	0.229	0.000	0.918

Problem 2210	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	149	149	119	121	159	93	0	89	-1	94
N.S.	1	1.00	0.80	0.81	1.07	0.62	0.00	0.60	-0.01	0.63
time (sec)	N/A	0.050	0.121	0.049	1.390	0.392	0.000	0.218	0.000	0.780

Problem 2211	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	123	295	186	139	0	156	-1	124
N.S.	1	1.00	0.73	1.75	1.10	0.82	0.00	0.92	-0.01	0.73
time (sec)	N/A	0.128	0.078	0.052	1.313	0.424	0.000	0.357	0.000	0.981

Problem 2212	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	174	174	130	232	192	159	0	861	-1	131
N.S.	1	1.00	0.75	1.33	1.10	0.91	0.00	4.95	-0.01	0.75
time (sec)	N/A	0.123	0.107	0.059	1.308	0.427	0.000	1.453	0.000	1.043

Problem 2213	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	181	181	130	253	218	173	0	279	-1	131
N.S.	1	1.00	0.72	1.40	1.20	0.96	0.00	1.54	-0.01	0.72
time (sec)	N/A	0.128	0.108	0.062	1.140	0.439	0.000	0.381	0.000	0.952

Problem 2214	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	190	190	130	274	249	189	0	325	-1	131
N.S.	1	1.00	0.68	1.44	1.31	0.99	0.00	1.71	-0.01	0.69
time (sec)	N/A	0.129	0.110	0.057	1.249	0.421	0.000	0.483	0.000	0.946

Problem 2215	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	195	195	130	295	285	203	0	636	-1	131
N.S.	1	1.00	0.67	1.51	1.46	1.04	0.00	3.26	-0.01	0.67
time (sec)	N/A	0.130	0.120	0.060	1.183	0.440	0.000	1.309	0.000	0.933

Problem 2216	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	130	316	326	219	0	417	-1	131
N.S.	1	1.00	0.66	1.60	1.65	1.11	0.00	2.12	-0.01	0.66
time (sec)	N/A	0.126	0.154	0.064	1.290	0.423	0.000	0.367	0.000	1.027

Problem 2217	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	130	337	372	233	0	467	-1	131
N.S.	1	1.00	0.66	1.71	1.89	1.18	0.00	2.37	-0.01	0.66
time (sec)	N/A	0.131	0.172	0.069	1.348	0.451	0.000	0.387	0.000	1.008

Problem 2218	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	130	358	423	249	0	509	-1	131
N.S.	1	1.00	0.66	1.82	2.15	1.26	0.00	2.58	-0.01	0.66
time (sec)	N/A	0.129	0.182	0.075	1.627	0.444	0.000	0.411	0.000	0.975

Problem 2219	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	197	197	130	379	479	263	0	546	-1	131
N.S.	1	1.00	0.66	1.92	2.43	1.34	0.00	2.77	-0.01	0.66
time (sec)	N/A	0.132	0.190	0.085	1.643	0.445	0.000	0.509	0.000	0.989

Problem 2220	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	184	184	185	369	513	200	0	563	-1	101
N.S.	1	1.00	1.01	2.01	2.79	1.09	0.00	3.06	-0.01	0.55
time (sec)	N/A	0.096	0.137	0.112	1.401	0.431	0.000	0.376	0.000	0.856

Problem 2221	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	209	209	212	390	579	215	0	614	-1	106
N.S.	1	1.00	1.01	1.87	2.77	1.03	0.00	2.94	-0.00	0.51
time (sec)	N/A	0.121	0.161	0.149	1.502	0.442	0.000	0.407	0.000	0.936

Problem 2222	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	234	234	239	411	650	230	0	665	-1	111
N.S.	1	1.00	1.02	1.76	2.78	0.98	0.00	2.84	-0.00	0.47
time (sec)	N/A	0.152	0.308	0.194	1.421	0.446	0.000	0.381	0.000	1.091

Problem 2223	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	259	259	262	432	726	245	0	716	-1	116
N.S.	1	1.00	1.01	1.67	2.80	0.95	0.00	2.76	-0.00	0.45
time (sec)	N/A	0.182	0.241	9.365	1.400	0.461	0.000	0.543	0.000	1.287

Problem 2224	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	407	407	357	981	0	811	0	412	-1	433
N.S.	1	1.00	0.88	2.41	0.00	1.99	0.00	1.01	-0.00	1.06
time (sec)	N/A	0.684	0.528	0.059	0.000	0.657	0.000	0.295	0.000	1.769

Problem 2225	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	234	234	225	537	0	487	0	231	-1	234
N.S.	1	1.00	0.96	2.29	0.00	2.08	0.00	0.99	-0.00	1.00
time (sec)	N/A	0.250	0.198	0.060	0.000	0.513	0.000	0.263	0.000	0.874

Problem 2226	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	116	115	115	243	0	273	0	119	-1	120
N.S.	1	0.99	0.99	2.09	0.00	2.35	0.00	1.03	-0.01	1.03
time (sec)	N/A	0.088	0.071	0.059	0.000	0.464	0.000	0.249	0.000	0.590

Problem 2227	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	67	67	66	81	0	162	0	62	80	69
N.S.	1	1.00	0.99	1.21	0.00	2.42	0.00	0.93	1.19	1.03
time (sec)	N/A	0.024	0.090	0.050	0.000	0.419	0.000	0.237	2.657	0.007

Problem 2228	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	132	132	126	349	0	1079	0	0	-1	152
N.S.	1	1.00	0.95	2.64	0.00	8.17	0.00	0.00	-0.01	1.15
time (sec)	N/A	0.121	0.153	0.060	0.000	42.738	0.000	0.000	0.000	0.632

Problem 2229	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	150	150	147	1033	0	748	0	0	-1	229
N.S.	1	1.00	0.98	6.89	0.00	4.99	0.00	0.00	-0.01	1.53
time (sec)	N/A	0.138	0.091	0.062	0.000	2.187	0.000	0.000	0.000	1.046

Problem 2230	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	271	269	264	2204	0	1750	0	1476	-1	0
N.S.	1	0.99	0.97	8.13	0.00	6.46	0.00	5.45	-0.00	0.00
time (sec)	N/A	0.378	0.457	0.122	0.000	15.986	0.000	0.392	0.000	182.086

Problem 2231	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	444	442	434	3898	0	3684	0	4249	-1	0
N.S.	1	1.00	0.98	8.78	0.00	8.30	0.00	9.57	-0.00	0.00
time (sec)	N/A	0.835	0.929	0.071	0.000	85.512	0.000	0.744	0.000	180.297

Problem 2232	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	325	325	426	1451	0	1605	0	530	-1	538
N.S.	1	1.00	1.31	4.46	0.00	4.94	0.00	1.63	-0.00	1.66
time (sec)	N/A	0.338	0.640	0.069	0.000	3.121	0.000	0.329	0.000	3.779

Problem 2233	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	238	779	0	945	0	294	-1	281
N.S.	1	1.00	1.13	3.71	0.00	4.50	0.00	1.40	-0.00	1.34
time (sec)	N/A	0.189	0.448	0.053	0.000	2.511	0.000	0.306	0.000	1.346

Problem 2234	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	126	126	127	341	0	489	0	147	163	132
N.S.	1	1.00	1.01	2.71	0.00	3.88	0.00	1.17	1.29	1.05
time (sec)	N/A	0.064	0.366	0.053	0.000	1.649	0.000	0.319	3.281	0.767

Problem 2235	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	45	45	44	45	0	74	0	55	44	44
N.S.	1	1.00	0.98	1.00	0.00	1.64	0.00	1.22	0.98	0.98
time (sec)	N/A	0.011	0.157	0.050	0.000	0.474	0.000	0.288	2.510	0.007

Problem 2236	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	188	188	184	1261	0	1656	0	568	-1	233
N.S.	1	1.00	0.98	6.71	0.00	8.81	0.00	3.02	-0.01	1.24
time (sec)	N/A	0.156	0.159	0.056	0.000	4.950	0.000	0.307	0.000	1.053

Problem 2237	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	334	332	326	3090	0	4122	0	0	-1	6674
N.S.	1	0.99	0.98	9.25	0.00	12.34	0.00	0.00	-0.00	19.98
time (sec)	N/A	0.425	0.847	0.065	0.000	19.051	0.000	0.000	0.000	38.284

Problem 2238	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	545	545	527	5528	0	8054	0	4002	-1	0
N.S.	1	1.00	0.97	10.14	0.00	14.78	0.00	7.34	-0.00	0.00
time (sec)	N/A	0.933	3.349	0.068	0.000	88.930	0.000	0.859	0.000	180.136

Problem 2239	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	608	608	849	3912	0	3181	0	1185	-1	1243
N.S.	1	1.00	1.40	6.43	0.00	5.23	0.00	1.95	-0.00	2.04
time (sec)	N/A	0.835	2.396	0.093	0.000	14.414	0.000	0.401	0.000	14.803

Problem 2240	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	397	397	505	2443	0	1881	0	790	-1	802
N.S.	1	1.00	1.27	6.15	0.00	4.74	0.00	1.99	-0.00	2.02
time (sec)	N/A	0.341	1.342	0.102	0.000	11.256	0.000	0.387	0.000	5.916

Problem 2241	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	121	121	314	433	0	469	0	448	423	425
N.S.	1	1.00	2.60	3.58	0.00	3.88	0.00	3.70	3.50	3.51
time (sec)	N/A	0.067	0.955	0.020	0.000	9.119	0.000	0.334	3.094	3.063

Problem 2242	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	158	158	200	256	0	353	0	309	246	248
N.S.	1	1.00	1.27	1.62	0.00	2.23	0.00	1.96	1.56	1.57
time (sec)	N/A	0.124	0.308	0.013	0.000	8.908	0.000	0.327	2.820	1.774

Problem 2243	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	F(-2)	B	F(-1)	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	90	90	99	132	0	245	0	193	121	123
N.S.	1	1.00	1.10	1.47	0.00	2.72	0.00	2.14	1.34	1.37
time (sec)	N/A	0.021	0.099	0.008	0.000	1.097	0.000	0.304	2.660	0.012

Problem 2244	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	436	436	437	2996	0	6068	0	11729	-1	0
N.S.	1	1.00	1.00	6.87	0.00	13.92	0.00	26.90	-0.00	0.00
time (sec)	N/A	0.554	1.040	0.035	0.000	24.722	0.000	0.903	0.000	180.972

Problem 2245	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	746	744	754	6675	0	12690	0	8475	-1	0
N.S.	1	1.00	1.01	8.95	0.00	17.01	0.00	11.36	-0.00	0.00
time (sec)	N/A	1.558	4.713	0.080	0.000	103.118	0.000	3.787	0.000	180.699

Problem 2246	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	1401	1401	2369	11346	0	0	0	3352	-1	3721
N.S.	1	1.00	1.69	8.10	0.00	0.00	0.00	2.39	-0.00	2.66
time (sec)	N/A	2.195	11.248	0.052	0.000	0.000	0.000	0.490	0.000	53.104

Problem 2247	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	942	942	1608	7765	0	5253	0	2525	-1	2751
N.S.	1	1.00	1.71	8.24	0.00	5.58	0.00	2.68	-0.00	2.92
time (sec)	N/A	0.961	9.191	0.022	0.000	80.935	0.000	0.837	0.000	30.309

Problem 2248	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	210	210	1196	1914	0	1628	0	1763	7972	1893
N.S.	1	1.00	5.70	9.11	0.00	7.75	0.00	8.40	37.96	9.01
time (sec)	N/A	0.135	6.304	0.017	0.000	66.927	0.000	0.368	5.478	21.882

Problem 2249	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	264	264	963	1502	0	1370	0	1437	4090	1481
N.S.	1	1.00	3.65	5.69	0.00	5.19	0.00	5.44	15.49	5.61
time (sec)	N/A	0.362	1.620	0.019	0.000	128.734	0.000	0.360	4.432	14.921

Problem 2250	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	324	324	711	1064	0	1095	0	1089	1996	1043
N.S.	1	1.00	2.19	3.28	0.00	3.38	0.00	3.36	6.16	3.22
time (sec)	N/A	0.385	1.405	0.015	0.000	130.732	0.000	0.341	3.769	10.232

Problem 2251	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	225	225	200	608	0	805	0	727	892	587
N.S.	1	1.00	0.89	2.70	0.00	3.58	0.00	3.23	3.96	2.61
time (sec)	N/A	0.184	0.589	0.011	0.000	127.209	0.000	0.313	3.263	6.957

Problem 2252	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	B	F(-1)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	133	133	120	288	0	543	0	433	394	267
N.S.	1	1.00	0.90	2.17	0.00	4.08	0.00	3.26	2.96	2.01
time (sec)	N/A	0.037	0.197	0.009	0.000	5.063	0.000	0.279	3.118	2.760

Problem 2253	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	974	974	1120	5461	0	0	0	0	-1	0
N.S.	1	1.00	1.15	5.61	0.00	0.00	0.00	0.00	-0.00	0.00
time (sec)	N/A	1.710	6.240	0.019	0.000	0.000	0.000	0.000	0.000	180.118

Problem 2254	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	137	137	72	111	109	73	0	69	-1	74
N.S.	1	1.00	0.53	0.81	0.80	0.53	0.00	0.50	-0.01	0.54
time (sec)	N/A	0.086	0.051	0.018	1.292	0.410	0.000	0.231	0.000	1.551

Problem 2255	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	112	112	67	94	92	68	0	64	-1	69
N.S.	1	1.00	0.60	0.84	0.82	0.61	0.00	0.57	-0.01	0.62
time (sec)	N/A	0.064	0.033	0.007	1.365	0.398	0.000	0.226	0.000	0.871

Problem 2256	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	87	87	62	77	75	63	0	59	-1	64
N.S.	1	1.00	0.71	0.89	0.86	0.72	0.00	0.68	-0.01	0.74
time (sec)	N/A	0.045	0.026	0.008	1.241	0.400	0.000	0.226	0.000	0.618

Problem 2257	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	57	60	58	58	0	54	-1	59
N.S.	1	1.00	0.92	0.97	0.94	0.94	0.00	0.87	-0.02	0.95
time (sec)	N/A	0.023	0.020	0.009	1.311	0.398	0.000	0.218	0.000	0.524

Problem 2258	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	57	57	52	45	43	53	0	49	44	54
N.S.	1	1.00	0.91	0.79	0.75	0.93	0.00	0.86	0.77	0.95
time (sec)	N/A	0.016	0.009	0.005	1.335	0.393	0.000	0.249	2.682	0.413

Problem 2259	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	77	77	72	61	70	90	0	107	-1	67
N.S.	1	1.00	0.94	0.79	0.91	1.17	0.00	1.39	-0.01	0.87
time (sec)	N/A	0.046	0.018	0.009	1.168	0.404	0.000	0.293	0.000	0.564

Problem 2260	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	64	64	64	53	64	80	0	127	-1	61
N.S.	1	1.00	1.00	0.83	1.00	1.25	0.00	1.98	-0.02	0.95
time (sec)	N/A	0.041	0.022	0.010	1.292	0.398	0.000	0.343	0.000	0.455

Problem 2261	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	89	89	69	74	90	95	0	206	-1	66
N.S.	1	1.00	0.78	0.83	1.01	1.07	0.00	2.31	-0.01	0.74
time (sec)	N/A	0.061	0.034	0.011	1.267	0.401	0.000	0.324	0.000	0.546

Problem 2262	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	114	114	74	95	121	110	0	257	-1	71
N.S.	1	1.00	0.65	0.83	1.06	0.96	0.00	2.25	-0.01	0.62
time (sec)	N/A	0.075	0.042	0.012	1.209	0.402	0.000	0.315	0.000	0.629

Problem 2263	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	139	139	79	116	157	125	0	193	-1	76
N.S.	1	1.00	0.57	0.83	1.13	0.90	0.00	1.39	-0.01	0.55
time (sec)	N/A	0.097	0.050	0.011	1.271	0.404	0.000	0.368	0.000	0.640

Problem 2264	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	164	164	84	137	198	140	0	359	-1	81
N.S.	1	1.00	0.51	0.84	1.21	0.85	0.00	2.19	-0.01	0.49
time (sec)	N/A	0.144	0.062	0.014	1.166	0.406	0.000	0.555	0.000	0.960

Problem 2265	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	117	117	81	130	109	97	0	67	-1	86
N.S.	1	1.00	0.69	1.11	0.93	0.83	0.00	0.57	-0.01	0.74
time (sec)	N/A	0.074	0.040	0.015	1.112	0.419	0.000	0.226	0.000	0.604

Problem 2266	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	76	113	92	92	0	62	-1	81
N.S.	1	1.00	0.83	1.23	1.00	1.00	0.00	0.67	-0.01	0.88
time (sec)	N/A	0.052	0.034	0.007	1.403	0.398	0.000	0.227	0.000	0.501

Problem 2267	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	83	83	68	96	75	87	0	58	-1	74
N.S.	1	1.00	0.82	1.16	0.90	1.05	0.00	0.70	-0.01	0.89
time (sec)	N/A	0.039	0.029	0.007	1.600	0.415	0.000	0.217	0.000	0.443

Problem 2268	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	53	79	58	81	0	54	78	71
N.S.	1	1.00	0.85	1.27	0.94	1.31	0.00	0.87	1.26	1.15
time (sec)	N/A	0.024	0.091	0.005	1.225	0.402	0.000	0.213	0.379	0.372

Problem 2269	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	21	21	21	28	30	19	0	19	19	33
N.S.	1	1.00	1.00	1.33	1.43	0.90	0.00	0.90	0.90	1.57
time (sec)	N/A	0.005	0.041	0.005	0.509	0.404	0.000	0.231	0.071	0.298

Problem 2270	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	62	62	62	87	72	95	0	93	-1	71
N.S.	1	1.00	1.00	1.40	1.16	1.53	0.00	1.50	-0.02	1.15
time (sec)	N/A	0.038	0.026	0.008	1.359	0.410	0.000	0.277	0.000	0.394

Problem 2271	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	90	90	106	110	0	170	-1	83
N.S.	1	1.00	0.96	0.96	1.13	1.17	0.00	1.81	-0.01	0.88
time (sec)	N/A	0.053	0.031	0.011	1.356	0.408	0.000	0.315	0.000	0.490

Problem 2272	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	119	119	79	111	157	125	0	225	-1	88
N.S.	1	1.00	0.66	0.93	1.32	1.05	0.00	1.89	-0.01	0.74
time (sec)	N/A	0.075	0.046	0.013	1.270	0.407	0.000	0.356	0.000	0.531

Problem 2273	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	144	144	84	132	225	140	0	276	-1	93
N.S.	1	1.00	0.58	0.92	1.56	0.97	0.00	1.92	-0.01	0.65
time (sec)	N/A	0.103	0.056	0.011	1.297	0.404	0.000	0.322	0.000	0.550

Problem 2274	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	169	169	89	153	310	155	0	235	-1	98
N.S.	1	1.00	0.53	0.91	1.83	0.92	0.00	1.39	-0.01	0.58
time (sec)	N/A	0.117	0.065	0.012	1.255	0.421	0.000	0.350	0.000	0.669

Problem 2275	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	115	115	83	178	214	117	0	68	-1	86
N.S.	1	1.00	0.72	1.55	1.86	1.02	0.00	0.59	-0.01	0.75
time (sec)	N/A	0.057	0.073	0.014	1.159	0.406	0.000	0.231	0.000	0.535

Problem 2276	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	92	92	67	161	197	112	0	63	-1	81
N.S.	1	1.00	0.73	1.75	2.14	1.22	0.00	0.68	-0.01	0.88
time (sec)	N/A	0.042	0.059	0.008	1.235	0.397	0.000	0.464	0.000	0.430

Problem 2277	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	54	54	33	38	76	51	0	28	48	45
N.S.	1	1.00	0.61	0.70	1.41	0.94	0.00	0.52	0.89	0.83
time (sec)	N/A	0.022	0.032	0.003	0.505	0.399	0.000	0.218	0.116	0.318

Problem 2278	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	31	38	59	51	0	28	48	43
N.S.	1	1.00	0.66	0.81	1.26	1.09	0.00	0.60	1.02	0.91
time (sec)	N/A	0.016	0.058	0.005	0.525	0.392	0.000	0.240	2.437	0.307

Problem 2279	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	47	47	31	38	59	51	0	29	36	43
N.S.	1	1.00	0.66	0.81	1.26	1.09	0.00	0.62	0.77	0.91
time (sec)	N/A	0.010	0.043	0.004	0.445	0.403	0.000	0.206	2.424	0.301

Problem 2280	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	72	144	101	125	0	102	-1	81
N.S.	1	1.00	0.85	1.69	1.19	1.47	0.00	1.20	-0.01	0.95
time (sec)	N/A	0.055	0.054	0.009	1.451	0.412	0.000	0.280	0.000	0.386

Problem 2281	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	124	124	113	127	135	140	0	235	-1	93
N.S.	1	1.00	0.91	1.02	1.09	1.13	0.00	1.90	-0.01	0.75
time (sec)	N/A	0.073	0.057	0.012	1.314	0.414	0.000	0.393	0.000	0.470

Problem 2282	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	147	147	143	148	186	155	0	234	-1	98
N.S.	1	1.00	0.97	1.01	1.27	1.05	0.00	1.59	-0.01	0.67
time (sec)	N/A	0.095	0.078	0.012	1.242	0.420	0.000	0.321	0.000	0.529

Problem 2283	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	174	174	150	169	254	170	0	285	-1	103
N.S.	1	1.00	0.86	0.97	1.46	0.98	0.00	1.64	-0.01	0.59
time (sec)	N/A	0.116	0.113	0.013	1.274	0.427	0.000	0.335	0.000	0.596

Problem 2284	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	35	35	35	32	41	50	0	52	-1	39
N.S.	1	1.00	1.00	0.91	1.17	1.43	0.00	1.49	-0.03	1.11
time (sec)	N/A	0.030	0.007	0.008	1.176	0.418	0.000	0.181	0.000	0.243

Problem 2285	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	37	44	116	37	37	49
N.S.	1	1.00	0.53	0.47	0.70	0.83	2.19	0.70	0.70	0.92
time (sec)	N/A	0.016	0.014	0.005	0.543	0.393	3.784	0.157	3.028	0.080

Problem 2286	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	37	39	100	37	37	49
N.S.	1	1.00	0.53	0.47	0.70	0.74	1.89	0.70	0.70	0.92
time (sec)	N/A	0.016	0.012	0.005	0.498	0.396	1.850	0.193	0.038	0.050

Problem 2287	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	37	34	46	37	37	49
N.S.	1	1.00	0.53	0.47	0.70	0.64	0.87	0.70	0.70	0.92
time (sec)	N/A	0.020	0.012	0.004	0.551	0.375	13.957	0.209	0.037	0.037

Problem 2288	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	37	29	44	37	37	49
N.S.	1	1.00	0.53	0.47	0.70	0.55	0.83	0.70	0.70	0.92
time (sec)	N/A	0.015	0.010	0.004	0.605	0.377	2.695	0.154	0.038	0.041

Problem 2289	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	37	24	46	37	37	40
N.S.	1	1.00	0.53	0.47	0.70	0.45	0.87	0.70	0.70	0.75
time (sec)	N/A	0.016	0.012	0.004	0.486	0.408	41.281	0.159	0.035	0.046

Problem 2290	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	37	24	46	37	37	40
N.S.	1	1.00	0.53	0.47	0.70	0.45	0.87	0.70	0.70	0.75
time (sec)	N/A	0.016	0.012	0.003	0.514	0.379	19.150	0.158	0.039	0.036

Problem 2291	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	33	36	102	33	38	40
N.S.	1	1.00	0.53	0.47	0.62	0.68	1.92	0.62	0.72	0.75
time (sec)	N/A	0.016	0.012	0.003	0.576	0.382	0.660	0.199	0.047	0.045

Problem 2292	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	53	53	28	25	33	41	158	33	24	40
N.S.	1	1.00	0.53	0.47	0.62	0.77	2.98	0.62	0.45	0.75
time (sec)	N/A	0.015	0.012	0.004	0.456	0.391	1.373	0.210	2.371	0.046

Problem 2293	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	55	54	146	55	55	71
N.S.	1	1.00	0.48	0.44	0.70	0.68	1.85	0.70	0.70	0.90
time (sec)	N/A	0.024	0.017	0.007	0.526	0.395	5.885	0.165	2.390	0.040

Problem 2294	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	55	49	70	55	55	71
N.S.	1	1.00	0.48	0.44	0.70	0.62	0.89	0.70	0.70	0.90
time (sec)	N/A	0.023	0.016	0.007	0.481	0.378	29.675	0.163	0.029	0.051

Problem 2295	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	55	44	70	55	55	71
N.S.	1	1.00	0.48	0.44	0.70	0.56	0.89	0.70	0.70	0.90
time (sec)	N/A	0.023	0.015	0.006	0.465	0.391	23.804	0.176	0.027	0.045

Problem 2296	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	55	39	70	55	55	58
N.S.	1	1.00	0.48	0.44	0.70	0.49	0.89	0.70	0.70	0.73
time (sec)	N/A	0.023	0.014	0.005	0.642	0.386	3.560	0.156	0.031	0.062

Problem 2297	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	55	34	70	55	55	71
N.S.	1	1.00	0.48	0.44	0.70	0.43	0.89	0.70	0.70	0.90
time (sec)	N/A	0.023	0.016	0.005	0.518	0.392	85.806	0.167	0.027	0.040

Problem 2298	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	55	34	68	55	55	58
N.S.	1	1.00	0.48	0.44	0.70	0.43	0.86	0.70	0.70	0.73
time (sec)	N/A	0.033	0.015	0.006	0.525	0.387	35.236	0.167	0.029	0.041

Problem 2299	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	51	46	70	51	50	58
N.S.	1	1.00	0.48	0.44	0.65	0.58	0.89	0.65	0.63	0.73
time (sec)	N/A	0.026	0.015	0.006	0.626	0.383	43.540	0.176	0.028	0.047

Problem 2300	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	B	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	79	79	38	35	51	51	238	51	50	58
N.S.	1	1.00	0.48	0.44	0.65	0.65	3.01	0.65	0.63	0.73
time (sec)	N/A	0.024	0.015	0.005	0.656	0.390	1.563	0.170	0.041	0.052

Problem 2301	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	73	64	94	73	73	93
N.S.	1	1.00	0.46	0.43	0.70	0.61	0.90	0.70	0.70	0.89
time (sec)	N/A	0.035	0.021	0.005	0.711	0.395	49.990	0.176	0.035	0.049

Problem 2302	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	73	59	94	73	73	93
N.S.	1	1.00	0.46	0.43	0.70	0.56	0.90	0.70	0.70	0.89
time (sec)	N/A	0.038	0.019	0.006	0.788	0.384	42.098	0.172	0.034	0.058

Problem 2303	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	73	54	94	73	73	93
N.S.	1	1.00	0.46	0.43	0.70	0.51	0.90	0.70	0.70	0.89
time (sec)	N/A	0.033	0.019	0.005	0.525	0.381	35.463	0.172	0.035	0.048

Problem 2304	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	73	49	94	73	73	93
N.S.	1	1.00	0.46	0.43	0.70	0.47	0.90	0.70	0.70	0.89
time (sec)	N/A	0.034	0.017	0.005	0.671	0.381	4.017	0.211	0.035	0.061

Problem 2305	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	73	44	94	73	73	93
N.S.	1	1.00	0.46	0.43	0.70	0.42	0.90	0.70	0.70	0.89
time (sec)	N/A	0.030	0.020	0.006	0.514	0.377	124.644	0.165	0.035	0.062

Problem 2306	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	73	44	94	73	73	76
N.S.	1	1.00	0.46	0.43	0.70	0.42	0.90	0.70	0.70	0.72
time (sec)	N/A	0.031	0.018	0.007	0.505	0.379	46.036	0.167	0.036	0.059

Problem 2307	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	69	56	94	69	68	76
N.S.	1	1.00	0.46	0.43	0.66	0.53	0.90	0.66	0.65	0.72
time (sec)	N/A	0.030	0.019	0.006	0.559	0.388	56.094	0.176	0.032	0.052

Problem 2308	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	105	48	45	69	61	94	69	68	76
N.S.	1	1.00	0.46	0.43	0.66	0.58	0.90	0.66	0.65	0.72
time (sec)	N/A	0.028	0.019	0.005	0.489	0.385	62.144	0.182	0.030	0.053

Problem 2309	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	94	94	70	80	97	86	138	101	71	91
N.S.	1	1.00	0.74	0.85	1.03	0.91	1.47	1.07	0.76	0.97
time (sec)	N/A	0.099	0.068	0.020	1.219	0.397	113.477	0.216	2.383	0.139

Problem 2310	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	64	71	88	81	126	92	62	73
N.S.	1	1.00	0.79	0.88	1.09	1.00	1.56	1.14	0.77	0.90
time (sec)	N/A	0.079	0.067	0.012	1.126	0.402	83.328	0.175	0.058	0.113

Problem 2311	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	68	68	56	62	79	74	114	83	53	60
N.S.	1	1.00	0.82	0.91	1.16	1.09	1.68	1.22	0.78	0.88
time (sec)	N/A	0.060	0.029	0.012	1.200	0.411	59.215	0.179	0.072	0.123

Problem 2312	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	53	70	71	102	74	38	55
N.S.	1	1.00	1.00	0.96	1.27	1.29	1.85	1.35	0.69	1.00
time (sec)	N/A	0.046	0.015	0.012	1.296	0.408	8.205	0.171	0.065	0.119

Problem 2313	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	B	A	A	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	38	38	38	44	61	56	95	65	29	38
N.S.	1	1.00	1.00	1.16	1.61	1.47	2.50	1.71	0.76	1.00
time (sec)	N/A	0.030	0.013	0.010	1.184	0.402	82.714	0.167	0.059	0.138

Problem 2314	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	55	55	55	53	70	95	102	74	38	55
N.S.	1	1.00	1.00	0.96	1.27	1.73	1.85	1.35	0.69	1.00
time (sec)	N/A	0.045	0.037	0.013	1.373	0.412	76.667	0.184	2.371	0.149

Problem 2315	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	68	68	65	62	75	120	114	79	43	64
N.S.	1	1.00	0.96	0.91	1.10	1.76	1.68	1.16	0.63	0.94
time (sec)	N/A	0.062	0.084	0.014	1.205	0.418	105.817	0.173	0.072	0.174

Problem 2316	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	63	71	84	145	126	88	52	73
N.S.	1	1.00	0.78	0.88	1.04	1.79	1.56	1.09	0.64	0.90
time (sec)	N/A	0.078	0.094	0.015	1.035	0.404	94.034	0.170	0.072	0.143

Problem 2317	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	98	98	81	104	116	129	0	120	90	111
N.S.	1	1.00	0.83	1.06	1.18	1.32	0.00	1.22	0.92	1.13
time (sec)	N/A	0.081	0.088	0.027	1.228	0.400	0.000	0.184	0.065	0.207

Problem 2318	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	81	81	92	95	107	124	0	111	81	98
N.S.	1	1.00	1.14	1.17	1.32	1.53	0.00	1.37	1.00	1.21
time (sec)	N/A	0.071	0.048	0.020	1.386	0.404	0.000	0.305	0.078	0.218

Problem 2319	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	70	86	98	119	0	102	66	89
N.S.	1	1.00	0.97	1.19	1.36	1.65	0.00	1.42	0.92	1.24
time (sec)	N/A	0.046	0.054	0.019	1.366	0.409	0.000	0.175	2.409	0.232

Problem 2320	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	66	66	66	86	98	113	212	102	66	83
N.S.	1	1.00	1.00	1.30	1.48	1.71	3.21	1.55	1.00	1.26
time (sec)	N/A	0.040	0.056	0.019	1.121	0.407	122.219	0.175	2.401	0.192

Problem 2321	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	72	72	72	86	98	119	0	102	66	84
N.S.	1	1.00	1.00	1.19	1.36	1.65	0.00	1.42	0.92	1.17
time (sec)	N/A	0.045	0.059	0.020	1.208	0.395	0.000	0.174	0.067	0.195

Problem 2322	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	85	85	85	95	107	144	0	111	72	93
N.S.	1	1.00	1.00	1.12	1.26	1.69	0.00	1.31	0.85	1.09
time (sec)	N/A	0.061	0.078	0.023	1.227	0.406	0.000	0.175	0.072	0.255

Problem 2323	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	98	98	94	104	116	169	0	116	82	102
N.S.	1	1.00	0.96	1.06	1.18	1.72	0.00	1.18	0.84	1.04
time (sec)	N/A	0.080	0.111	0.023	1.173	0.397	0.000	0.178	0.071	0.212

Problem 2324	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	111	111	86	113	125	194	0	125	91	111
N.S.	1	1.00	0.77	1.02	1.13	1.75	0.00	1.13	0.82	1.00
time (sec)	N/A	0.098	0.198	0.023	1.313	0.411	0.000	0.197	0.075	0.203

Problem 2325	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	A	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	115	115	86	133	143	175	0	129	116	122
N.S.	1	1.00	0.75	1.16	1.24	1.52	0.00	1.12	1.01	1.06
time (sec)	N/A	0.082	0.118	0.022	1.381	0.407	0.000	0.200	2.413	0.293

Problem 2326	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	80	124	134	169	0	120	101	100
N.S.	1	1.00	0.80	1.24	1.34	1.69	0.00	1.20	1.01	1.00
time (sec)	N/A	0.063	0.082	0.020	1.291	0.404	0.000	0.186	2.424	0.284

Problem 2327	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	102	102	82	124	134	170	0	120	101	102
N.S.	1	1.00	0.80	1.22	1.31	1.67	0.00	1.18	0.99	1.00
time (sec)	N/A	0.059	0.081	0.020	1.358	0.399	0.000	0.191	0.069	0.294

Problem 2328	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	100	100	80	124	133	170	0	119	101	97
N.S.	1	1.00	0.80	1.24	1.33	1.70	0.00	1.19	1.01	0.97
time (sec)	N/A	0.067	0.077	0.020	1.312	0.398	0.000	0.182	0.071	0.296

Problem 2329	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	102	102	81	124	134	170	0	120	101	102
N.S.	1	1.00	0.79	1.22	1.31	1.67	0.00	1.18	0.99	1.00
time (sec)	N/A	0.062	0.149	0.021	1.055	0.420	0.000	0.191	2.392	0.256

Problem 2330	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	102	102	81	124	134	170	0	120	101	102
N.S.	1	1.00	0.79	1.22	1.31	1.67	0.00	1.18	0.99	1.00
time (sec)	N/A	0.063	0.097	0.021	0.961	0.411	0.000	0.176	2.401	0.267

Problem 2331	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	115	115	86	133	143	195	0	129	109	111
N.S.	1	1.00	0.75	1.16	1.24	1.70	0.00	1.12	0.95	0.97
time (sec)	N/A	0.085	0.141	0.021	0.994	0.411	0.000	0.184	2.402	0.310

Problem 2332	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	128	128	91	142	152	220	0	134	118	120
N.S.	1	1.00	0.71	1.11	1.19	1.72	0.00	1.05	0.92	0.94
time (sec)	N/A	0.096	0.286	0.023	0.982	0.428	0.000	0.182	0.080	0.302

Problem 2333	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	A	A	B	F(-1)	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	141	141	121	151	161	245	0	143	127	129
N.S.	1	1.00	0.86	1.07	1.14	1.74	0.00	1.01	0.90	0.91
time (sec)	N/A	0.116	0.176	0.027	0.976	0.398	0.000	0.190	0.079	0.304

Problem 2334	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	C	A	F	A	F	B	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	105	115	141	111	0	52	0	313	143	73
N.S.	1	1.10	1.34	1.06	0.00	0.50	0.00	2.98	1.36	0.70
time (sec)	N/A	0.243	0.273	0.334	0.000	0.418	0.000	1.012	3.274	1.378

Problem 2335	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	B	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	594	591	4291	8232	2662	5919	0	14376	6425	0
N.S.	1	0.99	7.22	13.86	4.48	9.96	0.00	24.20	10.82	0.00
time (sec)	N/A	0.687	6.699	0.051	0.899	0.541	0.000	0.821	5.848	0.625

Problem 2336	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	F(-1)	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	333	330	633	2557	1118	2156	0	4940	2307	0
N.S.	1	0.99	1.90	7.68	3.36	6.47	0.00	14.83	6.93	0.00
time (sec)	N/A	0.351	1.454	0.020	0.658	0.450	0.000	0.336	3.802	0.165

Problem 2337	Optimal	Rubi	MMA	Maple	Maxima	Fricas	Sympy	Giac	Mupad	I.A.
grade	A	A	A	B	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD	Yes
size	153	151	181	498	352	538	5930	1162	602	0
N.S.	1	0.99	1.18	3.25	2.30	3.52	38.76	7.59	3.93	0.00
time (sec)	N/A	0.109	0.339	0.007	0.527	0.405	5.252	0.224	2.971	0.092

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [420] had the largest ratio of [.4500]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	2	1	1.00	18	0.056
2	A	2	1	1.00	18	0.056
3	A	2	1	1.00	18	0.056
4	A	2	1	1.00	16	0.062
5	A	2	1	1.00	15	0.067
6	A	2	1	1.00	18	0.056
7	A	2	1	1.00	18	0.056
8	A	2	1	1.00	18	0.056
9	A	2	1	1.00	18	0.056
10	A	2	1	1.00	18	0.056
11	A	2	1	1.00	18	0.056
12	A	2	1	1.00	18	0.056
13	A	2	1	1.00	18	0.056
14	A	2	1	1.00	20	0.050
15	A	2	1	1.00	20	0.050
16	A	2	1	1.00	20	0.050
17	A	2	1	1.00	18	0.056
18	A	2	1	1.00	17	0.059
19	A	2	1	1.00	20	0.050
20	A	2	1	1.00	20	0.050
21	A	2	1	1.00	20	0.050
22	A	2	1	1.00	20	0.050
23	A	2	1	1.00	20	0.050
24	A	2	1	1.00	20	0.050
25	A	2	1	1.00	20	0.050
26	A	2	1	1.00	20	0.050
27	A	2	1	1.00	20	0.050
28	A	2	1	1.00	20	0.050
29	A	2	1	1.00	20	0.050
30	A	2	1	1.00	18	0.056
31	A	2	1	1.00	17	0.059
32	A	2	1	1.00	20	0.050
33	A	2	1	1.00	20	0.050
34	A	2	1	1.00	20	0.050
35	A	2	1	1.00	20	0.050
36	A	2	1	1.00	20	0.050
37	A	2	1	1.00	20	0.050
38	A	2	1	1.00	20	0.050
39	A	2	1	1.00	20	0.050

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
40	A	2	1	1.00	20	0.050
41	A	2	1	1.00	20	0.050
42	A	2	1	1.00	20	0.050
43	A	2	1	1.00	20	0.050
44	A	2	1	1.00	20	0.050
45	A	2	1	1.00	20	0.050
46	A	2	1	1.00	18	0.056
47	A	2	1	1.00	17	0.059
48	A	2	1	1.00	20	0.050
49	A	2	1	1.00	20	0.050
50	A	2	1	1.00	20	0.050
51	A	2	1	1.00	20	0.050
52	A	2	1	1.00	20	0.050
53	A	2	1	1.00	20	0.050
54	A	2	1	1.00	20	0.050
55	A	2	1	1.00	18	0.056
56	A	2	1	1.00	17	0.059
57	A	2	1	1.00	20	0.050
58	A	2	1	1.00	20	0.050
59	A	2	1	1.00	20	0.050
60	A	2	1	1.00	20	0.050
61	A	2	1	1.00	20	0.050
62	A	2	1	1.00	20	0.050
63	A	2	1	1.00	20	0.050
64	A	2	1	1.00	18	0.056
65	A	2	1	1.00	17	0.059
66	A	2	1	1.00	20	0.050
67	A	7	6	1.00	22	0.273
68	A	6	6	1.00	22	0.273
69	A	4	4	1.00	20	0.200
70	A	4	4	1.00	19	0.210
71	A	4	4	1.00	22	0.182
72	A	4	4	1.00	22	0.182
73	A	4	4	1.00	22	0.182
74	A	2	2	1.00	22	0.091
75	A	3	3	1.00	22	0.136
76	A	4	3	1.00	22	0.136
77	A	5	3	1.00	22	0.136
78	A	6	3	1.00	22	0.136
79	A	8	6	1.00	22	0.273
80	A	7	6	1.00	22	0.273
81	A	5	4	1.00	20	0.200
82	A	5	4	1.00	19	0.210
83	A	5	5	1.00	22	0.227
84	A	5	5	1.00	22	0.227
85	A	5	4	1.00	22	0.182
86	A	5	5	1.00	22	0.227
87	A	5	4	1.00	22	0.182

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
88	A	2	2	1.00	22	0.091
89	A	3	3	1.00	22	0.136
90	A	4	3	1.00	22	0.136
91	A	5	3	1.00	22	0.136
92	A	6	3	1.00	22	0.136
93	A	9	6	1.00	22	0.273
94	A	8	6	1.00	22	0.273
95	A	6	4	1.00	20	0.200
96	A	6	4	1.00	19	0.210
97	A	6	5	1.00	22	0.227
98	A	6	5	1.00	22	0.227
99	A	6	5	1.00	22	0.227
100	A	6	6	1.00	22	0.273
101	A	6	5	1.00	22	0.227
102	A	6	5	1.00	22	0.227
103	A	6	4	1.00	22	0.182
104	A	2	2	1.00	22	0.091
105	A	3	3	1.00	22	0.136
106	A	4	3	1.00	22	0.136
107	A	5	3	1.00	22	0.136
108	A	6	3	1.00	22	0.136
109	A	7	5	1.00	22	0.227
110	A	6	5	1.00	22	0.227
111	A	5	5	1.00	22	0.227
112	A	3	3	1.00	20	0.150
113	A	3	3	1.00	19	0.158
114	A	3	3	1.00	22	0.136
115	A	2	2	1.00	22	0.091
116	A	3	3	1.00	22	0.136
117	A	4	3	1.00	22	0.136
118	A	5	3	1.00	22	0.136
119	A	6	3	1.00	22	0.136
120	A	6	5	1.00	22	0.227
121	A	5	5	1.00	22	0.227
122	A	4	4	1.00	22	0.182
123	A	3	3	1.00	20	0.150
124	A	1	1	1.00	19	0.053
125	A	2	2	1.00	22	0.091
126	A	3	3	1.00	22	0.136
127	A	4	3	1.00	22	0.136
128	A	5	3	1.00	22	0.136
129	A	6	6	1.00	22	0.273
130	A	5	5	1.00	22	0.227
131	A	4	4	1.00	22	0.182
132	A	2	2	1.00	22	0.091
133	A	2	2	1.00	20	0.100
134	A	2	2	1.00	19	0.105
135	A	3	3	1.00	22	0.136

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
136	A	4	4	1.00	22	0.182
137	A	5	4	1.00	22	0.182
138	A	3	3	1.00	19	0.158
139	A	4	3	1.00	19	0.158
140	A	2	1	1.00	20	0.050
141	A	2	1	1.00	20	0.050
142	A	2	1	1.00	20	0.050
143	A	2	1	1.00	20	0.050
144	A	2	1	1.00	20	0.050
145	A	2	1	1.00	20	0.050
146	A	2	1	1.00	20	0.050
147	A	2	1	1.00	20	0.050
148	A	2	1	1.00	20	0.050
149	A	2	1	1.00	22	0.045
150	A	2	1	1.00	22	0.045
151	A	2	1	1.00	22	0.045
152	A	2	1	1.00	22	0.045
153	A	2	1	1.00	22	0.045
154	A	2	1	1.00	22	0.045
155	A	2	1	1.00	22	0.045
156	A	2	1	1.00	22	0.045
157	A	2	1	1.00	22	0.045
158	A	2	1	1.00	22	0.045
159	A	2	1	1.00	22	0.045
160	A	2	1	1.00	22	0.045
161	A	2	1	1.00	22	0.045
162	A	2	1	1.00	22	0.045
163	A	2	1	1.00	22	0.045
164	A	2	1	1.00	22	0.045
165	A	2	1	1.00	22	0.045
166	A	2	1	1.00	22	0.045
167	A	2	1	1.00	22	0.045
168	A	7	5	1.00	22	0.227
169	A	6	5	1.00	22	0.227
170	A	5	5	1.00	22	0.227
171	A	4	4	1.00	22	0.182
172	A	4	4	1.00	22	0.182
173	A	5	5	1.00	22	0.227
174	A	6	5	1.00	22	0.227
175	A	7	5	1.00	22	0.227
176	A	8	5	1.00	22	0.227
177	A	7	5	1.00	22	0.227
178	A	6	5	1.00	22	0.227
179	A	5	5	1.00	22	0.227
180	A	4	4	1.00	22	0.182
181	A	5	5	1.00	22	0.227
182	A	6	5	1.00	22	0.227
183	A	7	5	1.00	22	0.227

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
184	A	8	5	1.00	22	0.227
185	A	8	6	1.00	22	0.273
186	A	7	6	1.00	22	0.273
187	A	6	6	1.00	22	0.273
188	A	5	5	1.00	22	0.227
189	A	5	5	1.00	22	0.227
190	A	6	5	1.00	22	0.227
191	A	7	5	1.00	22	0.227
192	A	8	5	1.00	22	0.227
193	A	9	5	1.00	22	0.227
194	A	6	3	1.00	24	0.125
195	A	5	3	1.00	24	0.125
196	A	4	3	1.00	24	0.125
197	A	3	3	1.00	24	0.125
198	A	2	2	1.00	24	0.083
199	A	4	4	1.00	24	0.167
200	A	4	4	1.00	24	0.167
201	A	4	4	1.00	24	0.167
202	A	5	5	1.00	24	0.208
203	A	6	3	1.00	24	0.125
204	A	5	3	1.00	24	0.125
205	A	4	3	1.00	24	0.125
206	A	3	3	1.00	24	0.125
207	A	2	2	1.00	24	0.083
208	A	5	4	1.00	24	0.167
209	A	5	4	1.00	24	0.167
210	A	5	5	1.00	24	0.208
211	A	5	4	1.00	24	0.167
212	A	6	5	1.00	24	0.208
213	A	7	5	1.00	24	0.208
214	A	6	3	1.00	24	0.125
215	A	5	3	1.00	24	0.125
216	A	4	3	1.00	24	0.125
217	A	3	3	1.00	24	0.125
218	A	2	2	1.00	24	0.083
219	A	6	4	1.00	24	0.167
220	A	6	4	1.00	24	0.167
221	A	6	5	1.00	24	0.208
222	A	6	5	1.00	24	0.208
223	A	6	4	1.00	24	0.167
224	A	7	5	1.00	24	0.208
225	A	5	3	1.00	24	0.125
226	A	4	3	1.00	24	0.125
227	A	3	3	1.00	24	0.125
228	A	2	2	1.00	24	0.083
229	A	3	3	1.00	26	0.115
230	A	3	3	1.00	24	0.125
231	A	4	4	1.00	24	0.167

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
232	A	5	4	1.00	24	0.167
233	A	5	3	1.00	24	0.125
234	A	4	3	1.00	24	0.125
235	A	3	3	1.00	24	0.125
236	A	2	2	1.00	24	0.083
237	A	3	3	1.00	24	0.125
238	A	4	4	1.00	24	0.167
239	A	5	5	1.00	24	0.208
240	A	6	5	1.00	24	0.208
241	A	7	5	1.00	24	0.208
242	A	5	3	1.00	24	0.125
243	A	4	3	1.00	24	0.125
244	A	3	3	1.00	24	0.125
245	A	2	2	1.00	24	0.083
246	A	4	4	1.00	24	0.167
247	A	5	5	1.00	24	0.208
248	A	6	5	1.00	24	0.208
249	A	7	5	1.00	24	0.208
250	A	1	1	1.00	25	0.040
251	A	2	1	1.00	16	0.062
252	A	2	1	1.00	16	0.062
253	A	2	1	1.00	14	0.071
254	A	2	1	1.00	13	0.077
255	A	2	1	1.00	16	0.062
256	A	2	1	1.00	16	0.062
257	A	2	1	1.00	16	0.062
258	A	2	1	1.00	18	0.056
259	A	2	1	1.00	18	0.056
260	A	2	1	1.00	16	0.062
261	A	3	2	1.00	15	0.133
262	A	2	1	1.00	18	0.056
263	A	2	1	1.00	18	0.056
264	A	2	1	1.00	18	0.056
265	A	2	1	1.00	18	0.056
266	A	2	1	1.00	18	0.056
267	A	2	1	1.00	16	0.062
268	A	3	2	1.00	15	0.133
269	A	2	1	1.00	18	0.056
270	A	2	1	1.00	18	0.056
271	A	2	1	1.00	18	0.056
272	A	2	1	1.00	18	0.056
273	A	2	1	1.00	18	0.056
274	A	2	1	1.00	16	0.062
275	A	3	2	1.00	15	0.133
276	A	2	1	1.00	18	0.056
277	A	2	1	1.00	18	0.056
278	A	2	1	1.00	18	0.056
279	A	5	4	1.00	18	0.222

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
280	A	5	4	1.00	18	0.222
281	A	5	4	1.00	18	0.222
282	A	4	4	1.00	16	0.250
283	A	3	3	1.00	15	0.200
284	A	5	4	1.00	18	0.222
285	A	5	4	1.00	18	0.222
286	A	5	4	1.00	18	0.222
287	A	5	4	1.00	18	0.222
288	A	3	3	1.00	16	0.188
289	A	6	5	1.00	18	0.278
290	A	5	5	1.00	18	0.278
291	A	4	4	1.00	18	0.222
292	A	2	2	1.00	16	0.125
293	A	2	2	1.00	15	0.133
294	A	6	5	1.00	18	0.278
295	A	6	5	1.00	18	0.278
296	A	6	5	1.00	18	0.278
297	A	5	3	1.00	23	0.130
298	A	5	3	1.00	23	0.130
299	A	5	3	1.00	23	0.130
300	A	4	3	1.00	21	0.143
301	A	3	2	1.00	20	0.100
302	A	2	1	1.00	23	0.043
303	A	2	1	1.00	23	0.043
304	A	2	1	1.00	23	0.043
305	A	2	1	1.00	23	0.043
306	A	6	4	1.00	23	0.174
307	A	5	4	1.00	23	0.174
308	A	4	3	1.00	23	0.130
309	A	2	2	1.00	21	0.095
310	A	2	2	1.00	20	0.100
311	A	3	2	1.00	23	0.087
312	A	3	2	1.00	23	0.087
313	A	3	2	1.00	23	0.087
314	A	7	5	1.00	20	0.250
315	A	6	5	1.00	20	0.250
316	A	5	5	1.00	20	0.250
317	A	4	4	1.00	18	0.222
318	A	4	4	1.00	17	0.235
319	A	7	7	1.00	20	0.350
320	A	7	7	1.00	20	0.350
321	A	7	7	1.00	20	0.350
322	A	5	5	1.00	20	0.250
323	A	6	6	1.00	20	0.300
324	A	7	6	1.00	20	0.300
325	A	8	6	1.00	20	0.300
326	A	8	5	1.00	20	0.250
327	A	7	5	1.00	20	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
328	A	6	5	1.00	20	0.250
329	A	5	4	1.00	18	0.222
330	A	5	4	1.00	17	0.235
331	A	8	7	1.00	20	0.350
332	A	8	8	1.00	20	0.400
333	A	8	7	1.00	20	0.350
334	A	8	8	1.00	20	0.400
335	A	8	7	1.00	20	0.350
336	A	6	5	1.00	20	0.250
337	A	7	6	1.00	20	0.300
338	A	8	6	1.00	20	0.300
339	A	9	5	1.00	20	0.250
340	A	8	5	1.00	20	0.250
341	A	7	5	1.00	20	0.250
342	A	6	4	1.00	18	0.222
343	A	6	4	1.00	17	0.235
344	A	9	7	1.00	20	0.350
345	A	9	8	1.00	20	0.400
346	A	9	8	1.00	20	0.400
347	A	9	7	1.00	20	0.350
348	A	9	8	1.00	20	0.400
349	A	9	8	1.00	20	0.400
350	A	9	7	1.00	20	0.350
351	A	7	5	1.00	20	0.250
352	A	8	6	1.00	20	0.300
353	A	9	6	1.00	20	0.300
354	A	6	4	1.00	20	0.200
355	A	5	4	1.00	20	0.200
356	A	4	4	1.00	20	0.200
357	A	3	3	1.00	18	0.167
358	A	3	3	1.00	17	0.176
359	A	6	6	1.00	20	0.300
360	A	4	4	1.00	20	0.200
361	A	5	5	1.00	20	0.250
362	A	6	5	1.00	20	0.250
363	A	7	5	1.00	20	0.250
364	A	8	5	1.00	20	0.250
365	A	5	5	1.00	20	0.250
366	A	4	4	1.00	20	0.200
367	A	4	4	1.00	20	0.200
368	A	3	3	1.00	18	0.167
369	A	1	1	1.00	17	0.059
370	A	5	5	1.00	20	0.250
371	A	5	5	1.00	20	0.250
372	A	6	6	1.00	20	0.300
373	A	7	6	1.00	20	0.300
374	A	5	4	1.00	20	0.200
375	A	4	4	1.00	20	0.200

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
376	A	2	2	1.00	20	0.100
377	A	2	2	0.94	18	0.111
378	A	2	2	1.00	17	0.118
379	A	6	5	1.00	20	0.250
380	A	6	5	1.00	20	0.250
381	A	7	6	1.00	20	0.300
382	A	3	3	1.00	17	0.176
383	A	4	3	1.00	17	0.176
384	A	2	1	1.00	18	0.056
385	A	2	1	1.00	18	0.056
386	A	2	1	1.00	18	0.056
387	A	2	1	1.00	18	0.056
388	A	2	1	1.00	18	0.056
389	A	2	1	1.00	18	0.056
390	A	2	1	1.00	18	0.056
391	A	2	1	1.00	18	0.056
392	A	2	1	1.00	18	0.056
393	A	2	1	1.00	20	0.050
394	A	2	1	1.00	20	0.050
395	A	2	1	1.00	20	0.050
396	A	2	1	1.00	20	0.050
397	A	2	1	1.00	20	0.050
398	A	2	1	1.00	20	0.050
399	A	2	1	1.00	20	0.050
400	A	2	1	1.00	20	0.050
401	A	2	1	1.00	20	0.050
402	A	2	1	1.00	20	0.050
403	A	2	1	1.00	20	0.050
404	A	2	1	1.00	20	0.050
405	A	2	1	1.00	20	0.050
406	A	2	1	1.00	20	0.050
407	A	2	1	1.00	20	0.050
408	A	2	1	1.00	20	0.050
409	A	2	1	1.00	20	0.050
410	A	2	1	1.00	20	0.050
411	A	2	1	1.00	20	0.050
412	A	13	8	1.00	20	0.400
413	A	12	8	1.00	20	0.400
414	A	11	8	1.00	20	0.400
415	A	10	7	1.00	20	0.350
416	A	11	8	1.00	20	0.400
417	A	12	8	1.00	20	0.400
418	A	13	8	1.00	20	0.400
419	A	14	8	1.00	20	0.400
420	A	12	9	1.00	20	0.450
421	A	11	8	1.00	20	0.400
422	A	11	8	1.00	20	0.400
423	A	11	8	1.00	20	0.400

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
424	A	12	9	1.00	20	0.450
425	A	13	9	1.00	20	0.450
426	A	12	8	1.00	20	0.400
427	A	12	9	1.00	20	0.450
428	A	12	9	1.00	20	0.450
429	A	12	9	1.00	20	0.450
430	A	12	8	1.00	20	0.400
431	A	13	9	1.00	20	0.450
432	A	4	3	1.00	18	0.167
433	A	2	1	1.00	20	0.050
434	A	2	1	1.00	20	0.050
435	A	2	1	1.00	20	0.050
436	A	2	1	1.00	18	0.056
437	A	3	2	1.00	25	0.080
438	A	3	2	1.00	25	0.080
439	A	3	2	1.00	25	0.080
440	A	3	2	1.00	23	0.087
441	A	3	2	1.00	22	0.091
442	A	4	3	1.00	25	0.120
443	A	3	2	1.00	25	0.080
444	A	3	2	1.00	25	0.080
445	A	3	2	1.00	25	0.080
446	A	3	3	1.00	25	0.120
447	A	3	2	1.00	25	0.080
448	A	3	2	1.00	25	0.080
449	A	3	2	1.00	25	0.080
450	A	3	2	1.00	27	0.074
451	A	3	2	1.00	27	0.074
452	A	3	2	1.00	27	0.074
453	A	3	2	1.00	25	0.080
454	A	3	2	1.00	24	0.083
455	A	4	3	1.00	27	0.111
456	A	3	2	1.00	27	0.074
457	A	3	2	1.00	27	0.074
458	A	3	2	1.00	27	0.074
459	A	3	2	1.00	27	0.074
460	A	4	3	1.00	27	0.111
461	A	3	3	1.00	27	0.111
462	A	3	2	1.00	27	0.074
463	A	3	2	1.00	27	0.074
464	A	3	2	1.00	27	0.074
465	A	3	2	1.00	27	0.074
466	A	3	2	1.00	27	0.074
467	A	3	2	1.00	27	0.074
468	A	3	2	1.00	27	0.074
469	A	3	2	1.00	27	0.074
470	A	3	2	1.00	25	0.080
471	A	3	2	1.00	24	0.083

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
472	A	4	3	1.00	27	0.111
473	A	3	2	1.00	27	0.074
474	A	3	2	1.00	27	0.074
475	A	3	2	1.00	27	0.074
476	A	3	2	1.00	27	0.074
477	A	3	2	1.00	27	0.074
478	A	3	2	1.00	27	0.074
479	A	4	3	1.00	27	0.111
480	A	3	3	1.00	27	0.111
481	A	4	4	1.00	27	0.148
482	A	3	2	1.00	27	0.074
483	A	3	2	1.00	27	0.074
484	A	3	2	1.00	27	0.074
485	A	3	2	1.00	27	0.074
486	A	3	2	1.00	19	0.105
487	A	3	2	1.00	19	0.105
488	A	3	2	1.00	19	0.105
489	A	3	2	1.00	19	0.105
490	A	3	2	1.00	19	0.105
491	A	3	2	1.00	19	0.105
492	A	3	2	1.00	17	0.118
493	A	3	2	1.00	16	0.125
494	A	4	3	1.00	19	0.158
495	A	3	2	1.00	19	0.105
496	A	3	2	1.00	19	0.105
497	A	3	2	1.00	19	0.105
498	A	3	2	1.00	19	0.105
499	A	3	2	1.00	19	0.105
500	A	3	2	1.00	19	0.105
501	A	3	2	1.00	19	0.105
502	A	3	2	1.00	19	0.105
503	A	3	2	1.00	19	0.105
504	A	3	2	1.00	19	0.105
505	A	4	3	1.00	19	0.158
506	A	3	3	1.00	19	0.158
507	A	4	4	1.00	19	0.210
508	A	5	4	1.00	19	0.210
509	A	6	4	1.00	19	0.210
510	A	7	4	1.00	19	0.210
511	A	8	4	1.00	19	0.210
512	A	3	2	1.00	19	0.105
513	A	3	2	1.00	19	0.105
514	A	3	2	1.00	19	0.105
515	A	3	2	1.00	17	0.118
516	A	3	2	1.00	17	0.118
517	A	3	2	1.00	17	0.118
518	A	3	2	1.00	17	0.118
519	A	3	2	1.00	17	0.118

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
520	A	3	2	1.00	17	0.118
521	A	3	2	1.00	17	0.118
522	A	3	2	1.00	17	0.118
523	A	3	2	1.00	17	0.118
524	A	3	2	1.00	17	0.118
525	A	3	2	1.00	15	0.133
526	A	2	2	1.00	14	0.143
527	A	3	2	1.00	17	0.118
528	A	3	2	1.00	17	0.118
529	A	3	2	1.00	17	0.118
530	A	3	2	1.00	17	0.118
531	A	3	2	1.00	17	0.118
532	A	3	2	1.00	17	0.118
533	A	3	2	1.00	17	0.118
534	A	3	2	1.00	17	0.118
535	A	3	2	1.00	17	0.118
536	A	3	2	1.00	17	0.118
537	A	3	2	1.00	17	0.118
538	A	3	2	1.00	17	0.118
539	A	2	2	1.00	17	0.118
540	A	3	3	1.00	17	0.176
541	A	4	3	1.00	17	0.176
542	A	5	3	1.00	17	0.176
543	A	6	3	1.00	17	0.176
544	A	7	3	1.00	17	0.176
545	A	8	3	1.00	17	0.176
546	A	9	3	1.00	17	0.176
547	A	3	2	1.00	17	0.118
548	A	3	2	1.00	17	0.118
549	A	3	2	1.00	27	0.074
550	A	3	2	1.00	27	0.074
551	A	3	2	1.00	27	0.074
552	A	3	2	1.00	27	0.074
553	A	3	2	1.00	25	0.080
554	A	3	2	1.00	24	0.083
555	A	3	2	1.00	27	0.074
556	A	3	2	1.00	27	0.074
557	A	3	2	1.00	27	0.074
558	A	3	2	1.00	27	0.074
559	A	3	2	1.00	27	0.074
560	A	3	2	1.00	27	0.074
561	A	3	2	1.00	27	0.074
562	A	3	2	1.00	27	0.074
563	A	4	3	1.00	27	0.111
564	A	3	2	1.00	25	0.080
565	A	3	2	1.00	24	0.083
566	A	3	2	1.00	27	0.074
567	A	3	2	1.00	27	0.074

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
568	A	3	2	1.00	27	0.074
569	A	3	2	1.00	27	0.074
570	A	3	2	1.00	27	0.074
571	A	3	2	1.00	27	0.074
572	A	4	3	1.00	27	0.111
573	A	3	3	1.00	27	0.111
574	A	3	2	1.00	27	0.074
575	A	3	2	1.00	25	0.080
576	A	3	2	1.00	24	0.083
577	A	3	2	1.00	27	0.074
578	A	3	2	1.00	27	0.074
579	A	3	2	1.00	27	0.074
580	A	3	2	1.00	29	0.069
581	A	3	2	1.00	29	0.069
582	A	3	2	1.00	29	0.069
583	A	3	2	1.00	27	0.074
584	A	2	2	1.00	26	0.077
585	A	3	2	1.00	29	0.069
586	A	3	2	1.00	29	0.069
587	A	3	2	1.00	29	0.069
588	A	3	3	1.00	29	0.103
589	A	3	2	1.00	29	0.069
590	A	3	2	1.00	29	0.069
591	A	3	2	1.00	29	0.069
592	A	3	2	1.00	29	0.069
593	A	3	2	1.00	29	0.069
594	A	3	2	1.00	29	0.069
595	A	3	2	1.00	29	0.069
596	A	3	2	1.00	27	0.074
597	A	2	2	1.00	26	0.077
598	A	4	3	1.00	29	0.103
599	A	3	2	1.00	29	0.069
600	A	3	2	1.00	29	0.069
601	A	3	2	1.00	29	0.069
602	A	4	3	1.00	29	0.103
603	A	3	3	1.00	29	0.103
604	A	3	2	1.00	29	0.069
605	A	3	2	1.00	29	0.069
606	A	3	2	1.00	29	0.069
607	A	3	2	1.00	29	0.069
608	A	3	2	1.00	29	0.069
609	A	3	2	1.00	29	0.069
610	A	3	2	1.00	29	0.069
611	A	3	2	1.00	29	0.069
612	A	3	2	1.00	29	0.069
613	A	3	2	1.00	29	0.069
614	A	3	2	1.00	29	0.069
615	A	3	2	1.00	27	0.074

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
616	A	2	2	1.00	26	0.077
617	A	4	3	1.00	29	0.103
618	A	3	2	1.00	29	0.069
619	A	3	2	1.00	29	0.069
620	A	3	2	1.00	29	0.069
621	A	3	2	1.00	29	0.069
622	A	3	2	1.00	29	0.069
623	A	4	3	1.00	29	0.103
624	A	3	3	1.00	29	0.103
625	A	4	4	1.00	29	0.138
626	A	3	2	1.00	29	0.069
627	A	3	2	1.00	29	0.069
628	A	3	2	1.00	29	0.069
629	A	3	2	1.00	29	0.069
630	A	3	2	1.00	29	0.069
631	A	3	2	1.00	29	0.069
632	A	3	2	1.00	29	0.069
633	A	3	2	1.00	29	0.069
634	A	3	2	1.00	27	0.074
635	A	3	3	1.00	26	0.115
636	A	3	2	1.00	29	0.069
637	A	5	5	1.00	29	0.172
638	A	3	2	1.00	29	0.069
639	A	3	2	1.00	29	0.069
640	A	3	2	1.00	29	0.069
641	A	3	2	1.00	29	0.069
642	A	3	2	1.00	29	0.069
643	A	3	2	1.00	29	0.069
644	A	3	2	1.00	27	0.074
645	A	2	2	1.00	26	0.077
646	A	3	2	1.00	29	0.069
647	A	3	2	1.00	29	0.069
648	A	3	2	1.00	29	0.069
649	A	3	2	1.00	29	0.069
650	A	4	3	1.00	29	0.103
651	A	3	3	1.00	29	0.103
652	A	3	2	1.00	27	0.074
653	A	2	2	1.00	26	0.077
654	A	3	2	1.00	29	0.069
655	A	3	2	1.00	29	0.069
656	A	3	2	1.00	27	0.074
657	A	3	2	1.00	27	0.074
658	A	3	2	1.00	27	0.074
659	A	3	2	1.00	27	0.074
660	A	3	2	1.00	27	0.074
661	A	3	2	1.00	27	0.074
662	A	3	2	1.00	27	0.074
663	A	3	2	1.00	27	0.074

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
664	A	3	2	1.00	27	0.074
665	A	3	2	1.00	29	0.069
666	A	3	2	1.00	29	0.069
667	A	3	2	1.00	29	0.069
668	A	3	2	1.00	29	0.069
669	A	3	2	1.00	29	0.069
670	A	3	2	1.00	29	0.069
671	A	3	2	1.00	29	0.069
672	A	3	2	1.00	29	0.069
673	A	3	2	1.00	29	0.069
674	A	3	2	1.00	29	0.069
675	A	3	2	1.00	29	0.069
676	A	3	2	1.00	29	0.069
677	A	3	2	1.00	29	0.069
678	A	3	2	1.00	29	0.069
679	A	3	2	1.00	29	0.069
680	A	3	2	1.00	29	0.069
681	A	3	2	1.00	29	0.069
682	A	3	2	1.00	29	0.069
683	A	3	2	1.00	29	0.069
684	A	8	5	1.00	29	0.172
685	A	7	5	1.00	29	0.172
686	A	6	5	1.00	29	0.172
687	A	5	5	1.00	29	0.172
688	A	4	4	1.00	29	0.138
689	A	5	5	1.00	29	0.172
690	A	6	5	1.00	29	0.172
691	A	7	5	1.00	29	0.172
692	A	8	5	1.00	29	0.172
693	A	8	6	1.00	29	0.207
694	A	7	6	1.00	29	0.207
695	A	6	5	1.00	29	0.172
696	A	6	6	1.00	29	0.207
697	A	6	5	1.00	29	0.172
698	A	7	5	1.00	29	0.172
699	A	8	5	1.00	29	0.172
700	A	10	6	1.00	29	0.207
701	A	9	6	1.00	29	0.207
702	A	8	5	1.00	29	0.172
703	A	8	6	1.00	29	0.207
704	A	8	6	1.00	29	0.207
705	A	8	6	1.00	29	0.207
706	A	8	5	1.00	29	0.172
707	A	9	5	1.00	29	0.172
708	A	10	5	1.00	29	0.172
709	A	3	2	1.00	31	0.065
710	A	3	2	1.00	31	0.065
711	A	3	2	1.00	31	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
712	A	3	2	1.00	31	0.065
713	A	3	2	1.00	31	0.065
714	A	3	2	1.00	31	0.065
715	A	3	2	1.00	31	0.065
716	A	3	2	1.00	31	0.065
717	A	3	2	1.00	31	0.065
718	A	3	2	1.00	31	0.065
719	A	3	2	1.00	31	0.065
720	A	3	2	1.00	31	0.065
721	A	3	2	1.00	31	0.065
722	A	3	2	1.00	31	0.065
723	A	3	2	1.00	31	0.065
724	A	3	2	1.00	31	0.065
725	A	3	2	1.00	31	0.065
726	A	3	2	1.00	31	0.065
727	A	3	2	1.00	31	0.065
728	A	3	2	1.00	31	0.065
729	A	3	2	1.00	31	0.065
730	A	3	2	1.00	31	0.065
731	A	3	2	1.00	31	0.065
732	A	3	2	1.00	31	0.065
733	A	3	2	1.00	31	0.065
734	A	3	2	1.00	31	0.065
735	A	3	2	1.00	31	0.065
736	A	8	5	1.00	31	0.161
737	A	7	5	1.00	31	0.161
738	A	6	5	1.00	31	0.161
739	A	5	5	1.00	31	0.161
740	A	4	4	1.00	31	0.129
741	A	4	4	1.00	31	0.129
742	A	5	5	1.00	31	0.161
743	A	6	5	1.00	31	0.161
744	A	7	5	1.00	31	0.161
745	A	8	6	1.00	31	0.194
746	A	7	6	1.00	31	0.194
747	A	6	6	1.00	31	0.194
748	A	5	5	1.00	31	0.161
749	A	5	5	1.00	31	0.161
750	A	6	5	1.00	31	0.161
751	A	7	5	1.00	31	0.161
752	A	8	5	1.00	31	0.161
753	A	10	6	1.00	31	0.194
754	A	9	6	1.00	31	0.194
755	A	8	6	1.00	31	0.194
756	A	7	5	1.00	31	0.161
757	A	7	6	1.00	31	0.194
758	A	7	6	1.00	31	0.194
759	A	7	5	1.00	31	0.161

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
760	A	8	5	1.00	31	0.161
761	A	9	5	1.00	31	0.161
762	A	10	5	1.00	31	0.161
763	A	3	2	1.00	27	0.074
764	A	3	2	1.00	27	0.074
765	A	3	2	1.00	25	0.080
766	A	3	2	1.00	17	0.118
767	A	3	2	1.00	19	0.105
768	A	2	1	1.00	19	0.053
769	A	2	1	1.00	19	0.053
770	A	2	1	1.00	17	0.059
771	A	2	1	1.00	16	0.062
772	A	2	1	1.00	19	0.053
773	A	2	1	1.00	19	0.053
774	A	2	1	1.00	19	0.053
775	A	2	1	1.00	19	0.053
776	A	2	1	1.00	19	0.053
777	A	2	1	1.00	19	0.053
778	A	2	1	1.00	19	0.053
779	A	2	1	1.00	19	0.053
780	A	2	1	1.00	21	0.048
781	A	2	1	1.00	19	0.053
782	A	2	1	1.00	18	0.056
783	A	2	1	1.00	21	0.048
784	A	2	1	1.00	21	0.048
785	A	2	1	1.00	21	0.048
786	A	2	1	1.00	21	0.048
787	A	2	1	1.00	21	0.048
788	A	2	1	1.00	21	0.048
789	A	2	1	1.00	21	0.048
790	A	2	1	1.00	21	0.048
791	A	2	1	1.00	21	0.048
792	A	2	1	1.00	21	0.048
793	A	2	1	1.00	19	0.053
794	A	2	1	1.00	18	0.056
795	A	2	1	1.00	21	0.048
796	A	2	1	1.00	21	0.048
797	A	2	1	1.00	21	0.048
798	A	2	1	1.00	21	0.048
799	A	2	1	1.00	21	0.048
800	A	2	1	1.00	21	0.048
801	A	2	1	1.00	21	0.048
802	A	2	1	1.00	21	0.048
803	A	2	1	1.00	21	0.048
804	A	2	1	1.00	21	0.048
805	A	2	1	1.00	21	0.048
806	A	6	5	1.00	21	0.238
807	A	6	5	1.00	21	0.238

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
808	A	6	5	1.00	21	0.238
809	A	5	5	1.00	19	0.263
810	A	4	4	1.00	18	0.222
811	A	6	5	1.00	21	0.238
812	A	6	5	1.00	21	0.238
813	A	6	5	1.00	21	0.238
814	A	6	5	1.00	21	0.238
815	A	7	6	1.00	21	0.286
816	A	6	6	1.00	21	0.286
817	A	5	5	1.00	21	0.238
818	A	3	3	1.00	19	0.158
819	A	3	3	1.00	18	0.167
820	A	7	6	1.00	21	0.286
821	A	7	6	1.00	21	0.286
822	A	7	6	1.00	21	0.286
823	A	1	1	1.00	16	0.062
824	A	3	2	1.00	16	0.125
825	A	4	4	1.00	16	0.250
826	A	4	4	1.00	18	0.222
827	A	3	2	1.00	14	0.143
828	A	3	2	1.00	18	0.111
829	A	1	1	1.00	18	0.056
830	A	3	3	1.00	14	0.214
831	A	3	3	1.00	14	0.214
832	A	4	4	1.00	14	0.286
833	A	1	1	1.00	7	0.143
834	A	2	2	1.00	24	0.083
835	A	7	5	1.00	23	0.217
836	A	6	5	1.00	23	0.217
837	A	5	5	1.00	23	0.217
838	A	4	4	1.00	21	0.190
839	A	4	4	1.00	20	0.200
840	A	6	5	1.00	23	0.217
841	A	6	5	1.00	23	0.217
842	A	6	5	1.00	23	0.217
843	A	4	4	1.00	23	0.174
844	A	5	5	1.00	23	0.217
845	A	6	5	1.00	23	0.217
846	A	7	5	1.00	23	0.217
847	A	8	5	1.00	23	0.217
848	A	7	5	1.00	23	0.217
849	A	6	5	1.00	23	0.217
850	A	5	4	1.00	21	0.190
851	A	5	4	1.00	20	0.200
852	A	7	5	1.00	23	0.217
853	A	7	6	1.00	23	0.261
854	A	7	5	1.00	23	0.217
855	A	7	6	1.00	23	0.261

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
856	A	7	5	1.00	23	0.217
857	A	5	4	1.00	23	0.174
858	A	6	5	1.00	23	0.217
859	A	7	5	1.00	23	0.217
860	A	9	5	1.00	23	0.217
861	A	8	5	1.00	23	0.217
862	A	7	5	1.00	23	0.217
863	A	6	4	1.00	21	0.190
864	A	6	4	1.00	20	0.200
865	A	8	5	1.00	23	0.217
866	A	8	6	1.00	23	0.261
867	A	8	6	1.00	23	0.261
868	A	8	5	1.00	23	0.217
869	A	8	6	1.00	23	0.261
870	A	8	6	1.00	23	0.261
871	A	8	5	1.00	23	0.217
872	A	6	4	1.00	23	0.174
873	A	7	5	1.00	23	0.217
874	A	8	5	1.00	23	0.217
875	A	6	4	1.00	23	0.174
876	A	5	4	1.00	23	0.174
877	A	4	4	1.00	23	0.174
878	A	3	3	1.00	21	0.143
879	A	3	3	1.00	20	0.150
880	A	5	4	1.00	23	0.174
881	A	3	3	1.00	23	0.130
882	A	4	4	1.00	23	0.174
883	A	5	4	1.00	23	0.174
884	A	6	4	1.00	23	0.174
885	A	7	4	1.00	23	0.174
886	A	5	5	1.00	23	0.217
887	A	4	4	1.00	23	0.174
888	A	4	4	1.00	23	0.174
889	A	3	3	1.00	21	0.143
890	A	1	1	1.00	20	0.050
891	A	4	4	1.00	23	0.174
892	A	4	4	1.00	23	0.174
893	A	5	5	1.00	23	0.217
894	A	6	5	1.00	23	0.217
895	A	5	4	1.00	23	0.174
896	A	4	4	1.00	23	0.174
897	A	2	2	1.00	23	0.087
898	A	2	2	1.00	21	0.095
899	A	2	2	1.00	20	0.100
900	A	5	4	1.00	23	0.174
901	A	5	4	1.00	23	0.174
902	A	6	5	1.00	23	0.217
903	A	3	3	1.00	20	0.150

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
904	A	4	3	1.00	20	0.150
905	A	2	2	1.00	21	0.095
906	A	2	1	1.00	21	0.048
907	A	2	1	1.00	21	0.048
908	A	2	1	1.00	21	0.048
909	A	2	1	1.00	21	0.048
910	A	2	1	1.00	21	0.048
911	A	2	1	1.00	21	0.048
912	A	2	1	1.00	21	0.048
913	A	2	1	1.00	21	0.048
914	A	2	1	1.00	21	0.048
915	A	2	1	1.00	23	0.043
916	A	2	1	1.00	23	0.043
917	A	2	1	1.00	23	0.043
918	A	2	1	1.00	23	0.043
919	A	2	1	1.00	23	0.043
920	A	2	1	1.00	23	0.043
921	A	2	1	1.00	23	0.043
922	A	2	1	1.00	23	0.043
923	A	2	1	1.00	23	0.043
924	A	2	1	1.00	23	0.043
925	A	2	1	1.00	23	0.043
926	A	2	1	1.00	23	0.043
927	A	2	1	1.00	23	0.043
928	A	2	1	1.00	23	0.043
929	A	2	1	1.00	23	0.043
930	A	2	1	1.00	23	0.043
931	A	2	1	1.00	23	0.043
932	A	2	1	1.00	23	0.043
933	A	2	1	1.00	23	0.043
934	A	7	4	1.00	23	0.174
935	A	6	4	1.00	23	0.174
936	A	5	4	1.00	23	0.174
937	A	4	3	1.00	23	0.130
938	A	5	4	1.00	23	0.174
939	A	6	4	1.00	23	0.174
940	A	7	4	1.00	23	0.174
941	A	8	4	1.00	23	0.174
942	A	6	5	1.00	23	0.217
943	A	5	4	1.00	23	0.174
944	A	5	4	1.00	23	0.174
945	A	5	4	1.00	23	0.174
946	A	6	5	1.00	23	0.217
947	A	7	5	1.00	23	0.217
948	A	6	4	1.00	23	0.174
949	A	6	5	1.00	23	0.217
950	A	6	5	1.00	23	0.217
951	A	6	5	1.00	23	0.217

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
952	A	6	4	1.00	23	0.174
953	A	7	5	1.00	23	0.217
954	A	2	1	1.00	23	0.043
955	A	2	1	1.00	23	0.043
956	A	2	1	1.00	21	0.048
957	A	2	1	1.00	22	0.045
958	A	2	1	1.00	22	0.045
959	A	2	1	1.00	22	0.045
960	A	2	1	1.00	22	0.045
961	A	2	1	1.00	20	0.050
962	A	2	1	1.00	15	0.067
963	A	2	1	1.00	22	0.045
964	A	2	1	1.00	22	0.045
965	A	2	1	1.00	22	0.045
966	A	2	1	1.00	22	0.045
967	A	2	1	1.00	22	0.045
968	A	2	1	1.00	22	0.045
969	A	2	1	1.00	24	0.042
970	A	2	1	1.00	24	0.042
971	A	2	1	1.00	24	0.042
972	A	2	1	1.00	22	0.045
973	A	2	1	1.00	17	0.059
974	A	2	1	1.00	24	0.042
975	A	2	1	1.00	24	0.042
976	A	2	1	1.00	24	0.042
977	A	2	1	1.00	24	0.042
978	A	2	1	1.00	24	0.042
979	A	2	1	1.00	24	0.042
980	A	2	1	1.00	24	0.042
981	A	2	1	1.00	24	0.042
982	A	2	1	1.00	24	0.042
983	A	2	1	1.00	24	0.042
984	A	2	1	1.00	24	0.042
985	A	2	1	1.00	24	0.042
986	A	2	1	1.00	22	0.045
987	A	2	1	1.00	17	0.059
988	A	2	1	1.00	24	0.042
989	A	2	1	1.00	24	0.042
990	A	2	1	1.00	24	0.042
991	A	2	1	1.00	24	0.042
992	A	2	1	1.00	24	0.042
993	A	2	1	1.00	24	0.042
994	A	2	1	1.00	24	0.042
995	A	2	1	1.00	22	0.045
996	A	2	1	1.00	17	0.059
997	A	2	1	1.00	24	0.042
998	A	2	1	1.00	24	0.042
999	A	2	1	1.00	24	0.042

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1000	A	2	1	1.00	24	0.042
1001	A	2	1	1.00	24	0.042
1002	A	2	1	1.00	24	0.042
1003	A	2	1	1.00	24	0.042
1004	A	2	1	1.00	22	0.045
1005	A	2	1	1.00	17	0.059
1006	A	2	1	1.00	24	0.042
1007	A	2	1	1.00	24	0.042
1008	A	2	1	1.00	24	0.042
1009	A	2	1	1.00	24	0.042
1010	A	2	1	1.00	24	0.042
1011	A	2	1	1.00	24	0.042
1012	A	2	1	1.00	24	0.042
1013	A	2	1	1.00	22	0.045
1014	A	2	1	1.00	17	0.059
1015	A	2	1	1.00	24	0.042
1016	A	2	1	1.00	24	0.042
1017	A	6	5	1.00	26	0.192
1018	A	5	5	1.00	26	0.192
1019	A	4	4	1.00	24	0.167
1020	A	4	4	1.00	19	0.210
1021	A	6	5	1.00	26	0.192
1022	A	6	5	1.00	26	0.192
1023	A	6	5	1.00	26	0.192
1024	A	4	4	1.00	26	0.154
1025	A	5	5	1.00	26	0.192
1026	A	6	5	1.00	26	0.192
1027	A	6	5	1.00	26	0.192
1028	A	5	4	1.00	24	0.167
1029	A	5	4	1.00	19	0.210
1030	A	7	5	1.00	26	0.192
1031	A	7	6	1.00	26	0.231
1032	A	7	5	1.00	26	0.192
1033	A	7	6	1.00	26	0.231
1034	A	7	5	1.00	26	0.192
1035	A	5	4	1.00	26	0.154
1036	A	6	5	1.00	26	0.192
1037	A	7	5	1.00	26	0.192
1038	A	7	5	1.00	26	0.192
1039	A	6	4	1.00	24	0.167
1040	A	6	4	1.00	19	0.210
1041	A	8	5	1.00	26	0.192
1042	A	8	6	1.00	26	0.231
1043	A	8	6	1.00	26	0.231
1044	A	8	5	1.00	26	0.192
1045	A	8	6	1.00	26	0.231
1046	A	5	4	1.00	26	0.154
1047	A	4	4	1.00	26	0.154

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1048	A	3	3	1.00	24	0.125
1049	A	3	3	1.00	19	0.158
1050	A	5	4	1.00	26	0.154
1051	A	3	3	1.00	26	0.115
1052	A	4	4	1.00	26	0.154
1053	A	5	4	1.00	26	0.154
1054	A	4	4	1.00	26	0.154
1055	A	4	4	1.00	26	0.154
1056	A	3	3	1.00	24	0.125
1057	A	1	1	1.00	19	0.053
1058	A	4	4	1.00	26	0.154
1059	A	4	4	1.00	26	0.154
1060	A	5	5	1.00	26	0.192
1061	A	5	4	1.00	26	0.154
1062	A	4	4	1.00	26	0.154
1063	A	2	2	1.00	26	0.077
1064	A	2	2	1.00	24	0.083
1065	A	2	2	1.00	19	0.105
1066	A	5	4	1.00	26	0.154
1067	A	5	4	1.00	26	0.154
1068	A	2	1	1.00	24	0.042
1069	A	2	1	1.00	24	0.042
1070	A	2	1	1.00	24	0.042
1071	A	2	1	1.00	24	0.042
1072	A	2	1	1.00	24	0.042
1073	A	2	1	1.00	24	0.042
1074	A	2	1	1.00	24	0.042
1075	A	2	1	1.00	24	0.042
1076	A	2	1	1.00	26	0.038
1077	A	2	1	1.00	26	0.038
1078	A	2	1	1.00	26	0.038
1079	A	2	1	1.00	26	0.038
1080	A	2	1	1.00	26	0.038
1081	A	2	1	1.00	26	0.038
1082	A	2	1	1.00	26	0.038
1083	A	2	1	1.00	26	0.038
1084	A	8	4	1.00	26	0.154
1085	A	7	4	1.00	26	0.154
1086	A	6	4	1.00	26	0.154
1087	A	5	4	1.00	26	0.154
1088	A	4	3	1.00	26	0.115
1089	A	5	4	1.00	26	0.154
1090	A	6	4	1.00	26	0.154
1091	A	7	4	1.00	26	0.154
1092	A	8	4	1.00	26	0.154
1093	A	8	5	1.00	26	0.192
1094	A	7	5	1.00	26	0.192
1095	A	6	5	1.00	26	0.192

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1096	A	5	4	1.00	26	0.154
1097	A	5	4	1.00	26	0.154
1098	A	5	4	1.00	26	0.154
1099	A	6	5	1.00	26	0.192
1100	A	7	5	1.00	26	0.192
1101	A	8	5	1.00	26	0.192
1102	A	7	5	1.00	26	0.192
1103	A	6	4	1.00	26	0.154
1104	A	6	5	1.00	26	0.192
1105	A	6	5	1.00	26	0.192
1106	A	6	5	1.00	26	0.192
1107	A	6	4	1.00	26	0.154
1108	A	7	5	1.00	26	0.192
1109	A	8	5	1.00	26	0.192
1110	A	2	1	1.00	20	0.050
1111	A	2	1	1.00	20	0.050
1112	A	2	1	1.00	20	0.050
1113	A	2	1	1.00	20	0.050
1114	A	2	1	1.00	18	0.056
1115	A	2	1	1.00	13	0.077
1116	A	2	1	1.00	20	0.050
1117	A	2	1	1.00	20	0.050
1118	A	2	1	1.00	20	0.050
1119	A	2	1	1.00	20	0.050
1120	A	2	1	1.00	20	0.050
1121	A	2	1	1.00	20	0.050
1122	A	2	1	1.00	20	0.050
1123	A	2	1	1.00	22	0.045
1124	A	2	1	1.00	22	0.045
1125	A	2	1	1.00	22	0.045
1126	A	2	1	1.00	22	0.045
1127	A	2	1	1.00	20	0.050
1128	A	3	2	1.00	15	0.133
1129	A	2	1	1.00	22	0.045
1130	A	2	1	1.00	22	0.045
1131	A	2	1	1.00	22	0.045
1132	A	2	1	1.00	22	0.045
1133	A	2	1	1.00	22	0.045
1134	A	2	1	1.00	22	0.045
1135	A	2	1	1.00	22	0.045
1136	A	2	1	1.00	22	0.045
1137	A	2	1	1.00	22	0.045
1138	A	2	1	1.00	22	0.045
1139	A	2	1	1.00	22	0.045
1140	A	2	1	1.00	22	0.045
1141	A	2	1	1.00	22	0.045
1142	A	2	1	1.00	22	0.045
1143	A	2	1	1.00	20	0.050

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1144	A	3	2	1.00	15	0.133
1145	A	2	1	1.00	22	0.045
1146	A	2	1	1.00	22	0.045
1147	A	2	1	1.00	22	0.045
1148	A	2	1	1.00	22	0.045
1149	A	2	1	1.00	22	0.045
1150	A	2	1	1.00	22	0.045
1151	A	2	1	1.00	22	0.045
1152	A	2	1	1.00	22	0.045
1153	A	2	1	1.00	22	0.045
1154	A	2	1	1.00	22	0.045
1155	A	2	1	1.00	22	0.045
1156	A	5	4	1.00	22	0.182
1157	A	5	4	1.00	22	0.182
1158	A	5	4	1.00	22	0.182
1159	A	4	4	1.00	20	0.200
1160	A	3	3	1.00	15	0.200
1161	A	5	4	1.00	22	0.182
1162	A	5	4	1.00	22	0.182
1163	A	5	4	1.00	22	0.182
1164	A	6	5	1.00	22	0.227
1165	A	6	5	1.00	22	0.227
1166	A	5	5	1.00	22	0.227
1167	A	4	4	1.00	22	0.182
1168	A	2	2	1.00	20	0.100
1169	A	2	2	1.00	15	0.133
1170	A	6	5	1.00	22	0.227
1171	A	6	5	1.00	22	0.227
1172	A	6	5	1.00	22	0.227
1173	A	5	4	1.00	22	0.182
1174	A	3	3	1.00	22	0.136
1175	A	3	3	1.00	22	0.136
1176	A	3	3	1.00	20	0.150
1177	A	3	3	1.00	15	0.200
1178	A	7	5	1.00	22	0.227
1179	A	7	5	1.00	22	0.227
1180	A	2	1	1.00	20	0.050
1181	A	3	3	1.00	14	0.214
1182	A	6	4	1.00	24	0.167
1183	A	5	4	1.00	24	0.167
1184	A	4	4	1.00	24	0.167
1185	A	3	3	1.00	22	0.136
1186	A	3	3	1.00	17	0.176
1187	A	5	5	1.00	24	0.208
1188	A	5	5	1.00	24	0.208
1189	A	5	5	1.00	24	0.208
1190	A	4	4	1.00	24	0.167
1191	A	5	5	1.00	24	0.208

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1192	A	6	5	1.00	24	0.208
1193	A	7	5	1.00	24	0.208
1194	A	7	4	1.00	24	0.167
1195	A	6	4	1.00	24	0.167
1196	A	5	4	1.00	24	0.167
1197	A	4	3	1.00	22	0.136
1198	A	4	3	1.00	17	0.176
1199	A	6	5	1.00	24	0.208
1200	A	6	6	1.00	24	0.250
1201	A	6	5	1.00	24	0.208
1202	A	6	6	1.00	24	0.250
1203	A	6	5	1.00	24	0.208
1204	A	5	4	1.00	24	0.167
1205	A	6	5	1.00	24	0.208
1206	A	7	5	1.00	24	0.208
1207	A	8	4	1.00	24	0.167
1208	A	7	4	1.00	24	0.167
1209	A	6	4	1.00	24	0.167
1210	A	5	3	1.00	22	0.136
1211	A	5	3	1.00	17	0.176
1212	A	7	5	1.00	24	0.208
1213	A	7	6	1.00	24	0.250
1214	A	7	6	1.00	24	0.250
1215	A	7	5	1.00	24	0.208
1216	A	7	6	1.00	24	0.250
1217	A	7	6	1.00	24	0.250
1218	A	7	5	1.00	24	0.208
1219	A	6	4	1.00	24	0.167
1220	A	7	5	1.00	24	0.208
1221	A	8	5	1.00	24	0.208
1222	A	9	5	1.00	24	0.208
1223	A	5	3	1.00	24	0.125
1224	A	4	3	1.00	24	0.125
1225	A	3	3	1.00	24	0.125
1226	A	2	2	1.00	22	0.091
1227	A	2	2	1.00	17	0.118
1228	A	4	4	1.00	24	0.167
1229	A	3	3	1.00	24	0.125
1230	A	4	4	1.00	24	0.167
1231	A	5	4	1.00	24	0.167
1232	A	6	4	1.00	24	0.167
1233	A	7	4	1.00	24	0.167
1234	A	4	4	1.00	24	0.167
1235	A	3	3	1.00	24	0.125
1236	A	3	3	1.00	24	0.125
1237	A	2	2	1.00	22	0.091
1238	A	1	1	1.00	17	0.059
1239	A	4	4	1.00	24	0.167

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1240	A	4	4	1.00	24	0.167
1241	A	5	5	1.00	24	0.208
1242	A	6	5	1.00	24	0.208
1243	A	7	5	1.00	24	0.208
1244	A	5	4	1.00	24	0.167
1245	A	4	3	1.00	24	0.125
1246	A	4	3	1.00	24	0.125
1247	A	3	3	1.00	24	0.125
1248	A	2	2	1.00	24	0.083
1249	A	2	2	1.00	22	0.091
1250	A	2	2	1.00	17	0.118
1251	A	5	4	1.00	24	0.167
1252	A	5	4	1.00	24	0.167
1253	A	6	5	1.00	24	0.208
1254	A	7	5	1.00	24	0.208
1255	A	2	1	1.00	22	0.045
1256	A	2	1	1.00	22	0.045
1257	A	2	1	1.00	22	0.045
1258	A	2	1	1.00	22	0.045
1259	A	2	1	1.00	22	0.045
1260	A	2	1	1.00	22	0.045
1261	A	2	1	1.00	24	0.042
1262	A	2	1	1.00	24	0.042
1263	A	2	1	1.00	24	0.042
1264	A	2	1	1.00	24	0.042
1265	A	2	1	1.00	24	0.042
1266	A	2	1	1.00	24	0.042
1267	A	2	1	1.00	24	0.042
1268	A	2	1	1.00	24	0.042
1269	A	2	1	1.00	24	0.042
1270	A	2	1	1.00	24	0.042
1271	A	2	1	1.00	24	0.042
1272	A	2	1	1.00	24	0.042
1273	A	7	4	1.00	25	0.160
1274	A	6	4	1.00	25	0.160
1275	A	5	4	1.00	25	0.160
1276	A	4	3	1.00	25	0.120
1277	A	5	4	1.00	25	0.160
1278	A	6	4	1.00	25	0.160
1279	A	6	5	1.00	25	0.200
1280	A	5	4	1.00	25	0.160
1281	A	5	4	1.00	25	0.160
1282	A	5	4	1.00	25	0.160
1283	A	6	5	1.00	25	0.200
1284	A	6	4	1.00	25	0.160
1285	A	6	5	1.00	25	0.200
1286	A	6	5	1.00	25	0.200
1287	A	6	5	1.00	25	0.200

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1288	A	6	4	1.00	25	0.160
1289	A	4	3	1.00	38	0.079
1290	A	6	4	1.00	43	0.093
1291	A	4	3	1.00	24	0.125
1292	A	10	6	1.00	22	0.273
1293	A	12	8	1.00	20	0.400
1294	A	6	4	1.00	20	0.200
1295	A	4	3	1.00	22	0.136
1296	A	6	4	1.00	20	0.200
1297	A	4	3	1.27	18	0.167
1298	A	2	1	1.00	22	0.045
1299	A	2	1	1.00	22	0.045
1300	A	2	1	1.00	20	0.050
1301	A	1	1	1.00	30	0.033
1302	A	2	1	1.00	24	0.042
1303	A	2	1	1.00	24	0.042
1304	A	2	1	1.00	24	0.042
1305	A	2	1	1.00	22	0.045
1306	A	1	1	1.00	17	0.059
1307	A	2	1	1.00	24	0.042
1308	A	2	1	1.00	24	0.042
1309	A	2	1	1.00	24	0.042
1310	A	2	1	1.00	24	0.042
1311	A	2	1	1.00	24	0.042
1312	A	2	1	1.00	26	0.038
1313	A	2	1	1.00	26	0.038
1314	A	2	1	1.00	26	0.038
1315	A	2	1	1.00	24	0.042
1316	A	1	1	1.00	19	0.053
1317	A	2	1	1.00	26	0.038
1318	A	2	1	1.00	26	0.038
1319	A	2	1	1.00	26	0.038
1320	A	2	1	1.00	26	0.038
1321	A	2	1	1.00	26	0.038
1322	A	2	1	1.00	26	0.038
1323	A	2	1	1.00	26	0.038
1324	A	2	1	1.00	26	0.038
1325	A	2	1	1.00	24	0.042
1326	A	1	1	1.00	19	0.053
1327	A	2	1	1.00	26	0.038
1328	A	2	1	1.00	26	0.038
1329	A	2	1	1.00	26	0.038
1330	A	2	1	1.00	26	0.038
1331	A	2	1	1.00	26	0.038
1332	A	6	5	1.00	26	0.192
1333	A	6	5	1.00	26	0.192
1334	A	6	5	1.00	26	0.192
1335	A	5	5	1.00	24	0.208

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1336	A	1	1	1.00	19	0.053
1337	A	6	5	1.00	26	0.192
1338	A	6	5	1.00	26	0.192
1339	A	6	5	1.00	26	0.192
1340	A	7	6	1.00	26	0.231
1341	A	7	6	1.00	26	0.231
1342	A	5	5	1.00	26	0.192
1343	A	3	3	1.00	24	0.125
1344	A	1	1	1.00	19	0.053
1345	A	7	6	1.00	26	0.231
1346	A	7	6	1.00	26	0.231
1347	A	8	7	1.00	26	0.269
1348	A	7	7	1.00	26	0.269
1349	A	4	4	1.00	26	0.154
1350	A	4	4	1.00	26	0.154
1351	A	4	4	0.97	24	0.167
1352	A	1	1	1.00	19	0.053
1353	A	8	6	1.00	26	0.231
1354	A	7	5	1.00	28	0.179
1355	A	6	5	1.00	28	0.179
1356	A	5	5	1.00	28	0.179
1357	A	4	4	1.00	26	0.154
1358	A	1	1	1.00	21	0.048
1359	A	6	5	1.00	28	0.179
1360	A	6	5	1.00	28	0.179
1361	A	6	5	1.00	28	0.179
1362	A	4	4	1.00	28	0.143
1363	A	5	5	1.00	28	0.179
1364	A	6	5	1.00	28	0.179
1365	A	7	5	1.00	28	0.179
1366	A	6	5	1.00	28	0.179
1367	A	5	4	1.00	26	0.154
1368	A	1	1	1.00	21	0.048
1369	A	7	5	1.00	28	0.179
1370	A	7	6	1.00	28	0.214
1371	A	7	5	1.00	28	0.179
1372	A	7	6	1.00	28	0.214
1373	A	8	5	1.00	28	0.179
1374	A	7	5	1.00	28	0.179
1375	A	6	4	1.00	26	0.154
1376	A	1	1	1.00	21	0.048
1377	A	8	5	1.00	28	0.179
1378	A	8	6	1.00	28	0.214
1379	A	8	6	1.00	28	0.214
1380	A	8	5	1.00	28	0.179
1381	A	5	4	1.00	28	0.143
1382	A	4	4	1.00	28	0.143
1383	A	3	3	1.00	26	0.115

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1384	A	1	1	1.00	21	0.048
1385	A	5	4	1.00	28	0.143
1386	A	3	3	1.00	28	0.107
1387	A	4	4	1.00	28	0.143
1388	A	5	4	1.00	28	0.143
1389	A	5	5	1.00	28	0.179
1390	A	5	5	1.00	28	0.179
1391	A	4	4	1.00	28	0.143
1392	A	3	3	1.00	26	0.115
1393	A	1	1	1.00	21	0.048
1394	A	4	4	1.00	28	0.143
1395	A	4	4	1.00	28	0.143
1396	A	5	5	1.00	28	0.179
1397	A	5	5	1.00	28	0.179
1398	A	2	2	1.00	28	0.071
1399	A	2	2	1.00	26	0.077
1400	A	1	1	1.00	21	0.048
1401	A	5	4	1.00	28	0.143
1402	A	5	4	1.00	28	0.143
1403	A	2	1	1.00	26	0.038
1404	A	2	1	1.00	26	0.038
1405	A	2	1	1.00	26	0.038
1406	A	2	1	1.00	26	0.038
1407	A	2	1	1.00	26	0.038
1408	A	2	1	1.00	26	0.038
1409	A	2	1	1.00	28	0.036
1410	A	2	1	1.00	28	0.036
1411	A	2	1	1.00	28	0.036
1412	A	2	1	1.00	28	0.036
1413	A	2	1	1.00	28	0.036
1414	A	2	1	1.00	28	0.036
1415	A	2	1	1.00	28	0.036
1416	A	2	1	1.00	28	0.036
1417	A	2	1	1.00	28	0.036
1418	A	2	1	1.00	28	0.036
1419	A	2	1	1.00	28	0.036
1420	A	2	1	1.00	28	0.036
1421	A	6	4	1.00	28	0.143
1422	A	5	4	1.00	28	0.143
1423	A	4	3	1.00	28	0.107
1424	A	5	4	1.00	28	0.143
1425	A	6	4	1.00	28	0.143
1426	A	6	5	1.00	28	0.179
1427	A	5	4	1.00	28	0.143
1428	A	5	4	1.00	28	0.143
1429	A	5	4	1.00	28	0.143
1430	A	6	5	1.00	28	0.179
1431	A	7	6	1.00	28	0.214

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1432	A	6	5	1.00	28	0.179
1433	A	6	5	1.00	28	0.179
1434	A	6	5	1.00	28	0.179
1435	A	6	4	1.00	28	0.143
1436	A	2	1	1.00	26	0.038
1437	A	2	1	1.00	26	0.038
1438	A	2	1	1.00	24	0.042
1439	A	3	2	1.00	29	0.069
1440	A	3	2	1.00	29	0.069
1441	A	3	2	1.00	29	0.069
1442	A	3	2	1.00	29	0.069
1443	A	3	2	1.00	27	0.074
1444	A	3	2	1.00	22	0.091
1445	A	3	2	1.00	29	0.069
1446	A	3	2	1.00	29	0.069
1447	A	3	2	1.00	29	0.069
1448	A	4	3	1.00	29	0.103
1449	A	3	3	1.00	29	0.103
1450	A	3	2	1.00	29	0.069
1451	A	3	2	1.00	29	0.069
1452	A	3	2	1.00	29	0.069
1453	A	3	2	1.00	31	0.065
1454	A	3	2	1.00	31	0.065
1455	A	3	2	1.00	31	0.065
1456	A	3	2	1.00	31	0.065
1457	A	3	2	1.00	31	0.065
1458	A	3	2	1.00	31	0.065
1459	A	3	2	1.00	29	0.069
1460	A	3	2	1.00	24	0.083
1461	A	3	2	1.00	31	0.065
1462	A	3	2	1.00	31	0.065
1463	A	3	2	1.00	31	0.065
1464	A	3	2	1.00	31	0.065
1465	A	3	2	1.00	31	0.065
1466	A	4	3	1.00	31	0.097
1467	A	3	3	1.00	31	0.097
1468	A	4	4	1.00	31	0.129
1469	A	5	4	1.00	31	0.129
1470	A	3	2	1.00	31	0.065
1471	A	3	2	1.00	31	0.065
1472	A	3	2	1.00	31	0.065
1473	A	3	2	1.00	31	0.065
1474	A	3	2	1.00	31	0.065
1475	A	3	2	1.00	31	0.065
1476	A	3	2	1.00	29	0.069
1477	A	3	2	1.00	24	0.083
1478	A	3	2	1.00	31	0.065
1479	A	3	2	1.00	31	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1480	A	3	2	1.00	31	0.065
1481	A	3	2	1.00	31	0.065
1482	A	3	2	1.00	31	0.065
1483	A	4	3	1.00	31	0.097
1484	A	3	2	1.00	29	0.069
1485	A	3	2	1.00	24	0.083
1486	A	3	2	1.00	31	0.065
1487	A	3	2	1.00	31	0.065
1488	A	3	2	1.00	33	0.061
1489	A	3	2	1.00	33	0.061
1490	A	3	2	1.00	33	0.061
1491	A	3	2	1.00	31	0.065
1492	A	2	2	1.00	26	0.077
1493	A	3	2	1.00	33	0.061
1494	A	3	2	1.00	33	0.061
1495	A	3	2	1.00	33	0.061
1496	A	3	3	1.00	33	0.091
1497	A	3	2	1.00	33	0.061
1498	A	3	2	1.00	33	0.061
1499	A	3	2	1.00	33	0.061
1500	A	3	2	1.00	33	0.061
1501	A	3	2	1.00	33	0.061
1502	A	3	2	1.00	33	0.061
1503	A	3	2	1.00	33	0.061
1504	A	3	2	1.00	31	0.065
1505	A	2	2	1.00	26	0.077
1506	A	3	2	1.00	33	0.061
1507	A	3	2	1.00	33	0.061
1508	A	3	2	1.00	33	0.061
1509	A	3	2	1.00	33	0.061
1510	A	4	3	1.00	33	0.091
1511	A	3	3	1.00	33	0.091
1512	A	4	4	1.00	33	0.121
1513	A	3	2	1.00	33	0.061
1514	A	3	2	1.00	33	0.061
1515	A	3	2	1.00	33	0.061
1516	A	3	2	1.00	33	0.061
1517	A	3	2	1.00	33	0.061
1518	A	3	2	1.00	33	0.061
1519	A	3	2	1.00	33	0.061
1520	A	3	2	1.00	33	0.061
1521	A	3	2	1.00	33	0.061
1522	A	3	2	1.00	33	0.061
1523	A	3	2	1.00	31	0.065
1524	A	2	2	1.00	26	0.077
1525	A	3	2	1.00	33	0.061
1526	A	3	2	1.00	33	0.061
1527	A	3	2	1.00	33	0.061

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1528	A	3	2	1.00	33	0.061
1529	A	3	2	1.00	33	0.061
1530	A	3	2	1.00	33	0.061
1531	A	4	3	1.00	33	0.091
1532	A	3	3	1.00	33	0.091
1533	A	4	4	1.00	33	0.121
1534	A	5	4	1.00	33	0.121
1535	A	3	2	1.00	33	0.061
1536	A	3	2	1.00	33	0.061
1537	A	3	2	1.00	33	0.061
1538	A	3	2	1.00	33	0.061
1539	A	3	2	1.00	33	0.061
1540	A	3	2	1.00	33	0.061
1541	A	3	2	1.00	31	0.065
1542	A	3	3	1.00	26	0.115
1543	A	3	2	1.00	33	0.061
1544	A	5	4	1.00	33	0.121
1545	A	3	2	1.00	33	0.061
1546	A	3	2	1.00	33	0.061
1547	A	3	2	1.00	33	0.061
1548	A	3	2	1.00	33	0.061
1549	A	3	2	1.00	33	0.061
1550	A	3	2	1.00	31	0.065
1551	A	2	2	1.00	26	0.077
1552	A	3	2	1.00	33	0.061
1553	A	3	2	1.00	33	0.061
1554	A	3	2	1.00	33	0.061
1555	A	3	2	1.00	33	0.061
1556	A	3	2	1.00	33	0.061
1557	A	4	3	1.00	33	0.091
1558	A	3	3	1.00	33	0.091
1559	A	3	2	1.00	31	0.065
1560	A	2	2	1.00	26	0.077
1561	A	3	2	1.00	33	0.061
1562	A	3	2	1.00	33	0.061
1563	A	3	2	1.00	33	0.061
1564	A	3	2	1.00	31	0.065
1565	A	3	2	1.00	31	0.065
1566	A	3	2	1.00	31	0.065
1567	A	3	2	1.00	31	0.065
1568	A	3	2	1.00	31	0.065
1569	A	3	2	1.00	31	0.065
1570	A	3	2	1.00	31	0.065
1571	A	3	2	1.00	31	0.065
1572	A	3	2	1.00	33	0.061
1573	A	3	2	1.00	33	0.061
1574	A	3	2	1.00	33	0.061
1575	A	3	2	1.00	33	0.061

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1576	A	3	2	1.00	33	0.061
1577	A	3	2	1.00	33	0.061
1578	A	3	2	1.00	33	0.061
1579	A	3	2	1.00	33	0.061
1580	A	3	2	1.00	33	0.061
1581	A	3	2	1.00	33	0.061
1582	A	3	2	1.00	33	0.061
1583	A	3	2	1.00	33	0.061
1584	A	3	2	1.00	33	0.061
1585	A	3	2	1.00	33	0.061
1586	A	3	2	1.00	33	0.061
1587	A	3	2	1.00	33	0.061
1588	A	8	5	1.00	33	0.152
1589	A	7	5	1.00	33	0.152
1590	A	6	5	1.00	33	0.152
1591	A	5	5	1.00	33	0.152
1592	A	4	4	1.00	33	0.121
1593	A	5	5	1.00	33	0.152
1594	A	6	5	1.00	33	0.152
1595	A	7	5	1.00	33	0.152
1596	A	9	6	1.00	33	0.182
1597	A	8	6	1.00	33	0.182
1598	A	7	6	1.00	33	0.182
1599	A	6	5	1.00	33	0.152
1600	A	6	6	1.00	33	0.182
1601	A	6	5	1.00	33	0.152
1602	A	7	5	1.00	33	0.152
1603	A	8	5	1.00	33	0.152
1604	A	9	5	1.00	33	0.152
1605	A	10	6	1.00	33	0.182
1606	A	9	6	1.00	33	0.182
1607	A	8	5	1.00	33	0.152
1608	A	8	6	1.00	33	0.182
1609	A	8	6	1.00	33	0.182
1610	A	8	6	1.00	33	0.182
1611	A	8	5	1.00	33	0.152
1612	A	9	5	1.00	33	0.152
1613	A	10	5	1.00	33	0.152
1614	A	11	5	1.00	33	0.152
1615	A	3	2	1.00	35	0.057
1616	A	3	2	1.00	35	0.057
1617	A	3	2	1.00	35	0.057
1618	A	3	2	1.00	35	0.057
1619	A	3	2	1.00	35	0.057
1620	A	3	2	1.00	35	0.057
1621	A	3	2	1.00	35	0.057
1622	A	3	2	1.00	35	0.057
1623	A	3	2	1.00	35	0.057

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1624	A	3	2	1.00	35	0.057
1625	A	3	2	1.00	35	0.057
1626	A	3	2	1.00	35	0.057
1627	A	3	2	1.00	35	0.057
1628	A	3	2	1.00	35	0.057
1629	A	3	2	1.00	35	0.057
1630	A	3	2	1.00	35	0.057
1631	A	3	2	1.00	35	0.057
1632	A	3	2	1.00	35	0.057
1633	A	3	2	1.00	35	0.057
1634	A	3	2	1.00	35	0.057
1635	A	3	2	1.00	35	0.057
1636	A	3	2	1.00	35	0.057
1637	A	3	2	1.00	35	0.057
1638	A	3	2	1.00	35	0.057
1639	A	7	5	1.00	35	0.143
1640	A	6	5	1.00	35	0.143
1641	A	5	5	1.00	35	0.143
1642	A	4	4	1.00	35	0.114
1643	A	4	4	1.00	35	0.114
1644	A	5	5	1.00	35	0.143
1645	A	6	5	1.00	35	0.143
1646	A	8	6	1.00	35	0.171
1647	A	7	6	1.00	35	0.171
1648	A	6	6	1.00	35	0.171
1649	A	5	5	1.00	35	0.143
1650	A	5	5	1.00	35	0.143
1651	A	6	5	1.00	35	0.143
1652	A	7	5	1.00	35	0.143
1653	A	8	5	1.00	35	0.143
1654	A	10	6	1.00	35	0.171
1655	A	9	6	1.00	35	0.171
1656	A	8	6	1.00	35	0.171
1657	A	7	5	1.00	35	0.143
1658	A	7	6	1.00	35	0.171
1659	A	7	6	1.00	35	0.171
1660	A	7	5	1.00	35	0.143
1661	A	8	5	1.00	35	0.143
1662	A	9	5	1.00	35	0.143
1663	A	10	5	1.00	35	0.143
1664	A	3	2	1.00	31	0.065
1665	A	3	2	1.00	29	0.069
1666	A	3	2	1.00	33	0.061
1667	A	3	2	1.00	33	0.061
1668	A	3	2	1.00	33	0.061
1669	A	3	3	1.00	35	0.086
1670	A	3	2	1.00	29	0.069
1671	A	3	2	1.00	29	0.069

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1672	A	3	2	1.00	29	0.069
1673	A	3	2	1.00	29	0.069
1674	A	3	2	1.00	27	0.074
1675	A	2	2	1.00	22	0.091
1676	A	3	2	1.00	29	0.069
1677	A	3	2	1.00	29	0.069
1678	A	3	2	1.00	29	0.069
1679	A	3	2	1.00	29	0.069
1680	A	3	2	1.00	31	0.065
1681	A	3	2	1.00	31	0.065
1682	A	3	2	1.00	31	0.065
1683	A	3	2	1.00	31	0.065
1684	A	3	2	1.00	31	0.065
1685	A	3	2	1.00	29	0.069
1686	A	2	2	1.00	24	0.083
1687	A	3	2	1.00	31	0.065
1688	A	3	2	1.00	31	0.065
1689	A	3	2	1.00	31	0.065
1690	A	3	2	1.00	31	0.065
1691	A	3	2	1.00	31	0.065
1692	A	3	2	1.00	31	0.065
1693	A	3	2	1.00	31	0.065
1694	A	3	2	1.00	31	0.065
1695	A	3	2	1.00	31	0.065
1696	A	3	2	1.00	29	0.069
1697	A	2	2	1.00	24	0.083
1698	A	3	2	1.00	31	0.065
1699	A	3	2	1.00	31	0.065
1700	A	3	2	1.00	31	0.065
1701	A	3	2	1.00	31	0.065
1702	A	3	2	1.00	31	0.065
1703	A	3	2	1.00	31	0.065
1704	A	3	2	1.00	31	0.065
1705	A	3	2	1.00	29	0.069
1706	A	2	2	1.00	24	0.083
1707	A	4	3	1.00	31	0.097
1708	A	3	2	1.00	31	0.065
1709	A	3	2	1.00	31	0.065
1710	A	3	2	1.00	31	0.065
1711	A	3	2	1.00	31	0.065
1712	A	3	2	1.00	31	0.065
1713	A	3	2	1.00	31	0.065
1714	A	2	2	1.00	29	0.069
1715	A	2	2	1.00	24	0.083
1716	A	3	2	1.00	31	0.065
1717	A	3	2	1.00	31	0.065
1718	A	3	2	1.00	31	0.065
1719	A	3	2	1.00	31	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1720	A	3	2	1.00	31	0.065
1721	A	2	2	1.00	31	0.065
1722	A	3	2	1.00	31	0.065
1723	A	3	2	1.00	29	0.069
1724	A	2	2	1.00	24	0.083
1725	A	3	2	1.00	31	0.065
1726	A	3	2	1.00	31	0.065
1727	A	3	2	1.00	31	0.065
1728	A	3	2	1.00	31	0.065
1729	A	4	3	1.00	33	0.091
1730	A	4	3	1.00	33	0.091
1731	A	4	3	1.00	33	0.091
1732	A	4	3	1.00	33	0.091
1733	A	4	3	1.00	31	0.097
1734	A	1	1	1.00	26	0.038
1735	A	4	3	1.00	33	0.091
1736	A	4	3	1.00	33	0.091
1737	A	4	3	1.00	33	0.091
1738	A	1	1	1.00	33	0.030
1739	A	4	3	1.00	33	0.091
1740	A	4	3	1.00	33	0.091
1741	A	4	3	1.00	33	0.091
1742	A	4	3	1.00	33	0.091
1743	A	4	3	1.00	33	0.091
1744	A	4	3	1.00	33	0.091
1745	A	4	3	1.00	33	0.091
1746	A	4	3	1.00	33	0.091
1747	A	4	3	1.00	33	0.091
1748	A	4	3	1.00	33	0.091
1749	A	4	3	1.00	31	0.097
1750	A	1	1	1.00	26	0.038
1751	A	4	3	1.00	33	0.091
1752	A	4	3	1.00	33	0.091
1753	A	4	3	1.00	33	0.091
1754	A	4	3	1.00	33	0.091
1755	A	4	3	1.00	33	0.091
1756	A	1	1	1.00	33	0.030
1757	A	4	4	1.00	33	0.121
1758	A	5	4	1.00	33	0.121
1759	A	4	3	1.00	33	0.091
1760	A	4	3	1.00	33	0.091
1761	A	4	3	1.00	33	0.091
1762	A	4	3	1.00	33	0.091
1763	A	4	3	1.00	33	0.091
1764	A	4	3	1.00	33	0.091
1765	A	4	3	1.00	33	0.091
1766	A	4	3	1.00	33	0.091
1767	A	4	3	1.00	33	0.091

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1768	A	4	3	1.00	33	0.091
1769	A	4	3	1.00	33	0.091
1770	A	4	3	1.00	33	0.091
1771	A	4	3	1.00	31	0.097
1772	A	1	1	1.00	26	0.038
1773	A	4	3	1.00	33	0.091
1774	A	4	3	1.00	33	0.091
1775	A	4	3	1.00	33	0.091
1776	A	4	3	1.00	33	0.091
1777	A	4	3	1.00	33	0.091
1778	A	4	3	1.00	33	0.091
1779	A	4	3	1.00	33	0.091
1780	A	1	1	1.00	33	0.030
1781	A	4	4	1.00	33	0.121
1782	A	5	4	1.00	33	0.121
1783	A	6	4	1.00	33	0.121
1784	A	4	3	1.00	33	0.091
1785	A	4	3	1.00	33	0.091
1786	A	4	3	1.00	33	0.091
1787	A	4	3	1.00	33	0.091
1788	A	4	3	1.00	33	0.091
1789	A	4	3	1.00	33	0.091
1790	A	3	3	1.00	33	0.091
1791	A	3	3	1.00	33	0.091
1792	A	3	3	1.00	33	0.091
1793	A	3	2	1.00	31	0.065
1794	A	1	1	1.00	26	0.038
1795	A	3	3	1.00	33	0.091
1796	A	1	1	1.00	33	0.030
1797	A	3	3	0.93	33	0.091
1798	A	3	3	0.93	33	0.091
1799	A	3	3	0.93	33	0.091
1800	A	4	3	1.00	33	0.091
1801	A	4	3	1.00	33	0.091
1802	A	4	4	1.00	33	0.121
1803	A	3	3	1.00	31	0.097
1804	A	1	1	1.00	26	0.038
1805	A	4	3	1.00	33	0.091
1806	A	4	3	1.00	33	0.091
1807	A	4	3	1.00	33	0.091
1808	A	4	3	1.00	33	0.091
1809	A	4	3	1.00	33	0.091
1810	A	4	3	1.00	33	0.091
1811	A	1	1	1.00	33	0.030
1812	A	2	2	1.00	31	0.065
1813	A	1	1	1.00	26	0.038
1814	A	4	3	1.00	33	0.091
1815	A	4	3	1.00	33	0.091

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1816	A	4	3	1.00	33	0.091
1817	A	3	2	1.00	31	0.065
1818	A	3	2	1.00	31	0.065
1819	A	3	2	1.00	31	0.065
1820	A	3	2	1.00	31	0.065
1821	A	3	2	1.00	31	0.065
1822	A	3	2	1.00	31	0.065
1823	A	3	2	1.00	31	0.065
1824	A	3	2	1.00	31	0.065
1825	A	3	2	1.00	33	0.061
1826	A	3	2	1.00	33	0.061
1827	A	3	2	1.00	33	0.061
1828	A	3	2	1.00	33	0.061
1829	A	3	2	1.00	33	0.061
1830	A	3	2	1.00	33	0.061
1831	A	3	2	1.00	33	0.061
1832	A	3	2	1.00	33	0.061
1833	A	3	2	1.00	33	0.061
1834	A	3	2	1.00	33	0.061
1835	A	3	2	1.00	33	0.061
1836	A	3	2	1.00	33	0.061
1837	A	3	2	1.00	33	0.061
1838	A	3	2	1.00	33	0.061
1839	A	3	2	1.00	33	0.061
1840	A	3	2	1.00	33	0.061
1841	A	7	4	1.00	33	0.121
1842	A	6	4	1.00	33	0.121
1843	A	5	4	1.00	33	0.121
1844	A	4	4	1.00	33	0.121
1845	A	3	3	1.00	33	0.091
1846	A	4	4	1.00	33	0.121
1847	A	5	4	1.00	33	0.121
1848	A	6	4	1.00	33	0.121
1849	A	8	5	1.00	33	0.152
1850	A	7	5	1.00	33	0.152
1851	A	6	5	1.00	33	0.152
1852	A	5	4	1.00	33	0.121
1853	A	5	5	1.00	33	0.152
1854	A	5	4	1.00	33	0.121
1855	A	6	4	1.00	33	0.121
1856	A	7	4	1.00	33	0.121
1857	A	8	4	1.00	33	0.121
1858	A	9	5	1.00	33	0.152
1859	A	8	5	1.00	33	0.152
1860	A	7	4	1.00	33	0.121
1861	A	7	5	1.00	33	0.152
1862	A	7	5	1.00	33	0.152
1863	A	7	5	1.00	33	0.152

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1864	A	7	4	1.00	33	0.121
1865	A	8	4	1.00	33	0.121
1866	A	9	4	1.00	33	0.121
1867	A	4	3	1.00	35	0.086
1868	A	4	3	1.00	35	0.086
1869	A	4	3	1.00	35	0.086
1870	A	4	3	1.00	35	0.086
1871	A	4	3	1.00	35	0.086
1872	A	4	3	1.00	35	0.086
1873	A	4	3	1.00	35	0.086
1874	A	4	3	1.00	35	0.086
1875	A	4	3	1.00	35	0.086
1876	A	4	3	1.00	35	0.086
1877	A	4	3	1.00	35	0.086
1878	A	4	3	1.00	35	0.086
1879	A	4	3	1.00	35	0.086
1880	A	4	3	1.00	35	0.086
1881	A	4	3	1.00	35	0.086
1882	A	4	3	1.00	35	0.086
1883	A	4	3	1.00	35	0.086
1884	A	4	3	1.00	35	0.086
1885	A	4	3	1.00	35	0.086
1886	A	4	3	1.00	35	0.086
1887	A	4	3	1.00	35	0.086
1888	A	4	3	1.00	35	0.086
1889	A	4	3	1.00	35	0.086
1890	A	4	3	1.00	35	0.086
1891	A	4	3	1.00	35	0.086
1892	A	4	3	1.00	35	0.086
1893	A	4	3	1.00	35	0.086
1894	A	4	3	1.00	35	0.086
1895	A	4	3	1.00	35	0.086
1896	A	4	3	1.00	35	0.086
1897	A	3	3	1.00	35	0.086
1898	A	3	3	1.00	35	0.086
1899	A	3	3	1.00	35	0.086
1900	A	3	3	1.00	35	0.086
1901	A	3	3	1.00	35	0.086
1902	A	3	3	1.00	35	0.086
1903	A	3	3	1.00	35	0.086
1904	A	3	3	1.00	35	0.086
1905	A	7	5	1.00	35	0.143
1906	A	6	5	1.00	35	0.143
1907	A	5	5	1.00	35	0.143
1908	A	4	4	1.00	35	0.114
1909	A	5	5	1.00	35	0.143
1910	A	6	5	1.00	35	0.143
1911	A	7	5	1.00	35	0.143

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1912	A	8	5	1.00	35	0.143
1913	A	7	6	1.00	35	0.171
1914	A	6	5	1.00	35	0.143
1915	A	6	6	1.00	35	0.171
1916	A	6	5	1.00	35	0.143
1917	A	7	5	1.00	35	0.143
1918	A	8	5	1.00	35	0.143
1919	A	9	5	1.00	35	0.143
1920	A	10	5	1.00	35	0.143
1921	A	3	2	1.00	31	0.065
1922	A	3	2	1.00	31	0.065
1923	A	3	2	1.00	29	0.069
1924	A	4	3	1.00	33	0.091
1925	A	4	3	1.00	33	0.091
1926	A	4	3	1.00	33	0.091
1927	A	3	3	1.00	33	0.091
1928	A	1	1	1.00	38	0.026
1929	A	4	3	1.00	31	0.097
1930	A	4	3	1.00	31	0.097
1931	A	4	3	1.00	29	0.103
1932	A	1	1	1.00	24	0.042
1933	A	4	3	1.00	34	0.088
1934	A	4	3	1.00	34	0.088
1935	A	4	3	1.00	36	0.083
1936	A	4	3	1.00	36	0.083
1937	A	4	3	1.00	34	0.088
1938	A	3	3	1.00	38	0.079
1939	A	3	3	1.00	34	0.088
1940	A	4	3	1.00	34	0.088
1941	A	4	3	1.00	34	0.088
1942	A	7	6	1.00	44	0.136
1943	A	7	7	1.00	44	0.159
1944	A	4	4	1.00	42	0.095
1945	A	4	4	1.00	44	0.091
1946	A	4	4	1.00	44	0.091
1947	A	4	4	1.00	44	0.091
1948	A	2	2	1.00	44	0.045
1949	A	3	3	1.00	44	0.068
1950	A	4	3	1.00	44	0.068
1951	A	5	3	1.00	44	0.068
1952	A	6	3	1.00	44	0.068
1953	A	8	6	1.00	44	0.136
1954	A	8	7	1.00	44	0.159
1955	A	5	4	1.00	42	0.095
1956	A	5	5	1.00	44	0.114
1957	A	5	5	1.00	44	0.114
1958	A	5	4	1.00	44	0.091
1959	A	5	5	1.00	44	0.114

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1960	A	5	4	1.00	44	0.091
1961	A	2	2	1.00	44	0.045
1962	A	3	3	1.00	44	0.068
1963	A	4	3	1.00	44	0.068
1964	A	5	3	1.00	44	0.068
1965	A	9	6	1.00	44	0.136
1966	A	9	7	1.00	44	0.159
1967	A	6	4	1.00	42	0.095
1968	A	6	5	1.00	44	0.114
1969	A	6	5	1.00	44	0.114
1970	A	7	7	1.00	44	0.159
1971	A	6	6	1.00	44	0.136
1972	A	6	5	1.00	44	0.114
1973	A	6	5	1.00	44	0.114
1974	A	6	4	1.00	44	0.091
1975	A	2	2	1.00	44	0.045
1976	A	3	3	1.00	44	0.068
1977	A	4	3	1.00	44	0.068
1978	A	5	3	1.00	44	0.068
1979	A	6	5	1.00	44	0.114
1980	A	6	6	1.00	44	0.136
1981	A	3	3	1.00	42	0.071
1982	A	3	3	1.00	44	0.068
1983	A	2	2	1.00	44	0.045
1984	A	3	3	1.00	44	0.068
1985	A	4	3	1.00	44	0.068
1986	A	5	3	1.00	44	0.068
1987	A	5	5	1.00	44	0.114
1988	A	4	4	1.00	44	0.091
1989	A	3	3	1.15	42	0.071
1990	A	2	2	1.00	44	0.045
1991	A	3	3	1.00	44	0.068
1992	A	4	3	1.00	44	0.068
1993	A	6	6	1.00	44	0.136
1994	A	5	5	1.00	44	0.114
1995	A	4	4	1.00	44	0.091
1996	A	2	2	1.00	44	0.045
1997	A	2	2	1.00	42	0.048
1998	A	3	3	1.00	44	0.068
1999	A	4	4	1.00	44	0.091
2000	A	5	4	1.00	44	0.091
2001	A	5	3	1.00	46	0.065
2002	A	4	3	1.00	46	0.065
2003	A	3	3	1.00	46	0.065
2004	A	2	2	1.00	46	0.043
2005	A	4	4	1.00	46	0.087
2006	A	4	4	1.00	46	0.087
2007	A	4	4	1.00	46	0.087

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2008	A	5	5	1.00	46	0.109
2009	A	6	5	1.00	46	0.109
2010	A	6	3	1.00	46	0.065
2011	A	5	3	1.00	46	0.065
2012	A	4	3	1.00	46	0.065
2013	A	3	3	1.00	46	0.065
2014	A	2	2	1.00	46	0.043
2015	A	5	4	1.00	46	0.087
2016	A	5	4	1.00	46	0.087
2017	A	5	5	1.00	46	0.109
2018	A	5	4	1.00	46	0.087
2019	A	6	5	1.00	46	0.109
2020	A	7	3	1.00	46	0.065
2021	A	6	3	1.00	46	0.065
2022	A	5	3	1.00	46	0.065
2023	A	4	3	1.00	46	0.065
2024	A	3	3	1.00	46	0.065
2025	A	2	2	1.00	46	0.043
2026	A	6	4	1.00	46	0.087
2027	A	6	4	1.00	46	0.087
2028	A	6	5	1.00	46	0.109
2029	A	6	5	1.00	46	0.109
2030	A	6	4	1.00	46	0.087
2031	A	7	5	1.00	46	0.109
2032	A	4	3	1.00	46	0.065
2033	A	3	3	1.00	46	0.065
2034	A	2	2	1.00	46	0.043
2035	A	3	3	1.00	46	0.065
2036	A	3	3	1.00	46	0.065
2037	A	4	4	1.00	46	0.087
2038	A	5	3	1.00	46	0.065
2039	A	4	3	1.00	46	0.065
2040	A	3	3	1.00	46	0.065
2041	A	2	2	1.00	46	0.043
2042	A	3	3	1.00	46	0.065
2043	A	4	4	1.00	46	0.087
2044	A	5	5	1.00	46	0.109
2045	A	6	5	1.00	46	0.109
2046	A	6	3	1.00	46	0.065
2047	A	5	3	1.00	46	0.065
2048	A	4	3	1.00	46	0.065
2049	A	3	3	1.00	46	0.065
2050	A	2	2	1.00	46	0.043
2051	A	4	4	1.00	46	0.087
2052	A	5	5	1.00	46	0.109
2053	A	6	5	1.00	46	0.109
2054	A	7	5	1.00	46	0.109
2055	A	1	1	1.00	61	0.016

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2056	A	1	1	1.00	60	0.017
2057	A	3	2	1.00	42	0.048
2058	A	2	1	1.00	21	0.048
2059	A	2	1	1.00	21	0.048
2060	A	2	1	1.00	21	0.048
2061	A	2	1	1.00	17	0.059
2062	A	6	5	1.00	21	0.238
2063	A	8	8	1.00	21	0.381
2064	A	9	8	1.00	21	0.381
2065	A	2	1	0.99	23	0.043
2066	A	2	1	0.99	23	0.043
2067	A	2	1	0.99	23	0.043
2068	A	2	1	1.00	21	0.048
2069	A	2	1	1.00	16	0.062
2070	A	2	1	0.98	23	0.043
2071	A	2	1	0.98	23	0.043
2072	A	2	1	1.00	23	0.043
2073	A	2	1	0.99	23	0.043
2074	A	2	1	0.99	23	0.043
2075	A	2	1	0.99	23	0.043
2076	A	2	1	0.99	23	0.043
2077	A	2	1	0.99	25	0.040
2078	A	2	1	0.99	25	0.040
2079	A	2	1	0.99	25	0.040
2080	A	2	1	0.99	25	0.040
2081	A	2	1	1.00	23	0.043
2082	A	2	1	1.00	18	0.056
2083	A	2	1	1.00	25	0.040
2084	A	2	1	0.99	25	0.040
2085	A	2	1	1.00	25	0.040
2086	A	2	1	0.99	25	0.040
2087	A	2	1	0.99	25	0.040
2088	A	2	1	0.99	25	0.040
2089	A	2	1	0.99	25	0.040
2090	A	2	1	0.99	25	0.040
2091	A	2	1	0.99	25	0.040
2092	A	2	1	1.00	25	0.040
2093	A	2	1	1.00	25	0.040
2094	A	2	1	1.00	25	0.040
2095	A	2	1	1.00	25	0.040
2096	A	2	1	1.00	23	0.043
2097	A	2	1	1.00	18	0.056
2098	A	2	1	0.99	25	0.040
2099	A	2	1	0.99	25	0.040
2100	A	2	1	1.00	25	0.040
2101	A	2	1	1.00	25	0.040
2102	A	2	1	1.00	25	0.040
2103	A	2	1	1.00	25	0.040

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
2104	A	2	1	1.00	25	0.040
2105	A	2	1	1.00	25	0.040
2106	A	2	1	1.00	25	0.040
2107	A	2	1	1.00	25	0.040
2108	A	2	1	1.00	25	0.040
2109	A	2	1	1.00	19	0.053
2110	A	2	1	1.00	19	0.053
2111	A	2	1	1.00	19	0.053
2112	A	2	1	1.00	19	0.053
2113	A	2	1	1.00	19	0.053
2114	A	2	1	1.00	17	0.059
2115	A	2	1	1.00	12	0.083
2116	A	2	1	1.00	19	0.053
2117	A	2	1	1.00	19	0.053
2118	A	2	1	1.00	19	0.053
2119	A	2	1	1.00	19	0.053
2120	A	2	1	1.00	19	0.053
2121	A	2	1	1.00	19	0.053
2122	A	2	1	1.00	19	0.053
2123	A	6	5	1.00	25	0.200
2124	A	6	5	1.00	25	0.200
2125	A	5	5	1.00	23	0.217
2126	A	4	4	1.00	18	0.222
2127	A	6	5	1.00	25	0.200
2128	A	6	5	1.00	25	0.200
2129	A	6	5	1.00	25	0.200
2130	A	6	5	1.00	25	0.200
2131	A	4	4	1.00	25	0.160
2132	A	4	4	0.99	25	0.160
2133	A	4	4	0.99	23	0.174
2134	A	4	4	1.00	18	0.222
2135	A	8	6	1.00	25	0.240
2136	A	8	6	1.00	25	0.240
2137	A	5	3	1.00	25	0.120
2138	A	5	3	1.00	25	0.120
2139	A	5	3	1.00	25	0.120
2140	A	4	3	1.00	23	0.130
2141	A	3	2	1.00	18	0.111
2142	A	2	1	1.00	25	0.040
2143	A	2	1	1.00	25	0.040
2144	A	2	1	1.00	25	0.040
2145	A	2	1	1.00	25	0.040
2146	A	7	5	1.00	25	0.200
2147	A	7	5	1.00	25	0.200
2148	A	5	4	1.00	25	0.160
2149	A	4	3	1.00	23	0.130
2150	A	4	3	1.00	18	0.167
2151	A	3	2	1.00	25	0.080

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
2152	A	3	2	1.00	25	0.080
2153	A	3	2	1.00	25	0.080
2154	A	3	2	1.00	25	0.080
2155	A	8	5	1.00	25	0.200
2156	A	6	4	1.00	25	0.160
2157	A	5	4	1.00	25	0.160
2158	A	6	5	1.00	25	0.200
2159	A	5	4	1.00	23	0.174
2160	A	5	4	1.00	18	0.222
2161	A	4	2	1.00	25	0.080
2162	A	4	2	1.00	25	0.080
2163	A	4	2	1.00	25	0.080
2164	A	2	2	1.00	15	0.133
2165	A	7	5	1.00	27	0.185
2166	A	6	5	1.00	27	0.185
2167	A	5	5	1.00	27	0.185
2168	A	4	4	1.00	25	0.160
2169	A	4	4	1.00	20	0.200
2170	A	6	5	1.00	27	0.185
2171	A	6	5	1.00	27	0.185
2172	A	6	5	1.00	27	0.185
2173	A	4	4	1.00	27	0.148
2174	A	5	5	1.00	27	0.185
2175	A	6	5	1.00	27	0.185
2176	A	7	5	1.00	27	0.185
2177	A	8	5	1.00	27	0.185
2178	A	7	5	1.00	27	0.185
2179	A	6	5	1.00	27	0.185
2180	A	5	4	1.00	25	0.160
2181	A	5	4	1.00	20	0.200
2182	A	7	5	1.00	27	0.185
2183	A	7	6	1.00	27	0.222
2184	A	7	5	1.00	27	0.185
2185	A	7	6	1.00	27	0.222
2186	A	7	5	1.00	27	0.185
2187	A	5	4	1.00	27	0.148
2188	A	6	5	1.00	27	0.185
2189	A	7	5	1.00	27	0.185
2190	A	8	5	1.00	27	0.185
2191	A	9	5	1.00	27	0.185
2192	A	8	5	1.00	27	0.185
2193	A	7	5	1.00	27	0.185
2194	A	6	4	1.00	25	0.160
2195	A	6	4	1.00	20	0.200
2196	A	8	5	1.00	27	0.185
2197	A	8	6	1.00	27	0.222
2198	A	8	6	1.00	27	0.222
2199	A	8	5	1.00	27	0.185

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2200	A	8	6	1.00	27	0.222
2201	A	8	6	1.00	27	0.222
2202	A	8	5	1.00	27	0.185
2203	A	6	4	1.00	27	0.148
2204	A	7	5	1.00	27	0.185
2205	A	8	5	1.00	27	0.185
2206	A	10	5	1.00	27	0.185
2207	A	9	5	1.00	27	0.185
2208	A	8	5	1.00	27	0.185
2209	A	7	4	1.00	25	0.160
2210	A	7	4	1.00	20	0.200
2211	A	9	5	1.00	27	0.185
2212	A	9	6	1.00	27	0.222
2213	A	9	6	1.00	27	0.222
2214	A	9	6	1.00	27	0.222
2215	A	9	5	1.00	27	0.185
2216	A	9	6	1.00	27	0.222
2217	A	9	6	1.00	27	0.222
2218	A	9	6	1.00	27	0.222
2219	A	9	5	1.00	27	0.185
2220	A	7	4	1.00	27	0.148
2221	A	8	5	1.00	27	0.185
2222	A	9	5	1.00	27	0.185
2223	A	10	5	1.00	27	0.185
2224	A	5	4	1.00	27	0.148
2225	A	4	4	1.00	27	0.148
2226	A	3	3	0.99	25	0.120
2227	A	3	3	1.00	20	0.150
2228	A	5	4	1.00	27	0.148
2229	A	3	3	1.00	27	0.111
2230	A	4	4	0.99	27	0.148
2231	A	5	4	1.00	27	0.148
2232	A	4	4	1.00	27	0.148
2233	A	4	4	1.00	27	0.148
2234	A	3	3	1.00	25	0.120
2235	A	1	1	1.00	20	0.050
2236	A	4	4	1.00	27	0.148
2237	A	4	4	0.99	27	0.148
2238	A	5	5	1.00	27	0.185
2239	A	5	4	1.00	27	0.148
2240	A	4	4	1.00	27	0.148
2241	A	2	2	1.00	27	0.074
2242	A	2	2	1.00	25	0.080
2243	A	2	2	1.00	20	0.100
2244	A	5	4	1.00	27	0.148
2245	A	5	4	1.00	27	0.148
2246	A	6	4	1.00	27	0.148
2247	A	5	4	1.00	27	0.148

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
2248	A	3	3	1.00	27	0.111
2249	A	3	3	1.00	27	0.111
2250	A	3	3	1.00	27	0.111
2251	A	3	3	1.00	25	0.120
2252	A	3	3	1.00	20	0.150
2253	A	6	4	1.00	27	0.148
2254	A	6	4	1.00	27	0.148
2255	A	5	4	1.00	27	0.148
2256	A	4	4	1.00	27	0.148
2257	A	3	3	1.00	25	0.120
2258	A	3	3	1.00	20	0.150
2259	A	5	4	1.00	27	0.148
2260	A	3	3	1.00	27	0.111
2261	A	4	4	1.00	27	0.148
2262	A	5	4	1.00	27	0.148
2263	A	6	4	1.00	27	0.148
2264	A	7	4	1.00	27	0.148
2265	A	5	5	1.00	27	0.185
2266	A	4	4	1.00	27	0.148
2267	A	4	4	1.00	27	0.148
2268	A	3	3	1.00	25	0.120
2269	A	1	1	1.00	20	0.050
2270	A	4	4	1.00	27	0.148
2271	A	4	4	1.00	27	0.148
2272	A	5	5	1.00	27	0.185
2273	A	6	5	1.00	27	0.185
2274	A	7	5	1.00	27	0.185
2275	A	5	4	1.00	27	0.148
2276	A	4	4	1.00	27	0.148
2277	A	2	2	1.00	27	0.074
2278	A	2	2	1.00	25	0.080
2279	A	2	2	1.00	20	0.100
2280	A	5	4	1.00	27	0.148
2281	A	5	4	1.00	27	0.148
2282	A	6	5	1.00	27	0.185
2283	A	7	5	1.00	27	0.185
2284	A	5	5	1.00	19	0.263
2285	A	2	1	1.00	25	0.040
2286	A	2	1	1.00	25	0.040
2287	A	2	1	1.00	25	0.040
2288	A	2	1	1.00	25	0.040
2289	A	2	1	1.00	25	0.040
2290	A	2	1	1.00	25	0.040
2291	A	2	1	1.00	25	0.040
2292	A	2	1	1.00	25	0.040
2293	A	2	1	1.00	27	0.037
2294	A	2	1	1.00	27	0.037
2295	A	2	1	1.00	27	0.037

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2296	A	2	1	1.00	27	0.037
2297	A	2	1	1.00	27	0.037
2298	A	2	1	1.00	27	0.037
2299	A	2	1	1.00	27	0.037
2300	A	2	1	1.00	27	0.037
2301	A	2	1	1.00	27	0.037
2302	A	2	1	1.00	27	0.037
2303	A	2	1	1.00	27	0.037
2304	A	2	1	1.00	27	0.037
2305	A	2	1	1.00	27	0.037
2306	A	2	1	1.00	27	0.037
2307	A	2	1	1.00	27	0.037
2308	A	2	1	1.00	27	0.037
2309	A	8	4	1.00	27	0.148
2310	A	7	4	1.00	27	0.148
2311	A	6	4	1.00	27	0.148
2312	A	5	4	1.00	27	0.148
2313	A	4	3	1.00	27	0.111
2314	A	5	4	1.00	27	0.148
2315	A	6	4	1.00	27	0.148
2316	A	7	4	1.00	27	0.148
2317	A	7	5	1.00	27	0.185
2318	A	6	5	1.00	27	0.185
2319	A	5	4	1.00	27	0.148
2320	A	5	4	1.00	27	0.148
2321	A	5	4	1.00	27	0.148
2322	A	6	5	1.00	27	0.185
2323	A	7	5	1.00	27	0.185
2324	A	8	5	1.00	27	0.185
2325	A	7	5	1.00	27	0.185
2326	A	6	4	1.00	27	0.148
2327	A	6	5	1.00	27	0.185
2328	A	6	5	1.00	27	0.185
2329	A	6	5	1.00	27	0.185
2330	A	6	4	1.00	27	0.148
2331	A	7	5	1.00	27	0.185
2332	A	8	5	1.00	27	0.185
2333	A	9	5	1.00	27	0.185
2334	A	6	4	1.10	32	0.125
2335	A	2	1	0.99	25	0.040
2336	A	2	1	0.99	25	0.040
2337	A	2	1	0.99	23	0.043

Chapter 3

Listing of integrals

Local contents

3.1 $\int x^m(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{x^{m+3}(Ac+bB)}{m+3}+\frac{Abx^{m+2}}{m+2}+\frac{Bcx^{m+4}}{m+4}$$

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{x^{m+3}(Ac+bB)}{m+3}+\frac{Abx^{m+2}}{m+2}+\frac{Bcx^{m+4}}{m+4}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^(2 + m))/(2 + m) + ((b*B + A*c)*x^(3 + m))/(3 + m) + (B*c*x^(4 + m))
/(4 + m)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^{1+m}+(bB+Ac)x^{2+m}+Bcx^{3+m}\right)\,dx\\&=\frac{Abx^{2+m}}{2+m}+\frac{(bB+Ac)x^{3+m}}{3+m}+\frac{Bcx^{4+m}}{4+m}\end{aligned}$$

Mathematica [A] time = 0.04, size = 57, normalized size = 1.27

$$\frac{x^{m+2}(A(m+4)(b(m+3)+c(m+2)x)+B(m+2)x(b(m+4)+c(m+3)x))}{(m+2)(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (x^(2 + m)*(A*(4 + m)*(b*(3 + m) + c*(2 + m)*x) + B*(2 + m)*x*(b*(4 + m) +
c*(3 + m)*x)))/((2 + m)*(3 + m)*(4 + m))
```

IntegrateAlgebraic [F] time = 0.05, size = 0, normalized size = 0.00

$$\int x^m(A+Bx)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(A + B*x)*(b*x + c*x^2), x]
```

fricas [B] time = 0.42, size = 94, normalized size = 2.09

$$\frac{\left(\left(Bcm^2 + 5\,Bcm + 6\,Bc\right)x^4 + \left((Bb + Ac)m^2 + 8\,Bb + 8\,Ac + 6\,(Bb + Ac)m\right)x^3 + \left(Abm^2 + 7\,Abm + 12\,Ab\right)x^2\right)x^m}{m^3 + 9\,m^2 + 26\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] ((B*c*m^2 + 5*B*c*m + 6*B*c)*x^4 + ((B*b + A*c)*m^2 + 8*B*b + 8*A*c + 6*(B*
b + A*c)*m)*x^3 + (A*b*m^2 + 7*A*b*m + 12*A*b)*x^2)*x^m/(m^3 + 9*m^2 + 26*m
 + 24)
```

giac [B] time = 0.23, size = 149, normalized size = 3.31

$$\frac{Bcm^2x^4x^m + Bbm^2x^3x^m + Acm^2x^3x^m + 5\,Bcmx^4x^m + Abm^2x^2x^m + 6\,Bbmx^3x^m + 6\,Acmx^3x^m + 6\,Bcx^4x^m + 7\,Abmx^2x^m + 8\,Bbx^3x^m + 8\,Acx^3x^m + 12\,Abx^2x^m}{m^3 + 9\,m^2 + 26\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*c*m^2*x^4*x^m + B*b*m^2*x^3*x^m + A*c*m^2*x^3*x^m + 5*B*c*m*x^4*x^m + A*
b*m^2*x^2*x^m + 6*B*b*m*x^3*x^m + 6*A*c*m*x^3*x^m + 6*B*c*x^4*x^m + 7*A*b*m
*x^2*x^m + 8*B*b*x^3*x^m + 8*A*c*x^3*x^m + 12*A*b*x^2*x^m)/(m^3 + 9*m^2 + 2
6*m + 24)
```

maple [B] time = 0.05, size = 98, normalized size = 2.18

$$\frac{\left(Bc\,m^2x^2 + Ac\,m^2x + Bb\,m^2x + 5Bcm\,x^2 + Ab\,m^2 + 6Acmx + 6Bbmx + 6Bc\,x^2 + 7Abm + 8Acx + 8Bbx + 12Ab\right)x^{m+2}}{(m + 4)\,(m + 3)\,(m + 2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] x^(m+2)*(B*c*m^2*x^2+A*c*m^2*x+B*b*m^2*x+5*B*c*m*x^2+A*b*m^2+6*A*c*m*x+6*B*
b*m*x+6*B*c*x^2+7*A*b*m+8*A*c*x+8*B*b*x+12*A*b)/(m+4)/(m+3)/(m+2)
```

maxima [A] time = 0.86, size = 53, normalized size = 1.18

$$\frac{Bcx^{m+4}}{m+4} + \frac{Bbx^{m+3}}{m+3} + \frac{Acx^{m+3}}{m+3} + \frac{Abx^{m+2}}{m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] B*c*x^(m + 4)/(m + 4) + B*b*x^(m + 3)/(m + 3) + A*c*x^(m + 3)/(m + 3) + A*b
*x^(m + 2)/(m + 2)
```

mupad [B] time = 1.13, size = 97, normalized size = 2.16

$$x^m\left(\frac{x^3\,\left(A\,c + B\,b\right)\,\left(m^2 + 6\,m + 8\right)}{m^3 + 9\,m^2 + 26\,m + 24} + \frac{A\,b\,x^2\,\left(m^2 + 7\,m + 12\right)}{m^3 + 9\,m^2 + 26\,m + 24} + \frac{B\,c\,x^4\,\left(m^2 + 5\,m + 6\right)}{m^3 + 9\,m^2 + 26\,m + 24}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^m*((x^3*(A*c + B*b)*(6*m + m^2 + 8))/(26*m + 9*m^2 + m^3 + 24) + (A*b*x^2
*(7*m + m^2 + 12))/(26*m + 9*m^2 + m^3 + 24) + (B*c*x^4*(5*m + m^2 + 6))/(2
6*m + 9*m^2 + m^3 + 24))
```

sympy [A] time = 0.81, size = 394, normalized size = 8.76

$$\begin{cases} -\frac{Ab}{2x^2} - \frac{Ac}{x} - \frac{Bb}{x} + Bc\log(x) & \text{for } m = -4 \\ -\frac{Ab}{x} + Ac\log(x) + Bb\log(x) + Bcx & \text{for } m = -3 \\ Ab\log(x) + Acx + Bbx + \frac{Bcx^2}{2} & \text{for } m = -2 \\ \frac{Abm^2x^2x^m}{m^3+9m^2+26m+24} + \frac{7Abmx^2x^m}{m^3+9m^2+26m+24} + \frac{12Abx^2x^m}{m^3+9m^2+26m+24} + \frac{Acm^2x^3x^m}{m^3+9m^2+26m+24} + \frac{6Acmx^3x^m}{m^3+9m^2+26m+24} + \frac{8Acx^3x^m}{m^3+9m^2+26m+24} + \frac{Bbm^2x^3x^m}{m^3+9m^2+26m+24} + \frac{6Bbmx^3x^m}{m^3+9m^2+26m+24} + \frac{8Bbx^3x^m}{m^3+9m^2+26m+24} + \frac{Bcm^2x^4x^m}{m^3+9m^2+26m+24} + \frac{5Bcmx^4x^m}{m^3+9m^2+26m+24} + \frac{6Bcx^4x^m}{m^3+9m^2+26m+24} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] Piecewise((-A*b/(2*x**2) - A*c/x - B*b/x + B*c*log(x), Eq(m, -4)), (-A*b/x
+ A*c*log(x) + B*b*log(x) + B*c*x, Eq(m, -3)), (A*b*log(x) + A*c*x + B*b*x
+ B*c*x**2/2, Eq(m, -2)), (A*b*m**2*x**2*x**m/(m**3 + 9*m**2 + 26*m + 24) +
 7*A*b*m*x**2*x**m/(m**3 + 9*m**2 + 26*m + 24) + 12*A*b*x**2*x**m/(m**3 + 9
*m**2 + 26*m + 24) + A*c*m**2*x**3*x**m/(m**3 + 9*m**2 + 26*m + 24) + 6*A*c
*m*x**3*x**m/(m**3 + 9*m**2 + 26*m + 24) + 8*A*c*x**3*x**m/(m**3 + 9*m**2 +
 26*m + 24) + B*b*m**2*x**3*x**m/(m**3 + 9*m**2 + 26*m + 24) + 6*B*b*m*x**3
*x**m/(m**3 + 9*m**2 + 26*m + 24) + 8*B*b*x**3*x**m/(m**3 + 9*m**2 + 26*m +
 24) + B*c*m**2*x**4*x**m/(m**3 + 9*m**2 + 26*m + 24) + 5*B*c*m*x**4*x**m/(
m**3 + 9*m**2 + 26*m + 24) + 6*B*c*x**4*x**m/(m**3 + 9*m**2 + 26*m + 24), T
rue))
```

3.2 $\int x^3(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{7}Bcx^7$$

Rubi [A] time = 0.04, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^4+(bB+Ac)x^5+Bcx^6\right)\,dx\\&=\frac{1}{5}Abx^5+\frac{1}{6}(bB+Ac)x^6+\frac{1}{7}Bcx^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 1.00

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2), x]
```

fricas [A] time = 0.36, size = 29, normalized size = 0.88

$$\frac{1}{7}x^7cB+\frac{1}{6}x^6bB+\frac{1}{6}x^6cA+\frac{1}{5}x^5bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
[Out] 1/7*x^7*c*B + 1/6*x^6*b*B + 1/6*x^6*c*A + 1/5*x^5*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{7}\,Bcx^7 + \frac{1}{6}\,Bbx^6 + \frac{1}{6}\,Acx^6 + \frac{1}{5}\,Abx^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
[Out] 1/7*B*c*x^7 + 1/6*B*b*x^6 + 1/6*A*c*x^6 + 1/5*A*b*x^5
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$\frac{Bc\,x^7}{7} + \frac{Ab\,x^5}{5} + \frac{(Ac + bB)\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x),x)
[Out] 1/5*A*b*x^5+1/6*(A*c+B*b)*x^6+1/7*B*c*x^7
```

maxima [A] time = 0.86, size = 27, normalized size = 0.82

$$\frac{1}{7}\,Bcx^7 + \frac{1}{5}\,Abx^5 + \frac{1}{6}\,(Bb + Ac)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
[Out] 1/7*B*c*x^7 + 1/5*A*b*x^5 + 1/6*(B*b + A*c)*x^6
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^7}{7} + \left(\frac{A\,c}{6} + \frac{B\,b}{6}\right)\,x^6 + \frac{A\,b\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)*(A + B*x),x)
[Out] x^6*((A*c)/6 + (B*b)/6) + (A*b*x^5)/5 + (B*c*x^7)/7
```

sympy [A] time = 0.07, size = 29, normalized size = 0.88

$$\frac{Abx^5}{5} + \frac{Bcx^7}{7} + x^6\left(\frac{Ac}{6} + \frac{Bb}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x),x)
[Out] A*b*x**5/5 + B*c*x**7/7 + x**6*(A*c/6 + B*b/6)
```

3.3 $\int x^2(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{6}Bcx^6$$

Rubi [A] time = 0.04, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^3+(bB+Ac)x^4+Bcx^5\right)\,dx\\&=\frac{1}{4}Abx^4+\frac{1}{5}(bB+Ac)x^5+\frac{1}{6}Bcx^6\end{aligned}$$

Mathematica [A] time = 0.00, size = 33, normalized size = 1.00

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 29, normalized size = 0.88

$$\frac{1}{6}x^6cB+\frac{1}{5}x^5bB+\frac{1}{5}x^5cA+\frac{1}{4}x^4bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c*B + 1/5*x^5*b*B + 1/5*x^5*c*A + 1/4*x^4*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{6}Bcx^6 + \frac{1}{5}Bbx^5 + \frac{1}{5}Acx^5 + \frac{1}{4}Abx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6 + 1/5*B*b*x^5 + 1/5*A*c*x^5 + 1/4*A*b*x^4
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$\frac{Bc\,x^6}{6} + \frac{Ab\,x^4}{4} + \frac{(Ac + bB)\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/4*A*b*x^4+1/5*(A*c+B*b)*x^5+1/6*B*c*x^6
```

maxima [A] time = 0.84, size = 27, normalized size = 0.82

$$\frac{1}{6}Bcx^6 + \frac{1}{4}Abx^4 + \frac{1}{5}(Bb + Ac)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*x^6 + 1/4*A*b*x^4 + 1/5*(B*b + A*c)*x^5
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^6}{6} + \left(\frac{A\,c}{5} + \frac{B\,b}{5}\right)\,x^5 + \frac{A\,b\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^5*((A*c)/5 + (B*b)/5) + (A*b*x^4)/4 + (B*c*x^6)/6
```

sympy [A] time = 0.06, size = 29, normalized size = 0.88

$$\frac{Abx^4}{4} + \frac{Bcx^6}{6} + x^5\left(\frac{Ac}{5} + \frac{Bb}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**4/4 + B*c*x**6/6 + x**5*(A*c/5 + B*b/5)
```

3.4 $\int x(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{5}Bcx^5$$

Rubi [A] time = 0.03, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {765}

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^4)/4 + (B*c*x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx^2+(bB+Ac)x^3+Bcx^4\right)\,dx\\ &= \frac{1}{3}Abx^3+\frac{1}{4}(bB+Ac)x^4+\frac{1}{5}Bcx^5\end{aligned}$$

Mathematica [A] time = 0.00, size = 33, normalized size = 1.00

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^4)/4 + (B*c*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2), x]
```

fricas [A] time = 0.33, size = 29, normalized size = 0.88

$$\frac{1}{5}x^5cB+\frac{1}{4}x^4bB+\frac{1}{4}x^4cA+\frac{1}{3}x^3bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
[Out] 1/5*x^5*c*B + 1/4*x^4*b*B + 1/4*x^4*c*A + 1/3*x^3*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{5}\,Bcx^{5}+\frac{1}{4}\,Bbx^{4}+\frac{1}{4}\,Acx^{4}+\frac{1}{3}\,Abx^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
[Out] 1/5*B*c*x^5 + 1/4*B*b*x^4 + 1/4*A*c*x^4 + 1/3*A*b*x^3
```

maple [A] time = 0.04, size = 28, normalized size = 0.85

$$\frac{Bc\,x^{5}}{5}+\frac{Ab\,x^{3}}{3}+\frac{\left(Ac+bB\right)x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x),x)
[Out] 1/3*A*b*x^3+1/4*(A*c+B*b)*x^4+1/5*B*c*x^5
```

maxima [A] time = 0.81, size = 27, normalized size = 0.82

$$\frac{1}{5}\,Bcx^{5}+\frac{1}{3}\,Abx^{3}+\frac{1}{4}\,{\left(Bb+Ac\right)}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
[Out] 1/5*B*c*x^5 + 1/3*A*b*x^3 + 1/4*(B*b + A*c)*x^4
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^5}{5}+\left(\frac{A\,c}{4}+\frac{B\,b}{4}\right)\,x^4+\frac{A\,b\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)*(A + B*x),x)
[Out] x^4*((A*c)/4 + (B*b)/4) + (A*b*x^3)/3 + (B*c*x^5)/5
```

sympy [A] time = 0.07, size = 29, normalized size = 0.88

$$\frac{Abx^{3}}{3}+\frac{Bcx^{5}}{5}+x^{4}\left(\frac{Ac}{4}+\frac{Bb}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x),x)
[Out] A*b*x**3/3 + B*c*x**5/5 + x**4*(A*c/4 + B*b/4)
```

3.5 $\int (A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {631}

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= \frac{1}{2}Abx^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.00, size = 29, normalized size = 0.88

$$\frac{1}{12}x^2(A(6b+4cx)+Bx(4b+3cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (x^2*(B*x*(4*b + 3*c*x) + A*(6*b + 4*c*x)))/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 29, normalized size = 0.88

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*b*A
```

giac [A] time = 0.14, size = 29, normalized size = 0.88

$$\frac{1}{4}Bcx^4 + \frac{1}{3}Bbx^3 + \frac{1}{3}Acx^3 + \frac{1}{2}Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*A*b*x^2
```

maple [A] time = 0.04, size = 28, normalized size = 0.85

$$\frac{Bc\,x^4}{4} + \frac{Ab\,x^2}{2} + \frac{(Ac + bB)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/2*A*b*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

maxima [A] time = 0.89, size = 27, normalized size = 0.82

$$\frac{1}{4}Bcx^4 + \frac{1}{2}Abx^2 + \frac{1}{3}(Bb + Ac)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/2*A*b*x^2 + 1/3*(B*b + A*c)*x^3
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^4}{4} + \left(\frac{A\,c}{3} + \frac{B\,b}{3}\right)\,x^3 + \frac{A\,b\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^3*((A*c)/3 + (B*b)/3) + (A*b*x^2)/2 + (B*c*x^4)/4
```

sympy [A] time = 0.06, size = 29, normalized size = 0.88

$$\frac{Abx^2}{2} + \frac{Bcx^4}{4} + x^3\left(\frac{Ac}{3} + \frac{Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**2/2 + B*c*x**4/4 + x**3*(A*c/3 + B*b/3)
```

3.6 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x}\,dx$

Optimal. Leaf size=28

$$\frac{1}{2}x^2(Ac+bB)+Abx+\frac{1}{3}Bcx^3$$

Rubi [A] time = 0.02, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{2}x^2(Ac+bB)+Abx+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x,x]
```

```
[Out] A*b*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x}\,dx &= \int \left(Ab+(bB+Ac)x+Bcx^2\right)dx\\ &= Abx+\frac{1}{2}(bB+Ac)x^2+\frac{1}{3}Bcx^3\end{aligned}$$

Mathematica [A] time = 0.00, size = 28, normalized size = 1.00

$$\frac{1}{2}x^2(Ac+bB)+Abx+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x,x]
```

```
[Out] A*b*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3
```

IntegrateAlgebraic [A] time = 0.02, size = 32, normalized size = 1.14

$$Abx+\frac{1}{2}Acx^2+\frac{1}{2}bBx^2+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x,x]
```

```
[Out] A*b*x + (b*B*x^2)/2 + (A*c*x^2)/2 + (B*c*x^3)/3
```

fricas [A] time = 0.39, size = 24, normalized size = 0.86

$$\frac{1}{3}\,Bcx^3+Abx+\frac{1}{2}\,(Bb+Ac)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*c*x^3 + A*b*x + 1/2*(B*b + A*c)*x^2
```

giac [A] time = 0.15, size = 26, normalized size = 0.93

$$\frac{1}{3}Bcx^3 + \frac{1}{2}Bbx^2 + \frac{1}{2}Acx^2 + Abx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + 1/2*B*b*x^2 + 1/2*A*c*x^2 + A*b*x
```

maple [A] time = 0.05, size = 25, normalized size = 0.89

$$\frac{Bc\,x^3}{3} + Abx + \frac{(Ac + bB)\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x,x)
```

```
[Out] A*b*x+1/2*(A*c+B*b)*x^2+1/3*B*c*x^3
```

maxima [A] time = 0.85, size = 24, normalized size = 0.86

$$\frac{1}{3}Bcx^3 + Abx + \frac{1}{2}(Bb + Ac)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + A*b*x + 1/2*(B*b + A*c)*x^2
```

mupad [B] time = 0.04, size = 25, normalized size = 0.89

$$\frac{B\,c\,x^3}{3} + \left(\frac{A\,c}{2} + \frac{B\,b}{2}\right)\,x^2 + A\,b\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x,x)
```

```
[Out] x^2*((A*c)/2 + (B*b)/2) + A*b*x + (B*c*x^3)/3
```

sympy [A] time = 0.06, size = 26, normalized size = 0.93

$$Abx + \frac{Bcx^3}{3} + x^2\left(\frac{Ac}{2} + \frac{Bb}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x,x)
```

```
[Out] A*b*x + B*c*x**3/3 + x**2*(A*c/2 + B*b/2)
```

3.7 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^2} dx$

Optimal. Leaf size=24

$$x(Ac+bB)+Ab\log(x)+\frac{1}{2}Bcx^2$$

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$x(Ac+bB)+Ab\log(x)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^2,x]
```

```
[Out] (b*B + A*c)*x + (B*c*x^2)/2 + A*b*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^2} dx &= \int \left(bB+Ac+\frac{Ab}{x}+Bcx\right) dx\\ &= (bB+Ac)x+\frac{1}{2}Bcx^2+Ab\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 24, normalized size = 1.00

$$x(Ac+bB)+Ab\log(x)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^2,x]
```

```
[Out] (b*B + A*c)*x + (B*c*x^2)/2 + A*b*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^2, x]
```

fricas [A] time = 0.39, size = 22, normalized size = 0.92

$$\frac{1}{2}Bcx^2+Ab\log(x)+(Bb+Ac)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^2,x, algorithm="fricas")
[Out] 1/2*B*c*x^2 + A*b*log(x) + (B*b + A*c)*x
```

giac [A] time = 0.14, size = 22, normalized size = 0.92

$$\frac{1}{2}Bcx^2 + Bbx + Acx + Ab\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^2,x, algorithm="giac")
[Out] 1/2*B*c*x^2 + B*b*x + A*c*x + A*b*log(abs(x))
```

maple [A] time = 0.04, size = 22, normalized size = 0.92

$$\frac{Bc\,x^2}{2} + Ab\ln(x) + Acx + Bbx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^2,x)
[Out] 1/2*B*c*x^2+A*c*x+B*b*x+A*b*ln(x)
```

maxima [A] time = 0.90, size = 22, normalized size = 0.92

$$\frac{1}{2}Bcx^2 + Ab\log(x) + (Bb + Ac)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^2,x, algorithm="maxima")
[Out] 1/2*B*c*x^2 + A*b*log(x) + (B*b + A*c)*x
```

mupad [B] time = 0.03, size = 22, normalized size = 0.92

$$x\,(A\,c + B\,b) + \frac{B\,c\,x^2}{2} + A\,b\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^2,x)
[Out] x*(A*c + B*b) + (B*c*x^2)/2 + A*b*log(x)
```

sympy [A] time = 0.11, size = 22, normalized size = 0.92

$$Ab\log(x) + \frac{Bcx^2}{2} + x\,(Ac + Bb)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**2,x)
[Out] A*b*log(x) + B*c*x**2/2 + x*(A*c + B*b)
```

3.8 $\int \frac{(A+Bx)(bx+cx^2)}{x^3}\,dx$

Optimal. Leaf size=22

$$\log(x)(Ac+bB)-\frac{Ab}{x}+Bcx$$

Rubi [A] time = 0.02, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\log(x)(Ac+bB)-\frac{Ab}{x}+Bcx$$

Antiderivative was successfully verified.

[In] Int[((A + B*x)*(b*x + c*x^2))/x^3,x]

[Out] -((A*b)/x) + B*c*x + (b*B + A*c)*Log[x]

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^3}\,dx &= \int \left(Bc+\frac{Ab}{x^2}+\frac{bB+Ac}{x}\right)dx\\ &= -\frac{Ab}{x}+Bcx+(bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 1.00

$$\log(x)(Ac+bB)-\frac{Ab}{x}+Bcx$$

Antiderivative was successfully verified.

[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^3,x]

[Out] -((A*b)/x) + B*c*x + (b*B + A*c)*Log[x]

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^3}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^3,x]

[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^3, x]

fricas [A] time = 0.39, size = 26, normalized size = 1.18

$$\frac{Bcx^2+(Bb+Ac)x\log(x)-Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^3,x, algorithm="fricas")
[Out] (B*c*x^2 + (B*b + A*c)*x*log(x) - A*b)/x
```

giac [A] time = 0.15, size = 23, normalized size = 1.05

$$Bcx + (Bb + Ac)\log(|x|) - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^3,x, algorithm="giac")
[Out] B*c*x + (B*b + A*c)*log(abs(x)) - A*b/x
```

maple [A] time = 0.05, size = 23, normalized size = 1.05

$$Ac\ln(x) + Bb\ln(x) + Bcx - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^3,x)
[Out] B*c*x-A*b/x+A*c*ln(x)+B*b*ln(x)
```

maxima [A] time = 0.87, size = 22, normalized size = 1.00

$$Bcx + (Bb + Ac)\log(x) - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^3,x, algorithm="maxima")
[Out] B*c*x + (B*b + A*c)*log(x) - A*b/x
```

mupad [B] time = 0.04, size = 22, normalized size = 1.00

$$\ln(x)\,(A\,c + B\,b) + B\,c\,x - \frac{A\,b}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^3,x)
[Out] log(x)*(A*c + B*b) + B*c*x - (A*b)/x
```

sympy [A] time = 0.15, size = 19, normalized size = 0.86

$$-\frac{Ab}{x} + Bcx + (Ac + Bb)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**3,x)
[Out] -A*b/x + B*c*x + (A*c + B*b)*log(x)
```

3.9 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^4}\,dx$

Optimal. Leaf size=27

$$-\frac{Ac+bB}{x}-\frac{Ab}{2x^2}+Bc\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{x}-\frac{Ab}{2x^2}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^4,x]
```

```
[Out] -(A*b)/(2*x^2) - (b*B + A*c)/x + B*c*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^4}\,dx &= \int \left(\frac{Ab}{x^3}+\frac{bB+Ac}{x^2}+\frac{Bc}{x}\right)dx\\ &= -\frac{Ab}{2x^2}-\frac{bB+Ac}{x}+Bc\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 1.04

$$\frac{-Ac-bB}{x}-\frac{Ab}{2x^2}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^4,x]
```

```
[Out] -1/2*(A*b)/x^2 + (-(b*B) - A*c)/x + B*c*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^4, x]
```

fricas [A] time = 0.40, size = 29, normalized size = 1.07

$$\frac{2\,Bcx^2\log(x)-Ab-2\,(Bb+Ac)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^4,x, algorithm="fricas")
[Out] 1/2*(2*B*c*x^2*log(x) - A*b - 2*(B*b + A*c)*x)/x^2
```

giac [A] time = 0.15, size = 26, normalized size = 0.96

$$Bc\log(|x|) - \frac{Ab + 2(Bb + Ac)x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^4,x, algorithm="giac")
[Out] B*c*log(abs(x)) - 1/2*(A*b + 2*(B*b + A*c)*x)/x^2
```

maple [A] time = 0.05, size = 28, normalized size = 1.04

$$Bc\ln(x) - \frac{Ac}{x} - \frac{Bb}{x} - \frac{Ab}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^4,x)
[Out] -1/2*A*b/x^2-1/x*A*c-1/x*b*B+B*c*ln(x)
```

maxima [A] time = 0.84, size = 25, normalized size = 0.93

$$Bc\log(x) - \frac{Ab + 2(Bb + Ac)x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^4,x, algorithm="maxima")
[Out] B*c*log(x) - 1/2*(A*b + 2*(B*b + A*c)*x)/x^2
```

mupad [B] time = 1.02, size = 25, normalized size = 0.93

$$Bc\ln(x) - \frac{\frac{Ab}{2} + x(Ac + Bb)}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^4,x)
[Out] B*c*log(x) - ((A*b)/2 + x*(A*c + B*b))/x^2
```

sympy [A] time = 0.22, size = 27, normalized size = 1.00

$$Bc\log(x) + \frac{-Ab + x(-2Ac - 2Bb)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**4,x)
[Out] B*c*log(x) + (-A*b + x*(-2*A*c - 2*B*b))/(2*x**2)
```

3.10 $\int \frac{(A+Bx)(bx+cx^2)}{x^5}\,dx$

Optimal. Leaf size=31

$$-\frac{Ac+bB}{2x^2}-\frac{Ab}{3x^3}-\frac{Bc}{x}$$

Rubi [A] time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{2x^2}-\frac{Ab}{3x^3}-\frac{Bc}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^5,x]
[Out] -(A*b)/(3*x^3) - (b*B + A*c)/(2*x^2) - (B*c)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^5}\,dx &= \int \left(\frac{Ab}{x^4}+\frac{bB+Ac}{x^3}+\frac{Bc}{x^2}\right)dx\\ &= -\frac{Ab}{3x^3}-\frac{bB+Ac}{2x^2}-\frac{Bc}{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.90

$$-\frac{A(2b+3cx)+3Bx(b+2cx)}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^5,x]
[Out] -1/6*(3*B*x*(b + 2*c*x) + A*(2*b + 3*c*x))/x^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^5,x]
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^5, x]
```

fricas [A] time = 0.39, size = 27, normalized size = 0.87

$$-\frac{6\,Bcx^2+2\,Ab+3\,(Bb+Ac)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^5,x, algorithm="fricas")
[Out] -1/6*(6*B*c*x^2 + 2*A*b + 3*(B*b + A*c)*x)/x^3
```

giac [A] time = 0.15, size = 27, normalized size = 0.87

$$-\frac{6\,Bcx^{2} + 3\,Bbx + 3\,Acx + 2\,Ab}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^5,x, algorithm="giac")
[Out] -1/6*(6*B*c*x^2 + 3*B*b*x + 3*A*c*x + 2*A*b)/x^3
```

maple [A] time = 0.05, size = 28, normalized size = 0.90

$$-\frac{Bc}{x} - \frac{Ab}{3x^{3}} - \frac{Ac + bB}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^5,x)
[Out] -1/3*A*b/x^3-1/2*(A*c+B*b)/x^2-B*c/x
```

maxima [A] time = 0.88, size = 27, normalized size = 0.87

$$-\frac{6\,Bcx^{2} + 2\,Ab + 3\,(Bb + Ac)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^5,x, algorithm="maxima")
[Out] -1/6*(6*B*c*x^2 + 2*A*b + 3*(B*b + A*c)*x)/x^3
```

mupad [B] time = 0.04, size = 27, normalized size = 0.87

$$-\frac{B\,c\,x^{2} + \left(\frac{A\,c}{2} + \frac{B\,b}{2}\right)\,x + \frac{A\,b}{3}}{x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^5,x)
[Out] -((A*b)/3 + x*((A*c)/2 + (B*b)/2) + B*c*x^2)/x^3
```

sympy [A] time = 0.28, size = 31, normalized size = 1.00

$$\frac{-2Ab - 6Bcx^{2} + x\,(-3Ac - 3Bb)}{6x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**5,x)
[Out] (-2*A*b - 6*B*c*x**2 + x*(-3*A*c - 3*B*b))/(6*x**3)
```

3.11 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^6} dx$

Optimal. Leaf size=33

$$-\frac{Ac+bB}{3x^3}-\frac{Ab}{4x^4}-\frac{Bc}{2x^2}$$

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{3x^3}-\frac{Ab}{4x^4}-\frac{Bc}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^6,x]
```

```
[Out] -(A*b)/(4*x^4) - (b*B + A*c)/(3*x^3) - (B*c)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^6} dx &= \int \left(\frac{Ab}{x^5}+\frac{bB+Ac}{x^4}+\frac{Bc}{x^3}\right) dx\\ &= -\frac{Ab}{4x^4}-\frac{bB+Ac}{3x^3}-\frac{Bc}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 0.88

$$-\frac{3Ab+4Acx+4bBx+6Bcx^2}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^6,x]
```

```
[Out] -1/12*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2)/x^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^6} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^6, x]
```

fricas [A] time = 0.39, size = 27, normalized size = 0.82

$$-\frac{6\,Bcx^2+3\,Ab+4\,(Bb+Ac)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^6,x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*c*x^2 + 3*A*b + 4*(B*b + A*c)*x)/x^4
```

giac [A] time = 0.15, size = 27, normalized size = 0.82

$$-\frac{6 \, B c x^{2} + 4 \, B b x + 4 \, A c x + 3 \, A b}{12 \, x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^6,x, algorithm="giac")
```

```
[Out] -1/12*(6*B*c*x^2 + 4*B*b*x + 4*A*c*x + 3*A*b)/x^4
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$-\frac{B c}{2 x^{2}}-\frac{A b}{4 x^{4}}-\frac{A c +b B}{3 x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^6,x)
```

```
[Out] -1/4*A*b/x^4-1/3*(A*c+B*b)/x^3-1/2*B*c/x^2
```

maxima [A] time = 0.90, size = 27, normalized size = 0.82

$$-\frac{6 \, B c x^{2} + 3 \, A b + 4 \, {\left(B b + A c\right)} x}{12 \, x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^6,x, algorithm="maxima")
```

```
[Out] -1/12*(6*B*c*x^2 + 3*A*b + 4*(B*b + A*c)*x)/x^4
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$-\frac{\frac{B\,c\,x^2}{2}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x+\frac{A\,b}{4}}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^6,x)
```

```
[Out] -((A*b)/4 + x*((A*c)/3 + (B*b)/3) + (B*c*x^2)/2)/x^4
```

sympy [A] time = 0.34, size = 31, normalized size = 0.94

$$\frac{- 3 A b - 6 B c x^{2} + x \left(- 4 A c - 4 B b\right)}{12 x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**6,x)
```

```
[Out] (-3*A*b - 6*B*c*x**2 + x*(-4*A*c - 4*B*b))/(12*x**4)
```

3.12 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^7}\,dx$

Optimal. Leaf size=33

$$-\frac{Ac+bB}{4x^4}-\frac{Ab}{5x^5}-\frac{Bc}{3x^3}$$

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{4x^4}-\frac{Ab}{5x^5}-\frac{Bc}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^7,x]
```

```
[Out] -(A*b)/(5*x^5) - (b*B + A*c)/(4*x^4) - (B*c)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^7}\,dx&=\int \left(\frac{Ab}{x^6}+\frac{bB+Ac}{x^5}+\frac{Bc}{x^4}\right)dx\\&=-\frac{Ab}{5x^5}-\frac{bB+Ac}{4x^4}-\frac{Bc}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.94

$$-\frac{3A(4b+5cx)+5Bx(3b+4cx)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^7,x]
```

```
[Out] -1/60*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*x))/x^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^7, x]
```

fricas [A] time = 0.39, size = 27, normalized size = 0.82

$$-\frac{20\,Bcx^2+12\,Ab+15\,(Bb+Ac)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*x^2 + 12*A*b + 15*(B*b + A*c)*x)/x^5
```

giac [A] time = 0.15, size = 27, normalized size = 0.82

$$-\frac{20\,Bcx^2 + 15\,Bbx + 15\,Acx + 12\,Ab}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^2 + 15*B*b*x + 15*A*c*x + 12*A*b)/x^5
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$-\frac{Bc}{3x^3} - \frac{Ab}{5x^5} - \frac{Ac + bB}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^7,x)
```

```
[Out] -1/5*A*b/x^5-1/4*(A*c+B*b)/x^4-1/3*B*c/x^3
```

maxima [A] time = 0.91, size = 27, normalized size = 0.82

$$-\frac{20\,Bcx^2 + 12\,Ab + 15\,(Bb + Ac)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*x^2 + 12*A*b + 15*(B*b + A*c)*x)/x^5
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$-\frac{\frac{B\,c\,x^2}{3} + \left(\frac{A\,c}{4} + \frac{B\,b}{4}\right)\,x + \frac{A\,b}{5}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^7,x)
```

```
[Out] -((A*b)/5 + x*((A*c)/4 + (B*b)/4) + (B*c*x^2)/3)/x^5
```

sympy [A] time = 0.41, size = 31, normalized size = 0.94

$$\frac{-12Ab - 20Bcx^2 + x\,(-15Ac - 15Bb)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**7,x)
```

```
[Out] (-12*A*b - 20*B*c*x**2 + x*(-15*A*c - 15*B*b))/(60*x**5)
```

3.13 $\int \frac{(A+Bx)(bx+cx^2)}{x^8}\,dx$

Optimal. Leaf size=33

$$-\frac{Ac+bB}{5x^5}-\frac{Ab}{6x^6}-\frac{Bc}{4x^4}$$

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{5x^5}-\frac{Ab}{6x^6}-\frac{Bc}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^8,x]
[Out] -(A*b)/(6*x^6) - (b*B + A*c)/(5*x^5) - (B*c)/(4*x^4)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(bx+cx^2)}{x^8}\,dx &= \int \left(\frac{Ab}{x^7}+\frac{bB+Ac}{x^6}+\frac{Bc}{x^5}\right)dx\\ &= -\frac{Ab}{6x^6}-\frac{bB+Ac}{5x^5}-\frac{Bc}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.94

$$-\frac{2A(5b+6cx)+3Bx(4b+5cx)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^8,x]
[Out] -1/60*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6*c*x))/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(bx+cx^2)}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^8,x]
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^8, x]
```

fricas [A] time = 0.37, size = 27, normalized size = 0.82

$$-\frac{15\,Bcx^2+10\,Ab+12\,(Bb+Ac)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^8,x, algorithm="fricas")
[Out] -1/60*(15*B*c*x^2 + 10*A*b + 12*(B*b + A*c)*x)/x^6
```

giac [A] time = 0.15, size = 27, normalized size = 0.82

$$-\frac{15\,Bcx^2 + 12\,Bbx + 12\,Acx + 10\,Ab}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^8,x, algorithm="giac")
[Out] -1/60*(15*B*c*x^2 + 12*B*b*x + 12*A*c*x + 10*A*b)/x^6
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$-\frac{Bc}{4x^4} - \frac{Ab}{6x^6} - \frac{Ac + bB}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^8,x)
[Out] -1/5*(A*c+B*b)/x^5-1/4*B*c/x^4-1/6*A*b/x^6
```

maxima [A] time = 0.88, size = 27, normalized size = 0.82

$$-\frac{15\,Bcx^2 + 10\,Ab + 12\,(Bb + Ac)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^8,x, algorithm="maxima")
[Out] -1/60*(15*B*c*x^2 + 10*A*b + 12*(B*b + A*c)*x)/x^6
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$-\frac{\frac{B\,c\,x^2}{4} + \left(\frac{A\,c}{5} + \frac{B\,b}{5}\right)\,x + \frac{A\,b}{6}}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^8,x)
[Out] -((A*b)/6 + x*((A*c)/5 + (B*b)/5) + (B*c*x^2)/4)/x^6
```

sympy [A] time = 0.49, size = 31, normalized size = 0.94

$$\frac{-10Ab - 15Bcx^2 + x\,(-12Ac - 12Bb)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**8,x)
[Out] (-10*A*b - 15*B*c*x**2 + x*(-12*A*c - 12*B*b))/(60*x**6)
```

3.14 $\int x^m(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=71

$$\frac{Ab^2x^{m+3}}{m+3}+\frac{bx^{m+4}(2Ac+bB)}{m+4}+\frac{cx^{m+5}(Ac+2bB)}{m+5}+\frac{Bc^2x^{m+6}}{m+6}$$

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{Ab^2x^{m+3}}{m+3}+\frac{bx^{m+4}(2Ac+bB)}{m+4}+\frac{cx^{m+5}(Ac+2bB)}{m+5}+\frac{Bc^2x^{m+6}}{m+6}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^(3 + m))/(3 + m) + (b*(b*B + 2*A*c)*x^(4 + m))/(4 + m) + (c*(2*b*B
 + A*c)*x^(5 + m))/(5 + m) + (B*c^2*x^(6 + m))/(6 + m)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(bx+cx^2\right)^2\,dx &= \int \left(Ab^2x^{2+m}+b(bB+2Ac)x^{3+m}+c(2bB+Ac)x^{4+m}+Bc^2x^{5+m}\right)dx\\ &= \frac{Ab^2x^{3+m}}{3+m}+\frac{b(bB+2Ac)x^{4+m}}{4+m}+\frac{c(2bB+Ac)x^{5+m}}{5+m}+\frac{Bc^2x^{6+m}}{6+m}\end{aligned}$$

Mathematica [A] time = 0.10, size = 71, normalized size = 1.00

$$\frac{x^{m+3}\left(\left(\frac{b^2}{m+3}+\frac{2bcx}{m+4}+\frac{c^2x^2}{m+5}\right)(Ac(m+6)-bB(m+3))+B(b+cx)^3\right)}{c(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (x^(3 + m)*(B*(b + c*x)^3 + (-(b*B*(3 + m)) + A*c*(6 + m))*(b^2/(3 + m) + (
2*b*c*x)/(4 + m) + (c^2*x^2)/(5 + m))))/(c*(6 + m))
```

IntegrateAlgebraic [F] time = 0.09, size = 0, normalized size = 0.00

$$\int x^m(A+Bx)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(A + B*x)*(b*x + c*x^2)^2, x]
```

fricas [**B**] time = 0.42, size = 217, normalized size = 3.06

$$\frac{\left(\left(Bc^2m^3+12\,Bc^2m^2+47\,Bc^2m+60\,Bc^2\right)x^6+\left(\left(2\,Bbc+Ac^2\right)m^3+144\,Bbc+72\,Ac^2+13\left(2\,Bbc+Ac^2\right)m^2+54\left(2\,Bbc+Ac^2\right)m\right)x^5+\left(\left(Bb^2+2\,Abc\right)m^3+90\,Bb^2+180\,Abc+14\left(Bb^2+2\,Abc\right)m^2+63\left(Bb^2+2\,Abc\right)m\right)x^4+\left(Ab^2m^3+15\,Ab^2m^2+74\,Ab^2m+120\,Ab^2\right)x^3\right)x^m}{m^4+18\,m^3+119\,m^2+342\,m+360}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^3 + 12*B*c^2*m^2 + 47*B*c^2*m + 60*B*c^2)*x^6 + ((2*B*b*c + A*c^2
)*m^3 + 144*B*b*c + 72*A*c^2 + 13*(2*B*b*c + A*c^2)*m^2 + 54*(2*B*b*c + A*c
^2)*m)*x^5 + ((B*b^2 + 2*A*b*c)*m^3 + 90*B*b^2 + 180*A*b*c + 14*(B*b^2 + 2*
A*b*c)*m^2 + 63*(B*b^2 + 2*A*b*c)*m)*x^4 + (A*b^2*m^3 + 15*A*b^2*m^2 + 74*A
*b^2*m + 120*A*b^2)*x^3)*x^m/(m^4 + 18*m^3 + 119*m^2 + 342*m + 360)
```

giac [**B**] time = 0.17, size = 340, normalized size = 4.79

$$\frac{Bc^2m^3x^6x^m+2\,Bbcm^3x^5x^m+Ac^2m^3x^5x^m+12\,Bc^2m^2x^6x^m+Bb^2m^3x^4x^m+2\,Abcm^3x^4x^m+26\,Bbcm^2x^5x^m+13\,Ac^2m^2x^5x^m+47\,Bc^2mx^6x^m+Ab^2m^3x^3x^m+14\,Bb^2m^2x^4x^m+28\,Abcm^2x^4x^m+108\,Bbcmx^5x^m+54\,Ac^2mx^5x^m+60\,Bc^2x^6x^m+15\,Ab^2m^2x^3x^m+63\,Bb^2mx^4x^m+126\,Abcmx^4x^m+144\,Bbcx^5x^m+72\,Ac^2x^5x^m+74\,Ab^2mx^3x^m+90\,Bb^2x^4x^m+180\,Abcx^4x^m+120\,Ab^2x^3x^m}{m^4+18\,m^3+119\,m^2+342\,m+360}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*c^2*m^3*x^6*x^m + 2*B*b*c*m^3*x^5*x^m + A*c^2*m^3*x^5*x^m + 12*B*c^2*m^2
*x^6*x^m + B*b^2*m^3*x^4*x^m + 2*A*b*c*m^3*x^4*x^m + 26*B*b*c*m^2*x^5*x^m +
 13*A*c^2*m^2*x^5*x^m + 47*B*c^2*m*x^6*x^m + A*b^2*m^3*x^3*x^m + 14*B*b^2*m
^2*x^4*x^m + 28*A*b*c*m^2*x^4*x^m + 108*B*b*c*m*x^5*x^m + 54*A*c^2*m*x^5*x^
m + 60*B*c^2*x^6*x^m + 15*A*b^2*m^2*x^3*x^m + 63*B*b^2*m*x^4*x^m + 126*A*b*
c*m*x^4*x^m + 144*B*b*c*x^5*x^m + 72*A*c^2*x^5*x^m + 74*A*b^2*m*x^3*x^m + 9
0*B*b^2*x^4*x^m + 180*A*b*c*x^4*x^m + 120*A*b^2*x^3*x^m)/(m^4 + 18*m^3 + 11
9*m^2 + 342*m + 360)
```

maple [**B**] time = 0.06, size = 246, normalized size = 3.46

$$\frac{\left(Bc^2m^3x^3+Ac^2m^3x^2+2Bbc\,m^3x^2+12Bc^2m^2x^3+2Abc\,m^3x+13Ac^2m^2x^2+Bb^2m^3x+26Bbc\,m^2x^2+47Bc^2m\,x^3+Ab^2m^3+28Abc\,m^2x+54Ac^2m\,x^2+14Bb^2m^2x+108Bbcm\,x^2+60Bc^2x^3+15Ab^2m^2+126Abcmx+72Ac^2x^2+63Bb^2mx+144Bbc\,x^2+74Ab^2m+180Abcx+90Bb^2x+120Ab^2\right)x^{m+3}}{(m+6)\,(m+5)\,(m+4)\,(m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] x^(m+3)*(B*c^2*m^3*x^3+A*c^2*m^3*x^2+2*B*b*c*m^3*x^2+12*B*c^2*m^2*x^3+2*A*b
*c*m^3*x+13*A*c^2*m^2*x^2+B*b^2*m^3*x+26*B*b*c*m^2*x^2+47*B*c^2*m*x^3+A*b^2
*m^3+28*A*b*c*m^2*x+54*A*c^2*m*x^2+14*B*b^2*m^2*x+108*B*b*c*m*x^2+60*B*c^2*
x^3+15*A*b^2*m^2+126*A*b*c*m*x+72*A*c^2*x^2+63*B*b^2*m*x+144*B*b*c*x^2+74*A
*b^2*m+180*A*b*c*x+90*B*b^2*x+120*A*b^2)/(m+6)/(m+5)/(m+4)/(m+3)
```

maxima [**A**] time = 0.86, size = 91, normalized size = 1.28

$$\frac{Bc^2x^{m+6}}{m+6}+\frac{2\,Bbcx^{m+5}}{m+5}+\frac{Ac^2x^{m+5}}{m+5}+\frac{Bb^2x^{m+4}}{m+4}+\frac{2\,Abcx^{m+4}}{m+4}+\frac{Ab^2x^{m+3}}{m+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] B*c^2*x^(m + 6)/(m + 6) + 2*B*b*c*x^(m + 5)/(m + 5) + A*c^2*x^(m + 5)/(m +
5) + B*b^2*x^(m + 4)/(m + 4) + 2*A*b*c*x^(m + 4)/(m + 4) + A*b^2*x^(m + 3)/
(m + 3)
```

mupad [**B**] time = 1.20, size = 179, normalized size = 2.52

$$x^m\left(\frac{A\,b^2\,x^3\,\left(m^3+15\,m^2+74\,m+120\right)}{m^4+18\,m^3+119\,m^2+342\,m+360}+\frac{B\,c^2\,x^6\,\left(m^3+12\,m^2+47\,m+60\right)}{m^4+18\,m^3+119\,m^2+342\,m+360}+\frac{b\,x^4\,\left(2\,A\,c+B\,b\right)\,\left(m^3+14\,m^2+63\,m+90\right)}{m^4+18\,m^3+119\,m^2+342\,m+360}+\frac{c\,x^5\,\left(A\,c+2\,B\,b\right)\,\left(m^3+13\,m^2+54\,m+72\right)}{m^4+18\,m^3+119\,m^2+342\,m+360}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^m*((A*b^2*x^3*(74*m + 15*m^2 + m^3 + 120))/(342*m + 119*m^2 + 18*m^3 + m^
4 + 360) + (B*c^2*x^6*(47*m + 12*m^2 + m^3 + 60))/(342*m + 119*m^2 + 18*m^3
 + m^4 + 360) + (b*x^4*(2*A*c + B*b)*(63*m + 14*m^2 + m^3 + 90))/(342*m + 1
19*m^2 + 18*m^3 + m^4 + 360) + (c*x^5*(A*c + 2*B*b)*(54*m + 13*m^2 + m^3 +
72))/(342*m + 119*m^2 + 18*m^3 + m^4 + 360))
```

sympy [**A**] time = 1.55, size = 1027, normalized size = 14.46

$$\begin{cases} -\frac{Ab^2}{3x^3} - \frac{Abc}{x^2} - \frac{Ac^2}{x} - \frac{Bb^2}{2x^2} - \frac{2Bbc}{x} + Bc^2\log(x) & \text{for}\ m = -6 \\ -\frac{Ab^2}{2x^2} - \frac{2Abc}{x} + Ac^2\log(x) - \frac{Bb^2}{x} + 2Bbc\log(x) + Bc^2x & \text{for}\ m = -5 \\ -\frac{Ab^2}{x} + 2Abc\log(x) + Ac^2x + Bb^2\log(x) + 2Bbcx + \frac{Bc^2x^2}{2} & \text{for}\ m = -4 \\ Ab^2\log(x) + 2Abcx + \frac{Ac^2x^2}{2} + Bb^2x + Bbcx^2 + \frac{Bc^2x^3}{3} & \text{for}\ m = -3 \\ \frac{Ab^2m^3x^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{15Ab^2m^2x^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{74Ab^2mx^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{120Ab^2x^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{2Abcm^3x^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{28Abcm^2x^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{126Abcmx^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{180Abcx^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{Ac^2m^3x^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{13Ac^2m^2x^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{54Ac^2mx^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{72Ac^2x^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{Bb^2m^3x^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{14Bb^2m^2x^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{63Bb^2mx^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{90Bb^2x^4x^m}{m^4+18m^3+119m^2+342m+360} + \frac{2Bbcm^3x^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{26Bbcm^2x^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{108Bbcmx^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{144Bbcx^5x^m}{m^4+18m^3+119m^2+342m+360} + \frac{Bc^2m^3x^6x^m}{m^4+18m^3+119m^2+342m+360} + \frac{12Bc^2m^2x^6x^m}{m^4+18m^3+119m^2+342m+360} + \frac{47Bc^2mx^6x^m}{m^4+18m^3+119m^2+342m+360} + \frac{60Bc^2x^6x^m}{m^4+18m^3+119m^2+342m+360} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((-A*b**2/(3*x**3) - A*b*c/x**2 - A*c**2/x - B*b**2/(2*x**2) - 2*B
*b*c/x + B*c**2*log(x), Eq(m, -6)), (-A*b**2/(2*x**2) - 2*A*b*c/x + A*c**2*
log(x) - B*b**2/x + 2*B*b*c*log(x) + B*c**2*x, Eq(m, -5)), (-A*b**2/x + 2*A
*b*c*log(x) + A*c**2*x + B*b**2*log(x) + 2*B*b*c*x + B*c**2*x**2/2, Eq(m, -
4)), (A*b**2*log(x) + 2*A*b*c*x + A*c**2*x**2/2 + B*b**2*x + B*b*c*x**2 + B
*c**2*x**3/3, Eq(m, -3)), (A*b**2*m**3*x**3*x**m/(m**4 + 18*m**3 + 119*m**2
 + 342*m + 360) + 15*A*b**2*m**2*x**3*x**m/(m**4 + 18*m**3 + 119*m**2 + 342
*m + 360) + 74*A*b**2*m*x**3*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360)
 + 120*A*b**2*x**3*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 2*A*b*c
*m**3*x**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 28*A*b*c*m**2*x
**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 126*A*b*c*m*x**4*x**m/
(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 180*A*b*c*x**4*x**m/(m**4 + 18*
m**3 + 119*m**2 + 342*m + 360) + A*c**2*m**3*x**5*x**m/(m**4 + 18*m**3 + 11
9*m**2 + 342*m + 360) + 13*A*c**2*m**2*x**5*x**m/(m**4 + 18*m**3 + 119*m**2
 + 342*m + 360) + 54*A*c**2*m*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m
+ 360) + 72*A*c**2*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + B*
b**2*m**3*x**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 14*B*b**2*m
**2*x**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 63*B*b**2*m*x**4*
x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 90*B*b**2*x**4*x**m/(m**4
+ 18*m**3 + 119*m**2 + 342*m + 360) + 2*B*b*c*m**3*x**5*x**m/(m**4 + 18*m**
3 + 119*m**2 + 342*m + 360) + 26*B*b*c*m**2*x**5*x**m/(m**4 + 18*m**3 + 119
*m**2 + 342*m + 360) + 108*B*b*c*m*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 3
42*m + 360) + 144*B*b*c*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360)
 + B*c**2*m**3*x**6*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 12*B*c
**2*m**2*x**6*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 47*B*c**2*m*
x**6*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 60*B*c**2*x**6*x**m/(
m**4 + 18*m**3 + 119*m**2 + 342*m + 360), True))
```

3.15 $\int x^3(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{6}Ab^2x^6+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{9}Bc^2x^9$$

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{6}Ab^2x^6+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^6)/6 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^8)/8 + (B*c^2*
x^9)/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^5+b(bB+2Ac)x^6+c(2bB+Ac)x^7+Bc^2x^8\right)\,dx\\&=\frac{1}{6}Ab^2x^6+\frac{1}{7}b(bB+2Ac)x^7+\frac{1}{8}c(2bB+Ac)x^8+\frac{1}{9}Bc^2x^9\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{6}Ab^2x^6+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^6)/6 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^8)/8 + (B*c^2*
x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 53, normalized size = 0.96

$$\frac{1}{9}x^9c^2B+\frac{1}{4}x^8cbB+\frac{1}{8}x^8c^2A+\frac{1}{7}x^7b^2B+\frac{2}{7}x^7cbA+\frac{1}{6}x^6b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^2*B + 1/4*x^8*c*b*B + 1/8*x^8*c^2*A + 1/7*x^7*b^2*B + 2/7*x^7*c*b
*A + 1/6*x^6*b^2*A
```

giac [A] time = 0.17, size = 53, normalized size = 0.96

$$\frac{1}{9}Bc^2x^9 + \frac{1}{4}Bbcx^8 + \frac{1}{8}Ac^2x^8 + \frac{1}{7}Bb^2x^7 + \frac{2}{7}Abcx^7 + \frac{1}{6}Ab^2x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9 + 1/4*B*b*c*x^8 + 1/8*A*c^2*x^8 + 1/7*B*b^2*x^7 + 2/7*A*b*c*x
^7 + 1/6*A*b^2*x^6
```

maple [A] time = 0.05, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^9}{9} + \frac{A\,b^2x^6}{6} + \frac{\left(A\,c^2 + 2bBc\right)x^8}{8} + \frac{\left(2Abc + b^2B\right)x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/9*B*c^2*x^9+1/8*(A*c^2+2*B*b*c)*x^8+1/7*(2*A*b*c+B*b^2)*x^7+1/6*A*b^2*x^6
```

maxima [A] time = 0.87, size = 51, normalized size = 0.93

$$\frac{1}{9}Bc^2x^9 + \frac{1}{6}Ab^2x^6 + \frac{1}{8}\left(2\,Bbc + Ac^2\right)x^8 + \frac{1}{7}\left(Bb^2 + 2\,Abc\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*x^9 + 1/6*A*b^2*x^6 + 1/8*(2*B*b*c + A*c^2)*x^8 + 1/7*(B*b^2 + 2*
A*b*c)*x^7
```

mupad [B] time = 1.05, size = 51, normalized size = 0.93

$$x^7\left(\frac{B\,b^2}{7} + \frac{2\,A\,c\,b}{7}\right) + x^8\left(\frac{A\,c^2}{8} + \frac{B\,b\,c}{4}\right) + \frac{A\,b^2\,x^6}{6} + \frac{B\,c^2\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^7*((B*b^2)/7 + (2*A*b*c)/7) + x^8*((A*c^2)/8 + (B*b*c)/4) + (A*b^2*x^6)/6
 + (B*c^2*x^9)/9
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^6}{6} + \frac{Bc^2x^9}{9} + x^8\left(\frac{Ac^2}{8} + \frac{Bbc}{4}\right) + x^7\left(\frac{2Abc}{7} + \frac{Bb^2}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**6/6 + B*c**2*x**9/9 + x**8*(A*c**2/8 + B*b*c/4) + x**7*(2*A*b*c/7
 + B*b**2/7)
```

3.16 $\int x^2(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{5}Ab^2x^5+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{8}Bc^2x^8$$

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{5}Ab^2x^5+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2*
x^8)/8
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^4+b(bB+2Ac)x^5+c(2bB+Ac)x^6+Bc^2x^7\right)dx\\&=\frac{1}{5}Ab^2x^5+\frac{1}{6}b(bB+2Ac)x^6+\frac{1}{7}c(2bB+Ac)x^7+\frac{1}{8}Bc^2x^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{5}Ab^2x^5+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2*
x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 53, normalized size = 0.96

$$\frac{1}{8}x^8c^2B+\frac{2}{7}x^7cbB+\frac{1}{7}x^7c^2A+\frac{1}{6}x^6b^2B+\frac{1}{3}x^6cbA+\frac{1}{5}x^5b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*B + 2/7*x^7*c*b*B + 1/7*x^7*c^2*A + 1/6*x^6*b^2*B + 1/3*x^6*c*b
*A + 1/5*x^5*b^2*A
```

giac [A] time = 0.17, size = 53, normalized size = 0.96

$$\frac{1}{8}Bc^2x^8 + \frac{2}{7}Bbcx^7 + \frac{1}{7}Ac^2x^7 + \frac{1}{6}Bb^2x^6 + \frac{1}{3}Abcx^6 + \frac{1}{5}Ab^2x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 2/7*B*b*c*x^7 + 1/7*A*c^2*x^7 + 1/6*B*b^2*x^6 + 1/3*A*b*c*x
^6 + 1/5*A*b^2*x^5
```

maple [A] time = 0.05, size = 52, normalized size = 0.95

$$\frac{Bc^2x^8}{8} + \frac{Ab^2x^5}{5} + \frac{\left(Ac^2 + 2bBc\right)x^7}{7} + \frac{\left(2Abc + b^2B\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/8*B*c^2*x^8+1/7*(A*c^2+2*B*b*c)*x^7+1/6*(2*A*b*c+B*b^2)*x^6+1/5*A*b^2*x^5
```

maxima [A] time = 0.89, size = 51, normalized size = 0.93

$$\frac{1}{8}Bc^2x^8 + \frac{1}{5}Ab^2x^5 + \frac{1}{7}\left(2Bbc + Ac^2\right)x^7 + \frac{1}{6}\left(Bb^2 + 2Abc\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/5*A*b^2*x^5 + 1/7*(2*B*b*c + A*c^2)*x^7 + 1/6*(B*b^2 + 2*
A*b*c)*x^6
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^6\left(\frac{Bb^2}{6} + \frac{Acb}{3}\right) + x^7\left(\frac{Ac^2}{7} + \frac{2Bbc}{7}\right) + \frac{Ab^2x^5}{5} + \frac{Bc^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^6*((B*b^2)/6 + (A*b*c)/3) + x^7*((A*c^2)/7 + (2*B*b*c)/7) + (A*b^2*x^5)/5
 + (B*c^2*x^8)/8
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^5}{5} + \frac{Bc^2x^8}{8} + x^7\left(\frac{Ac^2}{7} + \frac{2Bbc}{7}\right) + x^6\left(\frac{Abc}{3} + \frac{Bb^2}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**5/5 + B*c**2*x**8/8 + x**7*(A*c**2/7 + 2*B*b*c/7) + x**6*(A*b*c/3
 + B*b**2/6)
```

3.17 $\int x(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{4}Ab^2x^4+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{5}bx^5(2Ac+bB)+\frac{1}{7}Bc^2x^7$$

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{4}Ab^2x^4+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{5}bx^5(2Ac+bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2*
x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)^2\,dx &= \int \left(Ab^2x^3+b(bB+2Ac)x^4+c(2bB+Ac)x^5+Bc^2x^6\right)\,dx\\ &= \frac{1}{4}Ab^2x^4+\frac{1}{5}b(bB+2Ac)x^5+\frac{1}{6}c(2bB+Ac)x^6+\frac{1}{7}Bc^2x^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{4}Ab^2x^4+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{5}bx^5(2Ac+bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2*
x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.34, size = 53, normalized size = 0.96

$$\frac{1}{7}x^7c^2B+\frac{1}{3}x^6cbB+\frac{1}{6}x^6c^2A+\frac{1}{5}x^5b^2B+\frac{2}{5}x^5cbA+\frac{1}{4}x^4b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c^2*B + 1/3*x^6*c*b*B + 1/6*x^6*c^2*A + 1/5*x^5*b^2*B + 2/5*x^5*c*b
*A + 1/4*x^4*b^2*A
```

giac [A] time = 0.16, size = 53, normalized size = 0.96

$$\frac{1}{7}Bc^2x^7 + \frac{1}{3}Bbcx^6 + \frac{1}{6}Ac^2x^6 + \frac{1}{5}Bb^2x^5 + \frac{2}{5}Abcx^5 + \frac{1}{4}Ab^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 1/3*B*b*c*x^6 + 1/6*A*c^2*x^6 + 1/5*B*b^2*x^5 + 2/5*A*b*c*x
^5 + 1/4*A*b^2*x^4
```

maple [A] time = 0.05, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^7}{7} + \frac{A\,b^2x^4}{4} + \frac{\left(A\,c^2 + 2bBc\right)x^6}{6} + \frac{\left(2Abc + b^2B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/7*B*c^2*x^7+1/6*(A*c^2+2*B*b*c)*x^6+1/5*(2*A*b*c+B*b^2)*x^5+1/4*A*b^2*x^4
```

maxima [A] time = 0.84, size = 51, normalized size = 0.93

$$\frac{1}{7}Bc^2x^7 + \frac{1}{4}Ab^2x^4 + \frac{1}{6}\left(2\,Bbc + Ac^2\right)x^6 + \frac{1}{5}\left(Bb^2 + 2\,Abc\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/4*A*b^2*x^4 + 1/6*(2*B*b*c + A*c^2)*x^6 + 1/5*(B*b^2 + 2*
A*b*c)*x^5
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^5\left(\frac{B\,b^2}{5} + \frac{2\,A\,c\,b}{5}\right) + x^6\left(\frac{A\,c^2}{6} + \frac{B\,b\,c}{3}\right) + \frac{A\,b^2\,x^4}{4} + \frac{B\,c^2\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^5*((B*b^2)/5 + (2*A*b*c)/5) + x^6*((A*c^2)/6 + (B*b*c)/3) + (A*b^2*x^4)/4
 + (B*c^2*x^7)/7
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^4}{4} + \frac{Bc^2x^7}{7} + x^6\left(\frac{Ac^2}{6} + \frac{Bbc}{3}\right) + x^5\left(\frac{2Abc}{5} + \frac{Bb^2}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**4/4 + B*c**2*x**7/7 + x**6*(A*c**2/6 + B*b*c/3) + x**5*(2*A*b*c/5
 + B*b**2/5)
```

3.18 $\int (A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*
x^6)/6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^2\,dx&=\int \left(Ab^2x^2+b(bB+2Ac)x^3+c(2bB+Ac)x^4+Bc^2x^5\right)dx\\&=\frac{1}{3}Ab^2x^3+\frac{1}{4}b(bB+2Ac)x^4+\frac{1}{5}c(2bB+Ac)x^5+\frac{1}{6}Bc^2x^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.89

$$\frac{1}{60}x^3\left(20Ab^2+12cx^2(Ac+2bB)+15bx(2Ac+bB)+10Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (x^3*(20*A*b^2 + 15*b*(b*B + 2*A*c)*x + 12*c*(2*b*B + A*c)*x^2 + 10*B*c^2*x
^3))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.34, size = 53, normalized size = 0.96

$$\frac{1}{6}x^6c^2B+\frac{2}{5}x^5cbB+\frac{1}{5}x^5c^2A+\frac{1}{4}x^4b^2B+\frac{1}{2}x^4cbA+\frac{1}{3}x^3b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*b
*A + 1/3*x^3*b^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{6}\,Bc^2x^6+\frac{2}{5}\,Bbcx^5+\frac{1}{5}\,Ac^2x^5+\frac{1}{4}\,Bb^2x^4+\frac{1}{2}\,Abcx^4+\frac{1}{3}\,Ab^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*A*b*c*x
^4 + 1/3*A*b^2*x^3
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^6}{6}+\frac{A\,b^2x^3}{3}+\frac{\left(A\,c^2+2bBc\right)x^5}{5}+\frac{\left(2Abc+b^2B\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+B*b^2)*x^4+1/3*A*b^2*x^3
```

maxima [A] time = 0.92, size = 51, normalized size = 0.93

$$\frac{1}{6}\,Bc^2x^6+\frac{1}{3}\,Ab^2x^3+\frac{1}{5}\left(2\,Bbc+Ac^2\right)x^5+\frac{1}{4}\left(Bb^2+2\,Abc\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/3*A*b^2*x^3 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*
A*b*c)*x^4
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^4\left(\frac{B\,b^2}{4}+\frac{A\,c\,b}{2}\right)+x^5\left(\frac{A\,c^2}{5}+\frac{2\,B\,b\,c}{5}\right)+\frac{A\,b^2\,x^3}{3}+\frac{B\,c^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^4*((B*b^2)/4 + (A*b*c)/2) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + (A*b^2*x^3)/3
 + (B*c^2*x^6)/6
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^3}{3}+\frac{Bc^2x^6}{6}+x^5\left(\frac{Ac^2}{5}+\frac{2Bbc}{5}\right)+x^4\left(\frac{Abc}{2}+\frac{Bb^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**3/3 + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2
 + B*b**2/4)
```

3.19 $\int \frac{(A+Bx)(bx+cx^2)^2}{x}\,dx$

Optimal. Leaf size=55

$$\frac{1}{2}Ab^2x^2+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{3}bx^3(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{2}Ab^2x^2+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{3}bx^3(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x,x]
```

```
[Out] (A*b^2*x^2)/2 + (b*(b*B + 2*A*c)*x^3)/3 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*
x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x}\,dx &= \int \left(Ab^2x+b(bB+2Ac)x^2+c(2bB+Ac)x^3+Bc^2x^4\right)dx\\ &= \frac{1}{2}Ab^2x^2+\frac{1}{3}b(bB+2Ac)x^3+\frac{1}{4}c(2bB+Ac)x^4+\frac{1}{5}Bc^2x^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.89

$$\frac{1}{60}x^2\left(30Ab^2+15cx^2(Ac+2bB)+20bx(2Ac+bB)+12Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x,x]
```

```
[Out] (x^2*(30*A*b^2 + 20*b*(b*B + 2*A*c)*x + 15*c*(2*b*B + A*c)*x^2 + 12*B*c^2*x
^3))/60
```

IntegrateAlgebraic [A] time = 0.03, size = 65, normalized size = 1.18

$$\frac{1}{2}Ab^2x^2+\frac{2}{3}Abcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{3}b^2Bx^3+\frac{1}{2}bBcx^4+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x,x]
```

```
[Out] (A*b^2*x^2)/2 + (b^2*B*x^3)/3 + (2*A*b*c*x^3)/3 + (b*B*c*x^4)/2 + (A*c^2*x^
4)/4 + (B*c^2*x^5)/5
```

fricas [A] time = 0.39, size = 51, normalized size = 0.93

$$\frac{1}{5}Bc^2x^5 + \frac{1}{2}Ab^2x^2 + \frac{1}{4}\left(2Bbc + Ac^2\right)x^4 + \frac{1}{3}\left(Bb^2 + 2Abc\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*A*b^2*x^2 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*
A*b*c)*x^3
```

giac [A] time = 0.18, size = 53, normalized size = 0.96

$$\frac{1}{5}Bc^2x^5 + \frac{1}{2}Bbcx^4 + \frac{1}{4}Ac^2x^4 + \frac{1}{3}Bb^2x^3 + \frac{2}{3}Abcx^3 + \frac{1}{2}Ab^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*B*b*c*x^4 + 1/4*A*c^2*x^4 + 1/3*B*b^2*x^3 + 2/3*A*b*c*x
^3 + 1/2*A*b^2*x^2
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^5}{5} + \frac{A\,b^2x^2}{2} + \frac{\left(A\,c^2 + 2bBc\right)x^4}{4} + \frac{\left(2Abc + b^2B\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x,x)
```

```
[Out] 1/5*B*c^2*x^5+1/4*(A*c^2+2*B*b*c)*x^4+1/3*(2*A*b*c+B*b^2)*x^3+1/2*A*b^2*x^2
```

maxima [A] time = 0.90, size = 51, normalized size = 0.93

$$\frac{1}{5}Bc^2x^5 + \frac{1}{2}Ab^2x^2 + \frac{1}{4}\left(2Bbc + Ac^2\right)x^4 + \frac{1}{3}\left(Bb^2 + 2Abc\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*A*b^2*x^2 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*
A*b*c)*x^3
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^3\left(\frac{B\,b^2}{3} + \frac{2\,A\,c\,b}{3}\right) + x^4\left(\frac{A\,c^2}{4} + \frac{B\,b\,c}{2}\right) + \frac{A\,b^2\,x^2}{2} + \frac{B\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x,x)
```

```
[Out] x^3*((B*b^2)/3 + (2*A*b*c)/3) + x^4*((A*c^2)/4 + (B*b*c)/2) + (A*b^2*x^2)/2
 + (B*c^2*x^5)/5
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^2}{2} + \frac{Bc^2x^5}{5} + x^4\left(\frac{Ac^2}{4} + \frac{Bbc}{2}\right) + x^3\left(\frac{2Abc}{3} + \frac{Bb^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x,x)
```

```
[Out] A*b**2*x**2/2 + B*c**2*x**5/5 + x**4*(A*c**2/4 + B*b*c/2) + x**3*(2*A*b*c/3
 + B*b**2/3)
```

3.20 $\int \frac{(A+Bx)(bx+cx^2)^2}{x^2} dx$

Optimal. Leaf size=38

$$\frac{B(b+cx)^4}{4c^2} - \frac{(b+cx)^3(bB-Ac)}{3c^2}$$

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{B(b+cx)^4}{4c^2} - \frac{(b+cx)^3(bB-Ac)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^2,x]
```

```
[Out] -((b*B - A*c)*(b + c*x)^3)/(3*c^2) + (B*(b + c*x)^4)/(4*c^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned} \int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^2} dx &= \int \left(\frac{(-bB+Ac)(b+cx)^2}{c} + \frac{B(b+cx)^3}{c}\right) dx \\ &= -\frac{(bB-Ac)(b+cx)^3}{3c^2} + \frac{B(b+cx)^4}{4c^2} \end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.24

$$\frac{1}{12}x\left(12Ab^2 + 4cx^2(Ac+2bB) + 6bx(2Ac+bB) + 3Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^2,x]
```

```
[Out] (x*(12*A*b^2 + 6*b*(b*B + 2*A*c)*x + 4*c*(2*b*B + A*c)*x^2 + 3*B*c^2*x^3))/
12
```

IntegrateAlgebraic [A] time = 0.03, size = 57, normalized size = 1.50

$$Ab^2x + Abcx^2 + \frac{1}{3}Ac^2x^3 + \frac{1}{2}b^2Bx^2 + \frac{2}{3}bBcx^3 + \frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^2,x]
```

```
[Out] A*b^2*x + (b^2*B*x^2)/2 + A*b*c*x^2 + (2*b*B*c*x^3)/3 + (A*c^2*x^3)/3 + (B*
c^2*x^4)/4
```

fricas [A] time = 0.39, size = 48, normalized size = 1.26

$$\frac{1}{4}Bc^2x^4 + Ab^2x + \frac{1}{3}\left(2Bbc + Ac^2\right)x^3 + \frac{1}{2}\left(Bb^2 + 2Abc\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/4*B*c^2*x^4 + A*b^2*x + 1/3*(2*B*b*c + A*c^2)*x^3 + 1/2*(B*b^2 + 2*A*b*c)
*x^2
```

giac [A] time = 0.15, size = 49, normalized size = 1.29

$$\frac{1}{4}Bc^2x^4 + \frac{2}{3}Bbcx^3 + \frac{1}{3}Ac^2x^3 + \frac{1}{2}Bb^2x^2 + Abcx^2 + Ab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + 2/3*B*b*c*x^3 + 1/3*A*c^2*x^3 + 1/2*B*b^2*x^2 + A*b*c*x^2 +
 A*b^2*x
```

maple [A] time = 0.04, size = 49, normalized size = 1.29

$$\frac{Bc^2x^4}{4} + Ab^2x + \frac{\left(Ac^2 + 2bBc\right)x^3}{3} + \frac{\left(2Abc + b^2B\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^2,x)
```

```
[Out] 1/4*B*c^2*x^4+1/3*(A*c^2+2*B*b*c)*x^3+1/2*(2*A*b*c+B*b^2)*x^2+A*b^2*x
```

maxima [A] time = 0.95, size = 48, normalized size = 1.26

$$\frac{1}{4}Bc^2x^4 + Ab^2x + \frac{1}{3}\left(2Bbc + Ac^2\right)x^3 + \frac{1}{2}\left(Bb^2 + 2Abc\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + A*b^2*x + 1/3*(2*B*b*c + A*c^2)*x^3 + 1/2*(B*b^2 + 2*A*b*c)
*x^2
```

mupad [B] time = 0.05, size = 47, normalized size = 1.24

$$x^2\left(\frac{Bb^2}{2} + Acb\right) + x^3\left(\frac{Ac^2}{3} + \frac{2Bbc}{3}\right) + \frac{Bc^2x^4}{4} + Ab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^2,x)
```

```
[Out] x^2*((B*b^2)/2 + A*b*c) + x^3*((A*c^2)/3 + (2*B*b*c)/3) + (B*c^2*x^4)/4 + A
*b^2*x
```

sympy [A] time = 0.08, size = 49, normalized size = 1.29

$$Ab^2x + \frac{Bc^2x^4}{4} + x^3\left(\frac{Ac^2}{3} + \frac{2Bbc}{3}\right) + x^2\left(Abc + \frac{Bb^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**2,x)
```

```
[Out] A*b**2*x + B*c**2*x**4/4 + x**3*(A*c**2/3 + 2*B*b*c/3) + x**2*(A*b*c + B*b*
*2/2)
```

3.21 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^3}\,dx$

Optimal. Leaf size=46

$$Ab^2\log(x)+\frac{1}{2}cx^2(Ac+2bB)+bx(2Ac+bB)+\frac{1}{3}Bc^2x^3$$

Rubi [A] time = 0.03, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$Ab^2\log(x)+\frac{1}{2}cx^2(Ac+2bB)+bx(2Ac+bB)+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^3,x]
```

```
[Out] b*(b*B + 2*A*c)*x + (c*(2*b*B + A*c)*x^2)/2 + (B*c^2*x^3)/3 + A*b^2*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^3}\,dx &= \int \left(b(bB+2Ac)+\frac{Ab^2}{x}+c(2bB+Ac)x+Bc^2x^2\right)dx\\ &= b(bB+2Ac)x+\frac{1}{2}c(2bB+Ac)x^2+\frac{1}{3}Bc^2x^3+Ab^2\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 0.93

$$Ab^2\log(x)+bcx(2A+Bx)+\frac{1}{6}c^2x^2(3A+2Bx)+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^3,x]
```

```
[Out] b^2*B*x + b*c*x*(2*A + B*x) + (c^2*x^2*(3*A + 2*B*x))/6 + A*b^2*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^3, x]
```

fricas [A] time = 0.39, size = 46, normalized size = 1.00

$$\frac{1}{3}\,Bc^2x^3 + Ab^2\log(x) + \frac{1}{2}\left(2\,Bbc + Ac^2\right)x^2 + \left(Bb^2 + 2\,Abc\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/3*B*c^2*x^3 + A*b^2*log(x) + 1/2*(2*B*b*c + A*c^2)*x^2 + (B*b^2 + 2*A*b*c
)*x
```

giac [A] time = 0.15, size = 46, normalized size = 1.00

$$\frac{1}{3}\,Bc^2x^3 + Bbcx^2 + \frac{1}{2}\,Ac^2x^2 + Bb^2x + 2\,Abcx + Ab^2\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + B*b*c*x^2 + 1/2*A*c^2*x^2 + B*b^2*x + 2*A*b*c*x + A*b^2*log
(abs(x))
```

maple [A] time = 0.05, size = 46, normalized size = 1.00

$$\frac{B\,c^2x^3}{3} + \frac{A\,c^2x^2}{2} + Bbc\,x^2 + A\,b^2\ln(x) + 2Abcx + B\,b^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^3,x)
```

```
[Out] 1/3*B*c^2*x^3+1/2*A*c^2*x^2+B*b*c*x^2+2*A*b*c*x+B*b^2*x+A*b^2*ln(x)
```

maxima [A] time = 0.90, size = 46, normalized size = 1.00

$$\frac{1}{3}\,Bc^2x^3 + Ab^2\log(x) + \frac{1}{2}\left(2\,Bbc + Ac^2\right)x^2 + \left(Bb^2 + 2\,Abc\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + A*b^2*log(x) + 1/2*(2*B*b*c + A*c^2)*x^2 + (B*b^2 + 2*A*b*c
)*x
```

mupad [B] time = 0.04, size = 45, normalized size = 0.98

$$x^2\left(\frac{A\,c^2}{2} + B\,b\,c\right) + x\,\left(B\,b^2 + 2\,A\,c\,b\right) + \frac{B\,c^2\,x^3}{3} + A\,b^2\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^3,x)
```

```
[Out] x^2*((A*c^2)/2 + B*b*c) + x*(B*b^2 + 2*A*b*c) + (B*c^2*x^3)/3 + A*b^2*log(x
)
```

sympy [A] time = 0.14, size = 46, normalized size = 1.00

$$Ab^2\log\left(x\right) + \frac{Bc^2x^3}{3} + x^2\left(\frac{Ac^2}{2} + Bbc\right) + x\left(2Abc + Bb^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**3,x)
```

```
[Out] A*b**2*log(x) + B*c**2*x**3/3 + x**2*(A*c**2/2 + B*b*c) + x*(2*A*b*c + B*b*
*2)
```

3.22 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^4} \, dx$

Optimal. Leaf size=44

$$-\frac{Ab^2}{x}+cx(Ac+2bB)+b\log(x)(2Ac+bB)+\frac{1}{2}Bc^2x^2$$

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{x}+cx(Ac+2bB)+b\log(x)(2Ac+bB)+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^4,x]
```

```
[Out] -((A*b^2)/x) + c*(2*b*B + A*c)*x + (B*c^2*x^2)/2 + b*(b*B + 2*A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^4}\,dx &= \int \left(c(2bB+Ac)+\frac{Ab^2}{x^2}+\frac{b(bB+2Ac)}{x}+Bc^2x\right)dx\\ &= -\frac{Ab^2}{x}+c(2bB+Ac)x+\frac{1}{2}Bc^2x^2+b(bB+2Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 43, normalized size = 0.98

$$A\left(c^2x-\frac{b^2}{x}\right)+b\log(x)(2Ac+bB)+\frac{1}{2}Bcx(4b+cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^4,x]
```

```
[Out] (B*c*x*(4*b + c*x))/2 + A*(-(b^2/x) + c^2*x) + b*(b*B + 2*A*c)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^4, x]
```

fricas [A] time = 0.40, size = 52, normalized size = 1.18

$$\frac{Bc^2x^3 - 2\,Ab^2 + 2\left(2\,Bbc + Ac^2\right)x^2 + 2\left(Bb^2 + 2\,Abc\right)x\log(x)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c^2*x^3 - 2*A*b^2 + 2*(2*B*b*c + A*c^2)*x^2 + 2*(B*b^2 + 2*A*b*c)*x*
log(x))/x
```

giac [A] time = 0.16, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bc^2x^2 + 2\,Bbcx + Ac^2x - \frac{Ab^2}{x} + \left(Bb^2 + 2\,Abc\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*B*c^2*x^2 + 2*B*b*c*x + A*c^2*x - A*b^2/x + (B*b^2 + 2*A*b*c)*log(abs(x
))
```

maple [A] time = 0.05, size = 46, normalized size = 1.05

$$\frac{B\,c^2x^2}{2} + 2Abc\ln(x) + A\,c^2x + B\,b^2\ln(x) + 2Bbcx - \frac{A\,b^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^4,x)
```

```
[Out] 1/2*B*c^2*x^2+A*c^2*x+2*b*B*c*x-A*b^2/x+2*A*ln(x)*b*c+b^2*B*ln(x)
```

maxima [A] time = 0.89, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bc^2x^2 - \frac{Ab^2}{x} + \left(2\,Bbc + Ac^2\right)x + \left(Bb^2 + 2\,Abc\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^2*x^2 - A*b^2/x + (2*B*b*c + A*c^2)*x + (B*b^2 + 2*A*b*c)*log(x)
```

mupad [B] time = 0.05, size = 46, normalized size = 1.05

$$x\,\left(A\,c^2 + 2\,B\,b\,c\right) + \ln(x)\,\left(B\,b^2 + 2\,A\,c\,b\right) - \frac{A\,b^2}{x} + \frac{B\,c^2\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^4,x)
```

```
[Out] x*(A*c^2 + 2*B*b*c) + log(x)*(B*b^2 + 2*A*b*c) - (A*b^2)/x + (B*c^2*x^2)/2
```

sympy [A] time = 0.19, size = 42, normalized size = 0.95

$$-\frac{Ab^2}{x} + \frac{Bc^2x^2}{2} + b\left(2Ac + Bb\right)\log\left(x\right) + x\left(Ac^2 + 2Bbc\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**4,x)
```

```
[Out] -A*b**2/x + B*c**2*x**2/2 + b*(2*A*c + B*b)*log(x) + x*(A*c**2 + 2*B*b*c)
```

3.23 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^5} dx$

Optimal. Leaf size=44

$$-\frac{Ab^2}{2x^2}-\frac{b(2Ac+bB)}{x}+c\log(x)(Ac+2bB)+Bc^2x$$

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{2x^2}-\frac{b(2Ac+bB)}{x}+c\log(x)(Ac+2bB)+Bc^2x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^5,x]
[Out] -(A*b^2)/(2*x^2) - (b*(b*B + 2*A*c))/x + B*c^2*x + c*(2*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^5}\,dx &= \int \left(Bc^2+\frac{Ab^2}{x^3}+\frac{b(bB+2Ac)}{x^2}+\frac{c(2bB+Ac)}{x}\right)dx\\ &= -\frac{Ab^2}{2x^2}-\frac{b(bB+2Ac)}{x}+Bc^2x+c(2bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 44, normalized size = 1.00

$$-\frac{Ab^2}{2x^2}-\frac{b(2Ac+bB)}{x}+c\log(x)(Ac+2bB)+Bc^2x$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^5,x]
[Out] -1/2*(A*b^2)/x^2 - (b*(b*B + 2*A*c))/x + B*c^2*x + c*(2*b*B + A*c)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^5,x]
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^5, x]
```

fricas [A] time = 0.41, size = 53, normalized size = 1.20

$$\frac{2\,Bc^2x^3 + 2\,\left(2\,Bbc + Ac^2\right)x^2\log(x) - Ab^2 - 2\,\left(Bb^2 + 2\,Abc\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c^2*x^3 + 2*(2*B*b*c + A*c^2)*x^2*log(x) - A*b^2 - 2*(B*b^2 + 2*A*
b*c)*x)/x^2
```

giac [A] time = 0.16, size = 47, normalized size = 1.07

$$Bc^2x + \left(2\,Bbc + Ac^2\right)\log\left(|x|\right) - \frac{Ab^2 + 2\,\left(Bb^2 + 2\,Abc\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^5,x, algorithm="giac")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(abs(x)) - 1/2*(A*b^2 + 2*(B*b^2 + 2*A*b*c)*
x)/x^2
```

maple [A] time = 0.05, size = 48, normalized size = 1.09

$$A\,c^2\ln(x) + 2Bbc\ln(x) + B\,c^2x - \frac{2Abc}{x} - \frac{B\,b^2}{x} - \frac{A\,b^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^5,x)
```

```
[Out] B*c^2*x-1/2*A*b^2/x^2-2*b/x*A*c-b^2/x*B+A*ln(x)*c^2+2*B*ln(x)*b*c
```

maxima [A] time = 0.93, size = 46, normalized size = 1.05

$$Bc^2x + \left(2\,Bbc + Ac^2\right)\log(x) - \frac{Ab^2 + 2\,\left(Bb^2 + 2\,Abc\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^5,x, algorithm="maxima")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(x) - 1/2*(A*b^2 + 2*(B*b^2 + 2*A*b*c)*x)/x^
2
```

mupad [B] time = 1.04, size = 46, normalized size = 1.05

$$\ln(x)\,\left(A\,c^2 + 2\,B\,b\,c\right) - \frac{\frac{A\,b^2}{2} + x\,\left(B\,b^2 + 2\,A\,c\,b\right)}{x^2} + B\,c^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^5,x)
```

```
[Out] log(x)*(A*c^2 + 2*B*b*c) - ((A*b^2)/2 + x*(B*b^2 + 2*A*b*c))/x^2 + B*c^2*x
```

sympy [A] time = 0.33, size = 46, normalized size = 1.05

$$Bc^2x + c\,(Ac + 2Bb)\log\left(x\right) + \frac{-Ab^2 + x\left(-4Abc - 2Bb^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**5,x)
```

```
[Out] B*c**2*x + c*(A*c + 2*B*b)*log(x) + (-A*b**2 + x*(-4*A*b*c - 2*B*b**2))/(2*
x**2)
```

3.24 $\int \frac{(A+Bx)(bx+cx^2)^2}{x^6} \, dx$

Optimal. Leaf size=49

$$-\frac{Ab^2}{3x^3}-\frac{b(2Ac+bB)}{2x^2}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{3x^3}-\frac{b(2Ac+bB)}{2x^2}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -(A*b^2)/(3*x^3) - (b*(b*B + 2*A*c))/(2*x^2) - (c*(2*b*B + A*c))/x + B*c^2*
Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^6}\,dx &= \int \left(\frac{Ab^2}{x^4}+\frac{b(bB+2Ac)}{x^3}+\frac{c(2bB+Ac)}{x^2}+\frac{Bc^2}{x}\right)dx\\ &= -\frac{Ab^2}{3x^3}-\frac{b(bB+2Ac)}{2x^2}-\frac{c(2bB+Ac)}{x}+Bc^2\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.96

$$Bc^2\log(x)-\frac{2A\left(b^2+3bcx+3c^2x^2\right)+3bBx(b+4cx)}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -1/6*(3*b*B*x*(b + 4*c*x) + 2*A*(b^2 + 3*b*c*x + 3*c^2*x^2))/x^3 + B*c^2*Lo
g[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^6, x]
```

fricas [A] time = 0.39, size = 53, normalized size = 1.08

$$\frac{6\,Bc^{2}x^{3}\log(x) - 2\,Ab^{2} - 6\left(2\,Bbc + Ac^{2}\right)x^{2} - 3\left(Bb^{2} + 2\,Abc\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^6,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*c^2*x^3*log(x) - 2*A*b^2 - 6*(2*B*b*c + A*c^2)*x^2 - 3*(B*b^2 + 2*
A*b*c)*x)/x^3
```

giac [A] time = 0.17, size = 51, normalized size = 1.04

$$Bc^{2}\log\left(|x|\right) - \frac{2\,Ab^{2} + 6\left(2\,Bbc + Ac^{2}\right)x^{2} + 3\left(Bb^{2} + 2\,Abc\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^6,x, algorithm="giac")
```

```
[Out] B*c^2*log(abs(x)) - 1/6*(2*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 3*(B*b^2 + 2*A
*b*c)*x)/x^3
```

maple [A] time = 0.05, size = 52, normalized size = 1.06

$$B\,c^{2}\ln(x) - \frac{A\,c^{2}}{x} - \frac{2Bbc}{x} - \frac{Abc}{x^{2}} - \frac{B\,b^{2}}{2x^{2}} - \frac{A\,b^{2}}{3x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^6,x)
```

```
[Out] -1/3*A*b^2/x^3-b/x^2*A*c-1/2*b^2*B/x^2-c^2/x*A-2*c/x*b*B+B*c^2*ln(x)
```

maxima [A] time = 0.87, size = 50, normalized size = 1.02

$$Bc^{2}\log(x) - \frac{2\,Ab^{2} + 6\left(2\,Bbc + Ac^{2}\right)x^{2} + 3\left(Bb^{2} + 2\,Abc\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^6,x, algorithm="maxima")
```

```
[Out] B*c^2*log(x) - 1/6*(2*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 3*(B*b^2 + 2*A*b*c)
*x)/x^3
```

mupad [B] time = 1.12, size = 48, normalized size = 0.98

$$B\,c^{2}\,\ln(x) - \frac{x^{2}\,\left(A\,c^{2} + 2\,B\,b\,c\right) + \frac{A\,b^{2}}{3} + x\,\left(\frac{B\,b^{2}}{2} + A\,c\,b\right)}{x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^6,x)
```

```
[Out] B*c^2*log(x) - (x^2*(A*c^2 + 2*B*b*c) + (A*b^2)/3 + x*((B*b^2)/2 + A*b*c))/
x^3
```

sympy [A] time = 0.53, size = 54, normalized size = 1.10

$$Bc^{2}\log\left(x\right) + \frac{-2Ab^{2} + x^{2}\left(-6Ac^{2} - 12Bbc\right) + x\left(-6Abc - 3Bb^{2}\right)}{6x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**6,x)
```

```
[Out] B*c**2*log(x) + (-2*A*b**2 + x**2*(-6*A*c**2 - 12*B*b*c) + x*(-6*A*b*c - 3*
B*b**2))/(6*x**3)
```

3.25 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^7}\,dx$

Optimal. Leaf size=53

$$-\frac{Ab^2}{4x^4}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

Rubi [A] time = 0.03, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{4x^4}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -(A*b^2)/(4*x^4) - (b*(b*B + 2*A*c))/(3*x^3) - (c*(2*b*B + A*c))/(2*x^2) -
(B*c^2)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^7}\,dx &= \int \left(\frac{Ab^2}{x^5}+\frac{b(bB+2Ac)}{x^4}+\frac{c(2bB+Ac)}{x^3}+\frac{Bc^2}{x^2}\right)dx\\ &= -\frac{Ab^2}{4x^4}-\frac{b(bB+2Ac)}{3x^3}-\frac{c(2bB+Ac)}{2x^2}-\frac{Bc^2}{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.94

$$-\frac{A\left(3b^2+8bcx+6c^2x^2\right)+4Bx\left(b^2+3bcx+3c^2x^2\right)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -1/12*(4*B*x*(b^2 + 3*b*c*x + 3*c^2*x^2) + A*(3*b^2 + 8*b*c*x + 6*c^2*x^2))
/x^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^7, x]
```

fricas [A] time = 0.39, size = 51, normalized size = 0.96

$$-\frac{12\,Bc^2x^3 + 3\,Ab^2 + 6\left(2\,Bbc + Ac^2\right)x^2 + 4\left(Bb^2 + 2\,Abc\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^7,x, algorithm="fricas")
[Out] -1/12*(12*B*c^2*x^3 + 3*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 4*(B*b^2 + 2*A*b*
c)*x)/x^4
```

giac [A] time = 0.15, size = 51, normalized size = 0.96

$$-\frac{12\,Bc^2x^3 + 12\,Bbcx^2 + 6\,Ac^2x^2 + 4\,Bb^2x + 8\,Abcx + 3\,Ab^2}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^7,x, algorithm="giac")
[Out] -1/12*(12*B*c^2*x^3 + 12*B*b*c*x^2 + 6*A*c^2*x^2 + 4*B*b^2*x + 8*A*b*c*x +
3*A*b^2)/x^4
```

maple [A] time = 0.05, size = 48, normalized size = 0.91

$$-\frac{B\,c^2}{x} - \frac{A\,b^2}{4x^4} - \frac{(Ac + 2bB)\,c}{2x^2} - \frac{(2Ac + bB)\,b}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^7,x)
[Out] -1/4*A*b^2/x^4-1/3*(2*A*c+B*b)*b/x^3-1/2*c*(A*c+2*B*b)/x^2-B*c^2/x
```

maxima [A] time = 0.92, size = 51, normalized size = 0.96

$$-\frac{12\,Bc^2x^3 + 3\,Ab^2 + 6\left(2\,Bbc + Ac^2\right)x^2 + 4\left(Bb^2 + 2\,Abc\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^7,x, algorithm="maxima")
[Out] -1/12*(12*B*c^2*x^3 + 3*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 4*(B*b^2 + 2*A*b*
c)*x)/x^4
```

mupad [B] time = 0.04, size = 49, normalized size = 0.92

$$-\frac{x^2\left(\frac{A\,c^2}{2} + B\,b\,c\right) + \frac{A\,b^2}{4} + x\left(\frac{B\,b^2}{3} + \frac{2\,A\,c\,b}{3}\right) + B\,c^2\,x^3}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^7,x)
[Out] -(x^2*((A*c^2)/2 + B*b*c) + (A*b^2)/4 + x*((B*b^2)/3 + (2*A*b*c)/3) + B*c^2
*x^3)/x^4
```

sympy [A] time = 0.68, size = 56, normalized size = 1.06

$$\frac{-3Ab^2 - 12Bc^2x^3 + x^2\left(-6Ac^2 - 12Bbc\right) + x\left(-8Abc - 4Bb^2\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**7,x)
```

```
[Out] (-3*A*b**2 - 12*B*c**2*x**3 + x**2*(-6*A*c**2 - 12*B*b*c) + x*(-8*A*b*c - 4
*B*b**2))/(12*x**4)
```

3.26 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^8}\,dx$

Optimal. Leaf size=55

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{4x^4}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{4x^4}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -(A*b^2)/(5*x^5) - (b*(b*B + 2*A*c))/(4*x^4) - (c*(2*b*B + A*c))/(3*x^3) -
(B*c^2)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^8}\,dx &= \int \left(\frac{Ab^2}{x^6}+\frac{b(bB+2Ac)}{x^5}+\frac{c(2bB+Ac)}{x^4}+\frac{Bc^2}{x^3}\right)dx\\ &= -\frac{Ab^2}{5x^5}-\frac{b(bB+2Ac)}{4x^4}-\frac{c(2bB+Ac)}{3x^3}-\frac{Bc^2}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 53, normalized size = 0.96

$$-\frac{2A\left(6b^2+15bcx+10c^2x^2\right)+5Bx\left(3b^2+8bcx+6c^2x^2\right)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -1/60*(5*B*x*(3*b^2 + 8*b*c*x + 6*c^2*x^2) + 2*A*(6*b^2 + 15*b*c*x + 10*c^2
*x^2))/x^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^8, x]
```

fricas [A] time = 0.39, size = 51, normalized size = 0.93

$$-\frac{30\,Bc^2x^3+12\,Ab^2+20\left(2\,Bbc+Ac^2\right)x^2+15\left(Bb^2+2\,Abc\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c^2*x^3 + 12*A*b^2 + 20*(2*B*b*c + A*c^2)*x^2 + 15*(B*b^2 + 2*A
*b*c)*x)/x^5
```

giac [A] time = 0.16, size = 51, normalized size = 0.93

$$-\frac{30\,Bc^2x^3+40\,Bbcx^2+20\,Ac^2x^2+15\,Bb^2x+30\,Abcx+12\,Ab^2}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c^2*x^3 + 40*B*b*c*x^2 + 20*A*c^2*x^2 + 15*B*b^2*x + 30*A*b*c*x
 + 12*A*b^2)/x^5
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,c^2}{2x^2}-\frac{A\,b^2}{5x^5}-\frac{(Ac+2bB)\,c}{3x^3}-\frac{(2Ac+bB)\,b}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^8,x)
```

```
[Out] -1/5*A*b^2/x^5-1/4*b*(2*A*c+B*b)/x^4-1/3*(A*c+2*B*b)*c/x^3-1/2*B*c^2/x^2
```

maxima [A] time = 0.84, size = 51, normalized size = 0.93

$$-\frac{30\,Bc^2x^3+12\,Ab^2+20\left(2\,Bbc+Ac^2\right)x^2+15\left(Bb^2+2\,Abc\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c^2*x^3 + 12*A*b^2 + 20*(2*B*b*c + A*c^2)*x^2 + 15*(B*b^2 + 2*A
*b*c)*x)/x^5
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\left(\frac{A\,c^2}{3}+\frac{2\,B\,b\,c}{3}\right)+\frac{A\,b^2}{5}+x\left(\frac{B\,b^2}{4}+\frac{A\,c\,b}{2}\right)+\frac{B\,c^2\,x^3}{2}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^8,x)
```

```
[Out] -(x^2*((A*c^2)/3 + (2*B*b*c)/3) + (A*b^2)/5 + x*((B*b^2)/4 + (A*b*c)/2) + (
B*c^2*x^3)/2)/x^5
```

sympy [A] time = 0.86, size = 56, normalized size = 1.02

$$\frac{-12Ab^2-30Bc^2x^3+x^2\left(-20Ac^2-40Bbc\right)+x\left(-30Abc-15Bb^2\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**8,x)
```

```
[Out] (-12*A*b**2 - 30*B*c**2*x**3 + x**2*(-20*A*c**2 - 40*B*b*c) + x*(-30*A*b*c
- 15*B*b**2))/(60*x**5)
```

3.27 $\int x^m(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=96

$$\frac{Ab^3x^{m+4}}{m+4}+\frac{b^2x^{m+5}(3Ac+bB)}{m+5}+\frac{c^2x^{m+7}(Ac+3bB)}{m+7}+\frac{3bcx^{m+6}(Ac+bB)}{m+6}+\frac{Bc^3x^{m+8}}{m+8}$$

Rubi [A] time = 0.06, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^2x^{m+5}(3Ac+bB)}{m+5}+\frac{Ab^3x^{m+4}}{m+4}+\frac{c^2x^{m+7}(Ac+3bB)}{m+7}+\frac{3bcx^{m+6}(Ac+bB)}{m+6}+\frac{Bc^3x^{m+8}}{m+8}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^(4 + m))/(4 + m) + (b^2*(b*B + 3*A*c)*x^(5 + m))/(5 + m) + (3*b*c*
(b*B + A*c)*x^(6 + m))/(6 + m) + (c^2*(3*b*B + A*c)*x^(7 + m))/(7 + m) + (B
*c^3*x^(8 + m))/(8 + m)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^{3+m}+b^2(bB+3Ac)x^{4+m}+3bc(bB+Ac)x^{5+m}+c^2(3bB+Ac)x^{6+m}+B\right.\\&=\frac{Ab^3x^{4+m}}{4+m}+\frac{b^2(bB+3Ac)x^{5+m}}{5+m}+\frac{3bc(bB+Ac)x^{6+m}}{6+m}+\frac{c^2(3bB+Ac)x^{7+m}}{7+m}+\frac{Bc}{8}\end{aligned}$$

Mathematica [A] time = 0.11, size = 87, normalized size = 0.91

$$\frac{x^{m+4}\left(\left(\frac{b^3}{m+4}+\frac{3b^2cx}{m+5}+\frac{3bc^2x^2}{m+6}+\frac{c^3x^3}{m+7}\right)(Ac(m+8)-bB(m+4))+B(b+cx)^4\right)}{c(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (x^(4 + m)*(B*(b + c*x)^4 + (-(b*B*(4 + m)) + A*c*(8 + m))*(b^3/(4 + m) + (
3*b^2*c*x)/(5 + m) + (3*b*c^2*x^2)/(6 + m) + (c^3*x^3)/(7 + m))))/(c*(8 + m
))
```

IntegrateAlgebraic [F] time = 0.42, size = 0, normalized size = 0.00

$$\int x^m(A+Bx)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(A + B*x)*(b*x + c*x^2)^3,x]
```

[Out] Defer[IntegrateAlgebraic][x^m*(A + B*x)*(b*x + c*x^2)^3, x]

fricas [B] time = 0.42, size = 381, normalized size = 3.97

$$\frac{\left({\left(B c^{3} m^{4} + 22 \, B c^{3} m^{3} + 179 \, B c^{3} m^{2} + 638 \, B c^{3} m + 840 \, B c^{3}\right)} x^{8} + {\left({\left(3 \, B b c^{2} + A c^{3}\right)} m^{4} + 2880 \, B b c^{2} + 960 \, A c^{3} + 23 \, {\left(3 \, B b c^{2} + A c^{3}\right)} m^{3} + 194 \, {\left(3 \, B b c^{2} + A c^{3}\right)} m^{2} + 712 \, {\left(3 \, B b c^{2} + A c^{3}\right)} m\right)} x^{7} + 3 \, {\left({\left(B b^{2} c + A b c^{2}\right)} m^{4} + 1120 \, B b^{2} c + 1120 \, A b c^{2} + 24 \, {\left(B b^{2} c + A b c^{2}\right)} m^{3} + 211 \, {\left(B b^{2} c + A b c^{2}\right)} m^{2} + 804 \, {\left(B b^{2} c + A b c^{2}\right)} m\right)} x^{6} + {\left({\left(B b^{3} + 3 \, A b^{2} c\right)} m^{4} + 1344 \, B b^{3} + 4032 \, A b^{2} c + 25 \, {\left(B b^{3} + 3 \, A b^{2} c\right)} m^{3} + 230 \, {\left(B b^{3} + 3 \, A b^{2} c\right)} m^{2} + 920 \, {\left(B b^{3} + 3 \, A b^{2} c\right)} m\right)} x^{5} + {\left(A b^{3} m^{4} + 26 \, A b^{3} m^{3} + 251 \, A b^{3} m^{2} + 1066 \, A b^{3} m + 1680 \, A b^{3}\right)} x^{4}\right)} x^{m}}{m^{5} + 30 \, m^{4} + 355 \, m^{3} + 2070 \, m^{2} + 5944 \, m + 6720}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")

[Out] ((B*c^3*m^4 + 22*B*c^3*m^3 + 179*B*c^3*m^2 + 638*B*c^3*m + 840*B*c^3)*x^8 + ((3*B*b*c^2 + A*c^3)*m^4 + 2880*B*b*c^2 + 960*A*c^3 + 23*(3*B*b*c^2 + A*c^3)*m^3 + 194*(3*B*b*c^2 + A*c^3)*m^2 + 712*(3*B*b*c^2 + A*c^3)*m)*x^7 + 3*((B*b^2*c + A*b*c^2)*m^4 + 1120*B*b^2*c + 1120*A*b*c^2 + 24*(B*b^2*c + A*b*c^2)*m^3 + 211*(B*b^2*c + A*b*c^2)*m^2 + 804*(B*b^2*c + A*b*c^2)*m)*x^6 + ((B*b^3 + 3*A*b^2*c)*m^4 + 1344*B*b^3 + 4032*A*b^2*c + 25*(B*b^3 + 3*A*b^2*c)*m^3 + 230*(B*b^3 + 3*A*b^2*c)*m^2 + 920*(B*b^3 + 3*A*b^2*c)*m)*x^5 + (A*b^3*m^4 + 26*A*b^3*m^3 + 251*A*b^3*m^2 + 1066*A*b^3*m + 1680*A*b^3)*x^4)*x^m/(m^5 + 30*m^4 + 355*m^3 + 2070*m^2 + 5944*m + 6720)

giac [B] time = 0.25, size = 603, normalized size = 6.28

$$\frac{B c^{3} m^{4} x^{8} x^{m} + 3 \, B b c^{2} m^{4} x^{7} x^{m} + A c^{3} m^{4} x^{7} x^{m} + 22 \, B c^{3} m^{3} x^{8} x^{m} + 3 \, B b^{2} c m^{4} x^{6} x^{m} + 3 \, A b c^{2} m^{4} x^{6} x^{m} + 69 \, B b c^{2} m^{3} x^{7} x^{m} + 23 \, A c^{3} m^{3} x^{7} x^{m} + 179 \, B c^{3} m^{2} x^{8} x^{m} + B b^{3} m^{4} x^{5} x^{m} + 3 \, A b^{2} c m^{4} x^{5} x^{m} + 72 \, B b^{2} c m^{3} x^{6} x^{m} + 72 \, A b c^{2} m^{3} x^{6} x^{m} + 582 \, B b c^{2} m^{2} x^{7} x^{m} + 194 \, A c^{3} m^{2} x^{7} x^{m} + 638 \, B c^{3} m x^{8} x^{m} + A b^{3} m^{4} x^{4} x^{m} + 25 \, B b^{3} m^{3} x^{5} x^{m} + 75 \, A b^{2} c m^{3} x^{5} x^{m} + 633 \, B b^{2} c m^{2} x^{6} x^{m} + 633 \, A b c^{2} m^{2} x^{6} x^{m} + 2136 \, B b c^{2} m x^{7} x^{m} + 712 \, A c^{3} m x^{7} x^{m} + 840 \, B c^{3} x^{8} x^{m} + 26 \, A b^{3} m^{3} x^{4} x^{m} + 230 \, B b^{3} m^{2} x^{5} x^{m} + 690 \, A b^{2} c m^{2} x^{5} x^{m} + 2412 \, B b^{2} c m x^{6} x^{m} + 2412 \, A b c^{2} m x^{6} x^{m} + 2880 \, B b c^{2} x^{7} x^{m} + 960 \, A c^{3} x^{7} x^{m} + 251 \, A b^{3} m^{2} x^{4} x^{m} + 920 \, B b^{3} m x^{5} x^{m} + 2760 \, A b^{2} c m x^{5} x^{m} + 3360 \, B b^{2} c x^{6} x^{m} + 3360 \, A b c^{2} x^{6} x^{m} + 1066 \, A b^{3} m x^{4} x^{m} + 1344 \, B b^{3} x^{5} x^{m} + 4032 \, A b^{2} c x^{5} x^{m} + 1680 \, A b^{3} x^{4} x^{m}}{m^{5} + 30 \, m^{4} + 355 \, m^{3} + 2070 \, m^{2} + 5944 \, m + 6720}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")

[Out] (B*c^3*m^4*x^8*x^m + 3*B*b*c^2*m^4*x^7*x^m + A*c^3*m^4*x^7*x^m + 22*B*c^3*m^3*x^8*x^m + 3*B*b^2*c*m^4*x^6*x^m + 3*A*b*c^2*m^4*x^6*x^m + 69*B*b*c^2*m^3*x^7*x^m + 23*A*c^3*m^3*x^7*x^m + 179*B*c^3*m^2*x^8*x^m + B*b^3*m^4*x^5*x^m + 3*A*b^2*c*m^4*x^5*x^m + 72*B*b^2*c*m^3*x^6*x^m + 72*A*b*c^2*m^3*x^6*x^m + 582*B*b*c^2*m^2*x^7*x^m + 194*A*c^3*m^2*x^7*x^m + 638*B*c^3*m*x^8*x^m + A*b^3*m^4*x^4*x^m + 25*B*b^3*m^3*x^5*x^m + 75*A*b^2*c*m^3*x^5*x^m + 633*B*b^2*c*m^2*x^6*x^m + 633*A*b*c^2*m^2*x^6*x^m + 2136*B*b*c^2*m*x^7*x^m + 712*A*c^3*m*x^7*x^m + 840*B*c^3*x^8*x^m + 26*A*b^3*m^3*x^4*x^m + 230*B*b^3*m^2*x^5*x^m + 690*A*b^2*c*m^2*x^5*x^m + 2412*B*b^2*c*m*x^6*x^m + 2412*A*b*c^2*m*x^6*x^m + 2880*B*b*c^2*x^7*x^m + 960*A*c^3*x^7*x^m + 251*A*b^3*m^2*x^4*x^m + 920*B*b^3*m*x^5*x^m + 2760*A*b^2*c*m*x^5*x^m + 3360*B*b^2*c*x^6*x^m + 3360*A*b*c^2*x^6*x^m + 1066*A*b^3*m*x^4*x^m + 1344*B*b^3*x^5*x^m + 4032*A*b^2*c*x^5*x^m + 1680*A*b^3*x^4*x^m)/(m^5 + 30*m^4 + 355*m^3 + 2070*m^2 + 5944*m + 6720)

maple [B] time = 0.05, size = 454, normalized size = 4.73

$$\frac{\left(B c^{3} m^{4} x^{4}+A c^{3} m^{4} x^{3}+3 B b c^{2} m^{4} x^{3}+22 B c^{3} m^{3} x^{4}+3 A b c^{2} m^{4} x^{2}+23 A c^{3} m^{3} x^{3}+3 B b^{2} c m^{4} x^{2}+69 B b c^{2} m^{3} x^{3}+179 B c^{3} m^{2} x^{4}+3 A b^{2} c m^{4} x+72 A b c^{2} m^{3} x^{2}+194 A c^{3} m^{2} x^{3}+B b^{3} m^{4} x+72 B b^{2} c m^{3} x^{2}+582 B b c^{2} m^{2} x^{3}+638 B c^{3} m x^{4}+A b^{3} m^{4}+75 A b^{2} c m^{3} x+633 A b c^{2} m^{2} x^{2}+712 A c^{3} m x^{3}+25 B b^{3} m^{3} x+633 B b^{2} c m^{2} x^{2}+2136 B b c^{2} m x^{3}+840 B c^{3} x^{4}+26 A b^{3} m^{3}+690 A b^{2} c m^{2} x+2412 A b c^{2} m x^{2}+960 A c^{3} x^{3}+230 B b^{3} m^{2} x+2412 B b^{2} c m x^{2}+2880 B b c^{2} x^{3}+251 A b^{3} m^{2}+2760 A b^{2} c m x+3360 A b c^{2} x^{2}+920 B b^{3} m x+3360 B b^{2} c x^{2}+1066 A b^{3} m+4032 A b^{2} c x+1344 B b^{3} x+1680 A b^{3}\right) x^{m +4}}{\left(m +8\right) \left(m +7\right) \left(m +6\right) \left(m +5\right) \left(m +4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^m*(B*x+A)*(c*x^2+b*x)^3,x)

[Out] x^(m+4)*(B*c^3*m^4*x^4+A*c^3*m^4*x^3+3*B*b*c^2*m^4*x^3+22*B*c^3*m^3*x^4+3*A*b*c^2*m^4*x^2+23*A*c^3*m^3*x^3+3*B*b^2*c*m^4*x^2+69*B*b*c^2*m^3*x^3+179*B*c^3*m^2*x^4+3*A*b^2*c*m^4*x+72*A*b*c^2*m^3*x^2+194*A*c^3*m^2*x^3+B*b^3*m^4*x+72*B*b^2*c*m^3*x^2+582*B*b*c^2*m^2*x^3+638*B*c^3*m*x^4+A*b^3*m^4+75*A*b^2*c*m^3*x+633*A*b*c^2*m^2*x^2+712*A*c^3*m*x^3+25*B*b^3*m^3*x+633*B*b^2*c*m^2*x^2+2136*B*b*c^2*m*x^3+840*B*c^3*x^4+26*A*b^3*m^3+690*A*b^2*c*m^2*x+2412*A*b*c^2*m*x^2+960*A*c^3*x^3+230*B*b^3*m^2*x+2412*B*b^2*c*m*x^2+2880*B*b*c^2*x^3+251*A*b^3*m^2+2760*A*b^2*c*m*x+3360*A*b*c^2*x^2+920*B*b^3*m*x+3360*B*b^2*c*x^2+1066*A*b^3*m+4032*A*b^2*c*x+1344*B*b^3*x+1680*A*b^3)/(m+8)/(m+7)/(m+6)/(m+5)/(m+4)

maxima [A] time = 0.91, size = 129, normalized size = 1.34

$$\frac{Bc^3x^{m+8}}{m+8}+\frac{3\,Bbc^2x^{m+7}}{m+7}+\frac{Ac^3x^{m+7}}{m+7}+\frac{3\,Bb^2cx^{m+6}}{m+6}+\frac{3\,Abc^2x^{m+6}}{m+6}+\frac{Bb^3x^{m+5}}{m+5}+\frac{3\,Ab^2cx^{m+5}}{m+5}+\frac{Ab^3x^{m+4}}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] B*c^3*x^(m + 8)/(m + 8) + 3*B*b*c^2*x^(m + 7)/(m + 7) + A*c^3*x^(m + 7)/(m
+ 7) + 3*B*b^2*c*x^(m + 6)/(m + 6) + 3*A*b*c^2*x^(m + 6)/(m + 6) + B*b^3*x^
(m + 5)/(m + 5) + 3*A*b^2*c*x^(m + 5)/(m + 5) + A*b^3*x^(m + 4)/(m + 4)
```

mupad [B] time = 1.28, size = 291, normalized size = 3.03

$$\frac{A\,b^3\,x^m\,x^4\,\left(m^4+26\,m^3+251\,m^2+1066\,m+1680\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}+\frac{B\,c^3\,x^m\,x^8\,\left(m^4+22\,m^3+179\,m^2+638\,m+840\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}+\frac{b^2\,x^m\,x^5\,\left(3\,A\,c+B\,b\right)\,\left(m^4+25\,m^3+230\,m^2+920\,m+1344\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}+\frac{c^2\,x^m\,x^7\,\left(A\,c+3\,B\,b\right)\,\left(m^4+23\,m^3+194\,m^2+712\,m+960\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}+\frac{3\,b\,c\,x^m\,x^6\,\left(A\,c+B\,b\right)\,\left(m^4+24\,m^3+211\,m^2+804\,m+1120\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*b^3*x^m*x^4*(1066*m + 251*m^2 + 26*m^3 + m^4 + 1680))/(5944*m + 2070*m^2
 + 355*m^3 + 30*m^4 + m^5 + 6720) + (B*c^3*x^m*x^8*(638*m + 179*m^2 + 22*m^
3 + m^4 + 840))/(5944*m + 2070*m^2 + 355*m^3 + 30*m^4 + m^5 + 6720) + (b^2*
x^m*x^5*(3*A*c + B*b)*(920*m + 230*m^2 + 25*m^3 + m^4 + 1344))/(5944*m + 20
70*m^2 + 355*m^3 + 30*m^4 + m^5 + 6720) + (c^2*x^m*x^7*(A*c + 3*B*b)*(712*m
 + 194*m^2 + 23*m^3 + m^4 + 960))/(5944*m + 2070*m^2 + 355*m^3 + 30*m^4 + m
^5 + 6720) + (3*b*c*x^m*x^6*(A*c + B*b)*(804*m + 211*m^2 + 24*m^3 + m^4 + 1
120))/(5944*m + 2070*m^2 + 355*m^3 + 30*m^4 + m^5 + 6720)
```

sympy [A] time = 2.76, size = 2026, normalized size = 21.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] Piecewise((-A*b**3/(4*x**4) - A*b**2*c/x**3 - 3*A*b*c**2/(2*x**2) - A*c**3/
x - B*b**3/(3*x**3) - 3*B*b**2*c/(2*x**2) - 3*B*b*c**2/x + B*c**3*log(x), E
q(m, -8)), (-A*b**3/(3*x**3) - 3*A*b**2*c/(2*x**2) - 3*A*b*c**2/x + A*c**3*
log(x) - B*b**3/(2*x**2) - 3*B*b**2*c/x + 3*B*b*c**2*log(x) + B*c**3*x, Eq(
m, -7)), (-A*b**3/(2*x**2) - 3*A*b**2*c/x + 3*A*b*c**2*log(x) + A*c**3*x -
B*b**3/x + 3*B*b**2*c*log(x) + 3*B*b*c**2*x + B*c**3*x**2/2, Eq(m, -6)), (-
A*b**3/x + 3*A*b**2*c*log(x) + 3*A*b*c**2*x + A*c**3*x**2/2 + B*b**3*log(x)
 + 3*B*b**2*c*x + 3*B*b*c**2*x**2/2 + B*c**3*x**3/3, Eq(m, -5)), (A*b**3*lo
g(x) + 3*A*b**2*c*x + 3*A*b*c**2*x**2/2 + A*c**3*x**3/3 + B*b**3*x + 3*B*b*
*2*c*x**2/2 + B*b*c**2*x**3 + B*c**3*x**4/4, Eq(m, -4)), (A*b**3*m**4*x**4*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 26*A*b**3*m*
*3*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 251*
A*b**3*m**2*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 672
0) + 1066*A*b**3*m*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*
m + 6720) + 1680*A*b**3*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 +
5944*m + 6720) + 3*A*b**2*c*m**4*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 207
0*m**2 + 5944*m + 6720) + 75*A*b**2*c*m**3*x**5*x**m/(m**5 + 30*m**4 + 355*
m**3 + 2070*m**2 + 5944*m + 6720) + 690*A*b**2*c*m**2*x**5*x**m/(m**5 + 30*
m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 2760*A*b**2*c*m*x**5*x**m/(m
**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 4032*A*b**2*c*x**5*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 3*A*b*c**2*m
**4*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 72*
A*b*c**2*m**3*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6
720) + 633*A*b*c**2*m**2*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 +
 5944*m + 6720) + 2412*A*b*c**2*m*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 20
```

```
70*m**2 + 5944*m + 6720) + 3360*A*b*c**2*x**6*x**m/(m**5 + 30*m**4 + 355*m*
*3 + 2070*m**2 + 5944*m + 6720) + A*c**3*m**4*x**7*x**m/(m**5 + 30*m**4 + 3
55*m**3 + 2070*m**2 + 5944*m + 6720) + 23*A*c**3*m**3*x**7*x**m/(m**5 + 30*
m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 194*A*c**3*m**2*x**7*x**m/(m
**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 712*A*c**3*m*x**7*x
**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 960*A*c**3*x*
*7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + B*b**3*m*
*4*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 25*B
*b**3*m**3*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720
) + 230*B*b**3*m**2*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944
*m + 6720) + 920*B*b**3*m*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2
 + 5944*m + 6720) + 1344*B*b**3*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*
m**2 + 5944*m + 6720) + 3*B*b**2*c*m**4*x**6*x**m/(m**5 + 30*m**4 + 355*m**
3 + 2070*m**2 + 5944*m + 6720) + 72*B*b**2*c*m**3*x**6*x**m/(m**5 + 30*m**4
 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 633*B*b**2*c*m**2*x**6*x**m/(m**
5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 2412*B*b**2*c*m*x**6*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 3360*B*b**2*
c*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 3*B*b
*c**2*m**4*x**7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720
) + 69*B*b*c**2*m**3*x**7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 594
4*m + 6720) + 582*B*b*c**2*m**2*x**7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070
*m**2 + 5944*m + 6720) + 2136*B*b*c**2*m*x**7*x**m/(m**5 + 30*m**4 + 355*m*
*3 + 2070*m**2 + 5944*m + 6720) + 2880*B*b*c**2*x**7*x**m/(m**5 + 30*m**4 +
 355*m**3 + 2070*m**2 + 5944*m + 6720) + B*c**3*m**4*x**8*x**m/(m**5 + 30*m
**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 22*B*c**3*m**3*x**8*x**m/(m**
5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 179*B*c**3*m**2*x**8*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 638*B*c**3*m
*x**8*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 840*B*
c**3*x**8*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720), Tru
e))
```

3.28 $\int x^3(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{7}Ab^3x^7+\frac{1}{8}b^2x^8(3Ac+bB)+\frac{1}{10}c^2x^{10}(Ac+3bB)+\frac{1}{3}bcx^9(Ac+bB)+\frac{1}{11}Bc^3x^{11}$$

Rubi [A] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{8}b^2x^8(3Ac+bB)+\frac{1}{7}Ab^3x^7+\frac{1}{10}c^2x^{10}(Ac+3bB)+\frac{1}{3}bcx^9(Ac+bB)+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^7)/7 + (b^2*(b*B + 3*A*c)*x^8)/8 + (b*c*(b*B + A*c)*x^9)/3 + (c^2*
(3*b*B + A*c)*x^10)/10 + (B*c^3*x^11)/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^6+b^2(bB+3Ac)x^7+3bc(bB+Ac)x^8+c^2(3bB+Ac)x^9+Bc^3x^{10}\right)dx\\&=\frac{1}{7}Ab^3x^7+\frac{1}{8}b^2(bB+3Ac)x^8+\frac{1}{3}bc(bB+Ac)x^9+\frac{1}{10}c^2(3bB+Ac)x^{10}+\frac{1}{11}Bc^3x^{1}\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{7}Ab^3x^7+\frac{1}{8}b^2x^8(3Ac+bB)+\frac{1}{10}c^2x^{10}(Ac+3bB)+\frac{1}{3}bcx^9(Ac+bB)+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^7)/7 + (b^2*(b*B + 3*A*c)*x^8)/8 + (b*c*(b*B + A*c)*x^9)/3 + (c^2*
(3*b*B + A*c)*x^10)/10 + (B*c^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 77, normalized size = 1.03

$$\frac{1}{11}x^{11}c^3B+\frac{3}{10}x^{10}c^2bB+\frac{1}{10}x^{10}c^3A+\frac{1}{3}x^9cb^2B+\frac{1}{3}x^9c^2bA+\frac{1}{8}x^8b^3B+\frac{3}{8}x^8cb^2A+\frac{1}{7}x^7b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^3*B + 3/10*x^10*c^2*b*B + 1/10*x^10*c^3*A + 1/3*x^9*c*b^2*B + 1
/3*x^9*c^2*b*A + 1/8*x^8*b^3*B + 3/8*x^8*c*b^2*A + 1/7*x^7*b^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{11}\,Bc^3x^{11} + \frac{3}{10}\,Bbc^2x^{10} + \frac{1}{10}\,Ac^3x^{10} + \frac{1}{3}\,Bb^2cx^9 + \frac{1}{3}\,Abc^2x^9 + \frac{1}{8}\,Bb^3x^8 + \frac{3}{8}\,Ab^2cx^8 + \frac{1}{7}\,Ab^3x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11 + 3/10*B*b*c^2*x^10 + 1/10*A*c^3*x^10 + 1/3*B*b^2*c*x^9 + 1
/3*A*b*c^2*x^9 + 1/8*B*b^3*x^8 + 3/8*A*b^2*c*x^8 + 1/7*A*b^3*x^7
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^{11}}{11}+\frac{A\,b^3x^7}{7}+\frac{\left(A\,c^3+3Bb\,c^2\right)x^{10}}{10}+\frac{\left(3Ab\,c^2+3B\,b^2c\right)x^9}{9}+\frac{\left(3A\,b^2c+b^3B\right)x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/11*B*c^3*x^11+1/10*(A*c^3+3*B*b*c^2)*x^10+1/9*(3*A*b*c^2+3*B*b^2*c)*x^9+1
/8*(3*A*b^2*c+B*b^3)*x^8+1/7*A*b^3*x^7
```

maxima [A] time = 0.90, size = 73, normalized size = 0.97

$$\frac{1}{11}\,Bc^3x^{11}+\frac{1}{7}\,Ab^3x^7+\frac{1}{10}\left(3\,Bbc^2+Ac^3\right)x^{10}+\frac{1}{3}\left(Bb^2c+Abc^2\right)x^9+\frac{1}{8}\left(Bb^3+3\,Ab^2c\right)x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*x^11 + 1/7*A*b^3*x^7 + 1/10*(3*B*b*c^2 + A*c^3)*x^10 + 1/3*(B*b^
2*c + A*b*c^2)*x^9 + 1/8*(B*b^3 + 3*A*b^2*c)*x^8
```

mupad [B] time = 0.04, size = 69, normalized size = 0.92

$$x^8\,\left(\frac{B\,b^3}{8}+\frac{3\,A\,c\,b^2}{8}\right)+x^{10}\,\left(\frac{A\,c^3}{10}+\frac{3\,B\,b\,c^2}{10}\right)+\frac{A\,b^3\,x^7}{7}+\frac{B\,c^3\,x^{11}}{11}+\frac{b\,c\,x^9\,\left(A\,c+B\,b\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^8*((B*b^3)/8 + (3*A*b^2*c)/8) + x^10*((A*c^3)/10 + (3*B*b*c^2)/10) + (A*b
^3*x^7)/7 + (B*c^3*x^11)/11 + (b*c*x^9*(A*c + B*b))/3
```

sympy [A] time = 0.08, size = 80, normalized size = 1.07

$$\frac{Ab^3x^7}{7}+\frac{Bc^3x^{11}}{11}+x^{10}\left(\frac{Ac^3}{10}+\frac{3Bbc^2}{10}\right)+x^9\left(\frac{Abc^2}{3}+\frac{Bb^2c}{3}\right)+x^8\left(\frac{3Ab^2c}{8}+\frac{Bb^3}{8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**7/7 + B*c**3*x**11/11 + x**10*(A*c**3/10 + 3*B*b*c**2/10) + x**9*
(A*b*c**2/3 + B*b**2*c/3) + x**8*(3*A*b**2*c/8 + B*b**3/8)
```

3.29 $\int x^2(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{6}Ab^3x^6+\frac{1}{7}b^2x^7(3Ac+bB)+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{3}{8}bcx^8(Ac+bB)+\frac{1}{10}Bc^3x^{10}$$

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{7}b^2x^7(3Ac+bB)+\frac{1}{6}Ab^3x^6+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{3}{8}bcx^8(Ac+bB)+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^6)/6 + (b^2*(b*B + 3*A*c)*x^7)/7 + (3*b*c*(b*B + A*c)*x^8)/8 + (c^
2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^5+b^2(bB+3Ac)x^6+3bc(bB+Ac)x^7+c^2(3bB+Ac)x^8+Bc^3x^9\right)dx\\&=\frac{1}{6}Ab^3x^6+\frac{1}{7}b^2(bB+3Ac)x^7+\frac{3}{8}bc(bB+Ac)x^8+\frac{1}{9}c^2(3bB+Ac)x^9+\frac{1}{10}Bc^3x^{10}\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{6}Ab^3x^6+\frac{1}{7}b^2x^7(3Ac+bB)+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{3}{8}bcx^8(Ac+bB)+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^6)/6 + (b^2*(b*B + 3*A*c)*x^7)/7 + (3*b*c*(b*B + A*c)*x^8)/8 + (c^
2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 77, normalized size = 1.03

$$\frac{1}{10}x^{10}c^3B+\frac{1}{3}x^9c^2bB+\frac{1}{9}x^9c^3A+\frac{3}{8}x^8cb^2B+\frac{3}{8}x^8c^2bA+\frac{1}{7}x^7b^3B+\frac{3}{7}x^7cb^2A+\frac{1}{6}x^6b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^3*B + 1/3*x^9*c^2*b*B + 1/9*x^9*c^3*A + 3/8*x^8*c*b^2*B + 3/8*x
^8*c^2*b*A + 1/7*x^7*b^3*B + 3/7*x^7*c*b^2*A + 1/6*x^6*b^3*A
```

giac [A] time = 0.18, size = 77, normalized size = 1.03

$$\frac{1}{10}Bc^3x^{10} + \frac{1}{3}Bbc^2x^9 + \frac{1}{9}Ac^3x^9 + \frac{3}{8}Bb^2cx^8 + \frac{3}{8}Abc^2x^8 + \frac{1}{7}Bb^3x^7 + \frac{3}{7}Ab^2cx^7 + \frac{1}{6}Ab^3x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 1/3*B*b*c^2*x^9 + 1/9*A*c^3*x^9 + 3/8*B*b^2*c*x^8 + 3/8*A
*b*c^2*x^8 + 1/7*B*b^3*x^7 + 3/7*A*b^2*c*x^7 + 1/6*A*b^3*x^6
```

maple [A] time = 0.05, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^{10}}{10} + \frac{A\,b^3x^6}{6} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^9}{9} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^8}{8} + \frac{\left(3A\,b^2c + b^3B\right)x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/10*B*c^3*x^10+1/9*(A*c^3+3*B*b*c^2)*x^9+1/8*(3*A*b*c^2+3*B*b^2*c)*x^8+1/7
*(3*A*b^2*c+B*b^3)*x^7+1/6*A*b^3*x^6
```

maxima [A] time = 0.85, size = 73, normalized size = 0.97

$$\frac{1}{10}Bc^3x^{10} + \frac{1}{6}Ab^3x^6 + \frac{1}{9}\left(3\,Bbc^2 + Ac^3\right)x^9 + \frac{3}{8}\left(Bb^2c + Abc^2\right)x^8 + \frac{1}{7}\left(Bb^3 + 3\,Ab^2c\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/6*A*b^3*x^6 + 1/9*(3*B*b*c^2 + A*c^3)*x^9 + 3/8*(B*b^2*
c + A*b*c^2)*x^8 + 1/7*(B*b^3 + 3*A*b^2*c)*x^7
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^7\left(\frac{B\,b^3}{7} + \frac{3\,A\,c\,b^2}{7}\right) + x^9\left(\frac{A\,c^3}{9} + \frac{B\,b\,c^2}{3}\right) + \frac{A\,b^3\,x^6}{6} + \frac{B\,c^3\,x^{10}}{10} + \frac{3\,b\,c\,x^8\,\left(A\,c + B\,b\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^7*((B*b^3)/7 + (3*A*b^2*c)/7) + x^9*((A*c^3)/9 + (B*b*c^2)/3) + (A*b^3*x^
6)/6 + (B*c^3*x^10)/10 + (3*b*c*x^8*(A*c + B*b))/8
```

sympy [A] time = 0.08, size = 82, normalized size = 1.09

$$\frac{Ab^3x^6}{6} + \frac{Bc^3x^{10}}{10} + x^9\left(\frac{Ac^3}{9} + \frac{Bbc^2}{3}\right) + x^8\left(\frac{3Abc^2}{8} + \frac{3Bb^2c}{8}\right) + x^7\left(\frac{3Ab^2c}{7} + \frac{Bb^3}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**6/6 + B*c**3*x**10/10 + x**9*(A*c**3/9 + B*b*c**2/3) + x**8*(3*A*
b*c**2/8 + 3*B*b**2*c/8) + x**7*(3*A*b**2*c/7 + B*b**3/7)
```

3.30 $\int x(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{5}Ab^3x^5+\frac{1}{6}b^2x^6(3Ac+bB)+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{3}{7}bcx^7(Ac+bB)+\frac{1}{9}Bc^3x^9$$

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{6}b^2x^6(3Ac+bB)+\frac{1}{5}Ab^3x^5+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{3}{7}bcx^7(Ac+bB)+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^6)/6 + (3*b*c*(b*B + A*c)*x^7)/7 + (c^
2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^4+b^2(bB+3Ac)x^5+3bc(bB+Ac)x^6+c^2(3bB+Ac)x^7+Bc^3x^8\right)dx\\&=\frac{1}{5}Ab^3x^5+\frac{1}{6}b^2(bB+3Ac)x^6+\frac{3}{7}bc(bB+Ac)x^7+\frac{1}{8}c^2(3bB+Ac)x^8+\frac{1}{9}Bc^3x^9\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{5}Ab^3x^5+\frac{1}{6}b^2x^6(3Ac+bB)+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{3}{7}bcx^7(Ac+bB)+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^6)/6 + (3*b*c*(b*B + A*c)*x^7)/7 + (c^
2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.34, size = 77, normalized size = 1.03

$$\frac{1}{9}x^9c^3B+\frac{3}{8}x^8c^2bB+\frac{1}{8}x^8c^3A+\frac{3}{7}x^7cb^2B+\frac{3}{7}x^7c^2bA+\frac{1}{6}x^6b^3B+\frac{1}{2}x^6cb^2A+\frac{1}{5}x^5b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*B + 3/8*x^8*c^2*b*B + 1/8*x^8*c^3*A + 3/7*x^7*c*b^2*B + 3/7*x^7
*c^2*b*A + 1/6*x^6*b^3*B + 1/2*x^6*c*b^2*A + 1/5*x^5*b^3*A
```

giac [A] time = 0.16, size = 77, normalized size = 1.03

$$\frac{1}{9}Bc^3x^9 + \frac{3}{8}Bbc^2x^8 + \frac{1}{8}Ac^3x^8 + \frac{3}{7}Bb^2cx^7 + \frac{3}{7}Abc^2x^7 + \frac{1}{6}Bb^3x^6 + \frac{1}{2}Ab^2cx^6 + \frac{1}{5}Ab^3x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9 + 3/8*B*b*c^2*x^8 + 1/8*A*c^3*x^8 + 3/7*B*b^2*c*x^7 + 3/7*A*b
*c^2*x^7 + 1/6*B*b^3*x^6 + 1/2*A*b^2*c*x^6 + 1/5*A*b^3*x^5
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^9}{9} + \frac{A\,b^3x^5}{5} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^8}{8} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^7}{7} + \frac{\left(3A\,b^2c + b^3B\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/9*B*c^3*x^9+1/8*(A*c^3+3*B*b*c^2)*x^8+1/7*(3*A*b*c^2+3*B*b^2*c)*x^7+1/6*(
3*A*b^2*c+B*b^3)*x^6+1/5*A*b^3*x^5
```

maxima [A] time = 0.88, size = 73, normalized size = 0.97

$$\frac{1}{9}Bc^3x^9 + \frac{1}{5}Ab^3x^5 + \frac{1}{8}\left(3\,Bbc^2 + Ac^3\right)x^8 + \frac{3}{7}\left(Bb^2c + Abc^2\right)x^7 + \frac{1}{6}\left(Bb^3 + 3\,Ab^2c\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*x^9 + 1/5*A*b^3*x^5 + 1/8*(3*B*b*c^2 + A*c^3)*x^8 + 3/7*(B*b^2*c
+ A*b*c^2)*x^7 + 1/6*(B*b^3 + 3*A*b^2*c)*x^6
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^6\left(\frac{B\,b^3}{6} + \frac{A\,c\,b^2}{2}\right) + x^8\left(\frac{A\,c^3}{8} + \frac{3\,B\,b\,c^2}{8}\right) + \frac{A\,b^3\,x^5}{5} + \frac{B\,c^3\,x^9}{9} + \frac{3\,b\,c\,x^7\,\left(A\,c + B\,b\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^6*((B*b^3)/6 + (A*b^2*c)/2) + x^8*((A*c^3)/8 + (3*B*b*c^2)/8) + (A*b^3*x^
5)/5 + (B*c^3*x^9)/9 + (3*b*c*x^7*(A*c + B*b))/7
```

sympy [A] time = 0.08, size = 82, normalized size = 1.09

$$\frac{Ab^3x^5}{5} + \frac{Bc^3x^9}{9} + x^8\left(\frac{Ac^3}{8} + \frac{3Bbc^2}{8}\right) + x^7\left(\frac{3Abc^2}{7} + \frac{3Bb^2c}{7}\right) + x^6\left(\frac{Ab^2c}{2} + \frac{Bb^3}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**5/5 + B*c**3*x**9/9 + x**8*(A*c**3/8 + 3*B*b*c**2/8) + x**7*(3*A*
b*c**2/7 + 3*B*b**2*c/7) + x**6*(A*b**2*c/2 + B*b**3/6)
```

3.31 $\int (A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{4}Ab^3x^4+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3x^3+b^2(bB+3Ac)x^4+3bc(bB+Ac)x^5+c^2(3bB+Ac)x^6+Bc^3x^7\right)dx\\ &= \frac{1}{4}Ab^3x^4+\frac{1}{5}b^2(bB+3Ac)x^5+\frac{1}{2}bc(bB+Ac)x^6+\frac{1}{7}c^2(3bB+Ac)x^7+\frac{1}{8}Bc^3x^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 77, normalized size = 1.03

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{3}{5}x^5cb^2A+\frac{1}{4}x^4b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*b*A + 1/5*x^5*b^3*B + 3/5*x^5*c*b^2*A + 1/4*x^4*b^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8 + \frac{3}{7}Bbc^2x^7 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bb^2cx^6 + \frac{1}{2}Abc^2x^6 + \frac{1}{5}Bb^3x^5 + \frac{3}{5}Ab^2cx^5 + \frac{1}{4}Ab^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*A*b
*c^2*x^6 + 1/5*B*b^3*x^5 + 3/5*A*b^2*c*x^5 + 1/4*A*b^3*x^4
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^8}{8} + \frac{A\,b^3x^4}{4} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^7}{7} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^6}{6} + \frac{\left(3A\,b^2c + b^3B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+3*B*b^2*c)*x^6+1/5*(
3*A*b^2*c+B*b^3)*x^5+1/4*A*b^3*x^4
```

maxima [A] time = 0.88, size = 73, normalized size = 0.97

$$\frac{1}{8}Bc^3x^8 + \frac{1}{4}Ab^3x^4 + \frac{1}{7}\left(3\,Bbc^2 + Ac^3\right)x^7 + \frac{1}{2}\left(Bb^2c + Abc^2\right)x^6 + \frac{1}{5}\left(Bb^3 + 3\,Ab^2c\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/4*A*b^3*x^4 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c
+ A*b*c^2)*x^6 + 1/5*(B*b^3 + 3*A*b^2*c)*x^5
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^5\left(\frac{B\,b^3}{5} + \frac{3\,A\,c\,b^2}{5}\right) + x^7\left(\frac{A\,c^3}{7} + \frac{3\,B\,b\,c^2}{7}\right) + \frac{A\,b^3\,x^4}{4} + \frac{B\,c^3\,x^8}{8} + \frac{b\,c\,x^6\,\left(A\,c + B\,b\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^5*((B*b^3)/5 + (3*A*b^2*c)/5) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + (A*b^3*
x^4)/4 + (B*c^3*x^8)/8 + (b*c*x^6*(A*c + B*b))/2
```

sympy [A] time = 0.08, size = 80, normalized size = 1.07

$$\frac{Ab^3x^4}{4} + \frac{Bc^3x^8}{8} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^6\left(\frac{Abc^2}{2} + \frac{Bb^2c}{2}\right) + x^5\left(\frac{3Ab^2c}{5} + \frac{Bb^3}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**4/4 + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*
c**2/2 + B*b**2*c/2) + x**5*(3*A*b**2*c/5 + B*b**3/5)
```

3.32 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x}\,dx$

Optimal. Leaf size=75

$$\frac{1}{3}Ab^3x^3+\frac{1}{4}b^2x^4(3Ac+bB)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{5}bcx^5(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{4}b^2x^4(3Ac+bB)+\frac{1}{3}Ab^3x^3+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{5}bcx^5(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^4)/4 + (3*b*c*(b*B + A*c)*x^5)/5 + (c^
2*(3*b*B + A*c)*x^6)/6 + (B*c^3*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x}\,dx &= \int \left(Ab^3x^2+b^2(bB+3Ac)x^3+3bc(bB+Ac)x^4+c^2(3bB+Ac)x^5+Bc^3x^6\right)dx\\ &= \frac{1}{3}Ab^3x^3+\frac{1}{4}b^2(bB+3Ac)x^4+\frac{3}{5}bc(bB+Ac)x^5+\frac{1}{6}c^2(3bB+Ac)x^6+\frac{1}{7}Bc^3x^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{3}Ab^3x^3+\frac{1}{4}b^2x^4(3Ac+bB)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{5}bcx^5(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^4)/4 + (3*b*c*(b*B + A*c)*x^5)/5 + (c^
2*(3*b*B + A*c)*x^6)/6 + (B*c^3*x^7)/7
```

IntegrateAlgebraic [A] time = 0.02, size = 93, normalized size = 1.24

$$\frac{1}{3}Ab^3x^3+\frac{3}{4}Ab^2cx^4+\frac{3}{5}Abc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{4}b^3Bx^4+\frac{3}{5}b^2Bcx^5+\frac{1}{2}bBc^2x^6+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^3*B*x^4)/4 + (3*A*b^2*c*x^4)/4 + (3*b^2*B*c*x^5)/5 + (3*
A*b*c^2*x^5)/5 + (b*B*c^2*x^6)/2 + (A*c^3*x^6)/6 + (B*c^3*x^7)/7
```

fricas [A] time = 0.38, size = 73, normalized size = 0.97

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{3}\,Ab^3x^3+\frac{1}{6}\left(3\,Bbc^2+Ac^3\right)x^6+\frac{3}{5}\left(Bb^2c+Abc^2\right)x^5+\frac{1}{4}\left(Bb^3+3\,Ab^2c\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^3*x^7 + 1/3*A*b^3*x^3 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c
+ A*b*c^2)*x^5 + 1/4*(B*b^3 + 3*A*b^2*c)*x^4
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{2}\,Bbc^2x^6+\frac{1}{6}\,Ac^3x^6+\frac{3}{5}\,Bb^2cx^5+\frac{3}{5}\,Abc^2x^5+\frac{1}{4}\,Bb^3x^4+\frac{3}{4}\,Ab^2cx^4+\frac{1}{3}\,Ab^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 1/2*B*b*c^2*x^6 + 1/6*A*c^3*x^6 + 3/5*B*b^2*c*x^5 + 3/5*A*b
*c^2*x^5 + 1/4*B*b^3*x^4 + 3/4*A*b^2*c*x^4 + 1/3*A*b^3*x^3
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^7}{7}+\frac{A\,b^3x^3}{3}+\frac{\left(A\,c^3+3Bb\,c^2\right)x^6}{6}+\frac{\left(3Ab\,c^2+3B\,b^2c\right)x^5}{5}+\frac{\left(3A\,b^2c+b^3B\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x,x)
```

```
[Out] 1/7*B*c^3*x^7+1/6*(A*c^3+3*B*b*c^2)*x^6+1/5*(3*A*b*c^2+3*B*b^2*c)*x^5+1/4*(
3*A*b^2*c+B*b^3)*x^4+1/3*A*b^3*x^3
```

maxima [A] time = 0.94, size = 73, normalized size = 0.97

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{3}\,Ab^3x^3+\frac{1}{6}\left(3\,Bbc^2+Ac^3\right)x^6+\frac{3}{5}\left(Bb^2c+Abc^2\right)x^5+\frac{1}{4}\left(Bb^3+3\,Ab^2c\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/3*A*b^3*x^3 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c
+ A*b*c^2)*x^5 + 1/4*(B*b^3 + 3*A*b^2*c)*x^4
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^4\left(\frac{B\,b^3}{4}+\frac{3\,A\,c\,b^2}{4}\right)+x^6\left(\frac{A\,c^3}{6}+\frac{B\,b\,c^2}{2}\right)+\frac{A\,b^3\,x^3}{3}+\frac{B\,c^3\,x^7}{7}+\frac{3\,b\,c\,x^5\,\left(A\,c+B\,b\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x,x)
```

```
[Out] x^4*((B*b^3)/4 + (3*A*b^2*c)/4) + x^6*((A*c^3)/6 + (B*b*c^2)/2) + (A*b^3*x^
3)/3 + (B*c^3*x^7)/7 + (3*b*c*x^5*(A*c + B*b))/5
```

sympy [A] time = 0.08, size = 82, normalized size = 1.09

$$\frac{Ab^3x^3}{3}+\frac{Bc^3x^7}{7}+x^6\left(\frac{Ac^3}{6}+\frac{Bbc^2}{2}\right)+x^5\left(\frac{3Abc^2}{5}+\frac{3Bb^2c}{5}\right)+x^4\left(\frac{3Ab^2c}{4}+\frac{Bb^3}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x,x)
```

```
[Out] A*b**3*x**3/3 + B*c**3*x**7/7 + x**6*(A*c**3/6 + B*b*c**2/2) + x**5*(3*A*b*
c**2/5 + 3*B*b**2*c/5) + x**4*(3*A*b**2*c/4 + B*b**3/4)
```

3.33 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=62

$$-\frac{(b+cx)^5(2bB-Ac)}{5c^3}+\frac{b(b+cx)^4(bB-Ac)}{4c^3}+\frac{B(b+cx)^6}{6c^3}$$

Rubi [A] time = 0.04, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{(b+cx)^5(2bB-Ac)}{5c^3}+\frac{b(b+cx)^4(bB-Ac)}{4c^3}+\frac{B(b+cx)^6}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^2,x]
```

```
[Out] (b*(b*B - A*c)*(b + c*x)^4)/(4*c^3) - ((2*b*B - A*c)*(b + c*x)^5)/(5*c^3) +
 (B*(b + c*x)^6)/(6*c^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^2}\,dx &= \int \left(\frac{b(bB-Ac)(b+cx)^3}{c^2}+\frac{(-2bB+Ac)(b+cx)^4}{c^2}+\frac{B(b+cx)^5}{c^2}\right)dx\\ &= \frac{b(bB-Ac)(b+cx)^4}{4c^3}-\frac{(2bB-Ac)(b+cx)^5}{5c^3}+\frac{B(b+cx)^6}{6c^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.08

$$\frac{1}{60}x^2\left(30Ab^3+20b^2x(3Ac+bB)+12c^2x^3(Ac+3bB)+45bcx^2(Ac+bB)+10Bc^3x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^2,x]
```

```
[Out] (x^2*(30*A*b^3 + 20*b^2*(b*B + 3*A*c)*x + 45*b*c*(b*B + A*c)*x^2 + 12*c^2*(
3*b*B + A*c)*x^3 + 10*B*c^3*x^4))/60
```

IntegrateAlgebraic [A] time = 0.03, size = 90, normalized size = 1.45

$$\frac{1}{2}Ab^3x^2+Ab^2cx^3+\frac{3}{4}Abc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{3}b^3Bx^3+\frac{3}{4}b^2Bcx^4+\frac{3}{5}bBc^2x^5+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^2,x]
```

```
[Out] (A*b^3*x^2)/2 + (b^3*B*x^3)/3 + A*b^2*c*x^3 + (3*b^2*B*c*x^4)/4 + (3*A*b*c^
2*x^4)/4 + (3*b*B*c^2*x^5)/5 + (A*c^3*x^5)/5 + (B*c^3*x^6)/6
```

fricas [A] time = 0.39, size = 73, normalized size = 1.18

$$\frac{1}{6}\,Bc^3x^6 + \frac{1}{2}\,Ab^3x^2 + \frac{1}{5}\left(3\,Bbc^2 + Ac^3\right)x^5 + \frac{3}{4}\left(Bb^2c + Abc^2\right)x^4 + \frac{1}{3}\left(Bb^3 + 3\,Ab^2c\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/6*B*c^3*x^6 + 1/2*A*b^3*x^2 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + 3/4*(B*b^2*c
+ A*b*c^2)*x^4 + 1/3*(B*b^3 + 3*A*b^2*c)*x^3
```

giac [A] time = 0.15, size = 76, normalized size = 1.23

$$\frac{1}{6}\,Bc^3x^6 + \frac{3}{5}\,Bbc^2x^5 + \frac{1}{5}\,Ac^3x^5 + \frac{3}{4}\,Bb^2cx^4 + \frac{3}{4}\,Abc^2x^4 + \frac{1}{3}\,Bb^3x^3 + Ab^2cx^3 + \frac{1}{2}\,Ab^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 3/5*B*b*c^2*x^5 + 1/5*A*c^3*x^5 + 3/4*B*b^2*c*x^4 + 3/4*A*b
*c^2*x^4 + 1/3*B*b^3*x^3 + A*b^2*c*x^3 + 1/2*A*b^3*x^2
```

maple [A] time = 0.05, size = 76, normalized size = 1.23

$$\frac{B\,c^3x^6}{6} + \frac{A\,b^3x^2}{2} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^5}{5} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^4}{4} + \frac{\left(3A\,b^2c + b^3B\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^2,x)
```

```
[Out] 1/6*B*c^3*x^6+1/5*(A*c^3+3*B*b*c^2)*x^5+1/4*(3*A*b*c^2+3*B*b^2*c)*x^4+1/3*(
3*A*b^2*c+B*b^3)*x^3+1/2*A*b^3*x^2
```

maxima [A] time = 0.82, size = 73, normalized size = 1.18

$$\frac{1}{6}\,Bc^3x^6 + \frac{1}{2}\,Ab^3x^2 + \frac{1}{5}\left(3\,Bbc^2 + Ac^3\right)x^5 + \frac{3}{4}\left(Bb^2c + Abc^2\right)x^4 + \frac{1}{3}\left(Bb^3 + 3\,Ab^2c\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/2*A*b^3*x^2 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + 3/4*(B*b^2*c
+ A*b*c^2)*x^4 + 1/3*(B*b^3 + 3*A*b^2*c)*x^3
```

mupad [B] time = 0.03, size = 68, normalized size = 1.10

$$x^3\,\left(\frac{B\,b^3}{3} + A\,c\,b^2\right) + x^5\,\left(\frac{A\,c^3}{5} + \frac{3\,B\,b\,c^2}{5}\right) + \frac{A\,b^3\,x^2}{2} + \frac{B\,c^3\,x^6}{6} + \frac{3\,b\,c\,x^4\,\left(A\,c + B\,b\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^2,x)
```

```
[Out] x^3*((B*b^3)/3 + A*b^2*c) + x^5*((A*c^3)/5 + (3*B*b*c^2)/5) + (A*b^3*x^2)/2
 + (B*c^3*x^6)/6 + (3*b*c*x^4*(A*c + B*b))/4
```

sympy [A] time = 0.08, size = 80, normalized size = 1.29

$$\frac{Ab^3x^2}{2} + \frac{Bc^3x^6}{6} + x^5\left(\frac{Ac^3}{5} + \frac{3Bbc^2}{5}\right) + x^4\left(\frac{3Abc^2}{4} + \frac{3Bb^2c}{4}\right) + x^3\left(Ab^2c + \frac{Bb^3}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**2,x)
```

```
[Out] A*b**3*x**2/2 + B*c**3*x**6/6 + x**5*(A*c**3/5 + 3*B*b*c**2/5) + x**4*(3*A*
b*c**2/4 + 3*B*b**2*c/4) + x**3*(A*b**2*c + B*b**3/3)
```

3.34 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^3} dx$

Optimal. Leaf size=38

$$\frac{B(b+cx)^5}{5c^2}-\frac{(b+cx)^4(bB-Ac)}{4c^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{B(b+cx)^5}{5c^2}-\frac{(b+cx)^4(bB-Ac)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^3,x]
```

```
[Out] -((b*B - A*c)*(b + c*x)^4)/(4*c^2) + (B*(b + c*x)^5)/(5*c^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^3}\,dx &= \int \left(\frac{(-bB+Ac)(b+cx)^3}{c}+\frac{B(b+cx)^4}{c}\right)dx\\ &= -\frac{(bB-Ac)(b+cx)^4}{4c^2}+\frac{B(b+cx)^5}{5c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.76

$$Ab^3x+\frac{1}{2}b^2x^2(3Ac+bB)+\frac{1}{4}c^2x^4(Ac+3bB)+bcx^3(Ac+bB)+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^3,x]
```

```
[Out] A*b^3*x + (b^2*(b*B + 3*A*c)*x^2)/2 + b*c*(b*B + A*c)*x^3 + (c^2*(3*b*B + A
*c)*x^4)/4 + (B*c^3*x^5)/5
```

IntegrateAlgebraic [B] time = 0.03, size = 82, normalized size = 2.16

$$Ab^3x+\frac{3}{2}Ab^2cx^2+Abc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{2}b^3Bx^2+b^2Bcx^3+\frac{3}{4}bBc^2x^4+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^3,x]
```

```
[Out] A*b^3*x + (b^3*B*x^2)/2 + (3*A*b^2*c*x^2)/2 + b^2*B*c*x^3 + A*b*c^2*x^3 + (
3*b*B*c^2*x^4)/4 + (A*c^3*x^4)/4 + (B*c^3*x^5)/5
```

fricas [**B**] time = 0.37, size = 69, normalized size = 1.82

$$\frac{1}{5}Bc^3x^5 + Ab^3x + \frac{1}{4}\left(3Bbc^2 + Ac^3\right)x^4 + \left(Bb^2c + Abc^2\right)x^3 + \frac{1}{2}\left(Bb^3 + 3Ab^2c\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^3*x^5 + A*b^3*x + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + (B*b^2*c + A*b*c^2)
*x^3 + 1/2*(B*b^3 + 3*A*b^2*c)*x^2
```

giac [**B**] time = 0.16, size = 72, normalized size = 1.89

$$\frac{1}{5}Bc^3x^5 + \frac{3}{4}Bbc^2x^4 + \frac{1}{4}Ac^3x^4 + Bb^2cx^3 + Abc^2x^3 + \frac{1}{2}Bb^3x^2 + \frac{3}{2}Ab^2cx^2 + Ab^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + 3/4*B*b*c^2*x^4 + 1/4*A*c^3*x^4 + B*b^2*c*x^3 + A*b*c^2*x^3
 + 1/2*B*b^3*x^2 + 3/2*A*b^2*c*x^2 + A*b^3*x
```

maple [**B**] time = 0.05, size = 73, normalized size = 1.92

$$\frac{B\,c^3x^5}{5} + A\,b^3x + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^4}{4} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^3}{3} + \frac{\left(3A\,b^2c + b^3B\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^3,x)
```

```
[Out] 1/5*B*c^3*x^5+1/4*(A*c^3+3*B*b*c^2)*x^4+1/3*(3*A*b*c^2+3*B*b^2*c)*x^3+1/2*(
3*A*b^2*c+B*b^3)*x^2+A*b^3*x
```

maxima [**B**] time = 0.90, size = 69, normalized size = 1.82

$$\frac{1}{5}Bc^3x^5 + Ab^3x + \frac{1}{4}\left(3Bbc^2 + Ac^3\right)x^4 + \left(Bb^2c + Abc^2\right)x^3 + \frac{1}{2}\left(Bb^3 + 3Ab^2c\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + A*b^3*x + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + (B*b^2*c + A*b*c^2)
*x^3 + 1/2*(B*b^3 + 3*A*b^2*c)*x^2
```

mupad [**B**] time = 0.03, size = 65, normalized size = 1.71

$$x^2\left(\frac{B\,b^3}{2} + \frac{3\,A\,c\,b^2}{2}\right) + x^4\left(\frac{A\,c^3}{4} + \frac{3\,B\,b\,c^2}{4}\right) + \frac{B\,c^3\,x^5}{5} + A\,b^3\,x + b\,c\,x^3\,\left(A\,c + B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^3,x)
```

```
[Out] x^2*((B*b^3)/2 + (3*A*b^2*c)/2) + x^4*((A*c^3)/4 + (3*B*b*c^2)/4) + (B*c^3*
x^5)/5 + A*b^3*x + b*c*x^3*(A*c + B*b)
```

sympy [**B**] time = 0.08, size = 73, normalized size = 1.92

$$Ab^3x + \frac{Bc^3x^5}{5} + x^4\left(\frac{Ac^3}{4} + \frac{3Bbc^2}{4}\right) + x^3\left(Abc^2 + Bb^2c\right) + x^2\left(\frac{3Ab^2c}{2} + \frac{Bb^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**3,x)
```

```
[Out] A*b**3*x + B*c**3*x**5/5 + x**4*(A*c**3/4 + 3*B*b*c**2/4) + x**3*(A*b*c**2
+ B*b**2*c) + x**2*(3*A*b**2*c/2 + B*b**3/2)
```

3.35 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^4}\,dx$

Optimal. Leaf size=66

$$Ab^3\log(x)+b^2x(3Ac+bB)+\frac{1}{3}c^2x^3(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{4}Bc^3x^4$$

Rubi [A] time = 0.04, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$b^2x(3Ac+bB)+Ab^3\log(x)+\frac{1}{3}c^2x^3(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{4}Bc^3x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^4,x]
```

```
[Out] b^2*(b*B + 3*A*c)*x + (3*b*c*(b*B + A*c)*x^2)/2 + (c^2*(3*b*B + A*c)*x^3)/3
 + (B*c^3*x^4)/4 + A*b^3*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^4}\,dx &= \int \left(b^2(bB+3Ac)+\frac{Ab^3}{x}+3bc(bB+Ac)x+c^2(3bB+Ac)x^2+Bc^3x^3\right)dx\\ &= b^2(bB+3Ac)x+\frac{3}{2}bc(bB+Ac)x^2+\frac{1}{3}c^2(3bB+Ac)x^3+\frac{1}{4}Bc^3x^4+Ab^3\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 0.95

$$Ab^3\log(x)+\frac{1}{12}x\left(18b^2c(2A+Bx)+6bc^2x(3A+2Bx)+c^3x^2(4A+3Bx)+12b^3B\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^4,x]
```

```
[Out] (x*(12*b^3*B + 18*b^2*c*(2*A + B*x) + 6*b*c^2*x*(3*A + 2*B*x) + c^3*x^2*(4*
A + 3*B*x)))/12 + A*b^3*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^4, x]
```

fricas [A] time = 0.39, size = 68, normalized size = 1.03

$$\frac{1}{4}Bc^3x^4 + Ab^3\log(x) + \frac{1}{3}\left(3Bbc^2 + Ac^3\right)x^3 + \frac{3}{2}\left(Bb^2c + Abc^2\right)x^2 + \left(Bb^3 + 3Ab^2c\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^4,x, algorithm="fricas")
```

```
[Out] 1/4*B*c^3*x^4 + A*b^3*log(x) + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3/2*(B*b^2*c +
 A*b*c^2)*x^2 + (B*b^3 + 3*A*b^2*c)*x
```

giac [A] time = 0.15, size = 70, normalized size = 1.06

$$\frac{1}{4}Bc^3x^4 + Bbc^2x^3 + \frac{1}{3}Ac^3x^3 + \frac{3}{2}Bb^2cx^2 + \frac{3}{2}Abc^2x^2 + Bb^3x + 3Ab^2cx + Ab^3\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^4,x, algorithm="giac")
```

```
[Out] 1/4*B*c^3*x^4 + B*b*c^2*x^3 + 1/3*A*c^3*x^3 + 3/2*B*b^2*c*x^2 + 3/2*A*b*c^2
*x^2 + B*b^3*x + 3*A*b^2*c*x + A*b^3*log(abs(x))
```

maple [A] time = 0.05, size = 70, normalized size = 1.06

$$\frac{Bc^3x^4}{4} + \frac{Ac^3x^3}{3} + Bbc^2x^3 + \frac{3Abc^2x^2}{2} + \frac{3Bb^2cx^2}{2} + Ab^3\ln(x) + 3Ab^2cx + Bb^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^4,x)
```

```
[Out] 1/4*B*c^3*x^4+1/3*A*c^3*x^3+B*b*c^2*x^3+3/2*A*b*c^2*x^2+3/2*B*b^2*c*x^2+3*A
*b^2*c*x+B*b^3*x+A*b^3*ln(x)
```

maxima [A] time = 0.93, size = 68, normalized size = 1.03

$$\frac{1}{4}Bc^3x^4 + Ab^3\log(x) + \frac{1}{3}\left(3Bbc^2 + Ac^3\right)x^3 + \frac{3}{2}\left(Bb^2c + Abc^2\right)x^2 + \left(Bb^3 + 3Ab^2c\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^4,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^3*x^4 + A*b^3*log(x) + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3/2*(B*b^2*c +
 A*b*c^2)*x^2 + (B*b^3 + 3*A*b^2*c)*x
```

mupad [B] time = 0.03, size = 63, normalized size = 0.95

$$x\left(Bb^3 + 3Acb^2\right) + x^3\left(\frac{Ac^3}{3} + Bbc^2\right) + \frac{Bc^3x^4}{4} + Ab^3\ln(x) + \frac{3bcx^2\,(Ac + Bb)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^4,x)
```

```
[Out] x*(B*b^3 + 3*A*b^2*c) + x^3*((A*c^3)/3 + B*b*c^2) + (B*c^3*x^4)/4 + A*b^3*l
og(x) + (3*b*c*x^2*(A*c + B*b))/2
```

sympy [A] time = 0.17, size = 73, normalized size = 1.11

$$Ab^3\log(x) + \frac{Bc^3x^4}{4} + x^3\left(\frac{Ac^3}{3} + Bbc^2\right) + x^2\left(\frac{3Abc^2}{2} + \frac{3Bb^2c}{2}\right) + x\left(3Ab^2c + Bb^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**4,x)
```

```
[Out] A*b**3*log(x) + B*c**3*x**4/4 + x**3*(A*c**3/3 + B*b*c**2) + x**2*(3*A*b*c*
*2/2 + 3*B*b**2*c/2) + x*(3*A*b**2*c + B*b**3)
```

3.36 $\int \frac{(A+Bx)(bx+cx^2)^3}{x^5}\,dx$

Optimal. Leaf size=65

$$-\frac{Ab^3}{x}+b^2\log(x)(3Ac+bB)+\frac{1}{2}c^2x^2(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{3}Bc^3x^3$$

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$b^2\log(x)(3Ac+bB)-\frac{Ab^3}{x}+\frac{1}{2}c^2x^2(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^5,x]
```

```
[Out] -((A*b^3)/x) + 3*b*c*(b*B + A*c)*x + (c^2*(3*b*B + A*c)*x^2)/2 + (B*c^3*x^3
)/3 + b^2*(b*B + 3*A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^5}\,dx &= \int \left(3bc(bB+Ac)+\frac{Ab^3}{x^2}+\frac{b^2(bB+3Ac)}{x}+c^2(3bB+Ac)x+Bc^3x^2\right)dx\\ &= -\frac{Ab^3}{x}+3bc(bB+Ac)x+\frac{1}{2}c^2(3bB+Ac)x^2+\frac{1}{3}Bc^3x^3+b^2(bB+3Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 1.03

$$-\frac{Ab^3}{x}+\log(x)\left(3Ab^2c+b^3B\right)+\frac{1}{2}c^2x^2(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^5,x]
```

```
[Out] -((A*b^3)/x) + 3*b*c*(b*B + A*c)*x + (c^2*(3*b*B + A*c)*x^2)/2 + (B*c^3*x^3
)/3 + (b^3*B + 3*A*b^2*c)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^5, x]
```

fricas [A] time = 0.38, size = 75, normalized size = 1.15

$$\frac{2\,Bc^3x^4 - 6\,Ab^3 + 3\,\left(3\,Bbc^2 + Ac^3\right)x^3 + 18\,\left(Bb^2c + Abc^2\right)x^2 + 6\,\left(Bb^3 + 3\,Ab^2c\right)x\log(x)}{6\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^5,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^3*x^4 - 6*A*b^3 + 3*(3*B*b*c^2 + A*c^3)*x^3 + 18*(B*b^2*c + A*b*
c^2)*x^2 + 6*(B*b^3 + 3*A*b^2*c)*x*log(x))/x
```

giac [A] time = 0.18, size = 71, normalized size = 1.09

$$\frac{1}{3}\,Bc^3x^3 + \frac{3}{2}\,Bbc^2x^2 + \frac{1}{2}\,Ac^3x^2 + 3\,Bb^2cx + 3\,Abc^2x - \frac{Ab^3}{x} + \left(Bb^3 + 3\,Ab^2c\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^5,x, algorithm="giac")
```

```
[Out] 1/3*B*c^3*x^3 + 3/2*B*b*c^2*x^2 + 1/2*A*c^3*x^2 + 3*B*b^2*c*x + 3*A*b*c^2*x
 - A*b^3/x + (B*b^3 + 3*A*b^2*c)*log(abs(x))
```

maple [A] time = 0.05, size = 71, normalized size = 1.09

$$\frac{B\,c^3x^3}{3} + \frac{A\,c^3x^2}{2} + \frac{3Bb\,c^2x^2}{2} + 3A\,b^2c\ln(x) + 3Ab\,c^2x + B\,b^3\ln(x) + 3B\,b^2cx - \frac{A\,b^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^5,x)
```

```
[Out] 1/3*B*c^3*x^3+1/2*A*x^2*c^3+3/2*B*x^2*b*c^2+3*A*b*c^2*x+3*B*b^2*c*x-A*b^3/x
+3*A*ln(x)*b^2*c+B*ln(x)*b^3
```

maxima [A] time = 0.91, size = 69, normalized size = 1.06

$$\frac{1}{3}\,Bc^3x^3 - \frac{Ab^3}{x} + \frac{1}{2}\,\left(3\,Bbc^2 + Ac^3\right)x^2 + 3\,\left(Bb^2c + Abc^2\right)x + \left(Bb^3 + 3\,Ab^2c\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^3*x^3 - A*b^3/x + 1/2*(3*B*b*c^2 + A*c^3)*x^2 + 3*(B*b^2*c + A*b*c^
2)*x + (B*b^3 + 3*A*b^2*c)*log(x)
```

mupad [B] time = 0.04, size = 65, normalized size = 1.00

$$x^2\,\left(\frac{A\,c^3}{2} + \frac{3\,B\,b\,c^2}{2}\right) + \ln(x)\,\left(B\,b^3 + 3\,A\,c\,b^2\right) - \frac{A\,b^3}{x} + \frac{B\,c^3\,x^3}{3} + 3\,b\,c\,x\,\left(A\,c + B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^5,x)
```

```
[Out] x^2*((A*c^3)/2 + (3*B*b*c^2)/2) + log(x)*(B*b^3 + 3*A*b^2*c) - (A*b^3)/x +
(B*c^3*x^3)/3 + 3*b*c*x*(A*c + B*b)
```

sympy [A] time = 0.22, size = 70, normalized size = 1.08

$$-\frac{Ab^3}{x} + \frac{Bc^3x^3}{3} + b^2\left(3Ac + Bb\right)\log\left(x\right) + x^2\left(\frac{Ac^3}{2} + \frac{3Bbc^2}{2}\right) + x\left(3Abc^2 + 3Bb^2c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**5,x)
```

```
[Out] -A*b**3/x + B*c**3*x**3/3 + b**2*(3*A*c + B*b)*log(x) + x**2*(A*c**3/2 + 3*
B*b*c**2/2) + x*(3*A*b*c**2 + 3*B*b**2*c)
```

3.37 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^6}\,dx$

Optimal. Leaf size=65

$$-\frac{Ab^3}{2x^2}-\frac{b^2(3Ac+bB)}{x}+c^2x(Ac+3bB)+3bc\log(x)(Ac+bB)+\frac{1}{2}Bc^3x^2$$

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{x}-\frac{Ab^3}{2x^2}+c^2x(Ac+3bB)+3bc\log(x)(Ac+bB)+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -(A*b^3)/(2*x^2) - (b^2*(b*B + 3*A*c))/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^2
)/2 + 3*b*c*(b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^6}\,dx &= \int \left(c^2(3bB+Ac)+\frac{Ab^3}{x^3}+\frac{b^2(bB+3Ac)}{x^2}+\frac{3bc(bB+Ac)}{x}+Bc^3x\right)dx\\ &= -\frac{Ab^3}{2x^2}-\frac{b^2(bB+3Ac)}{x}+c^2(3bB+Ac)x+\frac{1}{2}Bc^3x^2+3bc(bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 71, normalized size = 1.09

$$-\frac{Ab^3}{2x^2}+3\log(x)\left(Abc^2+b^2Bc\right)+\frac{b^3(-B)-3Ab^2c}{x}+c^2x(Ac+3bB)+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -1/2*(A*b^3)/x^2 + (-(b^3*B) - 3*A*b^2*c)/x + c^2*(3*b*B + A*c)*x + (B*c^3*
x^2)/2 + 3*(b^2*B*c + A*b*c^2)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^6, x]
```

fricas [A] time = 0.42, size = 74, normalized size = 1.14

$$\frac{Bc^3x^4 - Ab^3 + 2\left(3\,Bbc^2 + Ac^3\right)x^3 + 6\left(Bb^2c + Abc^2\right)x^2\log(x) - 2\left(Bb^3 + 3\,Ab^2c\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^6,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c^3*x^4 - A*b^3 + 2*(3*B*b*c^2 + A*c^3)*x^3 + 6*(B*b^2*c + A*b*c^2)*
x^2*log(x) - 2*(B*b^3 + 3*A*b^2*c)*x)/x^2
```

giac [A] time = 0.15, size = 69, normalized size = 1.06

$$\frac{1}{2}\,Bc^3x^2 + 3\,Bbc^2x + Ac^3x + 3\left(Bb^2c + Abc^2\right)\log\left(|x|\right) - \frac{Ab^3 + 2\left(Bb^3 + 3\,Ab^2c\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^6,x, algorithm="giac")
```

```
[Out] 1/2*B*c^3*x^2 + 3*B*b*c^2*x + A*c^3*x + 3*(B*b^2*c + A*b*c^2)*log(abs(x)) -
 1/2*(A*b^3 + 2*(B*b^3 + 3*A*b^2*c)*x)/x^2
```

maple [A] time = 0.06, size = 71, normalized size = 1.09

$$\frac{B\,c^3x^2}{2} + 3Ab\,c^2\ln(x) + A\,c^3x + 3B\,b^2c\ln(x) + 3Bb\,c^2x - \frac{3A\,b^2c}{x} - \frac{B\,b^3}{x} - \frac{A\,b^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^6,x)
```

```
[Out] 1/2*B*c^3*x^2+A*c^3*x+3*B*b*c^2*x-1/2*A*b^3/x^2-3*b^2/x*A*c-b^3/x*B+3*A*ln(
x)*b*c^2+3*B*ln(x)*b^2*c
```

maxima [A] time = 0.90, size = 69, normalized size = 1.06

$$\frac{1}{2}\,Bc^3x^2 + \left(3\,Bbc^2 + Ac^3\right)x + 3\left(Bb^2c + Abc^2\right)\log(x) - \frac{Ab^3 + 2\left(Bb^3 + 3\,Ab^2c\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^3*x^2 + (3*B*b*c^2 + A*c^3)*x + 3*(B*b^2*c + A*b*c^2)*log(x) - 1/2*
(A*b^3 + 2*(B*b^3 + 3*A*b^2*c)*x)/x^2
```

mupad [B] time = 1.06, size = 70, normalized size = 1.08

$$\ln(x)\,\left(3\,B\,b^2\,c + 3\,A\,b\,c^2\right) - \frac{x\,\left(B\,b^3 + 3\,A\,c\,b^2\right) + \frac{A\,b^3}{2}}{x^2} + x\,\left(A\,c^3 + 3\,B\,b\,c^2\right) + \frac{B\,c^3\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^6,x)
```

```
[Out] log(x)*(3*A*b*c^2 + 3*B*b^2*c) - (x*(B*b^3 + 3*A*b^2*c) + (A*b^3)/2)/x^2 +
x*(A*c^3 + 3*B*b*c^2) + (B*c^3*x^2)/2
```

sympy [A] time = 0.36, size = 68, normalized size = 1.05

$$\frac{Bc^3x^2}{2} + 3bc\left(Ac + Bb\right)\log\left(x\right) + x\left(Ac^3 + 3Bbc^2\right) + \frac{-Ab^3 + x\left(-6Ab^2c - 2Bb^3\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**6,x)
```

```
[Out] B*c**3*x**2/2 + 3*b*c*(A*c + B*b)*log(x) + x*(A*c**3 + 3*B*b*c**2) + (-A*b*
*3 + x*(-6*A*b**2*c - 2*B*b**3))/(2*x**2)
```

3.38 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^7}\,dx$

Optimal. Leaf size=64

$$-\frac{Ab^3}{3x^3}-\frac{b^2(3Ac+bB)}{2x^2}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+Bc^3x$$

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{2x^2}-\frac{Ab^3}{3x^3}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+Bc^3x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -(A*b^3)/(3*x^3) - (b^2*(b*B + 3*A*c))/(2*x^2) - (3*b*c*(b*B + A*c))/x + B*
c^3*x + c^2*(3*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^7}\,dx &= \int \left(Bc^3+\frac{Ab^3}{x^4}+\frac{b^2(bB+3Ac)}{x^3}+\frac{3bc(bB+Ac)}{x^2}+\frac{c^2(3bB+Ac)}{x}\right)dx\\ &= -\frac{Ab^3}{3x^3}-\frac{b^2(bB+3Ac)}{2x^2}-\frac{3bc(bB+Ac)}{x}+Bc^3x+c^2(3bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.14

$$-\frac{Ab^3}{3x^3}-\frac{3\left(Abc^2+b^2Bc\right)}{x}+\frac{b^3(-B)-3Ab^2c}{2x^2}+\log(x)\left(Ac^3+3bBc^2\right)+Bc^3x$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -1/3*(A*b^3)/x^3 + (-(b^3*B) - 3*A*b^2*c)/(2*x^2) - (3*(b^2*B*c + A*b*c^2))
/x + B*c^3*x + (3*b*B*c^2 + A*c^3)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^7, x]
```

fricas [A] time = 0.40, size = 75, normalized size = 1.17

$$\frac{6\,Bc^{3}x^{4} + 6\left(3\,Bbc^{2} + Ac^{3}\right)x^{3}\log(x) - 2\,Ab^{3} - 18\left(Bb^{2}c + Abc^{2}\right)x^{2} - 3\left(Bb^{3} + 3\,Ab^{2}c\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^7,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*c^3*x^4 + 6*(3*B*b*c^2 + A*c^3)*x^3*log(x) - 2*A*b^3 - 18*(B*b^2*c
 + A*b*c^2)*x^2 - 3*(B*b^3 + 3*A*b^2*c)*x)/x^3
```

giac [A] time = 0.15, size = 70, normalized size = 1.09

$$Bc^{3}x + \left(3\,Bbc^{2} + Ac^{3}\right)\log\left(|x|\right) - \frac{2\,Ab^{3} + 18\left(Bb^{2}c + Abc^{2}\right)x^{2} + 3\left(Bb^{3} + 3\,Ab^{2}c\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^7,x, algorithm="giac")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(abs(x)) - 1/6*(2*A*b^3 + 18*(B*b^2*c + A*
b*c^2)*x^2 + 3*(B*b^3 + 3*A*b^2*c)*x)/x^3
```

maple [A] time = 0.06, size = 72, normalized size = 1.12

$$A\,c^{3}\ln(x) + 3Bb\,c^{2}\ln(x) + B\,c^{3}x - \frac{3Ab\,c^{2}}{x} - \frac{3B\,b^{2}c}{x} - \frac{3A\,b^{2}c}{2x^{2}} - \frac{B\,b^{3}}{2x^{2}} - \frac{A\,b^{3}}{3x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^7,x)
```

```
[Out] B*c^3*x-1/3*A*b^3/x^3-3/2*b^2/x^2*A*c-1/2*b^3/x^2*B-3*b*c^2/x*A-3*b^2*c/x*B
+A*ln(x)*c^3+3*B*ln(x)*b*c^2
```

maxima [A] time = 0.82, size = 69, normalized size = 1.08

$$Bc^{3}x + \left(3\,Bbc^{2} + Ac^{3}\right)\log(x) - \frac{2\,Ab^{3} + 18\left(Bb^{2}c + Abc^{2}\right)x^{2} + 3\left(Bb^{3} + 3\,Ab^{2}c\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^7,x, algorithm="maxima")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(x) - 1/6*(2*A*b^3 + 18*(B*b^2*c + A*b*c^2
)*x^2 + 3*(B*b^3 + 3*A*b^2*c)*x)/x^3
```

mupad [B] time = 0.07, size = 70, normalized size = 1.09

$$\ln(x)\,\left(A\,c^{3} + 3\,B\,b\,c^{2}\right) - \frac{x^{2}\,\left(3\,B\,b^{2}\,c + 3\,A\,b\,c^{2}\right) + x\,\left(\frac{B\,b^{3}}{2} + \frac{3\,A\,c\,b^{2}}{2}\right) + \frac{A\,b^{3}}{3}}{x^{3}} + B\,c^{3}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^7,x)
```

```
[Out] log(x)*(A*c^3 + 3*B*b*c^2) - (x^2*(3*A*b*c^2 + 3*B*b^2*c) + x*((B*b^3)/2 +
(3*A*b^2*c)/2) + (A*b^3)/3)/x^3 + B*c^3*x
```

sympy [A] time = 0.66, size = 73, normalized size = 1.14

$$Bc^3x + c^2(Ac + 3Bb)\log(x) + \frac{-2Ab^3 + x^2\left(-18Abc^2 - 18Bb^2c\right) + x\left(-9Ab^2c - 3Bb^3\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**7,x)
```

```
[Out] B*c**3*x + c**2*(A*c + 3*B*b)*log(x) + (-2*A*b**3 + x**2*(-18*A*b*c**2 - 18
*B*b**2*c) + x*(-9*A*b**2*c - 3*B*b**3))/(6*x**3)
```

3.39 $\int \frac{(A+Bx)(bx+cx^2)^3}{x^8} dx$

Optimal. Leaf size=69

$$-\frac{Ab^3}{4x^4}-\frac{b^2(3Ac+bB)}{3x^3}-\frac{c^2(Ac+3bB)}{x}-\frac{3bc(Ac+bB)}{2x^2}+Bc^3\log(x)$$

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{3x^3}-\frac{Ab^3}{4x^4}-\frac{c^2(Ac+3bB)}{x}-\frac{3bc(Ac+bB)}{2x^2}+Bc^3\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -(A*b^3)/(4*x^4) - (b^2*(b*B + 3*A*c))/(3*x^3) - (3*b*c*(b*B + A*c))/(2*x^2
) - (c^2*(3*b*B + A*c))/x + B*c^3*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^8}\,dx &= \int \left(\frac{Ab^3}{x^5}+\frac{b^2(bB+3Ac)}{x^4}+\frac{3bc(bB+Ac)}{x^3}+\frac{c^2(3bB+Ac)}{x^2}+\frac{Bc^3}{x}\right)dx\\ &= -\frac{Ab^3}{4x^4}-\frac{b^2(bB+3Ac)}{3x^3}-\frac{3bc(bB+Ac)}{2x^2}-\frac{c^2(3bB+Ac)}{x}+Bc^3\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 1.03

$$Bc^3\log(x)-\frac{3A\left(b^3+4b^2cx+6bc^2x^2+4c^3x^3\right)+2bBx\left(2b^2+9bcx+18c^2x^2\right)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -1/12*(2*b*B*x*(2*b^2 + 9*b*c*x + 18*c^2*x^2) + 3*A*(b^3 + 4*b^2*c*x + 6*b*
c^2*x^2 + 4*c^3*x^3))/x^4 + B*c^3*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^8, x]
```

fricas [A] time = 0.40, size = 75, normalized size = 1.09

$$\frac{12\,Bc^3x^4\log(x) - 3\,Ab^3 - 12\left(3\,Bbc^2 + Ac^3\right)x^3 - 18\left(Bb^2c + Abc^2\right)x^2 - 4\left(Bb^3 + 3\,Ab^2c\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^8,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^3*x^4*log(x) - 3*A*b^3 - 12*(3*B*b*c^2 + A*c^3)*x^3 - 18*(B*b^
2*c + A*b*c^2)*x^2 - 4*(B*b^3 + 3*A*b^2*c)*x)/x^4
```

giac [A] time = 0.18, size = 73, normalized size = 1.06

$$Bc^3\log\left(|x|\right) - \frac{3\,Ab^3 + 12\left(3\,Bbc^2 + Ac^3\right)x^3 + 18\left(Bb^2c + Abc^2\right)x^2 + 4\left(Bb^3 + 3\,Ab^2c\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^8,x, algorithm="giac")
```

```
[Out] B*c^3*log(abs(x)) - 1/12*(3*A*b^3 + 12*(3*B*b*c^2 + A*c^3)*x^3 + 18*(B*b^2*
c + A*b*c^2)*x^2 + 4*(B*b^3 + 3*A*b^2*c)*x)/x^4
```

maple [A] time = 0.05, size = 76, normalized size = 1.10

$$B\,c^3\ln(x) - \frac{A\,c^3}{x} - \frac{3Bb\,c^2}{x} - \frac{3Ab\,c^2}{2x^2} - \frac{3B\,b^2c}{2x^2} - \frac{A\,b^2c}{x^3} - \frac{B\,b^3}{3x^3} - \frac{A\,b^3}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^8,x)
```

```
[Out] -1/4*A*b^3/x^4-b^2/x^3*A*c-1/3*b^3/x^3*B-3/2*b*c^2/x^2*A-3/2*b^2*c/x^2*B-c^
3/x*A-3*c^2/x*b*B+B*c^3*ln(x)
```

maxima [A] time = 0.92, size = 72, normalized size = 1.04

$$Bc^3\log(x) - \frac{3\,Ab^3 + 12\left(3\,Bbc^2 + Ac^3\right)x^3 + 18\left(Bb^2c + Abc^2\right)x^2 + 4\left(Bb^3 + 3\,Ab^2c\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^8,x, algorithm="maxima")
```

```
[Out] B*c^3*log(x) - 1/12*(3*A*b^3 + 12*(3*B*b*c^2 + A*c^3)*x^3 + 18*(B*b^2*c + A
*b*c^2)*x^2 + 4*(B*b^3 + 3*A*b^2*c)*x)/x^4
```

mupad [B] time = 0.08, size = 71, normalized size = 1.03

$$B\,c^3\,\ln(x) - \frac{x^2\,\left(\frac{3\,B\,b^2\,c}{2} + \frac{3\,A\,b\,c^2}{2}\right) + x\,\left(\frac{B\,b^3}{3} + A\,c\,b^2\right) + \frac{A\,b^3}{4} + x^3\,\left(A\,c^3 + 3\,B\,b\,c^2\right)}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^8,x)
```

```
[Out] B*c^3*log(x) - (x^2*((3*A*b*c^2)/2 + (3*B*b^2*c)/2) + x*((B*b^3)/3 + A*b^2*
c) + (A*b^3)/4 + x^3*(A*c^3 + 3*B*b*c^2))/x^4
```

sympy [A] time = 0.99, size = 80, normalized size = 1.16

$$Bc^3\log(x)+\frac{-3Ab^3+x^3\left(-12Ac^3-36Bbc^2\right)+x^2\left(-18Abc^2-18Bb^2c\right)+x\left(-12Ab^2c-4Bb^3\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**8,x)
```

```
[Out] B*c**3*log(x) + (-3*A*b**3 + x**3*(-12*A*c**3 - 36*B*b*c**2) + x**2*(-18*A*
b*c**2 - 18*B*b**2*c) + x*(-12*A*b**2*c - 4*B*b**3))/(12*x**4)
```

3.40 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^9}\,dx$

Optimal. Leaf size=71

$$-\frac{Ab^3}{5x^5}-\frac{b^2(3Ac+bB)}{4x^4}-\frac{c^2(Ac+3bB)}{2x^2}-\frac{bc(Ac+bB)}{x^3}-\frac{Bc^3}{x}$$

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{4x^4}-\frac{Ab^3}{5x^5}-\frac{c^2(Ac+3bB)}{2x^2}-\frac{bc(Ac+bB)}{x^3}-\frac{Bc^3}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -(A*b^3)/(5*x^5) - (b^2*(b*B + 3*A*c))/(4*x^4) - (b*c*(b*B + A*c))/x^3 - (c
^2*(3*b*B + A*c))/(2*x^2) - (B*c^3)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^9}\,dx &= \int \left(\frac{Ab^3}{x^6}+\frac{b^2(bB+3Ac)}{x^5}+\frac{3bc(bB+Ac)}{x^4}+\frac{c^2(3bB+Ac)}{x^3}+\frac{Bc^3}{x^2}\right)dx\\ &= -\frac{Ab^3}{5x^5}-\frac{b^2(bB+3Ac)}{4x^4}-\frac{bc(bB+Ac)}{x^3}-\frac{c^2(3bB+Ac)}{2x^2}-\frac{Bc^3}{x}\end{aligned}$$

Mathematica [A] time = 0.02, size = 72, normalized size = 1.01

$$-\frac{A\left(4b^3+15b^2cx+20bc^2x^2+10c^3x^3\right)+5Bx\left(b^3+4b^2cx+6bc^2x^2+4c^3x^3\right)}{20x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -1/20*(5*B*x*(b^3 + 4*b^2*c*x + 6*b*c^2*x^2 + 4*c^3*x^3) + A*(4*b^3 + 15*b^
2*c*x + 20*b*c^2*x^2 + 10*c^3*x^3))/x^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^9, x]
```

fricas [A] time = 0.39, size = 73, normalized size = 1.03

$$-\frac{20\,Bc^3x^4 + 4\,Ab^3 + 10\,\left(3\,Bbc^2 + Ac^3\right)x^3 + 20\,\left(Bb^2c + Abc^2\right)x^2 + 5\,\left(Bb^3 + 3\,Ab^2c\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^9,x, algorithm="fricas")
```

```
[Out] -1/20*(20*B*c^3*x^4 + 4*A*b^3 + 10*(3*B*b*c^2 + A*c^3)*x^3 + 20*(B*b^2*c +
A*b*c^2)*x^2 + 5*(B*b^3 + 3*A*b^2*c)*x)/x^5
```

giac [A] time = 0.15, size = 75, normalized size = 1.06

$$-\frac{20\,Bc^3x^4 + 30\,Bbc^2x^3 + 10\,Ac^3x^3 + 20\,Bb^2cx^2 + 20\,Abc^2x^2 + 5\,Bb^3x + 15\,Ab^2cx + 4\,Ab^3}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^9,x, algorithm="giac")
```

```
[Out] -1/20*(20*B*c^3*x^4 + 30*B*b*c^2*x^3 + 10*A*c^3*x^3 + 20*B*b^2*c*x^2 + 20*A
*b*c^2*x^2 + 5*B*b^3*x + 15*A*b^2*c*x + 4*A*b^3)/x^5
```

maple [A] time = 0.05, size = 66, normalized size = 0.93

$$-\frac{B\,c^3}{x} - \frac{(Ac + 3bB)\,c^2}{2x^2} - \frac{A\,b^3}{5x^5} - \frac{(Ac + bB)\,bc}{x^3} - \frac{(3Ac + bB)\,b^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^9,x)
```

```
[Out] -1/5*A*b^3/x^5-1/4*b^2*(3*A*c+B*b)/x^4-(A*c+B*b)*b*c/x^3-1/2*c^2*(A*c+3*B*b
)/x^2-B*c^3/x
```

maxima [A] time = 0.84, size = 73, normalized size = 1.03

$$-\frac{20\,Bc^3x^4 + 4\,Ab^3 + 10\,\left(3\,Bbc^2 + Ac^3\right)x^3 + 20\,\left(Bb^2c + Abc^2\right)x^2 + 5\,\left(Bb^3 + 3\,Ab^2c\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^9,x, algorithm="maxima")
```

```
[Out] -1/20*(20*B*c^3*x^4 + 4*A*b^3 + 10*(3*B*b*c^2 + A*c^3)*x^3 + 20*(B*b^2*c +
A*b*c^2)*x^2 + 5*(B*b^3 + 3*A*b^2*c)*x)/x^5
```

mupad [B] time = 1.02, size = 71, normalized size = 1.00

$$-\frac{x^2\,\left(B\,b^2\,c + A\,b\,c^2\right) + x\,\left(\frac{B\,b^3}{4} + \frac{3\,A\,c\,b^2}{4}\right) + \frac{A\,b^3}{5} + x^3\,\left(\frac{A\,c^3}{2} + \frac{3\,B\,b\,c^2}{2}\right) + B\,c^3\,x^4}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^9,x)
```

```
[Out] -(x^2*(A*b*c^2 + B*b^2*c) + x*((B*b^3)/4 + (3*A*b^2*c)/4) + (A*b^3)/5 + x^3
*((A*c^3)/2 + (3*B*b*c^2)/2) + B*c^3*x^4)/x^5
```

sympy [A] time = 1.30, size = 82, normalized size = 1.15

$$\frac{-4Ab^3 - 20Bc^3x^4 + x^3\left(-10Ac^3 - 30Bbc^2\right) + x^2\left(-20Abc^2 - 20Bb^2c\right) + x\left(-15Ab^2c - 5Bb^3\right)}{20x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**9,x)
```

```
[Out] (-4*A*b**3 - 20*B*c**3*x**4 + x**3*(-10*A*c**3 - 30*B*b*c**2) + x**2*(-20*A
*b*c**2 - 20*B*b**2*c) + x*(-15*A*b**2*c - 5*B*b**3))/(20*x**5)
```

3.41 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{10}}\,dx$

Optimal. Leaf size=75

$$-\frac{Ab^3}{6x^6}-\frac{b^2(3Ac+bB)}{5x^5}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{4x^4}-\frac{Bc^3}{2x^2}$$

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{5x^5}-\frac{Ab^3}{6x^6}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{4x^4}-\frac{Bc^3}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -(A*b^3)/(6*x^6) - (b^2*(b*B + 3*A*c))/(5*x^5) - (3*b*c*(b*B + A*c))/(4*x^4
) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{10}}\,dx &= \int \left(\frac{Ab^3}{x^7}+\frac{b^2(bB+3Ac)}{x^6}+\frac{3bc(bB+Ac)}{x^5}+\frac{c^2(3bB+Ac)}{x^4}+\frac{Bc^3}{x^3}\right)dx\\ &= -\frac{Ab^3}{6x^6}-\frac{b^2(bB+3Ac)}{5x^5}-\frac{3bc(bB+Ac)}{4x^4}-\frac{c^2(3bB+Ac)}{3x^3}-\frac{Bc^3}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 74, normalized size = 0.99

$$-\frac{A\left(10b^3+36b^2cx+45bc^2x^2+20c^3x^3\right)+3Bx\left(4b^3+15b^2cx+20bc^2x^2+10c^3x^3\right)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -1/60*(3*B*x*(4*b^3 + 15*b^2*c*x + 20*b*c^2*x^2 + 10*c^3*x^3) + A*(10*b^3 +
 36*b^2*c*x + 45*b*c^2*x^2 + 20*c^3*x^3))/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^10,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^10, x]
```

fricas [A] time = 0.39, size = 73, normalized size = 0.97

$$-\frac{30\,Bc^{3}x^{4}+10\,Ab^{3}+20\,\left(3\,Bbc^{2}+Ac^{3}\right)x^{3}+45\,\left(Bb^{2}c+Abc^{2}\right)x^{2}+12\,\left(Bb^{3}+3\,Ab^{2}c\right)x}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^10,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c^3*x^4 + 10*A*b^3 + 20*(3*B*b*c^2 + A*c^3)*x^3 + 45*(B*b^2*c +
 A*b*c^2)*x^2 + 12*(B*b^3 + 3*A*b^2*c)*x)/x^6
```

giac [A] time = 0.18, size = 75, normalized size = 1.00

$$-\frac{30\,Bc^{3}x^{4}+60\,Bbc^{2}x^{3}+20\,Ac^{3}x^{3}+45\,Bb^{2}cx^{2}+45\,Abc^{2}x^{2}+12\,Bb^{3}x+36\,Ab^{2}cx+10\,Ab^{3}}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c^3*x^4 + 60*B*b*c^2*x^3 + 20*A*c^3*x^3 + 45*B*b^2*c*x^2 + 45*A
*b*c^2*x^2 + 12*B*b^3*x + 36*A*b^2*c*x + 10*A*b^3)/x^6
```

maple [A] time = 0.05, size = 66, normalized size = 0.88

$$-\frac{B\,c^{3}}{2x^{2}}-\frac{(Ac+3bB)\,c^{2}}{3x^{3}}-\frac{A\,b^{3}}{6x^{6}}-\frac{3\,(Ac+bB)\,bc}{4x^{4}}-\frac{(3Ac+bB)\,b^{2}}{5x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^10,x)
```

```
[Out] -1/6*A*b^3/x^6-1/5*(3*A*c+B*b)*b^2/x^5-3/4*b*c*(A*c+B*b)/x^4-1/3*(A*c+3*B*b
)*c^2/x^3-1/2*B*c^3/x^2
```

maxima [A] time = 0.81, size = 73, normalized size = 0.97

$$-\frac{30\,Bc^{3}x^{4}+10\,Ab^{3}+20\,\left(3\,Bbc^{2}+Ac^{3}\right)x^{3}+45\,\left(Bb^{2}c+Abc^{2}\right)x^{2}+12\,\left(Bb^{3}+3\,Ab^{2}c\right)x}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^10,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c^3*x^4 + 10*A*b^3 + 20*(3*B*b*c^2 + A*c^3)*x^3 + 45*(B*b^2*c +
 A*b*c^2)*x^2 + 12*(B*b^3 + 3*A*b^2*c)*x)/x^6
```

mupad [B] time = 0.04, size = 73, normalized size = 0.97

$$-\frac{x^{2}\,\left(\frac{3\,B\,b^{2}\,c}{4}+\frac{3\,A\,b\,c^{2}}{4}\right)+x\,\left(\frac{B\,b^{3}}{5}+\frac{3\,A\,c\,b^{2}}{5}\right)+\frac{A\,b^{3}}{6}+x^{3}\,\left(\frac{A\,c^{3}}{3}+B\,b\,c^{2}\right)+\frac{B\,c^{3}\,x^{4}}{2}}{x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^10,x)
```

```
[Out] -(x^2*((3*A*b*c^2)/4 + (3*B*b^2*c)/4) + x*((B*b^3)/5 + (3*A*b^2*c)/5) + (A*
b^3)/6 + x^3*((A*c^3)/3 + B*b*c^2) + (B*c^3*x^4)/2)/x^6
```

sympy [**A**] time = 1.63, size = 82, normalized size = 1.09

$$\frac{-10Ab^3 - 30Bc^3x^4 + x^3\left(-20Ac^3 - 60Bbc^2\right) + x^2\left(-45Abc^2 - 45Bb^2c\right) + x\left(-36Ab^2c - 12Bb^3\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**10,x)
```

```
[Out] (-10*A*b**3 - 30*B*c**3*x**4 + x**3*(-20*A*c**3 - 60*B*b*c**2) + x**2*(-45*
A*b*c**2 - 45*B*b**2*c) + x*(-36*A*b**2*c - 12*B*b**3))/(60*x**6)
```

3.42 $\int \frac{(A+Bx)(bx+cx^2)^3}{x^{11}}\,dx$

Optimal. Leaf size=75

$$-\frac{Ab^3}{7x^7}-\frac{b^2(3Ac+bB)}{6x^6}-\frac{c^2(Ac+3bB)}{4x^4}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{3x^3}$$

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{6x^6}-\frac{Ab^3}{7x^7}-\frac{c^2(Ac+3bB)}{4x^4}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -(A*b^3)/(7*x^7) - (b^2*(b*B + 3*A*c))/(6*x^6) - (3*b*c*(b*B + A*c))/(5*x^5
) - (c^2*(3*b*B + A*c))/(4*x^4) - (B*c^3)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11}}\,dx &= \int \left(\frac{Ab^3}{x^8}+\frac{b^2(bB+3Ac)}{x^7}+\frac{3bc(bB+Ac)}{x^6}+\frac{c^2(3bB+Ac)}{x^5}+\frac{Bc^3}{x^4}\right)dx\\ &= -\frac{Ab^3}{7x^7}-\frac{b^2(bB+3Ac)}{6x^6}-\frac{3bc(bB+Ac)}{5x^5}-\frac{c^2(3bB+Ac)}{4x^4}-\frac{Bc^3}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$-\frac{3A\left(20b^3+70b^2cx+84bc^2x^2+35c^3x^3\right)+7Bx\left(10b^3+36b^2cx+45bc^2x^2+20c^3x^3\right)}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -1/420*(7*B*x*(10*b^3 + 36*b^2*c*x + 45*b*c^2*x^2 + 20*c^3*x^3) + 3*A*(20*b
^3 + 70*b^2*c*x + 84*b*c^2*x^2 + 35*c^3*x^3))/x^7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^11, x]
```

fricas [A] time = 0.38, size = 73, normalized size = 0.97

$$-\frac{140\,Bc^{3}x^{4}+60\,Ab^{3}+105\,\left(3\,Bbc^{2}+Ac^{3}\right)x^{3}+252\,\left(Bb^{2}c+Abc^{2}\right)x^{2}+70\,\left(Bb^{3}+3\,Ab^{2}c\right)x}{420\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^11,x, algorithm="fricas")
```

```
[Out] -1/420*(140*B*c^3*x^4 + 60*A*b^3 + 105*(3*B*b*c^2 + A*c^3)*x^3 + 252*(B*b^2
*c + A*b*c^2)*x^2 + 70*(B*b^3 + 3*A*b^2*c)*x)/x^7
```

giac [A] time = 0.16, size = 75, normalized size = 1.00

$$-\frac{140\,Bc^{3}x^{4}+315\,Bbc^{2}x^{3}+105\,Ac^{3}x^{3}+252\,Bb^{2}cx^{2}+252\,Abc^{2}x^{2}+70\,Bb^{3}x+210\,Ab^{2}cx+60\,Ab^{3}}{420\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^11,x, algorithm="giac")
```

```
[Out] -1/420*(140*B*c^3*x^4 + 315*B*b*c^2*x^3 + 105*A*c^3*x^3 + 252*B*b^2*c*x^2 +
 252*A*b*c^2*x^2 + 70*B*b^3*x + 210*A*b^2*c*x + 60*A*b^3)/x^7
```

maple [A] time = 0.05, size = 66, normalized size = 0.88

$$-\frac{B\,c^{3}}{3x^{3}}-\frac{\left(Ac+3bB\right)c^{2}}{4x^{4}}-\frac{A\,b^{3}}{7x^{7}}-\frac{3\left(Ac+bB\right)bc}{5x^{5}}-\frac{\left(3Ac+bB\right)b^{2}}{6x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^11,x)
```

```
[Out] -1/7*A*b^3/x^7-1/6*b^2*(3*A*c+B*b)/x^6-3/5*(A*c+B*b)*b*c/x^5-1/4*c^2*(A*c+3
*B*b)/x^4-1/3*B*c^3/x^3
```

maxima [A] time = 0.91, size = 73, normalized size = 0.97

$$-\frac{140\,Bc^{3}x^{4}+60\,Ab^{3}+105\,\left(3\,Bbc^{2}+Ac^{3}\right)x^{3}+252\,\left(Bb^{2}c+Abc^{2}\right)x^{2}+70\,\left(Bb^{3}+3\,Ab^{2}c\right)x}{420\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^11,x, algorithm="maxima")
```

```
[Out] -1/420*(140*B*c^3*x^4 + 60*A*b^3 + 105*(3*B*b*c^2 + A*c^3)*x^3 + 252*(B*b^2
*c + A*b*c^2)*x^2 + 70*(B*b^3 + 3*A*b^2*c)*x)/x^7
```

mupad [B] time = 0.05, size = 74, normalized size = 0.99

$$-\frac{x^{2}\,\left(\frac{3\,B\,b^{2}\,c}{5}+\frac{3\,A\,b\,c^{2}}{5}\right)+x\,\left(\frac{B\,b^{3}}{6}+\frac{A\,c\,b^{2}}{2}\right)+\frac{A\,b^{3}}{7}+x^{3}\,\left(\frac{A\,c^{3}}{4}+\frac{3\,B\,b\,c^{2}}{4}\right)+\frac{B\,c^{3}\,x^{4}}{3}}{x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^11,x)
```

```
[Out] -(x^2*((3*A*b*c^2)/5 + (3*B*b^2*c)/5) + x*((B*b^3)/6 + (A*b^2*c)/2) + (A*b^
3)/7 + x^3*((A*c^3)/4 + (3*B*b*c^2)/4) + (B*c^3*x^4)/3)/x^7
```

sympy [A] time = 2.04, size = 82, normalized size = 1.09

$$\frac{-60Ab^3 - 140Bc^3x^4 + x^3\left(-105Ac^3 - 315Bbc^2\right) + x^2\left(-252Abc^2 - 252Bb^2c\right) + x\left(-210Ab^2c - 70Bb^3\right)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**11,x)
```

```
[Out] (-60*A*b**3 - 140*B*c**3*x**4 + x**3*(-105*A*c**3 - 315*B*b*c**2) + x**2*(-
252*A*b*c**2 - 252*B*b**2*c) + x*(-210*A*b**2*c - 70*B*b**3))/(420*x**7)
```

3.43 $\int \frac{x^4(d+ex)}{bx+cx^2} \, dx$

Optimal. Leaf size=87

$$-\frac{b^3(cd-be)\log(b+cx)}{c^5}+\frac{b^2x(cd-be)}{c^4}-\frac{bx^2(cd-be)}{2c^3}+\frac{x^3(cd-be)}{3c^2}+\frac{ex^4}{4c}$$

Rubi [A] time = 0.09, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^2x(cd-be)}{c^4}-\frac{b^3(cd-be)\log(b+cx)}{c^5}+\frac{x^3(cd-be)}{3c^2}-\frac{bx^2(cd-be)}{2c^3}+\frac{ex^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (b^2*(c*d - b*e)*x)/c^4 - (b*(c*d - b*e)*x^2)/(2*c^3) + ((c*d - b*e)*x^3)/(
3*c^2) + (e*x^4)/(4*c) - (b^3*(c*d - b*e)*Log[b + c*x])/c^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(d+ex)}{bx+cx^2} \, dx &= \int \left(-\frac{b^2(-cd+be)}{c^4}+\frac{b(-cd+be)x}{c^3}+\frac{(cd-be)x^2}{c^2}+\frac{ex^3}{c}+\frac{b^3(-cd+be)}{c^4(b+cx)}\right) dx \\
&= \frac{b^2(cd-be)x}{c^4}-\frac{b(cd-be)x^2}{2c^3}+\frac{(cd-be)x^3}{3c^2}+\frac{ex^4}{4c}-\frac{b^3(cd-be)\log(b+cx)}{c^5}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 80, normalized size = 0.92

$$\frac{12b^3(be-cd)\log(b+cx)+cx\left(-12b^3e+6b^2c(2d+ex)-2bc^2x(3d+2ex)+c^3x^2(4d+3ex)\right)}{12c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (c*x*(-12*b^3*e + 6*b^2*c*(2*d + e*x) - 2*b*c^2*x*(3*d + 2*e*x) + c^3*x^2*(
4*d + 3*e*x)) + 12*b^3*(-(c*d) + b*e)*Log[b + c*x])/(12*c^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{bx+cx^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(b*x + c*x^2), x]
```

fricas [A] time = 0.39, size = 94, normalized size = 1.08

$$\frac{3\,c^4ex^4+4\left(c^4d-bc^3e\right)x^3-6\left(bc^3d-b^2c^2e\right)x^2+12\left(b^2c^2d-b^3ce\right)x-12\left(b^3cd-b^4e\right)\log\left(cx+b\right)}{12\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/12*(3*c^4*e*x^4 + 4*(c^4*d - b*c^3*e)*x^3 - 6*(b*c^3*d - b^2*c^2*e)*x^2 +
 12*(b^2*c^2*d - b^3*c*e)*x - 12*(b^3*c*d - b^4*e)*log(c*x + b))/c^5
```

giac [A] time = 0.16, size = 100, normalized size = 1.15

$$\frac{3\,c^3x^4e+4\,c^3dx^3-4\,bc^2x^3e-6\,bc^2dx^2+6\,b^2cx^2e+12\,b^2cdx-12\,b^3xe}{12\,c^4}-\frac{\left(b^3cd-b^4e\right)\log\left(|cx+b|\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/12*(3*c^3*x^4*e + 4*c^3*d*x^3 - 4*b*c^2*x^3*e - 6*b*c^2*d*x^2 + 6*b^2*c*x
^2*e + 12*b^2*c*d*x - 12*b^3*x*e)/c^4 - (b^3*c*d - b^4*e)*log(abs(c*x + b))
/c^5
```

maple [A] time = 0.05, size = 100, normalized size = 1.15

$$\frac{e\,x^4}{4c}-\frac{be\,x^3}{3c^2}+\frac{d\,x^3}{3c}+\frac{b^2e\,x^2}{2c^3}-\frac{bd\,x^2}{2c^2}+\frac{b^4e\ln\left(cx+b\right)}{c^5}-\frac{b^3d\ln\left(cx+b\right)}{c^4}-\frac{b^3ex}{c^4}+\frac{b^2dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/4*e*x^4/c-1/3/c^2*x^3*b*e+1/3*d*x^3/c+1/2/c^3*x^2*b^2*e-1/2/c^2*x^2*b*d-1
/c^4*x*b^3*e+1/c^3*x*b^2*d+b^4/c^5*ln(c*x+b)*e-b^3/c^4*ln(c*x+b)*d
```

maxima [A] time = 0.89, size = 93, normalized size = 1.07

$$\frac{3\,c^3ex^4+4\left(c^3d-bc^2e\right)x^3-6\left(bc^2d-b^2ce\right)x^2+12\left(b^2cd-b^3e\right)x}{12\,c^4}-\frac{\left(b^3cd-b^4e\right)\log\left(cx+b\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/12*(3*c^3*e*x^4 + 4*(c^3*d - b*c^2*e)*x^3 - 6*(b*c^2*d - b^2*c*e)*x^2 + 1
2*(b^2*c*d - b^3*e)*x)/c^4 - (b^3*c*d - b^4*e)*log(c*x + b)/c^5
```

mupad [B] time = 0.05, size = 94, normalized size = 1.08

$$x^3\left(\frac{d}{3\,c}-\frac{b\,e}{3\,c^2}\right)+\frac{\ln\left(b+c\,x\right)\,\left(b^4\,e-b^3\,c\,d\right)}{c^5}+\frac{e\,x^4}{4\,c}-\frac{b\,x^2\,\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)}{2\,c}+\frac{b^2\,x\,\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] x^3*(d/(3*c) - (b*e)/(3*c^2)) + (log(b + c*x)*(b^4*e - b^3*c*d))/c^5 + (e*x
^4)/(4*c) - (b*x^2*(d/c - (b*e)/c^2))/(2*c) + (b^2*x*(d/c - (b*e)/c^2))/c^2
```

sympy [A] time = 0.24, size = 85, normalized size = 0.98

$$\frac{b^3(be-cd)\log(b+cx)}{c^5}+x^3\left(-\frac{be}{3c^2}+\frac{d}{3c}\right)+x^2\left(\frac{b^2e}{2c^3}-\frac{bd}{2c^2}\right)+x\left(-\frac{b^3e}{c^4}+\frac{b^2d}{c^3}\right)+\frac{ex^4}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] b**3*(b*e - c*d)*log(b + c*x)/c**5 + x**3*(-b*e/(3*c**2) + d/(3*c)) + x**2*
(b**2*e/(2*c**3) - b*d/(2*c**2)) + x*(-b**3*e/c**4 + b**2*d/c**3) + e*x**4/
(4*c)
```

3.44 $\int \frac{x^3(d+ex)}{bx+cx^2} \, dx$

Optimal. Leaf size=66

$$\frac{b^2(cd-be)\log(b+cx)}{c^4}-\frac{bx(cd-be)}{c^3}+\frac{x^2(cd-be)}{2c^2}+\frac{ex^3}{3c}$$

Rubi [A] time = 0.06, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^2(cd-be)\log(b+cx)}{c^4}+\frac{x^2(cd-be)}{2c^2}-\frac{bx(cd-be)}{c^3}+\frac{ex^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] -((b*(c*d - b*e)*x)/c^3) + ((c*d - b*e)*x^2)/(2*c^2) + (e*x^3)/(3*c) + (b^2
*(c*d - b*e)*Log[b + c*x])/c^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{bx+cx^2}\,dx &= \int \left(\frac{b(-cd+be)}{c^3}+\frac{(cd-be)x}{c^2}+\frac{ex^2}{c}-\frac{b^2(-cd+be)}{c^3(b+cx)}\right)dx\\ &= -\frac{b(cd-be)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{b^2(cd-be)\log(b+cx)}{c^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 61, normalized size = 0.92

$$\frac{cx\left(6b^2e-3bc(2d+ex)+c^2x(3d+2ex)\right)+6b^2(cd-be)\log(b+cx)}{6c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (c*x*(6*b^2*e - 3*b*c*(2*d + e*x) + c^2*x*(3*d + 2*e*x)) + 6*b^2*(c*d - b*e
)*Log[b + c*x])/(6*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(b*x + c*x^2), x]
```

fricas [A] time = 0.39, size = 71, normalized size = 1.08

$$\frac{2\,c^{3}ex^{3}+3\left(c^{3}d-bc^{2}e\right)x^{2}-6\left(bc^{2}d-b^{2}ce\right)x+6\left(b^{2}cd-b^{3}e\right)\log\left(cx+b\right)}{6\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(2*c^3*e*x^3 + 3*(c^3*d - b*c^2*e)*x^2 - 6*(b*c^2*d - b^2*c*e)*x + 6*(b
^2*c*d - b^3*e)*log(c*x + b))/c^4
```

giac [A] time = 0.16, size = 74, normalized size = 1.12

$$\frac{2\,c^{2}x^{3}e+3\,c^{2}dx^{2}-3\,bcx^{2}e-6\,bcdx+6\,b^{2}xe}{6\,c^{3}}+\frac{\left(b^{2}cd-b^{3}e\right)\log\left(|cx+b|\right)}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/6*(2*c^2*x^3*e + 3*c^2*d*x^2 - 3*b*c*x^2*e - 6*b*c*d*x + 6*b^2*x*e)/c^3 +
 (b^2*c*d - b^3*e)*log(abs(c*x + b))/c^4
```

maple [A] time = 0.04, size = 76, normalized size = 1.15

$$\frac{e\,x^{3}}{3c}-\frac{be\,x^{2}}{2c^{2}}+\frac{d\,x^{2}}{2c}-\frac{b^{3}e\ln\left(cx+b\right)}{c^{4}}+\frac{b^{2}d\ln\left(cx+b\right)}{c^{3}}+\frac{b^{2}ex}{c^{3}}-\frac{bdx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/3*e*x^3/c-1/2/c^2*x^2*b*e+1/2*d*x^2/c+1/c^3*x*b^2*e-1/c^2*x*b*d-b^3/c^4*l
n(c*x+b)*e+b^2/c^3*ln(c*x+b)*d
```

maxima [A] time = 0.95, size = 69, normalized size = 1.05

$$\frac{2\,c^{2}ex^{3}+3\left(c^{2}d-bce\right)x^{2}-6\left(bcd-b^{2}e\right)x}{6\,c^{3}}+\frac{\left(b^{2}cd-b^{3}e\right)\log\left(cx+b\right)}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/6*(2*c^2*e*x^3 + 3*(c^2*d - b*c*e)*x^2 - 6*(b*c*d - b^2*e)*x)/c^3 + (b^2*
c*d - b^3*e)*log(c*x + b)/c^4
```

mupad [B] time = 1.01, size = 72, normalized size = 1.09

$$x^{2}\left(\frac{d}{2\,c}-\frac{b\,e}{2\,c^{2}}\right)-\frac{\ln\left(b+c\,x\right)\,\left(b^{3}\,e-b^{2}\,c\,d\right)}{c^{4}}+\frac{e\,x^{3}}{3\,c}-\frac{b\,x\,\left(\frac{d}{c}-\frac{b\,e}{c^{2}}\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] x^2*(d/(2*c) - (b*e)/(2*c^2)) - (log(b + c*x)*(b^3*e - b^2*c*d))/c^4 + (e*x
^3)/(3*c) - (b*x*(d/c - (b*e)/c^2))/c
```

sympy [A] time = 0.22, size = 61, normalized size = 0.92

$$-\frac{b^{2}\left(be-cd\right)\log\left(b+cx\right)}{c^{4}}+x^{2}\left(-\frac{be}{2c^{2}}+\frac{d}{2c}\right)+x\left(\frac{b^{2}e}{c^{3}}-\frac{bd}{c^{2}}\right)+\frac{ex^{3}}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] -b**2*(b*e - c*d)*log(b + c*x)/c**4 + x**2*(-b*e/(2*c**2) + d/(2*c)) + x*(b
**2*e/c**3 - b*d/c**2) + e*x**3/(3*c)
```

3.45 $\int \frac{x^2(d+ex)}{bx+cx^2} dx$

Optimal. Leaf size=45

$$-\frac{b(cd-be)\log(b+cx)}{c^3}+\frac{x(cd-be)}{c^2}+\frac{ex^2}{2c}$$

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{x(cd-be)}{c^2}-\frac{b(cd-be)\log(b+cx)}{c^3}+\frac{ex^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] ((c*d - b*e)*x)/c^2 + (e*x^2)/(2*c) - (b*(c*d - b*e)*Log[b + c*x])/c^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{bx+cx^2}\,dx &= \int \left(\frac{cd-be}{c^2}+\frac{ex}{c}+\frac{b(-cd+be)}{c^2(b+cx)}\right)dx\\ &= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{b(cd-be)\log(b+cx)}{c^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 41, normalized size = 0.91

$$\frac{cx(-2be+2cd+cex)+2b(be-cd)\log(b+cx)}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (c*x*(2*c*d - 2*b*e + c*e*x) + 2*b*(-(c*d) + b*e)*Log[b + c*x])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(b*x + c*x^2), x]
```

fricas [A] time = 0.39, size = 47, normalized size = 1.04

$$\frac{c^2ex^2+2\left(c^2d-bce\right)x-2\left(bcd-b^2e\right)\log\left(cx+b\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/2*(c^2*e*x^2 + 2*(c^2*d - b*c*e)*x - 2*(b*c*d - b^2*e)*log(c*x + b))/c^3
```

giac [A] time = 0.15, size = 49, normalized size = 1.09

$$\frac{cx^2e + 2\,cdx - 2\,bxe}{2\,c^2} - \frac{\left(bcd - b^2e\right)\log\left(|cx + b|\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/2*(c*x^2*e + 2*c*d*x - 2*b*x*e)/c^2 - (b*c*d - b^2*e)*log(abs(c*x + b))/c
^3
```

maple [A] time = 0.05, size = 52, normalized size = 1.16

$$\frac{e\,x^2}{2c} + \frac{b^2e\ln\left(cx + b\right)}{c^3} - \frac{bd\ln\left(cx + b\right)}{c^2} - \frac{bex}{c^2} + \frac{dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/2*e*x^2/c-1/c^2*x*b*e+d*x/c+b^2/c^3*ln(c*x+b)*e-b/c^2*ln(c*x+b)*d
```

maxima [A] time = 0.89, size = 46, normalized size = 1.02

$$\frac{cex^2 + 2\left(cd - be\right)x}{2\,c^2} - \frac{\left(bcd - b^2e\right)\log\left(cx + b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/2*(c*e*x^2 + 2*(c*d - b*e)*x)/c^2 - (b*c*d - b^2*e)*log(c*x + b)/c^3
```

mupad [B] time = 1.02, size = 46, normalized size = 1.02

$$x\left(\frac{d}{c} - \frac{b\,e}{c^2}\right) + \frac{e\,x^2}{2\,c} + \frac{\ln\left(b + c\,x\right)\left(b^2\,e - b\,c\,d\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] x*(d/c - (b*e)/c^2) + (e*x^2)/(2*c) + (log(b + c*x)*(b^2*e - b*c*d))/c^3
```

sympy [A] time = 0.19, size = 37, normalized size = 0.82

$$\frac{b\left(be - cd\right)\log\left(b + cx\right)}{c^3} + x\left(-\frac{be}{c^2} + \frac{d}{c}\right) + \frac{ex^2}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] b*(b*e - c*d)*log(b + c*x)/c**3 + x*(-b*e/c**2 + d/c) + e*x**2/(2*c)
```

3.46 $\int \frac{x(d+ex)}{bx+cx^2} \, dx$

Optimal. Leaf size=25

$$\frac{(cd-be)\log(b+cx)}{c^2}+\frac{ex}{c}$$

Rubi [A] time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{(cd-be)\log(b+cx)}{c^2}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(b*x + c*x^2),x]
[Out] (e*x)/c + ((c*d - b*e)*Log[b + c*x])/c^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{bx+cx^2} \, dx &= \int \left(\frac{e}{c}+\frac{cd-be}{c(b+cx)}\right) dx\\ &= \frac{ex}{c}+\frac{(cd-be)\log(b+cx)}{c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 1.00

$$\frac{(cd-be)\log(b+cx)}{c^2}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(b*x + c*x^2),x]
[Out] (e*x)/c + ((c*d - b*e)*Log[b + c*x])/c^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{bx+cx^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(b*x + c*x^2),x]
[Out] IntegrateAlgebraic[(x*(d + e*x))/(b*x + c*x^2), x]
```

fricas [A] time = 0.38, size = 24, normalized size = 0.96

$$\frac{cex+(cd-be)\log(cx+b)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (c*e*x + (c*d - b*e)*log(c*x + b))/c^2
```

giac [A] time = 0.14, size = 28, normalized size = 1.12

$$\frac{xe}{c} + \frac{(cd - be)\log(|cx + b|)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] x*e/c + (c*d - b*e)*log(abs(c*x + b))/c^2
```

maple [A] time = 0.05, size = 32, normalized size = 1.28

$$-\frac{be\ln(cx + b)}{c^2} + \frac{d\ln(cx + b)}{c} + \frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] e*x/c-1/c^2*ln(c*x+b)*b*e+1/c*ln(c*x+b)*d
```

maxima [A] time = 0.94, size = 25, normalized size = 1.00

$$\frac{ex}{c} + \frac{(cd - be)\log(cx + b)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] e*x/c + (c*d - b*e)*log(c*x + b)/c^2
```

mupad [B] time = 0.05, size = 26, normalized size = 1.04

$$\frac{e\,x}{c} - \frac{\ln(b + c\,x)\,(b\,e - c\,d)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] (e*x)/c - (log(b + c*x)*(b*e - c*d))/c^2
```

sympy [A] time = 0.16, size = 20, normalized size = 0.80

$$\frac{ex}{c} - \frac{(be - cd)\log(b + cx)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] e*x/c - (b*e - c*d)*log(b + c*x)/c**2
```

3.47 $\int \frac{d+ex}{bx+cx^2} \, dx$

Optimal. Leaf size=30

$$\frac{d\log(x)}{b} - \frac{(cd-be)\log(b+cx)}{bc}$$

Rubi [A] time = 0.02, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{d\log(x)}{b} - \frac{(cd-be)\log(b+cx)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2),x]
[Out] (d*Log[x])/b - ((c*d - b*e)*Log[b + c*x])/(b*c)
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{bx+cx^2} \, dx &= \int \left(\frac{d}{bx} + \frac{-cd+be}{b(b+cx)}\right) dx\\ &= \frac{d\log(x)}{b} - \frac{(cd-be)\log(b+cx)}{bc}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 0.97

$$\frac{(be-cd)\log(b+cx)}{bc} + \frac{d\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2),x]
[Out] (d*Log[x])/b + ((-(c*d) + b*e)*Log[b + c*x])/(b*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{bx+cx^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2),x]
[Out] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2), x]
```

fricas [A] time = 0.40, size = 29, normalized size = 0.97

$$\frac{cd\log(x) - (cd-be)\log(cx+b)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (c*d*log(x) - (c*d - b*e)*log(c*x + b))/(b*c)
```

giac [A] time = 0.15, size = 33, normalized size = 1.10

$$\frac{d\log(|x|)}{b} - \frac{(cd-be)\log(|cx+b|)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] d*log(abs(x))/b - (c*d - b*e)*log(abs(c*x + b))/(b*c)
```

maple [A] time = 0.05, size = 32, normalized size = 1.07

$$\frac{d\ln(x)}{b} - \frac{d\ln(cx+b)}{b} + \frac{e\ln(cx+b)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/c*ln(c*x+b)*e-1/b*ln(c*x+b)*d+1/b*d*ln(x)
```

maxima [A] time = 0.85, size = 30, normalized size = 1.00

$$\frac{d\log(x)}{b} - \frac{(cd-be)\log(cx+b)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] d*log(x)/b - (c*d - b*e)*log(c*x + b)/(b*c)
```

mupad [B] time = 0.10, size = 28, normalized size = 0.93

$$\frac{d\ \ln(x)}{b} - \ln(b+c\,x)\left(\frac{d}{b} - \frac{e}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2),x)
```

```
[Out] (d*log(x))/b - log(b + c*x)*(d/b - e/c)
```

sympy [A] time = 0.42, size = 41, normalized size = 1.37

$$\frac{d\log(x)}{b} + \frac{(be-cd)\log\left(x + \frac{-bd+\frac{b(be-cd)}{c}}{be-2cd}\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x),x)
```

```
[Out] d*log(x)/b + (b*e - c*d)*log(x + (-b*d + b*(b*e - c*d)/c)/(b*e - 2*c*d))/(b
*c)
```

3.48 $\int \frac{d+ex}{x(bx+cx^2)} dx$

Optimal. Leaf size=43

$$-\frac{\log(x)(cd-be)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}-\frac{d}{bx}$$

Rubi [A] time = 0.04, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{\log(x)(cd-be)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}-\frac{d}{bx}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(b*x + c*x^2)),x]
[Out] -(d/(b*x)) - ((c*d - b*e)*Log[x])/b^2 + ((c*d - b*e)*Log[b + c*x])/b^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(bx+cx^2\right)}\,dx &= \int \left(\frac{d}{bx^2}+\frac{-cd+be}{b^2x}-\frac{c(-cd+be)}{b^2(b+cx)}\right)dx\\ &= -\frac{d}{bx}-\frac{(cd-be)\log(x)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.98

$$\frac{\log(x)(be-cd)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}-\frac{d}{bx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(b*x + c*x^2)),x]
[Out] -(d/(b*x)) + ((-(c*d) + b*e)*Log[x])/b^2 + ((c*d - b*e)*Log[b + c*x])/b^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(b*x + c*x^2)),x]
[Out] IntegrateAlgebraic[(d + e*x)/(x*(b*x + c*x^2)), x]
```

fricas [A] time = 0.40, size = 41, normalized size = 0.95

$$\frac{(cd-be)x\log(cx+b)-(cd-be)x\log(x)-bd}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x),x, algorithm="fricas")
[Out] ((c*d - b*e)*x*log(c*x + b) - (c*d - b*e)*x*log(x) - b*d)/(b^2*x)
```

giac [A] time = 0.24, size = 53, normalized size = 1.23

$$-\frac{(cd-be)\log(|x|)}{b^2}-\frac{d}{bx}+\frac{(c^2d-bce)\log(|cx+b|)}{b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x),x, algorithm="giac")
[Out] -(c*d - b*e)*log(abs(x))/b^2 - d/(b*x) + (c^2*d - b*c*e)*log(abs(c*x + b))/
(b^2*c)
```

maple [A] time = 0.05, size = 51, normalized size = 1.19

$$\frac{e\ln(x)}{b}-\frac{e\ln(cx+b)}{b}-\frac{cd\ln(x)}{b^2}+\frac{cd\ln(cx+b)}{b^2}-\frac{d}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x),x)
[Out] -1/b*ln(c*x+b)*e+1/b^2*ln(c*x+b)*c*d-d/b/x+1/b*ln(x)*e-1/b^2*ln(x)*c*d
```

maxima [A] time = 0.85, size = 43, normalized size = 1.00

$$\frac{(cd-be)\log(cx+b)}{b^2}-\frac{(cd-be)\log(x)}{b^2}-\frac{d}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x),x, algorithm="maxima")
[Out] (c*d - b*e)*log(c*x + b)/b^2 - (c*d - b*e)*log(x)/b^2 - d/(b*x)
```

mupad [B] time = 0.09, size = 33, normalized size = 0.77

$$-\frac{d}{b\,x}-\frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)\,\left(b\,e-c\,d\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(b*x + c*x^2)),x)
[Out] - d/(b*x) - (2*atanh((2*c*x)/b + 1)*(b*e - c*d))/b^2
```

sympy [B] time = 0.37, size = 95, normalized size = 2.21

$$-\frac{d}{bx}+\frac{(be-cd)\log\left(x+\frac{b^2e-bcd-b(be-cd)}{2bce-2c^2d}\right)}{b^2}-\frac{(be-cd)\log\left(x+\frac{b^2e-bcd+b(be-cd)}{2bce-2c^2d}\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x),x)
[Out] -d/(b*x) + (b*e - c*d)*log(x + (b**2*e - b*c*d - b*(b*e - c*d))/(2*b*c*e -
2*c**2*d))/b**2 - (b*e - c*d)*log(x + (b**2*e - b*c*d + b*(b*e - c*d))/(2*b
*c*e - 2*c**2*d))/b**2
```

3.49 $\int \frac{d+ex}{x^2(bx+cx^2)} dx$

Optimal. Leaf size=62

$$\frac{c\log(x)(cd-be)}{b^3}-\frac{c(cd-be)\log(b+cx)}{b^3}+\frac{cd-be}{b^2x}-\frac{d}{2bx^2}$$

Rubi [A] time = 0.05, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{cd-be}{b^2x}+\frac{c\log(x)(cd-be)}{b^3}-\frac{c(cd-be)\log(b+cx)}{b^3}-\frac{d}{2bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(b*x + c*x^2)),x]
```

```
[Out] -d/(2*b*x^2) + (c*d - b*e)/(b^2*x) + (c*(c*d - b*e)*Log[x])/b^3 - (c*(c*d -
 b*e)*Log[b + c*x])/b^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2(bx+cx^2)}\,dx &= \int \left(\frac{d}{bx^3}+\frac{-cd+be}{b^2x^2}-\frac{c(-cd+be)}{b^3x}+\frac{c^2(-cd+be)}{b^3(b+cx)}\right)dx\\ &= -\frac{d}{2bx^2}+\frac{cd-be}{b^2x}+\frac{c(cd-be)\log(x)}{b^3}-\frac{c(cd-be)\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 58, normalized size = 0.94

$$\frac{-\frac{b(bd+2bex-2cdx)}{x^2}+2c\log(x)(cd-be)+2c(be-cd)\log(b+cx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(b*x + c*x^2)),x]
```

```
[Out] (-((b*(b*d - 2*c*d*x + 2*b*e*x))/x^2) + 2*c*(c*d - b*e)*Log[x] + 2*c*(-(c*d
) + b*e)*Log[b + c*x])/(2*b^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2(bx+cx^2)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(b*x + c*x^2)), x]
```

fricas [A] time = 0.41, size = 68, normalized size = 1.10

$$-\frac{2\left(c^{2}d-bce\right)x^{2}\log\left(cx+b\right)-2\left(c^{2}d-bce\right)x^{2}\log(x)+b^{2}d-2\left(bcd-b^{2}e\right)x}{2\,b^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] -1/2*(2*(c^2*d - b*c*e)*x^2*log(c*x + b) - 2*(c^2*d - b*c*e)*x^2*log(x) + b
^2*d - 2*(b*c*d - b^2*e)*x)/(b^3*x^2)
```

giac [A] time = 0.18, size = 78, normalized size = 1.26

$$\frac{\left(c^{2}d-bce\right)\log\left(|x|\right)}{b^{3}}-\frac{\left(c^{3}d-bc^{2}e\right)\log\left(|cx+b|\right)}{b^{3}c}-\frac{b^{2}d-2\left(bcd-b^{2}e\right)x}{2\,b^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (c^2*d - b*c*e)*log(abs(x))/b^3 - (c^3*d - b*c^2*e)*log(abs(c*x + b))/(b^3*
c) - 1/2*(b^2*d - 2*(b*c*d - b^2*e)*x)/(b^3*x^2)
```

maple [A] time = 0.05, size = 75, normalized size = 1.21

$$-\frac{ce\ln(x)}{b^{2}}+\frac{ce\ln\left(cx+b\right)}{b^{2}}+\frac{c^{2}d\ln(x)}{b^{3}}-\frac{c^{2}d\ln\left(cx+b\right)}{b^{3}}-\frac{e}{bx}+\frac{cd}{b^{2}x}-\frac{d}{2b\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x),x)
```

```
[Out] c/b^2*ln(c*x+b)*e-c^2/b^3*ln(c*x+b)*d-1/2*d/b/x^2-1/b/x*e+1/b^2/x*c*d-c/b^2
*ln(x)*e+c^2/b^3*ln(x)*d
```

maxima [A] time = 0.92, size = 63, normalized size = 1.02

$$-\frac{\left(c^{2}d-bce\right)\log\left(cx+b\right)}{b^{3}}+\frac{\left(c^{2}d-bce\right)\log(x)}{b^{3}}-\frac{bd-2\left(cd-be\right)x}{2\,b^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -(c^2*d - b*c*e)*log(c*x + b)/b^3 + (c^2*d - b*c*e)*log(x)/b^3 - 1/2*(b*d -
 2*(c*d - b*e)*x)/(b^2*x^2)
```

mupad [B] time = 0.08, size = 73, normalized size = 1.18

$$-\frac{\frac{d}{2\,b}+\frac{x\,\left(b\,e-c\,d\right)}{b^2}}{x^2}-\frac{2\,c\,\mathrm{atanh}\left(\frac{c\,\left(b\,e-c\,d\right)\,\left(b+2\,c\,x\right)}{b\,\left(c^2\,d-b\,c\,e\right)}\right)\,\left(b\,e-c\,d\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(b*x + c*x^2)),x)
```

```
[Out] - (d/(2*b) + (x*(b*e - c*d))/b^2)/x^2 - (2*c*atanh((c*(b*e - c*d)*(b + 2*c*
x))/(b*(c^2*d - b*c*e)))*(b*e - c*d))/b^3
```

sympy [B] time = 0.45, size = 131, normalized size = 2.11

$$\frac{-bd+x\left(-2be+2cd\right)}{2b^{2}x^{2}}-\frac{c\left(be-cd\right)\log\left(x+\frac{b^{2}ce-bc^{2}d-bc(be-cd)}{2bc^{2}e-2c^{3}d}\right)}{b^{3}}+\frac{c\left(be-cd\right)\log\left(x+\frac{b^{2}ce-bc^{2}d+bc(be-cd)}{2bc^{2}e-2c^{3}d}\right)}{b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x),x)
```

```
[Out] (-b*d + x*(-2*b*e + 2*c*d))/(2*b**2*x**2) - c*(b*e - c*d)*log(x + (b**2*c*e
 - b*c**2*d - b*c*(b*e - c*d))/(2*b*c**2*e - 2*c**3*d))/b**3 + c*(b*e - c*d
)*log(x + (b**2*c*e - b*c**2*d + b*c*(b*e - c*d))/(2*b*c**2*e - 2*c**3*d))/
b**3
```

3.50 $\int \frac{d+ex}{x^3(bx+cx^2)}\,dx$

Optimal. Leaf size=86

$$-\frac{c^2\log(x)(cd-be)}{b^4}+\frac{c^2(cd-be)\log(b+cx)}{b^4}-\frac{c(cd-be)}{b^3x}+\frac{cd-be}{2b^2x^2}-\frac{d}{3bx^3}$$

Rubi [A] time = 0.06, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{c^2\log(x)(cd-be)}{b^4}+\frac{c^2(cd-be)\log(b+cx)}{b^4}+\frac{cd-be}{2b^2x^2}-\frac{c(cd-be)}{b^3x}-\frac{d}{3bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(b*x + c*x^2)),x]
```

```
[Out] -d/(3*b*x^3) + (c*d - b*e)/(2*b^2*x^2) - (c*(c*d - b*e))/(b^3*x) - (c^2*(c*
d - b*e)*Log[x])/b^4 + (c^2*(c*d - b*e)*Log[b + c*x])/b^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^3\left(bx+cx^2\right)}\,dx &= \int \left(\frac{d}{bx^4}+\frac{-cd+be}{b^2x^3}-\frac{c(-cd+be)}{b^3x^2}+\frac{c^2(-cd+be)}{b^4x}-\frac{c^3(-cd+be)}{b^4(b+cx)}\right)dx\\ &= -\frac{d}{3bx^3}+\frac{cd-be}{2b^2x^2}-\frac{c(cd-be)}{b^3x}-\frac{c^2(cd-be)\log(x)}{b^4}+\frac{c^2(cd-be)\log(b+cx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 81, normalized size = 0.94

$$\frac{\frac{b\left(-\left(b^2(2d+3ex)\right)+3bcx(d+2ex)-6c^2dx^2\right)}{x^3}+6c^2\log(x)(be-cd)+6c^2(cd-be)\log(b+cx)}{6b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(b*x + c*x^2)),x]
```

```
[Out] ((b*(-6*c^2*d*x^2 + 3*b*c*x*(d + 2*e*x) - b^2*(2*d + 3*e*x)))/x^3 + 6*c^2*(
-(c*d) + b*e)*Log[x] + 6*c^2*(c*d - b*e)*Log[b + c*x])/(6*b^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^3\left(bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(b*x + c*x^2)), x]
```

fricas [A] time = 0.41, size = 94, normalized size = 1.09

$$\frac{6\left(c^{3}d-bc^{2}e\right)x^{3}\log\left(cx+b\right)-6\left(c^{3}d-bc^{2}e\right)x^{3}\log(x)-2\,b^{3}d-6\left(bc^{2}d-b^{2}ce\right)x^{2}+3\left(b^{2}cd-b^{3}e\right)x}{6\,b^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(6*(c^3*d - b*c^2*e)*x^3*log(c*x + b) - 6*(c^3*d - b*c^2*e)*x^3*log(x)
- 2*b^3*d - 6*(b*c^2*d - b^2*c*e)*x^2 + 3*(b^2*c*d - b^3*e)*x)/(b^4*x^3)
```

giac [A] time = 0.16, size = 103, normalized size = 1.20

$$-\frac{\left(c^{3}d-bc^{2}e\right)\log\left(|x|\right)}{b^{4}}+\frac{\left(c^{4}d-bc^{3}e\right)\log\left(|cx+b|\right)}{b^{4}c}-\frac{2\,b^{3}d+6\left(bc^{2}d-b^{2}ce\right)x^{2}-3\left(b^{2}cd-b^{3}e\right)x}{6\,b^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -(c^3*d - b*c^2*e)*log(abs(x))/b^4 + (c^4*d - b*c^3*e)*log(abs(c*x + b))/(b
^4*c) - 1/6*(2*b^3*d + 6*(b*c^2*d - b^2*c*e)*x^2 - 3*(b^2*c*d - b^3*e)*x)/(
b^4*x^3)
```

maple [A] time = 0.05, size = 101, normalized size = 1.17

$$\frac{c^{2}e\ln(x)}{b^{3}}-\frac{c^{2}e\ln\left(cx+b\right)}{b^{3}}-\frac{c^{3}d\ln(x)}{b^{4}}+\frac{c^{3}d\ln\left(cx+b\right)}{b^{4}}+\frac{ce}{b^{2}x}-\frac{c^{2}d}{b^{3}x}-\frac{e}{2b\,x^{2}}+\frac{cd}{2b^{2}x^{2}}-\frac{d}{3b\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+b*x),x)
```

```
[Out] -c^2/b^3*ln(c*x+b)*e+c^3/b^4*ln(c*x+b)*d-1/3*d/b/x^3-1/2/b/x^2*e+1/2/b^2/x^
2*c*d+c^2/b^3*ln(x)*e-c^3/b^4*ln(x)*d+c/b^2/x*e-c^2/b^3/x*d
```

maxima [A] time = 0.88, size = 89, normalized size = 1.03

$$\frac{\left(c^{3}d-bc^{2}e\right)\log\left(cx+b\right)}{b^{4}}-\frac{\left(c^{3}d-bc^{2}e\right)\log(x)}{b^{4}}-\frac{2\,b^{2}d+6\left(c^{2}d-bce\right)x^{2}-3\left(bcd-b^{2}e\right)x}{6\,b^{3}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (c^3*d - b*c^2*e)*log(c*x + b)/b^4 - (c^3*d - b*c^2*e)*log(x)/b^4 - 1/6*(2*
b^2*d + 6*(c^2*d - b*c*e)*x^2 - 3*(b*c*d - b^2*e)*x)/(b^3*x^3)
```

mupad [B] time = 0.09, size = 97, normalized size = 1.13

$$\frac{2\,c^{2}\,\mathrm{atanh}\left(\frac{c^{2}\,(b\,e-c\,d)\,(b+2\,c\,x)}{b\left(c^{3}\,d-b\,c^{2}\,e\right)}\right)\,(b\,e-c\,d)}{b^{4}}-\frac{\frac{d}{3\,b}+\frac{x\,(b\,e-c\,d)}{2\,b^{2}}-\frac{c\,x^{2}\,(b\,e-c\,d)}{b^{3}}}{x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(b*x + c*x^2)),x)
```

```
[Out] (2*c^2*atanh((c^2*(b*e - c*d)*(b + 2*c*x))/(b*(c^3*d - b*c^2*e)))*(b*e - c*
d))/b^4 - (d/(3*b) + (x*(b*e - c*d))/(2*b^2) - (c*x^2*(b*e - c*d))/b^3)/x^3
```

sympy [B] time = 0.50, size = 165, normalized size = 1.92

$$\frac{-2b^2d+x^2\left(6bce-6c^2d\right)+x\left(-3b^2e+3bcd\right)}{6b^3x^3}+\frac{c^2\left(be-cd\right)\log\left(x+\frac{b^2c^2e-bc^3d-bc^2(be-cd)}{2bc^3e-2c^4d}\right)}{b^4}-\frac{c^2\left(be-cd\right)\log\left(x+\frac{b^2c^2e-bc^3d+bc^2(be-cd)}{2bc^3e-2c^4d}\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+b*x),x)
```

```
[Out] (-2*b**2*d + x**2*(6*b*c*e - 6*c**2*d) + x*(-3*b**2*e + 3*b*c*d))/(6*b**3*x
**3) + c**2*(b*e - c*d)*log(x + (b**2*c**2*e - b*c**3*d - b*c**2*(b*e - c*d
))/(2*b*c**3*e - 2*c**4*d))/b**4 - c**2*(b*e - c*d)*log(x + (b**2*c**2*e -
b*c**3*d + b*c**2*(b*e - c*d))/(2*b*c**3*e - 2*c**4*d))/b**4
```

3.51 $\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=90

$$\frac{b^3(cd-be)}{c^5(b+cx)}+\frac{b^2(3cd-4be)\log(b+cx)}{c^5}-\frac{bx(2cd-3be)}{c^4}+\frac{x^2(cd-2be)}{2c^3}+\frac{ex^3}{3c^2}$$

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^3(cd-be)}{c^5(b+cx)}+\frac{b^2(3cd-4be)\log(b+cx)}{c^5}+\frac{x^2(cd-2be)}{2c^3}-\frac{bx(2cd-3be)}{c^4}+\frac{ex^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -((b*(2*c*d - 3*b*e)*x)/c^4) + ((c*d - 2*b*e)*x^2)/(2*c^3) + (e*x^3)/(3*c^2
) + (b^3*(c*d - b*e))/(c^5*(b + c*x)) + (b^2*(3*c*d - 4*b*e)*Log[b + c*x])/
c^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{b(-2cd+3be)}{c^4}+\frac{(cd-2be)x}{c^3}+\frac{ex^2}{c^2}+\frac{b^3(-cd+be)}{c^4(b+cx)^2}-\frac{b^2(-3cd+4be)}{c^4(b+cx)}\right)dx\\ &= -\frac{b(2cd-3be)x}{c^4}+\frac{(cd-2be)x^2}{2c^3}+\frac{ex^3}{3c^2}+\frac{b^3(cd-be)}{c^5(b+cx)}+\frac{b^2(3cd-4be)\log(b+cx)}{c^5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 0.97

$$\frac{\frac{6b^3(cd-be)}{b+cx}+6b^2(3cd-4be)\log(b+cx)+3c^2x^2(cd-2be)+6bcx(3be-2cd)+2c^3ex^3}{6c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (6*b*c*(-2*c*d + 3*b*e)*x + 3*c^2*(c*d - 2*b*e)*x^2 + 2*c^3*e*x^3 + (6*b^3*
(c*d - b*e))/(b + c*x) + 6*b^2*(3*c*d - 4*b*e)*Log[b + c*x])/(6*c^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^5*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^5*(d + e*x))/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.40, size = 139, normalized size = 1.54

$$\frac{2 c^4 e x^4 + 6 b^3 c d - 6 b^4 e + \left(3 c^4 d - 4 b c^3 e\right) x^3 - 3 \left(3 b c^3 d - 4 b^2 c^2 e\right) x^2 - 6 \left(2 b^2 c^2 d - 3 b^3 c e\right) x + 6 \left(3 b^3 c d - 4 b^4 e + \left(3 b^2 c^2 d - 4 b^3 c e\right) x\right) \log\left(c x + b\right)}{6 \left(c^6 x + b c^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*c^4*e*x^4 + 6*b^3*c*d - 6*b^4*e + (3*c^4*d - 4*b*c^3*e)*x^3 - 3*(3*b
*c^3*d - 4*b^2*c^2*e)*x^2 - 6*(2*b^2*c^2*d - 3*b^3*c*e)*x + 6*(3*b^3*c*d -
4*b^4*e + (3*b^2*c^2*d - 4*b^3*c*e)*x)*log(c*x + b))/(c^6*x + b*c^5)
```

giac [A] time = 0.16, size = 107, normalized size = 1.19

$$\frac{\left(3 b^2 c d - 4 b^3 e\right) \log\left(|c x + b|\right)}{c^5} + \frac{2 c^4 x^3 e + 3 c^4 d x^2 - 6 b c^3 x^2 e - 12 b c^3 d x + 18 b^2 c^2 x e}{6 c^6} + \frac{b^3 c d - b^4 e}{(c x + b) c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (3*b^2*c*d - 4*b^3*e)*log(abs(c*x + b))/c^5 + 1/6*(2*c^4*x^3*e + 3*c^4*d*x^
2 - 6*b*c^3*x^2*e - 12*b*c^3*d*x + 18*b^2*c^2*x*e)/c^6 + (b^3*c*d - b^4*e)/
((c*x + b)*c^5)
```

maple [A] time = 0.06, size = 109, normalized size = 1.21

$$\frac{e x^3}{3 c^2} - \frac{b e x^2}{c^3} + \frac{d x^2}{2 c^2} - \frac{b^4 e}{(c x + b) c^5} + \frac{b^3 d}{(c x + b) c^4} - \frac{4 b^3 e \ln\left(c x + b\right)}{c^5} + \frac{3 b^2 d \ln\left(c x + b\right)}{c^4} + \frac{3 b^2 e x}{c^4} - \frac{2 b d x}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/3*e*x^3/c^2-1/c^3*x^2*b*e+1/2*d*x^2/c^2+3/c^4*x*b^2*e-2/c^3*x*b*d-4*b^3/c
^5*ln(c*x+b)*e+3*b^2/c^4*ln(c*x+b)*d-b^4/c^5/(c*x+b)*e+b^3/c^4/(c*x+b)*d
```

maxima [A] time = 0.93, size = 98, normalized size = 1.09

$$\frac{b^3 c d - b^4 e}{c^6 x + b c^5} + \frac{2 c^2 e x^3 + 3 \left(c^2 d - 2 b c e\right) x^2 - 6 \left(2 b c d - 3 b^2 e\right) x}{6 c^4} + \frac{\left(3 b^2 c d - 4 b^3 e\right) \log\left(c x + b\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (b^3*c*d - b^4*e)/(c^6*x + b*c^5) + 1/6*(2*c^2*e*x^3 + 3*(c^2*d - 2*b*c*e)*
x^2 - 6*(2*b*c*d - 3*b^2*e)*x)/c^4 + (3*b^2*c*d - 4*b^3*e)*log(c*x + b)/c^5
```

mupad [B] time = 1.03, size = 115, normalized size = 1.28

$$x^2 \left(\frac{d}{2 c^2} - \frac{b e}{c^3}\right) - x \left(\frac{b^2 e}{c^4} + \frac{2 b \left(\frac{d}{c^2} - \frac{2 b e}{c^3}\right)}{c}\right) - \frac{\ln\left(b + c x\right) \left(4 b^3 e - 3 b^2 c d\right)}{c^5} + \frac{e x^3}{3 c^2} - \frac{b^4 e - b^3 c d}{c \left(x c^5 + b c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x^2*(d/(2*c^2) - (b*e)/c^3) - x*((b^2*e)/c^4 + (2*b*(d/c^2 - (2*b*e)/c^3))/
c) - (log(b + c*x)*(4*b^3*e - 3*b^2*c*d))/c^5 + (e*x^3)/(3*c^2) - (b^4*e -
b^3*c*d)/(c*(b*c^4 + c^5*x))
```

sympy [A] time = 0.42, size = 92, normalized size = 1.02

$$-\frac{b^2\left(4be-3cd\right)\log\left(b+cx\right)}{c^5}+x^2\left(-\frac{be}{c^3}+\frac{d}{2c^2}\right)+x\left(\frac{3b^2e}{c^4}-\frac{2bd}{c^3}\right)+\frac{-b^4e+b^3cd}{bc^5+c^6x}+\frac{ex^3}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] -b**2*(4*b*e - 3*c*d)*log(b + c*x)/c**5 + x**2*(-b*e/c**3 + d/(2*c**2)) + x
*(3*b**2*e/c**4 - 2*b*d/c**3) + (-b**4*e + b**3*c*d)/(b*c**5 + c**6*x) + e*
x**3/(3*c**2)
```

3.52 $\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=69

$$-\frac{b^2(cd-be)}{c^4(b+cx)}-\frac{b(2cd-3be)\log(b+cx)}{c^4}+\frac{x(cd-2be)}{c^3}+\frac{ex^2}{2c^2}$$

Rubi [A] time = 0.07, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(cd-be)}{c^4(b+cx)}+\frac{x(cd-2be)}{c^3}-\frac{b(2cd-3be)\log(b+cx)}{c^4}+\frac{ex^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((c*d - 2*b*e)*x)/c^3 + (e*x^2)/(2*c^2) - (b^2*(c*d - b*e))/(c^4*(b + c*x))
 - (b*(2*c*d - 3*b*e)*Log[b + c*x])/c^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^2} \, dx &= \int \left(\frac{cd-2be}{c^3}+\frac{ex}{c^2}-\frac{b^2(-cd+be)}{c^3(b+cx)^2}+\frac{b(-2cd+3be)}{c^3(b+cx)}\right) dx\\ &= \frac{(cd-2be)x}{c^3}+\frac{ex^2}{2c^2}-\frac{b^2(cd-be)}{c^4(b+cx)}-\frac{b(2cd-3be)\log(b+cx)}{c^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 66, normalized size = 0.96

$$\frac{\frac{2b^2(be-cd)}{b+cx}+2cx(cd-2be)+2b(3be-2cd)\log(b+cx)+c^2ex^2}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (2*c*(c*d - 2*b*e)*x + c^2*e*x^2 + (2*b^2*(-(c*d) + b*e))/(b + c*x) + 2*b*(
-2*c*d + 3*b*e)*Log[b + c*x])/(2*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.39, size = 111, normalized size = 1.61

$$\frac{c^3ex^3 - 2\,b^2cd + 2\,b^3e + \left(2\,c^3d - 3\,bc^2e\right)x^2 + 2\left(bc^2d - 2\,b^2ce\right)x - 2\left(2\,b^2cd - 3\,b^3e + \left(2\,bc^2d - 3\,b^2ce\right)x\right)\log\left(cx + b\right)}{2\left(c^5x + bc^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(c^3*e*x^3 - 2*b^2*c*d + 2*b^3*e + (2*c^3*d - 3*b*c^2*e)*x^2 + 2*(b*c^2
*d - 2*b^2*c*e)*x - 2*(2*b^2*c*d - 3*b^3*e + (2*b*c^2*d - 3*b^2*c*e)*x)*log
(c*x + b))/(c^5*x + b*c^4)
```

giac [A] time = 0.15, size = 81, normalized size = 1.17

$$-\frac{\left(2\,bcd - 3\,b^2e\right)\log\left(|cx + b|\right)}{c^4} + \frac{c^2x^2e + 2\,c^2dx - 4\,bcxe}{2\,c^4} - \frac{b^2cd - b^3e}{(cx + b)c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*b*c*d - 3*b^2*e)*log(abs(c*x + b))/c^4 + 1/2*(c^2*x^2*e + 2*c^2*d*x - 4
*b*c*x*e)/c^4 - (b^2*c*d - b^3*e)/((c*x + b)*c^4)
```

maple [A] time = 0.05, size = 84, normalized size = 1.22

$$\frac{e\,x^2}{2c^2} + \frac{b^3e}{(cx + b)\,c^4} - \frac{b^2d}{(cx + b)\,c^3} + \frac{3b^2e\ln\left(cx + b\right)}{c^4} - \frac{2bd\ln\left(cx + b\right)}{c^3} - \frac{2bex}{c^3} + \frac{dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/2*e*x^2/c^2-2/c^3*x*b*e+d*x/c^2+3*b^2/c^4*ln(c*x+b)*e-2*b/c^3*ln(c*x+b)*d
+b^3/c^4/(c*x+b)*e-b^2/c^3/(c*x+b)*d
```

maxima [A] time = 0.91, size = 75, normalized size = 1.09

$$-\frac{b^2cd - b^3e}{c^5x + bc^4} + \frac{cex^2 + 2\,(cd - 2\,be)x}{2\,c^3} - \frac{\left(2\,bcd - 3\,b^2e\right)\log\left(cx + b\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(b^2*c*d - b^3*e)/(c^5*x + b*c^4) + 1/2*(c*e*x^2 + 2*(c*d - 2*b*e)*x)/c^3
- (2*b*c*d - 3*b^2*e)*log(c*x + b)/c^4
```

mupad [B] time = 0.06, size = 77, normalized size = 1.12

$$x\left(\frac{d}{c^2} - \frac{2\,b\,e}{c^3}\right) + \frac{e\,x^2}{2\,c^2} + \frac{b^3\,e - b^2\,c\,d}{c\,\left(x\,c^4 + b\,c^3\right)} + \frac{\ln\left(b + c\,x\right)\,\left(3\,b^2\,e - 2\,b\,c\,d\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x*(d/c^2 - (2*b*e)/c^3) + (e*x^2)/(2*c^2) + (b^3*e - b^2*c*d)/(c*(b*c^3 + c
^4*x)) + (log(b + c*x)*(3*b^2*e - 2*b*c*d))/c^4
```

sympy [A] time = 0.37, size = 68, normalized size = 0.99

$$\frac{b\left(3be-2cd\right)\log\left(b+cx\right)}{c^4}+x\left(-\frac{2be}{c^3}+\frac{d}{c^2}\right)+\frac{b^3e-b^2cd}{bc^4+c^5x}+\frac{ex^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] b*(3*b*e - 2*c*d)*log(b + c*x)/c**4 + x*(-2*b*e/c**3 + d/c**2) + (b**3*e -
b**2*c*d)/(b*c**4 + c**5*x) + e*x**2/(2*c**2)
```

3.53 $\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=45

$$\frac{b(cd-be)}{c^3(b+cx)}+\frac{(cd-2be)\log(b+cx)}{c^3}+\frac{ex}{c^2}$$

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b(cd-be)}{c^3(b+cx)}+\frac{(cd-2be)\log(b+cx)}{c^3}+\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*x)/c^2 + (b*(c*d - b*e))/(c^3*(b + c*x)) + ((c*d - 2*b*e)*Log[b + c*x])/
c^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^2} dx &= \int \left(\frac{e}{c^2}+\frac{b(-cd+be)}{c^2(b+cx)^2}+\frac{cd-2be}{c^2(b+cx)}\right) dx\\ &= \frac{ex}{c^2}+\frac{b(cd-be)}{c^3(b+cx)}+\frac{(cd-2be)\log(b+cx)}{c^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{\frac{b(cd-be)}{b+cx}+(cd-2be)\log(b+cx)+cex}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (c*e*x + (b*(c*d - b*e))/(b + c*x) + (c*d - 2*b*e)*Log[b + c*x])/c^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.38, size = 69, normalized size = 1.53

$$\frac{c^2ex^2 + bcex + bcd - b^2e + \left(bcd - 2\,b^2e + \left(c^2d - 2\,bce\right)x\right)\log\left(cx + b\right)}{c^4x + bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (c^2*e*x^2 + b*c*e*x + b*c*d - b^2*e + (b*c*d - 2*b^2*e + (c^2*d - 2*b*c*e)
*x)*log(c*x + b))/(c^4*x + b*c^3)
```

giac [A] time = 0.17, size = 51, normalized size = 1.13

$$\frac{xe}{c^2} + \frac{(cd - 2\,be)\log\left(|cx + b|\right)}{c^3} + \frac{bcd - b^2e}{(cx + b)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] x*e/c^2 + (c*d - 2*b*e)*log(abs(c*x + b))/c^3 + (b*c*d - b^2*e)/((c*x + b)*
c^3)
```

maple [A] time = 0.05, size = 61, normalized size = 1.36

$$-\frac{b^2e}{(cx + b)\,c^3} + \frac{bd}{(cx + b)\,c^2} - \frac{2be\ln\left(cx + b\right)}{c^3} + \frac{d\ln\left(cx + b\right)}{c^2} + \frac{ex}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] e*x/c^2-2/c^3*ln(c*x+b)*b*e+1/c^2*ln(c*x+b)*d-b^2/c^3/(c*x+b)*e+b/c^2/(c*x+
b)*d
```

maxima [A] time = 0.83, size = 50, normalized size = 1.11

$$\frac{bcd - b^2e}{c^4x + bc^3} + \frac{ex}{c^2} + \frac{(cd - 2\,be)\log\left(cx + b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (b*c*d - b^2*e)/(c^4*x + b*c^3) + e*x/c^2 + (c*d - 2*b*e)*log(c*x + b)/c^3
```

mupad [B] time = 1.03, size = 56, normalized size = 1.24

$$\frac{e\,x}{c^2} - \frac{b^2\,e - b\,c\,d}{c\,\left(x\,c^3 + b\,c^2\right)} - \frac{\ln\left(b + c\,x\right)\,\left(2\,b\,e - c\,d\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (e*x)/c^2 - (b^2*e - b*c*d)/(c*(b*c^2 + c^3*x)) - (log(b + c*x)*(2*b*e - c*
d))/c^3
```

sympy [A] time = 0.29, size = 44, normalized size = 0.98

$$\frac{-b^2e + bcd}{bc^3 + c^4x} + \frac{ex}{c^2} - \frac{(2be - cd)\log\left(b + cx\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-b**2*e + b*c*d)/(b*c**3 + c**4*x) + e*x/c**2 - (2*b*e - c*d)*log(b + c*x)
/c**3
```

3.54 $\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=32

$$\frac{e\log(b+cx)}{c^2}-\frac{cd-be}{c^2(b+cx)}$$

Rubi [A] time = 0.03, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{e\log(b+cx)}{c^2}-\frac{cd-be}{c^2(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -((c*d - b*e)/(c^2*(b + c*x))) + (e*Log[b + c*x])/c^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^2}dx &= \int\left(\frac{cd-be}{c(b+cx)^2}+\frac{e}{c(b+cx)}\right)dx\\ &= -\frac{cd-be}{c^2(b+cx)}+\frac{e\log(b+cx)}{c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.97

$$\frac{be-cd}{c^2(b+cx)}+\frac{e\log(b+cx)}{c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (-(c*d) + b*e)/(c^2*(b + c*x)) + (e*Log[b + c*x])/c^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^2}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.39, size = 39, normalized size = 1.22

$$-\frac{cd - be - (cex + be)\log(cx + b)}{c^3x + bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
[Out] -(c*d - b*e - (c*e*x + b*e)*log(c*x + b))/(c^3*x + b*c^2)
```

giac [A] time = 0.15, size = 35, normalized size = 1.09

$$\frac{e\log(|cx + b|)}{c^2} - \frac{cd - be}{(cx + b)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
[Out] e*log(abs(c*x + b))/c^2 - (c*d - b*e)/((c*x + b)*c^2)
```

maple [A] time = 0.05, size = 39, normalized size = 1.22

$$\frac{be}{(cx + b)\,c^2} - \frac{d}{(cx + b)\,c} + \frac{e\ln(cx + b)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x)^2,x)
[Out] e*ln(c*x+b)/c^2+1/c^2/(c*x+b)*b*e-1/c/(c*x+b)*d
```

maxima [A] time = 0.85, size = 35, normalized size = 1.09

$$-\frac{cd - be}{c^3x + bc^2} + \frac{e\log(cx + b)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
[Out] -(c*d - b*e)/(c^3*x + b*c^2) + e*log(c*x + b)/c^2
```

mupad [B] time = 0.04, size = 31, normalized size = 0.97

$$\frac{b\,e - c\,d}{c^2\,(b + c\,x)} + \frac{e\,\ln(b + c\,x)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(b*x + c*x^2)^2,x)
[Out] (b*e - c*d)/(c^2*(b + c*x)) + (e*log(b + c*x))/c^2
```

sympy [A] time = 0.20, size = 27, normalized size = 0.84

$$\frac{be - cd}{bc^2 + c^3x} + \frac{e\log(b + cx)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x)**2,x)
[Out] (b*e - c*d)/(b*c**2 + c**3*x) + e*log(b + c*x)/c**2
```

3.55 $\int \frac{x(d+ex)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=42

$$-\frac{d\log(b+cx)}{b^2}+\frac{d\log(x)}{b^2}+\frac{cd-be}{bc(b+cx)}$$

Rubi [A] time = 0.03, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{d\log(b+cx)}{b^2}+\frac{d\log(x)}{b^2}+\frac{cd-be}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (c*d - b*e)/(b*c*(b + c*x)) + (d*Log[x])/b^2 - (d*Log[b + c*x])/b^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{d}{b^2x}+\frac{-cd+be}{b(b+cx)^2}-\frac{cd}{b^2(b+cx)}\right)dx\\ &= \frac{cd-be}{bc(b+cx)}+\frac{d\log(x)}{b^2}-\frac{d\log(b+cx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.90

$$\frac{\frac{b(cd-be)}{c(b+cx)}-d\log(b+cx)+d\log(x)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((b*(c*d - b*e))/(c*(b + c*x)) + d*Log[x] - d*Log[b + c*x])/b^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{\left(bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.39, size = 61, normalized size = 1.45

$$\frac{bcd - b^2e - \left(c^2dx + bcd\right)\log\left(cx + b\right) + \left(c^2dx + bcd\right)\log(x)}{b^2c^2x + b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (b*c*d - b^2*e - (c^2*d*x + b*c*d)*log(c*x + b) + (c^2*d*x + b*c*d)*log(x))
/(b^2*c^2*x + b^3*c)
```

giac [A] time = 0.15, size = 48, normalized size = 1.14

$$-\frac{d\log\left(|cx + b|\right)}{b^2} + \frac{d\log\left(|x|\right)}{b^2} + \frac{bcd - b^2e}{(cx + b)b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -d*log(abs(c*x + b))/b^2 + d*log(abs(x))/b^2 + (b*c*d - b^2*e)/((c*x + b)*b
^2*c)
```

maple [A] time = 0.05, size = 46, normalized size = 1.10

$$\frac{d}{(cx + b)\,b} + \frac{d\ln(x)}{b^2} - \frac{d\ln\left(cx + b\right)}{b^2} - \frac{e}{(cx + b)\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/c/(c*x+b)*e+1/b/(c*x+b)*d-d*ln(c*x+b)/b^2+d*ln(x)/b^2
```

maxima [A] time = 0.85, size = 43, normalized size = 1.02

$$\frac{cd - be}{bc^2x + b^2c} - \frac{d\log\left(cx + b\right)}{b^2} + \frac{d\log(x)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (c*d - b*e)/(b*c^2*x + b^2*c) - d*log(c*x + b)/b^2 + d*log(x)/b^2
```

mupad [B] time = 1.02, size = 40, normalized size = 0.95

$$-\frac{2\,d\,\mathrm{atanh}\left(\frac{2\,c\,x}{b} + 1\right)}{b^2} - \frac{b\,e - c\,d}{b\,c\,\left(b + c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] - (2*d*atanh((2*c*x)/b + 1))/b^2 - (b*e - c*d)/(b*c*(b + c*x))
```

sympy [A] time = 0.29, size = 32, normalized size = 0.76

$$\frac{-be + cd}{b^2c + bc^2x} + \frac{d\left(\log\left(x\right) - \log\left(\frac{b}{c} + x\right)\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-b*e + c*d)/(b**2*c + b*c**2*x) + d*(log(x) - log(b/c + x))/b**2
```

3.56 $\int \frac{d+ex}{\left(bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=65

$$-\frac{\log(x)(2cd-be)}{b^3}+\frac{(2cd-be)\log(b+cx)}{b^3}-\frac{cd-be}{b^2(b+cx)}-\frac{d}{b^2x}$$

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$-\frac{cd-be}{b^2(b+cx)}-\frac{\log(x)(2cd-be)}{b^3}+\frac{(2cd-be)\log(b+cx)}{b^3}-\frac{d}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^2,x]
```

```
[Out] -(d/(b^2*x)) - (c*d - b*e)/(b^2*(b + c*x)) - ((2*c*d - b*e)*Log[x])/b^3 + (
(2*c*d - b*e)*Log[b + c*x])/b^3
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(bx+cx^2\right)^2} \, dx &= \int \left(\frac{d}{b^2x^2}+\frac{-2cd+be}{b^3x}-\frac{c(-cd+be)}{b^2(b+cx)^2}-\frac{c(-2cd+be)}{b^3(b+cx)}\right) \, dx\\ &= -\frac{d}{b^2x}-\frac{cd-be}{b^2(b+cx)}-\frac{(2cd-be)\log(x)}{b^3}+\frac{(2cd-be)\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.86

$$\frac{\frac{b(be-cd)}{b+cx}+\log(x)(be-2cd)+(2cd-be)\log(b+cx)-\frac{bd}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^2,x]
```

```
[Out] (-((b*d)/x) + (b*(-(c*d) + b*e))/(b + c*x) + (-2*c*d + b*e)*Log[x] + (2*c*d
 - b*e)*Log[b + c*x])/b^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(bx+cx^2\right)^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.40, size = 111, normalized size = 1.71

$$-\frac{b^2d + \left(2\,bcd - b^2e\right)x - \left(\left(2\,c^2d - bce\right)x^2 + \left(2\,bcd - b^2e\right)x\right)\log\left(cx + b\right) + \left(\left(2\,c^2d - bce\right)x^2 + \left(2\,bcd - b^2e\right)x\right)\log(x)}{b^3cx^2 + b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(b^2*d + (2*b*c*d - b^2*e)*x - ((2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*
x)*log(c*x + b) + ((2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*x)*log(x))/(b^
3*c*x^2 + b^4*x)
```

giac [A] time = 0.17, size = 77, normalized size = 1.18

$$-\frac{(2\,cd - be)\log\left(|x|\right)}{b^3} - \frac{2\,cdx - bxe + bd}{\left(cx^2 + bx\right)b^2} + \frac{\left(2\,c^2d - bce\right)\log\left(|cx + b|\right)}{b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*c*d - b*e)*log(abs(x))/b^3 - (2*c*d*x - b*x*e + b*d)/((c*x^2 + b*x)*b^2
) + (2*c^2*d - b*c*e)*log(abs(c*x + b))/(b^3*c)
```

maple [A] time = 0.05, size = 78, normalized size = 1.20

$$\frac{e}{(cx+b)\,b} - \frac{cd}{(cx+b)\,b^2} + \frac{e\ln(x)}{b^2} - \frac{e\ln\left(cx+b\right)}{b^2} - \frac{2cd\ln(x)}{b^3} + \frac{2cd\ln\left(cx+b\right)}{b^3} - \frac{d}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/b^2*ln(c*x+b)*e+2/b^3*ln(c*x+b)*c*d+1/b/(c*x+b)*e-1/b^2/(c*x+b)*c*d-1/b^
2*d/x+1/b^2*ln(x)*e-2/b^3*ln(x)*c*d
```

maxima [A] time = 0.92, size = 69, normalized size = 1.06

$$-\frac{bd + (2\,cd - be)x}{b^2cx^2 + b^3x} + \frac{(2\,cd - be)\log\left(cx + b\right)}{b^3} - \frac{(2\,cd - be)\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(b*d + (2*c*d - b*e)*x)/(b^2*c*x^2 + b^3*x) + (2*c*d - b*e)*log(c*x + b)/b
^3 - (2*c*d - b*e)*log(x)/b^3
```

mupad [B] time = 0.09, size = 57, normalized size = 0.88

$$-\frac{\frac{d}{b} - \frac{x\,(b\,e-2\,c\,d)}{b^2}}{c\,x^2 + b\,x} - \frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b} + 1\right)\,(b\,e - 2\,c\,d)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^2,x)
```

```
[Out] - (d/b - (x*(b*e - 2*c*d))/b^2)/(b*x + c*x^2) - (2*atanh((2*c*x)/b + 1)*(b*
e - 2*c*d))/b^3
```

<u>**sympy**</u> [**B**] time = 0.48, size = 128, normalized size = 1.97

$$\frac{-bd + x\,(be - 2cd)}{b^3x + b^2cx^2} + \frac{(be - 2cd)\log\left(x + \frac{b^2e - 2bcd - b(be - 2cd)}{2bce - 4c^2d}\right)}{b^3} - \frac{(be - 2cd)\log\left(x + \frac{b^2e - 2bcd + b(be - 2cd)}{2bce - 4c^2d}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-b*d + x*(b*e - 2*c*d))/(b**3*x + b**2*c*x**2) + (b*e - 2*c*d)*log(x + (b*
*2*e - 2*b*c*d - b*(b*e - 2*c*d))/(2*b*c*e - 4*c**2*d))/b**3 - (b*e - 2*c*d
)*log(x + (b**2*e - 2*b*c*d + b*(b*e - 2*c*d))/(2*b*c*e - 4*c**2*d))/b**3
```

3.57 $\int \frac{d+ex}{x\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=85

$$\frac{c\log(x)(3cd-2be)}{b^4}-\frac{c(3cd-2be)\log(b+cx)}{b^4}+\frac{2cd-be}{b^3x}+\frac{c(cd-be)}{b^3(b+cx)}-\frac{d}{2b^2x^2}$$

Rubi [A] time = 0.08, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2cd-be}{b^3x}+\frac{c(cd-be)}{b^3(b+cx)}+\frac{c\log(x)(3cd-2be)}{b^4}-\frac{c(3cd-2be)\log(b+cx)}{b^4}-\frac{d}{2b^2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(b*x + c*x^2)^2),x]
```

```
[Out] -d/(2*b^2*x^2) + (2*c*d - b*e)/(b^3*x) + (c*(c*d - b*e))/(b^3*(b + c*x)) +
(c*(3*c*d - 2*b*e)*Log[x])/b^4 - (c*(3*c*d - 2*b*e)*Log[b + c*x])/b^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{d}{b^2x^3}+\frac{-2cd+be}{b^3x^2}-\frac{c(-3cd+2be)}{b^4x}+\frac{c^2(-cd+be)}{b^3(b+cx)^2}+\frac{c^2(-3cd+2be)}{b^4(b+cx)}\right)dx\\ &= -\frac{d}{2b^2x^2}+\frac{2cd-be}{b^3x}+\frac{c(cd-be)}{b^3(b+cx)}+\frac{c(3cd-2be)\log(x)}{b^4}-\frac{c(3cd-2be)\log(b+cx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 85, normalized size = 1.00

$$\frac{-\frac{b\left(b^2(d+2ex)+bcx(4ex-3d)-6c^2dx^2\right)}{x^2(b+cx)}+2c\log(x)(3cd-2be)+2c(2be-3cd)\log(b+cx)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(b*x + c*x^2)^2),x]
```

```
[Out] (-((b*(-6*c^2*d*x^2 + b^2*(d + 2*e*x) + b*c*x*(-3*d + 4*e*x)))/(x^2*(b + c*
x))) + 2*c*(3*c*d - 2*b*e)*Log[x] + 2*c*(-3*c*d + 2*b*e)*Log[b + c*x])/(2*b
^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(b*x + c*x^2)^2), x]
```

fricas [A] time = 0.40, size = 151, normalized size = 1.78

$$-\frac{b^{3} d - 2 \left(3 \, b c^{2} d - 2 \, b^{2} c e\right) x^{2} - \left(3 \, b^{2} c d - 2 \, b^{3} e\right) x + 2 \left(\left(3 \, c^{3} d - 2 \, b c^{2} e\right) x^{3} + \left(3 \, b c^{2} d - 2 \, b^{2} c e\right) x^{2}\right) \log\left(c x + b\right) - 2 \left(\left(3 \, c^{3} d - 2 \, b c^{2} e\right) x^{3} + \left(3 \, b c^{2} d - 2 \, b^{2} c e\right) x^{2}\right) \log\left(x\right)}{2 \left(b^{4} c x^{3} + b^{5} x^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^3*d - 2*(3*b*c^2*d - 2*b^2*c*e)*x^2 - (3*b^2*c*d - 2*b^3*e)*x + 2*(
(3*c^3*d - 2*b*c^2*e)*x^3 + (3*b*c^2*d - 2*b^2*c*e)*x^2)*log(c*x + b) - 2*(
(3*c^3*d - 2*b*c^2*e)*x^3 + (3*b*c^2*d - 2*b^2*c*e)*x^2)*log(x))/(b^4*c*x^3
 + b^5*x^2)
```

giac [A] time = 0.16, size = 111, normalized size = 1.31

$$\frac{\left(3 \, c^{2} d - 2 \, b c e\right) \log\left({\left| x \right|}\right)}{b^{4}} - \frac{\left(3 \, c^{3} d - 2 \, b c^{2} e\right) \log\left({\left| c x + b \right|}\right)}{b^{4} c} - \frac{b^{3} d - 2 \left(3 \, b c^{2} d - 2 \, b^{2} c e\right) x^{2} - \left(3 \, b^{2} c d - 2 \, b^{3} e\right) x}{2 \, {\left(c x + b\right)} b^{4} x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (3*c^2*d - 2*b*c*e)*log(abs(x))/b^4 - (3*c^3*d - 2*b*c^2*e)*log(abs(c*x + b
))/(b^4*c) - 1/2*(b^3*d - 2*(3*b*c^2*d - 2*b^2*c*e)*x^2 - (3*b^2*c*d - 2*b^
3*e)*x)/((c*x + b)*b^4*x^2)
```

maple [A] time = 0.06, size = 107, normalized size = 1.26

$$-\frac{ce}{\left(cx+b\right)b^{2}}+\frac{c^{2}d}{\left(cx+b\right)b^{3}}-\frac{2ce\ln\left(x\right)}{b^{3}}+\frac{2ce\ln\left(cx+b\right)}{b^{3}}+\frac{3c^{2}d\ln\left(x\right)}{b^{4}}-\frac{3c^{2}d\ln\left(cx+b\right)}{b^{4}}-\frac{e}{b^{2}x}+\frac{2cd}{b^{3}x}-\frac{d}{2b^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x)^2,x)
```

```
[Out] 2*c/b^3*ln(c*x+b)*e-3*c^2/b^4*ln(c*x+b)*d-c/b^2/(c*x+b)*e+c^2/b^3/(c*x+b)*d
-1/2*d/b^2/x^2-1/b^2/x*e+2/b^3/x*c*d-2*c/b^3*ln(x)*e+3*c^2/b^4*ln(x)*d
```

maxima [A] time = 0.90, size = 100, normalized size = 1.18

$$-\frac{b^{2} d - 2 \left(3 \, c^{2} d - 2 \, b c e\right) x^{2} - \left(3 \, b c d - 2 \, b^{2} e\right) x}{2 \left(b^{3} c x^{3} + b^{4} x^{2}\right)} - \frac{\left(3 \, c^{2} d - 2 \, b c e\right) \log\left(c x + b\right)}{b^{4}} + \frac{\left(3 \, c^{2} d - 2 \, b c e\right) \log\left(x\right)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*d - 2*(3*c^2*d - 2*b*c*e)*x^2 - (3*b*c*d - 2*b^2*e)*x)/(b^3*c*x^3
 + b^4*x^2) - (3*c^2*d - 2*b*c*e)*log(c*x + b)/b^4 + (3*c^2*d - 2*b*c*e)*lo
g(x)/b^4
```

mupad [B] time = 0.11, size = 105, normalized size = 1.24

$$-\frac{\frac{d}{2\,b}+\frac{x\,\left(2\,b\,e-3\,c\,d\right)}{2\,b^2}+\frac{c\,x^2\,\left(2\,b\,e-3\,c\,d\right)}{b^3}}{c\,x^3+b\,x^2}-\frac{2\,c\,\mathrm{atanh}\left(\frac{c\,\left(2\,b\,e-3\,c\,d\right)\,\left(b+2\,c\,x\right)}{b\,\left(3\,c^2\,d-2\,b\,c\,e\right)}\right)\,\left(2\,b\,e-3\,c\,d\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(b*x + c*x^2)^2),x)
```

```
[Out] - (d/(2*b) + (x*(2*b*e - 3*c*d))/(2*b^2) + (c*x^2*(2*b*e - 3*c*d))/b^3)/(b*
x^2 + c*x^3) - (2*c*atanh((c*(2*b*e - 3*c*d)*(b + 2*c*x))/(b*(3*c^2*d - 2*b
*c*e)))*(2*b*e - 3*c*d))/b^4
```

sympy [B] time = 0.59, size = 184, normalized size = 2.16

$$\frac{-b^2d + x^2\left(-4bce + 6c^2d\right) + x\left(-2b^2e + 3bcd\right)}{2b^4x^2 + 2b^3cx^3} - \frac{c\left(2be - 3cd\right)\log\left(x + \frac{2b^2ce - 3bc^2d - bc(2be - 3cd)}{4bc^2e - 6c^3d}\right)}{b^4} + \frac{c\left(2be - 3cd\right)\log\left(x + \frac{2b^2ce - 3bc^2d + bc(2be - 3cd)}{4bc^2e - 6c^3d}\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x)**2,x)
```

```
[Out] (-b**2*d + x**2*(-4*b*c*e + 6*c**2*d) + x*(-2*b**2*e + 3*b*c*d))/(2*b**4*x*
*2 + 2*b**3*c*x**3) - c*(2*b*e - 3*c*d)*log(x + (2*b**2*c*e - 3*b*c**2*d -
b*c*(2*b*e - 3*c*d))/(4*b*c**2*e - 6*c**3*d))/b**4 + c*(2*b*e - 3*c*d)*log(
x + (2*b**2*c*e - 3*b*c**2*d + b*c*(2*b*e - 3*c*d))/(4*b*c**2*e - 6*c**3*d)
)/b**4
```

3.58 $\int \frac{d+ex}{x^2\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=113

$$-\frac{c^2\log(x)(4cd-3be)}{b^5}+\frac{c^2(4cd-3be)\log(b+cx)}{b^5}-\frac{c^2(cd-be)}{b^4(b+cx)}-\frac{c(3cd-2be)}{b^4x}+\frac{2cd-be}{2b^3x^2}-\frac{d}{3b^2x^3}$$

Rubi [A] time = 0.10, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{c^2(cd-be)}{b^4(b+cx)}-\frac{c^2\log(x)(4cd-3be)}{b^5}+\frac{c^2(4cd-3be)\log(b+cx)}{b^5}+\frac{2cd-be}{2b^3x^2}-\frac{c(3cd-2be)}{b^4x}-\frac{d}{3b^2x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(b*x + c*x^2)^2),x]
```

```
[Out] -d/(3*b^2*x^3) + (2*c*d - b*e)/(2*b^3*x^2) - (c*(3*c*d - 2*b*e))/(b^4*x) -
(c^2*(c*d - b*e))/(b^4*(b + c*x)) - (c^2*(4*c*d - 3*b*e)*Log[x])/b^5 + (c^2
*(4*c*d - 3*b*e)*Log[b + c*x])/b^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{d+ex}{x^2\left(bx+cx^2\right)^2} dx = \int \left(\frac{d}{b^2x^4}+\frac{-2cd+be}{b^3x^3}-\frac{c(-3cd+2be)}{b^4x^2}+\frac{c^2(-4cd+3be)}{b^5x}-\frac{c^3(-cd+be)}{b^4(b+cx)^2}-\frac{c^3(-4cd+3be}{b^5(b+cx)}$$
$$=-\frac{d}{3b^2x^3}+\frac{2cd-be}{2b^3x^2}-\frac{c(3cd-2be)}{b^4x}-\frac{c^2(cd-be)}{b^4(b+cx)}-\frac{c^2(4cd-3be)\log(x)}{b^5}+\frac{c^2(4cd-3be)\,\mathrm{lo}}{b^5}$$

Mathematica [A] time = 0.08, size = 106, normalized size = 0.94

$$\frac{-\frac{2b^3d}{x^3}-\frac{3b^2(be-2cd)}{x^2}+\frac{6bc^2(be-cd)}{b+cx}+6c^2\log(x)(3be-4cd)+6c^2(4cd-3be)\log(b+cx)+\frac{6bc(2be-3cd)}{x}}{6b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(b*x + c*x^2)^2),x]
```

```
[Out] ((-2*b^3*d)/x^3 - (3*b^2*(-2*c*d + b*e))/x^2 + (6*b*c*(-3*c*d + 2*b*e))/x +
 (6*b*c^2*(-(c*d) + b*e))/(b + c*x) + 6*c^2*(-4*c*d + 3*b*e)*Log[x] + 6*c^2
*(4*c*d - 3*b*e)*Log[b + c*x])/(6*b^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(bx+cx^2\right)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(b*x + c*x^2)^2), x]
```

fricas [A] time = 0.41, size = 180, normalized size = 1.59

$$-\frac{2 b^4 d + 6 \left(4 b c^3 d - 3 b^2 c^2 e\right) x^3 + 3 \left(4 b^2 c^2 d - 3 b^3 c e\right) x^2 - \left(4 b^3 c d - 3 b^4 e\right) x - 6 \left(\left(4 c^4 d - 3 b c^3 e\right) x^4 + \left(4 b c^3 d - 3 b^2 c^2 e\right) x^3\right) \log\left(c x + b\right) + 6 \left(\left(4 c^4 d - 3 b c^3 e\right) x^4 + \left(4 b c^3 d - 3 b^2 c^2 e\right) x^3\right) \log\left(x\right)}{6 \left(b^5 c x^4 + b^6 x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(2*b^4*d + 6*(4*b*c^3*d - 3*b^2*c^2*e)*x^3 + 3*(4*b^2*c^2*d - 3*b^3*c*
e)*x^2 - (4*b^3*c*d - 3*b^4*e)*x - 6*((4*c^4*d - 3*b*c^3*e)*x^4 + (4*b*c^3*
d - 3*b^2*c^2*e)*x^3)*log(c*x + b) + 6*((4*c^4*d - 3*b*c^3*e)*x^4 + (4*b*c^
3*d - 3*b^2*c^2*e)*x^3)*log(x))/(b^5*c*x^4 + b^6*x^3)
```

giac [A] time = 0.15, size = 139, normalized size = 1.23

$$-\frac{\left(4 c^3 d - 3 b c^2 e\right) \log\left(|x|\right)}{b^5} + \frac{\left(4 c^4 d - 3 b c^3 e\right) \log\left(|c x + b|\right)}{b^5 c} - \frac{2 b^4 d + 6 \left(4 b c^3 d - 3 b^2 c^2 e\right) x^3 + 3 \left(4 b^2 c^2 d - 3 b^3 c e\right) x^2 - \left(4 b^3 c d - 3 b^4 e\right) x}{6 \left(c x + b\right) b^5 x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(4*c^3*d - 3*b*c^2*e)*log(abs(x))/b^5 + (4*c^4*d - 3*b*c^3*e)*log(abs(c*x
+ b))/(b^5*c) - 1/6*(2*b^4*d + 6*(4*b*c^3*d - 3*b^2*c^2*e)*x^3 + 3*(4*b^2*c
^2*d - 3*b^3*c*e)*x^2 - (4*b^3*c*d - 3*b^4*e)*x)/((c*x + b)*b^5*x^3)
```

maple [A] time = 0.12, size = 134, normalized size = 1.19

$$\frac{c^2 e}{\left(c x + b\right) b^3} - \frac{c^3 d}{\left(c x + b\right) b^4} + \frac{3 c^2 e \ln\left(x\right)}{b^4} - \frac{3 c^2 e \ln\left(c x + b\right)}{b^4} - \frac{4 c^3 d \ln\left(x\right)}{b^5} + \frac{4 c^3 d \ln\left(c x + b\right)}{b^5} + \frac{2 c e}{b^3 x} - \frac{3 c^2 d}{b^4 x} - \frac{e}{2 b^2 x^2} + \frac{c d}{b^3 x^2} - \frac{d}{3 b^2 x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x)^2,x)
```

```
[Out] -3*c^2/b^4*ln(c*x+b)*e+4*c^3/b^5*ln(c*x+b)*d+c^2/b^3/(c*x+b)*e-c^3/b^4/(c*x
+b)*d-1/3*d/b^2/x^3-1/2/b^2/x^2*e+1/b^3/x^2*c*d+3*c^2/b^4*ln(x)*e-4*c^3/b^5
*ln(x)*d+2*c/b^3/x*e-3*c^2/b^4/x*d
```

maxima [A] time = 0.97, size = 129, normalized size = 1.14

$$-\frac{2 b^3 d + 6 \left(4 c^3 d - 3 b c^2 e\right) x^3 + 3 \left(4 b c^2 d - 3 b^2 c e\right) x^2 - \left(4 b^2 c d - 3 b^3 e\right) x}{6 \left(b^4 c x^4 + b^5 x^3\right)} + \frac{\left(4 c^3 d - 3 b c^2 e\right) \log\left(c x + b\right)}{b^5} - \frac{\left(4 c^3 d - 3 b c^2 e\right) \log\left(x\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(2*b^3*d + 6*(4*c^3*d - 3*b*c^2*e)*x^3 + 3*(4*b*c^2*d - 3*b^2*c*e)*x^2
 - (4*b^2*c*d - 3*b^3*e)*x)/(b^4*c*x^4 + b^5*x^3) + (4*c^3*d - 3*b*c^2*e)*l
og(c*x + b)/b^5 - (4*c^3*d - 3*b*c^2*e)*log(x)/b^5
```

mupad [B] time = 1.08, size = 132, normalized size = 1.17

$$\frac{2 c^2 \operatorname{atanh}\left(\frac{c^2 \left(3 b e - 4 c d\right) \left(b + 2 c x\right)}{b \left(4 c^3 d - 3 b c^2 e\right)}\right) \left(3 b e - 4 c d\right)}{b^5} - \frac{\frac{d}{3 b} + \frac{x \left(3 b e - 4 c d\right)}{6 b^2} - \frac{c x^2 \left(3 b e - 4 c d\right)}{2 b^3} - \frac{c^2 x^3 \left(3 b e - 4 c d\right)}{b^4}}{c x^4 + b x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(b*x + c*x^2)^2),x)
```

```
[Out] (2*c^2*atanh((c^2*(3*b*e - 4*c*d)*(b + 2*c*x))/(b*(4*c^3*d - 3*b*c^2*e)))*(
3*b*e - 4*c*d))/b^5 - (d/(3*b) + (x*(3*b*e - 4*c*d))/(6*b^2) - (c*x^2*(3*b*
e - 4*c*d))/(2*b^3) - (c^2*x^3*(3*b*e - 4*c*d))/b^4)/(b*x^3 + c*x^4)
```

sympy [B] time = 0.66, size = 219, normalized size = 1.94

$$\frac{-2b^3d + x^3\left(18bc^2e - 24c^3d\right) + x^2\left(9b^2ce - 12bc^2d\right) + x\left(-3b^3e + 4b^2cd\right)}{6b^5x^3 + 6b^4cx^4} + \frac{c^2\left(3be - 4cd\right)\log\left(x + \frac{3b^2c^2e - 4bc^3d - bc^2(3be - 4cd)}{6bc^3e - 8c^4d}\right)}{b^5} - \frac{c^2\left(3be - 4cd\right)\log\left(x + \frac{3b^2c^2e - 4bc^3d + bc^2(3be - 4cd)}{6bc^3e - 8c^4d}\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x)**2,x)
```

```
[Out] (-2*b**3*d + x**3*(18*b*c**2*e - 24*c**3*d) + x**2*(9*b**2*c*e - 12*b*c**2*
d) + x*(-3*b**3*e + 4*b**2*c*d))/(6*b**5*x**3 + 6*b**4*c*x**4) + c**2*(3*b*
e - 4*c*d)*log(x + (3*b**2*c**2*e - 4*b*c**3*d - b*c**2*(3*b*e - 4*c*d))/(6
*b*c**3*e - 8*c**4*d))/b**5 - c**2*(3*b*e - 4*c*d)*log(x + (3*b**2*c**2*e -
 4*b*c**3*d + b*c**2*(3*b*e - 4*c*d))/(6*b*c**3*e - 8*c**4*d))/b**5
```

3.59 $\int \frac{x^6(d+ex)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=94

$$\frac{b^3(cd-be)}{2c^5(b+cx)^2}-\frac{b^2(3cd-4be)}{c^5(b+cx)}-\frac{3b(cd-2be)\log(b+cx)}{c^5}+\frac{x(cd-3be)}{c^4}+\frac{ex^2}{2c^3}$$

Rubi [A] time = 0.10, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^3(cd-be)}{2c^5(b+cx)^2}-\frac{b^2(3cd-4be)}{c^5(b+cx)}+\frac{x(cd-3be)}{c^4}-\frac{3b(cd-2be)\log(b+cx)}{c^5}+\frac{ex^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^6*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((c*d - 3*b*e)*x)/c^4 + (e*x^2)/(2*c^3) + (b^3*(c*d - b*e))/(2*c^5*(b + c*x
)^2) - (b^2*(3*c*d - 4*b*e))/(c^5*(b + c*x)) - (3*b*(c*d - 2*b*e)*Log[b + c
*x])/c^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^6(d+ex)}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{cd-3be}{c^4}+\frac{ex}{c^3}+\frac{b^3(-cd+be)}{c^4(b+cx)^3}-\frac{b^2(-3cd+4be)}{c^4(b+cx)^2}+\frac{3b(-cd+2be)}{c^4(b+cx)}\right)dx\\ &= \frac{(cd-3be)x}{c^4}+\frac{ex^2}{2c^3}+\frac{b^3(cd-be)}{2c^5(b+cx)^2}-\frac{b^2(3cd-4be)}{c^5(b+cx)}-\frac{3b(cd-2be)\log(b+cx)}{c^5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.91

$$\frac{\frac{b^3(cd-be)}{(b+cx)^2}+\frac{2b^2(4be-3cd)}{b+cx}+2cx(cd-3be)+6b(2be-cd)\log(b+cx)+c^2ex^2}{2c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^6*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (2*c*(c*d - 3*b*e)*x + c^2*e*x^2 + (b^3*(c*d - b*e))/(b + c*x)^2 + (2*b^2*(
-3*c*d + 4*b*e))/(b + c*x) + 6*b*(-(c*d) + 2*b*e)*Log[b + c*x])/(2*c^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^6(d+ex)}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^6*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^6*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.39, size = 167, normalized size = 1.78

$$\frac{c^4ex^4 - 5\,b^3cd + 7\,b^4e + 2\left(c^4d - 2\,bc^3e\right)x^3 + \left(4\,bc^3d - 11\,b^2c^2e\right)x^2 - 2\left(2\,b^2c^2d - b^3ce\right)x - 6\left(b^3cd - 2\,b^4e + \left(bc^3d - 2\,b^2c^2e\right)x^2 + 2\left(b^2c^2d - 2\,b^3ce\right)x\right)\log\left(cx+b\right)}{2\left(c^7x^2 + 2\,bc^6x + b^2c^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(c^4*e*x^4 - 5*b^3*c*d + 7*b^4*e + 2*(c^4*d - 2*b*c^3*e)*x^3 + (4*b*c^3
*d - 11*b^2*c^2*e)*x^2 - 2*(2*b^2*c^2*d - b^3*c*e)*x - 6*(b^3*c*d - 2*b^4*e
 + (b*c^3*d - 2*b^2*c^2*e)*x^2 + 2*(b^2*c^2*d - 2*b^3*c*e)*x)*log(c*x + b))
/(c^7*x^2 + 2*b*c^6*x + b^2*c^5)
```

giac [A] time = 0.15, size = 104, normalized size = 1.11

$$-\frac{3\left(bcd - 2\,b^2e\right)\log\left(|cx+b|\right)}{c^5} + \frac{c^3x^2e + 2\,c^3dx - 6\,bc^2xe}{2\,c^6} - \frac{5\,b^3cd - 7\,b^4e + 2\left(3\,b^2c^2d - 4\,b^3ce\right)x}{2\,(cx+b)^2c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -3*(b*c*d - 2*b^2*e)*log(abs(c*x + b))/c^5 + 1/2*(c^3*x^2*e + 2*c^3*d*x - 6
*b*c^2*x*e)/c^6 - 1/2*(5*b^3*c*d - 7*b^4*e + 2*(3*b^2*c^2*d - 4*b^3*c*e)*x)
/((c*x + b)^2*c^5)
```

maple [A] time = 0.07, size = 117, normalized size = 1.24

$$-\frac{b^4e}{2\,(cx+b)^2\,c^5} + \frac{b^3d}{2\,(cx+b)^2\,c^4} + \frac{e\,x^2}{2c^3} + \frac{4b^3e}{(cx+b)\,c^5} - \frac{3b^2d}{(cx+b)\,c^4} + \frac{6b^2e\ln\left(cx+b\right)}{c^5} - \frac{3bd\ln\left(cx+b\right)}{c^4} - \frac{3bex}{c^4} + \frac{dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] 1/2*e*x^2/c^3-3/c^4*x*b*e+1/c^3*x*d+6*b^2/c^5*ln(c*x+b)*e-3*b/c^4*ln(c*x+b)
*d-1/2*b^4/c^5/(c*x+b)^2*e+1/2*b^3/c^4/(c*x+b)^2*d+4*b^3/c^5/(c*x+b)*e-3*b^
2/c^4/(c*x+b)*d
```

maxima [A] time = 0.81, size = 106, normalized size = 1.13

$$-\frac{5\,b^3cd - 7\,b^4e + 2\left(3\,b^2c^2d - 4\,b^3ce\right)x}{2\left(c^7x^2 + 2\,bc^6x + b^2c^5\right)} + \frac{cex^2 + 2\,(cd - 3\,be)x}{2\,c^4} - \frac{3\left(bcd - 2\,b^2e\right)\log\left(cx+b\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*b^3*c*d - 7*b^4*e + 2*(3*b^2*c^2*d - 4*b^3*c*e)*x)/(c^7*x^2 + 2*b*c
^6*x + b^2*c^5) + 1/2*(c*e*x^2 + 2*(c*d - 3*b*e)*x)/c^4 - 3*(b*c*d - 2*b^2*
e)*log(c*x + b)/c^5
```

mupad [B] time = 1.04, size = 108, normalized size = 1.15

$$x\left(\frac{d}{c^3} - \frac{3\,b\,e}{c^4}\right) + \frac{x\left(4\,b^3\,e - 3\,b^2\,c\,d\right) + \frac{7\,b^4\,e - 5\,b^3\,c\,d}{2\,c}}{b^2\,c^4 + 2\,b\,c^5\,x + c^6\,x^2} + \frac{e\,x^2}{2\,c^3} + \frac{\ln\left(b + c\,x\right)\,\left(6\,b^2\,e - 3\,b\,c\,d\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^6*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] x*(d/c^3 - (3*b*e)/c^4) + (x*(4*b^3*e - 3*b^2*c*d) + (7*b^4*e - 5*b^3*c*d)/
(2*c))/(b^2*c^4 + c^6*x^2 + 2*b*c^5*x) + (e*x^2)/(2*c^3) + (log(b + c*x)*(6
*b^2*e - 3*b*c*d))/c^5
```

sympy [A] time = 0.68, size = 107, normalized size = 1.14

$$\frac{3b\left(2be-cd\right)\log\left(b+cx\right)}{c^5}+x\left(-\frac{3be}{c^4}+\frac{d}{c^3}\right)+\frac{7b^4e-5b^3cd+x\left(8b^3ce-6b^2c^2d\right)}{2b^2c^5+4bc^6x+2c^7x^2}+\frac{ex^2}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] 3*b*(2*b*e - c*d)*log(b + c*x)/c**5 + x*(-3*b*e/c**4 + d/c**3) + (7*b**4*e
- 5*b**3*c*d + x*(8*b**3*c*e - 6*b**2*c**2*d))/(2*b**2*c**5 + 4*b*c**6*x +
2*c**7*x**2) + e*x**2/(2*c**3)
```

3.60 $\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=71

$$-\frac{b^2(cd-be)}{2c^4(b+cx)^2}+\frac{b(2cd-3be)}{c^4(b+cx)}+\frac{(cd-3be)\log(b+cx)}{c^4}+\frac{ex}{c^3}$$

Rubi [A] time = 0.06, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(cd-be)}{2c^4(b+cx)^2}+\frac{b(2cd-3be)}{c^4(b+cx)}+\frac{(cd-3be)\log(b+cx)}{c^4}+\frac{ex}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (e*x)/c^3 - (b^2*(c*d - b*e))/(2*c^4*(b + c*x)^2) + (b*(2*c*d - 3*b*e))/(c^
4*(b + c*x)) + ((c*d - 3*b*e)*Log[b + c*x])/c^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{e}{c^3}-\frac{b^2(-cd+be)}{c^3(b+cx)^3}+\frac{b(-2cd+3be)}{c^3(b+cx)^2}+\frac{cd-3be}{c^3(b+cx)}\right)dx\\ &= \frac{ex}{c^3}-\frac{b^2(cd-be)}{2c^4(b+cx)^2}+\frac{b(2cd-3be)}{c^4(b+cx)}+\frac{(cd-3be)\log(b+cx)}{c^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 1.06

$$\frac{2bcd-3b^2e}{c^4(b+cx)}+\frac{b^3e-b^2cd}{2c^4(b+cx)^2}+\frac{(cd-3be)\log(b+cx)}{c^4}+\frac{ex}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (e*x)/c^3 + (-(b^2*c*d) + b^3*e)/(2*c^4*(b + c*x)^2) + (2*b*c*d - 3*b^2*e)/
(c^4*(b + c*x)) + ((c*d - 3*b*e)*Log[b + c*x])/c^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^5*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^5*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.39, size = 131, normalized size = 1.85

$$\frac{2\,c^3ex^3+4\,bc^2ex^2+3\,b^2cd-5\,b^3e+4\left(bc^2d-b^2ce\right)x+2\left(b^2cd-3\,b^3e+\left(c^3d-3\,bc^2e\right)x^2+2\left(bc^2d-3\,b^2ce\right)x\right)\log\left(cx+b\right)}{2\left(c^6x^2+2\,bc^5x+b^2c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*c^3*e*x^3 + 4*b*c^2*e*x^2 + 3*b^2*c*d - 5*b^3*e + 4*(b*c^2*d - b^2*c
*e)*x + 2*(b^2*c*d - 3*b^3*e + (c^3*d - 3*b*c^2*e)*x^2 + 2*(b*c^2*d - 3*b^2
*c*e)*x)*log(c*x + b))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4)
```

giac [A] time = 0.19, size = 74, normalized size = 1.04

$$\frac{xe}{c^3}+\frac{\left(cd-3\,be\right)\log\left(\left|cx+b\right|\right)}{c^4}+\frac{3\,b^2cd-5\,b^3e+2\left(2\,bc^2d-3\,b^2ce\right)x}{2\left(cx+b\right)^2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] x*e/c^3 + (c*d - 3*b*e)*log(abs(c*x + b))/c^4 + 1/2*(3*b^2*c*d - 5*b^3*e +
2*(2*b*c^2*d - 3*b^2*c*e)*x)/((c*x + b)^2*c^4)
```

maple [A] time = 0.05, size = 94, normalized size = 1.32

$$\frac{b^3e}{2\left(cx+b\right)^2c^4}-\frac{b^2d}{2\left(cx+b\right)^2c^3}-\frac{3b^2e}{\left(cx+b\right)c^4}+\frac{2bd}{\left(cx+b\right)c^3}-\frac{3be\ln\left(cx+b\right)}{c^4}+\frac{d\ln\left(cx+b\right)}{c^3}+\frac{ex}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] e*x/c^3-3/c^4*ln(c*x+b)*b*e+1/c^3*ln(c*x+b)*d+1/2*b^3/c^4/(c*x+b)^2*e-1/2*b
^2/c^3/(c*x+b)^2*d-3*b^2/c^4/(c*x+b)*e+2*b/c^3/(c*x+b)*d
```

maxima [A] time = 0.93, size = 83, normalized size = 1.17

$$\frac{3\,b^2cd-5\,b^3e+2\left(2\,bc^2d-3\,b^2ce\right)x}{2\left(c^6x^2+2\,bc^5x+b^2c^4\right)}+\frac{ex}{c^3}+\frac{\left(cd-3\,be\right)\log\left(cx+b\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(3*b^2*c*d - 5*b^3*e + 2*(2*b*c^2*d - 3*b^2*c*e)*x)/(c^6*x^2 + 2*b*c^5*
x + b^2*c^4) + e*x/c^3 + (c*d - 3*b*e)*log(c*x + b)/c^4
```

mupad [B] time = 1.08, size = 87, normalized size = 1.23

$$\frac{e\,x}{c^3}-\frac{\ln\left(b+c\,x\right)\,\left(3\,b\,e-c\,d\right)}{c^4}-\frac{x\,\left(3\,b^2\,e-2\,b\,c\,d\right)+\frac{5\,b^3\,e-3\,b^2\,c\,d}{2\,c}}{b^2\,c^3+2\,b\,c^4\,x+c^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (e*x)/c^3 - (log(b + c*x)*(3*b*e - c*d))/c^4 - (x*(3*b^2*e - 2*b*c*d) + (5*
b^3*e - 3*b^2*c*d)/(2*c))/(b^2*c^3 + c^5*x^2 + 2*b*c^4*x)
```

sympy [A] time = 0.55, size = 83, normalized size = 1.17

$$\frac{-5b^3e + 3b^2cd + x\left(-6b^2ce + 4bc^2d\right)}{2b^2c^4 + 4bc^5x + 2c^6x^2} + \frac{ex}{c^3} - \frac{(3be - cd)\log\left(b + cx\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-5*b**3*e + 3*b**2*c*d + x*(-6*b**2*c*e + 4*b*c**2*d))/(2*b**2*c**4 + 4*b*
c**5*x + 2*c**6*x**2) + e*x/c**3 - (3*b*e - c*d)*log(b + c*x)/c**4
```

3.61 $\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=55

$$-\frac{cd-2be}{c^3(b+cx)}+\frac{b(cd-be)}{2c^3(b+cx)^2}+\frac{e\log(b+cx)}{c^3}$$

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{cd-2be}{c^3(b+cx)}+\frac{b(cd-be)}{2c^3(b+cx)^2}+\frac{e\log(b+cx)}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (b*(c*d - b*e))/(2*c^3*(b + c*x)^2) - (c*d - 2*b*e)/(c^3*(b + c*x)) + (e*Lo
g[b + c*x])/c^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^3} \, dx &= \int \left(\frac{b(-cd+be)}{c^2(b+cx)^3}+\frac{cd-2be}{c^2(b+cx)^2}+\frac{e}{c^2(b+cx)}\right) \, dx\\ &= \frac{b(cd-be)}{2c^3(b+cx)^2}-\frac{cd-2be}{c^3(b+cx)}+\frac{e\log(b+cx)}{c^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.98

$$\frac{3b^2e-bc(d-4ex)+2e(b+cx)^2\log(b+cx)-2c^2dx}{2c^3(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (3*b^2*e - 2*c^2*d*x - b*c*(d - 4*e*x) + 2*e*(b + c*x)^2*Log[b + c*x])/(2*c
^3*(b + c*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^3} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.38, size = 79, normalized size = 1.44

$$-\frac{bcd - 3\,b^2e + 2\left(c^2d - 2\,bce\right)x - 2\left(c^2ex^2 + 2\,bcex + b^2e\right)\log\left(cx + b\right)}{2\left(c^5x^2 + 2\,bc^4x + b^2c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b*c*d - 3*b^2*e + 2*(c^2*d - 2*b*c*e)*x - 2*(c^2*e*x^2 + 2*b*c*e*x +
b^2*e)*log(c*x + b))/(c^5*x^2 + 2*b*c^4*x + b^2*c^3)
```

giac [A] time = 0.15, size = 55, normalized size = 1.00

$$\frac{e\log\left(|cx + b|\right)}{c^3} - \frac{2\left(cd - 2\,be\right)x + \frac{bcd - 3\,b^2e}{c}}{2\left(cx + b\right)^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] e*log(abs(c*x + b))/c^3 - 1/2*(2*(c*d - 2*b*e)*x + (b*c*d - 3*b^2*e)/c)/((c
*x + b)^2*c^2)
```

maple [A] time = 0.05, size = 70, normalized size = 1.27

$$-\frac{b^2e}{2\left(cx + b\right)^2c^3} + \frac{bd}{2\left(cx + b\right)^2c^2} + \frac{2be}{\left(cx + b\right)c^3} - \frac{d}{\left(cx + b\right)c^2} + \frac{e\ln\left(cx + b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] e*ln(c*x+b)/c^3-1/2*b^2/c^3/(c*x+b)^2*e+1/2*b/c^2/(c*x+b)^2*d+2/c^3/(c*x+b)
*b*e-1/c^2/(c*x+b)*d
```

maxima [A] time = 0.91, size = 63, normalized size = 1.15

$$-\frac{bcd - 3\,b^2e + 2\left(c^2d - 2\,bce\right)x}{2\left(c^5x^2 + 2\,bc^4x + b^2c^3\right)} + \frac{e\log\left(cx + b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*c*d - 3*b^2*e + 2*(c^2*d - 2*b*c*e)*x)/(c^5*x^2 + 2*b*c^4*x + b^2*c
^3) + e*log(c*x + b)/c^3
```

mupad [B] time = 1.05, size = 63, normalized size = 1.15

$$\frac{\frac{3\,b^2\,e-b\,c\,d}{2\,c^3} + \frac{x\,\left(2\,b\,e-c\,d\right)}{c^2}}{b^2 + 2\,b\,c\,x + c^2\,x^2} + \frac{e\,\ln\left(b + c\,x\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((3*b^2*e - b*c*d)/(2*c^3) + (x*(2*b*e - c*d))/c^2)/(b^2 + c^2*x^2 + 2*b*c*
x) + (e*log(b + c*x))/c^3
```

sympy [A] time = 0.36, size = 63, normalized size = 1.15

$$\frac{3b^2e - bcd + x\left(4bce - 2c^2d\right)}{2b^2c^3 + 4bc^4x + 2c^5x^2} + \frac{e\log\left(b + cx\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (3*b**2*e - b*c*d + x*(4*b*c*e - 2*c**2*d))/(2*b**2*c**3 + 4*b*c**4*x + 2*c
**5*x**2) + e*log(b + c*x)/c**3
```

3.62 $\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=36

$$-\frac{cd-be}{2c^2(b+cx)^2}-\frac{e}{c^2(b+cx)}$$

Rubi [A] time = 0.03, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{cd-be}{2c^2(b+cx)^2}-\frac{e}{c^2(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -(c*d - b*e)/(2*c^2*(b + c*x)^2) - e/(c^2*(b + c*x))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned} \int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^3} \, dx &= \int \left(\frac{cd-be}{c(b+cx)^3}+\frac{e}{c(b+cx)^2}\right) dx \\ &= -\frac{cd-be}{2c^2(b+cx)^2}-\frac{e}{c^2(b+cx)} \end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.72

$$-\frac{be+c(d+2ex)}{2c^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*(b*e + c*(d + 2*e*x))/(c^2*(b + c*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^3} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.38, size = 38, normalized size = 1.06

$$-\frac{2\,cex+cd+be}{2\,\left(c^4x^2+2\,bc^3x+b^2c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
[Out] -1/2*(2*c*e*x + c*d + b*e)/(c^4*x^2 + 2*b*c^3*x + b^2*c^2)
```

giac [A] time = 0.18, size = 26, normalized size = 0.72

$$-\frac{2\,cxe+cd+be}{2\,(cx+b)^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
[Out] -1/2*(2*c*x*e + c*d + b*e)/((c*x + b)^2*c^2)
```

maple [A] time = 0.05, size = 35, normalized size = 0.97

$$-\frac{e}{(cx+b)\,c^2}-\frac{-be+cd}{2\,(cx+b)^2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x)^3,x)
[Out] -1/2*(-b*e+c*d)/c^2/(c*x+b)^2-e/c^2/(c*x+b)
```

maxima [A] time = 0.92, size = 38, normalized size = 1.06

$$-\frac{2\,cex+cd+be}{2\,\left(c^4x^2+2\,bc^3x+b^2c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
[Out] -1/2*(2*c*e*x + c*d + b*e)/(c^4*x^2 + 2*b*c^3*x + b^2*c^2)
```

mupad [B] time = 1.03, size = 39, normalized size = 1.08

$$-\frac{\frac{b\,e+c\,d}{2\,c^2}+\frac{e\,x}{c}}{b^2+2\,b\,c\,x+c^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(b*x + c*x^2)^3,x)
[Out] -((b*e + c*d)/(2*c^2) + (e*x)/c)/(b^2 + c^2*x^2 + 2*b*c*x)
```

sympy [A] time = 0.28, size = 39, normalized size = 1.08

$$\frac{-be-cd-2cex}{2b^2c^2+4bc^3x+2c^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x)**3,x)
[Out] (-b*e - c*d - 2*c*e*x)/(2*b**2*c**2 + 4*b*c**3*x + 2*c**4*x**2)
```

3.63 $\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=57

$$-\frac{d\log(b+cx)}{b^3}+\frac{d\log(x)}{b^3}+\frac{d}{b^2(b+cx)}+\frac{cd-be}{2bc(b+cx)^2}$$

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{d}{b^2(b+cx)}-\frac{d\log(b+cx)}{b^3}+\frac{d\log(x)}{b^3}+\frac{cd-be}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (c*d - b*e)/(2*b*c*(b + c*x)^2) + d/(b^2*(b + c*x)) + (d*Log[x])/b^3 - (d*L
og[b + c*x])/b^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{d}{b^3x}+\frac{-cd+be}{b(b+cx)^3}-\frac{cd}{b^2(b+cx)^2}-\frac{cd}{b^3(b+cx)}\right)dx\\ &= \frac{cd-be}{2bc(b+cx)^2}+\frac{d}{b^2(b+cx)}+\frac{d\log(x)}{b^3}-\frac{d\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 0.93

$$\frac{\frac{b\left(b^2(-e)+3bcd+2c^2dx\right)}{c(b+cx)^2}-2d\log(b+cx)+2d\log(x)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((b*(3*b*c*d - b^2*e + 2*c^2*d*x))/(c*(b + c*x)^2) + 2*d*Log[x] - 2*d*Log[b
 + c*x])/(2*b^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.39, size = 109, normalized size = 1.91

$$\frac{2\,bc^2dx + 3\,b^2cd - b^3e - 2\left(c^3dx^2 + 2\,bc^2dx + b^2cd\right)\log\left(cx + b\right) + 2\left(c^3dx^2 + 2\,bc^2dx + b^2cd\right)\log(x)}{2\left(b^3c^3x^2 + 2\,b^4c^2x + b^5c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*c^2*d*x + 3*b^2*c*d - b^3*e - 2*(c^3*d*x^2 + 2*b*c^2*d*x + b^2*c*d
)*log(c*x + b) + 2*(c^3*d*x^2 + 2*b*c^2*d*x + b^2*c*d)*log(x))/(b^3*c^3*x^2
 + 2*b^4*c^2*x + b^5*c)
```

giac [A] time = 0.17, size = 60, normalized size = 1.05

$$-\frac{d\log\left(|cx + b|\right)}{b^3} + \frac{d\log\left(|x|\right)}{b^3} + \frac{2\,bc^2dx + 3\,b^2cd - b^3e}{2\left(cx + b\right)^2b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -d*log(abs(c*x + b))/b^3 + d*log(abs(x))/b^3 + 1/2*(2*b*c^2*d*x + 3*b^2*c*d
 - b^3*e)/((c*x + b)^2*b^3*c)
```

maple [A] time = 0.05, size = 59, normalized size = 1.04

$$\frac{d}{2\left(cx + b\right)^2 b} - \frac{e}{2\left(cx + b\right)^2 c} + \frac{d}{\left(cx + b\right) b^2} + \frac{d\ln(x)}{b^3} - \frac{d\ln\left(cx + b\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/2/c/(c*x+b)^2*e+1/2/b/(c*x+b)^2*d-d*ln(c*x+b)/b^3+d/b^2/(c*x+b)+d*ln(x)/
b^3
```

maxima [A] time = 0.92, size = 68, normalized size = 1.19

$$\frac{2\,c^2dx + 3\,bcd - b^2e}{2\left(b^2c^3x^2 + 2\,b^3c^2x + b^4c\right)} - \frac{d\log\left(cx + b\right)}{b^3} + \frac{d\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*c^2*d*x + 3*b*c*d - b^2*e)/(b^2*c^3*x^2 + 2*b^3*c^2*x + b^4*c) - d*l
og(c*x + b)/b^3 + d*log(x)/b^3
```

mupad [B] time = 0.07, size = 62, normalized size = 1.09

$$-\frac{\frac{b\,e-3\,c\,d}{2\,b\,c} - \frac{c\,d\,x}{b^2}}{b^2 + 2\,b\,c\,x + c^2\,x^2} - \frac{2\,d\,\mathrm{atanh}\left(\frac{2\,c\,x}{b} + 1\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] - ((b*e - 3*c*d)/(2*b*c) - (c*d*x)/b^2)/(b^2 + c^2*x^2 + 2*b*c*x) - (2*d*at
anh((2*c*x)/b + 1))/b^3
```

sympy [A] time = 0.41, size = 63, normalized size = 1.11

$$\frac{-b^2e+3bcd+2c^2dx}{2b^4c+4b^3c^2x+2b^2c^3x^2}+\frac{d\left(\log\left(x\right)-\log\left(\frac{b}{c}+x\right)\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-b**2*e + 3*b*c*d + 2*c**2*d*x)/(2*b**4*c + 4*b**3*c**2*x + 2*b**2*c**3*x*
*2) + d*(log(x) - log(b/c + x))/b**3
```

3.64 $\int \frac{x(d+ex)}{\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=88

$$-\frac{\log(x)(3cd-be)}{b^4}+\frac{(3cd-be)\log(b+cx)}{b^4}-\frac{2cd-be}{b^3(b+cx)}-\frac{d}{b^3x}-\frac{cd-be}{2b^2(b+cx)^2}$$

Rubi [A] time = 0.07, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{2cd-be}{b^3(b+cx)}-\frac{cd-be}{2b^2(b+cx)^2}-\frac{\log(x)(3cd-be)}{b^4}+\frac{(3cd-be)\log(b+cx)}{b^4}-\frac{d}{b^3x}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -(d/(b^3*x)) - (c*d - b*e)/(2*b^2*(b + c*x)^2) - (2*c*d - b*e)/(b^3*(b + c*
x)) - ((3*c*d - b*e)*Log[x])/b^4 + ((3*c*d - b*e)*Log[b + c*x])/b^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(bx+cx^2\right)^3} dx &= \int \left(\frac{d}{b^3x^2}+\frac{-3cd+be}{b^4x}-\frac{c(-cd+be)}{b^2(b+cx)^3}-\frac{c(-2cd+be)}{b^3(b+cx)^2}-\frac{c(-3cd+be)}{b^4(b+cx)}\right) dx\\ &= -\frac{d}{b^3x}-\frac{cd-be}{2b^2(b+cx)^2}-\frac{2cd-be}{b^3(b+cx)}-\frac{(3cd-be)\log(x)}{b^4}+\frac{(3cd-be)\log(b+cx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 81, normalized size = 0.92

$$\frac{\frac{b^2(be-cd)}{(b+cx)^2}+\frac{2b(be-2cd)}{b+cx}+2\log(x)(be-3cd)+2(3cd-be)\log(b+cx)-\frac{2bd}{x}}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((-2*b*d)/x + (b^2*(-(c*d) + b*e))/(b + c*x)^2 + (2*b*(-2*c*d + b*e))/(b +
c*x) + 2*(-3*c*d + b*e)*Log[x] + 2*(3*c*d - b*e)*Log[b + c*x])/(2*b^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{\left(bx+cx^2\right)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.41, size = 195, normalized size = 2.22

$$-\frac{2\,b^{3}d+2\left(3\,bc^{2}d-b^{2}ce\right)x^{2}+3\left(3\,b^{2}cd-b^{3}e\right)x-2\left(\left(3\,c^{3}d-bc^{2}e\right)x^{3}+2\left(3\,bc^{2}d-b^{2}ce\right)x^{2}+\left(3\,b^{2}cd-b^{3}e\right)x\right)\log\left(cx+b\right)+2\left(\left(3\,c^{3}d-bc^{2}e\right)x^{3}+2\left(3\,bc^{2}d-b^{2}ce\right)x^{2}+\left(3\,b^{2}cd-b^{3}e\right)x\right)\log\left(x\right)}{2\left(b^{4}c^{2}x^{3}+2\,b^{5}cx^{2}+b^{6}x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b^3*d + 2*(3*b*c^2*d - b^2*c*e)*x^2 + 3*(3*b^2*c*d - b^3*e)*x - 2*(
(3*c^3*d - b*c^2*e)*x^3 + 2*(3*b*c^2*d - b^2*c*e)*x^2 + (3*b^2*c*d - b^3*e)
*x)*log(c*x + b) + 2*((3*c^3*d - b*c^2*e)*x^3 + 2*(3*b*c^2*d - b^2*c*e)*x^2
 + (3*b^2*c*d - b^3*e)*x)*log(x))/(b^4*c^2*x^3 + 2*b^5*c*x^2 + b^6*x)
```

giac [A] time = 0.16, size = 107, normalized size = 1.22

$$-\frac{\left(3\,cd-be\right)\log\left(|x|\right)}{b^{4}}+\frac{\left(3\,c^{2}d-bce\right)\log\left(|cx+b|\right)}{b^{4}c}-\frac{2\,b^{3}d+2\left(3\,bc^{2}d-b^{2}ce\right)x^{2}+3\left(3\,b^{2}cd-b^{3}e\right)x}{2\left(cx+b\right)^{2}b^{4}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*c*d - b*e)*log(abs(x))/b^4 + (3*c^2*d - b*c*e)*log(abs(c*x + b))/(b^4*c
) - 1/2*(2*b^3*d + 2*(3*b*c^2*d - b^2*c*e)*x^2 + 3*(3*b^2*c*d - b^3*e)*x)/(
(c*x + b)^2*b^4*x)
```

maple [A] time = 0.05, size = 105, normalized size = 1.19

$$\frac{e}{2\left(cx+b\right)^{2}b}-\frac{cd}{2\left(cx+b\right)^{2}b^{2}}+\frac{e}{\left(cx+b\right)b^{2}}-\frac{2cd}{\left(cx+b\right)b^{3}}+\frac{e\ln(x)}{b^{3}}-\frac{e\ln\left(cx+b\right)}{b^{3}}-\frac{3cd\ln(x)}{b^{4}}+\frac{3cd\ln\left(cx+b\right)}{b^{4}}-\frac{d}{b^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/b^3*ln(c*x+b)*e+3/b^4*ln(c*x+b)*c*d+1/b^2/(c*x+b)*e-2/b^3/(c*x+b)*c*d+1/
2/b/(c*x+b)^2*e-1/2/b^2/(c*x+b)^2*c*d-d/b^3/x+1/b^3*ln(x)*e-3/b^4*ln(x)*c*d
```

maxima [A] time = 0.86, size = 104, normalized size = 1.18

$$-\frac{2\,b^{2}d+2\left(3\,c^{2}d-bce\right)x^{2}+3\left(3\,bcd-b^{2}e\right)x}{2\left(b^{3}c^{2}x^{3}+2\,b^{4}cx^{2}+b^{5}x\right)}+\frac{\left(3\,cd-be\right)\log\left(cx+b\right)}{b^{4}}-\frac{\left(3\,cd-be\right)\log(x)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b^2*d + 2*(3*c^2*d - b*c*e)*x^2 + 3*(3*b*c*d - b^2*e)*x)/(b^3*c^2*x
^3 + 2*b^4*c*x^2 + b^5*x) + (3*c*d - b*e)*log(c*x + b)/b^4 - (3*c*d - b*e)*
log(x)/b^4
```

mupad [B] time = 1.10, size = 84, normalized size = 0.95

$$\frac{\frac{3\,x\,\left(b\,e-3\,c\,d\right)}{2\,b^{2}}-\frac{d}{b}+\frac{c\,x^{2}\,\left(b\,e-3\,c\,d\right)}{b^{3}}}{b^{2}\,x+2\,b\,c\,x^{2}+c^{2}\,x^{3}}-\frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)\,\left(b\,e-3\,c\,d\right)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((3*x*(b*e - 3*c*d))/(2*b^2) - d/b + (c*x^2*(b*e - 3*c*d))/b^3)/(b^2*x + c^
2*x^3 + 2*b*c*x^2) - (2*atanh((2*c*x)/b + 1)*(b*e - 3*c*d))/b^4
```

sympy [B] time = 0.64, size = 168, normalized size = 1.91

$$\frac{-2b^2d + x^2\left(2bce - 6c^2d\right) + x\left(3b^2e - 9bcd\right)}{2b^5x + 4b^4cx^2 + 2b^3c^2x^3} + \frac{(be - 3cd)\log\left(x + \frac{b^2e - 3bcd - b(be - 3cd)}{2bce - 6c^2d}\right)}{b^4} - \frac{(be - 3cd)\log\left(x + \frac{b^2e - 3bcd + b(be - 3cd)}{2bce - 6c^2d}\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-2*b**2*d + x**2*(2*b*c*e - 6*c**2*d) + x*(3*b**2*e - 9*b*c*d))/(2*b**5*x
+ 4*b**4*c*x**2 + 2*b**3*c**2*x**3) + (b*e - 3*c*d)*log(x + (b**2*e - 3*b*c
*d - b*(b*e - 3*c*d))/(2*b*c*e - 6*c**2*d))/b**4 - (b*e - 3*c*d)*log(x + (b
**2*e - 3*b*c*d + b*(b*e - 3*c*d))/(2*b*c*e - 6*c**2*d))/b**4
```

3.65 $\int \frac{d+ex}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=110

$$\frac{3c\log(x)(2cd-be)}{b^5}-\frac{3c(2cd-be)\log(b+cx)}{b^5}+\frac{3cd-be}{b^4x}+\frac{c(3cd-2be)}{b^4(b+cx)}+\frac{c(cd-be)}{2b^3(b+cx)^2}-\frac{d}{2b^3x^2}$$

Rubi [A] time = 0.09, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{3cd-be}{b^4x}+\frac{c(3cd-2be)}{b^4(b+cx)}+\frac{c(cd-be)}{2b^3(b+cx)^2}+\frac{3c\log(x)(2cd-be)}{b^5}-\frac{3c(2cd-be)\log(b+cx)}{b^5}-\frac{d}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^3,x]
```

```
[Out] -d/(2*b^3*x^2) + (3*c*d - b*e)/(b^4*x) + (c*(c*d - b*e))/(2*b^3*(b + c*x)^2
) + (c*(3*c*d - 2*b*e))/(b^4*(b + c*x)) + (3*c*(2*c*d - b*e)*Log[x])/b^5 -
(3*c*(2*c*d - b*e)*Log[b + c*x])/b^5
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(bx+cx^2\right)^3}\,dx&=\int \left(\frac{d}{b^3x^3}+\frac{-3cd+be}{b^4x^2}-\frac{3c(-2cd+be)}{b^5x}+\frac{c^2(-cd+be)}{b^3(b+cx)^3}+\frac{c^2(-3cd+2be)}{b^4(b+cx)^2}+\frac{3c^2(-2cd+be)}{b^5(b+cx)}\right)\\&=-\frac{d}{2b^3x^2}+\frac{3cd-be}{b^4x}+\frac{c(cd-be)}{2b^3(b+cx)^2}+\frac{c(3cd-2be)}{b^4(b+cx)}+\frac{3c(2cd-be)\log(x)}{b^5}-\frac{3c(2cd-be)\log(}{b^5}\end{aligned}$$

Mathematica [A] time = 0.08, size = 102, normalized size = 0.93

$$\frac{-\frac{b\left(b^3(d+2ex)+b^2cx(9ex-4d)+6bc^2x^2(ex-3d)-12c^3dx^3\right)}{x^2(b+cx)^2}+6c\log(x)(2cd-be)+6c(be-2cd)\log(b+cx)}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^3,x]
```

```
[Out] (-((b*(-12*c^3*d*x^3 + 6*b*c^2*x^2*(-3*d + e*x) + b^3*(d + 2*e*x) + b^2*c*x
*(-4*d + 9*e*x)))/(x^2*(b + c*x)^2)) + 6*c*(2*c*d - b*e)*Log[x] + 6*c*(-2*c
*d + b*e)*Log[b + c*x])/(2*b^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.41, size = 234, normalized size = 2.13

$$-\frac{b^4 d - 6\left(2 b c^3 d - b^2 c^2 e\right)x^3 - 9\left(2 b^2 c^2 d - b^3 c e\right)x^2 - 2\left(2 b^3 c d - b^4 e\right)x + 6\left(\left(2 c^4 d - b c^3 e\right)x^4 + 2\left(2 b c^3 d - b^2 c^2 e\right)x^3 + \left(2 b^2 c^2 d - b^3 c e\right)x^2\right)\log\left(c x + b\right) - 6\left(\left(2 c^4 d - b c^3 e\right)x^4 + 2\left(2 b c^3 d - b^2 c^2 e\right)x^3 + \left(2 b^2 c^2 d - b^3 c e\right)x^2\right)\log\left(x\right)}{2\left(b^5 c^2 x^4 + 2 b^6 c x^3 + b^7 x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b^4*d - 6*(2*b*c^3*d - b^2*c^2*e)*x^3 - 9*(2*b^2*c^2*d - b^3*c*e)*x^2
 - 2*(2*b^3*c*d - b^4*e)*x + 6*((2*c^4*d - b*c^3*e)*x^4 + 2*(2*b*c^3*d - b^
2*c^2*e)*x^3 + (2*b^2*c^2*d - b^3*c*e)*x^2)*log(c*x + b) - 6*((2*c^4*d - b*
c^3*e)*x^4 + 2*(2*b*c^3*d - b^2*c^2*e)*x^3 + (2*b^2*c^2*d - b^3*c*e)*x^2)*l
og(x))/(b^5*c^2*x^4 + 2*b^6*c*x^3 + b^7*x^2)
```

giac [A] time = 0.20, size = 132, normalized size = 1.20

$$\frac{3\left(2 c^2 d - b c e\right)\log\left(|x|\right)}{b^5} - \frac{3\left(2 c^3 d - b c^2 e\right)\log\left(|c x + b|\right)}{b^5 c} + \frac{12 c^3 d x^3 - 6 b c^2 x^3 e + 18 b c^2 d x^2 - 9 b^2 c x^2 e + 4 b^2 c d x - 2 b^3 x e - b^3 d}{2\left(c x^2 + b x\right)^2 b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3*(2*c^2*d - b*c*e)*log(abs(x))/b^5 - 3*(2*c^3*d - b*c^2*e)*log(abs(c*x + b
))/(b^5*c) + 1/2*(12*c^3*d*x^3 - 6*b*c^2*x^3*e + 18*b*c^2*d*x^2 - 9*b^2*c*x
^2*e + 4*b^2*c*d*x - 2*b^3*x*e - b^3*d)/((c*x^2 + b*x)^2*b^4)
```

maple [A] time = 0.06, size = 138, normalized size = 1.25

$$-\frac{c e}{2\left(c x + b\right)^2 b^2} + \frac{c^2 d}{2\left(c x + b\right)^2 b^3} - \frac{2 c e}{\left(c x + b\right) b^3} + \frac{3 c^2 d}{\left(c x + b\right) b^4} - \frac{3 c e \ln\left(x\right)}{b^4} + \frac{3 c e \ln\left(c x + b\right)}{b^4} + \frac{6 c^2 d \ln\left(x\right)}{b^5} - \frac{6 c^2 d \ln\left(c x + b\right)}{b^5} - \frac{e}{b^3 x} + \frac{3 c d}{b^4 x} - \frac{d}{2 b^3 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -2*c/b^3/(c*x+b)*e+3*c^2/b^4/(c*x+b)*d-1/2*c/b^2/(c*x+b)^2*e+1/2*c^2/b^3/(c
*x+b)^2*d+3*c/b^4*ln(c*x+b)*e-6*c^2/b^5*ln(c*x+b)*d-1/2/b^3*d/x^2-1/b^3/x*e
+3/b^4/x*c*d-3*c/b^4*ln(x)*e+6*c^2/b^5*ln(x)*d
```

maxima [A] time = 0.95, size = 136, normalized size = 1.24

$$-\frac{b^3 d - 6\left(2 c^3 d - b c^2 e\right)x^3 - 9\left(2 b c^2 d - b^2 c e\right)x^2 - 2\left(2 b^2 c d - b^3 e\right)x}{2\left(b^4 c^2 x^4 + 2 b^5 c x^3 + b^6 x^2\right)} - \frac{3\left(2 c^2 d - b c e\right)\log\left(c x + b\right)}{b^5} + \frac{3\left(2 c^2 d - b c e\right)\log\left(x\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b^3*d - 6*(2*c^3*d - b*c^2*e)*x^3 - 9*(2*b*c^2*d - b^2*c*e)*x^2 - 2*(
2*b^2*c*d - b^3*e)*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2) - 3*(2*c^2*d -
b*c*e)*log(c*x + b)/b^5 + 3*(2*c^2*d - b*c*e)*log(x)/b^5
```

mupad [B] time = 1.12, size = 132, normalized size = 1.20

$$-\frac{\frac{d}{2 b} + \frac{x\left(b e - 2 c d\right)}{b^2} + \frac{9 c x^2\left(b e - 2 c d\right)}{2 b^3} + \frac{3 c^2 x^3\left(b e - 2 c d\right)}{b^4}}{b^2 x^2 + 2 b c x^3 + c^2 x^4} - \frac{6 c\,\mathrm{atanh}\left(\frac{3 c\left(b e - 2 c d\right)\left(b + 2 c x\right)}{b\left(6 c^2 d - 3 b c e\right)}\right)\left(b e - 2 c d\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^3,x)
```

```
[Out] - (d/(2*b) + (x*(b*e - 2*c*d))/b^2 + (9*c*x^2*(b*e - 2*c*d))/(2*b^3) + (3*c
^2*x^3*(b*e - 2*c*d))/b^4)/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (6*c*atanh((3*
c*(b*e - 2*c*d)*(b + 2*c*x))/(b*(6*c^2*d - 3*b*c*e)))*(b*e - 2*c*d))/b^5
```

sympy [B] time = 0.74, size = 219, normalized size = 1.99

$$\frac{-b^3d + x^3\left(-6bc^2e + 12c^3d\right) + x^2\left(-9b^2ce + 18bc^2d\right) + x\left(-2b^3e + 4b^2cd\right)}{2b^6x^2 + 4b^5cx^3 + 2b^4c^2x^4} - \frac{3c\left(be - 2cd\right)\log\left(x + \frac{3b^2ce - 6bc^2d - 3bc(be - 2cd)}{6bc^2e - 12c^3d}\right)}{b^5} + \frac{3c\left(be - 2cd\right)\log\left(x + \frac{3b^2ce - 6bc^2d + 3bc(be - 2cd)}{6bc^2e - 12c^3d}\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-b**3*d + x**3*(-6*b*c**2*e + 12*c**3*d) + x**2*(-9*b**2*c*e + 18*b*c**2*d
) + x*(-2*b**3*e + 4*b**2*c*d))/(2*b**6*x**2 + 4*b**5*c*x**3 + 2*b**4*c**2*
x**4) - 3*c*(b*e - 2*c*d)*log(x + (3*b**2*c*e - 6*b*c**2*d - 3*b*c*(b*e - 2
*c*d))/(6*b*c**2*e - 12*c**3*d))/b**5 + 3*c*(b*e - 2*c*d)*log(x + (3*b**2*c
*e - 6*b*c**2*d + 3*b*c*(b*e - 2*c*d))/(6*b*c**2*e - 12*c**3*d))/b**5
```

3.66 $\int \frac{d+ex}{x\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=140

$$-\frac{2c^2\log(x)(5cd-3be)}{b^6}+\frac{2c^2(5cd-3be)\log(b+cx)}{b^6}-\frac{c^2(4cd-3be)}{b^5(b+cx)}-\frac{3c(2cd-be)}{b^5x}-\frac{c^2(cd-be)}{2b^4(b+cx)^2}+\frac{3cd-be}{2b^4x^2}-\frac{d}{3b^3x^3}$$

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{c^2(4cd-3be)}{b^5(b+cx)}-\frac{c^2(cd-be)}{2b^4(b+cx)^2}-\frac{2c^2\log(x)(5cd-3be)}{b^6}+\frac{2c^2(5cd-3be)\log(b+cx)}{b^6}+\frac{3cd-be}{2b^4x^2}-\frac{3c(2cd-be)}{b^5x}-\frac{d}{3b^3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(b*x + c*x^2)^3),x]
```

```
[Out] -d/(3*b^3*x^3) + (3*c*d - b*e)/(2*b^4*x^2) - (3*c*(2*c*d - b*e))/(b^5*x) -
(c^2*(c*d - b*e))/(2*b^4*(b + c*x)^2) - (c^2*(4*c*d - 3*b*e))/(b^5*(b + c*x
)) - (2*c^2*(5*c*d - 3*b*e)*Log[x])/b^6 + (2*c^2*(5*c*d - 3*b*e)*Log[b + c*
x])/b^6
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{d}{b^3x^4}+\frac{-3cd+be}{b^4x^3}-\frac{3c(-2cd+be)}{b^5x^2}+\frac{2c^2(-5cd+3be)}{b^6x}-\frac{c^3(-cd+be)}{b^4(b+cx)^3}-\frac{c^3(-4cd+3be)}{b^5(b+cx)^2}\ldots\right)dx\\ &= -\frac{d}{3b^3x^3}+\frac{3cd-be}{2b^4x^2}-\frac{3c(2cd-be)}{b^5x}-\frac{c^2(cd-be)}{2b^4(b+cx)^2}-\frac{c^2(4cd-3be)}{b^5(b+cx)}-\frac{2c^2(5cd-3be)\log\ldots}{b^6}\end{aligned}$$

Mathematica [A] time = 0.12, size = 129, normalized size = 0.92

$$\frac{\frac{b\left(-\left(b^4(2d+3ex)\right)+b^3cx(5d+12ex)+2b^2c^2x^2(27ex-10d)+18bc^3x^3(2ex-5d)-60c^4dx^4\right)}{x^3(b+cx)^2}+12c^2\log(x)(3be-5cd)+12c^2(5cd-3be)\log(b+cx)}{6b^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(b*x + c*x^2)^3),x]
```

```
[Out] ((b*(-60*c^4*d*x^4 + 18*b*c^3*x^3*(-5*d + 2*e*x) - b^4*(2*d + 3*e*x) + b^3*
c*x*(5*d + 12*e*x) + 2*b^2*c^2*x^2*(-10*d + 27*e*x)))/(x^3*(b + c*x)^2) + 1
2*c^2*(-5*c*d + 3*b*e)*Log[x] + 12*c^2*(5*c*d - 3*b*e)*Log[b + c*x])/(6*b^6
)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(b*x + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(b*x + c*x^2)^3), x]
```

fricas [A] time = 0.41, size = 263, normalized size = 1.88

$$-\frac{2\,b^{5} d + 12\left(5\,b c^{4} d - 3\,b^{2} c^{3} e\right)x^{4} + 18\left(5\,b^{2} c^{3} d - 3\,b^{3} c^{2} e\right)x^{3} + 4\left(5\,b^{3} c^{2} d - 3\,b^{4} c e\right)x^{2} - \left(5\,b^{4} c d - 3\,b^{5} e\right)x - 12\left(\left(5\,c^{5} d - 3\,b c^{4} e\right)x^{5} + 2\left(5\,b c^{4} d - 3\,b^{2} c^{3} e\right)x^{4} + \left(5\,b^{2} c^{3} d - 3\,b^{3} c^{2} e\right)x^{3}\right)\log\left(cx + b\right) + 12\left(\left(5\,c^{5} d - 3\,b c^{4} e\right)x^{5} + 2\left(5\,b c^{4} d - 3\,b^{2} c^{3} e\right)x^{4} + \left(5\,b^{2} c^{3} d - 3\,b^{3} c^{2} e\right)x^{3}\right)\log\left(x\right)}{6\left(b^{6} c^{2} x^{5} + 2\,b^{7} c x^{4} + b^{8} x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/6*(2*b^5*d + 12*(5*b*c^4*d - 3*b^2*c^3*e)*x^4 + 18*(5*b^2*c^3*d - 3*b^3*
c^2*e)*x^3 + 4*(5*b^3*c^2*d - 3*b^4*c*e)*x^2 - (5*b^4*c*d - 3*b^5*e)*x - 12
*((5*c^5*d - 3*b*c^4*e)*x^5 + 2*(5*b*c^4*d - 3*b^2*c^3*e)*x^4 + (5*b^2*c^3*
d - 3*b^3*c^2*e)*x^3)*log(c*x + b) + 12*((5*c^5*d - 3*b*c^4*e)*x^5 + 2*(5*b
*c^4*d - 3*b^2*c^3*e)*x^4 + (5*b^2*c^3*d - 3*b^3*c^2*e)*x^3)*log(x))/(b^6*c
^2*x^5 + 2*b^7*c*x^4 + b^8*x^3)
```

giac [A] time = 0.17, size = 165, normalized size = 1.18

$$-\frac{2\left(5\,c^{3} d - 3\,b c^{2} e\right)\log\left(|x|\right)}{b^{6}} + \frac{2\left(5\,c^{4} d - 3\,b c^{3} e\right)\log\left(|cx + b|\right)}{b^{6} c} - \frac{2\,b^{5} d + 12\left(5\,b c^{4} d - 3\,b^{2} c^{3} e\right)x^{4} + 18\left(5\,b^{2} c^{3} d - 3\,b^{3} c^{2} e\right)x^{3} + 4\left(5\,b^{3} c^{2} d - 3\,b^{4} c e\right)x^{2} - \left(5\,b^{4} c d - 3\,b^{5} e\right)x}{6\,(cx + b)^{2} b^{6} x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -2*(5*c^3*d - 3*b*c^2*e)*log(abs(x))/b^6 + 2*(5*c^4*d - 3*b*c^3*e)*log(abs(
c*x + b))/(b^6*c) - 1/6*(2*b^5*d + 12*(5*b*c^4*d - 3*b^2*c^3*e)*x^4 + 18*(5
*b^2*c^3*d - 3*b^3*c^2*e)*x^3 + 4*(5*b^3*c^2*d - 3*b^4*c*e)*x^2 - (5*b^4*c*
d - 3*b^5*e)*x)/((c*x + b)^2*b^6*x^3)
```

maple [A] time = 0.06, size = 168, normalized size = 1.20

$$\frac{c^{2} e}{2\,(cx + b)^{2}\,b^{3}} - \frac{c^{3} d}{2\,(cx + b)^{2}\,b^{4}} + \frac{3 c^{2} e}{(cx + b)\,b^{4}} - \frac{4 c^{3} d}{(cx + b)\,b^{5}} + \frac{6 c^{2} e \ln(x)}{b^{5}} - \frac{6 c^{2} e \ln(cx + b)}{b^{5}} - \frac{10 c^{3} d \ln(x)}{b^{6}} + \frac{10 c^{3} d \ln(cx + b)}{b^{6}} + \frac{3ce}{b^{4} x} - \frac{6 c^{2} d}{b^{5} x} - \frac{e}{2 b^{3} x^{2}} + \frac{3cd}{2 b^{4} x^{2}} - \frac{d}{3 b^{3} x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x)^3,x)
```

```
[Out] -6*c^2/b^5*ln(c*x+b)*e+10*c^3/b^6*ln(c*x+b)*d+3*c^2/b^4/(c*x+b)*e-4*c^3/b^5
/(c*x+b)*d+1/2*c^2/b^3/(c*x+b)^2*e-1/2*c^3/b^4/(c*x+b)^2*d-1/3*d/b^3/x^3-1/
2/b^3/x^2*e+3/2/b^4/x^2*c*d+3*c/b^4/x*e-6*c^2/b^5/x*d+6*c^2/b^5*ln(x)*e-10*
c^3/b^6*ln(x)*d
```

maxima [A] time = 0.99, size = 165, normalized size = 1.18

$$-\frac{2\,b^{4} d + 12\left(5\,c^{4} d - 3\,b c^{3} e\right)x^{4} + 18\left(5\,b c^{3} d - 3\,b^{2} c^{2} e\right)x^{3} + 4\left(5\,b^{2} c^{2} d - 3\,b^{3} c e\right)x^{2} - \left(5\,b^{3} c d - 3\,b^{4} e\right)x}{6\left(b^{5} c^{2} x^{5} + 2\,b^{6} c x^{4} + b^{7} x^{3}\right)} + \frac{2\left(5\,c^{3} d - 3\,b c^{2} e\right)\log\left(cx + b\right)}{b^{6}} - \frac{2\left(5\,c^{3} d - 3\,b c^{2} e\right)\log\left(x\right)}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/6*(2*b^4*d + 12*(5*c^4*d - 3*b*c^3*e)*x^4 + 18*(5*b*c^3*d - 3*b^2*c^2*e)
*x^3 + 4*(5*b^2*c^2*d - 3*b^3*c*e)*x^2 - (5*b^3*c*d - 3*b^4*e)*x)/(b^5*c^2*
x^5 + 2*b^6*c*x^4 + b^7*x^3) + 2*(5*c^3*d - 3*b*c^2*e)*log(c*x + b)/b^6 - 2
*(5*c^3*d - 3*b*c^2*e)*log(x)/b^6
```

mupad [B] time = 1.09, size = 163, normalized size = 1.16

$$\frac{\frac{2\,c\,x^{2}\,(3\,b\,e-5\,c\,d)}{3\,b^{3}} - \frac{x\,(3\,b\,e-5\,c\,d)}{6\,b^{2}} - \frac{d}{3\,b} + \frac{3\,c^{2}\,x^{3}\,(3\,b\,e-5\,c\,d)}{b^{4}} + \frac{2\,c^{3}\,x^{4}\,(3\,b\,e-5\,c\,d)}{b^{5}}}{b^{2}\,x^{3} + 2\,b\,c\,x^{4} + c^{2}\,x^{5}} + \frac{4\,c^{2}\,\mathrm{atanh}\left(\frac{2\,c^{2}\,(3\,b\,e-5\,c\,d)\,(b+2\,c\,x)}{b\,\left(10\,c^{3}\,d-6\,b\,c^{2}\,e\right)}\right)\,(3\,b\,e - 5\,c\,d)}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(b*x + c*x^2)^3),x)
```

```
[Out] ((2*c*x^2*(3*b*e - 5*c*d))/(3*b^3) - (x*(3*b*e - 5*c*d))/(6*b^2) - d/(3*b)
+ (3*c^2*x^3*(3*b*e - 5*c*d))/b^4 + (2*c^3*x^4*(3*b*e - 5*c*d))/b^5)/(b^2*x
^3 + c^2*x^5 + 2*b*c*x^4) + (4*c^2*atanh((2*c^2*(3*b*e - 5*c*d)*(b + 2*c*x)
)/(b*(10*c^3*d - 6*b*c^2*e)))*(3*b*e - 5*c*d))/b^6
```

sympy [A] time = 0.80, size = 262, normalized size = 1.87

$$\frac{-2b^4d + x^4\left(36bc^3e - 60c^4d\right) + x^3\left(54b^2c^2e - 90bc^3d\right) + x^2\left(12b^3ce - 20b^2c^2d\right) + x\left(-3b^4e + 5b^3cd\right)}{6b^7x^3 + 12b^6cx^4 + 6b^5c^2x^5} + \frac{2c^2\left(3be - 5cd\right)\log\left(x + \frac{6b^2c^2e - 10bc^3d - 2bc^2(3be - 5cd)}{12bc^3e - 20c^4d}\right)}{b^6} - \frac{2c^2\left(3be - 5cd\right)\log\left(x + \frac{6b^2c^2e - 10bc^3d + 2bc^2(3be - 5cd)}{12bc^3e - 20c^4d}\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x)**3,x)
```

```
[Out] (-2*b**4*d + x**4*(36*b*c**3*e - 60*c**4*d) + x**3*(54*b**2*c**2*e - 90*b*c
**3*d) + x**2*(12*b**3*c*e - 20*b**2*c**2*d) + x*(-3*b**4*e + 5*b**3*c*d))/
(6*b**7*x**3 + 12*b**6*c*x**4 + 6*b**5*c**2*x**5) + 2*c**2*(3*b*e - 5*c*d)*
log(x + (6*b**2*c**2*e - 10*b*c**3*d - 2*b*c**2*(3*b*e - 5*c*d))/(12*b*c**3
*e - 20*c**4*d))/b**6 - 2*c**2*(3*b*e - 5*c*d)*log(x + (6*b**2*c**2*e - 10*
b*c**3*d + 2*b*c**2*(3*b*e - 5*c*d))/(12*b*c**3*e - 20*c**4*d))/b**6
```

3.67 $\int x^3(A + Bx)\sqrt{bx + cx^2}\, dx$

Optimal. Leaf size=200

$$-\frac{7b^5(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{11/2}}+\frac{7b^3(b+2cx)\sqrt{bx+cx^2}\,(3bB-4Ac)}{512c^5}-\frac{7b^2\left(bx+cx^2\right)^{3/2}(3bB-4Ac)}{192c^4}+\frac{7bx\left(b\right.}{}$$

Rubi [A] time = 0.19, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {794, 670, 640, 612, 620, 206}

$$\frac{7b^3(b+2cx)\sqrt{bx+cx^2}\,(3bB-4Ac)}{512c^5}-\frac{7b^2\left(bx+cx^2\right)^{3/2}(3bB-4Ac)}{192c^4}-\frac{7b^5(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{11/2}}+\frac{7bx\left(bx+cx^2\right)^{3/2}(3bB-4Ac)}{160c^3}-\frac{x^2\left(bx+cx^2\right)^{3/2}(3bB-4Ac)}{20c^2}+\frac{Bx^3\left(bx+cx^2\right)^{3/2}}{6c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (7*b^3*(3*b*B - 4*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(512*c^5) - (7*b^2*(3
*b*B - 4*A*c)*(b*x + c*x^2)^(3/2))/(192*c^4) + (7*b*(3*b*B - 4*A*c)*x*(b*x
+ c*x^2)^(3/2))/(160*c^3) - ((3*b*B - 4*A*c)*x^2*(b*x + c*x^2)^(3/2))/(20*c
^2) + (B*x^3*(b*x + c*x^2)^(3/2))/(6*c) - (7*b^5*(3*b*B - 4*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^3(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{Bx^3\left(bx+cx^2\right)^{3/2}}{6c} + \frac{\left(3(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int x^3\sqrt{bx+cx^2}\,dx}{6c}$$

$$= -\frac{(3bB-4Ac)x^2\left(bx+cx^2\right)^{3/2}}{20c^2} + \frac{Bx^3\left(bx+cx^2\right)^{3/2}}{6c} + \frac{(7b(3bB-4Ac))\int x^2\sqrt{bx}}{40c^2}$$

$$= \frac{7b(3bB-4Ac)x\left(bx+cx^2\right)^{3/2}}{160c^3} - \frac{(3bB-4Ac)x^2\left(bx+cx^2\right)^{3/2}}{20c^2} + \frac{Bx^3\left(bx+cx^2\right)}{6c}$$

$$= -\frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4} + \frac{7b(3bB-4Ac)x\left(bx+cx^2\right)^{3/2}}{160c^3} - \frac{(3bB-4Ac)}{2}$$

$$= \frac{7b^3(3bB-4Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^5} - \frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4} + \frac{7b(3bB}{}$$

$$= \frac{7b^3(3bB-4Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^5} - \frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4} + \frac{7b(3bB}{}$$

$$= \frac{7b^3(3bB-4Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^5} - \frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4} + \frac{7b(3bB}{}$$

Mathematica [A] time = 0.28, size = 166, normalized size = 0.83

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-210b^4c(2A+Bx)+56b^3c^2x(5A+3Bx)-16b^2c^3x^2(14A+9Bx)+64bc^4x^3(3A+2Bx)+256c^5x^4(6A+5Bx)+315b^5B\right)-\frac{105b^{9/2}(3bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{7680c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(315*b^5*B - 210*b^4*c*(2*A + B*x) + 64*b*c^4*x
^3*(3*A + 2*B*x) + 56*b^3*c^2*x*(5*A + 3*B*x) + 256*c^5*x^4*(6*A + 5*B*x) -
 16*b^2*c^3*x^2*(14*A + 9*B*x)) - (105*b^(9/2)*(3*b*B - 4*A*c)*ArcSinh[(Sqr
t[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(11/2))
```

IntegrateAlgebraic [A] time = 0.60, size = 177, normalized size = 0.88

$$\frac{7\left(3b^6B-4Ab^5c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{1024c^{11/2}}+\frac{\sqrt{bx+cx^2}\left(-420Ab^4c+280Ab^3c^2x-224Ab^2c^3x^2+192Abc^4x^3+1536Ac^5x^4+315b^5B-210b^4Bcx+168b^3Bc^2x^2-144b^2Bc^3x^3+128bBc^4x^4+1280Bc^5x^5\right)}{7680c^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(315*b^5*B - 420*A*b^4*c - 210*b^4*B*c*x + 280*A*b^3*c^2
*x + 168*b^3*B*c^2*x^2 - 224*A*b^2*c^3*x^2 - 144*b^2*B*c^3*x^3 + 192*A*b*c^
4*x^3 + 128*b*B*c^4*x^4 + 1536*A*c^5*x^4 + 1280*B*c^5*x^5))/(7680*c^5) + (7
*(3*b^6*B - 4*A*b^5*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(1024*
c^(11/2))
```

fricas [A] time = 0.43, size = 349, normalized size = 1.74

$$\left[-\frac{105\left(3Bb^6-4Ab^5c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(1280Bc^6x^5+315Bb^5c-420Ab^4c^2+128\left(Bbc^5+12Ac^6\right)x^4-48\left(3Bb^2c^4-4Abc^5\right)x^3+56\left(3Bb^3c^3-4Ab^2c^4\right)x^2-70\left(3Bb^4c^2-4Ab^3c^3\right)x\right)\sqrt{cx^2+bx}}{15360c^6}, \frac{105\left(3Bb^6-4Ab^5c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(1280Bc^6x^5+315Bb^5c-420Ab^4c^2+128\left(Bbc^5+12Ac^6\right)x^4-48\left(3Bb^2c^4-4Abc^5\right)x^3+56\left(3Bb^3c^3-4Ab^2c^4\right)x^2-70\left(3Bb^4c^2-4Ab^3c^3\right)x\right)\sqrt{cx^2+bx}}{7680c^6}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(105*(3*B*b^6 - 4*A*b^5*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(1280*B*c^6*x^5 + 315*B*b^5*c - 420*A*b^4*c^2 + 128*(B*b
*c^5 + 12*A*c^6)*x^4 - 48*(3*B*b^2*c^4 - 4*A*b*c^5)*x^3 + 56*(3*B*b^3*c^3 -
 4*A*b^2*c^4)*x^2 - 70*(3*B*b^4*c^2 - 4*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))/c^
6, 1/7680*(105*(3*B*b^6 - 4*A*b^5*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt
(-c)/(c*x)) + (1280*B*c^6*x^5 + 315*B*b^5*c - 420*A*b^4*c^2 + 128*(B*b*c^5
+ 12*A*c^6)*x^4 - 48*(3*B*b^2*c^4 - 4*A*b*c^5)*x^3 + 56*(3*B*b^3*c^3 - 4*A*
b^2*c^4)*x^2 - 70*(3*B*b^4*c^2 - 4*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.22, size = 188, normalized size = 0.94

$$\frac{1}{7680}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10Bx+\frac{Bbc^4+12Ac^5}{c^5}\right)x-\frac{3\left(3Bb^2c^3-4Abc^4\right)}{c^5}\right)x+\frac{7\left(3Bb^3c^2-4Ab^2c^3\right)}{c^5}\right)x-\frac{35\left(3Bb^4c-4Ab^3c^2\right)}{c^5}\right)x+\frac{105\left(3Bb^5-4Ab^4c\right)}{c^5}\right)+\frac{7\left(3Bb^6-4Ab^5c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{1024c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*x + (B*b*c^4 + 12*A*c^5)/c^5)*x
- 3*(3*B*b^2*c^3 - 4*A*b*c^4)/c^5)*x + 7*(3*B*b^3*c^2 - 4*A*b^2*c^3)/c^5)*x
 - 35*(3*B*b^4*c - 4*A*b^3*c^2)/c^5)*x + 105*(3*B*b^5 - 4*A*b^4*c)/c^5) + 7
/1024*(3*B*b^6 - 4*A*b^5*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt
(c) - b))/c^(11/2)
```

maple [A] time = 0.05, size = 291, normalized size = 1.46

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx^3}{6c}+\frac{7Ab^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{9}{2}}}-\frac{21Bb^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{1024c^{\frac{11}{2}}}-\frac{7\sqrt{cx^2+bx}\,Ab^3x}{64c^3}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax^2}{5c}+\frac{21\sqrt{cx^2+bx}\,Bb^4x}{256c^4}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bbx^2}{20c^2}-\frac{7\sqrt{cx^2+bx}\,Ab^4}{128c^4}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Abx}{40c^2}+\frac{21\sqrt{cx^2+bx}\,Bb^5}{512c^5}+\frac{21\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2x}{160c^3}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2}{48c^3}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3}{64c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/6*B*x^3*(c*x^2+b*x)^(3/2)/c-3/20*B*b/c^2*x^2*(c*x^2+b*x)^(3/2)+21/160*B*b
^2/c^3*x*(c*x^2+b*x)^(3/2)-7/64*B*b^3/c^4*(c*x^2+b*x)^(3/2)+21/256*B*b^4/c^
4*(c*x^2+b*x)^(1/2)*x+21/512*B*b^5/c^5*(c*x^2+b*x)^(1/2)-21/1024*B*b^6/c^(1
1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*A*x^2*(c*x^2+b*x)^(3/2)/
c-7/40*A*b/c^2*x*(c*x^2+b*x)^(3/2)+7/48*A*b^2/c^3*(c*x^2+b*x)^(3/2)-7/64*A*
b^3/c^3*(c*x^2+b*x)^(1/2)*x-7/128*A*b^4/c^4*(c*x^2+b*x)^(1/2)+7/256*A*b^5/c
^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.90, size = 288, normalized size = 1.44

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx^3}{6c}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bbx^2}{20c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax^2}{5c}+\frac{21\sqrt{cx^2+bx}\,Bb^4x}{256c^4}+\frac{21\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2x}{160c^3}-\frac{7\sqrt{cx^2+bx}\,Ab^3x}{64c^3}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Abx}{40c^2}-\frac{21Bb^6\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024c^{\frac{11}{2}}}+\frac{7Ab^5\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256c^{\frac{9}{2}}}+\frac{21\sqrt{cx^2+bx}\,Bb^5}{512c^5}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3}{64c^4}-\frac{7\sqrt{cx^2+bx}\,Ab^4}{128c^4}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2}{48c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(3/2)*B*x^3/c - 3/20*(c*x^2 + b*x)^(3/2)*B*b*x^2/c^2 + 1/
5*(c*x^2 + b*x)^(3/2)*A*x^2/c + 21/256*sqrt(c*x^2 + b*x)*B*b^4*x/c^4 + 21/1
60*(c*x^2 + b*x)^(3/2)*B*b^2*x/c^3 - 7/64*sqrt(c*x^2 + b*x)*A*b^3*x/c^3 - 7
/40*(c*x^2 + b*x)^(3/2)*A*b*x/c^2 - 21/1024*B*b^6*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/c^(11/2) + 7/256*A*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c))/c^(9/2) + 21/512*sqrt(c*x^2 + b*x)*B*b^5/c^5 - 7/64*(c*x^2 + b
```

```
*x)^(3/2)*B*b^3/c^4 - 7/128*sqrt(c*x^2 + b*x)*A*b^4/c^4 + 7/48*(c*x^2 + b*x
)^(3/2)*A*b^2/c^3
```

mupad [B] time = 1.82, size = 267, normalized size = 1.34

$$\frac{3\,B\,b\left(\frac{7\,b\left(\frac{x\left(c\,x^2+b\,x\right)^{3/2}}{4\,c}-\frac{5\,b\left(\frac{b^3\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}\right)}{10\,c}-\frac{x^2\left(c\,x^2+b\,x\right)^{3/2}}{5\,c}\right)}{4\,c}-\frac{7\,A\,b\left(\frac{x\left(c\,x^2+b\,x\right)^{3/2}}{4\,c}-\frac{5\,b\left(\frac{b^3\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}\right)}{10\,c}+\frac{A\,x^2\left(c\,x^2+b\,x\right)^{3/2}}{5\,c}+\frac{B\,x^3\left(c\,x^2+b\,x\right)^{3/2}}{6\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (3*B*b*((7*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((b + 2*c*x)/c^
(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*
x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) - (x^2*(b*x + c*x^2)^(3/2
))/(5*c)))/(4*c) - (7*A*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((
b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^
(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) + (A*x^2*(b*
x + c*x^2)^(3/2))/(5*c) + (B*x^3*(b*x + c*x^2)^(3/2))/(6*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3\sqrt{x\,(b+cx)}\;(A+Bx)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**3*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.68 $\int x^2(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=165

$$\frac{b^4(7bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{9/2}}-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(7bB-10Ac)}{128c^4}+\frac{b\left(bx+cx^2\right)^{3/2}(7bB-10Ac)}{48c^3}-\frac{x\left(bx+c\right.}{}$$

Rubi [A] time = 0.16, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(7bB-10Ac)}{128c^4}+\frac{b^4(7bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{9/2}}+\frac{b\left(bx+cx^2\right)^{3/2}(7bB-10Ac)}{48c^3}-\frac{x\left(bx+cx^2\right)^{3/2}(7bB-10Ac)}{40c^2}+\frac{Bx^2\left(bx+cx^2\right)^{3/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] -(b^2*(7*b*B - 10*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^4) + (b*(7*b*B
 - 10*A*c)*(b*x + c*x^2)^(3/2))/(48*c^3) - ((7*b*B - 10*A*c)*x*(b*x + c*x^2
)^(3/2))/(40*c^2) + (B*x^2*(b*x + c*x^2)^(3/2))/(5*c) + (b^4*(7*b*B - 10*A*
c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
```

```
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^2(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{Bx^2\left(bx+cx^2\right)^{3/2}}{5c} + \frac{\left(2(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int x^2\sqrt{bx+cx^2}\,dx}{5c}$$

$$= -\frac{(7bB-10Ac)x\left(bx+cx^2\right)^{3/2}}{40c^2} + \frac{Bx^2\left(bx+cx^2\right)^{3/2}}{5c} + \frac{(b(7bB-10Ac))\int x\sqrt{bx+}}{16c^2}$$

$$= \frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3} - \frac{(7bB-10Ac)x\left(bx+cx^2\right)^{3/2}}{40c^2} + \frac{Bx^2\left(bx+cx^2\right)}{5c}$$

$$= -\frac{b^2(7bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^4} + \frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3} - \frac{(7bB-}{}$$

$$= -\frac{b^2(7bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^4} + \frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3} - \frac{(7bB-}{}$$

$$= -\frac{b^2(7bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^4} + \frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3} - \frac{(7bB-}{}$$

Mathematica [A] time = 0.25, size = 148, normalized size = 0.90

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{7/2}(7bB-10Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(10b^3c(15A+7Bx)-4b^2c^2x(25A+14Bx)+16bc^3x^2(5A+3Bx)+96c^4x^3(5A+4Bx)-105b^4B\right)\right)}{1920c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^4*B + 16*b*c^3*x^2*(5*A + 3*B*x) + 96*c
^4*x^3*(5*A + 4*B*x) + 10*b^3*c*(15*A + 7*B*x) - 4*b^2*c^2*x*(25*A + 14*B*x
)) + (15*b^(7/2)*(7*b*B - 10*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt
[x]*Sqrt[1 + (c*x)/b])))/(1920*c^(9/2))
```

IntegrateAlgebraic [A] time = 0.54, size = 153, normalized size = 0.93

$$\frac{\left(10Ab^4c-7b^5B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{256c^{9/2}}+\frac{\sqrt{bx+cx^2}\left(150Ab^3c-100Ab^2c^2x+80Abc^3x^2+480Ac^4x^3-105b^4B+70b^3Bcx-56b^2Bc^2x^2+48bBc^3x^3+384Bc^4x^4\right)}{1920c^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-105*b^4*B + 150*A*b^3*c + 70*b^3*B*c*x - 100*A*b^2*c^2
*x - 56*b^2*B*c^2*x^2 + 80*A*b*c^3*x^2 + 48*b*B*c^3*x^3 + 480*A*c^4*x^3 + 3
84*B*c^4*x^4))/(1920*c^4) + ((-7*b^5*B + 10*A*b^4*c)*Log[b + 2*c*x - 2*Sqrt
[c]*Sqrt[b*x + c*x^2]])/(256*c^(9/2))
```

fricas [A] time = 0.42, size = 302, normalized size = 1.83

$$\left[-\frac{15\left(7Bb^5-10Ab^4c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(384Bc^5x^4-105Bb^4c+150Ab^3c^2+48\left(Bbc^4+10Ac^5\right)x^3-8\left(7Bb^2c^3-10Abc^4\right)x^2+10\left(7Bb^3c^2-10Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{3840c^5}, -\frac{15\left(7Bb^5-10Ab^4c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(384Bc^5x^4-105Bb^4c+150Ab^3c^2+48\left(Bbc^4+10Ac^5\right)x^3-8\left(7Bb^2c^3-10Abc^4\right)x^2+10\left(7Bb^3c^2-10Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{1920c^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(7*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
b*x)*sqrt(c)) - 2*(384*B*c^5*x^4 - 105*B*b^4*c + 150*A*b^3*c^2 + 48*(B*b*c^
4 + 10*A*c^5)*x^3 - 8*(7*B*b^2*c^3 - 10*A*b*c^4)*x^2 + 10*(7*B*b^3*c^2 - 10
*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1/1920*(15*(7*B*b^5 - 10*A*b^4*c)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (384*B*c^5*x^4 - 105*B*b
^4*c + 150*A*b^3*c^2 + 48*(B*b*c^4 + 10*A*c^5)*x^3 - 8*(7*B*b^2*c^3 - 10*A*
b*c^4)*x^2 + 10*(7*B*b^3*c^2 - 10*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.24, size = 160, normalized size = 0.97

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(8Bx+\frac{Bbc^3+10Ac^4}{c^4}\right)x-\frac{7Bb^2c^2-10Abc^3}{c^4}\right)x+\frac{5\left(7Bb^3c-10Ab^2c^2\right)}{c^4}\right)x-\frac{15\left(7Bb^4-10Ab^3c\right)}{c^4}\right)-\frac{\left(7Bb^5-10Ab^4c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{256c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*x + (B*b*c^3 + 10*A*c^4)/c^4)*x - (7
*B*b^2*c^2 - 10*A*b*c^3)/c^4)*x + 5*(7*B*b^3*c - 10*A*b^2*c^2)/c^4)*x - 15*
(7*B*b^4 - 10*A*b^3*c)/c^4) - 1/256*(7*B*b^5 - 10*A*b^4*c)*log(abs(-2*(sqrt
(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [A] time = 0.05, size = 245, normalized size = 1.48

$$-\frac{5Ab^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{7Bb^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{9}{2}}}+\frac{5\sqrt{cx^2+bx}\,Ab^2x}{32c^2}-\frac{7\sqrt{cx^2+bx}\,Bb^3x}{64c^3}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx^2}{5c}+\frac{5\sqrt{cx^2+bx}\,Ab^3}{64c^3}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax}{4c}-\frac{7\sqrt{cx^2+bx}\,Bb^4}{128c^4}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bbx}{40c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{24c^2}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2}{48c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/5*B*x^2*(c*x^2+b*x)^(3/2)/c-7/40*B*b/c^2*x*(c*x^2+b*x)^(3/2)+7/48*B*b^2/c
^3*(c*x^2+b*x)^(3/2)-7/64*B*b^3/c^3*(c*x^2+b*x)^(1/2)*x-7/128*B*b^4/c^4*(c*
x^2+b*x)^(1/2)+7/256*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2)
)+1/4*A*x*(c*x^2+b*x)^(3/2)/c-5/24*A*b/c^2*(c*x^2+b*x)^(3/2)+5/32*A*b^2/c^2
*(c*x^2+b*x)^(1/2)*x+5/64*A*b^3/c^3*(c*x^2+b*x)^(1/2)-5/128*A*b^4/c^(7/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.86, size = 242, normalized size = 1.47

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx^2}{5c}-\frac{7\sqrt{cx^2+bx}\,Bb^3x}{64c^3}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bbx}{40c^2}+\frac{5\sqrt{cx^2+bx}\,Ab^2x}{32c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax}{4c}+\frac{7Bb^5\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256c^{\frac{9}{2}}}-\frac{5Ab^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{7}{2}}}-\frac{7\sqrt{cx^2+bx}\,Bb^4}{128c^4}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2}{48c^3}+\frac{5\sqrt{cx^2+bx}\,Ab^3}{64c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{24c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*(c*x^2 + b*x)^(3/2)*B*x^2/c - 7/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^3 - 7/40
*(c*x^2 + b*x)^(3/2)*B*b*x/c^2 + 5/32*sqrt(c*x^2 + b*x)*A*b^2*x/c^2 + 1/4*(
c*x^2 + b*x)^(3/2)*A*x/c + 7/256*B*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*
sqrt(c))/c^(9/2) - 5/128*A*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
/c^(7/2) - 7/128*sqrt(c*x^2 + b*x)*B*b^4/c^4 + 7/48*(c*x^2 + b*x)^(3/2)*B*b
^2/c^3 + 5/64*sqrt(c*x^2 + b*x)*A*b^3/c^3 - 5/24*(c*x^2 + b*x)^(3/2)*A*b/c^
2
```

mupad [B] time = 1.48, size = 215, normalized size = 1.30

$$\frac{Ax\left(cx^2+bx\right)^{3/2}}{4c}-\frac{5Ab\left(\frac{b^3\ln\left(\frac{b+2cx}{\sqrt{c}}+2\sqrt{cx^2+bx}\right)}{16c^{5/2}}+\frac{\sqrt{cx^2+bx}\left(-3b^2+2bcx+8c^2x^2\right)}{24c^2}\right)}{8c}-\frac{7Bb\left(\frac{x\left(cx^2+bx\right)^{3/2}}{4c}-\frac{5b\left(\frac{b^3\ln\left(\frac{b+2cx}{\sqrt{c}}+2\sqrt{cx^2+bx}\right)}{16c^{5/2}}+\frac{\sqrt{cx^2+bx}\left(-3b^2+2bcx+8c^2x^2\right)}{24c^2}\right)}{8c}\right)}{10c}+\frac{Bx^2\left(cx^2+bx\right)^{3/2}}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*x*(b*x + c*x^2)^(3/2))/(4*c) - (5*A*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^
2 + 2*b*c*x))/(24*c^2)))/(8*c) - (7*B*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5
*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (
(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c
) + (B*x^2*(b*x + c*x^2)^(3/2))/(5*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \sqrt{x\,(b+cx)}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.69 $\int x(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=113

$$-\frac{b^3(5bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{7/2}}+\frac{b(b+2cx)\sqrt{bx+cx^2}\,(5bB-8Ac)}{64c^3}-\frac{\left(bx+cx^2\right)^{3/2}(-8Ac+5bB-6Bcx)}{24c^2}$$

Rubi [A] time = 0.05, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {779, 612, 620, 206}

$$-\frac{b^3(5bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{7/2}}+\frac{b(b+2cx)\sqrt{bx+cx^2}\,(5bB-8Ac)}{64c^3}-\frac{\left(bx+cx^2\right)^{3/2}(-8Ac+5bB-6Bcx)}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (b*(5*b*B - 8*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(64*c^3) - ((5*b*B - 8*A*
c - 6*B*c*x)*(b*x + c*x^2)^(3/2))/(24*c^2) - (b^3*(5*b*B - 8*A*c)*ArcTanh[(
Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\sqrt{bx+cx^2}\,dx = -\frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2}+\frac{(b(5bB-8Ac))\int \sqrt{bx+cx^2}\,dx}{16c^2}$$
$$=\frac{b(5bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2}-\frac{\left(b^3(5b\right.}{}$$
$$=\frac{b(5bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2}-\frac{\left(b^3(5b\right.}{}$$
$$=\frac{b(5bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2}-\frac{b^3(5bB}{}$$

Mathematica [A] time = 0.21, size = 128, normalized size = 1.13

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-2b^2c(12A+5Bx)+8bc^2x(2A+Bx)+16c^3x^2(4A+3Bx)+15b^3B\right)-\frac{3b^{5/2}(5bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{192c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^3*B + 8*b*c^2*x*(2*A + B*x) + 16*c^3*x^2*
(4*A + 3*B*x) - 2*b^2*c*(12*A + 5*B*x)) - (3*b^(5/2)*(5*b*B - 8*A*c)*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(7/2))
```

IntegrateAlgebraic [A] time = 0.42, size = 129, normalized size = 1.14

$$\frac{\left(5b^4B-8Ab^3c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{128c^{7/2}}+\frac{\sqrt{bx+cx^2}\left(-24Ab^2c+16Abc^2x+64Ac^3x^2+15b^3B-10b^2Bcx+8bBc^2x^2+48Bc^3x^3\right)}{192c^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(15*b^3*B - 24*A*b^2*c - 10*b^2*B*c*x + 16*A*b*c^2*x + 8
*b*B*c^2*x^2 + 64*A*c^3*x^2 + 48*B*c^3*x^3))/(192*c^3) + ((5*b^4*B - 8*A*b^
3*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(128*c^(7/2))
```

fricas [A] time = 0.43, size = 253, normalized size = 2.24

$$\left[-\frac{3\left(5Bb^4-8Ab^3c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(48Bc^4x^3+15Bb^3c-24Ab^2c^2+8\left(Bbc^3+8Ac^4\right)x^2-2\left(5Bb^2c^2-8Abc^3\right)x\right)\sqrt{cx^2+bx}}{384c^4}, \frac{3\left(5Bb^4-8Ab^3c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(48Bc^4x^3+15Bb^3c-24Ab^2c^2+8\left(Bbc^3+8Ac^4\right)x^2-2\left(5Bb^2c^2-8Abc^3\right)x\right)\sqrt{cx^2+bx}}{192c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(5*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(48*B*c^4*x^3 + 15*B*b^3*c - 24*A*b^2*c^2 + 8*(B*b*c^3 + 8*A
*c^4)*x^2 - 2*(5*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/192*(3
*(5*B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) +
(48*B*c^4*x^3 + 15*B*b^3*c - 24*A*b^2*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^2 - 2*(
5*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.43, size = 132, normalized size = 1.17

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6Bx+\frac{Bbc^2+8Ac^3}{c^3}\right)x-\frac{5Bb^2c-8Abc^2}{c^3}\right)x+\frac{3\left(5Bb^3-8Ab^2c\right)}{c^3}\right)+\frac{\left(5Bb^4-8Ab^3c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{128c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x + (B*b*c^2 + 8*A*c^3)/c^3)*x - (5*B*b^
2*c - 8*A*b*c^2)/c^3)*x + 3*(5*B*b^3 - 8*A*b^2*c)/c^3) + 1/128*(5*B*b^4 - 8
*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 201, normalized size = 1.78

$$\frac{A b^3 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{16c^{\frac{5}{2}}}-\frac{5B b^4 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{128c^{\frac{7}{2}}}-\frac{\sqrt{c x^2+bx}\, Abx}{4c}+\frac{5\sqrt{c x^2+bx}\, B b^2 x}{32c^2}-\frac{\sqrt{c x^2+bx}\, A b^2}{8c^2}+\frac{5\sqrt{c x^2+bx}\, B b^3}{64c^3}+\frac{\left(c x^2+bx\right)^{\frac{3}{2}} Bx}{4c}+\frac{\left(c x^2+bx\right)^{\frac{3}{2}} A}{3c}-\frac{5\left(c x^2+bx\right)^{\frac{3}{2}} Bb}{24c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x)^(3/2)/c-5/24*B*b/c^2*(c*x^2+b*x)^(3/2)+5/32*B*b^2/c^2*x
*(c*x^2+b*x)^(1/2)+5/64*B*b^3/c^3*(c*x^2+b*x)^(1/2)-5/128*B*b^4/c^(7/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*A*(c*x^2+b*x)^(3/2)/c-1/4*A*b/c*
x*(c*x^2+b*x)^(1/2)-1/8*A*b^2/c^2*(c*x^2+b*x)^(1/2)+1/16*A*b^3/c^(5/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.90, size = 198, normalized size = 1.75

$$\frac{5 \sqrt{cx^2+bx}\, Bb^2 x}{32\, c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}} Bx}{4\, c}-\frac{\sqrt{cx^2+bx}\, Abx}{4\, c}-\frac{5\, Bb^4 \log\left(2\, cx+b+2\, \sqrt{cx^2+bx}\, \sqrt{c}\right)}{128\, c^{\frac{7}{2}}}+\frac{Ab^3 \log\left(2\, cx+b+2\, \sqrt{cx^2+bx}\, \sqrt{c}\right)}{16\, c^{\frac{5}{2}}}+\frac{5\, \sqrt{cx^2+bx}\, Bb^3}{64\, c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}} Bb}{24\, c^2}-\frac{\sqrt{cx^2+bx}\, Ab^2}{8\, c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}} A}{3\, c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 5/32*sqrt(c*x^2 + b*x)*B*b^2*x/c^2 + 1/4*(c*x^2 + b*x)^(3/2)*B*x/c - 1/4*sq
rt(c*x^2 + b*x)*A*b*x/c - 5/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c))/c^(7/2) + 1/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c
^(5/2) + 5/64*sqrt(c*x^2 + b*x)*B*b^3/c^3 - 5/24*(c*x^2 + b*x)^(3/2)*B*b/c^
2 - 1/8*sqrt(c*x^2 + b*x)*A*b^2/c^2 + 1/3*(c*x^2 + b*x)^(3/2)*A/c
```

mupad [B] time = 1.52, size = 165, normalized size = 1.46

$$\frac{A\,\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}+\frac{B\,x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{4\,c}-\frac{5\,B\,b\,\left(\frac{b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}+\frac{A\,b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2) + (B*x*(b*x
+ c*x^2)^(3/2))/(4*c) - (5*B*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x
^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*
x))/(24*c^2)))/(8*c) + (A*b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/
2)))/(16*c^(5/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \sqrt{x \left(b + cx\right)} \left(A + Bx\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.70 $\int (A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=97

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

Rubi [A] time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(8*c^2) + (B*(b*x + c*x^2)^(
3/2))/(3*c) + (b^2*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8
*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\sqrt{bx+cx^2}\,dx = \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{(-bB+2Ac)\int \sqrt{bx+cx^2}\,dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2(bB-2Ac)\right)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{16c^2}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2(bB-2Ac)\right)\operatorname{Subst}\left(\int \frac{1}{1-cx^2}\right.}{8c^2}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}$$

Mathematica [A] time = 0.18, size = 108, normalized size = 1.11

$$\frac{\sqrt{x(b+cx)}\left(\frac{3b^{3/2}(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}} + \sqrt{c}\left(2bc(3A+Bx)+4c^2x(3A+2Bx)-3b^2B\right)\right)}{24c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-3*b^2*B + 2*b*c*(3*A + B*x) + 4*c^2*x*(3*A +
2*B*x)) + (3*b^(3/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqr
t[x]*Sqrt[1 + (c*x)/b])))/(24*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.51, size = 105, normalized size = 1.08

$$\frac{\sqrt{bx+cx^2}\left(6Abc+12Ac^2x-3b^2B+2bBcx+8Bc^2x^2\right)}{24c^2} + \frac{\left(2Ab^2c-b^3B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{16c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-3*b^2*B + 6*A*b*c + 2*b*B*c*x + 12*A*c^2*x + 8*B*c^2*x
^2))/(24*c^2) + ((-(b^3*B) + 2*A*b^2*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x
+ c*x^2]])/(16*c^(5/2))
```

fricas [A] time = 0.43, size = 204, normalized size = 2.10

$$\left[-\frac{3\left(Bb^3-2Ab^2c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(8Bc^3x^2-3Bb^2c+6Abc^2+2\left(Bbc^2+6Ac^3\right)x\right)\sqrt{cx^2+bx}}{48c^3}, -\frac{3\left(Bb^3-2Ab^2c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(8Bc^3x^2-3Bb^2c+6Abc^2+2\left(Bbc^2+6Ac^3\right)x\right)\sqrt{cx^2+bx}}{24c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*b^3 - 2*A*b^2*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*b*c^2 + 6*A*c^3)*x)
*sqrt(c*x^2 + b*x))/c^3, -1/24*(3*(B*b^3 - 2*A*b^2*c)*sqrt(-c)*arctan(sqrt(
c*x^2 + b*x)*sqrt(-c)/(c*x)) - (8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*
b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.20, size = 102, normalized size = 1.05

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(4Bx+\frac{Bbc+6Ac^2}{c^2}\right)x-\frac{3\left(Bb^2-2Abc\right)}{c^2}\right)-\frac{\left(Bb^3-2Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{16c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")

[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x + (B*b*c + 6*A*c^2)/c^2)*x - 3*(B*b^2 - 2*A*b*c)/c^2) - 1/16*(B*b^3 - 2*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)

maple [A] time = 0.05, size = 157, normalized size = 1.62

$$-\frac{A b^2 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{8c^{\frac{3}{2}}}+\frac{B b^3 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{16c^{\frac{5}{2}}}+\frac{\sqrt{c x^2+bx}\, Ax}{2}-\frac{\sqrt{c x^2+bx}\, Bbx}{4c}+\frac{\sqrt{c x^2+bx}\, Ab}{4c}-\frac{\sqrt{c x^2+bx}\, B b^2}{8c^2}+\frac{\left(c x^2+bx\right)^{\frac{3}{2}} B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+b*x)^(1/2),x)

[Out] 1/3*B*(c*x^2+b*x)^(3/2)/c-1/4*B*b/c*x*(c*x^2+b*x)^(1/2)-1/8*B*b^2/c^2*(c*x^2+b*x)^(1/2)+1/16*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/2*A*x*(c*x^2+b*x)^(1/2)+1/4*A/c*(c*x^2+b*x)^(1/2)*b-1/8*A*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))

maxima [A] time = 0.95, size = 154, normalized size = 1.59

$$\frac{1}{2}\sqrt{cx^2+bx}\,Ax-\frac{\sqrt{cx^2+bx}\,Bbx}{4c}+\frac{Bb^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{5}{2}}}-\frac{Ab^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{3}{2}}}-\frac{\sqrt{cx^2+bx}\,Bb^2}{8c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{3c}+\frac{\sqrt{cx^2+bx}\,Ab}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")

[Out] 1/2*sqrt(c*x^2 + b*x)*A*x - 1/4*sqrt(c*x^2 + b*x)*B*b*x/c + 1/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 1/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 1/8*sqrt(c*x^2 + b*x)*B*b^2/c^2 + 1/3*(c*x^2 + b*x)^(3/2)*B/c + 1/4*sqrt(c*x^2 + b*x)*A*b/c

mupad [B] time = 1.38, size = 127, normalized size = 1.31

$$A\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)+\frac{B\,b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{B\,\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}-\frac{A\,b^2\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x + c*x^2)^(1/2)*(A + B*x),x)

[Out] A*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) + (B*b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (B*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2) - (A*b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(8*c^(3/2))

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x\,(b+cx)}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2),x)

[Out] Integral(sqrt(x*(b + c*x))*(A + B*x), x)

3.71 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x} \, dx$

Optimal. Leaf size=92

$$-\frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{4c^{3/2}}-\frac{\sqrt{bx+cx^2}\,(bB-4Ac)}{4c}+\frac{B\left(bx+cx^2\right)^{3/2}}{2cx}$$

Rubi [A] time = 0.07, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {794, 664, 620, 206}

$$-\frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{4c^{3/2}}-\frac{\sqrt{bx+cx^2}\,(bB-4Ac)}{4c}+\frac{B\left(bx+cx^2\right)^{3/2}}{2cx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x,x]
```

```
[Out] -((b*B - 4*A*c)*Sqrt[b*x + c*x^2])/(4*c) + (B*(b*x + c*x^2)^(3/2))/(2*c*x)
- (b*(b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x}\,dx = \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} + \frac{\left(bB-Ac+\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{bx+cx^2}}{x}\,dx}{2c}$$
$$= -\frac{(bB-4Ac)\sqrt{bx+cx^2}}{4c} + \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} - \frac{(b(bB-4Ac))\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{8c}$$
$$= -\frac{(bB-4Ac)\sqrt{bx+cx^2}}{4c} + \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} - \frac{(b(bB-4Ac))\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \right.}{4c}$$
$$= -\frac{(bB-4Ac)\sqrt{bx+cx^2}}{4c} + \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} - \frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{3/2}}$$

Mathematica [A] time = 0.14, size = 89, normalized size = 0.97

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\,(4Ac+bB+2Bcx)-\frac{\sqrt{b}\,(bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\,\sqrt{\frac{cx}{b}+1}}\right)}{4c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(b*B + 4*A*c + 2*B*c*x) - (Sqrt[b]*(b*B - 4*A*c
)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(4*c^(3
/2))
```

IntegrateAlgebraic [A] time = 0.45, size = 85, normalized size = 0.92

$$\frac{\left(b^2B-4Abc\right)\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)}{8c^{3/2}} + \frac{\sqrt{bx+cx^2}\,(4Ac+bB+2Bcx)}{4c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x,x]
```

```
[Out] ((b*B + 4*A*c + 2*B*c*x)*Sqrt[b*x + c*x^2])/(4*c) + ((b^2*B - 4*A*b*c)*Log[
b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[b*x + c*x^2]])/(8*c^(3/2))
```

fricas [A] time = 0.42, size = 153, normalized size = 1.66

$$\left[-\frac{\left(Bb^2-4\,Abc\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(2\,Bc^2x+Bbc+4\,Ac^2\right)\sqrt{cx^2+bx}}{8\,c^2}, \frac{\left(Bb^2-4\,Abc\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\left(2\,Bc^2x+Bbc+4\,Ac^2\right)\sqrt{cx^2+bx}}{4\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] [-1/8*((B*b^2 - 4*A*b*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c
)) - 2*(2*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^2, 1/4*((B*b^2 -
4*A*b*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (2*B*c^2*x + B
*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^2]
```

giac [A] time = 0.23, size = 77, normalized size = 0.84

$$\frac{1}{4}\,\sqrt{cx^2+bx}\left(2\,Bx+\frac{Bb+4\,Ac}{c}\right)+\frac{\left(Bb^2-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x,x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x + (B*b + 4*A*c)/c) + 1/8*(B*b^2 - 4*A*b*c)*log
(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.05, size = 112, normalized size = 1.22

$$\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2\sqrt{c}}-\frac{B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx}\;Bx}{2}+\sqrt{c\,x^2+bx}\;A+\frac{\sqrt{c\,x^2+bx}\;Bb}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x,x)
```

```
[Out] 1/2*B*x*(c*x^2+b*x)^(1/2)+1/4*B/c*(c*x^2+b*x)^(1/2)*b-1/8*B*b^2/c^(3/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+A*(c*x^2+b*x)^(1/2)+1/2*A*b*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.89, size = 109, normalized size = 1.18

$$\frac{1}{2}\sqrt{cx^2+bx}\,Bx-\frac{Bb^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{3}{2}}}+\frac{Ab\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,\sqrt{c}}+\sqrt{cx^2+bx}\,A+\frac{\sqrt{cx^2+bx}\,Bb}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*B*x - 1/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c))/c^(3/2) + 1/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt
(c) + sqrt(c*x^2 + b*x)*A + 1/4*sqrt(c*x^2 + b*x)*B*b/c
```

mupad [B] time = 1.32, size = 101, normalized size = 1.10

$$A\,\sqrt{c\,x^2+b\,x}+B\,\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{B\,b^2\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}+\frac{A\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x,x)
```

```
[Out] A*(b*x + c*x^2)^(1/2) + B*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) - (B*b^2*log(
(b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(8*c^(3/2)) + (A*b*log((b/2 + c
*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(2*c^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x, x)
```

3.72 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^2}\,dx$

Optimal. Leaf size=83

$$\frac{\sqrt{bx+cx^2}\,(2Ac+bB)}{b}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}$$

Rubi [A] time = 0.09, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 664, 620, 206}

$$\frac{\sqrt{bx+cx^2}\,(2Ac+bB)}{b}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^2,x]
```

```
[Out] ((b*B + 2*A*c)*Sqrt[b*x + c*x^2])/b - (2*A*(b*x + c*x^2)^(3/2))/(b*x^2) + (
(b*B + 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^2}\,dx = -\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2} + \frac{\left(2\left(-2(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x}\,dx}{b}$$

$$= \frac{(bB+2Ac)\sqrt{bx+cx^2}}{b} - \frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2} + \frac{1}{2}(bB+2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx$$

$$= \frac{(bB+2Ac)\sqrt{bx+cx^2}}{b} - \frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2} + (bB+2Ac)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x,\right.$$

$$= \frac{(bB+2Ac)\sqrt{bx+cx^2}}{b} - \frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2} + \frac{(bB+2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}$$

Mathematica [A] time = 0.14, size = 75, normalized size = 0.90

$$\frac{\sqrt{x(b+cx)}\left(\frac{\sqrt{x}\,(2Ac+bB)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,\sqrt{c}\,\sqrt{\frac{cx}{b}+1}} - 2A + Bx\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(-2*A + B*x + ((b*B + 2*A*c)*Sqrt[x]*ArcSinh[(Sqrt[c]*Sq
rt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b])))/x
```

IntegrateAlgebraic [A] time = 0.34, size = 70, normalized size = 0.84

$$\frac{(Bx-2A)\sqrt{bx+cx^2}}{x} + \frac{(-2Ac-bB)\log\left(-2\sqrt{c}\,\sqrt{bx+cx^2}+b+2cx\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^2,x]
```

```
[Out] ((-2*A + B*x)*Sqrt[b*x + c*x^2])/x + ((-(b*B) - 2*A*c)*Log[b + 2*c*x - 2*Sq
rt[c]*Sqrt[b*x + c*x^2]])/(2*Sqrt[c])
```

fricas [A] time = 0.42, size = 138, normalized size = 1.66

$$\left[\frac{(Bb+2\,Ac)\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\,(Bcx-2\,Ac)\sqrt{cx^2+bx}}{2\,cx}, -\frac{(Bb+2\,Ac)\sqrt{-c}\,x\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)-(Bcx-2\,Ac)\sqrt{cx^2+bx}}{cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/2*((B*b + 2*A*c)*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
+ 2*(B*c*x - 2*A*c)*sqrt(c*x^2 + b*x))/(c*x), -((B*b + 2*A*c)*sqrt(-c)*x*ar
ctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (B*c*x - 2*A*c)*sqrt(c*x^2 + b*x))
/(c*x)]
```

giac [A] time = 0.21, size = 82, normalized size = 0.99

$$\sqrt{cx^2+bx}\,B - \frac{(Bb+2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,\sqrt{c}} + \frac{2\,Ab}{\sqrt{c}\,x-\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B - 1/2*(B*b + 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*sqrt(c) - b))/sqrt(c) + 2*A*b/(sqrt(c)*x - sqrt(c*x^2 + b*x))
```

maple [A] time = 0.06, size = 113, normalized size = 1.36

$$A\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)+\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2\sqrt{c}}+\frac{2\sqrt{c\,x^2+bx}\;Ac}{b}+\sqrt{c\,x^2+bx}\;B-\frac{2\left(c\,x^2+bx\right)^{\frac{3}{2}}A}{b\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x)
```

```
[Out] -2*A*(c*x^2+b*x)^(3/2)/b/x^2+2*A/b*c*(c*x^2+b*x)^(1/2)+A*c^(1/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+B*(c*x^2+b*x)^(1/2)+1/2*B*b*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.84, size = 89, normalized size = 1.07

$$\frac{Bb\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,\sqrt{c}}+A\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+\sqrt{cx^2+bx}\,B-\frac{2\,\sqrt{cx^2+bx}\,A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + A*sqrt(c)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + sqrt(c*x^2 + b*x)*B - 2*sqrt(c
*x^2 + b*x)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\sqrt{c\,x^2+b\,x}\;\left(A+B\,x\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^2,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{x\,(b+cx)}\;(A+Bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**2, x)
```

3.73 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^3}\,dx$

Optimal. Leaf size=73

$$-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}-\frac{2B\sqrt{bx+cx^2}}{x}+2B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)$$

Rubi [A] time = 0.07, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 662, 620, 206}

$$-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}-\frac{2B\sqrt{bx+cx^2}}{x}+2B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^3,x]
```

```
[Out] (-2*B*Sqrt[b*x + c*x^2])/x - (2*A*(b*x + c*x^2)^(3/2))/(3*b*x^3) + 2*B*Sqrt
[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^3}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+B\int \frac{\sqrt{bx+cx^2}}{x^2}\,dx\\
&= -\frac{2B\sqrt{bx+cx^2}}{x}-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+(Bc)\int \frac{1}{\sqrt{bx+cx^2}}\,dx\\
&= -\frac{2B\sqrt{bx+cx^2}}{x}-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+(2Bc)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)\\
&= -\frac{2B\sqrt{bx+cx^2}}{x}-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+2B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)
\end{aligned}
$$

Mathematica [C] time = 0.06, size = 86, normalized size = 1.18

$$
\frac{2\sqrt{x(b+cx)}\left((b+cx)\sqrt{\frac{cx}{b}+1}\,(bB-Ac)-b^2B\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx}{b}\right)\right)}{3bcx^2\sqrt{\frac{cx}{b}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^3,x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*((b*B - A*c)*(b + c*x)*Sqrt[1 + (c*x)/b] - b^2*B*Hyper
geometric2F1[-3/2, -3/2, -1/2, -((c*x)/b)]))/(3*b*c*x^2*Sqrt[1 + (c*x)/b])
```

IntegrateAlgebraic [A] time = 0.32, size = 72, normalized size = 0.99

$$
-\frac{2\sqrt{bx+cx^2}\,(Ab+Acx+3bBx)}{3bx^2}-B\sqrt{c}\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^3,x]
```

```
[Out] (-2*(A*b + 3*b*B*x + A*c*x)*Sqrt[b*x + c*x^2])/(3*b*x^2) - B*Sqrt[c]*Log[b
+ 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]]
```

fricas [A] time = 0.42, size = 141, normalized size = 1.93

$$
\left[\frac{3\,Bb\sqrt{c}\,x^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\sqrt{cx^2+bx}\,(Ab+(3\,Bb+Ac)x)}{3\,bx^2},\,-\frac{2\left(3\,Bb\sqrt{-c}\,x^2\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\sqrt{cx^2+bx}\,(Ab+(3\,Bb+Ac)x)\right)}{3\,bx^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/3*(3*B*b*sqrt(c)*x^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*sq
rt(c*x^2 + b*x)*(A*b + (3*B*b + A*c)*x))/(b*x^2), -2/3*(3*B*b*sqrt(-c)*x^2*
arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + sqrt(c*x^2 + b*x)*(A*b + (3*B*b
+ A*c)*x))/(b*x^2)]
```

giac [B] time = 0.26, size = 151, normalized size = 2.07

$$
-B\sqrt{c}\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)+\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bb\sqrt{c}+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Ac^{\frac{3}{2}}+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)Abc+Ab^2\sqrt{c}\right)}{3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3\sqrt{c}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] -B*sqrt(c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b)) + 2/3*(
3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*sqrt(c) + 3*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^2*A*c^(3/2) + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c + A*b^2*sqrt
(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x))^3*sqrt(c))
```

maple [A] time = 0.07, size = 89, normalized size = 1.22

$$B\sqrt{c}\ \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)+\frac{2\sqrt{c\,x^2+bx}\ Bc}{b}-\frac{2\left(c\,x^2+bx\right)^{\frac{3}{2}}B}{b\,x^2}-\frac{2\left(c\,x^2+bx\right)^{\frac{3}{2}}A}{3b\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x)
```

```
[Out] -2/3*A*(c*x^2+b*x)^(3/2)/b/x^3-2*B/b/x^2*(c*x^2+b*x)^(3/2)+2*B/b*c*(c*x^2+b
*x)^(1/2)+B*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.95, size = 85, normalized size = 1.16

$$\left(\sqrt{c}\ \log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{2\,\sqrt{cx^2+bx}}{x}\right)B-\frac{2}{3}\,A\left(\frac{\sqrt{cx^2+bx}\,c}{bx}+\frac{\sqrt{cx^2+bx}}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] (sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*sqrt(c*x^2 + b*x)
/x)*B - 2/3*A*(sqrt(c*x^2 + b*x)*c/(b*x) + sqrt(c*x^2 + b*x)/x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\ \left(A+B\,x\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^3,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\ (A+Bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**3, x)
```

3.74 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^4}\,dx$

Optimal. Leaf size=57

$$-\frac{2\left(bx+cx^2\right)^{3/2}(5bB-2Ac)}{15b^2x^3}-\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}$$

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\left(bx+cx^2\right)^{3/2}(5bB-2Ac)}{15b^2x^3}-\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^4,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(5*b*x^4) - (2*(5*b*B - 2*A*c)*(b*x + c*x^2)^(3/
2))/(15*b^2*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^4}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}+\frac{\left(2\left(-4(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^3}\,dx}{5b}\\ &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}-\frac{2(5bB-2Ac)\left(bx+cx^2\right)^{3/2}}{15b^2x^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 36, normalized size = 0.63

$$-\frac{2(x(b+cx))^{3/2}(3Ab-2Acx+5bBx)}{15b^2x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^4,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(3*A*b + 5*b*B*x - 2*A*c*x))/(15*b^2*x^4)
```

IntegrateAlgebraic [A] time = 0.30, size = 60, normalized size = 1.05

$$\frac{2\sqrt{bx+cx^2}\left(-3Ab^2-Abcx+2Ac^2x^2-5b^2Bx-5bBcx^2\right)}{15b^2x^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^4,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-3*A*b^2 - 5*b^2*B*x - A*b*c*x - 5*b*B*c*x^2 + 2*A*c^
2*x^2))/(15*b^2*x^3)
```

fricas [A] time = 0.40, size = 55, normalized size = 0.96

$$-\frac{2\left(3\,Ab^2+\left(5\,Bbc-2\,Ac^2\right)x^2+\left(5\,Bb^2+Abc\right)x\right)\sqrt{cx^2+bx}}{15\,b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^2 + (5*B*b*c - 2*A*c^2)*x^2 + (5*B*b^2 + A*b*c)*x)*sqrt(c*x^2
+ b*x)/(b^2*x^3)
```

giac [B] time = 0.25, size = 191, normalized size = 3.35

$$\frac{2\left(15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bc+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb\sqrt{c}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ac^{\frac{3}{2}}+5\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^2+25\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Abc+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^2\sqrt{c}+3\,Ab^3\right)}{15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] 2/15*(15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c + 15*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^3*B*b*sqrt(c) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(3/2) + 5
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2 + 25*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^2*A*b*c + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*sqrt(c) + 3*A*b^3)/(s
qrt(c)*x - sqrt(c*x^2 + b*x))^5
```

maple [A] time = 0.05, size = 40, normalized size = 0.70

$$-\frac{2\,(cx+b)\,(-2Acx+5Bbx+3Ab)\,\sqrt{c\,x^2+bx}}{15b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x)
```

```
[Out] -2/15*(c*x+b)*(-2*A*c*x+5*B*b*x+3*A*b)*(c*x^2+b*x)^(1/2)/b^2/x^3
```

maxima [B] time = 0.95, size = 100, normalized size = 1.75

$$-\frac{2\,\sqrt{cx^2+bx}\,Bc}{3\,bx}+\frac{4\,\sqrt{cx^2+bx}\,Ac^2}{15\,b^2x}-\frac{2\,\sqrt{cx^2+bx}\,B}{3\,x^2}-\frac{2\,\sqrt{cx^2+bx}\,Ac}{15\,bx^2}-\frac{2\,\sqrt{cx^2+bx}\,A}{5\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(c*x^2 + b*x)*B*c/(b*x) + 4/15*sqrt(c*x^2 + b*x)*A*c^2/(b^2*x) - 2
/3*sqrt(c*x^2 + b*x)*B/x^2 - 2/15*sqrt(c*x^2 + b*x)*A*c/(b*x^2) - 2/5*sqrt(
c*x^2 + b*x)*A/x^3
```

mupad [B] time = 1.44, size = 100, normalized size = 1.75

$$\frac{4\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{15\,b^2\,x}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{3\,x^2}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{15\,b\,x^2}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{3\,b\,x}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{5\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^4,x)
```

```
[Out] (4*A*c^2*(b*x + c*x^2)^(1/2))/(15*b^2*x) - (2*B*(b*x + c*x^2)^(1/2))/(3*x^2
) - (2*A*c*(b*x + c*x^2)^(1/2))/(15*b*x^2) - (2*B*c*(b*x + c*x^2)^(1/2))/(3
*b*x) - (2*A*(b*x + c*x^2)^(1/2))/(5*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**4,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**4, x)
```

3.75 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^5}\,dx$

Optimal. Leaf size=90

$$\frac{4c\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{105b^3x^3}-\frac{2\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{35b^2x^4}-\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}$$

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{105b^3x^3}-\frac{2\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{35b^2x^4}-\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^5,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(7*b*x^5) - (2*(7*b*B - 4*A*c)*(b*x + c*x^2)^(3/
2))/(35*b^2*x^4) + (4*c*(7*b*B - 4*A*c)*(b*x + c*x^2)^(3/2))/(105*b^3*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^5}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}+\frac{\left(2\left(-5(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^4}\,dx}{7b}\\ &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}-\frac{2(7bB-4Ac)\left(bx+cx^2\right)^{3/2}}{35b^2x^4}-\frac{(2c(7bB-4Ac))\int \frac{\sqrt{bx+cx^2}}{x^3}\,dx}{35b^2}\\ &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}-\frac{2(7bB-4Ac)\left(bx+cx^2\right)^{3/2}}{35b^2x^4}+\frac{4c(7bB-4Ac)\left(bx+cx^2\right)^{3/2}}{105b^3x^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 56, normalized size = 0.62

$$-\frac{2(x(b+cx))^{3/2}\left(A\left(15b^2-12bcx+8c^2x^2\right)+7bBx(3b-2cx)\right)}{105b^3x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^5,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(7*b*B*x*(3*b - 2*c*x) + A*(15*b^2 - 12*b*c*x + 8*c
^2*x^2)))/(105*b^3*x^5)
```

IntegrateAlgebraic [A] time = 0.34, size = 84, normalized size = 0.93

$$-\frac{2\sqrt{bx+cx^2}\left(15Ab^3+3Ab^2cx-4Abc^2x^2+8Ac^3x^3+21b^3Bx+7b^2Bcx^2-14bBc^2x^3\right)}{105b^3x^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^5,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(15*A*b^3 + 21*b^3*B*x + 3*A*b^2*c*x + 7*b^2*B*c*x^2
- 4*A*b*c^2*x^2 - 14*b*B*c^2*x^3 + 8*A*c^3*x^3))/(105*b^3*x^4)
```

fricas [A] time = 0.40, size = 80, normalized size = 0.89

$$-\frac{2\left(15\,Ab^3-2\left(7\,Bbc^2-4\,Ac^3\right)x^3+\left(7\,Bb^2c-4\,Abc^2\right)x^2+3\left(7\,Bb^3+Ab^2c\right)x\right)\sqrt{cx^2+bx}}{105\,b^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] -2/105*(15*A*b^3 - 2*(7*B*b*c^2 - 4*A*c^3)*x^3 + (7*B*b^2*c - 4*A*b*c^2)*x^
2 + 3*(7*B*b^3 + A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^3*x^4)
```

giac [B] time = 0.23, size = 251, normalized size = 2.79

$$\frac{2\left(105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bc^{\frac{3}{2}}+175\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bbc+140\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ac^2+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^2\sqrt{c}+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Abc^{\frac{3}{2}}+21\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^3+273\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^2c+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^3\sqrt{c}+15\,Ab^4\right)}{105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] 2/105*(105*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^(3/2) + 175*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*B*b*c + 140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^2 + 1
05*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*sqrt(c) + 315*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*A*b*c^(3/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3 +
273*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c + 105*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*A*b^3*sqrt(c) + 15*A*b^4)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
```

maple [A] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-14Bbc\,x^2-12Abcx+21B\,b^2x+15A\,b^2\right)\sqrt{c\,x^2+bx}}{105b^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x)
```

```
[Out] -2/105*(c*x+b)*(8*A*c^2*x^2-14*B*b*c*x^2-12*A*b*c*x+21*B*b^2*x+15*A*b^2)*(c
*x^2+b*x)^(1/2)/b^3/x^4
```

maxima [A] time = 0.93, size = 146, normalized size = 1.62

$$\frac{4\sqrt{cx^2+bx}\,Bc^2}{15\,b^2x}-\frac{16\sqrt{cx^2+bx}\,Ac^3}{105\,b^3x}-\frac{2\sqrt{cx^2+bx}\,Bc}{15\,bx^2}+\frac{8\sqrt{cx^2+bx}\,Ac^2}{105\,b^2x^2}-\frac{2\sqrt{cx^2+bx}\,B}{5\,x^3}-\frac{2\sqrt{cx^2+bx}\,Ac}{35\,bx^3}-\frac{2\sqrt{cx^2+bx}\,A}{7\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] 4/15*sqrt(c*x^2 + b*x)*B*c^2/(b^2*x) - 16/105*sqrt(c*x^2 + b*x)*A*c^3/(b^3*
x) - 2/15*sqrt(c*x^2 + b*x)*B*c/(b*x^2) + 8/105*sqrt(c*x^2 + b*x)*A*c^2/(b^
2*x^2) - 2/5*sqrt(c*x^2 + b*x)*B/x^3 - 2/35*sqrt(c*x^2 + b*x)*A*c/(b*x^3) -
 2/7*sqrt(c*x^2 + b*x)*A/x^4
```

mupad [B] time = 1.67, size = 146, normalized size = 1.62

$$\frac{8\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b^2\,x^2}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{5\,x^3}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{35\,b\,x^3}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{15\,b\,x^2}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{16\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{105\,b^3\,x}+\frac{4\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{15\,b^2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^5,x)
```

```
[Out] (8*A*c^2*(b*x + c*x^2)^(1/2))/(105*b^2*x^2) - (2*B*(b*x + c*x^2)^(1/2))/(5*
x^3) - (2*A*c*(b*x + c*x^2)^(1/2))/(35*b*x^3) - (2*B*c*(b*x + c*x^2)^(1/2))
/(15*b*x^2) - (2*A*(b*x + c*x^2)^(1/2))/(7*x^4) - (16*A*c^3*(b*x + c*x^2)^(
1/2))/(105*b^3*x) + (4*B*c^2*(b*x + c*x^2)^(1/2))/(15*b^2*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**5,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**5, x)
```

3.76 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^6} \, dx$

Optimal. Leaf size=125

$$-\frac{16c^2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{315b^4x^3}+\frac{8c\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{105b^3x^4}-\frac{2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{21b^2x^5}-\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}$$

Rubi [A] time = 0.11, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{315b^4x^3}+\frac{8c\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{105b^3x^4}-\frac{2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{21b^2x^5}-\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^6,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(9*b*x^6) - (2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(3/
2))/(21*b^2*x^5) + (8*c*(3*b*B - 2*A*c)*(b*x + c*x^2)^(3/2))/(105*b^3*x^4)
- (16*c^2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(3/2))/(315*b^4*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^6}\,dx = -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6} + \frac{\left(2\left(-6(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^5}\,dx}{9b}$$
$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{21b^2x^5} - \frac{(4c(3bB-2Ac))\int \frac{\sqrt{bx+cx^2}}{x^4}\,dx}{21b^2}$$
$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{21b^2x^5} + \frac{8c(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{105b^3x^4} + \cdots$$
$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{21b^2x^5} + \frac{8c(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{105b^3x^4} - \cdots$$

Mathematica [A] time = 0.03, size = 78, normalized size = 0.62

$$-\frac{2(x(b+cx))^{3/2}\left(A\left(35b^3-30b^2cx+24bc^2x^2-16c^3x^3\right)+3bBx\left(15b^2-12bcx+8c^2x^2\right)\right)}{315b^4x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^6,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(3*b*B*x*(15*b^2 - 12*b*c*x + 8*c^2*x^2) + A*(35*b^
3 - 30*b^2*c*x + 24*b*c^2*x^2 - 16*c^3*x^3)))/(315*b^4*x^6)
```

IntegrateAlgebraic [A] time = 0.34, size = 108, normalized size = 0.86

$$\frac{2\sqrt{bx+cx^2}\left(-35Ab^4-5Ab^3cx+6Ab^2c^2x^2-8Abc^3x^3+16Ac^4x^4-45b^4Bx-9b^3Bcx^2+12b^2Bc^2x^3-24bBc^3x^4\right)}{315b^4x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^6,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-35*A*b^4 - 45*b^4*B*x - 5*A*b^3*c*x - 9*b^3*B*c*x^2
+ 6*A*b^2*c^2*x^2 + 12*b^2*B*c^2*x^3 - 8*A*b*c^3*x^3 - 24*b*B*c^3*x^4 + 16*
A*c^4*x^4))/(315*b^4*x^5)
```

fricas [A] time = 0.41, size = 105, normalized size = 0.84

$$-\frac{2\left(35\,Ab^4+8\left(3\,Bbc^3-2\,Ac^4\right)x^4-4\left(3\,Bb^2c^2-2\,Abc^3\right)x^3+3\left(3\,Bb^3c-2\,Ab^2c^2\right)x^2+5\left(9\,Bb^4+Ab^3c\right)x\right)\sqrt{cx^2+bx}}{315\,b^4x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^4 + 8*(3*B*b*c^3 - 2*A*c^4)*x^4 - 4*(3*B*b^2*c^2 - 2*A*b*c^3
)*x^3 + 3*(3*B*b^3*c - 2*A*b^2*c^2)*x^2 + 5*(9*B*b^4 + A*b^3*c)*x)*sqrt(c*x
^2 + b*x)/(b^4*x^5)
```

giac [B] time = 0.20, size = 311, normalized size = 2.49

$$\frac{2\left(420\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bc^2+945\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bbc^{\frac{3}{2}}+630\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ac^{\frac{5}{2}}+819\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^2c+1764\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Abc^2+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^3\sqrt{c}+1995\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^2c^{\frac{3}{2}}+45\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^4+1125\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^3c+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^4\sqrt{c}+35\,Ab^5\right)}{315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] 2/315*(420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^2 + 945*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^5*B*b*c^(3/2) + 630*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^(5/
```

```
2) + 819*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c + 1764*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*A*b*c^2 + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*sqrt
(c) + 1995*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2) + 45*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^2*B*b^4 + 1125*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3
*c + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c) + 35*A*b^5)/(sqrt(c)
*x - sqrt(c*x^2 + b*x))^9
```

maple [A] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-16A\,c^3x^3+24Bb\,c^2x^3+24Ab\,c^2x^2-36B\,b^2c\,x^2-30A\,b^2cx+45B\,b^3x+35A\,b^3\right)\sqrt{c\,x^2+bx}}{315b^4x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x)
```

```
[Out] -2/315*(c*x+b)*(-16*A*c^3*x^3+24*B*b*c^2*x^3+24*A*b*c^2*x^2-36*B*b^2*c*x^2-
30*A*b^2*c*x+45*B*b^3*x+35*A*b^3)*(c*x^2+b*x)^(1/2)/b^4/x^5
```

maxima [A] time = 0.98, size = 192, normalized size = 1.54

$$-\frac{16\sqrt{cx^2+bx}\,Bc^3}{105\,b^3x}+\frac{32\sqrt{cx^2+bx}\,Ac^4}{315\,b^4x}+\frac{8\sqrt{cx^2+bx}\,Bc^2}{105\,b^2x^2}-\frac{16\sqrt{cx^2+bx}\,Ac^3}{315\,b^3x^2}-\frac{2\sqrt{cx^2+bx}\,Bc}{35\,bx^3}+\frac{4\sqrt{cx^2+bx}\,Ac^2}{105\,b^2x^3}-\frac{2\sqrt{cx^2+bx}\,B}{7\,x^4}-\frac{2\sqrt{cx^2+bx}\,Ac}{63\,bx^4}-\frac{2\sqrt{cx^2+bx}\,A}{9\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] -16/105*sqrt(c*x^2 + b*x)*B*c^3/(b^3*x) + 32/315*sqrt(c*x^2 + b*x)*A*c^4/(b
^4*x) + 8/105*sqrt(c*x^2 + b*x)*B*c^2/(b^2*x^2) - 16/315*sqrt(c*x^2 + b*x)*
A*c^3/(b^3*x^2) - 2/35*sqrt(c*x^2 + b*x)*B*c/(b*x^3) + 4/105*sqrt(c*x^2 + b
*x)*A*c^2/(b^2*x^3) - 2/7*sqrt(c*x^2 + b*x)*B/x^4 - 2/63*sqrt(c*x^2 + b*x)*
A*c/(b*x^4) - 2/9*sqrt(c*x^2 + b*x)*A/x^5
```

mupad [B] time = 1.94, size = 192, normalized size = 1.54

$$\frac{4\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b^2\,x^3}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^4}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{35\,b\,x^3}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{16\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{315\,b^3\,x^2}+\frac{32\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{315\,b^4\,x}+\frac{8\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b^2\,x^2}-\frac{16\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{105\,b^3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^6,x)
```

```
[Out] (4*A*c^2*(b*x + c*x^2)^(1/2))/(105*b^2*x^3) - (2*B*(b*x + c*x^2)^(1/2))/(7*
x^4) - (2*A*c*(b*x + c*x^2)^(1/2))/(63*b*x^4) - (2*B*c*(b*x + c*x^2)^(1/2))
/(35*b*x^3) - (2*A*(b*x + c*x^2)^(1/2))/(9*x^5) - (16*A*c^3*(b*x + c*x^2)^(
1/2))/(315*b^3*x^2) + (32*A*c^4*(b*x + c*x^2)^(1/2))/(315*b^4*x) + (8*B*c^2
*(b*x + c*x^2)^(1/2))/(105*b^2*x^2) - (16*B*c^3*(b*x + c*x^2)^(1/2))/(105*b
^3*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\left(A+Bx\right)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**6,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**6, x)
```

3.77 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^7}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{3465b^5x^3}-\frac{16c^2\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{1155b^4x^4}+\frac{4c\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{231b^3x^5}-\frac{2\left(bx+cx^2\right)^{3/2}}{99b}$$

Rubi [A] time = 0.16, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{32c^3\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{3465b^5x^3}-\frac{16c^2\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{1155b^4x^4}+\frac{4c\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{231b^3x^5}-\frac{2\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{99b^2x^6}-\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^7,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(11*b*x^7) - (2*(11*b*B - 8*A*c)*(b*x + c*x^2)^(
3/2))/(99*b^2*x^6) + (4*c*(11*b*B - 8*A*c)*(b*x + c*x^2)^(3/2))/(231*b^3*x^
5) - (16*c^2*(11*b*B - 8*A*c)*(b*x + c*x^2)^(3/2))/(1155*b^4*x^4) + (32*c^3
*(11*b*B - 8*A*c)*(b*x + c*x^2)^(3/2))/(3465*b^5*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^7}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} + \frac{\left(2\left(-7(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^6}\,dx}{11b} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} - \frac{(2c(11bB-8Ac))\int \frac{\sqrt{bx+cx^2}}{x^5}\,d}{33b^2} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} + \frac{4c(11bB-8Ac)\left(bx+cx^2\right)^{3/}}{231b^3x^5} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} + \frac{4c(11bB-8Ac)\left(bx+cx^2\right)^{3/}}{231b^3x^5} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} + \frac{4c(11bB-8Ac)\left(bx+cx^2\right)^{3/}}{231b^3x^5}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 100, normalized size = 0.62

$$
-\frac{2(x(b+cx))^{3/2}\left(A\left(315b^4-280b^3cx+240b^2c^2x^2-192bc^3x^3+128c^4x^4\right)+11bBx\left(35b^3-30b^2cx+24bc^2x^2-16c^3x^3\right)\right)}{3465b^5x^7}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^7,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(11*b*B*x*(35*b^3 - 30*b^2*c*x + 24*b*c^2*x^2 - 16*
c^3*x^3) + A*(315*b^4 - 280*b^3*c*x + 240*b^2*c^2*x^2 - 192*b*c^3*x^3 + 128
*c^4*x^4)))/(3465*b^5*x^7)
```

IntegrateAlgebraic [A] time = 0.40, size = 132, normalized size = 0.82

$$
-\frac{2\sqrt{bx+cx^2}\left(315Ab^5+35Ab^4cx-40Ab^3c^2x^2+48Ab^2c^3x^3-64Abc^4x^4+128Ac^5x^5+385b^5Bx+55b^4Bcx^2-66b^3Bc^2x^3+88b^2Bc^3x^4-176bBc^4x^5\right)}{3465b^5x^6}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^7,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(315*A*b^5 + 385*b^5*B*x + 35*A*b^4*c*x + 55*b^4*B*c*
x^2 - 40*A*b^3*c^2*x^2 - 66*b^3*B*c^2*x^3 + 48*A*b^2*c^3*x^3 + 88*b^2*B*c^3
*x^4 - 64*A*b*c^4*x^4 - 176*b*B*c^4*x^5 + 128*A*c^5*x^5))/(3465*b^5*x^6)
```

fricas [A] time = 0.41, size = 129, normalized size = 0.81

$$
-\frac{2\left(315\,Ab^5-16\left(11\,Bbc^4-8\,Ac^5\right)x^5+8\left(11\,Bb^2c^3-8\,Abc^4\right)x^4-6\left(11\,Bb^3c^2-8\,Ab^2c^3\right)x^3+5\left(11\,Bb^4c-8\,Ab^3c^2\right)x^2+35\left(11\,Bb^5+Ab^4c\right)x\right)\sqrt{cx^2+bx}}{3465\,b^5x^6}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] -2/3465*(315*A*b^5 - 16*(11*B*b*c^4 - 8*A*c^5)*x^5 + 8*(11*B*b^2*c^3 - 8*A*
b*c^4)*x^4 - 6*(11*B*b^3*c^2 - 8*A*b^2*c^3)*x^3 + 5*(11*B*b^4*c - 8*A*b^3*c
^2)*x^2 + 35*(11*B*b^5 + A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^5*x^6)
```

giac [B] time = 0.20, size = 371, normalized size = 2.32

$$
\frac{2\left(6930\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bc^{\frac{5}{2}}+19404\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bbc^2+11088\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ac^3+21945\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^2c^{\frac{3}{2}}+36960\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Abc^{\frac{5}{2}}+12375\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^3c+51480\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^2c^2+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^4\sqrt{c}+38115\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^3c^{\frac{3}{2}}+385\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^5+15785\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^4c+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^5\sqrt{c}+315\,Ab^6\right)}{3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 2/3465*(6930*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*c^(5/2) + 19404*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^6*B*b*c^2 + 11088*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A
*c^3 + 21945*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/2) + 36960*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^(5/2) + 12375*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^4*B*b^3*c + 51480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^2 + 3465*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(c) + 38115*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*A*b^3*c^(3/2) + 385*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5 +
 15785*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c + 3465*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*A*b^5*sqrt(c) + 315*A*b^6)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(128A\,c^4x^4-176Bb\,c^3x^4-192Ab\,c^3x^3+264B\,b^2c^2x^3+240A\,b^2c^2x^2-330B\,b^3c\,x^2-280A\,b^3cx+385b^4Bx+315A\,b^4\right)\sqrt{c\,x^2+bx}}{3465b^5x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x)
```

```
[Out] -2/3465*(c*x+b)*(128*A*c^4*x^4-176*B*b*c^3*x^4-192*A*b*c^3*x^3+264*B*b^2*c^
2*x^3+240*A*b^2*c^2*x^2-330*B*b^3*c*x^2-280*A*b^3*c*x+385*B*b^4*x+315*A*b^4
)*(c*x^2+b*x)^(1/2)/b^5/x^6
```

maxima [A] time = 0.98, size = 238, normalized size = 1.49

$$\frac{32\,\sqrt{cx^2+bx}\,Bc^4}{315\,b^4x}-\frac{256\,\sqrt{cx^2+bx}\,Ac^5}{3465\,b^5x}-\frac{16\,\sqrt{cx^2+bx}\,Bc^3}{315\,b^3x^2}+\frac{128\,\sqrt{cx^2+bx}\,Ac^4}{3465\,b^4x^2}+\frac{4\,\sqrt{cx^2+bx}\,Bc^2}{105\,b^2x^3}-\frac{32\,\sqrt{cx^2+bx}\,Ac^3}{1155\,b^3x^3}-\frac{2\,\sqrt{cx^2+bx}\,Bc}{63\,bx^4}+\frac{16\,\sqrt{cx^2+bx}\,Ac^2}{693\,b^2x^4}-\frac{2\,\sqrt{cx^2+bx}\,B}{9\,x^5}-\frac{2\,\sqrt{cx^2+bx}\,Ac}{99\,bx^5}-\frac{2\,\sqrt{cx^2+bx}\,A}{11\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] 32/315*sqrt(c*x^2 + b*x)*B*c^4/(b^4*x) - 256/3465*sqrt(c*x^2 + b*x)*A*c^5/(
b^5*x) - 16/315*sqrt(c*x^2 + b*x)*B*c^3/(b^3*x^2) + 128/3465*sqrt(c*x^2 + b
*x)*A*c^4/(b^4*x^2) + 4/105*sqrt(c*x^2 + b*x)*B*c^2/(b^2*x^3) - 32/1155*sqr
t(c*x^2 + b*x)*A*c^3/(b^3*x^3) - 2/63*sqrt(c*x^2 + b*x)*B*c/(b*x^4) + 16/69
3*sqrt(c*x^2 + b*x)*A*c^2/(b^2*x^4) - 2/9*sqrt(c*x^2 + b*x)*B/x^5 - 2/99*sq
rt(c*x^2 + b*x)*A*c/(b*x^5) - 2/11*sqrt(c*x^2 + b*x)*A/x^6
```

mupad [B] time = 2.23, size = 238, normalized size = 1.49

$$\frac{16\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{693\,b^2\,x^4}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{99\,b\,x^5}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^4}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{32\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{1155\,b^3\,x^3}+\frac{128\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{3465\,b^4\,x^2}-\frac{256\,A\,c^5\,\sqrt{c\,x^2+b\,x}}{3465\,b^5\,x}+\frac{4\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b^2\,x^3}-\frac{16\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{315\,b^3\,x^2}+\frac{32\,B\,c^4\,\sqrt{c\,x^2+b\,x}}{315\,b^4\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^7,x)
```

```
[Out] (16*A*c^2*(b*x + c*x^2)^(1/2))/(693*b^2*x^4) - (2*B*(b*x + c*x^2)^(1/2))/(9
*x^5) - (2*A*c*(b*x + c*x^2)^(1/2))/(99*b*x^5) - (2*B*c*(b*x + c*x^2)^(1/2)
)/(63*b*x^4) - (2*A*(b*x + c*x^2)^(1/2))/(11*x^6) - (32*A*c^3*(b*x + c*x^2)
^(1/2))/(1155*b^3*x^3) + (128*A*c^4*(b*x + c*x^2)^(1/2))/(3465*b^4*x^2) - (
256*A*c^5*(b*x + c*x^2)^(1/2))/(3465*b^5*x) + (4*B*c^2*(b*x + c*x^2)^(1/2))
/(105*b^2*x^3) - (16*B*c^3*(b*x + c*x^2)^(1/2))/(315*b^3*x^2) + (32*B*c^4*(
b*x + c*x^2)^(1/2))/(315*b^4*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,(A+Bx)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**7,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**7, x)
```

3.78 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^8}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{45045b^6x^3}+\frac{128c^3\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{15015b^5x^4}-\frac{32c^2\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{3003b^4x^5}+\frac{1}{}$$

Rubi [A] time = 0.20, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{45045b^6x^3}+\frac{128c^3\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{15015b^5x^4}-\frac{32c^2\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{3003b^4x^5}+\frac{16c\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{1287b^3x^6}-\frac{2\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{143b^2x^7}-\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^8,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(13*b*x^8) - (2*(13*b*B - 10*A*c)*(b*x + c*x^2)^
(3/2))/(143*b^2*x^7) + (16*c*(13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(1287*b
^3*x^6) - (32*c^2*(13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(3003*b^4*x^5) + (
128*c^3*(13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(15015*b^5*x^4) - (256*c^4*(
13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(45045*b^6*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^8}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} + \frac{\left(2\left(-8(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int\frac{\sqrt{bx+cx^2}}{x^7}\,dx}{13b} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} - \frac{(8c(13bB-10Ac))\int\frac{\sqrt{bx+cx^2}}{x^6}\,d}{143b^2} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx^2\right)^{3}}{1287b^3x^6} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx^2\right)^{3}}{1287b^3x^6} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx^2\right)^{3}}{1287b^3x^6} \\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx^2\right)^{3}}{1287b^3x^6}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.63

$$-\frac{2(x(b+cx))^{3/2}\left(5A\left(693b^5-630b^4cx+560b^3c^2x^2-480b^2c^3x^3+384bc^4x^4-256c^5x^5\right)+13bBx\left(315b^4-280b^3cx+240b^2c^2x^2-192bc^3x^3+128c^4x^4\right)\right)}{45045b^6x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^8,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(13*b*B*x*(315*b^4 - 280*b^3*c*x + 240*b^2*c^2*x^2
- 192*b*c^3*x^3 + 128*c^4*x^4) + 5*A*(693*b^5 - 630*b^4*c*x + 560*b^3*c^2*x
^2 - 480*b^2*c^3*x^3 + 384*b*c^4*x^4 - 256*c^5*x^5)))/(45045*b^6*x^8)
```

IntegrateAlgebraic [A] time = 0.45, size = 156, normalized size = 0.80

$$\frac{2\sqrt{bx+cx^2}\left(-3465Ab^6-315Ab^5cx+350Ab^4c^2x^2-400Ab^3c^3x^3+480Ab^2c^4x^4-640Abc^5x^5+1280Ac^6x^6-4095b^6Bx-455b^5Bcx^2+520b^4Bc^2x^3-624b^3Bc^3x^4+832b^2Bc^4x^5-1664bBc^5x^6\right)}{45045b^6x^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^8,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-3465*A*b^6 - 4095*b^6*B*x - 315*A*b^5*c*x - 455*b^5*
B*c*x^2 + 350*A*b^4*c^2*x^2 + 520*b^4*B*c^2*x^3 - 400*A*b^3*c^3*x^3 - 624*b
^3*B*c^3*x^4 + 480*A*b^2*c^4*x^4 + 832*b^2*B*c^4*x^5 - 640*A*b*c^5*x^5 - 16
64*b*B*c^5*x^6 + 1280*A*c^6*x^6))/(45045*b^6*x^7)
```

fricas [A] time = 0.40, size = 153, normalized size = 0.78

$$-\frac{2\left(3465\,Ab^6+128\left(13\,Bbc^5-10\,Ac^6\right)x^6-64\left(13\,Bb^2c^4-10\,Abc^5\right)x^5+48\left(13\,Bb^3c^3-10\,Ab^2c^4\right)x^4-40\left(13\,Bb^4c^2-10\,Ab^3c^3\right)x^3+35\left(13\,Bb^5c-10\,Ab^4c^2\right)x^2+315\left(13\,Bb^6+Ab^5c\right)x\right)\sqrt{cx^2+bx}}{45045\,b^6x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x, algorithm="fricas")
```

```
[Out] -2/45045*(3465*A*b^6 + 128*(13*B*b*c^5 - 10*A*c^6)*x^6 - 64*(13*B*b^2*c^4 -
 10*A*b*c^5)*x^5 + 48*(13*B*b^3*c^3 - 10*A*b^2*c^4)*x^4 - 40*(13*B*b^4*c^2
- 10*A*b^3*c^3)*x^3 + 35*(13*B*b^5*c - 10*A*b^4*c^2)*x^2 + 315*(13*B*b^6 +
A*b^5*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^7)
```

giac [B] time = 0.20, size = 431, normalized size = 2.21

$$\frac{2\left(144144\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bc^3+480480\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bbc^{\frac{5}{2}}+240240\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Ac^{\frac{7}{2}}+669240\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^2c^2+926640\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Abc^3+495495\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^3c^{\frac{3}{2}}+1531530\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^2c^{\frac{5}{2}}+205205\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^4c+1401400\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^3c^2+45045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^5\sqrt{c}+765765\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^4c^{\frac{3}{2}}+4095\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^6+249795\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^5c+45045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^6\sqrt{c}+3465\,Ab^7\right)}{45045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x, algorithm="giac")
```

```
[Out] 2/45045*(144144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^3 + 480480*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^7*B*b*c^(5/2) + 240240*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^7*A*c^(7/2) + 669240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^2 + 926640
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b*c^3 + 495495*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^5*B*b^3*c^(3/2) + 1531530*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*
c^(5/2) + 205205*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c + 1401400*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*c^2 + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^3*B*b^5*sqrt(c) + 765765*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^(3/2)
 + 4095*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^6 + 249795*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*A*b^5*c + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*sqrt(
c) + 3465*A*b^7)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^13
```

maple [A] time = 0.04, size = 134, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-1280A\,c^{5}x^{5}+1664Bb\,c^{4}x^{5}+1920Ab\,c^{4}x^{4}-2496B\,b^{2}c^{3}x^{4}-2400A\,b^{2}c^{3}x^{3}+3120B\,b^{3}c^{2}x^{3}+2800A\,b^{3}c^{2}x^{2}-3640B\,b^{4}c\,x^{2}-3150A\,b^{4}cx+4095B\,b^{5}x+3465A\,b^{5}\right)\sqrt{c\,x^{2}+bx}}{45045b^{6}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x)
```

```
[Out] -2/45045*(c*x+b)*(-1280*A*c^5*x^5+1664*B*b*c^4*x^5+1920*A*b*c^4*x^4-2496*B*
b^2*c^3*x^4-2400*A*b^2*c^3*x^3+3120*B*b^3*c^2*x^3+2800*A*b^3*c^2*x^2-3640*B
*b^4*c*x^2-3150*A*b^4*c*x+4095*B*b^5*x+3465*A*b^5)*(c*x^2+b*x)^(1/2)/x^7/b^
6
```

maxima [A] time = 0.99, size = 284, normalized size = 1.46

$$-\frac{256\,\sqrt{cx^{2}+bx}\,Bc^{5}}{3465\,b^{5}x}+\frac{512\,\sqrt{cx^{2}+bx}\,Ac^{6}}{9009\,b^{6}x}+\frac{128\,\sqrt{cx^{2}+bx}\,Bc^{4}}{3465\,b^{4}x^{2}}-\frac{256\,\sqrt{cx^{2}+bx}\,Ac^{5}}{9009\,b^{5}x^{2}}-\frac{32\,\sqrt{cx^{2}+bx}\,Bc^{3}}{1155\,b^{3}x^{3}}+\frac{64\,\sqrt{cx^{2}+bx}\,Ac^{4}}{3003\,b^{4}x^{3}}+\frac{16\,\sqrt{cx^{2}+bx}\,Bc^{2}}{693\,b^{2}x^{4}}-\frac{160\,\sqrt{cx^{2}+bx}\,Ac^{3}}{9009\,b^{3}x^{4}}-\frac{2\,\sqrt{cx^{2}+bx}\,Bc}{99\,bx^{5}}+\frac{20\,\sqrt{cx^{2}+bx}\,Ac^{2}}{1287\,b^{2}x^{5}}-\frac{2\,\sqrt{cx^{2}+bx}\,B}{11\,x^{6}}-\frac{2\,\sqrt{cx^{2}+bx}\,Ac}{143\,bx^{6}}-\frac{2\,\sqrt{cx^{2}+bx}\,A}{13\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x, algorithm="maxima")
```

```
[Out] -256/3465*sqrt(c*x^2 + b*x)*B*c^5/(b^5*x) + 512/9009*sqrt(c*x^2 + b*x)*A*c^
6/(b^6*x) + 128/3465*sqrt(c*x^2 + b*x)*B*c^4/(b^4*x^2) - 256/9009*sqrt(c*x^
2 + b*x)*A*c^5/(b^5*x^2) - 32/1155*sqrt(c*x^2 + b*x)*B*c^3/(b^3*x^3) + 64/3
003*sqrt(c*x^2 + b*x)*A*c^4/(b^4*x^3) + 16/693*sqrt(c*x^2 + b*x)*B*c^2/(b^2
*x^4) - 160/9009*sqrt(c*x^2 + b*x)*A*c^3/(b^3*x^4) - 2/99*sqrt(c*x^2 + b*x)
*B*c/(b*x^5) + 20/1287*sqrt(c*x^2 + b*x)*A*c^2/(b^2*x^5) - 2/11*sqrt(c*x^2
+ b*x)*B/x^6 - 2/143*sqrt(c*x^2 + b*x)*A*c/(b*x^6) - 2/13*sqrt(c*x^2 + b*x)
*A/x^7
```

mupad [B] time = 2.49, size = 284, normalized size = 1.46

$$\frac{20\,A\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{1287\,b^{2}\,x^{5}}-\frac{2\,B\,\sqrt{c\,x^{2}+b\,x}}{11\,x^{6}}-\frac{2\,A\,c\,\sqrt{c\,x^{2}+b\,x}}{143\,b\,x^{6}}-\frac{2\,B\,c\,\sqrt{c\,x^{2}+b\,x}}{99\,b\,x^{5}}-\frac{2\,A\,\sqrt{c\,x^{2}+b\,x}}{13\,x^{7}}-\frac{160\,A\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{9009\,b^{3}\,x^{4}}+\frac{64\,A\,c^{4}\,\sqrt{c\,x^{2}+b\,x}}{3003\,b^{4}\,x^{3}}-\frac{256\,A\,c^{5}\,\sqrt{c\,x^{2}+b\,x}}{9009\,b^{5}\,x^{2}}+\frac{512\,A\,c^{6}\,\sqrt{c\,x^{2}+b\,x}}{9009\,b^{6}\,x}+\frac{16\,B\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{693\,b^{2}\,x^{4}}-\frac{32\,B\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{1155\,b^{3}\,x^{3}}+\frac{128\,B\,c^{4}\,\sqrt{c\,x^{2}+b\,x}}{3465\,b^{4}\,x^{2}}-\frac{256\,B\,c^{5}\,\sqrt{c\,x^{2}+b\,x}}{3465\,b^{5}\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^8,x)
```

```
[Out] (20*A*c^2*(b*x + c*x^2)^(1/2))/(1287*b^2*x^5) - (2*B*(b*x + c*x^2)^(1/2))/(
11*x^6) - (2*A*c*(b*x + c*x^2)^(1/2))/(143*b*x^6) - (2*B*c*(b*x + c*x^2)^(1
/2))/(99*b*x^5) - (2*A*(b*x + c*x^2)^(1/2))/(13*x^7) - (160*A*c^3*(b*x + c*
x^2)^(1/2))/(9009*b^3*x^4) + (64*A*c^4*(b*x + c*x^2)^(1/2))/(3003*b^4*x^3)
- (256*A*c^5*(b*x + c*x^2)^(1/2))/(9009*b^5*x^2) + (512*A*c^6*(b*x + c*x^2)
^(1/2))/(9009*b^6*x) + (16*B*c^2*(b*x + c*x^2)^(1/2))/(693*b^2*x^4) - (32*B
*c^3*(b*x + c*x^2)^(1/2))/(1155*b^3*x^3) + (128*B*c^4*(b*x + c*x^2)^(1/2))/
(3465*b^4*x^2) - (256*B*c^5*(b*x + c*x^2)^(1/2))/(3465*b^5*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x(b+cx)}\,(A+Bx)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**8,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**8, x)
```

3.79 $\int x^3(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=238

$$\frac{9b^7(11bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{16384c^{13/2}}-\frac{9b^5(b+2cx)\sqrt{bx+cx^2}\,(11bB-16Ac)}{16384c^6}+\frac{3b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(11bB}{2048c^5}$$

Rubi [A] time = 0.25, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$-\frac{9b^5(b+2cx)\sqrt{bx+cx^2}\,(11bB-16Ac)}{16384c^6}+\frac{3b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(11bB-16Ac)}{2048c^5}-\frac{3b^2\left(bx+cx^2\right)^{5/2}(11bB-16Ac)}{640c^4}+\frac{9b^7(11bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{16384c^{13/2}}+\frac{3bx\left(bx+cx^2\right)^{5/2}(11bB-16Ac)}{448c^3}-\frac{x^2\left(bx+cx^2\right)^{5/2}(11bB-16Ac)}{112c^2}+\frac{Bx^3\left(bx+cx^2\right)^{5/2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-9*b^5*(11*b*B - 16*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(16384*c^6) + (3*b
^3*(11*b*B - 16*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(2048*c^5) - (3*b^2*(
11*b*B - 16*A*c)*(b*x + c*x^2)^(5/2))/(640*c^4) + (3*b*(11*b*B - 16*A*c)*x*
(b*x + c*x^2)^(5/2))/(448*c^3) - ((11*b*B - 16*A*c)*x^2*(b*x + c*x^2)^(5/2)
)/(112*c^2) + (B*x^3*(b*x + c*x^2)^(5/2))/(8*c) + (9*b^7*(11*b*B - 16*A*c)*
ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(16384*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx &= \frac{Bx^3\left(bx+cx^2\right)^{5/2}}{8c}+\frac{\left(3(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int x^3\left(bx+cx^2\right)^{3/2}\,dx}{8c}\\
&= -\frac{(11bB-16Ac)x^2\left(bx+cx^2\right)^{5/2}}{112c^2}+\frac{Bx^3\left(bx+cx^2\right)^{5/2}}{8c}+\frac{(9b(11bB-16Ac))\int x^2}{224c^2}\\
&= \frac{3b(11bB-16Ac)x\left(bx+cx^2\right)^{5/2}}{448c^3}-\frac{(11bB-16Ac)x^2\left(bx+cx^2\right)^{5/2}}{112c^2}+\frac{Bx^3\left(bx+c\right.}{8c}\\
&= -\frac{3b^2(11bB-16Ac)\left(bx+cx^2\right)^{5/2}}{640c^4}+\frac{3b(11bB-16Ac)x\left(bx+cx^2\right)^{5/2}}{448c^3}-\frac{(11bB-}{}\\
&= \frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{2048c^5}-\frac{3b^2(11bB-16Ac)\left(bx+cx^2\right)^{5/2}}{640c^4}+\frac{3}{}\\
&= -\frac{9b^5(11bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^6}+\frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+cx\right.}{2048c^5}\\
&= -\frac{9b^5(11bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^6}+\frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+cx\right.}{2048c^5}\\
&= -\frac{9b^5(11bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^6}+\frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+cx\right.}{2048c^5}
\end{aligned}
$$

Mathematica [A] time = 0.43, size = 179, normalized size = 0.75

$$
\frac{x^5\sqrt{x(b+cx)}\left(\frac{11(11bB-16Ac)\left(315b^{13/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(315b^6-210b^5cx+168b^4c^2x^2-144b^3c^3x^3+128b^2c^4x^4+6400bc^5x^5+5120c^6x^6\right)\right)}{71680c^{11/2}x^{11/2}\sqrt{\frac{cx}{b}+1}}+11B(b+cx)^2\right)}{88c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (x^5*Sqrt[x*(b + c*x)]*(11*B*(b + c*x)^2 + (11*(11*b*B - 16*A*c)*(-(Sqrt[c]
*Sqrt[x]*Sqrt[1 + (c*x)/b]*(315*b^6 - 210*b^5*c*x + 168*b^4*c^2*x^2 - 144*b
^3*c^3*x^3 + 128*b^2*c^4*x^4 + 6400*b*c^5*x^5 + 5120*c^6*x^6)) + 315*b^(13/
2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(71680*c^(11/2)*x^(11/2)*Sqrt[1 + (
c*x)/b])))/(88*c)
```

IntegrateAlgebraic [A] time = 0.84, size = 225, normalized size = 0.95

$$
\frac{\sqrt{bx+cx^2}\left(5040Ab^6c-3360Ab^5c^2x+2688Ab^4c^3x^2-2304Ab^3c^4x^3+2048Ab^2c^5x^4+102400Abc^6x^5+81920Ac^7x^6-3465b^7B+2310b^6Bcx-1848b^5Bc^2x^2+1584b^4Bc^3x^3-1408b^3Bc^4x^4+1280b^2Bc^5x^5+87040bBc^6x^6+71680Bc^7x^7\right)}{573440c^6}-\frac{9\left(11b^8B-16Ab^7c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{32768c^{13/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-3465*b^7*B + 5040*A*b^6*c + 2310*b^6*B*c*x - 3360*A*b^
5*c^2*x - 1848*b^5*B*c^2*x^2 + 2688*A*b^4*c^3*x^2 + 1584*b^4*B*c^3*x^3 - 23
```

```
04*A*b^3*c^4*x^3 - 1408*b^3*B*c^4*x^4 + 2048*A*b^2*c^5*x^4 + 1280*b^2*B*c^5
*x^5 + 102400*A*b*c^6*x^5 + 87040*b*B*c^6*x^6 + 81920*A*c^7*x^6 + 71680*B*c
^7*x^7))/(573440*c^6) - (9*(11*b^8*B - 16*A*b^7*c)*Log[b + 2*c*x - 2*Sqrt[c
]*Sqrt[b*x + c*x^2]])/(32768*c^(13/2))
```

fricas [**A**] time = 0.43, size = 446, normalized size = 1.87

$$\left[-\frac{315\left(11\,Bb^{8}-16\,Ab^{7}c\right)\sqrt{c}\log\left(2\,cx+b-2\,\sqrt{cx^{2}+bx}\sqrt{c}\right)-2\left(71680\,Bc^{8}x^{7}-3465\,Bb^{7}c+5040\,Ab^{6}c^{2}+5120\left(17\,Bbc^{7}+16\,Ac^{8}\right)x^{6}+1280\left(Bb^{2}c^{6}+80\,Abc^{7}\right)x^{5}-128\left(11\,Bb^{3}c^{5}-16\,Ab^{2}c^{6}\right)x^{4}+144\left(11\,Bb^{4}c^{4}-16\,Ab^{3}c^{5}\right)x^{3}-168\left(11\,Bb^{5}c^{3}-16\,Ab^{4}c^{4}\right)x^{2}+210\left(11\,Bb^{6}c^{2}-16\,Ab^{5}c^{3}\right)x\right)\sqrt{cx^{2}+bx}}{1146880\,c^{7}},\ -\frac{315\left(11\,Bb^{8}-16\,Ab^{7}c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^{2}+bx}\sqrt{-c}}{cx}\right)-\left(71680\,Bc^{8}x^{7}-3465\,Bb^{7}c+5040\,Ab^{6}c^{2}+5120\left(17\,Bbc^{7}+16\,Ac^{8}\right)x^{6}+1280\left(Bb^{2}c^{6}+80\,Abc^{7}\right)x^{5}-128\left(11\,Bb^{3}c^{5}-16\,Ab^{2}c^{6}\right)x^{4}+144\left(11\,Bb^{4}c^{4}-16\,Ab^{3}c^{5}\right)x^{3}-168\left(11\,Bb^{5}c^{3}-16\,Ab^{4}c^{4}\right)x^{2}+210\left(11\,Bb^{6}c^{2}-16\,Ab^{5}c^{3}\right)x\right)\sqrt{cx^{2}+bx}}{573440\,c^{7}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/1146880*(315*(11*B*b^8 - 16*A*b^7*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x
^2 + b*x)*sqrt(c)) - 2*(71680*B*c^8*x^7 - 3465*B*b^7*c + 5040*A*b^6*c^2 + 5
120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c^6 + 80*A*b*c^7)*x^5 - 128*(
11*B*b^3*c^5 - 16*A*b^2*c^6)*x^4 + 144*(11*B*b^4*c^4 - 16*A*b^3*c^5)*x^3 -
168*(11*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 + 210*(11*B*b^6*c^2 - 16*A*b^5*c^3)*x
)*sqrt(c*x^2 + b*x))/c^7, -1/573440*(315*(11*B*b^8 - 16*A*b^7*c)*sqrt(-c)*a
rctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (71680*B*c^8*x^7 - 3465*B*b^7*c +
 5040*A*b^6*c^2 + 5120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c^6 + 80*A
*b*c^7)*x^5 - 128*(11*B*b^3*c^5 - 16*A*b^2*c^6)*x^4 + 144*(11*B*b^4*c^4 - 1
6*A*b^3*c^5)*x^3 - 168*(11*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 + 210*(11*B*b^6*c^
2 - 16*A*b^5*c^3)*x)*sqrt(c*x^2 + b*x))/c^7]
```

giac [**A**] time = 0.22, size = 249, normalized size = 1.05

$$\frac{1}{573440}\sqrt{cx^{2}+bx}\left(2\left(4\left(2\left(8\left(10\left(4\left(14\,Bcx+\frac{17\,Bbc^{7}+16\,Ac^{8}}{c^{7}}\right)x+\frac{Bb^{2}c^{6}+80\,Abc^{7}}{c^{7}}\right)x-\frac{11\,Bb^{3}c^{5}-16\,Ab^{2}c^{6}}{c^{7}}\right)x+\frac{9\left(11\,Bb^{4}c^{4}-16\,Ab^{3}c^{5}\right)}{c^{7}}\right)x-\frac{21\left(11\,Bb^{5}c^{3}-16\,Ab^{4}c^{4}\right)}{c^{7}}\right)x+\frac{105\left(11\,Bb^{6}c^{2}-16\,Ab^{5}c^{3}\right)}{c^{7}}\right)x-\frac{315\left(11\,Bb^{7}c-16\,Ab^{6}c^{2}\right)}{c^{7}}\right)-\frac{9\left(11\,Bb^{8}-16\,Ab^{7}c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^{2}+bx}\right)\sqrt{c}-b\right|\right)}{32768\,c^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/573440*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*(4*(14*B*c*x + (17*B*b*c^7 + 16*
A*c^8)/c^7)*x + (B*b^2*c^6 + 80*A*b*c^7)/c^7)*x - (11*B*b^3*c^5 - 16*A*b^2*
c^6)/c^7)*x + 9*(11*B*b^4*c^4 - 16*A*b^3*c^5)/c^7)*x - 21*(11*B*b^5*c^3 - 1
6*A*b^4*c^4)/c^7)*x + 105*(11*B*b^6*c^2 - 16*A*b^5*c^3)/c^7)*x - 315*(11*B*
b^7*c - 16*A*b^6*c^2)/c^7) - 9/32768*(11*B*b^8 - 16*A*b^7*c)*log(abs(-2*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(13/2)
```

maple [**A**] time = 0.05, size = 373, normalized size = 1.57

$$-\frac{9Ab^{7}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx}\right)}{2048c^{\frac{11}{2}}}+\frac{99Bb^{8}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx}\right)}{32768c^{\frac{13}{2}}}+\frac{9\sqrt{cx^{2}+bx}\,Ab^{5}x}{512c^{4}}-\frac{99\sqrt{cx^{2}+bx}\,Bb^{6}x}{8192c^{5}}+\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Bx^{3}}{8c}+\frac{9\sqrt{cx^{2}+bx}\,Ab^{6}}{1024c^{5}}-\frac{3\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab^{3}x}{64c^{3}}+\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Ax^{2}}{7c}-\frac{99\sqrt{cx^{2}+bx}\,Bb^{7}}{16384c^{6}}+\frac{33\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{4}x}{1024c^{4}}-\frac{11\left(cx^{2}+bx\right)^{\frac{5}{2}}Bbx^{2}}{112c^{2}}-\frac{3\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab^{4}}{128c^{4}}-\frac{3\left(cx^{2}+bx\right)^{\frac{5}{2}}Abx}{28c^{2}}+\frac{33\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{5}}{2048c^{5}}+\frac{33\left(cx^{2}+bx\right)^{\frac{5}{2}}Bb^{2}x}{448c^{3}}+\frac{3\left(cx^{2}+bx\right)^{\frac{5}{2}}Ab^{2}}{40c^{3}}-\frac{33\left(cx^{2}+bx\right)^{\frac{5}{2}}Bb^{3}}{640c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/8*B*x^3*(c*x^2+b*x)^(5/2)/c-11/112*B*b/c^2*x^2*(c*x^2+b*x)^(5/2)+33/448*B
*b^2/c^3*x*(c*x^2+b*x)^(5/2)-33/640*B*b^3/c^4*(c*x^2+b*x)^(5/2)+33/1024*B*b
^4/c^4*(c*x^2+b*x)^(3/2)*x+33/2048*B*b^5/c^5*(c*x^2+b*x)^(3/2)-99/8192*B*b^
6/c^5*(c*x^2+b*x)^(1/2)*x-99/16384*B*b^7/c^6*(c*x^2+b*x)^(1/2)+99/32768*B*b
^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/7*A*x^2*(c*x^2+b*x)
^(5/2)/c-3/28*A*b/c^2*x*(c*x^2+b*x)^(5/2)+3/40*A*b^2/c^3*(c*x^2+b*x)^(5/2)-
3/64*A*b^3/c^3*(c*x^2+b*x)^(3/2)*x-3/128*A*b^4/c^4*(c*x^2+b*x)^(3/2)+9/512*
A*b^5/c^4*(c*x^2+b*x)^(1/2)*x+9/1024*A*b^6/c^5*(c*x^2+b*x)^(1/2)-9/2048*A*b
^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**A**] time = 0.95, size = 370, normalized size = 1.55

$$\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Bx^{3}}{8\,c}-\frac{11\left(cx^{2}+bx\right)^{\frac{5}{2}}Bbx^{2}}{112\,c^{2}}+\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Ax^{2}}{7\,c}-\frac{99\,\sqrt{cx^{2}+bx}\,Bb^{6}x}{8192\,c^{5}}+\frac{33\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{4}x}{1024\,c^{4}}+\frac{9\,\sqrt{cx^{2}+bx}\,Ab^{5}x}{512\,c^{4}}+\frac{33\left(cx^{2}+bx\right)^{\frac{5}{2}}Bb^{2}x}{448\,c^{3}}-\frac{3\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab^{3}x}{64\,c^{3}}-\frac{3\left(cx^{2}+bx\right)^{\frac{5}{2}}Abx}{28\,c^{2}}+\frac{99\,Bb^{8}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\sqrt{c}\right)}{32768\,c^{\frac{13}{2}}}-\frac{9\,Ab^{7}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\sqrt{c}\right)}{2048\,c^{\frac{11}{2}}}-\frac{99\,\sqrt{cx^{2}+bx}\,Bb^{7}}{16384\,c^{6}}+\frac{33\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{5}}{2048\,c^{5}}+\frac{9\,\sqrt{cx^{2}+bx}\,Ab^{6}}{1024\,c^{5}}-\frac{33\left(cx^{2}+bx\right)^{\frac{5}{2}}Bb^{3}}{640\,c^{4}}-\frac{3\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab^{4}}{128\,c^{4}}+\frac{3\left(cx^{2}+bx\right)^{\frac{5}{2}}Ab^{2}}{40\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + b*x)^(5/2)*B*x^3/c - 11/112*(c*x^2 + b*x)^(5/2)*B*b*x^2/c^2 +
1/7*(c*x^2 + b*x)^(5/2)*A*x^2/c - 99/8192*sqrt(c*x^2 + b*x)*B*b^6*x/c^5 + 3
3/1024*(c*x^2 + b*x)^(3/2)*B*b^4*x/c^4 + 9/512*sqrt(c*x^2 + b*x)*A*b^5*x/c^
4 + 33/448*(c*x^2 + b*x)^(5/2)*B*b^2*x/c^3 - 3/64*(c*x^2 + b*x)^(3/2)*A*b^3
*x/c^3 - 3/28*(c*x^2 + b*x)^(5/2)*A*b*x/c^2 + 99/32768*B*b^8*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(13/2) - 9/2048*A*b^7*log(2*c*x + b + 2*sq
rt(c*x^2 + b*x)*sqrt(c))/c^(11/2) - 99/16384*sqrt(c*x^2 + b*x)*B*b^7/c^6 +
33/2048*(c*x^2 + b*x)^(3/2)*B*b^5/c^5 + 9/1024*sqrt(c*x^2 + b*x)*A*b^6/c^5
- 33/640*(c*x^2 + b*x)^(5/2)*B*b^3/c^4 - 3/128*(c*x^2 + b*x)^(3/2)*A*b^4/c^
4 + 3/40*(c*x^2 + b*x)^(5/2)*A*b^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^3*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**3*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.80 $\int x^2(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=203

$$-\frac{b^6(9bB-14Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{1024c^{11/2}}+\frac{b^4(b+2cx)\sqrt{bx+cx^2}\,(9bB-14Ac)}{1024c^5}-\frac{b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-14\ldots}{384c^4}$$

Rubi [A] time = 0.20, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$\frac{b^4(b+2cx)\sqrt{bx+cx^2}\,(9bB-14Ac)}{1024c^5}-\frac{b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-14Ac)}{384c^4}-\frac{b^6(9bB-14Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{1024c^{11/2}}+\frac{b\left(bx+cx^2\right)^{5/2}(9bB-14Ac)}{120c^3}-\frac{x\left(bx+cx^2\right)^{5/2}(9bB-14Ac)}{84c^2}+\frac{Bx^2\left(bx+cx^2\right)^{5/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (b^4*(9*b*B - 14*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^5) - (b^2*(9*b
*B - 14*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(384*c^4) + (b*(9*b*B - 14*A*
c)*(b*x + c*x^2)^(5/2))/(120*c^3) - ((9*b*B - 14*A*c)*x*(b*x + c*x^2)^(5/2)
)/(84*c^2) + (B*x^2*(b*x + c*x^2)^(5/2))/(7*c) - (b^6*(9*b*B - 14*A*c)*ArcT
anh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^2(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{Bx^2\left(bx+cx^2\right)^{5/2}}{7c} + \frac{\left(2(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int x^2\left(bx+cx^2\right)^{3/2}\,dx}{7c}$$

$$= -\frac{(9bB-14Ac)x\left(bx+cx^2\right)^{5/2}}{84c^2} + \frac{Bx^2\left(bx+cx^2\right)^{5/2}}{7c} + \frac{(b(9bB-14Ac))\int x\left(bx+\right.}{24c^2}$$

$$= \frac{b(9bB-14Ac)\left(bx+cx^2\right)^{5/2}}{120c^3} - \frac{(9bB-14Ac)x\left(bx+cx^2\right)^{5/2}}{84c^2} + \frac{Bx^2\left(bx+cx^2\right)^{5/}}{7c}$$

$$= -\frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^4} + \frac{b(9bB-14Ac)\left(bx+cx^2\right)^{5/2}}{120c^3} - \frac{(9bB}{}$$

$$= \frac{b^4(9bB-14Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^5} - \frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^4} +$$

$$= \frac{b^4(9bB-14Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^5} - \frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^4} +$$

$$= \frac{b^4(9bB-14Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^5} - \frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^4} +$$

Mathematica [A] time = 0.34, size = 167, normalized size = 0.82

$$\frac{x^4\sqrt{x(b+cx)}\left(9B(b+cx)^2-\frac{3(9bB-14Ac)\left(105b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-105b^5+70b^4cx-56b^3c^2x^2+48b^2c^3x^3+1664bc^4x^4+1280c^5x^5\right)\right)}{5120c^{9/2}x^{9/2}\sqrt{\frac{cx}{b}+1}}\right)}{63c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (x^4*Sqrt[x*(b + c*x)]*(9*B*(b + c*x)^2 - (3*(9*b*B - 14*A*c)*(Sqrt[c]*Sqrt
[x]*Sqrt[1 + (c*x)/b]*(-105*b^5 + 70*b^4*c*x - 56*b^3*c^2*x^2 + 48*b^2*c^3*
x^3 + 1664*b*c^4*x^4 + 1280*c^5*x^5) + 105*b^(11/2)*ArcSinh[(Sqrt[c]*Sqrt[x
])/Sqrt[b]]))/(5120*c^(9/2)*x^(9/2)*Sqrt[1 + (c*x)/b])))/(63*c)
```

IntegrateAlgebraic [A] time = 0.75, size = 201, normalized size = 0.99

$$\frac{\left(9b^7B-14Ab^6c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{2048c^{11/2}}+\frac{\sqrt{bx+cx^2}\left(-1470Ab^5c+980Ab^4c^2x-784Ab^3c^3x^2+672Ab^2c^4x^3+23296Abc^5x^4+17920Ac^6x^5+945b^6B-630b^5Bcx+504b^4Bc^2x^2-432b^3Bc^3x^3+384b^2Bc^4x^4+19200bBc^5x^5+15360Bc^6x^6\right)}{107520c^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(945*b^6*B - 1470*A*b^5*c - 630*b^5*B*c*x + 980*A*b^4*c^
2*x + 504*b^4*B*c^2*x^2 - 784*A*b^3*c^3*x^2 - 432*b^3*B*c^3*x^3 + 672*A*b^2
*c^4*x^3 + 384*b^2*B*c^4*x^4 + 23296*A*b*c^5*x^4 + 19200*b*B*c^5*x^5 + 1792
0*A*c^6*x^5 + 15360*B*c^6*x^6))/(107520*c^5) + ((9*b^7*B - 14*A*b^6*c)*Log[
b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(2048*c^(11/2))
```

fricas [A] time = 0.43, size = 399, normalized size = 1.97

$$\left[-\frac{105\left(9Bb^7-14Ab^6c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(15360Bc^7x^6+945Bb^6c-1470Ab^5c^2+1280\left(15Bbc^6+14Ac^7\right)x^5+128\left(3Bb^2c^5+182Abc^6\right)x^4-48\left(9Bb^3c^4-14Ab^2c^5\right)x^3+56\left(9Bb^4c^3-14Ab^3c^4\right)x^2-70\left(9Bb^5c^2-14Ab^4c^3\right)x\right)\sqrt{cx^2+bx}}{215040c^6}, \frac{105\left(9Bb^7-14Ab^6c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(15360Bc^7x^6+945Bb^6c-1470Ab^5c^2+1280\left(15Bbc^6+14Ac^7\right)x^5+128\left(3Bb^2c^5+182Abc^6\right)x^4-48\left(9Bb^3c^4-14Ab^2c^5\right)x^3+56\left(9Bb^4c^3-14Ab^3c^4\right)x^2-70\left(9Bb^5c^2-14Ab^4c^3\right)x\right)\sqrt{cx^2+bx}}{107520c^6}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/215040*(105*(9*B*b^7 - 14*A*b^6*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2
 + b*x)*sqrt(c)) - 2*(15360*B*c^7*x^6 + 945*B*b^6*c - 1470*A*b^5*c^2 + 1280
*(15*B*b*c^6 + 14*A*c^7)*x^5 + 128*(3*B*b^2*c^5 + 182*A*b*c^6)*x^4 - 48*(9*
B*b^3*c^4 - 14*A*b^2*c^5)*x^3 + 56*(9*B*b^4*c^3 - 14*A*b^3*c^4)*x^2 - 70*(9
*B*b^5*c^2 - 14*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^6, 1/107520*(105*(9*B*b^
7 - 14*A*b^6*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (15360*
B*c^7*x^6 + 945*B*b^6*c - 1470*A*b^5*c^2 + 1280*(15*B*b*c^6 + 14*A*c^7)*x^5
 + 128*(3*B*b^2*c^5 + 182*A*b*c^6)*x^4 - 48*(9*B*b^3*c^4 - 14*A*b^2*c^5)*x^
3 + 56*(9*B*b^4*c^3 - 14*A*b^3*c^4)*x^2 - 70*(9*B*b^5*c^2 - 14*A*b^4*c^3)*x
)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.24, size = 222, normalized size = 1.09

$$\frac{1}{107520}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\left(12Bcx+\frac{15Bbc^6+14Ac^7}{c^6}\right)x+\frac{3Bb^2c^5+182Abc^6}{c^6}\right)x-\frac{3\left(9Bb^3c^4-14Ab^2c^5\right)}{c^6}\right)x+\frac{7\left(9Bb^4c^3-14Ab^3c^4\right)}{c^6}\right)x-\frac{35\left(9Bb^5c^2-14Ab^4c^3\right)}{c^6}\right)x+\frac{105\left(9Bb^6c-14Ab^5c^2\right)}{c^6}\right)+\frac{\left(9Bb^7-14Ab^6c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2048c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*(12*B*c*x + (15*B*b*c^6 + 14*A*c
^7)/c^6)*x + (3*B*b^2*c^5 + 182*A*b*c^6)/c^6)*x - 3*(9*B*b^3*c^4 - 14*A*b^2
*c^5)/c^6)*x + 7*(9*B*b^4*c^3 - 14*A*b^3*c^4)/c^6)*x - 35*(9*B*b^5*c^2 - 14
*A*b^4*c^3)/c^6)*x + 105*(9*B*b^6*c - 14*A*b^5*c^2)/c^6) + 1/2048*(9*B*b^7
- 14*A*b^6*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(1
1/2)
```

maple [A] time = 0.06, size = 327, normalized size = 1.61

$$\frac{7Ab^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{1024c^{\frac{9}{2}}}-\frac{9Bb^7\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2048c^{\frac{11}{2}}}-\frac{7\sqrt{cx^2+bx}\,Ab^4x}{256c^3}+\frac{9\sqrt{cx^2+bx}\,Bb^5x}{512c^4}-\frac{7\sqrt{cx^2+bx}\,Ab^5}{512c^4}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2x}{96c^2}+\frac{9\sqrt{cx^2+bx}\,Bb^6}{1024c^5}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{64c^3}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bx^2}{7c}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3}{192c^3}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ax}{6c}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4}{128c^4}-\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{28c^2}-\frac{7\left(cx^2+bx\right)^{\frac{5}{2}}Ab}{60c^2}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2}{40c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/7*B*x^2*(c*x^2+b*x)^(5/2)/c-3/28*B*b/c^2*x*(c*x^2+b*x)^(5/2)+3/40*B*b^2/c
^3*(c*x^2+b*x)^(5/2)-3/64*B*b^3/c^3*(c*x^2+b*x)^(3/2)*x-3/128*B*b^4/c^4*(c*
x^2+b*x)^(3/2)+9/512*B*b^5/c^4*(c*x^2+b*x)^(1/2)*x+9/1024*B*b^6/c^5*(c*x^2+
b*x)^(1/2)-9/2048*B*b^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+
1/6*A*x*(c*x^2+b*x)^(5/2)/c-7/60*A*b/c^2*(c*x^2+b*x)^(5/2)+7/96*A*b^2/c^2*(
c*x^2+b*x)^(3/2)*x+7/192*A*b^3/c^3*(c*x^2+b*x)^(3/2)-7/256*A*b^4/c^3*(c*x^2
+b*x)^(1/2)*x-7/512*A*b^5/c^4*(c*x^2+b*x)^(1/2)+7/1024*A*b^6/c^(9/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 1.04, size = 324, normalized size = 1.60

$$\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bx^2}{7c}+\frac{9\sqrt{cx^2+bx}\,Bb^5x}{512c^4}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{64c^3}-\frac{7\sqrt{cx^2+bx}\,Ab^4x}{256c^3}-\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{28c^2}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2x}{96c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ax}{6c}-\frac{9Bb^7\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2048c^{\frac{11}{2}}}+\frac{7Ab^6\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024c^{\frac{9}{2}}}+\frac{9\sqrt{cx^2+bx}\,Bb^6}{1024c^5}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4}{128c^4}-\frac{7\sqrt{cx^2+bx}\,Ab^5}{512c^4}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2}{40c^3}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3}{192c^3}-\frac{7\left(cx^2+bx\right)^{\frac{5}{2}}Ab}{60c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + b*x)^(5/2)*B*x^2/c + 9/512*sqrt(c*x^2 + b*x)*B*b^5*x/c^4 - 3/6
4*(c*x^2 + b*x)^(3/2)*B*b^3*x/c^3 - 7/256*sqrt(c*x^2 + b*x)*A*b^4*x/c^3 - 3
/28*(c*x^2 + b*x)^(5/2)*B*b*x/c^2 + 7/96*(c*x^2 + b*x)^(3/2)*A*b^2*x/c^2 +
1/6*(c*x^2 + b*x)^(5/2)*A*x/c - 9/2048*B*b^7*log(2*c*x + b + 2*sqrt(c*x^2 +
```

```
 b*x)*sqrt(c))/c^(11/2) + 7/1024*A*b^6*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*
sqrt(c))/c^(9/2) + 9/1024*sqrt(c*x^2 + b*x)*B*b^6/c^5 - 3/128*(c*x^2 + b*x)
^(3/2)*B*b^4/c^4 - 7/512*sqrt(c*x^2 + b*x)*A*b^5/c^4 + 3/40*(c*x^2 + b*x)^(
5/2)*B*b^2/c^3 + 7/192*(c*x^2 + b*x)^(3/2)*A*b^3/c^3 - 7/60*(c*x^2 + b*x)^(
5/2)*A*b/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 \left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^(3/2)*(A + B*x),x)
[Out] int(x^2*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2} \left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**(3/2),x)
[Out] Integral(x**2*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.81 $\int x(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=151

$$\frac{b^5(7bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{9/2}}-\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(7bB-12Ac)}{512c^4}+\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(7bB-12Ac}{192c^3}$$

Rubi [A] time = 0.07, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {779, 612, 620, 206}

$$-\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(7bB-12Ac)}{512c^4}+\frac{b^5(7bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{9/2}}+\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(7bB-12Ac)}{192c^3}-\frac{\left(bx+cx^2\right)^{5/2}(-12Ac+7bB-10Bcx)}{60c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] -(b^3*(7*b*B - 12*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(512*c^4) + (b*(7*b*B
 - 12*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(192*c^3) - ((7*b*B - 12*A*c -
10*B*c*x)*(b*x + c*x^2)^(5/2))/(60*c^2) + (b^5*(7*b*B - 12*A*c)*ArcTanh[(Sq
rt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int x(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx &= -\frac{(7bB-12Ac-10Bcx)\left(bx+cx^2\right)^{5/2}}{60c^2}+\frac{(b(7bB-12Ac))\int\left(bx+cx^2\right)^{3/2}\,dx}{24c^2} \\
&= \frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3}-\frac{(7bB-12Ac-10Bcx)\left(bx+cx^2\right)^{5/2}}{60c^2}-(\\
&= -\frac{b^3(7bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^4}+\frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3}- \\
&= -\frac{b^3(7bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^4}+\frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3}- \\
&= -\frac{b^3(7bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^4}+\frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3}-
\end{aligned}
$$

Mathematica [A] time = 0.29, size = 166, normalized size = 1.10

$$
\frac{\sqrt{x(b+cx)}\left(\frac{15b^{9/2}(7bB-12Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(10b^4c(18A+7Bx)-8b^3c^2x(15A+7Bx)+48b^2c^3x^2(2A+Bx)+64bc^4x^3(33A+26Bx)+256c^5x^4(6A+5Bx)-105b^5B\right)\right)}{7680c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^5*B + 48*b^2*c^3*x^2*(2*A + B*x) + 256*
c^5*x^4*(6*A + 5*B*x) - 8*b^3*c^2*x*(15*A + 7*B*x) + 10*b^4*c*(18*A + 7*B*x
) + 64*b*c^4*x^3*(33*A + 26*B*x)) + (15*b^(9/2)*(7*b*B - 12*A*c)*ArcSinh[(S
qrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(9/2))
```

IntegrateAlgebraic [A] time = 0.66, size = 177, normalized size = 1.17

$$
\frac{\left(12Ab^5c-7b^6B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{1024c^{9/2}}+\frac{\sqrt{bx+cx^2}\left(180Ab^4c-120Ab^3c^2x+96Ab^2c^3x^2+2112Abc^4x^3+1536Ac^5x^4-105b^5B+70b^4Bcx-56b^3Bc^2x^2+48b^2Bc^3x^3+1664bBc^4x^4+1280Bc^5x^5\right)}{7680c^4}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-105*b^5*B + 180*A*b^4*c + 70*b^4*B*c*x - 120*A*b^3*c^2
*x - 56*b^3*B*c^2*x^2 + 96*A*b^2*c^3*x^2 + 48*b^2*B*c^3*x^3 + 2112*A*b*c^4*
x^3 + 1664*b*B*c^4*x^4 + 1536*A*c^5*x^4 + 1280*B*c^5*x^5))/(7680*c^4) + ((-
7*b^6*B + 12*A*b^5*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(1024*c
^(9/2))
```

fricas [A] time = 0.44, size = 350, normalized size = 2.32

$$
\left[-\frac{15\left(7Bb^6-12Ab^5c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(1280Bc^6x^5-105Bb^5c+180Ab^4c^2+128\left(13Bbc^5+12Ac^6\right)x^4+48\left(Bb^2c^4+44Abc^5\right)x^3-8\left(7Bb^3c^3-12Ab^2c^4\right)x^2+10\left(7Bb^4c^2-12Ab^3c^3\right)x\right)\sqrt{cx^2+bx}}{15360c^5},-\frac{15\left(7Bb^6-12Ab^5c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(1280Bc^6x^5-105Bb^5c+180Ab^4c^2+128\left(13Bbc^5+12Ac^6\right)x^4+48\left(Bb^2c^4+44Abc^5\right)x^3-8\left(7Bb^3c^3-12Ab^2c^4\right)x^2+10\left(7Bb^4c^2-12Ab^3c^3\right)x\right)\sqrt{cx^2+bx}}{7680c^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(7*B*b^6 - 12*A*b^5*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(1280*B*c^6*x^5 - 105*B*b^5*c + 180*A*b^4*c^2 + 128*(13*
B*b*c^5 + 12*A*c^6)*x^4 + 48*(B*b^2*c^4 + 44*A*b*c^5)*x^3 - 8*(7*B*b^3*c^3
- 12*A*b^2*c^4)*x^2 + 10*(7*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))
/c^5, -1/7680*(15*(7*B*b^6 - 12*A*b^5*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*
sqrt(-c)/(c*x)) - (1280*B*c^6*x^5 - 105*B*b^5*c + 180*A*b^4*c^2 + 128*(13*B
*b*c^5 + 12*A*c^6)*x^4 + 48*(B*b^2*c^4 + 44*A*b*c^5)*x^3 - 8*(7*B*b^3*c^3 -
```

```
 12*A*b^2*c^4)*x^2 + 10*(7*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))/
c^5]
```

giac [A] time = 0.22, size = 194, normalized size = 1.28

$$\frac{1}{7680}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\,Bcx+\frac{13\,Bbc^5+12\,Ac^6}{c^5}\right)x+\frac{3\left(Bb^2c^4+44\,Abc^5\right)}{c^5}\right)x-\frac{7\,Bb^3c^3-12\,Ab^2c^4}{c^5}\right)x+\frac{5\left(7\,Bb^4c^2-12\,Ab^3c^3\right)}{c^5}\right)x-\frac{15\left(7\,Bb^5c-12\,Ab^4c^2\right)}{c^5}\right)-\frac{\left(7\,Bb^6-12\,Ab^5c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{1024\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*c*x + (13*B*b*c^5 + 12*A*c^6)/c^
5)*x + 3*(B*b^2*c^4 + 44*A*b*c^5)/c^5)*x - (7*B*b^3*c^3 - 12*A*b^2*c^4)/c^5
)*x + 5*(7*B*b^4*c^2 - 12*A*b^3*c^3)/c^5)*x - 15*(7*B*b^5*c - 12*A*b^4*c^2)
/c^5) - 1/1024*(7*B*b^6 - 12*A*b^5*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 283, normalized size = 1.87

$$-\frac{3A\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{7}{2}}}+\frac{7B\,b^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{9}{2}}}+\frac{3\sqrt{c\,x^2+bx}\,A\,b^3x}{64c^2}-\frac{7\sqrt{c\,x^2+bx}\,B\,b^4x}{256c^3}+\frac{3\sqrt{c\,x^2+bx}\,A\,b^4}{128c^3}-\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}Abx}{8c}-\frac{7\sqrt{c\,x^2+bx}\,B\,b^5}{512c^4}+\frac{7\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,b^2x}{96c^2}-\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}A\,b^2}{16c^2}+\frac{7\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,b^3}{192c^3}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}Bx}{6c}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}A}{5c}-\frac{7\left(c\,x^2+bx\right)^{\frac{5}{2}}Bb}{60c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/6*B*x*(c*x^2+b*x)^(5/2)/c-7/60*B*b/c^2*(c*x^2+b*x)^(5/2)+7/96*B*b^2/c^2*x
*(c*x^2+b*x)^(3/2)+7/192*B*b^3/c^3*(c*x^2+b*x)^(3/2)-7/256*B*b^4/c^3*(c*x^2
+b*x)^(1/2)*x-7/512*B*b^5/c^4*(c*x^2+b*x)^(1/2)+7/1024*B*b^6/c^(9/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*A*(c*x^2+b*x)^(5/2)/c-1/8*A*b/c*x*(
c*x^2+b*x)^(3/2)-1/16*A*b^2/c^2*(c*x^2+b*x)^(3/2)+3/64*A*b^3/c^2*(c*x^2+b*x
)^(1/2)*x+3/128*A*b^4/c^3*(c*x^2+b*x)^(1/2)-3/256*A*b^5/c^(7/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.95, size = 280, normalized size = 1.85

$$-\frac{7\sqrt{cx^2+bx}\,Bb^4x}{256\,c^3}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2x}{96\,c^2}+\frac{3\sqrt{cx^2+bx}\,Ab^3x}{64\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bx}{6\,c}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Abx}{8\,c}+\frac{7\,Bb^6\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024\,c^{\frac{9}{2}}}-\frac{3\,Ab^5\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256\,c^{\frac{7}{2}}}-\frac{7\sqrt{cx^2+bx}\,Bb^5}{512\,c^4}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3}{192\,c^3}+\frac{3\sqrt{cx^2+bx}\,Ab^4}{128\,c^3}-\frac{7\left(cx^2+bx\right)^{\frac{5}{2}}Bb}{60\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2}{16\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -7/256*sqrt(c*x^2 + b*x)*B*b^4*x/c^3 + 7/96*(c*x^2 + b*x)^(3/2)*B*b^2*x/c^2
 + 3/64*sqrt(c*x^2 + b*x)*A*b^3*x/c^2 + 1/6*(c*x^2 + b*x)^(5/2)*B*x/c - 1/8
*(c*x^2 + b*x)^(3/2)*A*b*x/c + 7/1024*B*b^6*log(2*c*x + b + 2*sqrt(c*x^2 +
b*x)*sqrt(c))/c^(9/2) - 3/256*A*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(7/2) - 7/512*sqrt(c*x^2 + b*x)*B*b^5/c^4 + 7/192*(c*x^2 + b*x)^(3/
2)*B*b^3/c^3 + 3/128*sqrt(c*x^2 + b*x)*A*b^4/c^3 - 7/60*(c*x^2 + b*x)^(5/2)
*B*b/c^2 - 1/16*(c*x^2 + b*x)^(3/2)*A*b^2/c^2 + 1/5*(c*x^2 + b*x)^(5/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.82 $\int (A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=134

$$-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}+\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+$$

Rubi [A] time = 0.05, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+\frac{B\left(bx+cx^2\right)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (3*b^2*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^3) - ((b*B - 2*A
*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(16*c^2) + (B*(b*x + c*x^2)^(5/2))/(5*
c) - (3*b^4*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(7
/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{B\left(bx+cx^2\right)^{5/2}}{5c} + \frac{(-bB+2Ac)\int \left(bx+cx^2\right)^{3/2}\,dx}{2c}$$
$$= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+cx^2\right)^{5/2}}{5c} + \frac{\left(3b^2(bB-2Ac)\right)\int \sqrt{bx+\cdots}}{32c^2}$$
$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\cdots\right.}{5\cdots}$$
$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\cdots\right.}{5\cdots}$$
$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\cdots\right.}{5\cdots}$$

Mathematica [A] time = 0.25, size = 146, normalized size = 1.09

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-10b^3c(3A+Bx)+4b^2c^2x(5A+2Bx)+16bc^3x^2(15A+11Bx)+32c^4x^3(5A+4Bx)+15b^4B\right)-\frac{15b^{7/2}(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{640c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^4*B - 10*b^3*c*(3*A + B*x) + 4*b^2*c^2*x*
(5*A + 2*B*x) + 32*c^4*x^3*(5*A + 4*B*x) + 16*b*c^3*x^2*(15*A + 11*B*x)) -
(15*b^(7/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt
[1 + (c*x)/b])))/(640*c^(7/2))
```

IntegrateAlgebraic [A] time = 0.66, size = 152, normalized size = 1.13

$$\frac{3\left(b^5B-2Ab^4c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{256c^{7/2}}+\frac{\sqrt{bx+cx^2}\left(-30Ab^3c+20Ab^2c^2x+240Abc^3x^2+160Ac^4x^3+15b^4B-10b^3Bcx+8b^2Bc^2x^2+176bBc^3x^3+128Bc^4x^4\right)}{640c^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(15*b^4*B - 30*A*b^3*c - 10*b^3*B*c*x + 20*A*b^2*c^2*x +
 8*b^2*B*c^2*x^2 + 240*A*b*c^3*x^2 + 176*b*B*c^3*x^3 + 160*A*c^4*x^3 + 128*
B*c^4*x^4))/(640*c^3) + (3*(b^5*B - 2*A*b^4*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sq
rt[b*x + c*x^2]])/(256*c^(7/2))
```

fricas [A] time = 0.42, size = 297, normalized size = 2.22

$$\left[-\frac{15\left(Bb^5-2Ab^4c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(128Bc^5x^4+15Bb^4c-30Ab^3c^2+16\left(11Bbc^4+10Ac^5\right)x^3+8\left(Bb^2c^3+30Abc^4\right)x^2-10\left(Bb^3c^2-2Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{1280c^4}, \frac{15\left(Bb^5-2Ab^4c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(128Bc^5x^4+15Bb^4c-30Ab^3c^2+16\left(11Bbc^4+10Ac^5\right)x^3+8\left(Bb^2c^3+30Abc^4\right)x^2-10\left(Bb^3c^2-2Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{640c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(B*b^5 - 2*A*b^4*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b^3*c^2 + 16*(11*B*b*c^4
+ 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 - 10*(B*b^3*c^2 - 2*A*b^2*
c^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/640*(15*(B*b^5 - 2*A*b^4*c)*sqrt(-c)*arct
an(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b
^3*c^2 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 -
10*(B*b^3*c^2 - 2*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.22, size = 162, normalized size = 1.21

$$\frac{1}{640}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\,Bcx+\frac{11\,Bbc^4+10\,Ac^5}{c^4}\right)x+\frac{Bb^2c^3+30\,Abc^4}{c^4}\right)x-\frac{5\left(Bb^3c^2-2\,Ab^2c^3\right)}{c^4}\right)x+\frac{15\left(Bb^4c-2\,Ab^3c^2\right)}{c^4}\right)+\frac{3\left(Bb^5-2\,Ab^4c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{256\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/640*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*B*c*x + (11*B*b*c^4 + 10*A*c^5)/c^4)*x
+ (B*b^2*c^3 + 30*A*b*c^4)/c^4)*x - 5*(B*b^3*c^2 - 2*A*b^2*c^3)/c^4)*x + 15
*(B*b^4*c - 2*A*b^3*c^2)/c^4) + 3/256*(B*b^5 - 2*A*b^4*c)*log(abs(-2*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 239, normalized size = 1.78

$$\frac{3A\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{5}{2}}}-\frac{3B\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{7}{2}}}-\frac{3\sqrt{c\,x^2+bx}\,A\,b^2x}{32c}+\frac{3\sqrt{c\,x^2+bx}\,B\,b^3x}{64c^2}-\frac{3\sqrt{c\,x^2+bx}\,A\,b^3}{64c^2}+\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}Ax}{4}+\frac{3\sqrt{c\,x^2+bx}\,B\,b^4}{128c^3}-\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}Bbx}{8c}+\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}Ab}{8c}-\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,b^2}{16c^2}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}B}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/5*B*(c*x^2+b*x)^(5/2)/c-1/8*B*b/c*x*(c*x^2+b*x)^(3/2)-1/16*B*b^2/c^2*(c*x
^2+b*x)^(3/2)+3/64*B*b^3/c^2*(c*x^2+b*x)^(1/2)*x+3/128*B*b^4/c^3*(c*x^2+b*x
)^(1/2)-3/256*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/4*A
*x*(c*x^2+b*x)^(3/2)+1/8*A/c*(c*x^2+b*x)^(3/2)*b-3/32*A*b^2/c*(c*x^2+b*x)^(
1/2)*x-3/64*A*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*A*b^4/c^(5/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.89, size = 236, normalized size = 1.76

$$\frac{1}{4}\left(cx^2+bx\right)^{\frac{3}{2}}Ax+\frac{3\sqrt{cx^2+bx}\,Bb^3x}{64\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bbx}{8\,c}-\frac{3\sqrt{cx^2+bx}\,Ab^2x}{32\,c}-\frac{3\,Bb^5\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256\,c^{\frac{7}{2}}}+\frac{3\,Ab^4\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128\,c^{\frac{5}{2}}}+\frac{3\sqrt{cx^2+bx}\,Bb^4}{128\,c^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2}{16\,c^2}-\frac{3\sqrt{cx^2+bx}\,Ab^3}{64\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{5\,c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*A*x + 3/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^2 - 1/8*(c*x
^2 + b*x)^(3/2)*B*b*x/c - 3/32*sqrt(c*x^2 + b*x)*A*b^2*x/c - 3/256*B*b^5*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 3/128*A*b^4*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 3/128*sqrt(c*x^2 + b*x)*B*b^4/
c^3 - 1/16*(c*x^2 + b*x)^(3/2)*B*b^2/c^2 - 3/64*sqrt(c*x^2 + b*x)*A*b^3/c^2
 + 1/5*(c*x^2 + b*x)^(5/2)*B/c + 1/8*(c*x^2 + b*x)^(3/2)*A*b/c
```

mupad [B] time = 1.45, size = 208, normalized size = 1.55

$$\frac{B\left(c\,x^2+b\,x\right)^{5/2}}{5\,c}+\frac{A\left(c\,x^2+b\,x\right)^{3/2}\left(\frac{b}{2}+c\,x\right)}{4\,c}-\frac{B\,b\left(\frac{x\left(c\,x^2+b\,x\right)^{3/2}}{4}+\frac{b\left(c\,x^2+b\,x\right)^{3/2}}{8\,c}-\frac{3\,b^2\left(\frac{\sqrt{c\,x^2+b\,x}\,\left(b+2\,c\,x\right)}{4\,c}-\frac{b^2\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}\right)}{16\,c}\right)}{2\,c}-\frac{3\,A\,b^2\left(\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{b^2\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}\right)}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] (B*(b*x + c*x^2)^(5/2))/(5*c) + (A*(b*x + c*x^2)^(3/2)*(b/2 + c*x))/(4*c) -
 (B*b*((x*(b*x + c*x^2)^(3/2))/4 + (b*(b*x + c*x^2)^(3/2))/(8*c) - (3*b^2*(
((b*x + c*x^2)^(1/2)*(b + 2*c*x))/(4*c) - (b^2*log((b/2 + c*x)/c^(1/2) + (b
*x + c*x^2)^(1/2)))/(8*c^(3/2))))/(16*c)))/(2*c) - (3*A*b^2*((b*x + c*x^2)^
(1/2)*(x/2 + b/(4*c)) - (b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2))
)/(8*c^(3/2))))/(16*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x(b+cx))^{\frac{3}{2}}(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.83 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=132

$$\frac{b^3(3bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{5/2}}-\frac{b(b+2cx)\sqrt{bx+cx^2}\,(3bB-8Ac)}{64c^2}-\frac{\left(bx+cx^2\right)^{3/2}(3bB-8Ac)}{24c}+\frac{B\left(bx+cx^2\right)^{5/2}}{4cx}$$

Rubi [A] time = 0.10, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {794, 664, 612, 620, 206}

$$\frac{b^3(3bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{5/2}}-\frac{b(b+2cx)\sqrt{bx+cx^2}\,(3bB-8Ac)}{64c^2}-\frac{\left(bx+cx^2\right)^{3/2}(3bB-8Ac)}{24c}+\frac{B\left(bx+cx^2\right)^{5/2}}{4cx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] -(b*(3*b*B - 8*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(64*c^2) - ((3*b*B - 8*A
*c)*(b*x + c*x^2)^(3/2))/(24*c) + (B*(b*x + c*x^2)^(5/2))/(4*c*x) + (b^3*(3
*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x}\,dx &= \frac{B\left(bx+cx^2\right)^{5/2}}{4cx}+\frac{\left(bB-Ac+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x}\,dx}{4c}\\
&= -\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/2}}{4cx}-\frac{(b(3bB-8Ac))\int \sqrt{bx+cx^2}\,dx}{16c}\\
&= -\frac{b(3bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^2}-\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/}}{4cx}\\
&= -\frac{b(3bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^2}-\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/}}{4cx}\\
&= -\frac{b(3bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^2}-\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/}}{4cx}
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 128, normalized size = 0.97

$$
\frac{\sqrt{x(b+cx)}\left(\frac{3b^{5/2}(3bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(6b^2c(4A+Bx)+8bc^2x(14A+9Bx)+16c^3x^2(4A+3Bx)-9b^3B\right)\right)}{192c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-9*b^3*B + 6*b^2*c*(4*A + B*x) + 16*c^3*x^2*(4
*A + 3*B*x) + 8*b*c^2*x*(14*A + 9*B*x)) + (3*b^(5/2)*(3*b*B - 8*A*c)*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.68, size = 129, normalized size = 0.98

$$
\frac{\left(8Ab^3c-3b^4B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{128c^{5/2}}+\frac{\sqrt{bx+cx^2}\left(24Ab^2c+112Abc^2x+64Ac^3x^2-9b^3B+6b^2Bcx+72bBc^2x^2+48Bc^3x^3\right)}{192c^2}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-9*b^3*B + 24*A*b^2*c + 6*b^2*B*c*x + 112*A*b*c^2*x + 7
2*b*B*c^2*x^2 + 64*A*c^3*x^2 + 48*B*c^3*x^3))/(192*c^2) + ((-3*b^4*B + 8*A*
b^3*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(128*c^(5/2))
```

fricas [A] time = 0.42, size = 256, normalized size = 1.94

$$
\left[-\frac{3\left(3Bb^4-8Ab^3c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(48Bc^4x^3-9Bb^3c+24Ab^2c^2+8\left(9Bbc^3+8Ac^4\right)x^2+2\left(3Bb^2c^2+56Abc^3\right)x\right)\sqrt{cx^2+bx}}{384c^3},-\frac{3\left(3Bb^4-8Ab^3c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(48Bc^4x^3-9Bb^3c+24Ab^2c^2+8\left(9Bbc^3+8Ac^4\right)x^2+2\left(3Bb^2c^2+56Abc^3\right)x\right)\sqrt{cx^2+bx}}{192c^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(3*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(48*B*c^4*x^3 - 9*B*b^3*c + 24*A*b^2*c^2 + 8*(9*B*b*c^3 + 8*
A*c^4)*x^2 + 2*(3*B*b^2*c^2 + 56*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^3, -1/192
*(3*(3*B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x))
 - (48*B*c^4*x^3 - 9*B*b^3*c + 24*A*b^2*c^2 + 8*(9*B*b*c^3 + 8*A*c^4)*x^2 +
 2*(3*B*b^2*c^2 + 56*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.21, size = 138, normalized size = 1.05

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6Bcx+\frac{9Bbc^3+8Ac^4}{c^3}\right)x+\frac{3Bb^2c^2+56Abc^3}{c^3}\right)x-\frac{3\left(3Bb^3c-8Ab^2c^2\right)}{c^3}\right)-\frac{\left(3Bb^4-8Ab^3c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{128c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*c*x + (9*B*b*c^3 + 8*A*c^4)/c^3)*x + (3*
B*b^2*c^2 + 56*A*b*c^3)/c^3)*x - 3*(3*B*b^3*c - 8*A*b^2*c^2)/c^3) - 1/128*(
3*B*b^4 - 8*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b
))/c^(5/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.45

$$-\frac{Ab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{3}{2}}}+\frac{3Bb^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{5}{2}}}+\frac{\sqrt{cx^2+bx}\,Abx}{4}-\frac{3\sqrt{cx^2+bx}\,Bb^2x}{32c}+\frac{\sqrt{cx^2+bx}\,Ab^2}{8c}-\frac{3\sqrt{cx^2+bx}\,Bb^3}{64c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx}{4}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{3}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{8c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x,x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x)^(3/2)+1/8*B/c*(c*x^2+b*x)^(3/2)*b-3/32*B*b^2/c*(c*x^2+b
*x)^(1/2)*x-3/64*B*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*B*b^4/c^(5/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*A*(c*x^2+b*x)^(3/2)+1/4*A*b*(c*x^2+b*x)
^(1/2)*x+1/8*A/c*(c*x^2+b*x)^(1/2)*b^2-1/16*A*b^3/c^(3/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.86, size = 189, normalized size = 1.43

$$\frac{1}{4}\left(cx^2+bx\right)^{\frac{3}{2}}Bx+\frac{1}{4}\sqrt{cx^2+bx}\,Abx-\frac{3\sqrt{cx^2+bx}\,Bb^2x}{32c}+\frac{3Bb^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{5}{2}}}-\frac{Ab^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{3}{2}}}+\frac{1}{3}\left(cx^2+bx\right)^{\frac{3}{2}}A-\frac{3\sqrt{cx^2+bx}\,Bb^3}{64c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{8c}+\frac{\sqrt{cx^2+bx}\,Ab^2}{8c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*B*x + 1/4*sqrt(c*x^2 + b*x)*A*b*x - 3/32*sqrt(c*x^2
 + b*x)*B*b^2*x/c + 3/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)
)/c^(5/2) - 1/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
 + 1/3*(c*x^2 + b*x)^(3/2)*A - 3/64*sqrt(c*x^2 + b*x)*B*b^3/c^2 + 1/8*(c*x^
2 + b*x)^(3/2)*B*b/c + 1/8*sqrt(c*x^2 + b*x)*A*b^2/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(cx^2+bx\right)^{3/2}(A+Bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x, x)
```

3.84 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=126

$$-\frac{b^2(bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{3/2}}+\frac{\left(bx+cx^2\right)^{3/2}(bB-6Ac)}{3b}+\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-6Ac)}{8c}+\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}$$

Rubi [A] time = 0.14, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 664, 612, 620, 206}

$$-\frac{b^2(bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{3/2}}+\frac{\left(bx+cx^2\right)^{3/2}(bB-6Ac)}{3b}+\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-6Ac)}{8c}+\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((b*B - 6*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(8*c) + ((b*B - 6*A*c)*(b*x + c*x^2)^(3/2))/(3*b) + (2*A*(b*x + c*x^2)^(5/2))/(b*x^2) - (b^2*(b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (GtQ[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1 - c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || EqQ[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1] &&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
```

```
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^2}\,dx &= \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2} - \frac{\left(2\left(-2(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x}\,dx}{b} \\
&= \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2} - \frac{1}{2}(-bB+6Ac)\int \sqrt{bx+cx^2}\,dx \\
&= \frac{(bB-6Ac)(b+2cx)\sqrt{bx+cx^2}}{8c} + \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2} \\
&= \frac{(bB-6Ac)(b+2cx)\sqrt{bx+cx^2}}{8c} + \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2} \\
&= \frac{(bB-6Ac)(b+2cx)\sqrt{bx+cx^2}}{8c} + \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}
\end{aligned}
$$

Mathematica [A] time = 0.19, size = 109, normalized size = 0.87

$$
\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(2bc(15A+7Bx)+4c^2x(3A+2Bx)+3b^2B\right)-\frac{3b^{3/2}(bB-6Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{24c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(3*b^2*B + 4*c^2*x*(3*A + 2*B*x) + 2*b*c*(15*A
+ 7*B*x)) - (3*b^(3/2)*(b*B - 6*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(S
qrt[x]*Sqrt[1 + (c*x)/b])))/(24*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.51, size = 108, normalized size = 0.86

$$
\frac{\sqrt{bx+cx^2}\left(30Abc+12Ac^2x+3b^2B+14bBcx+8Bc^2x^2\right)}{24c}+\frac{\left(b^3B-6Ab^2c\right)\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)}{16c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(3*b^2*B + 30*A*b*c + 14*b*B*c*x + 12*A*c^2*x + 8*B*c^2*
x^2))/(24*c) + ((b^3*B - 6*A*b^2*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[b*x
+ c*x^2]])/(16*c^(3/2))
```

fricas [A] time = 0.43, size = 205, normalized size = 1.63

$$
\left[-\frac{3\left(Bb^3-6Ab^2c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(8Bc^3x^2+3Bb^2c+30Abc^2+2\left(7Bbc^2+6Ac^3\right)x\right)\sqrt{cx^2+bx}}{48c^2}, \frac{3\left(Bb^3-6Ab^2c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(8Bc^3x^2+3Bb^2c+30Abc^2+2\left(7Bbc^2+6Ac^3\right)x\right)\sqrt{cx^2+bx}}{24c^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*b^3 - 6*A*b^2*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(8*B*c^3*x^2 + 3*B*b^2*c + 30*A*b*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)
*x)*sqrt(c*x^2 + b*x))/c^2, 1/24*(3*(B*b^3 - 6*A*b^2*c)*sqrt(-c)*arctan(sqr
```

```
t(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B*c^3*x^2 + 3*B*b^2*c + 30*A*b*c^2 + 2*
(7*B*b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^2]
```

giac [A] time = 0.24, size = 109, normalized size = 0.87

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(4\,Bcx+\frac{7\,Bbc^2+6\,Ac^3}{c^2}\right)x+\frac{3\left(Bb^2c+10\,Abc^2\right)}{c^2}\right)+\frac{\left(Bb^3-6\,Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{16\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*c*x + (7*B*b*c^2 + 6*A*c^3)/c^2)*x + 3*(B*b^
2*c + 10*A*b*c^2)/c^2) + 1/16*(B*b^3 - 6*A*b^2*c)*log(abs(-2*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.06, size = 187, normalized size = 1.48

$$\frac{3Ab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8\sqrt{c}}-\frac{Bb^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{3}{2}}}-\frac{3\sqrt{cx^2+bx}\,Acx}{2}+\frac{\sqrt{cx^2+bx}\,Bbx}{4}-\frac{3\sqrt{cx^2+bx}\,Ab}{4}+\frac{\sqrt{cx^2+bx}\,Bb^2}{8c}-\frac{2\left(cx^2+bx\right)^{\frac{3}{2}}Ac}{b}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{3}+\frac{2\left(cx^2+bx\right)^{\frac{5}{2}}A}{bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x)
```

```
[Out] 2*A*(c*x^2+b*x)^(5/2)/b/x^2-2*A/b*c*(c*x^2+b*x)^(3/2)-3/2*A*c*(c*x^2+b*x)^(
1/2)*x-3/4*A*b*(c*x^2+b*x)^(1/2)+3/8*A*b^2/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x)^(1/2))+1/3*B*(c*x^2+b*x)^(3/2)+1/4*B*b*(c*x^2+b*x)^(1/2)*x+1/8*B
/c*(c*x^2+b*x)^(1/2)*b^2-1/16*B*b^3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))
```

maxima [A] time = 0.90, size = 147, normalized size = 1.17

$$\frac{1}{4}\sqrt{cx^2+bx}\,Bbx-\frac{Bb^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,c^{\frac{3}{2}}}+\frac{3\,Ab^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,\sqrt{c}}+\frac{1}{3}\left(cx^2+bx\right)^{\frac{3}{2}}B+\frac{3}{4}\sqrt{cx^2+bx}\,Ab+\frac{\sqrt{cx^2+bx}\,Bb^2}{8\,c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*B*b*x - 1/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c))/c^(3/2) + 3/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
/sqrt(c) + 1/3*(c*x^2 + b*x)^(3/2)*B + 3/4*sqrt(c*x^2 + b*x)*A*b + 1/8*sqrt
(c*x^2 + b*x)*B*b^2/c + 1/2*(c*x^2 + b*x)^(3/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^2,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**2,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**2, x)
```

3.85 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^3} \, dx$

Optimal. Leaf size=118

$$\frac{\left(bx+cx^2\right)^{3/2}(4Ac+bB)}{2bx}+\frac{3}{4}\sqrt{bx+cx^2}\,(4Ac+bB)+\frac{3b(4Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3}$$

Rubi [A] time = 0.12, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 664, 620, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}(4Ac+bB)}{2bx}+\frac{3}{4}\sqrt{bx+cx^2}\,(4Ac+bB)+\frac{3b(4Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (3*(b*B + 4*A*c)*Sqrt[b*x + c*x^2])/4 + ((b*B + 4*A*c)*(b*x + c*x^2)^(3/2))
/(2*b*x) - (2*A*(b*x + c*x^2)^(5/2))/(b*x^3) + (3*b*(b*B + 4*A*c)*ArcTanh[(
Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^3}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{\left(2\left(-3(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^2}\,dx}{b}$$

$$= \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{1}{4}(3(bB+4Ac))\int \frac{\sqrt{bx+cx^2}}{x}\,dx$$

$$= \frac{3}{4}(bB+4Ac)\sqrt{bx+cx^2} + \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{1}{8}(3b(b$$

$$= \frac{3}{4}(bB+4Ac)\sqrt{bx+cx^2} + \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{1}{4}(3b(b$$

$$= \frac{3}{4}(bB+4Ac)\sqrt{bx+cx^2} + \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{3b(bB}{}$$

Mathematica [A] time = 0.17, size = 94, normalized size = 0.80

$$\frac{\sqrt{x(b+cx)}\left(\frac{3\sqrt{b}\sqrt{x}(4Ac+bB)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\sqrt{\frac{cx}{b}+1}} + A(4cx-8b) + Bx(5b+2cx)\right)}{4x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(B*x*(5*b + 2*c*x) + A*(-8*b + 4*c*x) + (3*Sqrt[b]*(b*B
+ 4*A*c)*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[c]*Sqrt[1 + (c*x
)/b]))))/(4*x)
```

IntegrateAlgebraic [A] time = 0.50, size = 90, normalized size = 0.76

$$\frac{\sqrt{bx+cx^2}\left(-8Ab+4Acx+5bBx+2Bcx^2\right)}{4x} - \frac{3\left(4Abc+b^2B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{8\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b + 5*b*B*x + 4*A*c*x + 2*B*c*x^2))/(4*x) - (3*(b^
2*B + 4*A*b*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(8*Sqrt[c])
```

fricas [A] time = 0.43, size = 186, normalized size = 1.58

$$\left[\frac{3\left(Bb^2+4Abc\right)\sqrt{c}x\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(2Bc^2x^2-8Abc+\left(5Bbc+4Ac^2\right)x\right)\sqrt{cx^2+bx}}{8cx}, -\frac{3\left(Bb^2+4Abc\right)\sqrt{-c}x\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(2Bc^2x^2-8Abc+\left(5Bbc+4Ac^2\right)x\right)\sqrt{cx^2+bx}}{4cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*(B*b^2 + 4*A*b*c)*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c)) + 2*(2*B*c^2*x^2 - 8*A*b*c + (5*B*b*c + 4*A*c^2)*x)*sqrt(c*x^2 + b*x)
)/(c*x), -1/4*(3*(B*b^2 + 4*A*b*c)*sqrt(-c)*x*arctan(sqrt(c*x^2 + b*x)*sqrt
(-c)/(c*x)) - (2*B*c^2*x^2 - 8*A*b*c + (5*B*b*c + 4*A*c^2)*x)*sqrt(c*x^2 +
b*x))/(c*x)]
```

giac [A] time = 0.26, size = 109, normalized size = 0.92

$$\frac{2\,Ab^2}{\sqrt{c}\,x-\sqrt{cx^2+bx}}+\frac{1}{4}\left(2\,Bcx+\frac{5\,Bbc+4\,Ac^2}{c}\right)\sqrt{cx^2+bx}-\frac{3\left(Bb^2+4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 2*A*b^2/(sqrt(c)*x - sqrt(c*x^2 + b*x)) + 1/4*(2*B*c*x + (5*B*b*c + 4*A*c^2
)/c)*sqrt(c*x^2 + b*x) - 3/8*(B*b^2 + 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*sqrt(c) - b))/sqrt(c)
```

maple [B] time = 0.06, size = 232, normalized size = 1.97

$$\frac{3Ab\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2}+\frac{3B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8\sqrt{c}}-\frac{6\sqrt{c\,x^2+bx}\;A\,c^2x}{b}-\frac{3\sqrt{c\,x^2+bx}\;Bcx}{2}-3\sqrt{c\,x^2+bx}\;Ac-\frac{3\sqrt{c\,x^2+bx}\;Bb}{4}-\frac{8\left(c\,x^2+bx\right)^{\frac{3}{2}}A\,c^2}{b^2}-\frac{2\left(c\,x^2+bx\right)^{\frac{3}{2}}Bc}{b}+\frac{8\left(c\,x^2+bx\right)^{\frac{5}{2}}Ac}{b^2x^2}+\frac{2\left(c\,x^2+bx\right)^{\frac{5}{2}}B}{b\,x^2}-\frac{2\left(c\,x^2+bx\right)^{\frac{5}{2}}A}{b\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x)
```

```
[Out] -2*A*(c*x^2+b*x)^(5/2)/b/x^3+8*A/b^2*c/x^2*(c*x^2+b*x)^(5/2)-8*A/b^2*c^2*(c
*x^2+b*x)^(3/2)-6*A/b*c^2*(c*x^2+b*x)^(1/2)*x-3*A*c*(c*x^2+b*x)^(1/2)+3/2*A
*b*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+2*B/b/x^2*(c*x^2+b*x)^
(5/2)-2*B/b*c*(c*x^2+b*x)^(3/2)-3/2*B*c*(c*x^2+b*x)^(1/2)*x-3/4*B*b*(c*x^2+
b*x)^(1/2)+3/8*B*b^2/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.87, size = 129, normalized size = 1.09

$$\frac{3\,Bb^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,\sqrt{c}}+\frac{3}{2}\,Ab\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+\frac{3}{4}\,\sqrt{cx^2+bx}\,Bb+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{2\,x}-\frac{3\,\sqrt{cx^2+bx}\,Ab}{x}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] 3/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + 3/2*A*b*sq
rt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 3/4*sqrt(c*x^2 + b*x)*
B*b + 1/2*(c*x^2 + b*x)^(3/2)*B/x - 3*sqrt(c*x^2 + b*x)*A*b/x + (c*x^2 + b*
x)^(3/2)*A/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^3,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**3,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**3, x)
```

3.86 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^4} \, dx$

Optimal. Leaf size=120

$$-\frac{2\left(bx+cx^2\right)^{3/2}(2Ac+3bB)}{3bx^2}+\frac{c\sqrt{bx+cx^2}\,(2Ac+3bB)}{b}+\sqrt{c}\,(2Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}$$

Rubi [A] time = 0.12, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 662, 664, 620, 206}

$$-\frac{2\left(bx+cx^2\right)^{3/2}(2Ac+3bB)}{3bx^2}+\frac{c\sqrt{bx+cx^2}\,(2Ac+3bB)}{b}+\sqrt{c}\,(2Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (c*(3*b*B + 2*A*c)*Sqrt[b*x + c*x^2])/b - (2*(3*b*B + 2*A*c)*(b*x + c*x^2)^
(3/2))/(3*b*x^2) - (2*A*(b*x + c*x^2)^(5/2))/(3*b*x^4) + Sqrt[c]*(3*b*B + 2
*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
```

```
&& !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^4}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\frac{\left(2\left(-4(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x^3}\,dx}{3b}\\
&= -\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\frac{(c(3bB+2Ac))\int\frac{\sqrt{bx+cx^2}}{x}\,d}{b}\\
&= \frac{c(3bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\frac{1}{2}\\
&= \frac{c(3bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+(\\
&= \frac{c(3bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+
\end{aligned}$$

Mathematica [C] time = 0.04, size = 84, normalized size = 0.70

$$-\frac{2\sqrt{x(b+cx)}\left(bx(2Ac+3bB)\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx}{b}\right)+A\sqrt{\frac{cx}{b}+1}\,(b+cx)^2\right)}{3bx^2\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(A*(b + c*x)^2*Sqrt[1 + (c*x)/b] + b*(3*b*B + 2*A*c)*
x*Hypergeometric2F1[-3/2, -1/2, 1/2, -((c*x)/b)]))/(3*b*x^2*Sqrt[1 + (c*x)/
b])
```

IntegrateAlgebraic [A] time = 0.47, size = 92, normalized size = 0.77

$$\frac{1}{2}\left(-2Ac^{3/2}-3bB\sqrt{c}\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)+\frac{\sqrt{bx+cx^2}\left(-2Ab-8Acx-6bBx+3Bcx^2\right)}{3x^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-2*A*b - 6*b*B*x - 8*A*c*x + 3*B*c*x^2))/(3*x^2) + ((-3
*b*B*Sqrt[c] - 2*A*c^(3/2))*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/2
```

fricas [A] time = 0.43, size = 170, normalized size = 1.42

$$\left[\frac{3\,(3\,Bb+2\,Ac)\sqrt{c}\,x^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(3\,Bcx^2-2\,Ab-2\,(3\,Bb+4\,Ac)x\right)\sqrt{cx^2+bx}}{6\,x^2},\ -\frac{3\,(3\,Bb+2\,Ac)\sqrt{-c}\,x^2\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)-\left(3\,Bcx^2-2\,Ab-2\,(3\,Bb+4\,Ac)x\right)\sqrt{cx^2+bx}}{3\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/6*(3*(3*B*b + 2*A*c)*sqrt(c)*x^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c)) + 2*(3*B*c*x^2 - 2*A*b - 2*(3*B*b + 4*A*c)*x)*sqrt(c*x^2 + b*x))/x^2,
```

```
-1/3*(3*(3*B*b + 2*A*c)*sqrt(-c)*x^2*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*
x)) - (3*B*c*x^2 - 2*A*b - 2*(3*B*b + 4*A*c)*x)*sqrt(c*x^2 + b*x))/x^2]
```

giac [A] time = 0.27, size = 181, normalized size = 1.51

$$\sqrt{cx^2+bx}\,Bc-\frac{\left(3\,Bbc+2\,Ac^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,\sqrt{c}}+\frac{2\left(3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^2\sqrt{c}+6\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Abc^{\frac{3}{2}}+3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^2c+Ab^3\sqrt{c}\right)}{3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B*c - 1/2*(3*B*b*c + 2*A*c^2)*log(abs(-2*(sqrt(c)*x - sqr
t(c*x^2 + b*x))*sqrt(c) - b))/sqrt(c) + 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*B*b^2*sqrt(c) + 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(3/2) + 3*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c + A*b^3*sqrt(c))/((sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*sqrt(c))
```

maple [B] time = 0.06, size = 284, normalized size = 2.37

$$A\,c^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)+\frac{3Bb\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2}-\frac{4\sqrt{c\,x^2+bx}\,A\,c^3x}{b^2}-\frac{6\sqrt{c\,x^2+bx}\,B\,c^2x}{b}-\frac{2\sqrt{c\,x^2+bx}\,A\,c^2}{b}-3\sqrt{c\,x^2+bx}\,Bc-\frac{16\left(c\,x^2+bx\right)^{\frac{3}{2}}A\,c^3}{3b^3}-\frac{8\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,c^2}{b^2}+\frac{16\left(c\,x^2+bx\right)^{\frac{5}{2}}A\,c^2}{3b^3x^2}+\frac{8\left(c\,x^2+bx\right)^{\frac{5}{2}}Bc}{b^2x^2}-\frac{4\left(c\,x^2+bx\right)^{\frac{5}{2}}Ac}{3b^2x^3}-\frac{2\left(c\,x^2+bx\right)^{\frac{5}{2}}B}{b\,x^3}-\frac{2\left(c\,x^2+bx\right)^{\frac{5}{2}}A}{3b\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x)
```

```
[Out] -2/3*A*(c*x^2+b*x)^(5/2)/b/x^4-4/3*A/b^2*c/x^3*(c*x^2+b*x)^(5/2)+16/3*A/b^3
*c^2/x^2*(c*x^2+b*x)^(5/2)-16/3*A/b^3*c^3*(c*x^2+b*x)^(3/2)-4*A/b^2*c^3*(c*
x^2+b*x)^(1/2)*x-2*A/b*c^2*(c*x^2+b*x)^(1/2)+A*c^(3/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))-2*B/b/x^3*(c*x^2+b*x)^(5/2)+8*B/b^2*c/x^2*(c*x^2+b*x)
^(5/2)-8*B/b^2*c^2*(c*x^2+b*x)^(3/2)-6*B/b*c^2*(c*x^2+b*x)^(1/2)*x-3*B*c*(c
*x^2+b*x)^(1/2)+3/2*B*b*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 1.00, size = 146, normalized size = 1.22

$$\frac{3}{2}\,Bb\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+Ac^{\frac{3}{2}}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{3\,\sqrt{cx^2+bx}\,Bb}{x}-\frac{7\,\sqrt{cx^2+bx}\,Ac}{3\,x}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{x^2}-\frac{\sqrt{cx^2+bx}\,Ab}{3\,x^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] 3/2*B*b*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + A*c^(3/2)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 3*sqrt(c*x^2 + b*x)*B*b/x - 7/
3*sqrt(c*x^2 + b*x)*A*c/x + (c*x^2 + b*x)^(3/2)*B/x^2 - 1/3*sqrt(c*x^2 + b*
x)*A*b/x^2 - 1/3*(c*x^2 + b*x)^(3/2)*A/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + cx\right)\right)^{\frac{3}{2}} \left(A + Bx\right)}{x^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**4,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**4, x)
```

3.87 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^5}\,dx$

Optimal. Leaf size=95

$$-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+2Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2Bc\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}$$

Rubi [A] time = 0.10, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 662, 620, 206}

$$-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+2Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2Bc\sqrt{bx+cx^2}}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (-2*B*c*Sqrt[b*x + c*x^2])/x - (2*B*(b*x + c*x^2)^(3/2))/(3*x^3) - (2*A*(b*
x + c*x^2)^(5/2))/(5*b*x^5) + 2*B*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*
x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^5}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5} + B\int \frac{\left(bx+cx^2\right)^{3/2}}{x^4}\,dx \\ &= -\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5} + (Bc)\int \frac{\sqrt{bx+cx^2}}{x^2}\,dx \\ &= -\frac{2Bc\sqrt{bx+cx^2}}{x} - \frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5} + \left(Bc^2\right)\int \frac{1}{\sqrt{bx+cx^2}} \\ &= -\frac{2Bc\sqrt{bx+cx^2}}{x} - \frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5} + \left(2Bc^2\right)\mathrm{Subst}\left(\int \frac{}{1\ldots}\right. \\ &= -\frac{2Bc\sqrt{bx+cx^2}}{x} - \frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5} + 2Bc^{3/2}\tanh^{-1}\left(\frac{\ldots}{\sqrt{bx\ldots}}\right.\end{aligned}$$

Mathematica [C] time = 0.08, size = 88, normalized size = 0.93

$$\frac{2\sqrt{x(b+cx)}\left((b+cx)^2\sqrt{\frac{cx}{b}+1}\,(bB-Ac)-b^3B\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};-\frac{cx}{b}\right)\right)}{5bcx^3\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*((b*B - A*c)*(b + c*x)^2*Sqrt[1 + (c*x)/b] - b^3*B*Hyp
ergeometric2F1[-5/2, -5/2, -3/2, -((c*x)/b)]))/(5*b*c*x^3*Sqrt[1 + (c*x)/b]
)
```

IntegrateAlgebraic [A] time = 0.39, size = 96, normalized size = 1.01

$$-\frac{2\sqrt{bx+cx^2}\left(3Ab^2+6Abcx+3Ac^2x^2+5b^2Bx+20bBcx^2\right)}{15bx^3}-Bc^{3/2}\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(3*A*b^2 + 5*b^2*B*x + 6*A*b*c*x + 20*b*B*c*x^2 + 3*A
*c^2*x^2))/(15*b*x^3) - B*c^(3/2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^
2]]
```

fricas [A] time = 0.43, size = 188, normalized size = 1.98

$$\left[\frac{15\,Bbc^{\frac{3}{2}}x^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(3\,Ab^2+\left(20\,Bbc+3\,Ac^2\right)x^2+\left(5\,Bb^2+6\,Abc\right)x\right)\sqrt{cx^2+bx}}{15\,bx^3},\ -\frac{2\left(15\,Bb\sqrt{-c}\,cx^3\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\left(3\,Ab^2+\left(20\,Bbc+3\,Ac^2\right)x^2+\left(5\,Bb^2+6\,Abc\right)x\right)\sqrt{cx^2+bx}\right)}{15\,bx^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/15*(15*B*b*c^(3/2)*x^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*
(3*A*b^2 + (20*B*b*c + 3*A*c^2)*x^2 + (5*B*b^2 + 6*A*b*c)*x)*sqrt(c*x^2 + b
*x))/(b*x^3), -2/15*(15*B*b*sqrt(-c)*c*x^3*arctan(sqrt(c*x^2 + b*x)*sqrt(-c
)/(c*x)) + (3*A*b^2 + (20*B*b*c + 3*A*c^2)*x^2 + (5*B*b^2 + 6*A*b*c)*x)*sqr
t(c*x^2 + b*x))/(b*x^3)]
```

giac [B] time = 0.25, size = 270, normalized size = 2.84

$$-Bc^{\frac{3}{2}}\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)+\frac{2\left(30\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bbc^{\frac{3}{2}}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ac^{\frac{5}{2}}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^2c+30\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Abc^2+5\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^3\sqrt{c}+30\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^2c^{\frac{3}{2}}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^3c+3\,Ab^4\sqrt{c}\right)}{15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] -B*c^(3/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b)) + 2/15*
(30*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b*c^(3/2) + 15*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^4*A*c^(5/2) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c + 30
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^2 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*B*b^3*sqrt(c) + 30*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(3/2) +
15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c + 3*A*b^4*sqrt(c))/((sqrt(c)*x -
 sqrt(c*x^2 + b*x))^5*sqrt(c))
```

maple [B] time = 0.05, size = 176, normalized size = 1.85

$$B c^{\frac{3}{2}} \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)-\frac{4\sqrt{c x^2+bx}\, B c^3 x}{b^2}-\frac{2\sqrt{c x^2+bx}\, B c^2}{b}-\frac{16\left(c x^2+bx\right)^{\frac{3}{2}} B c^3}{3b^3}+\frac{16\left(c x^2+bx\right)^{\frac{5}{2}} B c^2}{3b^3x^2}-\frac{4\left(c x^2+bx\right)^{\frac{5}{2}} Bc}{3b^2x^3}-\frac{2\left(c x^2+bx\right)^{\frac{5}{2}} B}{3b x^4}-\frac{2\left(c x^2+bx\right)^{\frac{5}{2}} A}{5b x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x)
```

```
[Out] -2/5*A*(c*x^2+b*x)^(5/2)/b/x^5-2/3*B/b/x^4*(c*x^2+b*x)^(5/2)-4/3*B/b^2*c/x^
3*(c*x^2+b*x)^(5/2)+16/3*B/b^3*c^2/x^2*(c*x^2+b*x)^(5/2)-16/3*B/b^3*c^3*(c*
x^2+b*x)^(3/2)-4*B/b^2*c^3*(c*x^2+b*x)^(1/2)*x-2*B/b*c^2*(c*x^2+b*x)^(1/2)+
B*c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.95, size = 158, normalized size = 1.66

$$Bc^{\frac{3}{2}} \log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{7\,\sqrt{cx^2+bx}\,Bc}{3\,x}-\frac{2\,\sqrt{cx^2+bx}\,Ac^2}{5\,bx}-\frac{\sqrt{cx^2+bx}\,Bb}{3\,x^2}+\frac{\sqrt{cx^2+bx}\,Ac}{5\,x^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{3\,x^3}+\frac{3\,\sqrt{cx^2+bx}\,Ab}{5\,x^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] B*c^(3/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 7/3*sqrt(c*x^2 + b
*x)*B*c/x - 2/5*sqrt(c*x^2 + b*x)*A*c^2/(b*x) - 1/3*sqrt(c*x^2 + b*x)*B*b/x
^2 + 1/5*sqrt(c*x^2 + b*x)*A*c/x^2 - 1/3*(c*x^2 + b*x)^(3/2)*B/x^3 + 3/5*sq
rt(c*x^2 + b*x)*A*b/x^3 - (c*x^2 + b*x)^(3/2)*A/x^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{x^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**5,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**5, x)
```

3.88 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=57

$$-\frac{2\left(bx+cx^2\right)^{5/2}(7bB-2Ac)}{35b^2x^5}-\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}$$

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\left(bx+cx^2\right)^{5/2}(7bB-2Ac)}{35b^2x^5}-\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(7*b*x^6) - (2*(7*b*B - 2*A*c)*(b*x + c*x^2)^(5/
2))/(35*b^2*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^6}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}+\frac{\left(2\left(-6(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^5}\,dx}{7b}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}-\frac{2(7bB-2Ac)\left(bx+cx^2\right)^{5/2}}{35b^2x^5}\end{aligned}$$

Mathematica [A] time = 0.02, size = 36, normalized size = 0.63

$$-\frac{2(x(b+cx))^{5/2}(5Ab-2Acx+7bBx)}{35b^2x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-2*(x*(b + c*x))^(5/2)*(5*A*b + 7*b*B*x - 2*A*c*x))/(35*b^2*x^6)
```

IntegrateAlgebraic [A] time = 0.37, size = 84, normalized size = 1.47

$$\frac{2\sqrt{bx+cx^2}\left(-5Ab^3-8Ab^2cx-Abc^2x^2+2Ac^3x^3-7b^3Bx-14b^2Bcx^2-7bBc^2x^3\right)}{35b^2x^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-5*A*b^3 - 7*b^3*B*x - 8*A*b^2*c*x - 14*b^2*B*c*x^2 -
 A*b*c^2*x^2 - 7*b*B*c^2*x^3 + 2*A*c^3*x^3))/(35*b^2*x^4)
```

fricas [A] time = 0.40, size = 78, normalized size = 1.37

$$-\frac{2\left(5\,Ab^3+\left(7\,Bbc^2-2\,Ac^3\right)x^3+\left(14\,Bb^2c+Abc^2\right)x^2+\left(7\,Bb^3+8\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{35\,b^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] -2/35*(5*A*b^3 + (7*B*b*c^2 - 2*A*c^3)*x^3 + (14*B*b^2*c + A*b*c^2)*x^2 + (
7*B*b^3 + 8*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^2*x^4)
```

giac [B] time = 0.23, size = 311, normalized size = 5.46

$$\frac{2\left(35\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bc^2+70\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bbc^{\frac{3}{2}}+35\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ac^{\frac{5}{2}}+70\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^2c+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Abc^2+35\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^3\sqrt{c}+140\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^2c^{\frac{3}{2}}+7\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^4+98\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^3c+35\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^4\sqrt{c}+5\,Ab^5\right)}{35\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] 2/35*(35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^2 + 70*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b*c^(3/2) + 35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^(5/2) +
 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c + 105*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^4*A*b*c^2 + 35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*sqrt(c) + 1
40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2) + 7*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^2*B*b^4 + 98*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c + 35*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c) + 5*A*b^5)/(sqrt(c)*x - sqrt(c*x
^2 + b*x))^7
```

maple [A] time = 0.05, size = 40, normalized size = 0.70

$$-\frac{2\,(cx+b)\,(-2Acx+7Bbx+5Ab)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{35b^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x)
```

```
[Out] -2/35*(c*x+b)*(-2*A*c*x+7*B*b*x+5*A*b)*(c*x^2+b*x)^(3/2)/b^2/x^5
```

maxima [B] time = 0.94, size = 176, normalized size = 3.09

$$-\frac{2\sqrt{cx^2+bx}\,Bc^2}{5\,bx}+\frac{4\sqrt{cx^2+bx}\,Ac^3}{35\,b^2x}+\frac{\sqrt{cx^2+bx}\,Bc}{5\,x^2}-\frac{2\sqrt{cx^2+bx}\,Ac^2}{35\,bx^2}+\frac{3\sqrt{cx^2+bx}\,Bb}{5\,x^3}+\frac{3\sqrt{cx^2+bx}\,Ac}{70\,x^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{x^4}+\frac{3\sqrt{cx^2+bx}\,Ab}{14\,x^4}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{2\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] -2/5*sqrt(c*x^2 + b*x)*B*c^2/(b*x) + 4/35*sqrt(c*x^2 + b*x)*A*c^3/(b^2*x) +
 1/5*sqrt(c*x^2 + b*x)*B*c/x^2 - 2/35*sqrt(c*x^2 + b*x)*A*c^2/(b*x^2) + 3/5
*sqrt(c*x^2 + b*x)*B*b/x^3 + 3/70*sqrt(c*x^2 + b*x)*A*c/x^3 - (c*x^2 + b*x)
^(3/2)*B/x^4 + 3/14*sqrt(c*x^2 + b*x)*A*b/x^4 - 1/2*(c*x^2 + b*x)^(3/2)*A/x
^5
```

mupad [B] time = 2.02, size = 142, normalized size = 2.49

$$\frac{4\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{35\,b^2\,x}-\frac{16\,A\,c\,\sqrt{c\,x^2+b\,x}}{35\,x^3}-\frac{2\,B\,b\,\sqrt{c\,x^2+b\,x}}{5\,x^3}-\frac{4\,B\,c\,\sqrt{c\,x^2+b\,x}}{5\,x^2}-\frac{2\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{35\,b\,x^2}-\frac{2\,A\,b\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{2\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{5\,b\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^6,x)
```

```
[Out] (4*A*c^3*(b*x + c*x^2)^(1/2))/(35*b^2*x) - (16*A*c*(b*x + c*x^2)^(1/2))/(35
*x^3) - (2*B*b*(b*x + c*x^2)^(1/2))/(5*x^3) - (4*B*c*(b*x + c*x^2)^(1/2))/(
5*x^2) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(35*b*x^2) - (2*A*b*(b*x + c*x^2)^(1
/2))/(7*x^4) - (2*B*c^2*(b*x + c*x^2)^(1/2))/(5*b*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**6,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**6, x)
```

3.89 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=90

$$\frac{4c\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{315b^3x^5}-\frac{2\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{63b^2x^6}-\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7}$$

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{315b^3x^5}-\frac{2\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{63b^2x^6}-\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(9*b*x^7) - (2*(9*b*B - 4*A*c)*(b*x + c*x^2)^(5/
2))/(63*b^2*x^6) + (4*c*(9*b*B - 4*A*c)*(b*x + c*x^2)^(5/2))/(315*b^3*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^7}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7} + \frac{\left(2\left(-7(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^6}\,dx}{9b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7} - \frac{2(9bB-4Ac)\left(bx+cx^2\right)^{5/2}}{63b^2x^6} - \frac{(2c(9bB-4Ac))\int \frac{\left(bx+cx^2\right)^{3}}{x^5}}{63b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7} - \frac{2(9bB-4Ac)\left(bx+cx^2\right)^{5/2}}{63b^2x^6} + \frac{4c(9bB-4Ac)\left(bx+cx^2\right)^{5/}}{315b^3x^5}$$

Mathematica [A] time = 0.03, size = 56, normalized size = 0.62

$$\frac{2(x(b+cx))^{5/2}\left(A\left(-35b^2+20bcx-8c^2x^2\right)+9bBx(2cx-5b)\right)}{315b^3x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(9*b*B*x*(-5*b + 2*c*x) + A*(-35*b^2 + 20*b*c*x - 8*
c^2*x^2)))/(315*b^3*x^7)
```

IntegrateAlgebraic [A] time = 0.41, size = 108, normalized size = 1.20

$$-\frac{2\sqrt{bx+cx^2}\left(35Ab^4+50Ab^3cx+3Ab^2c^2x^2-4Abc^3x^3+8Ac^4x^4+45b^4Bx+72b^3Bcx^2+9b^2Bc^2x^3-18bBc^3x^4\right)}{315b^3x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(35*A*b^4 + 45*b^4*B*x + 50*A*b^3*c*x + 72*b^3*B*c*x^
2 + 3*A*b^2*c^2*x^2 + 9*b^2*B*c^2*x^3 - 4*A*b*c^3*x^3 - 18*b*B*c^3*x^4 + 8*
A*c^4*x^4))/(315*b^3*x^5)
```

fricas [A] time = 0.40, size = 104, normalized size = 1.16

$$-\frac{2\left(35\,Ab^4-2\left(9\,Bbc^3-4\,Ac^4\right)x^4+\left(9\,Bb^2c^2-4\,Abc^3\right)x^3+3\left(24\,Bb^3c+Ab^2c^2\right)x^2+5\left(9\,Bb^4+10\,Ab^3c\right)x\right)\sqrt{cx^2+bx}}{315\,b^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^4 - 2*(9*B*b*c^3 - 4*A*c^4)*x^4 + (9*B*b^2*c^2 - 4*A*b*c^3)*
x^3 + 3*(24*B*b^3*c + A*b^2*c^2)*x^2 + 5*(9*B*b^4 + 10*A*b^3*c)*x)*sqrt(c*x
^2 + b*x)/(b^3*x^5)
```

giac [B] time = 0.23, size = 371, normalized size = 4.12

$$\frac{2\left(315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bc^{\frac{5}{2}}+945\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bbc^2+420\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ac^3+1260\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^2c^{\frac{3}{2}}+1575\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Abc^{\frac{5}{2}}+882\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^3c+2583\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^2c^2+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^4\sqrt{c}+2310\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^3c^{\frac{3}{2}}+45\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^5+1170\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^4c+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^5\sqrt{c}+35\,Ab^6\right)}{315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] 2/315*(315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*c^(5/2) + 945*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^6*B*b*c^2 + 420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*c^3 +
 1260*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/2) + 1575*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^5*A*b*c^(5/2) + 882*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b
```

```
^3*c + 2583*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^2 + 315*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(c) + 2310*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
*A*b^3*c^(3/2) + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5 + 1170*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*A*b^4*c + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b
^5*sqrt(c) + 35*A*b^6)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
```

maple [A] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^{2}x^{2}-18Bbc\,x^{2}-20Abcx+45B\,b^{2}x+35A\,b^{2}\right)\left(c\,x^{2}+bx\right)^{\frac{3}{2}}}{315b^{3}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x)
```

```
[Out] -2/315*(c*x+b)*(8*A*c^2*x^2-18*B*b*c*x^2-20*A*b*c*x+45*B*b^2*x+35*A*b^2)*(c
*x^2+b*x)^(3/2)/b^3/x^6
```

maxima [B] time = 0.98, size = 222, normalized size = 2.47

$$\frac{4\,\sqrt{cx^{2}+bx}\,Bc^{3}}{35\,b^{2}x}-\frac{16\,\sqrt{cx^{2}+bx}\,Ac^{4}}{315\,b^{3}x}-\frac{2\,\sqrt{cx^{2}+bx}\,Bc^{2}}{35\,bx^{2}}+\frac{8\,\sqrt{cx^{2}+bx}\,Ac^{3}}{315\,b^{2}x^{2}}+\frac{3\,\sqrt{cx^{2}+bx}\,Bc}{70\,x^{3}}-\frac{2\,\sqrt{cx^{2}+bx}\,Ac^{2}}{105\,bx^{3}}+\frac{3\,\sqrt{cx^{2}+bx}\,Bb}{14\,x^{4}}+\frac{\sqrt{cx^{2}+bx}\,Ac}{63\,x^{4}}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}B}{2\,x^{5}}+\frac{\sqrt{cx^{2}+bx}\,Ab}{9\,x^{5}}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}A}{3\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] 4/35*sqrt(c*x^2 + b*x)*B*c^3/(b^2*x) - 16/315*sqrt(c*x^2 + b*x)*A*c^4/(b^3*
x) - 2/35*sqrt(c*x^2 + b*x)*B*c^2/(b*x^2) + 8/315*sqrt(c*x^2 + b*x)*A*c^3/(
b^2*x^2) + 3/70*sqrt(c*x^2 + b*x)*B*c/x^3 - 2/105*sqrt(c*x^2 + b*x)*A*c^2/(
b*x^3) + 3/14*sqrt(c*x^2 + b*x)*B*b/x^4 + 1/63*sqrt(c*x^2 + b*x)*A*c/x^4 -
1/2*(c*x^2 + b*x)^(3/2)*B/x^5 + 1/9*sqrt(c*x^2 + b*x)*A*b/x^5 - 1/3*(c*x^2
+ b*x)^(3/2)*A/x^6
```

mupad [B] time = 2.40, size = 188, normalized size = 2.09

$$\frac{8\,A\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{315\,b^{2}\,x^{2}}-\frac{20\,A\,c\,\sqrt{c\,x^{2}+b\,x}}{63\,x^{4}}-\frac{2\,B\,b\,\sqrt{c\,x^{2}+b\,x}}{7\,x^{4}}-\frac{16\,B\,c\,\sqrt{c\,x^{2}+b\,x}}{35\,x^{3}}-\frac{2\,A\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{105\,b\,x^{3}}-\frac{2\,A\,b\,\sqrt{c\,x^{2}+b\,x}}{9\,x^{5}}-\frac{16\,A\,c^{4}\,\sqrt{c\,x^{2}+b\,x}}{315\,b^{3}\,x}-\frac{2\,B\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{35\,b\,x^{2}}+\frac{4\,B\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{35\,b^{2}\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^7,x)
```

```
[Out] (8*A*c^3*(b*x + c*x^2)^(1/2))/(315*b^2*x^2) - (20*A*c*(b*x + c*x^2)^(1/2))/
(63*x^4) - (2*B*b*(b*x + c*x^2)^(1/2))/(7*x^4) - (16*B*c*(b*x + c*x^2)^(1/2
))/(35*x^3) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(105*b*x^3) - (2*A*b*(b*x + c*x
^2)^(1/2))/(9*x^5) - (16*A*c^4*(b*x + c*x^2)^(1/2))/(315*b^3*x) - (2*B*c^2*
(b*x + c*x^2)^(1/2))/(35*b*x^2) + (4*B*c^3*(b*x + c*x^2)^(1/2))/(35*b^2*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**7,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**7, x)
```

3.90 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{3465b^4x^5}+\frac{8c\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{693b^3x^6}-\frac{2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{99b^2x^7}-\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8}$$

Rubi [A] time = 0.12, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{3465b^4x^5}+\frac{8c\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{693b^3x^6}-\frac{2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{99b^2x^7}-\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(11*b*x^8) - (2*(11*b*B - 6*A*c)*(b*x + c*x^2)^(
5/2))/(99*b^2*x^7) + (8*c*(11*b*B - 6*A*c)*(b*x + c*x^2)^(5/2))/(693*b^3*x^
6) - (16*c^2*(11*b*B - 6*A*c)*(b*x + c*x^2)^(5/2))/(3465*b^4*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^8}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8} + \frac{\left(2\left(-8(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^7}\,dx}{11b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8} - \frac{2(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{99b^2x^7} - \frac{(4c(11bB-6Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^6}}{99b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8} - \frac{2(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{99b^2x^7} + \frac{8c(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{693b^3x^6}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8} - \frac{2(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{99b^2x^7} + \frac{8c(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{693b^3x^6}$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.63

$$-\frac{2(x(b+cx))^{5/2}\left(3A\left(105b^3-70b^2cx+40bc^2x^2-16c^3x^3\right)+11bBx\left(35b^2-20bcx+8c^2x^2\right)\right)}{3465b^4x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (-2*(x*(b + c*x))^(5/2)*(11*b*B*x*(35*b^2 - 20*b*c*x + 8*c^2*x^2) + 3*A*(10
5*b^3 - 70*b^2*c*x + 40*b*c^2*x^2 - 16*c^3*x^3)))/(3465*b^4*x^8)
```

IntegrateAlgebraic [A] time = 0.46, size = 132, normalized size = 1.06

$$\frac{2\sqrt{bx+cx^2}\left(-315Ab^5-420Ab^4cx-15Ab^3c^2x^2+18Ab^2c^3x^3-24Abc^4x^4+48Ac^5x^5-385b^5Bx-550b^4Bcx^2-33b^3Bc^2x^3+44b^2Bc^3x^4-88bBc^4x^5\right)}{3465b^4x^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-315*A*b^5 - 385*b^5*B*x - 420*A*b^4*c*x - 550*b^4*B*
c*x^2 - 15*A*b^3*c^2*x^2 - 33*b^3*B*c^2*x^3 + 18*A*b^2*c^3*x^3 + 44*b^2*B*c
^3*x^4 - 24*A*b*c^4*x^4 - 88*b*B*c^4*x^5 + 48*A*c^5*x^5))/(3465*b^4*x^6)
```

fricas [A] time = 0.41, size = 130, normalized size = 1.04

$$-\frac{2\left(315\,Ab^5+8\left(11\,Bbc^4-6\,Ac^5\right)x^5-4\left(11\,Bb^2c^3-6\,Abc^4\right)x^4+3\left(11\,Bb^3c^2-6\,Ab^2c^3\right)x^3+5\left(110\,Bb^4c+3\,Ab^3c^2\right)x^2+35\left(11\,Bb^5+12\,Ab^4c\right)x\right)\sqrt{cx^2+bx}}{3465\,b^4x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] -2/3465*(315*A*b^5 + 8*(11*B*b*c^4 - 6*A*c^5)*x^5 - 4*(11*B*b^2*c^3 - 6*A*b
*c^4)*x^4 + 3*(11*B*b^3*c^2 - 6*A*b^2*c^3)*x^3 + 5*(110*B*b^4*c + 3*A*b^3*c
^2)*x^2 + 35*(11*B*b^5 + 12*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^4*x^6)
```

giac [B] time = 0.40, size = 431, normalized size = 3.45

$$\frac{2\left(4620\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bc^3+17325\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bbc^{\frac{5}{2}}+6930\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Ac^{\frac{7}{2}}+28413\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^2c^2+30492\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Abc^3+25410\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^3c^{\frac{3}{2}}+58905\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^2c^{\frac{5}{2}}+12870\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^4c+63855\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^3c^2+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^5\sqrt{c}+41580\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^4c^{\frac{3}{2}}+385\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^6+16170\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^5c+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^6\sqrt{c}+315\,Ab^7\right)}{3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] 2/3465*(4620*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^3 + 17325*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^7*B*b*c^(5/2) + 6930*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*
```

```
c^(7/2) + 28413*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^2 + 30492*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^6*A*b*c^3 + 25410*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*B*b^3*c^(3/2) + 58905*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c^(5/2) + 1
2870*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c + 63855*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^4*A*b^3*c^2 + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*sqrt
(c) + 41580*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^(3/2) + 385*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^2*B*b^6 + 16170*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*
b^5*c + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*sqrt(c) + 315*A*b^7)/(sq
rt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-48A\,c^3x^3+88Bb\,c^2x^3+120Ab\,c^2x^2-220B\,b^2c\,x^2-210A\,b^2cx+385B\,b^3x+315A\,b^3\right)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{3465b^4x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x)
```

```
[Out] -2/3465*(c*x+b)*(-48*A*c^3*x^3+88*B*b*c^2*x^3+120*A*b*c^2*x^2-220*B*b^2*c*x
^2-210*A*b^2*c*x+385*B*b^3*x+315*A*b^3)*(c*x^2+b*x)^(3/2)/x^7/b^4
```

maxima [B] time = 0.96, size = 268, normalized size = 2.14

$$-\frac{16\sqrt{cx^2+bx}\,Bc^4}{315\,b^3x}+\frac{32\sqrt{cx^2+bx}\,Ac^5}{1155\,b^4x}+\frac{8\sqrt{cx^2+bx}\,Bc^3}{315\,b^2x^2}-\frac{16\sqrt{cx^2+bx}\,Ac^4}{1155\,b^3x^2}-\frac{2\sqrt{cx^2+bx}\,Bc^2}{105\,bx^3}+\frac{4\sqrt{cx^2+bx}\,Ac^3}{385\,b^2x^3}+\frac{\sqrt{cx^2+bx}\,Bc}{63\,x^4}-\frac{2\sqrt{cx^2+bx}\,Ac^2}{231\,bx^4}+\frac{\sqrt{cx^2+bx}\,Bb}{9\,x^5}+\frac{\sqrt{cx^2+bx}\,Ac}{132\,x^5}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}B}{3\,x^6}+\frac{3\sqrt{cx^2+bx}\,Ab}{44\,x^6}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}A}{4\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] -16/315*sqrt(c*x^2 + b*x)*B*c^4/(b^3*x) + 32/1155*sqrt(c*x^2 + b*x)*A*c^5/(
b^4*x) + 8/315*sqrt(c*x^2 + b*x)*B*c^3/(b^2*x^2) - 16/1155*sqrt(c*x^2 + b*x
)*A*c^4/(b^3*x^2) - 2/105*sqrt(c*x^2 + b*x)*B*c^2/(b*x^3) + 4/385*sqrt(c*x^
2 + b*x)*A*c^3/(b^2*x^3) + 1/63*sqrt(c*x^2 + b*x)*B*c/x^4 - 2/231*sqrt(c*x^
2 + b*x)*A*c^2/(b*x^4) + 1/9*sqrt(c*x^2 + b*x)*B*b/x^5 + 1/132*sqrt(c*x^2 +
 b*x)*A*c/x^5 - 1/3*(c*x^2 + b*x)^(3/2)*B/x^6 + 3/44*sqrt(c*x^2 + b*x)*A*b/
x^6 - 1/4*(c*x^2 + b*x)^(3/2)*A/x^7
```

mupad [B] time = 2.88, size = 234, normalized size = 1.87

$$\frac{4\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{385\,b^2\,x^3}-\frac{8\,A\,c\,\sqrt{c\,x^2+b\,x}}{33\,x^5}-\frac{2\,B\,b\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{20\,B\,c\,\sqrt{c\,x^2+b\,x}}{63\,x^4}-\frac{2\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{231\,b\,x^4}-\frac{2\,A\,b\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{16\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{1155\,b^3\,x^2}+\frac{32\,A\,c^5\,\sqrt{c\,x^2+b\,x}}{1155\,b^4\,x}-\frac{2\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b\,x^3}+\frac{8\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{315\,b^2\,x^2}-\frac{16\,B\,c^4\,\sqrt{c\,x^2+b\,x}}{315\,b^3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^8,x)
```

```
[Out] (4*A*c^3*(b*x + c*x^2)^(1/2))/(385*b^2*x^3) - (8*A*c*(b*x + c*x^2)^(1/2))/(
33*x^5) - (2*B*b*(b*x + c*x^2)^(1/2))/(9*x^5) - (20*B*c*(b*x + c*x^2)^(1/2)
)/(63*x^4) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(231*b*x^4) - (2*A*b*(b*x + c*x^
2)^(1/2))/(11*x^6) - (16*A*c^4*(b*x + c*x^2)^(1/2))/(1155*b^3*x^2) + (32*A*
c^5*(b*x + c*x^2)^(1/2))/(1155*b^4*x) - (2*B*c^2*(b*x + c*x^2)^(1/2))/(105*
b*x^3) + (8*B*c^3*(b*x + c*x^2)^(1/2))/(315*b^2*x^2) - (16*B*c^4*(b*x + c*x
^2)^(1/2))/(315*b^3*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**8,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**8, x)
```

3.91 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^9} dx$

Optimal. Leaf size=160

$$\frac{32c^3\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{15015b^5x^5}-\frac{16c^2\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{3003b^4x^6}+\frac{4c\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{429b^3x^7}-\frac{2\left(bx+cx^2\right)^{5/2}}{143}$$

Rubi [A] time = 0.17, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{32c^3\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{15015b^5x^5}-\frac{16c^2\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{3003b^4x^6}+\frac{4c\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{429b^3x^7}-\frac{2\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{143b^2x^8}-\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^9,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(13*b*x^9) - (2*(13*b*B - 8*A*c)*(b*x + c*x^2)^(
5/2))/(143*b^2*x^8) + (4*c*(13*b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(429*b^3*x
^7) - (16*c^2*(13*b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(3003*b^4*x^6) + (32*c^
3*(13*b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(15015*b^5*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^9}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} + \frac{\left(2\left(-9(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^8}\,dx}{13b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} - \frac{(6c(13bB-8Ac))\int \frac{(bx+cx}{x^7}}{143b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} + \frac{4c(13bB-8Ac)\left(bx+cx^2\right.}{429b^3x^7}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} + \frac{4c(13bB-8Ac)\left(bx+cx^2\right.}{429b^3x^7}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} + \frac{4c(13bB-8Ac)\left(bx+cx^2\right.}{429b^3x^7}$$

Mathematica [A] time = 0.04, size = 100, normalized size = 0.62

$$\frac{2(x(b+cx))^{5/2}\left(A\left(-1155b^4+840b^3cx-560b^2c^2x^2+320bc^3x^3-128c^4x^4\right)+13bBx\left(-105b^3+70b^2cx-40bc^2x^2+16c^3x^3\right)\right)}{15015b^5x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^9,x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(13*b*B*x*(-105*b^3 + 70*b^2*c*x - 40*b*c^2*x^2 + 16
*c^3*x^3) + A*(-1155*b^4 + 840*b^3*c*x - 560*b^2*c^2*x^2 + 320*b*c^3*x^3 -
128*c^4*x^4)))/(15015*b^5*x^9)
```

IntegrateAlgebraic [A] time = 0.48, size = 156, normalized size = 0.98

$$-\frac{2\sqrt{bx+cx^2}\left(1155Ab^6+1470Ab^5cx+35Ab^4c^2x^2-40Ab^3c^3x^3+48Ab^2c^4x^4-64Abc^5x^5+128Ac^6x^6+1365b^6Bx+1820b^5Bcx^2+65b^4Bc^2x^3-78b^3Bc^3x^4+104b^2Bc^4x^5-208bBc^5x^6\right)}{15015b^5x^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^9,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(1155*A*b^6 + 1365*b^6*B*x + 1470*A*b^5*c*x + 1820*b^
5*B*c*x^2 + 35*A*b^4*c^2*x^2 + 65*b^4*B*c^2*x^3 - 40*A*b^3*c^3*x^3 - 78*b^3
*B*c^3*x^4 + 48*A*b^2*c^4*x^4 + 104*b^2*B*c^4*x^5 - 64*A*b*c^5*x^5 - 208*b*
B*c^5*x^6 + 128*A*c^6*x^6))/(15015*b^5*x^7)
```

fricas [A] time = 0.42, size = 153, normalized size = 0.96

$$-\frac{2\left(1155\,Ab^6-16\left(13\,Bbc^5-8\,Ac^6\right)x^6+8\left(13\,Bb^2c^4-8\,Abc^5\right)x^5-6\left(13\,Bb^3c^3-8\,Ab^2c^4\right)x^4+5\left(13\,Bb^4c^2-8\,Ab^3c^3\right)x^3+35\left(52\,Bb^5c+Ab^4c^2\right)x^2+105\left(13\,Bb^6+14\,Ab^5c\right)x\right)\sqrt{cx^2+bx}}{15015\,b^5x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x, algorithm="fricas")
```

```
[Out] -2/15015*(1155*A*b^6 - 16*(13*B*b*c^5 - 8*A*c^6)*x^6 + 8*(13*B*b^2*c^4 - 8*
A*b*c^5)*x^5 - 6*(13*B*b^3*c^3 - 8*A*b^2*c^4)*x^4 + 5*(13*B*b^4*c^2 - 8*A*b
^3*c^3)*x^3 + 35*(52*B*b^5*c + A*b^4*c^2)*x^2 + 105*(13*B*b^6 + 14*A*b^5*c)
*x)*sqrt(c*x^2 + b*x)/(b^5*x^7)
```

giac [B] time = 0.21, size = 491, normalized size = 3.07

$$\frac{2\left(30030\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9Bc^{\frac{7}{2}}+132132\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bbc^3+48048\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Ac^4+255255\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bb^2c^{\frac{5}{2}}+240240\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Abc^{\frac{7}{2}}+276705\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^3c^2+531960\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ab^2c^3+180180\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^4c^{\frac{3}{2}}+675675\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^3c^{\frac{5}{2}}+70070\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^5c+535535\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^4c^2+15015\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^6\sqrt{c}+270270\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^5c^{\frac{3}{2}}+1365\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^7+84630\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^6c+15015\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^7\sqrt{c}+1155\,Ab^8\right)}{15015\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x, algorithm="giac")
```

```
[Out] 2/15015*(30030*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^(7/2) + 132132*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^8*B*b*c^3 + 48048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
8*A*c^4 + 255255*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^(5/2) + 240240*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b*c^(7/2) + 276705*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^6*B*b^3*c^2 + 531960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^3
 + 180180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^(3/2) + 675675*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^5*A*b^3*c^(5/2) + 70070*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^4*B*b^5*c + 535535*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^2 + 15015
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^6*sqrt(c) + 270270*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^3*A*b^5*c^(3/2) + 1365*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b
^7 + 84630*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c + 15015*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*A*b^7*sqrt(c) + 1155*A*b^8)/(sqrt(c)*x - sqrt(c*x^2 + b*x
))^13
```

maple [A] time = 0.04, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(128A\,c^{4}x^{4}-208Bb\,c^{3}x^{4}-320Ab\,c^{3}x^{3}+520B\,b^{2}c^{2}x^{3}+560A\,b^{2}c^{2}x^{2}-910B\,b^{3}c\,x^{2}-840A\,b^{3}cx+1365b^{4}Bx+1155A\,b^{4}\right)\left(c\,x^{2}+bx\right)^{\frac{3}{2}}}{15015b^{5}x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x)
```

```
[Out] -2/15015*(c*x+b)*(128*A*c^4*x^4-208*B*b*c^3*x^4-320*A*b*c^3*x^3+520*B*b^2*c
^2*x^3+560*A*b^2*c^2*x^2-910*B*b^3*c*x^2-840*A*b^3*c*x+1365*B*b^4*x+1155*A*
b^4)*(c*x^2+b*x)^(3/2)/b^5/x^8
```

maxima [B] time = 1.01, size = 314, normalized size = 1.96

$$\frac{32\sqrt{cx^{2}+bx}\,Bc^{5}}{1155\,b^{4}x}-\frac{256\sqrt{cx^{2}+bx}\,Ac^{6}}{15015\,b^{5}x}-\frac{16\sqrt{cx^{2}+bx}\,Bc^{4}}{1155\,b^{3}x^{2}}+\frac{128\sqrt{cx^{2}+bx}\,Ac^{5}}{15015\,b^{4}x^{2}}+\frac{4\sqrt{cx^{2}+bx}\,Bc^{3}}{385\,b^{2}x^{3}}-\frac{32\sqrt{cx^{2}+bx}\,Ac^{4}}{5005\,b^{3}x^{3}}-\frac{2\sqrt{cx^{2}+bx}\,Bc^{2}}{231\,bx^{4}}+\frac{16\sqrt{cx^{2}+bx}\,Ac^{3}}{3003\,b^{2}x^{4}}+\frac{\sqrt{cx^{2}+bx}\,Bc}{132\,x^{5}}-\frac{2\sqrt{cx^{2}+bx}\,Ac^{2}}{429\,bx^{5}}+\frac{3\sqrt{cx^{2}+bx}\,Bb}{44\,x^{6}}+\frac{3\sqrt{cx^{2}+bx}\,Ac}{715\,x^{6}}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}B}{4\,x^{7}}+\frac{3\sqrt{cx^{2}+bx}\,Ab}{65\,x^{7}}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}A}{5\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x, algorithm="maxima")
```

```
[Out] 32/1155*sqrt(c*x^2 + b*x)*B*c^5/(b^4*x) - 256/15015*sqrt(c*x^2 + b*x)*A*c^6
/(b^5*x) - 16/1155*sqrt(c*x^2 + b*x)*B*c^4/(b^3*x^2) + 128/15015*sqrt(c*x^2
 + b*x)*A*c^5/(b^4*x^2) + 4/385*sqrt(c*x^2 + b*x)*B*c^3/(b^2*x^3) - 32/5005
*sqrt(c*x^2 + b*x)*A*c^4/(b^3*x^3) - 2/231*sqrt(c*x^2 + b*x)*B*c^2/(b*x^4)
+ 16/3003*sqrt(c*x^2 + b*x)*A*c^3/(b^2*x^4) + 1/132*sqrt(c*x^2 + b*x)*B*c/x
^5 - 2/429*sqrt(c*x^2 + b*x)*A*c^2/(b*x^5) + 3/44*sqrt(c*x^2 + b*x)*B*b/x^6
 + 3/715*sqrt(c*x^2 + b*x)*A*c/x^6 - 1/4*(c*x^2 + b*x)^(3/2)*B/x^7 + 3/65*s
qrt(c*x^2 + b*x)*A*b/x^7 - 1/5*(c*x^2 + b*x)^(3/2)*A/x^8
```

mupad [B] time = 3.27, size = 280, normalized size = 1.75

$$\frac{16\,A\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{3003\,b^{2}\,x^{4}}-\frac{28\,A\,c\,\sqrt{c\,x^{2}+b\,x}}{143\,x^{6}}-\frac{2\,B\,b\,\sqrt{c\,x^{2}+b\,x}}{11\,x^{6}}-\frac{8\,B\,c\,\sqrt{c\,x^{2}+b\,x}}{33\,x^{5}}-\frac{2\,A\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{429\,b\,x^{5}}-\frac{2\,A\,b\,\sqrt{c\,x^{2}+b\,x}}{13\,x^{7}}-\frac{32\,A\,c^{4}\,\sqrt{c\,x^{2}+b\,x}}{5005\,b^{3}\,x^{3}}+\frac{128\,A\,c^{5}\,\sqrt{c\,x^{2}+b\,x}}{15015\,b^{4}\,x^{2}}-\frac{256\,A\,c^{6}\,\sqrt{c\,x^{2}+b\,x}}{15015\,b^{5}\,x}-\frac{2\,B\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{231\,b\,x^{4}}+\frac{4\,B\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{385\,b^{2}\,x^{3}}-\frac{16\,B\,c^{4}\,\sqrt{c\,x^{2}+b\,x}}{1155\,b^{3}\,x^{2}}+\frac{32\,B\,c^{5}\,\sqrt{c\,x^{2}+b\,x}}{1155\,b^{4}\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^9,x)
```

```
[Out] (16*A*c^3*(b*x + c*x^2)^(1/2))/(3003*b^2*x^4) - (28*A*c*(b*x + c*x^2)^(1/2)
)/(143*x^6) - (2*B*b*(b*x + c*x^2)^(1/2))/(11*x^6) - (8*B*c*(b*x + c*x^2)^(
1/2))/(33*x^5) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(429*b*x^5) - (2*A*b*(b*x +
c*x^2)^(1/2))/(13*x^7) - (32*A*c^4*(b*x + c*x^2)^(1/2))/(5005*b^3*x^3) + (1
28*A*c^5*(b*x + c*x^2)^(1/2))/(15015*b^4*x^2) - (256*A*c^6*(b*x + c*x^2)^(1
/2))/(15015*b^5*x) - (2*B*c^2*(b*x + c*x^2)^(1/2))/(231*b*x^4) + (4*B*c^3*(
```

```
b*x + c*x^2)^(1/2))/(385*b^2*x^3) - (16*B*c^4*(b*x + c*x^2)^(1/2))/(1155*b^
3*x^2) + (32*B*c^5*(b*x + c*x^2)^(1/2))/(1155*b^4*x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**9,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**9, x)
```

3.92 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{10}}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{45045b^6x^5}+\frac{128c^3\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{9009b^5x^6}-\frac{32c^2\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{1287b^4x^7}+\frac{16c\left(bx+c\right.}{}$$

Rubi [A] time = 0.18, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{45045b^6x^5}+\frac{128c^3\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{9009b^5x^6}-\frac{32c^2\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{1287b^4x^7}+\frac{16c\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{429b^3x^8}-\frac{2\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{39b^2x^9}-\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^10,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(15*b*x^10) - (2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(
5/2))/(39*b^2*x^9) + (16*c*(3*b*B - 2*A*c)*(b*x + c*x^2)^(5/2))/(429*b^3*x^
8) - (32*c^2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(5/2))/(1287*b^4*x^7) + (128*c^3
*(3*b*B - 2*A*c)*(b*x + c*x^2)^(5/2))/(9009*b^5*x^6) - (256*c^4*(3*b*B - 2*
A*c)*(b*x + c*x^2)^(5/2))/(45045*b^6*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{10}}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}} + \frac{\left(2\left(-10(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^9}\,dx}{15b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9} - \frac{(8c(3bB-2Ac))\int \frac{\left(bx+cx^2\right)^{3}}{x^8}}{39b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9} + \frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9} + \frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9} + \frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}} - \frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9} + \frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}$$

Mathematica [A] time = 0.04, size = 122, normalized size = 0.63

$$-\frac{2(x(b+cx))^{5/2}\left(A\left(3003b^5-2310b^4cx+1680b^3c^2x^2-1120b^2c^3x^3+640bc^4x^4-256c^5x^5\right)+3bBx\left(1155b^4-840b^3cx+560b^2c^2x^2-320bc^3x^3+128c^4x^4\right)\right)}{45045b^6x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^10,x]
```

```
[Out] (-2*(x*(b + c*x))^(5/2)*(3*b*B*x*(1155*b^4 - 840*b^3*c*x + 560*b^2*c^2*x^2
- 320*b*c^3*x^3 + 128*c^4*x^4) + A*(3003*b^5 - 2310*b^4*c*x + 1680*b^3*c^2*
x^2 - 1120*b^2*c^3*x^3 + 640*b*c^4*x^4 - 256*c^5*x^5)))/(45045*b^6*x^10)
```

IntegrateAlgebraic [A] time = 0.53, size = 180, normalized size = 0.92

$$\frac{2\sqrt{bx+cx^2}\left(-3003Ab^7-3696Ab^6cx-63Ab^5c^2x^2+70Ab^4c^3x^3-80Ab^3c^4x^4+96Ab^2c^5x^5-128Abc^6x^6+256Ac^7x^7-3465b^7Bx-4410b^6Bcx^2-105b^5Bc^2x^3+120b^4Bc^3x^4-144b^3Bc^4x^5+192b^2Bc^5x^6-384bBc^6x^7\right)}{45045b^6x^8}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^10,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-3003*A*b^7 - 3465*b^7*B*x - 3696*A*b^6*c*x - 4410*b^
6*B*c*x^2 - 63*A*b^5*c^2*x^2 - 105*b^5*B*c^2*x^3 + 70*A*b^4*c^3*x^3 + 120*b
^4*B*c^3*x^4 - 80*A*b^3*c^4*x^4 - 144*b^3*B*c^4*x^5 + 96*A*b^2*c^5*x^5 + 19
2*b^2*B*c^5*x^6 - 128*A*b*c^6*x^6 - 384*b*B*c^6*x^7 + 256*A*c^7*x^7))/(4504
5*b^6*x^8)
```

fricas [A] time = 0.40, size = 177, normalized size = 0.91

$$-\frac{2\left(3003\,Ab^7+128\left(3\,Bbc^6-2\,Ac^7\right)x^7-64\left(3\,Bb^2c^5-2\,Abc^6\right)x^6+48\left(3\,Bb^3c^4-2\,Ab^2c^5\right)x^5-40\left(3\,Bb^4c^3-2\,Ab^3c^4\right)x^4+35\left(3\,Bb^5c^2-2\,Ab^4c^3\right)x^3+63\left(70\,Bb^6c+Ab^5c^2\right)x^2+231\left(15\,Bb^7+16\,Ab^6c\right)x\right)\sqrt{cx^2+bx}}{45045\,b^6x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x, algorithm="fricas")
```

```
[Out] -2/45045*(3003*A*b^7 + 128*(3*B*b*c^6 - 2*A*c^7)*x^7 - 64*(3*B*b^2*c^5 - 2*
A*b*c^6)*x^6 + 48*(3*B*b^3*c^4 - 2*A*b^2*c^5)*x^5 - 40*(3*B*b^4*c^3 - 2*A*b
^3*c^4)*x^4 + 35*(3*B*b^5*c^2 - 2*A*b^4*c^3)*x^3 + 63*(70*B*b^6*c + A*b^5*c
^2)*x^2 + 231*(15*B*b^7 + 16*A*b^6*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^8)
```

giac [B] time = 0.33, size = 551, normalized size = 2.83

$$\frac{2 \left(144144 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{10} B c^4 + 720720 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{9} B b c^{\frac{7}{2}} + 240240 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{9} A c^{\frac{9}{2}} + 1595880 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{8} B b^2 c^3 + 1338480 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{8} A b c^4 + 2027025 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{7} B b^3 c^{\frac{5}{2}} + 3333330 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{7} A b^2 c^{\frac{7}{2}} + 1606605 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{6} B b^4 c^2 + 4844840 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{6} A b^3 c^3 + 810810 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{5} B b^5 c^{\frac{3}{2}} + 4513509 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{5} A b^4 c^{\frac{5}{2}} + 253890 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{4} B b^6 c + 2788695 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{4} A b^5 c^2 + 45045 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{3} B b^7 \sqrt{c} + 1141140 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{3} A b^6 c^{\frac{3}{2}} + 3465 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{2} B b^8 + 297990 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{2} A b^7 c + 45045 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right) A b^8 \sqrt{c} + 3003 A b^9\right)}{45045 \left(\sqrt{c} x - \sqrt{c x^2 + b x}\right)^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x, algorithm="giac")
```

```
[Out] 2/45045*(144144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^4 + 720720*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^9*B*b*c^(7/2) + 240240*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^9*A*c^(9/2) + 1595880*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^2*c^3 + 1338
480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b*c^4 + 2027025*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^7*B*b^3*c^(5/2) + 3333330*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*
b^2*c^(7/2) + 1606605*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^4*c^2 + 4844840
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^3 + 810810*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b^5*c^(3/2) + 4513509*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^
4*c^(5/2) + 253890*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c + 2788695*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^2 + 45045*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^3*B*b^7*sqrt(c) + 1141140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^(3
/2) + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^8 + 297990*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^2*A*b^7*c + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*sq
rt(c) + 3003*A*b^9)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^15
```

maple [A] time = 0.05, size = 134, normalized size = 0.69

$$-\frac{2 (c x + b) \left(-256 A c^5 x^5 + 384 B b c^4 x^5 + 640 A b c^4 x^4 - 960 B b^2 c^3 x^4 - 1120 A b^2 c^3 x^3 + 1680 B b^3 c^2 x^3 + 1680 A b^3 c^2 x^2 - 2520 B b^4 c x^2 - 2310 A b^4 c x + 3465 B b^5 x + 3003 A b^5\right) \left(c x^2 + b x\right)^{\frac{3}{2}}}{45045 b^6 x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x)
```

```
[Out] -2/45045*(c*x+b)*(-256*A*c^5*x^5+384*B*b*c^4*x^5+640*A*b*c^4*x^4-960*B*b^2*
c^3*x^4-1120*A*b^2*c^3*x^3+1680*B*b^3*c^2*x^3+1680*A*b^3*c^2*x^2-2520*B*b^4
*c*x^2-2310*A*b^4*c*x+3465*B*b^5*x+3003*A*b^5)*(c*x^2+b*x)^(3/2)/x^9/b^6
```

maxima [B] time = 0.98, size = 360, normalized size = 1.85

$$-\frac{256 \sqrt{c x^2 + b x} B c^6}{15015 b^5 x} + \frac{512 \sqrt{c x^2 + b x} A c^7}{45045 b^6 x} + \frac{128 \sqrt{c x^2 + b x} B c^5}{15015 b^4 x^2} - \frac{256 \sqrt{c x^2 + b x} A c^6}{45045 b^5 x^2} - \frac{32 \sqrt{c x^2 + b x} B c^4}{5005 b^3 x^3} + \frac{64 \sqrt{c x^2 + b x} A c^5}{15015 b^4 x^3} + \frac{16 \sqrt{c x^2 + b x} B c^3}{3003 b^2 x^4} - \frac{32 \sqrt{c x^2 + b x} A c^4}{9009 b^3 x^4} - \frac{2 \sqrt{c x^2 + b x} B c^2}{429 b x^5} + \frac{4 \sqrt{c x^2 + b x} A c^3}{1287 b^2 x^5} + \frac{3 \sqrt{c x^2 + b x} B c}{715 x^6} - \frac{2 \sqrt{c x^2 + b x} A c^2}{715 b x^6} + \frac{3 \sqrt{c x^2 + b x} B b}{65 x^7} + \frac{\sqrt{c x^2 + b x} A c}{390 x^7} - \frac{\left(c x^2 + b x\right)^{\frac{3}{2}} B}{5 x^8} + \frac{\sqrt{c x^2 + b x} A b}{30 x^8} - \frac{\left(c x^2 + b x\right)^{\frac{3}{2}} A}{6 x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x, algorithm="maxima")
```

```
[Out] -256/15015*sqrt(c*x^2 + b*x)*B*c^6/(b^5*x) + 512/45045*sqrt(c*x^2 + b*x)*A*
c^7/(b^6*x) + 128/15015*sqrt(c*x^2 + b*x)*B*c^5/(b^4*x^2) - 256/45045*sqrt(
c*x^2 + b*x)*A*c^6/(b^5*x^2) - 32/5005*sqrt(c*x^2 + b*x)*B*c^4/(b^3*x^3) +
64/15015*sqrt(c*x^2 + b*x)*A*c^5/(b^4*x^3) + 16/3003*sqrt(c*x^2 + b*x)*B*c^
3/(b^2*x^4) - 32/9009*sqrt(c*x^2 + b*x)*A*c^4/(b^3*x^4) - 2/429*sqrt(c*x^2
+ b*x)*B*c^2/(b*x^5) + 4/1287*sqrt(c*x^2 + b*x)*A*c^3/(b^2*x^5) + 3/715*sqr
t(c*x^2 + b*x)*B*c/x^6 - 2/715*sqrt(c*x^2 + b*x)*A*c^2/(b*x^6) + 3/65*sqrt(
c*x^2 + b*x)*B*b/x^7 + 1/390*sqrt(c*x^2 + b*x)*A*c/x^7 - 1/5*(c*x^2 + b*x)^
(3/2)*B/x^8 + 1/30*sqrt(c*x^2 + b*x)*A*b/x^8 - 1/6*(c*x^2 + b*x)^(3/2)*A/x^
9
```

mupad [B] time = 3.78, size = 326, normalized size = 1.67

$$\frac{4 A c^3 \sqrt{c x^2 + b x}}{1287 b^2 x^5} - \frac{32 A c \sqrt{c x^2 + b x}}{195 x^7} - \frac{2 B b \sqrt{c x^2 + b x}}{13 x^7} - \frac{28 B c \sqrt{c x^2 + b x}}{143 x^6} - \frac{2 A c^2 \sqrt{c x^2 + b x}}{715 b x^6} - \frac{2 A b \sqrt{c x^2 + b x}}{15 x^8} - \frac{32 A c^4 \sqrt{c x^2 + b x}}{9009 b^3 x^4} + \frac{64 A c^5 \sqrt{c x^2 + b x}}{15015 b^4 x^3} - \frac{256 A c^6 \sqrt{c x^2 + b x}}{45045 b^5 x^2} + \frac{512 A c^7 \sqrt{c x^2 + b x}}{45045 b^6 x} - \frac{2 B c^2 \sqrt{c x^2 + b x}}{429 b x^5} + \frac{16 B c^3 \sqrt{c x^2 + b x}}{3003 b^2 x^4} - \frac{32 B c^4 \sqrt{c x^2 + b x}}{5005 b^3 x^3} + \frac{128 B c^5 \sqrt{c x^2 + b x}}{15015 b^4 x^2} - \frac{256 B c^6 \sqrt{c x^2 + b x}}{15015 b^5 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^10,x)
```

```
[Out] (4*A*c^3*(b*x + c*x^2)^(1/2))/(1287*b^2*x^5) - (32*A*c*(b*x + c*x^2)^(1/2))
/(195*x^7) - (2*B*b*(b*x + c*x^2)^(1/2))/(13*x^7) - (28*B*c*(b*x + c*x^2)^(
1/2))/(143*x^6) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(715*b*x^6) - (2*A*b*(b*x +
 c*x^2)^(1/2))/(15*x^8) - (32*A*c^4*(b*x + c*x^2)^(1/2))/(9009*b^3*x^4) + (
64*A*c^5*(b*x + c*x^2)^(1/2))/(15015*b^4*x^3) - (256*A*c^6*(b*x + c*x^2)^(1
/2))/(45045*b^5*x^2) + (512*A*c^7*(b*x + c*x^2)^(1/2))/(45045*b^6*x) - (2*B
*c^2*(b*x + c*x^2)^(1/2))/(429*b*x^5) + (16*B*c^3*(b*x + c*x^2)^(1/2))/(300
3*b^2*x^4) - (32*B*c^4*(b*x + c*x^2)^(1/2))/(5005*b^3*x^3) + (128*B*c^5*(b*
x + c*x^2)^(1/2))/(15015*b^4*x^2) - (256*B*c^6*(b*x + c*x^2)^(1/2))/(15015*
b^5*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**10,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**10, x)
```

3.93 $\int x^3(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=276

$$-\frac{11b^9(13bB-20Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{131072c^{15/2}}+\frac{11b^7(b+2cx)\sqrt{bx+cx^2}\,(13bB-20Ac)}{131072c^7}-\frac{11b^5(b+2cx)\left(bx+cx^2\right)^{3/2}(13l}{49152c^6}$$

Rubi [A] time = 0.30, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {794, 670, 640, 612, 620, 206}

$$\frac{11b^7(b+2cx)\sqrt{bx+cx^2}\,(13bB-20Ac)}{131072c^7}-\frac{11b^5(b+2cx)\left(bx+cx^2\right)^{3/2}(13bB-20Ac)}{49152c^6}+\frac{11b^3(b+2cx)\left(bx+cx^2\right)^{5/2}(13bB-20Ac)}{15360c^5}-\frac{11b^2\left(bx+cx^2\right)^{7/2}(13bB-20Ac)}{4480c^4}-\frac{11b^9(13bB-20Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{131072c^{15/2}}+\frac{11bx\left(bx+cx^2\right)^{7/2}(13bB-20Ac)}{2880c^3}-\frac{x^2\left(bx+cx^2\right)^{7/2}(13bB-20Ac)}{180c^2}+\frac{Bx^3\left(bx+cx^2\right)^{7/2}}{10c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (11*b^7*(13*b*B - 20*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(131072*c^7) - (11
*b^5*(13*b*B - 20*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(49152*c^6) + (11*b
^3*(13*b*B - 20*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(15360*c^5) - (11*b^2
*(13*b*B - 20*A*c)*(b*x + c*x^2)^(7/2))/(4480*c^4) + (11*b*(13*b*B - 20*A*c
)*x*(b*x + c*x^2)^(7/2))/(2880*c^3) - ((13*b*B - 20*A*c)*x^2*(b*x + c*x^2)^
(7/2))/(180*c^2) + (B*x^3*(b*x + c*x^2)^(7/2))/(10*c) - (11*b^9*(13*b*B - 2
0*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(131072*c^(15/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^3(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx = \frac{Bx^3\left(bx+cx^2\right)^{7/2}}{10c} + \frac{\left(3(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int x^3\left(bx+cx^2\right)^{5/2}\,dx}{10c}$$

$$= -\frac{(13bB-20Ac)x^2\left(bx+cx^2\right)^{7/2}}{180c^2} + \frac{Bx^3\left(bx+cx^2\right)^{7/2}}{10c} + \frac{(11b(13bB-20Ac)) \cdots}{36 \cdots}$$

$$= \frac{11b(13bB-20Ac)x\left(bx+cx^2\right)^{7/2}}{2880c^3} - \frac{(13bB-20Ac)x^2\left(bx+cx^2\right)^{7/2}}{180c^2} + \frac{Bx^3\left(b \cdots\right.}{\cdots}$$

$$= -\frac{11b^2(13bB-20Ac)\left(bx+cx^2\right)^{7/2}}{4480c^4} + \frac{11b(13bB-20Ac)x\left(bx+cx^2\right)^{7/2}}{2880c^3} - \frac{(13 \cdots}{\cdots}$$

$$= \frac{11b^3(13bB-20Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{15360c^5} - \frac{11b^2(13bB-20Ac)\left(bx+cx^2\right)^{7/ \cdots}}{4480c^4}$$

$$= -\frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{49152c^6} + \frac{11b^3(13bB-20Ac)(b+2cx)\left(\cdots\right.}{15360c^5}$$

$$= \frac{11b^7(13bB-20Ac)(b+2cx)\sqrt{bx+cx^2}}{131072c^7} - \frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+ \cdots\right.}{49152c^6}$$

$$= \frac{11b^7(13bB-20Ac)(b+2cx)\sqrt{bx+cx^2}}{131072c^7} - \frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+ \cdots\right.}{49152c^6}$$

$$= \frac{11b^7(13bB-20Ac)(b+2cx)\sqrt{bx+cx^2}}{131072c^7} - \frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+ \cdots\right.}{49152c^6}$$

Mathematica [A] time = 0.36, size = 207, normalized size = 0.75

$$\frac{x^4(x(b+cx))^{5/2}\left(13B(b+cx)^3-\frac{13(13bB-20Ac)\left(3465b^{17/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-3465b^8+2310b^7cx-1848b^6c^2x^2+1584b^5c^3x^3-1408b^4c^4x^4+1280b^3c^5x^5+316416b^2c^6x^6+530432bc^7x^7+229376c^8x^8\right)\right)}{4128768c^{13/2}x^{13/2}\sqrt{\frac{cx}{b}+1}}\right)}{130c(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^4*(x*(b + c*x))^(5/2)*(13*B*(b + c*x)^3 - (13*(13*b*B - 20*A*c)*(Sqrt[c]
*Sqrt[x]*Sqrt[1 + (c*x)/b]*(-3465*b^8 + 2310*b^7*c*x - 1848*b^6*c^2*x^2 + 1
584*b^5*c^3*x^3 - 1408*b^4*c^4*x^4 + 1280*b^3*c^5*x^5 + 316416*b^2*c^6*x^6
+ 530432*b*c^7*x^7 + 229376*c^8*x^8) + 3465*b^(17/2)*ArcSinh[(Sqrt[c]*Sqrt[
x])/Sqrt[b]]))/(4128768*c^(13/2)*x^(13/2)*Sqrt[1 + (c*x)/b])))/(130*c*(b +
c*x)^2)
```

IntegrateAlgebraic [A] time = 1.20, size = 273, normalized size = 0.99

$$\frac{11\left(13b^{10}B-20Ab^9c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{262144c^{15/2}}+\frac{\sqrt{bx+cx^2}\left(-69300Ab^8c+46200Ab^7c^2x-36960Ab^6c^3x^2+31680Ab^5c^4x^3-28160Ab^4c^5x^4+25600Ab^3c^6x^5+6328320Ab^2c^7x^6+10608640Abc^8x^7+4587520Ac^9x^8+45045b^9B-30030b^8Bcx+24024b^7Bc^2x^2-20592b^6Bc^3x^3+18304b^5Bc^4x^4-16640b^4Bc^5x^5+15360b^3Bc^6x^6+5490688b^2Bc^7x^7+9404416bBc^8x^8+4128768Bc^9x^9\right)}{41287680c^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(45045*b^9*B - 69300*A*b^8*c - 30030*b^8*B*c*x + 46200*A
*b^7*c^2*x + 24024*b^7*B*c^2*x^2 - 36960*A*b^6*c^3*x^2 - 20592*b^6*B*c^3*x^
3 + 31680*A*b^5*c^4*x^3 + 18304*b^5*B*c^4*x^4 - 28160*A*b^4*c^5*x^4 - 16640
*b^4*B*c^5*x^5 + 25600*A*b^3*c^6*x^5 + 15360*b^3*B*c^6*x^6 + 6328320*A*b^2*
c^7*x^6 + 5490688*b^2*B*c^7*x^7 + 10608640*A*b*c^8*x^7 + 9404416*b*B*c^8*x^
8 + 4587520*A*c^9*x^8 + 4128768*B*c^9*x^9))/(41287680*c^7) + (11*(13*b^10*B
 - 20*A*b^9*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(262144*c^(15/
2))
```

fricas [A]   time = 0.43, size = 541, normalized size = 1.96

$$\left[-\frac{3465\left(13Bb^{10}-20Ab^{9}c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^{2}+bx}\sqrt{c}\right)-2\left(4128768Bc^{10}x^{9}+45045Bb^{9}c-69300Ab^{8}c^{2}+229376\left(41Bbc^{9}+20Ac^{10}\right)x^{8}+14336\left(383Bb^{2}c^{8}+740Abc^{9}\right)x^{7}+15360\left(Bb^{3}c^{7}+412Ab^{2}c^{8}\right)x^{6}-1280\left(13Bb^{4}c^{6}-20Ab^{3}c^{7}\right)x^{5}+1408\left(13Bb^{5}c^{5}-20Ab^{4}c^{6}\right)x^{4}-1584\left(13Bb^{6}c^{4}-20Ab^{5}c^{5}\right)x^{3}+1848\left(13Bb^{7}c^{3}-20Ab^{6}c^{4}\right)x^{2}-2310\left(13Bb^{8}c^{2}-20Ab^{7}c^{3}\right)x\right)\sqrt{cx^{2}+bx}}{82575360\,c^{8}},\ \frac{3465\left(13Bb^{10}-20Ab^{9}c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^{2}+bx}\sqrt{-c}}{cx}\right)+\left(4128768Bc^{10}x^{9}+45045Bb^{9}c-69300Ab^{8}c^{2}+229376\left(41Bbc^{9}+20Ac^{10}\right)x^{8}+14336\left(383Bb^{2}c^{8}+740Abc^{9}\right)x^{7}+15360\left(Bb^{3}c^{7}+412Ab^{2}c^{8}\right)x^{6}-1280\left(13Bb^{4}c^{6}-20Ab^{3}c^{7}\right)x^{5}+1408\left(13Bb^{5}c^{5}-20Ab^{4}c^{6}\right)x^{4}-1584\left(13Bb^{6}c^{4}-20Ab^{5}c^{5}\right)x^{3}+1848\left(13Bb^{7}c^{3}-20Ab^{6}c^{4}\right)x^{2}-2310\left(13Bb^{8}c^{2}-20Ab^{7}c^{3}\right)x\right)\sqrt{cx^{2}+bx}}{41287680\,c^{8}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/82575360*(3465*(13*B*b^10 - 20*A*b^9*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c)) - 2*(4128768*B*c^10*x^9 + 45045*B*b^9*c - 69300*A*b^8
*c^2 + 229376*(41*B*b*c^9 + 20*A*c^10)*x^8 + 14336*(383*B*b^2*c^8 + 740*A*b
*c^9)*x^7 + 15360*(B*b^3*c^7 + 412*A*b^2*c^8)*x^6 - 1280*(13*B*b^4*c^6 - 20
*A*b^3*c^7)*x^5 + 1408*(13*B*b^5*c^5 - 20*A*b^4*c^6)*x^4 - 1584*(13*B*b^6*c
^4 - 20*A*b^5*c^5)*x^3 + 1848*(13*B*b^7*c^3 - 20*A*b^6*c^4)*x^2 - 2310*(13*
B*b^8*c^2 - 20*A*b^7*c^3)*x)*sqrt(c*x^2 + b*x))/c^8, 1/41287680*(3465*(13*B
*b^10 - 20*A*b^9*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (41
28768*B*c^10*x^9 + 45045*B*b^9*c - 69300*A*b^8*c^2 + 229376*(41*B*b*c^9 + 2
0*A*c^10)*x^8 + 14336*(383*B*b^2*c^8 + 740*A*b*c^9)*x^7 + 15360*(B*b^3*c^7
+ 412*A*b^2*c^8)*x^6 - 1280*(13*B*b^4*c^6 - 20*A*b^3*c^7)*x^5 + 1408*(13*B*
b^5*c^5 - 20*A*b^4*c^6)*x^4 - 1584*(13*B*b^6*c^4 - 20*A*b^5*c^5)*x^3 + 1848
*(13*B*b^7*c^3 - 20*A*b^6*c^4)*x^2 - 2310*(13*B*b^8*c^2 - 20*A*b^7*c^3)*x)*
sqrt(c*x^2 + b*x))/c^8]
```

giac [A]   time = 0.26, size = 309, normalized size = 1.12

$$\frac{1}{41287680}\sqrt{cx^{2}+bx}\left(2\left(4\left(2\left(8\left(2\left(4\left(14\left(16\left(18Bc^{2}x+\frac{41Bbc^{10}+20Ac^{11}}{c^{9}}\right)x+\frac{383Bb^{2}c^{9}+740Abc^{10}}{c^{9}}\right)x+\frac{15\left(Bb^{3}c^{8}+412Ab^{2}c^{9}\right)}{c^{9}}\right)x-\frac{5\left(13Bb^{4}c^{7}-20Ab^{3}c^{8}\right)}{c^{9}}\right)x+\frac{11\left(13Bb^{5}c^{6}-20Ab^{4}c^{7}\right)}{c^{9}}\right)x-\frac{99\left(13Bb^{6}c^{5}-20Ab^{5}c^{6}\right)}{c^{9}}\right)x+\frac{231\left(13Bb^{7}c^{4}-20Ab^{6}c^{5}\right)}{c^{9}}\right)x-\frac{1155\left(13Bb^{8}c^{3}-20Ab^{7}c^{4}\right)}{c^{9}}\right)x+\frac{3465\left(13Bb^{9}c^{2}-20Ab^{8}c^{3}\right)}{c^{9}}\right)+\frac{11\left(13Bb^{10}-20Ab^{9}c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^{2}+bx}\right)\sqrt{c}-b\right|\right)}{262144\,c^{\frac{15}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/41287680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(4*(14*(16*(18*B*c^2*x + (41*B*
b*c^10 + 20*A*c^11)/c^9)*x + (383*B*b^2*c^9 + 740*A*b*c^10)/c^9)*x + 15*(B*
b^3*c^8 + 412*A*b^2*c^9)/c^9)*x - 5*(13*B*b^4*c^7 - 20*A*b^3*c^8)/c^9)*x +
11*(13*B*b^5*c^6 - 20*A*b^4*c^7)/c^9)*x - 99*(13*B*b^6*c^5 - 20*A*b^5*c^6)/
c^9)*x + 231*(13*B*b^7*c^4 - 20*A*b^6*c^5)/c^9)*x - 1155*(13*B*b^8*c^3 - 20
*A*b^7*c^4)/c^9)*x + 3465*(13*B*b^9*c^2 - 20*A*b^8*c^3)/c^9) + 11/262144*(1
3*B*b^10 - 20*A*b^9*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) -
 b))/c^(15/2)
```

maple [A]   time = 0.05, size = 455, normalized size = 1.65

$$\frac{55Ab^{9}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx}\right)}{65536c^{\frac{13}{2}}}-\frac{143Bb^{10}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx}\right)}{262144c^{\frac{15}{2}}}-\frac{55\sqrt{cx^{2}+bx}\,Ab^{7}x}{16384c^{5}}+\frac{143\sqrt{cx^{2}+bx}\,Bb^{8}x}{65536c^{6}}-\frac{55\sqrt{cx^{2}+bx}\,Ab^{8}}{32768c^{6}}+\frac{55\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab^{5}x}{6144c^{4}}+\frac{143\sqrt{cx^{2}+bx}\,Bb^{9}}{131072c^{7}}-\frac{143\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{6}x}{24576c^{5}}+\frac{\left(cx^{2}+bx\right)^{\frac{7}{2}}Bx^{3}}{10c}+\frac{55\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab^{6}}{12288c^{5}}-\frac{11\left(cx^{2}+bx\right)^{\frac{5}{2}}Ab^{3}x}{384c^{3}}+\frac{\left(cx^{2}+bx\right)^{\frac{7}{2}}Ax^{2}}{9c}-\frac{143\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{7}}{49152c^{6}}+\frac{143\left(cx^{2}+bx\right)^{\frac{5}{2}}Bb^{4}x}{7680c^{4}}-\frac{13\left(cx^{2}+bx\right)^{\frac{7}{2}}Bbx^{2}}{180c^{2}}-\frac{11\left(cx^{2}+bx\right)^{\frac{5}{2}}Ab^{4}}{768c^{4}}-\frac{11\left(cx^{2}+bx\right)^{\frac{7}{2}}Abx}{144c^{2}}+\frac{143\left(cx^{2}+bx\right)^{\frac{5}{2}}Bb^{5}}{15360c^{5}}+\frac{143\left(cx^{2}+bx\right)^{\frac{7}{2}}Bb^{2}x}{2880c^{3}}+\frac{11\left(cx^{2}+bx\right)^{\frac{7}{2}}Ab^{2}}{224c^{3}}-\frac{143\left(cx^{2}+bx\right)^{\frac{7}{2}}Bb^{3}}{4480c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/10*B*x^3*(c*x^2+b*x)^(7/2)/c-13/180*B*b/c^2*x^2*(c*x^2+b*x)^(7/2)+143/288
0*B*b^2/c^3*x*(c*x^2+b*x)^(7/2)-143/4480*B*b^3/c^4*(c*x^2+b*x)^(7/2)+143/76
80*B*b^4/c^4*(c*x^2+b*x)^(5/2)*x+143/15360*B*b^5/c^5*(c*x^2+b*x)^(5/2)-143/
24576*B*b^6/c^5*(c*x^2+b*x)^(3/2)*x-143/49152*B*b^7/c^6*(c*x^2+b*x)^(3/2)+1
```

```
43/65536*B*b^8/c^6*(c*x^2+b*x)^(1/2)*x+143/131072*B*b^9/c^7*(c*x^2+b*x)^(1/
2)-143/262144*B*b^10/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/9
*A*x^2*(c*x^2+b*x)^(7/2)/c-11/144*A*b/c^2*x*(c*x^2+b*x)^(7/2)+11/224*A*b^2/
c^3*(c*x^2+b*x)^(7/2)-11/384*A*b^3/c^3*(c*x^2+b*x)^(5/2)*x-11/768*A*b^4/c^4
*(c*x^2+b*x)^(5/2)+55/6144*A*b^5/c^4*(c*x^2+b*x)^(3/2)*x+55/12288*A*b^6/c^5
*(c*x^2+b*x)^(3/2)-55/16384*A*b^7/c^5*(c*x^2+b*x)^(1/2)*x-55/32768*A*b^8/c^
6*(c*x^2+b*x)^(1/2)+55/65536*A*b^9/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))
```

maxima [A] time = 0.97, size = 452, normalized size = 1.64

$$\frac{(cx^2+bx)^{\frac{7}{2}}Bx^3}{10\,c} - \frac{13\,(cx^2+bx)^{\frac{7}{2}}Bbx^2}{180\,c^2} + \frac{(cx^2+bx)^{\frac{7}{2}}Ax^2}{9\,c} + \frac{143\,\sqrt{cx^2+bx}\,Bb^8x}{65536\,c^6} - \frac{143\,(cx^2+bx)^{\frac{3}{2}}Bb^6x}{24576\,c^5} - \frac{55\,\sqrt{cx^2+bx}\,Ab^7x}{16384\,c^5} + \frac{143\,(cx^2+bx)^{\frac{5}{2}}Bb^4x}{7680\,c^4} + \frac{55\,(cx^2+bx)^{\frac{3}{2}}Ab^5x}{6144\,c^4} + \frac{143\,(cx^2+bx)^{\frac{7}{2}}Bb^2x}{2880\,c^3} - \frac{11\,(cx^2+bx)^{\frac{5}{2}}Ab^3x}{384\,c^3} - \frac{11\,(cx^2+bx)^{\frac{7}{2}}Abx}{144\,c^2} - \frac{143\,Bb^{10}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{262144\,c^{\frac{15}{2}}} + \frac{55\,Ab^9\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{65536\,c^{\frac{13}{2}}} + \frac{143\,\sqrt{cx^2+bx}\,Bb^9}{131072\,c^7} - \frac{143\,(cx^2+bx)^{\frac{3}{2}}Bb^7}{49152\,c^6} - \frac{55\,\sqrt{cx^2+bx}\,Ab^8}{32768\,c^6} + \frac{143\,(cx^2+bx)^{\frac{5}{2}}Bb^5}{15360\,c^5} + \frac{55\,(cx^2+bx)^{\frac{3}{2}}Ab^6}{12288\,c^5} - \frac{143\,(cx^2+bx)^{\frac{7}{2}}Bb^3}{4480\,c^4} - \frac{11\,(cx^2+bx)^{\frac{5}{2}}Ab^4}{768\,c^4} + \frac{11\,(cx^2+bx)^{\frac{7}{2}}Ab^2}{224\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/10*(c*x^2 + b*x)^(7/2)*B*x^3/c - 13/180*(c*x^2 + b*x)^(7/2)*B*b*x^2/c^2 +
 1/9*(c*x^2 + b*x)^(7/2)*A*x^2/c + 143/65536*sqrt(c*x^2 + b*x)*B*b^8*x/c^6
- 143/24576*(c*x^2 + b*x)^(3/2)*B*b^6*x/c^5 - 55/16384*sqrt(c*x^2 + b*x)*A*
b^7*x/c^5 + 143/7680*(c*x^2 + b*x)^(5/2)*B*b^4*x/c^4 + 55/6144*(c*x^2 + b*x
)^(3/2)*A*b^5*x/c^4 + 143/2880*(c*x^2 + b*x)^(7/2)*B*b^2*x/c^3 - 11/384*(c*
x^2 + b*x)^(5/2)*A*b^3*x/c^3 - 11/144*(c*x^2 + b*x)^(7/2)*A*b*x/c^2 - 143/2
62144*B*b^10*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(15/2) + 55/655
36*A*b^9*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(13/2) + 143/131072
*sqrt(c*x^2 + b*x)*B*b^9/c^7 - 143/49152*(c*x^2 + b*x)^(3/2)*B*b^7/c^6 - 55
/32768*sqrt(c*x^2 + b*x)*A*b^8/c^6 + 143/15360*(c*x^2 + b*x)^(5/2)*B*b^5/c^
5 + 55/12288*(c*x^2 + b*x)^(3/2)*A*b^6/c^5 - 143/4480*(c*x^2 + b*x)^(7/2)*B
*b^3/c^4 - 11/768*(c*x^2 + b*x)^(5/2)*A*b^4/c^4 + 11/224*(c*x^2 + b*x)^(7/2
)*A*b^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^3*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**3*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.94 $\int x^2(A + Bx)\left(bx + cx^2\right)^{5/2} dx$

Optimal. Leaf size=241

$$\frac{5b^8(11bB - 18Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{32768c^{13/2}} - \frac{5b^6(b + 2cx)\sqrt{bx + cx^2}\,(11bB - 18Ac)}{32768c^6} + \frac{5b^4(b + 2cx)\left(bx + cx^2\right)^{3/2}(11bB - 1}{12288c^5}$$

Rubi [A] time = 0.25, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {794, 670, 640, 612, 620, 206}

$$-\frac{5b^6(b + 2cx)\sqrt{bx + cx^2}\,(11bB - 18Ac)}{32768c^6} + \frac{5b^4(b + 2cx)\left(bx + cx^2\right)^{3/2}(11bB - 18Ac)}{12288c^5} - \frac{b^2(b + 2cx)\left(bx + cx^2\right)^{5/2}(11bB - 18Ac)}{768c^4} + \frac{5b^8(11bB - 18Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{32768c^{13/2}} + \frac{b\left(bx + cx^2\right)^{7/2}(11bB - 18Ac)}{224c^3} - \frac{x\left(bx + cx^2\right)^{7/2}(11bB - 18Ac)}{144c^2} + \frac{Bx^2\left(bx + cx^2\right)^{7/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*b^6*(11*b*B - 18*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(32768*c^6) + (5*b
^4*(11*b*B - 18*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(12288*c^5) - (b^2*(1
1*b*B - 18*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(768*c^4) + (b*(11*b*B - 1
8*A*c)*(b*x + c*x^2)^(7/2))/(224*c^3) - ((11*b*B - 18*A*c)*x*(b*x + c*x^2)^
(7/2))/(144*c^2) + (B*x^2*(b*x + c*x^2)^(7/2))/(9*c) + (5*b^8*(11*b*B - 18*
A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(32768*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^2(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx = \frac{Bx^2\left(bx+cx^2\right)^{7/2}}{9c} + \frac{\left(2(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int x^2\left(bx+cx^2\right)^{5/2}\,dx}{9c}$$

$$= -\frac{(11bB-18Ac)x\left(bx+cx^2\right)^{7/2}}{144c^2} + \frac{Bx^2\left(bx+cx^2\right)^{7/2}}{9c} + \frac{(b(11bB-18Ac))\int x}{32c^2}$$

$$= \frac{b(11bB-18Ac)\left(bx+cx^2\right)^{7/2}}{224c^3} - \frac{(11bB-18Ac)x\left(bx+cx^2\right)^{7/2}}{144c^2} + \frac{Bx^2\left(bx+c\right.}{9c}$$

$$= -\frac{b^2(11bB-18Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{768c^4} + \frac{b(11bB-18Ac)\left(bx+cx^2\right)^{7/2}}{224c^3} -$$

$$= \frac{5b^4(11bB-18Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{12288c^5} - \frac{b^2(11bB-18Ac)(b+2cx)\left(bx+\right.}{768c^4}$$

$$= -\frac{5b^6(11bB-18Ac)(b+2cx)\sqrt{bx+cx^2}}{32768c^6} + \frac{5b^4(11bB-18Ac)(b+2cx)\left(bx+\right.}{12288c^5}$$

$$= -\frac{5b^6(11bB-18Ac)(b+2cx)\sqrt{bx+cx^2}}{32768c^6} + \frac{5b^4(11bB-18Ac)(b+2cx)\left(bx+\right.}{12288c^5}$$

$$= -\frac{5b^6(11bB-18Ac)(b+2cx)\sqrt{bx+cx^2}}{32768c^6} + \frac{5b^4(11bB-18Ac)(b+2cx)\left(bx+\right.}{12288c^5}$$

Mathematica [A] time = 0.40, size = 197, normalized size = 0.82

$$\frac{x^3(x(b+cx))^{5/2}\left(\frac{11(11bB-18Ac)\left(315b^{15/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(315b^7-210b^6cx+168b^5c^2x^2-144b^4c^3x^3+128b^3c^4x^4+20736b^2c^5x^5+33792bc^6x^6+14336c^7x^7\right)\right)}{229376c^{11/2}x^{11/2}\sqrt{\frac{cx}{b}+1}}+11B(b+cx)^3\right)}{99c(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^3*(x*(b + c*x))^(5/2)*(11*B*(b + c*x)^3 + (11*(11*b*B - 18*A*c)*(-(Sqrt[
c]*Sqrt[x]*Sqrt[1 + (c*x)/b]*(315*b^7 - 210*b^6*c*x + 168*b^5*c^2*x^2 - 144
*b^4*c^3*x^3 + 128*b^3*c^4*x^4 + 20736*b^2*c^5*x^5 + 33792*b*c^6*x^6 + 1433
6*c^7*x^7)) + 315*b^(15/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(229376*c^(
11/2)*x^(11/2)*Sqrt[1 + (c*x)/b])))/(99*c*(b + c*x)^2)
```

IntegrateAlgebraic [A] time = 0.93, size = 249, normalized size = 1.03

$$\frac{\sqrt{bx+cx^2}\left(5670Ab^7c-3780Ab^6c^2x+3024Ab^5c^3x^2-2592Ab^4c^4x^3+2304Ab^3c^5x^4+373248Ab^2c^6x^5+608256Abc^7x^6+258048Ac^8x^7-3465b^8B+2310b^7Bcx-1848b^6Bc^2x^2+1584b^5Bc^3x^3-1408b^4Bc^4x^4+1280b^3Bc^5x^5+316416b^2Bc^6x^6+530432bBc^7x^7+229376Bc^8x^8\right)}{2064384c^6}-\frac{5\left(11b^9B-18Ab^8c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{65536c^{13/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-3465*b^8*B + 5670*A*b^7*c + 2310*b^7*B*c*x - 3780*A*b^
6*c^2*x - 1848*b^6*B*c^2*x^2 + 3024*A*b^5*c^3*x^2 + 1584*b^5*B*c^3*x^3 - 25
```

```
92*A*b^4*c^4*x^3 - 1408*b^4*B*c^4*x^4 + 2304*A*b^3*c^5*x^4 + 1280*b^3*B*c^5
*x^5 + 373248*A*b^2*c^6*x^5 + 316416*b^2*B*c^6*x^6 + 608256*A*b*c^7*x^6 + 5
30432*b*B*c^7*x^7 + 258048*A*c^8*x^7 + 229376*B*c^8*x^8))/(2064384*c^6) - (
5*(11*b^9*B - 18*A*b^8*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(65
536*c^(13/2))
```

fricas [A] time = 0.43, size = 496, normalized size = 2.06

$$\left[-\frac{315\,(11\,Bb^9-18\,Ab^8c)\sqrt{c}\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,(229376\,Bc^9x^8-3465\,Bb^8c+5670\,Ab^7c^2+14336\,(37\,Bbc^8+18\,Ac^9)x^7+3072\,(103\,Bb^2c^7+198\,Abc^8)x^6+256\,(5\,Bb^3c^6+1458\,Ab^2c^7)x^5-128\,(11\,Bb^4c^5-18\,Ab^3c^6)x^4+144\,(11\,Bb^5c^4-18\,Ab^4c^5)x^3-168\,(11\,Bb^6c^3-18\,Ab^5c^4)x^2+210\,(11\,Bb^7c^2-18\,Ab^6c^3)x)\sqrt{cx^2+bx}}{4128768\,c^7},\ -\frac{315\,(11\,Bb^9-18\,Ab^8c)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)-(229376\,Bc^9x^8-3465\,Bb^8c+5670\,Ab^7c^2+14336\,(37\,Bbc^8+18\,Ac^9)x^7+3072\,(103\,Bb^2c^7+198\,Abc^8)x^6+256\,(5\,Bb^3c^6+1458\,Ab^2c^7)x^5-128\,(11\,Bb^4c^5-18\,Ab^3c^6)x^4+144\,(11\,Bb^5c^4-18\,Ab^4c^5)x^3-168\,(11\,Bb^6c^3-18\,Ab^5c^4)x^2+210\,(11\,Bb^7c^2-18\,Ab^6c^3)x)\sqrt{cx^2+bx}}{2064384\,c^7}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/4128768*(315*(11*B*b^9 - 18*A*b^8*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x
^2 + b*x)*sqrt(c)) - 2*(229376*B*c^9*x^8 - 3465*B*b^8*c + 5670*A*b^7*c^2 +
14336*(37*B*b*c^8 + 18*A*c^9)*x^7 + 3072*(103*B*b^2*c^7 + 198*A*b*c^8)*x^6
+ 256*(5*B*b^3*c^6 + 1458*A*b^2*c^7)*x^5 - 128*(11*B*b^4*c^5 - 18*A*b^3*c^6
)*x^4 + 144*(11*B*b^5*c^4 - 18*A*b^4*c^5)*x^3 - 168*(11*B*b^6*c^3 - 18*A*b^
5*c^4)*x^2 + 210*(11*B*b^7*c^2 - 18*A*b^6*c^3)*x)*sqrt(c*x^2 + b*x))/c^7, -
1/2064384*(315*(11*B*b^9 - 18*A*b^8*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sq
rt(-c)/(c*x)) - (229376*B*c^9*x^8 - 3465*B*b^8*c + 5670*A*b^7*c^2 + 14336*(
37*B*b*c^8 + 18*A*c^9)*x^7 + 3072*(103*B*b^2*c^7 + 198*A*b*c^8)*x^6 + 256*(
5*B*b^3*c^6 + 1458*A*b^2*c^7)*x^5 - 128*(11*B*b^4*c^5 - 18*A*b^3*c^6)*x^4 +
 144*(11*B*b^5*c^4 - 18*A*b^4*c^5)*x^3 - 168*(11*B*b^6*c^3 - 18*A*b^5*c^4)*
x^2 + 210*(11*B*b^7*c^2 - 18*A*b^6*c^3)*x)*sqrt(c*x^2 + b*x))/c^7]
```

giac [A] time = 0.46, size = 282, normalized size = 1.17

$$\frac{1}{2064384}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(4\left(14\left(16\,Bc^2x+\frac{37\,Bbc^9+18\,Ac^{10}}{c^8}\right)x+\frac{3\,(103\,Bb^2c^8+198\,Abc^9)}{c^8}\right)x+\frac{5\,Bb^3c^7+1458\,Ab^2c^8}{c^8}\right)x-\frac{11\,Bb^4c^6-18\,Ab^3c^7}{c^8}\right)x+\frac{9\,(11\,Bb^5c^5-18\,Ab^4c^6)}{c^8}\right)x-\frac{21\,(11\,Bb^6c^4-18\,Ab^5c^5)}{c^8}\right)x+\frac{105\,(11\,Bb^7c^3-18\,Ab^6c^4)}{c^8}\right)x-\frac{315\,(11\,Bb^8c^2-18\,Ab^7c^3)}{c^8}\right)-\frac{5\,(11\,Bb^9-18\,Ab^8c)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{65536\,c^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/2064384*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(4*(14*(16*B*c^2*x + (37*B*b*c^9
 + 18*A*c^10)/c^8)*x + 3*(103*B*b^2*c^8 + 198*A*b*c^9)/c^8)*x + (5*B*b^3*c^
7 + 1458*A*b^2*c^8)/c^8)*x - (11*B*b^4*c^6 - 18*A*b^3*c^7)/c^8)*x + 9*(11*B
*b^5*c^5 - 18*A*b^4*c^6)/c^8)*x - 21*(11*B*b^6*c^4 - 18*A*b^5*c^5)/c^8)*x +
 105*(11*B*b^7*c^3 - 18*A*b^6*c^4)/c^8)*x - 315*(11*B*b^8*c^2 - 18*A*b^7*c^
3)/c^8) - 5/65536*(11*B*b^9 - 18*A*b^8*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*sqrt(c) - b))/c^(13/2)
```

maple [A] time = 0.05, size = 409, normalized size = 1.70

$$-\frac{45Ab^8\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{32768c^{\frac{11}{2}}}+\frac{55Bb^9\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{65536c^{\frac{13}{2}}}+\frac{45\sqrt{cx^2+bx}\,Ab^6x}{8192c^4}-\frac{55\sqrt{cx^2+bx}\,Bb^7x}{16384c^5}+\frac{45\sqrt{cx^2+bx}\,Ab^7}{16384c^5}-\frac{15(cx^2+bx)^{\frac{3}{2}}Ab^4x}{1024c^3}-\frac{55\sqrt{cx^2+bx}\,Bb^8}{32768c^6}+\frac{55(cx^2+bx)^{\frac{3}{2}}Bb^5x}{6144c^4}-\frac{15(cx^2+bx)^{\frac{3}{2}}Ab^5}{2048c^4}+\frac{3(cx^2+bx)^{\frac{5}{2}}Ab^2x}{64c^2}+\frac{55(cx^2+bx)^{\frac{3}{2}}Bb^6}{12288c^5}-\frac{11(cx^2+bx)^{\frac{5}{2}}Bb^3x}{384c^3}+\frac{(cx^2+bx)^{\frac{7}{2}}Bx^2}{9c}+\frac{3(cx^2+bx)^{\frac{5}{2}}Ab^3}{128c^3}+\frac{(cx^2+bx)^{\frac{7}{2}}Ax}{8c}-\frac{11(cx^2+bx)^{\frac{5}{2}}Bb^4}{768c^4}-\frac{11(cx^2+bx)^{\frac{7}{2}}Bbx}{144c^2}-\frac{9(cx^2+bx)^{\frac{7}{2}}Ab}{112c^2}+\frac{11(cx^2+bx)^{\frac{7}{2}}Bb^2}{224c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/9*B*x^2*(c*x^2+b*x)^(7/2)/c-11/144*B*b/c^2*x*(c*x^2+b*x)^(7/2)+11/224*B*b
^2/c^3*(c*x^2+b*x)^(7/2)-11/384*B*b^3/c^3*(c*x^2+b*x)^(5/2)*x-11/768*B*b^4/
c^4*(c*x^2+b*x)^(5/2)+55/6144*B*b^5/c^4*(c*x^2+b*x)^(3/2)*x+55/12288*B*b^6/
c^5*(c*x^2+b*x)^(3/2)-55/16384*B*b^7/c^5*(c*x^2+b*x)^(1/2)*x-55/32768*B*b^8
/c^6*(c*x^2+b*x)^(1/2)+55/65536*B*b^9/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))+1/8*A*x*(c*x^2+b*x)^(7/2)/c-9/112*A*b/c^2*(c*x^2+b*x)^(7/2)+3
/64*A*b^2/c^2*(c*x^2+b*x)^(5/2)*x+3/128*A*b^3/c^3*(c*x^2+b*x)^(5/2)-15/1024
*A*b^4/c^3*(c*x^2+b*x)^(3/2)*x-15/2048*A*b^5/c^4*(c*x^2+b*x)^(3/2)+45/8192*
A*b^6/c^4*(c*x^2+b*x)^(1/2)*x+45/16384*A*b^7/c^5*(c*x^2+b*x)^(1/2)-45/32768
*A*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.96, size = 406, normalized size = 1.68

$$\frac{(cx^2+bx)^{\frac{7}{2}}Bx^2}{9c}-\frac{55\sqrt{cx^2+bx}\,Bb^7x}{16384c^5}+\frac{55(cx^2+bx)^{\frac{3}{2}}Bb^5x}{6144c^4}+\frac{45\sqrt{cx^2+bx}\,Ab^6x}{8192c^4}-\frac{11(cx^2+bx)^{\frac{5}{2}}Bb^3x}{384c^3}-\frac{15(cx^2+bx)^{\frac{3}{2}}Ab^4x}{1024c^3}-\frac{11(cx^2+bx)^{\frac{7}{2}}Bbx}{144c^2}+\frac{3(cx^2+bx)^{\frac{5}{2}}Ab^2x}{64c^2}+\frac{(cx^2+bx)^{\frac{7}{2}}Ax}{8c}+\frac{55Bb^9\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{65536c^{\frac{13}{2}}}-\frac{45Ab^8\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{32768c^{\frac{11}{2}}}-\frac{55\sqrt{cx^2+bx}\,Bb^8}{32768c^6}+\frac{55(cx^2+bx)^{\frac{3}{2}}Bb^6}{12288c^5}+\frac{45\sqrt{cx^2+bx}\,Ab^7}{16384c^5}-\frac{11(cx^2+bx)^{\frac{5}{2}}Bb^4}{768c^4}-\frac{15(cx^2+bx)^{\frac{3}{2}}Ab^5}{2048c^4}+\frac{11(cx^2+bx)^{\frac{7}{2}}Bb^2}{224c^3}+\frac{3(cx^2+bx)^{\frac{5}{2}}Ab^3}{128c^3}-\frac{9(cx^2+bx)^{\frac{7}{2}}Ab}{112c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + b*x)^(7/2)*B*x^2/c - 55/16384*sqrt(c*x^2 + b*x)*B*b^7*x/c^5 +
55/6144*(c*x^2 + b*x)^(3/2)*B*b^5*x/c^4 + 45/8192*sqrt(c*x^2 + b*x)*A*b^6*x
/c^4 - 11/384*(c*x^2 + b*x)^(5/2)*B*b^3*x/c^3 - 15/1024*(c*x^2 + b*x)^(3/2)
*A*b^4*x/c^3 - 11/144*(c*x^2 + b*x)^(7/2)*B*b*x/c^2 + 3/64*(c*x^2 + b*x)^(5
/2)*A*b^2*x/c^2 + 1/8*(c*x^2 + b*x)^(7/2)*A*x/c + 55/65536*B*b^9*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(13/2) - 45/32768*A*b^8*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) - 55/32768*sqrt(c*x^2 + b*x)*B*b^8/
c^6 + 55/12288*(c*x^2 + b*x)^(3/2)*B*b^6/c^5 + 45/16384*sqrt(c*x^2 + b*x)*A
*b^7/c^5 - 11/768*(c*x^2 + b*x)^(5/2)*B*b^4/c^4 - 15/2048*(c*x^2 + b*x)^(3/
2)*A*b^5/c^4 + 11/224*(c*x^2 + b*x)^(7/2)*B*b^2/c^3 + 3/128*(c*x^2 + b*x)^(
5/2)*A*b^3/c^3 - 9/112*(c*x^2 + b*x)^(7/2)*A*b/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^2*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2}\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**2*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.95 $\int x(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=189

$$-\frac{5b^7(9bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{16384c^{11/2}}+\frac{5b^5(b+2cx)\sqrt{bx+cx^2}\,(9bB-16Ac)}{16384c^5}-\frac{5b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-16}{6144c^4}$$

Rubi [A] time = 0.09, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {779, 612, 620, 206}

$$\frac{5b^5(b+2cx)\sqrt{bx+cx^2}\,(9bB-16Ac)}{16384c^5}-\frac{5b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-16Ac)}{6144c^4}-\frac{5b^7(9bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{16384c^{11/2}}+\frac{b(b+2cx)\left(bx+cx^2\right)^{5/2}(9bB-16Ac)}{384c^3}-\frac{\left(bx+cx^2\right)^{7/2}(-16Ac+9bB-14Bcx)}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*b^5*(9*b*B - 16*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(16384*c^5) - (5*b^3
*(9*b*B - 16*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(6144*c^4) + (b*(9*b*B -
 16*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(384*c^3) - ((9*b*B - 16*A*c - 14
*B*c*x)*(b*x + c*x^2)^(7/2))/(112*c^2) - (5*b^7*(9*b*B - 16*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(bx+cx^2\right)^{5/2}dx = -\frac{(9bB-16Ac-14Bcx)\left(bx+cx^2\right)^{7/2}}{112c^2}+\frac{(b(9bB-16Ac))\int\left(bx+cx^2\right)^{5/2}dx}{32c^2}$$
$$=\frac{b(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{384c^3}-\frac{(9bB-16Ac-14Bcx)\left(bx+cx^2\right)^{7/2}}{112c^2}$$
$$=-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{6144c^4}+\frac{b(9bB-16Ac)(b+2cx)\left(bx+cx\right.}{384c^3}$$
$$=\frac{5b^5(9bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)}{6144c^4}$$
$$=\frac{5b^5(9bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)}{6144c^4}$$
$$=\frac{5b^5(9bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)}{6144c^4}$$

Mathematica [A] time = 0.41, size = 182, normalized size = 0.96

$$\frac{(x(b+cx))^{9/2}\left(9B(b+cx)^3-\frac{3(9bB-16Ac)\left(105b^{13/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-105b^6+70b^5cx-56b^4c^2x^2+48b^3c^3x^3+4736b^2c^4x^4+7424bc^5x^5+3072c^6x^6\right)\right)}{14336c^{9/2}x^{9/2}\sqrt{\frac{cx}{b}+1}}\right)}{72c(b+cx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(9/2)*(9*B*(b + c*x)^3 - (3*(9*b*B - 16*A*c)*(Sqrt[c]*Sqrt[x
]*Sqrt[1 + (c*x)/b]*(-105*b^6 + 70*b^5*c*x - 56*b^4*c^2*x^2 + 48*b^3*c^3*x^
3 + 4736*b^2*c^4*x^4 + 7424*b*c^5*x^5 + 3072*c^6*x^6) + 105*b^(13/2)*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(14336*c^(9/2)*x^(9/2)*Sqrt[1 + (c*x)/b])))/
(72*c*(b + c*x)^4)
```

IntegrateAlgebraic [A] time = 1.03, size = 225, normalized size = 1.19

$$\frac{5\left(9b^8B-16Ab^7c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{32768c^{11/2}}+\frac{\sqrt{bx+cx^2}\left(-1680Ab^6c+1120Ab^5c^2x-896Ab^4c^3x^2+768Ab^3c^4x^3+75776Ab^2c^5x^4+118784Abc^6x^5+49152Ac^7x^6+945b^7B-630b^6Bcx+504b^5Bc^2x^2-432b^4Bc^3x^3+384b^3Bc^4x^4+62208b^2Bc^5x^5+101376bBc^6x^6+43008Bc^7x^7\right)}{344064c^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(945*b^7*B - 1680*A*b^6*c - 630*b^6*B*c*x + 1120*A*b^5*c
^2*x + 504*b^5*B*c^2*x^2 - 896*A*b^4*c^3*x^2 - 432*b^4*B*c^3*x^3 + 768*A*b^
3*c^4*x^3 + 384*b^3*B*c^4*x^4 + 75776*A*b^2*c^5*x^4 + 62208*b^2*B*c^5*x^5 +
 118784*A*b*c^6*x^5 + 101376*b*B*c^6*x^6 + 49152*A*c^7*x^6 + 43008*B*c^7*x^
7))/(344064*c^5) + (5*(9*b^8*B - 16*A*b^7*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt
[b*x + c*x^2]])/(32768*c^(11/2))
```

fricas [A] time = 0.43, size = 447, normalized size = 2.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/688128*(105*(9*B*b^8 - 16*A*b^7*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2
 + b*x)*sqrt(c)) - 2*(43008*B*c^8*x^7 + 945*B*b^7*c - 1680*A*b^6*c^2 + 3072
```

```
*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 + 464*A*b*c^7)*x^5 + 128*
(3*B*b^3*c^5 + 592*A*b^2*c^6)*x^4 - 48*(9*B*b^4*c^4 - 16*A*b^3*c^5)*x^3 + 5
6*(9*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 - 70*(9*B*b^6*c^2 - 16*A*b^5*c^3)*x)*sqr
t(c*x^2 + b*x))/c^6, 1/344064*(105*(9*B*b^8 - 16*A*b^7*c)*sqrt(-c)*arctan(s
qrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (43008*B*c^8*x^7 + 945*B*b^7*c - 1680*A*
b^6*c^2 + 3072*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 + 464*A*b*c
^7)*x^5 + 128*(3*B*b^3*c^5 + 592*A*b^2*c^6)*x^4 - 48*(9*B*b^4*c^4 - 16*A*b^
3*c^5)*x^3 + 56*(9*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 - 70*(9*B*b^6*c^2 - 16*A*b
^5*c^3)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.26, size = 253, normalized size = 1.34

$$\frac{1}{344064}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(12\left(14\,Bc^2x+\frac{33\,Bbc^8+16\,Ac^9}{c^7}\right)x+\frac{243\,Bb^2c^7+464\,Abc^8}{c^7}\right)x+\frac{3\,Bb^3c^6+592\,Ab^2c^7}{c^7}\right)x-\frac{3\left(9\,Bb^4c^5-16\,Ab^3c^6\right)}{c^7}\right)x+\frac{7\left(9\,Bb^5c^4-16\,Ab^4c^5\right)}{c^7}\right)x-\frac{35\left(9\,Bb^6c^3-16\,Ab^5c^4\right)}{c^7}\right)x+\frac{105\left(9\,Bb^7c^2-16\,Ab^6c^3\right)}{c^7}\right)+\frac{5\left(9\,Bb^8-16\,Ab^7c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{32768\,c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/344064*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*(14*B*c^2*x + (33*B*b*c^8 + 1
6*A*c^9)/c^7)*x + (243*B*b^2*c^7 + 464*A*b*c^8)/c^7)*x + (3*B*b^3*c^6 + 592
*A*b^2*c^7)/c^7)*x - 3*(9*B*b^4*c^5 - 16*A*b^3*c^6)/c^7)*x + 7*(9*B*b^5*c^4
 - 16*A*b^4*c^5)/c^7)*x - 35*(9*B*b^6*c^3 - 16*A*b^5*c^4)/c^7)*x + 105*(9*B
*b^7*c^2 - 16*A*b^6*c^3)/c^7) + 5/32768*(9*B*b^8 - 16*A*b^7*c)*log(abs(-2*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 365, normalized size = 1.93

$$\frac{5Ab^7\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2048c^{\frac{9}{2}}}-\frac{45Bb^8\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{32768c^{\frac{11}{2}}}-\frac{5\sqrt{cx^2+bx}\,Ab^5x}{512c^3}+\frac{45\sqrt{cx^2+bx}\,Bb^6x}{8192c^4}-\frac{5\sqrt{cx^2+bx}\,Ab^6}{1024c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3x}{192c^2}+\frac{45\sqrt{cx^2+bx}\,Bb^7}{16384c^5}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4x}{1024c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^4}{384c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Abx}{12c}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^5}{2048c^4}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2x}{64c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab^2}{24c^2}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^3}{128c^3}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}Bx}{8c}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}A}{7c}-\frac{9\left(cx^2+bx\right)^{\frac{7}{2}}Bb}{112c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/8*B*x*(c*x^2+b*x)^(7/2)/c-9/112*B*b/c^2*(c*x^2+b*x)^(7/2)+3/64*B*b^2/c^2*
x*(c*x^2+b*x)^(5/2)+3/128*B*b^3/c^3*(c*x^2+b*x)^(5/2)-15/1024*B*b^4/c^3*(c*
x^2+b*x)^(3/2)*x-15/2048*B*b^5/c^4*(c*x^2+b*x)^(3/2)+45/8192*B*b^6/c^4*(c*x
^2+b*x)^(1/2)*x+45/16384*B*b^7/c^5*(c*x^2+b*x)^(1/2)-45/32768*B*b^8/c^(11/2
)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/7*A*(c*x^2+b*x)^(7/2)/c-1/12*
A*b/c*x*(c*x^2+b*x)^(5/2)-1/24*A*b^2/c^2*(c*x^2+b*x)^(5/2)+5/192*A*b^3/c^2*
(c*x^2+b*x)^(3/2)*x+5/384*A*b^4/c^3*(c*x^2+b*x)^(3/2)-5/512*A*b^5/c^3*(c*x^
2+b*x)^(1/2)*x-5/1024*A*b^6/c^4*(c*x^2+b*x)^(1/2)+5/2048*A*b^7/c^(9/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 1.00, size = 362, normalized size = 1.92

$$\frac{45\sqrt{cx^2+bx}\,Bb^6x}{8192\,c^4}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4x}{1024\,c^3}-\frac{5\sqrt{cx^2+bx}\,Ab^5x}{512\,c^3}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2x}{64\,c^2}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3x}{192\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}Bx}{8\,c}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Abx}{12\,c}-\frac{45\,Bb^8\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{32768\,c^{\frac{11}{2}}}+\frac{5\,Ab^7\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2048\,c^{\frac{9}{2}}}+\frac{45\sqrt{cx^2+bx}\,Bb^7}{16384\,c^5}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^5}{2048\,c^4}-\frac{5\sqrt{cx^2+bx}\,Ab^6}{1024\,c^4}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^3}{128\,c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^4}{384\,c^3}-\frac{9\left(cx^2+bx\right)^{\frac{7}{2}}Bb}{112\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab^2}{24\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}A}{7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 45/8192*sqrt(c*x^2 + b*x)*B*b^6*x/c^4 - 15/1024*(c*x^2 + b*x)^(3/2)*B*b^4*x
/c^3 - 5/512*sqrt(c*x^2 + b*x)*A*b^5*x/c^3 + 3/64*(c*x^2 + b*x)^(5/2)*B*b^2
*x/c^2 + 5/192*(c*x^2 + b*x)^(3/2)*A*b^3*x/c^2 + 1/8*(c*x^2 + b*x)^(7/2)*B*
x/c - 1/12*(c*x^2 + b*x)^(5/2)*A*b*x/c - 45/32768*B*b^8*log(2*c*x + b + 2*s
qrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 5/2048*A*b^7*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/c^(9/2) + 45/16384*sqrt(c*x^2 + b*x)*B*b^7/c^5 - 15/204
8*(c*x^2 + b*x)^(3/2)*B*b^5/c^4 - 5/1024*sqrt(c*x^2 + b*x)*A*b^6/c^4 + 3/12
8*(c*x^2 + b*x)^(5/2)*B*b^3/c^3 + 5/384*(c*x^2 + b*x)^(3/2)*A*b^4/c^3 - 9/1
12*(c*x^2 + b*x)^(7/2)*B*b/c^2 - 1/24*(c*x^2 + b*x)^(5/2)*A*b^2/c^2 + 1/7*(
c*x^2 + b*x)^(7/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^(5/2)*(A + B*x),x)
[Out] int(x*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**(5/2),x)
[Out] Integral(x*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.96 $\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=171

$$\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}-\frac{(b$$

Rubi [A] time = 0.07, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}+\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{(b+2cx)\left(bx+cx^2\right)^{5/2}(bB-2Ac)}{24c^2}+\frac{B\left(bx+cx^2\right)^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*b^4*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^4) + (5*b^2*(b
*B - 2*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(384*c^3) - ((b*B - 2*A*c)*(b
+ 2*c*x)*(b*x + c*x^2)^(5/2))/(24*c^2) + (B*(b*x + c*x^2)^(7/2))/(7*c) + (5
*b^6*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx &= \frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{(-bB+2Ac)\int \left(bx+cx^2\right)^{5/2}\,dx}{2c} \\
&= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{\left(5b^2(bB-2Ac)\right)\int \left(bx \right.}{48c^2} \\
&= \frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B}{} \\
&= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}- \\
&= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}- \\
&= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-
\end{aligned}
$$

Mathematica [A] time = 0.39, size = 171, normalized size = 1.00

$$
\frac{(x(b+cx))^{7/2}\left(\frac{49(bB-2Ac)\left(15b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(15b^5-10b^4cx+8b^3c^2x^2+432b^2c^3x^3+640bc^4x^4+256c^5x^5\right)\right)}{3072c^{7/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}+7B(b+cx)^3\right)}{49c(b+cx)^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(7/2)*(7*B*(b + c*x)^3 + (49*(b*B - 2*A*c)*(-(Sqrt[c]*Sqrt[x
]*Sqrt[1 + (c*x)/b]*(15*b^5 - 10*b^4*c*x + 8*b^3*c^2*x^2 + 432*b^2*c^3*x^3
+ 640*b*c^4*x^4 + 256*c^5*x^5)) + 15*b^(11/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqr
t[b]]))/(3072*c^(7/2)*x^(7/2)*Sqrt[1 + (c*x)/b])))/(49*c*(b + c*x)^3)
```

IntegrateAlgebraic [A] time = 1.00, size = 200, normalized size = 1.17

$$
\frac{\sqrt{bx+cx^2}\left(210Ab^5c-140Ab^4c^2x+112Ab^3c^3x^2+6048Ab^2c^4x^3+8960Abc^5x^4+3584Ac^6x^5-105b^6B+70b^5Bcx-56b^4Bc^2x^2+48b^3Bc^3x^3+4736b^2Bc^4x^4+7424bBc^5x^5+3072Bc^6x^6\right)}{21504c^4}-\frac{5\left(b^7B-2Ab^6c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{2048c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-105*b^6*B + 210*A*b^5*c + 70*b^5*B*c*x - 140*A*b^4*c^2
*x - 56*b^4*B*c^2*x^2 + 112*A*b^3*c^3*x^2 + 48*b^3*B*c^3*x^3 + 6048*A*b^2*c
^4*x^3 + 4736*b^2*B*c^4*x^4 + 8960*A*b*c^5*x^4 + 7424*b*B*c^5*x^5 + 3584*A*
c^6*x^5 + 3072*B*c^6*x^6))/(21504*c^4) - (5*(b^7*B - 2*A*b^6*c)*Log[b + 2*c
*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(2048*c^(9/2))
```

fricas [A] time = 0.41, size = 392, normalized size = 2.29

$$
\left[-\frac{105\left(Bb^7-2Ab^6c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(3072Bc^7x^6-105Bb^6c+210Ab^5c^2+256\left(29Bbc^6+14Ac^7\right)x^5+128\left(37Bb^2c^5+70Abc^6\right)x^4+48\left(Bb^3c^4+126Ab^2c^5\right)x^3-56\left(Bb^4c^3-2Ab^3c^4\right)x^2+70\left(Bb^5c^2-2Ab^4c^3\right)x\right)\sqrt{cx^2+bx}}{43008c^5},\ -\frac{105\left(Bb^7-2Ab^6c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(3072Bc^7x^6-105Bb^6c+210Ab^5c^2+256\left(29Bbc^6+14Ac^7\right)x^5+128\left(37Bb^2c^5+70Abc^6\right)x^4+48\left(Bb^3c^4+126Ab^2c^5\right)x^3-56\left(Bb^4c^3-2Ab^3c^4\right)x^2+70\left(Bb^5c^2-2Ab^4c^3\right)x\right)\sqrt{cx^2+bx}}{21504c^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/43008*(105*(B*b^7 - 2*A*b^6*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b
*x)*sqrt(c)) - 2*(3072*B*c^7*x^6 - 105*B*b^6*c + 210*A*b^5*c^2 + 256*(29*B*
b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4
 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 -
```

```
2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1/21504*(105*(B*b^7 - 2*A*b^6*c)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (3072*B*c^7*x^6 - 105*B*
b^6*c + 210*A*b^5*c^2 + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5
 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2
*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 - 2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.22, size = 221, normalized size = 1.29

$$\frac{1}{21504}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(12\,Bc^2x+\frac{29\,Bbc^7+14\,Ac^8}{c^6}\right)x+\frac{37\,Bb^2c^6+70\,Abc^7}{c^6}\right)x+\frac{3\left(Bb^3c^5+126\,Ab^2c^6\right)}{c^6}\right)x-\frac{7\left(Bb^4c^4-2\,Ab^3c^5\right)}{c^6}\right)x+\frac{35\left(Bb^5c^3-2\,Ab^4c^4\right)}{c^6}\right)x-\frac{105\left(Bb^6c^2-2\,Ab^5c^3\right)}{c^6}\right)-\frac{5\left(Bb^7-2\,Ab^6c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2048\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/21504*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*B*c^2*x + (29*B*b*c^7 + 14*A*c
^8)/c^6)*x + (37*B*b^2*c^6 + 70*A*b*c^7)/c^6)*x + 3*(B*b^3*c^5 + 126*A*b^2*
c^6)/c^6)*x - 7*(B*b^4*c^4 - 2*A*b^3*c^5)/c^6)*x + 35*(B*b^5*c^3 - 2*A*b^4*
c^4)/c^6)*x - 105*(B*b^6*c^2 - 2*A*b^5*c^3)/c^6) - 5/2048*(B*b^7 - 2*A*b^6*
c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 321, normalized size = 1.88

$$-\frac{5Ab^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{1024c^{\frac{7}{2}}}+\frac{5Bb^7\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2048c^{\frac{9}{2}}}+\frac{5\sqrt{cx^2+bx}\,Ab^4x}{256c^2}-\frac{5\sqrt{cx^2+bx}\,Bb^5x}{512c^3}+\frac{5\sqrt{cx^2+bx}\,Ab^5}{512c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2x}{96c}-\frac{5\sqrt{cx^2+bx}\,Bb^6}{1024c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{192c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3}{192c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ax}{6}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4}{384c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{12c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab}{12c}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2}{24c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}B}{7c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/7*B*(c*x^2+b*x)^(7/2)/c-1/12*B*b/c*x*(c*x^2+b*x)^(5/2)-1/24*B*b^2/c^2*(c*
x^2+b*x)^(5/2)+5/192*B*b^3/c^2*(c*x^2+b*x)^(3/2)*x+5/384*B*b^4/c^3*(c*x^2+b
*x)^(3/2)-5/512*B*b^5/c^3*(c*x^2+b*x)^(1/2)*x-5/1024*B*b^6/c^4*(c*x^2+b*x)^
(1/2)+5/2048*B*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/6*A*
x*(c*x^2+b*x)^(5/2)+1/12*A/c*(c*x^2+b*x)^(5/2)*b-5/96*A*b^2/c*(c*x^2+b*x)^(
3/2)*x-5/192*A*b^3/c^2*(c*x^2+b*x)^(3/2)+5/256*A*b^4/c^2*(c*x^2+b*x)^(1/2)*
x+5/512*A*b^5/c^3*(c*x^2+b*x)^(1/2)-5/1024*A*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.94, size = 318, normalized size = 1.86

$$\frac{1}{6}\left(cx^2+bx\right)^{\frac{5}{2}}Ax-\frac{5\sqrt{cx^2+bx}\,Bb^5x}{512\,c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{192\,c^2}+\frac{5\sqrt{cx^2+bx}\,Ab^4x}{256\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{12\,c}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2x}{96\,c}+\frac{5\,Bb^7\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2048\,c^{\frac{9}{2}}}-\frac{5\,Ab^6\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024\,c^{\frac{7}{2}}}-\frac{5\sqrt{cx^2+bx}\,Bb^6}{1024\,c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4}{384\,c^3}+\frac{5\sqrt{cx^2+bx}\,Ab^5}{512\,c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2}{24\,c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3}{192\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}B}{7\,c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab}{12\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*A*x - 5/512*sqrt(c*x^2 + b*x)*B*b^5*x/c^3 + 5/192*(
c*x^2 + b*x)^(3/2)*B*b^3*x/c^2 + 5/256*sqrt(c*x^2 + b*x)*A*b^4*x/c^2 - 1/12
*(c*x^2 + b*x)^(5/2)*B*b*x/c - 5/96*(c*x^2 + b*x)^(3/2)*A*b^2*x/c + 5/2048*
B*b^7*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) - 5/1024*A*b^6*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 5/1024*sqrt(c*x^2 + b
*x)*B*b^6/c^4 + 5/384*(c*x^2 + b*x)^(3/2)*B*b^4/c^3 + 5/512*sqrt(c*x^2 + b*
x)*A*b^5/c^3 - 1/24*(c*x^2 + b*x)^(5/2)*B*b^2/c^2 - 5/192*(c*x^2 + b*x)^(3/
2)*A*b^3/c^2 + 1/7*(c*x^2 + b*x)^(7/2)*B/c + 1/12*(c*x^2 + b*x)^(5/2)*A*b/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x(b+cx))^{\frac{5}{2}}(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2),x)
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.97 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=170

$$-\frac{b^5(5bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{7/2}}+\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(5bB-12Ac)}{512c^3}-\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(5bB-12Ac)}{192c^2}\cdot$$

Rubi [A] time = 0.13, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {794, 664, 612, 620, 206}

$$\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(5bB-12Ac)}{512c^3}-\frac{b^5(5bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{7/2}}-\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(5bB-12Ac)}{192c^2}-\frac{\left(bx+cx^2\right)^{5/2}(5bB-12Ac)}{60c}+\frac{B\left(bx+cx^2\right)^{7/2}}{6cx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] (b^3*(5*b*B - 12*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(512*c^3) - (b*(5*b*B
- 12*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(192*c^2) - ((5*b*B - 12*A*c)*(b
*x + c*x^2)^(5/2))/(60*c) + (B*(b*x + c*x^2)^(7/2))/(6*c*x) - (b^5*(5*b*B -
 12*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x}\,dx = \frac{B\left(bx+cx^2\right)^{7/2}}{6cx} + \frac{\left(bB-Ac+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x}\,dx}{6c}$$

$$= -\frac{(5bB-12Ac)\left(bx+cx^2\right)^{5/2}}{60c} + \frac{B\left(bx+cx^2\right)^{7/2}}{6cx} - \frac{(b(5bB-12Ac))\int \left(bx+cx^2 \cdots\right.}{24c}$$

$$= -\frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} - \frac{(5bB-12Ac)\left(bx+cx^2\right)^{5/2}}{60c} + \frac{B\left(bx \cdots\right.}{\cdots}$$

$$= \frac{b^3(5bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^3} - \frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} - \cdots$$

$$= \frac{b^3(5bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^3} - \frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} - \cdots$$

$$= \frac{b^3(5bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^3} - \frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} - \cdots$$

Mathematica [A] time = 0.29, size = 166, normalized size = 0.98

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-10b^4c(18A+5Bx)+40b^3c^2x(3A+Bx)+48b^2c^3x^2(62A+45Bx)+64bc^4x^3(63A+50Bx)+256c^5x^4(6A+5Bx)+75b^5B\right)-\frac{15b^{9/2}(5bB-12Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{7680c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(75*b^5*B + 40*b^3*c^2*x*(3*A + B*x) + 256*c^5*
x^4*(6*A + 5*B*x) - 10*b^4*c*(18*A + 5*B*x) + 48*b^2*c^3*x^2*(62*A + 45*B*x
) + 64*b*c^4*x^3*(63*A + 50*B*x)) - (15*b^(9/2)*(5*b*B - 12*A*c)*ArcSinh[(S
qrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(7/2))
```

IntegrateAlgebraic [A] time = 0.89, size = 177, normalized size = 1.04

$$\frac{\left(5b^6B-12Ab^5c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{1024c^{7/2}}+\frac{\sqrt{bx+cx^2}\left(-180Ab^4c+120Ab^3c^2x+2976Ab^2c^3x^2+4032Abc^4x^3+1536Ac^5x^4+75b^5B-50b^4Bcx+40b^3Bc^2x^2+2160b^2Bc^3x^3+3200bBc^4x^4+1280Bc^5x^5\right)}{7680c^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(75*b^5*B - 180*A*b^4*c - 50*b^4*B*c*x + 120*A*b^3*c^2*x
 + 40*b^3*B*c^2*x^2 + 2976*A*b^2*c^3*x^2 + 2160*b^2*B*c^3*x^3 + 4032*A*b*c^
4*x^3 + 3200*b*B*c^4*x^4 + 1536*A*c^5*x^4 + 1280*B*c^5*x^5))/(7680*c^3) + (
(5*b^6*B - 12*A*b^5*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(1024*
c^(7/2))
```

fricas [A] time = 0.45, size = 351, normalized size = 2.06

$$\left[-\frac{15\left(5Bb^6-12Ab^5c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(1280Bc^6x^5+75Bb^5c-180Ab^4c^2+128\left(25Bbc^5+12Ac^6\right)x^4+144\left(15Bb^2c^4+28Abc^5\right)x^3+8\left(5Bb^3c^3+372Ab^2c^4\right)x^2-10\left(5Bb^4c^2-12Ab^3c^3\right)x\right)\sqrt{cx^2+bx}}{15360c^4}, \frac{15\left(5Bb^6-12Ab^5c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(1280Bc^6x^5+75Bb^5c-180Ab^4c^2+128\left(25Bbc^5+12Ac^6\right)x^4+144\left(15Bb^2c^4+28Abc^5\right)x^3+8\left(5Bb^3c^3+372Ab^2c^4\right)x^2-10\left(5Bb^4c^2-12Ab^3c^3\right)x\right)\sqrt{cx^2+bx}}{7680c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(5*B*b^6 - 12*A*b^5*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(1280*B*c^6*x^5 + 75*B*b^5*c - 180*A*b^4*c^2 + 128*(25*B
*b*c^5 + 12*A*c^6)*x^4 + 144*(15*B*b^2*c^4 + 28*A*b*c^5)*x^3 + 8*(5*B*b^3*c
```

```
^3 + 372*A*b^2*c^4)*x^2 - 10*(5*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 + b
*x))/c^4, 1/7680*(15*(5*B*b^6 - 12*A*b^5*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (1280*B*c^6*x^5 + 75*B*b^5*c - 180*A*b^4*c^2 + 128*(25
*B*b*c^5 + 12*A*c^6)*x^4 + 144*(15*B*b^2*c^4 + 28*A*b*c^5)*x^3 + 8*(5*B*b^3
*c^3 + 372*A*b^2*c^4)*x^2 - 10*(5*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 +
 b*x))/c^4]
```

giac [A]   time = 0.23, size = 198, normalized size = 1.16

$$\frac{1}{7680}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\,Bc^2x+\frac{25\,Bbc^6+12\,Ac^7}{c^5}\right)x+\frac{9\left(15\,Bb^2c^5+28\,Abc^6\right)}{c^5}\right)x+\frac{5\,Bb^3c^4+372\,Ab^2c^5}{c^5}\right)x-\frac{5\left(5\,Bb^4c^3-12\,Ab^3c^4\right)}{c^5}\right)x+\frac{15\left(5\,Bb^5c^2-12\,Ab^4c^3\right)}{c^5}\right)+\frac{\left(5\,Bb^6-12\,Ab^5c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{1024\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*c^2*x + (25*B*b*c^6 + 12*A*c^7)/
c^5)*x + 9*(15*B*b^2*c^5 + 28*A*b*c^6)/c^5)*x + (5*B*b^3*c^4 + 372*A*b^2*c^
5)/c^5)*x - 5*(5*B*b^4*c^3 - 12*A*b^3*c^4)/c^5)*x + 15*(5*B*b^5*c^2 - 12*A*
b^4*c^3)/c^5) + 1/1024*(5*B*b^6 - 12*A*b^5*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [A]   time = 0.05, size = 274, normalized size = 1.61

$$\frac{3A\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{5}{2}}}-\frac{5B\,b^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{7}{2}}}-\frac{3\sqrt{c\,x^2+bx}\;A\,b^3x}{64c}+\frac{5\sqrt{c\,x^2+bx}\;B\,b^4x}{256c^2}-\frac{3\sqrt{c\,x^2+bx}\;A\,b^4}{128c^2}+\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}Abx}{8}+\frac{5\sqrt{c\,x^2+bx}\;B\,b^5}{512c^3}-\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,b^2x}{96c}+\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}A\,b^2}{16c}-\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,b^3}{192c^2}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}Bx}{6}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}A}{5}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}Bb}{12c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x,x)
```

```
[Out] 1/6*B*x*(c*x^2+b*x)^(5/2)+1/12*B/c*(c*x^2+b*x)^(5/2)*b-5/96*B*b^2/c*(c*x^2+
b*x)^(3/2)*x-5/192*B*b^3/c^2*(c*x^2+b*x)^(3/2)+5/256*B*b^4/c^2*(c*x^2+b*x)^
(1/2)*x+5/512*B*b^5/c^3*(c*x^2+b*x)^(1/2)-5/1024*B*b^6/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*A*(c*x^2+b*x)^(5/2)+1/8*A*b*(c*x^2+b*x)^(
3/2)*x+1/16*A/c*(c*x^2+b*x)^(3/2)*b^2-3/64*A*b^3/c*(c*x^2+b*x)^(1/2)*x-3/12
8*A*b^4/c^2*(c*x^2+b*x)^(1/2)+3/256*A*b^5/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x)^(1/2))
```

maxima [A]   time = 0.97, size = 271, normalized size = 1.59

$$\frac{1}{6}\left(cx^2+bx\right)^{\frac{5}{2}}Bx+\frac{1}{8}\left(cx^2+bx\right)^{\frac{3}{2}}Abx+\frac{5\sqrt{cx^2+bx}\,Bb^4x}{256\,c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2x}{96\,c}-\frac{3\sqrt{cx^2+bx}\,Ab^3x}{64\,c}-\frac{5\,Bb^6\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024\,c^{\frac{7}{2}}}+\frac{3\,Ab^5\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256\,c^{\frac{5}{2}}}+\frac{1}{5}\left(cx^2+bx\right)^{\frac{5}{2}}A+\frac{5\sqrt{cx^2+bx}\,Bb^5}{512\,c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3}{192\,c^2}-\frac{3\sqrt{cx^2+bx}\,Ab^4}{128\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bb}{12\,c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*B*x + 1/8*(c*x^2 + b*x)^(3/2)*A*b*x + 5/256*sqrt(c*
x^2 + b*x)*B*b^4*x/c^2 - 5/96*(c*x^2 + b*x)^(3/2)*B*b^2*x/c - 3/64*sqrt(c*x
^2 + b*x)*A*b^3*x/c - 5/1024*B*b^6*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt
(c))/c^(7/2) + 3/256*A*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(
5/2) + 1/5*(c*x^2 + b*x)^(5/2)*A + 5/512*sqrt(c*x^2 + b*x)*B*b^5/c^3 - 5/19
2*(c*x^2 + b*x)^(3/2)*B*b^3/c^2 - 3/128*sqrt(c*x^2 + b*x)*A*b^4/c^2 + 1/12*
(c*x^2 + b*x)^(5/2)*B*b/c + 1/16*(c*x^2 + b*x)^(3/2)*A*b^2/c
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x, x)
```

3.98 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=169

$$\frac{b^4(3bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{128c^{5/2}}-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(3bB-10Ac)}{128c^2}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(3bB-10Ac)}{48c}+\frac{(}{}$$

Rubi [A] time = 0.17, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 664, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(3bB-10Ac)}{128c^2}+\frac{b^4(3bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{128c^{5/2}}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(3bB-10Ac)}{48c}+\frac{\left(bx+cx^2\right)^{5/2}(3bB-10Ac)}{15b}+\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] -(b^2*(3*b*B - 10*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^2) + ((3*b*B -
 10*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(48*c) + ((3*b*B - 10*A*c)*(b*x +
 c*x^2)^(5/2))/(15*b) + (2*A*(b*x + c*x^2)^(7/2))/(3*b*x^2) + (b^4*(3*b*B -
 10*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
```

```
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^2}\,dx = \frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^2} - \frac{\left(2\left(-2(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x}\,dx}{3b}$$

$$= \frac{(3bB-10Ac)\left(bx+cx^2\right)^{5/2}}{15b} + \frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^2} - \frac{1}{6}(-3bB+10Ac)\int \left(bx+cx\right.$$

$$= \frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c} + \frac{(3bB-10Ac)\left(bx+cx^2\right)^{5/2}}{15b} + \frac{2A\left(bx+\right.}{3b}$$

$$= -\frac{b^2(3bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^2} + \frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c} +$$

$$= -\frac{b^2(3bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^2} + \frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c} +$$

$$= -\frac{b^2(3bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^2} + \frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c} +$$

Mathematica [A] time = 0.26, size = 147, normalized size = 0.87

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{7/2}(3bB-10Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(30b^3c(5A+Bx)+4b^2c^2x(295A+186Bx)+16bc^3x^2(85A+63Bx)+96c^4x^3(5A+4Bx)-45b^4B\right)\right)}{1920c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-45*b^4*B + 30*b^3*c*(5*A + B*x) + 96*c^4*x^3*
(5*A + 4*B*x) + 16*b*c^3*x^2*(85*A + 63*B*x) + 4*b^2*c^2*x*(295*A + 186*B*x
)) + (15*b^(7/2)*(3*b*B - 10*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt
[x]*Sqrt[1 + (c*x)/b])))/(1920*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.70, size = 153, normalized size = 0.91

$$\frac{\left(10Ab^4c-3b^5B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{256c^{5/2}}+\frac{\sqrt{bx+cx^2}\left(150Ab^3c+1180Ab^2c^2x+1360Abc^3x^2+480Ac^4x^3-45b^4B+30b^3Bcx+744b^2Bc^2x^2+1008bBc^3x^3+384Bc^4x^4\right)}{1920c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-45*b^4*B + 150*A*b^3*c + 30*b^3*B*c*x + 1180*A*b^2*c^2
*x + 744*b^2*B*c^2*x^2 + 1360*A*b*c^3*x^2 + 1008*b*B*c^3*x^3 + 480*A*c^4*x^
3 + 384*B*c^4*x^4))/(1920*c^2) + ((-3*b^5*B + 10*A*b^4*c)*Log[b + 2*c*x - 2
*Sqrt[c]*Sqrt[b*x + c*x^2]])/(256*c^(5/2))
```

fricas [A] time = 0.42, size = 304, normalized size = 1.80

$$\left[-\frac{15\left(3Bb^5-10Ab^4c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(384Bc^5x^4-45Bb^4c+150Ab^3c^2+48\left(21Bbc^4+10Ac^5\right)x^3+8\left(93Bb^2c^3+170Abc^4\right)x^2+10\left(3Bb^3c^2+118Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{3840c^3}, -\frac{15\left(3Bb^5-10Ab^4c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(384Bc^5x^4-45Bb^4c+150Ab^3c^2+48\left(21Bbc^4+10Ac^5\right)x^3+8\left(93Bb^2c^3+170Abc^4\right)x^2+10\left(3Bb^3c^2+118Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{1920c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(3*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
b*x)*sqrt(c)) - 2*(384*B*c^5*x^4 - 45*B*b^4*c + 150*A*b^3*c^2 + 48*(21*B*b*
c^4 + 10*A*c^5)*x^3 + 8*(93*B*b^2*c^3 + 170*A*b*c^4)*x^2 + 10*(3*B*b^3*c^2
+ 118*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^3, -1/1920*(15*(3*B*b^5 - 10*A*b^4
*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (384*B*c^5*x^4 - 45
*B*b^4*c + 150*A*b^3*c^2 + 48*(21*B*b*c^4 + 10*A*c^5)*x^3 + 8*(93*B*b^2*c^3
 + 170*A*b*c^4)*x^2 + 10*(3*B*b^3*c^2 + 118*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x)
)/c^3]
```

giac [A] time = 0.24, size = 170, normalized size = 1.01

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(8\,Bc^2x+\frac{21\,Bbc^5+10\,Ac^6}{c^4}\right)x+\frac{93\,Bb^2c^4+170\,Abc^5}{c^4}\right)x+\frac{5\left(3\,Bb^3c^3+118\,Ab^2c^4\right)}{c^4}\right)x-\frac{15\left(3\,Bb^4c^2-10\,Ab^3c^3\right)}{c^4}\right)-\frac{\left(3\,Bb^5-10\,Ab^4c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{256\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*c^2*x + (21*B*b*c^5 + 10*A*c^6)/c^4)
*x + (93*B*b^2*c^4 + 170*A*b*c^5)/c^4)*x + 5*(3*B*b^3*c^3 + 118*A*b^2*c^4)/
c^4)*x - 15*(3*B*b^4*c^2 - 10*A*b^3*c^3)/c^4) - 1/256*(3*B*b^5 - 10*A*b^4*c
)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 266, normalized size = 1.57

$$-\frac{5A\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{3}{2}}}+\frac{3B\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{5}{2}}}+\frac{5\sqrt{c\,x^2+bx}\,A\,b^2x}{32}-\frac{3\sqrt{c\,x^2+bx}\,B\,b^3x}{64c}+\frac{5\sqrt{c\,x^2+bx}\,A\,b^3}{64c}-\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}Acx}{12}-\frac{3\sqrt{c\,x^2+bx}\,B\,b^4}{128c^2}+\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}Bbx}{8}-\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}Ab}{24}+\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,b^2}{16c}-\frac{2\left(c\,x^2+bx\right)^{\frac{5}{2}}Ac}{3b}+\frac{\left(c\,x^2+bx\right)^{\frac{5}{2}}B}{5}+\frac{2\left(c\,x^2+bx\right)^{\frac{7}{2}}A}{3b\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x)
```

```
[Out] 2/3*A*(c*x^2+b*x)^(7/2)/b/x^2-2/3*A/b*c*(c*x^2+b*x)^(5/2)-5/12*A*c*(c*x^2+b
*x)^(3/2)*x-5/24*A*b*(c*x^2+b*x)^(3/2)+5/32*A*b^2*(c*x^2+b*x)^(1/2)*x+5/64*
A*b^3/c*(c*x^2+b*x)^(1/2)-5/128*A*b^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))+1/5*B*(c*x^2+b*x)^(5/2)+1/8*B*b*(c*x^2+b*x)^(3/2)*x+1/16*B/c*(
c*x^2+b*x)^(3/2)*b^2-3/64*B*b^3/c*(c*x^2+b*x)^(1/2)*x-3/128*B*b^4/c^2*(c*x^
2+b*x)^(1/2)+3/256*B*b^5/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.94, size = 226, normalized size = 1.34

$$\frac{1}{8}\left(cx^2+bx\right)^{\frac{3}{2}}Bbx+\frac{5}{32}\sqrt{cx^2+bx}\,Ab^2x-\frac{3\sqrt{cx^2+bx}\,Bb^3x}{64\,c}+\frac{3\,Bb^5\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{256\,c^{\frac{5}{2}}}-\frac{5\,Ab^4\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{128\,c^{\frac{3}{2}}}+\frac{1}{5}\left(cx^2+bx\right)^{\frac{5}{2}}B+\frac{5}{24}\left(cx^2+bx\right)^{\frac{3}{2}}Ab-\frac{3\sqrt{cx^2+bx}\,Bb^4}{128\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2}{16\,c}+\frac{5\sqrt{cx^2+bx}\,Ab^3}{64\,c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{4\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + b*x)^(3/2)*B*b*x + 5/32*sqrt(c*x^2 + b*x)*A*b^2*x - 3/64*sqrt(
c*x^2 + b*x)*B*b^3*x/c + 3/256*B*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sq
rt(c))/c^(5/2) - 5/128*A*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c
^(3/2) + 1/5*(c*x^2 + b*x)^(5/2)*B + 5/24*(c*x^2 + b*x)^(3/2)*A*b - 3/128*s
qrt(c*x^2 + b*x)*B*b^4/c^2 + 1/16*(c*x^2 + b*x)^(3/2)*B*b^2/c + 5/64*sqrt(c
*x^2 + b*x)*A*b^3/c + 1/4*(c*x^2 + b*x)^(5/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^2,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**2,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**2, x)
```

3.99 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=155

$$-\frac{5b^3(bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{3/2}}+\frac{\left(bx+cx^2\right)^{5/2}(bB-8Ac)}{4bx}+\frac{5}{24}\left(bx+cx^2\right)^{3/2}(bB-8Ac)+\frac{5b(b+2cx)\sqrt{bx+cx^2}}{64c}$$

Rubi [A] time = 0.17, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 664, 612, 620, 206}

$$-\frac{5b^3(bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{3/2}}+\frac{\left(bx+cx^2\right)^{5/2}(bB-8Ac)}{4bx}+\frac{5}{24}\left(bx+cx^2\right)^{3/2}(bB-8Ac)+\frac{5b(b+2cx)\sqrt{bx+cx^2}\,(bB-8Ac)}{64c}+\frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (5*b*(b*B - 8*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(64*c) + (5*(b*B - 8*A*c)
*(b*x + c*x^2)^(3/2))/24 + ((b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(4*b*x) + (2
*A*(b*x + c*x^2)^(7/2))/(b*x^3) - (5*b^3*(b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x)/
Sqrt[b*x + c*x^2]])/(64*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
```

```
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^3}\,dx &= \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3} - \frac{\left(2\left(-3(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^2}\,dx}{b} \\
&= \frac{(bB-8Ac)\left(bx+cx^2\right)^{5/2}}{4bx} + \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3} + \frac{1}{8}(5(bB-8Ac))\int \frac{\left(bx+cx^2\right)^{3}}{x} \\
&= \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)\left(bx+cx^2\right)^{5/2}}{4bx} + \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3} + \\
&= \frac{5b(bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c} + \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)}{4} \\
&= \frac{5b(bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c} + \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)}{4} \\
&= \frac{5b(bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c} + \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)}{4}
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 128, normalized size = 0.83

$$
\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(2b^2c(132A+59Bx)+8bc^2x(26A+17Bx)+16c^3x^2(4A+3Bx)+15b^3B\right)-\frac{15b^{5/2}(bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{192c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^3*B + 16*c^3*x^2*(4*A + 3*B*x) + 8*b*c^2*
x*(26*A + 17*B*x) + 2*b^2*c*(132*A + 59*B*x)) - (15*b^(5/2)*(b*B - 8*A*c)*A
rcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(3/
2))
```

IntegrateAlgebraic [A] time = 0.58, size = 132, normalized size = 0.85

$$
\frac{5\left(b^4B-8Ab^3c\right)\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)}{128c^{3/2}}+\frac{\sqrt{bx+cx^2}\left(264Ab^2c+208Abc^2x+64Ac^3x^2+15b^3B+118b^2Bcx+136bBc^2x^2+48Bc^3x^3\right)}{192c}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(15*b^3*B + 264*A*b^2*c + 118*b^2*B*c*x + 208*A*b*c^2*x
+ 136*b*B*c^2*x^2 + 64*A*c^3*x^2 + 48*B*c^3*x^3))/(192*c) + (5*(b^4*B - 8*A
*b^3*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[b*x + c*x^2]])/(128*c^(3/2))
```

fricas [A] time = 0.43, size = 253, normalized size = 1.63

$$
\left[-\frac{15\left(Bb^4-8Ab^3c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(48Bc^4x^3+15Bb^3c+264Ab^2c^2+8\left(17Bbc^3+8Ac^4\right)x^2+2\left(59Bb^2c^2+104Abc^3\right)x\right)\sqrt{cx^2+bx}}{384c^2}, \frac{15\left(Bb^4-8Ab^3c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(48Bc^4x^3+15Bb^3c+264Ab^2c^2+8\left(17Bbc^3+8Ac^4\right)x^2+2\left(59Bb^2c^2+104Abc^3\right)x\right)\sqrt{cx^2+bx}}{192c^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c)) - 2*(48*B*c^4*x^3 + 15*B*b^3*c + 264*A*b^2*c^2 + 8*(17*B*b*c^3 +
8*A*c^4)*x^2 + 2*(59*B*b^2*c^2 + 104*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^2, 1/
192*(15*(B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) + (48*B*c^4*x^3 + 15*B*b^3*c + 264*A*b^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4)*
x^2 + 2*(59*B*b^2*c^2 + 104*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^2]
```

giac [A] time = 0.22, size = 141, normalized size = 0.91

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6\,Bc^2x+\frac{17\,Bbc^4+8\,Ac^5}{c^3}\right)x+\frac{59\,Bb^2c^3+104\,Abc^4}{c^3}\right)x+\frac{3\left(5\,Bb^3c^2+88\,Ab^2c^3\right)}{c^3}\right)+\frac{5\left(Bb^4-8\,Ab^3c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{128\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*c^2*x + (17*B*b*c^4 + 8*A*c^5)/c^3)*x +
(59*B*b^2*c^3 + 104*A*b*c^4)/c^3)*x + 3*(5*B*b^3*c^2 + 88*A*b^2*c^3)/c^3) +
 5/128*(B*b^4 - 8*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(
c) - b))/c^(3/2)
```

maple [B] time = 0.06, size = 306, normalized size = 1.97

$$\frac{5A\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16\sqrt{c}}-\frac{5B\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^2+bx}\,Abcx}{4}+\frac{5\sqrt{c\,x^2+bx}\,B\,b^2x}{32}-\frac{5\sqrt{c\,x^2+bx}\,A\,b^2}{8}+\frac{10\left(c\,x^2+bx\right)^{\frac{3}{2}}A\,c^2x}{3b}+\frac{5\sqrt{c\,x^2+bx}\,B\,b^3}{64c}-\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}Bcx}{12}+\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}Ac}{3}-\frac{5\left(c\,x^2+bx\right)^{\frac{3}{2}}Bb}{24}+\frac{16\left(c\,x^2+bx\right)^{\frac{5}{2}}A\,c^2}{3b^2}-\frac{2\left(c\,x^2+bx\right)^{\frac{5}{2}}Bc}{3b}-\frac{16\left(c\,x^2+bx\right)^{\frac{7}{2}}Ac}{3b^2x^2}+\frac{2\left(c\,x^2+bx\right)^{\frac{7}{2}}B}{3b\,x^2}+\frac{2\left(c\,x^2+bx\right)^{\frac{7}{2}}A}{b\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x)
```

```
[Out] 2*A*(c*x^2+b*x)^(7/2)/b/x^3-16/3*A/b^2*c/x^2*(c*x^2+b*x)^(7/2)+16/3*A/b^2*c
^2*(c*x^2+b*x)^(5/2)+10/3*A/b*c^2*(c*x^2+b*x)^(3/2)*x+5/3*A*c*(c*x^2+b*x)^(
3/2)-5/4*A*b*c*(c*x^2+b*x)^(1/2)*x-5/8*A*b^2*(c*x^2+b*x)^(1/2)+5/16*A*b^3/c
^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+2/3*B/b/x^2*(c*x^2+b*x)^(7
/2)-2/3*B/b*c*(c*x^2+b*x)^(5/2)-5/12*B*c*(c*x^2+b*x)^(3/2)*x-5/24*B*b*(c*x^
2+b*x)^(3/2)+5/32*B*b^2*(c*x^2+b*x)^(1/2)*x+5/64*B*b^3/c*(c*x^2+b*x)^(1/2)-
5/128*B*b^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.91, size = 187, normalized size = 1.21

$$\frac{5}{32}\sqrt{cx^2+bx}\,Bb^2x-\frac{5\,Bb^4\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{128\,c^{\frac{3}{2}}}+\frac{5\,Ab^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,\sqrt{c}}+\frac{5}{24}\left(cx^2+bx\right)^{\frac{3}{2}}Bb+\frac{5}{8}\sqrt{cx^2+bx}\,Ab^2+\frac{5\,\sqrt{cx^2+bx}\,Bb^3}{64\,c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{4\,x}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{12\,x}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] 5/32*sqrt(c*x^2 + b*x)*B*b^2*x - 5/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c))/c^(3/2) + 5/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/sqrt(c) + 5/24*(c*x^2 + b*x)^(3/2)*B*b + 5/8*sqrt(c*x^2 + b*x)*A*b^2
+ 5/64*sqrt(c*x^2 + b*x)*B*b^3/c + 1/4*(c*x^2 + b*x)^(5/2)*B/x + 5/12*(c*x^
2 + b*x)^(3/2)*A*b/x + 1/3*(c*x^2 + b*x)^(5/2)*A/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^3,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**3,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**3, x)
```

3.100 $\int \frac{(A+Bx)(bx+cx^2)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=153

$$\frac{5b^2(6Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8\sqrt{c}}+\frac{2\left(bx+cx^2\right)^{5/2}(6Ac+bB)}{bx^2}-\frac{5c\left(bx+cx^2\right)^{3/2}(6Ac+bB)}{3b}-\frac{5}{8}(b+2cx)\sqrt{bx+cx^2}$$

Rubi [A] time = 0.17, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {792, 662, 664, 612, 620, 206}

$$\frac{5b^2(6Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8\sqrt{c}}+\frac{2\left(bx+cx^2\right)^{5/2}(6Ac+bB)}{bx^2}-\frac{5c\left(bx+cx^2\right)^{3/2}(6Ac+bB)}{3b}-\frac{5}{8}(b+2cx)\sqrt{bx+cx^2}\,(6Ac+bB)-\frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (-5*(b*B + 6*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/8 - (5*c*(b*B + 6*A*c)*(b*
x + c*x^2)^(3/2))/(3*b) + (2*(b*B + 6*A*c)*(b*x + c*x^2)^(5/2))/(b*x^2) - (
2*A*(b*x + c*x^2)^(7/2))/(b*x^4) + (5*b^2*(b*B + 6*A*c)*ArcTanh[(Sqrt[c]*x)
/Sqrt[b*x + c*x^2]])/(8*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^4}dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4} + \frac{\left(2\left(-4(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x^3}dx}{b}$$

$$= \frac{2(bB+6Ac)\left(bx+cx^2\right)^{5/2}}{bx^2} - \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4} - \frac{(5c(bB+6Ac))\int\frac{\left(bx+cx^2\right)^{3/2}}{x}d}{b}$$

$$= -\frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2(bB+6Ac)\left(bx+cx^2\right)^{5/2}}{bx^2} - \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4}$$

$$= -\frac{5}{8}(bB+6Ac)(b+2cx)\sqrt{bx+cx^2} - \frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2(bB+6A}{}$$

$$= -\frac{5}{8}(bB+6Ac)(b+2cx)\sqrt{bx+cx^2} - \frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2(bB+6A}{}$$

$$= -\frac{5}{8}(bB+6Ac)(b+2cx)\sqrt{bx+cx^2} - \frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2(bB+6A}{}$$

Mathematica [A] time = 0.21, size = 117, normalized size = 0.76

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{3/2}\sqrt{x}(6Ac+bB)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\sqrt{\frac{cx}{b}+1}} - 6A\left(8b^2-9bcx-2c^2x^2\right) + Bx\left(33b^2+26bcx+8c^2x^2\right)\right)}{24x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(-6*A*(8*b^2 - 9*b*c*x - 2*c^2*x^2) + B*x*(33*b^2 + 26*b
*c*x + 8*c^2*x^2) + (15*b^(3/2)*(b*B + 6*A*c)*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt
[x])/Sqrt[b]])/(Sqrt[c]*Sqrt[1 + (c*x)/b])))/(24*x)
```

IntegrateAlgebraic [A] time = 0.62, size = 116, normalized size = 0.76

$$\frac{\sqrt{bx+cx^2}\left(-48Ab^2+54Abcx+12Ac^2x^2+33b^2Bx+26bBcx^2+8Bc^2x^3\right)}{24x} - \frac{5\left(6Ab^2c+b^3B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{16\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-48*A*b^2 + 33*b^2*B*x + 54*A*b*c*x + 26*b*B*c*x^2 + 12
*A*c^2*x^2 + 8*B*c^2*x^3))/(24*x) - (5*(b^3*B + 6*A*b^2*c)*Log[b + 2*c*x -
2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(16*Sqrt[c])
```

fricas [A] time = 0.41, size = 240, normalized size = 1.57

$$\left[\frac{15\left(Bb^{3}+6\,Ab^{2}c\right)\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\sqrt{c}\right)+2\left(8\,Bc^{3}x^{3}-48\,Ab^{2}c+2\left(13\,Bbc^{2}+6\,Ac^{3}\right)x^{2}+3\left(11\,Bb^{2}c+18\,Abc^{2}\right)x\right)\sqrt{cx^{2}+bx}}{48\,cx},\ -\frac{15\left(Bb^{3}+6\,Ab^{2}c\right)\sqrt{-c}\,x\arctan\left(\frac{\sqrt{cx^{2}+bx}\sqrt{-c}}{cx}\right)-\left(8\,Bc^{3}x^{3}-48\,Ab^{2}c+2\left(13\,Bbc^{2}+6\,Ac^{3}\right)x^{2}+3\left(11\,Bb^{2}c+18\,Abc^{2}\right)x\right)\sqrt{cx^{2}+bx}}{24\,cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/48*(15*(B*b^3 + 6*A*b^2*c)*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c)) + 2*(8*B*c^3*x^3 - 48*A*b^2*c + 2*(13*B*b*c^2 + 6*A*c^3)*x^2 + 3*
(11*B*b^2*c + 18*A*b*c^2)*x)*sqrt(c*x^2 + b*x))/(c*x), -1/24*(15*(B*b^3 + 6
*A*b^2*c)*sqrt(-c)*x*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (8*B*c^3*x^
3 - 48*A*b^2*c + 2*(13*B*b*c^2 + 6*A*c^3)*x^2 + 3*(11*B*b^2*c + 18*A*b*c^2)
*x)*sqrt(c*x^2 + b*x))/(c*x)]
```

giac [A] time = 0.24, size = 141, normalized size = 0.92

$$\frac{2\,Ab^{3}}{\sqrt{c}\,x-\sqrt{cx^{2}+bx}}+\frac{1}{24}\,\sqrt{cx^{2}+bx}\left(2\left(4\,Bc^{2}x+\frac{13\,Bbc^{3}+6\,Ac^{4}}{c^{2}}\right)x+\frac{3\left(11\,Bb^{2}c^{2}+18\,Abc^{3}\right)}{c^{2}}\right)-\frac{5\left(Bb^{3}+6\,Ab^{2}c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx}\right)\sqrt{c}-b\right|\right)}{16\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 2*A*b^3/(sqrt(c)*x - sqrt(c*x^2 + b*x)) + 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*c^
2*x + (13*B*b*c^3 + 6*A*c^4)/c^2)*x + 3*(11*B*b^2*c^2 + 18*A*b*c^3)/c^2) -
5/16*(B*b^3 + 6*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)
 - b))/sqrt(c)
```

maple [B] time = 0.06, size = 358, normalized size = 2.34

$$\frac{15Ab^{2}\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx}\right)}{8}+\frac{5Bb^{3}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx}\right)}{16\sqrt{c}}-\frac{15\sqrt{cx^{2}+bx}\,Ac^{2}x}{2}-\frac{5\sqrt{cx^{2}+bx}\,Bbcx}{4}-\frac{15\sqrt{cx^{2}+bx}\,Abc}{4}+\frac{20\left(cx^{2}+bx\right)^{\frac{3}{2}}Ac^{3}x}{b^{2}}-\frac{5\sqrt{cx^{2}+bx}\,Bb^{2}}{8}+\frac{10\left(cx^{2}+bx\right)^{\frac{3}{2}}Bc^{2}x}{3b}+\frac{10\left(cx^{2}+bx\right)^{\frac{3}{2}}Ac^{2}}{b}+\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Bc}{3}+\frac{32\left(cx^{2}+bx\right)^{\frac{5}{2}}Ac^{3}}{b^{3}}+\frac{16\left(cx^{2}+bx\right)^{\frac{5}{2}}Bc^{2}}{3b^{2}}-\frac{32\left(cx^{2}+bx\right)^{\frac{7}{2}}Ac^{2}}{b^{3}x^{2}}-\frac{16\left(cx^{2}+bx\right)^{\frac{7}{2}}Bc}{3b^{2}x^{2}}+\frac{12\left(cx^{2}+bx\right)^{\frac{7}{2}}Ac}{b^{2}x^{3}}+\frac{2\left(cx^{2}+bx\right)^{\frac{7}{2}}B}{b\,x^{3}}-\frac{2\left(cx^{2}+bx\right)^{\frac{7}{2}}A}{b\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x)
```

```
[Out] -2*A*(c*x^2+b*x)^(7/2)/b/x^4+12*A/b^2*c/x^3*(c*x^2+b*x)^(7/2)-32*A/b^3*c^2/
x^2*(c*x^2+b*x)^(7/2)+32*A/b^3*c^3*(c*x^2+b*x)^(5/2)+20*A/b^2*c^3*(c*x^2+b*
x)^(3/2)*x+10*A/b*c^2*(c*x^2+b*x)^(3/2)-15/2*A*c^2*(c*x^2+b*x)^(1/2)*x-15/4
*A*b*c*(c*x^2+b*x)^(1/2)+15/8*A*b^2*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))+2*B/b/x^3*(c*x^2+b*x)^(7/2)-16/3*B/b^2*c/x^2*(c*x^2+b*x)^(7/2)+1
6/3*B/b^2*c^2*(c*x^2+b*x)^(5/2)+10/3*B/b*c^2*(c*x^2+b*x)^(3/2)*x+5/3*B*c*(c
*x^2+b*x)^(3/2)-5/4*B*b*c*(c*x^2+b*x)^(1/2)*x-5/8*B*b^2*(c*x^2+b*x)^(1/2)+5
/16*B*b^3/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.91, size = 172, normalized size = 1.12

$$\frac{5\,Bb^{3}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\sqrt{c}\right)}{16\,\sqrt{c}}+\frac{15}{8}\,Ab^{2}\sqrt{c}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\sqrt{c}\right)+\frac{5}{8}\,\sqrt{cx^{2}+bx}\,Bb^{2}+\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb}{12\,x}-\frac{15\,\sqrt{cx^{2}+bx}\,Ab^{2}}{4\,x}+\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}B}{3\,x^{2}}+\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab}{4\,x^{2}}+\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}A}{2\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] 5/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + 15/8*A*b^
2*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 5/8*sqrt(c*x^2 + b
*x)*B*b^2 + 5/12*(c*x^2 + b*x)^(3/2)*B*b/x - 15/4*sqrt(c*x^2 + b*x)*A*b^2/x
 + 1/3*(c*x^2 + b*x)^(5/2)*B/x^2 + 5/4*(c*x^2 + b*x)^(3/2)*A*b/x^2 + 1/2*(c
*x^2 + b*x)^(5/2)*A/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**4,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**4, x)
```

3.101 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^5} \, dx$

Optimal. Leaf size=157

$$\frac{5c\left(bx+cx^2\right)^{3/2}(4Ac+3bB)}{6bx}+\frac{5}{4}c\sqrt{bx+cx^2}\,(4Ac+3bB)+\frac{5}{4}b\sqrt{c}\,(4Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2\left(bx+cx^2\right)^{5/2}}{3bx}$$

Rubi [A] time = 0.16, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 662, 664, 620, 206}

$$-\frac{2\left(bx+cx^2\right)^{5/2}(4Ac+3bB)}{3bx^3}+\frac{5c\left(bx+cx^2\right)^{3/2}(4Ac+3bB)}{6bx}+\frac{5}{4}c\sqrt{bx+cx^2}\,(4Ac+3bB)+\frac{5}{4}b\sqrt{c}\,(4Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (5*c*(3*b*B + 4*A*c)*Sqrt[b*x + c*x^2])/4 + (5*c*(3*b*B + 4*A*c)*(b*x + c*x
^2)^(3/2))/(6*b*x) - (2*(3*b*B + 4*A*c)*(b*x + c*x^2)^(5/2))/(3*b*x^3) - (2
*A*(b*x + c*x^2)^(7/2))/(3*b*x^5) + (5*b*Sqrt[c]*(3*b*B + 4*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/4
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
```

```
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^5}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5} + \frac{\left(2\left(-5(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^4}\,dx}{3b}$$

$$= -\frac{2(3bB+4Ac)\left(bx+cx^2\right)^{5/2}}{3bx^3} - \frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5} + \frac{(5c(3bB+4Ac))\int \frac{\left(bx+cx^2\right)^{3}}{x^2}}{3b}$$

$$= \frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx} - \frac{2(3bB+4Ac)\left(bx+cx^2\right)^{5/2}}{3bx^3} - \frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5}$$

$$= \frac{5}{4}c(3bB+4Ac)\sqrt{bx+cx^2} + \frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx} - \frac{2(3bB+4Ac)\left(bx\right.}{3bx^3}$$

$$= \frac{5}{4}c(3bB+4Ac)\sqrt{bx+cx^2} + \frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx} - \frac{2(3bB+4Ac)\left(bx\right.}{3bx^3}$$

$$= \frac{5}{4}c(3bB+4Ac)\sqrt{bx+cx^2} + \frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx} - \frac{2(3bB+4Ac)\left(bx\right.}{3bx^3}$$

Mathematica [C] time = 0.05, size = 86, normalized size = 0.55

$$-\frac{2\sqrt{x(b+cx)}\left(b^2x(4Ac+3bB)\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx}{b}\right)+A\sqrt{\frac{cx}{b}+1}\,(b+cx)^3\right)}{3bx^2\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(A*(b + c*x)^3*Sqrt[1 + (c*x)/b] + b^2*(3*b*B + 4*A*c
)*x*Hypergeometric2F1[-5/2, -1/2, 1/2, -((c*x)/b)]))/(3*b*x^2*Sqrt[1 + (c*x
)/b])
```

IntegrateAlgebraic [A] time = 0.54, size = 119, normalized size = 0.76

$$\frac{\sqrt{bx+cx^2}\left(-8Ab^2-56Abcx+12Ac^2x^2-24b^2Bx+27bBcx^2+6Bc^2x^3\right)}{12x^2}-\frac{5}{8}\left(4Abc^{3/2}+3b^2B\sqrt{c}\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^2 - 24*b^2*B*x - 56*A*b*c*x + 27*b*B*c*x^2 + 12*
A*c^2*x^2 + 6*B*c^2*x^3))/(12*x^2) - (5*(3*b^2*B*Sqrt[c] + 4*A*b*c^(3/2))*L
og[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/8
```

fricas [A] time = 0.41, size = 224, normalized size = 1.43

$$\left[\frac{15\left(3Bb^2+4Abc\right)\sqrt{c}\,x^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(6Bc^2x^3-8Ab^2+3\left(9Bbc+4Ac^2\right)x^2-8\left(3Bb^2+7Abc\right)x\right)\sqrt{cx^2+bx}}{24x^2},\ -\frac{15\left(3Bb^2+4Abc\right)\sqrt{-c}\,x^2\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(6Bc^2x^3-8Ab^2+3\left(9Bbc+4Ac^2\right)x^2-8\left(3Bb^2+7Abc\right)x\right)\sqrt{cx^2+bx}}{12x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/24*(15*(3*B*b^2 + 4*A*b*c)*sqrt(c)*x^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*
x)*sqrt(c)) + 2*(6*B*c^2*x^3 - 8*A*b^2 + 3*(9*B*b*c + 4*A*c^2)*x^2 - 8*(3*B
*b^2 + 7*A*b*c)*x)*sqrt(c*x^2 + b*x))/x^2, -1/12*(15*(3*B*b^2 + 4*A*b*c)*sq
rt(-c)*x^2*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (6*B*c^2*x^3 - 8*A*b^
2 + 3*(9*B*b*c + 4*A*c^2)*x^2 - 8*(3*B*b^2 + 7*A*b*c)*x)*sqrt(c*x^2 + b*x))
/x^2]
```

giac [A] time = 0.28, size = 211, normalized size = 1.34

$$\frac{1}{4}\left(2\,Bc^2x+\frac{9\,Bbc^2+4\,Ac^3}{c}\right)\sqrt{cx^2+bx}-\frac{5\left(3\,Bb^2c+4\,Abc^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,\sqrt{c}}+\frac{2\left(3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^3\sqrt{c}+9\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^2c^{\frac{3}{2}}+3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^3c+Ab^4\sqrt{c}\right)}{3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*c^2*x + (9*B*b*c^2 + 4*A*c^3)/c)*sqrt(c*x^2 + b*x) - 5/8*(3*B*b^2*
c + 4*A*b*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/sqr
t(c) + 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*sqrt(c) + 9*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(3/2) + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^3*c + A*b^4*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x))^3*sqrt(c))
```

maple [B] time = 0.05, size = 411, normalized size = 2.62

$$\frac{5Abc^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2}+\frac{15Bb^2\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8}-\frac{10\sqrt{cx^2+bx}\,Ac^3x}{b}-\frac{15\sqrt{cx^2+bx}\,Bc^2x}{2}+\frac{80\left(cx^2+bx\right)^{\frac{3}{2}}Ac^4x}{3b^3}-5\sqrt{cx^2+bx}\,Ac^2-\frac{15\sqrt{cx^2+bx}\,Bbc}{4}+\frac{20\left(cx^2+bx\right)^{\frac{3}{2}}Bc^3x}{b^2}+\frac{40\left(cx^2+bx\right)^{\frac{3}{2}}Ac^3}{3b^2}+\frac{10\left(cx^2+bx\right)^{\frac{3}{2}}Bc^2}{b}+\frac{128\left(cx^2+bx\right)^{\frac{5}{2}}Ac^4}{3b^4}+\frac{32\left(cx^2+bx\right)^{\frac{5}{2}}Bc^3}{b^3}-\frac{128\left(cx^2+bx\right)^{\frac{7}{2}}Ac^3}{3b^4x^2}-\frac{32\left(cx^2+bx\right)^{\frac{7}{2}}Bc^2}{b^3x^2}+\frac{16\left(cx^2+bx\right)^{\frac{7}{2}}Ac^2}{b^3x^3}+\frac{12\left(cx^2+bx\right)^{\frac{7}{2}}Bc}{b^2x^3}-\frac{8\left(cx^2+bx\right)^{\frac{7}{2}}Ac}{3b^2x^4}-\frac{2\left(cx^2+bx\right)^{\frac{7}{2}}B}{bx^4}-\frac{2\left(cx^2+bx\right)^{\frac{7}{2}}A}{3bx^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x)
```

```
[Out] -2/3*A*(c*x^2+b*x)^(7/2)/b/x^5-8/3*A/b^2*c/x^4*(c*x^2+b*x)^(7/2)+16*A/b^3*c
^2/x^3*(c*x^2+b*x)^(7/2)-128/3*A/b^4*c^3/x^2*(c*x^2+b*x)^(7/2)+128/3*A/b^4*
c^4*(c*x^2+b*x)^(5/2)+80/3*A/b^3*c^4*(c*x^2+b*x)^(3/2)*x+40/3*A/b^2*c^3*(c*
x^2+b*x)^(3/2)-10*A/b*c^3*(c*x^2+b*x)^(1/2)*x-5*A*c^2*(c*x^2+b*x)^(1/2)+5/2
*A*b*c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-2*B/b/x^4*(c*x^2+b*x
)^(7/2)+12*B/b^2*c/x^3*(c*x^2+b*x)^(7/2)-32*B/b^3*c^2/x^2*(c*x^2+b*x)^(7/2)
+32*B/b^3*c^3*(c*x^2+b*x)^(5/2)+20*B/b^2*c^3*(c*x^2+b*x)^(3/2)*x+10*B/b*c^2
*(c*x^2+b*x)^(3/2)-15/2*B*c^2*(c*x^2+b*x)^(1/2)*x-15/4*B*b*c*(c*x^2+b*x)^(1
/2)+15/8*B*b^2*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.96, size = 191, normalized size = 1.22

$$\frac{15}{8}\,Bb^2\sqrt{c}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+\frac{5}{2}\,Abc^{\frac{3}{2}}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{15\,\sqrt{cx^2+bx}\,Bb^2}{4\,x}-\frac{35\,\sqrt{cx^2+bx}\,Abc}{6\,x}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{4\,x^2}-\frac{5\,\sqrt{cx^2+bx}\,Ab^2}{6\,x^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{2\,x^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{6\,x^3}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] 15/8*B*b^2*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 5/2*A*b*c
^(3/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 15/4*sqrt(c*x^2 + b*x
)*B*b^2/x - 35/6*sqrt(c*x^2 + b*x)*A*b*c/x + 5/4*(c*x^2 + b*x)^(3/2)*B*b/x^
2 - 5/6*sqrt(c*x^2 + b*x)*A*b^2/x^2 + 1/2*(c*x^2 + b*x)^(5/2)*B/x^3 - 5/6*(
c*x^2 + b*x)^(3/2)*A*b/x^3 + (c*x^2 + b*x)^(5/2)*A/x^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^5,x)
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\left(b+cx\right))^{\frac{5}{2}}\left(A+Bx\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**5,x)
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**5, x)
```

3.102 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=155

$$c^{3/2}(2Ac+5bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)+\frac{c^2\sqrt{bx+cx^2}\,(2Ac+5bB)}{b}-\frac{2c\left(bx+cx^2\right)^{3/2}(2Ac+5bB)}{3bx^2}-\frac{2\left(bx+cx^2\right)^{5/2}(2}{15bx^4}$$

Rubi [A] time = 0.16, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {792, 662, 664, 620, 206}

$$\frac{c^2\sqrt{bx+cx^2}\,(2Ac+5bB)}{b}+c^{3/2}(2Ac+5bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2\left(bx+cx^2\right)^{5/2}(2Ac+5bB)}{15bx^4}-\frac{2c\left(bx+cx^2\right)^{3/2}(2Ac+5bB)}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{7/2}}{5bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] (c^2*(5*b*B + 2*A*c)*Sqrt[b*x + c*x^2])/b - (2*c*(5*b*B + 2*A*c)*(b*x + c*x
^2)^(3/2))/(3*b*x^2) - (2*(5*b*B + 2*A*c)*(b*x + c*x^2)^(5/2))/(15*b*x^4) -
 (2*A*(b*x + c*x^2)^(7/2))/(5*b*x^6) + c^(3/2)*(5*b*B + 2*A*c)*ArcTanh[(Sqr
t[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
```

```
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^6}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{5bx^6}+\frac{\left(2\left(-6(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x^5}\,dx}{5b}\\
&= -\frac{2(5bB+2Ac)\left(bx+cx^2\right)^{5/2}}{15bx^4}-\frac{2A\left(bx+cx^2\right)^{7/2}}{5bx^6}+\frac{(c(5bB+2Ac))\int\frac{\left(bx+cx^2\right)^{3/2}}{x^3}}{3b}\\
&= -\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)\left(bx+cx^2\right)^{5/2}}{15bx^4}-\frac{2A\left(bx+cx^2\right)^{7}}{5bx^6}\\
&= \frac{c^2(5bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)\left(bx\right.}{15bx^4}\\
&= \frac{c^2(5bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)\left(bx\right.}{15bx^4}\\
&= \frac{c^2(5bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)\left(bx\right.}{15bx^4}\end{aligned}$$

Mathematica [C] time = 0.05, size = 87, normalized size = 0.56

$$-\frac{2\sqrt{x(b+cx)}\left(b^2x(2Ac+5bB)\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx}{b}\right)+3A\sqrt{\frac{cx}{b}+1}\,(b+cx)^3\right)}{15bx^3\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(3*A*(b + c*x)^3*Sqrt[1 + (c*x)/b] + b^2*(5*b*B + 2*A
*c)*x*Hypergeometric2F1[-5/2, -3/2, -1/2, -((c*x)/b)]))/(15*b*x^3*Sqrt[1 +
(c*x)/b])
```

IntegrateAlgebraic [A] time = 0.54, size = 116, normalized size = 0.75

$$\frac{\sqrt{bx+cx^2}\left(-6Ab^2-22Abcx-46Ac^2x^2-10b^2Bx-70bBcx^2+15Bc^2x^3\right)}{15x^3}+\frac{1}{2}\left(-2Ac^{5/2}-5bBc^{3/2}\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-6*A*b^2 - 10*b^2*B*x - 22*A*b*c*x - 70*b*B*c*x^2 - 46*
A*c^2*x^2 + 15*B*c^2*x^3))/(15*x^3) + ((-5*b*B*c^(3/2) - 2*A*c^(5/2))*Log[b
 + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/2
```

fricas [A] time = 0.42, size = 224, normalized size = 1.45

$$\left[\frac{15\left(5Bbc+2Ac^2\right)\sqrt{c}\,x^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(15Bc^2x^3-6Ab^2-2\left(35Bbc+23Ac^2\right)x^2-2\left(5Bb^2+11Abc\right)x\right)\sqrt{cx^2+bx}}{30x^3},\ -\frac{15\left(5Bbc+2Ac^2\right)\sqrt{-c}\,x^3\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(15Bc^2x^3-6Ab^2-2\left(35Bbc+23Ac^2\right)x^2-2\left(5Bb^2+11Abc\right)x\right)\sqrt{cx^2+bx}}{15x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/30*(15*(5*B*b*c + 2*A*c^2)*sqrt(c)*x^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*
x)*sqrt(c)) + 2*(15*B*c^2*x^3 - 6*A*b^2 - 2*(35*B*b*c + 23*A*c^2)*x^2 - 2*(
5*B*b^2 + 11*A*b*c)*x)*sqrt(c*x^2 + b*x))/x^3, -1/15*(15*(5*B*b*c + 2*A*c^2
)*sqrt(-c)*x^3*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (15*B*c^2*x^3 - 6
*A*b^2 - 2*(35*B*b*c + 23*A*c^2)*x^2 - 2*(5*B*b^2 + 11*A*b*c)*x)*sqrt(c*x^2
 + b*x))/x^3]
```

giac [B] time = 0.27, size = 304, normalized size = 1.96

$$\sqrt{cx^2+bx}\,Bc^2-\frac{\left(5\,Bbc^2+2\,Ac^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\sqrt{c}}+\frac{2\left(45\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^2c^{\frac{3}{2}}+45\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Abc^{\frac{5}{2}}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^3c+45\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^2c^2+5\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^4\sqrt{c}+35\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^3c^{\frac{3}{2}}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^4c+3\,Ab^5\sqrt{c}\right)}{15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B*c^2 - 1/2*(5*B*b*c^2 + 2*A*c^3)*log(abs(-2*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*sqrt(c) - b))/sqrt(c) + 2/15*(45*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^4*B*b^2*c^(3/2) + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^(5/2
) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c + 45*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^3*A*b^2*c^2 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4*sqrt(c)
+ 35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^(3/2) + 15*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*A*b^4*c + 3*A*b^5*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*sqrt(c))
```

maple [B] time = 0.06, size = 460, normalized size = 2.97

$$Ac^{\frac{5}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)+\frac{5Bbc^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2}-\frac{4\sqrt{cx^2+bx}\,Ac^4x}{b^2}-\frac{10\sqrt{cx^2+bx}\,Bc^3x}{b}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{b}+\frac{32\left(cx^2+bx\right)^{\frac{3}{2}}Ac^5x}{3b^4}+\frac{80\left(cx^2+bx\right)^{\frac{3}{2}}Bc^4x}{3b^3}-5\sqrt{cx^2+bx}\,Bc^2+\frac{16\left(cx^2+bx\right)^{\frac{3}{2}}Ac^4}{3b^3}+\frac{40\left(cx^2+bx\right)^{\frac{3}{2}}Bc^3}{3b^2}+\frac{256\left(cx^2+bx\right)^{\frac{5}{2}}Ac^5}{15b^5}+\frac{128\left(cx^2+bx\right)^{\frac{5}{2}}Bc^4}{3b^4}-\frac{256\left(cx^2+bx\right)^{\frac{7}{2}}Ac^4}{15b^5x^2}-\frac{128\left(cx^2+bx\right)^{\frac{7}{2}}Bc^3}{3b^4x^2}+\frac{32\left(cx^2+bx\right)^{\frac{7}{2}}Ac^3}{5b^4x^3}+\frac{16\left(cx^2+bx\right)^{\frac{7}{2}}Bc^2}{b^3x^3}-\frac{16\left(cx^2+bx\right)^{\frac{7}{2}}Ac^2}{15b^3x^4}-\frac{8\left(cx^2+bx\right)^{\frac{7}{2}}Bc}{3b^2x^4}-\frac{4\left(cx^2+bx\right)^{\frac{7}{2}}Ac}{15b^2x^5}-\frac{2\left(cx^2+bx\right)^{\frac{7}{2}}B}{3bx^5}-\frac{2\left(cx^2+bx\right)^{\frac{7}{2}}A}{5bx^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x)
```

```
[Out] -2/5*A*(c*x^2+b*x)^(7/2)/b/x^6-4/15*A/b^2*c/x^5*(c*x^2+b*x)^(7/2)-16/15*A/b
^3*c^2/x^4*(c*x^2+b*x)^(7/2)+32/5*A/b^4*c^3/x^3*(c*x^2+b*x)^(7/2)-256/15*A/
b^5*c^4/x^2*(c*x^2+b*x)^(7/2)+256/15*A/b^5*c^5*(c*x^2+b*x)^(5/2)+32/3*A/b^4
*c^5*(c*x^2+b*x)^(3/2)*x+16/3*A/b^3*c^4*(c*x^2+b*x)^(3/2)-4*A/b^2*c^4*(c*x^
2+b*x)^(1/2)*x-2*A/b*c^3*(c*x^2+b*x)^(1/2)+A*c^(5/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x)^(1/2))-2/3*B/b/x^5*(c*x^2+b*x)^(7/2)-8/3*B/b^2*c/x^4*(c*x^2+b*
x)^(7/2)+16*B/b^3*c^2/x^3*(c*x^2+b*x)^(7/2)-128/3*B/b^4*c^3/x^2*(c*x^2+b*x)
^(7/2)+128/3*B/b^4*c^4*(c*x^2+b*x)^(5/2)+80/3*B/b^3*c^4*(c*x^2+b*x)^(3/2)*x
+40/3*B/b^2*c^3*(c*x^2+b*x)^(3/2)-10*B/b*c^3*(c*x^2+b*x)^(1/2)*x-5*B*c^2*(c
*x^2+b*x)^(1/2)+5/2*B*b*c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.98, size = 244, normalized size = 1.57

$$\frac{5}{2}Bbc^{\frac{3}{2}}\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+Ac^{\frac{5}{2}}\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-\frac{35\sqrt{cx^2+bx}\,Bbc}{6\,x}-\frac{38\sqrt{cx^2+bx}\,Ac^2}{15\,x}-\frac{5\sqrt{cx^2+bx}\,Bb^2}{6\,x^2}-\frac{7\sqrt{cx^2+bx}\,Abc}{30\,x^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{6\,x^3}+\frac{3\sqrt{cx^2+bx}\,Ab^2}{10\,x^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ac}{3\,x^3}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{x^4}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{2\,x^4}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] 5/2*B*b*c^(3/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + A*c^(5/2)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 35/6*sqrt(c*x^2 + b*x)*B*b*c/x
 - 38/15*sqrt(c*x^2 + b*x)*A*c^2/x - 5/6*sqrt(c*x^2 + b*x)*B*b^2/x^2 - 7/30
*sqrt(c*x^2 + b*x)*A*b*c/x^2 - 5/6*(c*x^2 + b*x)^(3/2)*B*b/x^3 + 3/10*sqrt(
c*x^2 + b*x)*A*b^2/x^3 - 1/3*(c*x^2 + b*x)^(3/2)*A*c/x^3 + (c*x^2 + b*x)^(5
/2)*B/x^4 - 1/2*(c*x^2 + b*x)^(3/2)*A*b/x^4 - 1/5*(c*x^2 + b*x)^(5/2)*A/x^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^6,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**6,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**6, x)
```

3.103 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=119

$$-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+2Bc^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2Bc^2\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}$$

Rubi [A] time = 0.14, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 662, 620, 206}

$$-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}-\frac{2Bc^2\sqrt{bx+cx^2}}{x}+2Bc^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (-2*B*c^2*Sqrt[b*x + c*x^2])/x - (2*B*c*(b*x + c*x^2)^(3/2))/(3*x^3) - (2*B
*(b*x + c*x^2)^(5/2))/(5*x^5) - (2*A*(b*x + c*x^2)^(7/2))/(7*b*x^7) + 2*B*c
^(5/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^7}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7} + B\int \frac{\left(bx+cx^2\right)^{5/2}}{x^6}\,dx \\
&= -\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5} - \frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7} + (Bc)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^4}\,dx \\
&= -\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5} - \frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7} + \left(Bc^2\right)\int \frac{\sqrt{bx+c}}{x^2} \\
&= -\frac{2Bc^2\sqrt{bx+cx^2}}{x} - \frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5} - \frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7} + \\
&= -\frac{2Bc^2\sqrt{bx+cx^2}}{x} - \frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5} - \frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7} + \\
&= -\frac{2Bc^2\sqrt{bx+cx^2}}{x} - \frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3} - \frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5} - \frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7} +
\end{aligned}
$$

Mathematica [C] time = 0.06, size = 83, normalized size = 0.70

$$
\frac{2(x(b+cx))^{5/2}\left((b+cx)^3(bB-Ac)-\frac{b^4B\,{}_2F_1\left(-\frac{7}{2},-\frac{7}{2};-\frac{5}{2};-\frac{cx}{b}\right)}{\sqrt{\frac{cx}{b}+1}}\right)}{7bcx^6(b+cx)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*((b*B - A*c)*(b + c*x)^3 - (b^4*B*Hypergeometric2F1[
-7/2, -7/2, -5/2, -((c*x)/b)])/Sqrt[1 + (c*x)/b]))/(7*b*c*x^6*(b + c*x)^2)
```

IntegrateAlgebraic [A] time = 0.46, size = 120, normalized size = 1.01

$$
-\frac{2\sqrt{bx+cx^2}\left(15Ab^3+45Ab^2cx+45Abc^2x^2+15Ac^3x^3+21b^3Bx+77b^2Bcx^2+161bBc^2x^3\right)}{105bx^4}-Bc^{5/2}\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(15*A*b^3 + 21*b^3*B*x + 45*A*b^2*c*x + 77*b^2*B*c*x^
2 + 45*A*b*c^2*x^2 + 161*b*B*c^2*x^3 + 15*A*c^3*x^3))/(105*b*x^4) - B*c^(5/
2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]]
```

fricas [A] time = 0.43, size = 238, normalized size = 2.00

$$
\left[\frac{105\,Bbc^{\frac{5}{2}}x^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(15Ab^3+\left(161Bbc^2+15Ac^3\right)x^3+\left(77Bb^2c+45Abc^2\right)x^2+3\left(7Bb^3+15Ab^2c\right)x\right)\sqrt{cx^2+bx}}{105\,bx^4},\ -\frac{2\left(105\,Bb\sqrt{-c}\,c^2x^4\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(15Ab^3+\left(161Bbc^2+15Ac^3\right)x^3+\left(77Bb^2c+45Abc^2\right)x^2+3\left(7Bb^3+15Ab^2c\right)x\right)\sqrt{cx^2+bx}\right)}{105\,bx^4}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/105*(105*B*b*c^(5/2)*x^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) -
2*(15*A*b^3 + (161*B*b*c^2 + 15*A*c^3)*x^3 + (77*B*b^2*c + 45*A*b*c^2)*x^2
+ 3*(7*B*b^3 + 15*A*b^2*c)*x)*sqrt(c*x^2 + b*x))/(b*x^4), -2/105*(105*B*b*s
qrt(-c)*c^2*x^4*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (15*A*b^3 + (161
*B*b*c^2 + 15*A*c^3)*x^3 + (77*B*b^2*c + 45*A*b*c^2)*x^2 + 3*(7*B*b^3 + 15*
A*b^2*c)*x)*sqrt(c*x^2 + b*x))/(b*x^4)]
```

giac [B] time = 0.27, size = 390, normalized size = 3.28

$$-Bc^{\frac{5}{2}}\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)+\frac{2\left(315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bbc^{\frac{5}{2}}+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ac^{\frac{7}{2}}+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^2c^2+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Abc^3+245\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^3c^{\frac{3}{2}}+525\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^2c^{\frac{5}{2}}+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^4c+525\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^3c^2+21\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^5\sqrt{c}+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^4c^{\frac{3}{2}}+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^5c+15Ab^6\sqrt{c}\right)}{105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] -B*c^(5/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b)) + 2/105
*(315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b*c^(5/2) + 105*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^6*A*c^(7/2) + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^
2 + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^3 + 245*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^4*B*b^3*c^(3/2) + 525*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*
c^(5/2) + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*c + 525*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*A*b^3*c^2 + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5
*sqrt(c) + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c^(3/2) + 105*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*A*b^5*c + 15*A*b^6*sqrt(c))/((sqrt(c)*x - sqrt(c*
x^2 + b*x))^7*sqrt(c))
```

maple [B] time = 0.06, size = 263, normalized size = 2.21

$$Bc^{\frac{5}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)-\frac{4\sqrt{cx^2+bx}\,Bc^4x}{b^2}-\frac{2\sqrt{cx^2+bx}\,Bc^3}{b}+\frac{32\left(cx^2+bx\right)^{\frac{3}{2}}Bc^5x}{3b^4}+\frac{16\left(cx^2+bx\right)^{\frac{3}{2}}Bc^4}{3b^3}+\frac{256\left(cx^2+bx\right)^{\frac{5}{2}}Bc^5}{15b^5}-\frac{256\left(cx^2+bx\right)^{\frac{7}{2}}Bc^4}{15b^5x^2}+\frac{32\left(cx^2+bx\right)^{\frac{7}{2}}Bc^3}{5b^4x^3}-\frac{16\left(cx^2+bx\right)^{\frac{7}{2}}Bc^2}{15b^3x^4}-\frac{4\left(cx^2+bx\right)^{\frac{7}{2}}Bc}{15b^2x^5}-\frac{2\left(cx^2+bx\right)^{\frac{7}{2}}B}{5bx^6}-\frac{2\left(cx^2+bx\right)^{\frac{7}{2}}A}{7bx^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x)
```

```
[Out] -2/5*B/b/x^6*(c*x^2+b*x)^(7/2)-4/15*B/b^2*c/x^5*(c*x^2+b*x)^(7/2)-16/15*B/b
^3*c^2/x^4*(c*x^2+b*x)^(7/2)+32/5*B/b^4*c^3/x^3*(c*x^2+b*x)^(7/2)-256/15*B/
b^5*c^4/x^2*(c*x^2+b*x)^(7/2)+256/15*B/b^5*c^5*(c*x^2+b*x)^(5/2)+32/3*B/b^4
*c^5*(c*x^2+b*x)^(3/2)*x+16/3*B/b^3*c^4*(c*x^2+b*x)^(3/2)-4*B/b^2*c^4*(c*x^
2+b*x)^(1/2)*x-2*B/b*c^3*(c*x^2+b*x)^(1/2)+B*c^(5/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x)^(1/2))-2/7*A*(c*x^2+b*x)^(7/2)/b/x^7
```

maxima [B] time = 0.91, size = 258, normalized size = 2.17

$$Bc^{\frac{5}{2}}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-\frac{38\sqrt{cx^2+bx}\,Bc^2}{15x}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{7bx}-\frac{7\sqrt{cx^2+bx}\,Bbc}{30x^2}+\frac{\sqrt{cx^2+bx}\,Ac^2}{7x^2}+\frac{3\sqrt{cx^2+bx}\,Bb^2}{10x^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bc}{3x^3}-\frac{3\sqrt{cx^2+bx}\,Abc}{28x^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{2x^4}-\frac{15\sqrt{cx^2+bx}\,Ab^2}{28x^4}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{5x^5}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{4x^5}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] B*c^(5/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 38/15*sqrt(c*x^2 +
 b*x)*B*c^2/x - 2/7*sqrt(c*x^2 + b*x)*A*c^3/(b*x) - 7/30*sqrt(c*x^2 + b*x)*
B*b*c/x^2 + 1/7*sqrt(c*x^2 + b*x)*A*c^2/x^2 + 3/10*sqrt(c*x^2 + b*x)*B*b^2/
x^3 - 1/3*(c*x^2 + b*x)^(3/2)*B*c/x^3 - 3/28*sqrt(c*x^2 + b*x)*A*b*c/x^3 -
1/2*(c*x^2 + b*x)^(3/2)*B*b/x^4 - 15/28*sqrt(c*x^2 + b*x)*A*b^2/x^4 - 1/5*(
c*x^2 + b*x)^(5/2)*B/x^5 + 5/4*(c*x^2 + b*x)^(3/2)*A*b/x^5 - (c*x^2 + b*x)^
(5/2)*A/x^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^7,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**7,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**7, x)
```

3.104 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^8} \, dx$

Optimal. Leaf size=57

$$-\frac{2\left(bx+cx^2\right)^{7/2}(9bB-2Ac)}{63b^2x^7}-\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}$$

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\left(bx+cx^2\right)^{7/2}(9bB-2Ac)}{63b^2x^7}-\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(9*b*x^8) - (2*(9*b*B - 2*A*c)*(b*x + c*x^2)^(7/
2))/(63*b^2*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^8} \, dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}+\frac{\left(2\left(-8(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^7} \, dx}{9b}\\ &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}-\frac{2(9bB-2Ac)\left(bx+cx^2\right)^{7/2}}{63b^2x^7}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.75

$$-\frac{2(b+cx)^3\sqrt{x(b+cx)}(7Ab-2Acx+9bBx)}{63b^2x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(7*A*b + 9*b*B*x - 2*A*c*x))/(63*b^2*x^5)
```

IntegrateAlgebraic [A] time = 0.41, size = 108, normalized size = 1.89

$$\frac{2\sqrt{bx+cx^2}\left(-7Ab^4-19Ab^3cx-15Ab^2c^2x^2-Abc^3x^3+2Ac^4x^4-9b^4Bx-27b^3Bcx^2-27b^2Bc^2x^3-9bBc^3x^4\right)}{63b^2x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-7*A*b^4 - 9*b^4*B*x - 19*A*b^3*c*x - 27*b^3*B*c*x^2
- 15*A*b^2*c^2*x^2 - 27*b^2*B*c^2*x^3 - A*b*c^3*x^3 - 9*b*B*c^3*x^4 + 2*A*c
^4*x^4))/(63*b^2*x^5)
```

fricas [B] time = 0.40, size = 102, normalized size = 1.79

$$-\frac{2\left(7\,Ab^4+\left(9\,Bbc^3-2\,Ac^4\right)x^4+\left(27\,Bb^2c^2+Abc^3\right)x^3+3\left(9\,Bb^3c+5\,Ab^2c^2\right)x^2+\left(9\,Bb^4+19\,Ab^3c\right)x\right)\sqrt{cx^2+bx}}{63\,b^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] -2/63*(7*A*b^4 + (9*B*b*c^3 - 2*A*c^4)*x^4 + (27*B*b^2*c^2 + A*b*c^3)*x^3 +
 3*(9*B*b^3*c + 5*A*b^2*c^2)*x^2 + (9*B*b^4 + 19*A*b^3*c)*x)*sqrt(c*x^2 + b
*x)/(b^2*x^5)
```

giac [B] time = 0.23, size = 431, normalized size = 7.56

$$\frac{2\left(63\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bc^3+189\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bbc^{\frac{5}{2}}+63\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Ac^{\frac{7}{2}}+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^2c^2+273\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Abc^3+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^3c^{\frac{3}{2}}+567\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^2c^{\frac{5}{2}}+189\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^4c+693\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^3c^2+63\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^5\sqrt{c}+525\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^4c^{\frac{3}{2}}+9\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^6+243\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^5c+63\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^6\sqrt{c}+7\,Ab^7\right)}{63\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] 2/63*(63*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^3 + 189*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^7*B*b*c^(5/2) + 63*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*c^(7/2)
+ 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^2 + 273*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^6*A*b*c^3 + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^(3/2
) + 567*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c^(5/2) + 189*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^4*B*b^4*c + 693*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*
c^2 + 63*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*sqrt(c) + 525*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^3*A*b^4*c^(3/2) + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^6 + 243*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c + 63*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*A*b^6*sqrt(c) + 7*A*b^7)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
```

maple [A] time = 0.04, size = 40, normalized size = 0.70

$$-\frac{2\,(cx+b)\,(-2Acx+9Bbx+7Ab)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{63b^2x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x)
```

```
[Out] -2/63*(c*x+b)*(-2*A*c*x+9*B*b*x+7*A*b)*(c*x^2+b*x)^(5/2)/b^2/x^7
```

maxima [B] time = 1.00, size = 258, normalized size = 4.53

$$-\frac{2\sqrt{cx^2+bx}\,Bc^3}{7\,bx}+\frac{4\sqrt{cx^2+bx}\,Ac^4}{63\,b^2x}+\frac{\sqrt{cx^2+bx}\,Bc^2}{7\,x^2}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{63\,bx^2}-\frac{3\sqrt{cx^2+bx}\,Bbc}{28\,x^3}+\frac{\sqrt{cx^2+bx}\,Ac^2}{42\,x^3}-\frac{15\sqrt{cx^2+bx}\,Bb^2}{28\,x^4}-\frac{5\sqrt{cx^2+bx}\,Abc}{252\,x^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{4\,x^5}-\frac{5\sqrt{cx^2+bx}\,Ab^2}{36\,x^5}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{x^6}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{12\,x^6}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{2\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] -2/7*sqrt(c*x^2 + b*x)*B*c^3/(b*x) + 4/63*sqrt(c*x^2 + b*x)*A*c^4/(b^2*x) +
 1/7*sqrt(c*x^2 + b*x)*B*c^2/x^2 - 2/63*sqrt(c*x^2 + b*x)*A*c^3/(b*x^2) - 3
/28*sqrt(c*x^2 + b*x)*B*b*c/x^3 + 1/42*sqrt(c*x^2 + b*x)*A*c^2/x^3 - 15/28*
sqrt(c*x^2 + b*x)*B*b^2/x^4 - 5/252*sqrt(c*x^2 + b*x)*A*b*c/x^4 + 5/4*(c*x^
2 + b*x)^(3/2)*B*b/x^5 - 5/36*sqrt(c*x^2 + b*x)*A*b^2/x^5 - (c*x^2 + b*x)^(
5/2)*B/x^6 + 5/12*(c*x^2 + b*x)^(3/2)*A*b/x^6 - 1/2*(c*x^2 + b*x)^(5/2)*A/x
^7
```

mupad [B] time = 2.89, size = 188, normalized size = 3.30

$$\frac{4\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{63\,b^2\,x}-\frac{10\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{21\,x^3}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{6\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{7\,x^2}-\frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^2}-\frac{2\,A\,b^2\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{2\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{7\,b\,x}-\frac{38\,A\,b\,c\,\sqrt{c\,x^2+b\,x}}{63\,x^4}-\frac{6\,B\,b\,c\,\sqrt{c\,x^2+b\,x}}{7\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^8,x)
```

```
[Out] (4*A*c^4*(b*x + c*x^2)^(1/2))/(63*b^2*x) - (10*A*c^2*(b*x + c*x^2)^(1/2))/(
21*x^3) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(7*x^4) - (6*B*c^2*(b*x + c*x^2)^(1
/2))/(7*x^2) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(63*b*x^2) - (2*A*b^2*(b*x + c
*x^2)^(1/2))/(9*x^5) - (2*B*c^3*(b*x + c*x^2)^(1/2))/(7*b*x) - (38*A*b*c*(b
*x + c*x^2)^(1/2))/(63*x^4) - (6*B*b*c*(b*x + c*x^2)^(1/2))/(7*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**8,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**8, x)
```

3.105 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=90

$$\frac{4c\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{693b^3x^7}-\frac{2\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{99b^2x^8}-\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}$$

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{693b^3x^7}-\frac{2\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{99b^2x^8}-\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(11*b*x^9) - (2*(11*b*B - 4*A*c)*(b*x + c*x^2)^(
7/2))/(99*b^2*x^8) + (4*c*(11*b*B - 4*A*c)*(b*x + c*x^2)^(7/2))/(693*b^3*x^
7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^9}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9} + \frac{\left(2\left(-9(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^8}\,dx}{11b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9} - \frac{2(11bB-4Ac)\left(bx+cx^2\right)^{7/2}}{99b^2x^8} - \frac{(2c(11bB-4Ac))\int \frac{\left(bx+cx^2\right)^{5/2}}{x^7}}{99b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9} - \frac{2(11bB-4Ac)\left(bx+cx^2\right)^{7/2}}{99b^2x^8} + \frac{4c(11bB-4Ac)\left(bx+cx^2\right)^{7/2}}{693b^3x^7}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 0.70

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(A\left(-63b^2+28bcx-8c^2x^2\right)+11bBx(2cx-7b)\right)}{693b^3x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(11*b*B*x*(-7*b + 2*c*x) + A*(-63*b^2 + 28
*b*c*x - 8*c^2*x^2)))/(693*b^3*x^6)
```

IntegrateAlgebraic [A] time = 0.47, size = 132, normalized size = 1.47

$$-\frac{2\sqrt{bx+cx^2}\left(63Ab^5+161Ab^4cx+113Ab^3c^2x^2+3Ab^2c^3x^3-4Abc^4x^4+8Ac^5x^5+77b^5Bx+209b^4Bcx^2+165b^3Bc^2x^3+11b^2Bc^3x^4-22bBc^4x^5\right)}{693b^3x^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(63*A*b^5 + 77*b^5*B*x + 161*A*b^4*c*x + 209*b^4*B*c*
x^2 + 113*A*b^3*c^2*x^2 + 165*b^3*B*c^2*x^3 + 3*A*b^2*c^3*x^3 + 11*b^2*B*c^
3*x^4 - 4*A*b*c^4*x^4 - 22*b*B*c^4*x^5 + 8*A*c^5*x^5))/(693*b^3*x^6)
```

fricas [A] time = 0.41, size = 127, normalized size = 1.41

$$-\frac{2\left(63\,Ab^5-2\left(11\,Bbc^4-4\,Ac^5\right)x^5+\left(11\,Bb^2c^3-4\,Abc^4\right)x^4+3\left(55\,Bb^3c^2+Ab^2c^3\right)x^3+\left(209\,Bb^4c+113\,Ab^3c^2\right)x^2+7\left(11\,Bb^5+23\,Ab^4c\right)x\right)\sqrt{cx^2+bx}}{693\,b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] -2/693*(63*A*b^5 - 2*(11*B*b*c^4 - 4*A*c^5)*x^5 + (11*B*b^2*c^3 - 4*A*b*c^4
)*x^4 + 3*(55*B*b^3*c^2 + A*b^2*c^3)*x^3 + (209*B*b^4*c + 113*A*b^3*c^2)*x^
2 + 7*(11*B*b^5 + 23*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^3*x^6)
```

giac [B] time = 0.22, size = 491, normalized size = 5.46

$$\frac{2\left(693\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9Bc^{\frac{7}{2}}+3003\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bbc^3+924\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Ac^4+6237\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bb^2c^{\frac{5}{2}}+4851\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Abc^{\frac{7}{2}}+7623\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^3c^2+11781\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ab^2c^3+5775\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^4c^{\frac{3}{2}}+16863\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^3c^{\frac{5}{2}}+2673\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^5c+15345\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^4c^2+693\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^6\sqrt{c}+9009\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^5c^{\frac{3}{2}}+77\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^7+3311\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^6c+693\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^7\sqrt{c}+63\,Ab^8\right)}{693\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] 2/693*(693*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^(7/2) + 3003*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^8*B*b*c^3 + 924*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*c^4
+ 6237*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^(5/2) + 4851*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^7*A*b*c^(7/2) + 7623*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B
*b^3*c^2 + 11781*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^3 + 5775*(sqrt(c
```

```
)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^(3/2) + 16863*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^5*A*b^3*c^(5/2) + 2673*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^5*c + 15
345*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^2 + 693*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^3*B*b^6*sqrt(c) + 9009*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^5*c
^(3/2) + 77*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7 + 3311*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^2*A*b^6*c + 693*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^7*sqrt(
c) + 63*A*b^8)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-22Bbc\,x^2-28Abcx+77B\,b^2x+63A\,b^2\right)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{693b^3x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x)
```

```
[Out] -2/693*(c*x+b)*(8*A*c^2*x^2-22*B*b*c*x^2-28*A*b*c*x+77*B*b^2*x+63*A*b^2)*(c
*x^2+b*x)^(5/2)/b^3/x^8
```

maxima [B] time = 0.97, size = 304, normalized size = 3.38

$$\frac{4\sqrt{cx^2+bx}\,Bc^4}{63\,b^2x}-\frac{16\sqrt{cx^2+bx}\,Ac^5}{693\,b^3x}-\frac{2\sqrt{cx^2+bx}\,Bc^3}{63\,bx^2}+\frac{8\sqrt{cx^2+bx}\,Ac^4}{693\,b^2x^2}+\frac{\sqrt{cx^2+bx}\,Bc^2}{42\,x^3}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{231\,bx^3}-\frac{5\sqrt{cx^2+bx}\,Bbc}{252\,x^4}+\frac{5\sqrt{cx^2+bx}\,Ac^2}{693\,x^4}-\frac{5\sqrt{cx^2+bx}\,Bb^2}{36\,x^5}-\frac{5\sqrt{cx^2+bx}\,Abc}{792\,x^5}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{12\,x^6}-\frac{5\sqrt{cx^2+bx}\,Ab^2}{88\,x^6}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{2\,x^7}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{24\,x^7}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{3\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] 4/63*sqrt(c*x^2 + b*x)*B*c^4/(b^2*x) - 16/693*sqrt(c*x^2 + b*x)*A*c^5/(b^3*
x) - 2/63*sqrt(c*x^2 + b*x)*B*c^3/(b*x^2) + 8/693*sqrt(c*x^2 + b*x)*A*c^4/(
b^2*x^2) + 1/42*sqrt(c*x^2 + b*x)*B*c^2/x^3 - 2/231*sqrt(c*x^2 + b*x)*A*c^3
/(b*x^3) - 5/252*sqrt(c*x^2 + b*x)*B*b*c/x^4 + 5/693*sqrt(c*x^2 + b*x)*A*c^
2/x^4 - 5/36*sqrt(c*x^2 + b*x)*B*b^2/x^5 - 5/792*sqrt(c*x^2 + b*x)*A*b*c/x^
5 + 5/12*(c*x^2 + b*x)^(3/2)*B*b/x^6 - 5/88*sqrt(c*x^2 + b*x)*A*b^2/x^6 - 1
/2*(c*x^2 + b*x)^(5/2)*B/x^7 + 5/24*(c*x^2 + b*x)^(3/2)*A*b/x^7 - 1/3*(c*x^
2 + b*x)^(5/2)*A/x^8
```

mupad [B] time = 3.46, size = 234, normalized size = 2.60

$$\frac{8\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{693\,b^2\,x^2}-\frac{226\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{693\,x^4}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{10\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{21\,x^3}-\frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{231\,b\,x^3}-\frac{2\,A\,b^2\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{16\,A\,c^5\,\sqrt{c\,x^2+b\,x}}{693\,b^3\,x}-\frac{2\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^2}+\frac{4\,B\,c^4\,\sqrt{c\,x^2+b\,x}}{63\,b^2\,x}-\frac{46\,A\,b\,c\,\sqrt{c\,x^2+b\,x}}{99\,x^5}-\frac{38\,B\,b\,c\,\sqrt{c\,x^2+b\,x}}{63\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^9,x)
```

```
[Out] (8*A*c^4*(b*x + c*x^2)^(1/2))/(693*b^2*x^2) - (226*A*c^2*(b*x + c*x^2)^(1/2
))/(693*x^4) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(9*x^5) - (10*B*c^2*(b*x + c*x
^2)^(1/2))/(21*x^3) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(231*b*x^3) - (2*A*b^2*
(b*x + c*x^2)^(1/2))/(11*x^6) - (16*A*c^5*(b*x + c*x^2)^(1/2))/(693*b^3*x)
- (2*B*c^3*(b*x + c*x^2)^(1/2))/(63*b*x^2) + (4*B*c^4*(b*x + c*x^2)^(1/2))/
(63*b^2*x) - (46*A*b*c*(b*x + c*x^2)^(1/2))/(99*x^5) - (38*B*b*c*(b*x + c*x
^2)^(1/2))/(63*x^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\,(b+cx)\right)^{\frac{5}{2}}\,(A+Bx)}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**9,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**9, x)
```

3.106 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{9009b^4x^7}+\frac{8c\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{1287b^3x^8}-\frac{2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{143b^2x^9}-\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}}$$

Rubi [A] time = 0.12, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{9009b^4x^7}+\frac{8c\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{1287b^3x^8}-\frac{2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{143b^2x^9}-\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(13*b*x^10) - (2*(13*b*B - 6*A*c)*(b*x + c*x^2)^
(7/2))/(143*b^2*x^9) + (8*c*(13*b*B - 6*A*c)*(b*x + c*x^2)^(7/2))/(1287*b^3
*x^8) - (16*c^2*(13*b*B - 6*A*c)*(b*x + c*x^2)^(7/2))/(9009*b^4*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{10}}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} + \frac{\left(2\left(-10(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^9}\,dx}{13b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} - \frac{2(13bB-6Ac)\left(bx+cx^2\right)^{7/2}}{143b^2x^9} - \frac{(4c(13bB-6Ac))\int \frac{(bx+cx}{x^8}}{143b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} - \frac{2(13bB-6Ac)\left(bx+cx^2\right)^{7/2}}{143b^2x^9} + \frac{8c(13bB-6Ac)\left(bx+cx^2\right.}{1287b^3x^8}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} - \frac{2(13bB-6Ac)\left(bx+cx^2\right)^{7/2}}{143b^2x^9} + \frac{8c(13bB-6Ac)\left(bx+cx^2\right.}{1287b^3x^8}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.69

$$-\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(3A\left(231b^3-126b^2cx+56bc^2x^2-16c^3x^3\right)+13bBx\left(63b^2-28bcx+8c^2x^2\right)\right)}{9009b^4x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(13*b*B*x*(63*b^2 - 28*b*c*x + 8*c^2*x^2)
 + 3*A*(231*b^3 - 126*b^2*c*x + 56*b*c^2*x^2 - 16*c^3*x^3)))/(9009*b^4*x^7)
```

IntegrateAlgebraic [A] time = 0.50, size = 156, normalized size = 1.25

$$\frac{2\sqrt{bx+cx^2}\left(-693Ab^6-1701Ab^5cx-1113Ab^4c^2x^2-15Ab^3c^3x^3+18Ab^2c^4x^4-24Abc^5x^5+48Ac^6x^6-819b^6Bx-2093b^5Bcx^2-1469b^4Bc^2x^3-39b^3Bc^3x^4+52b^2Bc^4x^5-104bBc^5x^6\right)}{9009b^4x^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-693*A*b^6 - 819*b^6*B*x - 1701*A*b^5*c*x - 2093*b^5*
B*c*x^2 - 1113*A*b^4*c^2*x^2 - 1469*b^4*B*c^2*x^3 - 15*A*b^3*c^3*x^3 - 39*b
^3*B*c^3*x^4 + 18*A*b^2*c^4*x^4 + 52*b^2*B*c^4*x^5 - 24*A*b*c^5*x^5 - 104*b
*B*c^5*x^6 + 48*A*c^6*x^6))/(9009*b^4*x^7)
```

fricas [A] time = 0.40, size = 153, normalized size = 1.22

$$-\frac{2\left(693\,Ab^6+8\left(13\,Bbc^5-6\,Ac^6\right)x^6-4\left(13\,Bb^2c^4-6\,Abc^5\right)x^5+3\left(13\,Bb^3c^3-6\,Ab^2c^4\right)x^4+\left(1469\,Bb^4c^2+15\,Ab^3c^3\right)x^3+7\left(299\,Bb^5c+159\,Ab^4c^2\right)x^2+63\left(13\,Bb^6+27\,Ab^5c\right)x\right)\sqrt{cx^2+bx}}{9009\,b^4x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] -2/9009*(693*A*b^6 + 8*(13*B*b*c^5 - 6*A*c^6)*x^6 - 4*(13*B*b^2*c^4 - 6*A*b
*c^5)*x^5 + 3*(13*B*b^3*c^3 - 6*A*b^2*c^4)*x^4 + (1469*B*b^4*c^2 + 15*A*b^3
*c^3)*x^3 + 7*(299*B*b^5*c + 159*A*b^4*c^2)*x^2 + 63*(13*B*b^6 + 27*A*b^5*c
)*x)*sqrt(c*x^2 + b*x)/(b^4*x^7)
```

giac [B] time = 0.24, size = 551, normalized size = 4.41

$$\frac{2\left(12012\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{10}Bc^4+63063\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9Bbc^{\frac{7}{2}}+18018\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9Ac^{\frac{9}{2}}+153153\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bb^2c^3+108108\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Abc^4+219219\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bb^3c^{\frac{5}{2}}+297297\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Ab^2c^{\frac{7}{2}}+199485\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^4c^2+485199\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ab^3c^3+117117\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^5c^{\frac{3}{2}}+513513\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^4c^{\frac{5}{2}}+43043\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^6c+363363\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^5c^2+9009\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^7\sqrt{c}+171171\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^6c^{\frac{3}{2}}+819\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^8+51597\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^7c+9009\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^8\sqrt{c}+693\,Ab^9\right)}{9009\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] 2/9009*(12012*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^4 + 63063*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^9*B*b*c^(7/2) + 18018*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
*A*c^(9/2) + 153153*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^2*c^3 + 108108*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b*c^4 + 219219*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^7*B*b^3*c^(5/2) + 297297*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^2*c^(7
/2) + 199485*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^4*c^2 + 485199*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^6*A*b^3*c^3 + 117117*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^5*B*b^5*c^(3/2) + 513513*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^4*c^(5/2) +
 43043*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c + 363363*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*A*b^5*c^2 + 9009*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^7*s
qrt(c) + 171171*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^(3/2) + 819*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^2*B*b^8 + 51597*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
2*A*b^7*c + 9009*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*sqrt(c) + 693*A*b^9)
/(sqrt(c)*x - sqrt(c*x^2 + b*x))^13
```

maple [A] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-48A\,c^3x^3+104Bb\,c^2x^3+168Ab\,c^2x^2-364B\,b^2c\,x^2-378A\,b^2cx+819B\,b^3x+693A\,b^3\right)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{9009b^4x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x)
```

```
[Out] -2/9009*(c*x+b)*(-48*A*c^3*x^3+104*B*b*c^2*x^3+168*A*b*c^2*x^2-364*B*b^2*c*
x^2-378*A*b^2*c*x+819*B*b^3*x+693*A*b^3)*(c*x^2+b*x)^(5/2)/x^9/b^4
```

maxima [B] time = 0.94, size = 350, normalized size = 2.80

$$-\frac{16\sqrt{cx^2+bx}\,Bc^5}{693\,b^3x}+\frac{32\sqrt{cx^2+bx}\,Ac^6}{3003\,b^4x}+\frac{8\sqrt{cx^2+bx}\,Bc^4}{693\,b^2x^2}-\frac{16\sqrt{cx^2+bx}\,Ac^5}{3003\,b^3x^2}-\frac{2\sqrt{cx^2+bx}\,Bc^3}{231\,bx^3}+\frac{4\sqrt{cx^2+bx}\,Ac^4}{1001\,b^2x^3}+\frac{5\sqrt{cx^2+bx}\,Bc^2}{693\,x^4}-\frac{10\sqrt{cx^2+bx}\,Ac^3}{3003\,bx^4}-\frac{5\sqrt{cx^2+bx}\,Bbc}{792\,x^5}+\frac{5\sqrt{cx^2+bx}\,Ac^2}{1716\,x^5}-\frac{5\sqrt{cx^2+bx}\,Bb^2}{88\,x^6}-\frac{3\sqrt{cx^2+bx}\,Abc}{1144\,x^6}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{24\,x^7}-\frac{3\sqrt{cx^2+bx}\,Ab^2}{104\,x^7}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{3\,x^8}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{8\,x^8}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{4\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] -16/693*sqrt(c*x^2 + b*x)*B*c^5/(b^3*x) + 32/3003*sqrt(c*x^2 + b*x)*A*c^6/(
b^4*x) + 8/693*sqrt(c*x^2 + b*x)*B*c^4/(b^2*x^2) - 16/3003*sqrt(c*x^2 + b*x
)*A*c^5/(b^3*x^2) - 2/231*sqrt(c*x^2 + b*x)*B*c^3/(b*x^3) + 4/1001*sqrt(c*x
^2 + b*x)*A*c^4/(b^2*x^3) + 5/693*sqrt(c*x^2 + b*x)*B*c^2/x^4 - 10/3003*sqr
t(c*x^2 + b*x)*A*c^3/(b*x^4) - 5/792*sqrt(c*x^2 + b*x)*B*b*c/x^5 + 5/1716*s
qrt(c*x^2 + b*x)*A*c^2/x^5 - 5/88*sqrt(c*x^2 + b*x)*B*b^2/x^6 - 3/1144*sqrt
(c*x^2 + b*x)*A*b*c/x^6 + 5/24*(c*x^2 + b*x)^(3/2)*B*b/x^7 - 3/104*sqrt(c*x
^2 + b*x)*A*b^2/x^7 - 1/3*(c*x^2 + b*x)^(5/2)*B/x^8 + 1/8*(c*x^2 + b*x)^(3/
2)*A*b/x^8 - 1/4*(c*x^2 + b*x)^(5/2)*A/x^9
```

mupad [B] time = 4.09, size = 280, normalized size = 2.24

$$\frac{4\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{1001\,b^2\,x^3}-\frac{106\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{429\,x^5}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{226\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{693\,x^4}-\frac{10\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{3003\,b\,x^4}-\frac{2\,A\,b^2\,\sqrt{c\,x^2+b\,x}}{13\,x^7}-\frac{16\,A\,c^5\,\sqrt{c\,x^2+b\,x}}{3003\,b^3\,x^2}+\frac{32\,A\,c^6\,\sqrt{c\,x^2+b\,x}}{3003\,b^4\,x}-\frac{2\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{231\,b\,x^3}+\frac{8\,B\,c^4\,\sqrt{c\,x^2+b\,x}}{693\,b^2\,x^2}-\frac{16\,B\,c^5\,\sqrt{c\,x^2+b\,x}}{693\,b^3\,x}-\frac{54\,A\,b\,c\,\sqrt{c\,x^2+b\,x}}{143\,x^6}-\frac{46\,B\,b\,c\,\sqrt{c\,x^2+b\,x}}{99\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^10,x)
```

```
[Out] (4*A*c^4*(b*x + c*x^2)^(1/2))/(1001*b^2*x^3) - (106*A*c^2*(b*x + c*x^2)^(1/
2))/(429*x^5) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(11*x^6) - (226*B*c^2*(b*x +
c*x^2)^(1/2))/(693*x^4) - (10*A*c^3*(b*x + c*x^2)^(1/2))/(3003*b*x^4) - (2*
A*b^2*(b*x + c*x^2)^(1/2))/(13*x^7) - (16*A*c^5*(b*x + c*x^2)^(1/2))/(3003*
b^3*x^2) + (32*A*c^6*(b*x + c*x^2)^(1/2))/(3003*b^4*x) - (2*B*c^3*(b*x + c*
x^2)^(1/2))/(231*b*x^3) + (8*B*c^4*(b*x + c*x^2)^(1/2))/(693*b^2*x^2) - (16
*B*c^5*(b*x + c*x^2)^(1/2))/(693*b^3*x) - (54*A*b*c*(b*x + c*x^2)^(1/2))/(1
43*x^6) - (46*B*b*c*(b*x + c*x^2)^(1/2))/(99*x^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**10,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**10, x)
```

3.107 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11}}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{45045b^5x^7}-\frac{16c^2\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{6435b^4x^8}+\frac{4c\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{715b^3x^9}-\frac{2\left(bx+cx^2\right)^{7/2}}{195b\ldots}$$

Rubi [A] time = 0.16, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$\frac{32c^3\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{45045b^5x^7}-\frac{16c^2\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{6435b^4x^8}+\frac{4c\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{715b^3x^9}-\frac{2\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{195b^2x^{10}}-\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^11,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(15*b*x^11) - (2*(15*b*B - 8*A*c)*(b*x + c*x^2)^
(7/2))/(195*b^2*x^10) + (4*c*(15*b*B - 8*A*c)*(b*x + c*x^2)^(7/2))/(715*b^3
*x^9) - (16*c^2*(15*b*B - 8*A*c)*(b*x + c*x^2)^(7/2))/(6435*b^4*x^8) + (32*
c^3*(15*b*B - 8*A*c)*(b*x + c*x^2)^(7/2))/(45045*b^5*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11}}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} + \frac{\left(2\left(-11(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{10}}\,dx}{15b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} - \frac{(2c(15bB-8Ac))\int \frac{\left(bx+cx\right.}{x^9}}{65b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} + \frac{4c(15bB-8Ac)\left(bx+cx^2\right.}{715b^3x^9}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} + \frac{4c(15bB-8Ac)\left(bx+cx^2\right.}{715b^3x^9}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} + \frac{4c(15bB-8Ac)\left(bx+cx^2\right.}{715b^3x^9}$$

Mathematica [A] time = 0.03, size = 107, normalized size = 0.67

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(A\left(-3003b^4+1848b^3cx-1008b^2c^2x^2+448bc^3x^3-128c^4x^4\right)+15bBx\left(-231b^3+126b^2cx-56bc^2x^2+16c^3x^3\right)\right)}{45045b^5x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^11,x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(15*b*B*x*(-231*b^3 + 126*b^2*c*x - 56*b*c
^2*x^2 + 16*c^3*x^3) + A*(-3003*b^4 + 1848*b^3*c*x - 1008*b^2*c^2*x^2 + 448
*b*c^3*x^3 - 128*c^4*x^4)))/(45045*b^5*x^8)
```

IntegrateAlgebraic [A] time = 0.55, size = 180, normalized size = 1.12

$$-\frac{2\sqrt{bx+cx^2}\left(3003Ab^7+7161Ab^6cx+4473Ab^5c^2x^2+35Ab^4c^3x^3-40Ab^3c^4x^4+48Ab^2c^5x^5-64Abc^6x^6+128Ac^7x^7+3465b^7Bx+8505b^6Bcx^2+5565b^5Bc^2x^3+75b^4Bc^3x^4-90b^3Bc^4x^5+120b^2Bc^5x^6-240bBc^6x^7\right)}{45045b^5x^8}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^11,x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(3003*A*b^7 + 3465*b^7*B*x + 7161*A*b^6*c*x + 8505*b^
6*B*c*x^2 + 4473*A*b^5*c^2*x^2 + 5565*b^5*B*c^2*x^3 + 35*A*b^4*c^3*x^3 + 75
*b^4*B*c^3*x^4 - 40*A*b^3*c^4*x^4 - 90*b^3*B*c^4*x^5 + 48*A*b^2*c^5*x^5 + 1
20*b^2*B*c^5*x^6 - 64*A*b*c^6*x^6 - 240*b*B*c^6*x^7 + 128*A*c^7*x^7))/(4504
5*b^5*x^8)
```

fricas [A] time = 0.40, size = 177, normalized size = 1.11

$$-\frac{2\left(3003Ab^7-16\left(15Bbc^6-8Ac^7\right)x^7+8\left(15Bb^2c^5-8Abc^6\right)x^6-6\left(15Bb^3c^4-8Ab^2c^5\right)x^5+5\left(15Bb^4c^3-8Ab^3c^4\right)x^4+35\left(159Bb^5c^2+Ab^4c^3\right)x^3+63\left(135Bb^6c+71Ab^5c^2\right)x^2+231\left(15Bb^7+31Ab^6c\right)x\right)\sqrt{cx^2+bx}}{45045b^5x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x, algorithm="fricas")
```

```
[Out] -2/45045*(3003*A*b^7 - 16*(15*B*b*c^6 - 8*A*c^7)*x^7 + 8*(15*B*b^2*c^5 - 8*
A*b*c^6)*x^6 - 6*(15*B*b^3*c^4 - 8*A*b^2*c^5)*x^5 + 5*(15*B*b^4*c^3 - 8*A*b
^3*c^4)*x^4 + 35*(159*B*b^5*c^2 + A*b^4*c^3)*x^3 + 63*(135*B*b^6*c + 71*A*b
^5*c^2)*x^2 + 231*(15*B*b^7 + 31*A*b^6*c)*x)*sqrt(c*x^2 + b*x)/(b^5*x^8)
```

giac [B] time = 0.24, size = 611, normalized size = 3.82

$$\frac{2\left(90090\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}Bc^{9/2}+540540\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{10}Bbc^4+144144\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{10}Ac^5+1486485\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9Bb^2c^{7/2}+960960\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9Abc^{9/2}+2425995\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Bb^3c^3+2934360\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^8Ab^2c^4+2567565\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Bb^4c^{5/2}+5360355\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7Ab^3c^{7/2}+1816815\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bb^5c^2+6451445\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Ab^4c^3+855855\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bb^6c^{3/2}+5324319\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ab^5c^{5/2}+257985\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^7c+3042585\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ab^6c^2+45045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^8\sqrt{c}+1186185\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^7c^{3/2}+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^9+301455\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^8c+45045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^9\sqrt{c}+3003Ab^{10}\right)}{45045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x, algorithm="giac")
```

```
[Out] 2/45045*(90090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*c^(9/2) + 540540*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^10*B*b*c^4 + 144144*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^10*A*c^5 + 1486485*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^2*c^(7/2) + 960
960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b*c^(9/2) + 2425995*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^8*B*b^3*c^3 + 2934360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*
b^2*c^4 + 2567565*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^4*c^(5/2) + 5360355
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^(7/2) + 1816815*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^6*B*b^5*c^2 + 6451445*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b
^4*c^3 + 855855*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^6*c^(3/2) + 5324319*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^5*c^(5/2) + 257985*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^4*B*b^7*c + 3042585*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^6*c^
2 + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*sqrt(c) + 1186185*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c^(3/2) + 3465*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^2*B*b^9 + 301455*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*c + 45045*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*sqrt(c) + 3003*A*b^10)/(sqrt(c)*x - sqrt
(c*x^2 + b*x))^15
```

maple [A] time = 0.05, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(128A\,c^4x^4-240Bb\,c^3x^4-448Ab\,c^3x^3+840B\,b^2c^2x^3+1008A\,b^2c^2x^2-1890B\,b^3c\,x^2-1848A\,b^3cx+3465b^4Bx+3003A\,b^4\right)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{45045b^5x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x)
```

```
[Out] -2/45045*(c*x+b)*(128*A*c^4*x^4-240*B*b*c^3*x^4-448*A*b*c^3*x^3+840*B*b^2*c
^2*x^3+1008*A*b^2*c^2*x^2-1890*B*b^3*c*x^2-1848*A*b^3*c*x+3465*B*b^4*x+3003
*A*b^4)*(c*x^2+b*x)^(5/2)/b^5/x^10
```

maxima [B] time = 0.93, size = 396, normalized size = 2.48

$$\frac{32\sqrt{cx^2+bx}\,Bc^6}{3003\,b^4x}-\frac{256\sqrt{cx^2+bx}\,Ac^7}{45045\,b^5x}-\frac{16\sqrt{cx^2+bx}\,Bc^5}{3003\,b^3x^2}+\frac{128\sqrt{cx^2+bx}\,Ac^6}{45045\,b^4x^2}+\frac{4\sqrt{cx^2+bx}\,Bc^4}{1001\,b^2x^3}-\frac{32\sqrt{cx^2+bx}\,Ac^5}{15015\,b^3x^3}-\frac{10\sqrt{cx^2+bx}\,Bc^3}{3003\,bx^4}+\frac{16\sqrt{cx^2+bx}\,Ac^4}{9009\,b^2x^4}+\frac{5\sqrt{cx^2+bx}\,Bc^2}{1716\,x^5}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{1287\,bx^5}-\frac{3\sqrt{cx^2+bx}\,Bbc}{1144\,x^6}+\frac{\sqrt{cx^2+bx}\,Ac^2}{715\,x^6}-\frac{3\sqrt{cx^2+bx}\,Bb^2}{104\,x^7}-\frac{\sqrt{cx^2+bx}\,Abc}{780\,x^7}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{8\,x^8}-\frac{\sqrt{cx^2+bx}\,Ab^2}{60\,x^8}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{4\,x^9}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{12\,x^9}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{5\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x, algorithm="maxima")
```

```
[Out] 32/3003*sqrt(c*x^2 + b*x)*B*c^6/(b^4*x) - 256/45045*sqrt(c*x^2 + b*x)*A*c^7
/(b^5*x) - 16/3003*sqrt(c*x^2 + b*x)*B*c^5/(b^3*x^2) + 128/45045*sqrt(c*x^2
 + b*x)*A*c^6/(b^4*x^2) + 4/1001*sqrt(c*x^2 + b*x)*B*c^4/(b^2*x^3) - 32/150
15*sqrt(c*x^2 + b*x)*A*c^5/(b^3*x^3) - 10/3003*sqrt(c*x^2 + b*x)*B*c^3/(b*x
^4) + 16/9009*sqrt(c*x^2 + b*x)*A*c^4/(b^2*x^4) + 5/1716*sqrt(c*x^2 + b*x)*
B*c^2/x^5 - 2/1287*sqrt(c*x^2 + b*x)*A*c^3/(b*x^5) - 3/1144*sqrt(c*x^2 + b*
x)*B*b*c/x^6 + 1/715*sqrt(c*x^2 + b*x)*A*c^2/x^6 - 3/104*sqrt(c*x^2 + b*x)*
B*b^2/x^7 - 1/780*sqrt(c*x^2 + b*x)*A*b*c/x^7 + 1/8*(c*x^2 + b*x)^(3/2)*B*b
/x^8 - 1/60*sqrt(c*x^2 + b*x)*A*b^2/x^8 - 1/4*(c*x^2 + b*x)^(5/2)*B/x^9 + 1
/12*(c*x^2 + b*x)^(3/2)*A*b/x^9 - 1/5*(c*x^2 + b*x)^(5/2)*A/x^10
```

mupad [B] time = 4.76, size = 326, normalized size = 2.04

$$\frac{16\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{9009\,b^2\,x^4}-\frac{142\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{715\,x^6}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{13\,x^7}-\frac{106\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{429\,x^5}-\frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{1287\,b\,x^5}-\frac{2\,A\,b^2\,\sqrt{c\,x^2+b\,x}}{15\,x^8}-\frac{32\,A\,c^5\,\sqrt{c\,x^2+b\,x}}{15015\,b^3\,x^3}+\frac{128\,A\,c^6\,\sqrt{c\,x^2+b\,x}}{45045\,b^4\,x^2}-\frac{256\,A\,c^7\,\sqrt{c\,x^2+b\,x}}{45045\,b^5\,x}-\frac{10\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{3003\,b\,x^4}+\frac{4\,B\,c^4\,\sqrt{c\,x^2+b\,x}}{1001\,b^2\,x^3}-\frac{16\,B\,c^5\,\sqrt{c\,x^2+b\,x}}{3003\,b^3\,x^2}+\frac{32\,B\,c^6\,\sqrt{c\,x^2+b\,x}}{3003\,b^4\,x}-\frac{62\,A\,b\,c\,\sqrt{c\,x^2+b\,x}}{195\,x^7}-\frac{54\,B\,b\,c\,\sqrt{c\,x^2+b\,x}}{143\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^11,x)
```

```
[Out] (16*A*c^4*(b*x + c*x^2)^(1/2))/(9009*b^2*x^4) - (142*A*c^2*(b*x + c*x^2)^(1
/2))/(715*x^6) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(13*x^7) - (106*B*c^2*(b*x +
```

```
 c*x^2)^(1/2))/(429*x^5) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(1287*b*x^5) - (2*
A*b^2*(b*x + c*x^2)^(1/2))/(15*x^8) - (32*A*c^5*(b*x + c*x^2)^(1/2))/(15015
*b^3*x^3) + (128*A*c^6*(b*x + c*x^2)^(1/2))/(45045*b^4*x^2) - (256*A*c^7*(b
*x + c*x^2)^(1/2))/(45045*b^5*x) - (10*B*c^3*(b*x + c*x^2)^(1/2))/(3003*b*x
^4) + (4*B*c^4*(b*x + c*x^2)^(1/2))/(1001*b^2*x^3) - (16*B*c^5*(b*x + c*x^2
)^(1/2))/(3003*b^3*x^2) + (32*B*c^6*(b*x + c*x^2)^(1/2))/(3003*b^4*x) - (62
*A*b*c*(b*x + c*x^2)^(1/2))/(195*x^7) - (54*B*b*c*(b*x + c*x^2)^(1/2))/(143
*x^6)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**11,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**11, x)
```

3.108 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{12}}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{765765b^6x^7}+\frac{128c^3\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{109395b^5x^8}-\frac{32c^2\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{12155b^4x^9}+\frac{16c}{}$$

Rubi [A] time = 0.21, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{765765b^6x^7}+\frac{128c^3\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{109395b^5x^8}-\frac{32c^2\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{12155b^4x^9}+\frac{16c\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{3315b^3x^{10}}-\frac{2\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{255b^2x^{11}}-\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^12,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(17*b*x^12) - (2*(17*b*B - 10*A*c)*(b*x + c*x^2)
^(7/2))/(255*b^2*x^11) + (16*c*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(3315
*b^3*x^10) - (32*c^2*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(12155*b^4*x^9)
 + (128*c^3*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(109395*b^5*x^8) - (256*
c^4*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(765765*b^6*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{12}}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} + \frac{\left(2\left(-12(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{11}}dx}{17b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} - \frac{(8c(17bB-10Ac))\int \frac{(bx+}{}}{255b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

Mathematica [A] time = 0.04, size = 130, normalized size = 0.67

$$-\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(5A\left(9009b^5-6006b^4cx+3696b^3c^2x^2-2016b^2c^3x^3+896bc^4x^4-256c^5x^5\right)+17bBx\left(3003b^4-1848b^3cx+1008b^2c^2x^2-448bc^3x^3+128c^4x^4\right)\right)}{765765b^6x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^12,x]
```

```
[Out] (-2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(17*b*B*x*(3003*b^4 - 1848*b^3*c*x + 1008
*b^2*c^2*x^2 - 448*b*c^3*x^3 + 128*c^4*x^4) + 5*A*(9009*b^5 - 6006*b^4*c*x
+ 3696*b^3*c^2*x^2 - 2016*b^2*c^3*x^3 + 896*b*c^4*x^4 - 256*c^5*x^5)))/(765
765*b^6*x^9)
```

IntegrateAlgebraic [A] time = 0.57, size = 204, normalized size = 1.05

$$\frac{2\sqrt{bx+cx^2}\left(-45045Ab^8-105105Ab^7cx-63525Ab^6c^2x^2-315Ab^5c^3x^3+350Ab^4c^4x^4-400Ab^3c^5x^5+480Ab^2c^6x^6-640Abc^7x^7+1280Ac^8x^8-51051b^8Bx-121737b^7Bcx^2-76041b^6Bc^2x^3-595b^5Bc^3x^4+680b^4Bc^4x^5-816b^3Bc^5x^6+1088b^2Bc^6x^7-2176bBc^7x^8\right)}{765765b^6x^9}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^12,x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-45045*A*b^8 - 51051*b^8*B*x - 105105*A*b^7*c*x - 121
737*b^7*B*c*x^2 - 63525*A*b^6*c^2*x^2 - 76041*b^6*B*c^2*x^3 - 315*A*b^5*c^3
*x^3 - 595*b^5*B*c^3*x^4 + 350*A*b^4*c^4*x^4 + 680*b^4*B*c^4*x^5 - 400*A*b^
3*c^5*x^5 - 816*b^3*B*c^5*x^6 + 480*A*b^2*c^6*x^6 + 1088*b^2*B*c^6*x^7 - 64
0*A*b*c^7*x^7 - 2176*b*B*c^7*x^8 + 1280*A*c^8*x^8))/(765765*b^6*x^9)
```

fricas [A] time = 0.41, size = 202, normalized size = 1.04

$$-\frac{2\left(45045Ab^8+128\left(17Bbc^7-10Ac^8\right)x^8-64\left(17Bb^2c^6-10Abc^7\right)x^7+48\left(17Bb^3c^5-10Ab^2c^6\right)x^6-40\left(17Bb^4c^4-10Ab^3c^5\right)x^5+35\left(17Bb^5c^3-10Ab^4c^4\right)x^4+63\left(1207Bb^6c^2+5Ab^5c^3\right)x^3+231\left(527Bb^7c+275Ab^6c^2\right)x^2+3003\left(17Bb^8+35Ab^7c\right)x\right)\sqrt{cx^2+bx}}{765765b^6x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x, algorithm="fricas")
```

```
[Out] -2/765765*(45045*A*b^8 + 128*(17*B*b*c^7 - 10*A*c^8)*x^8 - 64*(17*B*b^2*c^6
 - 10*A*b*c^7)*x^7 + 48*(17*B*b^3*c^5 - 10*A*b^2*c^6)*x^6 - 40*(17*B*b^4*c^
4 - 10*A*b^3*c^5)*x^5 + 35*(17*B*b^5*c^3 - 10*A*b^4*c^4)*x^4 + 63*(1207*B*b
^6*c^2 + 5*A*b^5*c^3)*x^3 + 231*(527*B*b^7*c + 275*A*b^6*c^2)*x^2 + 3003*(1
7*B*b^8 + 35*A*b^7*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^9)
```

giac [B] time = 0.24, size = 671, normalized size = 3.44

$$\frac{2\left(2450448\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{12}Bc^5+16336320\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}Bbc^{\frac{9}{2}}+4084080\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}Ac^{\frac{11}{2}}+49884120\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{10}Bb^2c^4+29755440\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{10}Abc^5+91126035\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{9}Bb^3c^{\frac{7}{2}}+99549450\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{9}Ab^2c^{\frac{9}{2}}+109674565\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{8}Bb^4c^3+200800600\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{8}Ab^3c^4+90513423\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{7}Bb^5c^{\frac{5}{2}}+270315045\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{7}Ab^4c^{\frac{7}{2}}+51723945\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{6}Bb^6c^2+254303595\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{6}Ab^5c^3+20165145\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{5}Bb^7c^{\frac{3}{2}}+170255085\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{5}Ab^6c^{\frac{5}{2}}+5124735\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{4}Bb^8c+80994375\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{4}Ab^7c^2+765765\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{3}Bb^9\sqrt{c}+26801775\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{3}Ab^8c^{\frac{3}{2}}+51051\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{2}Bb^{10}+5870865\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{2}Ab^9c+765765\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^{10}\sqrt{c}+45045Ab^{11}\right)}{765765\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x, algorithm="giac")
```

```
[Out] 2/765765*(2450448*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*B*c^5 + 16336320*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^11*B*b*c^(9/2) + 4084080*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^11*A*c^(11/2) + 49884120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^2*
c^4 + 29755440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b*c^5 + 91126035*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^(7/2) + 99549450*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^9*A*b^2*c^(9/2) + 109674565*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b
^4*c^3 + 200800600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^3*c^4 + 90513423*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c^(5/2) + 270315045*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^7*A*b^4*c^(7/2) + 51723945*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
6*B*b^6*c^2 + 254303595*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^3 + 20165
145*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^7*c^(3/2) + 170255085*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^5*A*b^6*c^(5/2) + 5124735*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^4*B*b^8*c + 80994375*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^7*c^2 + 7657
65*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^9*sqrt(c) + 26801775*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*A*b^8*c^(3/2) + 51051*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
2*B*b^10 + 5870865*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^9*c + 765765*(sqrt
(c)*x - sqrt(c*x^2 + b*x))*A*b^10*sqrt(c) + 45045*A*b^11)/(sqrt(c)*x - sqrt
(c*x^2 + b*x))^17
```

maple [A] time = 0.05, size = 134, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(-1280Ac^5x^5+2176Bbc^4x^5+4480Abc^4x^4-7616Bb^2c^3x^4-10080Ab^2c^3x^3+17136Bb^3c^2x^3+18480Ab^3c^2x^2-31416Bb^4cx^2-30030Ab^4cx+51051Bb^5x+45045Ab^5\right)\left(cx^2+bx\right)^{\frac{5}{2}}}{765765b^6x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x)
```

```
[Out] -2/765765*(c*x+b)*(-1280*A*c^5*x^5+2176*B*b*c^4*x^5+4480*A*b*c^4*x^4-7616*B
*b^2*c^3*x^4-10080*A*b^2*c^3*x^3+17136*B*b^3*c^2*x^3+18480*A*b^3*c^2*x^2-31
416*B*b^4*c*x^2-30030*A*b^4*c*x+51051*B*b^5*x+45045*A*b^5)*(c*x^2+b*x)^(5/2
)/x^11/b^6
```

maxima [B] time = 1.09, size = 442, normalized size = 2.27

$$-\frac{256\sqrt{cx^2+bx}Bc^7}{45045b^5x}+\frac{512\sqrt{cx^2+bx}Ac^8}{153153b^6x}+\frac{128\sqrt{cx^2+bx}Bc^6}{45045b^4x^2}-\frac{256\sqrt{cx^2+bx}Ac^7}{153153b^5x^2}-\frac{32\sqrt{cx^2+bx}Bc^5}{15015b^3x^3}+\frac{64\sqrt{cx^2+bx}Ac^6}{51051b^4x^3}+\frac{16\sqrt{cx^2+bx}Bc^4}{9009b^2x^4}-\frac{160\sqrt{cx^2+bx}Ac^5}{153153b^3x^4}-\frac{2\sqrt{cx^2+bx}Bc^3}{1287bx^5}+\frac{20\sqrt{cx^2+bx}Ac^4}{21879b^2x^5}+\frac{\sqrt{cx^2+bx}Bc^2}{715x^6}-\frac{2\sqrt{cx^2+bx}Ac^3}{2431bx^6}-\frac{\sqrt{cx^2+bx}Bbc}{780x^7}+\frac{\sqrt{cx^2+bx}Ac^2}{1326x^7}-\frac{\sqrt{cx^2+bx}Bb^2}{60x^8}-\frac{\sqrt{cx^2+bx}Abc}{1428x^8}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb}{12x^9}-\frac{5\sqrt{cx^2+bx}Ab^2}{476x^9}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{5x^{10}}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{84x^{10}}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}A}{6x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x, algorithm="maxima")
```

```
[Out] -256/45045*sqrt(c*x^2 + b*x)*B*c^7/(b^5*x) + 512/153153*sqrt(c*x^2 + b*x)*A
*c^8/(b^6*x) + 128/45045*sqrt(c*x^2 + b*x)*B*c^6/(b^4*x^2) - 256/153153*sqr
t(c*x^2 + b*x)*A*c^7/(b^5*x^2) - 32/15015*sqrt(c*x^2 + b*x)*B*c^5/(b^3*x^3)
 + 64/51051*sqrt(c*x^2 + b*x)*A*c^6/(b^4*x^3) + 16/9009*sqrt(c*x^2 + b*x)*B
*c^4/(b^2*x^4) - 160/153153*sqrt(c*x^2 + b*x)*A*c^5/(b^3*x^4) - 2/1287*sqrt
(c*x^2 + b*x)*B*c^3/(b*x^5) + 20/21879*sqrt(c*x^2 + b*x)*A*c^4/(b^2*x^5) +
1/715*sqrt(c*x^2 + b*x)*B*c^2/x^6 - 2/2431*sqrt(c*x^2 + b*x)*A*c^3/(b*x^6)
- 1/780*sqrt(c*x^2 + b*x)*B*b*c/x^7 + 1/1326*sqrt(c*x^2 + b*x)*A*c^2/x^7 -
1/60*sqrt(c*x^2 + b*x)*B*b^2/x^8 - 1/1428*sqrt(c*x^2 + b*x)*A*b*c/x^8 + 1/1
2*(c*x^2 + b*x)^(3/2)*B*b/x^9 - 5/476*sqrt(c*x^2 + b*x)*A*b^2/x^9 - 1/5*(c*
x^2 + b*x)^(5/2)*B/x^10 + 5/84*(c*x^2 + b*x)^(3/2)*A*b/x^10 - 1/6*(c*x^2 +
b*x)^(5/2)*A/x^11
```

mupad [B] time = 5.40, size = 372, normalized size = 1.91

$$\frac{20\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{21879\,b^2\,x^5}-\frac{110\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{663\,x^7}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{15\,x^8}-\frac{142\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{715\,x^6}-\frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{2431\,b\,x^6}-\frac{2\,A\,b^2\,\sqrt{c\,x^2+b\,x}}{17\,x^9}-\frac{160\,A\,c^5\,\sqrt{c\,x^2+b\,x}}{153153\,b^3\,x^4}+\frac{64\,A\,c^6\,\sqrt{c\,x^2+b\,x}}{51051\,b^4\,x^3}-\frac{256\,A\,c^7\,\sqrt{c\,x^2+b\,x}}{153153\,b^5\,x^2}+\frac{512\,A\,c^8\,\sqrt{c\,x^2+b\,x}}{153153\,b^6\,x}-\frac{2\,B\,c^3\,\sqrt{c\,x^2+b\,x}}{1287\,b\,x^5}+\frac{16\,B\,c^4\,\sqrt{c\,x^2+b\,x}}{9009\,b^2\,x^4}-\frac{32\,B\,c^5\,\sqrt{c\,x^2+b\,x}}{15015\,b^3\,x^3}+\frac{128\,B\,c^6\,\sqrt{c\,x^2+b\,x}}{45045\,b^4\,x^2}-\frac{256\,B\,c^7\,\sqrt{c\,x^2+b\,x}}{45045\,b^5\,x}-\frac{14\,A\,b\,c\,\sqrt{c\,x^2+b\,x}}{51\,x^8}-\frac{62\,B\,b\,c\,\sqrt{c\,x^2+b\,x}}{195\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^12,x)
```

```
[Out] (20*A*c^4*(b*x + c*x^2)^(1/2))/(21879*b^2*x^5) - (110*A*c^2*(b*x + c*x^2)^(
1/2))/(663*x^7) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(15*x^8) - (142*B*c^2*(b*x
+ c*x^2)^(1/2))/(715*x^6) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(2431*b*x^6) - (2
*A*b^2*(b*x + c*x^2)^(1/2))/(17*x^9) - (160*A*c^5*(b*x + c*x^2)^(1/2))/(153
153*b^3*x^4) + (64*A*c^6*(b*x + c*x^2)^(1/2))/(51051*b^4*x^3) - (256*A*c^7*
(b*x + c*x^2)^(1/2))/(153153*b^5*x^2) + (512*A*c^8*(b*x + c*x^2)^(1/2))/(15
3153*b^6*x) - (2*B*c^3*(b*x + c*x^2)^(1/2))/(1287*b*x^5) + (16*B*c^4*(b*x +
 c*x^2)^(1/2))/(9009*b^2*x^4) - (32*B*c^5*(b*x + c*x^2)^(1/2))/(15015*b^3*x
^3) + (128*B*c^6*(b*x + c*x^2)^(1/2))/(45045*b^4*x^2) - (256*B*c^7*(b*x + c
*x^2)^(1/2))/(45045*b^5*x) - (14*A*b*c*(b*x + c*x^2)^(1/2))/(51*x^8) - (62*
B*b*c*(b*x + c*x^2)^(1/2))/(195*x^7)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**12,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**12, x)
```

3.109 $\int \frac{x^4(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=197

$$-\frac{7b^4(9bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{11/2}}+\frac{7b^3\sqrt{bx+cx^2}\,(9bB-10Ac)}{128c^5}-\frac{7b^2x\sqrt{bx+cx^2}\,(9bB-10Ac)}{192c^4}+\frac{7bx^2\sqrt{bx+cx}\cdots}{24\cdots}$$

Rubi [A] time = 0.20, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {794, 670, 640, 620, 206}

$$\frac{7b^3\sqrt{bx+cx^2}\,(9bB-10Ac)}{128c^5}-\frac{7b^2x\sqrt{bx+cx^2}\,(9bB-10Ac)}{192c^4}-\frac{7b^4(9bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{11/2}}+\frac{7bx^2\sqrt{bx+cx^2}\,(9bB-10Ac)}{240c^3}-\frac{x^3\sqrt{bx+cx^2}\,(9bB-10Ac)}{40c^2}+\frac{Bx^4\sqrt{bx+cx^2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (7*b^3*(9*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(128*c^5) - (7*b^2*(9*b*B - 10*A
*c)*x*Sqrt[b*x + c*x^2])/(192*c^4) + (7*b*(9*b*B - 10*A*c)*x^2*Sqrt[b*x + c
*x^2])/(240*c^3) - ((9*b*B - 10*A*c)*x^3*Sqrt[b*x + c*x^2])/(40*c^2) + (B*x
^4*Sqrt[b*x + c*x^2])/(5*c) - (7*b^4*(9*b*B - 10*A*c)*ArcTanh[(Sqrt[c]*x)/S
qrt[b*x + c*x^2]])/(128*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^4(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{Bx^4\sqrt{bx+cx^2}}{5c} + \frac{\left(4(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{x^4}{\sqrt{bx+cx^2}}\,dx}{5c} \\
&= -\frac{(9bB-10Ac)x^3\sqrt{bx+cx^2}}{40c^2} + \frac{Bx^4\sqrt{bx+cx^2}}{5c} + \frac{(7b(9bB-10Ac))\int \frac{x^3}{\sqrt{bx+cx^2}}\,dx}{80c^2} \\
&= \frac{7b(9bB-10Ac)x^2\sqrt{bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{bx+cx^2}}{40c^2} + \frac{Bx^4\sqrt{bx+cx^2}}{5c} - \frac{\left(7b^2(9bB \right.}{} \\
&= -\frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{bx+c}}{40c^2} \\
&= \frac{7b^3(9bB-10Ac)\sqrt{bx+cx^2}}{128c^5} - \frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+c}}{240c^3} \\
&= \frac{7b^3(9bB-10Ac)\sqrt{bx+cx^2}}{128c^5} - \frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+c}}{240c^3} \\
&= \frac{7b^3(9bB-10Ac)\sqrt{bx+cx^2}}{128c^5} - \frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+c}}{240c^3}
\end{aligned}
$$

Mathematica [A] time = 0.35, size = 133, normalized size = 0.68

$$
\frac{\sqrt{x(b+cx)}\left(\frac{(9bB-10Ac)\left(cx\sqrt{\frac{cx}{b}+1}\left(105b^3-70b^2cx+56bc^2x^2-48c^3x^3\right)-105b^{7/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)}{\sqrt{\frac{cx}{b}+1}}+384Bc^5x^5\right)}{1920c^6x}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(384*B*c^5*x^5 + ((9*b*B - 10*A*c)*(c*x*Sqrt[1 + (c*x)/b
]*(105*b^3 - 70*b^2*c*x + 56*b*c^2*x^2 - 48*c^3*x^3) - 105*b^(7/2)*Sqrt[c]*
Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/Sqrt[1 + (c*x)/b]))/(1920*c^6*
x)
```

IntegrateAlgebraic [A] time = 0.62, size = 153, normalized size = 0.78

$$
\frac{7\left(9b^5B-10Ab^4c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{256c^{11/2}}+\frac{\sqrt{bx+cx^2}\left(-1050Ab^3c+700Ab^2c^2x-560Abc^3x^2+480Ac^4x^3+945b^4B-630b^3Bcx+504b^2Bc^2x^2-432bBc^3x^3+384Bc^4x^4\right)}{1920c^5}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(945*b^4*B - 1050*A*b^3*c - 630*b^3*B*c*x + 700*A*b^2*c^
2*x + 504*b^2*B*c^2*x^2 - 560*A*b*c^3*x^2 - 432*b*B*c^3*x^3 + 480*A*c^4*x^3
 + 384*B*c^4*x^4))/(1920*c^5) + (7*(9*b^5*B - 10*A*b^4*c)*Log[b + 2*c*x - 2
*Sqrt[c]*Sqrt[b*x + c*x^2]])/(256*c^(11/2))
```

fricas [A] time = 0.44, size = 303, normalized size = 1.54

$$
\left[-\frac{105\left(9Bb^5-10Ab^4c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(384Bc^5x^4+945Bb^4c-1050Ab^3c^2-48\left(9Bbc^4-10Ac^5\right)x^3+56\left(9Bb^2c^3-10Abc^4\right)x^2-70\left(9Bb^3c^2-10Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{3840c^6}, \frac{105\left(9Bb^5-10Ab^4c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(384Bc^5x^4+945Bb^4c-1050Ab^3c^2-48\left(9Bbc^4-10Ac^5\right)x^3+56\left(9Bb^2c^3-10Abc^4\right)x^2-70\left(9Bb^3c^2-10Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{1920c^6}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(105*(9*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(384*B*c^5*x^4 + 945*B*b^4*c - 1050*A*b^3*c^2 - 48*(9*B*
b*c^4 - 10*A*c^5)*x^3 + 56*(9*B*b^2*c^3 - 10*A*b*c^4)*x^2 - 70*(9*B*b^3*c^2
 - 10*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^6, 1/1920*(105*(9*B*b^5 - 10*A*b^4
*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (384*B*c^5*x^4 + 94
5*B*b^4*c - 1050*A*b^3*c^2 - 48*(9*B*b*c^4 - 10*A*c^5)*x^3 + 56*(9*B*b^2*c^
3 - 10*A*b*c^4)*x^2 - 70*(9*B*b^3*c^2 - 10*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))
/c^6]
```

giac [A] time = 0.23, size = 165, normalized size = 0.84

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(\frac{8Bx}{c}-\frac{9Bbc^3-10Ac^4}{c^5}\right)x+\frac{7\left(9Bb^2c^2-10Abc^3\right)}{c^5}\right)x-\frac{35\left(9Bb^3c-10Ab^2c^2\right)}{c^5}\right)x+\frac{105\left(9Bb^4-10Ab^3c\right)}{c^5}\right)+\frac{7\left(9Bb^5-10Ab^4c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{256c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*x/c - (9*B*b*c^3 - 10*A*c^4)/c^5)*x
+ 7*(9*B*b^2*c^2 - 10*A*b*c^3)/c^5)*x - 35*(9*B*b^3*c - 10*A*b^2*c^2)/c^5)*
x + 105*(9*B*b^4 - 10*A*b^3*c)/c^5) + 7/256*(9*B*b^5 - 10*A*b^4*c)*log(abs(
-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [A] time = 0.05, size = 255, normalized size = 1.29

$$\frac{\sqrt{cx^2+bx}\,Bx^4}{5c}+\frac{\sqrt{cx^2+bx}\,Ax^3}{4c}-\frac{9\sqrt{cx^2+bx}\,Bbx^3}{40c^2}-\frac{7\sqrt{cx^2+bx}\,Abx^2}{24c^2}+\frac{21\sqrt{cx^2+bx}\,Bb^2x^2}{80c^3}+\frac{35Ab^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{9}{2}}}-\frac{63Bb^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{11}{2}}}+\frac{35\sqrt{cx^2+bx}\,Ab^2x}{96c^3}-\frac{21\sqrt{cx^2+bx}\,Bb^3x}{64c^4}-\frac{35\sqrt{cx^2+bx}\,Ab^3}{64c^4}+\frac{63\sqrt{cx^2+bx}\,Bb^4}{128c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/5*B*x^4*(c*x^2+b*x)^(1/2)/c-9/40*B*b/c^2*x^3*(c*x^2+b*x)^(1/2)+21/80*B*b^
2/c^3*x^2*(c*x^2+b*x)^(1/2)-21/64*B*b^3/c^4*x*(c*x^2+b*x)^(1/2)+63/128*B*b^
4/c^5*(c*x^2+b*x)^(1/2)-63/256*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))+1/4*A*x^3/c*(c*x^2+b*x)^(1/2)-7/24*A*b/c^2*x^2*(c*x^2+b*x)^(1/
2)+35/96*A*b^2/c^3*x*(c*x^2+b*x)^(1/2)-35/64*A*b^3/c^4*(c*x^2+b*x)^(1/2)+35
/128*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.96, size = 252, normalized size = 1.28

$$\frac{\sqrt{cx^2+bx}Bx^4}{5c}-\frac{9\sqrt{cx^2+bx}Bbx^3}{40c^2}+\frac{\sqrt{cx^2+bx}Ax^3}{4c}+\frac{21\sqrt{cx^2+bx}Bb^2x^2}{80c^3}-\frac{7\sqrt{cx^2+bx}Abx^2}{24c^2}-\frac{21\sqrt{cx^2+bx}Bb^3x}{64c^4}+\frac{35\sqrt{cx^2+bx}Ab^2x}{96c^3}-\frac{63Bb^5\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256c^{\frac{11}{2}}}+\frac{35Ab^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{9}{2}}}+\frac{63\sqrt{cx^2+bx}Bb^4}{128c^5}-\frac{35\sqrt{cx^2+bx}Ab^3}{64c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(c*x^2 + b*x)*B*x^4/c - 9/40*sqrt(c*x^2 + b*x)*B*b*x^3/c^2 + 1/4*sq
rt(c*x^2 + b*x)*A*x^3/c + 21/80*sqrt(c*x^2 + b*x)*B*b^2*x^2/c^3 - 7/24*sqrt
(c*x^2 + b*x)*A*b*x^2/c^2 - 21/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^4 + 35/96*sqr
t(c*x^2 + b*x)*A*b^2*x/c^3 - 63/256*B*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*
x)*sqrt(c))/c^(11/2) + 35/128*A*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(9/2) + 63/128*sqrt(c*x^2 + b*x)*B*b^4/c^5 - 35/64*sqrt(c*x^2 + b*x
)*A*b^3/c^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{\sqrt{x (b + cx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.110 $\int \frac{x^3(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=162

$$\frac{5b^3(7bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{9/2}}-\frac{5b^2\sqrt{bx+cx^2}\,(7bB-8Ac)}{64c^4}+\frac{5bx\sqrt{bx+cx^2}\,(7bB-8Ac)}{96c^3}-\frac{x^2\sqrt{bx+cx^2}\,(7bB-}{24c^2}$$

Rubi [A] time = 0.16, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {794, 670, 640, 620, 206}

$$-\frac{5b^2\sqrt{bx+cx^2}\,(7bB-8Ac)}{64c^4}+\frac{5b^3(7bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{9/2}}+\frac{5bx\sqrt{bx+cx^2}\,(7bB-8Ac)}{96c^3}-\frac{x^2\sqrt{bx+cx^2}\,(7bB-8Ac)}{24c^2}+\frac{Bx^3\sqrt{bx+cx^2}}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (-5*b^2*(7*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/(64*c^4) + (5*b*(7*b*B - 8*A*c)*
x*Sqrt[b*x + c*x^2])/(96*c^3) - ((7*b*B - 8*A*c)*x^2*Sqrt[b*x + c*x^2])/(24
*c^2) + (B*x^3*Sqrt[b*x + c*x^2])/(4*c) + (5*b^3*(7*b*B - 8*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{Bx^3\sqrt{bx+cx^2}}{4c} + \frac{\left(3(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{x^3}{\sqrt{bx+cx^2}}\,dx}{4c} \\
&= -\frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{bx+cx^2}}{4c} + \frac{(5b(7bB-8Ac))\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{48c^2} \\
&= \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{bx+cx^2}}{4c} - \frac{\left(5b^2(7bB-8\right.}{} \\
&= -\frac{5b^2(7bB-8Ac)\sqrt{bx+cx^2}}{64c^4} + \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} + \\
&= -\frac{5b^2(7bB-8Ac)\sqrt{bx+cx^2}}{64c^4} + \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} + \\
&= -\frac{5b^2(7bB-8Ac)\sqrt{bx+cx^2}}{64c^4} + \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} +
\end{aligned}
$$

Mathematica [A] time = 0.33, size = 129, normalized size = 0.80

$$
\frac{\sqrt{x(b+cx)}\left(\frac{15b^{5/2}(7bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}} + \sqrt{c}\left(10b^2c(12A+7Bx)-8bc^2x(10A+7Bx)+16c^3x^2(4A+3Bx)-105b^3B\right)\right)}{192c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^3*B + 16*c^3*x^2*(4*A + 3*B*x) - 8*b*c^
2*x*(10*A + 7*B*x) + 10*b^2*c*(12*A + 7*B*x)) + (15*b^(5/2)*(7*b*B - 8*A*c)
*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(
9/2))
```

IntegrateAlgebraic [A] time = 0.52, size = 129, normalized size = 0.80

$$
\frac{\sqrt{bx+cx^2}\left(120Ab^2c-80Abc^2x+64Ac^3x^2-105b^3B+70b^2Bcx-56bBc^2x^2+48Bc^3x^3\right)}{192c^4} - \frac{5\left(7b^4B-8Ab^3c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{128c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-105*b^3*B + 120*A*b^2*c + 70*b^2*B*c*x - 80*A*b*c^2*x
- 56*b*B*c^2*x^2 + 64*A*c^3*x^2 + 48*B*c^3*x^3))/(192*c^4) - (5*(7*b^4*B -
8*A*b^3*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(128*c^(9/2))
```

fricas [A] time = 0.43, size = 256, normalized size = 1.58

$$
\left[-\frac{15\left(7Bb^4-8Ab^3c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(48Bc^4x^3-105Bb^3c+120Ab^2c^2-8\left(7Bbc^3-8Ac^4\right)x^2+10\left(7Bb^2c^2-8Abc^3\right)x\right)\sqrt{cx^2+bx}}{384c^5}, -\frac{15\left(7Bb^4-8Ab^3c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(48Bc^4x^3-105Bb^3c+120Ab^2c^2-8\left(7Bbc^3-8Ac^4\right)x^2+10\left(7Bb^2c^2-8Abc^3\right)x\right)\sqrt{cx^2+bx}}{192c^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(7*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*
x)*sqrt(c)) - 2*(48*B*c^4*x^3 - 105*B*b^3*c + 120*A*b^2*c^2 - 8*(7*B*b*c^3
- 8*A*c^4)*x^2 + 10*(7*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1
```

```
/192*(15*(7*B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(
c*x)) - (48*B*c^4*x^3 - 105*B*b^3*c + 120*A*b^2*c^2 - 8*(7*B*b*c^3 - 8*A*c^
4)*x^2 + 10*(7*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.27, size = 137, normalized size = 0.85

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(\frac{6\,Bx}{c}-\frac{7\,Bbc^2-8\,Ac^3}{c^4}\right)x+\frac{5\left(7\,Bb^2c-8\,Abc^2\right)}{c^4}\right)x-\frac{15\left(7\,Bb^3-8\,Ab^2c\right)}{c^4}\right)-\frac{5\left(7\,Bb^4-8\,Ab^3c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{128\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x/c - (7*B*b*c^2 - 8*A*c^3)/c^4)*x + 5*(
7*B*b^2*c - 8*A*b*c^2)/c^4)*x - 15*(7*B*b^3 - 8*A*b^2*c)/c^4) - 5/128*(7*B*
b^4 - 8*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c
^(9/2)
```

maple [A] time = 0.05, size = 209, normalized size = 1.29

$$\frac{\sqrt{c\,x^2+bx}\;B\,x^3}{4c}+\frac{\sqrt{c\,x^2+bx}\;A\,x^2}{3c}-\frac{7\sqrt{c\,x^2+bx}\;Bb\,x^2}{24c^2}-\frac{5A\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{35B\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{9}{2}}}-\frac{5\sqrt{c\,x^2+bx}\;Abx}{12c^2}+\frac{35\sqrt{c\,x^2+bx}\;B\,b^2x}{96c^3}+\frac{5\sqrt{c\,x^2+bx}\;A\,b^2}{8c^3}-\frac{35\sqrt{c\,x^2+bx}\;B\,b^3}{64c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*x^3*(c*x^2+b*x)^(1/2)/c-7/24*B*b/c^2*x^2*(c*x^2+b*x)^(1/2)+35/96*B*b^
2/c^3*x*(c*x^2+b*x)^(1/2)-35/64*B*b^3/c^4*(c*x^2+b*x)^(1/2)+35/128*B*b^4/c^
(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*A*x^2/c*(c*x^2+b*x)^(1/
2)-5/12*A*b/c^2*x*(c*x^2+b*x)^(1/2)+5/8*A*b^2/c^3*(c*x^2+b*x)^(1/2)-5/16*A*
b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.87, size = 206, normalized size = 1.27

$$\frac{\sqrt{cx^2+bx}\,Bx^3}{4\,c}-\frac{7\,\sqrt{cx^2+bx}\,Bbx^2}{24\,c^2}+\frac{\sqrt{cx^2+bx}\,Ax^2}{3\,c}+\frac{35\,\sqrt{cx^2+bx}\,Bb^2x}{96\,c^3}-\frac{5\,\sqrt{cx^2+bx}\,Abx}{12\,c^2}+\frac{35\,Bb^4\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{128\,c^{\frac{9}{2}}}-\frac{5\,Ab^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,c^{\frac{7}{2}}}-\frac{35\,\sqrt{cx^2+bx}\,Bb^3}{64\,c^4}+\frac{5\,\sqrt{cx^2+bx}\,Ab^2}{8\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*B*x^3/c - 7/24*sqrt(c*x^2 + b*x)*B*b*x^2/c^2 + 1/3*sq
rt(c*x^2 + b*x)*A*x^2/c + 35/96*sqrt(c*x^2 + b*x)*B*b^2*x/c^3 - 5/12*sqrt(c
*x^2 + b*x)*A*b*x/c^2 + 35/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sq
rt(c))/c^(9/2) - 5/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(7/2) - 35/64*sqrt(c*x^2 + b*x)*B*b^3/c^4 + 5/8*sqrt(c*x^2 + b*x)*A*b^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.111 $\int \frac{x^2(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=127

$$-\frac{b^2(5bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{7/2}}+\frac{b\sqrt{bx+cx^2}\,(5bB-6Ac)}{8c^3}-\frac{x\sqrt{bx+cx^2}\,(5bB-6Ac)}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}$$

Rubi [A] time = 0.12, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {794, 670, 640, 620, 206}

$$-\frac{b^2(5bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{7/2}}+\frac{b\sqrt{bx+cx^2}\,(5bB-6Ac)}{8c^3}-\frac{x\sqrt{bx+cx^2}\,(5bB-6Ac)}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (b*(5*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/(8*c^3) - ((5*b*B - 6*A*c)*x*Sqrt[b*x
 + c*x^2])/(12*c^2) + (B*x^2*Sqrt[b*x + c*x^2])/(3*c) - (b^2*(5*b*B - 6*A*c
)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\sqrt{bx+cx^2}}\,dx = \frac{Bx^2\sqrt{bx+cx^2}}{3c} + \frac{\left(2(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{3c}$$

$$= -\frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2} + \frac{Bx^2\sqrt{bx+cx^2}}{3c} + \frac{(b(5bB-6Ac))\int \frac{x}{\sqrt{bx+cx^2}}\,dx}{8c^2}$$

$$= \frac{b(5bB-6Ac)\sqrt{bx+cx^2}}{8c^3} - \frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2} + \frac{Bx^2\sqrt{bx+cx^2}}{3c} - \frac{\left(b^2(5bB-6Ac)\right)}{16c}$$

$$= \frac{b(5bB-6Ac)\sqrt{bx+cx^2}}{8c^3} - \frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2} + \frac{Bx^2\sqrt{bx+cx^2}}{3c} - \frac{\left(b^2(5bB-6Ac)\right)}{}$$

$$= \frac{b(5bB-6Ac)\sqrt{bx+cx^2}}{8c^3} - \frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2} + \frac{Bx^2\sqrt{bx+cx^2}}{3c} - \frac{b^2(5bB-6Ac)\,\mathrm{ta}}{8c}$$

Mathematica [A] time = 0.08, size = 116, normalized size = 0.91

$$\frac{\sqrt{c}\,x(b+cx)\left(-2bc(9A+5Bx)+4c^2x(3A+2Bx)+15b^2B\right)-3b^{5/2}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(5bB-6Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{24c^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*x*(b + c*x)*(15*b^2*B + 4*c^2*x*(3*A + 2*B*x) - 2*b*c*(9*A + 5*B*x
)) - 3*b^(5/2)*(5*b*B - 6*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(24*c^(7/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.55, size = 105, normalized size = 0.83

$$\frac{\sqrt{bx+cx^2}\left(-18Abc+12Ac^2x+15b^2B-10bBcx+8Bc^2x^2\right)}{24c^3} + \frac{\left(5b^3B-6Ab^2c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{16c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(15*b^2*B - 18*A*b*c - 10*b*B*c*x + 12*A*c^2*x + 8*B*c^2
*x^2))/(24*c^3) + ((5*b^3*B - 6*A*b^2*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x
 + c*x^2]])/(16*c^(7/2))
```

fricas [A] time = 0.45, size = 207, normalized size = 1.63

$$\left[-\frac{3\left(5Bb^3-6Ab^2c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(8Bc^3x^2+15Bb^2c-18Abc^2-2\left(5Bbc^2-6Ac^3\right)x\right)\sqrt{cx^2+bx}}{48c^4}, \frac{3\left(5Bb^3-6Ab^2c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(8Bc^3x^2+15Bb^2c-18Abc^2-2\left(5Bbc^2-6Ac^3\right)x\right)\sqrt{cx^2+bx}}{24c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(5*B*b^3 - 6*A*b^2*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c)) - 2*(8*B*c^3*x^2 + 15*B*b^2*c - 18*A*b*c^2 - 2*(5*B*b*c^2 - 6*A*c
^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/24*(3*(5*B*b^3 - 6*A*b^2*c)*sqrt(-c)*arcta
n(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B*c^3*x^2 + 15*B*b^2*c - 18*A*b*c^
2 - 2*(5*B*b*c^2 - 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.23, size = 109, normalized size = 0.86

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(\frac{4\,Bx}{c}-\frac{5\,Bbc-6\,Ac^2}{c^3}\right)x+\frac{3\left(5\,Bb^2-6\,Abc\right)}{c^3}\right)+\frac{\left(5\,Bb^3-6\,Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{16\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x/c - (5*B*b*c - 6*A*c^2)/c^3)*x + 3*(5*B*b^
2 - 6*A*b*c)/c^3) + 1/16*(5*B*b^3 - 6*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [A] time = 0.06, size = 163, normalized size = 1.28

$$\frac{\sqrt{c\,x^2+bx}\;B\,x^2}{3c}+\frac{3A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{5B\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{\sqrt{c\,x^2+bx}\;Ax}{2c}-\frac{5\sqrt{c\,x^2+bx}\;Bbx}{12c^2}-\frac{3\sqrt{c\,x^2+bx}\;Ab}{4c^2}+\frac{5\sqrt{c\,x^2+bx}\;B\,b^2}{8c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*B*x^2*(c*x^2+b*x)^(1/2)/c-5/12*B*b/c^2*x*(c*x^2+b*x)^(1/2)+5/8*B*b^2/c^
3*(c*x^2+b*x)^(1/2)-5/16*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))+1/2*A*x/c*(c*x^2+b*x)^(1/2)-3/4*A*b/c^2*(c*x^2+b*x)^(1/2)+3/8*A*b^2/c
^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.92, size = 160, normalized size = 1.26

$$\frac{\sqrt{cx^2+bx}\,Bx^2}{3\,c}-\frac{5\,\sqrt{cx^2+bx}\,Bbx}{12\,c^2}+\frac{\sqrt{cx^2+bx}\,Ax}{2\,c}-\frac{5\,Bb^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,c^{\frac{7}{2}}}+\frac{3\,Ab^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{5}{2}}}+\frac{5\,\sqrt{cx^2+bx}\,Bb^2}{8\,c^3}-\frac{3\,\sqrt{cx^2+bx}\,Ab}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2 + b*x)*B*x^2/c - 5/12*sqrt(c*x^2 + b*x)*B*b*x/c^2 + 1/2*sqrt
(c*x^2 + b*x)*A*x/c - 5/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c
))/c^(7/2) + 3/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2)
 + 5/8*sqrt(c*x^2 + b*x)*B*b^2/c^3 - 3/4*sqrt(c*x^2 + b*x)*A*b/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^2*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.112 $\int \frac{x(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=75

$$\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

Rubi [A] time = 0.03, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {779, 620, 206}

$$\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] -((3*b*B - 4*A*c - 2*B*c*x)*Sqrt[b*x + c*x^2])/(4*c^2) + (b*(3*b*B - 4*A*c)
*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= -\frac{(3bB-4Ac-2Bcx)\sqrt{bx+cx^2}}{4c^2}+\frac{(b(3bB-4Ac))\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{8c^2}\\
&= -\frac{(3bB-4Ac-2Bcx)\sqrt{bx+cx^2}}{4c^2}+\frac{(b(3bB-4Ac))\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{4c^2}\\
&= -\frac{(3bB-4Ac-2Bcx)\sqrt{bx+cx^2}}{4c^2}+\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 96, normalized size = 1.28

$$\frac{b^{3/2}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(3bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\,x(b+cx)(4Ac-3bB+2Bcx)}{4c^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*x*(b + c*x)*(-3*b*B + 4*A*c + 2*B*c*x) + b^(3/2)*(3*b*B - 4*A*c)*S
qrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*c^(5/2)*Sqr
t[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.46, size = 89, normalized size = 1.19

$$\frac{\left(4Abc-3b^2B\right)\log\left(-2c^{5/2}\sqrt{bx+cx^2}+bc^2+2c^3x\right)}{8c^{5/2}}+\frac{\sqrt{bx+cx^2}\,(4Ac-3bB+2Bcx)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] ((-3*b*B + 4*A*c + 2*B*c*x)*Sqrt[b*x + c*x^2])/(4*c^2) + ((-3*b^2*B + 4*A*b
*c)*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[b*x + c*x^2]])/(8*c^(5/2))
```

fricas [A] time = 0.43, size = 158, normalized size = 2.11

$$\left[-\frac{\left(3\,Bb^2-4\,Abc\right)\sqrt{c}\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\left(2\,Bc^2x-3\,Bbc+4\,Ac^2\right)\sqrt{cx^2+bx}}{8\,c^3},\ -\frac{\left(3\,Bb^2-4\,Abc\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)-\left(2\,Bc^2x-3\,Bbc+4\,Ac^2\right)\sqrt{cx^2+bx}}{4\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((3*B*b^2 - 4*A*b*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt
(c)) - 2*(2*B*c^2*x - 3*B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^3, -1/4*((3*B
*b^2 - 4*A*b*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (2*B*c^
2*x - 3*B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.24, size = 83, normalized size = 1.11

$$\frac{1}{4}\,\sqrt{cx^2+bx}\left(\frac{2\,Bx}{c}-\frac{3\,Bb-4\,Ac}{c^2}\right)-\frac{\left(3\,Bb^2-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x/c - (3*B*b - 4*A*c)/c^2) - 1/8*(3*B*b^2 - 4*A*
b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 118, normalized size = 1.57

$$-\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{3B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^2+bx}\;Bx}{2c}+\frac{\sqrt{c\,x^2+bx}\;A}{c}-\frac{3\sqrt{c\,x^2+bx}\;Bb}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/2*B*x/c*(c*x^2+b*x)^(1/2)-3/4*B*b/c^2*(c*x^2+b*x)^(1/2)+3/8*B*b^2/c^(5/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+A/c*(c*x^2+b*x)^(1/2)-1/2*A*b/c^
(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.79, size = 115, normalized size = 1.53

$$\frac{\sqrt{cx^2+bx}\,Bx}{2\,c}+\frac{3\,Bb^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{5}{2}}}-\frac{Ab\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}-\frac{3\,\sqrt{cx^2+bx}\,Bb}{4\,c^2}+\frac{\sqrt{cx^2+bx}\,A}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*B*x/c + 3/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c))/c^(5/2) - 1/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(3/2) - 3/4*sqrt(c*x^2 + b*x)*B*b/c^2 + sqrt(c*x^2 + b*x)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.113 $\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=55

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {640, 620, 206}

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x
^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx&=\frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2c}\\&=\frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\&=\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 80, normalized size = 1.45

$$\frac{B\sqrt{c}\,x(b+cx)-\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[c]*x*(b + c*x) - Sqrt[b]*(b*B - 2*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(c^(3/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.36, size = 67, normalized size = 1.22

$$\frac{(bB-2Ac)\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)}{2c^{3/2}}+\frac{B\sqrt{bx+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[b*x + c*x^2])/c + ((b*B - 2*A*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt
[b*x + c*x^2]])/(2*c^(3/2))
```

fricas [A] time = 0.41, size = 115, normalized size = 2.09

$$\left[\frac{2\sqrt{cx^2+bx}Bc-(Bb-2Ac)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2c^2}, \frac{\sqrt{cx^2+bx}Bc+(Bb-2Ac)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)}{c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(c*x^2 + b*x)*B*c - (B*b - 2*A*c)*sqrt(c)*log(2*c*x + b + 2*sqr
t(c*x^2 + b*x)*sqrt(c)))/c^2, (sqrt(c*x^2 + b*x)*B*c + (B*b - 2*A*c)*sqrt(-
c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)))/c^2]
```

giac [A] time = 0.22, size = 60, normalized size = 1.09

$$\frac{\sqrt{cx^2+bx}B}{c}+\frac{(Bb-2Ac)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.06, size = 78, normalized size = 1.42

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B*(c*x^2+b*x)^(1/2)/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1
/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.90, size = 75, normalized size = 1.36

$$-\frac{Bb\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2c^{\frac{3}{2}}}+\frac{A\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+bx}B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + A*log(2*c*x
 + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + sqrt(c*x^2 + b*x)*B/c
```

mupad [B] time = 1.35, size = 77, normalized size = 1.40

$$\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{\sqrt{c}}+\frac{B\,\sqrt{c\,x^2+b\,x}}{c}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(1/2) + (B*(b*x + c*x^
2)^(1/2))/c - (B*b*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(2*c^(3/
2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(x*(b + c*x)), x)
```

3.114 $\int \frac{A+Bx}{x\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=52

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\sqrt{bx+cx^2}}{bx}$$

Rubi [A] time = 0.03, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 620, 206}

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\sqrt{bx+cx^2}}{bx}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(b*x) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]
])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\sqrt{bx+cx^2}}\,dx &= -\frac{2A\sqrt{bx+cx^2}}{bx}+B\int \frac{1}{\sqrt{bx+cx^2}}\,dx\\ &= -\frac{2A\sqrt{bx+cx^2}}{bx}+(2B)\operatorname{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)\\ &= -\frac{2A\sqrt{bx+cx^2}}{bx}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 69, normalized size = 1.33

$$\frac{2\sqrt{x(b+cx)}\left(\frac{\sqrt{b}\,B\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\sqrt{\frac{cx}{b}+1}}-A\right)}{bx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(-A + (Sqrt[b]*B*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqr
t[b]])/(Sqrt[c]*Sqrt[1 + (c*x)/b])))/(b*x)
```

IntegrateAlgebraic [A] time = 0.30, size = 58, normalized size = 1.12

$$-\frac{2A\sqrt{bx+cx^2}}{bx}-\frac{B\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(b*x) - (B*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*
x^2]])/Sqrt[c]
```

fricas [A] time = 0.42, size = 116, normalized size = 2.23

$$\left[\frac{Bb\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\sqrt{cx^2+bx}\,Ac}{bcx},-\frac{2\left(Bb\sqrt{-c}\,x\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\sqrt{cx^2+bx}\,Ac\right)}{bcx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [(B*b*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*sqrt(c*x^2
 + b*x)*A*c)/(b*c*x), -2*(B*b*sqrt(-c)*x*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/
(c*x)) + sqrt(c*x^2 + b*x)*A*c)/(b*c*x)]
```

giac [A] time = 0.32, size = 59, normalized size = 1.13

$$-\frac{B\log\left(\left|2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right|\right)}{\sqrt{c}}+\frac{2\,A}{\sqrt{c}\,x-\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -B*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 2*A/(s
qrt(c)*x - sqrt(c*x^2 + b*x))
```

maple [A] time = 0.05, size = 51, normalized size = 0.98

$$\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}-\frac{2\sqrt{c\,x^2+bx}\;A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)-2*A*(c*x^2+b*x)^(1/2)/b
/x
```

maxima [A] time = 0.73, size = 49, normalized size = 0.94

$$\frac{B \log\left(2\,cx + b + 2\,\sqrt{cx^2 + bx}\,\sqrt{c}\right)}{\sqrt{c}} - \frac{2\,\sqrt{cx^2 + bx}\,A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] B*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) - 2*sqrt(c*x^2 + b*x
)*A/(b*x)
```

mupad [B] time = 1.27, size = 50, normalized size = 0.96

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}} + \sqrt{c\,x^2 + b\,x}\right)}{\sqrt{c}} - \frac{2\,A\,\sqrt{c\,x^2 + b\,x}}{b\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(1/2) - (2*A*(b*x + c*
x^2)^(1/2))/(b*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x*sqrt(x*(b + c*x))), x)
```

3.115 $\int \frac{A+Bx}{x^2\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=57

$$-\frac{2\sqrt{bx+cx^2}\,(3bB-2Ac)}{3b^2x}-\frac{2A\sqrt{bx+cx^2}}{3bx^2}$$

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\sqrt{bx+cx^2}\,(3bB-2Ac)}{3b^2x}-\frac{2A\sqrt{bx+cx^2}}{3bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(3*b*x^2) - (2*(3*b*B - 2*A*c)*Sqrt[b*x + c*x^2])/
(3*b^2*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\sqrt{bx+cx^2}}\,dx&=-\frac{2A\sqrt{bx+cx^2}}{3bx^2}+\frac{\left(2\left(-2(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x\sqrt{bx+cx^2}}\,dx}{3b}\\&=-\frac{2A\sqrt{bx+cx^2}}{3bx^2}-\frac{2(3bB-2Ac)\sqrt{bx+cx^2}}{3b^2x}\end{aligned}$$

Mathematica [A] time = 0.02, size = 35, normalized size = 0.61

$$-\frac{2\sqrt{x(b+cx)}\,(A(b-2cx)+3bBx)}{3b^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(3*b*B*x + A*(b - 2*c*x)))/(3*b^2*x^2)
```

IntegrateAlgebraic [A] time = 0.30, size = 38, normalized size = 0.67

$$\frac{2\sqrt{bx+cx^2}\,(-Ab+2Acx-3bBx)}{3b^2x^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*Sqrt[b*x + c*x^2]),x]
[Out] (2*(-(A*b) - 3*b*B*x + 2*A*c*x)*Sqrt[b*x + c*x^2])/(3*b^2*x^2)
```

fricas [A] time = 0.41, size = 34, normalized size = 0.60

$$-\frac{2\sqrt{cx^2+bx}\,(Ab+(3\,Bb-2\,Ac)x)}{3\,b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
[Out] -2/3*sqrt(c*x^2 + b*x)*(A*b + (3*B*b - 2*A*c)*x)/(b^2*x^2)
```

giac [A] time = 0.22, size = 76, normalized size = 1.33

$$\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2B+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)A\sqrt{c}+Ab\right)}{3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x, algorithm="giac")
[Out] 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B + 3*(sqrt(c)*x - sqrt(c*x^2 + b*
x))*A*sqrt(c) + A*b)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
```

maple [A] time = 0.05, size = 39, normalized size = 0.68

$$-\frac{2\,(cx+b)\,(-2Acx+3Bbx+Ab)}{3\sqrt{c\,x^2+bx}\;b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x)
[Out] -2/3*(c*x+b)*(-2*A*c*x+3*B*b*x+A*b)/x/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.87, size = 62, normalized size = 1.09

$$-\frac{2\sqrt{cx^2+bx}\,B}{bx}+\frac{4\sqrt{cx^2+bx}\,Ac}{3\,b^2x}-\frac{2\sqrt{cx^2+bx}\,A}{3\,bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
[Out] -2*sqrt(c*x^2 + b*x)*B/(b*x) + 4/3*sqrt(c*x^2 + b*x)*A*c/(b^2*x) - 2/3*sqrt
(c*x^2 + b*x)*A/(b*x^2)
```

mupad [B] time = 1.09, size = 33, normalized size = 0.58

$$-\frac{2\sqrt{c\,x^2+b\,x}\;\left(A\,b-2\,A\,c\,x+3\,B\,b\,x\right)}{3\,b^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(A*b - 2*A*c*x + 3*B*b*x))/(3*b^2*x^2)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^2\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*sqrt(x*(b + c*x))), x)
```

3.116 $\int \frac{A+Bx}{x^3\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=90

$$\frac{4c\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^3x}-\frac{2\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^2x^2}-\frac{2A\sqrt{bx+cx^2}}{5bx^3}$$

Rubi [A] time = 0.08, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^3x}-\frac{2\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^2x^2}-\frac{2A\sqrt{bx+cx^2}}{5bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(5*b*x^3) - (2*(5*b*B - 4*A*c)*Sqrt[b*x + c*x^2])/
(15*b^2*x^2) + (4*c*(5*b*B - 4*A*c)*Sqrt[b*x + c*x^2])/(15*b^3*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^3\sqrt{bx+cx^2}}\,dx &= -\frac{2A\sqrt{bx+cx^2}}{5bx^3}+\frac{\left(2\left(-3(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^2\sqrt{bx+cx^2}}\,dx}{5b}\\
&= -\frac{2A\sqrt{bx+cx^2}}{5bx^3}-\frac{2(5bB-4Ac)\sqrt{bx+cx^2}}{15b^2x^2}-\frac{(2c(5bB-4Ac))\int \frac{1}{x\sqrt{bx+cx^2}}\,dx}{15b^2}\\
&= -\frac{2A\sqrt{bx+cx^2}}{5bx^3}-\frac{2(5bB-4Ac)\sqrt{bx+cx^2}}{15b^2x^2}+\frac{4c(5bB-4Ac)\sqrt{bx+cx^2}}{15b^3x}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 54, normalized size = 0.60

$$-\frac{2\sqrt{x(b+cx)}\left(A\left(3b^2-4bcx+8c^2x^2\right)+5bBx(b-2cx)\right)}{15b^3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(5*b*B*x*(b - 2*c*x) + A*(3*b^2 - 4*b*c*x + 8*c^2*x^2
)))/(15*b^3*x^3)
```

IntegrateAlgebraic [A] time = 0.32, size = 60, normalized size = 0.67

$$-\frac{2\sqrt{bx+cx^2}\left(3Ab^2-4Abcx+8Ac^2x^2+5b^2Bx-10bBcx^2\right)}{15b^3x^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(3*A*b^2 + 5*b^2*B*x - 4*A*b*c*x - 10*b*B*c*x^2 + 8*A
*c^2*x^2))/(15*b^3*x^3)
```

fricas [A] time = 0.41, size = 57, normalized size = 0.63

$$-\frac{2\left(3\,Ab^2-2\left(5\,Bbc-4\,Ac^2\right)x^2+\left(5\,Bb^2-4\,Abc\right)x\right)\sqrt{cx^2+bx}}{15\,b^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^2 - 2*(5*B*b*c - 4*A*c^2)*x^2 + (5*B*b^2 - 4*A*b*c)*x)*sqrt(c*
x^2 + b*x)/(b^3*x^3)
```

giac [A] time = 0.22, size = 133, normalized size = 1.48

$$\frac{2\left(15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3B\sqrt{c}+5\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bb+20\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Ac+15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)Ab\sqrt{c}+3\,Ab^2\right)}{15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*(15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*sqrt(c) + 5*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*B*b + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c + 15*(sqrt(c
)*x - sqrt(c*x^2 + b*x))*A*b*sqrt(c) + 3*A*b^2)/(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5
```

maple [A] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-10Bbc\,x^2-4Abcx+5B\,b^2x+3A\,b^2\right)}{15\sqrt{c\,x^2+bx}\;b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/15*(c*x+b)*(8*A*c^2*x^2-10*B*b*c*x^2-4*A*b*c*x+5*B*b^2*x+3*A*b^2)/x^2/b^
3/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.92, size = 106, normalized size = 1.18

$$\frac{4\sqrt{cx^2+bx}\,Bc}{3\,b^2x} - \frac{16\sqrt{cx^2+bx}\,Ac^2}{15\,b^3x} - \frac{2\sqrt{cx^2+bx}\,B}{3\,bx^2} + \frac{8\sqrt{cx^2+bx}\,Ac}{15\,b^2x^2} - \frac{2\sqrt{cx^2+bx}\,A}{5\,bx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 4/3*sqrt(c*x^2 + b*x)*B*c/(b^2*x) - 16/15*sqrt(c*x^2 + b*x)*A*c^2/(b^3*x) -
 2/3*sqrt(c*x^2 + b*x)*B/(b*x^2) + 8/15*sqrt(c*x^2 + b*x)*A*c/(b^2*x^2) - 2
/5*sqrt(c*x^2 + b*x)*A/(b*x^3)
```

mupad [B] time = 1.09, size = 56, normalized size = 0.62

$$-\frac{2\sqrt{c\,x^2+b\,x}\,\left(5\,B\,b^2\,x+3\,A\,b^2-10\,B\,b\,c\,x^2-4\,A\,b\,c\,x+8\,A\,c^2\,x^2\right)}{15\,b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^2 + 8*A*c^2*x^2 + 5*B*b^2*x - 10*B*b*c*x^2 -
 4*A*b*c*x))/(15*b^3*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*sqrt(x*(b + c*x))), x)
```

3.117 $\int \frac{A+Bx}{x^4\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^4x}+\frac{8c\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^3x^2}-\frac{2\sqrt{bx+cx^2}\,(7bB-6Ac)}{35b^2x^3}-\frac{2A\sqrt{bx+cx^2}}{7bx^4}$$

Rubi [A] time = 0.11, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{16c^2\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^4x}+\frac{8c\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^3x^2}-\frac{2\sqrt{bx+cx^2}\,(7bB-6Ac)}{35b^2x^3}-\frac{2A\sqrt{bx+cx^2}}{7bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(7*b*x^4) - (2*(7*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/
(35*b^2*x^3) + (8*c*(7*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/(105*b^3*x^2) - (16*
c^2*(7*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/(105*b^4*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^4\sqrt{bx+cx^2}}\,dx = -\frac{2A\sqrt{bx+cx^2}}{7bx^4} + \frac{\left(2\left(-4(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^3\sqrt{bx+cx^2}}\,dx}{7b}$$
$$= -\frac{2A\sqrt{bx+cx^2}}{7bx^4} - \frac{2(7bB-6Ac)\sqrt{bx+cx^2}}{35b^2x^3} - \frac{(4c(7bB-6Ac))\int \frac{1}{x^2\sqrt{bx+cx^2}}\,dx}{35b^2}$$
$$= -\frac{2A\sqrt{bx+cx^2}}{7bx^4} - \frac{2(7bB-6Ac)\sqrt{bx+cx^2}}{35b^2x^3} + \frac{8c(7bB-6Ac)\sqrt{bx+cx^2}}{105b^3x^2} + \frac{(8c^2(7bB-6\ldots}{\ldots}$$
$$= -\frac{2A\sqrt{bx+cx^2}}{7bx^4} - \frac{2(7bB-6Ac)\sqrt{bx+cx^2}}{35b^2x^3} + \frac{8c(7bB-6Ac)\sqrt{bx+cx^2}}{105b^3x^2} - \frac{16c^2(7bB-6\ldots}{10\ldots}$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.63

$$-\frac{2\sqrt{x(b+cx)}\left(3A\left(5b^3-6b^2cx+8bc^2x^2-16c^3x^3\right)+7bBx\left(3b^2-4bcx+8c^2x^2\right)\right)}{105b^4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(7*b*B*x*(3*b^2 - 4*b*c*x + 8*c^2*x^2) + 3*A*(5*b^3 -
 6*b^2*c*x + 8*b*c^2*x^2 - 16*c^3*x^3)))/(105*b^4*x^4)
```

IntegrateAlgebraic [A] time = 0.35, size = 84, normalized size = 0.67

$$\frac{2\sqrt{bx+cx^2}\left(-15Ab^3+18Ab^2cx-24Abc^2x^2+48Ac^3x^3-21b^3Bx+28b^2Bcx^2-56bBc^2x^3\right)}{105b^4x^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-15*A*b^3 - 21*b^3*B*x + 18*A*b^2*c*x + 28*b^2*B*c*x^
2 - 24*A*b*c^2*x^2 - 56*b*B*c^2*x^3 + 48*A*c^3*x^3))/(105*b^4*x^4)
```

fricas [A] time = 0.41, size = 82, normalized size = 0.66

$$-\frac{2\left(15\,Ab^3+8\left(7\,Bbc^2-6\,Ac^3\right)x^3-4\left(7\,Bb^2c-6\,Abc^2\right)x^2+3\left(7\,Bb^3-6\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{105\,b^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/105*(15*A*b^3 + 8*(7*B*b*c^2 - 6*A*c^3)*x^3 - 4*(7*B*b^2*c - 6*A*b*c^2)*
x^2 + 3*(7*B*b^3 - 6*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*x^4)
```

giac [A] time = 0.22, size = 191, normalized size = 1.53

$$\frac{2\left(140\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bc+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb\sqrt{c}+210\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ac^{\frac{3}{2}}+21\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^2+252\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Abc+105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^2\sqrt{c}+15\,Ab^3\right)}{105\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c + 105*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*B*b*sqrt(c) + 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(3/2)
```

```
 + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2 + 252*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^2*A*b*c + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*sqrt(c) + 15*A
*b^3)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
```

maple [A] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-48A\,c^{3}x^{3}+56Bb\,c^{2}x^{3}+24Ab\,c^{2}x^{2}-28B\,b^{2}c\,x^{2}-18A\,b^{2}cx+21B\,b^{3}x+15A\,b^{3}\right)}{105\sqrt{c\,x^{2}+bx}\;b^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/105*(c*x+b)*(-48*A*c^3*x^3+56*B*b*c^2*x^3+24*A*b*c^2*x^2-28*B*b^2*c*x^2-
18*A*b^2*c*x+21*B*b^3*x+15*A*b^3)/x^3/b^4/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.93, size = 152, normalized size = 1.22

$$-\frac{16\sqrt{cx^{2}+bx}\,Bc^{2}}{15\,b^{3}x}+\frac{32\sqrt{cx^{2}+bx}\,Ac^{3}}{35\,b^{4}x}+\frac{8\sqrt{cx^{2}+bx}\,Bc}{15\,b^{2}x^{2}}-\frac{16\sqrt{cx^{2}+bx}\,Ac^{2}}{35\,b^{3}x^{2}}-\frac{2\sqrt{cx^{2}+bx}\,B}{5\,bx^{3}}+\frac{12\sqrt{cx^{2}+bx}\,Ac}{35\,b^{2}x^{3}}-\frac{2\sqrt{cx^{2}+bx}\,A}{7\,bx^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/15*sqrt(c*x^2 + b*x)*B*c^2/(b^3*x) + 32/35*sqrt(c*x^2 + b*x)*A*c^3/(b^4
*x) + 8/15*sqrt(c*x^2 + b*x)*B*c/(b^2*x^2) - 16/35*sqrt(c*x^2 + b*x)*A*c^2/
(b^3*x^2) - 2/5*sqrt(c*x^2 + b*x)*B/(b*x^3) + 12/35*sqrt(c*x^2 + b*x)*A*c/(
b^2*x^3) - 2/7*sqrt(c*x^2 + b*x)*A/(b*x^4)
```

mupad [B] time = 1.12, size = 113, normalized size = 0.90

$$\frac{\sqrt{c\,x^{2}+b\,x}\,\left(96\,A\,c^{3}-112\,B\,b\,c^{2}\right)}{105\,b^{4}\,x}-\frac{\left(48\,A\,c^{2}-56\,B\,b\,c\right)\sqrt{c\,x^{2}+b\,x}}{105\,b^{3}\,x^{2}}-\frac{2\,A\,\sqrt{c\,x^{2}+b\,x}}{7\,b\,x^{4}}+\frac{\sqrt{c\,x^{2}+b\,x}\,\left(12\,A\,c-14\,B\,b\right)}{35\,b^{2}\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(96*A*c^3 - 112*B*b*c^2))/(105*b^4*x) - ((48*A*c^2 - 5
6*B*b*c)*(b*x + c*x^2)^(1/2))/(105*b^3*x^2) - (2*A*(b*x + c*x^2)^(1/2))/(7*
b*x^4) + ((b*x + c*x^2)^(1/2)*(12*A*c - 14*B*b))/(35*b^2*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{x^{4}\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**4*sqrt(x*(b + c*x))), x)
```

3.118 $\int \frac{A+Bx}{x^5\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^5x}-\frac{16c^2\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^4x^2}+\frac{4c\sqrt{bx+cx^2}\,(9bB-8Ac)}{105b^3x^3}-\frac{2\sqrt{bx+cx^2}\,(9bB-8A}{63b^2x^4}$$

Rubi [A] time = 0.14, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{32c^3\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^5x}-\frac{16c^2\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^4x^2}+\frac{4c\sqrt{bx+cx^2}\,(9bB-8Ac)}{105b^3x^3}-\frac{2\sqrt{bx+cx^2}\,(9bB-8Ac)}{63b^2x^4}-\frac{2A\sqrt{bx+cx^2}}{9bx^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(9*b*x^5) - (2*(9*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/
(63*b^2*x^4) + (4*c*(9*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/(105*b^3*x^3) - (16*
c^2*(9*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/(315*b^4*x^2) + (32*c^3*(9*b*B - 8*A
*c)*Sqrt[b*x + c*x^2])/(315*b^5*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^5\sqrt{bx+cx^2}}\,dx = -\frac{2A\sqrt{bx+cx^2}}{9bx^5} + \frac{\left(2\left(-5(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^4\sqrt{bx+cx^2}}\,dx}{9b}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} - \frac{(2c(9bB-8Ac))\int \frac{1}{x^3\sqrt{bx+cx^2}}\,dx}{21b^2}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} + \frac{4c(9bB-8Ac)\sqrt{bx+cx^2}}{105b^3x^3} + \frac{\left(8c^2(9bB-8Ac\right.}{10}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} + \frac{4c(9bB-8Ac)\sqrt{bx+cx^2}}{105b^3x^3} - \frac{16c^2(9bB-8Ac}{315b^4}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} + \frac{4c(9bB-8Ac)\sqrt{bx+cx^2}}{105b^3x^3} - \frac{16c^2(9bB-8Ac}{315b^4}$$

Mathematica [A] time = 0.05, size = 100, normalized size = 0.62

$$-\frac{2\sqrt{x(b+cx)}\left(A\left(35b^4-40b^3cx+48b^2c^2x^2-64bc^3x^3+128c^4x^4\right)+9bBx\left(5b^3-6b^2cx+8bc^2x^2-16c^3x^3\right)\right)}{315b^5x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(9*b*B*x*(5*b^3 - 6*b^2*c*x + 8*b*c^2*x^2 - 16*c^3*x^
3) + A*(35*b^4 - 40*b^3*c*x + 48*b^2*c^2*x^2 - 64*b*c^3*x^3 + 128*c^4*x^4))
)/(315*b^5*x^5)
```

IntegrateAlgebraic [A] time = 0.38, size = 108, normalized size = 0.68

$$-\frac{2\sqrt{bx+cx^2}\left(35Ab^4-40Ab^3cx+48Ab^2c^2x^2-64Abc^3x^3+128Ac^4x^4+45b^4Bx-54b^3Bcx^2+72b^2Bc^2x^3-144bBc^3x^4\right)}{315b^5x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^5*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(35*A*b^4 + 45*b^4*B*x - 40*A*b^3*c*x - 54*b^3*B*c*x^
2 + 48*A*b^2*c^2*x^2 + 72*b^2*B*c^2*x^3 - 64*A*b*c^3*x^3 - 144*b*B*c^3*x^4
+ 128*A*c^4*x^4))/(315*b^5*x^5)
```

fricas [A] time = 0.41, size = 106, normalized size = 0.66

$$-\frac{2\left(35\,Ab^4-16\left(9\,Bbc^3-8\,Ac^4\right)x^4+8\left(9\,Bb^2c^2-8\,Abc^3\right)x^3-6\left(9\,Bb^3c-8\,Ab^2c^2\right)x^2+5\left(9\,Bb^4-8\,Ab^3c\right)x\right)\sqrt{cx^2+bx}}{315\,b^5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^4 - 16*(9*B*b*c^3 - 8*A*c^4)*x^4 + 8*(9*B*b^2*c^2 - 8*A*b*c^
3)*x^3 - 6*(9*B*b^3*c - 8*A*b^2*c^2)*x^2 + 5*(9*B*b^4 - 8*A*b^3*c)*x)*sqrt(
c*x^2 + b*x)/(b^5*x^5)
```

giac [A] time = 0.22, size = 251, normalized size = 1.57

$$\frac{2\left(630\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bc^{\frac{3}{2}}+756\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bbc+1008\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Ac^2+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^2\sqrt{c}+1680\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Abc^{\frac{3}{2}}+45\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^3+1080\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^2c+315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^3\sqrt{c}+35\,Ab^4\right)}{315\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(630*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^(3/2) + 756*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*B*b*c + 1008*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^2 +
315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*sqrt(c) + 1680*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^3*A*b*c^(3/2) + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3
+ 1080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c + 315*(sqrt(c)*x - sqrt(c*
x^2 + b*x))*A*b^3*sqrt(c) + 35*A*b^4)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
```

maple [A] time = 0.05, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(128A\,c^4x^4-144Bb\,c^3x^4-64Ab\,c^3x^3+72B\,b^2c^2x^3+48A\,b^2c^2x^2-54B\,b^3c\,x^2-40A\,b^3cx+45b^4Bx+35A\,b^4\right)}{315\sqrt{c\,x^2+bx}\;b^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/315*(c*x+b)*(128*A*c^4*x^4-144*B*b*c^3*x^4-64*A*b*c^3*x^3+72*B*b^2*c^2*x
^3+48*A*b^2*c^2*x^2-54*B*b^3*c*x^2-40*A*b^3*c*x+45*B*b^4*x+35*A*b^4)/x^4/b^
5/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.89, size = 198, normalized size = 1.24

$$\frac{32\sqrt{cx^2+bx}\,Bc^3}{35\,b^4x}-\frac{256\sqrt{cx^2+bx}\,Ac^4}{315\,b^5x}-\frac{16\sqrt{cx^2+bx}\,Bc^2}{35\,b^3x^2}+\frac{128\sqrt{cx^2+bx}\,Ac^3}{315\,b^4x^2}+\frac{12\sqrt{cx^2+bx}\,Bc}{35\,b^2x^3}-\frac{32\sqrt{cx^2+bx}\,Ac^2}{105\,b^3x^3}-\frac{2\sqrt{cx^2+bx}\,B}{7\,bx^4}+\frac{16\sqrt{cx^2+bx}\,Ac}{63\,b^2x^4}-\frac{2\sqrt{cx^2+bx}\,A}{9\,bx^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 32/35*sqrt(c*x^2 + b*x)*B*c^3/(b^4*x) - 256/315*sqrt(c*x^2 + b*x)*A*c^4/(b^
5*x) - 16/35*sqrt(c*x^2 + b*x)*B*c^2/(b^3*x^2) + 128/315*sqrt(c*x^2 + b*x)*
A*c^3/(b^4*x^2) + 12/35*sqrt(c*x^2 + b*x)*B*c/(b^2*x^3) - 32/105*sqrt(c*x^2
 + b*x)*A*c^2/(b^3*x^3) - 2/7*sqrt(c*x^2 + b*x)*B/(b*x^4) + 16/63*sqrt(c*x^
2 + b*x)*A*c/(b^2*x^4) - 2/9*sqrt(c*x^2 + b*x)*A/(b*x^5)
```

mupad [B] time = 1.10, size = 146, normalized size = 0.91

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(128\,A\,c^3-144\,B\,b\,c^2\right)}{315\,b^4\,x^2}-\frac{\sqrt{c\,x^2+b\,x}\,\left(256\,A\,c^4-288\,B\,b\,c^3\right)}{315\,b^5\,x}-\frac{\left(32\,A\,c^2-36\,B\,b\,c\right)\,\sqrt{c\,x^2+b\,x}}{105\,b^3\,x^3}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{9\,b\,x^5}+\frac{\sqrt{c\,x^2+b\,x}\,\left(16\,A\,c-18\,B\,b\right)}{63\,b^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(128*A*c^3 - 144*B*b*c^2))/(315*b^4*x^2) - ((b*x + c*x
^2)^(1/2)*(256*A*c^4 - 288*B*b*c^3))/(315*b^5*x) - ((32*A*c^2 - 36*B*b*c)*(
b*x + c*x^2)^(1/2))/(105*b^3*x^3) - (2*A*(b*x + c*x^2)^(1/2))/(9*b*x^5) + (
(b*x + c*x^2)^(1/2)*(16*A*c - 18*B*b))/(63*b^2*x^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^5\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**5*sqrt(x*(b + c*x))), x)
```

3.119 $\int \frac{A+Bx}{x^6\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^6x}+\frac{128c^3\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^5x^2}-\frac{32c^2\sqrt{bx+cx^2}\,(11bB-10Ac)}{1155b^4x^3}+\frac{16c\sqrt{bx+cx^2}}{693 \cdots}$$

Rubi [A] time = 0.18, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{256c^4\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^6x}+\frac{128c^3\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^5x^2}-\frac{32c^2\sqrt{bx+cx^2}\,(11bB-10Ac)}{1155b^4x^3}+\frac{16c\sqrt{bx+cx^2}\,(11bB-10Ac)}{693b^3x^4}-\frac{2\sqrt{bx+cx^2}\,(11bB-10Ac)}{99b^2x^5}-\frac{2A\sqrt{bx+cx^2}}{11bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^6*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(11*b*x^6) - (2*(11*b*B - 10*A*c)*Sqrt[b*x + c*x^2
])/(99*b^2*x^5) + (16*c*(11*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(693*b^3*x^4)
- (32*c^2*(11*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(1155*b^4*x^3) + (128*c^3*(1
1*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(3465*b^5*x^2) - (256*c^4*(11*b*B - 10*A
*c)*Sqrt[b*x + c*x^2])/(3465*b^6*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^6\sqrt{bx+cx^2}}\,dx = -\frac{2A\sqrt{bx+cx^2}}{11bx^6} + \frac{\left(2\left(-6(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^5\sqrt{bx+cx^2}}\,dx}{11b}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{11bx^6} - \frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5} - \frac{(8c(11bB-10Ac))\int \frac{1}{x^4\sqrt{bx+cx^2}}\,dx}{99b^2}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{11bx^6} - \frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5} + \frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4} + \frac{(16c^2(1}{}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{11bx^6} - \frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5} + \frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4} - \frac{32c^2(11}{}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{11bx^6} - \frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5} + \frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4} - \frac{32c^2(11}{}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{11bx^6} - \frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5} + \frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4} - \frac{32c^2(11}{}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.63

$$-\frac{2\sqrt{x(b+cx)}\left(5A\left(63b^5-70b^4cx+80b^3c^2x^2-96b^2c^3x^3+128bc^4x^4-256c^5x^5\right)+11bBx\left(35b^4-40b^3cx+48b^2c^2x^2-64bc^3x^3+128c^4x^4\right)\right)}{3465b^6x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^6*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(11*b*B*x*(35*b^4 - 40*b^3*c*x + 48*b^2*c^2*x^2 - 64*
b*c^3*x^3 + 128*c^4*x^4) + 5*A*(63*b^5 - 70*b^4*c*x + 80*b^3*c^2*x^2 - 96*b
^2*c^3*x^3 + 128*b*c^4*x^4 - 256*c^5*x^5)))/(3465*b^6*x^6)
```

IntegrateAlgebraic [A] time = 0.41, size = 132, normalized size = 0.68

$$\frac{2\sqrt{bx+cx^2}\left(-315Ab^5+350Ab^4cx-400Ab^3c^2x^2+480Ab^2c^3x^3-640Abc^4x^4+1280Ac^5x^5-385b^5Bx+440b^4Bcx^2-528b^3Bc^2x^3+704b^2Bc^3x^4-1408bBc^4x^5\right)}{3465b^6x^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^6*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-315*A*b^5 - 385*b^5*B*x + 350*A*b^4*c*x + 440*b^4*B*
c*x^2 - 400*A*b^3*c^2*x^2 - 528*b^3*B*c^2*x^3 + 480*A*b^2*c^3*x^3 + 704*b^2
*B*c^3*x^4 - 640*A*b*c^4*x^4 - 1408*b*B*c^4*x^5 + 1280*A*c^5*x^5))/(3465*b^
6*x^6)
```

fricas [A] time = 0.41, size = 130, normalized size = 0.67

$$-\frac{2\left(315\,Ab^5+128\left(11\,Bbc^4-10\,Ac^5\right)x^5-64\left(11\,Bb^2c^3-10\,Abc^4\right)x^4+48\left(11\,Bb^3c^2-10\,Ab^2c^3\right)x^3-40\left(11\,Bb^4c-10\,Ab^3c^2\right)x^2+35\left(11\,Bb^5-10\,Ab^4c\right)x\right)\sqrt{cx^2+bx}}{3465\,b^6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/3465*(315*A*b^5 + 128*(11*B*b*c^4 - 10*A*c^5)*x^5 - 64*(11*B*b^2*c^3 - 1
0*A*b*c^4)*x^4 + 48*(11*B*b^3*c^2 - 10*A*b^2*c^3)*x^3 - 40*(11*B*b^4*c - 10
*A*b^3*c^2)*x^2 + 35*(11*B*b^5 - 10*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^6)
```

giac [A] time = 0.22, size = 311, normalized size = 1.59

$$\frac{2\left(11088\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^6Bc^2+18480\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Bbc^{\frac{3}{2}}+18480\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^5Ac^{\frac{5}{2}}+11880\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Bb^2c+39600\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^4Abc^2+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^3\sqrt{c}+34650\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^2c^{\frac{3}{2}}+385\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^4+15400\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^3c+3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^4\sqrt{c}+315\,Ab^5\right)}{3465\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(11088*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^2 + 18480*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*B*b*c^(3/2) + 18480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*
A*c^(5/2) + 11880*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c + 39600*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^4*A*b*c^2 + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
*B*b^3*sqrt(c) + 34650*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2) + 38
5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4 + 15400*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^2*A*b^3*c + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c) + 315
*A*b^5)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 134, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(-1280Ac^5x^5+1408Bbc^4x^5+640Abc^4x^4-704Bb^2c^3x^4-480Ab^2c^3x^3+528Bb^3c^2x^3+400Ab^3c^2x^2-440Bb^4cx^2-350Ab^4cx+385Bb^5x+315Ab^5\right)}{3465\sqrt{cx^2+bx}\,b^6x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/3465*(c*x+b)*(-1280*A*c^5*x^5+1408*B*b*c^4*x^5+640*A*b*c^4*x^4-704*B*b^2
*c^3*x^4-480*A*b^2*c^3*x^3+528*B*b^3*c^2*x^3+400*A*b^3*c^2*x^2-440*B*b^4*c*
x^2-350*A*b^4*c*x+385*B*b^5*x+315*A*b^5)/x^5/b^6/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.95, size = 244, normalized size = 1.25

$$-\frac{256\sqrt{cx^2+bx}Bc^4}{315b^5x}+\frac{512\sqrt{cx^2+bx}Ac^5}{693b^6x}+\frac{128\sqrt{cx^2+bx}Bc^3}{315b^4x^2}-\frac{256\sqrt{cx^2+bx}Ac^4}{693b^5x^2}-\frac{32\sqrt{cx^2+bx}Bc^2}{105b^3x^3}+\frac{64\sqrt{cx^2+bx}Ac^3}{231b^4x^3}+\frac{16\sqrt{cx^2+bx}Bc}{63b^2x^4}-\frac{160\sqrt{cx^2+bx}Ac^2}{693b^3x^4}-\frac{2\sqrt{cx^2+bx}B}{9bx^5}+\frac{20\sqrt{cx^2+bx}Ac}{99b^2x^5}-\frac{2\sqrt{cx^2+bx}A}{11bx^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -256/315*sqrt(c*x^2 + b*x)*B*c^4/(b^5*x) + 512/693*sqrt(c*x^2 + b*x)*A*c^5/
(b^6*x) + 128/315*sqrt(c*x^2 + b*x)*B*c^3/(b^4*x^2) - 256/693*sqrt(c*x^2 +
b*x)*A*c^4/(b^5*x^2) - 32/105*sqrt(c*x^2 + b*x)*B*c^2/(b^3*x^3) + 64/231*sq
rt(c*x^2 + b*x)*A*c^3/(b^4*x^3) + 16/63*sqrt(c*x^2 + b*x)*B*c/(b^2*x^4) - 1
60/693*sqrt(c*x^2 + b*x)*A*c^2/(b^3*x^4) - 2/9*sqrt(c*x^2 + b*x)*B/(b*x^5)
+ 20/99*sqrt(c*x^2 + b*x)*A*c/(b^2*x^5) - 2/11*sqrt(c*x^2 + b*x)*A/(b*x^6)
```

mupad [B] time = 1.12, size = 177, normalized size = 0.91

$$\frac{\sqrt{cx^2+bx}\,\left(320Ac^3-352Bbc^2\right)}{1155b^4x^3}-\frac{\sqrt{cx^2+bx}\,\left(1280Ac^4-1408Bbc^3\right)}{3465b^5x^2}-\frac{\left(160Ac^2-176Bbc\right)\sqrt{cx^2+bx}}{693b^3x^4}-\frac{2A\sqrt{cx^2+bx}}{11bx^6}+\frac{\sqrt{cx^2+bx}\,\left(20Ac-22Bb\right)}{99b^2x^5}+\frac{256c^4\sqrt{cx^2+bx}\,\left(10Ac-11Bb\right)}{3465b^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^6*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(320*A*c^3 - 352*B*b*c^2))/(1155*b^4*x^3) - ((b*x + c*
x^2)^(1/2)*(1280*A*c^4 - 1408*B*b*c^3))/(3465*b^5*x^2) - ((160*A*c^2 - 176*
B*b*c)*(b*x + c*x^2)^(1/2))/(693*b^3*x^4) - (2*A*(b*x + c*x^2)^(1/2))/(11*b
*x^6) + ((b*x + c*x^2)^(1/2)*(20*A*c - 22*B*b))/(99*b^2*x^5) + (256*c^4*(b*
x + c*x^2)^(1/2)*(10*A*c - 11*B*b))/(3465*b^6*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^6\sqrt{x\left(b+cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**6/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**6*sqrt(x*(b + c*x))), x)
```

3.120 $\int \frac{x^4(A+Bx)}{(bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=170

$$-\frac{5b^2(7bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{9/2}}+\frac{5b\sqrt{bx+cx^2}(7bB-6Ac)}{8c^4}-\frac{5x\sqrt{bx+cx^2}(7bB-6Ac)}{12c^3}+\frac{x^2\sqrt{bx+cx^2}(7bB}{3bc^2}$$

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {788, 670, 640, 620, 206}

$$-\frac{5b^2(7bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{9/2}}+\frac{x^2\sqrt{bx+cx^2}(7bB-6Ac)}{3bc^2}-\frac{5x\sqrt{bx+cx^2}(7bB-6Ac)}{12c^3}+\frac{5b\sqrt{bx+cx^2}(7bB-6Ac)}{8c^4}-\frac{2x^4(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^4)/(b*c*Sqrt[b*x + c*x^2]) + (5*b*(7*b*B - 6*A*c)*Sqrt[b*
x + c*x^2])/(8*c^4) - (5*(7*b*B - 6*A*c)*x*Sqrt[b*x + c*x^2])/(12*c^3) + ((
7*b*B - 6*A*c)*x^2*Sqrt[b*x + c*x^2])/(3*b*c^2) - (5*b^2*(7*b*B - 6*A*c)*Ar
cTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} - \left(\frac{6A}{b}-\frac{7B}{c}\right)\int \frac{x^3}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{(7bB-6Ac)x^2\sqrt{bx+cx^2}}{3bc^2} - \frac{(5(7bB-6Ac))\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{6c^2}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2\sqrt{bx+cx^2}}{3bc^2} + \frac{(5b(7bB-6Ac}{8c}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{5b(7bB-6Ac)\sqrt{bx+cx^2}}{8c^4} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2}{3bc^2}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{5b(7bB-6Ac)\sqrt{bx+cx^2}}{8c^4} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2}{3bc^2}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{5b(7bB-6Ac)\sqrt{bx+cx^2}}{8c^4} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2}{3bc^2}$$

Mathematica [A] time = 0.22, size = 137, normalized size = 0.81

$$\frac{\frac{(b+cx)(7bB-6Ac)\left(cx\sqrt{\frac{cx}{b}+1}\left(15b^2-10bcx+8c^2x^2\right)-15b^{5/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)}{3\sqrt{\frac{cx}{b}+1}}+16c^4x^4(Ac-bB)}{8bc^5\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (16*c^4*(-(b*B) + A*c)*x^4 + ((7*b*B - 6*A*c)*(b + c*x)*(c*x*Sqrt[1 + (c*x)
/b]*(15*b^2 - 10*b*c*x + 8*c^2*x^2) - 15*b^(5/2)*Sqrt[c]*Sqrt[x]*ArcSinh[(S
qrt[c]*Sqrt[x])/Sqrt[b]]))/(3*Sqrt[1 + (c*x)/b]))/(8*b*c^5*Sqrt[x*(b + c*x)
])
```

IntegrateAlgebraic [A] time = 0.62, size = 136, normalized size = 0.80

$$\frac{5\left(7b^3B-6Ab^2c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{16c^{9/2}}+\frac{\sqrt{bx+cx^2}\left(-90Ab^2c-30Abc^2x+12Ac^3x^2+105b^3B+35b^2Bcx-14bBc^2x^2+8Bc^3x^3\right)}{24c^4(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(105*b^3*B - 90*A*b^2*c + 35*b^2*B*c*x - 30*A*b*c^2*x -
14*b*B*c^2*x^2 + 12*A*c^3*x^2 + 8*B*c^3*x^3))/(24*c^4*(b + c*x)) + (5*(7*b^
3*B - 6*A*b^2*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(16*c^(9/2))
```

fricas [A] time = 0.42, size = 313, normalized size = 1.84

$$\left[-\frac{15\left(7Bb^4-6Ab^3c+\left(7Bb^3c-6Ab^2c^2\right)x\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(8Bc^4x^3+105Bb^3c-90Ab^2c^2-2\left(7Bbc^3-6Ac^4\right)x^2+5\left(7Bb^2c^2-6Abc^3\right)x\right)\sqrt{cx^2+bx}}{48\left(c^6x+bc^5\right)}, \frac{15\left(7Bb^4-6Ab^3c+\left(7Bb^3c-6Ab^2c^2\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(8Bc^4x^3+105Bb^3c-90Ab^2c^2-2\left(7Bbc^3-6Ac^4\right)x^2+5\left(7Bb^2c^2-6Abc^3\right)x\right)\sqrt{cx^2+bx}}{24\left(c^6x+bc^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(15*(7*B*b^4 - 6*A*b^3*c + (7*B*b^3*c - 6*A*b^2*c^2)*x)*sqrt(c)*log(
2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(8*B*c^4*x^3 + 105*B*b^3*c - 9
0*A*b^2*c^2 - 2*(7*B*b*c^3 - 6*A*c^4)*x^2 + 5*(7*B*b^2*c^2 - 6*A*b*c^3)*x)*
sqrt(c*x^2 + b*x))/(c^6*x + b*c^5), 1/24*(15*(7*B*b^4 - 6*A*b^3*c + (7*B*b^
3*c - 6*A*b^2*c^2)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (
8*B*c^4*x^3 + 105*B*b^3*c - 90*A*b^2*c^2 - 2*(7*B*b*c^3 - 6*A*c^4)*x^2 + 5*
(7*B*b^2*c^2 - 6*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/(c^6*x + b*c^5)]
```

giac [**A**] time = 0.26, size = 163, normalized size = 0.96

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2x\left(\frac{4Bx}{c^2}-\frac{11Bbc^{10}-6Ac^{11}}{c^{13}}\right)+\frac{3\left(19Bb^2c^9-14Abc^{10}\right)}{c^{13}}\right)+\frac{5\left(7Bb^3-6Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{16c^{\frac{9}{2}}}+\frac{2\left(Bb^4-Ab^3c\right)}{\left(\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)c+b\sqrt{c}\right)c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*x*(4*B*x/c^2 - (11*B*b*c^10 - 6*A*c^11)/c^13) + 3
*(19*B*b^2*c^9 - 14*A*b*c^10)/c^13) + 5/16*(7*B*b^3 - 6*A*b^2*c)*log(abs(-2
*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2) + 2*(B*b^4 - A*b^3*c
)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*c + b*sqrt(c))*c^4)
```

maple [**A**] time = 0.06, size = 215, normalized size = 1.26

$$\frac{Bx^4}{3\sqrt{cx^2+bx}\,c}+\frac{Ax^3}{2\sqrt{cx^2+bx}\,c}-\frac{7Bbx^3}{12\sqrt{cx^2+bx}\,c^2}-\frac{5Abx^2}{4\sqrt{cx^2+bx}\,c^2}+\frac{35Bb^2x^2}{24\sqrt{cx^2+bx}\,c^3}-\frac{15Ab^2x}{4\sqrt{cx^2+bx}\,c^3}+\frac{35Bb^3x}{8\sqrt{cx^2+bx}\,c^4}+\frac{15Ab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{7}{2}}}-\frac{35Bb^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/3*B*x^4/c/(c*x^2+b*x)^(1/2)-7/12*B*b/c^2*x^3/(c*x^2+b*x)^(1/2)+35/24*B*b^
2/c^3*x^2/(c*x^2+b*x)^(1/2)+35/8*B*b^3/c^4/(c*x^2+b*x)^(1/2)*x-35/16*B*b^3/
c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/2*A*x^3/c/(c*x^2+b*x)^(
1/2)-5/4*A*b/c^2*x^2/(c*x^2+b*x)^(1/2)-15/4*A*b^2/c^3/(c*x^2+b*x)^(1/2)*x+1
5/8*A*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**A**] time = 0.94, size = 212, normalized size = 1.25

$$\frac{Bx^4}{3\sqrt{cx^2+bx}\,c}-\frac{7Bbx^3}{12\sqrt{cx^2+bx}\,c^2}+\frac{Ax^3}{2\sqrt{cx^2+bx}\,c}+\frac{35Bb^2x^2}{24\sqrt{cx^2+bx}\,c^3}-\frac{5Abx^2}{4\sqrt{cx^2+bx}\,c^2}+\frac{35Bb^3x}{8\sqrt{cx^2+bx}\,c^4}-\frac{15Ab^2x}{4\sqrt{cx^2+bx}\,c^3}-\frac{35Bb^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{9}{2}}}+\frac{15Ab^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*B*x^4/(sqrt(c*x^2 + b*x)*c) - 7/12*B*b*x^3/(sqrt(c*x^2 + b*x)*c^2) + 1/
2*A*x^3/(sqrt(c*x^2 + b*x)*c) + 35/24*B*b^2*x^2/(sqrt(c*x^2 + b*x)*c^3) - 5
/4*A*b*x^2/(sqrt(c*x^2 + b*x)*c^2) + 35/8*B*b^3*x/(sqrt(c*x^2 + b*x)*c^4) -
 15/4*A*b^2*x/(sqrt(c*x^2 + b*x)*c^3) - 35/16*B*b^3*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c))/c^(9/2) + 15/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c))/c^(7/2)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{(x (b + cx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x)**(3/2),x)
[Out] Integral(x**4*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.121 $\int \frac{x^3(A+Bx)}{(bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=135

$$\frac{3b(5bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{4c^{7/2}}-\frac{3\sqrt{bx+cx^2}\,(5bB-4Ac)}{4c^3}+\frac{x\sqrt{bx+cx^2}\,(5bB-4Ac)}{2bc^2}-\frac{2x^3(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.12, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {788, 670, 640, 620, 206}

$$\frac{x\sqrt{bx+cx^2}\,(5bB-4Ac)}{2bc^2}-\frac{3\sqrt{bx+cx^2}\,(5bB-4Ac)}{4c^3}+\frac{3b(5bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{4c^{7/2}}-\frac{2x^3(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^3)/(b*c*Sqrt[b*x + c*x^2]) - (3*(5*b*B - 4*A*c)*Sqrt[b*x
+ c*x^2])/(4*c^3) + ((5*b*B - 4*A*c)*x*Sqrt[b*x + c*x^2])/(2*b*c^2) + (3*b*
(5*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\left(\frac{4A}{b}-\frac{5B}{c}\right)\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx\\ &= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}-\frac{(3(5bB-4Ac))\int \frac{x}{\sqrt{bx+cx^2}}\,dx}{4c^2}\\ &= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\frac{3(5bB-4Ac)\sqrt{bx+cx^2}}{4c^3}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}+\frac{(3b(5bB-4Ac))}{8c^3}\\ &= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\frac{3(5bB-4Ac)\sqrt{bx+cx^2}}{4c^3}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}+\frac{(3b(5bB-4Ac))}{}\\ &= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\frac{3(5bB-4Ac)\sqrt{bx+cx^2}}{4c^3}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}+\frac{3b(5bB-4Ac)\,\mathrm{ta}}{4c^7}\end{aligned}$$

Mathematica [A] time = 0.09, size = 109, normalized size = 0.81

$$\frac{3b^{3/2}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(5bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\,x\left(bc(12A-5Bx)+2c^2x(2A+Bx)-15b^2B\right)}{4c^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*x*(-15*b^2*B + b*c*(12*A - 5*B*x) + 2*c^2*x*(2*A + B*x)) + 3*b^(3/
2)*(5*b*B - 4*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt
[b]])/(4*c^(7/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.55, size = 116, normalized size = 0.86

$$\frac{\sqrt{bx+cx^2}\left(12Abc+4Ac^2x-15b^2B-5bBcx+2Bc^2x^2\right)}{4c^3(b+cx)}-\frac{3\left(5b^2B-4Abc\right)\log\left(-2c^{7/2}\sqrt{bx+cx^2}+bc^3+2c^4x\right)}{8c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-15*b^2*B + 12*A*b*c - 5*b*B*c*x + 4*A*c^2*x + 2*B*c^2*
x^2))/(4*c^3*(b + c*x)) - (3*(5*b^2*B - 4*A*b*c)*Log[b*c^3 + 2*c^4*x - 2*c^
(7/2)*Sqrt[b*x + c*x^2]])/(8*c^(7/2))
```

fricas [A] time = 0.41, size = 262, normalized size = 1.94

$$\left[-\frac{3\left(5Bb^3-4Ab^2c+\left(5Bb^2c-4Abc^2\right)x\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(2Bc^3x^2-15Bb^2c+12Abc^2-\left(5Bbc^2-4Ac^3\right)x\right)\sqrt{cx^2+bx}}{8\left(c^5x+bc^4\right)},\ -\frac{3\left(5Bb^3-4Ab^2c+\left(5Bb^2c-4Abc^2\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(2Bc^3x^2-15Bb^2c+12Abc^2-\left(5Bbc^2-4Ac^3\right)x\right)\sqrt{cx^2+bx}}{4\left(c^5x+bc^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*(5*B*b^3 - 4*A*b^2*c + (5*B*b^2*c - 4*A*b*c^2)*x)*sqrt(c)*log(2*c*
x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(2*B*c^3*x^2 - 15*B*b^2*c + 12*A*b
*c^2 - (5*B*b*c^2 - 4*A*c^3)*x)*sqrt(c*x^2 + b*x))/(c^5*x + b*c^4), -1/4*(3
```

```
*(5*B*b^3 - 4*A*b^2*c + (5*B*b^2*c - 4*A*b*c^2)*x)*sqrt(-c)*arctan(sqrt(c*x
^2 + b*x)*sqrt(-c)/(c*x)) - (2*B*c^3*x^2 - 15*B*b^2*c + 12*A*b*c^2 - (5*B*b
*c^2 - 4*A*c^3)*x)*sqrt(c*x^2 + b*x))/(c^5*x + b*c^4)]
```

giac [A] time = 0.31, size = 135, normalized size = 1.00

$$\frac{1}{4}\sqrt{cx^2+bx}\left(\frac{2\,Bx}{c^2}-\frac{7\,Bbc^5-4\,Ac^6}{c^8}\right)-\frac{3\left(5\,Bb^2-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{7}{2}}}-\frac{2\left(Bb^3-Ab^2c\right)}{\left(\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)c+b\sqrt{c}\right)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x/c^2 - (7*B*b*c^5 - 4*A*c^6)/c^8) - 3/8*(5*B*b^
2 - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/
2) - 2*(B*b^3 - A*b^2*c)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*c + b*sqrt(c))*c
^3)
```

maple [A] time = 0.05, size = 166, normalized size = 1.23

$$\frac{B\,x^3}{2\sqrt{c\,x^2+bx}\;c}+\frac{A\,x^2}{\sqrt{c\,x^2+bx}\;c}-\frac{5Bb\,x^2}{4\sqrt{c\,x^2+bx}\;c^2}+\frac{3Abx}{\sqrt{c\,x^2+bx}\;c^2}-\frac{15B\,b^2x}{4\sqrt{c\,x^2+bx}\;c^3}-\frac{3Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{5}{2}}}+\frac{15B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/2*B*x^3/c/(c*x^2+b*x)^(1/2)-5/4*B*b/c^2*x^2/(c*x^2+b*x)^(1/2)-15/4*B*b^2/
c^3/(c*x^2+b*x)^(1/2)*x+15/8*B*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x)^(1/2))+A*x^2/c/(c*x^2+b*x)^(1/2)+3*A*b/c^2/(c*x^2+b*x)^(1/2)*x-3/2*A*b/c
^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.94, size = 163, normalized size = 1.21

$$\frac{Bx^3}{2\sqrt{cx^2+bx}\,c}-\frac{5\,Bbx^2}{4\sqrt{cx^2+bx}\,c^2}+\frac{Ax^2}{\sqrt{cx^2+bx}\,c}-\frac{15\,Bb^2x}{4\sqrt{cx^2+bx}\,c^3}+\frac{3\,Abx}{\sqrt{cx^2+bx}\,c^2}+\frac{15\,Bb^2\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8\,c^{\frac{7}{2}}}-\frac{3\,Ab\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^3/(sqrt(c*x^2 + b*x)*c) - 5/4*B*b*x^2/(sqrt(c*x^2 + b*x)*c^2) + A*x
^2/(sqrt(c*x^2 + b*x)*c) - 15/4*B*b^2*x/(sqrt(c*x^2 + b*x)*c^3) + 3*A*b*x/(
sqrt(c*x^2 + b*x)*c^2) + 15/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(7/2) - 3/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + Bx\right)}{\left(x \left(b + cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.122 $\int \frac{x^2(A+Bx)}{(bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=99

$$-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}+\frac{\sqrt{bx+cx^2}\,(3bB-2Ac)}{bc^2}-\frac{2x^2(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.09, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {788, 640, 620, 206}

$$\frac{\sqrt{bx+cx^2}\,(3bB-2Ac)}{bc^2}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}-\frac{2x^2(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^2)/(b*c*Sqrt[b*x + c*x^2]) + ((3*b*B - 2*A*c)*Sqrt[b*x +
c*x^2])/(b*c^2) - ((3*b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/
c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}}-\left(\frac{2A}{b}-\frac{3B}{c}\right)\int \frac{x}{\sqrt{bx+cx^2}}\,dx \\
&= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}}+\frac{(3bB-2Ac)\sqrt{bx+cx^2}}{bc^2}-\frac{(3bB-2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2c^2} \\
&= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}}+\frac{(3bB-2Ac)\sqrt{bx+cx^2}}{bc^2}-\frac{(3bB-2Ac)\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c^2} \\
&= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}}+\frac{(3bB-2Ac)\sqrt{bx+cx^2}}{bc^2}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.08, size = 88, normalized size = 0.89

$$
\frac{\sqrt{c}\,x(-2Ac+3bB+Bcx)-\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(3bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*x*(3*b*B - 2*A*c + B*c*x) - Sqrt[b]*(3*b*B - 2*A*c)*Sqrt[x]*Sqrt[1
 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(c^(5/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [**A**] time = 0.49, size = 83, normalized size = 0.84

$$
\frac{(3bB-2Ac)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{2c^{5/2}}+\frac{\sqrt{bx+cx^2}\,(-2Ac+3bB+Bcx)}{c^2(b+cx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] ((3*b*B - 2*A*c + B*c*x)*Sqrt[b*x + c*x^2])/(c^2*(b + c*x)) + ((3*b*B - 2*A
*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(2*c^(5/2))
```

fricas [**A**] time = 0.42, size = 202, normalized size = 2.04

$$
\left[-\frac{\left(3\,Bb^2-2\,Abc+\left(3\,Bbc-2\,Ac^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\left(Bc^2x+3\,Bbc-2\,Ac^2\right)\sqrt{cx^2+bx}}{2\,\left(c^4x+bc^3\right)},\ \frac{\left(3\,Bb^2-2\,Abc+\left(3\,Bbc-2\,Ac^2\right)x\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\left(Bc^2x+3\,Bbc-2\,Ac^2\right)\sqrt{cx^2+bx}}{c^4x+bc^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((3*B*b^2 - 2*A*b*c + (3*B*b*c - 2*A*c^2)*x)*sqrt(c)*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(B*c^2*x + 3*B*b*c - 2*A*c^2)*sqrt(c*x^2 +
 b*x))/(c^4*x + b*c^3), ((3*B*b^2 - 2*A*b*c + (3*B*b*c - 2*A*c^2)*x)*sqrt(-
c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (B*c^2*x + 3*B*b*c - 2*A*c^2)
*sqrt(c*x^2 + b*x))/(c^4*x + b*c^3)]
```

giac [**A**] time = 0.28, size = 106, normalized size = 1.07

$$
\frac{\sqrt{cx^2+bx}\,B}{c^2}+\frac{(3\,Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{5}{2}}}+\frac{2\left(Bb^2-Abc\right)}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)c+b\sqrt{c}\right)c^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c^2 + 1/2*(3*B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*sqrt(c) - b))/c^(5/2) + 2*(B*b^2 - A*b*c)/(((sqrt(c)*x - sqrt
(c*x^2 + b*x))*c + b*sqrt(c))*c^2)
```

maple [A] time = 0.05, size = 118, normalized size = 1.19

$$\frac{B\,x^2}{\sqrt{c\,x^2+bx}\;c}-\frac{2Ax}{\sqrt{c\,x^2+bx}\;c}+\frac{3Bbx}{\sqrt{c\,x^2+bx}\;c^2}+\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{c^{\frac{3}{2}}}-\frac{3Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] B*x^2/c/(c*x^2+b*x)^(1/2)+3*B*b/c^2/(c*x^2+b*x)^(1/2)*x-3/2*B*b/c^(5/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-2*A/c/(c*x^2+b*x)^(1/2)*x+A/c^(3/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.88, size = 115, normalized size = 1.16

$$\frac{Bx^2}{\sqrt{cx^2+bx}\,c}+\frac{3\,Bbx}{\sqrt{cx^2+bx}\,c^2}-\frac{2\,Ax}{\sqrt{cx^2+bx}\,c}-\frac{3\,Bb\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{5}{2}}}+\frac{A\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x^2/(sqrt(c*x^2 + b*x)*c) + 3*B*b*x/(sqrt(c*x^2 + b*x)*c^2) - 2*A*x/(sqrt
(c*x^2 + b*x)*c) - 3/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(
5/2) + A*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^2*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \left(A + Bx\right)}{\left(x \left(b + cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.123 $\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2x(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {777, 620, 206}

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2x(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x)/(b*c*Sqrt[b*x + c*x^2]) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[
b*x + c*x^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x}{bc\sqrt{bx+cx^2}}+\frac{B\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{c}\\ &= -\frac{2(bB-Ac)x}{bc\sqrt{bx+cx^2}}+\frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\ &= -\frac{2(bB-Ac)x}{bc\sqrt{bx+cx^2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 79, normalized size = 1.32

$$\frac{2\sqrt{c}\,x(Ac-bB)+2b^{3/2}B\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{bc^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[c]*(-(b*B) + A*c)*x + 2*b^(3/2)*B*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh
[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b*c^(3/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.37, size = 76, normalized size = 1.27

$$\frac{2\sqrt{bx+cx^2}\,(Ac-bB)}{bc(b+cx)}-\frac{B\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(-(b*B) + A*c)*Sqrt[b*x + c*x^2])/(b*c*(b + c*x)) - (B*Log[b*c + 2*c^2*x
 - 2*c^(3/2)*Sqrt[b*x + c*x^2]])/c^(3/2)
```

fricas [A] time = 0.42, size = 164, normalized size = 2.73

$$\left[\frac{\left(Bbcx+Bb^2\right)\sqrt{c}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(Bbc-Ac^2\right)\sqrt{cx^2+bx}}{bc^3x+b^2c^2},\,-\frac{2\left(\left(Bbcx+Bb^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\left(Bbc-Ac^2\right)\sqrt{cx^2+bx}\right)}{bc^3x+b^2c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [((B*b*c*x + B*b^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) -
2*(B*b*c - A*c^2)*sqrt(c*x^2 + b*x))/(b*c^3*x + b^2*c^2), -2*((B*b*c*x + B*
b^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (B*b*c - A*c^2)*sq
rt(c*x^2 + b*x))/(b*c^3*x + b^2*c^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%%{1,[1]%%%},[2,2]%%%}+%%%{%%{[-2,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3]%
%%}+%%%{1,[0,4]%%%} / %%%{%%%{1,[2]%%%},[2,0]%%%}+%%%{%%{[%%%{-2,[1]%%%},0]
:[1,0,%%%{-1,[1]%%%}]%%},[1,1]%%%}+%%%{%%%{1,[1]%%%},[0,2]%%%} Error: Bad A
rgument Value
```

maple [A] time = 0.05, size = 67, normalized size = 1.12

$$\frac{2Ax}{\sqrt{c\,x^2+bx}\;b}-\frac{2Bx}{\sqrt{c\,x^2+bx}\;c}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*B/c/(c*x^2+b*x)^(1/2)*x+B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/
2))+2*A/b/(c*x^2+b*x)^(1/2)*x
```

maxima [A] time = 0.87, size = 65, normalized size = 1.08

$$\frac{2\,Ax}{\sqrt{cx^2+bx}\,b}-\frac{2\,Bx}{\sqrt{cx^2+bx}\,c}+\frac{B\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*A*x/(sqrt(c*x^2 + b*x)*b) - 2*B*x/(sqrt(c*x^2 + b*x)*c) + B*log(2*c*x + b
 + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
```

mupad [B] time = 1.33, size = 64, normalized size = 1.07

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{c^{3/2}}+\frac{2\,A\,x}{b\,\sqrt{x\,\left(b+c\,x\right)}}-\frac{2\,B\,x}{c\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(3/2) + (2*A*x)/(b*(x*
(b + c*x))^(1/2)) - (2*B*x)/(c*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\,(A+Bx)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.124 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{3/2}} dx$

Optimal. Leaf size=33

$$-\frac{2(Ab - x(bB - 2Ac))}{b^2\sqrt{bx + cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {636}

$$-\frac{2(Ab - x(bB - 2Ac))}{b^2\sqrt{bx + cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(b^2*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A + Bx}{\left(bx + cx^2\right)^{3/2}} dx = -\frac{2(Ab - (bB - 2Ac)x)}{b^2\sqrt{bx + cx^2}}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.91

$$\frac{2bBx - 2A(b + 2cx)}{b^2\sqrt{x(b + cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*b*B*x - 2*A*(b + 2*c*x))/(b^2*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.32, size = 42, normalized size = 1.27

$$\frac{2\sqrt{bx + cx^2}\,(-Ab - 2Acx + bBx)}{b^2x(b + cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(-(A*b) + b*B*x - 2*A*c*x)*Sqrt[b*x + c*x^2])/(b^2*x*(b + c*x))
```

fricas [A] time = 0.40, size = 44, normalized size = 1.33

$$-\frac{2\sqrt{cx^2 + bx}\,(Ab - (Bb - 2\,Ac)x)}{b^2cx^2 + b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(c*x^2 + b*x)*(A*b - (B*b - 2*A*c)*x)/(b^2*c*x^2 + b^3*x)
```

giac [A] time = 0.22, size = 33, normalized size = 1.00

$$-\frac{2\left(\frac{A}{b}-\frac{(Bb-2\,Ac)x}{b^2}\right)}{\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(A/b - (B*b - 2*A*c)*x/b^2)/sqrt(c*x^2 + b*x)
```

maple [A] time = 0.05, size = 37, normalized size = 1.12

$$-\frac{2\,(cx+b)\,(2Acx-Bbx+Ab)\,x}{\left(c\,x^2+bx\right)^{\frac{3}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*(c*x+b)*x*(2*A*c*x-B*b*x+A*b)/b^2/(c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.90, size = 55, normalized size = 1.67

$$\frac{2\,Bx}{\sqrt{cx^2+bx}\,b}-\frac{4\,Acx}{\sqrt{cx^2+bx}\,b^2}-\frac{2\,A}{\sqrt{cx^2+bx}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*B*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*x/(sqrt(c*x^2 + b*x)*b^2) - 2*A/(sqrt(c
*x^2 + b*x)*b)
```

mupad [B] time = 1.12, size = 31, normalized size = 0.94

$$-\frac{2\,A\,b+4\,A\,c\,x-2\,B\,b\,x}{b^2\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] -(2*A*b + 4*A*c*x - 2*B*b*x)/(b^2*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(x\,(b+cx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.125 $\int \frac{A+Bx}{x\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$-\frac{2(b+2cx)(3bB-4Ac)}{3b^3\sqrt{bx+cx^2}}-\frac{2A}{3bx\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {792, 613}

$$-\frac{2(b+2cx)(3bB-4Ac)}{3b^3\sqrt{bx+cx^2}}-\frac{2A}{3bx\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(3*b*x*Sqrt[b*x + c*x^2]) - (2*(3*b*B - 4*A*c)*(b + 2*c*x))/(3*b^3*S
qrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2A}{3bx\sqrt{bx+cx^2}}+\frac{\left(2\left(bB-Ac+\frac{1}{2}(bB-2Ac)\right)\right)\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b}\\ &= -\frac{2A}{3bx\sqrt{bx+cx^2}}-\frac{2(3bB-4Ac)(b+2cx)}{3b^3\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.87

$$-\frac{2\left(A\left(b^2-4bcx-8c^2x^2\right)+3bBx(b+2cx)\right)}{3b^3x\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(3*b*B*x*(b + 2*c*x) + A*(b^2 - 4*b*c*x - 8*c^2*x^2)))/(3*b^3*x*Sqrt[x*
(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.34, size = 66, normalized size = 1.10

$$-\frac{2\sqrt{bx+cx^2}\left(Ab^2-4Abcx-8Ac^2x^2+3b^2Bx+6bBcx^2\right)}{3b^3x^2(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(b*x + c*x^2)^(3/2)),x]
[Out] (-2*Sqrt[b*x + c*x^2]*(A*b^2 + 3*b^2*B*x - 4*A*b*c*x + 6*b*B*c*x^2 - 8*A*c^
2*x^2))/(3*b^3*x^2*(b + c*x))
```

fricas [A] time = 0.40, size = 68, normalized size = 1.13

$$-\frac{2\left(Ab^2+2\left(3\,Bbc-4\,Ac^2\right)x^2+\left(3\,Bb^2-4\,Abc\right)x\right)\sqrt{cx^2+bx}}{3\left(b^3cx^3+b^4x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
[Out] -2/3*(A*b^2 + 2*(3*B*b*c - 4*A*c^2)*x^2 + (3*B*b^2 - 4*A*b*c)*x)*sqrt(c*x^2
 + b*x)/(b^3*c*x^3 + b^4*x^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(3/2),x, algorithm="giac")
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x), x)
```

maple [A] time = 0.05, size = 58, normalized size = 0.97

$$-\frac{2\,(cx+b)\left(-8A\,c^2x^2+6Bbc\,x^2-4Abcx+3B\,b^2x+A\,b^2\right)}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x)^(3/2),x)
[Out] -2/3*(c*x+b)*(-8*A*c^2*x^2+6*B*b*c*x^2-4*A*b*c*x+3*B*b^2*x+A*b^2)/b^3/(c*x^
2+b*x)^(3/2)
```

maxima [A] time = 0.91, size = 96, normalized size = 1.60

$$-\frac{4\,Bcx}{\sqrt{cx^2+bx}\,b^2}+\frac{16\,Ac^2x}{3\,\sqrt{cx^2+bx}\,b^3}-\frac{2\,B}{\sqrt{cx^2+bx}\,b}+\frac{8\,Ac}{3\,\sqrt{cx^2+bx}\,b^2}-\frac{2\,A}{3\,\sqrt{cx^2+bx}\,bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
[Out] -4*B*c*x/(sqrt(c*x^2 + b*x)*b^2) + 16/3*A*c^2*x/(sqrt(c*x^2 + b*x)*b^3) - 2
*B/(sqrt(c*x^2 + b*x)*b) + 8/3*A*c/(sqrt(c*x^2 + b*x)*b^2) - 2/3*A/(sqrt(c*
x^2 + b*x)*b*x)
```

mupad [B] time = 1.16, size = 62, normalized size = 1.03

$$-\frac{2\sqrt{c\,x^2+b\,x}\,\left(3\,B\,b^2\,x+A\,b^2+6\,B\,b\,c\,x^2-4\,A\,b\,c\,x-8\,A\,c^2\,x^2\right)}{3\,b^3\,x^2\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(A*b^2 - 8*A*c^2*x^2 + 3*B*b^2*x + 6*B*b*c*x^2 - 4*
A*b*c*x))/(3*b^3*x^2*(b + c*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left(x\left(b+cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(x*(b + c*x))**(3/2)), x)
```

3.126 $\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=93

$$\frac{8c(b+2cx)(5bB-6Ac)}{15b^4\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}-\frac{2A}{5bx^2\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.08, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 613}

$$\frac{8c(b+2cx)(5bB-6Ac)}{15b^4\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}-\frac{2A}{5bx^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(5*b*x^2*Sqrt[b*x + c*x^2]) - (2*(5*b*B - 6*A*c))/(15*b^2*x*Sqrt[b*x
 + c*x^2]) + (8*c*(5*b*B - 6*A*c)*(b + 2*c*x))/(15*b^4*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2A}{5bx^2\sqrt{bx+cx^2}}+\frac{\left(2\left(\frac{1}{2}(bB-2Ac)-2(-bB+Ac)\right)\right)\int \frac{1}{x\left(bx+cx^2\right)^{3/2}}\,dx}{5b}\\
&= -\frac{2A}{5bx^2\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}-\frac{(4c(5bB-6Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{15b^2}\\
&= -\frac{2A}{5bx^2\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}+\frac{8c(5bB-6Ac)(b+2cx)}{15b^4\sqrt{bx+cx^2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 0.81

$$-\frac{2\left(3A\left(b^3-2b^2cx+8bc^2x^2+16c^3x^3\right)+5bBx\left(b^2-4bcx-8c^2x^2\right)\right)}{15b^4x^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x]
[Out] (-2*(5*b*B*x*(b^2 - 4*b*c*x - 8*c^2*x^2) + 3*A*(b^3 - 2*b^2*c*x + 8*b*c^2*x
^2 + 16*c^3*x^3)))/(15*b^4*x^2*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.36, size = 91, normalized size = 0.98

$$\frac{2\sqrt{bx+cx^2}\left(-3Ab^3+6Ab^2cx-24Abc^2x^2-48Ac^3x^3-5b^3Bx+20b^2Bcx^2+40bBc^2x^3\right)}{15b^4x^3(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x]
[Out] (2*Sqrt[b*x + c*x^2]*(-3*A*b^3 - 5*b^3*B*x + 6*A*b^2*c*x + 20*b^2*B*c*x^2 -
 24*A*b*c^2*x^2 + 40*b*B*c^2*x^3 - 48*A*c^3*x^3))/(15*b^4*x^3*(b + c*x))
```

fricas [A] time = 0.41, size = 93, normalized size = 1.00

$$-\frac{2\left(3\,Ab^3-8\left(5\,Bbc^2-6\,Ac^3\right)x^3-4\left(5\,Bb^2c-6\,Abc^2\right)x^2+\left(5\,Bb^3-6\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{15\left(b^4cx^4+b^5x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
[Out] -2/15*(3*A*b^3 - 8*(5*B*b*c^2 - 6*A*c^3)*x^3 - 4*(5*B*b^2*c - 6*A*b*c^2)*x^
2 + (5*B*b^3 - 6*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*c*x^4 + b^5*x^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x, algorithm="giac")
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^2), x)
```

maple [A] time = 0.05, size = 86, normalized size = 0.92

$$-\frac{2\,(cx+b)\left(48A\,c^3x^3-40Bb\,c^2x^3+24Ab\,c^2x^2-20B\,b^2c\,x^2-6A\,b^2cx+5B\,b^3x+3A\,b^3\right)}{15\left(c\,x^2+bx\right)^{\frac{3}{2}}\,b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x)
[Out] -2/15*(c*x+b)*(48*A*c^3*x^3-40*B*b*c^2*x^3+24*A*b*c^2*x^2-20*B*b^2*c*x^2-6*
A*b^2*c*x+5*B*b^3*x+3*A*b^3)/x/b^4/(c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.92, size = 142, normalized size = 1.53

$$\frac{16\,Bc^2x}{3\,\sqrt{cx^2+bx}\,b^3}-\frac{32\,Ac^3x}{5\,\sqrt{cx^2+bx}\,b^4}+\frac{8\,Bc}{3\,\sqrt{cx^2+bx}\,b^2}-\frac{16\,Ac^2}{5\,\sqrt{cx^2+bx}\,b^3}-\frac{2\,B}{3\,\sqrt{cx^2+bx}\,bx}+\frac{4\,Ac}{5\,\sqrt{cx^2+bx}\,b^2x}-\frac{2\,A}{5\,\sqrt{cx^2+bx}\,bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 16/3*B*c^2*x/(sqrt(c*x^2 + b*x)*b^3) - 32/5*A*c^3*x/(sqrt(c*x^2 + b*x)*b^4)
 + 8/3*B*c/(sqrt(c*x^2 + b*x)*b^2) - 16/5*A*c^2/(sqrt(c*x^2 + b*x)*b^3) - 2
/3*B/(sqrt(c*x^2 + b*x)*b*x) + 4/5*A*c/(sqrt(c*x^2 + b*x)*b^2*x) - 2/5*A/(s
qrt(c*x^2 + b*x)*b*x^2)
```

mupad [B] time = 1.23, size = 87, normalized size = 0.94

$$-\frac{2\,\sqrt{c\,x^2+b\,x}\,\left(5\,B\,b^3\,x+3\,A\,b^3-20\,B\,b^2\,c\,x^2-6\,A\,b^2\,c\,x-40\,B\,b\,c^2\,x^3+24\,A\,b\,c^2\,x^2+48\,A\,c^3\,x^3\right)}{15\,b^4\,x^3\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^3 + 48*A*c^3*x^3 + 5*B*b^3*x - 6*A*b^2*c*x +
 24*A*b*c^2*x^2 - 20*B*b^2*c*x^2 - 40*B*b*c^2*x^3))/(15*b^4*x^3*(b + c*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\,(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*(x*(b + c*x))**(3/2)), x)
```

3.127 $\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=128

$$-\frac{16c^2(b+2cx)(7bB-8Ac)}{35b^5\sqrt{bx+cx^2}}+\frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}}-\frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}}-\frac{2A}{7bx^3\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.11, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 613}

$$-\frac{16c^2(b+2cx)(7bB-8Ac)}{35b^5\sqrt{bx+cx^2}}+\frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}}-\frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}}-\frac{2A}{7bx^3\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(7*b*x^3*Sqrt[b*x + c*x^2]) - (2*(7*b*B - 8*A*c))/(35*b^2*x^2*Sqrt[b
*x + c*x^2]) + (4*c*(7*b*B - 8*A*c))/(35*b^3*x*Sqrt[b*x + c*x^2]) - (16*c^2
*(7*b*B - 8*A*c)*(b + 2*c*x))/(35*b^5*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2A}{7bx^3\sqrt{bx+cx^2}} + \frac{\left(2\left(\frac{1}{2}(bB-2Ac)-3(-bB+Ac)\right)\right)\int \frac{1}{x^2\left(bx+cx^2\right)^{3/2}}\,dx}{7b}$$

$$= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} - \frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}} - \frac{(6c(7bB-8Ac))\int \frac{1}{x\left(bx+cx^2\right)^{3/2}}\,dx}{35b^2}$$

$$= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} - \frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}} + \frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}} + \frac{\left(8c^2(7bB-8Ac)\right)\int \frac{1}{\left(bx+cx^2 \right.}}{35b^3}$$

$$= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} - \frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}} + \frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}} - \frac{16c^2(7bB-8Ac)(b+2cx)}{35b^5\sqrt{bx+cx^2}}$$

Mathematica [**A**] time = 0.03, size = 98, normalized size = 0.77

$$-\frac{2\left(A\left(5b^4-8b^3cx+16b^2c^2x^2-64bc^3x^3-128c^4x^4\right)+7bBx\left(b^3-2b^2cx+8bc^2x^2+16c^3x^3\right)\right)}{35b^5x^3\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(7*b*B*x*(b^3 - 2*b^2*c*x + 8*b*c^2*x^2 + 16*c^3*x^3) + A*(5*b^4 - 8*b^
3*c*x + 16*b^2*c^2*x^2 - 64*b*c^3*x^3 - 128*c^4*x^4)))/(35*b^5*x^3*Sqrt[x*(
b + c*x)])
```

IntegrateAlgebraic [**A**] time = 0.39, size = 115, normalized size = 0.90

$$-\frac{2\sqrt{bx+cx^2}\left(5Ab^4-8Ab^3cx+16Ab^2c^2x^2-64Abc^3x^3-128Ac^4x^4+7b^4Bx-14b^3Bcx^2+56b^2Bc^2x^3+112bBc^3x^4\right)}{35b^5x^4(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(5*A*b^4 + 7*b^4*B*x - 8*A*b^3*c*x - 14*b^3*B*c*x^2 +
 16*A*b^2*c^2*x^2 + 56*b^2*B*c^2*x^3 - 64*A*b*c^3*x^3 + 112*b*B*c^3*x^4 - 1
28*A*c^4*x^4))/(35*b^5*x^4*(b + c*x))
```

fricas [**A**] time = 0.40, size = 117, normalized size = 0.91

$$-\frac{2\left(5Ab^4+16\left(7Bbc^3-8Ac^4\right)x^4+8\left(7Bb^2c^2-8Abc^3\right)x^3-2\left(7Bb^3c-8Ab^2c^2\right)x^2+\left(7Bb^4-8Ab^3c\right)x\right)\sqrt{cx^2+bx}}{35\left(b^5cx^5+b^6x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/35*(5*A*b^4 + 16*(7*B*b*c^3 - 8*A*c^4)*x^4 + 8*(7*B*b^2*c^2 - 8*A*b*c^3)
*x^3 - 2*(7*B*b^3*c - 8*A*b^2*c^2)*x^2 + (7*B*b^4 - 8*A*b^3*c)*x)*sqrt(c*x^
2 + b*x)/(b^5*c*x^5 + b^6*x^4)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^3), x)
```

maple [A] time = 0.06, size = 110, normalized size = 0.86

$$-\frac{2\left(cx+b\right)\left(-128A\,c^{4}x^{4}+112Bb\,c^{3}x^{4}-64Ab\,c^{3}x^{3}+56B\,b^{2}c^{2}x^{3}+16A\,b^{2}c^{2}x^{2}-14B\,b^{3}c\,x^{2}-8A\,b^{3}cx+7b^{4}Bx+5A\,b^{4}\right)}{35\left(c\,x^{2}+bx\right)^{\frac{3}{2}}b^{5}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/35*(c*x+b)*(-128*A*c^4*x^4+112*B*b*c^3*x^4-64*A*b*c^3*x^3+56*B*b^2*c^2*x
^3+16*A*b^2*c^2*x^2-14*B*b^3*c*x^2-8*A*b^3*c*x+7*B*b^4*x+5*A*b^4)/x^2/b^5/(
c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.92, size = 188, normalized size = 1.47

$$-\frac{32\,Bc^{3}x}{5\,\sqrt{cx^{2}+bx}\,b^{4}}+\frac{256\,Ac^{4}x}{35\,\sqrt{cx^{2}+bx}\,b^{5}}-\frac{16\,Bc^{2}}{5\,\sqrt{cx^{2}+bx}\,b^{3}}+\frac{128\,Ac^{3}}{35\,\sqrt{cx^{2}+bx}\,b^{4}}+\frac{4\,Bc}{5\,\sqrt{cx^{2}+bx}\,b^{2}x}-\frac{32\,Ac^{2}}{35\,\sqrt{cx^{2}+bx}\,b^{3}x}-\frac{2\,B}{5\,\sqrt{cx^{2}+bx}\,bx^{2}}+\frac{16\,Ac}{35\,\sqrt{cx^{2}+bx}\,b^{2}x^{2}}-\frac{2\,A}{7\,\sqrt{cx^{2}+bx}\,bx^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -32/5*B*c^3*x/(sqrt(c*x^2 + b*x)*b^4) + 256/35*A*c^4*x/(sqrt(c*x^2 + b*x)*b
^5) - 16/5*B*c^2/(sqrt(c*x^2 + b*x)*b^3) + 128/35*A*c^3/(sqrt(c*x^2 + b*x)*
b^4) + 4/5*B*c/(sqrt(c*x^2 + b*x)*b^2*x) - 32/35*A*c^2/(sqrt(c*x^2 + b*x)*b
^3*x) - 2/5*B/(sqrt(c*x^2 + b*x)*b*x^2) + 16/35*A*c/(sqrt(c*x^2 + b*x)*b^2*
x^2) - 2/7*A/(sqrt(c*x^2 + b*x)*b*x^3)
```

mupad [B] time = 1.29, size = 161, normalized size = 1.26

$$-\frac{\left(14\,B\,b^{2}-26\,A\,b\,c\right)\,\sqrt{c\,x^{2}+b\,x}}{35\,b^{4}\,x^{3}}-\frac{2\,A\,\sqrt{c\,x^{2}+b\,x}}{7\,b^{2}\,x^{4}}-\frac{\sqrt{c\,x^{2}+b\,x}\,\left(x\,\left(\frac{116\,A\,c^{4}-84\,B\,b\,c^{3}}{35\,b^{5}}-\frac{4\,c^{3}\,\left(93\,A\,c-77\,B\,b\right)}{35\,b^{5}}\right)-\frac{2\,c^{2}\,\left(93\,A\,c-77\,B\,b\right)}{35\,b^{4}}\right)}{x\,\left(b+c\,x\right)}-\frac{2\,c\,\sqrt{c\,x^{2}+b\,x}\,\left(29\,A\,c-21\,B\,b\right)}{35\,b^{4}\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] - ((14*B*b^2 - 26*A*b*c)*(b*x + c*x^2)^(1/2))/(35*b^4*x^3) - (2*A*(b*x + c*
x^2)^(1/2))/(7*b^2*x^4) - ((b*x + c*x^2)^(1/2)*(x*((116*A*c^4 - 84*B*b*c^3)
/(35*b^5) - (4*c^3*(93*A*c - 77*B*b))/(35*b^5)) - (2*c^2*(93*A*c - 77*B*b))
/(35*b^4)))/(x*(b + c*x)) - (2*c*(b*x + c*x^2)^(1/2)*(29*A*c - 21*B*b))/(35
*b^4*x^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{3}\left(x\left(b+cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*(x*(b + c*x))**(3/2)), x)
```

3.128 $\int \frac{A+Bx}{x^4\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=163

$$\frac{128c^3(b+2cx)(9bB-10Ac)}{315b^6\sqrt{bx+cx^2}}-\frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}}+\frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}}-\frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}}-\frac{2A}{9bx^4\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.14, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 613}

$$\frac{128c^3(b+2cx)(9bB-10Ac)}{315b^6\sqrt{bx+cx^2}}-\frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}}+\frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}}-\frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}}-\frac{2A}{9bx^4\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(9*b*x^4*Sqrt[b*x + c*x^2]) - (2*(9*b*B - 10*A*c))/(63*b^2*x^3*Sqrt[
b*x + c*x^2]) + (16*c*(9*b*B - 10*A*c))/(315*b^3*x^2*Sqrt[b*x + c*x^2]) - (
32*c^2*(9*b*B - 10*A*c))/(315*b^4*x*Sqrt[b*x + c*x^2]) + (128*c^3*(9*b*B -
10*A*c)*(b + 2*c*x))/(315*b^6*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^4\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2A}{9bx^4\sqrt{bx+cx^2}} + \frac{\left(2\left(\frac{1}{2}(bB-2Ac)-4(-bB+Ac)\right)\right)\int \frac{1}{x^3\left(bx+cx^2\right)^{3/2}}\,dx}{9b}$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} - \frac{(8c(9bB-10Ac))\int \frac{1}{x^2\left(bx+cx^2\right)^{3/2}}\,dx}{63b^2}$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} + \frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}} + \frac{\left(16c^2(9bB-10Ac)\right)\int}{105b^3}$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} + \frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}} - \frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}} - $$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} + \frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}} - \frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}} + $$

Mathematica [A] time = 0.03, size = 123, normalized size = 0.75

$$-\frac{2\left(5A\left(7b^5-10b^4cx+16b^3c^2x^2-32b^2c^3x^3+128bc^4x^4+256c^5x^5\right)+9bBx\left(5b^4-8b^3cx+16b^2c^2x^2-64bc^3x^3-128c^4x^4\right)\right)}{315b^6x^4\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(9*b*B*x*(5*b^4 - 8*b^3*c*x + 16*b^2*c^2*x^2 - 64*b*c^3*x^3 - 128*c^4*x
^4) + 5*A*(7*b^5 - 10*b^4*c*x + 16*b^3*c^2*x^2 - 32*b^2*c^3*x^3 + 128*b*c^4
*x^4 + 256*c^5*x^5)))/(315*b^6*x^4*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.42, size = 139, normalized size = 0.85

$$\frac{2\sqrt{bx+cx^2}\left(-35Ab^5+50Ab^4cx-80Ab^3c^2x^2+160Ab^2c^3x^3-640Abc^4x^4-1280Ac^5x^5-45b^5Bx+72b^4Bcx^2-144b^3Bc^2x^3+576b^2Bc^3x^4+1152bBc^4x^5\right)}{315b^6x^5(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-35*A*b^5 - 45*b^5*B*x + 50*A*b^4*c*x + 72*b^4*B*c*x^
2 - 80*A*b^3*c^2*x^2 - 144*b^3*B*c^2*x^3 + 160*A*b^2*c^3*x^3 + 576*b^2*B*c^
3*x^4 - 640*A*b*c^4*x^4 + 1152*b*B*c^4*x^5 - 1280*A*c^5*x^5))/(315*b^6*x^5*
(b + c*x))
```

fricas [A] time = 0.41, size = 142, normalized size = 0.87

$$-\frac{2\left(35\,Ab^5-128\left(9\,Bbc^4-10\,Ac^5\right)x^5-64\left(9\,Bb^2c^3-10\,Abc^4\right)x^4+16\left(9\,Bb^3c^2-10\,Ab^2c^3\right)x^3-8\left(9\,Bb^4c-10\,Ab^3c^2\right)x^2+5\left(9\,Bb^5-10\,Ab^4c\right)x\right)\sqrt{cx^2+bx}}{315\left(b^6cx^6+b^7x^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^5 - 128*(9*B*b*c^4 - 10*A*c^5)*x^5 - 64*(9*B*b^2*c^3 - 10*A*
b*c^4)*x^4 + 16*(9*B*b^3*c^2 - 10*A*b^2*c^3)*x^3 - 8*(9*B*b^4*c - 10*A*b^3*
c^2)*x^2 + 5*(9*B*b^5 - 10*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^6*c*x^6 + b^7*x
^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{3}{2}} x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^4), x)
```

maple [A] time = 0.05, size = 134, normalized size = 0.82

$$-\frac{2\,(cx+b)\left(1280 A\,c^5 x^5 - 1152 B b\,c^4 x^5 + 640 A b\,c^4 x^4 - 576 B\,b^2 c^3 x^4 - 160 A\,b^2 c^3 x^3 + 144 B\,b^3 c^2 x^3 + 80 A\,b^3 c^2 x^2 - 72 B\,b^4 c\,x^2 - 50 A\,b^4 c x + 45 B\,b^5 x + 35 A\,b^5\right)}{315\left(c\,x^2 + bx\right)^{\frac{3}{2}} b^6 x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/315*(c*x+b)*(1280*A*c^5*x^5-1152*B*b*c^4*x^5+640*A*b*c^4*x^4-576*B*b^2*c
^3*x^4-160*A*b^2*c^3*x^3+144*B*b^3*c^2*x^3+80*A*b^3*c^2*x^2-72*B*b^4*c*x^2-
50*A*b^4*c*x+45*B*b^5*x+35*A*b^5)/x^3/b^6/(c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.52, size = 234, normalized size = 1.44

$$\frac{256\,Bc^4 x}{35\,\sqrt{cx^2 + bx}\,b^5} - \frac{512\,Ac^5 x}{63\,\sqrt{cx^2 + bx}\,b^6} + \frac{128\,Bc^3}{35\,\sqrt{cx^2 + bx}\,b^4} - \frac{256\,Ac^4}{63\,\sqrt{cx^2 + bx}\,b^5} - \frac{32\,Bc^2}{35\,\sqrt{cx^2 + bx}\,b^3 x} + \frac{64\,Ac^3}{63\,\sqrt{cx^2 + bx}\,b^4 x} + \frac{16\,Bc}{35\,\sqrt{cx^2 + bx}\,b^2 x^2} - \frac{32\,Ac^2}{63\,\sqrt{cx^2 + bx}\,b^3 x^2} - \frac{2\,B}{7\,\sqrt{cx^2 + bx}\,bx^3} + \frac{20\,Ac}{63\,\sqrt{cx^2 + bx}\,b^2 x^3} - \frac{2\,A}{9\,\sqrt{cx^2 + bx}\,bx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 256/35*B*c^4*x/(sqrt(c*x^2 + b*x)*b^5) - 512/63*A*c^5*x/(sqrt(c*x^2 + b*x)*
b^6) + 128/35*B*c^3/(sqrt(c*x^2 + b*x)*b^4) - 256/63*A*c^4/(sqrt(c*x^2 + b*
x)*b^5) - 32/35*B*c^2/(sqrt(c*x^2 + b*x)*b^3*x) + 64/63*A*c^3/(sqrt(c*x^2 +
 b*x)*b^4*x) + 16/35*B*c/(sqrt(c*x^2 + b*x)*b^2*x^2) - 32/63*A*c^2/(sqrt(c*
x^2 + b*x)*b^3*x^2) - 2/7*B/(sqrt(c*x^2 + b*x)*b*x^3) + 20/63*A*c/(sqrt(c*x
^2 + b*x)*b^2*x^3) - 2/9*A/(sqrt(c*x^2 + b*x)*b*x^4)
```

mupad [B] time = 1.36, size = 191, normalized size = 1.17

$$\frac{\sqrt{c\,x^2 + b\,x}\,\left(x\,\left(\frac{1300\,A\,c^5 - 1044\,B\,b\,c^4}{315\,b^6} - \frac{4\,c^4\,(965\,A\,c - 837\,B\,b)}{315\,b^6}\right) - \frac{2\,c^3\,(965\,A\,c - 837\,B\,b)}{315\,b^5}\right)}{x\,(b + c\,x)} - \frac{2\,A\,\sqrt{c\,x^2 + b\,x}}{9\,b^2\,x^5} - \frac{\left(18\,B\,b^2 - 34\,A\,b\,c\right)\,\sqrt{c\,x^2 + b\,x}}{63\,b^4\,x^4} - \frac{2\,c\,\sqrt{c\,x^2 + b\,x}\,\,(55\,A\,c - 39\,B\,b)}{105\,b^4\,x^3} + \frac{2\,c^2\,\sqrt{c\,x^2 + b\,x}\,\,(325\,A\,c - 261\,B\,b)}{315\,b^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(x*((1300*A*c^5 - 1044*B*b*c^4)/(315*b^6) - (4*c^4*(96
5*A*c - 837*B*b))/(315*b^6)) - (2*c^3*(965*A*c - 837*B*b))/(315*b^5)))/(x*(
b + c*x)) - (2*A*(b*x + c*x^2)^(1/2))/(9*b^2*x^5) - ((18*B*b^2 - 34*A*b*c)*
(b*x + c*x^2)^(1/2))/(63*b^4*x^4) - (2*c*(b*x + c*x^2)^(1/2)*(55*A*c - 39*B
*b))/(105*b^4*x^3) + (2*c^2*(b*x + c*x^2)^(1/2)*(325*A*c - 261*B*b))/(315*b
^5*x^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^4 \left(x \left(b + cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**4*(x*(b + c*x))**(3/2)), x)
```

3.129 $\int \frac{x^5(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=172

$$\frac{5b(7bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{9/2}}-\frac{5\sqrt{bx+cx^2}\,(7bB-4Ac)}{4c^4}+\frac{5x\sqrt{bx+cx^2}\,(7bB-4Ac)}{6bc^3}-\frac{2x^3(7bB-4Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2}{3bc}$$

Rubi [A] time = 0.17, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {788, 668, 670, 640, 620, 206}

$$-\frac{2x^3(7bB-4Ac)}{3bc^2\sqrt{bx+cx^2}}+\frac{5x\sqrt{bx+cx^2}\,(7bB-4Ac)}{6bc^3}-\frac{5\sqrt{bx+cx^2}\,(7bB-4Ac)}{4c^4}+\frac{5b(7bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{9/2}}-\frac{2x^5(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^5)/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*(7*b*B - 4*A*c)*x^3)/
(3*b*c^2*Sqrt[b*x + c*x^2]) - (5*(7*b*B - 4*A*c)*Sqrt[b*x + c*x^2])/(4*c^4)
 + (5*(7*b*B - 4*A*c)*x*Sqrt[b*x + c*x^2])/(6*b*c^3) + (5*b*(7*b*B - 4*A*c)
*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^5(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{1}{3}\left(\frac{4A}{b}-\frac{7B}{c}\right)\int \frac{x^4}{\left(bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} + \frac{(5(7bB-4Ac))\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{3bc^2}$$

$$= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} + \frac{5(7bB-4Ac)x\sqrt{bx+cx^2}}{6bc^3} - \frac{(5(7bB-4Ac))\int \frac{}{\sqrt{bx}}}{4c^3}$$

$$= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} - \frac{5(7bB-4Ac)\sqrt{bx+cx^2}}{4c^4} + \frac{5(7bB-4Ac)x\sqrt{bx+c}}{6bc^3}$$

$$= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} - \frac{5(7bB-4Ac)\sqrt{bx+cx^2}}{4c^4} + \frac{5(7bB-4Ac)x\sqrt{bx+c}}{6bc^3}$$

$$= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} - \frac{5(7bB-4Ac)\sqrt{bx+cx^2}}{4c^4} + \frac{5(7bB-4Ac)x\sqrt{bx+c}}{6bc^3}$$

Mathematica [C] time = 0.06, size = 80, normalized size = 0.47

$$\frac{2x^5\left((b+cx)\sqrt{\frac{cx}{b}+1}\,(7bB-4Ac)\,{}_2F_1\left(\frac{3}{2},\frac{7}{2};\frac{9}{2};-\frac{cx}{b}\right)+7b(Ac-bB)\right)}{21b^2c(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^5*(7*b*(-(b*B) + A*c) + (7*b*B - 4*A*c)*(b + c*x)*Sqrt[1 + (c*x)/b]*Hy
pergeometric2F1[3/2, 7/2, 9/2, -((c*x)/b)]))/(21*b^2*c*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.61, size = 140, normalized size = 0.81

$$\frac{\sqrt{bx+cx^2}\left(60Ab^2c+80Abc^2x+12Ac^3x^2-105b^3B-140b^2Bcx-21bBc^2x^2+6Bc^3x^3\right)}{12c^4(b+cx)^2}-\frac{5\left(7b^2B-4Abc\right)\log\left(-2c^{9/2}\sqrt{bx+cx^2}+bc^4+2c^5x\right)}{8c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-105*b^3*B + 60*A*b^2*c - 140*b^2*B*c*x + 80*A*b*c^2*x
- 21*b*B*c^2*x^2 + 12*A*c^3*x^2 + 6*B*c^3*x^3))/(12*c^4*(b + c*x)^2) - (5*(
```

```
7*b^2*B - 4*A*b*c)*Log[b*c^4 + 2*c^5*x - 2*c^(9/2)*Sqrt[b*x + c*x^2]])/(8*c
^(9/2))
```

fricas [A] time = 0.43, size = 380, normalized size = 2.21

$$\left[-\frac{15\left(7Bb^4-4Ab^3c+\left(7Bb^2c^2-4Abc^3\right)x^2+2\left(7Bb^3c-4Ab^2c^2\right)x\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(6Bc^4x^3-105Bb^3c+60Ab^2c^2-3\left(7Bbc^3-4Ac^4\right)x^2-20\left(7Bb^2c^2-4Abc^3\right)x\right)\sqrt{cx^2+bx}}{24\left(c^7x^2+2bc^6x+b^2c^5\right)}, -\frac{15\left(7Bb^4-4Ab^3c+\left(7Bb^2c^2-4Abc^3\right)x^2+2\left(7Bb^3c-4Ab^2c^2\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(6Bc^4x^3-105Bb^3c+60Ab^2c^2-3\left(7Bbc^3-4Ac^4\right)x^2-20\left(7Bb^2c^2-4Abc^3\right)x\right)\sqrt{cx^2+bx}}{12\left(c^7x^2+2bc^6x+b^2c^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(15*(7*B*b^4 - 4*A*b^3*c + (7*B*b^2*c^2 - 4*A*b*c^3)*x^2 + 2*(7*B*b^
3*c - 4*A*b^2*c^2)*x)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c))
- 2*(6*B*c^4*x^3 - 105*B*b^3*c + 60*A*b^2*c^2 - 3*(7*B*b*c^3 - 4*A*c^4)*x^2
 - 20*(7*B*b^2*c^2 - 4*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/(c^7*x^2 + 2*b*c^6*x
+ b^2*c^5), -1/12*(15*(7*B*b^4 - 4*A*b^3*c + (7*B*b^2*c^2 - 4*A*b*c^3)*x^2
+ 2*(7*B*b^3*c - 4*A*b^2*c^2)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)
/(c*x)) - (6*B*c^4*x^3 - 105*B*b^3*c + 60*A*b^2*c^2 - 3*(7*B*b*c^3 - 4*A*c^
4)*x^2 - 20*(7*B*b^2*c^2 - 4*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/(c^7*x^2 + 2*b*
c^6*x + b^2*c^5)]
```

giac [A] time = 0.49, size = 253, normalized size = 1.47

$$\frac{1}{4}\sqrt{cx^2+bx}\left(\frac{2Bx}{c^3}-\frac{11Bbc^7-4Ac^8}{c^{11}}\right)-\frac{5\left(7Bb^2-4Abc\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8c^{\frac{9}{2}}}-\frac{2\left(12\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^3c^{\frac{3}{2}}-9\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^2c^{\frac{5}{2}}+21\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Bb^4c-15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^3c^2+10Bb^5\sqrt{c}-7Ab^4c^{\frac{3}{2}}\right)}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right)^3c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x/c^3 - (11*B*b*c^7 - 4*A*c^8)/c^11) - 5/8*(7*B*
b^2 - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(
9/2) - 2/3*(12*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^(3/2) - 9*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(5/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^4*c - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c^2 + 10*B*b^5*sqrt(c)
 - 7*A*b^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b)^3*c^5)
```

maple [B] time = 0.05, size = 338, normalized size = 1.97

$$\frac{Bx^5}{2\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{Ax^4}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{7Bbx^4}{4\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{5Abx^3}{6\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{35Bb^2x^3}{24\left(cx^2+bx\right)^{\frac{3}{2}}c^3}-\frac{5Ab^2x^2}{4\left(cx^2+bx\right)^{\frac{3}{2}}c^3}+\frac{35Bb^3x^2}{16\left(cx^2+bx\right)^{\frac{3}{2}}c^4}-\frac{5Ab^3x}{12\left(cx^2+bx\right)^{\frac{3}{2}}c^4}+\frac{35Bb^4x}{48\left(cx^2+bx\right)^{\frac{3}{2}}c^5}+\frac{35Abx}{6\sqrt{cx^2+bx}\,c^3}-\frac{245Bb^2x}{24\sqrt{cx^2+bx}\,c^4}-\frac{5Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{7}{2}}}+\frac{35Bb^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{9}{2}}}+\frac{5Ab^2}{12\sqrt{cx^2+bx}\,c^4}-\frac{35Bb^3}{48\sqrt{cx^2+bx}\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/2*B*x^5/c/(c*x^2+b*x)^(3/2)-7/4*B*b/c^2*x^4/(c*x^2+b*x)^(3/2)-35/24*B*b^2
/c^3*x^3/(c*x^2+b*x)^(3/2)+35/16*B*b^3/c^4*x^2/(c*x^2+b*x)^(3/2)+35/48*B*b^
4/c^5/(c*x^2+b*x)^(3/2)*x-245/24*B*b^2/c^4/(c*x^2+b*x)^(1/2)*x-35/48*B*b^3/
c^5/(c*x^2+b*x)^(1/2)+35/8*B*b^2/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)
^(1/2))+A*x^4/c/(c*x^2+b*x)^(3/2)+5/6*A*b/c^2*x^3/(c*x^2+b*x)^(3/2)-5/4*A*b
^2/c^3*x^2/(c*x^2+b*x)^(3/2)-5/12*A*b^3/c^4/(c*x^2+b*x)^(3/2)*x+35/6*A*b/c^
3/(c*x^2+b*x)^(1/2)*x+5/12*A*b^2/c^4/(c*x^2+b*x)^(1/2)-5/2*A*b/c^(7/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.68, size = 362, normalized size = 2.10

$$\frac{Bx^5}{2\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{35Bb^2x\left(\frac{3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)}{24c^2}+\frac{5Abx\left(\frac{3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)}{6c}-\frac{7Bbx^4}{4\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{Ax^4}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{35Bb^2x}{6\sqrt{cx^2+bx}\,c^4}+\frac{10Abx}{3\sqrt{cx^2+bx}\,c^3}+\frac{35Bb^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{9}{2}}}-\frac{5Ab\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2c^{\frac{7}{2}}}-\frac{35\sqrt{cx^2+bx}\,Bb}{12c^4}+\frac{5\sqrt{cx^2+bx}\,A}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^5/((c*x^2 + b*x)^(3/2)*c) - 35/24*B*b^2*x*(3*x^2/((c*x^2 + b*x)^(3/
2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sq
rt(c*x^2 + b*x)*c^2))/c^2 + 5/6*A*b*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/
((c*x^2 + b*x)^(3/2)*c^2) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b
*x)*c^2))/c - 7/4*B*b*x^4/((c*x^2 + b*x)^(3/2)*c^2) + A*x^4/((c*x^2 + b*x)^
(3/2)*c) - 35/6*B*b^2*x/(sqrt(c*x^2 + b*x)*c^4) + 10/3*A*b*x/(sqrt(c*x^2 +
b*x)*c^3) + 35/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2)
 - 5/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 35/12*sqr
t(c*x^2 + b*x)*B*b/c^4 + 5/3*sqrt(c*x^2 + b*x)*A/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^5\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^5*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{5} \left(A + B x\right)}{\left(x \left(b + c x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**5*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.130 $\int \frac{x^4(A+Bx)}{(bx+cx^2)^{5/2}} \, dx$

Optimal. Leaf size=136

$$-\frac{(5bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{7/2}}+\frac{\sqrt{bx+cx^2}\,(5bB-2Ac)}{bc^3}-\frac{2x^2(5bB-2Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^4(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {788, 668, 640, 620, 206}

$$-\frac{2x^2(5bB-2Ac)}{3bc^2\sqrt{bx+cx^2}}+\frac{\sqrt{bx+cx^2}\,(5bB-2Ac)}{bc^3}-\frac{(5bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{7/2}}-\frac{2x^4(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^4)/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*(5*b*B - 2*A*c)*x^2)/
(3*b*c^2*Sqrt[b*x + c*x^2]) + ((5*b*B - 2*A*c)*Sqrt[b*x + c*x^2])/(b*c^3) -
 ((5*b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(7/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{1}{3}\left(\frac{2A}{b}-\frac{5B}{c}\right)\int \frac{x^3}{\left(bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}} + \frac{(5bB-2Ac)\int \frac{x}{\sqrt{bx+cx^2}}\,dx}{bc^2}$$

$$= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}} + \frac{(5bB-2Ac)\sqrt{bx+cx^2}}{bc^3} - \frac{(5bB-2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,\ldots}{2c^3}$$

$$= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}} + \frac{(5bB-2Ac)\sqrt{bx+cx^2}}{bc^3} - \frac{(5bB-2Ac)\,\mathrm{Subst}\left(\int \ldots\right.}{c^3}$$

$$= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}} + \frac{(5bB-2Ac)\sqrt{bx+cx^2}}{bc^3} - \frac{(5bB-2Ac)\tanh^{-1}\left(\ldots\right.}{c^{7/2}}$$

Mathematica [C] time = 0.06, size = 80, normalized size = 0.59

$$\frac{2x^4\left((b+cx)\sqrt{\frac{cx}{b}+1}\,(5bB-2Ac)\,{}_2F_1\left(\frac{3}{2},\frac{5}{2};\frac{7}{2};-\frac{cx}{b}\right)+5b(Ac-bB)\right)}{15b^2c(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^4*(5*b*(-(b*B) + A*c) + (5*b*B - 2*A*c)*(b + c*x)*Sqrt[1 + (c*x)/b]*Hy
pergeometric2F1[3/2, 5/2, 7/2, -((c*x)/b)]))/(15*b^2*c*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.51, size = 107, normalized size = 0.79

$$\frac{\sqrt{bx+cx^2}\left(-6Abc-8Ac^2x+15b^2B+20bBcx+3Bc^2x^2\right)}{3c^3(b+cx)^2}+\frac{(5bB-2Ac)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(15*b^2*B - 6*A*b*c + 20*b*B*c*x - 8*A*c^2*x + 3*B*c^2*x
^2))/(3*c^3*(b + c*x)^2) + ((5*b*B - 2*A*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[
b*x + c*x^2]])/(2*c^(7/2))
```

fricas [A] time = 0.43, size = 321, normalized size = 2.36

$$\left[-\frac{3\left(5Bb^3-2Ab^2c+\left(5Bbc^2-2Ac^3\right)x^2+2\left(5Bb^2c-2Abc^2\right)x\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(3Bc^3x^2+15Bb^2c-6Abc^2+4\left(5Bbc^2-2Ac^3\right)x\right)\sqrt{cx^2+bx}}{6\left(c^6x^2+2bc^5x+b^2c^4\right)}, \frac{3\left(5Bb^3-2Ab^2c+\left(5Bbc^2-2Ac^3\right)x^2+2\left(5Bb^2c-2Abc^2\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(3Bc^3x^2+15Bb^2c-6Abc^2+4\left(5Bbc^2-2Ac^3\right)x\right)\sqrt{cx^2+bx}}{3\left(c^6x^2+2bc^5x+b^2c^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(5*B*b^3 - 2*A*b^2*c + (5*B*b*c^2 - 2*A*c^3)*x^2 + 2*(5*B*b^2*c -
2*A*b*c^2)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(3*B
```

```
*c^3*x^2 + 15*B*b^2*c - 6*A*b*c^2 + 4*(5*B*b*c^2 - 2*A*c^3)*x)*sqrt(c*x^2 +
 b*x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4), 1/3*(3*(5*B*b^3 - 2*A*b^2*c + (5*B*
b*c^2 - 2*A*c^3)*x^2 + 2*(5*B*b^2*c - 2*A*b*c^2)*x)*sqrt(-c)*arctan(sqrt(c*
x^2 + b*x)*sqrt(-c)/(c*x)) + (3*B*c^3*x^2 + 15*B*b^2*c - 6*A*b*c^2 + 4*(5*B
*b*c^2 - 2*A*c^3)*x)*sqrt(c*x^2 + b*x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4)]
```

giac [A] time = 0.29, size = 224, normalized size = 1.65

$$\frac{\sqrt{cx^2+bx}B}{c^3}+\frac{(5Bb-2Ac)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2c^{\frac{7}{2}}}+\frac{2\left(9\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^2c^{\frac{3}{2}}-6\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Abc^{\frac{5}{2}}+15\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Bb^3c-9\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^2c^2+7Bb^4\sqrt{c}-4Ab^3c^{\frac{3}{2}}\right)}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right)^3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c^3 + 1/2*(5*B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*sqrt(c) - b))/c^(7/2) + 2/3*(9*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*B*b^2*c^(3/2) - 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(5/2) + 15*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*c - 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A
*b^2*c^2 + 7*B*b^4*sqrt(c) - 4*A*b^3*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b
*x))*sqrt(c) + b)^3*c^4)
```

maple [B] time = 0.05, size = 283, normalized size = 2.08

$$\frac{Bx^4}{(cx^2+bx)^{\frac{3}{2}}c}-\frac{Ax^3}{3(cx^2+bx)^{\frac{3}{2}}c}+\frac{5Bbx^3}{6(cx^2+bx)^{\frac{3}{2}}c^2}+\frac{Abx^2}{2(cx^2+bx)^{\frac{3}{2}}c^2}-\frac{5Bb^2x^2}{4(cx^2+bx)^{\frac{3}{2}}c^3}+\frac{Ab^2x}{6(cx^2+bx)^{\frac{3}{2}}c^3}-\frac{5Bb^3x}{12(cx^2+bx)^{\frac{3}{2}}c^4}-\frac{7Ax}{3\sqrt{cx^2+bx}\,c^2}+\frac{35Bbx}{6\sqrt{cx^2+bx}\,c^3}+\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{c^{\frac{5}{2}}}-\frac{5Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{7}{2}}}-\frac{Ab}{6\sqrt{cx^2+bx}\,c^3}+\frac{5Bb^2}{12\sqrt{cx^2+bx}\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] B*x^4/c/(c*x^2+b*x)^(3/2)+5/6*B*b/c^2*x^3/(c*x^2+b*x)^(3/2)-5/4*B*b^2/c^3*x
^2/(c*x^2+b*x)^(3/2)-5/12*B*b^3/c^4/(c*x^2+b*x)^(3/2)*x+35/6*B*b/c^3/(c*x^2
+b*x)^(1/2)*x+5/12*B*b^2/c^4/(c*x^2+b*x)^(1/2)-5/2*B*b/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x)^(1/2))-1/3*A*x^3/c/(c*x^2+b*x)^(3/2)+1/2*A*b/c^2*x^2
/(c*x^2+b*x)^(3/2)+1/6*A*b^2/c^3/(c*x^2+b*x)^(3/2)*x-7/3*A/c^2/(c*x^2+b*x)^
(1/2)*x-1/6*A*b/c^3/(c*x^2+b*x)^(1/2)+A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x)^(1/2))
```

maxima [B] time = 0.60, size = 310, normalized size = 2.28

$$-\frac{1}{3}Ax\left(\frac{3x^2}{(cx^2+bx)^{\frac{3}{2}}c}+\frac{bx}{(cx^2+bx)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)+\frac{5Bbx\left(\frac{3x^2}{(cx^2+bx)^{\frac{3}{2}}c}+\frac{bx}{(cx^2+bx)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)}{6c}+\frac{Bx^4}{(cx^2+bx)^{\frac{3}{2}}c}+\frac{10Bbx}{3\sqrt{cx^2+bx}\,c^3}-\frac{4Ax}{3\sqrt{cx^2+bx}\,c^2}-\frac{5Bb\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2c^{\frac{7}{2}}}+\frac{A\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{c^{\frac{5}{2}}}+\frac{5\sqrt{cx^2+bx}B}{3c^3}-\frac{2\sqrt{cx^2+bx}A}{3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*A*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2
*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) + 5/6*B*b*x*(3*x^2/
((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2*x/(sqrt(c*x^2 +
 b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2))/c + B*x^4/((c*x^2 + b*x)^(3/2)*c) +
 10/3*B*b*x/(sqrt(c*x^2 + b*x)*c^3) - 4/3*A*x/(sqrt(c*x^2 + b*x)*c^2) - 5/2
*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + A*log(2*c*x + b
 + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 5/3*sqrt(c*x^2 + b*x)*B/c^3 - 2/3
*sqrt(c*x^2 + b*x)*A/(b*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{(x (b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.131 $\int \frac{x^3(A+Bx)}{(bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=84

$$-\frac{2x^3(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.08, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {788, 652, 620, 206}

$$-\frac{2x^3(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^3)/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*B*x)/(c^2*Sqrt[b*x +
c*x^2]) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 652

```
Int[((d_.) + (e_.)*(x_))^2*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symb
ol] :> Simp[(e*(d + e*x)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[
(e^2*(p + 2))/(c*(p + 1)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{
a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{B\int \frac{x^2}{\left(bx+cx^2\right)^{3/2}}\,dx}{c}$$

$$= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2Bx}{c^2\sqrt{bx+cx^2}} + \frac{B\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{c^2}$$

$$= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2Bx}{c^2\sqrt{bx+cx^2}} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{bx+cx^2}}\right)}{c^2}$$

$$= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2Bx}{c^2\sqrt{bx+cx^2}} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}$$

Mathematica [A] time = 0.09, size = 99, normalized size = 1.18

$$\frac{x\left(2\sqrt{c}\,x\left(Ac^2x-3b^2B-4bBcx\right)+6b^{3/2}B\sqrt{x}\,(b+cx)\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\right)}{3bc^{5/2}(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x*(2*Sqrt[c]*x*(-3*b^2*B - 4*b*B*c*x + A*c^2*x) + 6*b^(3/2)*B*Sqrt[x]*(b +
 c*x)*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(3*b*c^(5/2)*(
x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.44, size = 92, normalized size = 1.10

$$-\frac{2\sqrt{bx+cx^2}\,\left(-Ac^2x+3b^2B+4bBcx\right)}{3bc^2(b+cx)^2} - \frac{B\log\left(-2c^{5/2}\sqrt{bx+cx^2}\,+bc^2+2c^3x\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(3*b^2*B + 4*b*B*c*x - A*c^2*x)*Sqrt[b*x + c*x^2])/(3*b*c^2*(b + c*x)^2
) - (B*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[b*x + c*x^2]])/c^(5/2)
```

fricas [A] time = 0.43, size = 239, normalized size = 2.85

$$\left[\frac{3\left(Bbc^2x^2+2Bb^2cx+Bb^3\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(3Bb^2c+\left(4Bbc^2-Ac^3\right)x\right)\sqrt{cx^2+bx}}{3\left(bc^5x^2+2b^2c^4x+b^3c^3\right)}, -\frac{2\left(3\left(Bbc^2x^2+2Bb^2cx+Bb^3\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(3Bb^2c+\left(4Bbc^2-Ac^3\right)x\right)\sqrt{cx^2+bx}\right)}{3\left(bc^5x^2+2b^2c^4x+b^3c^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(B*b*c^2*x^2 + 2*B*b^2*c*x + B*b^3)*sqrt(c)*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c)) - 2*(3*B*b^2*c + (4*B*b*c^2 - A*c^3)*x)*sqrt(c*x^2 +
b*x))/(b*c^5*x^2 + 2*b^2*c^4*x + b^3*c^3), -2/3*(3*(B*b*c^2*x^2 + 2*B*b^2*c
*x + B*b^3)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (3*B*b^2*c
+ (4*B*b*c^2 - A*c^3)*x)*sqrt(c*x^2 + b*x))/(b*c^5*x^2 + 2*b^2*c^4*x + b^3*
c^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%%{1,[2]%%%},[4,4]%%%}+%%%{%%{[%%%{-4,[1]%%%},0]:[1,0,%%%{-1,[1]%%%
}]%%},[3,5]%%%}+%%%{%%%{6,[1]%%%},[2,6]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%
%}]%%},[1,7]%%%}+%%%{1,[0,8]%%%} / %%%{%%%{1,[4]%%%},[4,0]%%%}+%%%{%%{[%%%{
-4,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1]%%%}+%%%{%%%{6,[3]%%%},[2,2]%%%}
+%%%{%%{[%%%{-4,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3]%%%}+%%%{%%%{1,[2]%
%%},[0,4]%%%} Error: Bad Argument Value
```

maple [B] time = 0.05, size = 206, normalized size = 2.45

$$-\frac{B x^3}{3\left(c x^2+bx\right)^{\frac{3}{2}} c}-\frac{A x^2}{\left(c x^2+bx\right)^{\frac{3}{2}} c}+\frac{Bb x^2}{2\left(c x^2+bx\right)^{\frac{3}{2}} c^2}-\frac{Abx}{3\left(c x^2+bx\right)^{\frac{3}{2}} c^2}+\frac{B b^2 x}{6\left(c x^2+bx\right)^{\frac{3}{2}} c^3}+\frac{2Ax}{3\sqrt{c x^2+bx}\, bc}-\frac{7Bx}{3\sqrt{c x^2+bx}\, c^2}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{c^{\frac{5}{2}}}+\frac{A}{3\sqrt{c x^2+bx}\, c^2}-\frac{Bb}{6\sqrt{c x^2+bx}\, c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -1/3*B*x^3/c/(c*x^2+b*x)^(3/2)+1/2*B*b/c^2*x^2/(c*x^2+b*x)^(3/2)+1/6*B*b^2/
c^3/(c*x^2+b*x)^(3/2)*x-7/3*B*x/c^2/(c*x^2+b*x)^(1/2)-1/6*B*b/c^3/(c*x^2+b*
x)^(1/2)+B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-A*x^2/c/(c*x^2
+b*x)^(3/2)-1/3*A*b/c^2/(c*x^2+b*x)^(3/2)*x+2/3*A/b/c/(c*x^2+b*x)^(1/2)*x+1
/3*A/c^2/(c*x^2+b*x)^(1/2)
```

maxima [B] time = 0.67, size = 221, normalized size = 2.63

$$-\frac{1}{3}Bx\left(\frac{3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)-\frac{Ax^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{4Bx}{3\sqrt{cx^2+bx}\,c^2}-\frac{Abx}{3\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{2Ax}{3\sqrt{cx^2+bx}\,bc}+\frac{B\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{c^{\frac{5}{2}}}+\frac{A}{3\sqrt{cx^2+bx}\,c^2}-\frac{2\sqrt{cx^2+bx}\,B}{3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2
*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) - A*x^2/((c*x^2 + b
*x)^(3/2)*c) - 4/3*B*x/(sqrt(c*x^2 + b*x)*c^2) - 1/3*A*b*x/((c*x^2 + b*x)^(
3/2)*c^2) + 2/3*A*x/(sqrt(c*x^2 + b*x)*b*c) + B*log(2*c*x + b + 2*sqrt(c*x^
2 + b*x)*sqrt(c))/c^(5/2) + 1/3*A/(sqrt(c*x^2 + b*x)*c^2) - 2/3*sqrt(c*x^2
+ b*x)*B/(b*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + Bx\right)}{\left(x \left(b + cx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.132 $\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=67

$$\frac{2x(2Ac+bB)}{3b^2c\sqrt{bx+cx^2}}-\frac{2x^2(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.05, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {788, 636}

$$\frac{2x(2Ac+bB)}{3b^2c\sqrt{bx+cx^2}}-\frac{2x^2(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^2)/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*(b*B + 2*A*c)*x)/(3*b
^2*c*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx&=-\frac{2(bB-Ac)x^2}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{(bB+2Ac)\int \frac{x}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}\\&=-\frac{2(bB-Ac)x^2}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2(bB+2Ac)x}{3b^2c\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 35, normalized size = 0.52

$$\frac{2x^2(3Ab+2Acx+bBx)}{3b^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

[Out] (2*x^2*(3*A*b + b*B*x + 2*A*c*x))/(3*b^2*(x*(b + c*x))^(3/2))

IntegrateAlgebraic [A] time = 0.35, size = 41, normalized size = 0.61

$$\frac{2\sqrt{bx+cx^2}\,(3Ab+2Acx+bBx)}{3b^2(b+cx)^2}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x]

[Out] (2*(3*A*b + b*B*x + 2*A*c*x)*Sqrt[b*x + c*x^2])/(3*b^2*(b + c*x)^2)

fricas [A] time = 0.40, size = 51, normalized size = 0.76

$$\frac{2\sqrt{cx^2+bx}\,(3\,Ab+(Bb+2\,Ac)x)}{3\left(b^2c^2x^2+2\,b^3cx+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")

[Out] 2/3*sqrt(c*x^2 + b*x)*(3*A*b + (B*b + 2*A*c)*x)/(b^2*c^2*x^2 + 2*b^3*c*x + b^4)

giac [B] time = 0.23, size = 119, normalized size = 1.78

$$\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bc+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)Bb\sqrt{c}+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)Ac^{\frac{3}{2}}+Bb^2+2\,Abc\right)}{3\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right)^3c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")

[Out] 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*c + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*sqrt(c) + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*c^(3/2) + B*b^2 + 2*A*b*c)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b)^3*c^(3/2))

maple [A] time = 0.05, size = 39, normalized size = 0.58

$$\frac{2\,(cx+b)\,(2Acx+Bbx+3Ab)\,x^3}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x)

[Out] 2/3*(c*x+b)*x^3*(2*A*c*x+B*b*x+3*A*b)/b^2/(c*x^2+b*x)^(5/2)

maxima [B] time = 0.66, size = 134, normalized size = 2.00

$$-\frac{Bx^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{4\,Ax}{3\sqrt{cx^2+bx}\,b^2}-\frac{Bbx}{3\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2\,Ax}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{2\,Bx}{3\sqrt{cx^2+bx}\,bc}+\frac{B}{3\sqrt{cx^2+bx}\,c^2}+\frac{2\,A}{3\sqrt{cx^2+bx}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")

[Out] -B*x^2/((c*x^2 + b*x)^(3/2)*c) + 4/3*A*x/(sqrt(c*x^2 + b*x)*b^2) - 1/3*B*b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2/3*A*x/((c*x^2 + b*x)^(3/2)*c) + 2/3*B*x/(sq

```
rt(c*x^2 + b*x)*b*c) + 1/3*B/(sqrt(c*x^2 + b*x)*c^2) + 2/3*A/(sqrt(c*x^2 +
b*x)*b*c)
```

mupad [B] time = 1.16, size = 37, normalized size = 0.55

$$\frac{2\sqrt{c\,x^2+b\,x}\,\left(3\,A\,b+2\,A\,c\,x+B\,b\,x\right)}{3\,b^2\,{\left(b+c\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x)
[Out] (2*(b*x + c*x^2)^(1/2)*(3*A*b + 2*A*c*x + B*b*x))/(3*b^2*(b + c*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(A+Bx)}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x)**(5/2),x)
[Out] Integral(x**2*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.133 $\int \frac{x(A+Bx)}{(bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=70

$$\frac{2(b+2cx)(bB-4Ac)}{3b^3c\sqrt{bx+cx^2}}-\frac{2x(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.03, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {777, 613}

$$\frac{2(b+2cx)(bB-4Ac)}{3b^3c\sqrt{bx+cx^2}}-\frac{2x(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x)/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*(b*B - 4*A*c)*(b + 2*c*
x))/(3*b^3*c*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{\left(2\left(-\frac{b^2B}{2}+2Abc\right)\right)\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2c}\\ &= -\frac{2(bB-Ac)x}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2(bB-4Ac)(b+2cx)}{3b^3c\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.79

$$\frac{x\left(2bBx(3b+2cx)-2A\left(3b^2+12bcx+8c^2x^2\right)\right)}{3b^3(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x*(2*b*B*x*(3*b + 2*c*x) - 2*A*(3*b^2 + 12*b*c*x + 8*c^2*x^2)))/(3*b^3*(x*
(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.36, size = 67, normalized size = 0.96

$$\frac{2\sqrt{bx+cx^2}\left(-3Ab^2-12Abcx-8Ac^2x^2+3b^2Bx+2bBcx^2\right)}{3b^3x(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-3*A*b^2 + 3*b^2*B*x - 12*A*b*c*x + 2*b*B*c*x^2 - 8*A
*c^2*x^2))/(3*b^3*x*(b + c*x)^2)
```

fricas [A] time = 0.42, size = 77, normalized size = 1.10

$$-\frac{2\left(3\,Ab^2-2\left(Bbc-4\,Ac^2\right)x^2-3\left(Bb^2-4\,Abc\right)x\right)\sqrt{cx^2+bx}}{3\left(b^3c^2x^3+2\,b^4cx^2+b^5x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(3*A*b^2 - 2*(B*b*c - 4*A*c^2)*x^2 - 3*(B*b^2 - 4*A*b*c)*x)*sqrt(c*x^2
 + b*x)/(b^3*c^2*x^3 + 2*b^4*c*x^2 + b^5*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)x}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*x/(c*x^2 + b*x)^(5/2), x)
```

maple [A] time = 0.05, size = 62, normalized size = 0.89

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-2Bbc\,x^2+12Abcx-3B\,b^2x+3A\,b^2\right)x^2}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x^2*(8*A*c^2*x^2-2*B*b*c*x^2+12*A*b*c*x-3*B*b^2*x+3*A*b^2)/b^3
/(c*x^2+b*x)^(5/2)
```

maxima [A] time = 0.52, size = 111, normalized size = 1.59

$$\frac{4\,Bx}{3\sqrt{cx^2+bx}\,b^2}+\frac{2\,Ax}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{2\,Bx}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{16\,Acx}{3\sqrt{cx^2+bx}\,b^3}-\frac{8\,A}{3\sqrt{cx^2+bx}\,b^2}+\frac{2\,B}{3\sqrt{cx^2+bx}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 4/3*B*x/(sqrt(c*x^2 + b*x)*b^2) + 2/3*A*x/((c*x^2 + b*x)^(3/2)*b) - 2/3*B*x
/((c*x^2 + b*x)^(3/2)*c) - 16/3*A*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*A/(sqrt
(c*x^2 + b*x)*b^2) + 2/3*B/(sqrt(c*x^2 + b*x)*b*c)
```

mupad [B] time = 1.18, size = 63, normalized size = 0.90

$$-\frac{2\sqrt{c\,x^2+b\,x}\,\left(-3\,B\,b^2\,x+3\,A\,b^2-2\,B\,b\,c\,x^2+12\,A\,b\,c\,x+8\,A\,c^2\,x^2\right)}{3\,b^3\,x\,{\left(b+c\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^2 + 8*A*c^2*x^2 - 3*B*b^2*x - 2*B*b*c*x^2 +
12*A*b*c*x))/(3*b^3*x*(b + c*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.134 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=70

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(3*b^2*(b*x + c*x^2)^(3/2)) - (8*(b*B - 2*A*c)
*(b + 2*c*x))/(3*b^4*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2}\\ &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3b^4\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 1.03

$$-\frac{2\left(A\left(b^3-6b^2cx-24bc^2x^2-16c^3x^3\right)+bBx\left(3b^2+12bcx+8c^2x^2\right)\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2) + A*(b^3 - 6*b^2*c*x - 24*b*c^2*x
^2 - 16*c^3*x^3)))/(3*b^4*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.38, size = 90, normalized size = 1.29

$$-\frac{2\sqrt{bx+cx^2}\left(Ab^3-6Ab^2cx-24Abc^2x^2-16Ac^3x^3+3b^3Bx+12b^2Bcx^2+8bBc^2x^3\right)}{3b^4x^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(A*b^3 + 3*b^3*B*x - 6*A*b^2*c*x + 12*b^2*B*c*x^2 - 2
4*A*b*c^2*x^2 + 8*b*B*c^2*x^3 - 16*A*c^3*x^3))/(3*b^4*x^2*(b + c*x)^2)
```

fricas [A] time = 0.41, size = 101, normalized size = 1.44

$$-\frac{2\left(Ab^3+8\left(Bbc^2-2\,Ac^3\right)x^3+12\left(Bb^2c-2\,Abc^2\right)x^2+3\left(Bb^3-2\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{3\left(b^4c^2x^4+2\,b^5cx^3+b^6x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c^2)*x^2 + 3*
(B*b^3 - 2*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x
^2)
```

giac [A] time = 0.24, size = 82, normalized size = 1.17

$$-\frac{2\left(\left(4\,x\left(\frac{2\left(Bbc^2-2\,Ac^3\right)x}{b^4}+\frac{3\left(Bb^2c-2\,Abc^2\right)}{b^4}\right)+\frac{3\left(Bb^3-2\,Ab^2c\right)}{b^4}\right)x+\frac{A}{b}\right)}{3\left(cx^2+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*x*(2*(B*b*c^2 - 2*A*c^3)*x/b^4 + 3*(B*b^2*c - 2*A*b*c^2)/b^4) + 3*
(B*b^3 - 2*A*b^2*c)/b^4)*x + A/b)/(c*x^2 + b*x)^(3/2)
```

maple [A] time = 0.05, size = 83, normalized size = 1.19

$$-\frac{2\,(cx+b)\left(-16A\,c^3x^3+8Bb\,c^2x^3-24Ab\,c^2x^2+12B\,b^2c\,x^2-6A\,b^2cx+3B\,b^3x+A\,b^3\right)x}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(-16*A*c^3*x^3+8*B*b*c^2*x^3-24*A*b*c^2*x^2+12*B*b^2*c*x^2-6
*A*b^2*c*x+3*B*b^3*x+A*b^3)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.57, size = 130, normalized size = 1.86

$$\frac{2\,Bx}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{16\,Bcx}{3\sqrt{cx^2+bx}\,b^3}-\frac{4\,Acx}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2x}{3\sqrt{cx^2+bx}\,b^4}-\frac{8\,B}{3\sqrt{cx^2+bx}\,b^2}-\frac{2\,A}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16\,Ac}{3\sqrt{cx^2+bx}\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*x/((c*x^2 + b*x)^(3/2)*b) - 16/3*B*c*x/(sqrt(c*x^2 + b*x)*b^3) - 4/3*
A*c*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*x/(sqrt(c*x^2 + b*x)*b^4) - 8/
3*B/(sqrt(c*x^2 + b*x)*b^2) - 2/3*A/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c/(sqr
t(c*x^2 + b*x)*b^3)
```

mupad [B] time = 1.15, size = 76, normalized size = 1.09

$$-\frac{2\,\left(3\,B\,b^3\,x+A\,b^3+12\,B\,b^2\,c\,x^2-6\,A\,b^2\,c\,x+8\,B\,b\,c^2\,x^3-24\,A\,b\,c^2\,x^2-16\,A\,c^3\,x^3\right)}{3\,b^4\,{\left(c\,x^2+b\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 3*B*b^3*x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B
*b^2*c*x^2 + 8*B*b*c^2*x^3))/(3*b^4*(b*x + c*x^2)^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x \left(b + cx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.135 $\int \frac{A+Bx}{x\left(bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=96

$$\frac{16c(b+2cx)(5bB-8Ac)}{15b^5\sqrt{bx+cx^2}}-\frac{2(b+2cx)(5bB-8Ac)}{15b^3\left(bx+cx^2\right)^{3/2}}-\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.07, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 614, 613}

$$\frac{16c(b+2cx)(5bB-8Ac)}{15b^5\sqrt{bx+cx^2}}-\frac{2(b+2cx)(5bB-8Ac)}{15b^3\left(bx+cx^2\right)^{3/2}}-\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*A)/(5*b*x*(b*x + c*x^2)^(3/2)) - (2*(5*b*B - 8*A*c)*(b + 2*c*x))/(15*b^
3*(b*x + c*x^2)^(3/2)) + (16*c*(5*b*B - 8*A*c)*(b + 2*c*x))/(15*b^5*Sqrt[b*
x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}} + \frac{\left(2\left(bB-Ac-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{5b}$$

$$= -\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}} - \frac{2(5bB-8Ac)(b+2cx)}{15b^3\left(bx+cx^2\right)^{3/2}} - \frac{(8c(5bB-8Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{15b^3}$$

$$= -\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}} - \frac{2(5bB-8Ac)(b+2cx)}{15b^3\left(bx+cx^2\right)^{3/2}} + \frac{16c(5bB-8Ac)(b+2cx)}{15b^5\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.03, size = 98, normalized size = 1.02

$$-\frac{2\left(A\left(3b^4-8b^3cx+48b^2c^2x^2+192bc^3x^3+128c^4x^4\right)+5bBx\left(b^3-6b^2cx-24bc^2x^2-16c^3x^3\right)\right)}{15b^5x(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(5*b*B*x*(b^3 - 6*b^2*c*x - 24*b*c^2*x^2 - 16*c^3*x^3) + A*(3*b^4 - 8*b
^3*c*x + 48*b^2*c^2*x^2 + 192*b*c^3*x^3 + 128*c^4*x^4)))/(15*b^5*x*(x*(b +
c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.42, size = 115, normalized size = 1.20

$$\frac{2\sqrt{bx+cx^2}\left(-3Ab^4+8Ab^3cx-48Ab^2c^2x^2-192Abc^3x^3-128Ac^4x^4-5b^4Bx+30b^3Bcx^2+120b^2Bc^2x^3+80bBc^3x^4\right)}{15b^5x^3(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-3*A*b^4 - 5*b^4*B*x + 8*A*b^3*c*x + 30*b^3*B*c*x^2 -
 48*A*b^2*c^2*x^2 + 120*b^2*B*c^2*x^3 - 192*A*b*c^3*x^3 + 80*b*B*c^3*x^4 -
128*A*c^4*x^4))/(15*b^5*x^3*(b + c*x)^2)
```

fricas [A] time = 0.41, size = 128, normalized size = 1.33

$$-\frac{2\left(3\,Ab^4-16\left(5\,Bbc^3-8\,Ac^4\right)x^4-24\left(5\,Bb^2c^2-8\,Abc^3\right)x^3-6\left(5\,Bb^3c-8\,Ab^2c^2\right)x^2+\left(5\,Bb^4-8\,Ab^3c\right)x\right)\sqrt{cx^2+bx}}{15\left(b^5c^2x^5+2\,b^6cx^4+b^7x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^4 - 16*(5*B*b*c^3 - 8*A*c^4)*x^4 - 24*(5*B*b^2*c^2 - 8*A*b*c^3
)*x^3 - 6*(5*B*b^3*c - 8*A*b^2*c^2)*x^2 + (5*B*b^4 - 8*A*b^3*c)*x)*sqrt(c*x
^2 + b*x)/(b^5*c^2*x^5 + 2*b^6*c*x^4 + b^7*x^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x), x)
```

maple [A] time = 0.05, size = 107, normalized size = 1.11

$$-\frac{2 (cx+b)\left(128A\,c^4x^4-80Bb\,c^3x^4+192Ab\,c^3x^3-120B\,b^2c^2x^3+48A\,b^2c^2x^2-30B\,b^3c\,x^2-8A\,b^3cx+5b^4Bx+3A\,b^4\right)}{15\left(c\,x^2+bx\right)^{\frac{5}{2}} b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/15*(c*x+b)*(128*A*c^4*x^4-80*B*b*c^3*x^4+192*A*b*c^3*x^3-120*B*b^2*c^2*x
^3+48*A*b^2*c^2*x^2-30*B*b^3*c*x^2-8*A*b^3*c*x+5*B*b^4*x+3*A*b^4)/b^5/(c*x^
2+b*x)^(5/2)
```

maxima [B] time = 0.71, size = 176, normalized size = 1.83

$$-\frac{4\,Bcx}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Bc^2x}{3\,\sqrt{cx^2+bx}\,b^4}+\frac{32\,Ac^2x}{15\left(cx^2+bx\right)^{\frac{3}{2}}b^3}-\frac{256\,Ac^3x}{15\,\sqrt{cx^2+bx}\,b^5}-\frac{2\,B}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16\,Bc}{3\,\sqrt{cx^2+bx}\,b^3}+\frac{16\,Ac}{15\left(cx^2+bx\right)^{\frac{3}{2}}b^2}-\frac{128\,Ac^2}{15\,\sqrt{cx^2+bx}\,b^4}-\frac{2\,A}{5\left(cx^2+bx\right)^{\frac{3}{2}}bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/3*B*c*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*B*c^2*x/(sqrt(c*x^2 + b*x)*b^4)
 + 32/15*A*c^2*x/((c*x^2 + b*x)^(3/2)*b^3) - 256/15*A*c^3*x/(sqrt(c*x^2 + b
*x)*b^5) - 2/3*B/((c*x^2 + b*x)^(3/2)*b) + 16/3*B*c/(sqrt(c*x^2 + b*x)*b^3)
 + 16/15*A*c/((c*x^2 + b*x)^(3/2)*b^2) - 128/15*A*c^2/(sqrt(c*x^2 + b*x)*b^
4) - 2/5*A/((c*x^2 + b*x)^(3/2)*b*x)
```

mupad [B] time = 1.25, size = 111, normalized size = 1.16

$$-\frac{2\,\sqrt{c\,x^2+b\,x}\,\left(5\,B\,b^4\,x+3\,A\,b^4-30\,B\,b^3\,c\,x^2-8\,A\,b^3\,c\,x-120\,B\,b^2\,c^2\,x^3+48\,A\,b^2\,c^2\,x^2-80\,B\,b\,c^3\,x^4+192\,A\,b\,c^3\,x^3+128\,A\,c^4\,x^4\right)}{15\,b^5\,x^3\,{\left(b+c\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^4 + 128*A*c^4*x^4 + 5*B*b^4*x - 8*A*b^3*c*x
+ 192*A*b*c^3*x^3 - 30*B*b^3*c*x^2 - 80*B*b*c^3*x^4 + 48*A*b^2*c^2*x^2 - 12
0*B*b^2*c^2*x^3))/(15*b^5*x^3*(b + c*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left(x\left(b+cx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*(x*(b + c*x))**(5/2)), x)
```

3.136 $\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=131

$$-\frac{128c^2(b+2cx)(7bB-10Ac)}{105b^6\sqrt{bx+cx^2}}+\frac{16c(b+2cx)(7bB-10Ac)}{105b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}-\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 658, 614, 613}

$$-\frac{128c^2(b+2cx)(7bB-10Ac)}{105b^6\sqrt{bx+cx^2}}+\frac{16c(b+2cx)(7bB-10Ac)}{105b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}-\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*A)/(7*b*x^2*(b*x + c*x^2)^(3/2)) - (2*(7*b*B - 10*A*c))/(35*b^2*x*(b*x
+ c*x^2)^(3/2)) + (16*c*(7*b*B - 10*A*c)*(b + 2*c*x))/(105*b^4*(b*x + c*x^2
)^(3/2)) - (128*c^2*(7*b*B - 10*A*c)*(b + 2*c*x))/(105*b^6*Sqrt[b*x + c*x^2
])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}} + \frac{\left(2\left(-2(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x\left(bx+cx^2\right)^{5/2}}\,dx}{7b}$$

$$= -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}} - \frac{(8c(7bB-10Ac))\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{35b^2}$$

$$= -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}} + \frac{16c(7bB-10Ac)(b+2cx)}{105b^4\left(bx+cx^2\right)^{3/2}} + \frac{\left(64c^2(7bB-1\right.}{}$$

$$= -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}} + \frac{16c(7bB-10Ac)(b+2cx)}{105b^4\left(bx+cx^2\right)^{3/2}} - \frac{128c^2(7bB-1}{105b^6\sqrt{}}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.94

$$-\frac{2\left(5A\left(3b^5-6b^4cx+16b^3c^2x^2-96b^2c^3x^3-384bc^4x^4-256c^5x^5\right)+7bBx\left(3b^4-8b^3cx+48b^2c^2x^2+192bc^3x^3+128c^4x^4\right)\right)}{105b^6x^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(7*b*B*x*(3*b^4 - 8*b^3*c*x + 48*b^2*c^2*x^2 + 192*b*c^3*x^3 + 128*c^4*
x^4) + 5*A*(3*b^5 - 6*b^4*c*x + 16*b^3*c^2*x^2 - 96*b^2*c^3*x^3 - 384*b*c^4
*x^4 - 256*c^5*x^5)))/(105*b^6*x^2*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.44, size = 139, normalized size = 1.06

$$-\frac{2\sqrt{bx+cx^2}\left(15Ab^5-30Ab^4cx+80Ab^3c^2x^2-480Ab^2c^3x^3-1920Abc^4x^4-1280Ac^5x^5+21b^5Bx-56b^4Bcx^2+336b^3Bc^2x^3+1344b^2Bc^3x^4+896bBc^4x^5\right)}{105b^6x^4(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(15*A*b^5 + 21*b^5*B*x - 30*A*b^4*c*x - 56*b^4*B*c*x^
2 + 80*A*b^3*c^2*x^2 + 336*b^3*B*c^2*x^3 - 480*A*b^2*c^3*x^3 + 1344*b^2*B*c
^3*x^4 - 1920*A*b*c^4*x^4 + 896*b*B*c^4*x^5 - 1280*A*c^5*x^5))/(105*b^6*x^4
*(b + c*x)^2)
```

fricas [A] time = 0.40, size = 153, normalized size = 1.17

$$-\frac{2\left(15\,Ab^5+128\left(7\,Bbc^4-10\,Ac^5\right)x^5+192\left(7\,Bb^2c^3-10\,Abc^4\right)x^4+48\left(7\,Bb^3c^2-10\,Ab^2c^3\right)x^3-8\left(7\,Bb^4c-10\,Ab^3c^2\right)x^2+3\left(7\,Bb^5-10\,Ab^4c\right)x\right)\sqrt{cx^2+bx}}{105\left(b^6c^2x^6+2\,b^7cx^5+b^8x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/105*(15*A*b^5 + 128*(7*B*b*c^4 - 10*A*c^5)*x^5 + 192*(7*B*b^2*c^3 - 10*A
*b*c^4)*x^4 + 48*(7*B*b^3*c^2 - 10*A*b^2*c^3)*x^3 - 8*(7*B*b^4*c - 10*A*b^3
*c^2)*x^2 + 3*(7*B*b^5 - 10*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^6*c^2*x^6 + 2*
b^7*c*x^5 + b^8*x^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x^2), x)
```

maple [A] time = 0.05, size = 134, normalized size = 1.02

$$-\frac{2 (cx+b) \left(-1280 A\,c^{5} x^{5}+896 B b\,c^{4} x^{5}-1920 A b\,c^{4} x^{4}+1344 B\,b^{2} c^{3} x^{4}-480 A\,b^{2} c^{3} x^{3}+336 B\,b^{3} c^{2} x^{3}+80 A\,b^{3} c^{2} x^{2}-56 B\,b^{4} c\,x^{2}-30 A\,b^{4} c x+21 B\,b^{5} x+15 A\,b^{5}\right)}{105 \left(c\,x^{2}+b x\right)^{\frac{5}{2}} b^{6} x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/105*(c*x+b)*(-1280*A*c^5*x^5+896*B*b*c^4*x^5-1920*A*b*c^4*x^4+1344*B*b^2
*c^3*x^4-480*A*b^2*c^3*x^3+336*B*b^3*c^2*x^3+80*A*b^3*c^2*x^2-56*B*b^4*c*x^
2-30*A*b^4*c*x+21*B*b^5*x+15*A*b^5)/x/b^6/(c*x^2+b*x)^(5/2)
```

maxima [A] time = 0.59, size = 224, normalized size = 1.71

$$\frac{32 \, B c^{2} x}{15 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{3}} - \frac{256 \, B c^{3} x}{15 \, \sqrt{c x^{2} + b x} b^{5}} - \frac{64 \, A c^{3} x}{21 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{4}} + \frac{512 \, A c^{4} x}{21 \, \sqrt{c x^{2} + b x} b^{6}} + \frac{16 \, B c}{15 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{2}} - \frac{128 \, B c^{2}}{15 \, \sqrt{c x^{2} + b x} b^{4}} - \frac{32 \, A c^{2}}{21 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{3}} + \frac{256 \, A c^{3}}{21 \, \sqrt{c x^{2} + b x} b^{5}} - \frac{2 \, B}{5 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b x} + \frac{4 \, A c}{7 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{2} x} - \frac{2 \, A}{7 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 32/15*B*c^2*x/((c*x^2 + b*x)^(3/2)*b^3) - 256/15*B*c^3*x/(sqrt(c*x^2 + b*x)
*b^5) - 64/21*A*c^3*x/((c*x^2 + b*x)^(3/2)*b^4) + 512/21*A*c^4*x/(sqrt(c*x^
2 + b*x)*b^6) + 16/15*B*c/((c*x^2 + b*x)^(3/2)*b^2) - 128/15*B*c^2/(sqrt(c*
x^2 + b*x)*b^4) - 32/21*A*c^2/((c*x^2 + b*x)^(3/2)*b^3) + 256/21*A*c^3/(sqr
t(c*x^2 + b*x)*b^5) - 2/5*B/((c*x^2 + b*x)^(3/2)*b*x) + 4/7*A*c/((c*x^2 + b
*x)^(3/2)*b^2*x) - 2/7*A/((c*x^2 + b*x)^(3/2)*b*x^2)
```

mupad [B] time = 1.33, size = 235, normalized size = 1.79

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(\frac{1280\,A\,c^3-896\,B\,b\,c^2}{105\,b^5}+\frac{2\,c\,x\,\left(1280\,A\,c^3-896\,B\,b\,c^2\right)}{105\,b^6}\right)}{x\,\left(b+c\,x\right)}-\frac{\sqrt{c\,x^2+b\,x}\,\left(14\,B\,b^3-40\,A\,b^2\,c\right)}{35\,b^6\,x^3}-\frac{\sqrt{c\,x^2+b\,x}\,\left(x\,\left(\frac{4\,c^2\,\left(185\,A\,c-98\,B\,b\right)}{105\,b^4}+\frac{2\,c^2\,\left(230\,A\,c-91\,B\,b\right)}{105\,b^4}+\frac{b\,\left(\frac{160\,A\,c^4-56\,B\,b\,c^3}{105\,b^5}-\frac{4\,c^3\,\left(230\,A\,c-91\,B\,b\right)}{105\,b^5}\right)}{c}\right)+\frac{2\,c\,\left(185\,A\,c-98\,B\,b\right)}{105\,b^3}\right)}{x^2\,{\left(b+c\,x\right)}^2}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{7\,b^3\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*((1280*A*c^3 - 896*B*b*c^2)/(105*b^5) + (2*c*x*(1280*A
*c^3 - 896*B*b*c^2))/(105*b^6)))/(x*(b + c*x)) - ((b*x + c*x^2)^(1/2)*(14*B
*b^3 - 40*A*b^2*c))/(35*b^6*x^3) - ((b*x + c*x^2)^(1/2)*(x*((4*c^2*(185*A*c
 - 98*B*b))/(105*b^4) + (2*c^2*(230*A*c - 91*B*b))/(105*b^4) + (b*((160*A*c
^4 - 56*B*b*c^3)/(105*b^5) - (4*c^3*(230*A*c - 91*B*b))/(105*b^5)))/c) + (2
*c*(185*A*c - 98*B*b))/(105*b^3)))/(x^2*(b + c*x)^2) - (2*A*(b*x + c*x^2)^(
1/2))/(7*b^3*x^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + B x}{x^{2} \left(x \left(b + c x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*(x*(b + c*x))**(5/2)), x)
```

3.137 $\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=166

$$\frac{256c^3(b+2cx)(3bB-4Ac)}{63b^7\sqrt{bx+cx^2}}-\frac{32c^2(b+2cx)(3bB-4Ac)}{63b^5\left(bx+cx^2\right)^{3/2}}+\frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}}-\frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}}-\frac{2A}{9bx^3\left(bx+c\right.}$$

Rubi [A] time = 0.15, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 658, 614, 613}

$$\frac{256c^3(b+2cx)(3bB-4Ac)}{63b^7\sqrt{bx+cx^2}}-\frac{32c^2(b+2cx)(3bB-4Ac)}{63b^5\left(bx+cx^2\right)^{3/2}}+\frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}}-\frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}}-\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*A)/(9*b*x^3*(b*x + c*x^2)^(3/2)) - (2*(3*b*B - 4*A*c))/(21*b^2*x^2*(b*x
 + c*x^2)^(3/2)) + (4*c*(3*b*B - 4*A*c))/(21*b^3*x*(b*x + c*x^2)^(3/2)) - (
32*c^2*(3*b*B - 4*A*c)*(b + 2*c*x))/(63*b^5*(b*x + c*x^2)^(3/2)) + (256*c^3
*(3*b*B - 4*A*c)*(b + 2*c*x))/(63*b^7*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - -\frac{\left(2\left(-3(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^2\left(bx+cx^2\right)^{5/2}}\,dx}{9b}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} - \frac{(10c(3bB-4Ac))\int \frac{1}{x\left(bx+cx^2\right)^{5/2}}\,dx}{21b^2}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} + \frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}} + \frac{\left(16c^2(3bB-4Ac\right.}{21}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} + \frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}} - \frac{32c^2(3bB-4Ac)}{63b^5\left(bx+c\right.}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} + \frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}} - \frac{32c^2(3bB-4Ac)}{63b^5\left(bx+c\right.}$$

Mathematica [A] time = 0.05, size = 145, normalized size = 0.87

$$\frac{6bBx\left(-3b^5+6b^4cx-16b^3c^2x^2+96b^2c^3x^3+384bc^4x^4+256c^5x^5\right)-2A\left(7b^6-12b^5cx+24b^4c^2x^2-64b^3c^3x^3+384b^2c^4x^4+1536bc^5x^5+1024c^6x^6\right)}{63b^7x^3(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (6*b*B*x*(-3*b^5 + 6*b^4*c*x - 16*b^3*c^2*x^2 + 96*b^2*c^3*x^3 + 384*b*c^4*
x^4 + 256*c^5*x^5) - 2*A*(7*b^6 - 12*b^5*c*x + 24*b^4*c^2*x^2 - 64*b^3*c^3*
x^3 + 384*b^2*c^4*x^4 + 1536*b*c^5*x^5 + 1024*c^6*x^6))/(63*b^7*x^3*(x*(b +
 c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.48, size = 163, normalized size = 0.98

$$\frac{2\sqrt{bx+cx^2}\left(-7Ab^6+12Ab^5cx-24Ab^4c^2x^2+64Ab^3c^3x^3-384Ab^2c^4x^4-1536Abc^5x^5-1024Ac^6x^6-9b^6Bx+18b^5Bcx^2-48b^4Bc^2x^3+288b^3Bc^3x^4+1152b^2Bc^4x^5+768bBc^5x^6\right)}{63b^7x^5(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-7*A*b^6 - 9*b^6*B*x + 12*A*b^5*c*x + 18*b^5*B*c*x^2
 - 24*A*b^4*c^2*x^2 - 48*b^4*B*c^2*x^3 + 64*A*b^3*c^3*x^3 + 288*b^3*B*c^3*x^
4 - 384*A*b^2*c^4*x^4 + 1152*b^2*B*c^4*x^5 - 1536*A*b*c^5*x^5 + 768*b*B*c^5
*x^6 - 1024*A*c^6*x^6))/(63*b^7*x^5*(b + c*x)^2)
```

fricas [A] time = 0.41, size = 177, normalized size = 1.07

$$-\frac{2\left(7\,Ab^6-256\left(3\,Bbc^5-4\,Ac^6\right)x^6-384\left(3\,Bb^2c^4-4\,Abc^5\right)x^5-96\left(3\,Bb^3c^3-4\,Ab^2c^4\right)x^4+16\left(3\,Bb^4c^2-4\,Ab^3c^3\right)x^3-6\left(3\,Bb^5c-4\,Ab^4c^2\right)x^2+3\left(3\,Bb^6-4\,Ab^5c\right)x\right)\sqrt{cx^2+bx}}{63\left(b^7c^2x^7+2\,b^8cx^6+b^9x^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/63*(7*A*b^6 - 256*(3*B*b*c^5 - 4*A*c^6)*x^6 - 384*(3*B*b^2*c^4 - 4*A*b*c
^5)*x^5 - 96*(3*B*b^3*c^3 - 4*A*b^2*c^4)*x^4 + 16*(3*B*b^4*c^2 - 4*A*b^3*c^
3)*x^3 - 6*(3*B*b^5*c - 4*A*b^4*c^2)*x^2 + 3*(3*B*b^6 - 4*A*b^5*c)*x)*sqrt(
c*x^2 + b*x)/(b^7*c^2*x^7 + 2*b^8*c*x^6 + b^9*x^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{5}{2}} x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x^3), x)
```

maple [A] time = 0.05, size = 158, normalized size = 0.95

$$-\frac{2 \left(c x + b\right) \left(1024 A \,c^{6} x^{6}-768 B b \,c^{5} x^{6}+1536 A b \,c^{5} x^{5}-1152 B \,b^{2} c^{4} x^{5}+384 A \,b^{2} c^{4} x^{4}-288 B \,b^{3} c^{3} x^{4}-64 A \,b^{3} c^{3} x^{3}+48 B \,b^{4} c^{2} x^{3}+24 A \,b^{4} c^{2} x^{2}-18 B \,b^{5} c \,x^{2}-12 A \,b^{5} c x +9 b^{6} B x +7 A \,b^{6}\right)}{63 \left(c \,x^{2}+b x \right)^{\frac{5}{2}} b^{7} x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/63*(c*x+b)*(1024*A*c^6*x^6-768*B*b*c^5*x^6+1536*A*b*c^5*x^5-1152*B*b^2*c
^4*x^5+384*A*b^2*c^4*x^4-288*B*b^3*c^3*x^4-64*A*b^3*c^3*x^3+48*B*b^4*c^2*x^
3+24*A*b^4*c^2*x^2-18*B*b^5*c*x^2-12*A*b^5*c*x+9*B*b^6*x+7*A*b^6)/x^2/b^7/(
c*x^2+b*x)^(5/2)
```

maxima [A] time = 0.51, size = 270, normalized size = 1.63

$$-\frac{64 \, B c^{3} x}{21 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{4}} + \frac{512 \, B c^{4} x}{21 \, \sqrt{c x^{2} + b x} b^{6}} + \frac{256 \, A c^{4} x}{63 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{5}} - \frac{2048 \, A c^{5} x}{63 \, \sqrt{c x^{2} + b x} b^{7}} - \frac{32 \, B c^{2}}{21 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{3}} + \frac{256 \, B c^{3}}{21 \, \sqrt{c x^{2} + b x} b^{5}} + \frac{128 \, A c^{3}}{63 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{4}} - \frac{1024 \, A c^{4}}{63 \, \sqrt{c x^{2} + b x} b^{6}} + \frac{4 \, B c}{7 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{2} x} - \frac{16 \, A c^{2}}{21 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{3} x} - \frac{2 \, B}{7 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b x^{2}} + \frac{8 \, A c}{21 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b^{2} x^{2}} - \frac{2 \, A}{9 \, {\left(c x^{2} + b x\right)}^{\frac{3}{2}} b x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -64/21*B*c^3*x/((c*x^2 + b*x)^(3/2)*b^4) + 512/21*B*c^4*x/(sqrt(c*x^2 + b*x
)*b^6) + 256/63*A*c^4*x/((c*x^2 + b*x)^(3/2)*b^5) - 2048/63*A*c^5*x/(sqrt(c
*x^2 + b*x)*b^7) - 32/21*B*c^2/((c*x^2 + b*x)^(3/2)*b^3) + 256/21*B*c^3/(sq
rt(c*x^2 + b*x)*b^5) + 128/63*A*c^3/((c*x^2 + b*x)^(3/2)*b^4) - 1024/63*A*c
^4/(sqrt(c*x^2 + b*x)*b^6) + 4/7*B*c/((c*x^2 + b*x)^(3/2)*b^2*x) - 16/21*A*
c^2/((c*x^2 + b*x)^(3/2)*b^3*x) - 2/7*B/((c*x^2 + b*x)^(3/2)*b*x^2) + 8/21*
A*c/((c*x^2 + b*x)^(3/2)*b^2*x^2) - 2/9*A/((c*x^2 + b*x)^(3/2)*b*x^3)
```

mupad [B] time = 1.41, size = 266, normalized size = 1.60

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(x\,\left(\frac{4\,c^3\,\left(176\,A\,c-111\,B\,b\right)}{63\,b^5}+\frac{2\,c^3\,\left(247\,A\,c-138\,B\,b\right)}{63\,b^5}+\frac{b\,\left(\frac{184\,A\,c^5-96\,B\,b\,c^4}{63\,b^6}-\frac{4\,c^4\,\left(247\,A\,c-138\,B\,b\right)}{63\,b^6}\right)}{c}\right)+\frac{2\,c^2\,\left(176\,A\,c-111\,B\,b\right)}{63\,b^4}\right)}{x^2\,{\left(b+c\,x\right)}^2}-\frac{\sqrt{c\,x^2+b\,x}\,\left(18\,B\,b^3-52\,A\,b^2\,c\right)}{63\,b^6\,x^4}-\frac{\sqrt{c\,x^2+b\,x}\,\left(\frac{1024\,A\,c^4-768\,B\,b\,c^3}{63\,b^6}+\frac{2\,c\,x\,\left(1024\,A\,c^4-768\,B\,b\,c^3\right)}{63\,b^7}\right)}{x\,\left(b+c\,x\right)}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{9\,b^3\,x^5}-\frac{2\,c\,\sqrt{c\,x^2+b\,x}\,\left(23\,A\,c-12\,B\,b\right)}{21\,b^5\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(x*((4*c^3*(176*A*c - 111*B*b))/(63*b^5) + (2*c^3*(247
*A*c - 138*B*b))/(63*b^5) + (b*((184*A*c^5 - 96*B*b*c^4)/(63*b^6) - (4*c^4*
(247*A*c - 138*B*b))/(63*b^6)))/c) + (2*c^2*(176*A*c - 111*B*b))/(63*b^4)))
/(x^2*(b + c*x)^2) - ((b*x + c*x^2)^(1/2)*(18*B*b^3 - 52*A*b^2*c))/(63*b^6*
x^4) - ((b*x + c*x^2)^(1/2)*((1024*A*c^4 - 768*B*b*c^3)/(63*b^6) + (2*c*x*(
1024*A*c^4 - 768*B*b*c^3))/(63*b^7)))/(x*(b + c*x)) - (2*A*(b*x + c*x^2)^(1
/2))/(9*b^3*x^5) - (2*c*(b*x + c*x^2)^(1/2)*(23*A*c - 12*B*b))/(21*b^5*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{3} \left(x \left(b + cx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*(x*(b + c*x))**(5/2)), x)
```

3.138 $\int \frac{d+ex}{\left(bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{128c(b+2cx)(2cd-be)}{15b^6\sqrt{bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(x(2cd-be)+bd)}{5b^2\left(bx+cx^2\right)^{5/2}}$$

Rubi [A] time = 0.03, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {638, 614, 613}

$$-\frac{128c(b+2cx)(2cd-be)}{15b^6\sqrt{bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(x(2cd-be)+bd)}{5b^2\left(bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(b*d + (2*c*d - b*e)*x))/(5*b^2*(b*x + c*x^2)^(5/2)) + (16*(2*c*d - b*e
)*(b + 2*c*x))/(15*b^4*(b*x + c*x^2)^(3/2)) - (128*c*(2*c*d - b*e)*(b + 2*c
*x))/(15*b^6*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(bx+cx^2\right)^{7/2}}\,dx &= -\frac{2(bd+(2cd-be)x)}{5b^2\left(bx+cx^2\right)^{5/2}}-\frac{(8(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{5b^2}\\ &= -\frac{2(bd+(2cd-be)x)}{5b^2\left(bx+cx^2\right)^{5/2}}+\frac{16(2cd-be)(b+2cx)}{15b^4\left(bx+cx^2\right)^{3/2}}+\frac{(64c(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{15b^4}\\ &= -\frac{2(bd+(2cd-be)x)}{5b^2\left(bx+cx^2\right)^{5/2}}+\frac{16(2cd-be)(b+2cx)}{15b^4\left(bx+cx^2\right)^{3/2}}-\frac{128c(2cd-be)(b+2cx)}{15b^6\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 105, normalized size = 0.98

$$-\frac{2\left(b^5(3d+5ex)-10b^4cx(d+4ex)+80b^3c^2x^2(d-3ex)+160b^2c^3x^3(3d-2ex)-128bc^4x^4(ex-5d)+256c^5dx^5\right)}{15b^6(x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(256*c^5*d*x^5 + 80*b^3*c^2*x^2*(d - 3*e*x) + 160*b^2*c^3*x^3*(3*d - 2*
e*x) - 128*b*c^4*x^4*(-5*d + e*x) - 10*b^4*c*x*(d + 4*e*x) + b^5*(3*d + 5*e
*x)))/(15*b^6*(x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [A] time = 0.46, size = 139, normalized size = 1.30

$$\frac{2\sqrt{bx+cx^2}\left(-3b^5d-5b^5ex+10b^4cdx+40b^4cex^2-80b^3c^2dx^2+240b^3c^2ex^3-480b^2c^3dx^3+320b^2c^3ex^4-640bc^4dx^4+128bc^4ex^5-256c^5dx^5\right)}{15b^6x^3(b+cx)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-3*b^5*d + 10*b^4*c*d*x - 5*b^5*e*x - 80*b^3*c^2*d*x^
2 + 40*b^4*c*e*x^2 - 480*b^2*c^3*d*x^3 + 240*b^3*c^2*e*x^3 - 640*b*c^4*d*x^
4 + 320*b^2*c^3*e*x^4 - 256*c^5*d*x^5 + 128*b*c^4*e*x^5))/(15*b^6*x^3*(b +
c*x)^3)
```

fricas [A] time = 0.41, size = 164, normalized size = 1.53

$$-\frac{2\left(3b^5d+128\left(2c^5d-bc^4e\right)x^5+320\left(2bc^4d-b^2c^3e\right)x^4+240\left(2b^2c^3d-b^3c^2e\right)x^3+40\left(2b^3c^2d-b^4ce\right)x^2-5\left(2b^4cd-b^5e\right)x\right)\sqrt{cx^2+bx}}{15\left(b^6c^3x^6+3b^7c^2x^5+3b^8cx^4+b^9x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*b^5*d + 128*(2*c^5*d - b*c^4*e)*x^5 + 320*(2*b*c^4*d - b^2*c^3*e)*
x^4 + 240*(2*b^2*c^3*d - b^3*c^2*e)*x^3 + 40*(2*b^3*c^2*d - b^4*c*e)*x^2 -
5*(2*b^4*c*d - b^5*e)*x)*sqrt(c*x^2 + b*x)/(b^6*c^3*x^6 + 3*b^7*c^2*x^5 + 3
*b^8*c*x^4 + b^9*x^3)
```

giac [A] time = 0.23, size = 147, normalized size = 1.37

$$-\frac{2\left(\left(8\left(2\left(4x\left(\frac{2\left(2c^5d-bc^4e\right)x}{b^6}+\frac{5\left(2bc^4d-b^2c^3e\right)}{b^6}\right)+\frac{15\left(2b^2c^3d-b^3c^2e\right)}{b^6}\right)x+\frac{5\left(2b^3c^2d-b^4ce\right)}{b^6}\right)x-\frac{5\left(2b^4cd-b^5e\right)}{b^6}\right)x+\frac{3d}{b}\right)}{15\left(cx^2+bx\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*((8*(2*(4*x*(2*(2*c^5*d - b*c^4*e)*x/b^6 + 5*(2*b*c^4*d - b^2*c^3*e)/
b^6) + 15*(2*b^2*c^3*d - b^3*c^2*e)/b^6)*x + 5*(2*b^3*c^2*d - b^4*c*e)/b^6)
*x - 5*(2*b^4*c*d - b^5*e)/b^6)*x + 3*d/b)/(c*x^2 + b*x)^(5/2)
```

maple [A] time = 0.04, size = 132, normalized size = 1.23

$$-\frac{2(cx+b)\left(-128bc^4ex^5+256c^5dx^5-320b^2c^3ex^4+640bc^4dx^4-240b^3c^2ex^3+480b^2c^3dx^3-40b^4cex^2+80b^3c^2dx^2+5b^5ex-10b^4cdx+3db^5\right)x}{15\left(cx^2+bx\right)^{\frac{7}{2}}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^(7/2),x)
```

```
[Out] -2/15*(c*x+b)*x*(-128*b*c^4*e*x^5+256*c^5*d*x^5-320*b^2*c^3*e*x^4+640*b*c^4
*d*x^4-240*b^3*c^2*e*x^3+480*b^2*c^3*d*x^3-40*b^4*c*e*x^2+80*b^3*c^2*d*x^2+
5*b^5*e*x-10*b^4*c*d*x+3*b^5*d)/b^6/(c*x^2+b*x)^(7/2)
```

maxima [B] time = 0.61, size = 210, normalized size = 1.96

$$-\frac{4\,cdx}{5\,{\left(cx^2+bx\right)}^{\frac{5}{2}}b^2}+\frac{64\,c^2dx}{15\,{\left(cx^2+bx\right)}^{\frac{3}{2}}b^4}-\frac{512\,c^3dx}{15\,\sqrt{cx^2+bx}\,b^6}+\frac{2\,ex}{5\,{\left(cx^2+bx\right)}^{\frac{5}{2}}b}-\frac{32\,cex}{15\,{\left(cx^2+bx\right)}^{\frac{3}{2}}b^3}+\frac{256\,c^2ex}{15\,\sqrt{cx^2+bx}\,b^5}-\frac{2\,d}{5\,{\left(cx^2+bx\right)}^{\frac{5}{2}}b}+\frac{32\,cd}{15\,{\left(cx^2+bx\right)}^{\frac{3}{2}}b^3}-\frac{256\,c^2d}{15\,\sqrt{cx^2+bx}\,b^5}-\frac{16\,e}{15\,{\left(cx^2+bx\right)}^{\frac{3}{2}}b^2}+\frac{128\,ce}{15\,\sqrt{cx^2+bx}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -4/5*c*d*x/((c*x^2 + b*x)^(5/2)*b^2) + 64/15*c^2*d*x/((c*x^2 + b*x)^(3/2)*b
^4) - 512/15*c^3*d*x/(sqrt(c*x^2 + b*x)*b^6) + 2/5*e*x/((c*x^2 + b*x)^(5/2)
*b) - 32/15*c*e*x/((c*x^2 + b*x)^(3/2)*b^3) + 256/15*c^2*e*x/(sqrt(c*x^2 +
b*x)*b^5) - 2/5*d/((c*x^2 + b*x)^(5/2)*b) + 32/15*c*d/((c*x^2 + b*x)^(3/2)*
b^3) - 256/15*c^2*d/(sqrt(c*x^2 + b*x)*b^5) - 16/15*e/((c*x^2 + b*x)^(3/2)*
b^2) + 128/15*c*e/(sqrt(c*x^2 + b*x)*b^4)
```

mupad [B] time = 1.20, size = 125, normalized size = 1.17

$$-\frac{2\,\left(5\,e\,b^5\,x+3\,d\,b^5-40\,e\,b^4\,c\,x^2-10\,d\,b^4\,c\,x-240\,e\,b^3\,c^2\,x^3+80\,d\,b^3\,c^2\,x^2-320\,e\,b^2\,c^3\,x^4+480\,d\,b^2\,c^3\,x^3-128\,e\,b\,c^4\,x^5+640\,d\,b\,c^4\,x^4+256\,d\,c^5\,x^5\right)}{15\,b^6\,{\left(c\,x^2+b\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^(7/2),x)
```

```
[Out] -(2*(3*b^5*d + 256*c^5*d*x^5 + 5*b^5*e*x + 80*b^3*c^2*d*x^2 + 480*b^2*c^3*d
*x^3 - 240*b^3*c^2*e*x^3 - 320*b^2*c^3*e*x^4 - 10*b^4*c*d*x + 640*b*c^4*d*x
^4 - 40*b^4*c*e*x^2 - 128*b*c^4*e*x^5))/(15*b^6*(b*x + c*x^2)^(5/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(x\left(b+cx\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**(7/2),x)
```

```
[Out] Integral((d + e*x)/(x*(b + c*x))**(7/2), x)
```

3.139 $\int \frac{d+ex}{(bx+cx^2)^{9/2}}\,dx$

Optimal. Leaf size=145

$$\frac{1024c^2(b+2cx)(2cd-be)}{35b^8\sqrt{bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35b^6\left(bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35b^4\left(bx+cx^2\right)^{5/2}}-\frac{2(x(2cd-be)+bd)}{7b^2\left(bx+cx^2\right)^{7/2}}$$

Rubi [A] time = 0.04, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {638, 614, 613}

$$\frac{1024c^2(b+2cx)(2cd-be)}{35b^8\sqrt{bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35b^6\left(bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35b^4\left(bx+cx^2\right)^{5/2}}-\frac{2(x(2cd-be)+bd)}{7b^2\left(bx+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*(b*d + (2*c*d - b*e)*x))/(7*b^2*(b*x + c*x^2)^(7/2)) + (24*(2*c*d - b*e
)*(b + 2*c*x))/(35*b^4*(b*x + c*x^2)^(5/2)) - (128*c*(2*c*d - b*e)*(b + 2*c
*x))/(35*b^6*(b*x + c*x^2)^(3/2)) + (1024*c^2*(2*c*d - b*e)*(b + 2*c*x))/(3
5*b^8*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{d+ex}{\left(bx+cx^2\right)^{9/2}}\,dx = -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} - \frac{(12(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{7/2}}\,dx}{7b^2}$$

$$= -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35b^4\left(bx+cx^2\right)^{5/2}} + \frac{(192c(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{35b^4}$$

$$= -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35b^4\left(bx+cx^2\right)^{5/2}} - \frac{128c(2cd-be)(b+2cx)}{35b^6\left(bx+cx^2\right)^{3/2}} - \frac{\left(512c^2(2cd-b\right.}{3}$$

$$= -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35b^4\left(bx+cx^2\right)^{5/2}} - \frac{128c(2cd-be)(b+2cx)}{35b^6\left(bx+cx^2\right)^{3/2}} + \frac{1024c^2(2cd-b}{35b^8\sqrt{bx}}$$

Mathematica [A] time = 0.06, size = 150, normalized size = 1.03

$$-\frac{2\sqrt{x(b+cx)}\left(b^7(5d+7ex)-14b^6cx(d+2ex)+56b^5c^2x^2(d+5ex)-560b^4c^3x^3(d-4ex)+4480b^3c^4x^4(ex-d)+1792b^2c^5x^5(2ex-5d)+1024bc^6x^6(ex-7d)-2048c^7dx^7\right)}{35b^8x^4(b+cx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(-2048*c^7*d*x^7 - 560*b^4*c^3*x^3*(d - 4*e*x) + 1024
*b*c^6*x^6*(-7*d + e*x) + 4480*b^3*c^4*x^4*(-d + e*x) + 1792*b^2*c^5*x^5*(-
5*d + 2*e*x) - 14*b^6*c*x*(d + 2*e*x) + 56*b^5*c^2*x^2*(d + 5*e*x) + b^7*(5
*d + 7*e*x)))/(35*b^8*x^4*(b + c*x)^4)
```

IntegrateAlgebraic [A] time = 0.56, size = 187, normalized size = 1.29

$$-\frac{2\sqrt{bx+cx^2}\left(5b^7d+7b^7ex-14b^6cdx-28b^6cex^2+56b^5c^2dx^2+280b^5c^2ex^3-560b^4c^3dx^3+2240b^4c^3ex^4-4480b^3c^4dx^4+4480b^3c^4ex^5-8960b^2c^5dx^5+3584b^2c^5ex^6-7168bc^6dx^6+1024bc^6ex^7-2048c^7dx^7\right)}{35b^8x^4(b+cx)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)/(b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(5*b^7*d - 14*b^6*c*d*x + 7*b^7*e*x + 56*b^5*c^2*d*x^
2 - 28*b^6*c*e*x^2 - 560*b^4*c^3*d*x^3 + 280*b^5*c^2*e*x^3 - 4480*b^3*c^4*d
*x^4 + 2240*b^4*c^3*e*x^4 - 8960*b^2*c^5*d*x^5 + 4480*b^3*c^4*e*x^5 - 7168*
b*c^6*d*x^6 + 3584*b^2*c^5*e*x^6 - 2048*c^7*d*x^7 + 1024*b*c^6*e*x^7))/(35*
b^8*x^4*(b + c*x)^4)
```

fricas [A] time = 0.42, size = 223, normalized size = 1.54

$$-\frac{2\left(5\,b^7d-1024\left(2\,c^7d-bc^6e\right)x^7-3584\left(2\,bc^6d-b^2c^5e\right)x^6-4480\left(2\,b^2c^5d-b^3c^4e\right)x^5-2240\left(2\,b^3c^4d-b^4c^3e\right)x^4-280\left(2\,b^4c^3d-b^5c^2e\right)x^3+28\left(2\,b^5c^2d-b^6ce\right)x^2-7\left(2\,b^6cd-b^7e\right)x\right)\sqrt{cx^2+bx}}{35\left(b^8c^4x^8+4\,b^9c^3x^7+6\,b^{10}c^2x^6+4\,b^{11}cx^5+b^{12}x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(9/2),x, algorithm="fricas")
```

```
[Out] -2/35*(5*b^7*d - 1024*(2*c^7*d - b*c^6*e)*x^7 - 3584*(2*b*c^6*d - b^2*c^5*e
)*x^6 - 4480*(2*b^2*c^5*d - b^3*c^4*e)*x^5 - 2240*(2*b^3*c^4*d - b^4*c^3*e)
*x^4 - 280*(2*b^4*c^3*d - b^5*c^2*e)*x^3 + 28*(2*b^5*c^2*d - b^6*c*e)*x^2 -
 7*(2*b^6*c*d - b^7*e)*x)*sqrt(c*x^2 + b*x)/(b^8*c^4*x^8 + 4*b^9*c^3*x^7 +
6*b^10*c^2*x^6 + 4*b^11*c*x^5 + b^12*x^4)
```

giac [A] time = 0.33, size = 205, normalized size = 1.41

$$\frac{2\left(\left(4\left(2\left(8\left(2\left(4\,x\left(\frac{2\left(2\,c^7d-bc^6e\right)x}{b^8}+\frac{7\left(2\,bc^6d-b^2c^5e\right)}{b^8}\right)+\frac{35\left(2\,b^2c^5d-b^3c^4e\right)}{b^8}\right)x+\frac{35\left(2\,b^3c^4d-b^4c^3e\right)}{b^8}\right)x+\frac{35\left(2\,b^4c^3d-b^5c^2e\right)}{b^8}\right)x-\frac{7\left(2\,b^5c^2d-b^6ce\right)}{b^8}\right)x+\frac{7\left(2\,b^6cd-b^7e\right)}{b^8}\right)x-\frac{5\,d}{b}\right)}{35\left(cx^2+bx\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(9/2),x, algorithm="giac")
```

```
[Out] 2/35*((4*(2*(8*(2*(4*x*(2*(2*c^7*d - b*c^6*e)*x/b^8 + 7*(2*b*c^6*d - b^2*c^
5*e)/b^8) + 35*(2*b^2*c^5*d - b^3*c^4*e)/b^8)*x + 35*(2*b^3*c^4*d - b^4*c^3
*e)/b^8)*x + 35*(2*b^4*c^3*d - b^5*c^2*e)/b^8)*x - 7*(2*b^5*c^2*d - b^6*c*e
)/b^8)*x + 7*(2*b^6*c*d - b^7*e)/b^8)*x - 5*d/b)/(c*x^2 + b*x)^(7/2)
```

maple [A] time = 0.07, size = 180, normalized size = 1.24

$$-\frac{2\left(cx+b\right)\left(1024b\,c^{6}e\,x^{7}-2048c^{7}d\,x^{7}+3584b^{2}c^{5}e\,x^{6}-7168b\,c^{6}d\,x^{6}+4480b^{3}c^{4}e\,x^{5}-8960b^{2}c^{5}d\,x^{5}+2240b^{4}c^{3}e\,x^{4}-4480b^{3}c^{4}d\,x^{4}+280b^{5}c^{2}e\,x^{3}-560b^{4}c^{3}d\,x^{3}-28b^{6}ce\,x^{2}+56b^{5}c^{2}d\,x^{2}+7b^{7}ex-14b^{6}cdx+5d\,b^{7}\right)x}{35\left(c\,x^{2}+bx\right)^{\frac{9}{2}}b^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^(9/2),x)
```

```
[Out] -2/35*(c*x+b)*x*(1024*b*c^6*e*x^7-2048*c^7*d*x^7+3584*b^2*c^5*e*x^6-7168*b*
c^6*d*x^6+4480*b^3*c^4*e*x^5-8960*b^2*c^5*d*x^5+2240*b^4*c^3*e*x^4-4480*b^3
*c^4*d*x^4+280*b^5*c^2*e*x^3-560*b^4*c^3*d*x^3-28*b^6*c*e*x^2+56*b^5*c^2*d*
x^2+7*b^7*e*x-14*b^6*c*d*x+5*b^7*d)/b^8/(c*x^2+b*x)^(9/2)
```

maxima [B] time = 0.63, size = 292, normalized size = 2.01

$$-\frac{4\,cdx}{7\left(cx^{2}+bx\right)^{\frac{7}{2}}b^{2}}+\frac{96\,c^{2}dx}{35\left(cx^{2}+bx\right)^{\frac{5}{2}}b^{4}}-\frac{512\,c^{3}dx}{35\left(cx^{2}+bx\right)^{\frac{3}{2}}b^{6}}+\frac{4096\,c^{4}dx}{35\sqrt{cx^{2}+bx}\,b^{8}}+\frac{2\,ex}{7\left(cx^{2}+bx\right)^{\frac{7}{2}}b}-\frac{48\,cex}{35\left(cx^{2}+bx\right)^{\frac{5}{2}}b^{3}}+\frac{256\,c^{2}ex}{35\left(cx^{2}+bx\right)^{\frac{3}{2}}b^{5}}-\frac{2048\,c^{3}ex}{35\sqrt{cx^{2}+bx}\,b^{7}}-\frac{2\,d}{7\left(cx^{2}+bx\right)^{\frac{7}{2}}b}+\frac{48\,cd}{35\left(cx^{2}+bx\right)^{\frac{5}{2}}b^{3}}-\frac{256\,c^{2}d}{35\left(cx^{2}+bx\right)^{\frac{3}{2}}b^{5}}+\frac{2048\,c^{3}d}{35\sqrt{cx^{2}+bx}\,b^{7}}-\frac{24\,e}{35\left(cx^{2}+bx\right)^{\frac{5}{2}}b^{2}}+\frac{128\,ce}{35\left(cx^{2}+bx\right)^{\frac{3}{2}}b^{4}}-\frac{1024\,c^{2}e}{35\sqrt{cx^{2}+bx}\,b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(9/2),x, algorithm="maxima")
```

```
[Out] -4/7*c*d*x/((c*x^2 + b*x)^(7/2)*b^2) + 96/35*c^2*d*x/((c*x^2 + b*x)^(5/2)*b
^4) - 512/35*c^3*d*x/((c*x^2 + b*x)^(3/2)*b^6) + 4096/35*c^4*d*x/(sqrt(c*x^
2 + b*x)*b^8) + 2/7*e*x/((c*x^2 + b*x)^(7/2)*b) - 48/35*c*e*x/((c*x^2 + b*x
)^(5/2)*b^3) + 256/35*c^2*e*x/((c*x^2 + b*x)^(3/2)*b^5) - 2048/35*c^3*e*x/(
sqrt(c*x^2 + b*x)*b^7) - 2/7*d/((c*x^2 + b*x)^(7/2)*b) + 48/35*c*d/((c*x^2
+ b*x)^(5/2)*b^3) - 256/35*c^2*d/((c*x^2 + b*x)^(3/2)*b^5) + 2048/35*c^3*d/
(sqrt(c*x^2 + b*x)*b^7) - 24/35*e/((c*x^2 + b*x)^(5/2)*b^2) + 128/35*c*e/((
c*x^2 + b*x)^(3/2)*b^4) - 1024/35*c^2*e/(sqrt(c*x^2 + b*x)*b^6)
```

mupad [B] time = 1.20, size = 185, normalized size = 1.28

$$\frac{\frac{2048\,c^3\,d-1024\,b\,c^2\,e}{35\,b^7}+\frac{2\,c\,x\,\left(2048\,c^3\,d-1024\,b\,c^2\,e\right)}{35\,b^8}}{\sqrt{c\,x^2+b\,x}}-\frac{\frac{256\,c^2\,d-128\,b\,c\,e}{35\,b^5}+\frac{2\,c\,x\,\left(256\,c^2\,d-128\,b\,c\,e\right)}{35\,b^6}}{{\left(c\,x^2+b\,x\right)}^{3/2}}-\frac{\frac{2\,d}{7\,b}-x\,\left(\frac{2\,e}{7\,b}-\frac{4\,c\,d}{7\,b^2}\right)}{{\left(c\,x^2+b\,x\right)}^{7/2}}-\frac{\frac{24\,b\,e-48\,c\,d}{35\,b^3}+\frac{2\,c\,x\,\left(24\,b\,e-48\,c\,d\right)}{35\,b^4}}{{\left(c\,x^2+b\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^(9/2),x)
```

```
[Out] ((2048*c^3*d - 1024*b*c^2*e)/(35*b^7) + (2*c*x*(2048*c^3*d - 1024*b*c^2*e))
/(35*b^8))/(b*x + c*x^2)^(1/2) - ((256*c^2*d - 128*b*c*e)/(35*b^5) + (2*c*x
*(256*c^2*d - 128*b*c*e))/(35*b^6))/(b*x + c*x^2)^(3/2) - ((2*d)/(7*b) - x*
((2*e)/(7*b) - (4*c*d)/(7*b^2)))/(b*x + c*x^2)^(7/2) - ((24*b*e - 48*c*d)/(
35*b^3) + (2*c*x*(24*b*e - 48*c*d))/(35*b^4))/(b*x + c*x^2)^(5/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d + ex}{\left(x \left(b + cx\right)\right)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**(9/2),x)
```

```
[Out] Integral((d + e*x)/(x*(b + c*x))**(9/2), x)
```

3.140 $\int x^{7/2}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{11}Abx^{11/2}+\frac{2}{15}Bcx^{15/2}$$

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{11}Abx^{11/2}+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*A*b*x^(11/2))/11 + (2*(b*B + A*c)*x^(13/2))/13 + (2*B*c*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(bx+cx^2\right)\,dx &= \int\left(Abx^{9/2}+(bB+Ac)x^{11/2}+Bcx^{13/2}\right)dx\\ &= \frac{2}{11}Abx^{11/2}+\frac{2}{13}(bB+Ac)x^{13/2}+\frac{2}{15}Bcx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2x^{11/2}(15A(13b+11cx)+11Bx(15b+13cx))}{2145}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*x^(11/2)*(15*A*(13*b + 11*c*x) + 11*B*x*(15*b + 13*c*x)))/2145
```

IntegrateAlgebraic [A] time = 0.03, size = 41, normalized size = 1.05

$$\frac{2\left(195Abx^{11/2}+165Acx^{13/2}+165bBx^{13/2}+143Bcx^{15/2}\right)}{2145}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*(195*A*b*x^(11/2) + 165*b*B*x^(13/2) + 165*A*c*x^(13/2) + 143*B*c*x^(15/
2)))/2145
```

fricas [A] time = 0.39, size = 32, normalized size = 0.82

$$\frac{2}{2145}\left(143\,Bcx^7+195\,Abx^5+165\,(Bb+Ac)x^6\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/2145*(143*B*c*x^7 + 195*A*b*x^5 + 165*(B*b + A*c)*x^6)*sqrt(x)
```

giac [A] time = 0.22, size = 29, normalized size = 0.74

$$\frac{2}{15}\,Bcx^{\frac{15}{2}} + \frac{2}{13}\,Bbx^{\frac{13}{2}} + \frac{2}{13}\,Acx^{\frac{13}{2}} + \frac{2}{11}\,Abx^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*B*b*x^(13/2) + 2/13*A*c*x^(13/2) + 2/11*A*b*x^(11/
2)
```

maple [A] time = 0.05, size = 28, normalized size = 0.72

$$\frac{2\left(143Bc\,x^{2}+165Acx+165Bbx+195Ab\right)x^{\frac{11}{2}}}{2145}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 2/2145*x^(11/2)*(143*B*c*x^2+165*A*c*x+165*B*b*x+195*A*b)
```

maxima [A] time = 0.47, size = 27, normalized size = 0.69

$$\frac{2}{15}\,Bcx^{\frac{15}{2}} + \frac{2}{11}\,Abx^{\frac{11}{2}} + \frac{2}{13}\,(Bb + Ac)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/11*A*b*x^(11/2) + 2/13*(B*b + A*c)*x^(13/2)
```

mupad [B] time = 0.05, size = 27, normalized size = 0.69

$$\frac{2\,x^{11/2}\,\left(195\,A\,b+165\,A\,c\,x+165\,B\,b\,x+143\,B\,c\,x^2\right)}{2145}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(11/2)*(195*A*b + 165*A*c*x + 165*B*b*x + 143*B*c*x^2))/2145
```

sympy [A] time = 7.89, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{11}{2}}}{11} + \frac{2Acx^{\frac{13}{2}}}{13} + \frac{2Bbx^{\frac{13}{2}}}{13} + \frac{2Bcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*x**(11/2)/11 + 2*A*c*x**(13/2)/13 + 2*B*b*x**(13/2)/13 + 2*B*c*x**(15
/2)/15
```

3.141 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{9}Abx^{9/2}+\frac{2}{13}Bcx^{13/2}$$

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{9}Abx^{9/2}+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*A*b*x^(9/2))/9 + (2*(b*B + A*c)*x^(11/2))/11 + (2*B*c*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx^{7/2}+(bB+Ac)x^{9/2}+Bcx^{11/2}\right)dx\\ &= \frac{2}{9}Abx^{9/2}+\frac{2}{11}(bB+Ac)x^{11/2}+\frac{2}{13}Bcx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2x^{9/2}(13A(11b+9cx)+9Bx(13b+11cx))}{1287}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*x^(9/2)*(13*A*(11*b + 9*c*x) + 9*B*x*(13*b + 11*c*x)))/1287
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 1.05

$$\frac{2\left(143Abx^{9/2}+117Acx^{11/2}+117bBx^{11/2}+99Bcx^{13/2}\right)}{1287}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*(143*A*b*x^(9/2) + 117*b*B*x^(11/2) + 117*A*c*x^(11/2) + 99*B*c*x^(13/2)
))/1287
```

fricas [A] time = 0.40, size = 32, normalized size = 0.82

$$\frac{2}{1287}\left(99\,Bcx^6+143\,Abx^4+117\,(Bb+Ac)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*B*c*x^6 + 143*A*b*x^4 + 117*(B*b + A*c)*x^5)*sqrt(x)
```

giac [A] time = 0.19, size = 29, normalized size = 0.74

$$\frac{2}{13}\,Bcx^{\frac{13}{2}} + \frac{2}{11}\,Bbx^{\frac{11}{2}} + \frac{2}{11}\,Acx^{\frac{11}{2}} + \frac{2}{9}\,Abx^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*B*b*x^(11/2) + 2/11*A*c*x^(11/2) + 2/9*A*b*x^(9/2)
```

maple [A] time = 0.05, size = 28, normalized size = 0.72

$$\frac{2\left(99Bc\,x^{2}+117Acx+117Bbx+143Ab\right)x^{\frac{9}{2}}}{1287}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 2/1287*x^(9/2)*(99*B*c*x^2+117*A*c*x+117*B*b*x+143*A*b)
```

maxima [A] time = 0.56, size = 27, normalized size = 0.69

$$\frac{2}{13}\,Bcx^{\frac{13}{2}} + \frac{2}{9}\,Abx^{\frac{9}{2}} + \frac{2}{11}\,(Bb + Ac)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/9*A*b*x^(9/2) + 2/11*(B*b + A*c)*x^(11/2)
```

mupad [B] time = 0.04, size = 27, normalized size = 0.69

$$\frac{2\,x^{9/2}\,\left(143\,A\,b+117\,A\,c\,x+117\,B\,b\,x+99\,B\,c\,x^2\right)}{1287}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(9/2)*(143*A*b + 117*A*c*x + 117*B*b*x + 99*B*c*x^2))/1287
```

sympy [A] time = 3.86, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{9}{2}}}{9} + \frac{2Acx^{\frac{11}{2}}}{11} + \frac{2Bbx^{\frac{11}{2}}}{11} + \frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*x**(9/2)/9 + 2*A*c*x**(11/2)/11 + 2*B*b*x**(11/2)/11 + 2*B*c*x**(13/2
)/13
```

3.142 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{7}Abx^{7/2}+\frac{2}{11}Bcx^{11/2}$$

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{7}Abx^{7/2}+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2),x]
[Out] (2*A*b*x^(7/2))/7 + (2*(b*B + A*c)*x^(9/2))/9 + (2*B*c*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^{5/2}+(bB+Ac)x^{7/2}+Bcx^{9/2}\right)dx\\&=\frac{2}{7}Abx^{7/2}+\frac{2}{9}(bB+Ac)x^{9/2}+\frac{2}{11}Bcx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2}{693}x^{7/2}(11A(9b+7cx)+7Bx(11b+9cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2),x]
[Out] (2*x^(7/2)*(11*A*(9*b + 7*c*x) + 7*B*x*(11*b + 9*c*x)))/693
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 1.05

$$\frac{2}{693}\left(99Abx^{7/2}+77Acx^{9/2}+77bBx^{9/2}+63Bcx^{11/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(b*x + c*x^2),x]
[Out] (2*(99*A*b*x^(7/2) + 77*b*B*x^(9/2) + 77*A*c*x^(9/2) + 63*B*c*x^(11/2)))/69
3
```

fricas [A] time = 0.40, size = 32, normalized size = 0.82

$$\frac{2}{693}\left(63\,Bcx^5+99\,Abx^3+77\,(Bb+Ac)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*c*x^5 + 99*A*b*x^3 + 77*(B*b + A*c)*x^4)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.74

$$\frac{2}{11} Bcx^{\frac{11}{2}} + \frac{2}{9} Bbx^{\frac{9}{2}} + \frac{2}{9} Acx^{\frac{9}{2}} + \frac{2}{7} Abx^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*B*b*x^(9/2) + 2/9*A*c*x^(9/2) + 2/7*A*b*x^(7/2)
```

maple [A] time = 0.04, size = 28, normalized size = 0.72

$$\frac{2\left(63Bc\,x^{2} + 77Acx + 77Bbx + 99Ab\right) x^{\frac{7}{2}}}{693}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 2/693*x^(7/2)*(63*B*c*x^2+77*A*c*x+77*B*b*x+99*A*b)
```

maxima [A] time = 0.67, size = 27, normalized size = 0.69

$$\frac{2}{11} Bcx^{\frac{11}{2}} + \frac{2}{7} Abx^{\frac{7}{2}} + \frac{2}{9} (Bb + Ac)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/7*A*b*x^(7/2) + 2/9*(B*b + A*c)*x^(9/2)
```

mupad [B] time = 1.02, size = 27, normalized size = 0.69

$$\frac{2\,x^{7/2}\,\left(99\,A\,b + 77\,A\,c\,x + 77\,B\,b\,x + 63\,B\,c\,x^2\right)}{693}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(7/2)*(99*A*b + 77*A*c*x + 77*B*b*x + 63*B*c*x^2))/693
```

sympy [A] time = 1.62, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{7}{2}}}{7} + \frac{2Acx^{\frac{9}{2}}}{9} + \frac{2Bbx^{\frac{9}{2}}}{9} + \frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*x**(7/2)/7 + 2*A*c*x**(9/2)/9 + 2*B*b*x**(9/2)/9 + 2*B*c*x**(11/2)/11
```

3.143 $\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{5}Abx^{5/2}+\frac{2}{9}Bcx^{9/2}$$

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{5}Abx^{5/2}+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2),x]
[Out] (2*A*b*x^(5/2))/5 + (2*(b*B + A*c)*x^(7/2))/7 + (2*B*c*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx^{3/2}+(bB+Ac)x^{5/2}+Bcx^{7/2}\right)dx\\ &= \frac{2}{5}Abx^{5/2}+\frac{2}{7}(bB+Ac)x^{7/2}+\frac{2}{9}Bcx^{9/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2}{315}x^{5/2}(9A(7b+5cx)+5Bx(9b+7cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2),x]
[Out] (2*x^(5/2)*(9*A*(7*b + 5*c*x) + 5*B*x*(9*b + 7*c*x)))/315
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 1.05

$$\frac{2}{315}\left(63Abx^{5/2}+45Acx^{7/2}+45bBx^{7/2}+35Bcx^{9/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(b*x + c*x^2),x]
[Out] (2*(63*A*b*x^(5/2) + 45*b*B*x^(7/2) + 45*A*c*x^(7/2) + 35*B*c*x^(9/2)))/315
```

fricas [A] time = 0.41, size = 32, normalized size = 0.82

$$\frac{2}{315}\left(35\,Bcx^4+63\,Abx^2+45\,(Bb+Ac)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)*x^(1/2),x, algorithm="fricas")
[Out] 2/315*(35*B*c*x^4 + 63*A*b*x^2 + 45*(B*b + A*c)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.74

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{7}\,Bbx^{\frac{7}{2}} + \frac{2}{7}\,Acx^{\frac{7}{2}} + \frac{2}{5}\,Abx^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)*x^(1/2),x, algorithm="giac")
[Out] 2/9*B*c*x^(9/2) + 2/7*B*b*x^(7/2) + 2/7*A*c*x^(7/2) + 2/5*A*b*x^(5/2)
```

maple [A] time = 0.04, size = 28, normalized size = 0.72

$$\frac{2\left(35Bc\,x^{2}+45Acx+45Bbx+63Ab\right)x^{\frac{5}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)*x^(1/2),x)
[Out] 2/315*x^(5/2)*(35*B*c*x^2+45*A*c*x+45*B*b*x+63*A*b)
```

maxima [A] time = 0.58, size = 27, normalized size = 0.69

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{5}\,Abx^{\frac{5}{2}} + \frac{2}{7}\,(Bb + Ac)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)*x^(1/2),x, algorithm="maxima")
[Out] 2/9*B*c*x^(9/2) + 2/5*A*b*x^(5/2) + 2/7*(B*b + A*c)*x^(7/2)
```

mupad [B] time = 0.04, size = 27, normalized size = 0.69

$$\frac{2\,x^{5/2}\,\left(63\,A\,b+45\,A\,c\,x+45\,B\,b\,x+35\,B\,c\,x^2\right)}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)*(A + B*x),x)
[Out] (2*x^(5/2)*(63*A*b + 45*A*c*x + 45*B*b*x + 35*B*c*x^2))/315
```

sympy [A] time = 2.33, size = 37, normalized size = 0.95

$$\frac{2Abx^{\frac{5}{2}}}{5} + \frac{2Bcx^{\frac{9}{2}}}{9} + \frac{2x^{\frac{7}{2}}\,(Ac + Bb)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)*x**(1/2),x)
[Out] 2*A*b*x**(5/2)/5 + 2*B*c*x**(9/2)/9 + 2*x**(7/2)*(A*c + B*b)/7
```

3.144 $\int \frac{(A+Bx)(bx+cx^2)}{\sqrt{x}} dx$

Optimal. Leaf size=39

$$\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{3}Abx^{3/2}+\frac{2}{7}Bcx^{7/2}$$

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{3}Abx^{3/2}+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*A*b*x^(3/2))/3 + (2*(b*B + A*c)*x^(5/2))/5 + (2*B*c*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{x}}\,dx &= \int \left(Ab\sqrt{x}+(bB+Ac)x^{3/2}+Bcx^{5/2}\right)dx\\ &= \frac{2}{3}Abx^{3/2}+\frac{2}{5}(bB+Ac)x^{5/2}+\frac{2}{7}Bcx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2}{105}x^{3/2}(7A(5b+3cx)+3Bx(7b+5cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*x^(3/2)*(7*A*(5*b + 3*c*x) + 3*B*x*(7*b + 5*c*x)))/105
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 1.05

$$\frac{2}{105}\left(35Abx^{3/2}+21Acx^{5/2}+21bBx^{5/2}+15Bcx^{7/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*(35*A*b*x^(3/2) + 21*b*B*x^(5/2) + 21*A*c*x^(5/2) + 15*B*c*x^(7/2)))/105
```

fricas [A] time = 0.39, size = 30, normalized size = 0.77

$$\frac{2}{105}\left(15\,Bcx^3+35\,Abx+21\,(Bb+Ac)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*x^3 + 35*A*b*x + 21*(B*b + A*c)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.74

$$\frac{2}{7}Bcx^{\frac{7}{2}} + \frac{2}{5}Bbx^{\frac{5}{2}} + \frac{2}{5}Acx^{\frac{5}{2}} + \frac{2}{3}Abx^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/5*B*b*x^(5/2) + 2/5*A*c*x^(5/2) + 2/3*A*b*x^(3/2)
```

maple [A] time = 0.05, size = 28, normalized size = 0.72

$$\frac{2\left(15Bc\,x^{2}+21Acx+21Bbx+35Ab\right)x^{\frac{3}{2}}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(1/2),x)
```

```
[Out] 2/105*x^(3/2)*(15*B*c*x^2+21*A*c*x+21*B*b*x+35*A*b)
```

maxima [A] time = 0.50, size = 27, normalized size = 0.69

$$\frac{2}{7}Bcx^{\frac{7}{2}} + \frac{2}{3}Abx^{\frac{3}{2}} + \frac{2}{5}(Bb+Ac)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/3*A*b*x^(3/2) + 2/5*(B*b + A*c)*x^(5/2)
```

mupad [B] time = 0.04, size = 27, normalized size = 0.69

$$\frac{2\,x^{3/2}\,\left(35\,A\,b+21\,A\,c\,x+21\,B\,b\,x+15\,B\,c\,x^2\right)}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(1/2),x)
```

```
[Out] (2*x^(3/2)*(35*A*b + 21*A*c*x + 21*B*b*x + 15*B*c*x^2))/105
```

sympy [A] time = 0.44, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{3}{2}}}{3} + \frac{2Acx^{\frac{5}{2}}}{5} + \frac{2Bbx^{\frac{5}{2}}}{5} + \frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(1/2),x)
```

```
[Out] 2*A*b*x**(3/2)/3 + 2*A*c*x**(5/2)/5 + 2*B*b*x**(5/2)/5 + 2*B*c*x**(7/2)/7
```

3.145 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{3/2}} \, dx$

Optimal. Leaf size=37

$$\frac{2}{3}x^{3/2}(Ac+bB)+2Ab\sqrt{x}+\frac{2}{5}Bcx^{5/2}$$

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{3}x^{3/2}(Ac+bB)+2Ab\sqrt{x}+\frac{2}{5}Bcx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(3/2),x]
[Out] 2*A*b*Sqrt[x] + (2*(b*B + A*c)*x^(3/2))/3 + (2*B*c*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{3/2}} \, dx &= \int \left(\frac{Ab}{\sqrt{x}}+(bB+Ac)\sqrt{x}+Bcx^{3/2}\right) dx\\ &= 2Ab\sqrt{x}+\frac{2}{3}(bB+Ac)x^{3/2}+\frac{2}{5}Bcx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.84

$$\frac{2}{15}\sqrt{x}\,(5A(3b+cx)+Bx(5b+3cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(3/2),x]
[Out] (2*Sqrt[x]*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)))/15
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 1.11

$$\frac{2}{15}\left(15Ab\sqrt{x}+5Acx^{3/2}+5bBx^{3/2}+3Bcx^{5/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^(3/2),x]
[Out] (2*(15*A*b*Sqrt[x] + 5*b*B*x^(3/2) + 5*A*c*x^(3/2) + 3*B*c*x^(5/2)))/15
```

fricas [A] time = 0.41, size = 27, normalized size = 0.73

$$\frac{2}{15}\left(3\,Bcx^2+15\,Ab+5\,(Bb+Ac)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(3/2),x, algorithm="fricas")
[Out] 2/15*(3*B*c*x^2 + 15*A*b + 5*(B*b + A*c)*x)*sqrt(x)
```

giac [A] time = 0.17, size = 29, normalized size = 0.78

$$\frac{2}{5}\,Bcx^{\frac{5}{2}} + \frac{2}{3}\,Bbx^{\frac{3}{2}} + \frac{2}{3}\,Acx^{\frac{3}{2}} + 2\,Ab\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(3/2),x, algorithm="giac")
[Out] 2/5*B*c*x^(5/2) + 2/3*B*b*x^(3/2) + 2/3*A*c*x^(3/2) + 2*A*b*sqrt(x)
```

maple [A] time = 0.04, size = 28, normalized size = 0.76

$$\frac{2\left(3Bc\,x^{2}+5Acx+5Bbx+15Ab\right)\sqrt{x}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(3/2),x)
[Out] 2/15*x^(1/2)*(3*B*c*x^2+5*A*c*x+5*B*b*x+15*A*b)
```

maxima [A] time = 0.58, size = 27, normalized size = 0.73

$$\frac{2}{5}\,Bcx^{\frac{5}{2}} + 2\,Ab\sqrt{x} + \frac{2}{3}\,(Bb + Ac)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(3/2),x, algorithm="maxima")
[Out] 2/5*B*c*x^(5/2) + 2*A*b*sqrt(x) + 2/3*(B*b + A*c)*x^(3/2)
```

mupad [B] time = 0.04, size = 27, normalized size = 0.73

$$\frac{2\,\sqrt{x}\,\left(15\,A\,b+5\,A\,c\,x+5\,B\,b\,x+3\,B\,c\,x^2\right)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(3/2),x)
[Out] (2*x^(1/2)*(15*A*b + 5*A*c*x + 5*B*b*x + 3*B*c*x^2))/15
```

sympy [A] time = 0.48, size = 44, normalized size = 1.19

$$2Ab\sqrt{x} + \frac{2Acx^{\frac{3}{2}}}{3} + \frac{2Bbx^{\frac{3}{2}}}{3} + \frac{2Bcx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(3/2),x)
[Out] 2*A*b*sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*b*x**(3/2)/3 + 2*B*c*x**(5/2)/5
```

3.146 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{5/2}} \, dx$

Optimal. Leaf size=35

$$2\sqrt{x}\,(Ac+bB)-\frac{2Ab}{\sqrt{x}}+\frac{2}{3}Bcx^{3/2}$$

Rubi [A] time = 0.02, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$2\sqrt{x}\,(Ac+bB)-\frac{2Ab}{\sqrt{x}}+\frac{2}{3}Bcx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(5/2),x]
[Out] (-2*A*b)/Sqrt[x] + 2*(b*B + A*c)*Sqrt[x] + (2*B*c*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{5/2}} \, dx &= \int \left(\frac{Ab}{x^{3/2}}+\frac{bB+Ac}{\sqrt{x}}+Bc\sqrt{x}\right) dx\\ &= -\frac{2Ab}{\sqrt{x}}+2(bB+Ac)\sqrt{x}+\frac{2}{3}Bcx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 0.83

$$\frac{2(Bx(3b+cx)-3A(b-cx))}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(5/2),x]
[Out] (2*(-3*A*(b - c*x) + B*x*(3*b + c*x)))/(3*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.02, size = 30, normalized size = 0.86

$$\frac{2\left(-3Ab+3Acx+3bBx+Bcx^2\right)}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^(5/2),x]
[Out] (2*(-3*A*b + 3*b*B*x + 3*A*c*x + B*c*x^2))/(3*Sqrt[x])
```

fricas [A] time = 0.40, size = 26, normalized size = 0.74

$$\frac{2\left(Bcx^{2} - 3\,Ab + 3\,(Bb + Ac)x\right)}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(5/2),x, algorithm="fricas")
[Out] 2/3*(B*c*x^2 - 3*A*b + 3*(B*b + A*c)*x)/sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.83

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Bb\sqrt{x} + 2\,Ac\sqrt{x} - \frac{2\,Ab}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(5/2),x, algorithm="giac")
[Out] 2/3*B*c*x^(3/2) + 2*B*b*sqrt(x) + 2*A*c*sqrt(x) - 2*A*b/sqrt(x)
```

maple [A] time = 0.05, size = 28, normalized size = 0.80

$$-\frac{2\left(-Bc\,x^{2} - 3Acx - 3Bbx + 3Ab\right)}{3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(5/2),x)
[Out] -2/3/x^(1/2)*(-B*c*x^2-3*A*c*x-3*B*b*x+3*A*b)
```

maxima [A] time = 0.71, size = 27, normalized size = 0.77

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} - \frac{2\,Ab}{\sqrt{x}} + 2\,(Bb + Ac)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(5/2),x, algorithm="maxima")
[Out] 2/3*B*c*x^(3/2) - 2*A*b/sqrt(x) + 2*(B*b + A*c)*sqrt(x)
```

mupad [B] time = 1.02, size = 27, normalized size = 0.77

$$\frac{6\,A\,c\,x - 6\,A\,b + 6\,B\,b\,x + 2\,B\,c\,x^{2}}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(5/2),x)
[Out] (6*A*c*x - 6*A*b + 6*B*b*x + 2*B*c*x^2)/(3*x^(1/2))
```

sympy [A] time = 0.76, size = 41, normalized size = 1.17

$$-\frac{2Ab}{\sqrt{x}} + 2Ac\sqrt{x} + 2Bb\sqrt{x} + \frac{2Bcx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(5/2),x)
[Out] -2*A*b/sqrt(x) + 2*A*c*sqrt(x) + 2*B*b*sqrt(x) + 2*B*c*x**(3/2)/3
```

3.147 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{7/2}}\,dx$

Optimal. Leaf size=35

$$-\frac{2(Ac+bB)}{\sqrt{x}}-\frac{2Ab}{3x^{3/2}}+2Bc\sqrt{x}$$

Rubi [A] time = 0.02, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{2(Ac+bB)}{\sqrt{x}}-\frac{2Ab}{3x^{3/2}}+2Bc\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(7/2),x]
[Out] (-2*A*b)/(3*x^(3/2)) - (2*(b*B + A*c))/Sqrt[x] + 2*B*c*Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{7/2}}\,dx &= \int \left(\frac{Ab}{x^{5/2}}+\frac{bB+Ac}{x^{3/2}}+\frac{Bc}{\sqrt{x}}\right)dx\\ &= -\frac{2Ab}{3x^{3/2}}-\frac{2(bB+Ac)}{\sqrt{x}}+2Bc\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.80

$$-\frac{2(A(b+3cx)+3Bx(b-cx))}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(7/2),x]
[Out] (-2*(3*B*x*(b - c*x) + A*(b + 3*c*x)))/(3*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 31, normalized size = 0.89

$$\frac{2\left(-Ab-3Acx-3bBx+3Bcx^2\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^(7/2),x]
[Out] (2*(-(A*b) - 3*b*B*x - 3*A*c*x + 3*B*c*x^2))/(3*x^(3/2))
```

fricas [A] time = 0.40, size = 27, normalized size = 0.77

$$\frac{2\left(3\,Bcx^2-Ab-3\,(Bb+Ac)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*c*x^2 - A*b - 3*(B*b + A*c)*x)/x^(3/2)
```

giac [A] time = 0.15, size = 27, normalized size = 0.77

$$2\,Bc\sqrt{x}-\frac{2\,(3\,Bbx+3\,Acx+Ab)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*B*c*sqrt(x) - 2/3*(3*B*b*x + 3*A*c*x + A*b)/x^(3/2)
```

maple [A] time = 0.05, size = 27, normalized size = 0.77

$$-\frac{2\left(-3Bc\,x^{2}+3Acx+3Bbx+Ab\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(7/2),x)
```

```
[Out] -2/3/x^(3/2)*(-3*B*c*x^2+3*A*c*x+3*B*b*x+A*b)
```

maxima [A] time = 0.59, size = 27, normalized size = 0.77

$$2\,Bc\sqrt{x}-\frac{2\,(Ab+3\,(Bb+Ac)x)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2*B*c*sqrt(x) - 2/3*(A*b + 3*(B*b + A*c)*x)/x^(3/2)
```

mupad [B] time = 1.02, size = 27, normalized size = 0.77

$$-\frac{2\,A\,b+6\,A\,c\,x+6\,B\,b\,x-6\,B\,c\,x^2}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(7/2),x)
```

```
[Out] -(2*A*b + 6*A*c*x + 6*B*b*x - 6*B*c*x^2)/(3*x^(3/2))
```

sympy [A] time = 1.34, size = 41, normalized size = 1.17

$$-\frac{2Ab}{3x^{\frac{3}{2}}}-\frac{2Ac}{\sqrt{x}}-\frac{2Bb}{\sqrt{x}}+2Bc\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(7/2),x)
```

```
[Out] -2*A*b/(3*x**(3/2)) - 2*A*c/sqrt(x) - 2*B*b/sqrt(x) + 2*B*c*sqrt(x)
```

3.148 $\int \frac{(A+Bx)(bx+cx^2)}{x^{9/2}} \, dx$

Optimal. Leaf size=37

$$-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Ab}{5x^{5/2}}-\frac{2Bc}{\sqrt{x}}$$

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Ab}{5x^{5/2}}-\frac{2Bc}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*A*b)/(5*x^(5/2)) - (2*(b*B + A*c))/(3*x^(3/2)) - (2*B*c)/Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(bx+cx^2)}{x^{9/2}} \, dx &= \int \left(\frac{Ab}{x^{7/2}}+\frac{bB+Ac}{x^{5/2}}+\frac{Bc}{x^{3/2}}\right) dx\\ &= -\frac{2Ab}{5x^{5/2}}-\frac{2(bB+Ac)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.81

$$-\frac{2(A(3b+5cx)+5Bx(b+3cx))}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x)))/(15*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 31, normalized size = 0.84

$$-\frac{2\left(3Ab+5Acx+5bBx+15Bcx^2\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(3*A*b + 5*b*B*x + 5*A*c*x + 15*B*c*x^2))/(15*x^(5/2))
```

fricas [A] time = 0.40, size = 27, normalized size = 0.73

$$-\frac{2\left(15\,Bcx^2+3\,Ab+5\,(Bb+Ac)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(9/2),x, algorithm="fricas")
[Out] -2/15*(15*B*c*x^2 + 3*A*b + 5*(B*b + A*c)*x)/x^(5/2)
```

giac [A] time = 0.15, size = 27, normalized size = 0.73

$$-\frac{2\left(15\,Bcx^2+5\,Bbx+5\,Acx+3\,Ab\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(9/2),x, algorithm="giac")
[Out] -2/15*(15*B*c*x^2 + 5*B*b*x + 5*A*c*x + 3*A*b)/x^(5/2)
```

maple [A] time = 0.05, size = 28, normalized size = 0.76

$$-\frac{2\left(15Bc\,x^2+5Acx+5Bbx+3Ab\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(9/2),x)
[Out] -2/15/x^(5/2)*(15*B*c*x^2+5*A*c*x+5*B*b*x+3*A*b)
```

maxima [A] time = 0.51, size = 27, normalized size = 0.73

$$-\frac{2\left(15\,Bcx^2+3\,Ab+5\,(Bb+Ac)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(9/2),x, algorithm="maxima")
[Out] -2/15*(15*B*c*x^2 + 3*A*b + 5*(B*b + A*c)*x)/x^(5/2)
```

mupad [B] time = 0.03, size = 28, normalized size = 0.76

$$-\frac{2\,B\,c\,x^2+\left(\frac{2\,A\,c}{3}+\frac{2\,B\,b}{3}\right)\,x+\frac{2\,A\,b}{5}}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(9/2),x)
[Out] -((2*A*b)/5 + x*((2*A*c)/3 + (2*B*b)/3) + 2*B*c*x^2)/x^(5/2)
```

sympy [A] time = 2.93, size = 46, normalized size = 1.24

$$-\frac{2Ab}{5x^{\frac{5}{2}}}-\frac{2Ac}{3x^{\frac{3}{2}}}-\frac{2Bb}{3x^{\frac{3}{2}}}-\frac{2Bc}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(9/2),x)
[Out] -2*A*b/(5*x**(5/2)) - 2*A*c/(3*x**(3/2)) - 2*B*b/(3*x**(3/2)) - 2*B*c/sqrt(
x)
```

3.149 $\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{15}bx^{15/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{15}bx^{15/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(13/2))/13 + (2*b*(b*B + 2*A*c)*x^(15/2))/15 + (2*c*(2*b*B + A*c
)*x^(17/2))/17 + (2*B*c^2*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^{11/2}+b(bB+2Ac)x^{13/2}+c(2bB+Ac)x^{15/2}+Bc^2x^{17/2}\right)dx\\&=\frac{2}{13}Ab^2x^{13/2}+\frac{2}{15}b(bB+2Ac)x^{15/2}+\frac{2}{17}c(2bB+Ac)x^{17/2}+\frac{2}{19}Bc^2x^{19/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{13/2}\left(19A\left(255b^2+442bcx+195c^2x^2\right)+13Bx\left(323b^2+570bcx+255c^2x^2\right)\right)}{62985}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(13/2)*(19*A*(255*b^2 + 442*b*c*x + 195*c^2*x^2) + 13*B*x*(323*b^2 + 5
70*b*c*x + 255*c^2*x^2)))/62985
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.10

$$\frac{2\left(4845Ab^2x^{13/2}+8398Abcx^{15/2}+3705Ac^2x^{17/2}+4199b^2Bx^{15/2}+7410bBcx^{17/2}+3315Bc^2x^{19/2}\right)}{62985}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(4845*A*b^2*x^(13/2) + 4199*b^2*B*x^(15/2) + 8398*A*b*c*x^(15/2) + 7410*
b*B*c*x^(17/2) + 3705*A*c^2*x^(17/2) + 3315*B*c^2*x^(19/2)))/62985
```

fricas [A] time = 0.38, size = 56, normalized size = 0.89

$$\frac{2}{62985}\left(3315\,Bc^2x^9+4845\,Ab^2x^6+3705\left(2\,Bbc+Ac^2\right)x^8+4199\left(Bb^2+2\,Abc\right)x^7\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/62985*(3315*B*c^2*x^9 + 4845*A*b^2*x^6 + 3705*(2*B*b*c + A*c^2)*x^8 + 419
9*(B*b^2 + 2*A*b*c)*x^7)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}}+\frac{4}{17}\,Bbcx^{\frac{17}{2}}+\frac{2}{17}\,Ac^2x^{\frac{17}{2}}+\frac{2}{15}\,Bb^2x^{\frac{15}{2}}+\frac{4}{15}\,Abcx^{\frac{15}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 4/17*B*b*c*x^(17/2) + 2/17*A*c^2*x^(17/2) + 2/15*B*b^
2*x^(15/2) + 4/15*A*b*c*x^(15/2) + 2/13*A*b^2*x^(13/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(3315B\,c^2x^3+3705A\,c^2x^2+7410Bbc\,x^2+8398Abcx+4199B\,b^2x+4845A\,b^2\right)x^{\frac{13}{2}}}{62985}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/62985*x^(13/2)*(3315*B*c^2*x^3+3705*A*c^2*x^2+7410*B*b*c*x^2+8398*A*b*c*x
+4199*B*b^2*x+4845*A*b^2)
```

maxima [A] time = 0.51, size = 51, normalized size = 0.81

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}+\frac{2}{17}\left(2\,Bbc+Ac^2\right)x^{\frac{17}{2}}+\frac{2}{15}\left(Bb^2+2\,Abc\right)x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/13*A*b^2*x^(13/2) + 2/17*(2*B*b*c + A*c^2)*x^(17/2)
 + 2/15*(B*b^2 + 2*A*b*c)*x^(15/2)
```

mupad [B] time = 1.03, size = 51, normalized size = 0.81

$$x^{15/2}\left(\frac{2\,B\,b^2}{15}+\frac{4\,A\,c\,b}{15}\right)+x^{17/2}\left(\frac{2\,A\,c^2}{17}+\frac{4\,B\,b\,c}{17}\right)+\frac{2\,A\,b^2\,x^{13/2}}{13}+\frac{2\,B\,c^2\,x^{19/2}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(15/2)*((2*B*b^2)/15 + (4*A*b*c)/15) + x^(17/2)*((2*A*c^2)/17 + (4*B*b*c)
/17) + (2*A*b^2*x^(13/2))/13 + (2*B*c^2*x^(19/2))/19
```

sympy [A] time = 14.98, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{13}{2}}}{13}+\frac{4Abcx^{\frac{15}{2}}}{15}+\frac{2Ac^2x^{\frac{17}{2}}}{17}+\frac{2Bb^2x^{\frac{15}{2}}}{15}+\frac{4Bbcx^{\frac{17}{2}}}{17}+\frac{2Bc^2x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*x**(13/2)/13 + 4*A*b*c*x**(15/2)/15 + 2*A*c**2*x**(17/2)/17 + 2*B*
b**2*x**(15/2)/15 + 4*B*b*c*x**(17/2)/17 + 2*B*c**2*x**(19/2)/19
```

3.150 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{11}Ab^2x^{11/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{13}bx^{13/2}(2Ac+bB)+\frac{2}{17}Bc^2x^{17/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{11}Ab^2x^{11/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{13}bx^{13/2}(2Ac+bB)+\frac{2}{17}Bc^2x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(11/2))/11 + (2*b*(b*B + 2*A*c)*x^(13/2))/13 + (2*c*(2*b*B + A*c
)*x^(15/2))/15 + (2*B*c^2*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^2\,dx &= \int\left(Ab^2x^{9/2}+b(bB+2Ac)x^{11/2}+c(2bB+Ac)x^{13/2}+Bc^2x^{15/2}\right)dx\\ &= \frac{2}{11}Ab^2x^{11/2}+\frac{2}{13}b(bB+2Ac)x^{13/2}+\frac{2}{15}c(2bB+Ac)x^{15/2}+\frac{2}{17}Bc^2x^{17/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{11/2}\left(17A\left(195b^2+330bcx+143c^2x^2\right)+11Bx\left(255b^2+442bcx+195c^2x^2\right)\right)}{36465}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(11/2)*(17*A*(195*b^2 + 330*b*c*x + 143*c^2*x^2) + 11*B*x*(255*b^2 + 4
42*b*c*x + 195*c^2*x^2)))/36465
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.10

$$\frac{2\left(3315Ab^2x^{11/2}+5610Abcx^{13/2}+2431Ac^2x^{15/2}+2805b^2Bx^{13/2}+4862bBcx^{15/2}+2145Bc^2x^{17/2}\right)}{36465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(3315*A*b^2*x^(11/2) + 2805*b^2*B*x^(13/2) + 5610*A*b*c*x^(13/2) + 4862*
b*B*c*x^(15/2) + 2431*A*c^2*x^(15/2) + 2145*B*c^2*x^(17/2)))/36465
```

fricas [A] time = 0.39, size = 56, normalized size = 0.89

$$\frac{2}{36465}\left(2145\,Bc^2x^8 + 3315\,Ab^2x^5 + 2431\left(2\,Bbc + Ac^2\right)x^7 + 2805\left(Bb^2 + 2\,Abc\right)x^6\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/36465*(2145*B*c^2*x^8 + 3315*A*b^2*x^5 + 2431*(2*B*b*c + A*c^2)*x^7 + 280
5*(B*b^2 + 2*A*b*c)*x^6)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.84

$$\frac{2}{17}\,Bc^2x^{\frac{17}{2}} + \frac{4}{15}\,Bbcx^{\frac{15}{2}} + \frac{2}{15}\,Ac^2x^{\frac{15}{2}} + \frac{2}{13}\,Bb^2x^{\frac{13}{2}} + \frac{4}{13}\,Abcx^{\frac{13}{2}} + \frac{2}{11}\,Ab^2x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 4/15*B*b*c*x^(15/2) + 2/15*A*c^2*x^(15/2) + 2/13*B*b^
2*x^(13/2) + 4/13*A*b*c*x^(13/2) + 2/11*A*b^2*x^(11/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(2145B\,c^2x^3 + 2431A\,c^2x^2 + 4862Bbc\,x^2 + 5610Abcx + 2805B\,b^2x + 3315A\,b^2\right)x^{\frac{11}{2}}}{36465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/36465*x^(11/2)*(2145*B*c^2*x^3+2431*A*c^2*x^2+4862*B*b*c*x^2+5610*A*b*c*x
+2805*B*b^2*x+3315*A*b^2)
```

maxima [A] time = 0.57, size = 51, normalized size = 0.81

$$\frac{2}{17}\,Bc^2x^{\frac{17}{2}} + \frac{2}{11}\,Ab^2x^{\frac{11}{2}} + \frac{2}{15}\left(2\,Bbc + Ac^2\right)x^{\frac{15}{2}} + \frac{2}{13}\left(Bb^2 + 2\,Abc\right)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/11*A*b^2*x^(11/2) + 2/15*(2*B*b*c + A*c^2)*x^(15/2)
 + 2/13*(B*b^2 + 2*A*b*c)*x^(13/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{13/2}\left(\frac{2\,B\,b^2}{13} + \frac{4\,A\,c\,b}{13}\right) + x^{15/2}\left(\frac{2\,A\,c^2}{15} + \frac{4\,B\,b\,c}{15}\right) + \frac{2\,A\,b^2\,x^{11/2}}{11} + \frac{2\,B\,c^2\,x^{17/2}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(13/2)*((2*B*b^2)/13 + (4*A*b*c)/13) + x^(15/2)*((2*A*c^2)/15 + (4*B*b*c)
/15) + (2*A*b^2*x^(11/2))/11 + (2*B*c^2*x^(17/2))/17
```

sympy [A] time = 8.36, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{11}{2}}}{11} + \frac{4Abcx^{\frac{13}{2}}}{13} + \frac{2Ac^2x^{\frac{15}{2}}}{15} + \frac{2Bb^2x^{\frac{13}{2}}}{13} + \frac{4Bbcx^{\frac{15}{2}}}{15} + \frac{2Bc^2x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*x**(11/2)/11 + 4*A*b*c*x**(13/2)/13 + 2*A*c**2*x**(15/2)/15 + 2*B*
b**2*x**(13/2)/13 + 4*B*b*c*x**(15/2)/15 + 2*B*c**2*x**(17/2)/17
```

3.151 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{9}Ab^2x^{9/2}+\frac{2}{13}cx^{13/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{15}Bc^2x^{15/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{9}Ab^2x^{9/2}+\frac{2}{13}cx^{13/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{15}Bc^2x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(9/2))/9 + (2*b*(b*B + 2*A*c)*x^(11/2))/11 + (2*c*(2*b*B + A*c)*
x^(13/2))/13 + (2*B*c^2*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^2\,dx &= \int\left(Ab^2x^{7/2}+b(bB+2Ac)x^{9/2}+c(2bB+Ac)x^{11/2}+Bc^2x^{13/2}\right)dx\\ &= \frac{2}{9}Ab^2x^{9/2}+\frac{2}{11}b(bB+2Ac)x^{11/2}+\frac{2}{13}c(2bB+Ac)x^{13/2}+\frac{2}{15}Bc^2x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{9/2}\left(5A\left(143b^2+234bcx+99c^2x^2\right)+3Bx\left(195b^2+330bcx+143c^2x^2\right)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(9/2)*(5*A*(143*b^2 + 234*b*c*x + 99*c^2*x^2) + 3*B*x*(195*b^2 + 330*b
*c*x + 143*c^2*x^2)))/6435
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.10

$$\frac{2\left(715Ab^2x^{9/2}+1170Abcx^{11/2}+495Ac^2x^{13/2}+585b^2Bx^{11/2}+990bBcx^{13/2}+429Bc^2x^{15/2}\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(715*A*b^2*x^(9/2) + 585*b^2*B*x^(11/2) + 1170*A*b*c*x^(11/2) + 990*b*B*
c*x^(13/2) + 495*A*c^2*x^(13/2) + 429*B*c^2*x^(15/2)))/6435
```

fricas [A] time = 0.39, size = 56, normalized size = 0.89

$$\frac{2}{6435}\left(429\,Bc^{2}x^{7}+715\,Ab^{2}x^{4}+495\left(2\,Bbc+Ac^{2}\right)x^{6}+585\left(Bb^{2}+2\,Abc\right)x^{5}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c^2*x^7 + 715*A*b^2*x^4 + 495*(2*B*b*c + A*c^2)*x^6 + 585*(B*
b^2 + 2*A*b*c)*x^5)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{15}\,Bc^{2}x^{\frac{15}{2}}+\frac{4}{13}\,Bbcx^{\frac{13}{2}}+\frac{2}{13}\,Ac^{2}x^{\frac{13}{2}}+\frac{2}{11}\,Bb^{2}x^{\frac{11}{2}}+\frac{4}{11}\,Abcx^{\frac{11}{2}}+\frac{2}{9}\,Ab^{2}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 4/13*B*b*c*x^(13/2) + 2/13*A*c^2*x^(13/2) + 2/11*B*b^
2*x^(11/2) + 4/11*A*b*c*x^(11/2) + 2/9*A*b^2*x^(9/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(429B\,c^{2}x^{3}+495A\,c^{2}x^{2}+990Bbc\,x^{2}+1170Abcx+585B\,b^{2}x+715A\,b^{2}\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*c^2*x^3+495*A*c^2*x^2+990*B*b*c*x^2+1170*A*b*c*x+585*
B*b^2*x+715*A*b^2)
```

maxima [A] time = 0.54, size = 51, normalized size = 0.81

$$\frac{2}{15}\,Bc^{2}x^{\frac{15}{2}}+\frac{2}{9}\,Ab^{2}x^{\frac{9}{2}}+\frac{2}{13}\left(2\,Bbc+Ac^{2}\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Bb^{2}+2\,Abc\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/9*A*b^2*x^(9/2) + 2/13*(2*B*b*c + A*c^2)*x^(13/2) +
 2/11*(B*b^2 + 2*A*b*c)*x^(11/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{11/2}\left(\frac{2\,B\,b^{2}}{11}+\frac{4\,A\,c\,b}{11}\right)+x^{13/2}\left(\frac{2\,A\,c^{2}}{13}+\frac{4\,B\,b\,c}{13}\right)+\frac{2\,A\,b^{2}\,x^{9/2}}{9}+\frac{2\,B\,c^{2}\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(11/2)*((2*B*b^2)/11 + (4*A*b*c)/11) + x^(13/2)*((2*A*c^2)/13 + (4*B*b*c)
/13) + (2*A*b^2*x^(9/2))/9 + (2*B*c^2*x^(15/2))/15
```

sympy [A] time = 4.49, size = 80, normalized size = 1.27

$$\frac{2Ab^{2}x^{\frac{9}{2}}}{9}+\frac{4Abcx^{\frac{11}{2}}}{11}+\frac{2Ac^{2}x^{\frac{13}{2}}}{13}+\frac{2Bb^{2}x^{\frac{11}{2}}}{11}+\frac{4Bbcx^{\frac{13}{2}}}{13}+\frac{2Bc^{2}x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*x**(9/2)/9 + 4*A*b*c*x**(11/2)/11 + 2*A*c**2*x**(13/2)/13 + 2*B*b*
*2*x**(11/2)/11 + 4*B*b*c*x**(13/2)/13 + 2*B*c**2*x**(15/2)/15
```

3.152 $\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=63

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{9}bx^{9/2}(2Ac+bB)+\frac{2}{13}Bc^2x^{13/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{9}bx^{9/2}(2Ac+bB)+\frac{2}{13}Bc^2x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(7/2))/7 + (2*b*(b*B + 2*A*c)*x^(9/2))/9 + (2*c*(2*b*B + A*c)*x^
(11/2))/11 + (2*B*c^2*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^2 \, dx &= \int \left(Ab^2x^{5/2}+b(bB+2Ac)x^{7/2}+c(2bB+Ac)x^{9/2}+Bc^2x^{11/2}\right) dx\\ &= \frac{2}{7}Ab^2x^{7/2}+\frac{2}{9}b(bB+2Ac)x^{9/2}+\frac{2}{11}c(2bB+Ac)x^{11/2}+\frac{2}{13}Bc^2x^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{7/2}\left(13A\left(99b^2+154bcx+63c^2x^2\right)+7Bx\left(143b^2+234bcx+99c^2x^2\right)\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(7/2)*(13*A*(99*b^2 + 154*b*c*x + 63*c^2*x^2) + 7*B*x*(143*b^2 + 234*b
*c*x + 99*c^2*x^2)))/9009
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 1.10

$$\frac{2\left(1287Ab^2x^{7/2}+2002Abcx^{9/2}+819Ac^2x^{11/2}+1001b^2Bx^{9/2}+1638bBcx^{11/2}+693Bc^2x^{13/2}\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(1287*A*b^2*x^(7/2) + 1001*b^2*B*x^(9/2) + 2002*A*b*c*x^(9/2) + 1638*b*B
*c*x^(11/2) + 819*A*c^2*x^(11/2) + 693*B*c^2*x^(13/2)))/9009
```

fricas [A] time = 0.39, size = 56, normalized size = 0.89

$$\frac{2}{9009}\left(693\,Bc^{2}x^{6}+1287\,Ab^{2}x^{3}+819\left(2\,Bbc+Ac^{2}\right)x^{5}+1001\left(Bb^{2}+2\,Abc\right)x^{4}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c^2*x^6 + 1287*A*b^2*x^3 + 819*(2*B*b*c + A*c^2)*x^5 + 1001*(
B*b^2 + 2*A*b*c)*x^4)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{13}\,Bc^{2}x^{\frac{13}{2}}+\frac{4}{11}\,Bbcx^{\frac{11}{2}}+\frac{2}{11}\,Ac^{2}x^{\frac{11}{2}}+\frac{2}{9}\,Bb^{2}x^{\frac{9}{2}}+\frac{4}{9}\,Abcx^{\frac{9}{2}}+\frac{2}{7}\,Ab^{2}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 4/11*B*b*c*x^(11/2) + 2/11*A*c^2*x^(11/2) + 2/9*B*b^2
*x^(9/2) + 4/9*A*b*c*x^(9/2) + 2/7*A*b^2*x^(7/2)
```

maple [A] time = 0.04, size = 52, normalized size = 0.83

$$\frac{2\left(693B\,c^{2}x^{3}+819A\,c^{2}x^{2}+1638Bbc\,x^{2}+2002Abcx+1001B\,b^{2}x+1287A\,b^{2}\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*c^2*x^3+819*A*c^2*x^2+1638*B*b*c*x^2+2002*A*b*c*x+100
1*B*b^2*x+1287*A*b^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.81

$$\frac{2}{13}\,Bc^{2}x^{\frac{13}{2}}+\frac{2}{7}\,Ab^{2}x^{\frac{7}{2}}+\frac{2}{11}\left(2\,Bbc+Ac^{2}\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Bb^{2}+2\,Abc\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/7*A*b^2*x^(7/2) + 2/11*(2*B*b*c + A*c^2)*x^(11/2) +
 2/9*(B*b^2 + 2*A*b*c)*x^(9/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{9/2}\left(\frac{2\,B\,b^2}{9}+\frac{4\,A\,c\,b}{9}\right)+x^{11/2}\left(\frac{2\,A\,c^2}{11}+\frac{4\,B\,b\,c}{11}\right)+\frac{2\,A\,b^2\,x^{7/2}}{7}+\frac{2\,B\,c^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(9/2)*((2*B*b^2)/9 + (4*A*b*c)/9) + x^(11/2)*((2*A*c^2)/11 + (4*B*b*c)/11
) + (2*A*b^2*x^(7/2))/7 + (2*B*c^2*x^(13/2))/13
```

sympy [A] time = 3.24, size = 66, normalized size = 1.05

$$\frac{2Ab^{2}x^{\frac{7}{2}}}{7}+\frac{2Bc^{2}x^{\frac{13}{2}}}{13}+\frac{2x^{\frac{11}{2}}\left(Ac^{2}+2Bbc\right)}{11}+\frac{2x^{\frac{9}{2}}\left(2Abc+Bb^{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2*x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(7/2)/7 + 2*B*c**2*x**(13/2)/13 + 2*x**(11/2)*(A*c**2 + 2*B*b*c
)/11 + 2*x**(9/2)*(2*A*b*c + B*b**2)/9
```

3.153 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{x}} \, dx$

Optimal. Leaf size=63

$$\frac{2}{5}Ab^2x^{5/2} + \frac{2}{9}cx^{9/2}(Ac+2bB) + \frac{2}{7}bx^{7/2}(2Ac+bB) + \frac{2}{11}Bc^2x^{11/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{5}Ab^2x^{5/2} + \frac{2}{9}cx^{9/2}(Ac+2bB) + \frac{2}{7}bx^{7/2}(2Ac+bB) + \frac{2}{11}Bc^2x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*A*b^2*x^(5/2))/5 + (2*b*(b*B + 2*A*c)*x^(7/2))/7 + (2*c*(2*b*B + A*c)*x^
(9/2))/9 + (2*B*c^2*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{x}} \, dx &= \int \left(Ab^2x^{3/2} + b(bB+2Ac)x^{5/2} + c(2bB+Ac)x^{7/2} + Bc^2x^{9/2}\right) dx \\ &= \frac{2}{5}Ab^2x^{5/2} + \frac{2}{7}b(bB+2Ac)x^{7/2} + \frac{2}{9}c(2bB+Ac)x^{9/2} + \frac{2}{11}Bc^2x^{11/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{5/2}\left(11A\left(63b^2+90bcx+35c^2x^2\right)+5Bx\left(99b^2+154bcx+63c^2x^2\right)\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*x^(5/2)*(11*A*(63*b^2 + 90*b*c*x + 35*c^2*x^2) + 5*B*x*(99*b^2 + 154*b*c
*x + 63*c^2*x^2)))/3465
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 1.10

$$\frac{2\left(693Ab^2x^{5/2} + 990Abcx^{7/2} + 385Ac^2x^{9/2} + 495b^2Bx^{7/2} + 770bBcx^{9/2} + 315Bc^2x^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*(693*A*b^2*x^(5/2) + 495*b^2*B*x^(7/2) + 990*A*b*c*x^(7/2) + 770*b*B*c*x
^(9/2) + 385*A*c^2*x^(9/2) + 315*B*c^2*x^(11/2)))/3465
```

fricas [A] time = 0.39, size = 56, normalized size = 0.89

$$\frac{2}{3465}\left(315\,Bc^2x^5 + 693\,Ab^2x^2 + 385\left(2\,Bbc + Ac^2\right)x^4 + 495\left(Bb^2 + 2\,Abc\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*x^5 + 693*A*b^2*x^2 + 385*(2*B*b*c + A*c^2)*x^4 + 495*(B*
b^2 + 2*A*b*c)*x^3)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.84

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}} + \frac{4}{9}\,Bbcx^{\frac{9}{2}} + \frac{2}{9}\,Ac^2x^{\frac{9}{2}} + \frac{2}{7}\,Bb^2x^{\frac{7}{2}} + \frac{4}{7}\,Abcx^{\frac{7}{2}} + \frac{2}{5}\,Ab^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 4/9*B*b*c*x^(9/2) + 2/9*A*c^2*x^(9/2) + 2/7*B*b^2*x^(
7/2) + 4/7*A*b*c*x^(7/2) + 2/5*A*b^2*x^(5/2)
```

maple [A] time = 0.06, size = 52, normalized size = 0.83

$$\frac{2\left(315B\,c^2x^3 + 385A\,c^2x^2 + 770Bbc\,x^2 + 990Abcx + 495B\,b^2x + 693A\,b^2\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*c^2*x^3+385*A*c^2*x^2+770*B*b*c*x^2+990*A*b*c*x+495*B
*b^2*x+693*A*b^2)
```

maxima [A] time = 0.56, size = 51, normalized size = 0.81

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}} + \frac{2}{5}\,Ab^2x^{\frac{5}{2}} + \frac{2}{9}\left(2\,Bbc + Ac^2\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Bb^2 + 2\,Abc\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/5*A*b^2*x^(5/2) + 2/9*(2*B*b*c + A*c^2)*x^(9/2) + 2
/7*(B*b^2 + 2*A*b*c)*x^(7/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{7/2}\left(\frac{2\,B\,b^2}{7} + \frac{4\,A\,c\,b}{7}\right) + x^{9/2}\left(\frac{2\,A\,c^2}{9} + \frac{4\,B\,b\,c}{9}\right) + \frac{2\,A\,b^2\,x^{5/2}}{5} + \frac{2\,B\,c^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(1/2),x)
```

```
[Out] x^(7/2)*((2*B*b^2)/7 + (4*A*b*c)/7) + x^(9/2)*((2*A*c^2)/9 + (4*B*b*c)/9) +
 (2*A*b^2*x^(5/2))/5 + (2*B*c^2*x^(11/2))/11
```

sympy [A] time = 1.57, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{5}{2}}}{5} + \frac{4Abcx^{\frac{7}{2}}}{7} + \frac{2Ac^2x^{\frac{9}{2}}}{9} + \frac{2Bb^2x^{\frac{7}{2}}}{7} + \frac{4Bbcx^{\frac{9}{2}}}{9} + \frac{2Bc^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(5/2)/5 + 4*A*b*c*x**(7/2)/7 + 2*A*c**2*x**(9/2)/9 + 2*B*b**2*x
**(7/2)/7 + 4*B*b*c*x**(9/2)/9 + 2*B*c**2*x**(11/2)/11
```

3.154 $\int \frac{(A+Bx)(bx+cx^2)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{3}Ab^2x^{3/2}+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{5}bx^{5/2}(2Ac+bB)+\frac{2}{9}Bc^2x^{9/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{3}Ab^2x^{3/2}+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{5}bx^{5/2}(2Ac+bB)+\frac{2}{9}Bc^2x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (2*A*b^2*x^(3/2))/3 + (2*b*(b*B + 2*A*c)*x^(5/2))/5 + (2*c*(2*b*B + A*c)*x^
(7/2))/7 + (2*B*c^2*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{3/2}}\,dx &= \int \left(Ab^2\sqrt{x}+b(bB+2Ac)x^{3/2}+c(2bB+Ac)x^{5/2}+Bc^2x^{7/2}\right)dx\\ &= \frac{2}{3}Ab^2x^{3/2}+\frac{2}{5}b(bB+2Ac)x^{5/2}+\frac{2}{7}c(2bB+Ac)x^{7/2}+\frac{2}{9}Bc^2x^{9/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.86

$$\frac{2}{315}x^{3/2}\left(3A\left(35b^2+42bcx+15c^2x^2\right)+Bx\left(63b^2+90bcx+35c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (2*x^(3/2)*(3*A*(35*b^2 + 42*b*c*x + 15*c^2*x^2) + B*x*(63*b^2 + 90*b*c*x +
 35*c^2*x^2)))/315
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.10

$$\frac{2}{315}\left(105Ab^2x^{3/2}+126Abcx^{5/2}+45Ac^2x^{7/2}+63b^2Bx^{5/2}+90bBcx^{7/2}+35Bc^2x^{9/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (2*(105*A*b^2*x^(3/2) + 63*b^2*B*x^(5/2) + 126*A*b*c*x^(5/2) + 90*b*B*c*x^(
7/2) + 45*A*c^2*x^(7/2) + 35*B*c^2*x^(9/2)))/315
```

fricas [A] time = 0.41, size = 54, normalized size = 0.86

$$\frac{2}{315}\left(35\,Bc^2x^4+105\,Ab^2x+45\left(2\,Bbc+Ac^2\right)x^3+63\left(Bb^2+2\,Abc\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*x^4 + 105*A*b^2*x + 45*(2*B*b*c + A*c^2)*x^3 + 63*(B*b^2 +
2*A*b*c)*x^2)*sqrt(x)
```

giac [A] time = 0.19, size = 53, normalized size = 0.84

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}}+\frac{4}{7}\,Bbcx^{\frac{7}{2}}+\frac{2}{7}\,Ac^2x^{\frac{7}{2}}+\frac{2}{5}\,Bb^2x^{\frac{5}{2}}+\frac{4}{5}\,Abcx^{\frac{5}{2}}+\frac{2}{3}\,Ab^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 4/7*B*b*c*x^(7/2) + 2/7*A*c^2*x^(7/2) + 2/5*B*b^2*x^(5/
2) + 4/5*A*b*c*x^(5/2) + 2/3*A*b^2*x^(3/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(35B\,c^2x^3+45A\,c^2x^2+90Bbc\,x^2+126Abcx+63B\,b^2x+105A\,b^2\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*c^2*x^3+45*A*c^2*x^2+90*B*b*c*x^2+126*A*b*c*x+63*B*b^2*
x+105*A*b^2)
```

maxima [A] time = 0.51, size = 51, normalized size = 0.81

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}}+\frac{2}{3}\,Ab^2x^{\frac{3}{2}}+\frac{2}{7}\left(2\,Bbc+Ac^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Bb^2+2\,Abc\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 2/3*A*b^2*x^(3/2) + 2/7*(2*B*b*c + A*c^2)*x^(7/2) + 2/5
*(B*b^2 + 2*A*b*c)*x^(5/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{5/2}\left(\frac{2\,B\,b^2}{5}+\frac{4\,A\,c\,b}{5}\right)+x^{7/2}\left(\frac{2\,A\,c^2}{7}+\frac{4\,B\,b\,c}{7}\right)+\frac{2\,A\,b^2\,x^{3/2}}{3}+\frac{2\,B\,c^2\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(3/2),x)
```

```
[Out] x^(5/2)*((2*B*b^2)/5 + (4*A*b*c)/5) + x^(7/2)*((2*A*c^2)/7 + (4*B*b*c)/7) +
 (2*A*b^2*x^(3/2))/3 + (2*B*c^2*x^(9/2))/9
```

sympy [A] time = 1.50, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{3}{2}}}{3}+\frac{4Abcx^{\frac{5}{2}}}{5}+\frac{2Ac^2x^{\frac{7}{2}}}{7}+\frac{2Bb^2x^{\frac{5}{2}}}{5}+\frac{4Bbcx^{\frac{7}{2}}}{7}+\frac{2Bc^2x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(3/2),x)
```

```
[Out] 2*A*b**2*x**(3/2)/3 + 4*A*b*c*x**(5/2)/5 + 2*A*c**2*x**(7/2)/7 + 2*B*b**2*x
**(5/2)/5 + 4*B*b*c*x**(7/2)/7 + 2*B*c**2*x**(9/2)/9
```

3.155 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=61

$$2Ab^2\sqrt{x}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{3}bx^{3/2}(2Ac+bB)+\frac{2}{7}Bc^2x^{7/2}$$

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$2Ab^2\sqrt{x}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{3}bx^{3/2}(2Ac+bB)+\frac{2}{7}Bc^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] 2*A*b^2*Sqrt[x] + (2*b*(b*B + 2*A*c)*x^(3/2))/3 + (2*c*(2*b*B + A*c)*x^(5/2
))/5 + (2*B*c^2*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{5/2}}\,dx &= \int \left(\frac{Ab^2}{\sqrt{x}}+b(bB+2Ac)\sqrt{x}+c(2bB+Ac)x^{3/2}+Bc^2x^{5/2}\right)dx\\ &= 2Ab^2\sqrt{x}+\frac{2}{3}b(bB+2Ac)x^{3/2}+\frac{2}{5}c(2bB+Ac)x^{5/2}+\frac{2}{7}Bc^2x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.89

$$\frac{2}{105}\sqrt{x}\left(7A\left(15b^2+10bcx+3c^2x^2\right)+Bx\left(35b^2+42bcx+15c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*Sqrt[x]*(7*A*(15*b^2 + 10*b*c*x + 3*c^2*x^2) + B*x*(35*b^2 + 42*b*c*x +
15*c^2*x^2)))/105
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.13

$$\frac{2}{105}\left(105Ab^2\sqrt{x}+70Abcx^{3/2}+21Ac^2x^{5/2}+35b^2Bx^{3/2}+42bBcx^{5/2}+15Bc^2x^{7/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*(105*A*b^2*Sqrt[x] + 35*b^2*B*x^(3/2) + 70*A*b*c*x^(3/2) + 42*b*B*c*x^(5
/2) + 21*A*c^2*x^(5/2) + 15*B*c^2*x^(7/2)))/105
```

fricas [A] time = 0.41, size = 51, normalized size = 0.84

$$\frac{2}{105}\left(15\,Bc^{2}x^{3}+105\,Ab^{2}+21\left(2\,Bbc+Ac^{2}\right)x^{2}+35\left(Bb^{2}+2\,Abc\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*x^3 + 105*A*b^2 + 21*(2*B*b*c + A*c^2)*x^2 + 35*(B*b^2 + 2*
A*b*c)*x)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.87

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{4}{5}\,Bbcx^{\frac{5}{2}}+\frac{2}{5}\,Ac^{2}x^{\frac{5}{2}}+\frac{2}{3}\,Bb^{2}x^{\frac{3}{2}}+\frac{4}{3}\,Abcx^{\frac{3}{2}}+2\,Ab^{2}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 4/5*B*b*c*x^(5/2) + 2/5*A*c^2*x^(5/2) + 2/3*B*b^2*x^(3/
2) + 4/3*A*b*c*x^(3/2) + 2*A*b^2*sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.85

$$\frac{2\left(15B\,c^{2}x^{3}+21A\,c^{2}x^{2}+42Bbc\,x^{2}+70Abcx+35B\,b^{2}x+105A\,b^{2}\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x)
```

```
[Out] 2/105*x^(1/2)*(15*B*c^2*x^3+21*A*c^2*x^2+42*B*b*c*x^2+70*A*b*c*x+35*B*b^2*x
+105*A*b^2)
```

maxima [A] time = 0.51, size = 51, normalized size = 0.84

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+2\,Ab^{2}\sqrt{x}+\frac{2}{5}\left(2\,Bbc+Ac^{2}\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Bb^{2}+2\,Abc\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2*A*b^2*sqrt(x) + 2/5*(2*B*b*c + A*c^2)*x^(5/2) + 2/3*(
B*b^2 + 2*A*b*c)*x^(3/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.84

$$x^{3/2}\left(\frac{2\,B\,b^2}{3}+\frac{4\,A\,c\,b}{3}\right)+x^{5/2}\left(\frac{2\,A\,c^2}{5}+\frac{4\,B\,b\,c}{5}\right)+2\,A\,b^2\,\sqrt{x}+\frac{2\,B\,c^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(5/2),x)
```

```
[Out] x^(3/2)*((2*B*b^2)/3 + (4*A*b*c)/3) + x^(5/2)*((2*A*c^2)/5 + (4*B*b*c)/5) +
 2*A*b^2*x^(1/2) + (2*B*c^2*x^(7/2))/7
```

sympy [A] time = 1.84, size = 78, normalized size = 1.28

$$2Ab^{2}\sqrt{x}+\frac{4Abcx^{\frac{3}{2}}}{3}+\frac{2Ac^{2}x^{\frac{5}{2}}}{5}+\frac{2Bb^{2}x^{\frac{3}{2}}}{3}+\frac{4Bbcx^{\frac{5}{2}}}{5}+\frac{2Bc^{2}x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(5/2),x)
```

```
[Out] 2*A*b**2*sqrt(x) + 4*A*b*c*x**(3/2)/3 + 2*A*c**2*x**(5/2)/5 + 2*B*b**2*x**(
3/2)/3 + 4*B*b*c*x**(5/2)/5 + 2*B*c**2*x**(7/2)/7
```

3.156 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2Ab^2}{\sqrt{x}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+2b\sqrt{x}\,(2Ac+bB)+\frac{2}{5}Bc^2x^{5/2}$$

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$-\frac{2Ab^2}{\sqrt{x}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+2b\sqrt{x}\,(2Ac+bB)+\frac{2}{5}Bc^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*A*b^2)/Sqrt[x] + 2*b*(b*B + 2*A*c)*Sqrt[x] + (2*c*(2*b*B + A*c)*x^(3/2)
)/3 + (2*B*c^2*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{7/2}}\,dx&=\int \left(\frac{Ab^2}{x^{3/2}}+\frac{b(bB+2Ac)}{\sqrt{x}}+c(2bB+Ac)\sqrt{x}+Bc^2x^{3/2}\right)dx\\&=-\frac{2Ab^2}{\sqrt{x}}+2b(bB+2Ac)\sqrt{x}+\frac{2}{3}c(2bB+Ac)x^{3/2}+\frac{2}{5}Bc^2x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.92

$$\frac{10A\left(-3b^2+6bcx+c^2x^2\right)+2Bx\left(15b^2+10bcx+3c^2x^2\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (10*A*(-3*b^2 + 6*b*c*x + c^2*x^2) + 2*B*x*(15*b^2 + 10*b*c*x + 3*c^2*x^2))
/(15*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.05, size = 55, normalized size = 0.93

$$\frac{2\left(-15Ab^2+30Abcx+5Ac^2x^2+15b^2Bx+10bBcx^2+3Bc^2x^3\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (2*(-15*A*b^2 + 15*b^2*B*x + 30*A*b*c*x + 10*b*B*c*x^2 + 5*A*c^2*x^2 + 3*B*
c^2*x^3))/(15*Sqrt[x])
```

fricas [A] time = 0.41, size = 51, normalized size = 0.86

$$\frac{2\left(3 Bc^2x^3 - 15 Ab^2 + 5\left(2 Bbc + Ac^2\right)x^2 + 15\left(Bb^2 + 2 Abc\right)x\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^3 - 15*A*b^2 + 5*(2*B*b*c + A*c^2)*x^2 + 15*(B*b^2 + 2*A*b*
c)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.90

$$\frac{2}{5}Bc^2x^{\frac{5}{2}} + \frac{4}{3}Bbcx^{\frac{3}{2}} + \frac{2}{3}Ac^2x^{\frac{3}{2}} + 2Bb^2\sqrt{x} + 4Abc\sqrt{x} - \frac{2Ab^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 4/3*B*b*c*x^(3/2) + 2/3*A*c^2*x^(3/2) + 2*B*b^2*sqrt(x)
 + 4*A*b*c*sqrt(x) - 2*A*b^2/sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.88

$$-\frac{2\left(-3B c^2x^3 - 5A c^2x^2 - 10Bbc x^2 - 30Abcx - 15B b^2x + 15A b^2\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x)
```

```
[Out] -2/15/x^(1/2)*(-3*B*c^2*x^3-5*A*c^2*x^2-10*B*b*c*x^2-30*A*b*c*x-15*B*b^2*x+
15*A*b^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.86

$$\frac{2}{5}Bc^2x^{\frac{5}{2}} - \frac{2Ab^2}{\sqrt{x}} + \frac{2}{3}\left(2Bbc + Ac^2\right)x^{\frac{3}{2}} + 2\left(Bb^2 + 2Abc\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^2*x^(5/2) - 2*A*b^2/sqrt(x) + 2/3*(2*B*b*c + A*c^2)*x^(3/2) + 2*(B*
b^2 + 2*A*b*c)*sqrt(x)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.86

$$\sqrt{x}\,\left(2\,B\,b^2 + 4\,A\,c\,b\right) + x^{3/2}\,\left(\frac{2\,A\,c^2}{3} + \frac{4\,B\,b\,c}{3}\right) - \frac{2\,A\,b^2}{\sqrt{x}} + \frac{2\,B\,c^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(7/2),x)
```

```
[Out] x^(1/2)*(2*B*b^2 + 4*A*b*c) + x^(3/2)*((2*A*c^2)/3 + (4*B*b*c)/3) - (2*A*b^
2)/x^(1/2) + (2*B*c^2*x^(5/2))/5
```

sympy [A] time = 2.90, size = 75, normalized size = 1.27

$$-\frac{2Ab^2}{\sqrt{x}} + 4Abc\sqrt{x} + \frac{2Ac^2x^{\frac{3}{2}}}{3} + 2Bb^2\sqrt{x} + \frac{4Bbcx^{\frac{3}{2}}}{3} + \frac{2Bc^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(7/2),x)
```

```
[Out] -2*A*b**2/sqrt(x) + 4*A*b*c*sqrt(x) + 2*A*c**2*x**(3/2)/3 + 2*B*b**2*sqrt(x
) + 4*B*b*c*x**(3/2)/3 + 2*B*c**2*x**(5/2)/5
```

3.157 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{9/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2Ab^2}{3x^{3/2}}-\frac{2b(2Ac+bB)}{\sqrt{x}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$-\frac{2Ab^2}{3x^{3/2}}-\frac{2b(2Ac+bB)}{\sqrt{x}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*A*b^2)/(3*x^(3/2)) - (2*b*(b*B + 2*A*c))/Sqrt[x] + 2*c*(2*b*B + A*c)*Sq
rt[x] + (2*B*c^2*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{9/2}}\,dx &= \int \left(\frac{Ab^2}{x^{5/2}}+\frac{b(bB+2Ac)}{x^{3/2}}+\frac{c(2bB+Ac)}{\sqrt{x}}+Bc^2\sqrt{x}\right)dx\\ &= -\frac{2Ab^2}{3x^{3/2}}-\frac{2b(bB+2Ac)}{\sqrt{x}}+2c(2bB+Ac)\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.88

$$\frac{2Bx\left(-3b^2+6bcx+c^2x^2\right)-2A\left(b^2+6bcx-3c^2x^2\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*A*(b^2 + 6*b*c*x - 3*c^2*x^2) + 2*B*x*(-3*b^2 + 6*b*c*x + c^2*x^2))/(3*
x^(3/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 54, normalized size = 0.92

$$\frac{2\left(-Ab^2-6Abcx+3Ac^2x^2-3b^2Bx+6bBcx^2+Bc^2x^3\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (2*(-(A*b^2) - 3*b^2*B*x - 6*A*b*c*x + 6*b*B*c*x^2 + 3*A*c^2*x^2 + B*c^2*x^
3))/(3*x^(3/2))
```

fricas [A] time = 0.41, size = 50, normalized size = 0.85

$$\frac{2\left(Bc^2x^3 - Ab^2 + 3\left(2\,Bbc + Ac^2\right)x^2 - 3\left(Bb^2 + 2\,Abc\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c^2*x^3 - A*b^2 + 3*(2*B*b*c + A*c^2)*x^2 - 3*(B*b^2 + 2*A*b*c)*x)/x
^(3/2)
```

giac [A] time = 0.20, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}} + 4\,Bbc\sqrt{x} + 2\,Ac^2\sqrt{x} - \frac{2\left(3\,Bb^2x + 6\,Abcx + Ab^2\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 4*B*b*c*sqrt(x) + 2*A*c^2*sqrt(x) - 2/3*(3*B*b^2*x + 6*
A*b*c*x + A*b^2)/x^(3/2)
```

maple [A] time = 0.05, size = 51, normalized size = 0.86

$$-\frac{2\left(-B\,c^2x^3 - 3A\,c^2x^2 - 6Bbc\,x^2 + 6Abcx + 3B\,b^2x + A\,b^2\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x)
```

```
[Out] -2/3/x^(3/2)*(-B*c^2*x^3-3*A*c^2*x^2-6*B*b*c*x^2+6*A*b*c*x+3*B*b^2*x+A*b^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}} + 2\left(2\,Bbc + Ac^2\right)\sqrt{x} - \frac{2\left(Ab^2 + 3\left(Bb^2 + 2\,Abc\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*(2*B*b*c + A*c^2)*sqrt(x) - 2/3*(A*b^2 + 3*(B*b^2 + 2
*A*b*c)*x)/x^(3/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.86

$$-\frac{6\,B\,b^2\,x + 2\,A\,b^2 - 12\,B\,b\,c\,x^2 + 12\,A\,b\,c\,x - 2\,B\,c^2\,x^3 - 6\,A\,c^2\,x^2}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(9/2),x)
```

```
[Out] -(2*A*b^2 - 6*A*c^2*x^2 - 2*B*c^2*x^3 + 6*B*b^2*x - 12*B*b*c*x^2 + 12*A*b*c
*x)/(3*x^(3/2))
```

sympy [A] time = 3.96, size = 73, normalized size = 1.24

$$-\frac{2Ab^2}{3x^{\frac{3}{2}}}-\frac{4Abc}{\sqrt{x}}+2Ac^2\sqrt{x}-\frac{2Bb^2}{\sqrt{x}}+4Bbc\sqrt{x}+\frac{2Bc^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(9/2),x)
```

```
[Out] -2*A*b**2/(3*x**(3/2)) - 4*A*b*c/sqrt(x) + 2*A*c**2*sqrt(x) - 2*B*b**2/sqrt
(x) + 4*B*b*c*sqrt(x) + 2*B*c**2*x**(3/2)/3
```

3.158 $\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{15}Ab^3x^{15/2}+\frac{2}{17}b^2x^{17/2}(3Ac+bB)+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

Rubi [A] time = 0.05, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{17}b^2x^{17/2}(3Ac+bB)+\frac{2}{15}Ab^3x^{15/2}+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(15/2))/15 + (2*b^2*(b*B + 3*A*c)*x^(17/2))/17 + (6*b*c*(b*B + A
*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21 + (2*B*c^3*x^(23/2))/2
3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^3\,dx=\int\left(Ab^3x^{13/2}+b^2(bB+3Ac)x^{15/2}+3bc(bB+Ac)x^{17/2}+c^2(3bB+Ac)x^{19/2}\right.$$
$$=\frac{2}{15}Ab^3x^{15/2}+\frac{2}{17}b^2(bB+3Ac)x^{17/2}+\frac{6}{19}bc(bB+Ac)x^{19/2}+\frac{2}{21}c^2(3bB+Ac$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{15/2}(b+cx)^4-\frac{x^{15/2}\left(2261b^3+5985b^2cx+5355bc^2x^2+1615c^3x^3\right)(15bB-23Ac)}{33915}\right)}{23c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(15/2)*(b + c*x)^4 - ((15*b*B - 23*A*c)*x^(15/2)*(2261*b^3 + 5985*b
^2*c*x + 5355*b*c^2*x^2 + 1615*c^3*x^3))/33915))/(23*c)
```

IntegrateAlgebraic [A] time = 0.05, size = 97, normalized size = 1.14

$$\frac{2\left(52003Ab^3x^{15/2}+137655Ab^2cx^{17/2}+123165Abc^2x^{19/2}+37145Ac^3x^{21/2}+45885b^3Bx^{17/2}+123165b^2Bcx^{19/2}+111435bBc^2x^{21/2}+33915Bc^3x^{23/2}\right)}{780045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(52003*A*b^3*x^(15/2) + 45885*b^3*B*x^(17/2) + 137655*A*b^2*c*x^(17/2) +
 123165*b^2*B*c*x^(19/2) + 123165*A*b*c^2*x^(19/2) + 111435*b*B*c^2*x^(21/2
) + 37145*A*c^3*x^(21/2) + 33915*B*c^3*x^(23/2)))/780045
```

fricas [A] time = 0.40, size = 78, normalized size = 0.92

$$\frac{2}{780045}\left(33915\,Bc^3x^{11}+52003\,Ab^3x^7+37145\left(3\,Bbc^2+Ac^3\right)x^{10}+123165\left(Bb^2c+Abc^2\right)x^9+45885\left(Bb^3+3\,Ab^2c\right)x^8\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 2/780045*(33915*B*c^3*x^11 + 52003*A*b^3*x^7 + 37145*(3*B*b*c^2 + A*c^3)*x^
10 + 123165*(B*b^2*c + A*b*c^2)*x^9 + 45885*(B*b^3 + 3*A*b^2*c)*x^8)*sqrt(x
)
```

giac [A] time = 0.16, size = 77, normalized size = 0.91

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}}+\frac{2}{7}\,Bbc^2x^{\frac{21}{2}}+\frac{2}{21}\,Ac^3x^{\frac{21}{2}}+\frac{6}{19}\,Bb^2cx^{\frac{19}{2}}+\frac{6}{19}\,Abc^2x^{\frac{19}{2}}+\frac{2}{17}\,Bb^3x^{\frac{17}{2}}+\frac{6}{17}\,Ab^2cx^{\frac{17}{2}}+\frac{2}{15}\,Ab^3x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/7*B*b*c^2*x^(21/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*b
^2*c*x^(19/2) + 6/19*A*b*c^2*x^(19/2) + 2/17*B*b^3*x^(17/2) + 6/17*A*b^2*c*
x^(17/2) + 2/15*A*b^3*x^(15/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(33915B\,c^3x^4+37145A\,c^3x^3+111435Bb\,c^2x^3+123165Ab\,c^2x^2+123165B\,b^2c\,x^2+137655A\,b^2cx+45885B\,b^3x+52003A\,b^3\right)x^{\frac{15}{2}}}{780045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 2/780045*x^(15/2)*(33915*B*c^3*x^4+37145*A*c^3*x^3+111435*B*b*c^2*x^3+12316
5*A*b*c^2*x^2+123165*B*b^2*c*x^2+137655*A*b^2*c*x+45885*B*b^3*x+52003*A*b^3
)
```

maxima [A] time = 0.47, size = 73, normalized size = 0.86

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}}+\frac{2}{15}\,Ab^3x^{\frac{15}{2}}+\frac{2}{21}\left(3\,Bbc^2+Ac^3\right)x^{\frac{21}{2}}+\frac{6}{19}\left(Bb^2c+Abc^2\right)x^{\frac{19}{2}}+\frac{2}{17}\left(Bb^3+3\,Ab^2c\right)x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/15*A*b^3*x^(15/2) + 2/21*(3*B*b*c^2 + A*c^3)*x^(21/
2) + 6/19*(B*b^2*c + A*b*c^2)*x^(19/2) + 2/17*(B*b^3 + 3*A*b^2*c)*x^(17/2)
```

mupad [B] time = 1.01, size = 69, normalized size = 0.81

$$x^{17/2}\left(\frac{2\,B\,b^3}{17}+\frac{6\,A\,c\,b^2}{17}\right)+x^{21/2}\left(\frac{2\,A\,c^3}{21}+\frac{2\,B\,b\,c^2}{7}\right)+\frac{2\,A\,b^3\,x^{15/2}}{15}+\frac{2\,B\,c^3\,x^{23/2}}{23}+\frac{6\,b\,c\,x^{19/2}\,\left(A\,c+B\,b\right)}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(17/2)*((2*B*b^3)/17 + (6*A*b^2*c)/17) + x^(21/2)*((2*A*c^3)/21 + (2*B*b*
c^2)/7) + (2*A*b^3*x^(15/2))/15 + (2*B*c^3*x^(23/2))/23 + (6*b*c*x^(19/2)*(
A*c + B*b))/19
```

sympy [A] time = 26.59, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{15}{2}}}{15}+\frac{6Ab^2cx^{\frac{17}{2}}}{17}+\frac{6Abc^2x^{\frac{19}{2}}}{19}+\frac{2Ac^3x^{\frac{21}{2}}}{21}+\frac{2Bb^3x^{\frac{17}{2}}}{17}+\frac{6Bb^2cx^{\frac{19}{2}}}{19}+\frac{2Bbc^2x^{\frac{21}{2}}}{7}+\frac{2Bc^3x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] 2*A*b**3*x**(15/2)/15 + 6*A*b**2*c*x**(17/2)/17 + 6*A*b*c**2*x**(19/2)/19 +
 2*A*c**3*x**(21/2)/21 + 2*B*b**3*x**(17/2)/17 + 6*B*b**2*c*x**(19/2)/19 +
2*B*b*c**2*x**(21/2)/7 + 2*B*c**3*x**(23/2)/23
```

3.159 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{13}Ab^3x^{13/2}+\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{21}Bc^3x^{21/2}$$

Rubi [A] time = 0.05, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{13}Ab^3x^{13/2}+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{21}Bc^3x^{21/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(13/2))/13 + (2*b^2*(b*B + 3*A*c)*x^(15/2))/15 + (6*b*c*(b*B + A
*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 + (2*B*c^3*x^(21/2))/2
1
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^3\,dx=\int\left(Ab^3x^{11/2}+b^2(bB+3Ac)x^{13/2}+3bc(bB+Ac)x^{15/2}+c^2(3bB+Ac)x^{17/2}+B\right.$$
$$=\frac{2}{13}Ab^3x^{13/2}+\frac{2}{15}b^2(bB+3Ac)x^{15/2}+\frac{6}{17}bc(bB+Ac)x^{17/2}+\frac{2}{19}c^2(3bB+Ac)x^{1}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{13/2}(b+cx)^4-\frac{x^{13/2}\left(1615b^3+4199b^2cx+3705bc^2x^2+1105c^3x^3\right)(13bB-21Ac)}{20995}\right)}{21c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(13/2)*(b + c*x)^4 - ((13*b*B - 21*A*c)*x^(13/2)*(1615*b^3 + 4199*b
^2*c*x + 3705*b*c^2*x^2 + 1105*c^3*x^3))/20995))/(21*c)
```

IntegrateAlgebraic [A] time = 0.05, size = 97, normalized size = 1.14

$$\frac{2\left(33915Ab^3x^{13/2}+88179Ab^2cx^{15/2}+77805Abc^2x^{17/2}+23205Ac^3x^{19/2}+29393b^3Bx^{15/2}+77805b^2Bcx^{17/2}+69615bBc^2x^{19/2}+20995Bc^3x^{21/2}\right)}{440895}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(33915*A*b^3*x^(13/2) + 29393*b^3*B*x^(15/2) + 88179*A*b^2*c*x^(15/2) +
77805*b^2*B*c*x^(17/2) + 77805*A*b*c^2*x^(17/2) + 69615*b*B*c^2*x^(19/2) +
23205*A*c^3*x^(19/2) + 20995*B*c^3*x^(21/2)))/440895
```

fricas [A] time = 0.41, size = 78, normalized size = 0.92

$$\frac{2}{440895}\left(20995\,Bc^3x^{10} + 33915\,Ab^3x^6 + 23205\left(3\,Bbc^2 + Ac^3\right)x^9 + 77805\left(Bb^2c + Abc^2\right)x^8 + 29393\left(Bb^3 + 3\,Ab^2c\right)x^7\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 2/440895*(20995*B*c^3*x^10 + 33915*A*b^3*x^6 + 23205*(3*B*b*c^2 + A*c^3)*x^
9 + 77805*(B*b^2*c + A*b*c^2)*x^8 + 29393*(B*b^3 + 3*A*b^2*c)*x^7)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.91

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}} + \frac{6}{19}\,Bbc^2x^{\frac{19}{2}} + \frac{2}{19}\,Ac^3x^{\frac{19}{2}} + \frac{6}{17}\,Bb^2cx^{\frac{17}{2}} + \frac{6}{17}\,Abc^2x^{\frac{17}{2}} + \frac{2}{15}\,Bb^3x^{\frac{15}{2}} + \frac{2}{5}\,Ab^2cx^{\frac{15}{2}} + \frac{2}{13}\,Ab^3x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 6/19*B*b*c^2*x^(19/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*
b^2*c*x^(17/2) + 6/17*A*b*c^2*x^(17/2) + 2/15*B*b^3*x^(15/2) + 2/5*A*b^2*c*
x^(15/2) + 2/13*A*b^3*x^(13/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(20995B\,c^3x^4 + 23205A\,c^3x^3 + 69615Bb\,c^2x^3 + 77805Ab\,c^2x^2 + 77805B\,b^2c\,x^2 + 88179A\,b^2cx + 29393B\,b^3x + 33915A\,b^3\right)x^{\frac{13}{2}}}{440895}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 2/440895*x^(13/2)*(20995*B*c^3*x^4+23205*A*c^3*x^3+69615*B*b*c^2*x^3+77805*
A*b*c^2*x^2+77805*B*b^2*c*x^2+88179*A*b^2*c*x+29393*B*b^3*x+33915*A*b^3)
```

maxima [A] time = 0.49, size = 73, normalized size = 0.86

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}} + \frac{2}{13}\,Ab^3x^{\frac{13}{2}} + \frac{2}{19}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{19}{2}} + \frac{6}{17}\left(Bb^2c + Abc^2\right)x^{\frac{17}{2}} + \frac{2}{15}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/13*A*b^3*x^(13/2) + 2/19*(3*B*b*c^2 + A*c^3)*x^(19/
2) + 6/17*(B*b^2*c + A*b*c^2)*x^(17/2) + 2/15*(B*b^3 + 3*A*b^2*c)*x^(15/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{15/2}\left(\frac{2\,B\,b^3}{15} + \frac{2\,A\,c\,b^2}{5}\right) + x^{19/2}\left(\frac{2\,A\,c^3}{19} + \frac{6\,B\,b\,c^2}{19}\right) + \frac{2\,A\,b^3\,x^{13/2}}{13} + \frac{2\,B\,c^3\,x^{21/2}}{21} + \frac{6\,b\,c\,x^{17/2}\,\left(A\,c + B\,b\right)}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(15/2)*((2*B*b^3)/15 + (2*A*b^2*c)/5) + x^(19/2)*((2*A*c^3)/19 + (6*B*b*c
^2)/19) + (2*A*b^3*x^(13/2))/13 + (2*B*c^3*x^(21/2))/21 + (6*b*c*x^(17/2)*(
A*c + B*b))/17
```

sympy [A] time = 15.92, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{13}{2}}}{13} + \frac{2Ab^2cx^{\frac{15}{2}}}{5} + \frac{6Abc^2x^{\frac{17}{2}}}{17} + \frac{2Ac^3x^{\frac{19}{2}}}{19} + \frac{2Bb^3x^{\frac{15}{2}}}{15} + \frac{6Bb^2cx^{\frac{17}{2}}}{17} + \frac{6Bbc^2x^{\frac{19}{2}}}{19} + \frac{2Bc^3x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] 2*A*b**3*x**(13/2)/13 + 2*A*b**2*c*x**(15/2)/5 + 6*A*b*c**2*x**(17/2)/17 +
2*A*c**3*x**(19/2)/19 + 2*B*b**3*x**(15/2)/15 + 6*B*b**2*c*x**(17/2)/17 + 6
*B*b*c**2*x**(19/2)/19 + 2*B*c**3*x**(21/2)/21
```

3.160 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{11}Ab^3x^{11/2}+\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{17}c^2x^{17/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{19}Bc^3x^{19/2}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{11}Ab^3x^{11/2}+\frac{2}{17}c^2x^{17/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{19}Bc^3x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(11/2))/11 + (2*b^2*(b*B + 3*A*c)*x^(13/2))/13 + (2*b*c*(b*B + A
*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(17/2))/17 + (2*B*c^3*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^3\,dx=\int\left(Ab^3x^{9/2}+b^2(bB+3Ac)x^{11/2}+3bc(bB+Ac)x^{13/2}+c^2(3bB+Ac)x^{15/2}+\right.$$
$$=\frac{2}{11}Ab^3x^{11/2}+\frac{2}{13}b^2(bB+3Ac)x^{13/2}+\frac{2}{5}bc(bB+Ac)x^{15/2}+\frac{2}{17}c^2(3bB+Ac)x$$

Mathematica [A] time = 0.04, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{11/2}(b+cx)^4-\frac{x^{11/2}\left(1105b^3+2805b^2cx+2431bc^2x^2+715c^3x^3\right)(11bB-19Ac)}{12155}\right)}{19c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(11/2)*(b + c*x)^4 - ((11*b*B - 19*A*c)*x^(11/2)*(1105*b^3 + 2805*b
^2*c*x + 2431*b*c^2*x^2 + 715*c^3*x^3))/12155))/(19*c)
```

IntegrateAlgebraic [A] time = 0.05, size = 97, normalized size = 1.14

$$\frac{2\left(20995Ab^3x^{11/2}+53295Ab^2cx^{13/2}+46189Abc^2x^{15/2}+13585Ac^3x^{17/2}+17765b^3Bx^{13/2}+46189b^2Bcx^{15/2}+40755bBc^2x^{17/2}+12155Bc^3x^{19/2}\right)}{230945}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(20995*A*b^3*x^(11/2) + 17765*b^3*B*x^(13/2) + 53295*A*b^2*c*x^(13/2) +
46189*b^2*B*c*x^(15/2) + 46189*A*b*c^2*x^(15/2) + 40755*b*B*c^2*x^(17/2) +
13585*A*c^3*x^(17/2) + 12155*B*c^3*x^(19/2)))/230945
```

fricas [A] time = 0.41, size = 78, normalized size = 0.92

$$\frac{2}{230945}\left(12155\,Bc^3x^9+20995\,Ab^3x^5+13585\left(3\,Bbc^2+Ac^3\right)x^8+46189\left(Bb^2c+Abc^2\right)x^7+17765\left(Bb^3+3\,Ab^2c\right)x^6\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 2/230945*(12155*B*c^3*x^9 + 20995*A*b^3*x^5 + 13585*(3*B*b*c^2 + A*c^3)*x^8
 + 46189*(B*b^2*c + A*b*c^2)*x^7 + 17765*(B*b^3 + 3*A*b^2*c)*x^6)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.91

$$\frac{2}{19}\,Bc^3x^{\frac{19}{2}}+\frac{6}{17}\,Bbc^2x^{\frac{17}{2}}+\frac{2}{17}\,Ac^3x^{\frac{17}{2}}+\frac{2}{5}\,Bb^2cx^{\frac{15}{2}}+\frac{2}{5}\,Abc^2x^{\frac{15}{2}}+\frac{2}{13}\,Bb^3x^{\frac{13}{2}}+\frac{6}{13}\,Ab^2cx^{\frac{13}{2}}+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 6/17*B*b*c^2*x^(17/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*b
^2*c*x^(15/2) + 2/5*A*b*c^2*x^(15/2) + 2/13*B*b^3*x^(13/2) + 6/13*A*b^2*c*x
^(13/2) + 2/11*A*b^3*x^(11/2)
```

maple [A] time = 0.06, size = 76, normalized size = 0.89

$$\frac{2\left(12155Bc^3x^4+13585Ac^3x^3+40755Bbc^2x^3+46189Abc^2x^2+46189Bb^2cx^2+53295Ab^2cx+17765Bb^3x+20995Ab^3\right)x^{\frac{11}{2}}}{230945}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 2/230945*x^(11/2)*(12155*B*c^3*x^4+13585*A*c^3*x^3+40755*B*b*c^2*x^3+46189*
A*b*c^2*x^2+46189*B*b^2*c*x^2+53295*A*b^2*c*x+17765*B*b^3*x+20995*A*b^3)
```

maxima [A] time = 0.57, size = 73, normalized size = 0.86

$$\frac{2}{19}\,Bc^3x^{\frac{19}{2}}+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}+\frac{2}{17}\left(3\,Bbc^2+Ac^3\right)x^{\frac{17}{2}}+\frac{2}{5}\left(Bb^2c+Abc^2\right)x^{\frac{15}{2}}+\frac{2}{13}\left(Bb^3+3\,Ab^2c\right)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/11*A*b^3*x^(11/2) + 2/17*(3*B*b*c^2 + A*c^3)*x^(17/
2) + 2/5*(B*b^2*c + A*b*c^2)*x^(15/2) + 2/13*(B*b^3 + 3*A*b^2*c)*x^(13/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{13/2}\left(\frac{2\,B\,b^3}{13}+\frac{6\,A\,c\,b^2}{13}\right)+x^{17/2}\left(\frac{2\,A\,c^3}{17}+\frac{6\,B\,b\,c^2}{17}\right)+\frac{2\,A\,b^3\,x^{11/2}}{11}+\frac{2\,B\,c^3\,x^{19/2}}{19}+\frac{2\,b\,c\,x^{15/2}\,\left(A\,c+B\,b\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(13/2)*((2*B*b^3)/13 + (6*A*b^2*c)/13) + x^(17/2)*((2*A*c^3)/17 + (6*B*b*
c^2)/17) + (2*A*b^3*x^(11/2))/11 + (2*B*c^3*x^(19/2))/19 + (2*b*c*x^(15/2)*
(A*c + B*b))/5
```

sympy [A] time = 8.27, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{11}{2}}}{11}+\frac{6Ab^2cx^{\frac{13}{2}}}{13}+\frac{2Abc^2x^{\frac{15}{2}}}{5}+\frac{2Ac^3x^{\frac{17}{2}}}{17}+\frac{2Bb^3x^{\frac{13}{2}}}{13}+\frac{2Bb^2cx^{\frac{15}{2}}}{5}+\frac{6Bbc^2x^{\frac{17}{2}}}{17}+\frac{2Bc^3x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] 2*A*b**3*x**(11/2)/11 + 6*A*b**2*c*x**(13/2)/13 + 2*A*b*c**2*x**(15/2)/5 +
2*A*c**3*x**(17/2)/17 + 2*B*b**3*x**(13/2)/13 + 2*B*b**2*c*x**(15/2)/5 + 6*
B*b*c**2*x**(17/2)/17 + 2*B*c**3*x**(19/2)/19
```

3.161 $\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{9}Ab^3x^{9/2}+\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{15}c^2x^{15/2}(Ac+3bB)+\frac{6}{13}bcx^{13/2}(Ac+bB)+\frac{2}{17}Bc^3x^{17/2}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{9}Ab^3x^{9/2}+\frac{2}{15}c^2x^{15/2}(Ac+3bB)+\frac{6}{13}bcx^{13/2}(Ac+bB)+\frac{2}{17}Bc^3x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(9/2))/9 + (2*b^2*(b*B + 3*A*c)*x^(11/2))/11 + (6*b*c*(b*B + A*c
)*x^(13/2))/13 + (2*c^2*(3*b*B + A*c)*x^(15/2))/15 + (2*B*c^3*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3x^{7/2}+b^2(bB+3Ac)x^{9/2}+3bc(bB+Ac)x^{11/2}+c^2(3bB+Ac)x^{13/2}+Bc^3\right.\\ &= \frac{2}{9}Ab^3x^{9/2}+\frac{2}{11}b^2(bB+3Ac)x^{11/2}+\frac{6}{13}bc(bB+Ac)x^{13/2}+\frac{2}{15}c^2(3bB+Ac)x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{9/2}(b+cx)^4-\frac{x^{9/2}\left(715b^3+1755b^2cx+1485bc^2x^2+429c^3x^3\right)(9bB-17Ac)}{6435}\right)}{17c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(9/2)*(b + c*x)^4 - ((9*b*B - 17*A*c)*x^(9/2)*(715*b^3 + 1755*b^2*c
*x + 1485*b*c^2*x^2 + 429*c^3*x^3))/6435))/(17*c)
```

IntegrateAlgebraic [A] time = 0.05, size = 97, normalized size = 1.14

$$\frac{2\left(12155Ab^3x^{9/2}+29835Ab^2cx^{11/2}+25245Abc^2x^{13/2}+7293Ac^3x^{15/2}+9945b^3Bx^{11/2}+25245b^2Bcx^{13/2}+21879bBc^2x^{15/2}+6435Bc^3x^{17/2}\right)}{109395}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(12155*A*b^3*x^(9/2) + 9945*b^3*B*x^(11/2) + 29835*A*b^2*c*x^(11/2) + 25
245*b^2*B*c*x^(13/2) + 25245*A*b*c^2*x^(13/2) + 21879*b*B*c^2*x^(15/2) + 72
93*A*c^3*x^(15/2) + 6435*B*c^3*x^(17/2)))/109395
```

fricas [A] time = 0.38, size = 78, normalized size = 0.92

$$\frac{2}{109395}\left(6435\,Bc^3x^8+12155\,Ab^3x^4+7293\left(3\,Bbc^2+Ac^3\right)x^7+25245\left(Bb^2c+Abc^2\right)x^6+9945\left(Bb^3+3\,Ab^2c\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/109395*(6435*B*c^3*x^8 + 12155*A*b^3*x^4 + 7293*(3*B*b*c^2 + A*c^3)*x^7 +
 25245*(B*b^2*c + A*b*c^2)*x^6 + 9945*(B*b^3 + 3*A*b^2*c)*x^5)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.91

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{5}\,Bbc^2x^{\frac{15}{2}}+\frac{2}{15}\,Ac^3x^{\frac{15}{2}}+\frac{6}{13}\,Bb^2cx^{\frac{13}{2}}+\frac{6}{13}\,Abc^2x^{\frac{13}{2}}+\frac{2}{11}\,Bb^3x^{\frac{11}{2}}+\frac{6}{11}\,Ab^2cx^{\frac{11}{2}}+\frac{2}{9}\,Ab^3x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/5*B*b*c^2*x^(15/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*b
^2*c*x^(13/2) + 6/13*A*b*c^2*x^(13/2) + 2/11*B*b^3*x^(11/2) + 6/11*A*b^2*c*
x^(11/2) + 2/9*A*b^3*x^(9/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(6435B\,c^3x^4+7293A\,c^3x^3+21879Bb\,c^2x^3+25245Ab\,c^2x^2+25245B\,b^2c\,x^2+29835A\,b^2cx+9945B\,b^3x+12155A\,b^3\right)x^{\frac{9}{2}}}{109395}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x)
```

```
[Out] 2/109395*x^(9/2)*(6435*B*c^3*x^4+7293*A*c^3*x^3+21879*B*b*c^2*x^3+25245*A*b
*c^2*x^2+25245*B*b^2*c*x^2+29835*A*b^2*c*x+9945*B*b^3*x+12155*A*b^3)
```

maxima [A] time = 0.68, size = 73, normalized size = 0.86

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{9}\,Ab^3x^{\frac{9}{2}}+\frac{2}{15}\left(3\,Bbc^2+Ac^3\right)x^{\frac{15}{2}}+\frac{6}{13}\left(Bb^2c+Abc^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Bb^3+3\,Ab^2c\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/9*A*b^3*x^(9/2) + 2/15*(3*B*b*c^2 + A*c^3)*x^(15/2)
 + 6/13*(B*b^2*c + A*b*c^2)*x^(13/2) + 2/11*(B*b^3 + 3*A*b^2*c)*x^(11/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{11/2}\left(\frac{2\,B\,b^3}{11}+\frac{6\,A\,c\,b^2}{11}\right)+x^{15/2}\left(\frac{2\,A\,c^3}{15}+\frac{2\,B\,b\,c^2}{5}\right)+\frac{2\,A\,b^3\,x^{9/2}}{9}+\frac{2\,B\,c^3\,x^{17/2}}{17}+\frac{6\,b\,c\,x^{13/2}\,\left(A\,c+B\,b\right)}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(11/2)*((2*B*b^3)/11 + (6*A*b^2*c)/11) + x^(15/2)*((2*A*c^3)/15 + (2*B*b*
c^2)/5) + (2*A*b^3*x^(9/2))/9 + (2*B*c^3*x^(17/2))/17 + (6*b*c*x^(13/2)*(A*
c + B*b))/13
```

sympy [A] time = 3.76, size = 95, normalized size = 1.12

$$\frac{2Ab^3x^{\frac{9}{2}}}{9}+\frac{2Bc^3x^{\frac{17}{2}}}{17}+\frac{2x^{\frac{15}{2}}\left(Ac^3+3Bbc^2\right)}{15}+\frac{2x^{\frac{13}{2}}\left(3Abc^2+3Bb^2c\right)}{13}+\frac{2x^{\frac{11}{2}}\left(3Ab^2c+Bb^3\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3*x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(9/2)/9 + 2*B*c**3*x**(17/2)/17 + 2*x**(15/2)*(A*c**3 + 3*B*b*c
**2)/15 + 2*x**(13/2)*(3*A*b*c**2 + 3*B*b**2*c)/13 + 2*x**(11/2)*(3*A*b**2*
c + B*b**3)/11
```

3.162 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{7}Ab^3x^{7/2}+\frac{2}{9}b^2x^{9/2}(3Ac+bB)+\frac{2}{13}c^2x^{13/2}(Ac+3bB)+\frac{6}{11}bcx^{11/2}(Ac+bB)+\frac{2}{15}Bc^3x^{15/2}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{9}b^2x^{9/2}(3Ac+bB)+\frac{2}{7}Ab^3x^{7/2}+\frac{2}{13}c^2x^{13/2}(Ac+3bB)+\frac{6}{11}bcx^{11/2}(Ac+bB)+\frac{2}{15}Bc^3x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*A*b^3*x^(7/2))/7 + (2*b^2*(b*B + 3*A*c)*x^(9/2))/9 + (6*b*c*(b*B + A*c)*
x^(11/2))/11 + (2*c^2*(3*b*B + A*c)*x^(13/2))/13 + (2*B*c^3*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{\sqrt{x}}\,dx=\int \left(Ab^3x^{5/2}+b^2(bB+3Ac)x^{7/2}+3bc(bB+Ac)x^{9/2}+c^2(3bB+Ac)x^{11/2}+Bc^3x\right.$$
$$=\frac{2}{7}Ab^3x^{7/2}+\frac{2}{9}b^2(bB+3Ac)x^{9/2}+\frac{6}{11}bc(bB+Ac)x^{11/2}+\frac{2}{13}c^2(3bB+Ac)x^{13/2}+$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{7/2}(b+cx)^4-\frac{x^{7/2}\left(429b^3+1001b^2cx+819bc^2x^2+231c^3x^3\right)(7bB-15Ac)}{3003}\right)}{15c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(B*x^(7/2)*(b + c*x)^4 - ((7*b*B - 15*A*c)*x^(7/2)*(429*b^3 + 1001*b^2*c
*x + 819*b*c^2*x^2 + 231*c^3*x^3))/3003))/(15*c)
```

IntegrateAlgebraic [A] time = 0.05, size = 97, normalized size = 1.14

$$\frac{2\left(6435Ab^3x^{7/2}+15015Ab^2cx^{9/2}+12285Abc^2x^{11/2}+3465Ac^3x^{13/2}+5005b^3Bx^{9/2}+12285b^2Bcx^{11/2}+10395bBc^2x^{13/2}+3003Bc^3x^{15/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(6435*A*b^3*x^(7/2) + 5005*b^3*B*x^(9/2) + 15015*A*b^2*c*x^(9/2) + 12285
*b^2*B*c*x^(11/2) + 12285*A*b*c^2*x^(11/2) + 10395*b*B*c^2*x^(13/2) + 3465*
A*c^3*x^(13/2) + 3003*B*c^3*x^(15/2)))/45045
```

fricas [A] time = 0.39, size = 78, normalized size = 0.92

$$\frac{2}{45045}\left(3003\,Bc^3x^7 + 6435\,Ab^3x^3 + 3465\left(3\,Bbc^2 + Ac^3\right)x^6 + 12285\left(Bb^2c + Abc^2\right)x^5 + 5005\left(Bb^3 + 3\,Ab^2c\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^3*x^7 + 6435*A*b^3*x^3 + 3465*(3*B*b*c^2 + A*c^3)*x^6 + 1
2285*(B*b^2*c + A*b*c^2)*x^5 + 5005*(B*b^3 + 3*A*b^2*c)*x^4)*sqrt(x)
```

giac [A] time = 0.17, size = 77, normalized size = 0.91

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}} + \frac{6}{13}\,Bbc^2x^{\frac{13}{2}} + \frac{2}{13}\,Ac^3x^{\frac{13}{2}} + \frac{6}{11}\,Bb^2cx^{\frac{11}{2}} + \frac{6}{11}\,Abc^2x^{\frac{11}{2}} + \frac{2}{9}\,Bb^3x^{\frac{9}{2}} + \frac{2}{3}\,Ab^2cx^{\frac{9}{2}} + \frac{2}{7}\,Ab^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 6/13*B*b*c^2*x^(13/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*
b^2*c*x^(11/2) + 6/11*A*b*c^2*x^(11/2) + 2/9*B*b^3*x^(9/2) + 2/3*A*b^2*c*x^
(9/2) + 2/7*A*b^3*x^(7/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(3003B\,c^3x^4 + 3465A\,c^3x^3 + 10395Bb\,c^2x^3 + 12285Ab\,c^2x^2 + 12285B\,b^2c\,x^2 + 15015A\,b^2cx + 5005B\,b^3x + 6435A\,b^3\right)x^{\frac{7}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x)
```

```
[Out] 2/45045*x^(7/2)*(3003*B*c^3*x^4+3465*A*c^3*x^3+10395*B*b*c^2*x^3+12285*A*b*
c^2*x^2+12285*B*b^2*c*x^2+15015*A*b^2*c*x+5005*B*b^3*x+6435*A*b^3)
```

maxima [A] time = 0.56, size = 73, normalized size = 0.86

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}} + \frac{2}{7}\,Ab^3x^{\frac{7}{2}} + \frac{2}{13}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{13}{2}} + \frac{6}{11}\left(Bb^2c + Abc^2\right)x^{\frac{11}{2}} + \frac{2}{9}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/7*A*b^3*x^(7/2) + 2/13*(3*B*b*c^2 + A*c^3)*x^(13/2)
 + 6/11*(B*b^2*c + A*b*c^2)*x^(11/2) + 2/9*(B*b^3 + 3*A*b^2*c)*x^(9/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{9/2}\left(\frac{2\,B\,b^3}{9} + \frac{2\,A\,c\,b^2}{3}\right) + x^{13/2}\left(\frac{2\,A\,c^3}{13} + \frac{6\,B\,b\,c^2}{13}\right) + \frac{2\,A\,b^3\,x^{7/2}}{7} + \frac{2\,B\,c^3\,x^{15/2}}{15} + \frac{6\,b\,c\,x^{11/2}\,\left(A\,c + B\,b\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(1/2),x)
```

```
[Out] x^(9/2)*((2*B*b^3)/9 + (2*A*b^2*c)/3) + x^(13/2)*((2*A*c^3)/13 + (6*B*b*c^2
)/13) + (2*A*b^3*x^(7/2))/7 + (2*B*c^3*x^(15/2))/15 + (6*b*c*x^(11/2)*(A*c
+ B*b))/11
```

sympy [A] time = 3.51, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{7}{2}}}{7}+\frac{2Ab^2cx^{\frac{9}{2}}}{3}+\frac{6Abc^2x^{\frac{11}{2}}}{11}+\frac{2Ac^3x^{\frac{13}{2}}}{13}+\frac{2Bb^3x^{\frac{9}{2}}}{9}+\frac{6Bb^2cx^{\frac{11}{2}}}{11}+\frac{6Bbc^2x^{\frac{13}{2}}}{13}+\frac{2Bc^3x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(7/2)/7 + 2*A*b**2*c*x**(9/2)/3 + 6*A*b*c**2*x**(11/2)/11 + 2*A
*c**3*x**(13/2)/13 + 2*B*b**3*x**(9/2)/9 + 6*B*b**2*c*x**(11/2)/11 + 6*B*b*
c**2*x**(13/2)/13 + 2*B*c**3*x**(15/2)/15
```

3.163 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{3/2}} \, dx$

Optimal. Leaf size=85

$$\frac{2}{5}Ab^3x^{5/2}+\frac{2}{7}b^2x^{7/2}(3Ac+bB)+\frac{2}{11}c^2x^{11/2}(Ac+3bB)+\frac{2}{3}bcx^{9/2}(Ac+bB)+\frac{2}{13}Bc^3x^{13/2}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{7}b^2x^{7/2}(3Ac+bB)+\frac{2}{5}Ab^3x^{5/2}+\frac{2}{11}c^2x^{11/2}(Ac+3bB)+\frac{2}{3}bcx^{9/2}(Ac+bB)+\frac{2}{13}Bc^3x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*A*b^3*x^(5/2))/5 + (2*b^2*(b*B + 3*A*c)*x^(7/2))/7 + (2*b*c*(b*B + A*c)*
x^(9/2))/3 + (2*c^2*(3*b*B + A*c)*x^(11/2))/11 + (2*B*c^3*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{3/2}} \, dx &= \int \left(Ab^3x^{3/2}+b^2(bB+3Ac)x^{5/2}+3bc(bB+Ac)x^{7/2}+c^2(3bB+Ac)x^{9/2}+Bc^3x^{11/2}\right. \\ &= \frac{2}{5}Ab^3x^{5/2}+\frac{2}{7}b^2(bB+3Ac)x^{7/2}+\frac{2}{3}bc(bB+Ac)x^{9/2}+\frac{2}{11}c^2(3bB+Ac)x^{11/2}+\frac{2}{13}Bc\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{5/2}(b+cx)^4-\frac{x^{5/2}\left(231b^3+495b^2cx+385bc^2x^2+105c^3x^3\right)(5bB-13Ac)}{1155}\right)}{13c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(B*x^(5/2)*(b + c*x)^4 - ((5*b*B - 13*A*c)*x^(5/2)*(231*b^3 + 495*b^2*c*
x + 385*b*c^2*x^2 + 105*c^3*x^3))/1155))/(13*c)
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 1.14

$$\frac{2\left(3003Ab^3x^{5/2}+6435Ab^2cx^{7/2}+5005Abc^2x^{9/2}+1365Ac^3x^{11/2}+2145b^3Bx^{7/2}+5005b^2Bcx^{9/2}+4095bBc^2x^{11/2}+1155Bc^3x^{13/2}\right)}{15015}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(3003*A*b^3*x^(5/2) + 2145*b^3*B*x^(7/2) + 6435*A*b^2*c*x^(7/2) + 5005*b
^2*B*c*x^(9/2) + 5005*A*b*c^2*x^(9/2) + 4095*b*B*c^2*x^(11/2) + 1365*A*c^3*
x^(11/2) + 1155*B*c^3*x^(13/2)))/15015
```

fricas [A] time = 0.41, size = 78, normalized size = 0.92

$$\frac{2}{15015}\left(1155\,Bc^3x^6+3003\,Ab^3x^2+1365\left(3\,Bbc^2+Ac^3\right)x^5+5005\left(Bb^2c+Abc^2\right)x^4+2145\left(Bb^3+3\,Ab^2c\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*x^6 + 3003*A*b^3*x^2 + 1365*(3*B*b*c^2 + A*c^3)*x^5 + 5
005*(B*b^2*c + A*b*c^2)*x^4 + 2145*(B*b^3 + 3*A*b^2*c)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.91

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}}+\frac{6}{11}\,Bbc^2x^{\frac{11}{2}}+\frac{2}{11}\,Ac^3x^{\frac{11}{2}}+\frac{2}{3}\,Bb^2cx^{\frac{9}{2}}+\frac{2}{3}\,Abc^2x^{\frac{9}{2}}+\frac{2}{7}\,Bb^3x^{\frac{7}{2}}+\frac{6}{7}\,Ab^2cx^{\frac{7}{2}}+\frac{2}{5}\,Ab^3x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 6/11*B*b*c^2*x^(11/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*b
^2*c*x^(9/2) + 2/3*A*b*c^2*x^(9/2) + 2/7*B*b^3*x^(7/2) + 6/7*A*b^2*c*x^(7/2
) + 2/5*A*b^3*x^(5/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(1155B\,c^3x^4+1365A\,c^3x^3+4095Bb\,c^2x^3+5005Ab\,c^2x^2+5005B\,b^2c\,x^2+6435A\,b^2cx+2145B\,b^3x+3003A\,b^3\right)x^{\frac{5}{2}}}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x)
```

```
[Out] 2/15015*x^(5/2)*(1155*B*c^3*x^4+1365*A*c^3*x^3+4095*B*b*c^2*x^3+5005*A*b*c^
2*x^2+5005*B*b^2*c*x^2+6435*A*b^2*c*x+2145*B*b^3*x+3003*A*b^3)
```

maxima [A] time = 0.47, size = 73, normalized size = 0.86

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}}+\frac{2}{5}\,Ab^3x^{\frac{5}{2}}+\frac{2}{11}\left(3\,Bbc^2+Ac^3\right)x^{\frac{11}{2}}+\frac{2}{3}\left(Bb^2c+Abc^2\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Bb^3+3\,Ab^2c\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/5*A*b^3*x^(5/2) + 2/11*(3*B*b*c^2 + A*c^3)*x^(11/2)
 + 2/3*(B*b^2*c + A*b*c^2)*x^(9/2) + 2/7*(B*b^3 + 3*A*b^2*c)*x^(7/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{7/2}\left(\frac{2\,B\,b^3}{7}+\frac{6\,A\,c\,b^2}{7}\right)+x^{11/2}\left(\frac{2\,A\,c^3}{11}+\frac{6\,B\,b\,c^2}{11}\right)+\frac{2\,A\,b^3\,x^{5/2}}{5}+\frac{2\,B\,c^3\,x^{13/2}}{13}+\frac{2\,b\,c\,x^{9/2}\,\left(A\,c+B\,b\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(3/2),x)
```

```
[Out] x^(7/2)*((2*B*b^3)/7 + (6*A*b^2*c)/7) + x^(11/2)*((2*A*c^3)/11 + (6*B*b*c^2
)/11) + (2*A*b^3*x^(5/2))/5 + (2*B*c^3*x^(13/2))/13 + (2*b*c*x^(9/2)*(A*c +
 B*b))/3
```

sympy [A] time = 3.73, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{5}{2}}}{5}+\frac{6Ab^2cx^{\frac{7}{2}}}{7}+\frac{2Abc^2x^{\frac{9}{2}}}{3}+\frac{2Ac^3x^{\frac{11}{2}}}{11}+\frac{2Bb^3x^{\frac{7}{2}}}{7}+\frac{2Bb^2cx^{\frac{9}{2}}}{3}+\frac{6Bbc^2x^{\frac{11}{2}}}{11}+\frac{2Bc^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(3/2),x)
```

```
[Out] 2*A*b**3*x**(5/2)/5 + 6*A*b**2*c*x**(7/2)/7 + 2*A*b*c**2*x**(9/2)/3 + 2*A*c
**3*x**(11/2)/11 + 2*B*b**3*x**(7/2)/7 + 2*B*b**2*c*x**(9/2)/3 + 6*B*b*c**2
*x**(11/2)/11 + 2*B*c**3*x**(13/2)/13
```

3.164 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{3}Ab^3x^{3/2}+\frac{2}{5}b^2x^{5/2}(3Ac+bB)+\frac{2}{9}c^2x^{9/2}(Ac+3bB)+\frac{6}{7}bcx^{7/2}(Ac+bB)+\frac{2}{11}Bc^3x^{11/2}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{5}b^2x^{5/2}(3Ac+bB)+\frac{2}{3}Ab^3x^{3/2}+\frac{2}{9}c^2x^{9/2}(Ac+3bB)+\frac{6}{7}bcx^{7/2}(Ac+bB)+\frac{2}{11}Bc^3x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*A*b^3*x^(3/2))/3 + (2*b^2*(b*B + 3*A*c)*x^(5/2))/5 + (6*b*c*(b*B + A*c)*
x^(7/2))/7 + (2*c^2*(3*b*B + A*c)*x^(9/2))/9 + (2*B*c^3*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{5/2}}\,dx &= \int \left(Ab^3\sqrt{x}+b^2(bB+3Ac)x^{3/2}+3bc(bB+Ac)x^{5/2}+c^2(3bB+Ac)x^{7/2}+Bc^3x^9\right.\\ &= \frac{2}{3}Ab^3x^{3/2}+\frac{2}{5}b^2(bB+3Ac)x^{5/2}+\frac{6}{7}bc(bB+Ac)x^{7/2}+\frac{2}{9}c^2(3bB+Ac)x^{9/2}+\frac{2}{11}B\end{aligned}$$

Mathematica [A] time = 0.04, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{3/2}(b+cx)^4-\frac{1}{315}x^{3/2}\left(105b^3+189b^2cx+135bc^2x^2+35c^3x^3\right)(3bB-11Ac)\right)}{11c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(B*x^(3/2)*(b + c*x)^4 - ((3*b*B - 11*A*c)*x^(3/2)*(105*b^3 + 189*b^2*c*
x + 135*b*c^2*x^2 + 35*c^3*x^3))/315))/(11*c)
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 1.14

$$\frac{2\left(1155Ab^3x^{3/2}+2079Ab^2cx^{5/2}+1485Abc^2x^{7/2}+385Ac^3x^{9/2}+693b^3Bx^{5/2}+1485b^2Bcx^{7/2}+1155bBc^2x^{9/2}+315Bc^3x^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(1155*A*b^3*x^(3/2) + 693*b^3*B*x^(5/2) + 2079*A*b^2*c*x^(5/2) + 1485*b^
2*B*c*x^(7/2) + 1485*A*b*c^2*x^(7/2) + 1155*b*B*c^2*x^(9/2) + 385*A*c^3*x^(
9/2) + 315*B*c^3*x^(11/2)))/3465
```

fricas [A] time = 0.40, size = 76, normalized size = 0.89

$$\frac{2}{3465}\left(315\,Bc^3x^5+1155\,Ab^3x+385\left(3\,Bbc^2+Ac^3\right)x^4+1485\left(Bb^2c+Abc^2\right)x^3+693\left(Bb^3+3\,Ab^2c\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*x^5 + 1155*A*b^3*x + 385*(3*B*b*c^2 + A*c^3)*x^4 + 1485*(
B*b^2*c + A*b*c^2)*x^3 + 693*(B*b^3 + 3*A*b^2*c)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.91

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}}+\frac{2}{3}\,Bbc^2x^{\frac{9}{2}}+\frac{2}{9}\,Ac^3x^{\frac{9}{2}}+\frac{6}{7}\,Bb^2cx^{\frac{7}{2}}+\frac{6}{7}\,Abc^2x^{\frac{7}{2}}+\frac{2}{5}\,Bb^3x^{\frac{5}{2}}+\frac{6}{5}\,Ab^2cx^{\frac{5}{2}}+\frac{2}{3}\,Ab^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/3*B*b*c^2*x^(9/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*b^2*c
*x^(7/2) + 6/7*A*b*c^2*x^(7/2) + 2/5*B*b^3*x^(5/2) + 6/5*A*b^2*c*x^(5/2) +
2/3*A*b^3*x^(3/2)
```

maple [A] time = 0.04, size = 76, normalized size = 0.89

$$\frac{2\left(315B\,c^3x^4+385A\,c^3x^3+1155Bb\,c^2x^3+1485Ab\,c^2x^2+1485B\,b^2c\,x^2+2079A\,b^2cx+693B\,b^3x+1155A\,b^3\right)x^{\frac{3}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x)
```

```
[Out] 2/3465*x^(3/2)*(315*B*c^3*x^4+385*A*c^3*x^3+1155*B*b*c^2*x^3+1485*A*b*c^2*x
^2+1485*B*b^2*c*x^2+2079*A*b^2*c*x+693*B*b^3*x+1155*A*b^3)
```

maxima [A] time = 0.65, size = 73, normalized size = 0.86

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}}+\frac{2}{3}\,Ab^3x^{\frac{3}{2}}+\frac{2}{9}\left(3\,Bbc^2+Ac^3\right)x^{\frac{9}{2}}+\frac{6}{7}\left(Bb^2c+Abc^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Bb^3+3\,Ab^2c\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/3*A*b^3*x^(3/2) + 2/9*(3*B*b*c^2 + A*c^3)*x^(9/2) +
 6/7*(B*b^2*c + A*b*c^2)*x^(7/2) + 2/5*(B*b^3 + 3*A*b^2*c)*x^(5/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{5/2}\left(\frac{2\,B\,b^3}{5}+\frac{6\,A\,c\,b^2}{5}\right)+x^{9/2}\left(\frac{2\,A\,c^3}{9}+\frac{2\,B\,b\,c^2}{3}\right)+\frac{2\,A\,b^3\,x^{3/2}}{3}+\frac{2\,B\,c^3\,x^{11/2}}{11}+\frac{6\,b\,c\,x^{7/2}\,\left(A\,c+B\,b\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(5/2),x)
```

```
[Out] x^(5/2)*((2*B*b^3)/5 + (6*A*b^2*c)/5) + x^(9/2)*((2*A*c^3)/9 + (2*B*b*c^2)/
3) + (2*A*b^3*x^(3/2))/3 + (2*B*c^3*x^(11/2))/11 + (6*b*c*x^(7/2)*(A*c + B*
b))/7
```

sympy [A] time = 4.35, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{3}{2}}}{3} + \frac{6Ab^2cx^{\frac{5}{2}}}{5} + \frac{6Abc^2x^{\frac{7}{2}}}{7} + \frac{2Ac^3x^{\frac{9}{2}}}{9} + \frac{2Bb^3x^{\frac{5}{2}}}{5} + \frac{6Bb^2cx^{\frac{7}{2}}}{7} + \frac{2Bbc^2x^{\frac{9}{2}}}{3} + \frac{2Bc^3x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(5/2),x)
```

```
[Out] 2*A*b**3*x**(3/2)/3 + 6*A*b**2*c*x**(5/2)/5 + 6*A*b*c**2*x**(7/2)/7 + 2*A*c
**3*x**(9/2)/9 + 2*B*b**3*x**(5/2)/5 + 6*B*b**2*c*x**(7/2)/7 + 2*B*b*c**2*x
**(9/2)/3 + 2*B*c**3*x**(11/2)/11
```

3.165 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=83

$$2Ab^3\sqrt{x}+\frac{2}{3}b^2x^{3/2}(3Ac+bB)+\frac{2}{7}c^2x^{7/2}(Ac+3bB)+\frac{6}{5}bcx^{5/2}(Ac+bB)+\frac{2}{9}Bc^3x^{9/2}$$

Rubi [A] time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{3}b^2x^{3/2}(3Ac+bB)+2Ab^3\sqrt{x}+\frac{2}{7}c^2x^{7/2}(Ac+3bB)+\frac{6}{5}bcx^{5/2}(Ac+bB)+\frac{2}{9}Bc^3x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] 2*A*b^3*Sqrt[x] + (2*b^2*(b*B + 3*A*c)*x^(3/2))/3 + (6*b*c*(b*B + A*c)*x^(5
/2))/5 + (2*c^2*(3*b*B + A*c)*x^(7/2))/7 + (2*B*c^3*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{7/2}}\,dx &= \int \left(\frac{Ab^3}{\sqrt{x}}+b^2(bB+3Ac)\sqrt{x}+3bc(bB+Ac)x^{3/2}+c^2(3bB+Ac)x^{5/2}+Bc^3x^{7/2}\right)dx\\ &= 2Ab^3\sqrt{x}+\frac{2}{3}b^2(bB+3Ac)x^{3/2}+\frac{6}{5}bc(bB+Ac)x^{5/2}+\frac{2}{7}c^2(3bB+Ac)x^{7/2}+\frac{2}{9}Bc^3x^9\end{aligned}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.76

$$\frac{2\sqrt{x}\left(35B(b+cx)^4-\left(35b^3+35b^2cx+21bc^2x^2+5c^3x^3\right)(bB-9Ac)\right)}{315c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*Sqrt[x]*(35*B*(b + c*x)^4 - (b*B - 9*A*c)*(35*b^3 + 35*b^2*c*x + 21*b*c^
2*x^2 + 5*c^3*x^3)))/(315*c)
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 1.17

$$\frac{2}{315}\left(315Ab^3\sqrt{x}+315Ab^2cx^{3/2}+189Abc^2x^{5/2}+45Ac^3x^{7/2}+105b^3Bx^{3/2}+189b^2Bcx^{5/2}+135bBc^2x^{7/2}+35Bc^3x^{9/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(315*A*b^3*Sqrt[x] + 105*b^3*B*x^(3/2) + 315*A*b^2*c*x^(3/2) + 189*b^2*B
*c*x^(5/2) + 189*A*b*c^2*x^(5/2) + 135*b*B*c^2*x^(7/2) + 45*A*c^3*x^(7/2) +
 35*B*c^3*x^(9/2)))/315
```

fricas [A] time = 0.40, size = 73, normalized size = 0.88

$$\frac{2}{315}\left(35\,Bc^3x^4+315\,Ab^3+45\left(3\,Bbc^2+Ac^3\right)x^3+189\left(Bb^2c+Abc^2\right)x^2+105\left(Bb^3+3\,Ab^2c\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*x^4 + 315*A*b^3 + 45*(3*B*b*c^2 + A*c^3)*x^3 + 189*(B*b^2*c
 + A*b*c^2)*x^2 + 105*(B*b^3 + 3*A*b^2*c)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.93

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}}+\frac{6}{7}\,Bbc^2x^{\frac{7}{2}}+\frac{2}{7}\,Ac^3x^{\frac{7}{2}}+\frac{6}{5}\,Bb^2cx^{\frac{5}{2}}+\frac{6}{5}\,Abc^2x^{\frac{5}{2}}+\frac{2}{3}\,Bb^3x^{\frac{3}{2}}+2\,Ab^2cx^{\frac{3}{2}}+2\,Ab^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 6/7*B*b*c^2*x^(7/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*b^2*c*x
^(5/2) + 6/5*A*b*c^2*x^(5/2) + 2/3*B*b^3*x^(3/2) + 2*A*b^2*c*x^(3/2) + 2*A*
b^3*sqrt(x)
```

maple [A] time = 0.05, size = 76, normalized size = 0.92

$$\frac{2\left(35B\,c^3x^4+45A\,c^3x^3+135Bb\,c^2x^3+189Ab\,c^2x^2+189B\,b^2c\,x^2+315A\,b^2cx+105B\,b^3x+315A\,b^3\right)\sqrt{x}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x)
```

```
[Out] 2/315*x^(1/2)*(35*B*c^3*x^4+45*A*c^3*x^3+135*B*b*c^2*x^3+189*A*b*c^2*x^2+18
9*B*b^2*c*x^2+315*A*b^2*c*x+105*B*b^3*x+315*A*b^3)
```

maxima [A] time = 0.49, size = 73, normalized size = 0.88

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}}+2\,Ab^3\sqrt{x}+\frac{2}{7}\left(3\,Bbc^2+Ac^3\right)x^{\frac{7}{2}}+\frac{6}{5}\left(Bb^2c+Abc^2\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Bb^3+3\,Ab^2c\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2*A*b^3*sqrt(x) + 2/7*(3*B*b*c^2 + A*c^3)*x^(7/2) + 6/5
*(B*b^2*c + A*b*c^2)*x^(5/2) + 2/3*(B*b^3 + 3*A*b^2*c)*x^(3/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.83

$$x^{3/2}\left(\frac{2\,B\,b^3}{3}+2\,A\,c\,b^2\right)+x^{7/2}\left(\frac{2\,A\,c^3}{7}+\frac{6\,B\,b\,c^2}{7}\right)+2\,A\,b^3\,\sqrt{x}+\frac{2\,B\,c^3\,x^{9/2}}{9}+\frac{6\,b\,c\,x^{5/2}\,\left(A\,c+B\,b\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(7/2),x)
```

```
[Out] x^(3/2)*((2*B*b^3)/3 + 2*A*b^2*c) + x^(7/2)*((2*A*c^3)/7 + (6*B*b*c^2)/7) +
 2*A*b^3*x^(1/2) + (2*B*c^3*x^(9/2))/9 + (6*b*c*x^(5/2)*(A*c + B*b))/5
```

sympy [A] time = 5.97, size = 110, normalized size = 1.33

$$2Ab^3\sqrt{x}+2Ab^2cx^{\frac{3}{2}}+\frac{6Abc^2x^{\frac{5}{2}}}{5}+\frac{2Ac^3x^{\frac{7}{2}}}{7}+\frac{2Bb^3x^{\frac{3}{2}}}{3}+\frac{6Bb^2cx^{\frac{5}{2}}}{5}+\frac{6Bbc^2x^{\frac{7}{2}}}{7}+\frac{2Bc^3x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(7/2),x)
```

```
[Out] 2*A*b**3*sqrt(x) + 2*A*b**2*c*x**(3/2) + 6*A*b*c**2*x**(5/2)/5 + 2*A*c**3*x
**(7/2)/7 + 2*B*b**3*x**(3/2)/3 + 6*B*b**2*c*x**(5/2)/5 + 6*B*b*c**2*x**(7/
2)/7 + 2*B*c**3*x**(9/2)/9
```

3.166 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{9/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2Ab^3}{\sqrt{x}}+2b^2\sqrt{x}\,(3Ac+bB)+\frac{2}{5}c^2x^{5/2}(Ac+3bB)+2bcx^{3/2}(Ac+bB)+\frac{2}{7}Bc^3x^{7/2}$$

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$2b^2\sqrt{x}\,(3Ac+bB)-\frac{2Ab^3}{\sqrt{x}}+\frac{2}{5}c^2x^{5/2}(Ac+3bB)+2bcx^{3/2}(Ac+bB)+\frac{2}{7}Bc^3x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*A*b^3)/Sqrt[x] + 2*b^2*(b*B + 3*A*c)*Sqrt[x] + 2*b*c*(b*B + A*c)*x^(3/2
) + (2*c^2*(3*b*B + A*c)*x^(5/2))/5 + (2*B*c^3*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{9/2}}\,dx &= \int \left(\frac{Ab^3}{x^{3/2}}+\frac{b^2(bB+3Ac)}{\sqrt{x}}+3bc(bB+Ac)\sqrt{x}+c^2(3bB+Ac)x^{3/2}+Bc^3x^{5/2}\right)dx\\ &= -\frac{2Ab^3}{\sqrt{x}}+2b^2(bB+3Ac)\sqrt{x}+2bc(bB+Ac)x^{3/2}+\frac{2}{5}c^2(3bB+Ac)x^{5/2}+\frac{2}{7}Bc^3x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 0.95

$$\frac{2\left(7A\left(-5b^3+15b^2cx+5bc^2x^2+c^3x^3\right)+Bx\left(35b^3+35b^2cx+21bc^2x^2+5c^3x^3\right)\right)}{35\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(7*A*(-5*b^3 + 15*b^2*c*x + 5*b*c^2*x^2 + c^3*x^3) + B*x*(35*b^3 + 35*b^
2*c*x + 21*b*c^2*x^2 + 5*c^3*x^3)))/(35*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.06, size = 79, normalized size = 1.00

$$\frac{2\left(-35Ab^3+105Ab^2cx+35Abc^2x^2+7Ac^3x^3+35b^3Bx+35b^2Bcx^2+21bBc^2x^3+5Bc^3x^4\right)}{35\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(-35*A*b^3 + 35*b^3*B*x + 105*A*b^2*c*x + 35*b^2*B*c*x^2 + 35*A*b*c^2*x^
2 + 21*b*B*c^2*x^3 + 7*A*c^3*x^3 + 5*B*c^3*x^4))/(35*Sqrt[x])
```

fricas [A] time = 0.39, size = 73, normalized size = 0.92

$$\frac{2\left(5\,Bc^3x^4-35\,Ab^3+7\left(3\,Bbc^2+Ac^3\right)x^3+35\left(Bb^2c+Abc^2\right)x^2+35\left(Bb^3+3\,Ab^2c\right)x\right)}{35\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^4 - 35*A*b^3 + 7*(3*B*b*c^2 + A*c^3)*x^3 + 35*(B*b^2*c + A*
b*c^2)*x^2 + 35*(B*b^3 + 3*A*b^2*c)*x)/sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.97

$$\frac{2}{7}\,Bc^3x^{\frac{7}{2}}+\frac{6}{5}\,Bbc^2x^{\frac{5}{2}}+\frac{2}{5}\,Ac^3x^{\frac{5}{2}}+2\,Bb^2cx^{\frac{3}{2}}+2\,Abc^2x^{\frac{3}{2}}+2\,Bb^3\sqrt{x}+6\,Ab^2c\sqrt{x}-\frac{2\,Ab^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 6/5*B*b*c^2*x^(5/2) + 2/5*A*c^3*x^(5/2) + 2*B*b^2*c*x^(
3/2) + 2*A*b*c^2*x^(3/2) + 2*B*b^3*sqrt(x) + 6*A*b^2*c*sqrt(x) - 2*A*b^3/sq
rt(x)
```

maple [A] time = 0.05, size = 76, normalized size = 0.96

$$-\frac{2\left(-5B\,c^3x^4-7A\,c^3x^3-21Bb\,c^2x^3-35Ab\,c^2x^2-35B\,b^2c\,x^2-105A\,b^2cx-35B\,b^3x+35A\,b^3\right)}{35\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x)
```

```
[Out] -2/35/x^(1/2)*(-5*B*c^3*x^4-7*A*c^3*x^3-21*B*b*c^2*x^3-35*A*b*c^2*x^2-35*B*
b^2*c*x^2-105*A*b^2*c*x-35*B*b^3*x+35*A*b^3)
```

maxima [A] time = 0.62, size = 73, normalized size = 0.92

$$\frac{2}{7}\,Bc^3x^{\frac{7}{2}}-\frac{2\,Ab^3}{\sqrt{x}}+\frac{2}{5}\left(3\,Bbc^2+Ac^3\right)x^{\frac{5}{2}}+2\left(Bb^2c+Abc^2\right)x^{\frac{3}{2}}+2\left(Bb^3+3\,Ab^2c\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^3*x^(7/2) - 2*A*b^3/sqrt(x) + 2/5*(3*B*b*c^2 + A*c^3)*x^(5/2) + 2*(
B*b^2*c + A*b*c^2)*x^(3/2) + 2*(B*b^3 + 3*A*b^2*c)*sqrt(x)
```

mupad [B] time = 0.04, size = 69, normalized size = 0.87

$$\sqrt{x}\,\left(2\,B\,b^3+6\,A\,c\,b^2\right)+x^{5/2}\,\left(\frac{2\,A\,c^3}{5}+\frac{6\,B\,b\,c^2}{5}\right)-\frac{2\,A\,b^3}{\sqrt{x}}+\frac{2\,B\,c^3\,x^{7/2}}{7}+2\,b\,c\,x^{3/2}\,\left(A\,c+B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*B*b^3 + 6*A*b^2*c) + x^(5/2)*((2*A*c^3)/5 + (6*B*b*c^2)/5) - (2*
A*b^3)/x^(1/2) + (2*B*c^3*x^(7/2))/7 + 2*b*c*x^(3/2)*(A*c + B*b)
```

sympy [A] time = 7.85, size = 105, normalized size = 1.33

$$-\frac{2Ab^3}{\sqrt{x}} + 6Ab^2c\sqrt{x} + 2Abc^2x^{\frac{3}{2}} + \frac{2Ac^3x^{\frac{5}{2}}}{5} + 2Bb^3\sqrt{x} + 2Bb^2cx^{\frac{3}{2}} + \frac{6Bbc^2x^{\frac{5}{2}}}{5} + \frac{2Bc^3x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(9/2),x)
```

```
[Out] -2*A*b**3/sqrt(x) + 6*A*b**2*c*sqrt(x) + 2*A*b*c**2*x**(3/2) + 2*A*c**3*x**
(5/2)/5 + 2*B*b**3*sqrt(x) + 2*B*b**2*c*x**(3/2) + 6*B*b*c**2*x**(5/2)/5 +
2*B*c**3*x**(7/2)/7
```

3.167 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=81

$$-\frac{2Ab^3}{3x^{3/2}}-\frac{2b^2(3Ac+bB)}{\sqrt{x}}+\frac{2}{3}c^2x^{3/2}(Ac+3bB)+6bc\sqrt{x}\,(Ac+bB)+\frac{2}{5}Bc^3x^{5/2}$$

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$-\frac{2b^2(3Ac+bB)}{\sqrt{x}}-\frac{2Ab^3}{3x^{3/2}}+\frac{2}{3}c^2x^{3/2}(Ac+3bB)+6bc\sqrt{x}\,(Ac+bB)+\frac{2}{5}Bc^3x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*A*b^3)/(3*x^(3/2)) - (2*b^2*(b*B + 3*A*c))/Sqrt[x] + 6*b*c*(b*B + A*c)*
Sqrt[x] + (2*c^2*(3*b*B + A*c)*x^(3/2))/3 + (2*B*c^3*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11/2}}\,dx &= \int \left(\frac{Ab^3}{x^{5/2}}+\frac{b^2(bB+3Ac)}{x^{3/2}}+\frac{3bc(bB+Ac)}{\sqrt{x}}+c^2(3bB+Ac)\sqrt{x}+Bc^3x^{3/2}\right)dx\\ &= -\frac{2Ab^3}{3x^{3/2}}-\frac{2b^2(bB+3Ac)}{\sqrt{x}}+6bc(bB+Ac)\sqrt{x}+\frac{2}{3}c^2(3bB+Ac)x^{3/2}+\frac{2}{5}Bc^3x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 74, normalized size = 0.91

$$\frac{6Bx\left(-5b^3+15b^2cx+5bc^2x^2+c^3x^3\right)-10A\left(b^3+9b^2cx-9bc^2x^2-c^3x^3\right)}{15x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-10*A*(b^3 + 9*b^2*c*x - 9*b*c^2*x^2 - c^3*x^3) + 6*B*x*(-5*b^3 + 15*b^2*c
*x + 5*b*c^2*x^2 + c^3*x^3))/(15*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.05, size = 79, normalized size = 0.98

$$\frac{2\left(-5Ab^3-45Ab^2cx+45Abc^2x^2+5Ac^3x^3-15b^3Bx+45b^2Bcx^2+15bBc^2x^3+3Bc^3x^4\right)}{15x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (2*(-5*A*b^3 - 15*b^3*B*x - 45*A*b^2*c*x + 45*b^2*B*c*x^2 + 45*A*b*c^2*x^2
+ 15*b*B*c^2*x^3 + 5*A*c^3*x^3 + 3*B*c^3*x^4))/(15*x^(3/2))
```

fricas [A] time = 0.40, size = 73, normalized size = 0.90

$$\frac{2\left(3\,Bc^3x^4 - 5\,Ab^3 + 5\left(3\,Bbc^2 + Ac^3\right)x^3 + 45\left(Bb^2c + Abc^2\right)x^2 - 15\left(Bb^3 + 3\,Ab^2c\right)x\right)}{15\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^3*x^4 - 5*A*b^3 + 5*(3*B*b*c^2 + A*c^3)*x^3 + 45*(B*b^2*c + A*b
*c^2)*x^2 - 15*(B*b^3 + 3*A*b^2*c)*x)/x^(3/2)
```

giac [A] time = 0.16, size = 75, normalized size = 0.93

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}} + 2\,Bbc^2x^{\frac{3}{2}} + \frac{2}{3}\,Ac^3x^{\frac{3}{2}} + 6\,Bb^2c\sqrt{x} + 6\,Abc^2\sqrt{x} - \frac{2\left(3\,Bb^3x + 9\,Ab^2cx + Ab^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2*B*b*c^2*x^(3/2) + 2/3*A*c^3*x^(3/2) + 6*B*b^2*c*sqrt(
x) + 6*A*b*c^2*sqrt(x) - 2/3*(3*B*b^3*x + 9*A*b^2*c*x + A*b^3)/x^(3/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.94

$$-\frac{2\left(-3B\,c^3x^4 - 5A\,c^3x^3 - 15Bb\,c^2x^3 - 45Ab\,c^2x^2 - 45B\,b^2c\,x^2 + 45A\,b^2cx + 15B\,b^3x + 5A\,b^3\right)}{15x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x)
```

```
[Out] -2/15/x^(3/2)*(-3*B*c^3*x^4-5*A*c^3*x^3-15*B*b*c^2*x^3-45*A*b*c^2*x^2-45*B*
b^2*c*x^2+45*A*b^2*c*x+15*B*b^3*x+5*A*b^3)
```

maxima [A] time = 0.57, size = 73, normalized size = 0.90

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}} + \frac{2}{3}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{3}{2}} + 6\left(Bb^2c + Abc^2\right)\sqrt{x} - \frac{2\left(Ab^3 + 3\left(Bb^3 + 3\,Ab^2c\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*(3*B*b*c^2 + A*c^3)*x^(3/2) + 6*(B*b^2*c + A*b*c^2)
*sqrt(x) - 2/3*(A*b^3 + 3*(B*b^3 + 3*A*b^2*c)*x)/x^(3/2)
```

mupad [B] time = 0.06, size = 70, normalized size = 0.86

$$x^{3/2}\left(\frac{2\,A\,c^3}{3} + 2\,B\,b\,c^2\right) - \frac{x\,\left(2\,B\,b^3 + 6\,A\,c\,b^2\right) + \frac{2\,A\,b^3}{3}}{x^{3/2}} + \frac{2\,B\,c^3\,x^{5/2}}{5} + 6\,b\,c\,\sqrt{x}\,\left(A\,c + B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(11/2),x)
```

```
[Out] x^(3/2)*((2*A*c^3)/3 + 2*B*b*c^2) - (x*(2*B*b^3 + 6*A*b^2*c) + (2*A*b^3)/3)
/x^(3/2) + (2*B*c^3*x^(5/2))/5 + 6*b*c*x^(1/2)*(A*c + B*b)
```

sympy [A] time = 10.34, size = 105, normalized size = 1.30

$$-\frac{2Ab^3}{3x^{\frac{3}{2}}}-\frac{6Ab^2c}{\sqrt{x}}+6Abc^2\sqrt{x}+\frac{2Ac^3x^{\frac{3}{2}}}{3}-\frac{2Bb^3}{\sqrt{x}}+6Bb^2c\sqrt{x}+2Bbc^2x^{\frac{3}{2}}+\frac{2Bc^3x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(11/2),x)
```

```
[Out] -2*A*b**3/(3*x**(3/2)) - 6*A*b**2*c/sqrt(x) + 6*A*b*c**2*sqrt(x) + 2*A*c**3
*x**(3/2)/3 - 2*B*b**3/sqrt(x) + 6*B*b**2*c*sqrt(x) + 2*B*b*c**2*x**(3/2) +
 2*B*c**3*x**(5/2)/5
```

3.168 $\int \frac{x^{7/2}(A+Bx)}{bx+cx^2} dx$

Optimal. Leaf size=113

$$\frac{2b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}-\frac{2b^2\sqrt{x}\,(bB-Ac)}{c^4}+\frac{2bx^{3/2}(bB-Ac)}{3c^3}-\frac{2x^{5/2}(bB-Ac)}{5c^2}+\frac{2Bx^{7/2}}{7c}$$

Rubi [A] time = 0.07, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 80, 50, 63, 205}

$$-\frac{2b^2\sqrt{x}\,(bB-Ac)}{c^4}+\frac{2b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}-\frac{2x^{5/2}(bB-Ac)}{5c^2}+\frac{2bx^{3/2}(bB-Ac)}{3c^3}+\frac{2Bx^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (-2*b^2*(b*B - A*c)*Sqrt[x])/c^4 + (2*b*(b*B - A*c)*x^(3/2))/(3*c^3) - (2*(
b*B - A*c)*x^(5/2))/(5*c^2) + (2*B*x^(7/2))/(7*c) + (2*b^(5/2)*(b*B - A*c)*
ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{bx+cx^2}\,dx &= \int \frac{x^{5/2}(A+Bx)}{b+cx}\,dx \\
&= \frac{2Bx^{7/2}}{7c} + \frac{\left(2\left(-\frac{7bB}{2}+\frac{7Ac}{2}\right)\right)\int \frac{x^{5/2}}{b+cx}\,dx}{7c} \\
&= -\frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{(b(bB-Ac))\int \frac{x^{3/2}}{b+cx}\,dx}{c^2} \\
&= \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} - \frac{\left(b^2(bB-Ac)\right)\int \frac{\sqrt{x}}{b+cx}\,dx}{c^3} \\
&= -\frac{2b^2(bB-Ac)\sqrt{x}}{c^4} + \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{\left(b^3(bB-Ac)\right)\int \frac{1}{\sqrt{x}\,(b+}}{c^4} \\
&= -\frac{2b^2(bB-Ac)\sqrt{x}}{c^4} + \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{\left(2b^3(bB-Ac)\right)\text{Subst}}{c^4} \\
&= -\frac{2b^2(bB-Ac)\sqrt{x}}{c^4} + \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{2b^{5/2}(bB-Ac)\tan^{-1}(}{c^{9/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 101, normalized size = 0.89

$$
\frac{2b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}} + \frac{2\sqrt{x}\left(35b^2c(3A+Bx)-7bc^2x(5A+3Bx)+3c^3x^2(7A+5Bx)-105b^3B\right)}{105c^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(-105*b^3*B + 35*b^2*c*(3*A + B*x) - 7*b*c^2*x*(5*A + 3*B*x) + 3
*c^3*x^2*(7*A + 5*B*x)))/(105*c^4) + (2*b^(5/2)*(b*B - A*c)*ArcTan[(Sqrt[c]
*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

IntegrateAlgebraic [A] time = 0.11, size = 131, normalized size = 1.16

$$
\frac{2\left(b^{7/2}B-Ab^{5/2}c\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}} + \frac{2\left(105Ab^2c\sqrt{x}-35Abc^2x^{3/2}+21Ac^3x^{5/2}-105b^3B\sqrt{x}+35b^2Bcx^{3/2}-21bBc^2x^{5/2}+15Bc^3x^{7/2}\right)}{105c^4}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*(-105*b^3*B*Sqrt[x] + 105*A*b^2*c*Sqrt[x] + 35*b^2*B*c*x^(3/2) - 35*A*b*
c^2*x^(3/2) - 21*b*B*c^2*x^(5/2) + 21*A*c^3*x^(5/2) + 15*B*c^3*x^(7/2)))/(1
05*c^4) + (2*(b^(7/2)*B - A*b^(5/2)*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c
^(9/2)
```

fricas [A] time = 0.42, size = 229, normalized size = 2.03

$$
\left[-\frac{105\left(Bb^3-Ab^2c\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx-2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(15Bc^3x^3-105Bb^3+105Ab^2c-21\left(Bbc^2-Ac^3\right)x^2+35\left(Bb^2c-Abc^2\right)x\right)\sqrt{x}}{105c^4},\ \frac{2\left(105\left(Bb^3-Ab^2c\right)\sqrt{\frac{b}{c}}\arctan\left(\frac{c\sqrt{x}\sqrt{\frac{b}{c}}}{b}\right)+\left(15Bc^3x^3-105Bb^3+105Ab^2c-21\left(Bbc^2-Ac^3\right)x^2+35\left(Bb^2c-Abc^2\right)x\right)\sqrt{x}\right)}{105c^4}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*b^3 - A*b^2*c)*sqrt(-b/c)*log((c*x - 2*c*sqrt(x)*sqrt(-b/c)
 - b)/(c*x + b)) - 2*(15*B*c^3*x^3 - 105*B*b^3 + 105*A*b^2*c - 21*(B*b*c^2
```

```
- A*c^3)*x^2 + 35*(B*b^2*c - A*b*c^2)*x)*sqrt(x))/c^4, 2/105*(105*(B*b^3 -
A*b^2*c)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (15*B*c^3*x^3 - 105*B*b^
3 + 105*A*b^2*c - 21*(B*b*c^2 - A*c^3)*x^2 + 35*(B*b^2*c - A*b*c^2)*x)*sqrt
(x))/c^4]
```

giac [A] time = 0.19, size = 115, normalized size = 1.02

$$\frac{2\left(Bb^4 - Ab^3c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^4} + \frac{2\left(15\,Bc^6x^{\frac{7}{2}} - 21\,Bbc^5x^{\frac{5}{2}} + 21\,Ac^6x^{\frac{5}{2}} + 35\,Bb^2c^4x^{\frac{3}{2}} - 35\,Abc^5x^{\frac{3}{2}} - 105\,Bb^3c^3\sqrt{x} + 105\,Ab^2c^4\sqrt{x}\right)}{105\,c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b^4 - A*b^3*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + 2/105*(15
*B*c^6*x^(7/2) - 21*B*b*c^5*x^(5/2) + 21*A*c^6*x^(5/2) + 35*B*b^2*c^4*x^(3/
2) - 35*A*b*c^5*x^(3/2) - 105*B*b^3*c^3*sqrt(x) + 105*A*b^2*c^4*sqrt(x))/c^
7
```

maple [A] time = 0.05, size = 126, normalized size = 1.12

$$\frac{2B\,x^{\frac{7}{2}}}{7c} + \frac{2A\,x^{\frac{5}{2}}}{5c} - \frac{2Bb\,x^{\frac{5}{2}}}{5c^2} - \frac{2A\,b^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^3} + \frac{2B\,b^4\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^4} - \frac{2Ab\,x^{\frac{3}{2}}}{3c^2} + \frac{2B\,b^2x^{\frac{3}{2}}}{3c^3} + \frac{2A\,b^2\sqrt{x}}{c^3} - \frac{2B\,b^3\sqrt{x}}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x),x)
```

```
[Out] 2/7*B/c*x^(7/2)+2/5/c*A*x^(5/2)-2/5/c^2*B*x^(5/2)*b-2/3/c^2*A*x^(3/2)*b+2/3
/c^3*B*x^(3/2)*b^2+2/c^3*A*b^2*x^(1/2)-2/c^4*b^3*B*x^(1/2)-2*b^3/c^3/(b*c)^
(1/2)*arctan(c*x^(1/2)/(b*c)^(1/2))*A+2*b^4/c^4/(b*c)^(1/2)*arctan(c*x^(1/2
)/(b*c)^(1/2))*B
```

maxima [A] time = 1.28, size = 105, normalized size = 0.93

$$\frac{2\left(Bb^4 - Ab^3c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^4} + \frac{2\left(15\,Bc^3x^{\frac{7}{2}} - 21\left(Bbc^2 - Ac^3\right)x^{\frac{5}{2}} + 35\left(Bb^2c - Abc^2\right)x^{\frac{3}{2}} - 105\left(Bb^3 - Ab^2c\right)\sqrt{x}\right)}{105\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b^4 - A*b^3*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + 2/105*(15
*B*c^3*x^(7/2) - 21*(B*b*c^2 - A*c^3)*x^(5/2) + 35*(B*b^2*c - A*b*c^2)*x^(3
/2) - 105*(B*b^3 - A*b^2*c)*sqrt(x))/c^4
```

mupad [B] time = 1.04, size = 125, normalized size = 1.11

$$x^{5/2}\left(\frac{2\,A}{5\,c} - \frac{2\,B\,b}{5\,c^2}\right) + \frac{2\,B\,x^{7/2}}{7\,c} + \frac{b^2\,\sqrt{x}\,\left(\frac{2\,A}{c} - \frac{2\,B\,b}{c^2}\right)}{c^2} + \frac{2\,b^{5/2}\,\mathrm{atan}\left(\frac{b^{5/2}\,\sqrt{c}\,\sqrt{x}\,\left(A\,c-B\,b\right)}{B\,b^4-A\,b^3\,c}\right)\,\left(A\,c-B\,b\right)}{c^{9/2}} - \frac{b\,x^{3/2}\,\left(\frac{2\,A}{c} - \frac{2\,B\,b}{c^2}\right)}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] x^(5/2)*((2*A)/(5*c) - (2*B*b)/(5*c^2)) + (2*B*x^(7/2))/(7*c) + (b^2*x^(1/2
)*((2*A)/c - (2*B*b)/c^2))/c^2 + (2*b^(5/2)*atan((b^(5/2)*c^(1/2)*x^(1/2)*(
A*c - B*b))/(B*b^4 - A*b^3*c))*(A*c - B*b))/c^(9/2) - (b*x^(3/2)*((2*A)/c -
 (2*B*b)/c^2))/(3*c)
```

sympy [A] time = 45.39, size = 279, normalized size = 2.47

$$\begin{cases} \frac{iAb^{\frac{5}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}} - \frac{iAb^{\frac{5}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}} + \frac{2Ab^2\sqrt{x}}{c^3} - \frac{2Abx^{\frac{3}{2}}}{3c^2} + \frac{2Ax^{\frac{5}{2}}}{5c} - \frac{iBb^{\frac{7}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^5\sqrt{\frac{1}{c}}} + \frac{iBb^{\frac{7}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^5\sqrt{\frac{1}{c}}} - \frac{2Bb^3\sqrt{x}}{c^4} + \frac{2Bb^2x^{\frac{3}{2}}}{3c^3} - \frac{2Bbx^{\frac{5}{2}}}{5c^2} + \frac{2Bx^{\frac{7}{2}}}{7c} & \text{for } c \neq 0 \\ \frac{\frac{2Ax^{\frac{7}{2}}}{7} + \frac{2Bx^{\frac{9}{2}}}{9}}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((I*A*b**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**4*sqrt(1/c)
) - I*A*b**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**4*sqrt(1/c)) + 2*A*
b**2*sqrt(x)/c**3 - 2*A*b*x**(3/2)/(3*c**2) + 2*A*x**(5/2)/(5*c) - I*B*b**(
7/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**5*sqrt(1/c)) + I*B*b**(7/2)*lo
g(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**5*sqrt(1/c)) - 2*B*b**3*sqrt(x)/c**4 +
 2*B*b**2*x**(3/2)/(3*c**3) - 2*B*b*x**(5/2)/(5*c**2) + 2*B*x**(7/2)/(7*c),
 Ne(c, 0)), ((2*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/b, True))
```

3.169 $\int \frac{x^{5/2}(A+Bx)}{bx+cx^2}\,dx$

Optimal. Leaf size=90

$$-\frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}+\frac{2b\sqrt{x}\,(bB-Ac)}{c^3}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2Bx^{5/2}}{5c}$$

Rubi [A] time = 0.05, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 80, 50, 63, 205}

$$-\frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2b\sqrt{x}\,(bB-Ac)}{c^3}+\frac{2Bx^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*b*(b*B - A*c)*Sqrt[x])/c^3 - (2*(b*B - A*c)*x^(3/2))/(3*c^2) + (2*B*x^(5
/2))/(5*c) - (2*b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(7
/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{bx+cx^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{b+cx}\,dx \\
&= \frac{2Bx^{5/2}}{5c} + \frac{\left(2\left(-\frac{5bB}{2}+\frac{5Ac}{2}\right)\right)\int \frac{x^{3/2}}{b+cx}\,dx}{5c} \\
&= -\frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} + \frac{(b(bB-Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{c^2} \\
&= \frac{2b(bB-Ac)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{\left(b^2(bB-Ac)\right)\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{c^3} \\
&= \frac{2b(bB-Ac)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{\left(2b^2(bB-Ac)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{c^3} \\
&= \frac{2b(bB-Ac)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 81, normalized size = 0.90

$$
\frac{2\sqrt{x}\left(-5bc(3A+Bx)+c^2x(5A+3Bx)+15b^2B\right)}{15c^3} - \frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(15*b^2*B - 5*b*c*(3*A + B*x) + c^2*x*(5*A + 3*B*x)))/(15*c^3) -
 (2*b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(7/2)
```

IntegrateAlgebraic [A] time = 0.10, size = 88, normalized size = 0.98

$$
\frac{2\sqrt{x}\left(-15Abc+5Ac^2x+15b^2B-5bBcx+3Bc^2x^2\right)}{15c^3} - \frac{2\left(b^{5/2}B-Ab^{3/2}c\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(15*b^2*B - 15*A*b*c - 5*b*B*c*x + 5*A*c^2*x + 3*B*c^2*x^2))/(15
*c^3) - (2*(b^(5/2)*B - A*b^(3/2)*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(
7/2)
```

fricas [A] time = 0.41, size = 180, normalized size = 2.00

$$
\left[-\frac{15\left(Bb^2-Abc\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx+2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(3Bc^2x^2+15Bb^2-15Abc-5\left(Bbc-Ac^2\right)x\right)\sqrt{x}}{15c^3}, -\frac{2\left(15\left(Bb^2-Abc\right)\sqrt{\frac{b}{c}}\arctan\left(\frac{c\sqrt{x}\sqrt{\frac{b}{c}}}{b}\right)-\left(3Bc^2x^2+15Bb^2-15Abc-5\left(Bbc-Ac^2\right)x\right)\sqrt{x}\right)}{15c^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*b^2 - A*b*c)*sqrt(-b/c)*log((c*x + 2*c*sqrt(x)*sqrt(-b/c) - b
)/(c*x + b)) - 2*(3*B*c^2*x^2 + 15*B*b^2 - 15*A*b*c - 5*(B*b*c - A*c^2)*x)*
sqrt(x))/c^3, -2/15*(15*(B*b^2 - A*b*c)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c
)/b) - (3*B*c^2*x^2 + 15*B*b^2 - 15*A*b*c - 5*(B*b*c - A*c^2)*x)*sqrt(x))/c
^3]
```

giac [A] time = 0.17, size = 91, normalized size = 1.01

$$-\frac{2\left(Bb^3 - Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^3} + \frac{2\left(3\,Bc^4x^{\frac{5}{2}} - 5\,Bbc^3x^{\frac{3}{2}} + 5\,Ac^4x^{\frac{3}{2}} + 15\,Bb^2c^2\sqrt{x} - 15\,Abc^3\sqrt{x}\right)}{15\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -2*(B*b^3 - A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^3) + 2/15*(3*
B*c^4*x^(5/2) - 5*B*b*c^3*x^(3/2) + 5*A*c^4*x^(3/2) + 15*B*b^2*c^2*sqrt(x)
- 15*A*b*c^3*sqrt(x))/c^5
```

maple [A] time = 0.06, size = 102, normalized size = 1.13

$$\frac{2B\,x^{\frac{5}{2}}}{5c} + \frac{2A\,b^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^2} - \frac{2B\,b^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^3} + \frac{2A\,x^{\frac{3}{2}}}{3c} - \frac{2Bb\,x^{\frac{3}{2}}}{3c^2} - \frac{2Ab\sqrt{x}}{c^2} + \frac{2B\,b^2\sqrt{x}}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x),x)
```

```
[Out] 2/5*B/c*x^(5/2)+2/3*A*x^(3/2)/c-2/3/c^2*B*x^(3/2)*b-2/c^2*A*b*x^(1/2)+2/c^3
*b^2*B*x^(1/2)+2*b^2/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2*b^
3/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.23, size = 82, normalized size = 0.91

$$-\frac{2\left(Bb^3 - Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^3} + \frac{2\left(3\,Bc^2x^{\frac{5}{2}} - 5\left(Bbc - Ac^2\right)x^{\frac{3}{2}} + 15\left(Bb^2 - Abc\right)\sqrt{x}\right)}{15\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -2*(B*b^3 - A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^3) + 2/15*(3*
B*c^2*x^(5/2) - 5*(B*b*c - A*c^2)*x^(3/2) + 15*(B*b^2 - A*b*c)*sqrt(x))/c^3
```

mupad [B] time = 1.05, size = 101, normalized size = 1.12

$$x^{3/2}\left(\frac{2\,A}{3\,c} - \frac{2\,B\,b}{3\,c^2}\right) + \frac{2\,B\,x^{5/2}}{5\,c} - \frac{2\,b^{3/2}\,\mathrm{atan}\left(\frac{b^{3/2}\,\sqrt{c}\,\sqrt{x}\,(A\,c-B\,b)}{B\,b^3-A\,b^2\,c}\right)\,(A\,c-B\,b)}{c^{7/2}} - \frac{b\,\sqrt{x}\,\left(\frac{2\,A}{c} - \frac{2\,B\,b}{c^2}\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] x^(3/2)*((2*A)/(3*c) - (2*B*b)/(3*c^2)) + (2*B*x^(5/2))/(5*c) - (2*b^(3/2)*
atan((b^(3/2)*c^(1/2)*x^(1/2)*(A*c - B*b))/(B*b^3 - A*b^2*c))*(A*c - B*b))/
c^(7/2) - (b*x^(1/2)*((2*A)/c - (2*B*b)/c^2))/c
```

sympy [A] time = 16.35, size = 245, normalized size = 2.72

$$\begin{cases} -\frac{iAb^{\frac{3}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^3\sqrt{\frac{1}{c}}} + \frac{iAb^{\frac{3}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^3\sqrt{\frac{1}{c}}} - \frac{2Ab\sqrt{x}}{c^2} + \frac{2Ax^{\frac{3}{2}}}{3c} + \frac{iBb^{\frac{5}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}} - \frac{iBb^{\frac{5}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}} + \frac{2Bb^2\sqrt{x}}{c^3} - \frac{2Bbx^{\frac{3}{2}}}{3c^2} + \frac{2Bx^{\frac{5}{2}}}{5c} & \text{for } c \neq 0 \\ \frac{\frac{2Ax^{\frac{5}{2}}}{5} + \frac{2Bx^{\frac{7}{2}}}{7}}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((-I*A*b**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c
)) + I*A*b**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c)) - 2*A
*b*sqrt(x)/c**2 + 2*A*x**(3/2)/(3*c) + I*B*b**(5/2)*log(-I*sqrt(b)*sqrt(1/c
) + sqrt(x))/(c**4*sqrt(1/c)) - I*B*b**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt
(x))/(c**4*sqrt(1/c)) + 2*B*b**2*sqrt(x)/c**3 - 2*B*b*x**(3/2)/(3*c**2) + 2
*B*x**(5/2)/(5*c), Ne(c, 0)), ((2*A*x**(5/2)/5 + 2*B*x**(7/2)/7)/b, True))
```

3.170 $\int \frac{x^{3/2}(A+Bx)}{bx+cx^2}\,dx$

Optimal. Leaf size=69

$$\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}-\frac{2\sqrt{x}\,(bB-Ac)}{c^2}+\frac{2Bx^{3/2}}{3c}$$

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 80, 50, 63, 205}

$$-\frac{2\sqrt{x}\,(bB-Ac)}{c^2}+\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}+\frac{2Bx^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/c^2 + (2*B*x^(3/2))/(3*c) + (2*Sqrt[b]*(b*B - A*c)
*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(5/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{bx+cx^2}\,dx = \int \frac{\sqrt{x}\,(A+Bx)}{b+cx}\,dx$$
$$= \frac{2Bx^{3/2}}{3c} + \frac{\left(2\left(-\frac{3bB}{2}+\frac{3Ac}{2}\right)\right)\int \frac{\sqrt{x}}{b+cx}\,dx}{3c}$$
$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{(b(bB-Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{c^2}$$
$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{(2b(bB-Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{c^2}$$
$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}$$

Mathematica [A] time = 0.03, size = 63, normalized size = 0.91

$$\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}} + \frac{2\sqrt{x}\,(3Ac-3bB+Bcx)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(-3*b*B + 3*A*c + B*c*x))/(3*c^2) + (2*Sqrt[b]*(b*B - A*c)*ArcTa
n[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(5/2)
```

IntegrateAlgebraic [A] time = 0.07, size = 76, normalized size = 1.10

$$\frac{2\left(b^{3/2}B - A\sqrt{b}\,c\right)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}} + \frac{2\left(3Ac\sqrt{x} - 3bB\sqrt{x} + Bcx^{3/2}\right)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*(-3*b*B*Sqrt[x] + 3*A*c*Sqrt[x] + B*c*x^(3/2)))/(3*c^2) + (2*(b^(3/2)*B
- A*Sqrt[b]*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(5/2)
```

fricas [A] time = 0.42, size = 129, normalized size = 1.87

$$\left[-\frac{3\,(Bb-Ac)\sqrt{-\frac{b}{c}}\,\log\left(\frac{cx-2\,c\sqrt{x}\,\sqrt{-\frac{b}{c}}-b}{cx+b}\right) - 2\,(Bcx-3\,Bb+3\,Ac)\sqrt{x}}{3\,c^2},\ \frac{2\left(3\,(Bb-Ac)\sqrt{\frac{b}{c}}\,\arctan\left(\frac{c\sqrt{x}\,\sqrt{\frac{b}{c}}}{b}\right) + (Bcx-3\,Bb+3\,Ac)\sqrt{x}\right)}{3\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*b - A*c)*sqrt(-b/c)*log((c*x - 2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x
 + b)) - 2*(B*c*x - 3*B*b + 3*A*c)*sqrt(x))/c^2, 2/3*(3*(B*b - A*c)*sqrt(b/
c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (B*c*x - 3*B*b + 3*A*c)*sqrt(x))/c^2]
```

giac [A] time = 0.16, size = 64, normalized size = 0.93

$$\frac{2\left(Bb^2 - Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^2} + \frac{2\left(Bc^2x^{\frac{3}{2}} - 3\,Bbc\sqrt{x} + 3\,Ac^2\sqrt{x}\right)}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b^2 - A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2) + 2/3*(B*c^2*
x^(3/2) - 3*B*b*c*sqrt(x) + 3*A*c^2*sqrt(x))/c^3
```

maple [A] time = 0.05, size = 78, normalized size = 1.13

$$-\frac{2Ab\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c}+\frac{2B\,b^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{2}}+\frac{2B\,x^{\frac{3}{2}}}{3c}+\frac{2A\sqrt{x}}{c}-\frac{2Bb\sqrt{x}}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x),x)
```

```
[Out] 2/3*B/c*x^(3/2)+2*A*x^(1/2)/c-2/c^2*b*B*x^(1/2)-2*b/c/(b*c)^(1/2)*arctan(1/
(b*c)^(1/2)*c*x^(1/2))*A+2*b^2/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/
2))*B
```

maxima [A] time = 1.51, size = 58, normalized size = 0.84

$$\frac{2\left(Bb^{2}-Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{2}}+\frac{2\left(Bcx^{\frac{3}{2}}-3\,(Bb-Ac)\sqrt{x}\right)}{3\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b^2 - A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2) + 2/3*(B*c*x^
(3/2) - 3*(B*b - A*c)*sqrt(x))/c^2
```

mupad [B] time = 0.08, size = 76, normalized size = 1.10

$$\sqrt{x}\,\left(\frac{2\,A}{c}-\frac{2\,B\,b}{c^2}\right)+\frac{2\,B\,x^{3/2}}{3\,c}+\frac{2\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{c}\,\sqrt{x}\,\left(A\,c-B\,b\right)}{B\,b^2-A\,b\,c}\right)\,\left(A\,c-B\,b\right)}{c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] x^(1/2)*((2*A)/c - (2*B*b)/c^2) + (2*B*x^(3/2))/(3*c) + (2*b^(1/2)*atan((b^
(1/2)*c^(1/2)*x^(1/2)*(A*c - B*b))/(B*b^2 - A*b*c))*(A*c - B*b))/c^(5/2)
```

sympy [A] time = 6.70, size = 212, normalized size = 3.07

$$\begin{cases} \frac{iA\sqrt{b}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{2}\sqrt{\frac{1}{c}}}-\frac{iA\sqrt{b}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{2}\sqrt{\frac{1}{c}}}+\frac{2A\sqrt{x}}{c}-\frac{iBb^{\frac{3}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{3}\sqrt{\frac{1}{c}}}+\frac{iBb^{\frac{3}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{3}\sqrt{\frac{1}{c}}}-\frac{2Bb\sqrt{x}}{c^{2}}+\frac{2Bx^{\frac{3}{2}}}{3c} & \text{for}\: c \neq 0 \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((I*A*sqrt(b)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c))
 - I*A*sqrt(b)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) + 2*A*sq
rt(x)/c - I*B*b**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c))
 + I*B*b**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c)) - 2*B*b
*sqrt(x)/c**2 + 2*B*x**(3/2)/(3*c), Ne(c, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5
/2)/5)/b, True))
```

3.171 $\int \frac{\sqrt{x}(A+Bx)}{bx+cx^2}\,dx$

Optimal. Leaf size=49

$$\frac{2B\sqrt{x}}{c}-\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {781, 80, 63, 205}

$$\frac{2B\sqrt{x}}{c}-\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b
]*c^(3/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{bx+cx^2}\,dx = \int \frac{A+Bx}{\sqrt{x}(b+cx)}\,dx$$
$$= \frac{2B\sqrt{x}}{c} + \frac{\left(2\left(-\frac{bB}{2}+\frac{Ac}{2}\right)\right)\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{c}$$
$$= \frac{2B\sqrt{x}}{c} + \frac{\left(4\left(-\frac{bB}{2}+\frac{Ac}{2}\right)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{c}$$
$$= \frac{2B\sqrt{x}}{c} - \frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 1.00

$$\frac{2B\sqrt{x}}{c} - \frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b
]*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.05, size = 49, normalized size = 1.00

$$\frac{2B\sqrt{x}}{c} - \frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b
]*c^(3/2))
```

fricas [A] time = 0.41, size = 102, normalized size = 2.08

$$\left[\frac{2\,Bbc\sqrt{x}+(Bb-Ac)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)}{bc^2}, \frac{2\left(Bbc\sqrt{x}+(Bb-Ac)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)\right)}{bc^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [(2*B*b*c*sqrt(x) + (B*b - A*c)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt
(x))/(c*x + b)))/(b*c^2), 2*(B*b*c*sqrt(x) + (B*b - A*c)*sqrt(b*c)*arctan(s
qrt(b*c)/(c*sqrt(x))))/(b*c^2)]
```

giac [A] time = 0.18, size = 39, normalized size = 0.80

$$\frac{2\,B\sqrt{x}}{c} - \frac{2\,(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c - 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c)
```

maple [A] time = 0.05, size = 53, normalized size = 1.08

$$\frac{2A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}}-\frac{2Bb\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c}+\frac{2B\sqrt{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x),x)
```

```
[Out] 2*B/c*x^(1/2)+2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2/c/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*b*B
```

maxima [A] time = 1.22, size = 39, normalized size = 0.80

$$\frac{2\,B\sqrt{x}}{c}-\frac{2\,(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*B*sqrt(x)/c - 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c)
```

mupad [B] time = 0.06, size = 37, normalized size = 0.76

$$\frac{2\,B\,\sqrt{x}}{c}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{\sqrt{b}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] (2*B*x^(1/2))/c + (2*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/(b^(1/2)*
c^(3/2))
```

sympy [A] time = 2.19, size = 218, normalized size = 4.45

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{\sqrt{x}}+2B\sqrt{x}\right) & \text{for } b=0\wedge c=0\\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{c} & \text{for } b=0\\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{b} & \text{for } c=0\\ -\frac{iA\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}}+\frac{iA\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}}+\frac{iB\sqrt{b}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^2\sqrt{\frac{1}{c}}}-\frac{iB\sqrt{b}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^2\sqrt{\frac{1}{c}}}+\frac{2B\sqrt{x}}{c} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c, Eq(b, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/3)/b, Eq(c
, 0)), (-I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*
A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*B*sqrt(b)*lo
g(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) - I*B*sqrt(b)*log(I*sqrt
(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) + 2*B*sqrt(x)/c, True))
```

3.172 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=49

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{2A}{b\sqrt{x}}$$

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {781, 78, 63, 205}

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{2A}{b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(b*Sqrt[x]) + (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(
3/2)*Sqrt[c])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)}\,dx = \int \frac{A+Bx}{x^{3/2}(b+cx)}\,dx$$
$$= -\frac{2A}{b\sqrt{x}} + \frac{\left(2\left(\frac{bB}{2}-\frac{Ac}{2}\right)\right)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{b}$$
$$= -\frac{2A}{b\sqrt{x}} + \frac{\left(4\left(\frac{bB}{2}-\frac{Ac}{2}\right)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{b}$$
$$= -\frac{2A}{b\sqrt{x}} + \frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 1.00

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}} - \frac{2A}{b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(b*Sqrt[x]) + (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(
3/2)*Sqrt[c])
```

IntegrateAlgebraic [A] time = 0.06, size = 49, normalized size = 1.00

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}} - \frac{2A}{b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(b*Sqrt[x]) + (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(
3/2)*Sqrt[c])
```

fricas [A] time = 0.42, size = 112, normalized size = 2.29

$$\left[-\frac{2\,Abc\sqrt{x} - (Bb-Ac)\sqrt{-bc}\,x\log\left(\frac{cx-b+2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)}{b^2cx}, -\frac{2\left(Abc\sqrt{x} + (Bb-Ac)\sqrt{bc}\,x\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)\right)}{b^2cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-(2*A*b*c*sqrt(x) - (B*b - A*c)*sqrt(-b*c)*x*log((c*x - b + 2*sqrt(-b*c)*s
qrt(x))/(c*x + b)))/(b^2*c*x), -2*(A*b*c*sqrt(x) + (B*b - A*c)*sqrt(b*c)*x*
arctan(sqrt(b*c)/(c*sqrt(x))))/(b^2*c*x)]
```

giac [A] time = 0.15, size = 39, normalized size = 0.80

$$\frac{2\,(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b} - \frac{2\,A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b) - 2*A/(b*sqrt(x))
```

maple [A] time = 0.06, size = 53, normalized size = 1.08

$$-\frac{2Ac\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b}+\frac{2B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}}-\frac{2A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)/x^(1/2),x)
```

```
[Out] -2/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A*c+2/(b*c)^(1/2)*arctan(1
/(b*c)^(1/2)*c*x^(1/2))*B-2*A/b/x^(1/2)
```

maxima [A] time = 1.19, size = 39, normalized size = 0.80

$$\frac{2\,(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b}-\frac{2\,A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b) - 2*A/(b*sqrt(x))
```

mupad [B] time = 0.07, size = 50, normalized size = 1.02

$$\frac{2\,B\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,\sqrt{c}}-\frac{2\,A\,\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}}-\frac{2\,A}{b\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)),x)
```

```
[Out] (2*B*atan((c^(1/2)*x^(1/2))/b^(1/2)))/(b^(1/2)*c^(1/2)) - (2*A*c^(1/2)*atan
((c^(1/2)*x^(1/2))/b^(1/2)))/b^(3/2) - (2*A)/(b*x^(1/2))
```

sympy [A] time = 3.40, size = 216, normalized size = 4.41

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) & \text{for}\ b=0\wedge c=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{c} & \text{for}\ b=0 \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{b} & \text{for}\ c=0 \\ -\frac{2A}{b\sqrt{x}}+\frac{iA\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{iA\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{iB\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}}+\frac{iB\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c, Eq(b, 0)), ((-2*A/sqrt(x) + 2*B*sqrt(x))
/b, Eq(c, 0)), (-2*A/(b*sqrt(x)) + I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/
(b**(3/2)*sqrt(1/c)) - I*A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqr
t(1/c)) - I*B*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I
*B*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)), True))
```

3.173 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=69

$$-\frac{2\sqrt{c}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2A}{3bx^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2\sqrt{c}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}-\frac{2A}{3bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(3*b*x^(3/2)) - (2*(b*B - A*c))/(b^2*Sqrt[x]) - (2*Sqrt[c]*(b*B - A*
c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(5/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{5/2}(b+cx)}\,dx\\
&= -\frac{2A}{3bx^{3/2}}+\frac{\left(2\left(\frac{3bB}{2}-\frac{3Ac}{2}\right)\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{3b}\\
&= -\frac{2A}{3bx^{3/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{(c(bB-Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{b^2}\\
&= -\frac{2A}{3bx^{3/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{(2c(bB-Ac))\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{b^2}\\
&= -\frac{2A}{3bx^{3/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2\sqrt{c}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}
\end{aligned}
$$

Mathematica [C] time = 0.01, size = 44, normalized size = 0.64

$$
\frac{{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{cx}{b}\right)(6Acx-6bBx)-2Ab}{3b^2x^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A*b + (-6*b*B*x + 6*A*c*x)*Hypergeometric2F1[-1/2, 1, 1/2, -((c*x)/b)])
/(3*b^2*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.08, size = 68, normalized size = 0.99

$$
-\frac{2\left(bB\sqrt{c}-Ac^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}-\frac{2(Ab-3Acx+3bBx)}{3b^2x^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*(A*b + 3*b*B*x - 3*A*c*x))/(3*b^2*x^(3/2)) - (2*(b*B*Sqrt[c] - A*c^(3/2
))*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(5/2)
```

fricas [A] time = 0.43, size = 146, normalized size = 2.12

$$
\left[-\frac{3\,(Bb-Ac)x^2\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\,(Ab+3\,(Bb-Ac)x)\sqrt{x}}{3\,b^2x^2},\ \frac{2\left(3\,(Bb-Ac)x^2\sqrt{\frac{c}{b}}\,\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-(Ab+3\,(Bb-Ac)x)\sqrt{x}\right)}{3\,b^2x^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*b - A*c)*x^2*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/
(c*x + b)) + 2*(A*b + 3*(B*b - A*c)*x)*sqrt(x))/(b^2*x^2), 2/3*(3*(B*b - A*
c)*x^2*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (A*b + 3*(B*b - A*c)*x)*
sqrt(x))/(b^2*x^2)]
```

giac [A] time = 0.16, size = 55, normalized size = 0.80

$$-\frac{2\left(Bbc-Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{2}}-\frac{2\,(3\,Bbx-3\,Acx+Ab)}{3\,b^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -2*(B*b*c - A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2) - 2/3*(3*B*b
*x - 3*A*c*x + A*b)/(b^2*x^(3/2))
```

maple [A] time = 0.06, size = 78, normalized size = 1.13

$$\frac{2A\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{2}}-\frac{2Bc\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b}+\frac{2Ac}{b^{2}\sqrt{x}}-\frac{2B}{b\sqrt{x}}-\frac{2A}{3b\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x),x)
```

```
[Out] 2*c^2/b^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2*c/b/(b*c)^(1/2)*a
rctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/3*A/b/x^(3/2)+2/b^2/x^(1/2)*A*c-2/b/x^(1
/2)*B
```

maxima [A] time = 1.28, size = 56, normalized size = 0.81

$$-\frac{2\left(Bbc-Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{2}}-\frac{2\,(Ab+3\,(Bb-Ac)x)}{3\,b^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -2*(B*b*c - A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2) - 2/3*(A*b +
 3*(B*b - A*c)*x)/(b^2*x^(3/2))
```

mupad [B] time = 1.07, size = 54, normalized size = 0.78

$$\frac{2\,\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{b^{5/2}}-\frac{\frac{2\,A}{3\,b}-\frac{2\,x\,(A\,c-B\,b)}{b^{2}}}{x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)),x)
```

```
[Out] (2*c^(1/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(5/2) - ((2*A)/(3
*b) - (2*x*(A*c - B*b))/b^2)/x^(3/2)
```

sympy [A] time = 7.01, size = 248, normalized size = 3.59

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) & \text{for}\ b=0\wedge c=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{b} & \text{for}\ c=0 \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c} & \text{for}\ b=0 \\ -\frac{2A}{3bx^{\frac{3}{2}}}+\frac{2Ac}{b^{2}\sqrt{x}}-\frac{iAc\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+\frac{iAc\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}}-\frac{2B}{b\sqrt{x}}+\frac{iB\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{iB\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(3*x**(3/2)) - 2*B/sqrt(x))/b, Eq(c, 0)), ((-2*A/(5*x**(5/2)) - 2*
B/(3*x**(3/2)))/c, Eq(b, 0)), (-2*A/(3*b*x**(3/2)) + 2*A*c/(b**2*sqrt(x)) -
 I*A*c*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)) + I*A*c*log
(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)) - 2*B/(b*sqrt(x)) + I*
B*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqrt(1/c)) - I*B*log(I*sqrt
(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqrt(1/c)), True))
```

3.174 $\int \frac{A+Bx}{x^{5/2}(bx+cx^2)}\,dx$

Optimal. Leaf size=90

$$\frac{2c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}-\frac{2A}{5bx^{5/2}}$$

Rubi [A] time = 0.05, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{2c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}-\frac{2A}{5bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(5*b*x^(5/2)) - (2*(b*B - A*c))/(3*b^2*x^(3/2)) + (2*c*(b*B - A*c))/
(b^3*Sqrt[x]) + (2*c^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b
^(7/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{7/2}(b+cx)}\,dx\\
&= -\frac{2A}{5bx^{5/2}}+\frac{\left(2\left(\frac{5bB}{2}-\frac{5Ac}{2}\right)\right)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{5b}\\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}-\frac{(c(bB-Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{b^2}\\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}+\frac{\left(c^2(bB-Ac)\right)\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{b^3}\\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}+\frac{\left(2c^2(bB-Ac)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{b^3}\\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}+\frac{2c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 43, normalized size = 0.48

$$\frac{-10x(bB-Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{cx}{b}\right)-6Ab}{15b^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (-6*A*b - 10*(b*B - A*c)*x*Hypergeometric2F1[-3/2, 1, -1/2, -((c*x)/b)])/(1
5*b^2*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.11, size = 91, normalized size = 1.01

$$\frac{2\left(bBc^{3/2}-Ac^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{2\left(3Ab^2-5Abcx+15Ac^2x^2+5b^2Bx-15bBcx^2\right)}{15b^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*(3*A*b^2 + 5*b^2*B*x - 5*A*b*c*x - 15*b*B*c*x^2 + 15*A*c^2*x^2))/(15*b^
3*x^(5/2)) + (2*(b*B*c^(3/2) - A*c^(5/2))*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/b^(7/2)
```

fricas [A] time = 0.42, size = 195, normalized size = 2.17

$$\left[-\frac{15\left(Bbc-Ac^2\right)x^3\sqrt{-\frac{c}{b}}\log\left(\frac{cx-2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(3Ab^2-15\left(Bbc-Ac^2\right)x^2+5\left(Bb^2-Abc\right)x\right)\sqrt{x}}{15b^3x^3},\ -\frac{2\left(15\left(Bbc-Ac^2\right)x^3\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)+\left(3Ab^2-15\left(Bbc-Ac^2\right)x^2+5\left(Bb^2-Abc\right)x\right)\sqrt{x}\right)}{15b^3x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*b*c - A*c^2)*x^3*sqrt(-c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-c/b)
 - b)/(c*x + b)) + 2*(3*A*b^2 - 15*(B*b*c - A*c^2)*x^2 + 5*(B*b^2 - A*b*c)*
x)*sqrt(x))/(b^3*x^3), -2/15*(15*(B*b*c - A*c^2)*x^3*sqrt(c/b)*arctan(b*sqr
t(c/b)/(c*sqrt(x))) + (3*A*b^2 - 15*(B*b*c - A*c^2)*x^2 + 5*(B*b^2 - A*b*c)
*x)*sqrt(x))/(b^3*x^3)]
```

giac [A] time = 0.16, size = 80, normalized size = 0.89

$$\frac{2\left(Bbc^{2}-Ac^{3}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}+\frac{2\left(15\,Bbcx^{2}-15\,Ac^{2}x^{2}-5\,Bb^{2}x+5\,Abcx-3\,Ab^{2}\right)}{15\,b^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^2 - A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) + 2/15*(15*
B*b*c*x^2 - 15*A*c^2*x^2 - 5*B*b^2*x + 5*A*b*c*x - 3*A*b^2)/(b^3*x^(5/2))
```

maple [A] time = 0.06, size = 102, normalized size = 1.13

$$-\frac{2A\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{3}}+\frac{2B\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{2}}-\frac{2A\,c^{2}}{b^{3}\sqrt{x}}+\frac{2Bc}{b^{2}\sqrt{x}}+\frac{2Ac}{3b^{2}x^{\frac{3}{2}}}-\frac{2B}{3b\,x^{\frac{3}{2}}}-\frac{2A}{5b\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x),x)
```

```
[Out] -2*c^3/b^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+2*c^2/b^2/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/5*A/b/x^(5/2)+2/3/b^2/x^(3/2)*A*c-2
/3/b/x^(3/2)*B-2*c^2/b^3/x^(1/2)*A+2*c/b^2/x^(1/2)*B
```

maxima [A] time = 1.36, size = 80, normalized size = 0.89

$$\frac{2\left(Bbc^{2}-Ac^{3}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}-\frac{2\left(3\,Ab^{2}-15\left(Bbc-Ac^{2}\right)x^{2}+5\left(Bb^{2}-Abc\right)x\right)}{15\,b^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b*c^2 - A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) - 2/15*(3*A
*b^2 - 15*(B*b*c - A*c^2)*x^2 + 5*(B*b^2 - A*b*c)*x)/(b^3*x^(5/2))
```

mupad [B] time = 1.09, size = 71, normalized size = 0.79

$$-\frac{\frac{2\,A}{5\,b}-\frac{2\,x\,(A\,c-B\,b)}{3\,b^{2}}+\frac{2\,c\,x^{2}\,(A\,c-B\,b)}{b^{3}}}{x^{5/2}}-\frac{2\,c^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)),x)
```

```
[Out] - ((2*A)/(5*b) - (2*x*(A*c - B*b))/(3*b^2) + (2*c*x^2*(A*c - B*b))/b^3)/x^(
5/2) - (2*c^(3/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(7/2)
```

sympy [A] time = 18.37, size = 289, normalized size = 3.21

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) & \text{for } b=0 \wedge c=0 \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{c} & \text{for } b=0 \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{b} & \text{for } c=0 \\ -\frac{2A}{5bx^{\frac{5}{2}}}+\frac{2Ac}{3b^2x^{\frac{3}{2}}}-\frac{2Ac^2}{b^3\sqrt{x}}+\frac{iAc^2\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{7}{2}}\sqrt{\frac{1}{c}}}-\frac{iAc^2\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{7}{2}}\sqrt{\frac{1}{c}}}-\frac{2B}{3bx^{\frac{3}{2}}}+\frac{2Bc}{b^2\sqrt{x}}-\frac{iBc\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+\frac{iBc\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/c, Eq(b, 0)), ((-2*A/(5*x**(5/2))
 - 2*B/(3*x**(3/2)))/b, Eq(c, 0)), (-2*A/(5*b*x**(5/2)) + 2*A*c/(3*b**2*x**
(3/2)) - 2*A*c**2/(b**3*sqrt(x)) + I*A*c**2*log(-I*sqrt(b)*sqrt(1/c) + sqrt
(x))/(b**(7/2)*sqrt(1/c)) - I*A*c**2*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b*
*(7/2)*sqrt(1/c)) - 2*B/(3*b*x**(3/2)) + 2*B*c/(b**2*sqrt(x)) - I*B*c*log(-
I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)) + I*B*c*log(I*sqrt(b)*s
qrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)), True))
```

3.175 $\int \frac{A+Bx}{x^{7/2}(bx+cx^2)}\,dx$

Optimal. Leaf size=113

$$-\frac{2c^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{2A}{7bx^{7/2}}$$

Rubi [A] time = 0.07, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}-\frac{2c^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{2A}{7bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(7*b*x^(7/2)) - (2*(b*B - A*c))/(5*b^2*x^(5/2)) + (2*c*(b*B - A*c))/
(3*b^3*x^(3/2)) - (2*c^2*(b*B - A*c))/(b^4*Sqrt[x]) - (2*c^(5/2)*(b*B - A*c
)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(9/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)}\,dx = \int \frac{A+Bx}{x^{9/2}(b+cx)}\,dx$$

$$= -\frac{2A}{7bx^{7/2}} + \frac{\left(2\left(\frac{7bB}{2}-\frac{7Ac}{2}\right)\right)\int \frac{1}{x^{7/2}(b+cx)}\,dx}{7b}$$

$$= -\frac{2A}{7bx^{7/2}} - \frac{2(bB-Ac)}{5b^2x^{5/2}} - \frac{(c(bB-Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{b^2}$$

$$= -\frac{2A}{7bx^{7/2}} - \frac{2(bB-Ac)}{5b^2x^{5/2}} + \frac{2c(bB-Ac)}{3b^3x^{3/2}} + \frac{\left(c^2(bB-Ac)\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{b^3}$$

$$= -\frac{2A}{7bx^{7/2}} - \frac{2(bB-Ac)}{5b^2x^{5/2}} + \frac{2c(bB-Ac)}{3b^3x^{3/2}} - \frac{2c^2(bB-Ac)}{b^4\sqrt{x}} - \frac{\left(c^3(bB-Ac)\right)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{b^4}$$

$$= -\frac{2A}{7bx^{7/2}} - \frac{2(bB-Ac)}{5b^2x^{5/2}} + \frac{2c(bB-Ac)}{3b^3x^{3/2}} - \frac{2c^2(bB-Ac)}{b^4\sqrt{x}} - \frac{\left(2c^3(bB-Ac)\right)\operatorname{Subst}\left(\int \frac{1}{b+cx}\right.}{b^4}$$

$$= -\frac{2A}{7bx^{7/2}} - \frac{2(bB-Ac)}{5b^2x^{5/2}} + \frac{2c(bB-Ac)}{3b^3x^{3/2}} - \frac{2c^2(bB-Ac)}{b^4\sqrt{x}} - \frac{2c^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}$$

Mathematica [**C**] time = 0.01, size = 44, normalized size = 0.39

$$\frac{2\left({}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{cx}{b}\right)(7Acx-7bBx)-5Ab\right)}{35b^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(-5*A*b + (-7*b*B*x + 7*A*c*x)*Hypergeometric2F1[-5/2, 1, -3/2, -((c*x)/
b)]))/(35*b^2*x^(7/2))
```

IntegrateAlgebraic [**A**] time = 0.13, size = 115, normalized size = 1.02

$$-\frac{2\left(bBc^{5/2}-Ac^{7/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}} - \frac{2\left(15Ab^3-21Ab^2cx+35Abc^2x^2-105Ac^3x^3+21b^3Bx-35b^2Bcx^2+105bBc^2x^3\right)}{105b^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*(15*A*b^3 + 21*b^3*B*x - 21*A*b^2*c*x - 35*b^2*B*c*x^2 + 35*A*b*c^2*x^2
 + 105*b*B*c^2*x^3 - 105*A*c^3*x^3))/(105*b^4*x^(7/2)) - (2*(b*B*c^(5/2) -
A*c^(7/2))*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(9/2)
```

fricas [**A**] time = 0.44, size = 246, normalized size = 2.18

$$\left[-\frac{105\left(Bbc^2-Ac^3\right)x^4\sqrt{-\frac{c}{b}}\log\left(\frac{cx+2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(15Ab^3+105\left(Bbc^2-Ac^3\right)x^3-35\left(Bb^2c-Abc^2\right)x^2+21\left(Bb^3-Ab^2c\right)x\right)\sqrt{x}}{105b^4x^4}, \frac{2\left(105\left(Bbc^2-Ac^3\right)x^4\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-\left(15Ab^3+105\left(Bbc^2-Ac^3\right)x^3-35\left(Bb^2c-Abc^2\right)x^2+21\left(Bb^3-Ab^2c\right)x\right)\sqrt{x}\right)}{105b^4x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*b*c^2 - A*c^3)*x^4*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-
c/b) - b)/(c*x + b)) + 2*(15*A*b^3 + 105*(B*b*c^2 - A*c^3)*x^3 - 35*(B*b^2*
c - A*b*c^2)*x^2 + 21*(B*b^3 - A*b^2*c)*x)*sqrt(x))/(b^4*x^4), 2/105*(105*(
B*b*c^2 - A*c^3)*x^4*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (15*A*b^3
+ 105*(B*b*c^2 - A*c^3)*x^3 - 35*(B*b^2*c - A*b*c^2)*x^2 + 21*(B*b^3 - A*b^
2*c)*x)*sqrt(x))/(b^4*x^4)]
```

giac [A] time = 0.16, size = 104, normalized size = 0.92

$$-\frac{2\left(Bbc^3 - Ac^4\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^4} - \frac{2\left(105\,Bbc^2x^3 - 105\,Ac^3x^3 - 35\,Bb^2cx^2 + 35\,Abc^2x^2 + 21\,Bb^3x - 21\,Ab^2cx + 15\,Ab^3\right)}{105\,b^4x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -2*(B*b*c^3 - A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) - 2/105*(1
05*B*b*c^2*x^3 - 105*A*c^3*x^3 - 35*B*b^2*c*x^2 + 35*A*b*c^2*x^2 + 21*B*b^3
*x - 21*A*b^2*c*x + 15*A*b^3)/(b^4*x^(7/2))
```

maple [A] time = 0.06, size = 126, normalized size = 1.12

$$\frac{2A\,c^4\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^4} - \frac{2B\,c^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^3} + \frac{2A\,c^3}{b^4\sqrt{x}} - \frac{2B\,c^2}{b^3\sqrt{x}} - \frac{2A\,c^2}{3b^3x^{\frac{3}{2}}} + \frac{2Bc}{3b^2x^{\frac{3}{2}}} + \frac{2Ac}{5b^2x^{\frac{5}{2}}} - \frac{2B}{5b\,x^{\frac{5}{2}}} - \frac{2A}{7b\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x),x)
```

```
[Out] 2*c^4/b^4/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2*c^3/b^3/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/7*A/b/x^(7/2)+2/5/b^2/x^(5/2)*A*c-2/
5/b/x^(5/2)*B-2/3*c^2/b^3/x^(3/2)*A+2/3*c/b^2/x^(3/2)*B+2*c^3/b^4/x^(1/2)*A
-2*c^2/b^3/x^(1/2)*B
```

maxima [A] time = 1.32, size = 103, normalized size = 0.91

$$-\frac{2\left(Bbc^3 - Ac^4\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^4} - \frac{2\left(15\,Ab^3 + 105\left(Bbc^2 - Ac^3\right)x^3 - 35\left(Bb^2c - Abc^2\right)x^2 + 21\left(Bb^3 - Ab^2c\right)x\right)}{105\,b^4x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -2*(B*b*c^3 - A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) - 2/105*(1
5*A*b^3 + 105*(B*b*c^2 - A*c^3)*x^3 - 35*(B*b^2*c - A*b*c^2)*x^2 + 21*(B*b^
3 - A*b^2*c)*x)/(b^4*x^(7/2))
```

mupad [B] time = 1.09, size = 90, normalized size = 0.80

$$\frac{2\,c^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c-B\,b\right)}{b^{9/2}} - \frac{\frac{2\,A}{7\,b} - \frac{2\,x\,\left(A\,c-B\,b\right)}{5\,b^2} - \frac{2\,c^2\,x^3\,\left(A\,c-B\,b\right)}{b^4} + \frac{2\,c\,x^2\,\left(A\,c-B\,b\right)}{3\,b^3}}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)),x)
```

```
[Out] (2*c^(5/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(9/2) - ((2*A)/(7
*b) - (2*x*(A*c - B*b))/(5*b^2) - (2*c^2*x^3*(A*c - B*b))/b^4 + (2*c*x^2*(A
*c - B*b))/(3*b^3))/x^(7/2)
```

sympy [A] time = 52.05, size = 326, normalized size = 2.88

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{9x^{\frac{9}{2}}} - \frac{2B}{7x^{\frac{7}{2}}}\right) & \text{for } b = 0 \wedge c = 0 \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}} - \frac{2B}{5x^{\frac{5}{2}}}}{b} & \text{for } c = 0 \\ \frac{-\frac{2A}{9x^{\frac{9}{2}}} - \frac{2B}{7x^{\frac{7}{2}}}}{c} & \text{for } b = 0 \\ -\frac{2A}{7bx^{\frac{7}{2}}} + \frac{2Ac}{5b^2x^{\frac{5}{2}}} - \frac{2Ac^2}{3b^3x^{\frac{3}{2}}} + \frac{2Ac^3}{b^4\sqrt{x}} - \frac{iAc^3\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{9}{2}}\sqrt{\frac{1}{c}}} + \frac{iAc^3\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{9}{2}}\sqrt{\frac{1}{c}}} - \frac{2B}{5bx^{\frac{5}{2}}} + \frac{2Bc}{3b^2x^{\frac{3}{2}}} - \frac{2Bc^2}{b^3\sqrt{x}} + \frac{iBc^2\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{7}{2}}\sqrt{\frac{1}{c}}} - \frac{iBc^2\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{7}{2}}\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/b, Eq(c, 0)), ((-2*A/(9*x**(9/2))
 - 2*B/(7*x**(7/2)))/c, Eq(b, 0)), (-2*A/(7*b*x**(7/2)) + 2*A*c/(5*b**2*x**
(5/2)) - 2*A*c**2/(3*b**3*x**(3/2)) + 2*A*c**3/(b**4*sqrt(x)) - I*A*c**3*lo
g(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(9/2)*sqrt(1/c)) + I*A*c**3*log(I*sqr
t(b)*sqrt(1/c) + sqrt(x))/(b**(9/2)*sqrt(1/c)) - 2*B/(5*b*x**(5/2)) + 2*B*c
/(3*b**2*x**(3/2)) - 2*B*c**2/(b**3*sqrt(x)) + I*B*c**2*log(-I*sqrt(b)*sqrt
(1/c) + sqrt(x))/(b**(7/2)*sqrt(1/c)) - I*B*c**2*log(I*sqrt(b)*sqrt(1/c) +
sqrt(x))/(b**(7/2)*sqrt(1/c)), True))
```

3.176 $\int \frac{A+Bx}{x^{9/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=136

$$\frac{2c^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{2A}{9bx^{9/2}}$$

Rubi [A] time = 0.08, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}+\frac{2c^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{2A}{9bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(9*b*x^(9/2)) - (2*(b*B - A*c))/(7*b^2*x^(7/2)) + (2*c*(b*B - A*c))/
(5*b^3*x^(5/2)) - (2*c^2*(b*B - A*c))/(3*b^4*x^(3/2)) + (2*c^3*(b*B - A*c))
/(b^5*Sqrt[x]) + (2*c^(7/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/
b^(11/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\left(bx+cx^2\right)}\,dx = \int \frac{A+Bx}{x^{11/2}(b+cx)}\,dx$$

$$= -\frac{2A}{9bx^{9/2}} + \frac{\left(2\left(\frac{9bB}{2}-\frac{9Ac}{2}\right)\right)\int \frac{1}{x^{9/2}(b+cx)}\,dx}{9b}$$

$$= -\frac{2A}{9bx^{9/2}} - \frac{2(bB-Ac)}{7b^2x^{7/2}} - \frac{(c(bB-Ac))\int \frac{1}{x^{7/2}(b+cx)}\,dx}{b^2}$$

$$= -\frac{2A}{9bx^{9/2}} - \frac{2(bB-Ac)}{7b^2x^{7/2}} + \frac{2c(bB-Ac)}{5b^3x^{5/2}} + \frac{\left(c^2(bB-Ac)\right)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{b^3}$$

$$= -\frac{2A}{9bx^{9/2}} - \frac{2(bB-Ac)}{7b^2x^{7/2}} + \frac{2c(bB-Ac)}{5b^3x^{5/2}} - \frac{2c^2(bB-Ac)}{3b^4x^{3/2}} - \frac{\left(c^3(bB-Ac)\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{b^4}$$

$$= -\frac{2A}{9bx^{9/2}} - \frac{2(bB-Ac)}{7b^2x^{7/2}} + \frac{2c(bB-Ac)}{5b^3x^{5/2}} - \frac{2c^2(bB-Ac)}{3b^4x^{3/2}} + \frac{2c^3(bB-Ac)}{b^5\sqrt{x}} + \frac{\left(c^4(bB-Ac\right)}{}$$

$$= -\frac{2A}{9bx^{9/2}} - \frac{2(bB-Ac)}{7b^2x^{7/2}} + \frac{2c(bB-Ac)}{5b^3x^{5/2}} - \frac{2c^2(bB-Ac)}{3b^4x^{3/2}} + \frac{2c^3(bB-Ac)}{b^5\sqrt{x}} + \frac{\left(2c^4(bB-A\right.}{}$$

$$= -\frac{2A}{9bx^{9/2}} - \frac{2(bB-Ac)}{7b^2x^{7/2}} + \frac{2c(bB-Ac)}{5b^3x^{5/2}} - \frac{2c^2(bB-Ac)}{3b^4x^{3/2}} + \frac{2c^3(bB-Ac)}{b^5\sqrt{x}} + \frac{2c^{7/2}(bB-A}{b}$$

Mathematica [C] time = 0.01, size = 44, normalized size = 0.32

$$\frac{2\left({}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};-\frac{cx}{b}\right)(9Acx-9bBx)-7Ab\right)}{63b^2x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(-7*A*b + (-9*b*B*x + 9*A*c*x)*Hypergeometric2F1[-7/2, 1, -5/2, -((c*x)/
b)]))/(63*b^2*x^(9/2))
```

IntegrateAlgebraic [A] time = 0.14, size = 139, normalized size = 1.02

$$\frac{2\left(bBc^{7/2}-Ac^{9/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}} - \frac{2\left(35Ab^4-45Ab^3cx+63Ab^2c^2x^2-105Abc^3x^3+315Ac^4x^4+45b^4Bx-63b^3Bcx^2+105b^2Bc^2x^3-315bBc^3x^4\right)}{315b^5x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*(35*A*b^4 + 45*b^4*B*x - 45*A*b^3*c*x - 63*b^3*B*c*x^2 + 63*A*b^2*c^2*x
^2 + 105*b^2*B*c^2*x^3 - 105*A*b*c^3*x^3 - 315*b*B*c^3*x^4 + 315*A*c^4*x^4)
)/(315*b^5*x^(9/2)) + (2*(b*B*c^(7/2) - A*c^(9/2))*ArcTan[(Sqrt[c]*Sqrt[x])
/Sqrt[b]])/b^(11/2)
```

fricas [A] time = 0.43, size = 291, normalized size = 2.14

$$\left[-\frac{315\left(Bbc^3-Ac^4\right)x^5\sqrt{-\frac{c}{b}}\log\left(\frac{cx-2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(35Ab^4-315\left(Bbc^3-Ac^4\right)x^4+105\left(Bb^2c^2-Abc^3\right)x^3-63\left(Bb^3c-Ab^2c^2\right)x^2+45\left(Bb^4-Ab^3c\right)x\right)\sqrt{x}}{315b^5x^5}, -\frac{2\left(315\left(Bbc^3-Ac^4\right)x^5\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)+\left(35Ab^4-315\left(Bbc^3-Ac^4\right)x^4+105\left(Bb^2c^2-Abc^3\right)x^3-63\left(Bb^3c-Ab^2c^2\right)x^2+45\left(Bb^4-Ab^3c\right)x\right)\sqrt{x}\right)}{315b^5x^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/315*(315*(B*b*c^3 - A*c^4)*x^5*sqrt(-c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-
c/b) - b)/(c*x + b)) + 2*(35*A*b^4 - 315*(B*b*c^3 - A*c^4)*x^4 + 105*(B*b^2
*c^2 - A*b*c^3)*x^3 - 63*(B*b^3*c - A*b^2*c^2)*x^2 + 45*(B*b^4 - A*b^3*c)*x
)*sqrt(x))/(b^5*x^5), -2/315*(315*(B*b*c^3 - A*c^4)*x^5*sqrt(c/b)*arctan(b*
sqrt(c/b)/(c*sqrt(x))) + (35*A*b^4 - 315*(B*b*c^3 - A*c^4)*x^4 + 105*(B*b^2
*c^2 - A*b*c^3)*x^3 - 63*(B*b^3*c - A*b^2*c^2)*x^2 + 45*(B*b^4 - A*b^3*c)*x
)*sqrt(x))/(b^5*x^5)]
```

giac [A] time = 0.16, size = 128, normalized size = 0.94

$$\frac{2\left(Bbc^4 - Ac^5\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^5} + \frac{2\left(315\,Bbc^3x^4 - 315\,Ac^4x^4 - 105\,Bb^2c^2x^3 + 105\,Abc^3x^3 + 63\,Bb^3cx^2 - 63\,Ab^2c^2x^2 - 45\,Bb^4x + 45\,Ab^3cx - 35\,Ab^4\right)}{315\,b^5x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^4 - A*c^5)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) + 2/315*(31
5*B*b*c^3*x^4 - 315*A*c^4*x^4 - 105*B*b^2*c^2*x^3 + 105*A*b*c^3*x^3 + 63*B*
b^3*c*x^2 - 63*A*b^2*c^2*x^2 - 45*B*b^4*x + 45*A*b^3*c*x - 35*A*b^4)/(b^5*x
^(9/2))
```

maple [A] time = 0.07, size = 150, normalized size = 1.10

$$-\frac{2A\,c^5\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^5} + \frac{2B\,c^4\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^4} - \frac{2A\,c^4}{b^5\sqrt{x}} + \frac{2B\,c^3}{b^4\sqrt{x}} + \frac{2A\,c^3}{3b^4x^{\frac{3}{2}}} - \frac{2B\,c^2}{3b^3x^{\frac{3}{2}}} - \frac{2A\,c^2}{5b^3x^{\frac{5}{2}}} + \frac{2Bc}{5b^2x^{\frac{5}{2}}} + \frac{2Ac}{7b^2x^{\frac{7}{2}}} - \frac{2B}{7b\,x^{\frac{7}{2}}} - \frac{2A}{9b\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(c*x^2+b*x),x)
```

```
[Out] -2*c^5/b^5/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+2*c^4/b^4/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/9*A/b/x^(9/2)+2/7/b^2/x^(7/2)*A*c-2
/7/b/x^(7/2)*B-2/5*c^2/b^3/x^(5/2)*A+2/5*c/b^2/x^(5/2)*B-2*c^4/b^5/x^(1/2)*
A+2*c^3/b^4/x^(1/2)*B+2/3*c^3/b^4/x^(3/2)*A-2/3*c^2/b^3/x^(3/2)*B
```

maxima [A] time = 1.16, size = 126, normalized size = 0.93

$$\frac{2\left(Bbc^4 - Ac^5\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^5} - \frac{2\left(35\,Ab^4 - 315\left(Bbc^3 - Ac^4\right)x^4 + 105\left(Bb^2c^2 - Abc^3\right)x^3 - 63\left(Bb^3c - Ab^2c^2\right)x^2 + 45\left(Bb^4 - Ab^3c\right)x\right)}{315\,b^5x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b*c^4 - A*c^5)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) - 2/315*(35
*A*b^4 - 315*(B*b*c^3 - A*c^4)*x^4 + 105*(B*b^2*c^2 - A*b*c^3)*x^3 - 63*(B*
b^3*c - A*b^2*c^2)*x^2 + 45*(B*b^4 - A*b^3*c)*x)/(b^5*x^(9/2))
```

mupad [B] time = 1.11, size = 109, normalized size = 0.80

$$-\frac{\frac{2\,A}{9\,b} - \frac{2\,x\,(A\,c-B\,b)}{7\,b^2} - \frac{2\,c^2\,x^3\,(A\,c-B\,b)}{3\,b^4} + \frac{2\,c^3\,x^4\,(A\,c-B\,b)}{b^5} + \frac{2\,c\,x^2\,(A\,c-B\,b)}{5\,b^3}}{x^{9/2}} - \frac{2\,c^{7/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(b*x + c*x^2)),x)
```

```
[Out] - ((2*A)/(9*b) - (2*x*(A*c - B*b))/(7*b^2) - (2*c^2*x^3*(A*c - B*b))/(3*b^4
) + (2*c^3*x^4*(A*c - B*b))/b^5 + (2*c*x^2*(A*c - B*b))/(5*b^3))/x^(9/2) -
(2*c^(7/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(11/2)
```

sympy [A] time = 126.31, size = 360, normalized size = 2.65

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{11x^{\frac{11}{2}}} - \frac{2B}{9x^{\frac{9}{2}}}\right) & \text{for } b = 0 \wedge c = 0 \\ \frac{-\frac{2A}{11x^{\frac{11}{2}}} - \frac{2B}{9x^{\frac{9}{2}}}}{c} & \text{for } b = 0 \\ \frac{-\frac{2A}{9x^{\frac{9}{2}}} - \frac{2B}{7x^{\frac{7}{2}}}}{b} & \text{for } c = 0 \\ -\frac{2A}{9bx^{\frac{9}{2}}} + \frac{2Ac}{7b^2x^{\frac{7}{2}}} - \frac{2Ac^2}{5b^3x^{\frac{5}{2}}} + \frac{2Ac^3}{3b^4x^{\frac{3}{2}}} - \frac{2Ac^4}{b^5\sqrt{x}} + \frac{iAc^4\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{11}{2}}\sqrt{\frac{1}{c}}} - \frac{iAc^4\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{11}{2}}\sqrt{\frac{1}{c}}} - \frac{2B}{7bx^{\frac{7}{2}}} + \frac{2Bc}{5b^2x^{\frac{5}{2}}} - \frac{2Bc^2}{3b^3x^{\frac{3}{2}}} + \frac{2Bc^3}{b^4\sqrt{x}} - \frac{iBc^3\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{9}{2}}\sqrt{\frac{1}{c}}} + \frac{iBc^3\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{9}{2}}\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(11*x**(11/2)) - 2*B/(9*x**(9/2))), Eq(b, 0) & Eq(c, 0
)), ((-2*A/(11*x**(11/2)) - 2*B/(9*x**(9/2)))/c, Eq(b, 0)), ((-2*A/(9*x**(9
/2)) - 2*B/(7*x**(7/2)))/b, Eq(c, 0)), (-2*A/(9*b*x**(9/2)) + 2*A*c/(7*b**2
*x**(7/2)) - 2*A*c**2/(5*b**3*x**(5/2)) + 2*A*c**3/(3*b**4*x**(3/2)) - 2*A*
c**4/(b**5*sqrt(x)) + I*A*c**4*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(11/
2)*sqrt(1/c)) - I*A*c**4*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(11/2)*sqrt
(1/c)) - 2*B/(7*b*x**(7/2)) + 2*B*c/(5*b**2*x**(5/2)) - 2*B*c**2/(3*b**3*x*
*(3/2)) + 2*B*c**3/(b**4*sqrt(x)) - I*B*c**3*log(-I*sqrt(b)*sqrt(1/c) + sqr
t(x))/(b**(9/2)*sqrt(1/c)) + I*B*c**3*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b
**(9/2)*sqrt(1/c)), True))
```

3.177 $\int \frac{x^{9/2}(A+Bx)}{(bx+cx^2)^2}\,dx$

Optimal. Leaf size=131

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}+\frac{b\sqrt{x}\,(7bB-5Ac)}{c^4}-\frac{x^{3/2}(7bB-5Ac)}{3c^3}+\frac{x^{5/2}(7bB-5Ac)}{5bc^2}-\frac{x^{7/2}(bB-Ac)}{bc(b+cx)}$$

Rubi [A] time = 0.07, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 50, 63, 205}

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}+\frac{x^{5/2}(7bB-5Ac)}{5bc^2}-\frac{x^{3/2}(7bB-5Ac)}{3c^3}+\frac{b\sqrt{x}\,(7bB-5Ac)}{c^4}-\frac{x^{7/2}(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (b*(7*b*B - 5*A*c)*Sqrt[x])/c^4 - ((7*b*B - 5*A*c)*x^(3/2))/(3*c^3) + ((7*b
*B - 5*A*c)*x^(5/2))/(5*b*c^2) - ((b*B - A*c)*x^(7/2))/(b*c*(b + c*x)) - (b
^(3/2)*(7*b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx = \int \frac{x^{5/2}(A+Bx)}{(b+cx)^2}\,dx$$

$$= -\frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{\left(-\frac{7bB}{2}+\frac{5Ac}{2}\right)\int \frac{x^{5/2}}{b+cx}\,dx}{bc}$$

$$= \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{(7bB-5Ac)\int \frac{x^{3/2}}{b+cx}\,dx}{2c^2}$$

$$= -\frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} + \frac{(b(7bB-5Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{2c^3}$$

$$= \frac{b(7bB-5Ac)\sqrt{x}}{c^4} - \frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{\left(b^2(7bB-5\right.}{}$$

$$= \frac{b(7bB-5Ac)\sqrt{x}}{c^4} - \frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{\left(b^2(7bB-5\right.}{}$$

$$= \frac{b(7bB-5Ac)\sqrt{x}}{c^4} - \frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{b^{3/2}(7bB-5}{}$$

Mathematica [A] time = 0.07, size = 110, normalized size = 0.84

$$\frac{\sqrt{x}\left(b^2(70Bcx-75Ac)-2bc^2x(25A+7Bx)+2c^3x^2(5A+3Bx)+105b^3B\right)}{15c^4(b+cx)} - \frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(105*b^3*B + 2*c^3*x^2*(5*A + 3*B*x) - 2*b*c^2*x*(25*A + 7*B*x) +
b^2*(-75*A*c + 70*B*c*x)))/(15*c^4*(b + c*x)) - (b^(3/2)*(7*b*B - 5*A*c)*Ar
cTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

IntegrateAlgebraic [A] time = 0.14, size = 119, normalized size = 0.91

$$\frac{\left(5Ab^{3/2}c-7b^{5/2}B\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}} + \frac{\sqrt{x}\left(-75Ab^2c-50Abc^2x+10Ac^3x^2+105b^3B+70b^2Bcx-14bBc^2x^2+6Bc^3x^3\right)}{15c^4(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(105*b^3*B - 75*A*b^2*c + 70*b^2*B*c*x - 50*A*b*c^2*x - 14*b*B*c^2
*x^2 + 10*A*c^3*x^2 + 6*B*c^3*x^3))/(15*c^4*(b + c*x)) + ((-7*b^(5/2)*B + 5
*A*b^(3/2)*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

fricas [A] time = 0.42, size = 290, normalized size = 2.21

$$\left[-\frac{15\left(7Bb^3-5Ab^2c+\left(7Bb^2c-5Abc^2\right)x\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx+2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(6Bc^3x^3+105Bb^3-75Ab^2c-2\left(7Bbc^2-5Ac^3\right)x^2+10\left(7Bb^2c-5Abc^2\right)x\right)\sqrt{x}}{30\left(c^5x+bc^4\right)}, -\frac{15\left(7Bb^3-5Ab^2c+\left(7Bb^2c-5Abc^2\right)x\right)\sqrt{\frac{b}{c}}\arctan\left(\frac{c\sqrt{x}\sqrt{\frac{b}{c}}}{b}\right)-\left(6Bc^3x^3+105Bb^3-75Ab^2c-2\left(7Bbc^2-5Ac^3\right)x^2+10\left(7Bb^2c-5Abc^2\right)x\right)\sqrt{x}}{15\left(c^5x+bc^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/30*(15*(7*B*b^3 - 5*A*b^2*c + (7*B*b^2*c - 5*A*b*c^2)*x)*sqrt(-b/c)*log
((c*x + 2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x + b)) - 2*(6*B*c^3*x^3 + 105*B*b^3
 - 75*A*b^2*c - 2*(7*B*b*c^2 - 5*A*c^3)*x^2 + 10*(7*B*b^2*c - 5*A*b*c^2)*x)
*sqrt(x))/(c^5*x + b*c^4), -1/15*(15*(7*B*b^3 - 5*A*b^2*c + (7*B*b^2*c - 5*
A*b*c^2)*x)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) - (6*B*c^3*x^3 + 105*B*
b^3 - 75*A*b^2*c - 2*(7*B*b*c^2 - 5*A*c^3)*x^2 + 10*(7*B*b^2*c - 5*A*b*c^2)
*x)*sqrt(x))/(c^5*x + b*c^4)]
```

giac [A] time = 0.16, size = 122, normalized size = 0.93

$$-\frac{\left(7\,Bb^{3}-5\,Ab^{2}c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{4}}+\frac{Bb^{3}\sqrt{x}-Ab^{2}c\sqrt{x}}{(cx+b)c^{4}}+\frac{2\left(3\,Bc^{8}x^{\frac{5}{2}}-10\,Bbc^{7}x^{\frac{3}{2}}+5\,Ac^{8}x^{\frac{3}{2}}+45\,Bb^{2}c^{6}\sqrt{x}-30\,Abc^{7}\sqrt{x}\right)}{15\,c^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(7*B*b^3 - 5*A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + (B*b^3
*sqrt(x) - A*b^2*c*sqrt(x))/((c*x + b)*c^4) + 2/15*(3*B*c^8*x^(5/2) - 10*B*
b*c^7*x^(3/2) + 5*A*c^8*x^(3/2) + 45*B*b^2*c^6*sqrt(x) - 30*A*b*c^7*sqrt(x)
)/c^10
```

maple [A] time = 0.07, size = 139, normalized size = 1.06

$$\frac{2B\,x^{\frac{5}{2}}}{5c^{2}}+\frac{5A\,b^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^{3}}-\frac{7B\,b^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^{4}}-\frac{A\,b^{2}\sqrt{x}}{(cx+b)\,c^{3}}+\frac{2A\,x^{\frac{3}{2}}}{3c^{2}}+\frac{B\,b^{3}\sqrt{x}}{(cx+b)\,c^{4}}-\frac{4Bb\,x^{\frac{3}{2}}}{3c^{3}}-\frac{4Ab\sqrt{x}}{c^{3}}+\frac{6B\,b^{2}\sqrt{x}}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2/5/c^2*B*x^(5/2)+2/3/c^2*A*x^(3/2)-4/3/c^3*B*x^(3/2)*b-4/c^3*A*b*x^(1/2)+6
/c^4*b^2*B*x^(1/2)-b^2/c^3*x^(1/2)/(c*x+b)*A+b^3/c^4*x^(1/2)/(c*x+b)*B+5*b^
2/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-7*b^3/c^4/(b*c)^(1/2)*a
rctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.22, size = 115, normalized size = 0.88

$$\frac{\left(Bb^{3}-Ab^{2}c\right)\sqrt{x}}{c^{5}x+bc^{4}}-\frac{\left(7\,Bb^{3}-5\,Ab^{2}c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{4}}+\frac{2\left(3\,Bc^{2}x^{\frac{5}{2}}-5\left(2\,Bbc-Ac^{2}\right)x^{\frac{3}{2}}+15\left(3\,Bb^{2}-2\,Abc\right)\sqrt{x}\right)}{15\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (B*b^3 - A*b^2*c)*sqrt(x)/(c^5*x + b*c^4) - (7*B*b^3 - 5*A*b^2*c)*arctan(c*
sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + 2/15*(3*B*c^2*x^(5/2) - 5*(2*B*b*c - A
*c^2)*x^(3/2) + 15*(3*B*b^2 - 2*A*b*c)*sqrt(x))/c^4
```

mupad [B] time = 1.04, size = 146, normalized size = 1.11

$$x^{3/2}\left(\frac{2\,A}{3\,c^{2}}-\frac{4\,B\,b}{3\,c^{3}}\right)-\sqrt{x}\left(\frac{2\,b\left(\frac{2\,A}{c^{2}}-\frac{4\,B\,b}{c^{3}}\right)}{c}+\frac{2\,B\,b^{2}}{c^{4}}\right)+\frac{2\,B\,x^{5/2}}{5\,c^{2}}+\frac{\sqrt{x}\,\left(B\,b^{3}-A\,b^{2}\,c\right)}{x\,c^{5}+b\,c^{4}}-\frac{b^{3/2}\,\mathrm{atan}\left(\frac{b^{3/2}\,\sqrt{c}\,\sqrt{x}\,(5\,A\,c-7\,B\,b)}{7\,B\,b^{3}-5\,A\,b^{2}\,c}\right)\,(5\,A\,c-7\,B\,b)}{c^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x^(3/2)*((2*A)/(3*c^2) - (4*B*b)/(3*c^3)) - x^(1/2)*((2*b*((2*A)/c^2 - (4*B
*b)/c^3))/c + (2*B*b^2)/c^4) + (2*B*x^(5/2))/(5*c^2) + (x^(1/2)*(B*b^3 - A*
```

```
b^2*c))/(b*c^4 + c^5*x) - (b^(3/2)*atan((b^(3/2)*c^(1/2)*x^(1/2)*(5*A*c - 7
*B*b))/(7*B*b^3 - 5*A*b^2*c))*(5*A*c - 7*B*b))/c^(9/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.178 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=109

$$\frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}-\frac{\sqrt{x}\,(5bB-3Ac)}{c^3}+\frac{x^{3/2}(5bB-3Ac)}{3bc^2}-\frac{x^{5/2}(bB-Ac)}{bc(b+cx)}$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 50, 63, 205}

$$\frac{x^{3/2}(5bB-3Ac)}{3bc^2}-\frac{\sqrt{x}\,(5bB-3Ac)}{c^3}+\frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}-\frac{x^{5/2}(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((5*b*B - 3*A*c)*Sqrt[x])/c^3) + ((5*b*B - 3*A*c)*x^(3/2))/(3*b*c^2) - ((
b*B - A*c)*x^(5/2))/(b*c*(b + c*x)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt
[c]*Sqrt[x])/Sqrt[b]])/c^(7/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] || !(IntegerQ[n] || !(EqQ[e, 0] || !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(b+cx)^2}\,dx \\
&= -\frac{(bB-Ac)x^{5/2}}{bc(b+cx)} - \frac{\left(-\frac{5bB}{2}+\frac{3Ac}{2}\right)\int \frac{x^{3/2}}{b+cx}\,dx}{bc} \\
&= \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} - \frac{(5bB-3Ac)\int \frac{\sqrt{x}}{b+cx}\,dx}{2c^2} \\
&= -\frac{(5bB-3Ac)\sqrt{x}}{c^3} + \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} + \frac{(b(5bB-3Ac))\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{2c^3} \\
&= -\frac{(5bB-3Ac)\sqrt{x}}{c^3} + \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} + \frac{(b(5bB-3Ac))\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\right.}{c^3} \\
&= -\frac{(5bB-3Ac)\sqrt{x}}{c^3} + \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} + \frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 88, normalized size = 0.81

$$
\frac{\sqrt{x}\left(bc(9A-10Bx)+2c^2x(3A+Bx)-15b^2B\right)}{3c^3(b+cx)} + \frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(-15*b^2*B + b*c*(9*A - 10*B*x) + 2*c^2*x*(3*A + B*x)))/(3*c^3*(b
+ c*x)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(7/
2)
```

IntegrateAlgebraic [A] time = 0.13, size = 95, normalized size = 0.87

$$
\frac{\left(5b^{3/2}B-3A\sqrt{b}\,c\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}} + \frac{\sqrt{x}\left(9Abc+6Ac^2x-15b^2B-10bBcx+2Bc^2x^2\right)}{3c^3(b+cx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(-15*b^2*B + 9*A*b*c - 10*b*B*c*x + 6*A*c^2*x + 2*B*c^2*x^2))/(3*c
^3*(b + c*x)) + ((5*b^(3/2)*B - 3*A*Sqrt[b]*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqr
t[b]])/c^(7/2)
```

fricas [A] time = 0.41, size = 231, normalized size = 2.12

$$
\left[-\frac{3\left(5Bb^2-3Abc+\left(5Bbc-3Ac^2\right)x\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx-2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(2Bc^2x^2-15Bb^2+9Abc-2\left(5Bbc-3Ac^2\right)x\right)\sqrt{x}}{6\left(c^4x+bc^3\right)},\ \frac{3\left(5Bb^2-3Abc+\left(5Bbc-3Ac^2\right)x\right)\sqrt{\frac{b}{c}}\arctan\left(\frac{c\sqrt{x}\sqrt{\frac{b}{c}}}{b}\right)+\left(2Bc^2x^2-15Bb^2+9Abc-2\left(5Bbc-3Ac^2\right)x\right)\sqrt{x}}{3\left(c^4x+bc^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(5*B*b^2 - 3*A*b*c + (5*B*b*c - 3*A*c^2)*x)*sqrt(-b/c)*log((c*x -
2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x + b)) - 2*(2*B*c^2*x^2 - 15*B*b^2 + 9*A*b*
c - 2*(5*B*b*c - 3*A*c^2)*x)*sqrt(x))/(c^4*x + b*c^3), 1/3*(3*(5*B*b^2 - 3*
A*b*c + (5*B*b*c - 3*A*c^2)*x)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (2
*B*c^2*x^2 - 15*B*b^2 + 9*A*b*c - 2*(5*B*b*c - 3*A*c^2)*x)*sqrt(x))/(c^4*x
+ b*c^3)]
```

giac [A] time = 0.16, size = 95, normalized size = 0.87

$$\frac{\left(5\,Bb^{2}-3\,Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{3}}-\frac{Bb^{2}\sqrt{x}-Abc\sqrt{x}}{(cx+b)c^{3}}+\frac{2\left(Bc^{4}x^{\frac{3}{2}}-6\,Bbc^{3}\sqrt{x}+3\,Ac^{4}\sqrt{x}\right)}{3\,c^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (5*B*b^2 - 3*A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^3) - (B*b^2*sq
rt(x) - A*b*c*sqrt(x))/((c*x + b)*c^3) + 2/3*(B*c^4*x^(3/2) - 6*B*b*c^3*sqr
t(x) + 3*A*c^4*sqrt(x))/c^6
```

maple [A] time = 0.07, size = 113, normalized size = 1.04

$$-\frac{3Ab\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^{2}}+\frac{5B\,b^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^{3}}+\frac{Ab\sqrt{x}}{(cx+b)\,c^{2}}-\frac{B\,b^{2}\sqrt{x}}{(cx+b)\,c^{3}}+\frac{2B\,x^{\frac{3}{2}}}{3c^{2}}+\frac{2A\sqrt{x}}{c^{2}}-\frac{4Bb\sqrt{x}}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2/3/c^2*B*x^(3/2)+2/c^2*A*x^(1/2)-4/c^3*b*B*x^(1/2)+b/c^2*x^(1/2)/(c*x+b)*A
-b^2/c^3*x^(1/2)/(c*x+b)*B-3*b/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/
2))*A+5*b^2/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.20, size = 88, normalized size = 0.81

$$-\frac{\left(Bb^{2}-Abc\right)\sqrt{x}}{c^{4}x+bc^{3}}+\frac{\left(5\,Bb^{2}-3\,Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{3}}+\frac{2\left(Bcx^{\frac{3}{2}}-3\,(2\,Bb-Ac)\sqrt{x}\right)}{3\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(B*b^2 - A*b*c)*sqrt(x)/(c^4*x + b*c^3) + (5*B*b^2 - 3*A*b*c)*arctan(c*sqr
t(x)/sqrt(b*c))/(sqrt(b*c)*c^3) + 2/3*(B*c*x^(3/2) - 3*(2*B*b - A*c)*sqrt(x
))/c^3
```

mupad [B] time = 1.09, size = 107, normalized size = 0.98

$$\sqrt{x}\,\left(\frac{2\,A}{c^2}-\frac{4\,B\,b}{c^3}\right)-\frac{\sqrt{x}\,\left(B\,b^2-A\,b\,c\right)}{x\,c^4+b\,c^3}+\frac{2\,B\,x^{3/2}}{3\,c^2}+\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{c}\,\sqrt{x}\,(3\,A\,c-5\,B\,b)}{5\,B\,b^2-3\,A\,b\,c}\right)\,(3\,A\,c-5\,B\,b)}{c^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x^(1/2)*((2*A)/c^2 - (4*B*b)/c^3) - (x^(1/2)*(B*b^2 - A*b*c))/(b*c^3 + c^4*
x) + (2*B*x^(3/2))/(3*c^2) + (b^(1/2)*atan((b^(1/2)*c^(1/2)*x^(1/2)*(3*A*c
- 5*B*b))/(5*B*b^2 - 3*A*b*c))*(3*A*c - 5*B*b))/c^(7/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.179 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=88

$$-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}+\frac{\sqrt{x}\,(3bB-Ac)}{bc^2}-\frac{x^{3/2}(bB-Ac)}{bc(b+cx)}$$

Rubi [A] time = 0.04, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 50, 63, 205}

$$\frac{\sqrt{x}\,(3bB-Ac)}{bc^2}-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}-\frac{x^{3/2}(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((3*b*B - A*c)*Sqrt[x])/(b*c^2) - ((b*B - A*c)*x^(3/2))/(b*c*(b + c*x)) - (
(3*b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*c^(5/2))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx=\int \frac{\sqrt{x}\,(A+Bx)}{(b+cx)^2}\,dx$$
$$=-\frac{(bB-Ac)x^{3/2}}{bc(b+cx)}-\frac{\left(-\frac{3bB}{2}+\frac{Ac}{2}\right)\int \frac{\sqrt{x}}{b+cx}\,dx}{bc}$$
$$=\frac{(3bB-Ac)\sqrt{x}}{bc^2}-\frac{(bB-Ac)x^{3/2}}{bc(b+cx)}-\frac{(3bB-Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2c^2}$$
$$=\frac{(3bB-Ac)\sqrt{x}}{bc^2}-\frac{(bB-Ac)x^{3/2}}{bc(b+cx)}-\frac{(3bB-Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{c^2}$$
$$=\frac{(3bB-Ac)\sqrt{x}}{bc^2}-\frac{(bB-Ac)x^{3/2}}{bc(b+cx)}-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}$$

Mathematica [A] time = 0.04, size = 69, normalized size = 0.78

$$\frac{\sqrt{x}\,(-Ac+3bB+2Bcx)}{c^2(b+cx)}-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(3*b*B - A*c + 2*B*c*x))/(c^2*(b + c*x)) - ((3*b*B - A*c)*ArcTan[(
Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.10, size = 67, normalized size = 0.76

$$\frac{(Ac-3bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}+\frac{\sqrt{x}\,(-Ac+3bB+2Bcx)}{c^2(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(3*b*B - A*c + 2*B*c*x))/(c^2*(b + c*x)) + ((-3*b*B + A*c)*ArcTan[
(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*c^(5/2))
```

fricas [A] time = 0.42, size = 198, normalized size = 2.25

$$\left[\frac{\left(3\,Bb^2-Abc+\left(3\,Bbc-Ac^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(2\,Bbc^2x+3\,Bb^2c-Abc^2\right)\sqrt{x}}{2\left(bc^4x+b^2c^3\right)},\ \frac{\left(3\,Bb^2-Abc+\left(3\,Bbc-Ac^2\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)+\left(2\,Bbc^2x+3\,Bb^2c-Abc^2\right)\sqrt{x}}{bc^4x+b^2c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((3*B*b^2 - A*b*c + (3*B*b*c - A*c^2)*x)*sqrt(-b*c)*log((c*x - b - 2*s
qrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(2*B*b*c^2*x + 3*B*b^2*c - A*b*c^2)*sqrt(
x))/(b*c^4*x + b^2*c^3), ((3*B*b^2 - A*b*c + (3*B*b*c - A*c^2)*x)*sqrt(b*c)
*arctan(sqrt(b*c)/(c*sqrt(x))) + (2*B*b*c^2*x + 3*B*b^2*c - A*b*c^2)*sqrt(x
))/(b*c^4*x + b^2*c^3)]
```

giac [A] time = 0.16, size = 65, normalized size = 0.74

$$\frac{2\,B\sqrt{x}}{c^2} - \frac{(3\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^2} + \frac{Bb\sqrt{x} - Ac\sqrt{x}}{(cx+b)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 - (3*B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2)
 + (B*b*sqrt(x) - A*c*sqrt(x))/((c*x + b)*c^2)
```

maple [A] time = 0.07, size = 87, normalized size = 0.99

$$\frac{A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c} - \frac{3Bb\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^2} - \frac{A\sqrt{x}}{(cx+b)\,c} + \frac{Bb\sqrt{x}}{(cx+b)\,c^2} + \frac{2B\sqrt{x}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2*B*x^(1/2)/c^2-1/c*x^(1/2)/(c*x+b)*A+1/c^2*x^(1/2)/(c*x+b)*b*B+1/c/(b*c)^(
1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-3/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/
2)*c*x^(1/2))*b*B
```

maxima [A] time = 1.30, size = 65, normalized size = 0.74

$$\frac{(Bb - Ac)\sqrt{x}}{c^3x + bc^2} + \frac{2\,B\sqrt{x}}{c^2} - \frac{(3\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (B*b - A*c)*sqrt(x)/(c^3*x + b*c^2) + 2*B*sqrt(x)/c^2 - (3*B*b - A*c)*arcta
n(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2)
```

mupad [B] time = 0.09, size = 62, normalized size = 0.70

$$\frac{2\,B\,\sqrt{x}}{c^2} - \frac{\sqrt{x}\;\left(A\,c - B\,b\right)}{x\,c^3 + b\,c^2} + \frac{\mathrm{atan}\left(\frac{\sqrt{c}\;\sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c - 3\,B\,b\right)}{\sqrt{b}\;c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (2*B*x^(1/2))/c^2 - (x^(1/2)*(A*c - B*b))/(b*c^2 + c^3*x) + (atan((c^(1/2)*
x^(1/2))/b^(1/2))*(A*c - 3*B*b))/(b^(1/2)*c^(5/2))
```

sympy [A] time = 107.25, size = 782, normalized size = 8.89

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}\right) & \text{for}\ b = 0 \wedge c = 0 \\ \frac{-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}}{c^2} & \text{for}\ b = 0 \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3} + \frac{2Bx^{\frac{5}{2}}}{5}}{b^2} & \text{for}\ c = 0 \\ -\frac{2iA\sqrt{b}c^2\sqrt{x}\sqrt{\frac{1}{c}}}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} + \frac{Abc\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} - \frac{Abc\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} + \frac{Ac^2x\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} - \frac{Ac^2x\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} + \frac{6iBb^{\frac{3}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} + \frac{4iB\sqrt{b}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} - \frac{3Bb^2\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} + \frac{3Bb^2\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} - \frac{3Bbcx\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} + \frac{3Bbcx\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{2ib^{\frac{3}{2}}c^3\sqrt{\frac{1}{c}} + 2i\sqrt{b}c^4x\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c**2, Eq(b, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5/2)/5)/b
**2, Eq(c, 0)), (-2*I*A*sqrt(b)*c**2*sqrt(x)*sqrt(1/c)/(2*I*b**(3/2)*c**3*s
qrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) + A*b*c*log(-I*sqrt(b)*sqrt(1/c) +
 sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - A*
b*c*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*s
qrt(b)*c**4*x*sqrt(1/c)) + A*c**2*x*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*
I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - A*c**2*x*log(I*
sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**
4*x*sqrt(1/c)) + 6*I*B*b**(3/2)*c*sqrt(x)*sqrt(1/c)/(2*I*b**(3/2)*c**3*sqrt
(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) + 4*I*B*sqrt(b)*c**2*x**(3/2)*sqrt(1/
c)/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - 3*B*b**2*
log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt
(b)*c**4*x*sqrt(1/c)) + 3*B*b**2*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b*
*(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - 3*B*b*c*x*log(-I*sq
rt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*
x*sqrt(1/c)) + 3*B*b*c*x*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c
**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)), True))
```

3.180 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=64

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}}-\frac{\sqrt{x}\,(bB-Ac)}{bc(b+cx)}$$

Rubi [A] time = 0.03, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {781, 78, 63, 205}

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}}-\frac{\sqrt{x}\,(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((b*B - A*c)*Sqrt[x])/(b*c*(b + c*x))) + ((b*B + A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(b^(3/2)*c^(3/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx = \int \frac{A+Bx}{\sqrt{x}\,(b+cx)^2}\,dx$$
$$= -\frac{(bB-Ac)\sqrt{x}}{bc(b+cx)} + \frac{(bB+Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2bc}$$
$$= -\frac{(bB-Ac)\sqrt{x}}{bc(b+cx)} + \frac{(bB+Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{bc}$$
$$= -\frac{(bB-Ac)\sqrt{x}}{bc(b+cx)} + \frac{(bB+Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.98

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}} + \frac{\sqrt{x}\,(Ac-bB)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((-(b*B) + A*c)*Sqrt[x])/(b*c*(b + c*x)) + ((b*B + A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(b^(3/2)*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.10, size = 63, normalized size = 0.98

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}} + \frac{\sqrt{x}\,(Ac-bB)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((-(b*B) + A*c)*Sqrt[x])/(b*c*(b + c*x)) + ((b*B + A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(b^(3/2)*c^(3/2))
```

fricas [A] time = 0.41, size = 177, normalized size = 2.77

$$\left[-\frac{\left(Bb^2+Abc+\left(Bbc+Ac^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(Bb^2c-Abc^2\right)\sqrt{x}}{2\left(b^2c^3x+b^3c^2\right)}, -\frac{\left(Bb^2+Abc+\left(Bbc+Ac^2\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)+\left(Bb^2c-Abc^2\right)\sqrt{x}}{b^2c^3x+b^3c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*((B*b^2 + A*b*c + (B*b*c + A*c^2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt
(-b*c)*sqrt(x))/(c*x + b)) + 2*(B*b^2*c - A*b*c^2)*sqrt(x))/(b^2*c^3*x + b^
3*c^2), -((B*b^2 + A*b*c + (B*b*c + A*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c
*sqrt(x))) + (B*b^2*c - A*b*c^2)*sqrt(x))/(b^2*c^3*x + b^3*c^2)]
```

giac [A] time = 0.16, size = 60, normalized size = 0.94

$$\frac{(Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,bc} - \frac{Bb\sqrt{x}-Ac\sqrt{x}}{(cx+b)bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b + A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b*c) - (B*b*sqrt(x) - A*
c*sqrt(x))/((c*x + b)*b*c)
```

maple [A] time = 0.07, size = 69, normalized size = 1.08

$$\frac{A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b}+\frac{B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c}+\frac{(Ac-bB)\sqrt{x}}{(cx+b)\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] (A*c-B*b)/b/c*x^(1/2)/(c*x+b)+1/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2
))*A+1/c/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.35, size = 58, normalized size = 0.91

$$-\frac{(Bb-Ac)\sqrt{x}}{bc^2x+b^2c}+\frac{(Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(B*b - A*c)*sqrt(x)/(b*c^2*x + b^2*c) + (B*b + A*c)*arctan(c*sqrt(x)/sqrt(
b*c))/(sqrt(b*c)*b*c)
```

mupad [B] time = 1.08, size = 51, normalized size = 0.80

$$\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)(A\,c+B\,b)}{b^{3/2}\,c^{3/2}}+\frac{\sqrt{x}\,\left(A\,c-B\,b\right)}{b\,c\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c + B*b))/(b^(3/2)*c^(3/2)) + (x^(1/2)*
(A*c - B*b))/(b*c*(b + c*x))
```

sympy [A] time = 55.27, size = 716, normalized size = 11.19

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) & \text{for } b=0 \wedge c=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{c^2} & \text{for } b=0 \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{b^2} & \text{for } c=0 \\ \frac{2iA\sqrt{b}c^2\sqrt{x}\sqrt{\frac{1}{c}}}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}+\frac{Abc\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{Abc\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}+\frac{Ac^2x\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{Ac^2x\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{2iBb^{\frac{3}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}+\frac{Bb^2\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{Bb^2\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}+\frac{Bbcx\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{Bbcx\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c**2, Eq(b, 0)), ((2*A*sqrt(x) + 2*B*x**(3/
2)/3)/b**2, Eq(c, 0)), (2*I*A*sqrt(b)*c**2*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2)*
c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + A*b*c*log(-I*sqrt(b)*sqrt
(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/
c)) - A*b*c*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c)
 + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + A*c**2*x*log(-I*sqrt(b)*sqrt(1/c) + sqr
t(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) - A*c**
```

```
2*x*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b
**(3/2)*c**3*x*sqrt(1/c)) - 2*I*B*b**(3/2)*c*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2
)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + B*b**2*log(-I*sqrt(b)*s
qrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt
(1/c)) - B*b**2*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(
1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + B*b*c*x*log(-I*sqrt(b)*sqrt(1/c) +
sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) - B*
b*c*x*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I
*b**(3/2)*c**3*x*sqrt(1/c)), True))
```

3.181 $\int \frac{\sqrt{x}(A+Bx)}{\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=85

$$\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}+\frac{bB-3Ac}{b^2c\sqrt{x}}-\frac{bB-Ac}{bc\sqrt{x}(b+cx)}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{bB-3Ac}{b^2c\sqrt{x}}+\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}-\frac{bB-Ac}{bc\sqrt{x}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (b*B - 3*A*c)/(b^2*c*Sqrt[x]) - (b*B - A*c)/(b*c*Sqrt[x]*(b + c*x)) + ((b*B
 - 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(5/2)*Sqrt[c])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{3/2}(b+cx)^2}\,dx\\
&= -\frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} - \frac{\left(\frac{bB}{2}-\frac{3Ac}{2}\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{bc}\\
&= \frac{bB-3Ac}{b^2c\sqrt{x}} - \frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} + \frac{(bB-3Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2b^2}\\
&= \frac{bB-3Ac}{b^2c\sqrt{x}} - \frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} + \frac{(bB-3Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{b^2}\\
&= \frac{bB-3Ac}{b^2c\sqrt{x}} - \frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} + \frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.69

$$\frac{(b+cx)(bB-3Ac)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{cx}{b}\right)+b(Ac-bB)}{b^2c\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (b*(-(b*B) + A*c) + (b*B - 3*A*c)*(b + c*x)*Hypergeometric2F1[-1/2, 1, 1/2,
 -((c*x)/b)])/(b^2*c*Sqrt[x]*(b + c*x))
```

IntegrateAlgebraic [A] time = 0.10, size = 67, normalized size = 0.79

$$\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}+\frac{-2Ab-3Acx+bBx}{b^2\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (-2*A*b + b*B*x - 3*A*c*x)/(b^2*Sqrt[x]*(b + c*x)) + ((b*B - 3*A*c)*ArcTan[
(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(5/2)*Sqrt[c])
```

fricas [A] time = 0.43, size = 215, normalized size = 2.53

$$\left[\frac{\left(\left(Bbc-3\,Ac^2\right)x^2+\left(Bb^2-3\,Abc\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b+2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)-2\left(2\,Ab^2c-\left(Bb^2c-3\,Abc^2\right)x\right)\sqrt{x}}{2\left(b^3c^2x^2+b^4cx\right)}, -\frac{\left(\left(Bbc-3\,Ac^2\right)x^2+\left(Bb^2-3\,Abc\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)+\left(2\,Ab^2c-\left(Bb^2c-3\,Abc^2\right)x\right)\sqrt{x}}{b^3c^2x^2+b^4cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((B*b*c - 3*A*c^2)*x^2 + (B*b^2 - 3*A*b*c)*x)*sqrt(-b*c)*log((c*x - b
 + 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) - 2*(2*A*b^2*c - (B*b^2*c - 3*A*b*c^2)*
x)*sqrt(x))/(b^3*c^2*x^2 + b^4*c*x), -(((B*b*c - 3*A*c^2)*x^2 + (B*b^2 - 3*
A*b*c)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*sqrt(x))) + (2*A*b^2*c - (B*b^2*c -
 3*A*b*c^2)*x)*sqrt(x))/(b^3*c^2*x^2 + b^4*c*x)]
```

giac [A] time = 0.17, size = 60, normalized size = 0.71

$$\frac{(Bb-3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^2}+\frac{Bbx-3\,Acx-2\,Ab}{\left(cx^{\frac{3}{2}}+b\sqrt{x}\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b - 3*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2) + (B*b*x - 3*A*c*
x - 2*A*b)/((c*x^(3/2) + b*sqrt(x))*b^2)
```

maple [A] time = 0.07, size = 87, normalized size = 1.02

$$-\frac{3Ac\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^2}+\frac{B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b}-\frac{Ac\sqrt{x}}{(cx+b)\,b^2}+\frac{B\sqrt{x}}{(cx+b)\,b}-\frac{2A}{b^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/b^2*x^(1/2)/(c*x+b)*A*c+1/b*x^(1/2)/(c*x+b)*B-3/b^2/(b*c)^(1/2)*arctan(1
/(b*c)^(1/2)*c*x^(1/2))*A*c+1/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))
*B-2*A/b^2/x^(1/2)
```

maxima [A] time = 1.35, size = 65, normalized size = 0.76

$$-\frac{2\,Ab-(Bb-3\,Ac)x}{b^2cx^{\frac{3}{2}}+b^3\sqrt{x}}+\frac{(Bb-3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(2*A*b - (B*b - 3*A*c)*x)/(b^2*c*x^(3/2) + b^3*sqrt(x)) + (B*b - 3*A*c)*ar
ctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2)
```

mupad [B] time = 1.08, size = 65, normalized size = 0.76

$$-\frac{\frac{2\,A}{b}+\frac{x\,(3\,A\,c-B\,b)}{b^2}}{b\,\sqrt{x}+c\,x^{3/2}}-\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(3\,A\,c-B\,b)}{b^{5/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] - ((2*A)/b + (x*(3*A*c - B*b))/b^2)/(b*x^(1/2) + c*x^(3/2)) - (atan((c^(1/2
)*x^(1/2))/b^(1/2))*(3*A*c - B*b))/(b^(5/2)*c^(1/2))
```

sympy [A] time = 33.16, size = 884, normalized size = 10.40

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) & \text{for}\ b=0\wedge c=0 \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c^2} & \text{for}\ b=0 \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{b^2} & \text{for}\ c=0 \\ -\frac{4iAb^{\frac{3}{2}}c\sqrt{\frac{1}{c}}}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{6iA\sqrt{b}c^2x\sqrt{\frac{1}{c}}}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{3Abc\sqrt{x}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}+\frac{3Abc\sqrt{x}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{3Ac^2x^{\frac{3}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}+\frac{3Ac^2x^{\frac{3}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}+\frac{2iBb^{\frac{3}{2}}cx\sqrt{\frac{1}{c}}}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}+\frac{Bb^2\sqrt{x}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{Bb^2\sqrt{x}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}+\frac{Bbcx^{\frac{3}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{Bbcx^{\frac{3}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^2x^{\frac{3}{2}}\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/c**2, Eq(b, 0)), ((-2*A/sqrt(x) +
 2*B*sqrt(x))/b**2, Eq(c, 0)), (-4*I*A*b**(3/2)*c*sqrt(1/c)/(2*I*b**(7/2)*c
*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) - 6*I*A*sqrt(b)*
c**2*x*sqrt(1/c)/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(
3/2)*sqrt(1/c)) - 3*A*b*c*sqrt(x)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*
b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) + 3*A*
b*c*sqrt(x)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt
(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) - 3*A*c**2*x**(3/2)*log(-I*sq
rt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)
*c**2*x**(3/2)*sqrt(1/c)) + 3*A*c**2*x**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqr
t(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1
/c)) + 2*I*B*b**(3/2)*c*x*sqrt(1/c)/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I
*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) + B*b**2*sqrt(x)*log(-I*sqrt(b)*sqrt(1/c
) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)
*sqrt(1/c)) - B*b**2*sqrt(x)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/
2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) + B*b*c*x**(
3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c)
+ 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) - B*b*c*x**(3/2)*log(I*sqrt(b)*sqrt
(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(
3/2)*sqrt(1/c)), True))
```

3.182 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=110

$$-\frac{\sqrt{c}\,(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}+\frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}$$

Rubi [A] time = 0.06, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}-\frac{\sqrt{c}\,(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^2),x]
```

```
[Out] (3*b*B - 5*A*c)/(3*b^2*c*x^(3/2)) - (3*b*B - 5*A*c)/(b^3*Sqrt[x]) - (b*B -
A*c)/(b*c*x^(3/2)*(b + c*x)) - (Sqrt[c]*(3*b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/b^(7/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{5/2}(b+cx)^2}\,dx\\
&= -\frac{bB-Ac}{bcx^{3/2}(b+cx)}-\frac{\left(\frac{3bB}{2}-\frac{5Ac}{2}\right)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{bc}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}+\frac{(3bB-5Ac)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{2b^2}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}-\frac{(c(3bB-5Ac))\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{2b^3}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}-\frac{(c(3bB-5Ac))\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{b^3}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}-\frac{\sqrt{c}\,(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.58

$$
\frac{(b+cx)(3bB-5Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{cx}{b}\right)+3b(Ac-bB)}{3b^2cx^{3/2}(b+cx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^2),x]
```

```
[Out] (3*b*(-(b*B) + A*c) + (3*b*B - 5*A*c)*(b + c*x)*Hypergeometric2F1[-3/2, 1,
-1/2, -((c*x)/b)])/(3*b^2*c*x^(3/2)*(b + c*x))
```

IntegrateAlgebraic [A] time = 0.13, size = 98, normalized size = 0.89

$$
\frac{\left(5Ac^{3/2}-3bB\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}+\frac{-2Ab^2+10Abcx+15Ac^2x^2-6b^2Bx-9bBcx^2}{3b^3x^{3/2}(b+cx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^2),x]
```

```
[Out] (-2*A*b^2 - 6*b^2*B*x + 10*A*b*c*x - 9*b*B*c*x^2 + 15*A*c^2*x^2)/(3*b^3*x^(
3/2)*(b + c*x)) + ((-3*b*B*Sqrt[c] + 5*A*c^(3/2))*ArcTan[(Sqrt[c]*Sqrt[x])/
Sqrt[b]])/b^(7/2)
```

fricas [A] time = 0.42, size = 262, normalized size = 2.38

$$
\left[-\frac{3\left(\left(3Bbc-5Ac^2\right)x^3+\left(3Bb^2-5Abc\right)x^2\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx+2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(2Ab^2+3\left(3Bbc-5Ac^2\right)x^2+2\left(3Bb^2-5Abc\right)x\right)\sqrt{x}}{6\left(b^3cx^3+b^4x^2\right)},\ \frac{3\left(\left(3Bbc-5Ac^2\right)x^3+\left(3Bb^2-5Abc\right)x^2\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-\left(2Ab^2+3\left(3Bbc-5Ac^2\right)x^2+2\left(3Bb^2-5Abc\right)x\right)\sqrt{x}}{3\left(b^3cx^3+b^4x^2\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((3*B*b*c - 5*A*c^2)*x^3 + (3*B*b^2 - 5*A*b*c)*x^2)*sqrt(-c/b)*log
((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/(c*x + b)) + 2*(2*A*b^2 + 3*(3*B*b*c -
5*A*c^2)*x^2 + 2*(3*B*b^2 - 5*A*b*c)*x)*sqrt(x))/(b^3*c*x^3 + b^4*x^2), 1/3
*(3*((3*B*b*c - 5*A*c^2)*x^3 + (3*B*b^2 - 5*A*b*c)*x^2)*sqrt(c/b)*arctan(b*
sqrt(c/b)/(c*sqrt(x))) - (2*A*b^2 + 3*(3*B*b*c - 5*A*c^2)*x^2 + 2*(3*B*b^2
- 5*A*b*c)*x)*sqrt(x))/(b^3*c*x^3 + b^4*x^2)]
```

giac [A] time = 0.26, size = 85, normalized size = 0.77

$$-\frac{\left(3\,Bbc-5\,Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}-\frac{Bbc\sqrt{x}-Ac^{2}\sqrt{x}}{(cx+b)b^{3}}-\frac{2\,(3\,Bbx-6\,Acx+Ab)}{3\,b^{3}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] -(3*B*b*c - 5*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) - (B*b*c*s
qrt(x) - A*c^2*sqrt(x))/((c*x + b)*b^3) - 2/3*(3*B*b*x - 6*A*c*x + A*b)/(b^
3*x^(3/2))
```

maple [A] time = 0.07, size = 113, normalized size = 1.03

$$\frac{5A\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{3}}-\frac{3Bc\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{2}}+\frac{A\,c^{2}\sqrt{x}}{(cx+b)\,b^{3}}-\frac{Bc\sqrt{x}}{(cx+b)\,b^{2}}+\frac{4Ac}{b^{3}\sqrt{x}}-\frac{2B}{b^{2}\sqrt{x}}-\frac{2A}{3b^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x)
```

```
[Out] 1/b^3*c^2*x^(1/2)/(c*x+b)*A-1/b^2*c*x^(1/2)/(c*x+b)*B+5/b^3*c^2/(b*c)^(1/2)
*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-3/b^2*c/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)
*c*x^(1/2))*B-2/3/b^2*A/x^(3/2)+4/b^3/x^(1/2)*A*c-2/b^2/x^(1/2)*B
```

maxima [A] time = 1.23, size = 93, normalized size = 0.85

$$-\frac{2\,Ab^{2}+3\left(3\,Bbc-5\,Ac^{2}\right)x^{2}+2\left(3\,Bb^{2}-5\,Abc\right)x}{3\left(b^{3}cx^{\frac{5}{2}}+b^{4}x^{\frac{3}{2}}\right)}-\frac{\left(3\,Bbc-5\,Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*(2*A*b^2 + 3*(3*B*b*c - 5*A*c^2)*x^2 + 2*(3*B*b^2 - 5*A*b*c)*x)/(b^3*c
*x^(5/2) + b^4*x^(3/2)) - (3*B*b*c - 5*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(
sqrt(b*c)*b^3)
```

mupad [B] time = 1.09, size = 81, normalized size = 0.74

$$\frac{\frac{2\,x\,(5\,A\,c-3\,B\,b)}{3\,b^{2}}-\frac{2\,A}{3\,b}+\frac{c\,x^{2}\,(5\,A\,c-3\,B\,b)}{b^{3}}}{b\,x^{3/2}+c\,x^{5/2}}+\frac{\sqrt{c}\;\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(5\,A\,c-3\,B\,b)}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^2),x)
```

```
[Out] ((2*x*(5*A*c - 3*B*b))/(3*b^2) - (2*A)/(3*b) + (c*x^2*(5*A*c - 3*B*b))/b^3)
/(b*x^(3/2) + c*x^(5/2)) + (c^(1/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(5*A*c
- 3*B*b))/b^(7/2)
```

sympy [A] time = 42.92, size = 983, normalized size = 8.94

$$\begin{cases} \infty \left(- \frac{2A}{7x^{\frac{7}{2}}} - \frac{2B}{5x^{\frac{5}{2}}}\right) & \text{for}\ b = 0 \wedge c = 0 \\ \frac{- \frac{2A}{7x^{\frac{7}{2}}} - \frac{2B}{5x^{\frac{5}{2}}}}{c^{2}} & \text{for}\ b = 0 \\ \frac{- \frac{2A}{3x^{\frac{3}{2}}} - \frac{2B}{\sqrt{x}}}{b^{2}} & \text{for}\ c = 0 \\ - \frac{4iAb^{\frac{5}{2}}\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} + \frac{20iAb^{\frac{3}{2}}cx\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} + \frac{30iA\sqrt{b}c^{2}x^{2}\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} + \frac{15Abcx^{\frac{3}{2}}\log{\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} - \frac{15Abcx^{\frac{3}{2}}\log{\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} + \frac{15Ac^{2}x^{\frac{5}{2}}\log{\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} - \frac{15Ac^{2}x^{\frac{5}{2}}\log{\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} - \frac{12iBb^{\frac{5}{2}}x\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} - \frac{18iBb^{\frac{3}{2}}cx^{2}\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} - \frac{9Bb^{2}x^{\frac{3}{2}}\log{\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} + \frac{9Bb^{2}x^{\frac{3}{2}}\log{\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} - \frac{9Bbcx^{\frac{5}{2}}\log{\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} + \frac{9Bbcx^{\frac{5}{2}}\log{\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}} + 6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**2/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/c**2, Eq(b, 0)), ((-2*A/(3*x**(3/
2)) - 2*B/sqrt(x))/b**2, Eq(c, 0)), (-4*I*A*b**(5/2)*sqrt(1/c)/(6*I*b**(9/2
)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 20*I*A*b**(3/2)
*c*x*sqrt(1/c)/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*s
qrt(1/c)) + 30*I*A*sqrt(b)*c**2*x**2*sqrt(1/c)/(6*I*b**(9/2)*x**(3/2)*sqrt(
1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 15*A*b*c*x**(3/2)*log(-I*sqrt(b
)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x*
*(5/2)*sqrt(1/c)) - 15*A*b*c*x**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6
*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 15*A*
c**2*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sq
rt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) - 15*A*c**2*x**(5/2)*log(I*sqr
t(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c
*x**(5/2)*sqrt(1/c)) - 12*I*B*b**(5/2)*x*sqrt(1/c)/(6*I*b**(9/2)*x**(3/2)*s
qrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) - 18*I*B*b**(3/2)*c*x**2*sqrt
(1/c)/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c))
 - 9*B*b**2*x**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(
3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 9*B*b**2*x**(3/2)*log
(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(
7/2)*c*x**(5/2)*sqrt(1/c)) - 9*B*b*c*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sq
rt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)
) + 9*B*b*c*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3
/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)), True))
```

3.183 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=130

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}+\frac{c(5bB-7Ac)}{b^4\sqrt{x}}-\frac{5bB-7Ac}{3b^3x^{3/2}}+\frac{5bB-7Ac}{5b^2cx^{5/2}}-\frac{bB-Ac}{bcx^{5/2}(b+cx)}$$

Rubi [A] time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}-\frac{5bB-7Ac}{3b^3x^{3/2}}+\frac{5bB-7Ac}{5b^2cx^{5/2}}+\frac{c(5bB-7Ac)}{b^4\sqrt{x}}-\frac{bB-Ac}{bcx^{5/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (5*b*B - 7*A*c)/(5*b^2*c*x^(5/2)) - (5*b*B - 7*A*c)/(3*b^3*x^(3/2)) + (c*(5
*b*B - 7*A*c))/(b^4*Sqrt[x]) - (b*B - A*c)/(b*c*x^(5/2)*(b + c*x)) + (c^(3/
2)*(5*b*B - 7*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(9/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{7/2}(b+cx)^2}\,dx \\
&= -\frac{bB-Ac}{bcx^{5/2}(b+cx)} - \frac{\left(\frac{5bB}{2}-\frac{7Ac}{2}\right)\int \frac{1}{x^{7/2}(b+cx)}\,dx}{bc} \\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{(5bB-7Ac)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{2b^2} \\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} - \frac{(c(5bB-7Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{2b^3} \\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} + \frac{c(5bB-7Ac)}{b^4\sqrt{x}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{\left(c^2(5bB-7Ac)\right)\int \frac{1}{\sqrt{x}(b}}{2b^4} \\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} + \frac{c(5bB-7Ac)}{b^4\sqrt{x}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{\left(c^2(5bB-7Ac)\right)\text{Subst}}{b^4} \\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} + \frac{c(5bB-7Ac)}{b^4\sqrt{x}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\right.}{b^{9/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.49

$$
\frac{(b+cx)(5bB-7Ac)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{cx}{b}\right)+5b(Ac-bB)}{5b^2cx^{5/2}(b+cx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (5*b*(-(b*B) + A*c) + (5*b*B - 7*A*c)*(b + c*x)*Hypergeometric2F1[-5/2, 1,
-3/2, -((c*x)/b)])/(5*b^2*c*x^(5/2)*(b + c*x))
```

IntegrateAlgebraic [A] time = 0.15, size = 122, normalized size = 0.94

$$
\frac{\left(5bBc^{3/2}-7Ac^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}+\frac{-6Ab^3+14Ab^2cx-70Abc^2x^2-105Ac^3x^3-10b^3Bx+50b^2Bcx^2+75bBc^2x^3}{15b^4x^{5/2}(b+cx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-6*A*b^3 - 10*b^3*B*x + 14*A*b^2*c*x + 50*b^2*B*c*x^2 - 70*A*b*c^2*x^2 + 7
5*b*B*c^2*x^3 - 105*A*c^3*x^3)/(15*b^4*x^(5/2)*(b + c*x)) + ((5*b*B*c^(3/2)
 - 7*A*c^(5/2))*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(9/2)
```

fricas [A] time = 0.42, size = 319, normalized size = 2.45

$$
\left[-\frac{15\left(\left(5Bbc^2-7Ac^3\right)x^4+\left(5Bb^2c-7Abc^2\right)x^3\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx-2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(6Ab^3-15\left(5Bbc^2-7Ac^3\right)x^3-10\left(5Bb^2c-7Abc^2\right)x^2+2\left(5Bb^3-7Ab^2c\right)x\right)\sqrt{x}}{30\left(b^4cx^4+b^5x^3\right)}, -\frac{15\left(\left(5Bbc^2-7Ac^3\right)x^4+\left(5Bb^2c-7Abc^2\right)x^3\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)+\left(6Ab^3-15\left(5Bbc^2-7Ac^3\right)x^3-10\left(5Bb^2c-7Abc^2\right)x^2+2\left(5Bb^3-7Ab^2c\right)x\right)\sqrt{x}}{15\left(b^4cx^4+b^5x^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/30*(15*((5*B*b*c^2 - 7*A*c^3)*x^4 + (5*B*b^2*c - 7*A*b*c^2)*x^3)*sqrt(-
c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-c/b) - b)/(c*x + b)) + 2*(6*A*b^3 - 15*(5
*B*b*c^2 - 7*A*c^3)*x^3 - 10*(5*B*b^2*c - 7*A*b*c^2)*x^2 + 2*(5*B*b^3 - 7*A
*b^2*c)*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3), -1/15*(15*((5*B*b*c^2 - 7*A*c^3)
*x^4 + (5*B*b^2*c - 7*A*b*c^2)*x^3)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x)
)) + (6*A*b^3 - 15*(5*B*b*c^2 - 7*A*c^3)*x^3 - 10*(5*B*b^2*c - 7*A*b*c^2)*x
^2 + 2*(5*B*b^3 - 7*A*b^2*c)*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3)]
```

giac [A] time = 0.16, size = 110, normalized size = 0.85

$$\frac{\left(5\,Bbc^2-7\,Ac^3\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^4}+\frac{Bbc^2\sqrt{x}-Ac^3\sqrt{x}}{(cx+b)b^4}+\frac{2\left(30\,Bbcx^2-45\,Ac^2x^2-5\,Bb^2x+10\,Abcx-3\,Ab^2\right)}{15\,b^4x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (5*B*b*c^2 - 7*A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) + (B*b*c^
2*sqrt(x) - A*c^3*sqrt(x))/((c*x + b)*b^4) + 2/15*(30*B*b*c*x^2 - 45*A*c^2*
x^2 - 5*B*b^2*x + 10*A*b*c*x - 3*A*b^2)/(b^4*x^(5/2))
```

maple [A] time = 0.06, size = 139, normalized size = 1.07

$$-\frac{7A\,c^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^4}+\frac{5B\,c^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^3}-\frac{A\,c^3\sqrt{x}}{(cx+b)\,b^4}+\frac{B\,c^2\sqrt{x}}{(cx+b)\,b^3}-\frac{6A\,c^2}{b^4\sqrt{x}}+\frac{4Bc}{b^3\sqrt{x}}+\frac{4Ac}{3b^3x^{\frac{3}{2}}}-\frac{2B}{3b^2x^{\frac{3}{2}}}-\frac{2A}{5b^2x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/b^4*c^3*x^(1/2)/(c*x+b)*A+1/b^3*c^2*x^(1/2)/(c*x+b)*B-7/b^4*c^3/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+5/b^3*c^2/(b*c)^(1/2)*arctan(1/(b*c)^
(1/2)*c*x^(1/2))*B-2/5/b^2*A/x^(5/2)+4/3/b^3/x^(3/2)*A*c-2/3/b^2/x^(3/2)*B-
6*c^2/b^4/x^(1/2)*A+4*c/b^3/x^(1/2)*B
```

maxima [A] time = 1.17, size = 118, normalized size = 0.91

$$-\frac{6\,Ab^3-15\left(5\,Bbc^2-7\,Ac^3\right)x^3-10\left(5\,Bb^2c-7\,Abc^2\right)x^2+2\left(5\,Bb^3-7\,Ab^2c\right)x}{15\left(b^4cx^{\frac{7}{2}}+b^5x^{\frac{5}{2}}\right)}+\frac{\left(5\,Bbc^2-7\,Ac^3\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/15*(6*A*b^3 - 15*(5*B*b*c^2 - 7*A*c^3)*x^3 - 10*(5*B*b^2*c - 7*A*b*c^2)*
x^2 + 2*(5*B*b^3 - 7*A*b^2*c)*x)/(b^4*c*x^(7/2) + b^5*x^(5/2)) + (5*B*b*c^2
 - 7*A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4)
```

mupad [B] time = 1.11, size = 103, normalized size = 0.79

$$-\frac{\frac{2\,A}{5\,b}-\frac{2\,x\,(7\,A\,c-5\,B\,b)}{15\,b^2}+\frac{c^2\,x^3\,(7\,A\,c-5\,B\,b)}{b^4}+\frac{2\,c\,x^2\,(7\,A\,c-5\,B\,b)}{3\,b^3}}{b\,x^{5/2}+c\,x^{7/2}}-\frac{c^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(7\,A\,c-5\,B\,b)}{b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x)
```

```
[Out] - ((2*A)/(5*b) - (2*x*(7*A*c - 5*B*b))/(15*b^2) + (c^2*x^3*(7*A*c - 5*B*b))
/b^4 + (2*c*x^2*(7*A*c - 5*B*b))/(3*b^3))/(b*x^(5/2) + c*x^(7/2)) - (c^(3/2
)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(7*A*c - 5*B*b))/b^(9/2)
```

sympy [A] time = 81.93, size = 1127, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2)))/c**2, Eq(b, 0)), ((-2*A/(5*x**(5/
2)) - 2*B/(3*x**(3/2)))/b**2, Eq(c, 0)), (-12*I*A*b**(7/2)*sqrt(1/c)/(30*I*
b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 28*I*A
*b**(5/2)*c*x*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*
c*x**(7/2)*sqrt(1/c)) - 140*I*A*b**(3/2)*c**2*x**2*sqrt(1/c)/(30*I*b**(11/2
)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) - 210*I*A*sqrt(b
)*c**3*x**3*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*
x**(7/2)*sqrt(1/c)) - 105*A*b*c**2*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt
(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c
)) + 105*A*b*c**2*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/
2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) - 105*A*c**3*x*
*(7/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/
c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 105*A*c**3*x**(7/2)*log(I*sqrt(b
)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c
*x**(7/2)*sqrt(1/c)) - 20*I*B*b**(7/2)*x*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)
*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 100*I*B*b**(5/2)*c*x**2*
sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqr
t(1/c)) + 150*I*B*b**(3/2)*c**2*x**3*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqr
t(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 75*B*b**2*c*x**(5/2)*log(-I*
sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(
9/2)*c*x**(7/2)*sqrt(1/c)) - 75*B*b**2*c*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) +
 sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqr
t(1/c)) + 75*B*b*c**2*x**(7/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b*
*(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) - 75*B*b*c
**2*x**(7/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sq
rt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)), True))
```

3.184 $\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=156

$$-\frac{c^{5/2}(7bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}$$

Rubi [A] time = 0.08, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}-\frac{c^{5/2}(7bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (7*b*B - 9*A*c)/(7*b^2*c*x^(7/2)) - (7*b*B - 9*A*c)/(5*b^3*x^(5/2)) + (c*(7
*b*B - 9*A*c))/(3*b^4*x^(3/2)) - (c^2*(7*b*B - 9*A*c))/(b^5*Sqrt[x]) - (b*B
 - A*c)/(b*c*x^(7/2)*(b + c*x)) - (c^(5/2)*(7*b*B - 9*A*c)*ArcTan[(Sqrt[c]*
Sqrt[x])/Sqrt[b]])/b^(11/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{9/2}(b+cx)^2}\,dx \\
&= -\frac{bB-Ac}{bcx^{7/2}(b+cx)} - \frac{\left(\frac{7bB}{2}-\frac{9Ac}{2}\right)\int \frac{1}{x^{9/2}(b+cx)}\,dx}{bc} \\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}} - \frac{bB-Ac}{bcx^{7/2}(b+cx)} + \frac{(7bB-9Ac)\int \frac{1}{x^{7/2}(b+cx)}\,dx}{2b^2} \\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}} - \frac{7bB-9Ac}{5b^3x^{5/2}} - \frac{bB-Ac}{bcx^{7/2}(b+cx)} - \frac{(c(7bB-9Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{2b^3} \\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}} - \frac{7bB-9Ac}{5b^3x^{5/2}} + \frac{c(7bB-9Ac)}{3b^4x^{3/2}} - \frac{bB-Ac}{bcx^{7/2}(b+cx)} + \frac{\left(c^2(7bB-9Ac)\right)\int \frac{1}{x^{3/2}(b}{2b^4} \\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}} - \frac{7bB-9Ac}{5b^3x^{5/2}} + \frac{c(7bB-9Ac)}{3b^4x^{3/2}} - \frac{c^2(7bB-9Ac)}{b^5\sqrt{x}} - \frac{bB-Ac}{bcx^{7/2}(b+cx)} - \left(c^3(7b\right. \\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}} - \frac{7bB-9Ac}{5b^3x^{5/2}} + \frac{c(7bB-9Ac)}{3b^4x^{3/2}} - \frac{c^2(7bB-9Ac)}{b^5\sqrt{x}} - \frac{bB-Ac}{bcx^{7/2}(b+cx)} - \left(c^3(7b\right. \\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}} - \frac{7bB-9Ac}{5b^3x^{5/2}} + \frac{c(7bB-9Ac)}{3b^4x^{3/2}} - \frac{c^2(7bB-9Ac)}{b^5\sqrt{x}} - \frac{bB-Ac}{bcx^{7/2}(b+cx)} - c^{5/2}(7l
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.41

$$\frac{(b+cx)(7bB-9Ac)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};-\frac{cx}{b}\right)+7b(Ac-bB)}{7b^2cx^{7/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (7*b*(-(b*B) + A*c) + (7*b*B - 9*A*c)*(b + c*x)*Hypergeometric2F1[-7/2, 1,
-5/2, -((c*x)/b)])/(7*b^2*c*x^(7/2)*(b + c*x))
```

IntegrateAlgebraic [A] time = 0.15, size = 146, normalized size = 0.94

$$\frac{\left(9Ac^{7/2}-7bBc^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{-30Ab^4+54Ab^3cx-126Ab^2c^2x^2+630Abc^3x^3+945Ac^4x^4-42b^4Bx+98b^3Bcx^2-490b^2Bc^2x^3-735bBc^3x^4}{105b^5x^{7/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-30*A*b^4 - 42*b^4*B*x + 54*A*b^3*c*x + 98*b^3*B*c*x^2 - 126*A*b^2*c^2*x^2
 - 490*b^2*B*c^2*x^3 + 630*A*b*c^3*x^3 - 735*b*B*c^3*x^4 + 945*A*c^4*x^4)/(
105*b^5*x^(7/2)*(b + c*x)) + ((-7*b*B*c^(5/2) + 9*A*c^(7/2))*ArcTan[(Sqrt[c
]*Sqrt[x])/Sqrt[b]])/b^(11/2)
```

fricas [A] time = 0.43, size = 372, normalized size = 2.38

$$\left[-\frac{105\left(\left(7Bbc^3-9Ac^4\right)x^5+\left(7Bb^2c^2-9Abc^3\right)x^4\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx+2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(30Ab^4+105\left(7Bbc^3-9Ac^4\right)x^4+70\left(7Bb^2c^2-9Abc^3\right)x^3-14\left(7Bb^3c-9Ab^2c^2\right)x^2+6\left(7Bb^4-9Ab^3c\right)x\right)\sqrt{x}}{210\left(b^5cx^5+b^6x^4\right)},\ \frac{105\left(\left(7Bbc^3-9Ac^4\right)x^5+\left(7Bb^2c^2-9Abc^3\right)x^4\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-\left(30Ab^4+105\left(7Bbc^3-9Ac^4\right)x^4+70\left(7Bb^2c^2-9Abc^3\right)x^3-14\left(7Bb^3c-9Ab^2c^2\right)x^2+6\left(7Bb^4-9Ab^3c\right)x\right)\sqrt{x}}{105\left(b^5cx^5+b^6x^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/210*(105*((7*B*b*c^3 - 9*A*c^4)*x^5 + (7*B*b^2*c^2 - 9*A*b*c^3)*x^4)*sq
rt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/(c*x + b)) + 2*(30*A*b^4 +
105*(7*B*b*c^3 - 9*A*c^4)*x^4 + 70*(7*B*b^2*c^2 - 9*A*b*c^3)*x^3 - 14*(7*B*
b^3*c - 9*A*b^2*c^2)*x^2 + 6*(7*B*b^4 - 9*A*b^3*c)*x)*sqrt(x))/(b^5*c*x^5 +
 b^6*x^4), 1/105*(105*((7*B*b*c^3 - 9*A*c^4)*x^5 + (7*B*b^2*c^2 - 9*A*b*c^3
)*x^4)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (30*A*b^4 + 105*(7*B*b*c
^3 - 9*A*c^4)*x^4 + 70*(7*B*b^2*c^2 - 9*A*b*c^3)*x^3 - 14*(7*B*b^3*c - 9*A*
b^2*c^2)*x^2 + 6*(7*B*b^4 - 9*A*b^3*c)*x)*sqrt(x))/(b^5*c*x^5 + b^6*x^4)]
```

giac [A] time = 0.16, size = 136, normalized size = 0.87

$$-\frac{\left(7\,Bbc^{3}-9\,Ac^{4}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{5}}-\frac{Bbc^{3}\sqrt{x}-Ac^{4}\sqrt{x}}{(cx+b)b^{5}}-\frac{2\left(315\,Bbc^{2}x^{3}-420\,Ac^{3}x^{3}-70\,Bb^{2}cx^{2}+105\,Abc^{2}x^{2}+21\,Bb^{3}x-42\,Ab^{2}cx+15\,Ab^{3}\right)}{105\,b^{5}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(7*B*b*c^3 - 9*A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) - (B*b*c
^3*sqrt(x) - A*c^4*sqrt(x))/((c*x + b)*b^5) - 2/105*(315*B*b*c^2*x^3 - 420*
A*c^3*x^3 - 70*B*b^2*c*x^2 + 105*A*b*c^2*x^2 + 21*B*b^3*x - 42*A*b^2*c*x +
15*A*b^3)/(b^5*x^(7/2))
```

maple [A] time = 0.07, size = 163, normalized size = 1.04

$$\frac{9A\,c^{4}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{5}}-\frac{7B\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{4}}+\frac{A\,c^{4}\sqrt{x}}{(cx+b)\,b^{5}}-\frac{B\,c^{3}\sqrt{x}}{(cx+b)\,b^{4}}+\frac{8A\,c^{3}}{b^{5}\sqrt{x}}-\frac{6B\,c^{2}}{b^{4}\sqrt{x}}-\frac{2A\,c^{2}}{b^{4}x^{\frac{3}{2}}}+\frac{4Bc}{3b^{3}x^{\frac{3}{2}}}+\frac{4Ac}{5b^{3}x^{\frac{5}{2}}}-\frac{2B}{5b^{2}x^{\frac{5}{2}}}-\frac{2A}{7b^{2}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/b^5*c^4*x^(1/2)/(c*x+b)*A-1/b^4*c^3*x^(1/2)/(c*x+b)*B+9/b^5*c^4/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-7/b^4*c^3/(b*c)^(1/2)*arctan(1/(b*c)^(
1/2)*c*x^(1/2))*B-2/7/b^2*A/x^(7/2)+4/5/b^3/x^(5/2)*A*c-2/5/b^2/x^(5/2)*B-2
*c^2/b^4/x^(3/2)*A+4/3*c/b^3/x^(3/2)*B+8*c^3/b^5/x^(1/2)*A-6*c^2/b^4/x^(1/2
)*B
```

maxima [A] time = 1.19, size = 143, normalized size = 0.92

$$-\frac{30\,Ab^{4}+105\left(7\,Bbc^{3}-9\,Ac^{4}\right)x^{4}+70\left(7\,Bb^{2}c^{2}-9\,Abc^{3}\right)x^{3}-14\left(7\,Bb^{3}c-9\,Ab^{2}c^{2}\right)x^{2}+6\left(7\,Bb^{4}-9\,Ab^{3}c\right)x}{105\left(b^{5}cx^{\frac{9}{2}}+b^{6}x^{\frac{7}{2}}\right)}-\frac{\left(7\,Bbc^{3}-9\,Ac^{4}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/105*(30*A*b^4 + 105*(7*B*b*c^3 - 9*A*c^4)*x^4 + 70*(7*B*b^2*c^2 - 9*A*b*
c^3)*x^3 - 14*(7*B*b^3*c - 9*A*b^2*c^2)*x^2 + 6*(7*B*b^4 - 9*A*b^3*c)*x)/(b
^5*c*x^(9/2) + b^6*x^(7/2)) - (7*B*b*c^3 - 9*A*c^4)*arctan(c*sqrt(x)/sqrt(b
*c))/(sqrt(b*c)*b^5)
```

mupad [B] time = 1.12, size = 121, normalized size = 0.78

$$\frac{\frac{2\,x\,(9\,A\,c-7\,B\,b)}{35\,b^{2}}-\frac{2\,A}{7\,b}+\frac{2\,c^{2}\,x^{3}\,(9\,A\,c-7\,B\,b)}{3\,b^{4}}+\frac{c^{3}\,x^{4}\,(9\,A\,c-7\,B\,b)}{b^{5}}-\frac{2\,c\,x^{2}\,(9\,A\,c-7\,B\,b)}{15\,b^{3}}}{b\,x^{7/2}+c\,x^{9/2}}+\frac{c^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(9\,A\,c-7\,B\,b)}{b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x)
```

```
[Out] ((2*x*(9*A*c - 7*B*b))/(35*b^2) - (2*A)/(7*b) + (2*c^2*x^3*(9*A*c - 7*B*b))
/(3*b^4) + (c^3*x^4*(9*A*c - 7*B*b))/b^5 - (2*c*x^2*(9*A*c - 7*B*b))/(15*b^
3))/(b*x^(7/2) + c*x^(9/2)) + (c^(5/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(9*A
*c - 7*B*b))/b^(11/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.185 $\int \frac{x^{13/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=169

$$-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4c^{11/2}}+\frac{7b\sqrt{x}\,(9bB-5Ac)}{4c^5}-\frac{7x^{3/2}(9bB-5Ac)}{12c^4}+\frac{7x^{5/2}(9bB-5Ac)}{20bc^3}-\frac{x^{7/2}(9bB-5Ac)}{4bc^2(b+cx)}-$$

Rubi [A] time = 0.09, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {781, 78, 47, 50, 63, 205}

$$-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4c^{11/2}}-\frac{x^{7/2}(9bB-5Ac)}{4bc^2(b+cx)}+\frac{7x^{5/2}(9bB-5Ac)}{20bc^3}-\frac{7x^{3/2}(9bB-5Ac)}{12c^4}+\frac{7b\sqrt{x}\,(9bB-5Ac)}{4c^5}-\frac{x^{9/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (7*b*(9*b*B - 5*A*c)*Sqrt[x])/(4*c^5) - (7*(9*b*B - 5*A*c)*x^(3/2))/(12*c^4
) + (7*(9*b*B - 5*A*c)*x^(5/2))/(20*b*c^3) - ((b*B - A*c)*x^(9/2))/(2*b*c*(
b + c*x)^2) - ((9*b*B - 5*A*c)*x^(7/2))/(4*b*c^2*(b + c*x)) - (7*b^(3/2)*(9
*b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*c^(11/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{13/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{x^{7/2}(A+Bx)}{(b+cx)^3}\,dx \\
&= -\frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{\left(-\frac{9bB}{2}+\frac{5Ac}{2}\right)\int \frac{x^{7/2}}{(b+cx)^2}\,dx}{2bc} \\
&= -\frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-5Ac)x^{7/2}}{4bc^2(b+cx)} + \frac{(7(9bB-5Ac))\int \frac{x^{5/2}}{b+cx}\,dx}{8bc^2} \\
&= \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-5Ac)x^{7/2}}{4bc^2(b+cx)} - \frac{(7(9bB-5Ac))\int \frac{x^{3/2}}{b+cx}\,dx}{8c^3} \\
&= -\frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-5Ac)x^{7/2}}{4bc^2(b+cx)} + \frac{(7b(9bB \cdots}{\cdots} \\
&= \frac{7b(9bB-5Ac)\sqrt{x}}{4c^5} - \frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-\cdots}{4bc^2(\cdots} \\
&= \frac{7b(9bB-5Ac)\sqrt{x}}{4c^5} - \frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-\cdots}{4bc^2(\cdots} \\
&= \frac{7b(9bB-5Ac)\sqrt{x}}{4c^5} - \frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-\cdots}{4bc^2(\cdots}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.36

$$
\frac{x^{9/2}\left(\frac{9b^2(Ac-bB)}{(b+cx)^2}+(9bB-5Ac)\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};-\frac{cx}{b}\right)\right)}{18b^3c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (x^(9/2)*((9*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (9*b*B - 5*A*c)*Hypergeometr
ic2F1[2, 9/2, 11/2, -((c*x)/b)]))/(18*b^3*c)
```

IntegrateAlgebraic [A] time = 0.21, size = 146, normalized size = 0.86

$$
\frac{\sqrt{x}\left(-525Ab^3c-875Ab^2c^2x-280Abc^3x^2+40Ac^4x^3+945b^4B+1575b^3Bcx+504b^2Bc^2x^2-72bBc^3x^3+24Bc^4x^4\right)}{60c^5(b+cx)^2}-\frac{7\left(9b^{5/2}B-5Ab^{3/2}c\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4c^{11/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(945*b^4*B - 525*A*b^3*c + 1575*b^3*B*c*x - 875*A*b^2*c^2*x + 504*
b^2*B*c^2*x^2 - 280*A*b*c^3*x^2 - 72*b*B*c^3*x^3 + 40*A*c^4*x^3 + 24*B*c^4*
x^4))/(60*c^5*(b + c*x)^2) - (7*(9*b^(5/2)*B - 5*A*b^(3/2)*c)*ArcTan[(Sqrt[
c]*Sqrt[x])/Sqrt[b]])/(4*c^(11/2))
```

fricas [A] time = 0.42, size = 408, normalized size = 2.41

$$\left[-\frac{105\left(9Bb^4-5Ab^3c+\left(9Bb^2c^2-5Abc^3\right)x^2+2\left(9Bb^3c-5Ab^2c^2\right)x\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx+2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(24Bc^4x^4+945Bb^4-525Ab^3c-8\left(9Bbc^3-5Ac^4\right)x^3+56\left(9Bb^2c^2-5Abc^3\right)x^2+175\left(9Bb^3c-5Ab^2c^2\right)x\right)\sqrt{x}}{120\left(c^7x^2+2bc^6x+b^2c^5\right)}, -\frac{105\left(9Bb^4-5Ab^3c+\left(9Bb^2c^2-5Abc^3\right)x^2+2\left(9Bb^3c-5Ab^2c^2\right)x\right)\sqrt{\frac{b}{c}}\arctan\left(\frac{c\sqrt{x}\sqrt{\frac{b}{c}}}{b}\right)-\left(24Bc^4x^4+945Bb^4-525Ab^3c-8\left(9Bbc^3-5Ac^4\right)x^3+56\left(9Bb^2c^2-5Abc^3\right)x^2+175\left(9Bb^3c-5Ab^2c^2\right)x\right)\sqrt{x}}{60\left(c^7x^2+2bc^6x+b^2c^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/120*(105*(9*B*b^4 - 5*A*b^3*c + (9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 2*(9*B*
b^3*c - 5*A*b^2*c^2)*x)*sqrt(-b/c)*log((c*x + 2*c*sqrt(x)*sqrt(-b/c) - b)/(
c*x + b)) - 2*(24*B*c^4*x^4 + 945*B*b^4 - 525*A*b^3*c - 8*(9*B*b*c^3 - 5*A*
c^4)*x^3 + 56*(9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 175*(9*B*b^3*c - 5*A*b^2*c^2)
*x)*sqrt(x))/(c^7*x^2 + 2*b*c^6*x + b^2*c^5), -1/60*(105*(9*B*b^4 - 5*A*b^3
*c + (9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 2*(9*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(b/
c)*arctan(c*sqrt(x)*sqrt(b/c)/b) - (24*B*c^4*x^4 + 945*B*b^4 - 525*A*b^3*c
- 8*(9*B*b*c^3 - 5*A*c^4)*x^3 + 56*(9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 175*(9*B
*b^3*c - 5*A*b^2*c^2)*x)*sqrt(x))/(c^7*x^2 + 2*b*c^6*x + b^2*c^5)]
```

giac [A] time = 0.21, size = 146, normalized size = 0.86

$$-\frac{7\left(9Bb^3-5Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^5}+\frac{17Bb^3cx^{\frac{3}{2}}-13Ab^2c^2x^{\frac{3}{2}}+15Bb^4\sqrt{x}-11Ab^3c\sqrt{x}}{4\left(cx+b\right)^2c^5}+\frac{2\left(3Bc^{12}x^{\frac{5}{2}}-15Bbc^{11}x^{\frac{3}{2}}+5Ac^{12}x^{\frac{3}{2}}+90Bb^2c^{10}\sqrt{x}-45Abc^{11}\sqrt{x}\right)}{15c^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -7/4*(9*B*b^3 - 5*A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^5) + 1/
4*(17*B*b^3*c*x^(3/2) - 13*A*b^2*c^2*x^(3/2) + 15*B*b^4*sqrt(x) - 11*A*b^3*
c*sqrt(x))/((c*x + b)^2*c^5) + 2/15*(3*B*c^12*x^(5/2) - 15*B*b*c^11*x^(3/2)
 + 5*A*c^12*x^(3/2) + 90*B*b^2*c^10*sqrt(x) - 45*A*b*c^11*sqrt(x))/c^15
```

maple [A] time = 0.07, size = 178, normalized size = 1.05

$$-\frac{13Ab^2x^{\frac{3}{2}}}{4\left(cx+b\right)^2c^3}+\frac{17Bb^3x^{\frac{3}{2}}}{4\left(cx+b\right)^2c^4}-\frac{11Ab^3\sqrt{x}}{4\left(cx+b\right)^2c^4}+\frac{15Bb^4\sqrt{x}}{4\left(cx+b\right)^2c^5}+\frac{2Bx^{\frac{5}{2}}}{5c^3}+\frac{35Ab^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^4}-\frac{63Bb^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^5}+\frac{2Ax^{\frac{3}{2}}}{3c^3}-\frac{2Bbx^{\frac{3}{2}}}{c^4}-\frac{6Ab\sqrt{x}}{c^4}+\frac{12Bb^2\sqrt{x}}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2/5/c^3*B*x^(5/2)+2/3/c^3*A*x^(3/2)-2/c^4*B*x^(3/2)*b-6/c^4*A*b*x^(1/2)+12/
c^5*b^2*B*x^(1/2)-13/4*b^2/c^3/(c*x+b)^2*A*x^(3/2)+17/4*b^3/c^4/(c*x+b)^2*B
*x^(3/2)-11/4*b^3/c^4/(c*x+b)^2*A*x^(1/2)+15/4*b^4/c^5/(c*x+b)^2*B*x^(1/2)+
35/4*b^2/c^4/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-63/4*b^3/c^5/(b*
c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.13, size = 151, normalized size = 0.89

$$\frac{\left(17Bb^3c-13Ab^2c^2\right)x^{\frac{3}{2}}+\left(15Bb^4-11Ab^3c\right)\sqrt{x}}{4\left(c^7x^2+2bc^6x+b^2c^5\right)}-\frac{7\left(9Bb^3-5Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^5}+\frac{2\left(3Bc^2x^{\frac{5}{2}}-5\left(3Bbc-Ac^2\right)x^{\frac{3}{2}}+45\left(2Bb^2-Abc\right)\sqrt{x}\right)}{15c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/4*((17*B*b^3*c - 13*A*b^2*c^2)*x^(3/2) + (15*B*b^4 - 11*A*b^3*c)*sqrt(x))
/(c^7*x^2 + 2*b*c^6*x + b^2*c^5) - 7/4*(9*B*b^3 - 5*A*b^2*c)*arctan(c*sqrt(
```

```
x)/sqrt(b*c))/(sqrt(b*c)*c^5) + 2/15*(3*B*c^2*x^(5/2) - 5*(3*B*b*c - A*c^2)
*x^(3/2) + 45*(2*B*b^2 - A*b*c)*sqrt(x))/c^5
```

mupad [B] time = 1.07, size = 183, normalized size = 1.08

$$x^{3/2}\left(\frac{2A}{3c^3}-\frac{2Bb}{c^4}\right)-\frac{x^{3/2}\left(\frac{13Ab^2c^2}{4}-\frac{17Bb^3c}{4}\right)-\sqrt{x}\left(\frac{15Bb^4}{4}-\frac{11Ab^3c}{4}\right)}{b^2c^5+2bc^6x+c^7x^2}-\sqrt{x}\left(\frac{3b\left(\frac{2A}{c^3}-\frac{6Bb}{c^4}\right)}{c}+\frac{6Bb^2}{c^5}\right)+\frac{2Bx^{5/2}}{5c^3}-\frac{7b^{3/2}\operatorname{atan}\left(\frac{b^{3/2}\sqrt{c}\sqrt{x}\,(5Ac-9Bb)}{9Bb^3-5Ab^2c}\right)(5Ac-9Bb)}{4c^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] x^(3/2)*((2*A)/(3*c^3) - (2*B*b)/c^4) - (x^(3/2)*((13*A*b^2*c^2)/4 - (17*B*
b^3*c)/4) - x^(1/2)*((15*B*b^4)/4 - (11*A*b^3*c)/4))/(b^2*c^5 + c^7*x^2 + 2
*b*c^6*x) - x^(1/2)*((3*b*((2*A)/c^3 - (6*B*b)/c^4))/c + (6*B*b^2)/c^5) + (
2*B*x^(5/2))/(5*c^3) - (7*b^(3/2)*atan((b^(3/2)*c^(1/2)*x^(1/2)*(5*A*c - 9*
B*b))/(9*B*b^3 - 5*A*b^2*c))*(5*A*c - 9*B*b))/(4*c^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(13/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.186 $\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=147

$$\frac{5\sqrt{b}\,(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4c^{9/2}}-\frac{5\sqrt{x}\,(7bB-3Ac)}{4c^4}+\frac{5x^{3/2}(7bB-3Ac)}{12bc^3}-\frac{x^{5/2}(7bB-3Ac)}{4bc^2(b+cx)}-\frac{x^{7/2}(bB-Ac)}{2bc(b+cx)^2}$$

Rubi [A] time = 0.07, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {781, 78, 47, 50, 63, 205}

$$-\frac{x^{5/2}(7bB-3Ac)}{4bc^2(b+cx)}+\frac{5x^{3/2}(7bB-3Ac)}{12bc^3}-\frac{5\sqrt{x}\,(7bB-3Ac)}{4c^4}+\frac{5\sqrt{b}\,(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4c^{9/2}}-\frac{x^{7/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (-5*(7*b*B - 3*A*c)*Sqrt[x])/(4*c^4) + (5*(7*b*B - 3*A*c)*x^(3/2))/(12*b*c^
3) - ((b*B - A*c)*x^(7/2))/(2*b*c*(b + c*x)^2) - ((7*b*B - 3*A*c)*x^(5/2))/
(4*b*c^2*(b + c*x)) + (5*Sqrt[b]*(7*b*B - 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/S
qrt[b]])/(4*c^(9/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx = \int \frac{x^{5/2}(A+Bx)}{(b+cx)^3}\,dx$$

$$= -\frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{\left(-\frac{7bB}{2}+\frac{3Ac}{2}\right)\int \frac{x^{5/2}}{(b+cx)^2}\,dx}{2bc}$$

$$= -\frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + \frac{(5(7bB-3Ac))\int \frac{x^{3/2}}{b+cx}\,dx}{8bc^2}$$

$$= \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} - \frac{(5(7bB-3Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{8c^3}$$

$$= -\frac{5(7bB-3Ac)\sqrt{x}}{4c^4} + \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + \frac{(5b(7bB}{}$$

$$= -\frac{5(7bB-3Ac)\sqrt{x}}{4c^4} + \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + \frac{(5b(7bB}{}$$

$$= -\frac{5(7bB-3Ac)\sqrt{x}}{4c^4} + \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + \frac{5\sqrt{b}\,(7b}{}$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.41

$$\frac{x^{7/2}\left(\frac{7b^2(Ac-bB)}{(b+cx)^2}+(7bB-3Ac)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};-\frac{cx}{b}\right)\right)}{14b^3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (x^(7/2)*((7*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (7*b*B - 3*A*c)*Hypergeometr
ic2F1[2, 7/2, 9/2, -((c*x)/b)]))/(14*b^3*c)
```

IntegrateAlgebraic [A] time = 0.20, size = 122, normalized size = 0.83

$$\frac{5\left(7b^{3/2}B-3A\sqrt{b}\,c\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4c^{9/2}} + \frac{\sqrt{x}\left(45Ab^2c+75Abc^2x+24Ac^3x^2-105b^3B-175b^2Bcx-56bBc^2x^2+8Bc^3x^3\right)}{12c^4(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(-105*b^3*B + 45*A*b^2*c - 175*b^2*B*c*x + 75*A*b*c^2*x - 56*b*B*c
^2*x^2 + 24*A*c^3*x^2 + 8*B*c^3*x^3))/(12*c^4*(b + c*x)^2) + (5*(7*b^(3/2)*
B - 3*A*Sqrt[b]*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*c^(9/2))
```

fricas [A] time = 0.43, size = 349, normalized size = 2.37

$$\left[-\frac{15\left(7Bb^3-3Ab^2c+\left(7Bbc^2-3Ac^3\right)x^2+2\left(7Bb^2c-3Abc^2\right)x\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx-2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(8Bc^3x^3-105Bb^3+45Ab^2c-8\left(7Bbc^2-3Ac^3\right)x^2-25\left(7Bb^2c-3Abc^2\right)x\right)\sqrt{x}}{24\left(c^6x^2+2bc^5x+b^2c^4\right)}, \frac{15\left(7Bb^3-3Ab^2c+\left(7Bbc^2-3Ac^3\right)x^2+2\left(7Bb^2c-3Abc^2\right)x\right)\sqrt{\frac{b}{c}}\arctan\left(\frac{c\sqrt{x}\sqrt{\frac{b}{c}}}{b}\right)+\left(8Bc^3x^3-105Bb^3+45Ab^2c-8\left(7Bbc^2-3Ac^3\right)x^2-25\left(7Bb^2c-3Abc^2\right)x\right)\sqrt{x}}{12\left(c^6x^2+2bc^5x+b^2c^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/24*(15*(7*B*b^3 - 3*A*b^2*c + (7*B*b*c^2 - 3*A*c^3)*x^2 + 2*(7*B*b^2*c
- 3*A*b*c^2)*x)*sqrt(-b/c)*log((c*x - 2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x + b)
) - 2*(8*B*c^3*x^3 - 105*B*b^3 + 45*A*b^2*c - 8*(7*B*b*c^2 - 3*A*c^3)*x^2 -
 25*(7*B*b^2*c - 3*A*b*c^2)*x)*sqrt(x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4), 1/
12*(15*(7*B*b^3 - 3*A*b^2*c + (7*B*b*c^2 - 3*A*c^3)*x^2 + 2*(7*B*b^2*c - 3*
A*b*c^2)*x)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (8*B*c^3*x^3 - 105*B*
b^3 + 45*A*b^2*c - 8*(7*B*b*c^2 - 3*A*c^3)*x^2 - 25*(7*B*b^2*c - 3*A*b*c^2)
*x)*sqrt(x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4)]
```

giac [A] time = 0.18, size = 119, normalized size = 0.81

$$\frac{5\left(7Bb^2-3Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^4}-\frac{13Bb^2cx^{\frac{3}{2}}-9Abc^2x^{\frac{3}{2}}+11Bb^3\sqrt{x}-7Ab^2c\sqrt{x}}{4\left(cx+b\right)^2c^4}+\frac{2\left(Bc^6x^{\frac{3}{2}}-9Bbc^5\sqrt{x}+3Ac^6\sqrt{x}\right)}{3c^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 5/4*(7*B*b^2 - 3*A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) - 1/4*(
13*B*b^2*c*x^(3/2) - 9*A*b*c^2*x^(3/2) + 11*B*b^3*sqrt(x) - 7*A*b^2*c*sqrt(
x))/((c*x + b)^2*c^4) + 2/3*(B*c^6*x^(3/2) - 9*B*b*c^5*sqrt(x) + 3*A*c^6*sq
rt(x))/c^9
```

maple [A] time = 0.07, size = 152, normalized size = 1.03

$$\frac{9Abx^{\frac{3}{2}}}{4\left(cx+b\right)^2c^2}-\frac{13Bb^2x^{\frac{3}{2}}}{4\left(cx+b\right)^2c^3}+\frac{7Ab^2\sqrt{x}}{4\left(cx+b\right)^2c^3}-\frac{11Bb^3\sqrt{x}}{4\left(cx+b\right)^2c^4}-\frac{15Ab\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^3}+\frac{35Bb^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^4}+\frac{2Bx^{\frac{3}{2}}}{3c^3}+\frac{2A\sqrt{x}}{c^3}-\frac{6Bb\sqrt{x}}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2/3/c^3*B*x^(3/2)+2/c^3*A*x^(1/2)-6/c^4*b*B*x^(1/2)+9/4*b/c^2/(c*x+b)^2*x^(
3/2)*A-13/4*b^2/c^3/(c*x+b)^2*x^(3/2)*B+7/4*b^2/c^3/(c*x+b)^2*A*x^(1/2)-11/
4*b^3/c^4/(c*x+b)^2*B*x^(1/2)-15/4*b/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c
*x^(1/2))*A+35/4*b^2/c^4/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.19, size = 124, normalized size = 0.84

$$-\frac{\left(13Bb^2c-9Abc^2\right)x^{\frac{3}{2}}+\left(11Bb^3-7Ab^2c\right)\sqrt{x}}{4\left(c^6x^2+2bc^5x+b^2c^4\right)}+\frac{5\left(7Bb^2-3Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^4}+\frac{2\left(Bcx^{\frac{3}{2}}-3\left(3Bb-Ac\right)\sqrt{x}\right)}{3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/4*((13*B*b^2*c - 9*A*b*c^2)*x^(3/2) + (11*B*b^3 - 7*A*b^2*c)*sqrt(x))/(c
^6*x^2 + 2*b*c^5*x + b^2*c^4) + 5/4*(7*B*b^2 - 3*A*b*c)*arctan(c*sqrt(x)/sq
rt(b*c))/(sqrt(b*c)*c^4) + 2/3*(B*c*x^(3/2) - 3*(3*B*b - A*c)*sqrt(x))/c^4
```

mupad [B] time = 0.09, size = 143, normalized size = 0.97

$$\frac{x^{3/2}\left(\frac{9Abc^2}{4}-\frac{13Bb^2c}{4}\right)-\sqrt{x}\left(\frac{11Bb^3}{4}-\frac{7Ab^2c}{4}\right)}{b^2c^4+2bc^5x+c^6x^2}+\sqrt{x}\left(\frac{2A}{c^3}-\frac{6Bb}{c^4}\right)+\frac{2Bx^{3/2}}{3c^3}+\frac{5\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c}\sqrt{x}\left(3Ac-7Bb\right)}{7Bb^2-3Abc}\right)\left(3Ac-7Bb\right)}{4c^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (x^(3/2)*((9*A*b*c^2)/4 - (13*B*b^2*c)/4) - x^(1/2)*((11*B*b^3)/4 - (7*A*b^
2*c)/4))/(b^2*c^4 + c^6*x^2 + 2*b*c^5*x) + x^(1/2)*((2*A)/c^3 - (6*B*b)/c^4
) + (2*B*x^(3/2))/(3*c^3) + (5*b^(1/2)*atan((b^(1/2)*c^(1/2)*x^(1/2)*(3*A*c
 - 7*B*b))/(7*B*b^2 - 3*A*b*c))*(3*A*c - 7*B*b))/(4*c^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.187 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=126

$$-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}+\frac{3\sqrt{x}\,(5bB-Ac)}{4bc^3}-\frac{x^{3/2}(5bB-Ac)}{4bc^2(b+cx)}-\frac{x^{5/2}(bB-Ac)}{2bc(b+cx)^2}$$

Rubi [A] time = 0.06, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {781, 78, 47, 50, 63, 205}

$$-\frac{x^{3/2}(5bB-Ac)}{4bc^2(b+cx)}+\frac{3\sqrt{x}\,(5bB-Ac)}{4bc^3}-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}-\frac{x^{5/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (3*(5*b*B - A*c)*Sqrt[x])/(4*b*c^3) - ((b*B - A*c)*x^(5/2))/(2*b*c*(b + c*x
)^2) - ((5*b*B - A*c)*x^(3/2))/(4*b*c^2*(b + c*x)) - (3*(5*b*B - A*c)*ArcTa
n[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*Sqrt[b]*c^(7/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(b+cx)^3}\,dx\\
&= -\frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{\left(-\frac{5bB}{2}+\frac{Ac}{2}\right)\int \frac{x^{3/2}}{(b+cx)^2}\,dx}{2bc}\\
&= -\frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} + \frac{(3(5bB-Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{8bc^2}\\
&= \frac{3(5bB-Ac)\sqrt{x}}{4bc^3} - \frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} - \frac{(3(5bB-Ac))\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{8c^3}\\
&= \frac{3(5bB-Ac)\sqrt{x}}{4bc^3} - \frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} - \frac{(3(5bB-Ac))\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x\right.}{4c^3}\\
&= \frac{3(5bB-Ac)\sqrt{x}}{4bc^3} - \frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} - \frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.48

$$\frac{x^{5/2}\left(\frac{5b^2(Ac-bB)}{(b+cx)^2}+(5bB-Ac)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};-\frac{cx}{b}\right)\right)}{10b^3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (x^(5/2)*((5*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (5*b*B - A*c)*Hypergeometric
2F1[2, 5/2, 7/2, -((c*x)/b)]))/(10*b^3*c)
```

IntegrateAlgebraic [A] time = 0.17, size = 94, normalized size = 0.75

$$\frac{\sqrt{x}\left(-3Abc-5Ac^2x+15b^2B+25bBcx+8Bc^2x^2\right)}{4c^3(b+cx)^2} - \frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(15*b^2*B - 3*A*b*c + 25*b*B*c*x - 5*A*c^2*x + 8*B*c^2*x^2))/(4*c^
3*(b + c*x)^2) - (3*(5*b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*Sqr
t[b]*c^(7/2))
```

fricas [A] time = 0.43, size = 319, normalized size = 2.53

$$\left[\frac{3\left(5\,Bb^3 - Ab^2c + \left(5\,Bbc^2 - Ac^3\right)x^2 + 2\left(5\,Bb^2c - Abc^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\sqrt{-bc}\,\sqrt{x}}{cx+b}\right) + 2\left(8\,Bbc^3x^2 + 15\,Bb^3c - 3\,Ab^2c^2 + 5\left(5\,Bb^2c^2 - Abc^3\right)x\right)\sqrt{x}}{8\left(bc^6x^2 + 2\,b^2c^5x + b^3c^4\right)}, \frac{3\left(5\,Bb^3 - Ab^2c + \left(5\,Bbc^2 - Ac^3\right)x^2 + 2\left(5\,Bb^2c - Abc^2\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right) + \left(8\,Bbc^3x^2 + 15\,Bb^3c - 3\,Ab^2c^2 + 5\left(5\,Bb^2c^2 - Abc^3\right)x\right)\sqrt{x}}{4\left(bc^6x^2 + 2\,b^2c^5x + b^3c^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*(5*B*b^3 - A*b^2*c + (5*B*b*c^2 - A*c^3)*x^2 + 2*(5*B*b^2*c - A*b*c
^2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(8*B*
b*c^3*x^2 + 15*B*b^3*c - 3*A*b^2*c^2 + 5*(5*B*b^2*c^2 - A*b*c^3)*x)*sqrt(x)
)/(b*c^6*x^2 + 2*b^2*c^5*x + b^3*c^4), 1/4*(3*(5*B*b^3 - A*b^2*c + (5*B*b*c
^2 - A*c^3)*x^2 + 2*(5*B*b^2*c - A*b*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*
sqrt(x))) + (8*B*b*c^3*x^2 + 15*B*b^3*c - 3*A*b^2*c^2 + 5*(5*B*b^2*c^2 - A*
b*c^3)*x)*sqrt(x))/(b*c^6*x^2 + 2*b^2*c^5*x + b^3*c^4)]
```

giac [A] time = 0.16, size = 87, normalized size = 0.69

$$\frac{2\,B\sqrt{x}}{c^3} - \frac{3\,(5\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^3} + \frac{9\,Bbcx^{\frac{3}{2}} - 5\,Ac^2x^{\frac{3}{2}} + 7\,Bb^2\sqrt{x} - 3\,Abc\sqrt{x}}{4\,(cx+b)^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^3 - 3/4*(5*B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*
c^3) + 1/4*(9*B*b*c*x^(3/2) - 5*A*c^2*x^(3/2) + 7*B*b^2*sqrt(x) - 3*A*b*c*s
qrt(x))/((c*x + b)^2*c^3)
```

maple [A] time = 0.07, size = 125, normalized size = 0.99

$$-\frac{5A\,x^{\frac{3}{2}}}{4\,(cx+b)^2\,c} + \frac{9Bb\,x^{\frac{3}{2}}}{4\,(cx+b)^2\,c^2} - \frac{3Ab\sqrt{x}}{4\,(cx+b)^2\,c^2} + \frac{7B\,b^2\sqrt{x}}{4\,(cx+b)^2\,c^3} + \frac{3A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^2} - \frac{15Bb\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^3} + \frac{2B\sqrt{x}}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*B/c^3*x^(1/2)-5/4/c/(c*x+b)^2*x^(3/2)*A+9/4/c^2/(c*x+b)^2*x^(3/2)*b*B-3/4
/c^2/(c*x+b)^2*A*x^(1/2)*b+7/4/c^3/(c*x+b)^2*B*x^(1/2)*b^2+3/4/c^2/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-15/4/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(
1/2)*c*x^(1/2))*b*B
```

maxima [A] time = 1.46, size = 99, normalized size = 0.79

$$\frac{\left(9\,Bbc - 5\,Ac^2\right)x^{\frac{3}{2}} + \left(7\,Bb^2 - 3\,Abc\right)\sqrt{x}}{4\left(c^5x^2 + 2\,bc^4x + b^2c^3\right)} + \frac{2\,B\sqrt{x}}{c^3} - \frac{3\,(5\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/4*((9*B*b*c - 5*A*c^2)*x^(3/2) + (7*B*b^2 - 3*A*b*c)*sqrt(x))/(c^5*x^2 +
2*b*c^4*x + b^2*c^3) + 2*B*sqrt(x)/c^3 - 3/4*(5*B*b - A*c)*arctan(c*sqrt(x)
/sqrt(b*c))/(sqrt(b*c)*c^3)
```

mupad [B] time = 0.11, size = 96, normalized size = 0.76

$$\frac{\sqrt{x}\,\left(\frac{7\,B\,b^2}{4} - \frac{3\,A\,b\,c}{4}\right) - x^{3/2}\,\left(\frac{5\,A\,c^2}{4} - \frac{9\,B\,b\,c}{4}\right)}{b^2\,c^3 + 2\,b\,c^4\,x + c^5\,x^2} + \frac{2\,B\,\sqrt{x}}{c^3} + \frac{3\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c - 5\,B\,b)}{4\,\sqrt{b}\;c^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (x^(1/2)*((7*B*b^2)/4 - (3*A*b*c)/4) - x^(3/2)*((5*A*c^2)/4 - (9*B*b*c)/4))
/(b^2*c^3 + c^5*x^2 + 2*b*c^4*x) + (2*B*x^(1/2))/c^3 + (3*atan((c^(1/2)*x^(
1/2))/b^(1/2))*(A*c - 5*B*b))/(4*b^(1/2)*c^(7/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.188 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=100

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}-\frac{\sqrt{x}\,(Ac+3bB)}{4bc^2(b+cx)}-\frac{x^{3/2}(bB-Ac)}{2bc(b+cx)^2}$$

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 47, 63, 205}

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}-\frac{\sqrt{x}\,(Ac+3bB)}{4bc^2(b+cx)}-\frac{x^{3/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -((b*B - A*c)*x^(3/2))/(2*b*c*(b + c*x)^2) - ((3*b*B + A*c)*Sqrt[x])/(4*b*c
^2*(b + c*x)) + ((3*b*B + A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(3/2
)*c^(5/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{(b+cx)^3}\,dx\\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}+\frac{(3bB+Ac)\int \frac{\sqrt{x}}{(b+cx)^2}\,dx}{4bc}\\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}-\frac{(3bB+Ac)\sqrt{x}}{4bc^2(b+cx)}+\frac{(3bB+Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8bc^2}\\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}-\frac{(3bB+Ac)\sqrt{x}}{4bc^2(b+cx)}+\frac{(3bB+Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{4bc^2}\\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}-\frac{(3bB+Ac)\sqrt{x}}{4bc^2(b+cx)}+\frac{(3bB+Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 85, normalized size = 0.85

$$
\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}+\frac{\sqrt{x}\left(-bc(A+5Bx)+Ac^2x-3b^2B\right)}{4bc^2(b+cx)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(-3*b^2*B + A*c^2*x - b*c*(A + 5*B*x)))/(4*b*c^2*(b + c*x)^2) + ((
3*b*B + A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(3/2)*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.17, size = 86, normalized size = 0.86

$$
\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}-\frac{\sqrt{x}\left(Abc-Ac^2x+3b^2B+5bBcx\right)}{4bc^2(b+cx)^2}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(Sqrt[x]*(3*b^2*B + A*b*c + 5*b*B*c*x - A*c^2*x))/(b*c^2*(b + c*x)^2)
+ ((3*b*B + A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(3/2)*c^(5/2))
```

fricas [A] time = 0.42, size = 291, normalized size = 2.91

$$
\left[-\frac{\left(3\,Bb^3+Ab^2c+\left(3\,Bbc^2+Ac^3\right)x^2+2\left(3\,Bb^2c+Abc^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(3\,Bb^3c+Ab^2c^2+\left(5\,Bb^2c^2-Abc^3\right)x\right)\sqrt{x}}{8\left(b^2c^5x^2+2\,b^3c^4x+b^4c^3\right)},-\frac{\left(3\,Bb^3+Ab^2c+\left(3\,Bbc^2+Ac^3\right)x^2+2\left(3\,Bb^2c+Abc^2\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)+\left(3\,Bb^3c+Ab^2c^2+\left(5\,Bb^2c^2-Abc^3\right)x\right)\sqrt{x}}{4\left(b^2c^5x^2+2\,b^3c^4x+b^4c^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*((3*B*b^3 + A*b^2*c + (3*B*b*c^2 + A*c^3)*x^2 + 2*(3*B*b^2*c + A*b*c^
2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(3*B*b
^3*c + A*b^2*c^2 + (5*B*b^2*c^2 - A*b*c^3)*x)*sqrt(x))/(b^2*c^5*x^2 + 2*b^3
*c^4*x + b^4*c^3), -1/4*((3*B*b^3 + A*b^2*c + (3*B*b*c^2 + A*c^3)*x^2 + 2*(
3*B*b^2*c + A*b*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*sqrt(x))) + (3*B*b^3*
```

```
c + A*b^2*c^2 + (5*B*b^2*c^2 - A*b*c^3)*x)*sqrt(x))/(b^2*c^5*x^2 + 2*b^3*c^
4*x + b^4*c^3)]
```

giac [A] time = 0.16, size = 82, normalized size = 0.82

$$\frac{(3\,Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,bc^2}-\frac{5\,Bbcx^{\frac{3}{2}}-Ac^2x^{\frac{3}{2}}+3\,Bb^2\sqrt{x}+Abc\sqrt{x}}{4\,(cx+b)^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(3*B*b + A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b*c^2) - 1/4*(5*B*
b*c*x^(3/2) - A*c^2*x^(3/2) + 3*B*b^2*sqrt(x) + A*b*c*sqrt(x))/((c*x + b)^2
*b*c^2)
```

maple [A] time = 0.06, size = 94, normalized size = 0.94

$$\frac{A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;bc}+\frac{3B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^2}+\frac{\frac{(Ac-5bB)x^{\frac{3}{2}}}{4bc}-\frac{(Ac+3bB)\sqrt{x}}{4c^2}}{(cx+b)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*(1/8*(A*c-5*B*b)/b/c*x^(3/2)-1/8*(A*c+3*B*b)/c^2*x^(1/2))/(c*x+b)^2+1/4/c
/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+3/4/c^2/(b*c)^(1/2)*arctan
(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.29, size = 94, normalized size = 0.94

$$-\frac{\left(5\,Bbc-Ac^2\right)x^{\frac{3}{2}}+\left(3\,Bb^2+Abc\right)\sqrt{x}}{4\left(bc^4x^2+2\,b^2c^3x+b^3c^2\right)}+\frac{(3\,Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/4*((5*B*b*c - A*c^2)*x^(3/2) + (3*B*b^2 + A*b*c)*sqrt(x))/(b*c^4*x^2 + 2
*b^2*c^3*x + b^3*c^2) + 1/4*(3*B*b + A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt
(b*c)*b*c^2)
```

mupad [B] time = 1.10, size = 84, normalized size = 0.84

$$\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c+3\,B\,b\right)}{4\,b^{3/2}\,c^{5/2}}-\frac{\frac{\sqrt{x}\,\left(A\,c+3\,B\,b\right)}{4\,c^2}-\frac{x^{3/2}\,\left(A\,c-5\,B\,b\right)}{4\,b\,c}}{b^2+2\,b\,c\,x+c^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c + 3*B*b))/(4*b^(3/2)*c^(5/2)) - ((x^(
1/2)*(A*c + 3*B*b))/(4*c^2) - (x^(3/2)*(A*c - 5*B*b))/(4*b*c))/(b^2 + c^2*x
^2 + 2*b*c*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.189 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=100

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}+\frac{\sqrt{x}\,(3Ac+bB)}{4b^2c(b+cx)}-\frac{\sqrt{x}\,(bB-Ac)}{2bc(b+cx)^2}$$

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}+\frac{\sqrt{x}\,(3Ac+bB)}{4b^2c(b+cx)}-\frac{\sqrt{x}\,(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -((b*B - A*c)*Sqrt[x])/(2*b*c*(b + c*x)^2) + ((b*B + 3*A*c)*Sqrt[x])/(4*b^2
*c*(b + c*x)) + ((b*B + 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(5/2
)*c^(3/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{\sqrt{x}\,(b+cx)^3}\,dx\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\int \frac{1}{\sqrt{x}\,(b+cx)^2}\,dx}{4bc}\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\sqrt{x}}{4b^2c(b+cx)}+\frac{(bB+3Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8b^2c}\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\sqrt{x}}{4b^2c(b+cx)}+\frac{(bB+3Ac)\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{4b^2c}\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\sqrt{x}}{4b^2c(b+cx)}+\frac{(bB+3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 91, normalized size = 0.91

$$
\frac{\sqrt{x}\left(\frac{b^2(Ac-bB)}{(b+cx)^2}-\frac{1}{2}(-3Ac-bB)\left(\frac{b}{b+cx}+\frac{\sqrt{b}\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\,\sqrt{x}}\right)\right)}{2b^3c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*((b^2*(-(b*B) + A*c))/(b + c*x)^2 - ((-(b*B) - 3*A*c)*(b/(b + c*x)
 + (Sqrt[b]*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[c]*Sqrt[x])))/2))/(2*b
^3*c)
```

IntegrateAlgebraic [A] time = 0.15, size = 86, normalized size = 0.86

$$
\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}-\frac{\sqrt{x}\left(-5Abc-3Ac^2x+b^2B-bBcx\right)}{4b^2c(b+cx)^2}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(Sqrt[x]*(b^2*B - 5*A*b*c - b*B*c*x - 3*A*c^2*x))/(b^2*c*(b + c*x)^2)
+ ((b*B + 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(5/2)*c^(3/2))
```

fricas [A] time = 0.42, size = 291, normalized size = 2.91

$$
\left[-\frac{\left(Bb^3+3\,Ab^2c+\left(Bbc^2+3\,Ac^3\right)x^2+2\left(Bb^2c+3\,Abc^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(Bb^3c-5\,Ab^2c^2-\left(Bb^2c^2+3\,Abc^3\right)x\right)\sqrt{x}}{8\left(b^3c^4x^2+2\,b^4c^3x+b^5c^2\right)},\ -\frac{\left(Bb^3+3\,Ab^2c+\left(Bbc^2+3\,Ac^3\right)x^2+2\left(Bb^2c+3\,Abc^2\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)+\left(Bb^3c-5\,Ab^2c^2-\left(Bb^2c^2+3\,Abc^3\right)x\right)\sqrt{x}}{4\left(b^3c^4x^2+2\,b^4c^3x+b^5c^2\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*((B*b^3 + 3*A*b^2*c + (B*b*c^2 + 3*A*c^3)*x^2 + 2*(B*b^2*c + 3*A*b*c^
2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(B*b^3
*c - 5*A*b^2*c^2 - (B*b^2*c^2 + 3*A*b*c^3)*x)*sqrt(x))/(b^3*c^4*x^2 + 2*b^4
```

```
*c^3*x + b^5*c^2), -1/4*((B*b^3 + 3*A*b^2*c + (B*b*c^2 + 3*A*c^3)*x^2 + 2*(
B*b^2*c + 3*A*b*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*sqrt(x))) + (B*b^3*c
- 5*A*b^2*c^2 - (B*b^2*c^2 + 3*A*b*c^3)*x)*sqrt(x))/(b^3*c^4*x^2 + 2*b^4*c^
3*x + b^5*c^2)]
```

giac [A] time = 0.16, size = 82, normalized size = 0.82

$$\frac{(Bb+3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^2c}+\frac{Bbcx^{\frac{3}{2}}+3\,Ac^2x^{\frac{3}{2}}-Bb^2\sqrt{x}+5\,Abc\sqrt{x}}{4\,(cx+b)^2b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(B*b + 3*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2*c) + 1/4*(B*b*
c*x^(3/2) + 3*A*c^2*x^(3/2) - B*b^2*sqrt(x) + 5*A*b*c*sqrt(x))/((c*x + b)^2
*b^2*c)
```

maple [A] time = 0.07, size = 95, normalized size = 0.95

$$\frac{3A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^2}+\frac{B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,bc}+\frac{\frac{(3Ac+bB)x^{\frac{3}{2}}}{4b^2}+\frac{(5Ac-bB)\sqrt{x}}{4bc}}{(cx+b)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*(1/8*(3*A*c+B*b)/b^2*x^(3/2)+1/8*(5*A*c-B*b)/b/c*x^(1/2))/(c*x+b)^2+3/4/b
^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+1/4/b/c/(b*c)^(1/2)*arctan
(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.23, size = 94, normalized size = 0.94

$$\frac{\left(Bbc+3\,Ac^2\right)x^{\frac{3}{2}}-\left(Bb^2-5\,Abc\right)\sqrt{x}}{4\left(b^2c^3x^2+2\,b^3c^2x+b^4c\right)}+\frac{(Bb+3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/4*((B*b*c + 3*A*c^2)*x^(3/2) - (B*b^2 - 5*A*b*c)*sqrt(x))/(b^2*c^3*x^2 +
2*b^3*c^2*x + b^4*c) + 1/4*(B*b + 3*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(
b*c)*b^2*c)
```

mupad [B] time = 1.09, size = 84, normalized size = 0.84

$$\frac{\frac{x^{3/2}\,(3\,A\,c+B\,b)}{4\,b^2}+\frac{\sqrt{x}\,(5\,A\,c-B\,b)}{4\,b\,c}}{b^2+2\,b\,c\,x+c^2\,x^2}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(3\,A\,c+B\,b)}{4\,b^{5/2}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((x^(3/2)*(3*A*c + B*b))/(4*b^2) + (x^(1/2)*(5*A*c - B*b))/(4*b*c))/(b^2 +
c^2*x^2 + 2*b*c*x) + (atan((c^(1/2)*x^(1/2))/b^(1/2))*(3*A*c + B*b))/(4*b^(
5/2)*c^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.190 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=123

$$\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}+\frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}$$

Rubi [A] time = 0.06, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}+\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (3*(b*B - 5*A*c))/(4*b^3*c*Sqrt[x]) - (b*B - A*c)/(2*b*c*Sqrt[x]*(b + c*x)^
2) - (b*B - 5*A*c)/(4*b^2*c*Sqrt[x]*(b + c*x)) + (3*(b*B - 5*A*c)*ArcTan[(S
qrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(7/2)*Sqrt[c])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{x^{3/2}(b+cx)^3}\,dx\\
&= -\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}-\frac{\left(\frac{bB}{2}-\frac{5Ac}{2}\right)\int \frac{1}{x^{3/2}(b+cx)^2}\,dx}{2bc}\\
&= -\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}-\frac{(3(bB-5Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{8b^2c}\\
&= \frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}+\frac{(3(bB-5Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8b^3}\\
&= \frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}+\frac{(3(bB-5Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{4b^3}\\
&= \frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}+\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.48

$$\frac{\frac{b^2(Ac-bB)}{(b+cx)^2}+(bB-5Ac)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};-\frac{cx}{b}\right)}{2b^3c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((b^2*(-(b*B) + A*c))/(b + c*x)^2 + (b*B - 5*A*c)*Hypergeometric2F1[-1/2, 2
, 1/2, -((c*x)/b)])/(2*b^3*c*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.17, size = 96, normalized size = 0.78

$$\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}+\frac{-8Ab^2-25Abcx-15Ac^2x^2+5b^2Bx+3bBcx^2}{4b^3\sqrt{x}\,(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (-8*A*b^2 + 5*b^2*B*x - 25*A*b*c*x + 3*b*B*c*x^2 - 15*A*c^2*x^2)/(4*b^3*Sqr
t[x]*(b + c*x)^2) + (3*(b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*
b^(7/2)*Sqrt[c])
```

fricas [A] time = 0.43, size = 331, normalized size = 2.69

$$\left[\frac{3\left(\left(Bbc^2-5\,Ac^3\right)x^3+2\left(Bb^2c-5\,Abc^2\right)x^2+\left(Bb^3-5\,Ab^2c\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b+2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)-2\left(8\,Ab^3c-3\left(Bb^2c^2-5\,Abc^3\right)x^2-5\left(Bb^3c-5\,Ab^2c^2\right)x\right)\sqrt{x}}{8\left(b^4c^3x^3+2\,b^5c^2x^2+b^6cx\right)},-\frac{3\left(\left(Bbc^2-5\,Ac^3\right)x^3+2\left(Bb^2c-5\,Abc^2\right)x^2+\left(Bb^3-5\,Ab^2c\right)x\right)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)+\left(8\,Ab^3c-3\left(Bb^2c^2-5\,Abc^3\right)x^2-5\left(Bb^3c-5\,Ab^2c^2\right)x\right)\sqrt{x}}{4\left(b^4c^3x^3+2\,b^5c^2x^2+b^6cx\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*((B*b*c^2 - 5*A*c^3)*x^3 + 2*(B*b^2*c - 5*A*b*c^2)*x^2 + (B*b^3 - 5
*A*b^2*c)*x)*sqrt(-b*c)*log((c*x - b + 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) - 2
*(8*A*b^3*c - 3*(B*b^2*c^2 - 5*A*b*c^3)*x^2 - 5*(B*b^3*c - 5*A*b^2*c^2)*x)*
sqrt(x))/(b^4*c^3*x^3 + 2*b^5*c^2*x^2 + b^6*c*x), -1/4*(3*((B*b*c^2 - 5*A*c
^3)*x^3 + 2*(B*b^2*c - 5*A*b*c^2)*x^2 + (B*b^3 - 5*A*b^2*c)*x)*sqrt(b*c)*ar
ctan(sqrt(b*c)/(c*sqrt(x))) + (8*A*b^3*c - 3*(B*b^2*c^2 - 5*A*b*c^3)*x^2 -
5*(B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(x))/(b^4*c^3*x^3 + 2*b^5*c^2*x^2 + b^6*c*
x)]
```

giac [A] time = 0.20, size = 86, normalized size = 0.70

$$\frac{3\,(Bb-5\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^3}-\frac{2\,A}{b^3\sqrt{x}}+\frac{3\,Bbcx^{\frac{3}{2}}-7\,Ac^2x^{\frac{3}{2}}+5\,Bb^2\sqrt{x}-9\,Abc\sqrt{x}}{4\,(cx+b)^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3/4*(B*b - 5*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) - 2*A/(b^3*sq
rt(x)) + 1/4*(3*B*b*c*x^(3/2) - 7*A*c^2*x^(3/2) + 5*B*b^2*sqrt(x) - 9*A*b*c
*sqrt(x))/((c*x + b)^2*b^3)
```

maple [A] time = 0.07, size = 125, normalized size = 1.02

$$-\frac{7Ac^2x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^3}+\frac{3Bc\,x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^2}-\frac{9Ac\sqrt{x}}{4\,(cx+b)^2\,b^2}+\frac{5B\sqrt{x}}{4\,(cx+b)^2\,b}-\frac{15Ac\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;b^3}+\frac{3B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;b^2}-\frac{2A}{b^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] -7/4/b^3/(c*x+b)^2*x^(3/2)*A*c^2+3/4/b^2/(c*x+b)^2*x^(3/2)*B*c-9/4/b^2/(c*x
+b)^2*A*x^(1/2)*c+5/4/b/(c*x+b)^2*B*x^(1/2)-15/4/b^3/(b*c)^(1/2)*arctan(1/(
b*c)^(1/2)*c*x^(1/2))*A*c+3/4/b^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2
))*B-2*A/b^3/x^(1/2)
```

maxima [A] time = 1.29, size = 98, normalized size = 0.80

$$-\frac{8\,Ab^2-3\left(Bbc-5\,Ac^2\right)x^2-5\left(Bb^2-5\,Abc\right)x}{4\left(b^3c^2x^{\frac{5}{2}}+2\,b^4cx^{\frac{3}{2}}+b^5\sqrt{x}\right)}+\frac{3\,(Bb-5\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(8*A*b^2 - 3*(B*b*c - 5*A*c^2)*x^2 - 5*(B*b^2 - 5*A*b*c)*x)/(b^3*c^2*x
^(5/2) + 2*b^4*c*x^(3/2) + b^5*sqrt(x)) + 3/4*(B*b - 5*A*c)*arctan(c*sqrt(x
)/sqrt(b*c))/(sqrt(b*c)*b^3)
```

mupad [B] time = 1.12, size = 116, normalized size = 0.94

$$-\frac{\frac{2\,A}{b}+\frac{5\,x\,(5\,A\,c-B\,b)}{4\,b^2}+\frac{3\,c\,x^2\,(5\,A\,c-B\,b)}{4\,b^3}}{b^2\,\sqrt{x}+c^2\,x^{5/2}+2\,b\,c\,x^{3/2}}-\frac{3\,\mathrm{atan}\left(\frac{3\,\sqrt{c}\,\sqrt{x}\,(5\,A\,c-B\,b)}{\sqrt{b}\,(15\,A\,c-3\,B\,b)}\right)\,(5\,A\,c-B\,b)}{4\,b^{7/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] - ((2*A)/b + (5*x*(5*A*c - B*b))/(4*b^2) + (3*c*x^2*(5*A*c - B*b))/(4*b^3))
/(b^2*x^(1/2) + c^2*x^(5/2) + 2*b*c*x^(3/2)) - (3*atan((3*c^(1/2)*x^(1/2)*(
5*A*c - B*b))/(b^(1/2)*(15*A*c - 3*B*b)))*(5*A*c - B*b))/(4*b^(7/2)*c^(1/2)
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.191 $\int \frac{\sqrt{x}(A+Bx)}{(bx+cx^2)^3}\,dx$

Optimal. Leaf size=147

$$-\frac{5\sqrt{c}(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{9/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}+\frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}$$

Rubi [A] time = 0.07, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}+\frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}-\frac{5\sqrt{c}(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{9/2}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (5*(3*b*B - 7*A*c))/(12*b^3*c*x^(3/2)) - (5*(3*b*B - 7*A*c))/(4*b^4*Sqrt[x]
) - (b*B - A*c)/(2*b*c*x^(3/2)*(b + c*x)^2) - (3*b*B - 7*A*c)/(4*b^2*c*x^(3
/2)*(b + c*x)) - (5*Sqrt[c]*(3*b*B - 7*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b
]])/(4*b^(9/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{x^{5/2}(b+cx)^3}\,dx \\
&= -\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2} - \frac{\left(\frac{3bB}{2}-\frac{7Ac}{2}\right)\int \frac{1}{x^{5/2}(b+cx)^2}\,dx}{2bc} \\
&= -\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2} - \frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)} - \frac{(5(3bB-7Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{8b^2c} \\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}} - \frac{bB-Ac}{2bcx^{3/2}(b+cx)^2} - \frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)} + \frac{(5(3bB-7Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{8b^3} \\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}} - \frac{5(3bB-7Ac)}{4b^4\sqrt{x}} - \frac{bB-Ac}{2bcx^{3/2}(b+cx)^2} - \frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)} - \frac{(5c(3bB-7Ac))\int}{8b^4} \\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}} - \frac{5(3bB-7Ac)}{4b^4\sqrt{x}} - \frac{bB-Ac}{2bcx^{3/2}(b+cx)^2} - \frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)} - \frac{(5c(3bB-7Ac))\,\mathrm{Su}}{} \\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}} - \frac{5(3bB-7Ac)}{4b^4\sqrt{x}} - \frac{bB-Ac}{2bcx^{3/2}(b+cx)^2} - \frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)} - \frac{5\sqrt{c}\,(3bB-7Ac)\,\mathrm{ta}}{4b^{9/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.41

$$
\frac{\frac{3b^2(Ac-bB)}{(b+cx)^2} + (3bB-7Ac)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};-\frac{cx}{b}\right)}{6b^3cx^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((3*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (3*b*B - 7*A*c)*Hypergeometric2F1[-3/
2, 2, -1/2, -((c*x)/b)])/(6*b^3*c*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.19, size = 125, normalized size = 0.85

$$
\frac{-8Ab^3+56Ab^2cx+175Abc^2x^2+105Ac^3x^3-24b^3Bx-75b^2Bcx^2-45bBc^2x^3}{12b^4x^{3/2}(b+cx)^2} - \frac{5\left(3bB\sqrt{c}-7Ac^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (-8*A*b^3 - 24*b^3*B*x + 56*A*b^2*c*x - 75*b^2*B*c*x^2 + 175*A*b*c^2*x^2 -
45*b*B*c^2*x^3 + 105*A*c^3*x^3)/(12*b^4*x^(3/2)*(b + c*x)^2) - (5*(3*b*B*Sq
rt[c] - 7*A*c^(3/2))*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(9/2))
```

fricas [A] time = 0.43, size = 380, normalized size = 2.59

$$
\left[-\frac{15\left(\left(3Bbc^2-7Ac^3\right)x^4+2\left(3Bb^2c-7Abc^2\right)x^3+\left(3Bb^3-7Ab^2c\right)x^2\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx+2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(8Ab^3+15\left(3Bbc^2-7Ac^3\right)x^3+25\left(3Bb^2c-7Abc^2\right)x^2+8\left(3Bb^3-7Ab^2c\right)x\right)\sqrt{x}}{24\left(b^4c^2x^4+2b^5cx^3+b^6x^2\right)}, \frac{15\left(\left(3Bbc^2-7Ac^3\right)x^4+2\left(3Bb^2c-7Abc^2\right)x^3+\left(3Bb^3-7Ab^2c\right)x^2\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-\left(8Ab^3+15\left(3Bbc^2-7Ac^3\right)x^3+25\left(3Bb^2c-7Abc^2\right)x^2+8\left(3Bb^3-7Ab^2c\right)x\right)\sqrt{x}}{12\left(b^4c^2x^4+2b^5cx^3+b^6x^2\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/24*(15*((3*B*b*c^2 - 7*A*c^3)*x^4 + 2*(3*B*b^2*c - 7*A*b*c^2)*x^3 + (3*
B*b^3 - 7*A*b^2*c)*x^2)*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/(
c*x + b)) + 2*(8*A*b^3 + 15*(3*B*b*c^2 - 7*A*c^3)*x^3 + 25*(3*B*b^2*c - 7*A
*b*c^2)*x^2 + 8*(3*B*b^3 - 7*A*b^2*c)*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^
3 + b^6*x^2), 1/12*(15*((3*B*b*c^2 - 7*A*c^3)*x^4 + 2*(3*B*b^2*c - 7*A*b*c^
2)*x^3 + (3*B*b^3 - 7*A*b^2*c)*x^2)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x)
)) - (8*A*b^3 + 15*(3*B*b*c^2 - 7*A*c^3)*x^3 + 25*(3*B*b^2*c - 7*A*b*c^2)*x
^2 + 8*(3*B*b^3 - 7*A*b^2*c)*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x
^2)]
```

giac [A] time = 0.16, size = 108, normalized size = 0.73

$$-\frac{5\left(3\,Bbc-7\,Ac^2\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^4}-\frac{2\,(3\,Bbx-9\,Acx+Ab)}{3\,b^4x^{\frac{3}{2}}}-\frac{7\,Bbc^2x^{\frac{3}{2}}-11\,Ac^3x^{\frac{3}{2}}+9\,Bb^2c\sqrt{x}-13\,Abc^2\sqrt{x}}{4\,(cx+b)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -5/4*(3*B*b*c - 7*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) - 2/3*
(3*B*b*x - 9*A*c*x + A*b)/(b^4*x^(3/2)) - 1/4*(7*B*b*c^2*x^(3/2) - 11*A*c^3
*x^(3/2) + 9*B*b^2*c*sqrt(x) - 13*A*b*c^2*sqrt(x))/((c*x + b)^2*b^4)
```

maple [A] time = 0.09, size = 152, normalized size = 1.03

$$\frac{11Ac^3x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^4}-\frac{7Bc^2x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^3}+\frac{13Ac^2\sqrt{x}}{4\,(cx+b)^2\,b^3}-\frac{9Bc\sqrt{x}}{4\,(cx+b)^2\,b^2}+\frac{35Ac^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^4}-\frac{15Bc\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^3}+\frac{6Ac}{b^4\sqrt{x}}-\frac{2B}{b^3\sqrt{x}}-\frac{2A}{3b^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 11/4/b^4*c^3/(c*x+b)^2*x^(3/2)*A-7/4/b^3*c^2/(c*x+b)^2*x^(3/2)*B+13/4/b^3*c
^2/(c*x+b)^2*A*x^(1/2)-9/4/b^2*c/(c*x+b)^2*B*x^(1/2)+35/4/b^4*c^2/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-15/4/b^3*c/(b*c)^(1/2)*arctan(1/(b*c)^
(1/2)*c*x^(1/2))*B-2/3/b^3*A/x^(3/2)+6/b^4/x^(1/2)*A*c-2/b^3/x^(1/2)*B
```

maxima [A] time = 1.29, size = 128, normalized size = 0.87

$$-\frac{8\,Ab^3+15\left(3\,Bbc^2-7\,Ac^3\right)x^3+25\left(3\,Bb^2c-7\,Abc^2\right)x^2+8\left(3\,Bb^3-7\,Ab^2c\right)x}{12\left(b^4c^2x^{\frac{7}{2}}+2\,b^5cx^{\frac{5}{2}}+b^6x^{\frac{3}{2}}\right)}-\frac{5\left(3\,Bbc-7\,Ac^2\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(8*A*b^3 + 15*(3*B*b*c^2 - 7*A*c^3)*x^3 + 25*(3*B*b^2*c - 7*A*b*c^2)*
x^2 + 8*(3*B*b^3 - 7*A*b^2*c)*x)/(b^4*c^2*x^(7/2) + 2*b^5*c*x^(5/2) + b^6*x
^(3/2)) - 5/4*(3*B*b*c - 7*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^
4)
```

mupad [B] time = 1.11, size = 114, normalized size = 0.78

$$\frac{\frac{2\,x\,(7\,A\,c-3\,B\,b)}{3\,b^2}-\frac{2\,A}{3\,b}+\frac{5\,c^2\,x^3\,(7\,A\,c-3\,B\,b)}{4\,b^4}+\frac{25\,c\,x^2\,(7\,A\,c-3\,B\,b)}{12\,b^3}}{b^2\,x^{3/2}+c^2\,x^{7/2}+2\,b\,c\,x^{5/2}}+\frac{5\,\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(7\,A\,c-3\,B\,b)}{4\,b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((2*x*(7*A*c - 3*B*b))/(3*b^2) - (2*A)/(3*b) + (5*c^2*x^3*(7*A*c - 3*B*b))/
(4*b^4) + (25*c*x^2*(7*A*c - 3*B*b))/(12*b^3))/(b^2*x^(3/2) + c^2*x^(7/2) +
 2*b*c*x^(5/2)) + (5*c^(1/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(7*A*c - 3*B*b
))/(4*b^(9/2))
```

sympy [A] time = 165.44, size = 1880, normalized size = 12.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2)))/c**3, Eq(b, 0)), ((-2*A/(3*x**(3/
2)) - 2*B/sqrt(x))/b**3, Eq(c, 0)), (-16*I*A*b**(7/2)*sqrt(1/c)/(24*I*b**(1
3/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/
2)*c**2*x**(7/2)*sqrt(1/c)) + 112*I*A*b**(5/2)*c*x*sqrt(1/c)/(24*I*b**(13/2
)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*
c**2*x**(7/2)*sqrt(1/c)) + 350*I*A*b**(3/2)*c**2*x**2*sqrt(1/c)/(24*I*b**(1
3/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/
2)*c**2*x**(7/2)*sqrt(1/c)) + 210*I*A*sqrt(b)*c**3*x**3*sqrt(1/c)/(24*I*b**
(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(
9/2)*c**2*x**(7/2)*sqrt(1/c)) + 105*A*b**2*c*x**(3/2)*log(-I*sqrt(b)*sqrt(1
/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/
2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) - 105*A*b**2*c*x**(3/
2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) +
48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)
) + 210*A*b*c**2*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/
2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)
*c**2*x**(7/2)*sqrt(1/c)) - 210*A*b*c**2*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) +
 sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sq
rt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) + 105*A*c**3*x**(7/2)*log(
-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b
**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) - 10
5*A*c**3*x**(7/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/
2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**
(7/2)*sqrt(1/c)) - 48*I*B*b**(7/2)*x*sqrt(1/c)/(24*I*b**(13/2)*x**(3/2)*sqr
t(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*
sqrt(1/c)) - 150*I*B*b**(5/2)*c*x**2*sqrt(1/c)/(24*I*b**(13/2)*x**(3/2)*sqr
t(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*
sqrt(1/c)) - 90*I*B*b**(3/2)*c**2*x**3*sqrt(1/c)/(24*I*b**(13/2)*x**(3/2)*s
qrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2
)*sqrt(1/c)) - 45*B*b**3*x**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I
*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*
b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) + 45*B*b**3*x**(3/2)*log(I*sqrt(b)*sqrt(1
/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/
2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) - 90*B*b**2*c*x**(5/2
)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) +
48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)
) + 90*B*b**2*c*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)
*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c
**2*x**(7/2)*sqrt(1/c)) - 45*B*b*c**2*x**(7/2)*log(-I*sqrt(b)*sqrt(1/c) + s
qrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt
(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) + 45*B*b*c**2*x**(7/2)*log(I
*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**
(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)), True)
)
```

3.192 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=169

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{11/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}-\frac{bB-A}{2bcx^{5/2}(b}$$

Rubi [A] time = 0.09, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{11/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}+\frac{7(5bB-9Ac)}{20b^3cx^{5/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^3),x]
```

```
[Out] (7*(5*b*B - 9*A*c))/(20*b^3*c*x^(5/2)) - (7*(5*b*B - 9*A*c))/(12*b^4*x^(3/2
)) + (7*c*(5*b*B - 9*A*c))/(4*b^5*Sqrt[x]) - (b*B - A*c)/(2*b*c*x^(5/2)*(b
+ c*x)^2) - (5*b*B - 9*A*c)/(4*b^2*c*x^(5/2)*(b + c*x)) + (7*c^(3/2)*(5*b*B
 - 9*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(11/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{x^{7/2}(b+cx)^3}\,dx \\
&= -\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{\left(\frac{5bB}{2}-\frac{9Ac}{2}\right)\int \frac{1}{x^{7/2}(b+cx)^2}\,dx}{2bc} \\
&= -\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}-\frac{(7(5bB-9Ac))\int \frac{1}{x^{7/2}(b+cx)}\,dx}{8b^2c} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}+\frac{(7(5bB-9Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{8b^3} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}-\frac{(7c(5bB-9Ac))}{8b^4} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.36

$$\frac{\frac{5b^2(Ac-bB)}{(b+cx)^2}+(5bB-9Ac)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};-\frac{cx}{b}\right)}{10b^3cx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^3),x]
```

```
[Out] ((5*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (5*b*B - 9*A*c)*Hypergeometric2F1[-5/
2, 2, -3/2, -((c*x)/b)])/(10*b^3*c*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.20, size = 149, normalized size = 0.88

$$\frac{7\left(5bBc^{3/2}-9Ac^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{11/2}}+\frac{-24Ab^4+72Ab^3cx-504Ab^2c^2x^2-1575Abc^3x^3-945Ac^4x^4-40b^4Bx+280b^3Bcx^2+875b^2Bc^2x^3+525bBc^3x^4}{60b^5x^{5/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^3),x]
```

```
[Out] (-24*A*b^4 - 40*b^4*B*x + 72*A*b^3*c*x + 280*b^3*B*c*x^2 - 504*A*b^2*c^2*x^
2 + 875*b^2*B*c^2*x^3 - 1575*A*b*c^3*x^3 + 525*b*B*c^3*x^4 - 945*A*c^4*x^4)
/(60*b^5*x^(5/2)*(b + c*x)^2) + (7*(5*b*B*c^(3/2) - 9*A*c^(5/2))*ArcTan[(Sq
rt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(11/2))
```

fricas [A] time = 0.43, size = 437, normalized size = 2.59

$$\left[-\frac{105\left(\left(5Bbc^3-9Ac^4\right)x^5+2\left(5Bb^2c^2-9Abc^3\right)x^4+\left(5Bb^3c-9Ab^2c^2\right)x^3\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx-2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(24Ab^4-105\left(5Bbc^3-9Ac^4\right)x^4-175\left(5Bb^2c^2-9Abc^3\right)x^3-56\left(5Bb^3c-9Ab^2c^2\right)x^2+8\left(5Bb^4-9Ab^3c\right)x\right)\sqrt{x}}{120\left(b^5c^2x^5+2b^6cx^4+b^7x^3\right)}, -\frac{105\left(\left(5Bbc^3-9Ac^4\right)x^5+2\left(5Bb^2c^2-9Abc^3\right)x^4+\left(5Bb^3c-9Ab^2c^2\right)x^3\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)+\left(24Ab^4-105\left(5Bbc^3-9Ac^4\right)x^4-175\left(5Bb^2c^2-9Abc^3\right)x^3-56\left(5Bb^3c-9Ab^2c^2\right)x^2+8\left(5Bb^4-9Ab^3c\right)x\right)\sqrt{x}}{60\left(b^5c^2x^5+2b^6cx^4+b^7x^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/120*(105*((5*B*b*c^3 - 9*A*c^4)*x^5 + 2*(5*B*b^2*c^2 - 9*A*b*c^3)*x^4 +
 (5*B*b^3*c - 9*A*b^2*c^2)*x^3)*sqrt(-c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-c/b
) - b)/(c*x + b)) + 2*(24*A*b^4 - 105*(5*B*b*c^3 - 9*A*c^4)*x^4 - 175*(5*B*
b^2*c^2 - 9*A*b*c^3)*x^3 - 56*(5*B*b^3*c - 9*A*b^2*c^2)*x^2 + 8*(5*B*b^4 -
9*A*b^3*c)*x)*sqrt(x))/(b^5*c^2*x^5 + 2*b^6*c*x^4 + b^7*x^3), -1/60*(105*((
5*B*b*c^3 - 9*A*c^4)*x^5 + 2*(5*B*b^2*c^2 - 9*A*b*c^3)*x^4 + (5*B*b^3*c - 9
*A*b^2*c^2)*x^3)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) + (24*A*b^4 - 10
5*(5*B*b*c^3 - 9*A*c^4)*x^4 - 175*(5*B*b^2*c^2 - 9*A*b*c^3)*x^3 - 56*(5*B*b
^3*c - 9*A*b^2*c^2)*x^2 + 8*(5*B*b^4 - 9*A*b^3*c)*x)*sqrt(x))/(b^5*c^2*x^5
+ 2*b^6*c*x^4 + b^7*x^3)]
```

giac [A] time = 0.17, size = 135, normalized size = 0.80

$$\frac{7\left(5\,Bbc^{2}-9\,Ac^{3}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^{5}}+\frac{11\,Bbc^{3}x^{\frac{3}{2}}-15\,Ac^{4}x^{\frac{3}{2}}+13\,Bb^{2}c^{2}\sqrt{x}-17\,Abc^{3}\sqrt{x}}{4\,(cx+b)^{2}b^{5}}+\frac{2\left(45\,Bbcx^{2}-90\,Ac^{2}x^{2}-5\,Bb^{2}x+15\,Abcx-3\,Ab^{2}\right)}{15\,b^{5}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 7/4*(5*B*b*c^2 - 9*A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) + 1/4
*(11*B*b*c^3*x^(3/2) - 15*A*c^4*x^(3/2) + 13*B*b^2*c^2*sqrt(x) - 17*A*b*c^3
*sqrt(x))/((c*x + b)^2*b^5) + 2/15*(45*B*b*c*x^2 - 90*A*c^2*x^2 - 5*B*b^2*x
 + 15*A*b*c*x - 3*A*b^2)/(b^5*x^(5/2))
```

maple [A] time = 0.08, size = 178, normalized size = 1.05

$$-\frac{15A\,c^{4}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{5}}+\frac{11B\,c^{3}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{4}}-\frac{17A\,c^{3}\sqrt{x}}{4\,(cx+b)^{2}\,b^{4}}+\frac{13B\,c^{2}\sqrt{x}}{4\,(cx+b)^{2}\,b^{3}}-\frac{63A\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^{5}}+\frac{35B\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^{4}}-\frac{12A\,c^{2}}{b^{5}\sqrt{x}}+\frac{6Bc}{b^{4}\sqrt{x}}+\frac{2Ac}{b^{4}x^{\frac{3}{2}}}-\frac{2B}{3b^{3}x^{\frac{3}{2}}}-\frac{2A}{5b^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x)
```

```
[Out] -15/4/b^5*c^4/(c*x+b)^2*x^(3/2)*A+11/4/b^4*c^3/(c*x+b)^2*x^(3/2)*B-17/4/b^4
*c^3/(c*x+b)^2*A*x^(1/2)+13/4/b^3*c^2/(c*x+b)^2*B*x^(1/2)-63/4/b^5*c^3/(b*c
)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+35/4/b^4*c^2/(b*c)^(1/2)*arctan(1
/(b*c)^(1/2)*c*x^(1/2))*B-2/5/b^3*A/x^(5/2)+2/b^4/x^(3/2)*A*c-2/3/b^3/x^(3/
2)*B-12*c^2/b^5/x^(1/2)*A+6*c/b^4/x^(1/2)*B
```

maxima [A] time = 1.56, size = 154, normalized size = 0.91

$$-\frac{24\,Ab^{4}-105\left(5\,Bbc^{3}-9\,Ac^{4}\right)x^{4}-175\left(5\,Bb^{2}c^{2}-9\,Abc^{3}\right)x^{3}-56\left(5\,Bb^{3}c-9\,Ab^{2}c^{2}\right)x^{2}+8\left(5\,Bb^{4}-9\,Ab^{3}c\right)x}{60\left(b^{5}c^{2}x^{\frac{9}{2}}+2\,b^{6}cx^{\frac{7}{2}}+b^{7}x^{\frac{5}{2}}\right)}+\frac{7\left(5\,Bbc^{2}-9\,Ac^{3}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] -1/60*(24*A*b^4 - 105*(5*B*b*c^3 - 9*A*c^4)*x^4 - 175*(5*B*b^2*c^2 - 9*A*b*
c^3)*x^3 - 56*(5*B*b^3*c - 9*A*b^2*c^2)*x^2 + 8*(5*B*b^4 - 9*A*b^3*c)*x)/(b
^5*c^2*x^(9/2) + 2*b^6*c*x^(7/2) + b^7*x^(5/2)) + 7/4*(5*B*b*c^2 - 9*A*c^3)
*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5)
```

mupad [B] time = 1.14, size = 135, normalized size = 0.80

$$-\frac{\frac{2\,A}{5\,b}-\frac{2\,x\,(9\,A\,c-5\,B\,b)}{15\,b^2}+\frac{35\,c^2\,x^3\,(9\,A\,c-5\,B\,b)}{12\,b^4}+\frac{7\,c^3\,x^4\,(9\,A\,c-5\,B\,b)}{4\,b^5}+\frac{14\,c\,x^2\,(9\,A\,c-5\,B\,b)}{15\,b^3}}{b^2\,x^{5/2}+c^2\,x^{9/2}+2\,b\,c\,x^{7/2}}-\frac{7\,c^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(9\,A\,c-5\,B\,b)}{4\,b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^3),x)
```

```
[Out] - ((2*A)/(5*b) - (2*x*(9*A*c - 5*B*b))/(15*b^2) + (35*c^2*x^3*(9*A*c - 5*B*
b))/(12*b^4) + (7*c^3*x^4*(9*A*c - 5*B*b))/(4*b^5) + (14*c*x^2*(9*A*c - 5*B
*b))/(15*b^3))/(b^2*x^(5/2) + c^2*x^(9/2) + 2*b*c*x^(7/2)) - (7*c^(3/2)*ata
n((c^(1/2)*x^(1/2))/b^(1/2))*(9*A*c - 5*B*b))/(4*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**3/x**(1/2),x)
```

```
[Out] Timed out
```

3.193 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=193

$$-\frac{9c^{5/2}(7bB-11Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{13/2}}-\frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}}+\frac{3c(7bB-11Ac)}{4b^5x^{3/2}}-\frac{9(7bB-11Ac)}{20b^4x^{5/2}}+\frac{9(7bB-11Ac)}{28b^3cx^{7/2}}-\frac{7b}{4b^2c}$$

Rubi [A] time = 0.10, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}}-\frac{9c^{5/2}(7bB-11Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{13/2}}+\frac{3c(7bB-11Ac)}{4b^5x^{3/2}}-\frac{9(7bB-11Ac)}{20b^4x^{5/2}}-\frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)}+\frac{9(7bB-11Ac)}{28b^3cx^{7/2}}-\frac{bB-Ac}{2bcx^{7/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (9*(7*b*B - 11*A*c))/(28*b^3*c*x^(7/2)) - (9*(7*b*B - 11*A*c))/(20*b^4*x^(5
/2)) + (3*c*(7*b*B - 11*A*c))/(4*b^5*x^(3/2)) - (9*c^2*(7*b*B - 11*A*c))/(4
*b^6*Sqrt[x]) - (b*B - A*c)/(2*b*c*x^(7/2)*(b + c*x)^2) - (7*b*B - 11*A*c)/
(4*b^2*c*x^(7/2)*(b + c*x)) - (9*c^(5/2)*(7*b*B - 11*A*c)*ArcTan[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(4*b^(13/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
```

```
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^3}\,dx = \int \frac{A+Bx}{x^{9/2}(b+cx)^3}\,dx$$

$$= -\frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{\left(\frac{7bB}{2}-\frac{11Ac}{2}\right)\int \frac{1}{x^{9/2}(b+cx)^2}\,dx}{2bc}$$

$$= -\frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)} - \frac{(9(7bB-11Ac))\int \frac{1}{x^{9/2}(b+cx)}\,dx}{8b^2c}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)} + \frac{(9(7bB-11Ac))\int \frac{1}{x^{7/2}(b+cx)}\,dx}{8b^3}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)} - \frac{(9c(7bB-11A}{8}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+c}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx}$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.32

$$\frac{\frac{7b^2(Ac-bB)}{(b+cx)^2} + (7bB-11Ac)\,{}_2F_1\left(-\frac{7}{2},2;-\frac{5}{2};-\frac{cx}{b}\right)}{14b^3cx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] ((7*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (7*b*B - 11*A*c)*Hypergeometric2F1[-7
/2, 2, -5/2, -((c*x)/b)])/(14*b^3*c*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.22, size = 173, normalized size = 0.90

$$\frac{-40Ab^5+88Ab^4cx-264Ab^3c^2x^2+1848Ab^2c^3x^3+5775Abc^4x^4+3465Ac^5x^5-56b^5Bx+168b^4Bcx^2-1176b^3Bc^2x^3-3675b^2Bc^3x^4-2205bBc^4x^5}{140b^6x^{7/2}(b+cx)^2} - \frac{9\left(7bBc^{5/2}-11Ac^{7/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{13/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (-40*A*b^5 - 56*b^5*B*x + 88*A*b^4*c*x + 168*b^4*B*c*x^2 - 264*A*b^3*c^2*x^
2 - 1176*b^3*B*c^2*x^3 + 1848*A*b^2*c^3*x^3 - 3675*b^2*B*c^3*x^4 + 5775*A*b
*c^4*x^4 - 2205*b*B*c^4*x^5 + 3465*A*c^5*x^5)/(140*b^6*x^(7/2)*(b + c*x)^2)
 - (9*(7*b*B*c^(5/2) - 11*A*c^(7/2))*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*
b^(13/2))
```

fricas [A] time = 0.44, size = 490, normalized size = 2.54

$$\left[-\frac{315\left(\left(7\,Bbc^4-11\,Ac^5\right)x^6+2\left(7\,Bb^2c^3-11\,Abc^4\right)x^5+\left(7\,Bb^3c^2-11\,Ab^2c^3\right)x^4\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx+2b\sqrt{x}\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(40\,Ab^5+315\left(7\,Bbc^4-11\,Ac^5\right)x^5+525\left(7\,Bb^2c^3-11\,Abc^4\right)x^4+168\left(7\,Bb^3c^2-11\,Ab^2c^3\right)x^3-24\left(7\,Bb^4c-11\,Ab^3c^2\right)x^2+8\left(7\,Bb^5-11\,Ab^4c\right)x\right)\sqrt{x}}{280\left(b^6c^2x^6+2\,b^7cx^5+b^8x^4\right)},\ \frac{315\left(\left(7\,Bbc^4-11\,Ac^5\right)x^6+2\left(7\,Bb^2c^3-11\,Abc^4\right)x^5+\left(7\,Bb^3c^2-11\,Ab^2c^3\right)x^4\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-\left(40\,Ab^5+315\left(7\,Bbc^4-11\,Ac^5\right)x^5+525\left(7\,Bb^2c^3-11\,Abc^4\right)x^4+168\left(7\,Bb^3c^2-11\,Ab^2c^3\right)x^3-24\left(7\,Bb^4c-11\,Ab^3c^2\right)x^2+8\left(7\,Bb^5-11\,Ab^4c\right)x\right)\sqrt{x}}{140\left(b^6c^2x^6+2\,b^7cx^5+b^8x^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/280*(315*((7*B*b*c^4 - 11*A*c^5)*x^6 + 2*(7*B*b^2*c^3 - 11*A*b*c^4)*x^5
 + (7*B*b^3*c^2 - 11*A*b^2*c^3)*x^4)*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt
(-c/b) - b)/(c*x + b)) + 2*(40*A*b^5 + 315*(7*B*b*c^4 - 11*A*c^5)*x^5 + 525
*(7*B*b^2*c^3 - 11*A*b*c^4)*x^4 + 168*(7*B*b^3*c^2 - 11*A*b^2*c^3)*x^3 - 24
*(7*B*b^4*c - 11*A*b^3*c^2)*x^2 + 8*(7*B*b^5 - 11*A*b^4*c)*x)*sqrt(x))/(b^6
*c^2*x^6 + 2*b^7*c*x^5 + b^8*x^4), 1/140*(315*((7*B*b*c^4 - 11*A*c^5)*x^6 +
 2*(7*B*b^2*c^3 - 11*A*b*c^4)*x^5 + (7*B*b^3*c^2 - 11*A*b^2*c^3)*x^4)*sqrt(
c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (40*A*b^5 + 315*(7*B*b*c^4 - 11*A*c^
5)*x^5 + 525*(7*B*b^2*c^3 - 11*A*b*c^4)*x^4 + 168*(7*B*b^3*c^2 - 11*A*b^2*c
^3)*x^3 - 24*(7*B*b^4*c - 11*A*b^3*c^2)*x^2 + 8*(7*B*b^5 - 11*A*b^4*c)*x)*s
qrt(x))/(b^6*c^2*x^6 + 2*b^7*c*x^5 + b^8*x^4)]
```

giac [A] time = 0.17, size = 159, normalized size = 0.82

$$-\frac{9\left(7\,Bbc^3-11\,Ac^4\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^6}-\frac{15\,Bbc^4x^{\frac{3}{2}}-19\,Ac^5x^{\frac{3}{2}}+17\,Bb^2c^3\sqrt{x}-21\,Abc^4\sqrt{x}}{4\,(cx+b)^2b^6}-\frac{2\left(210\,Bbc^2x^3-350\,Ac^3x^3-35\,Bb^2cx^2+70\,Abc^2x^2+7\,Bb^3x-21\,Ab^2cx+5\,Ab^3\right)}{35\,b^6x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -9/4*(7*B*b*c^3 - 11*A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^6) - 1
/4*(15*B*b*c^4*x^(3/2) - 19*A*c^5*x^(3/2) + 17*B*b^2*c^3*sqrt(x) - 21*A*b*c
^4*sqrt(x))/((c*x + b)^2*b^6) - 2/35*(210*B*b*c^2*x^3 - 350*A*c^3*x^3 - 35*
B*b^2*c*x^2 + 70*A*b*c^2*x^2 + 7*B*b^3*x - 21*A*b^2*c*x + 5*A*b^3)/(b^6*x^(
7/2))
```

maple [A] time = 0.07, size = 202, normalized size = 1.05

$$\frac{19A\,c^5x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^6}-\frac{15B\,c^4x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^5}+\frac{21A\,c^4\sqrt{x}}{4\,(cx+b)^2\,b^5}-\frac{17B\,c^3\sqrt{x}}{4\,(cx+b)^2\,b^4}+\frac{99A\,c^4\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^6}-\frac{63B\,c^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^5}+\frac{20A\,c^3}{b^6\sqrt{x}}-\frac{12B\,c^2}{b^5\sqrt{x}}-\frac{4A\,c^2}{b^5x^{\frac{3}{2}}}+\frac{2Bc}{b^4x^{\frac{3}{2}}}+\frac{6Ac}{5b^4x^{\frac{5}{2}}}-\frac{2B}{5b^3x^{\frac{5}{2}}}-\frac{2A}{7b^3x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 19/4/b^6*c^5/(c*x+b)^2*x^(3/2)*A-15/4/b^5*c^4/(c*x+b)^2*x^(3/2)*B+21/4/b^5*
c^4/(c*x+b)^2*A*x^(1/2)-17/4/b^4*c^3/(c*x+b)^2*B*x^(1/2)+99/4/b^6*c^4/(b*c)
^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-63/4/b^5*c^3/(b*c)^(1/2)*arctan(1/
(b*c)^(1/2)*c*x^(1/2))*B-2/7/b^3*A/x^(7/2)+6/5/b^4/x^(5/2)*A*c-2/5/b^3/x^(5
/2)*B-4*c^2/b^5/x^(3/2)*A+2*c/b^4/x^(3/2)*B+20*c^3/b^6/x^(1/2)*A-12*c^2/b^5
/x^(1/2)*B
```

maxima [A] time = 1.37, size = 178, normalized size = 0.92

$$-\frac{40\,Ab^5+315\left(7\,Bbc^4-11\,Ac^5\right)x^5+525\left(7\,Bb^2c^3-11\,Abc^4\right)x^4+168\left(7\,Bb^3c^2-11\,Ab^2c^3\right)x^3-24\left(7\,Bb^4c-11\,Ab^3c^2\right)x^2+8\left(7\,Bb^5-11\,Ab^4c\right)x}{140\left(b^6c^2x^{\frac{11}{2}}+2\,b^7cx^{\frac{9}{2}}+b^8x^{\frac{7}{2}}\right)}-\frac{9\left(7\,Bbc^3-11\,Ac^4\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/140*(40*A*b^5 + 315*(7*B*b*c^4 - 11*A*c^5)*x^5 + 525*(7*B*b^2*c^3 - 11*A
*b*c^4)*x^4 + 168*(7*B*b^3*c^2 - 11*A*b^2*c^3)*x^3 - 24*(7*B*b^4*c - 11*A*b
^3*c^2)*x^2 + 8*(7*B*b^5 - 11*A*b^4*c)*x)/(b^6*c^2*x^(11/2) + 2*b^7*c*x^(9/
```

```
2) + b^8*x^(7/2)) - 9/4*(7*B*b*c^3 - 11*A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/
(sqrt(b*c)*b^6)
```

mupad [B] time = 1.18, size = 154, normalized size = 0.80

$$\frac{\frac{2\,x\,(11\,A\,c-7\,B\,b)}{35\,b^2}-\frac{2\,A}{7\,b}+\frac{6\,c^2\,x^3\,(11\,A\,c-7\,B\,b)}{5\,b^4}+\frac{15\,c^3\,x^4\,(11\,A\,c-7\,B\,b)}{4\,b^5}+\frac{9\,c^4\,x^5\,(11\,A\,c-7\,B\,b)}{4\,b^6}-\frac{6\,c\,x^2\,(11\,A\,c-7\,B\,b)}{35\,b^3}}{b^2\,x^{7/2}+c^2\,x^{11/2}+2\,b\,c\,x^{9/2}}+\frac{9\,c^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(11\,A\,c-7\,B\,b)}{4\,b^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x)
```

```
[Out] ((2*x*(11*A*c - 7*B*b))/(35*b^2) - (2*A)/(7*b) + (6*c^2*x^3*(11*A*c - 7*B*b
))/(5*b^4) + (15*c^3*x^4*(11*A*c - 7*B*b))/(4*b^5) + (9*c^4*x^5*(11*A*c - 7
*B*b))/(4*b^6) - (6*c*x^2*(11*A*c - 7*B*b))/(35*b^3))/(b^2*x^(7/2) + c^2*x^
(11/2) + 2*b*c*x^(9/2)) + (9*c^(5/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(11*A*
c - 7*B*b))/(4*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.194 $\int x^{7/2}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=207

$$-\frac{256b^4\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{45045c^6x^{3/2}}+\frac{128b^3\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{15015c^5\sqrt{x}}-\frac{32b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}(10bB-13Ac}{3003c^4}$$

Rubi [A] time = 0.19, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{256b^4\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{45045c^6x^{3/2}}+\frac{128b^3\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{15015c^5\sqrt{x}}-\frac{32b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{3003c^4}+\frac{16bx^{3/2}\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{1287c^3}-\frac{2x^{5/2}\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{143c^2}+\frac{2Bx^{7/2}\left(bx+cx^2\right)^{3/2}}{13c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (-256*b^4*(10*b*B - 13*A*c)*(b*x + c*x^2)^(3/2))/(45045*c^6*x^(3/2)) + (128
*b^3*(10*b*B - 13*A*c)*(b*x + c*x^2)^(3/2))/(15015*c^5*Sqrt[x]) - (32*b^2*(
10*b*B - 13*A*c)*Sqrt[x]*(b*x + c*x^2)^(3/2))/(3003*c^4) + (16*b*(10*b*B -
13*A*c)*x^(3/2)*(b*x + c*x^2)^(3/2))/(1287*c^3) - (2*(10*b*B - 13*A*c)*x^(5
/2)*(b*x + c*x^2)^(3/2))/(143*c^2) + (2*B*x^(7/2)*(b*x + c*x^2)^(3/2))/(13*
c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{7/2}(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{2Bx^{7/2}\left(bx+cx^2\right)^{3/2}}{13c} + \frac{\left(2\left(\frac{7}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int x^{7/2}\sqrt{bx+cx^2}\,dx}{13c}$$

$$= -\frac{2(10bB-13Ac)x^{5/2}\left(bx+cx^2\right)^{3/2}}{143c^2} + \frac{2Bx^{7/2}\left(bx+cx^2\right)^{3/2}}{13c} + \frac{(8b(10bB-13Ac))}{143 \cdots}$$

$$= \frac{16b(10bB-13Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{1287c^3} - \frac{2(10bB-13Ac)x^{5/2}\left(bx+cx^2\right)^{3/2}}{143c^2} + \frac{2Bx^{7/2}\cdots}{\cdots}$$

$$= -\frac{32b^2(10bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{3003c^4} + \frac{16b(10bB-13Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{1287c^3} - \frac{2\cdots}{\cdots}$$

$$= \frac{128b^3(10bB-13Ac)\left(bx+cx^2\right)^{3/2}}{15015c^5\sqrt{x}} - \frac{32b^2(10bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{3003c^4} + \frac{16b(\cdots}{\cdots}$$

$$= -\frac{256b^4(10bB-13Ac)\left(bx+cx^2\right)^{3/2}}{45045c^6x^{3/2}} + \frac{128b^3(10bB-13Ac)\left(bx+cx^2\right)^{3/2}}{15015c^5\sqrt{x}} - \frac{32b^2\cdots}{\cdots}$$

Mathematica [A] time = 0.09, size = 113, normalized size = 0.55

$$\frac{2(x(b+cx))^{3/2}\left(128b^4c(13A+15Bx)-96b^3c^2x(26A+25Bx)+80b^2c^3x^2(39A+35Bx)-70bc^4x^3(52A+45Bx)+315c^5x^4(13A+11Bx)-1280b^5B\right)}{45045c^6x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(-1280*b^5*B + 315*c^5*x^4*(13*A + 11*B*x) + 128*b^4
*c*(13*A + 15*B*x) - 96*b^3*c^2*x*(26*A + 25*B*x) + 80*b^2*c^3*x^2*(39*A +
35*B*x) - 70*b*c^4*x^3*(52*A + 45*B*x)))/(45045*c^6*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.16, size = 131, normalized size = 0.63

$$\frac{2\left(bx+cx^2\right)^{3/2}\left(1664Ab^4c-2496Ab^3c^2x+3120Ab^2c^3x^2-3640Abc^4x^3+4095Ac^5x^4-1280b^5B+1920b^4Bcx-2400b^3Bc^2x^2+2800b^2Bc^3x^3-3150bBc^4x^4+3465Bc^5x^5\right)}{45045c^6x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(b*x + c*x^2)^(3/2)*(-1280*b^5*B + 1664*A*b^4*c + 1920*b^4*B*c*x - 2496*
A*b^3*c^2*x - 2400*b^3*B*c^2*x^2 + 3120*A*b^2*c^3*x^2 + 2800*b^2*B*c^3*x^3
- 3640*A*b*c^4*x^3 - 3150*b*B*c^4*x^4 + 4095*A*c^5*x^4 + 3465*B*c^5*x^5))/(
45045*c^6*x^(3/2))
```

fricas [A] time = 0.41, size = 150, normalized size = 0.72

$$\frac{2\left(3465\,Bc^6x^6-1280\,Bb^6+1664\,Ab^5c+315\left(Bbc^5+13\,Ac^6\right)x^5-35\left(10\,Bb^2c^4-13\,Abc^5\right)x^4+40\left(10\,Bb^3c^3-13\,Ab^2c^4\right)x^3-48\left(10\,Bb^4c^2-13\,Ab^3c^3\right)x^2+64\left(10\,Bb^5c-13\,Ab^4c^2\right)x\right)\sqrt{cx^2+bx}}{45045\,c^6\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^6*x^6 - 1280*B*b^6 + 1664*A*b^5*c + 315*(B*b*c^5 + 13*A*c
^6)*x^5 - 35*(10*B*b^2*c^4 - 13*A*b*c^5)*x^4 + 40*(10*B*b^3*c^3 - 13*A*b^2*
c^4)*x^3 - 48*(10*B*b^4*c^2 - 13*A*b^3*c^3)*x^2 + 64*(10*B*b^5*c - 13*A*b^4
*c^2)*x)*sqrt(c*x^2 + b*x)/(c^6*sqrt(x))
```

giac [A] time = 0.22, size = 158, normalized size = 0.76

$$\frac{2}{9009}\,B\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b^4-3003\,(cx+b)^{\frac{3}{2}}b^5}{c^6}\right)-\frac{2}{3465}\,A\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/9009*B*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*
b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^
(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*A*(128*b^(11/2)/c^5 - (
315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 -
2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5)
```

maple [A] time = 0.05, size = 131, normalized size = 0.63

$$\frac{2\,(cx+b)\left(3465B\,x^5c^5+4095A\,c^5x^4-3150Bb\,c^4x^4-3640Ab\,c^4x^3+2800B\,b^2c^3x^3+3120A\,b^2c^3x^2-2400B\,b^3c^2x^2-2496A\,b^3c^2x+1920B\,b^4cx+1664A\,b^4c-1280B\,b^5\right)\sqrt{c\,x^2+bx}}{45045c^6\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/45045*(c*x+b)*(3465*B*c^5*x^5+4095*A*c^5*x^4-3150*B*b*c^4*x^4-3640*A*b*c^
4*x^3+2800*B*b^2*c^3*x^3+3120*A*b^2*c^3*x^2-2400*B*b^3*c^2*x^2-2496*A*b^3*c
^2*x+1920*B*b^4*c*x+1664*A*b^4*c-1280*B*b^5)*(c*x^2+b*x)^(1/2)/c^6/x^(1/2)
```

maxima [A] time = 0.65, size = 142, normalized size = 0.69

$$\frac{2\left(315\,c^5x^5+35\,bc^4x^4-40\,b^2c^3x^3+48\,b^3c^2x^2-64\,b^4cx+128\,b^5\right)\sqrt{cx+b}\,A}{3465\,c^5}+\frac{2\left(693\,c^6x^6+63\,bc^5x^5-70\,b^2c^4x^4+80\,b^3c^3x^3-96\,b^4c^2x^2+128\,b^5cx-256\,b^6\right)\sqrt{cx+b}\,B}{9009\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*b
^4*c*x + 128*b^5)*sqrt(c*x + b)*A/c^5 + 2/9009*(693*c^6*x^6 + 63*b*c^5*x^5
- 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 - 96*b^4*c^2*x^2 + 128*b^5*c*x - 256*b^6)
*sqrt(c*x + b)*B/c^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{7/2}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(7/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{7}{2}}\sqrt{x\,(b+cx)}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(7/2)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.195 $\int x^{5/2}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{3465c^5x^{3/2}}-\frac{16b^2\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{1155c^4\sqrt{x}}+\frac{4b\sqrt{x}\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{231c^3}-\frac{2x^{3/2}\left(bx+\right.}{}$$

Rubi [A] time = 0.16, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$\frac{32b^3\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{3465c^5x^{3/2}}-\frac{16b^2\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{1155c^4\sqrt{x}}+\frac{4b\sqrt{x}\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{231c^3}-\frac{2x^{3/2}\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{99c^2}+\frac{2Bx^{5/2}\left(bx+cx^2\right)^{3/2}}{11c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (32*b^3*(8*b*B - 11*A*c)*(b*x + c*x^2)^(3/2))/(3465*c^5*x^(3/2)) - (16*b^2*
(8*b*B - 11*A*c)*(b*x + c*x^2)^(3/2))/(1155*c^4*Sqrt[x]) + (4*b*(8*b*B - 11
*A*c)*Sqrt[x]*(b*x + c*x^2)^(3/2))/(231*c^3) - (2*(8*b*B - 11*A*c)*x^(3/2)*
(b*x + c*x^2)^(3/2))/(99*c^2) + (2*B*x^(5/2)*(b*x + c*x^2)^(3/2))/(11*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{5/2}(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{2Bx^{5/2}\left(bx+cx^2\right)^{3/2}}{11c} + \frac{\left(2\left(\frac{5}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int x^{5/2}\sqrt{bx+cx^2}\,d}{11c}$$

$$= -\frac{2(8bB-11Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{99c^2} + \frac{2Bx^{5/2}\left(bx+cx^2\right)^{3/2}}{11c} + \frac{(2b(8bB-11Ac))}{3}$$

$$= \frac{4b(8bB-11Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{231c^3} - \frac{2(8bB-11Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{99c^2} + \frac{2Bx^{5/2}}{}$$

$$= -\frac{16b^2(8bB-11Ac)\left(bx+cx^2\right)^{3/2}}{1155c^4\sqrt{x}} + \frac{4b(8bB-11Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{231c^3} - \frac{2(8bE}{}$$

$$= \frac{32b^3(8bB-11Ac)\left(bx+cx^2\right)^{3/2}}{3465c^5x^{3/2}} - \frac{16b^2(8bB-11Ac)\left(bx+cx^2\right)^{3/2}}{1155c^4\sqrt{x}} + \frac{4b(8bB}{}$$

Mathematica [A] time = 0.07, size = 94, normalized size = 0.55

$$\frac{2(x(b+cx))^{3/2}\left(-16b^3c(11A+12Bx)+24b^2c^2x(11A+10Bx)-10bc^3x^2(33A+28Bx)+35c^4x^3(11A+9Bx)+128b^4B\right)}{3465c^5x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(128*b^4*B + 35*c^4*x^3*(11*A + 9*B*x) + 24*b^2*c^2*
x*(11*A + 10*B*x) - 16*b^3*c*(11*A + 12*B*x) - 10*b*c^3*x^2*(33*A + 28*B*x)
))/(3465*c^5*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.14, size = 107, normalized size = 0.63

$$\frac{2\left(bx+cx^2\right)^{3/2}\left(-176Ab^3c+264Ab^2c^2x-330Abc^3x^2+385Ac^4x^3+128b^4B-192b^3Bcx+240b^2Bc^2x^2-280bBc^3x^3+315Bc^4x^4\right)}{3465c^5x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(b*x + c*x^2)^(3/2)*(128*b^4*B - 176*A*b^3*c - 192*b^3*B*c*x + 264*A*b^2
*c^2*x + 240*b^2*B*c^2*x^2 - 330*A*b*c^3*x^2 - 280*b*B*c^3*x^3 + 385*A*c^4*
x^3 + 315*B*c^4*x^4))/(3465*c^5*x^(3/2))
```

fricas [A] time = 0.41, size = 126, normalized size = 0.74

$$\frac{2\left(315\,Bc^5x^5+128\,Bb^5-176\,Ab^4c+35\left(Bbc^4+11\,Ac^5\right)x^4-5\left(8\,Bb^2c^3-11\,Abc^4\right)x^3+6\left(8\,Bb^3c^2-11\,Ab^2c^3\right)x^2-8\left(8\,Bb^4c-11\,Ab^3c^2\right)x\right)\sqrt{cx^2+bx}}{3465\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^5*x^5 + 128*B*b^5 - 176*A*b^4*c + 35*(B*b*c^4 + 11*A*c^5)*x
^4 - 5*(8*B*b^2*c^3 - 11*A*b*c^4)*x^3 + 6*(8*B*b^3*c^2 - 11*A*b^2*c^3)*x^2
- 8*(8*B*b^4*c - 11*A*b^3*c^2)*x)*sqrt(c*x^2 + b*x)/(c^5*sqrt(x))
```

giac [A] time = 0.19, size = 134, normalized size = 0.79

$$-\frac{2}{3465}\,B\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)+\frac{2}{315}\,A\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -2/3465*B*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*
b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3
/2)*b^4)/c^5) + 2/315*A*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x +
b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4)
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2 (cx+b)\left(-315B\,x^4c^4-385A\,c^4x^3+280Bb\,c^3x^3+330Ab\,c^3x^2-240B\,b^2c^2x^2-264A\,b^2c^2x+192B\,b^3cx+176A\,b^3c-128b^4B\right)\sqrt{c\,x^2+bx}}{3465c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/3465*(c*x+b)*(-315*B*c^4*x^4-385*A*c^4*x^3+280*B*b*c^3*x^3+330*A*b*c^3*x
^2-240*B*b^2*c^2*x^2-264*A*b^2*c^2*x+192*B*b^3*c*x+176*A*b^3*c-128*B*b^4)*(
c*x^2+b*x)^(1/2)/c^5/x^(1/2)
```

maxima [A] time = 0.73, size = 120, normalized size = 0.71

$$\frac{2\left(35\,c^4x^4+5\,bc^3x^3-6\,b^2c^2x^2+8\,b^3cx-16\,b^4\right)\sqrt{cx+b}\,A}{315\,c^4}+\frac{2\left(315\,c^5x^5+35\,bc^4x^4-40\,b^2c^3x^3+48\,b^3c^2x^2-64\,b^4cx+128\,b^5\right)\sqrt{cx+b}\,B}{3465\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*(35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*sqrt(
c*x + b)*A/c^4 + 2/3465*(315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b
^3*c^2*x^2 - 64*b^4*c*x + 128*b^5)*sqrt(c*x + b)*B/c^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{5/2}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(5/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{5}{2}}\sqrt{x\left(b+cx\right)}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(5/2)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.196 $\int x^{3/2}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{315c^4x^{3/2}}+\frac{8b\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{105c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{21c^2}+\frac{2Bx^{3/2}\left(bx+cx^2\right)^{3/2}}{9c}$$

Rubi [A] time = 0.09, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{315c^4x^{3/2}}+\frac{8b\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{105c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{21c^2}+\frac{2Bx^{3/2}\left(bx+cx^2\right)^{3/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (-16*b^2*(2*b*B - 3*A*c)*(b*x + c*x^2)^(3/2))/(315*c^4*x^(3/2)) + (8*b*(2*b
*B - 3*A*c)*(b*x + c*x^2)^(3/2))/(105*c^3*Sqrt[x]) - (2*(2*b*B - 3*A*c)*Sqr
t[x]*(b*x + c*x^2)^(3/2))/(21*c^2) + (2*B*x^(3/2)*(b*x + c*x^2)^(3/2))/(9*c
)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{3/2}(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{2Bx^{3/2}\left(bx+cx^2\right)^{3/2}}{9c} + \frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int x^{3/2}\sqrt{bx+cx^2}\,dx}{9c}$$
$$= -\frac{2(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{21c^2} + \frac{2Bx^{3/2}\left(bx+cx^2\right)^{3/2}}{9c} + \frac{(4b(2bB-3Ac))\int \sqrt{x}}{21c^2}$$
$$= \frac{8b(2bB-3Ac)\left(bx+cx^2\right)^{3/2}}{105c^3\sqrt{x}} - \frac{2(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{21c^2} + \frac{2Bx^{3/2}\left(bx+cx\right.}{9c}$$
$$= -\frac{16b^2(2bB-3Ac)\left(bx+cx^2\right)^{3/2}}{315c^4x^{3/2}} + \frac{8b(2bB-3Ac)\left(bx+cx^2\right)^{3/2}}{105c^3\sqrt{x}} - \frac{2(2bB-3Ac)}{2}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.54

$$\frac{2(x(b+cx))^{3/2}\left(24b^2c(A+Bx)-6bc^2x(6A+5Bx)+5c^3x^2(9A+7Bx)-16b^3B\right)}{315c^4x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(-16*b^3*B + 24*b^2*c*(A + B*x) - 6*b*c^2*x*(6*A + 5
*B*x) + 5*c^3*x^2*(9*A + 7*B*x)))/(315*c^4*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.12, size = 83, normalized size = 0.62

$$\frac{2\left(bx+cx^2\right)^{3/2}\left(24Ab^2c-36Abc^2x+45Ac^3x^2-16b^3B+24b^2Bcx-30bBc^2x^2+35Bc^3x^3\right)}{315c^4x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(b*x + c*x^2)^(3/2)*(-16*b^3*B + 24*A*b^2*c + 24*b^2*B*c*x - 36*A*b*c^2*
x - 30*b*B*c^2*x^2 + 45*A*c^3*x^2 + 35*B*c^3*x^3))/(315*c^4*x^(3/2))
```

fricas [A] time = 0.41, size = 102, normalized size = 0.77

$$\frac{2\left(35\,Bc^4x^4-16\,Bb^4+24\,Ab^3c+5\left(Bbc^3+9\,Ac^4\right)x^3-3\left(2\,Bb^2c^2-3\,Abc^3\right)x^2+4\left(2\,Bb^3c-3\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}}{315\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^4*x^4 - 16*B*b^4 + 24*A*b^3*c + 5*(B*b*c^3 + 9*A*c^4)*x^3 - 3
*(2*B*b^2*c^2 - 3*A*b*c^3)*x^2 + 4*(2*B*b^3*c - 3*A*b^2*c^2)*x)*sqrt(c*x^2
+ b*x)/(c^4*sqrt(x))
```

giac [A] time = 0.19, size = 110, normalized size = 0.83

$$\frac{2}{315}\,B\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,A\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*B*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 189
*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*A*(8*b^(7/2)/c
^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^2)/c
^3)
```

maple [A] time = 0.08, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(35B\,c^{3}x^{3}+45A\,c^{3}x^{2}-30Bb\,c^{2}x^{2}-36Ab\,c^{2}x+24B\,b^{2}cx+24A\,b^{2}c-16b^{3}B\right)\sqrt{c\,x^{2}+bx}}{315c^{4}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/315*(c*x+b)*(35*B*c^3*x^3+45*A*c^3*x^2-30*B*b*c^2*x^2-36*A*b*c^2*x+24*B*b
^2*c*x+24*A*b^2*c-16*B*b^3)*(c*x^2+b*x)^(1/2)/c^4/x^(1/2)
```

maxima [A] time = 0.58, size = 98, normalized size = 0.74

$$\frac{2\left(15\,c^{3}x^{3}+3\,bc^{2}x^{2}-4\,b^{2}cx+8\,b^{3}\right)\sqrt{cx+b}\,A}{105\,c^{3}}+\frac{2\left(35\,c^{4}x^{4}+5\,bc^{3}x^{3}-6\,b^{2}c^{2}x^{2}+8\,b^{3}cx-16\,b^{4}\right)\sqrt{cx+b}\,B}{315\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*sqrt(c*x + b)*A/c^3 +
2/315*(35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*sqrt(
c*x + b)*B/c^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3/2}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{3}{2}}\sqrt{x\,(b+cx)}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(3/2)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.197 $\int \sqrt{x}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=96

$$\frac{4b\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{105c^3x^{3/2}}-\frac{2\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{35c^2\sqrt{x}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}$$

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{35c^2\sqrt{x}}+\frac{4b\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{105c^3x^{3/2}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (4*b*(4*b*B - 7*A*c)*(b*x + c*x^2)^(3/2))/(105*c^3*x^(3/2)) - (2*(4*b*B - 7
*A*c)*(b*x + c*x^2)^(3/2))/(35*c^2*Sqrt[x]) + (2*B*Sqrt[x]*(b*x + c*x^2)^(3
/2))/(7*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\sqrt{bx+cx^2}\,dx &= \frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}+\frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \sqrt{x}\sqrt{bx+cx^2}\,dx}{7c}\\ &= -\frac{2(4bB-7Ac)\left(bx+cx^2\right)^{3/2}}{35c^2\sqrt{x}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}+\frac{(2b(4bB-7Ac))\int \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\,dx}{35c^2}\\ &= \frac{4b(4bB-7Ac)\left(bx+cx^2\right)^{3/2}}{105c^3x^{3/2}}-\frac{2(4bB-7Ac)\left(bx+cx^2\right)^{3/2}}{35c^2\sqrt{x}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}\end{aligned}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.58

$$\frac{2(x(b+cx))^{3/2}\left(-2bc(7A+6Bx)+3c^2x(7A+5Bx)+8b^2B\right)}{105c^3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(8*b^2*B + 3*c^2*x*(7*A + 5*B*x) - 2*b*c*(7*A + 6*B*
x)))/(105*c^3*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.09, size = 59, normalized size = 0.61

$$\frac{2\left(bx+cx^2\right)^{3/2}\left(-14Abc+21Ac^2x+8b^2B-12bBcx+15Bc^2x^2\right)}{105c^3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(b*x + c*x^2)^(3/2)*(8*b^2*B - 14*A*b*c - 12*b*B*c*x + 21*A*c^2*x + 15*B
*c^2*x^2))/(105*c^3*x^(3/2))
```

fricas [A] time = 0.43, size = 78, normalized size = 0.81

$$\frac{2\left(15\,Bc^3x^3+8\,Bb^3-14\,Ab^2c+3\left(Bbc^2+7\,Ac^3\right)x^2-\left(4\,Bb^2c-7\,Abc^2\right)x\right)\sqrt{cx^2+bx}}{105\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^3*x^3 + 8*B*b^3 - 14*A*b^2*c + 3*(B*b*c^2 + 7*A*c^3)*x^2 - (4
*B*b^2*c - 7*A*b*c^2)*x)*sqrt(c*x^2 + b*x)/(c^3*sqrt(x))
```

giac [A] time = 0.24, size = 86, normalized size = 0.90

$$-\frac{2}{105}B\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)+\frac{2}{15}A\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -2/105*B*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(
c*x + b)^(3/2)*b^2)/c^3) + 2/15*A*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) - 5*(
c*x + b)^(3/2)*b)/c^2)
```

maple [A] time = 0.05, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-15B\,c^2x^2-21A\,c^2x+12Bbcx+14Abc-8b^2B\right)\sqrt{c\,x^2+bx}}{105c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/105*(c*x+b)*(-15*B*c^2*x^2-21*A*c^2*x+12*B*b*c*x+14*A*b*c-8*B*b^2)*(c*x^
2+b*x)^(1/2)/c^3/x^(1/2)
```

maxima [A] time = 0.61, size = 75, normalized size = 0.78

$$\frac{2\left(3\,c^2x^2 + bcx - 2\,b^2\right)\sqrt{cx+b}\,A}{15\,c^2} + \frac{2\left(15\,c^3x^3 + 3\,bc^2x^2 - 4\,b^2cx + 8\,b^3\right)\sqrt{cx+b}\,B}{105\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*c^2*x^2 + b*c*x - 2*b^2)*sqrt(c*x + b)*A/c^2 + 2/105*(15*c^3*x^3 +
3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*sqrt(c*x + b)*B/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,\sqrt{x\,(b+cx)}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.198 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{x}} dx$

Optimal. Leaf size=61

$$\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}-\frac{2\left(bx+cx^2\right)^{3/2}(2bB-5Ac)}{15c^2x^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}-\frac{2\left(bx+cx^2\right)^{3/2}(2bB-5Ac)}{15c^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[x],x]
```

```
[Out] (-2*(2*b*B - 5*A*c)*(b*x + c*x^2)^(3/2))/(15*c^2*x^(3/2)) + (2*B*(b*x + c*x
^2)^(3/2))/(5*c*Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{x}}\,dx &= \frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}+\frac{\left(2\left(\frac{1}{2}(bB-Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\,dx}{5c}\\ &= -\frac{2(2bB-5Ac)\left(bx+cx^2\right)^{3/2}}{15c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 37, normalized size = 0.61

$$\frac{2(x(b+cx))^{3/2}(5Ac-2bB+3Bcx)}{15c^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[x],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(-2*b*B + 5*A*c + 3*B*c*x))/(15*c^2*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.08, size = 39, normalized size = 0.64

$$\frac{2\left(bx+cx^2\right)^{3/2}(5Ac-2bB+3Bcx)}{15c^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[x],x]
[Out] (2*(-2*b*B + 5*A*c + 3*B*c*x)*(b*x + c*x^2)^(3/2))/(15*c^2*x^(3/2))
```

fricas [A] time = 0.41, size = 53, normalized size = 0.87

$$\frac{2\left(3\,Bc^2x^2-2\,Bb^2+5\,Abc+\left(Bbc+5\,Ac^2\right)x\right)\sqrt{cx^2+bx}}{15\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x, algorithm="fricas")
[Out] 2/15*(3*B*c^2*x^2 - 2*B*b^2 + 5*A*b*c + (B*b*c + 5*A*c^2)*x)*sqrt(c*x^2 + b
*x)/(c^2*sqrt(x))
```

giac [A] time = 0.17, size = 60, normalized size = 0.98

$$\frac{2}{15}B\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)+\frac{2}{3}A\left(\frac{(cx+b)^{\frac{3}{2}}}{c}-\frac{b^{\frac{3}{2}}}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x, algorithm="giac")
[Out] 2/15*B*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2) + 2/
3*A*((c*x + b)^(3/2)/c - b^(3/2)/c)
```

maple [A] time = 0.05, size = 39, normalized size = 0.64

$$\frac{2\,(cx+b)\,(3Bcx+5Ac-2bB)\,\sqrt{c\,x^2+bx}}{15c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x)
[Out] 2/15*(c*x+b)*(3*B*c*x+5*A*c-2*B*b)*(c*x^2+b*x)^(1/2)/c^2/x^(1/2)
```

maxima [A] time = 0.52, size = 45, normalized size = 0.74

$$\frac{2\,(cx+b)^{\frac{3}{2}}A}{3\,c}+\frac{2\left(3\,c^2x^2+bcx-2\,b^2\right)\sqrt{cx+b}\,B}{15\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x, algorithm="maxima")
[Out] 2/3*(c*x + b)^(3/2)*A/c + 2/15*(3*c^2*x^2 + b*c*x - 2*b^2)*sqrt(c*x + b)*B/
c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\,(A+B\,x)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/sqrt(x), x)
```

3.199 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{3/2}}\,dx$

Optimal. Leaf size=81

$$\frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} - 2A\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right) + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}}$$

Rubi [A] time = 0.06, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {794, 664, 660, 207}

$$\frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} - 2A\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right) + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(3/2),x]
```

```
[Out] (2*A*Sqrt[b*x + c*x^2])/Sqrt[x] + (2*B*(b*x + c*x^2)^(3/2))/(3*c*x^(3/2)) -
 2*A*Sqrt[b]*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{3/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} + A\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx \\
&= \frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} + (Ab)\int \frac{1}{\sqrt{x}\,\sqrt{bx+cx^2}}\,dx \\
&= \frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} + (2Ab)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right) \\
&= \frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} - 2A\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 80, normalized size = 0.99

$$
\frac{2\sqrt{x}\,\sqrt{b+cx}\left(\sqrt{b+cx}\,(3Ac+bB+Bcx) - 3A\sqrt{b}\,c\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{3c\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(3/2),x]
```

```
[Out] (2*Sqrt[x]*Sqrt[b + c*x]*(Sqrt[b + c*x]*(b*B + 3*A*c + B*c*x) - 3*A*Sqrt[b]
*c*ArcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(3*c*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.15, size = 71, normalized size = 0.88

$$
\frac{2\sqrt{bx+cx^2}\,(3Ac+bB+Bcx)}{3c\sqrt{x}} - 2A\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{bx+cx^2}}\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^(3/2),x]
```

```
[Out] (2*(b*B + 3*A*c + B*c*x)*Sqrt[b*x + c*x^2])/(3*c*Sqrt[x]) - 2*A*Sqrt[b]*Arc
Tanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]]
```

fricas [A] time = 0.42, size = 148, normalized size = 1.83

$$
\left[\frac{3\,A\sqrt{b}\,cx\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right) + 2\,(Bcx+Bb+3\,Ac)\sqrt{cx^2+bx}\,\sqrt{x}}{3\,cx}, \frac{2\left(3\,A\sqrt{-b}\,cx\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right) + (Bcx+Bb+3\,Ac)\sqrt{cx^2+bx}\,\sqrt{x}\right)}{3\,cx}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*A*sqrt(b)*c*x*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqr
t(x))/x^2) + 2*(B*c*x + B*b + 3*A*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x), 2/3*
(3*A*sqrt(-b)*c*x*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (B*c*x + B*b
 + 3*A*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x)]
```

giac [A] time = 0.18, size = 103, normalized size = 1.27

$$
\frac{2\,Ab\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}} - \frac{2\left(3\,Abc\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right) + B\sqrt{-b}\,b^{\frac{3}{2}} + 3\,A\sqrt{-b}\,\sqrt{b}\,c\right)}{3\,\sqrt{-b}\,c} + \frac{2\left((cx+b)^{\frac{3}{2}}Bc^2 + 3\,\sqrt{cx+b}\,Ac^3\right)}{3\,c^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2*A*b*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-b) - 2/3*(3*A*b*c*arctan(sqrt(b)
/sqrt(-b)) + B*sqrt(-b)*b^(3/2) + 3*A*sqrt(-b)*sqrt(b)*c)/(sqrt(-b)*c) + 2/
3*((c*x + b)^(3/2)*B*c^2 + 3*sqrt(c*x + b)*A*c^3)/c^3
```

maple [A] time = 0.06, size = 79, normalized size = 0.98

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(3A\sqrt{b}\,c\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-\sqrt{cx+b}\,Bcx-3\sqrt{cx+b}\,Ac-\sqrt{cx+b}\,Bb\right)}{3\sqrt{cx+b}\,c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x)
```

```
[Out] -2/3*((c*x+b)*x)^(1/2)*(3*A*b^(1/2)*c*arctanh((c*x+b)^(1/2)/b^(1/2))-B*x*c*
(c*x+b)^(1/2)-3*A*c*(c*x+b)^(1/2)-B*b*(c*x+b)^(1/2))/x^(1/2)/(c*x+b)^(1/2)/
c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A\int\frac{\sqrt{cx+b}}{x}\,dx+\frac{2\,(Bcx+Bb)\sqrt{cx+b}}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] A*integrate(sqrt(c*x + b)/x, x) + 2/3*(B*c*x + B*b)*sqrt(c*x + b)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{x^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{x\,(b+cx)}\,(A+Bx)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(3/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(3/2), x)
```

3.200 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{5/2}}\,dx$

Optimal. Leaf size=95

$$\frac{\sqrt{bx+cx^2}\,(Ac+2bB)}{b\sqrt{x}}-\frac{(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{\sqrt{b}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}$$

Rubi [A] time = 0.09, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 664, 660, 207}

$$\frac{\sqrt{bx+cx^2}\,(Ac+2bB)}{b\sqrt{x}}-\frac{(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{\sqrt{b}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(5/2),x]
```

```
[Out] ((2*b*B + A*c)*Sqrt[b*x + c*x^2])/(b*Sqrt[x]) - (A*(b*x + c*x^2)^(3/2))/(b*
x^(5/2)) - ((2*b*B + A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/Sqr
t[b]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{5/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}} + \frac{\left(-\frac{5}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx}{b}$$
$$= \frac{(2bB+Ac)\sqrt{bx+cx^2}}{b\sqrt{x}} - \frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}} + \frac{1}{2}(2bB+Ac)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx$$
$$= \frac{(2bB+Ac)\sqrt{bx+cx^2}}{b\sqrt{x}} - \frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}} + (2bB+Ac)\,\mathrm{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \sqrt{b.\right.$$
$$= \frac{(2bB+Ac)\sqrt{bx+cx^2}}{b\sqrt{x}} - \frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}} - \frac{(2bB+Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}$$

Mathematica [A] time = 0.05, size = 80, normalized size = 0.84

$$-\frac{\sqrt{x(b+cx)}\left(\sqrt{b}\,(A-2Bx)\sqrt{b+cx}+x(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{\sqrt{b}\,x^{3/2}\sqrt{b+cx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(5/2),x]
```

```
[Out] -((Sqrt[x*(b + c*x)]*(Sqrt[b]*(A - 2*B*x)*Sqrt[b + c*x] + (2*b*B + A*c)*x*A
rcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(Sqrt[b]*x^(3/2)*Sqrt[b + c*x]))
```

IntegrateAlgebraic [A] time = 0.20, size = 68, normalized size = 0.72

$$\frac{(-Ac-2bB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{\sqrt{b}} + \frac{(2Bx-A)\sqrt{bx+cx^2}}{x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^(5/2),x]
```

```
[Out] ((-A + 2*B*x)*Sqrt[b*x + c*x^2])/x^(3/2) + ((-2*b*B - A*c)*ArcTanh[(Sqrt[b]
*Sqrt[x])/Sqrt[b*x + c*x^2]])/Sqrt[b]
```

fricas [A] time = 0.42, size = 157, normalized size = 1.65

$$\left[\frac{(2\,Bb+Ac)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,(2\,Bbx-Ab)\sqrt{cx^2+bx}\,\sqrt{x}}{2\,bx^2}, \frac{(2\,Bb+Ac)\sqrt{-b}\,x^2\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+(2\,Bbx-Ab)\sqrt{cx^2+bx}\,\sqrt{x}}{bx^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/2*((2*B*b + A*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*s
qrt(b)*sqrt(x))/x^2) + 2*(2*B*b*x - A*b)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^2)
, ((2*B*b + A*c)*sqrt(-b)*x^2*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) +
(2*B*b*x - A*b)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^2)]
```

giac [A] time = 0.28, size = 61, normalized size = 0.64

$$\frac{2\,\sqrt{cx+b}\,Bc-\frac{\sqrt{cx+b}\,Ac}{x}+\frac{\left(2\,Bbc+Ac^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] (2*sqrt(c*x + b)*B*c - sqrt(c*x + b)*A*c/x + (2*B*b*c + A*c^2)*arctan(sqrt(
c*x + b)/sqrt(-b))/sqrt(-b))/c
```

maple [A] time = 0.07, size = 86, normalized size = 0.91

$$\frac{\left(-Acx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2Bbx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+2\sqrt{cx+b}\,B\sqrt{b}\,x-\sqrt{cx+b}\,A\sqrt{b}\right)\sqrt{(cx+b)\,x}}{\sqrt{cx+b}\,\sqrt{b}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x)
```

```
[Out] (-A*arctanh((c*x+b)^(1/2)/b^(1/2))*x*c+2*B*(c*x+b)^(1/2)*x*b^(1/2)-2*B*arct
anh((c*x+b)^(1/2)/b^(1/2))*x*b-A*(c*x+b)^(1/2)*b^(1/2))*((c*x+b)*x)^(1/2)/x
^(3/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/x^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\;(A+B\,x)}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\;(A+Bx)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(5/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(5/2), x)
```

3.201 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{7/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{3/2}}-\frac{\sqrt{bx+cx^2}\,(4bB-Ac)}{4bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}}$$

Rubi [A] time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 662, 660, 207}

$$-\frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{3/2}}-\frac{\sqrt{bx+cx^2}\,(4bB-Ac)}{4bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(7/2),x]
```

```
[Out] -((4*b*B - A*c)*Sqrt[b*x + c*x^2])/(4*b*x^(3/2)) - (A*(b*x + c*x^2)^(3/2))/
(2*b*x^(7/2)) - (c*(4*b*B - A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x]
)])/(4*b^(3/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{7/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} + \frac{\left(-\frac{7}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{bx+cx^2}}{x^{5/2}}\,dx}{2b}$$
$$= -\frac{(4bB-Ac)\sqrt{bx+cx^2}}{4bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} + \frac{(c(4bB-Ac))\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{8b}$$
$$= -\frac{(4bB-Ac)\sqrt{bx+cx^2}}{4bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} + \frac{(c(4bB-Ac))\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \right.}{4b}$$
$$= -\frac{(4bB-Ac)\sqrt{bx+cx^2}}{4bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} - \frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{3/2}}$$

Mathematica [A] time = 0.10, size = 83, normalized size = 0.79

$$-\frac{cx^2\sqrt{\frac{cx}{b}+1}\,(4bB-Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)+(b+cx)(2Ab+Acx+4bBx)}{4bx^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(7/2),x]
```

```
[Out] -1/4*((b + c*x)*(2*A*b + 4*b*B*x + A*c*x) + c*(4*b*B - A*c)*x^2*Sqrt[1 + (c
*x)/b]*ArcTanh[Sqrt[1 + (c*x)/b]])/(b*x^(3/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.24, size = 86, normalized size = 0.82

$$\frac{\left(Ac^2-4bBc\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{4b^{3/2}}+\frac{\sqrt{bx+cx^2}\,(-2Ab-Acx-4bBx)}{4bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^(7/2),x]
```

```
[Out] ((-2*A*b - 4*b*B*x - A*c*x)*Sqrt[b*x + c*x^2])/(4*b*x^(5/2)) + ((-4*b*B*c +
 A*c^2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(4*b^(3/2))
```

fricas [A] time = 0.42, size = 187, normalized size = 1.78

$$\left[-\frac{\left(4\,Bbc-Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Ab^2+\left(4\,Bb^2+Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{8\,b^2x^3}, \frac{\left(4\,Bbc-Ac^2\right)\sqrt{-b}\,x^3\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(2\,Ab^2+\left(4\,Bb^2+Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{4\,b^2x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((4*B*b*c - A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b
*x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*A*b^2 + (4*B*b^2 + A*b*c)*x)*sqrt(c*x^2 +
b*x)*sqrt(x))/(b^2*x^3), 1/4*((4*B*b*c - A*c^2)*sqrt(-b)*x^3*arctan(sqrt(-b
)*sqrt(x)/sqrt(c*x^2 + b*x)) - (2*A*b^2 + (4*B*b^2 + A*b*c)*x)*sqrt(c*x^2 +
 b*x)*sqrt(x))/(b^2*x^3)]
```

giac [A] time = 0.27, size = 110, normalized size = 1.05

$$\frac{\frac{\left(4\,Bbc^2-Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{4\,(cx+b)^{\frac{3}{2}}\,Bbc^2-4\,\sqrt{cx+b}\,Bb^2c^2+(cx+b)^{\frac{3}{2}}\,Ac^3+\sqrt{cx+b}\,Abc^3}{bc^2x^2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 1/4*((4*B*b*c^2 - A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) - (4*(
c*x + b)^(3/2)*B*b*c^2 - 4*sqrt(c*x + b)*B*b^2*c^2 + (c*x + b)^(3/2)*A*c^3
+ sqrt(c*x + b)*A*b*c^3)/(b*c^2*x^2))/c
```

maple [A] time = 0.07, size = 108, normalized size = 1.03

$$\frac{\sqrt{(cx+b)\,x}\,\left(A\,c^{2}x^{2}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-4Bbc\,x^{2}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-\sqrt{cx+b}\,\,A\sqrt{b}\,\,cx-4\sqrt{cx+b}\,\,B\,b^{\frac{3}{2}}x-2\sqrt{cx+b}\,\,A\,b^{\frac{3}{2}}\right)}{4\sqrt{cx+b}\,\,b^{\frac{3}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x)
```

```
[Out] 1/4*((c*x+b)*x)^(1/2)/b^(3/2)*(A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*c^2-4*B
*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c-A*x*c*b^(1/2)*(c*x+b)^(1/2)-4*B*x*b
^(3/2)*(c*x+b)^(1/2)-2*A*b^(3/2)*(c*x+b)^(1/2))/x^(5/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^{2}+bx}\,(Bx+A)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/x^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\,\left(A+B\,x\right)}{x^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(7/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(7/2), x)
```

3.202 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{9/2}}\,dx$

Optimal. Leaf size=142

$$\frac{c^2(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac)}{8b^2x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(2bB-Ac)}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}$$

Rubi [A] time = 0.12, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$\frac{c^2(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac)}{8b^2x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(2bB-Ac)}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(9/2),x]
```

```
[Out] -((2*b*B - A*c)*Sqrt[b*x + c*x^2])/(4*b*x^(5/2)) - (c*(2*b*B - A*c)*Sqrt[b*
x + c*x^2])/(8*b^2*x^(3/2)) - (A*(b*x + c*x^2)^(3/2))/(3*b*x^(9/2)) + (c^2*
(2*b*B - A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
```

```
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{9/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}} + \frac{\left(-\frac{9}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{bx+cx^2}}{x^{7/2}}\,dx}{3b}$$

$$= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}} + \frac{(c(2bB-Ac))\int \frac{1}{x^{3/2}\sqrt{bx+cx^2}}\,dx}{8b}$$

$$= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}} - \frac{c(2bB-Ac)\sqrt{bx+cx^2}}{8b^2x^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}} - \frac{\left(c^2(2bB-A\right.}{}$$

$$= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}} - \frac{c(2bB-Ac)\sqrt{bx+cx^2}}{8b^2x^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}} - \frac{\left(c^2(2bB-A\right.}{}$$

$$= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}} - \frac{c(2bB-Ac)\sqrt{bx+cx^2}}{8b^2x^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}} + \frac{c^2(2bB-Ac}{}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.43

$$-\frac{(x(b+cx))^{3/2}\left(Ab^3+c^2x^3(2bB-Ac)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{cx}{b}+1\right)\right)}{3b^4x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(9/2),x]
```

```
[Out] -1/3*((x*(b + c*x))^(3/2)*(A*b^3 + c^2*(2*b*B - A*c)*x^3*Hypergeometric2F1[
3/2, 3, 5/2, 1 + (c*x)/b]))/(b^4*x^(9/2))
```

IntegrateAlgebraic [A] time = 0.33, size = 111, normalized size = 0.78

$$\frac{\left(2bBc^2-Ac^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{8b^{5/2}} + \frac{\sqrt{bx+cx^2}\left(-8Ab^2-2Abcx+3Ac^2x^2-12b^2Bx-6bBcx^2\right)}{24b^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/x^(9/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^2 - 12*b^2*B*x - 2*A*b*c*x - 6*b*B*c*x^2 + 3*A*c
^2*x^2))/(24*b^2*x^(7/2)) + ((2*b*B*c^2 - A*c^3)*ArcTanh[(Sqrt[b]*Sqrt[x])/
Sqrt[b*x + c*x^2]])/(8*b^(5/2))
```

fricas [A] time = 0.43, size = 238, normalized size = 1.68

$$\left[-\frac{3\left(2Bbc^2-Ac^3\right)\sqrt{b}x^4\log\left(-\frac{cx^2+2bx-2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(8Ab^3+3\left(2Bb^2c-Abc^2\right)x^2+2\left(6Bb^3+Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{48b^3x^4}, -\frac{3\left(2Bbc^2-Ac^3\right)\sqrt{-b}x^4\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(8Ab^3+3\left(2Bb^2c-Abc^2\right)x^2+2\left(6Bb^3+Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{24b^3x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(2*B*b*c^2 - A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^3 + 3*(2*B*b^2*c - A*b*c^2)*x^2 +
 2*(6*B*b^3 + A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*x^4), -1/24*(3*(2
*B*b*c^2 - A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) +
 (8*A*b^3 + 3*(2*B*b^2*c - A*b*c^2)*x^2 + 2*(6*B*b^3 + A*b^2*c)*x)*sqrt(c*x
^2 + b*x)*sqrt(x))/(b^3*x^4)]
```

giac [A] time = 0.27, size = 128, normalized size = 0.90

$$-\frac{\frac{3\left(2\,Bbc^3-Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{6\,(cx+b)^{\frac{5}{2}}\,Bbc^3-6\,\sqrt{cx+b}\,Bb^3c^3-3\,(cx+b)^{\frac{5}{2}}\,Ac^4+8\,(cx+b)^{\frac{3}{2}}\,Abc^4+3\,\sqrt{cx+b}\,Ab^2c^4}{b^2c^3x^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -1/24*(3*(2*B*b*c^3 - A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2)
+ (6*(c*x + b)^(5/2)*B*b*c^3 - 6*sqrt(c*x + b)*B*b^3*c^3 - 3*(c*x + b)^(5/2
)*A*c^4 + 8*(c*x + b)^(3/2)*A*b*c^4 + 3*sqrt(c*x + b)*A*b^2*c^4)/(b^2*c^3*x
^3))/c
```

maple [A] time = 0.09, size = 147, normalized size = 1.04

$$-\frac{\sqrt{(cx+b)\,x}\,\left(3A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-6Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3\sqrt{cx+b}\,A\sqrt{b}\,c^2x^2+6\sqrt{cx+b}\,B\,b^{\frac{3}{2}}c\,x^2+2\sqrt{cx+b}\,A\,b^{\frac{3}{2}}cx+12\sqrt{cx+b}\,B\,b^{\frac{5}{2}}x+8\sqrt{cx+b}\,A\,b^{\frac{5}{2}}\right)}{24\sqrt{cx+b}\,b^{\frac{5}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x)
```

```
[Out] -1/24*((c*x+b)*x)^(1/2)/b^(5/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3
-6*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-3*A*x^2*c^2*b^(1/2)*(c*x+b)^(
1/2)+6*B*x^2*b^(3/2)*c*(c*x+b)^(1/2)+2*A*x*b^(3/2)*c*(c*x+b)^(1/2)+12*B*x*b
^(5/2)*(c*x+b)^(1/2)+8*A*b^(5/2)*(c*x+b)^(1/2))/x^(7/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/x^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,(A+Bx)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(9/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(9/2), x)
```

3.203 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=207

$$-\frac{256b^4\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{45045c^6x^{5/2}}+\frac{128b^3\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{9009c^5x^{3/2}}-\frac{32b^2\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{1287c^4\sqrt{x}}+16b\sqrt{x}$$

Rubi [A] time = 0.15, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{256b^4\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{45045c^6x^{5/2}}+\frac{128b^3\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{9009c^5x^{3/2}}-\frac{32b^2\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{1287c^4\sqrt{x}}+\frac{16b\sqrt{x}\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{429c^3}-\frac{2x^{3/2}\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{39c^2}+\frac{2Bx^{5/2}\left(bx+cx^2\right)^{5/2}}{15c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-256*b^4*(2*b*B - 3*A*c)*(b*x + c*x^2)^(5/2))/(45045*c^6*x^(5/2)) + (128*b
^3*(2*b*B - 3*A*c)*(b*x + c*x^2)^(5/2))/(9009*c^5*x^(3/2)) - (32*b^2*(2*b*B
 - 3*A*c)*(b*x + c*x^2)^(5/2))/(1287*c^4*Sqrt[x]) + (16*b*(2*b*B - 3*A*c)*S
qrt[x]*(b*x + c*x^2)^(5/2))/(429*c^3) - (2*(2*b*B - 3*A*c)*x^(3/2)*(b*x + c
*x^2)^(5/2))/(39*c^2) + (2*B*x^(5/2)*(b*x + c*x^2)^(5/2))/(15*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx &= \frac{2Bx^{5/2}\left(bx+cx^2\right)^{5/2}}{15c}+\frac{\left(2\left(\frac{5}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int x^{5/2}\left(bx+cx^2\right)^{3/}}{15c} \\
&= -\frac{2(2bB-3Ac)x^{3/2}\left(bx+cx^2\right)^{5/2}}{39c^2}+\frac{2Bx^{5/2}\left(bx+cx^2\right)^{5/2}}{15c}+\frac{(8b(2bB-3Ac))\int}{3} \\
&= \frac{16b(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{429c^3}-\frac{2(2bB-3Ac)x^{3/2}\left(bx+cx^2\right)^{5/2}}{39c^2}+\frac{2Bx^{5/2}(}{} \\
&= -\frac{32b^2(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{1287c^4\sqrt{x}}+\frac{16b(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{429c^3}-\frac{2(2bB}{} \\
&= \frac{128b^3(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{9009c^5x^{3/2}}-\frac{32b^2(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{1287c^4\sqrt{x}}+\frac{16b(2bB}{} \\
&= -\frac{256b^4(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{45045c^6x^{5/2}}+\frac{128b^3(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{9009c^5x^{3/2}}-\frac{32b^2(2}{}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 110, normalized size = 0.53

$$\frac{2(x(b+cx))^{5/2}\left(128b^4c(3A+5Bx)-160b^3c^2x(6A+7Bx)+1680b^2c^3x^2(A+Bx)-210bc^4x^3(12A+11Bx)+231c^5x^4(15A+13Bx)-256b^5B\right)}{45045c^6x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(-256*b^5*B + 1680*b^2*c^3*x^2*(A + B*x) + 128*b^4*c
*(3*A + 5*B*x) - 160*b^3*c^2*x*(6*A + 7*B*x) - 210*b*c^4*x^3*(12*A + 11*B*x
) + 231*c^5*x^4*(15*A + 13*B*x)))/(45045*c^6*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.72, size = 131, normalized size = 0.63

$$\frac{2\left(bx+cx^2\right)^{5/2}\left(384Ab^4c-960Ab^3c^2x+1680Ab^2c^3x^2-2520Abc^4x^3+3465Ac^5x^4-256b^5B+640b^4Bcx-1120b^3Bc^2x^2+1680b^2Bc^3x^3-2310bBc^4x^4+3003Bc^5x^5\right)}{45045c^6x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(b*x + c*x^2)^(5/2)*(-256*b^5*B + 384*A*b^4*c + 640*b^4*B*c*x - 960*A*b^
3*c^2*x - 1120*b^3*B*c^2*x^2 + 1680*A*b^2*c^3*x^2 + 1680*b^2*B*c^3*x^3 - 25
20*A*b*c^4*x^3 - 2310*b*B*c^4*x^4 + 3465*A*c^5*x^4 + 3003*B*c^5*x^5))/(4504
5*c^6*x^(5/2))
```

fricas [A] time = 0.41, size = 174, normalized size = 0.84

$$\frac{2\left(3003\,Bc^7x^7-256\,Bb^7+384\,Ab^6c+231\left(16\,Bbc^6+15\,Ac^7\right)x^6+63\left(Bb^2c^5+70\,Abc^6\right)x^5-35\left(2\,Bb^3c^4-3\,Ab^2c^5\right)x^4+40\left(2\,Bb^4c^3-3\,Ab^3c^4\right)x^3-48\left(2\,Bb^5c^2-3\,Ab^4c^3\right)x^2+64\left(2\,Bb^6c-3\,Ab^5c^2\right)x\right)\sqrt{cx^2+bx}}{45045\,c^6\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^7*x^7 - 256*B*b^7 + 384*A*b^6*c + 231*(16*B*b*c^6 + 15*A*
c^7)*x^6 + 63*(B*b^2*c^5 + 70*A*b*c^6)*x^5 - 35*(2*B*b^3*c^4 - 3*A*b^2*c^5)
*x^4 + 40*(2*B*b^4*c^3 - 3*A*b^3*c^4)*x^3 - 48*(2*B*b^5*c^2 - 3*A*b^4*c^3)*
x^2 + 64*(2*B*b^6*c - 3*A*b^5*c^2)*x)*sqrt(c*x^2 + b*x)/(c^6*sqrt(x))
```

giac [B] time = 0.25, size = 343, normalized size = 1.66

$$-\frac{2}{45045}\,Bc\left(\frac{1024\,b^{\frac{15}{2}}}{c^7}-\frac{3003\,(cx+b)^{\frac{15}{2}}-20790\,(cx+b)^{\frac{13}{2}}b+61425\,(cx+b)^{\frac{11}{2}}b^2-100100\,(cx+b)^{\frac{9}{2}}b^3+96525\,(cx+b)^{\frac{7}{2}}b^4-54054\,(cx+b)^{\frac{5}{2}}b^5+15015\,(cx+b)^{\frac{3}{2}}b^6}{c^7}\right)+\frac{2}{9009}\,Bb\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b^4-3003\,(cx+b)^{\frac{3}{2}}b^5}{c^6}\right)+\frac{2}{9009}\,Ac\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b^4-3003\,(cx+b)^{\frac{3}{2}}b^5}{c^6}\right)-\frac{2}{3465}\,Ab\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2/45045*B*c*(1024*b^(15/2)/c^7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b)^
(13/2)*b + 61425*(c*x + b)^(11/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 96525*
(c*x + b)^(7/2)*b^4 - 54054*(c*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b^6
)/c^7) + 2/9009*B*b*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x +
 b)^(11/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009
*(c*x + b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) + 2/9009*A*c*(256*b^(
13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 10010*(c*x +
b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b^4 - 3003*
(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*A*b*(128*b^(11/2)/c^5 - (315*(c*x + b)^(
11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^
(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5)
```

maple [A] time = 0.06, size = 131, normalized size = 0.63

$$\frac{2\,(cx+b)\left(3003B\,x^5c^5+3465A\,c^5x^4-2310Bb\,c^4x^4-2520Ab\,c^4x^3+1680B\,b^2c^3x^3+1680A\,b^2c^3x^2-1120B\,b^3c^2x^2-960A\,b^3c^2x+640B\,b^4cx+384A\,b^4c-256B\,b^5\right)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{45045c^6x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/45045*(c*x+b)*(3003*B*c^5*x^5+3465*A*c^5*x^4-2310*B*b*c^4*x^4-2520*A*b*c^
4*x^3+1680*B*b^2*c^3*x^3+1680*A*b^2*c^3*x^2-1120*B*b^3*c^2*x^2-960*A*b^3*c^
2*x+640*B*b^4*c*x+384*A*b^4*c-256*B*b^5)*(c*x^2+b*x)^(3/2)/c^6/x^(3/2)
```

maxima [A] time = 0.61, size = 318, normalized size = 1.54

$$\frac{2\left(5\left(693\,c^6x^6+63\,bc^5x^5-70\,b^2c^4x^4+80\,b^3c^3x^3-96\,b^4c^2x^2+128\,b^5cx-256\,b^6\right)x^5+13\left(315\,bc^5x^6+35\,b^2c^4x^5-40\,b^3c^3x^4+48\,b^4c^2x^3-64\,b^5cx^2+128\,b^6x\right)x^4\right)\sqrt{cx+b}\,A}{45045\,c^5x^5}+\frac{2\left(\left(3003\,c^7x^7+231\,bc^6x^6-252\,b^2c^5x^5+280\,b^3c^4x^4-320\,b^4c^3x^3+384\,b^5c^2x^2-512\,b^6cx+1024\,b^7\right)x^6+5\left(693\,bc^6x^7+63\,b^2c^5x^6-70\,b^3c^4x^5+80\,b^4c^3x^4-96\,b^5c^2x^3+128\,b^6cx^2-256\,b^7x\right)x^5\right)\sqrt{cx+b}\,B}{45045\,c^6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(5*(693*c^6*x^6 + 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 -
96*b^4*c^2*x^2 + 128*b^5*c*x - 256*b^6)*x^5 + 13*(315*b*c^5*x^6 + 35*b^2*c^
4*x^5 - 40*b^3*c^3*x^4 + 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4)*sq
rt(c*x + b)*A/(c^5*x^5) + 2/45045*((3003*c^7*x^7 + 231*b*c^6*x^6 - 252*b^2*
c^5*x^5 + 280*b^3*c^4*x^4 - 320*b^4*c^3*x^3 + 384*b^5*c^2*x^2 - 512*b^6*c*x
 + 1024*b^7)*x^6 + 5*(693*b*c^6*x^7 + 63*b^2*c^5*x^6 - 70*b^3*c^4*x^5 + 80*
b^4*c^3*x^4 - 96*b^5*c^2*x^3 + 128*b^6*c*x^2 - 256*b^7*x)*x^5)*sqrt(c*x + b
)*B/(c^6*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{5/2}\,{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^(5/2)*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.204 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{15015c^5x^{5/2}}-\frac{16b^2\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{3003c^4x^{3/2}}+\frac{4b\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{429c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+\right.}{}$$

Rubi [A] time = 0.16, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$\frac{32b^3\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{15015c^5x^{5/2}}-\frac{16b^2\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{3003c^4x^{3/2}}+\frac{4b\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{429c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{143c^2}+\frac{2Bx^{3/2}\left(bx+cx^2\right)^{5/2}}{13c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (32*b^3*(8*b*B - 13*A*c)*(b*x + c*x^2)^(5/2))/(15015*c^5*x^(5/2)) - (16*b^2
*(8*b*B - 13*A*c)*(b*x + c*x^2)^(5/2))/(3003*c^4*x^(3/2)) + (4*b*(8*b*B - 1
3*A*c)*(b*x + c*x^2)^(5/2))/(429*c^3*Sqrt[x]) - (2*(8*b*B - 13*A*c)*Sqrt[x]
*(b*x + c*x^2)^(5/2))/(143*c^2) + (2*B*x^(3/2)*(b*x + c*x^2)^(5/2))/(13*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{2Bx^{3/2}\left(bx+cx^2\right)^{5/2}}{13c} + \frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int x^{3/2}\left(bx+cx^2\right)^{3/\cdots}}{13c}$$

$$= -\frac{2(8bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{143c^2} + \frac{2Bx^{3/2}\left(bx+cx^2\right)^{5/2}}{13c} + \frac{(6b(8bB-13Ac))\cdots}{1\cdots}$$

$$= \frac{4b(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{429c^3\sqrt{x}} - \frac{2(8bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{143c^2} + \frac{2Bx^{3/2}\left(bx\cdots\right.}{13\cdots}$$

$$= -\frac{16b^2(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{3003c^4x^{3/2}} + \frac{4b(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{429c^3\sqrt{x}} - \frac{2(8bB-\cdots}{\cdots}$$

$$= \frac{32b^3(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{15015c^5x^{5/2}} - \frac{16b^2(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{3003c^4x^{3/2}} + \frac{4b(8bB-\cdots}{\cdots}$$

Mathematica [**A**] time = 0.08, size = 94, normalized size = 0.55

$$\frac{2(x(b+cx))^{5/2}\left(-16b^3c(13A+20Bx)+40b^2c^2x(13A+14Bx)-70bc^3x^2(13A+12Bx)+105c^4x^3(13A+11Bx)+128b^4B\right)}{15015c^5x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(128*b^4*B + 105*c^4*x^3*(13*A + 11*B*x) - 70*b*c^3*
x^2*(13*A + 12*B*x) + 40*b^2*c^2*x*(13*A + 14*B*x) - 16*b^3*c*(13*A + 20*B*
x)))/(15015*c^5*x^(5/2))
```

IntegrateAlgebraic [**A**] time = 0.65, size = 107, normalized size = 0.63

$$\frac{2\left(bx+cx^2\right)^{5/2}\left(-208Ab^3c+520Ab^2c^2x-910Abc^3x^2+1365Ac^4x^3+128b^4B-320b^3Bcx+560b^2Bc^2x^2-840bBc^3x^3+1155Bc^4x^4\right)}{15015c^5x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(b*x + c*x^2)^(5/2)*(128*b^4*B - 208*A*b^3*c - 320*b^3*B*c*x + 520*A*b^2
*c^2*x + 560*b^2*B*c^2*x^2 - 910*A*b*c^3*x^2 - 840*b*B*c^3*x^3 + 1365*A*c^4
*x^3 + 1155*B*c^4*x^4))/(15015*c^5*x^(5/2))
```

fricas [**A**] time = 0.41, size = 150, normalized size = 0.88

$$\frac{2\left(1155\,Bc^6x^6+128\,Bb^6-208\,Ab^5c+105\left(14\,Bbc^5+13\,Ac^6\right)x^5+35\left(Bb^2c^4+52\,Abc^5\right)x^4-5\left(8\,Bb^3c^3-13\,Ab^2c^4\right)x^3+6\left(8\,Bb^4c^2-13\,Ab^3c^3\right)x^2-8\left(8\,Bb^5c-13\,Ab^4c^2\right)x\right)\sqrt{cx^2+bx}}{15015\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^6*x^6 + 128*B*b^6 - 208*A*b^5*c + 105*(14*B*b*c^5 + 13*A*
c^6)*x^5 + 35*(B*b^2*c^4 + 52*A*b*c^5)*x^4 - 5*(8*B*b^3*c^3 - 13*A*b^2*c^4)
*x^3 + 6*(8*B*b^4*c^2 - 13*A*b^3*c^3)*x^2 - 8*(8*B*b^5*c - 13*A*b^4*c^2)*x)
*sqrt(c*x^2 + b*x)/(c^5*sqrt(x))
```

giac [**B**] time = 0.29, size = 295, normalized size = 1.74

$$\frac{2}{9009}\,Bc\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b^4-3003\,(cx+b)^{\frac{3}{2}}b^5}{c^6}\right)-\frac{2}{3465}\,Bb\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)-\frac{2}{3465}\,Ac\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)+\frac{2}{315}\,Ab\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2/9009*B*c*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2
)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b
)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*B*b*(128*b^(11/2)/c^5
 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^
2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) - 2/3465*A*c*
(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(
c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c
^5) + 2/315*A*b*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)
*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4)
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2\,(cx+b)\left(-1155B\,x^4c^4-1365A\,c^4x^3+840Bb\,c^3x^3+910Ab\,c^3x^2-560B\,b^2c^2x^2-520A\,b^2c^2x+320B\,b^3cx+208A\,b^3c-128b^4B\right)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{15015c^5x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/15015*(c*x+b)*(-1155*B*c^4*x^4-1365*A*c^4*x^3+840*B*b*c^3*x^3+910*A*b*c^
3*x^2-560*B*b^2*c^2*x^2-520*A*b^2*c^2*x+320*B*b^3*c*x+208*A*b^3*c-128*B*b^4
)*(c*x^2+b*x)^(3/2)/c^5/x^(3/2)
```

maxima [A] time = 0.59, size = 274, normalized size = 1.61

$$\frac{2\left(\left(315\,c^5x^5+35\,bc^4x^4-40\,b^2c^3x^3+48\,b^3c^2x^2-64\,b^4cx+128\,b^5\right)x^4+11\left(35\,bc^4x^5+5\,b^2c^3x^4-6\,b^3c^2x^3+8\,b^4cx^2-16\,b^5x\right)x^3\right)\sqrt{cx+b}\,A}{3465\,c^4x^4}+\frac{2\left(5\left(693\,c^6x^6+63\,bc^5x^5-70\,b^2c^4x^4+80\,b^3c^3x^3-96\,b^4c^2x^2+128\,b^5cx-256\,b^6\right)x^5+13\left(315\,bc^5x^6+35\,b^2c^4x^5-40\,b^3c^3x^4+48\,b^4c^2x^3-64\,b^5cx^2+128\,b^6x\right)x^4\right)\sqrt{cx+b}\,B}{45045\,c^5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3465*((315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*
b^4*c*x + 128*b^5)*x^4 + 11*(35*b*c^4*x^5 + 5*b^2*c^3*x^4 - 6*b^3*c^2*x^3 +
 8*b^4*c*x^2 - 16*b^5*x)*x^3)*sqrt(c*x + b)*A/(c^4*x^4) + 2/45045*(5*(693*c
^6*x^6 + 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 - 96*b^4*c^2*x^2 +
128*b^5*c*x - 256*b^6)*x^5 + 13*(315*b*c^5*x^6 + 35*b^2*c^4*x^5 - 40*b^3*c^
3*x^4 + 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4)*sqrt(c*x + b)*B/(c^
5*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3/2}\,{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{3}{2}}\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**(3/2)*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.205 $\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{3465c^4x^{5/2}}+\frac{8b\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{693c^3x^{3/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{99c^2\sqrt{x}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{5/2}}{11c}$$

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{3465c^4x^{5/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{99c^2\sqrt{x}}+\frac{8b\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{693c^3x^{3/2}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{5/2}}{11c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-16*b^2*(6*b*B - 11*A*c)*(b*x + c*x^2)^(5/2))/(3465*c^4*x^(5/2)) + (8*b*(6
*b*B - 11*A*c)*(b*x + c*x^2)^(5/2))/(693*c^3*x^(3/2)) - (2*(6*b*B - 11*A*c)
*(b*x + c*x^2)^(5/2))/(99*c^2*Sqrt[x]) + (2*B*Sqrt[x]*(b*x + c*x^2)^(5/2))/
(11*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{2B\sqrt{x}\left(bx+cx^2\right)^{5/2}}{11c} + \frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \sqrt{x}\,\left(bx+cx^2\right.}{11c}$$

$$= -\frac{2(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{99c^2\sqrt{x}} + \frac{2B\sqrt{x}\left(bx+cx^2\right)^{5/2}}{11c} + \frac{(4b(6bB-11Ac))\int}{99c^2}$$

$$= \frac{8b(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{693c^3x^{3/2}} - \frac{2(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{99c^2\sqrt{x}} + \frac{2B\sqrt{x}\left(bx\right.}{11c}$$

$$= -\frac{16b^2(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{3465c^4x^{5/2}} + \frac{8b(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{693c^3x^{3/2}} - \frac{2(6bB}{}$$

Mathematica [A] time = 0.06, size = 75, normalized size = 0.56

$$\frac{2(x(b+cx))^{5/2}\left(8b^2c(11A+15Bx)-10bc^2x(22A+21Bx)+35c^3x^2(11A+9Bx)-48b^3B\right)}{3465c^4x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(-48*b^3*B + 35*c^3*x^2*(11*A + 9*B*x) + 8*b^2*c*(11
*A + 15*B*x) - 10*b*c^2*x*(22*A + 21*B*x)))/(3465*c^4*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.55, size = 83, normalized size = 0.62

$$\frac{2\left(bx+cx^2\right)^{5/2}\left(88Ab^2c-220Abc^2x+385Ac^3x^2-48b^3B+120b^2Bcx-210bBc^2x^2+315Bc^3x^3\right)}{3465c^4x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(b*x + c*x^2)^(5/2)*(-48*b^3*B + 88*A*b^2*c + 120*b^2*B*c*x - 220*A*b*c^
2*x - 210*b*B*c^2*x^2 + 385*A*c^3*x^2 + 315*B*c^3*x^3))/(3465*c^4*x^(5/2))
```

fricas [A] time = 0.41, size = 127, normalized size = 0.95

$$\frac{2\left(315\,Bc^5x^5-48\,Bb^5+88\,Ab^4c+35\left(12\,Bbc^4+11\,Ac^5\right)x^4+5\left(3\,Bb^2c^3+110\,Abc^4\right)x^3-3\left(6\,Bb^3c^2-11\,Ab^2c^3\right)x^2+4\left(6\,Bb^4c-11\,Ab^3c^2\right)x\right)\sqrt{cx^2+bx}}{3465\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^5*x^5 - 48*B*b^5 + 88*A*b^4*c + 35*(12*B*b*c^4 + 11*A*c^5)*
x^4 + 5*(3*B*b^2*c^3 + 110*A*b*c^4)*x^3 - 3*(6*B*b^3*c^2 - 11*A*b^2*c^3)*x^
2 + 4*(6*B*b^4*c - 11*A*b^3*c^2)*x)*sqrt(c*x^2 + b*x)/(c^4*sqrt(x))
```

giac [B] time = 0.22, size = 247, normalized size = 1.86

$$-\frac{2}{3465}\,Bc\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)+\frac{2}{315}\,Bb\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)+\frac{2}{315}\,Ac\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,Ab\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] -2/3465*B*c*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2
)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^
(3/2)*b^4)/c^5) + 2/315*B*b*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*
x + b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) +
2/315*A*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 1
89*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*A*b*(8*b^(7/
2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^
2)/c^3)
```

maple [A] time = 0.05, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(315B\,c^{3}x^{3}+385A\,c^{3}x^{2}-210Bb\,c^{2}x^{2}-220Ab\,c^{2}x+120B\,b^{2}cx+88A\,b^{2}c-48b^{3}B\right)\left(c\,x^{2}+bx\right)^{\frac{3}{2}}}{3465c^{4}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x)
```

```
[Out] 2/3465*(c*x+b)*(315*B*c^3*x^3+385*A*c^3*x^2-210*B*b*c^2*x^2-220*A*b*c^2*x+1
20*B*b^2*c*x+88*A*b^2*c-48*B*b^3)*(c*x^2+b*x)^(3/2)/c^4/x^(3/2)
```

maxima [B] time = 0.66, size = 229, normalized size = 1.72

$$\frac{2\left(\left(35\,c^{4}x^{4}+5\,bc^{3}x^{3}-6\,b^{2}c^{2}x^{2}+8\,b^{3}cx-16\,b^{4}\right)x^{3}+3\left(15\,bc^{3}x^{4}+3\,b^{2}c^{2}x^{3}-4\,b^{3}cx^{2}+8\,b^{4}x\right)x^{2}\right)\sqrt{cx+b}\,A}{315\,c^{3}x^{3}}+\frac{2\left(\left(315\,c^{5}x^{5}+35\,bc^{4}x^{4}-40\,b^{2}c^{3}x^{3}+48\,b^{3}c^{2}x^{2}-64\,b^{4}cx+128\,b^{5}\right)x^{4}+11\left(35\,bc^{4}x^{5}+5\,b^{2}c^{3}x^{4}-6\,b^{3}c^{2}x^{3}+8\,b^{4}cx^{2}-16\,b^{5}x\right)x^{3}\right)\sqrt{cx+b}\,B}{3465\,c^{4}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*x^3
+ 3*(15*b*c^3*x^4 + 3*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2)*sqrt(c*x +
b)*A/(c^3*x^3) + 2/3465*((315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*
b^3*c^2*x^2 - 64*b^4*c*x + 128*b^5)*x^4 + 11*(35*b*c^4*x^5 + 5*b^2*c^3*x^4
- 6*b^3*c^2*x^3 + 8*b^4*c*x^2 - 16*b^5*x)*x^3)*sqrt(c*x + b)*B/(c^4*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.206 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=96

$$\frac{4b\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{315c^3x^{5/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{63c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}}$$

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{63c^2x^{3/2}}+\frac{4b\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{315c^3x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (4*b*(4*b*B - 9*A*c)*(b*x + c*x^2)^(5/2))/(315*c^3*x^(5/2)) - (2*(4*b*B - 9
*A*c)*(b*x + c*x^2)^(5/2))/(63*c^2*x^(3/2)) + (2*B*(b*x + c*x^2)^(5/2))/(9*
c*Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{x}}\,dx = \frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}} + \frac{\left(2\left(\frac{1}{2}(bB-Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{\sqrt{x}}\,dx}{9c}$$

$$= -\frac{2(4bB-9Ac)\left(bx+cx^2\right)^{5/2}}{63c^2x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}} + \frac{(2b(4bB-9Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{3/2}}\,dx}{63c^2}$$

$$= \frac{4b(4bB-9Ac)\left(bx+cx^2\right)^{5/2}}{315c^3x^{5/2}} - \frac{2(4bB-9Ac)\left(bx+cx^2\right)^{5/2}}{63c^2x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.58

$$\frac{2(x(b+cx))^{5/2}\left(-2bc(9A+10Bx)+5c^2x(9A+7Bx)+8b^2B\right)}{315c^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(8*b^2*B + 5*c^2*x*(9*A + 7*B*x) - 2*b*c*(9*A + 10*B
*x)))/(315*c^3*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.49, size = 59, normalized size = 0.61

$$\frac{2\left(bx+cx^2\right)^{5/2}\left(-18Abc+45Ac^2x+8b^2B-20bBcx+35Bc^2x^2\right)}{315c^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*(b*x + c*x^2)^(5/2)*(8*b^2*B - 18*A*b*c - 20*b*B*c*x + 45*A*c^2*x + 35*B
*c^2*x^2))/(315*c^3*x^(5/2))
```

fricas [A] time = 0.41, size = 102, normalized size = 1.06

$$\frac{2\left(35\,Bc^4x^4+8\,Bb^4-18\,Ab^3c+5\left(10\,Bbc^3+9\,Ac^4\right)x^3+3\left(Bb^2c^2+24\,Abc^3\right)x^2-\left(4\,Bb^3c-9\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}}{315\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^4*x^4 + 8*B*b^4 - 18*A*b^3*c + 5*(10*B*b*c^3 + 9*A*c^4)*x^3 +
 3*(B*b^2*c^2 + 24*A*b*c^3)*x^2 - (4*B*b^3*c - 9*A*b^2*c^2)*x)*sqrt(c*x^2 +
 b*x)/(c^3*sqrt(x))
```

giac [B] time = 0.21, size = 199, normalized size = 2.07

$$\frac{2}{315}\,Bc\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,Bb\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)-\frac{2}{105}\,Ac\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)+\frac{2}{15}\,Ab\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*B*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 1
89*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*B*b*(8*b^(7/
2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^
```

```
2)/c^3) - 2/105*A*c*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/
2)*b + 35*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*A*b*(2*b^(5/2)/c^2 + (3*(c*x + b
)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2)
```

maple [A] time = 0.06, size = 59, normalized size = 0.61

$$-\frac{2\left(cx+b\right)\left(-35B\,c^{2}x^{2}-45A\,c^{2}x+20Bbcx+18Abc-8b^{2}B\right)\left(c\,x^{2}+bx\right)^{\frac{3}{2}}}{315c^{3}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x)
```

```
[Out] -2/315*(c*x+b)*(-35*B*c^2*x^2-45*A*c^2*x+20*B*b*c*x+18*A*b*c-8*B*b^2)*(c*x^
2+b*x)^(3/2)/c^3/x^(3/2)
```

maxima [B] time = 0.63, size = 182, normalized size = 1.90

$$\frac{2\left(\left(15\,c^{3}x^{3}+3\,bc^{2}x^{2}-4\,b^{2}cx+8\,b^{3}\right)x^{2}+7\left(3\,bc^{2}x^{3}+b^{2}cx^{2}-2\,b^{3}x\right)x\right)\sqrt{cx+b}\,A}{105\,c^{2}x^{2}}+\frac{2\left(\left(35\,c^{4}x^{4}+5\,bc^{3}x^{3}-6\,b^{2}c^{2}x^{2}+8\,b^{3}cx-16\,b^{4}\right)x^{3}+3\left(15\,bc^{3}x^{4}+3\,b^{2}c^{2}x^{3}-4\,b^{3}cx^{2}+8\,b^{4}x\right)x^{2}\right)\sqrt{cx+b}\,B}{315\,c^{3}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*x^2 + 7*(3*b*c^2*x^3
+ b^2*c*x^2 - 2*b^3*x)*x)*sqrt(c*x + b)*A/(c^2*x^2) + 2/315*((35*c^4*x^4 +
5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*x^3 + 3*(15*b*c^3*x^4 + 3
*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2)*sqrt(c*x + b)*B/(c^3*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{\sqrt{x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{\sqrt{x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/sqrt(x), x)
```

3.207 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{3/2}} dx$

Optimal. Leaf size=61

$$\frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(2bB-7Ac)}{35c^2x^{5/2}}$$

Rubi [A] time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(2bB-7Ac)}{35c^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (-2*(2*b*B - 7*A*c)*(b*x + c*x^2)^(5/2))/(35*c^2*x^(5/2)) + (2*B*(b*x + c*x
^2)^(5/2))/(7*c*x^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{3/2}} dx &= \frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}+\frac{\left(2\left(-\frac{3}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{3/2}} dx}{7c}\\ &= -\frac{2(2bB-7Ac)\left(bx+cx^2\right)^{5/2}}{35c^2x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 37, normalized size = 0.61

$$\frac{2(x(b+cx))^{5/2}(7Ac-2bB+5Bcx)}{35c^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(-2*b*B + 7*A*c + 5*B*c*x))/(35*c^2*x^(5/2))
```

IntegrateAlgebraic [A]   time = 0.51, size = 39, normalized size = 0.64

$$\frac{2\left(bx+cx^2\right)^{5/2}(7Ac-2bB+5Bcx)}{35c^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (2*(-2*b*B + 7*A*c + 5*B*c*x)*(b*x + c*x^2)^(5/2))/(35*c^2*x^(5/2))
```

fricas [A]   time = 0.40, size = 76, normalized size = 1.25

$$\frac{2\left(5\,Bc^3x^3-2\,Bb^3+7\,Ab^2c+\left(8\,Bbc^2+7\,Ac^3\right)x^2+\left(Bb^2c+14\,Abc^2\right)x\right)\sqrt{cx^2+bx}}{35\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^3 - 2*B*b^3 + 7*A*b^2*c + (8*B*b*c^2 + 7*A*c^3)*x^2 + (B*b^
2*c + 14*A*b*c^2)*x)*sqrt(c*x^2 + b*x)/(c^2*sqrt(x))
```

giac [B]   time = 0.19, size = 149, normalized size = 2.44

$$-\frac{2}{105}\,Bc\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)+\frac{2}{15}\,Bb\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)+\frac{2}{15}\,Ac\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)+\frac{2}{3}\,Ab\left(\frac{(cx+b)^{\frac{3}{2}}}{c}-\frac{b^{\frac{3}{2}}}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] -2/105*B*c*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35
*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*B*b*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) -
 5*(c*x + b)^(3/2)*b)/c^2) + 2/15*A*c*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) -
 5*(c*x + b)^(3/2)*b)/c^2) + 2/3*A*b*((c*x + b)^(3/2)/c - b^(3/2)/c)
```

maple [A]   time = 0.05, size = 39, normalized size = 0.64

$$\frac{2\,(cx+b)\,(5Bcx+7Ac-2bB)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{35c^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x)
```

```
[Out] 2/35*(c*x+b)*(5*B*c*x+7*A*c-2*B*b)*(c*x^2+b*x)^(3/2)/c^2/x^(3/2)
```

maxima [B]   time = 0.62, size = 129, normalized size = 2.11

$$\frac{2\left(5\,bcx^2+5\,b^2x+\left(3\,c^2x^2+bcx-2\,b^2\right)x\right)\sqrt{cx+b}\,A}{15\,cx}+\frac{2\left(\left(15\,c^3x^3+3\,bc^2x^2-4\,b^2cx+8\,b^3\right)x^2+7\left(3\,bc^2x^3+b^2cx^2-2\,b^3x\right)x\right)\sqrt{cx+b}\,B}{105\,c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*(5*b*c*x^2 + 5*b^2*x + (3*c^2*x^2 + b*c*x - 2*b^2)*x)*sqrt(c*x + b)*A/
(c*x) + 2/105*((15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*x^2 + 7*(3*b*
c^2*x^3 + b^2*c*x^2 - 2*b^3*x)*x)*sqrt(c*x + b)*B/(c^2*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(3/2),x)
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(3/2),x)
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(3/2), x)
```

3.208 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=105

$$-2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}}$$

Rubi [A] time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {794, 664, 660, 207}

$$-2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (2*A*b*Sqrt[b*x + c*x^2])/Sqrt[x] + (2*A*(b*x + c*x^2)^(3/2))/(3*x^(3/2)) +
 (2*B*(b*x + c*x^2)^(5/2))/(5*c*x^(5/2)) - 2*A*b^(3/2)*ArcTanh[Sqrt[b*x + c
*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + A\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx \\
&= \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + (Ab)\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx \\
&= \frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + \left(Ab^2\right)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}} \\
&= \frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + \left(2Ab^2\right)\text{Subst}\left(\int \frac{1}{-b+ \right. \\
&= \frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} - 2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{bx+c}}{\sqrt{b}\sqrt{x}}\right.
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 100, normalized size = 0.95

$$
\frac{2\sqrt{x}\sqrt{b+cx}\left(\sqrt{b+cx}\left(b(20Ac+6Bcx)+c^2x(5A+3Bx)+3b^2B\right)-15Ab^{3/2}c\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{15c\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (2*Sqrt[x]*Sqrt[b + c*x]*(Sqrt[b + c*x]*(3*b^2*B + c^2*x*(5*A + 3*B*x) + b*
(20*A*c + 6*B*c*x)) - 15*A*b^(3/2)*c*ArcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(15*c
*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.68, size = 93, normalized size = 0.89

$$
\frac{2\sqrt{bx+cx^2}\left(20Abc+5Ac^2x+3b^2B+6bBcx+3Bc^2x^2\right)}{15c\sqrt{x}} - 2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(3*b^2*B + 20*A*b*c + 6*b*B*c*x + 5*A*c^2*x + 3*B*c^2*
x^2))/(15*c*Sqrt[x]) - 2*A*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x
^2]]
```

fricas [A] time = 0.42, size = 195, normalized size = 1.86

$$
\left[\frac{15\,Ab^{\frac{3}{2}}cx\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(3\,Bc^2x^2+3\,Bb^2+20\,Abc+\left(6\,Bbc+5\,Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{15\,cx},\ \frac{2\left(15\,A\sqrt{-b}\,bcx\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(3\,Bc^2x^2+3\,Bb^2+20\,Abc+\left(6\,Bbc+5\,Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}\right)}{15\,cx}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/15*(15*A*b^(3/2)*c*x*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*s
qrt(x))/x^2) + 2*(3*B*c^2*x^2 + 3*B*b^2 + 20*A*b*c + (6*B*b*c + 5*A*c^2)*x)
*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x), 2/15*(15*A*sqrt(-b)*b*c*x*arctan(sqrt(-b
)*sqrt(x)/sqrt(c*x^2 + b*x)) + (3*B*c^2*x^2 + 3*B*b^2 + 20*A*b*c + (6*B*b*c
 + 5*A*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x)]
```

giac [A] time = 0.20, size = 123, normalized size = 1.17

$$\frac{2\,Ab^2\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{2\left(15\,Ab^2c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)+3\,B\sqrt{-b}\,b^{\frac{5}{2}}+20\,A\sqrt{-b}\,b^{\frac{3}{2}}c\right)}{15\,\sqrt{-b}\,c}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}Bc^4+5\,(cx+b)^{\frac{3}{2}}Ac^5+15\,\sqrt{cx+b}\,Abc^5\right)}{15\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2*A*b^2*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-b) - 2/15*(15*A*b^2*c*arctan(s
qrt(b)/sqrt(-b)) + 3*B*sqrt(-b)*b^(5/2) + 20*A*sqrt(-b)*b^(3/2)*c)/(sqrt(-b
)*c) + 2/15*(3*(c*x + b)^(5/2)*B*c^4 + 5*(c*x + b)^(3/2)*A*c^5 + 15*sqrt(c*
x + b)*A*b*c^5)/c^5
```

maple [A] time = 0.06, size = 113, normalized size = 1.08

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(-3\sqrt{cx+b}\;B\,c^2x^2+15A\,b^{\frac{3}{2}}c\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-5\sqrt{cx+b}\;A\,c^2x-6\sqrt{cx+b}\;Bbcx-20\sqrt{cx+b}\;Abc-3\sqrt{cx+b}\;B\,b^2\right)}{15\sqrt{cx+b}\;c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x)
```

```
[Out] -2/15*((c*x+b)*x)^(1/2)*(-3*B*x^2*c^2*(c*x+b)^(1/2)+15*A*b^(3/2)*c*arctanh(
(c*x+b)^(1/2)/b^(1/2))-5*A*x*c^2*(c*x+b)^(1/2)-6*B*x*b*c*(c*x+b)^(1/2)-20*A
*b*c*(c*x+b)^(1/2)-3*B*b^2*(c*x+b)^(1/2))/x^(1/2)/(c*x+b)^(1/2)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$Ab\int\frac{\sqrt{cx+b}}{x}\,dx+\frac{2\left(5\left(Bbc+Ac^2\right)x^2+\left(3\,Bc^2x^2+Bbcx-2\,Bb^2\right)x+5\left(Bb^2+Abc\right)x\right)\sqrt{cx+b}}{15\,cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] A*b*integrate(sqrt(c*x + b)/x, x) + 2/15*(5*(B*b*c + A*c^2)*x^2 + (3*B*c^2*
x^2 + B*b*c*x - 2*B*b^2)*x + 5*(B*b^2 + A*b*c)*x)*sqrt(c*x + b)/(c*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(5/2), x)
```

3.209 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=128

$$\frac{\sqrt{bx+cx^2}\,(3Ac+2bB)}{\sqrt{x}}-\sqrt{b}\,(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{\left(bx+cx^2\right)^{3/2}(3Ac+2bB)}{3bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}$$

Rubi [A] time = 0.13, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 664, 660, 207}

$$\frac{\left(bx+cx^2\right)^{3/2}(3Ac+2bB)}{3bx^{3/2}}+\frac{\sqrt{bx+cx^2}\,(3Ac+2bB)}{\sqrt{x}}-\sqrt{b}\,(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] ((2*b*B + 3*A*c)*Sqrt[b*x + c*x^2])/Sqrt[x] + ((2*b*B + 3*A*c)*(b*x + c*x^2
)^(3/2))/(3*b*x^(3/2)) - (A*(b*x + c*x^2)^(5/2))/(b*x^(7/2)) - Sqrt[b]*(2*b
*B + 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}} + \frac{\left(-\frac{7}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx}{b}$$

$$= \frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}} + \frac{1}{2}(2bB+3Ac)\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,d$$

$$= \frac{(2bB+3Ac)\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}} + \frac{1}{2}(b$$

$$= \frac{(2bB+3Ac)\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}} + (b(2$$

$$= \frac{(2bB+3Ac)\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}} - \sqrt{b}($$

Mathematica [A] time = 0.06, size = 94, normalized size = 0.73

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{b+cx}\,(2Bx(4b+cx)-3A(b-2cx))-3\sqrt{b}\,x(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{3x^{3/2}\sqrt{b+cx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[b + c*x]*(-3*A*(b - 2*c*x) + 2*B*x*(4*b + c*x)) -
3*Sqrt[b]*(2*b*B + 3*A*c)*x*ArcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(3*x^(3/2)*Sqr
t[b + c*x])
```

IntegrateAlgebraic [A] time = 0.75, size = 89, normalized size = 0.70

$$\left(-3A\sqrt{b}\,c-2b^{3/2}B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)+\frac{\sqrt{bx+cx^2}\left(-3Ab+6Acx+8bBx+2Bcx^2\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-3*A*b + 8*b*B*x + 6*A*c*x + 2*B*c*x^2))/(3*x^(3/2)) +
(-2*b^(3/2)*B - 3*A*Sqrt[b]*c)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]]
```

fricas [A] time = 0.42, size = 184, normalized size = 1.44

$$\left[\frac{3\,(2\,Bb+3\,Ac)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Bcx^2-3\,Ab+2\,(4\,Bb+3\,Ac)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{6\,x^2},\ \frac{3\,(2\,Bb+3\,Ac)\sqrt{-b}\,x^2\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(2\,Bcx^2-3\,Ab+2\,(4\,Bb+3\,Ac)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(2*B*b + 3*A*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*
x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*B*c*x^2 - 3*A*b + 2*(4*B*b + 3*A*c)*x)*sqrt
(c*x^2 + b*x)*sqrt(x))/x^2, 1/3*(3*(2*B*b + 3*A*c)*sqrt(-b)*x^2*arctan(sqrt
(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (2*B*c*x^2 - 3*A*b + 2*(4*B*b + 3*A*c)*x)
*sqrt(c*x^2 + b*x)*sqrt(x))/x^2]
```

giac [A] time = 0.27, size = 93, normalized size = 0.73

$$\frac{2\,(cx+b)^{\frac{3}{2}}Bc+6\,\sqrt{cx+b}\,Bbc+6\,\sqrt{cx+b}\,Ac^2-\frac{3\,\sqrt{cx+b}\,Abc}{x}+\frac{3\left(2\,Bb^2c+3\,Abc^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 1/3*(2*(c*x + b)^(3/2)*B*c + 6*sqrt(c*x + b)*B*b*c + 6*sqrt(c*x + b)*A*c^2
 - 3*sqrt(c*x + b)*A*b*c/x + 3*(2*B*b^2*c + 3*A*b*c^2)*arctan(sqrt(c*x + b)/
sqrt(-b))/sqrt(-b))/c
```

maple [A] time = 0.07, size = 122, normalized size = 0.95

$$-\frac{\sqrt{(cx+b)\,x}\,\left(9Abcx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+6B\,b^2x\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2\sqrt{cx+b}\,B\sqrt{b}\,c\,x^2-6\sqrt{cx+b}\,A\sqrt{b}\,cx-8\sqrt{cx+b}\,B\,b^{\frac{3}{2}}x+3\sqrt{cx+b}\,A\,b^{\frac{3}{2}}\right)}{3\sqrt{cx+b}\,\sqrt{b}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x)
```

```
[Out] -1/3*((c*x+b)*x)^(1/2)*(-2*B*x^2*c*b^(1/2)*(c*x+b)^(1/2)+9*A*arctanh((c*x+b
)^(1/2)/b^(1/2))*x*b*c-6*A*x*c*b^(1/2)*(c*x+b)^(1/2)+6*B*arctanh((c*x+b)^(1
/2)/b^(1/2))*x*b^2-8*B*x*b^(3/2)*(c*x+b)^(1/2)+3*A*b^(3/2)*(c*x+b)^(1/2))/x
^(3/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2}{3}\,(Bcx+Bb)\sqrt{cx+b}\,+\int\frac{(Ab+(Bb+Ac)x)\sqrt{cx+b}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c*x + B*b)*sqrt(c*x + b) + integrate((A*b + (B*b + A*c)*x)*sqrt(c*x
+ b)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(7/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(7/2), x)
```

3.210 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=137

$$\frac{3c\sqrt{bx+cx^2}\,(Ac+4bB)}{4b\sqrt{x}}-\frac{3c(Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{4\sqrt{b}}-\frac{\left(bx+cx^2\right)^{3/2}(Ac+4bB)}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}$$

Rubi [A] time = 0.13, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 664, 660, 207}

$$-\frac{\left(bx+cx^2\right)^{3/2}(Ac+4bB)}{4bx^{5/2}}+\frac{3c\sqrt{bx+cx^2}\,(Ac+4bB)}{4b\sqrt{x}}-\frac{3c(Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{4\sqrt{b}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (3*c*(4*b*B + A*c)*Sqrt[b*x + c*x^2])/(4*b*Sqrt[x]) - ((4*b*B + A*c)*(b*x +
 c*x^2)^(3/2))/(4*b*x^(5/2)) - (A*(b*x + c*x^2)^(5/2))/(2*b*x^(9/2)) - (3*c
*(4*b*B + A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(4*Sqrt[b])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}} + \frac{\left(-\frac{9}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx}{2b}$$

$$= -\frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}} + \frac{(3c(4bB+Ac))\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx}{8b}$$

$$= \frac{3c(4bB+Ac)\sqrt{bx+cx^2}}{4b\sqrt{x}} - \frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}} + \frac{1}{8}(3c(4b$$

$$= \frac{3c(4bB+Ac)\sqrt{bx+cx^2}}{4b\sqrt{x}} - \frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}} + \frac{1}{4}(3c(4b$$

$$= \frac{3c(4bB+Ac)\sqrt{bx+cx^2}}{4b\sqrt{x}} - \frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}} - \frac{3c(4bB}{}$$

Mathematica [C] time = 0.03, size = 59, normalized size = 0.43

$$\frac{(x(b+cx))^{5/2}\left(cx^2(Ac+4bB)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{cx}{b}+1\right)-5Ab^2\right)}{10b^3x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*(-5*A*b^2 + c*(4*b*B + A*c)*x^2*Hypergeometric2F1[2, 5
/2, 7/2, 1 + (c*x)/b]))/(10*b^3*x^(9/2))
```

IntegrateAlgebraic [A] time = 0.80, size = 90, normalized size = 0.66

$$\frac{\sqrt{bx+cx^2}\left(-2Ab-5Acx-4bBx+8Bcx^2\right)}{4x^{5/2}} - \frac{3\left(Ac^2+4bBc\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{4\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-2*A*b - 4*b*B*x - 5*A*c*x + 8*B*c*x^2))/(4*x^(5/2)) -
(3*(4*b*B*c + A*c^2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(4*Sqrt[
b])
```

fricas [A] time = 0.42, size = 206, normalized size = 1.50

$$\left[\frac{3\left(4\,Bbc+Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8\,Bbcx^2-2\,Ab^2-\left(4\,Bb^2+5\,Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{8\,bx^3}, \frac{3\left(4\,Bbc+Ac^2\right)\sqrt{-b}\,x^3\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(8\,Bbcx^2-2\,Ab^2-\left(4\,Bb^2+5\,Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{4\,bx^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] [1/8*(3*(4*B*b*c + A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 +
b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*B*b*c*x^2 - 2*A*b^2 - (4*B*b^2 + 5*A*b*c)
*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^3), 1/4*(3*(4*B*b*c + A*c^2)*sqrt(-b)*x
^3*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (8*B*b*c*x^2 - 2*A*b^2 - (4
*B*b^2 + 5*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^3)]
```

giac [A] time = 0.42, size = 119, normalized size = 0.87

$$\frac{8\sqrt{cx+b}\,Bc^2 + \frac{3\left(4\,Bbc^2+Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}} - \frac{4\,(cx+b)^{\frac{3}{2}}Bbc^2 - 4\,\sqrt{cx+b}\,Bb^2c^2 + 5\,(cx+b)^{\frac{3}{2}}Ac^3 - 3\,\sqrt{cx+b}\,Abc^3}{c^2x^2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/4*(8*sqrt(c*x + b)*B*c^2 + 3*(4*B*b*c^2 + A*c^3)*arctan(sqrt(c*x + b)/sqr
t(-b))/sqrt(-b) - (4*(c*x + b)^(3/2)*B*b*c^2 - 4*sqrt(c*x + b)*B*b^2*c^2 +
5*(c*x + b)^(3/2)*A*c^3 - 3*sqrt(c*x + b)*A*b*c^3)/(c^2*x^2))/c
```

maple [A] time = 0.07, size = 126, normalized size = 0.92

$$-\frac{\sqrt{(cx+b)\,x}\,\left(3A\,c^2x^2\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) + 12Bbc\,x^2\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) - 8\sqrt{cx+b}\,B\sqrt{b}\,c\,x^2 + 5\sqrt{cx+b}\,A\sqrt{b}\,cx + 4\sqrt{cx+b}\,B\,b^{\frac{3}{2}}x + 2\sqrt{cx+b}\,A\,b^{\frac{3}{2}}\right)}{4\sqrt{cx+b}\,\sqrt{b}\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x)
```

```
[Out] -1/4*((c*x+b)*x)^(1/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*c^2+12*B*arc
tanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c-8*(c*x+b)^(1/2)*B*b^(1/2)*c*x^2+5*(c*x+
b)^(1/2)*A*b^(1/2)*c*x+4*(c*x+b)^(1/2)*B*b^(3/2)*x+2*(c*x+b)^(1/2)*A*b^(3/2
))/x^(5/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x^{9/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(9/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(9/2), x)
```

3.211 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx$

Optimal. Leaf size=142

$$-\frac{c^2(6bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{3/2}}-\frac{\left(bx+cx^2\right)^{3/2}(6bB-Ac)}{12bx^{7/2}}-\frac{c\sqrt{bx+cx^2}\,(6bB-Ac)}{8bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}$$

Rubi [A] time = 0.13, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 662, 660, 207}

$$-\frac{c^2(6bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{3/2}}-\frac{\left(bx+cx^2\right)^{3/2}(6bB-Ac)}{12bx^{7/2}}-\frac{c\sqrt{bx+cx^2}\,(6bB-Ac)}{8bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] -(c*(6*b*B - A*c)*Sqrt[b*x + c*x^2])/(8*b*x^(3/2)) - ((6*b*B - A*c)*(b*x +
c*x^2)^(3/2))/(12*b*x^(7/2)) - (A*(b*x + c*x^2)^(5/2))/(3*b*x^(11/2)) - (c^
2*(6*b*B - A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(3/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}} + \frac{\left(-\frac{11}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{9/2}}dx}{3b}$$

$$= -\frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}} + \frac{(c(6bB-Ac))\int \frac{\sqrt{bx+cx^2}}{x^{5/2}}dx}{8b}$$

$$= -\frac{c(6bB-Ac)\sqrt{bx+cx^2}}{8bx^{3/2}} - \frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}} + \frac{\left(c^2(6bB\right.}{}$$

$$= -\frac{c(6bB-Ac)\sqrt{bx+cx^2}}{8bx^{3/2}} - \frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}} + \frac{\left(c^2(6bB\right.}{}$$

$$= -\frac{c(6bB-Ac)\sqrt{bx+cx^2}}{8bx^{3/2}} - \frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}} - \frac{c^2(6bB}{}$$

Mathematica [A] time = 0.12, size = 107, normalized size = 0.75

$$-\frac{(b+cx)\left(A\left(8b^2+14bcx+3c^2x^2\right)+6bBx(2b+5cx)\right)+3c^2x^3\sqrt{\frac{cx}{b}+1}\,(6bB-Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)}{24bx^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] -1/24*((b + c*x)*(6*b*B*x*(2*b + 5*c*x) + A*(8*b^2 + 14*b*c*x + 3*c^2*x^2))
 + 3*c^2*(6*b*B - A*c)*x^3*Sqrt[1 + (c*x)/b]*ArcTanh[Sqrt[1 + (c*x)/b]])/(b
*x^(5/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.95, size = 110, normalized size = 0.77

$$\frac{\left(Ac^3-6bBc^2\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{8b^{3/2}} + \frac{\sqrt{bx+cx^2}\left(-8Ab^2-14Abcx-3Ac^2x^2-12b^2Bx-30bBcx^2\right)}{24bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^2 - 12*b^2*B*x - 14*A*b*c*x - 30*b*B*c*x^2 - 3*A
*c^2*x^2))/(24*b*x^(7/2)) + ((-6*b*B*c^2 + A*c^3)*ArcTanh[(Sqrt[b]*Sqrt[x])
/Sqrt[b*x + c*x^2]])/(8*b^(3/2))
```

fricas [A] time = 0.43, size = 239, normalized size = 1.68

$$\left[-\frac{3\left(6Bbc^2-Ac^3\right)\sqrt{b}x^4\log\left(-\frac{cx^2+2bx+2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(8Ab^3+3\left(10Bb^2c+Abc^2\right)x^2+2\left(6Bb^3+7Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{48b^2x^4},\ \frac{3\left(6Bbc^2-Ac^3\right)\sqrt{-b}x^4\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(8Ab^3+3\left(10Bb^2c+Abc^2\right)x^2+2\left(6Bb^3+7Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{24b^2x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(6*B*b*c^2 - A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^3 + 3*(10*B*b^2*c + A*b*c^2)*x^2
+ 2*(6*B*b^3 + 7*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*x^4), 1/24*(3*
(6*B*b*c^2 - A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x))
 - (8*A*b^3 + 3*(10*B*b^2*c + A*b*c^2)*x^2 + 2*(6*B*b^3 + 7*A*b^2*c)*x)*sqr
t(c*x^2 + b*x)*sqrt(x))/(b^2*x^4)]
```

giac [A] time = 0.32, size = 145, normalized size = 1.02

$$\frac{\frac{3\left(6Bbc^{3}-Ac^{4}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{30\,(cx+b)^{\frac{5}{2}}Bbc^{3}-48\,(cx+b)^{\frac{3}{2}}Bb^{2}c^{3}+18\,\sqrt{cx+b}\,Bb^{3}c^{3}+3\,(cx+b)^{\frac{5}{2}}Ac^{4}+8\,(cx+b)^{\frac{3}{2}}Abc^{4}-3\,\sqrt{cx+b}\,Ab^{2}c^{4}}{bc^{3}x^{3}}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x, algorithm="giac")
```

```
[Out] 1/24*(3*(6*B*b*c^3 - A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) - (
30*(c*x + b)^(5/2)*B*b*c^3 - 48*(c*x + b)^(3/2)*B*b^2*c^3 + 18*sqrt(c*x + b
)*B*b^3*c^3 + 3*(c*x + b)^(5/2)*A*c^4 + 8*(c*x + b)^(3/2)*A*b*c^4 - 3*sqrt(
c*x + b)*A*b^2*c^4)/(b*c^3*x^3))/c
```

maple [A] time = 0.07, size = 147, normalized size = 1.04

$$\frac{\sqrt{(cx+b)\,x}\,\left(3A\,c^{3}x^{3}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-18Bb\,c^{2}x^{3}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3\sqrt{cx+b}\;A\sqrt{b}\;c^{2}x^{2}-30\sqrt{cx+b}\;B\,b^{\frac{3}{2}}c\,x^{2}-14\sqrt{cx+b}\;A\,b^{\frac{3}{2}}cx-12\sqrt{cx+b}\;B\,b^{\frac{5}{2}}x-8\sqrt{cx+b}\;A\,b^{\frac{5}{2}}\right)}{24\sqrt{cx+b}\;b^{\frac{3}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x)
```

```
[Out] 1/24*((c*x+b)*x)^(1/2)/b^(3/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3-
18*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-3*(c*x+b)^(1/2)*A*b^(1/2)*c^2
*x^2-30*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2-14*(c*x+b)^(1/2)*A*b^(3/2)*c*x-12*(c*
x+b)^(1/2)*B*b^(5/2)*x-8*(c*x+b)^(1/2)*A*b^(5/2))/x^(7/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(11/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(11/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(11/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(11/2), x)
```

3.212 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{13/2}}\,dx$

Optimal. Leaf size=179

$$\frac{c^3(8bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{5/2}}-\frac{c^2\sqrt{bx+cx^2}\,(8bB-3Ac)}{64b^2x^{3/2}}-\frac{c\sqrt{bx+cx^2}\,(8bB-3Ac)}{32bx^{5/2}}-\frac{\left(bx+cx^2\right)^{3/2}(8bB-3Ac)}{24bx^{9/2}}$$

Rubi [A] time = 0.17, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$-\frac{c^2\sqrt{bx+cx^2}\,(8bB-3Ac)}{64b^2x^{3/2}}+\frac{c^3(8bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(8bB-3Ac)}{32bx^{5/2}}-\frac{\left(bx+cx^2\right)^{3/2}(8bB-3Ac)}{24bx^{9/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] -(c*(8*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/(32*b*x^(5/2)) - (c^2*(8*b*B - 3*A*c
)*Sqrt[b*x + c*x^2])/(64*b^2*x^(3/2)) - ((8*b*B - 3*A*c)*(b*x + c*x^2)^(3/2
))/(24*b*x^(9/2)) - (A*(b*x + c*x^2)^(5/2))/(4*b*x^(13/2)) + (c^3*(8*b*B -
3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(64*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{13/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}+\frac{\left(-\frac{13}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx}{4b}\\
&= -\frac{(8bB-3Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{9/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}+\frac{(c(8bB-3Ac))\int\frac{\sqrt{bx+cx^2}}{x^{7/2}}\,dx}{16b} \cdots\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{(8bB-3Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{9/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}+\cdots\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{c^2(8bB-3Ac)\sqrt{bx+cx^2}}{64b^2x^{3/2}}-\frac{(8bB-3Ac)\left(bx+cx \cdots\right.}{24bx^{9/2}}\cdots\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{c^2(8bB-3Ac)\sqrt{bx+cx^2}}{64b^2x^{3/2}}-\frac{(8bB-3Ac)\left(bx+cx \cdots\right.}{24bx^{9/2}}\cdots\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{c^2(8bB-3Ac)\sqrt{bx+cx^2}}{64b^2x^{3/2}}-\frac{(8bB-3Ac)\left(bx+cx \cdots\right.}{24bx^{9/2}}\cdots
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 62, normalized size = 0.35

$$
\frac{(x(b+cx))^{5/2}\left(c^3x^4(8bB-3Ac)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{cx}{b}+1\right)-5Ab^4\right)}{20b^5x^{13/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*(-5*A*b^4 + c^3*(8*b*B - 3*A*c)*x^4*Hypergeometric2F1[
5/2, 4, 7/2, 1 + (c*x)/b]))/(20*b^5*x^(13/2))
```

IntegrateAlgebraic [A] time = 1.07, size = 135, normalized size = 0.75

$$
\frac{\left(8bBc^3-3Ac^4\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{64b^{5/2}}+\frac{\sqrt{bx+cx^2}\left(-48Ab^3-72Ab^2cx-6Abc^2x^2+9Ac^3x^3-64b^3Bx-112b^2Bcx^2-24bBc^2x^3\right)}{192b^2x^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-48*A*b^3 - 64*b^3*B*x - 72*A*b^2*c*x - 112*b^2*B*c*x^2
 - 6*A*b*c^2*x^2 - 24*b*B*c^2*x^3 + 9*A*c^3*x^3))/(192*b^2*x^(9/2)) + ((8*b
*B*c^3 - 3*A*c^4)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(64*b^(5/2)
)
```

fricas [A] time = 0.42, size = 288, normalized size = 1.61

$$
\left[-\frac{3\left(8Bbc^3-3Ac^4\right)\sqrt{b}x^5\log\left(-\frac{cx^2+2bx-2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(48Ab^4+3\left(8Bb^2c^2-3Abc^3\right)x^3+2\left(56Bb^3c+3Ab^2c^2\right)x^2+8\left(8Bb^4+9Ab^3c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{384b^3x^5},\ -\frac{3\left(8Bbc^3-3Ac^4\right)\sqrt{-b}x^5\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(48Ab^4+3\left(8Bb^2c^2-3Abc^3\right)x^3+2\left(56Bb^3c+3Ab^2c^2\right)x^2+8\left(8Bb^4+9Ab^3c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{192b^3x^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(8*B*b*c^3 - 3*A*c^4)*sqrt(b)*x^5*log(-(c*x^2 + 2*b*x - 2*sqrt(c
*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(48*A*b^4 + 3*(8*B*b^2*c^2 - 3*A*b*c^
3)*x^3 + 2*(56*B*b^3*c + 3*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 9*A*b^3*c)*x)*sqrt
(c*x^2 + b*x)*sqrt(x))/(b^3*x^5), -1/192*(3*(8*B*b*c^3 - 3*A*c^4)*sqrt(-b)*
x^5*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (48*A*b^4 + 3*(8*B*b^2*c^2
 - 3*A*b*c^3)*x^3 + 2*(56*B*b^3*c + 3*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 9*A*b^3
*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*x^5)]
```

giac [A] time = 0.32, size = 176, normalized size = 0.98

$$-\frac{\frac{3\left(8\,Bbc^4-3\,Ac^5\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{24\,(cx+b)^{\frac{7}{2}}\,Bbc^4+40\,(cx+b)^{\frac{5}{2}}\,Bb^2c^4-88\,(cx+b)^{\frac{3}{2}}\,Bb^3c^4+24\,\sqrt{cx+b}\,Bb^4c^4-9\,(cx+b)^{\frac{7}{2}}\,Ac^5+33\,(cx+b)^{\frac{5}{2}}\,Abc^5+33\,(cx+b)^{\frac{3}{2}}\,Ab^2c^5-9\,\sqrt{cx+b}\,Ab^3c^5}{b^2c^4x^4}}{192\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x, algorithm="giac")
```

```
[Out] -1/192*(3*(8*B*b*c^4 - 3*A*c^5)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^
2) + (24*(c*x + b)^(7/2)*B*b*c^4 + 40*(c*x + b)^(5/2)*B*b^2*c^4 - 88*(c*x +
 b)^(3/2)*B*b^3*c^4 + 24*sqrt(c*x + b)*B*b^4*c^4 - 9*(c*x + b)^(7/2)*A*c^5
+ 33*(c*x + b)^(5/2)*A*b*c^5 + 33*(c*x + b)^(3/2)*A*b^2*c^5 - 9*sqrt(c*x +
b)*A*b^3*c^5)/(b^2*c^4*x^4))/c
```

maple [A] time = 0.08, size = 185, normalized size = 1.03

$$-\frac{\sqrt{(cx+b)\,x}\,\left(9A\,c^4x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-24Bb\,c^3x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-9\sqrt{cx+b}\;A\sqrt{b}\;c^3x^3+24\sqrt{cx+b}\;B\,b^{\frac{3}{2}}c^2x^3+6\sqrt{cx+b}\;A\,b^{\frac{3}{2}}c^2x^2+112\sqrt{cx+b}\;B\,b^{\frac{5}{2}}c\,x^2+72\sqrt{cx+b}\;A\,b^{\frac{5}{2}}cx+64\sqrt{cx+b}\;B\,b^{\frac{7}{2}}x+48\sqrt{cx+b}\;A\,b^{\frac{7}{2}}\right)}{192\sqrt{cx+b}\;b^{\frac{5}{2}}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x)
```

```
[Out] -1/192*((c*x+b)*x)^(1/2)/b^(5/2)*(9*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*c^
4-24*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*b*c^3-9*A*x^3*c^3*b^(1/2)*(c*x+b)
^(1/2)+24*B*x^3*b^(3/2)*c^2*(c*x+b)^(1/2)+6*A*x^2*b^(3/2)*c^2*(c*x+b)^(1/2)
+112*B*x^2*b^(5/2)*c*(c*x+b)^(1/2)+72*A*x*b^(5/2)*c*(c*x+b)^(1/2)+64*B*x*b^
(7/2)*(c*x+b)^(1/2)+48*A*b^(7/2)*(c*x+b)^(1/2))/x^(9/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(13/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(13/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(13/2),x)
```

```
[Out] Timed out
```

3.213 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{15/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{3c^4(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{7/2}}+\frac{3c^3\sqrt{bx+cx^2}\,(2bB-Ac)}{128b^3x^{3/2}}-\frac{c^2\sqrt{bx+cx^2}\,(2bB-Ac)}{64b^2x^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac)}{16bx^{7/2}}-$$

Rubi [A] time = 0.19, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$\frac{3c^3\sqrt{bx+cx^2}\,(2bB-Ac)}{128b^3x^{3/2}}-\frac{c^2\sqrt{bx+cx^2}\,(2bB-Ac)}{64b^2x^{5/2}}-\frac{3c^4(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{7/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac)}{16bx^{7/2}}-\frac{\left(bx+cx^2\right)^{3/2}(2bB-Ac)}{8bx^{11/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] -(c*(2*b*B - A*c)*Sqrt[b*x + c*x^2])/(16*b*x^(7/2)) - (c^2*(2*b*B - A*c)*Sq
rt[b*x + c*x^2])/(64*b^2*x^(5/2)) + (3*c^3*(2*b*B - A*c)*Sqrt[b*x + c*x^2])
/(128*b^3*x^(3/2)) - ((2*b*B - A*c)*(b*x + c*x^2)^(3/2))/(8*b*x^(11/2)) - (
A*(b*x + c*x^2)^(5/2))/(5*b*x^(15/2)) - (3*c^4*(2*b*B - A*c)*ArcTanh[Sqrt[b
*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(128*b^(7/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{15/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}} + \frac{\left(-\frac{15}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{13/2}}\,dx}{5b}$$

$$= -\frac{(2bB-Ac)\left(bx+cx^2\right)^{3/2}}{8bx^{11/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}} + \frac{(3c(2bB-Ac))\int \frac{\sqrt{bx+cx^2}}{x^{9/2}}\,dx}{16b}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{(2bB-Ac)\left(bx+cx^2\right)^{3/2}}{8bx^{11/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}} + \frac{\left(c^2(2\right.}{}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} - \frac{(2bB-Ac)\left(bx+cx^2\right)^{3/}}{8bx^{11/2}}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} + \frac{3c^3(2bB-Ac)\sqrt{bx+cx}}{128b^3x^{3/2}}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} + \frac{3c^3(2bB-Ac)\sqrt{bx+cx}}{128b^3x^{3/2}}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} + \frac{3c^3(2bB-Ac)\sqrt{bx+cx}}{128b^3x^{3/2}}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.28

$$-\frac{(x(b+cx))^{5/2}\left(Ab^5+c^4x^5(2bB-Ac)\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};\frac{cx}{b}+1\right)\right)}{5b^6x^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] -1/5*((x*(b + c*x))^(5/2)*(A*b^5 + c^4*(2*b*B - A*c)*x^5*Hypergeometric2F1[
5/2, 5, 7/2, 1 + (c*x)/b]))/(b^6*x^(15/2))
```

IntegrateAlgebraic [A] time = 1.31, size = 159, normalized size = 0.74

$$\frac{\sqrt{bx+cx^2}\left(-128Ab^4-176Ab^3cx-8Ab^2c^2x^2+10Abc^3x^3-15Ac^4x^4-160b^4Bx-240b^3Bcx^2-20b^2Bc^2x^3+30bBc^3x^4\right)}{640b^3x^{11/2}} - \frac{3\left(2bBc^4-Ac^5\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{128b^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-128*A*b^4 - 160*b^4*B*x - 176*A*b^3*c*x - 240*b^3*B*c*
x^2 - 8*A*b^2*c^2*x^2 - 20*b^2*B*c^2*x^3 + 10*A*b*c^3*x^3 + 30*b*B*c^3*x^4
- 15*A*c^4*x^4))/(640*b^3*x^(11/2)) - (3*(2*b*B*c^4 - A*c^5)*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(128*b^(7/2))
```

fricas [A] time = 0.43, size = 335, normalized size = 1.55

$$\left[-\frac{15\left(2\,Bbc^4-Ac^5\right)\sqrt{b}\,x^6\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(128\,Ab^5-15\left(2\,Bb^2c^3-Abc^4\right)x^4+10\left(2\,Bb^3c^2-Ab^2c^3\right)x^3+8\left(30\,Bb^4c+Ab^3c^2\right)x^2+16\left(10\,Bb^5+11\,Ab^4c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{1280\,b^4x^6},\ \frac{15\left(2\,Bbc^4-Ac^5\right)\sqrt{-b}\,x^6\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(128\,Ab^5-15\left(2\,Bb^2c^3-Abc^4\right)x^4+10\left(2\,Bb^3c^2-Ab^2c^3\right)x^3+8\left(30\,Bb^4c+Ab^3c^2\right)x^2+16\left(10\,Bb^5+11\,Ab^4c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{640\,b^4x^6}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(2*B*b*c^4 - A*c^5)*sqrt(b)*x^6*log(-(c*x^2 + 2*b*x + 2*sqrt(c
*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(128*A*b^5 - 15*(2*B*b^2*c^3 - A*b*c^
4)*x^4 + 10*(2*B*b^3*c^2 - A*b^2*c^3)*x^3 + 8*(30*B*b^4*c + A*b^3*c^2)*x^2
+ 16*(10*B*b^5 + 11*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^6), 1/640
*(15*(2*B*b*c^4 - A*c^5)*sqrt(-b)*x^6*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 +
b*x)) - (128*A*b^5 - 15*(2*B*b^2*c^3 - A*b*c^4)*x^4 + 10*(2*B*b^3*c^2 - A*b
^2*c^3)*x^3 + 8*(30*B*b^4*c + A*b^3*c^2)*x^2 + 16*(10*B*b^5 + 11*A*b^4*c)*x
)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^6)]
```

giac [A] time = 0.35, size = 192, normalized size = 0.89

$$\frac{\frac{15\left(2\,Bbc^5-Ac^6\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^3}+\frac{30\,(cx+b)^{\frac{9}{2}}Bbc^5-140\,(cx+b)^{\frac{7}{2}}Bb^2c^5+140\,(cx+b)^{\frac{3}{2}}Bb^4c^5-30\,\sqrt{cx+b}\,Bb^5c^5-15\,(cx+b)^{\frac{9}{2}}Ac^6+70\,(cx+b)^{\frac{7}{2}}Abc^6-128\,(cx+b)^{\frac{5}{2}}Ab^2c^6-70\,(cx+b)^{\frac{3}{2}}Ab^3c^6+15\,\sqrt{cx+b}\,Ab^4c^6}{b^3c^5x^5}}{640\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x, algorithm="giac")
```

```
[Out] 1/640*(15*(2*B*b*c^5 - A*c^6)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3)
 + (30*(c*x + b)^(9/2)*B*b*c^5 - 140*(c*x + b)^(7/2)*B*b^2*c^5 + 140*(c*x +
 b)^(3/2)*B*b^4*c^5 - 30*sqrt(c*x + b)*B*b^5*c^5 - 15*(c*x + b)^(9/2)*A*c^6
 + 70*(c*x + b)^(7/2)*A*b*c^6 - 128*(c*x + b)^(5/2)*A*b^2*c^6 - 70*(c*x + b
)^(3/2)*A*b^3*c^6 + 15*sqrt(c*x + b)*A*b^4*c^6)/(b^3*c^5*x^5))/c
```

maple [A] time = 0.07, size = 223, normalized size = 1.03

$$\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^5x^5\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-30Bb\,c^4x^5\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15\sqrt{cx+b}\,A\sqrt{b}\,c^4x^4+30\sqrt{cx+b}\,B\,b^{\frac{3}{2}}c^3x^4+10\sqrt{cx+b}\,A\,b^{\frac{3}{2}}c^3x^3-20\sqrt{cx+b}\,B\,b^{\frac{5}{2}}c^2x^3-8\sqrt{cx+b}\,A\,b^{\frac{5}{2}}c^2x^2-240\sqrt{cx+b}\,B\,b^{\frac{7}{2}}c\,x^2-176\sqrt{cx+b}\,A\,b^{\frac{7}{2}}cx-160\sqrt{cx+b}\,B\,b^{\frac{9}{2}}x-128\sqrt{cx+b}\,A\,b^{\frac{9}{2}}\right)}{640\sqrt{cx+b}\,b^{\frac{7}{2}}x^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x)
```

```
[Out] 1/640*((c*x+b)*x)^(1/2)/b^(7/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*c^
5-30*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*b*c^4-15*A*x^4*c^4*b^(1/2)*(c*x+b
)^(1/2)+30*B*x^4*b^(3/2)*c^3*(c*x+b)^(1/2)+10*A*x^3*b^(3/2)*c^3*(c*x+b)^(1/
2)-20*B*x^3*b^(5/2)*c^2*(c*x+b)^(1/2)-8*A*x^2*b^(5/2)*c^2*(c*x+b)^(1/2)-240
*B*x^2*b^(7/2)*c*(c*x+b)^(1/2)-176*A*x*b^(7/2)*c*(c*x+b)^(1/2)-160*B*x*b^(9
/2)*(c*x+b)^(1/2)-128*A*b^(9/2)*(c*x+b)^(1/2))/x^(11/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{15/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(15/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(15/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(15/2),x)
```

```
[Out] Timed out
```

3.214 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=207

$$-\frac{256b^4\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{765765c^6x^{7/2}}+\frac{128b^3\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{109395c^5x^{5/2}}-\frac{32b^2\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{12155c^4x^{3/2}}+\frac{16b}{}$$

Rubi [A] time = 0.20, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{256b^4\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{765765c^6x^{7/2}}+\frac{128b^3\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{109395c^5x^{5/2}}-\frac{32b^2\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{12155c^4x^{3/2}}+\frac{16b\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{3315c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{255c^2}+\frac{2Bx^{3/2}\left(bx+cx^2\right)^{7/2}}{17c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-256*b^4*(10*b*B - 17*A*c)*(b*x + c*x^2)^(7/2))/(765765*c^6*x^(7/2)) + (12
8*b^3*(10*b*B - 17*A*c)*(b*x + c*x^2)^(7/2))/(109395*c^5*x^(5/2)) - (32*b^2
*(10*b*B - 17*A*c)*(b*x + c*x^2)^(7/2))/(12155*c^4*x^(3/2)) + (16*b*(10*b*B
 - 17*A*c)*(b*x + c*x^2)^(7/2))/(3315*c^3*Sqrt[x]) - (2*(10*b*B - 17*A*c)*S
qrt[x]*(b*x + c*x^2)^(7/2))/(255*c^2) + (2*B*x^(3/2)*(b*x + c*x^2)^(7/2))/(
17*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx = \frac{2Bx^{3/2}\left(bx+cx^2\right)^{7/2}}{17c} + \frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int x^{3/2}\left(bx+cx^{2}\cdots\right.}{17c}$$
$$= -\frac{2(10bB-17Ac)\sqrt{x}\left(bx+cx^2\right)^{7/2}}{255c^2} + \frac{2Bx^{3/2}\left(bx+cx^2\right)^{7/2}}{17c} + \frac{(8b(10bB-17\cdots}{\cdots}$$
$$= \frac{16b(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{3315c^3\sqrt{x}} - \frac{2(10bB-17Ac)\sqrt{x}\left(bx+cx^2\right)^{7/2}}{255c^2} + \frac{2Bx\cdots}{\cdots}$$
$$= -\frac{32b^2(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{12155c^4x^{3/2}} + \frac{16b(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{3315c^3\sqrt{x}} - \frac{2(\cdots}{\cdots}$$
$$= \frac{128b^3(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{109395c^5x^{5/2}} - \frac{32b^2(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{12155c^4x^{3/2}} + \frac{16\cdots}{\cdots}$$
$$= -\frac{256b^4(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{765765c^6x^{7/2}} + \frac{128b^3(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{109395c^5x^{5/2}} - \cdots$$

Mathematica [A] time = 0.09, size = 120, normalized size = 0.58

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(128b^4c(17A+35Bx)-224b^3c^2x(34A+45Bx)+336b^2c^3x^2(51A+55Bx)-462bc^4x^3(68A+65Bx)+3003c^5x^4(17A+15Bx)-1280b^5B\right)}{765765c^6\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(-1280*b^5*B + 3003*c^5*x^4*(17*A + 15*B*x
) + 128*b^4*c*(17*A + 35*B*x) - 224*b^3*c^2*x*(34*A + 45*B*x) + 336*b^2*c^3
*x^2*(51*A + 55*B*x) - 462*b*c^4*x^3*(68*A + 65*B*x)))/(765765*c^6*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.71, size = 131, normalized size = 0.63

$$\frac{2\left(bx+cx^2\right)^{7/2}\left(2176Ab^4c-7616Ab^3c^2x+17136Ab^2c^3x^2-31416Abc^4x^3+51051Ac^5x^4-1280b^5B+4480b^4Bcx-10080b^3Bc^2x^2+18480b^2Bc^3x^3-30030bBc^4x^4+45045Bc^5x^5\right)}{765765c^6x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b*x + c*x^2)^(7/2)*(-1280*b^5*B + 2176*A*b^4*c + 4480*b^4*B*c*x - 7616*
A*b^3*c^2*x - 10080*b^3*B*c^2*x^2 + 17136*A*b^2*c^3*x^2 + 18480*b^2*B*c^3*x
^3 - 31416*A*b*c^4*x^3 - 30030*b*B*c^4*x^4 + 51051*A*c^5*x^4 + 45045*B*c^5*
x^5))/(765765*c^6*x^(7/2))
```

fricas [A] time = 0.40, size = 199, normalized size = 0.96

$$\frac{2\left(45045\,Bc^8x^8-1280\,Bb^8+2176\,Ab^7c+3003\left(35\,Bbc^7+17\,Ac^8\right)x^7+231\left(275\,Bb^2c^6+527\,Abc^7\right)x^6+63\left(5\,Bb^3c^5+1207\,Ab^2c^6\right)x^5-35\left(10\,Bb^4c^4-17\,Ab^3c^5\right)x^4+40\left(10\,Bb^5c^3-17\,Ab^4c^4\right)x^3-48\left(10\,Bb^6c^2-17\,Ab^5c^3\right)x^2+64\left(10\,Bb^7c-17\,Ab^6c^2\right)x\right)\sqrt{cx^2+bx}}{765765\,c^6\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^8*x^8 - 1280*B*b^8 + 2176*A*b^7*c + 3003*(35*B*b*c^7 +
17*A*c^8)*x^7 + 231*(275*B*b^2*c^6 + 527*A*b*c^7)*x^6 + 63*(5*B*b^3*c^5 + 1
207*A*b^2*c^6)*x^5 - 35*(10*B*b^4*c^4 - 17*A*b^3*c^5)*x^4 + 40*(10*B*b^5*c^
3 - 17*A*b^4*c^4)*x^3 - 48*(10*B*b^6*c^2 - 17*A*b^5*c^3)*x^2 + 64*(10*B*b^7
*c - 17*A*b^6*c^2)*x)*sqrt(c*x^2 + b*x)/(c^6*sqrt(x))
```

giac [B] time = 0.31, size = 560, normalized size = 2.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2/109395*B*c^2*(2048*b^(17/2)/c^8 + (6435*(c*x + b)^(17/2) - 51051*(c*x + b
)^(15/2)*b + 176715*(c*x + b)^(13/2)*b^2 - 348075*(c*x + b)^(11/2)*b^3 + 42
5425*(c*x + b)^(9/2)*b^4 - 328185*(c*x + b)^(7/2)*b^5 + 153153*(c*x + b)^(5
/2)*b^6 - 36465*(c*x + b)^(3/2)*b^7)/c^8) - 4/45045*B*b*c*(1024*b^(15/2)/c^
7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b)^(13/2)*b + 61425*(c*x + b)^(11
/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 96525*(c*x + b)^(7/2)*b^4 - 54054*(c
*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b^6)/c^7) - 2/45045*A*c^2*(1024*b
^(15/2)/c^7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b)^(13/2)*b + 61425*(c*
x + b)^(11/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 96525*(c*x + b)^(7/2)*b^4
- 54054*(c*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b^6)/c^7) + 2/9009*B*b^
2*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 100
10*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b
^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) + 4/9009*A*b*c*(256*b^(13/2)/c^6 + (693
*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 1
2870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*
b^5)/c^6) - 2/3465*A*b^2*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(
c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 11
55*(c*x + b)^(3/2)*b^4)/c^5)
```

maple [A] time = 0.05, size = 131, normalized size = 0.63

$$\frac{2\left(cx+b\right)\left(45045B\,x^{5}c^{5}+51051A\,c^{5}x^{4}-30030Bb\,c^{4}x^{4}-31416Ab\,c^{4}x^{3}+18480B\,b^{2}c^{3}x^{3}+17136A\,b^{2}c^{3}x^{2}-10080B\,b^{3}c^{2}x^{2}-7616A\,b^{3}c^{2}x+4480B\,b^{4}cx+2176A\,b^{4}c-1280B\,b^{5}\right)\left(c\,x^{2}+bx\right)^{\frac{5}{2}}}{765765c^{6}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/765765*(c*x+b)*(45045*B*c^5*x^5+51051*A*c^5*x^4-30030*B*b*c^4*x^4-31416*A
*b*c^4*x^3+18480*B*b^2*c^3*x^3+17136*A*b^2*c^3*x^2-10080*B*b^3*c^2*x^2-7616
*A*b^3*c^2*x+4480*B*b^4*c*x+2176*A*b^4*c-1280*B*b^5)*(c*x^2+b*x)^(5/2)/c^6/
x^(5/2)
```

maxima [B] time = 0.85, size = 507, normalized size = 2.45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/45045*((3003*c^7*x^7 + 231*b*c^6*x^6 - 252*b^2*c^5*x^5 + 280*b^3*c^4*x^4
- 320*b^4*c^3*x^3 + 384*b^5*c^2*x^2 - 512*b^6*c*x + 1024*b^7)*x^6 + 10*(693
*b*c^6*x^7 + 63*b^2*c^5*x^6 - 70*b^3*c^4*x^5 + 80*b^4*c^3*x^4 - 96*b^5*c^2*
x^3 + 128*b^6*c*x^2 - 256*b^7*x)*x^5 + 13*(315*b^2*c^5*x^7 + 35*b^3*c^4*x^6
 - 40*b^4*c^3*x^5 + 48*b^5*c^2*x^4 - 64*b^6*c*x^3 + 128*b^7*x^2)*x^4)*sqrt(
c*x + b)*A/(c^5*x^6) + 2/765765*(7*(6435*c^8*x^8 + 429*b*c^7*x^7 - 462*b^2*
c^6*x^6 + 504*b^3*c^5*x^5 - 560*b^4*c^4*x^4 + 640*b^5*c^3*x^3 - 768*b^6*c^2
*x^2 + 1024*b^7*c*x - 2048*b^8)*x^7 + 34*(3003*b*c^7*x^8 + 231*b^2*c^6*x^7
- 252*b^3*c^5*x^6 + 280*b^4*c^4*x^5 - 320*b^5*c^3*x^4 + 384*b^6*c^2*x^3 - 5
12*b^7*c*x^2 + 1024*b^8*x)*x^6 + 85*(693*b^2*c^6*x^8 + 63*b^3*c^5*x^7 - 70*
b^4*c^4*x^6 + 80*b^5*c^3*x^5 - 96*b^6*c^2*x^4 + 128*b^7*c*x^3 - 256*b^8*x^2
)*x^5)*sqrt(c*x + b)*B/(c^6*x^7)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3/2}\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^(5/2)*(A + B*x),x)
[Out] int(x^(3/2)*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**(5/2),x)
[Out] Timed out
```

3.215 $\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{45045c^5x^{7/2}}-\frac{16b^2\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{6435c^4x^{5/2}}+\frac{4b\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{715c^3x^{3/2}}-\frac{2\left(bx+cx^2\right)^{7/}}{195}$$

Rubi [A] time = 0.14, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{6435c^4x^{5/2}}+\frac{32b^3\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{45045c^5x^{7/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{195c^2\sqrt{x}}+\frac{4b\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{715c^3x^{3/2}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{7/2}}{15c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (32*b^3*(8*b*B - 15*A*c)*(b*x + c*x^2)^(7/2))/(45045*c^5*x^(7/2)) - (16*b^2
*(8*b*B - 15*A*c)*(b*x + c*x^2)^(7/2))/(6435*c^4*x^(5/2)) + (4*b*(8*b*B - 1
5*A*c)*(b*x + c*x^2)^(7/2))/(715*c^3*x^(3/2)) - (2*(8*b*B - 15*A*c)*(b*x +
c*x^2)^(7/2))/(195*c^2*Sqrt[x]) + (2*B*Sqrt[x]*(b*x + c*x^2)^(7/2))/(15*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx = \frac{2B\sqrt{x}\left(bx+cx^2\right)^{7/2}}{15c} + \frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \sqrt{x}\left(bx+cx^2\right.}{15c}$$

$$= -\frac{2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{195c^2\sqrt{x}} + \frac{2B\sqrt{x}\left(bx+cx^2\right)^{7/2}}{15c} + \frac{(2b(8bB-15Ac))}{65c^2}$$

$$= \frac{4b(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{715c^3x^{3/2}} - \frac{2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{195c^2\sqrt{x}} + \frac{2B\sqrt{x}\left(bx\right.}{15c}$$

$$= -\frac{16b^2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{6435c^4x^{5/2}} + \frac{4b(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{715c^3x^{3/2}} - \frac{2(8bB}{}$$

$$= \frac{32b^3(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{45045c^5x^{7/2}} - \frac{16b^2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{6435c^4x^{5/2}} + \frac{4b(8b}{}$$

Mathematica [**A**] time = 0.07, size = 101, normalized size = 0.59

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(-16b^3c(15A+28Bx)+168b^2c^2x(5A+6Bx)-42bc^3x^2(45A+44Bx)+231c^4x^3(15A+13Bx)+128b^4B\right)}{45045c^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(128*b^4*B + 168*b^2*c^2*x*(5*A + 6*B*x) +
 231*c^4*x^3*(15*A + 13*B*x) - 16*b^3*c*(15*A + 28*B*x) - 42*b*c^3*x^2*(45*
A + 44*B*x)))/(45045*c^5*Sqrt[x])
```

IntegrateAlgebraic [**A**] time = 0.60, size = 107, normalized size = 0.63

$$\frac{2\left(bx+cx^2\right)^{7/2}\left(-240Ab^3c+840Ab^2c^2x-1890Abc^3x^2+3465Ac^4x^3+128b^4B-448b^3Bcx+1008b^2Bc^2x^2-1848bBc^3x^3+3003Bc^4x^4\right)}{45045c^5x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b*x + c*x^2)^(7/2)*(128*b^4*B - 240*A*b^3*c - 448*b^3*B*c*x + 840*A*b^2
*c^2*x + 1008*b^2*B*c^2*x^2 - 1890*A*b*c^3*x^2 - 1848*b*B*c^3*x^3 + 3465*A*
c^4*x^3 + 3003*B*c^4*x^4))/(45045*c^5*x^(7/2))
```

fricas [**A**] time = 0.40, size = 174, normalized size = 1.02

$$\frac{2\left(3003Bc^7x^7+128Bb^7-240Ab^6c+231\left(31Bbc^6+15Ac^7\right)x^6+63\left(71Bb^2c^5+135Abc^6\right)x^5+35\left(Bb^3c^4+159Ab^2c^5\right)x^4-5\left(8Bb^4c^3-15Ab^3c^4\right)x^3+6\left(8Bb^5c^2-15Ab^4c^3\right)x^2-8\left(8Bb^6c-15Ab^5c^2\right)x\right)\sqrt{cx^2+bx}}{45045c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^7*x^7 + 128*B*b^7 - 240*A*b^6*c + 231*(31*B*b*c^6 + 15*A*
c^7)*x^6 + 63*(71*B*b^2*c^5 + 135*A*b*c^6)*x^5 + 35*(B*b^3*c^4 + 159*A*b^2*
c^5)*x^4 - 5*(8*B*b^4*c^3 - 15*A*b^3*c^4)*x^3 + 6*(8*B*b^5*c^2 - 15*A*b^4*c
^3)*x^2 - 8*(8*B*b^6*c - 15*A*b^5*c^2)*x)*sqrt(c*x^2 + b*x)/(c^5*sqrt(x))
```

giac [**B**] time = 0.28, size = 488, normalized size = 2.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] -2/45045*B*c^2*(1024*b^(15/2)/c^7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b
)^(13/2)*b + 61425*(c*x + b)^(11/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 9652
5*(c*x + b)^(7/2)*b^4 - 54054*(c*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b
^6)/c^7) + 4/9009*B*b*c*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c
*x + b)^(11/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 +
9009*(c*x + b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) + 2/9009*A*c^2*(2
56*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 10010*(
c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b^4 -
 3003*(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*B*b^2*(128*b^(11/2)/c^5 - (315*(c*
x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c
*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) - 4/3465*A*b*c*(128*b^(1
1/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^
(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) + 2/3
15*A*b^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 18
9*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4)
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2\left(cx+b\right)\left(-3003B\,x^{4}c^{4}-3465A\,c^{4}x^{3}+1848Bb\,c^{3}x^{3}+1890Ab\,c^{3}x^{2}-1008B\,b^{2}c^{2}x^{2}-840A\,b^{2}c^{2}x+448B\,b^{3}cx+240A\,b^{3}c-128b^{4}B\right)\left(c\,x^{2}+bx\right)^{\frac{5}{2}}}{45045c^{5}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x)
```

```
[Out] -2/45045*(c*x+b)*(-3003*B*c^4*x^4-3465*A*c^4*x^3+1848*B*b*c^3*x^3+1890*A*b*
c^3*x^2-1008*B*b^2*c^2*x^2-840*A*b^2*c^2*x+448*B*b^3*c*x+240*A*b^3*c-128*B*
b^4)*(c*x^2+b*x)^(5/2)/c^5/x^(5/2)
```

maxima [B] time = 0.82, size = 441, normalized size = 2.59

$$\frac{2\left(5\left(693\,c^{6}x^{6}+63\,bc^{5}x^{5}-70\,b^{2}c^{4}x^{4}+80\,b^{3}c^{3}x^{3}-96\,b^{4}c^{2}x^{2}+128\,b^{5}cx-256\,b^{6}\right)x^{5}+26\left(315\,bc^{5}x^{6}+35\,b^{2}c^{4}x^{5}-40\,b^{3}c^{3}x^{4}+48\,b^{4}c^{2}x^{3}-64\,b^{5}cx^{2}+128\,b^{6}x\right)x^{4}+143\left(35\,b^{2}c^{4}x^{6}+5\,b^{3}c^{3}x^{5}-6\,b^{4}c^{2}x^{4}+8\,b^{5}cx^{3}-16\,b^{6}x^{2}\right)x^{3}\right)\sqrt{cx+b}\,A}{45045\,c^{4}x^{5}}+\frac{2\left(\left(3003\,c^{7}x^{7}+231\,bc^{6}x^{6}-252\,b^{2}c^{5}x^{5}+280\,b^{3}c^{4}x^{4}-320\,b^{4}c^{3}x^{3}+384\,b^{5}c^{2}x^{2}-512\,b^{6}cx+1024\,b^{7}\right)x^{6}+10\left(693\,bc^{6}x^{7}+63\,b^{2}c^{5}x^{6}-70\,b^{3}c^{4}x^{5}+80\,b^{4}c^{3}x^{4}-96\,b^{5}c^{2}x^{3}+128\,b^{6}cx^{2}-256\,b^{7}x\right)x^{5}+13\left(315\,b^{2}c^{5}x^{7}+35\,b^{3}c^{4}x^{6}-40\,b^{4}c^{3}x^{5}+48\,b^{5}c^{2}x^{4}-64\,b^{6}cx^{3}+128\,b^{7}x^{2}\right)x^{4}\right)\sqrt{cx+b}\,B}{45045\,c^{5}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(5*(693*c^6*x^6 + 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 -
96*b^4*c^2*x^2 + 128*b^5*c*x - 256*b^6)*x^5 + 26*(315*b*c^5*x^6 + 35*b^2*c^
4*x^5 - 40*b^3*c^3*x^4 + 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4 + 1
43*(35*b^2*c^4*x^6 + 5*b^3*c^3*x^5 - 6*b^4*c^2*x^4 + 8*b^5*c*x^3 - 16*b^6*x
^2)*x^3)*sqrt(c*x + b)*A/(c^4*x^5) + 2/45045*((3003*c^7*x^7 + 231*b*c^6*x^6
 - 252*b^2*c^5*x^5 + 280*b^3*c^4*x^4 - 320*b^4*c^3*x^3 + 384*b^5*c^2*x^2 -
512*b^6*c*x + 1024*b^7)*x^6 + 10*(693*b*c^6*x^7 + 63*b^2*c^5*x^6 - 70*b^3*c
^4*x^5 + 80*b^4*c^3*x^4 - 96*b^5*c^2*x^3 + 128*b^6*c*x^2 - 256*b^7*x)*x^5 +
 13*(315*b^2*c^5*x^7 + 35*b^3*c^4*x^6 - 40*b^4*c^3*x^5 + 48*b^5*c^2*x^4 - 6
4*b^6*c*x^3 + 128*b^7*x^2)*x^4)*sqrt(c*x + b)*B/(c^5*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.216 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{9009c^4x^{7/2}}+\frac{8b\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{1287c^3x^{5/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{143c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}}$$

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{9009c^4x^{7/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{143c^2x^{3/2}}+\frac{8b\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{1287c^3x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (-16*b^2*(6*b*B - 13*A*c)*(b*x + c*x^2)^(7/2))/(9009*c^4*x^(7/2)) + (8*b*(6
*b*B - 13*A*c)*(b*x + c*x^2)^(7/2))/(1287*c^3*x^(5/2)) - (2*(6*b*B - 13*A*c
)*(b*x + c*x^2)^(7/2))/(143*c^2*x^(3/2)) + (2*B*(b*x + c*x^2)^(7/2))/(13*c*
Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx = \frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}} + \frac{\left(2\left(\frac{1}{2}(bB-Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx}{13c}$$

$$= -\frac{2(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{143c^2x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}} + \frac{(4b(6bB-13Ac))\int \frac{\left(bx+cx\right.}{x^{3/}}}{143c^2}$$

$$= \frac{8b(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{1287c^3x^{5/2}} - \frac{2(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{143c^2x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{7}}{13c\sqrt{x}}$$

$$= -\frac{16b^2(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{9009c^4x^{7/2}} + \frac{8b(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{1287c^3x^{5/2}} - \frac{2(6bB-1}{}$$

Mathematica [A] time = 0.06, size = 82, normalized size = 0.62

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(8b^2c(13A+21Bx)-14bc^2x(26A+27Bx)+63c^3x^2(13A+11Bx)-48b^3B\right)}{9009c^4\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(-48*b^3*B + 63*c^3*x^2*(13*A + 11*B*x) +
8*b^2*c*(13*A + 21*B*x) - 14*b*c^2*x*(26*A + 27*B*x)))/(9009*c^4*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.53, size = 83, normalized size = 0.62

$$\frac{2\left(bx+cx^2\right)^{7/2}\left(104Ab^2c-364Abc^2x+819Ac^3x^2-48b^3B+168b^2Bcx-378bBc^2x^2+693Bc^3x^3\right)}{9009c^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*(b*x + c*x^2)^(7/2)*(-48*b^3*B + 104*A*b^2*c + 168*b^2*B*c*x - 364*A*b*c
^2*x - 378*b*B*c^2*x^2 + 819*A*c^3*x^2 + 693*B*c^3*x^3))/(9009*c^4*x^(7/2))
```

fricas [A] time = 0.40, size = 150, normalized size = 1.13

$$\frac{2\left(693\,Bc^6x^6-48\,Bb^6+104\,Ab^5c+63\left(27\,Bbc^5+13\,Ac^6\right)x^5+7\left(159\,Bb^2c^4+299\,Abc^5\right)x^4+\left(15\,Bb^3c^3+1469\,Ab^2c^4\right)x^3-3\left(6\,Bb^4c^2-13\,Ab^3c^3\right)x^2+4\left(6\,Bb^5c-13\,Ab^4c^2\right)x\right)\sqrt{cx^2+bx}}{9009\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c^6*x^6 - 48*B*b^6 + 104*A*b^5*c + 63*(27*B*b*c^5 + 13*A*c^6)
*x^5 + 7*(159*B*b^2*c^4 + 299*A*b*c^5)*x^4 + (15*B*b^3*c^3 + 1469*A*b^2*c^4
)*x^3 - 3*(6*B*b^4*c^2 - 13*A*b^3*c^3)*x^2 + 4*(6*B*b^5*c - 13*A*b^4*c^2)*x
)*sqrt(c*x^2 + b*x)/(c^4*sqrt(x))
```

giac [B] time = 0.27, size = 416, normalized size = 3.13

$$\frac{2}{9009}\,Bc^2\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b^4-3003\,(cx+b)^{\frac{3}{2}}b^5}{c^6}\right)-\frac{4}{3465}\,Bbc\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)-\frac{2}{3465}\,Ac^2\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)+\frac{2}{315}\,Bb^2\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)+\frac{4}{315}\,Abc\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,Ab^2\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9009*B*c^2*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11
/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x +
 b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) - 4/3465*B*b*c*(128*b^(11/2)
/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2
)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) - 2/3465*
A*c^2*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b +
2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*
b^4)/c^5) + 2/315*B*b^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x +
b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) + 4/31
5*A*b*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 189
*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*A*b^2*(8*b^(7/
2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^
2)/c^3)
```

maple [A] time = 0.05, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(693B\,c^{3}x^{3}+819A\,c^{3}x^{2}-378Bb\,c^{2}x^{2}-364Ab\,c^{2}x+168B\,b^{2}cx+104A\,b^{2}c-48b^{3}B\right)\left(c\,x^{2}+bx\right)^{\frac{5}{2}}}{9009c^{4}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x)
```

```
[Out] 2/9009*(c*x+b)*(693*B*c^3*x^3+819*A*c^3*x^2-378*B*b*c^2*x^2-364*A*b*c^2*x+1
68*B*b^2*c*x+104*A*b^2*c-48*B*b^3)*(c*x^2+b*x)^(5/2)/c^4/x^(5/2)
```

maxima [B] time = 0.71, size = 375, normalized size = 2.82

$$\frac{2\left(\left(315\,c^{5}x^{5}+35\,bc^{4}x^{4}-40\,b^{2}c^{3}x^{3}+48\,b^{3}c^{2}x^{2}-64\,b^{4}cx+128\,b^{5}\right)x^{4}+22\left(35\,bc^{4}x^{5}+5\,b^{2}c^{3}x^{4}-6\,b^{3}c^{2}x^{3}+8\,b^{4}cx^{2}-16\,b^{5}x\right)x^{3}+33\left(15\,b^{2}c^{3}x^{5}+3\,b^{3}c^{2}x^{4}-4\,b^{4}cx^{3}+8\,b^{5}x^{2}\right)x^{2}\right)\sqrt{cx+b}\,A}{3465\,c^{3}x^{4}}+\frac{2\left(5\left(693\,c^{6}x^{6}+63\,bc^{5}x^{5}-70\,b^{2}c^{4}x^{4}+80\,b^{3}c^{3}x^{3}-96\,b^{4}c^{2}x^{2}+128\,b^{5}cx-256\,b^{6}\right)x^{5}+26\left(315\,bc^{5}x^{6}+35\,b^{2}c^{4}x^{5}-40\,b^{3}c^{3}x^{4}+48\,b^{4}c^{2}x^{3}-64\,b^{5}cx^{2}+128\,b^{6}x\right)x^{4}+143\left(35\,b^{2}c^{4}x^{6}+5\,b^{3}c^{3}x^{5}-6\,b^{4}c^{2}x^{4}+8\,b^{5}cx^{3}-16\,b^{6}x^{2}\right)x^{3}\right)\sqrt{cx+b}\,B}{45045\,c^{4}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*((315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*
b^4*c*x + 128*b^5)*x^4 + 22*(35*b*c^4*x^5 + 5*b^2*c^3*x^4 - 6*b^3*c^2*x^3 +
 8*b^4*c*x^2 - 16*b^5*x)*x^3 + 33*(15*b^2*c^3*x^5 + 3*b^3*c^2*x^4 - 4*b^4*c
*x^3 + 8*b^5*x^2)*x^2)*sqrt(c*x + b)*A/(c^3*x^4) + 2/45045*(5*(693*c^6*x^6
+ 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 - 96*b^4*c^2*x^2 + 128*b^5
*c*x - 256*b^6)*x^5 + 26*(315*b*c^5*x^6 + 35*b^2*c^4*x^5 - 40*b^3*c^3*x^4 +
 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4 + 143*(35*b^2*c^4*x^6 + 5*b
^3*c^3*x^5 - 6*b^4*c^2*x^4 + 8*b^5*c*x^3 - 16*b^6*x^2)*x^3)*sqrt(c*x + b)*B
/(c^4*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{\sqrt{x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{\sqrt{x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(1/2),x)
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/sqrt(x), x)
```

3.217 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{4b\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{693c^3x^{7/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{99c^2x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}$$

Rubi [A] time = 0.09, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{99c^2x^{5/2}}+\frac{4b\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{693c^3x^{7/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (4*b*(4*b*B - 11*A*c)*(b*x + c*x^2)^(7/2))/(693*c^3*x^(7/2)) - (2*(4*b*B -
11*A*c)*(b*x + c*x^2)^(7/2))/(99*c^2*x^(5/2)) + (2*B*(b*x + c*x^2)^(7/2))/(
11*c*x^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}+\frac{\left(2\left(-\frac{3}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx}{11c}\\
&= -\frac{2(4bB-11Ac)\left(bx+cx^2\right)^{7/2}}{99c^2x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}+\frac{(2b(4bB-11Ac))\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{5/2}}}{99c^2}\\
&= \frac{4b(4bB-11Ac)\left(bx+cx^2\right)^{7/2}}{693c^3x^{7/2}}-\frac{2(4bB-11Ac)\left(bx+cx^2\right)^{7/2}}{99c^2x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 63, normalized size = 0.66

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(-2bc(11A+14Bx)+7c^2x(11A+9Bx)+8b^2B\right)}{693c^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(8*b^2*B + 7*c^2*x*(11*A + 9*B*x) - 2*b*c*
(11*A + 14*B*x)))/(693*c^3*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.56, size = 59, normalized size = 0.61

$$\frac{2\left(bx+cx^2\right)^{7/2}\left(-22Abc+77Ac^2x+8b^2B-28bBcx+63Bc^2x^2\right)}{693c^3x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (2*(b*x + c*x^2)^(7/2)*(8*b^2*B - 22*A*b*c - 28*b*B*c*x + 77*A*c^2*x + 63*B
*c^2*x^2))/(693*c^3*x^(7/2))
```

fricas [A] time = 0.41, size = 125, normalized size = 1.30

$$\frac{2\left(63\,Bc^5x^5+8\,Bb^5-22\,Ab^4c+7\left(23\,Bbc^4+11\,Ac^5\right)x^4+\left(113\,Bb^2c^3+209\,Abc^4\right)x^3+3\left(Bb^3c^2+55\,Ab^2c^3\right)x^2-\left(4\,Bb^4c-11\,Ab^3c^2\right)x\right)\sqrt{cx^2+bx}}{693\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*c^5*x^5 + 8*B*b^5 - 22*A*b^4*c + 7*(23*B*b*c^4 + 11*A*c^5)*x^4
+ (113*B*b^2*c^3 + 209*A*b*c^4)*x^3 + 3*(B*b^3*c^2 + 55*A*b^2*c^3)*x^2 - (4
*B*b^4*c - 11*A*b^3*c^2)*x)*sqrt(c*x^2 + b*x)/(c^3*sqrt(x))
```

giac [B] time = 0.28, size = 344, normalized size = 3.58

$$-\frac{2}{3465}\,Bc^2\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b^4}{c^5}\right)+\frac{4}{315}\,Bbc\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)+\frac{2}{315}\,Ac^2\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,Bb^2\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)-\frac{4}{105}\,Abc\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)+\frac{2}{15}\,Ab^2\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] -2/3465*B*c^2*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9
/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b
)^(3/2)*b^4)/c^5) + 4/315*B*b*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135
*(c*x + b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4
) + 2/315*A*c^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)
*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*B*b^2*
(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^
(3/2)*b^2)/c^3) - 4/105*A*b*c*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*
x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*A*b^2*(2*b^(5/2)/c^2 +
 (3*(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2)
```

maple [A] time = 0.05, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-63B\,c^2x^2-77A\,c^2x+28Bbcx+22Abc-8b^2B\right)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{693c^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x)
```

```
[Out] -2/693*(c*x+b)*(-63*B*c^2*x^2-77*A*c^2*x+28*B*b*c*x+22*A*b*c-8*B*b^2)*(c*x^
2+b*x)^(5/2)/c^3/x^(5/2)
```

maxima [B] time = 0.86, size = 305, normalized size = 3.18

$$\frac{2\left(\left(35\,c^4x^4+5\,bc^3x^3-6\,b^2c^2x^2+8\,b^3cx-16\,b^4\right)x^3+6\left(15\,bc^3x^4+3\,b^2c^2x^3-4\,b^3cx^2+8\,b^4x\right)x^2+21\left(3\,b^2c^2x^4+b^3cx^3-2\,b^4x^2\right)x\right)\sqrt{cx+b}\,A}{315\,c^2x^3}+\frac{2\left(\left(315\,c^5x^5+35\,bc^4x^4-40\,b^2c^3x^3+48\,b^3c^2x^2-64\,b^4cx+128\,b^5\right)x^4+22\left(35\,bc^4x^5+5\,b^2c^3x^4-6\,b^3c^2x^3+8\,b^4cx^2-16\,b^5x\right)x^3+33\left(15\,b^2c^3x^5+3\,b^3c^2x^4-4\,b^4cx^3+8\,b^5x^2\right)x^2\right)\sqrt{cx+b}\,B}{3465\,c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*x^3
+ 6*(15*b*c^3*x^4 + 3*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2 + 21*(3*b^2*
c^2*x^4 + b^3*c*x^3 - 2*b^4*x^2)*x)*sqrt(c*x + b)*A/(c^2*x^3) + 2/3465*((31
5*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*b^4*c*x + 1
28*b^5)*x^4 + 22*(35*b*c^4*x^5 + 5*b^2*c^3*x^4 - 6*b^3*c^2*x^3 + 8*b^4*c*x^
2 - 16*b^5*x)*x^3 + 33*(15*b^2*c^3*x^5 + 3*b^3*c^2*x^4 - 4*b^4*c*x^3 + 8*b^
5*x^2)*x^2)*sqrt(c*x + b)*B/(c^3*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{x^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(3/2), x)
```

3.218 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(2bB-9Ac)}{63c^2x^{7/2}}$$

Rubi [A] time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(2bB-9Ac)}{63c^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (-2*(2*b*B - 9*A*c)*(b*x + c*x^2)^(7/2))/(63*c^2*x^(7/2)) + (2*B*(b*x + c*x
^2)^(7/2))/(9*c*x^(5/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}+\frac{\left(2\left(-\frac{5}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx}{9c}\\ &= -\frac{2(2bB-9Ac)\left(bx+cx^2\right)^{7/2}}{63c^2x^{7/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 44, normalized size = 0.72

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\,(9Ac-2bB+7Bcx)}{63c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(-2*b*B + 9*A*c + 7*B*c*x))/(63*c^2*Sqrt[x
])
```

IntegrateAlgebraic [A] time = 0.58, size = 39, normalized size = 0.64

$$\frac{2\left(bx+cx^2\right)^{7/2}(9Ac-2bB+7Bcx)}{63c^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (2*(-2*b*B + 9*A*c + 7*B*c*x)*(b*x + c*x^2)^(7/2))/(63*c^2*x^(7/2))
```

fricas [B] time = 0.41, size = 100, normalized size = 1.64

$$\frac{2\left(7\,Bc^4x^4-2\,Bb^4+9\,Ab^3c+\left(19\,Bbc^3+9\,Ac^4\right)x^3+3\left(5\,Bb^2c^2+9\,Abc^3\right)x^2+\left(Bb^3c+27\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}}{63\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/63*(7*B*c^4*x^4 - 2*B*b^4 + 9*A*b^3*c + (19*B*b*c^3 + 9*A*c^4)*x^3 + 3*(5
*B*b^2*c^2 + 9*A*b*c^3)*x^2 + (B*b^3*c + 27*A*b^2*c^2)*x)*sqrt(c*x^2 + b*x)
/(c^2*sqrt(x))
```

giac [B] time = 0.24, size = 270, normalized size = 4.43

$$\frac{2}{315}\,Bc^2\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{4}{105}\,Bbc\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)-\frac{2}{105}\,Ac^2\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)+\frac{2}{15}\,Bb^2\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)+\frac{4}{15}\,Abc\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)+\frac{2}{3}\,Ab^2\left(\frac{(cx+b)^{\frac{3}{2}}}{c}-\frac{b^{\frac{3}{2}}}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/315*B*c^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b +
 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 4/105*B*b*c*(8*b
^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2
)*b^2)/c^3) - 2/105*A*c^2*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x +
b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*B*b^2*(2*b^(5/2)/c^2 + (3*
(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2) + 4/15*A*b*c*(2*b^(5/2)/c^2 + (
3*(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2) + 2/3*A*b^2*((c*x + b)^(3/2)/
c - b^(3/2)/c)
```

maple [A] time = 0.04, size = 39, normalized size = 0.64

$$\frac{2\,(cx+b)\,(7Bcx+9Ac-2bB)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{63c^2x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x)
```

```
[Out] 2/63*(c*x+b)*(7*B*c*x+9*A*c-2*B*b)*(c*x^2+b*x)^(5/2)/c^2/x^(5/2)
```

maxima [B] time = 0.61, size = 230, normalized size = 3.77

$$\frac{2\left(35\,b^2cx^3+35\,b^3x^2+\left(15\,c^3x^3+3\,bc^2x^2-4\,b^2cx+8\,b^3\right)x^2+14\left(3\,bc^2x^3+b^2cx^2-2\,b^3x\right)x\right)\sqrt{cx+b}\,A}{105\,cx^2}+\frac{2\left(\left(35\,c^4x^4+5\,bc^3x^3-6\,b^2c^2x^2+8\,b^3cx-16\,b^4\right)x^3+6\left(15\,bc^3x^4+3\,b^2c^2x^3-4\,b^3cx^2+8\,b^4x\right)x^2+21\left(3\,b^2c^2x^4+b^3cx^3-2\,b^4x^2\right)x\right)\sqrt{cx+b}\,B}{315\,c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/105*(35*b^2*c*x^3 + 35*b^3*x^2 + (15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x +
8*b^3)*x^2 + 14*(3*b*c^2*x^3 + b^2*c*x^2 - 2*b^3*x)*x)*sqrt(c*x + b)*A/(c*x
```

```
^2) + 2/315*((35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4
)*x^3 + 6*(15*b*c^3*x^4 + 3*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2 + 21*(
3*b^2*c^2*x^4 + b^3*c*x^3 - 2*b^4*x^2)*x)*sqrt(c*x + b)*B/(c^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(5/2), x)
```

3.219 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=131

$$-2Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}}+\frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}}$$

Rubi [A] time = 0.12, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {794, 664, 660, 207}

$$\frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}}-2Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}}+\frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (2*A*b^2*Sqrt[b*x + c*x^2])/Sqrt[x] + (2*A*b*(b*x + c*x^2)^(3/2))/(3*x^(3/2
)) + (2*A*(b*x + c*x^2)^(5/2))/(5*x^(5/2)) + (2*B*(b*x + c*x^2)^(7/2))/(7*c
*x^(7/2)) - 2*A*b^(5/2)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + A\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx \\
&= \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + (Ab)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx \\
&= \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + \left(Ab^2\right)\int \frac{\sqrt{bx+c}}{x^{3/2}} \\
&= \frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + \\
&= \frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + \\
&= \frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} -
\end{aligned}
$$

Mathematica [A] time = 0.21, size = 95, normalized size = 0.73

$$
\frac{(x(b+cx))^{5/2}\left(-\frac{14Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)}{(b+cx)^{5/2}} + A\left(\frac{14b^2}{(b+cx)^2} + \frac{14b}{3(b+cx)} + \frac{14}{5}\right) + \frac{2B(b+cx)}{c}\right)}{7x^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*((2*B*(b + c*x))/c + A*(14/5 + (14*b^2)/(b + c*x)^2 +
(14*b)/(3*(b + c*x))) - (14*A*b^(5/2)*ArcTanh[Sqrt[b + c*x]/Sqrt[b]])/(b +
c*x)^(5/2)))/(7*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.75, size = 117, normalized size = 0.89

$$
\frac{2\sqrt{bx+cx^2}\left(161Ab^2c+77Abc^2x+21Ac^3x^2+15b^3B+45b^2Bcx+45bBc^2x^2+15Bc^3x^3\right)}{105c\sqrt{x}} - 2Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(15*b^3*B + 161*A*b^2*c + 45*b^2*B*c*x + 77*A*b*c^2*x
+ 45*b*B*c^2*x^2 + 21*A*c^3*x^2 + 15*B*c^3*x^3))/(105*c*Sqrt[x]) - 2*A*b^(5
/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]]
```

fricas [A] time = 0.42, size = 245, normalized size = 1.87

$$
\left[\frac{105\,Ab^{\frac{5}{2}}cx\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right) + 2\left(15\,Bc^3x^3+15\,Bb^3+161\,Ab^2c+3\left(15\,Bbc^2+7\,Ac^3\right)x^2+\left(45\,Bb^2c+77\,Abc^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{105\,cx}, \frac{2\left(105\,A\sqrt{-b}\,b^2cx\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(15\,Bc^3x^3+15\,Bb^3+161\,Ab^2c+3\left(15\,Bbc^2+7\,Ac^3\right)x^2+\left(45\,Bb^2c+77\,Abc^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}\right)}{105\,cx}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] [1/105*(105*A*b^(5/2)*c*x*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)
*sqrt(x))/x^2) + 2*(15*B*c^3*x^3 + 15*B*b^3 + 161*A*b^2*c + 3*(15*B*b*c^2 +
 7*A*c^3)*x^2 + (45*B*b^2*c + 77*A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*
x), 2/105*(105*A*sqrt(-b)*b^2*c*x*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)
```

```
) + (15*B*c^3*x^3 + 15*B*b^3 + 161*A*b^2*c + 3*(15*B*b*c^2 + 7*A*c^3)*x^2 +
 (45*B*b^2*c + 77*A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x)]
```

giac [A] time = 0.22, size = 139, normalized size = 1.06

$$\frac{2\,Ab^3\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{2\left(105\,Ab^3c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)+15\,B\sqrt{-b}\,b^{\frac{7}{2}}+161\,A\sqrt{-b}\,b^{\frac{5}{2}}c\right)}{105\,\sqrt{-b}\,c}+\frac{2\left(15\,(cx+b)^{\frac{7}{2}}Bc^6+21\,(cx+b)^{\frac{5}{2}}Ac^7+35\,(cx+b)^{\frac{3}{2}}Abc^7+105\,\sqrt{cx+b}\,Ab^2c^7\right)}{105\,c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*A*b^3*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-b) - 2/105*(105*A*b^3*c*arctan
(sqrt(b)/sqrt(-b)) + 15*B*sqrt(-b)*b^(7/2) + 161*A*sqrt(-b)*b^(5/2)*c)/(sqr
t(-b)*c) + 2/105*(15*(c*x + b)^(7/2)*B*c^6 + 21*(c*x + b)^(5/2)*A*c^7 + 35*
(c*x + b)^(3/2)*A*b*c^7 + 105*sqrt(c*x + b)*A*b^2*c^7)/c^7
```

maple [A] time = 0.06, size = 151, normalized size = 1.15

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(-15\sqrt{cx+b}\,B\,c^3x^3-21\sqrt{cx+b}\,A\,c^3x^2-45\sqrt{cx+b}\,Bb\,c^2x^2+105A\,b^{\frac{5}{2}}c\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-77\sqrt{cx+b}\,Ab\,c^2x-45\sqrt{cx+b}\,B\,b^2cx-161\sqrt{cx+b}\,A\,b^2c-15\sqrt{cx+b}\,B\,b^3\right)}{105\sqrt{cx+b}\,c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x)
```

```
[Out] -2/105*((c*x+b)*x)^(1/2)*(-15*B*x^3*c^3*(c*x+b)^(1/2)-21*A*x^2*c^3*(c*x+b)^
(1/2)-45*B*x^2*b*c^2*(c*x+b)^(1/2)+105*A*b^(5/2)*c*arctanh((c*x+b)^(1/2)/b^
(1/2))-77*A*x*b*c^2*(c*x+b)^(1/2)-45*B*x*b^2*c*(c*x+b)^(1/2)-161*A*b^2*c*(c
*x+b)^(1/2)-15*B*b^3*(c*x+b)^(1/2))/x^(1/2)/(c*x+b)^(1/2)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$Ab^2\int\frac{\sqrt{cx+b}}{x}\,dx+\frac{2\left(35\left(Bb^2c+2\,Abc^2\right)x^3+\left(15\,Bc^3x^3+3\,Bbc^2x^2-4\,Bb^2cx+8\,Bb^3\right)x^2+35\left(Bb^3+2\,Ab^2c\right)x^2+7\left(3\left(2\,Bbc^2+Ac^3\right)x^3+\left(2\,Bb^2c+Abc^2\right)x^2-2\left(2\,Bb^3+Ab^2c\right)x\right)x\right)\sqrt{cx+b}}{105\,cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] A*b^2*integrate(sqrt(c*x + b)/x, x) + 2/105*(35*(B*b^2*c + 2*A*b*c^2)*x^3 +
 (15*B*c^3*x^3 + 3*B*b*c^2*x^2 - 4*B*b^2*c*x + 8*B*b^3)*x^2 + 35*(B*b^3 + 2
*A*b^2*c)*x^2 + 7*(3*(2*B*b*c^2 + A*c^3)*x^3 + (2*B*b^2*c + A*b*c^2)*x^2 -
2*(2*B*b^3 + A*b^2*c)*x)*x)*sqrt(c*x + b)/(c*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{x^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(7/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(7/2), x)
```

3.220 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=160

$$-b^{3/2}(5Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{b\sqrt{bx+cx^2}\,(5Ac+2bB)}{\sqrt{x}}+\frac{\left(bx+cx^2\right)^{5/2}(5Ac+2bB)}{5bx^{5/2}}+\frac{\left(bx+cx^2\right)^{3/2}(5\cdots}{3x^{3/2}}$$

Rubi [A] time = 0.16, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 664, 660, 207}

$$-b^{3/2}(5Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{\left(bx+cx^2\right)^{5/2}(5Ac+2bB)}{5bx^{5/2}}+\frac{\left(bx+cx^2\right)^{3/2}(5Ac+2bB)}{3x^{3/2}}+\frac{b\sqrt{bx+cx^2}\,(5Ac+2bB)}{\sqrt{x}}-\frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (b*(2*b*B + 5*A*c)*Sqrt[b*x + c*x^2])/Sqrt[x] + ((2*b*B + 5*A*c)*(b*x + c*x
^2)^(3/2))/(3*x^(3/2)) + ((2*b*B + 5*A*c)*(b*x + c*x^2)^(5/2))/(5*b*x^(5/2)
) - (A*(b*x + c*x^2)^(7/2))/(b*x^(9/2)) - b^(3/2)*(2*b*B + 5*A*c)*ArcTanh[S
qrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}} + \frac{\left(-\frac{9}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx}{b}$$
$$= \frac{(2bB+5Ac)\left(bx+cx^2\right)^{5/2}}{5bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}} + \frac{1}{2}(2bB+5Ac)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx$$
$$= \frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{5/2}}{5bx^{5/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}} + \frac{1}{2}(b($$
$$= \frac{b(2bB+5Ac)\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{5}}{5bx^{5/2}}$$
$$= \frac{b(2bB+5Ac)\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{5}}{5bx^{5/2}}$$
$$= \frac{b(2bB+5Ac)\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{(2bB+5Ac)\left(bx+cx^2\right)^{5}}{5bx^{5/2}}$$

Mathematica [A] time = 0.08, size = 118, normalized size = 0.74

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{b+cx}\left(A\left(-15b^2+70bcx+10c^2x^2\right)+2Bx\left(23b^2+11bcx+3c^2x^2\right)\right)-15b^{3/2}x(5Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{15x^{3/2}\sqrt{b+cx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[b + c*x]*(2*B*x*(23*b^2 + 11*b*c*x + 3*c^2*x^2) +
A*(-15*b^2 + 70*b*c*x + 10*c^2*x^2)) - 15*b^(3/2)*(2*b*B + 5*A*c)*x*ArcTanh
[Sqrt[b + c*x]/Sqrt[b]]))/(15*x^(3/2)*Sqrt[b + c*x])
```

IntegrateAlgebraic [A] time = 0.87, size = 113, normalized size = 0.71

$$\left(-5Ab^{3/2}c-2b^{5/2}B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)+\frac{\sqrt{bx+cx^2}\left(-15Ab^2+70Abcx+10Ac^2x^2+46b^2Bx+22bBcx^2+6Bc^2x^3\right)}{15x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-15*A*b^2 + 46*b^2*B*x + 70*A*b*c*x + 22*b*B*c*x^2 + 10
*A*c^2*x^2 + 6*B*c^2*x^3))/(15*x^(3/2)) + (-2*b^(5/2)*B - 5*A*b^(3/2)*c)*Ar
cTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]]
```

fricas [A] time = 0.43, size = 238, normalized size = 1.49

$$\left[\frac{15\left(2Bb^2+5Abc\right)\sqrt{b}x^2\log\left(-\frac{cx^2+2bx-2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(6Bc^2x^3-15Ab^2+2\left(11Bbc+5Ac^2\right)x^2+2\left(23Bb^2+35Abc\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{30x^2}, \frac{15\left(2Bb^2+5Abc\right)\sqrt{-b}x^2\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(6Bc^2x^3-15Ab^2+2\left(11Bbc+5Ac^2\right)x^2+2\left(23Bb^2+35Abc\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{15x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] [1/30*(15*(2*B*b^2 + 5*A*b*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(6*B*c^2*x^3 - 15*A*b^2 + 2*(11*B*b*c +
5*A*c^2)*x^2 + 2*(23*B*b^2 + 35*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^2, 1
/15*(15*(2*B*b^2 + 5*A*b*c)*sqrt(-b)*x^2*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2
 + b*x)) + (6*B*c^2*x^3 - 15*A*b^2 + 2*(11*B*b*c + 5*A*c^2)*x^2 + 2*(23*B*b
^2 + 35*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^2]
```

giac [A] time = 0.35, size = 125, normalized size = 0.78

$$\frac{6\,(cx+b)^{\frac{5}{2}}Bc+10\,(cx+b)^{\frac{3}{2}}Bbc+30\,\sqrt{cx+b}\,Bb^2c+10\,(cx+b)^{\frac{3}{2}}Ac^2+60\,\sqrt{cx+b}\,Abc^2-\frac{15\,\sqrt{cx+b}\,Ab^2c}{x}+\frac{15\left(2\,Bb^3c+5\,Ab^2c^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}}{15\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/15*(6*(c*x + b)^(5/2)*B*c + 10*(c*x + b)^(3/2)*B*b*c + 30*sqrt(c*x + b)*B
*b^2*c + 10*(c*x + b)^(3/2)*A*c^2 + 60*sqrt(c*x + b)*A*b*c^2 - 15*sqrt(c*x
+ b)*A*b^2*c/x + 15*(2*B*b^3*c + 5*A*b^2*c^2)*arctan(sqrt(c*x + b)/sqrt(-b)
)/sqrt(-b))/c
```

maple [A] time = 0.07, size = 162, normalized size = 1.01

$$-\frac{\sqrt{(cx+b)\,x}\,\left(-6\sqrt{cx+b}\,B\sqrt{b}\,c^2x^3+75A\,b^2cx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+30B\,b^3x\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-10\sqrt{cx+b}\,A\sqrt{b}\,c^2x^2-22\sqrt{cx+b}\,B\,b^{\frac{3}{2}}c\,x^2-70\sqrt{cx+b}\,A\,b^{\frac{3}{2}}cx-46\sqrt{cx+b}\,B\,b^{\frac{5}{2}}x+15\sqrt{cx+b}\,A\,b^{\frac{5}{2}}\right)}{15\sqrt{cx+b}\,\sqrt{b}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x)
```

```
[Out] -1/15*((c*x+b)*x)^(1/2)*(-6*B*x^3*c^2*(c*x+b)^(1/2)*b^(1/2)-10*(c*x+b)^(1/2
)*A*b^(1/2)*c^2*x^2-22*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+75*A*arctanh((c*x+b)^(
1/2)/b^(1/2))*x*b^2*c-70*(c*x+b)^(1/2)*A*b^(3/2)*c*x+30*B*arctanh((c*x+b)^(
1/2)/b^(1/2))*x*b^3-46*(c*x+b)^(1/2)*B*b^(5/2)*x+15*(c*x+b)^(1/2)*A*b^(5/2)
)/x^(3/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(5\left(2\,Bbc+Ac^2\right)x^2+\left(3\,Bc^2x^2+Bbcx-2\,Bb^2\right)x+5\left(2\,Bb^2+Abc\right)x\right)\sqrt{cx+b}}{15\,x}+\int\frac{\left(Ab^2+\left(Bb^2+2\,Abc\right)x\right)\sqrt{cx+b}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/15*(5*(2*B*b*c + A*c^2)*x^2 + (3*B*c^2*x^2 + B*b*c*x - 2*B*b^2)*x + 5*(2*
B*b^2 + A*b*c)*x)*sqrt(c*x + b)/x + integrate((A*b^2 + (B*b^2 + 2*A*b*c)*x)
*sqrt(c*x + b)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(9/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(9/2), x)
```

3.221 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx$

Optimal. Leaf size=172

$$\frac{5c\sqrt{bx+cx^2}\,(3Ac+4bB)}{4\sqrt{x}}-\frac{5}{4}\sqrt{b}\,c(3Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)-\frac{\left(bx+cx^2\right)^{5/2}(3Ac+4bB)}{4bx^{7/2}}+\frac{5c\left(bx+cx^2\right)^{3/2}(}{12bx^{3/}}$$

Rubi [A] time = 0.16, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 664, 660, 207}

$$-\frac{\left(bx+cx^2\right)^{5/2}(3Ac+4bB)}{4bx^{7/2}}+\frac{5c\left(bx+cx^2\right)^{3/2}(3Ac+4bB)}{12bx^{3/2}}+\frac{5c\sqrt{bx+cx^2}\,(3Ac+4bB)}{4\sqrt{x}}-\frac{5}{4}\sqrt{b}\,c(3Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)-\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(11/2),x]
```

```
[Out] (5*c*(4*b*B + 3*A*c)*Sqrt[b*x + c*x^2])/(4*Sqrt[x]) + (5*c*(4*b*B + 3*A*c)*
(b*x + c*x^2)^(3/2))/(12*b*x^(3/2)) - ((4*b*B + 3*A*c)*(b*x + c*x^2)^(5/2))
/(4*b*x^(7/2)) - (A*(b*x + c*x^2)^(7/2))/(2*b*x^(11/2)) - (5*Sqrt[b]*c*(4*b
*B + 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/4
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
```

```
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}+\frac{\left(-\frac{11}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx}{2b}\\
&= -\frac{(4bB+3Ac)\left(bx+cx^2\right)^{5/2}}{4bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}+\frac{(5c(4bB+3Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}}{8b}\\
&= \frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+cx^2\right)^{5/2}}{4bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}+\\
&= \frac{5c(4bB+3Ac)\sqrt{bx+cx^2}}{4\sqrt{x}}+\frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+\right.}{4bx^{7/2}}\\
&= \frac{5c(4bB+3Ac)\sqrt{bx+cx^2}}{4\sqrt{x}}+\frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+\right.}{4bx^{7/2}}\\
&= \frac{5c(4bB+3Ac)\sqrt{bx+cx^2}}{4\sqrt{x}}+\frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+\right.}{4bx^{7/2}}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 67, normalized size = 0.39

$$\frac{(b+cx)^3\sqrt{x(b+cx)}\left(cx^2(3Ac+4bB)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{cx}{b}+1\right)-7Ab^2\right)}{14b^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(11/2),x]
```

```
[Out] ((b + c*x)^3*Sqrt[x*(b + c*x)]*(-7*A*b^2 + c*(4*b*B + 3*A*c)*x^2*Hypergeome
tric2F1[2, 7/2, 9/2, 1 + (c*x)/b]))/(14*b^3*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.94, size = 119, normalized size = 0.69

$$\frac{\sqrt{bx+cx^2}\left(-6Ab^2-27Abcx+24Ac^2x^2-12b^2Bx+56bBcx^2+8Bc^2x^3\right)}{12x^{5/2}}-\frac{5}{4}\left(3A\sqrt{b}\,c^2+4b^{3/2}Bc\right)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(11/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-6*A*b^2 - 12*b^2*B*x - 27*A*b*c*x + 56*b*B*c*x^2 + 24*
A*c^2*x^2 + 8*B*c^2*x^3))/(12*x^(5/2)) - (5*(4*b^(3/2)*B*c + 3*A*Sqrt[b]*c^
2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/4
```

fricas [A] time = 0.43, size = 238, normalized size = 1.38

$$\left[\frac{15\left(4Bbc+3Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2bx-2\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8Bc^2x^3-6Ab^2+8\left(7Bbc+3Ac^2\right)x^2-3\left(4Bb^2+9Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{24x^3},\ \frac{15\left(4Bbc+3Ac^2\right)\sqrt{-b}\,x^3\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(8Bc^2x^3-6Ab^2+8\left(7Bbc+3Ac^2\right)x^2-3\left(4Bb^2+9Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{12x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x, algorithm="fricas")
```

```
[Out] [1/24*(15*(4*B*b*c + 3*A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*B*c^2*x^3 - 6*A*b^2 + 8*(7*B*b*c + 3*
A*c^2)*x^2 - 3*(4*B*b^2 + 9*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^3, 1/12*
(15*(4*B*b*c + 3*A*c^2)*sqrt(-b)*x^3*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b
*x)) + (8*B*c^2*x^3 - 6*A*b^2 + 8*(7*B*b*c + 3*A*c^2)*x^2 - 3*(4*B*b^2 + 9*
A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^3]
```

giac [A] time = 0.32, size = 155, normalized size = 0.90

$$\frac{8\,(cx+b)^{\frac{3}{2}}Bc^2+48\,\sqrt{cx+b}\,Bbc^2+24\,\sqrt{cx+b}\,Ac^3+\frac{15\left(4\,Bb^2c^2+3\,Abc^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{3\left(4\,(cx+b)^{\frac{3}{2}}Bb^2c^2-4\,\sqrt{cx+b}\,Bb^3c^2+9\,(cx+b)^{\frac{3}{2}}Abc^3-7\,\sqrt{cx+b}\,Ab^2c^3\right)}{c^2x^2}}{12\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x, algorithm="giac")
```

```
[Out] 1/12*(8*(c*x + b)^(3/2)*B*c^2 + 48*sqrt(c*x + b)*B*b*c^2 + 24*sqrt(c*x + b)
*A*c^3 + 15*(4*B*b^2*c^2 + 3*A*b*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-
b) - 3*(4*(c*x + b)^(3/2)*B*b^2*c^2 - 4*sqrt(c*x + b)*B*b^3*c^2 + 9*(c*x +
b)^(3/2)*A*b*c^3 - 7*sqrt(c*x + b)*A*b^2*c^3)/(c^2*x^2))/c
```

maple [A] time = 0.06, size = 167, normalized size = 0.97

$$-\frac{\sqrt{(cx+b)\,x}\,\left(45Ab\,c^2x^2\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+60B\,b^2c\,x^2\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-8\sqrt{cx+b}\;B\sqrt{b}\;c^2x^3-24\sqrt{cx+b}\;A\sqrt{b}\;c^2x^2-56\sqrt{cx+b}\;B\,b^{\frac{3}{2}}c\,x^2+27\sqrt{cx+b}\;A\,b^{\frac{3}{2}}cx+12\sqrt{cx+b}\;B\,b^{\frac{5}{2}}x+6\sqrt{cx+b}\;A\,b^{\frac{5}{2}}\right)}{12\sqrt{cx+b}\;\sqrt{b}\;x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x)
```

```
[Out] -1/12*((c*x+b)*x)^(1/2)*(-8*(c*x+b)^(1/2)*B*b^(1/2)*c^2*x^3+45*A*arctanh((c
*x+b)^(1/2)/b^(1/2))*x^2*b*c^2-24*(c*x+b)^(1/2)*A*b^(1/2)*c^2*x^2+60*B*arct
anh((c*x+b)^(1/2)/b^(1/2))*x^2*b^2*c-56*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+27*(c
*x+b)^(1/2)*A*b^(3/2)*c*x+12*(c*x+b)^(1/2)*B*b^(5/2)*x+6*(c*x+b)^(1/2)*A*b^
(5/2))/x^(5/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2}{3}\left(Bc^2x+Bbc\right)\sqrt{cx+b}+\int\frac{\left(Ab^2+\left(2\,Bbc+Ac^2\right)x^2+\left(Bb^2+2\,Abc\right)x\right)\sqrt{cx+b}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c^2*x + B*b*c)*sqrt(c*x + b) + integrate((A*b^2 + (2*B*b*c + A*c^2)*
x^2 + (B*b^2 + 2*A*b*c)*x)*sqrt(c*x + b)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(11/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(11/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(11/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(11/2), x)
```

3.222 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx$

Optimal. Leaf size=175

$$\frac{5c^2\sqrt{bx+cx^2}\,(Ac+6bB)}{8b\sqrt{x}}-\frac{5c^2(Ac+6bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{8\sqrt{b}}-\frac{\left(bx+cx^2\right)^{5/2}(Ac+6bB)}{12bx^{9/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(Ac+6b}{24bx^{5/2}}$$

Rubi [A] time = 0.17, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 664, 660, 207}

$$\frac{5c^2\sqrt{bx+cx^2}\,(Ac+6bB)}{8b\sqrt{x}}-\frac{5c^2(Ac+6bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{8\sqrt{b}}-\frac{\left(bx+cx^2\right)^{5/2}(Ac+6bB)}{12bx^{9/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(Ac+6bB)}{24bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(13/2),x]
```

```
[Out] (5*c^2*(6*b*B + A*c)*Sqrt[b*x + c*x^2])/(8*b*Sqrt[x]) - (5*c*(6*b*B + A*c)*
(b*x + c*x^2)^(3/2))/(24*b*x^(5/2)) - ((6*b*B + A*c)*(b*x + c*x^2)^(5/2))/(
12*b*x^(9/2)) - (A*(b*x + c*x^2)^(7/2))/(3*b*x^(13/2)) - (5*c^2*(6*b*B + A*
c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*Sqrt[b])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}} + \frac{\left(-\frac{13}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx}{3b}$$

$$= -\frac{(6bB+Ac)\left(bx+cx^2\right)^{5/2}}{12bx^{9/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}} + \frac{(5c(6bB+Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx}{24b}$$

$$= -\frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+cx^2\right)^{5/2}}{12bx^{9/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}} + \cdots$$

$$= \frac{5c^2(6bB+Ac)\sqrt{bx+cx^2}}{8b\sqrt{x}} - \frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+cx^2\right.}{12bx^{9/2}}$$

$$= \frac{5c^2(6bB+Ac)\sqrt{bx+cx^2}}{8b\sqrt{x}} - \frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+cx^2\right.}{12bx^{9/2}}$$

$$= \frac{5c^2(6bB+Ac)\sqrt{bx+cx^2}}{8b\sqrt{x}} - \frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+cx^2\right.}{12bx^{9/2}}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.39

$$-\frac{(b+cx)^3\sqrt{x(b+cx)}\left(7Ab^3+c^2x^3(Ac+6bB)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{cx}{b}+1\right)\right)}{21b^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(13/2),x]
```

```
[Out] -1/21*((b + c*x)^3*Sqrt[x*(b + c*x)]*(7*A*b^3 + c^2*(6*b*B + A*c)*x^3*Hyper
geometric2F1[3, 7/2, 9/2, 1 + (c*x)/b]))/(b^4*x^(7/2))
```

IntegrateAlgebraic [A] time = 1.04, size = 116, normalized size = 0.66

$$\frac{\sqrt{bx+cx^2}\left(-8Ab^2-26Abcx-33Ac^2x^2-12b^2Bx-54bBcx^2+48Bc^2x^3\right)}{24x^{7/2}} - \frac{5\left(Ac^3+6bBc^2\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{8\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(13/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^2 - 12*b^2*B*x - 26*A*b*c*x - 54*b*B*c*x^2 - 33*
A*c^2*x^2 + 48*B*c^2*x^3))/(24*x^(7/2)) - (5*(6*b*B*c^2 + A*c^3)*ArcTanh[(S
qrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(8*Sqrt[b])
```

fricas [A] time = 0.42, size = 258, normalized size = 1.47

$$\left[\frac{15\left(6\,Bbc^2+Ac^3\right)\sqrt{b}\,x^4\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(48\,Bbc^2x^3-8\,Ab^3-3\left(18\,Bb^2c+11\,Abc^2\right)x^2-2\left(6\,Bb^3+13\,Ab^2c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{48\,bx^4},\ \frac{15\left(6\,Bbc^2+Ac^3\right)\sqrt{-b}\,x^4\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(48\,Bbc^2x^3-8\,Ab^3-3\left(18\,Bb^2c+11\,Abc^2\right)x^2-2\left(6\,Bb^3+13\,Ab^2c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{24\,bx^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x, algorithm="fricas")
```

```
[Out] [1/48*(15*(6*B*b*c^2 + A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(48*B*b*c^2*x^3 - 8*A*b^3 - 3*(18*B*b^2*
c + 11*A*b*c^2)*x^2 - 2*(6*B*b^3 + 13*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x)
)/(b*x^4), 1/24*(15*(6*B*b*c^2 + A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x
)/sqrt(c*x^2 + b*x)) + (48*B*b*c^2*x^3 - 8*A*b^3 - 3*(18*B*b^2*c + 11*A*b*c
^2)*x^2 - 2*(6*B*b^3 + 13*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^4)]
```

giac [A] time = 0.35, size = 151, normalized size = 0.86

$$\frac{48\sqrt{cx+b}\,Bc^3 + \frac{15\left(6\,Bbc^3+Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}} - \frac{54\,(cx+b)^{\frac{5}{2}}Bbc^3 - 96\,(cx+b)^{\frac{3}{2}}Bb^2c^3 + 42\,\sqrt{cx+b}\,Bb^3c^3 + 33\,(cx+b)^{\frac{5}{2}}Ac^4 - 40\,(cx+b)^{\frac{3}{2}}Abc^4 + 15\,\sqrt{cx+b}\,Ab^2c^4}{c^3x^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x, algorithm="giac")
```

```
[Out] 1/24*(48*sqrt(c*x + b)*B*c^3 + 15*(6*B*b*c^3 + A*c^4)*arctan(sqrt(c*x + b)/
sqrt(-b))/sqrt(-b) - (54*(c*x + b)^(5/2)*B*b*c^3 - 96*(c*x + b)^(3/2)*B*b^2
*c^3 + 42*sqrt(c*x + b)*B*b^3*c^3 + 33*(c*x + b)^(5/2)*A*c^4 - 40*(c*x + b)
^(3/2)*A*b*c^4 + 15*sqrt(c*x + b)*A*b^2*c^4)/(c^3*x^3))/c
```

maple [A] time = 0.07, size = 166, normalized size = 0.95

$$-\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) + 90Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) - 48\sqrt{cx+b}\,B\sqrt{b}\,c^2x^3 + 33\sqrt{cx+b}\,A\sqrt{b}\,c^2x^2 + 54\sqrt{cx+b}\,B\,b^{\frac{3}{2}}c\,x^2 + 26\sqrt{cx+b}\,A\,b^{\frac{3}{2}}cx + 12\sqrt{cx+b}\,B\,b^{\frac{5}{2}}x + 8\sqrt{cx+b}\,A\,b^{\frac{5}{2}}\right)}{24\sqrt{cx+b}\,\sqrt{b}\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x)
```

```
[Out] -1/24*((c*x+b)*x)^(1/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3+90*B*a
rctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-48*(c*x+b)^(1/2)*B*b^(1/2)*c^2*x^3+
33*(c*x+b)^(1/2)*A*b^(1/2)*c^2*x^2+54*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+26*(c*x
+b)^(1/2)*A*b^(3/2)*c*x+12*(c*x+b)^(1/2)*B*b^(5/2)*x+8*(c*x+b)^(1/2)*A*b^(5
/2))/x^(7/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{5}{2}}(Bx+A)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(5/2)*(B*x + A)/x^(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(13/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(13/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(13/2),x)
```

```
[Out] Timed out
```

3.223 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{15/2}} \, dx$

Optimal. Leaf size=179

$$-\frac{5c^3(8bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{3/2}}-\frac{5c^2\sqrt{bx+cx^2}\,(8bB-Ac)}{64bx^{3/2}}-\frac{\left(bx+cx^2\right)^{5/2}(8bB-Ac)}{24bx^{11/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(8bB-}{96bx^{7/2}}$$

Rubi [A] time = 0.17, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 662, 660, 207}

$$-\frac{5c^3(8bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{3/2}}-\frac{5c^2\sqrt{bx+cx^2}\,(8bB-Ac)}{64bx^{3/2}}-\frac{\left(bx+cx^2\right)^{5/2}(8bB-Ac)}{24bx^{11/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(8bB-Ac)}{96bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(15/2),x]
```

```
[Out] (-5*c^2*(8*b*B - A*c)*Sqrt[b*x + c*x^2])/(64*b*x^(3/2)) - (5*c*(8*b*B - A*c
)*(b*x + c*x^2)^(3/2))/(96*b*x^(7/2)) - ((8*b*B - A*c)*(b*x + c*x^2)^(5/2))
/(24*b*x^(11/2)) - (A*(b*x + c*x^2)^(7/2))/(4*b*x^(15/2)) - (5*c^3*(8*b*B -
 A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(64*b^(3/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{15/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}} + \frac{\left(-\frac{15}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx}{4b}$$

$$= -\frac{(8bB-Ac)\left(bx+cx^2\right)^{5/2}}{24bx^{11/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}} + \frac{(5c(8bB-Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx}{48b}$$

$$= -\frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}} - \frac{(8bB-Ac)\left(bx+cx^2\right)^{5/2}}{24bx^{11/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}} + \ldots$$

$$= -\frac{5c^2(8bB-Ac)\sqrt{bx+cx^2}}{64bx^{3/2}} - \frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}} - \frac{(8bB-Ac)\left(bx+c\ldots\right.}{24bx^{11/2}}$$

$$= -\frac{5c^2(8bB-Ac)\sqrt{bx+cx^2}}{64bx^{3/2}} - \frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}} - \frac{(8bB-Ac)\left(bx+c\ldots\right.}{24bx^{11/2}}$$

$$= -\frac{5c^2(8bB-Ac)\sqrt{bx+cx^2}}{64bx^{3/2}} - \frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}} - \frac{(8bB-Ac)\left(bx+c\ldots\right.}{24bx^{11/2}}$$

Mathematica [A] time = 0.14, size = 129, normalized size = 0.72

$$-\frac{(b+cx)\left(A\left(48b^3+136b^2cx+118bc^2x^2+15c^3x^3\right)+8bBx\left(8b^2+26bcx+33c^2x^2\right)\right)+15c^3x^4\sqrt{\frac{cx}{b}+1}\,(8bB-Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)}{192bx^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(15/2),x]
```

```
[Out] -1/192*((b + c*x)*(8*b*B*x*(8*b^2 + 26*b*c*x + 33*c^2*x^2) + A*(48*b^3 + 13
6*b^2*c*x + 118*b*c^2*x^2 + 15*c^3*x^3)) + 15*c^3*(8*b*B - A*c)*x^4*Sqrt[1
+ (c*x)/b]*ArcTanh[Sqrt[1 + (c*x)/b]])/(b*x^(7/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 1.26, size = 135, normalized size = 0.75

$$\frac{\sqrt{bx+cx^2}\left(-48Ab^3-136Ab^2cx-118Abc^2x^2-15Ac^3x^3-64b^3Bx-208b^2Bcx^2-264bBc^2x^3\right)}{192bx^{9/2}} - \frac{5\left(8bBc^3-Ac^4\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{64b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(15/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-48*A*b^3 - 64*b^3*B*x - 136*A*b^2*c*x - 208*b^2*B*c*x^
2 - 118*A*b*c^2*x^2 - 264*b*B*c^2*x^3 - 15*A*c^3*x^3))/(192*b*x^(9/2)) - (5
*(8*b*B*c^3 - A*c^4)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(64*b^(3
/2))
```

fricas [A] time = 0.43, size = 289, normalized size = 1.61

$$\left[-\frac{15\left(8Bbc^3-Ac^4\right)\sqrt{b}x^5\log\left(-\frac{cx^2+2bx+2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(48Ab^4+3\left(88Bb^2c^2+5Abc^3\right)x^3+2\left(104Bb^3c+59Ab^2c^2\right)x^2+8\left(8Bb^4+17Ab^3c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{384b^2x^5}, \frac{15\left(8Bbc^3-Ac^4\right)\sqrt{-b}x^5\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(48Ab^4+3\left(88Bb^2c^2+5Abc^3\right)x^3+2\left(104Bb^3c+59Ab^2c^2\right)x^2+8\left(8Bb^4+17Ab^3c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{192b^2x^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(8*B*b*c^3 - A*c^4)*sqrt(b)*x^5*log(-(c*x^2 + 2*b*x + 2*sqrt(c*
x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(48*A*b^4 + 3*(88*B*b^2*c^2 + 5*A*b*c^
3)*x^3 + 2*(104*B*b^3*c + 59*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 17*A*b^3*c)*x)*s
qrt(c*x^2 + b*x)*sqrt(x))/(b^2*x^5), 1/192*(15*(8*B*b*c^3 - A*c^4)*sqrt(-b)
```

```
*x^5*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) - (48*A*b^4 + 3*(88*B*b^2*c
^2 + 5*A*b*c^3)*x^3 + 2*(104*B*b^3*c + 59*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 17*
A*b^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*x^5)]
```

giac [A] time = 0.34, size = 177, normalized size = 0.99

$$\frac{\frac{15\left(8\,Bbc^4-Ac^5\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{264\,(cx+b)^{\frac{7}{2}}Bbc^4-584\,(cx+b)^{\frac{5}{2}}Bb^2c^4+440\,(cx+b)^{\frac{3}{2}}Bb^3c^4-120\,\sqrt{cx+b}\,Bb^4c^4+15\,(cx+b)^{\frac{7}{2}}Ac^5+73\,(cx+b)^{\frac{5}{2}}Abc^5-55\,(cx+b)^{\frac{3}{2}}Ab^2c^5+15\,\sqrt{cx+b}\,Ab^3c^5}{bc^4x^4}}{192\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x, algorithm="giac")
```

```
[Out] 1/192*(15*(8*B*b*c^4 - A*c^5)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) -
 (264*(c*x + b)^(7/2)*B*b*c^4 - 584*(c*x + b)^(5/2)*B*b^2*c^4 + 440*(c*x +
b)^(3/2)*B*b^3*c^4 - 120*sqrt(c*x + b)*B*b^4*c^4 + 15*(c*x + b)^(7/2)*A*c^5
 + 73*(c*x + b)^(5/2)*A*b*c^5 - 55*(c*x + b)^(3/2)*A*b^2*c^5 + 15*sqrt(c*x
+ b)*A*b^3*c^5)/(b*c^4*x^4))/c
```

maple [A] time = 0.07, size = 185, normalized size = 1.03

$$\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^4x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-120Bb\,c^3x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15\sqrt{cx+b}\,A\sqrt{b}\,c^3x^3-264\sqrt{cx+b}\,B\,b^{\frac{3}{2}}c^2x^3-118\sqrt{cx+b}\,A\,b^{\frac{3}{2}}c^2x^2-208\sqrt{cx+b}\,B\,b^{\frac{5}{2}}c\,x^2-136\sqrt{cx+b}\,A\,b^{\frac{5}{2}}cx-64\sqrt{cx+b}\,B\,b^{\frac{7}{2}}x-48\sqrt{cx+b}\,A\,b^{\frac{7}{2}}\right)}{192\sqrt{cx+b}\,b^{\frac{3}{2}}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x)
```

```
[Out] 1/192*((c*x+b)*x)^(1/2)/b^(3/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*c^
4-120*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*b*c^3-15*(c*x+b)^(1/2)*A*b^(1/2)
*c^3*x^3-264*(c*x+b)^(1/2)*B*b^(3/2)*c^2*x^3-118*(c*x+b)^(1/2)*A*b^(3/2)*c^
2*x^2-208*(c*x+b)^(1/2)*B*b^(5/2)*c*x^2-136*(c*x+b)^(1/2)*A*b^(5/2)*c*x-64*
(c*x+b)^(1/2)*B*b^(7/2)*x-48*(c*x+b)^(1/2)*A*b^(7/2))/x^(9/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{5}{2}}(Bx+A)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(5/2)*(B*x + A)/x^(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{15/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(15/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(15/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(15/2),x)
```

```
[Out] Timed out
```

3.224 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{17/2}}\,dx$

Optimal. Leaf size=216

$$\frac{c^4(10bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{5/2}}-\frac{c^3\sqrt{bx+cx^2}\,(10bB-3Ac)}{128b^2x^{3/2}}-\frac{c^2\sqrt{bx+cx^2}\,(10bB-3Ac)}{64bx^{5/2}}-\frac{c\left(bx+cx^2\right)^{3/2}(10}{48bx^{9/2}}$$

Rubi [A] time = 0.21, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$-\frac{c^3\sqrt{bx+cx^2}\,(10bB-3Ac)}{128b^2x^{3/2}}+\frac{c^4(10bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{5/2}}-\frac{c^2\sqrt{bx+cx^2}\,(10bB-3Ac)}{64bx^{5/2}}-\frac{c\left(bx+cx^2\right)^{3/2}(10bB-3Ac)}{48bx^{9/2}}-\frac{\left(bx+cx^2\right)^{5/2}(10bB-3Ac)}{40bx^{13/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(17/2),x]
```

```
[Out] -(c^2*(10*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/(64*b*x^(5/2)) - (c^3*(10*b*B - 3
*A*c)*Sqrt[b*x + c*x^2])/(128*b^2*x^(3/2)) - (c*(10*b*B - 3*A*c)*(b*x + c*x
^2)^(3/2))/(48*b*x^(9/2)) - ((10*b*B - 3*A*c)*(b*x + c*x^2)^(5/2))/(40*b*x^
(13/2)) - (A*(b*x + c*x^2)^(7/2))/(5*b*x^(17/2)) + (c^4*(10*b*B - 3*A*c)*Ar
cTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(128*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{17/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}} + \frac{\left(-\frac{17}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{15/2}}\,dx}{5b}$$

$$= -\frac{(10bB-3Ac)\left(bx+cx^2\right)^{5/2}}{40bx^{13/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}} + \frac{(c(10bB-3Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx}{16b}$$

$$= -\frac{c(10bB-3Ac)\left(bx+cx^2\right)^{3/2}}{48bx^{9/2}} - \frac{(10bB-3Ac)\left(bx+cx^2\right)^{5/2}}{40bx^{13/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}} + \cdots$$

$$= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}} - \frac{c(10bB-3Ac)\left(bx+cx^2\right)^{3/2}}{48bx^{9/2}} - \frac{(10bB-3Ac)\left(bx+\cdots\right.}{40bx^{13/2}}$$

$$= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}} - \frac{c^3(10bB-3Ac)\sqrt{bx+cx^2}}{128b^2x^{3/2}} - \frac{c(10bB-3Ac)\left(bx+\cdots\right.}{48bx^{9/2}}$$

$$= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}} - \frac{c^3(10bB-3Ac)\sqrt{bx+cx^2}}{128b^2x^{3/2}} - \frac{c(10bB-3Ac)\left(bx+\cdots\right.}{48bx^{9/2}}$$

$$= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}} - \frac{c^3(10bB-3Ac)\sqrt{bx+cx^2}}{128b^2x^{3/2}} - \frac{c(10bB-3Ac)\left(bx+\cdots\right.}{48bx^{9/2}}$$

Mathematica [C] time = 0.04, size = 69, normalized size = 0.32

$$-\frac{(b+cx)^3\sqrt{x(b+cx)}\left(7Ab^5+c^4x^5(10bB-3Ac)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{cx}{b}+1\right)\right)}{35b^6x^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(17/2),x]
```

```
[Out] -1/35*((b + c*x)^3*Sqrt[x*(b + c*x)]*(7*A*b^5 + c^4*(10*b*B - 3*A*c)*x^5*Hy
pergeometric2F1[7/2, 5, 9/2, 1 + (c*x)/b]))/(b^6*x^(11/2))
```

IntegrateAlgebraic [A] time = 0.46, size = 199, normalized size = 0.92

$$\frac{(x(b+cx))^{5/2}\left(\frac{\left(10bBc^4-3Ac^5\right)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)}{128b^{5/2}}+\frac{\sqrt{b+cx}\left(-45Ab^4c+210Ab^3c(b+cx)-384Ab^2c(b+cx)^2-210Abc(b+cx)^3+45Ac(b+cx)^4+150b^5B-700b^4B(b+cx)+1280b^3B(b+cx)^2-580b^2B(b+cx)^3-150bB(b+cx)^4\right)}{1920b^2cx^5}\right)}{x^{5/2}(b+cx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(17/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*((Sqrt[b + c*x]*(150*b^5*B - 45*A*b^4*c - 700*b^4*B*(b
 + c*x) + 210*A*b^3*c*(b + c*x) + 1280*b^3*B*(b + c*x)^2 - 384*A*b^2*c*(b +
 c*x)^2 - 580*b^2*B*(b + c*x)^3 - 210*A*b*c*(b + c*x)^3 - 150*b*B*(b + c*x)
^4 + 45*A*c*(b + c*x)^4))/(1920*b^2*c*x^5) + ((10*b*B*c^4 - 3*A*c^5)*ArcTan
h[Sqrt[b + c*x]/Sqrt[b]])/(128*b^(5/2))))/(x^(5/2)*(b + c*x)^(5/2))
```

fricas [A] time = 0.43, size = 336, normalized size = 1.56

$$\left[-\frac{15\,\left(10\,Bbc^{4}-3\,Ac^{5}\right)\sqrt{b}x^{6}\log\left(-\frac{cx^{2}+2\,bx-2\,\sqrt{cx^{2}+bx}\sqrt{b}\sqrt{x}}{x^{2}}\right)+2\,\left(384\,Ab^{5}+15\,\left(10\,Bb^{2}c^{3}-3\,Abc^{4}\right)x^{4}+10\,\left(118\,Bb^{3}c^{2}+3\,Ab^{2}c^{3}\right)x^{3}+8\,\left(170\,Bb^{4}c+93\,Ab^{3}c^{2}\right)x^{2}+48\,\left(10\,Bb^{5}+21\,Ab^{4}c\right)x\right)\sqrt{cx^{2}+bx}\sqrt{x}}{3840\,b^{3}x^{6}},\ -\frac{15\,\left(10\,Bbc^{4}-3\,Ac^{5}\right)\sqrt{-b}x^{6}\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^{2}+bx}}\right)+\left(384\,Ab^{5}+15\,\left(10\,Bb^{2}c^{3}-3\,Abc^{4}\right)x^{4}+10\,\left(118\,Bb^{3}c^{2}+3\,Ab^{2}c^{3}\right)x^{3}+8\,\left(170\,Bb^{4}c+93\,Ab^{3}c^{2}\right)x^{2}+48\,\left(10\,Bb^{5}+21\,Ab^{4}c\right)x\right)\sqrt{cx^{2}+bx}\sqrt{x}}{1920\,b^{3}x^{6}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(10*B*b*c^4 - 3*A*c^5)*sqrt(b)*x^6*log(-(c*x^2 + 2*b*x - 2*sqr
t(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(384*A*b^5 + 15*(10*B*b^2*c^3 - 3*
A*b*c^4)*x^4 + 10*(118*B*b^3*c^2 + 3*A*b^2*c^3)*x^3 + 8*(170*B*b^4*c + 93*A
*b^3*c^2)*x^2 + 48*(10*B*b^5 + 21*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b
^3*x^6), -1/1920*(15*(10*B*b*c^4 - 3*A*c^5)*sqrt(-b)*x^6*arctan(sqrt(-b)*sq
rt(x)/sqrt(c*x^2 + b*x)) + (384*A*b^5 + 15*(10*B*b^2*c^3 - 3*A*b*c^4)*x^4 +
 10*(118*B*b^3*c^2 + 3*A*b^2*c^3)*x^3 + 8*(170*B*b^4*c + 93*A*b^3*c^2)*x^2
+ 48*(10*B*b^5 + 21*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*x^6)]
```

giac [A] time = 0.44, size = 208, normalized size = 0.96

$$-\frac{\frac{15\,\left(10\,Bbc^{5}-3\,Ac^{6}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}b^{2}}+\frac{150\,(cx+b)^{\frac{9}{2}}Bbc^{5}+580\,(cx+b)^{\frac{7}{2}}Bb^{2}c^{5}-1280\,(cx+b)^{\frac{5}{2}}Bb^{3}c^{5}+700\,(cx+b)^{\frac{3}{2}}Bb^{4}c^{5}-150\,\sqrt{cx+b}Bb^{5}c^{5}-45\,(cx+b)^{\frac{9}{2}}Ac^{6}+210\,(cx+b)^{\frac{7}{2}}Abc^{6}+384\,(cx+b)^{\frac{5}{2}}Ab^{2}c^{6}-210\,(cx+b)^{\frac{3}{2}}Ab^{3}c^{6}+45\,\sqrt{cx+b}Ab^{4}c^{6}}{b^{2}c^{5}x^{5}}}{1920\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x, algorithm="giac")
```

```
[Out] -1/1920*(15*(10*B*b*c^5 - 3*A*c^6)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)
*b^2) + (150*(c*x + b)^(9/2)*B*b*c^5 + 580*(c*x + b)^(7/2)*B*b^2*c^5 - 1280
*(c*x + b)^(5/2)*B*b^3*c^5 + 700*(c*x + b)^(3/2)*B*b^4*c^5 - 150*sqrt(c*x +
 b)*B*b^5*c^5 - 45*(c*x + b)^(9/2)*A*c^6 + 210*(c*x + b)^(7/2)*A*b*c^6 + 38
4*(c*x + b)^(5/2)*A*b^2*c^6 - 210*(c*x + b)^(3/2)*A*b^3*c^6 + 45*sqrt(c*x +
 b)*A*b^4*c^6)/(b^2*c^5*x^5))/c
```

maple [A] time = 0.07, size = 223, normalized size = 1.03

$$-\frac{\sqrt{(cx+b)x}\left(45Ac^{5}x^{5}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-150Bbc^{4}x^{5}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-45\sqrt{cx+b}\,A\sqrt{b}\,c^{4}x^{4}+150\sqrt{cx+b}\,Bb^{\frac{3}{2}}c^{3}x^{4}+30\sqrt{cx+b}\,Ab^{\frac{3}{2}}c^{3}x^{3}+1180\sqrt{cx+b}\,Bb^{\frac{5}{2}}c^{2}x^{3}+744\sqrt{cx+b}\,Ab^{\frac{5}{2}}c^{2}x^{2}+1360\sqrt{cx+b}\,Bb^{\frac{7}{2}}cx^{2}+1008\sqrt{cx+b}\,Ab^{\frac{7}{2}}cx+480\sqrt{cx+b}\,Bb^{\frac{9}{2}}x+384\sqrt{cx+b}\,Ab^{\frac{9}{2}}\right)}{1920\sqrt{cx+b}\,b^{\frac{5}{2}}x^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x)
```

```
[Out] -1/1920*((c*x+b)*x)^(1/2)/b^(5/2)*(45*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*
c^5-150*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*b*c^4-45*(c*x+b)^(1/2)*A*b^(1/
2)*c^4*x^4+150*(c*x+b)^(1/2)*B*b^(3/2)*c^3*x^4+30*(c*x+b)^(1/2)*A*b^(3/2)*c
^3*x^3+1180*(c*x+b)^(1/2)*B*b^(5/2)*c^2*x^3+744*(c*x+b)^(1/2)*A*b^(5/2)*c^2
*x^2+1360*(c*x+b)^(1/2)*B*b^(7/2)*c*x^2+1008*(c*x+b)^(1/2)*A*b^(7/2)*c*x+48
0*(c*x+b)^(1/2)*B*b^(9/2)*x+384*(c*x+b)^(1/2)*A*b^(9/2))/x^(11/2)/(c*x+b)^(
1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}(Bx+A)}{x^{\frac{17}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(5/2)*(B*x + A)/x^(17/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^{17/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(17/2),x)
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(17/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(17/2),x)
[Out] Timed out
```

3.225 $\int \frac{x^{7/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^5\sqrt{x}}-\frac{16b^2\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^4}+\frac{4bx^{3/2}\sqrt{bx+cx^2}\,(8bB-9Ac)}{105c^3}-\frac{2x^{5/2}\sqrt{bx+cx^2}}{63c}$$

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^4}+\frac{32b^3\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^5\sqrt{x}}-\frac{2x^{5/2}\sqrt{bx+cx^2}\,(8bB-9Ac)}{63c^2}+\frac{4bx^{3/2}\sqrt{bx+cx^2}\,(8bB-9Ac)}{105c^3}+\frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (32*b^3*(8*b*B - 9*A*c)*Sqrt[b*x + c*x^2])/(315*c^5*Sqrt[x]) - (16*b^2*(8*b
*B - 9*A*c)*Sqrt[x]*Sqrt[b*x + c*x^2])/(315*c^4) + (4*b*(8*b*B - 9*A*c)*x^(
3/2)*Sqrt[b*x + c*x^2])/(105*c^3) - (2*(8*b*B - 9*A*c)*x^(5/2)*Sqrt[b*x + c
*x^2])/(63*c^2) + (2*B*x^(7/2)*Sqrt[b*x + c*x^2])/(9*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx = \frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c} + \frac{\left(2\left(\frac{7}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{x^{7/2}}{\sqrt{bx+cx^2}}\,dx}{9c}$$

$$= -\frac{2(8bB-9Ac)x^{5/2}\sqrt{bx+cx^2}}{63c^2} + \frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c} + \frac{(2b(8bB-9Ac))\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx}{21c^2}$$

$$= \frac{4b(8bB-9Ac)x^{3/2}\sqrt{bx+cx^2}}{105c^3} - \frac{2(8bB-9Ac)x^{5/2}\sqrt{bx+cx^2}}{63c^2} + \frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c} - \frac{\left(8b^2(8\right.}{}$$

$$= -\frac{16b^2(8bB-9Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{315c^4} + \frac{4b(8bB-9Ac)x^{3/2}\sqrt{bx+cx^2}}{105c^3} - \frac{2(8bB-9Ac)x^{5/2}\sqrt{bx}}{63c^2}$$

$$= \frac{32b^3(8bB-9Ac)\sqrt{bx+cx^2}}{315c^5\sqrt{x}} - \frac{16b^2(8bB-9Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{315c^4} + \frac{4b(8bB-9Ac)x^{3/2}\sqrt{bx+}}{105c^3}$$

Mathematica [A] time = 0.07, size = 94, normalized size = 0.55

$$\frac{2\sqrt{x(b+cx)}\left(-16b^3c(9A+4Bx)+24b^2c^2x(3A+2Bx)-2bc^3x^2(27A+20Bx)+5c^4x^3(9A+7Bx)+128b^4B\right)}{315c^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(128*b^4*B + 24*b^2*c^2*x*(3*A + 2*B*x) - 16*b^3*c*(9*
A + 4*B*x) + 5*c^4*x^3*(9*A + 7*B*x) - 2*b*c^3*x^2*(27*A + 20*B*x)))/(315*c
^5*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.14, size = 107, normalized size = 0.63

$$\frac{2\sqrt{bx+cx^2}\left(-144Ab^3c+72Ab^2c^2x-54Abc^3x^2+45Ac^4x^3+128b^4B-64b^3Bcx+48b^2Bc^2x^2-40bBc^3x^3+35Bc^4x^4\right)}{315c^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(128*b^4*B - 144*A*b^3*c - 64*b^3*B*c*x + 72*A*b^2*c^2
*x + 48*b^2*B*c^2*x^2 - 54*A*b*c^3*x^2 - 40*b*B*c^3*x^3 + 45*A*c^4*x^3 + 35
*B*c^4*x^4))/(315*c^5*Sqrt[x])
```

fricas [A] time = 0.41, size = 103, normalized size = 0.61

$$\frac{2\left(35\,Bc^4x^4+128\,Bb^4-144\,Ab^3c-5\left(8\,Bbc^3-9\,Ac^4\right)x^3+6\left(8\,Bb^2c^2-9\,Abc^3\right)x^2-8\left(8\,Bb^3c-9\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}}{315\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^4*x^4 + 128*B*b^4 - 144*A*b^3*c - 5*(8*B*b*c^3 - 9*A*c^4)*x^3
 + 6*(8*B*b^2*c^2 - 9*A*b*c^3)*x^2 - 8*(8*B*b^3*c - 9*A*b^2*c^2)*x)*sqrt(c*
x^2 + b*x)/(c^5*sqrt(x))
```

giac [A] time = 0.19, size = 135, normalized size = 0.79

$$\frac{2\left(Bb^4-Ab^3c\right)\sqrt{cx+b}}{c^5} + \frac{2\left(35\,(cx+b)^{\frac{9}{2}}B-180\,(cx+b)^{\frac{7}{2}}Bb+378\,(cx+b)^{\frac{5}{2}}Bb^2-420\,(cx+b)^{\frac{3}{2}}Bb^3+45\,(cx+b)^{\frac{7}{2}}Ac-189\,(cx+b)^{\frac{5}{2}}Abc+315\,(cx+b)^{\frac{3}{2}}Ab^2c\right)}{315\,c^5} - \frac{32\left(8\,Bb^{\frac{9}{2}}-9\,Ab^{\frac{7}{2}}c\right)}{315\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*b^4 - A*b^3*c)*sqrt(c*x + b)/c^5 + 2/315*(35*(c*x + b)^(9/2)*B - 180*(
c*x + b)^(7/2)*B*b + 378*(c*x + b)^(5/2)*B*b^2 - 420*(c*x + b)^(3/2)*B*b^3
+ 45*(c*x + b)^(7/2)*A*c - 189*(c*x + b)^(5/2)*A*b*c + 315*(c*x + b)^(3/2)*
A*b^2*c)/c^5 - 32/315*(8*B*b^(9/2) - 9*A*b^(7/2)*c)/c^5
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2\left(cx+b\right)\left(-35B\,x^{4}c^{4}-45A\,c^{4}x^{3}+40Bb\,c^{3}x^{3}+54Ab\,c^{3}x^{2}-48B\,b^{2}c^{2}x^{2}-72A\,b^{2}c^{2}x+64B\,b^{3}cx+144A\,b^{3}c-128b^{4}B\right)\sqrt{x}}{315\sqrt{c\,x^{2}+bx}\;c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/315*(c*x+b)*(-35*B*c^4*x^4-45*A*c^4*x^3+40*B*b*c^3*x^3+54*A*b*c^3*x^2-48
*B*b^2*c^2*x^2-72*A*b^2*c^2*x+64*B*b^3*c*x+144*A*b^3*c-128*B*b^4)*x^(1/2)/c
^5/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.70, size = 120, normalized size = 0.71

$$\frac{2\left(5\,c^{4}x^{4}-bc^{3}x^{3}+2\,b^{2}c^{2}x^{2}-8\,b^{3}cx-16\,b^{4}\right)A}{35\,\sqrt{cx+b}\,c^{4}}+\frac{2\left(35\,c^{5}x^{5}-5\,bc^{4}x^{4}+8\,b^{2}c^{3}x^{3}-16\,b^{3}c^{2}x^{2}+64\,b^{4}cx+128\,b^{5}\right)B}{315\,\sqrt{cx+b}\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*c^4*x^4 - b*c^3*x^3 + 2*b^2*c^2*x^2 - 8*b^3*c*x - 16*b^4)*A/(sqrt(c
*x + b)*c^4) + 2/315*(35*c^5*x^5 - 5*b*c^4*x^4 + 8*b^2*c^3*x^3 - 16*b^3*c^2
*x^2 + 64*b^4*c*x + 128*b^5)*B/(sqrt(c*x + b)*c^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{7}{2}}\left(A+Bx\right)}{\sqrt{x\left(b+cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(7/2)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.226 $\int \frac{x^{5/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^4\sqrt{x}}+\frac{8b\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^3}-\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-7Ac)}{35c^2}+\frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}$$

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^4\sqrt{x}}-\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-7Ac)}{35c^2}+\frac{8b\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^3}+\frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (-16*b^2*(6*b*B - 7*A*c)*Sqrt[b*x + c*x^2])/(105*c^4*Sqrt[x]) + (8*b*(6*b*B
 - 7*A*c)*Sqrt[x]*Sqrt[b*x + c*x^2])/(105*c^3) - (2*(6*b*B - 7*A*c)*x^(3/2)
*Sqrt[b*x + c*x^2])/(35*c^2) + (2*B*x^(5/2)*Sqrt[b*x + c*x^2])/(7*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx = \frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c} + \frac{\left(2\left(\frac{5}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx}{7c}$$

$$= -\frac{2(6bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^2} + \frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c} + \frac{(4b(6bB-7Ac))\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx}{35c^2}$$

$$= \frac{8b(6bB-7Ac)\sqrt{x}\sqrt{bx+cx^2}}{105c^3} - \frac{2(6bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^2} + \frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c} - \frac{(8b \cdots}{\cdots}$$

$$= -\frac{16b^2(6bB-7Ac)\sqrt{bx+cx^2}}{105c^4\sqrt{x}} + \frac{8b(6bB-7Ac)\sqrt{x}\sqrt{bx+cx^2}}{105c^3} - \frac{2(6bB-7Ac)x^{3/2}\sqrt{bx \cdots}}{35c^2}$$

Mathematica [A] time = 0.06, size = 75, normalized size = 0.56

$$\frac{2\sqrt{x(b+cx)}\left(8b^2c(7A+3Bx)-2bc^2x(14A+9Bx)+3c^3x^2(7A+5Bx)-48b^3B\right)}{105c^4\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(-48*b^3*B + 8*b^2*c*(7*A + 3*B*x) + 3*c^3*x^2*(7*A +
5*B*x) - 2*b*c^2*x*(14*A + 9*B*x)))/(105*c^4*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.12, size = 83, normalized size = 0.62

$$\frac{2\sqrt{bx+cx^2}\left(56Ab^2c-28Abc^2x+21Ac^3x^2-48b^3B+24b^2Bcx-18bBc^2x^2+15Bc^3x^3\right)}{105c^4\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-48*b^3*B + 56*A*b^2*c + 24*b^2*B*c*x - 28*A*b*c^2*x
- 18*b*B*c^2*x^2 + 21*A*c^3*x^2 + 15*B*c^3*x^3))/(105*c^4*Sqrt[x])
```

fricas [A] time = 0.41, size = 79, normalized size = 0.59

$$\frac{2\left(15\,Bc^3x^3-48\,Bb^3+56\,Ab^2c-3\left(6\,Bbc^2-7\,Ac^3\right)x^2+4\left(6\,Bb^2c-7\,Abc^2\right)x\right)\sqrt{cx^2+bx}}{105\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^3*x^3 - 48*B*b^3 + 56*A*b^2*c - 3*(6*B*b*c^2 - 7*A*c^3)*x^2 +
 4*(6*B*b^2*c - 7*A*b*c^2)*x)*sqrt(c*x^2 + b*x)/(c^4*sqrt(x))
```

giac [A] time = 0.25, size = 108, normalized size = 0.81

$$-\frac{2\left(Bb^3-Ab^2c\right)\sqrt{cx+b}}{c^4}+\frac{2\left(15\,(cx+b)^{\frac{7}{2}}B-63\,(cx+b)^{\frac{5}{2}}Bb+105\,(cx+b)^{\frac{3}{2}}Bb^2+21\,(cx+b)^{\frac{5}{2}}Ac-70\,(cx+b)^{\frac{3}{2}}Abc\right)}{105\,c^4}+\frac{16\left(6\,Bb^{\frac{7}{2}}-7\,Ab^{\frac{5}{2}}c\right)}{105\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*b^3 - A*b^2*c)*sqrt(c*x + b)/c^4 + 2/105*(15*(c*x + b)^(7/2)*B - 63*(
c*x + b)^(5/2)*B*b + 105*(c*x + b)^(3/2)*B*b^2 + 21*(c*x + b)^(5/2)*A*c - 7
0*(c*x + b)^(3/2)*A*b*c)/c^4 + 16/105*(6*B*b^(7/2) - 7*A*b^(5/2)*c)/c^4
```

maple [A] time = 0.05, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(15B\,c^{3}x^{3}+21A\,c^{3}x^{2}-18Bb\,c^{2}x^{2}-28Ab\,c^{2}x+24B\,b^{2}cx+56A\,b^{2}c-48b^{3}B\right)\sqrt{x}}{105\sqrt{c\,x^{2}+bx}\;c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/105*(c*x+b)*(15*B*c^3*x^3+21*A*c^3*x^2-18*B*b*c^2*x^2-28*A*b*c^2*x+24*B*b
^2*c*x+56*A*b^2*c-48*B*b^3)*x^(1/2)/c^4/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.64, size = 98, normalized size = 0.74

$$\frac{2\left(3\,c^{3}x^{3}-bc^{2}x^{2}+4\,b^{2}cx+8\,b^{3}\right)A}{15\,\sqrt{cx+b}\,c^{3}}+\frac{2\left(5\,c^{4}x^{4}-bc^{3}x^{3}+2\,b^{2}c^{2}x^{2}-8\,b^{3}cx-16\,b^{4}\right)B}{35\,\sqrt{cx+b}\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*c^3*x^3 - b*c^2*x^2 + 4*b^2*c*x + 8*b^3)*A/(sqrt(c*x + b)*c^3) + 2/
35*(5*c^4*x^4 - b*c^3*x^3 + 2*b^2*c^2*x^2 - 8*b^3*c*x - 16*b^4)*B/(sqrt(c*x
 + b)*c^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{5/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{5}{2}}\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(5/2)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.227 $\int \frac{x^{3/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=96

$$\frac{4b\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^3\sqrt{x}}-\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^2}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}$$

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^2}+\frac{4b\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^3\sqrt{x}}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (4*b*(4*b*B - 5*A*c)*Sqrt[b*x + c*x^2])/(15*c^3*Sqrt[x]) - (2*(4*b*B - 5*A*
c)*Sqrt[x]*Sqrt[b*x + c*x^2])/(15*c^2) + (2*B*x^(3/2)*Sqrt[b*x + c*x^2])/(5
*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^{3/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}+\frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx}{5c}\\ &= -\frac{2(4bB-5Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}+\frac{(2b(4bB-5Ac))\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{15c^2}\\ &= \frac{4b(4bB-5Ac)\sqrt{bx+cx^2}}{15c^3\sqrt{x}}-\frac{2(4bB-5Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}\end{aligned}$$

Mathematica [A] time = 0.04, size = 55, normalized size = 0.57

$$\frac{2\sqrt{x(b+cx)}\left(-2bc(5A+2Bx)+c^2x(5A+3Bx)+8b^2B\right)}{15c^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(8*b^2*B - 2*b*c*(5*A + 2*B*x) + c^2*x*(5*A + 3*B*x)))
/(15*c^3*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.10, size = 59, normalized size = 0.61

$$\frac{2\sqrt{bx+cx^2}\left(-10Abc+5Ac^2x+8b^2B-4bBcx+3Bc^2x^2\right)}{15c^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(8*b^2*B - 10*A*b*c - 4*b*B*c*x + 5*A*c^2*x + 3*B*c^2*
x^2))/(15*c^3*Sqrt[x])
```

fricas [A] time = 0.40, size = 55, normalized size = 0.57

$$\frac{2\left(3\,Bc^2x^2+8\,Bb^2-10\,Abc-\left(4\,Bbc-5\,Ac^2\right)x\right)\sqrt{cx^2+bx}}{15\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^2 + 8*B*b^2 - 10*A*b*c - (4*B*b*c - 5*A*c^2)*x)*sqrt(c*x^2
+ b*x)/(c^3*sqrt(x))
```

giac [A] time = 0.18, size = 81, normalized size = 0.84

$$\frac{2\left(Bb^2-Abc\right)\sqrt{cx+b}}{c^3}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}B-10\,(cx+b)^{\frac{3}{2}}Bb+5\,(cx+b)^{\frac{3}{2}}Ac\right)}{15\,c^3}-\frac{4\left(4\,Bb^{\frac{5}{2}}-5\,Ab^{\frac{3}{2}}c\right)}{15\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*b^2 - A*b*c)*sqrt(c*x + b)/c^3 + 2/15*(3*(c*x + b)^(5/2)*B - 10*(c*x +
 b)^(3/2)*B*b + 5*(c*x + b)^(3/2)*A*c)/c^3 - 4/15*(4*B*b^(5/2) - 5*A*b^(3/2
)*c)/c^3
```

maple [A] time = 0.06, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-3B\,c^2x^2-5A\,c^2x+4Bbcx+10Abc-8b^2B\right)\sqrt{x}}{15\sqrt{c\,x^2+bx}\;c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/15*(c*x+b)*(-3*B*c^2*x^2-5*A*c^2*x+4*B*b*c*x+10*A*b*c-8*B*b^2)*x^(1/2)/c
^3/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.57, size = 75, normalized size = 0.78

$$\frac{2\left(c^2x^2 - bcx - 2\,b^2\right)A}{3\,\sqrt{cx+b}\,c^2} + \frac{2\left(3\,c^3x^3 - bc^2x^2 + 4\,b^2cx + 8\,b^3\right)B}{15\,\sqrt{cx+b}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(c^2*x^2 - b*c*x - 2*b^2)*A/(sqrt(c*x + b)*c^2) + 2/15*(3*c^3*x^3 - b*c
^2*x^2 + 4*b^2*c*x + 8*b^3)*B/(sqrt(c*x + b)*c^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{3}{2}}\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.228 $\int \frac{\sqrt{x}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=61

$$\frac{2B\sqrt{x}\sqrt{bx+cx^2}}{3c}-\frac{2\sqrt{bx+cx^2}\,(2bB-3Ac)}{3c^2\sqrt{x}}$$

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\sqrt{x}\sqrt{bx+cx^2}}{3c}-\frac{2\sqrt{bx+cx^2}\,(2bB-3Ac)}{3c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (-2*(2*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/(3*c^2*Sqrt[x]) + (2*B*Sqrt[x]*Sqrt[
b*x + c*x^2])/(3*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{x}(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{2B\sqrt{x}\sqrt{bx+cx^2}}{3c}+\frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{3c}\\ &= -\frac{2(2bB-3Ac)\sqrt{bx+cx^2}}{3c^2\sqrt{x}}+\frac{2B\sqrt{x}\sqrt{bx+cx^2}}{3c}\end{aligned}$$

Mathematica [A] time = 0.03, size = 36, normalized size = 0.59

$$\frac{2\sqrt{x(b+cx)}\,(3Ac-2bB+Bcx)}{3c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(-2*b*B + 3*A*c + B*c*x))/(3*c^2*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.08, size = 38, normalized size = 0.62

$$\frac{2\sqrt{bx+cx^2}\,(3Ac-2bB+Bcx)}{3c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/Sqrt[b*x + c*x^2],x]
[Out] (2*(-2*b*B + 3*A*c + B*c*x)*Sqrt[b*x + c*x^2])/(3*c^2*Sqrt[x])
```

fricas [A] time = 0.40, size = 32, normalized size = 0.52

$$\frac{2\,(Bcx-2\,Bb+3\,Ac)\sqrt{cx^2+bx}}{3\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
[Out] 2/3*(B*c*x - 2*B*b + 3*A*c)*sqrt(c*x^2 + b*x)/(c^2*sqrt(x))
```

giac [A] time = 0.18, size = 53, normalized size = 0.87

$$\frac{2\,(cx+b)^{\frac{3}{2}}B}{3\,c^2}-\frac{2\,(Bb-Ac)\sqrt{cx+b}}{c^2}+\frac{2\left(2\,Bb^{\frac{3}{2}}-3\,A\sqrt{b}\,c\right)}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
[Out] 2/3*(c*x + b)^(3/2)*B/c^2 - 2*(B*b - A*c)*sqrt(c*x + b)/c^2 + 2/3*(2*B*b^(3
/2) - 3*A*sqrt(b)*c)/c^2
```

maple [A] time = 0.05, size = 38, normalized size = 0.62

$$\frac{2\,(cx+b)\,(Bcx+3Ac-2bB)\,\sqrt{x}}{3\sqrt{c\,x^2+bx}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x)
[Out] 2/3*(c*x+b)*(B*c*x+3*A*c-2*B*b)*x^(1/2)/c^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.62, size = 45, normalized size = 0.74

$$\frac{2\,\sqrt{cx+b}\,A}{c}+\frac{2\left(c^2x^2-bcx-2\,b^2\right)B}{3\,\sqrt{cx+b}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
[Out] 2*sqrt(c*x + b)*A/c + 2/3*(c^2*x^2 - b*c*x - 2*b^2)*B/(sqrt(c*x + b)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{x}\;(A+B\,x)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
[Out] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**(1/2),x)
[Out] Integral(sqrt(x)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.229 $\int \frac{A+Bx}{\sqrt{ex}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=72

$$\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{ex}}\right)}{\sqrt{b}\sqrt{e}}$$

Rubi [A] time = 0.06, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {794, 660, 208}

$$\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{ex}}\right)}{\sqrt{b}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*B*Sqrt[b*x + c*x^2])/(c*Sqrt[e*x]) - (2*A*ArcTanh[(Sqrt[e]*Sqrt[b*x + c*
x^2])/(Sqrt[b]*Sqrt[e*x])])/(Sqrt[b]*Sqrt[e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{ex}\sqrt{bx+cx^2}}\,dx &= \frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}+A\int \frac{1}{\sqrt{ex}\sqrt{bx+cx^2}}\,dx\\
&= \frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}+(2Ae)\,\text{Subst}\left(\int \frac{1}{-be+e^2x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{ex}}\right)\\
&= \frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{e}\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{ex}}\right)}{\sqrt{b}\sqrt{e}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 71, normalized size = 0.99

$$\frac{2x\left(\sqrt{b}B(b+cx)-Ac\sqrt{b+cx}\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{\sqrt{b}c\sqrt{ex}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*x*(Sqrt[b]*B*(b + c*x) - A*c*Sqrt[b + c*x]*ArcTanh[Sqrt[b + c*x]/Sqrt[b]
]))/(Sqrt[b]*c*Sqrt[e*x]*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.20, size = 72, normalized size = 1.00

$$\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{ex}}{\sqrt{e}\sqrt{bx+cx^2}}\right)}{\sqrt{b}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*B*Sqrt[b*x + c*x^2])/(c*Sqrt[e*x]) - (2*A*ArcTanh[(Sqrt[b]*Sqrt[e*x])/(S
qrt[e]*Sqrt[b*x + c*x^2])])/(Sqrt[b]*Sqrt[e])
```

fricas [A] time = 0.41, size = 166, normalized size = 2.31

$$\left[\frac{\sqrt{be}\,Acx\log\left(-\frac{cex^2+2\,bex-2\,\sqrt{cx^2+bx}\,\sqrt{be}\,\sqrt{ex}}{x^2}\right)+2\,\sqrt{cx^2+bx}\,\sqrt{ex}\,Bb}{bcex},\ \frac{2\left(\sqrt{-be}\,Acx\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-be}\,\sqrt{ex}}{cex^2+bex}\right)+\sqrt{cx^2+bx}\,\sqrt{ex}\,Bb\right)}{bcex}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*e)*A*c*x*log(-(c*e*x^2 + 2*b*e*x - 2*sqrt(c*x^2 + b*x)*sqrt(b*e)*s
qrt(e*x))/x^2) + 2*sqrt(c*x^2 + b*x)*sqrt(e*x)*B*b)/(b*c*e*x), 2*(sqrt(-b*e
)*A*c*x*arctan(sqrt(c*x^2 + b*x)*sqrt(-b*e)*sqrt(e*x)/(c*e*x^2 + b*e*x)) +
sqrt(c*x^2 + b*x)*sqrt(e*x)*B*b)/(b*c*e*x)]
```

giac [A] time = 0.21, size = 103, normalized size = 1.43

$$2\left(\frac{A\arctan\left(\frac{\sqrt{cxe+be}}{\sqrt{-be}}\right)e}{\sqrt{-be}}+\frac{\sqrt{cxe+be}\,B}{c}\right)e^{(-1)}-\frac{2\left(Ac\arctan\left(\frac{\sqrt{b}e^{\frac{1}{2}}}{\sqrt{-be}}\right)e+\sqrt{-be}\,B\sqrt{b}e^{\frac{1}{2}}\right)e^{(-1)}}{\sqrt{-be}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(A*arctan(sqrt(c*x*e + b*e)/sqrt(-b*e))*e/sqrt(-b*e) + sqrt(c*x*e + b*e)*
B/c)*e^(-1) - 2*(A*c*arctan(sqrt(b)*e^(1/2)/sqrt(-b*e))*e + sqrt(-b*e)*B*sq
rt(b)*e^(1/2))*e^(-1)/(sqrt(-b*e)*c)
```

maple [A] time = 0.08, size = 72, normalized size = 1.00

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(Ace\,\mathrm{arctanh}\left(\frac{\sqrt{(cx+b)e}}{\sqrt{be}}\right)-\sqrt{(cx+b)\,e}\,\sqrt{be}\,B\right)}{\sqrt{ex}\,\sqrt{(cx+b)\,e}\,\sqrt{be}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/(e*x)^(1/2)*((c*x+b)*x)^(1/2)*(A*c*e*arctanh((e*(c*x+b))^(1/2)/(b*e)^(1/
2))-B*(e*(c*x+b))^(1/2)*(b*e)^(1/2))/(e*(c*x+b))^(1/2)/c/(b*e)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx}\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*sqrt(e*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B\,x}{\sqrt{c\,x^2 + b\,x}\,\sqrt{e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{ex}\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(1/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(e*x)*sqrt(x*(b + c*x))), x)
```

3.230 $\int \frac{A+Bx}{x^{3/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=66

$$-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}$$

Rubi [A] time = 0.05, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {792, 660, 207}

$$-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[b*x + c*x^2])/(b*x^(3/2))) - ((2*b*B - A*c)*ArcTanh[Sqrt[b*x + c*
x^2]/(Sqrt[b]*Sqrt[x])])/b^(3/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&& !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\sqrt{bx+cx^2}}\,dx &= -\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}+\frac{\left(-\frac{3}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{b}\\
&= -\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}+\frac{\left(2\left(-\frac{3}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\operatorname{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b}\\
&= -\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.11

$$\frac{-x\sqrt{b+cx}\,(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)-A\sqrt{b}\,(b+cx)}{b^{3/2}\sqrt{x}\,\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-(A*Sqrt[b]*(b + c*x)) - (2*b*B - A*c)*x*Sqrt[b + c*x]*ArcTanh[Sqrt[b + c*
x]/Sqrt[b]])/(b^(3/2)*Sqrt[x]*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.19, size = 64, normalized size = 0.97

$$\frac{(Ac-2bB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{b^{3/2}}-\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[b*x + c*x^2])/(b*x^(3/2))) + ((-2*b*B + A*c)*ArcTanh[(Sqrt[b]*Sqr
t[x])/Sqrt[b*x + c*x^2]])/b^(3/2)
```

fricas [A] time = 0.43, size = 144, normalized size = 2.18

$$\left[-\frac{(2\,Bb-Ac)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,\sqrt{cx^2+bx}\,Ab\sqrt{x}}{2\,b^2x^2},\ \frac{(2\,Bb-Ac)\sqrt{-b}\,x^2\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\sqrt{cx^2+bx}\,Ab\sqrt{x}}{b^2x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((2*B*b - A*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*
sqrt(b)*sqrt(x))/x^2) + 2*sqrt(c*x^2 + b*x)*A*b*sqrt(x))/(b^2*x^2), ((2*B*b
 - A*c)*sqrt(-b)*x^2*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) - sqrt(c*x^
2 + b*x)*A*b*sqrt(x))/(b^2*x^2)]
```

giac [A] time = 0.23, size = 58, normalized size = 0.88

$$-\frac{\frac{\sqrt{cx+b}\,Ac}{bx}-\frac{\left(2\,Bbc-Ac^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -(sqrt(c*x + b)*A*c/(b*x) - (2*B*b*c - A*c^2)*arctan(sqrt(c*x + b)/sqrt(-b)
)/(sqrt(-b)*b))/c
```

maple [A] time = 0.06, size = 71, normalized size = 1.08

$$\frac{\sqrt{(cx+b)\,x}\,\left(Acx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2Bbx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-\sqrt{cx+b}\,A\sqrt{b}\right)}{\sqrt{cx+b}\,b^{\frac{3}{2}}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] ((c*x+b)*x)^(1/2)/b^(3/2)*(A*arctanh((c*x+b)^(1/2)/b^(1/2))*x*c-2*B*arctanh
((c*x+b)^(1/2)/b^(1/2))*x*b-(c*x+b)^(1/2)*A*b^(1/2))/x^(3/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx}\,x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{A + B\,x}{x^{3/2}\,\sqrt{c\,x^2 + b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{3}{2}}\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*sqrt(x*(b + c*x))), x)
```

3.231 $\int \frac{A+Bx}{x^{5/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=105

$$\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{5/2}}-\frac{\sqrt{bx+cx^2}\,(4bB-3Ac)}{4b^2x^{3/2}}-\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}$$

Rubi [A] time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 672, 660, 207}

$$-\frac{\sqrt{bx+cx^2}\,(4bB-3Ac)}{4b^2x^{3/2}}+\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{5/2}}-\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[b*x + c*x^2])/(2*b*x^(5/2)) - ((4*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/
(4*b^2*x^(3/2)) + (c*(4*b*B - 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqr
t[x])])/(4*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\sqrt{bx+cx^2}}\,dx = -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}} + \frac{\left(-\frac{5}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{1}{x^{3/2}\sqrt{bx+cx^2}}\,dx}{2b}$$

$$= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}} - \frac{(4bB-3Ac)\sqrt{bx+cx^2}}{4b^2x^{3/2}} - \frac{(c(4bB-3Ac))\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{8b^2}$$

$$= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}} - \frac{(4bB-3Ac)\sqrt{bx+cx^2}}{4b^2x^{3/2}} - \frac{(c(4bB-3Ac))\,\mathrm{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{4b^2}$$

$$= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}} - \frac{(4bB-3Ac)\sqrt{bx+cx^2}}{4b^2x^{3/2}} + \frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{5/2}}$$

Mathematica [A] time = 0.09, size = 92, normalized size = 0.88

$$\frac{\sqrt{x(b+cx)}\left(cx^2(4bB-3Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)+b\sqrt{\frac{cx}{b}+1}\,(-2Ab+3Acx-4bBx)\right)}{4b^3x^{5/2}\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(b*(-2*A*b - 4*b*B*x + 3*A*c*x)*Sqrt[1 + (c*x)/b] + c*(4
*b*B - 3*A*c)*x^2*ArcTanh[Sqrt[1 + (c*x)/b]]))/(4*b^3*x^(5/2)*Sqrt[1 + (c*x
)/b])
```

IntegrateAlgebraic [A] time = 0.23, size = 87, normalized size = 0.83

$$\frac{\left(4bBc-3Ac^2\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{4b^{5/2}} + \frac{\sqrt{bx+cx^2}\,(-2Ab+3Acx-4bBx)}{4b^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((-2*A*b - 4*b*B*x + 3*A*c*x)*Sqrt[b*x + c*x^2])/(4*b^2*x^(5/2)) + ((4*b*B*
c - 3*A*c^2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(4*b^(5/2))
```

fricas [A] time = 0.42, size = 188, normalized size = 1.79

$$\left[-\frac{\left(4\,Bbc-3\,Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Ab^2+\left(4\,Bb^2-3\,Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{8\,b^3x^3}, -\frac{\left(4\,Bbc-3\,Ac^2\right)\sqrt{-b}\,x^3\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(2\,Ab^2+\left(4\,Bb^2-3\,Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{4\,b^3x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((4*B*b*c - 3*A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 +
 b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*A*b^2 + (4*B*b^2 - 3*A*b*c)*x)*sqrt(c*x^
2 + b*x)*sqrt(x))/(b^3*x^3), -1/4*((4*B*b*c - 3*A*c^2)*sqrt(-b)*x^3*arctan(
sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (2*A*b^2 + (4*B*b^2 - 3*A*b*c)*x)*sqr
t(c*x^2 + b*x)*sqrt(x))/(b^3*x^3)]
```

giac [A] time = 0.26, size = 111, normalized size = 1.06

$$-\frac{\frac{\left(4\,Bbc^2-3\,Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{4\,(cx+b)^{\frac{3}{2}}\,Bbc^2-4\,\sqrt{cx+b}\,Bb^2c^2-3\,(cx+b)^{\frac{3}{2}}\,Ac^3+5\,\sqrt{cx+b}\,Abc^3}{b^2c^2x^2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*((4*B*b*c^2 - 3*A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2) +
 (4*(c*x + b)^(3/2)*B*b*c^2 - 4*sqrt(c*x + b)*B*b^2*c^2 - 3*(c*x + b)^(3/2)
*A*c^3 + 5*sqrt(c*x + b)*A*b*c^3)/(b^2*c^2*x^2))/c
```

maple [A] time = 0.07, size = 109, normalized size = 1.04

$$-\frac{\sqrt{(cx+b)x}\,\left(3A\,c^{2}x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-4Bbc\,x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3\sqrt{cx+b}\,A\sqrt{b}\,cx+4\sqrt{cx+b}\,B\,b^{\frac{3}{2}}x+2\sqrt{cx+b}\,A\,b^{\frac{3}{2}}\right)}{4\sqrt{cx+b}\,b^{\frac{5}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -1/4*((c*x+b)*x)^(1/2)/b^(5/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*c^2-
4*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c-3*(c*x+b)^(1/2)*A*b^(1/2)*c*x+4*
(c*x+b)^(1/2)*B*b^(3/2)*x+2*(c*x+b)^(1/2)*A*b^(3/2))/x^(5/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^{2}+bx}\,x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{5/2}\,\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{5}{2}}\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(5/2)*sqrt(x*(b + c*x))), x)
```

3.232 $\int \frac{A+Bx}{x^{7/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=142

$$-\frac{c^2(6bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{7/2}}+\frac{c\sqrt{bx+cx^2}\,(6bB-5Ac)}{8b^3x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(6bB-5Ac)}{12b^2x^{5/2}}-\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}$$

Rubi [A] time = 0.12, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 672, 660, 207}

$$-\frac{c^2(6bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{7/2}}+\frac{c\sqrt{bx+cx^2}\,(6bB-5Ac)}{8b^3x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(6bB-5Ac)}{12b^2x^{5/2}}-\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[b*x + c*x^2])/(3*b*x^(7/2)) - ((6*b*B - 5*A*c)*Sqrt[b*x + c*x^2])/
(12*b^2*x^(5/2)) + (c*(6*b*B - 5*A*c)*Sqrt[b*x + c*x^2])/(8*b^3*x^(3/2)) -
(c^2*(6*b*B - 5*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(7/
2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\sqrt{bx+cx^2}}\,dx = -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}} + \frac{\left(-\frac{7}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{1}{x^{5/2}\sqrt{bx+cx^2}}\,dx}{3b}$$

$$= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}} - \frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}} - \frac{(c(6bB-5Ac))\int \frac{1}{x^{3/2}\sqrt{bx+cx^2}}\,dx}{8b^2}$$

$$= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}} - \frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}} + \frac{c(6bB-5Ac)\sqrt{bx+cx^2}}{8b^3x^{3/2}} + \frac{\left(c^2(6bB-5Ac\right.}{1}$$

$$= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}} - \frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}} + \frac{c(6bB-5Ac)\sqrt{bx+cx^2}}{8b^3x^{3/2}} + \frac{\left(c^2(6bB-5Ac\right.}{}$$

$$= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}} - \frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}} + \frac{c(6bB-5Ac)\sqrt{bx+cx^2}}{8b^3x^{3/2}} - \frac{c^2(6bB-5Ac)}{8}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.43

$$-\frac{\sqrt{x(b+cx)}\left(Ab^3+c^2x^3(6bB-5Ac)\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{cx}{b}+1\right)\right)}{3b^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -1/3*(Sqrt[x*(b + c*x)]*(A*b^3 + c^2*(6*b*B - 5*A*c)*x^3*Hypergeometric2F1[
1/2, 3, 3/2, 1 + (c*x)/b]))/(b^4*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.35, size = 111, normalized size = 0.78

$$\frac{\left(5Ac^3-6bBc^2\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{8b^{7/2}} + \frac{\sqrt{bx+cx^2}\left(-8Ab^2+10Abcx-15Ac^2x^2-12b^2Bx+18bBcx^2\right)}{24b^3x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^2 - 12*b^2*B*x + 10*A*b*c*x + 18*b*B*c*x^2 - 15*
A*c^2*x^2))/(24*b^3*x^(7/2)) + ((-6*b*B*c^2 + 5*A*c^3)*ArcTanh[(Sqrt[b]*Sqr
t[x])/Sqrt[b*x + c*x^2]])/(8*b^(7/2))
```

fricas [A] time = 0.41, size = 241, normalized size = 1.70

$$\left[-\frac{3\left(6Bbc^2-5Ac^3\right)\sqrt{b}x^4\log\left(-\frac{cx^2+2bx+2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(8Ab^3-3\left(6Bb^2c-5Abc^2\right)x^2+2\left(6Bb^3-5Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{48b^4x^4}, \frac{3\left(6Bbc^2-5Ac^3\right)\sqrt{-b}x^4\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(8Ab^3-3\left(6Bb^2c-5Abc^2\right)x^2+2\left(6Bb^3-5Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{24b^4x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(6*B*b*c^2 - 5*A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x + 2*sqrt(c*
x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^3 - 3*(6*B*b^2*c - 5*A*b*c^2)*x
^2 + 2*(6*B*b^3 - 5*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^4), 1/24*
(3*(6*B*b*c^2 - 5*A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 +
b*x)) - (8*A*b^3 - 3*(6*B*b^2*c - 5*A*b*c^2)*x^2 + 2*(6*B*b^3 - 5*A*b^2*c)*
x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^4)]
```

giac [A] time = 0.28, size = 144, normalized size = 1.01

$$\frac{\frac{3\left(6\,Bbc^3-5\,Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^3}+\frac{18\,(cx+b)^{\frac{5}{2}}Bbc^3-48\,(cx+b)^{\frac{3}{2}}Bb^2c^3+30\,\sqrt{cx+b}\,Bb^3c^3-15\,(cx+b)^{\frac{5}{2}}Ac^4+40\,(cx+b)^{\frac{3}{2}}Abc^4-33\,\sqrt{cx+b}\,Ab^2c^4}{b^3c^3x^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*(3*(6*B*b*c^3 - 5*A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3)
 + (18*(c*x + b)^(5/2)*B*b*c^3 - 48*(c*x + b)^(3/2)*B*b^2*c^3 + 30*sqrt(c*x
 + b)*B*b^3*c^3 - 15*(c*x + b)^(5/2)*A*c^4 + 40*(c*x + b)^(3/2)*A*b*c^4 - 3
3*sqrt(c*x + b)*A*b^2*c^4)/(b^3*c^3*x^3))/c
```

maple [A] time = 0.06, size = 147, normalized size = 1.04

$$\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-18Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15\sqrt{cx+b}\,A\sqrt{b}\,c^2x^2+18\sqrt{cx+b}\,B\,b^{\frac{3}{2}}c\,x^2+10\sqrt{cx+b}\,A\,b^{\frac{3}{2}}cx-12\sqrt{cx+b}\,B\,b^{\frac{5}{2}}x-8\sqrt{cx+b}\,A\,b^{\frac{5}{2}}\right)}{24\sqrt{cx+b}\,b^{\frac{7}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/24*((c*x+b)*x)^(1/2)/b^(7/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3
-18*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-15*(c*x+b)^(1/2)*A*b^(1/2)*c
^2*x^2+18*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+10*(c*x+b)^(1/2)*A*b^(3/2)*c*x-12*(
c*x+b)^(1/2)*B*b^(5/2)*x-8*(c*x+b)^(1/2)*A*b^(5/2))/x^(7/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{7/2}\,\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{7}{2}}\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(7/2)*sqrt(x*(b + c*x))), x)
```

3.233 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{32b^2\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^5\sqrt{x}}+\frac{16b\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^4}-\frac{12x^{3/2}\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^3}+\frac{2x^{5/2}\sqrt{bx+cx^2}}{7b}$$

Rubi [A] time = 0.15, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {788, 656, 648}

$$-\frac{32b^2\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^5\sqrt{x}}+\frac{2x^{5/2}\sqrt{bx+cx^2}\,(8bB-7Ac)}{7bc^2}-\frac{12x^{3/2}\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^3}+\frac{16b\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^4}-\frac{2x^{9/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(9/2))/(b*c*Sqrt[b*x + c*x^2]) - (32*b^2*(8*b*B - 7*A*c)*
Sqrt[b*x + c*x^2])/(35*c^5*Sqrt[x]) + (16*b*(8*b*B - 7*A*c)*Sqrt[x]*Sqrt[b*
x + c*x^2])/(35*c^4) - (12*(8*b*B - 7*A*c)*x^(3/2)*Sqrt[b*x + c*x^2])/(35*c
^3) + (2*(8*b*B - 7*A*c)*x^(5/2)*Sqrt[b*x + c*x^2])/(7*b*c^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} - \left(\frac{7A}{b}-\frac{8B}{c}\right)\int \frac{x^{7/2}}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} + \frac{2(8bB-7Ac)x^{5/2}\sqrt{bx+cx^2}}{7bc^2} - \frac{(6(8bB-7Ac))\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx}{7c^2}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} - \frac{12(8bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^3} + \frac{2(8bB-7Ac)x^{5/2}\sqrt{bx+cx^2}}{7bc^2} + \frac{(24b(8b}{}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} + \frac{16b(8bB-7Ac)\sqrt{x}\sqrt{bx+cx^2}}{35c^4} - \frac{12(8bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^3} + \frac{2(8b}{}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} - \frac{32b^2(8bB-7Ac)\sqrt{bx+cx^2}}{35c^5\sqrt{x}} + \frac{16b(8bB-7Ac)\sqrt{x}\sqrt{bx+cx^2}}{35c^4} - \frac{12(8bE}{}$$

Mathematica [A] time = 0.06, size = 93, normalized size = 0.52

$$\frac{2\sqrt{x}\left(16b^3c(7A-4Bx)+8b^2c^2x(7A+2Bx)-2bc^3x^2(7A+4Bx)+c^4x^3(7A+5Bx)-128b^4B\right)}{35c^5\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(-128*b^4*B + 16*b^3*c*(7*A - 4*B*x) + 8*b^2*c^2*x*(7*A + 2*B*x)
 - 2*b*c^3*x^2*(7*A + 4*B*x) + c^4*x^3*(7*A + 5*B*x)))/(35*c^5*Sqrt[x*(b +
c*x)])
```

IntegrateAlgebraic [A] time = 0.81, size = 114, normalized size = 0.64

$$\frac{2\sqrt{bx+cx^2}\left(112Ab^3c+56Ab^2c^2x-14Abc^3x^2+7Ac^4x^3-128b^4B-64b^3Bcx+16b^2Bc^2x^2-8bBc^3x^3+5Bc^4x^4\right)}{35c^5\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-128*b^4*B + 112*A*b^3*c - 64*b^3*B*c*x + 56*A*b^2*c^
2*x + 16*b^2*B*c^2*x^2 - 14*A*b*c^3*x^2 - 8*b*B*c^3*x^3 + 7*A*c^4*x^3 + 5*B
*c^4*x^4))/(35*c^5*Sqrt[x]*(b + c*x))
```

fricas [A] time = 0.40, size = 116, normalized size = 0.65

$$\frac{2\left(5\,Bc^4x^4-128\,Bb^4+112\,Ab^3c-\left(8\,Bbc^3-7\,Ac^4\right)x^3+2\left(8\,Bb^2c^2-7\,Abc^3\right)x^2-8\left(8\,Bb^3c-7\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{35\left(c^6x^2+bc^5x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^4*x^4 - 128*B*b^4 + 112*A*b^3*c - (8*B*b*c^3 - 7*A*c^4)*x^3 + 2
*(8*B*b^2*c^2 - 7*A*b*c^3)*x^2 - 8*(8*B*b^3*c - 7*A*b^2*c^2)*x)*sqrt(c*x^2
+ b*x)*sqrt(x)/(c^6*x^2 + b*c^5*x)
```

giac [A] time = 0.21, size = 156, normalized size = 0.88

$$-\frac{2\left(Bb^4-Ab^3c\right)}{\sqrt{cx+b}\,c^5}+\frac{32\left(8\,Bb^4-7\,Ab^3c\right)}{35\,\sqrt{b}\,c^5}+\frac{2\left(5\,(cx+b)^{\frac{7}{2}}Bc^{30}-28\,(cx+b)^{\frac{5}{2}}Bbc^{30}+70\,(cx+b)^{\frac{3}{2}}Bb^2c^{30}-140\,\sqrt{cx+b}\,Bb^3c^{30}+7\,(cx+b)^{\frac{5}{2}}Ac^{31}-35\,(cx+b)^{\frac{3}{2}}Abc^{31}+105\,\sqrt{cx+b}\,Ab^2c^{31}\right)}{35\,c^{35}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(B*b^4 - A*b^3*c)/(sqrt(c*x + b)*c^5) + 32/35*(8*B*b^4 - 7*A*b^3*c)/(sqr
t(b)*c^5) + 2/35*(5*(c*x + b)^(7/2)*B*c^30 - 28*(c*x + b)^(5/2)*B*b*c^30 +
70*(c*x + b)^(3/2)*B*b^2*c^30 - 140*sqrt(c*x + b)*B*b^3*c^30 + 7*(c*x + b)^
(5/2)*A*c^31 - 35*(c*x + b)^(3/2)*A*b*c^31 + 105*sqrt(c*x + b)*A*b^2*c^31)/
c^35
```

maple [A] time = 0.05, size = 107, normalized size = 0.60

$$\frac{2\,(cx+b)\left(5B\,x^4c^4+7A\,c^4x^3-8Bb\,c^3x^3-14Ab\,c^3x^2+16B\,b^2c^2x^2+56A\,b^2c^2x-64B\,b^3cx+112A\,b^3c-128b^4B\right)x^{\frac{3}{2}}}{35\left(c\,x^2+bx\right)^{\frac{3}{2}}c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/35*(c*x+b)*(5*B*c^4*x^4+7*A*c^4*x^3-8*B*b*c^3*x^3-14*A*b*c^3*x^2+16*B*b^2
*c^2*x^2+56*A*b^2*c^2*x-64*B*b^3*c*x+112*A*b^3*c-128*B*b^4)*x^(3/2)/c^5/(c*
x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(\left(15\,Bc^5x^3+3\,Bbc^4x^2-4\,Bb^2c^3x+8\,Bb^3c^2\right)x^4+\left(16\,Bb^4c-3\left(4\,Bbc^4-7\,Ac^5\right)x^3-\left(8\,Bb^2c^3-7\,Abc^4\right)x^2+2\left(10\,Bb^3c^2-7\,Ab^2c^3\right)x\right)x^3+4\left(2\,Bb^5+\left(9\,Bb^2c^3-7\,Abc^4\right)x^3+2\left(10\,Bb^3c^2-7\,Ab^2c^3\right)x^2+\left(13\,Bb^4c-7\,Ab^3c^2\right)x\right)x^2\right)\sqrt{cx+b}}{105\left(c^7x^4+2\,bc^6x^3+b^2c^5x^2\right)}+\int -\frac{4\left(4\,Bb^5-2\,Ab^4c+\left(9\,Bb^3c^2-7\,Ab^2c^3\right)x^2+\left(13\,Bb^4c-9\,Ab^3c^2\right)x\right)\sqrt{cx+b}\,x^2}{15\left(c^7x^5+3\,bc^6x^4+3\,b^2c^5x^3+b^3c^4x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*B*c^5*x^3 + 3*B*b*c^4*x^2 - 4*B*b^2*c^3*x + 8*B*b^3*c^2)*x^4 + (
16*B*b^4*c - 3*(4*B*b*c^4 - 7*A*c^5)*x^3 - (8*B*b^2*c^3 - 7*A*b*c^4)*x^2 +
2*(10*B*b^3*c^2 - 7*A*b^2*c^3)*x)*x^3 + 4*(2*B*b^5 + (9*B*b^2*c^3 - 7*A*b*c
^4)*x^3 + 2*(10*B*b^3*c^2 - 7*A*b^2*c^3)*x^2 + (13*B*b^4*c - 7*A*b^3*c^2)*x
)*x^2)*sqrt(c*x + b)/(c^7*x^4 + 2*b*c^6*x^3 + b^2*c^5*x^2) + integrate(-4/1
5*(4*B*b^5 - 2*A*b^4*c + (9*B*b^3*c^2 - 7*A*b^2*c^3)*x^2 + (13*B*b^4*c - 9*
A*b^3*c^2)*x)*sqrt(c*x + b)*x^2/(c^7*x^5 + 3*b*c^6*x^4 + 3*b^2*c^5*x^3 + b^
3*c^4*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{9/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.234 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}} dx$

Optimal. Leaf size=141

$$\frac{16b\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^4\sqrt{x}}-\frac{8\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^3}+\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-5Ac)}{5bc^2}-\frac{2x^{7/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.11, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-5Ac)}{5bc^2}-\frac{8\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^3}+\frac{16b\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^4\sqrt{x}}-\frac{2x^{7/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(7/2))/(b*c*Sqrt[b*x + c*x^2]) + (16*b*(6*b*B - 5*A*c)*Sq
rt[b*x + c*x^2])/(15*c^4*Sqrt[x]) - (8*(6*b*B - 5*A*c)*Sqrt[x]*Sqrt[b*x + c
*x^2])/(15*c^3) + (2*(6*b*B - 5*A*c)*x^(3/2)*Sqrt[b*x + c*x^2])/(5*b*c^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} - \left(\frac{5A}{b}-\frac{6B}{c}\right)\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} + \frac{2(6bB-5Ac)x^{3/2}\sqrt{bx+cx^2}}{5bc^2} - \frac{(4(6bB-5Ac))\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx}{5c^2}$$

$$= -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} - \frac{8(6bB-5Ac)\sqrt{x}\sqrt{bx+cx^2}}{15c^3} + \frac{2(6bB-5Ac)x^{3/2}\sqrt{bx+cx^2}}{5bc^2} + \frac{(8b(6\cdots}{\cdots}$$

$$= -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} + \frac{16b(6bB-5Ac)\sqrt{bx+cx^2}}{15c^4\sqrt{x}} - \frac{8(6bB-5Ac)\sqrt{x}\sqrt{bx+cx^2}}{15c^3} + \frac{2(6bB\cdots}{\cdots}$$

Mathematica [A] time = 0.05, size = 74, normalized size = 0.52

$$\frac{2\sqrt{x}\left(-8b^2c(5A-3Bx)-2bc^2x(10A+3Bx)+c^3x^2(5A+3Bx)+48b^3B\right)}{15c^4\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(48*b^3*B - 8*b^2*c*(5*A - 3*B*x) + c^3*x^2*(5*A + 3*B*x) - 2*b*
c^2*x*(10*A + 3*B*x)))/(15*c^4*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.72, size = 90, normalized size = 0.64

$$\frac{2\sqrt{bx+cx^2}\left(-40Ab^2c-20Abc^2x+5Ac^3x^2+48b^3B+24b^2Bcx-6bBc^2x^2+3Bc^3x^3\right)}{15c^4\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(48*b^3*B - 40*A*b^2*c + 24*b^2*B*c*x - 20*A*b*c^2*x -
 6*b*B*c^2*x^2 + 5*A*c^3*x^2 + 3*B*c^3*x^3))/(15*c^4*Sqrt[x]*(b + c*x))
```

fricas [A] time = 0.39, size = 92, normalized size = 0.65

$$\frac{2\left(3\,Bc^3x^3+48\,Bb^3-40\,Ab^2c-\left(6\,Bbc^2-5\,Ac^3\right)x^2+4\left(6\,Bb^2c-5\,Abc^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{15\left(c^5x^2+bc^4x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^3*x^3 + 48*B*b^3 - 40*A*b^2*c - (6*B*b*c^2 - 5*A*c^3)*x^2 + 4*(
6*B*b^2*c - 5*A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^5*x^2 + b*c^4*x)
```

giac [A] time = 0.19, size = 124, normalized size = 0.88

$$\frac{2\left(Bb^3-Ab^2c\right)}{\sqrt{cx+b}\,c^4}-\frac{16\left(6\,Bb^3-5\,Ab^2c\right)}{15\,\sqrt{b}\,c^4}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}Bc^{16}-15\,(cx+b)^{\frac{3}{2}}Bbc^{16}+45\,\sqrt{cx+b}\,Bb^2c^{16}+5\,(cx+b)^{\frac{3}{2}}Ac^{17}-30\,\sqrt{cx+b}\,Abc^{17}\right)}{15\,c^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(B*b^3 - A*b^2*c)/(sqrt(c*x + b)*c^4) - 16/15*(6*B*b^3 - 5*A*b^2*c)/(sqrt
(b)*c^4) + 2/15*(3*(c*x + b)^(5/2)*B*c^16 - 15*(c*x + b)^(3/2)*B*b*c^16 + 4
5*sqrt(c*x + b)*B*b^2*c^16 + 5*(c*x + b)^(3/2)*A*c^17 - 30*sqrt(c*x + b)*A*
b*c^17)/c^20
```

maple [A] time = 0.05, size = 83, normalized size = 0.59

$$-\frac{2\left(cx+b\right)\left(-3B\,c^{3}x^{3}-5A\,c^{3}x^{2}+6Bb\,c^{2}x^{2}+20Ab\,c^{2}x-24B\,b^{2}cx+40A\,b^{2}c-48b^{3}B\right)x^{\frac{3}{2}}}{15\left(c\,x^{2}+bx\right)^{\frac{3}{2}}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/15*(c*x+b)*(-3*B*c^3*x^3-5*A*c^3*x^2+6*B*b*c^2*x^2+20*A*b*c^2*x-24*B*b^2
*c*x+40*A*b^2*c-48*B*b^3)*x^(3/2)/c^4/(c*x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(\left(3\,Bc^{3}x^{2}+Bbc^{2}x-2\,Bb^{2}c\right)x^{3}-\left(4\,Bb^{3}+\left(4\,Bbc^{2}-5\,Ac^{3}\right)x^{2}+\left(8\,Bb^{2}c-5\,Abc^{2}\right)x\right)x^{2}\right)\sqrt{cx+b}}{15\left(c^{5}x^{3}+2\,bc^{4}x^{2}+b^{2}c^{3}x\right)}-\int -\frac{4\left(2\,Bb^{4}+\left(7\,Bb^{2}c^{2}-5\,Abc^{3}\right)x^{2}+\left(9\,Bb^{3}c-5\,Ab^{2}c^{2}\right)x\right)\sqrt{cx+b}\,x^{2}}{15\left(c^{6}x^{5}+3\,bc^{5}x^{4}+3\,b^{2}c^{4}x^{3}+b^{3}c^{3}x^{2}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*B*c^3*x^2 + B*b*c^2*x - 2*B*b^2*c)*x^3 - (4*B*b^3 + (4*B*b*c^2 - 5
*A*c^3)*x^2 + (8*B*b^2*c - 5*A*b*c^2)*x)*x^2)*sqrt(c*x + b)/(c^5*x^3 + 2*b*
c^4*x^2 + b^2*c^3*x) - integrate(-4/15*(2*B*b^4 + (7*B*b^2*c^2 - 5*A*b*c^3)
*x^2 + (9*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(c*x + b)*x^2/(c^6*x^5 + 3*b*c^5*x^
4 + 3*b^2*c^4*x^3 + b^3*c^3*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.235 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=106

$$-\frac{4\sqrt{bx+cx^2}\,(4bB-3Ac)}{3c^3\sqrt{x}}+\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-3Ac)}{3bc^2}-\frac{2x^{5/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.08, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-3Ac)}{3bc^2}-\frac{4\sqrt{bx+cx^2}\,(4bB-3Ac)}{3c^3\sqrt{x}}-\frac{2x^{5/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(5/2))/(b*c*Sqrt[b*x + c*x^2]) - (4*(4*b*B - 3*A*c)*Sqrt[
b*x + c*x^2])/(3*c^3*Sqrt[x]) + (2*(4*b*B - 3*A*c)*Sqrt[x]*Sqrt[b*x + c*x^2
])/(3*b*c^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^{5/2}}{bc\sqrt{bx+cx^2}} - \left(\frac{3A}{b}-\frac{4B}{c}\right)\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^{5/2}}{bc\sqrt{bx+cx^2}} + \frac{2(4bB-3Ac)\sqrt{x}\sqrt{bx+cx^2}}{3bc^2} - \frac{(2(4bB-3Ac))\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{3c^2}$$

$$= -\frac{2(bB-Ac)x^{5/2}}{bc\sqrt{bx+cx^2}} - \frac{4(4bB-3Ac)\sqrt{bx+cx^2}}{3c^3\sqrt{x}} + \frac{2(4bB-3Ac)\sqrt{x}\sqrt{bx+cx^2}}{3bc^2}$$

Mathematica [A] time = 0.03, size = 54, normalized size = 0.51

$$\frac{2\sqrt{x}\left(b(6Ac-4Bcx)+c^2x(3A+Bx)-8b^2B\right)}{3c^3\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(-8*b^2*B + c^2*x*(3*A + B*x) + b*(6*A*c - 4*B*c*x)))/(3*c^3*Sqr
t[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.66, size = 65, normalized size = 0.61

$$\frac{2\sqrt{bx+cx^2}\left(6Abc+3Ac^2x-8b^2B-4bBcx+Bc^2x^2\right)}{3c^3\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-8*b^2*B + 6*A*b*c - 4*b*B*c*x + 3*A*c^2*x + B*c^2*x^
2))/(3*c^3*Sqrt[x]*(b + c*x))
```

fricas [A] time = 0.41, size = 67, normalized size = 0.63

$$\frac{2\left(Bc^2x^2-8\,Bb^2+6\,Abc-\left(4\,Bbc-3\,Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^4x^2+bc^3x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c^2*x^2 - 8*B*b^2 + 6*A*b*c - (4*B*b*c - 3*A*c^2)*x)*sqrt(c*x^2 + b*
x)*sqrt(x)/(c^4*x^2 + b*c^3*x)
```

giac [A] time = 0.19, size = 89, normalized size = 0.84

$$-\frac{2\left(Bb^2-Abc\right)}{\sqrt{cx+b}\,c^3} + \frac{4\left(4\,Bb^2-3\,Abc\right)}{3\,\sqrt{b}\,c^3} + \frac{2\left((cx+b)^{\frac{3}{2}}Bc^6-6\,\sqrt{cx+b}\,Bbc^6+3\,\sqrt{cx+b}\,Ac^7\right)}{3\,c^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(B*b^2 - A*b*c)/(sqrt(c*x + b)*c^3) + 4/3*(4*B*b^2 - 3*A*b*c)/(sqrt(b)*c
^3) + 2/3*((c*x + b)^(3/2)*B*c^6 - 6*sqrt(c*x + b)*B*b*c^6 + 3*sqrt(c*x + b
)*A*c^7)/c^9
```

maple [A] time = 0.04, size = 58, normalized size = 0.55

$$\frac{2 (cx + b) \left(B c^2 x^2 + 3A c^2 x - 4Bbcx + 6Abc - 8b^2 B\right) x^{\frac{3}{2}}}{3 \left(c x^2 + bx\right)^{\frac{3}{2}} c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/3*(c*x+b)*(B*c^2*x^2+3*A*c^2*x-4*B*b*c*x+6*A*b*c-8*B*b^2)*x^(3/2)/c^3/(c*
x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2 (Bcx + Bb)\sqrt{cx + b}\, x^2}{3 \left(c^3 x^2 + 2\, bc^2 x + b^2 c\right)} + \int \frac{\left(3\, Abcx^2 - \left(4\, Bb^2 + \left(4\, Bbc - 3\, Ac^2\right)x\right)x^2\right)\sqrt{cx + b}}{3 \left(c^4 x^4 + 3\, bc^3 x^3 + 3\, b^2 c^2 x^2 + b^3 cx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c*x + B*b)*sqrt(c*x + b)*x^2/(c^3*x^2 + 2*b*c^2*x + b^2*c) + integra
te(1/3*(3*A*b*c*x^2 - (4*B*b^2 + (4*B*b*c - 3*A*c^2)*x)*x^2)*sqrt(c*x + b)/
(c^4*x^4 + 3*b*c^3*x^3 + 3*b^2*c^2*x^2 + b^3*c*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{5/2}\, (A + B\, x)}{{\left(c\, x^2 + b\, x\right)}^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{5}{2}} (A + Bx)}{(x (b + cx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**(5/2)*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.236 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=70

$$\frac{2\sqrt{bx+cx^2}\,(2bB-Ac)}{bc^2\sqrt{x}}-\frac{2x^{3/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.05, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {788, 648}

$$\frac{2\sqrt{bx+cx^2}\,(2bB-Ac)}{bc^2\sqrt{x}}-\frac{2x^{3/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(3/2))/(b*c*Sqrt[b*x + c*x^2]) + (2*(2*b*B - A*c)*Sqrt[b*
x + c*x^2])/(b*c^2*Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^{3/2}}{bc\sqrt{bx+cx^2}}-\frac{\left(2\left(\frac{1}{2}(bB-2Ac)+\frac{3}{2}(-bB+Ac)\right)\right)\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{bc}\\ &= -\frac{2(bB-Ac)x^{3/2}}{bc\sqrt{bx+cx^2}}+\frac{2(2bB-Ac)\sqrt{bx+cx^2}}{bc^2\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 34, normalized size = 0.49

$$\frac{2\sqrt{x}\,(-Ac+2bB+Bcx)}{c^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(2*b*B - A*c + B*c*x))/(c^2*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.66, size = 43, normalized size = 0.61

$$\frac{2\sqrt{bx+cx^2}\,(-Ac+2bB+Bcx)}{c^2\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
[Out] (2*(2*b*B - A*c + B*c*x)*Sqrt[b*x + c*x^2])/(c^2*Sqrt[x]*(b + c*x))
```

fricas [A] time = 0.40, size = 45, normalized size = 0.64

$$\frac{2\,(Bcx+2\,Bb-Ac)\sqrt{cx^2+bx}\,\sqrt{x}}{c^3x^2+bc^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
[Out] 2*(B*c*x + 2*B*b - A*c)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^3*x^2 + b*c^2*x)
```

giac [A] time = 0.20, size = 51, normalized size = 0.73

$$\frac{2\,\sqrt{cx+b}\,B}{c^2}+\frac{2\,(Bb-Ac)}{\sqrt{cx+b}\,c^2}-\frac{2\,(2\,Bb-Ac)}{\sqrt{b}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
[Out] 2*sqrt(c*x + b)*B/c^2 + 2*(B*b - A*c)/(sqrt(c*x + b)*c^2) - 2*(2*B*b - A*c)
/(sqrt(b)*c^2)
```

maple [A] time = 0.05, size = 38, normalized size = 0.54

$$-\frac{2\,(cx+b)\,(-Bcx+Ac-2bB)\,x^{\frac{3}{2}}}{\left(c\,x^2+bx\right)^{\frac{3}{2}}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
[Out] -2*(c*x+b)*(-B*c*x+A*c-2*B*b)*x^(3/2)/c^2/(c*x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)x^{\frac{3}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
[Out] integrate((B*x + A)*x^(3/2)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^{3/2}\,(A+B\,x)}{{\left(c\,x^2+b\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
[Out] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{3}{2}}\,(A+Bx)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
[Out] Integral(x**(3/2)*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.237 $\int \frac{\sqrt{x}(A+Bx)}{(bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{2\sqrt{x}\,(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.05, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 660, 207}

$$-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{2\sqrt{x}\,(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/(b*c*Sqrt[b*x + c*x^2]) - (2*A*ArcTanh[Sqrt[b*x +
c*x^2]/(Sqrt[b]*Sqrt[x])])/b^(3/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)\sqrt{x}}{bc\sqrt{bx+cx^2}}+\frac{A\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{b}$$
$$= -\frac{2(bB-Ac)\sqrt{x}}{bc\sqrt{bx+cx^2}}+\frac{(2A)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b}$$
$$= -\frac{2(bB-Ac)\sqrt{x}}{bc\sqrt{bx+cx^2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}$$

Mathematica [A] time = 0.03, size = 69, normalized size = 1.01

$$-\frac{2\sqrt{x}\left(\sqrt{b}(bB-Ac)+Ac\sqrt{b+cx}\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{b^{3/2}c\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[x]*(Sqrt[b]*(b*B - A*c) + A*c*Sqrt[b + c*x]*ArcTanh[Sqrt[b + c*x]/
Sqrt[b]]))/(b^(3/2)*c*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.75, size = 75, normalized size = 1.10

$$\frac{2\sqrt{bx+cx^2}\,(Ac-bB)}{bc\sqrt{x}\,(b+cx)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(-(b*B) + A*c)*Sqrt[b*x + c*x^2])/(b*c*Sqrt[x]*(b + c*x)) - (2*A*ArcTanh
[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/b^(3/2)
```

fricas [A] time = 0.43, size = 192, normalized size = 2.82

$$\left[\frac{\left(Ac^2x^2+Abcx\right)\sqrt{b}\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)-2\left(Bb^2-Abc\right)\sqrt{cx^2+bx}\,\sqrt{x}}{b^2c^2x^2+b^3cx}, \frac{2\left(\left(Ac^2x^2+Abcx\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(Bb^2-Abc\right)\sqrt{cx^2+bx}\,\sqrt{x}\right)}{b^2c^2x^2+b^3cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [((A*c^2*x^2 + A*b*c*x)*sqrt(b)*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*s
qrt(b)*sqrt(x))/x^2) - 2*(B*b^2 - A*b*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*c^
2*x^2 + b^3*c*x), 2*((A*c^2*x^2 + A*b*c*x)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)
/sqrt(c*x^2 + b*x)) - (B*b^2 - A*b*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*c^2*x
^2 + b^3*c*x)]
```

giac [A] time = 0.21, size = 96, normalized size = 1.41

$$\frac{2\,A\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{2\,(Bb-Ac)}{\sqrt{cx+b}\,bc}-\frac{2\left(A\sqrt{b}\,c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)-B\sqrt{-b}\,b+A\sqrt{-b}\,c\right)}{\sqrt{-b}\,b^{\frac{3}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*A*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) - 2*(B*b - A*c)/(sqrt(c*x +
 b)*b*c) - 2*(A*sqrt(b)*c*arctan(sqrt(b)/sqrt(-b)) - B*sqrt(-b)*b + A*sqrt(
-b)*c)/(sqrt(-b)*b^(3/2)*c)
```

maple [A] time = 0.06, size = 63, normalized size = 0.93

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(\sqrt{cx+b}\;Ac\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-A\sqrt{b}\;c+B\,b^{\frac{3}{2}}\right)}{(cx+b)\,b^{\frac{3}{2}}c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*((c*x+b)*x)^(1/2)/b^(3/2)*(A*arctanh((c*x+b)^(1/2)/b^(1/2))*c*(c*x+b)^(1
/2)-A*c*b^(1/2)+B*b^(3/2))/x^(1/2)/(c*x+b)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{x}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(x)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\;\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A+Bx)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.238 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=97

$$-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}+\frac{\sqrt{x}\,(2bB-3Ac)}{b^2\sqrt{bx+cx^2}}-\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.08, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 666, 660, 207}

$$\frac{\sqrt{x}\,(2bB-3Ac)}{b^2\sqrt{bx+cx^2}}-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}-\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -(A/(b*Sqrt[x]*Sqrt[b*x + c*x^2])) + ((2*b*B - 3*A*c)*Sqrt[x])/(b^2*Sqrt[b*
x + c*x^2]) - ((2*b*B - 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
)/b^(5/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}} + \frac{\left(\frac{1}{2}(bB-2Ac)+\frac{1}{2}(bB-Ac)\right)\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{b}$$

$$= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-3Ac)\sqrt{x}}{b^2\sqrt{bx+cx^2}} + \frac{(2bB-3Ac)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{2b^2}$$

$$= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-3Ac)\sqrt{x}}{b^2\sqrt{bx+cx^2}} + \frac{(2bB-3Ac)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b^2}$$

$$= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-3Ac)\sqrt{x}}{b^2\sqrt{bx+cx^2}} - \frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.54

$$\frac{x(2bB-3Ac)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{cx}{b}+1\right)-Ab}{b^2\sqrt{x}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b) + (2*b*B - 3*A*c)*x*Hypergeometric2F1[-1/2, 1, 1/2, 1 + (c*x)/b])/(
b^2*Sqrt[x]*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.95, size = 85, normalized size = 0.88

$$\frac{(3Ac-2bB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{b^{5/2}} + \frac{\sqrt{bx+cx^2}\,(-Ab-3Acx+2bBx)}{b^2x^{3/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((-(A*b) + 2*b*B*x - 3*A*c*x)*Sqrt[b*x + c*x^2])/(b^2*x^(3/2)*(b + c*x)) +
((-2*b*B + 3*A*c)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/b^(5/2)
```

fricas [A] time = 0.41, size = 248, normalized size = 2.56

$$\left[-\frac{\left(\left(2\,Bbc-3\,Ac^2\right)x^3+\left(2\,Bb^2-3\,Abc\right)x^2\right)\sqrt{b}\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(Ab^2-\left(2\,Bb^2-3\,Abc\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{2\left(b^3cx^3+b^4x^2\right)}, \frac{\left(\left(2\,Bbc-3\,Ac^2\right)x^3+\left(2\,Bb^2-3\,Abc\right)x^2\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(Ab^2-\left(2\,Bb^2-3\,Abc\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{b^3cx^3+b^4x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(((2*B*b*c - 3*A*c^2)*x^3 + (2*B*b^2 - 3*A*b*c)*x^2)*sqrt(b)*log(-(c*
x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(A*b^2 - (2*B*b
^2 - 3*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*c*x^3 + b^4*x^2), (((2*B*b
*c - 3*A*c^2)*x^3 + (2*B*b^2 - 3*A*b*c)*x^2)*sqrt(-b)*arctan(sqrt(-b)*sqrt(
x)/sqrt(c*x^2 + b*x)) - (A*b^2 - (2*B*b^2 - 3*A*b*c)*x)*sqrt(c*x^2 + b*x)*s
qrt(x))/(b^3*c*x^3 + b^4*x^2)]
```

giac [A] time = 0.24, size = 87, normalized size = 0.90

$$\frac{(2\,Bb-3\,Ac)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{2\,(cx+b)Bb-2\,Bb^2-3\,(cx+b)Ac+2\,Abc}{\left((cx+b)^{\frac{3}{2}}-\sqrt{cx+b}\,b\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] (2*B*b - 3*A*c)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2) + (2*(c*x + b
)*B*b - 2*B*b^2 - 3*(c*x + b)*A*c + 2*A*b*c)/(((c*x + b)^(3/2) - sqrt(c*x +
 b)*b)*b^2)
```

maple [A] time = 0.09, size = 94, normalized size = 0.97

$$\frac{\sqrt{(cx+b)\,x}\,\left(3\sqrt{cx+b}\,\,Acx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2\sqrt{cx+b}\,\,Bbx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3A\sqrt{b}\,\,cx+2B\,b^{\frac{3}{2}}x-A\,b^{\frac{3}{2}}\right)}{(cx+b)\,b^{\frac{5}{2}}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x)
```

```
[Out] ((c*x+b)*x)^(1/2)/x^(3/2)*(3*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))
*x*c-2*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x*b+2*B*b^(3/2)*x-3*A
*b^(1/2)*x*c-A*b^(3/2))/(c*x+b)/b^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*sqrt(x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,\left(c\,x^2+b\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x}\,\left(x\,(b+cx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x)*(x*(b + c*x))**(3/2)), x)
```

3.239 $\int \frac{A+Bx}{x^{3/2}(bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=140

$$\frac{3c(4bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{7/2}}-\frac{3c\sqrt{x}\,(4bB-5Ac)}{4b^3\sqrt{bx+cx^2}}-\frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}}-\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.11, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$-\frac{3c\sqrt{x}\,(4bB-5Ac)}{4b^3\sqrt{bx+cx^2}}-\frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}}+\frac{3c(4bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{7/2}}-\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -A/(2*b*x^(3/2)*Sqrt[b*x + c*x^2]) - (4*b*B - 5*A*c)/(4*b^2*Sqrt[x]*Sqrt[b*
x + c*x^2]) - (3*c*(4*b*B - 5*A*c)*Sqrt[x])/(4*b^3*Sqrt[b*x + c*x^2]) + (3*
c*(4*b*B - 5*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(4*b^(7/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} + \frac{\left(\frac{1}{2}(bB-2Ac)-\frac{3}{2}(-bB+Ac)\right)\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{2b}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{(3c(4bB-5Ac))\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{8b^2}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{3c(4bB-5Ac)\sqrt{x}}{4b^3\sqrt{bx+cx^2}} - \frac{(3c(4bB-5Ac))\int \frac{}{\sqrt{x}\ \cdots}}{8b^3}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{3c(4bB-5Ac)\sqrt{x}}{4b^3\sqrt{bx+cx^2}} - \frac{(3c(4bB-5Ac))\,\mathrm{Subst}\cdots}{4\cdots}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{3c(4bB-5Ac)\sqrt{x}}{4b^3\sqrt{bx+cx^2}} + \frac{3c(4bB-5Ac)\tanh^{-1}\cdots}{4b^{7/2}}$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.43

$$\frac{cx^2(5Ac-4bB)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};\frac{cx}{b}+1\right)-Ab^2}{2b^3x^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b^2) + c*(-4*b*B + 5*A*c)*x^2*Hypergeometric2F1[-1/2, 2, 1/2, 1 + (c*x
)/b])/(2*b^3*x^(3/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 1.35, size = 116, normalized size = 0.83

$$\frac{3\left(4bBc-5Ac^2\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{4b^{7/2}} + \frac{\sqrt{bx+cx^2}\left(-2Ab^2+5Abcx+15Ac^2x^2-4b^2Bx-12bBcx^2\right)}{4b^3x^{5/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-2*A*b^2 - 4*b^2*B*x + 5*A*b*c*x - 12*b*B*c*x^2 + 15*A*
c^2*x^2))/(4*b^3*x^(5/2)*(b + c*x)) + (3*(4*b*B*c - 5*A*c^2)*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(4*b^(7/2))
```

fricas [A] time = 0.42, size = 304, normalized size = 2.17

$$\left[-\frac{3\left(\left(4Bbc^2-5Ac^3\right)x^4+\left(4Bb^2c-5Abc^2\right)x^3\right)\sqrt{b}\log\left(-\frac{cx^2+2bx-2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(2Ab^3+3\left(4Bb^2c-5Abc^2\right)x^2+\left(4Bb^3-5Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{8\left(b^4cx^4+b^5x^3\right)}, -\frac{3\left(\left(4Bbc^2-5Ac^3\right)x^4+\left(4Bb^2c-5Abc^2\right)x^3\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(2Ab^3+3\left(4Bb^2c-5Abc^2\right)x^2+\left(4Bb^3-5Ab^2c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{4\left(b^4cx^4+b^5x^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*((4*B*b*c^2 - 5*A*c^3)*x^4 + (4*B*b^2*c - 5*A*b*c^2)*x^3)*sqrt(b)*
log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*A*b^
3 + 3*(4*B*b^2*c - 5*A*b*c^2)*x^2 + (4*B*b^3 - 5*A*b^2*c)*x)*sqrt(c*x^2 + b
*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3), -1/4*(3*((4*B*b*c^2 - 5*A*c^3)*x^4 + (4
*B*b^2*c - 5*A*b*c^2)*x^3)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*
x)) + (2*A*b^3 + 3*(4*B*b^2*c - 5*A*b*c^2)*x^2 + (4*B*b^3 - 5*A*b^2*c)*x)*s
qrt(c*x^2 + b*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3)]
```

giac [A] time = 0.28, size = 125, normalized size = 0.89

$$-\frac{3\left(4 Bbc - 5 Ac^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{4\sqrt{-b}\,b^3} - \frac{2\left(Bbc - Ac^2\right)}{\sqrt{cx+b}\,b^3} - \frac{4\,(cx+b)^{\frac{3}{2}}Bbc - 4\sqrt{cx+b}\,Bb^2c - 7\,(cx+b)^{\frac{3}{2}}Ac^2 + 9\sqrt{cx+b}\,Abc^2}{4\,b^3c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -3/4*(4*B*b*c - 5*A*c^2)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3) - 2*
(B*b*c - A*c^2)/(sqrt(c*x + b)*b^3) - 1/4*(4*(c*x + b)^(3/2)*B*b*c - 4*sqrt
(c*x + b)*B*b^2*c - 7*(c*x + b)^(3/2)*A*c^2 + 9*sqrt(c*x + b)*A*b*c^2)/(b^3
*c^2*x^2)
```

maple [A] time = 0.09, size = 124, normalized size = 0.89

$$-\frac{\sqrt{(cx+b)\,x}\,\left(15\sqrt{cx+b}\;A\,c^2x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) - 12\sqrt{cx+b}\;Bbc\,x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) - 15A\sqrt{b}\;c^2x^2 + 12B\,b^{\frac{3}{2}}c\,x^2 - 5A\,b^{\frac{3}{2}}cx + 4B\,b^{\frac{5}{2}}x + 2A\,b^{\frac{5}{2}}\right)}{4\,(cx+b)\,b^{\frac{7}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -1/4/x^(5/2)*((c*x+b)*x)^(1/2)*(15*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^
(1/2))*x^2*c^2-12*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c+4*
B*b^(5/2)*x+12*B*b^(3/2)*x^2*c+2*A*b^(5/2)-5*A*b^(3/2)*x*c-15*A*b^(1/2)*x^2
*c^2)/(c*x+b)/b^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{3}{2}} x^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B\,x}{x^{3/2}\,\left(c\,x^2 + b\,x\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{3}{2}}\,(x\,(b + cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*(x*(b + c*x))**(3/2)), x)
```

3.240 $\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{5c^2(6bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{9/2}}+\frac{5c^2\sqrt{x}\,(6bB-7Ac)}{8b^4\sqrt{bx+cx^2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}-\frac{A}{3bx^{5/2}\sqrt{b}}$$

Rubi [A] time = 0.15, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$\frac{5c^2\sqrt{x}\,(6bB-7Ac)}{8b^4\sqrt{bx+cx^2}}-\frac{5c^2(6bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{9/2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}-\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -A/(3*b*x^(5/2)*Sqrt[b*x + c*x^2]) - (6*b*B - 7*A*c)/(12*b^2*x^(3/2)*Sqrt[b
*x + c*x^2]) + (5*c*(6*b*B - 7*A*c))/(24*b^3*Sqrt[x]*Sqrt[b*x + c*x^2]) + (
5*c^2*(6*b*B - 7*A*c)*Sqrt[x])/(8*b^4*Sqrt[b*x + c*x^2]) - (5*c^2*(6*b*B -
7*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(9/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}} + \frac{\left(\frac{1}{2}(bB-2Ac)-\frac{5}{2}(-bB+Ac)\right)\int \frac{1}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx}{3b}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}} - \frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}} - \frac{(5c(6bB-7Ac))\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{24b^2}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}} - \frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}} + \frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}} + \frac{\left(5c^2(6bB-7Ac)\right)\int}{16b^3}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}} - \frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}} + \frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}} + \frac{5c^2(6bB-7Ac)\sqrt{x}}{8b^4\sqrt{bx+cx^2}}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}} - \frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}} + \frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}} + \frac{5c^2(6bB-7Ac)\sqrt{x}}{8b^4\sqrt{bx+cx^2}}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}} - \frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}} + \frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}} + \frac{5c^2(6bB-7Ac)\sqrt{x}}{8b^4\sqrt{bx+cx^2}}$$

Mathematica [C] time = 0.02, size = 62, normalized size = 0.35

$$\frac{c^2x^3(6bB-7Ac)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};\frac{cx}{b}+1\right)-Ab^3}{3b^4x^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b^3) + c^2*(6*b*B - 7*A*c)*x^3*Hypergeometric2F1[-1/2, 3, 1/2, 1 + (c*
x)/b])/(3*b^4*x^(5/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 1.93, size = 142, normalized size = 0.79

$$\frac{\sqrt{bx+cx^2}\left(-8Ab^3+14Ab^2cx-35Abc^2x^2-105Ac^3x^3-12b^3Bx+30b^2Bcx^2+90bBc^2x^3\right)}{24b^4x^{7/2}(b+cx)} - \frac{5\left(6bBc^2-7Ac^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{8b^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^3 - 12*b^3*B*x + 14*A*b^2*c*x + 30*b^2*B*c*x^2 -
 35*A*b*c^2*x^2 + 90*b*B*c^2*x^3 - 105*A*c^3*x^3))/(24*b^4*x^(7/2)*(b + c*x
)) - (5*(6*b*B*c^2 - 7*A*c^3)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])
/(8*b^(9/2))
```

fricas [A] time = 0.42, size = 359, normalized size = 2.01

$$\left[-\frac{15\left(\left(6Bbc^3-7Ac^4\right)x^5+\left(6Bb^2c^2-7Abc^3\right)x^4\right)\sqrt{b}\log\left(-\frac{cx^2+2bx+2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(8Ab^4-15\left(6Bb^2c^2-7Abc^3\right)x^3-5\left(6Bb^3c-7Ab^2c^2\right)x^2+2\left(6Bb^4-7Ab^3c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{48\left(b^5cx^5+b^6x^4\right)},\ \frac{15\left(\left(6Bbc^3-7Ac^4\right)x^5+\left(6Bb^2c^2-7Abc^3\right)x^4\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(8Ab^4-15\left(6Bb^2c^2-7Abc^3\right)x^3-5\left(6Bb^3c-7Ab^2c^2\right)x^2+2\left(6Bb^4-7Ab^3c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{24\left(b^5cx^5+b^6x^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(15*((6*B*b*c^3 - 7*A*c^4)*x^5 + (6*B*b^2*c^2 - 7*A*b*c^3)*x^4)*sqrt
(b)*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*
A*b^4 - 15*(6*B*b^2*c^2 - 7*A*b*c^3)*x^3 - 5*(6*B*b^3*c - 7*A*b^2*c^2)*x^2
+ 2*(6*B*b^4 - 7*A*b^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^5*c*x^5 + b^6*x^
4), 1/24*(15*((6*B*b*c^3 - 7*A*c^4)*x^5 + (6*B*b^2*c^2 - 7*A*b*c^3)*x^4)*sq
rt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) - (8*A*b^4 - 15*(6*B*b^2*
c^2 - 7*A*b*c^3)*x^3 - 5*(6*B*b^3*c - 7*A*b^2*c^2)*x^2 + 2*(6*B*b^4 - 7*A*b
^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^5*c*x^5 + b^6*x^4)]
```

giac [A] time = 0.33, size = 165, normalized size = 0.92

$$\frac{5\left(6Bbc^2-7Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{8\sqrt{-b}\,b^4}+\frac{2\left(Bbc^2-Ac^3\right)}{\sqrt{cx+b}\,b^4}+\frac{42\,(cx+b)^{\frac{5}{2}}Bbc^2-96\,(cx+b)^{\frac{3}{2}}Bb^2c^2+54\sqrt{cx+b}\,Bb^3c^2-57\,(cx+b)^{\frac{5}{2}}Ac^3+136\,(cx+b)^{\frac{3}{2}}Abc^3-87\sqrt{cx+b}\,Ab^2c^3}{24\,b^4c^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 5/8*(6*B*b*c^2 - 7*A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^4) + 2
*(B*b*c^2 - A*c^3)/(sqrt(c*x + b)*b^4) + 1/24*(42*(c*x + b)^(5/2)*B*b*c^2 -
 96*(c*x + b)^(3/2)*B*b^2*c^2 + 54*sqrt(c*x + b)*B*b^3*c^2 - 57*(c*x + b)^(
5/2)*A*c^3 + 136*(c*x + b)^(3/2)*A*b*c^3 - 87*sqrt(c*x + b)*A*b^2*c^3)/(b^4
*c^3*x^3)
```

maple [A] time = 0.11, size = 150, normalized size = 0.84

$$\frac{\sqrt{(cx+b)\,x}\,\left(105\sqrt{cx+b}\,A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-90\sqrt{cx+b}\,Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-105A\sqrt{b}\,c^3x^3+90B\,b^{\frac{3}{2}}c^2x^3-35A\,b^{\frac{3}{2}}c^2x^2+30B\,b^{\frac{5}{2}}c\,x^2+14A\,b^{\frac{5}{2}}cx-12B\,b^{\frac{7}{2}}x-8A\,b^{\frac{7}{2}}\right)}{24\,(cx+b)\,b^{\frac{9}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/24/x^(7/2)*((c*x+b)*x)^(1/2)*(105*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b
^(1/2))*x^3*c^3-90*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2
-12*B*b^(7/2)*x+30*B*b^(5/2)*x^2*c+90*B*b^(3/2)*x^3*c^2-8*A*b^(7/2)+14*A*b^
(5/2)*x*c-35*A*b^(3/2)*x^2*c^2-105*A*b^(1/2)*x^3*c^3)/(c*x+b)/b^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{5/2}\,\left(c\,x^2+b\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{5}{2}} \left(x \left(b + cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**(5/2)*(x*(b + c*x))**(3/2)), x)
```

3.241 $\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=216

$$\frac{35c^3(8bB-9Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{11/2}}-\frac{35c^3\sqrt{x}\,(8bB-9Ac)}{64b^5\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{8b}{24b^2x^{5}}$$

Rubi [A] time = 0.19, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$-\frac{35c^3\sqrt{x}\,(8bB-9Ac)}{64b^5\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}+\frac{35c^3(8bB-9Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{11/2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}-\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -A/(4*b*x^(7/2)*Sqrt[b*x + c*x^2]) - (8*b*B - 9*A*c)/(24*b^2*x^(5/2)*Sqrt[b
*x + c*x^2]) + (7*c*(8*b*B - 9*A*c))/(96*b^3*x^(3/2)*Sqrt[b*x + c*x^2]) - (
35*c^2*(8*b*B - 9*A*c))/(192*b^4*Sqrt[x]*Sqrt[b*x + c*x^2]) - (35*c^3*(8*b*
B - 9*A*c)*Sqrt[x])/(64*b^5*Sqrt[b*x + c*x^2]) + (35*c^3*(8*b*B - 9*A*c)*Ar
cTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(64*b^(11/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} + \frac{\left(\frac{1}{2}(bB-2Ac)-\frac{7}{2}(-bB+Ac)\right)\int \frac{1}{x^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx}{4b}$$

$$= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} - \frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}} - \frac{(7c(8bB-9Ac))\int \frac{1}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx}{48b^2}$$

$$= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} - \frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}} + \frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}} + \frac{\left(35c^2(8bB-9Ac)\right)\int}{192b}$$

$$= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} - \frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}} + \frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}} - \frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}$$

$$= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} - \frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}} + \frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}} - \frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}$$

$$= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} - \frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}} + \frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}} - \frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}$$

$$= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}} - \frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}} + \frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}} - \frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}$$

Mathematica [C] time = 0.02, size = 62, normalized size = 0.29

$$\frac{c^3x^4(9Ac-8bB)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};\frac{cx}{b}+1\right)-Ab^4}{4b^5x^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b^4) + c^3*(-8*b*B + 9*A*c)*x^4*Hypergeometric2F1[-1/2, 4, 1/2, 1 + (c
*x)/b])/(4*b^5*x^(7/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 2.68, size = 166, normalized size = 0.77

$$\frac{35\left(8bBc^3-9Ac^4\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{64b^{11/2}} + \frac{\sqrt{bx+cx^2}\left(-48Ab^4+72Ab^3cx-126Ab^2c^2x^2+315Abc^3x^3+945Ac^4x^4-64b^4Bx+112b^3Bcx^2-280b^2Bc^2x^3-840bBc^3x^4\right)}{192b^5x^{9/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-48*A*b^4 - 64*b^4*B*x + 72*A*b^3*c*x + 112*b^3*B*c*x^2
 - 126*A*b^2*c^2*x^2 - 280*b^2*B*c^2*x^3 + 315*A*b*c^3*x^3 - 840*b*B*c^3*x^
4 + 945*A*c^4*x^4))/(192*b^5*x^(9/2)*(b + c*x)) + (35*(8*b*B*c^3 - 9*A*c^4)
*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(64*b^(11/2))
```

fricas [A] time = 0.44, size = 406, normalized size = 1.88

$$\left[-\frac{105\left(\left(8\,Bbc^4-9\,Ac^5\right)x^6+\left(8\,Bb^2c^3-9\,Abc^4\right)x^5\right)\sqrt{b}\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(48\,Ab^5+105\left(8\,Bb^2c^3-9\,Abc^4\right)x^4+35\left(8\,Bb^3c^2-9\,Ab^2c^3\right)x^3-14\left(8\,Bb^4c-9\,Ab^3c^2\right)x^2+8\left(8\,Bb^5-9\,Ab^4c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{384\left(b^6cx^6+b^7x^5\right)},\ -\frac{105\left(\left(8\,Bbc^4-9\,Ac^5\right)x^6+\left(8\,Bb^2c^3-9\,Abc^4\right)x^5\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(48\,Ab^5+105\left(8\,Bb^2c^3-9\,Abc^4\right)x^4+35\left(8\,Bb^3c^2-9\,Ab^2c^3\right)x^3-14\left(8\,Bb^4c-9\,Ab^3c^2\right)x^2+8\left(8\,Bb^5-9\,Ab^4c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{192\left(b^6cx^6+b^7x^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(105*((8*B*b*c^4 - 9*A*c^5)*x^6 + (8*B*b^2*c^3 - 9*A*b*c^4)*x^5)*sq
rt(b)*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(
48*A*b^5 + 105*(8*B*b^2*c^3 - 9*A*b*c^4)*x^4 + 35*(8*B*b^3*c^2 - 9*A*b^2*c^
3)*x^3 - 14*(8*B*b^4*c - 9*A*b^3*c^2)*x^2 + 8*(8*B*b^5 - 9*A*b^4*c)*x)*sqrt
(c*x^2 + b*x)*sqrt(x))/(b^6*c*x^6 + b^7*x^5), -1/192*(105*((8*B*b*c^4 - 9*A
*c^5)*x^6 + (8*B*b^2*c^3 - 9*A*b*c^4)*x^5)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)
/sqrt(c*x^2 + b*x)) + (48*A*b^5 + 105*(8*B*b^2*c^3 - 9*A*b*c^4)*x^4 + 35*(8
*B*b^3*c^2 - 9*A*b^2*c^3)*x^3 - 14*(8*B*b^4*c - 9*A*b^3*c^2)*x^2 + 8*(8*B*b
^5 - 9*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^6*c*x^6 + b^7*x^5)]
```

giac [A] time = 0.34, size = 197, normalized size = 0.91

$$-\frac{35\left(8\,Bbc^3-9\,Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{64\,\sqrt{-b}\,b^5}-\frac{2\left(Bbc^3-Ac^4\right)}{\sqrt{cx+b}\,b^5}-\frac{456\,(cx+b)^{\frac{7}{2}}Bbc^3-1544\,(cx+b)^{\frac{5}{2}}Bb^2c^3+1784\,(cx+b)^{\frac{3}{2}}Bb^3c^3-696\,\sqrt{cx+b}\,Bb^4c^3-561\,(cx+b)^{\frac{7}{2}}Ac^4+1929\,(cx+b)^{\frac{5}{2}}Abc^4-2295\,(cx+b)^{\frac{3}{2}}Ab^2c^4+975\,\sqrt{cx+b}\,Ab^3c^4}{192\,b^5c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -35/64*(8*B*b*c^3 - 9*A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^5)
- 2*(B*b*c^3 - A*c^4)/(sqrt(c*x + b)*b^5) - 1/192*(456*(c*x + b)^(7/2)*B*b*
c^3 - 1544*(c*x + b)^(5/2)*B*b^2*c^3 + 1784*(c*x + b)^(3/2)*B*b^3*c^3 - 696
*sqrt(c*x + b)*B*b^4*c^3 - 561*(c*x + b)^(7/2)*A*c^4 + 1929*(c*x + b)^(5/2)
*A*b*c^4 - 2295*(c*x + b)^(3/2)*A*b^2*c^4 + 975*sqrt(c*x + b)*A*b^3*c^4)/(b
^5*c^4*x^4)
```

maple [A] time = 0.09, size = 174, normalized size = 0.81

$$-\frac{\sqrt{(cx+b)x}\,\left(945\sqrt{cx+b}\,Ac^4x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-840\sqrt{cx+b}\,Bbc^3x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-945A\sqrt{b}\,c^4x^4+840Bb^{\frac{3}{2}}c^3x^4-315Ab^{\frac{3}{2}}c^3x^3+280Bb^{\frac{5}{2}}c^2x^3+126Ab^{\frac{5}{2}}c^2x^2-112Bb^{\frac{7}{2}}cx^2-72Ab^{\frac{7}{2}}cx+64Bb^{\frac{9}{2}}x+48Ab^{\frac{9}{2}}\right)}{192\,(cx+b)\,b^{\frac{11}{2}}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -1/192/x^(9/2)*((c*x+b)*x)^(1/2)*(945*A*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x
+b)^(1/2)*x^4*c^4+64*B*b^(9/2)*x-112*B*b^(7/2)*x^2*c+280*B*b^(5/2)*x^3*c^2+
840*B*b^(3/2)*x^4*c^3-840*B*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x+b)^(1/2)*x^
4*b*c^3+48*A*b^(9/2)-72*A*b^(7/2)*x*c+126*A*b^(5/2)*x^2*c^2-315*A*b^(3/2)*x
^3*c^3-945*A*b^(1/2)*x^4*c^4)/(c*x+b)/b^(11/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{7/2}\,{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x)
[Out] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x)**(3/2),x)
[Out] Timed out
```

3.242 $\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=180

$$\frac{32b^2\sqrt{x}\,(8bB-5Ac)}{15c^5\sqrt{bx+cx^2}}+\frac{16bx^{3/2}(8bB-5Ac)}{15c^4\sqrt{bx+cx^2}}-\frac{4x^{5/2}(8bB-5Ac)}{15c^3\sqrt{bx+cx^2}}+\frac{2x^{7/2}(8bB-5Ac)}{15bc^2\sqrt{bx+cx^2}}-\frac{2x^{11/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.16, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{32b^2\sqrt{x}\,(8bB-5Ac)}{15c^5\sqrt{bx+cx^2}}+\frac{2x^{7/2}(8bB-5Ac)}{15bc^2\sqrt{bx+cx^2}}-\frac{4x^{5/2}(8bB-5Ac)}{15c^3\sqrt{bx+cx^2}}+\frac{16bx^{3/2}(8bB-5Ac)}{15c^4\sqrt{bx+cx^2}}-\frac{2x^{11/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(11/2))/(3*b*c*(b*x + c*x^2)^(3/2)) + (32*b^2*(8*b*B - 5*
A*c)*Sqrt[x])/(15*c^5*Sqrt[b*x + c*x^2]) + (16*b*(8*b*B - 5*A*c)*x^(3/2))/(
15*c^4*Sqrt[b*x + c*x^2]) - (4*(8*b*B - 5*A*c)*x^(5/2))/(15*c^3*Sqrt[b*x +
c*x^2]) + (2*(8*b*B - 5*A*c)*x^(7/2))/(15*b*c^2*Sqrt[b*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{1}{3}\left(\frac{5A}{b}-\frac{8B}{c}\right)\int \frac{x^{9/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2(8bB-5Ac)x^{7/2}}{15bc^2\sqrt{bx+cx^2}} - \frac{(2(8bB-5Ac))\int \frac{x^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{5c^2}$$

$$= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{4(8bB-5Ac)x^{5/2}}{15c^3\sqrt{bx+cx^2}} + \frac{2(8bB-5Ac)x^{7/2}}{15bc^2\sqrt{bx+cx^2}} + \frac{(8b(8bB-5Ac))\int \frac{x^{5/2}}{\left(bx+cx^2\right)^{3/}}}{15c^3}$$

$$= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{16b(8bB-5Ac)x^{3/2}}{15c^4\sqrt{bx+cx^2}} - \frac{4(8bB-5Ac)x^{5/2}}{15c^3\sqrt{bx+cx^2}} + \frac{2(8bB-5Ac)x^{7/2}}{15bc^2\sqrt{bx+cx^2}} - \frac{(16b}{}$$

$$= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{32b^2(8bB-5Ac)\sqrt{x}}{15c^5\sqrt{bx+cx^2}} + \frac{16b(8bB-5Ac)x^{3/2}}{15c^4\sqrt{bx+cx^2}} - \frac{4(8bB-5Ac)x^{5/2}}{15c^3\sqrt{bx+cx^2}} + \frac{2}{1}$$

Mathematica [A] time = 0.07, size = 93, normalized size = 0.52

$$\frac{2x^{3/2}\left(b^3(192Bcx-80Ac)+24b^2c^2x(2Bx-5A)-2bc^3x^2(15A+4Bx)+c^4x^3(5A+3Bx)+128b^4B\right)}{15c^5(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(128*b^4*B + 24*b^2*c^2*x*(-5*A + 2*B*x) + c^4*x^3*(5*A + 3*B*x)
 - 2*b*c^3*x^2*(15*A + 4*B*x) + b^3*(-80*A*c + 192*B*c*x)))/(15*c^5*(x*(b +
 c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.97, size = 107, normalized size = 0.59

$$\frac{2x^{3/2}\left(-80Ab^3c-120Ab^2c^2x-30Abc^3x^2+5Ac^4x^3+128b^4B+192b^3Bcx+48b^2Bc^2x^2-8bBc^3x^3+3Bc^4x^4\right)}{15c^5\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(128*b^4*B - 80*A*b^3*c + 192*b^3*B*c*x - 120*A*b^2*c^2*x + 48*b
^2*B*c^2*x^2 - 30*A*b*c^3*x^2 - 8*b*B*c^3*x^3 + 5*A*c^4*x^3 + 3*B*c^4*x^4))
/(15*c^5*(b*x + c*x^2)^(3/2))
```

fricas [A] time = 0.41, size = 127, normalized size = 0.71

$$\frac{2\left(3\,Bc^4x^4+128\,Bb^4-80\,Ab^3c-\left(8\,Bbc^3-5\,Ac^4\right)x^3+6\left(8\,Bb^2c^2-5\,Abc^3\right)x^2+24\left(8\,Bb^3c-5\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{15\left(c^7x^3+2\,bc^6x^2+b^2c^5x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^4*x^4 + 128*B*b^4 - 80*A*b^3*c - (8*B*b*c^3 - 5*A*c^4)*x^3 + 6*
(8*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 24*(8*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(c*x^2
+ b*x)*sqrt(x)/(c^7*x^3 + 2*b*c^6*x^2 + b^2*c^5*x)
```

giac [A] time = 0.21, size = 147, normalized size = 0.82

$$-\frac{32\left(8\,Bb^3-5\,Ab^2c\right)}{15\,\sqrt{b}\,c^5}+\frac{2\left(12\,(cx+b)Bb^3-Bb^4-9\,(cx+b)Ab^2c+Ab^3c\right)}{3\,(cx+b)^{\frac{3}{2}}c^5}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}Bc^{20}-20\,(cx+b)^{\frac{3}{2}}Bbc^{20}+90\,\sqrt{cx+b}\,Bb^2c^{20}+5\,(cx+b)^{\frac{3}{2}}Ac^{21}-45\,\sqrt{cx+b}\,Abc^{21}\right)}{15\,c^{25}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -32/15*(8*B*b^3 - 5*A*b^2*c)/(sqrt(b)*c^5) + 2/3*(12*(c*x + b)*B*b^3 - B*b^
4 - 9*(c*x + b)*A*b^2*c + A*b^3*c)/((c*x + b)^(3/2)*c^5) + 2/15*(3*(c*x + b
)^(5/2)*B*c^20 - 20*(c*x + b)^(3/2)*B*b*c^20 + 90*sqrt(c*x + b)*B*b^2*c^20
+ 5*(c*x + b)^(3/2)*A*c^21 - 45*sqrt(c*x + b)*A*b*c^21)/c^25
```

maple [A] time = 0.05, size = 107, normalized size = 0.59

$$-\frac{2\,(cx+b)\left(-3B\,x^4c^4-5A\,c^4x^3+8Bb\,c^3x^3+30Ab\,c^3x^2-48B\,b^2c^2x^2+120A\,b^2c^2x-192B\,b^3cx+80A\,b^3c-128b^4B\right)x^{\frac{5}{2}}}{15\left(c\,x^2+bx\right)^{\frac{5}{2}}c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/15*(c*x+b)*(-3*B*c^4*x^4-5*A*c^4*x^3+8*B*b*c^3*x^3+30*A*b*c^3*x^2-48*B*b
^2*c^2*x^2+120*A*b^2*c^2*x-192*B*b^3*c*x+80*A*b^3*c-128*B*b^4)*x^(5/2)/c^5/
(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(\left(3\,Bc^3x^2+Bbc^2x-2\,Bb^2c\right)x^4-\left(6\,Bb^3+\left(6\,Bbc^2-5\,Ac^3\right)x^2+\left(12\,Bb^2c-5\,Abc^2\right)x\right)x^3\right)\sqrt{cx+b}}{15\left(c^6x^4+3\,bc^5x^3+3\,b^2c^4x^2+b^3c^3x\right)}-\int-\frac{2\left(4\,Bb^4+\left(9\,Bb^2c^2-5\,Abc^3\right)x^2+\left(13\,Bb^3c-5\,Ab^2c^2\right)x\right)\sqrt{cx+b}\,x^3}{5\left(c^7x^6+4\,bc^6x^5+6\,b^2c^5x^4+4\,b^3c^4x^3+b^4c^3x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*B*c^3*x^2 + B*b*c^2*x - 2*B*b^2*c)*x^4 - (6*B*b^3 + (6*B*b*c^2 - 5
*A*c^3)*x^2 + (12*B*b^2*c - 5*A*b*c^2)*x)*x^3)*sqrt(c*x + b)/(c^6*x^4 + 3*b
*c^5*x^3 + 3*b^2*c^4*x^2 + b^3*c^3*x) - integrate(-2/5*(4*B*b^4 + (9*B*b^2*
c^2 - 5*A*b*c^3)*x^2 + (13*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(c*x + b)*x^3/(c^7
*x^6 + 4*b*c^6*x^5 + 6*b^2*c^5*x^4 + 4*b^3*c^4*x^3 + b^4*c^3*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{11/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.243 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=143

$$-\frac{16b\sqrt{x}\,(2bB-Ac)}{3c^4\sqrt{bx+cx^2}}-\frac{8x^{3/2}(2bB-Ac)}{3c^3\sqrt{bx+cx^2}}+\frac{2x^{5/2}(2bB-Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{9/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2x^{5/2}(2bB-Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{8x^{3/2}(2bB-Ac)}{3c^3\sqrt{bx+cx^2}}-\frac{16b\sqrt{x}\,(2bB-Ac)}{3c^4\sqrt{bx+cx^2}}-\frac{2x^{9/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(9/2))/(3*b*c*(b*x + c*x^2)^(3/2)) - (16*b*(2*b*B - A*c)*
Sqrt[x])/(3*c^4*Sqrt[b*x + c*x^2]) - (8*(2*b*B - A*c)*x^(3/2))/(3*c^3*Sqrt[
b*x + c*x^2]) + (2*(2*b*B - A*c)*x^(5/2))/(3*b*c^2*Sqrt[b*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{\left(2\left(\frac{9}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{x^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2(2bB-Ac)x^{5/2}}{3bc^2\sqrt{bx+cx^2}} - \frac{(4(2bB-Ac))\int \frac{x^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3c^2}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{8(2bB-Ac)x^{3/2}}{3c^3\sqrt{bx+cx^2}} + \frac{2(2bB-Ac)x^{5/2}}{3bc^2\sqrt{bx+cx^2}} + \frac{(8b(2bB-Ac))\int \frac{x^{3/2}}{\left(bx+cx^2\right)^{3/2}}}{3c^3}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{16b(2bB-Ac)\sqrt{x}}{3c^4\sqrt{bx+cx^2}} - \frac{8(2bB-Ac)x^{3/2}}{3c^3\sqrt{bx+cx^2}} + \frac{2(2bB-Ac)x^{5/2}}{3bc^2\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.49

$$\frac{2x^{3/2}\left(8b^2c(A-3Bx)-6bc^2x(Bx-2A)+c^3x^2(3A+Bx)-16b^3B\right)}{3c^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(-16*b^3*B + 8*b^2*c*(A - 3*B*x) - 6*b*c^2*x*(-2*A + B*x) + c^3*
x^2*(3*A + B*x)))/(3*c^4*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.85, size = 82, normalized size = 0.57

$$\frac{2x^{3/2}\left(8Ab^2c+12Abc^2x+3Ac^3x^2-16b^3B-24b^2Bcx-6bBc^2x^2+Bc^3x^3\right)}{3c^4\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(-16*b^3*B + 8*A*b^2*c - 24*b^2*B*c*x + 12*A*b*c^2*x - 6*b*B*c^2
*x^2 + 3*A*c^3*x^2 + B*c^3*x^3))/(3*c^4*(b*x + c*x^2)^(3/2))
```

fricas [A] time = 0.39, size = 102, normalized size = 0.71

$$\frac{2\left(Bc^3x^3-16\,Bb^3+8\,Ab^2c-3\left(2\,Bbc^2-Ac^3\right)x^2-12\left(2\,Bb^2c-Abc^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^6x^3+2\,bc^5x^2+b^2c^4x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c^3*x^3 - 16*B*b^3 + 8*A*b^2*c - 3*(2*B*b*c^2 - A*c^3)*x^2 - 12*(2*B
*b^2*c - A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^6*x^3 + 2*b*c^5*x^2 + b^2
*c^4*x)
```

giac [A] time = 0.20, size = 112, normalized size = 0.78

$$\frac{16\left(2\,Bb^2-Abc\right)}{3\,\sqrt{b}\,c^4} - \frac{2\left(9\,(cx+b)Bb^2-Bb^3-6\,(cx+b)Abc+Ab^2c\right)}{3\,(cx+b)^{\frac{3}{2}}c^4} + \frac{2\left((cx+b)^{\frac{3}{2}}Bc^8-9\,\sqrt{cx+b}\,Bbc^8+3\,\sqrt{cx+b}\,Ac^9\right)}{3\,c^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 16/3*(2*B*b^2 - A*b*c)/(sqrt(b)*c^4) - 2/3*(9*(c*x + b)*B*b^2 - B*b^3 - 6*(
c*x + b)*A*b*c + A*b^2*c)/((c*x + b)^(3/2)*c^4) + 2/3*((c*x + b)^(3/2)*B*c^
8 - 9*sqrt(c*x + b)*B*b*c^8 + 3*sqrt(c*x + b)*A*c^9)/c^12
```

maple [A] time = 0.05, size = 82, normalized size = 0.57

$$\frac{2\left(cx+b\right)\left(B\,c^{3}x^{3}+3A\,c^{3}x^{2}-6Bb\,c^{2}x^{2}+12Ab\,c^{2}x-24B\,b^{2}cx+8A\,b^{2}c-16b^{3}B\right)x^{\frac{5}{2}}}{3\left(c\,x^{2}+bx\right)^{\frac{5}{2}}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(c*x+b)*(B*c^3*x^3+3*A*c^3*x^2-6*B*b*c^2*x^2+12*A*b*c^2*x-24*B*b^2*c*x+
8*A*b^2*c-16*B*b^3)*x^(5/2)/c^4/(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(Bcx+Bb\right)\sqrt{cx+b}\,x^{3}}{3\left(c^{4}x^{3}+3\,bc^{3}x^{2}+3\,b^{2}c^{2}x+b^{3}c\right)}+\int\frac{\left(Abcx^{3}-\left(2\,Bb^{2}+\left(2\,Bbc-Ac^{2}\right)x\right)x^{3}\right)\sqrt{cx+b}}{c^{5}x^{5}+4\,bc^{4}x^{4}+6\,b^{2}c^{3}x^{3}+4\,b^{3}c^{2}x^{2}+b^{4}cx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c*x + B*b)*sqrt(c*x + b)*x^3/(c^4*x^3 + 3*b*c^3*x^2 + 3*b^2*c^2*x +
b^3*c) + integrate((A*b*c*x^3 - (2*B*b^2 + (2*B*b*c - A*c^2)*x)*x^3)*sqrt(c
*x + b)/(c^5*x^5 + 4*b*c^4*x^4 + 6*b^2*c^3*x^3 + 4*b^3*c^2*x^2 + b^4*c*x),
x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^{9/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.244 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=108

$$\frac{4\sqrt{x}\,(4bB-Ac)}{3c^3\sqrt{bx+cx^2}}+\frac{2x^{3/2}(4bB-Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{7/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.09, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2x^{3/2}(4bB-Ac)}{3bc^2\sqrt{bx+cx^2}}+\frac{4\sqrt{x}\,(4bB-Ac)}{3c^3\sqrt{bx+cx^2}}-\frac{2x^{7/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(7/2))/(3*b*c*(b*x + c*x^2)^(3/2)) + (4*(4*b*B - A*c)*Sqr
t[x])/(3*c^3*Sqrt[b*x + c*x^2]) + (2*(4*b*B - A*c)*x^(3/2))/(3*b*c^2*Sqrt[b
*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^{7/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{\left(2\left(\frac{7}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{x^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}$$

$$= -\frac{2(bB-Ac)x^{7/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2(4bB-Ac)x^{3/2}}{3bc^2\sqrt{bx+cx^2}} - \frac{(2(4bB-Ac))\int \frac{x^{3/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3c^2}$$

$$= -\frac{2(bB-Ac)x^{7/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{4(4bB-Ac)\sqrt{x}}{3c^3\sqrt{bx+cx^2}} + \frac{2(4bB-Ac)x^{3/2}}{3bc^2\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.03, size = 53, normalized size = 0.49

$$\frac{2x^{3/2}\left(-2bc(A-6Bx)+3c^2x(Bx-A)+8b^2B\right)}{3c^3(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(8*b^2*B - 2*b*c*(A - 6*B*x) + 3*c^2*x*(-A + B*x)))/(3*c^3*(x*(b
 + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.82, size = 59, normalized size = 0.55

$$\frac{2x^{3/2}\left(-2Abc-3Ac^2x+8b^2B+12bBcx+3Bc^2x^2\right)}{3c^3\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(8*b^2*B - 2*A*b*c + 12*b*B*c*x - 3*A*c^2*x + 3*B*c^2*x^2))/(3*c
^3*(b*x + c*x^2)^(3/2))
```

fricas [A] time = 0.39, size = 79, normalized size = 0.73

$$\frac{2\left(3\,Bc^2x^2+8\,Bb^2-2\,Abc+3\left(4\,Bbc-Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^5x^3+2\,bc^4x^2+b^2c^3x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*c^2*x^2 + 8*B*b^2 - 2*A*b*c + 3*(4*B*b*c - A*c^2)*x)*sqrt(c*x^2 +
b*x)*sqrt(x)/(c^5*x^3 + 2*b*c^4*x^2 + b^2*c^3*x)
```

giac [A] time = 0.22, size = 72, normalized size = 0.67

$$\frac{2\sqrt{cx+b}\,B}{c^3} - \frac{4\,(4\,Bb-Ac)}{3\,\sqrt{b}\,c^3} + \frac{2\left(6\,(cx+b)Bb-Bb^2-3\,(cx+b)Ac+Abc\right)}{3\,(cx+b)^{\frac{3}{2}}c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(c*x + b)*B/c^3 - 4/3*(4*B*b - A*c)/(sqrt(b)*c^3) + 2/3*(6*(c*x + b)*
B*b - B*b^2 - 3*(c*x + b)*A*c + A*b*c)/((c*x + b)^(3/2)*c^3)
```

maple [A] time = 0.04, size = 59, normalized size = 0.55

$$-\frac{2\left(cx+b\right)\left(-3B\,c^{2}x^{2}+3A\,c^{2}x-12Bbcx+2Abc-8b^{2}B\right)x^{\frac{5}{2}}}{3\left(c\,x^{2}+bx\right)^{\frac{5}{2}}c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*(-3*B*c^2*x^2+3*A*c^2*x-12*B*b*c*x+2*A*b*c-8*B*b^2)*x^(5/2)/c^
3/(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)x^{\frac{7}{2}}}{\left(cx^{2}+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(7/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.245 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} dx$

Optimal. Leaf size=73

$$-\frac{2\sqrt{x}\,(Ac+2bB)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{5/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.05, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {788, 648}

$$-\frac{2\sqrt{x}\,(Ac+2bB)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{5/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(5/2))/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*(2*b*B + A*c)*Sqr
t[x])/(3*b*c^2*Sqrt[b*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^{5/2}}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{(2bB+Ac)\int \frac{x^{3/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}\\ &= -\frac{2(bB-Ac)x^{5/2}}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2(2bB+Ac)\sqrt{x}}{3bc^2\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 36, normalized size = 0.49

$$-\frac{2x^{3/2}(c(A+3Bx)+2bB)}{3c^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^(3/2)*(2*b*B + c*(A + 3*B*x)))/(3*c^2*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.85, size = 38, normalized size = 0.52

$$-\frac{2x^{3/2}(Ac+2bB+3Bcx)}{3c^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^(3/2)*(2*b*B + A*c + 3*B*c*x))/(3*c^2*(b*x + c*x^2)^(3/2))
```

fricas [A] time = 0.41, size = 56, normalized size = 0.77

$$-\frac{2\,(3\,Bcx+2\,Bb+Ac)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^4x^3+2\,bc^3x^2+b^2c^2x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(3*B*c*x + 2*B*b + A*c)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^4*x^3 + 2*b*c^3*x
^2 + b^2*c^2*x)
```

giac [A] time = 0.19, size = 45, normalized size = 0.62

$$-\frac{2\,(3\,(cx+b)B-Bb+Ac)}{3\,(cx+b)^{\frac{3}{2}}c^2}+\frac{2\,(2\,Bb+Ac)}{3\,b^{\frac{3}{2}}c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(3*(c*x + b)*B - B*b + A*c)/((c*x + b)^(3/2)*c^2) + 2/3*(2*B*b + A*c)/
(b^(3/2)*c^2)
```

maple [A] time = 0.05, size = 38, normalized size = 0.52

$$-\frac{2\,(cx+b)\,(3Bcx+Ac+2bB)\,x^{\frac{5}{2}}}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*(3*B*c*x+A*c+2*B*b)*x^(5/2)/c^2/(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)x^{\frac{5}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(5/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{5/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
[Out] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{5}{2}}\left(A+Bx\right)}{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
[Out] Integral(x**(5/2)*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.246 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}+\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}-\frac{2x^{3/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.08, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {788, 666, 660, 207}

$$\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}-\frac{2x^{3/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(3/2))/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*A*Sqrt[x])/(b^2*S
qrt[b*x + c*x^2]) - (2*A*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/b^(5
/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{A\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{b}$$

$$= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}} + \frac{A\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{b^2}$$

$$= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}} + \frac{(2A)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b^2}$$

$$= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}} - \frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}$$

Mathematica [C] time = 0.03, size = 62, normalized size = 0.66

$$\frac{2x^{3/2}\left(b(Ac-bB)+3Ac(b+cx)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{cx}{b}+1\right)\right)}{3b^2c(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(b*(-(b*B) + A*c) + 3*A*c*(b + c*x)*Hypergeometric2F1[-1/2, 1, 1
/2, 1 + (c*x)/b]))/(3*b^2*c*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.26, size = 88, normalized size = 0.94

$$\frac{2\sqrt{bx+cx^2}\left(4Abc+3Ac^2x+b^2(-B)\right)}{3b^2c\sqrt{x}\,(b+cx)^2} - \frac{2A\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(-(b^2*B) + 4*A*b*c + 3*A*c^2*x)*Sqrt[b*x + c*x^2])/(3*b^2*c*Sqrt[x]*(b
+ c*x)^2) - (2*A*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/b^(5/2)
```

fricas [A] time = 0.42, size = 262, normalized size = 2.79

$$\left[\frac{3\left(Ac^3x^3+2Abc^2x^2+Ab^2cx\right)\sqrt{b}\log\left(-\frac{cx^2+2bx-2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(3Abc^2x-Bb^3+4Ab^2c\right)\sqrt{cx^2+bx}\sqrt{x}}{3\left(b^3c^3x^3+2b^4c^2x^2+b^5cx\right)}, \frac{2\left(3\left(Ac^3x^3+2Abc^2x^2+Ab^2cx\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(3Abc^2x-Bb^3+4Ab^2c\right)\sqrt{cx^2+bx}\sqrt{x}\right)}{3\left(b^3c^3x^3+2b^4c^2x^2+b^5cx\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(A*c^3*x^3 + 2*A*b*c^2*x^2 + A*b^2*c*x)*sqrt(b)*log(-(c*x^2 + 2*b*x
 - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(3*A*b*c^2*x - B*b^3 + 4*A
*b^2*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*c^3*x^3 + 2*b^4*c^2*x^2 + b^5*c*x),
 2/3*(3*(A*c^3*x^3 + 2*A*b*c^2*x^2 + A*b^2*c*x)*sqrt(-b)*arctan(sqrt(-b)*sq
rt(x)/sqrt(c*x^2 + b*x)) + (3*A*b*c^2*x - B*b^3 + 4*A*b^2*c)*sqrt(c*x^2 + b
*x)*sqrt(x))/(b^3*c^3*x^3 + 2*b^4*c^2*x^2 + b^5*c*x)]
```

giac [A] time = 0.29, size = 110, normalized size = 1.17

$$\frac{2\,A\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}-\frac{2\left(3\,A\sqrt{b}\,c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)-B\sqrt{-b}\,b+4\,A\sqrt{-b}\,c\right)}{3\,\sqrt{-b}\,b^{\frac{5}{2}}c}-\frac{2\left(Bb^2-3\,(cx+b)Ac-Abc\right)}{3\,(cx+b)^{\frac{3}{2}}b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2*A*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2) - 2/3*(3*A*sqrt(b)*c*arct
an(sqrt(b)/sqrt(-b)) - B*sqrt(-b)*b + 4*A*sqrt(-b)*c)/(sqrt(-b)*b^(5/2)*c)
- 2/3*(B*b^2 - 3*(c*x + b)*A*c - A*b*c)/((c*x + b)^(3/2)*b^2*c)
```

maple [A] time = 0.07, size = 101, normalized size = 1.07

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(3\sqrt{cx+b}\,A\,c^2x\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3A\sqrt{b}\,c^2x+3\sqrt{cx+b}\,Abc\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-4A\,b^{\frac{3}{2}}c+B\,b^{\frac{5}{2}}\right)}{3\,(cx+b)^2\,b^{\frac{5}{2}}c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*((c*x+b)*x)^(1/2)/b^(5/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x*c^2*(c
*x+b)^(1/2)+3*A*c*arctanh((c*x+b)^(1/2)/b^(1/2))*b*(c*x+b)^(1/2)-3*A*b^(1/2
)*x*c^2-4*A*b^(3/2)*c+B*b^(5/2))/x^(1/2)/(c*x+b)^2/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)x^{\frac{3}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(3/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^{3/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^{\frac{3}{2}}\,(A+Bx)}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.247 $\int \frac{\sqrt{x}(A+Bx)}{(bx+cx^2)^{5/2}} dx$

Optimal. Leaf size=146

$$-\frac{(2bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{7/2}}+\frac{\sqrt{x}(2bB-5Ac)}{b^3\sqrt{bx+cx^2}}+\frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}}-\frac{2\sqrt{x}(bB-Ac)}{3bc(bx+cx^2)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {788, 672, 666, 660, 207}

$$\frac{\sqrt{x}(2bB-5Ac)}{b^3\sqrt{bx+cx^2}}+\frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}}-\frac{(2bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{7/2}}-\frac{2\sqrt{x}(bB-Ac)}{3bc(bx+cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*b*B - 5*A*c)/(3*b
^2*c*Sqrt[x]*Sqrt[b*x + c*x^2]) + ((2*b*B - 5*A*c)*Sqrt[x])/(b^3*Sqrt[b*x +
 c*x^2]) - ((2*b*B - 5*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/b
^(7/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{\left(2\left(\frac{1}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{2b^2}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\sqrt{x}}{b^3\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}} \cdots}{2b^3}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\sqrt{x}}{b^3\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\,\mathrm{Subst}\left(\int \frac{\cdots}{-b \cdots} \cdots\right.}{b^3}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\sqrt{x}}{b^3\sqrt{bx+cx^2}} - \frac{(2bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx \cdots}}{\sqrt{b} \cdots}\right.}{b^{7/2}}$$

Mathematica [C] time = 0.03, size = 55, normalized size = 0.38

$$\frac{\sqrt{x}\left(x(2bB-5Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{cx}{b}+1\right)-3Ab\right)}{3b^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[x]*(-3*A*b + (2*b*B - 5*A*c)*x*Hypergeometric2F1[-3/2, 1, -1/2, 1 + (
c*x)/b]))/(3*b^2*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.73, size = 110, normalized size = 0.75

$$\frac{(5Ac-2bB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{b^{7/2}} + \frac{\sqrt{bx+cx^2}\left(-3Ab^2-20Abcx-15Ac^2x^2+8b^2Bx+6bBcx^2\right)}{3b^3x^{3/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-3*A*b^2 + 8*b^2*B*x - 20*A*b*c*x + 6*b*B*c*x^2 - 15*A*
c^2*x^2))/(3*b^3*x^(3/2)*(b + c*x)^2) + ((-2*b*B + 5*A*c)*ArcTanh[(Sqrt[b]*
Sqrt[x])/Sqrt[b*x + c*x^2]])/b^(7/2)
```

fricas [A] time = 0.44, size = 367, normalized size = 2.51

$$\left[-\frac{3\left(\left(2\,Bbc^{2}-5\,Ac^{3}\right)x^{4}+2\left(2\,Bb^{2}c-5\,Abc^{2}\right)x^{3}+\left(2\,Bb^{3}-5\,Ab^{2}c\right)x^{2}\right)\sqrt{b}\,\log\left(-\frac{cx^{2}+2\,bx+2\,\sqrt{cx^{2}+bx}\,\sqrt{b}\,\sqrt{x}}{x^{2}}\right)+2\left(3\,Ab^{3}-3\left(2\,Bb^{2}c-5\,Abc^{2}\right)x^{2}-4\left(2\,Bb^{3}-5\,Ab^{2}c\right)x\right)\sqrt{cx^{2}+bx}\,\sqrt{x}}{6\left(b^{4}c^{2}x^{4}+2\,b^{5}cx^{3}+b^{6}x^{2}\right)},\ \frac{3\left(\left(2\,Bbc^{2}-5\,Ac^{3}\right)x^{4}+2\left(2\,Bb^{2}c-5\,Abc^{2}\right)x^{3}+\left(2\,Bb^{3}-5\,Ab^{2}c\right)x^{2}\right)\sqrt{-b}\,\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^{2}+bx}}\right)-\left(3\,Ab^{3}-3\left(2\,Bb^{2}c-5\,Abc^{2}\right)x^{2}-4\left(2\,Bb^{3}-5\,Ab^{2}c\right)x\right)\sqrt{cx^{2}+bx}\,\sqrt{x}}{3\left(b^{4}c^{2}x^{4}+2\,b^{5}cx^{3}+b^{6}x^{2}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((2*B*b*c^2 - 5*A*c^3)*x^4 + 2*(2*B*b^2*c - 5*A*b*c^2)*x^3 + (2*B*
b^3 - 5*A*b^2*c)*x^2)*sqrt(b)*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*sqr
t(b)*sqrt(x))/x^2) + 2*(3*A*b^3 - 3*(2*B*b^2*c - 5*A*b*c^2)*x^2 - 4*(2*B*b^
3 - 5*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b
^6*x^2), 1/3*(3*((2*B*b*c^2 - 5*A*c^3)*x^4 + 2*(2*B*b^2*c - 5*A*b*c^2)*x^3
+ (2*B*b^3 - 5*A*b^2*c)*x^2)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 +
b*x)) - (3*A*b^3 - 3*(2*B*b^2*c - 5*A*b*c^2)*x^2 - 4*(2*B*b^3 - 5*A*b^2*c)*
x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2)]
```

giac [A] time = 0.30, size = 90, normalized size = 0.62

$$\frac{(2\,Bb-5\,Ac)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^{3}}-\frac{\sqrt{cx+b}\,A}{b^{3}x}+\frac{2\left(3\,(cx+b)Bb+Bb^{2}-6\,(cx+b)Ac-Abc\right)}{3\,(cx+b)^{\frac{3}{2}}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] (2*B*b - 5*A*c)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3) - sqrt(c*x +
b)*A/(b^3*x) + 2/3*(3*(c*x + b)*B*b + B*b^2 - 6*(c*x + b)*A*c - A*b*c)/((c*
x + b)^(3/2)*b^3)
```

maple [A] time = 0.08, size = 175, normalized size = 1.20

$$\frac{\sqrt{(cx+b)\,x}\,\left(15\sqrt{cx+b}\,A\,c^{2}x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-6\sqrt{cx+b}\,Bbc\,x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15A\sqrt{b}\,c^{2}x^{2}+6B\,b^{\frac{3}{2}}c\,x^{2}+15\sqrt{cx+b}\,Abcx\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-6\sqrt{cx+b}\,B\,b^{2}x\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-20A\,b^{\frac{3}{2}}cx+8B\,b^{\frac{5}{2}}x-3A\,b^{\frac{5}{2}}\right)}{3\,(cx+b)^{2}\,b^{\frac{7}{2}}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/3*((c*x+b)*x)^(1/2)*(15*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^
2*c^2-6*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c+15*A*arctanh
((c*x+b)^(1/2)/b^(1/2))*x*b*c*(c*x+b)^(1/2)-15*A*b^(1/2)*c^2*x^2-6*B*arctan
h((c*x+b)^(1/2)/b^(1/2))*x*b^2*(c*x+b)^(1/2)+6*B*b^(3/2)*c*x^2-20*A*b^(3/2)
*c*x+8*B*b^(5/2)*x-3*A*b^(5/2))/x^(3/2)/(c*x+b)^2/b^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)\sqrt{x}}{\left(cx^{2}+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(x)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(c\,x^{2}+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A + Bx)}{(x\,(b + cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.248 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=174

$$\frac{5c(4bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{9/2}}-\frac{5c\sqrt{x}\,(4bB-7Ac)}{4b^4\sqrt{bx+cx^2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{\sqrt{x}\,(4bB-7Ac)}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.15, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 666, 672, 660, 207}

$$-\frac{5c\sqrt{x}\,(4bB-7Ac)}{4b^4\sqrt{bx+cx^2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{\sqrt{x}\,(4bB-7Ac)}{6b^2\left(bx+cx^2\right)^{3/2}}+\frac{5c(4bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{9/2}}-\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] -A/(2*b*Sqrt[x]*(b*x + c*x^2)^(3/2)) + ((4*b*B - 7*A*c)*Sqrt[x])/(6*b^2*(b*
x + c*x^2)^(3/2)) - (5*(4*b*B - 7*A*c))/(12*b^3*Sqrt[x]*Sqrt[b*x + c*x^2])
- (5*c*(4*b*B - 7*A*c)*Sqrt[x])/(4*b^4*Sqrt[b*x + c*x^2]) + (5*c*(4*b*B - 7
*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(4*b^(9/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{\left(\frac{1}{2}(bB-Ac)-\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{5/2}}\,dx}{2b}$$

$$= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}+\frac{(5(4bB-7Ac))\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{12b^2}$$

$$= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{(5c(4bB-7Ac))\int}{8b^3}$$

$$= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{5c(4bB-7Ac)\sqrt{x}}{4b^4\sqrt{bx+cx^2}}$$

$$= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{5c(4bB-7Ac)\sqrt{x}}{4b^4\sqrt{bx+cx^2}}$$

$$= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{5c(4bB-7Ac)\sqrt{x}}{4b^4\sqrt{bx+cx^2}}$$

Mathematica [C] time = 0.03, size = 60, normalized size = 0.34

$$\frac{cx^2(7Ac-4bB)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};\frac{cx}{b}+1\right)-3Ab^2}{6b^3\sqrt{x}\,(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-3*A*b^2 + c*(-4*b*B + 7*A*c)*x^2*Hypergeometric2F1[-3/2, 2, -1/2, 1 + (c*
x)/b])/(6*b^3*Sqrt[x]*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 2.44, size = 140, normalized size = 0.80

$$\frac{5\left(4bBc-7Ac^2\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{4b^{9/2}}+\frac{\sqrt{bx+cx^2}\left(-6Ab^3+21Ab^2cx+140Abc^2x^2+105Ac^3x^3-12b^3Bx-80b^2Bcx^2-60bBc^2x^3\right)}{12b^4x^{5/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-6*A*b^3 - 12*b^3*B*x + 21*A*b^2*c*x - 80*b^2*B*c*x^2 +
 140*A*b*c^2*x^2 - 60*b*B*c^2*x^3 + 105*A*c^3*x^3))/(12*b^4*x^(5/2)*(b + c*
x)^2) + (5*(4*b*B*c - 7*A*c^2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]]
)/(4*b^(9/2))
```

fricas [A] time = 0.42, size = 424, normalized size = 2.44

$$\left[-\frac{15\left(\left(4\,Bbc^3-7\,Ac^4\right)x^5+2\left(4\,Bb^2c^2-7\,Abc^3\right)x^4+\left(4\,Bb^3c-7\,Ab^2c^2\right)x^3\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(6\,Ab^4+15\left(4\,Bb^2c^2-7\,Abc^3\right)x^3+20\left(4\,Bb^3c-7\,Ab^2c^2\right)x^2+3\left(4\,Bb^4-7\,Ab^3c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{24\left(b^5c^2x^5+2\,b^6cx^4+b^7x^3\right)},\ -\frac{15\left(\left(4\,Bbc^3-7\,Ac^4\right)x^5+2\left(4\,Bb^2c^2-7\,Abc^3\right)x^4+\left(4\,Bb^3c-7\,Ab^2c^2\right)x^3\right)\sqrt{-b}\,\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)+\left(6\,Ab^4+15\left(4\,Bb^2c^2-7\,Abc^3\right)x^3+20\left(4\,Bb^3c-7\,Ab^2c^2\right)x^2+3\left(4\,Bb^4-7\,Ab^3c\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{12\left(b^5c^2x^5+2\,b^6cx^4+b^7x^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(15*((4*B*b*c^3 - 7*A*c^4)*x^5 + 2*(4*B*b^2*c^2 - 7*A*b*c^3)*x^4 + (
4*B*b^3*c - 7*A*b^2*c^2)*x^3)*sqrt(b)*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 +
b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(6*A*b^4 + 15*(4*B*b^2*c^2 - 7*A*b*c^3)*x^3
+ 20*(4*B*b^3*c - 7*A*b^2*c^2)*x^2 + 3*(4*B*b^4 - 7*A*b^3*c)*x)*sqrt(c*x^2
+ b*x)*sqrt(x))/(b^5*c^2*x^5 + 2*b^6*c*x^4 + b^7*x^3), -1/12*(15*((4*B*b*c^
3 - 7*A*c^4)*x^5 + 2*(4*B*b^2*c^2 - 7*A*b*c^3)*x^4 + (4*B*b^3*c - 7*A*b^2*c
^2)*x^3)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (6*A*b^4 + 1
5*(4*B*b^2*c^2 - 7*A*b*c^3)*x^3 + 20*(4*B*b^3*c - 7*A*b^2*c^2)*x^2 + 3*(4*B
*b^4 - 7*A*b^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^5*c^2*x^5 + 2*b^6*c*x^4
+ b^7*x^3)]
```

giac [A] time = 0.30, size = 149, normalized size = 0.86

$$-\frac{5\left(4\,Bbc-7\,Ac^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{4\,\sqrt{-b}\,b^4}-\frac{2\left(6\,(cx+b)Bbc+Bb^2c-9\,(cx+b)Ac^2-Abc^2\right)}{3\,(cx+b)^{\frac{3}{2}}b^4}-\frac{4\,(cx+b)^{\frac{3}{2}}Bbc-4\,\sqrt{cx+b}\,Bb^2c-11\,(cx+b)^{\frac{3}{2}}Ac^2+13\,\sqrt{cx+b}\,Abc^2}{4\,b^4c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] -5/4*(4*B*b*c - 7*A*c^2)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^4) - 2/
3*(6*(c*x + b)*B*b*c + B*b^2*c - 9*(c*x + b)*A*c^2 - A*b*c^2)/((c*x + b)^(3
/2)*b^4) - 1/4*(4*(c*x + b)^(3/2)*B*b*c - 4*sqrt(c*x + b)*B*b^2*c - 11*(c*x
 + b)^(3/2)*A*c^2 + 13*sqrt(c*x + b)*A*b*c^2)/(b^4*c^2*x^2)
```

maple [A] time = 0.08, size = 208, normalized size = 1.20

$$-\frac{\sqrt{(cx+b)\,x}\,\left(105\sqrt{cx+b}\,A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-60\sqrt{cx+b}\,Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-105A\sqrt{b}\,c^3x^3+60B\,b^{\frac{3}{2}}c^2x^3+105\sqrt{cx+b}\,Ab\,c^2x^2\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-60\sqrt{cx+b}\,B\,b^2c\,x^2\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-140A\,b^{\frac{3}{2}}c^2x^2+80B\,b^{\frac{5}{2}}c\,x^2-21A\,b^{\frac{5}{2}}cx+12B\,b^{\frac{7}{2}}x+6A\,b^{\frac{7}{2}}\right)}{12\,(cx+b)^2\,b^{\frac{9}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x)
```

```
[Out] -1/12*((c*x+b)*x)^(1/2)*(105*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))
*x^3*c^3-60*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2+105*A*
arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c^2*(c*x+b)^(1/2)-105*A*b^(1/2)*c^3*x^
3-60*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b^2*c*(c*x+b)^(1/2)+60*B*b^(3/2)*
c^2*x^3-140*A*b^(3/2)*c^2*x^2+80*B*b^(5/2)*c*x^2-21*A*b^(5/2)*c*x+12*B*b^(7
/2)*x+6*A*b^(7/2))/x^(5/2)/(c*x+b)^2/b^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*sqrt(x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + Bx}{\sqrt{x}\,\left(c\,x^2 + b\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(5/2)),x)
[Out] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2)/x**(1/2),x)
[Out] Timed out
```

3.249 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{35c^2(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{11/2}}+\frac{35c^2\sqrt{x}\,(2bB-3Ac)}{8b^5\sqrt{bx+cx^2}}+\frac{35c(2bB-3Ac)}{24b^4\sqrt{x}\sqrt{bx+cx^2}}-\frac{7c\sqrt{x}\,(2bB-3Ac)}{12b^3\left(bx+cx^2\right)^{3/2}}-\frac{2bB-}{4b^2\sqrt{x}\,(bx}$$

Rubi [A] time = 0.18, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$\frac{35c^2\sqrt{x}\,(2bB-3Ac)}{8b^5\sqrt{bx+cx^2}}-\frac{35c^2(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{11/2}}+\frac{35c(2bB-3Ac)}{24b^4\sqrt{x}\sqrt{bx+cx^2}}-\frac{7c\sqrt{x}\,(2bB-3Ac)}{12b^3\left(bx+cx^2\right)^{3/2}}-\frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}}-\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] -A/(3*b*x^(3/2)*(b*x + c*x^2)^(3/2)) - (2*b*B - 3*A*c)/(4*b^2*Sqrt[x]*(b*x
+ c*x^2)^(3/2)) - (7*c*(2*b*B - 3*A*c)*Sqrt[x])/(12*b^3*(b*x + c*x^2)^(3/2)
) + (35*c*(2*b*B - 3*A*c))/(24*b^4*Sqrt[x]*Sqrt[b*x + c*x^2]) + (35*c^2*(2*
b*B - 3*A*c)*Sqrt[x])/(8*b^5*Sqrt[b*x + c*x^2]) - (35*c^2*(2*b*B - 3*A*c)*A
rcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(11/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - -\frac{\left(-\frac{3}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{5/2}}\,dx}{3b}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{(7c(2bB-3Ac))\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{5/2}}\,dx}{8b^2}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} - \frac{(35c(2bB-3A}{}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3A}{24b^4\sqrt{x}\sqrt{bx+}}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3A}{24b^4\sqrt{x}\sqrt{bx+}}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3A}{24b^4\sqrt{x}\sqrt{bx+}}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3A}{24b^4\sqrt{x}\sqrt{bx+}}$$

Mathematica [C] time = 0.03, size = 62, normalized size = 0.29

$$\frac{c^2x^3(2bB-3Ac)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};\frac{cx}{b}+1\right)-Ab^3}{3b^4x^{3/2}(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-(A*b^3) + c^2*(2*b*B - 3*A*c)*x^3*Hypergeometric2F1[-3/2, 3, -1/2, 1 + (c
*x)/b])/(3*b^4*x^(3/2)*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 3.88, size = 166, normalized size = 0.78

$$\frac{\sqrt{bx+cx^2}\left(-8Ab^4+18Ab^3cx-63Ab^2c^2x^2-420Abc^3x^3-315Ac^4x^4-12b^4Bx+42b^3Bcx^2+280b^2Bc^2x^3+210bBc^3x^4\right)}{24b^5x^{7/2}(b+cx)^2}-\frac{35\left(2bBc^2-3Ac^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{bx+cx^2}}\right)}{8b^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b^4 - 12*b^4*B*x + 18*A*b^3*c*x + 42*b^3*B*c*x^2 -
 63*A*b^2*c^2*x^2 + 280*b^2*B*c^2*x^3 - 420*A*b*c^3*x^3 + 210*b*B*c^3*x^4 -
 315*A*c^4*x^4))/(24*b^5*x^(7/2)*(b + c*x)^2) - (35*(2*b*B*c^2 - 3*A*c^3)*A
rcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[b*x + c*x^2]])/(8*b^(11/2))
```

fricas [A] time = 0.45, size = 477, normalized size = 2.23

$$\left[-\frac{105\left(\left(2 Bbc^4-3 Ac^5\right)x^6+2\left(2 Bb^2c^3-3 Abc^4\right)x^5+\left(2 Bb^3c^2-3 Ab^2c^3\right)x^4\right)\sqrt{b}\log\left(-\frac{cx^2+2bx+2\sqrt{cx^2+bx}\sqrt{b}\sqrt{x}}{x^2}\right)+2\left(8 Ab^5-105\left(2 Bb^2c^3-3 Abc^4\right)x^4-140\left(2 Bb^3c^2-3 Ab^2c^3\right)x^3-21\left(2 Bb^4c-3 Ab^3c^2\right)x^2+6\left(2 Bb^5-3 Ab^4c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{48\left(b^6c^2x^6+2b^7cx^5+b^8x^4\right)}, \frac{105\left(\left(2 Bbc^4-3 Ac^5\right)x^6+2\left(2 Bb^2c^3-3 Abc^4\right)x^5+\left(2 Bb^3c^2-3 Ab^2c^3\right)x^4\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}\sqrt{x}}{\sqrt{cx^2+bx}}\right)-\left(8 Ab^5-105\left(2 Bb^2c^3-3 Abc^4\right)x^4-140\left(2 Bb^3c^2-3 Ab^2c^3\right)x^3-21\left(2 Bb^4c-3 Ab^3c^2\right)x^2+6\left(2 Bb^5-3 Ab^4c\right)x\right)\sqrt{cx^2+bx}\sqrt{x}}{24\left(b^6c^2x^6+2b^7cx^5+b^8x^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(105*((2*B*b*c^4 - 3*A*c^5)*x^6 + 2*(2*B*b^2*c^3 - 3*A*b*c^4)*x^5 +
(2*B*b^3*c^2 - 3*A*b^2*c^3)*x^4)*sqrt(b)*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2
 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^5 - 105*(2*B*b^2*c^3 - 3*A*b*c^4)*
x^4 - 140*(2*B*b^3*c^2 - 3*A*b^2*c^3)*x^3 - 21*(2*B*b^4*c - 3*A*b^3*c^2)*x^
2 + 6*(2*B*b^5 - 3*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^6*c^2*x^6 + 2*
b^7*c*x^5 + b^8*x^4), 1/24*(105*((2*B*b*c^4 - 3*A*c^5)*x^6 + 2*(2*B*b^2*c^3
 - 3*A*b*c^4)*x^5 + (2*B*b^3*c^2 - 3*A*b^2*c^3)*x^4)*sqrt(-b)*arctan(sqrt(-
b)*sqrt(x)/sqrt(c*x^2 + b*x)) - (8*A*b^5 - 105*(2*B*b^2*c^3 - 3*A*b*c^4)*x^
4 - 140*(2*B*b^3*c^2 - 3*A*b^2*c^3)*x^3 - 21*(2*B*b^4*c - 3*A*b^3*c^2)*x^2
+ 6*(2*B*b^5 - 3*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^6*c^2*x^6 + 2*b^
7*c*x^5 + b^8*x^4)]
```

giac [A] time = 0.31, size = 200, normalized size = 0.93

$$\frac{35\left(2 Bbc^2-3 Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{8\sqrt{-b}b^5}+\frac{210(cx+b)^4Bbc^2-560(cx+b)^3Bb^2c^2+462(cx+b)^2Bb^3c^2-96(cx+b)Bb^4c^2-16Bb^5c^2-315(cx+b)^4Ac^3+840(cx+b)^3Abc^3-693(cx+b)^2Ab^2c^3+144(cx+b)Ab^3c^3+16Ab^4c^3}{24\left((cx+b)^{\frac{3}{2}}-\sqrt{cx+b}\,b\right)^3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 35/8*(2*B*b*c^2 - 3*A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^5) +
1/24*(210*(c*x + b)^4*B*b*c^2 - 560*(c*x + b)^3*B*b^2*c^2 + 462*(c*x + b)^2
*B*b^3*c^2 - 96*(c*x + b)*B*b^4*c^2 - 16*B*b^5*c^2 - 315*(c*x + b)^4*A*c^3
+ 840*(c*x + b)^3*A*b*c^3 - 693*(c*x + b)^2*A*b^2*c^3 + 144*(c*x + b)*A*b^3
*c^3 + 16*A*b^4*c^3)/(((c*x + b)^(3/2) - sqrt(c*x + b)*b)^3*b^5)
```

maple [A] time = 0.07, size = 234, normalized size = 1.09

$$\frac{\sqrt{(cx+b)x}\left(315\sqrt{cx+b}\,Ac^4x^4\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-210\sqrt{cx+b}\,Bbc^3x^4\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-315A\sqrt{b}\,c^4x^4+210Bb^{\frac{3}{2}}c^3x^4+315\sqrt{cx+b}\,Abc^3x^3\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-210\sqrt{cx+b}\,Bb^2c^2x^3\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-420Ab^{\frac{3}{2}}c^3x^3+280Bb^{\frac{5}{2}}c^2x^3-63Ab^{\frac{5}{2}}c^2x^2+42Bb^{\frac{7}{2}}cx^2+18Ab^{\frac{7}{2}}cx-12Bb^{\frac{9}{2}}x-8Ab^{\frac{9}{2}}\right)}{24(cx+b)^2b^{\frac{11}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/24*((c*x+b)*x)^(1/2)*(315*A*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x+b)^(1/2)*
x^4*c^4-210*B*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x+b)^(1/2)*x^4*b*c^3+315*A*
arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^3*(c*x+b)^(1/2)-315*A*b^(1/2)*c^4*x^
4-210*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b^2*c^2*(c*x+b)^(1/2)+210*B*b^(3
/2)*c^3*x^4-420*A*b^(3/2)*c^3*x^3+280*B*b^(5/2)*c^2*x^3-63*A*b^(5/2)*c^2*x^
2+42*B*b^(7/2)*c*x^2+18*A*b^(7/2)*c*x-12*B*b^(9/2)*x-8*A*b^(9/2))/x^(7/2)/(
c*x+b)^2/b^(11/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.250 $\int x^{1+p}(2b+3cx)\left(bx+cx^2\right)^p\,dx$

Optimal. Leaf size=24

$$\frac{x^{p+1}\left(bx+cx^2\right)^{p+1}}{p+1}$$

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {763}

$$\frac{x^{p+1}\left(bx+cx^2\right)^{p+1}}{p+1}$$

Antiderivative was successfully verified.

```
[In] Int[x^(1 + p)*(2*b + 3*c*x)*(b*x + c*x^2)^p,x]
[Out] (x^(1 + p)*(b*x + c*x^2)^(1 + p))/(1 + p)
```

Rule 763

```
Int[((e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_.
), x_Symbol] :> Simp[(g*(e*x)^m*(b*x + c*x^2)^(p + 1))/(c*(m + 2*p + 2)), x
] /; FreeQ[{b, c, e, f, g, m, p}, x] && EqQ[b*g*(m + p + 1) - c*f*(m + 2*p
+ 2), 0] && NeQ[m + 2*p + 2, 0]
```

Rubi steps

$$\int x^{1+p}(2b+3cx)\left(bx+cx^2\right)^p\,dx=\frac{x^{1+p}\left(bx+cx^2\right)^{1+p}}{1+p}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 0.92

$$\frac{x^{p+1}(x(b+cx))^{p+1}}{p+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(1 + p)*(2*b + 3*c*x)*(b*x + c*x^2)^p,x]
[Out] (x^(1 + p)*(x*(b + c*x))^(1 + p))/(1 + p)
```

IntegrateAlgebraic [F] time = 0.13, size = 0, normalized size = 0.00

$$\int x^{1+p}(2b+3cx)\left(bx+cx^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^(1 + p)*(2*b + 3*c*x)*(b*x + c*x^2)^p,x]
[Out] Defer[IntegrateAlgebraic][x^(1 + p)*(2*b + 3*c*x)*(b*x + c*x^2)^p, x]
```

fricas [A] time = 0.42, size = 31, normalized size = 1.29

$$\frac{\left(cx^2+bx\right)\left(cx^2+bx\right)^p x^{p+1}}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+p)*(3*c*x+2*b)*(c*x^2+b*x)^p,x, algorithm="fricas")
```

```
[Out] (c*x^2 + b*x)*(c*x^2 + b*x)^p*x^(p + 1)/(p + 1)
```

giac [B] time = 0.27, size = 49, normalized size = 2.04

$$\frac{cx^2e^{\left(p\log(cx+b)+2\,p\log(x)+\log(x)\right)}+bxe^{\left(p\log(cx+b)+2\,p\log(x)+\log(x)\right)}}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+p)*(3*c*x+2*b)*(c*x^2+b*x)^p,x, algorithm="giac")
```

```
[Out] (c*x^2*e^(p*log(c*x + b) + 2*p*log(x) + log(x)) + b*x*e^(p*log(c*x + b) + 2
*p*log(x) + log(x)))/(p + 1)
```

maple [A] time = 0.04, size = 28, normalized size = 1.17

$$\frac{(cx+b)\,x^{p+2}\left(c\,x^2+bx\right)^p}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(p+1)*(3*c*x+2*b)*(c*x^2+b*x)^p,x)
```

```
[Out] (c*x+b)*x^(p+2)/(p+1)*(c*x^2+b*x)^p
```

maxima [A] time = 0.80, size = 32, normalized size = 1.33

$$\frac{\left(cx^3+bx^2\right)e^{\left(p\log(cx+b)+2\,p\log(x)\right)}}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+p)*(3*c*x+2*b)*(c*x^2+b*x)^p,x, algorithm="maxima")
```

```
[Out] (c*x^3 + b*x^2)*e^(p*log(c*x + b) + 2*p*log(x))/(p + 1)
```

mupad [B] time = 1.17, size = 41, normalized size = 1.71

$$\left(c\,x^2+b\,x\right)^p\,\left(\frac{b\,x\,x^{p+1}}{p+1}+\frac{c\,x^{p+1}\,x^2}{p+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(p + 1)*(b*x + c*x^2)^p*(2*b + 3*c*x),x)
```

```
[Out] (b*x + c*x^2)^p*((b*x*x^(p + 1))/(p + 1) + (c*x^(p + 1)*x^2)/(p + 1))
```

sympy [A] time = 43.34, size = 56, normalized size = 2.33

$$\begin{cases} \frac{bx^2x^p\left(bx+cx^2\right)^p}{p+1}+\frac{cx^3x^p\left(bx+cx^2\right)^p}{p+1} & \text{for}\ p\neq -1 \\ 2\log(x)+\log\left(\frac{b}{c}+x\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1+p)*(3*c*x+2*b)*(c*x**2+b*x)**p,x)
```

```
[Out] Piecewise((b*x**2*x**p*(b*x + c*x**2)**p/(p + 1) + c*x**3*x**p*(b*x + c*x**
2)**p/(p + 1), Ne(p, -1)), (2*log(x) + log(b/c + x), True))
```

3.251 $\int x^3(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7$$

Rubi [A] time = 0.04, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^4)/4 + (a*B*x^5)/5 + (A*c*x^6)/6 + (B*c*x^7)/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)\,dx &= \int \left(aAx^3+aBx^4+Acx^5+Bcx^6\right)\,dx\\ &= \frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^4)/4 + (a*B*x^5)/5 + (A*c*x^6)/6 + (B*c*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2), x]
```

fricas [A] time = 0.35, size = 29, normalized size = 0.78

$$\frac{1}{7}x^7cB+\frac{1}{6}x^6cA+\frac{1}{5}x^5aB+\frac{1}{4}x^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
[Out] 1/7*x^7*c*B + 1/6*x^6*c*A + 1/5*x^5*a*B + 1/4*x^4*a*A
```

giac [A] time = 0.16, size = 29, normalized size = 0.78

$$\frac{1}{7} Bcx^7 + \frac{1}{6} Acx^6 + \frac{1}{5} Bax^5 + \frac{1}{4} Aax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a),x, algorithm="giac")
[Out] 1/7*B*c*x^7 + 1/6*A*c*x^6 + 1/5*B*a*x^5 + 1/4*A*a*x^4
```

maple [A] time = 0.06, size = 30, normalized size = 0.81

$$\frac{1}{7}Bc\,x^7 + \frac{1}{6}Ac\,x^6 + \frac{1}{5}Ba\,x^5 + \frac{1}{4}Aa\,x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a),x)
[Out] 1/4*A*a*x^4+1/5*B*a*x^5+1/6*A*c*x^6+1/7*B*c*x^7
```

maxima [A] time = 0.61, size = 29, normalized size = 0.78

$$\frac{1}{7} Bcx^7 + \frac{1}{6} Acx^6 + \frac{1}{5} Bax^5 + \frac{1}{4} Aax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
[Out] 1/7*B*c*x^7 + 1/6*A*c*x^6 + 1/5*B*a*x^5 + 1/4*A*a*x^4
```

mupad [B] time = 0.05, size = 29, normalized size = 0.78

$$\frac{B\,c\,x^7}{7} + \frac{A\,c\,x^6}{6} + \frac{B\,a\,x^5}{5} + \frac{A\,a\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)*(A + B*x),x)
[Out] (A*a*x^4)/4 + (B*a*x^5)/5 + (A*c*x^6)/6 + (B*c*x^7)/7
```

sympy [A] time = 0.07, size = 32, normalized size = 0.86

$$\frac{Aax^4}{4} + \frac{Acx^6}{6} + \frac{Bax^5}{5} + \frac{Bcx^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a),x)
[Out] A*a*x**4/4 + A*c*x**6/6 + B*a*x**5/5 + B*c*x**7/7
```

3.252 $\int x^2(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6$$

Rubi [A] time = 0.03, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2),x]
[Out] (a*A*x^3)/3 + (a*B*x^4)/4 + (A*c*x^5)/5 + (B*c*x^6)/6
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^2+aBx^3+Acx^4+Bcx^5\right)\,dx\\&=\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2),x]
[Out] (a*A*x^3)/3 + (a*B*x^4)/4 + (A*c*x^5)/5 + (B*c*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2),x]
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2), x]
```

fricas [A] time = 0.35, size = 29, normalized size = 0.78

$$\frac{1}{6}x^6cB+\frac{1}{5}x^5cA+\frac{1}{4}x^4aB+\frac{1}{3}x^3aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
[Out] 1/6*x^6*c*B + 1/5*x^5*c*A + 1/4*x^4*a*B + 1/3*x^3*a*A
```

giac [A] time = 0.17, size = 29, normalized size = 0.78

$$\frac{1}{6} Bcx^6 + \frac{1}{5} Acx^5 + \frac{1}{4} Bax^4 + \frac{1}{3} Aax^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a),x, algorithm="giac")
[Out] 1/6*B*c*x^6 + 1/5*A*c*x^5 + 1/4*B*a*x^4 + 1/3*A*a*x^3
```

maple [A] time = 0.05, size = 30, normalized size = 0.81

$$\frac{1}{6}Bc\,x^6 + \frac{1}{5}Ac\,x^5 + \frac{1}{4}Ba\,x^4 + \frac{1}{3}Aa\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a),x)
[Out] 1/3*A*a*x^3+1/4*B*a*x^4+1/5*A*c*x^5+1/6*B*c*x^6
```

maxima [A] time = 0.50, size = 29, normalized size = 0.78

$$\frac{1}{6} Bcx^6 + \frac{1}{5} Acx^5 + \frac{1}{4} Bax^4 + \frac{1}{3} Aax^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
[Out] 1/6*B*c*x^6 + 1/5*A*c*x^5 + 1/4*B*a*x^4 + 1/3*A*a*x^3
```

mupad [B] time = 0.04, size = 29, normalized size = 0.78

$$\frac{B\,c\,x^6}{6} + \frac{A\,c\,x^5}{5} + \frac{B\,a\,x^4}{4} + \frac{A\,a\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)*(A + B*x),x)
[Out] (A*a*x^3)/3 + (B*a*x^4)/4 + (A*c*x^5)/5 + (B*c*x^6)/6
```

sympy [A] time = 0.07, size = 32, normalized size = 0.86

$$\frac{Aax^3}{3} + \frac{Acx^5}{5} + \frac{Bax^4}{4} + \frac{Bcx^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a),x)
[Out] A*a*x**3/3 + A*c*x**5/5 + B*a*x**4/4 + B*c*x**6/6
```

3.253 $\int x(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5$$

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {766}

$$\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^2)/2 + (a*B*x^3)/3 + (A*c*x^4)/4 + (B*c*x^5)/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)\,dx &= \int \left(aAx+aBx^2+Acx^3+Bcx^4\right)\,dx\\ &= \frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^2)/2 + (a*B*x^3)/3 + (A*c*x^4)/4 + (B*c*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2), x]
```

fricas [A] time = 0.34, size = 29, normalized size = 0.78

$$\frac{1}{5}x^5cB+\frac{1}{4}x^4cA+\frac{1}{3}x^3aB+\frac{1}{2}x^2aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*c*B + 1/4*x^4*c*A + 1/3*x^3*a*B + 1/2*x^2*a*A
```

giac [A] time = 0.14, size = 29, normalized size = 0.78

$$\frac{1}{5} Bcx^5 + \frac{1}{4} Acx^4 + \frac{1}{3} Bax^3 + \frac{1}{2} Aax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5 + 1/4*A*c*x^4 + 1/3*B*a*x^3 + 1/2*A*a*x^2
```

maple [A] time = 0.04, size = 30, normalized size = 0.81

$$\frac{1}{5}Bc\,x^5 + \frac{1}{4}Ac\,x^4 + \frac{1}{3}Ba\,x^3 + \frac{1}{2}Aa\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 1/2*A*a*x^2+1/3*B*a*x^3+1/4*A*c*x^4+1/5*B*c*x^5
```

maxima [A] time = 0.53, size = 29, normalized size = 0.78

$$\frac{1}{5} Bcx^5 + \frac{1}{4} Acx^4 + \frac{1}{3} Bax^3 + \frac{1}{2} Aax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*x^5 + 1/4*A*c*x^4 + 1/3*B*a*x^3 + 1/2*A*a*x^2
```

mupad [B] time = 0.04, size = 29, normalized size = 0.78

$$\frac{B\,c\,x^5}{5} + \frac{A\,c\,x^4}{4} + \frac{B\,a\,x^3}{3} + \frac{A\,a\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (A*a*x^2)/2 + (B*a*x^3)/3 + (A*c*x^4)/4 + (B*c*x^5)/5
```

sympy [A] time = 0.07, size = 32, normalized size = 0.86

$$\frac{Aax^2}{2} + \frac{Acx^4}{4} + \frac{Bax^3}{3} + \frac{Bcx^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a),x)
```

```
[Out] A*a*x**2/2 + A*c*x**4/4 + B*a*x**3/3 + B*c*x**5/5
```

3.254 $\int (A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=31

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {641}

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2),x]
[Out] a*A*x + (A*c*x^3)/3 + (B*(a + c*x^2)^2)/(4*c)
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)\,dx &= \frac{B\left(a+cx^2\right)^2}{4c}+A\int \left(a+cx^2\right)\,dx\\ &= aAx+\frac{1}{3}Acx^3+\frac{B\left(a+cx^2\right)^2}{4c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 32, normalized size = 1.03

$$aAx+\frac{1}{2}aBx^2+\frac{1}{3}Acx^3+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2),x]
[Out] a*A*x + (a*B*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2), x]
```

fricas [A] time = 0.35, size = 26, normalized size = 0.84

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="fricas")
[Out] 1/4*x^4*c*B + 1/3*x^3*c*A + 1/2*x^2*a*B + x*a*A
```

giac [A] time = 0.17, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^4 + \frac{1}{3}\,Acx^3 + \frac{1}{2}\,Bax^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="giac")
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

maple [A] time = 0.05, size = 27, normalized size = 0.87

$$\frac{1}{4}Bc\,x^4 + \frac{1}{3}Ac\,x^3 + \frac{1}{2}Ba\,x^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a),x)
[Out] 1/4*B*c*x^4+1/3*A*c*x^3+1/2*B*a*x^2+A*a*x
```

maxima [A] time = 0.56, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^4 + \frac{1}{3}\,Acx^3 + \frac{1}{2}\,Bax^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="maxima")
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

mupad [B] time = 0.05, size = 26, normalized size = 0.84

$$\frac{B\,c\,x^4}{4} + \frac{A\,c\,x^3}{3} + \frac{B\,a\,x^2}{2} + A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x),x)
[Out] A*a*x + (B*a*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

sympy [A] time = 0.07, size = 29, normalized size = 0.94

$$Aax + \frac{Acx^3}{3} + \frac{Bax^2}{2} + \frac{Bcx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a),x)
[Out] A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4
```

3.255 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x} \, dx$

Optimal. Leaf size=28

$$aA\log(x) + aBx + \frac{1}{2}Acx^2 + \frac{1}{3}Bcx^3$$

Rubi [A] time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$aA\log(x) + aBx + \frac{1}{2}Acx^2 + \frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x,x]
```

```
[Out] a*B*x + (A*c*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x} \, dx &= \int \left(aB + \frac{aA}{x} + Acx + Bcx^2\right) dx \\ &= aBx + \frac{1}{2}Acx^2 + \frac{1}{3}Bcx^3 + aA\log(x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 28, normalized size = 1.00

$$aA\log(x) + aBx + \frac{1}{2}Acx^2 + \frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x,x]
```

```
[Out] a*B*x + (A*c*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{x} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x, x]
```

fricas [A] time = 0.39, size = 24, normalized size = 0.86

$$\frac{1}{3}Bcx^3 + \frac{1}{2}Acx^2 + Bax + Aa\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*c*x^3 + 1/2*A*c*x^2 + B*a*x + A*a*log(x)
```

giac [A] time = 0.17, size = 25, normalized size = 0.89

$$\frac{1}{3}\,Bcx^3 + \frac{1}{2}\,Acx^2 + Bax + Aa\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + 1/2*A*c*x^2 + B*a*x + A*a*log(abs(x))
```

maple [A] time = 0.04, size = 25, normalized size = 0.89

$$\frac{Bc\,x^3}{3} + \frac{Ac\,x^2}{2} + Aa\ln(x) + Bax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x,x)
```

```
[Out] B*a*x+1/2*A*c*x^2+1/3*B*c*x^3+A*a*ln(x)
```

maxima [A] time = 0.57, size = 24, normalized size = 0.86

$$\frac{1}{3}\,Bcx^3 + \frac{1}{2}\,Acx^2 + Bax + Aa\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + 1/2*A*c*x^2 + B*a*x + A*a*log(x)
```

mupad [B] time = 0.04, size = 24, normalized size = 0.86

$$B\,a\,x + \frac{A\,c\,x^2}{2} + \frac{B\,c\,x^3}{3} + A\,a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x,x)
```

```
[Out] B*a*x + (A*c*x^2)/2 + (B*c*x^3)/3 + A*a*log(x)
```

sympy [A] time = 0.11, size = 27, normalized size = 0.96

$$Aa\log\left(x\right) + \frac{Acx^2}{2} + Bax + \frac{Bcx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x,x)
```

```
[Out] A*a*log(x) + A*c*x**2/2 + B*a*x + B*c*x**3/3
```

3.256 $\int \frac{(A+Bx)(a+cx^2)}{x^2} dx$

Optimal. Leaf size=26

$$-\frac{aA}{x}+aB\log(x)+Acx+\frac{1}{2}Bcx^2$$

Rubi [A] time = 0.01, antiderivative size = 26, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$-\frac{aA}{x}+aB\log(x)+Acx+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^2,x]
```

```
[Out] -((a*A)/x) + A*c*x + (B*c*x^2)/2 + a*B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^2}\,dx &= \int \left(Ac+\frac{aA}{x^2}+\frac{aB}{x}+Bcx\right)dx\\ &= -\frac{aA}{x}+Acx+\frac{1}{2}Bcx^2+aB\log(x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 26, normalized size = 1.00

$$-\frac{aA}{x}+aB\log(x)+Acx+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^2,x]
```

```
[Out] -((a*A)/x) + A*c*x + (B*c*x^2)/2 + a*B*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^2, x]
```

fricas [A] time = 0.38, size = 30, normalized size = 1.15

$$\frac{Bcx^3+2\,Acx^2+2\,Bax\log(x)-2\,Aa}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^2,x, algorithm="fricas")
[Out] 1/2*(B*c*x^3 + 2*A*c*x^2 + 2*B*a*x*log(x) - 2*A*a)/x
```

giac [A] time = 0.16, size = 25, normalized size = 0.96

$$\frac{1}{2}Bcx^2 + Acx + Ba\log(|x|) - \frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^2,x, algorithm="giac")
[Out] 1/2*B*c*x^2 + A*c*x + B*a*log(abs(x)) - A*a/x
```

maple [A] time = 0.05, size = 25, normalized size = 0.96

$$\frac{Bc\,x^2}{2} + Acx + Ba\ln(x) - \frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^2,x)
[Out] -A*a/x+A*c*x+1/2*B*c*x^2+B*a*ln(x)
```

maxima [A] time = 0.60, size = 24, normalized size = 0.92

$$\frac{1}{2}Bcx^2 + Acx + Ba\log(x) - \frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^2,x, algorithm="maxima")
[Out] 1/2*B*c*x^2 + A*c*x + B*a*log(x) - A*a/x
```

mupad [B] time = 0.04, size = 24, normalized size = 0.92

$$A\,c\,x - \frac{A\,a}{x} + \frac{B\,c\,x^2}{2} + B\,a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^2,x)
[Out] A*c*x - (A*a)/x + (B*c*x^2)/2 + B*a*log(x)
```

sympy [A] time = 0.14, size = 24, normalized size = 0.92

$$-\frac{Aa}{x} + Acx + Ba\log(x) + \frac{Bcx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**2,x)
[Out] -A*a/x + A*c*x + B*a*log(x) + B*c*x**2/2
```

3.257 $\int \frac{(A+Bx)(a+cx^2)}{x^3} \, dx$

Optimal. Leaf size=26

$$-\frac{aA}{2x^2}-\frac{aB}{x}+Ac\log(x)+Bcx$$

Rubi [A] time = 0.01, antiderivative size = 26, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$-\frac{aA}{2x^2}-\frac{aB}{x}+Ac\log(x)+Bcx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^3,x]
```

```
[Out] -(a*A)/(2*x^2) - (a*B)/x + B*c*x + A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(a+cx^2)}{x^3}\,dx &= \int \left(Bc+\frac{aA}{x^3}+\frac{aB}{x^2}+\frac{Ac}{x}\right)dx\\ &= -\frac{aA}{2x^2}-\frac{aB}{x}+Bcx+Ac\log(x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 26, normalized size = 1.00

$$-\frac{aA}{2x^2}-\frac{aB}{x}+Ac\log(x)+Bcx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^3,x]
```

```
[Out] -1/2*(a*A)/x^2 - (a*B)/x + B*c*x + A*c*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(a+cx^2)}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^3, x]
```

fricas [A] time = 0.39, size = 31, normalized size = 1.19

$$\frac{2\,Bcx^3+2\,Acx^2\log(x)-2\,Bax-Aa}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^3,x, algorithm="fricas")
[Out] 1/2*(2*B*c*x^3 + 2*A*c*x^2*log(x) - 2*B*a*x - A*a)/x^2
```

giac [A] time = 0.15, size = 25, normalized size = 0.96

$$Bcx + Ac\log\left(|x|\right) - \frac{2\,Bax + Aa}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^3,x, algorithm="giac")
[Out] B*c*x + A*c*log(abs(x)) - 1/2*(2*B*a*x + A*a)/x^2
```

maple [A] time = 0.05, size = 25, normalized size = 0.96

$$Ac\ln(x) + Bcx - \frac{Ba}{x} - \frac{Aa}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^3,x)
[Out] -1/2*A*a/x^2-B*a/x+B*c*x+A*c*ln(x)
```

maxima [A] time = 0.64, size = 24, normalized size = 0.92

$$Bcx + Ac\log(x) - \frac{2\,Bax + Aa}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^3,x, algorithm="maxima")
[Out] B*c*x + A*c*log(x) - 1/2*(2*B*a*x + A*a)/x^2
```

mupad [B] time = 1.03, size = 24, normalized size = 0.92

$$B\,c\,x - \frac{\frac{A\,a}{2} + B\,a\,x}{x^2} + A\,c\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^3,x)
[Out] B*c*x - ((A*a)/2 + B*a*x)/x^2 + A*c*log(x)
```

sympy [A] time = 0.21, size = 27, normalized size = 1.04

$$Ac\log\left(x\right) + Bcx + \frac{-Aa - 2Bax}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**3,x)
[Out] A*c*log(x) + B*c*x + (-A*a - 2*B*a*x)/(2*x**2)
```

3.258 $\int x^3(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9$$

Rubi [A] time = 0.06, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^4)/4 + (a^2*B*x^5)/5 + (a*A*c*x^6)/3 + (2*a*B*c*x^7)/7 + (A*c^2*x^
8)/8 + (B*c^2*x^9)/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)^2\,dx&=\int\left(a^2Ax^3+a^2Bx^4+2aAcx^5+2aBcx^6+Ac^2x^7+Bc^2x^8\right)dx\\&=\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9\end{aligned}$$

Mathematica [A] time = 0.00, size = 65, normalized size = 1.00

$$\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^4)/4 + (a^2*B*x^5)/5 + (a*A*c*x^6)/3 + (2*a*B*c*x^7)/7 + (A*c^2*x^
8)/8 + (B*c^2*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 53, normalized size = 0.82

$$\frac{1}{9}x^9c^2B+\frac{1}{8}x^8c^2A+\frac{2}{7}x^7caB+\frac{1}{3}x^6caA+\frac{1}{5}x^5a^2B+\frac{1}{4}x^4a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^2*B + 1/8*x^8*c^2*A + 2/7*x^7*c*a*B + 1/3*x^6*c*a*A + 1/5*x^5*a^2
*B + 1/4*x^4*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.82

$$\frac{1}{9}\,Bc^2x^9 + \frac{1}{8}\,Ac^2x^8 + \frac{2}{7}\,Bacx^7 + \frac{1}{3}\,Aacx^6 + \frac{1}{5}\,Ba^2x^5 + \frac{1}{4}\,Aa^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9 + 1/8*A*c^2*x^8 + 2/7*B*a*c*x^7 + 1/3*A*a*c*x^6 + 1/5*B*a^2*x
^5 + 1/4*A*a^2*x^4
```

maple [A] time = 0.04, size = 54, normalized size = 0.83

$$\frac{1}{9}B\,c^2x^9 + \frac{1}{8}A\,c^2x^8 + \frac{2}{7}Bac\,x^7 + \frac{1}{3}Aac\,x^6 + \frac{1}{5}B\,a^2x^5 + \frac{1}{4}A\,a^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/4*A*a^2*x^4+1/5*B*a^2*x^5+1/3*a*A*c*x^6+2/7*a*B*c*x^7+1/8*A*c^2*x^8+1/9*B
*c^2*x^9
```

maxima [A] time = 0.55, size = 53, normalized size = 0.82

$$\frac{1}{9}\,Bc^2x^9 + \frac{1}{8}\,Ac^2x^8 + \frac{2}{7}\,Bacx^7 + \frac{1}{3}\,Aacx^6 + \frac{1}{5}\,Ba^2x^5 + \frac{1}{4}\,Aa^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*x^9 + 1/8*A*c^2*x^8 + 2/7*B*a*c*x^7 + 1/3*A*a*c*x^6 + 1/5*B*a^2*x
^5 + 1/4*A*a^2*x^4
```

mupad [B] time = 0.03, size = 53, normalized size = 0.82

$$\frac{B\,a^2\,x^5}{5} + \frac{A\,a^2\,x^4}{4} + \frac{2\,B\,a\,c\,x^7}{7} + \frac{A\,a\,c\,x^6}{3} + \frac{B\,c^2\,x^9}{9} + \frac{A\,c^2\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (A*a^2*x^4)/4 + (B*a^2*x^5)/5 + (A*c^2*x^8)/8 + (B*c^2*x^9)/9 + (A*a*c*x^6)
/3 + (2*B*a*c*x^7)/7
```

sympy [A] time = 0.08, size = 61, normalized size = 0.94

$$\frac{Aa^2x^4}{4} + \frac{Aacx^6}{3} + \frac{Ac^2x^8}{8} + \frac{Ba^2x^5}{5} + \frac{2Bacx^7}{7} + \frac{Bc^2x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x**4/4 + A*a*c*x**6/3 + A*c**2*x**8/8 + B*a**2*x**5/5 + 2*B*a*c*x**7
/7 + B*c**2*x**9/9
```

3.259 $\int x^2(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8$$

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a^2*B*x^4)/4 + (2*a*A*c*x^5)/5 + (a*B*c*x^6)/3 + (A*c^2*x^
7)/7 + (B*c^2*x^8)/8
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^2\,dx &= \int \left(a^2Ax^2+a^2Bx^3+2aAcx^4+2aBcx^5+Ac^2x^6+Bc^2x^7\right)dx\\ &= \frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8\end{aligned}$$

Mathematica [A] time = 0.00, size = 65, normalized size = 1.00

$$\frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a^2*B*x^4)/4 + (2*a*A*c*x^5)/5 + (a*B*c*x^6)/3 + (A*c^2*x^
7)/7 + (B*c^2*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 53, normalized size = 0.82

$$\frac{1}{8}x^8c^2B+\frac{1}{7}x^7c^2A+\frac{1}{3}x^6caB+\frac{2}{5}x^5caA+\frac{1}{4}x^4a^2B+\frac{1}{3}x^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*B + 1/7*x^7*c^2*A + 1/3*x^6*c*a*B + 2/5*x^5*c*a*A + 1/4*x^4*a^2
*B + 1/3*x^3*a^2*A
```

giac [A] time = 0.18, size = 53, normalized size = 0.82

$$\frac{1}{8}\,Bc^2x^8 + \frac{1}{7}\,Ac^2x^7 + \frac{1}{3}\,Bacx^6 + \frac{2}{5}\,Aacx^5 + \frac{1}{4}\,Ba^2x^4 + \frac{1}{3}\,Aa^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 1/7*A*c^2*x^7 + 1/3*B*a*c*x^6 + 2/5*A*a*c*x^5 + 1/4*B*a^2*x
^4 + 1/3*A*a^2*x^3
```

maple [A] time = 0.04, size = 54, normalized size = 0.83

$$\frac{1}{8}B\,c^2x^8 + \frac{1}{7}A\,c^2x^7 + \frac{1}{3}Bac\,x^6 + \frac{2}{5}Aac\,x^5 + \frac{1}{4}B\,a^2x^4 + \frac{1}{3}A\,a^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/3*A*a^2*x^3+1/4*B*a^2*x^4+2/5*a*A*c*x^5+1/3*a*B*c*x^6+1/7*A*c^2*x^7+1/8*B
*c^2*x^8
```

maxima [A] time = 0.57, size = 53, normalized size = 0.82

$$\frac{1}{8}\,Bc^2x^8 + \frac{1}{7}\,Ac^2x^7 + \frac{1}{3}\,Bacx^6 + \frac{2}{5}\,Aacx^5 + \frac{1}{4}\,Ba^2x^4 + \frac{1}{3}\,Aa^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/7*A*c^2*x^7 + 1/3*B*a*c*x^6 + 2/5*A*a*c*x^5 + 1/4*B*a^2*x
^4 + 1/3*A*a^2*x^3
```

mupad [B] time = 0.02, size = 53, normalized size = 0.82

$$\frac{B\,a^2\,x^4}{4}+\frac{A\,a^2\,x^3}{3}+\frac{B\,a\,c\,x^6}{3}+\frac{2\,A\,a\,c\,x^5}{5}+\frac{B\,c^2\,x^8}{8}+\frac{A\,c^2\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (A*a^2*x^3)/3 + (B*a^2*x^4)/4 + (A*c^2*x^7)/7 + (B*c^2*x^8)/8 + (2*A*a*c*x^
5)/5 + (B*a*c*x^6)/3
```

sympy [A] time = 0.08, size = 61, normalized size = 0.94

$$\frac{Aa^2x^3}{3}+\frac{2Aacx^5}{5}+\frac{Ac^2x^7}{7}+\frac{Ba^2x^4}{4}+\frac{Bacx^6}{3}+\frac{Bc^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x**3/3 + 2*A*a*c*x**5/5 + A*c**2*x**7/7 + B*a**2*x**4/4 + B*a*c*x**6
/3 + B*c**2*x**8/8
```

3.260 $\int x(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7$$

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a^2*B*x^3)/3 + (a*A*c*x^4)/2 + (2*a*B*c*x^5)/5 + (A*c^2*x^
6)/6 + (B*c^2*x^7)/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)^2\,dx &= \int\left(a^2Ax+a^2Bx^2+2aAcx^3+2aBcx^4+Ac^2x^5+Bc^2x^6\right)dx\\ &= \frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7\end{aligned}$$

Mathematica [A] time = 0.00, size = 65, normalized size = 1.00

$$\frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a^2*B*x^3)/3 + (a*A*c*x^4)/2 + (2*a*B*c*x^5)/5 + (A*c^2*x^
6)/6 + (B*c^2*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 53, normalized size = 0.82

$$\frac{1}{7}x^7c^2B+\frac{1}{6}x^6c^2A+\frac{2}{5}x^5caB+\frac{1}{2}x^4caA+\frac{1}{3}x^3a^2B+\frac{1}{2}x^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c^2*B + 1/6*x^6*c^2*A + 2/5*x^5*c*a*B + 1/2*x^4*c*a*A + 1/3*x^3*a^2
*B + 1/2*x^2*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.82

$$\frac{1}{7}Bc^2x^7 + \frac{1}{6}Ac^2x^6 + \frac{2}{5}Bacx^5 + \frac{1}{2}Aacx^4 + \frac{1}{3}Ba^2x^3 + \frac{1}{2}Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 1/6*A*c^2*x^6 + 2/5*B*a*c*x^5 + 1/2*A*a*c*x^4 + 1/3*B*a^2*x
^3 + 1/2*A*a^2*x^2
```

maple [A] time = 0.04, size = 54, normalized size = 0.83

$$\frac{1}{7}B\,c^2x^7 + \frac{1}{6}A\,c^2x^6 + \frac{2}{5}Bac\,x^5 + \frac{1}{2}Aac\,x^4 + \frac{1}{3}B\,a^2x^3 + \frac{1}{2}A\,a^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/2*A*a^2*x^2+1/3*B*a^2*x^3+1/2*a*A*c*x^4+2/5*a*B*c*x^5+1/6*A*c^2*x^6+1/7*B
*c^2*x^7
```

maxima [A] time = 0.78, size = 53, normalized size = 0.82

$$\frac{1}{7}Bc^2x^7 + \frac{1}{6}Ac^2x^6 + \frac{2}{5}Bacx^5 + \frac{1}{2}Aacx^4 + \frac{1}{3}Ba^2x^3 + \frac{1}{2}Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/6*A*c^2*x^6 + 2/5*B*a*c*x^5 + 1/2*A*a*c*x^4 + 1/3*B*a^2*x
^3 + 1/2*A*a^2*x^2
```

mupad [B] time = 0.02, size = 53, normalized size = 0.82

$$\frac{B\,a^2\,x^3}{3} + \frac{A\,a^2\,x^2}{2} + \frac{2\,B\,a\,c\,x^5}{5} + \frac{A\,a\,c\,x^4}{2} + \frac{B\,c^2\,x^7}{7} + \frac{A\,c^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (A*a^2*x^2)/2 + (B*a^2*x^3)/3 + (A*c^2*x^6)/6 + (B*c^2*x^7)/7 + (A*a*c*x^4)
/2 + (2*B*a*c*x^5)/5
```

sympy [A] time = 0.07, size = 61, normalized size = 0.94

$$\frac{Aa^2x^2}{2} + \frac{Aacx^4}{2} + \frac{Ac^2x^6}{6} + \frac{Ba^2x^3}{3} + \frac{2Bacx^5}{5} + \frac{Bc^2x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x**2/2 + A*a*c*x**4/2 + A*c**2*x**6/6 + B*a**2*x**3/3 + 2*B*a*c*x**5
/5 + B*c**2*x**7/7
```

3.261 $\int (A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=45

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (2*a*A*c*x^3)/3 + (A*c^2*x^5)/5 + (B*(a + c*x^2)^3)/(6*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^2\,dx&=\frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a+cx^2\right)^2\,dx\\&=\frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a^2+2acx^2+c^2x^4\right)\,dx\\&=a^2Ax+\frac{2}{3}aAcx^3+\frac{1}{5}Ac^2x^5+\frac{B\left(a+cx^2\right)^3}{6c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 60, normalized size = 1.33

$$a^2Ax+\frac{1}{2}a^2Bx^2+\frac{2}{3}aAcx^3+\frac{1}{2}aBcx^4+\frac{1}{5}Ac^2x^5+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a^2*B*x^2)/2 + (2*a*A*c*x^3)/3 + (a*B*c*x^4)/2 + (A*c^2*x^5)/5 +
 (B*c^2*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 50, normalized size = 1.11

$$\frac{1}{6}x^6c^2B + \frac{1}{5}x^5c^2A + \frac{1}{2}x^4caB + \frac{2}{3}x^3caA + \frac{1}{2}x^2a^2B + xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 1/5*x^5*c^2*A + 1/2*x^4*c*a*B + 2/3*x^3*c*a*A + 1/2*x^2*a^2
*B + x*a^2*A
```

giac [A] time = 0.18, size = 50, normalized size = 1.11

$$\frac{1}{6}Bc^2x^6 + \frac{1}{5}Ac^2x^5 + \frac{1}{2}Bacx^4 + \frac{2}{3}Aacx^3 + \frac{1}{2}Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

maple [A] time = 0.04, size = 51, normalized size = 1.13

$$\frac{1}{6}B\,c^2x^6 + \frac{1}{5}A\,c^2x^5 + \frac{1}{2}Bac\,x^4 + \frac{2}{3}Aac\,x^3 + \frac{1}{2}B\,a^2x^2 + A\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*A*c^2*x^5+1/2*a*B*c*x^4+2/3*a*A*c*x^3+1/2*B*a^2*x^2+A*a^2
*x
```

maxima [A] time = 0.67, size = 50, normalized size = 1.11

$$\frac{1}{6}Bc^2x^6 + \frac{1}{5}Ac^2x^5 + \frac{1}{2}Bacx^4 + \frac{2}{3}Aacx^3 + \frac{1}{2}Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

mupad [B] time = 0.02, size = 50, normalized size = 1.11

$$\frac{B\,a^2\,x^2}{2} + A\,a^2\,x + \frac{B\,a\,c\,x^4}{2} + \frac{2\,A\,a\,c\,x^3}{3} + \frac{B\,c^2\,x^6}{6} + \frac{A\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (B*a^2*x^2)/2 + (A*c^2*x^5)/5 + (B*c^2*x^6)/6 + A*a^2*x + (2*A*a*c*x^3)/3 +
 (B*a*c*x^4)/2
```

sympy [A] time = 0.08, size = 58, normalized size = 1.29

$$Aa^2x + \frac{2Aacx^3}{3} + \frac{Ac^2x^5}{5} + \frac{Ba^2x^2}{2} + \frac{Bacx^4}{2} + \frac{Bc^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5/5 + B*a**2*x**2/2 + B*a*c*x**4/2 +
B*c**2*x**6/6
```

3.262 $\int \frac{(A+Bx)(a+cx^2)^2}{x} dx$

Optimal. Leaf size=53

$$a^2A\log(x)+a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$a^2A\log(x)+a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x,x]
```

```
[Out] a^2*B*x + a*A*c*x^2 + (2*a*B*c*x^3)/3 + (A*c^2*x^4)/4 + (B*c^2*x^5)/5 + a^2
*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x}\,dx &= \int \left(a^2B+\frac{a^2A}{x}+2aAcx+2aBcx^2+Ac^2x^3+Bc^2x^4\right)dx\\ &= a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5+a^2A\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 53, normalized size = 1.00

$$a^2A\log(x)+a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x,x]
```

```
[Out] a^2*B*x + a*A*c*x^2 + (2*a*B*c*x^3)/3 + (A*c^2*x^4)/4 + (B*c^2*x^5)/5 + a^2
*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x, x]
```

fricas [A] time = 0.39, size = 47, normalized size = 0.89

$$\frac{1}{5}Bc^2x^5 + \frac{1}{4}Ac^2x^4 + \frac{2}{3}Bacx^3 + Aacx^2 + Ba^2x + Aa^2\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*A*c^2*x^4 + 2/3*B*a*c*x^3 + A*a*c*x^2 + B*a^2*x + A*a^2
*log(x)
```

giac [A] time = 0.15, size = 48, normalized size = 0.91

$$\frac{1}{5}Bc^2x^5 + \frac{1}{4}Ac^2x^4 + \frac{2}{3}Bacx^3 + Aacx^2 + Ba^2x + Aa^2\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*A*c^2*x^4 + 2/3*B*a*c*x^3 + A*a*c*x^2 + B*a^2*x + A*a^2
*log(abs(x))
```

maple [A] time = 0.05, size = 48, normalized size = 0.91

$$\frac{B\,c^2x^5}{5} + \frac{A\,c^2x^4}{4} + \frac{2Bac\,x^3}{3} + Aac\,x^2 + A\,a^2\ln(x) + B\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x,x)
```

```
[Out] B*a^2*x+a*A*c*x^2+2/3*a*B*c*x^3+1/4*A*c^2*x^4+1/5*B*c^2*x^5+A*a^2*ln(x)
```

maxima [A] time = 0.56, size = 47, normalized size = 0.89

$$\frac{1}{5}Bc^2x^5 + \frac{1}{4}Ac^2x^4 + \frac{2}{3}Bacx^3 + Aacx^2 + Ba^2x + Aa^2\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*A*c^2*x^4 + 2/3*B*a*c*x^3 + A*a*c*x^2 + B*a^2*x + A*a^2
*log(x)
```

mupad [B] time = 0.03, size = 47, normalized size = 0.89

$$\frac{A\,c^2\,x^4}{4} + \frac{B\,c^2\,x^5}{5} + A\,a^2\,\ln(x) + B\,a^2\,x + A\,a\,c\,x^2 + \frac{2\,B\,a\,c\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x,x)
```

```
[Out] (A*c^2*x^4)/4 + (B*c^2*x^5)/5 + A*a^2*log(x) + B*a^2*x + A*a*c*x^2 + (2*B*a
*c*x^3)/3
```

sympy [A] time = 0.15, size = 54, normalized size = 1.02

$$Aa^2\log(x) + Aacx^2 + \frac{Ac^2x^4}{4} + Ba^2x + \frac{2Bacx^3}{3} + \frac{Bc^2x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x,x)
```

```
[Out] A*a**2*log(x) + A*a*c*x**2 + A*c**2*x**4/4 + B*a**2*x + 2*B*a*c*x**3/3 + B*
c**2*x**5/5
```

3.263 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^2}\,dx$

Optimal. Leaf size=52

$$-\frac{a^2A}{x}+a^2B\log(x)+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4$$

Rubi [A] time = 0.03, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{a^2A}{x}+a^2B\log(x)+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + 2*a*A*c*x + a*B*c*x^2 + (A*c^2*x^3)/3 + (B*c^2*x^4)/4 + a^2*
B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^2}\,dx &= \int \left(2aAc+\frac{a^2A}{x^2}+\frac{a^2B}{x}+2aBcx+Ac^2x^2+Bc^2x^3\right)dx\\ &= -\frac{a^2A}{x}+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4+a^2B\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 52, normalized size = 1.00

$$-\frac{a^2A}{x}+a^2B\log(x)+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + 2*a*A*c*x + a*B*c*x^2 + (A*c^2*x^3)/3 + (B*c^2*x^4)/4 + a^2*
B*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^2, x]
```

fricas [A] time = 0.40, size = 55, normalized size = 1.06

$$\frac{3\,Bc^2x^5 + 4\,Ac^2x^4 + 12\,Bacx^3 + 24\,Aacx^2 + 12\,Ba^2x\log(x) - 12\,Aa^2}{12\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*x^5 + 4*A*c^2*x^4 + 12*B*a*c*x^3 + 24*A*a*c*x^2 + 12*B*a^2*x*
log(x) - 12*A*a^2)/x
```

giac [A] time = 0.22, size = 49, normalized size = 0.94

$$\frac{1}{4}\,Bc^2x^4 + \frac{1}{3}\,Ac^2x^3 + Bacx^2 + 2\,Aacx + Ba^2\log\left(|x|\right) - \frac{Aa^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + 1/3*A*c^2*x^3 + B*a*c*x^2 + 2*A*a*c*x + B*a^2*log(abs(x)) -
 A*a^2/x
```

maple [A] time = 0.06, size = 49, normalized size = 0.94

$$\frac{B\,c^2x^4}{4} + \frac{A\,c^2x^3}{3} + Bac\,x^2 + 2Aacx + B\,a^2\ln(x) - \frac{A\,a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^2,x)
```

```
[Out] -A*a^2/x+2*a*A*c*x+a*B*c*x^2+1/3*A*c^2*x^3+1/4*B*c^2*x^4+B*a^2*ln(x)
```

maxima [A] time = 0.51, size = 48, normalized size = 0.92

$$\frac{1}{4}\,Bc^2x^4 + \frac{1}{3}\,Ac^2x^3 + Bacx^2 + 2\,Aacx + Ba^2\log(x) - \frac{Aa^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + 1/3*A*c^2*x^3 + B*a*c*x^2 + 2*A*a*c*x + B*a^2*log(x) - A*a^
2/x
```

mupad [B] time = 0.03, size = 48, normalized size = 0.92

$$\frac{A\,c^2\,x^3}{3} - \frac{A\,a^2}{x} + \frac{B\,c^2\,x^4}{4} + B\,a^2\,\ln(x) + B\,a\,c\,x^2 + 2\,A\,a\,c\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^2,x)
```

```
[Out] (A*c^2*x^3)/3 - (A*a^2)/x + (B*c^2*x^4)/4 + B*a^2*log(x) + B*a*c*x^2 + 2*A*
a*c*x
```

sympy [A] time = 0.17, size = 51, normalized size = 0.98

$$-\frac{Aa^2}{x} + 2Aacx + \frac{Ac^2x^3}{3} + Ba^2\log\left(x\right) + Bacx^2 + \frac{Bc^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**2,x)
```

```
[Out] -A*a**2/x + 2*A*a*c*x + A*c**2*x**3/3 + B*a**2*log(x) + B*a*c*x**2 + B*c**2
*x**4/4
```

3.264 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^3} \, dx$

Optimal. Leaf size=56

$$-\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aAc\log(x)+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3$$

Rubi [A] time = 0.03, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aAc\log(x)+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^3,x]
```

```
[Out] -(a^2*A)/(2*x^2) - (a^2*B)/x + 2*a*B*c*x + (A*c^2*x^2)/2 + (B*c^2*x^3)/3 +
2*a*A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^3}\,dx &= \int \left(2aBc+\frac{a^2A}{x^3}+\frac{a^2B}{x^2}+\frac{2aAc}{x}+Ac^2x+Bc^2x^2\right)dx\\ &= -\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3+2aAc\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 56, normalized size = 1.00

$$-\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aAc\log(x)+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^3,x]
```

```
[Out] -1/2*(a^2*A)/x^2 - (a^2*B)/x + 2*a*B*c*x + (A*c^2*x^2)/2 + (B*c^2*x^3)/3 +
2*a*A*c*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^3, x]
```

fricas [A] time = 0.40, size = 55, normalized size = 0.98

$$\frac{2\,Bc^2x^5 + 3\,Ac^2x^4 + 12\,Bacx^3 + 12\,Aacx^2\log(x) - 6\,Ba^2x - 3\,Aa^2}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 12*B*a*c*x^3 + 12*A*a*c*x^2*log(x) - 6*B*a
^2*x - 3*A*a^2)/x^2
```

giac [A] time = 0.17, size = 51, normalized size = 0.91

$$\frac{1}{3}\,Bc^2x^3 + \frac{1}{2}\,Ac^2x^2 + 2\,Bacx + 2\,Aac\log\left(|x|\right) - \frac{2\,Ba^2x + Aa^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + 1/2*A*c^2*x^2 + 2*B*a*c*x + 2*A*a*c*log(abs(x)) - 1/2*(2*B*
a^2*x + A*a^2)/x^2
```

maple [A] time = 0.06, size = 51, normalized size = 0.91

$$\frac{B\,c^2x^3}{3} + \frac{A\,c^2x^2}{2} + 2Aac\ln(x) + 2Bacx - \frac{B\,a^2}{x} - \frac{A\,a^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^3,x)
```

```
[Out] -1/2*A*a^2/x^2-B*a^2/x+2*a*B*c*x+1/2*A*c^2*x^2+1/3*B*c^2*x^3+2*a*A*c*ln(x)
```

maxima [A] time = 0.62, size = 50, normalized size = 0.89

$$\frac{1}{3}\,Bc^2x^3 + \frac{1}{2}\,Ac^2x^2 + 2\,Bacx + 2\,Aac\log(x) - \frac{2\,Ba^2x + Aa^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + 1/2*A*c^2*x^2 + 2*B*a*c*x + 2*A*a*c*log(x) - 1/2*(2*B*a^2*x
 + A*a^2)/x^2
```

mupad [B] time = 0.03, size = 50, normalized size = 0.89

$$\frac{A\,c^2\,x^2}{2} - \frac{\frac{A\,a^2}{2} + B\,a^2\,x}{x^2} + \frac{B\,c^2\,x^3}{3} + 2\,A\,a\,c\,\ln(x) + 2\,B\,a\,c\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^3,x)
```

```
[Out] (A*c^2*x^2)/2 - ((A*a^2)/2 + B*a^2*x)/x^2 + (B*c^2*x^3)/3 + 2*A*a*c*log(x)
+ 2*B*a*c*x
```

sympy [A] time = 0.25, size = 58, normalized size = 1.04

$$2Aac\log\left(x\right) + \frac{Ac^2x^2}{2} + 2Bacx + \frac{Bc^2x^3}{3} + \frac{-Aa^2 - 2Ba^2x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**3,x)
```

```
[Out] 2*A*a*c*log(x) + A*c**2*x**2/2 + 2*B*a*c*x + B*c**2*x**3/3 + (-A*a**2 - 2*B
*a**2*x)/(2*x**2)
```

3.265 $\int x^3(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=93

$$\frac{1}{4}a^3Ax^4+\frac{1}{5}a^3Bx^5+\frac{1}{2}a^2Acx^6+\frac{3}{7}a^2Bcx^7+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\frac{1}{11}Bc^3x^{11}$$

Rubi [A] time = 0.10, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{1}{2}a^2Acx^6+\frac{1}{4}a^3Ax^4+\frac{3}{7}a^2Bcx^7+\frac{1}{5}a^3Bx^5+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^4)/4 + (a^3*B*x^5)/5 + (a^2*A*c*x^6)/2 + (3*a^2*B*c*x^7)/7 + (3*a*
A*c^2*x^8)/8 + (a*B*c^2*x^9)/3 + (A*c^3*x^10)/10 + (B*c^3*x^11)/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x^3(A+Bx)\left(a+cx^2\right)^3\,dx=\int\left(a^3Ax^3+a^3Bx^4+3a^2Acx^5+3a^2Bcx^6+3aAc^2x^7+3aBc^2x^8+Ac^3x^9+Bc^3\right.$$
$$=\frac{1}{4}a^3Ax^4+\frac{1}{5}a^3Bx^5+\frac{1}{2}a^2Acx^6+\frac{3}{7}a^2Bcx^7+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}$$

Mathematica [A] time = 0.00, size = 93, normalized size = 1.00

$$\frac{1}{4}a^3Ax^4+\frac{1}{5}a^3Bx^5+\frac{1}{2}a^2Acx^6+\frac{3}{7}a^2Bcx^7+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^4)/4 + (a^3*B*x^5)/5 + (a^2*A*c*x^6)/2 + (3*a^2*B*c*x^7)/7 + (3*a*
A*c^2*x^8)/8 + (a*B*c^2*x^9)/3 + (A*c^3*x^10)/10 + (B*c^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 77, normalized size = 0.83

$$\frac{1}{11}x^{11}c^3B+\frac{1}{10}x^{10}c^3A+\frac{1}{3}x^9c^2aB+\frac{3}{8}x^8c^2aA+\frac{3}{7}x^7ca^2B+\frac{1}{2}x^6ca^2A+\frac{1}{5}x^5a^3B+\frac{1}{4}x^4a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^3*B + 1/10*x^10*c^3*A + 1/3*x^9*c^2*a*B + 3/8*x^8*c^2*a*A + 3/7
*x^7*c*a^2*B + 1/2*x^6*c*a^2*A + 1/5*x^5*a^3*B + 1/4*x^4*a^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 0.83

$$\frac{1}{11}\,Bc^3x^{11} + \frac{1}{10}\,Ac^3x^{10} + \frac{1}{3}\,Bac^2x^9 + \frac{3}{8}\,Aac^2x^8 + \frac{3}{7}\,Ba^2cx^7 + \frac{1}{2}\,Aa^2cx^6 + \frac{1}{5}\,Ba^3x^5 + \frac{1}{4}\,Aa^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11 + 1/10*A*c^3*x^10 + 1/3*B*a*c^2*x^9 + 3/8*A*a*c^2*x^8 + 3/7
*B*a^2*c*x^7 + 1/2*A*a^2*c*x^6 + 1/5*B*a^3*x^5 + 1/4*A*a^3*x^4
```

maple [A] time = 0.04, size = 78, normalized size = 0.84

$$\frac{1}{11}B\,c^3x^{11} + \frac{1}{10}A\,c^3x^{10} + \frac{1}{3}Ba\,c^2x^9 + \frac{3}{8}Aa\,c^2x^8 + \frac{3}{7}B\,a^2c\,x^7 + \frac{1}{2}A\,a^2c\,x^6 + \frac{1}{5}B\,a^3x^5 + \frac{1}{4}A\,a^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/4*A*a^3*x^4+1/5*B*a^3*x^5+1/2*a^2*A*c*x^6+3/7*a^2*B*c*x^7+3/8*a*A*c^2*x^8
+1/3*a*B*c^2*x^9+1/10*A*c^3*x^10+1/11*B*c^3*x^11
```

maxima [A] time = 0.57, size = 77, normalized size = 0.83

$$\frac{1}{11}\,Bc^3x^{11} + \frac{1}{10}\,Ac^3x^{10} + \frac{1}{3}\,Bac^2x^9 + \frac{3}{8}\,Aac^2x^8 + \frac{3}{7}\,Ba^2cx^7 + \frac{1}{2}\,Aa^2cx^6 + \frac{1}{5}\,Ba^3x^5 + \frac{1}{4}\,Aa^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*x^11 + 1/10*A*c^3*x^10 + 1/3*B*a*c^2*x^9 + 3/8*A*a*c^2*x^8 + 3/7
*B*a^2*c*x^7 + 1/2*A*a^2*c*x^6 + 1/5*B*a^3*x^5 + 1/4*A*a^3*x^4
```

mupad [B] time = 0.03, size = 77, normalized size = 0.83

$$\frac{B\,a^3\,x^5}{5}+\frac{A\,a^3\,x^4}{4}+\frac{3\,B\,a^2\,c\,x^7}{7}+\frac{A\,a^2\,c\,x^6}{2}+\frac{B\,a\,c^2\,x^9}{3}+\frac{3\,A\,a\,c^2\,x^8}{8}+\frac{B\,c^3\,x^{11}}{11}+\frac{A\,c^3\,x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x^4)/4 + (B*a^3*x^5)/5 + (A*c^3*x^10)/10 + (B*c^3*x^11)/11 + (A*a^2*
c*x^6)/2 + (3*A*a*c^2*x^8)/8 + (3*B*a^2*c*x^7)/7 + (B*a*c^2*x^9)/3
```

sympy [A] time = 0.08, size = 90, normalized size = 0.97

$$\frac{Aa^3x^4}{4} + \frac{Aa^2cx^6}{2} + \frac{3Aac^2x^8}{8} + \frac{Ac^3x^{10}}{10} + \frac{Ba^3x^5}{5} + \frac{3Ba^2cx^7}{7} + \frac{Bac^2x^9}{3} + \frac{Bc^3x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x**4/4 + A*a**2*c*x**6/2 + 3*A*a*c**2*x**8/8 + A*c**3*x**10/10 + B*a
**3*x**5/5 + 3*B*a**2*c*x**7/7 + B*a*c**2*x**9/3 + B*c**3*x**11/11
```

3.266 $\int x^2(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=93

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^3Bx^4+\frac{3}{5}a^2Acx^5+\frac{1}{2}a^2Bcx^6+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}Bc^3x^{10}$$

Rubi [A] time = 0.09, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{5}a^2Acx^5+\frac{1}{3}a^3Ax^3+\frac{1}{2}a^2Bcx^6+\frac{1}{4}a^3Bx^4+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^3*B*x^4)/4 + (3*a^2*A*c*x^5)/5 + (a^2*B*c*x^6)/2 + (3*a*
A*c^2*x^7)/7 + (3*a*B*c^2*x^8)/8 + (A*c^3*x^9)/9 + (B*c^3*x^10)/10
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3Ax^2+a^3Bx^3+3a^2Acx^4+3a^2Bcx^5+3aAc^2x^6+3aBc^2x^7+Ac^3x^8+Bc^3\right.\\ &= \frac{1}{3}a^3Ax^3+\frac{1}{4}a^3Bx^4+\frac{3}{5}a^2Acx^5+\frac{1}{2}a^2Bcx^6+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\end{aligned}$$

Mathematica [A] time = 0.00, size = 93, normalized size = 1.00

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^3Bx^4+\frac{3}{5}a^2Acx^5+\frac{1}{2}a^2Bcx^6+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^3*B*x^4)/4 + (3*a^2*A*c*x^5)/5 + (a^2*B*c*x^6)/2 + (3*a*
A*c^2*x^7)/7 + (3*a*B*c^2*x^8)/8 + (A*c^3*x^9)/9 + (B*c^3*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 77, normalized size = 0.83

$$\frac{1}{10}x^{10}c^3B+\frac{1}{9}x^9c^3A+\frac{3}{8}x^8c^2aB+\frac{3}{7}x^7c^2aA+\frac{1}{2}x^6ca^2B+\frac{3}{5}x^5ca^2A+\frac{1}{4}x^4a^3B+\frac{1}{3}x^3a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^3*B + 1/9*x^9*c^3*A + 3/8*x^8*c^2*a*B + 3/7*x^7*c^2*a*A + 1/2*x
^6*c*a^2*B + 3/5*x^5*c*a^2*A + 1/4*x^4*a^3*B + 1/3*x^3*a^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 0.83

$$\frac{1}{10}Bc^3x^{10} + \frac{1}{9}Ac^3x^9 + \frac{3}{8}Bac^2x^8 + \frac{3}{7}Aac^2x^7 + \frac{1}{2}Ba^2cx^6 + \frac{3}{5}Aa^2cx^5 + \frac{1}{4}Ba^3x^4 + \frac{1}{3}Aa^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 1/9*A*c^3*x^9 + 3/8*B*a*c^2*x^8 + 3/7*A*a*c^2*x^7 + 1/2*B
*a^2*c*x^6 + 3/5*A*a^2*c*x^5 + 1/4*B*a^3*x^4 + 1/3*A*a^3*x^3
```

maple [A] time = 0.04, size = 78, normalized size = 0.84

$$\frac{1}{10}B\,c^3x^{10} + \frac{1}{9}A\,c^3x^9 + \frac{3}{8}Ba\,c^2x^8 + \frac{3}{7}Aa\,c^2x^7 + \frac{1}{2}B\,a^2c\,x^6 + \frac{3}{5}A\,a^2c\,x^5 + \frac{1}{4}B\,a^3x^4 + \frac{1}{3}A\,a^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/3*A*a^3*x^3+1/4*B*a^3*x^4+3/5*a^2*A*c*x^5+1/2*a^2*B*c*x^6+3/7*a*A*c^2*x^7
+3/8*a*B*c^2*x^8+1/9*A*c^3*x^9+1/10*B*c^3*x^10
```

maxima [A] time = 0.51, size = 77, normalized size = 0.83

$$\frac{1}{10}Bc^3x^{10} + \frac{1}{9}Ac^3x^9 + \frac{3}{8}Bac^2x^8 + \frac{3}{7}Aac^2x^7 + \frac{1}{2}Ba^2cx^6 + \frac{3}{5}Aa^2cx^5 + \frac{1}{4}Ba^3x^4 + \frac{1}{3}Aa^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/9*A*c^3*x^9 + 3/8*B*a*c^2*x^8 + 3/7*A*a*c^2*x^7 + 1/2*B
*a^2*c*x^6 + 3/5*A*a^2*c*x^5 + 1/4*B*a^3*x^4 + 1/3*A*a^3*x^3
```

mupad [B] time = 0.03, size = 77, normalized size = 0.83

$$\frac{B\,a^3\,x^4}{4} + \frac{A\,a^3\,x^3}{3} + \frac{B\,a^2\,c\,x^6}{2} + \frac{3\,A\,a^2\,c\,x^5}{5} + \frac{3\,B\,a\,c^2\,x^8}{8} + \frac{3\,A\,a\,c^2\,x^7}{7} + \frac{B\,c^3\,x^{10}}{10} + \frac{A\,c^3\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x^3)/3 + (B*a^3*x^4)/4 + (A*c^3*x^9)/9 + (B*c^3*x^10)/10 + (3*A*a^2*
c*x^5)/5 + (3*A*a*c^2*x^7)/7 + (B*a^2*c*x^6)/2 + (3*B*a*c^2*x^8)/8
```

sympy [A] time = 0.08, size = 92, normalized size = 0.99

$$\frac{Aa^3x^3}{3} + \frac{3Aa^2cx^5}{5} + \frac{3Aac^2x^7}{7} + \frac{Ac^3x^9}{9} + \frac{Ba^3x^4}{4} + \frac{Ba^2cx^6}{2} + \frac{3Bac^2x^8}{8} + \frac{Bc^3x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x**3/3 + 3*A*a**2*c*x**5/5 + 3*A*a*c**2*x**7/7 + A*c**3*x**9/9 + B*a
**3*x**4/4 + B*a**2*c*x**6/2 + 3*B*a*c**2*x**8/8 + B*c**3*x**10/10
```

3.267 $\int x(A+Bx)\left(a+cx^2\right)^3 dx$

Optimal. Leaf size=93

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^3Bx^3+\frac{3}{4}a^2Acx^4+\frac{3}{5}a^2Bcx^5+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}Bc^3x^9$$

Rubi [A] time = 0.08, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{3}{4}a^2Acx^4+\frac{1}{2}a^3Ax^2+\frac{3}{5}a^2Bcx^5+\frac{1}{3}a^3Bx^3+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^3*B*x^3)/3 + (3*a^2*A*c*x^4)/4 + (3*a^2*B*c*x^5)/5 + (a*
A*c^2*x^6)/2 + (3*a*B*c^2*x^7)/7 + (A*c^3*x^8)/8 + (B*c^3*x^9)/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x(A+Bx)\left(a+cx^2\right)^3 dx=\int \left(a^3Ax+a^3Bx^2+3a^2Acx^3+3a^2Bcx^4+3aAc^2x^5+3aBc^2x^6+Ac^3x^7+Bc^3x^8\right.$$
$$=\frac{1}{2}a^3Ax^2+\frac{1}{3}a^3Bx^3+\frac{3}{4}a^2Acx^4+\frac{3}{5}a^2Bcx^5+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+$$

Mathematica [A] time = 0.00, size = 93, normalized size = 1.00

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^3Bx^3+\frac{3}{4}a^2Acx^4+\frac{3}{5}a^2Bcx^5+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^3*B*x^3)/3 + (3*a^2*A*c*x^4)/4 + (3*a^2*B*c*x^5)/5 + (a*
A*c^2*x^6)/2 + (3*a*B*c^2*x^7)/7 + (A*c^3*x^8)/8 + (B*c^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+cx^2\right)^3 dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^3, x]
```

fricas [A] time = 0.34, size = 77, normalized size = 0.83

$$\frac{1}{9}x^9c^3B+\frac{1}{8}x^8c^3A+\frac{3}{7}x^7c^2aB+\frac{1}{2}x^6c^2aA+\frac{3}{5}x^5ca^2B+\frac{3}{4}x^4ca^2A+\frac{1}{3}x^3a^3B+\frac{1}{2}x^2a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*B + 1/8*x^8*c^3*A + 3/7*x^7*c^2*a*B + 1/2*x^6*c^2*a*A + 3/5*x^5
*c*a^2*B + 3/4*x^4*c*a^2*A + 1/3*x^3*a^3*B + 1/2*x^2*a^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 0.83

$$\frac{1}{9}Bc^3x^9 + \frac{1}{8}Ac^3x^8 + \frac{3}{7}Bac^2x^7 + \frac{1}{2}Aac^2x^6 + \frac{3}{5}Ba^2cx^5 + \frac{3}{4}Aa^2cx^4 + \frac{1}{3}Ba^3x^3 + \frac{1}{2}Aa^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9 + 1/8*A*c^3*x^8 + 3/7*B*a*c^2*x^7 + 1/2*A*a*c^2*x^6 + 3/5*B*a
^2*c*x^5 + 3/4*A*a^2*c*x^4 + 1/3*B*a^3*x^3 + 1/2*A*a^3*x^2
```

maple [A] time = 0.05, size = 78, normalized size = 0.84

$$\frac{1}{9}B\,c^3x^9 + \frac{1}{8}A\,c^3x^8 + \frac{3}{7}Ba\,c^2x^7 + \frac{1}{2}Aa\,c^2x^6 + \frac{3}{5}B\,a^2c\,x^5 + \frac{3}{4}A\,a^2c\,x^4 + \frac{1}{3}B\,a^3x^3 + \frac{1}{2}A\,a^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/2*a^3*A*x^2+1/3*B*a^3*x^3+3/4*a^2*A*c*x^4+3/5*a^2*B*c*x^5+1/2*a*A*c^2*x^6
+3/7*a*B*c^2*x^7+1/8*A*c^3*x^8+1/9*B*c^3*x^9
```

maxima [A] time = 0.56, size = 77, normalized size = 0.83

$$\frac{1}{9}Bc^3x^9 + \frac{1}{8}Ac^3x^8 + \frac{3}{7}Bac^2x^7 + \frac{1}{2}Aac^2x^6 + \frac{3}{5}Ba^2cx^5 + \frac{3}{4}Aa^2cx^4 + \frac{1}{3}Ba^3x^3 + \frac{1}{2}Aa^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*x^9 + 1/8*A*c^3*x^8 + 3/7*B*a*c^2*x^7 + 1/2*A*a*c^2*x^6 + 3/5*B*a
^2*c*x^5 + 3/4*A*a^2*c*x^4 + 1/3*B*a^3*x^3 + 1/2*A*a^3*x^2
```

mupad [B] time = 0.03, size = 77, normalized size = 0.83

$$\frac{B\,a^3\,x^3}{3} + \frac{A\,a^3\,x^2}{2} + \frac{3\,B\,a^2\,c\,x^5}{5} + \frac{3\,A\,a^2\,c\,x^4}{4} + \frac{3\,B\,a\,c^2\,x^7}{7} + \frac{A\,a\,c^2\,x^6}{2} + \frac{B\,c^3\,x^9}{9} + \frac{A\,c^3\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x^2)/2 + (B*a^3*x^3)/3 + (A*c^3*x^8)/8 + (B*c^3*x^9)/9 + (3*A*a^2*c*
x^4)/4 + (A*a*c^2*x^6)/2 + (3*B*a^2*c*x^5)/5 + (3*B*a*c^2*x^7)/7
```

sympy [A] time = 0.08, size = 92, normalized size = 0.99

$$\frac{Aa^3x^2}{2} + \frac{3Aa^2cx^4}{4} + \frac{Aac^2x^6}{2} + \frac{Ac^3x^8}{8} + \frac{Ba^3x^3}{3} + \frac{3Ba^2cx^5}{5} + \frac{3Bac^2x^7}{7} + \frac{Bc^3x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x**2/2 + 3*A*a**2*c*x**4/4 + A*a*c**2*x**6/2 + A*c**3*x**8/8 + B*a**
3*x**3/3 + 3*B*a**2*c*x**5/5 + 3*B*a*c**2*x**7/7 + B*c**3*x**9/9
```

3.268 $\int (A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=56

$$a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

Rubi [A] time = 0.02, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Acx^3+a^3Ax+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + a^2*A*c*x^3 + (3*a*A*c^2*x^5)/5 + (A*c^3*x^7)/7 + (B*(a + c*x^2)^
4)/(8*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^3\,dx &= \frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a+cx^2\right)^3\,dx\\ &= \frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a^3+3a^2cx^2+3ac^2x^4+c^3x^6\right)\,dx\\ &= a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{1}{7}Ac^3x^7+\frac{B\left(a+cx^2\right)^4}{8c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 85, normalized size = 1.52

$$a^3Ax+\frac{1}{2}a^3Bx^2+a^2Acx^3+\frac{3}{4}a^2Bcx^4+\frac{3}{5}aAc^2x^5+\frac{1}{2}aBc^2x^6+\frac{1}{7}Ac^3x^7+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^3*B*x^2)/2 + a^2*A*c*x^3 + (3*a^2*B*c*x^4)/4 + (3*a*A*c^2*x^5)
/5 + (a*B*c^2*x^6)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^3, x]
```

fricas [A] time = 0.34, size = 73, normalized size = 1.30

$$\frac{1}{8}x^8c^3B + \frac{1}{7}x^7c^3A + \frac{1}{2}x^6c^2aB + \frac{3}{5}x^5c^2aA + \frac{3}{4}x^4ca^2B + x^3ca^2A + \frac{1}{2}x^2a^3B + xa^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 1/7*x^7*c^3*A + 1/2*x^6*c^2*a*B + 3/5*x^5*c^2*a*A + 3/4*x^4
*c*a^2*B + x^3*c*a^2*A + 1/2*x^2*a^3*B + x*a^3*A
```

giac [A] time = 0.15, size = 73, normalized size = 1.30

$$\frac{1}{8}Bc^3x^8 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bac^2x^6 + \frac{3}{5}Aac^2x^5 + \frac{3}{4}Ba^2cx^4 + Aa^2cx^3 + \frac{1}{2}Ba^3x^2 + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

maple [A] time = 0.04, size = 74, normalized size = 1.32

$$\frac{1}{8}Bc^3x^8 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bac^2x^6 + \frac{3}{5}Aac^2x^5 + \frac{3}{4}Ba^2cx^4 + Aa^2cx^3 + \frac{1}{2}Ba^3x^2 + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*A*c^3*x^7+1/2*a*B*c^2*x^6+3/5*a*A*c^2*x^5+3/4*a^2*B*c*x^4
+a^2*A*c*x^3+1/2*B*a^3*x^2+A*a^3*x
```

maxima [A] time = 0.51, size = 73, normalized size = 1.30

$$\frac{1}{8}Bc^3x^8 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bac^2x^6 + \frac{3}{5}Aac^2x^5 + \frac{3}{4}Ba^2cx^4 + Aa^2cx^3 + \frac{1}{2}Ba^3x^2 + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

mupad [B] time = 0.03, size = 73, normalized size = 1.30

$$\frac{B\,a^3\,x^2}{2} + A\,a^3\,x + \frac{3\,B\,a^2\,c\,x^4}{4} + A\,a^2\,c\,x^3 + \frac{B\,a\,c^2\,x^6}{2} + \frac{3\,A\,a\,c^2\,x^5}{5} + \frac{B\,c^3\,x^8}{8} + \frac{A\,c^3\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (B*a^3*x^2)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8 + A*a^3*x + A*a^2*c*x^3 + (3*
A*a*c^2*x^5)/5 + (3*B*a^2*c*x^4)/4 + (B*a*c^2*x^6)/2
```

sympy [**A**] time = 0.08, size = 85, normalized size = 1.52

$$Aa^3x + Aa^2cx^3 + \frac{3Aac^2x^5}{5} + \frac{Ac^3x^7}{7} + \frac{Ba^3x^2}{2} + \frac{3Ba^2cx^4}{4} + \frac{Bac^2x^6}{2} + \frac{Bc^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a**3*x**2/
2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8
```

3.269 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x}\,dx$

Optimal. Leaf size=81

$$a^3A\log(x)+a^3Bx+\frac{3}{2}a^2Acx^2+a^2Bcx^3+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7$$

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{2}a^2Acx^2+a^3A\log(x)+a^2Bcx^3+a^3Bx+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x,x]
```

```
[Out] a^3*B*x + (3*a^2*A*c*x^2)/2 + a^2*B*c*x^3 + (3*a*A*c^2*x^4)/4 + (3*a*B*c^2*
x^5)/5 + (A*c^3*x^6)/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x}\,dx &= \int \left(a^3B+\frac{a^3A}{x}+3a^2Acx+3a^2Bcx^2+3aAc^2x^3+3aBc^2x^4+Ac^3x^5+Bc^3x^6\right)dx\\ &= a^3Bx+\frac{3}{2}a^2Acx^2+a^2Bcx^3+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7+a^3A\log(x\end{aligned}$$

Mathematica [A] time = 0.01, size = 81, normalized size = 1.00

$$a^3A\log(x)+a^3Bx+\frac{3}{2}a^2Acx^2+a^2Bcx^3+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x,x]
```

```
[Out] a^3*B*x + (3*a^2*A*c*x^2)/2 + a^2*B*c*x^3 + (3*a*A*c^2*x^4)/4 + (3*a*B*c^2*
x^5)/5 + (A*c^3*x^6)/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x, x]
```

fricas [A]   time = 0.39, size = 71, normalized size = 0.88

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{6}\,Ac^3x^6+\frac{3}{5}\,Bac^2x^5+\frac{3}{4}\,Aac^2x^4+Ba^2cx^3+\frac{3}{2}\,Aa^2cx^2+Ba^3x+Aa^3\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*A*c^3*x^6 + 3/5*B*a*c^2*x^5 + 3/4*A*a*c^2*x^4 + B*a^2*c
*x^3 + 3/2*A*a^2*c*x^2 + B*a^3*x + A*a^3*log(x)
```

giac [A]   time = 0.15, size = 72, normalized size = 0.89

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{6}\,Ac^3x^6+\frac{3}{5}\,Bac^2x^5+\frac{3}{4}\,Aac^2x^4+Ba^2cx^3+\frac{3}{2}\,Aa^2cx^2+Ba^3x+Aa^3\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*A*c^3*x^6 + 3/5*B*a*c^2*x^5 + 3/4*A*a*c^2*x^4 + B*a^2*c
*x^3 + 3/2*A*a^2*c*x^2 + B*a^3*x + A*a^3*log(abs(x))
```

maple [A]   time = 0.05, size = 72, normalized size = 0.89

$$\frac{B\,c^3x^7}{7}+\frac{A\,c^3x^6}{6}+\frac{3Ba\,c^2x^5}{5}+\frac{3Aa\,c^2x^4}{4}+B\,a^2c\,x^3+\frac{3A\,a^2c\,x^2}{2}+A\,a^3\ln(x)+B\,a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x,x)
```

```
[Out] B*a^3*x+3/2*a^2*A*c*x^2+a^2*B*c*x^3+3/4*a*A*c^2*x^4+3/5*a*B*c^2*x^5+1/6*A*c
^3*x^6+1/7*B*c^3*x^7+A*a^3*ln(x)
```

maxima [A]   time = 0.52, size = 71, normalized size = 0.88

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{6}\,Ac^3x^6+\frac{3}{5}\,Bac^2x^5+\frac{3}{4}\,Aac^2x^4+Ba^2cx^3+\frac{3}{2}\,Aa^2cx^2+Ba^3x+Aa^3\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*A*c^3*x^6 + 3/5*B*a*c^2*x^5 + 3/4*A*a*c^2*x^4 + B*a^2*c
*x^3 + 3/2*A*a^2*c*x^2 + B*a^3*x + A*a^3*log(x)
```

mupad [B]   time = 0.04, size = 71, normalized size = 0.88

$$\frac{A\,c^3\,x^6}{6}+\frac{B\,c^3\,x^7}{7}+A\,a^3\,\ln(x)+B\,a^3\,x+\frac{3\,A\,a^2\,c\,x^2}{2}+\frac{3\,A\,a\,c^2\,x^4}{4}+B\,a^2\,c\,x^3+\frac{3\,B\,a\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x,x)
```

```
[Out] (A*c^3*x^6)/6 + (B*c^3*x^7)/7 + A*a^3*log(x) + B*a^3*x + (3*A*a^2*c*x^2)/2
+ (3*A*a*c^2*x^4)/4 + B*a^2*c*x^3 + (3*B*a*c^2*x^5)/5
```

sympy [A]   time = 0.18, size = 85, normalized size = 1.05

$$Aa^3\log\left(x\right)+\frac{3Aa^2cx^2}{2}+\frac{3Aac^2x^4}{4}+\frac{Ac^3x^6}{6}+Ba^3x+Ba^2cx^3+\frac{3Bac^2x^5}{5}+\frac{Bc^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x,x)
```

```
[Out] A*a**3*log(x) + 3*A*a**2*c*x**2/2 + 3*A*a*c**2*x**4/4 + A*c**3*x**6/6 + B*a
**3*x + B*a**2*c*x**3 + 3*B*a*c**2*x**5/5 + B*c**3*x**7/7
```

3.270 $\int \frac{(A+Bx)(a+cx^2)^3}{x^2} dx$

Optimal. Leaf size=80

$$-\frac{a^3A}{x}+a^3B\log(x)+3a^2Acx+\frac{3}{2}a^2Bcx^2+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6$$

Rubi [A] time = 0.04, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$3a^2Acx-\frac{a^3A}{x}+\frac{3}{2}a^2Bcx^2+a^3B\log(x)+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a^2*A*c*x + (3*a^2*B*c*x^2)/2 + a*A*c^2*x^3 + (3*a*B*c^2*x
^4)/4 + (A*c^3*x^5)/5 + (B*c^3*x^6)/6 + a^3*B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^2} dx = \int \left(3a^2Ac+\frac{a^3A}{x^2}+\frac{a^3B}{x}+3a^2Bcx+3aAc^2x^2+3aBc^2x^3+Ac^3x^4+Bc^3x^5\right) dx$$
$$= -\frac{a^3A}{x}+3a^2Acx+\frac{3}{2}a^2Bcx^2+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6+a^3B\log$$

Mathematica [A] time = 0.01, size = 80, normalized size = 1.00

$$-\frac{a^3A}{x}+a^3B\log(x)+3a^2Acx+\frac{3}{2}a^2Bcx^2+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a^2*A*c*x + (3*a^2*B*c*x^2)/2 + a*A*c^2*x^3 + (3*a*B*c^2*x
^4)/4 + (A*c^3*x^5)/5 + (B*c^3*x^6)/6 + a^3*B*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^2, x]
```

fricas [A] time = 0.40, size = 79, normalized size = 0.99

$$\frac{10\,Bc^3x^7 + 12\,Ac^3x^6 + 45\,Bac^2x^5 + 60\,Aac^2x^4 + 90\,Ba^2cx^3 + 180\,Aa^2cx^2 + 60\,Ba^3x\log(x) - 60\,Aa^3}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*x^7 + 12*A*c^3*x^6 + 45*B*a*c^2*x^5 + 60*A*a*c^2*x^4 + 90*B*
a^2*c*x^3 + 180*A*a^2*c*x^2 + 60*B*a^3*x*log(x) - 60*A*a^3)/x
```

giac [A] time = 0.18, size = 73, normalized size = 0.91

$$\frac{1}{6}\,Bc^3x^6 + \frac{1}{5}\,Ac^3x^5 + \frac{3}{4}\,Bac^2x^4 + Aac^2x^3 + \frac{3}{2}\,Ba^2cx^2 + 3\,Aa^2cx + Ba^3\log\left(|x|\right) - \frac{Aa^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 1/5*A*c^3*x^5 + 3/4*B*a*c^2*x^4 + A*a*c^2*x^3 + 3/2*B*a^2*c
*x^2 + 3*A*a^2*c*x + B*a^3*log(abs(x)) - A*a^3/x
```

maple [A] time = 0.05, size = 73, normalized size = 0.91

$$\frac{B\,c^3x^6}{6} + \frac{A\,c^3x^5}{5} + \frac{3Ba\,c^2x^4}{4} + Aa\,c^2x^3 + \frac{3B\,a^2c\,x^2}{2} + 3A\,a^2cx + B\,a^3\ln(x) - \frac{A\,a^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^2,x)
```

```
[Out] -A*a^3/x+3*a^2*A*c*x+3/2*a^2*B*c*x^2+a*A*c^2*x^3+3/4*a*B*c^2*x^4+1/5*A*c^3*
x^5+1/6*B*c^3*x^6+B*a^3*ln(x)
```

maxima [A] time = 0.55, size = 72, normalized size = 0.90

$$\frac{1}{6}\,Bc^3x^6 + \frac{1}{5}\,Ac^3x^5 + \frac{3}{4}\,Bac^2x^4 + Aac^2x^3 + \frac{3}{2}\,Ba^2cx^2 + 3\,Aa^2cx + Ba^3\log(x) - \frac{Aa^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/5*A*c^3*x^5 + 3/4*B*a*c^2*x^4 + A*a*c^2*x^3 + 3/2*B*a^2*c
*x^2 + 3*A*a^2*c*x + B*a^3*log(x) - A*a^3/x
```

mupad [B] time = 0.04, size = 72, normalized size = 0.90

$$\frac{A\,c^3\,x^5}{5} - \frac{A\,a^3}{x} + \frac{B\,c^3\,x^6}{6} + B\,a^3\,\ln(x) + 3\,A\,a^2\,c\,x + A\,a\,c^2\,x^3 + \frac{3\,B\,a^2\,c\,x^2}{2} + \frac{3\,B\,a\,c^2\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^2,x)
```

```
[Out] (A*c^3*x^5)/5 - (A*a^3)/x + (B*c^3*x^6)/6 + B*a^3*log(x) + 3*A*a^2*c*x + A*
a*c^2*x^3 + (3*B*a^2*c*x^2)/2 + (3*B*a*c^2*x^4)/4
```

sympy [A] time = 0.20, size = 82, normalized size = 1.02

$$-\frac{Aa^3}{x} + 3Aa^2cx + Aac^2x^3 + \frac{Ac^3x^5}{5} + Ba^3\log\left(x\right) + \frac{3Ba^2cx^2}{2} + \frac{3Bac^2x^4}{4} + \frac{Bc^3x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**2,x)
```

```
[Out] -A*a**3/x + 3*A*a**2*c*x + A*a*c**2*x**3 + A*c**3*x**5/5 + B*a**3*log(x) +
3*B*a**2*c*x**2/2 + 3*B*a*c**2*x**4/4 + B*c**3*x**6/6
```

3.271 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=81

$$-\frac{a^3A}{2x^2}-\frac{a^3B}{x}+3a^2Ac\log(x)+3a^2Bcx+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5$$

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$3a^2Ac\log(x)-\frac{a^3A}{2x^2}+3a^2Bcx-\frac{a^3B}{x}+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^3,x]
```

```
[Out] -(a^3*A)/(2*x^2) - (a^3*B)/x + 3*a^2*B*c*x + (3*a*A*c^2*x^2)/2 + a*B*c^2*x^
3 + (A*c^3*x^4)/4 + (B*c^3*x^5)/5 + 3*a^2*A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^3}\,dx&=\int \left(3a^2Bc+\frac{a^3A}{x^3}+\frac{a^3B}{x^2}+\frac{3a^2Ac}{x}+3aAc^2x+3aBc^2x^2+Ac^3x^3+Bc^3x^4\right)dx\\&=-\frac{a^3A}{2x^2}-\frac{a^3B}{x}+3a^2Bcx+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5+3a^2Ac\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 81, normalized size = 1.00

$$-\frac{a^3A}{2x^2}-\frac{a^3B}{x}+3a^2Ac\log(x)+3a^2Bcx+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^3,x]
```

```
[Out] -1/2*(a^3*A)/x^2 - (a^3*B)/x + 3*a^2*B*c*x + (3*a*A*c^2*x^2)/2 + a*B*c^2*x^
3 + (A*c^3*x^4)/4 + (B*c^3*x^5)/5 + 3*a^2*A*c*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^3, x]
```

fricas [A] time = 0.39, size = 79, normalized size = 0.98

$$\frac{4\,Bc^3x^7+5\,Ac^3x^6+20\,Bac^2x^5+30\,Aac^2x^4+60\,Ba^2cx^3+60\,Aa^2cx^2\log(x)-20\,Ba^3x-10\,Aa^3}{20\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*x^7 + 5*A*c^3*x^6 + 20*B*a*c^2*x^5 + 30*A*a*c^2*x^4 + 60*B*a^
2*c*x^3 + 60*A*a^2*c*x^2*log(x) - 20*B*a^3*x - 10*A*a^3)/x^2
```

giac [A] time = 0.16, size = 74, normalized size = 0.91

$$\frac{1}{5}\,Bc^3x^5+\frac{1}{4}\,Ac^3x^4+Bac^2x^3+\frac{3}{2}\,Aac^2x^2+3\,Ba^2cx+3\,Aa^2c\log\left(|x|\right)-\frac{2\,Ba^3x+Aa^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + 1/4*A*c^3*x^4 + B*a*c^2*x^3 + 3/2*A*a*c^2*x^2 + 3*B*a^2*c*x
 + 3*A*a^2*c*log(abs(x)) - 1/2*(2*B*a^3*x + A*a^3)/x^2
```

maple [A] time = 0.05, size = 74, normalized size = 0.91

$$\frac{B\,c^3x^5}{5}+\frac{A\,c^3x^4}{4}+Ba\,c^2x^3+\frac{3Aa\,c^2x^2}{2}+3A\,a^2c\ln(x)+3B\,a^2cx-\frac{B\,a^3}{x}-\frac{A\,a^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^3,x)
```

```
[Out] -1/2*A*a^3/x^2-B*a^3/x+3*a^2*B*c*x+3/2*a*A*c^2*x^2+a*B*c^2*x^3+1/4*A*c^3*x^
4+1/5*B*c^3*x^5+3*a^2*A*c*ln(x)
```

maxima [A] time = 0.62, size = 73, normalized size = 0.90

$$\frac{1}{5}\,Bc^3x^5+\frac{1}{4}\,Ac^3x^4+Bac^2x^3+\frac{3}{2}\,Aac^2x^2+3\,Ba^2cx+3\,Aa^2c\log(x)-\frac{2\,Ba^3x+Aa^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + 1/4*A*c^3*x^4 + B*a*c^2*x^3 + 3/2*A*a*c^2*x^2 + 3*B*a^2*c*x
 + 3*A*a^2*c*log(x) - 1/2*(2*B*a^3*x + A*a^3)/x^2
```

mupad [B] time = 0.03, size = 73, normalized size = 0.90

$$\frac{A\,c^3\,x^4}{4}-\frac{\frac{A\,a^3}{2}+B\,a^3\,x}{x^2}+\frac{B\,c^3\,x^5}{5}+3\,B\,a^2\,c\,x+\frac{3\,A\,a\,c^2\,x^2}{2}+B\,a\,c^2\,x^3+3\,A\,a^2\,c\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^3,x)
```

```
[Out] (A*c^3*x^4)/4 - ((A*a^3)/2 + B*a^3*x)/x^2 + (B*c^3*x^5)/5 + 3*B*a^2*c*x + (
3*A*a*c^2*x^2)/2 + B*a*c^2*x^3 + 3*A*a^2*c*log(x)
```

sympy [A] time = 0.29, size = 85, normalized size = 1.05

$$3Aa^2c\log(x)+\frac{3Aac^2x^2}{2}+\frac{Ac^3x^4}{4}+3Ba^2cx+Bac^2x^3+\frac{Bc^3x^5}{5}+\frac{-Aa^3-2Ba^3x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**3,x)
```

```
[Out] 3*A*a**2*c*log(x) + 3*A*a*c**2*x**2/2 + A*c**3*x**4/4 + 3*B*a**2*c*x + B*a*
c**2*x**3 + B*c**3*x**5/5 + (-A*a**3 - 2*B*a**3*x)/(2*x**2)
```

3.272 $\int x^3(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=121

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^4Bx^5+\frac{2}{3}a^3Acx^6+\frac{4}{7}a^3Bcx^7+\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^2Bc^2x^9+\frac{2}{5}aAc^3x^{10}+\frac{4}{11}aBc^3x^{11}+\frac{1}{12}Ac^4x^{12}+\frac{1}{13}Bc^4x^{13}$$

Rubi [A] time = 0.14, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^3Acx^6+\frac{1}{4}a^4Ax^4+\frac{2}{3}a^2Bc^2x^9+\frac{4}{7}a^3Bcx^7+\frac{1}{5}a^4Bx^5+\frac{2}{5}aAc^3x^{10}+\frac{4}{11}aBc^3x^{11}+\frac{1}{12}Ac^4x^{12}+\frac{1}{13}Bc^4x^{13}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^4)/4 + (a^4*B*x^5)/5 + (2*a^3*A*c*x^6)/3 + (4*a^3*B*c*x^7)/7 + (3*
a^2*A*c^2*x^8)/4 + (2*a^2*B*c^2*x^9)/3 + (2*a*A*c^3*x^10)/5 + (4*a*B*c^3*x^
11)/11 + (A*c^4*x^12)/12 + (B*c^4*x^13)/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)^4\,dx &= \int \left(a^4Ax^3+a^4Bx^4+4a^3Acx^5+4a^3Bcx^6+6a^2Ac^2x^7+6a^2Bc^2x^8+4aAc^3x^9\right.\\ &= \frac{1}{4}a^4Ax^4+\frac{1}{5}a^4Bx^5+\frac{2}{3}a^3Acx^6+\frac{4}{7}a^3Bcx^7+\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^2Bc^2x^9+\frac{2}{5}aAc^3x\end{aligned}$$

Mathematica [A] time = 0.00, size = 121, normalized size = 1.00

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^4Bx^5+\frac{2}{3}a^3Acx^6+\frac{4}{7}a^3Bcx^7+\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^2Bc^2x^9+\frac{2}{5}aAc^3x^{10}+\frac{4}{11}aBc^3x^{11}+\frac{1}{12}Ac^4x^{12}+\frac{1}{13}Bc^4x^{13}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^4)/4 + (a^4*B*x^5)/5 + (2*a^3*A*c*x^6)/3 + (4*a^3*B*c*x^7)/7 + (3*
a^2*A*c^2*x^8)/4 + (2*a^2*B*c^2*x^9)/3 + (2*a*A*c^3*x^10)/5 + (4*a*B*c^3*x^
11)/11 + (A*c^4*x^12)/12 + (B*c^4*x^13)/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a+cx^2\right)^4\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^4, x]
```

fricas [A] time = 0.35, size = 101, normalized size = 0.83

$$\frac{1}{13}x^{13}c^4B+\frac{1}{12}x^{12}c^4A+\frac{4}{11}x^{11}c^3aB+\frac{2}{5}x^{10}c^3aA+\frac{2}{3}x^9c^2a^2B+\frac{3}{4}x^8c^2a^2A+\frac{4}{7}x^7ca^3B+\frac{2}{3}x^6ca^3A+\frac{1}{5}x^5a^4B+\frac{1}{4}x^4a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*c^4*B + 1/12*x^12*c^4*A + 4/11*x^11*c^3*a*B + 2/5*x^10*c^3*a*A +
2/3*x^9*c^2*a^2*B + 3/4*x^8*c^2*a^2*A + 4/7*x^7*c*a^3*B + 2/3*x^6*c*a^3*A +
 1/5*x^5*a^4*B + 1/4*x^4*a^4*A
```

giac [A] time = 0.18, size = 101, normalized size = 0.83

$$\frac{1}{13}Bc^4x^{13}+\frac{1}{12}Ac^4x^{12}+\frac{4}{11}Bac^3x^{11}+\frac{2}{5}Aac^3x^{10}+\frac{2}{3}Ba^2c^2x^9+\frac{3}{4}Aa^2c^2x^8+\frac{4}{7}Ba^3cx^7+\frac{2}{3}Aa^3cx^6+\frac{1}{5}Ba^4x^5+\frac{1}{4}Aa^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/13*B*c^4*x^13 + 1/12*A*c^4*x^12 + 4/11*B*a*c^3*x^11 + 2/5*A*a*c^3*x^10 +
2/3*B*a^2*c^2*x^9 + 3/4*A*a^2*c^2*x^8 + 4/7*B*a^3*c*x^7 + 2/3*A*a^3*c*x^6 +
 1/5*B*a^4*x^5 + 1/4*A*a^4*x^4
```

maple [A] time = 0.04, size = 102, normalized size = 0.84

$$\frac{1}{13}Bc^4x^{13}+\frac{1}{12}Ac^4x^{12}+\frac{4}{11}Bac^3x^{11}+\frac{2}{5}Aac^3x^{10}+\frac{2}{3}Ba^2c^2x^9+\frac{3}{4}Aa^2c^2x^8+\frac{4}{7}Ba^3cx^7+\frac{2}{3}Aa^3cx^6+\frac{1}{5}Ba^4x^5+\frac{1}{4}Aa^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/4*a^4*A*x^4+1/5*a^4*B*x^5+2/3*a^3*A*c*x^6+4/7*a^3*B*c*x^7+3/4*a^2*A*c^2*x
^8+2/3*a^2*B*c^2*x^9+2/5*a*A*c^3*x^10+4/11*a*B*c^3*x^11+1/12*A*c^4*x^12+1/1
3*B*c^4*x^13
```

maxima [A] time = 0.49, size = 101, normalized size = 0.83

$$\frac{1}{13}Bc^4x^{13}+\frac{1}{12}Ac^4x^{12}+\frac{4}{11}Bac^3x^{11}+\frac{2}{5}Aac^3x^{10}+\frac{2}{3}Ba^2c^2x^9+\frac{3}{4}Aa^2c^2x^8+\frac{4}{7}Ba^3cx^7+\frac{2}{3}Aa^3cx^6+\frac{1}{5}Ba^4x^5+\frac{1}{4}Aa^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^4*x^13 + 1/12*A*c^4*x^12 + 4/11*B*a*c^3*x^11 + 2/5*A*a*c^3*x^10 +
2/3*B*a^2*c^2*x^9 + 3/4*A*a^2*c^2*x^8 + 4/7*B*a^3*c*x^7 + 2/3*A*a^3*c*x^6 +
 1/5*B*a^4*x^5 + 1/4*A*a^4*x^4
```

mupad [B] time = 0.05, size = 101, normalized size = 0.83

$$\frac{B\,a^4\,x^5}{5}+\frac{A\,a^4\,x^4}{4}+\frac{4\,B\,a^3\,c\,x^7}{7}+\frac{2\,A\,a^3\,c\,x^6}{3}+\frac{2\,B\,a^2\,c^2\,x^9}{3}+\frac{3\,A\,a^2\,c^2\,x^8}{4}+\frac{4\,B\,a\,c^3\,x^{11}}{11}+\frac{2\,A\,a\,c^3\,x^{10}}{5}+\frac{B\,c^4\,x^{13}}{13}+\frac{A\,c^4\,x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (A*a^4*x^4)/4 + (B*a^4*x^5)/5 + (A*c^4*x^12)/12 + (B*c^4*x^13)/13 + (2*A*a^
3*c*x^6)/3 + (2*A*a*c^3*x^10)/5 + (4*B*a^3*c*x^7)/7 + (4*B*a*c^3*x^11)/11 +
 (3*A*a^2*c^2*x^8)/4 + (2*B*a^2*c^2*x^9)/3
```

sympy [A] time = 0.09, size = 124, normalized size = 1.02

$$\frac{Aa^4x^4}{4}+\frac{2Aa^3cx^6}{3}+\frac{3Aa^2c^2x^8}{4}+\frac{2Aac^3x^{10}}{5}+\frac{Ac^4x^{12}}{12}+\frac{Ba^4x^5}{5}+\frac{4Ba^3cx^7}{7}+\frac{2Ba^2c^2x^9}{3}+\frac{4Bac^3x^{11}}{11}+\frac{Bc^4x^{13}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x**4/4 + 2*A*a**3*c*x**6/3 + 3*A*a**2*c**2*x**8/4 + 2*A*a*c**3*x**10
/5 + A*c**4*x**12/12 + B*a**4*x**5/5 + 4*B*a**3*c*x**7/7 + 2*B*a**2*c**2*x*
*9/3 + 4*B*a*c**3*x**11/11 + B*c**4*x**13/13
```

3.273 $\int x^2(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=121

$$\frac{1}{3}a^4Ax^3+\frac{1}{4}a^4Bx^4+\frac{4}{5}a^3Acx^5+\frac{2}{3}a^3Bcx^6+\frac{6}{7}a^2Ac^2x^7+\frac{3}{4}a^2Bc^2x^8+\frac{4}{9}aAc^3x^9+\frac{2}{5}aBc^3x^{10}+\frac{1}{11}Ac^4x^{11}+\frac{1}{12}Bc^4x^{12}$$

Rubi [A] time = 0.12, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {766}

$$\frac{6}{7}a^2Ac^2x^7+\frac{4}{5}a^3Acx^5+\frac{1}{3}a^4Ax^3+\frac{3}{4}a^2Bc^2x^8+\frac{2}{3}a^3Bcx^6+\frac{1}{4}a^4Bx^4+\frac{4}{9}aAc^3x^9+\frac{2}{5}aBc^3x^{10}+\frac{1}{11}Ac^4x^{11}+\frac{1}{12}Bc^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^3)/3 + (a^4*B*x^4)/4 + (4*a^3*A*c*x^5)/5 + (2*a^3*B*c*x^6)/3 + (6*
a^2*A*c^2*x^7)/7 + (3*a^2*B*c^2*x^8)/4 + (4*a*A*c^3*x^9)/9 + (2*a*B*c^3*x^1
0)/5 + (A*c^4*x^11)/11 + (B*c^4*x^12)/12
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^4\,dx &= \int\left(a^4Ax^2+a^4Bx^3+4a^3Acx^4+4a^3Bcx^5+6a^2Ac^2x^6+6a^2Bc^2x^7+4aAc^3x^8+4\right.\\ &= \frac{1}{3}a^4Ax^3+\frac{1}{4}a^4Bx^4+\frac{4}{5}a^3Acx^5+\frac{2}{3}a^3Bcx^6+\frac{6}{7}a^2Ac^2x^7+\frac{3}{4}a^2Bc^2x^8+\frac{4}{9}aAc^3x^9+\end{aligned}$$

Mathematica [A] time = 0.00, size = 121, normalized size = 1.00

$$\frac{1}{3}a^4Ax^3+\frac{1}{4}a^4Bx^4+\frac{4}{5}a^3Acx^5+\frac{2}{3}a^3Bcx^6+\frac{6}{7}a^2Ac^2x^7+\frac{3}{4}a^2Bc^2x^8+\frac{4}{9}aAc^3x^9+\frac{2}{5}aBc^3x^{10}+\frac{1}{11}Ac^4x^{11}+\frac{1}{12}Bc^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^3)/3 + (a^4*B*x^4)/4 + (4*a^3*A*c*x^5)/5 + (2*a^3*B*c*x^6)/3 + (6*
a^2*A*c^2*x^7)/7 + (3*a^2*B*c^2*x^8)/4 + (4*a*A*c^3*x^9)/9 + (2*a*B*c^3*x^1
0)/5 + (A*c^4*x^11)/11 + (B*c^4*x^12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+cx^2\right)^4\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^4, x]
```

fricas [A] time = 0.35, size = 101, normalized size = 0.83

$$\frac{1}{12}x^{12}c^4B+\frac{1}{11}x^{11}c^4A+\frac{2}{5}x^{10}c^3aB+\frac{4}{9}x^9c^3aA+\frac{3}{4}x^8c^2a^2B+\frac{6}{7}x^7c^2a^2A+\frac{2}{3}x^6ca^3B+\frac{4}{5}x^5ca^3A+\frac{1}{4}x^4a^4B+\frac{1}{3}x^3a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*c^4*B + 1/11*x^11*c^4*A + 2/5*x^10*c^3*a*B + 4/9*x^9*c^3*a*A + 3/
4*x^8*c^2*a^2*B + 6/7*x^7*c^2*a^2*A + 2/3*x^6*c*a^3*B + 4/5*x^5*c*a^3*A + 1
/4*x^4*a^4*B + 1/3*x^3*a^4*A
```

giac [A] time = 0.15, size = 101, normalized size = 0.83

$$\frac{1}{12}Bc^4x^{12} + \frac{1}{11}Ac^4x^{11} + \frac{2}{5}Bac^3x^{10} + \frac{4}{9}Aac^3x^9 + \frac{3}{4}Ba^2c^2x^8 + \frac{6}{7}Aa^2c^2x^7 + \frac{2}{3}Ba^3cx^6 + \frac{4}{5}Aa^3cx^5 + \frac{1}{4}Ba^4x^4 + \frac{1}{3}Aa^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/12*B*c^4*x^12 + 1/11*A*c^4*x^11 + 2/5*B*a*c^3*x^10 + 4/9*A*a*c^3*x^9 + 3/
4*B*a^2*c^2*x^8 + 6/7*A*a^2*c^2*x^7 + 2/3*B*a^3*c*x^6 + 4/5*A*a^3*c*x^5 + 1
/4*B*a^4*x^4 + 1/3*A*a^4*x^3
```

maple [A] time = 0.05, size = 102, normalized size = 0.84

$$\frac{1}{12}B\,c^4x^{12} + \frac{1}{11}A\,c^4x^{11} + \frac{2}{5}Ba\,c^3x^{10} + \frac{4}{9}Aa\,c^3x^9 + \frac{3}{4}B\,a^2c^2x^8 + \frac{6}{7}A\,a^2c^2x^7 + \frac{2}{3}B\,a^3c\,x^6 + \frac{4}{5}A\,a^3c\,x^5 + \frac{1}{4}B\,a^4x^4 + \frac{1}{3}A\,a^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/3*a^4*A*x^3+1/4*a^4*B*x^4+4/5*a^3*A*c*x^5+2/3*a^3*B*c*x^6+6/7*a^2*A*c^2*x
^7+3/4*a^2*B*c^2*x^8+4/9*a*A*c^3*x^9+2/5*a*B*c^3*x^10+1/11*A*c^4*x^11+1/12*
B*c^4*x^12
```

maxima [A] time = 0.48, size = 101, normalized size = 0.83

$$\frac{1}{12}Bc^4x^{12} + \frac{1}{11}Ac^4x^{11} + \frac{2}{5}Bac^3x^{10} + \frac{4}{9}Aac^3x^9 + \frac{3}{4}Ba^2c^2x^8 + \frac{6}{7}Aa^2c^2x^7 + \frac{2}{3}Ba^3cx^6 + \frac{4}{5}Aa^3cx^5 + \frac{1}{4}Ba^4x^4 + \frac{1}{3}Aa^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^4*x^12 + 1/11*A*c^4*x^11 + 2/5*B*a*c^3*x^10 + 4/9*A*a*c^3*x^9 + 3/
4*B*a^2*c^2*x^8 + 6/7*A*a^2*c^2*x^7 + 2/3*B*a^3*c*x^6 + 4/5*A*a^3*c*x^5 + 1
/4*B*a^4*x^4 + 1/3*A*a^4*x^3
```

mupad [B] time = 0.05, size = 101, normalized size = 0.83

$$\frac{B\,a^4\,x^4}{4} + \frac{A\,a^4\,x^3}{3} + \frac{2\,B\,a^3\,c\,x^6}{3} + \frac{4\,A\,a^3\,c\,x^5}{5} + \frac{3\,B\,a^2\,c^2\,x^8}{4} + \frac{6\,A\,a^2\,c^2\,x^7}{7} + \frac{2\,B\,a\,c^3\,x^{10}}{5} + \frac{4\,A\,a\,c^3\,x^9}{9} + \frac{B\,c^4\,x^{12}}{12} + \frac{A\,c^4\,x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (A*a^4*x^3)/3 + (B*a^4*x^4)/4 + (A*c^4*x^11)/11 + (B*c^4*x^12)/12 + (4*A*a^
3*c*x^5)/5 + (4*A*a*c^3*x^9)/9 + (2*B*a^3*c*x^6)/3 + (2*B*a*c^3*x^10)/5 + (
6*A*a^2*c^2*x^7)/7 + (3*B*a^2*c^2*x^8)/4
```

sympy [A] time = 0.09, size = 124, normalized size = 1.02

$$\frac{Aa^4x^3}{3} + \frac{4Aa^3cx^5}{5} + \frac{6Aa^2c^2x^7}{7} + \frac{4Aac^3x^9}{9} + \frac{Ac^4x^{11}}{11} + \frac{Ba^4x^4}{4} + \frac{2Ba^3cx^6}{3} + \frac{3Ba^2c^2x^8}{4} + \frac{2Bac^3x^{10}}{5} + \frac{Bc^4x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x**3/3 + 4*A*a**3*c*x**5/5 + 6*A*a**2*c**2*x**7/7 + 4*A*a*c**3*x**9/
9 + A*c**4*x**11/11 + B*a**4*x**4/4 + 2*B*a**3*c*x**6/3 + 3*B*a**2*c**2*x**
8/4 + 2*B*a*c**3*x**10/5 + B*c**4*x**12/12
```

3.274 $\int x(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=115

$$\frac{1}{2}a^4Ax^2+\frac{1}{3}a^4Bx^3+a^3Acx^4+\frac{4}{5}a^3Bcx^5+a^2Ac^2x^6+\frac{6}{7}a^2Bc^2x^7+\frac{1}{2}aAc^3x^8+\frac{4}{9}aBc^3x^9+\frac{1}{10}Ac^4x^{10}+\frac{1}{11}Bc^4x^{11}$$

Rubi [A] time = 0.12, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$a^2Ac^2x^6+a^3Acx^4+\frac{1}{2}a^4Ax^2+\frac{6}{7}a^2Bc^2x^7+\frac{4}{5}a^3Bcx^5+\frac{1}{3}a^4Bx^3+\frac{1}{2}aAc^3x^8+\frac{4}{9}aBc^3x^9+\frac{1}{10}Ac^4x^{10}+\frac{1}{11}Bc^4x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^2)/2 + (a^4*B*x^3)/3 + a^3*A*c*x^4 + (4*a^3*B*c*x^5)/5 + a^2*A*c^2
*x^6 + (6*a^2*B*c^2*x^7)/7 + (a*A*c^3*x^8)/2 + (4*a*B*c^3*x^9)/9 + (A*c^4*x
^10)/10 + (B*c^4*x^11)/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x(A+Bx)\left(a+cx^2\right)^4\,dx=\int\left(a^4Ax+a^4Bx^2+4a^3Acx^3+4a^3Bcx^4+6a^2Ac^2x^5+6a^2Bc^2x^6+4aAc^3x^7+\right.$$
$$=\frac{1}{2}a^4Ax^2+\frac{1}{3}a^4Bx^3+a^3Acx^4+\frac{4}{5}a^3Bcx^5+a^2Ac^2x^6+\frac{6}{7}a^2Bc^2x^7+\frac{1}{2}aAc^3x^8+$$

Mathematica [A] time = 0.00, size = 115, normalized size = 1.00

$$\frac{1}{2}a^4Ax^2+\frac{1}{3}a^4Bx^3+a^3Acx^4+\frac{4}{5}a^3Bcx^5+a^2Ac^2x^6+\frac{6}{7}a^2Bc^2x^7+\frac{1}{2}aAc^3x^8+\frac{4}{9}aBc^3x^9+\frac{1}{10}Ac^4x^{10}+\frac{1}{11}Bc^4x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^2)/2 + (a^4*B*x^3)/3 + a^3*A*c*x^4 + (4*a^3*B*c*x^5)/5 + a^2*A*c^2
*x^6 + (6*a^2*B*c^2*x^7)/7 + (a*A*c^3*x^8)/2 + (4*a*B*c^3*x^9)/9 + (A*c^4*x
^10)/10 + (B*c^4*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+cx^2\right)^4\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^4, x]
```

fricas [A] time = 0.36, size = 99, normalized size = 0.86

$$\frac{1}{11}x^{11}c^4B+\frac{1}{10}x^{10}c^4A+\frac{4}{9}x^9c^3aB+\frac{1}{2}x^8c^3aA+\frac{6}{7}x^7c^2a^2B+x^6c^2a^2A+\frac{4}{5}x^5ca^3B+x^4ca^3A+\frac{1}{3}x^3a^4B+\frac{1}{2}x^2a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^4*B + 1/10*x^10*c^4*A + 4/9*x^9*c^3*a*B + 1/2*x^8*c^3*a*A + 6/7
*x^7*c^2*a^2*B + x^6*c^2*a^2*A + 4/5*x^5*c*a^3*B + x^4*c*a^3*A + 1/3*x^3*a^
4*B + 1/2*x^2*a^4*A
```

giac [A] time = 0.19, size = 99, normalized size = 0.86

$$\frac{1}{11}Bc^4x^{11}+\frac{1}{10}Ac^4x^{10}+\frac{4}{9}Bac^3x^9+\frac{1}{2}Aac^3x^8+\frac{6}{7}Ba^2c^2x^7+Aa^2c^2x^6+\frac{4}{5}Ba^3cx^5+Aa^3cx^4+\frac{1}{3}Ba^4x^3+\frac{1}{2}Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/11*B*c^4*x^11 + 1/10*A*c^4*x^10 + 4/9*B*a*c^3*x^9 + 1/2*A*a*c^3*x^8 + 6/7
*B*a^2*c^2*x^7 + A*a^2*c^2*x^6 + 4/5*B*a^3*c*x^5 + A*a^3*c*x^4 + 1/3*B*a^4*
x^3 + 1/2*A*a^4*x^2
```

maple [A] time = 0.05, size = 100, normalized size = 0.87

$$\frac{1}{11}Bc^4x^{11}+\frac{1}{10}Ac^4x^{10}+\frac{4}{9}Bac^3x^9+\frac{1}{2}Aac^3x^8+\frac{6}{7}Ba^2c^2x^7+Aa^2c^2x^6+\frac{4}{5}Ba^3cx^5+Aa^3cx^4+\frac{1}{3}Ba^4x^3+\frac{1}{2}Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/2*a^4*A*x^2+1/3*a^4*B*x^3+a^3*A*c*x^4+4/5*a^3*B*c*x^5+a^2*A*c^2*x^6+6/7*a
^2*B*c^2*x^7+1/2*a*A*c^3*x^8+4/9*a*B*c^3*x^9+1/10*A*c^4*x^10+1/11*B*c^4*x^1
1
```

maxima [A] time = 0.60, size = 99, normalized size = 0.86

$$\frac{1}{11}Bc^4x^{11}+\frac{1}{10}Ac^4x^{10}+\frac{4}{9}Bac^3x^9+\frac{1}{2}Aac^3x^8+\frac{6}{7}Ba^2c^2x^7+Aa^2c^2x^6+\frac{4}{5}Ba^3cx^5+Aa^3cx^4+\frac{1}{3}Ba^4x^3+\frac{1}{2}Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^4*x^11 + 1/10*A*c^4*x^10 + 4/9*B*a*c^3*x^9 + 1/2*A*a*c^3*x^8 + 6/7
*B*a^2*c^2*x^7 + A*a^2*c^2*x^6 + 4/5*B*a^3*c*x^5 + A*a^3*c*x^4 + 1/3*B*a^4*
x^3 + 1/2*A*a^4*x^2
```

mupad [B] time = 0.05, size = 99, normalized size = 0.86

$$\frac{B\,a^4\,x^3}{3}+\frac{A\,a^4\,x^2}{2}+\frac{4\,B\,a^3\,c\,x^5}{5}+A\,a^3\,c\,x^4+\frac{6\,B\,a^2\,c^2\,x^7}{7}+A\,a^2\,c^2\,x^6+\frac{4\,B\,a\,c^3\,x^9}{9}+\frac{A\,a\,c^3\,x^8}{2}+\frac{B\,c^4\,x^{11}}{11}+\frac{A\,c^4\,x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (A*a^4*x^2)/2 + (B*a^4*x^3)/3 + (A*c^4*x^10)/10 + (B*c^4*x^11)/11 + A*a^3*c
*x^4 + (A*a*c^3*x^8)/2 + (4*B*a^3*c*x^5)/5 + (4*B*a*c^3*x^9)/9 + A*a^2*c^2*
x^6 + (6*B*a^2*c^2*x^7)/7
```

sympy [A] time = 0.09, size = 116, normalized size = 1.01

$$\frac{Aa^4x^2}{2} + Aa^3cx^4 + Aa^2c^2x^6 + \frac{Aac^3x^8}{2} + \frac{Ac^4x^{10}}{10} + \frac{Ba^4x^3}{3} + \frac{4Ba^3cx^5}{5} + \frac{6Ba^2c^2x^7}{7} + \frac{4Bac^3x^9}{9} + \frac{Bc^4x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x**2/2 + A*a**3*c*x**4 + A*a**2*c**2*x**6 + A*a*c**3*x**8/2 + A*c**4
*x**10/10 + B*a**4*x**3/3 + 4*B*a**3*c*x**5/5 + 6*B*a**2*c**2*x**7/7 + 4*B*
a*c**3*x**9/9 + B*c**4*x**11/11
```

3.275 $\int (A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=73

$$a^4Ax+\frac{4}{3}a^3Acx^3+\frac{6}{5}a^2Ac^2x^5+\frac{4}{7}aAc^3x^7+\frac{B\left(a+cx^2\right)^5}{10c}+\frac{1}{9}Ac^4x^9$$

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$\frac{6}{5}a^2Ac^2x^5+\frac{4}{3}a^3Acx^3+a^4Ax+\frac{4}{7}aAc^3x^7+\frac{B\left(a+cx^2\right)^5}{10c}+\frac{1}{9}Ac^4x^9$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] a^4*A*x + (4*a^3*A*c*x^3)/3 + (6*a^2*A*c^2*x^5)/5 + (4*a*A*c^3*x^7)/7 + (A*
c^4*x^9)/9 + (B*(a + c*x^2)^5)/(10*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^4\,dx &= \frac{B\left(a+cx^2\right)^5}{10c}+A\int \left(a+cx^2\right)^4\,dx\\ &= \frac{B\left(a+cx^2\right)^5}{10c}+A\int \left(a^4+4a^3cx^2+6a^2c^2x^4+4ac^3x^6+c^4x^8\right)dx\\ &= a^4Ax+\frac{4}{3}a^3Acx^3+\frac{6}{5}a^2Ac^2x^5+\frac{4}{7}aAc^3x^7+\frac{1}{9}Ac^4x^9+\frac{B\left(a+cx^2\right)^5}{10c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 110, normalized size = 1.51

$$a^4Ax+\frac{1}{2}a^4Bx^2+\frac{4}{3}a^3Acx^3+a^3Bcx^4+\frac{6}{5}a^2Ac^2x^5+a^2Bc^2x^6+\frac{4}{7}aAc^3x^7+\frac{1}{2}aBc^3x^8+\frac{1}{9}Ac^4x^9+\frac{1}{10}Bc^4x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] a^4*A*x + (a^4*B*x^2)/2 + (4*a^3*A*c*x^3)/3 + a^3*B*c*x^4 + (6*a^2*A*c^2*x^
5)/5 + a^2*B*c^2*x^6 + (4*a*A*c^3*x^7)/7 + (a*B*c^3*x^8)/2 + (A*c^4*x^9)/9
+ (B*c^4*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)^4\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^4, x]
```

fricas [A] time = 0.35, size = 96, normalized size = 1.32

$$\frac{1}{10}x^{10}c^4B + \frac{1}{9}x^9c^4A + \frac{1}{2}x^8c^3aB + \frac{4}{7}x^7c^3aA + x^6c^2a^2B + \frac{6}{5}x^5c^2a^2A + x^4ca^3B + \frac{4}{3}x^3ca^3A + \frac{1}{2}x^2a^4B + xa^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^4*B + 1/9*x^9*c^4*A + 1/2*x^8*c^3*a*B + 4/7*x^7*c^3*a*A + x^6*c
^2*a^2*B + 6/5*x^5*c^2*a^2*A + x^4*c*a^3*B + 4/3*x^3*c*a^3*A + 1/2*x^2*a^4*
B + x*a^4*A
```

giac [A] time = 0.15, size = 96, normalized size = 1.32

$$\frac{1}{10}Bc^4x^{10} + \frac{1}{9}Ac^4x^9 + \frac{1}{2}Bac^3x^8 + \frac{4}{7}Aac^3x^7 + Ba^2c^2x^6 + \frac{6}{5}Aa^2c^2x^5 + Ba^3cx^4 + \frac{4}{3}Aa^3cx^3 + \frac{1}{2}Ba^4x^2 + Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/10*B*c^4*x^10 + 1/9*A*c^4*x^9 + 1/2*B*a*c^3*x^8 + 4/7*A*a*c^3*x^7 + B*a^2
*c^2*x^6 + 6/5*A*a^2*c^2*x^5 + B*a^3*c*x^4 + 4/3*A*a^3*c*x^3 + 1/2*B*a^4*x^
2 + A*a^4*x
```

maple [A] time = 0.04, size = 97, normalized size = 1.33

$$\frac{1}{10}B\,c^4x^{10} + \frac{1}{9}A\,c^4x^9 + \frac{1}{2}Ba\,c^3x^8 + \frac{4}{7}Aa\,c^3x^7 + B\,a^2c^2x^6 + \frac{6}{5}A\,a^2c^2x^5 + B\,a^3c\,x^4 + \frac{4}{3}A\,a^3c\,x^3 + \frac{1}{2}B\,a^4x^2 + A\,a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/10*B*c^4*x^10+1/9*A*c^4*x^9+1/2*a*B*c^3*x^8+4/7*a*A*c^3*x^7+a^2*B*c^2*x^6
+6/5*a^2*A*c^2*x^5+a^3*B*c*x^4+4/3*a^3*A*c*x^3+1/2*a^4*B*x^2+a^4*A*x
```

maxima [A] time = 0.52, size = 96, normalized size = 1.32

$$\frac{1}{10}Bc^4x^{10} + \frac{1}{9}Ac^4x^9 + \frac{1}{2}Bac^3x^8 + \frac{4}{7}Aac^3x^7 + Ba^2c^2x^6 + \frac{6}{5}Aa^2c^2x^5 + Ba^3cx^4 + \frac{4}{3}Aa^3cx^3 + \frac{1}{2}Ba^4x^2 + Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^4*x^10 + 1/9*A*c^4*x^9 + 1/2*B*a*c^3*x^8 + 4/7*A*a*c^3*x^7 + B*a^2
*c^2*x^6 + 6/5*A*a^2*c^2*x^5 + B*a^3*c*x^4 + 4/3*A*a^3*c*x^3 + 1/2*B*a^4*x^
2 + A*a^4*x
```

mupad [B] time = 0.05, size = 96, normalized size = 1.32

$$\frac{B\,a^4\,x^2}{2} + A\,a^4\,x + B\,a^3\,c\,x^4 + \frac{4\,A\,a^3\,c\,x^3}{3} + B\,a^2\,c^2\,x^6 + \frac{6\,A\,a^2\,c^2\,x^5}{5} + \frac{B\,a\,c^3\,x^8}{2} + \frac{4\,A\,a\,c^3\,x^7}{7} + \frac{B\,c^4\,x^{10}}{10} + \frac{A\,c^4\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^4*(A + B*x),x)
```

[Out] (B*a^4*x^2)/2 + (A*c^4*x^9)/9 + (B*c^4*x^10)/10 + A*a^4*x + (4*A*a^3*c*x^3)
/3 + (4*A*a*c^3*x^7)/7 + B*a^3*c*x^4 + (B*a*c^3*x^8)/2 + (6*A*a^2*c^2*x^5)/
5 + B*a^2*c^2*x^6

sympy [A] time = 0.09, size = 112, normalized size = 1.53

$$Aa^4x + \frac{4Aa^3cx^3}{3} + \frac{6Aa^2c^2x^5}{5} + \frac{4Aac^3x^7}{7} + \frac{Ac^4x^9}{9} + \frac{Ba^4x^2}{2} + Ba^3cx^4 + Ba^2c^2x^6 + \frac{Bac^3x^8}{2} + \frac{Bc^4x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x + 4*A*a**3*c*x**3/3 + 6*A*a**2*c**2*x**5/5 + 4*A*a*c**3*x**7/7 + A
*c**4*x**9/9 + B*a**4*x**2/2 + B*a**3*c*x**4 + B*a**2*c**2*x**6 + B*a*c**3*
x**8/2 + B*c**4*x**10/10
```

3.276 $\int \frac{(A+Bx)(a+cx^2)^4}{x}\,dx$

Optimal. Leaf size=110

$$a^4A\log(x)+a^4Bx+2a^3Acx^2+\frac{4}{3}a^3Bcx^3+\frac{3}{2}a^2Ac^2x^4+\frac{6}{5}a^2Bc^2x^5+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac^4x^8+\frac{1}{9}Bc^4x^9$$

Rubi [A] time = 0.05, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{2}a^2Ac^2x^4+2a^3Acx^2+a^4A\log(x)+\frac{6}{5}a^2Bc^2x^5+\frac{4}{3}a^3Bcx^3+a^4Bx+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac^4x^8+\frac{1}{9}Bc^4x^9$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^4)/x,x]
```

```
[Out] a^4*B*x + 2*a^3*A*c*x^2 + (4*a^3*B*c*x^3)/3 + (3*a^2*A*c^2*x^4)/2 + (6*a^2*
B*c^2*x^5)/5 + (2*a*A*c^3*x^6)/3 + (4*a*B*c^3*x^7)/7 + (A*c^4*x^8)/8 + (B*c
^4*x^9)/9 + a^4*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x}\,dx = \int \left(a^4B+\frac{a^4A}{x}+4a^3Acx+4a^3Bcx^2+6a^2Ac^2x^3+6a^2Bc^2x^4+4aAc^3x^5+4aBc^3\right.$$
$$= a^4Bx+2a^3Acx^2+\frac{4}{3}a^3Bcx^3+\frac{3}{2}a^2Ac^2x^4+\frac{6}{5}a^2Bc^2x^5+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}$$

Mathematica [A] time = 0.01, size = 110, normalized size = 1.00

$$a^4A\log(x)+a^4Bx+2a^3Acx^2+\frac{4}{3}a^3Bcx^3+\frac{3}{2}a^2Ac^2x^4+\frac{6}{5}a^2Bc^2x^5+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac^4x^8+\frac{1}{9}Bc^4x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^4)/x,x]
```

```
[Out] a^4*B*x + 2*a^3*A*c*x^2 + (4*a^3*B*c*x^3)/3 + (3*a^2*A*c^2*x^4)/2 + (6*a^2*
B*c^2*x^5)/5 + (2*a*A*c^3*x^6)/3 + (4*a*B*c^3*x^7)/7 + (A*c^4*x^8)/8 + (B*c
^4*x^9)/9 + a^4*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^4)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^4)/x, x]
```

fricas [A] time = 0.40, size = 96, normalized size = 0.87

$$\frac{1}{9}Bc^4x^9 + \frac{1}{8}Ac^4x^8 + \frac{4}{7}Bac^3x^7 + \frac{2}{3}Aac^3x^6 + \frac{6}{5}Ba^2c^2x^5 + \frac{3}{2}Aa^2c^2x^4 + \frac{4}{3}Ba^3cx^3 + 2\,Aa^3cx^2 + Ba^4x + Aa^4\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x,x, algorithm="fricas")
```

```
[Out] 1/9*B*c^4*x^9 + 1/8*A*c^4*x^8 + 4/7*B*a*c^3*x^7 + 2/3*A*a*c^3*x^6 + 6/5*B*a
^2*c^2*x^5 + 3/2*A*a^2*c^2*x^4 + 4/3*B*a^3*c*x^3 + 2*A*a^3*c*x^2 + B*a^4*x
+ A*a^4*log(x)
```

giac [A] time = 0.15, size = 97, normalized size = 0.88

$$\frac{1}{9}Bc^4x^9 + \frac{1}{8}Ac^4x^8 + \frac{4}{7}Bac^3x^7 + \frac{2}{3}Aac^3x^6 + \frac{6}{5}Ba^2c^2x^5 + \frac{3}{2}Aa^2c^2x^4 + \frac{4}{3}Ba^3cx^3 + 2\,Aa^3cx^2 + Ba^4x + Aa^4\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x,x, algorithm="giac")
```

```
[Out] 1/9*B*c^4*x^9 + 1/8*A*c^4*x^8 + 4/7*B*a*c^3*x^7 + 2/3*A*a*c^3*x^6 + 6/5*B*a
^2*c^2*x^5 + 3/2*A*a^2*c^2*x^4 + 4/3*B*a^3*c*x^3 + 2*A*a^3*c*x^2 + B*a^4*x
+ A*a^4*log(abs(x))
```

maple [A] time = 0.04, size = 97, normalized size = 0.88

$$\frac{B\,c^4x^9}{9} + \frac{A\,c^4x^8}{8} + \frac{4Ba\,c^3x^7}{7} + \frac{2Aa\,c^3x^6}{3} + \frac{6B\,a^2c^2x^5}{5} + \frac{3A\,a^2c^2x^4}{2} + \frac{4B\,a^3c\,x^3}{3} + 2A\,a^3c\,x^2 + A\,a^4\ln(x) + B\,a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4/x,x)
```

```
[Out] a^4*B*x+2*a^3*A*c*x^2+4/3*a^3*B*c*x^3+3/2*a^2*A*c^2*x^4+6/5*a^2*B*c^2*x^5+2
/3*a*A*c^3*x^6+4/7*a*B*c^3*x^7+1/8*A*c^4*x^8+1/9*B*c^4*x^9+a^4*A*ln(x)
```

maxima [A] time = 0.48, size = 96, normalized size = 0.87

$$\frac{1}{9}Bc^4x^9 + \frac{1}{8}Ac^4x^8 + \frac{4}{7}Bac^3x^7 + \frac{2}{3}Aac^3x^6 + \frac{6}{5}Ba^2c^2x^5 + \frac{3}{2}Aa^2c^2x^4 + \frac{4}{3}Ba^3cx^3 + 2\,Aa^3cx^2 + Ba^4x + Aa^4\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^4*x^9 + 1/8*A*c^4*x^8 + 4/7*B*a*c^3*x^7 + 2/3*A*a*c^3*x^6 + 6/5*B*a
^2*c^2*x^5 + 3/2*A*a^2*c^2*x^4 + 4/3*B*a^3*c*x^3 + 2*A*a^3*c*x^2 + B*a^4*x
+ A*a^4*log(x)
```

mupad [B] time = 0.05, size = 96, normalized size = 0.87

$$\frac{A\,c^4\,x^8}{8} + \frac{B\,c^4\,x^9}{9} + A\,a^4\,\ln(x) + B\,a^4\,x + 2\,A\,a^3\,c\,x^2 + \frac{2\,A\,a\,c^3\,x^6}{3} + \frac{4\,B\,a^3\,c\,x^3}{3} + \frac{4\,B\,a\,c^3\,x^7}{7} + \frac{3\,A\,a^2\,c^2\,x^4}{2} + \frac{6\,B\,a^2\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^4*(A + B*x))/x,x)
```

```
[Out] (A*c^4*x^8)/8 + (B*c^4*x^9)/9 + A*a^4*log(x) + B*a^4*x + 2*A*a^3*c*x^2 + (2
*A*a*c^3*x^6)/3 + (4*B*a^3*c*x^3)/3 + (4*B*a*c^3*x^7)/7 + (3*A*a^2*c^2*x^4)
/2 + (6*B*a^2*c^2*x^5)/5
```

sympy [A] time = 0.22, size = 117, normalized size = 1.06

$$Aa^4\log\left(x\right) + 2Aa^3cx^2 + \frac{3Aa^2c^2x^4}{2} + \frac{2Aac^3x^6}{3} + \frac{Ac^4x^8}{8} + Ba^4x + \frac{4Ba^3cx^3}{3} + \frac{6Ba^2c^2x^5}{5} + \frac{4Bac^3x^7}{7} + \frac{Bc^4x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4/x,x)
```

```
[Out] A*a**4*log(x) + 2*A*a**3*c*x**2 + 3*A*a**2*c**2*x**4/2 + 2*A*a*c**3*x**6/3
+ A*c**4*x**8/8 + B*a**4*x + 4*B*a**3*c*x**3/3 + 6*B*a**2*c**2*x**5/5 + 4*B
*a*c**3*x**7/7 + B*c**4*x**9/9
```

3.277 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^2}\,dx$

Optimal. Leaf size=107

$$-\frac{a^4A}{x}+a^4B\log(x)+4a^3Acx+2a^3Bcx^2+2a^2Ac^2x^3+\frac{3}{2}a^2Bc^2x^4+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4x^7+\frac{1}{8}Bc^4x^8$$

Rubi [A] time = 0.06, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$2a^2Ac^2x^3+4a^3Acx-\frac{a^4A}{x}+\frac{3}{2}a^2Bc^2x^4+2a^3Bcx^2+a^4B\log(x)+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4x^7+\frac{1}{8}Bc^4x^8$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^4)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 4*a^3*A*c*x + 2*a^3*B*c*x^2 + 2*a^2*A*c^2*x^3 + (3*a^2*B*c^2
*x^4)/2 + (4*a*A*c^3*x^5)/5 + (2*a*B*c^3*x^6)/3 + (A*c^4*x^7)/7 + (B*c^4*x^
8)/8 + a^4*B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^2}\,dx &= \int \left(4a^3Ac+\frac{a^4A}{x^2}+\frac{a^4B}{x}+4a^3Bcx+6a^2Ac^2x^2+6a^2Bc^2x^3+4aAc^3x^4+4aBc^3x^5+\right.\\ &= -\frac{a^4A}{x}+4a^3Acx+2a^3Bcx^2+2a^2Ac^2x^3+\frac{3}{2}a^2Bc^2x^4+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4\end{aligned}$$

Mathematica [A] time = 0.01, size = 107, normalized size = 1.00

$$-\frac{a^4A}{x}+a^4B\log(x)+4a^3Acx+2a^3Bcx^2+2a^2Ac^2x^3+\frac{3}{2}a^2Bc^2x^4+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4x^7+\frac{1}{8}Bc^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^4)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 4*a^3*A*c*x + 2*a^3*B*c*x^2 + 2*a^2*A*c^2*x^3 + (3*a^2*B*c^2
*x^4)/2 + (4*a*A*c^3*x^5)/5 + (2*a*B*c^3*x^6)/3 + (A*c^4*x^7)/7 + (B*c^4*x^
8)/8 + a^4*B*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^4)/x^2,x]
```

[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^4)/x^2, x]

fricas [A] time = 0.40, size = 103, normalized size = 0.96

$$\frac{105\,Bc^4x^9 + 120\,Ac^4x^8 + 560\,Bac^3x^7 + 672\,Aac^3x^6 + 1260\,Ba^2c^2x^5 + 1680\,Aa^2c^2x^4 + 1680\,Ba^3cx^3 + 3360\,Aa^3cx^2 + 840\,Ba^4x\log(x) - 840\,Aa^4}{840\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^4/x^2,x, algorithm="fricas")

[Out] 1/840*(105*B*c^4*x^9 + 120*A*c^4*x^8 + 560*B*a*c^3*x^7 + 672*A*a*c^3*x^6 + 1260*B*a^2*c^2*x^5 + 1680*A*a^2*c^2*x^4 + 1680*B*a^3*c*x^3 + 3360*A*a^3*c*x^2 + 840*B*a^4*x*log(x) - 840*A*a^4)/x

giac [A] time = 0.17, size = 98, normalized size = 0.92

$$\frac{1}{8}\,Bc^4x^8 + \frac{1}{7}\,Ac^4x^7 + \frac{2}{3}\,Bac^3x^6 + \frac{4}{5}\,Aac^3x^5 + \frac{3}{2}\,Ba^2c^2x^4 + 2\,Aa^2c^2x^3 + 2\,Ba^3cx^2 + 4\,Aa^3cx + Ba^4\log\left(|x|\right) - \frac{Aa^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^4/x^2,x, algorithm="giac")

[Out] 1/8*B*c^4*x^8 + 1/7*A*c^4*x^7 + 2/3*B*a*c^3*x^6 + 4/5*A*a*c^3*x^5 + 3/2*B*a^2*c^2*x^4 + 2*A*a^2*c^2*x^3 + 2*B*a^3*c*x^2 + 4*A*a^3*c*x + B*a^4*log(abs(x)) - A*a^4/x

maple [A] time = 0.05, size = 98, normalized size = 0.92

$$\frac{B\,c^4x^8}{8} + \frac{A\,c^4x^7}{7} + \frac{2Ba\,c^3x^6}{3} + \frac{4Aa\,c^3x^5}{5} + \frac{3B\,a^2c^2x^4}{2} + 2A\,a^2c^2x^3 + 2B\,a^3c\,x^2 + 4A\,a^3cx + B\,a^4\ln(x) - \frac{A\,a^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+a)^4/x^2,x)

[Out] -a^4*A/x+4*a^3*A*c*x+2*a^3*B*c*x^2+2*a^2*A*c^2*x^3+3/2*a^2*B*c^2*x^4+4/5*a*A*c^3*x^5+2/3*a*B*c^3*x^6+1/7*A*c^4*x^7+1/8*B*c^4*x^8+a^4*B*ln(x)

maxima [A] time = 0.52, size = 97, normalized size = 0.91

$$\frac{1}{8}\,Bc^4x^8 + \frac{1}{7}\,Ac^4x^7 + \frac{2}{3}\,Bac^3x^6 + \frac{4}{5}\,Aac^3x^5 + \frac{3}{2}\,Ba^2c^2x^4 + 2\,Aa^2c^2x^3 + 2\,Ba^3cx^2 + 4\,Aa^3cx + Ba^4\log(x) - \frac{Aa^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^4/x^2,x, algorithm="maxima")

[Out] 1/8*B*c^4*x^8 + 1/7*A*c^4*x^7 + 2/3*B*a*c^3*x^6 + 4/5*A*a*c^3*x^5 + 3/2*B*a^2*c^2*x^4 + 2*A*a^2*c^2*x^3 + 2*B*a^3*c*x^2 + 4*A*a^3*c*x + B*a^4*log(x) - A*a^4/x

mupad [B] time = 0.05, size = 97, normalized size = 0.91

$$\frac{A\,c^4\,x^7}{7} - \frac{A\,a^4}{x} + \frac{B\,c^4\,x^8}{8} + B\,a^4\,\ln(x) + 4\,A\,a^3\,c\,x + \frac{4\,A\,a\,c^3\,x^5}{5} + 2\,B\,a^3\,c\,x^2 + \frac{2\,B\,a\,c^3\,x^6}{3} + 2\,A\,a^2\,c^2\,x^3 + \frac{3\,B\,a^2\,c^2\,x^4}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + c*x^2)^4*(A + B*x))/x^2,x)

[Out] (A*c^4*x^7)/7 - (A*a^4)/x + (B*c^4*x^8)/8 + B*a^4*log(x) + 4*A*a^3*c*x + (4*A*a*c^3*x^5)/5 + 2*B*a^3*c*x^2 + (2*B*a*c^3*x^6)/3 + 2*A*a^2*c^2*x^3 + (3*B*a^2*c^2*x^4)/2

sympy [A] time = 0.25, size = 112, normalized size = 1.05

$$-\frac{Aa^4}{x}+4Aa^3cx+2Aa^2c^2x^3+\frac{4Aac^3x^5}{5}+\frac{Ac^4x^7}{7}+Ba^4\log{(x)}+2Ba^3cx^2+\frac{3Ba^2c^2x^4}{2}+\frac{2Bac^3x^6}{3}+\frac{Bc^4x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4/x**2,x)
```

```
[Out] -A*a**4/x + 4*A*a**3*c*x + 2*A*a**2*c**2*x**3 + 4*A*a*c**3*x**5/5 + A*c**4*
x**7/7 + B*a**4*log(x) + 2*B*a**3*c*x**2 + 3*B*a**2*c**2*x**4/2 + 2*B*a*c**
3*x**6/3 + B*c**4*x**8/8
```

3.278 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^3} \, dx$

Optimal. Leaf size=105

$$-\frac{a^4 A}{2x^2}-\frac{a^4 B}{x}+4a^3 Ac\log(x)+4a^3 Bcx+3a^2 Ac^2x^2+2a^2 Bc^2x^3+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\frac{1}{7}Bc^4x^7$$

Rubi [A] time = 0.05, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$3a^2 Ac^2x^2+4a^3 Ac\log(x)-\frac{a^4 A}{2x^2}+2a^2 Bc^2x^3+4a^3 Bcx-\frac{a^4 B}{x}+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\frac{1}{7}Bc^4x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^4)/x^3,x]
```

```
[Out] -(a^4*A)/(2*x^2) - (a^4*B)/x + 4*a^3*B*c*x + 3*a^2*A*c^2*x^2 + 2*a^2*B*c^2*
x^3 + a*A*c^3*x^4 + (4*a*B*c^3*x^5)/5 + (A*c^4*x^6)/6 + (B*c^4*x^7)/7 + 4*a
^3*A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^3}\,dx &= \int \left(4a^3Bc+\frac{a^4A}{x^3}+\frac{a^4B}{x^2}+\frac{4a^3Ac}{x}+6a^2Ac^2x+6a^2Bc^2x^2+4aAc^3x^3+4aBc^3x^4\right.\\ &= -\frac{a^4A}{2x^2}-\frac{a^4B}{x}+4a^3Bcx+3a^2Ac^2x^2+2a^2Bc^2x^3+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 105, normalized size = 1.00

$$-\frac{a^4 A}{2x^2}-\frac{a^4 B}{x}+4a^3 Ac\log(x)+4a^3 Bcx+3a^2 Ac^2x^2+2a^2 Bc^2x^3+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\frac{1}{7}Bc^4x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^4)/x^3,x]
```

```
[Out] -1/2*(a^4*A)/x^2 - (a^4*B)/x + 4*a^3*B*c*x + 3*a^2*A*c^2*x^2 + 2*a^2*B*c^2*
x^3 + a*A*c^3*x^4 + (4*a*B*c^3*x^5)/5 + (A*c^4*x^6)/6 + (B*c^4*x^7)/7 + 4*a
^3*A*c*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^4)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^4)/x^3, x]
```

fricas [A] time = 0.39, size = 103, normalized size = 0.98

$$\frac{30\,Bc^4x^9 + 35\,Ac^4x^8 + 168\,Bac^3x^7 + 210\,Aac^3x^6 + 420\,Ba^2c^2x^5 + 630\,Aa^2c^2x^4 + 840\,Ba^3cx^3 + 840\,Aa^3cx^2\log(x) - 210\,Ba^4x - 105\,Aa^4}{210\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^3,x, algorithm="fricas")
```

```
[Out] 1/210*(30*B*c^4*x^9 + 35*A*c^4*x^8 + 168*B*a*c^3*x^7 + 210*A*a*c^3*x^6 + 42
0*B*a^2*c^2*x^5 + 630*A*a^2*c^2*x^4 + 840*B*a^3*c*x^3 + 840*A*a^3*c*x^2*log
(x) - 210*B*a^4*x - 105*A*a^4)/x^2
```

giac [A] time = 0.17, size = 98, normalized size = 0.93

$$\frac{1}{7}\,Bc^4x^7 + \frac{1}{6}\,Ac^4x^6 + \frac{4}{5}\,Bac^3x^5 + Aac^3x^4 + 2\,Ba^2c^2x^3 + 3\,Aa^2c^2x^2 + 4\,Ba^3cx + 4\,Aa^3c\log(|x|) - \frac{2\,Ba^4x + Aa^4}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^3,x, algorithm="giac")
```

```
[Out] 1/7*B*c^4*x^7 + 1/6*A*c^4*x^6 + 4/5*B*a*c^3*x^5 + A*a*c^3*x^4 + 2*B*a^2*c^2
*x^3 + 3*A*a^2*c^2*x^2 + 4*B*a^3*c*x + 4*A*a^3*c*log(abs(x)) - 1/2*(2*B*a^4
*x + A*a^4)/x^2
```

maple [A] time = 0.05, size = 98, normalized size = 0.93

$$\frac{B\,c^4x^7}{7} + \frac{A\,c^4x^6}{6} + \frac{4Ba\,c^3x^5}{5} + Aa\,c^3x^4 + 2B\,a^2c^2x^3 + 3A\,a^2c^2x^2 + 4A\,a^3c\ln(x) + 4B\,a^3cx - \frac{B\,a^4}{x} - \frac{A\,a^4}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4/x^3,x)
```

```
[Out] -1/2*a^4*A/x^2-a^4*B/x+4*a^3*B*c*x+3*a^2*A*c^2*x^2+2*a^2*B*c^2*x^3+a*A*c^3*
x^4+4/5*a*B*c^3*x^5+1/6*A*c^4*x^6+1/7*B*c^4*x^7+4*a^3*A*c*ln(x)
```

maxima [A] time = 0.49, size = 97, normalized size = 0.92

$$\frac{1}{7}\,Bc^4x^7 + \frac{1}{6}\,Ac^4x^6 + \frac{4}{5}\,Bac^3x^5 + Aac^3x^4 + 2\,Ba^2c^2x^3 + 3\,Aa^2c^2x^2 + 4\,Ba^3cx + 4\,Aa^3c\log(x) - \frac{2\,Ba^4x + Aa^4}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^3,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^4*x^7 + 1/6*A*c^4*x^6 + 4/5*B*a*c^3*x^5 + A*a*c^3*x^4 + 2*B*a^2*c^2
*x^3 + 3*A*a^2*c^2*x^2 + 4*B*a^3*c*x + 4*A*a^3*c*log(x) - 1/2*(2*B*a^4*x +
A*a^4)/x^2
```

mupad [B] time = 0.05, size = 97, normalized size = 0.92

$$\frac{A\,c^4\,x^6}{6} - \frac{\frac{A\,a^4}{2} + B\,a^4\,x}{x^2} + \frac{B\,c^4\,x^7}{7} + 4\,B\,a^3\,c\,x + A\,a\,c^3\,x^4 + \frac{4\,B\,a\,c^3\,x^5}{5} + 4\,A\,a^3\,c\,\ln(x) + 3\,A\,a^2\,c^2\,x^2 + 2\,B\,a^2\,c^2\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^4*(A + B*x))/x^3,x)
```

```
[Out] (A*c^4*x^6)/6 - ((A*a^4)/2 + B*a^4*x)/x^2 + (B*c^4*x^7)/7 + 4*B*a^3*c*x + A
*a*c^3*x^4 + (4*B*a*c^3*x^5)/5 + 4*A*a^3*c*log(x) + 3*A*a^2*c^2*x^2 + 2*B*a
^2*c^2*x^3
```

sympy [A] time = 0.33, size = 112, normalized size = 1.07

$$4Aa^3c\log(x) + 3Aa^2c^2x^2 + Aac^3x^4 + \frac{Ac^4x^6}{6} + 4Ba^3cx + 2Ba^2c^2x^3 + \frac{4Bac^3x^5}{5} + \frac{Bc^4x^7}{7} + \frac{-Aa^4 - 2Ba^4x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4/x**3,x)
```

```
[Out] 4*A*a**3*c*log(x) + 3*A*a**2*c**2*x**2 + A*a*c**3*x**4 + A*c**4*x**6/6 + 4*
B*a**3*c*x + 2*B*a**2*c**2*x**3 + 4*B*a*c**3*x**5/5 + B*c**4*x**7/7 + (-A*a
**4 - 2*B*a**4*x)/(2*x**2)
```

3.279 $\int \frac{x^4(d+ex)}{a+cx^2} dx$

Optimal. Leaf size=87

$$\frac{a^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2e\log\left(a+cx^2\right)}{2c^3}-\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}$$

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{a^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2e\log\left(a+cx^2\right)}{2c^3}-\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + c*x^2),x]
```

```
[Out] -((a*d*x)/c^2) - (a*e*x^2)/(2*c^2) + (d*x^3)/(3*c) + (e*x^4)/(4*c) + (a^(3/
2)*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(5/2) + (a^2*e*Log[a + c*x^2])/(2*c^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(d+ex)}{a+cx^2}\,dx &= \int \left(-\frac{ad}{c^2}-\frac{aex}{c^2}+\frac{dx^2}{c}+\frac{ex^3}{c}+\frac{a^2d+a^2ex}{c^2\left(a+cx^2\right)}\right)dx\\
&= -\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}+\frac{\int \frac{a^2d+a^2ex}{a+cx^2}\,dx}{c^2}\\
&= -\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}+\frac{\left(a^2d\right)\int \frac{1}{a+cx^2}\,dx}{c^2}+\frac{\left(a^2e\right)\int \frac{x}{a+cx^2}\,dx}{c^2}\\
&= -\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}+\frac{a^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2e\log\left(a+cx^2\right)}{2c^3}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 0.86

$$\frac{12a^{3/2}\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)+6a^2e\log\left(a+cx^2\right)+cx\left(cx^2(4d+3ex)-6a(2d+ex)\right)}{12c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (c*x*(-6*a*(2*d + e*x) + c*x^2*(4*d + 3*e*x)) + 12*a^(3/2)*Sqrt[c]*d*ArcTan
[(Sqrt[c]*x)/Sqrt[a]] + 6*a^2*e*Log[a + c*x^2])/(12*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^4(d+ex)}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(a + c*x^2), x]
```

fricas [A] time = 0.40, size = 176, normalized size = 2.02

$$\left[\frac{3\,c^2ex^4+4\,c^2dx^3-6\,acex^2+6\,acd\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2+2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)-12\,acdx+6\,a^2e\log\left(cx^2+a\right)}{12\,c^3},\ \frac{3\,c^2ex^4+4\,c^2dx^3-6\,acex^2+12\,acd\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)-12\,acdx+6\,a^2e\log\left(cx^2+a\right)}{12\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/12*(3*c^2*e*x^4 + 4*c^2*d*x^3 - 6*a*c*e*x^2 + 6*a*c*d*sqrt(-a/c)*log((c*
x^2 + 2*c*x*sqrt(-a/c) - a)/(c*x^2 + a)) - 12*a*c*d*x + 6*a^2*e*log(c*x^2 +
 a))/c^3, 1/12*(3*c^2*e*x^4 + 4*c^2*d*x^3 - 6*a*c*e*x^2 + 12*a*c*d*sqrt(a/c
)*arctan(c*x*sqrt(a/c)/a) - 12*a*c*d*x + 6*a^2*e*log(c*x^2 + a))/c^3]
```

giac [A] time = 0.15, size = 85, normalized size = 0.98

$$\frac{a^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}+\frac{a^2e\log\left(cx^2+a\right)}{2\,c^3}+\frac{3\,c^3x^4e+4\,c^3dx^3-6\,ac^2x^2e-12\,ac^2dx}{12\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] a^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*a^2*e*log(c*x^2 + a)/c^3
+ 1/12*(3*c^3*x^4*e + 4*c^3*d*x^3 - 6*a*c^2*x^2*e - 12*a*c^2*d*x)/c^4
```

maple [A] time = 0.05, size = 77, normalized size = 0.89

$$\frac{e\,x^4}{4c}+\frac{d\,x^3}{3c}+\frac{a^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c^2}-\frac{ae\,x^2}{2c^2}+\frac{a^2e\ln\left(c\,x^2+a\right)}{2c^3}-\frac{adx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/4/c*e*x^4+1/3/c*d*x^3-1/2*a*e*x^2/c^2-a*d*x/c^2+1/2*a^2*e*ln(c*x^2+a)/c^3
+a^2/c^2*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.19, size = 72, normalized size = 0.83

$$\frac{a^2 d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2} + \frac{a^2 e \log\left(cx^2 + a\right)}{2\,c^3} + \frac{3\,cex^4 + 4\,cdx^3 - 6\,aex^2 - 12\,adx}{12\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] a^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*a^2*e*log(c*x^2 + a)/c^3
+ 1/12*(3*c*e*x^4 + 4*c*d*x^3 - 6*a*e*x^2 - 12*a*d*x)/c^2
```

mupad [B] time = 0.06, size = 71, normalized size = 0.82

$$\frac{d\,x^3}{3\,c} + \frac{e\,x^4}{4\,c} + \frac{a^{3/2}\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}} + \frac{a^2\,e\,\ln\left(c\,x^2 + a\right)}{2\,c^3} - \frac{a\,d\,x}{c^2} - \frac{a\,e\,x^2}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (d*x^3)/(3*c) + (e*x^4)/(4*c) + (a^(3/2)*d*atan((c^(1/2)*x)/a^(1/2)))/c^(5/
2) + (a^2*e*log(a + c*x^2))/(2*c^3) - (a*d*x)/c^2 - (a*e*x^2)/(2*c^2)
```

sympy [B] time = 0.38, size = 189, normalized size = 2.17

$$-\frac{adx}{c^2} - \frac{aex^2}{2c^2} + \left(\frac{a^2e}{2c^3} - \frac{d\sqrt{-a^3c^7}}{2c^6}\right)\log\left(x + \frac{-a^2e + 2c^3\left(\frac{a^2e}{2c^3} - \frac{d\sqrt{-a^3c^7}}{2c^6}\right)}{acd}\right) + \left(\frac{a^2e}{2c^3} + \frac{d\sqrt{-a^3c^7}}{2c^6}\right)\log\left(x + \frac{-a^2e + 2c^3\left(\frac{a^2e}{2c^3} + \frac{d\sqrt{-a^3c^7}}{2c^6}\right)}{acd}\right) + \frac{dx^3}{3c} + \frac{ex^4}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+a),x)
```

```
[Out] -a*d*x/c**2 - a*e*x**2/(2*c**2) + (a**2*e/(2*c**3) - d*sqrt(-a**3*c**7)/(2*
c**6))*log(x + (-a**2*e + 2*c**3*(a**2*e/(2*c**3) - d*sqrt(-a**3*c**7)/(2*c
**6)))/(a*c*d)) + (a**2*e/(2*c**3) + d*sqrt(-a**3*c**7)/(2*c**6))*log(x + (
-a**2*e + 2*c**3*(a**2*e/(2*c**3) + d*sqrt(-a**3*c**7)/(2*c**6)))/(a*c*d))
+ d*x**3/(3*c) + e*x**4/(4*c)
```

3.280 $\int \frac{x^3(d+ex)}{a+cx^2}\,dx$

Optimal. Leaf size=73

$$\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{ad\log\left(a+cx^2\right)}{2c^2}-\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}$$

Rubi [A] time = 0.05, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{ad\log\left(a+cx^2\right)}{2c^2}-\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + c*x^2),x]
```

```
[Out] -((a*e*x)/c^2) + (d*x^2)/(2*c) + (e*x^3)/(3*c) + (a^(3/2)*e*ArcTan[(Sqrt[c]
*x)/Sqrt[a]])/c^(5/2) - (a*d*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3(d+ex)}{a+cx^2}\,dx &= \int \left(-\frac{ae}{c^2}+\frac{dx}{c}+\frac{ex^2}{c}+\frac{a^2e-acdx}{c^2\left(a+cx^2\right)}\right)dx\\
&= -\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}+\frac{\int \frac{a^2e-acdx}{a+cx^2}\,dx}{c^2}\\
&= -\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}-\frac{(ad)\int \frac{x}{a+cx^2}\,dx}{c}+\frac{\left(a^2e\right)\int \frac{1}{a+cx^2}\,dx}{c^2}\\
&= -\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}+\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{ad\log\left(a+cx^2\right)}{2c^2}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 64, normalized size = 0.88

$$\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{x(cx(3d+2ex)-6ae)-3ad\log\left(a+cx^2\right)}{6c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (a^(3/2)*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(5/2) + (x*(-6*a*e + c*x*(3*d + 2
*e*x)) - 3*a*d*Log[a + c*x^2])/(6*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(a + c*x^2), x]
```

fricas [A] time = 0.39, size = 144, normalized size = 1.97

$$\left[\frac{2\,cex^3+3\,cdx^2+3\,ae\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2+2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)-6\,aex-3\,ad\log\left(cx^2+a\right)}{6\,c^2},\frac{2\,cex^3+3\,cdx^2+6\,ae\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)-6\,aex-3\,ad\log\left(cx^2+a\right)}{6\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*c*e*x^3 + 3*c*d*x^2 + 3*a*e*sqrt(-a/c)*log((c*x^2 + 2*c*x*sqrt(-a/c
) - a)/(c*x^2 + a)) - 6*a*e*x - 3*a*d*log(c*x^2 + a))/c^2, 1/6*(2*c*e*x^3 +
 3*c*d*x^2 + 6*a*e*sqrt(a/c)*arctan(c*x*sqrt(a/c)/a) - 6*a*e*x - 3*a*d*log(
c*x^2 + a))/c^2]
```

giac [A] time = 0.16, size = 71, normalized size = 0.97

$$\frac{a^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}\,c^2}-\frac{ad\log\left(cx^2+a\right)}{2\,c^2}+\frac{2\,c^2x^3e+3\,c^2dx^2-6\,acxe}{6\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] a^2*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c^2) - 1/2*a*d*log(c*x^2 + a)/c^2 +
1/6*(2*c^2*x^3*e + 3*c^2*d*x^2 - 6*a*c*x*e)/c^3
```

maple [A] time = 0.05, size = 65, normalized size = 0.89

$$\frac{e\,x^3}{3c}+\frac{a^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c^2}+\frac{d\,x^2}{2c}-\frac{ad\ln\left(c\,x^2+a\right)}{2c^2}-\frac{aex}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/3/c*e*x^3+1/2/c*d*x^2-a*e*x/c^2-1/2*a*d*ln(c*x^2+a)/c^2+a^2/c^2*e/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.26, size = 63, normalized size = 0.86

$$\frac{a^2 e \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2} - \frac{ad\log\left(cx^2+a\right)}{2\,c^2} + \frac{2\,cex^3 + 3\,cdx^2 - 6\,aex}{6\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] a^2*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) - 1/2*a*d*log(c*x^2 + a)/c^2 +
1/6*(2*c*e*x^3 + 3*c*d*x^2 - 6*a*e*x)/c^2
```

mupad [B] time = 0.05, size = 59, normalized size = 0.81

$$\frac{d\,x^2}{2\,c} + \frac{e\,x^3}{3\,c} + \frac{a^{3/2}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}} - \frac{a\,e\,x}{c^2} - \frac{a\,d\,\ln\left(c\,x^2+a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (d*x^2)/(2*c) + (e*x^3)/(3*c) + (a^(3/2)*e*atan((c^(1/2)*x)/a^(1/2)))/c^(5/
2) - (a*e*x)/c^2 - (a*d*log(a + c*x^2))/(2*c^2)
```

sympy [B] time = 0.36, size = 167, normalized size = 2.29

$$-\frac{aex}{c^2} + \left(-\frac{ad}{2c^2} - \frac{e\sqrt{-a^3c^5}}{2c^5}\right)\log\left(x + \frac{ad + 2c^2\left(-\frac{ad}{2c^2} - \frac{e\sqrt{-a^3c^5}}{2c^5}\right)}{ae}\right) + \left(-\frac{ad}{2c^2} + \frac{e\sqrt{-a^3c^5}}{2c^5}\right)\log\left(x + \frac{ad + 2c^2\left(-\frac{ad}{2c^2} + \frac{e\sqrt{-a^3c^5}}{2c^5}\right)}{ae}\right) + \frac{dx^2}{2c} + \frac{ex^3}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+a),x)
```

```
[Out] -a*e*x/c**2 + (-a*d/(2*c**2) - e*sqrt(-a**3*c**5)/(2*c**5))*log(x + (a*d +
2*c**2*(-a*d/(2*c**2) - e*sqrt(-a**3*c**5)/(2*c**5)))/(a*e)) + (-a*d/(2*c**
2) + e*sqrt(-a**3*c**5)/(2*c**5))*log(x + (a*d + 2*c**2*(-a*d/(2*c**2) + e*
sqrt(-a**3*c**5)/(2*c**5)))/(a*e)) + d*x**2/(2*c) + e*x**3/(3*c)
```

3.281 $\int \frac{x^2(d+ex)}{a+cx^2} \, dx$

Optimal. Leaf size=61

$$-\frac{\sqrt{a}\, d \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{ae \log\left(a+cx^2\right)}{2c^2}+\frac{dx}{c}+\frac{ex^2}{2c}$$

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$-\frac{\sqrt{a}\, d \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{ae \log\left(a+cx^2\right)}{2c^2}+\frac{dx}{c}+\frac{ex^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (d*x)/c + (e*x^2)/(2*c) - (Sqrt[a]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(3/2) -
 (a*e*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(d+ex)}{a+cx^2} \, dx &= \int \left(\frac{d}{c}+\frac{ex}{c}-\frac{ad+aex}{c\left(a+cx^2\right)}\right) dx \\
&= \frac{dx}{c}+\frac{ex^2}{2c}-\frac{\int \frac{ad+aex}{a+cx^2} \, dx}{c} \\
&= \frac{dx}{c}+\frac{ex^2}{2c}-\frac{(ad)\int \frac{1}{a+cx^2} \, dx}{c}-\frac{(ae)\int \frac{x}{a+cx^2} \, dx}{c} \\
&= \frac{dx}{c}+\frac{ex^2}{2c}-\frac{\sqrt{a}\, d \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{ae \log\left(a+cx^2\right)}{2c^2}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.92

$$\frac{-2\sqrt{a}\sqrt{c}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)-ae\log\left(a+cx^2\right)+cx(2d+ex)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (c*x*(2*d + e*x) - 2*Sqrt[a]*Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]] - a*e*Lo
g[a + c*x^2])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(a + c*x^2), x]
```

fricas [A] time = 0.41, size = 127, normalized size = 2.08

$$\left[\frac{cex^2+cd\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2-2cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)+2cdx-ae\log\left(cx^2+a\right)}{2c^2},\frac{cex^2-2cd\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)+2cdx-ae\log\left(cx^2+a\right)}{2c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(c*e*x^2 + c*d*sqrt(-a/c)*log((c*x^2 - 2*c*x*sqrt(-a/c) - a)/(c*x^2 +
a)) + 2*c*d*x - a*e*log(c*x^2 + a))/c^2, 1/2*(c*e*x^2 - 2*c*d*sqrt(a/c)*arc
tan(c*x*sqrt(a/c)/a) + 2*c*d*x - a*e*log(c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 56, normalized size = 0.92

$$-\frac{ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}-\frac{ae\log\left(cx^2+a\right)}{2\,c^2}+\frac{cx^2e+2\,cdx}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*a*e*log(c*x^2 + a)/c^2 + 1/2
*(c*x^2*e + 2*c*d*x)/c^2
```

maple [A] time = 0.05, size = 53, normalized size = 0.87

$$-\frac{ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{e\,x^2}{2c}-\frac{ae\ln\left(c\,x^2+a\right)}{2c^2}+\frac{dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/2/c*e*x^2+1/c*d*x-1/2*a*e*ln(c*x^2+a)/c^2-a/c*d/(a*c)^(1/2)*arctan(1/(a*c
)^(1/2)*c*x)
```

maxima [A] time = 1.16, size = 52, normalized size = 0.85

$$-\frac{ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}-\frac{ae\log\left(cx^2+a\right)}{2\,c^2}+\frac{ex^2+2\,dx}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*a*e*log(c*x^2 + a)/c^2 + 1/2
*(e*x^2 + 2*d*x)/c
```

mupad [B] time = 1.06, size = 49, normalized size = 0.80

$$\frac{e\,x^2}{2\,c}+\frac{d\,x}{c}-\frac{\sqrt{a}\;d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{a\,e\,\ln\left(c\,x^2+a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (e*x^2)/(2*c) + (d*x)/c - (a^(1/2)*d*atan((c^(1/2)*x)/a^(1/2)))/c^(3/2) - (
a*e*log(a + c*x^2))/(2*c^2)
```

sympy [B] time = 0.45, size = 151, normalized size = 2.48

$$\left(-\frac{ae}{2c^2}-\frac{d\sqrt{-ac^5}}{2c^4}\right)\log\left(x+\frac{-ae-2c^2\left(-\frac{ae}{2c^2}-\frac{d\sqrt{-ac^5}}{2c^4}\right)}{cd}\right)+\left(-\frac{ae}{2c^2}+\frac{d\sqrt{-ac^5}}{2c^4}\right)\log\left(x+\frac{-ae-2c^2\left(-\frac{ae}{2c^2}+\frac{d\sqrt{-ac^5}}{2c^4}\right)}{cd}\right)+\frac{dx}{c}+\frac{ex^2}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+a),x)
```

```
[Out] (-a*e/(2*c**2) - d*sqrt(-a*c**5)/(2*c**4))*log(x + (-a*e - 2*c**2*(-a*e/(2*
c**2) - d*sqrt(-a*c**5)/(2*c**4)))/(c*d)) + (-a*e/(2*c**2) + d*sqrt(-a*c**5
)/(2*c**4))*log(x + (-a*e - 2*c**2*(-a*e/(2*c**2) + d*sqrt(-a*c**5)/(2*c**4
)))/(c*d)) + d*x/c + e*x**2/(2*c)
```

3.282 $\int \frac{x(d+ex)}{a+cx^2} \, dx$

Optimal. Leaf size=49

$$-\frac{\sqrt{a}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d \log \left(a+c x^2\right)}{2 c}+\frac{e x}{c}$$

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {774, 635, 205, 260}

$$-\frac{\sqrt{a}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d \log \left(a+c x^2\right)}{2 c}+\frac{e x}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (e*x)/c - (Sqrt[a]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(3/2) + (d*Log[a + c*x^
2])/(2*c)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(d+ex)}{a+cx^2} \, dx &= \frac{ex}{c}+\frac{\int \frac{-ae+cdx}{a+cx^2} \, dx}{c}\\
&= \frac{ex}{c}+d \int \frac{x}{a+cx^2} \, dx-\frac{(ae) \int \frac{1}{a+cx^2} \, dx}{c}\\
&= \frac{ex}{c}-\frac{\sqrt{a}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d \log \left(a+cx^2\right)}{2c}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 1.00

$$-\frac{\sqrt{a}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d \log \left(a+c x^2\right)}{2 c}+\frac{e x}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (e*x)/c - (Sqrt[a]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(3/2) + (d*Log[a + c*x^
2])/(2*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(a + c*x^2), x]
```

fricas [A] time = 0.41, size = 108, normalized size = 2.20

$$\left[\frac{e\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)+2\,ex+d\log\left(cx^2+a\right)}{2\,c}, -\frac{2\,e\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)-2\,ex-d\log\left(cx^2+a\right)}{2\,c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(e*sqrt(-a/c)*log((c*x^2 - 2*c*x*sqrt(-a/c) - a)/(c*x^2 + a)) + 2*e*x
+ d*log(c*x^2 + a))/c, -1/2*(2*e*sqrt(a/c)*arctan(c*x*sqrt(a/c)/a) - 2*e*x
- d*log(c*x^2 + a))/c]
```

giac [A] time = 0.15, size = 44, normalized size = 0.90

$$-\frac{a\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}\,c}+\frac{xe}{c}+\frac{d\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -a*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c) + x*e/c + 1/2*d*log(c*x^2 + a)/c
```

maple [A] time = 0.04, size = 43, normalized size = 0.88

$$-\frac{ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{d\ln\left(c\,x^2+a\right)}{2c}+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/c*e*x+1/2*d*ln(c*x^2+a)/c-1/c*a*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.15, size = 42, normalized size = 0.86

$$-\frac{ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{ex}{c}+\frac{d\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -a*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + e*x/c + 1/2*d*log(c*x^2 + a)/c
```

mupad [B] time = 1.07, size = 39, normalized size = 0.80

$$\frac{d\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{e\,x}{c}-\frac{\sqrt{a}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (d*log(a + c*x^2))/(2*c) + (e*x)/c - (a^(1/2)*e*atan((c^(1/2)*x)/a^(1/2)))/
c^(3/2)
```

sympy [B] time = 0.30, size = 112, normalized size = 2.29

$$\left(\frac{d}{2c}-\frac{e\sqrt{-ac^3}}{2c^3}\right)\log\left(x+\frac{-2c\left(\frac{d}{2c}-\frac{e\sqrt{-ac^3}}{2c^3}\right)+d}{e}\right)+\left(\frac{d}{2c}+\frac{e\sqrt{-ac^3}}{2c^3}\right)\log\left(x+\frac{-2c\left(\frac{d}{2c}+\frac{e\sqrt{-ac^3}}{2c^3}\right)+d}{e}\right)+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+a),x)
```

```
[Out] (d/(2*c) - e*sqrt(-a*c**3)/(2*c**3))*log(x + (-2*c*(d/(2*c) - e*sqrt(-a*c**
3)/(2*c**3)) + d)/e) + (d/(2*c) + e*sqrt(-a*c**3)/(2*c**3))*log(x + (-2*c*(
d/(2*c) + e*sqrt(-a*c**3)/(2*c**3)) + d)/e) + e*x/c
```

3.283 $\int \frac{d+ex}{a+cx^2} \, dx$

Optimal. Leaf size=42

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}$$

Rubi [A] time = 0.02, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {635, 205, 260}

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2),x]
```

```
[Out] (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (e*Log[a + c*x^2])/(2*c
)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a+cx^2}\,dx &= d\int \frac{1}{a+cx^2}\,dx+e\int \frac{x}{a+cx^2}\,dx\\ &= \frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2),x]
```

```
[Out] (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (e*Log[a + c*x^2])/(2*c
)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(a + c*x^2), x]
```

fricas [A] time = 0.41, size = 98, normalized size = 2.33

$$\left[\frac{ae\log\left(cx^2+a\right)-\sqrt{-ac}\,d\log\left(\frac{cx^2-2\sqrt{-ac}\,x-a}{cx^2+a}\right)}{2\,ac},\ \frac{ae\log\left(cx^2+a\right)+2\sqrt{ac}\,d\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(a*e*log(c*x^2 + a) - sqrt(-a*c)*d*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c
*x^2 + a)))/(a*c), 1/2*(a*e*log(c*x^2 + a) + 2*sqrt(a*c)*d*arctan(sqrt(a*c)
*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 32, normalized size = 0.76

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{e\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] d*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*e*log(c*x^2 + a)/c
```

maple [A] time = 0.04, size = 32, normalized size = 0.76

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{e\ln\left(c\,x^2+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/2/c*e*ln(c*x^2+a)+d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.19, size = 31, normalized size = 0.74

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{e\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] d*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*e*log(c*x^2 + a)/c
```

mupad [B] time = 0.05, size = 32, normalized size = 0.76

$$\frac{e\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2),x)
```

```
[Out] (e*log(a + c*x^2))/(2*c) + (d*atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(1/2))
```

sympy [B] time = 0.27, size = 124, normalized size = 2.95

$$\left(\frac{e}{2c}-\frac{d\sqrt{-ac^3}}{2ac^2}\right)\log\left(x+\frac{2ac\left(\frac{e}{2c}-\frac{d\sqrt{-ac^3}}{2ac^2}\right)-ae}{cd}\right)+\left(\frac{e}{2c}+\frac{d\sqrt{-ac^3}}{2ac^2}\right)\log\left(x+\frac{2ac\left(\frac{e}{2c}+\frac{d\sqrt{-ac^3}}{2ac^2}\right)-ae}{cd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a),x)
```

```
[Out] (e/(2*c) - d*sqrt(-a*c**3)/(2*a*c**2))*log(x + (2*a*c*(e/(2*c) - d*sqrt(-a*
c**3)/(2*a*c**2)) - a*e)/(c*d)) + (e/(2*c) + d*sqrt(-a*c**3)/(2*a*c**2))*lo
g(x + (2*a*c*(e/(2*c) + d*sqrt(-a*c**3)/(2*a*c**2)) - a*e)/(c*d))
```

3.284 $\int \frac{d+ex}{x(a+cx^2)} \, dx$

Optimal. Leaf size=49

$$-\frac{d \log \left(a+cx^2\right)}{2a}+\frac{e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{\sqrt{a}\, \sqrt{c}}+\frac{d \log(x)}{a}$$

Rubi [A] time = 0.04, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$-\frac{d \log \left(a+cx^2\right)}{2a}+\frac{e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{\sqrt{a}\, \sqrt{c}}+\frac{d \log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + c*x^2)),x]
```

```
[Out] (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (d*Log[x])/a - (d*Log[a
 + c*x^2])/(2*a)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{x\left(a+cx^2\right)} \, dx &= \int \left(\frac{d}{ax}+\frac{ae-cdx}{a\left(a+cx^2\right)}\right) \, dx\\
&= \frac{d \log(x)}{a}+\frac{\int \frac{ae-cdx}{a+cx^2} \, dx}{a}\\
&= \frac{d \log(x)}{a}-\frac{(cd) \int \frac{x}{a+cx^2} \, dx}{a}+e \int \frac{1}{a+cx^2} \, dx\\
&= \frac{e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{\sqrt{a}\, \sqrt{c}}+\frac{d \log(x)}{a}-\frac{d \log \left(a+cx^2\right)}{2a}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 1.00

$$-\frac{d\log\left(a+cx^2\right)}{2a}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{c}}+\frac{d\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + c*x^2)),x]
```

```
[Out] (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (d*Log[x])/a - (d*Log[a
 + c*x^2])/(2*a)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(a+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(a + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(a + c*x^2)), x]
```

fricas [A] time = 0.42, size = 109, normalized size = 2.22

$$\left[-\frac{cd\log\left(cx^2+a\right)-2\,cd\log(x)+\sqrt{-ac}\,e\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{2\,ac},-\frac{cd\log\left(cx^2+a\right)-2\,cd\log(x)-2\,\sqrt{ac}\,e\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [-1/2*(c*d*log(c*x^2 + a) - 2*c*d*log(x) + sqrt(-a*c)*e*log((c*x^2 - 2*sqrt
(-a*c)*x - a)/(c*x^2 + a)))/(a*c), -1/2*(c*d*log(c*x^2 + a) - 2*c*d*log(x)
- 2*sqrt(a*c)*e*arctan(sqrt(a*c)*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 40, normalized size = 0.82

$$\frac{\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}}-\frac{d\log\left(cx^2+a\right)}{2\,a}+\frac{d\log\left(|x|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a),x, algorithm="giac")
```

```
[Out] arctan(c*x/sqrt(a*c))*e/sqrt(a*c) - 1/2*d*log(c*x^2 + a)/a + d*log(abs(x))/
a
```

maple [A] time = 0.06, size = 39, normalized size = 0.80

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{d\ln(x)}{a}-\frac{d\ln\left(c\,x^2+a\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+a),x)
```

```
[Out] -1/2*d*ln(c*x^2+a)/a+e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a*d*ln(x)
```

maxima [A] time = 1.25, size = 38, normalized size = 0.78

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}} - \frac{d\log\left(cx^2 + a\right)}{2\,a} + \frac{d\log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] e*arctan(c*x/sqrt(a*c))/sqrt(a*c) - 1/2*d*log(c*x^2 + a)/a + d*log(x)/a
```

mupad [B] time = 1.41, size = 216, normalized size = 4.41

$$\frac{d\,\ln(x)}{a} - \frac{d\,\ln\left(a\,e\,\sqrt{-a^3\,c} + 3\,a^2\,c\,d - a^2\,c\,e\,x + 3\,c\,d\,x\,\sqrt{-a^3\,c}\right)}{2\,a} - \frac{d\,\ln\left(a\,e\,\sqrt{-a^3\,c} - 3\,a^2\,c\,d + a^2\,c\,e\,x + 3\,c\,d\,x\,\sqrt{-a^3\,c}\right)}{2\,a} + \frac{e\,\ln\left(a\,e\,\sqrt{-a^3\,c} - 3\,a^2\,c\,d + a^2\,c\,e\,x + 3\,c\,d\,x\,\sqrt{-a^3\,c}\right)\,\sqrt{-a^3\,c}}{2\,a^2\,c} - \frac{e\,\ln\left(a\,e\,\sqrt{-a^3\,c} + 3\,a^2\,c\,d - a^2\,c\,e\,x + 3\,c\,d\,x\,\sqrt{-a^3\,c}\right)\,\sqrt{-a^3\,c}}{2\,a^2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + c*x^2)),x)
```

```
[Out] (d*log(x))/a - (d*log(a*e*(-a^3*c)^(1/2) + 3*a^2*c*d - a^2*c*e*x + 3*c*d*x*
(-a^3*c)^(1/2)))/(2*a) - (d*log(a*e*(-a^3*c)^(1/2) - 3*a^2*c*d + a^2*c*e*x
+ 3*c*d*x*(-a^3*c)^(1/2)))/(2*a) + (e*log(a*e*(-a^3*c)^(1/2) - 3*a^2*c*d +
a^2*c*e*x + 3*c*d*x*(-a^3*c)^(1/2))*(-a^3*c)^(1/2))/(2*a^2*c) - (e*log(a*e*
(-a^3*c)^(1/2) + 3*a^2*c*d - a^2*c*e*x + 3*c*d*x*(-a^3*c)^(1/2))*(-a^3*c)^(
1/2))/(2*a^2*c)
```

sympy [B] time = 1.47, size = 321, normalized size = 6.55

$$\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right)\log\left(x + \frac{-12a^2cd\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right)^2 + 2a^2e^2\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right) + 6acd^2\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right) - 2ade^2 + 6cd^3}{ae^3 + 9cd^2e}\right) + \left(-\frac{d}{2a} + \frac{e\sqrt{-a^3c}}{2a^2c}\right)\log\left(x + \frac{-12a^2cd\left(-\frac{d}{2a} + \frac{e\sqrt{-a^3c}}{2a^2c}\right)^2 + 2a^2e^2\left(-\frac{d}{2a} + \frac{e\sqrt{-a^3c}}{2a^2c}\right) + 6acd^2\left(-\frac{d}{2a} + \frac{e\sqrt{-a^3c}}{2a^2c}\right) - 2ade^2 + 6cd^3}{ae^3 + 9cd^2e}\right) + \frac{d\log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+a),x)
```

```
[Out] (-d/(2*a) - e*sqrt(-a**3*c)/(2*a**2*c))*log(x + (-12*a**2*c*d*(-d/(2*a) - e
*sqrt(-a**3*c)/(2*a**2*c))**2 + 2*a**2*e**2*(-d/(2*a) - e*sqrt(-a**3*c)/(2*
a**2*c)) + 6*a*c*d**2*(-d/(2*a) - e*sqrt(-a**3*c)/(2*a**2*c)) - 2*a*d*e**2
+ 6*c*d**3)/(a*e**3 + 9*c*d**2*e)) + (-d/(2*a) + e*sqrt(-a**3*c)/(2*a**2*c)
)*log(x + (-12*a**2*c*d*(-d/(2*a) + e*sqrt(-a**3*c)/(2*a**2*c))**2 + 2*a**2
*e**2*(-d/(2*a) + e*sqrt(-a**3*c)/(2*a**2*c)) + 6*a*c*d**2*(-d/(2*a) + e*sq
rt(-a**3*c)/(2*a**2*c)) - 2*a*d*e**2 + 6*c*d**3)/(a*e**3 + 9*c*d**2*e)) + d
*log(x)/a
```

3.285 $\int \frac{d+ex}{x^2(a+cx^2)}\,dx$

Optimal. Leaf size=59

$$-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{e\log\left(a+cx^2\right)}{2a}-\frac{d}{ax}+\frac{e\log(x)}{a}$$

Rubi [A] time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{e\log\left(a+cx^2\right)}{2a}-\frac{d}{ax}+\frac{e\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + c*x^2)),x]
```

```
[Out] -(d/(a*x)) - (Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) + (e*Log[x])/a
 - (e*Log[a + c*x^2])/(2*a)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{x^2\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^2}+\frac{e}{ax}-\frac{c(d+ex)}{a\left(a+cx^2\right)}\right)dx\\
&= -\frac{d}{ax}+\frac{e\log(x)}{a}-\frac{c\int \frac{d+ex}{a+cx^2}\,dx}{a}\\
&= -\frac{d}{ax}+\frac{e\log(x)}{a}-\frac{(cd)\int \frac{1}{a+cx^2}\,dx}{a}-\frac{(ce)\int \frac{x}{a+cx^2}\,dx}{a}\\
&= -\frac{d}{ax}-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}+\frac{e\log(x)}{a}-\frac{e\log\left(a+cx^2\right)}{2a}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 59, normalized size = 1.00

$$-\frac{\sqrt{c}\, d \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{e \log\left(a+cx^2\right)}{2a}-\frac{d}{ax}+\frac{e\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + c*x^2)),x]
[Out] -(d/(a*x)) - (Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) + (e*Log[x])/a
 - (e*Log[a + c*x^2])/(2*a)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(a+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(a + c*x^2)),x]
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(a + c*x^2)), x]
```

fricas [A] time = 0.42, size = 124, normalized size = 2.10

$$\left[\frac{dx\sqrt{-\frac{c}{a}}\log\left(\frac{cx^2-2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)-ex\log\left(cx^2+a\right)+2\,ex\log(x)-2\,d}{2\,ax},-\frac{2\,dx\sqrt{\frac{c}{a}}\arctan\left(x\sqrt{\frac{c}{a}}\right)+ex\log\left(cx^2+a\right)-2\,ex\log(x)+2\,d}{2\,ax}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a),x, algorithm="fricas")
[Out] [1/2*(d*x*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) - e*x*
log(c*x^2 + a) + 2*e*x*log(x) - 2*d)/(a*x), -1/2*(2*d*x*sqrt(c/a)*arctan(x*
sqrt(c/a)) + e*x*log(c*x^2 + a) - 2*e*x*log(x) + 2*d)/(a*x)]
```

giac [A] time = 0.15, size = 55, normalized size = 0.93

$$-\frac{cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a}-\frac{e\log\left(cx^2+a\right)}{2\,a}+\frac{e\log\left(|x|\right)}{a}-\frac{d}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a),x, algorithm="giac")
[Out] -c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) - 1/2*e*log(c*x^2 + a)/a + e*log(a
bs(x))/a - d/(a*x)
```

maple [A] time = 0.06, size = 53, normalized size = 0.90

$$-\frac{cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;a}+\frac{e\ln(x)}{a}-\frac{e\ln\left(c\,x^2+a\right)}{2a}-\frac{d}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+a),x)
[Out] -1/2*e*ln(c*x^2+a)/a-c/a*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a*e*ln(x
)-1/a*d/x
```

maxima [A] time = 1.26, size = 52, normalized size = 0.88

$$-\frac{cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a}-\frac{e\log\left(cx^2+a\right)}{2\,a}+\frac{e\log(x)}{a}-\frac{d}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) - 1/2*e*log(c*x^2 + a)/a + e*log(x
)/a - d/(a*x)
```

mupad [B] time = 1.21, size = 131, normalized size = 2.22

$$\frac{e\,\ln(x)}{a}-\frac{d}{a\,x}-\frac{\ln\left(3\,a^2\,e+d\,\sqrt{-a^3\,c}-3\,e\,x\,\sqrt{-a^3\,c}+a\,c\,d\,x\right)\left(a^2\,e+d\,\sqrt{-a^3\,c}\right)}{2\,a^3}-\frac{\ln\left(3\,a^2\,e-d\,\sqrt{-a^3\,c}+3\,e\,x\,\sqrt{-a^3\,c}+a\,c\,d\,x\right)\left(a^2\,e-d\,\sqrt{-a^3\,c}\right)}{2\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + c*x^2)),x)
```

```
[Out] (e*log(x))/a - d/(a*x) - (log(3*a^2*e + d*(-a^3*c)^(1/2) - 3*e*x*(-a^3*c)^(
1/2) + a*c*d*x)*(a^2*e + d*(-a^3*c)^(1/2)))/(2*a^3) - (log(3*a^2*e - d*(-a^
3*c)^(1/2) + 3*e*x*(-a^3*c)^(1/2) + a*c*d*x)*(a^2*e - d*(-a^3*c)^(1/2)))/(2
*a^3)
```

sympy [B] time = 1.62, size = 326, normalized size = 5.53

$$\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)\log\left(x+\frac{12a^4e\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)^2-6a^3e^2\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)-2a^2cd^2\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)-6a^2e^3+2acd^2e}{9acde^2+c^2d^3}\right)+\left(-\frac{e}{2a}+\frac{d\sqrt{-a^3c}}{2a^3}\right)\log\left(x+\frac{12a^4e\left(-\frac{e}{2a}+\frac{d\sqrt{-a^3c}}{2a^3}\right)^2-6a^3e^2\left(-\frac{e}{2a}+\frac{d\sqrt{-a^3c}}{2a^3}\right)-2a^2cd^2\left(-\frac{e}{2a}+\frac{d\sqrt{-a^3c}}{2a^3}\right)-6a^2e^3+2acd^2e}{9acde^2+c^2d^3}\right)-\frac{d}{ax}+\frac{e\log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+a),x)
```

```
[Out] (-e/(2*a) - d*sqrt(-a**3*c)/(2*a**3))*log(x + (12*a**4*e*(-e/(2*a) - d*sqrt
(-a**3*c)/(2*a**3))**2 - 6*a**3*e**2*(-e/(2*a) - d*sqrt(-a**3*c)/(2*a**3))
 - 2*a**2*c*d**2*(-e/(2*a) - d*sqrt(-a**3*c)/(2*a**3)) - 6*a**2*e**3 + 2*a*c
*d**2*e)/(9*a*c*d*e**2 + c**2*d**3)) + (-e/(2*a) + d*sqrt(-a**3*c)/(2*a**3)
)*log(x + (12*a**4*e*(-e/(2*a) + d*sqrt(-a**3*c)/(2*a**3))**2 - 6*a**3*e**2
*(-e/(2*a) + d*sqrt(-a**3*c)/(2*a**3)) - 2*a**2*c*d**2*(-e/(2*a) + d*sqrt(-
a**3*c)/(2*a**3)) - 6*a**2*e**3 + 2*a*c*d**2*e)/(9*a*c*d*e**2 + c**2*d**3))
 - d/(a*x) + e*log(x)/a
```

3.286 $\int \frac{d+ex}{x^3(a+cx^2)}\,dx$

Optimal. Leaf size=73

$$-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}+\frac{cd\log\left(a+cx^2\right)}{2a^2}-\frac{cd\log(x)}{a^2}-\frac{d}{2ax^2}-\frac{e}{ax}$$

Rubi [A] time = 0.06, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{cd\log\left(a+cx^2\right)}{2a^2}-\frac{cd\log(x)}{a^2}-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{d}{2ax^2}-\frac{e}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + c*x^2)),x]
```

```
[Out] -d/(2*a*x^2) - e/(a*x) - (Sqrt[c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) -
(c*d*Log[x])/a^2 + (c*d*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{x^3\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^3}+\frac{e}{ax^2}-\frac{cd}{a^2x}-\frac{c(ae-cdx)}{a^2\left(a+cx^2\right)}\right)dx\\
&= -\frac{d}{2ax^2}-\frac{e}{ax}-\frac{cd\log(x)}{a^2}-\frac{c\int \frac{ae-cdx}{a+cx^2}\,dx}{a^2}\\
&= -\frac{d}{2ax^2}-\frac{e}{ax}-\frac{cd\log(x)}{a^2}+\frac{\left(c^2d\right)\int \frac{x}{a+cx^2}\,dx}{a^2}-\frac{(ce)\int \frac{1}{a+cx^2}\,dx}{a}\\
&= -\frac{d}{2ax^2}-\frac{e}{ax}-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{cd\log(x)}{a^2}+\frac{cd\log\left(a+cx^2\right)}{2a^2}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.00

$$-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}+\frac{cd\log\left(a+cx^2\right)}{2a^2}-\frac{cd\log(x)}{a^2}-\frac{d}{2ax^2}-\frac{e}{ax}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + c*x^2)),x]
```

```
[Out] -1/2*d/(a*x^2) - e/(a*x) - (Sqrt[c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2)
- (c*d*Log[x])/a^2 + (c*d*Log[a + c*x^2])/(2*a^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{d+ex}{x^3\left(a+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(a + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(a + c*x^2)), x]
```

fricas [A] time = 0.42, size = 153, normalized size = 2.10

$$\left[\frac{aex^2\sqrt{-\frac{c}{a}}\log\left(\frac{cx^2-2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)+cdx^2\log\left(cx^2+a\right)-2\,cdx^2\log(x)-2\,aex-ad}{2\,a^2x^2},-\frac{2\,aex^2\sqrt{\frac{c}{a}}\arctan\left(x\sqrt{\frac{c}{a}}\right)-cdx^2\log\left(cx^2+a\right)+2\,cdx^2\log(x)+2\,aex+ad}{2\,a^2x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(a*e*x^2*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) +
c*d*x^2*log(c*x^2 + a) - 2*c*d*x^2*log(x) - 2*a*e*x - a*d)/(a^2*x^2), -1/2*
(2*a*e*x^2*sqrt(c/a)*arctan(x*sqrt(c/a)) - c*d*x^2*log(c*x^2 + a) + 2*c*d*x
^2*log(x) + 2*a*e*x + a*d)/(a^2*x^2)]
```

giac [A] time = 0.15, size = 66, normalized size = 0.90

$$-\frac{c\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}\,a}+\frac{cd\log\left(cx^2+a\right)}{2\,a^2}-\frac{cd\log\left(|x|\right)}{a^2}-\frac{2\,axe+ad}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -c*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*a) + 1/2*c*d*log(c*x^2 + a)/a^2 - c*d
*log(abs(x))/a^2 - 1/2*(2*a*x*e + a*d)/(a^2*x^2)
```

maple [A] time = 0.05, size = 65, normalized size = 0.89

$$-\frac{ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;a}-\frac{cd\ln(x)}{a^2}+\frac{cd\ln\left(c\,x^2+a\right)}{2a^2}-\frac{e}{ax}-\frac{d}{2a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+a),x)
```

```
[Out] 1/2*c*d*ln(c*x^2+a)/a^2-c/a*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)-1/a*e/x
-1/2/a*d/x^2-c*d*ln(x)/a^2
```

maxima [A] time = 1.37, size = 60, normalized size = 0.82

$$-\frac{ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a}+\frac{cd\log\left(cx^2+a\right)}{2\,a^2}-\frac{cd\log(x)}{a^2}-\frac{2\,ex+d}{2\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -c*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*c*d*log(c*x^2 + a)/a^2 - c*d
*log(x)/a^2 - 1/2*(2*e*x + d)/(a*x^2)
```

mupad [B] time = 1.25, size = 154, normalized size = 2.11

$$\frac{\ln\left(a\,e\,\sqrt{-a^5\,c}+3\,a^3\,c\,d-a^3\,c\,e\,x+3\,c\,d\,x\,\sqrt{-a^5\,c}\right)\left(e\,\sqrt{-a^5\,c}+a^2\,c\,d\right)}{2\,a^4}-\frac{\ln\left(a\,e\,\sqrt{-a^5\,c}-3\,a^3\,c\,d+a^3\,c\,e\,x+3\,c\,d\,x\,\sqrt{-a^5\,c}\right)\left(e\,\sqrt{-a^5\,c}-a^2\,c\,d\right)}{2\,a^4}-\frac{\frac{d}{2\,a}+\frac{e\,x}{a}}{x^2}-\frac{c\,d\,\ln(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + c*x^2)),x)
```

```
[Out] (log(a*e*(-a^5*c)^(1/2) + 3*a^3*c*d - a^3*c*e*x + 3*c*d*x*(-a^5*c)^(1/2))*(
e*(-a^5*c)^(1/2) + a^2*c*d))/(2*a^4) - (log(a*e*(-a^5*c)^(1/2) - 3*a^3*c*d
+ a^3*c*e*x + 3*c*d*x*(-a^5*c)^(1/2))*(e*(-a^5*c)^(1/2) - a^2*c*d))/(2*a^4)
 - (d/(2*a) + (e*x)/a)/x^2 - (c*d*log(x))/a^2
```

sympy [B] time = 1.70, size = 360, normalized size = 4.93

$$\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)\log\left(x+\frac{-12a^4d\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)^2-2a^3e^2\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)-6a^2cd^2\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)-2acde^2+6c^2d^3}{ace^3+9c^2d^2e}\right)+\left(\frac{cd}{2a^2}+\frac{e\sqrt{-a^5c}}{2a^4}\right)\log\left(x+\frac{-12a^4d\left(\frac{cd}{2a^2}+\frac{e\sqrt{-a^5c}}{2a^4}\right)^2-2a^3e^2\left(\frac{cd}{2a^2}+\frac{e\sqrt{-a^5c}}{2a^4}\right)-6a^2cd^2\left(\frac{cd}{2a^2}+\frac{e\sqrt{-a^5c}}{2a^4}\right)-2acde^2+6c^2d^3}{ace^3+9c^2d^2e}\right)+\frac{-d-2ex}{2ax^2}-\frac{cd\log(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+a),x)
```

```
[Out] (c*d/(2*a**2) - e*sqrt(-a**5*c)/(2*a**4))*log(x + (-12*a**4*d*(c*d/(2*a**2)
 - e*sqrt(-a**5*c)/(2*a**4))**2 - 2*a**3*e**2*(c*d/(2*a**2) - e*sqrt(-a**5*
c)/(2*a**4)) - 6*a**2*c*d**2*(c*d/(2*a**2) - e*sqrt(-a**5*c)/(2*a**4)) - 2*
a*c*d*e**2 + 6*c**2*d**3)/(a*c*e**3 + 9*c**2*d**2*e)) + (c*d/(2*a**2) + e*s
qrt(-a**5*c)/(2*a**4))*log(x + (-12*a**4*d*(c*d/(2*a**2) + e*sqrt(-a**5*c)/
(2*a**4))**2 - 2*a**3*e**2*(c*d/(2*a**2) + e*sqrt(-a**5*c)/(2*a**4)) - 6*a*
*2*c*d**2*(c*d/(2*a**2) + e*sqrt(-a**5*c)/(2*a**4)) - 2*a*c*d*e**2 + 6*c**2
*d**3)/(a*c*e**3 + 9*c**2*d**2*e)) + (-d - 2*e*x)/(2*a*x**2) - c*d*log(x)/a
**2
```

3.287 $\int \frac{d+ex}{x^4(a+cx^2)} dx$

Optimal. Leaf size=83

$$\frac{c^{3/2} d \tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}+\frac{cd}{a^2 x}+\frac{ce\log\left(a+cx^2\right)}{2a^2}-\frac{ce\log(x)}{a^2}-\frac{d}{3ax^3}-\frac{e}{2ax^2}$$

Rubi [A] time = 0.06, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{c^{3/2} d \tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}+\frac{cd}{a^2 x}+\frac{ce\log\left(a+cx^2\right)}{2a^2}-\frac{ce\log(x)}{a^2}-\frac{d}{3ax^3}-\frac{e}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^4*(a + c*x^2)),x]
```

```
[Out] -d/(3*a*x^3) - e/(2*a*x^2) + (c*d)/(a^2*x) + (c^(3/2)*d*ArcTan[(Sqrt[c]*x)/
Sqrt[a]])/a^(5/2) - (c*e*Log[x])/a^2 + (c*e*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{x^4\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^4}+\frac{e}{ax^3}-\frac{cd}{a^2x^2}-\frac{ce}{a^2x}+\frac{c^2(d+ex)}{a^2\left(a+cx^2\right)}\right)dx\\
&= -\frac{d}{3ax^3}-\frac{e}{2ax^2}+\frac{cd}{a^2x}-\frac{ce\log(x)}{a^2}+\frac{c^2\int \frac{d+ex}{a+cx^2}\,dx}{a^2}\\
&= -\frac{d}{3ax^3}-\frac{e}{2ax^2}+\frac{cd}{a^2x}-\frac{ce\log(x)}{a^2}+\frac{\left(c^2d\right)\int \frac{1}{a+cx^2}\,dx}{a^2}+\frac{\left(c^2e\right)\int \frac{x}{a+cx^2}\,dx}{a^2}\\
&= -\frac{d}{3ax^3}-\frac{e}{2ax^2}+\frac{cd}{a^2x}+\frac{c^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}-\frac{ce\log(x)}{a^2}+\frac{ce\log\left(a+cx^2\right)}{2a^2}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 77, normalized size = 0.93

$$\frac{c^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{a^{5/2}}-\frac{-3cex^3\log\left(a+cx^2\right)+2ad+3aex-6cdx^2+6cex^3\log(x)}{6a^2x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^4*(a + c*x^2)),x]
```

```
[Out] (c^(3/2)*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(5/2) - (2*a*d + 3*a*e*x - 6*c*d*
x^2 + 6*c*e*x^3*Log[x] - 3*c*e*x^3*Log[a + c*x^2])/(6*a^2*x^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^4\left(a+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^4*(a + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^4*(a + c*x^2)), x]
```

fricas [A] time = 0.41, size = 170, normalized size = 2.05

$$\left[\frac{3\,cdx^3\sqrt{-\frac{c}{a}}\log\left(\frac{cx^2+2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)+3\,cex^3\log\left(cx^2+a\right)-6\,cex^3\log(x)+6\,cdx^2-3\,aex-2\,ad}{6\,a^2x^3},\frac{6\,cdx^3\sqrt{\frac{c}{a}}\arctan\left(x\sqrt{\frac{c}{a}}\right)+3\,cex^3\log\left(cx^2+a\right)-6\,cex^3\log(x)+6\,cdx^2-3\,aex-2\,ad}{6\,a^2x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/6*(3*c*d*x^3*sqrt(-c/a)*log((c*x^2 + 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a))
+ 3*c*e*x^3*log(c*x^2 + a) - 6*c*e*x^3*log(x) + 6*c*d*x^2 - 3*a*e*x - 2*a*d
)/(a^2*x^3), 1/6*(6*c*d*x^3*sqrt(c/a)*arctan(x*sqrt(c/a)) + 3*c*e*x^3*log(c
*x^2 + a) - 6*c*e*x^3*log(x) + 6*c*d*x^2 - 3*a*e*x - 2*a*d)/(a^2*x^3)]
```

giac [A] time = 0.15, size = 76, normalized size = 0.92

$$\frac{c^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a^2}+\frac{ce\log\left(cx^2+a\right)}{2\,a^2}-\frac{ce\log\left(|x|\right)}{a^2}+\frac{6\,cdx^2-3\,axe-2\,ad}{6\,a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+a),x, algorithm="giac")
```

```
[Out] c^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) + 1/2*c*e*log(c*x^2 + a)/a^2 -
c*e*log(abs(x))/a^2 + 1/6*(6*c*d*x^2 - 3*a*x*e - 2*a*d)/(a^2*x^3)
```

maple [A] time = 0.06, size = 75, normalized size = 0.90

$$\frac{c^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;a^2}-\frac{ce\ln(x)}{a^2}+\frac{ce\ln\left(c\,x^2+a\right)}{2a^2}+\frac{cd}{a^2x}-\frac{e}{2a\,x^2}-\frac{d}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^4/(c*x^2+a),x)
```

```
[Out] 1/2*c*e*ln(c*x^2+a)/a^2+c^2/a^2*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)-1/2
*e/a/x^2-1/3*d/a/x^3-c*e*ln(x)/a^2+c*d/a^2/x
```

maxima [A] time = 1.37, size = 72, normalized size = 0.87

$$\frac{c^2 d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a^2}+\frac{ce\log\left(cx^2+a\right)}{2\,a^2}-\frac{ce\log(x)}{a^2}+\frac{6\,cdx^2-3\,aex-2\,ad}{6\,a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] c^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) + 1/2*c*e*log(c*x^2 + a)/a^2 -
c*e*log(x)/a^2 + 1/6*(6*c*d*x^2 - 3*a*e*x - 2*a*d)/(a^2*x^3)
```

mupad [B] time = 0.26, size = 177, normalized size = 2.13

$$\frac{\ln\left(d\sqrt{-a^5c^3}-3ex\sqrt{-a^5c^3}+3a^3ce+a^2c^2dx\right)\left(d\sqrt{-a^5c^3}+a^3ce\right)}{2a^5}-\frac{\frac{d}{3a}+\frac{ex}{2a}-\frac{cdx^2}{a^2}}{x^3}-\frac{\ln\left(3ex\sqrt{-a^5c^3}-d\sqrt{-a^5c^3}+3a^3ce+a^2c^2dx\right)\left(d\sqrt{-a^5c^3}-a^3ce\right)}{2a^5}-\frac{ce\ln(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^4*(a + c*x^2)),x)
```

```
[Out] (log(d*(-a^5*c^3)^(1/2) - 3*e*x*(-a^5*c^3)^(1/2) + 3*a^3*c*e + a^2*c^2*d*x)
*(d*(-a^5*c^3)^(1/2) + a^3*c*e))/(2*a^5) - (d/(3*a) + (e*x)/(2*a) - (c*d*x^
2)/a^2)/x^3 - (log(3*e*x*(-a^5*c^3)^(1/2) - d*(-a^5*c^3)^(1/2) + 3*a^3*c*e
+ a^2*c^2*d*x)*(d*(-a^5*c^3)^(1/2) - a^3*c*e))/(2*a^5) - (c*e*log(x))/a^2
```

sympy [B] time = 1.77, size = 408, normalized size = 4.92

$$\left(\frac{ce}{2a^2}-\frac{d\sqrt{-a^5c^3}}{2a^5}\right)\log\left(x+\frac{12a^6e\left(\frac{ce}{2a^2}-\frac{d\sqrt{-a^5c^3}}{2a^5}\right)^2+6a^4ce^2\left(\frac{ce}{2a^2}-\frac{d\sqrt{-a^5c^3}}{2a^5}\right)+2a^3c^2d^2\left(\frac{ce}{2a^2}-\frac{d\sqrt{-a^5c^3}}{2a^5}\right)-6a^2c^2e^3+2ac^3d^2e}{9ac^3de^2+c^4d^3}\right)+\left(\frac{ce}{2a^2}+\frac{d\sqrt{-a^5c^3}}{2a^5}\right)\log\left(x+\frac{12a^6e\left(\frac{ce}{2a^2}+\frac{d\sqrt{-a^5c^3}}{2a^5}\right)^2+6a^4ce^2\left(\frac{ce}{2a^2}+\frac{d\sqrt{-a^5c^3}}{2a^5}\right)+2a^3c^2d^2\left(\frac{ce}{2a^2}+\frac{d\sqrt{-a^5c^3}}{2a^5}\right)-6a^2c^2e^3+2ac^3d^2e}{9ac^3de^2+c^4d^3}\right)-\frac{ce\log(x)}{a^2}+\frac{-2ad-3aex+6cdx^2}{6a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**4/(c*x**2+a),x)
```

```
[Out] (c*e/(2*a**2) - d*sqrt(-a**5*c**3)/(2*a**5))*log(x + (12*a**6*e*(c*e/(2*a**
2) - d*sqrt(-a**5*c**3)/(2*a**5))**2 + 6*a**4*c*e**2*(c*e/(2*a**2) - d*sqrt
(-a**5*c**3)/(2*a**5)) + 2*a**3*c**2*d**2*(c*e/(2*a**2) - d*sqrt(-a**5*c**3
)/(2*a**5)) - 6*a**2*c**2*e**3 + 2*a*c**3*d**2*e)/(9*a*c**3*d*e**2 + c**4*d
**3)) + (c*e/(2*a**2) + d*sqrt(-a**5*c**3)/(2*a**5))*log(x + (12*a**6*e*(c*
e/(2*a**2) + d*sqrt(-a**5*c**3)/(2*a**5))**2 + 6*a**4*c*e**2*(c*e/(2*a**2)
+ d*sqrt(-a**5*c**3)/(2*a**5)) + 2*a**3*c**2*d**2*(c*e/(2*a**2) + d*sqrt(-a
**5*c**3)/(2*a**5)) - 6*a**2*c**2*e**3 + 2*a*c**3*d**2*e)/(9*a*c**3*d*e**2
+ c**4*d**3)) - c*e*log(x)/a**2 + (-2*a*d - 3*a*e*x + 6*c*d*x**2)/(6*a**2*x
**3)
```

3.288 $\int \frac{d+ex}{a-cx^2}\,dx$

Optimal. Leaf size=43

$$\frac{d\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e\log\left(a-cx^2\right)}{2c}$$

Rubi [A] time = 0.02, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {635, 208, 260}

$$\frac{d\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e\log\left(a-cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a - c*x^2),x]
```

```
[Out] (d*ArcTanh[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) - (e*Log[a - c*x^2])/(2*
c)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a-cx^2}\,dx &= d\int \frac{1}{a-cx^2}\,dx+e\int \frac{x}{a-cx^2}\,dx\\ &= \frac{d\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e\log\left(a-cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 1.00

$$\frac{d\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e\log\left(a-cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a - c*x^2),x]
```

```
[Out] (d*ArcTanh[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) - (e*Log[a - c*x^2])/(2*
c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{a-cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a - c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(a - c*x^2), x]
```

fricas [A] time = 0.42, size = 102, normalized size = 2.37

$$\left[-\frac{ae\log\left(cx^2-a\right)-\sqrt{ac}\,d\log\left(\frac{cx^2+2\sqrt{ac}\,x+a}{cx^2-a}\right)}{2\,ac},-\frac{ae\log\left(cx^2-a\right)+2\sqrt{-ac}\,d\arctan\left(\frac{\sqrt{-ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] [-1/2*(a*e*log(c*x^2 - a) - sqrt(a*c)*d*log((c*x^2 + 2*sqrt(a*c)*x + a)/(c*
x^2 - a)))/(a*c), -1/2*(a*e*log(c*x^2 - a) + 2*sqrt(-a*c)*d*arctan(sqrt(-a*
c)*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 37, normalized size = 0.86

$$-\frac{d\arctan\left(\frac{cx}{\sqrt{-ac}}\right)}{\sqrt{-ac}}-\frac{e\log\left(cx^2-a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -d*arctan(c*x/sqrt(-a*c))/sqrt(-a*c) - 1/2*e*log(c*x^2 - a)/c
```

maple [A] time = 0.04, size = 34, normalized size = 0.79

$$\frac{d\,\mathrm{arctanh}\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}-\frac{e\ln\left(c\,x^2-a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(-c*x^2+a),x)
```

```
[Out] -1/2*e/c*ln(c*x^2-a)+d/(a*c)^(1/2)*arctanh(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.28, size = 49, normalized size = 1.14

$$-\frac{d\log\left(\frac{cx-\sqrt{ac}}{cx+\sqrt{ac}}\right)}{2\sqrt{ac}}-\frac{e\log\left(cx^2-a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/2*d*log((c*x - sqrt(a*c))/(c*x + sqrt(a*c)))/sqrt(a*c) - 1/2*e*log(c*x^2
 - a)/c
```

mupad [B] time = 0.21, size = 103, normalized size = 2.40

$$\frac{d\ln\left(a\,c+x\,\sqrt{a\,c^3}\right)\,\sqrt{a\,c^3}}{2\,a\,c^2}-\frac{e\ln\left(x\,\sqrt{a\,c^3}-a\,c\right)}{2\,c}-\frac{e\ln\left(a\,c+x\,\sqrt{a\,c^3}\right)}{2\,c}-\frac{d\ln\left(x\,\sqrt{a\,c^3}-a\,c\right)\,\sqrt{a\,c^3}}{2\,a\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a - c*x^2),x)
```

```
[Out] (d*log(a*c + x*(a*c^3)^(1/2))*(a*c^3)^(1/2))/(2*a*c^2) - (e*log(x*(a*c^3)^(
1/2) - a*c))/(2*c) - (e*log(a*c + x*(a*c^3)^(1/2)))/(2*c) - (d*log(x*(a*c^3
)^(1/2) - a*c)*(a*c^3)^(1/2))/(2*a*c^2)
```

sympy [B] time = 0.28, size = 119, normalized size = 2.77

$$-\left(\frac{e}{2c}-\frac{d\sqrt{ac^3}}{2ac^2}\right)\log\left(x+\frac{-2ac\left(\frac{e}{2c}-\frac{d\sqrt{ac^3}}{2ac^2}\right)+ae}{cd}\right)-\left(\frac{e}{2c}+\frac{d\sqrt{ac^3}}{2ac^2}\right)\log\left(x+\frac{-2ac\left(\frac{e}{2c}+\frac{d\sqrt{ac^3}}{2ac^2}\right)+ae}{cd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x**2+a),x)
```

```
[Out] -(e/(2*c) - d*sqrt(a*c**3)/(2*a*c**2))*log(x + (-2*a*c*(e/(2*c) - d*sqrt(a*
c**3)/(2*a*c**2)) + a*e)/(c*d)) - (e/(2*c) + d*sqrt(a*c**3)/(2*a*c**2))*log
(x + (-2*a*c*(e/(2*c) + d*sqrt(a*c**3)/(2*a*c**2)) + a*e)/(c*d))
```

3.289 $\int \frac{x^4(d+ex)}{(a+cx^2)^2} dx$

Optimal. Leaf size=85

$$-\frac{3\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{ae\log\left(a+cx^2\right)}{c^3}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}+\frac{3dx}{2c^2}+\frac{ex^2}{c^2}$$

Rubi [A] time = 0.07, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {819, 801, 635, 205, 260}

$$-\frac{3\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{ae\log\left(a+cx^2\right)}{c^3}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}+\frac{3dx}{2c^2}+\frac{ex^2}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (3*d*x)/(2*c^2) + (e*x^2)/c^2 - (x^3*(d + e*x))/(2*c*(a + c*x^2)) - (3*Sqrt
[a]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*c^(5/2)) - (a*e*Log[a + c*x^2])/c^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^4(d+ex)}{\left(a+cx^2\right)^2}\,dx = -\frac{x^3(d+ex)}{2c\left(a+cx^2\right)} + \frac{\int \frac{x^2(3ad+4aex)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{x^3(d+ex)}{2c\left(a+cx^2\right)} + \frac{\int \left(\frac{3ad}{c}+\frac{4aex}{c}-\frac{3a^2d+4a^2ex}{c\left(a+cx^2\right)}\right)dx}{2ac}$$

$$= \frac{3dx}{2c^2} + \frac{ex^2}{c^2} - \frac{x^3(d+ex)}{2c\left(a+cx^2\right)} - \frac{\int \frac{3a^2d+4a^2ex}{a+cx^2}\,dx}{2ac^2}$$

$$= \frac{3dx}{2c^2} + \frac{ex^2}{c^2} - \frac{x^3(d+ex)}{2c\left(a+cx^2\right)} - \frac{(3ad)\int \frac{1}{a+cx^2}\,dx}{2c^2} - \frac{(2ae)\int \frac{x}{a+cx^2}\,dx}{c^2}$$

$$= \frac{3dx}{2c^2} + \frac{ex^2}{c^2} - \frac{x^3(d+ex)}{2c\left(a+cx^2\right)} - \frac{3\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}} - \frac{ae\log\left(a+cx^2\right)}{c^3}$$

Mathematica [A] time = 0.06, size = 77, normalized size = 0.91

$$\frac{\frac{a(cdx-ae)}{a+cx^2} - 3\sqrt{a}\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right) - 2ae\log\left(a+cx^2\right) + 2cdx + cex^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (2*c*d*x + c*e*x^2 + (a*(-(a*e) + c*d*x))/(a + c*x^2) - 3*Sqrt[a]*Sqrt[c]*d
*ArcTan[(Sqrt[c]*x)/Sqrt[a]] - 2*a*e*Log[a + c*x^2])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(a + c*x^2)^2, x]
```

fricas [A] time = 0.40, size = 248, normalized size = 2.92

$$\left[\frac{2c^2ex^4 + 4c^2dx^3 + 2acex^2 + 6acdx - 2a^2e + 3\left(c^2dx^2 + acd\right)\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2 - 2cx\sqrt{-\frac{a}{c}} - a}{cx^2+a}\right) - 4\left(acex^2 + a^2e\right)\log\left(cx^2+a\right)}{4\left(c^4x^2 + ac^3\right)}, \frac{c^2ex^4 + 2c^2dx^3 + acex^2 + 3acdx - a^2e - 3\left(c^2dx^2 + acd\right)\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right) - 2\left(acex^2 + a^2e\right)\log\left(cx^2+a\right)}{2\left(c^4x^2 + ac^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*c^2*e*x^4 + 4*c^2*d*x^3 + 2*a*c*e*x^2 + 6*a*c*d*x - 2*a^2*e + 3*(c^
2*d*x^2 + a*c*d)*sqrt(-a/c)*log((c*x^2 - 2*c*x*sqrt(-a/c) - a)/(c*x^2 + a))
 - 4*(a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(c^4*x^2 + a*c^3), 1/2*(c^2*e*x^4
+ 2*c^2*d*x^3 + a*c*e*x^2 + 3*a*c*d*x - a^2*e - 3*(c^2*d*x^2 + a*c*d)*sqrt(
a/c)*arctan(c*x*sqrt(a/c)/a) - 2*(a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(c^4*x
^2 + a*c^3)]
```

giac [A] time = 0.20, size = 87, normalized size = 1.02

$$-\frac{3\,ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c^{2}}-\frac{ae\log\left(cx^{2}+a\right)}{c^{3}}+\frac{c^{2}x^{2}e+2\,c^{2}dx}{2\,c^{4}}+\frac{acdx-a^{2}e}{2\,\left(cx^{2}+a\right)c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) - a*e*log(c*x^2 + a)/c^3 + 1
/2*(c^2*x^2*e + 2*c^2*d*x)/c^4 + 1/2*(a*c*d*x - a^2*e)/((c*x^2 + a)*c^3)
```

maple [A] time = 0.05, size = 88, normalized size = 1.04

$$\frac{adx}{2\left(c\,x^{2}+a\right)c^{2}}-\frac{3ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^{2}}+\frac{e\,x^{2}}{2c^{2}}-\frac{a^{2}e}{2\left(c\,x^{2}+a\right)c^{3}}-\frac{ae\ln\left(c\,x^{2}+a\right)}{c^{3}}+\frac{dx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/2/c^2*e*x^2+1/c^2*d*x+1/2*a/c^2/(c*x^2+a)*d*x-1/2*a^2/c^3/(c*x^2+a)*e-a*e
*ln(c*x^2+a)/c^3-3/2*a/c^2*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.22, size = 81, normalized size = 0.95

$$-\frac{3\,ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c^{2}}+\frac{acdx-a^{2}e}{2\,\left(c^{4}x^{2}+ac^{3}\right)}-\frac{ae\log\left(cx^{2}+a\right)}{c^{3}}+\frac{ex^{2}+2\,dx}{2\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*(a*c*d*x - a^2*e)/(c^4
*x^2 + a*c^3) - a*e*log(c*x^2 + a)/c^3 + 1/2*(e*x^2 + 2*d*x)/c^2
```

mupad [B] time = 0.06, size = 81, normalized size = 0.95

$$\frac{e\,x^{2}}{2\,c^{2}}-\frac{\frac{a^{2}\,e}{2\,c}-\frac{a\,d\,x}{2}}{c^{3}\,x^{2}+a\,c^{2}}+\frac{d\,x}{c^{2}}-\frac{3\,\sqrt{a}\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,c^{5/2}}-\frac{a\,e\,\ln\left(c\,x^{2}+a\right)}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (e*x^2)/(2*c^2) - ((a^2*e)/(2*c) - (a*d*x)/2)/(a*c^2 + c^3*x^2) + (d*x)/c^2
 - (3*a^(1/2)*d*atan((c^(1/2)*x)/a^(1/2)))/(2*c^(5/2)) - (a*e*log(a + c*x^2
))/c^3
```

sympy [B] time = 0.72, size = 189, normalized size = 2.22

$$\left(-\frac{ae}{c^{3}}-\frac{3d\sqrt{-ac^{7}}}{4c^{6}}\right)\log\left(x+\frac{-4ae-4c^{3}\left(-\frac{ae}{c^{3}}-\frac{3d\sqrt{-ac^{7}}}{4c^{6}}\right)}{3cd}\right)+\left(-\frac{ae}{c^{3}}+\frac{3d\sqrt{-ac^{7}}}{4c^{6}}\right)\log\left(x+\frac{-4ae-4c^{3}\left(-\frac{ae}{c^{3}}+\frac{3d\sqrt{-ac^{7}}}{4c^{6}}\right)}{3cd}\right)+\frac{-a^{2}e+acdx}{2ac^{3}+2c^{4}x^{2}}+\frac{dx}{c^{2}}+\frac{ex^{2}}{2c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] (-a*e/c**3 - 3*d*sqrt(-a*c**7)/(4*c**6))*log(x + (-4*a*e - 4*c**3*(-a*e/c**
3 - 3*d*sqrt(-a*c**7)/(4*c**6)))/(3*c*d)) + (-a*e/c**3 + 3*d*sqrt(-a*c**7)/
(4*c**6))*log(x + (-4*a*e - 4*c**3*(-a*e/c**3 + 3*d*sqrt(-a*c**7)/(4*c**6))
)/(3*c*d)) + (-a**2*e + a*c*d*x)/(2*a*c**3 + 2*c**4*x**2) + d*x/c**2 + e*x*
*2/(2*c**2)
```

3.290 $\int \frac{x^3(d+ex)}{\left(a+cx^2\right)^2} dx$

Optimal. Leaf size=78

$$-\frac{3\sqrt{a}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{2c^{5/2}}+\frac{d \log\left(a+cx^2\right)}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{3ex}{2c^2}$$

Rubi [A] time = 0.04, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {819, 774, 635, 205, 260}

$$\frac{d \log\left(a+cx^2\right)}{2c^2}-\frac{3\sqrt{a}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{3ex}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (3*e*x)/(2*c^2) - (x^2*(d + e*x))/(2*c*(a + c*x^2)) - (3*Sqrt[a]*e*ArcTan[(
Sqrt[c]*x)/Sqrt[a]])/(2*c^(5/2)) + (d*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(d+ex)}{\left(a+cx^2\right)^2}\,dx &= -\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{\int \frac{x(2ad+3aex)}{a+cx^2}\,dx}{2ac}\\
&= \frac{3ex}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{\int \frac{-3a^2e+2acdx}{a+cx^2}\,dx}{2ac^2}\\
&= \frac{3ex}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{d\int \frac{x}{a+cx^2}\,dx}{c}-\frac{(3ae)\int \frac{1}{a+cx^2}\,dx}{2c^2}\\
&= \frac{3ex}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}-\frac{3\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}+\frac{d\log\left(a+cx^2\right)}{2c^2}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 75, normalized size = 0.96

$$
-\frac{3\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}+\frac{ad+aex}{2c^2\left(a+cx^2\right)}+\frac{d\log\left(a+cx^2\right)}{2c^2}+\frac{ex}{c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (e*x)/c^2 + (a*d + a*e*x)/(2*c^2*(a + c*x^2)) - (3*Sqrt[a]*e*ArcTan[(Sqrt[c
]*x)/Sqrt[a]])/(2*c^(5/2)) + (d*Log[a + c*x^2])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{x^3(d+ex)}{\left(a+cx^2\right)^2}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(a + c*x^2)^2, x]
```

fricas [A] time = 0.41, size = 192, normalized size = 2.46

$$
\left[\frac{4\,cex^3+6\,aex+3\left(cex^2+ae\right)\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)+2\,ad+2\left(cdx^2+ad\right)\log\left(cx^2+a\right)}{4\left(c^3x^2+ac^2\right)},\ \frac{2\,cex^3+3\,aex-3\left(cex^2+ae\right)\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)+ad+\left(cdx^2+ad\right)\log\left(cx^2+a\right)}{2\left(c^3x^2+ac^2\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(4*c*e*x^3 + 6*a*e*x + 3*(c*e*x^2 + a*e)*sqrt(-a/c)*log((c*x^2 - 2*c*x
*sqrt(-a/c) - a)/(c*x^2 + a)) + 2*a*d + 2*(c*d*x^2 + a*d)*log(c*x^2 + a))/(
c^3*x^2 + a*c^2), 1/2*(2*c*e*x^3 + 3*a*e*x - 3*(c*e*x^2 + a*e)*sqrt(a/c)*ar
ctan(c*x*sqrt(a/c)/a) + a*d + (c*d*x^2 + a*d)*log(c*x^2 + a))/(c^3*x^2 + a*
c^2)]
```

giac [A] time = 0.15, size = 67, normalized size = 0.86

$$
-\frac{3\,a\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,c^2}+\frac{xe}{c^2}+\frac{d\log\left(cx^2+a\right)}{2\,c^2}+\frac{axe+ad}{2\left(cx^2+a\right)c^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*a*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c^2) + x*e/c^2 + 1/2*d*log(c*x^2
+ a)/c^2 + 1/2*(a*x*e + a*d)/((c*x^2 + a)*c^2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.97

$$\frac{aex}{2\left(c\,x^{2}+a\right)c^{2}}-\frac{3ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^{2}}+\frac{ad}{2\left(c\,x^{2}+a\right)c^{2}}+\frac{d\ln\left(c\,x^{2}+a\right)}{2c^{2}}+\frac{ex}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/c^2*e*x+1/2/c^2/(c*x^2+a)*a*e*x+1/2/c^2/(c*x^2+a)*a*d+1/2*d*ln(c*x^2+a)/c
^2-3/2/c^2*a*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.16, size = 67, normalized size = 0.86

$$-\frac{3\,ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c^{2}}+\frac{aex+ad}{2\left(c^{3}x^{2}+ac^{2}\right)}+\frac{ex}{c^{2}}+\frac{d\log\left(cx^{2}+a\right)}{2\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*a*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*(a*e*x + a*d)/(c^3*x^2
 + a*c^2) + e*x/c^2 + 1/2*d*log(c*x^2 + a)/c^2
```

mupad [B] time = 1.08, size = 65, normalized size = 0.83

$$\frac{\frac{a\,d}{2}+\frac{a\,e\,x}{2}}{c^{3}\,x^{2}+a\,c^{2}}+\frac{d\,\ln\left(c\,x^{2}+a\right)}{2\,c^{2}}+\frac{e\,x}{c^{2}}-\frac{3\,\sqrt{a}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] ((a*d)/2 + (a*e*x)/2)/(a*c^2 + c^3*x^2) + (d*log(a + c*x^2))/(2*c^2) + (e*x
)/c^2 - (3*a^(1/2)*e*atan((c^(1/2)*x)/a^(1/2)))/(2*c^(5/2))
```

sympy [B] time = 0.67, size = 162, normalized size = 2.08

$$\left(\frac{d}{2c^{2}}-\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)\log\left(x+\frac{-4c^{2}\left(\frac{d}{2c^{2}}-\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)+2d}{3e}\right)+\left(\frac{d}{2c^{2}}+\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)\log\left(x+\frac{-4c^{2}\left(\frac{d}{2c^{2}}+\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)+2d}{3e}\right)+\frac{ad+aex}{2ac^{2}+2c^{3}x^{2}}+\frac{ex}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] (d/(2*c**2) - 3*e*sqrt(-a*c**5)/(4*c**5))*log(x + (-4*c**2*(d/(2*c**2) - 3*
e*sqrt(-a*c**5)/(4*c**5)) + 2*d)/(3*e)) + (d/(2*c**2) + 3*e*sqrt(-a*c**5)/(
4*c**5))*log(x + (-4*c**2*(d/(2*c**2) + 3*e*sqrt(-a*c**5)/(4*c**5)) + 2*d)/
(3*e)) + (a*d + a*e*x)/(2*a*c**2 + 2*c**3*x**2) + e*x/c**2
```

3.291 $\int \frac{x^2(d+ex)}{(a+cx^2)^2} dx$

Optimal. Leaf size=67

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}+\frac{e\log\left(a+cx^2\right)}{2c^2}-\frac{x(d+ex)}{2c\left(a+cx^2\right)}$$

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {819, 635, 205, 260}

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}+\frac{e\log\left(a+cx^2\right)}{2c^2}-\frac{x(d+ex)}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] -(x*(d + e*x))/(2*c*(a + c*x^2)) + (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*Sqrt[
a]*c^(3/2)) + (e*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^2(d+ex)}{\left(a+cx^2\right)^2}\,dx = -\frac{x(d+ex)}{2c\left(a+cx^2\right)} + \frac{\int \frac{ad+2aex}{a+cx^2}\,dx}{2ac}$$
$$= -\frac{x(d+ex)}{2c\left(a+cx^2\right)} + \frac{d\int \frac{1}{a+cx^2}\,dx}{2c} + \frac{e\int \frac{x}{a+cx^2}\,dx}{c}$$
$$= -\frac{x(d+ex)}{2c\left(a+cx^2\right)} + \frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}} + \frac{e\log\left(a+cx^2\right)}{2c^2}$$

Mathematica [A] time = 0.04, size = 62, normalized size = 0.93

$$\frac{\frac{ae-cdx}{a+cx^2} + \frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}} + e\log\left(a+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] ((a*e - c*d*x)/(a + c*x^2) + (Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a
] + e*Log[a + c*x^2])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(a + c*x^2)^2, x]
```

fricas [A] time = 0.39, size = 186, normalized size = 2.78

$$\left[-\frac{2\,acdx - 2\,a^2e + \left(cdx^2 + ad\right)\sqrt{-ac}\,\log\left(\frac{cx^2 - 2\,\sqrt{-ac}\,x - a}{cx^2 + a}\right) - 2\left(acex^2 + a^2e\right)\log\left(cx^2 + a\right)}{4\left(ac^3x^2 + a^2c^2\right)}, -\frac{acdx - a^2e - \left(cdx^2 + ad\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right) - \left(acex^2 + a^2e\right)\log\left(cx^2 + a\right)}{2\left(ac^3x^2 + a^2c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*c*d*x - 2*a^2*e + (c*d*x^2 + a*d)*sqrt(-a*c)*log((c*x^2 - 2*sqrt
(-a*c)*x - a)/(c*x^2 + a)) - 2*(a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(a*c^3*x
^2 + a^2*c^2), -1/2*(a*c*d*x - a^2*e - (c*d*x^2 + a*d)*sqrt(a*c)*arctan(sqr
t(a*c)*x/a) - (a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(a*c^3*x^2 + a^2*c^2)]
```

giac [A] time = 0.19, size = 62, normalized size = 0.93

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c} + \frac{e\log\left(cx^2 + a\right)}{2\,c^2} - \frac{dx - \frac{ae}{c}}{2\left(cx^2 + a\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + 1/2*e*log(c*x^2 + a)/c^2 - 1/2*
(d*x - a*e/c)/((c*x^2 + a)*c)
```

maple [A] time = 0.05, size = 61, normalized size = 0.91

$$\frac{d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\, c}+\frac{e \ln\left(c\,x^{2}+a\right)}{2c^{2}}+\frac{-\frac{dx}{2c}+\frac{ae}{2c^{2}}}{c\,x^{2}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] (-1/2/c*d*x+1/2*a*e/c^2)/(c*x^2+a)+1/2*e*ln(c*x^2+a)/c^2+1/2/c*d/(a*c)^(1/2
)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.16, size = 61, normalized size = 0.91

$$\frac{d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c}-\frac{cdx-ae}{2\left(c^{3}x^{2}+ac^{2}\right)}+\frac{e \log\left(cx^{2}+a\right)}{2\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*(c*d*x - a*e)/(c^3*x^2 + a*
c^2) + 1/2*e*log(c*x^2 + a)/c^2
```

mupad [B] time = 1.04, size = 72, normalized size = 1.07

$$\frac{e\,\ln\left(c\,x^2+a\right)}{2\,c^2}-\frac{d\,x}{2\,\left(c^2\,x^2+a\,c\right)}+\frac{a\,e}{2\,\left(c^3\,x^2+a\,c^2\right)}+\frac{d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,\sqrt{a}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (e*log(a + c*x^2))/(2*c^2) - (d*x)/(2*(a*c + c^2*x^2)) + (a*e)/(2*(a*c^2 +
c^3*x^2)) + (d*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(1/2)*c^(3/2))
```

sympy [B] time = 0.58, size = 162, normalized size = 2.42

$$\left(\frac{e}{2c^{2}}-\frac{d\sqrt{-ac^{5}}}{4ac^{4}}\right)\log\left(x+\frac{4ac^{2}\left(\frac{e}{2c^{2}}-\frac{d\sqrt{-ac^{5}}}{4ac^{4}}\right)-2ae}{cd}\right)+\left(\frac{e}{2c^{2}}+\frac{d\sqrt{-ac^{5}}}{4ac^{4}}\right)\log\left(x+\frac{4ac^{2}\left(\frac{e}{2c^{2}}+\frac{d\sqrt{-ac^{5}}}{4ac^{4}}\right)-2ae}{cd}\right)+\frac{ae-cdx}{2ac^{2}+2c^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] (e/(2*c**2) - d*sqrt(-a*c**5)/(4*a*c**4))*log(x + (4*a*c**2*(e/(2*c**2) - d
*sqrt(-a*c**5)/(4*a*c**4)) - 2*a*e)/(c*d)) + (e/(2*c**2) + d*sqrt(-a*c**5)/
(4*a*c**4))*log(x + (4*a*c**2*(e/(2*c**2) + d*sqrt(-a*c**5)/(4*a*c**4)) - 2
*a*e)/(c*d)) + (a*e - c*d*x)/(2*a*c**2 + 2*c**3*x**2)
```

3.292 $\int \frac{x(d+ex)}{(a+cx^2)^2}\,dx$

Optimal. Leaf size=50

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}-\frac{d+ex}{2c\left(a+cx^2\right)}$$

Rubi [A] time = 0.02, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {778, 205}

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}-\frac{d+ex}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] -(d + e*x)/(2*c*(a + c*x^2)) + (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*Sqrt[a]*c
^(3/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(a+cx^2\right)^2}\,dx &= -\frac{d+ex}{2c\left(a+cx^2\right)}+\frac{e\int \frac{1}{a+cx^2}\,dx}{2c}\\ &= -\frac{d+ex}{2c\left(a+cx^2\right)}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 53, normalized size = 1.06

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}+\frac{-d-ex}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (-d - e*x)/(2*c*(a + c*x^2)) + (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*Sqrt[a]*c
^(3/2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(a + c*x^2)^2, x]
```

fricas [A] time = 0.41, size = 137, normalized size = 2.74

$$\left[-\frac{2\,acex+2\,acd+\left(cex^2+ae\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{4\left(ac^3x^2+a^2c^2\right)},-\frac{acex+acd-\left(cex^2+ae\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\left(ac^3x^2+a^2c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*c*e*x + 2*a*c*d + (c*e*x^2 + a*e)*sqrt(-a*c)*log((c*x^2 - 2*sqrt
(-a*c)*x - a)/(c*x^2 + a)))/(a*c^3*x^2 + a^2*c^2), -1/2*(a*c*e*x + a*c*d -
(c*e*x^2 + a*e)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a*c^3*x^2 + a^2*c^2)]
```

giac [A] time = 0.17, size = 42, normalized size = 0.84

$$\frac{\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,c}-\frac{xe+d}{2\left(cx^2+a\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c) - 1/2*(x*e + d)/((c*x^2 + a)*c)
```

maple [A] time = 0.05, size = 46, normalized size = 0.92

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c}+\frac{-\frac{ex}{2c}-\frac{d}{2c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] (-1/2/c*e*x-1/2/c*d)/(c*x^2+a)+1/2/c*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x
)
```

maxima [A] time = 1.21, size = 41, normalized size = 0.82

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c}-\frac{ex+d}{2\left(c^2x^2+ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*(e*x + d)/(c^2*x^2 + a*c)
```

mupad [B] time = 0.05, size = 44, normalized size = 0.88

$$\frac{e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,\sqrt{a}\,c^{3/2}}-\frac{\frac{d}{2\,c}+\frac{e\,x}{2\,c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (e*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(1/2)*c^(3/2)) - (d/(2*c) + (e*x)/(2*c))
/(a + c*x^2)
```

sympy [A] time = 0.36, size = 85, normalized size = 1.70

$$e\left(-\frac{\sqrt{-\frac{1}{ac^3}}\log\left(-ac\sqrt{-\frac{1}{ac^3}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{ac^3}}\log\left(ac\sqrt{-\frac{1}{ac^3}}+x\right)}{4}\right)+\frac{-d-ex}{2ac+2c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] e*(-sqrt(-1/(a*c**3))*log(-a*c*sqrt(-1/(a*c**3)) + x)/4 + sqrt(-1/(a*c**3))
*log(a*c*sqrt(-1/(a*c**3)) + x)/4) + (-d - e*x)/(2*a*c + 2*c**2*x**2)
```

3.293 $\int \frac{d+ex}{\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=57

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{ae-cdx}{2ac\left(a+cx^2\right)}$$

Rubi [A] time = 0.01, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {639, 205}

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{ae-cdx}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2)^2,x]
```

```
[Out] -(a*e - c*d*x)/(2*a*c*(a + c*x^2)) + (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(
3/2)*Sqrt[c])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(a+cx^2\right)^2} \, dx &= -\frac{ae-cdx}{2ac\left(a+cx^2\right)}+\frac{d\int \frac{1}{a+cx^2} \, dx}{2a}\\ &= -\frac{ae-cdx}{2ac\left(a+cx^2\right)}+\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 57, normalized size = 1.00

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{cdx-ae}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2)^2,x]
```

```
[Out] (-(a*e) + c*d*x)/(2*a*c*(a + c*x^2)) + (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a
^(3/2)*Sqrt[c])
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(a + c*x^2)^2, x]
```

fricas [A] time = 0.41, size = 140, normalized size = 2.46

$$\left[\frac{2\,acdx-2\,a^2e-\left(cdx^2+ad\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{4\left(a^2c^2x^2+a^3c\right)},\ \frac{acdx-a^2e+\left(cdx^2+ad\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\left(a^2c^2x^2+a^3c\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*a*c*d*x - 2*a^2*e - (c*d*x^2 + a*d)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(
-a*c)*x - a)/(c*x^2 + a)))/(a^2*c^2*x^2 + a^3*c), 1/2*(a*c*d*x - a^2*e + (c
*d*x^2 + a*d)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a^2*c^2*x^2 + a^3*c)]
```

giac [A] time = 0.15, size = 48, normalized size = 0.84

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a}+\frac{cdx-ae}{2\left(cx^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(c*d*x - a*e)/((c*x^2 + a)*
a*c)
```

maple [A] time = 0.06, size = 49, normalized size = 0.86

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}+\frac{2cdx-2ae}{4\left(c\,x^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/4*(2*c*d*x-2*a*e)/a/c/(c*x^2+a)+1/2*d/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*
c*x)
```

maxima [A] time = 1.26, size = 48, normalized size = 0.84

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a}+\frac{cdx-ae}{2\left(ac^2x^2+a^2c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(c*d*x - a*e)/(a*c^2*x^2 +
a^2*c)
```

mupad [B] time = 0.05, size = 44, normalized size = 0.77

$$\frac{d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,a^{3/2}\,\sqrt{c}}-\frac{\frac{e}{2\,c}-\frac{d\,x}{2\,a}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2)^2,x)
```

```
[Out] (d*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(3/2)*c^(1/2)) - (e/(2*c) - (d*x)/(2*a))
/(a + c*x^2)
```

sympy [A] time = 0.36, size = 90, normalized size = 1.58

$$d\left(-\frac{\sqrt{-\frac{1}{a^3c}}\log\left(-a^2\sqrt{-\frac{1}{a^3c}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{a^3c}}\log\left(a^2\sqrt{-\frac{1}{a^3c}}+x\right)}{4}\right)+\frac{-ae+cdx}{2a^2c+2ac^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] d*(-sqrt(-1/(a**3*c))*log(-a**2*sqrt(-1/(a**3*c)) + x)/4 + sqrt(-1/(a**3*c)
)*log(a**2*sqrt(-1/(a**3*c)) + x)/4) + (-a*e + c*d*x)/(2*a**2*c + 2*a*c**2*
x**2)
```

3.294 $\int \frac{d+ex}{x\left(a+cx^2\right)^2} dx$

Optimal. Leaf size=73

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{d\log\left(a+cx^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{d+ex}{2a\left(a+cx^2\right)}$$

Rubi [A] time = 0.06, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {823, 801, 635, 205, 260}

$$-\frac{d\log\left(a+cx^2\right)}{2a^2}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{d\log(x)}{a^2}+\frac{d+ex}{2a\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + c*x^2)^2),x]
```

```
[Out] (d + e*x)/(2*a*(a + c*x^2)) + (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*Sq
rt[c]) + (d*Log[x])/a^2 - (d*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x\left(a+cx^2\right)^2}\,dx &= \frac{d+ex}{2a\left(a+cx^2\right)} - \frac{\int \frac{-2acd-acex}{x\left(a+cx^2\right)}\,dx}{2a^2c} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} - \frac{\int \left(-\frac{2cd}{x}+\frac{c(-ae+2cdx)}{a+cx^2}\right)dx}{2a^2c} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{\int \frac{-ae+2cdx}{a+cx^2}\,dx}{2a^2} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{(cd)\int \frac{x}{a+cx^2}\,dx}{a^2} + \frac{e\int \frac{1}{a+cx^2}\,dx}{2a} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} + \frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}} + \frac{d\log(x)}{a^2} - \frac{d\log\left(a+cx^2\right)}{2a^2}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 65, normalized size = 0.89

$$
\frac{\frac{a(d+ex)}{a+cx^2} - d\log\left(a+cx^2\right) + \frac{\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{c}} + 2d\log(x)}{2a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + c*x^2)^2),x]
```

```
[Out] ((a*(d + e*x))/(a + c*x^2) + (Sqrt[a]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[c
] + 2*d*Log[x] - d*Log[a + c*x^2])/(2*a^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{d+ex}{x\left(a+cx^2\right)^2}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(a + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(a + c*x^2)^2), x]
```

fricas [A] time = 0.43, size = 217, normalized size = 2.97

$$
\left[\frac{2\,acex + 2\,acd - \left(cex^2 + ae\right)\sqrt{-ac}\,\log\left(\frac{cx^2 - 2\,\sqrt{-ac}\,x - a}{cx^2 + a}\right) - 2\left(c^2dx^2 + acd\right)\log\left(cx^2 + a\right) + 4\left(c^2dx^2 + acd\right)\log(x)}{4\left(a^2c^2x^2 + a^3c\right)}, \frac{acex + acd + \left(cex^2 + ae\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right) - \left(c^2dx^2 + acd\right)\log\left(cx^2 + a\right) + 2\left(c^2dx^2 + acd\right)\log(x)}{2\left(a^2c^2x^2 + a^3c\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*a*c*e*x + 2*a*c*d - (c*e*x^2 + a*e)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(
-a*c)*x - a)/(c*x^2 + a)) - 2*(c^2*d*x^2 + a*c*d)*log(c*x^2 + a) + 4*(c^2*d
*x^2 + a*c*d)*log(x))/(a^2*c^2*x^2 + a^3*c), 1/2*(a*c*e*x + a*c*d + (c*e*x^
2 + a*e)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (c^2*d*x^2 + a*c*d)*log(c*x^2 +
a) + 2*(c^2*d*x^2 + a*c*d)*log(x))/(a^2*c^2*x^2 + a^3*c)]
```

giac [A] time = 0.15, size = 67, normalized size = 0.92

$$
\frac{\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,a} - \frac{d\log\left(cx^2 + a\right)}{2\,a^2} + \frac{d\log\left(|x|\right)}{a^2} + \frac{axe + ad}{2\left(cx^2 + a\right)a^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*a) - 1/2*d*log(c*x^2 + a)/a^2 + d*lo
g(abs(x))/a^2 + 1/2*(a*x*e + a*d)/((c*x^2 + a)*a^2)
```

maple [A] time = 0.05, size = 74, normalized size = 1.01

$$\frac{ex}{2\left(c\,x^{2}+a\right)a}+\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}+\frac{d}{2\left(c\,x^{2}+a\right)a}+\frac{d\ln(x)}{a^{2}}-\frac{d\ln\left(c\,x^{2}+a\right)}{2a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+a)^2,x)
```

```
[Out] 1/2/a/(c*x^2+a)*e*x+1/2/a/(c*x^2+a)*d-1/2*d*ln(c*x^2+a)/a^2+1/2/a*e/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a^2*d*ln(x)
```

maxima [A] time = 1.28, size = 61, normalized size = 0.84

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a}+\frac{ex+d}{2\left(acx^{2}+a^{2}\right)}-\frac{d\log\left(cx^{2}+a\right)}{2\,a^{2}}+\frac{d\log(x)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(e*x + d)/(a*c*x^2 + a^2) -
 1/2*d*log(c*x^2 + a)/a^2 + d*log(x)/a^2
```

mupad [B] time = 1.26, size = 165, normalized size = 2.26

$$\frac{\frac{d}{2a}+\frac{ex}{2a}}{c\,x^{2}+a}+\frac{d\,\ln(x)}{a^{2}}+\frac{\ln\left(a\,e\,\sqrt{-a^{5}\,c}-6\,a^{3}\,c\,d+a^{3}\,c\,e\,x+6\,c\,d\,x\,\sqrt{-a^{5}\,c}\right)\left(e\,\sqrt{-a^{5}\,c}-2\,a^{2}\,c\,d\right)}{4\,a^{4}\,c}-\frac{\ln\left(a\,e\,\sqrt{-a^{5}\,c}+6\,a^{3}\,c\,d-a^{3}\,c\,e\,x+6\,c\,d\,x\,\sqrt{-a^{5}\,c}\right)\left(e\,\sqrt{-a^{5}\,c}+2\,a^{2}\,c\,d\right)}{4\,a^{4}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + c*x^2)^2),x)
```

```
[Out] (d/(2*a) + (e*x)/(2*a))/(a + c*x^2) + (d*log(x))/a^2 + (log(a*e*(-a^5*c)^(1
/2) - 6*a^3*c*d + a^3*c*e*x + 6*c*d*x*(-a^5*c)^(1/2))*(e*(-a^5*c)^(1/2) - 2
*a^2*c*d))/(4*a^4*c) - (log(a*e*(-a^5*c)^(1/2) + 6*a^3*c*d - a^3*c*e*x + 6*
c*d*x*(-a^5*c)^(1/2))*(e*(-a^5*c)^(1/2) + 2*a^2*c*d))/(4*a^4*c)
```

sympy [B] time = 1.71, size = 359, normalized size = 4.92

$$\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)\log\left(x+\frac{-96a^{4}cd\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)^{2}+4a^{3}e^{2}\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)+48a^{2}cd^{2}\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)-4ade^{2}+48cd^{3}}{ae^{3}+36cd^{2}e}\right)+\left(-\frac{d}{2a^{2}}+\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)\log\left(x+\frac{-96a^{4}cd\left(-\frac{d}{2a^{2}}+\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)^{2}+4a^{3}e^{2}\left(-\frac{d}{2a^{2}}+\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)+48a^{2}cd^{2}\left(-\frac{d}{2a^{2}}+\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)-4ade^{2}+48cd^{3}}{ae^{3}+36cd^{2}e}\right)+\frac{d+ex}{2a^{2}+2acx^{2}}+\frac{d\log(x)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+a)**2,x)
```

```
[Out] (-d/(2*a**2) - e*sqrt(-a**5*c)/(4*a**4*c))*log(x + (-96*a**4*c*d*(-d/(2*a**
2) - e*sqrt(-a**5*c)/(4*a**4*c))**2 + 4*a**3*e**2*(-d/(2*a**2) - e*sqrt(-a*
*5*c)/(4*a**4*c)) + 48*a**2*c*d**2*(-d/(2*a**2) - e*sqrt(-a**5*c)/(4*a**4*c
)) - 4*a*d*e**2 + 48*c*d**3)/(a*e**3 + 36*c*d**2*e)) + (-d/(2*a**2) + e*sqr
t(-a**5*c)/(4*a**4*c))*log(x + (-96*a**4*c*d*(-d/(2*a**2) + e*sqrt(-a**5*c)
/(4*a**4*c))**2 + 4*a**3*e**2*(-d/(2*a**2) + e*sqrt(-a**5*c)/(4*a**4*c)) +
48*a**2*c*d**2*(-d/(2*a**2) + e*sqrt(-a**5*c)/(4*a**4*c)) - 4*a*d*e**2 + 48
*c*d**3)/(a*e**3 + 36*c*d**2*e)) + (d + e*x)/(2*a**2 + 2*a*c*x**2) + d*log(
x)/a**2
```

3.295 $\int \frac{d+ex}{x^2\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=87

$$-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{e\log\left(a+cx^2\right)}{2a^2}-\frac{3d}{2a^2x}+\frac{e\log(x)}{a^2}+\frac{d+ex}{2ax\left(a+cx^2\right)}$$

Rubi [A] time = 0.07, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {823, 801, 635, 205, 260}

$$-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{e\log\left(a+cx^2\right)}{2a^2}-\frac{3d}{2a^2x}+\frac{e\log(x)}{a^2}+\frac{d+ex}{2ax\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + c*x^2)^2),x]
```

```
[Out] (-3*d)/(2*a^2*x) + (d + e*x)/(2*a*x*(a + c*x^2)) - (3*Sqrt[c]*d*ArcTan[(Sqr
t[c]*x)/Sqrt[a]])/(2*a^(5/2)) + (e*Log[x])/a^2 - (e*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x^2\left(a+cx^2\right)^2}\,dx = \frac{d+ex}{2ax\left(a+cx^2\right)} - \frac{\int \frac{-3acd-2acex}{x^2\left(a+cx^2\right)}\,dx}{2a^2c}$$

$$= \frac{d+ex}{2ax\left(a+cx^2\right)} - \frac{\int \left(-\frac{3cd}{x^2} - \frac{2ce}{x} + \frac{c^2(3d+2ex)}{a+cx^2}\right)dx}{2a^2c}$$

$$= -\frac{3d}{2a^2x} + \frac{d+ex}{2ax\left(a+cx^2\right)} + \frac{e\log(x)}{a^2} - \frac{c\int \frac{3d+2ex}{a+cx^2}\,dx}{2a^2}$$

$$= -\frac{3d}{2a^2x} + \frac{d+ex}{2ax\left(a+cx^2\right)} + \frac{e\log(x)}{a^2} - \frac{(3cd)\int \frac{1}{a+cx^2}\,dx}{2a^2} - \frac{(ce)\int \frac{x}{a+cx^2}\,dx}{a^2}$$

$$= -\frac{3d}{2a^2x} + \frac{d+ex}{2ax\left(a+cx^2\right)} - \frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}} + \frac{e\log(x)}{a^2} - \frac{e\log\left(a+cx^2\right)}{2a^2}$$

Mathematica [A] time = 0.12, size = 81, normalized size = 0.93

$$-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}} - \frac{\frac{2ad-aex+3cdx^2}{ax+cx^3} + e\log\left(a+cx^2\right) - 2e\log(x)}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + c*x^2)^2),x]
```

```
[Out] (-3*Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(5/2)) - ((2*a*d - a*e*x +
3*c*d*x^2)/(a*x + c*x^3) - 2*e*Log[x] + e*Log[a + c*x^2])/(2*a^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(a + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(a + c*x^2)^2), x]
```

fricas [A] time = 0.43, size = 225, normalized size = 2.59

$$\left[-\frac{6\,cdx^2 - 2\,aex - 3\left(cdx^3 + adx\right)\sqrt{-\frac{c}{a}}\log\left(\frac{cx^2 - 2\,ax\sqrt{-\frac{c}{a}} - a}{cx^2+a}\right) + 4\,ad + 2\left(cex^3 + aex\right)\log\left(cx^2 + a\right) - 4\left(cex^3 + aex\right)\log(x)}{4\left(a^2cx^3 + a^3x\right)}, -\frac{3\,cdx^2 - aex + 3\left(cdx^3 + adx\right)\sqrt{\frac{c}{a}}\arctan\left(x\sqrt{\frac{c}{a}}\right) + 2\,ad + \left(cex^3 + aex\right)\log\left(cx^2 + a\right) - 2\left(cex^3 + aex\right)\log(x)}{2\left(a^2cx^3 + a^3x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(6*c*d*x^2 - 2*a*e*x - 3*(c*d*x^3 + a*d*x)*sqrt(-c/a)*log((c*x^2 - 2*
a*x*sqrt(-c/a) - a)/(c*x^2 + a)) + 4*a*d + 2*(c*e*x^3 + a*e*x)*log(c*x^2 +
a) - 4*(c*e*x^3 + a*e*x)*log(x))/(a^2*c*x^3 + a^3*x), -1/2*(3*c*d*x^2 - a*e
*x + 3*(c*d*x^3 + a*d*x)*sqrt(c/a)*arctan(x*sqrt(c/a)) + 2*a*d + (c*e*x^3 +
 a*e*x)*log(c*x^2 + a) - 2*(c*e*x^3 + a*e*x)*log(x))/(a^2*c*x^3 + a^3*x)]
```

giac [A] time = 0.16, size = 80, normalized size = 0.92

$$-\frac{3\,cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a^2} - \frac{e\log\left(cx^2 + a\right)}{2\,a^2} + \frac{e\log\left(|x|\right)}{a^2} - \frac{3\,cdx^2 - axe + 2\,ad}{2\left(cx^3 + ax\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) - 1/2*e*log(c*x^2 + a)/a^2 +
 e*log(abs(x))/a^2 - 1/2*(3*c*d*x^2 - a*x*e + 2*a*d)/((c*x^3 + a*x)*a^2)
```

maple [A] time = 0.08, size = 85, normalized size = 0.98

$$-\frac{cdx}{2\left(c\,x^{2}+a\right)a^{2}}-\frac{3cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a^{2}}+\frac{e}{2\left(c\,x^{2}+a\right)a}+\frac{e\ln(x)}{a^{2}}-\frac{e\ln\left(c\,x^{2}+a\right)}{2a^{2}}-\frac{d}{a^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/a^2/(c*x^2+a)*d*x+1/2/a/(c*x^2+a)*e-1/2*e*ln(c*x^2+a)/a^2-3/2*c/a^2*
d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a^2*e*ln(x)-1/a^2*d/x
```

maxima [A] time = 1.12, size = 78, normalized size = 0.90

$$-\frac{3\,cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a^{2}}-\frac{3\,cdx^{2}-aex+2\,ad}{2\left(a^{2}cx^{3}+a^{3}x\right)}-\frac{e\log\left(cx^{2}+a\right)}{2\,a^{2}}+\frac{e\log(x)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) - 1/2*(3*c*d*x^2 - a*e*x + 2
*a*d)/(a^2*c*x^3 + a^3*x) - 1/2*e*log(c*x^2 + a)/a^2 + e*log(x)/a^2
```

mupad [B] time = 1.22, size = 165, normalized size = 1.90

$$\frac{e\,\ln(x)}{a^{2}}-\frac{\ln\left(2\,a^{3}\,e+d\,\sqrt{-a^{5}\,c}\,-2\,e\,x\,\sqrt{-a^{5}\,c}\,+a^{2}\,c\,d\,x\right)\left(2\,a^{3}\,e+3\,d\,\sqrt{-a^{5}\,c}\right)}{4\,a^{5}}-\frac{\ln\left(2\,a^{3}\,e-d\,\sqrt{-a^{5}\,c}\,+2\,e\,x\,\sqrt{-a^{5}\,c}\,+a^{2}\,c\,d\,x\right)\left(2\,a^{3}\,e-3\,d\,\sqrt{-a^{5}\,c}\right)}{4\,a^{5}}-\frac{\frac{d}{a}-\frac{e\,x}{2\,a}+\frac{3\,c\,d\,x^{2}}{2\,a^{2}}}{c\,x^{3}+a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + c*x^2)^2),x)
```

```
[Out] (e*log(x))/a^2 - (log(2*a^3*e + d*(-a^5*c)^(1/2) - 2*e*x*(-a^5*c)^(1/2) + a
^2*c*d*x)*(2*a^3*e + 3*d*(-a^5*c)^(1/2)))/(4*a^5) - (log(2*a^3*e - d*(-a^5*
c)^(1/2) + 2*e*x*(-a^5*c)^(1/2) + a^2*c*d*x)*(2*a^3*e - 3*d*(-a^5*c)^(1/2))
)/(4*a^5) - (d/a - (e*x)/(2*a) + (3*c*d*x^2)/(2*a^2))/(a*x + c*x^3)
```

sympy [B] time = 1.81, size = 389, normalized size = 4.47

$$\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)\log\left(x+\frac{32a^{6}e\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)^{2}-16a^{4}e^{2}\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)-12a^{3}cd^{2}\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)-16a^{2}e^{3}+12acd^{2}e}{36acde^{2}+9c^{2}d^{3}}\right)+\left(-\frac{e}{2a^{2}}+\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)\log\left(x+\frac{32a^{6}e\left(-\frac{e}{2a^{2}}+\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)^{2}-16a^{4}e^{2}\left(-\frac{e}{2a^{2}}+\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)-12a^{3}cd^{2}\left(-\frac{e}{2a^{2}}+\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)-16a^{2}e^{3}+12acd^{2}e}{36acde^{2}+9c^{2}d^{3}}\right)+\frac{-2ad+aex-3cdx^{2}}{2a^{3}x+2a^{2}cx^{3}}+\frac{e\log\left(x\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+a)**2,x)
```

```
[Out] (-e/(2*a**2) - 3*d*sqrt(-a**5*c)/(4*a**5))*log(x + (32*a**6*e*(-e/(2*a**2)
- 3*d*sqrt(-a**5*c)/(4*a**5))**2 - 16*a**4*e**2*(-e/(2*a**2) - 3*d*sqrt(-a*
*5*c)/(4*a**5)) - 12*a**3*c*d**2*(-e/(2*a**2) - 3*d*sqrt(-a**5*c)/(4*a**5))
 - 16*a**2*e**3 + 12*a*c*d**2*e)/(36*a*c*d*e**2 + 9*c**2*d**3)) + (-e/(2*a*
*2) + 3*d*sqrt(-a**5*c)/(4*a**5))*log(x + (32*a**6*e*(-e/(2*a**2) + 3*d*sqr
t(-a**5*c)/(4*a**5))**2 - 16*a**4*e**2*(-e/(2*a**2) + 3*d*sqrt(-a**5*c)/(4*
a**5)) - 12*a**3*c*d**2*(-e/(2*a**2) + 3*d*sqrt(-a**5*c)/(4*a**5)) - 16*a**
2*e**3 + 12*a*c*d**2*e)/(36*a*c*d*e**2 + 9*c**2*d**3)) + (-2*a*d + a*e*x -
3*c*d*x**2)/(2*a**3*x + 2*a**2*c*x**3) + e*log(x)/a**2
```

3.296 $\int \frac{d+ex}{x^3(a+cx^2)^2} dx$

Optimal. Leaf size=96

$$-\frac{3\sqrt{c}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{cd\log\left(a+cx^2\right)}{a^3}-\frac{2cd\log(x)}{a^3}-\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}$$

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {823, 801, 635, 205, 260}

$$\frac{cd\log\left(a+cx^2\right)}{a^3}-\frac{2cd\log(x)}{a^3}-\frac{3\sqrt{c}\, e \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + c*x^2)^2),x]
```

```
[Out] -(d/(a^2*x^2)) - (3*e)/(2*a^2*x) + (d + e*x)/(2*a*x^2*(a + c*x^2)) - (3*Sqr
t[c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(5/2)) - (2*c*d*Log[x])/a^3 + (c*d
*Log[a + c*x^2])/a^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x^3\left(a+cx^2\right)^2}\,dx = \frac{d+ex}{2ax^2\left(a+cx^2\right)} - \frac{\int \frac{-4acd-3acex}{x^3\left(a+cx^2\right)}\,dx}{2a^2c}$$

$$= \frac{d+ex}{2ax^2\left(a+cx^2\right)} - \frac{\int \left(-\frac{4cd}{x^3} - \frac{3ce}{x^2} + \frac{4c^2d}{ax} + \frac{c^2(3ae-4cdx)}{a\left(a+cx^2\right)}\right)dx}{2a^2c}$$

$$= -\frac{d}{a^2x^2} - \frac{3e}{2a^2x} + \frac{d+ex}{2ax^2\left(a+cx^2\right)} - \frac{2cd\log(x)}{a^3} - \frac{c\int \frac{3ae-4cdx}{a+cx^2}\,dx}{2a^3}$$

$$= -\frac{d}{a^2x^2} - \frac{3e}{2a^2x} + \frac{d+ex}{2ax^2\left(a+cx^2\right)} - \frac{2cd\log(x)}{a^3} + \frac{\left(2c^2d\right)\int \frac{x}{a+cx^2}\,dx}{a^3} - \frac{(3ce)\int \frac{1}{a+cx^2}\,dx}{2a^2}$$

$$= -\frac{d}{a^2x^2} - \frac{3e}{2a^2x} + \frac{d+ex}{2ax^2\left(a+cx^2\right)} - \frac{3\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}} - \frac{2cd\log(x)}{a^3} + \frac{cd\log\left(a+cx^2\right)}{a^3}$$

Mathematica [A] time = 0.10, size = 82, normalized size = 0.85

$$-\frac{\frac{ac(d+ex)}{a+cx^2} - 2cd\log\left(a+cx^2\right) + 3\sqrt{a}\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right) + \frac{ad}{x^2} + \frac{2ae}{x} + 4cd\log(x)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + c*x^2)^2),x]
```

```
[Out] -1/2*((a*d)/x^2 + (2*a*e)/x + (a*c*(d + e*x))/(a + c*x^2) + 3*Sqrt[a]*Sqrt[
c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]] + 4*c*d*Log[x] - 2*c*d*Log[a + c*x^2])/a^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^3\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(a + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(a + c*x^2)^2), x]
```

fricas [A] time = 0.59, size = 285, normalized size = 2.97

$$\left[-\frac{6acex^3 + 4acdx^2 + 4a^2ex + 2a^2d - 3\left(acex^4 + a^2ex^2\right)\sqrt{-\frac{c}{a}}\log\left(\frac{cx^2 - 2ax\sqrt{-\frac{c}{a}} - a}{cx^2+a}\right) - 4\left(c^2dx^4 + acdx^2\right)\log\left(cx^2+a\right) + 8\left(c^2dx^4 + acdx^2\right)\log(x)}{4\left(a^3cx^4 + a^4x^2\right)}, -\frac{3acex^3 + 2acdx^2 + 2a^2ex + a^2d + 3\left(acex^4 + a^2ex^2\right)\sqrt{\frac{c}{a}}\arctan\left(x\sqrt{\frac{c}{a}}\right) - 2\left(c^2dx^4 + acdx^2\right)\log\left(cx^2+a\right) + 4\left(c^2dx^4 + acdx^2\right)\log(x)}{2\left(a^3cx^4 + a^4x^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(6*a*c*e*x^3 + 4*a*c*d*x^2 + 4*a^2*e*x + 2*a^2*d - 3*(a*c*e*x^4 + a^2
*e*x^2)*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) - 4*(c^2
*d*x^4 + a*c*d*x^2)*log(c*x^2 + a) + 8*(c^2*d*x^4 + a*c*d*x^2)*log(x))/(a^3
*c*x^4 + a^4*x^2), -1/2*(3*a*c*e*x^3 + 2*a*c*d*x^2 + 2*a^2*e*x + a^2*d + 3*
(a*c*e*x^4 + a^2*e*x^2)*sqrt(c/a)*arctan(x*sqrt(c/a)) - 2*(c^2*d*x^4 + a*c*
d*x^2)*log(c*x^2 + a) + 4*(c^2*d*x^4 + a*c*d*x^2)*log(x))/(a^3*c*x^4 + a^4*
x^2)]
```

giac [A] time = 0.16, size = 95, normalized size = 0.99

$$-\frac{3\,c\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,a^2}+\frac{cd\log\left(cx^2+a\right)}{a^3}-\frac{2\,cd\log\left(|x|\right)}{a^3}-\frac{3\,acx^3e+2\,acdx^2+2\,a^2xe+a^2d}{2\,\left(cx^2+a\right)a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*c*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*a^2) + c*d*log(c*x^2 + a)/a^3 - 2
*c*d*log(abs(x))/a^3 - 1/2*(3*a*c*x^3*e + 2*a*c*d*x^2 + 2*a^2*x*e + a^2*d)/
((c*x^2 + a)*a^3*x^2)
```

maple [A] time = 0.06, size = 97, normalized size = 1.01

$$-\frac{cex}{2\left(c\,x^2+a\right)a^2}-\frac{3ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a^2}-\frac{cd}{2\left(c\,x^2+a\right)a^2}-\frac{2cd\ln(x)}{a^3}+\frac{cd\ln\left(c\,x^2+a\right)}{a^3}-\frac{e}{a^2x}-\frac{d}{2a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/a^2/(c*x^2+a)*e*x-1/2*c/a^2/(c*x^2+a)*d+c*d*ln(c*x^2+a)/a^3-3/2*c/a^
2*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)-1/a^2*e/x-1/2/a^2*d/x^2-2*c*d*ln(
x)/a^3
```

maxima [A] time = 1.18, size = 88, normalized size = 0.92

$$-\frac{3\,ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a^2}-\frac{3\,cex^3+2\,cdx^2+2\,aex+ad}{2\,\left(a^2cx^4+a^3x^2\right)}+\frac{cd\log\left(cx^2+a\right)}{a^3}-\frac{2\,cd\log(x)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*c*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) - 1/2*(3*c*e*x^3 + 2*c*d*x^2
 + 2*a*e*x + a*d)/(a^2*c*x^4 + a^3*x^2) + c*d*log(c*x^2 + a)/a^3 - 2*c*d*lo
g(x)/a^3
```

mupad [B] time = 1.26, size = 186, normalized size = 1.94

$$\frac{\ln\left(a\,e\,\sqrt{-a^7\,c}+4\,a^4\,c\,d-a^4\,c\,e\,x+4\,c\,d\,x\,\sqrt{-a^7\,c}\right)\,\left(3\,e\,\sqrt{-a^7\,c}+4\,a^3\,c\,d\right)}{4\,a^6}-\frac{\ln\left(a\,e\,\sqrt{-a^7\,c}-4\,a^4\,c\,d+a^4\,c\,e\,x+4\,c\,d\,x\,\sqrt{-a^7\,c}\right)\,\left(3\,e\,\sqrt{-a^7\,c}-4\,a^3\,c\,d\right)}{4\,a^6}-\frac{\frac{d}{2\,a}+\frac{e\,x}{a}+\frac{c\,d\,x^2}{a^2}+\frac{3\,c\,e\,x^3}{2\,a^2}}{c\,x^4+a\,x^2}-\frac{2\,c\,d\,\ln(x)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + c*x^2)^2),x)
```

```
[Out] (log(a*e*(-a^7*c)^(1/2) + 4*a^4*c*d - a^4*c*e*x + 4*c*d*x*(-a^7*c)^(1/2))*(
3*e*(-a^7*c)^(1/2) + 4*a^3*c*d))/(4*a^6) - (log(a*e*(-a^7*c)^(1/2) - 4*a^4*
c*d + a^4*c*e*x + 4*c*d*x*(-a^7*c)^(1/2))*(3*e*(-a^7*c)^(1/2) - 4*a^3*c*d))
/(4*a^6) - (d/(2*a) + (e*x)/a + (c*d*x^2)/a^2 + (3*c*e*x^3)/(2*a^2))/(a*x^2
 + c*x^4) - (2*c*d*log(x))/a^3
```

sympy [B] time = 2.04, size = 398, normalized size = 4.15

$$\left(\frac{cd}{a^3}-\frac{3e\sqrt{-a^7c}}{4a^6}\right)\log\left(x+\frac{-64a^6d\left(\frac{cd}{a^3}-\frac{3e\sqrt{-a^7c}}{4a^6}\right)^2-12a^4e^2\left(\frac{cd}{a^3}-\frac{3e\sqrt{-a^7c}}{4a^6}\right)-64a^3cd^2\left(\frac{cd}{a^3}-\frac{3e\sqrt{-a^7c}}{4a^6}\right)-24acde^2+128c^2d^3}{9ace^3+144c^2d^2e}\right)+\left(\frac{cd}{a^3}+\frac{3e\sqrt{-a^7c}}{4a^6}\right)\log\left(x+\frac{-64a^6d\left(\frac{cd}{a^3}+\frac{3e\sqrt{-a^7c}}{4a^6}\right)^2-12a^4e^2\left(\frac{cd}{a^3}+\frac{3e\sqrt{-a^7c}}{4a^6}\right)-64a^3cd^2\left(\frac{cd}{a^3}+\frac{3e\sqrt{-a^7c}}{4a^6}\right)-24acde^2+128c^2d^3}{9ace^3+144c^2d^2e}\right)+\frac{-ad-2aex-2cdx^2-3cex^3}{2a^3x^2+2a^2cx^4}-\frac{2cd\log\left(x\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+a)**2,x)
```

```
[Out] (c*d/a**3 - 3*e*sqrt(-a**7*c)/(4*a**6))*log(x + (-64*a**6*d*(c*d/a**3 - 3*e
*sqrt(-a**7*c)/(4*a**6))**2 - 12*a**4*e**2*(c*d/a**3 - 3*e*sqrt(-a**7*c)/(4
*a**6)) - 64*a**3*c*d**2*(c*d/a**3 - 3*e*sqrt(-a**7*c)/(4*a**6)) - 24*a*c*d
*e**2 + 128*c**2*d**3)/(9*a*c*e**3 + 144*c**2*d**2*e)) + (c*d/a**3 + 3*e*sq
rt(-a**7*c)/(4*a**6))*log(x + (-64*a**6*d*(c*d/a**3 + 3*e*sqrt(-a**7*c)/(4*
a**6))**2 - 12*a**4*e**2*(c*d/a**3 + 3*e*sqrt(-a**7*c)/(4*a**6)) - 64*a**3*
c*d**2*(c*d/a**3 + 3*e*sqrt(-a**7*c)/(4*a**6)) - 24*a*c*d*e**2 + 128*c**2*d
**3)/(9*a*c*e**3 + 144*c**2*d**2*e)) + (-a*d - 2*a*e*x - 2*c*d*x**2 - 3*c*e
*x**3)/(2*a**3*x**2 + 2*a**2*c*x**4) - 2*c*d*log(x)/a**3
```

3.297 $\int \frac{x^4(d+ex)}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=95

$$-\frac{a^3(ae+cd)\log(a-cx)}{2c^6}+\frac{a^3(cd-ae)\log(a+cx)}{2c^6}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Rubi [A] time = 0.07, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {801, 633, 31}

$$-\frac{a^3(ae+cd)\log(a-cx)}{2c^6}+\frac{a^3(cd-ae)\log(a+cx)}{2c^6}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*d*x)/c^4) - (a^2*e*x^2)/(2*c^4) - (d*x^3)/(3*c^2) - (e*x^4)/(4*c^2)
- (a^3*(c*d + a*e)*Log[a - c*x])/(2*c^6) + (a^3*(c*d - a*e)*Log[a + c*x])/(
2*c^6)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(d+ex)}{a^2-c^2x^2}\,dx &= \int \left(-\frac{a^2d}{c^4}-\frac{a^2ex}{c^4}-\frac{dx^2}{c^2}-\frac{ex^3}{c^2}+\frac{a^4d+a^4ex}{c^4\left(a^2-c^2x^2\right)}\right)dx\\
&= -\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}+\frac{\int \frac{a^4d+a^4ex}{a^2-c^2x^2}\,dx}{c^4}\\
&= -\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}-\frac{\left(a^3(cd-ae)\right)\int \frac{1}{-ac-c^2x}\,dx}{2c^4}+\frac{\left(a^3(cd+ae)\right)\int \frac{1}{ac-c^2x}\,dx}{2c^4}\\
&= -\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}-\frac{a^3(cd+ae)\log(a-cx)}{2c^6}+\frac{a^3(cd-ae)\log(a+cx)}{2c^6}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 86, normalized size = 0.91

$$\frac{a^3d\tanh^{-1}\left(\frac{cx}{a}\right)}{c^5}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{a^4e\log\left(a^2-c^2x^2\right)}{2c^6}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*d*x)/c^4) - (a^2*e*x^2)/(2*c^4) - (d*x^3)/(3*c^2) - (e*x^4)/(4*c^2)
+ (a^3*d*ArcTanh[(c*x)/a])/c^5 - (a^4*e*Log[a^2 - c^2*x^2])/(2*c^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{a^2-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(a^2 - c^2*x^2), x]
```

fricas [A] time = 0.54, size = 89, normalized size = 0.94

$$-\frac{3\,c^4ex^4+4\,c^4dx^3+6\,a^2c^2ex^2+12\,a^2c^2dx-6\,\left(a^3cd-a^4e\right)\log\left(cx+a\right)+6\,\left(a^3cd+a^4e\right)\log\left(cx-a\right)}{12\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/12*(3*c^4*e*x^4 + 4*c^4*d*x^3 + 6*a^2*c^2*e*x^2 + 12*a^2*c^2*d*x - 6*(a^
3*c*d - a^4*e)*log(c*x + a) + 6*(a^3*c*d + a^4*e)*log(c*x - a))/c^6
```

giac [A] time = 0.17, size = 102, normalized size = 1.07

$$\frac{\left(a^3cd-a^4e\right)\log\left(|cx+a|\right)}{2\,c^6}-\frac{\left(a^3cd+a^4e\right)\log\left(|cx-a|\right)}{2\,c^6}-\frac{3\,c^6x^4e+4\,c^6dx^3+6\,a^2c^4x^2e+12\,a^2c^4dx}{12\,c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(a^3*c*d - a^4*e)*log(abs(c*x + a))/c^6 - 1/2*(a^3*c*d + a^4*e)*log(abs
(c*x - a))/c^6 - 1/12*(3*c^6*x^4*e + 4*c^6*d*x^3 + 6*a^2*c^4*x^2*e + 12*a^2
*c^4*d*x)/c^8
```

maple [A] time = 0.05, size = 106, normalized size = 1.12

$$-\frac{e\,x^4}{4c^2}-\frac{d\,x^3}{3c^2}-\frac{a^2e\,x^2}{2c^4}-\frac{a^4e\ln\left(cx-a\right)}{2c^6}-\frac{a^4e\ln\left(cx+a\right)}{2c^6}-\frac{a^3d\ln\left(cx-a\right)}{2c^5}+\frac{a^3d\ln\left(cx+a\right)}{2c^5}-\frac{a^2dx}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/4*e*x^4/c^2-1/3*d*x^3/c^2-1/2*a^2*e*x^2/c^4-a^2*d*x/c^4-1/2/c^6*a^4*ln(c
*x+a)*e+1/2/c^5*a^3*ln(c*x+a)*d-1/2/c^6*a^4*ln(c*x-a)*e-1/2/c^5*a^3*ln(c*x-
a)*d
```

maxima [A] time = 0.54, size = 90, normalized size = 0.95

$$-\frac{3\,c^2ex^4+4\,c^2dx^3+6\,a^2ex^2+12\,a^2dx}{12\,c^4}+\frac{\left(a^3cd-a^4e\right)\log\left(cx+a\right)}{2\,c^6}-\frac{\left(a^3cd+a^4e\right)\log\left(cx-a\right)}{2\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*c^2*e*x^4 + 4*c^2*d*x^3 + 6*a^2*e*x^2 + 12*a^2*d*x)/c^4 + 1/2*(a^3
*c*d - a^4*e)*log(c*x + a)/c^6 - 1/2*(a^3*c*d + a^4*e)*log(c*x - a)/c^6
```

mupad [B] time = 0.10, size = 89, normalized size = 0.94

$$-\frac{\ln(a+c\,x)\,\left(a^4\,e-a^3\,c\,d\right)}{2\,c^6}-\frac{\ln(a-c\,x)\,\left(e\,a^4+c\,d\,a^3\right)}{2\,c^6}-\frac{d\,x^3}{3\,c^2}-\frac{e\,x^4}{4\,c^2}-\frac{a^2\,e\,x^2}{2\,c^4}-\frac{a^2\,d\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] - (log(a + c*x)*(a^4*e - a^3*c*d))/(2*c^6) - (log(a - c*x)*(a^4*e + a^3*c*d
))/(2*c^6) - (d*x^3)/(3*c^2) - (e*x^4)/(4*c^2) - (a^2*e*x^2)/(2*c^4) - (a^2
*d*x)/c^4
```

sympy [A] time = 0.47, size = 129, normalized size = 1.36

$$-\frac{a^3\,(ae-cd)\log\left(x+\frac{a^4e-a^3(ae-cd)}{a^2c^2d}\right)}{2c^6}-\frac{a^3\,(ae+cd)\log\left(x+\frac{a^4e-a^3(ae+cd)}{a^2c^2d}\right)}{2c^6}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -a**3*(a*e - c*d)*log(x + (a**4*e - a**3*(a*e - c*d))/(a**2*c**2*d))/(2*c**
6) - a**3*(a*e + c*d)*log(x + (a**4*e - a**3*(a*e + c*d))/(a**2*c**2*d))/(2
*c**6) - a**2*d*x/c**4 - a**2*e*x**2/(2*c**4) - d*x**3/(3*c**2) - e*x**4/(4
*c**2)
```

3.298 $\int \frac{x^3(d+ex)}{a^2-c^2x^2} dx$

Optimal. Leaf size=81

$$-\frac{a^2(ae+cd)\log(a-cx)}{2c^5}-\frac{a^2(cd-ae)\log(a+cx)}{2c^5}-\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Rubi [A] time = 0.07, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {801, 633, 31}

$$-\frac{a^2(ae+cd)\log(a-cx)}{2c^5}-\frac{a^2(cd-ae)\log(a+cx)}{2c^5}-\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*e*x)/c^4) - (d*x^2)/(2*c^2) - (e*x^3)/(3*c^2) - (a^2*(c*d + a*e)*Log
[a - c*x])/(2*c^5) - (a^2*(c*d - a*e)*Log[a + c*x])/(2*c^5)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3(d+ex)}{a^2-c^2x^2} dx &= \int \left(-\frac{a^2e}{c^4}-\frac{dx}{c^2}-\frac{ex^2}{c^2}+\frac{a^4e+a^2c^2dx}{c^4\left(a^2-c^2x^2\right)}\right) dx\\
&= -\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}+\frac{\int \frac{a^4e+a^2c^2dx}{a^2-c^2x^2} dx}{c^4}\\
&= -\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}+\frac{\left(a^2(cd-ae)\right)\int \frac{1}{-ac-c^2x} dx}{2c^3}+\frac{\left(a^2(cd+ae)\right)\int \frac{1}{ac-c^2x} dx}{2c^3}\\
&= -\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}-\frac{a^2(cd+ae)\log(a-cx)}{2c^5}-\frac{a^2(cd-ae)\log(a+cx)}{2c^5}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 72, normalized size = 0.89

$$\frac{a^3e\tanh^{-1}\left(\frac{cx}{a}\right)}{c^5}-\frac{a^2ex}{c^4}-\frac{a^2d\log\left(a^2-c^2x^2\right)}{2c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*e*x)/c^4) - (d*x^2)/(2*c^2) - (e*x^3)/(3*c^2) + (a^3*e*ArcTanh[(c*x)
/a])/c^5 - (a^2*d*Log[a^2 - c^2*x^2])/(2*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{a^2-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(a^2 - c^2*x^2), x]
```

fricas [A] time = 0.41, size = 75, normalized size = 0.93

$$-\frac{2\,c^3ex^3+3\,c^3dx^2+6\,a^2cex+3\left(a^2cd-a^3e\right)\log\left(cx+a\right)+3\left(a^2cd+a^3e\right)\log\left(cx-a\right)}{6\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*c^3*e*x^3 + 3*c^3*d*x^2 + 6*a^2*c*e*x + 3*(a^2*c*d - a^3*e)*log(c*x
 + a) + 3*(a^2*c*d + a^3*e)*log(c*x - a))/c^5
```

giac [A] time = 0.17, size = 90, normalized size = 1.11

$$-\frac{\left(a^2cd-a^3e\right)\log\left(|cx+a|\right)}{2\,c^5}-\frac{\left(a^2cd+a^3e\right)\log\left(|cx-a|\right)}{2\,c^5}-\frac{2\,c^4x^3e+3\,c^4dx^2+6\,a^2c^2xe}{6\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] -1/2*(a^2*c*d - a^3*e)*log(abs(c*x + a))/c^5 - 1/2*(a^2*c*d + a^3*e)*log(ab
s(c*x - a))/c^5 - 1/6*(2*c^4*x^3*e + 3*c^4*d*x^2 + 6*a^2*c^2*x*e)/c^6
```

maple [A] time = 0.06, size = 94, normalized size = 1.16

$$-\frac{e\,x^3}{3c^2}-\frac{d\,x^2}{2c^2}-\frac{a^3e\ln\left(cx-a\right)}{2c^5}+\frac{a^3e\ln\left(cx+a\right)}{2c^5}-\frac{a^2d\ln\left(cx-a\right)}{2c^4}-\frac{a^2d\ln\left(cx+a\right)}{2c^4}-\frac{a^2ex}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/3/c^2*e*x^3-1/2/c^2*d*x^2-a^2*e*x/c^4+1/2/c^5*a^3*ln(c*x+a)*e-1/2/c^4*a^
2*ln(c*x+a)*d-1/2/c^5*a^3*ln(c*x-a)*e-1/2/c^4*a^2*ln(c*x-a)*d
```

maxima [A] time = 0.55, size = 81, normalized size = 1.00

$$-\frac{2\,c^2ex^3+3\,c^2dx^2+6\,a^2ex}{6\,c^4}-\frac{\left(a^2cd-a^3e\right)\log\left(cx+a\right)}{2\,c^5}-\frac{\left(a^2cd+a^3e\right)\log\left(cx-a\right)}{2\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -1/6*(2*c^2*e*x^3 + 3*c^2*d*x^2 + 6*a^2*e*x)/c^4 - 1/2*(a^2*c*d - a^3*e)*lo
g(c*x + a)/c^5 - 1/2*(a^2*c*d + a^3*e)*log(c*x - a)/c^5
```

mupad [B] time = 1.09, size = 77, normalized size = 0.95

$$\frac{\ln\left(a+c\,x\right)\,\left(a^3\,e-a^2\,c\,d\right)}{2\,c^5}-\frac{\ln\left(a-c\,x\right)\,\left(e\,a^3+c\,d\,a^2\right)}{2\,c^5}-\frac{d\,x^2}{2\,c^2}-\frac{e\,x^3}{3\,c^2}-\frac{a^2\,e\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] (log(a + c*x)*(a^3*e - a^2*c*d))/(2*c^5) - (log(a - c*x)*(a^3*e + a^2*c*d))
/(2*c^5) - (d*x^2)/(2*c^2) - (e*x^3)/(3*c^2) - (a^2*e*x)/c^4
```

sympy [A] time = 0.44, size = 110, normalized size = 1.36

$$-\frac{a^2ex}{c^4}+\frac{a^2\left(ae-cd\right)\log\left(x+\frac{a^2d+\frac{a^2(ae-cd)}{c}}{a^2e}\right)}{2c^5}-\frac{a^2\left(ae+cd\right)\log\left(x+\frac{a^2d-\frac{a^2(ae+cd)}{c}}{a^2e}\right)}{2c^5}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -a**2*e*x/c**4 + a**2*(a*e - c*d)*log(x + (a**2*d + a**2*(a*e - c*d)/c)/(a*
*2*e))/(2*c**5) - a**2*(a*e + c*d)*log(x + (a**2*d - a**2*(a*e + c*d)/c)/(a
**2*e))/(2*c**5) - d*x**2/(2*c**2) - e*x**3/(3*c**2)
```

3.299 $\int \frac{x^2(d+ex)}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=63

$$-\frac{a(ae+cd)\log(a-cx)}{2c^4}+\frac{a(cd-ae)\log(a+cx)}{2c^4}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Rubi [A] time = 0.06, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.130$, Rules used = $\{801, 633, 31\}$

$$-\frac{a(ae+cd)\log(a-cx)}{2c^4}+\frac{a(cd-ae)\log(a+cx)}{2c^4}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((d*x)/c^2) - (e*x^2)/(2*c^2) - (a*(c*d + a*e)*Log[a - c*x])/(2*c^4) + (a*
(c*d - a*e)*Log[a + c*x])/(2*c^4)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(d+ex)}{a^2-c^2x^2}\,dx &= \int \left(-\frac{d}{c^2}-\frac{ex}{c^2}+\frac{a^2d+a^2ex}{c^2\left(a^2-c^2x^2\right)}\right)dx \\
&= -\frac{dx}{c^2}-\frac{ex^2}{2c^2}+\frac{\int \frac{a^2d+a^2ex}{a^2-c^2x^2}\,dx}{c^2} \\
&= -\frac{dx}{c^2}-\frac{ex^2}{2c^2}-\frac{(a(cd-ae))\int \frac{1}{-ac-c^2x}\,dx}{2c^2}+\frac{(a(cd+ae))\int \frac{1}{ac-c^2x}\,dx}{2c^2} \\
&= -\frac{dx}{c^2}-\frac{ex^2}{2c^2}-\frac{a(cd+ae)\log(a-cx)}{2c^4}+\frac{a(cd-ae)\log(a+cx)}{2c^4}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 56, normalized size = 0.89

$$-\frac{a^2e\log\left(a^2-c^2x^2\right)}{2c^4}+\frac{ad\tanh^{-1}\left(\frac{cx}{a}\right)}{c^3}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((d*x)/c^2) - (e*x^2)/(2*c^2) + (a*d*ArcTanh[(c*x)/a])/c^3 - (a^2*e*Log[a^
2 - c^2*x^2])/(2*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{a^2-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(a^2 - c^2*x^2), x]
```

fricas [A] time = 0.41, size = 59, normalized size = 0.94

$$-\frac{c^2ex^2+2\,c^2dx-\left(acd-a^2e\right)\log\left(cx+a\right)+\left(acd+a^2e\right)\log\left(cx-a\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(c^2*e*x^2 + 2*c^2*d*x - (a*c*d - a^2*e)*log(c*x + a) + (a*c*d + a^2*e
)*log(c*x - a))/c^4
```

giac [A] time = 0.16, size = 72, normalized size = 1.14

$$\frac{\left(acd-a^2e\right)\log\left(|cx+a|\right)}{2\,c^4}-\frac{\left(acd+a^2e\right)\log\left(|cx-a|\right)}{2\,c^4}-\frac{c^2x^2e+2\,c^2dx}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(a*c*d - a^2*e)*log(abs(c*x + a))/c^4 - 1/2*(a*c*d + a^2*e)*log(abs(c*x
 - a))/c^4 - 1/2*(c^2*x^2*e + 2*c^2*d*x)/c^4
```

maple [A] time = 0.06, size = 78, normalized size = 1.24

$$-\frac{e\,x^2}{2c^2}-\frac{a^2e\ln\left(cx-a\right)}{2c^4}-\frac{a^2e\ln\left(cx+a\right)}{2c^4}-\frac{ad\ln\left(cx-a\right)}{2c^3}+\frac{ad\ln\left(cx+a\right)}{2c^3}-\frac{dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2/c^2*e*x^2-1/c^2*d*x-1/2/c^4*a^2*ln(c*x+a)*e+1/2/c^3*a*ln(c*x+a)*d-1/2/
c^4*a^2*ln(c*x-a)*e-1/2/c^3*a*ln(c*x-a)*d
```

maxima [A] time = 0.53, size = 61, normalized size = 0.97

$$-\frac{ex^2+2\,dx}{2\,c^2}+\frac{\left(acd-a^2e\right)\log\left(cx+a\right)}{2\,c^4}-\frac{\left(acd+a^2e\right)\log\left(cx-a\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -1/2*(e*x^2 + 2*d*x)/c^2 + 1/2*(a*c*d - a^2*e)*log(c*x + a)/c^4 - 1/2*(a*c*
d + a^2*e)*log(c*x - a)/c^4
```

mupad [B] time = 0.08, size = 61, normalized size = 0.97

$$-\frac{e\,x^2}{2\,c^2}-\frac{\ln\left(a+c\,x\right)\,\left(a^2\,e-a\,c\,d\right)}{2\,c^4}-\frac{\ln\left(a-c\,x\right)\,\left(e\,a^2+c\,d\,a\right)}{2\,c^4}-\frac{d\,x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] - (e*x^2)/(2*c^2) - (log(a + c*x)*(a^2*e - a*c*d))/(2*c^4) - (log(a - c*x)*
(a^2*e + a*c*d))/(2*c^4) - (d*x)/c^2
```

sympy [A] time = 0.47, size = 88, normalized size = 1.40

$$-\frac{a\left(ae-cd\right)\log\left(x+\frac{a^2e-a(ae-cd)}{c^2d}\right)}{2c^4}-\frac{a\left(ae+cd\right)\log\left(x+\frac{a^2e-a(ae+cd)}{c^2d}\right)}{2c^4}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -a*(a*e - c*d)*log(x + (a**2*e - a*(a*e - c*d))/(c**2*d))/(2*c**4) - a*(a*e
 + c*d)*log(x + (a**2*e - a*(a*e + c*d))/(c**2*d))/(2*c**4) - d*x/c**2 - e*
x**2/(2*c**2)
```

3.300 $\int \frac{x(d+ex)}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=50

$$-\frac{(ae+cd)\log(a-cx)}{2c^3}-\frac{(cd-ae)\log(a+cx)}{2c^3}-\frac{ex}{c^2}$$

Rubi [A] time = 0.04, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {774, 633, 31}

$$-\frac{(ae+cd)\log(a-cx)}{2c^3}-\frac{(cd-ae)\log(a+cx)}{2c^3}-\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((e*x)/c^2) - ((c*d + a*e)*Log[a - c*x])/(2*c^3) - ((c*d - a*e)*Log[a + c*
x])/(2*c^3)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{a^2-c^2x^2}\,dx &= -\frac{ex}{c^2}-\frac{\int \frac{-a^2e-c^2dx}{a^2-c^2x^2}\,dx}{c^2}\\ &= -\frac{ex}{c^2}+\frac{(cd-ae)\int \frac{1}{-ac-c^2x}\,dx}{2c}+\frac{(cd+ae)\int \frac{1}{ac-c^2x}\,dx}{2c}\\ &= -\frac{ex}{c^2}-\frac{(cd+ae)\log(a-cx)}{2c^3}-\frac{(cd-ae)\log(a+cx)}{2c^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 0.84

$$-\frac{d\log\left(a^2-c^2x^2\right)}{2c^2}+\frac{ae\tanh^{-1}\left(\frac{cx}{a}\right)}{c^3}-\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a^2 - c^2*x^2),x]
```

[Out] -((e*x)/c^2) + (a*e*ArcTanh[(c*x)/a])/c^3 - (d*Log[a^2 - c^2*x^2])/(2*c^2)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{a^2-c^2x^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(x*(d + e*x))/(a^2 - c^2*x^2),x]

[Out] IntegrateAlgebraic[(x*(d + e*x))/(a^2 - c^2*x^2), x]

fricas [A] time = 0.41, size = 42, normalized size = 0.84

$$-\frac{2\,cex+(cd-ae)\log\left(cx+a\right)+(cd+ae)\log\left(cx-a\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")

[Out] -1/2*(2*c*e*x + (c*d - a*e)*log(c*x + a) + (c*d + a*e)*log(c*x - a))/c^3

giac [A] time = 0.15, size = 52, normalized size = 1.04

$$-\frac{xe}{c^2}-\frac{(cd-ae)\log\left(|cx+a|\right)}{2\,c^3}-\frac{(cd+ae)\log\left(|cx-a|\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")

[Out] -x*e/c^2 - 1/2*(c*d - a*e)*log(abs(c*x + a))/c^3 - 1/2*(c*d + a*e)*log(abs(c*x - a))/c^3

maple [A] time = 0.05, size = 63, normalized size = 1.26

$$-\frac{ae\ln\left(cx-a\right)}{2c^3}+\frac{ae\ln\left(cx+a\right)}{2c^3}-\frac{d\ln\left(cx-a\right)}{2c^2}-\frac{d\ln\left(cx+a\right)}{2c^2}-\frac{ex}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x*(e*x+d)/(-c^2*x^2+a^2),x)

[Out] -1/c^2*e*x+1/2/c^3*ln(c*x+a)*a*e-1/2/c^2*ln(c*x+a)*d-1/2/c^3*ln(c*x-a)*a*e-1/2/c^2*ln(c*x-a)*d

maxima [A] time = 0.50, size = 47, normalized size = 0.94

$$-\frac{ex}{c^2}-\frac{(cd-ae)\log\left(cx+a\right)}{2\,c^3}-\frac{(cd+ae)\log\left(cx-a\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")

[Out] -e*x/c^2 - 1/2*(c*d - a*e)*log(c*x + a)/c^3 - 1/2*(c*d + a*e)*log(c*x - a)/c^3

mupad [B] time = 1.10, size = 60, normalized size = 1.20

$$\frac{a\,e\,\ln\left(a+c\,x\right)}{2\,c^3}-\frac{d\,\ln\left(a-c\,x\right)}{2\,c^2}-\frac{e\,x}{c^2}-\frac{d\,\ln\left(a+c\,x\right)}{2\,c^2}-\frac{a\,e\,\ln\left(a-c\,x\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] (a*e*log(a + c*x))/(2*c^3) - (d*log(a - c*x))/(2*c^2) - (e*x)/c^2 - (d*log(
a + c*x))/(2*c^2) - (a*e*log(a - c*x))/(2*c^3)
```

sympy [A] time = 0.35, size = 60, normalized size = 1.20

$$-\frac{ex}{c^2}+\frac{(ae-cd)\log\left(x+\frac{d+\frac{ae-cd}{c}}{e}\right)}{2c^3}-\frac{(ae+cd)\log\left(x+\frac{d-\frac{ae+cd}{c}}{e}\right)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -e*x/c**2 + (a*e - c*d)*log(x + (d + (a*e - c*d)/c)/e)/(2*c**3) - (a*e + c*
d)*log(x + (d - (a*e + c*d)/c)/e)/(2*c**3)
```

3.301 $\int \frac{d+ex}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=46

$$\frac{\left(\frac{cd}{a}-e\right)\log(a+cx)}{2c^2}-\frac{\left(\frac{cd}{a}+e\right)\log(a-cx)}{2c^2}$$

Rubi [A] time = 0.02, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {633, 31}

$$\frac{\left(\frac{cd}{a}-e\right)\log(a+cx)}{2c^2}-\frac{\left(\frac{cd}{a}+e\right)\log(a-cx)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a^2 - c^2*x^2),x]
```

```
[Out] -((((c*d)/a + e)*Log[a - c*x])/(2*c^2) + (((c*d)/a - e)*Log[a + c*x])/(2*c^2
)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a^2-c^2x^2}\,dx &= \frac{1}{2}\left(-\frac{cd}{a}+e\right)\int \frac{1}{-ac-c^2x}\,dx+\frac{1}{2}\left(\frac{cd}{a}+e\right)\int \frac{1}{ac-c^2x}\,dx\\ &= -\frac{\left(\frac{cd}{a}+e\right)\log(a-cx)}{2c^2}+\frac{\left(\frac{cd}{a}-e\right)\log(a+cx)}{2c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 37, normalized size = 0.80

$$\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{ac}-\frac{e\log\left(a^2-c^2x^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a^2 - c^2*x^2),x]
```

```
[Out] (d*ArcTanh[(c*x)/a])/(a*c) - (e*Log[a^2 - c^2*x^2])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{a^2-c^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a^2 - c^2*x^2),x]
[Out] IntegrateAlgebraic[(d + e*x)/(a^2 - c^2*x^2), x]
```

fricas [A] time = 0.40, size = 41, normalized size = 0.89

$$\frac{(cd - ae)\log(cx + a) - (cd + ae)\log(cx - a)}{2\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
[Out] 1/2*((c*d - a*e)*log(c*x + a) - (c*d + a*e)*log(c*x - a))/(a*c^2)
```

giac [A] time = 0.15, size = 50, normalized size = 1.09

$$\frac{(cd - ae)\log(|cx + a|)}{2\,ac^2} - \frac{(cd + ae)\log(|cx - a|)}{2\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
[Out] 1/2*(c*d - a*e)*log(abs(c*x + a))/(a*c^2) - 1/2*(c*d + a*e)*log(abs(c*x - a
))/(a*c^2)
```

maple [A] time = 0.05, size = 60, normalized size = 1.30

$$-\frac{d\ln(cx - a)}{2ac} + \frac{d\ln(cx + a)}{2ac} - \frac{e\ln(cx - a)}{2c^2} - \frac{e\ln(cx + a)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(-c^2*x^2+a^2),x)
[Out] -1/2/c^2*ln(c*x+a)*e+1/2/a/c*ln(c*x+a)*d-1/2/c^2*ln(c*x-a)*e-1/2/a/c*ln(c*x
-a)*d
```

maxima [A] time = 0.54, size = 46, normalized size = 1.00

$$\frac{(cd - ae)\log(cx + a)}{2\,ac^2} - \frac{(cd + ae)\log(cx - a)}{2\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
[Out] 1/2*(c*d - a*e)*log(c*x + a)/(a*c^2) - 1/2*(c*d + a*e)*log(c*x - a)/(a*c^2)
```

mupad [B] time = 0.09, size = 45, normalized size = 0.98

$$-\frac{\ln(a + c\,x)\,(a\,e - c\,d)}{2\,a\,c^2} - \frac{\ln(a - c\,x)\,(a\,e + c\,d)}{2\,a\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a^2 - c^2*x^2),x)
[Out] - (log(a + c*x)*(a*e - c*d))/(2*a*c^2) - (log(a - c*x)*(a*e + c*d))/(2*a*c^
2)
```

sympy [A] time = 0.33, size = 71, normalized size = 1.54

$$-\frac{(ae-cd)\log\left(x+\frac{a^2e-a(ae-cd)}{c^2d}\right)}{2ac^2}-\frac{(ae+cd)\log\left(x+\frac{a^2e-a(ae+cd)}{c^2d}\right)}{2ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -(a*e - c*d)*log(x + (a**2*e - a*(a*e - c*d))/(c**2*d))/(2*a*c**2) - (a*e +
 c*d)*log(x + (a**2*e - a*(a*e + c*d))/(c**2*d))/(2*a*c**2)
```

3.302 $\int \frac{d+ex}{x(a^2-c^2x^2)}\,dx$

Optimal. Leaf size=56

$$-\frac{(ae+cd)\log(a-cx)}{2a^2c}-\frac{(cd-ae)\log(a+cx)}{2a^2c}+\frac{d\log(x)}{a^2}$$

Rubi [A] time = 0.05, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$-\frac{(ae+cd)\log(a-cx)}{2a^2c}-\frac{(cd-ae)\log(a+cx)}{2a^2c}+\frac{d\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a^2 - c^2*x^2)),x]
```

```
[Out] (d*Log[x])/a^2 - ((c*d + a*e)*Log[a - c*x])/(2*a^2*c) - ((c*d - a*e)*Log[a
+ c*x])/(2*a^2*c)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(a^2-c^2x^2\right)}\,dx &= \int \left(\frac{d}{a^2x}-\frac{-cd-ae}{2a^2(a-cx)}+\frac{-cd+ae}{2a^2(a+cx)}\right)dx\\ &= \frac{d\log(x)}{a^2}-\frac{(cd+ae)\log(a-cx)}{2a^2c}-\frac{(cd-ae)\log(a+cx)}{2a^2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 44, normalized size = 0.79

$$-\frac{d\log\left(a^2-c^2x^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{ac}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a^2 - c^2*x^2)),x]
```

```
[Out] (e*ArcTanh[(c*x)/a])/(a*c) + (d*Log[x])/a^2 - (d*Log[a^2 - c^2*x^2])/(2*a^2
)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(a^2-c^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(a^2 - c^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(a^2 - c^2*x^2)), x]
```

fricas [A] time = 0.43, size = 48, normalized size = 0.86

$$\frac{2\,cd\log(x) - (cd - ae)\log\left(cx + a\right) - (cd + ae)\log\left(cx - a\right)}{2\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*c*d*log(x) - (c*d - a*e)*log(c*x + a) - (c*d + a*e)*log(c*x - a))/(a
^2*c)
```

giac [A] time = 0.17, size = 64, normalized size = 1.14

$$\frac{d\log\left(|x|\right)}{a^2} - \frac{\left(c^2d - ace\right)\log\left(|cx + a|\right)}{2\,a^2c^2} - \frac{\left(c^2d + ace\right)\log\left(|cx - a|\right)}{2\,a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] d*log(abs(x))/a^2 - 1/2*(c^2*d - a*c*e)*log(abs(c*x + a))/(a^2*c^2) - 1/2*(
c^2*d + a*c*e)*log(abs(c*x - a))/(a^2*c^2)
```

maple [A] time = 0.05, size = 67, normalized size = 1.20

$$-\frac{e\ln\left(cx - a\right)}{2ac} + \frac{e\ln\left(cx + a\right)}{2ac} + \frac{d\ln(x)}{a^2} - \frac{d\ln\left(cx - a\right)}{2a^2} - \frac{d\ln\left(cx + a\right)}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(-c^2*x^2+a^2),x)
```

```
[Out] 1/2/a/c*ln(c*x+a)*e-1/2/a^2*ln(c*x+a)*d-1/2/a/c*ln(c*x-a)*e-1/2/a^2*ln(c*x-
a)*d+1/a^2*d*ln(x)
```

maxima [A] time = 0.55, size = 53, normalized size = 0.95

$$\frac{d\log(x)}{a^2} - \frac{(cd - ae)\log\left(cx + a\right)}{2\,a^2c} - \frac{(cd + ae)\log\left(cx - a\right)}{2\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] d*log(x)/a^2 - 1/2*(c*d - a*e)*log(c*x + a)/(a^2*c) - 1/2*(c*d + a*e)*log(c
*x - a)/(a^2*c)
```

mupad [B] time = 1.15, size = 52, normalized size = 0.93

$$\frac{d\,\ln(x)}{a^2} + \frac{\ln\left(a + c\,x\right)\,\left(a\,e - c\,d\right)}{2\,a^2\,c} - \frac{\ln\left(a - c\,x\right)\,\left(a\,e + c\,d\right)}{2\,a^2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a^2 - c^2*x^2)),x)
```

```
[Out] (d*log(x))/a^2 + (log(a + c*x)*(a*e - c*d))/(2*a^2*c) - (log(a - c*x)*(a*e
+ c*d))/(2*a^2*c)
```

sympy [B] time = 1.59, size = 194, normalized size = 3.46

$$\frac{d\log\left(x\right)}{a^2} + \frac{(ae - cd)\log\left(x + \frac{-2a^2de^2 + \frac{a^2e^2(ae-cd)}{c} - 6c^2d^3 - 3cd^2(ae-cd) + 3d(ae-cd)^2}{a^2e^3 - 9c^2d^2e}\right)}{2a^2c} - \frac{(ae + cd)\log\left(x + \frac{-2a^2de^2 - \frac{a^2e^2(ae+cd)}{c} - 6c^2d^3 + 3cd^2(ae+cd) + 3d(ae+cd)^2}{a^2e^3 - 9c^2d^2e}\right)}{2a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c**2*x**2+a**2),x)
```

```
[Out] d*log(x)/a**2 + (a*e - c*d)*log(x + (-2*a**2*d*e**2 + a**2*e**2*(a*e - c*d)
/c - 6*c**2*d**3 - 3*c*d**2*(a*e - c*d) + 3*d*(a*e - c*d)**2)/(a**2*e**3 -
9*c**2*d**2*e))/(2*a**2*c) - (a*e + c*d)*log(x + (-2*a**2*d*e**2 - a**2*e**
2*(a*e + c*d)/c - 6*c**2*d**3 + 3*c*d**2*(a*e + c*d) + 3*d*(a*e + c*d)**2)/
(a**2*e**3 - 9*c**2*d**2*e))/(2*a**2*c)
```

3.303 $\int \frac{d+ex}{x^2(a^2-c^2x^2)}\,dx$

Optimal. Leaf size=59

$$-\frac{(ae+cd)\log(a-cx)}{2a^3}+\frac{(cd-ae)\log(a+cx)}{2a^3}-\frac{d}{a^2x}+\frac{e\log(x)}{a^2}$$

Rubi [A] time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$-\frac{(ae+cd)\log(a-cx)}{2a^3}+\frac{(cd-ae)\log(a+cx)}{2a^3}-\frac{d}{a^2x}+\frac{e\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a^2 - c^2*x^2)),x]
```

```
[Out] -(d/(a^2*x)) + (e*Log[x])/a^2 - ((c*d + a*e)*Log[a - c*x])/(2*a^3) + ((c*d
- a*e)*Log[a + c*x])/(2*a^3)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)}\,dx &= \int \left(\frac{d}{a^2x^2}+\frac{e}{a^2x}+\frac{c(cd+ae)}{2a^3(a-cx)}-\frac{c(-cd+ae)}{2a^3(a+cx)}\right)dx\\ &= -\frac{d}{a^2x}+\frac{e\log(x)}{a^2}-\frac{(cd+ae)\log(a-cx)}{2a^3}+\frac{(cd-ae)\log(a+cx)}{2a^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 51, normalized size = 0.86

$$\frac{cd\tanh^{-1}\left(\frac{cx}{a}\right)}{a^3}-\frac{e\log\left(a^2-c^2x^2\right)}{2a^2}-\frac{d}{a^2x}+\frac{e\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a^2 - c^2*x^2)),x]
```

```
[Out] -(d/(a^2*x)) + (c*d*ArcTanh[(c*x)/a])/a^3 + (e*Log[x])/a^2 - (e*Log[a^2 - c
^2*x^2])/(2*a^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(a^2 - c^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(a^2 - c^2*x^2)), x]
```

fricas [A] time = 0.42, size = 54, normalized size = 0.92

$$\frac{2\,aex\log(x) + (cd - ae)x\log(cx + a) - (cd + ae)x\log(cx - a) - 2\,ad}{2\,a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*e*x*log(x) + (c*d - a*e)*x*log(c*x + a) - (c*d + a*e)*x*log(c*x -
a) - 2*a*d)/(a^3*x)
```

giac [A] time = 0.15, size = 74, normalized size = 1.25

$$\frac{e\log(|x|)}{a^2} - \frac{d}{a^2x} + \frac{\left(c^2d - ace\right)\log(|cx + a|)}{2\,a^3c} - \frac{\left(c^2d + ace\right)\log(|cx - a|)}{2\,a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] e*log(abs(x))/a^2 - d/(a^2*x) + 1/2*(c^2*d - a*c*e)*log(abs(c*x + a))/(a^3*
c) - 1/2*(c^2*d + a*c*e)*log(abs(c*x - a))/(a^3*c)
```

maple [A] time = 0.06, size = 72, normalized size = 1.22

$$\frac{e\ln(x)}{a^2} - \frac{e\ln(cx - a)}{2a^2} - \frac{e\ln(cx + a)}{2a^2} - \frac{cd\ln(cx - a)}{2a^3} + \frac{cd\ln(cx + a)}{2a^3} - \frac{d}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2/a^2*ln(c*x+a)*e+1/2/a^3*ln(c*x+a)*c*d-1/2/a^2*ln(c*x-a)*e-1/2/a^3*ln(c
*x-a)*c*d+1/a^2*e*ln(x)-1/a^2*d/x
```

maxima [A] time = 0.54, size = 56, normalized size = 0.95

$$\frac{e\log(x)}{a^2} + \frac{(cd - ae)\log(cx + a)}{2\,a^3} - \frac{(cd + ae)\log(cx - a)}{2\,a^3} - \frac{d}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] e*log(x)/a^2 + 1/2*(c*d - a*e)*log(c*x + a)/a^3 - 1/2*(c*d + a*e)*log(c*x -
 a)/a^3 - d/(a^2*x)
```

mupad [B] time = 0.09, size = 55, normalized size = 0.93

$$\frac{e\,\ln(x)}{a^2} - \frac{\ln(a - c\,x)\,(a\,e + c\,d)}{2\,a^3} - \frac{d}{a^2\,x} - \frac{\ln(a + c\,x)\,(a\,e - c\,d)}{2\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a^2 - c^2*x^2)),x)
```

```
[Out] (e*log(x))/a^2 - (log(a - c*x)*(a*e + c*d))/(2*a^3) - d/(a^2*x) - (log(a +
c*x)*(a*e - c*d))/(2*a^3)
```

sympy [B] time = 1.70, size = 221, normalized size = 3.75

$$-\frac{d}{a^2x} + \frac{e\log(x)}{a^2} - \frac{(ae - cd)\log\left(x + \frac{6a^4e^3 - 3a^3e^2(ae - cd) + 2a^2c^2d^2e - 3a^2e(ae - cd)^2 + ac^2d^2(ae - cd)}{9a^2c^2de^2 - c^4d^3}\right)}{2a^3} - \frac{(ae + cd)\log\left(x + \frac{6a^4e^3 - 3a^3e^2(ae + cd) + 2a^2c^2d^2e - 3a^2e(ae + cd)^2 + ac^2d^2(ae + cd)}{9a^2c^2de^2 - c^4d^3}\right)}{2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(-c**2*x**2+a**2),x)
```

```
[Out] -d/(a**2*x) + e*log(x)/a**2 - (a*e - c*d)*log(x + (6*a**4*e**3 - 3*a**3*e**
2*(a*e - c*d) + 2*a**2*c**2*d**2*e - 3*a**2*e*(a*e - c*d)**2 + a*c**2*d**2*
(a*e - c*d))/(9*a**2*c**2*d*e**2 - c**4*d**3))/(2*a**3) - (a*e + c*d)*log(x
 + (6*a**4*e**3 - 3*a**3*e**2*(a*e + c*d) + 2*a**2*c**2*d**2*e - 3*a**2*e*(
a*e + c*d)**2 + a*c**2*d**2*(a*e + c*d))/(9*a**2*c**2*d*e**2 - c**4*d**3))/
(2*a**3)
```

3.304 $\int \frac{d+ex}{x^3(a^2-c^2x^2)}\,dx$

Optimal. Leaf size=75

$$\frac{c^2d\log(x)}{a^4}-\frac{c(ae+cd)\log(a-cx)}{2a^4}-\frac{c(cd-ae)\log(a+cx)}{2a^4}-\frac{d}{2a^2x^2}-\frac{e}{a^2x}$$

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$\frac{c^2d\log(x)}{a^4}-\frac{c(ae+cd)\log(a-cx)}{2a^4}-\frac{c(cd-ae)\log(a+cx)}{2a^4}-\frac{d}{2a^2x^2}-\frac{e}{a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a^2 - c^2*x^2)),x]
```

```
[Out] -d/(2*a^2*x^2) - e/(a^2*x) + (c^2*d*Log[x])/a^4 - (c*(c*d + a*e)*Log[a - c*
x])/(2*a^4) - (c*(c*d - a*e)*Log[a + c*x])/(2*a^4)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)}\,dx &= \int \left(\frac{d}{a^2x^3}+\frac{e}{a^2x^2}+\frac{c^2d}{a^4x}+\frac{c^2(cd+ae)}{2a^4(a-cx)}+\frac{c^2(-cd+ae)}{2a^4(a+cx)}\right)dx\\ &= -\frac{d}{2a^2x^2}-\frac{e}{a^2x}+\frac{c^2d\log(x)}{a^4}-\frac{c(cd+ae)\log(a-cx)}{2a^4}-\frac{c(cd-ae)\log(a+cx)}{2a^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 68, normalized size = 0.91

$$\frac{c^2d\log(x)}{a^4}+\frac{ce\tanh^{-1}\left(\frac{cx}{a}\right)}{a^3}-\frac{d}{2a^2x^2}-\frac{e}{a^2x}-\frac{c^2d\log\left(a^2-c^2x^2\right)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a^2 - c^2*x^2)),x]
```

```
[Out] -1/2*d/(a^2*x^2) - e/(a^2*x) + (c*e*ArcTanh[(c*x)/a])/a^3 + (c^2*d*Log[x])/
a^4 - (c^2*d*Log[a^2 - c^2*x^2])/(2*a^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(a^2 - c^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(a^2 - c^2*x^2)), x]
```

fricas [A] time = 0.43, size = 78, normalized size = 1.04

$$\frac{2\,c^2dx^2\log(x) - 2\,a^2ex - \left(c^2d - ace\right)x^2\log\left(cx + a\right) - \left(c^2d + ace\right)x^2\log\left(cx - a\right) - a^2d}{2\,a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*c^2*d*x^2*log(x) - 2*a^2*e*x - (c^2*d - a*c*e)*x^2*log(c*x + a) - (c
^2*d + a*c*e)*x^2*log(c*x - a) - a^2*d)/(a^4*x^2)
```

giac [A] time = 0.15, size = 93, normalized size = 1.24

$$\frac{c^2d\log\left(|x|\right)}{a^4} - \frac{\left(c^3d - ac^2e\right)\log\left(|cx + a|\right)}{2\,a^4c} - \frac{\left(c^3d + ac^2e\right)\log\left(|cx - a|\right)}{2\,a^4c} - \frac{2\,a^2xe + a^2d}{2\,a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] c^2*d*log(abs(x))/a^4 - 1/2*(c^3*d - a*c^2*e)*log(abs(c*x + a))/(a^4*c) - 1
/2*(c^3*d + a*c^2*e)*log(abs(c*x - a))/(a^4*c) - 1/2*(2*a^2*x*e + a^2*d)/(a
^4*x^2)
```

maple [A] time = 0.06, size = 90, normalized size = 1.20

$$-\frac{ce\ln\left(cx - a\right)}{2a^3} + \frac{ce\ln\left(cx + a\right)}{2a^3} + \frac{c^2d\ln(x)}{a^4} - \frac{c^2d\ln\left(cx - a\right)}{2a^4} - \frac{c^2d\ln\left(cx + a\right)}{2a^4} - \frac{e}{a^2x} - \frac{d}{2a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(-c^2*x^2+a^2),x)
```

```
[Out] 1/2*c/a^3*ln(c*x+a)*e-1/2*c^2/a^4*ln(c*x+a)*d-1/2*c/a^3*ln(c*x-a)*e-1/2*c^2
/a^4*ln(c*x-a)*d-1/a^2*e/x-1/2/a^2*d/x^2+c^2*d*ln(x)/a^4
```

maxima [A] time = 0.56, size = 70, normalized size = 0.93

$$\frac{c^2d\log(x)}{a^4} - \frac{\left(c^2d - ace\right)\log\left(cx + a\right)}{2\,a^4} - \frac{\left(c^2d + ace\right)\log\left(cx - a\right)}{2\,a^4} - \frac{2\,ex + d}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] c^2*d*log(x)/a^4 - 1/2*(c^2*d - a*c*e)*log(c*x + a)/a^4 - 1/2*(c^2*d + a*c*
e)*log(c*x - a)/a^4 - 1/2*(2*e*x + d)/(a^2*x^2)
```

mupad [B] time = 0.11, size = 73, normalized size = 0.97

$$\frac{c^2\,d\,\ln(x)}{a^4} - \frac{\ln\left(a + c\,x\right)\,\left(c^2\,d - a\,c\,e\right)}{2\,a^4} - \frac{\ln\left(a - c\,x\right)\,\left(d\,c^2 + a\,e\,c\right)}{2\,a^4} - \frac{\frac{d}{2\,a^2} + \frac{e\,x}{a^2}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a^2 - c^2*x^2)),x)
```

```
[Out] (c^2*d*log(x))/a^4 - (log(a + c*x)*(c^2*d - a*c*e))/(2*a^4) - (log(a - c*x)
*(c^2*d + a*c*e))/(2*a^4) - (d/(2*a^2) + (e*x)/a^2)/x^2
```

sympy [B] time = 1.86, size = 236, normalized size = 3.15

$$-\frac{d + 2ex}{2a^2x^2} + \frac{c^2d\log\left(x\right)}{a^4} + \frac{c\left(ae - cd\right)\log\left(x + \frac{-2a^2c^2de^2 + a^2ce^2(ae-cd) - 6c^4d^3 - 3c^3d^2(ae-cd) + 3c^2d(ae-cd)^2}{a^2c^2e^3 - 9c^4d^2e}\right)}{2a^4} - \frac{c\left(ae + cd\right)\log\left(x + \frac{-2a^2c^2de^2 - a^2ce^2(ae+cd) - 6c^4d^3 + 3c^3d^2(ae+cd) + 3c^2d(ae+cd)^2}{a^2c^2e^3 - 9c^4d^2e}\right)}{2a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(-c**2*x**2+a**2),x)
```

```
[Out] -(d + 2*e*x)/(2*a**2*x**2) + c**2*d*log(x)/a**4 + c*(a*e - c*d)*log(x + (-2
*a**2*c**2*d*e**2 + a**2*c*e**2*(a*e - c*d) - 6*c**4*d**3 - 3*c**3*d**2*(a*
e - c*d) + 3*c**2*d*(a*e - c*d)**2)/(a**2*c**2*e**3 - 9*c**4*d**2*e))/(2*a*
*4) - c*(a*e + c*d)*log(x + (-2*a**2*c**2*d*e**2 - a**2*c*e**2*(a*e + c*d)
- 6*c**4*d**3 + 3*c**3*d**2*(a*e + c*d) + 3*c**2*d*(a*e + c*d)**2)/(a**2*c*
*2*e**3 - 9*c**4*d**2*e))/(2*a**4)
```

3.305 $\int \frac{d+ex}{x^4(a^2-c^2x^2)}\,dx$

Optimal. Leaf size=93

$$-\frac{c^2(ae+cd)\log(a-cx)}{2a^5}+\frac{c^2(cd-ae)\log(a+cx)}{2a^5}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}$$

Rubi [A] time = 0.07, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$-\frac{c^2(ae+cd)\log(a-cx)}{2a^5}+\frac{c^2(cd-ae)\log(a+cx)}{2a^5}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^4*(a^2 - c^2*x^2)),x]
```

```
[Out] -d/(3*a^2*x^3) - e/(2*a^2*x^2) - (c^2*d)/(a^4*x) + (c^2*e*Log[x])/a^4 - (c^
2*(c*d + a*e)*Log[a - c*x])/(2*a^5) + (c^2*(c*d - a*e)*Log[a + c*x])/(2*a^5
)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^4\left(a^2-c^2x^2\right)}\,dx &= \int \left(\frac{d}{a^2x^4}+\frac{e}{a^2x^3}+\frac{c^2d}{a^4x^2}+\frac{c^2e}{a^4x}+\frac{c^3(cd+ae)}{2a^5(a-cx)}-\frac{c^3(-cd+ae)}{2a^5(a+cx)}\right)dx\\ &= -\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{c^2(cd+ae)\log(a-cx)}{2a^5}+\frac{c^2(cd-ae)\log(a+cx)}{2a^5}\end{aligned}$$

Mathematica [A] time = 0.02, size = 84, normalized size = 0.90

$$\frac{c^3d\tanh^{-1}\left(\frac{cx}{a}\right)}{a^5}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}-\frac{c^2e\log\left(a^2-c^2x^2\right)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^4*(a^2 - c^2*x^2)),x]
```

```
[Out] -1/3*d/(a^2*x^3) - e/(2*a^2*x^2) - (c^2*d)/(a^4*x) + (c^3*d*ArcTanh[(c*x)/a
])/a^5 + (c^2*e*Log[x])/a^4 - (c^2*e*Log[a^2 - c^2*x^2])/(2*a^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^4\left(a^2-c^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^4*(a^2 - c^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^4*(a^2 - c^2*x^2)), x]
```

fricas [A] time = 0.41, size = 93, normalized size = 1.00

$$\frac{6\,ac^{2}ex^{3}\log(x)-6\,ac^{2}dx^{2}-3\,a^{3}ex+3\left(c^{3}d-ac^{2}e\right)x^{3}\log\left(cx+a\right)-3\left(c^{3}d+ac^{2}e\right)x^{3}\log\left(cx-a\right)-2\,a^{3}d}{6\,a^{5}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(6*a*c^2*e*x^3*log(x) - 6*a*c^2*d*x^2 - 3*a^3*e*x + 3*(c^3*d - a*c^2*e)
*x^3*log(c*x + a) - 3*(c^3*d + a*c^2*e)*x^3*log(c*x - a) - 2*a^3*d)/(a^5*x^
3)
```

giac [A] time = 0.17, size = 104, normalized size = 1.12

$$\frac{c^{2}e\log\left(|x|\right)}{a^{4}}+\frac{\left(c^{4}d-ac^{3}e\right)\log\left(|cx+a|\right)}{2\,a^{5}c}-\frac{\left(c^{4}d+ac^{3}e\right)\log\left(|cx-a|\right)}{2\,a^{5}c}-\frac{6\,c^{2}dx^{2}+3\,a^{2}xe+2\,a^{2}d}{6\,a^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] c^2*e*log(abs(x))/a^4 + 1/2*(c^4*d - a*c^3*e)*log(abs(c*x + a))/(a^5*c) - 1
/2*(c^4*d + a*c^3*e)*log(abs(c*x - a))/(a^5*c) - 1/6*(6*c^2*d*x^2 + 3*a^2*x
*e + 2*a^2*d)/(a^4*x^3)
```

maple [A] time = 0.06, size = 106, normalized size = 1.14

$$\frac{c^{2}e\ln(x)}{a^{4}}-\frac{c^{2}e\ln\left(cx-a\right)}{2a^{4}}-\frac{c^{2}e\ln\left(cx+a\right)}{2a^{4}}-\frac{c^{3}d\ln\left(cx-a\right)}{2a^{5}}+\frac{c^{3}d\ln\left(cx+a\right)}{2a^{5}}-\frac{c^{2}d}{a^{4}x}-\frac{e}{2a^{2}x^{2}}-\frac{d}{3a^{2}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^4/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2*c^2/a^4*ln(c*x+a)*e+1/2*c^3/a^5*ln(c*x+a)*d-1/2*c^2/a^4*ln(c*x-a)*e-1/
2*c^3/a^5*ln(c*x-a)*d-1/2*e/a^2/x^2-1/3*d/a^2/x^3+c^2*e*ln(x)/a^4-c^2*d/a^4
/x
```

maxima [A] time = 0.50, size = 91, normalized size = 0.98

$$\frac{c^{2}e\log(x)}{a^{4}}+\frac{\left(c^{3}d-ac^{2}e\right)\log\left(cx+a\right)}{2\,a^{5}}-\frac{\left(c^{3}d+ac^{2}e\right)\log\left(cx-a\right)}{2\,a^{5}}-\frac{6\,c^{2}dx^{2}+3\,a^{2}ex+2\,a^{2}d}{6\,a^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] c^2*e*log(x)/a^4 + 1/2*(c^3*d - a*c^2*e)*log(c*x + a)/a^5 - 1/2*(c^3*d + a*
c^2*e)*log(c*x - a)/a^5 - 1/6*(6*c^2*d*x^2 + 3*a^2*e*x + 2*a^2*d)/(a^4*x^3)
```

mupad [B] time = 1.11, size = 89, normalized size = 0.96

$$\frac{\ln\left(a+c\,x\right)\,\left(c^3\,d-a\,c^2\,e\right)}{2\,a^5}-\frac{\frac{d}{3\,a^2}+\frac{e\,x}{2\,a^2}+\frac{c^2\,d\,x^2}{a^4}}{x^3}-\frac{\ln\left(a-c\,x\right)\,\left(d\,c^3+a\,e\,c^2\right)}{2\,a^5}+\frac{c^2\,e\,\ln(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^4*(a^2 - c^2*x^2)),x)
```

```
[Out] (log(a + c*x)*(c^3*d - a*c^2*e))/(2*a^5) - (d/(3*a^2) + (e*x)/(2*a^2) + (c^
2*d*x^2)/a^4)/x^3 - (log(a - c*x)*(c^3*d + a*c^2*e))/(2*a^5) + (c^2*e*log(x
))/a^4
```

sympy [**B**] time = 2.00, size = 279, normalized size = 3.00

$$\frac{c^2e\log(x)}{a^4}-\frac{2a^2d+3a^2ex+6c^2dx^2}{6a^4x^3}-\frac{c^2(ae-cd)\log\left(x+\frac{6a^4c^4e^3-3a^3c^4e^2(ae-cd)+2a^2c^6d^2e-3a^2c^4e(ae-cd)^2+ac^6d^2(ae-cd)}{9a^2c^6de^2-c^8d^3}\right)}{2a^5}-\frac{c^2(ae+cd)\log\left(x+\frac{6a^4c^4e^3-3a^3c^4e^2(ae+cd)+2a^2c^6d^2e-3a^2c^4e(ae+cd)^2+ac^6d^2(ae+cd)}{9a^2c^6de^2-c^8d^3}\right)}{2a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**4/(-c**2*x**2+a**2),x)
```

```
[Out] c**2*e*log(x)/a**4 - (2*a**2*d + 3*a**2*e*x + 6*c**2*d*x**2)/(6*a**4*x**3)
- c**2*(a*e - c*d)*log(x + (6*a**4*c**4*e**3 - 3*a**3*c**4*e**2*(a*e - c*d)
 + 2*a**2*c**6*d**2*e - 3*a**2*c**4*e*(a*e - c*d)**2 + a*c**6*d**2*(a*e - c
*d))/(9*a**2*c**6*d*e**2 - c**8*d**3))/(2*a**5) - c**2*(a*e + c*d)*log(x +
(6*a**4*c**4*e**3 - 3*a**3*c**4*e**2*(a*e + c*d) + 2*a**2*c**6*d**2*e - 3*a
**2*c**4*e*(a*e + c*d)**2 + a*c**6*d**2*(a*e + c*d))/(9*a**2*c**6*d*e**2 -
c**8*d**3))/(2*a**5)
```

3.306 $\int \frac{x^4(d+ex)}{\left(a^2-c^2x^2\right)^2} dx$

Optimal. Leaf size=94

$$\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{a(4ae+3cd)\log(a-cx)}{4c^6}-\frac{a(3cd-4ae)\log(a+cx)}{4c^6}+\frac{3dx}{2c^4}+\frac{ex^2}{c^4}$$

Rubi [A] time = 0.10, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {819, 801, 633, 31}

$$\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{a(4ae+3cd)\log(a-cx)}{4c^6}-\frac{a(3cd-4ae)\log(a+cx)}{4c^6}+\frac{3dx}{2c^4}+\frac{ex^2}{c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (3*d*x)/(2*c^4) + (e*x^2)/c^4 + (x^3*(d + e*x))/(2*c^2*(a^2 - c^2*x^2)) + (
a*(3*c*d + 4*a*e)*Log[a - c*x])/(4*c^6) - (a*(3*c*d - 4*a*e)*Log[a + c*x])/
(4*c^6)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^4(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx = \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \frac{x^2\left(3a^2d+4a^2ex\right)}{a^2-c^2x^2}\,dx}{2a^2c^2}$$

$$= \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \left(-\frac{3a^2d}{c^2} - \frac{4a^2ex}{c^2} + \frac{3a^4d+4a^4ex}{c^2\left(a^2-c^2x^2\right)}\right)dx}{2a^2c^2}$$

$$= \frac{3dx}{2c^4} + \frac{ex^2}{c^4} + \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \frac{3a^4d+4a^4ex}{a^2-c^2x^2}\,dx}{2a^2c^4}$$

$$= \frac{3dx}{2c^4} + \frac{ex^2}{c^4} + \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} + \frac{(a(3cd-4ae))\int \frac{1}{-ac-c^2x}\,dx}{4c^4} - \frac{(a(3cd+4ae))\int \frac{1}{ac-c^2x}\,dx}{4c^4}$$

$$= \frac{3dx}{2c^4} + \frac{ex^2}{c^4} + \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} + \frac{a(3cd+4ae)\log(a-cx)}{4c^6} - \frac{a(3cd-4ae)\log(a+cx)}{4c^6}$$

Mathematica [A] time = 0.05, size = 84, normalized size = 0.89

$$\frac{2a^2e\log\left(a^2-c^2x^2\right) + \frac{a^4e+a^2c^2dx}{a^2-c^2x^2} - 3acd\tanh^{-1}\left(\frac{cx}{a}\right) + 2c^2dx + c^2ex^2}{2c^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (2*c^2*d*x + c^2*e*x^2 + (a^4*e + a^2*c^2*d*x)/(a^2 - c^2*x^2) - 3*a*c*d*Ar
cTanh[(c*x)/a] + 2*a^2*e*Log[a^2 - c^2*x^2])/(2*c^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(a^2 - c^2*x^2)^2, x]
```

fricas [A] time = 0.40, size = 156, normalized size = 1.66

$$\frac{2\,c^4ex^4 + 4\,c^4dx^3 - 2\,a^2c^2ex^2 - 6\,a^2c^2dx - 2\,a^4e + \left(3\,a^3cd - 4\,a^4e - \left(3\,ac^3d - 4\,a^2c^2e\right)x^2\right)\log\left(cx+a\right) - \left(3\,a^3cd + 4\,a^4e - \left(3\,ac^3d + 4\,a^2c^2e\right)x^2\right)\log\left(cx-a\right)}{4\left(c^8x^2 - a^2c^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*c^4*e*x^4 + 4*c^4*d*x^3 - 2*a^2*c^2*e*x^2 - 6*a^2*c^2*d*x - 2*a^4*e
+ (3*a^3*c*d - 4*a^4*e - (3*a*c^3*d - 4*a^2*c^2*e)*x^2)*log(c*x + a) - (3*a
^3*c*d + 4*a^4*e - (3*a*c^3*d + 4*a^2*c^2*e)*x^2)*log(c*x - a))/(c^8*x^2 -
a^2*c^6)
```

giac [A] time = 0.16, size = 112, normalized size = 1.19

$$-\frac{\left(3\,acd - 4\,a^2e\right)\log\left(|cx+a|\right)}{4\,c^6} + \frac{\left(3\,acd + 4\,a^2e\right)\log\left(|cx-a|\right)}{4\,c^6} + \frac{c^4x^2e + 2\,c^4dx}{2\,c^8} - \frac{a^2c^2dx + a^4e}{2\,(cx+a)(cx-a)c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/4*(3*a*c*d - 4*a^2*e)*log(abs(c*x + a))/c^6 + 1/4*(3*a*c*d + 4*a^2*e)*lo
g(abs(c*x - a))/c^6 + 1/2*(c^4*x^2*e + 2*c^4*d*x)/c^8 - 1/2*(a^2*c^2*d*x +
a^4*e)/((c*x + a)*(c*x - a)*c^6)
```

maple [A] time = 0.06, size = 143, normalized size = 1.52

$$\frac{e\,x^2}{2c^4}+\frac{a^3e}{4\,(cx+a)\,c^6}-\frac{a^3e}{4\,(cx-a)\,c^6}-\frac{a^2d}{4\,(cx+a)\,c^5}-\frac{a^2d}{4\,(cx-a)\,c^5}+\frac{a^2e\ln(cx-a)}{c^6}+\frac{a^2e\ln(cx+a)}{c^6}+\frac{3ad\ln(cx-a)}{4c^5}-\frac{3ad\ln(cx+a)}{4c^5}+\frac{dx}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/2*e*x^2/c^4+d*x/c^4+1/c^6*a^2*ln(c*x+a)*e-3/4/c^5*a*ln(c*x+a)*d+1/4/c^6*a
^3/(c*x+a)*e-1/4/c^5*a^2/(c*x+a)*d+1/c^6*a^2*ln(c*x-a)*e+3/4/c^5*a*ln(c*x-a
)*d-1/4/c^6*a^3/(c*x-a)*e-1/4/c^5*a^2/(c*x-a)*d
```

maxima [A] time = 0.54, size = 99, normalized size = 1.05

$$-\frac{a^2c^2dx+a^4e}{2\left(c^8x^2-a^2c^6\right)}+\frac{ex^2+2\,dx}{2\,c^4}-\frac{\left(3\,acd-4\,a^2e\right)\log(cx+a)}{4\,c^6}+\frac{\left(3\,acd+4\,a^2e\right)\log(cx-a)}{4\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(a^2*c^2*d*x + a^4*e)/(c^8*x^2 - a^2*c^6) + 1/2*(e*x^2 + 2*d*x)/c^4 -
1/4*(3*a*c*d - 4*a^2*e)*log(c*x + a)/c^6 + 1/4*(3*a*c*d + 4*a^2*e)*log(c*x
- a)/c^6
```

mupad [B] time = 1.09, size = 99, normalized size = 1.05

$$\frac{\frac{a^4\,e}{2\,c^2}+\frac{a^2\,d\,x}{2}}{a^2\,c^4-c^6\,x^2}+\frac{e\,x^2}{2\,c^4}+\frac{\ln(a+c\,x)\,\left(4\,a^2\,e-3\,a\,c\,d\right)}{4\,c^6}+\frac{\ln(a-c\,x)\,\left(4\,e\,a^2+3\,c\,d\,a\right)}{4\,c^6}+\frac{d\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] ((a^4*e)/(2*c^2) + (a^2*d*x)/2)/(a^2*c^4 - c^6*x^2) + (e*x^2)/(2*c^4) + (lo
g(a + c*x)*(4*a^2*e - 3*a*c*d))/(4*c^6) + (log(a - c*x)*(4*a^2*e + 3*a*c*d)
)/(4*c^6) + (d*x)/c^4
```

sympy [A] time = 0.80, size = 141, normalized size = 1.50

$$\frac{a\,(4ae-3cd)\log\left(x+\frac{4a^2e-a(4ae-3cd)}{3c^2d}\right)}{4c^6}+\frac{a\,(4ae+3cd)\log\left(x+\frac{4a^2e-a(4ae+3cd)}{3c^2d}\right)}{4c^6}+\frac{-a^4e-a^2c^2dx}{-2a^2c^6+2c^8x^2}+\frac{dx}{c^4}+\frac{ex^2}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] a*(4*a*e - 3*c*d)*log(x + (4*a**2*e - a*(4*a*e - 3*c*d))/(3*c**2*d))/(4*c**
6) + a*(4*a*e + 3*c*d)*log(x + (4*a**2*e - a*(4*a*e + 3*c*d))/(3*c**2*d))/(
4*c**6) + (-a**4*e - a**2*c**2*d*x)/(-2*a**2*c**6 + 2*c**8*x**2) + d*x/c**4
 + e*x**2/(2*c**4)
```

3.307 $\int \frac{x^3(d+ex)}{\left(a^2-c^2x^2\right)^2} \, dx$

Optimal. Leaf size=84

$$\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(3ae+2cd)\log(a-cx)}{4c^5}+\frac{(2cd-3ae)\log(a+cx)}{4c^5}+\frac{3ex}{2c^4}$$

Rubi [A] time = 0.07, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {819, 774, 633, 31}

$$\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(3ae+2cd)\log(a-cx)}{4c^5}+\frac{(2cd-3ae)\log(a+cx)}{4c^5}+\frac{3ex}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (3*e*x)/(2*c^4) + (x^2*(d + e*x))/(2*c^2*(a^2 - c^2*x^2)) + ((2*c*d + 3*a*e
)*Log[a - c*x])/(4*c^5) + ((2*c*d - 3*a*e)*Log[a + c*x])/(4*c^5)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^3(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx = \frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \frac{x\left(2a^2d+3a^2ex\right)}{a^2-c^2x^2}\,dx}{2a^2c^2}$$
$$= \frac{3ex}{2c^4} + \frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)} + \frac{\int \frac{-3a^4e-2a^2c^2dx}{a^2-c^2x^2}\,dx}{2a^2c^4}$$
$$= \frac{3ex}{2c^4} + \frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{(2cd-3ae)\int \frac{1}{-ac-c^2x}\,dx}{4c^3} - \frac{(2cd+3ae)\int \frac{1}{ac-c^2x}\,dx}{4c^3}$$
$$= \frac{3ex}{2c^4} + \frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)} + \frac{(2cd+3ae)\log(a-cx)}{4c^5} + \frac{(2cd-3ae)\log(a+cx)}{4c^5}$$

Mathematica [A] time = 0.05, size = 64, normalized size = 0.76

$$\frac{\frac{a^2c(d+ex)}{a^2-c^2x^2} + cd\log\left(a^2-c^2x^2\right) - 3ae\tanh^{-1}\left(\frac{cx}{a}\right) + 2cex}{2c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (2*c*e*x + (a^2*c*(d + e*x))/(a^2 - c^2*x^2) - 3*a*e*ArcTanh[(c*x)/a] + c*d
*Log[a^2 - c^2*x^2])/(2*c^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(a^2 - c^2*x^2)^2, x]
```

fricas [A] time = 0.39, size = 129, normalized size = 1.54

$$\frac{4\,c^3ex^3 - 6\,a^2cex - 2\,a^2cd - \left(2\,a^2cd - 3\,a^3e - \left(2\,c^3d - 3\,ac^2e\right)x^2\right)\log\left(cx+a\right) - \left(2\,a^2cd + 3\,a^3e - \left(2\,c^3d + 3\,ac^2e\right)x^2\right)\log\left(cx-a\right)}{4\left(c^7x^2 - a^2c^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(4*c^3*e*x^3 - 6*a^2*c*e*x - 2*a^2*c*d - (2*a^2*c*d - 3*a^3*e - (2*c^3*
d - 3*a*c^2*e)*x^2)*log(c*x + a) - (2*a^2*c*d + 3*a^3*e - (2*c^3*d + 3*a*c^
2*e)*x^2)*log(c*x - a))/(c^7*x^2 - a^2*c^5)
```

giac [A] time = 0.16, size = 88, normalized size = 1.05

$$\frac{xe}{c^4} + \frac{(2\,cd - 3\,ae)\log\left(|cx+a|\right)}{4\,c^5} + \frac{(2\,cd + 3\,ae)\log\left(|cx-a|\right)}{4\,c^5} - \frac{a^2xe + a^2d}{2\,(cx+a)(cx-a)c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] x*e/c^4 + 1/4*(2*c*d - 3*a*e)*log(abs(c*x + a))/c^5 + 1/4*(2*c*d + 3*a*e)*l
og(abs(c*x - a))/c^5 - 1/2*(a^2*x*e + a^2*d)/((c*x + a)*(c*x - a)*c^4)
```

maple [A] time = 0.06, size = 126, normalized size = 1.50

$$-\frac{a^2e}{4(cx+a)c^5}-\frac{a^2e}{4(cx-a)c^5}+\frac{ad}{4(cx+a)c^4}-\frac{ad}{4(cx-a)c^4}+\frac{3ae\ln(cx-a)}{4c^5}-\frac{3ae\ln(cx+a)}{4c^5}+\frac{d\ln(cx-a)}{2c^4}+\frac{d\ln(cx+a)}{2c^4}+\frac{ex}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] e*x/c^4-3/4/c^5*ln(c*x+a)*a*e+1/2/c^4*ln(c*x+a)*d-1/4/c^5*a^2/(c*x+a)*e+1/4
/c^4*a/(c*x+a)*d+3/4/c^5*ln(c*x-a)*a*e+1/2/c^4*ln(c*x-a)*d-1/4/c^5*a^2/(c*x
-a)*e-1/4/c^4*a/(c*x-a)*d
```

maxima [A] time = 0.69, size = 81, normalized size = 0.96

$$-\frac{a^2ex+a^2d}{2\left(c^6x^2-a^2c^4\right)}+\frac{ex}{c^4}+\frac{(2\,cd-3\,ae)\log(cx+a)}{4\,c^5}+\frac{(2\,cd+3\,ae)\log(cx-a)}{4\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(a^2*e*x + a^2*d)/(c^6*x^2 - a^2*c^4) + e*x/c^4 + 1/4*(2*c*d - 3*a*e)*
log(c*x + a)/c^5 + 1/4*(2*c*d + 3*a*e)*log(c*x - a)/c^5
```

mupad [B] time = 1.08, size = 81, normalized size = 0.96

$$\frac{\frac{a^2\,d}{2}+\frac{a^2\,e\,x}{2}}{a^2\,c^4-c^6\,x^2}-\frac{\ln(a+c\,x)\,\left(3\,a\,e-2\,c\,d\right)}{4\,c^5}+\frac{\ln(a-c\,x)\,\left(3\,a\,e+2\,c\,d\right)}{4\,c^5}+\frac{e\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] ((a^2*d)/2 + (a^2*e*x)/2)/(a^2*c^4 - c^6*x^2) - (log(a + c*x)*(3*a*e - 2*c*
d))/(4*c^5) + (log(a - c*x)*(3*a*e + 2*c*d))/(4*c^5) + (e*x)/c^4
```

sympy [A] time = 0.74, size = 110, normalized size = 1.31

$$\frac{-a^2d-a^2ex}{-2a^2c^4+2c^6x^2}+\frac{ex}{c^4}-\frac{(3ae-2cd)\log\left(x+\frac{2d+\frac{3ae-2cd}{c}}{3e}\right)}{4c^5}+\frac{(3ae+2cd)\log\left(x+\frac{2d-\frac{3ae+2cd}{c}}{3e}\right)}{4c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-a**2*d - a**2*e*x)/(-2*a**2*c**4 + 2*c**6*x**2) + e*x/c**4 - (3*a*e - 2*c
*d)*log(x + (2*d + (3*a*e - 2*c*d)/c)/(3*e))/(4*c**5) + (3*a*e + 2*c*d)*log
(x + (2*d - (3*a*e + 2*c*d)/c)/(3*e))/(4*c**5)
```

3.308 $\int \frac{x^2(d+ex)}{\left(a^2-c^2x^2\right)^2} dx$

Optimal. Leaf size=77

$$\frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(2ae+cd)\log(a-cx)}{4ac^4}-\frac{(cd-2ae)\log(a+cx)}{4ac^4}$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {819, 633, 31}

$$\frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(2ae+cd)\log(a-cx)}{4ac^4}-\frac{(cd-2ae)\log(a+cx)}{4ac^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (x*(d + e*x))/(2*c^2*(a^2 - c^2*x^2)) + ((c*d + 2*a*e)*Log[a - c*x])/(4*a*c
^4) - ((c*d - 2*a*e)*Log[a + c*x])/(4*a*c^4)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(d+ex)}{\left(a^2-c^2x^2\right)^2} dx &= \frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}-\frac{\int \frac{a^2d+2a^2ex}{a^2-c^2x^2} dx}{2a^2c^2}\\
&= \frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(cd-2ae)\int \frac{1}{-ac-c^2x} dx}{4ac^2}-\frac{(cd+2ae)\int \frac{1}{ac-c^2x} dx}{4ac^2}\\
&= \frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(cd+2ae)\log(a-cx)}{4ac^4}-\frac{(cd-2ae)\log(a+cx)}{4ac^4}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 64, normalized size = 0.83

$$\frac{\frac{a^2e+c^2dx}{a^2-c^2x^2}+e\log\left(a^2-c^2x^2\right)-\frac{cd\tanh^{-1}\left(\frac{cx}{a}\right)}{a}}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] ((a^2*e + c^2*d*x)/(a^2 - c^2*x^2) - (c*d*ArcTanh[(c*x)/a])/a + e*Log[a^2 -
 c^2*x^2])/(2*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^2(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(a^2 - c^2*x^2)^2, x]
```

fricas [A] time = 0.39, size = 115, normalized size = 1.49

$$-\frac{2\,ac^2dx+2\,a^3e-\left(a^2cd-2\,a^3e-\left(c^3d-2\,ac^2e\right)x^2\right)\log\left(cx+a\right)+\left(a^2cd+2\,a^3e-\left(c^3d+2\,ac^2e\right)x^2\right)\log\left(cx-a\right)}{4\left(ac^6x^2-a^3c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a*c^2*d*x + 2*a^3*e - (a^2*c*d - 2*a^3*e - (c^3*d - 2*a*c^2*e)*x^2)
*log(c*x + a) + (a^2*c*d + 2*a^3*e - (c^3*d + 2*a*c^2*e)*x^2)*log(c*x - a))
/(a*c^6*x^2 - a^3*c^4)
```

giac [A] time = 0.18, size = 85, normalized size = 1.10

$$-\frac{dx+\frac{a^2e}{c^2}}{2\,(cx+a)(cx-a)c^2}-\frac{(cd-2\,ae)\log\left(|cx+a|\right)}{4\,ac^4}+\frac{(cd+2\,ae)\log\left(|cx-a|\right)}{4\,ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(d*x + a^2*e/c^2)/((c*x + a)*(c*x - a)*c^2) - 1/4*(c*d - 2*a*e)*log(ab
s(c*x + a))/(a*c^4) + 1/4*(c*d + 2*a*e)*log(abs(c*x - a))/(a*c^4)
```

maple [A] time = 0.05, size = 118, normalized size = 1.53

$$\frac{ae}{4\,(cx+a)\,c^4}-\frac{ae}{4\,(cx-a)\,c^4}+\frac{d\ln\left(cx-a\right)}{4a\,c^3}-\frac{d\ln\left(cx+a\right)}{4a\,c^3}-\frac{d}{4\,(cx+a)\,c^3}-\frac{d}{4\,(cx-a)\,c^3}+\frac{e\ln\left(cx-a\right)}{2c^4}+\frac{e\ln\left(cx+a\right)}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/4/c^4/(c*x+a)*a*e-1/4/c^3/(c*x+a)*d+1/2/c^4*ln(c*x+a)*e-1/4/a/c^3*ln(c*x+
a)*d-1/4/c^4/(c*x-a)*a*e-1/4/c^3/(c*x-a)*d+1/2/c^4*ln(c*x-a)*e+1/4/a/c^3*ln
(c*x-a)*d
```

maxima [A] time = 0.58, size = 79, normalized size = 1.03

$$-\frac{c^2dx + a^2e}{2\left(c^6x^2 - a^2c^4\right)} - \frac{(cd - 2\,ae)\log\left(cx + a\right)}{4\,ac^4} + \frac{(cd + 2\,ae)\log\left(cx - a\right)}{4\,ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(c^2*d*x + a^2*e)/(c^6*x^2 - a^2*c^4) - 1/4*(c*d - 2*a*e)*log(c*x + a)
/(a*c^4) + 1/4*(c*d + 2*a*e)*log(c*x - a)/(a*c^4)
```

mupad [B] time = 0.11, size = 103, normalized size = 1.34

$$\frac{a^2\,e}{2\,\left(a^2\,c^4 - c^6\,x^2\right)} + \frac{d\,x}{2\,\left(a^2\,c^2 - c^4\,x^2\right)} + \frac{e\,\ln\left(a + c\,x\right)}{2\,c^4} + \frac{e\,\ln\left(a - c\,x\right)}{2\,c^4} - \frac{d\,\ln\left(a + c\,x\right)}{4\,a\,c^3} + \frac{d\,\ln\left(a - c\,x\right)}{4\,a\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] (a^2*e)/(2*(a^2*c^4 - c^6*x^2)) + (d*x)/(2*(a^2*c^2 - c^4*x^2)) + (e*log(a
+ c*x))/(2*c^4) + (e*log(a - c*x))/(2*c^4) - (d*log(a + c*x))/(4*a*c^3) + (
d*log(a - c*x))/(4*a*c^3)
```

sympy [A] time = 0.63, size = 110, normalized size = 1.43

$$\frac{-a^2e - c^2dx}{-2a^2c^4 + 2c^6x^2} + \frac{(2ae - cd)\log\left(x + \frac{2a^2e - a(2ae - cd)}{c^2d}\right)}{4ac^4} + \frac{(2ae + cd)\log\left(x + \frac{2a^2e - a(2ae + cd)}{c^2d}\right)}{4ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-a**2*e - c**2*d*x)/(-2*a**2*c**4 + 2*c**6*x**2) + (2*a*e - c*d)*log(x + (
2*a**2*e - a*(2*a*e - c*d))/(c**2*d))/(4*a*c**4) + (2*a*e + c*d)*log(x + (2
*a**2*e - a*(2*a*e + c*d))/(c**2*d))/(4*a*c**4)
```

3.309 $\int \frac{x(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=45

$$\frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{2ac^3}$$

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {778, 208}

$$\frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{2ac^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (d + e*x)/(2*c^2*(a^2 - c^2*x^2)) - (e*ArcTanh[(c*x)/a])/(2*a*c^3)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx&=\frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\int \frac{1}{a^2-c^2x^2}\,dx}{2c^2}\\&=\frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{2ac^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.93

$$\frac{\frac{c(d+ex)}{a^2-c^2x^2}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{a}}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] ((c*(d + e*x))/(a^2 - c^2*x^2) - (e*ArcTanh[(c*x)/a])/a)/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(a^2 - c^2*x^2)^2, x]
```

fricas [A] time = 0.45, size = 80, normalized size = 1.78

$$-\frac{2\,acex + 2\,acd + \left(c^2ex^2 - a^2e\right)\log\left(cx + a\right) - \left(c^2ex^2 - a^2e\right)\log\left(cx - a\right)}{4\left(ac^5x^2 - a^3c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a*c*e*x + 2*a*c*d + (c^2*e*x^2 - a^2*e)*log(c*x + a) - (c^2*e*x^2 -
 a^2*e)*log(c*x - a))/(a*c^5*x^2 - a^3*c^3)
```

giac [A] time = 0.16, size = 63, normalized size = 1.40

$$-\frac{xe + d}{2\left(c^2x^2 - a^2\right)c^2} - \frac{e\log\left(|cx + a|\right)}{4\,ac^3} + \frac{e\log\left(|cx - a|\right)}{4\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(x*e + d)/((c^2*x^2 - a^2)*c^2) - 1/4*e*log(abs(c*x + a))/(a*c^3) + 1/
4*e*log(abs(c*x - a))/(a*c^3)
```

maple [B] time = 0.05, size = 96, normalized size = 2.13

$$\frac{d}{4\left(cx + a\right)a\,c^2} - \frac{d}{4\left(cx - a\right)a\,c^2} + \frac{e\ln\left(cx - a\right)}{4a\,c^3} - \frac{e\ln\left(cx + a\right)}{4a\,c^3} - \frac{e}{4\left(cx + a\right)c^3} - \frac{e}{4\left(cx - a\right)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] -1/4*e/a/c^3*ln(c*x+a)-1/4/c^3/(c*x+a)*e+1/4/a/c^2/(c*x+a)*d+1/4*e/a/c^3*ln
(c*x-a)-1/4/c^3/(c*x-a)*e-1/4/a/c^2/(c*x-a)*d
```

maxima [A] time = 0.51, size = 58, normalized size = 1.29

$$-\frac{ex + d}{2\left(c^4x^2 - a^2c^2\right)} - \frac{e\log\left(cx + a\right)}{4\,ac^3} + \frac{e\log\left(cx - a\right)}{4\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(e*x + d)/(c^4*x^2 - a^2*c^2) - 1/4*e*log(c*x + a)/(a*c^3) + 1/4*e*log
(c*x - a)/(a*c^3)
```

mupad [B] time = 0.06, size = 46, normalized size = 1.02

$$\frac{\frac{d}{2\,c^2} + \frac{e\,x}{2\,c^2}}{a^2 - c^2\,x^2} - \frac{e\,\mathrm{atanh}\left(\frac{c\,x}{a}\right)}{2\,a\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] (d/(2*c^2) + (e*x)/(2*c^2))/(a^2 - c^2*x^2) - (e*atanh((c*x)/a))/(2*a*c^3)
```

sympy [A] time = 0.36, size = 46, normalized size = 1.02

$$\frac{-d-ex}{-2a^2c^2+2c^4x^2}+\frac{e\left(\frac{\log\left(-\frac{a}{c}+x\right)}{4}-\frac{\log\left(\frac{a}{c}+x\right)}{4}\right)}{ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-d - e*x)/(-2*a**2*c**2 + 2*c**4*x**2) + e*(log(-a/c + x)/4 - log(a/c + x)
/4)/(a*c**3)
```

3.310 $\int \frac{d+ex}{\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=55

$$\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}+\frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {639, 208}

$$\frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}+\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (a^2*e + c^2*d*x)/(2*a^2*c^2*(a^2 - c^2*x^2)) + (d*ArcTanh[(c*x)/a])/(2*a^3
*c)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(a^2-c^2x^2\right)^2}\,dx &= \frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}+\frac{d\int \frac{1}{a^2-c^2x^2}\,dx}{2a^2}\\ &= \frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}+\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 58, normalized size = 1.05

$$\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}+\frac{a^2(-e)-c^2dx}{2a^2c^2\left(c^2x^2-a^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (-(a^2*e) - c^2*d*x)/(2*a^2*c^2*(-a^2 + c^2*x^2)) + (d*ArcTanh[(c*x)/a])/(2
*a^3*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a^2 - c^2*x^2)^2,x]
[Out] IntegrateAlgebraic[(d + e*x)/(a^2 - c^2*x^2)^2, x]
```

fricas [A] time = 0.45, size = 87, normalized size = 1.58

$$-\frac{2\,ac^2dx+2\,a^3e-\left(c^3dx^2-a^2cd\right)\log\left(cx+a\right)+\left(c^3dx^2-a^2cd\right)\log\left(cx-a\right)}{4\left(a^3c^4x^2-a^5c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
[Out] -1/4*(2*a*c^2*d*x + 2*a^3*e - (c^3*d*x^2 - a^2*c*d)*log(c*x + a) + (c^3*d*x
^2 - a^2*c*d)*log(c*x - a))/(a^3*c^4*x^2 - a^5*c^2)
```

giac [A] time = 0.16, size = 71, normalized size = 1.29

$$\frac{d\log\left(|cx+a|\right)}{4\,a^3c}-\frac{d\log\left(|cx-a|\right)}{4\,a^3c}-\frac{c^2dx+a^2e}{2\left(c^2x^2-a^2\right)a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
[Out] 1/4*d*log(abs(c*x + a))/(a^3*c) - 1/4*d*log(abs(c*x - a))/(a^3*c) - 1/2*(c^
2*d*x + a^2*e)/((c^2*x^2 - a^2)*a^2*c^2)
```

maple [A] time = 0.05, size = 102, normalized size = 1.85

$$\frac{e}{4\left(cx+a\right)a\,c^2}-\frac{e}{4\left(cx-a\right)a\,c^2}-\frac{d}{4\left(cx+a\right)a^2c}-\frac{d}{4\left(cx-a\right)a^2c}-\frac{d\ln\left(cx-a\right)}{4a^3c}+\frac{d\ln\left(cx+a\right)}{4a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(-c^2*x^2+a^2)^2,x)
[Out] 1/4*d/a^3/c*ln(c*x+a)+1/4/c^2/a/(c*x+a)*e-1/4/c/a^2/(c*x+a)*d-1/4*d/a^3/c*l
n(c*x-a)-1/4/c^2/a/(c*x-a)*e-1/4/c/a^2/(c*x-a)*d
```

maxima [A] time = 0.57, size = 68, normalized size = 1.24

$$-\frac{c^2dx+a^2e}{2\left(a^2c^4x^2-a^4c^2\right)}+\frac{d\log\left(cx+a\right)}{4\,a^3c}-\frac{d\log\left(cx-a\right)}{4\,a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
[Out] -1/2*(c^2*d*x + a^2*e)/(a^2*c^4*x^2 - a^4*c^2) + 1/4*d*log(c*x + a)/(a^3*c)
 - 1/4*d*log(c*x - a)/(a^3*c)
```

mupad [B] time = 1.07, size = 46, normalized size = 0.84

$$\frac{\frac{e}{2\,c^2}+\frac{d\,x}{2\,a^2}}{a^2-c^2\,x^2}+\frac{d\,\mathrm{atanh}\left(\frac{c\,x}{a}\right)}{2\,a^3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a^2 - c^2*x^2)^2,x)
```

```
[Out] (e/(2*c^2) + (d*x)/(2*a^2))/(a^2 - c^2*x^2) + (d*atanh((c*x)/a))/(2*a^3*c)
```

sympy [A] time = 0.33, size = 56, normalized size = 1.02

$$\frac{-a^2e-c^2dx}{-2a^4c^2+2a^2c^4x^2}+\frac{d\left(-\frac{\log\left(-\frac{a}{c}+x\right)}{4}+\frac{\log\left(\frac{a}{c}+x\right)}{4}\right)}{a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-a**2*e - c**2*d*x)/(-2*a**4*c**2 + 2*a**2*c**4*x**2) + d*(-log(-a/c + x)/
4 + log(a/c + x)/4)/(a**3*c)
```

3.311 $\int \frac{d+ex}{x\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=84

$$-\frac{(ae+2cd)\log(a-cx)}{4a^4c}-\frac{(2cd-ae)\log(a+cx)}{4a^4c}+\frac{d\log(x)}{a^4}+\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}$$

Rubi [A] time = 0.07, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {823, 801}

$$\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}-\frac{(ae+2cd)\log(a-cx)}{4a^4c}-\frac{(2cd-ae)\log(a+cx)}{4a^4c}+\frac{d\log(x)}{a^4}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a^2 - c^2*x^2)^2),x]
```

```
[Out] (d + e*x)/(2*a^2*(a^2 - c^2*x^2)) + (d*Log[x])/a^4 - ((2*c*d + a*e)*Log[a -
 c*x])/(4*a^4*c) - ((2*c*d - a*e)*Log[a + c*x])/(4*a^4*c)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{x\left(a^2-c^2x^2\right)^2}\,dx &= \frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}+\frac{\int \frac{2a^2c^2d+a^2c^2ex}{x\left(a^2-c^2x^2\right)}\,dx}{2a^4c^2}\\
&= \frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}+\frac{\int \left(\frac{2c^2d}{x}+\frac{c^2(2cd+ae)}{2(a-cx)}-\frac{c^2(2cd-ae)}{2(a+cx)}\right)dx}{2a^4c^2}\\
&= \frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}+\frac{d\log(x)}{a^4}-\frac{(2cd+ae)\log(a-cx)}{4a^4c}-\frac{(2cd-ae)\log(a+cx)}{4a^4c}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 65, normalized size = 0.77

$$\frac{\frac{a^2(d+ex)}{a^2-c^2x^2}-d\log\left(a^2-c^2x^2\right)+\frac{ae\tanh^{-1}\left(\frac{cx}{a}\right)}{c}+2d\log(x)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a^2 - c^2*x^2)^2),x]
```

```
[Out] ((a^2*(d + e*x))/(a^2 - c^2*x^2) + (a*e*ArcTanh[(c*x)/a])/c + 2*d*Log[x] -
d*Log[a^2 - c^2*x^2])/(2*a^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(a^2 - c^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(a^2 - c^2*x^2)^2), x]
```

fricas [A] time = 0.43, size = 139, normalized size = 1.65

$$-\frac{2\,a^2cex+2\,a^2cd-\left(2\,a^2cd-a^3e-\left(2\,c^3d-ac^2e\right)x^2\right)\log\left(cx+a\right)-\left(2\,a^2cd+a^3e-\left(2\,c^3d+ac^2e\right)x^2\right)\log\left(cx-a\right)-4\left(c^3dx^2-a^2cd\right)\log(x)}{4\left(a^4c^3x^2-a^6c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a^2*c*e*x + 2*a^2*c*d - (2*a^2*c*d - a^3*e - (2*c^3*d - a*c^2*e)*x^
2)*log(c*x + a) - (2*a^2*c*d + a^3*e - (2*c^3*d + a*c^2*e)*x^2)*log(c*x - a
) - 4*(c^3*d*x^2 - a^2*c*d)*log(x))/(a^4*c^3*x^2 - a^6*c)
```

giac [A] time = 0.16, size = 94, normalized size = 1.12

$$\frac{d\log\left(|x|\right)}{a^4}-\frac{\left(2\,cd-ae\right)\log\left(|cx+a|\right)}{4\,a^4c}-\frac{\left(2\,cd+ae\right)\log\left(|cx-a|\right)}{4\,a^4c}-\frac{a^2xe+a^2d}{2\,(cx+a)(cx-a)a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] d*log(abs(x))/a^4 - 1/4*(2*c*d - a*e)*log(abs(c*x + a))/(a^4*c) - 1/4*(2*c*
d + a*e)*log(abs(c*x - a))/(a^4*c) - 1/2*(a^2*x*e + a^2*d)/((c*x + a)*(c*x
- a)*a^4)
```

maple [A] time = 0.06, size = 129, normalized size = 1.54

$$-\frac{e}{4\left(cx+a\right)a^2c}-\frac{e}{4\left(cx-a\right)a^2c}-\frac{e\ln\left(cx-a\right)}{4a^3c}+\frac{e\ln\left(cx+a\right)}{4a^3c}+\frac{d}{4\left(cx+a\right)a^3}-\frac{d}{4\left(cx-a\right)a^3}+\frac{d\ln(x)}{a^4}-\frac{d\ln\left(cx-a\right)}{2a^4}-\frac{d\ln\left(cx+a\right)}{2a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/4/a^3/c*ln(c*x+a)*e-1/2/a^4*ln(c*x+a)*d-1/4/a^2/c/(c*x+a)*e+1/4/a^3/(c*x+
a)*d-1/4/a^3/c*ln(c*x-a)*e-1/2/a^4*ln(c*x-a)*d-1/4/a^2/c/(c*x-a)*e-1/4/a^3/
(c*x-a)*d+1/a^4*d*ln(x)
```

maxima [A] time = 0.69, size = 80, normalized size = 0.95

$$-\frac{ex+d}{2\left(a^2c^2x^2-a^4\right)}+\frac{d\log(x)}{a^4}-\frac{\left(2\,cd-ae\right)\log\left(cx+a\right)}{4\,a^4c}-\frac{\left(2\,cd+ae\right)\log\left(cx-a\right)}{4\,a^4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(e*x + d)/(a^2*c^2*x^2 - a^4) + d*log(x)/a^4 - 1/4*(2*c*d - a*e)*log(c
*x + a)/(a^4*c) - 1/4*(2*c*d + a*e)*log(c*x - a)/(a^4*c)
```

mupad [B] time = 0.11, size = 82, normalized size = 0.98

$$\frac{\frac{d}{2\,a^2}+\frac{e\,x}{2\,a^2}}{a^2-c^2\,x^2}+\frac{d\,\ln(x)}{a^4}+\frac{\ln\left(a+c\,x\right)\,\left(a\,e-2\,c\,d\right)}{4\,a^4\,c}-\frac{\ln\left(a-c\,x\right)\,\left(a\,e+2\,c\,d\right)}{4\,a^4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a^2 - c^2*x^2)^2),x)
```

```
[Out] (d/(2*a^2) + (e*x)/(2*a^2))/(a^2 - c^2*x^2) + (d*log(x))/a^4 + (log(a + c*x
)*(a*e - 2*c*d))/(4*a^4*c) - (log(a - c*x)*(a*e + 2*c*d))/(4*a^4*c)
```

sympy [B] time = 1.83, size = 231, normalized size = 2.75

$$\frac{-d-ex}{-2a^4+2a^2c^2x^2}+\frac{d\log(x)}{a^4}+\frac{(ae-2cd)\log\left(x+\frac{-4a^2de^2+\frac{a^2e^2(ae-2cd)}{c}-48c^2d^3-12cd^2(ae-2cd)+6d(ae-2cd)^2}{a^2e^3-36c^2d^2e}\right)}{4a^4c}-\frac{(ae+2cd)\log\left(x+\frac{-4a^2de^2-\frac{a^2e^2(ae+2cd)}{c}-48c^2d^3+12cd^2(ae+2cd)+6d(ae+2cd)^2}{a^2e^3-36c^2d^2e}\right)}{4a^4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-d - e*x)/(-2*a**4 + 2*a**2*c**2*x**2) + d*log(x)/a**4 + (a*e - 2*c*d)*log
(x + (-4*a**2*d*e**2 + a**2*e**2*(a*e - 2*c*d)/c - 48*c**2*d**3 - 12*c*d**2
*(a*e - 2*c*d) + 6*d*(a*e - 2*c*d)**2)/(a**2*e**3 - 36*c**2*d**2*e))/(4*a**
4*c) - (a*e + 2*c*d)*log(x + (-4*a**2*d*e**2 - a**2*e**2*(a*e + 2*c*d)/c -
48*c**2*d**3 + 12*c*d**2*(a*e + 2*c*d) + 6*d*(a*e + 2*c*d)**2)/(a**2*e**3 -
 36*c**2*d**2*e))/(4*a**4*c)
```

3.312 $\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=93

$$-\frac{(2ae+3cd)\log(a-cx)}{4a^5}+\frac{(3cd-2ae)\log(a+cx)}{4a^5}-\frac{3d}{2a^4x}+\frac{e\log(x)}{a^4}+\frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}$$

Rubi [A] time = 0.09, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {823, 801}

$$\frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}-\frac{(2ae+3cd)\log(a-cx)}{4a^5}+\frac{(3cd-2ae)\log(a+cx)}{4a^5}-\frac{3d}{2a^4x}+\frac{e\log(x)}{a^4}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x]
```

```
[Out] (-3*d)/(2*a^4*x) + (d + e*x)/(2*a^2*x*(a^2 - c^2*x^2)) + (e*Log[x])/a^4 - (
(3*c*d + 2*a*e)*Log[a - c*x])/(4*a^5) + ((3*c*d - 2*a*e)*Log[a + c*x])/(4*a
^5)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)^2}\,dx &= \frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}+\frac{\int \frac{3a^2c^2d+2a^2c^2ex}{x^2\left(a^2-c^2x^2\right)}\,dx}{2a^4c^2}\\ &= \frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}+\frac{\int \left(\frac{3c^2d}{x^2}+\frac{2c^2e}{x}+\frac{c^3(3cd+2ae)}{2a(a-cx)}-\frac{c^3(-3cd+2ae)}{2a(a+cx)}\right)dx}{2a^4c^2}\\ &= -\frac{3d}{2a^4x}+\frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}+\frac{e\log(x)}{a^4}-\frac{(3cd+2ae)\log(a-cx)}{4a^5}+\frac{(3cd-2ae)\log(a+}{4a^5}\end{aligned}$$

Mathematica [A] time = 0.08, size = 77, normalized size = 0.83

$$\frac{-ae\log\left(a^2-c^2x^2\right)+\frac{a^3e+ac^2dx}{a^2-c^2x^2}+3cd\tanh^{-1}\left(\frac{cx}{a}\right)-\frac{2ad}{x}+2ae\log(x)}{2a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x]
```

```
[Out] ((-2*a*d)/x + (a^3*e + a*c^2*d*x)/(a^2 - c^2*x^2) + 3*c*d*ArcTanh[(c*x)/a]
+ 2*a*e*Log[x] - a*e*Log[a^2 - c^2*x^2])/(2*a^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(a^2 - c^2*x^2)^2), x]
```

fricas [A] time = 0.49, size = 155, normalized size = 1.67

$$-\frac{6\,ac^2dx^2+2\,a^3ex-4\,a^3d-\left(\left(3\,c^3d-2\,ac^2e\right)x^3-\left(3\,a^2cd-2\,a^3e\right)x\right)\log\left(cx+a\right)+\left(\left(3\,c^3d+2\,ac^2e\right)x^3-\left(3\,a^2cd+2\,a^3e\right)x\right)\log\left(cx-a\right)-4\left(ac^2ex^3-a^3ex\right)\log(x)}{4\left(a^5c^2x^3-a^7x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(6*a*c^2*d*x^2 + 2*a^3*e*x - 4*a^3*d - ((3*c^3*d - 2*a*c^2*e)*x^3 - (3
*a^2*c*d - 2*a^3*e)*x)*log(c*x + a) + ((3*c^3*d + 2*a*c^2*e)*x^3 - (3*a^2*c
*d + 2*a^3*e)*x)*log(c*x - a) - 4*(a*c^2*e*x^3 - a^3*e*x)*log(x))/(a^5*c^2*
x^3 - a^7*x)
```

giac [A] time = 0.16, size = 112, normalized size = 1.20

$$\frac{e\log\left(|x|\right)}{a^4}-\frac{3\,c^2dx^2+a^2xe-2\,a^2d}{2\left(c^2x^3-a^2x\right)a^4}+\frac{\left(3\,c^2d-2\,ace\right)\log\left(|cx+a|\right)}{4\,a^5c}-\frac{\left(3\,c^2d+2\,ace\right)\log\left(|cx-a|\right)}{4\,a^5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] e*log(abs(x))/a^4 - 1/2*(3*c^2*d*x^2 + a^2*x*e - 2*a^2*d)/((c^2*x^3 - a^2*x
)*a^4) + 1/4*(3*c^2*d - 2*a*c*e)*log(abs(c*x + a))/(a^5*c) - 1/4*(3*c^2*d +
 2*a*c*e)*log(abs(c*x - a))/(a^5*c)
```

maple [A] time = 0.06, size = 130, normalized size = 1.40

$$\frac{e}{4\left(cx+a\right)a^3}-\frac{e}{4\left(cx-a\right)a^3}-\frac{cd}{4\left(cx+a\right)a^4}-\frac{cd}{4\left(cx-a\right)a^4}+\frac{e\ln(x)}{a^4}-\frac{e\ln\left(cx-a\right)}{2a^4}-\frac{e\ln\left(cx+a\right)}{2a^4}-\frac{3cd\ln\left(cx-a\right)}{4a^5}+\frac{3cd\ln\left(cx+a\right)}{4a^5}-\frac{d}{a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x)
```

```
[Out] -1/2/a^4*ln(c*x+a)*e+3/4/a^5*ln(c*x+a)*c*d+1/4/a^3/(c*x+a)*e-1/4/a^4/(c*x+a
)*c*d-1/2/a^4*ln(c*x-a)*e-3/4/a^5*ln(c*x-a)*c*d-1/4/a^3/(c*x-a)*e-1/4/a^4/(
c*x-a)*c*d+1/a^4*e*ln(x)-1/a^4*d/x
```

maxima [A] time = 0.47, size = 93, normalized size = 1.00

$$-\frac{3\,c^2dx^2+a^2ex-2\,a^2d}{2\left(a^4c^2x^3-a^6x\right)}+\frac{e\log(x)}{a^4}+\frac{\left(3\,cd-2\,ae\right)\log\left(cx+a\right)}{4\,a^5}-\frac{\left(3\,cd+2\,ae\right)\log\left(cx-a\right)}{4\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(3*c^2*d*x^2 + a^2*e*x - 2*a^2*d)/(a^4*c^2*x^3 - a^6*x) + e*log(x)/a^4
 + 1/4*(3*c*d - 2*a*e)*log(c*x + a)/a^5 - 1/4*(3*c*d + 2*a*e)*log(c*x - a)/
a^5
```

mupad [B] time = 1.11, size = 92, normalized size = 0.99

$$\frac{\frac{e\,x}{2\,a^2}-\frac{d}{a^2}+\frac{3\,c^2\,d\,x^2}{2\,a^4}}{a^2\,x-c^2\,x^3}-\frac{\ln\left(a+c\,x\right)\,\left(2\,a\,e-3\,c\,d\right)}{4\,a^5}-\frac{\ln\left(a-c\,x\right)\,\left(2\,a\,e+3\,c\,d\right)}{4\,a^5}+\frac{e\,\ln(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x)
```

```
[Out] ((e*x)/(2*a^2) - d/a^2 + (3*c^2*d*x^2)/(2*a^4))/(a^2*x - c^2*x^3) - (log(a
+ c*x)*(2*a*e - 3*c*d))/(4*a^5) - (log(a - c*x)*(2*a*e + 3*c*d))/(4*a^5) +
(e*log(x))/a^4
```

sympy [B] time = 1.95, size = 291, normalized size = 3.13

$$\frac{2a^2d-a^2ex-3c^2dx^2}{-2a^6x+2a^4c^2x^3}+\frac{e\log\left(x\right)}{a^4}-\frac{(2ae-3cd)\log\left(x+\frac{16a^4e^3-4a^3e^2(2ae-3cd)+12a^2c^2d^2e-2a^2e(2ae-3cd)^2+3ac^2d^2(2ae-3cd)}{36a^2c^2de^2-9c^4d^3}\right)}{4a^5}-\frac{(2ae+3cd)\log\left(x+\frac{16a^4e^3-4a^3e^2(2ae+3cd)+12a^2c^2d^2e-2a^2e(2ae+3cd)^2+3ac^2d^2(2ae+3cd)}{36a^2c^2de^2-9c^4d^3}\right)}{4a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (2*a**2*d - a**2*e*x - 3*c**2*d*x**2)/(-2*a**6*x + 2*a**4*c**2*x**3) + e*lo
g(x)/a**4 - (2*a*e - 3*c*d)*log(x + (16*a**4*e**3 - 4*a**3*e**2*(2*a*e - 3*
c*d) + 12*a**2*c**2*d**2*e - 2*a**2*e*(2*a*e - 3*c*d)**2 + 3*a*c**2*d**2*(2
*a*e - 3*c*d))/(36*a**2*c**2*d*e**2 - 9*c**4*d**3))/(4*a**5) - (2*a*e + 3*c
*d)*log(x + (16*a**4*e**3 - 4*a**3*e**2*(2*a*e + 3*c*d) + 12*a**2*c**2*d**2
*e - 2*a**2*e*(2*a*e + 3*c*d)**2 + 3*a*c**2*d**2*(2*a*e + 3*c*d))/(36*a**2*
c**2*d*e**2 - 9*c**4*d**3))/(4*a**5)
```

3.313 $\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)^2} dx$

Optimal. Leaf size=108

$$\frac{2c^2d\log(x)}{a^6}-\frac{c(3ae+4cd)\log(a-cx)}{4a^6}-\frac{c(4cd-3ae)\log(a+cx)}{4a^6}-\frac{d}{a^4x^2}-\frac{3e}{2a^4x}+\frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}$$

Rubi [A] time = 0.11, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {823, 801}

$$\frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{2c^2d\log(x)}{a^6}-\frac{c(3ae+4cd)\log(a-cx)}{4a^6}-\frac{c(4cd-3ae)\log(a+cx)}{4a^6}-\frac{d}{a^4x^2}-\frac{3e}{2a^4x}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x]
```

```
[Out] -(d/(a^4*x^2)) - (3*e)/(2*a^4*x) + (d + e*x)/(2*a^2*x^2*(a^2 - c^2*x^2)) +
(2*c^2*d*Log[x])/a^6 - (c*(4*c*d + 3*a*e)*Log[a - c*x])/(4*a^6) - (c*(4*c*d
 - 3*a*e)*Log[a + c*x])/(4*a^6)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)^2} dx &= \frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{\int \frac{4a^2c^2d+3a^2c^2ex}{x^3\left(a^2-c^2x^2\right)} dx}{2a^4c^2}\\ &= \frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{\int \left(\frac{4c^2d}{x^3}+\frac{3c^2e}{x^2}+\frac{4c^4d}{a^2x}+\frac{c^4(4cd+3ae)}{2a^2(a-cx)}+\frac{c^4(-4cd+3ae)}{2a^2(a+cx)}\right) dx}{2a^4c^2}\\ &= -\frac{d}{a^4x^2}-\frac{3e}{2a^4x}+\frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{2c^2d\log(x)}{a^6}-\frac{c(4cd+3ae)\log(a-cx)}{4a^6}-\frac{c(4cd-3\end{aligned}$$

Mathematica [A] time = 0.07, size = 91, normalized size = 0.84

$$\frac{\frac{a^2c^2(d+ex)}{a^2-c^2x^2}-2c^2d\log\left(a^2-c^2x^2\right)-\frac{a^2d}{x^2}-\frac{2a^2e}{x}+3ace\tanh^{-1}\left(\frac{cx}{a}\right)+4c^2d\log(x)}{2a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x]
```

```
[Out] (-((a^2*d)/x^2) - (2*a^2*e)/x + (a^2*c^2*(d + e*x))/(a^2 - c^2*x^2) + 3*a*c
*e*ArcTanh[(c*x)/a] + 4*c^2*d*Log[x] - 2*c^2*d*Log[a^2 - c^2*x^2])/(2*a^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(a^2 - c^2*x^2)^2), x]
```

fricas [A] time = 0.43, size = 184, normalized size = 1.70

$$-\frac{6\,a^2c^2ex^3+4\,a^2c^2dx^2-4\,a^4ex-2\,a^4d+\left(\left(4\,c^4d-3\,ac^3e\right)x^4-\left(4\,a^2c^2d-3\,a^3ce\right)x^2\right)\log\left(cx+a\right)+\left(\left(4\,c^4d+3\,ac^3e\right)x^4-\left(4\,a^2c^2d+3\,a^3ce\right)x^2\right)\log\left(cx-a\right)-8\left(c^4dx^4-a^2c^2dx^2\right)\log(x)}{4\left(a^6c^2x^4-a^8x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(6*a^2*c^2*e*x^3 + 4*a^2*c^2*d*x^2 - 4*a^4*e*x - 2*a^4*d + ((4*c^4*d -
 3*a*c^3*e)*x^4 - (4*a^2*c^2*d - 3*a^3*c*e)*x^2)*log(c*x + a) + ((4*c^4*d +
 3*a*c^3*e)*x^4 - (4*a^2*c^2*d + 3*a^3*c*e)*x^2)*log(c*x - a) - 8*(c^4*d*x^
4 - a^2*c^2*d*x^2)*log(x))/(a^6*c^2*x^4 - a^8*x^2)
```

giac [A] time = 0.19, size = 139, normalized size = 1.29

$$\frac{2\,c^2d\log\left(|x|\right)}{a^6}-\frac{\left(4\,c^3d-3\,ac^2e\right)\log\left(|cx+a|\right)}{4\,a^6c}-\frac{\left(4\,c^3d+3\,ac^2e\right)\log\left(|cx-a|\right)}{4\,a^6c}-\frac{3\,a^2c^2x^3e+2\,a^2c^2dx^2-2\,a^4xe-a^4d}{2\,(cx+a)(cx-a)a^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*c^2*d*log(abs(x))/a^6 - 1/4*(4*c^3*d - 3*a*c^2*e)*log(abs(c*x + a))/(a^6*
c) - 1/4*(4*c^3*d + 3*a*c^2*e)*log(abs(c*x - a))/(a^6*c) - 1/2*(3*a^2*c^2*x
^3*e + 2*a^2*c^2*d*x^2 - 2*a^4*x*e - a^4*d)/((c*x + a)*(c*x - a)*a^6*x^2)
```

maple [A] time = 0.06, size = 155, normalized size = 1.44

$$-\frac{ce}{4\,(cx+a)\,a^4}-\frac{ce}{4\,(cx-a)\,a^4}+\frac{c^2d}{4\,(cx+a)\,a^5}-\frac{c^2d}{4\,(cx-a)\,a^5}-\frac{3ce\ln\left(cx-a\right)}{4a^5}+\frac{3ce\ln\left(cx+a\right)}{4a^5}+\frac{2c^2d\ln(x)}{a^6}-\frac{c^2d\ln\left(cx-a\right)}{a^6}-\frac{c^2d\ln\left(cx+a\right)}{a^6}-\frac{e}{a^4x}-\frac{d}{2a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 3/4*c/a^5*ln(c*x+a)*e-c^2/a^6*ln(c*x+a)*d-1/4*c/a^4/(c*x+a)*e+1/4*c^2/a^5/(
c*x+a)*d-3/4*c/a^5*ln(c*x-a)*e-c^2/a^6*ln(c*x-a)*d-1/4*c/a^4/(c*x-a)*e-1/4*
c^2/a^5/(c*x-a)*d-1/a^4*e/x-1/2/a^4*d/x^2+2*c^2*d*ln(x)/a^6
```

maxima [A] time = 0.53, size = 115, normalized size = 1.06

$$-\frac{3\,c^2ex^3+2\,c^2dx^2-2\,a^2ex-a^2d}{2\left(a^4c^2x^4-a^6x^2\right)}+\frac{2\,c^2d\log(x)}{a^6}-\frac{\left(4\,c^2d-3\,ace\right)\log\left(cx+a\right)}{4\,a^6}-\frac{\left(4\,c^2d+3\,ace\right)\log\left(cx-a\right)}{4\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(3*c^2*e*x^3 + 2*c^2*d*x^2 - 2*a^2*e*x - a^2*d)/(a^4*c^2*x^4 - a^6*x^2
) + 2*c^2*d*log(x)/a^6 - 1/4*(4*c^2*d - 3*a*c*e)*log(c*x + a)/a^6 - 1/4*(4*
c^2*d + 3*a*c*e)*log(c*x - a)/a^6
```

mupad [B] time = 1.11, size = 116, normalized size = 1.07

$$\frac{2\,c^2\,d\,\ln(x)}{a^6}-\frac{\ln\left(a+c\,x\right)\,\left(4\,c^2\,d-3\,a\,c\,e\right)}{4\,a^6}-\frac{\ln\left(a-c\,x\right)\,\left(4\,d\,c^2+3\,a\,e\,c\right)}{4\,a^6}-\frac{\frac{d}{2\,a^2}+\frac{e\,x}{a^2}-\frac{c^2\,d\,x^2}{a^4}-\frac{3\,c^2\,e\,x^3}{2\,a^4}}{a^2\,x^2-c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x)
```

```
[Out] (2*c^2*d*log(x))/a^6 - (log(a + c*x)*(4*c^2*d - 3*a*c*e))/(4*a^6) - (log(a
- c*x)*(4*c^2*d + 3*a*c*e))/(4*a^6) - (d/(2*a^2) + (e*x)/a^2 - (c^2*d*x^2)/
a^4 - (3*c^2*e*x^3)/(2*a^4))/(a^2*x^2 - c^2*x^4)
```

sympy [B] time = 2.30, size = 311, normalized size = 2.88

$$\frac{a^2d+2a^2ex-2c^2dx^2-3c^2ex^3}{-2a^6x^2+2a^4c^2x^4}+\frac{2c^2d\log{(x)}}{a^6}+\frac{c\,(3ae-4cd)\log{\left(x+\frac{-24a^2c^2de^2+3a^2ce^2(3ae-4cd)-128c^4d^3-16c^3d^2(3ae-4cd)+4c^2d(3ae-4cd)^2}{9a^2c^2e^3-144c^4d^2e}\right)}}{4a^6}-\frac{c\,(3ae+4cd)\log{\left(x+\frac{-24a^2c^2de^2-3a^2ce^2(3ae+4cd)-128c^4d^3+16c^3d^2(3ae+4cd)+4c^2d(3ae+4cd)^2}{9a^2c^2e^3-144c^4d^2e}\right)}}{4a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (a**2*d + 2*a**2*e*x - 2*c**2*d*x**2 - 3*c**2*e*x**3)/(-2*a**6*x**2 + 2*a**
4*c**2*x**4) + 2*c**2*d*log(x)/a**6 + c*(3*a*e - 4*c*d)*log(x + (-24*a**2*c
**2*d*e**2 + 3*a**2*c*e**2*(3*a*e - 4*c*d) - 128*c**4*d**3 - 16*c**3*d**2*(
3*a*e - 4*c*d) + 4*c**2*d*(3*a*e - 4*c*d)**2)/(9*a**2*c**2*e**3 - 144*c**4*
d**2*e))/(4*a**6) - c*(3*a*e + 4*c*d)*log(x + (-24*a**2*c**2*d*e**2 - 3*a**
2*c*e**2*(3*a*e + 4*c*d) - 128*c**4*d**3 + 16*c**3*d**2*(3*a*e + 4*c*d) + 4
*c**2*d*(3*a*e + 4*c*d)**2)/(9*a**2*c**2*e**3 - 144*c**4*d**2*e))/(4*a**6)
```

3.314 $\int x^4(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=152

$$\frac{a^3A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}+\frac{a^2Ax\sqrt{a+cx^2}}{16c^2}+\frac{a\left(a+cx^2\right)^{3/2}(64aB-105Acx)}{840c^3}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}$$

Rubi [A] time = 0.13, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{a^2Ax\sqrt{a+cx^2}}{16c^2}+\frac{a^3A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}+\frac{a\left(a+cx^2\right)^{3/2}(64aB-105Acx)}{840c^3}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (a^2*A*x*Sqrt[a + c*x^2])/(16*c^2) - (4*a*B*x^2*(a + c*x^2)^(3/2))/(35*c^2)
 + (A*x^3*(a + c*x^2)^(3/2))/(6*c) + (B*x^4*(a + c*x^2)^(3/2))/(7*c) + (a*(
64*a*B - 105*A*c*x)*(a + c*x^2)^(3/2))/(840*c^3) + (a^3*A*ArcTanh[(Sqrt[c]*
x)/Sqrt[a + c*x^2]])/(16*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\sqrt{a+cx^2}\,dx = \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{\int x^3(-4aB+7Acx)\sqrt{a+cx^2}\,dx}{7c}$$

$$= \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c} + \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{\int x^2(-21aAc-24aBcx)\sqrt{a+cx^2}\,dx}{42c^2}$$

$$= -\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2} + \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c} + \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{\int x\left(48a^2Bc-105aA\right.}{210c}$$

$$= -\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2} + \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c} + \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{a(64aB-105Acx)\left(a\right.}{840c^3}$$

$$= \frac{a^2Ax\sqrt{a+cx^2}}{16c^2} - \frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2} + \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c} + \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{a(64}{}$$

$$= \frac{a^2Ax\sqrt{a+cx^2}}{16c^2} - \frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2} + \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c} + \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{a(64}{}$$

$$= \frac{a^2Ax\sqrt{a+cx^2}}{16c^2} - \frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2} + \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c} + \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c} + \frac{a(64}{}$$

Mathematica [A] time = 0.21, size = 113, normalized size = 0.74

$$\frac{\sqrt{a+cx^2}\left(\frac{105a^{5/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+128a^3B-a^2cx(105A+64Bx)+2ac^2x^3(35A+24Bx)+40c^3x^5(7A+6Bx)\right)}{1680c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(128*a^3*B + 40*c^3*x^5*(7*A + 6*B*x) + 2*a*c^2*x^3*(35*A
+ 24*B*x) - a^2*c*x*(105*A + 64*B*x) + (105*a^(5/2)*A*Sqrt[c]*ArcSinh[(Sqrt
[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(1680*c^3)
```

IntegrateAlgebraic [A] time = 0.31, size = 116, normalized size = 0.76

$$\frac{\sqrt{a+cx^2}\left(128a^3B-105a^2Acx-64a^2Bcx^2+70aAc^2x^3+48aBc^2x^4+280Ac^3x^5+240Bc^3x^6\right)}{1680c^3}-\frac{a^3A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{16c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(128*a^3*B - 105*a^2*A*c*x - 64*a^2*B*c*x^2 + 70*a*A*c^2*x
^3 + 48*a*B*c^2*x^4 + 280*A*c^3*x^5 + 240*B*c^3*x^6))/(1680*c^3) - (a^3*A*L
og[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(16*c^(5/2))
```

fricas [A] time = 0.49, size = 224, normalized size = 1.47

$$\left[\frac{105\,Aa^3\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+2\left(240\,Bc^3x^6+280\,Ac^3x^5+48\,Bac^2x^4+70\,Aac^2x^3-64\,Ba^2cx^2-105\,Aa^2cx+128\,Ba^3\right)\sqrt{cx^2+a}}{3360\,c^3}, -\frac{105\,Aa^3\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-\left(240\,Bc^3x^6+280\,Ac^3x^5+48\,Bac^2x^4+70\,Aac^2x^3-64\,Ba^2cx^2-105\,Aa^2cx+128\,Ba^3\right)\sqrt{cx^2+a}}{1680\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/3360*(105*A*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(240*B*c^3*x^6 + 280*A*c^3*x^5 + 48*B*a*c^2*x^4 + 70*A*a*c^2*x^3 - 64*B
```

```
*a^2*c*x^2 - 105*A*a^2*c*x + 128*B*a^3)*sqrt(c*x^2 + a))/c^3, -1/1680*(105*
A*a^3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (240*B*c^3*x^6 + 280*A*
c^3*x^5 + 48*B*a*c^2*x^4 + 70*A*a*c^2*x^3 - 64*B*a^2*c*x^2 - 105*A*a^2*c*x
+ 128*B*a^3)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.19, size = 106, normalized size = 0.70

$$-\frac{Aa^3 \log\left(\left|-\sqrt{c}x + \sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{5}{2}}} + \frac{1}{1680}\sqrt{cx^2+a}\left(\left(2\left(\left(4\left(5\left(6\,Bx + 7\,A\right)x + \frac{6\,Ba}{c}\right)x + \frac{35\,Aa}{c}\right)x - \frac{32\,Ba^2}{c^2}\right)x - \frac{105\,Aa^2}{c^2}\right)x + \frac{128\,Ba^3}{c^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*A*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/1680*sqrt(c*
x^2 + a)*((2*((4*(5*(6*B*x + 7*A)*x + 6*B*a/c)*x + 35*A*a/c)*x - 32*B*a^2/c
^2)*x - 105*A*a^2/c^2)*x + 128*B*a^3/c^3)
```

maple [A] time = 0.06, size = 136, normalized size = 0.89

$$\frac{\left(c\,x^2+a\right)^{\frac{3}{2}} B\,x^4}{7c} + \frac{\left(c\,x^2+a\right)^{\frac{3}{2}} A\,x^3}{6c} + \frac{A\,a^3 \ln\left(\sqrt{c}\,x + \sqrt{c\,x^2+a}\right)}{16c^{\frac{5}{2}}} + \frac{\sqrt{c\,x^2+a}\;A\,a^2 x}{16c^2} - \frac{4\left(c\,x^2+a\right)^{\frac{3}{2}} Ba\,x^2}{35c^2} - \frac{\left(c\,x^2+a\right)^{\frac{3}{2}} Aax}{8c^2} + \frac{8\left(c\,x^2+a\right)^{\frac{3}{2}} B\,a^2}{105c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/7*B*x^4*(c*x^2+a)^(3/2)/c-4/35*a*B*x^2*(c*x^2+a)^(3/2)/c^2+8/105*B*a^2/c^
3*(c*x^2+a)^(3/2)+1/6*A*x^3*(c*x^2+a)^(3/2)/c-1/8*A*a/c^2*x*(c*x^2+a)^(3/2)
+1/16*a^2*A*x*(c*x^2+a)^(1/2)/c^2+1/16*A*a^3/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)
^(1/2))
```

maxima [A] time = 0.56, size = 128, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{3}{2}} Bx^4}{7\,c} + \frac{\left(cx^2+a\right)^{\frac{3}{2}} Ax^3}{6\,c} - \frac{4\left(cx^2+a\right)^{\frac{3}{2}} Bax^2}{35\,c^2} - \frac{\left(cx^2+a\right)^{\frac{3}{2}} Aax}{8\,c^2} + \frac{\sqrt{cx^2+a}\,Aa^2 x}{16\,c^2} + \frac{Aa^3 \operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{5}{2}}} + \frac{8\left(cx^2+a\right)^{\frac{3}{2}} Ba^2}{105\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + a)^(3/2)*B*x^4/c + 1/6*(c*x^2 + a)^(3/2)*A*x^3/c - 4/35*(c*x^2
 + a)^(3/2)*B*a*x^2/c^2 - 1/8*(c*x^2 + a)^(3/2)*A*a*x/c^2 + 1/16*sqrt(c*x^2
 + a)*A*a^2*x/c^2 + 1/16*A*a^3*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 8/105*(c*x^
2 + a)^(3/2)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^4*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 8.36, size = 216, normalized size = 1.42

$$-\frac{Aa^{\frac{5}{2}}x}{16c^2\sqrt{1+\frac{cx^2}{a}}} - \frac{Aa^{\frac{3}{2}}x^3}{48c\sqrt{1+\frac{cx^2}{a}}} + \frac{5A\sqrt{a}\,x^5}{24\sqrt{1+\frac{cx^2}{a}}} + \frac{Aa^3 \operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16c^{\frac{5}{2}}} + \frac{Acx^7}{6\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}} + B\left(\begin{cases} \frac{8a^3\sqrt{a+cx^2}}{105c^3} - \frac{4a^2x^2\sqrt{a+cx^2}}{105c^2} + \frac{ax^4\sqrt{a+cx^2}}{35c} + \frac{x^6\sqrt{a+cx^2}}{7} & \text{for}\ c \neq 0 \\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] -A*a**(5/2)*x/(16*c**2*sqrt(1 + c*x**2/a)) - A*a**(3/2)*x**3/(48*c*sqrt(1 +
 c*x**2/a)) + 5*A*sqrt(a)*x**5/(24*sqrt(1 + c*x**2/a)) + A*a**3*asinh(sqrt(
c)*x/sqrt(a))/(16*c**(5/2)) + A*c*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a)) + B*P
iecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)
/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(
c, 0)), (sqrt(a)*x**6/6, True))
```

3.315 $\int x^3(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=127

$$\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}+\frac{a^2Bx\sqrt{a+cx^2}}{16c^2}-\frac{a\left(a+cx^2\right)^{3/2}(16A+15Bx)}{120c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}$$

Rubi [A] time = 0.08, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}-\frac{a\left(a+cx^2\right)^{3/2}(16A+15Bx)}{120c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (a^2*B*x*Sqrt[a + c*x^2])/(16*c^2) + (A*x^2*(a + c*x^2)^(3/2))/(5*c) + (B*x
^3*(a + c*x^2)^(3/2))/(6*c) - (a*(16*A + 15*B*x)*(a + c*x^2)^(3/2))/(120*c^
2) + (a^3*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(16*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\sqrt{a+cx^2}\,dx &= \frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{\int x^2(-3aB+6Acx)\sqrt{a+cx^2}\,dx}{6c}\\
&= \frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{\int x(-12aAc-15aBcx)\sqrt{a+cx^2}\,dx}{30c^2}\\
&= \frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}+\frac{\left(a^2B\right)\int\sqrt{a+\cdots}}{8c^2}\\
&= \frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}\cdots\\
&= \frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}\cdots\\
&= \frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}\cdots
\end{aligned}
$$

Mathematica [A] time = 0.18, size = 107, normalized size = 0.84

$$
\frac{\sqrt{a+cx^2}\left(\frac{15a^{5/2}B\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+\sqrt{c}\left(-a^2(32A+15Bx)+2acx^2(8A+5Bx)+8c^2x^4(6A+5Bx)\right)\right)}{240c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(8*c^2*x^4*(6*A + 5*B*x) + 2*a*c*x^2*(8*A + 5*B*x
) - a^2*(32*A + 15*B*x)) + (15*a^(5/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt
[1 + (c*x^2)/a]))/(240*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.27, size = 101, normalized size = 0.80

$$
\frac{\sqrt{a+cx^2}\left(-32a^2A-15a^2Bx+16aAcx^2+10aBcx^3+48Ac^2x^4+40Bc^2x^5\right)}{240c^2}-\frac{a^3B\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{16c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-32*a^2*A - 15*a^2*B*x + 16*a*A*c*x^2 + 10*a*B*c*x^3 + 48
*A*c^2*x^4 + 40*B*c^2*x^5))/(240*c^2) - (a^3*B*Log[-(Sqrt[c]*x) + Sqrt[a +
c*x^2]])/(16*c^(5/2))
```

fricas [A] time = 0.49, size = 206, normalized size = 1.62

$$
\left[\frac{15\,Ba^3\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(40\,Bc^3x^5+48\,Ac^3x^4+10\,Bac^2x^3+16\,Aac^2x^2-15\,Ba^2cx-32\,Aa^2c\right)\sqrt{cx^2+a}}{480\,c^3},\ -\frac{15\,Ba^3\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\left(40\,Bc^3x^5+48\,Ac^3x^4+10\,Bac^2x^3+16\,Aac^2x^2-15\,Ba^2cx-32\,Aa^2c\right)\sqrt{cx^2+a}}{240\,c^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/480*(15*B*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(40*B*c^3*x^5 + 48*A*c^3*x^4 + 10*B*a*c^2*x^3 + 16*A*a*c^2*x^2 - 15*B*a^2
*c*x - 32*A*a^2*c)*sqrt(c*x^2 + a))/c^3, -1/240*(15*B*a^3*sqrt(-c)*arctan(s
```

```
qrt(-c)*x/sqrt(c*x^2 + a)) - (40*B*c^3*x^5 + 48*A*c^3*x^4 + 10*B*a*c^2*x^3
+ 16*A*a*c^2*x^2 - 15*B*a^2*c*x - 32*A*a^2*c)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.20, size = 93, normalized size = 0.73

$$-\frac{Ba^3\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{16c^{\frac{5}{2}}}+\frac{1}{240}\sqrt{cx^2+a}\left(\left(2\left(\left(4\left(5Bx+6A\right)x+\frac{5Ba}{c}\right)x+\frac{8Aa}{c}\right)x-\frac{15Ba^2}{c^2}\right)x-\frac{32Aa^2}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*B*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/240*sqrt(c*x
^2 + a)*((2*((4*(5*B*x + 6*A)*x + 5*B*a/c)*x + 8*A*a/c)*x - 15*B*a^2/c^2)*x
 - 32*A*a^2/c^2)
```

maple [A] time = 0.06, size = 115, normalized size = 0.91

$$\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bx^3}{6c}+\frac{Ba^3\ln\left(\sqrt{c}\,x+\sqrt{cx^2+a}\right)}{16c^{\frac{5}{2}}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ax^2}{5c}+\frac{\sqrt{cx^2+a}\,Ba^2x}{16c^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bax}{8c^2}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Aa}{15c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/6*B*x^3*(c*x^2+a)^(3/2)/c-1/8*B*a/c^2*x*(c*x^2+a)^(3/2)+1/16*a^2*B*x*(c*x
^2+a)^(1/2)/c^2+1/16*B*a^3/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/5*A*x^2*
(c*x^2+a)^(3/2)/c-2/15*A*a/c^2*(c*x^2+a)^(3/2)
```

maxima [A] time = 0.48, size = 107, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bx^3}{6c}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ax^2}{5c}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bax}{8c^2}+\frac{\sqrt{cx^2+a}\,Ba^2x}{16c^2}+\frac{Ba^3\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16c^{\frac{5}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Aa}{15c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(3/2)*B*x^3/c + 1/5*(c*x^2 + a)^(3/2)*A*x^2/c - 1/8*(c*x^2
+ a)^(3/2)*B*a*x/c^2 + 1/16*sqrt(c*x^2 + a)*B*a^2*x/c^2 + 1/16*B*a^3*arcsin
h(c*x/sqrt(a*c))/c^(5/2) - 2/15*(c*x^2 + a)^(3/2)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\sqrt{cx^2+a}\,\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 7.86, size = 192, normalized size = 1.51

$$A\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}x^4}{4} & \text{otherwise}\end{cases}\right)-\frac{Ba^{\frac{5}{2}}x}{16c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba^{\frac{3}{2}}x^3}{48c\sqrt{1+\frac{cx^2}{a}}}+\frac{5B\sqrt{a}x^5}{24\sqrt{1+\frac{cx^2}{a}}}+\frac{Ba^3\,\mathrm{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{16c^{\frac{5}{2}}}+\frac{Bcx^7}{6\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(
15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) - B*a**
(5/2)*x/(16*c**2*sqrt(1 + c*x**2/a)) - B*a**(3/2)*x**3/(48*c*sqrt(1 + c*x**
2/a)) + 5*B*sqrt(a)*x**5/(24*sqrt(1 + c*x**2/a)) + B*a**3*asinh(sqrt(c)*x/s
qrt(a))/(16*c**(5/2)) + B*c*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.316 $\int x^2(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=104

$$-\frac{a^2A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}-\frac{\left(a+cx^2\right)^{3/2}(8aB-15Acx)}{60c^2}-\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}$$

Rubi [A] time = 0.05, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$-\frac{a^2A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}-\frac{\left(a+cx^2\right)^{3/2}(8aB-15Acx)}{60c^2}-\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] -(a*A*x*Sqrt[a + c*x^2])/(8*c) + (B*x^2*(a + c*x^2)^(3/2))/(5*c) - ((8*a*B
- 15*A*c*x)*(a + c*x^2)^(3/2))/(60*c^2) - (a^2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a
 + c*x^2]])/(8*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\sqrt{a+cx^2}\,dx &= \frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{\int x(-2aB+5Acx)\sqrt{a+cx^2}\,dx}{5c}\\
&= \frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{(aA)\int\sqrt{a+cx^2}\,dx}{4c}\\
&= -\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{\left(a^2A\right)\int\frac{1}{\sqrt{a+cx^2}}}{8c}\\
&= -\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{\left(a^2A\right)\text{Subst}\left(\int\right.}{}\\
&= -\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{a^2A\tanh^{-1}\left(\right.}{8c^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.17, size = 93, normalized size = 0.89

$$
\frac{\sqrt{a+cx^2}\left(-\frac{15a^{3/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}-16a^2B+acx(15A+8Bx)+6c^2x^3(5A+4Bx)\right)}{120c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-16*a^2*B + 6*c^2*x^3*(5*A + 4*B*x) + a*c*x*(15*A + 8*B*x
) - (15*a^(3/2)*A*Sqrt[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]
))/(120*c^2)
```

IntegrateAlgebraic [A] time = 0.23, size = 92, normalized size = 0.88

$$
\frac{\sqrt{a+cx^2}\left(-16a^2B+15aAcx+8aBcx^2+30Ac^2x^3+24Bc^2x^4\right)}{120c^2}+\frac{a^2A\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{8c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-16*a^2*B + 15*a*A*c*x + 8*a*B*c*x^2 + 30*A*c^2*x^3 + 24*
B*c^2*x^4))/(120*c^2) + (a^2*A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(8*c^(3
/2))
```

fricas [A] time = 0.51, size = 175, normalized size = 1.68

$$
\left[\frac{15\,Aa^2\sqrt{c}\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(24\,Bc^2x^4+30\,Ac^2x^3+8\,Bacx^2+15\,Aacx-16\,Ba^2\right)\sqrt{cx^2+a}}{240\,c^2},\ \frac{15\,Aa^2\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(24\,Bc^2x^4+30\,Ac^2x^3+8\,Bacx^2+15\,Aacx-16\,Ba^2\right)\sqrt{cx^2+a}}{120\,c^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/240*(15*A*a^2*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(24*B*c^2*x^4 + 30*A*c^2*x^3 + 8*B*a*c*x^2 + 15*A*a*c*x - 16*B*a^2)*sqrt(
c*x^2 + a))/c^2, 1/120*(15*A*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)
) + (24*B*c^2*x^4 + 30*A*c^2*x^3 + 8*B*a*c*x^2 + 15*A*a*c*x - 16*B*a^2)*sqr
t(c*x^2 + a))/c^2]
```

giac [A] time = 0.53, size = 81, normalized size = 0.78

$$\frac{Aa^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{3}{2}}}+\frac{1}{120}\,\sqrt{cx^2+a}\left(\left(2\left(3\,(4\,Bx+5\,A)x+\frac{4\,Ba}{c}\right)x+\frac{15\,Aa}{c}\right)x-\frac{16\,Ba^2}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*A*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/120*sqrt(c*x^2
 + a)*((2*(3*(4*B*x + 5*A)*x + 4*B*a/c)*x + 15*A*a/c)*x - 16*B*a^2/c^2)
```

maple [A] time = 0.06, size = 94, normalized size = 0.90

$$-\frac{A\,a^2\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{8c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\;Aax}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,x^2}{5c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Ax}{4c}-\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}Ba}{15c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/5*B*x^2*(c*x^2+a)^(3/2)/c-2/15*B*a/c^2*(c*x^2+a)^(3/2)+1/4*A*x*(c*x^2+a)^
(3/2)/c-1/8*a*A*x*(c*x^2+a)^(1/2)/c-1/8*A*a^2/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a
)^(1/2))
```

maxima [A] time = 0.48, size = 86, normalized size = 0.83

$$\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bx^2}{5\,c}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ax}{4\,c}-\frac{\sqrt{cx^2+a}\,Aax}{8\,c}-\frac{Aa^2\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{3}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Ba}{15\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*(c*x^2 + a)^(3/2)*B*x^2/c + 1/4*(c*x^2 + a)^(3/2)*A*x/c - 1/8*sqrt(c*x^
2 + a)*A*a*x/c - 1/8*A*a^2*arcsinh(c*x/sqrt(a*c))/c^(3/2) - 2/15*(c*x^2 + a
)^(3/2)*B*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\sqrt{c\,x^2+a}\;\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 5.46, size = 165, normalized size = 1.59

$$\frac{Aa^{\frac{3}{2}}x}{8c\sqrt{1+\frac{cx^2}{a}}}+\frac{3A\sqrt{a}\,x^3}{8\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^2\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8c^{\frac{3}{2}}}+\frac{Acx^5}{4\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}+B\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*a**(3/2)*x/(8*c*sqrt(1 + c*x**2/a)) + 3*A*sqrt(a)*x**3/(8*sqrt(1 + c*x**2
/a)) - A*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*c**(3/2)) + A*c*x**5/(4*sqrt(a)*s
qrt(1 + c*x**2/a)) + B*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x*
*2*sqrt(a + c*x**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x
**4/4, True))
```

3.317 $\int x(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=80

$$-\frac{a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}+\frac{\left(a+cx^2\right)^{3/2}(4A+3Bx)}{12c}-\frac{aBx\sqrt{a+cx^2}}{8c}$$

Rubi [A] time = 0.03, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {780, 195, 217, 206}

$$-\frac{a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}+\frac{\left(a+cx^2\right)^{3/2}(4A+3Bx)}{12c}-\frac{aBx\sqrt{a+cx^2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] -(a*B*x*Sqrt[a + c*x^2])/(8*c) + ((4*A + 3*B*x)*(a + c*x^2)^(3/2))/(12*c) -
 (a^2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\int x(A+Bx)\sqrt{a+cx^2}\,dx=\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{(aB)\int\sqrt{a+cx^2}\,dx}{4c}$$
$$=-\frac{aBx\sqrt{a+cx^2}}{8c}+\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{\left(a^2B\right)\int\frac{1}{\sqrt{a+cx^2}}\,dx}{8c}$$
$$=-\frac{aBx\sqrt{a+cx^2}}{8c}+\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{\left(a^2B\right)\text{Subst}\left(\int\frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{8c}$$
$$=-\frac{aBx\sqrt{a+cx^2}}{8c}+\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}$$

Mathematica [A] time = 0.14, size = 86, normalized size = 1.08

$$\frac{\sqrt{a+cx^2}\left(\sqrt{c}\left(8aA+3aBx+8Acx^2+6Bcx^3\right)-\frac{3a^{3/2}B\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}\right)}{24c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(8*a*A + 3*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) - (3*a^
(3/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(24*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.20, size = 77, normalized size = 0.96

$$\frac{a^2B\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{8c^{3/2}}+\frac{\sqrt{a+cx^2}\left(8aA+3aBx+8Acx^2+6Bcx^3\right)}{24c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(8*a*A + 3*a*B*x + 8*A*c*x^2 + 6*B*c*x^3))/(24*c) + (a^2*B
*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(8*c^(3/2))
```

fricas [A] time = 0.47, size = 157, normalized size = 1.96

$$\left[\frac{3\,Ba^2\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(6\,Bc^2x^3+8\,Ac^2x^2+3\,Bacx+8\,Aac\right)\sqrt{cx^2+a}}{48\,c^2},\ \frac{3\,Ba^2\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(6\,Bc^2x^3+8\,Ac^2x^2+3\,Bacx+8\,Aac\right)\sqrt{cx^2+a}}{24\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/48*(3*B*a^2*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*
(6*B*c^2*x^3 + 8*A*c^2*x^2 + 3*B*a*c*x + 8*A*a*c)*sqrt(c*x^2 + a))/c^2, 1/2
4*(3*B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (6*B*c^2*x^3 + 8*A
*c^2*x^2 + 3*B*a*c*x + 8*A*a*c)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.18, size = 68, normalized size = 0.85

$$\frac{Ba^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{3}{2}}}+\frac{1}{24}\,\sqrt{cx^2+a}\left(\left(2\,(3\,Bx+4\,A)x+\frac{3\,Ba}{c}\right)x+\frac{8\,Aa}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*B*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/24*sqrt(c*x^2
+ a)*((2*(3*B*x + 4*A)*x + 3*B*a/c)*x + 8*A*a/c)
```

maple [A] time = 0.05, size = 75, normalized size = 0.94

$$-\frac{B\,a^{2} \ln \left(\sqrt{c}\, x+\sqrt{c\,x^{2}+a}\right)}{8 c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^{2}+a}\; B a x}{8 c}+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}} B x}{4 c}+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}} A}{3 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/4*B*x*(c*x^2+a)^(3/2)/c-1/8*a*B*x*(c*x^2+a)^(1/2)/c-1/8*B*a^2/c^(3/2)*ln(
c^(1/2)*x+(c*x^2+a)^(1/2))+1/3*A*(c*x^2+a)^(3/2)/c
```

maxima [A] time = 0.47, size = 67, normalized size = 0.84

$$\frac{\left(cx^{2}+a\right)^{\frac{3}{2}} Bx}{4\,c}-\frac{\sqrt{cx^{2}+a}\, Bax}{8\,c}-\frac{Ba^{2} \operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{3}{2}}}+\frac{\left(cx^{2}+a\right)^{\frac{3}{2}} A}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + a)^(3/2)*B*x/c - 1/8*sqrt(c*x^2 + a)*B*a*x/c - 1/8*B*a^2*arcsi
nh(c*x/sqrt(a*c))/c^(3/2) + 1/3*(c*x^2 + a)^(3/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 5.41, size = 124, normalized size = 1.55

$$A \left(\begin{cases} \frac{\sqrt{a} x^{2}}{2} & \text{for}\: c = 0 \\ \frac{\left(a + c x^{2}\right)^{\frac{3}{2}}}{3 c} & \text{otherwise} \end{cases}\right) + \frac{B a^{\frac{3}{2}} x}{8 c \sqrt{1 + \frac{c x^{2}}{a}}} + \frac{3 B \sqrt{a} x^{3}}{8 \sqrt{1 + \frac{c x^{2}}{a}}} - \frac{B a^{2} \operatorname{asinh}{\left(\frac{\sqrt{c} x}{\sqrt{a}} \right)}}{8 c^{\frac{3}{2}}} + \frac{B c x^{5}}{4 \sqrt{a} \sqrt{1 + \frac{c x^{2}}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True))
+ B*a**(3/2)*x/(8*c*sqrt(1 + c*x**2/a)) + 3*B*sqrt(a)*x**3/(8*sqrt(1 + c*x*
*2/a)) - B*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*c**(3/2)) + B*c*x**5/(4*sqrt(a)
*sqrt(1 + c*x**2/a))
```

3.318 $\int (A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=67

$$\frac{1}{2}Ax\sqrt{a+cx^2}+\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}$$

Rubi [A] time = 0.02, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {641, 195, 217, 206}

$$\frac{1}{2}Ax\sqrt{a+cx^2}+\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (A*x*Sqrt[a + c*x^2])/2 + (B*(a + c*x^2)^(3/2))/(3*c) + (a*A*ArcTanh[(Sqrt[
c]*x)/Sqrt[a + c*x^2]])/(2*Sqrt[c])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\sqrt{a+cx^2}\,dx = \frac{B\left(a+cx^2\right)^{3/2}}{3c} + A\int \sqrt{a+cx^2}\,dx$$
$$= \frac{1}{2}Ax\sqrt{a+cx^2} + \frac{B\left(a+cx^2\right)^{3/2}}{3c} + \frac{1}{2}(aA)\int \frac{1}{\sqrt{a+cx^2}}\,dx$$
$$= \frac{1}{2}Ax\sqrt{a+cx^2} + \frac{B\left(a+cx^2\right)^{3/2}}{3c} + \frac{1}{2}(aA)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)$$
$$= \frac{1}{2}Ax\sqrt{a+cx^2} + \frac{B\left(a+cx^2\right)^{3/2}}{3c} + \frac{aA\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}$$

Mathematica [A] time = 0.04, size = 67, normalized size = 1.00

$$\frac{\sqrt{a+cx^2}\,(2aB+cx(3A+2Bx)) + 3aA\sqrt{c}\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)}{6c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(2*a*B + c*x*(3*A + 2*B*x)) + 3*a*A*Sqrt[c]*Log[c*x + Sqrt
[c]*Sqrt[a + c*x^2]])/(6*c)
```

IntegrateAlgebraic [A] time = 0.25, size = 68, normalized size = 1.01

$$\frac{\sqrt{a+cx^2}\left(2aB+3Acx+2Bcx^2\right)}{6c} - \frac{aA\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(2*a*B + 3*A*c*x + 2*B*c*x^2))/(6*c) - (a*A*Log[-(Sqrt[c]*
x) + Sqrt[a + c*x^2]])/(2*Sqrt[c])
```

fricas [A] time = 0.47, size = 128, normalized size = 1.91

$$\left[\frac{3\,Aa\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+2\left(2\,Bcx^2+3\,Acx+2\,Ba\right)\sqrt{cx^2+a}}{12\,c}, -\frac{3\,Aa\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-\left(2\,Bcx^2+3\,Acx+2\,Ba\right)\sqrt{cx^2+a}}{6\,c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*A*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(2
*B*c*x^2 + 3*A*c*x + 2*B*a)*sqrt(c*x^2 + a))/c, -1/6*(3*A*a*sqrt(-c)*arctan
(sqrt(-c)*x/sqrt(c*x^2 + a)) - (2*B*c*x^2 + 3*A*c*x + 2*B*a)*sqrt(c*x^2 + a
))/c]
```

giac [A] time = 0.20, size = 55, normalized size = 0.82

$$-\frac{Aa\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{2\,\sqrt{c}} + \frac{1}{6}\,\sqrt{cx^2+a}\left((2\,Bx+3\,A)x+\frac{2\,Ba}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*A*a*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/6*sqrt(c*x^2 +
a)*((2*B*x + 3*A)*x + 2*B*a/c)
```

maple [A] time = 0.05, size = 53, normalized size = 0.79

$$\frac{Aa\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2\sqrt{c}}+\frac{\sqrt{c\,x^2+a}\;Ax}{2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/3*B*(c*x^2+a)^(3/2)/c+1/2*A*x*(c*x^2+a)^(1/2)+1/2*A*a/c^(1/2)*ln(c^(1/2)*
x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.57, size = 45, normalized size = 0.67

$$\frac{1}{2}\sqrt{cx^2+a}\,Ax+\frac{Aa\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{c}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*A*x + 1/2*A*a*arcsinh(c*x/sqrt(a*c))/sqrt(c) + 1/3*(c*x
^2 + a)^(3/2)*B/c
```

mupad [B] time = 1.28, size = 52, normalized size = 0.78

$$\frac{B\left(c\,x^2+a\right)^{3/2}}{3\,c}+\frac{A\,x\,\sqrt{c\,x^2+a}}{2}+\frac{A\,a\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (B*(a + c*x^2)^(3/2))/(3*c) + (A*x*(a + c*x^2)^(1/2))/2 + (A*a*log(c^(1/2)*
x + (a + c*x^2)^(1/2)))/(2*c^(1/2))
```

sympy [A] time = 3.38, size = 70, normalized size = 1.04

$$\frac{A\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{Aa\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{c}}+B\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*x*sqrt(1 + c*x**2/a)/2 + A*a*asinh(sqrt(c)*x/sqrt(a))/(2*sqrt(c))
 + B*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True
))
```

3.319 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x}\,dx$

Optimal. Leaf size=79

$$\frac{1}{2}\sqrt{a+cx^2}\,(2A+Bx)-\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}$$

Rubi [A] time = 0.06, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {815, 844, 217, 206, 266, 63, 208}

$$\frac{1}{2}\sqrt{a+cx^2}\,(2A+Bx)-\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x,x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2])/2 + (a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]]
)/(2*Sqrt[c]) - Sqrt[a]*A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
```

```
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a+cx^2}}{x}\,dx &= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{\int \frac{2aAc+aBcx}{x\sqrt{a+cx^2}}\,dx}{2c}\\ &= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+(aA)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\frac{1}{2}(aB)\int \frac{1}{\sqrt{a+cx^2}}\,dx\\ &= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{1}{2}(aA)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)+\frac{1}{2}(aB)\,\text{Subst}\left(\int\right.\\ &= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}+\frac{(aA)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+c\right.}{c}\\ &= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}-\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)\end{aligned}$$

Mathematica [A] time = 0.22, size = 100, normalized size = 1.27

$$\frac{1}{2}\left(\frac{a^{3/2}B\sqrt{\frac{cx^2}{a}+1}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{c}\sqrt{a+cx^2}}+\sqrt{a+cx^2}(2A+Bx)-2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x,x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2] + (a^(3/2)*B*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt
[c]*x)/Sqrt[a]])/(Sqrt[c]*Sqrt[a + c*x^2]) - 2*Sqrt[a]*A*ArcTanh[Sqrt[a + c
*x^2]/Sqrt[a]])/2
```

IntegrateAlgebraic [A] time = 0.26, size = 95, normalized size = 1.20

$$\frac{1}{2}\sqrt{a+cx^2}(2A+Bx)+2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{aB\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x,x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2])/2 + 2*Sqrt[a]*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] -
 Sqrt[a + c*x^2]/Sqrt[a]] - (a*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(2*Sq
rt[c])
```

fricas [A] time = 0.51, size = 341, normalized size = 4.32

$$\left[\frac{Ba\sqrt{c}\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\sqrt{c}x-a\right)+2\,A\sqrt{a}c\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\sqrt{a}+2\,a}{x^{2}}\right)+2\,(Bcx+2\,Ac)\sqrt{cx^{2}+a}}{4\,c},\ -\frac{Ba\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^{2}+a}}\right)-A\sqrt{a}c\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\sqrt{a}+2\,a}{x^{2}}\right)-(Bcx+2\,Ac)\sqrt{cx^{2}+a}}{2\,c},\ \frac{4\,A\sqrt{-a}c\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)+Ba\sqrt{c}\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\sqrt{c}x-a\right)+2\,(Bcx+2\,Ac)\sqrt{cx^{2}+a}}{4\,c},\ -\frac{Ba\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^{2}+a}}\right)-2\,A\sqrt{-a}c\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)-(Bcx+2\,Ac)\sqrt{cx^{2}+a}}{2\,c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] [1/4*(B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*A*sqr
t(a)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(B*c*x + 2*A
*c)*sqrt(c*x^2 + a))/c, -1/2*(B*a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a
)) - A*sqrt(a)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - (B*c
*x + 2*A*c)*sqrt(c*x^2 + a))/c, 1/4*(4*A*sqrt(-a)*c*arctan(sqrt(-a)/sqrt(c*
x^2 + a)) + B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2
*(B*c*x + 2*A*c)*sqrt(c*x^2 + a))/c, -1/2*(B*a*sqrt(-c)*arctan(sqrt(-c)*x/s
qrt(c*x^2 + a)) - 2*A*sqrt(-a)*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (B*c*x
+ 2*A*c)*sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.20, size = 78, normalized size = 0.99

$$\frac{2\,Aa\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{Ba\log\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+a}\right|\right)}{2\,\sqrt{c}}+\frac{1}{2}\,\sqrt{cx^{2}+a}\,(Bx+2\,A)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x,x, algorithm="giac")
```

```
[Out] 2*A*a*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 1/2*B*a*lo
g(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/2*sqrt(c*x^2 + a)*(B*x + 2
*A)
```

maple [A] time = 0.05, size = 78, normalized size = 0.99

$$-A\sqrt{a}\,\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)+\frac{Ba\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{2\sqrt{c}}+\frac{\sqrt{c\,x^{2}+a}\,Bx}{2}+\sqrt{c\,x^{2}+a}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x,x)
```

```
[Out] 1/2*B*x*(c*x^2+a)^(1/2)+1/2*B*a/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))-A*a^(
1/2)*ln((2*a+2*a^(1/2)*(c*x^2+a)^(1/2))/x)+A*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.53, size = 59, normalized size = 0.75

$$\frac{1}{2}\,\sqrt{cx^{2}+a}\,Bx+\frac{Ba\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{c}}-A\sqrt{a}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\sqrt{cx^{2}+a}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*B*x + 1/2*B*a*arcsinh(c*x/sqrt(a*c))/sqrt(c) - A*sqrt(a
)*arcsinh(a/(sqrt(a*c)*abs(x))) + sqrt(c*x^2 + a)*A
```

mupad [B] time = 1.36, size = 68, normalized size = 0.86

$$A\,\sqrt{c\,x^{2}+a}-A\,\sqrt{a}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)+\frac{B\,x\,\sqrt{c\,x^{2}+a}}{2}+\frac{B\,a\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x,x)
```

```
[Out] A*(a + c*x^2)^(1/2) - A*a^(1/2)*atanh((a + c*x^2)^(1/2)/a^(1/2)) + (B*x*(a
+ c*x^2)^(1/2))/2 + (B*a*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/(2*c^(1/2))
```

sympy [**A**] time = 6.74, size = 107, normalized size = 1.35

$$-A\sqrt{a}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Aa}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{A\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}+\frac{B\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{Ba\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x,x)
```

```
[Out] -A*sqrt(a)*asinh(sqrt(a)/(sqrt(c)*x)) + A*a/(sqrt(c)*x*sqrt(a/(c*x**2) + 1)
) + A*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + B*sqrt(a)*x*sqrt(1 + c*x**2/a)/2 + B
*a*asinh(sqrt(c)*x/sqrt(a))/(2*sqrt(c))
```

3.320 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^2}\,dx$

Optimal. Leaf size=75

$$-\frac{\sqrt{a+cx^2}\,(A-Bx)}{x}+A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {813, 844, 217, 206, 266, 63, 208}

$$-\frac{\sqrt{a+cx^2}\,(A-Bx)}{x}+A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^2,x]
```

```
[Out] -(((A - B*x)*Sqrt[a + c*x^2])/x) + A*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c
*x^2]] - Sqrt[a]*B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
```

```
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^2}\,dx &= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}-\frac{1}{2}\int \frac{-2aB-2Acx}{x\sqrt{a+cx^2}}\,dx \\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+(aB)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+(Ac)\int \frac{1}{\sqrt{a+cx^2}}\,dx \\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+\frac{1}{2}(aB)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)+(Ac)\,\text{Subst}\left(\int \frac{1}{1-\cdots}\right. \\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\frac{(aB)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a}\cdots\right.}{c} \\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)
\end{aligned}
$$

Mathematica [A] time = 0.15, size = 99, normalized size = 1.32

$$
\frac{\sqrt{a+cx^2}\,(Bx-A)}{x}+\frac{\sqrt{a}\,A\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a+cx^2}}-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^2,x]
```

```
[Out] ((-A + B*x)*Sqrt[a + c*x^2])/x + (Sqrt[a]*A*Sqrt[c]*Sqrt[1 + (c*x^2)/a]*Arc
Sinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a + c*x^2] - Sqrt[a]*B*ArcTanh[Sqrt[a + c*x
^2]/Sqrt[a]]
```

IntegrateAlgebraic [A] time = 0.25, size = 92, normalized size = 1.23

$$
\frac{\sqrt{a+cx^2}\,(Bx-A)}{x}-A\sqrt{c}\,\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)+2\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x^2,x]
```

```
[Out] ((-A + B*x)*Sqrt[a + c*x^2])/x + 2*Sqrt[a]*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a] -
Sqrt[a + c*x^2]/Sqrt[a]] - A*Sqrt[c]*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]]
```

fricas [A] time = 0.52, size = 333, normalized size = 4.44

$$
\left[\frac{A\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+B\sqrt{a}\,x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,\sqrt{cx^2+a}\,(Bx-A)}{2\,x},\ -\frac{2\,A\sqrt{-c}\,x\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-B\sqrt{a}\,x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\,\sqrt{cx^2+a}\,(Bx-A)}{2\,x},\ \frac{2\,B\sqrt{-a}\,x\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+A\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\sqrt{cx^2+a}\,(Bx-A)}{2\,x},\ -\frac{A\sqrt{-c}\,x\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-B\sqrt{-a}\,x\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\sqrt{cx^2+a}\,(Bx-A)}{x}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/2*(A*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + B*sqrt(
a)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*sqrt(c*x^2 + a
)*(B*x - A))/x, -1/2*(2*A*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - B
*sqrt(a)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*sqrt(c*x
^2 + a)*(B*x - A))/x, 1/2*(2*B*sqrt(-a)*x*arctan(sqrt(-a)/sqrt(c*x^2 + a))
+ A*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*sqrt(c*x^
2 + a)*(B*x - A))/x, -(A*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - B*
sqrt(-a)*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - sqrt(c*x^2 + a)*(B*x - A))/x]
```

giac [A] time = 0.19, size = 102, normalized size = 1.36

$$\frac{2\,Ba\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-A\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\sqrt{cx^2+a}\,B+\frac{2\,Aa\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] 2*B*a*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - A*sqrt(c)*
log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + sqrt(c*x^2 + a)*B + 2*A*a*sqrt(c)/
((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)
```

maple [A] time = 0.06, size = 97, normalized size = 1.29

$$A\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)-B\sqrt{a}\,\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{\sqrt{c\,x^2+a}\,Acx}{a}+\sqrt{c\,x^2+a}\,B-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+a)^(3/2)+A*c/a*x*(c*x^2+a)^(1/2)+A*c^(1/2)*ln(c^(1/2)*x+(c*x^
2+a)^(1/2))-B*a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+B*(c*x^2+a)^(1/
2)
```

maxima [A] time = 0.54, size = 59, normalized size = 0.79

$$A\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-B\sqrt{a}\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\sqrt{cx^2+a}\,B-\frac{\sqrt{cx^2+a}\,A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] A*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - B*sqrt(a)*arcsinh(a/(sqrt(a*c)*abs(x)))
+ sqrt(c*x^2 + a)*B - sqrt(c*x^2 + a)*A/x
```

mupad [B] time = 1.80, size = 89, normalized size = 1.19

$$B\sqrt{c\,x^2+a}-\frac{A\sqrt{c\,x^2+a}}{x}-B\sqrt{a}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)-\frac{A\sqrt{c}\,\mathrm{asin}\left(\frac{\sqrt{c}\,x\,1\mathrm{i}}{\sqrt{a}}\right)\sqrt{c\,x^2+a}\,1\mathrm{i}}{\sqrt{a}\,\sqrt{\frac{c\,x^2}{a}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^2,x)
```

```
[Out] B*(a + c*x^2)^(1/2) - (A*(a + c*x^2)^(1/2))/x - B*a^(1/2)*atanh((a + c*x^2)
^(1/2)/a^(1/2)) - (A*c^(1/2)*asin((c^(1/2)*x*1i)/a^(1/2))*(a + c*x^2)^(1/2)
*1i)/(a^(1/2)*((c*x^2)/a + 1)^(1/2))
```

sympy [A] time = 4.56, size = 124, normalized size = 1.65

$$-\frac{A\sqrt{a}}{x\sqrt{1+\frac{cx^2}{a}}}+A\sqrt{c}\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Acx}{\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}-B\sqrt{a}\,\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Ba}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{B\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**2,x)
```

```
[Out] -A*sqrt(a)/(x*sqrt(1 + c*x**2/a)) + A*sqrt(c)*asinh(sqrt(c)*x/sqrt(a)) - A*
c*x/(sqrt(a)*sqrt(1 + c*x**2/a)) - B*sqrt(a)*asinh(sqrt(a)/(sqrt(c)*x)) + B
*a/(sqrt(c)*x*sqrt(a/(c*x**2) + 1)) + B*sqrt(c)*x/sqrt(a/(c*x**2) + 1)
```

3.321 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^3}\,dx$

Optimal. Leaf size=80

$$-\frac{\sqrt{a+cx^2}\,(A+2Bx)}{2x^2}-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}+B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Rubi [A] time = 0.06, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {811, 844, 217, 206, 266, 63, 208}

$$-\frac{\sqrt{a+cx^2}\,(A+2Bx)}{2x^2}-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}+B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^3,x]
```

```
[Out] -((A + 2*B*x)*Sqrt[a + c*x^2])/(2*x^2) + B*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt
[a + c*x^2]] - (A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*Sqrt[a])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
```

```
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^3}\,dx &= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}-\frac{\int \frac{-2aAc-4aBcx}{x\sqrt{a+cx^2}}\,dx}{4a}\\ &= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+\frac{1}{2}(Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+(Bc)\int \frac{1}{\sqrt{a+cx^2}}\,dx\\ &= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+\frac{1}{4}(Ac)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)+(Bc)\,\text{Subst}\left(\int \frac{}{1}\right.\\ &= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\frac{1}{2}A\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\right.\\ &= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 108, normalized size = 1.35

$$-\frac{\sqrt{a+cx^2}\left(a\sqrt{\frac{cx^2}{a}+1}\,(A+2Bx)+Acx^2\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)-2\sqrt{a}\,B\sqrt{c}\,x^2\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\right)}{2ax^2\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^3,x]
```

```
[Out] -1/2*(Sqrt[a + c*x^2]*(a*(A + 2*B*x)*Sqrt[1 + (c*x^2)/a] - 2*Sqrt[a]*B*Sqrt
[c]*x^2*ArcSinh[(Sqrt[c]*x)/Sqrt[a]] + A*c*x^2*ArcTanh[Sqrt[1 + (c*x^2)/a]]
))/(a*x^2*Sqrt[1 + (c*x^2)/a])
```

IntegrateAlgebraic [A] time = 0.36, size = 96, normalized size = 1.20

$$\frac{\sqrt{a+cx^2}\,(-A-2Bx)}{2x^2}+\frac{Ac\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}-B\sqrt{c}\,\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x^3,x]
```

```
[Out] ((-A - 2*B*x)*Sqrt[a + c*x^2])/(2*x^2) + (A*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a] -
 Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a] - B*Sqrt[c]*Log[-(Sqrt[c]*x) + Sqrt[a +
c*x^2]]
```

fricas [A] time = 0.58, size = 377, normalized size = 4.71

$$\left[\frac{2 B a \sqrt{c} x^{2} \log\left(-2 c x^{2} - 2 \sqrt{c x^{2} + a} \sqrt{c} x - a\right) + A \sqrt{a} c x^{2} \log\left(-\frac{c x^{2} - 2 \sqrt{c x^{2} + a} \sqrt{a} + 2 a}{x^{2}}\right) - 2 (2 B a x + A a) \sqrt{c x^{2} + a}}{4 a x^{2}}, -\frac{4 B a \sqrt{-c} x^{2} \arctan\left(\frac{\sqrt{-c} x}{\sqrt{c x^{2} + a}}\right) - A \sqrt{a} c x^{2} \log\left(-\frac{c x^{2} - 2 \sqrt{c x^{2} + a} \sqrt{a} + 2 a}{x^{2}}\right) + 2 (2 B a x + A a) \sqrt{c x^{2} + a}}{4 a x^{2}}, \frac{A \sqrt{-a} c x^{2} \arctan\left(\frac{\sqrt{-a}}{\sqrt{c x^{2} + a}}\right) + B a \sqrt{c} x^{2} \log\left(-2 c x^{2} - 2 \sqrt{c x^{2} + a} \sqrt{c} x - a\right) - (2 B a x + A a) \sqrt{c x^{2} + a}}{2 a x^{2}}, -\frac{2 B a \sqrt{-c} x^{2} \arctan\left(\frac{\sqrt{-c} x}{\sqrt{c x^{2} + a}}\right) - A \sqrt{-a} c x^{2} \arctan\left(\frac{\sqrt{-a}}{\sqrt{c x^{2} + a}}\right) + (2 B a x + A a) \sqrt{c x^{2} + a}}{2 a x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/4*(2*B*a*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + A
*sqrt(a)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(2*B
*a*x + A*a)*sqrt(c*x^2 + a))/(a*x^2), -1/4*(4*B*a*sqrt(-c)*x^2*arctan(sqrt(
-c)*x/sqrt(c*x^2 + a)) - A*sqrt(a)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sq
rt(a) + 2*a)/x^2) + 2*(2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a*x^2), 1/2*(A*sqrt
(-a)*c*x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + B*a*sqrt(c)*x^2*log(-2*c*x^2
- 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) - (2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a*x^
2), -1/2*(2*B*a*sqrt(-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - A*sqrt(-a
)*c*x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (2*B*a*x + A*a)*sqrt(c*x^2 + a))
/(a*x^2)]
```

giac [B] time = 0.20, size = 163, normalized size = 2.04

$$\frac{A c \arctan\left(-\frac{\sqrt{c} x - \sqrt{c x^{2} + a}}{\sqrt{-a}}\right)}{\sqrt{-a}} - B \sqrt{c} \log\left(\left|-\sqrt{c} x + \sqrt{c x^{2} + a}\right|\right) + \frac{\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)^{3} A c + 2 \left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)^{2} B a \sqrt{c} + \left(\sqrt{c} x - \sqrt{c x^{2} + a}\right) A a c - 2 B a^{2} \sqrt{c}}{\left(\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)^{2} - a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] A*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*sqrt(c)*lo
g(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*c
 + 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2
+ a))*A*a*c - 2*B*a^2*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2
```

maple [A] time = 0.06, size = 121, normalized size = 1.51

$$-\frac{A c \ln\left(\frac{2 a + 2 \sqrt{c x^{2}+a}\, \sqrt{a}}{x}\right)}{2 \sqrt{a}} + B \sqrt{c}\, \ln\left(\sqrt{c}\, x + \sqrt{c x^{2}+a}\right) + \frac{\sqrt{c x^{2}+a}\, B c x}{a} + \frac{\sqrt{c x^{2}+a}\, A c}{2 a} - \frac{\left(c x^{2}+a\right)^{\frac{3}{2}} B}{a x} - \frac{\left(c x^{2}+a\right)^{\frac{3}{2}} A}{2 a x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+a)^(3/2)-1/2*A*c/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1
/2))/x)+1/2*A*c/a*(c*x^2+a)^(1/2)-B/a/x*(c*x^2+a)^(3/2)+B*c/a*x*(c*x^2+a)^(
1/2)+B*c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.53, size = 83, normalized size = 1.04

$$B \sqrt{c} \operatorname{arsinh}\left(\frac{c x}{\sqrt{a c}}\right) - \frac{A c \operatorname{arsinh}\left(\frac{a}{\sqrt{a c} |x|}\right)}{2 \sqrt{a}} + \frac{\sqrt{c x^{2} + a} A c}{2 a} - \frac{\sqrt{c x^{2} + a} B}{x} - \frac{\left(c x^{2} + a\right)^{\frac{3}{2}} A}{2 a x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] B*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - 1/2*A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/sq
rt(a) + 1/2*sqrt(c*x^2 + a)*A*c/a - sqrt(c*x^2 + a)*B/x - 1/2*(c*x^2 + a)^(
3/2)*A/(a*x^2)
```

mupad [B] time = 1.87, size = 94, normalized size = 1.18

$$-\frac{A\,\sqrt{c\,x^2+a}}{2\,x^2}-\frac{B\,\sqrt{c\,x^2+a}}{x}-\frac{A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,\sqrt{a}}-\frac{B\,\sqrt{c}\,\mathrm{asin}\left(\frac{\sqrt{c}\,x\,1\mathrm{i}}{\sqrt{a}}\right)\,\sqrt{c\,x^2+a}\,1\mathrm{i}}{\sqrt{a}\,\sqrt{\frac{c\,x^2}{a}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^3,x)
```

```
[Out] - (A*(a + c*x^2)^(1/2))/(2*x^2) - (B*(a + c*x^2)^(1/2))/x - (A*c*atanh((a +
 c*x^2)^(1/2)/a^(1/2)))/(2*a^(1/2)) - (B*c^(1/2)*asin((c^(1/2)*x*1i)/a^(1/2
))*(a + c*x^2)^(1/2)*1i)/(a^(1/2)*((c*x^2)/a + 1)^(1/2))
```

sympy [A] time = 4.84, size = 107, normalized size = 1.34

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{Ac\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2\sqrt{a}}-\frac{B\sqrt{a}}{x\sqrt{1+\frac{cx^2}{a}}}+B\sqrt{c}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Bcx}{\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**3,x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) - A*c*asinh(sqrt(a)/(sqrt(c)*x))/(2*s
qrt(a)) - B*sqrt(a)/(x*sqrt(1 + c*x**2/a)) + B*sqrt(c)*asinh(sqrt(c)*x/sqrt
(a)) - B*c*x/(sqrt(a)*sqrt(1 + c*x**2/a))
```

3.322 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^4}\,dx$

Optimal. Leaf size=71

$$-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}$$

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {807, 266, 47, 63, 208}

$$-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^4,x]
```

```
[Out] -(B*Sqrt[a + c*x^2])/(2*x^2) - (A*(a + c*x^2)^(3/2))/(3*a*x^3) - (B*c*ArcTa
nh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*Sqrt[a])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^4}\,dx &= -\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+B\int \frac{\sqrt{a+cx^2}}{x^3}\,dx \\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{1}{2}B\,\text{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right) \\
&= -\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{1}{4}(Bc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right) \\
&= -\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{1}{2}B\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right) \\
&= -\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 85, normalized size = 1.20

$$
\frac{-\left(a+cx^2\right)\left(2aA+3aBx+2Acx^2\right)-3aBcx^3\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{6ax^3\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^4,x]
```

```
[Out] (-((a + c*x^2)*(2*a*A + 3*a*B*x + 2*A*c*x^2)) - 3*a*B*c*x^3*Sqrt[1 + (c*x^2
)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(6*a*x^3*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.40, size = 79, normalized size = 1.11

$$
\frac{\sqrt{a+cx^2}\left(-2aA-3aBx-2Acx^2\right)}{6ax^3}+\frac{Bc\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x^4,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-2*a*A - 3*a*B*x - 2*A*c*x^2))/(6*a*x^3) + (B*c*ArcTanh[(
Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a]
```

fricas [A] time = 0.47, size = 142, normalized size = 2.00

$$
\left[\frac{3\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(2\,Acx^2+3\,Bax+2\,Aa\right)\sqrt{cx^2+a}}{12\,ax^3},\ \frac{3\,B\sqrt{-a}\,cx^3\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(2\,Acx^2+3\,Bax+2\,Aa\right)\sqrt{cx^2+a}}{6\,ax^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/12*(3*B*sqrt(a)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2
) - 2*(2*A*c*x^2 + 3*B*a*x + 2*A*a)*sqrt(c*x^2 + a))/(a*x^3), 1/6*(3*B*sqrt
(-a)*c*x^3*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (2*A*c*x^2 + 3*B*a*x + 2*A*a)
*sqrt(c*x^2 + a))/(a*x^3)]
```

giac [B] time = 0.22, size = 143, normalized size = 2.01

$$\frac{Bc\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+\frac{3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^5Bc+6\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Ac^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^2c+2\,Aa^2c^{\frac{3}{2}}}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] B*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 1/3*(3*(sqrt
(c)*x - sqrt(c*x^2 + a))^5*B*c + 6*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*c^(3/2
) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^2*c + 2*A*a^2*c^(3/2))/((sqrt(c)*x
- sqrt(c*x^2 + a))^2 - a)^3
```

maple [A] time = 0.07, size = 84, normalized size = 1.18

$$-\frac{Bc\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+\frac{\sqrt{cx^2+a}\,Bc}{2a}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{2a\,x^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^4,x)
```

```
[Out] -1/3*A*(c*x^2+a)^(3/2)/a/x^3-1/2*B/a/x^2*(c*x^2+a)^(3/2)-1/2*B*c/a^(1/2)*ln
((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+1/2*B*c/a*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.59, size = 72, normalized size = 1.01

$$-\frac{Bc\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,\sqrt{a}}+\frac{\sqrt{cx^2+a}\,Bc}{2\,a}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{2\,ax^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{3\,ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] -1/2*B*c*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/2*sqrt(c*x^2 + a)*B*c/a
- 1/2*(c*x^2 + a)^(3/2)*B/(a*x^2) - 1/3*(c*x^2 + a)^(3/2)*A/(a*x^3)
```

mupad [B] time = 1.89, size = 55, normalized size = 0.77

$$-\frac{B\,\sqrt{c\,x^2+a}}{2\,x^2}-\frac{A\,\left(c\,x^2+a\right)^{3/2}}{3\,a\,x^3}-\frac{B\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^4,x)
```

```
[Out] - (B*(a + c*x^2)^(1/2))/(2*x^2) - (A*(a + c*x^2)^(3/2))/(3*a*x^3) - (B*c*at
anh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(1/2))
```

sympy [A] time = 4.21, size = 92, normalized size = 1.30

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{Bc\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{2\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**4,x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**2) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/
(3*a) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) - B*c*asinh(sqrt(a)/(sqrt(c)*x
))/(2*sqrt(a))
```

3.323 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^5}\,dx$

Optimal. Leaf size=99

$$\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}+\frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}$$

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}+\frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^5,x]
```

```
[Out] (A*c*Sqrt[a + c*x^2])/(8*a*x^2) - (A*(a + c*x^2)^(3/2))/(4*a*x^4) - (B*(a +
 c*x^2)^(3/2))/(3*a*x^3) + (A*c^2*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(3
/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] && !(IntegerQ[n] && !Intege
rQ[m]) && !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^5}\,dx &= -\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{\int \frac{(-4aB+Acx)\sqrt{a+cx^2}}{x^4}\,dx}{4a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{(Ac)\int \frac{\sqrt{a+cx^2}}{x^3}\,dx}{4a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{(Ac)\,\mathrm{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right)}{8a}\\
&= \frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{\left(Ac^2\right)\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{16a}\\
&= \frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{(Ac)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{8a}\\
&= \frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 53, normalized size = 0.54

$$-\frac{\left(a+cx^2\right)^{3/2}\left(a^2B+Ac^2x^3\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{cx^2}{a}+1\right)\right)}{3a^3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^5,x]
```

```
[Out] -1/3*((a + c*x^2)^(3/2)*(a^2*B + A*c^2*x^3*Hypergeometric2F1[3/2, 3, 5/2, 1
 + (c*x^2)/a]))/(a^3*x^3)
```

IntegrateAlgebraic [A] time = 0.50, size = 91, normalized size = 0.92

$$\frac{\sqrt{a+cx^2}\left(-6aA-8aBx-3Acx^2-8Bcx^3\right)}{24ax^4}-\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{4a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x^5,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-6*a*A - 8*a*B*x - 3*A*c*x^2 - 8*B*c*x^3))/(24*a*x^4) - (
A*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(4*a^(3/2))
```

fricas [A] time = 0.45, size = 171, normalized size = 1.73

$$\left[\frac{3\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(8\,Bacx^3+3\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{48\,a^2x^4},\,-\frac{3\,A\sqrt{-a}\,c^2x^4\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+\left(8\,Bacx^3+3\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{24\,a^2x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/48*(3*A*sqrt(a)*c^2*x^4*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x
^2) - 2*(8*B*a*c*x^3 + 3*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/
(a^2*x^4), -1/24*(3*A*sqrt(-a)*c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (
8*B*a*c*x^3 + 3*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a^2*x^4)
]
```

giac [B] time = 0.19, size = 267, normalized size = 2.70

$$-\frac{Ac^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a}+\frac{3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^7Ac^2+24\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^6Bac^{\frac{3}{2}}+21\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^5Aac^2-24\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Ba^2c^{\frac{3}{2}}+21\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Aa^2c^2+8\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Ba^3c^{\frac{3}{2}}+3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Aa^3c^2-8\,Ba^4c^{\frac{3}{2}}}{12\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] -1/4*A*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/12*(3*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*c^2 + 24*(sqrt(c)*x - sqrt(c*x^2 +
 a))^6*B*a*c^(3/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a*c^2 - 24*(sqrt(
c)*x - sqrt(c*x^2 + a))^4*B*a^2*c^(3/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + a))^
3*A*a^2*c^2 + 8*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^3*c^(3/2) + 3*(sqrt(c)*
x - sqrt(c*x^2 + a))*A*a^3*c^2 - 8*B*a^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2
 + a))^2 - a)^4*a)
```

maple [A] time = 0.06, size = 107, normalized size = 1.08

$$\frac{A\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\,A\,c^2}{8a^2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Ac}{8a^2x^2}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B}{3a\,x^3}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A}{4a\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^5,x)
```

```
[Out] -1/4*A*(c*x^2+a)^(3/2)/a/x^4+1/8*A*c/a^2/x^2*(c*x^2+a)^(3/2)+1/8*A*c^2/a^(3
/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-1/8*A*c^2/a^2*(c*x^2+a)^(1/2)-1/3
*B*(c*x^2+a)^(3/2)/a/x^3
```

maxima [A] time = 0.69, size = 95, normalized size = 0.96

$$\frac{Ac^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,Ac^2}{8\,a^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac}{8\,a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{3\,ax^3}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{4\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] 1/8*A*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/8*sqrt(c*x^2 + a)*A*c^2
/a^2 + 1/8*(c*x^2 + a)^(3/2)*A*c/(a^2*x^2) - 1/3*(c*x^2 + a)^(3/2)*B/(a*x^3
) - 1/4*(c*x^2 + a)^(3/2)*A/(a*x^4)
```

mupad [B] time = 2.09, size = 75, normalized size = 0.76

$$\frac{A\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,a^{3/2}}-\frac{A\,\sqrt{c\,x^2+a}}{8\,x^4}-\frac{A\,{\left(c\,x^2+a\right)}^{3/2}}{8\,a\,x^4}-\frac{B\,{\left(c\,x^2+a\right)}^{3/2}}{3\,a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^5,x)
```

```
[Out] (A*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(3/2)) - (A*(a + c*x^2)^(1/2)
)/(8*x^4) - (A*(a + c*x^2)^(3/2))/(8*a*x^4) - (B*(a + c*x^2)^(3/2))/(3*a*x^
3)
```

sympy [A] time = 5.94, size = 144, normalized size = 1.45

$$-\frac{Aa}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3A\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{3}{2}}}{8ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^2\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8a^{\frac{3}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**5,x)
```

```
[Out] -A*a/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) - 3*A*sqrt(c)/(8*x**3*sqrt(a/(c*
x**2) + 1)) - A*c**(3/2)/(8*a*x*sqrt(a/(c*x**2) + 1)) + A*c**2*asinh(sqrt(a
)/(sqrt(c)*x))/(8*a**(3/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**2) - B*c
**(3/2)*sqrt(a/(c*x**2) + 1)/(3*a)
```

3.324 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^6} \, dx$

Optimal. Leaf size=122

$$\frac{Bc^2 \tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}$$

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}+\frac{Bc^2 \tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^6,x]
```

```
[Out] (B*c*Sqrt[a + c*x^2])/(8*a*x^2) - (A*(a + c*x^2)^(3/2))/(5*a*x^5) - (B*(a +
 c*x^2)^(3/2))/(4*a*x^4) + (2*A*c*(a + c*x^2)^(3/2))/(15*a^2*x^3) + (B*c^2*
ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^6}\,dx = -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{\int \frac{(-5aB+2Acx)\sqrt{a+cx^2}}{x^5}\,dx}{5a}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{B\left(a+cx^2\right)^{3/2}}{4ax^4} + \frac{\int \frac{(-8aAc-5aBcx)\sqrt{a+cx^2}}{x^4}\,dx}{20a^2}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{B\left(a+cx^2\right)^{3/2}}{4ax^4} + \frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3} - \frac{(Bc)\int \frac{\sqrt{a+cx^2}}{x^3}\,dx}{4a}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{B\left(a+cx^2\right)^{3/2}}{4ax^4} + \frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3} - \frac{(Bc)\,\text{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx, x, \ldots\right.}{8a}$$

$$= \frac{Bc\sqrt{a+cx^2}}{8ax^2} - \frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{B\left(a+cx^2\right)^{3/2}}{4ax^4} + \frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3} - \frac{\left(Bc^2\right)\text{Subst}\left(\ldots\right.}{\ldots}$$

$$= \frac{Bc\sqrt{a+cx^2}}{8ax^2} - \frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{B\left(a+cx^2\right)^{3/2}}{4ax^4} + \frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3} - \frac{(Bc)\,\text{Subst}\left(\int \ldots\right.}{\ldots}$$

$$= \frac{Bc\sqrt{a+cx^2}}{8ax^2} - \frac{A\left(a+cx^2\right)^{3/2}}{5ax^5} - \frac{B\left(a+cx^2\right)^{3/2}}{4ax^4} + \frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3} + \frac{Bc^2\tanh^{-1}\left(\ldots\right.}{8a^{3/2}}$$

Mathematica [C] time = 0.02, size = 62, normalized size = 0.51

$$-\frac{\left(a+cx^2\right)^{3/2}\left(aA\left(3a-2cx^2\right)+5Bc^2x^5\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{cx^2}{a}+1\right)\right)}{15a^3x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^6,x]
```

```
[Out] -1/15*((a + c*x^2)^(3/2)*(a*A*(3*a - 2*c*x^2) + 5*B*c^2*x^5*Hypergeometric2
F1[3/2, 3, 5/2, 1 + (c*x^2)/a]))/(a^3*x^5)
```

IntegrateAlgebraic [A] time = 0.54, size = 106, normalized size = 0.87

$$\frac{\sqrt{a+cx^2}\left(-24a^2A-30a^2Bx-8aAcx^2-15aBcx^3+16Ac^2x^4\right)}{120a^2x^5} - \frac{Bc^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{4a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x^6,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-24*a^2*A - 30*a^2*B*x - 8*a*A*c*x^2 - 15*a*B*c*x^3 + 16*
A*c^2*x^4))/(120*a^2*x^5) - (B*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c
*x^2]/Sqrt[a]])/(4*a^(3/2))
```

fricas [A] time = 0.48, size = 190, normalized size = 1.56

$$\left[\frac{15\,B\sqrt{a}\,c^{2}x^{5}\log\left(-\frac{cx^{2}+2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)+2\left(16\,Ac^{2}x^{4}-15\,Bacx^{3}-8\,Aacx^{2}-30\,Ba^{2}x-24\,Aa^{2}\right)\sqrt{cx^{2}+a}}{240\,a^{2}x^{5}},\ -\frac{15\,B\sqrt{-a}\,c^{2}x^{5}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)-\left(16\,Ac^{2}x^{4}-15\,Bacx^{3}-8\,Aacx^{2}-30\,Ba^{2}x-24\,Aa^{2}\right)\sqrt{cx^{2}+a}}{120\,a^{2}x^{5}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/240*(15*B*sqrt(a)*c^2*x^5*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) + 2*(16*A*c^2*x^4 - 15*B*a*c*x^3 - 8*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^
2)*sqrt(c*x^2 + a))/(a^2*x^5), -1/120*(15*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a
)/sqrt(c*x^2 + a)) - (16*A*c^2*x^4 - 15*B*a*c*x^3 - 8*A*a*c*x^2 - 30*B*a^2*
x - 24*A*a^2)*sqrt(c*x^2 + a))/(a^2*x^5)]
```

giac [B] time = 0.19, size = 267, normalized size = 2.19

$$-\frac{Bc^{2}\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}\,a}+\frac{15\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{9}Bc^{2}+90\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{7}Bac^{2}+240\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{6}Aac^{\frac{5}{2}}+80\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Aa^{2}c^{\frac{5}{2}}-90\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{3}Ba^{3}c^{2}+80\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Aa^{3}c^{\frac{5}{2}}-15\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Ba^{4}c^{2}-16\,Aa^{4}c^{\frac{5}{2}}}{60\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{5}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/4*B*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/60*(15*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*c^2 + 90*(sqrt(c)*x - sqrt(c*x^2
+ a))^7*B*a*c^2 + 240*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a*c^(5/2) + 80*(sqr
t(c)*x - sqrt(c*x^2 + a))^4*A*a^2*c^(5/2) - 90*(sqrt(c)*x - sqrt(c*x^2 + a)
)^3*B*a^3*c^2 + 80*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^3*c^(5/2) - 15*(sqrt
(c)*x - sqrt(c*x^2 + a))*B*a^4*c^2 - 16*A*a^4*c^(5/2))/(((sqrt(c)*x - sqrt(
c*x^2 + a))^2 - a)^5*a)
```

maple [A] time = 0.06, size = 126, normalized size = 1.03

$$\frac{B\,c^{2}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^{2}+a}\,B\,c^{2}}{8a^{2}}+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}Bc}{8a^{2}x^{2}}+\frac{2\left(c\,x^{2}+a\right)^{\frac{3}{2}}Ac}{15a^{2}x^{3}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}B}{4a\,x^{4}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}A}{5a\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^6,x)
```

```
[Out] -1/5*A*(c*x^2+a)^(3/2)/a/x^5+2/15*A*c*(c*x^2+a)^(3/2)/a^2/x^3-1/4*B*(c*x^2+
a)^(3/2)/a/x^4+1/8*B*c/a^2/x^2*(c*x^2+a)^(3/2)+1/8*B*c^2/a^(3/2)*ln((2*a+2*
(c*x^2+a)^(1/2)*a^(1/2))/x)-1/8*B*c^2/a^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.75, size = 114, normalized size = 0.93

$$\frac{Bc^{2}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{3}{2}}}-\frac{\sqrt{cx^{2}+a}\,Bc^{2}}{8\,a^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Bc}{8\,a^{2}x^{2}}+\frac{2\left(cx^{2}+a\right)^{\frac{3}{2}}Ac}{15\,a^{2}x^{3}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}B}{4\,ax^{4}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}A}{5\,ax^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/8*sqrt(c*x^2 + a)*B*c^2
/a^2 + 1/8*(c*x^2 + a)^(3/2)*B*c/(a^2*x^2) + 2/15*(c*x^2 + a)^(3/2)*A*c/(a^
2*x^3) - 1/4*(c*x^2 + a)^(3/2)*B/(a*x^4) - 1/5*(c*x^2 + a)^(3/2)*A/(a*x^5)
```

mupad [B] time = 2.37, size = 95, normalized size = 0.78

$$\frac{B\,c^{2}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)}{8\,a^{3/2}}-\frac{B\,\sqrt{c\,x^{2}+a}}{8\,x^{4}}-\frac{B\left(c\,x^{2}+a\right)^{3/2}}{8\,a\,x^{4}}-\frac{A\,\sqrt{c\,x^{2}+a}\,\left(3\,a^{2}+a\,c\,x^{2}-2\,c^{2}\,x^{4}\right)}{15\,a^{2}\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^6,x)
```

```
[Out] (B*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(3/2)) - (B*(a + c*x^2)^(1/2)
)/(8*x^4) - (B*(a + c*x^2)^(3/2))/(8*a*x^4) - (A*(a + c*x^2)^(1/2)*(3*a^2 -
 2*c^2*x^4 + a*c*x^2))/(15*a^2*x^5)
```

sympy [A] time = 6.25, size = 173, normalized size = 1.42

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{15ax^2}+\frac{2Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{15a^2}-\frac{Ba}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3B\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Bc^{\frac{3}{2}}}{8ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Bc^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**6,x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/
(15*a*x**2) + 2*A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*a**2) - B*a/(4*sqrt(c)*
x**5*sqrt(a/(c*x**2) + 1)) - 3*B*sqrt(c)/(8*x**3*sqrt(a/(c*x**2) + 1)) - B*
c**(3/2)/(8*a*x*sqrt(a/(c*x**2) + 1)) + B*c**2*asinh(sqrt(a)/(sqrt(c)*x))/(
8*a**(3/2))
```

3.325 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^7} dx$

Optimal. Leaf size=147

$$-\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{5/2}}-\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}$$

Rubi [A] time = 0.12, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$-\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}-\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{5/2}}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^7,x]
```

```
[Out] -(A*c^2*Sqrt[a + c*x^2])/(16*a^2*x^2) - (A*(a + c*x^2)^(3/2))/(6*a*x^6) - (
B*(a + c*x^2)^(3/2))/(5*a*x^5) + (A*c*(a + c*x^2)^(3/2))/(8*a^2*x^4) + (2*B
*c*(a + c*x^2)^(3/2))/(15*a^2*x^3) - (A*c^3*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]
])/(16*a^(5/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^7}\,dx = -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{\int \frac{(-6aB+3Acx)\sqrt{a+cx^2}}{x^6}\,dx}{6a}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{\int \frac{(-15aAc-12aBcx)\sqrt{a+cx^2}}{x^5}\,dx}{30a^2}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4} - \frac{\int \frac{\left(48a^2Bc-15aAc^2x\right)\sqrt{a+cx^2}}{x^4}\,dx}{120a^3}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4} + \frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3} + \frac{\left(Ac^2\right)\int}{8}$$

$$= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4} + \frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3} + \frac{\left(Ac^2\right)\mathrm{Su}}{}$$

$$= -\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2} - \frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4} + \frac{2Bc\left(a+cx\right.}{15a^2x^3}$$

$$= -\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2} - \frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4} + \frac{2Bc\left(a+cx\right.}{15a^2x^3}$$

$$= -\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2} - \frac{A\left(a+cx^2\right)^{3/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{3/2}}{5ax^5} + \frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4} + \frac{2Bc\left(a+cx\right.}{15a^2x^3}$$

Mathematica [C] time = 0.03, size = 64, normalized size = 0.44

$$\frac{\left(a+cx^2\right)^{3/2}\left(a^2B\left(2cx^2-3a\right)+5Ac^3x^5\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};\frac{cx^2}{a}+1\right)\right)}{15a^4x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^7,x]
```

```
[Out] ((a + c*x^2)^(3/2)*(a^2*B*(-3*a + 2*c*x^2) + 5*A*c^3*x^5*Hypergeometric2F1[
3/2, 4, 5/2, 1 + (c*x^2)/a]))/(15*a^4*x^5)
```

IntegrateAlgebraic [A] time = 0.65, size = 115, normalized size = 0.78

$$\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{\sqrt{a+cx^2}\left(-40a^2A-48a^2Bx-10aAcx^2-16aBcx^3+15Ac^2x^4+32Bc^2x^5\right)}{240a^2x^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + c*x^2])/x^7,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-40*a^2*A - 48*a^2*B*x - 10*a*A*c*x^2 - 16*a*B*c*x^3 + 15
*A*c^2*x^4 + 32*B*c^2*x^5))/(240*a^2*x^6) + (A*c^3*ArcTanh[(Sqrt[c]*x)/Sqrt
[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(5/2))
```

fricas [A] time = 0.51, size = 219, normalized size = 1.49

$$\left[\frac{15\,A\sqrt{a}c^{3}x^{6}\log\left(-\frac{cx^{2}-2\sqrt{cx^{2}+a}\sqrt{a}+2\,a}{x^{2}}\right)+2\left(32\,Bac^{2}x^{5}+15\,Aac^{2}x^{4}-16\,Ba^{2}cx^{3}-10\,Aa^{2}cx^{2}-48\,Ba^{3}x-40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{480\,a^{3}x^{6}},\ \frac{15\,A\sqrt{-a}c^{3}x^{6}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)+\left(32\,Bac^{2}x^{5}+15\,Aac^{2}x^{4}-16\,Ba^{2}cx^{3}-10\,Aa^{2}cx^{2}-48\,Ba^{3}x-40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{240\,a^{3}x^{6}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/480*(15*A*sqrt(a)*c^3*x^6*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) + 2*(32*B*a*c^2*x^5 + 15*A*a*c^2*x^4 - 16*B*a^2*c*x^3 - 10*A*a^2*c*x^
2 - 48*B*a^3*x - 40*A*a^3)*sqrt(c*x^2 + a))/(a^3*x^6), 1/240*(15*A*sqrt(-a)
*c^3*x^6*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (32*B*a*c^2*x^5 + 15*A*a*c^2*x^
4 - 16*B*a^2*c*x^3 - 10*A*a^2*c*x^2 - 48*B*a^3*x - 40*A*a^3)*sqrt(c*x^2 + a
))/(a^3*x^6)]
```

giac [B] time = 0.23, size = 325, normalized size = 2.21

$$\frac{Ac^{3}\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}a^{2}}-\frac{15\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{11}Ac^{3}-85\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{9}Aac^{3}-480\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{8}Ba^{2}c^{\frac{5}{2}}-570\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{7}Aa^{2}c^{3}+320\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{6}Ba^{3}c^{\frac{5}{2}}-570\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Aa^{3}c^{3}-85\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{3}Aa^{4}c^{3}+192\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Ba^{5}c^{\frac{5}{2}}+15\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Aa^{5}c^{3}-32\,Ba^{6}c^{\frac{5}{2}}}{120\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{6}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/8*A*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) -
1/120*(15*(sqrt(c)*x - sqrt(c*x^2 + a))^11*A*c^3 - 85*(sqrt(c)*x - sqrt(c*x
^2 + a))^9*A*a*c^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + a))^8*B*a^2*c^(5/2) - 57
0*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*a^2*c^3 + 320*(sqrt(c)*x - sqrt(c*x^2 +
 a))^6*B*a^3*c^(5/2) - 570*(sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a^3*c^3 - 85*(
sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^4*c^3 + 192*(sqrt(c)*x - sqrt(c*x^2 + a)
)^2*B*a^5*c^(5/2) + 15*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^5*c^3 - 32*B*a^6*c
^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^6*a^2)
```

maple [A] time = 0.06, size = 147, normalized size = 1.00

$$-\frac{A\,c^{3}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{5}{2}}}+\frac{\sqrt{c\,x^{2}+a}\,A\,c^{3}}{16a^{3}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}A\,c^{2}}{16a^{3}x^{2}}+\frac{2\left(c\,x^{2}+a\right)^{\frac{3}{2}}Bc}{15a^{2}x^{3}}+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}Ac}{8a^{2}x^{4}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}B}{5a\,x^{5}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}A}{6a\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^7,x)
```

```
[Out] -1/5*B*(c*x^2+a)^(3/2)/a/x^5+2/15*B*c*(c*x^2+a)^(3/2)/a^2/x^3-1/6*A*(c*x^2+
a)^(3/2)/a/x^6+1/8*A*c*(c*x^2+a)^(3/2)/a^2/x^4-1/16*A*c^2/a^3/x^2*(c*x^2+a)
^(3/2)-1/16*A*c^3/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+1/16*A*c^3/
a^3*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.59, size = 135, normalized size = 0.92

$$-\frac{Ac^{3}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}|x|}\right)}{16\,a^{\frac{5}{2}}}+\frac{\sqrt{cx^{2}+a}\,Ac^{3}}{16\,a^{3}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{2}}{16\,a^{3}x^{2}}+\frac{2\left(cx^{2}+a\right)^{\frac{3}{2}}Bc}{15\,a^{2}x^{3}}+\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Ac}{8\,a^{2}x^{4}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}B}{5\,ax^{5}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}A}{6\,ax^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/16*A*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) + 1/16*sqrt(c*x^2 + a)*A*
c^3/a^3 - 1/16*(c*x^2 + a)^(3/2)*A*c^2/(a^3*x^2) + 2/15*(c*x^2 + a)^(3/2)*B
```

```
*c/(a^2*x^3) + 1/8*(c*x^2 + a)^(3/2)*A*c/(a^2*x^4) - 1/5*(c*x^2 + a)^(3/2)*
B/(a*x^5) - 1/6*(c*x^2 + a)^(3/2)*A/(a*x^6)
```

mupad [B] time = 2.70, size = 116, normalized size = 0.79

$$\frac{A\left(c\,x^2+a\right)^{5/2}}{16\,a^2\,x^6}-\frac{A\left(c\,x^2+a\right)^{3/2}}{6\,a\,x^6}-\frac{A\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{B\,\sqrt{c\,x^2+a}\,\left(3\,a^2+a\,c\,x^2-2\,c^2\,x^4\right)}{15\,a^2\,x^5}+\frac{A\,c^3\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,1{}\mathrm{i}}{16\,a^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^7,x)
```

```
[Out] (A*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/2))*1i)/(16*a^(5/2)) - (A*(a + c*x^
2)^(1/2))/(16*x^6) - (A*(a + c*x^2)^(3/2))/(6*a*x^6) + (A*(a + c*x^2)^(5/2)
)/(16*a^2*x^6) - (B*(a + c*x^2)^(1/2)*(3*a^2 - 2*c^2*x^4 + a*c*x^2))/(15*a^
2*x^5)
```

sympy [A] time = 8.57, size = 201, normalized size = 1.37

$$-\frac{Aa}{6\sqrt{c}x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{5A\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{3}{2}}}{48ax^3\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{5}{2}}}{16a^2x\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{16a^{\frac{5}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{15ax^2}+\frac{2Bc^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{15a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**7,x)
```

```
[Out] -A*a/(6*sqrt(c)*x**7*sqrt(a/(c*x**2) + 1)) - 5*A*sqrt(c)/(24*x**5*sqrt(a/(c
*x**2) + 1)) + A*c**(3/2)/(48*a*x**3*sqrt(a/(c*x**2) + 1)) + A*c**(5/2)/(16
*a**2*x*sqrt(a/(c*x**2) + 1)) - A*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*a**(5
/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - B*c**(3/2)*sqrt(a/(c*x**2)
 + 1)/(15*a*x**2) + 2*B*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*a**2)
```

3.326 $\int x^4(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=175

$$\frac{3a^4A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}+\frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{a\left(a+cx^2\right)^{5/2}(128aB-315Acx)}{5040c^3}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}$$

Rubi [A] time = 0.14, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{3a^4A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}+\frac{a\left(a+cx^2\right)^{5/2}(128aB-315Acx)}{5040c^3}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}-\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (3*a^3*A*x*Sqrt[a + c*x^2])/(128*c^2) + (a^2*A*x*(a + c*x^2)^(3/2))/(64*c^2
) - (4*a*B*x^2*(a + c*x^2)^(5/2))/(63*c^2) + (A*x^3*(a + c*x^2)^(5/2))/(8*c
) + (B*x^4*(a + c*x^2)^(5/2))/(9*c) + (a*(128*a*B - 315*A*c*x)*(a + c*x^2)^
(5/2))/(5040*c^3) + (3*a^4*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(128*c^(
5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
```

```
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\left(a+cx^2\right)^{3/2}\,dx = \frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c} + \frac{\int x^3(-4aB+9Acx)\left(a+cx^2\right)^{3/2}\,dx}{9c}$$

$$= \frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c} + \frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c} + \frac{\int x^2(-27aAc-32aBcx)\left(a+cx^2\right)^{3/2}\,d\ldots}{72c^2}$$

$$= -\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2} + \frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c} + \frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c} + \frac{\int x\left(64a^2Bc-\ldots\right.}{\ldots}$$

$$= -\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2} + \frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c} + \frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c} + \frac{a(128aB-315\ldots}{50\ldots}$$

$$= \frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2} - \frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2} + \frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c} + \frac{Bx^4\left(a+cx^2\right)^{5/\ldots}}{9c}$$

$$= \frac{3a^3Ax\sqrt{a+cx^2}}{128c^2} + \frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2} - \frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2} + \frac{Ax^3\left(a+cx^2\right)^{5/\ldots}}{8c}$$

$$= \frac{3a^3Ax\sqrt{a+cx^2}}{128c^2} + \frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2} - \frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2} + \frac{Ax^3\left(a+cx^2\right)^{5/\ldots}}{8c}$$

$$= \frac{3a^3Ax\sqrt{a+cx^2}}{128c^2} + \frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2} - \frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2} + \frac{Ax^3\left(a+cx^2\right)^{5/\ldots}}{8c}$$

Mathematica [A] time = 0.25, size = 132, normalized size = 0.75

$$\frac{\sqrt{a+cx^2}\left(\frac{945a^{7/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+1024a^4B-a^3cx(945A+512Bx)+6a^2c^2x^3(105A+64Bx)+40ac^3x^5(189A+160Bx)+560c^4x^7(9A+8Bx)\right)}{40320c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(1024*a^4*B + 560*c^4*x^7*(9*A + 8*B*x) + 6*a^2*c^2*x^3*(1
05*A + 64*B*x) + 40*a*c^3*x^5*(189*A + 160*B*x) - a^3*c*x*(945*A + 512*B*x)
 + (945*a^(7/2)*A*Sqrt[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]
))/(40320*c^3)
```

IntegrateAlgebraic [A] time = 0.38, size = 140, normalized size = 0.80

$$\frac{\sqrt{a+cx^2}\left(1024a^4B-945a^3Acx-512a^3Bcx^2+630a^2Ac^2x^3+384a^2Bc^2x^4+7560aAc^3x^5+6400aBc^3x^6+5040Ac^4x^7+4480Bc^4x^8\right)}{40320c^3}-\frac{3a^4A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{128c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(1024*a^4*B - 945*a^3*A*c*x - 512*a^3*B*c*x^2 + 630*a^2*A*
c^2*x^3 + 384*a^2*B*c^2*x^4 + 7560*a*A*c^3*x^5 + 6400*a*B*c^3*x^6 + 5040*A*
c^4*x^7 + 4480*B*c^4*x^8))/(40320*c^3) - (3*a^4*A*Log[-(Sqrt[c]*x) + Sqrt[a
 + c*x^2]])/(128*c^(5/2))
```

fricas [A] time = 0.52, size = 272, normalized size = 1.55

$$\left[\frac{945\,Aa^4\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+2\left(4480\,Bc^4x^8+5040\,Ac^4x^7+6400\,Bac^3x^6+7560\,Aac^3x^5+384\,Ba^2c^2x^4+630\,Aa^2c^2x^3-512\,Ba^3cx^2-945\,Aa^3cx+1024\,Ba^4\right)\sqrt{cx^2+a}}{80640\,c^3},-\frac{945\,Aa^4\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-\left(4480\,Bc^4x^8+5040\,Ac^4x^7+6400\,Bac^3x^6+7560\,Aac^3x^5+384\,Ba^2c^2x^4+630\,Aa^2c^2x^3-512\,Ba^3cx^2-945\,Aa^3cx+1024\,Ba^4\right)\sqrt{cx^2+a}}{40320\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/80640*(945*A*a^4*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 2*(4480*B*c^4*x^8 + 5040*A*c^4*x^7 + 6400*B*a*c^3*x^6 + 7560*A*a*c^3*x^5
 + 384*B*a^2*c^2*x^4 + 630*A*a^2*c^2*x^3 - 512*B*a^3*c*x^2 - 945*A*a^3*c*x
+ 1024*B*a^4)*sqrt(c*x^2 + a))/c^3, -1/40320*(945*A*a^4*sqrt(-c)*arctan(sqr
t(-c)*x/sqrt(c*x^2 + a)) - (4480*B*c^4*x^8 + 5040*A*c^4*x^7 + 6400*B*a*c^3*
x^6 + 7560*A*a*c^3*x^5 + 384*B*a^2*c^2*x^4 + 630*A*a^2*c^2*x^3 - 512*B*a^3*
c*x^2 - 945*A*a^3*c*x + 1024*B*a^4)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.22, size = 130, normalized size = 0.74

$$-\frac{3\,Aa^4\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{5}{2}}}+\frac{1}{40320}\sqrt{cx^2+a}\left(\frac{1024\,Ba^4}{c^3}-\left(\frac{945\,Aa^3}{c^2}+2\left(\frac{256\,Ba^3}{c^2}-\left(\frac{315\,Aa^2}{c}+4\left(\frac{48\,Ba^2}{c}+5\,(189\,Aa+2\,(80\,Ba+7\,(8\,Bcx+9\,Ac)x)x)x\right)x\right)x\right)x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -3/128*A*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/40320*sqrt(
c*x^2 + a)*(1024*B*a^4/c^3 - (945*A*a^3/c^2 + 2*(256*B*a^3/c^2 - (315*A*a^2
/c + 4*(48*B*a^2/c + 5*(189*A*a + 2*(80*B*a + 7*(8*B*c*x + 9*A*c)*x)*x)*x)*
x)*x)*x)*x)
```

maple [A] time = 0.06, size = 155, normalized size = 0.89

$$\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,x^4}{9c}+\frac{3A\,a^4\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\;A\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A\,x^3}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A\,a^2x}{64c^2}-\frac{4\left(c\,x^2+a\right)^{\frac{5}{2}}Ba\,x^2}{63c^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Aax}{16c^2}+\frac{8\left(c\,x^2+a\right)^{\frac{5}{2}}B\,a^2}{315c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/9*B*x^4*(c*x^2+a)^(5/2)/c-4/63*a*B*x^2*(c*x^2+a)^(5/2)/c^2+8/315*B*a^2/c^
3*(c*x^2+a)^(5/2)+1/8*A*x^3*(c*x^2+a)^(5/2)/c-1/16*A*a/c^2*x*(c*x^2+a)^(5/2
)+1/64*a^2*A*x*(c*x^2+a)^(3/2)/c^2+3/128*a^3*A*x*(c*x^2+a)^(1/2)/c^2+3/128*
A*a^4/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.67, size = 147, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bx^4}{9\,c}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ax^3}{8\,c}-\frac{4\left(cx^2+a\right)^{\frac{5}{2}}Bax^2}{63\,c^2}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Aax}{16\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Aa^2x}{64\,c^2}+\frac{3\sqrt{cx^2+a}\,Aa^3x}{128\,c^2}+\frac{3\,Aa^4\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{5}{2}}}+\frac{8\left(cx^2+a\right)^{\frac{5}{2}}Ba^2}{315\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + a)^(5/2)*B*x^4/c + 1/8*(c*x^2 + a)^(5/2)*A*x^3/c - 4/63*(c*x^2
 + a)^(5/2)*B*a*x^2/c^2 - 1/16*(c*x^2 + a)^(5/2)*A*a*x/c^2 + 1/64*(c*x^2 +
a)^(3/2)*A*a^2*x/c^2 + 3/128*sqrt(c*x^2 + a)*A*a^3*x/c^2 + 3/128*A*a^4*arcs
inh(c*x/sqrt(a*c))/c^(5/2) + 8/315*(c*x^2 + a)^(5/2)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^4*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 19.24, size = 366, normalized size = 2.09

$$-\frac{3Aa^{\frac{7}{2}}x}{128c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^{\frac{5}{2}}x^3}{128c\sqrt{1+\frac{cx^2}{a}}}+\frac{13Aa^{\frac{3}{2}}x^5}{64\sqrt{1+\frac{cx^2}{a}}}+\frac{5A\sqrt{a}\,cx^7}{16\sqrt{1+\frac{cx^2}{a}}}+\frac{3Aa^4\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{128c^{\frac{5}{2}}}+\frac{Ac^2x^9}{8\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}+Ba\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise}\end{cases}\right)+Bc\left(\begin{cases}-\frac{16a^4\sqrt{a+cx^2}}{315c^4}+\frac{8a^3x^2\sqrt{a+cx^2}}{315c^3}-\frac{2a^2x^4\sqrt{a+cx^2}}{105c^2}+\frac{ax^6\sqrt{a+cx^2}}{63c}+\frac{x^8\sqrt{a+cx^2}}{9} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^8}{8} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] -3*A*a**(7/2)*x/(128*c**2*sqrt(1 + c*x**2/a)) - A*a**(5/2)*x**3/(128*c*sqrt
(1 + c*x**2/a)) + 13*A*a**(3/2)*x**5/(64*sqrt(1 + c*x**2/a)) + 5*A*sqrt(a)*
c*x**7/(16*sqrt(1 + c*x**2/a)) + 3*A*a**4*asinh(sqrt(c)*x/sqrt(a))/(128*c**
(5/2)) + A*c**2*x**9/(8*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a*Piecewise((8*a**3
*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*c**2) + a*
x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0)), (sqrt(a)
*x**6/6, True)) + B*c*Piecewise((-16*a**4*sqrt(a + c*x**2)/(315*c**4) + 8*a
**3*x**2*sqrt(a + c*x**2)/(315*c**3) - 2*a**2*x**4*sqrt(a + c*x**2)/(105*c*
*2) + a*x**6*sqrt(a + c*x**2)/(63*c) + x**8*sqrt(a + c*x**2)/9, Ne(c, 0)),
(sqrt(a)*x**8/8, True))
```

3.327 $\int x^3(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=150

$$\frac{3a^4B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}+\frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}-\frac{a\left(a+cx^2\right)^{5/2}(32A+35Bx)}{560c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3}{}$$

Rubi [A] time = 0.09, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{3a^4B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}-\frac{a\left(a+cx^2\right)^{5/2}(32A+35Bx)}{560c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (3*a^3*B*x*Sqrt[a + c*x^2])/(128*c^2) + (a^2*B*x*(a + c*x^2)^(3/2))/(64*c^2
) + (A*x^2*(a + c*x^2)^(5/2))/(7*c) + (B*x^3*(a + c*x^2)^(5/2))/(8*c) - (a*
(32*A + 35*B*x)*(a + c*x^2)^(5/2))/(560*c^2) + (3*a^4*B*ArcTanh[(Sqrt[c]*x)
/Sqrt[a + c*x^2]])/(128*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{\int x^2(-3aB+8Acx)\left(a+cx^2\right)^{3/2}\,dx}{8c}\\
&= \frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{\int x(-16aAc-21aBcx)\left(a+cx^2\right)^{3/2}\,dx}{56c^2}\\
&= \frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\frac{a(32A+35Bx)\left(a+cx^2\right)^{5/2}}{560c^2}+\frac{\left(a^2B\right)\int}{}\\
&= \frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\frac{a(32A+35Bx)(a}{560c^2}\\
&= \frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\\
&= \frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\\
&= \frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 126, normalized size = 0.84

$$
\frac{\sqrt{a+cx^2}\left(\frac{105a^{7/2}B\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+\sqrt{c}\left(-a^3(256A+105Bx)+2a^2cx^2(64A+35Bx)+8ac^2x^4(128A+105Bx)+80c^3x^6(8A+7Bx)\right)\right)}{4480c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(80*c^3*x^6*(8*A + 7*B*x) + 2*a^2*c*x^2*(64*A + 3
5*B*x) + 8*a*c^2*x^4*(128*A + 105*B*x) - a^3*(256*A + 105*B*x)) + (105*a^(7
/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(4480*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.36, size = 125, normalized size = 0.83

$$
\frac{\sqrt{a+cx^2}\left(-256a^3A-105a^3Bx+128a^2Acx^2+70a^2Bcx^3+1024aAc^2x^4+840aBc^2x^5+640Ac^3x^6+560Bc^3x^7\right)}{4480c^2}-\frac{3a^4B\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{128c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-256*a^3*A - 105*a^3*B*x + 128*a^2*A*c*x^2 + 70*a^2*B*c*x
^3 + 1024*a*A*c^2*x^4 + 840*a*B*c^2*x^5 + 640*A*c^3*x^6 + 560*B*c^3*x^7))/(
4480*c^2) - (3*a^4*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(128*c^(5/2))
```

fricas [A] time = 0.48, size = 254, normalized size = 1.69

$$
\left[\frac{105\,Ba^4\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(560\,Bc^4x^7+640\,Ac^4x^6+840\,Bac^3x^5+1024\,Aac^3x^4+70\,Ba^2c^2x^3+128\,Aa^2c^2x^2-105\,Ba^3cx-256\,Aa^3c\right)\sqrt{cx^2+a}}{8960\,c^3},\ -\frac{105\,Ba^4\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\left(560\,Bc^4x^7+640\,Ac^4x^6+840\,Bac^3x^5+1024\,Aac^3x^4+70\,Ba^2c^2x^3+128\,Aa^2c^2x^2-105\,Ba^3cx-256\,Aa^3c\right)\sqrt{cx^2+a}}{4480\,c^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8960*(105*B*a^4*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(560*B*c^4*x^7 + 640*A*c^4*x^6 + 840*B*a*c^3*x^5 + 1024*A*a*c^3*x^4 + 7
```

```
0*B*a^2*c^2*x^3 + 128*A*a^2*c^2*x^2 - 105*B*a^3*c*x - 256*A*a^3*c)*sqrt(c*x
^2 + a))/c^3, -1/4480*(105*B*a^4*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)
) - (560*B*c^4*x^7 + 640*A*c^4*x^6 + 840*B*a*c^3*x^5 + 1024*A*a*c^3*x^4 + 7
0*B*a^2*c^2*x^3 + 128*A*a^2*c^2*x^2 - 105*B*a^3*c*x - 256*A*a^3*c)*sqrt(c*x
^2 + a))/c^3]
```

giac [A] time = 0.20, size = 115, normalized size = 0.77

$$-\frac{3\,Ba^4\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{5}{2}}}-\frac{1}{4480}\,\sqrt{cx^2+a}\left(\frac{256\,Aa^3}{c^2}+\left(\frac{105\,Ba^3}{c^2}-2\left(\frac{64\,Aa^2}{c}+\left(\frac{35\,Ba^2}{c}+4\,(128\,Aa+5\,(21\,Ba+2\,(7\,Bcx+8\,Ac)x)x)x\right)x\right)x\right)x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -3/128*B*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) - 1/4480*sqrt(c
*x^2 + a)*(256*A*a^3/c^2 + (105*B*a^3/c^2 - 2*(64*A*a^2/c + (35*B*a^2/c + 4
*(128*A*a + 5*(21*B*a + 2*(7*B*c*x + 8*A*c)*x)*x)*x)*x)*x)
```

maple [A] time = 0.06, size = 134, normalized size = 0.89

$$\frac{3B\,a^4\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\,B\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,x^3}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A\,x^2}{7c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,a^2x}{64c^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Bax}{16c^2}-\frac{2\left(c\,x^2+a\right)^{\frac{5}{2}}Aa}{35c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/8*B*x^3*(c*x^2+a)^(5/2)/c-1/16*B*a/c^2*x*(c*x^2+a)^(5/2)+1/64*a^2*B*x*(c*
x^2+a)^(3/2)/c^2+3/128*a^3*B*x*(c*x^2+a)^(1/2)/c^2+3/128*B*a^4/c^(5/2)*ln(c
^(1/2)*x+(c*x^2+a)^(1/2))+1/7*A*x^2*(c*x^2+a)^(5/2)/c-2/35*A*a/c^2*(c*x^2+a
)^(5/2)
```

maxima [A] time = 0.60, size = 126, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bx^3}{8\,c}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ax^2}{7\,c}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bax}{16\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ba^2x}{64\,c^2}+\frac{3\,\sqrt{cx^2+a}\,Ba^3x}{128\,c^2}+\frac{3\,Ba^4\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{5}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{5}{2}}Aa}{35\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + a)^(5/2)*B*x^3/c + 1/7*(c*x^2 + a)^(5/2)*A*x^2/c - 1/16*(c*x^2
 + a)^(5/2)*B*a*x/c^2 + 1/64*(c*x^2 + a)^(3/2)*B*a^2*x/c^2 + 3/128*sqrt(c*x
^2 + a)*B*a^3*x/c^2 + 3/128*B*a^4*arcsinh(c*x/sqrt(a*c))/c^(5/2) - 2/35*(c*
x^2 + a)^(5/2)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 18.14, size = 318, normalized size = 2.12

$$Aa\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)+Ac\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise}\end{cases}\right)-\frac{3Ba^{\frac{7}{2}}x}{128c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba^{\frac{5}{2}}x^3}{128c\sqrt{1+\frac{cx^2}{a}}}+\frac{13Ba^{\frac{3}{2}}x^5}{64\sqrt{1+\frac{cx^2}{a}}}+\frac{5B\sqrt{a}\,cx^7}{16\sqrt{1+\frac{cx^2}{a}}}+\frac{3Ba^4\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{128c^{\frac{5}{2}}}+\frac{Bc^2x^9}{8\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)
/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + A*c
*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**
2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, N
e(c, 0)), (sqrt(a)*x**6/6, True)) - 3*B*a**(7/2)*x/(128*c**2*sqrt(1 + c*x**
2/a)) - B*a**(5/2)*x**3/(128*c*sqrt(1 + c*x**2/a)) + 13*B*a**(3/2)*x**5/(64
*sqrt(1 + c*x**2/a)) + 5*B*sqrt(a)*c*x**7/(16*sqrt(1 + c*x**2/a)) + 3*B*a**
4*asinh(sqrt(c)*x/sqrt(a))/(128*c**(5/2)) + B*c**2*x**9/(8*sqrt(a)*sqrt(1 +
 c*x**2/a))
```

3.328 $\int x^2(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=127

$$-\frac{a^3A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{\left(a+cx^2\right)^{5/2}(12aB-35Acx)}{210c^2}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}$$

Rubi [A] time = 0.06, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$-\frac{a^3A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{\left(a+cx^2\right)^{5/2}(12aB-35Acx)}{210c^2}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] -(a^2*A*x*Sqrt[a + c*x^2])/(16*c) - (a*A*x*(a + c*x^2)^(3/2))/(24*c) + (B*x
^2*(a + c*x^2)^(5/2))/(7*c) - ((12*a*B - 35*A*c*x)*(a + c*x^2)^(5/2))/(210*
c^2) - (a^3*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(16*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{\int x(-2aB+7Acx)\left(a+cx^2\right)^{3/2}\,dx}{7c}\\
&= \frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a+cx^2\right)^{5/2}}{210c^2}-\frac{(aA)\int\left(a+cx^2\right)^{3/2}\,dx}{6c}\\
&= -\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a+cx^2\right)^{5/2}}{210c^2}-\frac{\left(a^2A\right.}{}\\
&= -\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a\right.}{210c^2}\\
&= -\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a\right.}{210c^2}\\
&= -\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a\right.}{210c^2}
\end{aligned}
$$

Mathematica [A] time = 0.21, size = 113, normalized size = 0.89

$$
\frac{\sqrt{a+cx^2}\left(-\frac{105a^{5/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}-96a^3B+3a^2cx(35A+16Bx)+2ac^2x^3(245A+192Bx)+40c^3x^5(7A+6Bx)\right)}{1680c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-96*a^3*B + 40*c^3*x^5*(7*A + 6*B*x) + 3*a^2*c*x*(35*A +
16*B*x) + 2*a*c^2*x^3*(245*A + 192*B*x) - (105*a^(5/2)*A*Sqrt[c]*ArcSinh[(S
qrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(1680*c^2)
```

IntegrateAlgebraic [A] time = 0.42, size = 116, normalized size = 0.91

$$
\frac{a^3A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{16c^{3/2}}+\frac{\sqrt{a+cx^2}\left(-96a^3B+105a^2Acx+48a^2Bcx^2+490aAc^2x^3+384aBc^2x^4+280Ac^3x^5+240Bc^3x^6\right)}{1680c^2}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-96*a^3*B + 105*a^2*A*c*x + 48*a^2*B*c*x^2 + 490*a*A*c^2*
x^3 + 384*a*B*c^2*x^4 + 280*A*c^3*x^5 + 240*B*c^3*x^6))/(1680*c^2) + (a^3*A
*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(16*c^(3/2))
```

fricas [A] time = 0.45, size = 223, normalized size = 1.76

$$
\left[\frac{105\,Aa^3\sqrt{c}\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+2\left(240\,Bc^3x^6+280\,Ac^3x^5+384\,Bac^2x^4+490\,Aac^2x^3+48\,Ba^2cx^2+105\,Aa^2cx-96\,Ba^3\right)\sqrt{cx^2+a}}{3360\,c^2},\ \frac{105\,Aa^3\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)+\left(240\,Bc^3x^6+280\,Ac^3x^5+384\,Bac^2x^4+490\,Aac^2x^3+48\,Ba^2cx^2+105\,Aa^2cx-96\,Ba^3\right)\sqrt{cx^2+a}}{1680\,c^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/3360*(105*A*a^3*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(240*B*c^3*x^6 + 280*A*c^3*x^5 + 384*B*a*c^2*x^4 + 490*A*a*c^2*x^3 + 48
*B*a^2*c*x^2 + 105*A*a^2*c*x - 96*B*a^3)*sqrt(c*x^2 + a))/c^2, 1/1680*(105*
A*a^3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (240*B*c^3*x^6 + 280*A*
```

```
c^3*x^5 + 384*B*a*c^2*x^4 + 490*A*a*c^2*x^3 + 48*B*a^2*c*x^2 + 105*A*a^2*c*
x - 96*B*a^3)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 103, normalized size = 0.81

$$\frac{Aa^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{3}{2}}}-\frac{1}{1680}\sqrt{cx^2+a}\left(\frac{96\,Ba^3}{c^2}-\left(\frac{105\,Aa^2}{c}+2\left(\frac{24\,Ba^2}{c}+(245\,Aa+4\,(48\,Ba+5\,(6\,Bcx+7\,Ac)x)x)x\right)x\right)x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/16*A*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) - 1/1680*sqrt(c*x
^2 + a)*(96*B*a^3/c^2 - (105*A*a^2/c + 2*(24*B*a^2/c + (245*A*a + 4*(48*B*a
 + 5*(6*B*c*x + 7*A*c)*x)*x)*x)*x)*x)
```

maple [A] time = 0.05, size = 113, normalized size = 0.89

$$-\frac{A\,a^3\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{16c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\;A\,a^2x}{16c}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Aax}{24c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,x^2}{7c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Ax}{6c}-\frac{2\left(c\,x^2+a\right)^{\frac{5}{2}}Ba}{35c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/7*B*x^2*(c*x^2+a)^(5/2)/c-2/35*B*a/c^2*(c*x^2+a)^(5/2)+1/6*A*x*(c*x^2+a)^
(5/2)/c-1/24*a*A*x*(c*x^2+a)^(3/2)/c-1/16*a^2*A*x*(c*x^2+a)^(1/2)/c-1/16*A*
a^3/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.50, size = 105, normalized size = 0.83

$$\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bx^2}{7\,c}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ax}{6\,c}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Aax}{24\,c}-\frac{\sqrt{cx^2+a}\,Aa^2x}{16\,c}-\frac{Aa^3\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{3}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{5}{2}}Ba}{35\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + a)^(5/2)*B*x^2/c + 1/6*(c*x^2 + a)^(5/2)*A*x/c - 1/24*(c*x^2 +
 a)^(3/2)*A*a*x/c - 1/16*sqrt(c*x^2 + a)*A*a^2*x/c - 1/16*A*a^3*arcsinh(c*x
/sqrt(a*c))/c^(3/2) - 2/35*(c*x^2 + a)^(5/2)*B*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 12.45, size = 287, normalized size = 2.26

$$\frac{Aa^{\frac{5}{2}}x}{16c\sqrt{1+\frac{cx^2}{a}}}+\frac{17Aa^{\frac{3}{2}}x^3}{48\sqrt{1+\frac{cx^2}{a}}}+\frac{11A\sqrt{a}\,cx^5}{24\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^3\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16c^{\frac{3}{2}}}+\frac{Ac^2x^7}{6\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}+Ba\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)+Bc\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(5/2)*x/(16*c*sqrt(1 + c*x**2/a)) + 17*A*a**(3/2)*x**3/(48*sqrt(1 + c*
x**2/a)) + 11*A*sqrt(a)*c*x**5/(24*sqrt(1 + c*x**2/a)) - A*a**3*asinh(sqrt(
c)*x/sqrt(a))/(16*c**(3/2)) + A*c**2*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a)) +
B*a*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)
/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + B*c
*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**
2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, N
e(c, 0)), (sqrt(a)*x**6/6, True))
```

3.329 $\int x(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=103

$$-\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Bx\sqrt{a+cx^2}}{16c}+\frac{\left(a+cx^2\right)^{5/2}(6A+5Bx)}{30c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}$$

Rubi [A] time = 0.03, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {780, 195, 217, 206}

$$-\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Bx\sqrt{a+cx^2}}{16c}+\frac{\left(a+cx^2\right)^{5/2}(6A+5Bx)}{30c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] -(a^2*B*x*Sqrt[a + c*x^2])/(16*c) - (a*B*x*(a + c*x^2)^(3/2))/(24*c) + ((6*
A + 5*B*x)*(a + c*x^2)^(5/2))/(30*c) - (a^3*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a +
c*x^2]])/(16*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+cx^2\right)^{3/2}dx = \frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c} - \frac{(aB)\int \left(a+cx^2\right)^{3/2}dx}{6c}$$
$$= -\frac{aBx\left(a+cx^2\right)^{3/2}}{24c} + \frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c} - \frac{\left(a^2B\right)\int \sqrt{a+cx^2}\,dx}{8c}$$
$$= -\frac{a^2Bx\sqrt{a+cx^2}}{16c} - \frac{aBx\left(a+cx^2\right)^{3/2}}{24c} + \frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c} - \frac{\left(a^3B\right)\int \frac{1}{\sqrt{a+c}}}{16c}$$
$$= -\frac{a^2Bx\sqrt{a+cx^2}}{16c} - \frac{aBx\left(a+cx^2\right)^{3/2}}{24c} + \frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c} - \frac{\left(a^3B\right)\text{Subst}}{}$$
$$= -\frac{a^2Bx\sqrt{a+cx^2}}{16c} - \frac{aBx\left(a+cx^2\right)^{3/2}}{24c} + \frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c} - \frac{a^3B\tanh^{-1}\left(\right.}{16c^{3/2}}$$

Mathematica [A] time = 0.18, size = 107, normalized size = 1.04

$$\frac{\sqrt{a+cx^2}\left(\sqrt{c}\left(3a^2(16A+5Bx)+2acx^2(48A+35Bx)+8c^2x^4(6A+5Bx)\right)-\frac{15a^{5/2}B\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}\right)}{240c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(8*c^2*x^4*(6*A + 5*B*x) + 3*a^2*(16*A + 5*B*x) +
 2*a*c*x^2*(48*A + 35*B*x)) - (15*a^(5/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/S
qrt[1 + (c*x^2)/a]))/(240*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.36, size = 101, normalized size = 0.98

$$\frac{a^3B\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{16c^{3/2}}+\frac{\sqrt{a+cx^2}\left(48a^2A+15a^2Bx+96aAcx^2+70aBcx^3+48Ac^2x^4+40Bc^2x^5\right)}{240c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(48*a^2*A + 15*a^2*B*x + 96*a*A*c*x^2 + 70*a*B*c*x^3 + 48*
A*c^2*x^4 + 40*B*c^2*x^5))/(240*c) + (a^3*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x
^2]])/(16*c^(3/2))
```

fricas [A] time = 0.46, size = 205, normalized size = 1.99

$$\left[\frac{15\,Ba^3\sqrt{c}\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\sqrt{c}\,x-a\right)+2\left(40\,Bc^3x^5+48\,Ac^3x^4+70\,Bac^2x^3+96\,Aac^2x^2+15\,Ba^2cx+48\,Aa^2c\right)\sqrt{cx^2+a}}{480\,c^2},\ \frac{15\,Ba^3\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(40\,Bc^3x^5+48\,Ac^3x^4+70\,Bac^2x^3+96\,Aac^2x^2+15\,Ba^2cx+48\,Aa^2c\right)\sqrt{cx^2+a}}{240\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/480*(15*B*a^3*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(40*B*c^3*x^5 + 48*A*c^3*x^4 + 70*B*a*c^2*x^3 + 96*A*a*c^2*x^2 + 15*B*a^2
*c*x + 48*A*a^2*c)*sqrt(c*x^2 + a))/c^2, 1/240*(15*B*a^3*sqrt(-c)*arctan(sq
rt(-c)*x/sqrt(c*x^2 + a)) + (40*B*c^3*x^5 + 48*A*c^3*x^4 + 70*B*a*c^2*x^3 +
 96*A*a*c^2*x^2 + 15*B*a^2*c*x + 48*A*a^2*c)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.24, size = 89, normalized size = 0.86

$$\frac{Ba^3\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{3}{2}}}+\frac{1}{240}\sqrt{cx^2+a}\left(\frac{48\,Aa^2}{c}+\left(\frac{15\,Ba^2}{c}+2\,(48\,Aa+(35\,Ba+4\,(5\,Bcx+6\,Ac)x)x)x\right)x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/16*B*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/240*sqrt(c*x^
2 + a)*(48*A*a^2/c + (15*B*a^2/c + 2*(48*A*a + (35*B*a + 4*(5*B*c*x + 6*A*c
)*x)*x)*x)*x)
```

maple [A] time = 0.05, size = 94, normalized size = 0.91

$$-\frac{B\,a^3\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{16c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\;B\,a^2x}{16c}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Bax}{24c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Bx}{6c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/6*B*x*(c*x^2+a)^(5/2)/c-1/24*a*B*x*(c*x^2+a)^(3/2)/c-1/16*a^2*B*x*(c*x^2+
a)^(1/2)/c-1/16*B*a^3/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/5*A*(c*x^2+a)
^(5/2)/c
```

maxima [A] time = 0.49, size = 86, normalized size = 0.83

$$\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bx}{6\,c}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bax}{24\,c}-\frac{\sqrt{cx^2+a}\,Ba^2x}{16\,c}-\frac{Ba^3\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{3}{2}}}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(5/2)*B*x/c - 1/24*(c*x^2 + a)^(3/2)*B*a*x/c - 1/16*sqrt(c*
x^2 + a)*B*a^2*x/c - 1/16*B*a^3*arcsinh(c*x/sqrt(a*c))/c^(3/2) + 1/5*(c*x^2
 + a)^(5/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^2+a\right)^{3/2}\,(A+B\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 12.11, size = 223, normalized size = 2.17

$$Aa\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Ac\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)+\frac{Ba^{\frac{5}{2}}x}{16c\sqrt{1+\frac{cx^2}{a}}}+\frac{17Ba^{\frac{3}{2}}x^3}{48\sqrt{1+\frac{cx^2}{a}}}+\frac{11B\sqrt{a}\,cx^5}{24\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba^3\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16c^{\frac{3}{2}}}+\frac{Bc^2x^7}{6\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)
) + A*c*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x
```

```
**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) +
 B*a**(5/2)*x/(16*c*sqrt(1 + c*x**2/a)) + 17*B*a**(3/2)*x**3/(48*sqrt(1 + c
*x**2/a)) + 11*B*sqrt(a)*c*x**5/(24*sqrt(1 + c*x**2/a)) - B*a**3*asinh(sqrt
(c)*x/sqrt(a))/(16*c**(3/2)) + B*c**2*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.330 $\int (A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=87

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{3}{8}aAx\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}$$

Rubi [A] time = 0.03, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {641, 195, 217, 206}

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{3}{8}aAx\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (3*a*A*x*Sqrt[a + c*x^2])/8 + (A*x*(a + c*x^2)^(3/2))/4 + (B*(a + c*x^2)^(5
/2))/(5*c) + (3*a^2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*Sqrt[c])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{B\left(a+cx^2\right)^{5/2}}{5c}+A\int \left(a+cx^2\right)^{3/2}\,dx \\
&= \frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{1}{4}(3aA)\int \sqrt{a+cx^2}\,dx \\
&= \frac{3}{8}aAx\sqrt{a+cx^2}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{1}{8}\left(3a^2A\right)\int \frac{1}{\sqrt{a+cx^2}}\,d \\
&= \frac{3}{8}aAx\sqrt{a+cx^2}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{1}{8}\left(3a^2A\right)\text{Subst}\left(\int \frac{1}{1-} \right. \\
&= \frac{3}{8}aAx\sqrt{a+cx^2}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 88, normalized size = 1.01

$$
\frac{\sqrt{a+cx^2}\left(8a^2B+acx(25A+16Bx)+2c^2x^3(5A+4Bx)\right)+15a^2A\sqrt{c}\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)}{40c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(8*a^2*B + 2*c^2*x^3*(5*A + 4*B*x) + a*c*x*(25*A + 16*B*x)
) + 15*a^2*A*Sqrt[c]*Log[c*x + Sqrt[c]*Sqrt[a + c*x^2]])/(40*c)
```

IntegrateAlgebraic [A] time = 0.37, size = 92, normalized size = 1.06

$$
\frac{\sqrt{a+cx^2}\left(8a^2B+25aAcx+16aBcx^2+10Ac^2x^3+8Bc^2x^4\right)}{40c}-\frac{3a^2A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{8\sqrt{c}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(8*a^2*B + 25*a*A*c*x + 16*a*B*c*x^2 + 10*A*c^2*x^3 + 8*B*
c^2*x^4))/(40*c) - (3*a^2*A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(8*Sqrt[c]
)
```

fricas [A] time = 0.44, size = 176, normalized size = 2.02

$$
\left[\frac{15\,Aa^2\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(8\,Bc^2x^4+10\,Ac^2x^3+16\,Bacx^2+25\,Aacx+8\,Ba^2\right)\sqrt{cx^2+a}}{80\,c},\,-\frac{15\,Aa^2\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-\left(8\,Bc^2x^4+10\,Ac^2x^3+16\,Bacx^2+25\,Aacx+8\,Ba^2\right)\sqrt{cx^2+a}}{40\,c}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/80*(15*A*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2
*(8*B*c^2*x^4 + 10*A*c^2*x^3 + 16*B*a*c*x^2 + 25*A*a*c*x + 8*B*a^2)*sqrt(c*
x^2 + a))/c, -1/40*(15*A*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) -
(8*B*c^2*x^4 + 10*A*c^2*x^3 + 16*B*a*c*x^2 + 25*A*a*c*x + 8*B*a^2)*sqrt(c*x
^2 + a))/c]
```

giac [A] time = 0.19, size = 76, normalized size = 0.87

$$
-\frac{3\,Aa^2\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{8\,\sqrt{c}}+\frac{1}{40}\,\sqrt{cx^2+a}\left(\frac{8\,Ba^2}{c}+(25\,Aa+2\,(8\,Ba+(4\,Bcx+5\,Ac)x)x)x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -3/8*A*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/40*sqrt(c*x^2
 + a)*(8*B*a^2/c + (25*A*a + 2*(8*B*a + (4*B*c*x + 5*A*c)*x)*x)*x)
```

maple [A] time = 0.05, size = 69, normalized size = 0.79

$$\frac{3 A\, a^{2} \ln \left(\sqrt{c}\, x+\sqrt{c\,x^{2}+a}\right)}{8 \sqrt{c}}+\frac{3 \sqrt{c\,x^{2}+a}\; A a x}{8}+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}} A x}{4}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}} B}{5 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/5*B*(c*x^2+a)^(5/2)/c+1/4*A*x*(c*x^2+a)^(3/2)+3/8*a*A*x*(c*x^2+a)^(1/2)+3
/8*A*a^2/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.49, size = 61, normalized size = 0.70

$$\frac{1}{4} \left(cx^{2}+a\right)^{\frac{3}{2}} Ax+\frac{3}{8} \sqrt{cx^{2}+a}\, Aax+\frac{3\, Aa^{2} \operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\, \sqrt{c}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}} B}{5\, c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + a)^(3/2)*A*x + 3/8*sqrt(c*x^2 + a)*A*a*x + 3/8*A*a^2*arcsinh(c
*x/sqrt(a*c))/sqrt(c) + 1/5*(c*x^2 + a)^(5/2)*B/c
```

mupad [B] time = 1.28, size = 54, normalized size = 0.62

$$\frac{B\left(c\,x^{2}+a\right)^{5/2}}{5\,c}+\frac{A\,x\left(c\,x^{2}+a\right)^{3/2}\,{}_2\mathrm{F}_1\left(-\frac{3}{2},\frac{1}{2};\,\frac{3}{2};\,-\frac{c\,x^{2}}{a}\right)}{{\left(\frac{c\,x^{2}}{a}+1\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] (B*(a + c*x^2)^(5/2))/(5*c) + (A*x*(a + c*x^2)^(3/2)*hypergeom([-3/2, 1/2],
 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^(3/2)
```

sympy [A] time = 7.62, size = 219, normalized size = 2.52

$$\frac{Aa^{\frac{3}{2}} x \sqrt{1+\frac{cx^{2}}{a}}}{2}+\frac{Aa^{\frac{3}{2}} x}{8 \sqrt{1+\frac{cx^{2}}{a}}}+\frac{3 A \sqrt{a}\, cx^{3}}{8 \sqrt{1+\frac{cx^{2}}{a}}}+\frac{3 Aa^{2} \operatorname{asinh}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{8 \sqrt{c}}+\frac{Ac^{2} x^{5}}{4 \sqrt{a} \sqrt{1+\frac{cx^{2}}{a}}}+Ba\left(\begin{cases}\frac{\sqrt{a}\, x^{2}}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Bc\left(\begin{cases}-\frac{2a^{2} \sqrt{a+cx^{2}}}{15c^{2}}+\frac{ax^{2} \sqrt{a+cx^{2}}}{15c}+\frac{x^{4} \sqrt{a+cx^{2}}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\, x^{4}}{4} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(3/2)*x*sqrt(1 + c*x**2/a)/2 + A*a**(3/2)*x/(8*sqrt(1 + c*x**2/a)) + 3
*A*sqrt(a)*c*x**3/(8*sqrt(1 + c*x**2/a)) + 3*A*a**2*asinh(sqrt(c)*x/sqrt(a)
)/(8*sqrt(c)) + A*c**2*x**5/(4*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a*Piecewise(
(sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + B*c*Piecew
ise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) +
x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True))
```

3.331 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=106

$$-a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{8}a\sqrt{a+cx^2}\,(8A+3Bx)+\frac{1}{12}\left(a+cx^2\right)^{3/2}(4A+3Bx)$$

Rubi [A] time = 0.09, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {815, 844, 217, 206, 266, 63, 208}

$$-a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{8}a\sqrt{a+cx^2}\,(8A+3Bx)+\frac{1}{12}\left(a+cx^2\right)^{3/2}(4A+3Bx)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x,x]
```

```
[Out] (a*(8*A + 3*B*x)*Sqrt[a + c*x^2])/8 + ((4*A + 3*B*x)*(a + c*x^2)^(3/2))/12
+ (3*a^2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*Sqrt[c]) - a^(3/2)*A*Ar
cTanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
```

```
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x}\,dx &= \frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{\int \frac{(4aAc+3aBcx)\sqrt{a+cx^2}}{x}\,dx}{4c}\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{\int \frac{8a^2Ac^2+3a^2Bc^2x}{x\sqrt{a+cx^2}}\,dx}{8c^2}\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\left(a^2A\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{1}{2}\left(a^2A\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+}}\right.\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}-a
\end{aligned}$$

Mathematica [A] time = 0.25, size = 118, normalized size = 1.11

$$\frac{1}{24}\left(-24a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{9a^{5/2}B\sqrt{\frac{cx^2}{a}+1}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{c}\sqrt{a+cx^2}}+\sqrt{a+cx^2}\left(32aA+15aBx+8Acx^2+6Bcx^3\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a + c*x^2]*(32*a*A + 15*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + (9*a^(5/2)*B
*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[c]*Sqrt[a + c*x^2]
) - 24*a^(3/2)*A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/24
```

IntegrateAlgebraic [A] time = 0.40, size = 114, normalized size = 1.08

$$2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{3a^2B\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{8\sqrt{c}}+\frac{1}{24}\sqrt{a+cx^2}\left(32aA+15aBx+8Acx^2+6Bcx^3\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a + c*x^2]*(32*a*A + 15*a*B*x + 8*A*c*x^2 + 6*B*c*x^3))/24 + 2*a^(3/2
)*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]] - (3*a^2*B*Log[-
(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(8*Sqrt[c])
```

fricas [A] time = 0.49, size = 439, normalized size = 4.14

$$\left[\frac{9 Ba^2\sqrt{c}\log\left(-2 cx^2-2\sqrt{cx^2+a}\sqrt{c}x-a\right)+24 Aa^{\frac{3}{2}}c\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)+2\left(6 Bc^2x^3+8 Ac^2x^2+15 Bacx+32 Aac\right)\sqrt{cx^2+a}}{48 c}, -\frac{9 Ba^2\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-12 Aa^{\frac{3}{2}}c\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)-\left(6 Bc^2x^3+8 Ac^2x^2+15 Bacx+32 Aac\right)\sqrt{cx^2+a}}{24 c}, \frac{48 A\sqrt{-a}ac\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+9 Ba^2\sqrt{c}\log\left(-2 cx^2-2\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(6 Bc^2x^3+8 Ac^2x^2+15 Bacx+32 Aac\right)\sqrt{cx^2+a}}{48 c}, -\frac{9 Ba^2\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-24 A\sqrt{-a}ac\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(6 Bc^2x^3+8 Ac^2x^2+15 Bacx+32 Aac\right)\sqrt{cx^2+a}}{24 c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [1/48*(9*B*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 24
*A*a^(3/2)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(6*B*c
^2*x^3 + 8*A*c^2*x^2 + 15*B*a*c*x + 32*A*a*c)*sqrt(c*x^2 + a))/c, -1/24*(9*
B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 12*A*a^(3/2)*c*log(-(c*
x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - (6*B*c^2*x^3 + 8*A*c^2*x^2 +
15*B*a*c*x + 32*A*a*c)*sqrt(c*x^2 + a))/c, 1/48*(48*A*sqrt(-a)*a*c*arctan(s
qrt(-a)/sqrt(c*x^2 + a)) + 9*B*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)
*sqrt(c)*x - a) + 2*(6*B*c^2*x^3 + 8*A*c^2*x^2 + 15*B*a*c*x + 32*A*a*c)*sqr
t(c*x^2 + a))/c, -1/24*(9*B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a))
 - 24*A*sqrt(-a)*a*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (6*B*c^2*x^3 + 8*A*
c^2*x^2 + 15*B*a*c*x + 32*A*a*c)*sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.20, size = 100, normalized size = 0.94

$$\frac{2 Aa^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{3 Ba^2\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{8\sqrt{c}}+\frac{1}{24}\sqrt{cx^2+a}\left(32 Aa+\left(15 Ba+2\left(3 Bcx+4 Ac\right)x\right)x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 2*A*a^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 3/8*B*a^
2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/24*sqrt(c*x^2 + a)*(32
*A*a + (15*B*a + 2*(3*B*c*x + 4*A*c)*x)*x)
```

maple [A] time = 0.05, size = 107, normalized size = 1.01

$$-A\,a^{\frac{3}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{3B\,a^2\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{8\sqrt{c}}+\frac{3\sqrt{c\,x^2+a}\,Bax}{8}+\sqrt{c\,x^2+a}\,Aa+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Bx}{4}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x,x)
```

```
[Out] 1/4*B*x*(c*x^2+a)^(3/2)+3/8*B*a*x*(c*x^2+a)^(1/2)+3/8*B*a^2/c^(1/2)*ln(c^(1
/2)*x+(c*x^2+a)^(1/2))+1/3*A*(c*x^2+a)^(3/2)-A*a^(3/2)*ln((2*a+2*(c*x^2+a)^
(1/2)*a^(1/2))/x)+A*(c*x^2+a)^(1/2)*a
```

maxima [A] time = 0.48, size = 88, normalized size = 0.83

$$\frac{1}{4}\left(cx^2+a\right)^{\frac{3}{2}}Bx+\frac{3}{8}\sqrt{cx^2+a}\,Bax+\frac{3 Ba^2\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{c}}-Aa^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{3}\left(cx^2+a\right)^{\frac{3}{2}}A+\sqrt{cx^2+a}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + a)^(3/2)*B*x + 3/8*sqrt(c*x^2 + a)*B*a*x + 3/8*B*a^2*arcsinh(c
*x/sqrt(a*c))/sqrt(c) - A*a^(3/2)*arcsinh(a/(sqrt(a*c)*abs(x))) + 1/3*(c*x^
2 + a)^(3/2)*A + sqrt(c*x^2 + a)*A*a
```

mupad [B] time = 1.40, size = 83, normalized size = 0.78

$$\frac{A\left(c\,x^2+a\right)^{3/2}}{3}-A\,a^{3/2}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)+A\,a\,\sqrt{c\,x^2+a}\,+\frac{B\,x\,\left(c\,x^2+a\right)^{3/2}\,{}_2\mathrm{F}_1\left(-\frac{3}{2},\frac{1}{2};\ \frac{3}{2};\ -\frac{c\,x^2}{a}\right)}{\left(\frac{c\,x^2}{a}+1\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x,x)
```

```
[Out] (A*(a + c*x^2)^(3/2))/3 - A*a^(3/2)*atanh((a + c*x^2)^(1/2)/a^(1/2)) + A*a*
(a + c*x^2)^(1/2) + (B*x*(a + c*x^2)^(3/2)*hypergeom([-3/2, 1/2], 3/2, -(c*
x^2)/a))/((c*x^2)/a + 1)^(3/2)
```

sympy [A] time = 17.92, size = 218, normalized size = 2.06

$$-Aa^{\frac{3}{2}}\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Aa^2}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{Aa\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}+Ac\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for } c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+\frac{Ba^{\frac{3}{2}}x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{Ba^{\frac{3}{2}}x}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{3B\sqrt{a}\,cx^3}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{3Ba^2\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8\sqrt{c}}+\frac{Bc^2x^5}{4\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x,x)
```

```
[Out] -A*a**(3/2)*asinh(sqrt(a)/(sqrt(c)*x)) + A*a**2/(sqrt(c)*x*sqrt(a/(c*x**2)
+ 1)) + A*a*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + A*c*Piecewise((sqrt(a)*x**2/2,
 Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + B*a**(3/2)*x*sqrt(1 + c*x*
*2/a)/2 + B*a**(3/2)*x/(8*sqrt(1 + c*x**2/a)) + 3*B*sqrt(a)*c*x**3/(8*sqrt(
1 + c*x**2/a)) + 3*B*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*sqrt(c)) + B*c**2*x**
5/(4*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.332 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=108

$$a^{3/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{\left(a+cx^2\right)^{3/2}(3A-Bx)}{3x}+\frac{1}{2}\sqrt{a+cx^2}\,(2aB+3Acx)+\frac{3}{2}aA\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Rubi [A] time = 0.08, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 815, 844, 217, 206, 266, 63, 208}

$$a^{3/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{\left(a+cx^2\right)^{3/2}(3A-Bx)}{3x}+\frac{1}{2}\sqrt{a+cx^2}\,(2aB+3Acx)+\frac{3}{2}aA\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((2*a*B + 3*A*c*x)*Sqrt[a + c*x^2])/2 - ((3*A - B*x)*(a + c*x^2)^(3/2))/(3*
x) + (3*a*A*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - a^(3/2)*B*Arc
Tanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx = -\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x} - \frac{1}{2}\int \frac{(-2aB-6Acx)\sqrt{a+cx^2}}{x}\,dx$$

$$= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2} - \frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x} - \frac{\int \frac{-4a^2Bc-6aAc^2x}{x\sqrt{a+cx^2}}\,dx}{4c}$$

$$= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2} - \frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x} + \left(a^2B\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx + \frac{1}{2}(3$$

$$= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2} - \frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x} + \frac{1}{2}\left(a^2B\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\right.$$

$$= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2} - \frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x} + \frac{3}{2}aA\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

$$= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2} - \frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x} + \frac{3}{2}aA\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Mathematica [C] time = 0.16, size = 105, normalized size = 0.97

$$-a^{3/2}B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right) - \frac{a^2A\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{a+cx^2}} + \frac{1}{3}B\sqrt{a+cx^2}\left(4a+cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^2,x]
```

[Out] (B*Sqrt[a + c*x^2]*(4*a + c*x^2))/3 - a^(3/2)*B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]] - (a^2*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-3/2, -1/2, 1/2, -((c*x^2)/a)])/(x*Sqrt[a + c*x^2])

IntegrateAlgebraic [A] time = 0.40, size = 115, normalized size = 1.06

$$2a^{3/2}B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{\sqrt{a+cx^2}\,\left(-6aA+8aBx+3Acx^2+2Bcx^3\right)}{6x}-\frac{3}{2}aA\sqrt{c}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^2,x]

[Out] (Sqrt[a + c*x^2]*(-6*a*A + 8*a*B*x + 3*A*c*x^2 + 2*B*c*x^3))/(6*x) + 2*a^(3/2)*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]] - (3*a*A*Sqrt[c]*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/2

fricas [A] time = 0.49, size = 411, normalized size = 3.81

$$\left[\frac{9Aa\sqrt{c}\,x\log\left(-2cx^2-2\sqrt{cx^2+a}\sqrt{c}\,x-a\right)+6Ba^{\frac{3}{2}}x\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)+2\left(2Bcx^3+3Acx^2+8Bax-6Aa\right)\sqrt{cx^2+a}}{12x},\ -\frac{9Aa\sqrt{-c}\,x\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-3Ba^{\frac{3}{2}}x\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)-\left(2Bcx^3+3Acx^2+8Bax-6Aa\right)\sqrt{cx^2+a}}{6x},\ \frac{12B\sqrt{-a}\,ax\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+9Aa\sqrt{c}\,x\log\left(-2cx^2-2\sqrt{cx^2+a}\sqrt{c}\,x-a\right)+2\left(2Bcx^3+3Acx^2+8Bax-6Aa\right)\sqrt{cx^2+a}}{12x},\ -\frac{9Aa\sqrt{-c}\,x\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-6B\sqrt{-a}\,ax\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(2Bcx^3+3Acx^2+8Bax-6Aa\right)\sqrt{cx^2+a}}{6x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^2,x, algorithm="fricas")

[Out] [1/12*(9*A*a*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 6*B*a^(3/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(2*B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 + a))/x, -1/6*(9*A*a*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 3*B*a^(3/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - (2*B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 + a))/x, 1/12*(12*B*sqrt(-a)*a*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 9*A*a*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(2*B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 + a))/x, -1/6*(9*A*a*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 6*B*sqrt(-a)*a*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (2*B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 + a))/x]

giac [A] time = 0.20, size = 124, normalized size = 1.15

$$\frac{2\,Ba^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{3}{2}\,Aa\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{2\,Aa^2\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a}+\frac{1}{6}\,\sqrt{cx^2+a}\,(8\,Ba+(2\,Bcx+3\,Ac)x)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^2,x, algorithm="giac")

[Out] 2*B*a^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 3/2*A*a*sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 2*A*a^2*sqrt(c)/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a) + 1/6*sqrt(c*x^2 + a)*(8*B*a + (2*B*c*x + 3*A*c)*x)

maple [A] time = 0.06, size = 126, normalized size = 1.17

$$\frac{3Aa\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2}-B\,a^{\frac{3}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{3\sqrt{c\,x^2+a}\,Acx}{2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Acx}{a}+\sqrt{c\,x^2+a}\,Ba+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B}{3}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^2,x)

[Out] -A/a/x*(c*x^2+a)^(5/2)+A*c/a*x*(c*x^2+a)^(3/2)+3/2*A*c*x*(c*x^2+a)^(1/2)+3/2*A*c^(1/2)*a*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/3*B*(c*x^2+a)^(3/2)-B*a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+B*(c*x^2+a)^(1/2)*a

maxima [A] time = 0.55, size = 88, normalized size = 0.81

$$\frac{3}{2}\sqrt{cx^2+a}\,Acx+\frac{3}{2}\,Aa\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-Ba^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{3}\left(cx^2+a\right)^{\frac{3}{2}}B+\sqrt{cx^2+a}\,Ba-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] 3/2*sqrt(c*x^2 + a)*A*c*x + 3/2*A*a*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - B*a^(3
/2)*arcsinh(a/(sqrt(a*c)*abs(x))) + 1/3*(c*x^2 + a)^(3/2)*B + sqrt(c*x^2 +
a)*B*a - (c*x^2 + a)^(3/2)*A/x
```

mupad [B] time = 1.98, size = 86, normalized size = 0.80

$$\frac{B\left(c\,x^2+a\right)^{3/2}}{3}-B\,a^{3/2}\operatorname{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)+B\,a\,\sqrt{c\,x^2+a}-\frac{A\left(c\,x^2+a\right)^{3/2}{}_2\mathrm{F}_1\left(-\frac{3}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\left(\frac{c\,x^2}{a}+1\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^2,x)
```

```
[Out] (B*(a + c*x^2)^(3/2))/3 - B*a^(3/2)*atanh((a + c*x^2)^(1/2)/a^(1/2)) + B*a*
(a + c*x^2)^(1/2) - (A*(a + c*x^2)^(3/2)*hypergeom([-3/2, -1/2], 1/2, -(c*x
^2)/a))/(x*((c*x^2)/a + 1)^(3/2))
```

sympy [A] time = 7.07, size = 184, normalized size = 1.70

$$-\frac{Aa^{\frac{3}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+\frac{A\sqrt{a}\,cx\sqrt{1+\frac{cx^2}{a}}}{2}-\frac{A\sqrt{a}\,cx}{\sqrt{1+\frac{cx^2}{a}}}+\frac{3Aa\sqrt{c}\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2}-Ba^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Ba^2}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{Ba\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}+Bc\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**2,x)
```

```
[Out] -A*a**(3/2)/(x*sqrt(1 + c*x**2/a)) + A*sqrt(a)*c*x*sqrt(1 + c*x**2/a)/2 - A
*sqrt(a)*c*x/sqrt(1 + c*x**2/a) + 3*A*a*sqrt(c)*asinh(sqrt(c)*x/sqrt(a))/2
- B*a**(3/2)*asinh(sqrt(a)/(sqrt(c)*x)) + B*a**2/(sqrt(c)*x*sqrt(a/(c*x**2)
 + 1)) + B*a*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + B*c*Piecewise((sqrt(a)*x**2/2
, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True))
```

3.333 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=111

$$-\frac{\left(a+cx^2\right)^{3/2}(A-Bx)}{2x^2}-\frac{3\sqrt{a+cx^2}\,(aB-Acx)}{2x}-\frac{3}{2}\sqrt{a}\,Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3}{2}aB\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Rubi [A] time = 0.08, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {813, 844, 217, 206, 266, 63, 208}

$$-\frac{\left(a+cx^2\right)^{3/2}(A-Bx)}{2x^2}-\frac{3\sqrt{a+cx^2}\,(aB-Acx)}{2x}-\frac{3}{2}\sqrt{a}\,Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3}{2}aB\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (-3*(a*B - A*c*x)*Sqrt[a + c*x^2])/(2*x) - ((A - B*x)*(a + c*x^2)^(3/2))/(2
*x^2) + (3*a*B*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - (3*Sqrt[a]
*A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx = -\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2} - \frac{3}{8}\int \frac{(-4aB-4Acx)\sqrt{a+cx^2}}{x^2}\,dx$$

$$= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x} - \frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2} + \frac{3}{16}\int \frac{8aAc+8aBcx}{x\sqrt{a+cx^2}}\,dx$$

$$= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x} - \frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2} + \frac{1}{2}(3aAc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx + \frac{1}{2}($$

$$= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x} - \frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2} + \frac{1}{4}(3aAc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,d\right.$$

$$= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x} - \frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2} + \frac{3}{2}aB\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) + $$

$$= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x} - \frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2} + \frac{3}{2}aB\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) - $$

Mathematica [C] time = 0.04, size = 90, normalized size = 0.81

$$\frac{Ac\left(a+cx^2\right)^{5/2}\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{cx^2}{a}+1\right)}{5a^2} - \frac{aB\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^3,x]
```

```
[Out] -((a*B*Sqrt[a + c*x^2]*Hypergeometric2F1[-3/2, -1/2, 1/2, -((c*x^2)/a)])/(x
*Sqrt[1 + (c*x^2)/a])) + (A*c*(a + c*x^2)^(5/2)*Hypergeometric2F1[2, 5/2, 7
/2, 1 + (c*x^2)/a])/(5*a^2)
```

IntegrateAlgebraic [A] time = 0.47, size = 115, normalized size = 1.04

$$\frac{\sqrt{a+cx^2}\left(-aA-2aBx+2Acx^2+Bcx^3\right)}{2x^2} + 3\sqrt{a}\,Ac\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+cx^2}}{\sqrt{a}}\right) - \frac{3}{2}aB\sqrt{c}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-(a*A) - 2*a*B*x + 2*A*c*x^2 + B*c*x^3))/(2*x^2) + 3*Sqrt
[a]*A*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]] - (3*a*B*Sqr
t[c]*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/2
```

fricas [A] time = 0.48, size = 425, normalized size = 3.83

$$\left[\frac{3\,Ba\sqrt{c}x^2\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+3\,A\sqrt{a}cx^2\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(Bcx^3+2\,Acx^2-2\,Bax-Aa\right)\sqrt{cx^2+a}}{4\,x^2},\ -\frac{6\,Ba\sqrt{-c}x^2\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-3\,A\sqrt{a}cx^2\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(Bcx^3+2\,Acx^2-2\,Bax-Aa\right)\sqrt{cx^2+a}}{4\,x^2},\ \frac{6\,A\sqrt{-a}cx^2\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+3\,Ba\sqrt{c}x^2\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+2\left(Bcx^3+2\,Acx^2-2\,Bax-Aa\right)\sqrt{cx^2+a}}{4\,x^2},\ -\frac{3\,Ba\sqrt{-c}x^2\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-3\,A\sqrt{-a}cx^2\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(Bcx^3+2\,Acx^2-2\,Bax-Aa\right)\sqrt{cx^2+a}}{2\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/4*(3*B*a*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 3
*A*sqrt(a)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(B
*c*x^3 + 2*A*c*x^2 - 2*B*a*x - A*a)*sqrt(c*x^2 + a))/x^2, -1/4*(6*B*a*sqrt(
-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 3*A*sqrt(a)*c*x^2*log(-(c*x^2
- 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(B*c*x^3 + 2*A*c*x^2 - 2*B*a*x
- A*a)*sqrt(c*x^2 + a))/x^2, 1/4*(6*A*sqrt(-a)*c*x^2*arctan(sqrt(-a)/sqrt(c
*x^2 + a)) + 3*B*a*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
 a) + 2*(B*c*x^3 + 2*A*c*x^2 - 2*B*a*x - A*a)*sqrt(c*x^2 + a))/x^2, -1/2*(3
*B*a*sqrt(-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 3*A*sqrt(-a)*c*x^2*a
rctan(sqrt(-a)/sqrt(c*x^2 + a)) - (B*c*x^3 + 2*A*c*x^2 - 2*B*a*x - A*a)*sqr
t(c*x^2 + a))/x^2]
```

giac [B] time = 0.25, size = 191, normalized size = 1.72

$$\frac{3\,Aac\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{3}{2}\,Ba\sqrt{c}\,\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\frac{1}{2}\,(Bcx+2\,Ac)\sqrt{cx^2+a}+\frac{\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Aac+2\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Ba^2\sqrt{c}+\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Aa^2c-2\,Ba^3\sqrt{c}}{\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 3*A*a*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 3/2*B*a*
sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/2*(B*c*x + 2*A*c)*sqrt(c
*x^2 + a) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a*c + 2*(sqrt(c)*x - sqrt(c*
x^2 + a))^2*B*a^2*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2 + a))*A*a^2*c - 2*B*a^3
*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2
```

maple [A] time = 0.06, size = 150, normalized size = 1.35

$$-\frac{3A\sqrt{a}\,c\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2}+\frac{3Ba\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2}+\frac{3\sqrt{c\,x^2+a}\,Bcx}{2}+\frac{3\sqrt{c\,x^2+a}\,Ac}{2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Bcx}{a}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Ac}{2a}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B}{ax}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{2a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+a)^(5/2)+1/2*A*c/a*(c*x^2+a)^(3/2)-3/2*A*c*a^(1/2)*ln((
2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+3/2*A*c*(c*x^2+a)^(1/2)-B/a/x*(c*x^2+a)^(
5/2)+B*c/a*x*(c*x^2+a)^(3/2)+3/2*B*c*x*(c*x^2+a)^(1/2)+3/2*B*c^(1/2)*a*ln(c
^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.56, size = 112, normalized size = 1.01

$$\frac{3}{2}\,\sqrt{cx^2+a}\,Bcx+\frac{3}{2}\,Ba\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{3}{2}\,A\sqrt{a}c\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{3}{2}\,\sqrt{cx^2+a}\,Ac+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac}{2\,a}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{x}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{2\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] 3/2*sqrt(c*x^2 + a)*B*c*x + 3/2*B*a*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - 3/2*A*
sqrt(a)*c*arcsinh(a/(sqrt(a*c)*abs(x))) + 3/2*sqrt(c*x^2 + a)*A*c + 1/2*(c*
```

```
x^2 + a)^(3/2)*A*c/a - (c*x^2 + a)^(3/2)*B/x - 1/2*(c*x^2 + a)^(5/2)*A/(a*x
^2)
```

mupad [B] time = 2.20, size = 91, normalized size = 0.82

$$A\,c\,\sqrt{c\,x^2+a}-\frac{A\,a\,\sqrt{c\,x^2+a}}{2\,x^2}-\frac{3\,A\,\sqrt{a}\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2}-\frac{B\,{\left(c\,x^2+a\right)}^{3/2}\,{}_2\mathrm{F}_1\left(-\frac{3}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\,{\left(\frac{c\,x^2}{a}+1\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^3,x)
```

```
[Out] A*c*(a + c*x^2)^(1/2) - (A*a*(a + c*x^2)^(1/2))/(2*x^2) - (3*A*a^(1/2)*c*at
anh((a + c*x^2)^(1/2)/a^(1/2)))/2 - (B*(a + c*x^2)^(3/2)*hypergeom([-3/2, -
1/2], 1/2, -(c*x^2)/a))/(x*((c*x^2)/a + 1)^(3/2))
```

sympy [A] time = 8.19, size = 182, normalized size = 1.64

$$-\frac{3A\sqrt{a}c\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{2}-\frac{Aa\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2x}+\frac{Aa\sqrt{c}}{x\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{3}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}-\frac{Ba^{\frac{3}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+\frac{B\sqrt{a}cx\sqrt{1+\frac{cx^2}{a}}}{2}-\frac{B\sqrt{a}cx}{\sqrt{1+\frac{cx^2}{a}}}+\frac{3Ba\sqrt{c}\,\mathrm{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**3,x)
```

```
[Out] -3*A*sqrt(a)*c*asinh(sqrt(a)/(sqrt(c)*x))/2 - A*a*sqrt(c)*sqrt(a/(c*x**2) +
 1)/(2*x) + A*a*sqrt(c)/(x*sqrt(a/(c*x**2) + 1)) + A*c**(3/2)*x/sqrt(a/(c*x
**2) + 1) - B*a**(3/2)/(x*sqrt(1 + c*x**2/a)) + B*sqrt(a)*c*x*sqrt(1 + c*x*
*2/a)/2 - B*sqrt(a)*c*x/sqrt(1 + c*x**2/a) + 3*B*a*sqrt(c)*asinh(sqrt(c)*x/
sqrt(a))/2
```

3.334 $\int \frac{(A+Bx)(a+cx^2)^{3/2}}{x^4} dx$

Optimal. Leaf size=109

$$-\frac{c\sqrt{a+cx^2}\,(2A-3Bx)}{2x}-\frac{\left(a+cx^2\right)^{3/2}(2A+3Bx)}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{3}{2}\sqrt{a}\,Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Rubi [A] time = 0.09, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {811, 813, 844, 217, 206, 266, 63, 208}

$$-\frac{c\sqrt{a+cx^2}\,(2A-3Bx)}{2x}-\frac{\left(a+cx^2\right)^{3/2}(2A+3Bx)}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{3}{2}\sqrt{a}\,Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^4,x]
```

```
[Out] -(c*(2*A - 3*B*x)*Sqrt[a + c*x^2])/(2*x) - ((2*A + 3*B*x)*(a + c*x^2)^(3/2)
)/(6*x^3) + A*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (3*Sqrt[a]*B*c
*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
```

```
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx &= -\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}-\frac{\int \frac{(-4aAc-6aBcx)\sqrt{a+cx^2}}{x^2}\,dx}{4a}\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+\frac{\int \frac{12a^2Bc+8aAc^2x}{x\sqrt{a+cx^2}}\,dx}{8a}\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+\frac{1}{2}(3aBc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+\frac{1}{4}(3aBc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\right.\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-
\end{aligned}$$

Mathematica [C] time = 0.04, size = 92, normalized size = 0.84

$$\frac{Bc\left(a+cx^2\right)^{5/2}\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{cx^2}{a}+1\right)}{5a^2}-\frac{aA\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)}{3x^3\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^4,x]
```

```
[Out] -1/3*(a*A*Sqrt[a + c*x^2]*Hypergeometric2F1[-3/2, -3/2, -1/2, -((c*x^2)/a)]
)/(x^3*Sqrt[1 + (c*x^2)/a]) + (B*c*(a + c*x^2)^(5/2)*Hypergeometric2F1[2, 5
/2, 7/2, 1 + (c*x^2)/a])/(5*a^2)
```

IntegrateAlgebraic [A] time = 0.49, size = 113, normalized size = 1.04

$$\frac{\sqrt{a+cx^2}\left(-2aA-3aBx-8Acx^2+6Bcx^3\right)}{6x^3}-Ac^{3/2}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)+3\sqrt{a}\,Bc\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-2*a*A - 3*a*B*x - 8*A*c*x^2 + 6*B*c*x^3))/(6*x^3) + 3*Sq
rt[a]*B*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]] - A*c^(3/2
)*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]]
```

fricas [A] time = 0.49, size = 426, normalized size = 3.91

$$\left[\frac{6\,Ac^{\frac{3}{2}}x^3\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+9\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(6\,Bcx^3-8\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{12\,x^3},\ -\frac{12\,A\sqrt{-c}\,cx^3\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-9\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(6\,Bcx^3-8\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{12\,x^3},\ \frac{9\,B\sqrt{-a}\,cx^3\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+3\,Ac^{\frac{3}{2}}x^3\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+\left(6\,Bcx^3-8\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{6\,x^3},\ -\frac{6\,A\sqrt{-c}\,cx^3\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-9\,B\sqrt{-a}\,cx^3\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(6\,Bcx^3-8\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{6\,x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/12*(6*A*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 9*
B*sqrt(a)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(6*
B*c*x^3 - 8*A*c*x^2 - 3*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/x^3, -1/12*(12*A*sq
rt(-c)*c*x^3*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*B*sqrt(a)*c*x^3*log(-(c
*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(6*B*c*x^3 - 8*A*c*x^2 - 3
*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/x^3, 1/6*(9*B*sqrt(-a)*c*x^3*arctan(sqrt(-
a)/sqrt(c*x^2 + a)) + 3*A*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt
(c)*x - a) + (6*B*c*x^3 - 8*A*c*x^2 - 3*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/x^3
, -1/6*(6*A*sqrt(-c)*c*x^3*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*B*sqrt(-a
)*c*x^3*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (6*B*c*x^3 - 8*A*c*x^2 - 3*B*a*x
 - 2*A*a)*sqrt(c*x^2 + a))/x^3]
```

giac [B] time = 0.22, size = 211, normalized size = 1.94

$$\frac{3\,Bac\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-Ac^{\frac{3}{2}}\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\sqrt{cx^2+a}\,Bc+\frac{3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^5Bac+12\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Aac^{\frac{3}{2}}-12\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Aa^2c^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^3c+8\,Aa^3c^{\frac{3}{2}}}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] 3*B*a*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - A*c^(3/2
)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + sqrt(c*x^2 + a)*B*c + 1/3*(3*(sq
rt(c)*x - sqrt(c*x^2 + a))^5*B*a*c + 12*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a
*c^(3/2) - 12*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^2*c^(3/2) - 3*(sqrt(c)*x
- sqrt(c*x^2 + a))*B*a^3*c + 8*A*a^3*c^(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a)
)^2 - a)^3
```

maple [A] time = 0.06, size = 174, normalized size = 1.60

$$A\,c^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)-\frac{3B\sqrt{a}\,c\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2}+\frac{\sqrt{c\,x^2+a}\,A\,c^2x}{a}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}A\,c^2x}{3a^2}+\frac{3\sqrt{c\,x^2+a}\,Bc}{2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Bc}{2a}-\frac{2\left(c\,x^2+a\right)^{\frac{5}{2}}Ac}{3a^2x}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B}{2a\,x^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^4,x)
```

```
[Out] -1/3*A/a/x^3*(c*x^2+a)^(5/2)-2/3*A*c/a^2/x*(c*x^2+a)^(5/2)+2/3*A*c^2/a^2*x*
(c*x^2+a)^(3/2)+A*c^2/a*x*(c*x^2+a)^(1/2)+A*c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^
```

```
(1/2))-1/2*B/a/x^2*(c*x^2+a)^(5/2)+1/2*B*c/a*(c*x^2+a)^(3/2)-3/2*B*c*a^(1/2
)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+3/2*B*c*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.53, size = 136, normalized size = 1.25

$$\frac{\sqrt{cx^2+a}\,Ac^2x}{a}+Ac^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{3}{2}\,B\sqrt{a}\,c\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{3}{2}\,\sqrt{cx^2+a}\,Bc+\frac{(cx^2+a)^{\frac{3}{2}}Bc}{2\,a}-\frac{2\,(cx^2+a)^{\frac{3}{2}}Ac}{3\,ax}-\frac{(cx^2+a)^{\frac{5}{2}}B}{2\,ax^2}-\frac{(cx^2+a)^{\frac{5}{2}}A}{3\,ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] sqrt(c*x^2 + a)*A*c^2*x/a + A*c^(3/2)*arcsinh(c*x/sqrt(a*c)) - 3/2*B*sqrt(a
)*c*arcsinh(a/(sqrt(a*c)*abs(x))) + 3/2*sqrt(c*x^2 + a)*B*c + 1/2*(c*x^2 +
a)^(3/2)*B*c/a - 2/3*(c*x^2 + a)^(3/2)*A*c/(a*x) - 1/2*(c*x^2 + a)^(5/2)*B/
(a*x^2) - 1/3*(c*x^2 + a)^(5/2)*A/(a*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/x^4, x)
```

sympy [B] time = 7.33, size = 202, normalized size = 1.85

$$-\frac{A\sqrt{a}\,c}{x\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3}+Ac^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Ac^2x}{\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}-\frac{3B\sqrt{a}\,c\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2}-\frac{Ba\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{2x}+\frac{Ba\sqrt{c}}{x\sqrt{\frac{a}{cx^2}+1}}+\frac{Bc^{\frac{3}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**4,x)
```

```
[Out] -A*sqrt(a)*c/(x*sqrt(1 + c*x**2/a)) - A*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x
**2) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/3 + A*c**(3/2)*asinh(sqrt(c)*x/sqrt(
a)) - A*c**2*x/(sqrt(a)*sqrt(1 + c*x**2/a)) - 3*B*sqrt(a)*c*asinh(sqrt(a)/(
sqrt(c)*x))/2 - B*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) + B*a*sqrt(c)/(x*sqr
t(a/(c*x**2) + 1)) + B*c**(3/2)*x/sqrt(a/(c*x**2) + 1)
```

3.335 $\int \frac{(A+Bx)(a+cx^2)^{3/2}}{x^5}\,dx$

Optimal. Leaf size=111

$$-\frac{c\sqrt{a+cx^2}\,(3A+8Bx)}{8x^2}-\frac{(a+cx^2)^{3/2}\,(3A+4Bx)}{12x^4}-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}+Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {811, 844, 217, 206, 266, 63, 208}

$$-\frac{c\sqrt{a+cx^2}\,(3A+8Bx)}{8x^2}-\frac{(a+cx^2)^{3/2}\,(3A+4Bx)}{12x^4}-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}+Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -(c*(3*A + 8*B*x)*Sqrt[a + c*x^2])/(8*x^2) - ((3*A + 4*B*x)*(a + c*x^2)^(3/
2))/(12*x^4) + B*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (3*A*c^2*Ar
cTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*Sqrt[a])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
```

```
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^5}\,dx = -\frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} - \frac{\int \frac{(-6aAc-8aBcx)\sqrt{a+cx^2}}{x^3}\,dx}{8a}$$

$$= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + \frac{\int \frac{12a^2Ac^2+32a^2Bc^2x}{x\sqrt{a+cx^2}}\,dx}{32a^2}$$

$$= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + \frac{1}{8}\left(3Ac^2\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx +$$

$$= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + \frac{1}{16}\left(3Ac^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+}}\right.$$

$$= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) +$$

$$= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) -$$

Mathematica [C] time = 0.08, size = 114, normalized size = 1.03

$$-\frac{\sqrt{a+cx^2}\left(8a^2Bx\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)+9Ac^2x^4\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)+3aA\left(2a+5cx^2\right)\sqrt{\frac{cx^2}{a}+1}\right)}{24ax^4\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -1/24*(Sqrt[a + c*x^2]*(3*a*A*(2*a + 5*c*x^2)*Sqrt[1 + (c*x^2)/a] + 9*A*c^2
*x^4*ArcTanh[Sqrt[1 + (c*x^2)/a]] + 8*a^2*B*x*Hypergeometric2F1[-3/2, -3/2,
 -1/2, -((c*x^2)/a)]))/(a*x^4*Sqrt[1 + (c*x^2)/a])
```

IntegrateAlgebraic [A] time = 0.63, size = 117, normalized size = 1.05

$$\frac{\sqrt{a+cx^2}\left(-6aA-8aBx-15Acx^2-32Bcx^3\right)}{24x^4}+\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{4\sqrt{a}}-Bc^{3/2}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-6*a*A - 8*a*B*x - 15*A*c*x^2 - 32*B*c*x^3))/(24*x^4) + (
3*A*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(4*Sqrt[a])
 - B*c^(3/2)*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]]
```

fricas [A] time = 0.48, size = 474, normalized size = 4.27

$$\left[\frac{24\,Bac^{\frac{3}{2}}x^4\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+9\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(32\,Bacx^3+15\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{48\,ax^4}, -\frac{48\,Ba\sqrt{-c}\,cx^4\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-9\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(32\,Bacx^3+15\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{48\,ax^4}, \frac{9\,A\sqrt{-a}\,c^2x^4\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+12\,Bac^{\frac{3}{2}}x^4\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)-\left(32\,Bacx^3+15\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{24\,ax^4}, -\frac{24\,Ba\sqrt{-c}\,cx^4\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-9\,A\sqrt{-a}\,c^2x^4\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+\left(32\,Bacx^3+15\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{24\,ax^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/48*(24*B*a*c^(3/2)*x^4*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 9*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) -
2*(32*B*a*c*x^3 + 15*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a*x
^4), -1/48*(48*B*a*sqrt(-c)*c*x^4*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*A*
sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(32
*B*a*c*x^3 + 15*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a*x^4),
1/24*(9*A*sqrt(-a)*c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 12*B*a*c^(3/2
)*x^4*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) - (32*B*a*c*x^3 + 15*
A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a*x^4), -1/24*(24*B*a*sq
rt(-c)*c*x^4*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*A*sqrt(-a)*c^2*x^4*arct
an(sqrt(-a)/sqrt(c*x^2 + a)) + (32*B*a*c*x^3 + 15*A*a*c*x^2 + 8*B*a^2*x + 6
*A*a^2)*sqrt(c*x^2 + a))/(a*x^4)]
```

giac [B] time = 0.22, size = 285, normalized size = 2.57

$$\frac{3\,Ac^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}}-Bc^{\frac{3}{2}}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{15\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^7Ac^2+48\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^6Bac^{\frac{3}{2}}+9\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^5Aac^2-96\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^4Ba^2c^{\frac{3}{2}}+9\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^3Aa^2c^2+80\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2Ba^3c^{\frac{3}{2}}+15\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)Aa^3c^2-32\,Ba^4c^{\frac{3}{2}}}{12\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] 3/4*A*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*c^(3
/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/12*(15*(sqrt(c)*x - sqrt(c*x
^2 + a))^7*A*c^2 + 48*(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a*c^(3/2) + 9*(sqrt
(c)*x - sqrt(c*x^2 + a))^5*A*a*c^2 - 96*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a
^2*c^(3/2) + 9*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^2*c^2 + 80*(sqrt(c)*x -
sqrt(c*x^2 + a))^2*B*a^3*c^(3/2) + 15*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^3*c
^2 - 32*B*a^4*c^(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^4
```

maple [B] time = 0.05, size = 202, normalized size = 1.82

$$-\frac{3Ac^2\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+Bc^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{cx^2+a}\right)+\frac{\sqrt{cx^2+a}\,Bc^2x}{a}+\frac{3\sqrt{cx^2+a}\,Ac^2}{8a}+\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Bc^2x}{3a^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac^2}{8a^2}-\frac{2\left(cx^2+a\right)^{\frac{5}{2}}Bc}{3a^2x}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ac}{8a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}B}{3ax^3}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{4ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^5,x)
```

```
[Out] -1/4*A/a/x^4*(c*x^2+a)^(5/2)-1/8*A*c/a^2/x^2*(c*x^2+a)^(5/2)+1/8*A*c^2/a^2*
(c*x^2+a)^(3/2)-3/8*A*c^2/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+3/8
*A*c^2/a*(c*x^2+a)^(1/2)-1/3*B/a/x^3*(c*x^2+a)^(5/2)-2/3*B*c/a^2/x*(c*x^2+a
)^(5/2)+2/3*B*c^2/a^2*x*(c*x^2+a)^(3/2)+B*c^2/a*x*(c*x^2+a)^(1/2)+B*c^(3/2)
*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.56, size = 164, normalized size = 1.48

$$\frac{\sqrt{cx^2+a}\,Bc^2x}{a}+Bc^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{3\,Ac^2\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac^2}{8\,a^2}+\frac{3\,\sqrt{cx^2+a}\,Ac^2}{8\,a}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Bc}{3\,ax}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ac}{8\,a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}B}{3\,ax^3}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{4\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] sqrt(c*x^2 + a)*B*c^2*x/a + B*c^(3/2)*arcsinh(c*x/sqrt(a*c)) - 3/8*A*c^2*ar
csinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/8*(c*x^2 + a)^(3/2)*A*c^2/a^2 + 3/8
*sqrt(c*x^2 + a)*A*c^2/a - 2/3*(c*x^2 + a)^(3/2)*B*c/(a*x) - 1/8*(c*x^2 + a
)^(5/2)*A*c/(a^2*x^2) - 1/3*(c*x^2 + a)^(5/2)*B/(a*x^3) - 1/4*(c*x^2 + a)^(
5/2)*A/(a*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/x^5, x)
```

sympy [B] time = 9.34, size = 236, normalized size = 2.13

$$-\frac{Aa^2}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}} - \frac{3Aa\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}} - \frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{2x} - \frac{Ac^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^2}+1}} - \frac{3Ac^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8\sqrt{a}} - \frac{B\sqrt{a}\,c}{x\sqrt{1+\frac{cx^2}{a}}} - \frac{Ba\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3x^2} - \frac{Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3} + Bc^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right) - \frac{Bc^2x}{\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**5,x)
```

```
[Out] -A*a**2/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) - 3*A*a*sqrt(c)/(8*x**3*sqrt(
a/(c*x**2) + 1)) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/(2*x) - A*c**(3/2)/(8*x*
sqrt(a/(c*x**2) + 1)) - 3*A*c**2*asinh(sqrt(a)/(sqrt(c)*x))/(8*sqrt(a)) - B
*sqrt(a)*c/(x*sqrt(1 + c*x**2/a)) - B*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**
2) - B*c**(3/2)*sqrt(a/(c*x**2) + 1)/3 + B*c**(3/2)*asinh(sqrt(c)*x/sqrt(a)
) - B*c**2*x/(sqrt(a)*sqrt(1 + c*x**2/a))
```

3.336 $\int \frac{(A+Bx)(a+cx^2)^{3/2}}{x^6} dx$

Optimal. Leaf size=93

$$-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}$$

Rubi [A] time = 0.06, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {807, 266, 47, 63, 208}

$$-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{3Bc\sqrt{a+cx^2}}{8x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-3*B*c*Sqrt[a + c*x^2])/(8*x^2) - (B*(a + c*x^2)^(3/2))/(4*x^4) - (A*(a +
c*x^2)^(5/2))/(5*a*x^5) - (3*B*c^2*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*Sqr
t[a])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
```

```
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx &= -\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+B\int \frac{\left(a+cx^2\right)^{3/2}}{x^5}\,dx\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{2}B\,\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx,x,x^2\right)\\
&= -\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{8}(3Bc)\,\text{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right)\\
&= -\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{16}\left(3Bc^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\right.\\
&= -\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{8}(3Bc)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,\right.\\
&= -\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 103, normalized size = 1.11

$$
\frac{-\frac{\left(a+cx^2\right)\left(2a^2(4A+5Bx)+acx^2(16A+25Bx)+8Ac^2x^4\right)}{ax^5}-15Bc^2\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{40\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-(((a + c*x^2)*(8*A*c^2*x^4 + 2*a^2*(4*A + 5*B*x) + a*c*x^2*(16*A + 25*B*x
)))/(a*x^5)) - 15*B*c^2*Sqrt[1 + (c*x^2)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(
40*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.63, size = 106, normalized size = 1.14

$$
\frac{\sqrt{a+cx^2}\left(-8a^2A-10a^2Bx-16aAcx^2-25aBcx^3-8Ac^2x^4\right)}{40ax^5}+\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{4\sqrt{a}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-8*a^2*A - 10*a^2*B*x - 16*a*A*c*x^2 - 25*a*B*c*x^3 - 8*A
*c^2*x^4))/(40*a*x^5) + (3*B*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x
^2]/Sqrt[a]])/(4*Sqrt[a])
```

fricas [A] time = 0.45, size = 190, normalized size = 2.04

$$
\left[\frac{15\,B\sqrt{a}\,c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(8\,Ac^2x^4+25\,Bacx^3+16\,Aacx^2+10\,Ba^2x+8\,Aa^2\right)\sqrt{cx^2+a}}{80\,ax^5},\ \frac{15\,B\sqrt{-a}\,c^2x^5\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(8\,Ac^2x^4+25\,Bacx^3+16\,Aacx^2+10\,Ba^2x+8\,Aa^2\right)\sqrt{cx^2+a}}{40\,ax^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/80*(15*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/
x^2) - 2*(8*A*c^2*x^4 + 25*B*a*c*x^3 + 16*A*a*c*x^2 + 10*B*a^2*x + 8*A*a^2)
*sqrt(c*x^2 + a))/(a*x^5), 1/40*(15*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a)/sqrt
(c*x^2 + a)) - (8*A*c^2*x^4 + 25*B*a*c*x^3 + 16*A*a*c*x^2 + 10*B*a^2*x + 8*
A*a^2)*sqrt(c*x^2 + a))/(a*x^5)]
```

giac [B] time = 0.22, size = 232, normalized size = 2.49

$$\frac{3\,Bc^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}}+\frac{25\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^9Bc^2+40\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^8Ac^{\frac{5}{2}}-10\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^7Bac^2+80\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Aa^2c^{\frac{5}{2}}+10\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Ba^3c^2-25\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^4c^2+8\,Aa^4c^{\frac{5}{2}}}{20\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] 3/4*B*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 1/20*(
25*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*c^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + a))
^8*A*c^(5/2) - 10*(sqrt(c)*x - sqrt(c*x^2 + a))^7*B*a*c^2 + 80*(sqrt(c)*x -
 sqrt(c*x^2 + a))^4*A*a^2*c^(5/2) + 10*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^
3*c^2 - 25*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^4*c^2 + 8*A*a^4*c^(5/2))/((sqr
t(c)*x - sqrt(c*x^2 + a))^2 - a)^5
```

maple [A] time = 0.06, size = 125, normalized size = 1.34

$$-\frac{3B\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3\sqrt{c\,x^2+a}\,B\,c^2}{8a}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c^2}{8a^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Bc}{8a^2x^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B}{4a\,x^4}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{5a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^6,x)
```

```
[Out] -1/5*A*(c*x^2+a)^(5/2)/a/x^5-1/4*B/a/x^4*(c*x^2+a)^(5/2)-1/8*B*c/a^2/x^2*(c
*x^2+a)^(5/2)+1/8*B*c^2/a^2*(c*x^2+a)^(3/2)-3/8*B*c^2/a^(1/2)*ln((2*a+2*(c*
x^2+a)^(1/2)*a^(1/2))/x)+3/8*B*c^2/a*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.65, size = 113, normalized size = 1.22

$$-\frac{3\,Bc^2\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bc^2}{8\,a^2}+\frac{3\,\sqrt{cx^2+a}\,Bc^2}{8\,a}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc}{8\,a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}B}{4\,ax^4}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{5\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] -3/8*B*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/8*(c*x^2 + a)^(3/2)*B*
c^2/a^2 + 3/8*sqrt(c*x^2 + a)*B*c^2/a - 1/8*(c*x^2 + a)^(5/2)*B*c/(a^2*x^2)
 - 1/4*(c*x^2 + a)^(5/2)*B/(a*x^4) - 1/5*(c*x^2 + a)^(5/2)*A/(a*x^5)
```

mupad [B] time = 2.76, size = 73, normalized size = 0.78

$$\frac{3\,B\,a\,\sqrt{c\,x^2+a}}{8\,x^4}-\frac{3\,B\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,\sqrt{a}}-\frac{5\,B\,{\left(c\,x^2+a\right)}^{3/2}}{8\,x^4}-\frac{A\,{\left(c\,x^2+a\right)}^{5/2}}{5\,a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^6,x)
```

```
[Out] (3*B*a*(a + c*x^2)^(1/2))/(8*x^4) - (3*B*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2
)))/(8*a^(1/2)) - (5*B*(a + c*x^2)^(3/2))/(8*x^4) - (A*(a + c*x^2)^(5/2))/(
5*a*x^5)
```

sympy [B] time = 8.95, size = 199, normalized size = 2.14

$$-\frac{Aa\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{2Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{5x^2}-\frac{Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{5a}-\frac{Ba^2}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3Ba\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{Bc^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^2}+1}}-\frac{3Bc^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**6,x)
```

```
[Out] -A*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 2*A*c**(3/2)*sqrt(a/(c*x**2) +
 1)/(5*x**2) - A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(5*a) - B*a**2/(4*sqrt(c)*x*
*5*sqrt(a/(c*x**2) + 1)) - 3*B*a*sqrt(c)/(8*x**3*sqrt(a/(c*x**2) + 1)) - B*
c**(3/2)*sqrt(a/(c*x**2) + 1)/(2*x) - B*c**(3/2)/(8*x*sqrt(a/(c*x**2) + 1))
 - 3*B*c**2*asinh(sqrt(a)/(sqrt(c)*x))/(8*sqrt(a))
```

3.337 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=124

$$\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}+\frac{Ac^2\sqrt{a+cx^2}}{16ax^2}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}$$

Rubi [A] time = 0.08, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}+\frac{Ac^2\sqrt{a+cx^2}}{16ax^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (A*c^2*Sqrt[a + c*x^2])/(16*a*x^2) + (A*c*(a + c*x^2)^(3/2))/(24*a*x^4) - (
A*(a + c*x^2)^(5/2))/(6*a*x^6) - (B*(a + c*x^2)^(5/2))/(5*a*x^5) + (A*c^3*A
rcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(16*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx = -\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{\int \frac{(-6aB+Acx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx}{6a}$$

$$= -\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{5/2}}{5ax^5} - \frac{(Ac)\int \frac{\left(a+cx^2\right)^{3/2}}{x^5}\,dx}{6a}$$

$$= -\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{5/2}}{5ax^5} - \frac{(Ac)\,\mathrm{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx, x, x^2\right)}{12a}$$

$$= \frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{5/2}}{5ax^5} - \frac{\left(Ac^2\right)\mathrm{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx, x, x^2\right.}{16a}$$

$$= \frac{Ac^2\sqrt{a+cx^2}}{16ax^2} + \frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{5/2}}{5ax^5} - \frac{\left(Ac^3\right)\mathrm{Subst}\left(\right.}{}$$

$$= \frac{Ac^2\sqrt{a+cx^2}}{16ax^2} + \frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{5/2}}{5ax^5} - \frac{\left(Ac^2\right)\mathrm{Subst}\left(\right.}{}$$

$$= \frac{Ac^2\sqrt{a+cx^2}}{16ax^2} + \frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{6ax^6} - \frac{B\left(a+cx^2\right)^{5/2}}{5ax^5} + \frac{Ac^3\tanh^{-1}\left(\right.}{16a^{3/2}}$$

Mathematica [C] time = 0.02, size = 54, normalized size = 0.44

$$\frac{\left(a+cx^2\right)^{5/2}\left(Ac^3x^5\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{cx^2}{a}+1\right)-a^3B\right)}{5a^4x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^7,x]
```

```
[Out] ((a + c*x^2)^(5/2)*(-(a^3*B) + A*c^3*x^5*Hypergeometric2F1[5/2, 4, 7/2, 1 +
 (c*x^2)/a]))/(5*a^4*x^5)
```

IntegrateAlgebraic [A] time = 0.78, size = 115, normalized size = 0.93

$$\frac{\sqrt{a+cx^2}\left(-40a^2A-48a^2Bx-70aAcx^2-96aBcx^3-15Ac^2x^4-48Bc^2x^5\right)}{240ax^6} - \frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-40*a^2*A - 48*a^2*B*x - 70*a*A*c*x^2 - 96*a*B*c*x^3 - 15
*A*c^2*x^4 - 48*B*c^2*x^5))/(240*a*x^6) - (A*c^3*ArcTanh[(Sqrt[c]*x)/Sqrt[a
] - Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(3/2))
```

fricas [A] time = 0.47, size = 219, normalized size = 1.77

$$\left[\frac{15\,A\sqrt{a}c^{3}x^{6}\log\left(-\frac{cx^{2}+2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)-2\left(48\,Bac^{2}x^{5}+15\,Aac^{2}x^{4}+96\,Ba^{2}cx^{3}+70\,Aa^{2}cx^{2}+48\,Ba^{3}x+40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{480\,a^{2}x^{6}},\ -\frac{15\,A\sqrt{-a}c^{3}x^{6}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)+\left(48\,Bac^{2}x^{5}+15\,Aac^{2}x^{4}+96\,Ba^{2}cx^{3}+70\,Aa^{2}cx^{2}+48\,Ba^{3}x+40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{240\,a^{2}x^{6}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/480*(15*A*sqrt(a)*c^3*x^6*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) - 2*(48*B*a*c^2*x^5 + 15*A*a*c^2*x^4 + 96*B*a^2*c*x^3 + 70*A*a^2*c*x^
2 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a^2*x^6), -1/240*(15*A*sqrt(-a
)*c^3*x^6*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (48*B*a*c^2*x^5 + 15*A*a*c^2*x
^4 + 96*B*a^2*c*x^3 + 70*A*a^2*c*x^2 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 +
a))/(a^2*x^6)]
```

giac [B] time = 0.27, size = 379, normalized size = 3.06

$$-\frac{Ac^{3}\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{8\sqrt{-a}\,a}+\frac{15\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{11}Ac^{3}+240\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{10}Bac^{\frac{5}{2}}+235\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{9}Aac^{3}-240\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{8}Ba^{2}c^{\frac{5}{2}}+390\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{7}Aa^{2}c^{3}+480\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{6}Ba^{3}c^{\frac{5}{2}}+390\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Aa^{3}c^{3}-480\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Ba^{4}c^{\frac{5}{2}}+235\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{3}Aa^{4}c^{3}+48\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Ba^{5}c^{\frac{5}{2}}+15\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Aa^{5}c^{3}-48\,Ba^{6}c^{\frac{5}{2}}}{120\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{6}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] -1/8*A*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/120*(15*(sqrt(c)*x - sqrt(c*x^2 + a))^11*A*c^3 + 240*(sqrt(c)*x - sqrt(c*x
^2 + a))^10*B*a*c^(5/2) + 235*(sqrt(c)*x - sqrt(c*x^2 + a))^9*A*a*c^3 - 240
*(sqrt(c)*x - sqrt(c*x^2 + a))^8*B*a^2*c^(5/2) + 390*(sqrt(c)*x - sqrt(c*x^
2 + a))^7*A*a^2*c^3 + 480*(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^3*c^(5/2) + 3
90*(sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a^3*c^3 - 480*(sqrt(c)*x - sqrt(c*x^2
+ a))^4*B*a^4*c^(5/2) + 235*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^4*c^3 + 48*
(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^5*c^(5/2) + 15*(sqrt(c)*x - sqrt(c*x^2
+ a))*A*a^5*c^3 - 48*B*a^6*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^
6*a)
```

maple [A] time = 0.07, size = 146, normalized size = 1.18

$$\frac{A\,c^{3}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^{2}+a}\,A\,c^{3}}{16a^{2}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}A\,c^{3}}{48a^{3}}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}A\,c^{2}}{48a^{3}x^{2}}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}A c}{24a^{2}x^{4}}-\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}B}{5a\,x^{5}}-\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}A}{6a\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^7,x)
```

```
[Out] -1/5*B*(c*x^2+a)^(5/2)/a/x^5-1/6*A*(c*x^2+a)^(5/2)/a/x^6+1/24*A*c/a^2/x^4*(
c*x^2+a)^(5/2)+1/48*A*c^2/a^3/x^2*(c*x^2+a)^(5/2)-1/48*A*c^3/a^3*(c*x^2+a)^
(3/2)+1/16*A*c^3/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-1/16*A*c^3/a
^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.58, size = 134, normalized size = 1.08

$$\frac{Ac^{3}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,a^{\frac{3}{2}}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{3}}{48\,a^{3}}-\frac{\sqrt{cx^{2}+a}\,Ac^{3}}{16\,a^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ac^{2}}{48\,a^{3}x^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ac}{24\,a^{2}x^{4}}-\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}B}{5\,ax^{5}}-\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}A}{6\,ax^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] 1/16*A*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/48*(c*x^2 + a)^(3/2)*A
*c^3/a^3 - 1/16*sqrt(c*x^2 + a)*A*c^3/a^2 + 1/48*(c*x^2 + a)^(5/2)*A*c^2/(a
^3*x^2) + 1/24*(c*x^2 + a)^(5/2)*A*c/(a^2*x^4) - 1/5*(c*x^2 + a)^(5/2)*B/(a
*x^5) - 1/6*(c*x^2 + a)^(5/2)*A/(a*x^6)
```

mupad [B] time = 3.21, size = 94, normalized size = 0.76

$$\frac{A\,a\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{A\,{\left(c\,x^2+a\right)}^{3/2}}{6\,x^6}-\frac{A\,{\left(c\,x^2+a\right)}^{5/2}}{16\,a\,x^6}-\frac{B\,{\left(c\,x^2+a\right)}^{5/2}}{5\,a\,x^5}-\frac{A\,c^3\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,1{}\mathrm{i}}{16\,a^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^7,x)
```

```
[Out] (A*a*(a + c*x^2)^(1/2))/(16*x^6) - (A*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/
2))*1i)/(16*a^(3/2)) - (A*(a + c*x^2)^(3/2))/(6*x^6) - (A*(a + c*x^2)^(5/2)
)/(16*a*x^6) - (B*(a + c*x^2)^(5/2))/(5*a*x^5)
```

sympy [A] time = 13.39, size = 201, normalized size = 1.62

$$-\frac{Aa^2}{6\sqrt{c}x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{11Aa\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{17Ac^{\frac{3}{2}}}{48x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{5}{2}}}{16ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{16a^{\frac{3}{2}}}-\frac{Ba\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{2Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{5x^2}-\frac{Bc^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{5a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**7,x)
```

```
[Out] -A*a**2/(6*sqrt(c)*x**7*sqrt(a/(c*x**2) + 1)) - 11*A*a*sqrt(c)/(24*x**5*sqr
t(a/(c*x**2) + 1)) - 17*A*c**(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - A*c**(5
/2)/(16*a*x*sqrt(a/(c*x**2) + 1)) + A*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*a
**(3/2)) - B*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 2*B*c**(3/2)*sqrt(a/
(c*x**2) + 1)/(5*x**2) - B*c**(5/2)*sqrt(a/(c*x**2) + 1)/(5*a)
```

3.338 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^8} \, dx$

Optimal. Leaf size=147

$$\frac{Bc^3 \tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}+\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}+\frac{Bc^2\sqrt{a+cx^2}}{16ax^2}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}$$

Rubi [A] time = 0.11, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}+\frac{Bc^3 \tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}+\frac{Bc^2\sqrt{a+cx^2}}{16ax^2}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (B*c^2*Sqrt[a + c*x^2])/(16*a*x^2) + (B*c*(a + c*x^2)^(3/2))/(24*a*x^4) - (
A*(a + c*x^2)^(5/2))/(7*a*x^7) - (B*(a + c*x^2)^(5/2))/(6*a*x^6) + (2*A*c*(
a + c*x^2)^(5/2))/(35*a^2*x^5) + (B*c^3*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(
16*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
```

```
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^8}\,dx = -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{\int \frac{(-7aB+2Acx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx}{7a}$$

$$= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{\int \frac{(-12aAc-7aBcx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx}{42a^2}$$

$$= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5} - \frac{(Bc)\int \frac{\left(a+cx^2\right)^{3/2}}{x^5}\,dx}{6a}$$

$$= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5} - \frac{(Bc)\,\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx, x\right.}{12a}$$

$$= \frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5} - \frac{\left(Bc^2\right)\text{Subs}}{}$$

$$= \frac{Bc^2\sqrt{a+cx^2}}{16ax^2} + \frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{2Ac\left(a+cx^2\right)}{35a^2x^5}$$

$$= \frac{Bc^2\sqrt{a+cx^2}}{16ax^2} + \frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{2Ac\left(a+cx^2\right)}{35a^2x^5}$$

$$= \frac{Bc^2\sqrt{a+cx^2}}{16ax^2} + \frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4} - \frac{A\left(a+cx^2\right)^{5/2}}{7ax^7} - \frac{B\left(a+cx^2\right)^{5/2}}{6ax^6} + \frac{2Ac\left(a+cx^2\right)}{35a^2x^5}$$

Mathematica [C] time = 0.03, size = 64, normalized size = 0.44

$$\frac{\left(a+cx^2\right)^{5/2}\left(a^2A\left(2cx^2-5a\right)+7Bc^3x^7\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{cx^2}{a}+1\right)\right)}{35a^4x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^8,x]
```

```
[Out] ((a + c*x^2)^(5/2)*(a^2*A*(-5*a + 2*c*x^2) + 7*B*c^3*x^7*Hypergeometric2F1[
5/2, 4, 7/2, 1 + (c*x^2)/a]))/(35*a^4*x^7)
```

IntegrateAlgebraic [A] time = 0.84, size = 130, normalized size = 0.88

$$\frac{\sqrt{a+cx^2}\left(-240a^3A-280a^3Bx-384a^2Acx^2-490a^2Bcx^3-48aAc^2x^4-105aBc^2x^5+96Ac^3x^6\right)}{1680a^2x^7} - \frac{Bc^3\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-240*a^3*A - 280*a^3*B*x - 384*a^2*A*c*x^2 - 490*a^2*B*c*
x^3 - 48*a*A*c^2*x^4 - 105*a*B*c^2*x^5 + 96*A*c^3*x^6))/(1680*a^2*x^7) - (B
*c^3*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(3/2))
```

fricas [A] time = 0.48, size = 238, normalized size = 1.62

$$\left[\frac{105\,B\sqrt{a}c^3x^7\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(96\,Ac^3x^6-105\,Bac^2x^5-48\,Aac^2x^4-490\,Ba^2cx^3-384\,Aa^2cx^2-280\,Ba^3x-240\,Aa^3\right)\sqrt{cx^2+a}}{3360\,a^2x^7},\ -\frac{105\,B\sqrt{-a}\,c^3x^7\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(96\,Ac^3x^6-105\,Bac^2x^5-48\,Aac^2x^4-490\,Ba^2cx^3-384\,Aa^2cx^2-280\,Ba^3x-240\,Aa^3\right)\sqrt{cx^2+a}}{1680\,a^2x^7}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/3360*(105*B*sqrt(a)*c^3*x^7*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*
a)/x^2) + 2*(96*A*c^3*x^6 - 105*B*a*c^2*x^5 - 48*A*a*c^2*x^4 - 490*B*a^2*c*
x^3 - 384*A*a^2*c*x^2 - 280*B*a^3*x - 240*A*a^3)*sqrt(c*x^2 + a))/(a^2*x^7)
, -1/1680*(105*B*sqrt(-a)*c^3*x^7*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (96*A*
c^3*x^6 - 105*B*a*c^2*x^5 - 48*A*a*c^2*x^4 - 490*B*a^2*c*x^3 - 384*A*a^2*c*
x^2 - 280*B*a^3*x - 240*A*a^3)*sqrt(c*x^2 + a))/(a^2*x^7)]
```

giac [B] time = 0.22, size = 379, normalized size = 2.58

$$-\frac{Bc^3\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{8\sqrt{-a}\,a}+\frac{105\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{13}Bc^3+1540\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{11}Bac^3+3360\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{10}Aac^{\frac{7}{2}}+1085\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{9}Ba^2c^3+3360\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{8}Aa^2c^{\frac{7}{2}}+6720\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{6}Aa^3c^{\frac{7}{2}}-1085\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{5}Ba^4c^3+1344\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{4}Aa^4c^{\frac{7}{2}}-1540\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{3}Ba^5c^3+672\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{2}Aa^5c^{\frac{7}{2}}-105\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^6c^3-96\,Aa^6c^{\frac{7}{2}}}{840\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^7a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] -1/8*B*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/840*(105*(sqrt(c)*x - sqrt(c*x^2 + a))^13*B*c^3 + 1540*(sqrt(c)*x - sqrt(c
*x^2 + a))^11*B*a*c^3 + 3360*(sqrt(c)*x - sqrt(c*x^2 + a))^10*A*a*c^(7/2) +
 1085*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*a^2*c^3 + 3360*(sqrt(c)*x - sqrt(c*
x^2 + a))^8*A*a^2*c^(7/2) + 6720*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a^3*c^(7
/2) - 1085*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*a^4*c^3 + 1344*(sqrt(c)*x - sq
rt(c*x^2 + a))^4*A*a^4*c^(7/2) - 1540*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^5
*c^3 + 672*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^5*c^(7/2) - 105*(sqrt(c)*x -
 sqrt(c*x^2 + a))*B*a^6*c^3 - 96*A*a^6*c^(7/2))/(((sqrt(c)*x - sqrt(c*x^2 +
 a))^2 - a)^7*a)
```

maple [A] time = 0.07, size = 165, normalized size = 1.12

$$\frac{B\,c^3\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\,B\,c^3}{16a^2}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c^3}{48a^3}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,c^2}{48a^3x^2}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Bc}{24a^2x^4}+\frac{2\left(c\,x^2+a\right)^{\frac{5}{2}}Ac}{35a^2x^5}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B}{6a\,x^6}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{7a\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^8,x)
```

```
[Out] -1/7*A*(c*x^2+a)^(5/2)/a/x^7+2/35*A*c*(c*x^2+a)^(5/2)/a^2/x^5-1/6*B*(c*x^2+
a)^(5/2)/a/x^6+1/24*B*c/a^2/x^4*(c*x^2+a)^(5/2)+1/48*B*c^2/a^3/x^2*(c*x^2+a
)^(5/2)-1/48*B*c^3/a^3*(c*x^2+a)^(3/2)+1/16*B*c^3/a^(3/2)*ln((2*a+2*(c*x^2+
a)^(1/2)*a^(1/2))/x)-1/16*B*c^3/a^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.49, size = 153, normalized size = 1.04

$$\frac{Bc^3\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,a^{\frac{3}{2}}}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bc^3}{48\,a^3}-\frac{\sqrt{cx^2+a}\,Bc^3}{16\,a^2}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc^2}{48\,a^3x^2}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc}{24\,a^2x^4}+\frac{2\left(cx^2+a\right)^{\frac{5}{2}}Ac}{35\,a^2x^5}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}B}{6\,ax^6}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{7\,ax^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/16*B*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/48*(c*x^2 + a)^(3/2)*B
*c^3/a^3 - 1/16*sqrt(c*x^2 + a)*B*c^3/a^2 + 1/48*(c*x^2 + a)^(5/2)*B*c^2/(a
^3*x^2) + 1/24*(c*x^2 + a)^(5/2)*B*c/(a^2*x^4) + 2/35*(c*x^2 + a)^(5/2)*A*c
/(a^2*x^5) - 1/6*(c*x^2 + a)^(5/2)*B/(a*x^6) - 1/7*(c*x^2 + a)^(5/2)*A/(a*x
^7)
```

mupad [B] time = 3.77, size = 150, normalized size = 1.02

$$\frac{B\,a\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{A\,a\,\sqrt{c\,x^2+a}}{7\,x^7}-\frac{B\,{\left(c\,x^2+a\right)}^{3/2}}{6\,x^6}-\frac{8\,A\,c\,\sqrt{c\,x^2+a}}{35\,x^5}-\frac{B\,{\left(c\,x^2+a\right)}^{5/2}}{16\,a\,x^6}-\frac{A\,c^2\,\sqrt{c\,x^2+a}}{35\,a\,x^3}+\frac{2\,A\,c^3\,\sqrt{c\,x^2+a}}{35\,a^2\,x}-\frac{B\,c^3\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,1{}\mathrm{i}}{16\,a^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^8,x)
```

```
[Out] (B*a*(a + c*x^2)^(1/2))/(16*x^6) - (B*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/
2))*1i)/(16*a^(3/2)) - (A*a*(a + c*x^2)^(1/2))/(7*x^7) - (B*(a + c*x^2)^(3/
2))/(6*x^6) - (8*A*c*(a + c*x^2)^(1/2))/(35*x^5) - (B*(a + c*x^2)^(5/2))/(1
6*a*x^6) - (A*c^2*(a + c*x^2)^(1/2))/(35*a*x^3) + (2*A*c^3*(a + c*x^2)^(1/2
))/(35*a^2*x)
```

sympy [B] time = 13.99, size = 575, normalized size = 3.91

$$-\frac{15Aa^6c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{33Aa^5c^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{17Aa^4c^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{3Aa^3c^{\frac{15}{2}}x^6\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{12Aa^2c^{\frac{17}{2}}x^8\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{8Aac^{\frac{19}{2}}x^{10}\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{15ax^2}+\frac{2Ac^{\frac{7}{2}}\sqrt{\frac{a}{cx^2}+1}}{15a^2}-\frac{Ba^2}{6\sqrt{c}x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{11Ba\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{17Bc^{\frac{3}{2}}}{48x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Bc^{\frac{5}{2}}}{16ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Bc^3\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{16a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**8,x)
```

```
[Out] -15*A*a**6*c**(9/2)*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**
5*x**8 + 105*a**3*c**6*x**10) - 33*A*a**5*c**(11/2)*x**2*sqrt(a/(c*x**2) +
1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 17*A*a
**4*c**(13/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5
*x**8 + 105*a**3*c**6*x**10) - 3*A*a**3*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)
/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 12*A*a**
2*c**(17/2)*x**8*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x
**8 + 105*a**3*c**6*x**10) - 8*A*a*c**(19/2)*x**10*sqrt(a/(c*x**2) + 1)/(10
5*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - A*c**(3/2)*s
qrt(a/(c*x**2) + 1)/(5*x**4) - A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*a*x**2)
+ 2*A*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a**2) - B*a**2/(6*sqrt(c)*x**7*sqrt
(a/(c*x**2) + 1)) - 11*B*a*sqrt(c)/(24*x**5*sqrt(a/(c*x**2) + 1)) - 17*B*c*
*(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - B*c**(5/2)/(16*a*x*sqrt(a/(c*x**2)
+ 1)) + B*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*a**(3/2))
```

3.339 $\int x^4(A + Bx)\left(a + cx^2\right)^{5/2} dx$

Optimal. Leaf size=198

$$\frac{3a^5A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}+\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{a\left(a+cx^2\right)^{7/2}(640aB-2079}{55440c^3}$$

Rubi [A] time = 0.15, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{3a^5A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}+\frac{a\left(a+cx^2\right)^{7/2}(640aB-2079Acx)}{55440c^3}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (3*a^4*A*x*Sqrt[a + c*x^2])/(256*c^2) + (a^3*A*x*(a + c*x^2)^(3/2))/(128*c^
2) + (a^2*A*x*(a + c*x^2)^(5/2))/(160*c^2) - (4*a*B*x^2*(a + c*x^2)^(7/2))/
(99*c^2) + (A*x^3*(a + c*x^2)^(7/2))/(10*c) + (B*x^4*(a + c*x^2)^(7/2))/(11
*c) + (a*(640*a*B - 2079*A*c*x)*(a + c*x^2)^(7/2))/(55440*c^3) + (3*a^5*A*A
rcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(256*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
```

```
) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\left(a+cx^2\right)^{5/2}\,dx=\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{\int x^3(-4aB+11Acx)\left(a+cx^2\right)^{5/2}\,dx}{11c}$$
$$=\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{\int x^2(-33aAc-40aBcx)\left(a+cx^2\right)^{5/2}\,dx}{110c^2}$$
$$=-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{\int x\left(80a^2Bc-297\right.}{9}$$
$$=-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{a(640aB-2079A}{55440}$$
$$=\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+$$
$$=\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}$$
$$=\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}$$
$$=\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}$$
$$=\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}$$

Mathematica [A] time = 0.29, size = 151, normalized size = 0.76

$$\frac{\sqrt{a+cx^2}\left(\frac{10395a^{9/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+10240a^5B-5a^4cx(2079A+1024Bx)+30a^3c^2x^3(231A+128Bx)+8a^2c^3x^5(21483A+18080Bx)+112ac^4x^7(2079A+1840Bx)+8064c^5x^9(11A+10Bx)\right)}{887040c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(10240*a^5*B + 8064*c^5*x^9*(11*A + 10*B*x) + 30*a^3*c^2*x
^3*(231*A + 128*B*x) - 5*a^4*c*x*(2079*A + 1024*B*x) + 112*a*c^4*x^7*(2079*
A + 1840*B*x) + 8*a^2*c^3*x^5*(21483*A + 18080*B*x) + (10395*a^(9/2)*A*Sqrt
[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(887040*c^3)
```

IntegrateAlgebraic [A] time = 0.53, size = 164, normalized size = 0.83

$$\frac{\sqrt{a+cx^2}\left(10240a^5B-10395a^4Acx-5120a^4Bcx^2+6930a^3Ac^2x^3+3840a^3Bc^2x^4+171864a^2Ac^3x^5+144640a^2Bc^3x^6+232848aAc^4x^7+206080aBc^4x^8+88704Ac^5x^9+80640Bc^5x^{10}\right)}{887040c^3}-\frac{3a^5A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{256c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(10240*a^5*B - 10395*a^4*A*c*x - 5120*a^4*B*c*x^2 + 6930*a
^3*A*c^2*x^3 + 3840*a^3*B*c^2*x^4 + 171864*a^2*A*c^3*x^5 + 144640*a^2*B*c^3
*x^6 + 232848*a*A*c^4*x^7 + 206080*a*B*c^4*x^8 + 88704*A*c^5*x^9 + 80640*B*
c^5*x^10))/(887040*c^3) - (3*a^5*A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(25
6*c^(5/2))
```

fricas [A] time = 0.49, size = 320, normalized size = 1.62

$$\left[\frac{10395 \, A a^{5} \sqrt{c} \log\left(-2 \, c x^{2} - 2 \, \sqrt{c x^{2} + a} \sqrt{c} x - a\right) + 2 \, {\left(80640 \, B c^{5} x^{10} + 88704 \, A c^{5} x^{9} + 206080 \, B a c^{4} x^{8} + 232848 \, A a c^{4} x^{7} + 144640 \, B a^{2} c^{3} x^{6} + 171864 \, A a^{2} c^{3} x^{5} + 3840 \, B a^{3} c^{2} x^{4} + 6930 \, A a^{3} c^{2} x^{3} - 5120 \, B a^{4} c x^{2} - 10395 \, A a^{4} c x + 10240 \, B a^{5}\right)} \sqrt{c x^{2} + a}}{1774080 \, c^{3}}, -\frac{10395 \, A a^{5} \sqrt{-c} \arctan\left(\frac{\sqrt{-c} x}{\sqrt{c x^{2} + a}}\right) - {\left(80640 \, B c^{5} x^{10} + 88704 \, A c^{5} x^{9} + 206080 \, B a c^{4} x^{8} + 232848 \, A a c^{4} x^{7} + 144640 \, B a^{2} c^{3} x^{6} + 171864 \, A a^{2} c^{3} x^{5} + 3840 \, B a^{3} c^{2} x^{4} + 6930 \, A a^{3} c^{2} x^{3} - 5120 \, B a^{4} c x^{2} - 10395 \, A a^{4} c x + 10240 \, B a^{5}\right)} \sqrt{c x^{2} + a}}{887040 \, c^{3}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/1774080*(10395*A*a^5*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x
- a) + 2*(80640*B*c^5*x^10 + 88704*A*c^5*x^9 + 206080*B*a*c^4*x^8 + 232848*
A*a*c^4*x^7 + 144640*B*a^2*c^3*x^6 + 171864*A*a^2*c^3*x^5 + 3840*B*a^3*c^2*
x^4 + 6930*A*a^3*c^2*x^3 - 5120*B*a^4*c*x^2 - 10395*A*a^4*c*x + 10240*B*a^5
)*sqrt(c*x^2 + a))/c^3, -1/887040*(10395*A*a^5*sqrt(-c)*arctan(sqrt(-c)*x/s
qrt(c*x^2 + a)) - (80640*B*c^5*x^10 + 88704*A*c^5*x^9 + 206080*B*a*c^4*x^8
+ 232848*A*a*c^4*x^7 + 144640*B*a^2*c^3*x^6 + 171864*A*a^2*c^3*x^5 + 3840*B
*a^3*c^2*x^4 + 6930*A*a^3*c^2*x^3 - 5120*B*a^4*c*x^2 - 10395*A*a^4*c*x + 10
240*B*a^5)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.21, size = 155, normalized size = 0.78

$$-\frac{3 \, A a^{5} \log\left({\left| -\sqrt{c} x + \sqrt{c x^{2} + a} \right|}\right)}{256 \, c^{\frac{5}{2}}} + \frac{1}{887040} \, {\left(\frac{10240 \, B a^{5}}{c^{3}} - {\left(\frac{10395 \, A a^{4}}{c^{2}} + 2 \, {\left(\frac{2560 \, B a^{4}}{c^{2}} - {\left(\frac{3465 \, A a^{3}}{c} + 4 \, {\left(\frac{480 \, B a^{3}}{c} + {\left(21483 \, A a^{2} + 2 \, {\left(9040 \, B a^{2} + 7 \, {\left(2079 \, A a c + 8 \, {\left(230 \, B a c + 9 \, {\left(10 \, B c^{2} x + 11 \, A c^{2}\right)} x\right)} x\right)} x\right)} x\right)} x\right)} x\right)} x\right)} x\right)} x\right)} \sqrt{c x^{2} + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -3/256*A*a^5*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/887040*(102
40*B*a^5/c^3 - (10395*A*a^4/c^2 + 2*(2560*B*a^4/c^2 - (3465*A*a^3/c + 4*(48
0*B*a^3/c + (21483*A*a^2 + 2*(9040*B*a^2 + 7*(2079*A*a*c + 8*(230*B*a*c + 9
*(10*B*c^2*x + 11*A*c^2)*x)*x)*x)*x)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.06, size = 174, normalized size = 0.88

$$\frac{3 A \,a^{5} \ln \left(\sqrt{c}\, x +\sqrt{c \,x^{2}+a}\right)}{256 c^{\frac{5}{2}}}+\frac{3 \sqrt{c \,x^{2}+a}\, A \,a^{4} x}{256 c^{2}}+\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} B \,x^{4}}{11 c}+\frac{\left(c \,x^{2}+a \right)^{\frac{3}{2}} A \,a^{3} x}{128 c^{2}}+\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} A \,x^{3}}{10 c}+\frac{\left(c \,x^{2}+a \right)^{\frac{5}{2}} A \,a^{2} x}{160 c^{2}}-\frac{4 \left(c \,x^{2}+a \right)^{\frac{7}{2}} B a \,x^{2}}{99 c^{2}}-\frac{3 \left(c \,x^{2}+a \right)^{\frac{7}{2}} A a x}{80 c^{2}}+\frac{8 \left(c \,x^{2}+a \right)^{\frac{7}{2}} B \,a^{2}}{693 c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/11*B*x^4*(c*x^2+a)^(7/2)/c-4/99*a*B*x^2*(c*x^2+a)^(7/2)/c^2+8/693*B*a^2/c
^3*(c*x^2+a)^(7/2)+1/10*A*x^3*(c*x^2+a)^(7/2)/c-3/80*A*a/c^2*x*(c*x^2+a)^(7
/2)+1/160*a^2*A*x*(c*x^2+a)^(5/2)/c^2+1/128*a^3*A*x*(c*x^2+a)^(3/2)/c^2+3/2
56*a^4*A*x*(c*x^2+a)^(1/2)/c^2+3/256*A*a^5/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(
1/2))
```

maxima [A] time = 0.53, size = 166, normalized size = 0.84

$$\frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} B x^{4}}{11 \, c} + \frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} A x^{3}}{10 \, c} - \frac{4 \, {\left(c x^{2} + a\right)}^{\frac{7}{2}} B a x^{2}}{99 \, c^{2}} - \frac{3 \, {\left(c x^{2} + a\right)}^{\frac{7}{2}} A a x}{80 \, c^{2}} + \frac{{\left(c x^{2} + a\right)}^{\frac{5}{2}} A a^{2} x}{160 \, c^{2}} + \frac{{\left(c x^{2} + a\right)}^{\frac{3}{2}} A a^{3} x}{128 \, c^{2}} + \frac{3 \, \sqrt{c x^{2} + a} A a^{4} x}{256 \, c^{2}} + \frac{3 \, A a^{5} \operatorname{arsinh}\left(\frac{c x}{\sqrt{a c}}\right)}{256 \, c^{\frac{5}{2}}} + \frac{8 \, {\left(c x^{2} + a\right)}^{\frac{7}{2}} B a^{2}}{693 \, c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/11*(c*x^2 + a)^(7/2)*B*x^4/c + 1/10*(c*x^2 + a)^(7/2)*A*x^3/c - 4/99*(c*x
^2 + a)^(7/2)*B*a*x^2/c^2 - 3/80*(c*x^2 + a)^(7/2)*A*a*x/c^2 + 1/160*(c*x^2
 + a)^(5/2)*A*a^2*x/c^2 + 1/128*(c*x^2 + a)^(3/2)*A*a^3*x/c^2 + 3/256*sqrt(
c*x^2 + a)*A*a^4*x/c^2 + 3/256*A*a^5*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 8/693
*(c*x^2 + a)^(7/2)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\,{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^4*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [A] time = 37.23, size = 541, normalized size = 2.73

$$-\frac{3Aa^{\frac{9}{2}}x}{256c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^{\frac{7}{2}}x^3}{256c\sqrt{1+\frac{cx^2}{a}}}+\frac{129Aa^{\frac{5}{2}}x^5}{640\sqrt{1+\frac{cx^2}{a}}}+\frac{73Aa^{\frac{3}{2}}cx^7}{160\sqrt{1+\frac{cx^2}{a}}}+\frac{29A\sqrt{a}\,c^2x^9}{80\sqrt{1+\frac{cx^2}{a}}}+\frac{3Aa^5\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{256c^{\frac{5}{2}}}+\frac{Ac^3x^{11}}{10\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}+Ba^2\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise}\end{cases}\right)+2Bac\left(\begin{cases}-\frac{16a^4\sqrt{a+cx^2}}{315c^4}+\frac{8a^3x^2\sqrt{a+cx^2}}{315c^3}-\frac{2a^2x^4\sqrt{a+cx^2}}{105c^2}+\frac{ax^6\sqrt{a+cx^2}}{63c}+\frac{x^8\sqrt{a+cx^2}}{9} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^8}{8} & \text{otherwise}\end{cases}\right)+Bc^2\left(\begin{cases}\frac{128a^5\sqrt{a+cx^2}}{3465c^5}-\frac{64a^4x^2\sqrt{a+cx^2}}{3465c^4}+\frac{16a^3x^4\sqrt{a+cx^2}}{1155c^3}-\frac{8a^2x^6\sqrt{a+cx^2}}{693c^2}+\frac{ax^8\sqrt{a+cx^2}}{99c}+\frac{x^{10}\sqrt{a+cx^2}}{11} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^{10}}{10} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] -3*A*a**(9/2)*x/(256*c**2*sqrt(1 + c*x**2/a)) - A*a**(7/2)*x**3/(256*c*sqrt
(1 + c*x**2/a)) + 129*A*a**(5/2)*x**5/(640*sqrt(1 + c*x**2/a)) + 73*A*a**(3
/2)*c*x**7/(160*sqrt(1 + c*x**2/a)) + 29*A*sqrt(a)*c**2*x**9/(80*sqrt(1 + c
*x**2/a)) + 3*A*a**5*asinh(sqrt(c)*x/sqrt(a))/(256*c**(5/2)) + A*c**3*x**11
/(10*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a**2*Piecewise((8*a**3*sqrt(a + c*x**2
)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*c**2) + a*x**4*sqrt(a + c*
x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0)), (sqrt(a)*x**6/6, True))
+ 2*B*a*c*Piecewise((-16*a**4*sqrt(a + c*x**2)/(315*c**4) + 8*a**3*x**2*sqr
t(a + c*x**2)/(315*c**3) - 2*a**2*x**4*sqrt(a + c*x**2)/(105*c**2) + a*x**6
*sqrt(a + c*x**2)/(63*c) + x**8*sqrt(a + c*x**2)/9, Ne(c, 0)), (sqrt(a)*x**
8/8, True)) + B*c**2*Piecewise((128*a**5*sqrt(a + c*x**2)/(3465*c**5) - 64*
a**4*x**2*sqrt(a + c*x**2)/(3465*c**4) + 16*a**3*x**4*sqrt(a + c*x**2)/(115
5*c**3) - 8*a**2*x**6*sqrt(a + c*x**2)/(693*c**2) + a*x**8*sqrt(a + c*x**2)
/(99*c) + x**10*sqrt(a + c*x**2)/11, Ne(c, 0)), (sqrt(a)*x**10/10, True))
```

3.340 $\int x^3(A + Bx)\left(a + cx^2\right)^{5/2} dx$

Optimal. Leaf size=173

$$\frac{3a^5B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}+\frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{a\left(a+cx^2\right)^{7/2}(160A+189Bx)}{5040c^2}$$

Rubi [A] time = 0.10, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{3a^5B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}-\frac{a\left(a+cx^2\right)^{7/2}(160A+189Bx)}{5040c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (3*a^4*B*x*Sqrt[a + c*x^2])/(256*c^2) + (a^3*B*x*(a + c*x^2)^(3/2))/(128*c^
2) + (a^2*B*x*(a + c*x^2)^(5/2))/(160*c^2) + (A*x^2*(a + c*x^2)^(7/2))/(9*c
) + (B*x^3*(a + c*x^2)^(7/2))/(10*c) - (a*(160*A + 189*B*x)*(a + c*x^2)^(7/
2))/(5040*c^2) + (3*a^5*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(256*c^(5/2
))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
```

```
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^3(A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{\int x^2(-3aB+10Acx)\left(a+cx^2\right)^{5/2}\,dx}{10c}\\
&= \frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{\int x(-20aAc-27aBcx)\left(a+cx^2\right)^{5/2}\,dx}{90c^2}\\
&= \frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}-\frac{a(160A+189Bx)\left(a+cx^2\right)^{7/2}}{5040c^2}+\frac{\left(3a^2B\right)\int}{}\\
&= \frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}-\frac{a(160A+189Bx)\left(a\right.}{5040c^2}\\
&= \frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}-\\
&= \frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\\
&= \frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\\
&= \frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+
\end{aligned}$$

Mathematica [A] time = 0.27, size = 145, normalized size = 0.84

$$\frac{\sqrt{a+cx^2}\left(\frac{945a^{9/2}B\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+\sqrt{c}\left(-5a^4(512A+189Bx)+10a^3cx^2(128A+63Bx)+24a^2c^2x^4(800A+651Bx)+16ac^3x^6(1520A+1323Bx)+896c^4x^8(10A+9Bx)\right)\right)}{80640c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(896*c^4*x^8*(10*A + 9*B*x) + 10*a^3*c*x^2*(128*A
 + 63*B*x) - 5*a^4*(512*A + 189*B*x) + 24*a^2*c^2*x^4*(800*A + 651*B*x) + 1
6*a*c^3*x^6*(1520*A + 1323*B*x)) + (945*a^(9/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[
a]])/Sqrt[1 + (c*x^2)/a]))/(80640*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.46, size = 149, normalized size = 0.86

$$\frac{\sqrt{a+cx^2}\left(-2560a^4A-945a^4Bx+1280a^3Acx^2+630a^3Bcx^3+19200a^2Ac^2x^4+15624a^2Bc^2x^5+24320aAc^3x^6+21168aBc^3x^7+8960Ac^4x^8+8064Bc^4x^9\right)}{80640c^2}-\frac{3a^5B\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{256c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-2560*a^4*A - 945*a^4*B*x + 1280*a^3*A*c*x^2 + 630*a^3*B*
c*x^3 + 19200*a^2*A*c^2*x^4 + 15624*a^2*B*c^2*x^5 + 24320*a*A*c^3*x^6 + 211
68*a*B*c^3*x^7 + 8960*A*c^4*x^8 + 8064*B*c^4*x^9))/(80640*c^2) - (3*a^5*B*L
og[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(256*c^(5/2))
```

fricas [A] time = 0.52, size = 302, normalized size = 1.75

$$\left[\frac{945\,Ba^5\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(8064\,Bc^5x^9+8960\,Ac^5x^8+21168\,Bac^4x^7+24320\,Aac^4x^6+15624\,Ba^2c^3x^5+19200\,Aa^2c^3x^4+630\,Ba^3c^2x^3+1280\,Aa^3c^2x^2-945\,Ba^4cx-2560\,Aa^4c\right)\sqrt{cx^2+a}}{161280\,c^3},\ -\frac{945\,Ba^5\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\left(8064\,Bc^5x^9+8960\,Ac^5x^8+21168\,Bac^4x^7+24320\,Aac^4x^6+15624\,Ba^2c^3x^5+19200\,Aa^2c^3x^4+630\,Ba^3c^2x^3+1280\,Aa^3c^2x^2-945\,Ba^4cx-2560\,Aa^4c\right)\sqrt{cx^2+a}}{80640\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/161280*(945*B*a^5*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a
) + 2*(8064*B*c^5*x^9 + 8960*A*c^5*x^8 + 21168*B*a*c^4*x^7 + 24320*A*a*c^4*
x^6 + 15624*B*a^2*c^3*x^5 + 19200*A*a^2*c^3*x^4 + 630*B*a^3*c^2*x^3 + 1280*
A*a^3*c^2*x^2 - 945*B*a^4*c*x - 2560*A*a^4*c)*sqrt(c*x^2 + a))/c^3, -1/8064
0*(945*B*a^5*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (8064*B*c^5*x^9
+ 8960*A*c^5*x^8 + 21168*B*a*c^4*x^7 + 24320*A*a*c^4*x^6 + 15624*B*a^2*c^3*
x^5 + 19200*A*a^2*c^3*x^4 + 630*B*a^3*c^2*x^3 + 1280*A*a^3*c^2*x^2 - 945*B*
a^4*c*x - 2560*A*a^4*c)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.22, size = 140, normalized size = 0.81

$$-\frac{3\,Ba^5\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{256\,c^{\frac{5}{2}}}-\frac{1}{80640}\left(\frac{2560\,Aa^4}{c^2}+\left(\frac{945\,Ba^4}{c^2}-2\left(\frac{640\,Aa^3}{c}+\left(\frac{315\,Ba^3}{c}+4\left(2400\,Aa^2+\left(1953\,Ba^2+2\left(1520\,Aac+7\left(189\,Bac+8\left(9\,Bc^2x+10\,Ac^2\right)x\right)x\right)x\right)x\right)x\right)x\right)x\right)\sqrt{cx^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -3/256*B*a^5*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) - 1/80640*(2560
*A*a^4/c^2 + (945*B*a^4/c^2 - 2*(640*A*a^3/c + (315*B*a^3/c + 4*(2400*A*a^2
 + (1953*B*a^2 + 2*(1520*A*a*c + 7*(189*B*a*c + 8*(9*B*c^2*x + 10*A*c^2)*x)
*x)*x)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.06, size = 153, normalized size = 0.88

$$\frac{3B\,a^5\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{256c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\,B\,a^4x}{256c^2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,x^3}{10c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A\,x^2}{9c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,a^2x}{160c^2}-\frac{3\left(c\,x^2+a\right)^{\frac{7}{2}}Bax}{80c^2}-\frac{2\left(c\,x^2+a\right)^{\frac{7}{2}}Aa}{63c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/10*B*x^3*(c*x^2+a)^(7/2)/c-3/80*B*a/c^2*x*(c*x^2+a)^(7/2)+1/160*a^2*B*x*(
c*x^2+a)^(5/2)/c^2+1/128*a^3*B*x*(c*x^2+a)^(3/2)/c^2+3/256*a^4*B*x*(c*x^2+a
)^(1/2)/c^2+3/256*B*a^5/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/9*A*x^2*(c*
x^2+a)^(7/2)/c-2/63*A*a/c^2*(c*x^2+a)^(7/2)
```

maxima [A] time = 0.59, size = 145, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bx^3}{10\,c}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ax^2}{9\,c}-\frac{3\left(cx^2+a\right)^{\frac{7}{2}}Bax}{80\,c^2}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ba^2x}{160\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ba^3x}{128\,c^2}+\frac{3\sqrt{cx^2+a}\,Ba^4x}{256\,c^2}+\frac{3\,Ba^5\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{256\,c^{\frac{5}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{7}{2}}Aa}{63\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/10*(c*x^2 + a)^(7/2)*B*x^3/c + 1/9*(c*x^2 + a)^(7/2)*A*x^2/c - 3/80*(c*x^
2 + a)^(7/2)*B*a*x/c^2 + 1/160*(c*x^2 + a)^(5/2)*B*a^2*x/c^2 + 1/128*(c*x^2
 + a)^(3/2)*B*a^3*x/c^2 + 3/256*sqrt(c*x^2 + a)*B*a^4*x/c^2 + 3/256*B*a^5*a
rcsinh(c*x/sqrt(a*c))/c^(5/2) - 2/63*(c*x^2 + a)^(7/2)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\,{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [A] time = 34.72, size = 469, normalized size = 2.71

$$Aa^2\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)+2Aac\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise}\end{cases}\right)+Ac^2\left(\begin{cases}-\frac{16a^4\sqrt{a+cx^2}}{315c^4}+\frac{8a^3x^2\sqrt{a+cx^2}}{315c^3}-\frac{2a^2x^4\sqrt{a+cx^2}}{105c^2}+\frac{ax^6\sqrt{a+cx^2}}{63c}+\frac{x^8\sqrt{a+cx^2}}{9} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^8}{8} & \text{otherwise}\end{cases}\right)-\frac{3Ba^{\frac{9}{2}}x}{256c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba^{\frac{7}{2}}x^3}{256c\sqrt{1+\frac{cx^2}{a}}}+\frac{129Ba^{\frac{5}{2}}x^5}{640\sqrt{1+\frac{cx^2}{a}}}+\frac{73Ba^{\frac{3}{2}}cx^7}{160\sqrt{1+\frac{cx^2}{a}}}+\frac{29B\sqrt{a}\,c^2x^9}{80\sqrt{1+\frac{cx^2}{a}}}+\frac{3Ba^5\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{256c^{\frac{5}{2}}}+\frac{Bc^3x^{11}}{10\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**2*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x*
*2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) +
2*A*a*c*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a
+ c*x**2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**
2)/7, Ne(c, 0)), (sqrt(a)*x**6/6, True)) + A*c**2*Piecewise((-16*a**4*sqrt(
a + c*x**2)/(315*c**4) + 8*a**3*x**2*sqrt(a + c*x**2)/(315*c**3) - 2*a**2*x
**4*sqrt(a + c*x**2)/(105*c**2) + a*x**6*sqrt(a + c*x**2)/(63*c) + x**8*sqr
t(a + c*x**2)/9, Ne(c, 0)), (sqrt(a)*x**8/8, True)) - 3*B*a**(9/2)*x/(256*c
**2*sqrt(1 + c*x**2/a)) - B*a**(7/2)*x**3/(256*c*sqrt(1 + c*x**2/a)) + 129*
B*a**(5/2)*x**5/(640*sqrt(1 + c*x**2/a)) + 73*B*a**(3/2)*c*x**7/(160*sqrt(1
 + c*x**2/a)) + 29*B*sqrt(a)*c**2*x**9/(80*sqrt(1 + c*x**2/a)) + 3*B*a**5*a
sinh(sqrt(c)*x/sqrt(a))/(256*c**(5/2)) + B*c**3*x**11/(10*sqrt(a)*sqrt(1 +
c*x**2/a))
```

3.341 $\int x^2(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=150

$$-\frac{5a^4A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{\left(a+cx^2\right)^{7/2}(16aB-63Acx)}{504c^2}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}$$

Rubi [A] time = 0.07, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$-\frac{5a^4A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{\left(a+cx^2\right)^{7/2}(16aB-63Acx)}{504c^2}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (-5*a^3*A*x*Sqrt[a + c*x^2])/(128*c) - (5*a^2*A*x*(a + c*x^2)^(3/2))/(192*c
) - (a*A*x*(a + c*x^2)^(5/2))/(48*c) + (B*x^2*(a + c*x^2)^(7/2))/(9*c) - ((
16*a*B - 63*A*c*x)*(a + c*x^2)^(7/2))/(504*c^2) - (5*a^4*A*ArcTanh[(Sqrt[c]
*x)/Sqrt[a + c*x^2]])/(128*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{\int x(-2aB+9Acx)\left(a+cx^2\right)^{5/2}\,dx}{9c}\\
&= \frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\frac{(16aB-63Acx)\left(a+cx^2\right)^{7/2}}{504c^2}-\frac{(aA)\int\left(a+cx^2\right)^{5/2}\,dx}{8c}\\
&= -\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\frac{(16aB-63Acx)\left(a+cx^2\right)^{7/2}}{504c^2}-\frac{\left(5a^2A\right)\cdots}{}\\
&= -\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\frac{(16aB-63Acx)\,(\cdots}{504c^2}\\
&= -\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\cdots\\
&= -\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\cdots\\
&= -\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\cdots
\end{aligned}
$$

Mathematica [A] time = 0.26, size = 131, normalized size = 0.87

$$
\frac{\sqrt{a+cx^2}\left(-\frac{315a^{7/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}-256a^4B+a^3cx(315A+128Bx)+6a^2c^2x^3(413A+320Bx)+8ac^3x^5(357A+304Bx)+112c^4x^7(9A+8Bx)\right)}{8064c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-256*a^4*B + 112*c^4*x^7*(9*A + 8*B*x) + a^3*c*x*(315*A +
 128*B*x) + 8*a*c^3*x^5*(357*A + 304*B*x) + 6*a^2*c^2*x^3*(413*A + 320*B*x)
 - (315*a^(7/2)*A*Sqrt[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]
))/(8064*c^2)
```

IntegrateAlgebraic [A] time = 0.43, size = 140, normalized size = 0.93

$$
\frac{5a^4A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{128c^{3/2}}+\frac{\sqrt{a+cx^2}\left(-256a^4B+315a^3Acx+128a^3Bcx^2+2478a^2Ac^2x^3+1920a^2Bc^2x^4+2856aAc^3x^5+2432aBc^3x^6+1008Ac^4x^7+896Bc^4x^8\right)}{8064c^2}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-256*a^4*B + 315*a^3*A*c*x + 128*a^3*B*c*x^2 + 2478*a^2*A
*c^2*x^3 + 1920*a^2*B*c^2*x^4 + 2856*a*A*c^3*x^5 + 2432*a*B*c^3*x^6 + 1008*
A*c^4*x^7 + 896*B*c^4*x^8))/(8064*c^2) + (5*a^4*A*Log[-(Sqrt[c]*x) + Sqrt[a
 + c*x^2]])/(128*c^(3/2))
```

fricas [A] time = 0.47, size = 271, normalized size = 1.81

$$
\left[\frac{315\,Aa^4\sqrt{c}\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\left(896\,Bc^4x^8+1008\,Ac^4x^7+2432\,Bac^3x^6+2856\,Aac^3x^5+1920\,Ba^2c^2x^4+2478\,Aa^2c^2x^3+128\,Ba^3cx^2+315\,Aa^3cx-256\,Ba^4\right)\sqrt{cx^2+a}}{16128\,c^2},\ \frac{315\,Aa^4\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(896\,Bc^4x^8+1008\,Ac^4x^7+2432\,Bac^3x^6+2856\,Aac^3x^5+1920\,Ba^2c^2x^4+2478\,Aa^2c^2x^3+128\,Ba^3cx^2+315\,Aa^3cx-256\,Ba^4\right)\sqrt{cx^2+a}}{8064\,c^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/16128*(315*A*a^4*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 2*(896*B*c^4*x^8 + 1008*A*c^4*x^7 + 2432*B*a*c^3*x^6 + 2856*A*a*c^3*x^5
+ 1920*B*a^2*c^2*x^4 + 2478*A*a^2*c^2*x^3 + 128*B*a^3*c*x^2 + 315*A*a^3*c*x
 - 256*B*a^4)*sqrt(c*x^2 + a))/c^2, 1/8064*(315*A*a^4*sqrt(-c)*arctan(sqrt(
-c)*x/sqrt(c*x^2 + a)) + (896*B*c^4*x^8 + 1008*A*c^4*x^7 + 2432*B*a*c^3*x^6
 + 2856*A*a*c^3*x^5 + 1920*B*a^2*c^2*x^4 + 2478*A*a^2*c^2*x^3 + 128*B*a^3*c
*x^2 + 315*A*a^3*c*x - 256*B*a^4)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.21, size = 128, normalized size = 0.85

$$\frac{5\,Aa^4\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{3}{2}}}-\frac{1}{8064}\left(\frac{256\,Ba^4}{c^2}-\left(\frac{315\,Aa^3}{c}+2\left(\frac{64\,Ba^3}{c}+\left(1239\,Aa^2+4\left(240\,Ba^2+\left(357\,Aac+2\left(152\,Bac+7\left(8\,Bc^2x+9\,Ac^2\right)x\right)x\right)x\right)x\right)x\right)x\right)\sqrt{cx^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 5/128*A*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) - 1/8064*(256*B*
a^4/c^2 - (315*A*a^3/c + 2*(64*B*a^3/c + (1239*A*a^2 + 4*(240*B*a^2 + (357*
A*a*c + 2*(152*B*a*c + 7*(8*B*c^2*x + 9*A*c^2)*x)*x)*x)*x)*x)*x)*sqrt(c*
x^2 + a)
```

maple [A] time = 0.06, size = 132, normalized size = 0.88

$$-\frac{5A\,a^4\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^2+a}\,A\,a^3x}{128c}-\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}A\,a^2x}{192c}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Aax}{48c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,x^2}{9c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}Ax}{8c}-\frac{2\left(c\,x^2+a\right)^{\frac{7}{2}}Ba}{63c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/9*B*x^2*(c*x^2+a)^(7/2)/c-2/63*B*a/c^2*(c*x^2+a)^(7/2)+1/8*A*x*(c*x^2+a)^
(7/2)/c-1/48*a*A*x*(c*x^2+a)^(5/2)/c-5/192*a^2*A*x*(c*x^2+a)^(3/2)/c-5/128*
a^3*A*x*(c*x^2+a)^(1/2)/c-5/128*A*a^4/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.67, size = 124, normalized size = 0.83

$$\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bx^2}{9\,c}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ax}{8\,c}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Aax}{48\,c}-\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Aa^2x}{192\,c}-\frac{5\,\sqrt{cx^2+a}\,Aa^3x}{128\,c}-\frac{5\,Aa^4\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{3}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{7}{2}}Ba}{63\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + a)^(7/2)*B*x^2/c + 1/8*(c*x^2 + a)^(7/2)*A*x/c - 1/48*(c*x^2 +
 a)^(5/2)*A*a*x/c - 5/192*(c*x^2 + a)^(3/2)*A*a^2*x/c - 5/128*sqrt(c*x^2 +
a)*A*a^3*x/c - 5/128*A*a^4*arcsinh(c*x/sqrt(a*c))/c^(3/2) - 2/63*(c*x^2 + a
)^(7/2)*B*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [A] time = 24.06, size = 442, normalized size = 2.95

$$\frac{5Aa^{\frac{7}{2}}x}{128c\sqrt{1+\frac{cx^2}{a}}}+\frac{133Aa^{\frac{5}{2}}x^3}{384\sqrt{1+\frac{cx^2}{a}}}+\frac{127Aa^{\frac{3}{2}}cx^5}{192\sqrt{1+\frac{cx^2}{a}}}+\frac{23A\sqrt{a}\,c^2x^7}{48\sqrt{1+\frac{cx^2}{a}}}-\frac{5Aa^4\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{128c^{\frac{3}{2}}}+\frac{Ac^3x^9}{8\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}+Ba^2\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)+2Bac\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^6}{6} & \text{otherwise}\end{cases}\right)+Bc^2\left(\begin{cases}-\frac{16a^4\sqrt{a+cx^2}}{315c^4}+\frac{8a^3x^2\sqrt{a+cx^2}}{315c^3}-\frac{2a^2x^4\sqrt{a+cx^2}}{105c^2}+\frac{ax^6\sqrt{a+cx^2}}{63c}+\frac{x^8\sqrt{a+cx^2}}{9} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^8}{8} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] 5*A*a**(7/2)*x/(128*c*sqrt(1 + c*x**2/a)) + 133*A*a**(5/2)*x**3/(384*sqrt(1
 + c*x**2/a)) + 127*A*a**(3/2)*c*x**5/(192*sqrt(1 + c*x**2/a)) + 23*A*sqrt(
a)*c**2*x**7/(48*sqrt(1 + c*x**2/a)) - 5*A*a**4*asinh(sqrt(c)*x/sqrt(a))/(1
28*c**(3/2)) + A*c**3*x**9/(8*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a**2*Piecewis
e((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) + x*
*4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + 2*B*a*c*Piecewi
se((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*
c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0))
, (sqrt(a)*x**6/6, True)) + B*c**2*Piecewise((-16*a**4*sqrt(a + c*x**2)/(31
5*c**4) + 8*a**3*x**2*sqrt(a + c*x**2)/(315*c**3) - 2*a**2*x**4*sqrt(a + c*
x**2)/(105*c**2) + a*x**6*sqrt(a + c*x**2)/(63*c) + x**8*sqrt(a + c*x**2)/9
, Ne(c, 0)), (sqrt(a)*x**8/8, True))
```

3.342 $\int x(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=126

$$-\frac{5a^4B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}+\frac{\left(a+cx^2\right)^{7/2}(8A+7Bx)}{56c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}$$

Rubi [A] time = 0.04, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {780, 195, 217, 206}

$$-\frac{5a^4B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}+\frac{\left(a+cx^2\right)^{7/2}(8A+7Bx)}{56c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (-5*a^3*B*x*Sqrt[a + c*x^2])/(128*c) - (5*a^2*B*x*(a + c*x^2)^(3/2))/(192*c
) - (a*B*x*(a + c*x^2)^(5/2))/(48*c) + ((8*A + 7*B*x)*(a + c*x^2)^(7/2))/(5
6*c) - (5*a^4*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(128*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && !Le
Q[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+cx^2\right)^{5/2}dx=\frac{(8A+7Bx)\left(a+cx^2\right)^{7/2}}{56c}-\frac{(aB)\int\left(a+cx^2\right)^{5/2}dx}{8c}$$
$$=-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}+\frac{(8A+7Bx)\left(a+cx^2\right)^{7/2}}{56c}-\frac{\left(5a^2B\right)\int\left(a+cx^2\right)^{3/2}dx}{48c}$$
$$=-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}+\frac{(8A+7Bx)\left(a+cx^2\right)^{7/2}}{56c}-\frac{\left(5a^3B\right)\int\sqrt{\cdots}}{64\cdots}$$
$$=-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}+\frac{(8A+7Bx)\left(a+cx^{2}\cdots\right.}{56c}$$
$$=-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}+\frac{(8A+7Bx)\left(a+cx^{2}\cdots\right.}{56c}$$
$$=-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}+\frac{(8A+7Bx)\left(a+cx^{2}\cdots\right.}{56c}$$

Mathematica [A] time = 0.49, size = 112, normalized size = 0.89

$$\frac{\left(a+cx^2\right)^{7/2}\left(-\frac{7aBx\left(\frac{15a^{7/2}\sqrt{\frac{cx^2}{a}+1}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{c}x}+\left(a+cx^2\right)\left(33a^2+26acx^2+8c^2x^4\right)\right)}{\left(a+cx^2\right)^4}+384A+336Bx\right)}{2688c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] ((a + c*x^2)^(7/2)*(384*A + 336*B*x - (7*a*B*x*((a + c*x^2)*(33*a^2 + 26*a*
c*x^2 + 8*c^2*x^4) + (15*a^(7/2)*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c]*x)/Sq
rt[a]])/(Sqrt[c]*x)))/(a + c*x^2)^4))/(2688*c)
```

IntegrateAlgebraic [A] time = 0.44, size = 125, normalized size = 0.99

$$\frac{5a^4B\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{128c^{3/2}}+\frac{\sqrt{a+cx^2}\left(384a^3A+105a^3Bx+1152a^2Acx^2+826a^2Bcx^3+1152aAc^2x^4+952aBc^2x^5+384Ac^3x^6+336Bc^3x^7\right)}{2688c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(384*a^3*A + 105*a^3*B*x + 1152*a^2*A*c*x^2 + 826*a^2*B*c*
x^3 + 1152*a*A*c^2*x^4 + 952*a*B*c^2*x^5 + 384*A*c^3*x^6 + 336*B*c^3*x^7))/
(2688*c) + (5*a^4*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(128*c^(3/2))
```

fricas [A] time = 0.47, size = 253, normalized size = 2.01

$$\left[\frac{105\,Ba^4\sqrt{c}\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(336\,Bc^4x^7+384\,Ac^4x^6+952\,Bac^3x^5+1152\,Aac^3x^4+826\,Ba^2c^2x^3+1152\,Aa^2c^2x^2+105\,Ba^3cx+384\,Aa^3c\right)\sqrt{cx^2+a}}{5376\,c^2},\frac{105\,Ba^4\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)+\left(336\,Bc^4x^7+384\,Ac^4x^6+952\,Bac^3x^5+1152\,Aac^3x^4+826\,Ba^2c^2x^3+1152\,Aa^2c^2x^2+105\,Ba^3cx+384\,Aa^3c\right)\sqrt{cx^2+a}}{2688\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/5376*(105*B*a^4*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(336*B*c^4*x^7 + 384*A*c^4*x^6 + 952*B*a*c^3*x^5 + 1152*A*a*c^3*x^4 + 8
```

```
26*B*a^2*c^2*x^3 + 1152*A*a^2*c^2*x^2 + 105*B*a^3*c*x + 384*A*a^3*c)*sqrt(c
*x^2 + a))/c^2, 1/2688*(105*B*a^4*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a
)) + (336*B*c^4*x^7 + 384*A*c^4*x^6 + 952*B*a*c^3*x^5 + 1152*A*a*c^3*x^4 +
826*B*a^2*c^2*x^3 + 1152*A*a^2*c^2*x^2 + 105*B*a^3*c*x + 384*A*a^3*c)*sqrt(
c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 114, normalized size = 0.90

$$\frac{5\,Ba^4\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{3}{2}}}+\frac{1}{2688}\left(\frac{384\,Aa^3}{c}+\left(\frac{105\,Ba^3}{c}+2\left(576\,Aa^2+\left(413\,Ba^2+4\left(144\,Aac+\left(119\,Bac+6\left(7\,Bc^2x+8\,Ac^2\right)x\right)x\right)x\right)x\right)x\right)x\right)\sqrt{cx^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 5/128*B*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/2688*(384*A*
a^3/c + (105*B*a^3/c + 2*(576*A*a^2 + (413*B*a^2 + 4*(144*A*a*c + (119*B*a*
c + 6*(7*B*c^2*x + 8*A*c^2)*x)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.05, size = 113, normalized size = 0.90

$$-\frac{5B\,a^4\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^2+a}\,B\,a^3x}{128c}-\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}B\,a^2x}{192c}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Bax}{48c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}Bx}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A}{7c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/8*B*x*(c*x^2+a)^(7/2)/c-1/48*a*B*x*(c*x^2+a)^(5/2)/c-5/192*a^2*B*x*(c*x^2
+a)^(3/2)/c-5/128*a^3*B*x*(c*x^2+a)^(1/2)/c-5/128*B*a^4/c^(3/2)*ln(c^(1/2)*
x+(c*x^2+a)^(1/2))+1/7*A*(c*x^2+a)^(7/2)/c
```

maxima [A] time = 0.56, size = 105, normalized size = 0.83

$$\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bx}{8\,c}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bax}{48\,c}-\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ba^2x}{192\,c}-\frac{5\,\sqrt{cx^2+a}\,Ba^3x}{128\,c}-\frac{5\,Ba^4\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{3}{2}}}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + a)^(7/2)*B*x/c - 1/48*(c*x^2 + a)^(5/2)*B*a*x/c - 5/192*(c*x^2
 + a)^(3/2)*B*a^2*x/c - 5/128*sqrt(c*x^2 + a)*B*a^3*x/c - 5/128*B*a^4*arcsi
nh(c*x/sqrt(a*c))/c^(3/2) + 1/7*(c*x^2 + a)^(7/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [A] time = 22.22, size = 354, normalized size = 2.81

$$Aa^2\left(\begin{cases}\frac{\sqrt{a}x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+2Aac\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}x^4}{4} & \text{otherwise}\end{cases}\right)+Ac^2\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}x^6}{6} & \text{otherwise}\end{cases}\right)+\frac{5Ba^{\frac{7}{2}}x}{128c\sqrt{1+\frac{cx^2}{a}}}+\frac{133Ba^{\frac{5}{2}}x^3}{384\sqrt{1+\frac{cx^2}{a}}}+\frac{127Ba^{\frac{3}{2}}cx^5}{192\sqrt{1+\frac{cx^2}{a}}}+\frac{23B\sqrt{a}c^2x^7}{48\sqrt{1+\frac{cx^2}{a}}}-\frac{5Ba^4\,\mathrm{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{128c^{\frac{3}{2}}}+\frac{Bc^3x^9}{8\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**2*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), Tr
ue)) + 2*A*a*c*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(
a + c*x**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, T
rue)) + A*c**2*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*
sqrt(a + c*x**2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a
+ c*x**2)/7, Ne(c, 0)), (sqrt(a)*x**6/6, True)) + 5*B*a**(7/2)*x/(128*c*sqr
t(1 + c*x**2/a)) + 133*B*a**(5/2)*x**3/(384*sqrt(1 + c*x**2/a)) + 127*B*a**
(3/2)*c*x**5/(192*sqrt(1 + c*x**2/a)) + 23*B*sqrt(a)*c**2*x**7/(48*sqrt(1 +
 c*x**2/a)) - 5*B*a**4*asinh(sqrt(c)*x/sqrt(a))/(128*c**(3/2)) + B*c**3*x**
9/(8*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.343 $\int (A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=107

$$\frac{5a^3A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}$$

Rubi [A] time = 0.03, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {641, 195, 217, 206}

$$\frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{5a^3A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (5*a^2*A*x*Sqrt[a + c*x^2])/16 + (5*a*A*x*(a + c*x^2)^(3/2))/24 + (A*x*(a +
 c*x^2)^(5/2))/6 + (B*(a + c*x^2)^(7/2))/(7*c) + (5*a^3*A*ArcTanh[(Sqrt[c]*
x)/Sqrt[a + c*x^2]])/(16*Sqrt[c])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{B\left(a+cx^2\right)^{7/2}}{7c}+A\int \left(a+cx^2\right)^{5/2}\,dx\\ &= \frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}+\frac{1}{6}(5aA)\int \left(a+cx^2\right)^{3/2}\,dx\\ &= \frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}+\frac{1}{8}\left(5a^2A\right)\int \sqrt{a+cx^2}\,d\\ &= \frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}+\frac{1}{16}\\ &= \frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}+\frac{1}{16}\\ &= \frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}+\frac{5a^3}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 108, normalized size = 1.01

$$\frac{105a^3A\sqrt{c}\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)+\sqrt{a+cx^2}\left(48a^3B+3a^2cx(77A+48Bx)+2ac^2x^3(91A+72Bx)+8c^3x^5(7A+6Bx)\right)}{336c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(48*a^3*B + 8*c^3*x^5*(7*A + 6*B*x) + 3*a^2*c*x*(77*A + 48
*B*x) + 2*a*c^2*x^3*(91*A + 72*B*x)) + 105*a^3*A*Sqrt[c]*Log[c*x + Sqrt[c]*
Sqrt[a + c*x^2]])/(336*c)
```

IntegrateAlgebraic [A] time = 0.42, size = 116, normalized size = 1.08

$$\frac{\sqrt{a+cx^2}\left(48a^3B+231a^2Acx+144a^2Bcx^2+182aAc^2x^3+144aBc^2x^4+56Ac^3x^5+48Bc^3x^6\right)}{336c}-\frac{5a^3A\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{16\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(48*a^3*B + 231*a^2*A*c*x + 144*a^2*B*c*x^2 + 182*a*A*c^2*
x^3 + 144*a*B*c^2*x^4 + 56*A*c^3*x^5 + 48*B*c^3*x^6))/(336*c) - (5*a^3*A*Lo
g[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(16*Sqrt[c])
```

fricas [A] time = 0.47, size = 224, normalized size = 2.09

$$\left[\frac{105\,Aa^3\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(48\,Bc^3x^6+56\,Ac^3x^5+144\,Bac^2x^4+182\,Aac^2x^3+144\,Ba^2cx^2+231\,Aa^2cx+48\,Ba^3\right)\sqrt{cx^2+a}}{672\,c},\ -\frac{105\,Aa^3\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\left(48\,Bc^3x^6+56\,Ac^3x^5+144\,Bac^2x^4+182\,Aac^2x^3+144\,Ba^2cx^2+231\,Aa^2cx+48\,Ba^3\right)\sqrt{cx^2+a}}{336\,c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/672*(105*A*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 2*(48*B*c^3*x^6 + 56*A*c^3*x^5 + 144*B*a*c^2*x^4 + 182*A*a*c^2*x^3 + 144*B
*a^2*c*x^2 + 231*A*a^2*c*x + 48*B*a^3)*sqrt(c*x^2 + a))/c, -1/336*(105*A*a^
3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (48*B*c^3*x^6 + 56*A*c^3*x^
5 + 144*B*a*c^2*x^4 + 182*A*a*c^2*x^3 + 144*B*a^2*c*x^2 + 231*A*a^2*c*x + 4
8*B*a^3)*sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.20, size = 101, normalized size = 0.94

$$-\frac{5\,Aa^{3}\log\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+a}\right|\right)}{16\,\sqrt{c}}+\frac{1}{336}\left(\frac{48\,Ba^{3}}{c}+\left(231\,Aa^{2}+2\left(72\,Ba^{2}+\left(91\,Aac+4\left(18\,Bac+\left(6\,Bc^{2}x+7\,Ac^{2}\right)x\right)x\right)x\right)x\right)\sqrt{cx^{2}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -5/16*A*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/336*(48*B*a^
3/c + (231*A*a^2 + 2*(72*B*a^2 + (91*A*a*c + 4*(18*B*a*c + (6*B*c^2*x + 7*A
*c^2)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.05, size = 85, normalized size = 0.79

$$\frac{5A\,a^{3}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{16\sqrt{c}}+\frac{5\sqrt{c\,x^{2}+a}\;A\,a^{2}x}{16}+\frac{5\left(c\,x^{2}+a\right)^{\frac{3}{2}}Aax}{24}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Ax}{6}+\frac{\left(c\,x^{2}+a\right)^{\frac{7}{2}}B}{7c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/7*B*(c*x^2+a)^(7/2)/c+1/6*A*x*(c*x^2+a)^(5/2)+5/24*a*A*x*(c*x^2+a)^(3/2)+
5/16*a^2*A*x*(c*x^2+a)^(1/2)+5/16*A*a^3/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2
))
```

maxima [A] time = 0.46, size = 77, normalized size = 0.72

$$\frac{1}{6}\left(cx^{2}+a\right)^{\frac{5}{2}}Ax+\frac{5}{24}\left(cx^{2}+a\right)^{\frac{3}{2}}Aax+\frac{5}{16}\sqrt{cx^{2}+a}\,Aa^{2}x+\frac{5\,Aa^{3}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,\sqrt{c}}+\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}B}{7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(5/2)*A*x + 5/24*(c*x^2 + a)^(3/2)*A*a*x + 5/16*sqrt(c*x^2
+ a)*A*a^2*x + 5/16*A*a^3*arcsinh(c*x/sqrt(a*c))/sqrt(c) + 1/7*(c*x^2 + a)^
(7/2)*B/c
```

mupad [B] time = 1.34, size = 54, normalized size = 0.50

$$\frac{B\left(c\,x^{2}+a\right)^{7/2}}{7\,c}+\frac{A\,x\left(c\,x^{2}+a\right)^{5/2}{}_{2}\mathrm{F}_{1}\left(-\frac{5}{2},\frac{1}{2};\ \frac{3}{2};\ -\frac{c\,x^{2}}{a}\right)}{\left(\frac{c\,x^{2}}{a}+1\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] (B*(a + c*x^2)^(7/2))/(7*c) + (A*x*(a + c*x^2)^(5/2)*hypergeom([-5/2, 1/2],
 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^(5/2)
```

sympy [A] time = 14.70, size = 348, normalized size = 3.25

$$\frac{Aa^{\frac{5}{2}}x\sqrt{1+\frac{cx^{2}}{a}}}{2}+\frac{3Aa^{\frac{5}{2}}x}{16\sqrt{1+\frac{cx^{2}}{a}}}+\frac{35Aa^{\frac{3}{2}}cx^{3}}{48\sqrt{1+\frac{cx^{2}}{a}}}+\frac{17A\sqrt{a}\,c^{2}x^{5}}{24\sqrt{1+\frac{cx^{2}}{a}}}+\frac{5Aa^{3}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16\sqrt{c}}+\frac{Ac^{3}x^{7}}{6\sqrt{a}\,\sqrt{1+\frac{cx^{2}}{a}}}+Ba^{2}\left(\begin{cases}\frac{\sqrt{a}\,x^{2}}{2} & \text{for}\: c=0\\\frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+2Bac\left(\begin{cases}-\frac{2a^{2}\sqrt{a+cx^{2}}}{15c^{2}}+\frac{ax^{2}\sqrt{a+cx^{2}}}{15c}+\frac{x^{4}\sqrt{a+cx^{2}}}{5} & \text{for}\: c\neq 0\\\frac{\sqrt{a}\,x^{4}}{4} & \text{otherwise}\end{cases}\right)+Bc^{2}\left(\begin{cases}\frac{8a^{3}\sqrt{a+cx^{2}}}{105c^{3}}-\frac{4a^{2}x^{2}\sqrt{a+cx^{2}}}{105c^{2}}+\frac{ax^{4}\sqrt{a+cx^{2}}}{35c}+\frac{x^{6}\sqrt{a+cx^{2}}}{7} & \text{for}\: c\neq 0\\\frac{\sqrt{a}\,x^{6}}{6} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**(5/2)*x*sqrt(1 + c*x**2/a)/2 + 3*A*a**(5/2)*x/(16*sqrt(1 + c*x**2/a))
+ 35*A*a**(3/2)*c*x**3/(48*sqrt(1 + c*x**2/a)) + 17*A*sqrt(a)*c**2*x**5/(24
*sqrt(1 + c*x**2/a)) + 5*A*a**3*asinh(sqrt(c)*x/sqrt(a))/(16*sqrt(c)) + A*c
**3*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a**2*Piecewise((sqrt(a)*x**2/2,
 Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + 2*B*a*c*Piecewise((-2*a**2
*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) + x**4*sqrt(a
+ c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + B*c**2*Piecewise((8*a**3*
sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*c**2) + a*x
**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0)), (sqrt(a)*
x**6/6, True))
```

3.344 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=132

$$-a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{1}{16}a^2\sqrt{a+cx^2}\,(16A+5Bx)+\frac{1}{24}a\left(a+cx^2\right)^{3/2}(8A+5Bx)+$$

Rubi [A] time = 0.12, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {815, 844, 217, 206, 266, 63, 208}

$$\frac{1}{16}a^2\sqrt{a+cx^2}\,(16A+5Bx)-a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{1}{24}a\left(a+cx^2\right)^{3/2}(8A+5Bx)+\frac{1}{30}\left(a+cx^2\right)^{5/2}(6A+5Bx)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x,x]
```

```
[Out] (a^2*(16*A + 5*B*x)*Sqrt[a + c*x^2])/16 + (a*(8*A + 5*B*x)*(a + c*x^2)^(3/2
))/24 + ((6*A + 5*B*x)*(a + c*x^2)^(5/2))/30 + (5*a^3*B*ArcTanh[(Sqrt[c]*x)
/Sqrt[a + c*x^2]])/(16*Sqrt[c]) - a^(5/2)*A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]
]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
```

```
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x}\,dx = \frac{1}{30}(6A+5Bx)\left(a+cx^2\right)^{5/2} + \frac{\int \frac{(6aAc+5aBcx)\left(a+cx^2\right)^{3/2}}{x}\,dx}{6c}$$

$$= \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx^2\right)^{5/2} + \frac{\int \frac{\left(24a^2Ac^2+15a^2Bc^2x\right)\sqrt{a+}}{x}}{24c^2}$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx\right.$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx\right.$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx\right.$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx\right.$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx\right.$$

Mathematica [A] time = 0.33, size = 139, normalized size = 1.05

$$-a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5a^{7/2}B\sqrt{\frac{cx^2}{a}+1}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{16\sqrt{c}\sqrt{a+cx^2}}+\frac{1}{240}\sqrt{a+cx^2}\left(a^2(368A+165Bx)+2acx^2(88A+65Bx)+8c^2x^4(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[a + c*x^2]*(8*c^2*x^4*(6*A + 5*B*x) + 2*a*c*x^2*(88*A + 65*B*x) + a^2
*(368*A + 165*B*x)))/240 + (5*a^(7/2)*B*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c
]*x)/Sqrt[a]])/(16*Sqrt[c]*Sqrt[a + c*x^2]) - a^(5/2)*A*ArcTanh[Sqrt[a + c*
x^2]/Sqrt[a]]
```

IntegrateAlgebraic [A] time = 0.47, size = 138, normalized size = 1.05

$$2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{5a^3B\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{16\sqrt{c}}+\frac{1}{240}\sqrt{a+cx^2}\left(368a^2A+165a^2Bx+176aAcx^2+130aBcx^3+48Ac^2x^4+40Bc^2x^5\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[a + c*x^2]*(368*a^2*A + 165*a^2*B*x + 176*a*A*c*x^2 + 130*a*B*c*x^3 +
 48*A*c^2*x^4 + 40*B*c^2*x^5))/240 + 2*a^(5/2)*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a
] - Sqrt[a + c*x^2]/Sqrt[a]] - (5*a^3*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]]
)/(16*Sqrt[c])
```

fricas [**A**] time = 0.48, size = 539, normalized size = 4.08

$$\left[\frac{75 Ba^3\sqrt{c}\log\left(-2 cx^2-2\sqrt{cx^2+a}\sqrt{c}x-a\right)+240 Aa^{\frac{5}{2}}c\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)+2\left(40 Bc^3x^5+48 Ac^3x^4+130 Bac^2x^3+176 Aac^2x^2+165 Ba^2cx+368 Aa^2c\right)\sqrt{cx^2+a}}{480 c}, -\frac{75 Ba^3\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-120 Aa^{\frac{5}{2}}c\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)-\left(40 Bc^3x^5+48 Ac^3x^4+130 Bac^2x^3+176 Aac^2x^2+165 Ba^2cx+368 Aa^2c\right)\sqrt{cx^2+a}}{240 c}, \frac{480 A\sqrt{-a}a^2c\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+75 Ba^3\sqrt{c}\log\left(-2 cx^2-2\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(40 Bc^3x^5+48 Ac^3x^4+130 Bac^2x^3+176 Aac^2x^2+165 Ba^2cx+368 Aa^2c\right)\sqrt{cx^2+a}}{480 c}, -\frac{75 Ba^3\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-240 A\sqrt{-a}a^2c\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(40 Bc^3x^5+48 Ac^3x^4+130 Bac^2x^3+176 Aac^2x^2+165 Ba^2cx+368 Aa^2c\right)\sqrt{cx^2+a}}{240 c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [1/480*(75*B*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
240*A*a^(5/2)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(40
*B*c^3*x^5 + 48*A*c^3*x^4 + 130*B*a*c^2*x^3 + 176*A*a*c^2*x^2 + 165*B*a^2*c
*x + 368*A*a^2*c)*sqrt(c*x^2 + a))/c, -1/240*(75*B*a^3*sqrt(-c)*arctan(sqrt
(-c)*x/sqrt(c*x^2 + a)) - 120*A*a^(5/2)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*s
qrt(a) + 2*a)/x^2) - (40*B*c^3*x^5 + 48*A*c^3*x^4 + 130*B*a*c^2*x^3 + 176*A
*a*c^2*x^2 + 165*B*a^2*c*x + 368*A*a^2*c)*sqrt(c*x^2 + a))/c, 1/480*(480*A*
sqrt(-a)*a^2*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 75*B*a^3*sqrt(c)*log(-2*c
*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(40*B*c^3*x^5 + 48*A*c^3*x^4 +
130*B*a*c^2*x^3 + 176*A*a*c^2*x^2 + 165*B*a^2*c*x + 368*A*a^2*c)*sqrt(c*x^2
 + a))/c, -1/240*(75*B*a^3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 24
0*A*sqrt(-a)*a^2*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (40*B*c^3*x^5 + 48*A*
c^3*x^4 + 130*B*a*c^2*x^3 + 176*A*a*c^2*x^2 + 165*B*a^2*c*x + 368*A*a^2*c)*
sqrt(c*x^2 + a))/c]
```

giac [**A**] time = 0.21, size = 125, normalized size = 0.95

$$\frac{2 Aa^3\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{5 Ba^3\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{16\sqrt{c}}+\frac{1}{240}\left(368 Aa^2+\left(165 Ba^2+2\left(88 Aac+\left(65 Bac+4\left(5 Bc^2x+6 Ac^2\right)x\right)x\right)x\right)x\right)\sqrt{cx^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 2*A*a^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 5/16*B*a
^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/240*(368*A*a^2 + (165
*B*a^2 + 2*(88*A*a*c + (65*B*a*c + 4*(5*B*c^2*x + 6*A*c^2)*x)*x)*x)*x)*sqrt
(c*x^2 + a)
```

maple [**A**] time = 0.05, size = 138, normalized size = 1.05

$$-A a^{\frac{5}{2}}\ln\left(\frac{2a+2\sqrt{c x^2+a}\,\sqrt{a}}{x}\right)+\frac{5B a^3\ln\left(\sqrt{c}\,x+\sqrt{c x^2+a}\right)}{16\sqrt{c}}+\frac{5\sqrt{c x^2+a}\,B a^2 x}{16}+\sqrt{c x^2+a}\,A a^2+\frac{5\left(c x^2+a\right)^{\frac{3}{2}}Bax}{24}+\frac{\left(c x^2+a\right)^{\frac{3}{2}}Aa}{3}+\frac{\left(c x^2+a\right)^{\frac{5}{2}}Bx}{6}+\frac{\left(c x^2+a\right)^{\frac{5}{2}}A}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x,x)
```

```
[Out] 1/6*B*x*(c*x^2+a)^(5/2)+5/24*B*a*x*(c*x^2+a)^(3/2)+5/16*B*a^2*x*(c*x^2+a)^(
1/2)+5/16*B*a^3/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/5*A*(c*x^2+a)^(5/2)
+1/3*A*a*(c*x^2+a)^(3/2)-A*a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+A*
(c*x^2+a)^(1/2)*a^2
```

maxima [**A**] time = 0.58, size = 119, normalized size = 0.90

$$\frac{1}{6}\left(cx^2+a\right)^{\frac{5}{2}}Bx+\frac{5}{24}\left(cx^2+a\right)^{\frac{3}{2}}Bax+\frac{5}{16}\sqrt{cx^2+a}\,Ba^2x+\frac{5\,Ba^3\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\sqrt{c}}-Aa^{\frac{5}{2}}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{5}\left(cx^2+a\right)^{\frac{5}{2}}A+\frac{1}{3}\left(cx^2+a\right)^{\frac{3}{2}}Aa+\sqrt{cx^2+a}\,Aa^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(5/2)*B*x + 5/24*(c*x^2 + a)^(3/2)*B*a*x + 5/16*sqrt(c*x^2
+ a)*B*a^2*x + 5/16*B*a^3*arcsinh(c*x/sqrt(a*c))/sqrt(c) - A*a^(5/2)*arcsin
h(a/(sqrt(a*c)*abs(x))) + 1/5*(c*x^2 + a)^(5/2)*A + 1/3*(c*x^2 + a)^(3/2)*A
*a + sqrt(c*x^2 + a)*A*a^2
```

mupad [B] time = 1.43, size = 101, normalized size = 0.77

$$\frac{A\left(c\,x^2+a\right)^{5/2}}{5}+A\,a^2\,\sqrt{c\,x^2+a}+\frac{A\,a\,\left(c\,x^2+a\right)^{3/2}}{3}+\frac{B\,x\,\left(c\,x^2+a\right)^{5/2}\,{}_2\mathrm{F}_1\left(-\frac{5}{2},\frac{1}{2};\ \frac{3}{2};\ -\frac{c\,x^2}{a}\right)}{\left(\frac{c\,x^2}{a}+1\right)^{5/2}}+A\,a^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1\mathrm{i}}{\sqrt{a}}\right)\,1\mathrm{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x,x)
```

```
[Out] (A*(a + c*x^2)^(5/2))/5 + A*a^2*(a + c*x^2)^(1/2) + A*a^(5/2)*atan(((a + c*
x^2)^(1/2)*1i)/a^(1/2))*1i + (A*a*(a + c*x^2)^(3/2))/3 + (B*x*(a + c*x^2)^(
5/2)*hypergeom([-5/2, 1/2], 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^(5/2)
```

sympy [A] time = 29.89, size = 323, normalized size = 2.45

$$-Aa^{\frac{5}{2}}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)+\frac{Aa^3}{\sqrt{c}x\sqrt{\frac{a}{cx^2}+1}}+\frac{Aa^2\sqrt{c}x}{\sqrt{\frac{a}{cx^2}+1}}+2Aac\left(\begin{cases}\frac{\sqrt{a}x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Ac^2\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}x^4}{4} & \text{otherwise}\end{cases}\right)+\frac{Ba^{\frac{5}{2}}x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{3Ba^{\frac{5}{2}}x}{16\sqrt{1+\frac{cx^2}{a}}}+\frac{35Ba^{\frac{3}{2}}cx^3}{48\sqrt{1+\frac{cx^2}{a}}}+\frac{17B\sqrt{a}c^2x^5}{24\sqrt{1+\frac{cx^2}{a}}}+\frac{5Ba^3\operatorname{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{16\sqrt{c}}+\frac{Bc^3x^7}{6\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x,x)
```

```
[Out] -A*a**(5/2)*asinh(sqrt(a)/(sqrt(c)*x)) + A*a**3/(sqrt(c)*x*sqrt(a/(c*x**2)
+ 1)) + A*a**2*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + 2*A*a*c*Piecewise((sqrt(a)*
x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + A*c**2*Piecewise((-
2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) + x**4*s
qrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + B*a**(5/2)*x*sqrt(1
 + c*x**2/a)/2 + 3*B*a**(5/2)*x/(16*sqrt(1 + c*x**2/a)) + 35*B*a**(3/2)*c*x
**3/(48*sqrt(1 + c*x**2/a)) + 17*B*sqrt(a)*c**2*x**5/(24*sqrt(1 + c*x**2/a)
) + 5*B*a**3*asinh(sqrt(c)*x/sqrt(a))/(16*sqrt(c)) + B*c**3*x**7/(6*sqrt(a)
*sqrt(1 + c*x**2/a))
```

3.345 $\int \frac{(A+Bx)(a+cx^2)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=136

$$a^{5/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{15}{8}a^2A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\frac{1}{8}a\sqrt{a+cx^2}\,(8aB+15Acx)-\frac{(a+cx^2)^{5/2}(5A-B}{5x}$$

Rubi [A] time = 0.12, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 815, 844, 217, 206, 266, 63, 208}

$$\frac{15}{8}a^2A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+a^{5/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{1}{8}a\sqrt{a+cx^2}\,(8aB+15Acx)-\frac{(a+cx^2)^{5/2}(5A-Bx)}{5x}+\frac{1}{12}(a+cx^2)^{3/2}(4aB+15Acx)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (a*(8*a*B + 15*A*c*x)*Sqrt[a + c*x^2])/8 + ((4*a*B + 15*A*c*x)*(a + c*x^2)^
(3/2))/12 - ((5*A - B*x)*(a + c*x^2)^(5/2))/(5*x) + (15*a^2*A*Sqrt[c]*ArcTa
nh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/8 - a^(5/2)*B*ArcTanh[Sqrt[a + c*x^2]/Sqrt
[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^2}\,dx = -\frac{(5A-Bx)\left(a+cx^2\right)^{5/2}}{5x}-\frac{1}{2}\int \frac{(-2aB-10Acx)\left(a+cx^2\right)^{3/2}}{x}\,dx$$

$$= \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2}-\frac{(5A-Bx)\left(a+cx^2\right)^{5/2}}{5x}-\frac{\int \frac{\left(-8a^2Bc-30aAc^2x\right)\sqrt{a+cx^2}}{x}}{8c}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2}+\frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2}-\frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2}+\frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2}-\frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2}+\frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2}-\frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2}+\frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2}-\frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2}+\frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2}-\frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

Mathematica [C] time = 0.21, size = 117, normalized size = 0.86

$$-a^{5/2}B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{a^3A\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{a+cx^2}}+\frac{1}{15}B\sqrt{a+cx^2}\left(23a^2+11acx^2+3c^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (B*Sqrt[a + c*x^2]*(23*a^2 + 11*a*c*x^2 + 3*c^2*x^4))/15 - a^(5/2)*B*ArcTan
h[Sqrt[a + c*x^2]/Sqrt[a]] - (a^3*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-
5/2, -1/2, 1/2, -((c*x^2)/a)])/(x*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.45, size = 141, normalized size = 1.04

$$2a^{5/2}B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{\sqrt{a+cx^2}\left(-120a^2A+184a^2Bx+135aAcx^2+88aBcx^3+30Ac^2x^4+24Bc^2x^5\right)}{120x}-\frac{15}{8}a^2A\sqrt{c}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-120*a^2*A + 184*a^2*B*x + 135*a*A*c*x^2 + 88*a*B*c*x^3 +
 30*A*c^2*x^4 + 24*B*c^2*x^5))/(120*x) + 2*a^(5/2)*B*ArcTanh[(Sqrt[c]*x)/Sq
rt[a] - Sqrt[a + c*x^2]/Sqrt[a]] - (15*a^2*A*Sqrt[c]*Log[-(Sqrt[c]*x) + Sqr
t[a + c*x^2]])/8
```

fricas [A] time = 0.51, size = 519, normalized size = 3.82

$$\left[\frac{225\,Aa^2\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+120\,Ba^{\frac{5}{2}}x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(24\,Bc^2x^5+30\,Ac^2x^4+88\,Bacx^3+135\,Aacx^2+184\,Ba^2x-120\,Aa^2\right)\sqrt{cx^2+a}}{240\,x},\ -\frac{225\,Aa^2\sqrt{-c}\,x\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-60\,Ba^{\frac{5}{2}}x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-\left(24\,Bc^2x^5+30\,Ac^2x^4+88\,Bacx^3+135\,Aacx^2+184\,Ba^2x-120\,Aa^2\right)\sqrt{cx^2+a}}{120\,x},\ \frac{240\,B\sqrt{-a}\,a^2x\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+225\,Aa^2\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(24\,Bc^2x^5+30\,Ac^2x^4+88\,Bacx^3+135\,Aacx^2+184\,Ba^2x-120\,Aa^2\right)\sqrt{cx^2+a}}{240\,x},\ -\frac{225\,Aa^2\sqrt{-c}\,x\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-120\,B\sqrt{-a}\,a^2x\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(24\,Bc^2x^5+30\,Ac^2x^4+88\,Bacx^3+135\,Aacx^2+184\,Ba^2x-120\,Aa^2\right)\sqrt{cx^2+a}}{120\,x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/240*(225*A*a^2*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 120*B*a^(5/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*
(24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a*c*x^3 + 135*A*a*c*x^2 + 184*B*a^2*x -
 120*A*a^2)*sqrt(c*x^2 + a))/x, -1/120*(225*A*a^2*sqrt(-c)*x*arctan(sqrt(-c
)*x/sqrt(c*x^2 + a)) - 60*B*a^(5/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(
a) + 2*a)/x^2) - (24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a*c*x^3 + 135*A*a*c*x^
2 + 184*B*a^2*x - 120*A*a^2)*sqrt(c*x^2 + a))/x, 1/240*(240*B*sqrt(-a)*a^2*
x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 225*A*a^2*sqrt(c)*x*log(-2*c*x^2 - 2*s
qrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a*c*x
^3 + 135*A*a*c*x^2 + 184*B*a^2*x - 120*A*a^2)*sqrt(c*x^2 + a))/x, -1/120*(2
25*A*a^2*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 120*B*sqrt(-a)*a^2
*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a
*c*x^3 + 135*A*a*c*x^2 + 184*B*a^2*x - 120*A*a^2)*sqrt(c*x^2 + a))/x]
```

giac [A] time = 0.26, size = 150, normalized size = 1.10

$$\frac{2\,Ba^3\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{15}{8}\,Aa^2\sqrt{c}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{2\,Aa^3\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a}+\frac{1}{120}\left(184\,Ba^2+\left(135\,Aac+2\left(44\,Bac+3\left(4\,Bc^2x+5\,Ac^2\right)x\right)x\right)x\right)\sqrt{cx^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 2*B*a^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 15/8*A*a
^2*sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 2*A*a^3*sqrt(c)/((sqrt(
c)*x - sqrt(c*x^2 + a))^2 - a) + 1/120*(184*B*a^2 + (135*A*a*c + 2*(44*B*a*
c + 3*(4*B*c^2*x + 5*A*c^2)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.06, size = 158, normalized size = 1.16

$$\frac{15Aa^2\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{8}-B\,a^{\frac{5}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{15\sqrt{c\,x^2+a}\,Aacx}{8}+\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}Acx}{4}+\sqrt{c\,x^2+a}\,B\,a^2+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Acx}{a}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Ba}{3}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B}{5}-\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+a)^(7/2)+A*c/a*x*(c*x^2+a)^(5/2)+5/4*A*c*x*(c*x^2+a)^(3/2)+15
/8*A*c*a*x*(c*x^2+a)^(1/2)+15/8*A*c^(1/2)*a^2*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
+1/5*B*(c*x^2+a)^(5/2)+1/3*B*a*(c*x^2+a)^(3/2)-B*a^(5/2)*ln((2*a+2*(c*x^2+a
)^(1/2)*a^(1/2))/x)+B*(c*x^2+a)^(1/2)*a^2
```

maxima [A] time = 0.53, size = 120, normalized size = 0.88

$$\frac{5}{4}\left(cx^2+a\right)^{\frac{3}{2}}Acx+\frac{15}{8}\sqrt{cx^2+a}\,Aacx+\frac{15}{8}Aa^2\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-Ba^{\frac{5}{2}}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{5}\left(cx^2+a\right)^{\frac{5}{2}}B+\frac{1}{3}\left(cx^2+a\right)^{\frac{3}{2}}Ba+\sqrt{cx^2+a}\,Ba^2-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] 5/4*(c*x^2 + a)^(3/2)*A*c*x + 15/8*sqrt(c*x^2 + a)*A*a*c*x + 15/8*A*a^2*sqr
t(c)*arcsinh(c*x/sqrt(a*c)) - B*a^(5/2)*arcsinh(a/(sqrt(a*c)*abs(x))) + 1/5
*(c*x^2 + a)^(5/2)*B + 1/3*(c*x^2 + a)^(3/2)*B*a + sqrt(c*x^2 + a)*B*a^2 -
(c*x^2 + a)^(5/2)*A/x
```

mupad [B] time = 2.23, size = 104, normalized size = 0.76

$$\frac{B\left(c\,x^2+a\right)^{5/2}}{5}+B\,a^2\,\sqrt{c\,x^2+a}+\frac{B\,a\left(c\,x^2+a\right)^{3/2}}{3}-\frac{A\left(c\,x^2+a\right)^{5/2}{}_2\mathrm{F}_1\left(-\frac{5}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\left(\frac{c\,x^2}{a}+1\right)^{5/2}}+B\,a^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1\mathrm{i}}{\sqrt{a}}\right)1\mathrm{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^2,x)
```

```
[Out] (B*(a + c*x^2)^(5/2))/5 + B*a^2*(a + c*x^2)^(1/2) + B*a^(5/2)*atan(((a + c*
x^2)^(1/2)*1i)/a^(1/2))*1i + (B*a*(a + c*x^2)^(3/2))/3 - (A*(a + c*x^2)^(5/
2)*hypergeom([-5/2, -1/2], 1/2, -(c*x^2)/a))/(x*((c*x^2)/a + 1)^(5/2))
```

sympy [A] time = 11.72, size = 318, normalized size = 2.34

$$-\frac{Aa^{\frac{5}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+Aa^{\frac{3}{2}}cx\sqrt{1+\frac{cx^2}{a}}-\frac{7Aa^{\frac{3}{2}}cx}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{3A\sqrt{a}c^2x^3}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{15Aa^2\sqrt{c}\operatorname{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{8}+\frac{Ac^3x^5}{4\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}-Ba^{\frac{5}{2}}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)+\frac{Ba^3}{\sqrt{c}x\sqrt{\frac{a}{cx^2}+1}}+\frac{Ba^2\sqrt{c}x}{\sqrt{\frac{a}{cx^2}+1}}+2Bac\left(\begin{cases}\frac{\sqrt{a}x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Bc^2\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}x^4}{4} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**2,x)
```

```
[Out] -A*a**(5/2)/(x*sqrt(1 + c*x**2/a)) + A*a**(3/2)*c*x*sqrt(1 + c*x**2/a) - 7*
A*a**(3/2)*c*x/(8*sqrt(1 + c*x**2/a)) + 3*A*sqrt(a)*c**2*x**3/(8*sqrt(1 + c
*x**2/a)) + 15*A*a**2*sqrt(c)*asinh(sqrt(c)*x/sqrt(a))/8 + A*c**3*x**5/(4*s
qrt(a)*sqrt(1 + c*x**2/a)) - B*a**(5/2)*asinh(sqrt(a)/(sqrt(c)*x)) + B*a**3
/(sqrt(c)*x*sqrt(a/(c*x**2) + 1)) + B*a**2*sqrt(c)*x/sqrt(a/(c*x**2) + 1) +
 2*B*a*c*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c),
True)) + B*c**2*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt
(a + c*x**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4,
True))
```

3.346 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=141

$$-\frac{5}{2}a^{3/2}Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{15}{8}a^2B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{\left(a+cx^2\right)^{5/2}(2A-Bx)}{4x^2}-\frac{5\left(a+cx^2\right)^{3/2}(3aB-2}{12x}$$

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 815, 844, 217, 206, 266, 63, 208}

$$-\frac{5}{2}a^{3/2}Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{15}{8}a^2B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{\left(a+cx^2\right)^{5/2}(2A-Bx)}{4x^2}-\frac{5\left(a+cx^2\right)^{3/2}(3aB-2Acx)}{12x}+\frac{5}{8}ac\sqrt{a+cx^2}(4A+3Bx)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (5*a*c*(4*A + 3*B*x)*Sqrt[a + c*x^2])/8 - (5*(3*a*B - 2*A*c*x)*(a + c*x^2)^
(3/2))/(12*x) - ((2*A - B*x)*(a + c*x^2)^(5/2))/(4*x^2) + (15*a^2*B*Sqrt[c]
*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/8 - (5*a^(3/2)*A*c*ArcTanh[Sqrt[a +
c*x^2]/Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^3}\,dx = -\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} - \frac{5}{16}\int \frac{(-4aB-8Acx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx$$

$$= -\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x} - \frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} + \frac{5}{32}\int \frac{(16aAc+24aBcx)}{x}$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2} - \frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x} - \frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} +$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2} - \frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x} - \frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} +$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2} - \frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x} - \frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} +$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2} - \frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x} - \frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} +$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2} - \frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x} - \frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2} +$$

Mathematica [C] time = 0.03, size = 92, normalized size = 0.65

$$\frac{Ac\left(a+cx^2\right)^{7/2} {}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^2} - \frac{a^2B\sqrt{a+cx^2}\, {}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^3,x]
```

```
[Out] -((a^2*B*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -1/2, 1/2, -((c*x^2)/a)])/
(x*Sqrt[1 + (c*x^2)/a])) + (A*c*(a + c*x^2)^(7/2)*Hypergeometric2F1[2, 7/2,
 9/2, 1 + (c*x^2)/a])/(7*a^2)
```

IntegrateAlgebraic [A] time = 0.52, size = 142, normalized size = 1.01

$$5a^{3/2}Ac\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{\sqrt{a+cx^2}\left(-12a^2A-24a^2Bx+56aAcx^2+27aBcx^3+8Ac^2x^4+6Bc^2x^5\right)}{24x^2}-\frac{15}{8}a^2B\sqrt{c}\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-12*a^2*A - 24*a^2*B*x + 56*a*A*c*x^2 + 27*a*B*c*x^3 + 8*
A*c^2*x^4 + 6*B*c^2*x^5))/(24*x^2) + 5*a^(3/2)*A*c*ArcTanh[(Sqrt[c]*x)/Sqrt
[a] - Sqrt[a + c*x^2]/Sqrt[a]] - (15*a^2*B*Sqrt[c]*Log[-(Sqrt[c]*x) + Sqrt[
a + c*x^2]])/8
```

fricas [A] time = 0.51, size = 535, normalized size = 3.79

$$\left[\frac{45Ba^2\sqrt{c}x^2\log\left(-2cx^2-2\sqrt{cx^2+a}\sqrt{c}x-a\right)+60Aa^{\frac{3}{2}}cx^2\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)+2\left(6Bc^2x^5+8Ac^2x^4+27Bacx^3+56Aacx^2-24Ba^2x-12Aa^2\right)\sqrt{cx^2+a}}{48x^2},-\frac{45Ba^2\sqrt{-c}x^2\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-30Aa^{\frac{3}{2}}cx^2\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)-\left(6Bc^2x^5+8Ac^2x^4+27Bacx^3+56Aacx^2-24Ba^2x-12Aa^2\right)\sqrt{cx^2+a}}{24x^2},\frac{120A\sqrt{-a}acx^2\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+45Ba^2\sqrt{c}x^2\log\left(-2cx^2-2\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(6Bc^2x^5+8Ac^2x^4+27Bacx^3+56Aacx^2-24Ba^2x-12Aa^2\right)\sqrt{cx^2+a}}{48x^2},-\frac{45Ba^2\sqrt{-c}x^2\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-60A\sqrt{-a}acx^2\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(6Bc^2x^5+8Ac^2x^4+27Bacx^3+56Aacx^2-24Ba^2x-12Aa^2\right)\sqrt{cx^2+a}}{24x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/48*(45*B*a^2*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 60*A*a^(3/2)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) +
 2*(6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*c*x^3 + 56*A*a*c*x^2 - 24*B*a^2*x -
12*A*a^2)*sqrt(c*x^2 + a))/x^2, -1/24*(45*B*a^2*sqrt(-c)*x^2*arctan(sqrt(-c
)*x/sqrt(c*x^2 + a)) - 30*A*a^(3/2)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*s
qrt(a) + 2*a)/x^2) - (6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*c*x^3 + 56*A*a*c*x
^2 - 24*B*a^2*x - 12*A*a^2)*sqrt(c*x^2 + a))/x^2, 1/48*(120*A*sqrt(-a)*a*c*
x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 45*B*a^2*sqrt(c)*x^2*log(-2*c*x^2 -
2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*c*
x^3 + 56*A*a*c*x^2 - 24*B*a^2*x - 12*A*a^2)*sqrt(c*x^2 + a))/x^2, -1/24*(45
*B*a^2*sqrt(-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 60*A*sqrt(-a)*a*c*
x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*
c*x^3 + 56*A*a*c*x^2 - 24*B*a^2*x - 12*A*a^2)*sqrt(c*x^2 + a))/x^2]
```

giac [A] time = 0.22, size = 219, normalized size = 1.55

$$\frac{5Aa^2c\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{15}{8}Ba^2\sqrt{c}\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\frac{1}{24}\left(56Aac+\left(27Bac+2\left(3Bc^2x+4Ac^2\right)x\right)x\right)\sqrt{cx^2+a}+\frac{\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Aa^2c+2\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Ba^3\sqrt{c}+\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Aa^3c-2Ba^4\sqrt{c}}{\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 5*A*a^2*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 15/8*B
*a^2*sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/24*(56*A*a*c + (27*
B*a*c + 2*(3*B*c^2*x + 4*A*c^2)*x)*x)*sqrt(c*x^2 + a) + ((sqrt(c)*x - sqrt(
c*x^2 + a))^3*A*a^2*c + 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^3*sqrt(c) + (
sqrt(c)*x - sqrt(c*x^2 + a))*A*a^3*c - 2*B*a^4*sqrt(c))/((sqrt(c)*x - sqrt(
c*x^2 + a))^2 - a)^2
```

maple [A] time = 0.06, size = 181, normalized size = 1.28

$$-\frac{5Aa^{\frac{3}{2}}c\ln\left(\frac{2a+2\sqrt{cx^2+a}\sqrt{a}}{x}\right)}{2}+\frac{15Ba^2\sqrt{c}\ln\left(\sqrt{c}x+\sqrt{cx^2+a}\right)}{8}+\frac{15\sqrt{cx^2+a}Bacx}{8}+\frac{5\sqrt{cx^2+a}Aac}{2}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bcx}{4}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ac}{6}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bcx}{a}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ac}{2a}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{ax}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{2ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+a)^(7/2)+1/2*A*c/a*(c*x^2+a)^(5/2)+5/6*A*c*(c*x^2+a)^(3
/2)-5/2*A*c*a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+5/2*A*c*a*(c*x^2+
a)^(1/2)-B/a/x*(c*x^2+a)^(7/2)+B*c/a*x*(c*x^2+a)^(5/2)+5/4*B*c*x*(c*x^2+a)^
(3/2)+15/8*B*c*a*x*(c*x^2+a)^(1/2)+15/8*B*c^(1/2)*a^2*ln(c^(1/2)*x+(c*x^2+a
)^(1/2))
```

maxima [A] time = 0.69, size = 143, normalized size = 1.01

$$\frac{5}{4}\left(cx^2+a\right)^{\frac{3}{2}}Bcx+\frac{15}{8}\sqrt{cx^2+a}\,Bacx+\frac{15}{8}Ba^2\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{5}{2}Aa^{\frac{3}{2}}c\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{5}{6}\left(cx^2+a\right)^{\frac{3}{2}}Ac+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ac}{2a}+\frac{5}{2}\sqrt{cx^2+a}\,Aac-\frac{\left(cx^2+a\right)^{\frac{5}{2}}B}{x}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{2ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] 5/4*(c*x^2 + a)^(3/2)*B*c*x + 15/8*sqrt(c*x^2 + a)*B*a*c*x + 15/8*B*a^2*sqr
t(c)*arcsinh(c*x/sqrt(a*c)) - 5/2*A*a^(3/2)*c*arcsinh(a/(sqrt(a*c)*abs(x)))
 + 5/6*(c*x^2 + a)^(3/2)*A*c + 1/2*(c*x^2 + a)^(5/2)*A*c/a + 5/2*sqrt(c*x^2
 + a)*A*a*c - (c*x^2 + a)^(5/2)*B/x - 1/2*(c*x^2 + a)^(7/2)*A/(a*x^2)
```

mupad [B] time = 2.51, size = 111, normalized size = 0.79

$$\frac{A\,c\,{\left(c\,x^2+a\right)}^{3/2}}{3}+2\,A\,a\,c\,\sqrt{c\,x^2+a}-\frac{A\,a^2\,\sqrt{c\,x^2+a}}{2\,x^2}-\frac{B\,{\left(c\,x^2+a\right)}^{5/2}\,{}_2\mathrm{F}_1\left(-\frac{5}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\,{\left(\frac{c\,x^2}{a}+1\right)}^{5/2}}+\frac{A\,a^{3/2}\,c\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,5{}\mathrm{i}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^3,x)
```

```
[Out] (A*c*(a + c*x^2)^(3/2))/3 + 2*A*a*c*(a + c*x^2)^(1/2) - (A*a^2*(a + c*x^2)^
(1/2))/(2*x^2) + (A*a^(3/2)*c*atan(((a + c*x^2)^(1/2)*1i)/a^(1/2))*5i)/2 -
(B*(a + c*x^2)^(5/2)*hypergeom([-5/2, -1/2], 1/2, -(c*x^2)/a))/(x*((c*x^2)/
a + 1)^(5/2))
```

sympy [A] time = 12.58, size = 279, normalized size = 1.98

$$-\frac{5Aa^{\frac{3}{2}}c\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{2}-\frac{Aa^2\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2x}+\frac{2Aa^2\sqrt{c}}{x\sqrt{\frac{a}{cx^2}+1}}+\frac{2Aac^{\frac{3}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}+Ac^2\left(\begin{cases}\frac{\sqrt{a}x^2}{2} & \text{for}\: c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)-\frac{Ba^{\frac{5}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+Ba^{\frac{3}{2}}cx\sqrt{1+\frac{cx^2}{a}}-\frac{7Ba^{\frac{3}{2}}cx}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{3B\sqrt{a}c^2x^3}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{15Ba^2\sqrt{c}\operatorname{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{8}+\frac{Bc^3x^5}{4\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**3,x)
```

```
[Out] -5*A*a**(3/2)*c*asinh(sqrt(a)/(sqrt(c)*x))/2 - A*a**2*sqrt(c)*sqrt(a/(c*x**
2) + 1)/(2*x) + 2*A*a**2*sqrt(c)/(x*sqrt(a/(c*x**2) + 1)) + 2*A*a*c**(3/2)*
x/sqrt(a/(c*x**2) + 1) + A*c**2*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a +
 c*x**2)**(3/2)/(3*c), True)) - B*a**(5/2)/(x*sqrt(1 + c*x**2/a)) + B*a**(3
/2)*c*x*sqrt(1 + c*x**2/a) - 7*B*a**(3/2)*c*x/(8*sqrt(1 + c*x**2/a)) + 3*B*
sqrt(a)*c**2*x**3/(8*sqrt(1 + c*x**2/a)) + 15*B*a**2*sqrt(c)*asinh(sqrt(c)*
x/sqrt(a))/8 + B*c**3*x**5/(4*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.347 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=137

$$-\frac{5}{2}a^{3/2}Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{5\left(a+cx^2\right)^{3/2}(aB-Acx)}{6x^2}-\frac{5ac\sqrt{a+cx^2}\,(A-Bx)}{2x}-\frac{\left(a+cx^2\right)^{5/2}(A-Bx)}{3x^3}+\frac{5}{2}aA$$

Rubi [A] time = 0.11, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {813, 844, 217, 206, 266, 63, 208}

$$-\frac{5}{2}a^{3/2}Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{\left(a+cx^2\right)^{5/2}(A-Bx)}{3x^3}-\frac{5\left(a+cx^2\right)^{3/2}(aB-Acx)}{6x^2}-\frac{5ac\sqrt{a+cx^2}\,(A-Bx)}{2x}+\frac{5}{2}aAc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (-5*a*c*(A - B*x)*Sqrt[a + c*x^2])/(2*x) - (5*(a*B - A*c*x)*(a + c*x^2)^(3/
2))/(6*x^2) - ((A - B*x)*(a + c*x^2)^(5/2))/(3*x^3) + (5*a*A*c^(3/2)*ArcTan
h[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - (5*a^(3/2)*B*c*ArcTanh[Sqrt[a + c*x^2]/
Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^4}\,dx &= -\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} - \frac{5}{18}\int \frac{(-6aB-6Acx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx \\
&= -\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2} - \frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} + \frac{5}{48}\int \frac{(24aAc+24aBcx)\sqrt{a}}{x^2} \\
&= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x} - \frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2} - \frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} - \frac{5}{96} \\
&= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x} - \frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2} - \frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} + \frac{1}{2}(\\
&= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x} - \frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2} - \frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} + \frac{1}{4}(\\
&= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x} - \frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2} - \frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} + \frac{5}{2}aA \\
&= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x} - \frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2} - \frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3} + \frac{5}{2}aA
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 94, normalized size = 0.69

$$
\frac{Bc\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^2} - \frac{a^2A\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)}{3x^3\sqrt{\frac{cx^2}{a}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^4,x]
```

```
[Out] -1/3*(a^2*A*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -3/2, -1/2, -((c*x^2)/a
)])/(x^3*Sqrt[1 + (c*x^2)/a]) + (B*c*(a + c*x^2)^(7/2)*Hypergeometric2F1[2,
 7/2, 9/2, 1 + (c*x^2)/a])/(7*a^2)
```

IntegrateAlgebraic [A] time = 0.59, size = 140, normalized size = 1.02

$$
5a^{3/2}Bc\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+cx^2}}{\sqrt{a}}\right) + \frac{\sqrt{a+cx^2}\left(-2a^2A-3a^2Bx-14aAcx^2+14aBcx^3+3Ac^2x^4+2Bc^2x^5\right)}{6x^3} - \frac{5}{2}aAc^{3/2}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-2*a^2*A - 3*a^2*B*x - 14*a*A*c*x^2 + 14*a*B*c*x^3 + 3*A*
c^2*x^4 + 2*B*c^2*x^5))/(6*x^3) + 5*a^(3/2)*B*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a]
 - Sqrt[a + c*x^2]/Sqrt[a]] - (5*a*A*c^(3/2)*Log[-(Sqrt[c]*x) + Sqrt[a + c*
x^2]])/2
```

fricas [A] time = 0.53, size = 529, normalized size = 3.86

$$\left[\frac{15\,Aac^{\frac{3}{2}}x^{3}\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{c}x-a\right)+15\,Ba^{\frac{3}{2}}cx^{3}\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)+2\left(2\,Bc^{2}x^{5}+3\,Ac^{2}x^{4}+14\,Bacx^{3}-14\,Aacx^{2}-3\,Ba^{2}x-2\,Aa^{2}\right)\sqrt{cx^{2}+a}}{12\,x^{3}},\ -\frac{30\,Aa\sqrt{-c}\,cx^{3}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^{2}+a}}\right)-15\,Ba^{\frac{3}{2}}cx^{3}\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)-2\left(2\,Bc^{2}x^{5}+3\,Ac^{2}x^{4}+14\,Bacx^{3}-14\,Aacx^{2}-3\,Ba^{2}x-2\,Aa^{2}\right)\sqrt{cx^{2}+a}}{12\,x^{3}},\ \frac{30\,B\sqrt{-a}\,acx^{3}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)+15\,Aac^{\frac{3}{2}}x^{3}\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{c}x-a\right)+2\left(2\,Bc^{2}x^{5}+3\,Ac^{2}x^{4}+14\,Bacx^{3}-14\,Aacx^{2}-3\,Ba^{2}x-2\,Aa^{2}\right)\sqrt{cx^{2}+a}}{12\,x^{3}},\ -\frac{15\,Aa\sqrt{-c}\,cx^{3}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^{2}+a}}\right)-15\,B\sqrt{-a}\,acx^{3}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)-\left(2\,Bc^{2}x^{5}+3\,Ac^{2}x^{4}+14\,Bacx^{3}-14\,Aacx^{2}-3\,Ba^{2}x-2\,Aa^{2}\right)\sqrt{cx^{2}+a}}{6\,x^{3}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/12*(15*A*a*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 15*B*a^(3/2)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2
*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 14*A*a*c*x^2 - 3*B*a^2*x - 2*A
*a^2)*sqrt(c*x^2 + a))/x^3, -1/12*(30*A*a*sqrt(-c)*c*x^3*arctan(sqrt(-c)*x/
sqrt(c*x^2 + a)) - 15*B*a^(3/2)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(
a) + 2*a)/x^2) - 2*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 14*A*a*c*x^2
 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/x^3, 1/12*(30*B*sqrt(-a)*a*c*x^3*a
rctan(sqrt(-a)/sqrt(c*x^2 + a)) + 15*A*a*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(
c*x^2 + a)*sqrt(c)*x - a) + 2*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 1
4*A*a*c*x^2 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/x^3, -1/6*(15*A*a*sqrt(
-c)*c*x^3*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 15*B*sqrt(-a)*a*c*x^3*arctan
(sqrt(-a)/sqrt(c*x^2 + a)) - (2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 14
*A*a*c*x^2 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/x^3]
```

giac [B] time = 0.23, size = 239, normalized size = 1.74

$$\frac{5\,Ba^{2}c\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{5}{2}\,Aac^{\frac{3}{2}}\log\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+a}\right|\right)+\frac{1}{6}\left(14\,Bac+\left(2\,Bc^{2}x+3\,Ac^{2}\right)x\right)\sqrt{cx^{2}+a}+\frac{3\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Ba^{2}c+18\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Aa^{2}c^{\frac{3}{2}}-24\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Aa^{3}c^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Ba^{4}c+14\,Aa^{4}c^{\frac{3}{2}}}{3\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 5*B*a^2*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 5/2*A*
a*c^(3/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/6*(14*B*a*c + (2*B*c^2
*x + 3*A*c^2)*x)*sqrt(c*x^2 + a) + 1/3*(3*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B
*a^2*c + 18*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a^2*c^(3/2) - 24*(sqrt(c)*x -
 sqrt(c*x^2 + a))^2*A*a^3*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^4*c
 + 14*A*a^4*c^(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^3
```

maple [A] time = 0.06, size = 207, normalized size = 1.51

$$\frac{5Aa\,c^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{2}-\frac{5B\,a^{\frac{3}{2}}c\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{2}+\frac{5\sqrt{c\,x^{2}+a}\,A\,c^{2}x}{2}+\frac{5\left(c\,x^{2}+a\right)^{\frac{3}{2}}A\,c^{2}x}{3a}+\frac{5\sqrt{c\,x^{2}+a}\,Bac}{2}+\frac{4\left(c\,x^{2}+a\right)^{\frac{5}{2}}A\,c^{2}x}{3a^{2}}+\frac{5\left(c\,x^{2}+a\right)^{\frac{3}{2}}Bc}{6}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Bc}{2a}-\frac{4\left(c\,x^{2}+a\right)^{\frac{7}{2}}Ac}{3a^{2}x}-\frac{\left(c\,x^{2}+a\right)^{\frac{7}{2}}B}{2a\,x^{2}}-\frac{\left(c\,x^{2}+a\right)^{\frac{7}{2}}A}{3a\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^4,x)
```

```
[Out] -1/3*A/a/x^3*(c*x^2+a)^(7/2)-4/3*A*c/a^2/x*(c*x^2+a)^(7/2)+4/3*A*c^2/a^2*x*
(c*x^2+a)^(5/2)+5/3*A*c^2/a*x*(c*x^2+a)^(3/2)+5/2*A*c^2*x*(c*x^2+a)^(1/2)+5
/2*A*c^(3/2)*a*ln(c^(1/2)*x+(c*x^2+a)^(1/2))-1/2*B/a/x^2*(c*x^2+a)^(7/2)+1/
2*B*c/a*(c*x^2+a)^(5/2)+5/6*B*c*(c*x^2+a)^(3/2)-5/2*B*c*a^(3/2)*ln((2*a+2*(
c*x^2+a)^(1/2)*a^(1/2))/x)+5/2*B*c*a*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.66, size = 169, normalized size = 1.23

$$\frac{5}{2}\,\sqrt{cx^{2}+a}\,Ac^{2}x+\frac{5\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{2}x}{3\,a}+\frac{5}{2}\,Aac^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{5}{2}\,Ba^{\frac{3}{2}}c\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{5}{6}\left(cx^{2}+a\right)^{\frac{3}{2}}Bc+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Bc}{2\,a}+\frac{5}{2}\,\sqrt{cx^{2}+a}\,Bac-\frac{4\left(cx^{2}+a\right)^{\frac{5}{2}}Ac}{3\,ax}-\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}B}{2\,ax^{2}}-\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}A}{3\,ax^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] 5/2*sqrt(c*x^2 + a)*A*c^2*x + 5/3*(c*x^2 + a)^(3/2)*A*c^2*x/a + 5/2*A*a*c^(
3/2)*arcsinh(c*x/sqrt(a*c)) - 5/2*B*a^(3/2)*c*arcsinh(a/(sqrt(a*c)*abs(x)))
 + 5/6*(c*x^2 + a)^(3/2)*B*c + 1/2*(c*x^2 + a)^(5/2)*B*c/a + 5/2*sqrt(c*x^2
 + a)*B*a*c - 4/3*(c*x^2 + a)^(5/2)*A*c/(a*x) - 1/2*(c*x^2 + a)^(7/2)*B/(a*
x^2) - 1/3*(c*x^2 + a)^(7/2)*A/(a*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^4, x)
```

sympy [A] time = 9.68, size = 277, normalized size = 2.02

$$-\frac{2Aa^{\frac{3}{2}}c}{x\sqrt{1+\frac{cx^2}{a}}}+\frac{A\sqrt{a}\,c^2x\sqrt{1+\frac{cx^2}{a}}}{2}-\frac{2A\sqrt{a}\,c^2x}{\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^2\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3}+\frac{5Aac^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2}-\frac{5Ba^{\frac{3}{2}}c\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2}-\frac{Ba^2\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{2x}+\frac{2Ba^2\sqrt{c}}{x\sqrt{\frac{a}{cx^2}+1}}+\frac{2Bac^{\frac{3}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}+Bc^2\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for}\: c=0\\\frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**4,x)
```

```
[Out] -2*A*a**(3/2)*c/(x*sqrt(1 + c*x**2/a)) + A*sqrt(a)*c**2*x*sqrt(1 + c*x**2/a
)/2 - 2*A*sqrt(a)*c**2*x/sqrt(1 + c*x**2/a) - A*a**2*sqrt(c)*sqrt(a/(c*x**2
) + 1)/(3*x**2) - A*a*c**(3/2)*sqrt(a/(c*x**2) + 1)/3 + 5*A*a*c**(3/2)*asin
h(sqrt(c)*x/sqrt(a))/2 - 5*B*a**(3/2)*c*asinh(sqrt(a)/(sqrt(c)*x))/2 - B*a*
*2*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) + 2*B*a**2*sqrt(c)/(x*sqrt(a/(c*x**2)
 + 1)) + 2*B*a*c**(3/2)*x/sqrt(a/(c*x**2) + 1) + B*c**2*Piecewise((sqrt(a)*
x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True))
```

3.348 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^5} dx$

Optimal. Leaf size=143

$$-\frac{5c\sqrt{a+cx^2}\,(4aB-3Acx)}{8x}-\frac{\left(a+cx^2\right)^{5/2}(A-2Bx)}{4x^4}-\frac{5\left(a+cx^2\right)^{3/2}(4aB+3Acx)}{24x^3}-\frac{15}{8}\sqrt{a}\,Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right.$$

Rubi [A] time = 0.12, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 811, 844, 217, 206, 266, 63, 208}

$$-\frac{\left(a+cx^2\right)^{5/2}(A-2Bx)}{4x^4}-\frac{5\left(a+cx^2\right)^{3/2}(4aB+3Acx)}{24x^3}-\frac{5c\sqrt{a+cx^2}\,(4aB-3Acx)}{8x}-\frac{15}{8}\sqrt{a}\,Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5}{2}aBc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (-5*c*(4*a*B - 3*A*c*x)*Sqrt[a + c*x^2])/(8*x) - (5*(4*a*B + 3*A*c*x)*(a +
c*x^2)^(3/2))/(24*x^3) - ((A - 2*B*x)*(a + c*x^2)^(5/2))/(4*x^4) + (5*a*B*c
^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - (15*Sqrt[a]*A*c^2*ArcTanh[
Sqrt[a + c*x^2]/Sqrt[a]])/8
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
```

```
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^5}\,dx = -\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4} - \frac{5}{16}\int \frac{(-8aB-4Acx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx$$

$$= -\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4} + \frac{5\int \frac{\left(32a^2Bc+24aAc^2x\right)\sqrt{a+cx^2}}{x^2}}{64a}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x} - \frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x} - \frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x} - \frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x} - \frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x} - \frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

Mathematica [C] time = 0.03, size = 96, normalized size = 0.67

$$-\frac{Ac^2\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^3} - \frac{a^2B\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)}{3x^3\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^5,x]
```

```
[Out] -1/3*(a^2*B*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -3/2, -1/2, -((c*x^2)/a
)])/(x^3*Sqrt[1 + (c*x^2)/a]) - (A*c^2*(a + c*x^2)^(7/2)*Hypergeometric2F1[
3, 7/2, 9/2, 1 + (c*x^2)/a])/(7*a^3)
```

IntegrateAlgebraic [A] time = 0.64, size = 144, normalized size = 1.01

$$\frac{\sqrt{a+cx^2}\left(-6a^2A-8a^2Bx-27aAcx^2-56aBcx^3+24Ac^2x^4+12Bc^2x^5\right)}{24x^4}+\frac{15}{4}\sqrt{a}\,Ac^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{5}{2}aBc^{3/2}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-6*a^2*A - 8*a^2*B*x - 27*a*A*c*x^2 - 56*a*B*c*x^3 + 24*A
*c^2*x^4 + 12*B*c^2*x^5))/(24*x^4) + (15*Sqrt[a]*A*c^2*ArcTanh[(Sqrt[c]*x)/
Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/4 - (5*a*B*c^(3/2)*Log[-(Sqrt[c]*x) + S
qrt[a + c*x^2]])/2
```

fricas [A] time = 0.54, size = 534, normalized size = 3.73

$$\left[\frac{60\,Bac^{\frac{3}{2}}x^4\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+45\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(12\,Bc^2x^5+24\,Ac^2x^4-56\,Bacx^3-27\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{48\,x^4},\ -\frac{120\,Ba\sqrt{-c}\,cx^4\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-45\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(12\,Bc^2x^5+24\,Ac^2x^4-56\,Bacx^3-27\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{48\,x^4},\ \frac{45\,A\sqrt{-a}\,c^2x^4\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+30\,Bac^{\frac{3}{2}}x^4\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+\left(12\,Bc^2x^5+24\,Ac^2x^4-56\,Bacx^3-27\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{24\,x^4},\ -\frac{60\,Ba\sqrt{-c}\,cx^4\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-45\,A\sqrt{-a}\,c^2x^4\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(12\,Bc^2x^5+24\,Ac^2x^4-56\,Bacx^3-27\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{24\,x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/48*(60*B*a*c^(3/2)*x^4*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 45*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) +
 2*(12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*a*c*x^3 - 27*A*a*c*x^2 - 8*B*a^2*x -
 6*A*a^2)*sqrt(c*x^2 + a))/x^4, -1/48*(120*B*a*sqrt(-c)*c*x^4*arctan(sqrt(-
c)*x/sqrt(c*x^2 + a)) - 45*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a
)*sqrt(a) + 2*a)/x^2) - 2*(12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*a*c*x^3 - 27*
A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/x^4, 1/24*(45*A*sqrt(-a)*
c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 30*B*a*c^(3/2)*x^4*log(-2*c*x^2
- 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + (12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*a*
c*x^3 - 27*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/x^4, -1/24*(60
*B*a*sqrt(-c)*c*x^4*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 45*A*sqrt(-a)*c^2*
x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*
a*c*x^3 - 27*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/x^4]
```

giac [B] time = 0.24, size = 316, normalized size = 2.21

$$\frac{15\,Aac^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}}-\frac{5}{2}\,Bac^{\frac{3}{2}}\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\frac{1}{2}\left(Bc^2x+2\,Ac^2\right)\sqrt{cx^2+a}+\frac{27\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^7Aac^2+72\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^6Ba^2c^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^5Aa^2c^2-168\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Ba^3c^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Aa^3c^2+152\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Ba^4c^{\frac{3}{2}}+27\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Aa^4c^2-56\,Ba^5c^{\frac{3}{2}}}{12\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 15/4*A*a*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 5/2
*B*a*c^(3/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/2*(B*c^2*x + 2*A*c^
2)*sqrt(c*x^2 + a) + 1/12*(27*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*a*c^2 + 72*
(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^2*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 +
 a))^5*A*a^2*c^2 - 168*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a^3*c^(3/2) - 3*(s
qrt(c)*x - sqrt(c*x^2 + a))^3*A*a^3*c^2 + 152*(sqrt(c)*x - sqrt(c*x^2 + a))
^2*B*a^4*c^(3/2) + 27*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^4*c^2 - 56*B*a^5*c^
(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^4
```

maple [B] time = 0.06, size = 236, normalized size = 1.65

$$-\frac{15A\sqrt{a}\,c^2\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{8}+\frac{5Bac^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{cx^2+a}\right)}{2}+\frac{5\sqrt{cx^2+a}\,Bc^2x}{2}+\frac{15\sqrt{cx^2+a}\,Ac^2}{8}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^2x}{3a}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ac^2}{8a}+\frac{4\left(cx^2+a\right)^{\frac{5}{2}}Bc^2x}{3a^2}+\frac{3\left(cx^2+a\right)^{\frac{5}{2}}Ac^2}{8a^2}-\frac{4\left(cx^2+a\right)^{\frac{7}{2}}Bc}{3a^2x}-\frac{3\left(cx^2+a\right)^{\frac{7}{2}}Ac}{8a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{3ax^3}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{4ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^5,x)
```

```
[Out] -1/4*A/a/x^4*(c*x^2+a)^(7/2)-3/8*A*c/a^2/x^2*(c*x^2+a)^(7/2)+3/8*A*c^2/a^2*
(c*x^2+a)^(5/2)+5/8*A*c^2/a*(c*x^2+a)^(3/2)-15/8*A*c^2*a^(1/2)*ln((2*a+2*(c
*x^2+a)^(1/2)*a^(1/2))/x)+15/8*A*c^2*(c*x^2+a)^(1/2)-1/3*B/a/x^3*(c*x^2+a)^
(7/2)-4/3*B*c/a^2/x*(c*x^2+a)^(7/2)+4/3*B*c^2/a^2*x*(c*x^2+a)^(5/2)+5/3*B*c
^2/a*x*(c*x^2+a)^(3/2)+5/2*B*c^2*x*(c*x^2+a)^(1/2)+5/2*B*c^(3/2)*a*ln(c^(1/
2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.65, size = 198, normalized size = 1.38

$$\frac{5}{2}\sqrt{cx^2+a}\,Bc^2x + \frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^2x}{3\,a} + \frac{5}{2}\,Bac^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right) - \frac{15}{8}\,A\sqrt{a}\,c^2\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right) + \frac{15}{8}\sqrt{cx^2+a}\,Ac^2 + \frac{3\left(cx^2+a\right)^{\frac{5}{2}}Ac^2}{8\,a^2} + \frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ac^2}{8\,a} - \frac{4\left(cx^2+a\right)^{\frac{5}{2}}Bc}{3\,ax} - \frac{3\left(cx^2+a\right)^{\frac{7}{2}}Ac}{8\,a^2x^2} - \frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{3\,ax^3} - \frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{4\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] 5/2*sqrt(c*x^2 + a)*B*c^2*x + 5/3*(c*x^2 + a)^(3/2)*B*c^2*x/a + 5/2*B*a*c^(
3/2)*arcsinh(c*x/sqrt(a*c)) - 15/8*A*sqrt(a)*c^2*arcsinh(a/(sqrt(a*c)*abs(x
))) + 15/8*sqrt(c*x^2 + a)*A*c^2 + 3/8*(c*x^2 + a)^(5/2)*A*c^2/a^2 + 5/8*(c
*x^2 + a)^(3/2)*A*c^2/a - 4/3*(c*x^2 + a)^(5/2)*B*c/(a*x) - 3/8*(c*x^2 + a)
^(7/2)*A*c/(a^2*x^2) - 1/3*(c*x^2 + a)^(7/2)*B/(a*x^3) - 1/4*(c*x^2 + a)^(7
/2)*A/(a*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{x^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^5, x)
```

sympy [B] time = 12.86, size = 299, normalized size = 2.09

$$-\frac{15A\sqrt{a}\,c^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8} - \frac{Aa^3}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}} - \frac{3Aa^2\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}} - \frac{Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{x} + \frac{7Aac^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^2}+1}} + \frac{Ac^{\frac{5}{2}}x}{\sqrt{\frac{a}{cx^2}+1}} - \frac{2Ba^{\frac{3}{2}}c}{x\sqrt{1+\frac{cx^2}{a}}} + \frac{B\sqrt{a}\,c^2x\sqrt{1+\frac{cx^2}{a}}}{2} - \frac{2B\sqrt{a}\,c^2x}{\sqrt{1+\frac{cx^2}{a}}} - \frac{Ba^2\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{3x^2} - \frac{Bac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3} + \frac{5Bac^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**5,x)
```

```
[Out] -15*A*sqrt(a)*c**2*asinh(sqrt(a)/(sqrt(c)*x))/8 - A*a**3/(4*sqrt(c)*x**5*sq
rt(a/(c*x**2) + 1)) - 3*A*a**2*sqrt(c)/(8*x**3*sqrt(a/(c*x**2) + 1)) - A*a*
c**(3/2)*sqrt(a/(c*x**2) + 1)/x + 7*A*a*c**(3/2)/(8*x*sqrt(a/(c*x**2) + 1))
 + A*c**(5/2)*x/sqrt(a/(c*x**2) + 1) - 2*B*a**(3/2)*c/(x*sqrt(1 + c*x**2/a)
) + B*sqrt(a)*c**2*x*sqrt(1 + c*x**2/a)/2 - 2*B*sqrt(a)*c**2*x/sqrt(1 + c*x
**2/a) - B*a**2*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**2) - B*a*c**(3/2)*sqrt(a
/(c*x**2) + 1)/3 + 5*B*a*c**(3/2)*asinh(sqrt(c)*x/sqrt(a))/2
```

3.349 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=140

$$-\frac{c^2\sqrt{a+cx^2}\,(8A-15Bx)}{8x}-\frac{\left(a+cx^2\right)^{5/2}(4A+5Bx)}{20x^5}-\frac{c\left(a+cx^2\right)^{3/2}(8A+15Bx)}{24x^3}+Ac^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-$$

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {811, 813, 844, 217, 206, 266, 63, 208}

$$-\frac{c^2\sqrt{a+cx^2}\,(8A-15Bx)}{8x}-\frac{c\left(a+cx^2\right)^{3/2}(8A+15Bx)}{24x^3}-\frac{\left(a+cx^2\right)^{5/2}(4A+5Bx)}{20x^5}+Ac^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{15}{8}\sqrt{a}\,Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^6,x]
```

```
[Out] -(c^2*(8*A - 15*B*x)*Sqrt[a + c*x^2])/(8*x) - (c*(8*A + 15*B*x)*(a + c*x^2)
^(3/2))/(24*x^3) - ((4*A + 5*B*x)*(a + c*x^2)^(5/2))/(20*x^5) + A*c^(5/2)*A
rcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (15*Sqrt[a]*B*c^2*ArcTanh[Sqrt[a + c*
x^2]/Sqrt[a]])/8
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
```

```
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^6}\,dx &= -\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}-\frac{\int \frac{(-8aAc-10aBcx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx}{8a}\\
&= -\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}+\frac{\int \frac{\left(32a^2Ac^2+60a^2Bc^2x\right)\sqrt{a+cx^2}}{x^2}}{32a^2}\\
&= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x}-\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}\\
&= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x}-\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}\\
&= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x}-\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}\\
&= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x}-\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}\\
&= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x}-\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 96, normalized size = 0.69

$$
-\frac{Bc^2\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^3}-\frac{a^2A\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};-\frac{cx^2}{a}\right)}{5x^5\sqrt{\frac{cx^2}{a}+1}}
$$

Antiderivative was successfully verified.

[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^6,x]

[Out] -1/5*(a^2*A*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -5/2, -3/2, -((c*x^2)/a)])/(x^5*Sqrt[1 + (c*x^2)/a]) - (B*c^2*(a + c*x^2)^(7/2)*Hypergeometric2F1[3, 7/2, 9/2, 1 + (c*x^2)/a])/(7*a^3)

IntegrateAlgebraic [A] time = 0.66, size = 141, normalized size = 1.01

$$\frac{\sqrt{a+cx^2}\left(-24a^2A-30a^2Bx-88aAcx^2-135aBcx^3-184Ac^2x^4+120Bc^2x^5\right)}{120x^5}-Ac^{5/2}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)+\frac{15}{4}\sqrt{a}\,Bc^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^6,x]

[Out] (Sqrt[a + c*x^2]*(-24*a^2*A - 30*a^2*B*x - 88*a*A*c*x^2 - 135*a*B*c*x^3 - 184*A*c^2*x^4 + 120*B*c^2*x^5))/(120*x^5) + (15*Sqrt[a]*B*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/4 - A*c^(5/2)*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]]

fricas [A] time = 0.52, size = 534, normalized size = 3.81

$$\left[\frac{120\,Ac^{\frac{5}{2}}x^5\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\sqrt{c}x-a\right)+225\,B\sqrt{a}c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\sqrt{a}+2\,a}{x^2}\right)+2\left(120\,Bc^2x^5-184\,Ac^2x^4-135\,Bacx^3-88\,Aacx^2-30\,Ba^2x-24\,Aa^2\right)\sqrt{cx^2+a}}{240\,x^5},\ -\frac{240\,A\sqrt{-c}c^2x^5\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-225\,B\sqrt{a}c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\sqrt{a}+2\,a}{x^2}\right)-2\left(120\,Bc^2x^5-184\,Ac^2x^4-135\,Bacx^3-88\,Aacx^2-30\,Ba^2x-24\,Aa^2\right)\sqrt{cx^2+a}}{240\,x^5},\ \frac{225\,B\sqrt{-a}c^2x^5\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+60\,Ac^{\frac{5}{2}}x^5\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\sqrt{c}x-a\right)+\left(120\,Bc^2x^5-184\,Ac^2x^4-135\,Bacx^3-88\,Aacx^2-30\,Ba^2x-24\,Aa^2\right)\sqrt{cx^2+a}}{120\,x^5},\ -\frac{120\,A\sqrt{-c}c^2x^5\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-225\,B\sqrt{-a}c^2x^5\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(120\,Bc^2x^5-184\,Ac^2x^4-135\,Bacx^3-88\,Aacx^2-30\,Ba^2x-24\,Aa^2\right)\sqrt{cx^2+a}}{120\,x^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^6,x, algorithm="fricas")

[Out] [1/240*(120*A*c^(5/2)*x^5*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 225*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(120*B*c^2*x^5 - 184*A*c^2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqrt(c*x^2 + a))/x^5, -1/240*(240*A*sqrt(-c)*c^2*x^5*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 225*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(120*B*c^2*x^5 - 184*A*c^2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqrt(c*x^2 + a))/x^5, 1/120*(225*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 60*A*c^(5/2)*x^5*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + (120*B*c^2*x^5 - 184*A*c^2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqrt(c*x^2 + a))/x^5, -1/120*(120*A*sqrt(-c)*c^2*x^5*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 225*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (120*B*c^2*x^5 - 184*A*c^2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqrt(c*x^2 + a))/x^5]

giac [B] time = 0.26, size = 331, normalized size = 2.36

$$\frac{15\,Bac^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}}-Ac^{\frac{5}{2}}\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\sqrt{cx^2+a}\,Bc^2+\frac{135\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^9Bac^2+360\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^8Aac^{\frac{5}{2}}-150\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^7Ba^2c^2-720\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^6Aa^2c^{\frac{5}{2}}+1120\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Aa^3c^{\frac{5}{2}}+150\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Ba^4c^2-560\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Aa^4c^{\frac{5}{2}}-135\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^5c^2+184\,Aa^5c^{\frac{5}{2}}}{60\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^6,x, algorithm="giac")

[Out] 15/4*B*a*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - A*c^(5/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + sqrt(c*x^2 + a)*B*c^2 + 1/60*(135*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*a*c^2 + 360*(sqrt(c)*x - sqrt(c*x^2 + a))^8*A*a*c^(5/2) - 150*(sqrt(c)*x - sqrt(c*x^2 + a))^7*B*a^2*c^2 - 720*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a^2*c^(5/2) + 1120*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a^3*c^(5/2) + 150*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^4*c^2 - 560*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^4*c^(5/2) - 135*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^5*c^2 + 184*A*a^5*c^(5/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^5

maple [B] time = 0.06, size = 257, normalized size = 1.84

$$A\,c^{\frac{5}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)-\frac{15B\sqrt{a}\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8}+\frac{\sqrt{c\,x^2+a}\,A\,c^3x}{a}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}A\,c^3x}{3a^2}+\frac{15\sqrt{c\,x^2+a}\,B\,c^2}{8}+\frac{8\left(c\,x^2+a\right)^{\frac{5}{2}}A\,c^3x}{15a^3}+\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c^2}{8a}+\frac{3\left(c\,x^2+a\right)^{\frac{5}{2}}B\,c^2}{8a^2}-\frac{8\left(c\,x^2+a\right)^{\frac{7}{2}}A\,c^2}{15a^3x}-\frac{3\left(c\,x^2+a\right)^{\frac{7}{2}}Bc}{8a^2x^2}-\frac{2\left(c\,x^2+a\right)^{\frac{7}{2}}Ac}{15a^2x^3}-\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B}{4a\,x^4}-\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A}{5a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^6,x)
```

```
[Out] -1/5*A/a/x^5*(c*x^2+a)^(7/2)-2/15*A*c/a^2/x^3*(c*x^2+a)^(7/2)-8/15*A*c^2/a^
3/x*(c*x^2+a)^(7/2)+8/15*A*c^3/a^3*x*(c*x^2+a)^(5/2)+2/3*A*c^3/a^2*x*(c*x^2
+a)^(3/2)+A*c^3/a*x*(c*x^2+a)^(1/2)+A*c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
-1/4*B/a/x^4*(c*x^2+a)^(7/2)-3/8*B*c/a^2/x^2*(c*x^2+a)^(7/2)+3/8*B*c^2/a^2*
(c*x^2+a)^(5/2)+5/8*B*c^2/a*(c*x^2+a)^(3/2)-15/8*B*c^2*a^(1/2)*ln((2*a+2*(c
*x^2+a)^(1/2)*a^(1/2))/x)+15/8*B*c^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.69, size = 219, normalized size = 1.56

$$\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Ac^3x}{3\,a^2}+\frac{\sqrt{cx^2+a}\,Ac^3x}{a}+Ac^{\frac{5}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{15}{8}\,B\sqrt{a}\,c^2\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{15}{8}\,\sqrt{cx^2+a}\,Bc^2+\frac{3\left(cx^2+a\right)^{\frac{5}{2}}Bc^2}{8\,a^2}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^2}{8\,a}-\frac{8\left(cx^2+a\right)^{\frac{5}{2}}Ac^2}{15\,a^2x}-\frac{3\left(cx^2+a\right)^{\frac{7}{2}}Bc}{8\,a^2x^2}-\frac{2\left(cx^2+a\right)^{\frac{7}{2}}Ac}{15\,a^2x^3}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{4\,ax^4}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{5\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] 2/3*(c*x^2 + a)^(3/2)*A*c^3*x/a^2 + sqrt(c*x^2 + a)*A*c^3*x/a + A*c^(5/2)*a
rcsinh(c*x/sqrt(a*c)) - 15/8*B*sqrt(a)*c^2*arcsinh(a/(sqrt(a*c)*abs(x))) +
15/8*sqrt(c*x^2 + a)*B*c^2 + 3/8*(c*x^2 + a)^(5/2)*B*c^2/a^2 + 5/8*(c*x^2 +
 a)^(3/2)*B*c^2/a - 8/15*(c*x^2 + a)^(5/2)*A*c^2/(a^2*x) - 3/8*(c*x^2 + a)^
(7/2)*B*c/(a^2*x^2) - 2/15*(c*x^2 + a)^(7/2)*A*c/(a^2*x^3) - 1/4*(c*x^2 + a
)^(7/2)*B/(a*x^4) - 1/5*(c*x^2 + a)^(7/2)*A/(a*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{x^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^6,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^6, x)
```

sympy [B] time = 12.22, size = 294, normalized size = 2.10

$$-\frac{A\sqrt{a}\,c^2}{x\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^2\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{11Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{15x^2}-\frac{8Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{15}+Ac^{\frac{5}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Ac^3x}{\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}-\frac{15B\sqrt{a}\,c^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8}-\frac{Ba^3}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3Ba^2\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Bac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{x}+\frac{7Bac^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^2}+1}}+\frac{Bc^{\frac{5}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**6,x)
```

```
[Out] -A*sqrt(a)*c**2/(x*sqrt(1 + c*x**2/a)) - A*a**2*sqrt(c)*sqrt(a/(c*x**2) + 1
)/(5*x**4) - 11*A*a*c**(3/2)*sqrt(a/(c*x**2) + 1)/(15*x**2) - 8*A*c**(5/2)*
sqrt(a/(c*x**2) + 1)/15 + A*c**(5/2)*asinh(sqrt(c)*x/sqrt(a)) - A*c**3*x/(s
qrt(a)*sqrt(1 + c*x**2/a)) - 15*B*sqrt(a)*c**2*asinh(sqrt(a)/(sqrt(c)*x))/8
 - B*a**3/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) - 3*B*a**2*sqrt(c)/(8*x**3*
sqrt(a/(c*x**2) + 1)) - B*a*c**(3/2)*sqrt(a/(c*x**2) + 1)/x + 7*B*a*c**(3/2
)/(8*x*sqrt(a/(c*x**2) + 1)) + B*c**(5/2)*x/sqrt(a/(c*x**2) + 1)
```

3.350 $\int \frac{(A+Bx)(a+cx^2)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=140

$$-\frac{c^2\sqrt{a+cx^2}\,(5A+16Bx)}{16x^2}-\frac{(a+cx^2)^{5/2}\,(5A+6Bx)}{30x^6}-\frac{c\,(a+cx^2)^{3/2}\,(5A+8Bx)}{24x^4}-\frac{5Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}+Bc^{5/2}$$

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {811, 844, 217, 206, 266, 63, 208}

$$-\frac{c^2\sqrt{a+cx^2}\,(5A+16Bx)}{16x^2}-\frac{c\,(a+cx^2)^{3/2}\,(5A+8Bx)}{24x^4}-\frac{(a+cx^2)^{5/2}\,(5A+6Bx)}{30x^6}-\frac{5Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}+Bc^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^7,x]
```

```
[Out] -(c^2*(5*A + 16*B*x)*Sqrt[a + c*x^2])/(16*x^2) - (c*(5*A + 8*B*x)*(a + c*x^
2)^(3/2))/(24*x^4) - ((5*A + 6*B*x)*(a + c*x^2)^(5/2))/(30*x^6) + B*c^(5/2)
*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (5*A*c^3*ArcTanh[Sqrt[a + c*x^2]/Sq
rt[a]])/(16*Sqrt[a])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
```

```
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^7}\,dx = -\frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} - \frac{\int \frac{(-10aAc-12aBcx)\left(a+cx^2\right)^{3/2}}{x^5}\,dx}{12a}$$

$$= -\frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} + \frac{\int \frac{\left(60a^2Ac^2+96a^2Bc^2x\right)\sqrt{a+cx^2}}{x^3}}{96a^2}$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6}$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

Mathematica [C] time = 0.12, size = 125, normalized size = 0.89

$$-\frac{\sqrt{a+cx^2}\left(48a^3Bx\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};-\frac{cx^2}{a}\right)+5aA\sqrt{\frac{cx^2}{a}+1}\left(8a^2+26acx^2+33c^2x^4\right)+75Ac^3x^6\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)\right)}{240ax^6\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^7,x]
```

```
[Out] -1/240*(Sqrt[a + c*x^2]*(5*a*A*Sqrt[1 + (c*x^2)/a]*(8*a^2 + 26*a*c*x^2 + 33
*c^2*x^4) + 75*A*c^3*x^6*ArcTanh[Sqrt[1 + (c*x^2)/a]] + 48*a^3*B*x*Hypergeo
metric2F1[-5/2, -5/2, -3/2, -((c*x^2)/a)]))/(a*x^6*Sqrt[1 + (c*x^2)/a])
```

IntegrateAlgebraic [A] time = 0.83, size = 141, normalized size = 1.01

$$\frac{\sqrt{a+cx^2}\left(-40a^2A-48a^2Bx-130aAcx^2-176aBcx^3-165Ac^2x^4-368Bc^2x^5\right)}{240x^6}+\frac{5Ac^3\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}-Bc^{5/2}\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-40*a^2*A - 48*a^2*B*x - 130*a*A*c*x^2 - 176*a*B*c*x^3 -
165*A*c^2*x^4 - 368*B*c^2*x^5))/(240*x^6) + (5*A*c^3*ArcTanh[(Sqrt[c]*x)/Sq
rt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(8*Sqrt[a]) - B*c^(5/2)*Log[-(Sqrt[c]*x)
+ Sqrt[a + c*x^2]]
```

fricas [A] time = 0.52, size = 574, normalized size = 4.10

$$\left[\frac{240\,Bac^{\frac{5}{2}}x^{6}\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{c}x-a\right)+75\,A\sqrt{a}c^{3}x^{6}\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)-2\,\left(368\,Bac^{2}x^{5}+165\,Aac^{2}x^{4}+176\,Ba^{2}cx^{3}+130\,Aa^{2}cx^{2}+48\,Ba^{3}x+40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{480\,ax^{6}},\ -\frac{480\,Ba\sqrt{-c}c^{2}x^{6}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^{2}+a}}\right)-75\,A\sqrt{a}c^{3}x^{6}\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)+2\,\left(368\,Bac^{2}x^{5}+165\,Aac^{2}x^{4}+176\,Ba^{2}cx^{3}+130\,Aa^{2}cx^{2}+48\,Ba^{3}x+40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{480\,ax^{6}},\ \frac{75\,A\sqrt{-a}c^{3}x^{6}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)+120\,Bac^{\frac{5}{2}}x^{6}\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{c}x-a\right)-\left(368\,Bac^{2}x^{5}+165\,Aac^{2}x^{4}+176\,Ba^{2}cx^{3}+130\,Aa^{2}cx^{2}+48\,Ba^{3}x+40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{240\,ax^{6}},\ -\frac{240\,Ba\sqrt{-c}c^{2}x^{6}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^{2}+a}}\right)-75\,A\sqrt{-a}c^{3}x^{6}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)+\left(368\,Bac^{2}x^{5}+165\,Aac^{2}x^{4}+176\,Ba^{2}cx^{3}+130\,Aa^{2}cx^{2}+48\,Ba^{3}x+40\,Aa^{3}\right)\sqrt{cx^{2}+a}}{240\,ax^{6}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/480*(240*B*a*c^(5/2)*x^6*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 75*A*sqrt(a)*c^3*x^6*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2)
 - 2*(368*B*a*c^2*x^5 + 165*A*a*c^2*x^4 + 176*B*a^2*c*x^3 + 130*A*a^2*c*x^2
 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a*x^6), -1/480*(480*B*a*sqrt(-c
)*c^2*x^6*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 75*A*sqrt(a)*c^3*x^6*log(-(c
*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(368*B*a*c^2*x^5 + 165*A*a
*c^2*x^4 + 176*B*a^2*c*x^3 + 130*A*a^2*c*x^2 + 48*B*a^3*x + 40*A*a^3)*sqrt(
c*x^2 + a))/(a*x^6), 1/240*(75*A*sqrt(-a)*c^3*x^6*arctan(sqrt(-a)/sqrt(c*x^
2 + a)) + 120*B*a*c^(5/2)*x^6*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
a) - (368*B*a*c^2*x^5 + 165*A*a*c^2*x^4 + 176*B*a^2*c*x^3 + 130*A*a^2*c*x^2
 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a*x^6), -1/240*(240*B*a*sqrt(-c
)*c^2*x^6*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 75*A*sqrt(-a)*c^3*x^6*arctan
(sqrt(-a)/sqrt(c*x^2 + a)) + (368*B*a*c^2*x^5 + 165*A*a*c^2*x^4 + 176*B*a^2
*c*x^3 + 130*A*a^2*c*x^2 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a*x^6)]
```

giac [B] time = 0.26, size = 397, normalized size = 2.84

$$\frac{5\,Ac^{3}\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}}-Bc^{\frac{5}{2}}\log\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+a}\right|\right)+\frac{165\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{11}Ac^{3}+720\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{10}Bac^{\frac{5}{2}}+25\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{9}Aac^{3}-2160\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{8}Ba^{2}c^{\frac{5}{2}}+450\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{7}Aa^{2}c^{3}+3680\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{6}Ba^{3}c^{\frac{5}{2}}+450\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Aa^{3}c^{3}-3360\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Ba^{4}c^{\frac{5}{2}}+25\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{3}Aa^{4}c^{3}+1488\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Ba^{5}c^{\frac{5}{2}}+165\,\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Aa^{5}c^{3}-368\,Ba^{6}c^{\frac{5}{2}}}{120\,\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] 5/8*A*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*c^(5
/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/120*(165*(sqrt(c)*x - sqrt(c
*x^2 + a))^11*A*c^3 + 720*(sqrt(c)*x - sqrt(c*x^2 + a))^10*B*a*c^(5/2) + 25
*(sqrt(c)*x - sqrt(c*x^2 + a))^9*A*a*c^3 - 2160*(sqrt(c)*x - sqrt(c*x^2 + a
))^8*B*a^2*c^(5/2) + 450*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*a^2*c^3 + 3680*(
sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^3*c^(5/2) + 450*(sqrt(c)*x - sqrt(c*x^2
+ a))^5*A*a^3*c^3 - 3360*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a^4*c^(5/2) + 25
*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^4*c^3 + 1488*(sqrt(c)*x - sqrt(c*x^2 +
 a))^2*B*a^5*c^(5/2) + 165*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^5*c^3 - 368*B*
a^6*c^(5/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^6
```

maple [B] time = 0.07, size = 281, normalized size = 2.01

$$-\frac{5Ac^{3}\ln\left(\frac{2a+2\sqrt{cx^{2}+a}\,\sqrt{a}}{x}\right)}{16\sqrt{a}}+Bc^{\frac{5}{2}}\ln\left(\sqrt{c}\,x+\sqrt{cx^{2}+a}\right)+\frac{\sqrt{cx^{2}+a}\,Bc^{3}x}{a}+\frac{5\sqrt{cx^{2}+a}\,Ac^{3}}{16a}+\frac{2\left(cx^{2}+a\right)^{\frac{3}{2}}Bc^{3}x}{3a^{2}}+\frac{5\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{3}}{48a^{2}}+\frac{8\left(cx^{2}+a\right)^{\frac{5}{2}}Bc^{3}x}{15a^{3}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ac^{3}}{16a^{3}}-\frac{8\left(cx^{2}+a\right)^{\frac{7}{2}}Bc^{2}}{15a^{3}x}-\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}Ac^{2}}{16a^{3}x^{2}}-\frac{2\left(cx^{2}+a\right)^{\frac{7}{2}}Bc}{15a^{2}x^{3}}-\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}Ac}{24a^{2}x^{4}}-\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}B}{5a\,x^{5}}-\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}A}{6a\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^7,x)
```

```
[Out] -1/5*B/a/x^5*(c*x^2+a)^(7/2)-2/15*B*c/a^2/x^3*(c*x^2+a)^(7/2)-8/15*B*c^2/a^
3/x*(c*x^2+a)^(7/2)+8/15*B*c^3/a^3*x*(c*x^2+a)^(5/2)+2/3*B*c^3/a^2*x*(c*x^2
+a)^(3/2)+B*c^3/a*x*(c*x^2+a)^(1/2)+B*c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

```
-1/6*A/a/x^6*(c*x^2+a)^(7/2)-1/24*A*c/a^2/x^4*(c*x^2+a)^(7/2)-1/16*A*c^2/a^
3/x^2*(c*x^2+a)^(7/2)+1/16*A*c^3/a^3*(c*x^2+a)^(5/2)+5/48*A*c^3/a^2*(c*x^2+
a)^(3/2)-5/16*A*c^3/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+5/16*A*c^
3/a*(c*x^2+a)^(1/2)
```

maxima [B] time = 0.76, size = 243, normalized size = 1.74

$$\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Bc^3x}{3\,a^2}+\frac{\sqrt{cx^2+a}\,Bc^3x}{a}+Bc^{\frac{5}{2}}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{5\,Ac^3\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ac^3}{16\,a^3}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ac^3}{48\,a^2}+\frac{5\,\sqrt{cx^2+a}\,Ac^3}{16\,a}-\frac{8\left(cx^2+a\right)^{\frac{5}{2}}Bc^2}{15\,a^2x}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ac^2}{16\,a^3x^2}-\frac{2\left(cx^2+a\right)^{\frac{7}{2}}Bc}{15\,a^2x^3}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ac}{24\,a^2x^4}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{5\,ax^5}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{6\,ax^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] 2/3*(c*x^2 + a)^(3/2)*B*c^3*x/a^2 + sqrt(c*x^2 + a)*B*c^3*x/a + B*c^(5/2)*a
rcsinh(c*x/sqrt(a*c)) - 5/16*A*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) +
1/16*(c*x^2 + a)^(5/2)*A*c^3/a^3 + 5/48*(c*x^2 + a)^(3/2)*A*c^3/a^2 + 5/16*
sqrt(c*x^2 + a)*A*c^3/a - 8/15*(c*x^2 + a)^(5/2)*B*c^2/(a^2*x) - 1/16*(c*x^
2 + a)^(7/2)*A*c^2/(a^3*x^2) - 2/15*(c*x^2 + a)^(7/2)*B*c/(a^2*x^3) - 1/24*
(c*x^2 + a)^(7/2)*A*c/(a^2*x^4) - 1/5*(c*x^2 + a)^(7/2)*B/(a*x^5) - 1/6*(c*
x^2 + a)^(7/2)*A/(a*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)}{x^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^7,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^7, x)
```

sympy [B] time = 17.16, size = 299, normalized size = 2.14

$$-\frac{Aa^3}{6\sqrt{c}\,x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{17Aa^2\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{35Aac^{\frac{3}{2}}}{48x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{3Ac^{\frac{5}{2}}}{16x\sqrt{\frac{a}{cx^2}+1}}-\frac{5Ac^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{16\sqrt{a}}-\frac{B\sqrt{a}\,c^2}{x\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba^2\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{11Bac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{15x^2}-\frac{8Bc^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{15}+Bc^{\frac{5}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Bc^3x}{\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**7,x)
```

```
[Out] -A*a**3/(6*sqrt(c)*x**7*sqrt(a/(c*x**2) + 1)) - 17*A*a**2*sqrt(c)/(24*x**5*
sqrt(a/(c*x**2) + 1)) - 35*A*a*c**(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - A*
c**(5/2)*sqrt(a/(c*x**2) + 1)/(2*x) - 3*A*c**(5/2)/(16*x*sqrt(a/(c*x**2) +
1)) - 5*A*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*sqrt(a)) - B*sqrt(a)*c**2/(x*
sqrt(1 + c*x**2/a)) - B*a**2*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 11*B*a
*c**(3/2)*sqrt(a/(c*x**2) + 1)/(15*x**2) - 8*B*c**(5/2)*sqrt(a/(c*x**2) + 1
)/15 + B*c**(5/2)*asinh(sqrt(c)*x/sqrt(a)) - B*c**3*x/(sqrt(a)*sqrt(1 + c*x
**2/a))
```

3.351 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx$

Optimal. Leaf size=115

$$-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{5Bc^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}-\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}$$

Rubi [A] time = 0.07, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {807, 266, 47, 63, 208}

$$-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{5Bc^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-5*B*c^2*Sqrt[a + c*x^2])/(16*x^2) - (5*B*c*(a + c*x^2)^(3/2))/(24*x^4) -
(B*(a + c*x^2)^(5/2))/(6*x^6) - (A*(a + c*x^2)^(7/2))/(7*a*x^7) - (5*B*c^3*
ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(16*Sqrt[a])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
```

```
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx &= -\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} + B\int \frac{\left(a+cx^2\right)^{5/2}}{x^7}\,dx \\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} + \frac{1}{2}B\,\text{Subst}\left(\int \frac{(a+cx)^{5/2}}{x^4}\,dx, x, x^2\right) \\
&= -\frac{B\left(a+cx^2\right)^{5/2}}{6x^6} - \frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} + \frac{1}{12}(5Bc)\,\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx, x, x^2\right) \\
&= -\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{B\left(a+cx^2\right)^{5/2}}{6x^6} - \frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} + \frac{1}{16}\left(5Bc^2\right)\text{Subst}\left(\int \frac{\sqrt{a+c}}{x^2}\right. \\
&= -\frac{5Bc^2\sqrt{a+cx^2}}{16x^2} - \frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{B\left(a+cx^2\right)^{5/2}}{6x^6} - \frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} + \frac{1}{32}\left(5Bc^3\right) \\
&= -\frac{5Bc^2\sqrt{a+cx^2}}{16x^2} - \frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{B\left(a+cx^2\right)^{5/2}}{6x^6} - \frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} + \frac{1}{16}\left(5Bc^2\right) \\
&= -\frac{5Bc^2\sqrt{a+cx^2}}{16x^2} - \frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{B\left(a+cx^2\right)^{5/2}}{6x^6} - \frac{A\left(a+cx^2\right)^{7/2}}{7ax^7} - \frac{5Bc^3\tanh}{16}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 123, normalized size = 1.07

$$
\frac{-\frac{\left(a+cx^2\right)\left(8a^3(6A+7Bx)+2a^2cx^2(72A+91Bx)+3ac^2x^4(48A+77Bx)+48Ac^3x^6\right)}{ax^7} - 105Bc^3\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{336\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-(((a + c*x^2)*(48*A*c^3*x^6 + 8*a^3*(6*A + 7*B*x) + 3*a*c^2*x^4*(48*A + 7
7*B*x) + 2*a^2*c*x^2*(72*A + 91*B*x)))/(a*x^7)) - 105*B*c^3*Sqrt[1 + (c*x^2
)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(336*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.84, size = 130, normalized size = 1.13

$$
\frac{\sqrt{a+cx^2}\left(-48a^3A-56a^3Bx-144a^2Acx^2-182a^2Bcx^3-144aAc^2x^4-231aBc^2x^5-48Ac^3x^6\right)}{336ax^7} + \frac{5Bc^3\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-48*a^3*A - 56*a^3*B*x - 144*a^2*A*c*x^2 - 182*a^2*B*c*x^
3 - 144*a*A*c^2*x^4 - 231*a*B*c^2*x^5 - 48*A*c^3*x^6))/(336*a*x^7) + (5*B*c
^3*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(8*Sqrt[a])
```

fricas [A] time = 0.49, size = 238, normalized size = 2.07

$$
\left[\frac{105B\sqrt{a}\,c^3x^7\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)-2\left(48Ac^3x^6+231Bac^2x^5+144Aac^2x^4+182Ba^2cx^3+144Aa^2cx^2+56Ba^3x+48Aa^3\right)\sqrt{cx^2+a}}{672ax^7}, \frac{105B\sqrt{-a}\,c^3x^7\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(48Ac^3x^6+231Bac^2x^5+144Aac^2x^4+182Ba^2cx^3+144Aa^2cx^2+56Ba^3x+48Aa^3\right)\sqrt{cx^2+a}}{336ax^7}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/672*(105*B*sqrt(a)*c^3*x^7*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a
)/x^2) - 2*(48*A*c^3*x^6 + 231*B*a*c^2*x^5 + 144*A*a*c^2*x^4 + 182*B*a^2*c*
x^3 + 144*A*a^2*c*x^2 + 56*B*a^3*x + 48*A*a^3)*sqrt(c*x^2 + a))/(a*x^7), 1/
336*(105*B*sqrt(-a)*c^3*x^7*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (48*A*c^3*x^
6 + 231*B*a*c^2*x^5 + 144*A*a*c^2*x^4 + 182*B*a^2*c*x^3 + 144*A*a^2*c*x^2 +
 56*B*a^3*x + 48*A*a^3)*sqrt(c*x^2 + a))/(a*x^7)]
```

giac [B] time = 0.24, size = 316, normalized size = 2.75

$$\frac{5\,Bc^3\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{8\sqrt{-a}}+\frac{231\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{13}Bc^3+336\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{12}Ac^{\frac{7}{2}}-196\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{11}Bac^3+595\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{9}Ba^2c^3+1680\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{8}Aa^2c^{\frac{7}{2}}-595\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{5}Ba^4c^3+1008\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{4}Aa^4c^{\frac{7}{2}}+196\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{3}Ba^5c^3-231\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^6c^3+48\,Aa^6c^{\frac{7}{2}}}{168\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] 5/8*B*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 1/168*
(231*(sqrt(c)*x - sqrt(c*x^2 + a))^13*B*c^3 + 336*(sqrt(c)*x - sqrt(c*x^2 +
 a))^12*A*c^(7/2) - 196*(sqrt(c)*x - sqrt(c*x^2 + a))^11*B*a*c^3 + 595*(sqr
t(c)*x - sqrt(c*x^2 + a))^9*B*a^2*c^3 + 1680*(sqrt(c)*x - sqrt(c*x^2 + a))^
8*A*a^2*c^(7/2) - 595*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*a^4*c^3 + 1008*(sqr
t(c)*x - sqrt(c*x^2 + a))^4*A*a^4*c^(7/2) + 196*(sqrt(c)*x - sqrt(c*x^2 + a
))^3*B*a^5*c^3 - 231*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^6*c^3 + 48*A*a^6*c^(
7/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^7
```

maple [A] time = 0.08, size = 164, normalized size = 1.43

$$-\frac{5Bc^3\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{16\sqrt{a}}+\frac{5\sqrt{cx^2+a}\,Bc^3}{16a}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^3}{48a^2}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc^3}{16a^3}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^2}{16a^3x^2}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc}{24a^2x^4}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{6a\,x^6}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{7a\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^8,x)
```

```
[Out] -1/7*A*(c*x^2+a)^(7/2)/a/x^7-1/6*B/a/x^6*(c*x^2+a)^(7/2)-1/24*B*c/a^2/x^4*(
c*x^2+a)^(7/2)-1/16*B*c^2/a^3/x^2*(c*x^2+a)^(7/2)+1/16*B*c^3/a^3*(c*x^2+a)^
(5/2)+5/48*B*c^3/a^2*(c*x^2+a)^(3/2)-5/16*B*c^3/a^(1/2)*ln((2*a+2*(c*x^2+a)
^(1/2)*a^(1/2))/x)+5/16*B*c^3/a*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.63, size = 152, normalized size = 1.32

$$-\frac{5\,Bc^3\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc^3}{16\,a^3}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^3}{48\,a^2}+\frac{5\,\sqrt{cx^2+a}\,Bc^3}{16\,a}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^2}{16\,a^3x^2}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc}{24\,a^2x^4}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{6\,ax^6}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{7\,ax^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] -5/16*B*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/16*(c*x^2 + a)^(5/2)*
B*c^3/a^3 + 5/48*(c*x^2 + a)^(3/2)*B*c^3/a^2 + 5/16*sqrt(c*x^2 + a)*B*c^3/a
 - 1/16*(c*x^2 + a)^(7/2)*B*c^2/(a^3*x^2) - 1/24*(c*x^2 + a)^(7/2)*B*c/(a^2
*x^4) - 1/6*(c*x^2 + a)^(7/2)*B/(a*x^6) - 1/7*(c*x^2 + a)^(7/2)*A/(a*x^7)
```

mupad [B] time = 4.39, size = 150, normalized size = 1.30

$$\frac{5\,B\,a\left(c\,x^2+a\right)^{3/2}}{6\,x^6}-\frac{11\,B\left(c\,x^2+a\right)^{5/2}}{16\,x^6}-\frac{A\,a^2\,\sqrt{c\,x^2+a}}{7\,x^7}-\frac{5\,B\,a^2\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{3\,A\,c^2\,\sqrt{c\,x^2+a}}{7\,x^3}-\frac{A\,c^3\,\sqrt{c\,x^2+a}}{7\,a\,x}-\frac{3\,A\,a\,c\,\sqrt{c\,x^2+a}}{7\,x^5}+\frac{B\,c^3\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,5{}\mathrm{i}}{16\,\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^8,x)
```

```
[Out] (B*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/2))*5i)/(16*a^(1/2)) - (11*B*(a + c
*x^2)^(5/2))/(16*x^6) + (5*B*a*(a + c*x^2)^(3/2))/(6*x^6) - (A*a^2*(a + c*x
^2)^(1/2))/(7*x^7) - (5*B*a^2*(a + c*x^2)^(1/2))/(16*x^6) - (3*A*c^2*(a + c
*x^2)^(1/2))/(7*x^3) - (A*c^3*(a + c*x^2)^(1/2))/(7*a*x) - (3*A*a*c*(a + c*
x^2)^(1/2))/(7*x^5)
```

sympy [B]   time = 16.82, size = 605, normalized size = 5.26

$$-\frac{15Aa^{7}c^{\frac{9}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{105a^{5}c^{4}x^{6}+210a^{4}c^{5}x^{8}+105a^{3}c^{6}x^{10}}-\frac{33Aa^{6}c^{\frac{11}{2}}x^{2}\sqrt{\frac{a}{cx^{2}}+1}}{105a^{5}c^{4}x^{6}+210a^{4}c^{5}x^{8}+105a^{3}c^{6}x^{10}}-\frac{17Aa^{5}c^{\frac{13}{2}}x^{4}\sqrt{\frac{a}{cx^{2}}+1}}{105a^{5}c^{4}x^{6}+210a^{4}c^{5}x^{8}+105a^{3}c^{6}x^{10}}-\frac{3Aa^{4}c^{\frac{15}{2}}x^{6}\sqrt{\frac{a}{cx^{2}}+1}}{105a^{5}c^{4}x^{6}+210a^{4}c^{5}x^{8}+105a^{3}c^{6}x^{10}}-\frac{12Aa^{3}c^{\frac{17}{2}}x^{8}\sqrt{\frac{a}{cx^{2}}+1}}{105a^{5}c^{4}x^{6}+210a^{4}c^{5}x^{8}+105a^{3}c^{6}x^{10}}-\frac{8Aa^{2}c^{\frac{19}{2}}x^{10}\sqrt{\frac{a}{cx^{2}}+1}}{105a^{5}c^{4}x^{6}+210a^{4}c^{5}x^{8}+105a^{3}c^{6}x^{10}}-\frac{2Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{5x^{4}}-\frac{7Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{15x^{2}}-\frac{Ac^{\frac{7}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{15a}-\frac{Ba^{3}}{6\sqrt{c}x^{7}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{17Ba^{2}\sqrt{c}}{24x^{5}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{35Bac^{\frac{3}{2}}}{48x^{3}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{Bc^{\frac{5}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{2x}-\frac{3Bc^{\frac{5}{2}}}{16x\sqrt{\frac{a}{cx^{2}}+1}}-\frac{5Bc^{3}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{16\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**8,x)
```

```
[Out] -15*A*a**7*c**(9/2)*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**
5*x**8 + 105*a**3*c**6*x**10) - 33*A*a**6*c**(11/2)*x**2*sqrt(a/(c*x**2) +
1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 17*A*a
**5*c**(13/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5
*x**8 + 105*a**3*c**6*x**10) - 3*A*a**4*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)
/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 12*A*a**
3*c**(17/2)*x**8*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x
**8 + 105*a**3*c**6*x**10) - 8*A*a**2*c**(19/2)*x**10*sqrt(a/(c*x**2) + 1)/
(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 2*A*a*c**
(3/2)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 7*A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15
*x**2) - A*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a) - B*a**3/(6*sqrt(c)*x**7*sq
rt(a/(c*x**2) + 1)) - 17*B*a**2*sqrt(c)/(24*x**5*sqrt(a/(c*x**2) + 1)) - 35
*B*a*c**(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - B*c**(5/2)*sqrt(a/(c*x**2) +
 1)/(2*x) - 3*B*c**(5/2)/(16*x*sqrt(a/(c*x**2) + 1)) - 5*B*c**3*asinh(sqrt(
a)/(sqrt(c)*x))/(16*sqrt(a))
```

3.352 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=149

$$\frac{5Ac^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}+\frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}$$

Rubi [A] time = 0.10, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{5Ac^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}+\frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (5*A*c^3*Sqrt[a + c*x^2])/(128*a*x^2) + (5*A*c^2*(a + c*x^2)^(3/2))/(192*a*
x^4) + (A*c*(a + c*x^2)^(5/2))/(48*a*x^6) - (A*(a + c*x^2)^(7/2))/(8*a*x^8)
 - (B*(a + c*x^2)^(7/2))/(7*a*x^7) + (5*A*c^4*ArcTanh[Sqrt[a + c*x^2]/Sqrt[
a]])/(128*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
```

```
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx = -\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{\int \frac{(-8aB+Acx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx}{8a}$$

$$= -\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{(Ac)\int \frac{\left(a+cx^2\right)^{5/2}}{x^7}\,dx}{8a}$$

$$= -\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{(Ac)\,\mathrm{Subst}\left(\int \frac{(a+cx)^{5/2}}{x^4}\,dx,x,x^2\right)}{16a}$$

$$= \frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\cdots$$

$$= \frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\cdots$$

$$= \frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\cdots$$

$$= \frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\cdots$$

$$= \frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\cdots$$

Mathematica [C] time = 0.02, size = 53, normalized size = 0.36

$$-\frac{\left(a+cx^2\right)^{7/2}\left(a^4B+Ac^4x^7\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{cx^2}{a}+1\right)\right)}{7a^5x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^9,x]
```

```
[Out] -1/7*((a + c*x^2)^(7/2)*(a^4*B + A*c^4*x^7*Hypergeometric2F1[7/2, 5, 9/2, 1
 + (c*x^2)/a]))/(a^5*x^7)
```

IntegrateAlgebraic [A] time = 1.01, size = 139, normalized size = 0.93

$$\frac{\sqrt{a+cx^2}\left(-336a^3A-384a^3Bx-952a^2Acx^2-1152a^2Bcx^3-826aAc^2x^4-1152aBc^2x^5-105Ac^3x^6-384Bc^3x^7\right)}{2688ax^8}-\frac{5Ac^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{64a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-336*a^3*A - 384*a^3*B*x - 952*a^2*A*c*x^2 - 1152*a^2*B*c
*x^3 - 826*a*A*c^2*x^4 - 1152*a*B*c^2*x^5 - 105*A*c^3*x^6 - 384*B*c^3*x^7))
/(2688*a*x^8) - (5*A*c^4*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt
[a]])/(64*a^(3/2))
```

fricas [A] time = 0.53, size = 267, normalized size = 1.79

$$\left[\frac{105 \, A \sqrt{a} c^{4} x^{8} \log\left(-\frac{c x^{2} + 2 \, \sqrt{c x^{2} + a} \sqrt{a} + 2 \, a}{x^{2}}\right) - 2 \, {\left(384 \, B a c^{3} x^{7} + 105 \, A a c^{3} x^{6} + 1152 \, B a^{2} c^{2} x^{5} + 826 \, A a^{2} c^{2} x^{4} + 1152 \, B a^{3} c x^{3} + 952 \, A a^{3} c x^{2} + 384 \, B a^{4} x + 336 \, A a^{4}\right)} \sqrt{c x^{2} + a}}{5376 \, a^{2} x^{8}}, -\frac{105 \, A \sqrt{-a} c^{4} x^{8} \arctan\left(\frac{\sqrt{-a}}{\sqrt{c x^{2} + a}}\right) + {\left(384 \, B a c^{3} x^{7} + 105 \, A a c^{3} x^{6} + 1152 \, B a^{2} c^{2} x^{5} + 826 \, A a^{2} c^{2} x^{4} + 1152 \, B a^{3} c x^{3} + 952 \, A a^{3} c x^{2} + 384 \, B a^{4} x + 336 \, A a^{4}\right)} \sqrt{c x^{2} + a}}{2688 \, a^{2} x^{8}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] [1/5376*(105*A*sqrt(a)*c^4*x^8*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*
a)/x^2) - 2*(384*B*a*c^3*x^7 + 105*A*a*c^3*x^6 + 1152*B*a^2*c^2*x^5 + 826*A
*a^2*c^2*x^4 + 1152*B*a^3*c*x^3 + 952*A*a^3*c*x^2 + 384*B*a^4*x + 336*A*a^4
)*sqrt(c*x^2 + a))/(a^2*x^8), -1/2688*(105*A*sqrt(-a)*c^4*x^8*arctan(sqrt(-
a)/sqrt(c*x^2 + a)) + (384*B*a*c^3*x^7 + 105*A*a*c^3*x^6 + 1152*B*a^2*c^2*x
^5 + 826*A*a^2*c^2*x^4 + 1152*B*a^3*c*x^3 + 952*A*a^3*c*x^2 + 384*B*a^4*x +
 336*A*a^4)*sqrt(c*x^2 + a))/(a^2*x^8)]
```

giac [B] time = 0.24, size = 491, normalized size = 3.30

$$-\frac{5 \, A c^{4} \arctan\left(-\frac{\sqrt{c} x - \sqrt{c x^{2} + a}}{\sqrt{-a}}\right)}{64 \, \sqrt{-a} a} + \frac{105 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{15} A c^{4} + 2688 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{14} B a c^{\frac{7}{2}} + 2779 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{13} A a c^{4} - 2688 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{12} B a^{2} c^{\frac{7}{2}} + 6265 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{11} A a^{2} c^{4} + 13440 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{10} B a^{3} c^{\frac{7}{2}} + 12355 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{9} A a^{3} c^{4} - 13440 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{8} B a^{4} c^{\frac{7}{2}} + 12355 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{7} A a^{4} c^{4} + 8064 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{6} B a^{5} c^{\frac{7}{2}} + 6265 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{5} A a^{5} c^{4} - 8064 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{4} B a^{6} c^{\frac{7}{2}} + 2779 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{3} A a^{6} c^{4} + 384 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{2} B a^{7} c^{\frac{7}{2}} + 105 \, {\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)} A a^{7} c^{4} - 384 \, B a^{8} c^{\frac{7}{2}}}{1344 \, {\left({\left(\sqrt{c} x - \sqrt{c x^{2} + a}\right)}^{2} - a\right)}^{8} a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] -5/64*A*c^4*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) +
1/1344*(105*(sqrt(c)*x - sqrt(c*x^2 + a))^15*A*c^4 + 2688*(sqrt(c)*x - sqrt
(c*x^2 + a))^14*B*a*c^(7/2) + 2779*(sqrt(c)*x - sqrt(c*x^2 + a))^13*A*a*c^4
 - 2688*(sqrt(c)*x - sqrt(c*x^2 + a))^12*B*a^2*c^(7/2) + 6265*(sqrt(c)*x -
sqrt(c*x^2 + a))^11*A*a^2*c^4 + 13440*(sqrt(c)*x - sqrt(c*x^2 + a))^10*B*a^
3*c^(7/2) + 12355*(sqrt(c)*x - sqrt(c*x^2 + a))^9*A*a^3*c^4 - 13440*(sqrt(c
)*x - sqrt(c*x^2 + a))^8*B*a^4*c^(7/2) + 12355*(sqrt(c)*x - sqrt(c*x^2 + a)
)^7*A*a^4*c^4 + 8064*(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^5*c^(7/2) + 6265*(
sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a^5*c^4 - 8064*(sqrt(c)*x - sqrt(c*x^2 + a
))^4*B*a^6*c^(7/2) + 2779*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^6*c^4 + 384*(
sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^7*c^(7/2) + 105*(sqrt(c)*x - sqrt(c*x^2
+ a))*A*a^7*c^4 - 384*B*a^8*c^(7/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)
^8*a)
```

maple [A] time = 0.13, size = 185, normalized size = 1.24

$$\frac{5 A \,c^{4} \ln \left(\frac{2 a +2 \sqrt{c \,x^{2}+a}\, \sqrt{a}}{x}\right)}{128 a^{\frac{3}{2}}}-\frac{5 \sqrt{c \,x^{2}+a}\, A \,c^{4}}{128 a^{2}}-\frac{5 \left(c \,x^{2}+a \right)^{\frac{3}{2}} A \,c^{4}}{384 a^{3}}-\frac{\left(c \,x^{2}+a \right)^{\frac{5}{2}} A \,c^{4}}{128 a^{4}}+\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} A \,c^{3}}{128 a^{4} x^{2}}+\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} A \,c^{2}}{192 a^{3} x^{4}}+\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} A c}{48 a^{2} x^{6}}-\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} B}{7 a \,x^{7}}-\frac{\left(c \,x^{2}+a \right)^{\frac{7}{2}} A}{8 a \,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^9,x)
```

```
[Out] -1/8*A*(c*x^2+a)^(7/2)/a/x^8+1/48*A*c/a^2/x^6*(c*x^2+a)^(7/2)+1/192*A*c^2/a
^3/x^4*(c*x^2+a)^(7/2)+1/128*A*c^3/a^4/x^2*(c*x^2+a)^(7/2)-1/128*A*c^4/a^4*
(c*x^2+a)^(5/2)-5/384*A*c^4/a^3*(c*x^2+a)^(3/2)+5/128*A*c^4/a^(3/2)*ln((2*a
+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-5/128*A*c^4/a^2*(c*x^2+a)^(1/2)-1/7*B*(c*x^2
+a)^(7/2)/a/x^7
```

maxima [A] time = 0.51, size = 173, normalized size = 1.16

$$\frac{5 \, A c^{4} \operatorname{arsinh}\left(\frac{a}{\sqrt{a c} {\left| x \right|}}\right)}{128 \, a^{\frac{3}{2}}} - \frac{{\left(c x^{2} + a\right)}^{\frac{5}{2}} A c^{4}}{128 \, a^{4}} - \frac{5 \, {\left(c x^{2} + a\right)}^{\frac{3}{2}} A c^{4}}{384 \, a^{3}} - \frac{5 \, \sqrt{c x^{2} + a} A c^{4}}{128 \, a^{2}} + \frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} A c^{3}}{128 \, a^{4} x^{2}} + \frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} A c^{2}}{192 \, a^{3} x^{4}} + \frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} A c}{48 \, a^{2} x^{6}} - \frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} B}{7 \, a x^{7}} - \frac{{\left(c x^{2} + a\right)}^{\frac{7}{2}} A}{8 \, a x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] 5/128*A*c^4*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/128*(c*x^2 + a)^(5/2)
*A*c^4/a^4 - 5/384*(c*x^2 + a)^(3/2)*A*c^4/a^3 - 5/128*sqrt(c*x^2 + a)*A*c^
4/a^2 + 1/128*(c*x^2 + a)^(7/2)*A*c^3/(a^4*x^2) + 1/192*(c*x^2 + a)^(7/2)*A
*c^2/(a^3*x^4) + 1/48*(c*x^2 + a)^(7/2)*A*c/(a^2*x^6) - 1/7*(c*x^2 + a)^(7/
2)*B/(a*x^7) - 1/8*(c*x^2 + a)^(7/2)*A/(a*x^8)
```

mupad [B] time = 5.35, size = 168, normalized size = 1.13

$$\frac{55\,A\,a\,{\left(c\,x^2+a\right)}^{3/2}}{384\,x^8}-\frac{73\,A\,{\left(c\,x^2+a\right)}^{5/2}}{384\,x^8}-\frac{5\,A\,a^2\,\sqrt{c\,x^2+a}}{128\,x^8}-\frac{5\,A\,{\left(c\,x^2+a\right)}^{7/2}}{128\,a\,x^8}-\frac{B\,a^2\,\sqrt{c\,x^2+a}}{7\,x^7}-\frac{3\,B\,c^2\,\sqrt{c\,x^2+a}}{7\,x^3}-\frac{B\,c^3\,\sqrt{c\,x^2+a}}{7\,a\,x}-\frac{3\,B\,a\,c\,\sqrt{c\,x^2+a}}{7\,x^5}-\frac{A\,c^4\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,5{}\mathrm{i}}{128\,a^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^9,x)
```

```
[Out] (55*A*a*(a + c*x^2)^(3/2))/(384*x^8) - (A*c^4*atan(((a + c*x^2)^(1/2)*1i)/a
^(1/2))*5i)/(128*a^(3/2)) - (73*A*(a + c*x^2)^(5/2))/(384*x^8) - (5*A*a^2*(
a + c*x^2)^(1/2))/(128*x^8) - (5*A*(a + c*x^2)^(7/2))/(128*a*x^8) - (B*a^2*
(a + c*x^2)^(1/2))/(7*x^7) - (3*B*c^2*(a + c*x^2)^(1/2))/(7*x^3) - (B*c^3*(
a + c*x^2)^(1/2))/(7*a*x) - (3*B*a*c*(a + c*x^2)^(1/2))/(7*x^5)
```

sympy [B] time = 25.77, size = 609, normalized size = 4.09

$$- \frac{A a^{3}}{8 \sqrt{c} x^{9} \sqrt{\frac{a}{c x^{2}} + 1}} - \frac{23 A a^{2} \sqrt{c}}{48 x^{7} \sqrt{\frac{a}{c x^{2}} + 1}} - \frac{127 A a c^{\frac{3}{2}}}{192 x^{5} \sqrt{\frac{a}{c x^{2}} + 1}} - \frac{133 A c^{\frac{5}{2}}}{384 x^{3} \sqrt{\frac{a}{c x^{2}} + 1}} - \frac{5 A c^{\frac{7}{2}}}{128 a x \sqrt{\frac{a}{c x^{2}} + 1}} + \frac{5 A c^{4} \operatorname{asinh}{\left(\frac{\sqrt{a}}{\sqrt{c} x} \right)}}{128 a^{\frac{3}{2}}} - \frac{15 B a^{7} c^{\frac{9}{2}} \sqrt{\frac{a}{c x^{2}} + 1}}{105 a^{5} c^{4} x^{6} + 210 a^{4} c^{5} x^{8} + 105 a^{3} c^{6} x^{10}} - \frac{33 B a^{6} c^{\frac{11}{2}} x^{2} \sqrt{\frac{a}{c x^{2}} + 1}}{105 a^{5} c^{4} x^{6} + 210 a^{4} c^{5} x^{8} + 105 a^{3} c^{6} x^{10}} - \frac{17 B a^{5} c^{\frac{13}{2}} x^{4} \sqrt{\frac{a}{c x^{2}} + 1}}{105 a^{5} c^{4} x^{6} + 210 a^{4} c^{5} x^{8} + 105 a^{3} c^{6} x^{10}} - \frac{3 B a^{4} c^{\frac{15}{2}} x^{6} \sqrt{\frac{a}{c x^{2}} + 1}}{105 a^{5} c^{4} x^{6} + 210 a^{4} c^{5} x^{8} + 105 a^{3} c^{6} x^{10}} - \frac{12 B a^{3} c^{\frac{17}{2}} x^{8} \sqrt{\frac{a}{c x^{2}} + 1}}{105 a^{5} c^{4} x^{6} + 210 a^{4} c^{5} x^{8} + 105 a^{3} c^{6} x^{10}} - \frac{8 B a^{2} c^{\frac{19}{2}} x^{10} \sqrt{\frac{a}{c x^{2}} + 1}}{105 a^{5} c^{4} x^{6} + 210 a^{4} c^{5} x^{8} + 105 a^{3} c^{6} x^{10}} - \frac{2 B a c^{\frac{3}{2}} \sqrt{\frac{a}{c x^{2}} + 1}}{5 x^{4}} - \frac{7 B c^{\frac{5}{2}} \sqrt{\frac{a}{c x^{2}} + 1}}{15 x^{2}} - \frac{B c^{\frac{7}{2}} \sqrt{\frac{a}{c x^{2}} + 1}}{15 a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**9,x)
```

```
[Out] -A*a**3/(8*sqrt(c)*x**9*sqrt(a/(c*x**2) + 1)) - 23*A*a**2*sqrt(c)/(48*x**7*
sqrt(a/(c*x**2) + 1)) - 127*A*a*c**(3/2)/(192*x**5*sqrt(a/(c*x**2) + 1)) -
133*A*c**(5/2)/(384*x**3*sqrt(a/(c*x**2) + 1)) - 5*A*c**(7/2)/(128*a*x*sqrt
(a/(c*x**2) + 1)) + 5*A*c**4*asinh(sqrt(a)/(sqrt(c)*x))/(128*a**(3/2)) - 15
*B*a**7*c**(9/2)*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x
**8 + 105*a**3*c**6*x**10) - 33*B*a**6*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/
(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 17*B*a**5
*c**(13/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x*
*8 + 105*a**3*c**6*x**10) - 3*B*a**4*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)/(1
05*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 12*B*a**3*c
**(17/2)*x**8*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8
 + 105*a**3*c**6*x**10) - 8*B*a**2*c**(19/2)*x**10*sqrt(a/(c*x**2) + 1)/(10
5*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 2*B*a*c**(3/
2)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 7*B*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*x*
*2) - B*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a)
```

3.353 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=172

$$\frac{5Bc^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}+\frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7}-\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9}+\frac{5Bc^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4}-\frac{B\left(a+cx^2\right)^{7/2}}{8ax^8}+$$

Rubi [A] time = 0.12, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7}+\frac{5Bc^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}-\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9}+\frac{5Bc^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{B\left(a+cx^2\right)^{7/2}}{8ax^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (5*B*c^3*Sqrt[a + c*x^2])/(128*a*x^2) + (5*B*c^2*(a + c*x^2)^(3/2))/(192*a*
x^4) + (B*c*(a + c*x^2)^(5/2))/(48*a*x^6) - (A*(a + c*x^2)^(7/2))/(9*a*x^9)
 - (B*(a + c*x^2)^(7/2))/(8*a*x^8) + (2*A*c*(a + c*x^2)^(7/2))/(63*a^2*x^7)
 + (5*B*c^4*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(128*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^{10}}\,dx = -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{\int \frac{(-9aB+2Acx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx}{9a}$$

$$= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{\int \frac{(-16aAc-9aBcx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx}{72a^2}$$

$$= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7} - \frac{(Bc)\int \frac{\left(a+cx^2\right)^{5/2}}{x^7}\,dx}{8a}$$

$$= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7} - \frac{(Bc)\,\mathrm{Subst}\left(\int \frac{(a+cx)^{5/2}}{x^4}\,dx, x \cdots\right.}{16a}$$

$$= \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7} - \left(5Bc^2\right)\mathrm{Sub}\cdots$$

$$= \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+\cdots\right.}{63a^2x\cdots}$$

$$= \frac{5Bc^3\sqrt{a+cx^2}}{128ax^2} + \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx\cdots\right.}{8ax^8}\cdots$$

$$= \frac{5Bc^3\sqrt{a+cx^2}}{128ax^2} + \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx\cdots\right.}{8ax^8}\cdots$$

$$= \frac{5Bc^3\sqrt{a+cx^2}}{128ax^2} + \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx\cdots\right.}{8ax^8}\cdots$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.37

$$-\frac{\left(a+cx^2\right)^{7/2}\left(a^3A\left(7a-2cx^2\right)+9Bc^4x^9\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{cx^2}{a}+1\right)\right)}{63a^5x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^10,x]
```

```
[Out] -1/63*((a + c*x^2)^(7/2)*(a^3*A*(7*a - 2*c*x^2) + 9*B*c^4*x^9*Hypergeometri
c2F1[7/2, 5, 9/2, 1 + (c*x^2)/a]))/(a^5*x^9)
```

IntegrateAlgebraic [A] time = 1.08, size = 154, normalized size = 0.90

$$\frac{\sqrt{a+cx^2}\left(-896a^4A-1008a^4Bx-2432a^3Acx^2-2856a^3Bcx^3-1920a^2Ac^2x^4-2478a^2Bc^2x^5-128aAc^3x^6-315aBc^3x^7+256Ac^4x^8\right)}{8064a^2x^9}-\frac{5Bc^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{64a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (Sqrt[a + c*x^2]*(-896*a^4*A - 1008*a^4*B*x - 2432*a^3*A*c*x^2 - 2856*a^3*B
*c*x^3 - 1920*a^2*A*c^2*x^4 - 2478*a^2*B*c^2*x^5 - 128*a*A*c^3*x^6 - 315*a*
B*c^3*x^7 + 256*A*c^4*x^8))/(8064*a^2*x^9) - (5*B*c^4*ArcTanh[(Sqrt[c]*x)/S
qrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(64*a^(3/2))
```

fricas [A] time = 0.56, size = 286, normalized size = 1.66

$$\left[\frac{315\,B\sqrt{a}\,c^4x^9\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(256\,Ac^4x^8-315\,Bac^3x^7-128\,Aac^3x^6-2478\,Ba^2c^2x^5-1920\,Aa^2c^2x^4-2856\,Ba^3cx^3-2432\,Aa^3cx^2-1008\,Ba^4x-896\,Aa^4\right)\sqrt{cx^2+a}}{16128\,a^2x^9},\ -\frac{315\,B\sqrt{-a}\,c^4x^9\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(256\,Ac^4x^8-315\,Bac^3x^7-128\,Aac^3x^6-2478\,Ba^2c^2x^5-1920\,Aa^2c^2x^4-2856\,Ba^3cx^3-2432\,Aa^3cx^2-1008\,Ba^4x-896\,Aa^4\right)\sqrt{cx^2+a}}{8064\,a^2x^9}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] [1/16128*(315*B*sqrt(a)*c^4*x^9*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2
*a)/x^2) + 2*(256*A*c^4*x^8 - 315*B*a*c^3*x^7 - 128*A*a*c^3*x^6 - 2478*B*a^
2*c^2*x^5 - 1920*A*a^2*c^2*x^4 - 2856*B*a^3*c*x^3 - 2432*A*a^3*c*x^2 - 1008
*B*a^4*x - 896*A*a^4)*sqrt(c*x^2 + a))/(a^2*x^9), -1/8064*(315*B*sqrt(-a)*c
^4*x^9*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (256*A*c^4*x^8 - 315*B*a*c^3*x^7
- 128*A*a*c^3*x^6 - 2478*B*a^2*c^2*x^5 - 1920*A*a^2*c^2*x^4 - 2856*B*a^3*c*
x^3 - 2432*A*a^3*c*x^2 - 1008*B*a^4*x - 896*A*a^4)*sqrt(c*x^2 + a))/(a^2*x^
9)]
```

giac [B] time = 0.25, size = 491, normalized size = 2.85

$$-\frac{5\,Bc^4\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{64\,\sqrt{-a}\,a}+\frac{315\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{17}Bc^4+8022\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{15}Bac^4+16128\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{14}Aac^{\frac{9}{2}}+10458\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{13}Ba^2c^4+26880\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{12}Aa^2c^{\frac{9}{2}}+18270\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{11}Ba^3c^4+80640\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{10}Aa^3c^{\frac{9}{2}}+48384\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{8}Aa^4c^{\frac{9}{2}}-18270\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{7}Ba^5c^4+48384\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{6}Aa^5c^{\frac{9}{2}}-10458\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{5}Ba^6c^4+6912\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{4}Aa^6c^{\frac{9}{2}}-8022\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{3}Ba^7c^4+2304\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^{2}Aa^7c^{\frac{9}{2}}-315\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^8c^4-256\,Aa^8c^{\frac{9}{2}}}{4032\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^9a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] -5/64*B*c^4*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) +
1/4032*(315*(sqrt(c)*x - sqrt(c*x^2 + a))^17*B*c^4 + 8022*(sqrt(c)*x - sqrt
(c*x^2 + a))^15*B*a*c^4 + 16128*(sqrt(c)*x - sqrt(c*x^2 + a))^14*A*a*c^(9/2
) + 10458*(sqrt(c)*x - sqrt(c*x^2 + a))^13*B*a^2*c^4 + 26880*(sqrt(c)*x - s
qrt(c*x^2 + a))^12*A*a^2*c^(9/2) + 18270*(sqrt(c)*x - sqrt(c*x^2 + a))^11*B
*a^3*c^4 + 80640*(sqrt(c)*x - sqrt(c*x^2 + a))^10*A*a^3*c^(9/2) + 48384*(sq
rt(c)*x - sqrt(c*x^2 + a))^8*A*a^4*c^(9/2) - 18270*(sqrt(c)*x - sqrt(c*x^2
+ a))^7*B*a^5*c^4 + 48384*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a^5*c^(9/2) - 1
0458*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*a^6*c^4 + 6912*(sqrt(c)*x - sqrt(c*x
^2 + a))^4*A*a^6*c^(9/2) - 8022*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^7*c^4 +
 2304*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^7*c^(9/2) - 315*(sqrt(c)*x - sqrt
(c*x^2 + a))*B*a^8*c^4 - 256*A*a^8*c^(9/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))
^2 - a)^9*a)
```

maple [A] time = 0.09, size = 204, normalized size = 1.19

$$\frac{5Bc^4\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{3}{2}}}-\frac{5\sqrt{cx^2+a}\,Bc^4}{128a^2}-\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^4}{384a^3}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc^4}{128a^4}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^3}{128a^4x^2}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^2}{192a^3x^4}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc}{48a^2x^6}+\frac{2\left(cx^2+a\right)^{\frac{7}{2}}Ac}{63a^2x^7}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}B}{8ax^8}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}A}{9ax^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^10,x)
```

```
[Out] -1/8*B*(c*x^2+a)^(7/2)/a/x^8+1/48*B*c/a^2/x^6*(c*x^2+a)^(7/2)+1/192*B*c^2/a
^3/x^4*(c*x^2+a)^(7/2)+1/128*B*c^3/a^4/x^2*(c*x^2+a)^(7/2)-1/128*B*c^4/a^4*
(c*x^2+a)^(5/2)-5/384*B*c^4/a^3*(c*x^2+a)^(3/2)+5/128*B*c^4/a^(3/2)*ln((2*a
+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-5/128*B*c^4/a^2*(c*x^2+a)^(1/2)-1/9*A*(c*x^2
+a)^(7/2)/a/x^9+2/63*A*c*(c*x^2+a)^(7/2)/a^2/x^7
```

maxima [A] time = 0.59, size = 192, normalized size = 1.12

$$\frac{5\,Bc^4\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{128\,a^{\frac{3}{2}}} - \frac{(cx^2+a)^{\frac{5}{2}}Bc^4}{128\,a^4} - \frac{5\,(cx^2+a)^{\frac{3}{2}}Bc^4}{384\,a^3} - \frac{5\,\sqrt{cx^2+a}\,Bc^4}{128\,a^2} + \frac{(cx^2+a)^{\frac{7}{2}}Bc^3}{128\,a^4x^2} + \frac{(cx^2+a)^{\frac{7}{2}}Bc^2}{192\,a^3x^4} + \frac{(cx^2+a)^{\frac{7}{2}}Bc}{48\,a^2x^6} + \frac{2\,(cx^2+a)^{\frac{7}{2}}Ac}{63\,a^2x^7} - \frac{(cx^2+a)^{\frac{7}{2}}B}{8\,ax^8} - \frac{(cx^2+a)^{\frac{7}{2}}A}{9\,ax^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] 5/128*B*c^4*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/128*(c*x^2 + a)^(5/2)
*B*c^4/a^4 - 5/384*(c*x^2 + a)^(3/2)*B*c^4/a^3 - 5/128*sqrt(c*x^2 + a)*B*c^
4/a^2 + 1/128*(c*x^2 + a)^(7/2)*B*c^3/(a^4*x^2) + 1/192*(c*x^2 + a)^(7/2)*B
*c^2/(a^3*x^4) + 1/48*(c*x^2 + a)^(7/2)*B*c/(a^2*x^6) + 2/63*(c*x^2 + a)^(7
/2)*A*c/(a^2*x^7) - 1/8*(c*x^2 + a)^(7/2)*B/(a*x^8) - 1/9*(c*x^2 + a)^(7/2)
*A/(a*x^9)
```

mupad [B] time = 6.34, size = 189, normalized size = 1.10

$$\frac{55\,B\,a\,\left(c\,x^2+a\right)^{3/2}}{384\,x^8} - \frac{73\,B\,\left(c\,x^2+a\right)^{5/2}}{384\,x^8} - \frac{A\,a^2\,\sqrt{c\,x^2+a}}{9\,x^9} - \frac{5\,B\,a^2\,\sqrt{c\,x^2+a}}{128\,x^8} - \frac{5\,B\,\left(c\,x^2+a\right)^{7/2}}{128\,a\,x^8} - \frac{5\,A\,c^2\,\sqrt{c\,x^2+a}}{21\,x^5} - \frac{A\,c^3\,\sqrt{c\,x^2+a}}{63\,a\,x^3} + \frac{2\,A\,c^4\,\sqrt{c\,x^2+a}}{63\,a^2\,x} - \frac{19\,A\,a\,c\,\sqrt{c\,x^2+a}}{63\,x^7} - \frac{B\,c^4\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,5{}\mathrm{i}}{128\,a^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^10,x)
```

```
[Out] (55*B*a*(a + c*x^2)^(3/2))/(384*x^8) - (B*c^4*atan(((a + c*x^2)^(1/2)*1i)/a
^(1/2))*5i)/(128*a^(3/2)) - (73*B*(a + c*x^2)^(5/2))/(384*x^8) - (A*a^2*(a
+ c*x^2)^(1/2))/(9*x^9) - (5*B*a^2*(a + c*x^2)^(1/2))/(128*x^8) - (5*B*(a +
 c*x^2)^(7/2))/(128*a*x^8) - (5*A*c^2*(a + c*x^2)^(1/2))/(21*x^5) - (A*c^3*
(a + c*x^2)^(1/2))/(63*a*x^3) + (2*A*c^4*(a + c*x^2)^(1/2))/(63*a^2*x) - (1
9*A*a*c*(a + c*x^2)^(1/2))/(63*x^7)
```

sympy [B] time = 25.67, size = 1202, normalized size = 6.99

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**10,x)
```

```
[Out] -35*A*a**9*c**(19/2)*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c*
*10*x**10 + 945*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 110*A*a**8*c**(2
1/2)*x**2*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 +
 945*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 114*A*a**7*c**(23/2)*x**4*s
qrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945*a**5*c
**11*x**12 + 315*a**4*c**12*x**14) - 40*A*a**6*c**(25/2)*x**6*sqrt(a/(c*x**
2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945*a**5*c**11*x**12 +
 315*a**4*c**12*x**14) - 30*A*a**6*c**(11/2)*sqrt(a/(c*x**2) + 1)/(105*a**5
*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) + 5*A*a**5*c**(27/2)
*x**8*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945
*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 66*A*a**5*c**(13/2)*x**2*sqrt(a
/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**
10) + 30*A*a**4*c**(29/2)*x**10*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 +
945*a**6*c**10*x**10 + 945*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 34*A*
a**4*c**(15/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**
5*x**8 + 105*a**3*c**6*x**10) + 40*A*a**3*c**(31/2)*x**12*sqrt(a/(c*x**2) +
 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945*a**5*c**11*x**12 + 315
*a**4*c**12*x**14) - 6*A*a**3*c**(17/2)*x**6*sqrt(a/(c*x**2) + 1)/(105*a**5
*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) + 16*A*a**2*c**(33/2
)*x**14*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 9
45*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 24*A*a**2*c**(19/2)*x**8*sqrt
(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x
```

```
**10) - 16*A*a*c**(21/2)*x**10*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 2
10*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - A*c**(5/2)*sqrt(a/(c*x**2) + 1)/
(5*x**4) - A*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a*x**2) + 2*A*c**(9/2)*sqrt(
a/(c*x**2) + 1)/(15*a**2) - B*a**3/(8*sqrt(c)*x**9*sqrt(a/(c*x**2) + 1)) -
23*B*a**2*sqrt(c)/(48*x**7*sqrt(a/(c*x**2) + 1)) - 127*B*a*c**(3/2)/(192*x*
*5*sqrt(a/(c*x**2) + 1)) - 133*B*c**(5/2)/(384*x**3*sqrt(a/(c*x**2) + 1)) -
 5*B*c**(7/2)/(128*a*x*sqrt(a/(c*x**2) + 1)) + 5*B*c**4*asinh(sqrt(a)/(sqrt
(c)*x))/(128*a**(3/2))
```

3.354 $\int \frac{x^4(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=129

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}+\frac{a\sqrt{a+cx^2}\,(64aB-45Acx)}{120c^3}+\frac{Ax^3\sqrt{a+cx^2}}{4c}-\frac{4aBx^2\sqrt{a+cx^2}}{15c^2}+\frac{Bx^4\sqrt{a+cx^2}}{5c}$$

Rubi [A] time = 0.11, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {833, 780, 217, 206}

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}+\frac{a\sqrt{a+cx^2}\,(64aB-45Acx)}{120c^3}+\frac{Ax^3\sqrt{a+cx^2}}{4c}-\frac{4aBx^2\sqrt{a+cx^2}}{15c^2}+\frac{Bx^4\sqrt{a+cx^2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (-4*a*B*x^2*Sqrt[a + c*x^2])/(15*c^2) + (A*x^3*Sqrt[a + c*x^2])/(4*c) + (B*
x^4*Sqrt[a + c*x^2])/(5*c) + (a*(64*a*B - 45*A*c*x)*Sqrt[a + c*x^2])/(120*c
^3) + (3*a^2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\sqrt{a+cx^2}}\,dx = \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{\int \frac{x^3(-4aB+5Acx)}{\sqrt{a+cx^2}}\,dx}{5c}$$

$$= \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{\int \frac{x^2(-15aAc-16aBcx)}{\sqrt{a+cx^2}}\,dx}{20c^2}$$

$$= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{\int \frac{x(32a^2Bc-45aAc^2x)}{\sqrt{a+cx^2}}\,dx}{60c^3}$$

$$= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{a(64aB-45Acx)\sqrt{a+cx^2}}{120c^3} + \frac{(3a^2 \cdots}{\cdots}$$

$$= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{a(64aB-45Acx)\sqrt{a+cx^2}}{120c^3} + \frac{(3a^2 \cdots}{\cdots}$$

$$= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{a(64aB-45Acx)\sqrt{a+cx^2}}{120c^3} + \frac{3a^2 A \cdots}{\cdots}$$

Mathematica [A] time = 0.06, size = 86, normalized size = 0.67

$$\frac{\sqrt{a+cx^2}\left(64a^2B-acx(45A+32Bx)+6c^2x^3(5A+4Bx)\right)+45a^2A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{120c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(64*a^2*B + 6*c^2*x^3*(5*A + 4*B*x) - a*c*x*(45*A + 32*B*x
)) + 45*a^2*A*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(120*c^3)
```

IntegrateAlgebraic [A] time = 0.30, size = 92, normalized size = 0.71

$$\frac{\sqrt{a+cx^2}\left(64a^2B-45aAcx-32aBcx^2+30Ac^2x^3+24Bc^2x^4\right)}{120c^3} - \frac{3a^2A\log\left(\sqrt{a+cx^2}-\sqrt{c}x\right)}{8c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(64*a^2*B - 45*a*A*c*x - 32*a*B*c*x^2 + 30*A*c^2*x^3 + 24*
B*c^2*x^4))/(120*c^3) - (3*a^2*A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(8*c^
(5/2))
```

fricas [A] time = 0.47, size = 176, normalized size = 1.36

$$\left[\frac{45\,Aa^2\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(24\,Bc^2x^4+30\,Ac^2x^3-32\,Bacx^2-45\,Aacx+64\,Ba^2\right)\sqrt{cx^2+a}}{240\,c^3}, -\frac{45\,Aa^2\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)-\left(24\,Bc^2x^4+30\,Ac^2x^3-32\,Bacx^2-45\,Aacx+64\,Ba^2\right)\sqrt{cx^2+a}}{120\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/240*(45*A*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(24*B*c^2*x^4 + 30*A*c^2*x^3 - 32*B*a*c*x^2 - 45*A*a*c*x + 64*B*a^2)*sqrt
(c*x^2 + a))/c^3, -1/120*(45*A*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 +
a)) - (24*B*c^2*x^4 + 30*A*c^2*x^3 - 32*B*a*c*x^2 - 45*A*a*c*x + 64*B*a^2)*
sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.19, size = 87, normalized size = 0.67

$$\frac{1}{120}\sqrt{cx^2+a}\left(\left(2\left(3\left(\frac{4\,Bx}{c}+\frac{5\,A}{c}\right)x-\frac{16\,Ba}{c^2}\right)x-\frac{45\,Aa}{c^2}\right)x+\frac{64\,Ba^2}{c^3}\right)-\frac{3\,Aa^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/120*sqrt(c*x^2 + a)*((2*(3*(4*B*x/c + 5*A/c)*x - 16*B*a/c^2)*x - 45*A*a/c
^2)*x + 64*B*a^2/c^3) - 3/8*A*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^
(5/2)
```

maple [A] time = 0.05, size = 117, normalized size = 0.91

$$\frac{\sqrt{c\,x^2+a}\;B\,x^4}{5c}+\frac{\sqrt{c\,x^2+a}\;A\,x^3}{4c}-\frac{4\sqrt{c\,x^2+a}\;B\,a\,x^2}{15c^2}+\frac{3A\,a^2\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{8c^{\frac{5}{2}}}-\frac{3\sqrt{c\,x^2+a}\;Aax}{8c^2}+\frac{8\sqrt{c\,x^2+a}\;B\,a^2}{15c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/5*B*x^4*(c*x^2+a)^(1/2)/c-4/15*a*B*x^2*(c*x^2+a)^(1/2)/c^2+8/15*B*a^2/c^3
*(c*x^2+a)^(1/2)+1/4*A*x^3*(c*x^2+a)^(1/2)/c-3/8*A*a/c^2*x*(c*x^2+a)^(1/2)+
3/8*A*a^2/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.57, size = 109, normalized size = 0.84

$$\frac{\sqrt{cx^2+a}\,Bx^4}{5\,c}+\frac{\sqrt{cx^2+a}\,Ax^3}{4\,c}-\frac{4\,\sqrt{cx^2+a}\,Bax^2}{15\,c^2}-\frac{3\,\sqrt{cx^2+a}\,Aax}{8\,c^2}+\frac{3\,Aa^2\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{5}{2}}}+\frac{8\,\sqrt{cx^2+a}\,Ba^2}{15\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(c*x^2 + a)*B*x^4/c + 1/4*sqrt(c*x^2 + a)*A*x^3/c - 4/15*sqrt(c*x^2
 + a)*B*a*x^2/c^2 - 3/8*sqrt(c*x^2 + a)*A*a*x/c^2 + 3/8*A*a^2*arcsinh(c*x/s
qrt(a*c))/c^(5/2) + 8/15*sqrt(c*x^2 + a)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^4\,\left(A+B\,x\right)}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [A] time = 6.58, size = 173, normalized size = 1.34

$$-\frac{3Aa^{\frac{3}{2}}x}{8c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{A\sqrt{a}\,x^3}{8c\sqrt{1+\frac{cx^2}{a}}}+\frac{3Aa^2\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8c^{\frac{5}{2}}}+\frac{Ax^5}{4\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}+B\left(\begin{cases}\frac{8a^2\sqrt{a+cx^2}}{15c^3}-\frac{4ax^2\sqrt{a+cx^2}}{15c^2}+\frac{x^4\sqrt{a+cx^2}}{5c} & \text{for}\ c\neq 0\\ \frac{x^6}{6\sqrt{a}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] -3*A*a**(3/2)*x/(8*c**2*sqrt(1 + c*x**2/a)) - A*sqrt(a)*x**3/(8*c*sqrt(1 +
c*x**2/a)) + 3*A*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*c**(5/2)) + A*x**5/(4*sqr
t(a)*sqrt(1 + c*x**2/a)) + B*Piecewise((8*a**2*sqrt(a + c*x**2)/(15*c**3) -
 4*a*x**2*sqrt(a + c*x**2)/(15*c**2) + x**4*sqrt(a + c*x**2)/(5*c), Ne(c, 0
)), (x**6/(6*sqrt(a)), True))
```

3.355 $\int \frac{x^3(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=104

$$\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}-\frac{a\sqrt{a+cx^2}\,(16A+9Bx)}{24c^2}+\frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}$$

Rubi [A] time = 0.07, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {833, 780, 217, 206}

$$\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}-\frac{a\sqrt{a+cx^2}\,(16A+9Bx)}{24c^2}+\frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (A*x^2*Sqrt[a + c*x^2])/(3*c) + (B*x^3*Sqrt[a + c*x^2])/(4*c) - (a*(16*A +
9*B*x)*Sqrt[a + c*x^2])/(24*c^2) + (3*a^2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*
x^2]])/(8*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{Bx^3\sqrt{a+cx^2}}{4c}+\frac{\int \frac{x^2(-3aB+4Acx)}{\sqrt{a+cx^2}}\,dx}{4c} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}+\frac{\int \frac{x(-8aAc-9aBcx)}{\sqrt{a+cx^2}}\,dx}{12c^2} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}-\frac{a(16A+9Bx)\sqrt{a+cx^2}}{24c^2}+\frac{(3a^2B)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{8c^2} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}-\frac{a(16A+9Bx)\sqrt{a+cx^2}}{24c^2}+\frac{(3a^2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{8c^2} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}-\frac{a(16A+9Bx)\sqrt{a+cx^2}}{24c^2}+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 76, normalized size = 0.73

$$
\frac{9a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\sqrt{c}\sqrt{a+cx^2}\left(-16aA-9aBx+8Acx^2+6Bcx^3\right)}{24c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[c]*Sqrt[a + c*x^2]*(-16*a*A - 9*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + 9*a^
2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(24*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.26, size = 77, normalized size = 0.74

$$
\frac{\sqrt{a+cx^2}\left(-16aA-9aBx+8Acx^2+6Bcx^3\right)}{24c^2}-\frac{3a^2B\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{8c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-16*a*A - 9*a*B*x + 8*A*c*x^2 + 6*B*c*x^3))/(24*c^2) - (3
*a^2*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(8*c^(5/2))
```

fricas [A] time = 0.45, size = 158, normalized size = 1.52

$$
\left[\frac{9\,Ba^2\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(6\,Bc^2x^3+8\,Ac^2x^2-9\,Bacx-16\,Aac\right)\sqrt{cx^2+a}}{48\,c^3},-\frac{9\,Ba^2\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\left(6\,Bc^2x^3+8\,Ac^2x^2-9\,Bacx-16\,Aac\right)\sqrt{cx^2+a}}{24\,c^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/48*(9*B*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*
(6*B*c^2*x^3 + 8*A*c^2*x^2 - 9*B*a*c*x - 16*A*a*c)*sqrt(c*x^2 + a))/c^3, -1
/24*(9*B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (6*B*c^2*x^3 + 8
*A*c^2*x^2 - 9*B*a*c*x - 16*A*a*c)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.22, size = 74, normalized size = 0.71

$$
\frac{1}{24}\sqrt{cx^2+a}\left(\left(2\left(\frac{3\,Bx}{c}+\frac{4\,A}{c}\right)x-\frac{9\,Ba}{c^2}\right)x-\frac{16\,Aa}{c^2}\right)-\frac{3\,Ba^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{5}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + a)*((2*(3*B*x/c + 4*A/c)*x - 9*B*a/c^2)*x - 16*A*a/c^2) -
 3/8*B*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.06, size = 96, normalized size = 0.92

$$\frac{\sqrt{c\,x^{2}+a}\;B\,x^{3}}{4c}+\frac{\sqrt{c\,x^{2}+a}\;A\,x^{2}}{3c}+\frac{3B\,a^{2}\ln\left(\sqrt{c}\;x+\sqrt{c\,x^{2}+a}\right)}{8c^{\frac{5}{2}}}-\frac{3\sqrt{c\,x^{2}+a}\;Bax}{8c^{2}}-\frac{2\sqrt{c\,x^{2}+a}\;Aa}{3c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/4*B*x^3*(c*x^2+a)^(1/2)/c-3/8*B*a/c^2*x*(c*x^2+a)^(1/2)+3/8*B*a^2/c^(5/2)
*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/3*A*x^2*(c*x^2+a)^(1/2)/c-2/3*A*a/c^2*(c*x
^2+a)^(1/2)
```

maxima [A] time = 0.48, size = 88, normalized size = 0.85

$$\frac{\sqrt{cx^{2}+a}\,Bx^{3}}{4\,c}+\frac{\sqrt{cx^{2}+a}\,Ax^{2}}{3\,c}-\frac{3\,\sqrt{cx^{2}+a}\,Bax}{8\,c^{2}}+\frac{3\,Ba^{2}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{5}{2}}}-\frac{2\,\sqrt{cx^{2}+a}\,Aa}{3\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + a)*B*x^3/c + 1/3*sqrt(c*x^2 + a)*A*x^2/c - 3/8*sqrt(c*x^2
+ a)*B*a*x/c^2 + 3/8*B*a^2*arcsinh(c*x/sqrt(a*c))/c^(5/2) - 2/3*sqrt(c*x^2
+ a)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3}\,\left(A+B\,x\right)}{\sqrt{c\,x^{2}+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [A] time = 6.23, size = 150, normalized size = 1.44

$$A\left(\begin{cases}-\frac{2a\sqrt{a+cx^{2}}}{3c^{2}}+\frac{x^{2}\sqrt{a+cx^{2}}}{3c} & \text{for}\ c\neq 0\\ \frac{x^{4}}{4\sqrt{a}} & \text{otherwise}\end{cases}\right)-\frac{3Ba^{\frac{3}{2}}x}{8c^{2}\sqrt{1+\frac{cx^{2}}{a}}}-\frac{B\sqrt{a}\,x^{3}}{8c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3Ba^{2}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8c^{\frac{5}{2}}}+\frac{Bx^{5}}{4\sqrt{a}\sqrt{1+\frac{cx^{2}}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((-2*a*sqrt(a + c*x**2)/(3*c**2) + x**2*sqrt(a + c*x**2)/(3*c),
Ne(c, 0)), (x**4/(4*sqrt(a)), True)) - 3*B*a**(3/2)*x/(8*c**2*sqrt(1 + c*x*
*2/a)) - B*sqrt(a)*x**3/(8*c*sqrt(1 + c*x**2/a)) + 3*B*a**2*asinh(sqrt(c)*x
/sqrt(a))/(8*c**(5/2)) + B*x**5/(4*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.356 $\int \frac{x^2(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=81

$$-\frac{\sqrt{a+cx^2}\,(4aB-3Acx)}{6c^2}-\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}+\frac{Bx^2\sqrt{a+cx^2}}{3c}$$

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {833, 780, 217, 206}

$$-\frac{\sqrt{a+cx^2}\,(4aB-3Acx)}{6c^2}-\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}+\frac{Bx^2\sqrt{a+cx^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (B*x^2*Sqrt[a + c*x^2])/(3*c) - ((4*a*B - 3*A*c*x)*Sqrt[a + c*x^2])/(6*c^2)
 - (a*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\sqrt{a+cx^2}}\,dx = \frac{Bx^2\sqrt{a+cx^2}}{3c} + \frac{\int \frac{x(-2aB+3Acx)}{\sqrt{a+cx^2}}\,dx}{3c}$$
$$= \frac{Bx^2\sqrt{a+cx^2}}{3c} - \frac{(4aB-3Acx)\sqrt{a+cx^2}}{6c^2} - \frac{(aA)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c}$$
$$= \frac{Bx^2\sqrt{a+cx^2}}{3c} - \frac{(4aB-3Acx)\sqrt{a+cx^2}}{6c^2} - \frac{(aA)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{2c}$$
$$= \frac{Bx^2\sqrt{a+cx^2}}{3c} - \frac{(4aB-3Acx)\sqrt{a+cx^2}}{6c^2} - \frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

Mathematica [A] time = 0.04, size = 64, normalized size = 0.79

$$\frac{\sqrt{a+cx^2}\,(cx(3A+2Bx)-4aB) - 3aA\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{6c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-4*a*B + c*x*(3*A + 2*B*x)) - 3*a*A*Sqrt[c]*ArcTanh[(Sqrt
[c]*x)/Sqrt[a + c*x^2]])/(6*c^2)
```

IntegrateAlgebraic [A] time = 0.30, size = 68, normalized size = 0.84

$$\frac{\sqrt{a+cx^2}\left(-4aB+3Acx+2Bcx^2\right)}{6c^2} + \frac{aA\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-4*a*B + 3*A*c*x + 2*B*c*x^2))/(6*c^2) + (a*A*Log[-(Sqrt[
c]*x) + Sqrt[a + c*x^2]])/(2*c^(3/2))
```

fricas [A] time = 0.45, size = 127, normalized size = 1.57

$$\left[\frac{3\,Aa\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(2\,Bcx^2+3\,Acx-4\,Ba\right)\sqrt{cx^2+a}}{12\,c^2}, \frac{3\,Aa\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(2\,Bcx^2+3\,Acx-4\,Ba\right)\sqrt{cx^2+a}}{6\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*A*a*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(2
*B*c*x^2 + 3*A*c*x - 4*B*a)*sqrt(c*x^2 + a))/c^2, 1/6*(3*A*a*sqrt(-c)*arcta
n(sqrt(-c)*x/sqrt(c*x^2 + a)) + (2*B*c*x^2 + 3*A*c*x - 4*B*a)*sqrt(c*x^2 +
a))/c^2]
```

giac [A] time = 0.19, size = 61, normalized size = 0.75

$$\frac{1}{6}\,\sqrt{cx^2+a}\left(\left(\frac{2\,Bx}{c}+\frac{3\,A}{c}\right)x-\frac{4\,Ba}{c^2}\right)+\frac{Aa\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(c*x^2 + a)*((2*B*x/c + 3*A/c)*x - 4*B*a/c^2) + 1/2*A*a*log(abs(-sq
rt(c)*x + sqrt(c*x^2 + a)))/c^(3/2)
```

maple [A] time = 0.06, size = 75, normalized size = 0.93

$$\frac{\sqrt{c\,x^2+a}\;B\,x^2}{3c}-\frac{Aa\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+a}\;Ax}{2c}-\frac{2\sqrt{c\,x^2+a}\;Ba}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/3*B*x^2*(c*x^2+a)^(1/2)/c-2/3*B*a/c^2*(c*x^2+a)^(1/2)+1/2*A*x/c*(c*x^2+a)
^(1/2)-1/2*A*a/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.48, size = 67, normalized size = 0.83

$$\frac{\sqrt{cx^2+a}\,Bx^2}{3\,c}+\frac{\sqrt{cx^2+a}\,Ax}{2\,c}-\frac{Aa\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{3}{2}}}-\frac{2\,\sqrt{cx^2+a}\,Ba}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2 + a)*B*x^2/c + 1/2*sqrt(c*x^2 + a)*A*x/c - 1/2*A*a*arcsinh(c
*x/sqrt(a*c))/c^(3/2) - 2/3*sqrt(c*x^2 + a)*B*a/c^2
```

mupad [B] time = 1.64, size = 93, normalized size = 1.15

$$\begin{cases} \frac{3\,B\,x^4+4\,A\,x^3}{12\,\sqrt{a}} & \text{if } c=0 \\ \frac{A\,x\,\sqrt{c\,x^2+a}}{2\,c}-\frac{A\,a\,\ln\left(2\,\sqrt{c}\,x+2\,\sqrt{c\,x^2+a}\right)}{2\,c^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}\,\left(2\,a-c\,x^2\right)}{3\,c^2} & \text{if } c\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] piecewise(c == 0, (4*A*x^3 + 3*B*x^4)/(12*a^(1/2)), c ~= 0, - (A*a*log(2*c^
(1/2)*x + 2*(a + c*x^2)^(1/2)))/(2*c^(3/2)) + (A*x*(a + c*x^2)^(1/2))/(2*c)
 - (B*(a + c*x^2)^(1/2)*(2*a - c*x^2))/(3*c^2))
```

sympy [A] time = 4.27, size = 94, normalized size = 1.16

$$\frac{A\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2c}-\frac{Aa\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{3}{2}}}+B\left(\begin{cases}-\frac{2a\sqrt{a+cx^2}}{3c^2}+\frac{x^2\sqrt{a+cx^2}}{3c} & \text{for } c\neq 0\\ \frac{x^4}{4\sqrt{a}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*x*sqrt(1 + c*x**2/a)/(2*c) - A*a*asinh(sqrt(c)*x/sqrt(a))/(2*c**(
3/2)) + B*Piecewise((-2*a*sqrt(a + c*x**2)/(3*c**2) + x**2*sqrt(a + c*x**2)
/(3*c), Ne(c, 0)), (x**4/(4*sqrt(a)), True))
```

3.357 $\int \frac{x(A+Bx)}{\sqrt{a+cx^2}} dx$

Optimal. Leaf size=56

$$\frac{\sqrt{a+cx^2}(2A+Bx)}{2c}-\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {780, 217, 206}

$$\frac{\sqrt{a+cx^2}(2A+Bx)}{2c}-\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2])/(2*c) - (a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x
^2]])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{(2A+Bx)\sqrt{a+cx^2}}{2c}-\frac{(aB)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c}\\ &= \frac{(2A+Bx)\sqrt{a+cx^2}}{2c}-\frac{(aB)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{2c}\\ &= \frac{(2A+Bx)\sqrt{a+cx^2}}{2c}-\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 1.02

$$\frac{\sqrt{c}\sqrt{a+cx^2}(2A+Bx)-aB\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[c]*(2*A + B*x)*Sqrt[a + c*x^2] - a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x
^2]])/(2*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.24, size = 58, normalized size = 1.04

$$\frac{\sqrt{a+cx^2}\,(2A+Bx)}{2c}+\frac{aB\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2])/(2*c) + (a*B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^
2]])/(2*c^(3/2))
```

fricas [A] time = 0.49, size = 109, normalized size = 1.95

$$\left[\frac{Ba\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,(Bcx+2\,Ac)\sqrt{cx^2+a}}{4\,c^2},\ \frac{Ba\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+(Bcx+2\,Ac)\sqrt{cx^2+a}}{2\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(B*a*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(B*c*
x + 2*A*c)*sqrt(c*x^2 + a))/c^2, 1/2*(B*a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c
*x^2 + a)) + (B*c*x + 2*A*c)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 50, normalized size = 0.89

$$\frac{1}{2}\,\sqrt{cx^2+a}\left(\frac{Bx}{c}+\frac{2\,A}{c}\right)+\frac{Ba\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*(B*x/c + 2*A/c) + 1/2*B*a*log(abs(-sqrt(c)*x + sqrt(c*x
^2 + a)))/c^(3/2)
```

maple [A] time = 0.05, size = 55, normalized size = 0.98

$$-\frac{Ba\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+a}\,Bx}{2c}+\frac{\sqrt{c\,x^2+a}\,A}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/2*B*x/c*(c*x^2+a)^(1/2)-1/2*B*a/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+A/c
*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.49, size = 47, normalized size = 0.84

$$\frac{\sqrt{cx^2+a}\,Bx}{2\,c}-\frac{Ba\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+a}\,A}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*B*x/c - 1/2*B*a*arcsinh(c*x/sqrt(a*c))/c^(3/2) + sqrt(c
*x^2 + a)*A/c
```

mupad [B] time = 1.43, size = 82, normalized size = 1.46

$$\begin{cases} \frac{2\,B\,x^3+3\,A\,x^2}{6\,\sqrt{a}} & \text{if } c=0 \\ \frac{A\,\sqrt{c\,x^2+a}}{c}-\frac{B\,a\,\ln\left(2\,\sqrt{c}\,x+2\,\sqrt{c\,x^2+a}\right)}{2\,c^{3/2}}+\frac{B\,x\,\sqrt{c\,x^2+a}}{2\,c} & \text{if } c\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] piecewise(c == 0, (3*A*x^2 + 2*B*x^3)/(6*a^(1/2)), c ~= 0, (A*(a + c*x^2)^(
1/2))/c - (B*a*log(2*c^(1/2)*x + 2*(a + c*x^2)^(1/2)))/(2*c^(3/2)) + (B*x*(
a + c*x^2)^(1/2))/(2*c))
```

sympy [A] time = 4.20, size = 70, normalized size = 1.25

$$A\left(\begin{cases} \frac{x^2}{2\sqrt{a}} & \text{for } c=0 \\ \frac{\sqrt{a+cx^2}}{c} & \text{otherwise} \end{cases}\right)+\frac{B\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2c}-\frac{Ba\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((x**2/(2*sqrt(a)), Eq(c, 0)), (sqrt(a + c*x**2)/c, True)) + B*s
qrt(a)*x*sqrt(1 + c*x**2/a)/(2*c) - B*a*asinh(sqrt(c)*x/sqrt(a))/(2*c**(3/2
))
```

3.358 $\int \frac{A+Bx}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=43

$$\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}+\frac{B\sqrt{a+cx^2}}{c}$$

Rubi [A] time = 0.01, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 217, 206}

$$\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}+\frac{B\sqrt{a+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a + c*x^2],x]
```

```
[Out] (B*Sqrt[a + c*x^2])/c + (A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{a+cx^2}}\,dx &= \frac{B\sqrt{a+cx^2}}{c}+A\int \frac{1}{\sqrt{a+cx^2}}\,dx\\
&= \frac{B\sqrt{a+cx^2}}{c}+A\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)\\
&= \frac{B\sqrt{a+cx^2}}{c}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 46, normalized size = 1.07

$$\frac{A\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)}{\sqrt{c}}+\frac{B\sqrt{a+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a + c*x^2],x]
[Out] (B*Sqrt[a + c*x^2])/c + (A*Log[c*x + Sqrt[c]*Sqrt[a + c*x^2]])/Sqrt[c]
```

IntegrateAlgebraic [A] time = 0.24, size = 46, normalized size = 1.07

$$\frac{B\sqrt{a+cx^2}}{c}-\frac{A\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[a + c*x^2],x]
[Out] (B*Sqrt[a + c*x^2])/c - (A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/Sqrt[c]
```

fricas [A] time = 0.46, size = 92, normalized size = 2.14

$$\left[\frac{A\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\sqrt{cx^2+a}\,B}{2\,c},-\frac{A\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\sqrt{cx^2+a}\,B}{c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
[Out] [1/2*(A*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*sqrt(c*
x^2 + a)*B)/c, -(A*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - sqrt(c*x^2
 + a)*B)/c]
```

giac [A] time = 0.19, size = 39, normalized size = 0.91

$$-\frac{A\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
[Out] -A*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + sqrt(c*x^2 + a)*B/c
```

maple [A] time = 0.05, size = 37, normalized size = 0.86

$$\frac{A\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{\sqrt{c}}+\frac{\sqrt{c\,x^2+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(1/2),x)
[Out] B*(c*x^2+a)^(1/2)/c+A*ln(c^(1/2)*x+(c*x^2+a)^(1/2))/c^(1/2)
```

maxima [A] time = 0.57, size = 29, normalized size = 0.67

$$\frac{A\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

[Out] A*arcsinh(c*x/sqrt(a*c))/sqrt(c) + sqrt(c*x^2 + a)*B/c

mupad [B] time = 1.33, size = 36, normalized size = 0.84

$$\frac{B\,\sqrt{c\,x^2+a}}{c}+\frac{A\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*x)/(a + c*x^2)^(1/2),x)

[Out] (B*(a + c*x^2)^(1/2))/c + (A*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(1/2)

sympy [B] time = 1.49, size = 102, normalized size = 2.37

$$A\left(\begin{cases}\frac{\sqrt{-\frac{a}{c}}\operatorname{asin}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{a}} & \text{for}\: a > 0 \wedge c < 0\\ \frac{\sqrt{\frac{a}{c}}\operatorname{asinh}\left(x\sqrt{\frac{c}{a}}\right)}{\sqrt{a}} & \text{for}\: a > 0 \wedge c > 0\\ \frac{\sqrt{-\frac{a}{c}}\operatorname{acosh}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{-a}} & \text{for}\: c > 0 \wedge a < 0\end{cases}\right)+B\left(\begin{cases}\frac{x^2}{2\sqrt{a}} & \text{for}\: c = 0\\ \frac{\sqrt{a+cx^2}}{c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(c*x**2+a)**(1/2),x)

[Out] A*Piecewise((sqrt(-a/c)*asin(x*sqrt(-c/a))/sqrt(a), (a > 0) & (c < 0)), (sqrt(a/c)*asinh(x*sqrt(c/a))/sqrt(a), (a > 0) & (c > 0)), (sqrt(-a/c)*acosh(x*sqrt(-c/a))/sqrt(-a), (c > 0) & (a < 0))) + B*Piecewise((x**2/(2*sqrt(a)), Eq(c, 0)), (sqrt(a + c*x**2)/c, True))

3.359 $\int \frac{A+Bx}{x\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=53

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Rubi [A] time = 0.04, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {844, 217, 206, 266, 63, 208}

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[a + c*x^2]),x]
```

```
[Out] (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/Sqrt[c] - (A*ArcTanh[Sqrt[a + c*x^
2]/Sqrt[a]])/Sqrt[a]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x\sqrt{a+cx^2}}\,dx &= A\int \frac{1}{x\sqrt{a+cx^2}}\,dx + B\int \frac{1}{\sqrt{a+cx^2}}\,dx \\
&= \frac{1}{2}A\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx, x, x^2\right) + B\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right) \\
&= \frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}} + \frac{A\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx, x, \sqrt{a+cx^2}\right)}{c} \\
&= \frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}} - \frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}
\end{aligned}
$$

Mathematica [A] time = 0.01, size = 53, normalized size = 1.00

$$
\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}} - \frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[a + c*x^2]),x]
```

```
[Out] (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/Sqrt[c] - (A*ArcTanh[Sqrt[a + c*x^
2]/Sqrt[a]])/Sqrt[a]
```

IntegrateAlgebraic [A] time = 0.20, size = 70, normalized size = 1.32

$$
\frac{2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{B\log\left(\sqrt{a+cx^2} - \sqrt{c}\,x\right)}{\sqrt{c}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*Sqrt[a + c*x^2]),x]
```

```
[Out] (2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a] - (B*L
og[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/Sqrt[c]
```

fricas [A] time = 0.50, size = 273, normalized size = 5.15

$$
\left[\frac{Ba\sqrt{c}\log\left(-2cx^2 - 2\sqrt{cx^2+a}\sqrt{c}\,x - a\right) + A\sqrt{a}\,c\log\left(-\frac{cx^2 - 2\sqrt{cx^2+a}\sqrt{a} + 2a}{x^2}\right)}{2ac}, -\frac{2Ba\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right) - A\sqrt{a}\,c\log\left(-\frac{cx^2 - 2\sqrt{cx^2+a}\sqrt{a} + 2a}{x^2}\right)}{2ac}, \frac{2A\sqrt{-a}\,c\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right) + Ba\sqrt{c}\log\left(-2cx^2 - 2\sqrt{cx^2+a}\sqrt{c}\,x - a\right)}{2ac}, -\frac{Ba\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right) - A\sqrt{-a}\,c\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)}{ac}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + A*sqrt(
a)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2))/(a*c), -1/2*(2*B*
a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - A*sqrt(a)*c*log(-(c*x^2 - 2
*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2))/(a*c), 1/2*(2*A*sqrt(-a)*c*arctan(sqr
t(-a)/sqrt(c*x^2 + a)) + B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(
c)*x - a))/(a*c), -(B*a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - A*sqr
t(-a)*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)))/(a*c)]
```

giac [A] time = 0.21, size = 58, normalized size = 1.09

$$\frac{2\,A\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{B\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 2*A*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*log(abs(-s
qrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c)
```

maple [A] time = 0.05, size = 52, normalized size = 0.98

$$-\frac{A\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}}+\frac{B\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+a)^(1/2),x)
```

```
[Out] B*ln(c^(1/2)*x+(c*x^2+a)^(1/2))/c^(1/2)-A/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)
*a^(1/2))/x)
```

maxima [A] time = 0.54, size = 33, normalized size = 0.62

$$\frac{B\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{c}}-\frac{A\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] B*arcsinh(c*x/sqrt(a*c))/sqrt(c) - A*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a)
```

mupad [B] time = 1.51, size = 42, normalized size = 0.79

$$\frac{B\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{\sqrt{c}}-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + c*x^2)^(1/2)),x)
```

```
[Out] (B*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(1/2) - (A*atanh((a + c*x^2)^(1/2)
/a^(1/2)))/a^(1/2)
```

sympy [A] time = 3.33, size = 99, normalized size = 1.87

$$-\frac{A\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{\sqrt{a}}+B\left(\begin{cases}\frac{\sqrt{-\frac{a}{c}}\,\mathrm{asin}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{a}} & \text{for}\ a>0\wedge c<0\\ \frac{\sqrt{\frac{a}{c}}\,\mathrm{asinh}\left(x\sqrt{\frac{c}{a}}\right)}{\sqrt{a}} & \text{for}\ a>0\wedge c>0\\ \frac{\sqrt{-\frac{a}{c}}\,\mathrm{acosh}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{-a}} & \text{for}\ c>0\wedge a<0\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*asinh(sqrt(a)/(sqrt(c)*x))/sqrt(a) + B*Piecewise((sqrt(-a/c)*asin(x*sqrt
(-c/a))/sqrt(a), (a > 0) & (c < 0)), (sqrt(a/c)*asinh(x*sqrt(c/a))/sqrt(a),
 (a > 0) & (c > 0)), (sqrt(-a/c)*acosh(x*sqrt(-c/a))/sqrt(-a), (c > 0) & (a
 < 0)))
```

3.360 $\int \frac{A+Bx}{x^2\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=47

$$-\frac{A\sqrt{a+cx^2}}{ax}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Rubi [A] time = 0.03, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {807, 266, 63, 208}

$$-\frac{A\sqrt{a+cx^2}}{ax}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[a + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + c*x^2])/(a*x)) - (B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^2\sqrt{a+cx^2}}\,dx = -\frac{A\sqrt{a+cx^2}}{ax} + B\int \frac{1}{x\sqrt{a+cx^2}}\,dx$$
$$= -\frac{A\sqrt{a+cx^2}}{ax} + \frac{1}{2}B\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx, x, x^2\right)$$
$$= -\frac{A\sqrt{a+cx^2}}{ax} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx, x, \sqrt{a+cx^2}\right)}{c}$$
$$= -\frac{A\sqrt{a+cx^2}}{ax} - \frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 1.00

$$-\frac{A\sqrt{a+cx^2}}{ax} - \frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[a + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + c*x^2])/(a*x)) - (B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a]
```

IntegrateAlgebraic [A] time = 0.22, size = 61, normalized size = 1.30

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{A\sqrt{a+cx^2}}{ax}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*Sqrt[a + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + c*x^2])/(a*x)) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a +
c*x^2]/Sqrt[a]])/Sqrt[a]
```

fricas [A] time = 0.47, size = 101, normalized size = 2.15

$$\left[\frac{B\sqrt{a}\,x\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right) - 2\sqrt{cx^2+a}\,A}{2\,ax}, \frac{B\sqrt{-a}\,x\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right) - \sqrt{cx^2+a}\,A}{ax}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(B*sqrt(a)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*s
qrt(c*x^2 + a)*A)/(a*x), (B*sqrt(-a)*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - s
qrt(c*x^2 + a)*A)/(a*x)]
```

giac [A] time = 0.19, size = 65, normalized size = 1.38

$$\frac{2\,B\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} + \frac{2\,A\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2 - a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 2*B*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 2*A*sqrt(c)/
((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)
```

maple [A] time = 0.05, size = 49, normalized size = 1.04

$$-\frac{B\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}}-\frac{\sqrt{c\,x^2+a}\,A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+a)^(1/2),x)
```

```
[Out] -A*(c*x^2+a)^(1/2)/a/x-B/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.57, size = 37, normalized size = 0.79

$$-\frac{B\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{\sqrt{a}}-\frac{\sqrt{cx^2+a}\,A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] -B*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) - sqrt(c*x^2 + a)*A/(a*x)
```

mupad [B] time = 1.37, size = 39, normalized size = 0.83

$$-\frac{B\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{\sqrt{a}}-\frac{A\,\sqrt{c\,x^2+a}}{a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + c*x^2)^(1/2)),x)
```

```
[Out] - (B*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(1/2) - (A*(a + c*x^2)^(1/2))/(a*x
)
```

sympy [A] time = 2.64, size = 41, normalized size = 0.87

$$-\frac{A\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{a}-\frac{B\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/a - B*asinh(sqrt(a)/(sqrt(c)*x))/sqrt(a)
```

3.361 $\int \frac{A+Bx}{x^3\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=72

$$\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}$$

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(2*a*x^2) - (B*Sqrt[a + c*x^2])/(a*x) + (A*c*ArcTanh[S
qrt[a + c*x^2]/Sqrt[a]])/(2*a^(3/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^3\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{\int \frac{-2aB+Acx}{x^2\sqrt{a+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}-\frac{(Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}-\frac{(Ac)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{4a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}-\frac{A\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}+\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 63, normalized size = 0.88

$$
\frac{\sqrt{a+cx^2}\left(\frac{Ac\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{\sqrt{\frac{cx^2}{a}+1}}-\frac{a(A+2Bx)}{x^2}\right)}{2a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-((a*(A + 2*B*x))/x^2) + (A*c*ArcTanh[Sqrt[1 + (c*x^2)/a]
])/Sqrt[1 + (c*x^2)/a]))/(2*a^2)
```

IntegrateAlgebraic [A] time = 0.32, size = 71, normalized size = 0.99

$$
\frac{\sqrt{a+cx^2}\,(-A-2Bx)}{2ax^2}-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*Sqrt[a + c*x^2]),x]
```

```
[Out] ((-A - 2*B*x)*Sqrt[a + c*x^2])/(2*a*x^2) - (A*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a]
 - Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2)
```

fricas [A] time = 0.46, size = 123, normalized size = 1.71

$$
\left[\frac{A\sqrt{a}\,cx^2\log\left(-\frac{cx^2+2\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\,(2\,Bax+Aa)\sqrt{cx^2+a}}{4\,a^2x^2},\ -\frac{A\sqrt{-a}\,cx^2\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+(2\,Bax+Aa)\sqrt{cx^2+a}}{2\,a^2x^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(A*sqrt(a)*c*x^2*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) -
 2*(2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*x^2), -1/2*(A*sqrt(-a)*c*x^2*arcta
n(sqrt(-a)/sqrt(c*x^2 + a)) + (2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*x^2)]
```

giac [B] time = 0.20, size = 146, normalized size = 2.03

$$-\frac{Ac\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Ac+2\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Ba\sqrt{c}+\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Aac-2\,Ba^2\sqrt{c}}{\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -A*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + ((sqrt(
c)*x - sqrt(c*x^2 + a))^3*A*c + 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a*sqrt(
c) + (sqrt(c)*x - sqrt(c*x^2 + a))*A*a*c - 2*B*a^2*sqrt(c))/(((sqrt(c)*x -
sqrt(c*x^2 + a))^2 - a)^2*a)
```

maple [A] time = 0.06, size = 68, normalized size = 0.94

$$\frac{Ac\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,B}{ax}-\frac{\sqrt{cx^2+a}\,A}{2a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/2*A*(c*x^2+a)^(1/2)/a/x^2+1/2*A*c/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1
/2))/x)-B*(c*x^2+a)^(1/2)/a/x
```

maxima [A] time = 0.65, size = 56, normalized size = 0.78

$$\frac{Ac\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,B}{ax}-\frac{\sqrt{cx^2+a}\,A}{2\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - sqrt(c*x^2 + a)*B/(a*x) - 1
/2*sqrt(c*x^2 + a)*A/(a*x^2)
```

mupad [B] time = 1.49, size = 58, normalized size = 0.81

$$\frac{A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}}{a\,x}-\frac{A\,\sqrt{c\,x^2+a}}{2\,a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + c*x^2)^(1/2)),x)
```

```
[Out] (A*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(3/2)) - (B*(a + c*x^2)^(1/2))/
(a*x) - (A*(a + c*x^2)^(1/2))/(2*a*x^2)
```

sympy [A] time = 3.66, size = 66, normalized size = 0.92

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2ax}+\frac{Ac\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2a^{\frac{3}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*a*x) + A*c*asinh(sqrt(a)/(sqrt(c)*x))/(2
*a**(3/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/a
```

3.362 $\int \frac{A+Bx}{x^4\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=97

$$\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}$$

Rubi [A] time = 0.07, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$\frac{2Ac\sqrt{a+cx^2}}{3a^2x}+\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(3*a*x^3) - (B*Sqrt[a + c*x^2])/(2*a*x^2) + (2*A*c*Sqr
t[a + c*x^2])/(3*a^2*x) + (B*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(3/2)
)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
```

```
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^4\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{\int \frac{-3aB+2Acx}{x^3\sqrt{a+cx^2}}\,dx}{3a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{\int \frac{-4aAc-3aBcx}{x^2\sqrt{a+cx^2}}\,dx}{6a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{(Bc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{(Bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{4a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}+\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.15, size = 73, normalized size = 0.75

$$
\frac{\sqrt{a+cx^2}\left(\frac{-2aA-3aBx+4Acx^2}{x^3}+\frac{3Bc\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{\sqrt{\frac{cx^2}{a}+1}}\right)}{6a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*((-2*a*A - 3*a*B*x + 4*A*c*x^2)/x^3 + (3*B*c*ArcTanh[Sqrt[
1 + (c*x^2)/a]])/Sqrt[1 + (c*x^2)/a]))/(6*a^2)
```

IntegrateAlgebraic [A] time = 0.37, size = 80, normalized size = 0.82

$$
\frac{\sqrt{a+cx^2}\left(-2aA-3aBx+4Acx^2\right)}{6a^2x^3}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-2*a*A - 3*a*B*x + 4*A*c*x^2))/(6*a^2*x^3) - (B*c*ArcTanh
[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2)
```

fricas [A] time = 0.46, size = 142, normalized size = 1.46

$$
\left[\frac{3\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(4\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{12\,a^2x^3},-\frac{3\,B\sqrt{-a}\,cx^3\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(4\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{6\,a^2x^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*B*sqrt(a)*c*x^3*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2
) + 2*(4*A*c*x^2 - 3*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/(a^2*x^3), -1/6*(3*B*s
qrt(-a)*c*x^3*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (4*A*c*x^2 - 3*B*a*x - 2*A
*a)*sqrt(c*x^2 + a))/(a^2*x^3)]
```

giac [A] time = 0.22, size = 151, normalized size = 1.56

$$-\frac{Bc\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^5Bc+12\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Aac^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^2c-4\,Aa^2c^{\frac{3}{2}}}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -B*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1/3*(3*
(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*c + 12*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*
a*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^2*c - 4*A*a^2*c^(3/2))/(((s
qrt(c)*x - sqrt(c*x^2 + a))^2 - a)^3*a)
```

maple [A] time = 0.06, size = 87, normalized size = 0.90

$$\frac{Bc\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}+\frac{2\sqrt{c\,x^2+a}\,Ac}{3a^2x}-\frac{\sqrt{c\,x^2+a}\,B}{2a\,x^2}-\frac{\sqrt{c\,x^2+a}\,A}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/3*A*(c*x^2+a)^(1/2)/a/x^3+2/3*A*c*(c*x^2+a)^(1/2)/a^2/x-1/2*B*(c*x^2+a)^
(1/2)/a/x^2+1/2*B*c/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.52, size = 75, normalized size = 0.77

$$\frac{Bc\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{3}{2}}}+\frac{2\sqrt{cx^2+a}\,Ac}{3\,a^2x}-\frac{\sqrt{cx^2+a}\,B}{2\,ax^2}-\frac{\sqrt{cx^2+a}\,A}{3\,ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) + 2/3*sqrt(c*x^2 + a)*A*c/(a^
2*x) - 1/2*sqrt(c*x^2 + a)*B/(a*x^2) - 1/3*sqrt(c*x^2 + a)*A/(a*x^3)
```

mupad [B] time = 1.64, size = 66, normalized size = 0.68

$$\frac{B\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}}{2\,a\,x^2}-\frac{A\,\sqrt{c\,x^2+a}\,\left(a-2\,c\,x^2\right)}{3\,a^2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + c*x^2)^(1/2)),x)
```

```
[Out] (B*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(3/2)) - (B*(a + c*x^2)^(1/2))/
(2*a*x^2) - (A*(a + c*x^2)^(1/2)*(a - 2*c*x^2))/(3*a^2*x^3)
```

sympy [A] time = 3.79, size = 97, normalized size = 1.00

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3ax^2}+\frac{2Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^2}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2ax}+\frac{Bc\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*a*x**2) + 2*A*c**(3/2)*sqrt(a/(c*x**2) +
 1)/(3*a**2) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*a*x) + B*c*asinh(sqrt(a)/(
sqrt(c)*x))/(2*a**(3/2))
```

3.363 $\int \frac{A+Bx}{x^5\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=122

$$-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}-\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}$$

Rubi [A] time = 0.10, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}-\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(4*a*x^4) - (B*Sqrt[a + c*x^2])/(3*a*x^3) + (3*A*c*Sqr
t[a + c*x^2])/(8*a^2*x^2) + (2*B*c*Sqrt[a + c*x^2])/(3*a^2*x) - (3*A*c^2*Ar
cTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
```

```
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^5\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{\int \frac{-4aB+3Acx}{x^4\sqrt{a+cx^2}}\,dx}{4a}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{\int \frac{-9aAc-8aBcx}{x^3\sqrt{a+cx^2}}\,dx}{12a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}-\frac{\int \frac{16a^2Bc-9aAc^2x}{x^2\sqrt{a+cx^2}}\,dx}{24a^3}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}+\frac{\left(3Ac^2\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{8a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}+\frac{\left(3Ac^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,\right.}{16a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}+\frac{(3Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x\right.}{8a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.49

$$
-\frac{\sqrt{a+cx^2}\left(3Ac^2x^3\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{cx^2}{a}+1\right)+aB\left(a-2cx^2\right)\right)}{3a^3x^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[a + c*x^2]),x]
```

```
[Out] -1/3*(Sqrt[a + c*x^2]*(a*B*(a - 2*c*x^2) + 3*A*c^2*x^3*Hypergeometric2F1[1/
2, 3, 3/2, 1 + (c*x^2)/a]))/(a^3*x^3)
```

IntegrateAlgebraic [A] time = 0.44, size = 91, normalized size = 0.75

$$
\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{\sqrt{a+cx^2}\left(-6aA-8aBx+9Acx^2+16Bcx^3\right)}{24a^2x^4}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^5*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-6*a*A - 8*a*B*x + 9*A*c*x^2 + 16*B*c*x^3))/(24*a^2*x^4)
+ (3*A*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/(4*a^(5/
2))
```

fricas [A] time = 0.48, size = 171, normalized size = 1.40

$$
\left[\frac{9\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(16\,Bacx^3+9\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{48\,a^3x^4},\ \frac{9\,A\sqrt{-a}\,c^2x^4\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+\left(16\,Bacx^3+9\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{24\,a^3x^4}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/48*(9*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x
^2) + 2*(16*B*a*c*x^3 + 9*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))
/(a^3*x^4), 1/24*(9*A*sqrt(-a)*c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (
16*B*a*c*x^3 + 9*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/(a^3*x^4
)]
```

giac [B] time = 0.21, size = 241, normalized size = 1.98

$$\frac{3\,Ac^{2}\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a^{2}}-\frac{9\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{7}Ac^{2}-33\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Aac^{2}-48\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Ba^{2}c^{\frac{3}{2}}-33\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{3}Aa^{2}c^{2}+64\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Ba^{3}c^{\frac{3}{2}}+9\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Aa^{3}c^{2}-16\,Ba^{4}c^{\frac{3}{2}}}{12\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{4}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 3/4*A*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) -
1/12*(9*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*c^2 - 33*(sqrt(c)*x - sqrt(c*x^2
+ a))^5*A*a*c^2 - 48*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a^2*c^(3/2) - 33*(sq
rt(c)*x - sqrt(c*x^2 + a))^3*A*a^2*c^2 + 64*(sqrt(c)*x - sqrt(c*x^2 + a))^2
*B*a^3*c^(3/2) + 9*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^3*c^2 - 16*B*a^4*c^(3/
2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^4*a^2)
```

maple [A] time = 0.06, size = 108, normalized size = 0.89

$$-\frac{3A\,c^{2}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}+\frac{2\sqrt{c\,x^{2}+a}\,Bc}{3a^{2}x}+\frac{3\sqrt{c\,x^{2}+a}\,Ac}{8a^{2}x^{2}}-\frac{\sqrt{c\,x^{2}+a}\,B}{3a\,x^{3}}-\frac{\sqrt{c\,x^{2}+a}\,A}{4a\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/4*A*(c*x^2+a)^(1/2)/a/x^4+3/8*A*c*(c*x^2+a)^(1/2)/a^2/x^2-3/8*A*c^2/a^(5
/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-1/3*B*(c*x^2+a)^(1/2)/a/x^3+2/3*B
*c*(c*x^2+a)^(1/2)/a^2/x
```

maxima [A] time = 0.64, size = 96, normalized size = 0.79

$$-\frac{3\,Ac^{2}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{5}{2}}}+\frac{2\,\sqrt{cx^{2}+a}\,Bc}{3\,a^{2}x}+\frac{3\,\sqrt{cx^{2}+a}\,Ac}{8\,a^{2}x^{2}}-\frac{\sqrt{cx^{2}+a}\,B}{3\,ax^{3}}-\frac{\sqrt{cx^{2}+a}\,A}{4\,ax^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] -3/8*A*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) + 2/3*sqrt(c*x^2 + a)*B*c/
(a^2*x) + 3/8*sqrt(c*x^2 + a)*A*c/(a^2*x^2) - 1/3*sqrt(c*x^2 + a)*B/(a*x^3)
 - 1/4*sqrt(c*x^2 + a)*A/(a*x^4)
```

mupad [B] time = 1.72, size = 86, normalized size = 0.70

$$\frac{3\,A\,\left(c\,x^{2}+a\right)^{3/2}}{8\,a^{2}\,x^{4}}-\frac{5\,A\,\sqrt{c\,x^{2}+a}}{8\,a\,x^{4}}-\frac{3\,A\,c^{2}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)}{8\,a^{5/2}}-\frac{B\,\sqrt{c\,x^{2}+a}\,\left(a-2\,c\,x^{2}\right)}{3\,a^{2}\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(a + c*x^2)^(1/2)),x)
```

```
[Out] (3*A*(a + c*x^2)^(3/2))/(8*a^2*x^4) - (5*A*(a + c*x^2)^(1/2))/(8*a*x^4) - (
3*A*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(5/2)) - (B*(a + c*x^2)^(1/2
)*(a - 2*c*x^2))/(3*a^2*x^3)
```

sympy [**A**] time = 5.71, size = 153, normalized size = 1.25

$$-\frac{A}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}+\frac{A\sqrt{c}}{8ax^3\sqrt{\frac{a}{cx^2}+1}}+\frac{3Ac^{\frac{3}{2}}}{8a^2x\sqrt{\frac{a}{cx^2}+1}}-\frac{3Ac^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8a^{\frac{5}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3ax^2}+\frac{2Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(c*x**2+a)**(1/2),x)
```

```
[Out] -A/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) + A*sqrt(c)/(8*a*x**3*sqrt(a/(c*x*
*2) + 1)) + 3*A*c**(3/2)/(8*a**2*x*sqrt(a/(c*x**2) + 1)) - 3*A*c**2*asinh(s
qrt(a)/(sqrt(c)*x))/(8*a**(5/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*a*x**2
) + 2*B*c**(3/2)*sqrt(a/(c*x**2) + 1)/(3*a**2)
```

3.364 $\int \frac{A+Bx}{x^6\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=147

$$-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}$$

Rubi [A] time = 0.13, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^6*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(5*a*x^5) - (B*Sqrt[a + c*x^2])/(4*a*x^4) + (4*A*c*Sqr
t[a + c*x^2])/(15*a^2*x^3) + (3*B*c*Sqrt[a + c*x^2])/(8*a^2*x^2) - (8*A*c^2
*Sqrt[a + c*x^2])/(15*a^3*x) - (3*B*c^2*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(
8*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
```

```
p])
```

Rubi steps

$$\int \frac{A+Bx}{x^6\sqrt{a+cx^2}}\,dx = -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{\int \frac{-5aB+4Acx}{x^5\sqrt{a+cx^2}}\,dx}{5a}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{\int \frac{-16aAc-15aBcx}{x^4\sqrt{a+cx^2}}\,dx}{20a^2}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{4Ac\sqrt{a+cx^2}}{15a^2x^3} - \frac{\int \frac{45a^2Bc-32aAc^2x}{x^3\sqrt{a+cx^2}}\,dx}{60a^3}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{4Ac\sqrt{a+cx^2}}{15a^2x^3} + \frac{3Bc\sqrt{a+cx^2}}{8a^2x^2} + \frac{\int \frac{64a^2Ac^2+45a^2Bc^2x}{x^2\sqrt{a+cx^2}}\,dx}{120a^4}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{4Ac\sqrt{a+cx^2}}{15a^2x^3} + \frac{3Bc\sqrt{a+cx^2}}{8a^2x^2} - \frac{8Ac^2\sqrt{a+cx^2}}{15a^3x} + \frac{\left(3Bc^2\right)\int}{8}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{4Ac\sqrt{a+cx^2}}{15a^2x^3} + \frac{3Bc\sqrt{a+cx^2}}{8a^2x^2} - \frac{8Ac^2\sqrt{a+cx^2}}{15a^3x} + \frac{\left(3Bc^2\right)\mathrm{Su}}{}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{4Ac\sqrt{a+cx^2}}{15a^2x^3} + \frac{3Bc\sqrt{a+cx^2}}{8a^2x^2} - \frac{8Ac^2\sqrt{a+cx^2}}{15a^3x} + \frac{(3Bc)\,\mathrm{Sub}}{}$$

$$= -\frac{A\sqrt{a+cx^2}}{5ax^5} - \frac{B\sqrt{a+cx^2}}{4ax^4} + \frac{4Ac\sqrt{a+cx^2}}{15a^2x^3} + \frac{3Bc\sqrt{a+cx^2}}{8a^2x^2} - \frac{8Ac^2\sqrt{a+cx^2}}{15a^3x} - \frac{3Bc^2\tanh}{8}$$

Mathematica [C] time = 0.02, size = 72, normalized size = 0.49

$$-\frac{\sqrt{a+cx^2}\left(A\left(3a^2-4acx^2+8c^2x^4\right)+15Bc^2x^5\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{cx^2}{a}+1\right)\right)}{15a^3x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^6*Sqrt[a + c*x^2]),x]
```

```
[Out] -1/15*(Sqrt[a + c*x^2]*(A*(3*a^2 - 4*a*c*x^2 + 8*c^2*x^4) + 15*B*c^2*x^5*Hy
pergeometric2F1[1/2, 3, 3/2, 1 + (c*x^2)/a]))/(a^3*x^5)
```

IntegrateAlgebraic [A] time = 0.52, size = 106, normalized size = 0.72

$$\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{\sqrt{a+cx^2}\left(-24a^2A-30a^2Bx+32aAcx^2+45aBcx^3-64Ac^2x^4\right)}{120a^3x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^6*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-24*a^2*A - 30*a^2*B*x + 32*a*A*c*x^2 + 45*a*B*c*x^3 - 64
*A*c^2*x^4))/(120*a^3*x^5) + (3*B*c^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a
+ c*x^2]/Sqrt[a]])/(4*a^(5/2))
```

fricas [A] time = 0.47, size = 190, normalized size = 1.29

$$\left[\frac{45\,B\sqrt{a}\,c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(64\,Ac^2x^4-45\,Bacx^3-32\,Aacx^2+30\,Ba^2x+24\,Aa^2\right)\sqrt{cx^2+a}}{240\,a^3x^5},\ \frac{45\,B\sqrt{-a}\,c^2x^5\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(64\,Ac^2x^4-45\,Bacx^3-32\,Aacx^2+30\,Ba^2x+24\,Aa^2\right)\sqrt{cx^2+a}}{120\,a^3x^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/240*(45*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) - 2*(64*A*c^2*x^4 - 45*B*a*c*x^3 - 32*A*a*c*x^2 + 30*B*a^2*x + 24*A*a
^2)*sqrt(c*x^2 + a))/(a^3*x^5), 1/120*(45*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a
)/sqrt(c*x^2 + a)) - (64*A*c^2*x^4 - 45*B*a*c*x^3 - 32*A*a*c*x^2 + 30*B*a^2
*x + 24*A*a^2)*sqrt(c*x^2 + a))/(a^3*x^5)]
```

giac [B] time = 0.21, size = 241, normalized size = 1.64

$$\frac{3\,Bc^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a^2}-\frac{45\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^9Bc^2-210\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^7Bac^2-640\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^4Aa^2c^{\frac{5}{2}}+210\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Ba^3c^2+320\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Aa^3c^{\frac{5}{2}}-45\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^4c^2-64\,Aa^4c^{\frac{5}{2}}}{60\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^5a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 3/4*B*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) -
1/60*(45*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*c^2 - 210*(sqrt(c)*x - sqrt(c*x^
2 + a))^7*B*a*c^2 - 640*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a^2*c^(5/2) + 210
*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^3*c^2 + 320*(sqrt(c)*x - sqrt(c*x^2 +
a))^2*A*a^3*c^(5/2) - 45*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^4*c^2 - 64*A*a^4
*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^5*a^2)
```

maple [A] time = 0.06, size = 129, normalized size = 0.88

$$-\frac{3B\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}-\frac{8\sqrt{c\,x^2+a}\,A\,c^2}{15a^3x}+\frac{3\sqrt{c\,x^2+a}\,Bc}{8a^2x^2}+\frac{4\sqrt{c\,x^2+a}\,Ac}{15a^2x^3}-\frac{\sqrt{c\,x^2+a}\,B}{4a\,x^4}-\frac{\sqrt{c\,x^2+a}\,A}{5a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^6/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/5*A*(c*x^2+a)^(1/2)/a/x^5+4/15*A*c*(c*x^2+a)^(1/2)/a^2/x^3-8/15*A*c^2*(c
*x^2+a)^(1/2)/a^3/x-1/4*B*(c*x^2+a)^(1/2)/a/x^4+3/8*B*c*(c*x^2+a)^(1/2)/a^2
/x^2-3/8*B*c^2/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.48, size = 117, normalized size = 0.80

$$-\frac{3\,Bc^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{5}{2}}}-\frac{8\,\sqrt{cx^2+a}\,Ac^2}{15\,a^3x}+\frac{3\,\sqrt{cx^2+a}\,Bc}{8\,a^2x^2}+\frac{4\,\sqrt{cx^2+a}\,Ac}{15\,a^2x^3}-\frac{\sqrt{cx^2+a}\,B}{4\,ax^4}-\frac{\sqrt{cx^2+a}\,A}{5\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] -3/8*B*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) - 8/15*sqrt(c*x^2 + a)*A*c
^2/(a^3*x) + 3/8*sqrt(c*x^2 + a)*B*c/(a^2*x^2) + 4/15*sqrt(c*x^2 + a)*A*c/(
a^2*x^3) - 1/4*sqrt(c*x^2 + a)*B/(a*x^4) - 1/5*sqrt(c*x^2 + a)*A/(a*x^5)
```

mupad [B] time = 1.79, size = 99, normalized size = 0.67

$$\frac{3\,B\,{\left(c\,x^2+a\right)}^{3/2}}{8\,a^2\,x^4}-\frac{5\,B\,\sqrt{c\,x^2+a}}{8\,a\,x^4}-\frac{3\,B\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,a^{5/2}}-\frac{A\,\sqrt{c\,x^2+a}\,\left(3\,a^2-4\,a\,c\,x^2+8\,c^2\,x^4\right)}{15\,a^3\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^6*(a + c*x^2)^(1/2)),x)
```

```
[Out] (3*B*(a + c*x^2)^(3/2))/(8*a^2*x^4) - (5*B*(a + c*x^2)^(1/2))/(8*a*x^4) - (
3*B*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(5/2)) - (A*(a + c*x^2)^(1/2
)*(3*a^2 + 8*c^2*x^4 - 4*a*c*x^2))/(15*a^3*x^5)
```

sympy [B] time = 6.46, size = 408, normalized size = 2.78

$$-\frac{3Aa^4c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{15a^5c^4x^4+30a^4c^5x^6+15a^3c^6x^8}-\frac{2Aa^3c^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{15a^5c^4x^4+30a^4c^5x^6+15a^3c^6x^8}-\frac{3Aa^2c^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{15a^5c^4x^4+30a^4c^5x^6+15a^3c^6x^8}-\frac{12Aac^{\frac{15}{2}}x^6\sqrt{\frac{a}{cx^2}+1}}{15a^5c^4x^4+30a^4c^5x^6+15a^3c^6x^8}-\frac{8Ac^{\frac{17}{2}}x^8\sqrt{\frac{a}{cx^2}+1}}{15a^5c^4x^4+30a^4c^5x^6+15a^3c^6x^8}-\frac{B}{4\sqrt{c}x^5\sqrt{\frac{a}{cx^2}+1}}+\frac{B\sqrt{c}}{8ax^3\sqrt{\frac{a}{cx^2}+1}}+\frac{3Bc^{\frac{3}{2}}}{8a^2x\sqrt{\frac{a}{cx^2}+1}}-\frac{3Bc^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{8a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**6/(c*x**2+a)**(1/2),x)
```

```
[Out] -3*A*a**4*c**(9/2)*sqrt(a/(c*x**2) + 1)/(15*a**5*c**4*x**4 + 30*a**4*c**5*x
**6 + 15*a**3*c**6*x**8) - 2*A*a**3*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(15
*a**5*c**4*x**4 + 30*a**4*c**5*x**6 + 15*a**3*c**6*x**8) - 3*A*a**2*c**(13/
2)*x**4*sqrt(a/(c*x**2) + 1)/(15*a**5*c**4*x**4 + 30*a**4*c**5*x**6 + 15*a*
*3*c**6*x**8) - 12*A*a*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)/(15*a**5*c**4*x*
*4 + 30*a**4*c**5*x**6 + 15*a**3*c**6*x**8) - 8*A*c**(17/2)*x**8*sqrt(a/(c*
x**2) + 1)/(15*a**5*c**4*x**4 + 30*a**4*c**5*x**6 + 15*a**3*c**6*x**8) - B/
(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) + B*sqrt(c)/(8*a*x**3*sqrt(a/(c*x**2)
 + 1)) + 3*B*c**(3/2)/(8*a**2*x*sqrt(a/(c*x**2) + 1)) - 3*B*c**2*asinh(sqrt
(a)/(sqrt(c)*x))/(8*a**(5/2))
```

3.365 $\int \frac{x^4(A+Bx)}{(a+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{\sqrt{a+cx^2}\,(16aB-9Acx)}{6c^3}-\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}$$

Rubi [A] time = 0.07, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {819, 833, 780, 217, 206}

$$-\frac{\sqrt{a+cx^2}\,(16aB-9Acx)}{6c^3}-\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((x^3*(A + B*x))/(c*Sqrt[a + c*x^2])) + (4*B*x^2*Sqrt[a + c*x^2])/(3*c^2)
- ((16*a*B - 9*A*c*x)*Sqrt[a + c*x^2])/(6*c^3) - (3*a*A*ArcTanh[(Sqrt[c]*x)
/Sqrt[a + c*x^2]])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
```

```
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{\int \frac{x^2(3aA+4aBx)}{\sqrt{a+cx^2}}\,dx}{ac}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}+\frac{\int \frac{x\left(-8a^2B+9aAcx\right)}{\sqrt{a+cx^2}}\,dx}{3ac^2}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}-\frac{(16aB-9Acx)\sqrt{a+cx^2}}{6c^3}-\frac{(3aA)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c^2}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}-\frac{(16aB-9Acx)\sqrt{a+cx^2}}{6c^3}-\frac{(3aA)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{}{\sqrt{a\cdots}}\right.}{2c^2}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}-\frac{(16aB-9Acx)\sqrt{a+cx^2}}{6c^3}-\frac{3aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 91, normalized size = 0.87

$$\frac{-16a^2B+acx(9A-8Bx)-9aA\sqrt{c}\sqrt{a+cx^2}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+c^2x^3(3A+2Bx)}{6c^3\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (-16*a^2*B + a*c*x*(9*A - 8*B*x) + c^2*x^3*(3*A + 2*B*x) - 9*a*A*Sqrt[c]*Sq
rt[a + c*x^2]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(6*c^3*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.41, size = 90, normalized size = 0.86

$$\frac{-16a^2B+9aAcx-8aBcx^2+3Ac^2x^3+2Bc^2x^4}{6c^3\sqrt{a+cx^2}}+\frac{3aA\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (-16*a^2*B + 9*a*A*c*x - 8*a*B*c*x^2 + 3*A*c^2*x^3 + 2*B*c^2*x^4)/(6*c^3*Sq
rt[a + c*x^2]) + (3*a*A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(2*c^(5/2))
```

fricas [A] time = 0.48, size = 217, normalized size = 2.07

$$\left[\frac{9\left(Aacx^2+Aa^2\right)\sqrt{c}\log\left(-2cx^2+2\sqrt{cx^2+a}\sqrt{c}x-a\right)+2\left(2Bc^2x^4+3Ac^2x^3-8Bacx^2+9Aacx-16Ba^2\right)\sqrt{cx^2+a}}{12\left(c^4x^2+ac^3\right)},\ \frac{9\left(Aacx^2+Aa^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x}{\sqrt{cx^2+a}}\right)+\left(2Bc^2x^4+3Ac^2x^3-8Bacx^2+9Aacx-16Ba^2\right)\sqrt{cx^2+a}}{6\left(c^4x^2+ac^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/12*(9*(A*a*c*x^2 + A*a^2)*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(
c)*x - a) + 2*(2*B*c^2*x^4 + 3*A*c^2*x^3 - 8*B*a*c*x^2 + 9*A*a*c*x - 16*B*a
^2)*sqrt(c*x^2 + a))/(c^4*x^2 + a*c^3), 1/6*(9*(A*a*c*x^2 + A*a^2)*sqrt(-c)
*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (2*B*c^2*x^4 + 3*A*c^2*x^3 - 8*B*a*c*
x^2 + 9*A*a*c*x - 16*B*a^2)*sqrt(c*x^2 + a))/(c^4*x^2 + a*c^3)]
```

giac [A] time = 0.20, size = 83, normalized size = 0.79

$$\frac{\left(\left(\left(\frac{2\,Bx}{c}+\frac{3\,A}{c}\right)x-\frac{8\,Ba}{c^2}\right)x+\frac{9\,Aa}{c^2}\right)x-\frac{16\,Ba^2}{c^3}}{6\,\sqrt{cx^2+a}}+\frac{3\,Aa\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*((((2*B*x/c + 3*A/c)*x - 8*B*a/c^2)*x + 9*A*a/c^2)*x - 16*B*a^2/c^3)/sq
rt(c*x^2 + a) + 3/2*A*a*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.05, size = 115, normalized size = 1.10

$$\frac{B\,x^4}{3\sqrt{c\,x^2+a}\;c}+\frac{A\,x^3}{2\sqrt{c\,x^2+a}\;c}-\frac{4Ba\,x^2}{3\sqrt{c\,x^2+a}\;c^2}+\frac{3Aax}{2\sqrt{c\,x^2+a}\;c^2}-\frac{3Aa\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{5}{2}}}-\frac{8B\,a^2}{3\sqrt{c\,x^2+a}\;c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/3*B*x^4/c/(c*x^2+a)^(1/2)-4/3*B*a/c^2*x^2/(c*x^2+a)^(1/2)-8/3*B*a^2/c^3/(
c*x^2+a)^(1/2)+1/2*A*x^3/c/(c*x^2+a)^(1/2)+3/2*A*a/c^2*x/(c*x^2+a)^(1/2)-3/
2*A*a/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.49, size = 107, normalized size = 1.02

$$\frac{Bx^4}{3\,\sqrt{cx^2+a}\,c}+\frac{Ax^3}{2\,\sqrt{cx^2+a}\,c}-\frac{4\,Bax^2}{3\,\sqrt{cx^2+a}\,c^2}+\frac{3\,Aax}{2\,\sqrt{cx^2+a}\,c^2}-\frac{3\,Aa\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{5}{2}}}-\frac{8\,Ba^2}{3\,\sqrt{cx^2+a}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*B*x^4/(sqrt(c*x^2 + a)*c) + 1/2*A*x^3/(sqrt(c*x^2 + a)*c) - 4/3*B*a*x^2
/(sqrt(c*x^2 + a)*c^2) + 3/2*A*a*x/(sqrt(c*x^2 + a)*c^2) - 3/2*A*a*arcsinh(
c*x/sqrt(a*c))/c^(5/2) - 8/3*B*a^2/(sqrt(c*x^2 + a)*c^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [A] time = 12.31, size = 144, normalized size = 1.37

$$A\left(\frac{3\sqrt{a}\,x}{2c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{3a\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{5}{2}}}+\frac{x^3}{2\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)+B\left(\begin{cases}-\frac{8a^2}{3c^3\sqrt{a+cx^2}}-\frac{4ax^2}{3c^2\sqrt{a+cx^2}}+\frac{x^4}{3c\sqrt{a+cx^2}} & \text{for}\ c\neq 0\\ \frac{x^6}{6a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(3*sqrt(a)*x/(2*c**2*sqrt(1 + c*x**2/a)) - 3*a*asinh(sqrt(c)*x/sqrt(a))/(
2*c**(5/2)) + x**3/(2*sqrt(a)*c*sqrt(1 + c*x**2/a))) + B*Piecewise((-8*a**2
/(3*c**3*sqrt(a + c*x**2)) - 4*a*x**2/(3*c**2*sqrt(a + c*x**2)) + x**4/(3*c
*sqrt(a + c*x**2)), Ne(c, 0)), (x**6/(6*a**(3/2)), True))
```

3.366 $\int \frac{x^3(A+Bx)}{(a+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=81

$$\frac{\sqrt{a+cx^2}\,(4A+3Bx)}{2c^2}-\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 780, 217, 206}

$$\frac{\sqrt{a+cx^2}\,(4A+3Bx)}{2c^2}-\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((x^2*(A + B*x))/(c*Sqrt[a + c*x^2])) + ((4*A + 3*B*x)*Sqrt[a + c*x^2])/(2
*c^2) - (3*a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{\int \frac{x(2aA+3aBx)}{\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{(4A+3Bx)\sqrt{a+cx^2}}{2c^2} - \frac{(3aB)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c^2}$$

$$= -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{(4A+3Bx)\sqrt{a+cx^2}}{2c^2} - \frac{(3aB)\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{2c^2}$$

$$= -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{(4A+3Bx)\sqrt{a+cx^2}}{2c^2} - \frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.89

$$\frac{a(4A+3Bx)+cx^2(2A+Bx)}{2c^2\sqrt{a+cx^2}} - \frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (c*x^2*(2*A + B*x) + a*(4*A + 3*B*x))/(2*c^2*Sqrt[a + c*x^2]) - (3*a*B*ArcT
anh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(2*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.39, size = 74, normalized size = 0.91

$$\frac{4aA+3aBx+2Acx^2+Bcx^3}{2c^2\sqrt{a+cx^2}} + \frac{3aB\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (4*a*A + 3*a*B*x + 2*A*c*x^2 + B*c*x^3)/(2*c^2*Sqrt[a + c*x^2]) + (3*a*B*Lo
g[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/(2*c^(5/2))
```

fricas [A] time = 0.48, size = 197, normalized size = 2.43

$$\left[\frac{3\left(Bacx^2+Ba^2\right)\sqrt{c}\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(Bc^2x^3+2\,Ac^2x^2+3\,Bacx+4\,Aac\right)\sqrt{cx^2+a}}{4\left(c^4x^2+ac^3\right)}, \frac{3\left(Bacx^2+Ba^2\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(Bc^2x^3+2\,Ac^2x^2+3\,Bacx+4\,Aac\right)\sqrt{cx^2+a}}{2\left(c^4x^2+ac^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(3*(B*a*c*x^2 + B*a^2)*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c
)*x - a) + 2*(B*c^2*x^3 + 2*A*c^2*x^2 + 3*B*a*c*x + 4*A*a*c)*sqrt(c*x^2 + a
))/(c^4*x^2 + a*c^3), 1/2*(3*(B*a*c*x^2 + B*a^2)*sqrt(-c)*arctan(sqrt(-c)*x
/sqrt(c*x^2 + a)) + (B*c^2*x^3 + 2*A*c^2*x^2 + 3*B*a*c*x + 4*A*a*c)*sqrt(c*
x^2 + a))/(c^4*x^2 + a*c^3)]
```

giac [A] time = 0.21, size = 70, normalized size = 0.86

$$\frac{\left(\left(\frac{Bx}{c}+\frac{2\,A}{c}\right)x+\frac{3\,Ba}{c^2}\right)x+\frac{4\,Aa}{c^2}}{2\,\sqrt{cx^2+a}} + \frac{3\,Ba\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(((B*x/c + 2*A/c)*x + 3*B*a/c^2)*x + 4*A*a/c^2)/sqrt(c*x^2 + a) + 3/2*B
*a*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.10, size = 93, normalized size = 1.15

$$\frac{B\,x^3}{2\sqrt{c\,x^2+a}\;c}+\frac{A\,x^2}{\sqrt{c\,x^2+a}\;c}+\frac{3Bax}{2\sqrt{c\,x^2+a}\;c^2}-\frac{3Ba\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{5}{2}}}+\frac{2Aa}{\sqrt{c\,x^2+a}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/2*B*x^3/c/(c*x^2+a)^(1/2)+3/2*B*a/c^2*x/(c*x^2+a)^(1/2)-3/2*B*a/c^(5/2)*l
n(c^(1/2)*x+(c*x^2+a)^(1/2))+A*x^2/c/(c*x^2+a)^(1/2)+2*A*a/c^2/(c*x^2+a)^(1
/2)
```

maxima [A] time = 0.67, size = 85, normalized size = 1.05

$$\frac{Bx^3}{2\,\sqrt{cx^2+a}\,c}+\frac{Ax^2}{\sqrt{cx^2+a}\,c}+\frac{3\,Bax}{2\,\sqrt{cx^2+a}\,c^2}-\frac{3\,Ba\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{5}{2}}}+\frac{2\,Aa}{\sqrt{cx^2+a}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^3/(sqrt(c*x^2 + a)*c) + A*x^2/(sqrt(c*x^2 + a)*c) + 3/2*B*a*x/(sqrt
(c*x^2 + a)*c^2) - 3/2*B*a*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 2*A*a/(sqrt(c*x
^2 + a)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [A] time = 10.93, size = 117, normalized size = 1.44

$$A\left(\begin{cases}\frac{2a}{c^2\sqrt{a+cx^2}}+\frac{x^2}{c\sqrt{a+cx^2}} & \text{for}\ c\neq 0\\ \frac{x^4}{4a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)+B\left(\frac{3\sqrt{a}\,x}{2c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{3a\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{5}{2}}}+\frac{x^3}{2\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*Piecewise((2*a/(c**2*sqrt(a + c*x**2)) + x**2/(c*sqrt(a + c*x**2)), Ne(c,
 0)), (x**4/(4*a**(3/2)), True)) + B*(3*sqrt(a)*x/(2*c**2*sqrt(1 + c*x**2/a
)) - 3*a*asinh(sqrt(c)*x/sqrt(a))/(2*c**(5/2)) + x**3/(2*sqrt(a)*c*sqrt(1 +
 c*x**2/a)))
```

3.367 $\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=66

$$-\frac{x(A+Bx)}{c\sqrt{a+cx^2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}+\frac{2B\sqrt{a+cx^2}}{c^2}$$

Rubi [A] time = 0.03, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 641, 217, 206}

$$-\frac{x(A+Bx)}{c\sqrt{a+cx^2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}+\frac{2B\sqrt{a+cx^2}}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((x*(A + B*x))/(c*Sqrt[a + c*x^2])) + (2*B*Sqrt[a + c*x^2])/c^2 + (A*ArcTa
nh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{\int \frac{aA+2aBx}{\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{2B\sqrt{a+cx^2}}{c^2} + \frac{A\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c}$$

$$= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{2B\sqrt{a+cx^2}}{c^2} + \frac{A\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{c}$$

$$= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{2B\sqrt{a+cx^2}}{c^2} + \frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 1.02

$$\frac{A\sqrt{c}\sqrt{a+cx^2}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) + 2aB + cx(Bx-A)}{c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (2*a*B + c*x*(-A + B*x) + A*Sqrt[c]*Sqrt[a + c*x^2]*ArcTanh[(Sqrt[c]*x)/Sqr
t[a + c*x^2]])/(c^2*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.36, size = 61, normalized size = 0.92

$$\frac{2aB - Acx + Bcx^2}{c^2\sqrt{a+cx^2}} - \frac{A\log\left(\sqrt{a+cx^2} - \sqrt{c}\,x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (2*a*B - A*c*x + B*c*x^2)/(c^2*Sqrt[a + c*x^2]) - (A*Log[-(Sqrt[c]*x) + Sqr
t[a + c*x^2]])/c^(3/2)
```

fricas [A] time = 0.46, size = 164, normalized size = 2.48

$$\left[\frac{\left(Acx^2 + Aa\right)\sqrt{c}\,\log\left(-2\,cx^2 - 2\,\sqrt{cx^2+a}\,\sqrt{c}\,x - a\right) + 2\left(Bcx^2 - Acx + 2\,Ba\right)\sqrt{cx^2+a}}{2\left(c^3x^2 + ac^2\right)}, -\frac{\left(Acx^2 + Aa\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right) - \left(Bcx^2 - Acx + 2\,Ba\right)\sqrt{cx^2+a}}{c^3x^2 + ac^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*c*x^2 + A*a)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
a) + 2*(B*c*x^2 - A*c*x + 2*B*a)*sqrt(c*x^2 + a))/(c^3*x^2 + a*c^2), -((A*c
*x^2 + A*a)*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (B*c*x^2 - A*c*x
+ 2*B*a)*sqrt(c*x^2 + a))/(c^3*x^2 + a*c^2)]
```

giac [A] time = 0.21, size = 58, normalized size = 0.88

$$\frac{\left(\frac{Bx}{c} - \frac{A}{c}\right)x + \frac{2\,Ba}{c^2}}{\sqrt{cx^2+a}} - \frac{A\log\left(\left|-\sqrt{c}\,x + \sqrt{cx^2+a}\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] ((B*x/c - A/c)*x + 2*B*a/c^2)/sqrt(c*x^2 + a) - A*log(abs(-sqrt(c)*x + sqrt
(c*x^2 + a)))/c^(3/2)
```

maple [A] time = 0.05, size = 72, normalized size = 1.09

$$\frac{B\,x^{2}}{\sqrt{c\,x^{2}+a}\;c}-\frac{Ax}{\sqrt{c\,x^{2}+a}\;c}+\frac{A\ln\left(\sqrt{c}\;x+\sqrt{c\,x^{2}+a}\right)}{c^{\frac{3}{2}}}+\frac{2Ba}{\sqrt{c\,x^{2}+a}\;c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] B*x^2/c/(c*x^2+a)^(1/2)+2*B*a/c^2/(c*x^2+a)^(1/2)-A*x/c/(c*x^2+a)^(1/2)+A/c
^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.53, size = 64, normalized size = 0.97

$$\frac{Bx^{2}}{\sqrt{cx^{2}+a}\,c}-\frac{Ax}{\sqrt{cx^{2}+a}\,c}+\frac{A\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{3}{2}}}+\frac{2\,Ba}{\sqrt{cx^{2}+a}\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x^2/(sqrt(c*x^2 + a)*c) - A*x/(sqrt(c*x^2 + a)*c) + A*arcsinh(c*x/sqrt(a*
c))/c^(3/2) + 2*B*a/(sqrt(c*x^2 + a)*c^2)
```

mupad [B] time = 1.47, size = 61, normalized size = 0.92

$$\frac{A\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{c^{3/2}}-\frac{A\,x}{c\,\sqrt{c\,x^{2}+a}}+\frac{B\,\left(c\,x^{2}+2\,a\right)}{c^{2}\,\sqrt{c\,x^{2}+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] (A*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(3/2) - (A*x)/(c*(a + c*x^2)^(1/2)
) + (B*(2*a + c*x^2))/(c^2*(a + c*x^2)^(1/2))
```

sympy [A] time = 8.87, size = 83, normalized size = 1.26

$$A\left(\frac{\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{\frac{3}{2}}}-\frac{x}{\sqrt{a}\,c\sqrt{1+\frac{cx^{2}}{a}}}\right)+B\left(\begin{cases}\frac{2a}{c^{2}\sqrt{a+cx^{2}}}+\frac{x^{2}}{c\sqrt{a+cx^{2}}} & \text{for}\; c\neq 0\\ \frac{x^{4}}{4a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(asinh(sqrt(c)*x/sqrt(a))/c**(3/2) - x/(sqrt(a)*c*sqrt(1 + c*x**2/a))) +
B*Piecewise((2*a/(c**2*sqrt(a + c*x**2)) + x**2/(c*sqrt(a + c*x**2)), Ne(c,
 0)), (x**4/(4*a**(3/2)), True))
```

3.368 $\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=48

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}-\frac{A+Bx}{c\sqrt{a+cx^2}}$$

Rubi [A] time = 0.02, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {778, 217, 206}

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}-\frac{A+Bx}{c\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((A + B*x)/(c*Sqrt[a + c*x^2])) + (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])
/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{A+Bx}{c\sqrt{a+cx^2}}+\frac{B\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c}\\
&= -\frac{A+Bx}{c\sqrt{a+cx^2}}+\frac{B\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{c}\\
&= -\frac{A+Bx}{c\sqrt{a+cx^2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 64, normalized size = 1.33

$$\frac{\sqrt{a}\,B\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\sqrt{c}\,(A+Bx)}{c^{3/2}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[c]*(A + B*x)) + Sqrt[a]*B*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c]*x)/S
qrt[a]])/(c^(3/2)*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.34, size = 53, normalized size = 1.10

$$\frac{-A-Bx}{c\sqrt{a+cx^2}}-\frac{B\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (-A - B*x)/(c*Sqrt[a + c*x^2]) - (B*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/c^
(3/2)
```

fricas [A] time = 0.46, size = 147, normalized size = 3.06

$$\left[\frac{\left(Bcx^2+Ba\right)\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)-2\,(Bcx+Ac)\sqrt{cx^2+a}}{2\left(c^3x^2+ac^2\right)},-\frac{\left(Bcx^2+Ba\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+(Bcx+Ac)\sqrt{cx^2+a}}{c^3x^2+ac^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*c*x^2 + B*a)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
a) - 2*(B*c*x + A*c)*sqrt(c*x^2 + a))/(c^3*x^2 + a*c^2), -((B*c*x^2 + B*a)*
sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (B*c*x + A*c)*sqrt(c*x^2 + a)
)/(c^3*x^2 + a*c^2)]
```

giac [A] time = 0.24, size = 48, normalized size = 1.00

$$-\frac{\frac{Bx}{c}+\frac{A}{c}}{\sqrt{cx^2+a}}-\frac{B\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -(B*x/c + A/c)/sqrt(c*x^2 + a) - B*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c
^(3/2)
```

maple [A] time = 0.05, size = 54, normalized size = 1.12

$$-\frac{Bx}{\sqrt{c\,x^2+a}\;c}+\frac{B\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{c^{\frac{3}{2}}}-\frac{A}{\sqrt{c\,x^2+a}\;c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] -B*x/c/(c*x^2+a)^(1/2)+B/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))-A/c/(c*x^2+a
)^(1/2)
```

maxima [A] time = 0.48, size = 46, normalized size = 0.96

$$-\frac{Bx}{\sqrt{cx^2+a}\,c}+\frac{B\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{3}{2}}}-\frac{A}{\sqrt{cx^2+a}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -B*x/(sqrt(c*x^2 + a)*c) + B*arcsinh(c*x/sqrt(a*c))/c^(3/2) - A/(sqrt(c*x^2
 + a)*c)
```

mupad [B] time = 1.22, size = 53, normalized size = 1.10

$$\frac{B\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{c^{3/2}}-\frac{A}{c\,\sqrt{c\,x^2+a}}-\frac{B\,x}{c\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] (B*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(3/2) - A/(c*(a + c*x^2)^(1/2)) -
(B*x)/(c*(a + c*x^2)^(1/2))
```

sympy [A] time = 8.03, size = 66, normalized size = 1.38

$$A\left(\begin{cases}-\frac{1}{c\sqrt{a+cx^2}} & \text{for } c\neq 0\\ \frac{x^2}{2a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)+B\left(\frac{\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{\frac{3}{2}}}-\frac{x}{\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*Piecewise((-1/(c*sqrt(a + c*x**2)), Ne(c, 0)), (x**2/(2*a**(3/2)), True))
 + B*(asinh(sqrt(c)*x/sqrt(a))/c**(3/2) - x/(sqrt(a)*c*sqrt(1 + c*x**2/a)))
```

3.369 $\int \frac{A+Bx}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=28

$$-\frac{aB-Acx}{ac\sqrt{a+cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {637}

$$-\frac{aB-Acx}{ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^(3/2),x]
```

```
[Out] -((a*B - A*c*x)/(a*c*Sqrt[a + c*x^2]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+cx^2\right)^{3/2}}\,dx=-\frac{aB-Acx}{ac\sqrt{a+cx^2}}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.96

$$\frac{Acx-aB}{ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^(3/2),x]
```

```
[Out] (-(a*B) + A*c*x)/(a*c*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.31, size = 27, normalized size = 0.96

$$\frac{Acx-aB}{ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + c*x^2)^(3/2),x]
```

```
[Out] (-(a*B) + A*c*x)/(a*c*Sqrt[a + c*x^2])
```

fricas [A] time = 0.45, size = 35, normalized size = 1.25

$$\frac{(Acx-Ba)\sqrt{cx^2+a}}{ac^2x^2+a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] (A*c*x - B*a)*sqrt(c*x^2 + a)/(a*c^2*x^2 + a^2*c)
```

giac [A] time = 0.20, size = 23, normalized size = 0.82

$$\frac{\frac{Ax}{a} - \frac{B}{c}}{\sqrt{cx^2 + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] (A*x/a - B/c)/sqrt(c*x^2 + a)
```

maple [A] time = 0.05, size = 26, normalized size = 0.93

$$\frac{Acx - Ba}{\sqrt{c\,x^2 + a}\;ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] (A*c*x-B*a)/a/c/(c*x^2+a)^(1/2)
```

maxima [A] time = 0.47, size = 31, normalized size = 1.11

$$\frac{Ax}{\sqrt{cx^2 + a}\,a} - \frac{B}{\sqrt{cx^2 + a}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] A*x/(sqrt(c*x^2 + a)*a) - B/(sqrt(c*x^2 + a)*c)
```

mupad [B] time = 1.08, size = 24, normalized size = 0.86

$$-\frac{\frac{B}{c} - \frac{A\,x}{a}}{\sqrt{c\,x^2 + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^(3/2),x)
```

```
[Out] -(B/c - (A*x)/a)/(a + c*x^2)^(1/2)
```

sympy [A] time = 7.23, size = 46, normalized size = 1.64

$$\frac{Ax}{a^{\frac{3}{2}}\sqrt{1 + \frac{cx^2}{a}}} + B\left(\begin{cases} -\frac{1}{c\sqrt{a+cx^2}} & \text{for}\ c \neq 0 \\ \frac{x^2}{2a^{\frac{3}{2}}} & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*x/(a**(3/2)*sqrt(1 + c*x**2/a)) + B*Piecewise((-1/(c*sqrt(a + c*x**2)), N
e(c, 0)), (x**2/(2*a**(3/2)), True))
```

3.370 $\int \frac{A+Bx}{x(a+cx^2)^{3/2}} dx$

Optimal. Leaf size=47

$$\frac{A+Bx}{a\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 12, 266, 63, 208}

$$\frac{A+Bx}{a\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*Sqrt[a + c*x^2]) - (A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x\left(a+cx^2\right)^{3/2}}\,dx = \frac{A+Bx}{a\sqrt{a+cx^2}} + \frac{\int \frac{aAc}{x\sqrt{a+cx^2}}\,dx}{a^2c}$$
$$= \frac{A+Bx}{a\sqrt{a+cx^2}} + \frac{A\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a}$$
$$= \frac{A+Bx}{a\sqrt{a+cx^2}} + \frac{A\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx, x, x^2\right)}{2a}$$
$$= \frac{A+Bx}{a\sqrt{a+cx^2}} + \frac{A\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx, x, \sqrt{a+cx^2}\right)}{ac}$$
$$= \frac{A+Bx}{a\sqrt{a+cx^2}} - \frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}$$

Mathematica [**A**] time = 0.03, size = 47, normalized size = 1.00

$$\frac{A+Bx}{a\sqrt{a+cx^2}} - \frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*Sqrt[a + c*x^2]) - (A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2
)
```

IntegrateAlgebraic [**A**] time = 0.34, size = 61, normalized size = 1.30

$$\frac{2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}} + \frac{A+Bx}{a\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*Sqrt[a + c*x^2]) + (2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a +
 c*x^2]/Sqrt[a]])/a^(3/2)
```

fricas [**A**] time = 0.48, size = 146, normalized size = 3.11

$$\left[\frac{\left(Acx^2+Aa\right)\sqrt{a}\log\left(-\frac{cx^2-2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)+2\left(Bax+Aa\right)\sqrt{cx^2+a}}{2\left(a^2cx^2+a^3\right)}, \frac{\left(Acx^2+Aa\right)\sqrt{-a}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+\left(Bax+Aa\right)\sqrt{cx^2+a}}{a^2cx^2+a^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*c*x^2 + A*a)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a
)/x^2) + 2*(B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*c*x^2 + a^3), ((A*c*x^2 + A*
a)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (B*a*x + A*a)*sqrt(c*x^2 + a
))/(a^2*c*x^2 + a^3)]
```

giac [A] time = 0.19, size = 59, normalized size = 1.26

$$\frac{\frac{Bx}{a}+\frac{A}{a}}{\sqrt{cx^2+a}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] (B*x/a + A/a)/sqrt(c*x^2 + a) + 2*A*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/s
qrt(-a))/(sqrt(-a)*a)
```

maple [A] time = 0.05, size = 60, normalized size = 1.28

$$\frac{Bx}{\sqrt{c\,x^2+a}\;a}-\frac{A\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{a^{\frac{3}{2}}}+\frac{A}{\sqrt{c\,x^2+a}\;a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(3/2)/x,x)
```

```
[Out] B*x/a/(c*x^2+a)^(1/2)+A/a/(c*x^2+a)^(1/2)-A/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/
2)*a^(1/2))/x)
```

maxima [A] time = 0.47, size = 48, normalized size = 1.02

$$\frac{Bx}{\sqrt{cx^2+a}\,a}-\frac{A\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{3}{2}}}+\frac{A}{\sqrt{cx^2+a}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x/(sqrt(c*x^2 + a)*a) - A*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) + A/(sqrt
(c*x^2 + a)*a)
```

mupad [B] time = 1.43, size = 50, normalized size = 1.06

$$\frac{A}{a\,\sqrt{c\,x^2+a}}-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{B\,x}{a\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + c*x^2)^(3/2)),x)
```

```
[Out] A/(a*(a + c*x^2)^(1/2)) - (A*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(3/2) + (B
*x)/(a*(a + c*x^2)^(1/2))
```

sympy [B] time = 9.57, size = 206, normalized size = 4.38

$$A\left(\frac{2a^3\sqrt{1+\frac{cx^2}{a}}}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}+\frac{a^3\log\left(\frac{cx^2}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}-\frac{2a^3\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}+\frac{a^2cx^2\log\left(\frac{cx^2}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}-\frac{2a^2cx^2\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}\right)+\frac{Bx}{a^{\frac{3}{2}}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(2*a**3*sqrt(1 + c*x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) + a**3*log(c*
x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) - 2*a**3*log(sqrt(1 + c*x**2/a) +
1)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) + a**2*c*x**2*log(c*x**2/a)/(2*a**(9/2)
 + 2*a**(7/2)*c*x**2) - 2*a**2*c*x**2*log(sqrt(1 + c*x**2/a) + 1)/(2*a**(9/
2) + 2*a**(7/2)*c*x**2)) + B*x/(a**(3/2)*sqrt(1 + c*x**2/a))
```

3.371 $\int \frac{A+Bx}{x^2(a+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=70

$$-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2A\sqrt{a+cx^2}}{a^2x}+\frac{A+Bx}{ax\sqrt{a+cx^2}}$$

Rubi [A] time = 0.05, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 807, 266, 63, 208}

$$-\frac{2A\sqrt{a+cx^2}}{a^2x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{A+Bx}{ax\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*x*Sqrt[a + c*x^2]) - (2*A*Sqrt[a + c*x^2])/(a^2*x) - (B*ArcTan
h[Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
```

```
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ax\sqrt{a+cx^2}}-\frac{\int \frac{-2aAc-aBcx}{x^2\sqrt{a+cx^2}}\,dx}{a^2c}\\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}}-\frac{2A\sqrt{a+cx^2}}{a^2x}+\frac{B\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a}\\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}}-\frac{2A\sqrt{a+cx^2}}{a^2x}+\frac{B\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{2a}\\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}}-\frac{2A\sqrt{a+cx^2}}{a^2x}+\frac{B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{ac}\\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}}-\frac{2A\sqrt{a+cx^2}}{a^2x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 72, normalized size = 1.03

$$
-\frac{a(A-Bx)+\sqrt{a}\,Bx\sqrt{a+cx^2}\,\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+2Acx^2}{a^2x\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + c*x^2)^(3/2)),x]
```

```
[Out] -((2*A*c*x^2 + a*(A - B*x) + Sqrt[a]*B*x*Sqrt[a + c*x^2]*ArcTanh[Sqrt[a + c
*x^2]/Sqrt[a]])/(a^2*x*Sqrt[a + c*x^2]))
```

IntegrateAlgebraic [A] time = 0.35, size = 75, normalized size = 1.07

$$
\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{-aA+aBx-2Acx^2}{a^2x\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a + c*x^2)^(3/2)),x]
```

```
[Out] (-(a*A) + a*B*x - 2*A*c*x^2)/(a^2*x*Sqrt[a + c*x^2]) + (2*B*ArcTanh[(Sqrt[c
]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2)
```

fricas [A] time = 0.46, size = 169, normalized size = 2.41

$$
\left[\frac{\left(Bcx^3+Bax\right)\sqrt{a}\,\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(2\,Acx^2-Bax+Aa\right)\sqrt{cx^2+a}}{2\left(a^2cx^3+a^3x\right)},\ \frac{\left(Bcx^3+Bax\right)\sqrt{-a}\,\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(2\,Acx^2-Bax+Aa\right)\sqrt{cx^2+a}}{a^2cx^3+a^3x}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*c*x^3 + B*a*x)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2
*a)/x^2) - 2*(2*A*c*x^2 - B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*c*x^3 + a^3*x)
, ((B*c*x^3 + B*a*x)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (2*A*c*x^2
 - B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*c*x^3 + a^3*x)]
```

giac [A] time = 0.21, size = 96, normalized size = 1.37

$$-\frac{\frac{Acx}{a^2}-\frac{B}{a}}{\sqrt{cx^2+a}}+\frac{2\,B\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{2\,A\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -(A*c*x/a^2 - B/a)/sqrt(c*x^2 + a) + 2*B*arctan(-(sqrt(c)*x - sqrt(c*x^2 +
a))/sqrt(-a))/(sqrt(-a)*a) + 2*A*sqrt(c)/(((sqrt(c)*x - sqrt(c*x^2 + a))^2
- a)*a)
```

maple [A] time = 0.06, size = 80, normalized size = 1.14

$$-\frac{2Acx}{\sqrt{c\,x^2+a}\;a^2}-\frac{B\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{a^{\frac{3}{2}}}+\frac{B}{\sqrt{c\,x^2+a}\;a}-\frac{A}{\sqrt{c\,x^2+a}\;ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+a)^(3/2),x)
```

```
[Out] -A/a/x/(c*x^2+a)^(1/2)-2*A*c/a^2*x/(c*x^2+a)^(1/2)+B/a/(c*x^2+a)^(1/2)-B/a^
(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.61, size = 68, normalized size = 0.97

$$-\frac{2\,Acx}{\sqrt{cx^2+a}\,a^2}-\frac{B\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{3}{2}}}+\frac{B}{\sqrt{cx^2+a}\,a}-\frac{A}{\sqrt{cx^2+a}\,ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*A*c*x/(sqrt(c*x^2 + a)*a^2) - B*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) +
B/(sqrt(c*x^2 + a)*a) - A/(sqrt(c*x^2 + a)*a*x)
```

mupad [B] time = 1.58, size = 70, normalized size = 1.00

$$\frac{B}{a\,\sqrt{c\,x^2+a}}-\frac{B\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{A}{a\,x\,\sqrt{c\,x^2+a}}-\frac{2\,A\,c\,x}{a^2\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + c*x^2)^(3/2)),x)
```

```
[Out] B/(a*(a + c*x^2)^(1/2)) - (B*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(3/2) - A/
(a*x*(a + c*x^2)^(1/2)) - (2*A*c*x)/(a^2*(a + c*x^2)^(1/2))
```

sympy [B] time = 13.93, size = 235, normalized size = 3.36

$$A\left(-\frac{1}{a\sqrt{c}\,x^2\sqrt{\frac{a}{cx^2}+1}}-\frac{2\sqrt{c}}{a^2\sqrt{\frac{a}{cx^2}+1}}\right)+B\left(\frac{2a^3\sqrt{1+\frac{cx^2}{a}}}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}+\frac{a^3\log\left(\frac{cx^2}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}-\frac{2a^3\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}+\frac{a^2cx^2\log\left(\frac{cx^2}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}-\frac{2a^2cx^2\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(-1/(a*sqrt(c)*x**2*sqrt(a/(c*x**2) + 1)) - 2*sqrt(c)/(a**2*sqrt(a/(c*x**
2) + 1))) + B*(2*a**3*sqrt(1 + c*x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) +
 a**3*log(c*x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) - 2*a**3*log(sqrt(1 +
c*x**2/a) + 1)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) + a**2*c*x**2*log(c*x**2/a)
/(2*a**(9/2) + 2*a**(7/2)*c*x**2) - 2*a**2*c*x**2*log(sqrt(1 + c*x**2/a) +
1)/(2*a**(9/2) + 2*a**(7/2)*c*x**2))
```

3.372 $\int \frac{A+Bx}{x^3(a+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=95

$$\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}+\frac{A+Bx}{ax^2\sqrt{a+cx^2}}$$

Rubi [A] time = 0.08, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {823, 835, 807, 266, 63, 208}

$$-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}+\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{2B\sqrt{a+cx^2}}{a^2x}+\frac{A+Bx}{ax^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*x^2*Sqrt[a + c*x^2]) - (3*A*Sqrt[a + c*x^2])/(2*a^2*x^2) - (2*B*Sqrt[a + c*x^2])/(a^2*x) + (3*A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b + (d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Denominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
```

```
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{\int \frac{-3aAc-2aBcx}{x^3\sqrt{a+cx^2}}\,dx}{a^2c}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}+\frac{\int \frac{4a^2Bc-3aAc^2x}{x^2\sqrt{a+cx^2}}\,dx}{2a^3c}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}-\frac{(3Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a^2}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}-\frac{(3Ac)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{4a^2}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}-\frac{(3A)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{2a^2}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}+\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.15, size = 75, normalized size = 0.79

$$\frac{-\frac{a(A+2Bx)}{x^2}+3Ac\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)-c(3A+4Bx)}{2a^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + c*x^2)^(3/2)),x]
```

```
[Out] (-((a*(A + 2*B*x))/x^2) - c*(3*A + 4*B*x) + 3*A*c*Sqrt[1 + (c*x^2)/a]*ArcTa
nh[Sqrt[1 + (c*x^2)/a]])/(2*a^2*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.48, size = 87, normalized size = 0.92

$$\frac{-aA-2aBx-3Acx^2-4Bcx^3}{2a^2x^2\sqrt{a+cx^2}}-\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a + c*x^2)^(3/2)),x]
```

```
[Out] (-(a*A) - 2*a*B*x - 3*A*c*x^2 - 4*B*c*x^3)/(2*a^2*x^2*Sqrt[a + c*x^2]) - (3
*A*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/a^(5/2)
```

fricas [A] time = 0.47, size = 211, normalized size = 2.22

$$\left[\frac{3\left(Ac^2x^4 + Aacx^2\right)\sqrt{a}\log\left(-\frac{cx^2+2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right) - 2\left(4Bacx^3 + 3Aacx^2 + 2Ba^2x + Aa^2\right)\sqrt{cx^2+a}}{4\left(a^3cx^4 + a^4x^2\right)}, -\frac{3\left(Ac^2x^4 + Aacx^2\right)\sqrt{-a}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right) + \left(4Bacx^3 + 3Aacx^2 + 2Ba^2x + Aa^2\right)\sqrt{cx^2+a}}{2\left(a^3cx^4 + a^4x^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(3*(A*c^2*x^4 + A*a*c*x^2)*sqrt(a)*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqr
t(a) + 2*a)/x^2) - 2*(4*B*a*c*x^3 + 3*A*a*c*x^2 + 2*B*a^2*x + A*a^2)*sqrt(c
*x^2 + a))/(a^3*c*x^4 + a^4*x^2), -1/2*(3*(A*c^2*x^4 + A*a*c*x^2)*sqrt(-a)*
arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (4*B*a*c*x^3 + 3*A*a*c*x^2 + 2*B*a^2*x +
 A*a^2)*sqrt(c*x^2 + a))/(a^3*c*x^4 + a^4*x^2)]
```

giac [B] time = 0.20, size = 171, normalized size = 1.80

$$-\frac{\frac{Bcx}{a^2} + \frac{Ac}{a^2}}{\sqrt{cx^2+a}} - \frac{3\,Ac\arctan\left(-\frac{\sqrt{c}x - \sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2} + \frac{\left(\sqrt{c}x - \sqrt{cx^2+a}\right)^3 Ac + 2\left(\sqrt{c}x - \sqrt{cx^2+a}\right)^2 Ba\sqrt{c} + \left(\sqrt{c}x - \sqrt{cx^2+a}\right)Aac - 2\,Ba^2\sqrt{c}}{\left(\left(\sqrt{c}x - \sqrt{cx^2+a}\right)^2 - a\right)^2 a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -(B*c*x/a^2 + A*c/a^2)/sqrt(c*x^2 + a) - 3*A*c*arctan(-(sqrt(c)*x - sqrt(c*
x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*c +
 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2 +
a))*A*a*c - 2*B*a^2*sqrt(c))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2*a^2)
```

maple [A] time = 0.06, size = 101, normalized size = 1.06

$$-\frac{2Bcx}{\sqrt{c\,x^2+a}\;a^2} + \frac{3Ac\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{2a^{\frac{5}{2}}} - \frac{3Ac}{2\sqrt{c\,x^2+a}\;a^2} - \frac{B}{\sqrt{c\,x^2+a}\;ax} - \frac{A}{2\sqrt{c\,x^2+a}\;a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/2*A/a/x^2/(c*x^2+a)^(1/2)-3/2*A*c/a^2/(c*x^2+a)^(1/2)+3/2*A*c/a^(5/2)*ln
((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-B/a/x/(c*x^2+a)^(1/2)-2*B*c/a^2*x/(c*x^
2+a)^(1/2)
```

maxima [A] time = 0.58, size = 89, normalized size = 0.94

$$-\frac{2\,Bcx}{\sqrt{cx^2+a}\,a^2} + \frac{3\,Ac\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{5}{2}}} - \frac{3\,Ac}{2\,\sqrt{cx^2+a}\,a^2} - \frac{B}{\sqrt{cx^2+a}\,ax} - \frac{A}{2\,\sqrt{cx^2+a}\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*B*c*x/(sqrt(c*x^2 + a)*a^2) + 3/2*A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5
/2) - 3/2*A*c/(sqrt(c*x^2 + a)*a^2) - B/(sqrt(c*x^2 + a)*a*x) - 1/2*A/(sqrt
(c*x^2 + a)*a*x^2)
```

mupad [B] time = 1.73, size = 94, normalized size = 0.99

$$\frac{3\,A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{5/2}}-\frac{3\,A\,c}{2\,a^2\,\sqrt{c\,x^2+a}}-\frac{A}{2\,a\,x^2\,\sqrt{c\,x^2+a}}-\frac{\sqrt{c\,x^2+a}\,\left(\frac{B}{a}+\frac{2\,B\,c\,x^2}{a^2}\right)}{c\,x^3+a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + c*x^2)^(3/2)),x)
```

```
[Out] (3*A*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(5/2)) - (3*A*c)/(2*a^2*(a +
c*x^2)^(1/2)) - A/(2*a*x^2*(a + c*x^2)^(1/2)) - ((a + c*x^2)^(1/2)*(B/a + (
2*B*c*x^2)/a^2))/(a*x + c*x^3)
```

sympy [A] time = 10.37, size = 124, normalized size = 1.31

$$A\left(-\frac{1}{2a\sqrt{c}x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{3\sqrt{c}}{2a^2x\sqrt{\frac{a}{cx^2}+1}}+\frac{3c\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2a^{\frac{5}{2}}}\right)+B\left(-\frac{1}{a\sqrt{c}x^2\sqrt{\frac{a}{cx^2}+1}}-\frac{2\sqrt{c}}{a^2\sqrt{\frac{a}{cx^2}+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(-1/(2*a*sqrt(c)*x**3*sqrt(a/(c*x**2) + 1)) - 3*sqrt(c)/(2*a**2*x*sqrt(a/
(c*x**2) + 1)) + 3*c*asinh(sqrt(a)/(sqrt(c)*x))/(2*a**(5/2))) + B*(-1/(a*sq
rt(c)*x**2*sqrt(a/(c*x**2) + 1)) - 2*sqrt(c)/(a**2*sqrt(a/(c*x**2) + 1)))
```

3.373 $\int \frac{A+Bx}{x^4(a+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=120

$$\frac{3Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{A+Bx}{ax^3\sqrt{a+cx^2}}$$

Rubi [A] time = 0.11, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {823, 835, 807, 266, 63, 208}

$$\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{3Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{A+Bx}{ax^3\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*x^3*Sqrt[a + c*x^2]) - (4*A*Sqrt[a + c*x^2])/(3*a^2*x^3) - (3*
B*Sqrt[a + c*x^2])/(2*a^2*x^2) + (8*A*c*Sqrt[a + c*x^2])/(3*a^3*x) + (3*B*c
*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
```

```
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^4\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{\int \frac{-4aAc-3aBcx}{x^4\sqrt{a+cx^2}}\,dx}{a^2c} \\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{4A\sqrt{a+cx^2}}{3a^2x^3} + \frac{\int \frac{9a^2Bc-8aAc^2x}{x^3\sqrt{a+cx^2}}\,dx}{3a^3c} \\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{4A\sqrt{a+cx^2}}{3a^2x^3} - \frac{3B\sqrt{a+cx^2}}{2a^2x^2} - \frac{\int \frac{16a^2Ac^2+9a^2Bc^2x}{x^2\sqrt{a+cx^2}}\,dx}{6a^4c} \\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{4A\sqrt{a+cx^2}}{3a^2x^3} - \frac{3B\sqrt{a+cx^2}}{2a^2x^2} + \frac{8Ac\sqrt{a+cx^2}}{3a^3x} - \frac{(3Bc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a^2} \\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{4A\sqrt{a+cx^2}}{3a^2x^3} - \frac{3B\sqrt{a+cx^2}}{2a^2x^2} + \frac{8Ac\sqrt{a+cx^2}}{3a^3x} - \frac{(3Bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}} \cdots\right.}{4a^2} \\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{4A\sqrt{a+cx^2}}{3a^2x^3} - \frac{3B\sqrt{a+cx^2}}{2a^2x^2} + \frac{8Ac\sqrt{a+cx^2}}{3a^3x} - \frac{(3B)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}} \cdots\right.}{2a^2} \\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}} - \frac{4A\sqrt{a+cx^2}}{3a^2x^3} - \frac{3B\sqrt{a+cx^2}}{2a^2x^2} + \frac{8Ac\sqrt{a+cx^2}}{3a^3x} + \frac{3Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.14, size = 90, normalized size = 0.75

$$
\frac{-\frac{a^2(2A+3Bx)}{x^3}+a\left(\frac{8Ac}{x}-9Bc\right)+9aBc\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)+16Ac^2x}{6a^3\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a + c*x^2)^(3/2)),x]
```

```
[Out] (a*(-9*B*c + (8*A*c)/x) + 16*A*c^2*x - (a^2*(2*A + 3*B*x))/x^3 + 9*a*B*c*Sq
rt[1 + (c*x^2)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(6*a^3*Sqrt[a + c*x^2])
```

IntegrateAlgebraic [A] time = 0.55, size = 102, normalized size = 0.85

$$
\frac{-2a^2A-3a^2Bx+8aAcx^2-9aBcx^3+16Ac^2x^4}{6a^3x^3\sqrt{a+cx^2}}-\frac{3Bc\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*(a + c*x^2)^(3/2)),x]
```

```
[Out] (-2*a^2*A - 3*a^2*B*x + 8*a*A*c*x^2 - 9*a*B*c*x^3 + 16*A*c^2*x^4)/(6*a^3*x^
3*Sqrt[a + c*x^2]) - (3*B*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/S
qrt[a]])/a^(5/2)
```

fricas [A] time = 0.46, size = 232, normalized size = 1.93

$$\left[\frac{9\left(Bc^{2}x^{5}+Bacx^{3}\right)\sqrt{a}\log\left(-\frac{cx^{2}+2\sqrt{cx^{2}+a}\sqrt{a}+2a}{x^{2}}\right)+2\left(16Ac^{2}x^{4}-9Bacx^{3}+8Aacx^{2}-3Ba^{2}x-2Aa^{2}\right)\sqrt{cx^{2}+a}}{12\left(a^{3}cx^{5}+a^{4}x^{3}\right)},-\frac{9\left(Bc^{2}x^{5}+Bacx^{3}\right)\sqrt{-a}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)-\left(16Ac^{2}x^{4}-9Bacx^{3}+8Aacx^{2}-3Ba^{2}x-2Aa^{2}\right)\sqrt{cx^{2}+a}}{6\left(a^{3}cx^{5}+a^{4}x^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/12*(9*(B*c^2*x^5 + B*a*c*x^3)*sqrt(a)*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sq
rt(a) + 2*a)/x^2) + 2*(16*A*c^2*x^4 - 9*B*a*c*x^3 + 8*A*a*c*x^2 - 3*B*a^2*x
 - 2*A*a^2)*sqrt(c*x^2 + a))/(a^3*c*x^5 + a^4*x^3), -1/6*(9*(B*c^2*x^5 + B*
a*c*x^3)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (16*A*c^2*x^4 - 9*B*a*
c*x^3 + 8*A*a*c*x^2 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/(a^3*c*x^5 + a^
4*x^3)]
```

giac [B] time = 0.21, size = 203, normalized size = 1.69

$$\frac{\frac{Ac^{2}x}{a^{3}}-\frac{Bc}{a^{2}}}{\sqrt{cx^{2}+a}}-\frac{3Bc\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^{2}}+\frac{3\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Bc-6\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Ac^{\frac{3}{2}}+24\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}Aac^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)Ba^{2}c-10Aa^{2}c^{\frac{3}{2}}}{3\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}-a\right)^{3}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] (A*c^2*x/a^3 - B*c/a^2)/sqrt(c*x^2 + a) - 3*B*c*arctan(-(sqrt(c)*x - sqrt(c
*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/3*(3*(sqrt(c)*x - sqrt(c*x^2 + a))^
5*B*c - 6*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*c^(3/2) + 24*(sqrt(c)*x - sqrt(
c*x^2 + a))^2*A*a*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^2*c - 10*A*
a^2*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^3*a^2)
```

maple [A] time = 0.05, size = 122, normalized size = 1.02

$$\frac{8Ac^{2}x}{3\sqrt{cx^{2}+a}\,a^{3}}+\frac{3Bc\ln\left(\frac{2a+2\sqrt{cx^{2}+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{5}{2}}}-\frac{3Bc}{2\sqrt{cx^{2}+a}\,a^{2}}+\frac{4Ac}{3\sqrt{cx^{2}+a}\,a^{2}x}-\frac{B}{2\sqrt{cx^{2}+a}\,ax^{2}}-\frac{A}{3\sqrt{cx^{2}+a}\,ax^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/3*A/a/x^3/(c*x^2+a)^(1/2)+4/3*A*c/a^2/x/(c*x^2+a)^(1/2)+8/3*A*c^2/a^3*x/
(c*x^2+a)^(1/2)-1/2*B/a/x^2/(c*x^2+a)^(1/2)-3/2*B*c/a^2/(c*x^2+a)^(1/2)+3/2
*B*c/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.50, size = 110, normalized size = 0.92

$$\frac{8Ac^{2}x}{3\sqrt{cx^{2}+a}a^{3}}+\frac{3Bc\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}|x|}\right)}{2a^{\frac{5}{2}}}-\frac{3Bc}{2\sqrt{cx^{2}+a}a^{2}}+\frac{4Ac}{3\sqrt{cx^{2}+a}a^{2}x}-\frac{B}{2\sqrt{cx^{2}+a}ax^{2}}-\frac{A}{3\sqrt{cx^{2}+a}ax^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 8/3*A*c^2*x/(sqrt(c*x^2 + a)*a^3) + 3/2*B*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a
^(5/2) - 3/2*B*c/(sqrt(c*x^2 + a)*a^2) + 4/3*A*c/(sqrt(c*x^2 + a)*a^2*x) -
1/2*B/(sqrt(c*x^2 + a)*a*x^2) - 1/3*A/(sqrt(c*x^2 + a)*a*x^3)
```

mupad [B] time = 1.85, size = 95, normalized size = 0.79

$$\frac{3\,B\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{5/2}}-\frac{B}{2\,a\,x^2\,\sqrt{c\,x^2+a}}-\frac{3\,B\,c}{2\,a^2\,\sqrt{c\,x^2+a}}+\frac{A\,\left(-a^2+4\,a\,c\,x^2+8\,c^2\,x^4\right)}{3\,a^3\,x^3\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + c*x^2)^(3/2)),x)
```

```
[Out] (3*B*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(5/2)) - B/(2*a*x^2*(a + c*x^
2)^(1/2)) - (3*B*c)/(2*a^2*(a + c*x^2)^(1/2)) + (A*(8*c^2*x^4 - a^2 + 4*a*c
*x^2))/(3*a^3*x^3*(a + c*x^2)^(1/2))
```

sympy [B] time = 28.08, size = 311, normalized size = 2.59

$$A\left(-\frac{a^3c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}+\frac{3a^2c^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}+\frac{12ac^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}+\frac{8c^{\frac{15}{2}}x^6\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}\right)+B\left(-\frac{1}{2a\sqrt{c}x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{3\sqrt{c}}{2a^2x\sqrt{\frac{a}{cx^2}+1}}+\frac{3c\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{2a^{\frac{5}{2}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(-a**3*c**(9/2)*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4*x**2 + 6*a**4*c**5*x**4
 + 3*a**3*c**6*x**6) + 3*a**2*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(3*a**5*c
**4*x**2 + 6*a**4*c**5*x**4 + 3*a**3*c**6*x**6) + 12*a*c**(13/2)*x**4*sqrt(
a/(c*x**2) + 1)/(3*a**5*c**4*x**2 + 6*a**4*c**5*x**4 + 3*a**3*c**6*x**6) +
8*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4*x**2 + 6*a**4*c**5*x**4
+ 3*a**3*c**6*x**6)) + B*(-1/(2*a*sqrt(c)*x**3*sqrt(a/(c*x**2) + 1)) - 3*sq
rt(c)/(2*a**2*x*sqrt(a/(c*x**2) + 1)) + 3*c*asinh(sqrt(a)/(sqrt(c)*x))/(2*a
**(5/2)))
```

3.374 $\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=99

$$-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}-\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}$$

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 641, 217, 206}

$$-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}-\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(x^3*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (x*(3*A + 4*B*x))/(3*c^2*Sqrt[a
+ c*x^2]) + (8*B*Sqrt[a + c*x^2])/(3*c^3) + (A*ArcTanh[(Sqrt[c]*x)/Sqrt[a +
 c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{\int \frac{x^2(3aA+4aBx)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{\int \frac{3a^2A+8a^2Bx}{\sqrt{a+cx^2}}\,dx}{3a^2c^2}$$

$$= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}+\frac{A\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c^2}$$

$$= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}+\frac{A\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{c^2}$$

$$= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.90

$$\frac{8a^2B-3acx(A-4Bx)+3A\sqrt{c}\left(a+cx^2\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+c^2x^3(3Bx-4A)}{3c^3\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (8*a^2*B - 3*a*c*x*(A - 4*B*x) + c^2*x^3*(-4*A + 3*B*x) + 3*A*Sqrt[c]*(a +
c*x^2)^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(3*c^3*(a + c*x^2)^(3/2)
)
```

IntegrateAlgebraic [A] time = 0.52, size = 87, normalized size = 0.88

$$\frac{8a^2B-3aAcx+12aBcx^2-4Ac^2x^3+3Bc^2x^4}{3c^3\left(a+cx^2\right)^{3/2}}-\frac{A\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (8*a^2*B - 3*a*A*c*x + 12*a*B*c*x^2 - 4*A*c^2*x^3 + 3*B*c^2*x^4)/(3*c^3*(a
+ c*x^2)^(3/2)) - (A*Log[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/c^(5/2)
```

fricas [A] time = 0.45, size = 258, normalized size = 2.61

$$\left[\frac{3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{c}\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(3\,Bc^2x^4-4\,Ac^2x^3+12\,Bacx^2-3\,Aacx+8\,Ba^2\right)\sqrt{cx^2+a}}{6\left(c^5x^4+2\,ac^4x^2+a^2c^3\right)},-\frac{3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\left(3\,Bc^2x^4-4\,Ac^2x^3+12\,Bacx^2-3\,Aacx+8\,Ba^2\right)\sqrt{cx^2+a}}{3\left(c^5x^4+2\,ac^4x^2+a^2c^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x
^2 + a)*sqrt(c)*x - a) + 2*(3*B*c^2*x^4 - 4*A*c^2*x^3 + 12*B*a*c*x^2 - 3*A*
a*c*x + 8*B*a^2)*sqrt(c*x^2 + a))/(c^5*x^4 + 2*a*c^4*x^2 + a^2*c^3), -1/3*(
```

```
3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 +
 a)) - (3*B*c^2*x^4 - 4*A*c^2*x^3 + 12*B*a*c*x^2 - 3*A*a*c*x + 8*B*a^2)*sqr
t(c*x^2 + a))/(c^5*x^4 + 2*a*c^4*x^2 + a^2*c^3)]
```

giac [A] time = 0.21, size = 82, normalized size = 0.83

$$\frac{\left(\left(\left(\frac{3\,Bx}{c} - \frac{4\,A}{c}\right)x + \frac{12\,Ba}{c^2}\right)x - \frac{3\,Aa}{c^2}\right)x + \frac{8\,Ba^2}{c^3}}{3\left(cx^2 + a\right)^{\frac{3}{2}}} - \frac{A\log\left(\left|-\sqrt{c}\,x + \sqrt{cx^2 + a}\right|\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((((3*B*x/c - 4*A/c)*x + 12*B*a/c^2)*x - 3*A*a/c^2)*x + 8*B*a^2/c^3)/(c
*x^2 + a)^(3/2) - A*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.05, size = 111, normalized size = 1.12

$$\frac{B\,x^4}{\left(c\,x^2 + a\right)^{\frac{3}{2}} c} - \frac{A\,x^3}{3\left(c\,x^2 + a\right)^{\frac{3}{2}} c} + \frac{4Ba\,x^2}{\left(c\,x^2 + a\right)^{\frac{3}{2}} c^2} - \frac{Ax}{\sqrt{c\,x^2 + a}\;c^2} + \frac{8B\,a^2}{3\left(c\,x^2 + a\right)^{\frac{3}{2}} c^3} + \frac{A\ln\left(\sqrt{c}\;x + \sqrt{c\,x^2 + a}\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] B*x^4/c/(c*x^2+a)^(3/2)+4*B*a/c^2*x^2/(c*x^2+a)^(3/2)+8/3*B*a^2/c^3/(c*x^2+
a)^(3/2)-1/3*A*x^3/c/(c*x^2+a)^(3/2)-A/c^2*x/(c*x^2+a)^(1/2)+A/c^(5/2)*ln(c
^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.62, size = 122, normalized size = 1.23

$$-\frac{1}{3}\,Ax\left(\frac{3\,x^2}{\left(cx^2 + a\right)^{\frac{3}{2}} c} + \frac{2\,a}{\left(cx^2 + a\right)^{\frac{3}{2}} c^2}\right) + \frac{Bx^4}{\left(cx^2 + a\right)^{\frac{3}{2}} c} + \frac{4\,Bax^2}{\left(cx^2 + a\right)^{\frac{3}{2}} c^2} - \frac{Ax}{3\,\sqrt{cx^2 + a}\,c^2} + \frac{A\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{5}{2}}} + \frac{8\,Ba^2}{3\left(cx^2 + a\right)^{\frac{3}{2}} c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*A*x*(3*x^2/((c*x^2 + a)^(3/2)*c) + 2*a/((c*x^2 + a)^(3/2)*c^2)) + B*x^
4/((c*x^2 + a)^(3/2)*c) + 4*B*a*x^2/((c*x^2 + a)^(3/2)*c^2) - 1/3*A*x/(sqrt
(c*x^2 + a)*c^2) + A*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 8/3*B*a^2/((c*x^2 + a
)^(3/2)*c^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A + B\,x\right)}{\left(c\,x^2 + a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [B] time = 29.11, size = 445, normalized size = 4.49

$$A\left(\frac{3a^{\frac{39}{2}}c^{11}\sqrt{1 + \frac{cx^2}{a}}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1 + \frac{cx^2}{a}} + 3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1 + \frac{cx^2}{a}}} + \frac{3a^{\frac{37}{2}}c^{12}x^2\sqrt{1 + \frac{cx^2}{a}}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1 + \frac{cx^2}{a}} + 3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1 + \frac{cx^2}{a}}} - \frac{3a^{19}c^{\frac{23}{2}}x}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1 + \frac{cx^2}{a}} + 3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1 + \frac{cx^2}{a}}} - \frac{4a^{18}c^{\frac{25}{2}}x^3}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1 + \frac{cx^2}{a}} + 3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1 + \frac{cx^2}{a}}}\right) + B\left(\begin{cases} \frac{8a^2}{3ac^3\sqrt{a+cx^2} + 3c^4x^2\sqrt{a+cx^2}} + \frac{12acx^2}{3ac^3\sqrt{a+cx^2} + 3c^4x^2\sqrt{a+cx^2}} + \frac{3c^2x^4}{3ac^3\sqrt{a+cx^2} + 3c^4x^2\sqrt{a+cx^2}} & \text{for}\: c \neq 0 \\ \frac{x^6}{6a^{\frac{5}{2}}} & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(3*a**(39/2)*c**11*sqrt(1 + c*x**2/a)*asinh(sqrt(c)*x/sqrt(a))/(3*a**(39/
2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**
2/a)) + 3*a**(37/2)*c**12*x**2*sqrt(1 + c*x**2/a)*asinh(sqrt(c)*x/sqrt(a))/
(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt
(1 + c*x**2/a)) - 3*a**19*c**(23/2)*x/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**
2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)) - 4*a**18*c**(25/2)*x
**3/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*
sqrt(1 + c*x**2/a))) + B*Piecewise((8*a**2/(3*a*c**3*sqrt(a + c*x**2) + 3*c
**4*x**2*sqrt(a + c*x**2)) + 12*a*c*x**2/(3*a*c**3*sqrt(a + c*x**2) + 3*c**
4*x**2*sqrt(a + c*x**2)) + 3*c**2*x**4/(3*a*c**3*sqrt(a + c*x**2) + 3*c**4*
x**2*sqrt(a + c*x**2)), Ne(c, 0)), (x**6/(6*a**(5/2)), True))
```

3.375 $\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}-\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}$$

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 778, 217, 206}

$$-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}-\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(x^2*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (2*A + 3*B*x)/(3*c^2*Sqrt[a + c*
x^2]) + (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{(a+cx^2)^{5/2}}\,dx = -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} + \frac{\int \frac{x(2aA+3aBx)}{(a+cx^2)^{3/2}}\,dx}{3ac}$$

$$= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{2A+3Bx}{3c^2\sqrt{a+cx^2}} + \frac{B\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c^2}$$

$$= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{2A+3Bx}{3c^2\sqrt{a+cx^2}} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{c^2}$$

$$= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{2A+3Bx}{3c^2\sqrt{a+cx^2}} + \frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}$$

Mathematica [A] time = 0.07, size = 69, normalized size = 0.87

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}} - \frac{a(2A+3Bx)+cx^2(3A+4Bx)}{3c^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -1/3*(a*(2*A + 3*B*x) + c*x^2*(3*A + 4*B*x))/(c^2*(a + c*x^2)^(3/2)) + (B*A
rcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/c^(5/2)
```

IntegrateAlgebraic [A] time = 0.51, size = 72, normalized size = 0.91

$$\frac{-2aA-3aBx-3Acx^2-4Bcx^3}{3c^2\left(a+cx^2\right)^{3/2}} - \frac{B\log\left(\sqrt{a+cx^2}-\sqrt{c}\,x\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (-2*a*A - 3*a*B*x - 3*A*c*x^2 - 4*B*c*x^3)/(3*c^2*(a + c*x^2)^(3/2)) - (B*L
og[-(Sqrt[c]*x) + Sqrt[a + c*x^2]])/c^(5/2)
```

fricas [A] time = 0.46, size = 239, normalized size = 3.03

$$\left[\frac{3\left(Bc^2x^4+2\,Bacx^2+Ba^2\right)\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)-2\left(4\,Bc^2x^3+3\,Ac^2x^2+3\,Bacx+2\,Aac\right)\sqrt{cx^2+a}}{6\left(c^5x^4+2\,ac^4x^2+a^2c^3\right)}, -\frac{3\left(Bc^2x^4+2\,Bacx^2+Ba^2\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+\left(4\,Bc^2x^3+3\,Ac^2x^2+3\,Bacx+2\,Aac\right)\sqrt{cx^2+a}}{3\left(c^5x^4+2\,ac^4x^2+a^2c^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(B*c^2*x^4 + 2*B*a*c*x^2 + B*a^2)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x
^2 + a)*sqrt(c)*x - a) - 2*(4*B*c^2*x^3 + 3*A*c^2*x^2 + 3*B*a*c*x + 2*A*a*c
)*sqrt(c*x^2 + a))/(c^5*x^4 + 2*a*c^4*x^2 + a^2*c^3), -1/3*(3*(B*c^2*x^4 +
2*B*a*c*x^2 + B*a^2)*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (4*B*c^2
*x^3 + 3*A*c^2*x^2 + 3*B*a*c*x + 2*A*a*c)*sqrt(c*x^2 + a))/(c^5*x^4 + 2*a*c
^4*x^2 + a^2*c^3)]
```

giac [A] time = 0.22, size = 70, normalized size = 0.89

$$-\frac{\left(\left(\frac{4\,Bx}{c}+\frac{3\,A}{c}\right)x+\frac{3\,Ba}{c^2}\right)x+\frac{2\,Aa}{c^2}}{3\,\left(cx^2+a\right)^{\frac{3}{2}}}-\frac{B\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(((4*B*x/c + 3*A/c)*x + 3*B*a/c^2)*x + 2*A*a/c^2)/(c*x^2 + a)^(3/2) -
B*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.05, size = 91, normalized size = 1.15

$$-\frac{B\,x^3}{3\left(c\,x^2+a\right)^{\frac{3}{2}}c}-\frac{A\,x^2}{\left(c\,x^2+a\right)^{\frac{3}{2}}c}-\frac{2Aa}{3\left(c\,x^2+a\right)^{\frac{3}{2}}c^2}-\frac{Bx}{\sqrt{c\,x^2+a}\;c^2}+\frac{B\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/3*B*x^3/c/(c*x^2+a)^(3/2)-B/c^2*x/(c*x^2+a)^(1/2)+B/c^(5/2)*ln(c^(1/2)*x
+(c*x^2+a)^(1/2))-A*x^2/c/(c*x^2+a)^(3/2)-2/3*A*a/c^2/(c*x^2+a)^(3/2)
```

maxima [A] time = 0.62, size = 102, normalized size = 1.29

$$-\frac{1}{3}\,Bx\left(\frac{3\,x^2}{\left(cx^2+a\right)^{\frac{3}{2}}c}+\frac{2\,a}{\left(cx^2+a\right)^{\frac{3}{2}}c^2}\right)-\frac{Ax^2}{\left(cx^2+a\right)^{\frac{3}{2}}c}-\frac{Bx}{3\,\sqrt{cx^2+a}\,c^2}+\frac{B\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{5}{2}}}-\frac{2\,Aa}{3\left(cx^2+a\right)^{\frac{3}{2}}c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*x*(3*x^2/((c*x^2 + a)^(3/2)*c) + 2*a/((c*x^2 + a)^(3/2)*c^2)) - A*x^
2/((c*x^2 + a)^(3/2)*c) - 1/3*B*x/(sqrt(c*x^2 + a)*c^2) + B*arcsinh(c*x/sqr
t(a*c))/c^(5/2) - 2/3*A*a/((c*x^2 + a)^(3/2)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [A] time = 15.98, size = 400, normalized size = 5.06

$$A\left(\begin{cases}-\frac{2a}{3ac^2\sqrt{a+cx^2}+3c^3x^2\sqrt{a+cx^2}}-\frac{3cx^2}{3ac^2\sqrt{a+cx^2}+3c^3x^2\sqrt{a+cx^2}} & \text{for } c\neq 0\\ \frac{x^4}{4a^{\frac{5}{2}}} & \text{otherwise}\end{cases}\right)+B\left(\frac{3a^{\frac{39}{2}}c^{11}\sqrt{1+\frac{cx^2}{a}}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1+\frac{cx^2}{a}}}+\frac{3a^{\frac{37}{2}}c^{12}x^2\sqrt{1+\frac{cx^2}{a}}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1+\frac{cx^2}{a}}}-\frac{3a^{19}c^{\frac{23}{2}}x}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1+\frac{cx^2}{a}}}-\frac{4a^{18}c^{\frac{25}{2}}x^3}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^2\sqrt{1+\frac{cx^2}{a}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*Piecewise((-2*a/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*x**2)
) - 3*c*x**2/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*x**2)), Ne
```

```
(c, 0)), (x**4/(4*a**(5/2)), True)) + B*(3*a**(39/2)*c**11*sqrt(1 + c*x**2/
a)*asinh(sqrt(c)*x/sqrt(a))/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a
**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)) + 3*a**(37/2)*c**12*x**2*sqrt(1
 + c*x**2/a)*asinh(sqrt(c)*x/sqrt(a))/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**
2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)) - 3*a**19*c**(23/2)*x
/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqr
t(1 + c*x**2/a)) - 4*a**18*c**(25/2)*x**3/(3*a**(39/2)*c**(27/2)*sqrt(1 + c
*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)))
```

3.376 $\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}-\frac{2B}{3c^2\sqrt{a+cx^2}}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {805, 261}

$$-\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}-\frac{2B}{3c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(x^2*(a*B - A*c*x))/(3*a*c*(a + c*x^2)^(3/2)) - (2*B)/(3*c^2*Sqrt[a + c*x^
2])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 805

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[(m*(c*d*f + a*e*g))/(2*a*c*(p + 1)), Int[(d + e*x)^(m
 - 1)*(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx &= -\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{(2B)\int \frac{x}{\left(a+cx^2\right)^{3/2}}\,dx}{3c}\\ &= -\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}-\frac{2B}{3c^2\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.83

$$\frac{-2a^2B-3aBcx^2+Ac^2x^3}{3ac^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (-2*a^2*B - 3*a*B*c*x^2 + A*c^2*x^3)/(3*a*c^2*(a + c*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.45, size = 44, normalized size = 0.83

$$\frac{-2a^2B - 3aBcx^2 + Ac^2x^3}{3ac^2\left(a + cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a + c*x^2)^(5/2),x]

[Out] (-2*a^2*B - 3*a*B*c*x^2 + A*c^2*x^3)/(3*a*c^2*(a + c*x^2)^(3/2))

fricas [A] time = 0.43, size = 63, normalized size = 1.19

$$\frac{\left(Ac^2x^3 - 3\,Bacx^2 - 2\,Ba^2\right)\sqrt{cx^2 + a}}{3\left(ac^4x^4 + 2\,a^2c^3x^2 + a^3c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")

[Out] 1/3*(A*c^2*x^3 - 3*B*a*c*x^2 - 2*B*a^2)*sqrt(c*x^2 + a)/(a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2)

giac [A] time = 0.20, size = 36, normalized size = 0.68

$$\frac{\left(\frac{Ax}{a} - \frac{3\,B}{c}\right)x^2 - \frac{2\,Ba}{c^2}}{3\left(cx^2 + a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")

[Out] 1/3*((A*x/a - 3*B/c)*x^2 - 2*B*a/c^2)/(c*x^2 + a)^(3/2)

maple [A] time = 0.06, size = 41, normalized size = 0.77

$$\frac{A\,c^2x^3 - 3Bac\,x^2 - 2B\,a^2}{3\left(c\,x^2 + a\right)^{\frac{3}{2}}a\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^2*(B*x+A)/(c*x^2+a)^(5/2),x)

[Out] 1/3*(A*c^2*x^3-3*B*a*c*x^2-2*B*a^2)/(c*x^2+a)^(3/2)/a/c^2

maxima [A] time = 0.58, size = 70, normalized size = 1.32

$$-\frac{Bx^2}{\left(cx^2 + a\right)^{\frac{3}{2}}c} - \frac{Ax}{3\left(cx^2 + a\right)^{\frac{3}{2}}c} + \frac{Ax}{3\sqrt{cx^2 + a}\,ac} - \frac{2\,Ba}{3\left(cx^2 + a\right)^{\frac{3}{2}}c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")

[Out] -B*x^2/((c*x^2 + a)^(3/2)*c) - 1/3*A*x/((c*x^2 + a)^(3/2)*c) + 1/3*A*x/(sqrt(c*x^2 + a)*a*c) - 2/3*B*a/((c*x^2 + a)^(3/2)*c^2)

mupad [B] time = 1.13, size = 51, normalized size = 0.96

$$\frac{B\,a^2-3\,B\,a\,\left(c\,x^2+a\right)+A\,c\,x\,\left(c\,x^2+a\right)-A\,a\,c\,x}{3\,a\,c^2\,{\left(c\,x^2+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] (B*a^2 - 3*B*a*(a + c*x^2) + A*c*x*(a + c*x^2) - A*a*c*x)/(3*a*c^2*(a + c*x
^2)^(3/2))
```

sympy [B] time = 13.69, size = 141, normalized size = 2.66

$$\frac{Ax^3}{3a^{\frac{5}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{3}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}+B\left(\begin{cases}-\frac{2a}{3ac^2\sqrt{a+cx^2}+3c^3x^2\sqrt{a+cx^2}}-\frac{3cx^2}{3ac^2\sqrt{a+cx^2}+3c^3x^2\sqrt{a+cx^2}} & \text{for } c\neq 0\\ \frac{x^4}{4a^{\frac{5}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*x**3/(3*a**(5/2)*sqrt(1 + c*x**2/a) + 3*a**(3/2)*c*x**2*sqrt(1 + c*x**2/a
)) + B*Piecewise((-2*a/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*
x**2)) - 3*c*x**2/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*x**2)
), Ne(c, 0)), (x**4/(4*a**(5/2)), True))
```

3.377 $\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{5/2}} dx$

Optimal. Leaf size=50

$$\frac{-A-Bx}{3c\left(a+cx^2\right)^{3/2}}+\frac{Bx}{3ac\sqrt{a+cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 47, normalized size of antiderivative = 0.94, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {778, 191}

$$\frac{Bx}{3ac\sqrt{a+cx^2}}-\frac{A+Bx}{3c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(A + B*x)/(3*c*(a + c*x^2)^(3/2)) + (B*x)/(3*a*c*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{5/2}} dx &= -\frac{A+Bx}{3c\left(a+cx^2\right)^{3/2}}+\frac{B\int \frac{1}{\left(a+cx^2\right)^{3/2}} dx}{3c}\\ &= -\frac{A+Bx}{3c\left(a+cx^2\right)^{3/2}}+\frac{Bx}{3ac\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.64

$$\frac{Bcx^3-aA}{3ac\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (-(a*A) + B*c*x^3)/(3*a*c*(a + c*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.42, size = 32, normalized size = 0.64

$$\frac{Bcx^3-aA}{3ac\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (-(a*A) + B*c*x^3)/(3*a*c*(a + c*x^2)^(3/2))
```

fricas [A] time = 0.43, size = 49, normalized size = 0.98

$$\frac{\left(Bcx^3 - Aa\right)\sqrt{cx^2 + a}}{3\left(ac^3x^4 + 2\,a^2c^2x^2 + a^3c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(B*c*x^3 - A*a)*sqrt(c*x^2 + a)/(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)
```

giac [A] time = 0.24, size = 26, normalized size = 0.52

$$\frac{\frac{Bx^3}{a} - \frac{A}{c}}{3\left(cx^2 + a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(B*x^3/a - A/c)/(c*x^2 + a)^(3/2)
```

maple [A] time = 0.05, size = 29, normalized size = 0.58

$$-\frac{-Bc\,x^3 + aA}{3\left(c\,x^2 + a\right)^{\frac{3}{2}} ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/3*(-B*c*x^3+A*a)/(c*x^2+a)^(3/2)/a/c
```

maxima [A] time = 0.55, size = 51, normalized size = 1.02

$$-\frac{Bx}{3\left(cx^2 + a\right)^{\frac{3}{2}}c} + \frac{Bx}{3\sqrt{cx^2 + a}\,ac} - \frac{A}{3\left(cx^2 + a\right)^{\frac{3}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*x/((c*x^2 + a)^(3/2)*c) + 1/3*B*x/(sqrt(c*x^2 + a)*a*c) - 1/3*A/((c*
x^2 + a)^(3/2)*c)
```

mupad [B] time = 1.09, size = 34, normalized size = 0.68

$$\frac{B\,x^3}{3\,a\left(c\,x^2 + a\right)^{3/2}} - \frac{A}{3\,c\left(c\,x^2 + a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] (B*x^3)/(3*a*(a + c*x^2)^(3/2)) - A/(3*c*(a + c*x^2)^(3/2))
```

sympy [A] time = 13.25, size = 95, normalized size = 1.90

$$A\left(\begin{cases} -\frac{1}{3ac\sqrt{a+cx^2}+3c^2x^2\sqrt{a+cx^2}} & \text{for } c \neq 0 \\ \frac{x^2}{2a^{\frac{5}{2}}} & \text{otherwise} \end{cases}\right) + \frac{Bx^3}{3a^{\frac{5}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{3}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*Piecewise((-1/(3*a*c*sqrt(a + c*x**2) + 3*c**2*x**2*sqrt(a + c*x**2)), Ne
(c, 0)), (x**2/(2*a**(5/2)), True)) + B*x**3/(3*a**(5/2)*sqrt(1 + c*x**2/a)
 + 3*a**(3/2)*c*x**2*sqrt(1 + c*x**2/a))
```

3.378 $\int \frac{A+Bx}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=51

$$\frac{2Ax}{3a^2\sqrt{a+cx^2}}+\frac{Acx-aB}{3ac\left(a+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.01, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {639, 191}

$$\frac{2Ax}{3a^2\sqrt{a+cx^2}}-\frac{aB-Acx}{3ac\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^(5/2),x]
```

```
[Out] -(a*B - A*c*x)/(3*a*c*(a + c*x^2)^(3/2)) + (2*A*x)/(3*a^2*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+cx^2\right)^{5/2}}\,dx &= -\frac{aB-Acx}{3ac\left(a+cx^2\right)^{3/2}}+\frac{(2A)\int \frac{1}{\left(a+cx^2\right)^{3/2}}\,dx}{3a}\\ &= -\frac{aB-Acx}{3ac\left(a+cx^2\right)^{3/2}}+\frac{2Ax}{3a^2\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.84

$$\frac{-a^2B+3aAcx+2Ac^2x^3}{3a^2c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^(5/2),x]
```

```
[Out] (-(a^2*B) + 3*a*A*c*x + 2*A*c^2*x^3)/(3*a^2*c*(a + c*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.41, size = 43, normalized size = 0.84

$$\frac{-a^2B+3aAcx+2Ac^2x^3}{3a^2c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + c*x^2)^(5/2),x]
```

```
[Out] (-(a^2*B) + 3*a*A*c*x + 2*A*c^2*x^3)/(3*a^2*c*(a + c*x^2)^(3/2))
```

fricas [A] time = 0.42, size = 62, normalized size = 1.22

$$\frac{\left(2\,Ac^{2}x^{3} + 3\,Aacx - Ba^{2}\right)\sqrt{cx^{2} + a}}{3\,\left(a^{2}c^{3}x^{4} + 2\,a^{3}c^{2}x^{2} + a^{4}c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(2*A*c^2*x^3 + 3*A*a*c*x - B*a^2)*sqrt(c*x^2 + a)/(a^2*c^3*x^4 + 2*a^3*
c^2*x^2 + a^4*c)
```

giac [A] time = 0.22, size = 37, normalized size = 0.73

$$\frac{\left(\frac{2\,Acx^{2}}{a^{2}} + \frac{3\,A}{a}\right)x - \frac{B}{c}}{3\,\left(cx^{2} + a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((2*A*c*x^2/a^2 + 3*A/a)*x - B/c)/(c*x^2 + a)^(3/2)
```

maple [A] time = 0.04, size = 40, normalized size = 0.78

$$\frac{2A\,c^{2}x^{3} + 3Aacx - B\,a^{2}}{3\left(c\,x^{2} + a\right)^{\frac{3}{2}}\,a^{2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/3*(2*A*c^2*x^3+3*A*a*c*x-B*a^2)/(c*x^2+a)^(3/2)/a^2/c
```

maxima [A] time = 0.66, size = 48, normalized size = 0.94

$$\frac{2\,Ax}{3\,\sqrt{cx^{2} + a}\,a^{2}} + \frac{Ax}{3\,\left(cx^{2} + a\right)^{\frac{3}{2}}a} - \frac{B}{3\,\left(cx^{2} + a\right)^{\frac{3}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*A*x/(sqrt(c*x^2 + a)*a^2) + 1/3*A*x/((c*x^2 + a)^(3/2)*a) - 1/3*B/((c*x
^2 + a)^(3/2)*c)
```

mupad [B] time = 1.09, size = 41, normalized size = 0.80

$$\frac{2\,A\,c\,x\,\left(c\,x^2 + a\right) - B\,a^2 + A\,a\,c\,x}{3\,a^2\,c\,{\left(c\,x^2 + a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^(5/2),x)
```

```
[Out] (2*A*c*x*(a + c*x^2) - B*a^2 + A*a*c*x)/(3*a^2*c*(a + c*x^2)^(3/2))
```

sympy [B] time = 12.46, size = 146, normalized size = 2.86

$$A\left(\frac{3ax}{3a^{\frac{7}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{5}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}+\frac{2cx^3}{3a^{\frac{7}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{5}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}\right)+B\left(\begin{cases}-\frac{1}{3ac\sqrt{a+cx^2}+3c^2x^2\sqrt{a+cx^2}} & \text{for } c\neq 0\\ \frac{x^2}{2a^{\frac{5}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(3*a*x/(3*a**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 + c*x**2
/a)) + 2*c*x**3/(3*a**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 +
 c*x**2/a))) + B*Piecewise((-1/(3*a*c*sqrt(a + c*x**2) + 3*c**2*x**2*sqrt(a
 + c*x**2)), Ne(c, 0)), (x**2/(2*a**(5/2)), True))
```

3.379 $\int \frac{A+Bx}{x\left(a+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=76

$$-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.06, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 12, 266, 63, 208}

$$\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*(a + c*x^2)^(3/2)) + (3*A + 2*B*x)/(3*a^2*Sqrt[a + c*x^2]) -
 (A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x\left(a+cx^2\right)^{5/2}}\,dx &= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}-\frac{\int \frac{-3aAc-2aBcx}{x\left(a+cx^2\right)^{3/2}}\,dx}{3a^2c}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{\int \frac{3a^2Ac^2}{x\sqrt{a+cx^2}}\,dx}{3a^4c^2}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a^2}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{2a^2}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{a^2c}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 69, normalized size = 0.91

$$
\frac{a(4A+3Bx)+cx^2(3A+2Bx)}{3a^2\left(a+cx^2\right)^{3/2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + c*x^2)^(5/2)),x]
```

```
[Out] (c*x^2*(3*A + 2*B*x) + a*(4*A + 3*B*x))/(3*a^2*(a + c*x^2)^(3/2)) - (A*ArcT
anh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(5/2)
```

IntegrateAlgebraic [A] time = 0.53, size = 83, normalized size = 1.09

$$
\frac{2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{4aA+3aBx+3Acx^2+2Bcx^3}{3a^2\left(a+cx^2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a + c*x^2)^(5/2)),x]
```

```
[Out] (4*a*A + 3*a*B*x + 3*A*c*x^2 + 2*B*c*x^3)/(3*a^2*(a + c*x^2)^(3/2)) + (2*A*
ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqrt[a]])/a^(5/2)
```

fricas [A] time = 0.45, size = 239, normalized size = 3.14

$$
\left[\frac{3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{a}\,\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(2\,Bacx^3+3\,Aacx^2+3\,Ba^2x+4\,Aa^2\right)\sqrt{cx^2+a}}{6\left(a^3c^2x^4+2\,a^4cx^2+a^5\right)},\ \frac{3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{-a}\,\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+\left(2\,Bacx^3+3\,Aacx^2+3\,Ba^2x+4\,Aa^2\right)\sqrt{cx^2+a}}{3\left(a^3c^2x^4+2\,a^4cx^2+a^5\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*x^
2 + a)*sqrt(a) + 2*a)/x^2) + 2*(2*B*a*c*x^3 + 3*A*a*c*x^2 + 3*B*a^2*x + 4*A
*a^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^4 + 2*a^4*c*x^2 + a^5), 1/3*(3*(A*c^2*x^4
 + 2*A*a*c*x^2 + A*a^2)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (2*B*a*
c*x^3 + 3*A*a*c*x^2 + 3*B*a^2*x + 4*A*a^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^4 +
2*a^4*c*x^2 + a^5)]
```

giac [A] time = 0.20, size = 82, normalized size = 1.08

$$\frac{\left(\left(\frac{2\,Bcx}{a^2}+\frac{3\,Ac}{a^2}\right)x+\frac{3\,B}{a}\right)x+\frac{4\,A}{a}}{3\left(cx^2+a\right)^{\frac{3}{2}}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(((2*B*c*x/a^2 + 3*A*c/a^2)*x + 3*B/a)*x + 4*A/a)/(c*x^2 + a)^(3/2) + 2
*A*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2)
```

maple [A] time = 0.05, size = 92, normalized size = 1.21

$$\frac{Bx}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a}+\frac{A}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a}+\frac{2Bx}{3\sqrt{c\,x^2+a}\;a^2}-\frac{A\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{a^{\frac{5}{2}}}+\frac{A}{\sqrt{c\,x^2+a}\;a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(5/2)/x,x)
```

```
[Out] 1/3*B*x/a/(c*x^2+a)^(3/2)+2/3*B/a^2*x/(c*x^2+a)^(1/2)+1/3*A/a/(c*x^2+a)^(3/
2)+A/a^2/(c*x^2+a)^(1/2)-A/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.60, size = 80, normalized size = 1.05

$$\frac{2\,Bx}{3\sqrt{cx^2+a}\,a^2}+\frac{Bx}{3\left(cx^2+a\right)^{\frac{3}{2}}a}-\frac{A\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{5}{2}}}+\frac{A}{\sqrt{cx^2+a}\,a^2}+\frac{A}{3\left(cx^2+a\right)^{\frac{3}{2}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*x/(sqrt(c*x^2 + a)*a^2) + 1/3*B*x/((c*x^2 + a)^(3/2)*a) - A*arcsinh(a
/(sqrt(a*c)*abs(x)))/a^(5/2) + A/(sqrt(c*x^2 + a)*a^2) + 1/3*A/((c*x^2 + a)
^(3/2)*a)
```

mupad [B] time = 1.51, size = 80, normalized size = 1.05

$$\frac{\frac{A}{3\,a}+\frac{A\left(c\,x^2+a\right)}{a^2}}{\left(c\,x^2+a\right)^{3/2}}+\frac{2\,B\,x\,\left(c\,x^2+a\right)+B\,a\,x}{3\,a^2\left(c\,x^2+a\right)^{3/2}}-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{a^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + c*x^2)^(5/2)),x)
```

```
[Out] (A/(3*a) + (A*(a + c*x^2))/a^2)/(a + c*x^2)^(3/2) + (2*B*x*(a + c*x^2) + B*
a*x)/(3*a^2*(a + c*x^2)^(3/2)) - (A*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(5/
2)
```

sympy [B] time = 25.67, size = 840, normalized size = 11.05

$$A\left(\frac{8a^7\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{3a^7\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{6a^7\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{14a^6cx^2\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{9a^6cx^2\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{18a^6cx^2\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{6a^5c^2x^4\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{9a^5c^2x^4\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{18a^5c^2x^4\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{3a^4c^3x^6\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{6a^4c^3x^6\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}\right)+B\left(\frac{3ax}{3a^{\frac{7}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{5}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}+\frac{2cx^3}{3a^{\frac{7}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{5}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(8*a**7*sqrt(1 + c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15
/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 3*a**7*log(c*x**2/a)/(6*a**(19/2)
+ 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 6
*a**7*log(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a
**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 14*a**6*c*x**2*sqrt(1 + c*x**
2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13
/2)*c**3*x**6) + 9*a**6*c*x**2*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*
x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**6*c*x**2*log
(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*
c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 6*a**5*c**2*x**4*sqrt(1 + c*x**2/a)/(6
*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**
3*x**6) + 9*a**5*c**2*x**4*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2
 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**5*c**2*x**4*log(
sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c
**2*x**4 + 6*a**(13/2)*c**3*x**6) + 3*a**4*c**3*x**6*log(c*x**2/a)/(6*a**(1
9/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6
) - 6*a**4*c**3*x**6*log(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2
)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6)) + B*(3*a*x/(3*a
**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 + c*x**2/a)) + 2*c*x*
*3/(3*a**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 + c*x**2/a)))
```

3.380 $\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=104

$$-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}+\frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.08, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 807, 266, 63, 208}

$$\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*x*(a + c*x^2)^(3/2)) + (4*A + 3*B*x)/(3*a^2*x*Sqrt[a + c*x^2
]) - (8*A*Sqrt[a + c*x^2])/(3*a^3*x) - (B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])
/a^(5/2)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
```

```
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{5/2}}\,dx &= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}-\frac{\int \frac{-4aAc-3aBcx}{x^2\left(a+cx^2\right)^{3/2}}\,dx}{3a^2c}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}+\frac{\int \frac{8a^2Ac^2+3a^2Bc^2x}{x^2\sqrt{a+cx^2}}\,dx}{3a^4c^2}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{B\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a^2}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{B\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{2a^2}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{B\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{a^2c}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 95, normalized size = 0.91

$$\frac{a^2(4Bx-3A)+3acx^2(Bx-4A)-3\sqrt{a}\,Bx\left(a+cx^2\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-8Ac^2x^4}{3a^3x\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + c*x^2)^(5/2)),x]
```

```
[Out] (-8*A*c^2*x^4 + 3*a*c*x^2*(-4*A + B*x) + a^2*(-3*A + 4*B*x) - 3*Sqrt[a]*B*x
*(a + c*x^2)^(3/2)*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(3*a^3*x*(a + c*x^2)^(
3/2))
```

IntegrateAlgebraic [A] time = 0.58, size = 101, normalized size = 0.97

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{-3a^2A+4a^2Bx-12aAcx^2+3aBcx^3-8Ac^2x^4}{3a^3x\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a + c*x^2)^(5/2)),x]
```

```
[Out] (-3*a^2*A + 4*a^2*B*x - 12*a*A*c*x^2 + 3*a*B*c*x^3 - 8*A*c^2*x^4)/(3*a^3*x*
(a + c*x^2)^(3/2)) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + c*x^2]/Sqr
t[a]])/a^(5/2)
```

fricas [A] time = 0.46, size = 264, normalized size = 2.54

$$\left[\frac{3\left(Bc^{2}x^{5}+2\,Bacx^{3}+Ba^{2}x\right)\sqrt{a}\,\log\left(-\frac{cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)-2\left(8\,Ac^{2}x^{4}-3\,Bacx^{3}+12\,Aacx^{2}-4\,Ba^{2}x+3\,Aa^{2}\right)\sqrt{cx^{2}+a}}{6\left(a^{3}c^{2}x^{5}+2\,a^{4}cx^{3}+a^{5}x\right)},\ \frac{3\left(Bc^{2}x^{5}+2\,Bacx^{3}+Ba^{2}x\right)\sqrt{-a}\,\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^{2}+a}}\right)-\left(8\,Ac^{2}x^{4}-3\,Bacx^{3}+12\,Aacx^{2}-4\,Ba^{2}x+3\,Aa^{2}\right)\sqrt{cx^{2}+a}}{3\left(a^{3}c^{2}x^{5}+2\,a^{4}cx^{3}+a^{5}x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(B*c^2*x^5 + 2*B*a*c*x^3 + B*a^2*x)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*
x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(8*A*c^2*x^4 - 3*B*a*c*x^3 + 12*A*a*c*x^2
- 4*B*a^2*x + 3*A*a^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)
, 1/3*(3*(B*c^2*x^5 + 2*B*a*c*x^3 + B*a^2*x)*sqrt(-a)*arctan(sqrt(-a)/sqrt(
c*x^2 + a)) - (8*A*c^2*x^4 - 3*B*a*c*x^3 + 12*A*a*c*x^2 - 4*B*a^2*x + 3*A*a
^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)]
```

giac [A] time = 0.21, size = 119, normalized size = 1.14

$$-\frac{\left(\left(\frac{5\,Ac^{2}x}{a^{3}}-\frac{3\,Bc}{a^{2}}\right)x+\frac{6\,Ac}{a^{2}}\right)x-\frac{4\,B}{a}}{3\left(cx^{2}+a\right)^{\frac{3}{2}}}+\frac{2\,B\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^{2}}+\frac{2\,A\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^{2}+a}\right)^{2}-a\right)a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(((5*A*c^2*x/a^3 - 3*B*c/a^2)*x + 6*A*c/a^2)*x - 4*B/a)/(c*x^2 + a)^(3
/2) + 2*B*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) +
2*A*sqrt(c)/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)*a^2)
```

maple [A] time = 0.06, size = 112, normalized size = 1.08

$$-\frac{4Acx}{3\left(c\,x^{2}+a\right)^{\frac{3}{2}}a^{2}}-\frac{8Acx}{3\sqrt{c\,x^{2}+a}\,a^{3}}+\frac{B}{3\left(c\,x^{2}+a\right)^{\frac{3}{2}}a}-\frac{B\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{a^{\frac{5}{2}}}-\frac{A}{\left(c\,x^{2}+a\right)^{\frac{3}{2}}ax}+\frac{B}{\sqrt{c\,x^{2}+a}\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+a)^(5/2),x)
```

```
[Out] -A/a/x/(c*x^2+a)^(3/2)-4/3*A*c/a^2*x/(c*x^2+a)^(3/2)-8/3*A*c/a^3*x/(c*x^2+a
)^(1/2)+1/3*B/a/(c*x^2+a)^(3/2)+B/a^2/(c*x^2+a)^(1/2)-B/a^(5/2)*ln((2*a+2*(
c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.57, size = 100, normalized size = 0.96

$$-\frac{8\,Acx}{3\sqrt{cx^{2}+a}\,a^{3}}-\frac{4\,Acx}{3\left(cx^{2}+a\right)^{\frac{3}{2}}a^{2}}-\frac{B\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{5}{2}}}+\frac{B}{\sqrt{cx^{2}+a}\,a^{2}}+\frac{B}{3\left(cx^{2}+a\right)^{\frac{3}{2}}a}-\frac{A}{\left(cx^{2}+a\right)^{\frac{3}{2}}ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -8/3*A*c*x/(sqrt(c*x^2 + a)*a^3) - 4/3*A*c*x/((c*x^2 + a)^(3/2)*a^2) - B*ar
csinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) + B/(sqrt(c*x^2 + a)*a^2) + 1/3*B/((c*x
^2 + a)^(3/2)*a) - A/((c*x^2 + a)^(3/2)*a*x)
```

mupad [B] time = 1.69, size = 96, normalized size = 0.92

$$\frac{\frac{B}{3\,a}+\frac{B\left(c\,x^{2}+a\right)}{a^{2}}}{\left(c\,x^{2}+a\right)^{3/2}}-\frac{B\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{A\,a^{2}-8\,A\left(c\,x^{2}+a\right)^{2}+4\,A\,a\,\left(c\,x^{2}+a\right)}{3\,a^{3}\,x\left(c\,x^{2}+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + c*x^2)^(5/2)),x)
```

```
[Out] (B/(3*a) + (B*(a + c*x^2))/a^2)/(a + c*x^2)^(3/2) - (B*atanh((a + c*x^2)^(1
/2)/a^(1/2)))/a^(5/2) + (A*a^2 - 8*A*(a + c*x^2)^2 + 4*A*a*(a + c*x^2))/(3*
a^3*x*(a + c*x^2)^(3/2))
```

sympy [B] time = 22.26, size = 910, normalized size = 8.75

$$A\left(-\frac{3a^2c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4+6a^4c^5x^2+3a^3c^6x^4}-\frac{12ac^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4+6a^4c^5x^2+3a^3c^6x^4}-\frac{8c^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4+6a^4c^5x^2+3a^3c^6x^4}\right)+B\left(\frac{8a^7\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{3a^7\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{6a^7\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{14a^6cx^2\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{9a^6cx^2\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{18a^6cx^2\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{6a^5c^2x^4\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{9a^5c^2x^4\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{18a^5c^2x^4\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{3a^4c^3x^6\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{6a^4c^3x^6\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(-3*a**2*c**(9/2)*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4 + 6*a**4*c**5*x**2 +
3*a**3*c**6*x**4) - 12*a*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4 +
 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4) - 8*c**(13/2)*x**4*sqrt(a/(c*x**2) +
1)/(3*a**5*c**4 + 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4)) + B*(8*a**7*sqrt(1
+ c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6
*a**(13/2)*c**3*x**6) + 3*a**7*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*
x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 6*a**7*log(sqrt(1
+ c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**
4 + 6*a**(13/2)*c**3*x**6) + 14*a**6*c*x**2*sqrt(1 + c*x**2/a)/(6*a**(19/2)
 + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) +
9*a**6*c*x**2*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/
2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**6*c*x**2*log(sqrt(1 + c*x**2/
a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**
(13/2)*c**3*x**6) + 6*a**5*c**2*x**4*sqrt(1 + c*x**2/a)/(6*a**(19/2) + 18*a
**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 9*a**5*
c**2*x**4*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c
**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**5*c**2*x**4*log(sqrt(1 + c*x**2/a
) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(
13/2)*c**3*x**6) + 3*a**4*c**3*x**6*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/
2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 6*a**4*c**3*x
**6*log(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**
(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6))
```

3.381 $\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=129

$$\frac{5Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{7/2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{8B\sqrt{a+cx^2}}{3a^3x}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}+\frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.11, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {823, 835, 807, 266, 63, 208}

$$\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}+\frac{5Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{7/2}}-\frac{8B\sqrt{a+cx^2}}{3a^3x}+\frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*x^2*(a + c*x^2)^(3/2)) + (5*A + 4*B*x)/(3*a^2*x^2*Sqrt[a + c
*x^2]) - (5*A*Sqrt[a + c*x^2])/(2*a^3*x^2) - (8*B*Sqrt[a + c*x^2])/(3*a^3*x
) + (5*A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(7/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
```

```
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{5/2}}\,dx = \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} - \frac{\int \frac{-5aAc-4aBcx}{x^3\left(a+cx^2\right)^{3/2}}\,dx}{3a^2c}$$

$$= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} + \frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}} + \frac{\int \frac{15a^2Ac^2+8a^2Bc^2x}{x^3\sqrt{a+cx^2}}\,dx}{3a^4c^2}$$

$$= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} + \frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3x^2} - \frac{\int \frac{-16a^3Bc^2+15a^2Ac^3x}{x^2\sqrt{a+cx^2}}\,dx}{6a^5c^2}$$

$$= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} + \frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3x^2} - \frac{8B\sqrt{a+cx^2}}{3a^3x} - \frac{(5Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a^3}$$

$$= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} + \frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3x^2} - \frac{8B\sqrt{a+cx^2}}{3a^3x} - \frac{(5Ac)\,\mathrm{Subst}\left(\int \frac{}{x\sqrt{a}}\right.}{4a^3}$$

$$= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} + \frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3x^2} - \frac{8B\sqrt{a+cx^2}}{3a^3x} - \frac{(5A)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+}\right.}{2a}$$

$$= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}} + \frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3x^2} - \frac{8B\sqrt{a+cx^2}}{3a^3x} + \frac{5Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right.}{2a^{7/2}}$$

Mathematica [A] time = 0.14, size = 106, normalized size = 0.82

$$\frac{-\frac{3a^3(A+2Bx)}{x^2} - 4a^2c(5A+6Bx) - ac^2x^2(15A+16Bx) + \frac{15Ac\left(a+cx^2\right)^2\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{\sqrt{\frac{cx^2}{a}+1}}}{6a^4\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + c*x^2)^(5/2)),x]
```

```
[Out] ((-3*a^3*(A + 2*B*x))/x^2 - 4*a^2*c*(5*A + 6*B*x) - a*c^2*x^2*(15*A + 16*B*
x) + (15*A*c*(a + c*x^2)^2*ArcTanh[Sqrt[1 + (c*x^2)/a]])/Sqrt[1 + (c*x^2)/a
])/(6*a^4*(a + c*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.68, size = 111, normalized size = 0.86

$$\frac{-3a^2A-6a^2Bx-20aAcx^2-24aBcx^3-15Ac^2x^4-16Bc^2x^5}{6a^3x^2\left(a+cx^2\right)^{3/2}}-\frac{5Ac\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a + c*x^2)^(5/2)),x]
```

```
[Out] (-3*a^2*A - 6*a^2*B*x - 20*a*A*c*x^2 - 24*a*B*c*x^3 - 15*A*c^2*x^4 - 16*B*c
^2*x^5)/(6*a^3*x^2*(a + c*x^2)^(3/2)) - (5*A*c*ArcTanh[(Sqrt[c]*x)/Sqrt[a]
- Sqrt[a + c*x^2]/Sqrt[a]])/a^(7/2)
```

fricas [A] time = 0.45, size = 307, normalized size = 2.38

$$\left[\frac{15\left(Ac^3x^6+2\,Aac^2x^4+Aa^2cx^2\right)\sqrt{a}\log\left(-\frac{cx^2+2\sqrt{cx^2+a}\sqrt{a}+2\,a}{x^2}\right)-2\left(16\,Bac^2x^5+15\,Aac^2x^4+24\,Ba^2cx^3+20\,Aa^2cx^2+6\,Ba^3x+3\,Aa^3\right)\sqrt{cx^2+a}}{12\left(a^4c^2x^6+2\,a^5cx^4+a^6x^2\right)},\ -\frac{15\left(Ac^3x^6+2\,Aac^2x^4+Aa^2cx^2\right)\sqrt{-a}\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+\left(16\,Bac^2x^5+15\,Aac^2x^4+24\,Ba^2cx^3+20\,Aa^2cx^2+6\,Ba^3x+3\,Aa^3\right)\sqrt{cx^2+a}}{6\left(a^4c^2x^6+2\,a^5cx^4+a^6x^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*(15*(A*c^3*x^6 + 2*A*a*c^2*x^4 + A*a^2*c*x^2)*sqrt(a)*log(-(c*x^2 + 2
*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(16*B*a*c^2*x^5 + 15*A*a*c^2*x^4 +
 24*B*a^2*c*x^3 + 20*A*a^2*c*x^2 + 6*B*a^3*x + 3*A*a^3)*sqrt(c*x^2 + a))/(a
^4*c^2*x^6 + 2*a^5*c*x^4 + a^6*x^2), -1/6*(15*(A*c^3*x^6 + 2*A*a*c^2*x^4 +
A*a^2*c*x^2)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (16*B*a*c^2*x^5 +
15*A*a*c^2*x^4 + 24*B*a^2*c*x^3 + 20*A*a^2*c*x^2 + 6*B*a^3*x + 3*A*a^3)*sqr
t(c*x^2 + a))/(a^4*c^2*x^6 + 2*a^5*c*x^4 + a^6*x^2)]
```

giac [A] time = 0.22, size = 197, normalized size = 1.53

$$-\frac{\left(\left(\frac{5\,Bc^2x}{a^3}+\frac{6\,Ac^2}{a^3}\right)x+\frac{6\,Bc}{a^2}\right)x+\frac{7\,Ac}{a^2}}{3\left(cx^2+a\right)^{\frac{3}{2}}}-\frac{5\,Ac\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^3}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^3Ac+2\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2Ba\sqrt{c}+\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)Aac-2\,Ba^2\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)^2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(((5*B*c^2*x/a^3 + 6*A*c^2/a^3)*x + 6*B*c/a^2)*x + 7*A*c/a^2)/(c*x^2 +
 a)^(3/2) - 5*A*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)
*a^3) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*c + 2*(sqrt(c)*x - sqrt(c*x^2 +
a))^2*B*a*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2 + a))*A*a*c - 2*B*a^2*sqrt(c))/
(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2*a^3)
```

maple [A] time = 0.06, size = 134, normalized size = 1.04

$$-\frac{4Bcx}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a^2}-\frac{5Ac}{6\left(c\,x^2+a\right)^{\frac{3}{2}}a^2}-\frac{8Bcx}{3\sqrt{c\,x^2+a}\,a^3}+\frac{5Ac\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{7}{2}}}-\frac{5Ac}{2\sqrt{c\,x^2+a}\,a^3}-\frac{B}{\left(c\,x^2+a\right)^{\frac{3}{2}}ax}-\frac{A}{2\left(c\,x^2+a\right)^{\frac{3}{2}}a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/2*A/a/x^2/(c*x^2+a)^(3/2)-5/6*A*c/a^2/(c*x^2+a)^(3/2)-5/2*A*c/a^3/(c*x^2
+a)^(1/2)+5/2*A*c/a^(7/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-B/a/x/(c*x^
2+a)^(3/2)-4/3*B*c/a^2*x/(c*x^2+a)^(3/2)-8/3*B*c/a^3*x/(c*x^2+a)^(1/2)
```

maxima [A] time = 0.56, size = 122, normalized size = 0.95

$$-\frac{8\,Bcx}{3\,\sqrt{cx^2+a}\,a^3}-\frac{4\,Bcx}{3\,\left(cx^2+a\right)^{\frac{3}{2}}a^2}+\frac{5\,Ac\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{7}{2}}}-\frac{5\,Ac}{2\,\sqrt{cx^2+a}\,a^3}-\frac{5\,Ac}{6\,\left(cx^2+a\right)^{\frac{3}{2}}a^2}-\frac{B}{\left(cx^2+a\right)^{\frac{3}{2}}ax}-\frac{A}{2\,\left(cx^2+a\right)^{\frac{3}{2}}ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -8/3*B*c*x/(sqrt(c*x^2 + a)*a^3) - 4/3*B*c*x/((c*x^2 + a)^(3/2)*a^2) + 5/2*
A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(7/2) - 5/2*A*c/(sqrt(c*x^2 + a)*a^3) -
 5/6*A*c/((c*x^2 + a)^(3/2)*a^2) - B/((c*x^2 + a)^(3/2)*a*x) - 1/2*A/((c*x^
2 + a)^(3/2)*a*x^2)
```

mupad [B] time = 1.73, size = 123, normalized size = 0.95

$$\frac{B\,a^2-8\,B\,\left(c\,x^2+a\right)^2+4\,B\,a\,\left(c\,x^2+a\right)}{3\,a^3\,x\,\left(c\,x^2+a\right)^{3/2}}-\frac{10\,A\,c}{3\,a^2\,\left(c\,x^2+a\right)^{3/2}}-\frac{A}{2\,a\,x^2\,\left(c\,x^2+a\right)^{3/2}}+\frac{5\,A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{7/2}}-\frac{5\,A\,c^2\,x^2}{2\,a^3\,\left(c\,x^2+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + c*x^2)^(5/2)),x)
```

```
[Out] (B*a^2 - 8*B*(a + c*x^2)^2 + 4*B*a*(a + c*x^2))/(3*a^3*x*(a + c*x^2)^(3/2))
 - (10*A*c)/(3*a^2*(a + c*x^2)^(3/2)) - A/(2*a*x^2*(a + c*x^2)^(3/2)) + (5*
A*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(7/2)) - (5*A*c^2*x^2)/(2*a^3*(a
 + c*x^2)^(3/2))
```

sympy [B] time = 22.82, size = 1034, normalized size = 8.02

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(-6*a**17*sqrt(1 + c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 3
6*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 46*a**16*c*x**2*sqrt(1 +
c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6
 + 12*a**(33/2)*c**3*x**8) - 15*a**16*c*x**2*log(c*x**2/a)/(12*a**(39/2)*x*
*2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8)
 + 30*a**16*c*x**2*log(sqrt(1 + c*x**2/a) + 1)/(12*a**(39/2)*x**2 + 36*a**(
37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 70*a**15*
c**2*x**4*sqrt(1 + c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*
a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 45*a**15*c**2*x**4*log(c*x*
*2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 1
2*a**(33/2)*c**3*x**8) + 90*a**15*c**2*x**4*log(sqrt(1 + c*x**2/a) + 1)/(12
*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/
2)*c**3*x**8) - 30*a**14*c**3*x**6*sqrt(1 + c*x**2/a)/(12*a**(39/2)*x**2 +
36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 45
*a**14*c**3*x**6*log(c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 3
6*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) + 90*a**14*c**3*x**6*log(sq
rt(1 + c*x**2/a) + 1)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/
2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 15*a**13*c**4*x**8*log(c*x**2/a)/(
12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(3
3/2)*c**3*x**8) + 30*a**13*c**4*x**8*log(sqrt(1 + c*x**2/a) + 1)/(12*a**(39
/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3
*x**8)) + B*(-3*a**2*c**(9/2)*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4 + 6*a**4*c*
*5*x**2 + 3*a**3*c**6*x**4) - 12*a*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(3*a
**5*c**4 + 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4) - 8*c**(13/2)*x**4*sqrt(a/(
c*x**2) + 1)/(3*a**5*c**4 + 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4))
```

3.382 $\int \frac{d+ex}{\left(a+cx^2\right)^{7/2}} \, dx$

Optimal. Leaf size=71

$$\frac{8dx}{15a^3\sqrt{a+cx^2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}+\frac{cdx-ae}{5ac\left(a+cx^2\right)^{5/2}}$$

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {639, 192, 191}

$$\frac{8dx}{15a^3\sqrt{a+cx^2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}-\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2)^(7/2),x]
```

```
[Out] -(a*e - c*d*x)/(5*a*c*(a + c*x^2)^(5/2)) + (4*d*x)/(15*a^2*(a + c*x^2)^(3/2
)) + (8*d*x)/(15*a^3*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{\left(a+cx^2\right)^{7/2}} \, dx &= -\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}+\frac{(4d)\int \frac{1}{\left(a+cx^2\right)^{5/2}} \, dx}{5a}\\
&= -\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}+\frac{(8d)\int \frac{1}{\left(a+cx^2\right)^{3/2}} \, dx}{15a^2}\\
&= -\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}+\frac{8dx}{15a^3\sqrt{a+cx^2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 55, normalized size = 0.77

$$\frac{-3a^3e+15a^2cdx+20ac^2dx^3+8c^3dx^5}{15a^3c\left(a+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2)^(7/2),x]
```

```
[Out] (-3*a^3*e + 15*a^2*c*d*x + 20*a*c^2*d*x^3 + 8*c^3*d*x^5)/(15*a^3*c*(a + c*x
^2)^(5/2))
```

IntegrateAlgebraic [A] time = 0.54, size = 55, normalized size = 0.77

$$\frac{-3a^3e+15a^2cdx+20ac^2dx^3+8c^3dx^5}{15a^3c\left(a+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + c*x^2)^(7/2),x]
```

```
[Out] (-3*a^3*e + 15*a^2*c*d*x + 20*a*c^2*d*x^3 + 8*c^3*d*x^5)/(15*a^3*c*(a + c*x
^2)^(5/2))
```

fricas [A] time = 0.43, size = 85, normalized size = 1.20

$$\frac{\left(8\,c^3dx^5+20\,ac^2dx^3+15\,a^2cdx-3\,a^3e\right)\sqrt{cx^2+a}}{15\left(a^3c^4x^6+3\,a^4c^3x^4+3\,a^5c^2x^2+a^6c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 1/15*(8*c^3*d*x^5 + 20*a*c^2*d*x^3 + 15*a^2*c*d*x - 3*a^3*e)*sqrt(c*x^2 + a
)/(a^3*c^4*x^6 + 3*a^4*c^3*x^4 + 3*a^5*c^2*x^2 + a^6*c)
```

giac [A] time = 0.25, size = 53, normalized size = 0.75

$$\frac{\left(4\left(\frac{2\,c^2dx^2}{a^3}+\frac{5\,cd}{a^2}\right)x^2+\frac{15\,d}{a}\right)x-\frac{3\,e}{c}}{15\left(cx^2+a\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*((4*(2*c^2*d*x^2/a^3 + 5*c*d/a^2)*x^2 + 15*d/a)*x - 3*e/c)/(c*x^2 + a)
^(5/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.73

$$-\frac{-8c^3d\,x^5-20c^2d\,x^3a-15dx\,a^2c+3a^3e}{15\left(c\,x^2+a\right)^{\frac{5}{2}}a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a)^(7/2),x)
```

```
[Out] -1/15*(-8*c^3*d*x^5-20*a*c^2*d*x^3-15*a^2*c*d*x+3*a^3*e)/(c*x^2+a)^(5/2)/a^
3/c
```

maxima [A] time = 0.53, size = 64, normalized size = 0.90

$$\frac{8\,dx}{15\,\sqrt{cx^2+a}\,a^3}+\frac{4\,dx}{15\left(cx^2+a\right)^{\frac{3}{2}}a^2}+\frac{dx}{5\left(cx^2+a\right)^{\frac{5}{2}}a}-\frac{e}{5\left(cx^2+a\right)^{\frac{5}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(7/2),x, algorithm="maxima")
```

```
[Out] 8/15*d*x/(sqrt(c*x^2 + a)*a^3) + 4/15*d*x/((c*x^2 + a)^(3/2)*a^2) + 1/5*d*x
/((c*x^2 + a)^(5/2)*a) - 1/5*e/((c*x^2 + a)^(5/2)*c)
```

mupad [B] time = 1.18, size = 59, normalized size = 0.83

$$\frac{8\,c\,d\,x\,\left(c\,x^2+a\right)^2-3\,a^3\,e+3\,a^2\,c\,d\,x+4\,a\,c\,d\,x\,\left(c\,x^2+a\right)}{15\,a^3\,c\,\left(c\,x^2+a\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2)^(7/2),x)
```

```
[Out] (8*c*d*x*(a + c*x^2)^2 - 3*a^3*e + 3*a^2*c*d*x + 4*a*c*d*x*(a + c*x^2))/(15
*a^3*c*(a + c*x^2)^(5/2))
```

sympy [B] time = 23.37, size = 486, normalized size = 6.85

$$d\left(\frac{15a^5x}{15a^{\frac{17}{2}}\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{15}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{13}{2}}c^2x^4\sqrt{1+\frac{cx^2}{a}}+15a^{\frac{11}{2}}c^3x^6\sqrt{1+\frac{cx^2}{a}}}+\frac{35a^4cx^3}{15a^{\frac{17}{2}}\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{15}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{13}{2}}c^2x^4\sqrt{1+\frac{cx^2}{a}}+15a^{\frac{11}{2}}c^3x^6\sqrt{1+\frac{cx^2}{a}}}+\frac{28a^3c^2x^5}{15a^{\frac{17}{2}}\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{15}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{13}{2}}c^2x^4\sqrt{1+\frac{cx^2}{a}}+15a^{\frac{11}{2}}c^3x^6\sqrt{1+\frac{cx^2}{a}}}+\frac{8a^2c^3x^7}{15a^{\frac{17}{2}}\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{15}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{13}{2}}c^2x^4\sqrt{1+\frac{cx^2}{a}}+15a^{\frac{11}{2}}c^3x^6\sqrt{1+\frac{cx^2}{a}}}\right)+e\left(\begin{cases}-\frac{1}{5a^2c\sqrt{a+cx^2}+10ac^2x^2\sqrt{a+cx^2}+5c^3x^4\sqrt{a+cx^2}} & \text{for}\ c\neq 0\\ \frac{x^2}{2a^{\frac{7}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a)**(7/2),x)
```

```
[Out] d*(15*a**5*x/(15*a**(17/2)*sqrt(1 + c*x**2/a) + 45*a**(15/2)*c*x**2*sqrt(1
+ c*x**2/a) + 45*a**(13/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 15*a**(11/2)*c**3
*x**6*sqrt(1 + c*x**2/a)) + 35*a**4*c*x**3/(15*a**(17/2)*sqrt(1 + c*x**2/a)
 + 45*a**(15/2)*c*x**2*sqrt(1 + c*x**2/a) + 45*a**(13/2)*c**2*x**4*sqrt(1 +
 c*x**2/a) + 15*a**(11/2)*c**3*x**6*sqrt(1 + c*x**2/a)) + 28*a**3*c**2*x**5
/(15*a**(17/2)*sqrt(1 + c*x**2/a) + 45*a**(15/2)*c*x**2*sqrt(1 + c*x**2/a)
+ 45*a**(13/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 15*a**(11/2)*c**3*x**6*sqrt(1
 + c*x**2/a)) + 8*a**2*c**3*x**7/(15*a**(17/2)*sqrt(1 + c*x**2/a) + 45*a**(
15/2)*c*x**2*sqrt(1 + c*x**2/a) + 45*a**(13/2)*c**2*x**4*sqrt(1 + c*x**2/a)
 + 15*a**(11/2)*c**3*x**6*sqrt(1 + c*x**2/a))) + e*Piecewise((-1/(5*a**2*c*
sqrt(a + c*x**2) + 10*a*c**2*x**2*sqrt(a + c*x**2) + 5*c**3*x**4*sqrt(a + c
*x**2)), Ne(c, 0)), (x**2/(2*a**(7/2)), True))
```

3.383 $\int \frac{d+ex}{\left(a+cx^2\right)^{9/2}}\,dx$

Optimal. Leaf size=91

$$\frac{16dx}{35a^4\sqrt{a+cx^2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{cdx-ae}{7ac\left(a+cx^2\right)^{7/2}}$$

Rubi [A] time = 0.02, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {639, 192, 191}

$$\frac{16dx}{35a^4\sqrt{a+cx^2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}-\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2)^(9/2),x]
```

```
[Out] -(a*e - c*d*x)/(7*a*c*(a + c*x^2)^(7/2)) + (6*d*x)/(35*a^2*(a + c*x^2)^(5/2
)) + (8*d*x)/(35*a^3*(a + c*x^2)^(3/2)) + (16*d*x)/(35*a^4*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{\left(a+cx^2\right)^{9/2}}\,dx &= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{(6d)\int \frac{1}{\left(a+cx^2\right)^{7/2}}\,dx}{7a}\\
&= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{(24d)\int \frac{1}{\left(a+cx^2\right)^{5/2}}\,dx}{35a^2}\\
&= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{(16d)\int \frac{1}{\left(a+cx^2\right)^{3/2}}\,dx}{35a^3}\\
&= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{16dx}{35a^4\sqrt{a+cx^2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.74

$$\frac{-5a^4e+35a^3cdx+70a^2c^2dx^3+56ac^3dx^5+16c^4dx^7}{35a^4c\left(a+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2)^(9/2),x]
```

```
[Out] (-5*a^4*e + 35*a^3*c*d*x + 70*a^2*c^2*d*x^3 + 56*a*c^3*d*x^5 + 16*c^4*d*x^7
)/(35*a^4*c*(a + c*x^2)^(7/2))
```

IntegrateAlgebraic [A] time = 0.65, size = 67, normalized size = 0.74

$$\frac{-5a^4e+35a^3cdx+70a^2c^2dx^3+56ac^3dx^5+16c^4dx^7}{35a^4c\left(a+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + c*x^2)^(9/2),x]
```

```
[Out] (-5*a^4*e + 35*a^3*c*d*x + 70*a^2*c^2*d*x^3 + 56*a*c^3*d*x^5 + 16*c^4*d*x^7
)/(35*a^4*c*(a + c*x^2)^(7/2))
```

fricas [A] time = 0.44, size = 108, normalized size = 1.19

$$\frac{\left(16\,c^4dx^7+56\,ac^3dx^5+70\,a^2c^2dx^3+35\,a^3cdx-5\,a^4e\right)\sqrt{cx^2+a}}{35\left(a^4c^5x^8+4\,a^5c^4x^6+6\,a^6c^3x^4+4\,a^7c^2x^2+a^8c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(9/2),x, algorithm="fricas")
```

```
[Out] 1/35*(16*c^4*d*x^7 + 56*a*c^3*d*x^5 + 70*a^2*c^2*d*x^3 + 35*a^3*c*d*x - 5*a
^4*e)*sqrt(c*x^2 + a)/(a^4*c^5*x^8 + 4*a^5*c^4*x^6 + 6*a^6*c^3*x^4 + 4*a^7*
c^2*x^2 + a^8*c)
```

giac [A] time = 0.23, size = 68, normalized size = 0.75

$$\frac{\left(2\left(4\left(\frac{2\,c^3dx^2}{a^4}+\frac{7\,c^2d}{a^3}\right)x^2+\frac{35\,cd}{a^2}\right)x^2+\frac{35\,d}{a}\right)x-\frac{5\,e}{c}}{35\left(cx^2+a\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(9/2),x, algorithm="giac")
```

```
[Out] 1/35*((2*(4*(2*c^3*d*x^2/a^4 + 7*c^2*d/a^3)*x^2 + 35*c*d/a^2)*x^2 + 35*d/a)
*x - 5*e/c)/(c*x^2 + a)^(7/2)
```

maple [A] time = 0.05, size = 64, normalized size = 0.70

$$-\frac{-16c^4d\,x^7-56c^3d\,x^5a-70c^2d\,x^3a^2-35dx\,a^3c+5e\,a^4}{35\left(c\,x^2+a\right)^{\frac{7}{2}}a^4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a)^(9/2),x)
```

```
[Out] -1/35*(-16*c^4*d*x^7-56*a*c^3*d*x^5-70*a^2*c^2*d*x^3-35*a^3*c*d*x+5*a^4*e)/
(c*x^2+a)^(7/2)/a^4/c
```

maxima [A] time = 0.61, size = 80, normalized size = 0.88

$$\frac{16\,dx}{35\,\sqrt{cx^2+a}\,a^4}+\frac{8\,dx}{35\left(cx^2+a\right)^{\frac{3}{2}}a^3}+\frac{6\,dx}{35\left(cx^2+a\right)^{\frac{5}{2}}a^2}+\frac{dx}{7\left(cx^2+a\right)^{\frac{7}{2}}a}-\frac{e}{7\left(cx^2+a\right)^{\frac{7}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(9/2),x, algorithm="maxima")
```

```
[Out] 16/35*d*x/(sqrt(c*x^2 + a)*a^4) + 8/35*d*x/((c*x^2 + a)^(3/2)*a^3) + 6/35*d
*x/((c*x^2 + a)^(5/2)*a^2) + 1/7*d*x/((c*x^2 + a)^(7/2)*a) - 1/7*e/((c*x^2
+ a)^(7/2)*c)
```

mupad [B] time = 1.18, size = 74, normalized size = 0.81

$$\frac{16\,d\,x}{35\,a^4\,\sqrt{c\,x^2+a}}-\frac{\frac{e}{7\,c}-\frac{d\,x}{7\,a}}{{\left(c\,x^2+a\right)}^{7/2}}+\frac{8\,d\,x}{35\,a^3\,{\left(c\,x^2+a\right)}^{3/2}}+\frac{6\,d\,x}{35\,a^2\,{\left(c\,x^2+a\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2)^(9/2),x)
```

```
[Out] (16*d*x)/(35*a^4*(a + c*x^2)^(1/2)) - (e/(7*c) - (d*x)/(7*a))/(a + c*x^2)^(
7/2) + (8*d*x)/(35*a^3*(a + c*x^2)^(3/2)) + (6*d*x)/(35*a^2*(a + c*x^2)^(5/
2))
```

sympy [B] time = 39.86, size = 1360, normalized size = 14.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a)**(9/2),x)
```

```
[Out] d*(35*a**14*x/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(
1 + c*x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*
c**3*x**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) +
 210*a**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt
(1 + c*x**2/a)) + 175*a**13*c*x**3/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a
**(35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**
2/a) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8
*sqrt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(
25/2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 371*a**12*c**2*x**5/(35*a**(37/2)*sq
rt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*
c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) +
 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt
(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 429*a**11*c*
*3*x**7/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*
x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x
**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a
**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c
*x**2/a)) + 286*a**10*c**4*x**9/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(
35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a
) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sq
rt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/
2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 104*a**9*c**5*x**11/(35*a**(37/2)*sqrt(
1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*c**
2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) + 52
```

```
5*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt(1
+ c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 16*a**8*c**6*x*
*13/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*x**2
/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x**6*
sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a**(2
7/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c*x**
2/a))) + e*Piecewise((-1/(7*a**3*c*sqrt(a + c*x**2) + 21*a**2*c**2*x**2*sqr
t(a + c*x**2) + 21*a*c**3*x**4*sqrt(a + c*x**2) + 7*c**4*x**6*sqrt(a + c*x*
*2)), Ne(c, 0)), (x**2/(2*a**(9/2)), True))
```

3.384 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{2}{9}aAx^{9/2}+\frac{2}{11}aBx^{11/2}+\frac{2}{13}Acx^{13/2}+\frac{2}{15}Bcx^{15/2}$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{9}aAx^{9/2}+\frac{2}{11}aBx^{11/2}+\frac{2}{13}Acx^{13/2}+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(9/2))/9 + (2*a*B*x^(11/2))/11 + (2*A*c*x^(13/2))/13 + (2*B*c*x^(1
5/2))/15
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^{7/2}+aBx^{9/2}+Acx^{11/2}+Bcx^{13/2}\right)\,dx\\&=\frac{2}{9}aAx^{9/2}+\frac{2}{11}aBx^{11/2}+\frac{2}{13}Acx^{13/2}+\frac{2}{15}Bcx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.78

$$\frac{2x^{9/2}\left(65a(11A+9Bx)+33cx^2(15A+13Bx)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*x^(9/2)*(65*a*(11*A + 9*B*x) + 33*c*x^2*(15*A + 13*B*x)))/6435
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{2\left(715aAx^{9/2}+585aBx^{11/2}+495Acx^{13/2}+429Bcx^{15/2}\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*(715*a*A*x^(9/2) + 585*a*B*x^(11/2) + 495*A*c*x^(13/2) + 429*B*c*x^(15/2
)))/6435
```

fricas [A] time = 0.41, size = 34, normalized size = 0.76

$$\frac{2}{6435}\left(429\,Bcx^7+495\,Acx^6+585\,Bax^5+715\,Aax^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c*x^7 + 495*A*c*x^6 + 585*B*a*x^5 + 715*A*a*x^4)*sqrt(x)
```

giac [A] time = 0.23, size = 29, normalized size = 0.64

$$\frac{2}{15}Bcx^{\frac{15}{2}} + \frac{2}{13}Acx^{\frac{13}{2}} + \frac{2}{11}Bax^{\frac{11}{2}} + \frac{2}{9}Aax^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*A*c*x^(13/2) + 2/11*B*a*x^(11/2) + 2/9*A*a*x^(9/2)
```

maple [A] time = 0.04, size = 30, normalized size = 0.67

$$\frac{2\left(429Bc\,x^{3}+495Ac\,x^{2}+585Bax+715aA\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*c*x^3+495*A*c*x^2+585*B*a*x+715*A*a)
```

maxima [A] time = 0.46, size = 29, normalized size = 0.64

$$\frac{2}{15}Bcx^{\frac{15}{2}} + \frac{2}{13}Acx^{\frac{13}{2}} + \frac{2}{11}Bax^{\frac{11}{2}} + \frac{2}{9}Aax^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*A*c*x^(13/2) + 2/11*B*a*x^(11/2) + 2/9*A*a*x^(9/2)
```

mupad [B] time = 0.05, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{9/2}}{9}+\frac{2\,B\,a\,x^{11/2}}{11}+\frac{2\,A\,c\,x^{13/2}}{13}+\frac{2\,B\,c\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(9/2))/9 + (2*B*a*x^(11/2))/11 + (2*A*c*x^(13/2))/13 + (2*B*c*x^(1
5/2))/15
```

sympy [A] time = 8.22, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{9}{2}}}{9} + \frac{2Acx^{\frac{13}{2}}}{13} + \frac{2Bax^{\frac{11}{2}}}{11} + \frac{2Bcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+a),x)
```

```
[Out] 2*A*a*x**(9/2)/9 + 2*A*c*x**(13/2)/13 + 2*B*a*x**(11/2)/11 + 2*B*c*x**(15/2
)/15
```

3.385 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{2}{7}aAx^{7/2}+\frac{2}{9}aBx^{9/2}+\frac{2}{11}Acx^{11/2}+\frac{2}{13}Bcx^{13/2}$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{7}aAx^{7/2}+\frac{2}{9}aBx^{9/2}+\frac{2}{11}Acx^{11/2}+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(7/2))/7 + (2*a*B*x^(9/2))/9 + (2*A*c*x^(11/2))/11 + (2*B*c*x^(13/
2))/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^{5/2}+aBx^{7/2}+Acx^{9/2}+Bcx^{11/2}\right)\,dx\\&=\frac{2}{7}aAx^{7/2}+\frac{2}{9}aBx^{9/2}+\frac{2}{11}Acx^{11/2}+\frac{2}{13}Bcx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.78

$$\frac{2x^{7/2}\left(143a(9A+7Bx)+63cx^2(13A+11Bx)\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*x^(7/2)*(143*a*(9*A + 7*B*x) + 63*c*x^2*(13*A + 11*B*x)))/9009
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{2\left(1287aAx^{7/2}+1001aBx^{9/2}+819Acx^{11/2}+693Bcx^{13/2}\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*(1287*a*A*x^(7/2) + 1001*a*B*x^(9/2) + 819*A*c*x^(11/2) + 693*B*c*x^(13/
2)))/9009
```

fricas [A] time = 0.43, size = 34, normalized size = 0.76

$$\frac{2}{9009}\left(693\,Bcx^6+819\,Acx^5+1001\,Bax^4+1287\,Aax^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c*x^6 + 819*A*c*x^5 + 1001*B*a*x^4 + 1287*A*a*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.64

$$\frac{2}{13}Bcx^{\frac{13}{2}}+\frac{2}{11}Acx^{\frac{11}{2}}+\frac{2}{9}Bax^{\frac{9}{2}}+\frac{2}{7}Aax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*A*c*x^(11/2) + 2/9*B*a*x^(9/2) + 2/7*A*a*x^(7/2)
```

maple [A] time = 0.06, size = 30, normalized size = 0.67

$$\frac{2\left(693Bc\,x^{3}+819Ac\,x^{2}+1001Bax+1287aA\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*c*x^3+819*A*c*x^2+1001*B*a*x+1287*A*a)
```

maxima [A] time = 0.62, size = 29, normalized size = 0.64

$$\frac{2}{13}Bcx^{\frac{13}{2}}+\frac{2}{11}Acx^{\frac{11}{2}}+\frac{2}{9}Bax^{\frac{9}{2}}+\frac{2}{7}Aax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*A*c*x^(11/2) + 2/9*B*a*x^(9/2) + 2/7*A*a*x^(7/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{7/2}}{7}+\frac{2\,B\,a\,x^{9/2}}{9}+\frac{2\,A\,c\,x^{11/2}}{11}+\frac{2\,B\,c\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(7/2))/7 + (2*B*a*x^(9/2))/9 + (2*A*c*x^(11/2))/11 + (2*B*c*x^(13/
2))/13
```

sympy [A] time = 3.76, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{7}{2}}}{7}+\frac{2Acx^{\frac{11}{2}}}{11}+\frac{2Bax^{\frac{9}{2}}}{9}+\frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+a),x)
```

```
[Out] 2*A*a*x**(7/2)/7 + 2*A*c*x**(11/2)/11 + 2*B*a*x**(9/2)/9 + 2*B*c*x**(13/2)/
13
```

3.386 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{2}{5}aAx^{5/2}+\frac{2}{7}aBx^{7/2}+\frac{2}{9}Acx^{9/2}+\frac{2}{11}Bcx^{11/2}$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{5}aAx^{5/2}+\frac{2}{7}aBx^{7/2}+\frac{2}{9}Acx^{9/2}+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(5/2))/5 + (2*a*B*x^(7/2))/7 + (2*A*c*x^(9/2))/9 + (2*B*c*x^(11/2)
)/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^{3/2}+aBx^{5/2}+Acx^{7/2}+Bcx^{9/2}\right)\,dx\\&=\frac{2}{5}aAx^{5/2}+\frac{2}{7}aBx^{7/2}+\frac{2}{9}Acx^{9/2}+\frac{2}{11}Bcx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 37, normalized size = 0.82

$$\frac{2}{35}ax^{5/2}(7A+5Bx)+\frac{2}{99}cx^{9/2}(11A+9Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*x^(5/2)*(7*A + 5*B*x))/35 + (2*c*x^(9/2)*(11*A + 9*B*x))/99
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{2\left(693aAx^{5/2}+495aBx^{7/2}+385Acx^{9/2}+315Bcx^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*(693*a*A*x^(5/2) + 495*a*B*x^(7/2) + 385*A*c*x^(9/2) + 315*B*c*x^(11/2))
)/3465
```

fricas [A] time = 0.39, size = 34, normalized size = 0.76

$$\frac{2}{3465}\left(315\,Bcx^5+385\,Acx^4+495\,Bax^3+693\,Aax^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*x^5 + 385*A*c*x^4 + 495*B*a*x^3 + 693*A*a*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.64

$$\frac{2}{11} Bcx^{\frac{11}{2}} + \frac{2}{9} Acx^{\frac{9}{2}} + \frac{2}{7} Bax^{\frac{7}{2}} + \frac{2}{5} Aax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*A*c*x^(9/2) + 2/7*B*a*x^(7/2) + 2/5*A*a*x^(5/2)
```

maple [A] time = 0.06, size = 30, normalized size = 0.67

$$\frac{2\left(315Bc\,x^{3}+385Ac\,x^{2}+495Bax+693aA\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*c*x^3+385*A*c*x^2+495*B*a*x+693*A*a)
```

maxima [A] time = 0.49, size = 29, normalized size = 0.64

$$\frac{2}{11} Bcx^{\frac{11}{2}} + \frac{2}{9} Acx^{\frac{9}{2}} + \frac{2}{7} Bax^{\frac{7}{2}} + \frac{2}{5} Aax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*A*c*x^(9/2) + 2/7*B*a*x^(7/2) + 2/5*A*a*x^(5/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{5/2}}{5}+\frac{2\,B\,a\,x^{7/2}}{7}+\frac{2\,A\,c\,x^{9/2}}{9}+\frac{2\,B\,c\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(5/2))/5 + (2*B*a*x^(7/2))/7 + (2*A*c*x^(9/2))/9 + (2*B*c*x^(11/2)
)/11
```

sympy [A] time = 1.66, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{5}{2}}}{5} + \frac{2Acx^{\frac{9}{2}}}{9} + \frac{2Bax^{\frac{7}{2}}}{7} + \frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+a),x)
```

```
[Out] 2*A*a*x**(5/2)/5 + 2*A*c*x**(9/2)/9 + 2*B*a*x**(7/2)/7 + 2*B*c*x**(11/2)/11
```

3.387 $\int \sqrt{x}(A+Bx)\left(a+cx^2\right) dx$

Optimal. Leaf size=45

$$\frac{2}{3}aAx^{3/2}+\frac{2}{5}aBx^{5/2}+\frac{2}{7}Acx^{7/2}+\frac{2}{9}Bcx^{9/2}$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{3}aAx^{3/2}+\frac{2}{5}aBx^{5/2}+\frac{2}{7}Acx^{7/2}+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(3/2))/3 + (2*a*B*x^(5/2))/5 + (2*A*c*x^(7/2))/7 + (2*B*c*x^(9/2))
/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+cx^2\right) dx &= \int \left(aA\sqrt{x}+aBx^{3/2}+Acx^{5/2}+Bcx^{7/2}\right) dx\\ &= \frac{2}{3}aAx^{3/2}+\frac{2}{5}aBx^{5/2}+\frac{2}{7}Acx^{7/2}+\frac{2}{9}Bcx^{9/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.78

$$\frac{2}{315}x^{3/2}\left(21a(5A+3Bx)+5cx^2(9A+7Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*x^(3/2)*(21*a*(5*A + 3*B*x) + 5*c*x^2*(9*A + 7*B*x)))/315
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{2}{315}\left(105aAx^{3/2}+63aBx^{5/2}+45Acx^{7/2}+35Bcx^{9/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*(105*a*A*x^(3/2) + 63*a*B*x^(5/2) + 45*A*c*x^(7/2) + 35*B*c*x^(9/2)))/31
5
```

fricas [A] time = 0.39, size = 32, normalized size = 0.71

$$\frac{2}{315}\left(35\,Bcx^4+45\,Acx^3+63\,Bax^2+105\,Aax\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*x^4 + 45*A*c*x^3 + 63*B*a*x^2 + 105*A*a*x)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.64

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{7}\,Acx^{\frac{7}{2}} + \frac{2}{5}\,Bax^{\frac{5}{2}} + \frac{2}{3}\,Aax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*A*c*x^(7/2) + 2/5*B*a*x^(5/2) + 2/3*A*a*x^(3/2)
```

maple [A] time = 0.05, size = 30, normalized size = 0.67

$$\frac{2\left(35Bc\,x^{3}+45Ac\,x^{2}+63Bax+105aA\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*c*x^3+45*A*c*x^2+63*B*a*x+105*A*a)
```

maxima [A] time = 0.60, size = 29, normalized size = 0.64

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{7}\,Acx^{\frac{7}{2}} + \frac{2}{5}\,Bax^{\frac{5}{2}} + \frac{2}{3}\,Aax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*A*c*x^(7/2) + 2/5*B*a*x^(5/2) + 2/3*A*a*x^(3/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{3/2}}{3}+\frac{2\,B\,a\,x^{5/2}}{5}+\frac{2\,A\,c\,x^{7/2}}{7}+\frac{2\,B\,c\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(3/2))/3 + (2*B*a*x^(5/2))/5 + (2*A*c*x^(7/2))/7 + (2*B*c*x^(9/2))
/9
```

sympy [A] time = 2.38, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{3}{2}}}{3}+\frac{2Acx^{\frac{7}{2}}}{7}+\frac{2Bax^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)*x**(1/2),x)
```

```
[Out] 2*A*a*x**(3/2)/3 + 2*A*c*x**(7/2)/7 + 2*B*a*x**(5/2)/5 + 2*B*c*x**(9/2)/9
```

3.388 $\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{x}}\,dx$

Optimal. Leaf size=43

$$2aA\sqrt{x}+\frac{2}{3}aBx^{3/2}+\frac{2}{5}Acx^{5/2}+\frac{2}{7}Bcx^{7/2}$$

Rubi [A] time = 0.01, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$2aA\sqrt{x}+\frac{2}{3}aBx^{3/2}+\frac{2}{5}Acx^{5/2}+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/Sqrt[x],x]
```

```
[Out] 2*a*A*Sqrt[x] + (2*a*B*x^(3/2))/3 + (2*A*c*x^(5/2))/5 + (2*B*c*x^(7/2))/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{x}}\,dx&=\int\left(\frac{aA}{\sqrt{x}}+aB\sqrt{x}+Acx^{3/2}+Bcx^{5/2}\right)dx\\&=2aA\sqrt{x}+\frac{2}{3}aBx^{3/2}+\frac{2}{5}Acx^{5/2}+\frac{2}{7}Bcx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 34, normalized size = 0.79

$$\frac{2}{105}\sqrt{x}\left(35a(3A+Bx)+3cx^2(7A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(35*a*(3*A + B*x) + 3*c*x^2*(7*A + 5*B*x)))/105
```

IntegrateAlgebraic [A] time = 0.02, size = 41, normalized size = 0.95

$$\frac{2}{105}\left(105aA\sqrt{x}+35aBx^{3/2}+21Acx^{5/2}+15Bcx^{7/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*(105*a*A*Sqrt[x] + 35*a*B*x^(3/2) + 21*A*c*x^(5/2) + 15*B*c*x^(7/2)))/10
5
```

fricas [A] time = 0.41, size = 29, normalized size = 0.67

$$\frac{2}{105}\left(15\,Bcx^3+21\,Acx^2+35\,Bax+105\,Aa\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(1/2),x, algorithm="fricas")
[Out] 2/105*(15*B*c*x^3 + 21*A*c*x^2 + 35*B*a*x + 105*A*a)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.67

$$\frac{2}{7}\,Bcx^{\frac{7}{2}} + \frac{2}{5}\,Acx^{\frac{5}{2}} + \frac{2}{3}\,Bax^{\frac{3}{2}} + 2\,Aa\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(1/2),x, algorithm="giac")
[Out] 2/7*B*c*x^(7/2) + 2/5*A*c*x^(5/2) + 2/3*B*a*x^(3/2) + 2*A*a*sqrt(x)
```

maple [A] time = 0.04, size = 30, normalized size = 0.70

$$\frac{2\left(15Bc\,x^{3}+21Ac\,x^{2}+35Bax+105aA\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(1/2),x)
[Out] 2/105*x^(1/2)*(15*B*c*x^3+21*A*c*x^2+35*B*a*x+105*A*a)
```

maxima [A] time = 0.49, size = 29, normalized size = 0.67

$$\frac{2}{7}\,Bcx^{\frac{7}{2}} + \frac{2}{5}\,Acx^{\frac{5}{2}} + \frac{2}{3}\,Bax^{\frac{3}{2}} + 2\,Aa\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(1/2),x, algorithm="maxima")
[Out] 2/7*B*c*x^(7/2) + 2/5*A*c*x^(5/2) + 2/3*B*a*x^(3/2) + 2*A*a*sqrt(x)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.67

$$2\,A\,a\,\sqrt{x}+\frac{2\,B\,a\,x^{3/2}}{3}+\frac{2\,A\,c\,x^{5/2}}{5}+\frac{2\,B\,c\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(1/2),x)
[Out] 2*A*a*x^(1/2) + (2*B*a*x^(3/2))/3 + (2*A*c*x^(5/2))/5 + (2*B*c*x^(7/2))/7
```

sympy [A] time = 0.45, size = 44, normalized size = 1.02

$$2Aa\sqrt{x}+\frac{2Acx^{\frac{5}{2}}}{5}+\frac{2Bax^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(1/2),x)
[Out] 2*A*a*sqrt(x) + 2*A*c*x**(5/2)/5 + 2*B*a*x**(3/2)/3 + 2*B*c*x**(7/2)/7
```

3.389 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{3/2}} \, dx$

Optimal. Leaf size=41

$$-\frac{2aA}{\sqrt{x}}+2aB\sqrt{x}+\frac{2}{3}Acx^{3/2}+\frac{2}{5}Bcx^{5/2}$$

Rubi [A] time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{\sqrt{x}}+2aB\sqrt{x}+\frac{2}{3}Acx^{3/2}+\frac{2}{5}Bcx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(3/2),x]
```

```
[Out] (-2*a*A)/Sqrt[x] + 2*a*B*Sqrt[x] + (2*A*c*x^(3/2))/3 + (2*B*c*x^(5/2))/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{3/2}} \, dx &= \int \left(\frac{aA}{x^{3/2}}+\frac{aB}{\sqrt{x}}+Ac\sqrt{x}+Bcx^{3/2}\right) dx\\ &= -\frac{2aA}{\sqrt{x}}+2aB\sqrt{x}+\frac{2}{3}Acx^{3/2}+\frac{2}{5}Bcx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$\frac{2\left(cx^2(5A+3Bx)-15a(A-Bx)\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(3/2),x]
```

```
[Out] (2*(-15*a*(A - B*x) + c*x^2*(5*A + 3*B*x)))/(15*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.03, size = 33, normalized size = 0.80

$$\frac{2\left(-15aA+15aBx+5Acx^2+3Bcx^3\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^(3/2),x]
```

```
[Out] (2*(-15*a*A + 15*a*B*x + 5*A*c*x^2 + 3*B*c*x^3))/(15*Sqrt[x])
```

fricas [A] time = 0.41, size = 29, normalized size = 0.71

$$\frac{2\left(3\,Bcx^{3}+5\,Acx^{2}+15\,Bax-15\,Aa\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(3/2),x, algorithm="fricas")
[Out] 2/15*(3*B*c*x^3 + 5*A*c*x^2 + 15*B*a*x - 15*A*a)/sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.71

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,Acx^{\frac{3}{2}}+2\,Ba\sqrt{x}-\frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(3/2),x, algorithm="giac")
[Out] 2/5*B*c*x^(5/2) + 2/3*A*c*x^(3/2) + 2*B*a*sqrt(x) - 2*A*a/sqrt(x)
```

maple [A] time = 0.04, size = 30, normalized size = 0.73

$$-\frac{2\left(-3Bc\,x^{3}-5Ac\,x^{2}-15Bax+15aA\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(3/2),x)
[Out] -2/15*(-3*B*c*x^3-5*A*c*x^2-15*B*a*x+15*A*a)/x^(1/2)
```

maxima [A] time = 0.51, size = 29, normalized size = 0.71

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,Acx^{\frac{3}{2}}+2\,Ba\sqrt{x}-\frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(3/2),x, algorithm="maxima")
[Out] 2/5*B*c*x^(5/2) + 2/3*A*c*x^(3/2) + 2*B*a*sqrt(x) - 2*A*a/sqrt(x)
```

mupad [B] time = 0.05, size = 29, normalized size = 0.71

$$2\,B\,a\,\sqrt{x}-\frac{2\,A\,a}{\sqrt{x}}+\frac{2\,A\,c\,x^{3/2}}{3}+\frac{2\,B\,c\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(3/2),x)
[Out] 2*B*a*x^(1/2) - (2*A*a)/x^(1/2) + (2*A*c*x^(3/2))/3 + (2*B*c*x^(5/2))/5
```

sympy [A] time = 0.62, size = 42, normalized size = 1.02

$$-\frac{2Aa}{\sqrt{x}}+\frac{2Acx^{\frac{3}{2}}}{3}+2Ba\sqrt{x}+\frac{2Bcx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(3/2),x)
[Out] -2*A*a/sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*a*sqrt(x) + 2*B*c*x**(5/2)/5
```

3.390 $\int \frac{(A+Bx)(a+cx^2)}{x^{5/2}} \, dx$

Optimal. Leaf size=41

$$-\frac{2aA}{3x^{3/2}}-\frac{2aB}{\sqrt{x}}+2Ac\sqrt{x}+\frac{2}{3}Bcx^{3/2}$$

Rubi [A] time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{3x^{3/2}}-\frac{2aB}{\sqrt{x}}+2Ac\sqrt{x}+\frac{2}{3}Bcx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(5/2),x]
[Out] (-2*a*A)/(3*x^(3/2)) - (2*a*B)/Sqrt[x] + 2*A*c*Sqrt[x] + (2*B*c*x^(3/2))/3
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{5/2}} \, dx &= \int \left(\frac{aA}{x^{5/2}}+\frac{aB}{x^{3/2}}+\frac{Ac}{\sqrt{x}}+Bc\sqrt{x}\right) dx\\ &= -\frac{2aA}{3x^{3/2}}-\frac{2aB}{\sqrt{x}}+2Ac\sqrt{x}+\frac{2}{3}Bcx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$\frac{2cx^2(3A+Bx)-2a(A+3Bx)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(5/2),x]
[Out] (2*c*x^2*(3*A + B*x) - 2*a*(A + 3*B*x))/(3*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 32, normalized size = 0.78

$$\frac{2\left(-aA-3aBx+3Acx^2+Bcx^3\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^(5/2),x]
[Out] (2*(-(a*A) - 3*a*B*x + 3*A*c*x^2 + B*c*x^3))/(3*x^(3/2))
```

fricas [A] time = 0.40, size = 28, normalized size = 0.68

$$\frac{2\left(Bcx^3+3\,Acx^2-3\,Bax-Aa\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(5/2),x, algorithm="fricas")
[Out] 2/3*(B*c*x^3 + 3*A*c*x^2 - 3*B*a*x - A*a)/x^(3/2)
```

giac [A] time = 0.15, size = 29, normalized size = 0.71

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Ac\sqrt{x} - \frac{2\,(3\,Bax + Aa)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(5/2),x, algorithm="giac")
[Out] 2/3*B*c*x^(3/2) + 2*A*c*sqrt(x) - 2/3*(3*B*a*x + A*a)/x^(3/2)
```

maple [A] time = 0.05, size = 29, normalized size = 0.71

$$-\frac{2\left(-Bc\,x^{3} - 3Ac\,x^{2} + 3Bax + aA\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(5/2),x)
[Out] -2/3*(-B*c*x^3-3*A*c*x^2+3*B*a*x+A*a)/x^(3/2)
```

maxima [A] time = 0.71, size = 29, normalized size = 0.71

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Ac\sqrt{x} - \frac{2\,(3\,Bax + Aa)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(5/2),x, algorithm="maxima")
[Out] 2/3*B*c*x^(3/2) + 2*A*c*sqrt(x) - 2/3*(3*B*a*x + A*a)/x^(3/2)
```

mupad [B] time = 1.05, size = 29, normalized size = 0.71

$$-\frac{-2\,B\,c\,x^3 - 6\,A\,c\,x^2 + 6\,B\,a\,x + 2\,A\,a}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(5/2),x)
[Out] -(2*A*a + 6*B*a*x - 6*A*c*x^2 - 2*B*c*x^3)/(3*x^(3/2))
```

sympy [A] time = 0.85, size = 42, normalized size = 1.02

$$-\frac{2Aa}{3x^{\frac{3}{2}}} + 2Ac\sqrt{x} - \frac{2Ba}{\sqrt{x}} + \frac{2Bcx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(5/2),x)
[Out] -2*A*a/(3*x**(3/2)) + 2*A*c*sqrt(x) - 2*B*a/sqrt(x) + 2*B*c*x**(3/2)/3
```

3.391 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{7/2}} \, dx$

Optimal. Leaf size=41

$$-\frac{2aA}{5x^{5/2}}-\frac{2aB}{3x^{3/2}}-\frac{2Ac}{\sqrt{x}}+2Bc\sqrt{x}$$

Rubi [A] time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{5x^{5/2}}-\frac{2aB}{3x^{3/2}}-\frac{2Ac}{\sqrt{x}}+2Bc\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*a*A)/(5*x^(5/2)) - (2*a*B)/(3*x^(3/2)) - (2*A*c)/Sqrt[x] + 2*B*c*Sqrt[x
]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{7/2}} \, dx &= \int \left(\frac{aA}{x^{7/2}}+\frac{aB}{x^{5/2}}+\frac{Ac}{x^{3/2}}+\frac{Bc}{\sqrt{x}}\right) dx\\ &= -\frac{2aA}{5x^{5/2}}-\frac{2aB}{3x^{3/2}}-\frac{2Ac}{\sqrt{x}}+2Bc\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$-\frac{2\left(a(3A+5Bx)+15cx^2(A-Bx)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*(15*c*x^2*(A - B*x) + a*(3*A + 5*B*x)))/(15*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 33, normalized size = 0.80

$$\frac{2\left(-3aA-5aBx-15Acx^2+15Bcx^3\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^(7/2),x]
```

```
[Out] (2*(-3*a*A - 5*a*B*x - 15*A*c*x^2 + 15*B*c*x^3))/(15*x^(5/2))
```

fricas [A] time = 0.41, size = 29, normalized size = 0.71

$$\frac{2\left(15\,Bcx^{3}-15\,Acx^{2}-5\,Bax-3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(7/2),x, algorithm="fricas")
[Out] 2/15*(15*B*c*x^3 - 15*A*c*x^2 - 5*B*a*x - 3*A*a)/x^(5/2)
```

giac [A] time = 0.15, size = 30, normalized size = 0.73

$$2\,Bc\sqrt{x}-\frac{2\left(15\,Acx^{2}+5\,Bax+3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(7/2),x, algorithm="giac")
[Out] 2*B*c*sqrt(x) - 2/15*(15*A*c*x^2 + 5*B*a*x + 3*A*a)/x^(5/2)
```

maple [A] time = 0.04, size = 30, normalized size = 0.73

$$-\frac{2\left(-15Bc\,x^{3}+15Ac\,x^{2}+5Bax+3aA\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(7/2),x)
[Out] -2/15*(-15*B*c*x^3+15*A*c*x^2+5*B*a*x+3*A*a)/x^(5/2)
```

maxima [A] time = 0.51, size = 30, normalized size = 0.73

$$2\,Bc\sqrt{x}-\frac{2\left(15\,Acx^{2}+5\,Bax+3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(7/2),x, algorithm="maxima")
[Out] 2*B*c*sqrt(x) - 2/15*(15*A*c*x^2 + 5*B*a*x + 3*A*a)/x^(5/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.71

$$-\frac{-30\,B\,c\,x^{3}+30\,A\,c\,x^{2}+10\,B\,a\,x+6\,A\,a}{15\,x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(7/2),x)
[Out] -(6*A*a + 10*B*a*x + 30*A*c*x^2 - 30*B*c*x^3)/(15*x^(5/2))
```

sympy [A] time = 1.44, size = 42, normalized size = 1.02

$$-\frac{2Aa}{5x^{\frac{5}{2}}}-\frac{2Ac}{\sqrt{x}}-\frac{2Ba}{3x^{\frac{3}{2}}}+2Bc\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(7/2),x)
[Out] -2*A*a/(5*x**(5/2)) - 2*A*c/sqrt(x) - 2*B*a/(3*x**(3/2)) + 2*B*c*sqrt(x)
```

3.392 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{9/2}} \, dx$

Optimal. Leaf size=43

$$-\frac{2aA}{7x^{7/2}}-\frac{2aB}{5x^{5/2}}-\frac{2Ac}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

Rubi [A] time = 0.01, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{7x^{7/2}}-\frac{2aB}{5x^{5/2}}-\frac{2Ac}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*a*A)/(7*x^(7/2)) - (2*a*B)/(5*x^(5/2)) - (2*A*c)/(3*x^(3/2)) - (2*B*c)/
Sqrt[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{9/2}} \, dx &= \int \left(\frac{aA}{x^{9/2}}+\frac{aB}{x^{7/2}}+\frac{Ac}{x^{5/2}}+\frac{Bc}{x^{3/2}}\right) \, dx\\ &= -\frac{2aA}{7x^{7/2}}-\frac{2aB}{5x^{5/2}}-\frac{2Ac}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.77

$$\frac{-6a(5A+7Bx)-70cx^2(A+3Bx)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(9/2),x]
```

```
[Out] (-70*c*x^2*(A + 3*B*x) - 6*a*(5*A + 7*B*x))/(105*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 33, normalized size = 0.77

$$-\frac{2\left(15aA+21aBx+35Acx^2+105Bcx^3\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(15*a*A + 21*a*B*x + 35*A*c*x^2 + 105*B*c*x^3))/(105*x^(7/2))
```

fricas [A] time = 0.41, size = 29, normalized size = 0.67

$$-\frac{2\left(105\,Bcx^3+35\,Acx^2+21\,Bax+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*A*c*x^2 + 21*B*a*x + 15*A*a)/x^(7/2)
```

giac [A] time = 0.16, size = 29, normalized size = 0.67

$$-\frac{2\left(105\,Bcx^3+35\,Acx^2+21\,Bax+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*A*c*x^2 + 21*B*a*x + 15*A*a)/x^(7/2)
```

maple [A] time = 0.04, size = 30, normalized size = 0.70

$$-\frac{2\left(105Bc\,x^3+35Ac\,x^2+21Bax+15aA\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(9/2),x)
```

```
[Out] -2/105*(105*B*c*x^3+35*A*c*x^2+21*B*a*x+15*A*a)/x^(7/2)
```

maxima [A] time = 0.59, size = 29, normalized size = 0.67

$$-\frac{2\left(105\,Bcx^3+35\,Acx^2+21\,Bax+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*A*c*x^2 + 21*B*a*x + 15*A*a)/x^(7/2)
```

mupad [B] time = 1.05, size = 29, normalized size = 0.67

$$-\frac{210\,B\,c\,x^3+70\,A\,c\,x^2+42\,B\,a\,x+30\,A\,a}{105\,x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(9/2),x)
```

```
[Out] -(30*A*a + 42*B*a*x + 70*A*c*x^2 + 210*B*c*x^3)/(105*x^(7/2))
```

sympy [A] time = 3.16, size = 46, normalized size = 1.07

$$-\frac{2Aa}{7x^{\frac{7}{2}}}-\frac{2Ac}{3x^{\frac{3}{2}}}-\frac{2Ba}{5x^{\frac{5}{2}}}-\frac{2Bc}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(9/2),x)
```

```
[Out] -2*A*a/(7*x**(7/2)) - 2*A*c/(3*x**(3/2)) - 2*B*a/(5*x**(5/2)) - 2*B*c/sqrt(
x)
```

3.393 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a^2Bx^{11/2}+\frac{4}{13}aAcx^{13/2}+\frac{4}{15}aBcx^{15/2}+\frac{2}{17}Ac^2x^{17/2}+\frac{2}{19}Bc^2x^{19/2}$$

Rubi [A] time = 0.02, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a^2Bx^{11/2}+\frac{4}{13}aAcx^{13/2}+\frac{4}{15}aBcx^{15/2}+\frac{2}{17}Ac^2x^{17/2}+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(9/2))/9 + (2*a^2*B*x^(11/2))/11 + (4*a*A*c*x^(13/2))/13 + (4*a*
B*c*x^(15/2))/15 + (2*A*c^2*x^(17/2))/17 + (2*B*c^2*x^(19/2))/19
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+cx^2\right)^2\,dx &= \int \left(a^2Ax^{7/2}+a^2Bx^{9/2}+2aAcx^{11/2}+2aBcx^{13/2}+Ac^2x^{15/2}+Bc^2x^{17/2}\right)dx\\ &= \frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a^2Bx^{11/2}+\frac{4}{13}aAcx^{13/2}+\frac{4}{15}aBcx^{15/2}+\frac{2}{17}Ac^2x^{17/2}+\frac{2}{19}Bc^2x^{19/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 60, normalized size = 0.78

$$\frac{2}{99}a^2x^{9/2}(11A+9Bx)+\frac{4}{195}acx^{13/2}(15A+13Bx)+\frac{2}{323}c^2x^{17/2}(19A+17Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*x^(9/2)*(11*A + 9*B*x))/99 + (4*a*c*x^(13/2)*(15*A + 13*B*x))/195 +
(2*c^2*x^(17/2)*(19*A + 17*B*x))/323
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 0.90

$$\frac{2\left(230945a^2Ax^{9/2}+188955a^2Bx^{11/2}+319770aAcx^{13/2}+277134aBcx^{15/2}+122265Ac^2x^{17/2}+109395Bc^2x^{19/2}\right)}{2078505}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*(230945*a^2*A*x^(9/2) + 188955*a^2*B*x^(11/2) + 319770*a*A*c*x^(13/2) +
277134*a*B*c*x^(15/2) + 122265*A*c^2*x^(17/2) + 109395*B*c^2*x^(19/2)))/207
8505
```

fricas [A] time = 0.41, size = 58, normalized size = 0.75

$$\frac{2}{2078505}\left(109395\,Bc^2x^9 + 122265\,Ac^2x^8 + 277134\,Bacx^7 + 319770\,Aacx^6 + 188955\,Ba^2x^5 + 230945\,Aa^2x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*c^2*x^9 + 122265*A*c^2*x^8 + 277134*B*a*c*x^7 + 319770*
A*a*c*x^6 + 188955*B*a^2*x^5 + 230945*A*a^2*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.69

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}} + \frac{2}{17}\,Ac^2x^{\frac{17}{2}} + \frac{4}{15}\,Bacx^{\frac{15}{2}} + \frac{4}{13}\,Aacx^{\frac{13}{2}} + \frac{2}{11}\,Ba^2x^{\frac{11}{2}} + \frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/17*A*c^2*x^(17/2) + 4/15*B*a*c*x^(15/2) + 4/13*A*a*
c*x^(13/2) + 2/11*B*a^2*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(109395B\,c^2x^5 + 122265A\,c^2x^4 + 277134Bac\,x^3 + 319770Aac\,x^2 + 188955B\,a^2x + 230945A\,a^2\right)x^{\frac{9}{2}}}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 2/2078505*x^(9/2)*(109395*B*c^2*x^5+122265*A*c^2*x^4+277134*B*a*c*x^3+31977
0*A*a*c*x^2+188955*B*a^2*x+230945*A*a^2)
```

maxima [A] time = 0.59, size = 53, normalized size = 0.69

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}} + \frac{2}{17}\,Ac^2x^{\frac{17}{2}} + \frac{4}{15}\,Bacx^{\frac{15}{2}} + \frac{4}{13}\,Aacx^{\frac{13}{2}} + \frac{2}{11}\,Ba^2x^{\frac{11}{2}} + \frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/17*A*c^2*x^(17/2) + 4/15*B*a*c*x^(15/2) + 4/13*A*a*
c*x^(13/2) + 2/11*B*a^2*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{9/2}}{9} + \frac{2\,B\,a^2\,x^{11/2}}{11} + \frac{2\,A\,c^2\,x^{17/2}}{17} + \frac{2\,B\,c^2\,x^{19/2}}{19} + \frac{4\,A\,a\,c\,x^{13/2}}{13} + \frac{4\,B\,a\,c\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(9/2))/9 + (2*B*a^2*x^(11/2))/11 + (2*A*c^2*x^(17/2))/17 + (2*B*
c^2*x^(19/2))/19 + (4*A*a*c*x^(13/2))/13 + (4*B*a*c*x^(15/2))/15
```

sympy [A] time = 16.12, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{9}{2}}}{9} + \frac{4Aacx^{\frac{13}{2}}}{13} + \frac{2Ac^2x^{\frac{17}{2}}}{17} + \frac{2Ba^2x^{\frac{11}{2}}}{11} + \frac{4Bacx^{\frac{15}{2}}}{15} + \frac{2Bc^2x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] 2*A*a**2*x**(9/2)/9 + 4*A*a*c*x**(13/2)/13 + 2*A*c**2*x**(17/2)/17 + 2*B*a*
*2*x**(11/2)/11 + 4*B*a*c*x**(15/2)/15 + 2*B*c**2*x**(19/2)/19
```

3.394 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a^2Bx^{9/2}+\frac{4}{11}aAcx^{11/2}+\frac{4}{13}aBcx^{13/2}+\frac{2}{15}Ac^2x^{15/2}+\frac{2}{17}Bc^2x^{17/2}$$

Rubi [A] time = 0.03, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a^2Bx^{9/2}+\frac{4}{11}aAcx^{11/2}+\frac{4}{13}aBcx^{13/2}+\frac{2}{15}Ac^2x^{15/2}+\frac{2}{17}Bc^2x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(7/2))/7 + (2*a^2*B*x^(9/2))/9 + (4*a*A*c*x^(11/2))/11 + (4*a*B*
c*x^(13/2))/13 + (2*A*c^2*x^(15/2))/15 + (2*B*c^2*x^(17/2))/17
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+cx^2\right)^2\,dx&=\int\left(a^2Ax^{5/2}+a^2Bx^{7/2}+2aAcx^{9/2}+2aBcx^{11/2}+Ac^2x^{13/2}+Bc^2x^{15/2}\right)dx\\&=\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a^2Bx^{9/2}+\frac{4}{11}aAcx^{11/2}+\frac{4}{13}aBcx^{13/2}+\frac{2}{15}Ac^2x^{15/2}+\frac{2}{17}Bc^2x^{17/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 60, normalized size = 0.78

$$\frac{2}{63}a^2x^{7/2}(9A+7Bx)+\frac{4}{143}acx^{11/2}(13A+11Bx)+\frac{2}{255}c^2x^{15/2}(17A+15Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*x^(7/2)*(9*A + 7*B*x))/63 + (4*a*c*x^(11/2)*(13*A + 11*B*x))/143 + (
2*c^2*x^(15/2)*(17*A + 15*B*x))/255
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 0.90

$$\frac{2\left(109395a^2Ax^{7/2}+85085a^2Bx^{9/2}+139230aAcx^{11/2}+117810aBcx^{13/2}+51051Ac^2x^{15/2}+45045Bc^2x^{17/2}\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*(109395*a^2*A*x^(7/2) + 85085*a^2*B*x^(9/2) + 139230*a*A*c*x^(11/2) + 11
7810*a*B*c*x^(13/2) + 51051*A*c^2*x^(15/2) + 45045*B*c^2*x^(17/2)))/765765
```

fricas [A] time = 0.41, size = 58, normalized size = 0.75

$$\frac{2}{765765}\left(45045\,Bc^2x^8+51051\,Ac^2x^7+117810\,Bacx^6+139230\,Aacx^5+85085\,Ba^2x^4+109395\,Aa^2x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^2*x^8 + 51051*A*c^2*x^7 + 117810*B*a*c*x^6 + 139230*A*a
*c*x^5 + 85085*B*a^2*x^4 + 109395*A*a^2*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.69

$$\frac{2}{17}\,Bc^{2}x^{\frac{17}{2}} + \frac{2}{15}\,Ac^{2}x^{\frac{15}{2}} + \frac{4}{13}\,Bacx^{\frac{13}{2}} + \frac{4}{11}\,Aacx^{\frac{11}{2}} + \frac{2}{9}\,Ba^{2}x^{\frac{9}{2}} + \frac{2}{7}\,Aa^{2}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/15*A*c^2*x^(15/2) + 4/13*B*a*c*x^(13/2) + 4/11*A*a*
c*x^(11/2) + 2/9*B*a^2*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(45045B\,c^{2}x^{5}+51051A\,c^{2}x^{4}+117810Bac\,x^{3}+139230Aac\,x^{2}+85085B\,a^{2}x+109395A\,a^{2}\right)x^{\frac{7}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 2/765765*x^(7/2)*(45045*B*c^2*x^5+51051*A*c^2*x^4+117810*B*a*c*x^3+139230*A
*a*c*x^2+85085*B*a^2*x+109395*A*a^2)
```

maxima [A] time = 0.53, size = 53, normalized size = 0.69

$$\frac{2}{17}\,Bc^{2}x^{\frac{17}{2}} + \frac{2}{15}\,Ac^{2}x^{\frac{15}{2}} + \frac{4}{13}\,Bacx^{\frac{13}{2}} + \frac{4}{11}\,Aacx^{\frac{11}{2}} + \frac{2}{9}\,Ba^{2}x^{\frac{9}{2}} + \frac{2}{7}\,Aa^{2}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/15*A*c^2*x^(15/2) + 4/13*B*a*c*x^(13/2) + 4/11*A*a*
c*x^(11/2) + 2/9*B*a^2*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{7/2}}{7}+\frac{2\,B\,a^2\,x^{9/2}}{9}+\frac{2\,A\,c^2\,x^{15/2}}{15}+\frac{2\,B\,c^2\,x^{17/2}}{17}+\frac{4\,A\,a\,c\,x^{11/2}}{11}+\frac{4\,B\,a\,c\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(7/2))/7 + (2*B*a^2*x^(9/2))/9 + (2*A*c^2*x^(15/2))/15 + (2*B*c^
2*x^(17/2))/17 + (4*A*a*c*x^(11/2))/11 + (4*B*a*c*x^(13/2))/13
```

sympy [A] time = 8.50, size = 80, normalized size = 1.04

$$\frac{2Aa^{2}x^{\frac{7}{2}}}{7} + \frac{4Aacx^{\frac{11}{2}}}{11} + \frac{2Ac^{2}x^{\frac{15}{2}}}{15} + \frac{2Ba^{2}x^{\frac{9}{2}}}{9} + \frac{4Bacx^{\frac{13}{2}}}{13} + \frac{2Bc^{2}x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] 2*A*a**2*x**(7/2)/7 + 4*A*a*c*x**(11/2)/11 + 2*A*c**2*x**(15/2)/15 + 2*B*a*
*2*x**(9/2)/9 + 4*B*a*c*x**(13/2)/13 + 2*B*c**2*x**(17/2)/17
```

3.395 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a^2Bx^{7/2}+\frac{4}{9}aAcx^{9/2}+\frac{4}{11}aBcx^{11/2}+\frac{2}{13}Ac^2x^{13/2}+\frac{2}{15}Bc^2x^{15/2}$$

Rubi [A] time = 0.02, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a^2Bx^{7/2}+\frac{4}{9}aAcx^{9/2}+\frac{4}{11}aBcx^{11/2}+\frac{2}{13}Ac^2x^{13/2}+\frac{2}{15}Bc^2x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(5/2))/5 + (2*a^2*B*x^(7/2))/7 + (4*a*A*c*x^(9/2))/9 + (4*a*B*c*
x^(11/2))/11 + (2*A*c^2*x^(13/2))/13 + (2*B*c^2*x^(15/2))/15
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+cx^2\right)^2\,dx&=\int\left(a^2Ax^{3/2}+a^2Bx^{5/2}+2aAcx^{7/2}+2aBcx^{9/2}+Ac^2x^{11/2}+Bc^2x^{13/2}\right)dx\\&=\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a^2Bx^{7/2}+\frac{4}{9}aAcx^{9/2}+\frac{4}{11}aBcx^{11/2}+\frac{2}{13}Ac^2x^{13/2}+\frac{2}{15}Bc^2x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.70

$$\frac{2x^{5/2}\left(1287a^2(7A+5Bx)+910acx^2(11A+9Bx)+231c^2x^4(15A+13Bx)\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*x^(5/2)*(1287*a^2*(7*A + 5*B*x) + 910*a*c*x^2*(11*A + 9*B*x) + 231*c^2*x
^4*(15*A + 13*B*x)))/45045
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 0.90

$$\frac{2\left(9009a^2Ax^{5/2}+6435a^2Bx^{7/2}+10010aAcx^{9/2}+8190aBcx^{11/2}+3465Ac^2x^{13/2}+3003Bc^2x^{15/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*(9009*a^2*A*x^(5/2) + 6435*a^2*B*x^(7/2) + 10010*a*A*c*x^(9/2) + 8190*a*
B*c*x^(11/2) + 3465*A*c^2*x^(13/2) + 3003*B*c^2*x^(15/2)))/45045
```

fricas [A] time = 0.40, size = 58, normalized size = 0.75

$$\frac{2}{45045}\left(3003\,Bc^2x^7 + 3465\,Ac^2x^6 + 8190\,Bacx^5 + 10010\,Aacx^4 + 6435\,Ba^2x^3 + 9009\,Aa^2x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^2*x^7 + 3465*A*c^2*x^6 + 8190*B*a*c*x^5 + 10010*A*a*c*x^4
 + 6435*B*a^2*x^3 + 9009*A*a^2*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.69

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}} + \frac{2}{13}\,Ac^2x^{\frac{13}{2}} + \frac{4}{11}\,Bacx^{\frac{11}{2}} + \frac{4}{9}\,Aacx^{\frac{9}{2}} + \frac{2}{7}\,Ba^2x^{\frac{7}{2}} + \frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/13*A*c^2*x^(13/2) + 4/11*B*a*c*x^(11/2) + 4/9*A*a*c
*x^(9/2) + 2/7*B*a^2*x^(7/2) + 2/5*A*a^2*x^(5/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(3003B\,c^2x^5 + 3465A\,c^2x^4 + 8190Bac\,x^3 + 10010Aac\,x^2 + 6435B\,a^2x + 9009A\,a^2\right)x^{\frac{5}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 2/45045*x^(5/2)*(3003*B*c^2*x^5+3465*A*c^2*x^4+8190*B*a*c*x^3+10010*A*a*c*x
^2+6435*B*a^2*x+9009*A*a^2)
```

maxima [A] time = 0.51, size = 53, normalized size = 0.69

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}} + \frac{2}{13}\,Ac^2x^{\frac{13}{2}} + \frac{4}{11}\,Bacx^{\frac{11}{2}} + \frac{4}{9}\,Aacx^{\frac{9}{2}} + \frac{2}{7}\,Ba^2x^{\frac{7}{2}} + \frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/13*A*c^2*x^(13/2) + 4/11*B*a*c*x^(11/2) + 4/9*A*a*c
*x^(9/2) + 2/7*B*a^2*x^(7/2) + 2/5*A*a^2*x^(5/2)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{5/2}}{5} + \frac{2\,B\,a^2\,x^{7/2}}{7} + \frac{2\,A\,c^2\,x^{13/2}}{13} + \frac{2\,B\,c^2\,x^{15/2}}{15} + \frac{4\,A\,a\,c\,x^{9/2}}{9} + \frac{4\,B\,a\,c\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(5/2))/5 + (2*B*a^2*x^(7/2))/7 + (2*A*c^2*x^(13/2))/13 + (2*B*c^
2*x^(15/2))/15 + (4*A*a*c*x^(9/2))/9 + (4*B*a*c*x^(11/2))/11
```

sympy [A] time = 4.26, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{5}{2}}}{5} + \frac{4Aacx^{\frac{9}{2}}}{9} + \frac{2Ac^2x^{\frac{13}{2}}}{13} + \frac{2Ba^2x^{\frac{7}{2}}}{7} + \frac{4Bacx^{\frac{11}{2}}}{11} + \frac{2Bc^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] 2*A*a**2*x**(5/2)/5 + 4*A*a*c*x**(9/2)/9 + 2*A*c**2*x**(13/2)/13 + 2*B*a**2
*x**(7/2)/7 + 4*B*a*c*x**(11/2)/11 + 2*B*c**2*x**(15/2)/15
```

3.396 $\int \sqrt{x}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a^2Bx^{5/2}+\frac{4}{7}aAcx^{7/2}+\frac{4}{9}aBcx^{9/2}+\frac{2}{11}Ac^2x^{11/2}+\frac{2}{13}Bc^2x^{13/2}$$

Rubi [A] time = 0.02, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a^2Bx^{5/2}+\frac{4}{7}aAcx^{7/2}+\frac{4}{9}aBcx^{9/2}+\frac{2}{11}Ac^2x^{11/2}+\frac{2}{13}Bc^2x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(3/2))/3 + (2*a^2*B*x^(5/2))/5 + (4*a*A*c*x^(7/2))/7 + (4*a*B*c*
x^(9/2))/9 + (2*A*c^2*x^(11/2))/11 + (2*B*c^2*x^(13/2))/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+cx^2\right)^2\,dx &= \int \left(a^2A\sqrt{x}+a^2Bx^{3/2}+2aAcx^{5/2}+2aBcx^{7/2}+Ac^2x^{9/2}+Bc^2x^{11/2}\right)dx\\ &= \frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a^2Bx^{5/2}+\frac{4}{7}aAcx^{7/2}+\frac{4}{9}aBcx^{9/2}+\frac{2}{11}Ac^2x^{11/2}+\frac{2}{13}Bc^2x^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 60, normalized size = 0.78

$$\frac{2}{15}a^2x^{3/2}(5A+3Bx)+\frac{4}{63}acx^{7/2}(9A+7Bx)+\frac{2}{143}c^2x^{11/2}(13A+11Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*x^(3/2)*(5*A + 3*B*x))/15 + (4*a*c*x^(7/2)*(9*A + 7*B*x))/63 + (2*c^
2*x^(11/2)*(13*A + 11*B*x))/143
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 0.90

$$\frac{2\left(15015a^2Ax^{3/2}+9009a^2Bx^{5/2}+12870aAcx^{7/2}+10010aBcx^{9/2}+4095Ac^2x^{11/2}+3465Bc^2x^{13/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*(15015*a^2*A*x^(3/2) + 9009*a^2*B*x^(5/2) + 12870*a*A*c*x^(7/2) + 10010*
a*B*c*x^(9/2) + 4095*A*c^2*x^(11/2) + 3465*B*c^2*x^(13/2)))/45045
```

fricas [A] time = 0.40, size = 56, normalized size = 0.73

$$\frac{2}{45045}\left(3465\,Bc^2x^6 + 4095\,Ac^2x^5 + 10010\,Bacx^4 + 12870\,Aacx^3 + 9009\,Ba^2x^2 + 15015\,Aa^2x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*x^6 + 4095*A*c^2*x^5 + 10010*B*a*c*x^4 + 12870*A*a*c*x^
3 + 9009*B*a^2*x^2 + 15015*A*a^2*x)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.69

$$\frac{2}{13}\,Bc^2x^{\frac{13}{2}} + \frac{2}{11}\,Ac^2x^{\frac{11}{2}} + \frac{4}{9}\,Bacx^{\frac{9}{2}} + \frac{4}{7}\,Aacx^{\frac{7}{2}} + \frac{2}{5}\,Ba^2x^{\frac{5}{2}} + \frac{2}{3}\,Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/11*A*c^2*x^(11/2) + 4/9*B*a*c*x^(9/2) + 4/7*A*a*c*x
^(7/2) + 2/5*B*a^2*x^(5/2) + 2/3*A*a^2*x^(3/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(3465B\,c^2x^5 + 4095A\,c^2x^4 + 10010Bac\,x^3 + 12870Aac\,x^2 + 9009B\,a^2x + 15015A\,a^2\right)x^{\frac{3}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3465*B*c^2*x^5+4095*A*c^2*x^4+10010*B*a*c*x^3+12870*A*a*c*
x^2+9009*B*a^2*x+15015*A*a^2)
```

maxima [A] time = 0.48, size = 53, normalized size = 0.69

$$\frac{2}{13}\,Bc^2x^{\frac{13}{2}} + \frac{2}{11}\,Ac^2x^{\frac{11}{2}} + \frac{4}{9}\,Bacx^{\frac{9}{2}} + \frac{4}{7}\,Aacx^{\frac{7}{2}} + \frac{2}{5}\,Ba^2x^{\frac{5}{2}} + \frac{2}{3}\,Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/11*A*c^2*x^(11/2) + 4/9*B*a*c*x^(9/2) + 4/7*A*a*c*x
^(7/2) + 2/5*B*a^2*x^(5/2) + 2/3*A*a^2*x^(3/2)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{3/2}}{3} + \frac{2\,B\,a^2\,x^{5/2}}{5} + \frac{2\,A\,c^2\,x^{11/2}}{11} + \frac{2\,B\,c^2\,x^{13/2}}{13} + \frac{4\,A\,a\,c\,x^{7/2}}{7} + \frac{4\,B\,a\,c\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(3/2))/3 + (2*B*a^2*x^(5/2))/5 + (2*A*c^2*x^(11/2))/11 + (2*B*c^
2*x^(13/2))/13 + (4*A*a*c*x^(7/2))/7 + (4*B*a*c*x^(9/2))/9
```

sympy [A] time = 3.08, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{3}{2}}}{3} + \frac{4Aacx^{\frac{7}{2}}}{7} + \frac{2Ac^2x^{\frac{11}{2}}}{11} + \frac{2Ba^2x^{\frac{5}{2}}}{5} + \frac{4Bacx^{\frac{9}{2}}}{9} + \frac{2Bc^2x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2*x**(1/2),x)
```

```
[Out] 2*A*a**2*x**(3/2)/3 + 4*A*a*c*x**(7/2)/7 + 2*A*c**2*x**(11/2)/11 + 2*B*a**2
*x**(5/2)/5 + 4*B*a*c*x**(9/2)/9 + 2*B*c**2*x**(13/2)/13
```

3.397 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=75

$$2a^2A\sqrt{x}+\frac{2}{3}a^2Bx^{3/2}+\frac{4}{5}aAcx^{5/2}+\frac{4}{7}aBcx^{7/2}+\frac{2}{9}Ac^2x^{9/2}+\frac{2}{11}Bc^2x^{11/2}$$

Rubi [A] time = 0.02, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$2a^2A\sqrt{x}+\frac{2}{3}a^2Bx^{3/2}+\frac{4}{5}aAcx^{5/2}+\frac{4}{7}aBcx^{7/2}+\frac{2}{9}Ac^2x^{9/2}+\frac{2}{11}Bc^2x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] 2*a^2*A*Sqrt[x] + (2*a^2*B*x^(3/2))/3 + (4*a*A*c*x^(5/2))/5 + (4*a*B*c*x^(7
/2))/7 + (2*A*c^2*x^(9/2))/9 + (2*B*c^2*x^(11/2))/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{x}}\,dx &= \int \left(\frac{a^2A}{\sqrt{x}}+a^2B\sqrt{x}+2aAcx^{3/2}+2aBcx^{5/2}+Ac^2x^{7/2}+Bc^2x^{9/2}\right)dx\\ &= 2a^2A\sqrt{x}+\frac{2}{3}a^2Bx^{3/2}+\frac{4}{5}aAcx^{5/2}+\frac{4}{7}aBcx^{7/2}+\frac{2}{9}Ac^2x^{9/2}+\frac{2}{11}Bc^2x^{11/2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 59, normalized size = 0.79

$$\frac{2}{3}a^2\sqrt{x}(3A+Bx)+\frac{4}{35}acx^{5/2}(7A+5Bx)+\frac{2}{99}c^2x^{9/2}(11A+9Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*a^2*Sqrt[x]*(3*A + B*x))/3 + (4*a*c*x^(5/2)*(7*A + 5*B*x))/35 + (2*c^2*x
^(9/2)*(11*A + 9*B*x))/99
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 0.92

$$\frac{2\left(3465a^2A\sqrt{x}+1155a^2Bx^{3/2}+1386aAcx^{5/2}+990aBcx^{7/2}+385Ac^2x^{9/2}+315Bc^2x^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*(3465*a^2*A*Sqrt[x] + 1155*a^2*B*x^(3/2) + 1386*a*A*c*x^(5/2) + 990*a*B*
c*x^(7/2) + 385*A*c^2*x^(9/2) + 315*B*c^2*x^(11/2)))/3465
```

fricas [A] time = 0.42, size = 53, normalized size = 0.71

$$\frac{2}{3465}\left(315\,Bc^2x^5+385\,Ac^2x^4+990\,Bacx^3+1386\,Aacx^2+1155\,Ba^2x+3465\,Aa^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*x^5 + 385*A*c^2*x^4 + 990*B*a*c*x^3 + 1386*A*a*c*x^2 + 11
55*B*a^2*x + 3465*A*a^2)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.71

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}}+\frac{2}{9}\,Ac^2x^{\frac{9}{2}}+\frac{4}{7}\,Bacx^{\frac{7}{2}}+\frac{4}{5}\,Aacx^{\frac{5}{2}}+\frac{2}{3}\,Ba^2x^{\frac{3}{2}}+2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/9*A*c^2*x^(9/2) + 4/7*B*a*c*x^(7/2) + 4/5*A*a*c*x^(
5/2) + 2/3*B*a^2*x^(3/2) + 2*A*a^2*sqrt(x)
```

maple [A] time = 0.05, size = 54, normalized size = 0.72

$$\frac{2\left(315B\,c^2x^5+385A\,c^2x^4+990Bac\,x^3+1386Aac\,x^2+1155B\,a^2x+3465A\,a^2\right)\sqrt{x}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(1/2)*(315*B*c^2*x^5+385*A*c^2*x^4+990*B*a*c*x^3+1386*A*a*c*x^2+11
55*B*a^2*x+3465*A*a^2)
```

maxima [A] time = 0.53, size = 53, normalized size = 0.71

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}}+\frac{2}{9}\,Ac^2x^{\frac{9}{2}}+\frac{4}{7}\,Bacx^{\frac{7}{2}}+\frac{4}{5}\,Aacx^{\frac{5}{2}}+\frac{2}{3}\,Ba^2x^{\frac{3}{2}}+2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/9*A*c^2*x^(9/2) + 4/7*B*a*c*x^(7/2) + 4/5*A*a*c*x^(
5/2) + 2/3*B*a^2*x^(3/2) + 2*A*a^2*sqrt(x)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.71

$$2\,A\,a^2\,\sqrt{x}+\frac{2\,B\,a^2\,x^{3/2}}{3}+\frac{2\,A\,c^2\,x^{9/2}}{9}+\frac{2\,B\,c^2\,x^{11/2}}{11}+\frac{4\,A\,a\,c\,x^{5/2}}{5}+\frac{4\,B\,a\,c\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(1/2),x)
```

```
[Out] 2*A*a^2*x^(1/2) + (2*B*a^2*x^(3/2))/3 + (2*A*c^2*x^(9/2))/9 + (2*B*c^2*x^(1
1/2))/11 + (4*A*a*c*x^(5/2))/5 + (4*B*a*c*x^(7/2))/7
```

sympy [A] time = 1.44, size = 78, normalized size = 1.04

$$2Aa^2\sqrt{x}+\frac{4Aacx^{\frac{5}{2}}}{5}+\frac{2Ac^2x^{\frac{9}{2}}}{9}+\frac{2Ba^2x^{\frac{3}{2}}}{3}+\frac{4Bacx^{\frac{7}{2}}}{7}+\frac{2Bc^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(1/2),x)
```

```
[Out] 2*A*a**2*sqrt(x) + 4*A*a*c*x**(5/2)/5 + 2*A*c**2*x**(9/2)/9 + 2*B*a**2*x**(
3/2)/3 + 4*B*a*c*x**(7/2)/7 + 2*B*c**2*x**(11/2)/11
```

3.398 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{3/2}} \, dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{\sqrt{x}}+2a^2B\sqrt{x}+\frac{4}{3}aAcx^{3/2}+\frac{4}{5}aBcx^{5/2}+\frac{2}{7}Ac^2x^{7/2}+\frac{2}{9}Bc^2x^{9/2}$$

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{\sqrt{x}}+2a^2B\sqrt{x}+\frac{4}{3}aAcx^{3/2}+\frac{4}{5}aBcx^{5/2}+\frac{2}{7}Ac^2x^{7/2}+\frac{2}{9}Bc^2x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-2*a^2*A)/Sqrt[x] + 2*a^2*B*Sqrt[x] + (4*a*A*c*x^(3/2))/3 + (4*a*B*c*x^(5/
2))/5 + (2*A*c^2*x^(7/2))/7 + (2*B*c^2*x^(9/2))/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{3/2}} \, dx &= \int \left(\frac{a^2A}{x^{3/2}}+\frac{a^2B}{\sqrt{x}}+2aAc\sqrt{x}+2aBcx^{3/2}+Ac^2x^{5/2}+Bc^2x^{7/2}\right) dx\\ &= -\frac{2a^2A}{\sqrt{x}}+2a^2B\sqrt{x}+\frac{4}{3}aAcx^{3/2}+\frac{4}{5}aBcx^{5/2}+\frac{2}{7}Ac^2x^{7/2}+\frac{2}{9}Bc^2x^{9/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.71

$$\frac{-630a^2(A-Bx)+84acx^2(5A+3Bx)+10c^2x^4(9A+7Bx)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-630*a^2*(A - B*x) + 84*a*c*x^2*(5*A + 3*B*x) + 10*c^2*x^4*(9*A + 7*B*x))/
(315*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.04, size = 57, normalized size = 0.78

$$\frac{2\left(-315a^2A+315a^2Bx+210aAcx^2+126aBcx^3+45Ac^2x^4+35Bc^2x^5\right)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^(3/2),x]
```

[Out] (2*(-315*a^2*A + 315*a^2*B*x + 210*a*A*c*x^2 + 126*a*B*c*x^3 + 45*A*c^2*x^4 + 35*B*c^2*x^5))/(315*Sqrt[x])

fricas [A] time = 0.42, size = 53, normalized size = 0.73

$$\frac{2\left(35 Bc^2x^5 + 45 Ac^2x^4 + 126 Bacx^3 + 210 Aacx^2 + 315 Ba^2x - 315 Aa^2\right)}{315 \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/x^(3/2),x, algorithm="fricas")

[Out] 2/315*(35*B*c^2*x^5 + 45*A*c^2*x^4 + 126*B*a*c*x^3 + 210*A*a*c*x^2 + 315*B*a^2*x - 315*A*a^2)/sqrt(x)

giac [A] time = 0.15, size = 53, normalized size = 0.73

$$\frac{2}{9} Bc^2x^{\frac{9}{2}} + \frac{2}{7} Ac^2x^{\frac{7}{2}} + \frac{4}{5} Bacx^{\frac{5}{2}} + \frac{4}{3} Aacx^{\frac{3}{2}} + 2 Ba^2\sqrt{x} - \frac{2 Aa^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/x^(3/2),x, algorithm="giac")

[Out] 2/9*B*c^2*x^(9/2) + 2/7*A*c^2*x^(7/2) + 4/5*B*a*c*x^(5/2) + 4/3*A*a*c*x^(3/2) + 2*B*a^2*sqrt(x) - 2*A*a^2/sqrt(x)

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-35B c^2x^5 - 45A c^2x^4 - 126Bac x^3 - 210Aac x^2 - 315B a^2x + 315A a^2\right)}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+a)^2/x^(3/2),x)

[Out] -2/315*(-35*B*c^2*x^5-45*A*c^2*x^4-126*B*a*c*x^3-210*A*a*c*x^2-315*B*a^2*x+315*A*a^2)/x^(1/2)

maxima [A] time = 0.66, size = 53, normalized size = 0.73

$$\frac{2}{9} Bc^2x^{\frac{9}{2}} + \frac{2}{7} Ac^2x^{\frac{7}{2}} + \frac{4}{5} Bacx^{\frac{5}{2}} + \frac{4}{3} Aacx^{\frac{3}{2}} + 2 Ba^2\sqrt{x} - \frac{2 Aa^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/x^(3/2),x, algorithm="maxima")

[Out] 2/9*B*c^2*x^(9/2) + 2/7*A*c^2*x^(7/2) + 4/5*B*a*c*x^(5/2) + 4/3*A*a*c*x^(3/2) + 2*B*a^2*sqrt(x) - 2*A*a^2/sqrt(x)

mupad [B] time = 0.03, size = 53, normalized size = 0.73

$$2\,B\,a^2\,\sqrt{x} - \frac{2\,A\,a^2}{\sqrt{x}} + \frac{2\,A\,c^2\,x^{7/2}}{7} + \frac{2\,B\,c^2\,x^{9/2}}{9} + \frac{4\,A\,a\,c\,x^{3/2}}{3} + \frac{4\,B\,a\,c\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + c*x^2)^2*(A + B*x))/x^(3/2),x)

[Out] 2*B*a^2*x^(1/2) - (2*A*a^2)/x^(1/2) + (2*A*c^2*x^(7/2))/7 + (2*B*c^2*x^(9/2))/9 + (4*A*a*c*x^(3/2))/3 + (4*B*a*c*x^(5/2))/5

<u>**sympy**</u> **[A]** time = 1.68, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{\sqrt{x}} + \frac{4Aacx^{\frac{3}{2}}}{3} + \frac{2Ac^2x^{\frac{7}{2}}}{7} + 2Ba^2\sqrt{x} + \frac{4Bacx^{\frac{5}{2}}}{5} + \frac{2Bc^2x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(3/2),x)
```

```
[Out] -2*A*a**2/sqrt(x) + 4*A*a*c*x**(3/2)/3 + 2*A*c**2*x**(7/2)/7 + 2*B*a**2*sqr
t(x) + 4*B*a*c*x**(5/2)/5 + 2*B*c**2*x**(9/2)/9
```

3.399 $\int \frac{(A+Bx)(a+cx^2)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a^2B}{\sqrt{x}}+4aAc\sqrt{x}+\frac{4}{3}aBcx^{3/2}+\frac{2}{5}Ac^2x^{5/2}+\frac{2}{7}Bc^2x^{7/2}$$

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a^2B}{\sqrt{x}}+4aAc\sqrt{x}+\frac{4}{3}aBcx^{3/2}+\frac{2}{5}Ac^2x^{5/2}+\frac{2}{7}Bc^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (-2*a^2*A)/(3*x^(3/2)) - (2*a^2*B)/Sqrt[x] + 4*a*A*c*Sqrt[x] + (4*a*B*c*x^(
3/2))/3 + (2*A*c^2*x^(5/2))/5 + (2*B*c^2*x^(7/2))/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{5/2}}\,dx &= \int \left(\frac{a^2A}{x^{5/2}}+\frac{a^2B}{x^{3/2}}+\frac{2aAc}{\sqrt{x}}+2aBc\sqrt{x}+Ac^2x^{3/2}+Bc^2x^{5/2}\right)dx\\ &= -\frac{2a^2A}{3x^{3/2}}-\frac{2a^2B}{\sqrt{x}}+4aAc\sqrt{x}+\frac{4}{3}aBcx^{3/2}+\frac{2}{5}Ac^2x^{5/2}+\frac{2}{7}Bc^2x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.70

$$\frac{-70a^2(A+3Bx)+140acx^2(3A+Bx)+6c^2x^4(7A+5Bx)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (140*a*c*x^2*(3*A + B*x) - 70*a^2*(A + 3*B*x) + 6*c^2*x^4*(7*A + 5*B*x))/(1
05*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 57, normalized size = 0.78

$$\frac{2\left(-35a^2A-105a^2Bx+210aAcx^2+70aBcx^3+21Ac^2x^4+15Bc^2x^5\right)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*(-35*a^2*A - 105*a^2*B*x + 210*a*A*c*x^2 + 70*a*B*c*x^3 + 21*A*c^2*x^4 +
 15*B*c^2*x^5))/(105*x^(3/2))
```

fricas [A] time = 0.41, size = 53, normalized size = 0.73

$$\frac{2\left(15\,Bc^{2}x^{5}+21\,Ac^{2}x^{4}+70\,Bacx^{3}+210\,Aacx^{2}-105\,Ba^{2}x-35\,Aa^{2}\right)}{105\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*x^5 + 21*A*c^2*x^4 + 70*B*a*c*x^3 + 210*A*a*c*x^2 - 105*B*a
^2*x - 35*A*a^2)/x^(3/2)
```

giac [A] time = 0.17, size = 53, normalized size = 0.73

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{2}{5}\,Ac^{2}x^{\frac{5}{2}}+\frac{4}{3}\,Bacx^{\frac{3}{2}}+4\,Aac\sqrt{x}-\frac{2\left(3\,Ba^{2}x+Aa^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2/5*A*c^2*x^(5/2) + 4/3*B*a*c*x^(3/2) + 4*A*a*c*sqrt(x)
 - 2/3*(3*B*a^2*x + A*a^2)/x^(3/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-15B\,c^{2}x^{5}-21A\,c^{2}x^{4}-70Bac\,x^{3}-210Aac\,x^{2}+105B\,a^{2}x+35A\,a^{2}\right)}{105x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(5/2),x)
```

```
[Out] -2/105*(-15*B*c^2*x^5-21*A*c^2*x^4-70*B*a*c*x^3-210*A*a*c*x^2+105*B*a^2*x+3
5*A*a^2)/x^(3/2)
```

maxima [A] time = 0.53, size = 53, normalized size = 0.73

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{2}{5}\,Ac^{2}x^{\frac{5}{2}}+\frac{4}{3}\,Bacx^{\frac{3}{2}}+4\,Aac\sqrt{x}-\frac{2\left(3\,Ba^{2}x+Aa^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2/5*A*c^2*x^(5/2) + 4/3*B*a*c*x^(3/2) + 4*A*a*c*sqrt(x)
 - 2/3*(3*B*a^2*x + A*a^2)/x^(3/2)
```

mupad [B] time = 0.03, size = 54, normalized size = 0.74

$$\frac{2\,A\,c^2\,x^{5/2}}{5}-\frac{\frac{2\,A\,a^2}{3}+2\,B\,a^2\,x}{x^{3/2}}+\frac{2\,B\,c^2\,x^{7/2}}{7}+4\,A\,a\,c\,\sqrt{x}+\frac{4\,B\,a\,c\,x^{3/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(5/2),x)
```

```
[Out] (2*A*c^2*x^(5/2))/5 - ((2*A*a^2)/3 + 2*B*a^2*x)/x^(3/2) + (2*B*c^2*x^(7/2))
/7 + 4*A*a*c*x^(1/2) + (4*B*a*c*x^(3/2))/3
```

sympy [A] time = 2.12, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{3x^{\frac{3}{2}}} + 4Aac\sqrt{x} + \frac{2Ac^2x^{\frac{5}{2}}}{5} - \frac{2Ba^2}{\sqrt{x}} + \frac{4Bacx^{\frac{3}{2}}}{3} + \frac{2Bc^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(5/2),x)
```

```
[Out] -2*A*a**2/(3*x**(3/2)) + 4*A*a*c*sqrt(x) + 2*A*c**2*x**(5/2)/5 - 2*B*a**2/s
qrt(x) + 4*B*a*c*x**(3/2)/3 + 2*B*c**2*x**(7/2)/7
```

3.400 $\int \frac{(A+Bx)(a+cx^2)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a^2B}{3x^{3/2}}-\frac{4aAc}{\sqrt{x}}+4aBc\sqrt{x}+\frac{2}{3}Ac^2x^{3/2}+\frac{2}{5}Bc^2x^{5/2}$$

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a^2B}{3x^{3/2}}-\frac{4aAc}{\sqrt{x}}+4aBc\sqrt{x}+\frac{2}{3}Ac^2x^{3/2}+\frac{2}{5}Bc^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^2*A)/(5*x^(5/2)) - (2*a^2*B)/(3*x^(3/2)) - (4*a*A*c)/Sqrt[x] + 4*a*B*
c*Sqrt[x] + (2*A*c^2*x^(3/2))/3 + (2*B*c^2*x^(5/2))/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{7/2}}\,dx &= \int \left(\frac{a^2A}{x^{7/2}}+\frac{a^2B}{x^{5/2}}+\frac{2aAc}{x^{3/2}}+\frac{2aBc}{\sqrt{x}}+Ac^2\sqrt{x}+Bc^2x^{3/2}\right)dx\\ &= -\frac{2a^2A}{5x^{5/2}}-\frac{2a^2B}{3x^{3/2}}-\frac{4aAc}{\sqrt{x}}+4aBc\sqrt{x}+\frac{2}{3}Ac^2x^{3/2}+\frac{2}{5}Bc^2x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 53, normalized size = 0.73

$$\frac{-2a^2(3A+5Bx)+60acx^2(Bx-A)+2c^2x^4(5A+3Bx)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (60*a*c*x^2*(-A + B*x) + 2*c^2*x^4*(5*A + 3*B*x) - 2*a^2*(3*A + 5*B*x))/(15
*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 57, normalized size = 0.78

$$\frac{2\left(-3a^2A-5a^2Bx-30aAcx^2+30aBcx^3+5Ac^2x^4+3Bc^2x^5\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (2*(-3*a^2*A - 5*a^2*B*x - 30*a*A*c*x^2 + 30*a*B*c*x^3 + 5*A*c^2*x^4 + 3*B*
c^2*x^5))/(15*x^(5/2))
```

fricas [A] time = 0.41, size = 53, normalized size = 0.73

$$\frac{2\left(3\,Bc^2x^5+5\,Ac^2x^4+30\,Bacx^3-30\,Aacx^2-5\,Ba^2x-3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^5 + 5*A*c^2*x^4 + 30*B*a*c*x^3 - 30*A*a*c*x^2 - 5*B*a^2*x -
 3*A*a^2)/x^(5/2)
```

giac [A] time = 0.15, size = 54, normalized size = 0.74

$$\frac{2}{5}\,Bc^2x^{\frac{5}{2}}+\frac{2}{3}\,Ac^2x^{\frac{3}{2}}+4\,Bac\sqrt{x}-\frac{2\left(30\,Aacx^2+5\,Ba^2x+3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 2/3*A*c^2*x^(3/2) + 4*B*a*c*sqrt(x) - 2/15*(30*A*a*c*x^
2 + 5*B*a^2*x + 3*A*a^2)/x^(5/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-3B\,c^2x^5-5A\,c^2x^4-30Bac\,x^3+30Aac\,x^2+5B\,a^2x+3A\,a^2\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(7/2),x)
```

```
[Out] -2/15*(-3*B*c^2*x^5-5*A*c^2*x^4-30*B*a*c*x^3+30*A*a*c*x^2+5*B*a^2*x+3*A*a^2
)/x^(5/2)
```

maxima [A] time = 0.49, size = 54, normalized size = 0.74

$$\frac{2}{5}\,Bc^2x^{\frac{5}{2}}+\frac{2}{3}\,Ac^2x^{\frac{3}{2}}+4\,Bac\sqrt{x}-\frac{2\left(30\,Aacx^2+5\,Ba^2x+3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 2/3*A*c^2*x^(3/2) + 4*B*a*c*sqrt(x) - 2/15*(30*A*a*c*x^
2 + 5*B*a^2*x + 3*A*a^2)/x^(5/2)
```

mupad [B] time = 0.05, size = 54, normalized size = 0.74

$$\frac{2\,A\,c^2\,x^{3/2}}{3}-\frac{\frac{2\,B\,a^2\,x}{3}+\frac{2\,A\,a^2}{5}+4\,A\,c\,a\,x^2}{x^{5/2}}+\frac{2\,B\,c^2\,x^{5/2}}{5}+4\,B\,a\,c\,\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(7/2),x)
```

```
[Out] (2*A*c^2*x^(3/2))/3 - ((2*A*a^2)/5 + (2*B*a^2*x)/3 + 4*A*a*c*x^2)/x^(5/2) +
 (2*B*c^2*x^(5/2))/5 + 4*B*a*c*x^(1/2)
```

sympy [A] time = 2.90, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{5x^{\frac{5}{2}}} - \frac{4Aac}{\sqrt{x}} + \frac{2Ac^2x^{\frac{3}{2}}}{3} - \frac{2Ba^2}{3x^{\frac{3}{2}}} + 4Bac\sqrt{x} + \frac{2Bc^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(7/2),x)
```

```
[Out] -2*A*a**2/(5*x**(5/2)) - 4*A*a*c/sqrt(x) + 2*A*c**2*x**(3/2)/3 - 2*B*a**2/(
3*x**(3/2)) + 4*B*a*c*sqrt(x) + 2*B*c**2*x**(5/2)/5
```

3.401 $\int \frac{(A+Bx)(a+cx^2)^2}{x^{9/2}} \, dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a^2B}{5x^{5/2}}-\frac{4aAc}{3x^{3/2}}-\frac{4aBc}{\sqrt{x}}+2Ac^2\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}$$

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a^2B}{5x^{5/2}}-\frac{4aAc}{3x^{3/2}}-\frac{4aBc}{\sqrt{x}}+2Ac^2\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*a^2*A)/(7*x^(7/2)) - (2*a^2*B)/(5*x^(5/2)) - (4*a*A*c)/(3*x^(3/2)) - (4
*a*B*c)/Sqrt[x] + 2*A*c^2*Sqrt[x] + (2*B*c^2*x^(3/2))/3
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{9/2}}\,dx &= \int \left(\frac{a^2A}{x^{9/2}}+\frac{a^2B}{x^{7/2}}+\frac{2aAc}{x^{5/2}}+\frac{2aBc}{x^{3/2}}+\frac{Ac^2}{\sqrt{x}}+Bc^2\sqrt{x}\right)dx\\ &= -\frac{2a^2A}{7x^{7/2}}-\frac{2a^2B}{5x^{5/2}}-\frac{4aAc}{3x^{3/2}}-\frac{4aBc}{\sqrt{x}}+2Ac^2\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.70

$$\frac{-6a^2(5A+7Bx)-140acx^2(A+3Bx)+70c^2x^4(3A+Bx)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (70*c^2*x^4*(3*A + B*x) - 140*a*c*x^2*(A + 3*B*x) - 6*a^2*(5*A + 7*B*x))/(1
05*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.05, size = 57, normalized size = 0.78

$$\frac{2\left(-15a^2A-21a^2Bx-70aAcx^2-210aBcx^3+105Ac^2x^4+35Bc^2x^5\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (2*(-15*a^2*A - 21*a^2*B*x - 70*a*A*c*x^2 - 210*a*B*c*x^3 + 105*A*c^2*x^4 +
 35*B*c^2*x^5))/(105*x^(7/2))
```

fricas [A] time = 0.41, size = 53, normalized size = 0.73

$$\frac{2\left(35\,Bc^2x^5+105\,Ac^2x^4-210\,Bacx^3-70\,Aacx^2-21\,Ba^2x-15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*c^2*x^5 + 105*A*c^2*x^4 - 210*B*a*c*x^3 - 70*A*a*c*x^2 - 21*B*a
^2*x - 15*A*a^2)/x^(7/2)
```

giac [A] time = 0.15, size = 54, normalized size = 0.74

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}}+2\,Ac^2\sqrt{x}-\frac{2\left(210\,Bacx^3+70\,Aacx^2+21\,Ba^2x+15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*A*c^2*sqrt(x) - 2/105*(210*B*a*c*x^3 + 70*A*a*c*x^2 +
 21*B*a^2*x + 15*A*a^2)/x^(7/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-35B\,c^2x^5-105A\,c^2x^4+210Bac\,x^3+70Aac\,x^2+21B\,a^2x+15A\,a^2\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(9/2),x)
```

```
[Out] -2/105*(-35*B*c^2*x^5-105*A*c^2*x^4+210*B*a*c*x^3+70*A*a*c*x^2+21*B*a^2*x+1
5*A*a^2)/x^(7/2)
```

maxima [A] time = 0.48, size = 54, normalized size = 0.74

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}}+2\,Ac^2\sqrt{x}-\frac{2\left(210\,Bacx^3+70\,Aacx^2+21\,Ba^2x+15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*A*c^2*sqrt(x) - 2/105*(210*B*a*c*x^3 + 70*A*a*c*x^2 +
 21*B*a^2*x + 15*A*a^2)/x^(7/2)
```

mupad [B] time = 0.05, size = 53, normalized size = 0.73

$$-\frac{42\,B\,a^2\,x+30\,A\,a^2+420\,B\,a\,c\,x^3+140\,A\,a\,c\,x^2-70\,B\,c^2\,x^5-210\,A\,c^2\,x^4}{105\,x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(9/2),x)
```

```
[Out] -(30*A*a^2 - 210*A*c^2*x^4 - 70*B*c^2*x^5 + 42*B*a^2*x + 140*A*a*c*x^2 + 42
0*B*a*c*x^3)/(105*x^(7/2))
```

sympy [A] time = 4.02, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{7x^{\frac{7}{2}}}-\frac{4Aac}{3x^{\frac{3}{2}}}+2Ac^2\sqrt{x}-\frac{2Ba^2}{5x^{\frac{5}{2}}}-\frac{4Bac}{\sqrt{x}}+\frac{2Bc^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(9/2),x)
```

```
[Out] -2*A*a**2/(7*x**(7/2)) - 4*A*a*c/(3*x**(3/2)) + 2*A*c**2*sqrt(x) - 2*B*a**2
/(5*x**(5/2)) - 4*B*a*c/sqrt(x) + 2*B*c**2*x**(3/2)/3
```

3.402 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^3Bx^{11/2}+\frac{6}{13}a^2Acx^{13/2}+\frac{2}{5}a^2Bcx^{15/2}+\frac{6}{17}aAc^2x^{17/2}+\frac{6}{19}aBc^2x^{19/2}+\frac{2}{21}Ac^3x^{21/2}+\frac{2}{23}Bc^3x^{23/2}$$

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6}{13}a^2Acx^{13/2}+\frac{2}{9}a^3Ax^{9/2}+\frac{2}{5}a^2Bcx^{15/2}+\frac{2}{11}a^3Bx^{11/2}+\frac{6}{17}aAc^2x^{17/2}+\frac{6}{19}aBc^2x^{19/2}+\frac{2}{21}Ac^3x^{21/2}+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(9/2))/9 + (2*a^3*B*x^(11/2))/11 + (6*a^2*A*c*x^(13/2))/13 + (2*
a^2*B*c*x^(15/2))/5 + (6*a*A*c^2*x^(17/2))/17 + (6*a*B*c^2*x^(19/2))/19 + (
2*A*c^3*x^(21/2))/21 + (2*B*c^3*x^(23/2))/23
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x^{7/2}(A+Bx)\left(a+cx^2\right)^3\,dx=\int\left(a^3Ax^{7/2}+a^3Bx^{9/2}+3a^2Acx^{11/2}+3a^2Bcx^{13/2}+3aAc^2x^{15/2}+3aBc^2x^{17/2}+A\right.$$
$$=\frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^3Bx^{11/2}+\frac{6}{13}a^2Acx^{13/2}+\frac{2}{5}a^2Bcx^{15/2}+\frac{6}{17}aAc^2x^{17/2}+\frac{6}{19}aBc^2x^1$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{99}a^3x^{9/2}(11A+9Bx)+\frac{2}{65}a^2cx^{13/2}(15A+13Bx)+\frac{6}{323}ac^2x^{17/2}(19A+17Bx)+\frac{2}{483}c^3x^{21/2}(23A+21Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(9/2)*(11*A + 9*B*x))/99 + (2*a^2*c*x^(13/2)*(15*A + 13*B*x))/65 +
 (6*a*c^2*x^(17/2)*(19*A + 17*B*x))/323 + (2*c^3*x^(21/2)*(23*A + 21*B*x))/
483
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 0.89

$$\frac{2\left(37182145a^3Ax^{9/2}+30421755a^3Bx^{11/2}+77224455a^2Acx^{13/2}+66927861a^2Bcx^{15/2}+59053995aAc^2x^{17/2}+52837785aBc^2x^{19/2}+15935205Ac^3x^{21/2}+14549535Bc^3x^{23/2}\right)}{334639305}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*(37182145*a^3*A*x^(9/2) + 30421755*a^3*B*x^(11/2) + 77224455*a^2*A*c*x^(
13/2) + 66927861*a^2*B*c*x^(15/2) + 59053995*a*A*c^2*x^(17/2) + 52837785*a*
B*c^2*x^(19/2) + 15935205*A*c^3*x^(21/2) + 14549535*B*c^3*x^(23/2)))/334639
305
```

fricas [A] time = 0.40, size = 82, normalized size = 0.75

$$\frac{2}{334639305}\left(14549535\,Bc^3x^{11}+15935205\,Ac^3x^{10}+52837785\,Bac^2x^9+59053995\,Aac^2x^8+66927861\,Ba^2cx^7+77224455\,Aa^2cx^6+30421755\,Ba^3x^5+37182145\,Aa^3x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 2/334639305*(14549535*B*c^3*x^11 + 15935205*A*c^3*x^10 + 52837785*B*a*c^2*x
^9 + 59053995*A*a*c^2*x^8 + 66927861*B*a^2*c*x^7 + 77224455*A*a^2*c*x^6 + 3
0421755*B*a^3*x^5 + 37182145*A*a^3*x^4)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.71

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}}+\frac{2}{21}\,Ac^3x^{\frac{21}{2}}+\frac{6}{19}\,Bac^2x^{\frac{19}{2}}+\frac{6}{17}\,Aac^2x^{\frac{17}{2}}+\frac{2}{5}\,Ba^2cx^{\frac{15}{2}}+\frac{6}{13}\,Aa^2cx^{\frac{13}{2}}+\frac{2}{11}\,Ba^3x^{\frac{11}{2}}+\frac{2}{9}\,Aa^3x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*a*c^2*x^(19/2) + 6/17*A*
a*c^2*x^(17/2) + 2/5*B*a^2*c*x^(15/2) + 6/13*A*a^2*c*x^(13/2) + 2/11*B*a^3*
x^(11/2) + 2/9*A*a^3*x^(9/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\left(14549535B\,c^3x^7+15935205A\,c^3x^6+52837785Ba\,c^2x^5+59053995Aa\,c^2x^4+66927861B\,a^2c\,x^3+77224455A\,a^2c\,x^2+30421755B\,a^3x+37182145A\,a^3\right)x^{\frac{9}{2}}}{334639305}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 2/334639305*x^(9/2)*(14549535*B*c^3*x^7+15935205*A*c^3*x^6+52837785*B*a*c^2
*x^5+59053995*A*a*c^2*x^4+66927861*B*a^2*c*x^3+77224455*A*a^2*c*x^2+3042175
5*B*a^3*x+37182145*A*a^3)
```

maxima [A] time = 0.52, size = 77, normalized size = 0.71

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}}+\frac{2}{21}\,Ac^3x^{\frac{21}{2}}+\frac{6}{19}\,Bac^2x^{\frac{19}{2}}+\frac{6}{17}\,Aac^2x^{\frac{17}{2}}+\frac{2}{5}\,Ba^2cx^{\frac{15}{2}}+\frac{6}{13}\,Aa^2cx^{\frac{13}{2}}+\frac{2}{11}\,Ba^3x^{\frac{11}{2}}+\frac{2}{9}\,Aa^3x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*a*c^2*x^(19/2) + 6/17*A*
a*c^2*x^(17/2) + 2/5*B*a^2*c*x^(15/2) + 6/13*A*a^2*c*x^(13/2) + 2/11*B*a^3*
x^(11/2) + 2/9*A*a^3*x^(9/2)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{9/2}}{9}+\frac{2\,B\,a^3\,x^{11/2}}{11}+\frac{2\,A\,c^3\,x^{21/2}}{21}+\frac{2\,B\,c^3\,x^{23/2}}{23}+\frac{6\,A\,a^2\,c\,x^{13/2}}{13}+\frac{6\,A\,a\,c^2\,x^{17/2}}{17}+\frac{2\,B\,a^2\,c\,x^{15/2}}{5}+\frac{6\,B\,a\,c^2\,x^{19/2}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(9/2))/9 + (2*B*a^3*x^(11/2))/11 + (2*A*c^3*x^(21/2))/21 + (2*B*
c^3*x^(23/2))/23 + (6*A*a^2*c*x^(13/2))/13 + (6*A*a*c^2*x^(17/2))/17 + (2*B
*a^2*c*x^(15/2))/5 + (6*B*a*c^2*x^(19/2))/19
```

sympy [A] time = 27.94, size = 114, normalized size = 1.05

$$\frac{2Aa^3x^{\frac{9}{2}}}{9} + \frac{6Aa^2cx^{\frac{13}{2}}}{13} + \frac{6Aac^2x^{\frac{17}{2}}}{17} + \frac{2Ac^3x^{\frac{21}{2}}}{21} + \frac{2Ba^3x^{\frac{11}{2}}}{11} + \frac{2Ba^2cx^{\frac{15}{2}}}{5} + \frac{6Bac^2x^{\frac{19}{2}}}{19} + \frac{2Bc^3x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] 2*A*a**3*x**(9/2)/9 + 6*A*a**2*c*x**(13/2)/13 + 6*A*a*c**2*x**(17/2)/17 + 2
*A*c**3*x**(21/2)/21 + 2*B*a**3*x**(11/2)/11 + 2*B*a**2*c*x**(15/2)/5 + 6*B
*a*c**2*x**(19/2)/19 + 2*B*c**3*x**(23/2)/23
```

3.403 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^3Bx^{9/2}+\frac{6}{11}a^2Acx^{11/2}+\frac{6}{13}a^2Bcx^{13/2}+\frac{2}{5}aAc^2x^{15/2}+\frac{6}{17}aBc^2x^{17/2}+\frac{2}{19}Ac^3x^{19/2}+\frac{2}{21}Bc^3x^{21/2}$$

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6}{11}a^2Acx^{11/2}+\frac{2}{7}a^3Ax^{7/2}+\frac{6}{13}a^2Bcx^{13/2}+\frac{2}{9}a^3Bx^{9/2}+\frac{2}{5}aAc^2x^{15/2}+\frac{6}{17}aBc^2x^{17/2}+\frac{2}{19}Ac^3x^{19/2}+\frac{2}{21}Bc^3x^{21/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(7/2))/7 + (2*a^3*B*x^(9/2))/9 + (6*a^2*A*c*x^(11/2))/11 + (6*a^
2*B*c*x^(13/2))/13 + (2*a*A*c^2*x^(15/2))/5 + (6*a*B*c^2*x^(17/2))/17 + (2*
A*c^3*x^(19/2))/19 + (2*B*c^3*x^(21/2))/21
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int x^{5/2}(A+Bx)\left(a+cx^2\right)^3\,dx=\int\left(a^3Ax^{5/2}+a^3Bx^{7/2}+3a^2Acx^{9/2}+3a^2Bcx^{11/2}+3aAc^2x^{13/2}+3aBc^2x^{15/2}+\right.$$
$$=\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^3Bx^{9/2}+\frac{6}{11}a^2Acx^{11/2}+\frac{6}{13}a^2Bcx^{13/2}+\frac{2}{5}aAc^2x^{15/2}+\frac{6}{17}aBc^2x$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{63}a^3x^{7/2}(9A+7Bx)+\frac{6}{143}a^2cx^{11/2}(13A+11Bx)+\frac{2}{85}ac^2x^{15/2}(17A+15Bx)+\frac{2}{399}c^3x^{19/2}(21A+19Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(7/2)*(9*A + 7*B*x))/63 + (6*a^2*c*x^(11/2)*(13*A + 11*B*x))/143 +
 (2*a*c^2*x^(15/2)*(17*A + 15*B*x))/85 + (2*c^3*x^(19/2)*(21*A + 19*B*x))/3
99
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 0.89

$$\frac{2\left(2078505a^3Ax^{7/2}+1616615a^3Bx^{9/2}+3968055a^2Acx^{11/2}+3357585a^2Bcx^{13/2}+2909907aAc^2x^{15/2}+2567565aBc^2x^{17/2}+765765Ac^3x^{19/2}+692835Bc^3x^{21/2}\right)}{14549535}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*(2078505*a^3*A*x^(7/2) + 1616615*a^3*B*x^(9/2) + 3968055*a^2*A*c*x^(11/2
) + 3357585*a^2*B*c*x^(13/2) + 2909907*a*A*c^2*x^(15/2) + 2567565*a*B*c^2*x
^(17/2) + 765765*A*c^3*x^(19/2) + 692835*B*c^3*x^(21/2)))/14549535
```

fricas [A] time = 0.41, size = 82, normalized size = 0.75

$$\frac{2}{14549535}\left(692835\,Bc^3x^{10}+765765\,Ac^3x^9+2567565\,Bac^2x^8+2909907\,Aac^2x^7+3357585\,Ba^2cx^6+3968055\,Aa^2cx^5+1616615\,Ba^3x^4+2078505\,Aa^3x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 2/14549535*(692835*B*c^3*x^10 + 765765*A*c^3*x^9 + 2567565*B*a*c^2*x^8 + 29
09907*A*a*c^2*x^7 + 3357585*B*a^2*c*x^6 + 3968055*A*a^2*c*x^5 + 1616615*B*a
^3*x^4 + 2078505*A*a^3*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.71

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}}+\frac{2}{19}\,Ac^3x^{\frac{19}{2}}+\frac{6}{17}\,Bac^2x^{\frac{17}{2}}+\frac{2}{5}\,Aac^2x^{\frac{15}{2}}+\frac{6}{13}\,Ba^2cx^{\frac{13}{2}}+\frac{6}{11}\,Aa^2cx^{\frac{11}{2}}+\frac{2}{9}\,Ba^3x^{\frac{9}{2}}+\frac{2}{7}\,Aa^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*a*c^2*x^(17/2) + 2/5*A*a
*c^2*x^(15/2) + 6/13*B*a^2*c*x^(13/2) + 6/11*A*a^2*c*x^(11/2) + 2/9*B*a^3*x
^(9/2) + 2/7*A*a^3*x^(7/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\left(692835B\,c^3x^7+765765A\,c^3x^6+2567565Ba\,c^2x^5+2909907Aa\,c^2x^4+3357585B\,a^2c\,x^3+3968055A\,a^2c\,x^2+1616615B\,a^3x+2078505A\,a^3\right)x^{\frac{7}{2}}}{14549535}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 2/14549535*x^(7/2)*(692835*B*c^3*x^7+765765*A*c^3*x^6+2567565*B*a*c^2*x^5+2
909907*A*a*c^2*x^4+3357585*B*a^2*c*x^3+3968055*A*a^2*c*x^2+1616615*B*a^3*x+
2078505*A*a^3)
```

maxima [A] time = 0.60, size = 77, normalized size = 0.71

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}}+\frac{2}{19}\,Ac^3x^{\frac{19}{2}}+\frac{6}{17}\,Bac^2x^{\frac{17}{2}}+\frac{2}{5}\,Aac^2x^{\frac{15}{2}}+\frac{6}{13}\,Ba^2cx^{\frac{13}{2}}+\frac{6}{11}\,Aa^2cx^{\frac{11}{2}}+\frac{2}{9}\,Ba^3x^{\frac{9}{2}}+\frac{2}{7}\,Aa^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*a*c^2*x^(17/2) + 2/5*A*a
*c^2*x^(15/2) + 6/13*B*a^2*c*x^(13/2) + 6/11*A*a^2*c*x^(11/2) + 2/9*B*a^3*x
^(9/2) + 2/7*A*a^3*x^(7/2)
```

mupad [B] time = 0.03, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{7/2}}{7}+\frac{2\,B\,a^3\,x^{9/2}}{9}+\frac{2\,A\,c^3\,x^{19/2}}{19}+\frac{2\,B\,c^3\,x^{21/2}}{21}+\frac{6\,A\,a^2\,c\,x^{11/2}}{11}+\frac{2\,A\,a\,c^2\,x^{15/2}}{5}+\frac{6\,B\,a^2\,c\,x^{13/2}}{13}+\frac{6\,B\,a\,c^2\,x^{17/2}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(7/2))/7 + (2*B*a^3*x^(9/2))/9 + (2*A*c^3*x^(19/2))/19 + (2*B*c^
3*x^(21/2))/21 + (6*A*a^2*c*x^(11/2))/11 + (2*A*a*c^2*x^(15/2))/5 + (6*B*a^
2*c*x^(13/2))/13 + (6*B*a*c^2*x^(17/2))/17
```

sympy [A] time = 16.45, size = 114, normalized size = 1.05

$$\frac{2Aa^3x^{\frac{7}{2}}}{7}+\frac{6Aa^2cx^{\frac{11}{2}}}{11}+\frac{2Aac^2x^{\frac{15}{2}}}{5}+\frac{2Ac^3x^{\frac{19}{2}}}{19}+\frac{2Ba^3x^{\frac{9}{2}}}{9}+\frac{6Ba^2cx^{\frac{13}{2}}}{13}+\frac{6Bac^2x^{\frac{17}{2}}}{17}+\frac{2Bc^3x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] 2*A*a**3*x**(7/2)/7 + 6*A*a**2*c*x**(11/2)/11 + 2*A*a*c**2*x**(15/2)/5 + 2*
A*c**3*x**(19/2)/19 + 2*B*a**3*x**(9/2)/9 + 6*B*a**2*c*x**(13/2)/13 + 6*B*a
*c**2*x**(17/2)/17 + 2*B*c**3*x**(21/2)/21
```

3.404 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^3Bx^{7/2}+\frac{2}{3}a^2Acx^{9/2}+\frac{6}{11}a^2Bcx^{11/2}+\frac{6}{13}aAc^2x^{13/2}+\frac{2}{5}aBc^2x^{15/2}+\frac{2}{17}Ac^3x^{17/2}+\frac{2}{19}Bc^3x^{19/2}$$

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{3}a^2Acx^{9/2}+\frac{2}{5}a^3Ax^{5/2}+\frac{6}{11}a^2Bcx^{11/2}+\frac{2}{7}a^3Bx^{7/2}+\frac{6}{13}aAc^2x^{13/2}+\frac{2}{5}aBc^2x^{15/2}+\frac{2}{17}Ac^3x^{17/2}+\frac{2}{19}Bc^3x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(5/2))/5 + (2*a^3*B*x^(7/2))/7 + (2*a^2*A*c*x^(9/2))/3 + (6*a^2*
B*c*x^(11/2))/11 + (6*a*A*c^2*x^(13/2))/13 + (2*a*B*c^2*x^(15/2))/5 + (2*A*
c^3*x^(17/2))/17 + (2*B*c^3*x^(19/2))/19
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3Ax^{3/2}+a^3Bx^{5/2}+3a^2Acx^{7/2}+3a^2Bcx^{9/2}+3aAc^2x^{11/2}+3aBc^2x^{13/2}+Ac\right.\\ &= \frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^3Bx^{7/2}+\frac{2}{3}a^2Acx^{9/2}+\frac{6}{11}a^2Bcx^{11/2}+\frac{6}{13}aAc^2x^{13/2}+\frac{2}{5}aBc^2x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{35}a^3x^{5/2}(7A+5Bx)+\frac{2}{33}a^2cx^{9/2}(11A+9Bx)+\frac{2}{65}ac^2x^{13/2}(15A+13Bx)+\frac{2}{323}c^3x^{17/2}(19A+17Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(5/2)*(7*A + 5*B*x))/35 + (2*a^2*c*x^(9/2)*(11*A + 9*B*x))/33 + (2
*a*c^2*x^(13/2)*(15*A + 13*B*x))/65 + (2*c^3*x^(17/2)*(19*A + 17*B*x))/323
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 0.89

$$\frac{2\left(969969a^3Ax^{5/2}+692835a^3Bx^{7/2}+1616615a^2Acx^{9/2}+1322685a^2Bcx^{11/2}+1119195aAc^2x^{13/2}+969969aBc^2x^{15/2}+285285Ac^3x^{17/2}+255255Bc^3x^{19/2}\right)}{4849845}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*(969969*a^3*A*x^(5/2) + 692835*a^3*B*x^(7/2) + 1616615*a^2*A*c*x^(9/2) +
 1322685*a^2*B*c*x^(11/2) + 1119195*a*A*c^2*x^(13/2) + 969969*a*B*c^2*x^(15
/2) + 285285*A*c^3*x^(17/2) + 255255*B*c^3*x^(19/2)))/4849845
```

fricas [A] time = 0.41, size = 82, normalized size = 0.75

$$\frac{2}{4849845}\left(255255\,Bc^{3}x^{9}+285285\,Ac^{3}x^{8}+969969\,Bac^{2}x^{7}+1119195\,Aac^{2}x^{6}+1322685\,Ba^{2}cx^{5}+1616615\,Aa^{2}cx^{4}+692835\,Ba^{3}x^{3}+969969\,Aa^{3}x^{2}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(255255*B*c^3*x^9 + 285285*A*c^3*x^8 + 969969*B*a*c^2*x^7 + 11191
95*A*a*c^2*x^6 + 1322685*B*a^2*c*x^5 + 1616615*A*a^2*c*x^4 + 692835*B*a^3*x
^3 + 969969*A*a^3*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.71

$$\frac{2}{19}\,Bc^{3}x^{\frac{19}{2}}+\frac{2}{17}\,Ac^{3}x^{\frac{17}{2}}+\frac{2}{5}\,Bac^{2}x^{\frac{15}{2}}+\frac{6}{13}\,Aac^{2}x^{\frac{13}{2}}+\frac{6}{11}\,Ba^{2}cx^{\frac{11}{2}}+\frac{2}{3}\,Aa^{2}cx^{\frac{9}{2}}+\frac{2}{7}\,Ba^{3}x^{\frac{7}{2}}+\frac{2}{5}\,Aa^{3}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*a*c^2*x^(15/2) + 6/13*A*a
*c^2*x^(13/2) + 6/11*B*a^2*c*x^(11/2) + 2/3*A*a^2*c*x^(9/2) + 2/7*B*a^3*x^(
7/2) + 2/5*A*a^3*x^(5/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\left(255255B\,c^{3}x^{7}+285285A\,c^{3}x^{6}+969969Ba\,c^{2}x^{5}+1119195Aa\,c^{2}x^{4}+1322685B\,a^{2}c\,x^{3}+1616615A\,a^{2}c\,x^{2}+692835B\,a^{3}x+969969A\,a^{3}\right)x^{\frac{5}{2}}}{4849845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 2/4849845*x^(5/2)*(255255*B*c^3*x^7+285285*A*c^3*x^6+969969*B*a*c^2*x^5+111
9195*A*a*c^2*x^4+1322685*B*a^2*c*x^3+1616615*A*a^2*c*x^2+692835*B*a^3*x+969
969*A*a^3)
```

maxima [A] time = 0.59, size = 77, normalized size = 0.71

$$\frac{2}{19}\,Bc^{3}x^{\frac{19}{2}}+\frac{2}{17}\,Ac^{3}x^{\frac{17}{2}}+\frac{2}{5}\,Bac^{2}x^{\frac{15}{2}}+\frac{6}{13}\,Aac^{2}x^{\frac{13}{2}}+\frac{6}{11}\,Ba^{2}cx^{\frac{11}{2}}+\frac{2}{3}\,Aa^{2}cx^{\frac{9}{2}}+\frac{2}{7}\,Ba^{3}x^{\frac{7}{2}}+\frac{2}{5}\,Aa^{3}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*a*c^2*x^(15/2) + 6/13*A*a
*c^2*x^(13/2) + 6/11*B*a^2*c*x^(11/2) + 2/3*A*a^2*c*x^(9/2) + 2/7*B*a^3*x^(
7/2) + 2/5*A*a^3*x^(5/2)
```

mupad [B] time = 0.03, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{5/2}}{5}+\frac{2\,B\,a^3\,x^{7/2}}{7}+\frac{2\,A\,c^3\,x^{17/2}}{17}+\frac{2\,B\,c^3\,x^{19/2}}{19}+\frac{2\,A\,a^2\,c\,x^{9/2}}{3}+\frac{6\,A\,a\,c^2\,x^{13/2}}{13}+\frac{6\,B\,a^2\,c\,x^{11/2}}{11}+\frac{2\,B\,a\,c^2\,x^{15/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(5/2))/5 + (2*B*a^3*x^(7/2))/7 + (2*A*c^3*x^(17/2))/17 + (2*B*c^
3*x^(19/2))/19 + (2*A*a^2*c*x^(9/2))/3 + (6*A*a*c^2*x^(13/2))/13 + (6*B*a^2
*c*x^(11/2))/11 + (2*B*a*c^2*x^(15/2))/5
```

sympy [**A**] time = 9.82, size = 114, normalized size = 1.05

$$\frac{2Aa^3x^{\frac{5}{2}}}{5}+\frac{2Aa^2cx^{\frac{9}{2}}}{3}+\frac{6Aac^2x^{\frac{13}{2}}}{13}+\frac{2Ac^3x^{\frac{17}{2}}}{17}+\frac{2Ba^3x^{\frac{7}{2}}}{7}+\frac{6Ba^2cx^{\frac{11}{2}}}{11}+\frac{2Bac^2x^{\frac{15}{2}}}{5}+\frac{2Bc^3x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] 2*A*a**3*x**(5/2)/5 + 2*A*a**2*c*x**(9/2)/3 + 6*A*a*c**2*x**(13/2)/13 + 2*A
*c**3*x**(17/2)/17 + 2*B*a**3*x**(7/2)/7 + 6*B*a**2*c*x**(11/2)/11 + 2*B*a*
c**2*x**(15/2)/5 + 2*B*c**3*x**(19/2)/19
```

3.405 $\int \sqrt{x}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^3Bx^{5/2}+\frac{6}{7}a^2Acx^{7/2}+\frac{2}{3}a^2Bcx^{9/2}+\frac{6}{11}aAc^2x^{11/2}+\frac{6}{13}aBc^2x^{13/2}+\frac{2}{15}Ac^3x^{15/2}+\frac{2}{17}Bc^3x^{17/2}$$

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6}{7}a^2Acx^{7/2}+\frac{2}{3}a^3Ax^{3/2}+\frac{2}{3}a^2Bcx^{9/2}+\frac{2}{5}a^3Bx^{5/2}+\frac{6}{11}aAc^2x^{11/2}+\frac{6}{13}aBc^2x^{13/2}+\frac{2}{15}Ac^3x^{15/2}+\frac{2}{17}Bc^3x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(3/2))/3 + (2*a^3*B*x^(5/2))/5 + (6*a^2*A*c*x^(7/2))/7 + (2*a^2*
B*c*x^(9/2))/3 + (6*a*A*c^2*x^(11/2))/11 + (6*a*B*c^2*x^(13/2))/13 + (2*A*c
^3*x^(15/2))/15 + (2*B*c^3*x^(17/2))/17
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \sqrt{x}(A+Bx)\left(a+cx^2\right)^3\,dx = \int \left(a^3A\sqrt{x}+a^3Bx^{3/2}+3a^2Acx^{5/2}+3a^2Bcx^{7/2}+3aAc^2x^{9/2}+3aBc^2x^{11/2}+A\right.$$

$$=\frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^3Bx^{5/2}+\frac{6}{7}a^2Acx^{7/2}+\frac{2}{3}a^2Bcx^{9/2}+\frac{6}{11}aAc^2x^{11/2}+\frac{6}{13}aBc^2x^{13/2}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{15}a^3x^{3/2}(5A+3Bx)+\frac{2}{21}a^2cx^{7/2}(9A+7Bx)+\frac{6}{143}ac^2x^{11/2}(13A+11Bx)+\frac{2}{255}c^3x^{15/2}(17A+15Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(3/2)*(5*A + 3*B*x))/15 + (2*a^2*c*x^(7/2)*(9*A + 7*B*x))/21 + (6*
a*c^2*x^(11/2)*(13*A + 11*B*x))/143 + (2*c^3*x^(15/2)*(17*A + 15*B*x))/255
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 0.89

$$\frac{2\left(85085a^3Ax^{3/2}+51051a^3Bx^{5/2}+109395a^2Acx^{7/2}+85085a^2Bcx^{9/2}+69615aAc^2x^{11/2}+58905aBc^2x^{13/2}+17017Ac^3x^{15/2}+15015Bc^3x^{17/2}\right)}{255255}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*(85085*a^3*A*x^(3/2) + 51051*a^3*B*x^(5/2) + 109395*a^2*A*c*x^(7/2) + 85
085*a^2*B*c*x^(9/2) + 69615*a*A*c^2*x^(11/2) + 58905*a*B*c^2*x^(13/2) + 170
17*A*c^3*x^(15/2) + 15015*B*c^3*x^(17/2)))/255255
```

fricas [A] time = 0.40, size = 80, normalized size = 0.73

$$\frac{2}{255255}\left(15015\,Bc^3x^8 + 17017\,Ac^3x^7 + 58905\,Bac^2x^6 + 69615\,Aac^2x^5 + 85085\,Ba^2cx^4 + 109395\,Aa^2cx^3 + 51051\,Ba^3x^2 + 85085\,Aa^3x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/255255*(15015*B*c^3*x^8 + 17017*A*c^3*x^7 + 58905*B*a*c^2*x^6 + 69615*A*a
*c^2*x^5 + 85085*B*a^2*c*x^4 + 109395*A*a^2*c*x^3 + 51051*B*a^3*x^2 + 85085
*A*a^3*x)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.71

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}} + \frac{2}{15}\,Ac^3x^{\frac{15}{2}} + \frac{6}{13}\,Bac^2x^{\frac{13}{2}} + \frac{6}{11}\,Aac^2x^{\frac{11}{2}} + \frac{2}{3}\,Ba^2cx^{\frac{9}{2}} + \frac{6}{7}\,Aa^2cx^{\frac{7}{2}} + \frac{2}{5}\,Ba^3x^{\frac{5}{2}} + \frac{2}{3}\,Aa^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*a*c^2*x^(13/2) + 6/11*A*
a*c^2*x^(11/2) + 2/3*B*a^2*c*x^(9/2) + 6/7*A*a^2*c*x^(7/2) + 2/5*B*a^3*x^(5
/2) + 2/3*A*a^3*x^(3/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\left(15015B\,c^3x^7 + 17017A\,c^3x^6 + 58905Ba\,c^2x^5 + 69615Aa\,c^2x^4 + 85085B\,a^2c\,x^3 + 109395A\,a^2c\,x^2 + 51051B\,a^3x + 85085A\,a^3\right)x^{\frac{3}{2}}}{255255}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3*x^(1/2),x)
```

```
[Out] 2/255255*x^(3/2)*(15015*B*c^3*x^7+17017*A*c^3*x^6+58905*B*a*c^2*x^5+69615*A
*a*c^2*x^4+85085*B*a^2*c*x^3+109395*A*a^2*c*x^2+51051*B*a^3*x+85085*A*a^3)
```

maxima [A] time = 0.52, size = 77, normalized size = 0.71

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}} + \frac{2}{15}\,Ac^3x^{\frac{15}{2}} + \frac{6}{13}\,Bac^2x^{\frac{13}{2}} + \frac{6}{11}\,Aac^2x^{\frac{11}{2}} + \frac{2}{3}\,Ba^2cx^{\frac{9}{2}} + \frac{6}{7}\,Aa^2cx^{\frac{7}{2}} + \frac{2}{5}\,Ba^3x^{\frac{5}{2}} + \frac{2}{3}\,Aa^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*a*c^2*x^(13/2) + 6/11*A*
a*c^2*x^(11/2) + 2/3*B*a^2*c*x^(9/2) + 6/7*A*a^2*c*x^(7/2) + 2/5*B*a^3*x^(5
/2) + 2/3*A*a^3*x^(3/2)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{3/2}}{3} + \frac{2\,B\,a^3\,x^{5/2}}{5} + \frac{2\,A\,c^3\,x^{15/2}}{15} + \frac{2\,B\,c^3\,x^{17/2}}{17} + \frac{6\,A\,a^2\,c\,x^{7/2}}{7} + \frac{6\,A\,a\,c^2\,x^{11/2}}{11} + \frac{2\,B\,a^2\,c\,x^{9/2}}{3} + \frac{6\,B\,a\,c^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(3/2))/3 + (2*B*a^3*x^(5/2))/5 + (2*A*c^3*x^(15/2))/15 + (2*B*c^
3*x^(17/2))/17 + (6*A*a^2*c*x^(7/2))/7 + (6*A*a*c^2*x^(11/2))/11 + (2*B*a^2
*c*x^(9/2))/3 + (6*B*a*c^2*x^(13/2))/13
```

sympy [A] time = 4.41, size = 114, normalized size = 1.05

$$\frac{2Aa^3x^{\frac{3}{2}}}{3}+\frac{6Aa^2cx^{\frac{7}{2}}}{7}+\frac{6Aac^2x^{\frac{11}{2}}}{11}+\frac{2Ac^3x^{\frac{15}{2}}}{15}+\frac{2Ba^3x^{\frac{5}{2}}}{5}+\frac{2Ba^2cx^{\frac{9}{2}}}{3}+\frac{6Bac^2x^{\frac{13}{2}}}{13}+\frac{2Bc^3x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3*x**(1/2),x)
```

```
[Out] 2*A*a**3*x**(3/2)/3 + 6*A*a**2*c*x**(7/2)/7 + 6*A*a*c**2*x**(11/2)/11 + 2*A
*c**3*x**(15/2)/15 + 2*B*a**3*x**(5/2)/5 + 2*B*a**2*c*x**(9/2)/3 + 6*B*a*c*
*2*x**(13/2)/13 + 2*B*c**3*x**(17/2)/17
```

3.406 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=107

$$2a^3A\sqrt{x}+\frac{2}{3}a^3Bx^{3/2}+\frac{6}{5}a^2Acx^{5/2}+\frac{6}{7}a^2Bcx^{7/2}+\frac{2}{3}aAc^2x^{9/2}+\frac{6}{11}aBc^2x^{11/2}+\frac{2}{13}Ac^3x^{13/2}+\frac{2}{15}Bc^3x^{15/2}$$

Rubi [A] time = 0.04, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6}{5}a^2Acx^{5/2}+2a^3A\sqrt{x}+\frac{6}{7}a^2Bcx^{7/2}+\frac{2}{3}a^3Bx^{3/2}+\frac{2}{3}aAc^2x^{9/2}+\frac{6}{11}aBc^2x^{11/2}+\frac{2}{13}Ac^3x^{13/2}+\frac{2}{15}Bc^3x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] 2*a^3*A*Sqrt[x] + (2*a^3*B*x^(3/2))/3 + (6*a^2*A*c*x^(5/2))/5 + (6*a^2*B*c*
x^(7/2))/7 + (2*a*A*c^2*x^(9/2))/3 + (6*a*B*c^2*x^(11/2))/11 + (2*A*c^3*x^(
13/2))/13 + (2*B*c^3*x^(15/2))/15
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{x}}\,dx = \int \left(\frac{a^3A}{\sqrt{x}}+a^3B\sqrt{x}+3a^2Acx^{3/2}+3a^2Bcx^{5/2}+3aAc^2x^{7/2}+3aBc^2x^{9/2}+Ac^3x^{11/2}+\right.$$
$$=2a^3A\sqrt{x}+\frac{2}{3}a^3Bx^{3/2}+\frac{6}{5}a^2Acx^{5/2}+\frac{6}{7}a^2Bcx^{7/2}+\frac{2}{3}aAc^2x^{9/2}+\frac{6}{11}aBc^2x^{11/2}+\frac{2}{13}Ac$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.67

$$\frac{2\sqrt{x}\left(5005a^3(3A+Bx)+1287a^2cx^2(7A+5Bx)+455ac^2x^4(11A+9Bx)+77c^3x^6(15A+13Bx)\right)}{15015}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(5005*a^3*(3*A + B*x) + 1287*a^2*c*x^2*(7*A + 5*B*x) + 455*a*c^2
*x^4*(11*A + 9*B*x) + 77*c^3*x^6*(15*A + 13*B*x)))/15015
```

IntegrateAlgebraic [A] time = 0.04, size = 97, normalized size = 0.91

$$\frac{2\left(15015a^3A\sqrt{x}+5005a^3Bx^{3/2}+9009a^2Acx^{5/2}+6435a^2Bcx^{7/2}+5005aAc^2x^{9/2}+4095aBc^2x^{11/2}+1155Ac^3x^{13/2}+1001Bc^3x^{15/2}\right)}{15015}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(15015*a^3*A*Sqrt[x] + 5005*a^3*B*x^(3/2) + 9009*a^2*A*c*x^(5/2) + 6435*
a^2*B*c*x^(7/2) + 5005*a*A*c^2*x^(9/2) + 4095*a*B*c^2*x^(11/2) + 1155*A*c^3
*x^(13/2) + 1001*B*c^3*x^(15/2)))/15015
```

fricas [A] time = 0.41, size = 77, normalized size = 0.72

$$\frac{2}{15015}\left(1001\,Bc^3x^7+1155\,Ac^3x^6+4095\,Bac^2x^5+5005\,Aac^2x^4+6435\,Ba^2cx^3+9009\,Aa^2cx^2+5005\,Ba^3x+15015\,Aa^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1001*B*c^3*x^7 + 1155*A*c^3*x^6 + 4095*B*a*c^2*x^5 + 5005*A*a*c^2*
x^4 + 6435*B*a^2*c*x^3 + 9009*A*a^2*c*x^2 + 5005*B*a^3*x + 15015*A*a^3)*sqr
t(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.72

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}}+\frac{2}{13}\,Ac^3x^{\frac{13}{2}}+\frac{6}{11}\,Bac^2x^{\frac{11}{2}}+\frac{2}{3}\,Aac^2x^{\frac{9}{2}}+\frac{6}{7}\,Ba^2cx^{\frac{7}{2}}+\frac{6}{5}\,Aa^2cx^{\frac{5}{2}}+\frac{2}{3}\,Ba^3x^{\frac{3}{2}}+2\,Aa^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*a*c^2*x^(11/2) + 2/3*A*a
*c^2*x^(9/2) + 6/7*B*a^2*c*x^(7/2) + 6/5*A*a^2*c*x^(5/2) + 2/3*B*a^3*x^(3/2
) + 2*A*a^3*sqrt(x)
```

maple [A] time = 0.05, size = 78, normalized size = 0.73

$$\frac{2\left(1001B\,c^3x^7+1155A\,c^3x^6+4095Ba\,c^2x^5+5005Aa\,c^2x^4+6435B\,a^2c\,x^3+9009A\,a^2c\,x^2+5005B\,a^3x+15015A\,a^3\right)\sqrt{x}}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(1/2),x)
```

```
[Out] 2/15015*x^(1/2)*(1001*B*c^3*x^7+1155*A*c^3*x^6+4095*B*a*c^2*x^5+5005*A*a*c^
2*x^4+6435*B*a^2*c*x^3+9009*A*a^2*c*x^2+5005*B*a^3*x+15015*A*a^3)
```

maxima [A] time = 0.51, size = 77, normalized size = 0.72

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}}+\frac{2}{13}\,Ac^3x^{\frac{13}{2}}+\frac{6}{11}\,Bac^2x^{\frac{11}{2}}+\frac{2}{3}\,Aac^2x^{\frac{9}{2}}+\frac{6}{7}\,Ba^2cx^{\frac{7}{2}}+\frac{6}{5}\,Aa^2cx^{\frac{5}{2}}+\frac{2}{3}\,Ba^3x^{\frac{3}{2}}+2\,Aa^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*a*c^2*x^(11/2) + 2/3*A*a
*c^2*x^(9/2) + 6/7*B*a^2*c*x^(7/2) + 6/5*A*a^2*c*x^(5/2) + 2/3*B*a^3*x^(3/2
) + 2*A*a^3*sqrt(x)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.72

$$2\,A\,a^3\,\sqrt{x}+\frac{2\,B\,a^3\,x^{3/2}}{3}+\frac{2\,A\,c^3\,x^{13/2}}{13}+\frac{2\,B\,c^3\,x^{15/2}}{15}+\frac{6\,A\,a^2\,c\,x^{5/2}}{5}+\frac{2\,A\,a\,c^2\,x^{9/2}}{3}+\frac{6\,B\,a^2\,c\,x^{7/2}}{7}+\frac{6\,B\,a\,c^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(1/2),x)
```

```
[Out] 2*A*a^3*x^(1/2) + (2*B*a^3*x^(3/2))/3 + (2*A*c^3*x^(13/2))/13 + (2*B*c^3*x^
(15/2))/15 + (6*A*a^2*c*x^(5/2))/5 + (2*A*a*c^2*x^(9/2))/3 + (6*B*a^2*c*x^(
7/2))/7 + (6*B*a*c^2*x^(11/2))/11
```

sympy [A] time = 3.87, size = 112, normalized size = 1.05

$$2Aa^3\sqrt{x}+\frac{6Aa^2cx^{\frac{5}{2}}}{5}+\frac{2Aac^2x^{\frac{9}{2}}}{3}+\frac{2Ac^3x^{\frac{13}{2}}}{13}+\frac{2Ba^3x^{\frac{3}{2}}}{3}+\frac{6Ba^2cx^{\frac{7}{2}}}{7}+\frac{6Bac^2x^{\frac{11}{2}}}{11}+\frac{2Bc^3x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(1/2),x)
```

```
[Out] 2*A*a**3*sqrt(x) + 6*A*a**2*c*x**(5/2)/5 + 2*A*a*c**2*x**(9/2)/3 + 2*A*c**3
*x**(13/2)/13 + 2*B*a**3*x**(3/2)/3 + 6*B*a**2*c*x**(7/2)/7 + 6*B*a*c**2*x*
*(11/2)/11 + 2*B*c**3*x**(15/2)/15
```

3.407 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{\sqrt{x}}+2a^3B\sqrt{x}+2a^2Acx^{3/2}+\frac{6}{5}a^2Bcx^{5/2}+\frac{6}{7}aAc^2x^{7/2}+\frac{2}{3}aBc^2x^{9/2}+\frac{2}{11}Ac^3x^{11/2}+\frac{2}{13}Bc^3x^{13/2}$$

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$2a^2Acx^{3/2}-\frac{2a^3A}{\sqrt{x}}+\frac{6}{5}a^2Bcx^{5/2}+2a^3B\sqrt{x}+\frac{6}{7}aAc^2x^{7/2}+\frac{2}{3}aBc^2x^{9/2}+\frac{2}{11}Ac^3x^{11/2}+\frac{2}{13}Bc^3x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (-2*a^3*A)/Sqrt[x] + 2*a^3*B*Sqrt[x] + 2*a^2*A*c*x^(3/2) + (6*a^2*B*c*x^(5/
2))/5 + (6*a*A*c^2*x^(7/2))/7 + (2*a*B*c^2*x^(9/2))/3 + (2*A*c^3*x^(11/2))/
11 + (2*B*c^3*x^(13/2))/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{3/2}}\,dx=\int \left(\frac{a^3A}{x^{3/2}}+\frac{a^3B}{\sqrt{x}}+3a^2Ac\sqrt{x}+3a^2Bcx^{3/2}+3aAc^2x^{5/2}+3aBc^2x^{7/2}+Ac^3x^{9/2}+B$$
$$=-\frac{2a^3A}{\sqrt{x}}+2a^3B\sqrt{x}+2a^2Acx^{3/2}+\frac{6}{5}a^2Bcx^{5/2}+\frac{6}{7}aAc^2x^{7/2}+\frac{2}{3}aBc^2x^{9/2}+\frac{2}{11}Ac^3$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.78

$$\frac{2a^3(Bx-A)}{\sqrt{x}}+\frac{2}{5}a^2cx^{3/2}(5A+3Bx)+\frac{2}{21}ac^2x^{7/2}(9A+7Bx)+\frac{2}{143}c^3x^{11/2}(13A+11Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*a^3*(-A + B*x))/Sqrt[x] + (2*a^2*c*x^(3/2)*(5*A + 3*B*x))/5 + (2*a*c^2*x
^(7/2)*(9*A + 7*B*x))/21 + (2*c^3*x^(11/2)*(13*A + 11*B*x))/143
```

IntegrateAlgebraic [A] time = 0.06, size = 81, normalized size = 0.79

$$\frac{2\left(-15015a^3A+15015a^3Bx+15015a^2Acx^2+9009a^2Bcx^3+6435aAc^2x^4+5005aBc^2x^5+1365Ac^3x^6+1155Bc^3x^7\right)}{15015\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(-15015*a^3*A + 15015*a^3*B*x + 15015*a^2*A*c*x^2 + 9009*a^2*B*c*x^3 + 6
435*a*A*c^2*x^4 + 5005*a*B*c^2*x^5 + 1365*A*c^3*x^6 + 1155*B*c^3*x^7))/(150
15*Sqrt[x])
```

fricas [A] time = 0.41, size = 77, normalized size = 0.75

$$\frac{2\left(1155\,Bc^3x^7+1365\,Ac^3x^6+5005\,Bac^2x^5+6435\,Aac^2x^4+9009\,Ba^2cx^3+15015\,Aa^2cx^2+15015\,Ba^3x-15015\,Aa^3\right)}{15015\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*x^7 + 1365*A*c^3*x^6 + 5005*B*a*c^2*x^5 + 6435*A*a*c^2*
x^4 + 9009*B*a^2*c*x^3 + 15015*A*a^2*c*x^2 + 15015*B*a^3*x - 15015*A*a^3)/s
qrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.75

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}}+\frac{2}{11}\,Ac^3x^{\frac{11}{2}}+\frac{2}{3}\,Bac^2x^{\frac{9}{2}}+\frac{6}{7}\,Aac^2x^{\frac{7}{2}}+\frac{6}{5}\,Ba^2cx^{\frac{5}{2}}+2\,Aa^2cx^{\frac{3}{2}}+2\,Ba^3\sqrt{x}-\frac{2\,Aa^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*a*c^2*x^(9/2) + 6/7*A*a*c
^2*x^(7/2) + 6/5*B*a^2*c*x^(5/2) + 2*A*a^2*c*x^(3/2) + 2*B*a^3*sqrt(x) - 2*
A*a^3/sqrt(x)
```

maple [A] time = 0.05, size = 78, normalized size = 0.76

$$-\frac{2\left(-1155B\,c^3x^7-1365A\,c^3x^6-5005Ba\,c^2x^5-6435Aa\,c^2x^4-9009B\,a^2c\,x^3-15015A\,a^2c\,x^2-15015B\,a^3x+15015A\,a^3\right)}{15015\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(3/2),x)
```

```
[Out] -2/15015*(-1155*B*c^3*x^7-1365*A*c^3*x^6-5005*B*a*c^2*x^5-6435*A*a*c^2*x^4-
9009*B*a^2*c*x^3-15015*A*a^2*c*x^2-15015*B*a^3*x+15015*A*a^3)/x^(1/2)
```

maxima [A] time = 0.51, size = 77, normalized size = 0.75

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}}+\frac{2}{11}\,Ac^3x^{\frac{11}{2}}+\frac{2}{3}\,Bac^2x^{\frac{9}{2}}+\frac{6}{7}\,Aac^2x^{\frac{7}{2}}+\frac{6}{5}\,Ba^2cx^{\frac{5}{2}}+2\,Aa^2cx^{\frac{3}{2}}+2\,Ba^3\sqrt{x}-\frac{2\,Aa^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*a*c^2*x^(9/2) + 6/7*A*a*c
^2*x^(7/2) + 6/5*B*a^2*c*x^(5/2) + 2*A*a^2*c*x^(3/2) + 2*B*a^3*sqrt(x) - 2*
A*a^3/sqrt(x)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.75

$$2\,B\,a^3\,\sqrt{x}-\frac{2\,A\,a^3}{\sqrt{x}}+\frac{2\,A\,c^3\,x^{11/2}}{11}+\frac{2\,B\,c^3\,x^{13/2}}{13}+2\,A\,a^2\,c\,x^{3/2}+\frac{6\,A\,a\,c^2\,x^{7/2}}{7}+\frac{6\,B\,a^2\,c\,x^{5/2}}{5}+\frac{2\,B\,a\,c^2\,x^{9/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(3/2),x)
```

```
[Out] 2*B*a^3*x^(1/2) - (2*A*a^3)/x^(1/2) + (2*A*c^3*x^(11/2))/11 + (2*B*c^3*x^(1
3/2))/13 + 2*A*a^2*c*x^(3/2) + (6*A*a*c^2*x^(7/2))/7 + (6*B*a^2*c*x^(5/2))/
5 + (2*B*a*c^2*x^(9/2))/3
```

sympy [A] time = 4.26, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{\sqrt{x}} + 2Aa^2cx^{\frac{3}{2}} + \frac{6Aac^2x^{\frac{7}{2}}}{7} + \frac{2Ac^3x^{\frac{11}{2}}}{11} + 2Ba^3\sqrt{x} + \frac{6Ba^2cx^{\frac{5}{2}}}{5} + \frac{2Bac^2x^{\frac{9}{2}}}{3} + \frac{2Bc^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(3/2),x)
```

```
[Out] -2*A*a**3/sqrt(x) + 2*A*a**2*c*x**(3/2) + 6*A*a*c**2*x**(7/2)/7 + 2*A*c**3*
x**(11/2)/11 + 2*B*a**3*sqrt(x) + 6*B*a**2*c*x**(5/2)/5 + 2*B*a*c**2*x**(9/
2)/3 + 2*B*c**3*x**(13/2)/13
```

3.408 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{5/2}} dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{3x^{3/2}}-\frac{2a^3B}{\sqrt{x}}+6a^2Ac\sqrt{x}+2a^2Bcx^{3/2}+\frac{6}{5}aAc^2x^{5/2}+\frac{6}{7}aBc^2x^{7/2}+\frac{2}{9}Ac^3x^{9/2}+\frac{2}{11}Bc^3x^{11/2}$$

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$6a^2Ac\sqrt{x}-\frac{2a^3A}{3x^{3/2}}+2a^2Bcx^{3/2}-\frac{2a^3B}{\sqrt{x}}+\frac{6}{5}aAc^2x^{5/2}+\frac{6}{7}aBc^2x^{7/2}+\frac{2}{9}Ac^3x^{9/2}+\frac{2}{11}Bc^3x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (-2*a^3*A)/(3*x^(3/2)) - (2*a^3*B)/Sqrt[x] + 6*a^2*A*c*Sqrt[x] + 2*a^2*B*c*
x^(3/2) + (6*a*A*c^2*x^(5/2))/5 + (6*a*B*c^2*x^(7/2))/7 + (2*A*c^3*x^(9/2))
/9 + (2*B*c^3*x^(11/2))/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{5/2}} dx &= \int \left(\frac{a^3A}{x^{5/2}}+\frac{a^3B}{x^{3/2}}+\frac{3a^2Ac}{\sqrt{x}}+3a^2Bc\sqrt{x}+3aAc^2x^{3/2}+3aBc^2x^{5/2}+Ac^3x^{7/2}+Bc^3x^{9/2}\right.\\ &= -\frac{2a^3A}{3x^{3/2}}-\frac{2a^3B}{\sqrt{x}}+6a^2Ac\sqrt{x}+2a^2Bcx^{3/2}+\frac{6}{5}aAc^2x^{5/2}+\frac{6}{7}aBc^2x^{7/2}+\frac{2}{9}Ac^3x^{9/2}+\frac{2}{11}\end{aligned}$$

Mathematica [A] time = 0.03, size = 78, normalized size = 0.76

$$-\frac{2a^3(A+3Bx)}{3x^{3/2}}+2a^2c\sqrt{x}(3A+Bx)+\frac{6}{35}ac^2x^{5/2}(7A+5Bx)+\frac{2}{99}c^3x^{9/2}(11A+9Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(5/2),x]
```

```
[Out] 2*a^2*c*Sqrt[x]*(3*A + B*x) - (2*a^3*(A + 3*B*x))/(3*x^(3/2)) + (6*a*c^2*x^
(5/2)*(7*A + 5*B*x))/35 + (2*c^3*x^(9/2)*(11*A + 9*B*x))/99
```

IntegrateAlgebraic [A] time = 0.05, size = 81, normalized size = 0.79

$$\frac{2\left(-1155a^3A-3465a^3Bx+10395a^2Acx^2+3465a^2Bcx^3+2079aAc^2x^4+1485aBc^2x^5+385Ac^3x^6+315Bc^3x^7\right)}{3465x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-1155*a^3*A - 3465*a^3*B*x + 10395*a^2*A*c*x^2 + 3465*a^2*B*c*x^3 + 207
9*a*A*c^2*x^4 + 1485*a*B*c^2*x^5 + 385*A*c^3*x^6 + 315*B*c^3*x^7))/(3465*x^
(3/2))
```

fricas [A] time = 0.40, size = 77, normalized size = 0.75

$$\frac{2\left(315\,Bc^3x^7 + 385\,Ac^3x^6 + 1485\,Bac^2x^5 + 2079\,Aac^2x^4 + 3465\,Ba^2cx^3 + 10395\,Aa^2cx^2 - 3465\,Ba^3x - 1155\,Aa^3\right)}{3465\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*x^7 + 385*A*c^3*x^6 + 1485*B*a*c^2*x^5 + 2079*A*a*c^2*x^4
 + 3465*B*a^2*c*x^3 + 10395*A*a^2*c*x^2 - 3465*B*a^3*x - 1155*A*a^3)/x^(3/2
)
```

giac [A] time = 0.20, size = 77, normalized size = 0.75

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}} + \frac{2}{9}\,Ac^3x^{\frac{9}{2}} + \frac{6}{7}\,Bac^2x^{\frac{7}{2}} + \frac{6}{5}\,Aac^2x^{\frac{5}{2}} + 2\,Ba^2cx^{\frac{3}{2}} + 6\,Aa^2c\sqrt{x} - \frac{2\left(3\,Ba^3x + Aa^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*a*c^2*x^(7/2) + 6/5*A*a*c^2
*x^(5/2) + 2*B*a^2*c*x^(3/2) + 6*A*a^2*c*sqrt(x) - 2/3*(3*B*a^3*x + A*a^3)/
x^(3/2)
```

maple [A] time = 0.07, size = 78, normalized size = 0.76

$$-\frac{2\left(-315B\,c^3x^7 - 385A\,c^3x^6 - 1485Ba\,c^2x^5 - 2079Aa\,c^2x^4 - 3465B\,a^2c\,x^3 - 10395A\,a^2c\,x^2 + 3465B\,a^3x + 1155A\,a^3\right)}{3465x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(5/2),x)
```

```
[Out] -2/3465*(-315*B*c^3*x^7-385*A*c^3*x^6-1485*B*a*c^2*x^5-2079*A*a*c^2*x^4-346
5*B*a^2*c*x^3-10395*A*a^2*c*x^2+3465*B*a^3*x+1155*A*a^3)/x^(3/2)
```

maxima [A] time = 0.54, size = 77, normalized size = 0.75

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}} + \frac{2}{9}\,Ac^3x^{\frac{9}{2}} + \frac{6}{7}\,Bac^2x^{\frac{7}{2}} + \frac{6}{5}\,Aac^2x^{\frac{5}{2}} + 2\,Ba^2cx^{\frac{3}{2}} + 6\,Aa^2c\sqrt{x} - \frac{2\left(3\,Ba^3x + Aa^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*a*c^2*x^(7/2) + 6/5*A*a*c^2
*x^(5/2) + 2*B*a^2*c*x^(3/2) + 6*A*a^2*c*sqrt(x) - 2/3*(3*B*a^3*x + A*a^3)/
x^(3/2)
```

mupad [B] time = 0.03, size = 78, normalized size = 0.76

$$\frac{2\,A\,c^3\,x^{9/2}}{9} - \frac{\frac{2\,A\,a^3}{3} + 2\,B\,a^3\,x}{x^{3/2}} + \frac{2\,B\,c^3\,x^{11/2}}{11} + 6\,A\,a^2\,c\,\sqrt{x} + \frac{6\,A\,a\,c^2\,x^{5/2}}{5} + 2\,B\,a^2\,c\,x^{3/2} + \frac{6\,B\,a\,c^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(5/2),x)
```

```
[Out] (2*A*c^3*x^(9/2))/9 - ((2*A*a^3)/3 + 2*B*a^3*x)/x^(3/2) + (2*B*c^3*x^(11/2)
)/11 + 6*A*a^2*c*x^(1/2) + (6*A*a*c^2*x^(5/2))/5 + 2*B*a^2*c*x^(3/2) + (6*B
*a*c^2*x^(7/2))/7
```

sympy [A] time = 4.83, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{3x^{\frac{3}{2}}} + 6Aa^2c\sqrt{x} + \frac{6Aac^2x^{\frac{5}{2}}}{5} + \frac{2Ac^3x^{\frac{9}{2}}}{9} - \frac{2Ba^3}{\sqrt{x}} + 2Ba^2cx^{\frac{3}{2}} + \frac{6Bac^2x^{\frac{7}{2}}}{7} + \frac{2Bc^3x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(5/2),x)
```

```
[Out] -2*A*a**3/(3*x**(3/2)) + 6*A*a**2*c*sqrt(x) + 6*A*a*c**2*x**(5/2)/5 + 2*A*c
**3*x**(9/2)/9 - 2*B*a**3/sqrt(x) + 2*B*a**2*c*x**(3/2) + 6*B*a*c**2*x**(7/
2)/7 + 2*B*c**3*x**(11/2)/11
```

3.409 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{7/2}} \, dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{5x^{5/2}}-\frac{2a^3B}{3x^{3/2}}-\frac{6a^2Ac}{\sqrt{x}}+6a^2Bc\sqrt{x}+2aAc^2x^{3/2}+\frac{6}{5}aBc^2x^{5/2}+\frac{2}{7}Ac^3x^{7/2}+\frac{2}{9}Bc^3x^{9/2}$$

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{6a^2Ac}{\sqrt{x}}-\frac{2a^3A}{5x^{5/2}}+6a^2Bc\sqrt{x}-\frac{2a^3B}{3x^{3/2}}+2aAc^2x^{3/2}+\frac{6}{5}aBc^2x^{5/2}+\frac{2}{7}Ac^3x^{7/2}+\frac{2}{9}Bc^3x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (-2*a^3*A)/(5*x^(5/2)) - (2*a^3*B)/(3*x^(3/2)) - (6*a^2*A*c)/Sqrt[x] + 6*a^
2*B*c*Sqrt[x] + 2*a*A*c^2*x^(3/2) + (6*a*B*c^2*x^(5/2))/5 + (2*A*c^3*x^(7/2
))/7 + (2*B*c^3*x^(9/2))/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{7/2}}\,dx &= \int \left(\frac{a^3A}{x^{7/2}}+\frac{a^3B}{x^{5/2}}+\frac{3a^2Ac}{x^{3/2}}+\frac{3a^2Bc}{\sqrt{x}}+3aAc^2\sqrt{x}+3aBc^2x^{3/2}+Ac^3x^{5/2}+Bc^3x^{7/2}\right)dx\\ &= -\frac{2a^3A}{5x^{5/2}}-\frac{2a^3B}{3x^{3/2}}-\frac{6a^2Ac}{\sqrt{x}}+6a^2Bc\sqrt{x}+2aAc^2x^{3/2}+\frac{6}{5}aBc^2x^{5/2}+\frac{2}{7}Ac^3x^{7/2}+\frac{2}{9}B\end{aligned}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.70

$$\frac{2\left(-21a^3(3A+5Bx)+945a^2cx^2(Bx-A)+63ac^2x^4(5A+3Bx)+5c^3x^6(9A+7Bx)\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(945*a^2*c*x^2*(-A + B*x) + 63*a*c^2*x^4*(5*A + 3*B*x) - 21*a^3*(3*A + 5
*B*x) + 5*c^3*x^6*(9*A + 7*B*x)))/(315*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.06, size = 81, normalized size = 0.79

$$\frac{2\left(-63a^3A-105a^3Bx-945a^2Acx^2+945a^2Bcx^3+315aAc^2x^4+189aBc^2x^5+45Ac^3x^6+35Bc^3x^7\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(-63*a^3*A - 105*a^3*B*x - 945*a^2*A*c*x^2 + 945*a^2*B*c*x^3 + 315*a*A*c
^2*x^4 + 189*a*B*c^2*x^5 + 45*A*c^3*x^6 + 35*B*c^3*x^7))/(315*x^(5/2))
```

fricas [A] time = 0.40, size = 77, normalized size = 0.75

$$\frac{2\left(35\,Bc^3x^7+45\,Ac^3x^6+189\,Bac^2x^5+315\,Aac^2x^4+945\,Ba^2cx^3-945\,Aa^2cx^2-105\,Ba^3x-63\,Aa^3\right)}{315\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*x^7 + 45*A*c^3*x^6 + 189*B*a*c^2*x^5 + 315*A*a*c^2*x^4 + 94
5*B*a^2*c*x^3 - 945*A*a^2*c*x^2 - 105*B*a^3*x - 63*A*a^3)/x^(5/2)
```

giac [A] time = 0.16, size = 78, normalized size = 0.76

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}}+\frac{2}{7}\,Ac^3x^{\frac{7}{2}}+\frac{6}{5}\,Bac^2x^{\frac{5}{2}}+2\,Aac^2x^{\frac{3}{2}}+6\,Ba^2c\sqrt{x}-\frac{2\left(45\,Aa^2cx^2+5\,Ba^3x+3\,Aa^3\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*a*c^2*x^(5/2) + 2*A*a*c^2*x^(
3/2) + 6*B*a^2*c*sqrt(x) - 2/15*(45*A*a^2*c*x^2 + 5*B*a^3*x + 3*A*a^3)/x^(5
/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.76

$$-\frac{2\left(-35B\,c^3x^7-45A\,c^3x^6-189Ba\,c^2x^5-315Aa\,c^2x^4-945B\,a^2c\,x^3+945A\,a^2c\,x^2+105B\,a^3x+63A\,a^3\right)}{315x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(7/2),x)
```

```
[Out] -2/315*(-35*B*c^3*x^7-45*A*c^3*x^6-189*B*a*c^2*x^5-315*A*a*c^2*x^4-945*B*a^
2*c*x^3+945*A*a^2*c*x^2+105*B*a^3*x+63*A*a^3)/x^(5/2)
```

maxima [A] time = 0.53, size = 78, normalized size = 0.76

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}}+\frac{2}{7}\,Ac^3x^{\frac{7}{2}}+\frac{6}{5}\,Bac^2x^{\frac{5}{2}}+2\,Aac^2x^{\frac{3}{2}}+6\,Ba^2c\sqrt{x}-\frac{2\left(45\,Aa^2cx^2+5\,Ba^3x+3\,Aa^3\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*a*c^2*x^(5/2) + 2*A*a*c^2*x^(
3/2) + 6*B*a^2*c*sqrt(x) - 2/15*(45*A*a^2*c*x^2 + 5*B*a^3*x + 3*A*a^3)/x^(5
/2)
```

mupad [B] time = 0.03, size = 78, normalized size = 0.76

$$\frac{2\,A\,c^3\,x^{7/2}}{7}-\frac{\frac{2\,B\,a^3\,x}{3}+\frac{2\,A\,a^3}{5}+6\,A\,c\,a^2\,x^2}{x^{5/2}}+\frac{2\,B\,c^3\,x^{9/2}}{9}+2\,A\,a\,c^2\,x^{3/2}+6\,B\,a^2\,c\,\sqrt{x}+\frac{6\,B\,a\,c^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(7/2),x)
```

```
[Out] (2*A*c^3*x^(7/2))/7 - ((2*A*a^3)/5 + (2*B*a^3*x)/3 + 6*A*a^2*c*x^2)/x^(5/2)
 + (2*B*c^3*x^(9/2))/9 + 2*A*a*c^2*x^(3/2) + 6*B*a^2*c*x^(1/2) + (6*B*a*c^2
*x^(5/2))/5
```

sympy [A] time = 6.49, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{5x^{\frac{5}{2}}}-\frac{6Aa^2c}{\sqrt{x}}+2Aac^2x^{\frac{3}{2}}+\frac{2Ac^3x^{\frac{7}{2}}}{7}-\frac{2Ba^3}{3x^{\frac{3}{2}}}+6Ba^2c\sqrt{x}+\frac{6Bac^2x^{\frac{5}{2}}}{5}+\frac{2Bc^3x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(7/2),x)
```

```
[Out] -2*A*a**3/(5*x**(5/2)) - 6*A*a**2*c/sqrt(x) + 2*A*a*c**2*x**(3/2) + 2*A*c**
3*x**(7/2)/7 - 2*B*a**3/(3*x**(3/2)) + 6*B*a**2*c*sqrt(x) + 6*B*a*c**2*x**(
5/2)/5 + 2*B*c**3*x**(9/2)/9
```

3.410 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{9/2}} \, dx$

Optimal. Leaf size=101

$$-\frac{2a^3A}{7x^{7/2}}-\frac{2a^3B}{5x^{5/2}}-\frac{2a^2Ac}{x^{3/2}}-\frac{6a^2Bc}{\sqrt{x}}+6aAc^2\sqrt{x}+2aBc^2x^{3/2}+\frac{2}{5}Ac^3x^{5/2}+\frac{2}{7}Bc^3x^{7/2}$$

Rubi [A] time = 0.04, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2Ac}{x^{3/2}}-\frac{2a^3A}{7x^{7/2}}-\frac{6a^2Bc}{\sqrt{x}}-\frac{2a^3B}{5x^{5/2}}+6aAc^2\sqrt{x}+2aBc^2x^{3/2}+\frac{2}{5}Ac^3x^{5/2}+\frac{2}{7}Bc^3x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*a^3*A)/(7*x^(7/2)) - (2*a^3*B)/(5*x^(5/2)) - (2*a^2*A*c)/x^(3/2) - (6*a
^2*B*c)/Sqrt[x] + 6*a*A*c^2*Sqrt[x] + 2*a*B*c^2*x^(3/2) + (2*A*c^3*x^(5/2))
/5 + (2*B*c^3*x^(7/2))/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{9/2}}\,dx &= \int \left(\frac{a^3A}{x^{9/2}}+\frac{a^3B}{x^{7/2}}+\frac{3a^2Ac}{x^{5/2}}+\frac{3a^2Bc}{x^{3/2}}+\frac{3aAc^2}{\sqrt{x}}+3aBc^2\sqrt{x}+Ac^3x^{3/2}+Bc^3x^{5/2}\right)dx\\ &= -\frac{2a^3A}{7x^{7/2}}-\frac{2a^3B}{5x^{5/2}}-\frac{2a^2Ac}{x^{3/2}}-\frac{6a^2Bc}{\sqrt{x}}+6aAc^2\sqrt{x}+2aBc^2x^{3/2}+\frac{2}{5}Ac^3x^{5/2}+\frac{2}{7}Bc^3x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 70, normalized size = 0.69

$$\frac{-2a^3(5A+7Bx)-70a^2cx^2(A+3Bx)+70ac^2x^4(3A+Bx)+2c^3x^6(7A+5Bx)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (70*a*c^2*x^4*(3*A + B*x) - 70*a^2*c*x^2*(A + 3*B*x) + 2*c^3*x^6*(7*A + 5*B
*x) - 2*a^3*(5*A + 7*B*x))/(35*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.06, size = 81, normalized size = 0.80

$$\frac{2\left(-5a^3A-7a^3Bx-35a^2Acx^2-105a^2Bcx^3+105aAc^2x^4+35aBc^2x^5+7Ac^3x^6+5Bc^3x^7\right)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(-5*a^3*A - 7*a^3*B*x - 35*a^2*A*c*x^2 - 105*a^2*B*c*x^3 + 105*a*A*c^2*x
^4 + 35*a*B*c^2*x^5 + 7*A*c^3*x^6 + 5*B*c^3*x^7))/(35*x^(7/2))
```

fricas [A] time = 0.42, size = 77, normalized size = 0.76

$$\frac{2\left(5\,Bc^3x^7+7\,Ac^3x^6+35\,Bac^2x^5+105\,Aac^2x^4-105\,Ba^2cx^3-35\,Aa^2cx^2-7\,Ba^3x-5\,Aa^3\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^7 + 7*A*c^3*x^6 + 35*B*a*c^2*x^5 + 105*A*a*c^2*x^4 - 105*B*
a^2*c*x^3 - 35*A*a^2*c*x^2 - 7*B*a^3*x - 5*A*a^3)/x^(7/2)
```

giac [A] time = 0.19, size = 78, normalized size = 0.77

$$\frac{2}{7}\,Bc^3x^{\frac{7}{2}}+\frac{2}{5}\,Ac^3x^{\frac{5}{2}}+2\,Bac^2x^{\frac{3}{2}}+6\,Aac^2\sqrt{x}-\frac{2\left(105\,Ba^2cx^3+35\,Aa^2cx^2+7\,Ba^3x+5\,Aa^3\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 2/5*A*c^3*x^(5/2) + 2*B*a*c^2*x^(3/2) + 6*A*a*c^2*sqrt(
x) - 2/35*(105*B*a^2*c*x^3 + 35*A*a^2*c*x^2 + 7*B*a^3*x + 5*A*a^3)/x^(7/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.77

$$-\frac{2\left(-5B\,c^3x^7-7A\,c^3x^6-35Ba\,c^2x^5-105Aa\,c^2x^4+105B\,a^2c\,x^3+35A\,a^2c\,x^2+7B\,a^3x+5A\,a^3\right)}{35x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(9/2),x)
```

```
[Out] -2/35*(-5*B*c^3*x^7-7*A*c^3*x^6-35*B*a*c^2*x^5-105*A*a*c^2*x^4+105*B*a^2*c*
x^3+35*A*a^2*c*x^2+7*B*a^3*x+5*A*a^3)/x^(7/2)
```

maxima [A] time = 0.52, size = 78, normalized size = 0.77

$$\frac{2}{7}\,Bc^3x^{\frac{7}{2}}+\frac{2}{5}\,Ac^3x^{\frac{5}{2}}+2\,Bac^2x^{\frac{3}{2}}+6\,Aac^2\sqrt{x}-\frac{2\left(105\,Ba^2cx^3+35\,Aa^2cx^2+7\,Ba^3x+5\,Aa^3\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 2/5*A*c^3*x^(5/2) + 2*B*a*c^2*x^(3/2) + 6*A*a*c^2*sqrt(
x) - 2/35*(105*B*a^2*c*x^3 + 35*A*a^2*c*x^2 + 7*B*a^3*x + 5*A*a^3)/x^(7/2)
```

mupad [B] time = 0.03, size = 78, normalized size = 0.77

$$\frac{2\,A\,c^3\,x^{5/2}}{5}-\frac{\frac{2\,B\,a^3\,x}{5}+\frac{2\,A\,a^3}{7}+6\,B\,c\,a^2\,x^3+2\,A\,c\,a^2\,x^2}{x^{7/2}}+\frac{2\,B\,c^3\,x^{7/2}}{7}+6\,A\,a\,c^2\,\sqrt{x}+2\,B\,a\,c^2\,x^{3/2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(9/2),x)
```

```
[Out] (2*A*c^3*x^(5/2))/5 - ((2*A*a^3)/7 + (2*B*a^3*x)/5 + 2*A*a^2*c*x^2 + 6*B*a^
2*c*x^3)/x^(7/2) + (2*B*c^3*x^(7/2))/7 + 6*A*a*c^2*x^(1/2) + 2*B*a*c^2*x^(3
/2)
```

sympy [A] time = 8.61, size = 107, normalized size = 1.06

$$-\frac{2Aa^3}{7x^{\frac{7}{2}}} - \frac{2Aa^2c}{x^{\frac{3}{2}}} + 6Aac^2\sqrt{x} + \frac{2Ac^3x^{\frac{5}{2}}}{5} - \frac{2Ba^3}{5x^{\frac{5}{2}}} - \frac{6Ba^2c}{\sqrt{x}} + 2Bac^2x^{\frac{3}{2}} + \frac{2Bc^3x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(9/2),x)
```

```
[Out] -2*A*a**3/(7*x**(7/2)) - 2*A*a**2*c/x**(3/2) + 6*A*a*c**2*sqrt(x) + 2*A*c**
3*x**(5/2)/5 - 2*B*a**3/(5*x**(5/2)) - 6*B*a**2*c/sqrt(x) + 2*B*a*c**2*x**(
3/2) + 2*B*c**3*x**(7/2)/7
```

3.411 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{9x^{9/2}}-\frac{2a^3B}{7x^{7/2}}-\frac{6a^2Ac}{5x^{5/2}}-\frac{2a^2Bc}{x^{3/2}}-\frac{6aAc^2}{\sqrt{x}}+6aBc^2\sqrt{x}+\frac{2}{3}Ac^3x^{3/2}+\frac{2}{5}Bc^3x^{5/2}$$

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{6a^2Ac}{5x^{5/2}}-\frac{2a^3A}{9x^{9/2}}-\frac{2a^2Bc}{x^{3/2}}-\frac{2a^3B}{7x^{7/2}}-\frac{6aAc^2}{\sqrt{x}}+6aBc^2\sqrt{x}+\frac{2}{3}Ac^3x^{3/2}+\frac{2}{5}Bc^3x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*a^3*A)/(9*x^(9/2)) - (2*a^3*B)/(7*x^(7/2)) - (6*a^2*A*c)/(5*x^(5/2)) -
(2*a^2*B*c)/x^(3/2) - (6*a*A*c^2)/Sqrt[x] + 6*a*B*c^2*Sqrt[x] + (2*A*c^3*x^
(3/2))/3 + (2*B*c^3*x^(5/2))/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{11/2}}\,dx &= \int \left(\frac{a^3A}{x^{11/2}}+\frac{a^3B}{x^{9/2}}+\frac{3a^2Ac}{x^{7/2}}+\frac{3a^2Bc}{x^{5/2}}+\frac{3aAc^2}{x^{3/2}}+\frac{3aBc^2}{\sqrt{x}}+Ac^3\sqrt{x}+Bc^3x^{3/2}\right)dx\\ &= -\frac{2a^3A}{9x^{9/2}}-\frac{2a^3B}{7x^{7/2}}-\frac{6a^2Ac}{5x^{5/2}}-\frac{2a^2Bc}{x^{3/2}}-\frac{6aAc^2}{\sqrt{x}}+6aBc^2\sqrt{x}+\frac{2}{3}Ac^3x^{3/2}+\frac{2}{5}Bc^3x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 0.69

$$-\frac{2\left(5a^3(7A+9Bx)+63a^2cx^2(3A+5Bx)+945ac^2x^4(A-Bx)-21c^3x^6(5A+3Bx)\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*(945*a*c^2*x^4*(A - B*x) - 21*c^3*x^6*(5*A + 3*B*x) + 63*a^2*c*x^2*(3*A
 + 5*B*x) + 5*a^3*(7*A + 9*B*x)))/(315*x^(9/2))
```

IntegrateAlgebraic [A] time = 0.05, size = 81, normalized size = 0.79

$$\frac{2\left(-35a^3A-45a^3Bx-189a^2Acx^2-315a^2Bcx^3-945aAc^2x^4+945aBc^2x^5+105Ac^3x^6+63Bc^3x^7\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (2*(-35*a^3*A - 45*a^3*B*x - 189*a^2*A*c*x^2 - 315*a^2*B*c*x^3 - 945*a*A*c^
2*x^4 + 945*a*B*c^2*x^5 + 105*A*c^3*x^6 + 63*B*c^3*x^7))/(315*x^(9/2))
```

fricas [A] time = 0.40, size = 77, normalized size = 0.75

$$\frac{2\left(63\,Bc^{3}x^{7}+105\,Ac^{3}x^{6}+945\,Bac^{2}x^{5}-945\,Aac^{2}x^{4}-315\,Ba^{2}cx^{3}-189\,Aa^{2}cx^{2}-45\,Ba^{3}x-35\,Aa^{3}\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*c^3*x^7 + 105*A*c^3*x^6 + 945*B*a*c^2*x^5 - 945*A*a*c^2*x^4 - 3
15*B*a^2*c*x^3 - 189*A*a^2*c*x^2 - 45*B*a^3*x - 35*A*a^3)/x^(9/2)
```

giac [A] time = 0.19, size = 78, normalized size = 0.76

$$\frac{2}{5}\,Bc^{3}x^{\frac{5}{2}}+\frac{2}{3}\,Ac^{3}x^{\frac{3}{2}}+6\,Bac^{2}\sqrt{x}-\frac{2\left(945\,Aac^{2}x^{4}+315\,Ba^{2}cx^{3}+189\,Aa^{2}cx^{2}+45\,Ba^{3}x+35\,Aa^{3}\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*A*c^3*x^(3/2) + 6*B*a*c^2*sqrt(x) - 2/315*(945*A*a*
c^2*x^4 + 315*B*a^2*c*x^3 + 189*A*a^2*c*x^2 + 45*B*a^3*x + 35*A*a^3)/x^(9/2
)
```

maple [A] time = 0.05, size = 78, normalized size = 0.76

$$-\frac{2\left(-63B\,c^{3}x^{7}-105A\,c^{3}x^{6}-945Ba\,c^{2}x^{5}+945Aa\,c^{2}x^{4}+315B\,a^{2}c\,x^{3}+189A\,a^{2}c\,x^{2}+45B\,a^{3}x+35A\,a^{3}\right)}{315x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(11/2),x)
```

```
[Out] -2/315*(-63*B*c^3*x^7-105*A*c^3*x^6-945*B*a*c^2*x^5+945*A*a*c^2*x^4+315*B*a
^2*c*x^3+189*A*a^2*c*x^2+45*B*a^3*x+35*A*a^3)/x^(9/2)
```

maxima [A] time = 0.52, size = 78, normalized size = 0.76

$$\frac{2}{5}\,Bc^{3}x^{\frac{5}{2}}+\frac{2}{3}\,Ac^{3}x^{\frac{3}{2}}+6\,Bac^{2}\sqrt{x}-\frac{2\left(945\,Aac^{2}x^{4}+315\,Ba^{2}cx^{3}+189\,Aa^{2}cx^{2}+45\,Ba^{3}x+35\,Aa^{3}\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*A*c^3*x^(3/2) + 6*B*a*c^2*sqrt(x) - 2/315*(945*A*a*
c^2*x^4 + 315*B*a^2*c*x^3 + 189*A*a^2*c*x^2 + 45*B*a^3*x + 35*A*a^3)/x^(9/2
)
```

mupad [B] time = 0.06, size = 78, normalized size = 0.76

$$\frac{2\,A\,c^3\,x^{3/2}}{3}-\frac{\frac{2\,B\,a^3\,x}{7}+\frac{2\,A\,a^3}{9}+2\,B\,a^2\,c\,x^3+\frac{6\,A\,a^2\,c\,x^2}{5}+6\,A\,a\,c^2\,x^4}{x^{9/2}}+\frac{2\,B\,c^3\,x^{5/2}}{5}+6\,B\,a\,c^2\,\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(11/2),x)
```

```
[Out] (2*A*c^3*x^(3/2))/3 - ((2*A*a^3)/9 + (2*B*a^3*x)/7 + (6*A*a^2*c*x^2)/5 + 6*
A*a*c^2*x^4 + 2*B*a^2*c*x^3)/x^(9/2) + (2*B*c^3*x^(5/2))/5 + 6*B*a*c^2*x^(1
/2)
```

sympy [A] time = 11.24, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{9x^{\frac{9}{2}}}-\frac{6Aa^2c}{5x^{\frac{5}{2}}}-\frac{6Aac^2}{\sqrt{x}}+\frac{2Ac^3x^{\frac{3}{2}}}{3}-\frac{2Ba^3}{7x^{\frac{7}{2}}}-\frac{2Ba^2c}{x^{\frac{3}{2}}}+6Bac^2\sqrt{x}+\frac{2Bc^3x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(11/2),x)
```

```
[Out] -2*A*a**3/(9*x**(9/2)) - 6*A*a**2*c/(5*x**(5/2)) - 6*A*a*c**2/sqrt(x) + 2*A
*c**3*x**(3/2)/3 - 2*B*a**3/(7*x**(7/2)) - 2*B*a**2*c/x**(3/2) + 6*B*a*c**2
*sqrt(x) + 2*B*c**3*x**(5/2)/5
```

3.412 $\int \frac{x^{5/2}(A+Bx)}{a+cx^2} dx$

Optimal. Leaf size=292

$$-\frac{a^{3/4}\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}+\frac{a^{3/4}\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}-$$

Rubi [A] time = 0.34, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{a^{3/4}\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}+\frac{a^{3/4}\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}-\frac{a^{3/4}\left(\sqrt{a}B-A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}c^{9/4}}+\frac{a^{3/4}\left(\sqrt{a}B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}c^{9/4}}-\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (-2*a*B*Sqrt[x])/c^2 + (2*A*x^(3/2))/(3*c) + (2*B*x^(5/2))/(5*c) - (a^(3/4)
*(Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sq
rt[2]*c^(9/4)) + (a^(3/4)*(Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/
4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(9/4)) - (a^(3/4)*(Sqrt[a]*B + A*Sqrt[c])*
Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9
/4)) + (a^(3/4)*(Sqrt[a]*B + A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{a+cx^2}\,dx &= \frac{2Bx^{5/2}}{5c}+\frac{\int \frac{x^{3/2}(-aB+Acx)}{a+cx^2}\,dx}{c}\\
&= \frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}+\frac{\int \frac{\sqrt{x}\,(-aAc-aBcx)}{a+cx^2}\,dx}{c^2}\\
&= -\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}+\frac{\int \frac{a^2Bc-aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{c^3}\\
&= -\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}+\frac{2\,\mathrm{Subst}\left(\int \frac{a^2Bc-aAc^2x^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c^3}\\
&= -\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}+\frac{\left(a\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c^{5/2}}+\frac{(a\,(\cdots}{\cdots}\\
&= -\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}+\frac{\left(a\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2c^{5/2}}+\cdots\\
&= -\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}-\frac{a^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{9/4}}+\cdots\\
&= -\frac{2aB\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}-\frac{a^{3/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,c^{9/4}}+\frac{a^{3/4}\left(\sqrt{a}\,B-\cdots\right.}{\cdots}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 290, normalized size = 0.99

$$
\frac{-15\sqrt{2}a^{5/4}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)+15\sqrt{2}a^{5/4}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)-30\sqrt{2}a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)+30\sqrt{2}a^{5/4}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)+60(-a)^{3/4}A\sqrt{c}\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)-60(-a)^{3/4}A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)-120aB\sqrt[4]{c}\sqrt{x}+40Ac^{5/4}x^{3/2}+24Bc^{5/4}x^{5/2}}{60c^{9/4}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + c*x^2),x]
```

[Out] (-120*a*B*c^(1/4)*Sqrt[x] + 40*A*c^(5/4)*x^(3/2) + 24*B*c^(5/4)*x^(5/2) - 3
0*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] + 30*Sqrt
[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] + 60*(-a)^(3/4)
*A*Sqrt[c]*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] - 60*(-a)^(3/4)*A*Sqrt[c]*A
rcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] - 15*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] - S
qrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 15*Sqrt[2]*a^(5/4)*B*Log[Sqrt
[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(60*c^(9/4))

IntegrateAlgebraic [A] time = 0.37, size = 173, normalized size = 0.59

$$-\frac{\left(a^{5/4}B - a^{3/4}A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{\sqrt{2}\,c^{9/4}}+\frac{\left(a^{3/4}A\sqrt{c}+a^{5/4}B\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{\sqrt{2}\,c^{9/4}}+\frac{2\left(-15aB\sqrt{x}+5Acx^{3/2}+3Bcx^{5/2}\right)}{15c^2}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a + c*x^2),x]

[Out] (2*(-15*a*B*Sqrt[x] + 5*A*c*x^(3/2) + 3*B*c*x^(5/2)))/(15*c^2) - ((a^(5/4)*
B - a^(3/4)*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4
)*Sqrt[x])])/(Sqrt[2]*c^(9/4)) + ((a^(5/4)*B + a^(3/4)*A*Sqrt[c])*ArcTanh[(
Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(Sqrt[2]*c^(9/4))

fricas [B] time = 0.46, size = 862, normalized size = 2.95

$$-\frac{15c^2\sqrt{\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}+2ABa^2}{c^4}}\log\left(-\left(B^4a^4-A^4a^2c^2\right)\sqrt{x}+\left(Ac^7\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}+B^3a^3c^2-A^2Ba^2c^3\right)\sqrt{\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}+2ABa^2}{c^4}}\right)-15c^2\sqrt{\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}+2ABa^2}{c^4}}\log\left(-\left(B^4a^4-A^4a^2c^2\right)\sqrt{x}-\left(Ac^7\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}+B^3a^3c^2-A^2Ba^2c^3\right)\sqrt{\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}+2ABa^2}{c^4}}\right)-15c^2\sqrt{-\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}-2ABa^2}{c^4}}\log\left(-\left(B^4a^4-A^4a^2c^2\right)\sqrt{x}+\left(Ac^7\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}-B^3a^3c^2+A^2Ba^2c^3\right)\sqrt{-\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}-2ABa^2}{c^4}}\right)+15c^2\sqrt{-\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}-2ABa^2}{c^4}}\log\left(-\left(B^4a^4-A^4a^2c^2\right)\sqrt{x}-\left(Ac^7\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}-B^3a^3c^2+A^2Ba^2c^3\right)\sqrt{-\frac{c^4\sqrt{-\frac{B^4a^5-2A^2B^2a^4c+A^4a^3c^2}{c^9}}-2ABa^2}{c^4}}\right)-4\left(3Bcx^2+5Acx-15Ba\right)\sqrt{x}}{30c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a),x, algorithm="fricas")

[Out] -1/30*(15*c^2*sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9
) + 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) + (A*c^7*sqrt(-(B^
4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + B^3*a^3*c^2 - A^2*B*a^2*c^3)*
sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + 2*A*B*a^2)
/c^4)) - 15*c^2*sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c
^9) + 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) - (A*c^7*sqrt(-(
B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + B^3*a^3*c^2 - A^2*B*a^2*c^3
)*sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + 2*A*B*a^
2)/c^4)) - 15*c^2*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2
)/c^9) - 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) + (A*c^7*sqrt
(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) - B^3*a^3*c^2 + A^2*B*a^2*
c^3)*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) - 2*A*
B*a^2)/c^4)) + 15*c^2*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3
*c^2)/c^9) - 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) - (A*c^7*
sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) - B^3*a^3*c^2 + A^2*B*
a^2*c^3)*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) -
2*A*B*a^2)/c^4)) - 4*(3*B*c*x^2 + 5*A*c*x - 15*B*a)*sqrt(x))/c^2

giac [A] time = 0.20, size = 262, normalized size = 0.90

$$\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2c^4}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2c^4}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4c^4}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4c^4}+\frac{2\left(3Bc^4x^{\frac{5}{2}}+5Ac^4x^{\frac{3}{2}}-15Bac^3\sqrt{x}\right)}{15c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a),x, algorithm="giac")

[Out] 1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/c^4 + 1/2*sqrt(2)*((a*c^3)^(1/4)
*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt
(x))/(a/c)^(1/4))/c^4 + 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)
*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/c^4 - 1/4*sqrt(2)*((a*c^3

```
)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqr
t(a/c))/c^4 + 2/15*(3*B*c^4*x^(5/2) + 5*A*c^4*x^(3/2) - 15*B*a*c^3*sqrt(x))
/c^5
```

maple [A] time = 0.06, size = 302, normalized size = 1.03

$$\frac{2Bx^{\frac{5}{2}}}{5c}+\frac{2Ax^{\frac{3}{2}}}{3c}-\frac{\sqrt{2}\,Aa\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c^2}-\frac{\sqrt{2}\,Aa\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c^2}-\frac{\sqrt{2}\,Aa\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}c^2}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ba\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2c^2}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ba\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2c^2}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ba\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4c^2}-\frac{2Ba\sqrt{x}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+a),x)
```

```
[Out] 2/5*B/c*x^(5/2)+2/3*A/c*x^(3/2)-2*a*B*x^(1/2)/c^2+1/2*a/c^2*B*(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/4*a/c^2*B*(a/c)^(1/4)*2^(1/2
)*ln((x+(a/c)^(1/4)*x^(1/2)*2^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*x^(1/2)*2^(
1/2)+(a/c)^(1/2)))+1/2*a/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/
4)*x^(1/2)+1)-1/4*a/c^2*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*x^(1/2)*2^(
1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*x^(1/2)*2^(1/2)+(a/c)^(1/2)))-1/2*a/c^2*A/
(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*a/c^2*A/(a/c)
^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.31, size = 265, normalized size = 0.91

$$\frac{a\left(\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{4c^2}+\frac{2\left(3Bcx^{\frac{5}{2}}+5Acx^{\frac{3}{2}}-15Ba\sqrt{x}\right)}{15c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*a*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^
(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqr
t(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(-1/2*
sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c))
)/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) + A*sqrt(a
)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^
(3/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*s
qrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c^2 + 2/15*(3*B*c*x^(5/2)
+ 5*A*c*x^(3/2) - 15*B*a*sqrt(x))/c^2
```

mupad [B] time = 1.26, size = 665, normalized size = 2.28

$$\frac{2Ax^{3/2}}{3c}+\frac{2Bx^{5/2}}{5c}-\frac{2Ba\sqrt{x}}{c^2}-\operatorname{atan}\left(\frac{A^2a^3\sqrt{x}\sqrt{\frac{ABa^2}{2c^4}-\frac{A^2\sqrt{-a^3c^9}}{4c^8}+\frac{B^2a\sqrt{-a^3c^9}}{4c^9}}\,32\mathrm{i}}{\frac{16A^3a^4}{c^2}-\frac{16AB^2a^5}{c^3}-\frac{16B^3a^4\sqrt{-a^3c^9}}{c^8}+\frac{16A^2Ba^3\sqrt{-a^3c^9}}{c^7}}-\frac{B^2a^4\sqrt{x}\sqrt{\frac{ABa^2}{2c^4}-\frac{A^2\sqrt{-a^3c^9}}{4c^8}+\frac{B^2a\sqrt{-a^3c^9}}{4c^9}}\,32\mathrm{i}}{\frac{16A^3a^4}{c}-\frac{16AB^2a^5}{c^2}-\frac{16B^3a^4\sqrt{-a^3c^9}}{c^7}+\frac{16A^2Ba^3\sqrt{-a^3c^9}}{c^6}}\right)\sqrt{\frac{B^2a\sqrt{-a^3c^9}-A^2c\sqrt{-a^3c^9}+2ABa^2c^5}{4c^9}}\,2\mathrm{i}-\operatorname{atan}\left(\frac{A^2a^3\sqrt{x}\sqrt{\frac{A^2\sqrt{-a^3c^9}}{4c^8}+\frac{ABa^2}{2c^4}-\frac{B^2a\sqrt{-a^3c^9}}{4c^9}}\,32\mathrm{i}}{\frac{16A^3a^4}{c^2}-\frac{16AB^2a^5}{c^3}+\frac{16B^3a^4\sqrt{-a^3c^9}}{c^8}-\frac{16A^2Ba^3\sqrt{-a^3c^9}}{c^7}}-\frac{B^2a^4\sqrt{x}\sqrt{\frac{A^2\sqrt{-a^3c^9}}{4c^8}+\frac{ABa^2}{2c^4}-\frac{B^2a\sqrt{-a^3c^9}}{4c^9}}\,32\mathrm{i}}{\frac{16A^3a^4}{c}-\frac{16AB^2a^5}{c^2}+\frac{16B^3a^4\sqrt{-a^3c^9}}{c^7}-\frac{16A^2Ba^3\sqrt{-a^3c^9}}{c^6}}\right)\sqrt{\frac{A^2c\sqrt{-a^3c^9}-B^2a\sqrt{-a^3c^9}+2ABa^2c^5}{4c^9}}\,2\mathrm{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + c*x^2),x)
```

```
[Out] (2*A*x^(3/2))/(3*c) - atan((A^2*a^3*x^(1/2)*((A^2*(-a^3*c^9)^(1/2))/(4*c^8)
 + (A*B*a^2)/(2*c^4) - (B^2*a*(-a^3*c^9)^(1/2))/(4*c^9))^(1/2)*32i)/((16*A^
3*a^4)/c^2 - (16*A*B^2*a^5)/c^3 + (16*B^3*a^4*(-a^3*c^9)^(1/2))/c^8 - (16*A
^2*B*a^3*(-a^3*c^9)^(1/2))/c^7) - (B^2*a^4*x^(1/2)*((A^2*(-a^3*c^9)^(1/2))/
(4*c^8) + (A*B*a^2)/(2*c^4) - (B^2*a*(-a^3*c^9)^(1/2))/(4*c^9))^(1/2)*32i)/
((16*A^3*a^4)/c - (16*A*B^2*a^5)/c^2 + (16*B^3*a^4*(-a^3*c^9)^(1/2))/c^7 -
(16*A^2*B*a^3*(-a^3*c^9)^(1/2))/c^6))*((A^2*c*(-a^3*c^9)^(1/2) - B^2*a*(-a^
3*c^9)^(1/2) + 2*A*B*a^2*c^5)/(4*c^9))^(1/2)*2i - atan((A^2*a^3*x^(1/2)*((A
*B*a^2)/(2*c^4) - (A^2*(-a^3*c^9)^(1/2))/(4*c^8) + (B^2*a*(-a^3*c^9)^(1/2))
/(4*c^9))^(1/2)*32i)/((16*A^3*a^4)/c^2 - (16*A*B^2*a^5)/c^3 - (16*B^3*a^4*(
-a^3*c^9)^(1/2))/c^8 + (16*A^2*B*a^3*(-a^3*c^9)^(1/2))/c^7) - (B^2*a^4*x^(1
```

```
/2)*((A*B*a^2)/(2*c^4) - (A^2*(-a^3*c^9)^(1/2))/(4*c^8) + (B^2*a*(-a^3*c^9)
^(1/2))/(4*c^9))^(1/2)*32i)/((16*A^3*a^4)/c - (16*A*B^2*a^5)/c^2 - (16*B^3*
a^4*(-a^3*c^9)^(1/2))/c^7 + (16*A^2*B*a^3*(-a^3*c^9)^(1/2))/c^6))*((B^2*a*(
-a^3*c^9)^(1/2) - A^2*c*(-a^3*c^9)^(1/2) + 2*A*B*a^2*c^5)/(4*c^9))^(1/2)*2i
 + (2*B*x^(5/2))/(5*c) - (2*B*a*x^(1/2))/c^2
```

sympy [A] time = 33.96, size = 403, normalized size = 1.38

$$\begin{cases} \tilde{\infty}\left(\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}\right) & \text{for } a=0\wedge c=0 \\ \frac{\frac{2Ax^{\frac{7}{2}}}{7}+\frac{2Bx^{\frac{9}{2}}}{9}}{a} & \text{for } c=0 \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{c} & \text{for } a=0 \\ \frac{(-1)^{\frac{3}{4}}Aa^{\frac{3}{4}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^2\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}Aa^{\frac{3}{4}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^2\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}Aa^{\frac{3}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c^2\sqrt[4]{\frac{1}{c}}}+\frac{2Ax^{\frac{3}{2}}}{3c}-\frac{\sqrt[4]{-1}Ba^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^2}+\frac{\sqrt[4]{-1}Ba^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^2}-\frac{\sqrt[4]{-1}Ba^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c^2}-\frac{2Ba\sqrt{x}}{c^2}+\frac{2Bx^{\frac{5}{2}}}{5c} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(2*A*x**(3/2)/3 + 2*B*x**(5/2)/5), Eq(a, 0) & Eq(c, 0)), ((2
*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a, Eq(c, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5/
2)/5)/c, Eq(a, 0)), ((-1)**(3/4)*A*a**(3/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)
**(1/4) + sqrt(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)*A*a**(3/4)*log((-1)*
*(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)
*A*a**(3/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(c**2*(1/c)**
(1/4)) + 2*A*x**(3/2)/(3*c) - (-1)**(1/4)*B*a**(5/4)*(1/c)**(1/4)*log(-(-1)
**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c**2) + (-1)**(1/4)*B*a**(5/4)*
(1/c)**(1/4)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c**2) - (-
1)**(1/4)*B*a**(5/4)*(1/c)**(1/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)*
*(1/4)))/c**2 - 2*B*a*sqrt(x)/c**2 + 2*B*x**(5/2)/(5*c), True))
```

3.413 $\int \frac{x^{3/2}(A+Bx)}{a+cx^2}\,dx$

Optimal. Leaf size=278

$$-\frac{\sqrt[4]{a}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{7/4}}+\frac{\sqrt[4]{a}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right.}{2\sqrt{2}c^{7/4}}$$

Rubi [A] time = 0.27, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt[4]{a}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{7/4}}+\frac{\sqrt[4]{a}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}c^{7/4}}+\frac{\sqrt[4]{a}\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}c^{7/4}}-\frac{\sqrt[4]{a}\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}c^{7/4}}+\frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*A*Sqrt[x])/c + (2*B*x^(3/2))/(3*c) + (a^(1/4)*(Sqrt[a]*B + A*Sqrt[c])*Ar
cTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(7/4)) - (a^(1/4)*(
Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt
[2]*c^(7/4)) - (a^(1/4)*(Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/
4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(7/4)) + (a^(1/4)*(Sqrt[a]*B
- A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2
*Sqrt[2]*c^(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{a+cx^2}\,dx = \frac{2Bx^{3/2}}{3c} + \frac{\int \frac{\sqrt{x}\,(-aB+Acx)}{a+cx^2}\,dx}{c}$$

$$= \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c} + \frac{\int \frac{-aAc-aBcx}{\sqrt{x}\,(a+cx^2)}\,dx}{c^2}$$

$$= \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c} + \frac{2\,\mathrm{Subst}\left(\int \frac{-aAc-aBcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{c^2}$$

$$= \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c} + \frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B - A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{c^2} - \frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B + A\sqrt{\right.\right.}{}$$

$$= \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c} - \frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B + A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}} - \frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}} + x^2}\,dx, x, \sqrt{x}\right)}{2c^2} - \frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B + \right.\right.}{}$$

$$= \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c} - \frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B - A\sqrt{c}\right)\log\left(\sqrt{a} - \sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x} + \sqrt{c}\,x\right)}{2\sqrt{2}\,c^{7/4}} + \frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B - A\right.}{}$$

$$= \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c} + \frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B + A\sqrt{c}\right)\tan^{-1}\left(1 - \frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,c^{7/4}} - \frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B + A\sqrt{c}\right)\tan^{-1}\left(1\right.}{\sqrt{2}\,c^{7/4}}$$

Mathematica [A] time = 0.06, size = 287, normalized size = 1.03

$$\frac{\sqrt[4]{a}\,A\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{5/4}} - \frac{\sqrt[4]{a}\,A\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{5/4}} + \frac{\sqrt[4]{a}\,A\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,c^{5/4}} - \frac{\sqrt[4]{a}\,A\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}\,c^{5/4}} + \frac{(-a)^{3/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}} - \frac{(-a)^{3/4}B\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}} + \frac{2A\sqrt{x}}{c} + \frac{2Bx^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*A*Sqrt[x])/c + (2*B*x^(3/2))/(3*c) + (a^(1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1
/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(5/4)) - (a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c
```

```
^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(5/4)) + ((-a)^(3/4)*B*ArcTan[(c^(1/4)
*Sqrt[x])/(-a)^(1/4)])/c^(7/4) - ((-a)^(3/4)*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-
a)^(1/4)])/c^(7/4) + (a^(1/4)*A*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[
x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(5/4)) - (a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(
1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(5/4))
```

IntegrateAlgebraic [A] time = 0.34, size = 160, normalized size = 0.58

$$\frac{\left(a^{3/4}B+\sqrt[4]{a}\,A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{\sqrt{2}\,c^{7/4}}+\frac{\left(a^{3/4}B-\sqrt[4]{a}\,A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{\sqrt{2}\,c^{7/4}}+\frac{2\left(3A\sqrt{x}+Bx^{3/2}\right)}{3c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*(3*A*Sqrt[x] + B*x^(3/2)))/(3*c) + ((a^(3/4)*B + a^(1/4)*A*Sqrt[c])*ArcT
an[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(Sqrt[2]*c^(7/
4)) + ((a^(3/4)*B - a^(1/4)*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqr
t[x])/(Sqrt[a] + Sqrt[c]*x)])/(Sqrt[2]*c^(7/4))
```

fricas [B] time = 0.46, size = 772, normalized size = 2.78

$$-\frac{3c\sqrt{-\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+2ABa}{c^{3}}}\log\left(-(B^{4}a^{2}-A^{4}c^{2})\sqrt{x}+\left(Bc^{5}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-AB^{2}ac^{2}+A^{3}c^{3}\right)\sqrt{-\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+2ABa}{c^{3}}}\right)-3c\sqrt{-\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+2ABa}{c^{3}}}\log\left(-(B^{4}a^{2}-A^{4}c^{2})\sqrt{x}-\left(Bc^{5}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-AB^{2}ac^{2}+A^{3}c^{3}\right)\sqrt{-\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+2ABa}{c^{3}}}\right)-3c\sqrt{\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-2ABa}{c^{3}}}\log\left(-(B^{4}a^{2}-A^{4}c^{2})\sqrt{x}+\left(Bc^{5}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+AB^{2}ac^{2}-A^{3}c^{3}\right)\sqrt{\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-2ABa}{c^{3}}}\right)+3c\sqrt{\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-2ABa}{c^{3}}}\log\left(-(B^{4}a^{2}-A^{4}c^{2})\sqrt{x}-\left(Bc^{5}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+AB^{2}ac^{2}-A^{3}c^{3}\right)\sqrt{\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-2ABa}{c^{3}}}\right)-4(Bx+3A)\sqrt{x}}{6c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/6*(3*c*sqrt(-(c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + 2
*A*B*a)/c^3)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (B*c^5*sqrt(-(B^4*a^3 - 2*A
^2*B^2*a^2*c + A^4*a*c^2)/c^7) - A*B^2*a*c^2 + A^3*c^3)*sqrt(-(c^3*sqrt(-(B
^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + 2*A*B*a)/c^3)) - 3*c*sqrt(-(c^
3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + 2*A*B*a)/c^3)*log(-(
B^4*a^2 - A^4*c^2)*sqrt(x) - (B*c^5*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*
a*c^2)/c^7) - A*B^2*a*c^2 + A^3*c^3)*sqrt(-(c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*
a^2*c + A^4*a*c^2)/c^7) + 2*A*B*a)/c^3)) - 3*c*sqrt((c^3*sqrt(-(B^4*a^3 - 2
*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) - 2*A*B*a)/c^3)*log(-(B^4*a^2 - A^4*c^2)*s
qrt(x) + (B*c^5*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + A*B^2*
a*c^2 - A^3*c^3)*sqrt((c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^
7) - 2*A*B*a)/c^3)) + 3*c*sqrt((c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*
a*c^2)/c^7) - 2*A*B*a)/c^3)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (B*c^5*sqrt(
-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + A*B^2*a*c^2 - A^3*c^3)*sqrt
((c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) - 2*A*B*a)/c^3)) -
 4*(B*x + 3*A)*sqrt(x))/c
```

giac [A] time = 0.19, size = 255, normalized size = 0.92

$$-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2c^{4}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2c^{4}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}-\left(ac^{3}\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4c^{4}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}-\left(ac^{3}\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4c^{4}}+\frac{2\left(Bc^{2}x^{\frac{3}{2}}+3Ac^{2}\sqrt{x}\right)}{3c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sq
rt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/c^4 - 1/2*sqrt(2)*((a*c^3)^(1/4
)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqr
t(x))/(a/c)^(1/4))/c^4 - 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B
)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/c^4 + 1/4*sqrt(2)*((a*c^
3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sq
rt(a/c))/c^4 + 2/3*(B*c^2*x^(3/2) + 3*A*c^2*sqrt(x))/c^3
```

maple [A] time = 0.05, size = 289, normalized size = 1.04

$$\frac{2Bx^{\frac{3}{2}}}{3c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4c}-\frac{\sqrt{2}\,Ba\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}-\frac{\sqrt{2}\,Ba\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}-\frac{\sqrt{2}\,Ba\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{2A\sqrt{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+a),x)
```

```
[Out] 2/3*B/c*x^(3/2)+2*A/c*x^(1/2)-1/4/c*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)
*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-
1/2/c*A*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2/c*A*(
a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4*a/c^2*B/(a/c)^
(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)
*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2*a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/
2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a
/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.29, size = 247, normalized size = 0.89

$$-\frac{a\left(\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{4c}+\frac{2\left(Bx^{\frac{3}{2}}+3A\sqrt{x}\right)}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/
4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a
)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)
*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt
(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(sq
rt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sq
rt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c
)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c + 2/3*(B*x^(3/2) + 3*A*sqrt(x))/c
```

mupad [B] time = 0.25, size = 601, normalized size = 2.16

$$\frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}-\operatorname{atan}\left(\frac{B^2a^3\sqrt{x}\,\sqrt{\frac{A^2\sqrt{-ac^7}}{4c^6}-\frac{ABa}{2c^3}-\frac{B^2a\sqrt{-ac^7}}{4c^7}}\,32{}i}{\frac{16B^3a^4}{c^2}+\frac{16A^3a^2\sqrt{-ac^7}}{c^4}-\frac{16A^2Ba^3}{c}-\frac{16AB^2a^3\sqrt{-ac^7}}{c^5}}-\frac{A^2a^2c\sqrt{x}\,\sqrt{\frac{A^2\sqrt{-ac^7}}{4c^6}-\frac{ABa}{2c^3}-\frac{B^2a\sqrt{-ac^7}}{4c^7}}\,32{}i}{\frac{16B^3a^4}{c^2}+\frac{16A^3a^2\sqrt{-ac^7}}{c^4}-\frac{16A^2Ba^3}{c}-\frac{16AB^2a^3\sqrt{-ac^7}}{c^5}}\right)\sqrt{-\frac{B^2a\sqrt{-ac^7}-A^2c\sqrt{-ac^7}+2ABac^4}{4c^7}}\,2{}i-\operatorname{atan}\left(\frac{B^2a^3\sqrt{x}\,\sqrt{\frac{B^2a\sqrt{-ac^7}}{4c^7}-\frac{ABa}{2c^3}-\frac{A^2\sqrt{-ac^7}}{4c^6}}\,32{}i}{\frac{16B^3a^4}{c^2}-\frac{16A^3a^2\sqrt{-ac^7}}{c^4}-\frac{16A^2Ba^3}{c}+\frac{16AB^2a^3\sqrt{-ac^7}}{c^5}}-\frac{A^2a^2c\sqrt{x}\,\sqrt{\frac{B^2a\sqrt{-ac^7}}{4c^7}-\frac{ABa}{2c^3}-\frac{A^2\sqrt{-ac^7}}{4c^6}}\,32{}i}{\frac{16B^3a^4}{c^2}-\frac{16A^3a^2\sqrt{-ac^7}}{c^4}-\frac{16A^2Ba^3}{c}+\frac{16AB^2a^3\sqrt{-ac^7}}{c^5}}\right)\sqrt{-\frac{A^2c\sqrt{-ac^7}-B^2a\sqrt{-ac^7}+2ABac^4}{4c^7}}\,2{}i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + c*x^2),x)
```

```
[Out] (2*A*x^(1/2))/c - atan((B^2*a^3*x^(1/2)*((A^2*(-a*c^7)^(1/2))/(4*c^6) - (A*
B*a)/(2*c^3) - (B^2*a*(-a*c^7)^(1/2))/(4*c^7))^(1/2)*32i)/((16*B^3*a^4)/c^2
 + (16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c - (16*A*B^2*a^3*(-a*c
^7)^(1/2))/c^5) - (A^2*a^2*c*x^(1/2)*((A^2*(-a*c^7)^(1/2))/(4*c^6) - (A*B*a
)/(2*c^3) - (B^2*a*(-a*c^7)^(1/2))/(4*c^7))^(1/2)*32i)/((16*B^3*a^4)/c^2 +
(16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c - (16*A*B^2*a^3*(-a*c^7)
^(1/2))/c^5))*(-(B^2*a*(-a*c^7)^(1/2) - A^2*c*(-a*c^7)^(1/2) + 2*A*B*a*c^4)
/(4*c^7))^(1/2)*2i - atan((B^2*a^3*x^(1/2)*((B^2*a*(-a*c^7)^(1/2))/(4*c^7)
- (A*B*a)/(2*c^3) - (A^2*(-a*c^7)^(1/2))/(4*c^6))^(1/2)*32i)/((16*B^3*a^4)/
c^2 - (16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c + (16*A*B^2*a^3*(-
a*c^7)^(1/2))/c^5) - (A^2*a^2*c*x^(1/2)*((B^2*a*(-a*c^7)^(1/2))/(4*c^7) - (
A*B*a)/(2*c^3) - (A^2*(-a*c^7)^(1/2))/(4*c^6))^(1/2)*32i)/((16*B^3*a^4)/c^2
 - (16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c + (16*A*B^2*a^3*(-a*c
^7)^(1/2))/c^5))*(-(A^2*c*(-a*c^7)^(1/2) - B^2*a*(-a*c^7)^(1/2) + 2*A*B*a*c
^4)/(4*c^7))^(1/2)*2i + (2*B*x^(3/2))/(3*c)
```

sympy [A] time = 10.06, size = 379, normalized size = 1.36

$$\begin{cases} \tilde{\infty}\left(2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}\right) & \text{for } a=0\wedge c=0 \\ \frac{\frac{2Ax^{\frac{5}{2}}}{5}+\frac{2Bx^{\frac{7}{2}}}{7}}{a} & \text{for } c=0 \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{c} & \text{for } a=0 \\ \frac{\sqrt[4]{-1}A\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c}-\frac{\sqrt[4]{-1}A\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c}+\frac{\sqrt[4]{-1}A\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c}+\frac{2A\sqrt{x}}{c}+\frac{(-1)^{\frac{3}{4}}Ba^{\frac{3}{4}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^2\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}Ba^{\frac{3}{4}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^2\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}Ba^{\frac{3}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c^2\sqrt[4]{\frac{1}{c}}}+\frac{2Bx^{\frac{3}{2}}}{3c} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(2*A*sqrt(x) + 2*B*x**(3/2)/3), Eq(a, 0) & Eq(c, 0)), ((2*A*
x**(5/2)/5 + 2*B*x**(7/2)/7)/a, Eq(c, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/3)/
c, Eq(a, 0)), ((-1)**(1/4)*A*a**(1/4)*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4
)*(1/c)**(1/4) + sqrt(x))/(2*c) - (-1)**(1/4)*A*a**(1/4)*(1/c)**(1/4)*log((
-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c) + (-1)**(1/4)*A*a**(1/4)*
(1/c)**(1/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/c + 2*A*sqrt
(x)/c + (-1)**(3/4)*B*a**(3/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqr
t(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)*B*a**(3/4)*log((-1)**(1/4)*a**(1/
4)*(1/c)**(1/4) + sqrt(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)*B*a**(3/4)*a
tan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(c**2*(1/c)**(1/4)) + 2*B*
x**(3/2)/(3*c), True))
```

3.414 $\int \frac{\sqrt{x}(A+Bx)}{a+cx^2} dx$

Optimal. Leaf size=265

$$\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{a}c^{5/4}}-\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{a}c^{5/4}}+\frac{\left(\sqrt{a}B-\right.}{}$$

Rubi [A] time = 0.23, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{a}c^{5/4}}-\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{a}c^{5/4}}+\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\sqrt[4]{a}c^{5/4}}-\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}\sqrt[4]{a}c^{5/4}}+\frac{2B\sqrt{x}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c + ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt
[x])/a^(1/4)])/(Sqrt[2]*a^(1/4)*c^(5/4)) - ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[
1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(1/4)*c^(5/4)) + ((Sqrt[
a]*B + A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(2*Sqrt[2]*a^(1/4)*c^(5/4)) - ((Sqrt[a]*B + A*Sqrt[c])*Log[Sqrt[a] + Sqr
t[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(1/4)*c^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}(A+Bx)}{a+cx^2}\,dx &= \frac{2B\sqrt{x}}{c}+\frac{\int \frac{-aB+Acx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{c}\\
&= \frac{2B\sqrt{x}}{c}+\frac{2\,\text{Subst}\left(\int \frac{-aB+Acx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c}\\
&= \frac{2B\sqrt{x}}{c}+\frac{\left(A-\frac{\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c}-\frac{\left(A+\frac{\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}\,dx\right.}{c}\\
&= \frac{2B\sqrt{x}}{c}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt[4]{a}}{\sqrt[4]{c}}+2x}{-\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}-x^2}\,dx,x,\sqrt{x}\right)}{2\sqrt{2}\sqrt[4]{a}c^{5/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\text{Subst}\left(\int\right.}{2\sqrt{2}}\\
&= \frac{2B\sqrt{x}}{c}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{a}c^{5/4}}-\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\log\left(\sqrt{a}+\right.}{2\sqrt{2}\sqrt[4]{a}}\\
&= \frac{2B\sqrt{x}}{c}-\frac{\left(A-\frac{\sqrt{a}B}{\sqrt{c}}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\sqrt[4]{a}c^{3/4}}+\frac{\left(A-\frac{\sqrt{a}B}{\sqrt{c}}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\sqrt[4]{a}c^{3/4}}+\frac{\left(\sqrt{a}B+\right.}{}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 266, normalized size = 1.00

$$
\frac{\sqrt{2}a^{5/4}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)-\sqrt{2}a^{5/4}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)+2\sqrt{2}a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)-2\sqrt{2}a^{5/4}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)-4(-a)^{3/4}A\sqrt{c}\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)+4(-a)^{3/4}A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)+8aB\sqrt[4]{c}\sqrt{x}}{4ac^{5/4}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (8*a*B*c^(1/4)*Sqrt[x] + 2*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sq
rt[x])/a^(1/4)] - 2*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/
a^(1/4)] - 4*(-a)^(3/4)*A*Sqrt[c]*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] + 4*
(-a)^(3/4)*A*Sqrt[c]*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] + Sqrt[2]*a^(5/4
```

```
)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] - Sqrt[2]*a^
(5/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(4*a*c^
(5/4))
```

IntegrateAlgebraic [A] time = 0.28, size = 149, normalized size = 0.56

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{\sqrt{2}\sqrt[4]{a}c^{5/4}}-\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{\sqrt{2}\sqrt[4]{a}c^{5/4}}+\frac{2B\sqrt{x}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c + ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sq
rt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(Sqrt[2]*a^(1/4)*c^(5/4)) - ((Sqrt[a]*B +
A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)]
)/(Sqrt[2]*a^(1/4)*c^(5/4))
```

fricas [B] time = 0.43, size = 764, normalized size = 2.88

$$\frac{c\sqrt{\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}+2AB}{c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Aac^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}+B^3a^2c-A^2Bac^2\right)\sqrt{\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}+2AB}{c^2}}\right)-c\sqrt{\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}+2AB}{c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}-\left(Aac^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}+B^3a^2c-A^2Bac^2\right)\sqrt{\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}+2AB}{c^2}}\right)-c\sqrt{-\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}-2AB}{c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Aac^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}-B^3a^2c+A^2Bac^2\right)\sqrt{-\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}-2AB}{c^2}}\right)+c\sqrt{-\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}-2AB}{c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}-\left(Aac^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}-B^3a^2c+A^2Bac^2\right)\sqrt{-\frac{c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{ac^5}}-2AB}{c^2}}\right)+4B\sqrt{x}}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*(c*sqrt((c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) + 2*A*B
)/c^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*a*c^4*sqrt(-(B^4*a^2 - 2*A^2*B
^2*a*c + A^4*c^2)/(a*c^5)) + B^3*a^2*c - A^2*B*a*c^2)*sqrt((c^2*sqrt(-(B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) + 2*A*B)/c^2)) - c*sqrt((c^2*sqrt(-
(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) + 2*A*B)/c^2)*log(-(B^4*a^2 -
A^4*c^2)*sqrt(x) - (A*a*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^
5)) + B^3*a^2*c - A^2*B*a*c^2)*sqrt((c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A
^4*c^2)/(a*c^5)) + 2*A*B)/c^2)) - c*sqrt(-(c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a
*c + A^4*c^2)/(a*c^5)) - 2*A*B)/c^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*
a*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - B^3*a^2*c + A^2*
B*a*c^2)*sqrt(-(c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - 2*
A*B)/c^2)) + c*sqrt(-(c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)
) - 2*A*B)/c^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (A*a*c^4*sqrt(-(B^4*a^2
- 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - B^3*a^2*c + A^2*B*a*c^2)*sqrt(-(c^2*s
qrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - 2*A*B)/c^2)) + 4*B*sqrt
(x))/c
```

giac [A] time = 0.19, size = 249, normalized size = 0.94

$$\frac{2B\sqrt{x}}{c}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2ac^3}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2ac^3}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4ac^3}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c - 1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(
1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^3) - 1/2*sq
rt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*
(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a*c^3) - 1/4*sqrt(2)*((a*c^3)^(1/4)*
B*a*c + (a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(
a*c^3) + 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-sqrt(2)*s
qrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^3)
```

maple [A] time = 0.05, size = 277, normalized size = 1.05

$$\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c}+\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c}+\frac{\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4c}+\frac{2B\sqrt{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(B*x+A)/(c*x^2+a),x)
```

```
[Out] 2*B/c*x^(1/2)-1/4/c*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)
+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2/c*B*(a/c)^(1
/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/2/c*B*(a/c)^(1/4)*2^(1/
2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/4/c*A/(a/c)^(1/4)*2^(1/2)*ln((x-
(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/
c)^(1/2)))+1/2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1
)+1/2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.45, size = 246, normalized size = 0.93

$$\frac{2B\sqrt{x}}{c}-\frac{\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2*B*sqrt(x)/c - 1/4*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(
2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sq
rt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c
)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sq
rt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt
(c) + A*sqrt(a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a
))/(a^(3/4)*c^(3/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(
1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c
```

mupad [B] time = 1.26, size = 566, normalized size = 2.14

$$2\,\mathrm{atanh}\left(\frac{32A^2ac^2\sqrt{x}\sqrt{\frac{AB}{2c^2}-\frac{B^2\sqrt{-ac^5}}{4c^5}+\frac{A^2\sqrt{-ac^5}}{4ac^4}}}{16AB^2a^2-16A^3ac-\frac{16B^3a^2\sqrt{-ac^5}}{c^3}+\frac{16A^2Ba\sqrt{-ac^5}}{c^2}}-\frac{32B^2a^2c\sqrt{x}\sqrt{\frac{AB}{2c^2}-\frac{B^2\sqrt{-ac^5}}{4c^5}+\frac{A^2\sqrt{-ac^5}}{4ac^4}}}{16AB^2a^2-16A^3ac-\frac{16B^3a^2\sqrt{-ac^5}}{c^3}+\frac{16A^2Ba\sqrt{-ac^5}}{c^2}}\right)\sqrt{\frac{A^2c\sqrt{-ac^5}-B^2a\sqrt{-ac^5}+2ABac^3}{4ac^5}}+2\,\mathrm{atanh}\left(\frac{32A^2ac^2\sqrt{x}\sqrt{\frac{AB}{2c^2}+\frac{B^2\sqrt{-ac^5}}{4c^5}-\frac{A^2\sqrt{-ac^5}}{4ac^4}}}{16AB^2a^2-16A^3ac+\frac{16B^3a^2\sqrt{-ac^5}}{c^3}-\frac{16A^2Ba\sqrt{-ac^5}}{c^2}}-\frac{32B^2a^2c\sqrt{x}\sqrt{\frac{AB}{2c^2}+\frac{B^2\sqrt{-ac^5}}{4c^5}-\frac{A^2\sqrt{-ac^5}}{4ac^4}}}{16AB^2a^2-16A^3ac+\frac{16B^3a^2\sqrt{-ac^5}}{c^3}-\frac{16A^2Ba\sqrt{-ac^5}}{c^2}}\right)\sqrt{\frac{B^2a\sqrt{-ac^5}-A^2c\sqrt{-ac^5}+2ABac^3}{4ac^5}}+\frac{2B\sqrt{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + c*x^2),x)
```

```
[Out] 2*atanh((32*A^2*a*c^2*x^(1/2)*((A*B)/(2*c^2) - (B^2*(-a*c^5)^(1/2))/(4*c^5)
 + (A^2*(-a*c^5)^(1/2))/(4*a*c^4))^(1/2))/(16*A*B^2*a^2 - 16*A^3*a*c - (16*
B^3*a^2*(-a*c^5)^(1/2))/c^3 + (16*A^2*B*a*(-a*c^5)^(1/2))/c^2) - (32*B^2*a^
2*c*x^(1/2)*((A*B)/(2*c^2) - (B^2*(-a*c^5)^(1/2))/(4*c^5) + (A^2*(-a*c^5)^(
1/2))/(4*a*c^4))^(1/2))/(16*A*B^2*a^2 - 16*A^3*a*c - (16*B^3*a^2*(-a*c^5)^(
1/2))/c^3 + (16*A^2*B*a*(-a*c^5)^(1/2))/c^2))*((A^2*c*(-a*c^5)^(1/2) - B^2*
a*(-a*c^5)^(1/2) + 2*A*B*a*c^3)/(4*a*c^5))^(1/2) + 2*atanh((32*A^2*a*c^2*x^
(1/2)*((A*B)/(2*c^2) + (B^2*(-a*c^5)^(1/2))/(4*c^5) - (A^2*(-a*c^5)^(1/2))/
(4*a*c^4))^(1/2))/(16*A*B^2*a^2 - 16*A^3*a*c + (16*B^3*a^2*(-a*c^5)^(1/2))/
c^3 - (16*A^2*B*a*(-a*c^5)^(1/2))/c^2) - (32*B^2*a^2*c*x^(1/2)*((A*B)/(2*c^
2) + (B^2*(-a*c^5)^(1/2))/(4*c^5) - (A^2*(-a*c^5)^(1/2))/(4*a*c^4))^(1/2))/
(16*A*B^2*a^2 - 16*A^3*a*c + (16*B^3*a^2*(-a*c^5)^(1/2))/c^3 - (16*A^2*B*a*
(-a*c^5)^(1/2))/c^2))*((B^2*a*(-a*c^5)^(1/2) - A^2*c*(-a*c^5)^(1/2) + 2*A*B
*a*c^3)/(4*a*c^5))^(1/2) + (2*B*x^(1/2))/c
```

sympy [A] time = 6.48, size = 359, normalized size = 1.35

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{\sqrt{x}}+2B\sqrt{x}\right) & \text{for } a=0\wedge c=0 \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{c} & \text{for } a=0 \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{a} & \text{for } c=0 \\ -\frac{(-1)^{\frac{3}{4}}A\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{a}c\sqrt[4]{\frac{1}{c}}}+\frac{(-1)^{\frac{3}{4}}A\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{a}c\sqrt[4]{\frac{1}{c}}}+\frac{(-1)^{\frac{3}{4}}A\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{\sqrt[4]{a}c\sqrt[4]{\frac{1}{c}}}+\frac{\sqrt[4]{-1}B\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c}-\frac{\sqrt[4]{-1}B\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c}+\frac{\sqrt[4]{-1}B\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c}+\frac{2B\sqrt{x}}{c} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*(B*x+A)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c, Eq(a, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5/2)/5)/a, E
q(c, 0)), (-(-1)**(3/4)*A*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))
/(2*a**(1/4)*c*(1/c)**(1/4)) + (-1)**(3/4)*A*log((-1)**(1/4)*a**(1/4)*(1/c)
**(1/4) + sqrt(x))/(2*a**(1/4)*c*(1/c)**(1/4)) + (-1)**(3/4)*A*atan((-1)**(
3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(1/4)*c*(1/c)**(1/4)) + (-1)**(1/
4)*B*a**(1/4)*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x)
)/(2*c) - (-1)**(1/4)*B*a**(1/4)*(1/c)**(1/4)*log((-1)**(1/4)*a**(1/4)*(1/c
)**(1/4) + sqrt(x))/(2*c) + (-1)**(1/4)*B*a**(1/4)*(1/c)**(1/4)*atan((-1)**
(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/c + 2*B*sqrt(x)/c, True))
```

3.415 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=254

$$\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B\right.}{}$$

Rubi [A] time = 0.19, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{3/4}c^{3/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}\,a^{3/4}c^{3/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + c*x^2)),x]
```

```
[Out] -(((Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(
Sqrt[2]*a^(3/4)*c^(3/4))) + ((Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^
(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(3/4)*c^(3/4)) + ((Sqrt[a]*B - A*Sqrt[c
])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a
^(3/4)*c^(3/4)) - ((Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(3/4)*c^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{A+Bx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)$$

$$= -\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{c} + \frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}+cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{c}$$

$$= \frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{2c} + \frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}+\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx, x, \ldots\right.}{2c}$$

$$= \frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{2\sqrt{2}a^{3/4}c^{3/4}} - \frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{a}+\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\ldots\right.}{2\sqrt{2}a^{3/4}c^{3/4}}$$

$$= -\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}a^{3/4}c^{3/4}} + \frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}a^{3/4}c^{3/4}} + \frac{\left(\sqrt{a}B-\ldots\right.}{}$$

Mathematica [A] time = 0.06, size = 262, normalized size = 1.03

$$\frac{-\sqrt{2}\sqrt[4]{a}A\sqrt{c}\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)+\sqrt{2}\sqrt[4]{a}A\sqrt{c}\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)-2\sqrt{2}\sqrt[4]{a}A\sqrt{c}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)+2\sqrt{2}\sqrt[4]{a}A\sqrt{c}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)-4(-a)^{3/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)+4(-a)^{3/4}B\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{4ac^{3/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + c*x^2)),x]
```

```
[Out] (-2*Sqrt[2]*a^(1/4)*A*Sqrt[c]*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)]
 + 2*Sqrt[2]*a^(1/4)*A*Sqrt[c]*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)
] - 4*(-a)^(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] + 4*(-a)^(3/4)*B*Ar
cTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] - Sqrt[2]*a^(1/4)*A*Sqrt[c]*Log[Sqrt[a]
 - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + Sqrt[2]*a^(1/4)*A*Sqrt[c]
*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(4*a*c^(3/4))
```

IntegrateAlgebraic [A] time = 0.23, size = 139, normalized size = 0.55

$$-\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{\sqrt{2}a^{3/4}c^{3/4}} - \frac{\left(\sqrt{a}B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{\sqrt{2}a^{3/4}c^{3/4}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a + c*x^2)),x]
```

```
[Out] -(((Sqrt[a]*B + A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x])])/(Sqrt[2]*a^(3/4)*c^(3/4))) - ((Sqrt[a]*B - A*Sqrt[c])*ArcT
anh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(Sqrt[2]*a^(3
/4)*c^(3/4))
```

fricas [**B**] time = 0.46, size = 775, normalized size = 3.05

$$\frac{1}{2}\sqrt{-\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+2AB}{ac}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Ba^3c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-AB^2a^2c+A^3ac^2\right)\sqrt{-\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+2AB}{ac}}\right)-\frac{1}{2}\sqrt{-\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+2AB}{ac}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}-\left(Ba^3c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-AB^2a^2c+A^3ac^2\right)\sqrt{-\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+2AB}{ac}}\right)-\frac{1}{2}\sqrt{\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-2AB}{ac}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Ba^3c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+AB^2a^2c-A^3ac^2\right)\sqrt{\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-2AB}{ac}}\right)+\frac{1}{2}\sqrt{\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-2AB}{ac}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}-\left(Ba^3c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+AB^2a^2c-A^3ac^2\right)\sqrt{\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-2AB}{ac}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(-(a*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B
)/(a*c))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A
^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - A*B^2*a^2*c + A^3*a*c^2)*sqrt(-(a*c*sqrt
(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B)/(a*c))) - 1/2*sqr
t(-(a*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B)/(a*c)
)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*
a*c + A^4*c^2)/(a^3*c^3)) - A*B^2*a^2*c + A^3*a*c^2)*sqrt(-(a*c*sqrt(-(B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B)/(a*c))) - 1/2*sqrt((a*c*
sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c))*log(-(
B^4*a^2 - A^4*c^2)*sqrt(x) + (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^
4*c^2)/(a^3*c^3)) + A*B^2*a^2*c - A^3*a*c^2)*sqrt((a*c*sqrt(-(B^4*a^2 - 2*A
^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c))) + 1/2*sqrt((a*c*sqrt(-(B^
4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c))*log(-(B^4*a^2 -
 A^4*c^2)*sqrt(x) - (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a
^3*c^3)) + A*B^2*a^2*c - A^3*a*c^2)*sqrt((a*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*
c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c)))
```

giac [**A**] time = 0.18, size = 244, normalized size = 0.96

$$\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,ac^3}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,ac^3}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2-\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4\,ac^3}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2-\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^3) + 1/2*sqrt(2)*((a*c^3)^(
1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*
sqrt(x))/(a/c)^(1/4))/(a*c^3) + 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^
(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^3) - 1/4*sqr
t(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/
4) + x + sqrt(a/c))/(a*c^3)
```

maple [**A**] time = 0.07, size = 268, normalized size = 1.06

$$\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a}+\frac{\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c}+\frac{\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c}+\frac{\sqrt{2}\,B\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/(c*x^2+a),x)
```

```
[Out] 1/4*A*(a/c)^(1/4)/a*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/
(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2*A*(a/c)^(1/4)/a*2^(1/2)*ar
ctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)-1)+1/4*B/c/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^
(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2
```

```
*B/c/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2*B/c/(a/c
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.15, size = 224, normalized size = 0.88

$$\frac{\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{2\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{2\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{4a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{4a^{\frac{3}{4}}c^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(
1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt
(c))*sqrt(c)) + 1/2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)*(sq
rt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*
sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - 1/4*sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(sq
rt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + 1/
4*sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sq
rt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4))
```

mupad [B] time = 1.27, size = 607, normalized size = 2.39

$$-2\,\mathrm{atanh}\left(\frac{32A^2c^3\sqrt{x}\sqrt{\frac{B^2\sqrt{-a^3c^3}}{4a^2c^3}-\frac{A^2\sqrt{-a^3c^3}}{4a^3c^2}-\frac{AB}{2ac}}}{16A^2Bc^2-16B^3ac-\frac{16AB^2\sqrt{-a^3c^3}}{a}+\frac{16A^3c\sqrt{-a^3c^3}}{a^2}}-\frac{32B^2ac^2\sqrt{x}\sqrt{\frac{B^2\sqrt{-a^3c^3}}{4a^2c^3}-\frac{A^2\sqrt{-a^3c^3}}{4a^3c^2}-\frac{AB}{2ac}}}{16A^2Bc^2-16B^3ac-\frac{16AB^2\sqrt{-a^3c^3}}{a}+\frac{16A^3c\sqrt{-a^3c^3}}{a^2}}\right)\sqrt{-\frac{A^2c\sqrt{-a^3c^3}-B^2a\sqrt{-a^3c^3}+2ABa^2c^2}{4a^3c^3}}-2\,\mathrm{atanh}\left(\frac{32A^2c^3\sqrt{x}\sqrt{\frac{A^2\sqrt{-a^3c^3}}{4a^3c^2}-\frac{AB}{2ac}-\frac{B^2\sqrt{-a^3c^3}}{4a^2c^3}}}{16A^2Bc^2-16B^3ac+\frac{16AB^2\sqrt{-a^3c^3}}{a}-\frac{16A^3c\sqrt{-a^3c^3}}{a^2}}-\frac{32B^2ac^2\sqrt{x}\sqrt{\frac{A^2\sqrt{-a^3c^3}}{4a^3c^2}-\frac{AB}{2ac}-\frac{B^2\sqrt{-a^3c^3}}{4a^2c^3}}}{16A^2Bc^2-16B^3ac+\frac{16AB^2\sqrt{-a^3c^3}}{a}-\frac{16A^3c\sqrt{-a^3c^3}}{a^2}}\right)\sqrt{-\frac{B^2a\sqrt{-a^3c^3}-A^2c\sqrt{-a^3c^3}+2ABa^2c^2}{4a^3c^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + c*x^2)),x)
```

```
[Out] - 2*atanh((32*A^2*c^3*x^(1/2)*((B^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3) - (A^2*(-
a^3*c^3)^(1/2))/(4*a^3*c^2) - (A*B)/(2*a*c))^(1/2))/(16*A^2*B*c^2 - 16*B^3*
a*c - (16*A*B^2*(-a^3*c^3)^(1/2))/a + (16*A^3*c*(-a^3*c^3)^(1/2))/a^2) - (3
2*B^2*a*c^2*x^(1/2)*((B^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3) - (A^2*(-a^3*c^3)^(
1/2))/(4*a^3*c^2) - (A*B)/(2*a*c))^(1/2))/(16*A^2*B*c^2 - 16*B^3*a*c - (16*
A*B^2*(-a^3*c^3)^(1/2))/a + (16*A^3*c*(-a^3*c^3)^(1/2))/a^2))*(-(A^2*c*(-a^
3*c^3)^(1/2) - B^2*a*(-a^3*c^3)^(1/2) + 2*A*B*a^2*c^2)/(4*a^3*c^3))^(1/2) -
 2*atanh((32*A^2*c^3*x^(1/2)*((A^2*(-a^3*c^3)^(1/2))/(4*a^3*c^2) - (A*B)/(2
*a*c) - (B^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3))^(1/2))/(16*A^2*B*c^2 - 16*B^3*a
*c + (16*A*B^2*(-a^3*c^3)^(1/2))/a - (16*A^3*c*(-a^3*c^3)^(1/2))/a^2) - (32
*B^2*a*c^2*x^(1/2)*((A^2*(-a^3*c^3)^(1/2))/(4*a^3*c^2) - (A*B)/(2*a*c) - (B
^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3))^(1/2))/(16*A^2*B*c^2 - 16*B^3*a*c + (16*A
*B^2*(-a^3*c^3)^(1/2))/a - (16*A^3*c*(-a^3*c^3)^(1/2))/a^2))*(-(B^2*a*(-a^3
*c^3)^(1/2) - A^2*c*(-a^3*c^3)^(1/2) + 2*A*B*a^2*c^2)/(4*a^3*c^3))^(1/2)
```

sympy [A] time = 7.03, size = 348, normalized size = 1.37

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) & \text{for}\: a=0\wedge c=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{c} & \text{for}\: a=0 \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{a} & \text{for}\: c=0 \\ -\frac{\sqrt[4]{-1}A\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{3}{4}}}+\frac{\sqrt[4]{-1}A\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{3}{4}}}-\frac{\sqrt[4]{-1}A\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{3}{4}}}-\frac{(-1)^{\frac{3}{4}}B\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{a}c\sqrt[4]{\frac{1}{c}}}+\frac{(-1)^{\frac{3}{4}}B\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{a}c\sqrt[4]{\frac{1}{c}}}+\frac{(-1)^{\frac{3}{4}}B\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{\sqrt[4]{a}c\sqrt[4]{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c, Eq(a, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/
3)/a, Eq(c, 0)), (-(-1)**(1/4)*A*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/
c)**(1/4) + sqrt(x))/(2*a**(3/4)) + (-1)**(1/4)*A*(1/c)**(1/4)*log((-1)**(1
```

```
/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(3/4)) - (-1)**(1/4)*A*(1/c)**(1
/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/a**(3/4) - (-1)**(3/4
)*B*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(1/4)*c*(1/c)**
(1/4)) + (-1)**(3/4)*B*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*
a**(1/4)*c*(1/c)**(1/4)) + (-1)**(3/4)*B*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)
*(1/c)**(1/4)))/(a**(1/4)*c*(1/c)**(1/4)), True))
```

3.416 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=265

$$-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}-\frac{\left(\sqrt{a}\,B-\right.}{}$$

Rubi **[A]** time = 0.22, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{5/4}\sqrt[4]{c}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}\,a^{5/4}\sqrt[4]{c}}-\frac{2A}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(a*Sqrt[x]) - ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*S
qrt[x])/a^(1/4)])/(Sqrt[2]*a^(5/4)*c^(1/4)) + ((Sqrt[a]*B - A*Sqrt[c])*ArcT
an[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(5/4)*c^(1/4)) - ((Sq
rt[a]*B + A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/(2*Sqrt[2]*a^(5/4)*c^(1/4)) + ((Sqrt[a]*B + A*Sqrt[c])*Log[Sqrt[a] +
Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(5/4)*c^(1/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)}\,dx &= -\frac{2A}{a\sqrt{x}}+\frac{\int \frac{aB-Acx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{aB-Acx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{\left(-A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\right.}{a}\\
&= -\frac{2A}{a\sqrt{x}}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2a}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}+\frac{\sqrt{2}\,\sqrt[4]{}}{\sqrt[4]{c}}}\right.}{2a}\\
&= -\frac{2A}{a\sqrt{x}}-\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}+\right.}{2\sqrt{2}\,}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{5/4}}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{5/4}}-
\end{aligned}$$

Mathematica [C] time = 0.08, size = 177, normalized size = 0.67

$$\frac{\frac{\sqrt{2}\,\sqrt[4]{a}\,B\left(-\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)+\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)-2\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)+2\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)\right)}{\sqrt[4]{c}}-\frac{8A\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)}{\sqrt{x}}}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + c*x^2)),x]
```

```
[Out] ((-8*A*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/Sqrt[x] + (Sqrt[2]*a^
(1/4)*B*(-2*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] + 2*ArcTan[1 + (S
```

```
qrt[2]*c^(1/4)*Sqrt[x]])/a^(1/4)] - Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sq
rt[x] + Sqrt[c]*x] + Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x]))/c^(1/4))/(4*a)
```

IntegrateAlgebraic [A] time = 0.32, size = 149, normalized size = 0.56

$$-\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{\sqrt{2}a^{5/4}\sqrt[4]{c}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{\sqrt{2}a^{5/4}\sqrt[4]{c}}-\frac{2A}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(a*Sqrt[x]) - ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/
(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(Sqrt[2]*a^(5/4)*c^(1/4)) + ((Sqrt[a]*B
 + A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*
x)])/(Sqrt[2]*a^(5/4)*c^(1/4))
```

fricas [B] time = 0.44, size = 767, normalized size = 2.89

$$-\frac{a x \sqrt{\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}+2 A B}{a^{2}}} \log\left(-\left(B^{4} a^{2}-A^{4} c^{2}\right) \sqrt{x}+\left(A a^{4} c \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}+B^{3} a^{3}-A^{2} B a^{2} c\right) \sqrt{\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}+2 A B}{a^{2}}}\right)-a x \sqrt{\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}+2 A B}{a^{2}}} \log\left(-\left(B^{4} a^{2}-A^{4} c^{2}\right) \sqrt{x}-\left(A a^{4} c \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}+B^{3} a^{3}-A^{2} B a^{2} c\right) \sqrt{\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}+2 A B}{a^{2}}}\right)-a x \sqrt{-\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}-2 A B}{a^{2}}} \log\left(-\left(B^{4} a^{2}-A^{4} c^{2}\right) \sqrt{x}+\left(A a^{4} c \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}-B^{3} a^{3}+A^{2} B a^{2} c\right) \sqrt{-\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}-2 A B}{a^{2}}}\right)+a x \sqrt{-\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}-2 A B}{a^{2}}} \log\left(-\left(B^{4} a^{2}-A^{4} c^{2}\right) \sqrt{x}-\left(A a^{4} c \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}-B^{3} a^{3}+A^{2} B a^{2} c\right) \sqrt{-\frac{a^{2} \sqrt{-\frac{B^{4} a^{2}-2 A^{2} B^{2} a c+A^{4} c^{2}}{a^{5} c}}-2 A B}{a^{2}}}\right)+4 A \sqrt{x}}{2 a x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/2*(a*x*sqrt((a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) + 2*
A*B)/a^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*a^4*c*sqrt(-(B^4*a^2 - 2*A^
2*B^2*a*c + A^4*c^2)/(a^5*c)) + B^3*a^3 - A^2*B*a^2*c)*sqrt((a^2*sqrt(-(B^4
*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) + 2*A*B)/a^2)) - a*x*sqrt((a^2*sqr
t(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) + 2*A*B)/a^2)*log(-(B^4*a^2
 - A^4*c^2)*sqrt(x) - (A*a^4*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a
^5*c)) + B^3*a^3 - A^2*B*a^2*c)*sqrt((a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c +
A^4*c^2)/(a^5*c)) + 2*A*B)/a^2)) - a*x*sqrt(-(a^2*sqrt(-(B^4*a^2 - 2*A^2*B^
2*a*c + A^4*c^2)/(a^5*c)) - 2*A*B)/a^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) +
(A*a^4*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - B^3*a^3 + A^2
*B*a^2*c)*sqrt(-(a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - 2
*A*B)/a^2)) + a*x*sqrt(-(a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5
*c)) - 2*A*B)/a^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (A*a^4*c*sqrt(-(B^4*a
^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - B^3*a^3 + A^2*B*a^2*c)*sqrt(-(a^2*
sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - 2*A*B)/a^2)) + 4*A*sqr
t(x))/(a*x)
```

giac [A] time = 0.19, size = 249, normalized size = 0.94

$$-\frac{2A}{a\sqrt{x}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^{2}c^{2}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^{2}c^{2}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac+\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^{2}c^{2}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac+\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -2*A/(a*sqrt(x)) + 1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arct
an(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^2) + 1
/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^2) + 1/4*sqrt(2)*((a*c^3)
^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(
a/c))/(a^2*c^2) - 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-
sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^2)
```

maple [A] time = 0.06, size = 277, normalized size = 1.05

$$-\frac{\sqrt{2}\, A \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2 \left(\frac{a}{c}\right)^{\frac{1}{4}} a}-\frac{\sqrt{2}\, A \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2 \left(\frac{a}{c}\right)^{\frac{1}{4}} a}-\frac{\sqrt{2}\, A \ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4 \left(\frac{a}{c}\right)^{\frac{1}{4}} a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, B \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2 a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, B \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2 a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, B \ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4 a}-\frac{2 A}{a \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+a),x)
```

```
[Out] 1/4/a*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/
(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2/a*B*(a/c)^(1/4)*2^(1/2)*ar
ctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2/a*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4/a*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^
(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2
/a*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2/a*A/(a/c
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2*A/a/x^(1/2)
```

maxima [A] time = 1.19, size = 246, normalized size = 0.93

$$\frac{\frac{2 \sqrt{2} \left(B a \sqrt{c}-A \sqrt{a} c\right) \arctan\left(\frac{\sqrt{2} \left(\sqrt{2} a^{\frac{1}{4}} c^{\frac{1}{4}}+2 \sqrt{c} \sqrt{x}\right)}{2 \sqrt{\sqrt{a} \sqrt{c}}}\right)}{\sqrt{a} \sqrt{\sqrt{a} \sqrt{c}} \sqrt{c}}+\frac{2 \sqrt{2} \left(B a \sqrt{c}-A \sqrt{a} c\right) \arctan\left(-\frac{\sqrt{2} \left(\sqrt{2} a^{\frac{1}{4}} c^{\frac{1}{4}}-2 \sqrt{c} \sqrt{x}\right)}{2 \sqrt{\sqrt{a} \sqrt{c}}}\right)}{\sqrt{a} \sqrt{\sqrt{a} \sqrt{c}} \sqrt{c}}+\frac{\sqrt{2} \left(B a \sqrt{c}+A \sqrt{a} c\right) \log\left(\sqrt{2} a^{\frac{1}{4}} c^{\frac{1}{4}} \sqrt{x}+\sqrt{c} x+\sqrt{a}\right)}{a^{\frac{3}{4}} c^{\frac{3}{4}}}-\frac{\sqrt{2} \left(B a \sqrt{c}+A \sqrt{a} c\right) \log\left(-\sqrt{2} a^{\frac{1}{4}} c^{\frac{1}{4}} \sqrt{x}+\sqrt{c} x+\sqrt{a}\right)}{a^{\frac{3}{4}} c^{\frac{3}{4}}}}{4 a}-\frac{2 A}{a \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1
/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(
a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(-1/2*sq
rt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/
(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*
c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3
/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqr
t(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a - 2*A/(a*sqrt(x))
```

mupad [B] time = 0.24, size = 602, normalized size = 2.27

$$2 \operatorname{atanh}\left(\frac{32 A^2 a^4 c^4 \sqrt{x} \sqrt{\frac{A B}{2 a^2}-\frac{A^2 \sqrt{-a^5 c}}{4 a^5}+\frac{B^2 \sqrt{-a^5 c}}{4 a^4 c}}}{16 A^3 a^3 c^4-16 B^3 a^2 c^2 \sqrt{-a^5 c}-16 A B^2 a^4 c^3+16 A^2 B a c^3 \sqrt{-a^5 c}}-\frac{32 B^2 a^5 c^3 \sqrt{x} \sqrt{\frac{A B}{2 a^2}-\frac{A^2 \sqrt{-a^5 c}}{4 a^5}+\frac{B^2 \sqrt{-a^5 c}}{4 a^4 c}}}{16 A^3 a^3 c^4-16 B^3 a^2 c^2 \sqrt{-a^5 c}-16 A B^2 a^4 c^3+16 A^2 B a c^3 \sqrt{-a^5 c}}\right) \sqrt{\frac{B^2 a \sqrt{-a^5 c}-A^2 c \sqrt{-a^5 c}+2 A B a^3 c}{4 a^5 c}}+2 \operatorname{atanh}\left(\frac{32 A^2 a^4 c^4 \sqrt{x} \sqrt{\frac{A^2 \sqrt{-a^5 c}}{4 a^5}+\frac{A B}{2 a^2}-\frac{B^2 \sqrt{-a^5 c}}{4 a^4 c}}}{16 A^3 a^3 c^4+16 B^3 a^2 c^2 \sqrt{-a^5 c}-16 A B^2 a^4 c^3-16 A^2 B a c^3 \sqrt{-a^5 c}}-\frac{32 B^2 a^5 c^3 \sqrt{x} \sqrt{\frac{A^2 \sqrt{-a^5 c}}{4 a^5}+\frac{A B}{2 a^2}-\frac{B^2 \sqrt{-a^5 c}}{4 a^4 c}}}{16 A^3 a^3 c^4+16 B^3 a^2 c^2 \sqrt{-a^5 c}-16 A B^2 a^4 c^3-16 A^2 B a c^3 \sqrt{-a^5 c}}\right) \sqrt{\frac{A^2 c \sqrt{-a^5 c}-B^2 a \sqrt{-a^5 c}+2 A B a^3 c}{4 a^5 c}}-\frac{2 A}{a \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + c*x^2)),x)
```

```
[Out] 2*atanh((32*A^2*a^4*c^4*x^(1/2)*((A*B)/(2*a^2) - (A^2*(-a^5*c)^(1/2))/(4*a^
5) + (B^2*(-a^5*c)^(1/2))/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 - 16*B^3*a^2*c^
2*(-a^5*c)^(1/2) - 16*A*B^2*a^4*c^3 + 16*A^2*B*a*c^3*(-a^5*c)^(1/2)) - (32*
B^2*a^5*c^3*x^(1/2)*((A*B)/(2*a^2) - (A^2*(-a^5*c)^(1/2))/(4*a^5) + (B^2*(-
a^5*c)^(1/2))/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 - 16*B^3*a^2*c^2*(-a^5*c)^(
1/2) - 16*A*B^2*a^4*c^3 + 16*A^2*B*a*c^3*(-a^5*c)^(1/2)))*((B^2*a*(-a^5*c)^
(1/2) - A^2*c*(-a^5*c)^(1/2) + 2*A*B*a^3*c)/(4*a^5*c))^(1/2) + 2*atanh((32*
A^2*a^4*c^4*x^(1/2)*((A^2*(-a^5*c)^(1/2))/(4*a^5) + (A*B)/(2*a^2) - (B^2*(-
a^5*c)^(1/2))/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 + 16*B^3*a^2*c^2*(-a^5*c)^(
1/2) - 16*A*B^2*a^4*c^3 - 16*A^2*B*a*c^3*(-a^5*c)^(1/2)) - (32*B^2*a^5*c^3*
x^(1/2)*((A^2*(-a^5*c)^(1/2))/(4*a^5) + (A*B)/(2*a^2) - (B^2*(-a^5*c)^(1/2)
)/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 + 16*B^3*a^2*c^2*(-a^5*c)^(1/2) - 16*A*
B^2*a^4*c^3 - 16*A^2*B*a*c^3*(-a^5*c)^(1/2)))*((A^2*c*(-a^5*c)^(1/2) - B^2*
a*(-a^5*c)^(1/2) + 2*A*B*a^3*c)/(4*a^5*c))^(1/2) - (2*A)/(a*x^(1/2))
```

sympy [A] time = 14.43, size = 355, normalized size = 1.34

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) & \text{for } a=0\wedge c=0 \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c} & \text{for } a=0 \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{a} & \text{for } c=0 \\ -\frac{2A}{a\sqrt{x}}+\frac{(-1)^{\frac{3}{4}}A\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}A\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}A\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{\sqrt[4]{-1}B\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{3}{4}}}+\frac{\sqrt[4]{-1}B\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{3}{4}}}-\frac{\sqrt[4]{-1}B\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{3}{4}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/c, Eq(a, 0)), ((-2*A/sqrt(x) + 2*
B*sqrt(x))/a, Eq(c, 0)), (-2*A/(a*sqrt(x)) + (-1)**(3/4)*A*log(-(-1)**(1/4)
*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/4)) - (-1)**(3/4)*A
*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/4))
 - (-1)**(3/4)*A*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(5/4
)*(1/c)**(1/4)) - (-1)**(1/4)*B*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c
)**(1/4) + sqrt(x))/(2*a**(3/4)) + (-1)**(1/4)*B*(1/c)**(1/4)*log((-1)**(1/
4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(3/4)) - (-1)**(1/4)*B*(1/c)**(1/
4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/a**(3/4), True))
```

3.417 $\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=278

$$-\frac{\sqrt[4]{c}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{7/4}}+\frac{\sqrt[4]{c}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{7/4}}$$

Rubi [A] time = 0.27, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt[4]{c}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{7/4}}+\frac{\sqrt[4]{c}\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{7/4}}+\frac{\sqrt[4]{c}\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}a^{7/4}}-\frac{\sqrt[4]{c}\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}a^{7/4}}-\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(3*a*x^(3/2)) - (2*B)/(a*Sqrt[x]) + ((Sqrt[a]*B + A*Sqrt[c])*c^(1/4)
*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(7/4)) - ((Sqrt[
a]*B + A*Sqrt[c])*c^(1/4)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(S
qrt[2]*a^(7/4)) - ((Sqrt[a]*B - A*Sqrt[c])*c^(1/4)*Log[Sqrt[a] - Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(7/4)) + ((Sqrt[a]*B - A*S
qrt[c])*c^(1/4)*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])
/(2*Sqrt[2]*a^(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)}\,dx = -\frac{2A}{3ax^{3/2}}+\frac{\int \frac{aB-Acx}{x^{3/2}\left(a+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{\int \frac{-aAc-aBcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{-aAc-aBcx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^2}$$

$$= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^{3/2}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\text{Subst}\left(\right.}{a^{3}}$$

$$= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2a^{3/2}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\text{Sub}}{}$$

$$= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{7/4}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)}{}$$

$$= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt[4]{c}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{7/4}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt[4]{c}\,\tan^{-1}\left(1\right.}{\sqrt{2}\,a^{7/4}}$$

Mathematica [C] time = 0.01, size = 53, normalized size = 0.19

$$-\frac{2\left(A\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\frac{cx^2}{a}\right)+3Bx\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(A*Hypergeometric2F1[-3/4, 1, 1/4, -((c*x^2)/a)] + 3*B*x*Hypergeometric
2F1[-1/4, 1, 3/4, -((c*x^2)/a)]))/(3*a*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.35, size = 155, normalized size = 0.56

$$\frac{\left(\sqrt{a}\,B\sqrt[4]{c}+Ac^{3/4}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{\sqrt{2}\,a^{7/4}}+\frac{\left(\sqrt{a}\,B\sqrt[4]{c}-Ac^{3/4}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{\sqrt{2}\,a^{7/4}}-\frac{2(A+3Bx)}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(A + 3*B*x))/(3*a*x^(3/2)) + ((Sqrt[a]*B*c^(1/4) + A*c^(3/4))*ArcTan[(S
qrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(Sqrt[2]*a^(7/4)) +
 ((Sqrt[a]*B*c^(1/4) - A*c^(3/4))*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])
/(Sqrt[a] + Sqrt[c]*x)])/(Sqrt[2]*a^(7/4))
```

fricas [B] time = 0.45, size = 802, normalized size = 2.88

$$-\frac{3ax^{2}\sqrt{-\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}+2ABc}{a^{3}}}\log\left(-(B^{4}a^{2}c-A^{4}c^{3})\sqrt{x}+\left(Ba^{6}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}-AB^{2}a^{3}c+A^{3}a^{2}c^{2}\right)\sqrt{-\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}+2ABc}{a^{3}}}\right)-3ax^{2}\sqrt{-\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}+2ABc}{a^{3}}}\log\left(-(B^{4}a^{2}c-A^{4}c^{3})\sqrt{x}-\left(Ba^{6}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}-AB^{2}a^{3}c+A^{3}a^{2}c^{2}\right)\sqrt{-\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}+2ABc}{a^{3}}}\right)-3ax^{2}\sqrt{\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}-2ABc}{a^{3}}}\log\left(-(B^{4}a^{2}c-A^{4}c^{3})\sqrt{x}+\left(Ba^{6}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}+AB^{2}a^{3}c-A^{3}a^{2}c^{2}\right)\sqrt{\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}-2ABc}{a^{3}}}\right)+3ax^{2}\sqrt{\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}-2ABc}{a^{3}}}\log\left(-(B^{4}a^{2}c-A^{4}c^{3})\sqrt{x}-\left(Ba^{6}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}+AB^{2}a^{3}c-A^{3}a^{2}c^{2}\right)\sqrt{\frac{a^{3}\sqrt{-\frac{B^{4}a^{2}c-2A^{2}B^{2}ac^{2}+A^{4}c^{3}}{a^{7}}}-2ABc}{a^{3}}}\right)+4(3Bx+A)\sqrt{x}}{6ax^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/6*(3*a*x^2*sqrt(-(a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7)
 + 2*A*B*c)/a^3)*log(-(B^4*a^2*c - A^4*c^3)*sqrt(x) + (B*a^6*sqrt(-(B^4*a^2
*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - A*B^2*a^3*c + A^3*a^2*c^2)*sqrt(-(a^
3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) + 2*A*B*c)/a^3)) - 3*a
*x^2*sqrt(-(a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) + 2*A*B*
c)/a^3)*log(-(B^4*a^2*c - A^4*c^3)*sqrt(x) - (B*a^6*sqrt(-(B^4*a^2*c - 2*A^
2*B^2*a*c^2 + A^4*c^3)/a^7) - A*B^2*a^3*c + A^3*a^2*c^2)*sqrt(-(a^3*sqrt(-(
B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) + 2*A*B*c)/a^3)) - 3*a*x^2*sqrt
((a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)*lo
g(-(B^4*a^2*c - A^4*c^3)*sqrt(x) + (B*a^6*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^
2 + A^4*c^3)/a^7) + A*B^2*a^3*c - A^3*a^2*c^2)*sqrt((a^3*sqrt(-(B^4*a^2*c -
 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)) + 3*a*x^2*sqrt((a^3*sqrt(
-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)*log(-(B^4*a^2
*c - A^4*c^3)*sqrt(x) - (B*a^6*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3
)/a^7) + A*B^2*a^3*c - A^3*a^2*c^2)*sqrt((a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*
a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)) + 4*(3*B*x + A)*sqrt(x))/(a*x^2)
```

giac [A] time = 0.24, size = 258, normalized size = 0.93

$$-\frac{2(3Bx+A)}{3ax^{\frac{3}{2}}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^{2}c^{2}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^{2}c^{2}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}-\left(ac^{3}\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^{2}c^{2}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}-\left(ac^{3}\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -2/3*(3*B*x + A)/(a*x^(3/2)) - 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(
3/4)*B)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(
a^2*c^2) - 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*
sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^2) - 1/4*sqrt
(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4)
 + x + sqrt(a/c))/(a^2*c^2) + 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3
/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^2)
```

maple [A] time = 0.05, size = 289, normalized size = 1.04

$$-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a^{2}}-\frac{\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a}-\frac{\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a}-\frac{\sqrt{2}\,B\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}a}-\frac{2B}{a\sqrt{x}}-\frac{2A}{3a\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+a),x)
```

```
[Out] -1/4*c/a^2*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1
/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2*c/a^2*A*(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*c/a^2*A*(a/c)^(1/4)*2^(1/2
)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4/a*B/(a/c)^(1/4)*2^(1/2)*ln((x-(
a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c
)^(1/2)))-1/2/a*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)
-1/2/a*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2/3*A/a/
x^(3/2)-2*B/a/x^(1/2)
```

maxima [A] time = 1.23, size = 244, normalized size = 0.88

$$-\frac{c\left(\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{4\,a}-\frac{2\,(3\,Bx+A)}{3\,ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/4*c*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/
4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a
)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)
*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt
(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(sq
rt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sq
rt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c
)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a - 2/3*(3*B*x + A)/(a*x^(3/2))
```

mupad [B] time = 1.25, size = 606, normalized size = 2.18

$$-2\,\mathrm{atanh}\left(\frac{32\,A^2\,a^3\,c^5\,\sqrt{x}\,\sqrt{\frac{A^2\,c\,\sqrt{-a^7\,c}}{4\,a^7}-\frac{B^2\,\sqrt{-a^7\,c}}{4\,a^6}-\frac{A\,B\,c}{2\,a^3}}}{16\,B^3\,a^3\,c^4+\frac{16\,A^3\,c^5\,\sqrt{-a^7\,c}}{a^2}-16\,A^2\,B\,a^2\,c^5-\frac{16\,A\,B^2\,c^4\,\sqrt{-a^7\,c}}{a}}-\frac{32\,B^2\,a^4\,c^4\,\sqrt{x}\,\sqrt{\frac{A^2\,c\,\sqrt{-a^7\,c}}{4\,a^7}-\frac{B^2\,\sqrt{-a^7\,c}}{4\,a^6}-\frac{A\,B\,c}{2\,a^3}}}{16\,B^3\,a^3\,c^4+\frac{16\,A^3\,c^5\,\sqrt{-a^7\,c}}{a^2}-16\,A^2\,B\,a^2\,c^5-\frac{16\,A\,B^2\,c^4\,\sqrt{-a^7\,c}}{a}}\right)\sqrt{-\frac{B^2\,a\,\sqrt{-a^7\,c}-A^2\,c\,\sqrt{-a^7\,c}+2\,A\,B\,a^4\,c}{4\,a^7}}-2\,\mathrm{atanh}\left(\frac{32\,A^2\,a^3\,c^5\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^7\,c}}{4\,a^6}-\frac{A^2\,c\,\sqrt{-a^7\,c}}{4\,a^7}-\frac{A\,B\,c}{2\,a^3}}}{16\,B^3\,a^3\,c^4-\frac{16\,A^3\,c^5\,\sqrt{-a^7\,c}}{a^2}-16\,A^2\,B\,a^2\,c^5+\frac{16\,A\,B^2\,c^4\,\sqrt{-a^7\,c}}{a}}-\frac{32\,B^2\,a^4\,c^4\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^7\,c}}{4\,a^6}-\frac{A^2\,c\,\sqrt{-a^7\,c}}{4\,a^7}-\frac{A\,B\,c}{2\,a^3}}}{16\,B^3\,a^3\,c^4-\frac{16\,A^3\,c^5\,\sqrt{-a^7\,c}}{a^2}-16\,A^2\,B\,a^2\,c^5+\frac{16\,A\,B^2\,c^4\,\sqrt{-a^7\,c}}{a}}\right)\sqrt{-\frac{A^2\,c\,\sqrt{-a^7\,c}-B^2\,a\,\sqrt{-a^7\,c}+2\,A\,B\,a^4\,c}{4\,a^7}}-\frac{\frac{2\,A}{3\,a}+\frac{2\,B\,x}{a}}{x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + c*x^2)),x)
```

```
[Out] - 2*atanh((32*A^2*a^3*c^5*x^(1/2)*((A^2*c*(-a^7*c)^(1/2))/(4*a^7) - (B^2*(-
a^7*c)^(1/2))/(4*a^6) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 + (16*A^3*c
^5*(-a^7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 - (16*A*B^2*c^4*(-a^7*c)^(1/2))/a
) - (32*B^2*a^4*c^4*x^(1/2)*((A^2*c*(-a^7*c)^(1/2))/(4*a^7) - (B^2*(-a^7*c)
^(1/2))/(4*a^6) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 + (16*A^3*c^5*(-a
^7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 - (16*A*B^2*c^4*(-a^7*c)^(1/2))/a))*(-(
B^2*a*(-a^7*c)^(1/2) - A^2*c*(-a^7*c)^(1/2) + 2*A*B*a^4*c)/(4*a^7))^(1/2) -
 2*atanh((32*A^2*a^3*c^5*x^(1/2)*((B^2*(-a^7*c)^(1/2))/(4*a^6) - (A^2*c*(-a
^7*c)^(1/2))/(4*a^7) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 - (16*A^3*c^
5*(-a^7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 + (16*A*B^2*c^4*(-a^7*c)^(1/2))/a)
 - (32*B^2*a^4*c^4*x^(1/2)*((B^2*(-a^7*c)^(1/2))/(4*a^6) - (A^2*c*(-a^7*c)^
(1/2))/(4*a^7) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 - (16*A^3*c^5*(-a^
7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 + (16*A*B^2*c^4*(-a^7*c)^(1/2))/a))*(-(A
^2*c*(-a^7*c)^(1/2) - B^2*a*(-a^7*c)^(1/2) + 2*A*B*a^4*c)/(4*a^7))^(1/2) -
((2*A)/(3*a) + (2*B*x)/a)/x^(3/2)
```

sympy [A] time = 34.45, size = 376, normalized size = 1.35

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) & \text{for } a=0\wedge c=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{a} & \text{for } c=0 \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{c} & \text{for } a=0 \\ -\frac{2A}{3ax^{\frac{3}{2}}}+\frac{\sqrt[4]{-1}Ac\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{7}{4}}}-\frac{\sqrt[4]{-1}Ac\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{7}{4}}}+\frac{\sqrt[4]{-1}Ac\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{7}{4}}}-\frac{2B}{a\sqrt{x}}+\frac{(-1)^{\frac{3}{4}}B\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}B\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}B\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(3*x**(3/2)) - 2*B/sqrt(x))/a, Eq(c, 0)), ((-2*A/(7*x**(7/2)) - 2*
B/(5*x**(5/2)))/c, Eq(a, 0)), (-2*A/(3*a*x**(3/2)) + (-1)**(1/4)*A*c*(1/c)*
*(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(7/4)) - (-1
)**(1/4)*A*c*(1/c)**(1/4)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/
(2*a**(7/4)) + (-1)**(1/4)*A*c*(1/c)**(1/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1
/4)*(1/c)**(1/4)))/a**(7/4) - 2*B/(a*sqrt(x)) + (-1)**(3/4)*B*log(-(-1)**(1
/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/4)) - (-1)**(3/4
)*B*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/
4)) - (-1)**(3/4)*B*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(
5/4)*(1/c)**(1/4)), True))
```

3.418 $\int \frac{A+Bx}{x^{7/2}(a+cx^2)}\,dx$

Optimal. Leaf size=292

$$\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}-\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}+\cdots$$

Rubi [A] time = 0.32, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}-\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}+\frac{c^{3/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{9/4}}-\frac{c^{3/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}\,a^{9/4}}+\frac{2Ac}{a^2\sqrt{x}}-\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(5*a*x^(5/2)) - (2*B)/(3*a*x^(3/2)) + (2*A*c)/(a^2*Sqrt[x]) + ((Sqrt
[a]*B - A*Sqrt[c])*c^(3/4)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(
Sqrt[2]*a^(9/4)) - ((Sqrt[a]*B - A*Sqrt[c])*c^(3/4)*ArcTan[1 + (Sqrt[2]*c^(
1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(9/4)) + ((Sqrt[a]*B + A*Sqrt[c])*c^(3/4
)*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^
(9/4)) - ((Sqrt[a]*B + A*Sqrt[c])*c^(3/4)*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(
1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] || !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a+cx^2\right)}\,dx = -\frac{2A}{5ax^{5/2}}+\frac{\int \frac{aB-Acx}{x^{5/2}\left(a+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{\int \frac{-aAc-aBcx}{x^{3/2}\left(a+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{2Ac}{a^2\sqrt{x}}+\frac{\int \frac{-a^2Bc+aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a^3}$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{2Ac}{a^2\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{-a^2Bc+aAc^2x^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^3}$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{2Ac}{a^2\sqrt{x}}-\frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^2}-\frac{((\sqrt{}\cdots}{\cdots}$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{2Ac}{a^2\sqrt{x}}-\frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2a^2}-\cdots$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{2Ac}{a^2\sqrt{x}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)c^{3/4}\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}-\frac{(\cdots}{\cdots}$$

$$= -\frac{2A}{5ax^{5/2}}-\frac{2B}{3ax^{3/2}}+\frac{2Ac}{a^2\sqrt{x}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)c^{3/4}\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{9/4}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\cdots}{\cdots}$$

Mathematica [C] time = 0.01, size = 54, normalized size = 0.18

$$-\frac{2\left(3A\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\frac{cx^2}{a}\right)+5Bx\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{15ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(3*A*Hypergeometric2F1[-5/4, 1, -1/4, -((c*x^2)/a)] + 5*B*x*Hypergeomet
ric2F1[-3/4, 1, 1/4, -((c*x^2)/a)]))/(15*a*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.37, size = 167, normalized size = 0.57

$$\frac{\left(\sqrt{a}\,Bc^{3/4}-Ac^{5/4}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{\sqrt{2}\,a^{9/4}}-\frac{\left(\sqrt{a}\,Bc^{3/4}+Ac^{5/4}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{\sqrt{2}\,a^{9/4}}-\frac{2\left(3aA+5aBx-15Acx^2\right)}{15a^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(3*a*A + 5*a*B*x - 15*A*c*x^2))/(15*a^2*x^(5/2)) + ((Sqrt[a]*B*c^(3/4)
- A*c^(5/4))*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])
])/(Sqrt[2]*a^(9/4)) - ((Sqrt[a]*B*c^(3/4) + A*c^(5/4))*ArcTanh[(Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(Sqrt[2]*a^(9/4))
```

fricas [B] time = 0.44, size = 869, normalized size = 2.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/30*(15*a^2*x^3*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/
a^9) + 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x) + (A*a^7*sqrt(-
(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + B^3*a^4*c - A^2*B*a^3*c^2)
*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + 2*A*B*c^2
)/a^4)) - 15*a^2*x^3*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c
^5)/a^9) + 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x) - (A*a^7*sq
rt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + B^3*a^4*c - A^2*B*a^3*
c^2)*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + 2*A*B
*c^2)/a^4)) - 15*a^2*x^3*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 +
A^4*c^5)/a^9) - 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x) + (A*a
^7*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) - B^3*a^4*c + A^2*B
*a^3*c^2)*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) -
 2*A*B*c^2)/a^4)) + 15*a^2*x^3*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*
c^4 + A^4*c^5)/a^9) - 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x)
- (A*a^7*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) - B^3*a^4*c +
 A^2*B*a^3*c^2)*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/
a^9) - 2*A*B*c^2)/a^4)) + 4*(15*A*c*x^2 - 5*B*a*x - 3*A*a)*sqrt(x))/(a^2*x^
3)
```

giac [A] time = 0.19, size = 265, normalized size = 0.91

$$-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^3c}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^3c}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^3c}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^3c}+\frac{2\left(15Acx^2-5Bax-3Aa\right)}{15a^2x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sq
rt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c) - 1/2*sqrt(2)*((a*c^3)^
(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2
*sqrt(x))/(a/c)^(1/4))/(a^3*c) - 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)
^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c) + 1/4*sq
```

```
rt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1
/4) + x + sqrt(a/c))/(a^3*c) + 2/15*(15*A*c*x^2 - 5*B*a*x - 3*A*a)/(a^2*x^(
5/2))
```

maple [A] time = 0.06, size = 302, normalized size = 1.03

$$\frac{\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{\sqrt{2}\,Ac\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Bc\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Bc\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Bc\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a^{2}}+\frac{2Ac}{a^{2}\sqrt{x}}-\frac{2B}{3a\,x^{\frac{3}{2}}}-\frac{2A}{5a\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+a),x)
```

```
[Out] -1/2*c/a^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*
c/a^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4*c/a^2
*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a
/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/4*c/a^2*A/(a/c)^(1/4)*2^(1/2)*ln(
(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+
(a/c)^(1/2)))+1/2*c/a^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)+1)+1/2*c/a^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)
-1)-2/5*A/a/x^(5/2)-2/3*B/a/x^(3/2)+2*A*c/a^2/x^(1/2)
```

maxima [A] time = 1.28, size = 263, normalized size = 0.90

$$-\frac{c\left(\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{4\,a^{2}}+\frac{2\left(15\,Acx^{2}-5\,Bax-3\,Aa\right)}{15\,a^{2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/4*c*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a
^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sq
rt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(-1/2
*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)
))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) + A*sqrt(
a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c
^(3/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*
sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2 + 2/15*(15*A*c*x^2 -
5*B*a*x - 3*A*a)/(a^2*x^(5/2))
```

mupad [B] time = 1.25, size = 664, normalized size = 2.27

$$-2\,\mathrm{atanh}\left(\frac{32\,A^{2}a^{7}c^{6}\sqrt{x}\,\sqrt{\frac{A^{2}c\sqrt{-a^{9}c^{3}}}{4\,a^{9}}-\frac{B^{2}\sqrt{-a^{9}c^{3}}}{4\,a^{8}}+\frac{A\,B\,c^{2}}{2\,a^{4}}}}{16\,A^{3}a^{5}c^{7}-16\,A\,B^{2}a^{6}c^{6}+16\,B^{3}a^{2}c^{4}\sqrt{-a^{9}c^{3}}-16\,A^{2}B\,a\,c^{5}\sqrt{-a^{9}c^{3}}}-\frac{32\,B^{2}a^{8}c^{5}\sqrt{x}\,\sqrt{\frac{A^{2}c\sqrt{-a^{9}c^{3}}}{4\,a^{9}}-\frac{B^{2}\sqrt{-a^{9}c^{3}}}{4\,a^{8}}+\frac{A\,B\,c^{2}}{2\,a^{4}}}}{16\,A^{3}a^{5}c^{7}-16\,A\,B^{2}a^{6}c^{6}+16\,B^{3}a^{2}c^{4}\sqrt{-a^{9}c^{3}}-16\,A^{2}B\,a\,c^{5}\sqrt{-a^{9}c^{3}}}\right)\sqrt{\frac{A^{2}c\sqrt{-a^{9}c^{3}}-B^{2}a\sqrt{-a^{9}c^{3}}+2\,A\,B\,a^{5}c^{2}}{4\,a^{9}}}-2\,\mathrm{atanh}\left(\frac{32\,A^{2}a^{7}c^{6}\sqrt{x}\,\sqrt{\frac{B^{2}\sqrt{-a^{9}c^{3}}}{4\,a^{8}}-\frac{A^{2}c\sqrt{-a^{9}c^{3}}}{4\,a^{9}}+\frac{A\,B\,c^{2}}{2\,a^{4}}}}{16\,A^{3}a^{5}c^{7}-16\,A\,B^{2}a^{6}c^{6}-16\,B^{3}a^{2}c^{4}\sqrt{-a^{9}c^{3}}+16\,A^{2}B\,a\,c^{5}\sqrt{-a^{9}c^{3}}}-\frac{32\,B^{2}a^{8}c^{5}\sqrt{x}\,\sqrt{\frac{B^{2}\sqrt{-a^{9}c^{3}}}{4\,a^{8}}-\frac{A^{2}c\sqrt{-a^{9}c^{3}}}{4\,a^{9}}+\frac{A\,B\,c^{2}}{2\,a^{4}}}}{16\,A^{3}a^{5}c^{7}-16\,A\,B^{2}a^{6}c^{6}-16\,B^{3}a^{2}c^{4}\sqrt{-a^{9}c^{3}}+16\,A^{2}B\,a\,c^{5}\sqrt{-a^{9}c^{3}}}\right)\sqrt{\frac{B^{2}a\sqrt{-a^{9}c^{3}}-A^{2}c\sqrt{-a^{9}c^{3}}+2\,A\,B\,a^{5}c^{2}}{4\,a^{9}}}-\frac{\frac{2\,A}{5\,a}+\frac{2\,B\,x}{3\,a}-\frac{2\,A\,c\,x^{2}}{a^{2}}}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a + c*x^2)),x)
```

```
[Out] - 2*atanh((32*A^2*a^7*c^6*x^(1/2)*((A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) - (B^2*
(-a^9*c^3)^(1/2))/(4*a^8) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A^3*a^5*c^7 - 16*
A*B^2*a^6*c^6 + 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) - 16*A^2*B*a*c^5*(-a^9*c^3)
^(1/2)) - (32*B^2*a^8*c^5*x^(1/2)*((A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) - (B^2*
(-a^9*c^3)^(1/2))/(4*a^8) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A^3*a^5*c^7 - 16*
A*B^2*a^6*c^6 + 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) - 16*A^2*B*a*c^5*(-a^9*c^3)
^(1/2)))*((A^2*c*(-a^9*c^3)^(1/2) - B^2*a*(-a^9*c^3)^(1/2) + 2*A*B*a^5*c^2)
/(4*a^9))^(1/2) - 2*atanh((32*A^2*a^7*c^6*x^(1/2)*((B^2*(-a^9*c^3)^(1/2))/(
4*a^8) - (A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A
^3*a^5*c^7 - 16*A*B^2*a^6*c^6 - 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) + 16*A^2*B*
a*c^5*(-a^9*c^3)^(1/2)) - (32*B^2*a^8*c^5*x^(1/2)*((B^2*(-a^9*c^3)^(1/2))/(
```

```
4*a^8) - (A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A
^3*a^5*c^7 - 16*A*B^2*a^6*c^6 - 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) + 16*A^2*B*
a*c^5*(-a^9*c^3)^(1/2)))*((B^2*a*(-a^9*c^3)^(1/2) - A^2*c*(-a^9*c^3)^(1/2)
+ 2*A*B*a^5*c^2)/(4*a^9))^(1/2) - ((2*A)/(5*a) + (2*B*x)/(3*a) - (2*A*c*x^2
)/a^2)/x^(5/2)
```

sympy [A] time = 108.65, size = 398, normalized size = 1.36

$$\begin{cases} \tilde{\infty} \left(- \frac{2A}{9x^{\frac{9}{2}}} - \frac{2B}{7x^{\frac{7}{2}}}\right) & \text{for } a = 0 \wedge c = 0 \\ \frac{- \frac{2A}{5x^{\frac{5}{2}}} - \frac{2B}{3x^{\frac{3}{2}}}}{a} & \text{for } c = 0 \\ \frac{- \frac{2A}{9x^{\frac{9}{2}}} - \frac{2B}{7x^{\frac{7}{2}}}}{c} & \text{for } a = 0 \\ - \frac{2A}{5ax^{\frac{5}{2}}} + \frac{2Ac}{a^2\sqrt{x}} - \frac{(-1)^{\frac{3}{4}} Ac \log\left(- \sqrt[4]{-1} \sqrt[4]{a} \sqrt[4]{\frac{1}{c}} + \sqrt{x}\right)}{2a^{\frac{9}{4}} \sqrt[4]{\frac{1}{c}}} + \frac{(-1)^{\frac{3}{4}} Ac \log\left(\sqrt[4]{-1} \sqrt[4]{a} \sqrt[4]{\frac{1}{c}} + \sqrt{x}\right)}{2a^{\frac{9}{4}} \sqrt[4]{\frac{1}{c}}} + \frac{(-1)^{\frac{3}{4}} Ac \operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}} \sqrt{x}}{\sqrt[4]{a} \sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{9}{4}} \sqrt[4]{\frac{1}{c}}} - \frac{2B}{3ax^{\frac{3}{2}}} + \frac{\sqrt[4]{-1} Bc \sqrt[4]{\frac{1}{c}} \log\left(- \sqrt[4]{-1} \sqrt[4]{a} \sqrt[4]{\frac{1}{c}} + \sqrt{x}\right)}{2a^{\frac{7}{4}}} - \frac{\sqrt[4]{-1} Bc \sqrt[4]{\frac{1}{c}} \log\left(\sqrt[4]{-1} \sqrt[4]{a} \sqrt[4]{\frac{1}{c}} + \sqrt{x}\right)}{2a^{\frac{7}{4}}} + \frac{\sqrt[4]{-1} Bc \sqrt[4]{\frac{1}{c}} \operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}} \sqrt{x}}{\sqrt[4]{a} \sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{7}{4}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/a, Eq(c, 0)), ((-2*A/(9*x**(9/2))
 - 2*B/(7*x**(7/2)))/c, Eq(a, 0)), (-2*A/(5*a*x**(5/2)) + 2*A*c/(a**2*sqrt(
x)) - (-1)**(3/4)*A*c*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*
a**(9/4)*(1/c)**(1/4)) + (-1)**(3/4)*A*c*log((-1)**(1/4)*a**(1/4)*(1/c)**(1
/4) + sqrt(x))/(2*a**(9/4)*(1/c)**(1/4)) + (-1)**(3/4)*A*c*atan((-1)**(3/4)
*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(9/4)*(1/c)**(1/4)) - 2*B/(3*a*x**(3/
2)) + (-1)**(1/4)*B*c*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) +
 sqrt(x))/(2*a**(7/4)) - (-1)**(1/4)*B*c*(1/c)**(1/4)*log((-1)**(1/4)*a**(1
/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(7/4)) + (-1)**(1/4)*B*c*(1/c)**(1/4)*ata
n((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/a**(7/4), True))
```

3.419 $\int \frac{A+Bx}{x^{9/2}(a+cx^2)}\,dx$

Optimal. Leaf size=306

$$\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}-\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}$$

Rubi [A] time = 0.37, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}-\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}-\frac{c^{5/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{11/4}}+\frac{c^{5/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt{2}\,a^{11/4}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}-\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(7*a*x^(7/2)) - (2*B)/(5*a*x^(5/2)) + (2*A*c)/(3*a^2*x^(3/2)) + (2*B
*c)/(a^2*Sqrt[x]) - ((Sqrt[a]*B + A*Sqrt[c])*c^(5/4)*ArcTan[1 - (Sqrt[2]*c^
(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(11/4)) + ((Sqrt[a]*B + A*Sqrt[c])*c^(5
/4)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(11/4)) + ((S
qrt[a]*B - A*Sqrt[c])*c^(5/4)*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x]
 + Sqrt[c]*x])/(2*Sqrt[2]*a^(11/4)) - ((Sqrt[a]*B - A*Sqrt[c])*c^(5/4)*Log[
Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(11/4)
)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
```

```
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\left(a+cx^2\right)}\,dx = -\frac{2A}{7ax^{7/2}}+\frac{\int \frac{aB-Acx}{x^{7/2}\left(a+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{\int \frac{-aAc-aBcx}{x^{5/2}\left(a+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{\int \frac{-a^2Bc+aAc^2x}{x^{3/2}\left(a+cx^2\right)}\,dx}{a^3}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}+\frac{\int \frac{a^2Ac^2+a^2Bc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a^4}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{a^2Ac^2+a^2Bc^2x^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^4}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}-\frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)c\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^{5/2}}+$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}+\frac{\left(\left(\sqrt{a}\,B+A\sqrt{c}\right)c\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{\right.}{2a^{5/2}}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)c^{5/4}\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\right.}{2\sqrt{2}\,a^{11/4}}$$

$$= -\frac{2A}{7ax^{7/2}}-\frac{2B}{5ax^{5/2}}+\frac{2Ac}{3a^2x^{3/2}}+\frac{2Bc}{a^2\sqrt{x}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)c^{5/4}\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{11/4}}+\frac{\left(\sqrt{a}\,B-\right.}{}$$

Mathematica [C] time = 0.01, size = 54, normalized size = 0.18

$$-\frac{2\left(5A\,{}_2F_1\left(-\frac{7}{4},1;-\frac{3}{4};-\frac{cx^2}{a}\right)+7Bx\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{35ax^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(5*A*Hypergeometric2F1[-7/4, 1, -3/4, -((c*x^2)/a)] + 7*B*x*Hypergeomet
ric2F1[-5/4, 1, -1/4, -((c*x^2)/a)]))/(35*a*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.41, size = 175, normalized size = 0.57

$$-\frac{\left(\sqrt{a}\,Bc^{5/4}+Ac^{7/4}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{\sqrt{2}\,a^{11/4}}-\frac{\left(\sqrt{a}\,Bc^{5/4}-Ac^{7/4}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{\sqrt{2}\,a^{11/4}}-\frac{2\left(15aA+21aBx-35Acx^2-105Bcx^3\right)}{105a^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(9/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(15*a*A + 21*a*B*x - 35*A*c*x^2 - 105*B*c*x^3))/(105*a^2*x^(7/2)) - ((S
qrt[a]*B*c^(5/4) + A*c^(7/4))*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)
*c^(1/4)*Sqrt[x])])/(Sqrt[2]*a^(11/4)) - ((Sqrt[a]*B*c^(5/4) - A*c^(7/4))*A
rcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(Sqrt[2]*a
^(11/4))
```

fricas [B] time = 0.44, size = 884, normalized size = 2.89

$$\frac{105a^2x^4\sqrt{-\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}+2ABc^3}{a^5}}\log\left(-\left(B^4a^2c^4-A^4c^6\right)\sqrt{x}+\left(Ba^9\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}-AB^2a^4c^3+A^3a^3c^4\right)\sqrt{-\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}+2ABc^3}{a^5}}\right)-105a^2x^4\sqrt{-\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}+2ABc^3}{a^5}}\log\left(-\left(B^4a^2c^4-A^4c^6\right)\sqrt{x}-\left(Ba^9\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}-AB^2a^4c^3+A^3a^3c^4\right)\sqrt{-\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}+2ABc^3}{a^5}}\right)-105a^2x^4\sqrt{\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}-2ABc^3}{a^5}}\log\left(-\left(B^4a^2c^4-A^4c^6\right)\sqrt{x}+\left(Ba^9\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}+AB^2a^4c^3-A^3a^3c^4\right)\sqrt{\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}-2ABc^3}{a^5}}\right)+105a^2x^4\sqrt{\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}-2ABc^3}{a^5}}\log\left(-\left(B^4a^2c^4-A^4c^6\right)\sqrt{x}-\left(Ba^9\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}+AB^2a^4c^3-A^3a^3c^4\right)\sqrt{\frac{a^5\sqrt{-\frac{B^4a^2c^5-2A^2B^2ac^6+A^4c^7}{a^{11}}}-2ABc^3}{a^5}}\right)+4\left(105Bcx^3+35Acx^2-21Bax-15Aa\right)\sqrt{x}}{210a^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/210*(105*a^2*x^4*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^
7)/a^11) + 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c^4 - A^4*c^6)*sqrt(x) + (B*a^9*sq
rt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - A*B^2*a^4*c^3 + A^3*a
^3*c^4)*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) +
2*A*B*c^3)/a^5)) - 105*a^2*x^4*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*
c^6 + A^4*c^7)/a^11) + 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c^4 - A^4*c^6)*sqrt(x)
 - (B*a^9*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - A*B^2*a^4
*c^3 + A^3*a^3*c^4)*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c
^7)/a^11) + 2*A*B*c^3)/a^5)) - 105*a^2*x^4*sqrt((a^5*sqrt(-(B^4*a^2*c^5 - 2
*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c^4 - A^4*c
^6)*sqrt(x) + (B*a^9*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11)
+ A*B^2*a^4*c^3 - A^3*a^3*c^4)*sqrt((a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c
^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)) + 105*a^2*x^4*sqrt((a^5*sqrt(-(B^4*a
^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c
^4 - A^4*c^6)*sqrt(x) - (B*a^9*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c
^7)/a^11) + A*B^2*a^4*c^3 - A^3*a^3*c^4)*sqrt((a^5*sqrt(-(B^4*a^2*c^5 - 2*A
^2*B^2*a*c^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)) + 4*(105*B*c*x^3 + 35*A*c*
x^2 - 21*B*a*x - 15*A*a)*sqrt(x))/(a^2*x^4)
```

giac [A] time = 0.22, size = 276, normalized size = 0.90

$$\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^3c}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^3c}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2-\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^3c}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2-\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{4a^3c}+\frac{2\left(105Bcx^3+35Acx^2-21Bax-15Aa\right)}{105a^2x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c) + 1/2*sqrt(2)*((a*c^3)^(
1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*
sqrt(x))/(a/c)^(1/4))/(a^3*c) + 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^
(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c) - 1/4*sqr
t(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/
4) + x + sqrt(a/c))/(a^3*c) + 2/105*(105*B*c*x^3 + 35*A*c*x^2 - 21*B*a*x -
15*A*a)/(a^2*x^(7/2))
```

maple [A] time = 0.07, size = 318, normalized size = 1.04

$$\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\,c^{2}\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a^{3}}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\,c^{2}\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a^{3}}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\,c^{2}\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a^{3}}+\frac{\sqrt{2}\,Bc\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{\sqrt{2}\,Bc\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{\sqrt{2}\,Bc\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{2Bc}{a^{2}\sqrt{x}}+\frac{2Ac}{3a^{2}x^{\frac{3}{2}}}-\frac{2B}{5a\,x^{\frac{5}{2}}}-\frac{2A}{7a\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(c*x^2+a),x)
```

```
[Out] 1/4*c^2/a^3*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(
1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2*c^2/a^3*A*(a/c)^(1/4
)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2*c^2/a^3*A*(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/4*c/a^2*B/(a/c)^(1/4)*2^(1/2
)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(
1/2)+(a/c)^(1/2)))+1/2*c/a^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/
4)*x^(1/2)+1)+1/2*c/a^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)-1)-2/7*A/a/x^(7/2)-2/5*B/a/x^(5/2)+2/3*A*c/a^2/x^(3/2)+2*B*c/a^2/x^(1
/2)
```

maxima [A] time = 1.24, size = 264, normalized size = 0.86

$$\frac{c^{2}\left(\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{4\,a^{2}}+\frac{2\left(105\,Bcx^{3}+35\,Acx^{2}-21\,Bax-15\,Aa\right)}{105\,a^{2}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*c^2*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1
/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(
a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2
)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqr
t(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(s
qrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + s
qrt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(
c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2 + 2/105*(105*B*c*x^3 + 35*A*c*x^2 -
21*B*a*x - 15*A*a)/(a^2*x^(7/2))
```

mupad [B] time = 1.27, size = 678, normalized size = 2.22

$$2\,\mathrm{atanh}\left(\frac{32\,A^2\,a^6\,c^7\,\sqrt{x}\,\sqrt{\frac{A^2\,c\,\sqrt{-a^{11}\,c^5}}{4\,a^{11}}-\frac{B^2\,\sqrt{-a^{11}\,c^5}}{4\,a^{10}}-\frac{A\,B\,c^3}{2\,a^5}}}{16\,B^3\,a^5\,c^7+\frac{16\,A^3\,c^6\,\sqrt{-a^{11}\,c^5}}{a^2}-16\,A^2\,B\,a^4\,c^8-\frac{16\,A\,B^2\,c^5\,\sqrt{-a^{11}\,c^5}}{a}}-\frac{32\,B^2\,a^7\,c^6\,\sqrt{x}\,\sqrt{\frac{A^2\,c\,\sqrt{-a^{11}\,c^5}}{4\,a^{11}}-\frac{B^2\,\sqrt{-a^{11}\,c^5}}{4\,a^{10}}-\frac{A\,B\,c^3}{2\,a^5}}}{16\,B^3\,a^5\,c^7+\frac{16\,A^3\,c^6\,\sqrt{-a^{11}\,c^5}}{a^2}-16\,A^2\,B\,a^4\,c^8-\frac{16\,A\,B^2\,c^5\,\sqrt{-a^{11}\,c^5}}{a}}\right)\sqrt{-\frac{B^2\,a\,\sqrt{-a^{11}\,c^5}-A^2\,c\,\sqrt{-a^{11}\,c^5}+2\,A\,B\,a^6\,c^3}{4\,a^{11}}}-\frac{\frac{2\,A}{7\,a}+\frac{2\,B\,x}{5\,a}-\frac{2\,A\,c\,x^2}{3\,a^2}-\frac{2\,B\,c\,x^3}{a^2}}{x^{7/2}}+2\,\mathrm{atanh}\left(\frac{32\,A^2\,a^6\,c^7\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^{11}\,c^5}}{4\,a^{10}}-\frac{A^2\,c\,\sqrt{-a^{11}\,c^5}}{4\,a^{11}}-\frac{A\,B\,c^3}{2\,a^5}}}{16\,B^3\,a^5\,c^7-\frac{16\,A^3\,c^6\,\sqrt{-a^{11}\,c^5}}{a^2}-16\,A^2\,B\,a^4\,c^8+\frac{16\,A\,B^2\,c^5\,\sqrt{-a^{11}\,c^5}}{a}}-\frac{32\,B^2\,a^7\,c^6\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^{11}\,c^5}}{4\,a^{10}}-\frac{A^2\,c\,\sqrt{-a^{11}\,c^5}}{4\,a^{11}}-\frac{A\,B\,c^3}{2\,a^5}}}{16\,B^3\,a^5\,c^7-\frac{16\,A^3\,c^6\,\sqrt{-a^{11}\,c^5}}{a^2}-16\,A^2\,B\,a^4\,c^8+\frac{16\,A\,B^2\,c^5\,\sqrt{-a^{11}\,c^5}}{a}}\right)\sqrt{-\frac{A^2\,c\,\sqrt{-a^{11}\,c^5}-B^2\,a\,\sqrt{-a^{11}\,c^5}+2\,A\,B\,a^6\,c^3}{4\,a^{11}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(a + c*x^2)),x)
```

```
[Out] 2*atanh((32*A^2*a^6*c^7*x^(1/2)*((A^2*c*(-a^11*c^5)^(1/2))/(4*a^11) - (B^2*
(-a^11*c^5)^(1/2))/(4*a^10) - (A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a^5*c^7 + (
16*A^3*c^6*(-a^11*c^5)^(1/2))/a^2 - 16*A^2*B*a^4*c^8 - (16*A*B^2*c^5*(-a^11
*c^5)^(1/2))/a) - (32*B^2*a^7*c^6*x^(1/2)*((A^2*c*(-a^11*c^5)^(1/2))/(4*a^1
1) - (B^2*(-a^11*c^5)^(1/2))/(4*a^10) - (A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a
```

```
^5*c^7 + (16*A^3*c^6*(-a^11*c^5)^(1/2))/a^2 - 16*A^2*B*a^4*c^8 - (16*A*B^2*
c^5*(-a^11*c^5)^(1/2))/a))*(-(B^2*a*(-a^11*c^5)^(1/2) - A^2*c*(-a^11*c^5)^(
1/2) + 2*A*B*a^6*c^3)/(4*a^11))^(1/2) - ((2*A)/(7*a) + (2*B*x)/(5*a) - (2*A
*c*x^2)/(3*a^2) - (2*B*c*x^3)/a^2)/x^(7/2) + 2*atanh((32*A^2*a^6*c^7*x^(1/2
)*((B^2*(-a^11*c^5)^(1/2))/(4*a^10) - (A^2*c*(-a^11*c^5)^(1/2))/(4*a^11) -
(A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a^5*c^7 - (16*A^3*c^6*(-a^11*c^5)^(1/2))/
a^2 - 16*A^2*B*a^4*c^8 + (16*A*B^2*c^5*(-a^11*c^5)^(1/2))/a) - (32*B^2*a^7*
c^6*x^(1/2)*((B^2*(-a^11*c^5)^(1/2))/(4*a^10) - (A^2*c*(-a^11*c^5)^(1/2))/(
4*a^11) - (A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a^5*c^7 - (16*A^3*c^6*(-a^11*c^
5)^(1/2))/a^2 - 16*A^2*B*a^4*c^8 + (16*A*B^2*c^5*(-a^11*c^5)^(1/2))/a))*(-(
A^2*c*(-a^11*c^5)^(1/2) - B^2*a*(-a^11*c^5)^(1/2) + 2*A*B*a^6*c^3)/(4*a^11)
)^(1/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.420 $\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=304

$$\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}-\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}+\frac{(5\sqrt{}}{}$$

Rubi [A] time = 0.31, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {819, 825, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}-\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}+\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}-\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{4\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{5B\sqrt{x}}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] (5*B*Sqrt[x])/(2*c^2) - (x^(3/2)*(A + B*x))/(2*c*(a + c*x^2)) + ((5*Sqrt[a]
*B - 3*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]
*a^(1/4)*c^(9/4)) - ((5*Sqrt[a]*B - 3*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4
)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(1/4)*c^(9/4)) + ((5*Sqrt[a]*B + 3*A*Sqrt
[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]
*a^(1/4)*c^(9/4)) - ((5*Sqrt[a]*B + 3*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1
/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(1/4)*c^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx = -\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} + \frac{\int \frac{\sqrt{x}\left(\frac{3aA}{2}+\frac{5aBx}{2}\right)}{a+cx^2}\,dx}{2ac}$$

$$= \frac{5B\sqrt{x}}{2c^2} - \frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} + \frac{\int \frac{-\frac{5a^2B}{2}+\frac{3}{2}aAcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2ac^2}$$

$$= \frac{5B\sqrt{x}}{2c^2} - \frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{-\frac{5a^2B}{2}+\frac{3}{2}aAcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{ac^2}$$

$$= \frac{5B\sqrt{x}}{2c^2} - \frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} + \frac{\left(3A-\frac{5\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}+cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4c^2} - \frac{\left(3A+\frac{5\sqrt{a}B}{\sqrt{c}}\right)\text{Subs}}{}$$

$$= \frac{5B\sqrt{x}}{2c^2} - \frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt[4]{a}}{\sqrt[4]{c}}+2x}{-\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}-x^2}\,dx, x, \sqrt{x}\right)}{8\sqrt{2}\sqrt[4]{a}c^{9/4}} + \frac{\left(5\sqrt{a}B+\right.}{}$$

$$= \frac{5B\sqrt{x}}{2c^2} - \frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{8\sqrt{2}\sqrt[4]{a}c^{9/4}} - \frac{\left(5\sqrt{a}B+3\right.}{}$$

$$= \frac{5B\sqrt{x}}{2c^2} - \frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)} - \frac{\left(3A-\frac{5\sqrt{a}B}{\sqrt{c}}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\sqrt[4]{a}c^{7/4}} + \frac{\left(3A-\frac{5\sqrt{a}B}{\sqrt{c}}\right)\tan^{-1}\left(1+\frac{\sqrt{2}}{}\right.}{4\sqrt{2}\sqrt[4]{a}c^{7/4}}$$

Mathematica [**A**] time = 0.52, size = 344, normalized size = 1.13

$$\frac{1}{16}\left(\frac{8Ax^{7/2}}{a^2+acx^2}+\frac{8Bx^{9/2}}{a^2+acx^2}+\frac{12A\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{\sqrt[4]{-a}c^{7/4}}-\frac{12A\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{\sqrt[4]{-a}c^{7/4}}-\frac{8Ax^{3/2}}{ac}+\frac{5\sqrt{2}\sqrt[4]{a}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{9/4}}-\frac{5\sqrt{2}\sqrt[4]{a}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{9/4}}+\frac{10\sqrt{2}\sqrt[4]{a}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{9/4}}-\frac{10\sqrt{2}\sqrt[4]{a}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{9/4}}-\frac{8Bx^{5/2}}{ac}+\frac{40B\sqrt{x}}{c^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] ((40*B*Sqrt[x])/c^2 - (8*A*x^(3/2))/(a*c) - (8*B*x^(5/2))/(a*c) + (8*A*x^(7
/2))/(a^2 + a*c*x^2) + (8*B*x^(9/2))/(a^2 + a*c*x^2) + (10*Sqrt[2]*a^(1/4)*
B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) - (10*Sqrt[2]*a^(1
/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (12*A*ArcTan
[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/((-a)^(1/4)*c^(7/4)) - (12*A*ArcTanh[(c^(1/
4)*Sqrt[x])/(-a)^(1/4)])/((-a)^(1/4)*c^(7/4)) + (5*Sqrt[2]*a^(1/4)*B*Log[Sq
rt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4) - (5*Sqrt[2]*
a^(1/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/
4))/16
```

IntegrateAlgebraic [**A**] time = 0.81, size = 190, normalized size = 0.62

$$\frac{\left(5\sqrt{a}B-3A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{4\sqrt{2}\sqrt[4]{a}c^{9/4}} - \frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{4\sqrt{2}\sqrt[4]{a}c^{9/4}} + \frac{5aB\sqrt{x}-Acx^{3/2}+4Bcx^{5/2}}{2c^2\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] (5*a*B*Sqrt[x] - A*c*x^(3/2) + 4*B*c*x^(5/2))/(2*c^2*(a + c*x^2)) + ((5*Sqr
t[a]*B - 3*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)
```

```
*Sqrt[x])])/(4*Sqrt[2]*a^(1/4)*c^(9/4)) - ((5*Sqrt[a]*B + 3*A*Sqrt[c])*ArcT
anh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(4*Sqrt[2]*a^
(1/4)*c^(9/4))
```

fricas [B] time = 0.44, size = 884, normalized size = 2.91

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((c^3*x^2 + a*c^2)*sqrt((c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*
A^4*c^2)/(a*c^9)) + 30*A*B)/c^4)*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) +
(3*A*a*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 12
5*B^3*a^2*c^2 - 45*A^2*B*a*c^3)*sqrt((c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*
a*c + 81*A^4*c^2)/(a*c^9)) + 30*A*B)/c^4)) - (c^3*x^2 + a*c^2)*sqrt((c^4*sq
rt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 30*A*B)/c^4)*lo
g(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (3*A*a*c^7*sqrt(-(625*B^4*a^2 - 450
*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 125*B^3*a^2*c^2 - 45*A^2*B*a*c^3)*sqr
t((c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 30*A*B
)/c^4)) - (c^3*x^2 + a*c^2)*sqrt(-(c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c
 + 81*A^4*c^2)/(a*c^9)) - 30*A*B)/c^4)*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt
(x) + (3*A*a*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)
) - 125*B^3*a^2*c^2 + 45*A^2*B*a*c^3)*sqrt(-(c^4*sqrt(-(625*B^4*a^2 - 450*A
^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) - 30*A*B)/c^4)) + (c^3*x^2 + a*c^2)*sqrt(
-(c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) - 30*A*B)
/c^4)*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (3*A*a*c^7*sqrt(-(625*B^4*a
^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) - 125*B^3*a^2*c^2 + 45*A^2*B*a*
c^3)*sqrt(-(c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9))
 - 30*A*B)/c^4)) + 4*(4*B*c*x^2 - A*c*x + 5*B*a)*sqrt(x))/(c^3*x^2 + a*c^2)
```

giac [A] time = 0.20, size = 283, normalized size = 0.93

$$\frac{2\,B\sqrt{x}}{c^{2}}-\frac{Acx^{\frac{3}{2}}-Ba\sqrt{x}}{2\left(cx^{2}+a\right)c^{2}}-\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac-3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,ac^{4}}-\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac-3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,ac^{4}}-\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac+3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16\,ac^{4}}+\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac+3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16\,ac^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 - 1/2*(A*c*x^(3/2) - B*a*sqrt(x))/((c*x^2 + a)*c^2) - 1/8*s
qrt(2)*(5*(a*c^3)^(1/4)*B*a*c - 3*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqrt
(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^4) - 1/8*sqrt(2)*(5*(a*c^3)^
(1/4)*B*a*c - 3*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) -
 2*sqrt(x))/(a/c)^(1/4))/(a*c^4) - 1/16*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c + 3*
(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^4) +
 1/16*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c + 3*(a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt
(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^4)
```

maple [A] time = 0.08, size = 314, normalized size = 1.03

$$-\frac{A\,x^{\frac{3}{2}}}{2\left(c\,x^{2}+a\right)c}+\frac{Ba\sqrt{x}}{2\left(c\,x^{2}+a\right)c^{2}}+\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{3\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}-\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8c^{2}}-\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8c^{2}}-\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16c^{2}}+\frac{2B\sqrt{x}}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 2*B/c^2*x^(1/2)-1/2/c/(c*x^2+a)*A*x^(3/2)+1/2/c^2/(c*x^2+a)*B*a*x^(1/2)-5/8
/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-5/16/c^2*B
*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c
```

)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-5/8/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/16/c^2*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/8/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/8/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)

maxima [A] time = 1.36, size = 283, normalized size = 0.93

$$-\frac{Acx^{\frac{3}{2}}-Ba\sqrt{x}}{2\left(c^3x^2+ac^2\right)}+\frac{2B\sqrt{x}}{c^2}-\frac{\frac{2\sqrt{2}\left(5Ba\sqrt{c}-3A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(5Ba\sqrt{c}-3A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(5Ba\sqrt{c}+3A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}\left(5Ba\sqrt{c}+3A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{16c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")

[Out] -1/2*(A*c*x^(3/2) - B*a*sqrt(x))/(c^3*x^2 + a*c^2) + 2*B*sqrt(x)/c^2 - 1/16*(2*sqrt(2)*(5*B*a*sqrt(c) - 3*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(5*B*a*sqrt(c) - 3*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(5*B*a*sqrt(c) + 3*A*sqrt(a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(5*B*a*sqrt(c) + 3*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c^2

mupad [B] time = 1.27, size = 617, normalized size = 2.03

$$\frac{\frac{Ba\sqrt{x}}{2}-\frac{Acx^{3/2}}{2}}{c^3x^2+ac^2}+\frac{2B\sqrt{x}}{c^2}-\mathrm{atan}\left(\frac{B^2a^2\sqrt{x}\sqrt{\frac{15AB}{32c^4}-\frac{25B^2\sqrt{-ac^9}}{64c^9}+\frac{9A^2\sqrt{-ac^9}}{64ac^8}}\,50{}\mathrm{i}}{\frac{27A^3a}{4c}+\frac{125B^3a^2\sqrt{-ac^9}}{4c^7}-\frac{75AB^2a^2}{4c^2}-\frac{45A^2Ba\sqrt{-ac^9}}{4c^6}}-\frac{A^2a\sqrt{x}\sqrt{\frac{15AB}{32c^4}-\frac{25B^2\sqrt{-ac^9}}{64c^9}+\frac{9A^2\sqrt{-ac^9}}{64ac^8}}\,18{}\mathrm{i}}{\frac{27A^3a}{4c^2}+\frac{125B^3a^2\sqrt{-ac^9}}{4c^8}-\frac{75AB^2a^2}{4c^3}-\frac{45A^2Ba\sqrt{-ac^9}}{4c^7}}\right)\sqrt{\frac{9A^2c\sqrt{-ac^9}-25B^2a\sqrt{-ac^9}+30ABac^5}{64ac^9}}\,2{}\mathrm{i}-\mathrm{atan}\left(\frac{B^2a^2\sqrt{x}\sqrt{\frac{15AB}{32c^4}+\frac{25B^2\sqrt{-ac^9}}{64c^9}-\frac{9A^2\sqrt{-ac^9}}{64ac^8}}\,50{}\mathrm{i}}{\frac{27A^3a}{4c}-\frac{125B^3a^2\sqrt{-ac^9}}{4c^7}-\frac{75AB^2a^2}{4c^2}+\frac{45A^2Ba\sqrt{-ac^9}}{4c^6}}-\frac{A^2a\sqrt{x}\sqrt{\frac{15AB}{32c^4}+\frac{25B^2\sqrt{-ac^9}}{64c^9}-\frac{9A^2\sqrt{-ac^9}}{64ac^8}}\,18{}\mathrm{i}}{\frac{27A^3a}{4c^2}-\frac{125B^3a^2\sqrt{-ac^9}}{4c^8}-\frac{75AB^2a^2}{4c^3}+\frac{45A^2Ba\sqrt{-ac^9}}{4c^7}}\right)\sqrt{\frac{25B^2a\sqrt{-ac^9}-9A^2c\sqrt{-ac^9}+30ABac^5}{64ac^9}}\,2{}\mathrm{i}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((x^(5/2)*(A + B*x))/(a + c*x^2)^2,x)

[Out] ((B*a*x^(1/2))/2 - (A*c*x^(3/2))/2)/(a*c^2 + c^3*x^2) - atan((B^2*a^2*x^(1/2)*((15*A*B)/(32*c^4) + (25*B^2*(-a*c^9)^(1/2))/(64*c^9) - (9*A^2*(-a*c^9)^(1/2))/(64*a*c^8))^(1/2)*50i)/((27*A^3*a)/(4*c) - (125*B^3*a^2*(-a*c^9)^(1/2))/(4*c^7) - (75*A*B^2*a^2)/(4*c^2) + (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^6)) - (A^2*a*x^(1/2)*((15*A*B)/(32*c^4) + (25*B^2*(-a*c^9)^(1/2))/(64*c^9) - (9*A^2*(-a*c^9)^(1/2))/(64*a*c^8))^(1/2)*18i)/((27*A^3*a)/(4*c^2) - (125*B^3*a^2*(-a*c^9)^(1/2))/(4*c^8) - (75*A*B^2*a^2)/(4*c^3) + (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^7)))*((25*B^2*a*(-a*c^9)^(1/2) - 9*A^2*c*(-a*c^9)^(1/2) + 30*A*B*a*c^5)/(64*a*c^9))^(1/2)*2i - atan((B^2*a^2*x^(1/2)*((15*A*B)/(32*c^4) - (25*B^2*(-a*c^9)^(1/2))/(64*c^9) + (9*A^2*(-a*c^9)^(1/2))/(64*a*c^8))^(1/2)*50i)/((27*A^3*a)/(4*c) + (125*B^3*a^2*(-a*c^9)^(1/2))/(4*c^7) - (75*A*B^2*a^2)/(4*c^2) - (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^6)) - (A^2*a*x^(1/2)*((15*A*B)/(32*c^4) - (25*B^2*(-a*c^9)^(1/2))/(64*c^9) + (9*A^2*(-a*c^9)^(1/2))/(64*a*c^8))^(1/2)*18i)/((27*A^3*a)/(4*c^2) + (125*B^3*a^2*(-a*c^9)^(1/2))/(4*c^8) - (75*A*B^2*a^2)/(4*c^3) - (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^7)))*((9*A^2*c*(-a*c^9)^(1/2) - 25*B^2*a*(-a*c^9)^(1/2) + 30*A*B*a*c^5)/(64*a*c^9))^(1/2)*2i + (2*B*x^(1/2))/c^2

sympy [A] time = 170.57, size = 1374, normalized size = 4.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+a)**2,x)

[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-2*A/sqrt(x) + 2*B*sqrt(x))/c**2, Eq(a, 0)), ((2*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a**2, Eq(c, 0)), (-4*(-1)**(1/4)*A*a**(1/4)*c*x**(3/2)*(1/c)**(1/4)/(8*(-1)*

```
*(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)*
*(1/4)) + 3*A*a*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**
(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**
(1/4)) - 3*A*a*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1
/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1
/4)) - 6*A*a*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/
4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/
4)) + 3*A*c*x**2*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)*
*(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)*
*(1/4)) - 3*A*c*x**2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-
1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/
c)**(1/4)) - 6*A*c*x**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(
8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2
*(1/c)**(1/4)) + 20*(-1)**(1/4)*B*a**(5/4)*sqrt(x)*(1/c)**(1/4)/(8*(-1)**(1
/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1
/4)) + 16*(-1)**(1/4)*B*a**(1/4)*c*x**(5/2)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**
(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4)) +
5*I*B*a**(3/2)*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/
(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**
2*(1/c)**(1/4)) - 5*I*B*a**(3/2)*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**
(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*
a**(1/4)*c**3*x**2*(1/c)**(1/4)) + 10*I*B*a**(3/2)*sqrt(1/c)*atan((-1)**(3/
4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/
4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4)) + 5*I*B*sqrt(a)*c*x**2*
sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*
a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4))
 - 5*I*B*sqrt(a)*c*x**2*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + s
qrt(x))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*
c**3*x**2*(1/c)**(1/4)) + 10*I*B*sqrt(a)*c*x**2*sqrt(1/c)*atan((-1)**(3/4)*
sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4)
+ 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4)), True))
```

3.421 $\int \frac{x^{3/2}(A+Bx)}{(a+cx^2)^2}\,dx$

Optimal. Leaf size=289

$$\frac{\left(3\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{3/4}c^{7/4}}-\frac{(3\sqrt{a}B}{}$$

Rubi [A] time = 0.24, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {819, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(3\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}a^{3/4}c^{7/4}}+\frac{\left(3\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{4\sqrt{2}a^{3/4}c^{7/4}}-\frac{\sqrt{x}(A+Bx)}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] -(Sqrt[x]*(A + B*x))/(2*c*(a + c*x^2)) - ((3*Sqrt[a]*B + A*Sqrt[c])*ArcTan[
1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(3/4)*c^(7/4)) + ((3*S
qrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqr
t[2]*a^(3/4)*c^(7/4)) + ((3*Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(3/4)*c^(7/4)) - ((3*Sqrt[
a]*B - A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(8*Sqrt[2]*a^(3/4)*c^(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx = -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\int \frac{\frac{aA}{2}+\frac{3aBx}{2}}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2ac}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\text{Subst}\left(\int \frac{\frac{aA}{2}+\frac{3}{2}aBx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{ac}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}-\frac{\left(3B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4c^2}+\frac{\left(3B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\ldots}{}\right.}{4c^2}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(3B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{8c^2}+\frac{\left(3B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\ldots\right.}{}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\ldots}{}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}-\frac{\left(3\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{3/4}c^{7/4}}+\frac{\left(3\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1+\ldots\right)}{4\sqrt{2}\,a^{3/4}c^{7/4}}$$

Mathematica [A] time = 0.23, size = 323, normalized size = 1.12

$$\frac{-\frac{\sqrt{2}\sqrt[4]{a}A\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{5/4}}+\frac{\sqrt{2}\sqrt[4]{a}A\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{5/4}}-\frac{2\sqrt{2}\sqrt[4]{a}A\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{2\sqrt{2}\sqrt[4]{a}A\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{5/4}}+\frac{8Ax^{5/2}}{a+cx^2}-\frac{12(-a)^{3/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}}+\frac{12(-a)^{3/4}B\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}}+\frac{8Bx^{7/2}}{a+cx^2}-\frac{8A\sqrt{x}}{c}-\frac{8Bx^{3/2}}{c}}{16a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] ((-8*A*Sqrt[x])/c - (8*B*x^(3/2))/c + (8*A*x^(5/2))/(a + c*x^2) + (8*B*x^(7
/2))/(a + c*x^2) - (2*Sqrt[2]*a^(1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/a^(1/4)])/c^(5/4) + (2*Sqrt[2]*a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt
[x])/a^(1/4)])/c^(5/4) - (12*(-a)^(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/
4)])/c^(7/4) + (12*(-a)^(3/4)*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(7
/4) - (Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/c^(5/4) + (Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/c^(5/4))/(16*a)
```

IntegrateAlgebraic [A] time = 0.81, size = 171, normalized size = 0.59

$$-\frac{\left(3\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{4\sqrt{2}\,a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{4\sqrt{2}\,a^{3/4}c^{7/4}}-\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] -1/2*(Sqrt[x]*(A + B*x))/(c*(a + c*x^2)) - ((3*Sqrt[a]*B + A*Sqrt[c])*ArcTa
n[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(4*Sqrt[2]*a^(3
/4)*c^(7/4)) - ((3*Sqrt[a]*B - A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*
Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(4*Sqrt[2]*a^(3/4)*c^(7/4))
```

fricas [B] time = 0.47, size = 888, normalized size = 3.07

$$\frac{\left(c^2x^2+ac\right)\sqrt{-\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+6AB}{ac^3}}\log\left(-\left(81B^4a^2-A^4c^2\right)\sqrt{x}+\left(3Ba^3c^5\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-9AB^2a^2c^2+A^3ac^3\right)\sqrt{-\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+6AB}{ac^3}}\right)-\left(c^2x^2+ac\right)\sqrt{-\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+6AB}{ac^3}}\log\left(-\left(81B^4a^2-A^4c^2\right)\sqrt{x}-\left(3Ba^3c^5\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-9AB^2a^2c^2+A^3ac^3\right)\sqrt{-\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+6AB}{ac^3}}\right)-\left(c^2x^2+ac\right)\sqrt{\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-6AB}{ac^3}}\log\left(-\left(81B^4a^2-A^4c^2\right)\sqrt{x}+\left(3Ba^3c^5\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+9AB^2a^2c^2-A^3ac^3\right)\sqrt{\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-6AB}{ac^3}}\right)+\left(c^2x^2+ac\right)\sqrt{\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-6AB}{ac^3}}\log\left(-\left(81B^4a^2-A^4c^2\right)\sqrt{x}-\left(3Ba^3c^5\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+9AB^2a^2c^2-A^3ac^3\right)\sqrt{\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-6AB}{ac^3}}\right)-4\left(Bx+A\right)\sqrt{x}}{8\left(c^2x^2+ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((c^2*x^2 + a*c)*sqrt(-(a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*
c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))*log(-(81*B^4*a^2 - A^4*c^2)*sqrt(x) + (3*
B*a^3*c^5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) - 9*A*B^
2*a^2*c^2 + A^3*a*c^3)*sqrt(-(a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^
4*c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))) - (c^2*x^2 + a*c)*sqrt(-(a*c^3*sqrt(-(
81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))*log(-(8
1*B^4*a^2 - A^4*c^2)*sqrt(x) - (3*B*a^3*c^5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*
a*c + A^4*c^2)/(a^3*c^7)) - 9*A*B^2*a^2*c^2 + A^3*a*c^3)*sqrt(-(a*c^3*sqrt(
-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))) - (c
^2*x^2 + a*c)*sqrt((a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^
3*c^7)) - 6*A*B)/(a*c^3))*log(-(81*B^4*a^2 - A^4*c^2)*sqrt(x) + (3*B*a^3*c^
5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) + 9*A*B^2*a^2*c^
2 - A^3*a*c^3)*sqrt((a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a
^3*c^7)) - 6*A*B)/(a*c^3))) + (c^2*x^2 + a*c)*sqrt((a*c^3*sqrt(-(81*B^4*a^2
 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) - 6*A*B)/(a*c^3))*log(-(81*B^4*a^2
- A^4*c^2)*sqrt(x) - (3*B*a^3*c^5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*
c^2)/(a^3*c^7)) + 9*A*B^2*a^2*c^2 - A^3*a*c^3)*sqrt((a*c^3*sqrt(-(81*B^4*a^
2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) - 6*A*B)/(a*c^3))) - 4*(B*x + A)*s
qrt(x))/(c^2*x^2 + a*c)
```

giac [A] time = 0.20, size = 271, normalized size = 0.94

$$-\frac{Bx^{\frac{3}{2}}+A\sqrt{x}}{2\left(cx^2+a\right)c}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+3\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8ac^4}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+3\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8ac^4}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2-3\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16ac^4}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2-3\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*x^(3/2) + A*sqrt(x))/((c*x^2 + a)*c) + 1/8*sqrt(2)*((a*c^3)^(1/4)*A
*c^2 + 3*(a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(
x))/(a/c)^(1/4))/(a*c^4) + 1/8*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + 3*(a*c^3)^(3/
4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a
*c^4) + 1/16*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - 3*(a*c^3)^(3/4)*B)*log(sqrt(2)*
sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^4) - 1/16*sqrt(2)*((a*c^3)^(1/4)*
A*c^2 - 3*(a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c)
)/(a*c^4)
```

maple [A] time = 0.08, size = 307, normalized size = 1.06

$$\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16ac}+\frac{3\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{3\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{3\sqrt{2}\,B\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{-\frac{Bx^{\frac{3}{2}}}{2c}-\frac{A\sqrt{x}}{2c}}{cx^{2}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 2*(-1/4*B/c*x^(3/2)-1/4*A/c*x^(1/2))/(c*x^2+a)+1/16/c*A*(a/c)^(1/4)/a*2^(1/
2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^
(1/2)+(a/c)^(1/2)))+1/8/c*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4
)*x^(1/2)+1)+1/8/c*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/
2)-1)+3/16/c^2*B/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c
)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/8/c^2*B/(a/c)^(1/4)
*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/8/c^2*B/(a/c)^(1/4)*2^(1/2
)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.21, size = 259, normalized size = 0.90

$$-\frac{Bx^{\frac{3}{2}}+A\sqrt{x}}{2\left(c^{2}x^{2}+ac\right)}+\frac{\frac{2\sqrt{2}\left(3B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(3B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(3B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(3B\sqrt{a}-A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{16c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*x^(3/2) + A*sqrt(x))/(c^2*x^2 + a*c) + 1/16*(2*sqrt(2)*(3*B*sqrt(a)
 + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(
x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt
(2)*(3*B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4)
- 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*
sqrt(c)) - sqrt(2)*(3*B*sqrt(a) - A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sq
rt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(3*B*sqrt(a) - A*s
qrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4
)*c^(3/4)))/c
```

mupad [B] time = 1.29, size = 656, normalized size = 2.27

$$2\,\mathrm{atanh}\left(\frac{18B^{2}a\sqrt{x}\sqrt{\frac{9B^{2}\sqrt{-a^{3}c^{7}}}{64a^{2}c^{7}}-\frac{A^{2}\sqrt{-a^{3}c^{7}}}{64a^{3}c^{6}}-\frac{3AB}{32ac^{3}}}}{\frac{3A^{2}B}{4c}-\frac{27B^{3}a}{4c^{2}}+\frac{A^{3}\sqrt{-a^{3}c^{7}}}{4a^{2}c^{4}}-\frac{9AB^{2}\sqrt{-a^{3}c^{7}}}{4ac^{5}}}-\frac{2A^{2}c\sqrt{x}\sqrt{\frac{9B^{2}\sqrt{-a^{3}c^{7}}}{64a^{2}c^{7}}-\frac{A^{2}\sqrt{-a^{3}c^{7}}}{64a^{3}c^{6}}-\frac{3AB}{32ac^{3}}}}{\frac{3A^{2}B}{4c}-\frac{27B^{3}a}{4c^{2}}+\frac{A^{3}\sqrt{-a^{3}c^{7}}}{4a^{2}c^{4}}-\frac{9AB^{2}\sqrt{-a^{3}c^{7}}}{4ac^{5}}}\right)\sqrt{-\frac{A^{2}c\sqrt{-a^{3}c^{7}}-9B^{2}a\sqrt{-a^{3}c^{7}}+6ABa^{2}c^{4}}{64a^{3}c^{7}}}+2\,\mathrm{atanh}\left(\frac{18B^{2}a\sqrt{x}\sqrt{\frac{A^{2}\sqrt{-a^{3}c^{7}}}{64a^{3}c^{6}}-\frac{3AB}{32ac^{3}}-\frac{9B^{2}\sqrt{-a^{3}c^{7}}}{64a^{2}c^{7}}}}{\frac{3A^{2}B}{4c}-\frac{27B^{3}a}{4c^{2}}-\frac{A^{3}\sqrt{-a^{3}c^{7}}}{4a^{2}c^{4}}+\frac{9AB^{2}\sqrt{-a^{3}c^{7}}}{4ac^{5}}}-\frac{2A^{2}c\sqrt{x}\sqrt{\frac{A^{2}\sqrt{-a^{3}c^{7}}}{64a^{3}c^{6}}-\frac{3AB}{32ac^{3}}-\frac{9B^{2}\sqrt{-a^{3}c^{7}}}{64a^{2}c^{7}}}}{\frac{3A^{2}B}{4c}-\frac{27B^{3}a}{4c^{2}}-\frac{A^{3}\sqrt{-a^{3}c^{7}}}{4a^{2}c^{4}}+\frac{9AB^{2}\sqrt{-a^{3}c^{7}}}{4ac^{5}}}\right)\sqrt{-\frac{9B^{2}a\sqrt{-a^{3}c^{7}}-A^{2}c\sqrt{-a^{3}c^{7}}+6ABa^{2}c^{4}}{64a^{3}c^{7}}}-\frac{\frac{A\sqrt{x}}{2c}+\frac{Bx^{3/2}}{2c}}{cx^{2}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + c*x^2)^2,x)
```

```
[Out] 2*atanh((18*B^2*a*x^(1/2)*((9*B^2*(-a^3*c^7)^(1/2))/(64*a^2*c^7) - (A^2*(-a
^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c^3))^(1/2))/((3*A^2*B)/(4*c) -
 (27*B^3*a)/(4*c^2) + (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) - (9*A*B^2*(-a^3*c
^7)^(1/2))/(4*a*c^5)) - (2*A^2*c*x^(1/2)*((9*B^2*(-a^3*c^7)^(1/2))/(64*a^2*
c^7) - (A^2*(-a^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B))/(32*a*c^3))^(1/2))/((3
```

```
*A^2*B)/(4*c) - (27*B^3*a)/(4*c^2) + (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) - (
9*A*B^2*(-a^3*c^7)^(1/2))/(4*a*c^5)))*(-(A^2*c*(-a^3*c^7)^(1/2) - 9*B^2*a*(
-a^3*c^7)^(1/2) + 6*A*B*a^2*c^4)/(64*a^3*c^7))^(1/2) + 2*atanh((18*B^2*a*x^
(1/2)*((A^2*(-a^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c^3) - (9*B^2*(-
a^3*c^7)^(1/2))/(64*a^2*c^7))^(1/2))/((3*A^2*B)/(4*c) - (27*B^3*a)/(4*c^2)
- (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) + (9*A*B^2*(-a^3*c^7)^(1/2))/(4*a*c^5)
) - (2*A^2*c*x^(1/2)*((A^2*(-a^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c
^3) - (9*B^2*(-a^3*c^7)^(1/2))/(64*a^2*c^7))^(1/2))/((3*A^2*B)/(4*c) - (27*
B^3*a)/(4*c^2) - (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) + (9*A*B^2*(-a^3*c^7)^(
1/2))/(4*a*c^5)))*(-(9*B^2*a*(-a^3*c^7)^(1/2) - A^2*c*(-a^3*c^7)^(1/2) + 6*
A*B*a^2*c^4)/(64*a^3*c^7))^(1/2) - ((A*x^(1/2))/(2*c) + (B*x^(3/2))/(2*c))/
(a + c*x^2)
```

sympy [A] time = 90.99, size = 1316, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c**2, Eq(a, 0)), ((2*A*x**(5/2)/5 + 2*B*x**
(7/2)/7)/a**2, Eq(c, 0)), (-4*(-1)**(1/4)*A*a**(5/4)*c*sqrt(x)*(1/c)**(1/4)
/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x*
*2*(1/c)**(1/4)) - I*A*a**(3/2)*c*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)
**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4
)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) + I*A*a**(3/2)*c*sqrt(1/c)*log((-1)**(1/
4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/
4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 2*I*A*a**(3/2)*c*sqrt
(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(
9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - I
*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqr
t(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c*
*3*x**2*(1/c)**(1/4)) + I*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log((-1)**(1/4)*a**
(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8
*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 2*I*A*sqrt(a)*c**2*x**2*sqr
t(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**
(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) -
4*(-1)**(1/4)*B*a**(5/4)*c*x**(3/2)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(9/4)*c*
*2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) + 3*B*a**2
*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*
c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 3*B*a*
*2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)
*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 6*B*a
**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(9/
4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) + 3*B
*a*c*x**2*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*
a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4))
 - 3*B*a*c*x**2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(
1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(
1/4)) - 6*B*a*c*x**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(
-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1
/c)**(1/4)), True))
```

3.422 $\int \frac{\sqrt{x}(A+Bx)}{(a+cx^2)^2}\,dx$

Optimal. Leaf size=292

$$-\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{5/4}c^{5/4}}-\frac{\left(\sqrt{a}\right.}{}$$

Rubi [A] time = 0.23, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {821, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{5/4}c^{5/4}}-\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{4\sqrt{2}a^{5/4}c^{5/4}}-\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] -(Sqrt[x]*(a*B - A*c*x))/(2*a*c*(a + c*x^2)) - ((Sqrt[a]*B + A*Sqrt[c])*Arc
Tan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(5/4)*c^(5/4)) + (
(Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*S
qrt[2]*a^(5/4)*c^(5/4)) - ((Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(5/4)*c^(5/4)) + ((Sqrt[a]
*B - A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])
/(8*Sqrt[2]*a^(5/4)*c^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
```

```
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{\left(a+cx^2\right)^2}\,dx = -\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{\frac{aB}{2}+\frac{Acx}{2}}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2ac}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{aB}{2}+\frac{1}{2}Acx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{ac}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)} - \frac{\left(A-\frac{\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4ac} + \frac{\left(A+\frac{\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}}{a+c}\right.}{4ac}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)} + \frac{\left(A+\frac{\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{8ac} + \frac{\left(A+\frac{\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int\right.}{8}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)} + \frac{\left(A-\frac{\sqrt{a}B}{\sqrt{c}}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{8\sqrt{2}a^{5/4}c^{3/4}} - \frac{\left(A-\frac{\sqrt{a}B}{\sqrt{c}}\right)\log\left(\sqrt{a}+\right.}{8\sqrt{2}a^{5}}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{2ac\left(a+cx^2\right)} - \frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}a^{5/4}c^{5/4}} + \frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{c}}{\sqrt[4]{a}}\right.}{4\sqrt{2}a^{5/4}c^{5/4}}$$

Mathematica [A] time = 0.23, size = 315, normalized size = 1.08

$$\frac{-\frac{\sqrt{2}a^{5/4}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{5/4}}+\frac{\sqrt{2}a^{5/4}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{5/4}}-\frac{2\sqrt{2}a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{2\sqrt{2}a^{5/4}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{5/4}}-\frac{4(-a)^{3/4}A\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{4(-a)^{3/4}A\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{8aAx^{3/2}}{a+cx^2}+\frac{8aBx^{5/2}}{a+cx^2}-\frac{8aB\sqrt{x}}{c}}{16a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] ((-8*a*B*Sqrt[x])/c + (8*a*A*x^(3/2))/(a + c*x^2) + (8*a*B*x^(5/2))/(a + c*
x^2) - (2*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/
c^(5/4) + (2*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)
])/c^(5/4) - (4*(-a)^(3/4)*A*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4)
+ (4*(-a)^(3/4)*A*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (Sqrt[2]
*a^(5/4)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(5
/4) + (Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/c^(5/4))/(16*a^2)
```

IntegrateAlgebraic [A] time = 1.05, size = 180, normalized size = 0.62

$$-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{4\sqrt{2}\,a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{4\sqrt{2}\,a^{5/4}c^{5/4}}+\frac{Acx^{3/2}-aB\sqrt{x}}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] (-(a*B*Sqrt[x]) + A*c*x^(3/2))/(2*a*c*(a + c*x^2)) - ((Sqrt[a]*B + A*Sqrt[c
])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(4*Sqrt
[2]*a^(5/4)*c^(5/4)) + ((Sqrt[a]*B - A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(4*Sqrt[2]*a^(5/4)*c^(5/4))
```

fricas [B] time = 0.45, size = 901, normalized size = 3.09

$$-\frac{\left(ac^2x^2+a^2c\right)\sqrt{-\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}+2AB}{a^2c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Aa^4c^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}+B^3a^3c-A^2Ba^2c^2\right)\sqrt{-\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}+2AB}{a^2c^2}}\right)-\left(ac^2x^2+a^2c\right)\sqrt{-\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}+2AB}{a^2c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}-\left(Aa^4c^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}+B^3a^3c-A^2Ba^2c^2\right)\sqrt{-\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}+2AB}{a^2c^2}}\right)-\left(ac^2x^2+a^2c\right)\sqrt{\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}-2AB}{a^2c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Aa^4c^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}-B^3a^3c+A^2Ba^2c^2\right)\sqrt{\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}-2AB}{a^2c^2}}\right)+\left(ac^2x^2+a^2c\right)\sqrt{\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}-2AB}{a^2c^2}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}-\left(Aa^4c^4\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}-B^3a^3c+A^2Ba^2c^2\right)\sqrt{\frac{a^2c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^5c^5}}-2AB}{a^2c^2}}\right)-4\left(Acx-Ba\right)\sqrt{x}}{8\left(ac^2x^2+a^2c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a*c^2*x^2 + a^2*c)*sqrt(-(a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A
^4*c^2)/(a^5*c^5)) + 2*A*B)/(a^2*c^2))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (
A*a^4*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) + B^3*a^3*c
- A^2*B*a^2*c^2)*sqrt(-(a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(
a^5*c^5)) + 2*A*B)/(a^2*c^2))) - (a*c^2*x^2 + a^2*c)*sqrt(-(a^2*c^2*sqrt(-(
B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) + 2*A*B)/(a^2*c^2))*log(-(B^4
*a^2 - A^4*c^2)*sqrt(x) - (A*a^4*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c
^2)/(a^5*c^5)) + B^3*a^3*c - A^2*B*a^2*c^2)*sqrt(-(a^2*c^2*sqrt(-(B^4*a^2 -
 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) + 2*A*B)/(a^2*c^2))) - (a*c^2*x^2 + a^
2*c)*sqrt((a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - 2
*A*B)/(a^2*c^2))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*a^4*c^4*sqrt(-(B^4*a
^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - B^3*a^3*c + A^2*B*a^2*c^2)*sqrt(
(a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - 2*A*B)/(a^2
*c^2))) + (a*c^2*x^2 + a^2*c)*sqrt((a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c
+ A^4*c^2)/(a^5*c^5)) - 2*A*B)/(a^2*c^2))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x)
- (A*a^4*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - B^3*a^3
*c + A^2*B*a^2*c^2)*sqrt((a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)
/(a^5*c^5)) - 2*A*B)/(a^2*c^2))) - 4*(A*c*x - B*a)*sqrt(x))/(a*c^2*x^2 + a^
2*c)
```

giac [A] time = 0.19, size = 271, normalized size = 0.93

$$\frac{Acx^{\frac{3}{2}}-Ba\sqrt{x}}{2\left(cx^2+a\right)ac}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8a^2c^3}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac+\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8a^2c^3}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16a^2c^3}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(A*c*x^(3/2) - B*a*sqrt(x))/((c*x^2 + a)*a*c) + 1/8*sqrt(2)*((a*c^3)^(1
/4)*B*a*c + (a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sq
rt(x))/(a/c)^(1/4))/(a^2*c^3) + 1/8*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^
(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))
/(a^2*c^3) + 1/16*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*log(sqrt(
2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^3) - 1/16*sqrt(2)*((a*c^3)^(
1/4)*B*a*c - (a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a
/c))/(a^2*c^3)
```

maple [A]   time = 0.05, size = 316, normalized size = 1.08

$$\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}ac}+\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}ac}+\frac{\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16ac}+\frac{\frac{Ax^{\frac{3}{2}}}{2a}-\frac{B\sqrt{x}}{2c}}{cx^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 2*(1/4*A/a*x^(3/2)-1/4*B/c*x^(1/2))/(c*x^2+a)+1/8/a/c*B*(a/c)^(1/4)*2^(1/2)
*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/8/a/c*B*(a/c)^(1/4)*2^(1/2)*arctan
(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/16/a/c*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^
(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/
2)))+1/16/a/c*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)
^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/8/a/c*A/(a/c)^(1/4)*
2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/8/a/c*A/(a/c)^(1/4)*2^(1/2)
*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A]   time = 1.24, size = 272, normalized size = 0.93

$$\frac{Acx^{\frac{3}{2}}-Ba\sqrt{x}}{2\left(ac^2x^2+a^2c\right)}+\frac{\frac{2\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{16\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(A*c*x^(3/2) - B*a*sqrt(x))/(a*c^2*x^2 + a^2*c) + 1/16*(2*sqrt(2)*(B*a*
sqrt(c) + A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt
(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c))
 + 2*sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/
4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a
)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*log(sqrt(2)*a^(1/
4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(B*a*
sqrt(c) - A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + s
qrt(a))/(a^(3/4)*c^(3/4)))/(a*c)
```

mupad [B]   time = 1.28, size = 652, normalized size = 2.23

$$2\,\mathrm{atanh}\left(\frac{2\,A^2\,c^2\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^5\,c^5}}{64\,a^4\,c^5}-\frac{A^2\,\sqrt{-a^5\,c^5}}{64\,a^5\,c^4}-\frac{A\,B}{32\,a^2\,c^2}}}{\frac{A\,B^2}{4}-\frac{A^3\,c}{4\,a}-\frac{B^3\,\sqrt{-a^5\,c^5}}{4\,a^2\,c^3}+\frac{A^2\,B\,\sqrt{-a^5\,c^5}}{4\,a^3\,c^2}}-\frac{2\,B^2\,c\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^5\,c^5}}{64\,a^4\,c^5}-\frac{A^2\,\sqrt{-a^5\,c^5}}{64\,a^5\,c^4}-\frac{A\,B}{32\,a^2\,c^2}}}{\frac{A\,B^2}{4\,a}-\frac{A^3\,c}{4\,a^2}-\frac{B^3\,\sqrt{-a^5\,c^5}}{4\,a^3\,c^3}+\frac{A^2\,B\,\sqrt{-a^5\,c^5}}{4\,a^4\,c^2}}\right)\sqrt{-\frac{A^2\,c\,\sqrt{-a^5\,c^5}-B^2\,a\,\sqrt{-a^5\,c^5}+2\,A\,B\,a^3\,c^3}{64\,a^5\,c^5}}+2\,\mathrm{atanh}\left(\frac{2\,A^2\,c^2\,\sqrt{x}\,\sqrt{\frac{A^2\,\sqrt{-a^5\,c^5}}{64\,a^5\,c^4}-\frac{A\,B}{32\,a^2\,c^2}-\frac{B^2\,\sqrt{-a^5\,c^5}}{64\,a^4\,c^5}}}{\frac{A\,B^2}{4}-\frac{A^3\,c}{4\,a}+\frac{B^3\,\sqrt{-a^5\,c^5}}{4\,a^2\,c^3}-\frac{A^2\,B\,\sqrt{-a^5\,c^5}}{4\,a^3\,c^2}}-\frac{2\,B^2\,c\,\sqrt{x}\,\sqrt{\frac{A^2\,\sqrt{-a^5\,c^5}}{64\,a^5\,c^4}-\frac{A\,B}{32\,a^2\,c^2}-\frac{B^2\,\sqrt{-a^5\,c^5}}{64\,a^4\,c^5}}}{\frac{A\,B^2}{4\,a}-\frac{A^3\,c}{4\,a^2}+\frac{B^3\,\sqrt{-a^5\,c^5}}{4\,a^3\,c^3}-\frac{A^2\,B\,\sqrt{-a^5\,c^5}}{4\,a^4\,c^2}}\right)\sqrt{-\frac{B^2\,a\,\sqrt{-a^5\,c^5}-A^2\,c\,\sqrt{-a^5\,c^5}+2\,A\,B\,a^3\,c^3}{64\,a^5\,c^5}}+\frac{\frac{A\,x^{3/2}}{2\,a}-\frac{B\,\sqrt{x}}{2\,c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + c*x^2)^2,x)
```

```
[Out] 2*atanh((2*A^2*c^2*x^(1/2)*((B^2*(-a^5*c^5)^(1/2))/(64*a^4*c^5) - (A^2*(-a^
5*c^5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2))^(1/2))/((A*B^2)/4 - (A^3*c
)/(4*a) - (B^3*(-a^5*c^5)^(1/2))/(4*a^2*c^3) + (A^2*B*(-a^5*c^5)^(1/2))/(4*
a^3*c^2)) - (2*B^2*c*x^(1/2)*((B^2*(-a^5*c^5)^(1/2))/(64*a^4*c^5) - (A^2*(-
a^5*c^5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2))^(1/2))/((A*B^2)/(4*a) -
(A^3*c)/(4*a^2) - (B^3*(-a^5*c^5)^(1/2))/(4*a^3*c^3) + (A^2*B*(-a^5*c^5)^(1
```

```
/2))/(4*a^4*c^2)))*(-(A^2*c*(-a^5*c^5)^(1/2) - B^2*a*(-a^5*c^5)^(1/2) + 2*A
*B*a^3*c^3)/(64*a^5*c^5))^(1/2) + 2*atanh((2*A^2*c^2*x^(1/2)*((A^2*(-a^5*c^
5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2) - (B^2*(-a^5*c^5)^(1/2))/(64*a^
4*c^5))^(1/2))/((A*B^2)/4 - (A^3*c)/(4*a) + (B^3*(-a^5*c^5)^(1/2))/(4*a^2*c
^3) - (A^2*B*(-a^5*c^5)^(1/2))/(4*a^3*c^2)) - (2*B^2*c*x^(1/2)*((A^2*(-a^5*
c^5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2) - (B^2*(-a^5*c^5)^(1/2))/(64*
a^4*c^5))^(1/2))/((A*B^2)/(4*a) - (A^3*c)/(4*a^2) + (B^3*(-a^5*c^5)^(1/2))/
(4*a^3*c^3) - (A^2*B*(-a^5*c^5)^(1/2))/(4*a^4*c^2)))*(-(B^2*a*(-a^5*c^5)^(1
/2) - A^2*c*(-a^5*c^5)^(1/2) + 2*A*B*a^3*c^3)/(64*a^5*c^5))^(1/2) + ((A*x^(
3/2))/(2*a) - (B*x^(1/2))/(2*c))/(a + c*x^2)
```

sympy [A] time = 52.79, size = 1266, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*(B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/c**2, Eq(a, 0)), ((2*A*x**(3/2)/3
 + 2*B*x**(5/2)/5)/a**2, Eq(c, 0)), (4*(-1)**(1/4)*A*a**(1/4)*c*x**(3/2)*(1
/c)**(1/4)/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*
c**2*x**2*(1/c)**(1/4)) + A*a*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt
(x))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x
**2*(1/c)**(1/4)) - A*a*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8
*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/
c)**(1/4)) - 2*A*a*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1
)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**
(1/4)) + A*c*x**2*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)
**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(
1/4)) - A*c*x**2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**
(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/
4)) - 2*A*c*x**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)*
*(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1
/4)) - 4*(-1)**(1/4)*B*a**(5/4)*sqrt(x)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(9/4
)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/4)) - I*B*a**
(3/2)*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**
(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/
4)) + I*B*a**(3/2)*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x
))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**
2*(1/c)**(1/4)) - 2*I*B*a**(3/2)*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/
4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a*
*(5/4)*c**2*x**2*(1/c)**(1/4)) - I*B*sqrt(a)*c*x**2*sqrt(1/c)*log(-(-1)**(1
/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4)
 + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/4)) + I*B*sqrt(a)*c*x**2*sqrt
(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9
/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/4)) - 2*I*B
*sqrt(a)*c*x**2*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))
/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*
(1/c)**(1/4)), True))
```

3.423 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^2} dx$

Optimal. Leaf size=287

$$\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B\right.}{}$$

Rubi [A] time = 0.25, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {823, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{7/4}c^{3/4}}+\frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{4\sqrt{2}\,a^{7/4}c^{3/4}}+\frac{\sqrt{x}(A+Bx)}{2a\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + c*x^2)^2),x]
```

```
[Out] (Sqrt[x]*(A + B*x))/(2*a*(a + c*x^2)) - ((Sqrt[a]*B + 3*A*Sqrt[c])*ArcTan[1
 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(7/4)*c^(3/4)) + ((Sqrt
[a]*B + 3*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt
[2]*a^(7/4)*c^(3/4)) + ((Sqrt[a]*B - 3*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(
1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(7/4)*c^(3/4)) - ((Sqrt[a]*
B - 3*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/(8*Sqrt[2]*a^(7/4)*c^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^2}\,dx = \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\int \frac{-\frac{3}{2}aAc-\frac{1}{2}aBcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2a^2c}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\text{Subst}\left(\int \frac{-\frac{3}{2}aAc-\frac{1}{2}aBcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^2c}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^{3/2}c} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\text{Sub}}{}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{8a^{3/2}c} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)}{}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} + \frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}} - \frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\text{l}}{}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{7/4}c^{3/4}} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}}{}\right.}{4\sqrt{2}\,a^{7/4}c^{3/4}}$$

Mathematica [A] time = 0.22, size = 304, normalized size = 1.06

$$\frac{\frac{8aA\sqrt{x}}{a+cx^2}-\frac{3\sqrt{2}\,\sqrt[4]{a}\,A\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{\sqrt[4]{c}}+\frac{3\sqrt{2}\,\sqrt[4]{a}\,A\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{\sqrt[4]{c}}-\frac{6\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt[4]{c}}+\frac{6\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt[4]{c}}-\frac{4(-a)^{3/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{4(-a)^{3/4}B\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{8aBx^{3/2}}{a+cx^2}}{16a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + c*x^2)^2),x]
```

```
[Out] ((8*a*A*Sqrt[x])/(a + c*x^2) + (8*a*B*x^(3/2))/(a + c*x^2) - (6*Sqrt[2]*a^(
1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) + (6*Sqrt[2]*
a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (4*(-a)^
(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) + (4*(-a)^(3/4)*B*Arc
Tanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (3*Sqrt[2]*a^(1/4)*A*Log[Sqrt
[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4) + (3*Sqrt[2]*a^
(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4)
)/(16*a^2)
```

IntegrateAlgebraic [A] time = 0.68, size = 175, normalized size = 0.61

$$-\frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{4\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{4\sqrt{2}\,a^{7/4}c^{3/4}}+\frac{A\sqrt{x}+Bx^{3/2}}{2a\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a + c*x^2)^2),x]
```

```
[Out] (A*Sqrt[x] + B*x^(3/2))/(2*a*(a + c*x^2)) - ((Sqrt[a]*B + 3*A*Sqrt[c])*ArcT
an[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(4*Sqrt[2]*a^(
7/4)*c^(3/4)) - ((Sqrt[a]*B - 3*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)
*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(4*Sqrt[2]*a^(7/4)*c^(3/4))
```

fricas [B] time = 0.46, size = 877, normalized size = 3.06

$$\frac{(acx^2+a^2)\sqrt{-\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}+6AB}{a^3c}}\log\left(-(B^4a^2-81A^4c^2)\sqrt{x}+\left(Ba^6c^2\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}-3AB^2a^3c+27A^3a^2c^2\right)\sqrt{-\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}+6AB}{a^3c}}\right)-(acx^2+a^2)\sqrt{-\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}+6AB}{a^3c}}\log\left(-(B^4a^2-81A^4c^2)\sqrt{x}-\left(Ba^6c^2\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}-3AB^2a^3c+27A^3a^2c^2\right)\sqrt{-\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}+6AB}{a^3c}}\right)-(acx^2+a^2)\sqrt{\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}-6AB}{a^3c}}\log\left(-(B^4a^2-81A^4c^2)\sqrt{x}+\left(Ba^6c^2\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}+3AB^2a^3c-27A^3a^2c^2\right)\sqrt{\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}-6AB}{a^3c}}\right)+(acx^2+a^2)\sqrt{\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}-6AB}{a^3c}}\log\left(-(B^4a^2-81A^4c^2)\sqrt{x}-\left(Ba^6c^2\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}+3AB^2a^3c-27A^3a^2c^2\right)\sqrt{\frac{a^3c\sqrt{-\frac{B^4a^2-18A^2B^2ac+81A^4c^2}{a^7c^3}}-6AB}{a^3c}}\right)+4(Bx+A)\sqrt{x}}{8(acx^2+a^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a*c*x^2 + a^2)*sqrt(-(a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*
c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))*log(-(B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (B*
a^6*c^2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) - 3*A*B^2*
a^3*c + 27*A^3*a^2*c^2)*sqrt(-(a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A
^4*c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))) - (a*c*x^2 + a^2)*sqrt(-(a^3*c*sqrt(-
(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))*log(-(
B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (B*a^6*c^2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c
+ 81*A^4*c^2)/(a^7*c^3)) - 3*A*B^2*a^3*c + 27*A^3*a^2*c^2)*sqrt(-(a^3*c*sqr
t(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))) -
(a*c*x^2 + a^2)*sqrt((a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(
a^7*c^3)) - 6*A*B)/(a^3*c))*log(-(B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (B*a^6*c^
2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) + 3*A*B^2*a^3*c
- 27*A^3*a^2*c^2)*sqrt((a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)
/(a^7*c^3)) - 6*A*B)/(a^3*c))) + (a*c*x^2 + a^2)*sqrt((a^3*c*sqrt(-(B^4*a^2
 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) - 6*A*B)/(a^3*c))*log(-(B^4*a^2
- 81*A^4*c^2)*sqrt(x) - (B*a^6*c^2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4
*c^2)/(a^7*c^3)) + 3*A*B^2*a^3*c - 27*A^3*a^2*c^2)*sqrt((a^3*c*sqrt(-(B^4*a
^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) - 6*A*B)/(a^3*c))) + 4*(B*x +
A)*sqrt(x))/(a*c*x^2 + a^2)
```

giac [A] time = 0.22, size = 273, normalized size = 0.95

$$\frac{Bx^{\frac{3}{2}}+A\sqrt{x}}{2\left(cx^2+a\right)a}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8a^2c^3}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8a^2c^3}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Ac^2-\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16a^2c^3}-\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Ac^2-\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*x^(3/2) + A*sqrt(x))/((c*x^2 + a)*a) + 1/8*sqrt(2)*(3*(a*c^3)^(1/4)*
A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x
))/(a/c)^(1/4))/(a^2*c^3) + 1/8*sqrt(2)*(3*(a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3
/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(
a^2*c^3) + 1/16*sqrt(2)*(3*(a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(sqrt(
2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^3) - 1/16*sqrt(2)*(3*(a*c^3)
^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt
(a/c))/(a^2*c^3)
```

maple [A] time = 0.07, size = 313, normalized size = 1.09

$$\frac{B x^{\frac{3}{2}}}{2\left(c x^{2}+a\right) a}+\frac{A\sqrt{x}}{2\left(c x^{2}+a\right) a}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\, A \arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8a^{2}}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\, A \arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8a^{2}}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\, A \ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16a^{2}}+\frac{\sqrt{2}\, B \arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}} a c}+\frac{\sqrt{2}\, B \arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}} a c}+\frac{\sqrt{2}\, B \ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}} a c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/(c*x^2+a)^2,x)
```

```
[Out] 1/2*A*x^(1/2)/a/(c*x^2+a)+3/16*A/a^2*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*
2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3
/8*A/a^2*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/8*A/a^
2*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/2*B*x^(3/2)/a
/(c*x^2+a)+1/16*B/a/c/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)
+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/8*B/a/c/(a/c)^
(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/8*B/a/c/(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.14, size = 256, normalized size = 0.89

$$\frac{Bx^{\frac{3}{2}}+A\sqrt{x}}{2\left(acx^{2}+a^{2}\right)}+\frac{\frac{2\sqrt{2}\left(B\sqrt{a}+3A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(B\sqrt{a}+3A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-3A\sqrt{c}\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(B\sqrt{a}-3A\sqrt{c}\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{16a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(B*x^(3/2) + A*sqrt(x))/(a*c*x^2 + a^2) + 1/16*(2*sqrt(2)*(B*sqrt(a) +
3*A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x
))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(
2)*(B*sqrt(a) + 3*A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) -
 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*s
qrt(c)) - sqrt(2)*(B*sqrt(a) - 3*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqr
t(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(B*sqrt(a) - 3*A*sq
rt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)
*c^(3/4)))/a
```

mupad [B] time = 1.28, size = 649, normalized size = 2.26

$$\frac{\frac{A\sqrt{x}}{2a}+\frac{Bx^{3/2}}{2a}}{cx^{2}+a}-2\,\mathrm{atanh}\left(\frac{2B^{2}c^{2}\sqrt{x}\sqrt{\frac{B^{2}\sqrt{-a^{7}c^{3}}}{64a^{6}c^{3}}-\frac{9A^{2}\sqrt{-a^{7}c^{3}}}{64a^{7}c^{2}}-\frac{3AB}{32a^{3}c}}}{\frac{B^{3}c}{4a}+\frac{3AB^{2}\sqrt{-a^{7}c^{3}}}{4a^{5}}-\frac{27A^{3}c\sqrt{-a^{7}c^{3}}}{4a^{6}}-\frac{9A^{2}Bc^{2}}{4a^{2}}}-\frac{18A^{2}c^{3}\sqrt{x}\sqrt{\frac{B^{2}\sqrt{-a^{7}c^{3}}}{64a^{6}c^{3}}-\frac{9A^{2}\sqrt{-a^{7}c^{3}}}{64a^{7}c^{2}}-\frac{3AB}{32a^{3}c}}}{\frac{B^{3}c}{4}+\frac{3AB^{2}\sqrt{-a^{7}c^{3}}}{4a^{4}}-\frac{27A^{3}c\sqrt{-a^{7}c^{3}}}{4a^{5}}-\frac{9A^{2}Bc^{2}}{4a}}\right)\sqrt{-\frac{9A^{2}c\sqrt{-a^{7}c^{3}}-B^{2}a\sqrt{-a^{7}c^{3}}+6ABa^{4}c^{2}}{64a^{7}c^{3}}}-2\,\mathrm{atanh}\left(\frac{2B^{2}c^{2}\sqrt{x}\sqrt{\frac{9A^{2}\sqrt{-a^{7}c^{3}}}{64a^{7}c^{2}}-\frac{3AB}{32a^{3}c}-\frac{B^{2}\sqrt{-a^{7}c^{3}}}{64a^{6}c^{3}}}}{\frac{B^{3}c}{4a}-\frac{3AB^{2}\sqrt{-a^{7}c^{3}}}{4a^{5}}+\frac{27A^{3}c\sqrt{-a^{7}c^{3}}}{4a^{6}}-\frac{9A^{2}Bc^{2}}{4a^{2}}}-\frac{18A^{2}c^{3}\sqrt{x}\sqrt{\frac{9A^{2}\sqrt{-a^{7}c^{3}}}{64a^{7}c^{2}}-\frac{3AB}{32a^{3}c}-\frac{B^{2}\sqrt{-a^{7}c^{3}}}{64a^{6}c^{3}}}}{\frac{B^{3}c}{4}-\frac{3AB^{2}\sqrt{-a^{7}c^{3}}}{4a^{4}}+\frac{27A^{3}c\sqrt{-a^{7}c^{3}}}{4a^{5}}-\frac{9A^{2}Bc^{2}}{4a}}\right)\sqrt{-\frac{B^{2}a\sqrt{-a^{7}c^{3}}-9A^{2}c\sqrt{-a^{7}c^{3}}+6ABa^{4}c^{2}}{64a^{7}c^{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + c*x^2)^2),x)
```

```
[Out] ((A*x^(1/2))/(2*a) + (B*x^(3/2))/(2*a))/(a + c*x^2) - 2*atanh((2*B^2*c^2*x^
(1/2)*((B^2*(-a^7*c^3)^(1/2))/(64*a^6*c^3) - (9*A^2*(-a^7*c^3)^(1/2))/(64*a
^7*c^2) - (3*A*B)/(32*a^3*c))^(1/2))/((B^3*c)/(4*a) + (3*A*B^2*(-a^7*c^3)^(
1/2))/(4*a^5) - (27*A^3*c*(-a^7*c^3)^(1/2))/(4*a^6) - (9*A^2*B*c^2)/(4*a^2)
) - (18*A^2*c^3*x^(1/2)*((B^2*(-a^7*c^3)^(1/2))/(64*a^6*c^3) - (9*A^2*(-a^7
```

```
*c^3)^(1/2))/(64*a^7*c^2) - (3*A*B)/(32*a^3*c))^(1/2))/((B^3*c)/4 + (3*A*B^
2*(-a^7*c^3)^(1/2))/(4*a^4) - (27*A^3*c*(-a^7*c^3)^(1/2))/(4*a^5) - (9*A^2*
B*c^2)/(4*a)))*(-(9*A^2*c*(-a^7*c^3)^(1/2) - B^2*a*(-a^7*c^3)^(1/2) + 6*A*B
*a^4*c^2)/(64*a^7*c^3))^(1/2) - 2*atanh((2*B^2*c^2*x^(1/2)*((9*A^2*(-a^7*c^
3)^(1/2))/(64*a^7*c^2) - (3*A*B)/(32*a^3*c) - (B^2*(-a^7*c^3)^(1/2))/(64*a^
6*c^3))^(1/2))/((B^3*c)/(4*a) - (3*A*B^2*(-a^7*c^3)^(1/2))/(4*a^5) + (27*A^
3*c*(-a^7*c^3)^(1/2))/(4*a^6) - (9*A^2*B*c^2)/(4*a^2)) - (18*A^2*c^3*x^(1/2
)*((9*A^2*(-a^7*c^3)^(1/2))/(64*a^7*c^2) - (3*A*B)/(32*a^3*c) - (B^2*(-a^7*
c^3)^(1/2))/(64*a^6*c^3))^(1/2))/((B^3*c)/4 - (3*A*B^2*(-a^7*c^3)^(1/2))/(4
*a^4) + (27*A^3*c*(-a^7*c^3)^(1/2))/(4*a^5) - (9*A^2*B*c^2)/(4*a)))*(-(B^2*
a*(-a^7*c^3)^(1/2) - 9*A^2*c*(-a^7*c^3)^(1/2) + 6*A*B*a^4*c^2)/(64*a^7*c^3)
)^(1/2)
```

sympy [A] time = 77.78, size = 1294, normalized size = 4.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/c**2, Eq(a, 0)), ((2*A*sqrt(x) +
2*B*x**(3/2)/3)/a**2, Eq(c, 0)), (4*(-1)**(1/4)*A*a**(5/4)*c*sqrt(x)*(1/c)*
*(1/4)/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**
2*x**2*(1/c)**(1/4)) - 3*I*A*a**(3/2)*c*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)
*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**
(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) + 3*I*A*a**(3/2)*c*sqrt(1/c)*log((-1
)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)*
*(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 6*I*A*a**(3/2)*c*
sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*
a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) -
 3*I*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) +
 sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*
c**2*x**2*(1/c)**(1/4)) + 3*I*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log((-1)**(1/4)
*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) +
 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 6*I*A*sqrt(a)*c**2*x**2*s
qrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a
**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) +
4*(-1)**(1/4)*B*a**(5/4)*c*x**(3/2)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(13/4)*c
*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) + B*a**2*log
(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(
1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - B*a**2*log((
-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c
)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 2*B*a**2*atan((
-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c
)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) + B*a*c*x**2*log(
-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1
/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - B*a*c*x**2*lo
g((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(
1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 2*B*a*c*x**2
*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)
*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)), True))
```

3.424 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=304

$$-\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}+\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}-$$

Rubi [A] time = 0.30, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {823, 829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}+\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}-\frac{\left(3\sqrt{a}\,B-5A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{9/4}\sqrt[4]{c}}+\frac{\left(3\sqrt{a}\,B-5A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{4\sqrt{2}\,a^{9/4}\sqrt[4]{c}}-\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + c*x^2)^2),x]
```

```
[Out] (-5*A)/(2*a^2*Sqrt[x]) + (A + B*x)/(2*a*Sqrt[x]*(a + c*x^2)) - ((3*Sqrt[a]*
B - 5*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*
a^(9/4)*c^(1/4)) + ((3*Sqrt[a]*B - 5*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)
*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(9/4)*c^(1/4)) - ((3*Sqrt[a]*B + 5*A*Sqrt[
c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*
a^(9/4)*c^(1/4)) + ((3*Sqrt[a]*B + 5*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/
4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(9/4)*c^(1/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^2}\,dx = \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} - \frac{\int \frac{-\frac{5}{2}aAc-\frac{3}{2}aBcx}{x^{3/2}\left(a+cx^2\right)}\,dx}{2a^2c}$$

$$= -\frac{5A}{2a^2\sqrt{x}} + \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} - \frac{\int \frac{-\frac{3}{2}a^2Bc+\frac{5}{2}aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2a^3c}$$

$$= -\frac{5A}{2a^2\sqrt{x}} + \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} - \frac{\text{Subst}\left(\int \frac{-\frac{3}{2}a^2Bc+\frac{5}{2}aAc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^3c}$$

$$= -\frac{5A}{2a^2\sqrt{x}} + \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} - \frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}+cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^2} + \frac{\left(5A + 3\cdots\right.}{}$$

$$= -\frac{5A}{2a^2\sqrt{x}} + \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} - \frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{8a^2} - \frac{\left(5A\right.}{}$$

$$= -\frac{5A}{2a^2\sqrt{x}} + \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} - \frac{\left(3\sqrt{a}B+5A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{8\sqrt{2}a^{9/4}\sqrt[4]{c}} + \frac{\left(\right.}{}$$

$$= -\frac{5A}{2a^2\sqrt{x}} + \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)} + \frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\sqrt[4]{c}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}a^{9/4}} - \frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\cdots}{}$$

Mathematica [C] time = 0.46, size = 256, normalized size = 0.84

$$\frac{\sqrt[4]{a}\left(\frac{8a^{3/4}A}{\sqrt{x}\left(a+cx^2\right)}+\frac{8a^{3/4}B\sqrt{x}}{a+cx^2}-\frac{3\sqrt{2}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{3\sqrt{2}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}-\frac{6\sqrt{2}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt[4]{c}}+\frac{6\sqrt{2}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt[4]{c}}\right)-\frac{40A\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)}{\sqrt{x}}}{16a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + c*x^2)^2),x]
```

```
[Out] ((-40*A*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/Sqrt[x] + a^(1/4)*((
8*a^(3/4)*A)/(Sqrt[x]*(a + c*x^2)) + (8*a^(3/4)*B*Sqrt[x])/(a + c*x^2) - (6
*Sqrt[2]*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) + (6*Sqrt
[2]*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (3*Sqrt[2]*B
*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4) + (3*S
qrt[2]*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4
)))/(16*a^2)
```

IntegrateAlgebraic [A] time = 1.00, size = 183, normalized size = 0.60

$$-\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{4\sqrt{2}a^{9/4}\sqrt[4]{c}}+\frac{\left(3\sqrt{a}B+5A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{4\sqrt{2}a^{9/4}\sqrt[4]{c}}+\frac{-4aA+aBx-5Acx^2}{2a^2\sqrt{x}\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a + c*x^2)^2),x]
```

```
[Out] (-4*a*A + a*B*x - 5*A*c*x^2)/(2*a^2*Sqrt[x]*(a + c*x^2)) - ((3*Sqrt[a]*B -
5*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])
```

```
])/(4*Sqrt[2]*a^(9/4)*c^(1/4)) + ((3*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTanh[(Sqrt
[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)])/(4*Sqrt[2]*a^(9/4)*c^(
1/4))
```

fricas [B] time = 0.45, size = 877, normalized size = 2.88

$$-\frac{(a^2cx^3+a^3x)\sqrt{\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+30AB}{a^4}}\log\left(-(81B^4a^2-625A^4c^2)\sqrt{x}+\left(5Aa^7c\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+27B^3a^4-75A^2Ba^3c\right)\sqrt{\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+30AB}{a^4}}\right)-(a^2cx^3+a^3x)\sqrt{\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+30AB}{a^4}}\log\left(-(81B^4a^2-625A^4c^2)\sqrt{x}-\left(5Aa^7c\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+27B^3a^4-75A^2Ba^3c\right)\sqrt{\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+30AB}{a^4}}\right)-(a^2cx^3+a^3x)\sqrt{-\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}-30AB}{a^4}}\log\left(-(81B^4a^2-625A^4c^2)\sqrt{x}+\left(5Aa^7c\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}-27B^3a^4+75A^2Ba^3c\right)\sqrt{-\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}-30AB}{a^4}}\right)+(a^2cx^3+a^3x)\sqrt{-\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}-30AB}{a^4}}\log\left(-(81B^4a^2-625A^4c^2)\sqrt{x}-\left(5Aa^7c\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}-27B^3a^4+75A^2Ba^3c\right)\sqrt{-\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}-30AB}{a^4}}\right)+4(5Acx^2-Bax+4Aa)\sqrt{x}}{8(a^2cx^3+a^3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a^2*c*x^3 + a^3*x)*sqrt((a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 6
25*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4)*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x)
 + (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) +
 27*B^3*a^4 - 75*A^2*B*a^3*c)*sqrt((a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c
 + 625*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4)) - (a^2*c*x^3 + a^3*x)*sqrt((a^4*sq
rt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4)*lo
g(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 450*
A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) + 27*B^3*a^4 - 75*A^2*B*a^3*c)*sqrt((a^
4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4
)) - (a^2*c*x^3 + a^3*x)*sqrt(-(a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 6
25*A^4*c^2)/(a^9*c)) - 30*A*B)/a^4)*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x)
 + (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) -
 27*B^3*a^4 + 75*A^2*B*a^3*c)*sqrt(-(a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*
c + 625*A^4*c^2)/(a^9*c)) - 30*A*B)/a^4)) + (a^2*c*x^3 + a^3*x)*sqrt(-(a^4*
sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) - 30*A*B)/a^4)*
log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 45
0*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) - 27*B^3*a^4 + 75*A^2*B*a^3*c)*sqrt(-
(a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) - 30*A*B)/
a^4)) + 4*(5*A*c*x^2 - B*a*x + 4*A*a)*sqrt(x))/(a^2*c*x^3 + a^3*x)
```

giac [A] time = 0.22, size = 281, normalized size = 0.92

$$-\frac{5Acx^2-Bax+4Aa}{2\left(cx^{\frac{5}{2}}+a\sqrt{x}\right)a^2}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Bac-5\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8a^3c^2}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Bac-5\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8a^3c^2}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Bac+5\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16a^3c^2}-\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Bac+5\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{16a^3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(5*A*c*x^2 - B*a*x + 4*A*a)/((c*x^(5/2) + a*sqrt(x))*a^2) + 1/8*sqrt(2
)*(3*(a*c^3)^(1/4)*B*a*c - 5*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqrt(2)*(
a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^2) + 1/8*sqrt(2)*(3*(a*c^3)^(1/
4)*B*a*c - 5*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*
sqrt(x))/(a/c)^(1/4))/(a^3*c^2) + 1/16*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c + 5*(
a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^2)
- 1/16*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c + 5*(a*c^3)^(3/4)*A)*log(-sqrt(2)*sqr
t(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^2)
```

maple [A] time = 0.08, size = 314, normalized size = 1.03

$$-\frac{Acx^{\frac{3}{2}}}{2\left(cx^2+a\right)a^2}+\frac{B\sqrt{x}}{2\left(cx^2+a\right)a}-\frac{5\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2}-\frac{5\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2}-\frac{5\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8a^2}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8a^2}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16a^2}-\frac{2A}{a^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+a)^2,x)
```

```
[Out] -1/2/a^2/(c*x^2+a)*A*x^(3/2)*c+1/2/a/(c*x^2+a)*B*x^(1/2)+3/8/a^2*B*(a/c)^(1
/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+3/16/a^2*B*(a/c)^(1/4)*2^
(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)
```

```
*x^(1/2)+(a/c)^(1/2)))+3/8/a^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(
1/4)*x^(1/2)+1)-5/16/a^2*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^
(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-5/8/a^2*A/(
a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-5/8/a^2*A/(a/c)^(1
/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2*A/a^2/x^(1/2)
```

maxima [A] time = 1.19, size = 280, normalized size = 0.92

$$-\frac{5\,Acx^2 - Bax + 4\,Aa}{2\left(a^2cx^{\frac{5}{2}} + a^3\sqrt{x}\right)} + \frac{\frac{2\sqrt{2}\left(3\,Ba\sqrt{c} - 5\,A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}} + 2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\sqrt{2}\left(3\,Ba\sqrt{c} - 5\,A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}} - 2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{\sqrt{2}\left(3\,Ba\sqrt{c} + 5\,A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x} + \sqrt{c}x + \sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}} - \frac{\sqrt{2}\left(3\,Ba\sqrt{c} + 5\,A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x} + \sqrt{c}x + \sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{16\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(5*A*c*x^2 - B*a*x + 4*A*a)/(a^2*c*x^(5/2) + a^3*sqrt(x)) + 1/16*(2*sq
rt(2)*(3*B*a*sqrt(c) - 5*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c
^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sq
rt(c))*sqrt(c)) + 2*sqrt(2)*(3*B*a*sqrt(c) - 5*A*sqrt(a)*c)*arctan(-1/2*sqr
t(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(
sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(3*B*a*sqrt(c) + 5*A*sqrt(
a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c
^(3/4)) - sqrt(2)*(3*B*a*sqrt(c) + 5*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1
/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2
```

mupad [B] time = 0.25, size = 634, normalized size = 2.09

$$2\,\mathrm{atanh}\left(\frac{1600\,A^2a^7c^4\sqrt{x}\sqrt{\frac{15\,A\,B}{32\,a^4}-\frac{25\,A^2\sqrt{-a^9c}}{64\,a^9}+\frac{9\,B^2\sqrt{-a^9c}}{64\,a^8c}}}{1000\,A^3a^5c^4-216\,B^3a^2c^2\sqrt{-a^9c}-360\,A\,B^2a^6c^3+600\,A^2B\,a\,c^3\sqrt{-a^9c}}-\frac{576\,B^2a^8c^3\sqrt{x}\sqrt{\frac{15\,A\,B}{32\,a^4}-\frac{25\,A^2\sqrt{-a^9c}}{64\,a^9}+\frac{9\,B^2\sqrt{-a^9c}}{64\,a^8c}}}{1000\,A^3a^5c^4-216\,B^3a^2c^2\sqrt{-a^9c}-360\,A\,B^2a^6c^3+600\,A^2B\,a\,c^3\sqrt{-a^9c}}\right)\sqrt{\frac{9\,B^2a\sqrt{-a^9c}-25\,A^2c\sqrt{-a^9c}+30\,A\,B\,a^5c}{64\,a^9c}}+2\,\mathrm{atanh}\left(\frac{1600\,A^2a^7c^4\sqrt{x}\sqrt{\frac{25\,A^2\sqrt{-a^9c}}{64\,a^9}+\frac{15\,A\,B}{32\,a^4}-\frac{9\,B^2\sqrt{-a^9c}}{64\,a^8c}}}{1000\,A^3a^5c^4+216\,B^3a^2c^2\sqrt{-a^9c}-360\,A\,B^2a^6c^3-600\,A^2B\,a\,c^3\sqrt{-a^9c}}-\frac{576\,B^2a^8c^3\sqrt{x}\sqrt{\frac{25\,A^2\sqrt{-a^9c}}{64\,a^9}+\frac{15\,A\,B}{32\,a^4}-\frac{9\,B^2\sqrt{-a^9c}}{64\,a^8c}}}{1000\,A^3a^5c^4+216\,B^3a^2c^2\sqrt{-a^9c}-360\,A\,B^2a^6c^3-600\,A^2B\,a\,c^3\sqrt{-a^9c}}\right)\sqrt{\frac{25\,A^2c\sqrt{-a^9c}-9\,B^2a\sqrt{-a^9c}+30\,A\,B\,a^5c}{64\,a^9c}}-\frac{\frac{2\,A}{a}-\frac{B\,x}{2\,a}+\frac{5\,A\,c\,x^2}{2\,a^2}}{a\sqrt{x}+c\,x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + c*x^2)^2),x)
```

```
[Out] 2*atanh((1600*A^2*a^7*c^4*x^(1/2)*((15*A*B)/(32*a^4) - (25*A^2*(-a^9*c)^(1/
2))/(64*a^9) + (9*B^2*(-a^9*c)^(1/2))/(64*a^8*c))^(1/2))/(1000*A^3*a^5*c^4
- 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A*B^2*a^6*c^3 + 600*A^2*B*a*c^3*(-a^
9*c)^(1/2)) - (576*B^2*a^8*c^3*x^(1/2)*((15*A*B)/(32*a^4) - (25*A^2*(-a^9*c
)^(1/2))/(64*a^9) + (9*B^2*(-a^9*c)^(1/2))/(64*a^8*c))^(1/2))/(1000*A^3*a^5
*c^4 - 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A*B^2*a^6*c^3 + 600*A^2*B*a*c^3
*(-a^9*c)^(1/2)))*((9*B^2*a*(-a^9*c)^(1/2) - 25*A^2*c*(-a^9*c)^(1/2) + 30*A
*B*a^5*c)/(64*a^9*c))^(1/2) + 2*atanh((1600*A^2*a^7*c^4*x^(1/2)*((25*A^2*(-
a^9*c)^(1/2))/(64*a^9) + (15*A*B)/(32*a^4) - (9*B^2*(-a^9*c)^(1/2))/(64*a^8
*c))^(1/2))/(1000*A^3*a^5*c^4 + 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A*B^2*
a^6*c^3 - 600*A^2*B*a*c^3*(-a^9*c)^(1/2)) - (576*B^2*a^8*c^3*x^(1/2)*((25*A
^2*(-a^9*c)^(1/2))/(64*a^9) + (15*A*B)/(32*a^4) - (9*B^2*(-a^9*c)^(1/2))/(6
4*a^8*c))^(1/2))/(1000*A^3*a^5*c^4 + 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A
*B^2*a^6*c^3 - 600*A^2*B*a*c^3*(-a^9*c)^(1/2)))*((25*A^2*c*(-a^9*c)^(1/2) -
 9*B^2*a*(-a^9*c)^(1/2) + 30*A*B*a^5*c)/(64*a^9*c))^(1/2) - ((2*A)/a - (B*x
)/(2*a) + (5*A*c*x^2)/(2*a^2))/(a*x^(1/2) + c*x^(5/2))
```

sympy [A] time = 149.46, size = 1435, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2)))/c**2, Eq(a, 0)), ((-2*A/sqrt(x) +
 2*B*sqrt(x))/a**2, Eq(c, 0)), (-16*(-1)**(1/4)*A*a**(5/4)*(1/c)**(1/4)/(8*
(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5
```

```
/2)*(1/c)**(1/4)) - 20*(-1)**(1/4)*A*a**(1/4)*c*x**2*(1/c)**(1/4)/(8*(-1)**
(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1
/c)**(1/4)) - 5*A*a*sqrt(x)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x
))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c
*x**(5/2)*(1/c)**(1/4)) + 5*A*a*sqrt(x)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/
4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)
*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 10*A*a*sqrt(x)*atan((-1)**(3/4)*sqrt(x
)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) +
8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) - 5*A*c*x**(5/2)*log(-(-1)*
*(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1
/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 5*A*c*x**(5/
2)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4
)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) +
10*A*c*x**(5/2)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**
(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1
/c)**(1/4)) + 4*(-1)**(1/4)*B*a**(5/4)*x*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(13
/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4))
- 3*I*B*a**(3/2)*sqrt(x)*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) +
 sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**
(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 3*I*B*a**(3/2)*sqrt(x)*sqrt(1/c)*log((-1)*
*(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1
/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) - 6*I*B*a**(3/
2)*sqrt(x)*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(
-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/
2)*(1/c)**(1/4)) - 3*I*B*sqrt(a)*c*x**(5/2)*sqrt(1/c)*log(-(-1)**(1/4)*a**(
1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4)
+ 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 3*I*B*sqrt(a)*c*x**(5/2
)*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)
*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**
(1/4)) - 6*I*B*sqrt(a)*c*x**(5/2)*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1
/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**
(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)), True))
```

3.425 $\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=317

$$-\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{11/4}}+\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\right.}{8\sqrt{2}a^{11/4}}$$

Rubi [A] time = 0.35, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {823, 829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{11/4}}+\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{11/4}}+\frac{\sqrt[4]{c}\left(5\sqrt{a}B+7A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}a^{11/4}}-\frac{\sqrt[4]{c}\left(5\sqrt{a}B+7A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{4\sqrt{2}a^{11/4}}-\frac{7A}{6a^2x^{3/2}}-\frac{5B}{2a^2\sqrt{x}}+\frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + c*x^2)^2),x]
```

```
[Out] (-7*A)/(6*a^2*x^(3/2)) - (5*B)/(2*a^2*Sqrt[x]) + (A + B*x)/(2*a*x^(3/2)*(a
+ c*x^2)) + ((5*Sqrt[a]*B + 7*A*Sqrt[c])*c^(1/4)*ArcTan[1 - (Sqrt[2]*c^(1/4
)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(11/4)) - ((5*Sqrt[a]*B + 7*A*Sqrt[c])*c^
(1/4)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(11/4)) -
 ((5*Sqrt[a]*B - 7*A*Sqrt[c])*c^(1/4)*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(11/4)) + ((5*Sqrt[a]*B - 7*A*Sqrt[c])*
c^(1/4)*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt
[2]*a^(11/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)^2}\,dx = \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\int \frac{-\frac{7}{2}aAc-\frac{5}{2}aBcx}{x^{5/2}\left(a+cx^2\right)}\,dx}{2a^2c}$$

$$= -\frac{7A}{6a^2x^{3/2}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\int \frac{-\frac{5}{2}a^2Bc+\frac{7}{2}aAc^2x}{x^{3/2}\left(a+cx^2\right)}\,dx}{2a^3c}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\int \frac{\frac{7}{2}a^2Ac^2+\frac{5}{2}a^2Bc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2a^4c}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{7}{2}a^2Ac^2+\frac{5}{2}a^2Bc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^4c}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}\,B-7A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{}\right.}{4a^{5/2}}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B+7A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,\right.}{8a^{5/2}}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B-7A\sqrt{c}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{}\right.}{8\sqrt{2}\,a^{11/4}}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}\,B+7A\sqrt{c}\right)\sqrt[4]{c}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{11/4}} -$$

Mathematica [C] time = 0.03, size = 85, normalized size = 0.27

$$\frac{3a(A+Bx)-7A\left(a+cx^2\right)\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\frac{cx^2}{a}\right)-15Bx\left(a+cx^2\right)\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)}{6a^2x^{3/2}\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + c*x^2)^2),x]
```

```
[Out] (3*a*(A + B*x) - 7*A*(a + c*x^2)*Hypergeometric2F1[-3/4, 1, 1/4, -((c*x^2)/
a)] - 15*B*x*(a + c*x^2)*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/(6*
a^2*x^(3/2)*(a + c*x^2))
```

IntegrateAlgebraic [A] time = 0.86, size = 191, normalized size = 0.60

$$\frac{\left(5\sqrt{a}\,B\sqrt[4]{c}+7Ac^{3/4}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{4\sqrt{2}\,a^{11/4}} + \frac{\left(5\sqrt{a}\,B\sqrt[4]{c}-7Ac^{3/4}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{4\sqrt{2}\,a^{11/4}} + \frac{-4aA-12aBx-7Acx^2-15Bcx^3}{6a^2x^{3/2}\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a + c*x^2)^2),x]
```

```
[Out] (-4*a*A - 12*a*B*x - 7*A*c*x^2 - 15*B*c*x^3)/(6*a^2*x^(3/2)*(a + c*x^2)) +
((5*Sqrt[a]*B*c^(1/4) + 7*A*c^(3/4))*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*
```

```
a^(1/4)*c^(1/4)*Sqrt[x])])/(4*Sqrt[2]*a^(11/4)) + ((5*Sqrt[a]*B*c^(1/4) - 7
*A*c^(3/4))*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)
])/(4*Sqrt[2]*a^(11/4))
```

fricas [B]   time = 0.45, size = 916, normalized size = 2.89

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/24*(3*(a^2*c*x^4 + a^3*x^2)*sqrt(-(a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B
^2*a*c^2 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*
A^4*c^3)*sqrt(x) + (5*B*a^9*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 240
1*A^4*c^3)/a^11) - 175*A*B^2*a^4*c + 343*A^3*a^3*c^2)*sqrt(-(a^5*sqrt(-(625
*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)) - 3
*(a^2*c*x^4 + a^3*x^2)*sqrt(-(a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2
 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*A^4*c^3)
*sqrt(x) - (5*B*a^9*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^
3)/a^11) - 175*A*B^2*a^4*c + 343*A^3*a^3*c^2)*sqrt(-(a^5*sqrt(-(625*B^4*a^2
*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)) - 3*(a^2*c*
x^4 + a^3*x^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A
^4*c^3)/a^11) - 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*A^4*c^3)*sqrt(x)
+ (5*B*a^9*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11)
+ 175*A*B^2*a^4*c - 343*A^3*a^3*c^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*
A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) - 70*A*B*c)/a^5)) + 3*(a^2*c*x^4 + a^3*
x^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^
11) - 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*A^4*c^3)*sqrt(x) - (5*B*a^9
*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) + 175*A*B^
2*a^4*c - 343*A^3*a^3*c^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*
c^2 + 2401*A^4*c^3)/a^11) - 70*A*B*c)/a^5)) + 4*(15*B*c*x^3 + 7*A*c*x^2 + 1
2*B*a*x + 4*A*a)*sqrt(x))/(a^2*c*x^4 + a^3*x^2)
```

giac [A]   time = 0.23, size = 291, normalized size = 0.92

$$-\frac{Bcx^{\frac{3}{2}} + Ac\sqrt{x}}{2\left(cx^{2} + a\right)a^{2}} - \frac{2\left(3\,Bx + A\right)}{3\,a^{2}x^{\frac{3}{2}}} - \frac{\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2} + 5\,\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}} + 2\,\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,a^{3}c^{2}} - \frac{\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2} + 5\,\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}} - 2\,\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,a^{3}c^{2}} - \frac{\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2} - 5\,\left(ac^{3}\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\,\sqrt{x}\,\left(\frac{a}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{a}{c}}\right)}{16\,a^{3}c^{2}} + \frac{\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2} - 5\,\left(ac^{3}\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\,\sqrt{x}\,\left(\frac{a}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{a}{c}}\right)}{16\,a^{3}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*c*x^(3/2) + A*c*sqrt(x))/((c*x^2 + a)*a^2) - 2/3*(3*B*x + A)/(a^2*x
^(3/2)) - 1/8*sqrt(2)*(7*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*arctan(1/
2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^2) - 1/8*sq
rt(2)*(7*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt
(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^2) - 1/16*sqrt(2)*(7*(a*c^
3)^(1/4)*A*c^2 - 5*(a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + s
qrt(a/c))/(a^3*c^2) + 1/16*sqrt(2)*(7*(a*c^3)^(1/4)*A*c^2 - 5*(a*c^3)^(3/4)
*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^2)
```

maple [A]   time = 0.11, size = 327, normalized size = 1.03

$$-\frac{Bc\,x^{\frac{3}{2}}}{2\left(c\,x^{2} + a\right)a^{2}} - \frac{Ac\sqrt{x}}{2\left(c\,x^{2} + a\right)a^{2}} - \frac{7\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}} - 1\right)}{8a^{3}} - \frac{7\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}} + 1\right)}{8a^{3}} - \frac{7\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\ln\left(\frac{x + \left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x} + \sqrt{\frac{a}{c}}}{x - \left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x} + \sqrt{\frac{a}{c}}}\right)}{16a^{3}} - \frac{5\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}} - 1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}} - \frac{5\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}} + 1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}} - \frac{5\sqrt{2}\,B\ln\left(\frac{x - \left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x} + \sqrt{\frac{a}{c}}}{x + \left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x} + \sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}} - \frac{2B}{a^{2}\sqrt{x}} - \frac{2A}{3a^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/a^2/(c*x^2+a)*B*x^(3/2)-1/2*c/a^2/(c*x^2+a)*A*x^(1/2)-7/16*c/a^3*A*(
a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^
```

```
(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-7/8*c/a^3*A*(a/c)^(1/4)*2^(1/2)*arctan(
2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-7/8*c/a^3*A*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/
2)/(a/c)^(1/4)*x^(1/2)-1)-5/16/a^2*B/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*
2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-5
/8/a^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-5/8/a^2*
B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2/3*A/a^2/x^(3/
2)-2*B/a^2/x^(1/2)
```

maxima [A] time = 1.24, size = 280, normalized size = 0.88

$$-\frac{15\,Bcx^3+7\,Acx^2+12\,Bax+4\,Aa}{6\left(a^2cx^{\frac{7}{2}}+a^3x^{\frac{3}{2}}\right)}-\frac{c\left(\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+7\,A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+7\,A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(5\,B\sqrt{a}-7\,A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(5\,B\sqrt{a}-7\,A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{16\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(15*B*c*x^3 + 7*A*c*x^2 + 12*B*a*x + 4*A*a)/(a^2*c*x^(7/2) + a^3*x^(3/
2)) - 1/16*c*(2*sqrt(2)*(5*B*sqrt(a) + 7*A*sqrt(c))*arctan(1/2*sqrt(2)*(sqr
t(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*s
qrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(5*B*sqrt(a) + 7*A*sqrt(c))*arcta
n(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*s
qrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(5*B*sqrt(a) - 7
*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(
3/4)*c^(3/4)) + sqrt(2)*(5*B*sqrt(a) - 7*A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^
(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2
```

mupad [B] time = 0.25, size = 638, normalized size = 2.01

$$-\frac{\frac{2\,A}{3\,a}+\frac{2\,B\,x}{a}+\frac{7\,A\,c\,x^2}{6\,a^2}+\frac{5\,B\,c\,x^3}{2\,a^2}}{a\,x^{3/2}+c\,x^{7/2}}-2\,\mathrm{atanh}\left(\frac{3136\,A^2\,a^6\,c^5\,\sqrt{x}\,\sqrt{\frac{49\,A^2\,c\,\sqrt{-a^{11}\,c}}{64\,a^{11}}-\frac{25\,B^2\,\sqrt{-a^{11}\,c}}{64\,a^{10}}-\frac{35\,A\,B\,c}{32\,a^5}}}{1000\,B^3\,a^5\,c^4+\frac{2744\,A^3\,c^5\,\sqrt{-a^{11}\,c}}{a^2}-1960\,A^2\,B\,a^4\,c^5-\frac{1400\,A\,B^2\,c^4\,\sqrt{-a^{11}\,c}}{a}}-\frac{1600\,B^2\,a^7\,c^4\,\sqrt{x}\,\sqrt{\frac{49\,A^2\,c\,\sqrt{-a^{11}\,c}}{64\,a^{11}}-\frac{25\,B^2\,\sqrt{-a^{11}\,c}}{64\,a^{10}}-\frac{35\,A\,B\,c}{32\,a^5}}}{1000\,B^3\,a^5\,c^4+\frac{2744\,A^3\,c^5\,\sqrt{-a^{11}\,c}}{a^2}-1960\,A^2\,B\,a^4\,c^5-\frac{1400\,A\,B^2\,c^4\,\sqrt{-a^{11}\,c}}{a}}\right)\sqrt{-\frac{25\,B^2\,a\,\sqrt{-a^{11}\,c}-49\,A^2\,c\,\sqrt{-a^{11}\,c}+70\,A\,B\,a^6\,c}{64\,a^{11}}}-2\,\mathrm{atanh}\left(\frac{3136\,A^2\,a^6\,c^5\,\sqrt{x}\,\sqrt{\frac{25\,B^2\,\sqrt{-a^{11}\,c}}{64\,a^{10}}-\frac{49\,A^2\,c\,\sqrt{-a^{11}\,c}}{64\,a^{11}}-\frac{35\,A\,B\,c}{32\,a^5}}}{1000\,B^3\,a^5\,c^4-\frac{2744\,A^3\,c^5\,\sqrt{-a^{11}\,c}}{a^2}-1960\,A^2\,B\,a^4\,c^5+\frac{1400\,A\,B^2\,c^4\,\sqrt{-a^{11}\,c}}{a}}-\frac{1600\,B^2\,a^7\,c^4\,\sqrt{x}\,\sqrt{\frac{25\,B^2\,\sqrt{-a^{11}\,c}}{64\,a^{10}}-\frac{49\,A^2\,c\,\sqrt{-a^{11}\,c}}{64\,a^{11}}-\frac{35\,A\,B\,c}{32\,a^5}}}{1000\,B^3\,a^5\,c^4-\frac{2744\,A^3\,c^5\,\sqrt{-a^{11}\,c}}{a^2}-1960\,A^2\,B\,a^4\,c^5+\frac{1400\,A\,B^2\,c^4\,\sqrt{-a^{11}\,c}}{a}}\right)\sqrt{-\frac{49\,A^2\,c\,\sqrt{-a^{11}\,c}-25\,B^2\,a\,\sqrt{-a^{11}\,c}+70\,A\,B\,a^6\,c}{64\,a^{11}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + c*x^2)^2),x)
```

```
[Out] - ((2*A)/(3*a) + (2*B*x)/a + (7*A*c*x^2)/(6*a^2) + (5*B*c*x^3)/(2*a^2))/(a*
x^(3/2) + c*x^(7/2)) - 2*atanh((3136*A^2*a^6*c^5*x^(1/2)*((49*A^2*c*(-a^11*
c)^(1/2))/(64*a^11) - (25*B^2*(-a^11*c)^(1/2))/(64*a^10) - (35*A*B*c)/(32*a
^5))^(1/2))/(1000*B^3*a^5*c^4 + (2744*A^3*c^5*(-a^11*c)^(1/2))/a^2 - 1960*A
^2*B*a^4*c^5 - (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a) - (1600*B^2*a^7*c^4*x^(1
/2)*((49*A^2*c*(-a^11*c)^(1/2))/(64*a^11) - (25*B^2*(-a^11*c)^(1/2))/(64*a^
10) - (35*A*B*c)/(32*a^5))^(1/2))/(1000*B^3*a^5*c^4 + (2744*A^3*c^5*(-a^11*
c)^(1/2))/a^2 - 1960*A^2*B*a^4*c^5 - (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a))*(
-(25*B^2*a*(-a^11*c)^(1/2) - 49*A^2*c*(-a^11*c)^(1/2) + 70*A*B*a^6*c)/(64*a
^11))^(1/2) - 2*atanh((3136*A^2*a^6*c^5*x^(1/2)*((25*B^2*(-a^11*c)^(1/2))/(
64*a^10) - (49*A^2*c*(-a^11*c)^(1/2))/(64*a^11) - (35*A*B*c)/(32*a^5))^(1/2
))/(1000*B^3*a^5*c^4 - (2744*A^3*c^5*(-a^11*c)^(1/2))/a^2 - 1960*A^2*B*a^4*
c^5 + (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a) - (1600*B^2*a^7*c^4*x^(1/2)*((25*
B^2*(-a^11*c)^(1/2))/(64*a^10) - (49*A^2*c*(-a^11*c)^(1/2))/(64*a^11) - (35
*A*B*c)/(32*a^5))^(1/2))/(1000*B^3*a^5*c^4 - (2744*A^3*c^5*(-a^11*c)^(1/2))
/a^2 - 1960*A^2*B*a^4*c^5 + (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a))*(-(49*A^2*
c*(-a^11*c)^(1/2) - 25*B^2*a*(-a^11*c)^(1/2) + 70*A*B*a^6*c)/(64*a^11))^(1/
2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.426 $\int \frac{x^{7/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=320

$$\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-$$

Rubi [A] time = 0.31, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {819, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-\frac{\left(21\sqrt{a}\,B+5A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{3/4}c^{11/4}}+\frac{\left(21\sqrt{a}\,B+5A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{32\sqrt{2}\,a^{3/4}c^{11/4}}-\frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)}-\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(x^(5/2)*(A + B*x))/(4*c*(a + c*x^2)^2) - (Sqrt[x]*(5*A + 7*B*x))/(16*c^2*
(a + c*x^2)) - ((21*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sq
rt[x])/a^(1/4)])/(32*Sqrt[2]*a^(3/4)*c^(11/4)) + ((21*Sqrt[a]*B + 5*A*Sqrt[
c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(3/4)*c^(1
1/4)) + ((21*Sqrt[a]*B - 5*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(3/4)*c^(11/4)) - ((21*Sqrt[a]*B - 5*A
*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*S
qrt[2]*a^(3/4)*c^(11/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx = -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\int \frac{x^{3/2}\left(\frac{5aA}{2}+\frac{7aBx}{2}\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\int \frac{\frac{5a^2A}{4}+\frac{21}{4}a^2Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^2c^2}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{5a^2A}{4}+\frac{21}{4}a^2Bx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^2c^2}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} - \frac{\left(21B-\frac{5A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32c^3} + (21B$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\left(21B+\frac{5A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{64c^3} +$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\left(21\sqrt{a}B-5A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right.}{64\sqrt{2}a^{3/4}c^{11/4}}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} - \frac{\left(21\sqrt{a}B+5A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}a^{3/4}c^{11/4}} + \frac{\left(21\sqrt{a}B\right.}{}$$

Mathematica [A] time = 0.48, size = 385, normalized size = 1.20

$$\frac{-\frac{5\sqrt{2}a^{5/4}A\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{9/4}}+\frac{5\sqrt{2}a^{5/4}A\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{9/4}}-\frac{10\sqrt{2}a^{5/4}A\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{9/4}}+\frac{10\sqrt{2}a^{5/4}A\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{9/4}}-\frac{40aA\sqrt{x}}{c^2}-\frac{8Ax^{9/2}}{a+cx^2}+\frac{32aAx^{9/2}}{\left(a+cx^2\right)^2}+\frac{84(-a)^{7/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{11/4}}+\frac{84(-a)^{3/4}aB\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{11/4}}-\frac{56aBx^{3/2}}{c^2}-\frac{24Bx^{11/2}}{a+cx^2}+\frac{32aBx^{11/2}}{\left(a+cx^2\right)^2}+\frac{8Ax^{5/2}}{c}+\frac{24Bx^{7/2}}{c}}{128a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-40*a*A*Sqrt[x])/c^2 - (56*a*B*x^(3/2))/c^2 + (8*A*x^(5/2))/c + (24*B*x^(
7/2))/c + (32*a*A*x^(9/2))/(a + c*x^2)^2 + (32*a*B*x^(11/2))/(a + c*x^2)^2
- (8*A*x^(9/2))/(a + c*x^2) - (24*B*x^(11/2))/(a + c*x^2) - (10*Sqrt[2]*a^(
5/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (10*Sqrt[2]
*a^(5/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (84*(-a
)^(7/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(11/4) + (84*(-a)^(3/4)*a
*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(11/4) - (5*Sqrt[2]*a^(5/4)*A*L
og[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4) + (5*Sqr
t[2]*a^(5/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/
c^(9/4))/(128*a^2)
```

IntegrateAlgebraic [A] time = 1.19, size = 191, normalized size = 0.60

$$-\frac{\left(21\sqrt{a}B+5A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{32\sqrt{2}a^{3/4}c^{11/4}}-\frac{\left(21\sqrt{a}B-5A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{32\sqrt{2}a^{3/4}c^{11/4}}-\frac{\sqrt{x}\left(5aA+7aBx+9Acx^2+11Bcx^3\right)}{16c^2\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -1/16*(Sqrt[x]*(5*a*A + 7*a*B*x + 9*A*c*x^2 + 11*B*c*x^3))/(c^2*(a + c*x^2)
^2) - ((21*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]*a
^(1/4)*c^(1/4)*Sqrt[x])])/(32*Sqrt[2]*a^(3/4)*c^(11/4)) - ((21*Sqrt[a]*B -
5*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x
)])/(32*Sqrt[2]*a^(3/4)*c^(11/4))
```

fricas [B] time = 0.46, size = 986, normalized size = 3.08

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*((c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sqrt(-(a*c^5*sqrt(-(194481*B^4*a^2
- 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 210*A*B)/(a*c^5))*log(-(19
4481*B^4*a^2 - 625*A^4*c^2)*sqrt(x) + (21*B*a^3*c^8*sqrt(-(194481*B^4*a^2 -
 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 2205*A*B^2*a^2*c^3 + 125*A^
3*a*c^4)*sqrt(-(a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c
^2)/(a^3*c^11)) + 210*A*B)/(a*c^5))) - (c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sq
rt(-(a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^
11)) + 210*A*B)/(a*c^5))*log(-(194481*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (21*
B*a^3*c^8*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^1
1)) - 2205*A*B^2*a^2*c^3 + 125*A^3*a*c^4)*sqrt(-(a*c^5*sqrt(-(194481*B^4*a^
2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 210*A*B)/(a*c^5))) - (c^
4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sqrt((a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^
2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 210*A*B)/(a*c^5))*log(-(194481*B^4*a
^2 - 625*A^4*c^2)*sqrt(x) + (21*B*a^3*c^8*sqrt(-(194481*B^4*a^2 - 22050*A^2
*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 2205*A*B^2*a^2*c^3 - 125*A^3*a*c^4)*s
qrt((a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^
11)) - 210*A*B)/(a*c^5))) + (c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sqrt((a*c^5*s
qrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 210*A
*B)/(a*c^5))*log(-(194481*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (21*B*a^3*c^8*sq
rt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 2205*A
*B^2*a^2*c^3 - 125*A^3*a*c^4)*sqrt((a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2
*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 210*A*B)/(a*c^5))) - 4*(11*B*c*x^3 +
9*A*c*x^2 + 7*B*a*x + 5*A*a)*sqrt(x))/(c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)
```

giac [A] time = 0.22, size = 293, normalized size = 0.92

$$-\frac{11 \, B c x^{\frac{7}{2}} + 9 \, A c x^{\frac{5}{2}} + 7 \, B a x^{\frac{3}{2}} + 5 \, A a \sqrt{x}}{16 \, {\left(c x^{2} + a\right)}^{2} c^{2}} + \frac{\sqrt{2} {\left(5 \, \left(a c^{3}\right)^{\frac{1}{4}} A c^{2} + 21 \, \left(a c^{3}\right)^{\frac{3}{4}} B\right)} \arctan\left(\frac{\sqrt{2} {\left(\sqrt{2} \left(\frac{a}{c}\right)^{\frac{1}{4}} + 2 \, \sqrt{x}\right)}}{2 \, \left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64 \, a c^{5}} + \frac{\sqrt{2} {\left(5 \, \left(a c^{3}\right)^{\frac{1}{4}} A c^{2} + 21 \, \left(a c^{3}\right)^{\frac{3}{4}} B\right)} \arctan\left(-\frac{\sqrt{2} {\left(\sqrt{2} \left(\frac{a}{c}\right)^{\frac{1}{4}} - 2 \, \sqrt{x}\right)}}{2 \, \left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64 \, a c^{5}} + \frac{\sqrt{2} {\left(5 \, \left(a c^{3}\right)^{\frac{1}{4}} A c^{2} - 21 \, \left(a c^{3}\right)^{\frac{3}{4}} B\right)} \log\left(\sqrt{2} \sqrt{x} \left(\frac{a}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{a}{c}}\right)}{128 \, a c^{5}} - \frac{\sqrt{2} {\left(5 \, \left(a c^{3}\right)^{\frac{1}{4}} A c^{2} - 21 \, \left(a c^{3}\right)^{\frac{3}{4}} B\right)} \log\left(-\sqrt{2} \sqrt{x} \left(\frac{a}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{a}{c}}\right)}{128 \, a c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] -1/16*(11*B*c*x^(7/2) + 9*A*c*x^(5/2) + 7*B*a*x^(3/2) + 5*A*a*sqrt(x))/((c*
x^2 + a)^2*c^2) + 1/64*sqrt(2)*(5*(a*c^3)^(1/4)*A*c^2 + 21*(a*c^3)^(3/4)*B)
*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^5)
+ 1/64*sqrt(2)*(5*(a*c^3)^(1/4)*A*c^2 + 21*(a*c^3)^(3/4)*B)*arctan(-1/2*sqr
t(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a*c^5) + 1/128*sqrt(2)
*(5*(a*c^3)^(1/4)*A*c^2 - 21*(a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/
4) + x + sqrt(a/c))/(a*c^5) - 1/128*sqrt(2)*(5*(a*c^3)^(1/4)*A*c^2 - 21*(a*
c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^5)
```

maple [A] time = 0.06, size = 327, normalized size = 1.02

$$\frac{5 \left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, A \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64 a \,c^{2}}+\frac{5 \left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, A \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64 a \,c^{2}}+\frac{5 \left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, A \ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128 a \,c^{2}}+\frac{21 \sqrt{2}\, B \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64 \left(\frac{a}{c}\right)^{\frac{1}{4}} c^{3}}+\frac{21 \sqrt{2}\, B \arctan\left(\frac{\sqrt{2}\, \sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64 \left(\frac{a}{c}\right)^{\frac{1}{4}} c^{3}}+\frac{21 \sqrt{2}\, B \ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}} \sqrt{2}\, \sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128 \left(\frac{a}{c}\right)^{\frac{1}{4}} c^{3}}+\frac{-\frac{11 B \,x^{\frac{7}{2}}}{16 c}-\frac{9 A \,x^{\frac{5}{2}}}{16 c}-\frac{7 B a \,x^{\frac{3}{2}}}{16 c^{2}}-\frac{5 A a \sqrt{x}}{16 c^{2}}}{\left(c \,x^{2}+a \right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(-11/32*B/c*x^(7/2)-9/32*A/c*x^(5/2)-7/32*B*a/c^2*x^(3/2)-5/32*a*A/c^2*x^
(1/2))/(c*x^2+a)^2+5/128/c^2*A*(a/c)^(1/4)/a*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1
/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64/
c^2*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/64/c^2*
A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+21/128/c^3*B/
(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)
^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+21/64/c^3*B/(a/c)^(1/4)*2^(1/2)*arctan
(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+21/64/c^3*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.33, size = 292, normalized size = 0.91

$$-\frac{11\,Bcx^{\frac{7}{2}}+9\,Acx^{\frac{5}{2}}+7\,Bax^{\frac{3}{2}}+5\,Aa\sqrt{x}}{16\left(c^4x^4+2\,ac^3x^2+a^2c^2\right)}+\frac{\frac{2\sqrt{2}\left(21\,B\sqrt{a}+5\,A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(21\,B\sqrt{a}+5\,A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(21\,B\sqrt{a}-5\,A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(21\,B\sqrt{a}-5\,A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{128\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/16*(11*B*c*x^(7/2) + 9*A*c*x^(5/2) + 7*B*a*x^(3/2) + 5*A*a*sqrt(x))/(c^4
*x^4 + 2*a*c^3*x^2 + a^2*c^2) + 1/128*(2*sqrt(2)*(21*B*sqrt(a) + 5*A*sqrt(c
))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sq
rt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(21*B*s
qrt(a) + 5*A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt
(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c))
 - sqrt(2)*(21*B*sqrt(a) - 5*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x)
 + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(21*B*sqrt(a) - 5*A*sqr
t(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*
c^(3/4)))/c^2
```

mupad [B] time = 1.29, size = 686, normalized size = 2.14

$$-2\,\mathrm{atanh}\left(\frac{25\,A^2\sqrt{x}\,\sqrt{\frac{441\,B^2\sqrt{-a^3c^{11}}}{4096\,a^2c^{11}}-\frac{25\,A^2\sqrt{-a^3c^{11}}}{4096\,a^3c^{10}}-\frac{105\,A\,B}{2048\,a\,c^5}}}{32\left(\frac{525\,A^2B}{2048\,c^3}-\frac{9261\,B^3a}{2048\,c^4}+\frac{125\,A^3\sqrt{-a^3c^{11}}}{2048\,a^2c^8}-\frac{2205\,A\,B^2\sqrt{-a^3c^{11}}}{2048\,a\,c^9}\right)}-\frac{441\,B^2a\sqrt{x}\,\sqrt{\frac{441\,B^2\sqrt{-a^3c^{11}}}{4096\,a^2c^{11}}-\frac{25\,A^2\sqrt{-a^3c^{11}}}{4096\,a^3c^{10}}-\frac{105\,A\,B}{2048\,a\,c^5}}}{32\left(\frac{525\,A^2B}{2048\,c^2}-\frac{9261\,B^3a}{2048\,c^3}+\frac{125\,A^3\sqrt{-a^3c^{11}}}{2048\,a^2c^7}-\frac{2205\,A\,B^2\sqrt{-a^3c^{11}}}{2048\,a\,c^8}\right)}\right)\sqrt{-\frac{25\,A^2c\sqrt{-a^3c^{11}}-441\,B^2a\sqrt{-a^3c^{11}}+210\,A\,B\,a^2c^6}{4096\,a^3c^{11}}}-2\,\mathrm{atanh}\left(\frac{25\,A^2\sqrt{x}\,\sqrt{\frac{25\,A^2\sqrt{-a^3c^{11}}}{4096\,a^3c^{10}}-\frac{105\,A\,B}{2048\,a\,c^5}-\frac{441\,B^2\sqrt{-a^3c^{11}}}{4096\,a^2c^{11}}}}{32\left(\frac{525\,A^2B}{2048\,c^3}-\frac{9261\,B^3a}{2048\,c^4}-\frac{125\,A^3\sqrt{-a^3c^{11}}}{2048\,a^2c^8}+\frac{2205\,A\,B^2\sqrt{-a^3c^{11}}}{2048\,a\,c^9}\right)}-\frac{441\,B^2a\sqrt{x}\,\sqrt{\frac{25\,A^2\sqrt{-a^3c^{11}}}{4096\,a^3c^{10}}-\frac{105\,A\,B}{2048\,a\,c^5}-\frac{441\,B^2\sqrt{-a^3c^{11}}}{4096\,a^2c^{11}}}}{32\left(\frac{525\,A^2B}{2048\,c^2}-\frac{9261\,B^3a}{2048\,c^3}-\frac{125\,A^3\sqrt{-a^3c^{11}}}{2048\,a^2c^7}+\frac{2205\,A\,B^2\sqrt{-a^3c^{11}}}{2048\,a\,c^8}\right)}\right)\sqrt{-\frac{441\,B^2a\sqrt{-a^3c^{11}}-25\,A^2c\sqrt{-a^3c^{11}}+210\,A\,B\,a^2c^6}{4096\,a^3c^{11}}}-\frac{\frac{9\,A\,x^{5/2}}{16\,c}+\frac{11\,B\,x^{7/2}}{16\,c}+\frac{5\,A\,a\sqrt{x}}{16\,c^2}+\frac{7\,B\,a\,x^{3/2}}{16\,c^2}}{a^2+2\,a\,c\,x^2+c^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] - 2*atanh((25*A^2*x^(1/2)*((441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*c^11) - (2
5*A^2*(-a^3*c^11)^(1/2))/(4096*a^3*c^10) - (105*A*B)/(2048*a*c^5))^(1/2))/(
32*((525*A^2*B)/(2048*c^3) - (9261*B^3*a)/(2048*c^4) + (125*A^3*(-a^3*c^11)
^(1/2))/(2048*a^2*c^8) - (2205*A*B^2*(-a^3*c^11)^(1/2))/(2048*a*c^9))) - (4
41*B^2*a*x^(1/2)*((441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*c^11) - (25*A^2*(-a
^3*c^11)^(1/2))/(4096*a^3*c^10) - (105*A*B)/(2048*a*c^5))^(1/2))/(32*((525*
A^2*B)/(2048*c^2) - (9261*B^3*a)/(2048*c^3) + (125*A^3*(-a^3*c^11)^(1/2))/(
2048*a^2*c^7) - (2205*A*B^2*(-a^3*c^11)^(1/2))/(2048*a*c^8))))*(-(25*A^2*c*
(-a^3*c^11)^(1/2) - 441*B^2*a*(-a^3*c^11)^(1/2) + 210*A*B*a^2*c^6)/(4096*a^
3*c^11))^(1/2) - 2*atanh((25*A^2*x^(1/2)*((25*A^2*(-a^3*c^11)^(1/2))/(4096*
a^3*c^10) - (105*A*B)/(2048*a*c^5) - (441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*
c^11))^(1/2))/(32*((525*A^2*B)/(2048*c^3) - (9261*B^3*a)/(2048*c^4) - (125*
A^3*(-a^3*c^11)^(1/2))/(2048*a^2*c^8) + (2205*A*B^2*(-a^3*c^11)^(1/2))/(204
8*a*c^9))) - (441*B^2*a*x^(1/2)*((25*A^2*(-a^3*c^11)^(1/2))/(4096*a^3*c^10)
 - (105*A*B)/(2048*a*c^5) - (441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*c^11))^(1
/2))/(32*((525*A^2*B)/(2048*c^2) - (9261*B^3*a)/(2048*c^3) - (125*A^3*(-a^3
*c^11)^(1/2))/(2048*a^2*c^7) + (2205*A*B^2*(-a^3*c^11)^(1/2))/(2048*a*c^8))
))*(-(441*B^2*a*(-a^3*c^11)^(1/2) - 25*A^2*c*(-a^3*c^11)^(1/2) + 210*A*B*a^
2*c^6)/(4096*a^3*c^11))^(1/2) - ((9*A*x^(5/2))/(16*c) + (11*B*x^(7/2))/(16*
```

```
c) + (5*A*a*x^(1/2))/(16*c^2) + (7*B*a*x^(3/2))/(16*c^2))/(a^2 + c^2*x^4 +
2*a*c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.427 $\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=325

$$-\frac{\left(5\sqrt{a}B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{5/4}c^{9/4}}+\frac{\left(5\sqrt{a}B-3A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{5/4}c^{9/4}}-$$

Rubi [A] time = 0.28, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {819, 821, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(5\sqrt{a}B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{5/4}c^{9/4}}+\frac{\left(5\sqrt{a}B-3A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{5/4}c^{9/4}}-\frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}a^{5/4}c^{9/4}}+\frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{32\sqrt{2}a^{5/4}c^{9/4}}-\frac{\sqrt{x}(5aB-3Acx)}{16ac^2\left(a+cx^2\right)}-\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(x^(3/2)*(A + B*x))/(4*c*(a + c*x^2)^2) - (Sqrt[x]*(5*a*B - 3*A*c*x))/(16*
a*c^2*(a + c*x^2)) - ((5*Sqrt[a]*B + 3*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/
4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(5/4)*c^(9/4)) + ((5*Sqrt[a]*B + 3*A*Sq
rt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(5/4)*c
^(9/4)) - ((5*Sqrt[a]*B - 3*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(5/4)*c^(9/4)) + ((5*Sqrt[a]*B - 3*A*
Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sq
rt[2]*a^(5/4)*c^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx = -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\int \frac{\sqrt{x}\left(\frac{3aA}{2}+\frac{5aBx}{2}\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\int \frac{\frac{5a^2B}{4}+\frac{3}{4}aAcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^2c^2}$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{5a^2B}{4}+\frac{3}{4}aAcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^2c^2}$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} - \frac{\left(3A-\frac{5\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32ac^2} + \cdots$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\left(3A+\frac{5\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{64ac^2} + \cdots$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\left(3A-\frac{5\sqrt{a}\,B}{\sqrt{c}}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{5/4}c^{7/4}} - \cdots$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{5/4}c^{9/4}} + \frac{\left(5\sqrt{a}\,B \cdots\right.}{\cdots}$$

Mathematica [A] time = 0.34, size = 372, normalized size = 1.14

$$\frac{-\frac{5\sqrt{2}\,a^{5/4}B\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{9/4}}+\frac{5\sqrt{2}\,a^{5/4}B\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{9/4}}-\frac{10\sqrt{2}\,a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{9/4}}+\frac{10\sqrt{2}\,a^{5/4}B\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{9/4}}-\frac{12(-a)^{3/4}A\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}}+\frac{12(-a)^{3/4}A\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}}+\frac{8Ax^{7/2}}{a+cx^2}+\frac{32aAx^{7/2}}{\left(a+cx^2\right)^2}-\frac{40aB\sqrt{x}}{c^2}-\frac{8Bx^{9/2}}{a+cx^2}+\frac{32aBx^{9/2}}{\left(a+cx^2\right)^2}-\frac{8Ax^{3/2}}{c}+\frac{8Bx^{5/2}}{c}}{128a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-40*a*B*Sqrt[x])/c^2 - (8*A*x^(3/2))/c + (8*B*x^(5/2))/c + (32*a*A*x^(7/2
))/(a + c*x^2)^2 + (32*a*B*x^(9/2))/(a + c*x^2)^2 + (8*A*x^(7/2))/(a + c*x^
2) - (8*B*x^(9/2))/(a + c*x^2) - (10*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*
c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (10*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt
[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) - (12*(-a)^(3/4)*A*ArcTan[(c^(1/4)*S
qrt[x])/(-a)^(1/4)])/c^(7/4) + (12*(-a)^(3/4)*A*ArcTanh[(c^(1/4)*Sqrt[x])/(
-a)^(1/4)])/c^(7/4) - (5*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4) + (5*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] + Sq
rt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4))/(128*a^2)
```

IntegrateAlgebraic [A] time = 1.29, size = 208, normalized size = 0.64

$$-\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}\right)}{32\sqrt{2}\,a^{5/4}c^{9/4}}+\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{32\sqrt{2}\,a^{5/4}c^{9/4}}+\frac{-5a^2B\sqrt{x}-aAcx^{3/2}-9aBcx^{5/2}+3Ac^2x^{7/2}}{16ac^2\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] (-5*a^2*B*Sqrt[x] - a*A*c*x^(3/2) - 9*a*B*c*x^(5/2) + 3*A*c^2*x^(7/2))/(16*
a*c^2*(a + c*x^2)^2) - ((5*Sqrt[a]*B + 3*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[
c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(32*Sqrt[2]*a^(5/4)*c^(9/4)) + ((
5*Sqrt[a]*B - 3*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[
a] + Sqrt[c]*x)])/(32*Sqrt[2]*a^(5/4)*c^(9/4))
```

fricas [B] time = 0.47, size = 1031, normalized size = 3.17

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2)*sqrt(-(a^2*c^4*sqrt(-(625*B^4*
a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 30*A*B)/(a^2*c^4))*log(-(6
25*B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (3*A*a^4*c^7*sqrt(-(625*B^4*a^2 - 450*A^
2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 125*B^3*a^3*c^2 - 45*A^2*B*a^2*c^3)*sq
rt(-(a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9))
+ 30*A*B)/(a^2*c^4))) - (a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2)*sqrt(-(a^2*c^
4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 30*A*B)/(
a^2*c^4))*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (3*A*a^4*c^7*sqrt(-(625
*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 125*B^3*a^3*c^2 - 45*
A^2*B*a^2*c^3)*sqrt(-(a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4
*c^2)/(a^5*c^9)) + 30*A*B)/(a^2*c^4))) - (a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c
^2)*sqrt((a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c
^9)) - 30*A*B)/(a^2*c^4))*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (3*A*a^
4*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) - 125*B
^3*a^3*c^2 + 45*A^2*B*a^2*c^3)*sqrt((a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B
^2*a*c + 81*A^4*c^2)/(a^5*c^9)) - 30*A*B)/(a^2*c^4))) + (a*c^4*x^4 + 2*a^2*
c^3*x^2 + a^3*c^2)*sqrt((a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*
A^4*c^2)/(a^5*c^9)) - 30*A*B)/(a^2*c^4))*log(-(625*B^4*a^2 - 81*A^4*c^2)*sq
rt(x) - (3*A*a^4*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^
5*c^9)) - 125*B^3*a^3*c^2 + 45*A^2*B*a^2*c^3)*sqrt((a^2*c^4*sqrt(-(625*B^4*
a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) - 30*A*B)/(a^2*c^4))) - 4*(3
*A*c^2*x^3 - 9*B*a*c*x^2 - A*a*c*x - 5*B*a^2)*sqrt(x))/(a*c^4*x^4 + 2*a^2*c
^3*x^2 + a^3*c^2)
```

giac [A] time = 0.20, size = 298, normalized size = 0.92

$$\frac{\sqrt{2}\left(5\left(ac^3\right)^{\frac{1}{4}}Bac+3\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64a^2c^4}+\frac{\sqrt{2}\left(5\left(ac^3\right)^{\frac{1}{4}}Bac+3\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64a^2c^4}+\frac{\sqrt{2}\left(5\left(ac^3\right)^{\frac{1}{4}}Bac-3\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128a^2c^4}-\frac{\sqrt{2}\left(5\left(ac^3\right)^{\frac{1}{4}}Bac-3\left(ac^3\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128a^2c^4}+\frac{3Ac^2x^{\frac{7}{2}}-9Bacx^{\frac{5}{2}}-Aacx^{\frac{3}{2}}-5Ba^2\sqrt{x}}{16\left(cx^2+a\right)^2ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/64*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c + 3*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)
*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 1/64*sqrt(2)*(5
*(a*c^3)^(1/4)*B*a*c + 3*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c
)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 1/128*sqrt(2)*(5*(a*c^3)^(1/4
)*B*a*c - 3*(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c
))/(a^2*c^4) - 1/128*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c - 3*(a*c^3)^(3/4)*A)*lo
g(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^4) + 1/16*(3*A*c^2*x
^(7/2) - 9*B*a*c*x^(5/2) - A*a*c*x^(3/2) - 5*B*a^2*sqrt(x))/((c*x^2 + a)^2*
a*c^2)
```

maple [A] time = 0.06, size = 335, normalized size = 1.03

$$\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}ac^2}+\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}ac^2}+\frac{3\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}ac^2}+\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64ac^2}+\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64ac^2}+\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128ac^2}+\frac{\frac{3Ax^{\frac{7}{2}}}{16a}-\frac{9Bx^{\frac{5}{2}}}{16c}-\frac{Ax^{\frac{3}{2}}}{16c}-\frac{5Ba\sqrt{x}}{16c^2}}{\left(cx^2+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(3/32*A/a*x^(7/2)-9/32*B/c*x^(5/2)-1/32*A/c*x^(3/2)-5/32*B*a/c^2*x^(1/2))
/(c*x^2+a)^2+5/64/a/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)-1)+5/128/a/c^2*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2
)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64/a/c^2*B*(a
/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/128/a/c^2*A/(a/c)
^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4
)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(
1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/64/a/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)
/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.22, size = 312, normalized size = 0.96

$$\frac{3\,Ac^2x^{\frac{7}{2}} - 9\,Bacx^{\frac{5}{2}} - Aacx^{\frac{3}{2}} - 5\,Ba^2\sqrt{x}}{16\left(ac^4x^4 + 2\,a^2c^3x^2 + a^3c^2\right)} + \frac{\frac{2\,\sqrt{2}\left(5\,Ba\sqrt{c}+3\,A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\,\sqrt{2}\left(5\,Ba\sqrt{c}+3\,A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{\sqrt{2}\left(5\,Ba\sqrt{c}-3\,A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}} - \frac{\sqrt{2}\left(5\,Ba\sqrt{c}-3\,A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{128\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(3*A*c^2*x^(7/2) - 9*B*a*c*x^(5/2) - A*a*c*x^(3/2) - 5*B*a^2*sqrt(x))/
(a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2) + 1/128*(2*sqrt(2)*(5*B*a*sqrt(c) + 3
*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(
x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt
(2)*(5*B*a*sqrt(c) + 3*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^
(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqr
t(c))*sqrt(c)) + sqrt(2)*(5*B*a*sqrt(c) - 3*A*sqrt(a)*c)*log(sqrt(2)*a^(1/4
)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(5*B*a
*sqrt(c) - 3*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x
+ sqrt(a))/(a^(3/4)*c^(3/4)))/(a*c^2)
```

mupad [B] time = 1.29, size = 697, normalized size = 2.14

$$2\,\mathrm{atanh}\left(\frac{25\,B^2\sqrt{x}\sqrt{\frac{25\,B^2\sqrt{-a^5c^9}}{4096\,a^4c^9}-\frac{9\,A^2\sqrt{-a^5c^9}}{4096\,a^5c^8}-\frac{15\,A\,B}{2048\,a^2c^4}}}{32\left(\frac{27\,A^3}{2048\,a^2c}-\frac{75\,A\,B^2}{2048\,a\,c^2}+\frac{125\,B^3\sqrt{-a^5c^9}}{2048\,a^3c^7}-\frac{45\,A^2B\sqrt{-a^5c^9}}{2048\,a^4c^6}\right)}+\frac{9\,A^2\sqrt{x}\sqrt{\frac{25\,B^2\sqrt{-a^5c^9}}{4096\,a^4c^9}-\frac{9\,A^2\sqrt{-a^5c^9}}{4096\,a^5c^8}-\frac{15\,A\,B}{2048\,a^2c^4}}}{32\left(\frac{75\,A\,B^2}{2048\,c^3}-\frac{27\,A^3}{2048\,a\,c^2}-\frac{125\,B^3\sqrt{-a^5c^9}}{2048\,a^2c^8}+\frac{45\,A^2B\sqrt{-a^5c^9}}{2048\,a^3c^7}\right)}\right)\sqrt{-\frac{9\,A^2c\sqrt{-a^5c^9}-25\,B^2a\sqrt{-a^5c^9}+30\,A\,B\,a^3c^5}{4096\,a^5c^9}}+2\,\mathrm{atanh}\left(\frac{25\,B^2\sqrt{x}\sqrt{\frac{9\,A^2\sqrt{-a^5c^9}}{4096\,a^5c^8}-\frac{15\,A\,B}{2048\,a^2c^4}-\frac{25\,B^2\sqrt{-a^5c^9}}{4096\,a^4c^9}}}{32\left(\frac{27\,A^3}{2048\,a^2c}-\frac{75\,A\,B^2}{2048\,a\,c^2}-\frac{125\,B^3\sqrt{-a^5c^9}}{2048\,a^3c^7}+\frac{45\,A^2B\sqrt{-a^5c^9}}{2048\,a^4c^6}\right)}+\frac{9\,A^2\sqrt{x}\sqrt{\frac{9\,A^2\sqrt{-a^5c^9}}{4096\,a^5c^8}-\frac{15\,A\,B}{2048\,a^2c^4}-\frac{25\,B^2\sqrt{-a^5c^9}}{4096\,a^4c^9}}}{32\left(\frac{75\,A\,B^2}{2048\,c^3}-\frac{27\,A^3}{2048\,a\,c^2}+\frac{125\,B^3\sqrt{-a^5c^9}}{2048\,a^2c^8}-\frac{45\,A^2B\sqrt{-a^5c^9}}{2048\,a^3c^7}\right)}\right)\sqrt{-\frac{25\,B^2a\sqrt{-a^5c^9}-9\,A^2c\sqrt{-a^5c^9}+30\,A\,B\,a^3c^5}{4096\,a^5c^9}}-\frac{\frac{A\,x^{3/2}}{16\,c}-\frac{3\,A\,x^{7/2}}{16\,a}+\frac{9\,B\,x^{5/2}}{16\,c}+\frac{5\,B\,a\sqrt{x}}{16\,c^2}}{a^2+2\,a\,c\,x^2+c^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] 2*atanh((25*B^2*x^(1/2)*((25*B^2*(-a^5*c^9)^(1/2))/(4096*a^4*c^9) - (9*A^2*
(-a^5*c^9)^(1/2))/(4096*a^5*c^8) - (15*A*B)/(2048*a^2*c^4))^(1/2))/(32*((27
*A^3)/(2048*a^2*c) - (75*A*B^2)/(2048*a*c^2) + (125*B^3*(-a^5*c^9)^(1/2))/(
2048*a^3*c^7) - (45*A^2*B*(-a^5*c^9)^(1/2))/(2048*a^4*c^6))) + (9*A^2*x^(1/
2)*((25*B^2*(-a^5*c^9)^(1/2))/(4096*a^4*c^9) - (9*A^2*(-a^5*c^9)^(1/2))/(40
96*a^5*c^8) - (15*A*B)/(2048*a^2*c^4))^(1/2))/(32*((75*A*B^2)/(2048*c^3) -
(27*A^3)/(2048*a*c^2) - (125*B^3*(-a^5*c^9)^(1/2))/(2048*a^2*c^8) + (45*A^2
*B*(-a^5*c^9)^(1/2))/(2048*a^3*c^7))))*(-(9*A^2*c*(-a^5*c^9)^(1/2) - 25*B^2
*a*(-a^5*c^9)^(1/2) + 30*A*B*a^3*c^5)/(4096*a^5*c^9))^(1/2) + 2*atanh((25*B
^2*x^(1/2)*((9*A^2*(-a^5*c^9)^(1/2))/(4096*a^5*c^8) - (15*A*B)/(2048*a^2*c^
4) - (25*B^2*(-a^5*c^9)^(1/2))/(4096*a^4*c^9))^(1/2))/(32*((27*A^3)/(2048*a
^2*c) - (75*A*B^2)/(2048*a*c^2) - (125*B^3*(-a^5*c^9)^(1/2))/(2048*a^3*c^7)
 + (45*A^2*B*(-a^5*c^9)^(1/2))/(2048*a^4*c^6))) + (9*A^2*x^(1/2)*((9*A^2*(-
a^5*c^9)^(1/2))/(4096*a^5*c^8) - (15*A*B)/(2048*a^2*c^4) - (25*B^2*(-a^5*c^
9)^(1/2))/(4096*a^4*c^9))^(1/2))/(32*((75*A*B^2)/(2048*c^3) - (27*A^3)/(204
8*a*c^2) + (125*B^3*(-a^5*c^9)^(1/2))/(2048*a^2*c^8) - (45*A^2*B*(-a^5*c^9)
^(1/2))/(2048*a^3*c^7))))*(-(25*B^2*a*(-a^5*c^9)^(1/2) - 9*A^2*c*(-a^5*c^9)
^(1/2) + 30*A*B*a^3*c^5)/(4096*a^5*c^9))^(1/2) - ((A*x^(3/2))/(16*c) - (3*A
```

```
*x^(7/2))/(16*a) + (9*B*x^(5/2))/(16*c) + (5*B*a*x^(1/2))/(16*c^2))/(a^2 +
c^2*x^4 + 2*a*c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.428 $\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=315

$$\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-\frac{3(}{}$$

Rubi [A] time = 0.28, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {819, 823, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-\frac{3\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}a^{7/4}c^{7/4}}+\frac{3\left(\sqrt{a}B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{32\sqrt{2}a^{7/4}c^{7/4}}-\frac{\sqrt{x}(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}(A+3Bx)}{16ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(A + B*x))/(4*c*(a + c*x^2)^2) + (Sqrt[x]*(A + 3*B*x))/(16*a*c*(a
 + c*x^2)) - (3*(Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/a^(1/4)])/(32*Sqrt[2]*a^(7/4)*c^(7/4)) + (3*(Sqrt[a]*B + A*Sqrt[c])*ArcTa
n[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(7/4)*c^(7/4)) + (3
*(Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/(64*Sqrt[2]*a^(7/4)*c^(7/4)) - (3*(Sqrt[a]*B - A*Sqrt[c])*Log[Sqr
t[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(7/4)*c^
(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx = -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\int \frac{\frac{aA}{2}+\frac{3aBx}{2}}{\sqrt{x}\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)}-\frac{\int \frac{-\frac{3}{4}a^2Ac-\frac{3}{4}a^2Bcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^3c^2}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)}-\frac{\text{Subst}\left(\int \frac{-\frac{3}{4}a^2Ac-\frac{3}{4}a^2Bcx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4a^3c^2}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)}-\frac{\left(3\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{32a^{3/2}c^2}+ \cdots$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)}+\frac{\left(3\left(\sqrt{a}\,B+A\sqrt{c}\right)\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x} \cdots\right.}{64a^{3/2}c^2} \cdots$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)}+\frac{3\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{7/4}c^{7/4}} - \cdots$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)}-\frac{3\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{7/4}c^{7/4}}+\frac{3\left(\sqrt{a}\,B+ \cdots\right.}{\cdots}$$

Mathematica [A] time = 0.17, size = 360, normalized size = 1.14

$$\frac{-\frac{3\sqrt{2}\sqrt[4]{a}A\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{5/4}}+\frac{3\sqrt{2}\sqrt[4]{a}A\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{c^{5/4}}-\frac{6\sqrt{2}\sqrt[4]{a}A\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{6\sqrt{2}\sqrt[4]{a}A\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{5/4}}+\frac{24Ax^{5/2}}{a+cx^2}+\frac{32aAx^{5/2}}{\left(a+cx^2\right)^2}-\frac{12(-a)^{3/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}}+\frac{12(-a)^{3/4}B\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{7/4}}+\frac{8Bx^{7/2}}{a+cx^2}+\frac{32aBx^{7/2}}{\left(a+cx^2\right)^2}-\frac{24A\sqrt{x}}{c}-\frac{8Bx^{3/2}}{c}}{128a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-24*A*Sqrt[x])/c - (8*B*x^(3/2))/c + (32*a*A*x^(5/2))/(a + c*x^2)^2 + (32
*a*B*x^(7/2))/(a + c*x^2)^2 + (24*A*x^(5/2))/(a + c*x^2) + (8*B*x^(7/2))/(a
 + c*x^2) - (6*Sqrt[2]*a^(1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/
4)])/c^(5/4) + (6*Sqrt[2]*a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^
(1/4)])/c^(5/4) - (12*(-a)^(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^
(7/4) + (12*(-a)^(3/4)*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(7/4) - (
3*Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]
*x])/c^(5/4) + (3*Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*S
qrt[x] + Sqrt[c]*x])/c^(5/4))/(128*a^2)
```

IntegrateAlgebraic [A] time = 1.17, size = 198, normalized size = 0.63

$$-\frac{3\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{32\sqrt{2}\,a^{7/4}c^{7/4}}-\frac{3\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{32\sqrt{2}\,a^{7/4}c^{7/4}}+\frac{-3aA\sqrt{x}-aBx^{3/2}+Acx^{5/2}+3Bcx^{7/2}}{16ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] (-3*a*A*Sqrt[x] - a*B*x^(3/2) + A*c*x^(5/2) + 3*B*c*x^(7/2))/(16*a*c*(a + c
*x^2)^2) - (3*(Sqrt[a]*B + A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(Sqrt[2]
*a^(1/4)*c^(1/4)*Sqrt[x])])/(32*Sqrt[2]*a^(7/4)*c^(7/4)) - (3*(Sqrt[a]*B -
A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] + Sqrt[c]*x)]
)/(32*Sqrt[2]*a^(7/4)*c^(7/4))
```

fricas [B] time = 0.47, size = 982, normalized size = 3.12

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*(3*(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 -
 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))*log(-27*(B^4*a^2 -
 A^4*c^2)*sqrt(x) + 27*(B*a^6*c^5*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)
/(a^7*c^7)) - A*B^2*a^3*c^2 + A^3*a^2*c^3)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 -
2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))) - 3*(a*c^3*x^4 + 2
*a^2*c^2*x^2 + a^3*c)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c
^2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))*log(-27*(B^4*a^2 - A^4*c^2)*sqrt(x) - 27
*(B*a^6*c^5*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - A*B^2*a^
3*c^2 + A^3*a^2*c^3)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^
2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))) - 3*(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)*
sqrt((a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)
/(a^3*c^3))*log(-27*(B^4*a^2 - A^4*c^2)*sqrt(x) + 27*(B*a^6*c^5*sqrt(-(B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) + A*B^2*a^3*c^2 - A^3*a^2*c^3)*sq
rt((a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)/(
a^3*c^3))) + 3*(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)*sqrt((a^3*c^3*sqrt(-(B^4
*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)/(a^3*c^3))*log(-27*(B^4
*a^2 - A^4*c^2)*sqrt(x) - 27*(B*a^6*c^5*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^
4*c^2)/(a^7*c^7)) + A*B^2*a^3*c^2 - A^3*a^2*c^3)*sqrt((a^3*c^3*sqrt(-(B^4*a
^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)/(a^3*c^3))) + 4*(3*B*c*x^
3 + A*c*x^2 - B*a*x - 3*A*a)*sqrt(x))/(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)
```

giac [A] time = 0.22, size = 289, normalized size = 0.92

$$\frac{3\,Bcx^{\frac{7}{2}} + Acx^{\frac{5}{2}} - Bax^{\frac{3}{2}} - 3\,Aa\sqrt{x}}{16\,{\left(cx^{2} + a\right)}^{2} ac} + \frac{3\,\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}} Ac^{2} + \left(ac^{3}\right)^{\frac{3}{4}} B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}} + 2\,\sqrt{x}\right)}{2\,\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{2}c^{4}} + \frac{3\,\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}} Ac^{2} + \left(ac^{3}\right)^{\frac{3}{4}} B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}} - 2\,\sqrt{x}\right)}{2\,\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{2}c^{4}} + \frac{3\,\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}} Ac^{2} - \left(ac^{3}\right)^{\frac{3}{4}} B\right)\log\left(\sqrt{2}\,\sqrt{x}\,\left(\frac{a}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{a}{c}}\right)}{128\,a^{2}c^{4}} - \frac{3\,\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}} Ac^{2} - \left(ac^{3}\right)^{\frac{3}{4}} B\right)\log\left(-\sqrt{2}\,\sqrt{x}\,\left(\frac{a}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{a}{c}}\right)}{128\,a^{2}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/16*(3*B*c*x^(7/2) + A*c*x^(5/2) - B*a*x^(3/2) - 3*A*a*sqrt(x))/((c*x^2 +
a)^2*a*c) + 3/64*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2
*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 3/64*sq
rt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*
(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 3/128*sqrt(2)*((a*c^3)^(1
/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c
))/(a^2*c^4) - 3/128*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-s
qrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^4)
```

maple [A] time = 0.06, size = 334, normalized size = 1.06

$$\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a^{2}c}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64a^{2}c}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128a^{2}c}+\frac{3\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a\,c^{2}}+\frac{3\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a\,c^{2}}+\frac{3\sqrt{2}\,B\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}a\,c^{2}}+\frac{\frac{3Bx^{\frac{7}{2}}}{16a}+\frac{Ax^{\frac{5}{2}}}{16a}-\frac{Bx^{\frac{3}{2}}}{16c}-\frac{3A\sqrt{x}}{16c}}{\left(c\,x^{2}+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(3/32*B/a*x^(7/2)+1/32*A/a*x^(5/2)-1/32*B/c*x^(3/2)-3/32*A/c*x^(1/2))/(c*
x^2+a)^2+3/128/a^2/c*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2
)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a^2/c*A*(a
/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/64/a^2/c*A*(a/c)^
(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+3/128/a/c^2*B/(a/c)^(1/
4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^
(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)
/(a/c)^(1/4)*x^(1/2)+1)+3/64/a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/
c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.35, size = 289, normalized size = 0.92

$$\frac{3\,Bcx^{\frac{7}{2}}+Acx^{\frac{5}{2}}-Bax^{\frac{3}{2}}-3\,Aa\sqrt{x}}{16\left(ac^{3}x^{4}+2\,a^{2}c^{2}x^{2}+a^{3}c\right)}+\frac{3\left(\frac{2\,\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{128\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(3*B*c*x^(7/2) + A*c*x^(5/2) - B*a*x^(3/2) - 3*A*a*sqrt(x))/(a*c^3*x^4
 + 2*a^2*c^2*x^2 + a^3*c) + 3/128*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan
(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqr
t(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*s
qrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/s
qrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*
sqrt(a) - A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt
(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/
4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/(a*c)
```

mupad [B] time = 1.29, size = 695, normalized size = 2.21

$$\frac{\frac{A\,x^{5/2}}{16\,a}+\frac{3\,B\,x^{7/2}}{16\,a}-\frac{3\,A\,\sqrt{x}}{16\,c}-\frac{B\,x^{3/2}}{16\,c}}{a^2+2\,a\,c\,x^2+c^2\,x^4}-2\,\mathrm{atanh}\left(\frac{9\,B^2\,\sqrt{x}\,\sqrt{\frac{9\,B^2\,\sqrt{-a^7\,c^7}}{4096\,a^6\,c^7}-\frac{9\,A^2\,\sqrt{-a^7\,c^7}}{4096\,a^7\,c^6}-\frac{9\,A\,B}{2048\,a^3\,c^3}}}{32\,\left(\frac{27\,B^3}{2048\,a\,c^2}-\frac{27\,A^3\,\sqrt{-a^7\,c^7}}{2048\,a^6\,c^4}-\frac{27\,A^2\,B}{2048\,a^2\,c}+\frac{27\,A\,B^2\,\sqrt{-a^7\,c^7}}{2048\,a^5\,c^5}\right)}-\frac{9\,A^2\,c\,\sqrt{x}\,\sqrt{\frac{9\,B^2\,\sqrt{-a^7\,c^7}}{4096\,a^6\,c^7}-\frac{9\,A^2\,\sqrt{-a^7\,c^7}}{4096\,a^7\,c^6}-\frac{9\,A\,B}{2048\,a^3\,c^3}}}{32\,\left(\frac{27\,B^3}{2048\,c^2}-\frac{27\,A^3\,\sqrt{-a^7\,c^7}}{2048\,a^5\,c^4}-\frac{27\,A^2\,B}{2048\,a\,c}+\frac{27\,A\,B^2\,\sqrt{-a^7\,c^7}}{2048\,a^4\,c^5}\right)}\right)\,\sqrt{-\frac{9\,\left(A^2\,c\,\sqrt{-a^7\,c^7}-B^2\,a\,\sqrt{-a^7\,c^7}+2\,A\,B\,a^4\,c^4\right)}{4096\,a^7\,c^7}}-2\,\mathrm{atanh}\left(\frac{9\,B^2\,\sqrt{x}\,\sqrt{\frac{9\,A^2\,\sqrt{-a^7\,c^7}}{4096\,a^7\,c^6}-\frac{9\,A\,B}{2048\,a^3\,c^3}-\frac{9\,B^2\,\sqrt{-a^7\,c^7}}{4096\,a^6\,c^7}}}{32\,\left(\frac{27\,B^3}{2048\,a\,c^2}+\frac{27\,A^3\,\sqrt{-a^7\,c^7}}{2048\,a^6\,c^4}-\frac{27\,A^2\,B}{2048\,a^2\,c}-\frac{27\,A\,B^2\,\sqrt{-a^7\,c^7}}{2048\,a^5\,c^5}\right)}-\frac{9\,A^2\,c\,\sqrt{x}\,\sqrt{\frac{9\,A^2\,\sqrt{-a^7\,c^7}}{4096\,a^7\,c^6}-\frac{9\,A\,B}{2048\,a^3\,c^3}-\frac{9\,B^2\,\sqrt{-a^7\,c^7}}{4096\,a^6\,c^7}}}{32\,\left(\frac{27\,B^3}{2048\,c^2}+\frac{27\,A^3\,\sqrt{-a^7\,c^7}}{2048\,a^5\,c^4}-\frac{27\,A^2\,B}{2048\,a\,c}-\frac{27\,A\,B^2\,\sqrt{-a^7\,c^7}}{2048\,a^4\,c^5}\right)}\right)\,\sqrt{-\frac{9\,\left(B^2\,a\,\sqrt{-a^7\,c^7}-A^2\,c\,\sqrt{-a^7\,c^7}+2\,A\,B\,a^4\,c^4\right)}{4096\,a^7\,c^7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] ((A*x^(5/2))/(16*a) + (3*B*x^(7/2))/(16*a) - (3*A*x^(1/2))/(16*c) - (B*x^(3
/2))/(16*c))/(a^2 + c^2*x^4 + 2*a*c*x^2) - 2*atanh((9*B^2*x^(1/2)*((9*B^2*(
-a^7*c^7)^(1/2))/(4096*a^6*c^7) - (9*A^2*(-a^7*c^7)^(1/2))/(4096*a^7*c^6) -
 (9*A*B)/(2048*a^3*c^3))^(1/2))/(32*((27*B^3)/(2048*a*c^2) - (27*A^3*(-a^7*
c^7)^(1/2))/(2048*a^6*c^4) - (27*A^2*B)/(2048*a^2*c) + (27*A*B^2*(-a^7*c^7)
^(1/2))/(2048*a^5*c^5))) - (9*A^2*c*x^(1/2)*((9*B^2*(-a^7*c^7)^(1/2))/(4096
*a^6*c^7) - (9*A^2*(-a^7*c^7)^(1/2))/(4096*a^7*c^6) - (9*A*B)/(2048*a^3*c^3
))^(1/2))/(32*((27*B^3)/(2048*c^2) - (27*A^3*(-a^7*c^7)^(1/2))/(2048*a^5*c^
4) - (27*A^2*B)/(2048*a*c) + (27*A*B^2*(-a^7*c^7)^(1/2))/(2048*a^4*c^5))))*
(-(9*(A^2*c*(-a^7*c^7)^(1/2) - B^2*a*(-a^7*c^7)^(1/2) + 2*A*B*a^4*c^4))/(40
96*a^7*c^7))^(1/2) - 2*atanh((9*B^2*x^(1/2)*((9*A^2*(-a^7*c^7)^(1/2))/(4096
*a^7*c^6) - (9*A*B)/(2048*a^3*c^3) - (9*B^2*(-a^7*c^7)^(1/2))/(4096*a^6*c^7
))^(1/2))/(32*((27*B^3)/(2048*a*c^2) + (27*A^3*(-a^7*c^7)^(1/2))/(2048*a^6*
c^4) - (27*A^2*B)/(2048*a^2*c) - (27*A*B^2*(-a^7*c^7)^(1/2))/(2048*a^5*c^5)
)) - (9*A^2*c*x^(1/2)*((9*A^2*(-a^7*c^7)^(1/2))/(4096*a^7*c^6) - (9*A*B)/(2
048*a^3*c^3) - (9*B^2*(-a^7*c^7)^(1/2))/(4096*a^6*c^7))^(1/2))/(32*((27*B^3
)/(2048*c^2) + (27*A^3*(-a^7*c^7)^(1/2))/(2048*a^5*c^4) - (27*A^2*B)/(2048*
a*c) - (27*A*B^2*(-a^7*c^7)^(1/2))/(2048*a^4*c^5))))*(-(9*(B^2*a*(-a^7*c^7)
^(1/2) - A^2*c*(-a^7*c^7)^(1/2) + 2*A*B*a^4*c^4))/(4096*a^7*c^7))^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.429 $\int \frac{\sqrt{x}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=331

$$-\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}+\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}-$$

Rubi [A] time = 0.29, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {821, 823, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}+\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}-\frac{\left(3\sqrt{a}B+5A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}a^{9/4}c^{5/4}}+\frac{\left(3\sqrt{a}B+5A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{32\sqrt{2}a^{9/4}c^{5/4}}+\frac{\sqrt{x}(aB+5Acx)}{16a^2c\left(a+cx^2\right)}-\frac{\sqrt{x}(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(a*B - A*c*x))/(4*a*c*(a + c*x^2)^2) + (Sqrt[x]*(a*B + 5*A*c*x))/
(16*a^2*c*(a + c*x^2)) - ((3*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c
^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(9/4)*c^(5/4)) + ((3*Sqrt[a]*B + 5*
A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(9/
4)*c^(5/4)) - ((3*Sqrt[a]*B - 5*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(9/4)*c^(5/4)) + ((3*Sqrt[a]*B -
5*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(6
4*Sqrt[2]*a^(9/4)*c^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
```

```
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{(a+cx^2)^3}\,dx = -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\int \frac{\frac{aB}{2}+\frac{5Acx}{2}}{\sqrt{x}(a+cx^2)^2}\,dx}{4ac}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\sqrt{x}(aB+5Acx)}{16a^2c(a+cx^2)} - \frac{\int \frac{-\frac{3}{4}a^2Bc-\frac{5}{4}aAc^2x}{\sqrt{x}(a+cx^2)}\,dx}{8a^3c^2}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\sqrt{x}(aB+5Acx)}{16a^2c(a+cx^2)} - \frac{\text{Subst}\left(\int \frac{-\frac{3}{4}a^2Bc-\frac{5}{4}aAc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^3c^2}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\sqrt{x}(aB+5Acx)}{16a^2c(a+cx^2)} + \frac{(3\sqrt{a}B-5A\sqrt{c})\,\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32a^2c^{3/2}}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\sqrt{x}(aB+5Acx)}{16a^2c(a+cx^2)} + \frac{(3\sqrt{a}B+5A\sqrt{c})\,\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{\right.}}{64a^2c^{3/2}}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\sqrt{x}(aB+5Acx)}{16a^2c(a+cx^2)} - \frac{(3\sqrt{a}B-5A\sqrt{c})\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}\right.}{64\sqrt{2}\,a^{9/4}c^{5/4}}$$

$$= -\frac{\sqrt{x}(aB-Acx)}{4ac(a+cx^2)^2} + \frac{\sqrt{x}(aB+5Acx)}{16a^2c(a+cx^2)} - \frac{(3\sqrt{a}B+5A\sqrt{c})\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{9/4}c^{5/4}} + \frac{(3\sqrt{a}B}{}$$

Mathematica [A] time = 0.18, size = 356, normalized size = 1.08

$$\frac{-\frac{3\sqrt{2}a^{5/4}B\log(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x)}{c^{5/4}}+\frac{3\sqrt{2}a^{5/4}B\log(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x)}{c^{5/4}}-\frac{6\sqrt{2}a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{6\sqrt{2}a^{5/4}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{c^{5/4}}+\frac{32a^2Ax^{3/2}}{(a+cx^2)^2}+\frac{32a^2Bx^{5/2}}{(a+cx^2)^2}-\frac{20(-a)^{3/4}A\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{20(-a)^{3/4}A\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{40aAx^{3/2}}{a+cx^2}+\frac{24aBx^{5/2}}{a+cx^2}-\frac{24aB\sqrt{x}}{c}}{128a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-24*a*B*Sqrt[x])/c + (32*a^2*A*x^(3/2))/(a + c*x^2)^2 + (32*a^2*B*x^(5/2)
)/(a + c*x^2)^2 + (40*a*A*x^(3/2))/(a + c*x^2) + (24*a*B*x^(5/2))/(a + c*x^
2) - (6*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^
(5/4) + (6*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])
/c^(5/4) - (20*(-a)^(3/4)*A*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) +
 (20*(-a)^(3/4)*A*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (3*Sqrt[
2]*a^(5/4)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^
(5/4) + (3*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x]
+ Sqrt[c]*x])/c^(5/4))/(128*a^3)
```

IntegrateAlgebraic [A] time = 0.89, size = 207, normalized size = 0.63

$$-\frac{(3\sqrt{a}B+5A\sqrt{c})\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{32\sqrt{2}\,a^{9/4}c^{5/4}} + \frac{(3\sqrt{a}B-5A\sqrt{c})\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{32\sqrt{2}\,a^{9/4}c^{5/4}} + \frac{-3a^2B\sqrt{x}+9aAcx^{3/2}+aBcx^{5/2}+5Ac^2x^{7/2}}{16a^2c(a+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] (-3*a^2*B*Sqrt[x] + 9*a*A*c*x^(3/2) + a*B*c*x^(5/2) + 5*A*c^2*x^(7/2))/(16*
a^2*c*(a + c*x^2)^2) - ((3*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[
c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(32*Sqrt[2]*a^(9/4)*c^(5/4)) + ((
3*Sqrt[a]*B - 5*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[
a] + Sqrt[c]*x)])/(32*Sqrt[2]*a^(9/4)*c^(5/4))
```

fricas [B] time = 0.46, size = 1022, normalized size = 3.09

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c)*sqrt(-(a^4*c^2*sqrt(-(81*B^4*a
^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 30*A*B)/(a^4*c^2))*log(-(8
1*B^4*a^2 - 625*A^4*c^2)*sqrt(x) + (5*A*a^7*c^4*sqrt(-(81*B^4*a^2 - 450*A^2
*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 27*B^3*a^4*c - 75*A^2*B*a^3*c^2)*sqrt(
-(a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 3
0*A*B)/(a^4*c^2))) - (a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c)*sqrt(-(a^4*c^2*s
qrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 30*A*B)/(a^4
*c^2))*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (5*A*a^7*c^4*sqrt(-(81*B^4
*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 27*B^3*a^4*c - 75*A^2*B*
a^3*c^2)*sqrt(-(a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/
(a^9*c^5)) + 30*A*B)/(a^4*c^2))) - (a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c)*sq
rt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) -
 30*A*B)/(a^4*c^2))*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) + (5*A*a^7*c^4*
sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) - 27*B^3*a^4*
c + 75*A^2*B*a^3*c^2)*sqrt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 6
25*A^4*c^2)/(a^9*c^5)) - 30*A*B)/(a^4*c^2))) + (a^2*c^3*x^4 + 2*a^3*c^2*x^2
 + a^4*c)*sqrt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/
(a^9*c^5)) - 30*A*B)/(a^4*c^2))*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (
5*A*a^7*c^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) -
 27*B^3*a^4*c + 75*A^2*B*a^3*c^2)*sqrt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2
*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) - 30*A*B)/(a^4*c^2))) - 4*(5*A*c^2*x^3 +
 B*a*c*x^2 + 9*A*a*c*x - 3*B*a^2)*sqrt(x))/(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a
^4*c)
```

giac [A] time = 0.21, size = 297, normalized size = 0.90

$$\frac{\sqrt{2}\left(3\left(ac^{3}\right)^{\frac{1}{4}}Bac+5\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64a^{3}c^{3}}+\frac{\sqrt{2}\left(3\left(ac^{3}\right)^{\frac{1}{4}}Bac+5\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64a^{3}c^{3}}+\frac{\sqrt{2}\left(3\left(ac^{3}\right)^{\frac{1}{4}}Bac-5\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128a^{3}c^{3}}-\frac{\sqrt{2}\left(3\left(ac^{3}\right)^{\frac{1}{4}}Bac-5\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128a^{3}c^{3}}+\frac{5Ac^{2}x^{\frac{7}{2}}+Bacx^{\frac{5}{2}}+9Aacx^{\frac{3}{2}}-3Ba^{2}\sqrt{x}}{16\left(cx^{2}+a\right)^{2}a^{2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/64*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c + 5*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)
*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3) + 1/64*sqrt(2)*(3
*(a*c^3)^(1/4)*B*a*c + 5*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c
)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3) + 1/128*sqrt(2)*(3*(a*c^3)^(1/4
)*B*a*c - 5*(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c
))/(a^3*c^3) - 1/128*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c - 5*(a*c^3)^(3/4)*A)*lo
g(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^3) + 1/16*(5*A*c^2*x
^(7/2) + B*a*c*x^(5/2) + 9*A*a*c*x^(3/2) - 3*B*a^2*sqrt(x))/((c*x^2 + a)^2*
a^2*c)
```

maple [A] time = 0.07, size = 335, normalized size = 1.01

$$\frac{5\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}c}+\frac{5\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}c}+\frac{5\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}c}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a^{2}c}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64a^{2}c}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128a^{2}c}+\frac{\frac{5Acx^{\frac{7}{2}}}{16a^{2}}+\frac{Bx^{\frac{5}{2}}}{16a}+\frac{9Ax^{\frac{3}{2}}}{16a}-\frac{3B\sqrt{x}}{16c}}{\left(cx^{2}+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(5/32*A*c/a^2*x^(7/2)+1/32*B/a*x^(5/2)+9/32*A/a*x^(3/2)-3/32*B/c*x^(1/2))
/(c*x^2+a)^2+3/64/a^2/c*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)-1)+3/128/a^2/c*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2
)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a^2/c*B*(a
/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/128/a^2/c*A/(a/c)
^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4
)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64/a^2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(
1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/64/a^2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)
/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.29, size = 311, normalized size = 0.94

$$\frac{5\,Ac^{2}x^{\frac{7}{2}}+Bacx^{\frac{5}{2}}+9\,Aacx^{\frac{3}{2}}-3\,Ba^{2}\sqrt{x}}{16\,\left(a^{2}c^{3}x^{4}+2\,a^{3}c^{2}x^{2}+a^{4}c\right)}+\frac{\frac{2\,\sqrt{2}\left(3\,Ba\sqrt{c}+5\,A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(3\,Ba\sqrt{c}+5\,A\sqrt{a}\,c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{\sqrt{2}\left(3\,Ba\sqrt{c}-5\,A\sqrt{a}\,c\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}\left(3\,Ba\sqrt{c}-5\,A\sqrt{a}\,c\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}\,x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{128\,a^{2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(5*A*c^2*x^(7/2) + B*a*c*x^(5/2) + 9*A*a*c*x^(3/2) - 3*B*a^2*sqrt(x))/
(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c) + 1/128*(2*sqrt(2)*(3*B*a*sqrt(c) + 5
*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(
x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt
(2)*(3*B*a*sqrt(c) + 5*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^
(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqr
t(c))*sqrt(c)) + sqrt(2)*(3*B*a*sqrt(c) - 5*A*sqrt(a)*c)*log(sqrt(2)*a^(1/4
)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(3*B*a
*sqrt(c) - 5*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x
+ sqrt(a))/(a^(3/4)*c^(3/4)))/(a^2*c)
```

mupad [B] time = 1.29, size = 690, normalized size = 2.08

$$\frac{\frac{9\,A\,x^{3/2}}{16\,a}+\frac{B\,x^{5/2}}{16\,a}-\frac{3\,B\,\sqrt{x}}{16\,c}+\frac{5\,A\,c\,x^{7/2}}{16\,a^{2}}}{a^{2}+2\,a\,c\,x^{2}+c^{2}\,x^{4}}-2\,\mathrm{atanh}\left(\frac{9\,B^{2}\,c\,\sqrt{x}\,\sqrt{\frac{25\,A^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{9}\,c^{4}}-\frac{15\,A\,B}{2048\,a^{4}\,c^{2}}-\frac{9\,B^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{8}\,c^{5}}}}{32\,\left(\frac{45\,A\,B^{2}}{2048\,a^{2}}-\frac{125\,A^{3}\,c}{2048\,a^{3}}+\frac{27\,B^{3}\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{6}\,c^{3}}-\frac{75\,A^{2}\,B\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{7}\,c^{2}}\right)}-\frac{25\,A^{2}\,c^{2}\,\sqrt{x}\,\sqrt{\frac{25\,A^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{9}\,c^{4}}-\frac{15\,A\,B}{2048\,a^{4}\,c^{2}}-\frac{9\,B^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{8}\,c^{5}}}}{32\,\left(\frac{45\,A\,B^{2}}{2048\,a}-\frac{125\,A^{3}\,c}{2048\,a^{2}}+\frac{27\,B^{3}\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{5}\,c^{3}}-\frac{75\,A^{2}\,B\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{6}\,c^{2}}\right)}\right)\,\sqrt{-\frac{9\,B^{2}\,a\,\sqrt{-a^{9}\,c^{5}}-25\,A^{2}\,c\,\sqrt{-a^{9}\,c^{5}}+30\,A\,B\,a^{5}\,c^{3}}{4096\,a^{9}\,c^{5}}}-2\,\mathrm{atanh}\left(\frac{9\,B^{2}\,c\,\sqrt{x}\,\sqrt{\frac{9\,B^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{8}\,c^{5}}-\frac{25\,A^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{9}\,c^{4}}-\frac{15\,A\,B}{2048\,a^{4}\,c^{2}}}}{32\,\left(\frac{45\,A\,B^{2}}{2048\,a^{2}}-\frac{125\,A^{3}\,c}{2048\,a^{3}}-\frac{27\,B^{3}\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{6}\,c^{3}}+\frac{75\,A^{2}\,B\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{7}\,c^{2}}\right)}-\frac{25\,A^{2}\,c^{2}\,\sqrt{x}\,\sqrt{\frac{9\,B^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{8}\,c^{5}}-\frac{25\,A^{2}\,\sqrt{-a^{9}\,c^{5}}}{4096\,a^{9}\,c^{4}}-\frac{15\,A\,B}{2048\,a^{4}\,c^{2}}}}{32\,\left(\frac{45\,A\,B^{2}}{2048\,a}-\frac{125\,A^{3}\,c}{2048\,a^{2}}-\frac{27\,B^{3}\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{5}\,c^{3}}+\frac{75\,A^{2}\,B\,\sqrt{-a^{9}\,c^{5}}}{2048\,a^{6}\,c^{2}}\right)}\right)\,\sqrt{-\frac{25\,A^{2}\,c\,\sqrt{-a^{9}\,c^{5}}-9\,B^{2}\,a\,\sqrt{-a^{9}\,c^{5}}+30\,A\,B\,a^{5}\,c^{3}}{4096\,a^{9}\,c^{5}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] ((9*A*x^(3/2))/(16*a) + (B*x^(5/2))/(16*a) - (3*B*x^(1/2))/(16*c) + (5*A*c*
x^(7/2))/(16*a^2))/(a^2 + c^2*x^4 + 2*a*c*x^2) - 2*atanh((9*B^2*c*x^(1/2)*(
(25*A^2*(-a^9*c^5)^(1/2))/(4096*a^9*c^4) - (15*A*B)/(2048*a^4*c^2) - (9*B^2
*(-a^9*c^5)^(1/2))/(4096*a^8*c^5))^(1/2))/(32*((45*A*B^2)/(2048*a^2) - (125
*A^3*c)/(2048*a^3) + (27*B^3*(-a^9*c^5)^(1/2))/(2048*a^6*c^3) - (75*A^2*B*(
-a^9*c^5)^(1/2))/(2048*a^7*c^2))) - (25*A^2*c^2*x^(1/2)*((25*A^2*(-a^9*c^5)
^(1/2))/(4096*a^9*c^4) - (15*A*B)/(2048*a^4*c^2) - (9*B^2*(-a^9*c^5)^(1/2))
/(4096*a^8*c^5))^(1/2))/(32*((45*A*B^2)/(2048*a) - (125*A^3*c)/(2048*a^2) +
 (27*B^3*(-a^9*c^5)^(1/2))/(2048*a^5*c^3) - (75*A^2*B*(-a^9*c^5)^(1/2))/(20
48*a^6*c^2))))*(-(9*B^2*a*(-a^9*c^5)^(1/2) - 25*A^2*c*(-a^9*c^5)^(1/2) + 30
*A*B*a^5*c^3)/(4096*a^9*c^5))^(1/2) - 2*atanh((9*B^2*c*x^(1/2)*((9*B^2*(-a^
9*c^5)^(1/2))/(4096*a^8*c^5) - (25*A^2*(-a^9*c^5)^(1/2))/(4096*a^9*c^4) - (
15*A*B)/(2048*a^4*c^2))^(1/2))/(32*((45*A*B^2)/(2048*a^2) - (125*A^3*c)/(20
48*a^3) - (27*B^3*(-a^9*c^5)^(1/2))/(2048*a^6*c^3) + (75*A^2*B*(-a^9*c^5)^(
1/2))/(2048*a^7*c^2))) - (25*A^2*c^2*x^(1/2)*((9*B^2*(-a^9*c^5)^(1/2))/(409
6*a^8*c^5) - (25*A^2*(-a^9*c^5)^(1/2))/(4096*a^9*c^4) - (15*A*B)/(2048*a^4*
c^2))^(1/2))/(32*((45*A*B^2)/(2048*a) - (125*A^3*c)/(2048*a^2) - (27*B^3*(-
a^9*c^5)^(1/2))/(2048*a^5*c^3) + (75*A^2*B*(-a^9*c^5)^(1/2))/(2048*a^6*c^2)
```

```
)))*(-(25*A^2*c*(-a^9*c^5)^(1/2) - 9*B^2*a*(-a^9*c^5)^(1/2) + 30*A*B*a^5*c^
3)/(4096*a^9*c^5))^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.430 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=320

$$\frac{\left(5\sqrt{a}B-21A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{11/4}c^{3/4}}-\frac{\left(5\sqrt{a}B-21A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{11/4}c^{3/4}}-$$

Rubi [A] time = 0.31, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {823, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(5\sqrt{a}B-21A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{11/4}c^{3/4}}-\frac{\left(5\sqrt{a}B-21A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{11/4}c^{3/4}}-\frac{\left(5\sqrt{a}B+21A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}a^{11/4}c^{3/4}}+\frac{\left(5\sqrt{a}B+21A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{32\sqrt{2}a^{11/4}c^{3/4}}+\frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)}+\frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + c*x^2)^3),x]
```

```
[Out] (Sqrt[x]*(A + B*x))/(4*a*(a + c*x^2)^2) + (Sqrt[x]*(7*A + 5*B*x))/(16*a^2*(
a + c*x^2)) - ((5*Sqrt[a]*B + 21*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/a^(1/4)])/(32*Sqrt[2]*a^(11/4)*c^(3/4)) + ((5*Sqrt[a]*B + 21*A*Sqrt[c
])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(11/4)*c^(3
/4)) + ((5*Sqrt[a]*B - 21*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(11/4)*c^(3/4)) - ((5*Sqrt[a]*B - 21*A*
Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sq
rt[2]*a^(11/4)*c^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^3}\,dx = \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} - \frac{\int \frac{-\frac{7}{2}aAc-\frac{5}{2}aBcx}{\sqrt{x}\left(a+cx^2\right)^2}\,dx}{4a^2c}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\int \frac{\frac{21}{4}a^2Ac^2+\frac{5}{4}a^2Bc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^4c^2}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{21}{4}a^2Ac^2+\frac{5}{4}a^2Bc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^4c^2}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(7A+5Bx)}{16a^2\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32a^{5/2}c} +$$

$$= \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}\,B+21A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right.}{64a^{5/2}c}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}\,x\right.}{64\sqrt{2}\,a^{11/4}c^{3/4}}$$

$$= \frac{\sqrt{x}\,(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(7A+5Bx)}{16a^2\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B+21A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{11/4}c^{3/4}} + \frac{\left(5\sqrt{a}\,B-\right.}{}$$

Mathematica [A] time = 0.17, size = 344, normalized size = 1.08

$$\frac{\frac{32a^2A\sqrt{x}}{\left(a+cx^2\right)^2}+\frac{32a^2Bx^{3/2}}{\left(a+cx^2\right)^2}+\frac{56aA\sqrt{x}}{a+cx^2}-\frac{21\sqrt{2}\sqrt[4]{a}A\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{21\sqrt{2}\sqrt[4]{a}A\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}-\frac{42\sqrt{2}\sqrt[4]{a}A\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt[4]{c}}+\frac{42\sqrt{2}\sqrt[4]{a}A\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt[4]{c}}-\frac{20(-a)^{3/4}B\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{20(-a)^{3/4}B\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{c^{3/4}}+\frac{40aBx^{3/2}}{a+cx^2}}{128a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + c*x^2)^3),x]
```

```
[Out] ((32*a^2*A*Sqrt[x])/(a + c*x^2)^2 + (32*a^2*B*x^(3/2))/(a + c*x^2)^2 + (56*
a*A*Sqrt[x])/(a + c*x^2) + (40*a*B*x^(3/2))/(a + c*x^2) - (42*Sqrt[2]*a^(1/
4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) + (42*Sqrt[2]*a
^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (20*(-a)^
(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) + (20*(-a)^(3/4)*B*Ar
cTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (21*Sqrt[2]*a^(1/4)*A*Log[Sq
rt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4) + (21*Sqrt[2]
*a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1
/4))/(128*a^3)
```

IntegrateAlgebraic [A] time = 0.58, size = 199, normalized size = 0.62

$$-\frac{\left(5\sqrt{a}\,B+21A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}\,x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{32\sqrt{2}\,a^{11/4}c^{3/4}} - \frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}\,x}\right)}{32\sqrt{2}\,a^{11/4}c^{3/4}} + \frac{11aA\sqrt{x}+9aBx^{3/2}+7Acx^{5/2}+5Bcx^{7/2}}{16a^2\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a + c*x^2)^3),x]
```

```
[Out] (11*a*A*Sqrt[x] + 9*a*B*x^(3/2) + 7*A*c*x^(5/2) + 5*B*c*x^(7/2))/(16*a^2*(a
 + c*x^2)^2) - ((5*Sqrt[a]*B + 21*A*Sqrt[c])*ArcTan[(Sqrt[a] - Sqrt[c]*x)/(
Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(32*Sqrt[2]*a^(11/4)*c^(3/4)) - ((5*Sqrt
[a]*B - 21*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])/(Sqrt[a] +
Sqrt[c]*x)])/(32*Sqrt[2]*a^(11/4)*c^(3/4))
```

fricas [B] time = 0.47, size = 981, normalized size = 3.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*((a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqrt(-(a^5*c*sqrt(-(625*B^4*a^2 - 2
2050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) + 210*A*B)/(a^5*c))*log(-(62
5*B^4*a^2 - 194481*A^4*c^2)*sqrt(x) + (5*B*a^9*c^2*sqrt(-(625*B^4*a^2 - 220
50*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) - 525*A*B^2*a^4*c + 9261*A^3*a
^3*c^2)*sqrt(-(a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^
2)/(a^11*c^3)) + 210*A*B)/(a^5*c))) - (a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqr
t(-(a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^
3)) + 210*A*B)/(a^5*c))*log(-(625*B^4*a^2 - 194481*A^4*c^2)*sqrt(x) - (5*B*
a^9*c^2*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)
) - 525*A*B^2*a^4*c + 9261*A^3*a^3*c^2)*sqrt(-(a^5*c*sqrt(-(625*B^4*a^2 - 2
2050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) + 210*A*B)/(a^5*c))) - (a^2*
c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqrt((a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2
*a*c + 194481*A^4*c^2)/(a^11*c^3)) - 210*A*B)/(a^5*c))*log(-(625*B^4*a^2 -
194481*A^4*c^2)*sqrt(x) + (5*B*a^9*c^2*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a
*c + 194481*A^4*c^2)/(a^11*c^3)) + 525*A*B^2*a^4*c - 9261*A^3*a^3*c^2)*sqrt
((a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)
) - 210*A*B)/(a^5*c))) + (a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqrt((a^5*c*sqrt
(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) - 210*A*B)
/(a^5*c))*log(-(625*B^4*a^2 - 194481*A^4*c^2)*sqrt(x) - (5*B*a^9*c^2*sqrt(-
(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) + 525*A*B^2*
a^4*c - 9261*A^3*a^3*c^2)*sqrt((a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*
c + 194481*A^4*c^2)/(a^11*c^3)) - 210*A*B)/(a^5*c))) + 4*(5*B*c*x^3 + 7*A*c
*x^2 + 9*B*a*x + 11*A*a)*sqrt(x))/(a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)
```

giac [A] time = 0.23, size = 293, normalized size = 0.92

$$\frac{5Bcx^{\frac{7}{2}}+7Acx^{\frac{5}{2}}+9Bax^{\frac{3}{2}}+11Aa\sqrt{x}}{16\left(cx^2+a\right)^2a^2}+\frac{\sqrt{2}\left(21\left(ac^3\right)^{\frac{1}{4}}Ac^2+5\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64a^3c^3}+\frac{\sqrt{2}\left(21\left(ac^3\right)^{\frac{1}{4}}Ac^2+5\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64a^3c^3}+\frac{\sqrt{2}\left(21\left(ac^3\right)^{\frac{1}{4}}Ac^2-5\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128a^3c^3}-\frac{\sqrt{2}\left(21\left(ac^3\right)^{\frac{1}{4}}Ac^2-5\left(ac^3\right)^{\frac{3}{4}}B\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128a^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/16*(5*B*c*x^(7/2) + 7*A*c*x^(5/2) + 9*B*a*x^(3/2) + 11*A*a*sqrt(x))/((c*x
^2 + a)^2*a^2) + 1/64*sqrt(2)*(21*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*
arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3)
 + 1/64*sqrt(2)*(21*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*arctan(-1/2*sq
rt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3) + 1/128*sqrt
(2)*(21*(a*c^3)^(1/4)*A*c^2 - 5*(a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^
(1/4) + x + sqrt(a/c))/(a^3*c^3) - 1/128*sqrt(2)*(21*(a*c^3)^(1/4)*A*c^2 -
5*(a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c
^3)
```

maple [A] time = 0.06, size = 349, normalized size = 1.09

$$\frac{Bx^{\frac{3}{2}}}{4\left(cx^2+a\right)^2a}+\frac{A\sqrt{x}}{4\left(cx^2+a\right)^2a}+\frac{5Bx^{\frac{3}{2}}}{16\left(cx^2+a\right)a^2}+\frac{7A\sqrt{x}}{16\left(cx^2+a\right)a^2}+\frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a^3}+\frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64a^3}+\frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128a^3}+\frac{5\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2c}+\frac{5\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2c}+\frac{5\sqrt{2}\,B\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/(c*x^2+a)^3,x)
```

```
[Out] 1/4*A*x^(1/2)/a/(c*x^2+a)^2+7/16*A/a^2*x^(1/2)/(c*x^2+a)+21/128*A/a^3*(a/c)
^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4
)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+21/64*A/a^3*(a/c)^(1/4)*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)+1)+21/64*A/a^3*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(
a/c)^(1/4)*x^(1/2)-1)+1/4*B*x^(3/2)/a/(c*x^2+a)^2+5/16*B/a^2*x^(3/2)/(c*x^2
+a)+5/128*B/a^2/c/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/
c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64*B/a^2/c/(a/c)^(
1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/64*B/a^2/c/(a/c)^(1/4)
*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [**A**] time = 1.50, size = 291, normalized size = 0.91

$$\frac{5\,Bcx^{\frac{7}{2}}+7\,Acx^{\frac{5}{2}}+9\,Bax^{\frac{3}{2}}+11\,Aa\sqrt{x}}{16\left(a^{2}c^{2}x^{4}+2\,a^{3}cx^{2}+a^{4}\right)}+\frac{\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+21\,A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+21\,A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}-\frac{\sqrt{2}\left(5\,B\sqrt{a}-21\,A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}\left(5\,B\sqrt{a}-21\,A\sqrt{c}\right)\log\left(-\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x}+\sqrt{c}x+\sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{128\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(5*B*c*x^(7/2) + 7*A*c*x^(5/2) + 9*B*a*x^(3/2) + 11*A*a*sqrt(x))/(a^2*
c^2*x^4 + 2*a^3*c*x^2 + a^4) + 1/128*(2*sqrt(2)*(5*B*sqrt(a) + 21*A*sqrt(c)
)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqr
t(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(5*B*sqr
t(a) + 21*A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(
c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c))
- sqrt(2)*(5*B*sqrt(a) - 21*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x)
+ sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(5*B*sqrt(a) - 21*A*sqrt
(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c
^(3/4)))/a^2
```

mupad [**B**] time = 1.28, size = 687, normalized size = 2.15

$$2\,\mathrm{atanh}\left(\frac{441\,A^2\,c^3\,\sqrt{x}\,\sqrt{\frac{25\,B^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{10}\,c^3}-\frac{441\,A^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{11}\,c^2}-\frac{105\,A\,B}{2048\,a^5\,c}}}{32\,\left(\frac{125\,B^3\,c}{2048\,a}+\frac{525\,A\,B^2\,\sqrt{-a^{11}\,c^3}}{2048\,a^7}-\frac{9261\,A^3\,c\,\sqrt{-a^{11}\,c^3}}{2048\,a^8}-\frac{2205\,A^2\,B\,c^2}{2048\,a^2}\right)}-\frac{25\,B^2\,c^2\,\sqrt{x}\,\sqrt{\frac{25\,B^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{10}\,c^3}-\frac{441\,A^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{11}\,c^2}-\frac{105\,A\,B}{2048\,a^5\,c}}}{32\,\left(\frac{125\,B^3\,c}{2048\,a^2}+\frac{525\,A\,B^2\,\sqrt{-a^{11}\,c^3}}{2048\,a^8}-\frac{9261\,A^3\,c\,\sqrt{-a^{11}\,c^3}}{2048\,a^9}-\frac{2205\,A^2\,B\,c^2}{2048\,a^3}\right)}\right)\,\sqrt{-\frac{441\,A^2\,c\,\sqrt{-a^{11}\,c^3}-25\,B^2\,a\,\sqrt{-a^{11}\,c^3}+210\,A\,B\,a^6\,c^2}{4096\,a^{11}\,c^3}}+2\,\mathrm{atanh}\left(\frac{441\,A^2\,c^3\,\sqrt{x}\,\sqrt{\frac{441\,A^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{11}\,c^2}-\frac{105\,A\,B}{2048\,a^5\,c}-\frac{25\,B^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{10}\,c^3}}}{32\,\left(\frac{125\,B^3\,c}{2048\,a}-\frac{525\,A\,B^2\,\sqrt{-a^{11}\,c^3}}{2048\,a^7}+\frac{9261\,A^3\,c\,\sqrt{-a^{11}\,c^3}}{2048\,a^8}-\frac{2205\,A^2\,B\,c^2}{2048\,a^2}\right)}-\frac{25\,B^2\,c^2\,\sqrt{x}\,\sqrt{\frac{441\,A^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{11}\,c^2}-\frac{105\,A\,B}{2048\,a^5\,c}-\frac{25\,B^2\,\sqrt{-a^{11}\,c^3}}{4096\,a^{10}\,c^3}}}{32\,\left(\frac{125\,B^3\,c}{2048\,a^2}-\frac{525\,A\,B^2\,\sqrt{-a^{11}\,c^3}}{2048\,a^8}+\frac{9261\,A^3\,c\,\sqrt{-a^{11}\,c^3}}{2048\,a^9}-\frac{2205\,A^2\,B\,c^2}{2048\,a^3}\right)}\right)\,\sqrt{-\frac{25\,B^2\,a\,\sqrt{-a^{11}\,c^3}-441\,A^2\,c\,\sqrt{-a^{11}\,c^3}+210\,A\,B\,a^6\,c^2}{4096\,a^{11}\,c^3}}+\frac{\frac{11\,A\,\sqrt{x}}{16\,a}+\frac{9\,B\,x^{3/2}}{16\,a}+\frac{7\,A\,c\,x^{5/2}}{16\,a^2}+\frac{5\,B\,c\,x^{7/2}}{16\,a^2}}{a^2+2\,a\,c\,x^2+c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + c*x^2)^3),x)
```

```
[Out] 2*atanh((441*A^2*c^3*x^(1/2)*((25*B^2*(-a^11*c^3)^(1/2))/(4096*a^10*c^3) -
(441*A^2*(-a^11*c^3)^(1/2))/(4096*a^11*c^2) - (105*A*B)/(2048*a^5*c))^(1/2)
)/(32*((125*B^3*c)/(2048*a) + (525*A*B^2*(-a^11*c^3)^(1/2))/(2048*a^7) - (9
261*A^3*c*(-a^11*c^3)^(1/2))/(2048*a^8) - (2205*A^2*B*c^2)/(2048*a^2))) - (
25*B^2*c^2*x^(1/2)*((25*B^2*(-a^11*c^3)^(1/2))/(4096*a^10*c^3) - (441*A^2*(
-a^11*c^3)^(1/2))/(4096*a^11*c^2) - (105*A*B)/(2048*a^5*c))^(1/2))/(32*((12
5*B^3*c)/(2048*a^2) + (525*A*B^2*(-a^11*c^3)^(1/2))/(2048*a^8) - (9261*A^3*
c*(-a^11*c^3)^(1/2))/(2048*a^9) - (2205*A^2*B*c^2)/(2048*a^3))))*(-(441*A^2
*c*(-a^11*c^3)^(1/2) - 25*B^2*a*(-a^11*c^3)^(1/2) + 210*A*B*a^6*c^2)/(4096*
a^11*c^3))^(1/2) + 2*atanh((441*A^2*c^3*x^(1/2)*((441*A^2*(-a^11*c^3)^(1/2)
)/(4096*a^11*c^2) - (105*A*B)/(2048*a^5*c) - (25*B^2*(-a^11*c^3)^(1/2))/(40
96*a^10*c^3))^(1/2))/(32*((125*B^3*c)/(2048*a) - (525*A*B^2*(-a^11*c^3)^(1/
2))/(2048*a^7) + (9261*A^3*c*(-a^11*c^3)^(1/2))/(2048*a^8) - (2205*A^2*B*c^
2)/(2048*a^2))) - (25*B^2*c^2*x^(1/2)*((441*A^2*(-a^11*c^3)^(1/2))/(4096*a^
11*c^2) - (105*A*B)/(2048*a^5*c) - (25*B^2*(-a^11*c^3)^(1/2))/(4096*a^10*c^
3))^(1/2))/(32*((125*B^3*c)/(2048*a^2) - (525*A*B^2*(-a^11*c^3)^(1/2))/(204
8*a^8) + (9261*A^3*c*(-a^11*c^3)^(1/2))/(2048*a^9) - (2205*A^2*B*c^2)/(2048
*a^3))))*(-(25*B^2*a*(-a^11*c^3)^(1/2) - 441*A^2*c*(-a^11*c^3)^(1/2) + 210*
A*B*a^6*c^2)/(4096*a^11*c^3))^(1/2) + ((11*A*x^(1/2))/(16*a) + (9*B*x^(3/2)
)/(16*a) + (7*A*c*x^(5/2))/(16*a^2) + (5*B*c*x^(7/2))/(16*a^2))/(a^2 + c^2*
x^4 + 2*a*c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.431 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=333

$$-\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}+\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{\right.}}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}$$

Rubi [A] time = 0.35, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {823, 829, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)}-\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}+\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}-\frac{3\left(7\sqrt{a}\,B-15A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{13/4}\sqrt[4]{c}}+\frac{3\left(7\sqrt{a}\,B-15A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}+1\right)}{32\sqrt{2}\,a^{13/4}\sqrt[4]{c}}-\frac{45A}{16a^3\sqrt{x}}+\frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + c*x^2)^3),x]
```

```
[Out] (-45*A)/(16*a^3*Sqrt[x]) + (A + B*x)/(4*a*Sqrt[x]*(a + c*x^2)^2) + (9*A + 7
*B*x)/(16*a^2*Sqrt[x]*(a + c*x^2)) - (3*(7*Sqrt[a]*B - 15*A*Sqrt[c])*ArcTan
[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(13/4)*c^(1/4)) + (3
*(7*Sqrt[a]*B - 15*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)]
)/(32*Sqrt[2]*a^(13/4)*c^(1/4)) - (3*(7*Sqrt[a]*B + 15*A*Sqrt[c])*Log[Sqrt[
a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(13/4)*c^(
1/4)) + (3*(7*Sqrt[a]*B + 15*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(13/4)*c^(1/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^3}\,dx = \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} - \frac{\int \frac{-\frac{9}{2}aAc-\frac{7}{2}aBcx}{x^{3/2}\left(a+cx^2\right)^2}\,dx}{4a^2c}$$

$$= \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{\int \frac{\frac{45}{4}a^2Ac^2+\frac{21}{4}a^2Bc^2x}{x^{3/2}\left(a+cx^2\right)}\,dx}{8a^4c^2}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{\int \frac{\frac{21}{4}a^3Bc^2-\frac{45}{4}a^2Ac^3x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^5c^2}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{21}{4}a^3Bc^2-\frac{45}{4}a^2Ac^3x^2}{a+cx^4}\,dx, x, \cdots\right)}{4a^5c^2}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} - \frac{\left(3\left(15A-\frac{7\sqrt{a}B}{\sqrt{c}}\right)\right)\text{Subst}\left(\int \frac{\sqrt{a}\cdots}{a+\cdots}\cdots\right)}{32a^3}\cdots$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} - \frac{\left(3\left(15A-\frac{7\sqrt{a}B}{\sqrt{c}}\right)\right)\text{Subst}\left(\int \frac{\cdots}{\frac{\sqrt{a}}{\sqrt{c}}-\cdots}\cdots\right)}{64a^3}\cdots$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} - \frac{3\left(7\sqrt{a}B+15A\sqrt{c}\right)\log\left(\sqrt{a}-\cdots\right)}{64\sqrt{2}a^{13/4}\sqrt[4]{\cdots}}\cdots$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{3\left(15A-\frac{7\sqrt{a}B}{\sqrt{c}}\right)\sqrt[4]{c}\tan^{-1}\left(1-\cdots\right)}{32\sqrt{2}a^{13/4}}\cdots$$

Mathematica [C] time = 0.29, size = 300, normalized size = 0.90

$$\frac{\sqrt[4]{a}\left(\frac{32a^{7/4}A}{\sqrt{x}\left(a+cx^2\right)^2}+\frac{72a^{3/4}A}{\sqrt{x}\left(a+cx^2\right)}+\frac{32a^{7/4}B\sqrt{x}}{\left(a+cx^2\right)^2}+\frac{56a^{3/4}B\sqrt{x}}{a+cx^2}-\frac{21\sqrt{2}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{21\sqrt{2}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}-\frac{42\sqrt{2}B\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt[4]{c}}+\frac{42\sqrt{2}B\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)}{\sqrt[4]{c}}\right)-\frac{360A\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)}{\sqrt{x}}}{128a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + c*x^2)^3),x]
```

```
[Out] ((-360*A*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/Sqrt[x] + a^(1/4)*(
(32*a^(7/4)*A)/(Sqrt[x]*(a + c*x^2)^2) + (32*a^(7/4)*B*Sqrt[x])/(a + c*x^2)
^2 + (72*a^(3/4)*A)/(Sqrt[x]*(a + c*x^2)) + (56*a^(3/4)*B*Sqrt[x])/(a + c*x
^2) - (42*Sqrt[2]*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4)
+ (42*Sqrt[2]*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (2
1*Sqrt[2]*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(
1/4) + (21*Sqrt[2]*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/c^(1/4)))/(128*a^3)
```

IntegrateAlgebraic [A] time = 0.92, size = 206, normalized size = 0.62

$$-\frac{3\left(7\sqrt{a}B-15A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{a}-\sqrt{c}x}{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}\right)}{32\sqrt{2}a^{13/4}\sqrt[4]{c}}+\frac{3\left(7\sqrt{a}B+15A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}}{\sqrt{a}+\sqrt{c}x}\right)}{32\sqrt{2}a^{13/4}\sqrt[4]{c}}+\frac{-32a^2A+11a^2Bx-81aAcx^2+7aBcx^3-45Ac^2x^4}{16a^3\sqrt{x}\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a + c*x^2)^3),x]
```

```
[Out] (-32*a^2*A + 11*a^2*B*x - 81*a*A*c*x^2 + 7*a*B*c*x^3 - 45*A*c^2*x^4)/(16*a^
3*Sqrt[x]*(a + c*x^2)^2) - (3*(7*Sqrt[a]*B - 15*A*Sqrt[c])*ArcTan[(Sqrt[a]
- Sqrt[c]*x)/(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x])])/(32*Sqrt[2]*a^(13/4)*c^(1/
4)) + (3*(7*Sqrt[a]*B + 15*A*Sqrt[c])*ArcTanh[(Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt
[x])/(Sqrt[a] + Sqrt[c]*x)])/(32*Sqrt[2]*a^(13/4)*c^(1/4))
```

fricas [B] time = 0.45, size = 958, normalized size = 2.88

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(3*(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)*sqrt((a^6*sqrt(-(2401*B^4*a^2
- 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 210*A*B)/a^6)*log(-9*(2401
*B^4*a^2 - 50625*A^4*c^2)*sqrt(x) + 9*(15*A*a^10*c*sqrt(-(2401*B^4*a^2 - 22
050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 343*B^3*a^5 - 1575*A^2*B*a^4*c
)*sqrt((a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*
c)) + 210*A*B)/a^6)) - 3*(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)*sqrt((a^6*sqrt
(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 210*A*B)/a
^6)*log(-9*(2401*B^4*a^2 - 50625*A^4*c^2)*sqrt(x) - 9*(15*A*a^10*c*sqrt(-(2
401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 343*B^3*a^5 -
1575*A^2*B*a^4*c)*sqrt((a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625
*A^4*c^2)/(a^13*c)) + 210*A*B)/a^6)) - 3*(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x
)*sqrt(-(a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13
*c)) - 210*A*B)/a^6)*log(-9*(2401*B^4*a^2 - 50625*A^4*c^2)*sqrt(x) + 9*(15*
A*a^10*c*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c))
 - 343*B^3*a^5 + 1575*A^2*B*a^4*c)*sqrt(-(a^6*sqrt(-(2401*B^4*a^2 - 22050*A
^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) - 210*A*B)/a^6)) + 3*(a^3*c^2*x^5 + 2
*a^4*c*x^3 + a^5*x)*sqrt(-(a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50
625*A^4*c^2)/(a^13*c)) - 210*A*B)/a^6)*log(-9*(2401*B^4*a^2 - 50625*A^4*c^2
)*sqrt(x) - 9*(15*A*a^10*c*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*
A^4*c^2)/(a^13*c)) - 343*B^3*a^5 + 1575*A^2*B*a^4*c)*sqrt(-(a^6*sqrt(-(2401
*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) - 210*A*B)/a^6)) +
4*(45*A*c^2*x^4 - 7*B*a*c*x^3 + 81*A*a*c*x^2 - 11*B*a^2*x + 32*A*a^2)*sqrt(
x))/(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)
```

giac [A] time = 0.21, size = 304, normalized size = 0.91

$$-\frac{2A}{a^{3}\sqrt{x}}+\frac{3\sqrt{2}\left(7\left(ac^{3}\right)^{\frac{1}{4}}Bac-15\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{4}c^{2}}+\frac{3\sqrt{2}\left(7\left(ac^{3}\right)^{\frac{1}{4}}Bac-15\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{4}c^{2}}+\frac{3\sqrt{2}\left(7\left(ac^{3}\right)^{\frac{1}{4}}Bac+15\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128\,a^{4}c^{2}}-\frac{3\sqrt{2}\left(7\left(ac^{3}\right)^{\frac{1}{4}}Bac+15\left(ac^{3}\right)^{\frac{3}{4}}A\right)\log\left(-\sqrt{2}\sqrt{x}\left(\frac{a}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{a}{c}}\right)}{128\,a^{4}c^{2}}-\frac{13\,Ac^{2}x^{\frac{7}{2}}-7\,Bacx^{\frac{5}{2}}+17\,Aacx^{\frac{3}{2}}-11\,Ba^{2}\sqrt{x}}{16\left(cx^{2}+a\right)^{2}a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] -2*A/(a^3*sqrt(x)) + 3/64*sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c - 15*(a*c^3)^(3/4)
*A)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^4*
c^2) + 3/64*sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c - 15*(a*c^3)^(3/4)*A)*arctan(-1/
2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^4*c^2) + 3/128*
sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c + 15*(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a
/c)^(1/4) + x + sqrt(a/c))/(a^4*c^2) - 3/128*sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c
 + 15*(a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a
^4*c^2) - 1/16*(13*A*c^2*x^(7/2) - 7*B*a*c*x^(5/2) + 17*A*a*c*x^(3/2) - 11*
B*a^2*sqrt(x))/((c*x^2 + a)^2*a^3)
```

maple [A] time = 0.06, size = 354, normalized size = 1.06

$$-\frac{13A\,c^{2}x^{\frac{7}{2}}}{16\left(c\,x^{2}+a\right)^{2}a^{3}}+\frac{7Bc\,x^{\frac{5}{2}}}{16\left(c\,x^{2}+a\right)^{2}a^{2}}-\frac{17Ac\,x^{\frac{3}{2}}}{16\left(c\,x^{2}+a\right)^{2}a^{2}}+\frac{11B\sqrt{x}}{16\left(c\,x^{2}+a\right)^{2}a}-\frac{45\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{3}}-\frac{45\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{3}}-\frac{45\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{3}}+\frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a^{3}}+\frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64a^{3}}+\frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128a^{3}}-\frac{2A}{a^{3}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+a)^3,x)
```

```
[Out] -13/16/a^3/(c*x^2+a)^2*A*x^(7/2)*c^2+7/16/a^2/(c*x^2+a)^2*B*x^(5/2)*c-17/16
/a^2/(c*x^2+a)^2*A*x^(3/2)*c+11/16/a/(c*x^2+a)^2*B*x^(1/2)+21/64/a^3*B*(a/c
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+21/64/a^3*B*(a/c)^(1/
4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+21/128/a^3*B*(a/c)^(1/4)*2
^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2
)*x^(1/2)+(a/c)^(1/2)))-45/128/a^3*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*
2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-4
5/64/a^3*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-45/64/
a^3*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2*A/a^3/x^(
1/2)
```

maxima [A] time = 1.38, size = 313, normalized size = 0.94

$$-\frac{45\,Ac^2x^4 - 7\,Bacx^3 + 81\,Aacx^2 - 11\,Ba^2x + 32\,Aa^2}{16\left(a^3c^2x^{\frac{9}{2}} + 2\,a^4cx^{\frac{5}{2}} + a^5\sqrt{x}\right)} + \frac{3\left(\frac{2\sqrt{2}\left(7\,Ba\sqrt{c} - 15\,A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}} + 2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\sqrt{2}\left(7\,Ba\sqrt{c} - 15\,A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}} - 2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{\sqrt{2}\left(7\,Ba\sqrt{c} + 15\,A\sqrt{a}c\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x} + \sqrt{c}x + \sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}} - \frac{\sqrt{2}\left(7\,Ba\sqrt{c} + 15\,A\sqrt{a}c\right)\log\left(-\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{x} + \sqrt{c}x + \sqrt{a}\right)}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right)}{128\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/16*(45*A*c^2*x^4 - 7*B*a*c*x^3 + 81*A*a*c*x^2 - 11*B*a^2*x + 32*A*a^2)/(
a^3*c^2*x^(9/2) + 2*a^4*c*x^(5/2) + a^5*sqrt(x)) + 3/128*(2*sqrt(2)*(7*B*a*
sqrt(c) - 15*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*s
qrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(
c)) + 2*sqrt(2)*(7*B*a*sqrt(c) - 15*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(
2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqr
t(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(7*B*a*sqrt(c) + 15*A*sqrt(a)*c)*log(
sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) -
sqrt(2)*(7*B*a*sqrt(c) + 15*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(
x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^3
```

mupad [B] time = 0.28, size = 673, normalized size = 2.02

$$2\,\mathrm{atanh}\left(\frac{66355200\,A^2a^{10}c^4\sqrt{x}\sqrt{\frac{945\,A\,B}{2048\,a^6} - \frac{2025\,A^2\sqrt{-a^{13}c}}{4096\,a^{13}} + \frac{441\,B^2\sqrt{-a^{13}c}}{4096\,a^{12}c}}}{46656000\,A^3a^7c^4 - 4741632\,B^3a^2c^2\sqrt{-a^{13}c} - 10160640\,A\,B^2a^8c^3 + 21772800\,A^2B\,a\,c^3\sqrt{-a^{13}c}} - \frac{14450688\,B^2a^{11}c^3\sqrt{x}\sqrt{\frac{945\,A\,B}{2048\,a^6} - \frac{2025\,A^2\sqrt{-a^{13}c}}{4096\,a^{13}} + \frac{441\,B^2\sqrt{-a^{13}c}}{4096\,a^{12}c}}}{46656000\,A^3a^7c^4 - 4741632\,B^3a^2c^2\sqrt{-a^{13}c} - 10160640\,A\,B^2a^8c^3 + 21772800\,A^2B\,a\,c^3\sqrt{-a^{13}c}}\right)\sqrt{\frac{9\left(49\,B^2a\sqrt{-a^{13}c} - 225\,A^2c\sqrt{-a^{13}c} + 210\,A\,B\,a^7c\right)}{4096\,a^{13}c}} + 2\,\mathrm{atanh}\left(\frac{66355200\,A^2a^{10}c^4\sqrt{x}\sqrt{\frac{2025\,A^2\sqrt{-a^{13}c}}{4096\,a^{13}} + \frac{945\,A\,B}{2048\,a^6} - \frac{441\,B^2\sqrt{-a^{13}c}}{4096\,a^{12}c}}}{46656000\,A^3a^7c^4 + 4741632\,B^3a^2c^2\sqrt{-a^{13}c} - 10160640\,A\,B^2a^8c^3 - 21772800\,A^2B\,a\,c^3\sqrt{-a^{13}c}} - \frac{14450688\,B^2a^{11}c^3\sqrt{x}\sqrt{\frac{2025\,A^2\sqrt{-a^{13}c}}{4096\,a^{13}} + \frac{945\,A\,B}{2048\,a^6} - \frac{441\,B^2\sqrt{-a^{13}c}}{4096\,a^{12}c}}}{46656000\,A^3a^7c^4 + 4741632\,B^3a^2c^2\sqrt{-a^{13}c} - 10160640\,A\,B^2a^8c^3 - 21772800\,A^2B\,a\,c^3\sqrt{-a^{13}c}}\right)\sqrt{\frac{9\left(225\,A^2c\sqrt{-a^{13}c} - 49\,B^2a\sqrt{-a^{13}c} + 210\,A\,B\,a^7c\right)}{4096\,a^{13}c}} - \frac{\frac{2\,A}{a} - \frac{11\,B\,x}{16\,a} + \frac{81\,A\,c\,x^2}{16\,a^2} - \frac{7\,B\,c\,x^3}{16\,a^2} + \frac{45\,A\,c^2x^4}{16\,a^3}}{a^2\sqrt{x} + c^2x^{9/2} + 2\,a\,c\,x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + c*x^2)^3),x)
```

```
[Out] 2*atanh((66355200*A^2*a^10*c^4*x^(1/2)*((945*A*B)/(2048*a^6) - (2025*A^2*(-
a^13*c)^(1/2))/(4096*a^13) + (441*B^2*(-a^13*c)^(1/2))/(4096*a^12*c))^(1/2)
)/(46656000*A^3*a^7*c^4 - 4741632*B^3*a^2*c^2*(-a^13*c)^(1/2) - 10160640*A*
B^2*a^8*c^3 + 21772800*A^2*B*a*c^3*(-a^13*c)^(1/2)) - (14450688*B^2*a^11*c^
3*x^(1/2)*((945*A*B)/(2048*a^6) - (2025*A^2*(-a^13*c)^(1/2))/(4096*a^13) +
(441*B^2*(-a^13*c)^(1/2))/(4096*a^12*c))^(1/2))/(46656000*A^3*a^7*c^4 - 474
1632*B^3*a^2*c^2*(-a^13*c)^(1/2) - 10160640*A*B^2*a^8*c^3 + 21772800*A^2*B*
a*c^3*(-a^13*c)^(1/2)))*((9*(49*B^2*a*(-a^13*c)^(1/2) - 225*A^2*c*(-a^13*c)
^(1/2) + 210*A*B*a^7*c))/(4096*a^13*c))^(1/2) + 2*atanh((66355200*A^2*a^10*
c^4*x^(1/2)*((2025*A^2*(-a^13*c)^(1/2))/(4096*a^13) + (945*A*B)/(2048*a^6)
- (441*B^2*(-a^13*c)^(1/2))/(4096*a^12*c))^(1/2))/(46656000*A^3*a^7*c^4 + 4
741632*B^3*a^2*c^2*(-a^13*c)^(1/2) - 10160640*A*B^2*a^8*c^3 - 21772800*A^2*
B*a*c^3*(-a^13*c)^(1/2)) - (14450688*B^2*a^11*c^3*x^(1/2)*((2025*A^2*(-a^13
*c)^(1/2))/(4096*a^13) + (945*A*B)/(2048*a^6) - (441*B^2*(-a^13*c)^(1/2))/(
4096*a^12*c))^(1/2))/(46656000*A^3*a^7*c^4 + 4741632*B^3*a^2*c^2*(-a^13*c)^
(1/2) - 10160640*A*B^2*a^8*c^3 - 21772800*A^2*B*a*c^3*(-a^13*c)^(1/2)))*((9
*(225*A^2*c*(-a^13*c)^(1/2) - 49*B^2*a*(-a^13*c)^(1/2) + 210*A*B*a^7*c))/(4
```

```
096*a^13*c))^(1/2) - ((2*A)/a - (11*B*x)/(16*a) + (81*A*c*x^2)/(16*a^2) - (
7*B*c*x^3)/(16*a^2) + (45*A*c^2*x^4)/(16*a^3))/(a^2*x^(1/2) + c^2*x^(9/2) +
 2*a*c*x^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.432 $\int \frac{1-x}{\sqrt{x}\left(1+x^2\right)} \, dx$

Optimal. Leaf size=45

$$\frac{\log \left(x+\sqrt{2} \sqrt{x}+1\right)}{\sqrt{2}}-\frac{\log \left(x-\sqrt{2} \sqrt{x}+1\right)}{\sqrt{2}}$$

Rubi [A] time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {827, 1165, 628}

$$\frac{\log \left(x+\sqrt{2} \sqrt{x}+1\right)}{\sqrt{2}}-\frac{\log \left(x-\sqrt{2} \sqrt{x}+1\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - x)/(Sqrt[x]*(1 + x^2)),x]
```

```
[Out] -(Log[1 - Sqrt[2]*Sqrt[x] + x]/Sqrt[2]) + Log[1 + Sqrt[2]*Sqrt[x] + x]/Sqrt
[2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rubi steps

$$\begin{aligned}
\int \frac{1-x}{\sqrt{x}\left(1+x^2\right)} \, dx &= 2 \operatorname{Subst}\left(\int \frac{1-x^2}{1+x^4} \, dx, x, \sqrt{x}\right)\\
&= -\frac{\operatorname{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2} \, dx, x, \sqrt{x}\right)}{\sqrt{2}}-\frac{\operatorname{Subst}\left(\int \frac{\sqrt{2}-2x}{-1+\sqrt{2}x-x^2} \, dx, x, \sqrt{x}\right)}{\sqrt{2}}\\
&= -\frac{\log \left(1-\sqrt{2} \sqrt{x}+x\right)}{\sqrt{2}}+\frac{\log \left(1+\sqrt{2} \sqrt{x}+x\right)}{\sqrt{2}}
\end{aligned}$$

Mathematica [C] time = 0.04, size = 99, normalized size = 2.20

$$\frac{1}{12} \left(3 \sqrt{2} \left(-\log \left(x-\sqrt{2} \sqrt{x}+1\right)+\log \left(x+\sqrt{2} \sqrt{x}+1\right)-2 \tan ^{-1}\left(1-\sqrt{2} \sqrt{x}\right)+2 \tan ^{-1}\left(\sqrt{2} \sqrt{x}+1\right)\right)-8 x^{3/2} \, _2F_1\left(\frac{3}{4},1;\frac{7}{4};-x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - x)/(Sqrt[x]*(1 + x^2)),x]
```

```
[Out] (-8*x^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -x^2] + 3*Sqrt[2]*(-2*ArcTan[1 -
 Sqrt[2]*Sqrt[x]] + 2*ArcTan[1 + Sqrt[2]*Sqrt[x]] - Log[1 - Sqrt[2]*Sqrt[x]
 + x] + Log[1 + Sqrt[2]*Sqrt[x] + x]))/12
```

IntegrateAlgebraic [A] time = 0.04, size = 23, normalized size = 0.51

$$\sqrt{2}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{x}}{x+1}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(1 - x)/(Sqrt[x]*(1 + x^2)),x]
```

```
[Out] Sqrt[2]*ArcTanh[(Sqrt[2]*Sqrt[x])/(1 + x)]
```

fricas [A] time = 0.43, size = 33, normalized size = 0.73

$$\frac{1}{2}\sqrt{2}\log\left(\frac{2\sqrt{2}(x+1)\sqrt{x}+x^2+4x+1}{x^2+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x^2+1)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*log((2*sqrt(2)*(x + 1)*sqrt(x) + x^2 + 4*x + 1)/(x^2 + 1))
```

giac [A] time = 0.15, size = 34, normalized size = 0.76

$$\frac{1}{2}\sqrt{2}\log\left(\sqrt{2}\sqrt{x}+x+1\right)-\frac{1}{2}\sqrt{2}\log\left(-\sqrt{2}\sqrt{x}+x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x^2+1)/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*log(sqrt(2)*sqrt(x) + x + 1) - 1/2*sqrt(2)*log(-sqrt(2)*sqrt(x)
 + x + 1)
```

maple [A] time = 0.05, size = 62, normalized size = 1.38

$$-\frac{\sqrt{2}\ln\left(\frac{x-\sqrt{2}\sqrt{x}+1}{x+\sqrt{2}\sqrt{x}+1}\right)}{4}+\frac{\sqrt{2}\ln\left(\frac{x+\sqrt{2}\sqrt{x}+1}{x-\sqrt{2}\sqrt{x}+1}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-x+1)/(x^2+1)/x^(1/2),x)
```

```
[Out] 1/4*2^(1/2)*ln((1+x+2^(1/2)*x^(1/2))/(1+x-2^(1/2)*x^(1/2)))-1/4*2^(1/2)*ln(
(1+x-2^(1/2)*x^(1/2))/(1+x+2^(1/2)*x^(1/2)))
```

maxima [A] time = 1.25, size = 34, normalized size = 0.76

$$\frac{1}{2}\sqrt{2}\log\left(\sqrt{2}\sqrt{x}+x+1\right)-\frac{1}{2}\sqrt{2}\log\left(-\sqrt{2}\sqrt{x}+x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x^2+1)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(2)*log(sqrt(2)*sqrt(x) + x + 1) - 1/2*sqrt(2)*log(-sqrt(2)*sqrt(x)
 + x + 1)
```

mupad [B] time = 0.13, size = 20, normalized size = 0.44

$$\sqrt{2}\,\mathrm{atanh}\left(\frac{8\sqrt{2}\,\sqrt{x}}{8\,x+8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 1)/(x^(1/2)*(x^2 + 1)),x)
```

```
[Out] 2^(1/2)*atanh((8*2^(1/2)*x^(1/2))/(8*x + 8))
```

sympy [A] time = 0.69, size = 49, normalized size = 1.09

$$-\frac{\sqrt{2}\log\left(-4\sqrt{2}\,\sqrt{x}+4x+4\right)}{2}+\frac{\sqrt{2}\log\left(4\sqrt{2}\,\sqrt{x}+4x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x**2+1)/x**(1/2),x)
```

```
[Out] -sqrt(2)*log(-4*sqrt(2)*sqrt(x) + 4*x + 4)/2 + sqrt(2)*log(4*sqrt(2)*sqrt(x
) + 4*x + 4)/2
```

3.433 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=217

$$\frac{a^4A(ex)^{m+1}}{e(m+1)}+\frac{a^4B(ex)^{m+2}}{e^2(m+2)}+\frac{4a^3Ac(ex)^{m+3}}{e^3(m+3)}+\frac{4a^3Bc(ex)^{m+4}}{e^4(m+4)}+\frac{6a^2Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{6a^2Bc^2(ex)^{m+6}}{e^6(m+6)}+\frac{4aAc^3(ex)^{m+7}}{e^7(m+7)}+\frac{4aB}{e^8}$$

Rubi [A] time = 0.17, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6a^2Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{4a^3Ac(ex)^{m+3}}{e^3(m+3)}+\frac{a^4A(ex)^{m+1}}{e(m+1)}+\frac{6a^2Bc^2(ex)^{m+6}}{e^6(m+6)}+\frac{4a^3Bc(ex)^{m+4}}{e^4(m+4)}+\frac{a^4B(ex)^{m+2}}{e^2(m+2)}+\frac{4aAc^3(ex)^{m+7}}{e^7(m+7)}+\frac{4aBc^3(ex)^{m+8}}{e^8(m+8)}+\frac{Ac^4(ex)^{m+9}}{e^9(m+9)}+\frac{Bc^4(ex)^{m+10}}{e^{10}(m+10)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^4*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (
4*a^3*A*c*(e*x)^(3 + m))/(e^3*(3 + m)) + (4*a^3*B*c*(e*x)^(4 + m))/(e^4*(4
+ m)) + (6*a^2*A*c^2*(e*x)^(5 + m))/(e^5*(5 + m)) + (6*a^2*B*c^2*(e*x)^(6 +
 m))/(e^6*(6 + m)) + (4*a*A*c^3*(e*x)^(7 + m))/(e^7*(7 + m)) + (4*a*B*c^3*(
e*x)^(8 + m))/(e^8*(8 + m)) + (A*c^4*(e*x)^(9 + m))/(e^9*(9 + m)) + (B*c^4*
(e*x)^(10 + m))/(e^10*(10 + m))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^4\,dx &= \int \left(a^4A(ex)^m+\frac{a^4B(ex)^{1+m}}{e}+\frac{4a^3Ac(ex)^{2+m}}{e^2}+\frac{4a^3Bc(ex)^{3+m}}{e^3}+\frac{6a^2Ac^2(ex)^{4+m}}{e^4}\right.\\ &= \frac{a^4A(ex)^{1+m}}{e(1+m)}+\frac{a^4B(ex)^{2+m}}{e^2(2+m)}+\frac{4a^3Ac(ex)^{3+m}}{e^3(3+m)}+\frac{4a^3Bc(ex)^{4+m}}{e^4(4+m)}+\frac{6a^2Ac^2(ex)^{5+m}}{e^5(5+m)}\end{aligned}$$

Mathematica [A] time = 0.30, size = 128, normalized size = 0.59

$$x(ex)^m\left(a^4\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+4a^3cx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)+6a^2c^2x^4\left(\frac{A}{m+5}+\frac{Bx}{m+6}\right)+4ac^3x^6\left(\frac{A}{m+7}+\frac{Bx}{m+8}\right)+c^4x^8\left(\frac{A}{m+9}+\frac{Bx}{m+10}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] x*(e*x)^m*(a^4*(A/(1 + m) + (B*x)/(2 + m)) + 4*a^3*c*x^2*(A/(3 + m) + (B*x)
/(4 + m)) + 6*a^2*c^2*x^4*(A/(5 + m) + (B*x)/(6 + m)) + 4*a*c^3*x^6*(A/(7 +
 m) + (B*x)/(8 + m)) + c^4*x^8*(A/(9 + m) + (B*x)/(10 + m)))
```

IntegrateAlgebraic [F] time = 0.63, size = 0, normalized size = 0.00

$$\int (ex)^m(A+Bx)\left(a+cx^2\right)^4\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + c*x^2)^4, x]
```

fricas [B] time = 0.55, size = 1051, normalized size = 4.84

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] ((B*c^4*m^9 + 45*B*c^4*m^8 + 870*B*c^4*m^7 + 9450*B*c^4*m^6 + 63273*B*c^4*m
^5 + 269325*B*c^4*m^4 + 723680*B*c^4*m^3 + 1172700*B*c^4*m^2 + 1026576*B*c^
4*m + 362880*B*c^4)*x^10 + (A*c^4*m^9 + 46*A*c^4*m^8 + 906*A*c^4*m^7 + 9996
*A*c^4*m^6 + 67809*A*c^4*m^5 + 291774*A*c^4*m^4 + 790964*A*c^4*m^3 + 129082
4*A*c^4*m^2 + 1136160*A*c^4*m + 403200*A*c^4)*x^9 + 4*(B*a*c^3*m^9 + 47*B*a
*c^3*m^8 + 944*B*a*c^3*m^7 + 10598*B*a*c^3*m^6 + 72989*B*a*c^3*m^5 + 318143
*B*a*c^3*m^4 + 871786*B*a*c^3*m^3 + 1435212*B*a*c^3*m^2 + 1271880*B*a*c^3*m
 + 453600*B*a*c^3)*x^8 + 4*(A*a*c^3*m^9 + 48*A*a*c^3*m^8 + 984*A*a*c^3*m^7
+ 11262*A*a*c^3*m^6 + 78939*A*a*c^3*m^5 + 349482*A*a*c^3*m^4 + 970556*A*a*c
^3*m^3 + 1615608*A*a*c^3*m^2 + 1444320*A*a*c^3*m + 518400*A*a*c^3)*x^7 + 6*
(B*a^2*c^2*m^9 + 49*B*a^2*c^2*m^8 + 1026*B*a^2*c^2*m^7 + 11994*B*a^2*c^2*m^
6 + 85809*B*a^2*c^2*m^5 + 387201*B*a^2*c^2*m^4 + 1093724*B*a^2*c^2*m^3 + 18
47156*B*a^2*c^2*m^2 + 1670640*B*a^2*c^2*m + 604800*B*a^2*c^2)*x^6 + 6*(A*a^
2*c^2*m^9 + 50*A*a^2*c^2*m^8 + 1070*A*a^2*c^2*m^7 + 12800*A*a^2*c^2*m^6 + 9
3773*A*a^2*c^2*m^5 + 433190*A*a^2*c^2*m^4 + 1250980*A*a^2*c^2*m^3 + 2154600
*A*a^2*c^2*m^2 + 1980576*A*a^2*c^2*m + 725760*A*a^2*c^2)*x^5 + 4*(B*a^3*c*m
^9 + 51*B*a^3*c*m^8 + 1116*B*a^3*c*m^7 + 13686*B*a^3*c*m^6 + 103029*B*a^3*c
*m^5 + 489939*B*a^3*c*m^4 + 1457174*B*a^3*c*m^3 + 2580804*B*a^3*c*m^2 + 243
0360*B*a^3*c*m + 907200*B*a^3*c)*x^4 + 4*(A*a^3*c*m^9 + 52*A*a^3*c*m^8 + 11
64*A*a^3*c*m^7 + 14658*A*a^3*c*m^6 + 113799*A*a^3*c*m^5 + 560658*A*a^3*c*m^
4 + 1734956*A*a^3*c*m^3 + 3204632*A*a^3*c*m^2 + 3139680*A*a^3*c*m + 1209600
*A*a^3*c)*x^3 + (B*a^4*m^9 + 53*B*a^4*m^8 + 1214*B*a^4*m^7 + 15722*B*a^4*m^
6 + 126329*B*a^4*m^5 + 649397*B*a^4*m^4 + 2118136*B*a^4*m^3 + 4173228*B*a^4
*m^2 + 4407120*B*a^4*m + 1814400*B*a^4)*x^2 + (A*a^4*m^9 + 54*A*a^4*m^8 + 1
266*A*a^4*m^7 + 16884*A*a^4*m^6 + 140889*A*a^4*m^5 + 761166*A*a^4*m^4 + 265
5764*A*a^4*m^3 + 5753736*A*a^4*m^2 + 6999840*A*a^4*m + 3628800*A*a^4)*x)*(e
*x)^m/(m^10 + 55*m^9 + 1320*m^8 + 18150*m^7 + 157773*m^6 + 902055*m^5 + 341
6930*m^4 + 8409500*m^3 + 12753576*m^2 + 10628640*m + 3628800)
```

giac [B] time = 0.24, size = 1778, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] (B*c^4*m^9*x^10*x^m*e^m + A*c^4*m^9*x^9*x^m*e^m + 45*B*c^4*m^8*x^10*x^m*e^m
 + 4*B*a*c^3*m^9*x^8*x^m*e^m + 46*A*c^4*m^8*x^9*x^m*e^m + 870*B*c^4*m^7*x^1
0*x^m*e^m + 4*A*a*c^3*m^9*x^7*x^m*e^m + 188*B*a*c^3*m^8*x^8*x^m*e^m + 906*A
*c^4*m^7*x^9*x^m*e^m + 9450*B*c^4*m^6*x^10*x^m*e^m + 6*B*a^2*c^2*m^9*x^6*x^
m*e^m + 192*A*a*c^3*m^8*x^7*x^m*e^m + 3776*B*a*c^3*m^7*x^8*x^m*e^m + 9996*A
*c^4*m^6*x^9*x^m*e^m + 63273*B*c^4*m^5*x^10*x^m*e^m + 6*A*a^2*c^2*m^9*x^5*x
^m*e^m + 294*B*a^2*c^2*m^8*x^6*x^m*e^m + 3936*A*a*c^3*m^7*x^7*x^m*e^m + 423
92*B*a*c^3*m^6*x^8*x^m*e^m + 67809*A*c^4*m^5*x^9*x^m*e^m + 269325*B*c^4*m^4
*x^10*x^m*e^m + 4*B*a^3*c*m^9*x^4*x^m*e^m + 300*A*a^2*c^2*m^8*x^5*x^m*e^m +
 6156*B*a^2*c^2*m^7*x^6*x^m*e^m + 45048*A*a*c^3*m^6*x^7*x^m*e^m + 291956*B*
a*c^3*m^5*x^8*x^m*e^m + 291774*A*c^4*m^4*x^9*x^m*e^m + 723680*B*c^4*m^3*x^1
0*x^m*e^m + 4*A*a^3*c*m^9*x^3*x^m*e^m + 204*B*a^3*c*m^8*x^4*x^m*e^m + 6420*
A*a^2*c^2*m^7*x^5*x^m*e^m + 71964*B*a^2*c^2*m^6*x^6*x^m*e^m + 315756*A*a*c^
3*m^5*x^7*x^m*e^m + 1272572*B*a*c^3*m^4*x^8*x^m*e^m + 790964*A*c^4*m^3*x^9*
x^m*e^m + 1172700*B*c^4*m^2*x^10*x^m*e^m + B*a^4*m^9*x^2*x^m*e^m + 208*A*a^
3*c*m^8*x^3*x^m*e^m + 4464*B*a^3*c*m^7*x^4*x^m*e^m + 76800*A*a^2*c^2*m^6*x^
```

```
5*x^m*e^m + 514854*B*a^2*c^2*m^5*x^6*x^m*e^m + 1397928*A*a*c^3*m^4*x^7*x^m*
e^m + 3487144*B*a*c^3*m^3*x^8*x^m*e^m + 1290824*A*c^4*m^2*x^9*x^m*e^m + 102
6576*B*c^4*m*x^10*x^m*e^m + A*a^4*m^9*x*x^m*e^m + 53*B*a^4*m^8*x^2*x^m*e^m
+ 4656*A*a^3*c*m^7*x^3*x^m*e^m + 54744*B*a^3*c*m^6*x^4*x^m*e^m + 562638*A*a
^2*c^2*m^5*x^5*x^m*e^m + 2323206*B*a^2*c^2*m^4*x^6*x^m*e^m + 3882224*A*a*c^
3*m^3*x^7*x^m*e^m + 5740848*B*a*c^3*m^2*x^8*x^m*e^m + 1136160*A*c^4*m*x^9*x
^m*e^m + 362880*B*c^4*x^10*x^m*e^m + 54*A*a^4*m^8*x*x^m*e^m + 1214*B*a^4*m^
7*x^2*x^m*e^m + 58632*A*a^3*c*m^6*x^3*x^m*e^m + 412116*B*a^3*c*m^5*x^4*x^m*
e^m + 2599140*A*a^2*c^2*m^4*x^5*x^m*e^m + 6562344*B*a^2*c^2*m^3*x^6*x^m*e^m
 + 6462432*A*a*c^3*m^2*x^7*x^m*e^m + 5087520*B*a*c^3*m*x^8*x^m*e^m + 403200
*A*c^4*x^9*x^m*e^m + 1266*A*a^4*m^7*x*x^m*e^m + 15722*B*a^4*m^6*x^2*x^m*e^m
 + 455196*A*a^3*c*m^5*x^3*x^m*e^m + 1959756*B*a^3*c*m^4*x^4*x^m*e^m + 75058
80*A*a^2*c^2*m^3*x^5*x^m*e^m + 11082936*B*a^2*c^2*m^2*x^6*x^m*e^m + 5777280
*A*a*c^3*m*x^7*x^m*e^m + 1814400*B*a*c^3*x^8*x^m*e^m + 16884*A*a^4*m^6*x*x^
m*e^m + 126329*B*a^4*m^5*x^2*x^m*e^m + 2242632*A*a^3*c*m^4*x^3*x^m*e^m + 58
28696*B*a^3*c*m^3*x^4*x^m*e^m + 12927600*A*a^2*c^2*m^2*x^5*x^m*e^m + 100238
40*B*a^2*c^2*m*x^6*x^m*e^m + 2073600*A*a*c^3*x^7*x^m*e^m + 140889*A*a^4*m^5
*x*x^m*e^m + 649397*B*a^4*m^4*x^2*x^m*e^m + 6939824*A*a^3*c*m^3*x^3*x^m*e^m
 + 10323216*B*a^3*c*m^2*x^4*x^m*e^m + 11883456*A*a^2*c^2*m*x^5*x^m*e^m + 36
28800*B*a^2*c^2*x^6*x^m*e^m + 761166*A*a^4*m^4*x*x^m*e^m + 2118136*B*a^4*m^
3*x^2*x^m*e^m + 12818528*A*a^3*c*m^2*x^3*x^m*e^m + 9721440*B*a^3*c*m*x^4*x^
m*e^m + 4354560*A*a^2*c^2*x^5*x^m*e^m + 2655764*A*a^4*m^3*x*x^m*e^m + 41732
28*B*a^4*m^2*x^2*x^m*e^m + 12558720*A*a^3*c*m*x^3*x^m*e^m + 3628800*B*a^3*c
*x^4*x^m*e^m + 5753736*A*a^4*m^2*x*x^m*e^m + 4407120*B*a^4*m*x^2*x^m*e^m +
4838400*A*a^3*c*x^3*x^m*e^m + 6999840*A*a^4*m*x*x^m*e^m + 1814400*B*a^4*x^2
*x^m*e^m + 3628800*A*a^4*x*x^m*e^m)/(m^10 + 55*m^9 + 1320*m^8 + 18150*m^7 +
 157773*m^6 + 902055*m^5 + 3416930*m^4 + 8409500*m^3 + 12753576*m^2 + 10628
640*m + 3628800)
```

maple [B] time = 0.05, size = 1255, normalized size = 5.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] x*(B*c^4*m^9*x^9+A*c^4*m^9*x^8+45*B*c^4*m^8*x^9+46*A*c^4*m^8*x^8+4*B*a*c^3*
m^9*x^7+870*B*c^4*m^7*x^9+4*A*a*c^3*m^9*x^6+906*A*c^4*m^7*x^8+188*B*a*c^3*m
^8*x^7+9450*B*c^4*m^6*x^9+192*A*a*c^3*m^8*x^6+9996*A*c^4*m^6*x^8+6*B*a^2*c^
2*m^9*x^5+3776*B*a*c^3*m^7*x^7+63273*B*c^4*m^5*x^9+6*A*a^2*c^2*m^9*x^4+3936
*A*a*c^3*m^7*x^6+67809*A*c^4*m^5*x^8+294*B*a^2*c^2*m^8*x^5+42392*B*a*c^3*m^
6*x^7+269325*B*c^4*m^4*x^9+300*A*a^2*c^2*m^8*x^4+45048*A*a*c^3*m^6*x^6+2917
74*A*c^4*m^4*x^8+4*B*a^3*c*m^9*x^3+6156*B*a^2*c^2*m^7*x^5+291956*B*a*c^3*m^
5*x^7+723680*B*c^4*m^3*x^9+4*A*a^3*c*m^9*x^2+6420*A*a^2*c^2*m^7*x^4+315756*
A*a*c^3*m^5*x^6+790964*A*c^4*m^3*x^8+204*B*a^3*c*m^8*x^3+71964*B*a^2*c^2*m^
6*x^5+1272572*B*a*c^3*m^4*x^7+1172700*B*c^4*m^2*x^9+208*A*a^3*c*m^8*x^2+768
00*A*a^2*c^2*m^6*x^4+1397928*A*a*c^3*m^4*x^6+1290824*A*c^4*m^2*x^8+B*a^4*m^
9*x+4464*B*a^3*c*m^7*x^3+514854*B*a^2*c^2*m^5*x^5+3487144*B*a*c^3*m^3*x^7+1
026576*B*c^4*m*x^9+A*a^4*m^9+4656*A*a^3*c*m^7*x^2+562638*A*a^2*c^2*m^5*x^4+
3882224*A*a*c^3*m^3*x^6+1136160*A*c^4*m*x^8+53*B*a^4*m^8*x+54744*B*a^3*c*m^
6*x^3+2323206*B*a^2*c^2*m^4*x^5+5740848*B*a*c^3*m^2*x^7+362880*B*c^4*x^9+54
*A*a^4*m^8+58632*A*a^3*c*m^6*x^2+2599140*A*a^2*c^2*m^4*x^4+6462432*A*a*c^3*
m^2*x^6+403200*A*c^4*x^8+1214*B*a^4*m^7*x+412116*B*a^3*c*m^5*x^3+6562344*B*
a^2*c^2*m^3*x^5+5087520*B*a*c^3*m*x^7+1266*A*a^4*m^7+455196*A*a^3*c*m^5*x^2
+7505880*A*a^2*c^2*m^3*x^4+5777280*A*a*c^3*m*x^6+15722*B*a^4*m^6*x+1959756*
B*a^3*c*m^4*x^3+11082936*B*a^2*c^2*m^2*x^5+1814400*B*a*c^3*x^7+16884*A*a^4*
m^6+2242632*A*a^3*c*m^4*x^2+12927600*A*a^2*c^2*m^2*x^4+2073600*A*a*c^3*x^6+
126329*B*a^4*m^5*x+5828696*B*a^3*c*m^3*x^3+10023840*B*a^2*c^2*m*x^5+140889*
A*a^4*m^5+6939824*A*a^3*c*m^3*x^2+11883456*A*a^2*c^2*m*x^4+649397*B*a^4*m^4
*x+10323216*B*a^3*c*m^2*x^3+3628800*B*a^2*c^2*x^5+761166*A*a^4*m^4+12818528
```

```
*A*a^3*c*m^2*x^2+4354560*A*a^2*c^2*x^4+2118136*B*a^4*m^3*x+9721440*B*a^3*c*
m*x^3+2655764*A*a^4*m^3+12558720*A*a^3*c*m*x^2+4173228*B*a^4*m^2*x+3628800*
B*a^3*c*x^3+5753736*A*a^4*m^2+4838400*A*a^3*c*x^2+4407120*B*a^4*m*x+6999840
*A*a^4*m+1814400*B*a^4*x+3628800*A*a^4)*(e*x)^m/(m+10)/(m+9)/(m+8)/(m+7)/(m
+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.78, size = 208, normalized size = 0.96

$$\frac{Bc^4e^mx^{10}x^m}{m+10}+\frac{Ac^4e^mx^9x^m}{m+9}+\frac{4\,Bac^3e^mx^8x^m}{m+8}+\frac{4\,Aac^3e^mx^7x^m}{m+7}+\frac{6\,Ba^2c^2e^mx^6x^m}{m+6}+\frac{6\,Aa^2c^2e^mx^5x^m}{m+5}+\frac{4\,Ba^3ce^mx^4x^m}{m+4}+\frac{4\,Aa^3ce^mx^3x^m}{m+3}+\frac{Ba^4e^mx^2x^m}{m+2}+\frac{(ex)^{m+1}Aa^4}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] B*c^4*e^m*x^10*x^m/(m + 10) + A*c^4*e^m*x^9*x^m/(m + 9) + 4*B*a*c^3*e^m*x^8
*x^m/(m + 8) + 4*A*a*c^3*e^m*x^7*x^m/(m + 7) + 6*B*a^2*c^2*e^m*x^6*x^m/(m +
 6) + 6*A*a^2*c^2*e^m*x^5*x^m/(m + 5) + 4*B*a^3*c*e^m*x^4*x^m/(m + 4) + 4*A
*a^3*c*e^m*x^3*x^m/(m + 3) + B*a^4*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1)*A*a^
4/(e*(m + 1))
```

mupad [B] time = 1.79, size = 1075, normalized size = 4.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (B*a^4*x^2*(e*x)^m*(4407120*m + 4173228*m^2 + 2118136*m^3 + 649397*m^4 + 12
6329*m^5 + 15722*m^6 + 1214*m^7 + 53*m^8 + m^9 + 1814400))/(10628640*m + 12
753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^
7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (A*c^4*x^9*(e*x)^m*(1136160*m + 1
290824*m^2 + 790964*m^3 + 291774*m^4 + 67809*m^5 + 9996*m^6 + 906*m^7 + 46*
m^8 + m^9 + 403200))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4
 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800
) + (B*c^4*x^10*(e*x)^m*(1026576*m + 1172700*m^2 + 723680*m^3 + 269325*m^4
+ 63273*m^5 + 9450*m^6 + 870*m^7 + 45*m^8 + m^9 + 362880))/(10628640*m + 12
753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^
7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (A*a^4*x*(e*x)^m*(6999840*m + 575
3736*m^2 + 2655764*m^3 + 761166*m^4 + 140889*m^5 + 16884*m^6 + 1266*m^7 + 5
4*m^8 + m^9 + 3628800))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*
m^4 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628
800) + (4*A*a*c^3*x^7*(e*x)^m*(1444320*m + 1615608*m^2 + 970556*m^3 + 34948
2*m^4 + 78939*m^5 + 11262*m^6 + 984*m^7 + 48*m^8 + m^9 + 518400))/(10628640
*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 1
8150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (4*A*a^3*c*x^3*(e*x)^m*(31
39680*m + 3204632*m^2 + 1734956*m^3 + 560658*m^4 + 113799*m^5 + 14658*m^6 +
 1164*m^7 + 52*m^8 + m^9 + 1209600))/(10628640*m + 12753576*m^2 + 8409500*m
^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9
+ m^10 + 3628800) + (4*B*a*c^3*x^8*(e*x)^m*(1271880*m + 1435212*m^2 + 87178
6*m^3 + 318143*m^4 + 72989*m^5 + 10598*m^6 + 944*m^7 + 47*m^8 + m^9 + 45360
0))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 1
57773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (4*B*a^3*c*x^
4*(e*x)^m*(2430360*m + 2580804*m^2 + 1457174*m^3 + 489939*m^4 + 103029*m^5
+ 13686*m^6 + 1116*m^7 + 51*m^8 + m^9 + 907200))/(10628640*m + 12753576*m^2
 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m
^8 + 55*m^9 + m^10 + 3628800) + (6*A*a^2*c^2*x^5*(e*x)^m*(1980576*m + 21546
00*m^2 + 1250980*m^3 + 433190*m^4 + 93773*m^5 + 12800*m^6 + 1070*m^7 + 50*m
^8 + m^9 + 725760))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4
+ 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800)
 + (6*B*a^2*c^2*x^6*(e*x)^m*(1670640*m + 1847156*m^2 + 1093724*m^3 + 387201
```

```
*m^4 + 85809*m^5 + 11994*m^6 + 1026*m^7 + 49*m^8 + m^9 + 604800))/(10628640
*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 1
8150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800)
```

sympy [A] time = 5.17, size = 8202, normalized size = 37.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] Piecewise(((-A*a**4/(9*x**9) - 4*A*a**3*c/(7*x**7) - 6*A*a**2*c**2/(5*x**5)
 - 4*A*a*c**3/(3*x**3) - A*c**4/x - B*a**4/(8*x**8) - 2*B*a**3*c/(3*x**6) -
 3*B*a**2*c**2/(2*x**4) - 2*B*a*c**3/x**2 + B*c**4*log(x))/e**10, Eq(m, -10
)), ((-A*a**4/(8*x**8) - 2*A*a**3*c/(3*x**6) - 3*A*a**2*c**2/(2*x**4) - 2*A
*a*c**3/x**2 + A*c**4*log(x) - B*a**4/(7*x**7) - 4*B*a**3*c/(5*x**5) - 2*B*
a**2*c**2/x**3 - 4*B*a*c**3/x + B*c**4*x)/e**9, Eq(m, -9)), ((-A*a**4/(7*x*
*7) - 4*A*a**3*c/(5*x**5) - 2*A*a**2*c**2/x**3 - 4*A*a*c**3/x + A*c**4*x -
B*a**4/(6*x**6) - B*a**3*c/x**4 - 3*B*a**2*c**2/x**2 + 4*B*a*c**3*log(x) +
B*c**4*x**2/2)/e**8, Eq(m, -8)), ((-A*a**4/(6*x**6) - A*a**3*c/x**4 - 3*A*a
**2*c**2/x**2 + 4*A*a*c**3*log(x) + A*c**4*x**2/2 - B*a**4/(5*x**5) - 4*B*a
**3*c/(3*x**3) - 6*B*a**2*c**2/x + 4*B*a*c**3*x + B*c**4*x**3/3)/e**7, Eq(m
, -7)), ((-A*a**4/(5*x**5) - 4*A*a**3*c/(3*x**3) - 6*A*a**2*c**2/x + 4*A*a*
c**3*x + A*c**4*x**3/3 - B*a**4/(4*x**4) - 2*B*a**3*c/x**2 + 6*B*a**2*c**2*
log(x) + 2*B*a*c**3*x**2 + B*c**4*x**4/4)/e**6, Eq(m, -6)), ((-A*a**4/(4*x*
*4) - 2*A*a**3*c/x**2 + 6*A*a**2*c**2*log(x) + 2*A*a*c**3*x**2 + A*c**4*x**
4/4 - B*a**4/(3*x**3) - 4*B*a**3*c/x + 6*B*a**2*c**2*x + 4*B*a*c**3*x**3/3
+ B*c**4*x**5/5)/e**5, Eq(m, -5)), ((-A*a**4/(3*x**3) - 4*A*a**3*c/x + 6*A*
a**2*c**2*x + 4*A*a*c**3*x**3/3 + A*c**4*x**5/5 - B*a**4/(2*x**2) + 4*B*a**
3*c*log(x) + 3*B*a**2*c**2*x**2 + B*a*c**3*x**4 + B*c**4*x**6/6)/e**4, Eq(m
, -4)), ((-A*a**4/(2*x**2) + 4*A*a**3*c*log(x) + 3*A*a**2*c**2*x**2 + A*a*c
**3*x**4 + A*c**4*x**6/6 - B*a**4/x + 4*B*a**3*c*x + 2*B*a**2*c**2*x**3 + 4
*B*a*c**3*x**5/5 + B*c**4*x**7/7)/e**3, Eq(m, -3)), ((-A*a**4/x + 4*A*a**3*
c*x + 2*A*a**2*c**2*x**3 + 4*A*a*c**3*x**5/5 + A*c**4*x**7/7 + B*a**4*log(x
) + 2*B*a**3*c*x**2 + 3*B*a**2*c**2*x**4/2 + 2*B*a*c**3*x**6/3 + B*c**4*x**
8/8)/e**2, Eq(m, -2)), ((A*a**4*log(x) + 2*A*a**3*c*x**2 + 3*A*a**2*c**2*x*
*4/2 + 2*A*a*c**3*x**6/3 + A*c**4*x**8/8 + B*a**4*x + 4*B*a**3*c*x**3/3 + 6
*B*a**2*c**2*x**5/5 + 4*B*a*c**3*x**7/7 + B*c**4*x**9/9)/e, Eq(m, -1)), (A*
a**4*e**m*m**9*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m*
*6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
 + 3628800) + 54*A*a**4*e**m*m**8*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 181
50*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275357
6*m**2 + 10628640*m + 3628800) + 1266*A*a**4*e**m*m**7*x*x**m/(m**10 + 55*m
**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8
409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 16884*A*a**4*e**m*m**
6*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m
**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) +
 140889*A*a**4*e**m*m**5*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 +
10628640*m + 3628800) + 761166*A*a**4*e**m*m**4*x*x**m/(m**10 + 55*m**9 + 1
320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*
m**3 + 12753576*m**2 + 10628640*m + 3628800) + 2655764*A*a**4*e**m*m**3*x*x
**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 5753
736*A*a**4*e**m*m**2*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157
773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1062
8640*m + 3628800) + 6999840*A*a**4*e**m*m*x*x**m/(m**10 + 55*m**9 + 1320*m*
*8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 +
 12753576*m**2 + 10628640*m + 3628800) + 3628800*A*a**4*e**m*x*x**m/(m**10
+ 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m*
```

```
*4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4*A*a**3*c*e**m
*m**9*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 9
02055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 362
8800) + 208*A*a**3*c*e**m*m**8*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 181
50*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275357
6*m**2 + 10628640*m + 3628800) + 4656*A*a**3*c*e**m*m**7*x**3*x**m/(m**10 +
 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**
4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 58632*A*a**3*c*e
**m*m**6*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
+ 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
3628800) + 455196*A*a**3*c*e**m*m**5*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8
 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1
2753576*m**2 + 10628640*m + 3628800) + 2242632*A*a**3*c*e**m*m**4*x**3*x**m
/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 34
16930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 6939824
*A*a**3*c*e**m*m**3*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1
57773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10
628640*m + 3628800) + 12818528*A*a**3*c*e**m*m**2*x**3*x**m/(m**10 + 55*m**
9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840
9500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 12558720*A*a**3*c*e**m*
m*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90205
5*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800
) + 4838400*A*a**3*c*e**m*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m*
*7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**
2 + 10628640*m + 3628800) + 6*A*a**2*c**2*e**m*m**9*x**5*x**m/(m**10 + 55*m
**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8
409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 300*A*a**2*c**2*e**m*
m**8*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90
2055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628
800) + 6420*A*a**2*c**2*e**m*m**7*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 +
18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275
3576*m**2 + 10628640*m + 3628800) + 76800*A*a**2*c**2*e**m*m**6*x**5*x**m/(
m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416
930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 562638*A*
a**2*c**2*e**m*m**5*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1
57773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10
628640*m + 3628800) + 2599140*A*a**2*c**2*e**m*m**4*x**5*x**m/(m**10 + 55*m
**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8
409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 7505880*A*a**2*c**2*e
**m*m**3*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
+ 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
3628800) + 12927600*A*a**2*c**2*e**m*m**2*x**5*x**m/(m**10 + 55*m**9 + 1320
*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**
3 + 12753576*m**2 + 10628640*m + 3628800) + 11883456*A*a**2*c**2*e**m*m*x**
5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**
5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4
354560*A*a**2*c**2*e**m*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7
 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
+ 10628640*m + 3628800) + 4*A*a*c**3*e**m*m**9*x**7*x**m/(m**10 + 55*m**9 +
 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840950
0*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 192*A*a*c**3*e**m*m**8*x**
7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**
5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 3
936*A*a*c**3*e**m*m**7*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7
+ 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 +
 10628640*m + 3628800) + 45048*A*a*c**3*e**m*m**6*x**7*x**m/(m**10 + 55*m**
9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840
9500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 315756*A*a*c**3*e**m*m*
*5*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 9020
```

55*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 362880
0) + 1397928*A*a*c**3*e**m*m**4*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 3882224*A*a*c**3*e**m*m**3*x**7*x**m/(m**
10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930
*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 6462432*A*a*
c**3*e**m*m**2*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773
*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1062864
0*m + 3628800) + 5777280*A*a*c**3*e**m*m*x**7*x**m/(m**10 + 55*m**9 + 1320*
m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3
 + 12753576*m**2 + 10628640*m + 3628800) + 2073600*A*a*c**3*e**m*x**7*x**m/
(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 341
6930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + A*c**4*e
m*m9*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
3628800) + 46*A*c**4*e**m*m**8*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 181
50*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275357
6*m**2 + 10628640*m + 3628800) + 906*A*c**4*e**m*m**7*x**9*x**m/(m**10 + 55
*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 +
 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 9996*A*c**4*e**m*m*
*6*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 9020
55*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 362880
0) + 67809*A*c**4*e**m*m**5*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*
m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m
2 + 10628640*m + 3628800) + 291774*A*c4*e**m*m**4*x**9*x**m/(m**10 + 55
*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 +
 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 790964*A*c**4*e**m*
m**3*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90
2055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628
800) + 1290824*A*c**4*e**m*m**2*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 1136160*A*c**4*e**m*m*x**9*x**m/(m**10 +
55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4
 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 403200*A*c**4*e**
m*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90205
5*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800
) + B*a**4*e**m*m**9*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1
0628640*m + 3628800) + 53*B*a**4*e**m*m**8*x**2*x**m/(m**10 + 55*m**9 + 132
0*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m*
*3 + 12753576*m**2 + 10628640*m + 3628800) + 1214*B*a**4*e**m*m**7*x**2*x**
m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3
416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 15722*
B*a**4*e**m*m**6*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1577
73*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628
640*m + 3628800) + 126329*B*a**4*e**m*m**5*x**2*x**m/(m**10 + 55*m**9 + 132
0*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m*
*3 + 12753576*m**2 + 10628640*m + 3628800) + 649397*B*a**4*e**m*m**4*x**2*x
m/(m10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 2118
136*B*a**4*e**m*m**3*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1
0628640*m + 3628800) + 4173228*B*a**4*e**m*m**2*x**2*x**m/(m**10 + 55*m**9
 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 84095
00*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4407120*B*a**4*e**m*m*x**
2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**
5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 1
814400*B*a**4*e**m*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 15
7773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 106

28640*m + 3628800) + 4*B*a**3*c*e**m*m**9*x**4*x**m/(m**10 + 55*m**9 + 1320
*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**
3 + 12753576*m**2 + 10628640*m + 3628800) + 204*B*a**3*c*e**m*m**8*x**4*x**
m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3
416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4464*B
*a**3*c*e**m*m**7*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157
773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1062
8640*m + 3628800) + 54744*B*a**3*c*e**m*m**6*x**4*x**m/(m**10 + 55*m**9 + 1
320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*
m**3 + 12753576*m**2 + 10628640*m + 3628800) + 412116*B*a**3*c*e**m*m**5*x*
*4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m*
*5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) +
1959756*B*a**3*c*e**m*m**4*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m
7 + 157773*m6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m*
*2 + 10628640*m + 3628800) + 5828696*B*a**3*c*e**m*m**3*x**4*x**m/(m**10 +
55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4
 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 10323216*B*a**3*c
*e**m*m**2*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**
6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
+ 3628800) + 9721440*B*a**3*c*e**m*m*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8
 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1
2753576*m**2 + 10628640*m + 3628800) + 3628800*B*a**3*c*e**m*x**4*x**m/(m**
10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930
*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 6*B*a**2*c**
2*e**m*m**9*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m*
*6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
 + 3628800) + 294*B*a**2*c**2*e**m*m**8*x**6*x**m/(m**10 + 55*m**9 + 1320*m
8 + 18150*m7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3
+ 12753576*m**2 + 10628640*m + 3628800) + 6156*B*a**2*c**2*e**m*m**7*x**6*x
m/(m10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 7196
4*B*a**2*c**2*e**m*m**6*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7
 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
+ 10628640*m + 3628800) + 514854*B*a**2*c**2*e**m*m**5*x**6*x**m/(m**10 + 5
5*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4
+ 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 2323206*B*a**2*c**
2*e**m*m**4*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m*
*6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
 + 3628800) + 6562344*B*a**2*c**2*e**m*m**3*x**6*x**m/(m**10 + 55*m**9 + 13
20*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m
3 + 12753576*m2 + 10628640*m + 3628800) + 11082936*B*a**2*c**2*e**m*m**
2*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90205
5*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800
) + 10023840*B*a**2*c**2*e**m*m*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 3628800*B*a**2*c**2*e**m*x**6*x**m/(m**10
 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m
4 + 8409500*m3 + 12753576*m**2 + 10628640*m + 3628800) + 4*B*a*c**3*e**
m*m**9*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 +
902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 36
28800) + 188*B*a*c**3*e**m*m**8*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 3776*B*a*c**3*e**m*m**7*x**8*x**m/(m**10
+ 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m*
*4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 42392*B*a*c**3*
e**m*m**6*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
 3628800) + 291956*B*a*c**3*e**m*m**5*x**8*x**m/(m**10 + 55*m**9 + 1320*m**
8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 +

```
12753576*m**2 + 10628640*m + 3628800) + 1272572*B*a*c**3*e**m*m**4*x**8*x**
m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3
416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 348714
4*B*a*c**3*e**m*m**3*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1
0628640*m + 3628800) + 5740848*B*a*c**3*e**m*m**2*x**8*x**m/(m**10 + 55*m**
9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840
9500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 5087520*B*a*c**3*e**m*m
*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055
*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800)
 + 1814400*B*a*c**3*e**m*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**
7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
 + 10628640*m + 3628800) + B*c**4*e**m*m**9*x**10*x**m/(m**10 + 55*m**9 + 1
320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*
m**3 + 12753576*m**2 + 10628640*m + 3628800) + 45*B*c**4*e**m*m**8*x**10*x*
*m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 870*B
*c**4*e**m*m**7*x**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1577
73*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628
640*m + 3628800) + 9450*B*c**4*e**m*m**6*x**10*x**m/(m**10 + 55*m**9 + 1320
*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**
3 + 12753576*m**2 + 10628640*m + 3628800) + 63273*B*c**4*e**m*m**5*x**10*x*
*m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 26932
5*B*c**4*e**m*m**4*x**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1
57773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10
628640*m + 3628800) + 723680*B*c**4*e**m*m**3*x**10*x**m/(m**10 + 55*m**9 +
 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840950
0*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 1172700*B*c**4*e**m*m**2*x
**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*
m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800)
+ 1026576*B*c**4*e**m*m*x**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**
7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
 + 10628640*m + 3628800) + 362880*B*c**4*e**m*x**10*x**m/(m**10 + 55*m**9 +
 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840950
0*m**3 + 12753576*m**2 + 10628640*m + 3628800), True))
```

3.434 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=169

$$\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{a^3B(ex)^{m+2}}{e^2(m+2)}+\frac{3a^2Ac(ex)^{m+3}}{e^3(m+3)}+\frac{3a^2Bc(ex)^{m+4}}{e^4(m+4)}+\frac{3aAc^2(ex)^{m+5}}{e^5(m+5)}+\frac{3aBc^2(ex)^{m+6}}{e^6(m+6)}+\frac{Ac^3(ex)^{m+7}}{e^7(m+7)}+\frac{Bc^3(e}{e^8(m}$$

Rubi [A] time = 0.10, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{3a^2Ac(ex)^{m+3}}{e^3(m+3)}+\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{3a^2Bc(ex)^{m+4}}{e^4(m+4)}+\frac{a^3B(ex)^{m+2}}{e^2(m+2)}+\frac{3aAc^2(ex)^{m+5}}{e^5(m+5)}+\frac{3aBc^2(ex)^{m+6}}{e^6(m+6)}+\frac{Ac^3(ex)^{m+7}}{e^7(m+7)}+\frac{Bc^3(ex)^{m+8}}{e^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^3*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (
3*a^2*A*c*(e*x)^(3 + m))/(e^3*(3 + m)) + (3*a^2*B*c*(e*x)^(4 + m))/(e^4*(4
+ m)) + (3*a*A*c^2*(e*x)^(5 + m))/(e^5*(5 + m)) + (3*a*B*c^2*(e*x)^(6 + m))
/(e^6*(6 + m)) + (A*c^3*(e*x)^(7 + m))/(e^7*(7 + m)) + (B*c^3*(e*x)^(8 + m)
)/(e^8*(8 + m))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3A(ex)^m+\frac{a^3B(ex)^{1+m}}{e}+\frac{3a^2Ac(ex)^{2+m}}{e^2}+\frac{3a^2Bc(ex)^{3+m}}{e^3}+\frac{3aAc^2(ex)^4}{e^4}\right.\\ &= \frac{a^3A(ex)^{1+m}}{e(1+m)}+\frac{a^3B(ex)^{2+m}}{e^2(2+m)}+\frac{3a^2Ac(ex)^{3+m}}{e^3(3+m)}+\frac{3a^2Bc(ex)^{4+m}}{e^4(4+m)}+\frac{3aAc^2(ex)^{5+}}{e^5(5+m)}\end{aligned}$$

Mathematica [A] time = 0.22, size = 101, normalized size = 0.60

$$x(ex)^m\left(a^3\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+3a^2cx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)+3ac^2x^4\left(\frac{A}{m+5}+\frac{Bx}{m+6}\right)+c^3x^6\left(\frac{A}{m+7}+\frac{Bx}{m+8}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] x*(e*x)^m*(a^3*(A/(1 + m) + (B*x)/(2 + m)) + 3*a^2*c*x^2*(A/(3 + m) + (B*x)
/(4 + m)) + 3*a*c^2*x^4*(A/(5 + m) + (B*x)/(6 + m)) + c^3*x^6*(A/(7 + m) +
(B*x)/(8 + m)))
```

IntegrateAlgebraic [F] time = 0.27, size = 0, normalized size = 0.00

$$\int (ex)^m(A+Bx)\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + c*x^2)^3, x]
```

fricas [B] time = 0.45, size = 649, normalized size = 3.84

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] ((B*c^3*m^7 + 28*B*c^3*m^6 + 322*B*c^3*m^5 + 1960*B*c^3*m^4 + 6769*B*c^3*m^
3 + 13132*B*c^3*m^2 + 13068*B*c^3*m + 5040*B*c^3)*x^8 + (A*c^3*m^7 + 29*A*c
^3*m^6 + 343*A*c^3*m^5 + 2135*A*c^3*m^4 + 7504*A*c^3*m^3 + 14756*A*c^3*m^2
+ 14832*A*c^3*m + 5760*A*c^3)*x^7 + 3*(B*a*c^2*m^7 + 30*B*a*c^2*m^6 + 366*B
*a*c^2*m^5 + 2340*B*a*c^2*m^4 + 8409*B*a*c^2*m^3 + 16830*B*a*c^2*m^2 + 1714
4*B*a*c^2*m + 6720*B*a*c^2)*x^6 + 3*(A*a*c^2*m^7 + 31*A*a*c^2*m^6 + 391*A*a
*c^2*m^5 + 2581*A*a*c^2*m^4 + 9544*A*a*c^2*m^3 + 19564*A*a*c^2*m^2 + 20304*
A*a*c^2*m + 8064*A*a*c^2)*x^5 + 3*(B*a^2*c*m^7 + 32*B*a^2*c*m^6 + 418*B*a^2
*c*m^5 + 2864*B*a^2*c*m^4 + 10993*B*a^2*c*m^3 + 23312*B*a^2*c*m^2 + 24876*B
*a^2*c*m + 10080*B*a^2*c)*x^4 + 3*(A*a^2*c*m^7 + 33*A*a^2*c*m^6 + 447*A*a^2
*c*m^5 + 3195*A*a^2*c*m^4 + 12864*A*a^2*c*m^3 + 28692*A*a^2*c*m^2 + 32048*A
*a^2*c*m + 13440*A*a^2*c)*x^3 + (B*a^3*m^7 + 34*B*a^3*m^6 + 478*B*a^3*m^5 +
 3580*B*a^3*m^4 + 15289*B*a^3*m^3 + 36706*B*a^3*m^2 + 44712*B*a^3*m + 20160
*B*a^3)*x^2 + (A*a^3*m^7 + 35*A*a^3*m^6 + 511*A*a^3*m^5 + 4025*A*a^3*m^4 +
18424*A*a^3*m^3 + 48860*A*a^3*m^2 + 69264*A*a^3*m + 40320*A*a^3)*x)*(e*x)^m
/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2 +
109584*m + 40320)
```

giac [B] time = 0.20, size = 1102, normalized size = 6.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] (B*c^3*m^7*x^8*x^m*e^m + A*c^3*m^7*x^7*x^m*e^m + 28*B*c^3*m^6*x^8*x^m*e^m +
 3*B*a*c^2*m^7*x^6*x^m*e^m + 29*A*c^3*m^6*x^7*x^m*e^m + 322*B*c^3*m^5*x^8*x
^m*e^m + 3*A*a*c^2*m^7*x^5*x^m*e^m + 90*B*a*c^2*m^6*x^6*x^m*e^m + 343*A*c^3
*m^5*x^7*x^m*e^m + 1960*B*c^3*m^4*x^8*x^m*e^m + 3*B*a^2*c*m^7*x^4*x^m*e^m +
 93*A*a*c^2*m^6*x^5*x^m*e^m + 1098*B*a*c^2*m^5*x^6*x^m*e^m + 2135*A*c^3*m^4
*x^7*x^m*e^m + 6769*B*c^3*m^3*x^8*x^m*e^m + 3*A*a^2*c*m^7*x^3*x^m*e^m + 96*
B*a^2*c*m^6*x^4*x^m*e^m + 1173*A*a*c^2*m^5*x^5*x^m*e^m + 7020*B*a*c^2*m^4*x
^6*x^m*e^m + 7504*A*c^3*m^3*x^7*x^m*e^m + 13132*B*c^3*m^2*x^8*x^m*e^m + B*a
^3*m^7*x^2*x^m*e^m + 99*A*a^2*c*m^6*x^3*x^m*e^m + 1254*B*a^2*c*m^5*x^4*x^m*
e^m + 7743*A*a*c^2*m^4*x^5*x^m*e^m + 25227*B*a*c^2*m^3*x^6*x^m*e^m + 14756*
A*c^3*m^2*x^7*x^m*e^m + 13068*B*c^3*m*x^8*x^m*e^m + A*a^3*m^7*x*x^m*e^m + 3
4*B*a^3*m^6*x^2*x^m*e^m + 1341*A*a^2*c*m^5*x^3*x^m*e^m + 8592*B*a^2*c*m^4*x
^4*x^m*e^m + 28632*A*a*c^2*m^3*x^5*x^m*e^m + 50490*B*a*c^2*m^2*x^6*x^m*e^m
+ 14832*A*c^3*m*x^7*x^m*e^m + 5040*B*c^3*x^8*x^m*e^m + 35*A*a^3*m^6*x*x^m*e
^m + 478*B*a^3*m^5*x^2*x^m*e^m + 9585*A*a^2*c*m^4*x^3*x^m*e^m + 32979*B*a^2
*c*m^3*x^4*x^m*e^m + 58692*A*a*c^2*m^2*x^5*x^m*e^m + 51432*B*a*c^2*m*x^6*x^
m*e^m + 5760*A*c^3*x^7*x^m*e^m + 511*A*a^3*m^5*x*x^m*e^m + 3580*B*a^3*m^4*x
^2*x^m*e^m + 38592*A*a^2*c*m^3*x^3*x^m*e^m + 69936*B*a^2*c*m^2*x^4*x^m*e^m
+ 60912*A*a*c^2*m*x^5*x^m*e^m + 20160*B*a*c^2*x^6*x^m*e^m + 4025*A*a^3*m^4*
x*x^m*e^m + 15289*B*a^3*m^3*x^2*x^m*e^m + 86076*A*a^2*c*m^2*x^3*x^m*e^m + 7
4628*B*a^2*c*m*x^4*x^m*e^m + 24192*A*a*c^2*x^5*x^m*e^m + 18424*A*a^3*m^3*x*
x^m*e^m + 36706*B*a^3*m^2*x^2*x^m*e^m + 96144*A*a^2*c*m*x^3*x^m*e^m + 30240
*B*a^2*c*x^4*x^m*e^m + 48860*A*a^3*m^2*x*x^m*e^m + 44712*B*a^3*m*x^2*x^m*e^
m + 40320*A*a^2*c*x^3*x^m*e^m + 69264*A*a^3*m*x*x^m*e^m + 20160*B*a^3*x^2*x
^m*e^m + 40320*A*a^3*x*x^m*e^m)/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*
m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

maple [B] time = 0.06, size = 765, normalized size = 4.53

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] x*(B*c^3*m^7*x^7+A*c^3*m^7*x^6+28*B*c^3*m^6*x^7+29*A*c^3*m^6*x^6+3*B*a*c^2*
m^7*x^5+322*B*c^3*m^5*x^7+3*A*a*c^2*m^7*x^4+343*A*c^3*m^5*x^6+90*B*a*c^2*m^
6*x^5+1960*B*c^3*m^4*x^7+93*A*a*c^2*m^6*x^4+2135*A*c^3*m^4*x^6+3*B*a^2*c*m^
7*x^3+1098*B*a*c^2*m^5*x^5+6769*B*c^3*m^3*x^7+3*A*a^2*c*m^7*x^2+1173*A*a*c^
2*m^5*x^4+7504*A*c^3*m^3*x^6+96*B*a^2*c*m^6*x^3+7020*B*a*c^2*m^4*x^5+13132*
B*c^3*m^2*x^7+99*A*a^2*c*m^6*x^2+7743*A*a*c^2*m^4*x^4+14756*A*c^3*m^2*x^6+B
*a^3*m^7*x+1254*B*a^2*c*m^5*x^3+25227*B*a*c^2*m^3*x^5+13068*B*c^3*m*x^7+A*a
^3*m^7+1341*A*a^2*c*m^5*x^2+28632*A*a*c^2*m^3*x^4+14832*A*c^3*m*x^6+34*B*a^
3*m^6*x+8592*B*a^2*c*m^4*x^3+50490*B*a*c^2*m^2*x^5+5040*B*c^3*x^7+35*A*a^3*
m^6+9585*A*a^2*c*m^4*x^2+58692*A*a*c^2*m^2*x^4+5760*A*c^3*x^6+478*B*a^3*m^5
*x+32979*B*a^2*c*m^3*x^3+51432*B*a*c^2*m*x^5+511*A*a^3*m^5+38592*A*a^2*c*m^
3*x^2+60912*A*a*c^2*m*x^4+3580*B*a^3*m^4*x+69936*B*a^2*c*m^2*x^3+20160*B*a*
c^2*x^5+4025*A*a^3*m^4+86076*A*a^2*c*m^2*x^2+24192*A*a*c^2*x^4+15289*B*a^3*
m^3*x+74628*B*a^2*c*m*x^3+18424*A*a^3*m^3+96144*A*a^2*c*m*x^2+36706*B*a^3*m
^2*x+30240*B*a^2*c*x^3+48860*A*a^3*m^2+40320*A*a^2*c*x^2+44712*B*a^3*m*x+69
264*A*a^3*m+20160*B*a^3*x+40320*A*a^3)*(e*x)^m/(m+8)/(m+7)/(m+6)/(m+5)/(m+4
)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.62, size = 162, normalized size = 0.96

$$\frac{Bc^3e^mx^8x^m}{m+8}+\frac{Ac^3e^mx^7x^m}{m+7}+\frac{3\,Bac^2e^mx^6x^m}{m+6}+\frac{3\,Aac^2e^mx^5x^m}{m+5}+\frac{3\,Ba^2ce^mx^4x^m}{m+4}+\frac{3\,Aa^2ce^mx^3x^m}{m+3}+\frac{Ba^3e^mx^2x^m}{m+2}+\frac{(ex)^{m+1}\,Aa^3}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] B*c^3*e^m*x^8*x^m/(m + 8) + A*c^3*e^m*x^7*x^m/(m + 7) + 3*B*a*c^2*e^m*x^6*x
^m/(m + 6) + 3*A*a*c^2*e^m*x^5*x^m/(m + 5) + 3*B*a^2*c*e^m*x^4*x^m/(m + 4)
+ 3*A*a^2*c*e^m*x^3*x^m/(m + 3) + B*a^3*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1)
*A*a^3/(e*(m + 1))
```

mupad [B] time = 1.48, size = 695, normalized size = 4.11

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x*(e*x)^m*(69264*m + 48860*m^2 + 18424*m^3 + 4025*m^4 + 511*m^5 + 35
*m^6 + m^7 + 40320))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*
m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (B*a^3*x^2*(e*x)^m*(44712*m + 36706
*m^2 + 15289*m^3 + 3580*m^4 + 478*m^5 + 34*m^6 + m^7 + 20160))/(109584*m +
118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40
320) + (A*c^3*x^7*(e*x)^m*(14832*m + 14756*m^2 + 7504*m^3 + 2135*m^4 + 343*
m^5 + 29*m^6 + m^7 + 5760))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
+ 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (B*c^3*x^8*(e*x)^m*(13068*m
+ 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584
*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8
 + 40320) + (3*A*a*c^2*x^5*(e*x)^m*(20304*m + 19564*m^2 + 9544*m^3 + 2581*m
^4 + 391*m^5 + 31*m^6 + m^7 + 8064))/(109584*m + 118124*m^2 + 67284*m^3 + 2
2449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*A*a^2*c*x^3*(e*x
)^m*(32048*m + 28692*m^2 + 12864*m^3 + 3195*m^4 + 447*m^5 + 33*m^6 + m^7 +
```

```
13440))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6
 + 36*m^7 + m^8 + 40320) + (3*B*a*c^2*x^6*(e*x)^m*(17144*m + 16830*m^2 + 84
09*m^3 + 2340*m^4 + 366*m^5 + 30*m^6 + m^7 + 6720))/(109584*m + 118124*m^2
+ 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*B
*a^2*c*x^4*(e*x)^m*(24876*m + 23312*m^2 + 10993*m^3 + 2864*m^4 + 418*m^5 +
32*m^6 + m^7 + 10080))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 453
6*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)
```

sympy [A] time = 3.18, size = 4507, normalized size = 26.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] Piecewise(((-A*a**3/(7*x**7) - 3*A*a**2*c/(5*x**5) - A*a*c**2/x**3 - A*c**3
/x - B*a**3/(6*x**6) - 3*B*a**2*c/(4*x**4) - 3*B*a*c**2/(2*x**2) + B*c**3*l
og(x))/e**8, Eq(m, -8)), ((-A*a**3/(6*x**6) - 3*A*a**2*c/(4*x**4) - 3*A*a*c
**2/(2*x**2) + A*c**3*log(x) - B*a**3/(5*x**5) - B*a**2*c/x**3 - 3*B*a*c**2
/x + B*c**3*x)/e**7, Eq(m, -7)), ((-A*a**3/(5*x**5) - A*a**2*c/x**3 - 3*A*a
*c**2/x + A*c**3*x - B*a**3/(4*x**4) - 3*B*a**2*c/(2*x**2) + 3*B*a*c**2*log
(x) + B*c**3*x**2/2)/e**6, Eq(m, -6)), ((-A*a**3/(4*x**4) - 3*A*a**2*c/(2*x
**2) + 3*A*a*c**2*log(x) + A*c**3*x**2/2 - B*a**3/(3*x**3) - 3*B*a**2*c/x +
 3*B*a*c**2*x + B*c**3*x**3/3)/e**5, Eq(m, -5)), ((-A*a**3/(3*x**3) - 3*A*a
**2*c/x + 3*A*a*c**2*x + A*c**3*x**3/3 - B*a**3/(2*x**2) + 3*B*a**2*c*log(x
) + 3*B*a*c**2*x**2/2 + B*c**3*x**4/4)/e**4, Eq(m, -4)), ((-A*a**3/(2*x**2)
 + 3*A*a**2*c*log(x) + 3*A*a*c**2*x**2/2 + A*c**3*x**4/4 - B*a**3/x + 3*B*a
**2*c*x + B*a*c**2*x**3 + B*c**3*x**5/5)/e**3, Eq(m, -3)), ((-A*a**3/x + 3*
A*a**2*c*x + A*a*c**2*x**3 + A*c**3*x**5/5 + B*a**3*log(x) + 3*B*a**2*c*x**
2/2 + 3*B*a*c**2*x**4/4 + B*c**3*x**6/6)/e**2, Eq(m, -2)), ((A*a**3*log(x)
+ 3*A*a**2*c*x**2/2 + 3*A*a*c**2*x**4/4 + A*c**3*x**6/6 + B*a**3*x + B*a**2
*c*x**3 + 3*B*a*c**2*x**5/5 + B*c**3*x**7/7)/e, Eq(m, -1)), (A*a**3*e**m*m*
*7*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 35*A*a**3*e**m*m**6*x*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 511*A*a**3*e**m*m**5*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 4025*A*
a**3*e**m*m**4*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 18424*A*a**3*e**m*m**3*x*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 48860*A*a**3*e**m*m**2*x*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 69264*A*a**3*e**m*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**3
*e**m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 3*A*a**2*c*e**m*m**7*x**3*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 99*A*a**2*c*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 1341*A*a**2*c*e**m*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*A*a**2
*c*e**m*m**4*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38592*A*a**2*c*e**m*m**3*x
**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
 118124*m**2 + 109584*m + 40320) + 86076*A*a**2*c*e**m*m**2*x**3*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 96144*A*a**2*c*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 40320*A*a**2*c*e**m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a*c**2*e**m
```

```
*m**7*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 93*A*a*c**2*e**m*m**6*x**5*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 1173*A*a*c**2*e**m*m**5*x**5*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 7743*A*a*c**2*e**m*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28632
*A*a*c**2*e**m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 58692*A*a*c**2*e**m
*m**2*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 60912*A*a*c**2*e**m*m*x**5*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 24192*A*a*c**2*e**m*x**5*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + A*c**3*e**m*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 29*A*c**3*e**m*m
**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 343*A*c**3*e**m*m**5*x**7*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 2135*A*c**3*e**m*m**4*x**7*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 7504*A*c**3*e**m*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14756*A*c**3
*e**m*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14832*A*c**3*e**m*m*x**7*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 5760*A*c**3*e**m*x**7*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + B*a**3*e**m*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 34*B*a**3*e**m*m
**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 478*B*a**3*e**m*m**5*x**2*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 3580*B*a**3*e**m*m**4*x**2*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 15289*B*a**3*e**m*m**3*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 36706*B*a**
3*e**m*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 44712*B*a**3*e**m*m*x**2*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 20160*B*a**3*e**m*x**2*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 3*B*a**2*c*e**m*m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 96*B*a**2*
c*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1254*B*a**2*c*e**m*m**5*x**
4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1
18124*m**2 + 109584*m + 40320) + 8592*B*a**2*c*e**m*m**4*x**4*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10
9584*m + 40320) + 32979*B*a**2*c*e**m*m**3*x**4*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 69936*B*a**2*c*e**m*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 74628*B*a*
*2*c*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 30240*B*a**2*c*e**m*x**4*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 3*B*a*c**2*e**m*m**7*x**6*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 90*B*a*c**2*e**m*m**6*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
```

```
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1098*B
*a*c**2*e**m*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7020*B*a*c**2*e**m*m*
*4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 25227*B*a*c**2*e**m*m**3*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 50490*B*a*c**2*e**m*m**2*x**6*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 51432*B*a*c**2*e**m*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 20160*
B*a*c**2*e**m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + B*c**3*e**m*m**7*x**8*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 28*B*c**3*e**m*m**6*x**8*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 322*B*c**3*e**m*m**5*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1960*B*c*
*3*e**m*m**4*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6769*B*c**3*e**m*m**3*x**8
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 13132*B*c**3*e**m*m**2*x**8*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 13068*B*c**3*e**m*m*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 +
4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 504
0*B*c**3*e**m*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320), True))
```

3.435 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=121

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{a^2B(ex)^{m+2}}{e^2(m+2)}+\frac{2aAc(ex)^{m+3}}{e^3(m+3)}+\frac{2aBc(ex)^{m+4}}{e^4(m+4)}+\frac{Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{Bc^2(ex)^{m+6}}{e^6(m+6)}$$

Rubi [A] time = 0.06, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{a^2B(ex)^{m+2}}{e^2(m+2)}+\frac{2aAc(ex)^{m+3}}{e^3(m+3)}+\frac{2aBc(ex)^{m+4}}{e^4(m+4)}+\frac{Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{Bc^2(ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^2*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (
2*a*A*c*(e*x)^(3 + m))/(e^3*(3 + m)) + (2*a*B*c*(e*x)^(4 + m))/(e^4*(4 + m)
) + (A*c^2*(e*x)^(5 + m))/(e^5*(5 + m)) + (B*c^2*(e*x)^(6 + m))/(e^6*(6 + m
))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^2\,dx&=\int \left(a^2A(ex)^m+\frac{a^2B(ex)^{1+m}}{e}+\frac{2aAc(ex)^{2+m}}{e^2}+\frac{2aBc(ex)^{3+m}}{e^3}+\frac{Ac^2(ex)^{4+m}}{e^4}+\right.\\&=\frac{a^2A(ex)^{1+m}}{e(1+m)}+\frac{a^2B(ex)^{2+m}}{e^2(2+m)}+\frac{2aAc(ex)^{3+m}}{e^3(3+m)}+\frac{2aBc(ex)^{4+m}}{e^4(4+m)}+\frac{Ac^2(ex)^{5+m}}{e^5(5+m)}+\end{aligned}$$

Mathematica [A] time = 0.07, size = 74, normalized size = 0.61

$$x(ex)^m\left(a^2\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+2acx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)+c^2x^4\left(\frac{A}{m+5}+\frac{Bx}{m+6}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] x*(e*x)^m*(a^2*(A/(1 + m) + (B*x)/(2 + m)) + 2*a*c*x^2*(A/(3 + m) + (B*x)/(
4 + m)) + c^2*x^4*(A/(5 + m) + (B*x)/(6 + m)))
```

IntegrateAlgebraic [F] time = 0.11, size = 0, normalized size = 0.00

$$\int (ex)^m(A+Bx)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + c*x^2)^2, x]
```

fricas [B] time = 0.43, size = 343, normalized size = 2.83

$$\frac{\left(\left(Bc^{2}m^{5}+15\,Bc^{2}m^{4}+85\,Bc^{2}m^{3}+225\,Bc^{2}m^{2}+274\,Bc^{2}m+120\,Bc^{2}\right)x^{6}+\left(Ac^{2}m^{5}+16\,Ac^{2}m^{4}+95\,Ac^{2}m^{3}+260\,Ac^{2}m^{2}+324\,Ac^{2}m+144\,Ac^{2}\right)x^{5}+2\left(Bacm^{5}+17\,Bacm^{4}+107\,Bacm^{3}+307\,Bacm^{2}+396\,Bacm+180\,Bac\right)x^{4}+2\left(Aacm^{5}+18\,Aacm^{4}+121\,Aacm^{3}+372\,Aacm^{2}+508\,Aacm+240\,Aac\right)x^{3}+\left(Ba^{2}m^{5}+19\,Ba^{2}m^{4}+137\,Ba^{2}m^{3}+461\,Ba^{2}m^{2}+702\,Ba^{2}m+360\,Ba^{2}\right)x^{2}+\left(Aa^{2}m^{5}+20\,Aa^{2}m^{4}+155\,Aa^{2}m^{3}+580\,Aa^{2}m^{2}+1044\,Aa^{2}m+720\,Aa^{2}\right)x\right)(ex)^{m}}{m^{6}+21\,m^{5}+175\,m^{4}+735\,m^{3}+1624\,m^{2}+1764\,m+720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^5 + 15*B*c^2*m^4 + 85*B*c^2*m^3 + 225*B*c^2*m^2 + 274*B*c^2*m + 1
20*B*c^2)*x^6 + (A*c^2*m^5 + 16*A*c^2*m^4 + 95*A*c^2*m^3 + 260*A*c^2*m^2 +
324*A*c^2*m + 144*A*c^2)*x^5 + 2*(B*a*c*m^5 + 17*B*a*c*m^4 + 107*B*a*c*m^3
+ 307*B*a*c*m^2 + 396*B*a*c*m + 180*B*a*c)*x^4 + 2*(A*a*c*m^5 + 18*A*a*c*m^
4 + 121*A*a*c*m^3 + 372*A*a*c*m^2 + 508*A*a*c*m + 240*A*a*c)*x^3 + (B*a^2*m
^5 + 19*B*a^2*m^4 + 137*B*a^2*m^3 + 461*B*a^2*m^2 + 702*B*a^2*m + 360*B*a^2
)*x^2 + (A*a^2*m^5 + 20*A*a^2*m^4 + 155*A*a^2*m^3 + 580*A*a^2*m^2 + 1044*A*
a^2*m + 720*A*a^2)*x)*(e*x)^m/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2
+ 1764*m + 720)
```

giac [B] time = 0.18, size = 586, normalized size = 4.84

$$\frac{Bc^{2}m^{5}x^{6}x^{m}e^{m}+Ac^{2}m^{5}x^{5}x^{m}e^{m}+15\,Bc^{2}m^{4}x^{6}x^{m}e^{m}+2\,Bacm^{5}x^{4}x^{m}e^{m}+16\,Ac^{2}m^{4}x^{5}x^{m}e^{m}+85\,Bc^{2}m^{3}x^{6}x^{m}e^{m}+2\,Aacm^{5}x^{3}x^{m}e^{m}+34\,Bacm^{4}x^{4}x^{m}e^{m}+95\,Ac^{2}m^{3}x^{5}x^{m}e^{m}+225\,Bc^{2}m^{2}x^{6}x^{m}e^{m}+Ba^{2}m^{5}x^{2}x^{m}e^{m}+36\,Aacm^{4}x^{3}x^{m}e^{m}+214\,Bacm^{3}x^{4}x^{m}e^{m}+260\,Ac^{2}m^{2}x^{5}x^{m}e^{m}+274\,Bc^{2}mx^{6}x^{m}e^{m}+Aa^{2}m^{5}xx^{m}e^{m}+19\,Ba^{2}m^{4}x^{2}x^{m}e^{m}+242\,Aacm^{3}x^{3}x^{m}e^{m}+614\,Bacm^{2}x^{4}x^{m}e^{m}+324\,Ac^{2}mx^{5}x^{m}e^{m}+120\,Bc^{2}x^{6}x^{m}e^{m}+20\,Aa^{2}m^{4}xx^{m}e^{m}+137\,Ba^{2}m^{3}x^{2}x^{m}e^{m}+744\,Aacm^{2}x^{3}x^{m}e^{m}+792\,Bacmx^{4}x^{m}e^{m}+144\,Ac^{2}x^{5}x^{m}e^{m}+155\,Aa^{2}m^{3}xx^{m}e^{m}+461\,Ba^{2}m^{2}x^{2}x^{m}e^{m}+1016\,Aacmx^{3}x^{m}e^{m}+360\,Bacx^{4}x^{m}e^{m}+580\,Aa^{2}m^{2}xx^{m}e^{m}+702\,Ba^{2}mx^{2}x^{m}e^{m}+480\,Aacx^{3}x^{m}e^{m}+1044\,Aa^{2}mxx^{m}e^{m}+360\,Ba^{2}x^{2}x^{m}e^{m}+720\,Aa^{2}xx^{m}e^{m}}{m^{6}+21\,m^{5}+175\,m^{4}+735\,m^{3}+1624\,m^{2}+1764\,m+720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] (B*c^2*m^5*x^6*x^m*e^m + A*c^2*m^5*x^5*x^m*e^m + 15*B*c^2*m^4*x^6*x^m*e^m +
 2*B*a*c*m^5*x^4*x^m*e^m + 16*A*c^2*m^4*x^5*x^m*e^m + 85*B*c^2*m^3*x^6*x^m*
e^m + 2*A*a*c*m^5*x^3*x^m*e^m + 34*B*a*c*m^4*x^4*x^m*e^m + 95*A*c^2*m^3*x^5
*x^m*e^m + 225*B*c^2*m^2*x^6*x^m*e^m + B*a^2*m^5*x^2*x^m*e^m + 36*A*a*c*m^4
*x^3*x^m*e^m + 214*B*a*c*m^3*x^4*x^m*e^m + 260*A*c^2*m^2*x^5*x^m*e^m + 274*
B*c^2*m*x^6*x^m*e^m + A*a^2*m^5*x*x^m*e^m + 19*B*a^2*m^4*x^2*x^m*e^m + 242*
A*a*c*m^3*x^3*x^m*e^m + 614*B*a*c*m^2*x^4*x^m*e^m + 324*A*c^2*m*x^5*x^m*e^m
 + 120*B*c^2*x^6*x^m*e^m + 20*A*a^2*m^4*x*x^m*e^m + 137*B*a^2*m^3*x^2*x^m*e
^m + 744*A*a*c*m^2*x^3*x^m*e^m + 792*B*a*c*m*x^4*x^m*e^m + 144*A*c^2*x^5*x^
m*e^m + 155*A*a^2*m^3*x*x^m*e^m + 461*B*a^2*m^2*x^2*x^m*e^m + 1016*A*a*c*m*
x^3*x^m*e^m + 360*B*a*c*x^4*x^m*e^m + 580*A*a^2*m^2*x*x^m*e^m + 702*B*a^2*m
*x^2*x^m*e^m + 480*A*a*c*x^3*x^m*e^m + 1044*A*a^2*m*x*x^m*e^m + 360*B*a^2*x
^2*x^m*e^m + 720*A*a^2*x*x^m*e^m)/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*
m^2 + 1764*m + 720)
```

maple [B] time = 0.05, size = 395, normalized size = 3.26

$$\frac{\left(Bc^{2}m^{5}x^{5}+Ac^{2}m^{5}x^{4}+15Bc^{2}m^{4}x^{5}+16Ac^{2}m^{4}x^{4}+2Bacm^{5}x^{3}+85Bc^{2}m^{3}x^{5}+2Aacm^{5}x^{2}+95Ac^{2}m^{3}x^{4}+34Bacm^{4}x^{3}+225Bc^{2}m^{2}x^{5}+36Aacm^{4}x^{2}+260Ac^{2}m^{2}x^{4}+Ba^{2}m^{5}x+214Bacm^{3}x^{3}+274Bc^{2}mx^{5}+Aa^{2}m^{5}+242Aacm^{3}x^{2}+324Ac^{2}mx^{4}+19Ba^{2}m^{4}x+614Bacm^{2}x^{3}+120Bc^{2}x^{5}+20Aa^{2}m^{4}+744Aacm^{2}x^{2}+144Ac^{2}x^{4}+137Ba^{2}m^{3}x+792Bacmx^{3}+155Aa^{2}m^{3}+1016Aacmx^{2}+461Ba^{2}m^{2}x+360Bacx^{3}+580Aa^{2}m^{2}+480Aacx^{2}+702Ba^{2}mx+1044Aa^{2}m+360Ba^{2}x+720Aa^{2}\right)x\,(ex)^{m}}{(m+6)(m+5)(m+4)(m+3)(m+2)(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] x*(B*c^2*m^5*x^5+A*c^2*m^5*x^4+15*B*c^2*m^4*x^5+16*A*c^2*m^4*x^4+2*B*a*c*m^
5*x^3+85*B*c^2*m^3*x^5+2*A*a*c*m^5*x^2+95*A*c^2*m^3*x^4+34*B*a*c*m^4*x^3+22
5*B*c^2*m^2*x^5+36*A*a*c*m^4*x^2+260*A*c^2*m^2*x^4+B*a^2*m^5*x+214*B*a*c*m^
3*x^3+274*B*c^2*m*x^5+A*a^2*m^5+242*A*a*c*m^3*x^2+324*A*c^2*m*x^4+19*B*a^2*
m^4*x+614*B*a*c*m^2*x^3+120*B*c^2*x^5+20*A*a^2*m^4+744*A*a*c*m^2*x^2+144*A*
c^2*x^4+137*B*a^2*m^3*x+792*B*a*c*m*x^3+155*A*a^2*m^3+1016*A*a*c*m*x^2+461*
B*a^2*m^2*x+360*B*a*c*x^3+580*A*a^2*m^2+480*A*a*c*x^2+702*B*a^2*m*x+1044*A*
a^2*m+360*B*a^2*x+720*A*a^2)*(e*x)^m/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.61, size = 116, normalized size = 0.96

$$\frac{Bc^{2}e^{m}x^{6}x^{m}}{m+6}+\frac{Ac^{2}e^{m}x^{5}x^{m}}{m+5}+\frac{2\,Bace^{m}x^{4}x^{m}}{m+4}+\frac{2\,Aace^{m}x^{3}x^{m}}{m+3}+\frac{Ba^{2}e^{m}x^{2}x^{m}}{m+2}+\frac{(ex)^{m+1}\,Aa^{2}}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] B*c^2*e^m*x^6*x^m/(m + 6) + A*c^2*e^m*x^5*x^m/(m + 5) + 2*B*a*c*e^m*x^4*x^m
/(m + 4) + 2*A*a*c*e^m*x^3*x^m/(m + 3) + B*a^2*e^m*x^2*x^m/(m + 2) + (e*x)^
(m + 1)*A*a^2/(e*(m + 1))
```

mupad [B] time = 1.28, size = 371, normalized size = 3.07

$$(e\,x)^m\left(\frac{A\,a^2\,x\,\left(m^5+20\,m^4+155\,m^3+580\,m^2+1044\,m+720\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{B\,a^2\,x^2\,\left(m^5+19\,m^4+137\,m^3+461\,m^2+702\,m+360\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{A\,c^2\,x^5\,\left(m^5+16\,m^4+95\,m^3+260\,m^2+324\,m+144\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{B\,c^2\,x^6\,\left(m^5+15\,m^4+85\,m^3+225\,m^2+274\,m+120\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{2\,A\,a\,c\,x^3\,\left(m^5+18\,m^4+121\,m^3+372\,m^2+508\,m+240\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{2\,B\,a\,c\,x^4\,\left(m^5+17\,m^4+107\,m^3+307\,m^2+396\,m+180\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (e*x)^m*((A*a^2*x*(1044*m + 580*m^2 + 155*m^3 + 20*m^4 + m^5 + 720))/(1764*
m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (B*a^2*x^2*(702*m
+ 461*m^2 + 137*m^3 + 19*m^4 + m^5 + 360))/(1764*m + 1624*m^2 + 735*m^3 + 1
75*m^4 + 21*m^5 + m^6 + 720) + (A*c^2*x^5*(324*m + 260*m^2 + 95*m^3 + 16*m^
4 + m^5 + 144))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720
) + (B*c^2*x^6*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (2*A*a*c*x^3*(508*m + 3
72*m^2 + 121*m^3 + 18*m^4 + m^5 + 240))/(1764*m + 1624*m^2 + 735*m^3 + 175*
m^4 + 21*m^5 + m^6 + 720) + (2*B*a*c*x^4*(396*m + 307*m^2 + 107*m^3 + 17*m^
4 + m^5 + 180))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720
))
```

sympy [A] time = 1.73, size = 2076, normalized size = 17.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] Piecewise(((-A*a**2/(5*x**5) - 2*A*a*c/(3*x**3) - A*c**2/x - B*a**2/(4*x**4
) - B*a*c/x**2 + B*c**2*log(x))/e**6, Eq(m, -6)), ((-A*a**2/(4*x**4) - A*a*
c/x**2 + A*c**2*log(x) - B*a**2/(3*x**3) - 2*B*a*c/x + B*c**2*x)/e**5, Eq(m
, -5)), ((-A*a**2/(3*x**3) - 2*A*a*c/x + A*c**2*x - B*a**2/(2*x**2) + 2*B*a
*c*log(x) + B*c**2*x**2/2)/e**4, Eq(m, -4)), ((-A*a**2/(2*x**2) + 2*A*a*c*l
og(x) + A*c**2*x**2/2 - B*a**2/x + 2*B*a*c*x + B*c**2*x**3/3)/e**3, Eq(m, -
3)), ((-A*a**2/x + 2*A*a*c*x + A*c**2*x**3/3 + B*a**2*log(x) + B*a*c*x**2 +
 B*c**2*x**4/4)/e**2, Eq(m, -2)), ((A*a**2*log(x) + A*a*c*x**2 + A*c**2*x**
4/4 + B*a**2*x + 2*B*a*c*x**3/3 + B*c**2*x**5/5)/e, Eq(m, -1)), (A*a**2*e**
m*m**5*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 20*A*a**2*e**m*m**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 155*A*a**2*e**m*m**3*x*x**m/(m**6 + 21*m**5 + 17
5*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 580*A*a**2*e**m*m**2*x*x**m
/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1044*A
*a**2*e**m*m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 176
4*m + 720) + 720*A*a**2*e**m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
 1624*m**2 + 1764*m + 720) + 2*A*a*c*e**m*m**5*x**3*x**m/(m**6 + 21*m**5 +
175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 36*A*a*c*e**m*m**4*x**3*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 242
*A*a*c*e**m*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 744*A*a*c*e**m*m**2*x**3*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1016*A*a*c*e**m*m*x**3*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 480*A*a*c*e
**m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + A*c**2*e**m*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 16*A*c**2*e**m*m**4*x**5*x**m/(m**6 + 21*m**5 +
175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 95*A*c**2*e**m*m**3*x**5*
```

```
x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 26
0*A*c**2*e**m*m**2*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m
**2 + 1764*m + 720) + 324*A*c**2*e**m*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 144*A*c**2*e**m*x**5*x**m/(m**6
+ 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + B*a**2*e**m*m
**5*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 19*B*a**2*e**m*m**4*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
+ 1624*m**2 + 1764*m + 720) + 137*B*a**2*e**m*m**3*x**2*x**m/(m**6 + 21*m**
5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 461*B*a**2*e**m*m**2*
x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
 + 702*B*a**2*e**m*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624
*m**2 + 1764*m + 720) + 360*B*a**2*e**m*x**2*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*B*a*c*e**m*m**5*x**4*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 34*B*a*c*e*
*m*m**4*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*
m + 720) + 214*B*a*c*e**m*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m
**3 + 1624*m**2 + 1764*m + 720) + 614*B*a*c*e**m*m**2*x**4*x**m/(m**6 + 21*
m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 792*B*a*c*e**m*m*x
**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
+ 360*B*a*c*e**m*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + B*c**2*e**m*m**5*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 +
 735*m**3 + 1624*m**2 + 1764*m + 720) + 15*B*c**2*e**m*m**4*x**6*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 85*B*c**2*e*
*m*m**3*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*
m + 720) + 225*B*c**2*e**m*m**2*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*
m**3 + 1624*m**2 + 1764*m + 720) + 274*B*c**2*e**m*m*x**6*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 120*B*c**2*e**m*x**
6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720), T
rue))
```

3.436 $\int (ex)^m(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=73

$$\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{aB(ex)^{m+2}}{e^2(m+2)}+\frac{Ac(ex)^{m+3}}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{aB(ex)^{m+2}}{e^2(m+2)}+\frac{Ac(ex)^{m+3}}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*(e*x)^(1 + m))/(e*(1 + m)) + (a*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (A*c*
(e*x)^(3 + m))/(e^3*(3 + m)) + (B*c*(e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)\,dx &= \int \left(aA(ex)^m+\frac{aB(ex)^{1+m}}{e}+\frac{Ac(ex)^{2+m}}{e^2}+\frac{Bc(ex)^{3+m}}{e^3}\right)dx\\ &= \frac{aA(ex)^{1+m}}{e(1+m)}+\frac{aB(ex)^{2+m}}{e^2(2+m)}+\frac{Ac(ex)^{3+m}}{e^3(3+m)}+\frac{Bc(ex)^{4+m}}{e^4(4+m)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 47, normalized size = 0.64

$$x(ex)^m\left(a\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+cx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2),x]
```

```
[Out] x*(e*x)^m*(a*(A/(1 + m) + (B*x)/(2 + m)) + c*x^2*(A/(3 + m) + (B*x)/(4 + m)
))
```

IntegrateAlgebraic [F] time = 0.07, size = 0, normalized size = 0.00

$$\int (ex)^m(A+Bx)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + c*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + c*x^2), x]
```

fricas [A] time = 0.43, size = 133, normalized size = 1.82

$$\frac{\left(\left(Bcm^3+6\,Bcm^2+11\,Bcm+6\,Bc\right)x^4+\left(Acm^3+7\,Acm^2+14\,Acm+8\,Ac\right)x^3+\left(Bam^3+8\,Bam^2+19\,Bam+12\,Ba\right)x^2+\left(Aam^3+9\,Aam^2+26\,Aam+24\,Aa\right)x\right)(ex)^m}{m^4+10\,m^3+35\,m^2+50\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] ((B*c*m^3 + 6*B*c*m^2 + 11*B*c*m + 6*B*c)*x^4 + (A*c*m^3 + 7*A*c*m^2 + 14*A
*c*m + 8*A*c)*x^3 + (B*a*m^3 + 8*B*a*m^2 + 19*B*a*m + 12*B*a)*x^2 + (A*a*m^
3 + 9*A*a*m^2 + 26*A*a*m + 24*A*a)*x)*(e*x)^m/(m^4 + 10*m^3 + 35*m^2 + 50*m
 + 24)
```

giac [B] time = 0.16, size = 230, normalized size = 3.15

$$\frac{Bcm^3x^4x^me^m + Acm^3x^3x^me^m + 6\,Bcm^2x^4x^me^m + Bam^3x^2x^me^m + 7\,Acm^2x^3x^me^m + 11\,Bcmx^4x^me^m + Aam^3xx^me^m + 8\,Bam^2x^2x^me^m + 14\,Acmx^3x^me^m + 6\,Bcx^4x^me^m + 9\,Aam^2xx^me^m + 19\,Bamx^2x^me^m + 8\,Acx^3x^me^m + 26\,Aamxx^me^m + 12\,Bax^2x^me^m + 24\,Aaxx^me^m}{m^4 + 10\,m^3 + 35\,m^2 + 50\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] (B*c*m^3*x^4*x^m*e^m + A*c*m^3*x^3*x^m*e^m + 6*B*c*m^2*x^4*x^m*e^m + B*a*m^
3*x^2*x^m*e^m + 7*A*c*m^2*x^3*x^m*e^m + 11*B*c*m*x^4*x^m*e^m + A*a*m^3*x*x^
m*e^m + 8*B*a*m^2*x^2*x^m*e^m + 14*A*c*m*x^3*x^m*e^m + 6*B*c*x^4*x^m*e^m +
9*A*a*m^2*x*x^m*e^m + 19*B*a*m*x^2*x^m*e^m + 8*A*c*x^3*x^m*e^m + 26*A*a*m*x
*x^m*e^m + 12*B*a*x^2*x^m*e^m + 24*A*a*x*x^m*e^m)/(m^4 + 10*m^3 + 35*m^2 +
50*m + 24)
```

maple [A] time = 0.05, size = 145, normalized size = 1.99

$$\frac{\left(Bc\,m^3x^3 + Ac\,m^3x^2 + 6Bc\,m^2x^3 + 7Ac\,m^2x^2 + Ba\,m^3x + 11Bcm\,x^3 + Aa\,m^3 + 14Acm\,x^2 + 8Ba\,m^2x + 6Bc\,x^3 + 9Aa\,m^2 + 8Ac\,x^2 + 19Bamx + 26Aam + 12Bax + 24Aa\right)x\,(ex)^m}{(m+4)\,(m+3)\,(m+2)\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a),x)
```

```
[Out] x*(B*c*m^3*x^3+A*c*m^3*x^2+6*B*c*m^2*x^3+7*A*c*m^2*x^2+B*a*m^3*x+11*B*c*m*x
^3+A*a*m^3+14*A*c*m*x^2+8*B*a*m^2*x+6*B*c*x^3+9*A*a*m^2+8*A*c*x^2+19*B*a*m*
x+26*A*a*m+12*B*a*x+24*A*a)*(e*x)^m/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.61, size = 70, normalized size = 0.96

$$\frac{Bce^mx^4x^m}{m+4} + \frac{Ace^mx^3x^m}{m+3} + \frac{Bae^mx^2x^m}{m+2} + \frac{(ex)^{m+1}\,Aa}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] B*c*e^m*x^4*x^m/(m + 4) + A*c*e^m*x^3*x^m/(m + 3) + B*a*e^m*x^2*x^m/(m + 2)
 + (e*x)^(m + 1)*A*a/(e*(m + 1))
```

mupad [B] time = 1.15, size = 161, normalized size = 2.21

$$(e\,x)^m\,\left(\frac{A\,a\,x\,\left(m^3+9\,m^2+26\,m+24\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{B\,a\,x^2\,\left(m^3+8\,m^2+19\,m+12\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{A\,c\,x^3\,\left(m^3+7\,m^2+14\,m+8\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{B\,c\,x^4\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (e*x)^m*((A*a*x*(26*m + 9*m^2 + m^3 + 24))/(50*m + 35*m^2 + 10*m^3 + m^4 +
24) + (B*a*x^2*(19*m + 8*m^2 + m^3 + 12))/(50*m + 35*m^2 + 10*m^3 + m^4 + 2
4) + (A*c*x^3*(14*m + 7*m^2 + m^3 + 8))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24)
 + (B*c*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [**A**] time = 0.86, size = 685, normalized size = 9.38

$$\begin{cases} \frac{-\frac{Aa}{3x^3}-\frac{Ac}{x}-\frac{Ba}{2x^2}+Bc\log(x)}{e^4} & \text{for } m=-4 \\ \frac{-\frac{Aa}{2x^2}+Ac\log(x)-\frac{Ba}{x}+Bcx}{e^3} & \text{for } m=-3 \\ \frac{-\frac{Aa}{x}+Acx+Ba\log(x)+\frac{Bcx^2}{2}}{e^2} & \text{for } m=-2 \\ \frac{Aa\log(x)+\frac{Acx^2}{2}+Bax+\frac{Bcx^3}{3}}{e} & \text{for } m=-1 \\ \frac{Aae^m m^3 x x^m}{m^4+10m^3+35m^2+50m+24}+\frac{9Aae^m m^2 x x^m}{m^4+10m^3+35m^2+50m+24}+\frac{26Aae^m m x x^m}{m^4+10m^3+35m^2+50m+24}+\frac{24Aae^m x x^m}{m^4+10m^3+35m^2+50m+24}+\frac{Ace^m m^3 x^3 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{7Ace^m m^2 x^3 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{14Ace^m m x^3 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{8Ace^m x^3 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{Bae^m m^3 x^2 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{8Bae^m m^2 x^2 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{19Bae^m m x^2 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{12Bae^m x^2 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{Bce^m m^3 x^4 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{6Bce^m m^2 x^4 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{11Bce^m m x^4 x^m}{m^4+10m^3+35m^2+50m+24}+\frac{6Bce^m x^4 x^m}{m^4+10m^3+35m^2+50m+24} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a),x)
```

```
[Out] Piecewise((((-A*a/(3*x**3) - A*c/x - B*a/(2*x**2) + B*c*log(x))/e**4, Eq(m,
-4)), ((-A*a/(2*x**2) + A*c*log(x) - B*a/x + B*c*x)/e**3, Eq(m, -3)), ((-A*
a/x + A*c*x + B*a*log(x) + B*c*x**2/2)/e**2, Eq(m, -2)), ((A*a*log(x) + A*c
*x**2/2 + B*a*x + B*c*x**3/3)/e, Eq(m, -1)), (A*a*e**m*m**3*x*x**m/(m**4 +
10*m**3 + 35*m**2 + 50*m + 24) + 9*A*a*e**m*m**2*x*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24) + 26*A*a*e**m*m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m
 + 24) + 24*A*a*e**m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + A*c*e*
*m*m**3*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 7*A*c*e**m*m**2*
x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 14*A*c*e**m*m*x**3*x**m/
(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 8*A*c*e**m*x**3*x**m/(m**4 + 10*m*
*3 + 35*m**2 + 50*m + 24) + B*a*e**m*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m*
*2 + 50*m + 24) + 8*B*a*e**m*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*
m + 24) + 19*B*a*e**m*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
12*B*a*e**m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B*c*e**m*m**
3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*m**2*x**4*x
**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*B*c*e**m*m*x**4*x**m/(m**4
+ 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*x**4*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24), True))
```

3.437 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{5}a^2Ax^5+\frac{1}{7}bx^7(2aB+Ab)+\frac{1}{6}ax^6(aB+2Ab)+\frac{1}{8}b^2Bx^8$$

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$\frac{1}{5}a^2Ax^5+\frac{1}{7}bx^7(2aB+Ab)+\frac{1}{6}ax^6(aB+2Ab)+\frac{1}{8}b^2Bx^8$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^5)/5 + (a*(2*A*b + a*B)*x^6)/6 + (b*(A*b + 2*a*B)*x^7)/7 + (b^2*B*
x^8)/8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x^4(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax^4+a(2Ab+aB)x^5+b(Ab+2aB)x^6+b^2Bx^7\right)dx\\ &= \frac{1}{5}a^2Ax^5+\frac{1}{6}a(2Ab+aB)x^6+\frac{1}{7}b(Ab+2aB)x^7+\frac{1}{8}b^2Bx^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{5}a^2Ax^5+\frac{1}{7}bx^7(2aB+Ab)+\frac{1}{6}ax^6(aB+2Ab)+\frac{1}{8}b^2Bx^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^5)/5 + (a*(2*A*b + a*B)*x^6)/6 + (b*(A*b + 2*a*B)*x^7)/7 + (b^2*B*
x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.39, size = 53, normalized size = 0.96

$$\frac{1}{8}x^8b^2B + \frac{2}{7}x^7baB + \frac{1}{7}x^7b^2A + \frac{1}{6}x^6a^2B + \frac{1}{3}x^6baA + \frac{1}{5}x^5a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^2*B + 2/7*x^7*b*a*B + 1/7*x^7*b^2*A + 1/6*x^6*a^2*B + 1/3*x^6*b*a
*A + 1/5*x^5*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{8}Bb^2x^8 + \frac{2}{7}Babx^7 + \frac{1}{7}Ab^2x^7 + \frac{1}{6}Ba^2x^6 + \frac{1}{3}Aabx^6 + \frac{1}{5}Aa^2x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^2*x^8 + 2/7*B*a*b*x^7 + 1/7*A*b^2*x^7 + 1/6*B*a^2*x^6 + 1/3*A*a*b*x
^6 + 1/5*A*a^2*x^5
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,b^2x^8}{8} + \frac{A\,a^2x^5}{5} + \frac{\left(A\,b^2 + 2abB\right)x^7}{7} + \frac{\left(2Aab + a^2B\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/8*B*b^2*x^8+1/7*(A*b^2+2*B*a*b)*x^7+1/6*(2*A*a*b+B*a^2)*x^6+1/5*a^2*A*x^5
```

maxima [A] time = 0.58, size = 51, normalized size = 0.93

$$\frac{1}{8}Bb^2x^8 + \frac{1}{5}Aa^2x^5 + \frac{1}{7}\left(2\,Bab + Ab^2\right)x^7 + \frac{1}{6}\left(Ba^2 + 2\,Aab\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/8*B*b^2*x^8 + 1/5*A*a^2*x^5 + 1/7*(2*B*a*b + A*b^2)*x^7 + 1/6*(B*a^2 + 2*
A*a*b)*x^6
```

mupad [B] time = 1.06, size = 51, normalized size = 0.93

$$x^6\left(\frac{B\,a^2}{6} + \frac{A\,b\,a}{3}\right) + x^7\left(\frac{A\,b^2}{7} + \frac{2\,B\,a\,b}{7}\right) + \frac{A\,a^2\,x^5}{5} + \frac{B\,b^2\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^6*((B*a^2)/6 + (A*a*b)/3) + x^7*((A*b^2)/7 + (2*B*a*b)/7) + (A*a^2*x^5)/5
 + (B*b^2*x^8)/8
```

sympy [A] time = 0.07, size = 54, normalized size = 0.98

$$\frac{Aa^2x^5}{5} + \frac{Bb^2x^8}{8} + x^7\left(\frac{Ab^2}{7} + \frac{2Bab}{7}\right) + x^6\left(\frac{Aab}{3} + \frac{Ba^2}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**5/5 + B*b**2*x**8/8 + x**7*(A*b**2/7 + 2*B*a*b/7) + x**6*(A*a*b/3
 + B*a**2/6)
```

3.438 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{4}a^2Ax^4+\frac{1}{6}bx^6(2aB+Ab)+\frac{1}{5}ax^5(aB+2Ab)+\frac{1}{7}b^2Bx^7$$

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$\frac{1}{4}a^2Ax^4+\frac{1}{6}bx^6(2aB+Ab)+\frac{1}{5}ax^5(aB+2Ab)+\frac{1}{7}b^2Bx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^4)/4 + (a*(2*A*b + a*B)*x^5)/5 + (b*(A*b + 2*a*B)*x^6)/6 + (b^2*B*
x^7)/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x^3(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax^3+a(2Ab+aB)x^4+b(Ab+2aB)x^5+b^2Bx^6\right)\,dx\\ &= \frac{1}{4}a^2Ax^4+\frac{1}{5}a(2Ab+aB)x^5+\frac{1}{6}b(Ab+2aB)x^6+\frac{1}{7}b^2Bx^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{4}a^2Ax^4+\frac{1}{6}bx^6(2aB+Ab)+\frac{1}{5}ax^5(aB+2Ab)+\frac{1}{7}b^2Bx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^4)/4 + (a*(2*A*b + a*B)*x^5)/5 + (b*(A*b + 2*a*B)*x^6)/6 + (b^2*B*
x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.37, size = 53, normalized size = 0.96

$$\frac{1}{7}x^7b^2B+\frac{1}{3}x^6baB+\frac{1}{6}x^6b^2A+\frac{1}{5}x^5a^2B+\frac{2}{5}x^5baA+\frac{1}{4}x^4a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*b^2*B + 1/3*x^6*b*a*B + 1/6*x^6*b^2*A + 1/5*x^5*a^2*B + 2/5*x^5*b*a
*A + 1/4*x^4*a^2*A
```

giac [A] time = 0.21, size = 53, normalized size = 0.96

$$\frac{1}{7}Bb^2x^7+\frac{1}{3}Babx^6+\frac{1}{6}Ab^2x^6+\frac{1}{5}Ba^2x^5+\frac{2}{5}Aabx^5+\frac{1}{4}Aa^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^2*x^7 + 1/3*B*a*b*x^6 + 1/6*A*b^2*x^6 + 1/5*B*a^2*x^5 + 2/5*A*a*b*x
^5 + 1/4*A*a^2*x^4
```

maple [A] time = 0.05, size = 52, normalized size = 0.95

$$\frac{Bb^2x^7}{7}+\frac{Aa^2x^4}{4}+\frac{\left(Ab^2+2abB\right)x^6}{6}+\frac{\left(2Aab+a^2B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/7*B*b^2*x^7+1/6*(A*b^2+2*B*a*b)*x^6+1/5*(2*A*a*b+B*a^2)*x^5+1/4*A*a^2*x^4
```

maxima [A] time = 0.56, size = 51, normalized size = 0.93

$$\frac{1}{7}Bb^2x^7+\frac{1}{4}Aa^2x^4+\frac{1}{6}\left(2Bab+Ab^2\right)x^6+\frac{1}{5}\left(Ba^2+2Aab\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/7*B*b^2*x^7 + 1/4*A*a^2*x^4 + 1/6*(2*B*a*b + A*b^2)*x^6 + 1/5*(B*a^2 + 2*
A*a*b)*x^5
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^5\left(\frac{Ba^2}{5}+\frac{2Aba}{5}\right)+x^6\left(\frac{Ab^2}{6}+\frac{Bab}{3}\right)+\frac{Aa^2x^4}{4}+\frac{Bb^2x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^5*((B*a^2)/5 + (2*A*a*b)/5) + x^6*((A*b^2)/6 + (B*a*b)/3) + (A*a^2*x^4)/4
 + (B*b^2*x^7)/7
```

sympy [A] time = 0.07, size = 54, normalized size = 0.98

$$\frac{Aa^2x^4}{4} + \frac{Bb^2x^7}{7} + x^6\left(\frac{Ab^2}{6} + \frac{Bab}{3}\right) + x^5\left(\frac{2Aab}{5} + \frac{Ba^2}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**4/4 + B*b**2*x**7/7 + x**6*(A*b**2/6 + B*a*b/3) + x**5*(2*A*a*b/5
 + B*a**2/5)
```

3.439 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}a^2Ax^3+\frac{1}{5}bx^5(2aB+Ab)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{6}b^2Bx^6$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$\frac{1}{3}a^2Ax^3+\frac{1}{5}bx^5(2aB+Ab)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{6}b^2Bx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^3)/3 + (a*(2*A*b + a*B)*x^4)/4 + (b*(A*b + 2*a*B)*x^5)/5 + (b^2*B*
x^6)/6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int x^2(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^2+a(2Ab+aB)x^3+b(Ab+2aB)x^4+b^2Bx^5\right)dx\\&=\frac{1}{3}a^2Ax^3+\frac{1}{4}a(2Ab+aB)x^4+\frac{1}{5}b(Ab+2aB)x^5+\frac{1}{6}b^2Bx^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.91

$$\frac{1}{60}x^3\left(5a^2(4A+3Bx)+6abx(5A+4Bx)+2b^2x^2(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^3*(5*a^2*(4*A + 3*B*x) + 6*a*b*x*(5*A + 4*B*x) + 2*b^2*x^2*(6*A + 5*B*x)
))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.36, size = 53, normalized size = 0.96

$$\frac{1}{6}x^6b^2B + \frac{2}{5}x^5baB + \frac{1}{5}x^5b^2A + \frac{1}{4}x^4a^2B + \frac{1}{2}x^4baA + \frac{1}{3}x^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^2*B + 2/5*x^5*b*a*B + 1/5*x^5*b^2*A + 1/4*x^4*a^2*B + 1/2*x^4*b*a
*A + 1/3*x^3*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{6}Bb^2x^6 + \frac{2}{5}Babx^5 + \frac{1}{5}Ab^2x^5 + \frac{1}{4}Ba^2x^4 + \frac{1}{2}Aabx^4 + \frac{1}{3}Aa^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^2*x^6 + 2/5*B*a*b*x^5 + 1/5*A*b^2*x^5 + 1/4*B*a^2*x^4 + 1/2*A*a*b*x
^4 + 1/3*A*a^2*x^3
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,b^2x^6}{6} + \frac{A\,a^2x^3}{3} + \frac{\left(A\,b^2 + 2abB\right)x^5}{5} + \frac{\left(2Aab + a^2B\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/6*B*b^2*x^6+1/5*(A*b^2+2*B*a*b)*x^5+1/4*(2*A*a*b+B*a^2)*x^4+1/3*A*a^2*x^3
```

maxima [A] time = 0.56, size = 51, normalized size = 0.93

$$\frac{1}{6}Bb^2x^6 + \frac{1}{3}Aa^2x^3 + \frac{1}{5}\left(2\,Bab + Ab^2\right)x^5 + \frac{1}{4}\left(Ba^2 + 2\,Aab\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*B*b^2*x^6 + 1/3*A*a^2*x^3 + 1/5*(2*B*a*b + A*b^2)*x^5 + 1/4*(B*a^2 + 2*
A*a*b)*x^4
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^4\left(\frac{B\,a^2}{4} + \frac{A\,b\,a}{2}\right) + x^5\left(\frac{A\,b^2}{5} + \frac{2\,B\,a\,b}{5}\right) + \frac{A\,a^2\,x^3}{3} + \frac{B\,b^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((B*a^2)/4 + (A*a*b)/2) + x^5*((A*b^2)/5 + (2*B*a*b)/5) + (A*a^2*x^3)/3
 + (B*b^2*x^6)/6
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Aa^2x^3}{3}+\frac{Bb^2x^6}{6}+x^5\left(\frac{Ab^2}{5}+\frac{2Bab}{5}\right)+x^4\left(\frac{Aab}{2}+\frac{Ba^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**3/3 + B*b**2*x**6/6 + x**5*(A*b**2/5 + 2*B*a*b/5) + x**4*(A*a*b/2
 + B*a**2/4)
```

3.440 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{2}a^2Ax^2+\frac{1}{4}bx^4(2aB+Ab)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{5}b^2Bx^5$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {27, 76}

$$\frac{1}{2}a^2Ax^2+\frac{1}{4}bx^4(2aB+Ab)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{5}b^2Bx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^2)/2 + (a*(2*A*b + a*B)*x^3)/3 + (b*(A*b + 2*a*B)*x^4)/4 + (b^2*B*
x^5)/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int x(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax+a(2Ab+aB)x^2+b(Ab+2aB)x^3+b^2Bx^4\right)\,dx\\&=\frac{1}{2}a^2Ax^2+\frac{1}{3}a(2Ab+aB)x^3+\frac{1}{4}b(Ab+2aB)x^4+\frac{1}{5}b^2Bx^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.91

$$\frac{1}{60}x^2\left(10a^2(3A+2Bx)+10abx(4A+3Bx)+3b^2x^2(5A+4Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^2*(10*a^2*(3*A + 2*B*x) + 10*a*b*x*(4*A + 3*B*x) + 3*b^2*x^2*(5*A + 4*B*
x)))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.36, size = 53, normalized size = 0.96

$$\frac{1}{5}x^5b^2B + \frac{1}{2}x^4baB + \frac{1}{4}x^4b^2A + \frac{1}{3}x^3a^2B + \frac{2}{3}x^3baA + \frac{1}{2}x^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b^2*B + 1/2*x^4*b*a*B + 1/4*x^4*b^2*A + 1/3*x^3*a^2*B + 2/3*x^3*b*a
*A + 1/2*x^2*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{5}Bb^2x^5 + \frac{1}{2}Babx^4 + \frac{1}{4}Ab^2x^4 + \frac{1}{3}Ba^2x^3 + \frac{2}{3}Aabx^3 + \frac{1}{2}Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^2*x^5 + 1/2*B*a*b*x^4 + 1/4*A*b^2*x^4 + 1/3*B*a^2*x^3 + 2/3*A*a*b*x
^3 + 1/2*A*a^2*x^2
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,b^2x^5}{5} + \frac{A\,a^2x^2}{2} + \frac{\left(A\,b^2 + 2abB\right)x^4}{4} + \frac{\left(2Aab + a^2B\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*B*b^2*x^5+1/4*(A*b^2+2*B*a*b)*x^4+1/3*(2*A*a*b+B*a^2)*x^3+1/2*A*a^2*x^2
```

maxima [A] time = 0.52, size = 51, normalized size = 0.93

$$\frac{1}{5}Bb^2x^5 + \frac{1}{2}Aa^2x^2 + \frac{1}{4}\left(2\,Bab + Ab^2\right)x^4 + \frac{1}{3}\left(Ba^2 + 2\,Aab\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/5*B*b^2*x^5 + 1/2*A*a^2*x^2 + 1/4*(2*B*a*b + A*b^2)*x^4 + 1/3*(B*a^2 + 2*
A*a*b)*x^3
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$x^3\left(\frac{B\,a^2}{3} + \frac{2\,A\,b\,a}{3}\right) + x^4\left(\frac{A\,b^2}{4} + \frac{B\,a\,b}{2}\right) + \frac{A\,a^2\,x^2}{2} + \frac{B\,b^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((B*a^2)/3 + (2*A*a*b)/3) + x^4*((A*b^2)/4 + (B*a*b)/2) + (A*a^2*x^2)/2
 + (B*b^2*x^5)/5
```

sympy [A] time = 0.07, size = 54, normalized size = 0.98

$$\frac{Aa^2x^2}{2}+\frac{Bb^2x^5}{5}+x^4\left(\frac{Ab^2}{4}+\frac{Bab}{2}\right)+x^3\left(\frac{2Aab}{3}+\frac{Ba^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**2/2 + B*b**2*x**5/5 + x**4*(A*b**2/4 + B*a*b/2) + x**3*(2*A*a*b/3
 + B*a**2/3)
```

3.441 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {27, 43}

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3)/(3*b^2) + (B*(a + b*x)^4)/(4*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)\,dx\\
&= \int \left(\frac{(Ab-aB)(a+bx)^2}{b}+\frac{B(a+bx)^3}{b}\right)dx\\
&= \frac{(Ab-aB)(a+bx)^3}{3b^2}+\frac{B(a+bx)^4}{4b^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 46, normalized size = 1.21

$$\frac{1}{12}x\left(6a^2(2A+Bx)+4abx(3A+2Bx)+b^2x^2(4A+3Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x*(6*a^2*(2*A + B*x) + 4*a*b*x*(3*A + 2*B*x) + b^2*x^2*(4*A + 3*B*x)))/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.36, size = 49, normalized size = 1.29

$$\frac{1}{4}x^4b^2B+\frac{2}{3}x^3baB+\frac{1}{3}x^3b^2A+\frac{1}{2}x^2a^2B+x^2baA+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] 1/4*x^4*b^2*B + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 1/2*x^2*a^2*B + x^2*b*a*A +
 x*a^2*A
```

giac [A] time = 0.15, size = 49, normalized size = 1.29

$$\frac{1}{4}Bb^2x^4+\frac{2}{3}Babx^3+\frac{1}{3}Ab^2x^3+\frac{1}{2}Ba^2x^2+Aabx^2+Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] 1/4*B*b^2*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 1/2*B*a^2*x^2 + A*a*b*x^2 +
 A*a^2*x
```

maple [A] time = 0.04, size = 49, normalized size = 1.29

$$\frac{B\,b^2x^4}{4}+A\,a^2x+\frac{\left(A\,b^2+2abB\right)x^3}{3}+\frac{\left(2Aab+a^2B\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/4*B*b^2*x^4+1/3*(A*b^2+2*B*a*b)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.47, size = 48, normalized size = 1.26

$$\frac{1}{4}Bb^2x^4+Aa^2x+\frac{1}{3}\left(2\,Bab+Ab^2\right)x^3+\frac{1}{2}\left(Ba^2+2\,Aab\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] 1/4*B*b^2*x^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2)*x^3 + 1/2*(B*a^2 + 2*A*a*b)
*x^2
```

mupad [B] time = 0.04, size = 47, normalized size = 1.24

$$x^2\left(\frac{B\,a^2}{2}+A\,b\,a\right)+x^3\left(\frac{A\,b^2}{3}+\frac{2\,B\,a\,b}{3}\right)+\frac{B\,b^2\,x^4}{4}+A\,a^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] x^2*((B*a^2)/2 + A*a*b) + x^3*((A*b^2)/3 + (2*B*a*b)/3) + (B*b^2*x^4)/4 + A
*a^2*x
```

sympy [A] time = 0.07, size = 49, normalized size = 1.29

$$Aa^2x+\frac{Bb^2x^4}{4}+x^3\left(\frac{Ab^2}{3}+\frac{2Bab}{3}\right)+x^2\left(Aab+\frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x + B*b**2*x**4/4 + x**3*(A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b + B*a*
*2/2)
```

3.442 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x} \, dx$

Optimal. Leaf size=40

$$a^2A\log(x)+2aAbx+\frac{B(a+bx)^3}{3b}+\frac{1}{2}Ab^2x^2$$

Rubi [A] time = 0.01, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {27, 80, 43}

$$a^2A\log(x)+2aAbx+\frac{B(a+bx)^3}{3b}+\frac{1}{2}Ab^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x,x]
```

```
[Out] 2*a*A*b*x + (A*b^2*x^2)/2 + (B*(a + b*x)^3)/(3*b) + a^2*A*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x} \, dx &= \int \frac{(a+bx)^2(A+Bx)}{x} \, dx \\
&= \frac{B(a+bx)^3}{3b}+A\int \frac{(a+bx)^2}{x} \, dx \\
&= \frac{B(a+bx)^3}{3b}+A\int \left(2ab+\frac{a^2}{x}+b^2x\right) dx \\
&= 2aAbx+\frac{1}{2}Ab^2x^2+\frac{B(a+bx)^3}{3b}+a^2A\log(x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 1.08

$$a^2A\log(x)+a^2Bx+abx(2A+Bx)+\frac{1}{6}b^2x^2(3A+2Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x,x]
```

```
[Out] a^2*B*x + a*b*x*(2*A + B*x) + (b^2*x^2*(3*A + 2*B*x))/6 + a^2*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x, x]
```

fricas [A] time = 0.41, size = 46, normalized size = 1.15

$$\frac{1}{3}Bb^2x^3 + Aa^2\log(x) + \frac{1}{2}\left(2\,Bab + Ab^2\right)x^2 + \left(Ba^2 + 2\,Aab\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*b^2*x^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2)*x^2 + (B*a^2 + 2*A*a*b
)*x
```

giac [A] time = 0.15, size = 46, normalized size = 1.15

$$\frac{1}{3}Bb^2x^3 + Babx^2 + \frac{1}{2}Ab^2x^2 + Ba^2x + 2\,Aabx + Aa^2\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*b^2*x^3 + B*a*b*x^2 + 1/2*A*b^2*x^2 + B*a^2*x + 2*A*a*b*x + A*a^2*log
(abs(x))
```

maple [A] time = 0.06, size = 46, normalized size = 1.15

$$\frac{B\,b^2x^3}{3} + \frac{A\,b^2x^2}{2} + Bab\,x^2 + A\,a^2\ln(x) + 2Aabx + B\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x)
```

```
[Out] 1/3*B*b^2*x^3+1/2*A*b^2*x^2+B*a*b*x^2+2*a*A*b*x+B*a^2*x+A*a^2*ln(x)
```

maxima [A] time = 0.60, size = 46, normalized size = 1.15

$$\frac{1}{3}Bb^2x^3 + Aa^2\log(x) + \frac{1}{2}\left(2\,Bab + Ab^2\right)x^2 + \left(Ba^2 + 2\,Aab\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*b^2*x^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2)*x^2 + (B*a^2 + 2*A*a*b
)*x
```

mupad [B] time = 0.04, size = 45, normalized size = 1.12

$$x^2\left(\frac{A\,b^2}{2}+B\,a\,b\right)+x\,\left(B\,a^2+2\,A\,b\,a\right)+\frac{B\,b^2\,x^3}{3}+A\,a^2\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x,x)
```

```
[Out] x^2*((A*b^2)/2 + B*a*b) + x*(B*a^2 + 2*A*a*b) + (B*b^2*x^3)/3 + A*a^2*log(x
)
```

sympy [A] time = 0.14, size = 46, normalized size = 1.15

$$Aa^2\log\left(x\right)+\frac{Bb^2x^3}{3}+x^2\left(\frac{Ab^2}{2}+Bab\right)+x\left(2Aab+Ba^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x,x)
```

```
[Out] A*a**2*log(x) + B*b**2*x**3/3 + x**2*(A*b**2/2 + B*a*b) + x*(2*A*a*b + B*a*
*2)
```

3.443 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^2} \, dx$

Optimal. Leaf size=44

$$-\frac{a^2A}{x}+bx(2aB+Ab)+a\log(x)(aB+2Ab)+\frac{1}{2}b^2Bx^2$$

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{x}+bx(2aB+Ab)+a\log(x)(aB+2Ab)+\frac{1}{2}b^2Bx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^2,x]
```

```
[Out] -((a^2*A)/x) + b*(A*b + 2*a*B)*x + (b^2*B*x^2)/2 + a*(2*A*b + a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^2} \, dx &= \int \frac{(a+bx)^2(A+Bx)}{x^2} \, dx\\
&= \int \left(b(Ab+2aB)+\frac{a^2A}{x^2}+\frac{a(2Ab+aB)}{x}+b^2Bx\right) \, dx\\
&= -\frac{a^2A}{x}+b(Ab+2aB)x+\frac{1}{2}b^2Bx^2+a(2Ab+aB)\log(x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.98

$$-\frac{a^2A}{x}+a\log(x)(aB+2Ab)+2abBx+\frac{1}{2}b^2x(2A+Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^2,x]
```

```
[Out] -((a^2*A)/x) + 2*a*b*B*x + (b^2*x*(2*A + B*x))/2 + a*(2*A*b + a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^2,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^2, x]
```

fricas [A] time = 0.43, size = 52, normalized size = 1.18

$$\frac{Bb^2x^3 - 2\,Aa^2 + 2\left(2\,Bab + Ab^2\right)x^2 + 2\left(Ba^2 + 2\,Aab\right)x\log(x)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x, algorithm="fricas")
[Out] 1/2*(B*b^2*x^3 - 2*A*a^2 + 2*(2*B*a*b + A*b^2)*x^2 + 2*(B*a^2 + 2*A*a*b)*x*
log(x))/x
```

giac [A] time = 0.15, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bb^2x^2 + 2\,Babx + Ab^2x - \frac{Aa^2}{x} + \left(Ba^2 + 2\,Aab\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x, algorithm="giac")
[Out] 1/2*B*b^2*x^2 + 2*B*a*b*x + A*b^2*x - A*a^2/x + (B*a^2 + 2*A*a*b)*log(abs(x
))
```

maple [A] time = 0.06, size = 46, normalized size = 1.05

$$\frac{B\,b^2x^2}{2} + 2Aab\ln(x) + A\,b^2x + B\,a^2\ln(x) + 2Babx - \frac{A\,a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x)
[Out] 1/2*B*b^2*x^2+A*b^2*x+2*a*b*B*x-A*a^2/x+2*A*ln(x)*a*b+B*a^2*ln(x)
```

maxima [A] time = 0.60, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bb^2x^2 - \frac{Aa^2}{x} + \left(2\,Bab + Ab^2\right)x + \left(Ba^2 + 2\,Aab\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x, algorithm="maxima")
[Out] 1/2*B*b^2*x^2 - A*a^2/x + (2*B*a*b + A*b^2)*x + (B*a^2 + 2*A*a*b)*log(x)
```

mupad [B] time = 0.04, size = 46, normalized size = 1.05

$$\ln(x)\,\left(B\,a^2 + 2\,A\,b\,a\right) + x\,\left(A\,b^2 + 2\,B\,a\,b\right) - \frac{A\,a^2}{x} + \frac{B\,b^2\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^2,x)
[Out] log(x)*(B*a^2 + 2*A*a*b) + x*(A*b^2 + 2*B*a*b) - (A*a^2)/x + (B*b^2*x^2)/2
```

sympy [A] time = 0.18, size = 42, normalized size = 0.95

$$-\frac{Aa^2}{x} + \frac{Bb^2x^2}{2} + a\left(2Ab + Ba\right)\log\left(x\right) + x\left(Ab^2 + 2Bab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**2,x)
```

```
[Out] -A*a**2/x + B*b**2*x**2/2 + a*(2*A*b + B*a)*log(x) + x*(A*b**2 + 2*B*a*b)
```

3.444 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^3}\,dx$

Optimal. Leaf size=44

$$-\frac{a^2A}{2x^2}-\frac{a(aB+2Ab)}{x}+b\log(x)(2aB+Ab)+b^2Bx$$

Rubi [A] time = 0.02, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{2x^2}-\frac{a(aB+2Ab)}{x}+b\log(x)(2aB+Ab)+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^3,x]
[Out] -(a^2*A)/(2*x^2) - (a*(2*A*b + a*B))/x + b^2*B*x + b*(A*b + 2*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^3}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^3}\,dx\\ &= \int \left(b^2B+\frac{a^2A}{x^3}+\frac{a(2Ab+aB)}{x^2}+\frac{b(Ab+2aB)}{x}\right)dx\\ &= -\frac{a^2A}{2x^2}-\frac{a(2Ab+aB)}{x}+b^2Bx+b(Ab+2aB)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 43, normalized size = 0.98

$$-\frac{a^2(A+2Bx)}{2x^2}+b\log(x)(2aB+Ab)-\frac{2aAb}{x}+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^3,x]
[Out] (-2*a*A*b)/x + b^2*B*x - (a^2*(A + 2*B*x))/(2*x^2) + b*(A*b + 2*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^3,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^3, x]
```

fricas [A] time = 0.43, size = 53, normalized size = 1.20

$$\frac{2\,Bb^2x^3 + 2\left(2\,Bab + Ab^2\right)x^2\log(x) - Aa^2 - 2\left(Ba^2 + 2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x, algorithm="fricas")
[Out] 1/2*(2*B*b^2*x^3 + 2*(2*B*a*b + A*b^2)*x^2*log(x) - A*a^2 - 2*(B*a^2 + 2*A*
a*b)*x)/x^2
```

giac [A] time = 0.15, size = 47, normalized size = 1.07

$$Bb^2x + \left(2\,Bab + Ab^2\right)\log\left(|x|\right) - \frac{Aa^2 + 2\left(Ba^2 + 2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x, algorithm="giac")
[Out] B*b^2*x + (2*B*a*b + A*b^2)*log(abs(x)) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*b)*
x)/x^2
```

maple [A] time = 0.05, size = 48, normalized size = 1.09

$$A\,b^2\ln(x) + 2Bab\ln(x) + B\,b^2x - \frac{2Aab}{x} - \frac{B\,a^2}{x} - \frac{A\,a^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x)
[Out] B*b^2*x-1/2*A*a^2/x^2-2*a/x*A*b-B*a^2/x+A*b^2*ln(x)+2*B*ln(x)*a*b
```

maxima [A] time = 0.56, size = 46, normalized size = 1.05

$$Bb^2x + \left(2\,Bab + Ab^2\right)\log(x) - \frac{Aa^2 + 2\left(Ba^2 + 2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x, algorithm="maxima")
[Out] B*b^2*x + (2*B*a*b + A*b^2)*log(x) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*b)*x)/x^
2
```

mupad [B] time = 1.07, size = 46, normalized size = 1.05

$$\ln(x)\,\left(A\,b^2 + 2\,B\,a\,b\right) - \frac{\frac{A\,a^2}{2} + x\,\left(B\,a^2 + 2\,A\,b\,a\right)}{x^2} + B\,b^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^3,x)
[Out] log(x)*(A*b^2 + 2*B*a*b) - ((A*a^2)/2 + x*(B*a^2 + 2*A*a*b))/x^2 + B*b^2*x
```

sympy [A] time = 0.33, size = 46, normalized size = 1.05

$$Bb^2x + b\left(Ab + 2Ba\right)\log\left(x\right) + \frac{-Aa^2 + x\left(-4Aab - 2Ba^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**3,x)
```

```
[Out] B*b**2*x + b*(A*b + 2*B*a)*log(x) + (-A*a**2 + x*(-4*A*a*b - 2*B*a**2))/(2*
x**2)
```

3.445 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^4}\,dx$

Optimal. Leaf size=49

$$-\frac{a^2A}{3x^3}-\frac{a(aB+2Ab)}{2x^2}-\frac{b(2aB+Ab)}{x}+b^2B\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{3x^3}-\frac{a(aB+2Ab)}{2x^2}-\frac{b(2aB+Ab)}{x}+b^2B\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^4,x]
```

```
[Out] -(a^2*A)/(3*x^3) - (a*(2*A*b + a*B))/(2*x^2) - (b*(A*b + 2*a*B))/x + b^2*B*
Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^4}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^4}\,dx\\ &= \int \left(\frac{a^2A}{x^4}+\frac{a(2Ab+aB)}{x^3}+\frac{b(Ab+2aB)}{x^2}+\frac{b^2B}{x}\right)dx\\ &= -\frac{a^2A}{3x^3}-\frac{a(2Ab+aB)}{2x^2}-\frac{b(Ab+2aB)}{x}+b^2B\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 48, normalized size = 0.98

$$b^2B\log(x)-\frac{a^2(2A+3Bx)+6abx(A+2Bx)+6Ab^2x^2}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^4,x]
```

```
[Out] -1/6*(6*A*b^2*x^2 + 6*a*b*x*(A + 2*B*x) + a^2*(2*A + 3*B*x))/x^3 + b^2*B*Lo
g[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^4,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^4, x]
```

fricas [A] time = 0.41, size = 53, normalized size = 1.08

$$\frac{6\,Bb^2x^3\log(x)-2\,Aa^2-6\,\left(2\,Bab+Ab^2\right)x^2-3\,\left(Ba^2+2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x, algorithm="fricas")
[Out] 1/6*(6*B*b^2*x^3*log(x) - 2*A*a^2 - 6*(2*B*a*b + A*b^2)*x^2 - 3*(B*a^2 + 2*
A*a*b)*x)/x^3
```

giac [A] time = 0.16, size = 51, normalized size = 1.04

$$Bb^2\log\left(|x|\right)-\frac{2\,Aa^2+6\,\left(2\,Bab+Ab^2\right)x^2+3\,\left(Ba^2+2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x, algorithm="giac")
[Out] B*b^2*log(abs(x)) - 1/6*(2*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 3*(B*a^2 + 2*A
*a*b)*x)/x^3
```

maple [A] time = 0.05, size = 52, normalized size = 1.06

$$B\,b^2\ln(x)-\frac{A\,b^2}{x}-\frac{2Bab}{x}-\frac{Aab}{x^2}-\frac{B\,a^2}{2x^2}-\frac{A\,a^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x)
[Out] -1/3*A*a^2/x^3-a/x^2*A*b-1/2*B*a^2/x^2-A*b^2/x-2*b/x*B*a+B*b^2*ln(x)
```

maxima [A] time = 0.55, size = 50, normalized size = 1.02

$$Bb^2\log(x)-\frac{2\,Aa^2+6\,\left(2\,Bab+Ab^2\right)x^2+3\,\left(Ba^2+2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x, algorithm="maxima")
[Out] B*b^2*log(x) - 1/6*(2*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 3*(B*a^2 + 2*A*a*b)
*x)/x^3
```

mupad [B] time = 0.05, size = 48, normalized size = 0.98

$$B\,b^2\,\ln(x)-\frac{x^2\,\left(A\,b^2+2\,B\,a\,b\right)+\frac{A\,a^2}{3}+x\,\left(\frac{B\,a^2}{2}+A\,b\,a\right)}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^4,x)
```

```
[Out] B*b^2*log(x) - (x^2*(A*b^2 + 2*B*a*b) + (A*a^2)/3 + x*((B*a^2)/2 + A*a*b))/
x^3
```

sympy [A] time = 0.52, size = 54, normalized size = 1.10

$$Bb^2\log(x) + \frac{-2Aa^2 + x^2\left(-6Ab^2 - 12Bab\right) + x\left(-6Aab - 3Ba^2\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**4,x)
```

```
[Out] B*b**2*log(x) + (-2*A*a**2 + x**2*(-6*A*b**2 - 12*B*a*b) + x*(-6*A*a*b - 3*
B*a**2))/(6*x**3)
```

3.446 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^5}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)^3(Ab-4aB)}{12a^2x^3}-\frac{A(a+bx)^3}{4ax^4}$$

Rubi [A] time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {27, 78, 37}

$$\frac{(a+bx)^3(Ab-4aB)}{12a^2x^3}-\frac{A(a+bx)^3}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^5,x]
```

```
[Out] -(A*(a + b*x)^3)/(4*a*x^4) + ((A*b - 4*a*B)*(a + b*x)^3)/(12*a^2*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^5}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^5}\,dx\\ &= -\frac{A(a+bx)^3}{4ax^4}+\frac{(-Ab+4aB)\int \frac{(a+bx)^2}{x^4}\,dx}{4a}\\ &= -\frac{A(a+bx)^3}{4ax^4}+\frac{(Ab-4aB)(a+bx)^3}{12a^2x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 1.07

$$-\frac{a^2(3A+4Bx)+4abx(2A+3Bx)+6b^2x^2(A+2Bx)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^5,x]
```

```
[Out] -1/12*(6*b^2*x^2*(A + 2*B*x) + 4*a*b*x*(2*A + 3*B*x) + a^2*(3*A + 4*B*x))/x
^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^5, x]
```

fricas [A] time = 0.39, size = 51, normalized size = 1.16

$$-\frac{12\,Bb^2x^3+3\,Aa^2+6\left(2\,Bab+Ab^2\right)x^2+4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*b^2*x^3 + 3*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 4*(B*a^2 + 2*A*a*
b)*x)/x^4
```

giac [A] time = 0.15, size = 51, normalized size = 1.16

$$-\frac{12\,Bb^2x^3+12\,Babx^2+6\,Ab^2x^2+4\,Ba^2x+8\,Aabx+3\,Aa^2}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*b^2*x^3 + 12*B*a*b*x^2 + 6*A*b^2*x^2 + 4*B*a^2*x + 8*A*a*b*x +
3*A*a^2)/x^4
```

maple [A] time = 0.05, size = 48, normalized size = 1.09

$$-\frac{B\,b^2}{x}-\frac{A\,a^2}{4x^4}-\frac{(Ab+2Ba)\,b}{2x^2}-\frac{(2Ab+Ba)\,a}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x)
```

```
[Out] -1/4*A*a^2/x^4-1/3*a*(2*A*b+B*a)/x^3-1/2*(A*b+2*B*a)*b/x^2-b^2*B/x
```

maxima [A] time = 0.57, size = 51, normalized size = 1.16

$$-\frac{12\,Bb^2x^3+3\,Aa^2+6\left(2\,Bab+Ab^2\right)x^2+4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*b^2*x^3 + 3*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 4*(B*a^2 + 2*A*a*
b)*x)/x^4
```

mupad [B] time = 0.04, size = 49, normalized size = 1.11

$$-\frac{x^2\,\left(\frac{A\,b^2}{2}+B\,a\,b\right)+\frac{A\,a^2}{4}+x\,\left(\frac{B\,a^2}{3}+\frac{2\,A\,b\,a}{3}\right)+B\,b^2\,x^3}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^5,x)
```

```
[Out] -(x^2*((A*b^2)/2 + B*a*b) + (A*a^2)/4 + x*((B*a^2)/3 + (2*A*a*b)/3) + B*b^2
*x^3)/x^4
```

sympy [A] time = 0.66, size = 56, normalized size = 1.27

$$\frac{-3Aa^2-12Bb^2x^3+x^2\left(-6Ab^2-12Bab\right)+x\left(-8Aab-4Ba^2\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**5,x)
```

```
[Out] (-3*A*a**2 - 12*B*b**2*x**3 + x**2*(-6*A*b**2 - 12*B*a*b) + x*(-8*A*a*b - 4
*B*a**2))/(12*x**4)
```

3.447 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)}{x^6} dx$

Optimal. Leaf size=55

$$-\frac{a^2A}{5x^5}-\frac{a(aB+2Ab)}{4x^4}-\frac{b(2aB+Ab)}{3x^3}-\frac{b^2B}{2x^2}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 76\}$

$$-\frac{a^2A}{5x^5}-\frac{a(aB+2Ab)}{4x^4}-\frac{b(2aB+Ab)}{3x^3}-\frac{b^2B}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^6,x]
```

```
[Out] -(a^2*A)/(5*x^5) - (a*(2*A*b + a*B))/(4*x^4) - (b*(A*b + 2*a*B))/(3*x^3) -
(b^2*B)/(2*x^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^6}dx &= \int \frac{(a+bx)^2(A+Bx)}{x^6}dx\\ &= \int \left(\frac{a^2A}{x^6}+\frac{a(2Ab+aB)}{x^5}+\frac{b(Ab+2aB)}{x^4}+\frac{b^2B}{x^3}\right)dx\\ &= -\frac{a^2A}{5x^5}-\frac{a(2Ab+aB)}{4x^4}-\frac{b(Ab+2aB)}{3x^3}-\frac{b^2B}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.91

$$-\frac{3a^2(4A+5Bx)+10abx(3A+4Bx)+10b^2x^2(2A+3Bx)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^6,x]
```

```
[Out] -1/60*(10*b^2*x^2*(2*A + 3*B*x) + 10*a*b*x*(3*A + 4*B*x) + 3*a^2*(4*A + 5*B
*x))/x^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^6,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^6, x]
```

fricas [A] time = 0.40, size = 51, normalized size = 0.93

$$-\frac{30\,Bb^2x^3+12\,Aa^2+20\left(2\,Bab+Ab^2\right)x^2+15\left(Ba^2+2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x, algorithm="fricas")
[Out] -1/60*(30*B*b^2*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2)*x^2 + 15*(B*a^2 + 2*A
*a*b)*x)/x^5
```

giac [A] time = 0.15, size = 51, normalized size = 0.93

$$-\frac{30\,Bb^2x^3+40\,Babx^2+20\,Ab^2x^2+15\,Ba^2x+30\,Aabx+12\,Aa^2}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x, algorithm="giac")
[Out] -1/60*(30*B*b^2*x^3 + 40*B*a*b*x^2 + 20*A*b^2*x^2 + 15*B*a^2*x + 30*A*a*b*x
 + 12*A*a^2)/x^5
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,b^2}{2x^2}-\frac{A\,a^2}{5x^5}-\frac{(Ab+2Ba)\,b}{3x^3}-\frac{(2Ab+Ba)\,a}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x)
[Out] -1/5*A*a^2/x^5-1/4*(2*A*b+B*a)*a/x^4-1/3*b*(A*b+2*B*a)/x^3-1/2*B*b^2/x^2
```

maxima [A] time = 0.52, size = 51, normalized size = 0.93

$$-\frac{30\,Bb^2x^3+12\,Aa^2+20\left(2\,Bab+Ab^2\right)x^2+15\left(Ba^2+2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x, algorithm="maxima")
[Out] -1/60*(30*B*b^2*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2)*x^2 + 15*(B*a^2 + 2*A
*a*b)*x)/x^5
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\left(\frac{A\,b^2}{3}+\frac{2\,B\,a\,b}{3}\right)+\frac{A\,a^2}{5}+x\left(\frac{B\,a^2}{4}+\frac{A\,b\,a}{2}\right)+\frac{B\,b^2\,x^3}{2}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^6,x)
```

```
[Out] -(x^2*((A*b^2)/3 + (2*B*a*b)/3) + (A*a^2)/5 + x*((B*a^2)/4 + (A*a*b)/2) + (
B*b^2*x^3)/2)/x^5
```

sympy [A] time = 0.86, size = 56, normalized size = 1.02

$$\frac{-12Aa^2 - 30Bb^2x^3 + x^2\left(-20Ab^2 - 40Bab\right) + x\left(-30Aab - 15Ba^2\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**6,x)
```

```
[Out] (-12*A*a**2 - 30*B*b**2*x**3 + x**2*(-20*A*b**2 - 40*B*a*b) + x*(-30*A*a*b
- 15*B*a**2))/(60*x**5)
```

3.448 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^7}\,dx$

Optimal. Leaf size=55

$$-\frac{a^2A}{6x^6}-\frac{a(aB+2Ab)}{5x^5}-\frac{b(2aB+Ab)}{4x^4}-\frac{b^2B}{3x^3}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{6x^6}-\frac{a(aB+2Ab)}{5x^5}-\frac{b(2aB+Ab)}{4x^4}-\frac{b^2B}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^7,x]
```

```
[Out] -(a^2*A)/(6*x^6) - (a*(2*A*b + a*B))/(5*x^5) - (b*(A*b + 2*a*B))/(4*x^4) -
(b^2*B)/(3*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^7}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^7}\,dx\\
&= \int \left(\frac{a^2A}{x^7}+\frac{a(2Ab+aB)}{x^6}+\frac{b(Ab+2aB)}{x^5}+\frac{b^2B}{x^4}\right)dx\\
&= -\frac{a^2A}{6x^6}-\frac{a(2Ab+aB)}{5x^5}-\frac{b(Ab+2aB)}{4x^4}-\frac{b^2B}{3x^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.91

$$-\frac{2a^2(5A+6Bx)+6abx(4A+5Bx)+5b^2x^2(3A+4Bx)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^7,x]
```

```
[Out] -1/60*(5*b^2*x^2*(3*A + 4*B*x) + 6*a*b*x*(4*A + 5*B*x) + 2*a^2*(5*A + 6*B*x
))/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^7, x]
```

fricas [A] time = 0.39, size = 51, normalized size = 0.93

$$-\frac{20\,Bb^2x^3+10\,Aa^2+15\left(2\,Bab+Ab^2\right)x^2+12\left(Ba^2+2\,Aab\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b^2*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2)*x^2 + 12*(B*a^2 + 2*A
*a*b)*x)/x^6
```

giac [A] time = 0.19, size = 51, normalized size = 0.93

$$-\frac{20\,Bb^2x^3+30\,Babx^2+15\,Ab^2x^2+12\,Ba^2x+24\,Aabx+10\,Aa^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b^2*x^3 + 30*B*a*b*x^2 + 15*A*b^2*x^2 + 12*B*a^2*x + 24*A*a*b*x
 + 10*A*a^2)/x^6
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,b^2}{3x^3}-\frac{A\,a^2}{6x^6}-\frac{(Ab+2Ba)\,b}{4x^4}-\frac{(2Ab+Ba)\,a}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x)
```

```
[Out] -1/6*A*a^2/x^6-1/5*(2*A*b+B*a)*a/x^5-1/4*b*(A*b+2*B*a)/x^4-1/3*b^2*B/x^3
```

maxima [A] time = 0.59, size = 51, normalized size = 0.93

$$-\frac{20\,Bb^2x^3+10\,Aa^2+15\left(2\,Bab+Ab^2\right)x^2+12\left(Ba^2+2\,Aab\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*b^2*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2)*x^2 + 12*(B*a^2 + 2*A
*a*b)*x)/x^6
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\left(\frac{A\,b^2}{4}+\frac{B\,a\,b}{2}\right)+\frac{A\,a^2}{6}+x\left(\frac{B\,a^2}{5}+\frac{2\,A\,b\,a}{5}\right)+\frac{B\,b^2\,x^3}{3}}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^7,x)
```

```
[Out] -(x^2*((A*b^2)/4 + (B*a*b)/2) + (A*a^2)/6 + x*((B*a^2)/5 + (2*A*a*b)/5) + (
B*b^2*x^3)/3)/x^6
```

sympy [A] time = 1.01, size = 56, normalized size = 1.02

$$\frac{-10Aa^2 - 20Bb^2x^3 + x^2\left(-15Ab^2 - 30Bab\right) + x\left(-24Aab - 12Ba^2\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**7,x)
```

```
[Out] (-10*A*a**2 - 20*B*b**2*x**3 + x**2*(-15*A*b**2 - 30*B*a*b) + x*(-24*A*a*b
- 12*B*a**2))/(60*x**6)
```

3.449 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)}{x^8} dx$

Optimal. Leaf size=55

$$-\frac{a^2A}{7x^7}-\frac{a(aB+2Ab)}{6x^6}-\frac{b(2aB+Ab)}{5x^5}-\frac{b^2B}{4x^4}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{7x^7}-\frac{a(aB+2Ab)}{6x^6}-\frac{b(2aB+Ab)}{5x^5}-\frac{b^2B}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^8,x]
```

```
[Out] -(a^2*A)/(7*x^7) - (a*(2*A*b + a*B))/(6*x^6) - (b*(A*b + 2*a*B))/(5*x^5) -
(b^2*B)/(4*x^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^8} dx &= \int \frac{(a+bx)^2(A+Bx)}{x^8} dx \\
&= \int \left(\frac{a^2A}{x^8}+\frac{a(2Ab+aB)}{x^7}+\frac{b(Ab+2aB)}{x^6}+\frac{b^2B}{x^5}\right) dx \\
&= -\frac{a^2A}{7x^7}-\frac{a(2Ab+aB)}{6x^6}-\frac{b(Ab+2aB)}{5x^5}-\frac{b^2B}{4x^4}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.91

$$-\frac{10a^2(6A+7Bx)+28abx(5A+6Bx)+21b^2x^2(4A+5Bx)}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^8,x]
```

```
[Out] -1/420*(21*b^2*x^2*(4*A + 5*B*x) + 28*a*b*x*(5*A + 6*B*x) + 10*a^2*(6*A + 7
*B*x))/x^7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^8, x]
```

fricas [A] time = 0.39, size = 51, normalized size = 0.93

$$-\frac{105\,Bb^2x^3+60\,Aa^2+84\left(2\,Bab+Ab^2\right)x^2+70\left(Ba^2+2\,Aab\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(105*B*b^2*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2)*x^2 + 70*(B*a^2 + 2
*A*a*b)*x)/x^7
```

giac [A] time = 0.16, size = 51, normalized size = 0.93

$$-\frac{105\,Bb^2x^3+168\,Babx^2+84\,Ab^2x^2+70\,Ba^2x+140\,Aabx+60\,Aa^2}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(105*B*b^2*x^3 + 168*B*a*b*x^2 + 84*A*b^2*x^2 + 70*B*a^2*x + 140*A*a
*b*x + 60*A*a^2)/x^7
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,b^2}{4x^4}-\frac{A\,a^2}{7x^7}-\frac{(Ab+2Ba)\,b}{5x^5}-\frac{(2Ab+Ba)\,a}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x)
```

```
[Out] -1/7*A*a^2/x^7-1/6*a*(2*A*b+B*a)/x^6-1/5*b*(A*b+2*B*a)/x^5-1/4*b^2*B/x^4
```

maxima [A] time = 0.47, size = 51, normalized size = 0.93

$$-\frac{105\,Bb^2x^3+60\,Aa^2+84\left(2\,Bab+Ab^2\right)x^2+70\left(Ba^2+2\,Aab\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(105*B*b^2*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2)*x^2 + 70*(B*a^2 + 2
*A*a*b)*x)/x^7
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\left(\frac{A\,b^2}{5}+\frac{2\,B\,a\,b}{5}\right)+\frac{A\,a^2}{7}+x\left(\frac{B\,a^2}{6}+\frac{A\,b\,a}{3}\right)+\frac{B\,b^2\,x^3}{4}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^8,x)
```

```
[Out] -(x^2*((A*b^2)/5 + (2*B*a*b)/5) + (A*a^2)/7 + x*((B*a^2)/6 + (A*a*b)/3) + (
B*b^2*x^3)/4)/x^7
```

sympy [A] time = 1.24, size = 56, normalized size = 1.02

$$\frac{-60Aa^2 - 105Bb^2x^3 + x^2\left(-84Ab^2 - 168Bab\right) + x\left(-140Aab - 70Ba^2\right)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**8,x)
```

```
[Out] (-60*A*a**2 - 105*B*b**2*x**3 + x**2*(-84*A*b**2 - 168*B*a*b) + x*(-140*A*a
*b - 70*B*a**2))/(420*x**7)
```

3.450 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=99

$$\frac{1}{5}a^4Ax^5+\frac{1}{6}a^3x^6(aB+4Ab)+\frac{2}{7}a^2bx^7(2aB+3Ab)+\frac{1}{9}b^3x^9(4aB+Ab)+\frac{1}{4}ab^2x^8(3aB+2Ab)+\frac{1}{10}b^4Bx^{10}$$

Rubi [A] time = 0.08, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{7}a^2bx^7(2aB+3Ab)+\frac{1}{6}a^3x^6(aB+4Ab)+\frac{1}{5}a^4Ax^5+\frac{1}{9}b^3x^9(4aB+Ab)+\frac{1}{4}ab^2x^8(3aB+2Ab)+\frac{1}{10}b^4Bx^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^5)/5 + (a^3*(4*A*b + a*B)*x^6)/6 + (2*a^2*b*(3*A*b + 2*a*B)*x^7)/7
 + (a*b^2*(2*A*b + 3*a*B)*x^8)/4 + (b^3*(A*b + 4*a*B)*x^9)/9 + (b^4*B*x^10)
/10
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^4(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^4+a^3(4Ab+aB)x^5+2a^2b(3Ab+2aB)x^6+2ab^2(2Ab+3a\right.\\ &= \frac{1}{5}a^4Ax^5+\frac{1}{6}a^3(4Ab+aB)x^6+\frac{2}{7}a^2b(3Ab+2aB)x^7+\frac{1}{4}ab^2(2Ab+3a\end{aligned}$$

Mathematica [A] time = 0.01, size = 99, normalized size = 1.00

$$\frac{1}{5}a^4Ax^5+\frac{1}{6}a^3x^6(aB+4Ab)+\frac{2}{7}a^2bx^7(2aB+3Ab)+\frac{1}{9}b^3x^9(4aB+Ab)+\frac{1}{4}ab^2x^8(3aB+2Ab)+\frac{1}{10}b^4Bx^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^5)/5 + (a^3*(4*A*b + a*B)*x^6)/6 + (2*a^2*b*(3*A*b + 2*a*B)*x^7)/7
 + (a*b^2*(2*A*b + 3*a*B)*x^8)/4 + (b^3*(A*b + 4*a*B)*x^9)/9 + (b^4*B*x^10)
/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.35, size = 101, normalized size = 1.02

$$\frac{1}{10}x^{10}b^4B+\frac{4}{9}x^9b^3aB+\frac{1}{9}x^9b^4A+\frac{3}{4}x^8b^2a^2B+\frac{1}{2}x^8b^3aA+\frac{4}{7}x^7ba^3B+\frac{6}{7}x^7b^2a^2A+\frac{1}{6}x^6a^4B+\frac{2}{3}x^6ba^3A+\frac{1}{5}x^5a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*b^4*B + 4/9*x^9*b^3*a*B + 1/9*x^9*b^4*A + 3/4*x^8*b^2*a^2*B + 1/2
*x^8*b^3*a*A + 4/7*x^7*b*a^3*B + 6/7*x^7*b^2*a^2*A + 1/6*x^6*a^4*B + 2/3*x^
6*b*a^3*A + 1/5*x^5*a^4*A
```

giac [A] time = 0.16, size = 101, normalized size = 1.02

$$\frac{1}{10}Bb^4x^{10}+\frac{4}{9}Bab^3x^9+\frac{1}{9}Ab^4x^9+\frac{3}{4}Ba^2b^2x^8+\frac{1}{2}Aab^3x^8+\frac{4}{7}Ba^3bx^7+\frac{6}{7}Aa^2b^2x^7+\frac{1}{6}Ba^4x^6+\frac{2}{3}Aa^3bx^6+\frac{1}{5}Aa^4x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*b^4*x^10 + 4/9*B*a*b^3*x^9 + 1/9*A*b^4*x^9 + 3/4*B*a^2*b^2*x^8 + 1/2
*A*a*b^3*x^8 + 4/7*B*a^3*b*x^7 + 6/7*A*a^2*b^2*x^7 + 1/6*B*a^4*x^6 + 2/3*A*
a^3*b*x^6 + 1/5*A*a^4*x^5
```

maple [A] time = 0.04, size = 100, normalized size = 1.01

$$\frac{Bb^4x^{10}}{10}+\frac{Aa^4x^5}{5}+\frac{\left(Ab^4+4Bab^3\right)x^9}{9}+\frac{\left(4Aab^3+6Ba^2b^2\right)x^8}{8}+\frac{\left(6Aa^2b^2+4Ba^3b\right)x^7}{7}+\frac{\left(4Aa^3b+Ba^4\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/10*b^4*B*x^10+1/9*(A*b^4+4*B*a*b^3)*x^9+1/8*(4*A*a*b^3+6*B*a^2*b^2)*x^8+1
/7*(6*A*a^2*b^2+4*B*a^3*b)*x^7+1/6*(4*A*a^3*b+B*a^4)*x^6+1/5*a^4*A*x^5
```

maxima [A] time = 0.48, size = 99, normalized size = 1.00

$$\frac{1}{10}Bb^4x^{10}+\frac{1}{5}Aa^4x^5+\frac{1}{9}\left(4Bab^3+Ab^4\right)x^9+\frac{1}{4}\left(3Ba^2b^2+2Aab^3\right)x^8+\frac{2}{7}\left(2Ba^3b+3Aa^2b^2\right)x^7+\frac{1}{6}\left(Ba^4+4Aa^3b\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*b^4*x^10 + 1/5*A*a^4*x^5 + 1/9*(4*B*a*b^3 + A*b^4)*x^9 + 1/4*(3*B*a^
2*b^2 + 2*A*a*b^3)*x^8 + 2/7*(2*B*a^3*b + 3*A*a^2*b^2)*x^7 + 1/6*(B*a^4 + 4
*A*a^3*b)*x^6
```

mupad [B] time = 0.05, size = 91, normalized size = 0.92

$$x^6\left(\frac{B\,a^4}{6}+\frac{2\,A\,b\,a^3}{3}\right)+x^9\left(\frac{A\,b^4}{9}+\frac{4\,B\,a\,b^3}{9}\right)+\frac{A\,a^4\,x^5}{5}+\frac{B\,b^4\,x^{10}}{10}+\frac{2\,a^2\,b\,x^7\,\left(3\,A\,b+2\,B\,a\right)}{7}+\frac{a\,b^2\,x^8\,\left(2\,A\,b+3\,B\,a\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^6*((B*a^4)/6 + (2*A*a^3*b)/3) + x^9*((A*b^4)/9 + (4*B*a*b^3)/9) + (A*a^4*
x^5)/5 + (B*b^4*x^10)/10 + (2*a^2*b*x^7*(3*A*b + 2*B*a))/7 + (a*b^2*x^8*(2*
A*b + 3*B*a))/4
```

sympy [A] time = 0.09, size = 109, normalized size = 1.10

$$\frac{Aa^4x^5}{5} + \frac{Bb^4x^{10}}{10} + x^9\left(\frac{Ab^4}{9} + \frac{4Bab^3}{9}\right) + x^8\left(\frac{Aab^3}{2} + \frac{3Ba^2b^2}{4}\right) + x^7\left(\frac{6Aa^2b^2}{7} + \frac{4Ba^3b}{7}\right) + x^6\left(\frac{2Aa^3b}{3} + \frac{Ba^4}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**5/5 + B*b**4*x**10/10 + x**9*(A*b**4/9 + 4*B*a*b**3/9) + x**8*(A*
a*b**3/2 + 3*B*a**2*b**2/4) + x**7*(6*A*a**2*b**2/7 + 4*B*a**3*b/7) + x**6*
(2*A*a**3*b/3 + B*a**4/6)
```

3.451 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=99

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^3x^5(aB+4Ab)+\frac{1}{3}a^2bx^6(2aB+3Ab)+\frac{1}{8}b^3x^8(4aB+Ab)+\frac{2}{7}ab^2x^7(3aB+2Ab)+\frac{1}{9}b^4Bx^9$$

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{1}{3}a^2bx^6(2aB+3Ab)+\frac{1}{5}a^3x^5(aB+4Ab)+\frac{1}{4}a^4Ax^4+\frac{1}{8}b^3x^8(4aB+Ab)+\frac{2}{7}ab^2x^7(3aB+2Ab)+\frac{1}{9}b^4Bx^9$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]

[Out] (a^4*A*x^4)/4 + (a^3*(4*A*b + a*B)*x^5)/5 + (a^2*b*(3*A*b + 2*a*B)*x^6)/3 +
 (2*a*b^2*(2*A*b + 3*a*B)*x^7)/7 + (b^3*(A*b + 4*a*B)*x^8)/8 + (b^4*B*x^9)/
9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^3(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^3+a^3(4Ab+aB)x^4+2a^2b(3Ab+2aB)x^5+2ab^2(2Ab+3aB)\right.\\ &= \frac{1}{4}a^4Ax^4+\frac{1}{5}a^3(4Ab+aB)x^5+\frac{1}{3}a^2b(3Ab+2aB)x^6+\frac{2}{7}ab^2(2Ab+3aB)\end{aligned}$$

Mathematica [A] time = 0.01, size = 99, normalized size = 1.00

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^3x^5(aB+4Ab)+\frac{1}{3}a^2bx^6(2aB+3Ab)+\frac{1}{8}b^3x^8(4aB+Ab)+\frac{2}{7}ab^2x^7(3aB+2Ab)+\frac{1}{9}b^4Bx^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]

[Out] (a^4*A*x^4)/4 + (a^3*(4*A*b + a*B)*x^5)/5 + (a^2*b*(3*A*b + 2*a*B)*x^6)/3 +
 (2*a*b^2*(2*A*b + 3*a*B)*x^7)/7 + (b^3*(A*b + 4*a*B)*x^8)/8 + (b^4*B*x^9)/
9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.36, size = 100, normalized size = 1.01

$$\frac{1}{9}x^9b^4B+\frac{1}{2}x^8b^3aB+\frac{1}{8}x^8b^4A+\frac{6}{7}x^7b^2a^2B+\frac{4}{7}x^7b^3aA+\frac{2}{3}x^6ba^3B+x^6b^2a^2A+\frac{1}{5}x^5a^4B+\frac{4}{5}x^5ba^3A+\frac{1}{4}x^4a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*b^4*B + 1/2*x^8*b^3*a*B + 1/8*x^8*b^4*A + 6/7*x^7*b^2*a^2*B + 4/7*x
^7*b^3*a*A + 2/3*x^6*b*a^3*B + x^6*b^2*a^2*A + 1/5*x^5*a^4*B + 4/5*x^5*b*a^
3*A + 1/4*x^4*a^4*A
```

giac [A] time = 0.15, size = 100, normalized size = 1.01

$$\frac{1}{9}Bb^4x^9+\frac{1}{2}Bab^3x^8+\frac{1}{8}Ab^4x^8+\frac{6}{7}Ba^2b^2x^7+\frac{4}{7}Aab^3x^7+\frac{2}{3}Ba^3bx^6+Aa^2b^2x^6+\frac{1}{5}Ba^4x^5+\frac{4}{5}Aa^3bx^5+\frac{1}{4}Aa^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*b^4*x^9 + 1/2*B*a*b^3*x^8 + 1/8*A*b^4*x^8 + 6/7*B*a^2*b^2*x^7 + 4/7*A
*a*b^3*x^7 + 2/3*B*a^3*b*x^6 + A*a^2*b^2*x^6 + 1/5*B*a^4*x^5 + 4/5*A*a^3*b*
x^5 + 1/4*A*a^4*x^4
```

maple [A] time = 0.07, size = 100, normalized size = 1.01

$$\frac{B\,b^4x^9}{9}+\frac{A\,a^4x^4}{4}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^8}{8}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^7}{7}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^6}{6}+\frac{\left(4A\,a^3b+B\,a^4\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/9*b^4*B*x^9+1/8*(A*b^4+4*B*a*b^3)*x^8+1/7*(4*A*a*b^3+6*B*a^2*b^2)*x^7+1/6
*(6*A*a^2*b^2+4*B*a^3*b)*x^6+1/5*(4*A*a^3*b+B*a^4)*x^5+1/4*A*a^4*x^4
```

maxima [A] time = 0.57, size = 99, normalized size = 1.00

$$\frac{1}{9}Bb^4x^9+\frac{1}{4}Aa^4x^4+\frac{1}{8}\left(4Bab^3+Ab^4\right)x^8+\frac{2}{7}\left(3Ba^2b^2+2Aab^3\right)x^7+\frac{1}{3}\left(2Ba^3b+3Aa^2b^2\right)x^6+\frac{1}{5}\left(Ba^4+4Aa^3b\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*b^4*x^9 + 1/4*A*a^4*x^4 + 1/8*(4*B*a*b^3 + A*b^4)*x^8 + 2/7*(3*B*a^2*
b^2 + 2*A*a*b^3)*x^7 + 1/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^6 + 1/5*(B*a^4 + 4*A
*a^3*b)*x^5
```

mupad [B] time = 1.04, size = 91, normalized size = 0.92

$$x^5\left(\frac{B\,a^4}{5}+\frac{4\,A\,b\,a^3}{5}\right)+x^8\left(\frac{A\,b^4}{8}+\frac{B\,a\,b^3}{2}\right)+\frac{A\,a^4\,x^4}{4}+\frac{B\,b^4\,x^9}{9}+\frac{a^2\,b\,x^6\,\left(3\,A\,b+2\,B\,a\right)}{3}+\frac{2\,a\,b^2\,x^7\,\left(2\,A\,b+3\,B\,a\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*((B*a^4)/5 + (4*A*a^3*b)/5) + x^8*((A*b^4)/8 + (B*a*b^3)/2) + (A*a^4*x^
4)/4 + (B*b^4*x^9)/9 + (a^2*b*x^6*(3*A*b + 2*B*a))/3 + (2*a*b^2*x^7*(2*A*b
+ 3*B*a))/7
```

sympy [A] time = 0.09, size = 105, normalized size = 1.06

$$\frac{Aa^4x^4}{4} + \frac{Bb^4x^9}{9} + x^8\left(\frac{Ab^4}{8} + \frac{Bab^3}{2}\right) + x^7\left(\frac{4Aab^3}{7} + \frac{6Ba^2b^2}{7}\right) + x^6\left(Aa^2b^2 + \frac{2Ba^3b}{3}\right) + x^5\left(\frac{4Aa^3b}{5} + \frac{Ba^4}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**4/4 + B*b**4*x**9/9 + x**8*(A*b**4/8 + B*a*b**3/2) + x**7*(4*A*a*
b**3/7 + 6*B*a**2*b**2/7) + x**6*(A*a**2*b**2 + 2*B*a**3*b/3) + x**5*(4*A*a
**3*b/5 + B*a**4/5)
```

3.452 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=87

$$\frac{a^2(a+bx)^5(Ab-aB)}{5b^4}+\frac{(a+bx)^7(Ab-3aB)}{7b^4}-\frac{a(a+bx)^6(2Ab-3aB)}{6b^4}+\frac{B(a+bx)^8}{8b^4}$$

Rubi [A] time = 0.05, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{a^2(a+bx)^5(Ab-aB)}{5b^4}+\frac{(a+bx)^7(Ab-3aB)}{7b^4}-\frac{a(a+bx)^6(2Ab-3aB)}{6b^4}+\frac{B(a+bx)^8}{8b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^2*(A*b - a*B)*(a + b*x)^5)/(5*b^4) - (a*(2*A*b - 3*a*B)*(a + b*x)^6)/(6*
b^4) + ((A*b - 3*a*B)*(a + b*x)^7)/(7*b^4) + (B*(a + b*x)^8)/(8*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^2(a+bx)^4(A+Bx)\,dx\\ &= \int \left(-\frac{a^2(-Ab+aB)(a+bx)^4}{b^3}+\frac{a(-2Ab+3aB)(a+bx)^5}{b^3}+\frac{(Ab-3a\\ &= \frac{a^2(Ab-aB)(a+bx)^5}{5b^4}-\frac{a(2Ab-3aB)(a+bx)^6}{6b^4}+\frac{(Ab-3aB)(a+bx\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 1.01

$$\frac{1}{840}x^3\left(70a^4(4A+3Bx)+168a^3bx(5A+4Bx)+168a^2b^2x^2(6A+5Bx)+80ab^3x^3(7A+6Bx)+15b^4x^4(8A+7Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^3*(70*a^4*(4*A + 3*B*x) + 168*a^3*b*x*(5*A + 4*B*x) + 168*a^2*b^2*x^2*(6
*A + 5*B*x) + 80*a*b^3*x^3*(7*A + 6*B*x) + 15*b^4*x^4*(8*A + 7*B*x)))/840
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.36, size = 99, normalized size = 1.14

$$\frac{1}{8}x^8b^4B+\frac{4}{7}x^7b^3aB+\frac{1}{7}x^7b^4A+x^6b^2a^2B+\frac{2}{3}x^6b^3aA+\frac{4}{5}x^5ba^3B+\frac{6}{5}x^5b^2a^2A+\frac{1}{4}x^4a^4B+x^4ba^3A+\frac{1}{3}x^3a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^4*B + 4/7*x^7*b^3*a*B + 1/7*x^7*b^4*A + x^6*b^2*a^2*B + 2/3*x^6*b
^3*a*A + 4/5*x^5*b*a^3*B + 6/5*x^5*b^2*a^2*A + 1/4*x^4*a^4*B + x^4*b*a^3*A
+ 1/3*x^3*a^4*A
```

giac [A] time = 0.17, size = 99, normalized size = 1.14

$$\frac{1}{8}\,Bb^4x^8+\frac{4}{7}\,Bab^3x^7+\frac{1}{7}\,Ab^4x^7+Ba^2b^2x^6+\frac{2}{3}\,Aab^3x^6+\frac{4}{5}\,Ba^3bx^5+\frac{6}{5}\,Aa^2b^2x^5+\frac{1}{4}\,Ba^4x^4+Aa^3bx^4+\frac{1}{3}\,Aa^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*b^4*x^8 + 4/7*B*a*b^3*x^7 + 1/7*A*b^4*x^7 + B*a^2*b^2*x^6 + 2/3*A*a*b
^3*x^6 + 4/5*B*a^3*b*x^5 + 6/5*A*a^2*b^2*x^5 + 1/4*B*a^4*x^4 + A*a^3*b*x^4
+ 1/3*A*a^4*x^3
```

maple [A] time = 0.05, size = 100, normalized size = 1.15

$$\frac{B\,b^4x^8}{8}+\frac{A\,a^4x^3}{3}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^7}{7}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^6}{6}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^5}{5}+\frac{\left(4A\,a^3b+B\,a^4\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*b^4*B*x^8+1/7*(A*b^4+4*B*a*b^3)*x^7+1/6*(4*A*a*b^3+6*B*a^2*b^2)*x^6+1/5
*(6*A*a^2*b^2+4*B*a^3*b)*x^5+1/4*(4*A*a^3*b+B*a^4)*x^4+1/3*A*a^4*x^3
```

maxima [A] time = 0.52, size = 99, normalized size = 1.14

$$\frac{1}{8}\,Bb^4x^8+\frac{1}{3}\,Aa^4x^3+\frac{1}{7}\left(4\,Bab^3+Ab^4\right)x^7+\frac{1}{3}\left(3\,Ba^2b^2+2\,Aab^3\right)x^6+\frac{2}{5}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^5+\frac{1}{4}\left(Ba^4+4\,Aa^3b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*b^4*x^8 + 1/3*A*a^4*x^3 + 1/7*(4*B*a*b^3 + A*b^4)*x^7 + 1/3*(3*B*a^2*
b^2 + 2*A*a*b^3)*x^6 + 2/5*(2*B*a^3*b + 3*A*a^2*b^2)*x^5 + 1/4*(B*a^4 + 4*A
*a^3*b)*x^4
```

mupad [B] time = 0.04, size = 90, normalized size = 1.03

$$x^4\,\left(\frac{B\,a^4}{4}+A\,b\,a^3\right)+x^7\,\left(\frac{A\,b^4}{7}+\frac{4\,B\,a\,b^3}{7}\right)+\frac{A\,a^4\,x^3}{3}+\frac{B\,b^4\,x^8}{8}+\frac{2\,a^2\,b\,x^5\,\left(3\,A\,b+2\,B\,a\right)}{5}+\frac{a\,b^2\,x^6\,\left(2\,A\,b+3\,B\,a\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*((B*a^4)/4 + A*a^3*b) + x^7*((A*b^4)/7 + (4*B*a*b^3)/7) + (A*a^4*x^3)/3
 + (B*b^4*x^8)/8 + (2*a^2*b*x^5*(3*A*b + 2*B*a))/5 + (a*b^2*x^6*(2*A*b + 3*
B*a))/3
```

sympy [A] time = 0.09, size = 104, normalized size = 1.20

$$\frac{Aa^4x^3}{3} + \frac{Bb^4x^8}{8} + x^7\left(\frac{Ab^4}{7} + \frac{4Bab^3}{7}\right) + x^6\left(\frac{2Aab^3}{3} + Ba^2b^2\right) + x^5\left(\frac{6Aa^2b^2}{5} + \frac{4Ba^3b}{5}\right) + x^4\left(Aa^3b + \frac{Ba^4}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**3/3 + B*b**4*x**8/8 + x**7*(A*b**4/7 + 4*B*a*b**3/7) + x**6*(2*A*
a*b**3/3 + B*a**2*b**2) + x**5*(6*A*a**2*b**2/5 + 4*B*a**3*b/5) + x**4*(A*a
**3*b + B*a**4/4)
```

3.453 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=61

$$\frac{(a+bx)^6(Ab-2aB)}{6b^3}-\frac{a(a+bx)^5(Ab-aB)}{5b^3}+\frac{B(a+bx)^7}{7b^3}$$

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}=0.080$, Rules used = $\{27,76\}$

$$\frac{(a+bx)^6(Ab-2aB)}{6b^3}-\frac{a(a+bx)^5(Ab-aB)}{5b^3}+\frac{B(a+bx)^7}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^5)/(5*b^3) + ((A*b - 2*a*B)*(a + b*x)^6)/(6*b^3)
+ (B*(a + b*x)^7)/(7*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx&=\int x(a+bx)^4(A+Bx)\,dx\\&=\int\left(\frac{a(-Ab+aB)(a+bx)^4}{b^2}+\frac{(Ab-2aB)(a+bx)^5}{b^2}+\frac{B(a+bx)^6}{b^2}\right)dx\\&=-\frac{a(Ab-aB)(a+bx)^5}{5b^3}+\frac{(Ab-2aB)(a+bx)^6}{6b^3}+\frac{B(a+bx)^7}{7b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 88, normalized size = 1.44

$$\frac{1}{210}x^2\left(35a^4(3A+2Bx)+70a^3bx(4A+3Bx)+63a^2b^2x^2(5A+4Bx)+28ab^3x^3(6A+5Bx)+5b^4x^4(7A+6Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^2*(35*a^4*(3*A + 2*B*x) + 70*a^3*b*x*(4*A + 3*B*x) + 63*a^2*b^2*x^2*(5*A
 + 4*B*x) + 28*a*b^3*x^3*(6*A + 5*B*x) + 5*b^4*x^4*(7*A + 6*B*x)))/210
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.37, size = 100, normalized size = 1.64

$$\frac{1}{7}x^7b^4B+\frac{2}{3}x^6b^3aB+\frac{1}{6}x^6b^4A+\frac{6}{5}x^5b^2a^2B+\frac{4}{5}x^5b^3aA+x^4ba^3B+\frac{3}{2}x^4b^2a^2A+\frac{1}{3}x^3a^4B+\frac{4}{3}x^3ba^3A+\frac{1}{2}x^2a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*b^4*B + 2/3*x^6*b^3*a*B + 1/6*x^6*b^4*A + 6/5*x^5*b^2*a^2*B + 4/5*x
^5*b^3*a*A + x^4*b*a^3*B + 3/2*x^4*b^2*a^2*A + 1/3*x^3*a^4*B + 4/3*x^3*b*a^
3*A + 1/2*x^2*a^4*A
```

giac [A] time = 0.15, size = 100, normalized size = 1.64

$$\frac{1}{7}Bb^4x^7+\frac{2}{3}Bab^3x^6+\frac{1}{6}Ab^4x^6+\frac{6}{5}Ba^2b^2x^5+\frac{4}{5}Aab^3x^5+Ba^3bx^4+\frac{3}{2}Aa^2b^2x^4+\frac{1}{3}Ba^4x^3+\frac{4}{3}Aa^3bx^3+\frac{1}{2}Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*b^4*x^7 + 2/3*B*a*b^3*x^6 + 1/6*A*b^4*x^6 + 6/5*B*a^2*b^2*x^5 + 4/5*A
*a*b^3*x^5 + B*a^3*b*x^4 + 3/2*A*a^2*b^2*x^4 + 1/3*B*a^4*x^3 + 4/3*A*a^3*b*
x^3 + 1/2*A*a^4*x^2
```

maple [A] time = 0.05, size = 100, normalized size = 1.64

$$\frac{B\,b^4x^7}{7}+\frac{A\,a^4x^2}{2}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^6}{6}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^5}{5}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^4}{4}+\frac{\left(4A\,a^3b+B\,a^4\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/7*b^4*B*x^7+1/6*(A*b^4+4*B*a*b^3)*x^6+1/5*(4*A*a*b^3+6*B*a^2*b^2)*x^5+1/4
*(6*A*a^2*b^2+4*B*a^3*b)*x^4+1/3*(4*A*a^3*b+B*a^4)*x^3+1/2*A*a^4*x^2
```

maxima [A] time = 0.46, size = 99, normalized size = 1.62

$$\frac{1}{7}Bb^4x^7+\frac{1}{2}Aa^4x^2+\frac{1}{6}\left(4\,Bab^3+Ab^4\right)x^6+\frac{2}{5}\left(3\,Ba^2b^2+2\,Aab^3\right)x^5+\frac{1}{2}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^4+\frac{1}{3}\left(Ba^4+4\,Aa^3b\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*b^4*x^7 + 1/2*A*a^4*x^2 + 1/6*(4*B*a*b^3 + A*b^4)*x^6 + 2/5*(3*B*a^2*
b^2 + 2*A*a*b^3)*x^5 + 1/2*(2*B*a^3*b + 3*A*a^2*b^2)*x^4 + 1/3*(B*a^4 + 4*A
*a^3*b)*x^3
```

mupad [B] time = 0.03, size = 91, normalized size = 1.49

$$x^3\left(\frac{B\,a^4}{3}+\frac{4\,A\,b\,a^3}{3}\right)+x^6\left(\frac{A\,b^4}{6}+\frac{2\,B\,a\,b^3}{3}\right)+\frac{A\,a^4\,x^2}{2}+\frac{B\,b^4\,x^7}{7}+\frac{a^2\,b\,x^4\,\left(3\,A\,b+2\,B\,a\right)}{2}+\frac{2\,a\,b^2\,x^5\,\left(2\,A\,b+3\,B\,a\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((B*a^4)/3 + (4*A*a^3*b)/3) + x^6*((A*b^4)/6 + (2*B*a*b^3)/3) + (A*a^4*
x^2)/2 + (B*b^4*x^7)/7 + (a^2*b*x^4*(3*A*b + 2*B*a))/2 + (2*a*b^2*x^5*(2*A*
b + 3*B*a))/5
```

sympy [B] time = 0.09, size = 107, normalized size = 1.75

$$\frac{Aa^4x^2}{2} + \frac{Bb^4x^7}{7} + x^6\left(\frac{Ab^4}{6} + \frac{2Bab^3}{3}\right) + x^5\left(\frac{4Aab^3}{5} + \frac{6Ba^2b^2}{5}\right) + x^4\left(\frac{3Aa^2b^2}{2} + Ba^3b\right) + x^3\left(\frac{4Aa^3b}{3} + \frac{Ba^4}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**2/2 + B*b**4*x**7/7 + x**6*(A*b**4/6 + 2*B*a*b**3/3) + x**5*(4*A*
a*b**3/5 + 6*B*a**2*b**2/5) + x**4*(3*A*a**2*b**2/2 + B*a**3*b) + x**3*(4*A
*a**3*b/3 + B*a**4/3)
```

3.454 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2 dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

Rubi [A] time = 0.01, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 43\}$

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5)/(5*b^2) + (B*(a + b*x)^6)/(6*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2 dx &= \int (a+bx)^4(A+Bx)\,dx\\ &= \int \left(\frac{(Ab-aB)(a+bx)^4}{b}+\frac{B(a+bx)^5}{b}\right)dx\\ &= \frac{(Ab-aB)(a+bx)^5}{5b^2}+\frac{B(a+bx)^6}{6b^2}\end{aligned}$$

Mathematica [B] time = 0.01, size = 84, normalized size = 2.21

$$\frac{1}{30}x\left(15a^4(2A+Bx)+20a^3bx(3A+2Bx)+15a^2b^2x^2(4A+3Bx)+6ab^3x^3(5A+4Bx)+b^4x^4(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(15*a^4*(2*A + B*x) + 20*a^3*b*x*(3*A + 2*B*x) + 15*a^2*b^2*x^2*(4*A + 3
*B*x) + 6*a*b^3*x^3*(5*A + 4*B*x) + b^4*x^4*(6*A + 5*B*x)))/30
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2 dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.36, size = 97, normalized size = 2.55

$$\frac{1}{6}x^6b^4B + \frac{4}{5}x^5b^3aB + \frac{1}{5}x^5b^4A + \frac{3}{2}x^4b^2a^2B + x^4b^3aA + \frac{4}{3}x^3ba^3B + 2x^3b^2a^2A + \frac{1}{2}x^2a^4B + 2x^2ba^3A + xa^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^4*B + 4/5*x^5*b^3*a*B + 1/5*x^5*b^4*A + 3/2*x^4*b^2*a^2*B + x^4*b
^3*a*A + 4/3*x^3*b*a^3*B + 2*x^3*b^2*a^2*A + 1/2*x^2*a^4*B + 2*x^2*b*a^3*A
+ x*a^4*A
```

giac [B] time = 0.18, size = 97, normalized size = 2.55

$$\frac{1}{6}Bb^4x^6 + \frac{4}{5}Bab^3x^5 + \frac{1}{5}Ab^4x^5 + \frac{3}{2}Ba^2b^2x^4 + Aab^3x^4 + \frac{4}{3}Ba^3bx^3 + 2Aa^2b^2x^3 + \frac{1}{2}Ba^4x^2 + 2Aa^3bx^2 + Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*b^4*x^6 + 4/5*B*a*b^3*x^5 + 1/5*A*b^4*x^5 + 3/2*B*a^2*b^2*x^4 + A*a*b
^3*x^4 + 4/3*B*a^3*b*x^3 + 2*A*a^2*b^2*x^3 + 1/2*B*a^4*x^2 + 2*A*a^3*b*x^2
+ A*a^4*x
```

maple [B] time = 0.04, size = 97, normalized size = 2.55

$$\frac{Bb^4x^6}{6} + Aa^4x + \frac{\left(Ab^4 + 4Bab^3\right)x^5}{5} + \frac{\left(4Aab^3 + 6Ba^2b^2\right)x^4}{4} + \frac{\left(6Aa^2b^2 + 4Ba^3b\right)x^3}{3} + \frac{\left(4Aa^3b + Ba^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/6*b^4*B*x^6+1/5*(A*b^4+4*B*a*b^3)*x^5+1/4*(4*A*a*b^3+6*B*a^2*b^2)*x^4+1/3
*(6*A*a^2*b^2+4*B*a^3*b)*x^3+1/2*(4*A*a^3*b+B*a^4)*x^2+A*a^4*x
```

maxima [B] time = 0.48, size = 96, normalized size = 2.53

$$\frac{1}{6}Bb^4x^6 + Aa^4x + \frac{1}{5}\left(4Bab^3 + Ab^4\right)x^5 + \frac{1}{2}\left(3Ba^2b^2 + 2Aab^3\right)x^4 + \frac{2}{3}\left(2Ba^3b + 3Aa^2b^2\right)x^3 + \frac{1}{2}\left(Ba^4 + 4Aa^3b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*b^4*x^6 + A*a^4*x + 1/5*(4*B*a*b^3 + A*b^4)*x^5 + 1/2*(3*B*a^2*b^2 +
2*A*a*b^3)*x^4 + 2/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^3 + 1/2*(B*a^4 + 4*A*a^3*b
)*x^2
```

mupad [B] time = 0.03, size = 88, normalized size = 2.32

$$x^2\left(\frac{Ba^4}{2} + 2Aba^3\right) + x^5\left(\frac{Ab^4}{5} + \frac{4Bab^3}{5}\right) + \frac{Bb^4x^6}{6} + Aa^4x + \frac{2a^2bx^3\,(3Ab + 2Ba)}{3} + \frac{ab^2x^4\,(2Ab + 3Ba)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*((B*a^4)/2 + 2*A*a^3*b) + x^5*((A*b^4)/5 + (4*B*a*b^3)/5) + (B*b^4*x^6)
/6 + A*a^4*x + (2*a^2*b*x^3*(3*A*b + 2*B*a))/3 + (a*b^2*x^4*(2*A*b + 3*B*a)
)/2
```

sympy [B] time = 0.09, size = 100, normalized size = 2.63

$$Aa^4x+\frac{Bb^4x^6}{6}+x^5\left(\frac{Ab^4}{5}+\frac{4Bab^3}{5}\right)+x^4\left(Aab^3+\frac{3Ba^2b^2}{2}\right)+x^3\left(2Aa^2b^2+\frac{4Ba^3b}{3}\right)+x^2\left(2Aa^3b+\frac{Ba^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x + B*b**4*x**6/6 + x**5*(A*b**4/5 + 4*B*a*b**3/5) + x**4*(A*a*b**3
+ 3*B*a**2*b**2/2) + x**3*(2*A*a**2*b**2 + 4*B*a**3*b/3) + x**2*(2*A*a**3*b
 + B*a**4/2)
```

3.455 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x}\,dx$

Optimal. Leaf size=66

$$a^4A\log(x)+4a^3Abx+3a^2Ab^2x^2+\frac{4}{3}aAb^3x^3+\frac{B(a+bx)^5}{5b}+\frac{1}{4}Ab^4x^4$$

Rubi [A] time = 0.02, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 80, 43}

$$3a^2Ab^2x^2+4a^3Abx+a^4A\log(x)+\frac{4}{3}aAb^3x^3+\frac{B(a+bx)^5}{5b}+\frac{1}{4}Ab^4x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x,x]
```

```
[Out] 4*a^3*A*b*x + 3*a^2*A*b^2*x^2 + (4*a*A*b^3*x^3)/3 + (A*b^4*x^4)/4 + (B*(a +
 b*x)^5)/(5*b) + a^4*A*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x}\,dx\\ &= \frac{B(a+bx)^5}{5b}+A\int \frac{(a+bx)^4}{x}\,dx\\ &= \frac{B(a+bx)^5}{5b}+A\int \left(4a^3b+\frac{a^4}{x}+6a^2b^2x+4ab^3x^2+b^4x^3\right)dx\\ &= 4a^3Abx+3a^2Ab^2x^2+\frac{4}{3}aAb^3x^3+\frac{1}{4}Ab^4x^4+\frac{B(a+bx)^5}{5b}+a^4A\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 83, normalized size = 1.26

$$a^4A\log(x)+a^4Bx+2a^3bx(2A+Bx)+a^2b^2x^2(3A+2Bx)+\frac{1}{3}ab^3x^3(4A+3Bx)+\frac{1}{20}b^4x^4(5A+4Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x,x]
```

```
[Out] a^4*B*x + 2*a^3*b*x*(2*A + B*x) + a^2*b^2*x^2*(3*A + 2*B*x) + (a*b^3*x^3*(4
*A + 3*B*x))/3 + (b^4*x^4*(5*A + 4*B*x))/20 + a^4*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x, x]
```

fricas [A] time = 0.40, size = 93, normalized size = 1.41

$$\frac{1}{5}\,Bb^4x^5 + Aa^4\log(x) + \frac{1}{4}\left(4\,Bab^3 + Ab^4\right)x^4 + \frac{2}{3}\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + \left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + \left(Ba^4 + 4\,Aa^3b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*b^4*x^5 + A*a^4*log(x) + 1/4*(4*B*a*b^3 + A*b^4)*x^4 + 2/3*(3*B*a^2*b
^2 + 2*A*a*b^3)*x^3 + (2*B*a^3*b + 3*A*a^2*b^2)*x^2 + (B*a^4 + 4*A*a^3*b)*x
```

giac [A] time = 0.17, size = 94, normalized size = 1.42

$$\frac{1}{5}\,Bb^4x^5 + Bab^3x^4 + \frac{1}{4}\,Ab^4x^4 + 2\,Ba^2b^2x^3 + \frac{4}{3}\,Aab^3x^3 + 2\,Ba^3bx^2 + 3\,Aa^2b^2x^2 + Ba^4x + 4\,Aa^3bx + Aa^4\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*b^4*x^5 + B*a*b^3*x^4 + 1/4*A*b^4*x^4 + 2*B*a^2*b^2*x^3 + 4/3*A*a*b^3
*x^3 + 2*B*a^3*b*x^2 + 3*A*a^2*b^2*x^2 + B*a^4*x + 4*A*a^3*b*x + A*a^4*log(
abs(x))
```

maple [A] time = 0.05, size = 94, normalized size = 1.42

$$\frac{B\,b^4x^5}{5} + \frac{A\,b^4x^4}{4} + Ba\,b^3x^4 + \frac{4Aa\,b^3x^3}{3} + 2B\,a^2b^2x^3 + 3A\,a^2b^2x^2 + 2B\,a^3b\,x^2 + A\,a^4\ln(x) + 4A\,a^3bx + B\,a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x)
```

```
[Out] 1/5*b^4*B*x^5+1/4*A*b^4*x^4+B*x^4*a*b^3+4/3*a*A*b^3*x^3+2*B*x^3*a^2*b^2+3*a
^2*A*b^2*x^2+2*B*x^2*a^3*b+4*a^3*A*b*x+B*a^4*x+A*a^4*ln(x)
```

maxima [A] time = 0.49, size = 93, normalized size = 1.41

$$\frac{1}{5}\,Bb^4x^5 + Aa^4\log(x) + \frac{1}{4}\left(4\,Bab^3 + Ab^4\right)x^4 + \frac{2}{3}\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + \left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + \left(Ba^4 + 4\,Aa^3b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*b^4*x^5 + A*a^4*log(x) + 1/4*(4*B*a*b^3 + A*b^4)*x^4 + 2/3*(3*B*a^2*b
^2 + 2*A*a*b^3)*x^3 + (2*B*a^3*b + 3*A*a^2*b^2)*x^2 + (B*a^4 + 4*A*a^3*b)*x
```

mupad [B] time = 0.04, size = 84, normalized size = 1.27

$$x\left(B\,a^4+4\,A\,b\,a^3\right)+x^4\left(\frac{A\,b^4}{4}+B\,a\,b^3\right)+\frac{B\,b^4\,x^5}{5}+A\,a^4\,\ln(x)+a^2\,b\,x^2\,(3\,A\,b+2\,B\,a)+\frac{2\,a\,b^2\,x^3\,(2\,A\,b+3\,B\,a)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x,x)
```

```
[Out] x*(B*a^4 + 4*A*a^3*b) + x^4*((A*b^4)/4 + B*a*b^3) + (B*b^4*x^5)/5 + A*a^4*l
og(x) + a^2*b*x^2*(3*A*b + 2*B*a) + (2*a*b^2*x^3*(2*A*b + 3*B*a))/3
```

sympy [A] time = 0.21, size = 95, normalized size = 1.44

$$Aa^4\log(x)+\frac{Bb^4x^5}{5}+x^4\left(\frac{Ab^4}{4}+Bab^3\right)+x^3\left(\frac{4Aab^3}{3}+2Ba^2b^2\right)+x^2\left(3Aa^2b^2+2Ba^3b\right)+x\left(4Aa^3b+Ba^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x,x)
```

```
[Out] A*a**4*log(x) + B*b**4*x**5/5 + x**4*(A*b**4/4 + B*a*b**3) + x**3*(4*A*a*b*
*3/3 + 2*B*a**2*b**2) + x**2*(3*A*a**2*b**2 + 2*B*a**3*b) + x*(4*A*a**3*b +
 B*a**4)
```

3.456 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^2}\,dx$

Optimal. Leaf size=86

$$-\frac{a^4A}{x}+a^3\log(x)(aB+4Ab)+2a^2bx(2aB+3Ab)+\frac{1}{3}b^3x^3(4aB+Ab)+ab^2x^2(3aB+2Ab)+\frac{1}{4}b^4Bx^4$$

Rubi [A] time = 0.05, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 76}

$$2a^2bx(2aB+3Ab)+a^3\log(x)(aB+4Ab)-\frac{a^4A}{x}+ab^2x^2(3aB+2Ab)+\frac{1}{3}b^3x^3(4aB+Ab)+\frac{1}{4}b^4Bx^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 2*a^2*b*(3*A*b + 2*a*B)*x + a*b^2*(2*A*b + 3*a*B)*x^2 + (b^3
*(A*b + 4*a*B)*x^3)/3 + (b^4*B*x^4)/4 + a^3*(4*A*b + a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^2}\,dx=\int \frac{(a+bx)^4(A+Bx)}{x^2}\,dx$$
$$=\int \left(2a^2b(3Ab+2aB)+\frac{a^4A}{x^2}+\frac{a^3(4Ab+aB)}{x}+2ab^2(2Ab+3aB)x+b$$
$$=-\frac{a^4A}{x}+2a^2b(3Ab+2aB)x+ab^2(2Ab+3aB)x^2+\frac{1}{3}b^3(Ab+4aB)x^3+$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.99

$$-\frac{a^4A}{x}+a^3\log(x)(aB+4Ab)+4a^3bBx+3a^2b^2x(2A+Bx)+\frac{2}{3}ab^3x^2(3A+2Bx)+\frac{1}{12}b^4x^3(4A+3Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 4*a^3*b*B*x + 3*a^2*b^2*x*(2*A + B*x) + (2*a*b^3*x^2*(3*A +
2*B*x))/3 + (b^4*x^3*(4*A + 3*B*x))/12 + a^3*(4*A*b + a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^2,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^2, x]
```

fricas [A] time = 0.40, size = 101, normalized size = 1.17

$$\frac{3\,Bb^4x^5-12\,Aa^4+4\left(4\,Bab^3+Ab^4\right)x^4+12\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+24\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+12\left(Ba^4+4\,Aa^3b\right)x\log(x)}{12\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x, algorithm="fricas")
[Out] 1/12*(3*B*b^4*x^5 - 12*A*a^4 + 4*(4*B*a*b^3 + A*b^4)*x^4 + 12*(3*B*a^2*b^2
+ 2*A*a*b^3)*x^3 + 24*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 12*(B*a^4 + 4*A*a^3*b
)*x*log(x))/x
```

giac [A] time = 0.16, size = 95, normalized size = 1.10

$$\frac{1}{4}\,Bb^4x^4+\frac{4}{3}\,Bab^3x^3+\frac{1}{3}\,Ab^4x^3+3\,Ba^2b^2x^2+2\,Aab^3x^2+4\,Ba^3bx+6\,Aa^2b^2x-\frac{Aa^4}{x}+\left(Ba^4+4\,Aa^3b\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x, algorithm="giac")
[Out] 1/4*B*b^4*x^4 + 4/3*B*a*b^3*x^3 + 1/3*A*b^4*x^3 + 3*B*a^2*b^2*x^2 + 2*A*a*b
^3*x^2 + 4*B*a^3*b*x + 6*A*a^2*b^2*x - A*a^4/x + (B*a^4 + 4*A*a^3*b)*log(ab
s(x))
```

maple [A] time = 0.05, size = 95, normalized size = 1.10

$$\frac{B\,b^4x^4}{4}+\frac{A\,b^4x^3}{3}+\frac{4Ba\,b^3x^3}{3}+2Aa\,b^3x^2+3B\,a^2b^2x^2+4A\,a^3b\ln(x)+6A\,a^2b^2x+B\,a^4\ln(x)+4B\,a^3bx-\frac{A\,a^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x)
[Out] 1/4*b^4*B*x^4+1/3*A*x^3*b^4+4/3*B*x^3*a*b^3+2*A*x^2*a*b^3+3*B*x^2*a^2*b^2+6
*A*a^2*b^2*x+4*B*a^3*b*x-A*a^4/x+4*A*ln(x)*a^3*b+B*a^4*ln(x)
```

maxima [A] time = 0.53, size = 94, normalized size = 1.09

$$\frac{1}{4}\,Bb^4x^4-\frac{Aa^4}{x}+\frac{1}{3}\left(4\,Bab^3+Ab^4\right)x^3+\left(3\,Ba^2b^2+2\,Aab^3\right)x^2+2\left(2\,Ba^3b+3\,Aa^2b^2\right)x+\left(Ba^4+4\,Aa^3b\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x, algorithm="maxima")
[Out] 1/4*B*b^4*x^4 - A*a^4/x + 1/3*(4*B*a*b^3 + A*b^4)*x^3 + (3*B*a^2*b^2 + 2*A*
a*b^3)*x^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*x + (B*a^4 + 4*A*a^3*b)*log(x)
```

mupad [B] time = 0.04, size = 86, normalized size = 1.00

$$x^3\left(\frac{A\,b^4}{3}+\frac{4\,B\,a\,b^3}{3}\right)+\ln(x)\,\left(B\,a^4+4\,A\,b\,a^3\right)-\frac{A\,a^4}{x}+\frac{B\,b^4\,x^4}{4}+2\,a^2\,b\,x\,\left(3\,A\,b+2\,B\,a\right)+a\,b^2\,x^2\,\left(2\,A\,b+3\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^2,x)
```

```
[Out] x^3*((A*b^4)/3 + (4*B*a*b^3)/3) + log(x)*(B*a^4 + 4*A*a^3*b) - (A*a^4)/x +
(B*b^4*x^4)/4 + 2*a^2*b*x*(3*A*b + 2*B*a) + a*b^2*x^2*(2*A*b + 3*B*a)
```

sympy [A] time = 0.26, size = 94, normalized size = 1.09

$$-\frac{Aa^4}{x} + \frac{Bb^4x^4}{4} + a^3\left(4Ab + Ba\right)\log\left(x\right) + x^3\left(\frac{Ab^4}{3} + \frac{4Bab^3}{3}\right) + x^2\left(2Aab^3 + 3Ba^2b^2\right) + x\left(6Aa^2b^2 + 4Ba^3b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**2,x)
```

```
[Out] -A*a**4/x + B*b**4*x**4/4 + a**3*(4*A*b + B*a)*log(x) + x**3*(A*b**4/3 + 4*
B*a*b**3/3) + x**2*(2*A*a*b**3 + 3*B*a**2*b**2) + x*(6*A*a**2*b**2 + 4*B*a*
*3*b)
```

3.457 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^3}\,dx$

Optimal. Leaf size=90

$$-\frac{a^4A}{2x^2}-\frac{a^3(aB+4Ab)}{x}+2a^2b\log(x)(2aB+3Ab)+\frac{1}{2}b^3x^2(4aB+Ab)+2ab^2x(3aB+2Ab)+\frac{1}{3}b^4Bx^3$$

Rubi [A] time = 0.05, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{x}+2a^2b\log(x)(2aB+3Ab)-\frac{a^4A}{2x^2}+\frac{1}{2}b^3x^2(4aB+Ab)+2ab^2x(3aB+2Ab)+\frac{1}{3}b^4Bx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^3,x]
```

```
[Out] -(a^4*A)/(2*x^2) - (a^3*(4*A*b + a*B))/x + 2*a*b^2*(2*A*b + 3*a*B)*x + (b^3
*(A*b + 4*a*B)*x^2)/2 + (b^4*B*x^3)/3 + 2*a^2*b*(3*A*b + 2*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^3}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^3}\,dx\\ &= \int \left(2ab^2(2Ab+3aB)+\frac{a^4A}{x^3}+\frac{a^3(4Ab+aB)}{x^2}+\frac{2a^2b(3Ab+2aB)}{x}+b^3(A\right.\\ &= -\frac{a^4A}{2x^2}-\frac{a^3(4Ab+aB)}{x}+2ab^2(2Ab+3aB)x+\frac{1}{2}b^3(Ab+4aB)x^2+\frac{1}{3}b^4Bx\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.96

$$-\frac{a^4(A+2Bx)}{2x^2}-\frac{4a^3Ab}{x}+2a^2b\log(x)(2aB+3Ab)+6a^2b^2Bx+2ab^3x(2A+Bx)+\frac{1}{6}b^4x^2(3A+2Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^3,x]
```

```
[Out] (-4*a^3*A*b)/x + 6*a^2*b^2*B*x + 2*a*b^3*x*(2*A + B*x) - (a^4*(A + 2*B*x))/
(2*x^2) + (b^4*x^2*(3*A + 2*B*x))/6 + 2*a^2*b*(3*A*b + 2*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^3, x]
```

fricas [A] time = 0.40, size = 101, normalized size = 1.12

$$\frac{2\,Bb^4x^5-3\,Aa^4+3\left(4\,Bab^3+Ab^4\right)x^4+12\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2\log(x)-6\left(Ba^4+4\,Aa^3b\right)x}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*x^5 - 3*A*a^4 + 3*(4*B*a*b^3 + A*b^4)*x^4 + 12*(3*B*a^2*b^2 +
2*A*a*b^3)*x^3 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2*log(x) - 6*(B*a^4 + 4*A*a
^3*b)*x)/x^2
```

giac [A] time = 0.15, size = 96, normalized size = 1.07

$$\frac{1}{3}\,Bb^4x^3+2\,Bab^3x^2+\frac{1}{2}\,Ab^4x^2+6\,Ba^2b^2x+4\,Aab^3x+2\left(2\,Ba^3b+3\,Aa^2b^2\right)\log\left(|x|\right)-\frac{Aa^4+2\left(Ba^4+4\,Aa^3b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*b^4*x^3 + 2*B*a*b^3*x^2 + 1/2*A*b^4*x^2 + 6*B*a^2*b^2*x + 4*A*a*b^3*x
 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*log(abs(x)) - 1/2*(A*a^4 + 2*(B*a^4 + 4*A*a^
3*b)*x)/x^2
```

maple [A] time = 0.06, size = 96, normalized size = 1.07

$$\frac{B\,b^4x^3}{3}+\frac{A\,b^4x^2}{2}+2Ba\,b^3x^2+6A\,a^2b^2\ln(x)+4Aa\,b^3x+4B\,a^3b\ln(x)+6B\,a^2b^2x-\frac{4A\,a^3b}{x}-\frac{B\,a^4}{x}-\frac{A\,a^4}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x)
```

```
[Out] 1/3*b^4*B*x^3+1/2*A*x^2*b^4+2*B*x^2*a*b^3+4*A*a*b^3*x+6*B*a^2*b^2*x-1/2*A*a
^4/x^2-4*a^3/x*A*b-B*a^4/x+6*A*ln(x)*a^2*b^2+4*B*ln(x)*a^3*b
```

maxima [A] time = 0.55, size = 96, normalized size = 1.07

$$\frac{1}{3}\,Bb^4x^3+\frac{1}{2}\left(4\,Bab^3+Ab^4\right)x^2+2\left(3\,Ba^2b^2+2\,Aab^3\right)x+2\left(2\,Ba^3b+3\,Aa^2b^2\right)\log(x)-\frac{Aa^4+2\left(Ba^4+4\,Aa^3b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*b^4*x^3 + 1/2*(4*B*a*b^3 + A*b^4)*x^2 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*x
 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*log(x) - 1/2*(A*a^4 + 2*(B*a^4 + 4*A*a^3*b)*
x)/x^2
```

mupad [B] time = 1.07, size = 91, normalized size = 1.01

$$\ln(x)\,\left(4\,B\,a^3\,b+6\,A\,a^2\,b^2\right)-\frac{x\,\left(B\,a^4+4\,A\,b\,a^3\right)+\frac{A\,a^4}{2}}{x^2}+x^2\,\left(\frac{A\,b^4}{2}+2\,B\,a\,b^3\right)+\frac{B\,b^4\,x^3}{3}+2\,a\,b^2\,x\,\left(2\,A\,b+3\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^3,x)
```

```
[Out] log(x)*(6*A*a^2*b^2 + 4*B*a^3*b) - (x*(B*a^4 + 4*A*a^3*b) + (A*a^4)/2)/x^2
+ x^2*((A*b^4)/2 + 2*B*a*b^3) + (B*b^4*x^3)/3 + 2*a*b^2*x*(2*A*b + 3*B*a)
```

sympy [A] time = 0.42, size = 97, normalized size = 1.08

$$\frac{Bb^4x^3}{3} + 2a^2b\,(3Ab + 2Ba)\log{(x)} + x^2\left(\frac{Ab^4}{2} + 2Bab^3\right) + x\left(4Aab^3 + 6Ba^2b^2\right) + \frac{-Aa^4 + x\left(-8Aa^3b - 2Ba^4\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**3,x)
```

```
[Out] B*b**4*x**3/3 + 2*a**2*b*(3*A*b + 2*B*a)*log(x) + x**2*(A*b**4/2 + 2*B*a*b*
*3) + x*(4*A*a*b**3 + 6*B*a**2*b**2) + (-A*a**4 + x*(-8*A*a**3*b - 2*B*a**4
))/(2*x**2)
```

3.458 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^4}\,dx$

Optimal. Leaf size=89

$$-\frac{a^4A}{3x^3}-\frac{a^3(aB+4Ab)}{2x^2}-\frac{2a^2b(2aB+3Ab)}{x}+b^3x(4aB+Ab)+2ab^2\log(x)(3aB+2Ab)+\frac{1}{2}b^4Bx^2$$

Rubi [A] time = 0.05, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{2x^2}-\frac{2a^2b(2aB+3Ab)}{x}-\frac{a^4A}{3x^3}+b^3x(4aB+Ab)+2ab^2\log(x)(3aB+2Ab)+\frac{1}{2}b^4Bx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^4,x]
```

```
[Out] -(a^4*A)/(3*x^3) - (a^3*(4*A*b + a*B))/(2*x^2) - (2*a^2*b*(3*A*b + 2*a*B))/
x + b^3*(A*b + 4*a*B)*x + (b^4*B*x^2)/2 + 2*a*b^2*(2*A*b + 3*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^4}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^4}\,dx\\ &= \int \left(b^3(Ab+4aB)+\frac{a^4A}{x^4}+\frac{a^3(4Ab+aB)}{x^3}+\frac{2a^2b(3Ab+2aB)}{x^2}+\frac{2ab^2(\right.\\ &= -\frac{a^4A}{3x^3}-\frac{a^3(4Ab+aB)}{2x^2}-\frac{2a^2b(3Ab+2aB)}{x}+b^3(Ab+4aB)x+\frac{1}{2}b^4Bx^2\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.97

$$-\frac{a^4(2A+3Bx)}{6x^3}-\frac{2a^3b(A+2Bx)}{x^2}-\frac{6a^2Ab^2}{x}+2ab^2\log(x)(3aB+2Ab)+4ab^3Bx+\frac{1}{2}b^4x(2A+Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^4,x]
```

```
[Out] (-6*a^2*A*b^2)/x + 4*a*b^3*B*x + (b^4*x*(2*A + B*x))/2 - (2*a^3*b*(A + 2*B*
x))/x^2 - (a^4*(2*A + 3*B*x))/(6*x^3) + 2*a*b^2*(2*A*b + 3*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^4, x]
```

fricas [A] time = 0.39, size = 101, normalized size = 1.13

$$\frac{3\,Bb^4x^5-2\,Aa^4+6\left(4\,Bab^3+Ab^4\right)x^4+12\left(3\,Ba^2b^2+2\,Aab^3\right)x^3\log(x)-12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-3\left(Ba^4+4\,Aa^3b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*b^4*x^5 - 2*A*a^4 + 6*(4*B*a*b^3 + A*b^4)*x^4 + 12*(3*B*a^2*b^2 +
2*A*a*b^3)*x^3*log(x) - 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 3*(B*a^4 + 4*A*a
^3*b)*x)/x^3
```

giac [A] time = 0.16, size = 96, normalized size = 1.08

$$\frac{1}{2}\,Bb^4x^2+4\,Bab^3x+Ab^4x+2\left(3\,Ba^2b^2+2\,Aab^3\right)\log\left(|x|\right)-\frac{2\,Aa^4+12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+3\left(Ba^4+4\,Aa^3b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*B*b^4*x^2 + 4*B*a*b^3*x + A*b^4*x + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*log(abs
(x)) - 1/6*(2*A*a^4 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 3*(B*a^4 + 4*A*a^3
*b)*x)/x^3
```

maple [A] time = 0.05, size = 95, normalized size = 1.07

$$\frac{B\,b^4x^2}{2}+4Aa\,b^3\ln(x)+A\,b^4x+6B\,a^2b^2\ln(x)+4Ba\,b^3x-\frac{6A\,a^2b^2}{x}-\frac{4B\,a^3b}{x}-\frac{2A\,a^3b}{x^2}-\frac{B\,a^4}{2x^2}-\frac{A\,a^4}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x)
```

```
[Out] 1/2*b^4*B*x^2+A*b^4*x+4*B*a*b^3*x-1/3*a^4*A/x^3-2*a^3/x^2*A*b-1/2*a^4/x^2*B
-6*a^2*b^2/x*A-4*a^3*b/x*B+4*A*ln(x)*a*b^3+6*B*ln(x)*a^2*b^2
```

maxima [A] time = 0.49, size = 96, normalized size = 1.08

$$\frac{1}{2}\,Bb^4x^2+\left(4\,Bab^3+Ab^4\right)x+2\left(3\,Ba^2b^2+2\,Aab^3\right)\log(x)-\frac{2\,Aa^4+12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+3\left(Ba^4+4\,Aa^3b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*B*b^4*x^2 + (4*B*a*b^3 + A*b^4)*x + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*log(x)
- 1/6*(2*A*a^4 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 3*(B*a^4 + 4*A*a^3*b)*x
)/x^3
```

mupad [B] time = 1.08, size = 94, normalized size = 1.06

$$x\,\left(A\,b^4+4\,B\,a\,b^3\right)+\ln(x)\,\left(6\,B\,a^2\,b^2+4\,A\,a\,b^3\right)-\frac{x\,\left(\frac{B\,a^4}{2}+2\,A\,b\,a^3\right)+\frac{A\,a^4}{3}+x^2\,\left(4\,B\,a^3\,b+6\,A\,a^2\,b^2\right)}{x^3}+\frac{B\,b^4\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^4,x)
```

```
[Out] x*(A*b^4 + 4*B*a*b^3) + log(x)*(6*B*a^2*b^2 + 4*A*a*b^3) - (x*((B*a^4)/2 +
2*A*a^3*b) + (A*a^4)/3 + x^2*(6*A*a^2*b^2 + 4*B*a^3*b))/x^3 + (B*b^4*x^2)/2
```

sympy [A] time = 0.73, size = 99, normalized size = 1.11

$$\frac{Bb^4x^2}{2} + 2ab^2\left(2Ab + 3Ba\right)\log\left(x\right) + x\left(Ab^4 + 4Bab^3\right) + \frac{-2Aa^4 + x^2\left(-36Aa^2b^2 - 24Ba^3b\right) + x\left(-12Aa^3b - 3Ba^4\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**4,x)
```

```
[Out] B*b**4*x**2/2 + 2*a*b**2*(2*A*b + 3*B*a)*log(x) + x*(A*b**4 + 4*B*a*b**3) +
 (-2*A*a**4 + x**2*(-36*A*a**2*b**2 - 24*B*a**3*b) + x*(-12*A*a**3*b - 3*B*
a**4))/(6*x**3)
```

3.459 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^5}\,dx$

Optimal. Leaf size=86

$$-\frac{a^4A}{4x^4}-\frac{a^3(aB+4Ab)}{3x^3}-\frac{a^2b(2aB+3Ab)}{x^2}+b^3\log(x)(4aB+Ab)-\frac{2ab^2(3aB+2Ab)}{x}+b^4Bx$$

Rubi [A] time = 0.05, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$-\frac{a^3(aB+4Ab)}{3x^3}-\frac{a^2b(2aB+3Ab)}{x^2}-\frac{a^4A}{4x^4}-\frac{2ab^2(3aB+2Ab)}{x}+b^3\log(x)(4aB+Ab)+b^4Bx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^5,x]
```

```
[Out] -(a^4*A)/(4*x^4) - (a^3*(4*A*b + a*B))/(3*x^3) - (a^2*b*(3*A*b + 2*a*B))/x^
2 - (2*a*b^2*(2*A*b + 3*a*B))/x + b^4*B*x + b^3*(A*b + 4*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^5}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^5}\,dx\\ &= \int \left(b^4B+\frac{a^4A}{x^5}+\frac{a^3(4Ab+aB)}{x^4}+\frac{2a^2b(3Ab+2aB)}{x^3}+\frac{2ab^2(2Ab+3aB)}{x^2}\right.\\ &= -\frac{a^4A}{4x^4}-\frac{a^3(4Ab+aB)}{3x^3}-\frac{a^2b(3Ab+2aB)}{x^2}-\frac{2ab^2(2Ab+3aB)}{x}+b^4Bx+b\end{aligned}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.99

$$-\frac{a^4(3A+4Bx)}{12x^4}-\frac{2a^3b(2A+3Bx)}{3x^3}-\frac{3a^2b^2(A+2Bx)}{x^2}+b^3\log(x)(4aB+Ab)-\frac{4aAb^3}{x}+b^4Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^5,x]
```

```
[Out] (-4*a*A*b^3)/x + b^4*B*x - (3*a^2*b^2*(A + 2*B*x))/x^2 - (2*a^3*b*(2*A + 3*
B*x))/(3*x^3) - (a^4*(3*A + 4*B*x))/(12*x^4) + b^3*(A*b + 4*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^5, x]
```

fricas [A] time = 0.41, size = 101, normalized size = 1.17

$$\frac{12\,Bb^4x^5+12\left(4\,Bab^3+Ab^4\right)x^4\log(x)-3\,Aa^4-24\left(3\,Ba^2b^2+2\,Aab^3\right)x^3-12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-4\left(Ba^4+4\,Aa^3b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^4*x^5 + 12*(4*B*a*b^3 + A*b^4)*x^4*log(x) - 3*A*a^4 - 24*(3*B*
a^2*b^2 + 2*A*a*b^3)*x^3 - 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 4*(B*a^4 + 4*
A*a^3*b)*x)/x^4
```

giac [A] time = 0.17, size = 96, normalized size = 1.12

$$Bb^4x+\left(4\,Bab^3+Ab^4\right)\log\left(|x|\right)-\frac{3\,Aa^4+24\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+4\left(Ba^4+4\,Aa^3b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x, algorithm="giac")
```

```
[Out] B*b^4*x + (4*B*a*b^3 + A*b^4)*log(abs(x)) - 1/12*(3*A*a^4 + 24*(3*B*a^2*b^2
 + 2*A*a*b^3)*x^3 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 4*(B*a^4 + 4*A*a^3*b
)*x)/x^4
```

maple [A] time = 0.05, size = 96, normalized size = 1.12

$$A\,b^4\ln(x)+4Ba\,b^3\ln(x)+B\,b^4x-\frac{4Aa\,b^3}{x}-\frac{6B\,a^2b^2}{x}-\frac{3A\,a^2b^2}{x^2}-\frac{2B\,a^3b}{x^2}-\frac{4A\,a^3b}{3x^3}-\frac{B\,a^4}{3x^3}-\frac{A\,a^4}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x)
```

```
[Out] b^4*B*x-1/4*a^4*A/x^4-4/3*a^3/x^3*A*b-1/3*a^4/x^3*B-3*a^2*b^2/x^2*A-2*a^3*b
/x^2*B-4*a*b^3/x*A-6*a^2*b^2/x*B+A*ln(x)*b^4+4*B*ln(x)*a*b^3
```

maxima [A] time = 0.46, size = 95, normalized size = 1.10

$$Bb^4x+\left(4\,Bab^3+Ab^4\right)\log(x)-\frac{3\,Aa^4+24\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+4\left(Ba^4+4\,Aa^3b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x, algorithm="maxima")
```

```
[Out] B*b^4*x + (4*B*a*b^3 + A*b^4)*log(x) - 1/12*(3*A*a^4 + 24*(3*B*a^2*b^2 + 2*
A*a*b^3)*x^3 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 4*(B*a^4 + 4*A*a^3*b)*x)/
x^4
```

mupad [B] time = 1.09, size = 93, normalized size = 1.08

$$\ln(x)\,\left(A\,b^4+4\,B\,a\,b^3\right)-\frac{x\,\left(\frac{B\,a^4}{3}+\frac{4\,A\,b\,a^3}{3}\right)+\frac{A\,a^4}{4}+x^2\,\left(2\,B\,a^3\,b+3\,A\,a^2\,b^2\right)+x^3\,\left(6\,B\,a^2\,b^2+4\,A\,a\,b^3\right)}{x^4}+B\,b^4\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^5,x)
```

```
[Out] log(x)*(A*b^4 + 4*B*a*b^3) - (x*((B*a^4)/3 + (4*A*a^3*b)/3) + (A*a^4)/4 + x
^2*(3*A*a^2*b^2 + 2*B*a^3*b) + x^3*(6*B*a^2*b^2 + 4*A*a*b^3))/x^4 + B*b^4*x
```

sympy [A] time = 1.22, size = 99, normalized size = 1.15

$$Bb^4x + b^3(Ab + 4Ba)\log(x) + \frac{-3Aa^4 + x^3(-48Aab^3 - 72Ba^2b^2) + x^2(-36Aa^2b^2 - 24Ba^3b) + x(-16Aa^3b - 4Ba^4)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**5,x)
```

```
[Out] B*b**4*x + b**3*(A*b + 4*B*a)*log(x) + (-3*A*a**4 + x**3*(-48*A*a*b**3 - 72
*B*a**2*b**2) + x**2*(-36*A*a**2*b**2 - 24*B*a**3*b) + x*(-16*A*a**3*b - 4*
B*a**4))/(12*x**4)
```

3.460 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^6}\,dx$

Optimal. Leaf size=71

$$-\frac{a^4B}{4x^4}-\frac{4a^3bB}{3x^3}-\frac{3a^2b^2B}{x^2}-\frac{A(a+bx)^5}{5ax^5}-\frac{4ab^3B}{x}+b^4B\log(x)$$

Rubi [A] time = 0.03, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 43}

$$-\frac{3a^2b^2B}{x^2}-\frac{4a^3bB}{3x^3}-\frac{a^4B}{4x^4}-\frac{A(a+bx)^5}{5ax^5}-\frac{4ab^3B}{x}+b^4B\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^6,x]
```

```
[Out] -(a^4*B)/(4*x^4) - (4*a^3*b*B)/(3*x^3) - (3*a^2*b^2*B)/x^2 - (4*a*b^3*B)/x
- (A*(a + b*x)^5)/(5*a*x^5) + b^4*B*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^6}\,dx&=\int \frac{(a+bx)^4(A+Bx)}{x^6}\,dx\\&=-\frac{A(a+bx)^5}{5ax^5}+B\int \frac{(a+bx)^4}{x^5}\,dx\\&=-\frac{A(a+bx)^5}{5ax^5}+B\int \left(\frac{a^4}{x^5}+\frac{4a^3b}{x^4}+\frac{6a^2b^2}{x^3}+\frac{4ab^3}{x^2}+\frac{b^4}{x}\right)dx\\&=-\frac{a^4B}{4x^4}-\frac{4a^3bB}{3x^3}-\frac{3a^2b^2B}{x^2}-\frac{4ab^3B}{x}-\frac{A(a+bx)^5}{5ax^5}+b^4B\log(x)\end{aligned}$$

Mathematica [A] time = 0.04, size = 87, normalized size = 1.23

$$b^4B\log(x)-\frac{3a^4(4A+5Bx)+20a^3bx(3A+4Bx)+60a^2b^2x^2(2A+3Bx)+120ab^3x^3(A+2Bx)+60Ab^4x^4}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^6,x]
```

```
[Out] -1/60*(60*A*b^4*x^4 + 120*a*b^3*x^3*(A + 2*B*x) + 60*a^2*b^2*x^2*(2*A + 3*B
*x) + 20*a^3*b*x*(3*A + 4*B*x) + 3*a^4*(4*A + 5*B*x))/x^5 + b^4*B*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^6, x]
```

fricas [A] time = 0.41, size = 101, normalized size = 1.42

$$\frac{60\,Bb^4x^5\log(x)-12\,Aa^4-60\left(4\,Bab^3+Ab^4\right)x^4-60\left(3\,Ba^2b^2+2\,Aab^3\right)x^3-40\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-15\left(Ba^4+4\,Aa^3b\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^4*x^5*log(x) - 12*A*a^4 - 60*(4*B*a*b^3 + A*b^4)*x^4 - 60*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 - 40*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 15*(B*a^4 +
4*A*a^3*b)*x)/x^5
```

giac [A] time = 0.17, size = 99, normalized size = 1.39

$$Bb^4\log\left(|x|\right)-\frac{12\,Aa^4+60\left(4\,Bab^3+Ab^4\right)x^4+60\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+40\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+15\left(Ba^4+4\,Aa^3b\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x, algorithm="giac")
```

```
[Out] B*b^4*log(abs(x)) - 1/60*(12*A*a^4 + 60*(4*B*a*b^3 + A*b^4)*x^4 + 60*(3*B*a
^2*b^2 + 2*A*a*b^3)*x^3 + 40*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 15*(B*a^4 + 4*
A*a^3*b)*x)/x^5
```

maple [A] time = 0.06, size = 100, normalized size = 1.41

$$B\,b^4\ln(x)-\frac{A\,b^4}{x}-\frac{4Ba\,b^3}{x}-\frac{2Aa\,b^3}{x^2}-\frac{3B\,a^2b^2}{x^2}-\frac{2A\,a^2b^2}{x^3}-\frac{4B\,a^3b}{3x^3}-\frac{A\,a^3b}{x^4}-\frac{B\,a^4}{4x^4}-\frac{A\,a^4}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x)
```

```
[Out] -1/5*A*a^4/x^5-a^3/x^4*A*b-1/4*a^4*B/x^4-2*a^2*b^2/x^3*A-4/3*a^3*b*B/x^3-2*
a*b^3/x^2*A-3*a^2*b^2*B/x^2-b^4/x*A-4*a*b^3*B/x+b^4*B*ln(x)
```

maxima [A] time = 0.46, size = 98, normalized size = 1.38

$$Bb^4\log(x)-\frac{12\,Aa^4+60\left(4\,Bab^3+Ab^4\right)x^4+60\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+40\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+15\left(Ba^4+4\,Aa^3b\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x, algorithm="maxima")
```

[Out] B*b^4*log(x) - 1/60*(12*A*a^4 + 60*(4*B*a*b^3 + A*b^4)*x^4 + 60*(3*B*a^2*b^2 + 2*A*a*b^3)*x^3 + 40*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 15*(B*a^4 + 4*A*a^3*b)*x)/x^5

mupad [B] time = 1.09, size = 94, normalized size = 1.32

$$B\,b^4\,\ln(x)-\frac{x\,\left(\frac{B\,a^4}{4}+A\,b\,a^3\right)+\frac{A\,a^4}{5}+x^3\,\left(3\,B\,a^2\,b^2+2\,A\,a\,b^3\right)+x^2\,\left(\frac{4\,B\,a^3\,b}{3}+2\,A\,a^2\,b^2\right)+x^4\,\left(A\,b^4+4\,B\,a\,b^3\right)}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^6,x)

[Out] B*b^4*log(x) - (x*((B*a^4)/4 + A*a^3*b) + (A*a^4)/5 + x^3*(3*B*a^2*b^2 + 2*A*a*b^3) + x^2*(2*A*a^2*b^2 + (4*B*a^3*b)/3) + x^4*(A*b^4 + 4*B*a*b^3))/x^5

sympy [A] time = 1.75, size = 105, normalized size = 1.48

$$Bb^4\log{(x)}+\frac{-12Aa^4+x^4\left(-60Ab^4-240Bab^3\right)+x^3\left(-120Aab^3-180Ba^2b^2\right)+x^2\left(-120Aa^2b^2-80Ba^3b\right)+x\left(-60Aa^3b-15Ba^4\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**6,x)

[Out] B*b**4*log(x) + (-12*A*a**4 + x**4*(-60*A*b**4 - 240*B*a*b**3) + x**3*(-120*A*a*b**3 - 180*B*a**2*b**2) + x**2*(-120*A*a**2*b**2 - 80*B*a**3*b) + x*(-60*A*a**3*b - 15*B*a**4))/(60*x**5)

3.461 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^7}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)^5(Ab-6aB)}{30a^2x^5}-\frac{A(a+bx)^5}{6ax^6}$$

Rubi [A] time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = $\{27, 78, 37\}$

$$\frac{(a+bx)^5(Ab-6aB)}{30a^2x^5}-\frac{A(a+bx)^5}{6ax^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^7,x]
```

```
[Out] -(A*(a + b*x)^5)/(6*a*x^6) + ((A*b - 6*a*B)*(a + b*x)^5)/(30*a^2*x^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^7}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^7}\,dx\\
&= -\frac{A(a+bx)^5}{6ax^6}+\frac{(-Ab+6aB)\int \frac{(a+bx)^4}{x^6}\,dx}{6a}\\
&= -\frac{A(a+bx)^5}{6ax^6}+\frac{(Ab-6aB)(a+bx)^5}{30a^2x^5}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 85, normalized size = 1.93

$$-\frac{a^4(5A+6Bx)+6a^3bx(4A+5Bx)+15a^2b^2x^2(3A+4Bx)+20ab^3x^3(2A+3Bx)+15b^4x^4(A+2Bx)}{30x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^7,x]
```

```
[Out] -1/30*(15*b^4*x^4*(A + 2*B*x) + 20*a*b^3*x^3*(2*A + 3*B*x) + 15*a^2*b^2*x^2
*(3*A + 4*B*x) + 6*a^3*b*x*(4*A + 5*B*x) + a^4*(5*A + 6*B*x))/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^7, x]
```

fricas [B] time = 0.40, size = 99, normalized size = 2.25

$$-\frac{30\,Bb^4x^5+5\,Aa^4+15\left(4\,Bab^3+Ab^4\right)x^4+20\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+15\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+6\left(Ba^4+4\,Aa^3b\right)x}{30\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x, algorithm="fricas")
```

```
[Out] -1/30*(30*B*b^4*x^5 + 5*A*a^4 + 15*(4*B*a*b^3 + A*b^4)*x^4 + 20*(3*B*a^2*b^
2 + 2*A*a*b^3)*x^3 + 15*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 6*(B*a^4 + 4*A*a^3*
b)*x)/x^6
```

giac [B] time = 0.17, size = 99, normalized size = 2.25

$$-\frac{30\,Bb^4x^5+60\,Bab^3x^4+15\,Ab^4x^4+60\,Ba^2b^2x^3+40\,Aab^3x^3+30\,Ba^3bx^2+45\,Aa^2b^2x^2+6\,Ba^4x+24\,Aa^3bx+5\,Aa^4}{30\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x, algorithm="giac")
```

```
[Out] -1/30*(30*B*b^4*x^5 + 60*B*a*b^3*x^4 + 15*A*b^4*x^4 + 60*B*a^2*b^2*x^3 + 40
*A*a*b^3*x^3 + 30*B*a^3*b*x^2 + 45*A*a^2*b^2*x^2 + 6*B*a^4*x + 24*A*a^3*b*x
 + 5*A*a^4)/x^6
```

maple [B] time = 0.06, size = 88, normalized size = 2.00

$$-\frac{B\,b^4}{x}-\frac{(Ab+4Ba)\,b^3}{2x^2}-\frac{2\,(2Ab+3Ba)\,a\,b^2}{3x^3}-\frac{A\,a^4}{6x^6}-\frac{(3Ab+2Ba)\,a^2b}{2x^4}-\frac{(4Ab+Ba)\,a^3}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x)
```

```
[Out] -1/5*a^3*(4*A*b+B*a)/x^5-1/2*a^2*b*(3*A*b+2*B*a)/x^4-2/3*a*b^2*(2*A*b+3*B*a
)/x^3-1/2*b^3*(A*b+4*B*a)/x^2-1/6*A*a^4/x^6-b^4*B/x
```

maxima [B] time = 0.58, size = 99, normalized size = 2.25

$$-\frac{30\,Bb^4x^5+5\,Aa^4+15\left(4\,Bab^3+Ab^4\right)x^4+20\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+15\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+6\left(Ba^4+4\,Aa^3b\right)x}{30\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x, algorithm="maxima")
```

```
[Out] -1/30*(30*B*b^4*x^5 + 5*A*a^4 + 15*(4*B*a*b^3 + A*b^4)*x^4 + 20*(3*B*a^2*b^
2 + 2*A*a*b^3)*x^3 + 15*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 6*(B*a^4 + 4*A*a^3*
b)*x)/x^6
```

mupad [B] time = 0.05, size = 95, normalized size = 2.16

$$-\frac{x\left(\frac{B\,a^4}{5}+\frac{4\,A\,b\,a^3}{5}\right)+\frac{A\,a^4}{6}+x^2\,\left(B\,a^3\,b+\frac{3\,A\,a^2\,b^2}{2}\right)+x^3\,\left(2\,B\,a^2\,b^2+\frac{4\,A\,a\,b^3}{3}\right)+x^4\,\left(\frac{A\,b^4}{2}+2\,B\,a\,b^3\right)+B\,b^4\,x^5}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^7,x)
```

```
[Out] -(x*((B*a^4)/5 + (4*A*a^3*b)/5) + (A*a^4)/6 + x^2*((3*A*a^2*b^2)/2 + B*a^3*
b) + x^3*(2*B*a^2*b^2 + (4*A*a*b^3)/3) + x^4*((A*b^4)/2 + 2*B*a*b^3) + B*b^
4*x^5)/x^6
```

sympy [B] time = 2.35, size = 107, normalized size = 2.43

$$\frac{-5Aa^4-30Bb^4x^5+x^4\left(-15Ab^4-60Bab^3\right)+x^3\left(-40Aab^3-60Ba^2b^2\right)+x^2\left(-45Aa^2b^2-30Ba^3b\right)+x\left(-24Aa^3b-6Ba^4\right)}{30x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**7,x)
```

```
[Out] (-5*A*a**4 - 30*B*b**4*x**5 + x**4*(-15*A*b**4 - 60*B*a*b**3) + x**3*(-40*A
*a*b**3 - 60*B*a**2*b**2) + x**2*(-45*A*a**2*b**2 - 30*B*a**3*b) + x*(-24*A
*a**3*b - 6*B*a**4))/(30*x**6)
```

3.462 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^8}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{7x^7}-\frac{a^3(aB+4Ab)}{6x^6}-\frac{2a^2b(2aB+3Ab)}{5x^5}-\frac{b^3(4aB+Ab)}{3x^3}-\frac{ab^2(3aB+2Ab)}{2x^4}-\frac{b^4B}{2x^2}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{6x^6}-\frac{2a^2b(2aB+3Ab)}{5x^5}-\frac{a^4A}{7x^7}-\frac{ab^2(3aB+2Ab)}{2x^4}-\frac{b^3(4aB+Ab)}{3x^3}-\frac{b^4B}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^8,x]
```

```
[Out] -(a^4*A)/(7*x^7) - (a^3*(4*A*b + a*B))/(6*x^6) - (2*a^2*b*(3*A*b + 2*a*B))/
(5*x^5) - (a*b^2*(2*A*b + 3*a*B))/(2*x^4) - (b^3*(A*b + 4*a*B))/(3*x^3) - (
b^4*B)/(2*x^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^8}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^8}\,dx\\ &= \int \left(\frac{a^4A}{x^8}+\frac{a^3(4Ab+aB)}{x^7}+\frac{2a^2b(3Ab+2aB)}{x^6}+\frac{2ab^2(2Ab+3aB)}{x^5}+\frac{b\end{aligned}$$

$$= -\frac{a^4A}{7x^7}-\frac{a^3(4Ab+aB)}{6x^6}-\frac{2a^2b(3Ab+2aB)}{5x^5}-\frac{ab^2(2Ab+3aB)}{2x^4}-\frac{b^3(Ab}{3$$

Mathematica [A] time = 0.02, size = 88, normalized size = 0.89

$$-\frac{5a^4(6A+7Bx)+28a^3bx(5A+6Bx)+63a^2b^2x^2(4A+5Bx)+70ab^3x^3(3A+4Bx)+35b^4x^4(2A+3Bx)}{210x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^8,x]
```

```
[Out] -1/210*(35*b^4*x^4*(2*A + 3*B*x) + 70*a*b^3*x^3*(3*A + 4*B*x) + 63*a^2*b^2*
x^2*(4*A + 5*B*x) + 28*a^3*b*x*(5*A + 6*B*x) + 5*a^4*(6*A + 7*B*x))/x^7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^8, x]
```

fricas [A] time = 0.39, size = 99, normalized size = 1.00

$$-\frac{105\,Bb^4x^5+30\,Aa^4+70\left(4\,Bab^3+Ab^4\right)x^4+105\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+84\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+35\left(Ba^4+4\,Aa^3b\right)x}{210\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/210*(105*B*b^4*x^5 + 30*A*a^4 + 70*(4*B*a*b^3 + A*b^4)*x^4 + 105*(3*B*a^
2*b^2 + 2*A*a*b^3)*x^3 + 84*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 35*(B*a^4 + 4*A
*a^3*b)*x)/x^7
```

giac [A] time = 0.16, size = 99, normalized size = 1.00

$$-\frac{105\,Bb^4x^5+280\,Bab^3x^4+70\,Ab^4x^4+315\,Ba^2b^2x^3+210\,Aab^3x^3+168\,Ba^3bx^2+252\,Aa^2b^2x^2+35\,Ba^4x+140\,Aa^3bx+30\,Aa^4}{210\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/210*(105*B*b^4*x^5 + 280*B*a*b^3*x^4 + 70*A*b^4*x^4 + 315*B*a^2*b^2*x^3
+ 210*A*a*b^3*x^3 + 168*B*a^3*b*x^2 + 252*A*a^2*b^2*x^2 + 35*B*a^4*x + 140*
A*a^3*b*x + 30*A*a^4)/x^7
```

maple [A] time = 0.05, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{2x^2}-\frac{(Ab+4Ba)\,b^3}{3x^3}-\frac{(2Ab+3Ba)\,a\,b^2}{2x^4}-\frac{A\,a^4}{7x^7}-\frac{2\,(3Ab+2Ba)\,a^2b}{5x^5}-\frac{(4Ab+Ba)\,a^3}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x)
```

```
[Out] -1/7*a^4*A/x^7-1/6*a^3*(4*A*b+B*a)/x^6-2/5*a^2*b*(3*A*b+2*B*a)/x^5-1/2*a*b^
2*(2*A*b+3*B*a)/x^4-1/3*b^3*(A*b+4*B*a)/x^3-1/2*b^4*B/x^2
```

maxima [A] time = 0.59, size = 99, normalized size = 1.00

$$-\frac{105\,Bb^4x^5+30\,Aa^4+70\left(4\,Bab^3+Ab^4\right)x^4+105\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+84\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+35\left(Ba^4+4\,Aa^3b\right)x}{210\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/210*(105*B*b^4*x^5 + 30*A*a^4 + 70*(4*B*a*b^3 + A*b^4)*x^4 + 105*(3*B*a^
2*b^2 + 2*A*a*b^3)*x^3 + 84*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 35*(B*a^4 + 4*A
*a^3*b)*x)/x^7
```

mupad [B] time = 1.08, size = 96, normalized size = 0.97

$$-\frac{x\left(\frac{B\,a^4}{6}+\frac{2\,A\,b\,a^3}{3}\right)+\frac{A\,a^4}{7}+x^3\left(\frac{3\,B\,a^2\,b^2}{2}+A\,a\,b^3\right)+x^2\left(\frac{4\,B\,a^3\,b}{5}+\frac{6\,A\,a^2\,b^2}{5}\right)+x^4\left(\frac{A\,b^4}{3}+\frac{4\,B\,a\,b^3}{3}\right)+\frac{B\,b^4\,x^5}{2}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^8,x)
```

```
[Out] -(x*((B*a^4)/6 + (2*A*a^3*b)/3) + (A*a^4)/7 + x^3*((3*B*a^2*b^2)/2 + A*a*b^
3) + x^2*((6*A*a^2*b^2)/5 + (4*B*a^3*b)/5) + x^4*((A*b^4)/3 + (4*B*a*b^3)/3
) + (B*b^4*x^5)/2)/x^7
```

sympy [A] time = 2.85, size = 107, normalized size = 1.08

$$\frac{-30Aa^4 - 105Bb^4x^5 + x^4\left(-70Ab^4 - 280Bab^3\right) + x^3\left(-210Aab^3 - 315Ba^2b^2\right) + x^2\left(-252Aa^2b^2 - 168Ba^3b\right) + x\left(-140Aa^3b - 35Ba^4\right)}{210x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**8,x)
```

```
[Out] (-30*A*a**4 - 105*B*b**4*x**5 + x**4*(-70*A*b**4 - 280*B*a*b**3) + x**3*(-2
10*A*a*b**3 - 315*B*a**2*b**2) + x**2*(-252*A*a**2*b**2 - 168*B*a**3*b) + x
*(-140*A*a**3*b - 35*B*a**4))/(210*x**7)
```

3.463 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^9}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{8x^8}-\frac{a^3(aB+4Ab)}{7x^7}-\frac{a^2b(2aB+3Ab)}{3x^6}-\frac{b^3(4aB+Ab)}{4x^4}-\frac{2ab^2(3aB+2Ab)}{5x^5}-\frac{b^4B}{3x^3}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{7x^7}-\frac{a^2b(2aB+3Ab)}{3x^6}-\frac{a^4A}{8x^8}-\frac{2ab^2(3aB+2Ab)}{5x^5}-\frac{b^3(4aB+Ab)}{4x^4}-\frac{b^4B}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^9,x]
```

```
[Out] -(a^4*A)/(8*x^8) - (a^3*(4*A*b + a*B))/(7*x^7) - (a^2*b*(3*A*b + 2*a*B))/(3
*x^6) - (2*a*b^2*(2*A*b + 3*a*B))/(5*x^5) - (b^3*(A*b + 4*a*B))/(4*x^4) - (
b^4*B)/(3*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^9}\,dx=\int \frac{(a+bx)^4(A+Bx)}{x^9}\,dx$$
$$=\int \left(\frac{a^4A}{x^9}+\frac{a^3(4Ab+aB)}{x^8}+\frac{2a^2b(3Ab+2aB)}{x^7}+\frac{2ab^2(2Ab+3aB)}{x^6}+\frac{b^3(A\right.$$
$$=-\frac{a^4A}{8x^8}-\frac{a^3(4Ab+aB)}{7x^7}-\frac{a^2b(3Ab+2aB)}{3x^6}-\frac{2ab^2(2Ab+3aB)}{5x^5}-\frac{b^3(Ab+}{4x^4}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.89

$$-\frac{15a^4(7A+8Bx)+80a^3bx(6A+7Bx)+168a^2b^2x^2(5A+6Bx)+168ab^3x^3(4A+5Bx)+70b^4x^4(3A+4Bx)}{840x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^9,x]
```

```
[Out] -1/840*(70*b^4*x^4*(3*A + 4*B*x) + 168*a*b^3*x^3*(4*A + 5*B*x) + 168*a^2*b^
2*x^2*(5*A + 6*B*x) + 80*a^3*b*x*(6*A + 7*B*x) + 15*a^4*(7*A + 8*B*x))/x^8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^9,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^9, x]
```

fricas [A] time = 0.39, size = 99, normalized size = 1.00

$$-\frac{280\,Bb^4x^5+105\,Aa^4+210\left(4\,Bab^3+Ab^4\right)x^4+336\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+280\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+120\left(Ba^4+4\,Aa^3b\right)x}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x, algorithm="fricas")
[Out] -1/840*(280*B*b^4*x^5 + 105*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 336*(3*B*
a^2*b^2 + 2*A*a*b^3)*x^3 + 280*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 120*(B*a^4 +
 4*A*a^3*b)*x)/x^8
```

giac [A] time = 0.16, size = 99, normalized size = 1.00

$$-\frac{280\,Bb^4x^5+840\,Bab^3x^4+210\,Ab^4x^4+1008\,Ba^2b^2x^3+672\,Aab^3x^3+560\,Ba^3bx^2+840\,Aa^2b^2x^2+120\,Ba^4x+480\,Aa^3bx+105\,Aa^4}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x, algorithm="giac")
[Out] -1/840*(280*B*b^4*x^5 + 840*B*a*b^3*x^4 + 210*A*b^4*x^4 + 1008*B*a^2*b^2*x^
3 + 672*A*a*b^3*x^3 + 560*B*a^3*b*x^2 + 840*A*a^2*b^2*x^2 + 120*B*a^4*x + 4
80*A*a^3*b*x + 105*A*a^4)/x^8
```

maple [A] time = 0.05, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{3x^3}-\frac{(Ab+4Ba)\,b^3}{4x^4}-\frac{2\,(2Ab+3Ba)\,a\,b^2}{5x^5}-\frac{A\,a^4}{8x^8}-\frac{(3Ab+2Ba)\,a^2b}{3x^6}-\frac{(4Ab+Ba)\,a^3}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x)
[Out] -1/8*a^4*A/x^8-1/7*a^3*(4*A*b+B*a)/x^7-1/3*a^2*b*(3*A*b+2*B*a)/x^6-2/5*a*b^
2*(2*A*b+3*B*a)/x^5-1/4*b^3*(A*b+4*B*a)/x^4-1/3*b^4*B/x^3
```

maxima [A] time = 0.52, size = 99, normalized size = 1.00

$$-\frac{280\,Bb^4x^5+105\,Aa^4+210\left(4\,Bab^3+Ab^4\right)x^4+336\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+280\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+120\left(Ba^4+4\,Aa^3b\right)x}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x, algorithm="maxima")
[Out] -1/840*(280*B*b^4*x^5 + 105*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 336*(3*B*
a^2*b^2 + 2*A*a*b^3)*x^3 + 280*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 120*(B*a^4 +
 4*A*a^3*b)*x)/x^8
```

mupad [B] time = 1.07, size = 95, normalized size = 0.96

$$-\frac{x\left(\frac{B\,a^4}{7}+\frac{4\,A\,b\,a^3}{7}\right)+\frac{A\,a^4}{8}+x^2\left(\frac{2\,B\,a^3\,b}{3}+A\,a^2\,b^2\right)+x^3\left(\frac{6\,B\,a^2\,b^2}{5}+\frac{4\,A\,a\,b^3}{5}\right)+x^4\left(\frac{A\,b^4}{4}+B\,a\,b^3\right)+\frac{B\,b^4\,x^5}{3}}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^9,x)
```

```
[Out] -(x*((B*a^4)/7 + (4*A*a^3*b)/7) + (A*a^4)/8 + x^2*(A*a^2*b^2 + (2*B*a^3*b)/
3) + x^3*((6*B*a^2*b^2)/5 + (4*A*a*b^3)/5) + x^4*((A*b^4)/4 + B*a*b^3) + (B
*b^4*x^5)/3)/x^8
```

sympy [A] time = 3.71, size = 107, normalized size = 1.08

$$\frac{-105Aa^4 - 280Bb^4x^5 + x^4\left(-210Ab^4 - 840Bab^3\right) + x^3\left(-672Aab^3 - 1008Ba^2b^2\right) + x^2\left(-840Aa^2b^2 - 560Ba^3b\right) + x\left(-480Aa^3b - 120Ba^4\right)}{840x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**9,x)
```

```
[Out] (-105*A*a**4 - 280*B*b**4*x**5 + x**4*(-210*A*b**4 - 840*B*a*b**3) + x**3*(
-672*A*a*b**3 - 1008*B*a**2*b**2) + x**2*(-840*A*a**2*b**2 - 560*B*a**3*b)
+ x*(-480*A*a**3*b - 120*B*a**4))/(840*x**8)
```

3.464 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{10}}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{9x^9}-\frac{a^3(aB+4Ab)}{8x^8}-\frac{2a^2b(2aB+3Ab)}{7x^7}-\frac{b^3(4aB+Ab)}{5x^5}-\frac{ab^2(3aB+2Ab)}{3x^6}-\frac{b^4B}{4x^4}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{8x^8}-\frac{2a^2b(2aB+3Ab)}{7x^7}-\frac{a^4A}{9x^9}-\frac{ab^2(3aB+2Ab)}{3x^6}-\frac{b^3(4aB+Ab)}{5x^5}-\frac{b^4B}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^10,x]
```

```
[Out] -(a^4*A)/(9*x^9) - (a^3*(4*A*b + a*B))/(8*x^8) - (2*a^2*b*(3*A*b + 2*a*B))/
(7*x^7) - (a*b^2*(2*A*b + 3*a*B))/(3*x^6) - (b^3*(A*b + 4*a*B))/(5*x^5) - (
b^4*B)/(4*x^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{10}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{10}}\,dx\\ &= \int \left(\frac{a^4A}{x^{10}}+\frac{a^3(4Ab+aB)}{x^9}+\frac{2a^2b(3Ab+2aB)}{x^8}+\frac{2ab^2(2Ab+3aB)}{x^7}+\frac{b}{}\right.\\ &= -\frac{a^4A}{9x^9}-\frac{a^3(4Ab+aB)}{8x^8}-\frac{2a^2b(3Ab+2aB)}{7x^7}-\frac{ab^2(2Ab+3aB)}{3x^6}-\frac{b^3(Ab}{5}\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.89

$$-\frac{35a^4(8A+9Bx)+180a^3bx(7A+8Bx)+360a^2b^2x^2(6A+7Bx)+336ab^3x^3(5A+6Bx)+126b^4x^4(4A+5Bx)}{2520x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^10,x]
```

```
[Out] -1/2520*(126*b^4*x^4*(4*A + 5*B*x) + 336*a*b^3*x^3*(5*A + 6*B*x) + 360*a^2*
b^2*x^2*(6*A + 7*B*x) + 180*a^3*b*x*(7*A + 8*B*x) + 35*a^4*(8*A + 9*B*x))/x
^9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^10,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^10, x]
```

fricas [A] time = 0.39, size = 99, normalized size = 1.00

$$-\frac{630\,Bb^4x^5+280\,Aa^4+504\,\left(4\,Bab^3+Ab^4\right)x^4+840\,\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+720\,\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+315\,\left(Ba^4+4\,Aa^3b\right)x}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x, algorithm="fricas")
[Out] -1/2520*(630*B*b^4*x^5 + 280*A*a^4 + 504*(4*B*a*b^3 + A*b^4)*x^4 + 840*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 720*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 315*(B*a^4
+ 4*A*a^3*b)*x)/x^9
```

giac [A] time = 0.18, size = 99, normalized size = 1.00

$$-\frac{630\,Bb^4x^5+2016\,Bab^3x^4+504\,Ab^4x^4+2520\,Ba^2b^2x^3+1680\,Aab^3x^3+1440\,Ba^3bx^2+2160\,Aa^2b^2x^2+315\,Ba^4x+1260\,Aa^3bx+280\,Aa^4}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x, algorithm="giac")
[Out] -1/2520*(630*B*b^4*x^5 + 2016*B*a*b^3*x^4 + 504*A*b^4*x^4 + 2520*B*a^2*b^2*
x^3 + 1680*A*a*b^3*x^3 + 1440*B*a^3*b*x^2 + 2160*A*a^2*b^2*x^2 + 315*B*a^4*
x + 1260*A*a^3*b*x + 280*A*a^4)/x^9
```

maple [A] time = 0.05, size = 88, normalized size = 0.89

$$-\frac{Bb^4}{4x^4}-\frac{(Ab+4Ba)\,b^3}{5x^5}-\frac{(2Ab+3Ba)\,a\,b^2}{3x^6}-\frac{A\,a^4}{9x^9}-\frac{2\,(3Ab+2Ba)\,a^2b}{7x^7}-\frac{(4Ab+Ba)\,a^3}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x)
[Out] -1/9*a^4*A/x^9-1/8*a^3*(4*A*b+B*a)/x^8-2/7*a^2*b*(3*A*b+2*B*a)/x^7-1/3*a*b^
2*(2*A*b+3*B*a)/x^6-1/5*b^3*(A*b+4*B*a)/x^5-1/4*b^4*B/x^4
```

maxima [A] time = 0.47, size = 99, normalized size = 1.00

$$-\frac{630\,Bb^4x^5+280\,Aa^4+504\,\left(4\,Bab^3+Ab^4\right)x^4+840\,\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+720\,\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+315\,\left(Ba^4+4\,Aa^3b\right)x}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x, algorithm="maxima")
[Out] -1/2520*(630*B*b^4*x^5 + 280*A*a^4 + 504*(4*B*a*b^3 + A*b^4)*x^4 + 840*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 720*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 315*(B*a^4
+ 4*A*a^3*b)*x)/x^9
```

mupad [B] time = 0.05, size = 96, normalized size = 0.97

$$-\frac{x\left(\frac{B\,a^4}{8}+\frac{A\,b\,a^3}{2}\right)+\frac{A\,a^4}{9}+x^3\left(B\,a^2\,b^2+\frac{2\,A\,a\,b^3}{3}\right)+x^2\left(\frac{4\,B\,a^3\,b}{7}+\frac{6\,A\,a^2\,b^2}{7}\right)+x^4\left(\frac{A\,b^4}{5}+\frac{4\,B\,a\,b^3}{5}\right)+\frac{B\,b^4\,x^5}{4}}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^10,x)
```

```
[Out] -(x*((B*a^4)/8 + (A*a^3*b)/2) + (A*a^4)/9 + x^3*(B*a^2*b^2 + (2*A*a*b^3)/3)
 + x^2*((6*A*a^2*b^2)/7 + (4*B*a^3*b)/7) + x^4*((A*b^4)/5 + (4*B*a*b^3)/5)
+ (B*b^4*x^5)/4)/x^9
```

sympy [A] time = 4.55, size = 107, normalized size = 1.08

$$\frac{-280Aa^4 - 630Bb^4x^5 + x^4\left(-504Ab^4 - 2016Bab^3\right) + x^3\left(-1680Aab^3 - 2520Ba^2b^2\right) + x^2\left(-2160Aa^2b^2 - 1440Ba^3b\right) + x\left(-1260Aa^3b - 315Ba^4\right)}{2520x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**10,x)
```

```
[Out] (-280*A*a**4 - 630*B*b**4*x**5 + x**4*(-504*A*b**4 - 2016*B*a*b**3) + x**3*
(-1680*A*a*b**3 - 2520*B*a**2*b**2) + x**2*(-2160*A*a**2*b**2 - 1440*B*a**3
*b) + x*(-1260*A*a**3*b - 315*B*a**4))/(2520*x**9)
```

3.465 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{11}} dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{10x^{10}}-\frac{a^3(aB+4Ab)}{9x^9}-\frac{a^2b(2aB+3Ab)}{4x^8}-\frac{b^3(4aB+Ab)}{6x^6}-\frac{2ab^2(3aB+2Ab)}{7x^7}-\frac{b^4B}{5x^5}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{9x^9}-\frac{a^2b(2aB+3Ab)}{4x^8}-\frac{a^4A}{10x^{10}}-\frac{2ab^2(3aB+2Ab)}{7x^7}-\frac{b^3(4aB+Ab)}{6x^6}-\frac{b^4B}{5x^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^11,x]
```

```
[Out] -(a^4*A)/(10*x^10) - (a^3*(4*A*b + a*B))/(9*x^9) - (a^2*b*(3*A*b + 2*a*B))/
(4*x^8) - (2*a*b^2*(2*A*b + 3*a*B))/(7*x^7) - (b^3*(A*b + 4*a*B))/(6*x^6) -
 (b^4*B)/(5*x^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{11}} dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{11}} dx\\ &= \int \left(\frac{a^4A}{x^{11}}+\frac{a^3(4Ab+aB)}{x^{10}}+\frac{2a^2b(3Ab+2aB)}{x^9}+\frac{2ab^2(2Ab+3aB)}{x^8}+\frac{b^3(A\right.\\ &= -\frac{a^4A}{10x^{10}}-\frac{a^3(4Ab+aB)}{9x^9}-\frac{a^2b(3Ab+2aB)}{4x^8}-\frac{2ab^2(2Ab+3aB)}{7x^7}-\frac{b^3(Ab-}{6x}\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.89

$$-\frac{14a^4(9A+10Bx)+70a^3bx(8A+9Bx)+135a^2b^2x^2(7A+8Bx)+120ab^3x^3(6A+7Bx)+42b^4x^4(5A+6Bx)}{1260x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^11,x]
```

```
[Out] -1/1260*(42*b^4*x^4*(5*A + 6*B*x) + 120*a*b^3*x^3*(6*A + 7*B*x) + 135*a^2*b
^2*x^2*(7*A + 8*B*x) + 70*a^3*b*x*(8*A + 9*B*x) + 14*a^4*(9*A + 10*B*x))/x^
10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^11, x]
```

fricas [A] time = 0.39, size = 99, normalized size = 1.00

$$-\frac{252\,Bb^4x^5+126\,Aa^4+210\left(4\,Bab^3+Ab^4\right)x^4+360\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+315\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+140\left(Ba^4+4\,Aa^3b\right)x}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x, algorithm="fricas")
```

```
[Out] -1/1260*(252*B*b^4*x^5 + 126*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 360*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 315*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 140*(B*a^4
+ 4*A*a^3*b)*x)/x^10
```

giac [A] time = 0.15, size = 99, normalized size = 1.00

$$-\frac{252\,Bb^4x^5+840\,Bab^3x^4+210\,Ab^4x^4+1080\,Ba^2b^2x^3+720\,Aab^3x^3+630\,Ba^3bx^2+945\,Aa^2b^2x^2+140\,Ba^4x+560\,Aa^3bx+126\,Aa^4}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x, algorithm="giac")
```

```
[Out] -1/1260*(252*B*b^4*x^5 + 840*B*a*b^3*x^4 + 210*A*b^4*x^4 + 1080*B*a^2*b^2*x
^3 + 720*A*a*b^3*x^3 + 630*B*a^3*b*x^2 + 945*A*a^2*b^2*x^2 + 140*B*a^4*x +
560*A*a^3*b*x + 126*A*a^4)/x^10
```

maple [A] time = 0.06, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{5x^5}-\frac{(Ab+4Ba)\,b^3}{6x^6}-\frac{2\,(2Ab+3Ba)\,a\,b^2}{7x^7}-\frac{A\,a^4}{10x^{10}}-\frac{(3Ab+2Ba)\,a^2b}{4x^8}-\frac{(4Ab+Ba)\,a^3}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x)
```

```
[Out] -1/10*a^4*A/x^10-1/9*a^3*(4*A*b+B*a)/x^9-1/4*a^2*b*(3*A*b+2*B*a)/x^8-2/7*a*
b^2*(2*A*b+3*B*a)/x^7-1/6*b^3*(A*b+4*B*a)/x^6-1/5*b^4*B/x^5
```

maxima [A] time = 0.45, size = 99, normalized size = 1.00

$$-\frac{252\,Bb^4x^5+126\,Aa^4+210\left(4\,Bab^3+Ab^4\right)x^4+360\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+315\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+140\left(Ba^4+4\,Aa^3b\right)x}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x, algorithm="maxima")
```

```
[Out] -1/1260*(252*B*b^4*x^5 + 126*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 360*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 315*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 140*(B*a^4
+ 4*A*a^3*b)*x)/x^10
```

mupad [B] time = 1.06, size = 97, normalized size = 0.98

$$-\frac{x\left(\frac{B\,a^4}{9}+\frac{4\,A\,b\,a^3}{9}\right)+\frac{A\,a^4}{10}+x^2\left(\frac{B\,a^3\,b}{2}+\frac{3\,A\,a^2\,b^2}{4}\right)+x^3\left(\frac{6\,B\,a^2\,b^2}{7}+\frac{4\,A\,a\,b^3}{7}\right)+x^4\left(\frac{A\,b^4}{6}+\frac{2\,B\,a\,b^3}{3}\right)+\frac{B\,b^4\,x^5}{5}}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^11,x)
```

```
[Out] -(x*((B*a^4)/9 + (4*A*a^3*b)/9) + (A*a^4)/10 + x^2*((3*A*a^2*b^2)/4 + (B*a^
3*b)/2) + x^3*((6*B*a^2*b^2)/7 + (4*A*a*b^3)/7) + x^4*((A*b^4)/6 + (2*B*a*b
^3)/3) + (B*b^4*x^5)/5)/x^10
```

sympy [A] time = 5.45, size = 107, normalized size = 1.08

$$\frac{-126Aa^4 - 252Bb^4x^5 + x^4\left(-210Ab^4 - 840Bab^3\right) + x^3\left(-720Aab^3 - 1080Ba^2b^2\right) + x^2\left(-945Aa^2b^2 - 630Ba^3b\right) + x\left(-560Aa^3b - 140Ba^4\right)}{1260x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**11,x)
```

```
[Out] (-126*A*a**4 - 252*B*b**4*x**5 + x**4*(-210*A*b**4 - 840*B*a*b**3) + x**3*(
-720*A*a*b**3 - 1080*B*a**2*b**2) + x**2*(-945*A*a**2*b**2 - 630*B*a**3*b)
+ x*(-560*A*a**3*b - 140*B*a**4))/(1260*x**10)
```

3.466 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=143

$$\frac{1}{6}a^6Ax^6+\frac{1}{7}a^5x^7(aB+6Ab)+\frac{3}{8}a^4bx^8(2aB+5Ab)+\frac{5}{9}a^3b^2x^9(3aB+4Ab)+\frac{1}{2}a^2b^3x^{10}(4aB+3Ab)+\frac{1}{12}b^5x^{12}(6aB+Ab$$

Rubi [A] time = 0.14, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{1}{2}a^2b^3x^{10}(4aB+3Ab)+\frac{5}{9}a^3b^2x^9(3aB+4Ab)+\frac{3}{8}a^4bx^8(2aB+5Ab)+\frac{1}{7}a^5x^7(aB+6Ab)+\frac{1}{6}a^6Ax^6+\frac{1}{12}b^5x^{12}(6aB+Ab)+\frac{3}{11}ab^4x^{11}(5aB+2Ab)+\frac{1}{13}b^6Bx^{13}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^6)/6 + (a^5*(6*A*b + a*B)*x^7)/7 + (3*a^4*b*(5*A*b + 2*a*B)*x^8)/8
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^9)/9 + (a^2*b^3*(3*A*b + 4*a*B)*x^10)/2 + (
3*a*b^4*(2*A*b + 5*a*B)*x^11)/11 + (b^5*(A*b + 6*a*B)*x^12)/12 + (b^6*B*x^1
3)/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^5(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6Ax^5+a^5(6Ab+aB)x^6+3a^4b(5Ab+2aB)x^7+5a^3b^2(4Ab+3\right.\\ &= \frac{1}{6}a^6Ax^6+\frac{1}{7}a^5(6Ab+aB)x^7+\frac{3}{8}a^4b(5Ab+2aB)x^8+\frac{5}{9}a^3b^2(4Ab+3\end{aligned}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.00

$$\frac{1}{6}a^6Ax^6+\frac{1}{7}a^5x^7(aB+6Ab)+\frac{3}{8}a^4bx^8(2aB+5Ab)+\frac{5}{9}a^3b^2x^9(3aB+4Ab)+\frac{1}{2}a^2b^3x^{10}(4aB+3Ab)+\frac{1}{12}b^5x^{12}(6aB+Ab)+\frac{3}{11}ab^4x^{11}(5aB+2Ab)+\frac{1}{13}b^6Bx^{13}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^6)/6 + (a^5*(6*A*b + a*B)*x^7)/7 + (3*a^4*b*(5*A*b + 2*a*B)*x^8)/8
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^9)/9 + (a^2*b^3*(3*A*b + 4*a*B)*x^10)/2 + (
3*a*b^4*(2*A*b + 5*a*B)*x^11)/11 + (b^5*(A*b + 6*a*B)*x^12)/12 + (b^6*B*x^1
3)/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
[Out] IntegrateAlgebraic[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.35, size = 149, normalized size = 1.04

$$\frac{1}{13}x^{13}b^6B+\frac{1}{2}x^{12}b^5aB+\frac{1}{12}x^{12}b^6A+\frac{15}{11}x^{11}b^4a^2B+\frac{6}{11}x^{11}b^5aA+2x^{10}b^3a^3B+\frac{3}{2}x^{10}b^4a^2A+\frac{5}{3}x^9b^2a^4B+\frac{20}{9}x^9b^3a^3A+\frac{3}{4}x^8ba^5B+\frac{15}{8}x^8b^2a^4A+\frac{1}{7}x^7a^6B+\frac{6}{7}x^7ba^5A+\frac{1}{6}x^6a^6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
[Out] 1/13*x^13*b^6*B + 1/2*x^12*b^5*a*B + 1/12*x^12*b^6*A + 15/11*x^11*b^4*a^2*B
 + 6/11*x^11*b^5*a*A + 2*x^10*b^3*a^3*B + 3/2*x^10*b^4*a^2*A + 5/3*x^9*b^2*
a^4*B + 20/9*x^9*b^3*a^3*A + 3/4*x^8*b*a^5*B + 15/8*x^8*b^2*a^4*A + 1/7*x^7
*a^6*B + 6/7*x^7*b*a^5*A + 1/6*x^6*a^6*A
```

giac [A] time = 0.17, size = 149, normalized size = 1.04

$$\frac{1}{13}Bb^6x^{13}+\frac{1}{2}Bab^5x^{12}+\frac{1}{12}Ab^6x^{12}+\frac{15}{11}Ba^2b^4x^{11}+\frac{6}{11}Aab^5x^{11}+2Ba^3b^3x^{10}+\frac{3}{2}Aa^2b^4x^{10}+\frac{5}{3}Ba^4b^2x^9+\frac{20}{9}Aa^3b^3x^9+\frac{3}{4}Ba^5bx^8+\frac{15}{8}Aa^4b^2x^8+\frac{1}{7}Ba^6x^7+\frac{6}{7}Aa^5bx^7+\frac{1}{6}Aa^6x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
[Out] 1/13*B*b^6*x^13 + 1/2*B*a*b^5*x^12 + 1/12*A*b^6*x^12 + 15/11*B*a^2*b^4*x^11
 + 6/11*A*a*b^5*x^11 + 2*B*a^3*b^3*x^10 + 3/2*A*a^2*b^4*x^10 + 5/3*B*a^4*b^
2*x^9 + 20/9*A*a^3*b^3*x^9 + 3/4*B*a^5*b*x^8 + 15/8*A*a^4*b^2*x^8 + 1/7*B*a
^6*x^7 + 6/7*A*a^5*b*x^7 + 1/6*A*a^6*x^6
```

maple [A] time = 0.05, size = 148, normalized size = 1.03

$$\frac{Bb^6x^{13}}{13}+\frac{Aa^6x^6}{6}+\frac{\left(Ab^6+6Bab^5\right)x^{12}}{12}+\frac{\left(6Aab^5+15Ba^2b^4\right)x^{11}}{11}+\frac{\left(15Aa^2b^4+20Ba^3b^3\right)x^{10}}{10}+\frac{\left(20Aa^3b^3+15Ba^4b^2\right)x^9}{9}+\frac{\left(15Aa^4b^2+6Ba^5b\right)x^8}{8}+\frac{\left(6Aa^5b+Ba^6\right)x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
[Out] 1/13*b^6*B*x^13+1/12*(A*b^6+6*B*a*b^5)*x^12+1/11*(6*A*a*b^5+15*B*a^2*b^4)*x
^11+1/10*(15*A*a^2*b^4+20*B*a^3*b^3)*x^10+1/9*(20*A*a^3*b^3+15*B*a^4*b^2)*x
^9+1/8*(15*A*a^4*b^2+6*B*a^5*b)*x^8+1/7*(6*A*a^5*b+B*a^6)*x^7+1/6*a^6*A*x^6
```

maxima [A] time = 0.48, size = 147, normalized size = 1.03

$$\frac{1}{13}Bb^6x^{13}+\frac{1}{6}Aa^6x^6+\frac{1}{12}\left(6Bab^5+Ab^6\right)x^{12}+\frac{3}{11}\left(5Ba^2b^4+2Aab^5\right)x^{11}+\frac{1}{2}\left(4Ba^3b^3+3Aa^2b^4\right)x^{10}+\frac{5}{9}\left(3Ba^4b^2+4Aa^3b^3\right)x^9+\frac{3}{8}\left(2Ba^5b+5Aa^4b^2\right)x^8+\frac{1}{7}\left(Ba^6+6Aa^5b\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
[Out] 1/13*B*b^6*x^13 + 1/6*A*a^6*x^6 + 1/12*(6*B*a*b^5 + A*b^6)*x^12 + 3/11*(5*B
*a^2*b^4 + 2*A*a*b^5)*x^11 + 1/2*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^10 + 5/9*(3*
B*a^4*b^2 + 4*A*a^3*b^3)*x^9 + 3/8*(2*B*a^5*b + 5*A*a^4*b^2)*x^8 + 1/7*(B*a
^6 + 6*A*a^5*b)*x^7
```

mupad [B] time = 0.06, size = 131, normalized size = 0.92

$$x^7\left(\frac{Ba^6}{7}+\frac{6Aba^5}{7}\right)+x^{12}\left(\frac{Ab^6}{12}+\frac{Bab^5}{2}\right)+\frac{Aa^6x^6}{6}+\frac{Bb^6x^{13}}{13}+\frac{5a^3b^2x^9\,(4Ab+3Ba)}{9}+\frac{a^2b^3x^{10}\,(3Ab+4Ba)}{2}+\frac{3a^4bx^8\,(5Ab+2Ba)}{8}+\frac{3ab^4x^{11}\,(2Ab+5Ba)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^7*((B*a^6)/7 + (6*A*a^5*b)/7) + x^12*((A*b^6)/12 + (B*a*b^5)/2) + (A*a^6*
x^6)/6 + (B*b^6*x^13)/13 + (5*a^3*b^2*x^9*(4*A*b + 3*B*a))/9 + (a^2*b^3*x^1
0*(3*A*b + 4*B*a))/2 + (3*a^4*b*x^8*(5*A*b + 2*B*a))/8 + (3*a*b^4*x^11*(2*A
*b + 5*B*a))/11
```

sympy [A] time = 0.10, size = 162, normalized size = 1.13

$$\frac{Aa^6x^6}{6}+\frac{Bb^6x^{13}}{13}+x^{12}\left(\frac{Ab^6}{12}+\frac{Bab^5}{2}\right)+x^{11}\left(\frac{6Aab^5}{11}+\frac{15Ba^2b^4}{11}\right)+x^{10}\left(\frac{3Aa^2b^4}{2}+2Ba^3b^3\right)+x^9\left(\frac{20Aa^3b^3}{9}+\frac{5Ba^4b^2}{3}\right)+x^8\left(\frac{15Aa^4b^2}{8}+\frac{3Ba^5b}{4}\right)+x^7\left(\frac{6Aa^5b}{7}+\frac{Ba^6}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**6/6 + B*b**6*x**13/13 + x**12*(A*b**6/12 + B*a*b**5/2) + x**11*(6
*A*a*b**5/11 + 15*B*a**2*b**4/11) + x**10*(3*A*a**2*b**4/2 + 2*B*a**3*b**3)
 + x**9*(20*A*a**3*b**3/9 + 5*B*a**4*b**2/3) + x**8*(15*A*a**4*b**2/8 + 3*B
*a**5*b/4) + x**7*(6*A*a**5*b/7 + B*a**6/7)
```

3.467 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=139

$$\frac{a^4(a+bx)^7(Ab-aB)}{7b^6}-\frac{a^3(a+bx)^8(4Ab-5aB)}{8b^6}+\frac{2a^2(a+bx)^9(3Ab-5aB)}{9b^6}+\frac{(a+bx)^{11}(Ab-5aB)}{11b^6}-\frac{a(a+bx)^{10}(2}{5b^6}$$

Rubi [A] time = 0.10, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}=0.074$, Rules used = {27, 76}

$$\frac{2a^2(a+bx)^9(3Ab-5aB)}{9b^6}-\frac{a^3(a+bx)^8(4Ab-5aB)}{8b^6}+\frac{a^4(a+bx)^7(Ab-aB)}{7b^6}+\frac{(a+bx)^{11}(Ab-5aB)}{11b^6}-\frac{a(a+bx)^{10}(2Ab-5aB)}{5b^6}+\frac{B(a+bx)^{12}}{12b^6}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^4*(A*b - a*B)*(a + b*x)^7)/(7*b^6) - (a^3*(4*A*b - 5*a*B)*(a + b*x)^8)/(
8*b^6) + (2*a^2*(3*A*b - 5*a*B)*(a + b*x)^9)/(9*b^6) - (a*(2*A*b - 5*a*B)*(
a + b*x)^10)/(5*b^6) + ((A*b - 5*a*B)*(a + b*x)^11)/(11*b^6) + (B*(a + b*x)
^12)/(12*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^4(a+bx)^6(A+Bx)\,dx\\ &= \int\left(-\frac{a^4(-Ab+aB)(a+bx)^6}{b^5}+\frac{a^3(-4Ab+5aB)(a+bx)^7}{b^5}-\frac{2a^2(-3Ab\right.\\ &= \frac{a^4(Ab-aB)(a+bx)^7}{7b^6}-\frac{a^3(4Ab-5aB)(a+bx)^8}{8b^6}+\frac{2a^2(3Ab-5aB)(a+}{9b^6}\end{aligned}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.03

$$\frac{1}{5}a^6Ax^5+\frac{1}{6}a^5x^6(aB+6Ab)+\frac{3}{7}a^4bx^7(2aB+5Ab)+\frac{5}{8}a^3b^2x^8(3aB+4Ab)+\frac{5}{9}a^2b^3x^9(4aB+3Ab)+\frac{1}{11}b^5x^{11}(6aB+Ab)+\frac{3}{10}ab^4x^{10}(5aB+2Ab)+\frac{1}{12}b^6Bx^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^5)/5 + (a^5*(6*A*b + a*B)*x^6)/6 + (3*a^4*b*(5*A*b + 2*a*B)*x^7)/7
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^8)/8 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^9)/9 +
```

```
(3*a*b^4*(2*A*b + 5*a*B)*x^10)/10 + (b^5*(A*b + 6*a*B)*x^11)/11 + (b^6*B*x^
12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.36, size = 148, normalized size = 1.06

$$\frac{1}{12}x^{12}b^6B+\frac{6}{11}x^{11}b^5aB+\frac{1}{11}x^{11}b^6A+\frac{3}{2}x^{10}b^4a^2B+\frac{3}{5}x^{10}b^5aA+\frac{20}{9}x^9b^3a^3B+\frac{5}{3}x^9b^4a^2A+\frac{15}{8}x^8b^2a^4B+\frac{5}{2}x^8b^3a^3A+\frac{6}{7}x^7ba^5B+\frac{15}{7}x^7b^2a^4A+\frac{1}{6}x^6a^6B+x^6ba^5A+\frac{1}{5}x^5a^6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*b^6*B + 6/11*x^11*b^5*a*B + 1/11*x^11*b^6*A + 3/2*x^10*b^4*a^2*B
+ 3/5*x^10*b^5*a*A + 20/9*x^9*b^3*a^3*B + 5/3*x^9*b^4*a^2*A + 15/8*x^8*b^2*
a^4*B + 5/2*x^8*b^3*a^3*A + 6/7*x^7*b*a^5*B + 15/7*x^7*b^2*a^4*A + 1/6*x^6*
a^6*B + x^6*b*a^5*A + 1/5*x^5*a^6*A
```

giac [A] time = 0.16, size = 148, normalized size = 1.06

$$\frac{1}{12}Bb^6x^{12}+\frac{6}{11}Bab^5x^{11}+\frac{1}{11}Ab^6x^{11}+\frac{3}{2}Ba^2b^4x^{10}+\frac{3}{5}Aab^5x^{10}+\frac{20}{9}Ba^3b^3x^9+\frac{5}{3}Aa^2b^4x^9+\frac{15}{8}Ba^4b^2x^8+\frac{5}{2}Aa^3b^3x^8+\frac{6}{7}Ba^5bx^7+\frac{15}{7}Aa^4b^2x^7+\frac{1}{6}Ba^6x^6+Aa^5bx^6+\frac{1}{5}Aa^6x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*b^6*x^12 + 6/11*B*a*b^5*x^11 + 1/11*A*b^6*x^11 + 3/2*B*a^2*b^4*x^10
+ 3/5*A*a*b^5*x^10 + 20/9*B*a^3*b^3*x^9 + 5/3*A*a^2*b^4*x^9 + 15/8*B*a^4*b^
2*x^8 + 5/2*A*a^3*b^3*x^8 + 6/7*B*a^5*b*x^7 + 15/7*A*a^4*b^2*x^7 + 1/6*B*a^
6*x^6 + A*a^5*b*x^6 + 1/5*A*a^6*x^5
```

maple [A] time = 0.04, size = 148, normalized size = 1.06

$$\frac{Bb^6x^{12}}{12}+\frac{Aa^6x^5}{5}+\frac{\left(Ab^6+6Bab^5\right)x^{11}}{11}+\frac{\left(6Aab^5+15Ba^2b^4\right)x^{10}}{10}+\frac{\left(15Aa^2b^4+20Ba^3b^3\right)x^9}{9}+\frac{\left(20Aa^3b^3+15Ba^4b^2\right)x^8}{8}+\frac{\left(15Aa^4b^2+6Ba^5b\right)x^7}{7}+\frac{\left(6Aa^5b+Ba^6\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/12*B*b^6*x^12+1/11*(A*b^6+6*B*a*b^5)*x^11+1/10*(6*A*a*b^5+15*B*a^2*b^4)*x
^10+1/9*(15*A*a^2*b^4+20*B*a^3*b^3)*x^9+1/8*(20*A*a^3*b^3+15*B*a^4*b^2)*x^8
+1/7*(15*A*a^4*b^2+6*B*a^5*b)*x^7+1/6*(6*A*a^5*b+B*a^6)*x^6+1/5*A*a^6*x^5
```

maxima [A] time = 0.50, size = 147, normalized size = 1.06

$$\frac{1}{12}Bb^6x^{12}+\frac{1}{5}Aa^6x^5+\frac{1}{11}\left(6Bab^5+Ab^6\right)x^{11}+\frac{3}{10}\left(5Ba^2b^4+2Aab^5\right)x^{10}+\frac{5}{9}\left(4Ba^3b^3+3Aa^2b^4\right)x^9+\frac{5}{8}\left(3Ba^4b^2+4Aa^3b^3\right)x^8+\frac{3}{7}\left(2Ba^5b+5Aa^4b^2\right)x^7+\frac{1}{6}\left(Ba^6+6Aa^5b\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*b^6*x^12 + 1/5*A*a^6*x^5 + 1/11*(6*B*a*b^5 + A*b^6)*x^11 + 3/10*(5*B
*a^2*b^4 + 2*A*a*b^5)*x^10 + 5/9*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^9 + 5/8*(3*B
*a^4*b^2 + 4*A*a^3*b^3)*x^8 + 3/7*(2*B*a^5*b + 5*A*a^4*b^2)*x^7 + 1/6*(B*a^
6 + 6*A*a^5*b)*x^6
```

mupad [B] time = 1.07, size = 130, normalized size = 0.94

$$x^6\left(\frac{B\,a^6}{6}+A\,b\,a^5\right)+x^{11}\left(\frac{A\,b^6}{11}+\frac{6\,B\,a\,b^5}{11}\right)+\frac{A\,a^6\,x^5}{5}+\frac{B\,b^6\,x^{12}}{12}+\frac{5\,a^3\,b^2\,x^8\,\left(4\,A\,b+3\,B\,a\right)}{8}+\frac{5\,a^2\,b^3\,x^9\,\left(3\,A\,b+4\,B\,a\right)}{9}+\frac{3\,a^4\,b\,x^7\,\left(5\,A\,b+2\,B\,a\right)}{7}+\frac{3\,a\,b^4\,x^{10}\,\left(2\,A\,b+5\,B\,a\right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^6*((B*a^6)/6 + A*a^5*b) + x^11*((A*b^6)/11 + (6*B*a*b^5)/11) + (A*a^6*x^5
)/5 + (B*b^6*x^12)/12 + (5*a^3*b^2*x^8*(4*A*b + 3*B*a))/8 + (5*a^2*b^3*x^9*
(3*A*b + 4*B*a))/9 + (3*a^4*b*x^7*(5*A*b + 2*B*a))/7 + (3*a*b^4*x^10*(2*A*b
 + 5*B*a))/10
```

sympy [A] time = 0.10, size = 162, normalized size = 1.17

$$\frac{Aa^6x^5}{5}+\frac{Bb^6x^{12}}{12}+x^{11}\left(\frac{Ab^6}{11}+\frac{6Bab^5}{11}\right)+x^{10}\left(\frac{3Aab^5}{5}+\frac{3Ba^2b^4}{2}\right)+x^9\left(\frac{5Aa^2b^4}{3}+\frac{20Ba^3b^3}{9}\right)+x^8\left(\frac{5Aa^3b^3}{2}+\frac{15Ba^4b^2}{8}\right)+x^7\left(\frac{15Aa^4b^2}{7}+\frac{6Ba^5b}{7}\right)+x^6\left(Aa^5b+\frac{Ba^6}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**5/5 + B*b**6*x**12/12 + x**11*(A*b**6/11 + 6*B*a*b**5/11) + x**10
*(3*A*a*b**5/5 + 3*B*a**2*b**4/2) + x**9*(5*A*a**2*b**4/3 + 20*B*a**3*b**3/
9) + x**8*(5*A*a**3*b**3/2 + 15*B*a**4*b**2/8) + x**7*(15*A*a**4*b**2/7 + 6
*B*a**5*b/7) + x**6*(A*a**5*b + B*a**6/6)
```

3.468 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=112

$$-\frac{a^3(a+bx)^7(Ab-aB)}{7b^5}+\frac{a^2(a+bx)^8(3Ab-4aB)}{8b^5}+\frac{(a+bx)^{10}(Ab-4aB)}{10b^5}-\frac{a(a+bx)^9(Ab-2aB)}{3b^5}+\frac{B(a+bx)^{11}}{11b^5}$$

Rubi [A] time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{a^2(a+bx)^8(3Ab-4aB)}{8b^5}-\frac{a^3(a+bx)^7(Ab-aB)}{7b^5}+\frac{(a+bx)^{10}(Ab-4aB)}{10b^5}-\frac{a(a+bx)^9(Ab-2aB)}{3b^5}+\frac{B(a+bx)^{11}}{11b^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(a^3*(A*b - a*B)*(a + b*x)^7)/(7*b^5) + (a^2*(3*A*b - 4*a*B)*(a + b*x)^8)/
(8*b^5) - (a*(A*b - 2*a*B)*(a + b*x)^9)/(3*b^5) + ((A*b - 4*a*B)*(a + b*x)^
10)/(10*b^5) + (B*(a + b*x)^11)/(11*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx=\int x^3(a+bx)^6(A+Bx)\,dx$$
$$=\int\left(\frac{a^3(-Ab+aB)(a+bx)^6}{b^4}-\frac{a^2(-3Ab+4aB)(a+bx)^7}{b^4}+\frac{3a(-Ab+\right.$$
$$=-\frac{a^3(Ab-aB)(a+bx)^7}{7b^5}+\frac{a^2(3Ab-4aB)(a+bx)^8}{8b^5}-\frac{a(Ab-2aB)(a\cdot}{3b^5}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.28

$$\frac{1}{4}a^6Ax^4+\frac{1}{5}a^5x^5(aB+6Ab)+\frac{1}{2}a^4bx^6(2aB+5Ab)+\frac{5}{7}a^3b^2x^7(3aB+4Ab)+\frac{5}{8}a^2b^3x^8(4aB+3Ab)+\frac{1}{10}b^5x^{10}(6aB+Ab)+\frac{1}{3}ab^4x^9(5aB+2Ab)+\frac{1}{11}b^6Bx^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^4)/4 + (a^5*(6*A*b + a*B)*x^5)/5 + (a^4*b*(5*A*b + 2*a*B)*x^6)/2 +
 (5*a^3*b^2*(4*A*b + 3*a*B)*x^7)/7 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^8)/8 + (a
*b^4*(2*A*b + 5*a*B)*x^9)/3 + (b^5*(A*b + 6*a*B)*x^10)/10 + (b^6*B*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.41, size = 148, normalized size = 1.32

$$\frac{1}{11}x^{11}b^6B+\frac{3}{5}x^{10}b^5aB+\frac{1}{10}x^{10}b^6A+\frac{5}{3}x^9b^4a^2B+\frac{2}{3}x^9b^5aA+\frac{5}{2}x^8b^3a^3B+\frac{15}{8}x^8b^4a^2A+\frac{15}{7}x^7b^2a^4B+\frac{20}{7}x^7b^3a^3A+x^6ba^5B+\frac{5}{2}x^6b^2a^4A+\frac{1}{5}x^5a^6B+\frac{6}{5}x^5ba^5A+\frac{1}{4}x^4a^6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b^6*B + 3/5*x^10*b^5*a*B + 1/10*x^10*b^6*A + 5/3*x^9*b^4*a^2*B +
2/3*x^9*b^5*a*A + 5/2*x^8*b^3*a^3*B + 15/8*x^8*b^4*a^2*A + 15/7*x^7*b^2*a^4
*B + 20/7*x^7*b^3*a^3*A + x^6*b*a^5*B + 5/2*x^6*b^2*a^4*A + 1/5*x^5*a^6*B +
 6/5*x^5*b*a^5*A + 1/4*x^4*a^6*A
```

giac [A] time = 0.20, size = 148, normalized size = 1.32

$$\frac{1}{11}Bb^6x^{11}+\frac{3}{5}Bab^5x^{10}+\frac{1}{10}Ab^6x^{10}+\frac{5}{3}Ba^2b^4x^9+\frac{2}{3}Aab^5x^9+\frac{5}{2}Ba^3b^3x^8+\frac{15}{8}Aa^2b^4x^8+\frac{15}{7}Ba^4b^2x^7+\frac{20}{7}Aa^3b^3x^7+Ba^5bx^6+\frac{5}{2}Aa^4b^2x^6+\frac{1}{5}Ba^6x^5+\frac{6}{5}Aa^5bx^5+\frac{1}{4}Aa^6x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*b^6*x^11 + 3/5*B*a*b^5*x^10 + 1/10*A*b^6*x^10 + 5/3*B*a^2*b^4*x^9 +
2/3*A*a*b^5*x^9 + 5/2*B*a^3*b^3*x^8 + 15/8*A*a^2*b^4*x^8 + 15/7*B*a^4*b^2*x
^7 + 20/7*A*a^3*b^3*x^7 + B*a^5*b*x^6 + 5/2*A*a^4*b^2*x^6 + 1/5*B*a^6*x^5 +
 6/5*A*a^5*b*x^5 + 1/4*A*a^6*x^4
```

maple [A] time = 0.04, size = 148, normalized size = 1.32

$$\frac{B\,b^6x^{11}}{11}+\frac{A\,a^6x^4}{4}+\frac{\left(A\,b^6+6Ba\,b^5\right)x^{10}}{10}+\frac{\left(6Aa\,b^5+15B\,a^2b^4\right)x^9}{9}+\frac{\left(15A\,a^2b^4+20B\,a^3b^3\right)x^8}{8}+\frac{\left(20A\,a^3b^3+15B\,a^4b^2\right)x^7}{7}+\frac{\left(15A\,a^4b^2+6B\,a^5b\right)x^6}{6}+\frac{\left(6A\,a^5b+B\,a^6\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/11*B*b^6*x^11+1/10*(A*b^6+6*B*a*b^5)*x^10+1/9*(6*A*a*b^5+15*B*a^2*b^4)*x^
9+1/8*(15*A*a^2*b^4+20*B*a^3*b^3)*x^8+1/7*(20*A*a^3*b^3+15*B*a^4*b^2)*x^7+1
/6*(15*A*a^4*b^2+6*B*a^5*b)*x^6+1/5*(6*A*a^5*b+B*a^6)*x^5+1/4*A*a^6*x^4
```

maxima [A] time = 0.53, size = 147, normalized size = 1.31

$$\frac{1}{11}Bb^6x^{11}+\frac{1}{4}Aa^6x^4+\frac{1}{10}\left(6\,Bab^5+Ab^6\right)x^{10}+\frac{1}{3}\left(5\,Ba^2b^4+2\,Aab^5\right)x^9+\frac{5}{8}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^8+\frac{5}{7}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^7+\frac{1}{2}\left(2\,Ba^5b+5\,Aa^4b^2\right)x^6+\frac{1}{5}\left(Ba^6+6\,Aa^5b\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*b^6*x^11 + 1/4*A*a^6*x^4 + 1/10*(6*B*a*b^5 + A*b^6)*x^10 + 1/3*(5*B*
a^2*b^4 + 2*A*a*b^5)*x^9 + 5/8*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^8 + 5/7*(3*B*a
^4*b^2 + 4*A*a^3*b^3)*x^7 + 1/2*(2*B*a^5*b + 5*A*a^4*b^2)*x^6 + 1/5*(B*a^6
+ 6*A*a^5*b)*x^5
```

mupad [B] time = 0.05, size = 131, normalized size = 1.17

$$x^5\left(\frac{B\,a^6}{5}+\frac{6\,A\,b\,a^5}{5}\right)+x^{10}\left(\frac{A\,b^6}{10}+\frac{3\,B\,a\,b^5}{5}\right)+\frac{A\,a^6\,x^4}{4}+\frac{B\,b^6\,x^{11}}{11}+\frac{5\,a^3\,b^2\,x^7\,\left(4\,A\,b+3\,B\,a\right)}{7}+\frac{5\,a^2\,b^3\,x^8\,\left(3\,A\,b+4\,B\,a\right)}{8}+\frac{a^4\,b\,x^6\,\left(5\,A\,b+2\,B\,a\right)}{2}+\frac{a\,b^4\,x^9\,\left(2\,A\,b+5\,B\,a\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*((B*a^6)/5 + (6*A*a^5*b)/5) + x^10*((A*b^6)/10 + (3*B*a*b^5)/5) + (A*a^
6*x^4)/4 + (B*b^6*x^11)/11 + (5*a^3*b^2*x^7*(4*A*b + 3*B*a))/7 + (5*a^2*b^3
*x^8*(3*A*b + 4*B*a))/8 + (a^4*b*x^6*(5*A*b + 2*B*a))/2 + (a*b^4*x^9*(2*A*b
 + 5*B*a))/3
```

sympy [A] time = 0.10, size = 162, normalized size = 1.45

$$\frac{Aa^6x^4}{4}+\frac{Bb^6x^{11}}{11}+x^{10}\left(\frac{Ab^6}{10}+\frac{3Bab^5}{5}\right)+x^9\left(\frac{2Aab^5}{3}+\frac{5Ba^2b^4}{3}\right)+x^8\left(\frac{15Aa^2b^4}{8}+\frac{5Ba^3b^3}{2}\right)+x^7\left(\frac{20Aa^3b^3}{7}+\frac{15Ba^4b^2}{7}\right)+x^6\left(\frac{5Aa^4b^2}{2}+Ba^5b\right)+x^5\left(\frac{6Aa^5b}{5}+\frac{Ba^6}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**4/4 + B*b**6*x**11/11 + x**10*(A*b**6/10 + 3*B*a*b**5/5) + x**9*(
2*A*a*b**5/3 + 5*B*a**2*b**4/3) + x**8*(15*A*a**2*b**4/8 + 5*B*a**3*b**3/2)
 + x**7*(20*A*a**3*b**3/7 + 15*B*a**4*b**2/7) + x**6*(5*A*a**4*b**2/2 + B*a
**5*b) + x**5*(6*A*a**5*b/5 + B*a**6/5)
```

3.469 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=87

$$\frac{a^2(a+bx)^7(Ab-aB)}{7b^4}+\frac{(a+bx)^9(Ab-3aB)}{9b^4}-\frac{a(a+bx)^8(2Ab-3aB)}{8b^4}+\frac{B(a+bx)^{10}}{10b^4}$$

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{a^2(a+bx)^7(Ab-aB)}{7b^4}+\frac{(a+bx)^9(Ab-3aB)}{9b^4}-\frac{a(a+bx)^8(2Ab-3aB)}{8b^4}+\frac{B(a+bx)^{10}}{10b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^2*(A*b - a*B)*(a + b*x)^7)/(7*b^4) - (a*(2*A*b - 3*a*B)*(a + b*x)^8)/(8*
b^4) + ((A*b - 3*a*B)*(a + b*x)^9)/(9*b^4) + (B*(a + b*x)^10)/(10*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^2(a+bx)^6(A+Bx)\,dx\\ &= \int\left(-\frac{a^2(-Ab+aB)(a+bx)^6}{b^3}+\frac{a(-2Ab+3aB)(a+bx)^7}{b^3}+\frac{(Ab-3aB)(}{b^3}\right.\\ &= \frac{a^2(Ab-aB)(a+bx)^7}{7b^4}-\frac{a(2Ab-3aB)(a+bx)^8}{8b^4}+\frac{(Ab-3aB)(a+bx)^9}{9b^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.64

$$\frac{1}{3}a^6Ax^3+\frac{1}{4}a^5x^4(aB+6Ab)+\frac{3}{5}a^4bx^5(2aB+5Ab)+\frac{5}{6}a^3b^2x^6(3aB+4Ab)+\frac{5}{7}a^2b^3x^7(4aB+3Ab)+\frac{1}{9}b^5x^9(6aB+Ab)+\frac{3}{8}ab^4x^8(5aB+2Ab)+\frac{1}{10}b^6Bx^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^3)/3 + (a^5*(6*A*b + a*B)*x^4)/4 + (3*a^4*b*(5*A*b + 2*a*B)*x^5)/5
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^6)/6 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^7)/7 +
(3*a*b^4*(2*A*b + 5*a*B)*x^8)/8 + (b^5*(A*b + 6*a*B)*x^9)/9 + (b^6*B*x^10)/
10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.38, size = 149, normalized size = 1.71

$$\frac{1}{10}x^{10}b^6B+\frac{2}{3}x^9b^5aB+\frac{1}{9}x^9b^6A+\frac{15}{8}x^8b^4a^2B+\frac{3}{4}x^8b^5aA+\frac{20}{7}x^7b^3a^3B+\frac{15}{7}x^7b^4a^2A+\frac{5}{2}x^6b^2a^4B+\frac{10}{3}x^6b^3a^3A+\frac{6}{5}x^5ba^5B+3x^5b^2a^4A+\frac{1}{4}x^4a^6B+\frac{3}{2}x^4ba^5A+\frac{1}{3}x^3a^6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*b^6*B + 2/3*x^9*b^5*a*B + 1/9*x^9*b^6*A + 15/8*x^8*b^4*a^2*B + 3/
4*x^8*b^5*a*A + 20/7*x^7*b^3*a^3*B + 15/7*x^7*b^4*a^2*A + 5/2*x^6*b^2*a^4*B
 + 10/3*x^6*b^3*a^3*A + 6/5*x^5*b*a^5*B + 3*x^5*b^2*a^4*A + 1/4*x^4*a^6*B +
 3/2*x^4*b*a^5*A + 1/3*x^3*a^6*A
```

giac [A] time = 0.19, size = 149, normalized size = 1.71

$$\frac{1}{10}Bb^6x^{10}+\frac{2}{3}Bab^5x^9+\frac{1}{9}Ab^6x^9+\frac{15}{8}Ba^2b^4x^8+\frac{3}{4}Aab^5x^8+\frac{20}{7}Ba^3b^3x^7+\frac{15}{7}Aa^2b^4x^7+\frac{5}{2}Ba^4b^2x^6+\frac{10}{3}Aa^3b^3x^6+\frac{6}{5}Ba^5bx^5+3Aa^4b^2x^5+\frac{1}{4}Ba^6x^4+\frac{3}{2}Aa^5bx^4+\frac{1}{3}Aa^6x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*b^6*x^10 + 2/3*B*a*b^5*x^9 + 1/9*A*b^6*x^9 + 15/8*B*a^2*b^4*x^8 + 3/
4*A*a*b^5*x^8 + 20/7*B*a^3*b^3*x^7 + 15/7*A*a^2*b^4*x^7 + 5/2*B*a^4*b^2*x^6
 + 10/3*A*a^3*b^3*x^6 + 6/5*B*a^5*b*x^5 + 3*A*a^4*b^2*x^5 + 1/4*B*a^6*x^4 +
 3/2*A*a^5*b*x^4 + 1/3*A*a^6*x^3
```

maple [A] time = 0.04, size = 148, normalized size = 1.70

$$\frac{Bb^6x^{10}}{10}+\frac{Aa^6x^3}{3}+\frac{\left(Ab^6+6Bab^5\right)x^9}{9}+\frac{\left(6Aab^5+15Ba^2b^4\right)x^8}{8}+\frac{\left(15Aa^2b^4+20Ba^3b^3\right)x^7}{7}+\frac{\left(20Aa^3b^3+15Ba^4b^2\right)x^6}{6}+\frac{\left(15Aa^4b^2+6Ba^5b\right)x^5}{5}+\frac{\left(6Aa^5b+Ba^6\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/10*B*b^6*x^10+1/9*(A*b^6+6*B*a*b^5)*x^9+1/8*(6*A*a*b^5+15*B*a^2*b^4)*x^8+
1/7*(15*A*a^2*b^4+20*B*a^3*b^3)*x^7+1/6*(20*A*a^3*b^3+15*B*a^4*b^2)*x^6+1/5
*(15*A*a^4*b^2+6*B*a^5*b)*x^5+1/4*(6*A*a^5*b+B*a^6)*x^4+1/3*A*a^6*x^3
```

maxima [A] time = 0.50, size = 147, normalized size = 1.69

$$\frac{1}{10}Bb^6x^{10}+\frac{1}{3}Aa^6x^3+\frac{1}{9}\left(6Bab^5+Ab^6\right)x^9+\frac{3}{8}\left(5Ba^2b^4+2Aab^5\right)x^8+\frac{5}{7}\left(4Ba^3b^3+3Aa^2b^4\right)x^7+\frac{5}{6}\left(3Ba^4b^2+4Aa^3b^3\right)x^6+\frac{3}{5}\left(2Ba^5b+5Aa^4b^2\right)x^5+\frac{1}{4}\left(Ba^6+6Aa^5b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*b^6*x^10 + 1/3*A*a^6*x^3 + 1/9*(6*B*a*b^5 + A*b^6)*x^9 + 3/8*(5*B*a^
2*b^4 + 2*A*a*b^5)*x^8 + 5/7*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^7 + 5/6*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^6 + 3/5*(2*B*a^5*b + 5*A*a^4*b^2)*x^5 + 1/4*(B*a^6 +
6*A*a^5*b)*x^4
```

mupad [B] time = 0.05, size = 131, normalized size = 1.51

$$x^4\left(\frac{B\,a^6}{4}+\frac{3\,A\,b\,a^5}{2}\right)+x^9\left(\frac{A\,b^6}{9}+\frac{2\,B\,a\,b^5}{3}\right)+\frac{A\,a^6\,x^3}{3}+\frac{B\,b^6\,x^{10}}{10}+\frac{5\,a^3\,b^2\,x^6\,\left(4\,A\,b+3\,B\,a\right)}{6}+\frac{5\,a^2\,b^3\,x^7\,\left(3\,A\,b+4\,B\,a\right)}{7}+\frac{3\,a^4\,b\,x^5\,\left(5\,A\,b+2\,B\,a\right)}{5}+\frac{3\,a\,b^4\,x^8\,\left(2\,A\,b+5\,B\,a\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^4*((B*a^6)/4 + (3*A*a^5*b)/2) + x^9*((A*b^6)/9 + (2*B*a*b^5)/3) + (A*a^6*
x^3)/3 + (B*b^6*x^10)/10 + (5*a^3*b^2*x^6*(4*A*b + 3*B*a))/6 + (5*a^2*b^3*x
^7*(3*A*b + 4*B*a))/7 + (3*a^4*b*x^5*(5*A*b + 2*B*a))/5 + (3*a*b^4*x^8*(2*A
*b + 5*B*a))/8
```

sympy [B] time = 0.10, size = 163, normalized size = 1.87

$$\frac{Aa^6x^3}{3}+\frac{Bb^6x^{10}}{10}+x^9\left(\frac{Ab^6}{9}+\frac{2Bab^5}{3}\right)+x^8\left(\frac{3Aab^5}{4}+\frac{15Ba^2b^4}{8}\right)+x^7\left(\frac{15Aa^2b^4}{7}+\frac{20Ba^3b^3}{7}\right)+x^6\left(\frac{10Aa^3b^3}{3}+\frac{5Ba^4b^2}{2}\right)+x^5\left(3Aa^4b^2+\frac{6Ba^5b}{5}\right)+x^4\left(\frac{3Aa^5b}{2}+\frac{Ba^6}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**3/3 + B*b**6*x**10/10 + x**9*(A*b**6/9 + 2*B*a*b**5/3) + x**8*(3*
A*a*b**5/4 + 15*B*a**2*b**4/8) + x**7*(15*A*a**2*b**4/7 + 20*B*a**3*b**3/7)
 + x**6*(10*A*a**3*b**3/3 + 5*B*a**4*b**2/2) + x**5*(3*A*a**4*b**2 + 6*B*a*
*5*b/5) + x**4*(3*A*a**5*b/2 + B*a**6/4)
```

3.470 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=61

$$\frac{(a+bx)^8(Ab-2aB)}{8b^3}-\frac{a(a+bx)^7(Ab-aB)}{7b^3}+\frac{B(a+bx)^9}{9b^3}$$

Rubi [A] time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$\frac{(a+bx)^8(Ab-2aB)}{8b^3}-\frac{a(a+bx)^7(Ab-aB)}{7b^3}+\frac{B(a+bx)^9}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^7)/(7*b^3) + ((A*b - 2*a*B)*(a + b*x)^8)/(8*b^3)
+ (B*(a + b*x)^9)/(9*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x(a+bx)^6(A+Bx)\,dx\\
&= \int \left(\frac{a(-Ab+aB)(a+bx)^6}{b^2}+\frac{(Ab-2aB)(a+bx)^7}{b^2}+\frac{B(a+bx)^8}{b^2}\right)dx\\
&= -\frac{a(Ab-aB)(a+bx)^7}{7b^3}+\frac{(Ab-2aB)(a+bx)^8}{8b^3}+\frac{B(a+bx)^9}{9b^3}
\end{aligned}$$

Mathematica [B] time = 0.02, size = 140, normalized size = 2.30

$$\frac{1}{2}a^6Ax^2+\frac{1}{3}a^5x^3(aB+6Ab)+\frac{3}{4}a^4bx^4(2aB+5Ab)+a^3b^2x^5(3aB+4Ab)+\frac{5}{6}a^2b^3x^6(4aB+3Ab)+\frac{1}{8}b^5x^8(6aB+Ab)+\frac{3}{7}ab^4x^7(5aB+2Ab)+\frac{1}{9}b^6Bx^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^2)/2 + (a^5*(6*A*b + a*B)*x^3)/3 + (3*a^4*b*(5*A*b + 2*a*B)*x^4)/4
 + a^3*b^2*(4*A*b + 3*a*B)*x^5 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^6)/6 + (3*a*b
^4*(2*A*b + 5*a*B)*x^7)/7 + (b^5*(A*b + 6*a*B)*x^8)/8 + (b^6*B*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.35, size = 149, normalized size = 2.44

$$\frac{1}{9}x^9b^6B+\frac{3}{4}x^8b^5aB+\frac{1}{8}x^8b^6A+\frac{15}{7}x^7b^4a^2B+\frac{6}{7}x^7b^5aA+\frac{10}{3}x^6b^3a^3B+\frac{5}{2}x^6b^4a^2A+3x^5b^2a^4B+4x^5b^3a^3A+\frac{3}{2}x^4ba^5B+\frac{15}{4}x^4b^2a^4A+\frac{1}{3}x^3a^6B+2x^3ba^5A+\frac{1}{2}x^2a^6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*b^6*B + 3/4*x^8*b^5*a*B + 1/8*x^8*b^6*A + 15/7*x^7*b^4*a^2*B + 6/7*
x^7*b^5*a*A + 10/3*x^6*b^3*a^3*B + 5/2*x^6*b^4*a^2*A + 3*x^5*b^2*a^4*B + 4*
x^5*b^3*a^3*A + 3/2*x^4*b*a^5*B + 15/4*x^4*b^2*a^4*A + 1/3*x^3*a^6*B + 2*x^
3*b*a^5*A + 1/2*x^2*a^6*A
```

giac [B] time = 0.15, size = 149, normalized size = 2.44

$$\frac{1}{9}Bb^6x^9+\frac{3}{4}Bab^5x^8+\frac{1}{8}Ab^6x^8+\frac{15}{7}Ba^2b^4x^7+\frac{6}{7}Aab^5x^7+\frac{10}{3}Ba^3b^3x^6+\frac{5}{2}Aa^2b^4x^6+3Ba^4b^2x^5+4Aa^3b^3x^5+\frac{3}{2}Ba^5bx^4+\frac{15}{4}Aa^4b^2x^4+\frac{1}{3}Ba^6x^3+2Aa^5bx^3+\frac{1}{2}Aa^6x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*b^6*x^9 + 3/4*B*a*b^5*x^8 + 1/8*A*b^6*x^8 + 15/7*B*a^2*b^4*x^7 + 6/7*
A*a*b^5*x^7 + 10/3*B*a^3*b^3*x^6 + 5/2*A*a^2*b^4*x^6 + 3*B*a^4*b^2*x^5 + 4*
A*a^3*b^3*x^5 + 3/2*B*a^5*b*x^4 + 15/4*A*a^4*b^2*x^4 + 1/3*B*a^6*x^3 + 2*A*
a^5*b*x^3 + 1/2*A*a^6*x^2
```

maple [B] time = 0.04, size = 148, normalized size = 2.43

$$\frac{Bb^6x^9}{9}+\frac{Aa^6x^2}{2}+\frac{\left(Ab^6+6Bab^5\right)x^8}{8}+\frac{\left(6Aab^5+15Ba^2b^4\right)x^7}{7}+\frac{\left(15Aa^2b^4+20Ba^3b^3\right)x^6}{6}+\frac{\left(20Aa^3b^3+15Ba^4b^2\right)x^5}{5}+\frac{\left(15Aa^4b^2+6Ba^5b\right)x^4}{4}+\frac{\left(6Aa^5b+Ba^6\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/9*B*b^6*x^9+1/8*(A*b^6+6*B*a*b^5)*x^8+1/7*(6*A*a*b^5+15*B*a^2*b^4)*x^7+1/
6*(15*A*a^2*b^4+20*B*a^3*b^3)*x^6+1/5*(20*A*a^3*b^3+15*B*a^4*b^2)*x^5+1/4*(
15*A*a^4*b^2+6*B*a^5*b)*x^4+1/3*(6*A*a^5*b+B*a^6)*x^3+1/2*A*a^6*x^2
```

maxima [B] time = 0.46, size = 146, normalized size = 2.39

$$\frac{1}{9}Bb^6x^9+\frac{1}{2}Aa^6x^2+\frac{1}{8}\left(6Bab^5+Ab^6\right)x^8+\frac{3}{7}\left(5Ba^2b^4+2Aab^5\right)x^7+\frac{5}{6}\left(4Ba^3b^3+3Aa^2b^4\right)x^6+\left(3Ba^4b^2+4Aa^3b^3\right)x^5+\frac{3}{4}\left(2Ba^5b+5Aa^4b^2\right)x^4+\frac{1}{3}\left(Ba^6+6Aa^5b\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*b^6*x^9 + 1/2*A*a^6*x^2 + 1/8*(6*B*a*b^5 + A*b^6)*x^8 + 3/7*(5*B*a^2*
b^4 + 2*A*a*b^5)*x^7 + 5/6*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^6 + (3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^5 + 3/4*(2*B*a^5*b + 5*A*a^4*b^2)*x^4 + 1/3*(B*a^6 + 6*A*a^
5*b)*x^3
```

mupad [B] time = 0.05, size = 130, normalized size = 2.13

$$x^3\left(\frac{B\,a^6}{3}+2\,A\,b\,a^5\right)+x^8\left(\frac{A\,b^6}{8}+\frac{3\,B\,a\,b^5}{4}\right)+\frac{A\,a^6\,x^2}{2}+\frac{B\,b^6\,x^9}{9}+a^3\,b^2\,x^5\,\left(4\,A\,b+3\,B\,a\right)+\frac{5\,a^2\,b^3\,x^6\,\left(3\,A\,b+4\,B\,a\right)}{6}+\frac{3\,a^4\,b\,x^4\,\left(5\,A\,b+2\,B\,a\right)}{4}+\frac{3\,a\,b^4\,x^7\,\left(2\,A\,b+5\,B\,a\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^3*((B*a^6)/3 + 2*A*a^5*b) + x^8*((A*b^6)/8 + (3*B*a*b^5)/4) + (A*a^6*x^2)
/2 + (B*b^6*x^9)/9 + a^3*b^2*x^5*(4*A*b + 3*B*a) + (5*a^2*b^3*x^6*(3*A*b +
4*B*a))/6 + (3*a^4*b*x^4*(5*A*b + 2*B*a))/4 + (3*a*b^4*x^7*(2*A*b + 5*B*a))
/7
```

sympy [B] time = 0.10, size = 160, normalized size = 2.62

$$\frac{Aa^6x^2}{2} + \frac{Bb^6x^9}{9} + x^8\left(\frac{Ab^6}{8} + \frac{3Bab^5}{4}\right) + x^7\left(\frac{6Aab^5}{7} + \frac{15Ba^2b^4}{7}\right) + x^6\left(\frac{5Aa^2b^4}{2} + \frac{10Ba^3b^3}{3}\right) + x^5\left(4Aa^3b^3 + 3Ba^4b^2\right) + x^4\left(\frac{15Aa^4b^2}{4} + \frac{3Ba^5b}{2}\right) + x^3\left(2Aa^5b + \frac{Ba^6}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**2/2 + B*b**6*x**9/9 + x**8*(A*b**6/8 + 3*B*a*b**5/4) + x**7*(6*A*
a*b**5/7 + 15*B*a**2*b**4/7) + x**6*(5*A*a**2*b**4/2 + 10*B*a**3*b**3/3) +
x**5*(4*A*a**3*b**3 + 3*B*a**4*b**2) + x**4*(15*A*a**4*b**2/4 + 3*B*a**5*b/
2) + x**3*(2*A*a**5*b + B*a**6/3)
```

3.471 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^7(Ab-aB)}{7b^2}+\frac{B(a+bx)^8}{8b^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$\frac{(a+bx)^7(Ab-aB)}{7b^2}+\frac{B(a+bx)^8}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^7)/(7*b^2) + (B*(a + b*x)^8)/(8*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)\,dx\\
&= \int \left(\frac{(Ab-aB)(a+bx)^6}{b}+\frac{B(a+bx)^7}{b}\right)dx\\
&= \frac{(Ab-aB)(a+bx)^7}{7b^2}+\frac{B(a+bx)^8}{8b^2}
\end{aligned}$$

Mathematica [B] time = 0.03, size = 122, normalized size = 3.21

$$\frac{1}{56}x\left(28a^6(2A+Bx)+56a^5bx(3A+2Bx)+70a^4b^2x^2(4A+3Bx)+56a^3b^3x^3(5A+4Bx)+28a^2b^4x^4(6A+5Bx)+8ab^5x^5(7A+6Bx)+b^6x^6(8A+7Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(28*a^6*(2*A + B*x) + 56*a^5*b*x*(3*A + 2*B*x) + 70*a^4*b^2*x^2*(4*A + 3
*B*x) + 56*a^3*b^3*x^3*(5*A + 4*B*x) + 28*a^2*b^4*x^4*(6*A + 5*B*x) + 8*a*b
^5*x^5*(7*A + 6*B*x) + b^6*x^6*(8*A + 7*B*x)))/56
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.35, size = 145, normalized size = 3.82

$$\frac{1}{8}x^8b^6B + \frac{6}{7}x^7b^5aB + \frac{1}{7}x^7b^6A + \frac{5}{2}x^6b^4a^2B + x^6b^5aA + 4x^5b^3a^3B + 3x^5b^4a^2A + \frac{15}{4}x^4b^2a^4B + 5x^4b^3a^3A + 2x^3ba^5B + 5x^3b^2a^4A + \frac{1}{2}x^2a^6B + 3x^2ba^5A + xa^6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^6*B + 6/7*x^7*b^5*a*B + 1/7*x^7*b^6*A + 5/2*x^6*b^4*a^2*B + x^6*b
^5*a*A + 4*x^5*b^3*a^3*B + 3*x^5*b^4*a^2*A + 15/4*x^4*b^2*a^4*B + 5*x^4*b^3
*a^3*A + 2*x^3*b*a^5*B + 5*x^3*b^2*a^4*A + 1/2*x^2*a^6*B + 3*x^2*b*a^5*A +
x*a^6*A
```

giac [B] time = 0.15, size = 145, normalized size = 3.82

$$\frac{1}{8}Bb^6x^8 + \frac{6}{7}Bab^5x^7 + \frac{1}{7}Ab^6x^7 + \frac{5}{2}Ba^2b^4x^6 + Aab^5x^6 + 4Ba^3b^3x^5 + 3Aa^2b^4x^5 + \frac{15}{4}Ba^4b^2x^4 + 5Aa^3b^3x^4 + 2Ba^5bx^3 + 5Aa^4b^2x^3 + \frac{1}{2}Ba^6x^2 + 3Aa^5bx^2 + Aa^6x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*b^6*x^8 + 6/7*B*a*b^5*x^7 + 1/7*A*b^6*x^7 + 5/2*B*a^2*b^4*x^6 + A*a*b
^5*x^6 + 4*B*a^3*b^3*x^5 + 3*A*a^2*b^4*x^5 + 15/4*B*a^4*b^2*x^4 + 5*A*a^3*b
^3*x^4 + 2*B*a^5*b*x^3 + 5*A*a^4*b^2*x^3 + 1/2*B*a^6*x^2 + 3*A*a^5*b*x^2 +
A*a^6*x
```

maple [B] time = 0.04, size = 145, normalized size = 3.82

$$\frac{Bb^6x^8}{8} + Aa^6x + \frac{(Ab^6 + 6Bab^5)x^7}{7} + \frac{(6Aab^5 + 15Ba^2b^4)x^6}{6} + \frac{(15Aa^2b^4 + 20Ba^3b^3)x^5}{5} + \frac{(20Aa^3b^3 + 15Ba^4b^2)x^4}{4} + \frac{(15Aa^4b^2 + 6Ba^5b)x^3}{3} + \frac{(6Aa^5b + Ba^6)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/8*B*b^6*x^8+1/7*(A*b^6+6*B*a*b^5)*x^7+1/6*(6*A*a*b^5+15*B*a^2*b^4)*x^6+1/
5*(15*A*a^2*b^4+20*B*a^3*b^3)*x^5+1/4*(20*A*a^3*b^3+15*B*a^4*b^2)*x^4+1/3*(
15*A*a^4*b^2+6*B*a^5*b)*x^3+1/2*(6*A*a^5*b+B*a^6)*x^2+A*a^6*x
```

maxima [B] time = 0.67, size = 142, normalized size = 3.74

$$\frac{1}{8}Bb^6x^8 + Aa^6x + \frac{1}{7}(6Bab^5 + Ab^6)x^7 + \frac{1}{2}(5Ba^2b^4 + 2Aab^5)x^6 + (4Ba^3b^3 + 3Aa^2b^4)x^5 + \frac{5}{4}(3Ba^4b^2 + 4Aa^3b^3)x^4 + (2Ba^5b + 5Aa^4b^2)x^3 + \frac{1}{2}(Ba^6 + 6Aa^5b)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*b^6*x^8 + A*a^6*x + 1/7*(6*B*a*b^5 + A*b^6)*x^7 + 1/2*(5*B*a^2*b^4 +
2*A*a*b^5)*x^6 + (4*B*a^3*b^3 + 3*A*a^2*b^4)*x^5 + 5/4*(3*B*a^4*b^2 + 4*A*a
^3*b^3)*x^4 + (2*B*a^5*b + 5*A*a^4*b^2)*x^3 + 1/2*(B*a^6 + 6*A*a^5*b)*x^2
```

mupad [B] time = 0.05, size = 126, normalized size = 3.32

$$x^2\left(\frac{Ba^6}{2} + 3Aba^5\right) + x^7\left(\frac{Ab^6}{7} + \frac{6Bab^5}{7}\right) + \frac{Bb^6x^8}{8} + Aa^6x + \frac{5a^3b^2x^4(4Ab + 3Ba)}{4} + a^2b^3x^5(3Ab + 4Ba) + a^4bx^3(5Ab + 2Ba) + \frac{ab^4x^6(2Ab + 5Ba)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^2*((B*a^6)/2 + 3*A*a^5*b) + x^7*((A*b^6)/7 + (6*B*a*b^5)/7) + (B*b^6*x^8)
/8 + A*a^6*x + (5*a^3*b^2*x^4*(4*A*b + 3*B*a))/4 + a^2*b^3*x^5*(3*A*b + 4*B
*a) + a^4*b*x^3*(5*A*b + 2*B*a) + (a*b^4*x^6*(2*A*b + 5*B*a))/2
```

sympy [B] time = 0.10, size = 148, normalized size = 3.89

$$Aa^6x + \frac{Bb^6x^8}{8} + x^7\left(\frac{Ab^6}{7} + \frac{6Bab^5}{7}\right) + x^6\left(Aab^5 + \frac{5Ba^2b^4}{2}\right) + x^5\left(3Aa^2b^4 + 4Ba^3b^3\right) + x^4\left(5Aa^3b^3 + \frac{15Ba^4b^2}{4}\right) + x^3\left(5Aa^4b^2 + 2Ba^5b\right) + x^2\left(3Aa^5b + \frac{Ba^6}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x + B*b**6*x**8/8 + x**7*(A*b**6/7 + 6*B*a*b**5/7) + x**6*(A*a*b**5
+ 5*B*a**2*b**4/2) + x**5*(3*A*a**2*b**4 + 4*B*a**3*b**3) + x**4*(5*A*a**3*
b**3 + 15*B*a**4*b**2/4) + x**3*(5*A*a**4*b**2 + 2*B*a**5*b) + x**2*(3*A*a*
*5*b + B*a**6/2)
```

3.472 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x} \, dx$

Optimal. Leaf size=96

$$a^6 A\log(x)+6a^5 Abx+\frac{15}{2}a^4 Ab^2x^2+\frac{20}{3}a^3 Ab^3x^3+\frac{15}{4}a^2 Ab^4x^4+\frac{6}{5}aAb^5x^5+\frac{B(a+bx)^7}{7b}+\frac{1}{6}Ab^6x^6$$

Rubi [A] time = 0.04, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 80, 43}

$$\frac{15}{4}a^2 Ab^4x^4+\frac{20}{3}a^3 Ab^3x^3+\frac{15}{2}a^4 Ab^2x^2+6a^5 Abx+a^6 A\log(x)+\frac{6}{5}aAb^5x^5+\frac{B(a+bx)^7}{7b}+\frac{1}{6}Ab^6x^6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x,x]
```

```
[Out] 6*a^5*A*b*x + (15*a^4*A*b^2*x^2)/2 + (20*a^3*A*b^3*x^3)/3 + (15*a^2*A*b^4*x
^4)/4 + (6*a*A*b^5*x^5)/5 + (A*b^6*x^6)/6 + (B*(a + b*x)^7)/(7*b) + a^6*A*L
og[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x} \, dx &= \int \frac{(a+bx)^6(A+Bx)}{x} \, dx \\
&= \frac{B(a+bx)^7}{7b}+A\int \frac{(a+bx)^6}{x} \, dx \\
&= \frac{B(a+bx)^7}{7b}+A\int \left(6a^5b+\frac{a^6}{x}+15a^4b^2x+20a^3b^3x^2+15a^2b^4x^3+6ab\right. \\
&= 6a^5 Abx+\frac{15}{2}a^4 Ab^2x^2+\frac{20}{3}a^3 Ab^3x^3+\frac{15}{4}a^2 Ab^4x^4+\frac{6}{5}aAb^5x^5+\frac{1}{6}Ab^6
\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 1.33

$$a^6 A\log(x)+a^6 Bx+3a^5 bx(2A+Bx)+\frac{5}{2}a^4 b^2x^2(3A+2Bx)+\frac{5}{3}a^3 b^3x^3(4A+3Bx)+\frac{3}{4}a^2 b^4x^4(5A+4Bx)+\frac{1}{5}ab^5x^5(6A+5Bx)+\frac{1}{42}b^6x^6(7A+6Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x,x]
```

```
[Out] a^6*B*x + 3*a^5*b*x*(2*A + B*x) + (5*a^4*b^2*x^2*(3*A + 2*B*x))/2 + (5*a^3*
b^3*x^3*(4*A + 3*B*x))/3 + (3*a^2*b^4*x^4*(5*A + 4*B*x))/4 + (a*b^5*x^5*(6*
A + 5*B*x))/5 + (b^6*x^6*(7*A + 6*B*x))/42 + a^6*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x, x]
```

fricas [A] time = 0.49, size = 142, normalized size = 1.48

$$\frac{1}{7}Bb^6x^7 + Aa^6\log(x) + \frac{1}{6}\left(6Bab^5 + Ab^6\right)x^6 + \frac{3}{5}\left(5Ba^2b^4 + 2Aab^5\right)x^5 + \frac{5}{4}\left(4Ba^3b^3 + 3Aa^2b^4\right)x^4 + \frac{5}{3}\left(3Ba^4b^2 + 4Aa^3b^3\right)x^3 + \frac{3}{2}\left(2Ba^5b + 5Aa^4b^2\right)x^2 + \left(Ba^6 + 6Aa^5b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*b^6*x^7 + A*a^6*log(x) + 1/6*(6*B*a*b^5 + A*b^6)*x^6 + 3/5*(5*B*a^2*b
^4 + 2*A*a*b^5)*x^5 + 5/4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5/3*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 3/2*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + (B*a^6 + 6*A*a^5
*b)*x
```

giac [A] time = 0.17, size = 142, normalized size = 1.48

$$\frac{1}{7}Bb^6x^7 + Bab^5x^6 + \frac{1}{6}Ab^6x^6 + 3Ba^2b^4x^5 + \frac{6}{5}Aab^5x^5 + 5Ba^3b^3x^4 + \frac{15}{4}Aa^2b^4x^4 + 5Ba^4b^2x^3 + \frac{20}{3}Aa^3b^3x^3 + 3Ba^5bx^2 + \frac{15}{2}Aa^4b^2x^2 + Ba^6x + 6Aa^5bx + Aa^6\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*b^6*x^7 + B*a*b^5*x^6 + 1/6*A*b^6*x^6 + 3*B*a^2*b^4*x^5 + 6/5*A*a*b^5
*x^5 + 5*B*a^3*b^3*x^4 + 15/4*A*a^2*b^4*x^4 + 5*B*a^4*b^2*x^3 + 20/3*A*a^3*
b^3*x^3 + 3*B*a^5*b*x^2 + 15/2*A*a^4*b^2*x^2 + B*a^6*x + 6*A*a^5*b*x + A*a^
6*log(abs(x))
```

maple [A] time = 0.04, size = 142, normalized size = 1.48

$$\frac{Bb^6x^7}{7} + \frac{Ab^6x^6}{6} + Bab^5x^6 + \frac{6Aab^5x^5}{5} + 3Ba^2b^4x^5 + \frac{15Aa^2b^4x^4}{4} + 5Ba^3b^3x^4 + \frac{20Aa^3b^3x^3}{3} + 5Ba^4b^2x^3 + \frac{15Aa^4b^2x^2}{2} + 3Ba^5bx^2 + Aa^6\ln(x) + 6Aa^5bx + Ba^6x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x)
```

```
[Out] 1/7*B*b^6*x^7+1/6*A*b^6*x^6+B*x^6*a*b^5+6/5*a*A*b^5*x^5+3*B*x^5*a^2*b^4+15/
4*a^2*A*b^4*x^4+5*B*x^4*a^3*b^3+20/3*a^3*A*b^3*x^3+5*B*x^3*a^4*b^2+15/2*a^4
*A*b^2*x^2+3*B*x^2*a^5*b+6*a^5*A*b*x+B*a^6*x+a^6*A*ln(x)
```

maxima [A] time = 0.51, size = 142, normalized size = 1.48

$$\frac{1}{7}Bb^6x^7 + Aa^6\log(x) + \frac{1}{6}\left(6Bab^5 + Ab^6\right)x^6 + \frac{3}{5}\left(5Ba^2b^4 + 2Aab^5\right)x^5 + \frac{5}{4}\left(4Ba^3b^3 + 3Aa^2b^4\right)x^4 + \frac{5}{3}\left(3Ba^4b^2 + 4Aa^3b^3\right)x^3 + \frac{3}{2}\left(2Ba^5b + 5Aa^4b^2\right)x^2 + \left(Ba^6 + 6Aa^5b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*b^6*x^7 + A*a^6*log(x) + 1/6*(6*B*a*b^5 + A*b^6)*x^6 + 3/5*(5*B*a^2*b
^4 + 2*A*a*b^5)*x^5 + 5/4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5/3*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 3/2*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + (B*a^6 + 6*A*a^5
*b)*x
```

mupad [B] time = 1.08, size = 125, normalized size = 1.30

$$x\,\left(B\,a^6+6\,A\,b\,a^5\right)+x^6\,\left(\frac{A\,b^6}{6}+B\,a\,b^5\right)+\frac{B\,b^6\,x^7}{7}+A\,a^6\,\ln(x)+\frac{5\,a^3\,b^2\,x^3\,\left(4\,A\,b+3\,B\,a\right)}{3}+\frac{5\,a^2\,b^3\,x^4\,\left(3\,A\,b+4\,B\,a\right)}{4}+\frac{3\,a^4\,b\,x^2\,\left(5\,A\,b+2\,B\,a\right)}{2}+\frac{3\,a\,b^4\,x^5\,\left(2\,A\,b+5\,B\,a\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x,x)
```

```
[Out] x*(B*a^6 + 6*A*a^5*b) + x^6*((A*b^6)/6 + B*a*b^5) + (B*b^6*x^7)/7 + A*a^6*l
og(x) + (5*a^3*b^2*x^3*(4*A*b + 3*B*a))/3 + (5*a^2*b^3*x^4*(3*A*b + 4*B*a))
/4 + (3*a^4*b*x^2*(5*A*b + 2*B*a))/2 + (3*a*b^4*x^5*(2*A*b + 5*B*a))/5
```

sympy [A] time = 0.28, size = 148, normalized size = 1.54

$$Aa^6\log{(x)} + \frac{Bb^6x^7}{7} + x^6\left(\frac{Ab^6}{6} + Bab^5\right) + x^5\left(\frac{6Aab^5}{5} + 3Ba^2b^4\right) + x^4\left(\frac{15Aa^2b^4}{4} + 5Ba^3b^3\right) + x^3\left(\frac{20Aa^3b^3}{3} + 5Ba^4b^2\right) + x^2\left(\frac{15Aa^4b^2}{2} + 3Ba^5b\right) + x\left(6Aa^5b + Ba^6\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x,x)
```

```
[Out] A*a**6*log(x) + B*b**6*x**7/7 + x**6*(A*b**6/6 + B*a*b**5) + x**5*(6*A*a*b*
*5/5 + 3*B*a**2*b**4) + x**4*(15*A*a**2*b**4/4 + 5*B*a**3*b**3) + x**3*(20*
A*a**3*b**3/3 + 5*B*a**4*b**2) + x**2*(15*A*a**4*b**2/2 + 3*B*a**5*b) + x*(
6*A*a**5*b + B*a**6)
```

3.473 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=133

$$-\frac{a^6A}{x}+a^5\log(x)(aB+6Ab)+3a^4bx(2aB+5Ab)+\frac{5}{2}a^3b^2x^2(3aB+4Ab)+\frac{5}{3}a^2b^3x^3(4aB+3Ab)+\frac{1}{5}b^5x^5(6aB+Ab)+\frac{3}{4}ab$$

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{5}{2}a^3b^2x^2(3aB+4Ab)+\frac{5}{3}a^2b^3x^3(4aB+3Ab)+3a^4bx(2aB+5Ab)+a^5\log(x)(aB+6Ab)-\frac{a^6A}{x}+\frac{3}{4}ab^4x^4(5aB+2Ab)+\frac{1}{5}b^5x^5(6aB+Ab)+\frac{1}{6}b^6Bx^6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^2,x]
```

```
[Out] -((a^6*A)/x) + 3*a^4*b*(5*A*b + 2*a*B)*x + (5*a^3*b^2*(4*A*b + 3*a*B)*x^2)/
2 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^3)/3 + (3*a*b^4*(2*A*b + 5*a*B)*x^4)/4 + (
b^5*(A*b + 6*a*B)*x^5)/5 + (b^6*B*x^6)/6 + a^5*(6*A*b + a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^2}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^2}\,dx\\ &= \int \left(3a^4b(5Ab+2aB)+\frac{a^6A}{x^2}+\frac{a^5(6Ab+aB)}{x}+5a^3b^2(4Ab+3aB)x+5a^2\right.\\ &= -\frac{a^6A}{x}+3a^4b(5Ab+2aB)x+\frac{5}{2}a^3b^2(4Ab+3aB)x^2+\frac{5}{3}a^2b^3(3Ab+4aB)x\end{aligned}$$

Mathematica [A] time = 0.05, size = 129, normalized size = 0.97

$$-\frac{a^6A}{x}+a^5\log(x)(aB+6Ab)+6a^5bBx+\frac{15}{2}a^4b^2x(2A+Bx)+\frac{10}{3}a^3b^3x^2(3A+2Bx)+\frac{5}{4}a^2b^4x^3(4A+3Bx)+\frac{3}{10}ab^5x^4(5A+4Bx)+\frac{1}{30}b^6x^5(6A+5Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^2,x]
```

```
[Out] -((a^6*A)/x) + 6*a^5*b*B*x + (15*a^4*b^2*x*(2*A + B*x))/2 + (10*a^3*b^3*x^2
*(3*A + 2*B*x))/3 + (5*a^2*b^4*x^3*(4*A + 3*B*x))/4 + (3*a*b^5*x^4*(5*A + 4
*B*x))/10 + (b^6*x^5*(6*A + 5*B*x))/30 + a^5*(6*A*b + a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^2, x]
```

fricas [A] time = 0.42, size = 149, normalized size = 1.12

$$\frac{10\,Bb^6x^7-60\,Aa^6+12\left(6\,Bab^5+Ab^6\right)x^6+45\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+100\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+150\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+180\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+60\left(Ba^6+6\,Aa^5b\right)x\log(x)}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*b^6*x^7 - 60*A*a^6 + 12*(6*B*a*b^5 + A*b^6)*x^6 + 45*(5*B*a^2*b^
4 + 2*A*a*b^5)*x^5 + 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 150*(3*B*a^4*b^2
 + 4*A*a^3*b^3)*x^3 + 180*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 60*(B*a^6 + 6*A*a
^5*b)*x*log(x))/x
```

giac [A] time = 0.16, size = 143, normalized size = 1.08

$$\frac{1}{6}\,Bb^6x^6+\frac{6}{5}\,Bab^5x^5+\frac{1}{5}\,Ab^6x^5+\frac{15}{4}\,Ba^2b^4x^4+\frac{3}{2}\,Aab^5x^4+\frac{20}{3}\,Ba^3b^3x^3+5\,Aa^2b^4x^3+\frac{15}{2}\,Ba^4b^2x^2+10\,Aa^3b^3x^2+6\,Ba^5bx+15\,Aa^4b^2x-\frac{Aa^6}{x}+\left(Ba^6+6\,Aa^5b\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*b^6*x^6 + 6/5*B*a*b^5*x^5 + 1/5*A*b^6*x^5 + 15/4*B*a^2*b^4*x^4 + 3/2*
A*a*b^5*x^4 + 20/3*B*a^3*b^3*x^3 + 5*A*a^2*b^4*x^3 + 15/2*B*a^4*b^2*x^2 + 1
0*A*a^3*b^3*x^2 + 6*B*a^5*b*x + 15*A*a^4*b^2*x - A*a^6/x + (B*a^6 + 6*A*a^5
*b)*log(abs(x))
```

maple [A] time = 0.05, size = 143, normalized size = 1.08

$$\frac{B\,b^6x^6}{6}+\frac{A\,b^6x^5}{5}+\frac{6Ba\,b^5x^5}{5}+\frac{3Aa\,b^5x^4}{2}+\frac{15B\,a^2b^4x^4}{4}+5A\,a^2b^4x^3+\frac{20B\,a^3b^3x^3}{3}+10A\,a^3b^3x^2+\frac{15B\,a^4b^2x^2}{2}+6A\,a^5b\ln(x)+15A\,a^4b^2x+B\,a^6\ln(x)+6B\,a^5bx-\frac{A\,a^6}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x)
```

```
[Out] 1/6*b^6*B*x^6+1/5*A*x^5*b^6+6/5*B*x^5*a*b^5+3/2*A*x^4*a*b^5+15/4*B*x^4*a^2*
b^4+5*A*x^3*a^2*b^4+20/3*B*x^3*a^3*b^3+10*A*x^2*a^3*b^3+15/2*B*x^2*a^4*b^2+
15*A*a^4*b^2*x+6*B*a^5*b*x-a^6*A/x+6*A*ln(x)*a^5*b+B*ln(x)*a^6
```

maxima [A] time = 0.62, size = 143, normalized size = 1.08

$$\frac{1}{6}\,Bb^6x^6-\frac{Aa^6}{x}+\frac{1}{5}\left(6\,Bab^5+Ab^6\right)x^5+\frac{3}{4}\left(5\,Ba^2b^4+2\,Aab^5\right)x^4+\frac{5}{3}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^3+\frac{5}{2}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^2+3\left(2\,Ba^5b+5\,Aa^4b^2\right)x+\left(Ba^6+6\,Aa^5b\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*b^6*x^6 - A*a^6/x + 1/5*(6*B*a*b^5 + A*b^6)*x^5 + 3/4*(5*B*a^2*b^4 +
2*A*a*b^5)*x^4 + 5/3*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^3 + 5/2*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*x^2 + 3*(2*B*a^5*b + 5*A*a^4*b^2)*x + (B*a^6 + 6*A*a^5*b)*log(x
)
```

mupad [B] time = 0.06, size = 127, normalized size = 0.95

$$x^5\left(\frac{A\,b^6}{5}+\frac{6\,B\,a\,b^5}{5}\right)+\ln(x)\,\left(B\,a^6+6\,A\,b\,a^5\right)-\frac{A\,a^6}{x}+\frac{B\,b^6\,x^6}{6}+\frac{5\,a^3\,b^2\,x^2\,\left(4\,A\,b+3\,B\,a\right)}{2}+\frac{5\,a^2\,b^3\,x^3\,\left(3\,A\,b+4\,B\,a\right)}{3}+3\,a^4\,b\,x\,\left(5\,A\,b+2\,B\,a\right)+\frac{3\,a\,b^4\,x^4\,\left(2\,A\,b+5\,B\,a\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^2,x)
```

```
[Out] x^5*((A*b^6)/5 + (6*B*a*b^5)/5) + log(x)*(B*a^6 + 6*A*a^5*b) - (A*a^6)/x +
(B*b^6*x^6)/6 + (5*a^3*b^2*x^2*(4*A*b + 3*B*a))/2 + (5*a^2*b^3*x^3*(3*A*b +
 4*B*a))/3 + 3*a^4*b*x*(5*A*b + 2*B*a) + (3*a*b^4*x^4*(2*A*b + 5*B*a))/4
```

sympy [A] time = 0.33, size = 148, normalized size = 1.11

$$-\frac{Aa^6}{x}+\frac{Bb^6x^6}{6}+a^5\left(6Ab+Ba\right)\log\left(x\right)+x^5\left(\frac{Ab^6}{5}+\frac{6Bab^5}{5}\right)+x^4\left(\frac{3Aab^5}{2}+\frac{15Ba^2b^4}{4}\right)+x^3\left(5Aa^2b^4+\frac{20Ba^3b^3}{3}\right)+x^2\left(10Aa^3b^3+\frac{15Ba^4b^2}{2}\right)+x\left(15Aa^4b^2+6Ba^5b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**2,x)
```

```
[Out] -A*a**6/x + B*b**6*x**6/6 + a**5*(6*A*b + B*a)*log(x) + x**5*(A*b**6/5 + 6*
B*a*b**5/5) + x**4*(3*A*a*b**5/2 + 15*B*a**2*b**4/4) + x**3*(5*A*a**2*b**4
+ 20*B*a**3*b**3/3) + x**2*(10*A*a**3*b**3 + 15*B*a**4*b**2/2) + x*(15*A*a*
*4*b**2 + 6*B*a**5*b)
```

3.474 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=131

$$-\frac{a^6A}{2x^2}-\frac{a^5(aB+6Ab)}{x}+3a^4b\log(x)(2aB+5Ab)+5a^3b^2x(3aB+4Ab)+\frac{5}{2}a^2b^3x^2(4aB+3Ab)+\frac{1}{4}b^5x^4(6aB+Ab)+ab$$

Rubi [A] time = 0.08, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$\frac{5}{2}a^2b^3x^2(4aB+3Ab)+5a^3b^2x(3aB+4Ab)-\frac{a^5(aB+6Ab)}{x}+3a^4b\log(x)(2aB+5Ab)-\frac{a^6A}{2x^2}+ab^4x^3(5aB+2Ab)+\frac{1}{4}b^5x^4(6aB+Ab)+\frac{1}{5}b^6Bx^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^3,x]
```

```
[Out] -(a^6*A)/(2*x^2) - (a^5*(6*A*b + a*B))/x + 5*a^3*b^2*(4*A*b + 3*a*B)*x + (5
*a^2*b^3*(3*A*b + 4*a*B)*x^2)/2 + a*b^4*(2*A*b + 5*a*B)*x^3 + (b^5*(A*b + 6
*a*B)*x^4)/4 + (b^6*B*x^5)/5 + 3*a^4*b*(5*A*b + 2*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^3}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^3}\,dx\\ &= \int \left(5a^3b^2(4Ab+3aB)+\frac{a^6A}{x^3}+\frac{a^5(6Ab+aB)}{x^2}+\frac{3a^4b(5Ab+2aB)}{x}+5\right.\\ &= -\frac{a^6A}{2x^2}-\frac{a^5(6Ab+aB)}{x}+5a^3b^2(4Ab+3aB)x+\frac{5}{2}a^2b^3(3Ab+4aB)x^2+\end{aligned}$$

Mathematica [A] time = 0.06, size = 128, normalized size = 0.98

$$-\frac{a^6(A+2Bx)}{2x^2}-\frac{6a^5Ab}{x}+3a^4b\log(x)(2aB+5Ab)+15a^4b^2Bx+10a^3b^3x(2A+Bx)+\frac{5}{2}a^2b^4x^2(3A+2Bx)+\frac{1}{2}ab^5x^3(4A+3Bx)+\frac{1}{20}b^6x^4(5A+4Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^3,x]
```

```
[Out] (-6*a^5*A*b)/x + 15*a^4*b^2*B*x + 10*a^3*b^3*x*(2*A + B*x) - (a^6*(A + 2*B*
x))/(2*x^2) + (5*a^2*b^4*x^2*(3*A + 2*B*x))/2 + (a*b^5*x^3*(4*A + 3*B*x))/2
 + (b^6*x^4*(5*A + 4*B*x))/20 + 3*a^4*b*(5*A*b + 2*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^3, x]
```

fricas [A] time = 0.42, size = 149, normalized size = 1.14

$$\frac{4\,Bb^6x^7-10\,Aa^6+5\left(6\,Bab^5+Ab^6\right)x^6+20\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+50\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+100\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+60\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2\log(x)-20\left(Ba^6+6\,Aa^5b\right)x}{20\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*b^6*x^7 - 10*A*a^6 + 5*(6*B*a*b^5 + A*b^6)*x^6 + 20*(5*B*a^2*b^4
+ 2*A*a*b^5)*x^5 + 50*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 100*(3*B*a^4*b^2 +
4*A*a^3*b^3)*x^3 + 60*(2*B*a^5*b + 5*A*a^4*b^2)*x^2*log(x) - 20*(B*a^6 + 6*
A*a^5*b)*x)/x^2
```

giac [A] time = 0.17, size = 144, normalized size = 1.10

$$\frac{1}{5}\,Bb^6x^5+\frac{3}{2}\,Bab^5x^4+\frac{1}{4}\,Ab^6x^4+5\,Ba^2b^4x^3+2\,Aab^5x^3+10\,Ba^3b^3x^2+\frac{15}{2}\,Aa^2b^4x^2+15\,Ba^4b^2x+20\,Aa^3b^3x+3\left(2\,Ba^5b+5\,Aa^4b^2\right)\log\left(|x|\right)-\frac{Aa^6+2\left(Ba^6+6\,Aa^5b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*b^6*x^5 + 3/2*B*a*b^5*x^4 + 1/4*A*b^6*x^4 + 5*B*a^2*b^4*x^3 + 2*A*a*b
^5*x^3 + 10*B*a^3*b^3*x^2 + 15/2*A*a^2*b^4*x^2 + 15*B*a^4*b^2*x + 20*A*a^3*
b^3*x + 3*(2*B*a^5*b + 5*A*a^4*b^2)*log(abs(x)) - 1/2*(A*a^6 + 2*(B*a^6 + 6
*A*a^5*b)*x)/x^2
```

maple [A] time = 0.06, size = 144, normalized size = 1.10

$$\frac{B\,b^6x^5}{5}+\frac{A\,b^6x^4}{4}+\frac{3Ba\,b^5x^4}{2}+2Aa\,b^5x^3+5B\,a^2b^4x^3+\frac{15A\,a^2b^4x^2}{2}+10B\,a^3b^3x^2+15A\,a^4b^2\ln(x)+20A\,a^3b^3x+6B\,a^5b\ln(x)+15B\,a^4b^2x-\frac{6A\,a^5b}{x}-\frac{B\,a^6}{x}-\frac{A\,a^6}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x)
```

```
[Out] 1/5*b^6*B*x^5+1/4*A*x^4*b^6+3/2*B*x^4*a*b^5+2*A*x^3*a*b^5+5*B*x^3*a^2*b^4+1
5/2*A*x^2*a^2*b^4+10*B*x^2*a^3*b^3+20*A*a^3*b^3*x+15*B*a^4*b^2*x-1/2*a^6*A/
x^2-6*a^5/x*A*b-a^6/x*B+15*A*ln(x)*a^4*b^2+6*B*ln(x)*a^5*b
```

maxima [A] time = 0.56, size = 143, normalized size = 1.09

$$\frac{1}{5}\,Bb^6x^5+\frac{1}{4}\left(6\,Bab^5+Ab^6\right)x^4+\left(5\,Ba^2b^4+2\,Aab^5\right)x^3+\frac{5}{2}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^2+5\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x+3\left(2\,Ba^5b+5\,Aa^4b^2\right)\log(x)-\frac{Aa^6+2\left(Ba^6+6\,Aa^5b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*b^6*x^5 + 1/4*(6*B*a*b^5 + A*b^6)*x^4 + (5*B*a^2*b^4 + 2*A*a*b^5)*x^3
 + 5/2*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^2 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x +
3*(2*B*a^5*b + 5*A*a^4*b^2)*log(x) - 1/2*(A*a^6 + 2*(B*a^6 + 6*A*a^5*b)*x)/
x^2
```

mupad [B] time = 1.08, size = 130, normalized size = 0.99

$$\ln(x)\left(6\,B\,a^5\,b+15\,A\,a^4\,b^2\right)-\frac{x\,\left(B\,a^6+6\,A\,b\,a^5\right)+\frac{A\,a^6}{2}}{x^2}+x^4\,\left(\frac{A\,b^6}{4}+\frac{3\,B\,a\,b^5}{2}\right)+\frac{B\,b^6\,x^5}{5}+\frac{5\,a^2\,b^3\,x^2\,\left(3\,A\,b+4\,B\,a\right)}{2}+5\,a^3\,b^2\,x\,\left(4\,A\,b+3\,B\,a\right)+a\,b^4\,x^3\,\left(2\,A\,b+5\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^3,x)
```

```
[Out] log(x)*(15*A*a^4*b^2 + 6*B*a^5*b) - (x*(B*a^6 + 6*A*a^5*b) + (A*a^6)/2)/x^2
 + x^4*((A*b^6)/4 + (3*B*a*b^5)/2) + (B*b^6*x^5)/5 + (5*a^2*b^3*x^2*(3*A*b
+ 4*B*a))/2 + 5*a^3*b^2*x*(4*A*b + 3*B*a) + a*b^4*x^3*(2*A*b + 5*B*a)
```

sympy [A] time = 0.51, size = 148, normalized size = 1.13

$$\frac{Bb^6x^5}{5}+3a^4b\left(5Ab+2Ba\right)\log\left(x\right)+x^4\left(\frac{Ab^6}{4}+\frac{3Bab^5}{2}\right)+x^3\left(2Aab^5+5Ba^2b^4\right)+x^2\left(\frac{15Aa^2b^4}{2}+10Ba^3b^3\right)+x\left(20Aa^3b^3+15Ba^4b^2\right)+\frac{-Aa^6+x\left(-12Aa^5b-2Ba^6\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**3,x)
```

```
[Out] B*b**6*x**5/5 + 3*a**4*b*(5*A*b + 2*B*a)*log(x) + x**4*(A*b**6/4 + 3*B*a*b*
*5/2) + x**3*(2*A*a*b**5 + 5*B*a**2*b**4) + x**2*(15*A*a**2*b**4/2 + 10*B*a
**3*b**3) + x*(20*A*a**3*b**3 + 15*B*a**4*b**2) + (-A*a**6 + x*(-12*A*a**5*
b - 2*B*a**6))/(2*x**2)
```

3.475 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)^3}{x^4}\,dx$

Optimal. Leaf size=134

$$-\frac{a^6A}{3x^3}-\frac{a^5(aB+6Ab)}{2x^2}-\frac{3a^4b(2aB+5Ab)}{x}+5a^3b^2\log(x)(3aB+4Ab)+5a^2b^3x(4aB+3Ab)+\frac{1}{3}b^5x^3(6aB+Ab)+\frac{3}{2}ab^4x$$

Rubi [A] time = 0.08, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 76}

$$5a^2b^3x(4aB+3Ab)+5a^3b^2\log(x)(3aB+4Ab)-\frac{a^5(aB+6Ab)}{2x^2}-\frac{3a^4b(2aB+5Ab)}{x}-\frac{a^6A}{3x^3}+\frac{3}{2}ab^4x^2(5aB+2Ab)+\frac{1}{3}b^5x^3(6aB+Ab)+\frac{1}{4}b^6Bx^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^4,x]
```

```
[Out] -(a^6*A)/(3*x^3) - (a^5*(6*A*b + a*B))/(2*x^2) - (3*a^4*b*(5*A*b + 2*a*B))/
x + 5*a^2*b^3*(3*A*b + 4*a*B)*x + (3*a*b^4*(2*A*b + 5*a*B)*x^2)/2 + (b^5*(A
*b + 6*a*B)*x^3)/3 + (b^6*B*x^4)/4 + 5*a^3*b^2*(4*A*b + 3*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^4}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^4}\,dx\\ &= \int \left(5a^2b^3(3Ab+4aB)+\frac{a^6A}{x^4}+\frac{a^5(6Ab+aB)}{x^3}+\frac{3a^4b(5Ab+2aB)}{x^2}+\frac{5a^3b}{}\right.\\ &= -\frac{a^6A}{3x^3}-\frac{a^5(6Ab+aB)}{2x^2}-\frac{3a^4b(5Ab+2aB)}{x}+5a^2b^3(3Ab+4aB)x+\frac{3}{2}ab^4(\end{aligned}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.95

$$-\frac{a^6(2A+3Bx)}{6x^3}-\frac{3a^5b(A+2Bx)}{x^2}-\frac{15a^4Ab^2}{x}+5a^3b^2\log(x)(3aB+4Ab)+20a^3b^3Bx+\frac{15}{2}a^2b^4x(2A+Bx)+ab^5x^2(3A+2Bx)+\frac{1}{12}b^6x^3(4A+3Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^4,x]
```

```
[Out] (-15*a^4*A*b^2)/x + 20*a^3*b^3*B*x + (15*a^2*b^4*x*(2*A + B*x))/2 - (3*a^5*
b*(A + 2*B*x))/x^2 + a*b^5*x^2*(3*A + 2*B*x) - (a^6*(2*A + 3*B*x))/(6*x^3)
+ (b^6*x^3*(4*A + 3*B*x))/12 + 5*a^3*b^2*(4*A*b + 3*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^4,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^4, x]
```

fricas [A] time = 0.41, size = 149, normalized size = 1.11

$$\frac{3\,Bb^6x^7-4\,Aa^6+4\,\left(6\,Bab^5+Ab^6\right)x^6+18\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+60\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+60\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3\log(x)-36\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-6\,\left(Ba^6+6\,Aa^5b\right)x}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x, algorithm="fricas")
[Out] 1/12*(3*B*b^6*x^7 - 4*A*a^6 + 4*(6*B*a*b^5 + A*b^6)*x^6 + 18*(5*B*a^2*b^4 +
 2*A*a*b^5)*x^5 + 60*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 60*(3*B*a^4*b^2 + 4*
A*a^3*b^3)*x^3*log(x) - 36*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 6*(B*a^6 + 6*A*a
^5*b)*x)/x^3
```

giac [A] time = 0.17, size = 145, normalized size = 1.08

$$\frac{1}{4}\,Bb^6x^4+2\,Bab^5x^3+\frac{1}{3}\,Ab^6x^3+\frac{15}{2}\,Ba^2b^4x^2+3\,Aab^5x^2+20\,Ba^3b^3x+15\,Aa^2b^4x+5\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)\log\left(|x|\right)-\frac{2\,Aa^6+18\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+3\,\left(Ba^6+6\,Aa^5b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x, algorithm="giac")
[Out] 1/4*B*b^6*x^4 + 2*B*a*b^5*x^3 + 1/3*A*b^6*x^3 + 15/2*B*a^2*b^4*x^2 + 3*A*a*
b^5*x^2 + 20*B*a^3*b^3*x + 15*A*a^2*b^4*x + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*l
og(abs(x)) - 1/6*(2*A*a^6 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 3*(B*a^6 + 6
*A*a^5*b)*x)/x^3
```

maple [A] time = 0.05, size = 144, normalized size = 1.07

$$\frac{B\,b^6x^4}{4}+\frac{A\,b^6x^3}{3}+2Ba\,b^5x^3+3Aa\,b^5x^2+\frac{15B\,a^2b^4x^2}{2}+20A\,a^3b^3\ln(x)+15A\,a^2b^4x+15B\,a^4b^2\ln(x)+20B\,a^3b^3x-\frac{15A\,a^4b^2}{x}-\frac{6B\,a^5b}{x}-\frac{3A\,a^5b}{x^2}-\frac{B\,a^6}{2x^2}-\frac{A\,a^6}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x)
[Out] 1/4*b^6*B*x^4+1/3*A*x^3*b^6+2*B*x^3*a*b^5+3*A*x^2*a*b^5+15/2*B*x^2*a^2*b^4+
15*A*a^2*b^4*x+20*B*a^3*b^3*x-1/3*a^6*A/x^3-3*a^5/x^2*A*b-1/2*a^6/x^2*B-15*
a^4*b^2/x*A-6*a^5*b/x*B+20*A*ln(x)*a^3*b^3+15*B*ln(x)*a^4*b^2
```

maxima [A] time = 0.52, size = 145, normalized size = 1.08

$$\frac{1}{4}\,Bb^6x^4+\frac{1}{3}\,\left(6\,Bab^5+Ab^6\right)x^3+\frac{3}{2}\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^2+5\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x+5\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)\log(x)-\frac{2\,Aa^6+18\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+3\,\left(Ba^6+6\,Aa^5b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x, algorithm="maxima")
[Out] 1/4*B*b^6*x^4 + 1/3*(6*B*a*b^5 + A*b^6)*x^3 + 3/2*(5*B*a^2*b^4 + 2*A*a*b^5)
*x^2 + 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*log(
x) - 1/6*(2*A*a^6 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 3*(B*a^6 + 6*A*a^5*b
)*x)/x^3
```

mupad [**B**]   time = 0.06, size = 135, normalized size = 1.01

$$x^3\left(\frac{A\,b^6}{3}+2\,B\,a\,b^5\right)-\frac{x\left(\frac{B\,a^6}{2}+3\,A\,b\,a^5\right)+\frac{A\,a^6}{3}+x^2\left(6\,B\,a^5\,b+15\,A\,a^4\,b^2\right)}{x^3}+\ln(x)\left(15\,B\,a^4\,b^2+20\,A\,a^3\,b^3\right)+\frac{B\,b^6\,x^4}{4}+5\,a^2\,b^3\,x\,(3\,A\,b+4\,B\,a)+\frac{3\,a\,b^4\,x^2\,(2\,A\,b+5\,B\,a)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^4,x)
```

```
[Out] x^3*((A*b^6)/3 + 2*B*a*b^5) - (x*((B*a^6)/2 + 3*A*a^5*b) + (A*a^6)/3 + x^2*
(15*A*a^4*b^2 + 6*B*a^5*b))/x^3 + log(x)*(20*A*a^3*b^3 + 15*B*a^4*b^2) + (B
*b^6*x^4)/4 + 5*a^2*b^3*x*(3*A*b + 4*B*a) + (3*a*b^4*x^2*(2*A*b + 5*B*a))/2
```

sympy [**A**]   time = 0.83, size = 150, normalized size = 1.12

$$\frac{Bb^6x^4}{4}+5a^3b^2\left(4Ab+3Ba\right)\log\left(x\right)+x^3\left(\frac{Ab^6}{3}+2Bab^5\right)+x^2\left(3Aab^5+\frac{15Ba^2b^4}{2}\right)+x\left(15Aa^2b^4+20Ba^3b^3\right)+\frac{-2Aa^6+x^2\left(-90Aa^4b^2-36Ba^5b\right)+x\left(-18Aa^5b-3Ba^6\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**4,x)
```

```
[Out] B*b**6*x**4/4 + 5*a**3*b**2*(4*A*b + 3*B*a)*log(x) + x**3*(A*b**6/3 + 2*B*a
*b**5) + x**2*(3*A*a*b**5 + 15*B*a**2*b**4/2) + x*(15*A*a**2*b**4 + 20*B*a*
*3*b**3) + (-2*A*a**6 + x**2*(-90*A*a**4*b**2 - 36*B*a**5*b) + x*(-18*A*a**
5*b - 3*B*a**6))/(6*x**3)
```

3.476 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^5}\,dx$

Optimal. Leaf size=134

$$-\frac{a^6A}{4x^4}-\frac{a^5(aB+6Ab)}{3x^3}-\frac{3a^4b(2aB+5Ab)}{2x^2}-\frac{5a^3b^2(3aB+4Ab)}{x}+5a^2b^3\log(x)(4aB+3Ab)+\frac{1}{2}b^5x^2(6aB+Ab)+3al$$

Rubi [A] time = 0.08, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{x}+5a^2b^3\log(x)(4aB+3Ab)-\frac{a^5(aB+6Ab)}{3x^3}-\frac{3a^4b(2aB+5Ab)}{2x^2}-\frac{a^6A}{4x^4}+\frac{1}{2}b^5x^2(6aB+Ab)+3ab^4x(5aB+2Ab)+\frac{1}{3}b^6Bx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^5,x]
```

```
[Out] -(a^6*A)/(4*x^4) - (a^5*(6*A*b + a*B))/(3*x^3) - (3*a^4*b*(5*A*b + 2*a*B))/
(2*x^2) - (5*a^3*b^2*(4*A*b + 3*a*B))/x + 3*a*b^4*(2*A*b + 5*a*B)*x + (b^5*
(A*b + 6*a*B)*x^2)/2 + (b^6*B*x^3)/3 + 5*a^2*b^3*(3*A*b + 4*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^5}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^5}\,dx\\ &= \int \left(3ab^4(2Ab+5aB)+\frac{a^6A}{x^5}+\frac{a^5(6Ab+aB)}{x^4}+\frac{3a^4b(5Ab+2aB)}{x^3}+5a\right.\\ &= -\frac{a^6A}{4x^4}-\frac{a^5(6Ab+aB)}{3x^3}-\frac{3a^4b(5Ab+2aB)}{2x^2}-\frac{5a^3b^2(4Ab+3aB)}{x}+3ab\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 0.96

$$-\frac{a^6(3A+4Bx)}{12x^4}-\frac{a^5b(2A+3Bx)}{x^3}-\frac{15a^4b^2(A+2Bx)}{2x^2}-\frac{20a^3Ab^3}{x}+5a^2b^3\log(x)(4aB+3Ab)+15a^2b^4Bx+3ab^5x(2A+Bx)+\frac{1}{6}b^6x^2(3A+2Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^5,x]
```

```
[Out] (-20*a^3*A*b^3)/x + 15*a^2*b^4*B*x + 3*a*b^5*x*(2*A + B*x) - (15*a^4*b^2*(A
 + 2*B*x))/(2*x^2) + (b^6*x^2*(3*A + 2*B*x))/6 - (a^5*b*(2*A + 3*B*x))/x^3
- (a^6*(3*A + 4*B*x))/(12*x^4) + 5*a^2*b^3*(3*A*b + 4*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^5, x]
```

fricas [A] time = 0.42, size = 149, normalized size = 1.11

$$\frac{4\,Bb^6x^7-3\,Aa^6+6\left(6\,Bab^5+Ab^6\right)x^6+36\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+60\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4\log\left(x\right)-60\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-18\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-4\left(Ba^6+6\,Aa^5b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*b^6*x^7 - 3*A*a^6 + 6*(6*B*a*b^5 + A*b^6)*x^6 + 36*(5*B*a^2*b^4 +
 2*A*a*b^5)*x^5 + 60*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4*log(x) - 60*(3*B*a^4*b
^2 + 4*A*a^3*b^3)*x^3 - 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 4*(B*a^6 + 6*A*a
^5*b)*x)/x^4
```

giac [A] time = 0.19, size = 145, normalized size = 1.08

$$\frac{1}{3}\,Bb^6x^3+3\,Bab^5x^2+\frac{1}{2}\,Ab^6x^2+15\,Ba^2b^4x+6\,Aab^5x+5\left(4\,Ba^3b^3+3\,Aa^2b^4\right)\log\left(|x|\right)-\frac{3\,Aa^6+60\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+18\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+4\left(Ba^6+6\,Aa^5b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x, algorithm="giac")
```

```
[Out] 1/3*B*b^6*x^3 + 3*B*a*b^5*x^2 + 1/2*A*b^6*x^2 + 15*B*a^2*b^4*x + 6*A*a*b^5*
x + 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*log(abs(x)) - 1/12*(3*A*a^6 + 60*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^3 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 4*(B*a^6 + 6*A
*a^5*b)*x)/x^4
```

maple [A] time = 0.06, size = 144, normalized size = 1.07

$$\frac{B\,b^6x^3}{3}+\frac{A\,b^6x^2}{2}+3Ba\,b^5x^2+15A\,a^2b^4\ln\left(x\right)+6Aa\,b^5x+20B\,a^3b^3\ln\left(x\right)+15B\,a^2b^4x-\frac{20A\,a^3b^3}{x}-\frac{15B\,a^4b^2}{x}-\frac{15A\,a^4b^2}{2x^2}-\frac{3B\,a^5b}{x^2}-\frac{2A\,a^5b}{x^3}-\frac{B\,a^6}{3x^3}-\frac{A\,a^6}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x)
```

```
[Out] 1/3*b^6*B*x^3+1/2*A*x^2*b^6+3*B*x^2*a*b^5+6*A*a*b^5*x+15*B*a^2*b^4*x-1/4*a^
6*A/x^4-2*a^5/x^3*A*b-1/3*a^6/x^3*B-15/2*a^4*b^2/x^2*A-3*a^5*b/x^2*B-20*a^3
*b^3/x*A-15*a^4*b^2/x*B+15*A*ln(x)*a^2*b^4+20*B*ln(x)*a^3*b^3
```

maxima [A] time = 0.55, size = 145, normalized size = 1.08

$$\frac{1}{3}\,Bb^6x^3+\frac{1}{2}\left(6\,Bab^5+Ab^6\right)x^2+3\left(5\,Ba^2b^4+2\,Aab^5\right)x+5\left(4\,Ba^3b^3+3\,Aa^2b^4\right)\log\left(x\right)-\frac{3\,Aa^6+60\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+18\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+4\left(Ba^6+6\,Aa^5b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*B*b^6*x^3 + 1/2*(6*B*a*b^5 + A*b^6)*x^2 + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*x
 + 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*log(x) - 1/12*(3*A*a^6 + 60*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^3 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 4*(B*a^6 + 6*A*a^5*b
)*x)/x^4
```

mupad [B] time = 0.06, size = 138, normalized size = 1.03

$$x^2\left(\frac{A\,b^6}{2}+3\,B\,a\,b^5\right)-\frac{x\,\left(\frac{B\,a^6}{3}+2\,A\,b\,a^5\right)+\frac{A\,a^6}{4}+x^2\,\left(3\,B\,a^5\,b+\frac{15\,A\,a^4\,b^2}{2}\right)+x^3\,\left(15\,B\,a^4\,b^2+20\,A\,a^3\,b^3\right)}{x^4}+\ln(x)\,\left(20\,B\,a^3\,b^3+15\,A\,a^2\,b^4\right)+\frac{B\,b^6\,x^3}{3}+3\,a\,b^4\,x\,\left(2\,A\,b+5\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^5,x)
```

```
[Out] x^2*((A*b^6)/2 + 3*B*a*b^5) - (x*((B*a^6)/3 + 2*A*a^5*b) + (A*a^6)/4 + x^2*
((15*A*a^4*b^2)/2 + 3*B*a^5*b) + x^3*(20*A*a^3*b^3 + 15*B*a^4*b^2))/x^4 + l
og(x)*(15*A*a^2*b^4 + 20*B*a^3*b^3) + (B*b^6*x^3)/3 + 3*a*b^4*x*(2*A*b + 5*
B*a)
```

sympy [A] time = 1.35, size = 150, normalized size = 1.12

$$\frac{Bb^6x^3}{3}+5a^2b^3\left(3Ab+4Ba\right)\log\left(x\right)+x^2\left(\frac{Ab^6}{2}+3Bab^5\right)+x\left(6Aab^5+15Ba^2b^4\right)+\frac{-3Aa^6+x^3\left(-240Aa^3b^3-180Ba^4b^2\right)+x^2\left(-90Aa^4b^2-36Ba^5b\right)+x\left(-24Aa^5b-4Ba^6\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**5,x)
```

```
[Out] B*b**6*x**3/3 + 5*a**2*b**3*(3*A*b + 4*B*a)*log(x) + x**2*(A*b**6/2 + 3*B*a
*b**5) + x*(6*A*a*b**5 + 15*B*a**2*b**4) + (-3*A*a**6 + x**3*(-240*A*a**3*b
**3 - 180*B*a**4*b**2) + x**2*(-90*A*a**4*b**2 - 36*B*a**5*b) + x*(-24*A*a*
*5*b - 4*B*a**6))/(12*x**4)
```

3.477 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^6}\,dx$

Optimal. Leaf size=131

$$-\frac{a^6A}{5x^5}-\frac{a^5(aB+6Ab)}{4x^4}-\frac{a^4b(2aB+5Ab)}{x^3}-\frac{5a^3b^2(3aB+4Ab)}{2x^2}-\frac{5a^2b^3(4aB+3Ab)}{x}+b^5x(6aB+Ab)+3ab^4\log(x)(5a$$

Rubi [A] time = 0.08, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{2x^2}-\frac{5a^2b^3(4aB+3Ab)}{x}-\frac{a^5(aB+6Ab)}{4x^4}-\frac{a^4b(2aB+5Ab)}{x^3}-\frac{a^6A}{5x^5}+b^5x(6aB+Ab)+3ab^4\log(x)(5aB+2Ab)+\frac{1}{2}b^6Bx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^6,x]
```

```
[Out] -(a^6*A)/(5*x^5) - (a^5*(6*A*b + a*B))/(4*x^4) - (a^4*b*(5*A*b + 2*a*B))/x^
3 - (5*a^3*b^2*(4*A*b + 3*a*B))/(2*x^2) - (5*a^2*b^3*(3*A*b + 4*a*B))/x + b
^5*(A*b + 6*a*B)*x + (b^6*B*x^2)/2 + 3*a*b^4*(2*A*b + 5*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^6}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^6}\,dx\\ &= \int \left(b^5(Ab+6aB)+\frac{a^6A}{x^6}+\frac{a^5(6Ab+aB)}{x^5}+\frac{3a^4b(5Ab+2aB)}{x^4}+\frac{5a^3b^2(4A\right.\\ &= -\frac{a^6A}{5x^5}-\frac{a^5(6Ab+aB)}{4x^4}-\frac{a^4b(5Ab+2aB)}{x^3}-\frac{5a^3b^2(4Ab+3aB)}{2x^2}-\frac{5a^2b^3(3\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 0.98

$$-\frac{a^6(4A+5Bx)}{20x^5}-\frac{a^5b(3A+4Bx)}{2x^4}-\frac{5a^4b^2(2A+3Bx)}{2x^3}-\frac{10a^3b^3(A+2Bx)}{x^2}-\frac{15a^2Ab^4}{x}+3ab^4\log(x)(5aB+2Ab)+6ab^5Bx+\frac{1}{2}b^6x(2A+Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^6,x]
```

```
[Out] (-15*a^2*A*b^4)/x + 6*a*b^5*B*x + (b^6*x*(2*A + B*x))/2 - (10*a^3*b^3*(A +
2*B*x))/x^2 - (5*a^4*b^2*(2*A + 3*B*x))/(2*x^3) - (a^5*b*(3*A + 4*B*x))/(2*
x^4) - (a^6*(4*A + 5*B*x))/(20*x^5) + 3*a*b^4*(2*A*b + 5*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^6,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^6, x]
```

fricas [A] time = 0.41, size = 149, normalized size = 1.14

$$\frac{10\,Bb^6x^7-4\,Aa^6+20\left(6\,Bab^5+Ab^6\right)x^6+60\left(5\,Ba^2b^4+2\,Aab^5\right)x^5\log(x)-100\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4-50\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-20\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-5\left(Ba^6+6\,Aa^5b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x, algorithm="fricas")
[Out] 1/20*(10*B*b^6*x^7 - 4*A*a^6 + 20*(6*B*a*b^5 + A*b^6)*x^6 + 60*(5*B*a^2*b^4
 + 2*A*a*b^5)*x^5*log(x) - 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 50*(3*B*a^
4*b^2 + 4*A*a^3*b^3)*x^3 - 20*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 5*(B*a^6 + 6*
A*a^5*b)*x)/x^5
```

giac [A] time = 0.18, size = 144, normalized size = 1.10

$$\frac{1}{2}\,Bb^6x^2+6\,Bab^5x+Ab^6x+3\left(5\,Ba^2b^4+2\,Aab^5\right)\log\left(|x|\right)-\frac{4\,Aa^6+100\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+50\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+20\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+5\left(Ba^6+6\,Aa^5b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x, algorithm="giac")
[Out] 1/2*B*b^6*x^2 + 6*B*a*b^5*x + A*b^6*x + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*log(abs
(x)) - 1/20*(4*A*a^6 + 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 50*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 20*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 5*(B*a^6 + 6*A*a^
5*b)*x)/x^5
```

maple [A] time = 0.06, size = 143, normalized size = 1.09

$$\frac{B\,b^6x^2}{2}+6Aa\,b^5\ln(x)+A\,b^6x+15B\,a^2b^4\ln(x)+6Ba\,b^5x-\frac{15A\,a^2b^4}{x}-\frac{20B\,a^3b^3}{x}-\frac{10A\,a^3b^3}{x^2}-\frac{15B\,a^4b^2}{2x^2}-\frac{5A\,a^4b^2}{x^3}-\frac{2B\,a^5b}{x^3}-\frac{3A\,a^5b}{2x^4}-\frac{B\,a^6}{4x^4}-\frac{A\,a^6}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x)
[Out] 1/2*b^6*B*x^2+A*b^6*x+6*B*a*b^5*x-1/5*a^6*A/x^5-3/2*a^5/x^4*A*b-1/4*a^6/x^4
*B-5*a^4*b^2/x^3*A-2*a^5*b/x^3*B-10*a^3*b^3/x^2*A-15/2*a^4*b^2/x^2*B-15*a^2
*b^4/x*A-20*a^3*b^3/x*B+6*A*ln(x)*a*b^5+15*B*ln(x)*a^2*b^4
```

maxima [A] time = 0.61, size = 144, normalized size = 1.10

$$\frac{1}{2}\,Bb^6x^2+\left(6\,Bab^5+Ab^6\right)x+3\left(5\,Ba^2b^4+2\,Aab^5\right)\log(x)-\frac{4\,Aa^6+100\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+50\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+20\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+5\left(Ba^6+6\,Aa^5b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x, algorithm="maxima")
[Out] 1/2*B*b^6*x^2 + (6*B*a*b^5 + A*b^6)*x + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*log(x)
- 1/20*(4*A*a^6 + 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 50*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*x^3 + 20*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 5*(B*a^6 + 6*A*a^5*b)*
x)/x^5
```

mupad [B] time = 1.09, size = 140, normalized size = 1.07

$$x\,\left(A\,b^6+6\,B\,a\,b^5\right)-\frac{x\,\left(\frac{B\,a^6}{4}+\frac{3\,A\,b\,a^5}{2}\right)+\frac{A\,a^6}{5}+x^2\,\left(2\,B\,a^5\,b+5\,A\,a^4\,b^2\right)+x^3\,\left(\frac{15\,B\,a^4\,b^2}{2}+10\,A\,a^3\,b^3\right)+x^4\,\left(20\,B\,a^3\,b^3+15\,A\,a^2\,b^4\right)}{x^5}+\ln(x)\,\left(15\,B\,a^2\,b^4+6\,A\,a\,b^5\right)+\frac{B\,b^6\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^6,x)
```

```
[Out] x*(A*b^6 + 6*B*a*b^5) - (x*((B*a^6)/4 + (3*A*a^5*b)/2) + (A*a^6)/5 + x^2*(5
*A*a^4*b^2 + 2*B*a^5*b) + x^3*(10*A*a^3*b^3 + (15*B*a^4*b^2)/2) + x^4*(15*A
*a^2*b^4 + 20*B*a^3*b^3))/x^5 + log(x)*(15*B*a^2*b^4 + 6*A*a*b^5) + (B*b^6*
x^2)/2
```

sympy [A] time = 2.09, size = 150, normalized size = 1.15

$$\frac{Bb^6x^2}{2}+3ab^4\left(2Ab+5Ba\right)\log\left(x\right)+x\left(Ab^6+6Bab^5\right)+\frac{-4Aa^6+x^4\left(-300Aa^2b^4-400Ba^3b^3\right)+x^3\left(-200Aa^3b^3-150Ba^4b^2\right)+x^2\left(-100Aa^4b^2-40Ba^5b\right)+x\left(-30Aa^5b-5Ba^6\right)}{20x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**6,x)
```

```
[Out] B*b**6*x**2/2 + 3*a*b**4*(2*A*b + 5*B*a)*log(x) + x*(A*b**6 + 6*B*a*b**5) +
 (-4*A*a**6 + x**4*(-300*A*a**2*b**4 - 400*B*a**3*b**3) + x**3*(-200*A*a**3
*b**3 - 150*B*a**4*b**2) + x**2*(-100*A*a**4*b**2 - 40*B*a**5*b) + x*(-30*A
*a**5*b - 5*B*a**6))/(20*x**5)
```

3.478 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^7}\,dx$

Optimal. Leaf size=132

$$-\frac{a^6A}{6x^6}-\frac{a^5(aB+6Ab)}{5x^5}-\frac{3a^4b(2aB+5Ab)}{4x^4}-\frac{5a^3b^2(3aB+4Ab)}{3x^3}-\frac{5a^2b^3(4aB+3Ab)}{2x^2}+b^5\log(x)(6aB+Ab)-\frac{3ab^4(}{}$$

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{3x^3}-\frac{5a^2b^3(4aB+3Ab)}{2x^2}-\frac{a^5(aB+6Ab)}{5x^5}-\frac{3a^4b(2aB+5Ab)}{4x^4}-\frac{a^6A}{6x^6}-\frac{3ab^4(5aB+2Ab)}{x}+b^5\log(x)(6aB+Ab)+b^6Bx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^7,x]
```

```
[Out] -(a^6*A)/(6*x^6) - (a^5*(6*A*b + a*B))/(5*x^5) - (3*a^4*b*(5*A*b + 2*a*B))/
(4*x^4) - (5*a^3*b^2*(4*A*b + 3*a*B))/(3*x^3) - (5*a^2*b^3*(3*A*b + 4*a*B))
/(2*x^2) - (3*a*b^4*(2*A*b + 5*a*B))/x + b^6*B*x + b^5*(A*b + 6*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^7}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^7}\,dx\\ &= \int \left(b^6B+\frac{a^6A}{x^7}+\frac{a^5(6Ab+aB)}{x^6}+\frac{3a^4b(5Ab+2aB)}{x^5}+\frac{5a^3b^2(4Ab+3a}{x^4}\right.\\ &= -\frac{a^6A}{6x^6}-\frac{a^5(6Ab+aB)}{5x^5}-\frac{3a^4b(5Ab+2aB)}{4x^4}-\frac{5a^3b^2(4Ab+3aB)}{3x^3}-\frac{5a^2}{}\end{aligned}$$

Mathematica [A] time = 0.07, size = 125, normalized size = 0.95

$$b^5\log(x)(6aB+Ab)-\frac{2a^6(5A+6Bx)+18a^5bx(4A+5Bx)+75a^4b^2x^2(3A+4Bx)+200a^3b^3x^3(2A+3Bx)+450a^2b^4x^4(A+2Bx)+360aAb^5x^5-60b^6Bx^7}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^7,x]
```

```
[Out] -1/60*(360*a*A*b^5*x^5 - 60*b^6*B*x^7 + 450*a^2*b^4*x^4*(A + 2*B*x) + 200*a
^3*b^3*x^3*(2*A + 3*B*x) + 75*a^4*b^2*x^2*(3*A + 4*B*x) + 18*a^5*b*x*(4*A +
 5*B*x) + 2*a^6*(5*A + 6*B*x))/x^6 + b^5*(A*b + 6*a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^7,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^7, x]
```

fricas [A] time = 0.49, size = 149, normalized size = 1.13

$$\frac{60\,Bb^6x^7+60\left(6\,Bab^5+Ab^6\right)x^6\log(x)-10\,Aa^6-180\left(5\,Ba^2b^4+2\,Aab^5\right)x^5-150\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4-100\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-45\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-12\left(Ba^6+6\,Aa^5b\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x, algorithm="fricas")
[Out] 1/60*(60*B*b^6*x^7 + 60*(6*B*a*b^5 + A*b^6)*x^6*log(x) - 10*A*a^6 - 180*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 - 150*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 100*(3*B
*a^4*b^2 + 4*A*a^3*b^3)*x^3 - 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 12*(B*a^6
+ 6*A*a^5*b)*x)/x^6
```

giac [A] time = 0.16, size = 144, normalized size = 1.09

$$Bb^6x+\left(6\,Bab^5+Ab^6\right)\log\left(|x|\right)-\frac{10\,Aa^6+180\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+150\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+100\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+45\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+12\left(Ba^6+6\,Aa^5b\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x, algorithm="giac")
[Out] B*b^6*x + (6*B*a*b^5 + A*b^6)*log(abs(x)) - 1/60*(10*A*a^6 + 180*(5*B*a^2*b
^4 + 2*A*a*b^5)*x^5 + 150*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 100*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 12*(B*a^6 + 6*A*a
^5*b)*x)/x^6
```

maple [A] time = 0.05, size = 144, normalized size = 1.09

$$A\,b^6\ln(x)+6Ba\,b^5\ln(x)+B\,b^6x-\frac{6Aa\,b^5}{x}-\frac{15B\,a^2b^4}{x}-\frac{15A\,a^2b^4}{2x^2}-\frac{10B\,a^3b^3}{x^2}-\frac{20A\,a^3b^3}{3x^3}-\frac{5B\,a^4b^2}{x^3}-\frac{15A\,a^4b^2}{4x^4}-\frac{3B\,a^5b}{2x^4}-\frac{6A\,a^5b}{5x^5}-\frac{B\,a^6}{5x^5}-\frac{A\,a^6}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x)
[Out] b^6*B*x-6/5*a^5/x^5*A*b-1/5*a^6/x^5*B-15/4*a^4*b^2/x^4*A-3/2*a^5*b/x^4*B-20
/3*a^3*b^3/x^3*A-5*a^4*b^2/x^3*B-15/2*a^2*b^4/x^2*A-10*a^3*b^3/x^2*B-1/6*a^
6*A/x^6-6*a*b^5/x*A-15*a^2*b^4/x*B+A*ln(x)*b^6+6*B*ln(x)*a*b^5
```

maxima [A] time = 0.47, size = 143, normalized size = 1.08

$$Bb^6x+\left(6\,Bab^5+Ab^6\right)\log(x)-\frac{10\,Aa^6+180\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+150\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+100\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+45\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+12\left(Ba^6+6\,Aa^5b\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x, algorithm="maxima")
[Out] B*b^6*x + (6*B*a*b^5 + A*b^6)*log(x) - 1/60*(10*A*a^6 + 180*(5*B*a^2*b^4 +
2*A*a*b^5)*x^5 + 150*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 100*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*x^3 + 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 12*(B*a^6 + 6*A*a^5*b)
*x)/x^6
```

mupad [B] time = 0.08, size = 139, normalized size = 1.05

$$\ln(x)\,\left(A\,b^6+6\,B\,a\,b^5\right)-\frac{x\,\left(\frac{B\,a^6}{5}+\frac{6\,A\,b\,a^5}{5}\right)+\frac{A\,a^6}{6}+x^2\,\left(\frac{3\,B\,a^5\,b}{2}+\frac{15\,A\,a^4\,b^2}{4}\right)+x^5\,\left(15\,B\,a^2\,b^4+6\,A\,a\,b^5\right)+x^3\,\left(5\,B\,a^4\,b^2+\frac{20\,A\,a^3\,b^3}{3}\right)+x^4\,\left(10\,B\,a^3\,b^3+\frac{15\,A\,a^2\,b^4}{2}\right)}{x^6}+B\,b^6\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^7,x)
```

```
[Out] log(x)*(A*b^6 + 6*B*a*b^5) - (x*((B*a^6)/5 + (6*A*a^5*b)/5) + (A*a^6)/6 + x
^2*((15*A*a^4*b^2)/4 + (3*B*a^5*b)/2) + x^5*(15*B*a^2*b^4 + 6*A*a*b^5) + x^
3*((20*A*a^3*b^3)/3 + 5*B*a^4*b^2) + x^4*((15*A*a^2*b^4)/2 + 10*B*a^3*b^3))
/x^6 + B*b^6*x
```

sympy [A] time = 3.16, size = 150, normalized size = 1.14

$$Bb^6x+b^5\left(Ab+6Ba\right)\log\left(x\right)+\frac{-10Aa^6+x^5\left(-360Aab^5-900Ba^2b^4\right)+x^4\left(-450Aa^2b^4-600Ba^3b^3\right)+x^3\left(-400Aa^3b^3-300Ba^4b^2\right)+x^2\left(-225Aa^4b^2-90Ba^5b\right)+x\left(-72Aa^5b-12Ba^6\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**7,x)
```

```
[Out] B*b**6*x + b**5*(A*b + 6*B*a)*log(x) + (-10*A*a**6 + x**5*(-360*A*a*b**5 -
900*B*a**2*b**4) + x**4*(-450*A*a**2*b**4 - 600*B*a**3*b**3) + x**3*(-400*A
*a**3*b**3 - 300*B*a**4*b**2) + x**2*(-225*A*a**4*b**2 - 90*B*a**5*b) + x*(
-72*A*a**5*b - 12*B*a**6))/(60*x**6)
```

3.479 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^8}\,dx$

Optimal. Leaf size=101

$$-\frac{a^6B}{6x^6}-\frac{6a^5bB}{5x^5}-\frac{15a^4b^2B}{4x^4}-\frac{20a^3b^3B}{3x^3}-\frac{15a^2b^4B}{2x^2}-\frac{A(a+bx)^7}{7ax^7}-\frac{6ab^5B}{x}+b^6B\log(x)$$

Rubi [A] time = 0.04, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 43}

$$-\frac{15a^2b^4B}{2x^2}-\frac{20a^3b^3B}{3x^3}-\frac{15a^4b^2B}{4x^4}-\frac{6a^5bB}{5x^5}-\frac{a^6B}{6x^6}-\frac{A(a+bx)^7}{7ax^7}-\frac{6ab^5B}{x}+b^6B\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^8,x]
```

```
[Out] -(a^6*B)/(6*x^6) - (6*a^5*b*B)/(5*x^5) - (15*a^4*b^2*B)/(4*x^4) - (20*a^3*b
^3*B)/(3*x^3) - (15*a^2*b^4*B)/(2*x^2) - (6*a*b^5*B)/x - (A*(a + b*x)^7)/(7
*a*x^7) + b^6*B*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^8}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^8}\,dx\\
&= -\frac{A(a+bx)^7}{7ax^7}+B\int \frac{(a+bx)^6}{x^7}\,dx\\
&= -\frac{A(a+bx)^7}{7ax^7}+B\int \left(\frac{a^6}{x^7}+\frac{6a^5b}{x^6}+\frac{15a^4b^2}{x^5}+\frac{20a^3b^3}{x^4}+\frac{15a^2b^4}{x^3}+\frac{6ab^5}{x^2}+\ldots\right.\\
&= -\frac{a^6B}{6x^6}-\frac{6a^5bB}{5x^5}-\frac{15a^4b^2B}{4x^4}-\frac{20a^3b^3B}{3x^3}-\frac{15a^2b^4B}{2x^2}-\frac{6ab^5B}{x}-\frac{A(a+bx)^7}{7ax^7}+\ldots
\end{aligned}$$

Mathematica [A] time = 0.05, size = 132, normalized size = 1.31

$$-\frac{a^6(6A+7Bx)}{42x^7}-\frac{a^5b(5A+6Bx)}{5x^6}-\frac{3a^4b^2(4A+5Bx)}{4x^5}-\frac{5a^3b^3(3A+4Bx)}{3x^4}-\frac{5a^2b^4(2A+3Bx)}{2x^3}-\frac{3ab^5(A+2Bx)}{x^2}-\frac{Ab^6}{x}+b^6B\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^8,x]
```

```
[Out] -((A*b^6)/x) - (3*a*b^5*(A + 2*B*x))/x^2 - (5*a^2*b^4*(2*A + 3*B*x))/(2*x^3
) - (5*a^3*b^3*(3*A + 4*B*x))/(3*x^4) - (3*a^4*b^2*(4*A + 5*B*x))/(4*x^5) -
 (a^5*b*(5*A + 6*B*x))/(5*x^6) - (a^6*(6*A + 7*B*x))/(42*x^7) + b^6*B*Log[x
]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^8, x]
```

fricas [A] time = 0.42, size = 149, normalized size = 1.48

$$\frac{420\,Bb^6x^7\log(x)-60\,Aa^6-420\left(6\,Bab^5+Ab^6\right)x^6-630\left(5\,Ba^2b^4+2\,Aab^5\right)x^5-700\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4-525\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-252\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-70\left(Ba^6+6\,Aa^5b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x, algorithm="fricas")
```

```
[Out] 1/420*(420*B*b^6*x^7*log(x) - 60*A*a^6 - 420*(6*B*a*b^5 + A*b^6)*x^6 - 630*
(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 - 700*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 525*(
3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 - 252*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 70*(B*
a^6 + 6*A*a^5*b)*x)/x^7
```

giac [A] time = 0.17, size = 147, normalized size = 1.46

$$Bb^6\log\left(|x|\right)-\frac{60\,Aa^6+420\left(6\,Bab^5+Ab^6\right)x^6+630\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+700\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+525\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+252\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+70\left(Ba^6+6\,Aa^5b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x, algorithm="giac")
```

```
[Out] B*b^6*log(abs(x)) - 1/420*(60*A*a^6 + 420*(6*B*a*b^5 + A*b^6)*x^6 + 630*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 700*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 525*(3*B
*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 252*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 70*(B*a^6
 + 6*A*a^5*b)*x)/x^7
```

maple [A] time = 0.06, size = 148, normalized size = 1.47

$$B\,b^6\ln(x)-\frac{A\,b^6}{x}-\frac{6Ba\,b^5}{x}-\frac{3Aa\,b^5}{x^2}-\frac{15B\,a^2b^4}{2x^2}-\frac{5A\,a^2b^4}{x^3}-\frac{20B\,a^3b^3}{3x^3}-\frac{5A\,a^3b^3}{x^4}-\frac{15B\,a^4b^2}{4x^4}-\frac{3A\,a^4b^2}{x^5}-\frac{6B\,a^5b}{5x^5}-\frac{A\,a^5b}{x^6}-\frac{B\,a^6}{6x^6}-\frac{A\,a^6}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x)
```

```
[Out] -3*a^4*b^2/x^5*A-6/5*a^5*b*B/x^5-5*a^3*b^3/x^4*A-15/4*a^4*b^2*B/x^4-5*a^2*b
^4/x^3*A-20/3*a^3*b^3*B/x^3-3*a*b^5/x^2*A-15/2*a^2*b^4*B/x^2-1/7*A*a^6/x^7-
a^5/x^6*A*b-1/6*a^6*B/x^6-b^6/x*A-6*a*b^5*B/x+b^6*B*ln(x)
```

maxima [A] time = 0.65, size = 146, normalized size = 1.45

$$Bb^6 \log(x) - \frac{60\, Aa^6 + 420\left(6\, Bab^5 + Ab^6\right)x^6 + 630\left(5\, Ba^2b^4 + 2\, Aab^5\right)x^5 + 700\left(4\, Ba^3b^3 + 3\, Aa^2b^4\right)x^4 + 525\left(3\, Ba^4b^2 + 4\, Aa^3b^3\right)x^3 + 252\left(2\, Ba^5b + 5\, Aa^4b^2\right)x^2 + 70\left(Ba^6 + 6\, Aa^5b\right)x}{420\, x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x, algorithm="maxima")
```

```
[Out] B*b^6*log(x) - 1/420*(60*A*a^6 + 420*(6*B*a*b^5 + A*b^6)*x^6 + 630*(5*B*a^2
*b^4 + 2*A*a*b^5)*x^5 + 700*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 525*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*x^3 + 252*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 70*(B*a^6 + 6*
A*a^5*b)*x)/x^7
```

mupad [B] time = 1.10, size = 140, normalized size = 1.39

$$B\, b^6\, \ln(x) - \frac{x\left(\frac{B\, a^6}{6} + A\, b\, a^5\right) + \frac{A\, a^6}{7} + x^2\left(\frac{6\, B\, a^5\, b}{5} + 3\, A\, a^4\, b^2\right) + x^5\left(\frac{15\, B\, a^2\, b^4}{2} + 3\, A\, a\, b^5\right) + x^6\left(A\, b^6 + 6\, B\, a\, b^5\right) + x^3\left(\frac{15\, B\, a^4\, b^2}{4} + 5\, A\, a^3\, b^3\right) + x^4\left(\frac{20\, B\, a^3\, b^3}{3} + 5\, A\, a^2\, b^4\right)}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^8,x)
```

```
[Out] B*b^6*log(x) - (x*((B*a^6)/6 + A*a^5*b) + (A*a^6)/7 + x^2*(3*A*a^4*b^2 + (6
*B*a^5*b)/5) + x^5*((15*B*a^2*b^4)/2 + 3*A*a*b^5) + x^6*(A*b^6 + 6*B*a*b^5)
 + x^3*(5*A*a^3*b^3 + (15*B*a^4*b^2)/4) + x^4*(5*A*a^2*b^4 + (20*B*a^3*b^3)
/3))/x^7
```

sympy [A] time = 4.37, size = 156, normalized size = 1.54

$$Bb^6 \log(x) + \frac{-60Aa^6 + x^6\left(-420Ab^6 - 2520Bab^5\right) + x^5\left(-1260Aab^5 - 3150Ba^2b^4\right) + x^4\left(-2100Aa^2b^4 - 2800Ba^3b^3\right) + x^3\left(-2100Aa^3b^3 - 1575Ba^4b^2\right) + x^2\left(-1260Aa^4b^2 - 504Ba^5b\right) + x\left(-420Aa^5b - 70Ba^6\right)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**8,x)
```

```
[Out] B*b**6*log(x) + (-60*A*a**6 + x**6*(-420*A*b**6 - 2520*B*a*b**5) + x**5*(-1
260*A*a*b**5 - 3150*B*a**2*b**4) + x**4*(-2100*A*a**2*b**4 - 2800*B*a**3*b*
*3) + x**3*(-2100*A*a**3*b**3 - 1575*B*a**4*b**2) + x**2*(-1260*A*a**4*b**2
 - 504*B*a**5*b) + x*(-420*A*a**5*b - 70*B*a**6))/(420*x**7)
```

3.480 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^9}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)^7(Ab-8aB)}{56a^2x^7}-\frac{A(a+bx)^7}{8ax^8}$$

Rubi [A] time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 37}

$$\frac{(a+bx)^7(Ab-8aB)}{56a^2x^7}-\frac{A(a+bx)^7}{8ax^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^9,x]
```

```
[Out] -(A*(a + b*x)^7)/(8*a*x^8) + ((A*b - 8*a*B)*(a + b*x)^7)/(56*a^2*x^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^9}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^9}\,dx\\ &= -\frac{A(a+bx)^7}{8ax^8}+\frac{(-Ab+8aB)\int \frac{(a+bx)^6}{x^8}\,dx}{8a}\\ &= -\frac{A(a+bx)^7}{8ax^8}+\frac{(Ab-8aB)(a+bx)^7}{56a^2x^7}\end{aligned}$$

Mathematica [B] time = 0.03, size = 123, normalized size = 2.80

$$-\frac{a^6(7A+8Bx)+8a^5bx(6A+7Bx)+28a^4b^2x^2(5A+6Bx)+56a^3b^3x^3(4A+5Bx)+70a^2b^4x^4(3A+4Bx)+56ab^5x^5(2A+3Bx)+28b^6x^6(A+2Bx)}{56x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^9,x]
```

```
[Out] -1/56*(28*b^6*x^6*(A + 2*B*x) + 56*a*b^5*x^5*(2*A + 3*B*x) + 70*a^2*b^4*x^4
*(3*A + 4*B*x) + 56*a^3*b^3*x^3*(4*A + 5*B*x) + 28*a^4*b^2*x^2*(5*A + 6*B*x
) + 8*a^5*b*x*(6*A + 7*B*x) + a^6*(7*A + 8*B*x))/x^8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^9, x]
```

fricas [B] time = 0.39, size = 147, normalized size = 3.34

$$-\frac{56\,Bb^6x^7+7\,Aa^6+28\left(6\,Bab^5+Ab^6\right)x^6+56\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+70\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+56\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+28\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+8\left(Ba^6+6\,Aa^5b\right)x}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x, algorithm="fricas")
```

```
[Out] -1/56*(56*B*b^6*x^7 + 7*A*a^6 + 28*(6*B*a*b^5 + A*b^6)*x^6 + 56*(5*B*a^2*b^
4 + 2*A*a*b^5)*x^5 + 70*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 56*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^3 + 28*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 8*(B*a^6 + 6*A*a^5*b
)*x)/x^8
```

giac [B] time = 0.15, size = 147, normalized size = 3.34

$$-\frac{56\,Bb^6x^7+168\,Bab^5x^6+28\,Ab^6x^6+280\,Ba^2b^4x^5+112\,Aab^5x^5+280\,Ba^3b^3x^4+210\,Aa^2b^4x^4+168\,Ba^4b^2x^3+224\,Aa^3b^3x^3+56\,Ba^5bx^2+140\,Aa^4b^2x^2+8\,Ba^6x+48\,Aa^5bx+7\,Aa^6}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x, algorithm="giac")
```

```
[Out] -1/56*(56*B*b^6*x^7 + 168*B*a*b^5*x^6 + 28*A*b^6*x^6 + 280*B*a^2*b^4*x^5 +
112*A*a*b^5*x^5 + 280*B*a^3*b^3*x^4 + 210*A*a^2*b^4*x^4 + 168*B*a^4*b^2*x^3
 + 224*A*a^3*b^3*x^3 + 56*B*a^5*b*x^2 + 140*A*a^4*b^2*x^2 + 8*B*a^6*x + 48*
A*a^5*b*x + 7*A*a^6)/x^8
```

maple [B] time = 0.05, size = 128, normalized size = 2.91

$$-\frac{B\,b^6}{x}-\frac{(Ab+6Ba)\,b^5}{2x^2}-\frac{(2Ab+5Ba)\,a\,b^4}{x^3}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{4x^4}-\frac{(4Ab+3Ba)\,a^3b^2}{x^5}-\frac{A\,a^6}{8x^8}-\frac{(5Ab+2Ba)\,a^4b}{2x^6}-\frac{(6Ab+Ba)\,a^5}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x)
```

```
[Out] -a^3*b^2*(4*A*b+3*B*a)/x^5-5/4*a^2*b^3*(3*A*b+4*B*a)/x^4-a*b^4*(2*A*b+5*B*a
)/x^3-1/8*A*a^6/x^8-1/2*b^5*(A*b+6*B*a)/x^2-1/7*a^5*(6*A*b+B*a)/x^7-1/2*a^4
*b*(5*A*b+2*B*a)/x^6-B*b^6/x
```

maxima [B] time = 0.54, size = 147, normalized size = 3.34

$$-\frac{56\,Bb^6x^7+7\,Aa^6+28\left(6\,Bab^5+Ab^6\right)x^6+56\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+70\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+56\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+28\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+8\left(Ba^6+6\,Aa^5b\right)x}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x, algorithm="maxima")
```

```
[Out] -1/56*(56*B*b^6*x^7 + 7*A*a^6 + 28*(6*B*a*b^5 + A*b^6)*x^6 + 56*(5*B*a^2*b^
4 + 2*A*a*b^5)*x^5 + 70*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 56*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^3 + 28*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 8*(B*a^6 + 6*A*a^5*b
)*x)/x^8
```

mupad [B] time = 1.09, size = 141, normalized size = 3.20

$$-\frac{x\left(\frac{B a^6}{7}+\frac{6 A b a^5}{7}\right)+\frac{A a^6}{8}+x^2\left(B a^5 b+\frac{5 A a^4 b^2}{2}\right)+x^5\left(5 B a^2 b^4+2 A a b^5\right)+x^6\left(\frac{A b^6}{2}+3 B a b^5\right)+x^3\left(3 B a^4 b^2+4 A a^3 b^3\right)+x^4\left(5 B a^3 b^3+\frac{15 A a^2 b^4}{4}\right)+B b^6 x^7}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^9,x)
```

```
[Out] -(x*((B*a^6)/7 + (6*A*a^5*b)/7) + (A*a^6)/8 + x^2*((5*A*a^4*b^2)/2 + B*a^5*
b) + x^5*(5*B*a^2*b^4 + 2*A*a*b^5) + x^6*((A*b^6)/2 + 3*B*a*b^5) + x^3*(4*A
*a^3*b^3 + 3*B*a^4*b^2) + x^4*((15*A*a^2*b^4)/4 + 5*B*a^3*b^3) + B*b^6*x^7)
/x^8
```

sympy [B] time = 5.52, size = 158, normalized size = 3.59

$$\frac{-7Aa^6-56Bb^6x^7+x^6\left(-28Ab^6-168Bab^5\right)+x^5\left(-112Aab^5-280Ba^2b^4\right)+x^4\left(-210Aa^2b^4-280Ba^3b^3\right)+x^3\left(-224Aa^3b^3-168Ba^4b^2\right)+x^2\left(-140Aa^4b^2-56Ba^5b\right)+x\left(-48Aa^5b-8Ba^6\right)}{56x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**9,x)
```

```
[Out] (-7*A*a**6 - 56*B*b**6*x**7 + x**6*(-28*A*b**6 - 168*B*a*b**5) + x**5*(-112
*A*a*b**5 - 280*B*a**2*b**4) + x**4*(-210*A*a**2*b**4 - 280*B*a**3*b**3) +
x**3*(-224*A*a**3*b**3 - 168*B*a**4*b**2) + x**2*(-140*A*a**4*b**2 - 56*B*a
**5*b) + x*(-48*A*a**5*b - 8*B*a**6))/(56*x**8)
```

3.481 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{10}}\,dx$

Optimal. Leaf size=72

$$-\frac{b(a+bx)^7(2Ab-9aB)}{504a^3x^7}+\frac{(a+bx)^7(2Ab-9aB)}{72a^2x^8}-\frac{A(a+bx)^7}{9ax^9}$$

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {27, 78, 45, 37}

$$-\frac{b(a+bx)^7(2Ab-9aB)}{504a^3x^7}+\frac{(a+bx)^7(2Ab-9aB)}{72a^2x^8}-\frac{A(a+bx)^7}{9ax^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^10,x]
```

```
[Out] -(A*(a + b*x)^7)/(9*a*x^9) + ((2*A*b - 9*a*B)*(a + b*x)^7)/(72*a^2*x^8) - (
b*(2*A*b - 9*a*B)*(a + b*x)^7)/(504*a^3*x^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{10}}\,dx=\int \frac{(a+bx)^6(A+Bx)}{x^{10}}\,dx$$
$$=-\frac{A(a+bx)^7}{9ax^9}+\frac{(-2Ab+9aB)\int \frac{(a+bx)^6}{x^9}\,dx}{9a}$$
$$=-\frac{A(a+bx)^7}{9ax^9}+\frac{(2Ab-9aB)(a+bx)^7}{72a^2x^8}+\frac{(b(2Ab-9aB))\int \frac{(a+bx)^6}{x^8}\,dx}{72a^2}$$
$$=-\frac{A(a+bx)^7}{9ax^9}+\frac{(2Ab-9aB)(a+bx)^7}{72a^2x^8}-\frac{b(2Ab-9aB)(a+bx)^7}{504a^3x^7}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 1.75

$$-\frac{7a^6(8A+9Bx)+54a^5bx(7A+8Bx)+180a^4b^2x^2(6A+7Bx)+336a^3b^3x^3(5A+6Bx)+378a^2b^4x^4(4A+5Bx)+252ab^5x^5(3A+4Bx)+84b^6x^6(2A+3Bx)}{504x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^10,x]
```

```
[Out] -1/504*(84*b^6*x^6*(2*A + 3*B*x) + 252*a*b^5*x^5*(3*A + 4*B*x) + 378*a^2*b^
4*x^4*(4*A + 5*B*x) + 336*a^3*b^3*x^3*(5*A + 6*B*x) + 180*a^4*b^2*x^2*(6*A
+ 7*B*x) + 54*a^5*b*x*(7*A + 8*B*x) + 7*a^6*(8*A + 9*B*x))/x^9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^10,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^10, x]
```

fricas [B] time = 0.39, size = 147, normalized size = 2.04

$$-\frac{252\,Bb^6x^7+56\,Aa^6+168\left(6\,Bab^5+Ab^6\right)x^6+378\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+504\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+420\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+216\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+63\left(Ba^6+6\,Aa^5b\right)x}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x, algorithm="fricas")
```

```
[Out] -1/504*(252*B*b^6*x^7 + 56*A*a^6 + 168*(6*B*a*b^5 + A*b^6)*x^6 + 378*(5*B*a
^2*b^4 + 2*A*a*b^5)*x^5 + 504*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 420*(3*B*a^
4*b^2 + 4*A*a^3*b^3)*x^3 + 216*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 63*(B*a^6 +
6*A*a^5*b)*x)/x^9
```

giac [B] time = 0.18, size = 147, normalized size = 2.04

$$-\frac{252\,Bb^6x^7+1008\,Bab^5x^6+168\,Ab^6x^6+1890\,Ba^2b^4x^5+756\,Aab^5x^5+2016\,Ba^3b^3x^4+1512\,Aa^2b^4x^4+1260\,Ba^4b^2x^3+1680\,Aa^3b^3x^3+432\,Ba^5bx^2+1080\,Aa^4b^2x^2+63\,Ba^6x+378\,Aa^5bx+56\,Aa^6}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(252*B*b^6*x^7 + 1008*B*a*b^5*x^6 + 168*A*b^6*x^6 + 1890*B*a^2*b^4*x
^5 + 756*A*a*b^5*x^5 + 2016*B*a^3*b^3*x^4 + 1512*A*a^2*b^4*x^4 + 1260*B*a^4
*b^2*x^3 + 1680*A*a^3*b^3*x^3 + 432*B*a^5*b*x^2 + 1080*A*a^4*b^2*x^2 + 63*B
*a^6*x + 378*A*a^5*b*x + 56*A*a^6)/x^9
```

maple [A] time = 0.06, size = 128, normalized size = 1.78

$$-\frac{B\,b^{6}}{2x^{2}}-\frac{(Ab+6Ba)\,b^{5}}{3x^{3}}-\frac{3\,(2Ab+5Ba)\,a\,b^{4}}{4x^{4}}-\frac{(3Ab+4Ba)\,a^{2}b^{3}}{x^{5}}-\frac{5\,(4Ab+3Ba)\,a^{3}b^{2}}{6x^{6}}-\frac{A\,a^{6}}{9x^{9}}-\frac{3\,(5Ab+2Ba)\,a^{4}b}{7x^{7}}-\frac{(6Ab+Ba)\,a^{5}}{8x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x)
```

```
[Out] -a^2*b^3*(3*A*b+4*B*a)/x^5-3/4*a*b^4*(2*A*b+5*B*a)/x^4-1/3*b^5*(A*b+6*B*a)/
x^3-1/8*a^5*(6*A*b+B*a)/x^8-1/2*B*b^6/x^2-1/9*A*a^6/x^9-3/7*a^4*b*(5*A*b+2*
B*a)/x^7-5/6*a^3*b^2*(4*A*b+3*B*a)/x^6
```

maxima [B] time = 0.56, size = 147, normalized size = 2.04

$$-\frac{252\,Bb^{6}x^{7}+56\,Aa^{6}+168\left(6\,Bab^{5}+Ab^{6}\right)x^{6}+378\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{5}+504\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{4}+420\left(3\,Ba^{4}b^{2}+4\,Aa^{3}b^{3}\right)x^{3}+216\left(2\,Ba^{5}b+5\,Aa^{4}b^{2}\right)x^{2}+63\left(Ba^{6}+6\,Aa^{5}b\right)x}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x, algorithm="maxima")
```

```
[Out] -1/504*(252*B*b^6*x^7 + 56*A*a^6 + 168*(6*B*a*b^5 + A*b^6)*x^6 + 378*(5*B*a
^2*b^4 + 2*A*a*b^5)*x^5 + 504*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 420*(3*B*a^
4*b^2 + 4*A*a^3*b^3)*x^3 + 216*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 63*(B*a^6 +
6*A*a^5*b)*x)/x^9
```

mupad [B] time = 0.07, size = 143, normalized size = 1.99

$$-\frac{x\left(\frac{B\,a^{6}}{8}+\frac{3\,A\,b\,a^{5}}{4}\right)+\frac{A\,a^{6}}{9}+x^{5}\left(\frac{15\,B\,a^{2}\,b^{4}}{4}+\frac{3\,A\,a\,b^{5}}{2}\right)+x^{2}\left(\frac{6\,B\,a^{5}\,b}{7}+\frac{15\,A\,a^{4}\,b^{2}}{7}\right)+x^{6}\left(\frac{A\,b^{6}}{3}+2\,B\,a\,b^{5}\right)+x^{4}\left(4\,B\,a^{3}\,b^{3}+3\,A\,a^{2}\,b^{4}\right)+x^{3}\left(\frac{5\,B\,a^{4}\,b^{2}}{2}+\frac{10\,A\,a^{3}\,b^{3}}{3}\right)+\frac{B\,b^{6}\,x^{7}}{2}}{x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^10,x)
```

```
[Out] -(x*((B*a^6)/8 + (3*A*a^5*b)/4) + (A*a^6)/9 + x^5*((15*B*a^2*b^4)/4 + (3*A*
a*b^5)/2) + x^2*((15*A*a^4*b^2)/7 + (6*B*a^5*b)/7) + x^6*((A*b^6)/3 + 2*B*a
*b^5) + x^4*(3*A*a^2*b^4 + 4*B*a^3*b^3) + x^3*((10*A*a^3*b^3)/3 + (5*B*a^4*
b^2)/2) + (B*b^6*x^7)/2)/x^9
```

sympy [B] time = 6.88, size = 158, normalized size = 2.19

$$\frac{-56Aa^{6}-252Bb^{6}x^{7}+x^{6}\left(-168Ab^{6}-1008Bab^{5}\right)+x^{5}\left(-756Aab^{5}-1890Ba^{2}b^{4}\right)+x^{4}\left(-1512Aa^{2}b^{4}-2016Ba^{3}b^{3}\right)+x^{3}\left(-1680Aa^{3}b^{3}-1260Ba^{4}b^{2}\right)+x^{2}\left(-1080Aa^{4}b^{2}-432Ba^{5}b\right)+x\left(-378Aa^{5}b-63Ba^{6}\right)}{504x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**10,x)
```

```
[Out] (-56*A*a**6 - 252*B*b**6*x**7 + x**6*(-168*A*b**6 - 1008*B*a*b**5) + x**5*(
-756*A*a*b**5 - 1890*B*a**2*b**4) + x**4*(-1512*A*a**2*b**4 - 2016*B*a**3*b
**3) + x**3*(-1680*A*a**3*b**3 - 1260*B*a**4*b**2) + x**2*(-1080*A*a**4*b**
2 - 432*B*a**5*b) + x*(-378*A*a**5*b - 63*B*a**6))/(504*x**9)
```

3.482 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11}} dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{10x^{10}}-\frac{a^5(aB+6Ab)}{9x^9}-\frac{3a^4b(2aB+5Ab)}{8x^8}-\frac{5a^3b^2(3aB+4Ab)}{7x^7}-\frac{5a^2b^3(4aB+3Ab)}{6x^6}-\frac{b^5(6aB+Ab)}{4x^4}-\frac{3ab^4(5aB}{5x}$$

Rubi [A] time = 0.08, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{7x^7}-\frac{5a^2b^3(4aB+3Ab)}{6x^6}-\frac{a^5(aB+6Ab)}{9x^9}-\frac{3a^4b(2aB+5Ab)}{8x^8}-\frac{a^6A}{10x^{10}}-\frac{3ab^4(5aB+2Ab)}{5x^5}-\frac{b^5(6aB+Ab)}{4x^4}-\frac{b^6B}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^11,x]
```

```
[Out] -(a^6*A)/(10*x^10) - (a^5*(6*A*b + a*B))/(9*x^9) - (3*a^4*b*(5*A*b + 2*a*B)
)/(8*x^8) - (5*a^3*b^2*(4*A*b + 3*a*B))/(7*x^7) - (5*a^2*b^3*(3*A*b + 4*a*B
))/(6*x^6) - (3*a*b^4*(2*A*b + 5*a*B))/(5*x^5) - (b^5*(A*b + 6*a*B))/(4*x^4
) - (b^6*B)/(3*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11}} dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{11}} dx \\
&= \int \left(\frac{a^6A}{x^{11}}+\frac{a^5(6Ab+aB)}{x^{10}}+\frac{3a^4b(5Ab+2aB)}{x^9}+\frac{5a^3b^2(4Ab+3aB)}{x^8}+\right. \\
&= -\frac{a^6A}{10x^{10}}-\frac{a^5(6Ab+aB)}{9x^9}-\frac{3a^4b(5Ab+2aB)}{8x^8}-\frac{5a^3b^2(4Ab+3aB)}{7x^7}-
\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{28a^6(9A+10Bx)+210a^5bx(8A+9Bx)+675a^4b^2x^2(7A+8Bx)+1200a^3b^3x^3(6A+7Bx)+1260a^2b^4x^4(5A+6Bx)+756ab^5x^5(4A+5Bx)+210b^6x^6(3A+4Bx)}{2520x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^11,x]
```

```
[Out] -1/2520*(210*b^6*x^6*(3*A + 4*B*x) + 756*a*b^5*x^5*(4*A + 5*B*x) + 1260*a^2
*b^4*x^4*(5*A + 6*B*x) + 1200*a^3*b^3*x^3*(6*A + 7*B*x) + 675*a^4*b^2*x^2*(
7*A + 8*B*x) + 210*a^5*b*x*(8*A + 9*B*x) + 28*a^6*(9*A + 10*B*x))/x^10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^11, x]
```

fricas [A] time = 0.39, size = 147, normalized size = 1.03

$$-\frac{840\,Bb^6x^7+252\,Aa^6+630\left(6\,Bab^5+Ab^6\right)x^6+1512\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+2100\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+1800\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+945\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+280\left(Ba^6+6\,Aa^5b\right)x}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*b^6*x^7 + 252*A*a^6 + 630*(6*B*a*b^5 + A*b^6)*x^6 + 1512*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 2100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1800*(3
*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 945*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 280*(B*
a^6 + 6*A*a^5*b)*x)/x^10
```

giac [A] time = 0.16, size = 147, normalized size = 1.03

$$-\frac{840\,Bb^6x^7+3780\,Bab^5x^6+630\,Ab^6x^6+7560\,Ba^2b^4x^5+3024\,Aab^5x^5+8400\,Ba^3b^3x^4+6300\,Aa^2b^4x^4+5400\,Ba^4b^2x^3+7200\,Aa^3b^3x^3+1890\,Ba^5bx^2+4725\,Aa^4b^2x^2+280\,Ba^6x+1680\,Aa^5bx+252\,Aa^6}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*b^6*x^7 + 3780*B*a*b^5*x^6 + 630*A*b^6*x^6 + 7560*B*a^2*b^4*
x^5 + 3024*A*a*b^5*x^5 + 8400*B*a^3*b^3*x^4 + 6300*A*a^2*b^4*x^4 + 5400*B*a
^4*b^2*x^3 + 7200*A*a^3*b^3*x^3 + 1890*B*a^5*b*x^2 + 4725*A*a^4*b^2*x^2 + 2
80*B*a^6*x + 1680*A*a^5*b*x + 252*A*a^6)/x^10
```

maple [A] time = 0.06, size = 128, normalized size = 0.90

$$-\frac{B\,b^6}{3x^3}-\frac{(Ab+6Ba)\,b^5}{4x^4}-\frac{3\,(2Ab+5Ba)\,a\,b^4}{5x^5}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{6x^6}-\frac{5\,(4Ab+3Ba)\,a^3b^2}{7x^7}-\frac{A\,a^6}{10x^{10}}-\frac{3\,(5Ab+2Ba)\,a^4b}{8x^8}-\frac{(6Ab+Ba)\,a^5}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x)
```

```
[Out] -1/10*a^6*A/x^10-1/9*a^5*(6*A*b+B*a)/x^9-3/8*a^4*b*(5*A*b+2*B*a)/x^8-5/7*a^
3*b^2*(4*A*b+3*B*a)/x^7-5/6*a^2*b^3*(3*A*b+4*B*a)/x^6-3/5*a*b^4*(2*A*b+5*B*
a)/x^5-1/4*b^5*(A*b+6*B*a)/x^4-1/3*b^6*B/x^3
```

maxima [A] time = 0.58, size = 147, normalized size = 1.03

$$-\frac{840\,Bb^6x^7+252\,Aa^6+630\left(6\,Bab^5+Ab^6\right)x^6+1512\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+2100\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+1800\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+945\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+280\left(Ba^6+6\,Aa^5b\right)x}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*b^6*x^7 + 252*A*a^6 + 630*(6*B*a*b^5 + A*b^6)*x^6 + 1512*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 2100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1800*(3
*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 945*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 280*(B*
a^6 + 6*A*a^5*b)*x)/x^10
```

mupad [B] time = 0.07, size = 143, normalized size = 1.00

$$-\frac{x\left(\frac{B\,a^6}{9}+\frac{2\,A\,b\,a^5}{3}\right)+\frac{A\,a^6}{10}+x^5\left(3\,B\,a^2\,b^4+\frac{6\,A\,a\,b^5}{5}\right)+x^2\left(\frac{3\,B\,a^5\,b}{4}+\frac{15\,A\,a^4\,b^2}{8}\right)+x^6\left(\frac{A\,b^6}{4}+\frac{3\,B\,a\,b^5}{2}\right)+x^4\left(\frac{10\,B\,a^3\,b^3}{3}+\frac{5\,A\,a^2\,b^4}{2}\right)+x^3\left(\frac{15\,B\,a^4\,b^2}{7}+\frac{20\,A\,a^3\,b^3}{7}\right)+\frac{B\,b^6\,x^7}{3}}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^11,x)
```

```
[Out] -(x*((B*a^6)/9 + (2*A*a^5*b)/3) + (A*a^6)/10 + x^5*(3*B*a^2*b^4 + (6*A*a*b^
5)/5) + x^2*((15*A*a^4*b^2)/8 + (3*B*a^5*b)/4) + x^6*((A*b^6)/4 + (3*B*a*b^
5)/2) + x^4*((5*A*a^2*b^4)/2 + (10*B*a^3*b^3)/3) + x^3*((20*A*a^3*b^3)/7 +
(15*B*a^4*b^2)/7) + (B*b^6*x^7)/3)/x^10
```

sympy [A] time = 9.00, size = 158, normalized size = 1.10

$$\frac{-252Aa^6-840Bb^6x^7+x^6\left(-630Ab^6-3780Bab^5\right)+x^5\left(-3024Aab^5-7560Ba^2b^4\right)+x^4\left(-6300Aa^2b^4-8400Ba^3b^3\right)+x^3\left(-7200Aa^3b^3-5400Ba^4b^2\right)+x^2\left(-4725Aa^4b^2-1890Ba^5b\right)+x\left(-1680Aa^5b-280Ba^6\right)}{2520x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**11,x)
```

```
[Out] (-252*A*a**6 - 840*B*b**6*x**7 + x**6*(-630*A*b**6 - 3780*B*a*b**5) + x**5*
(-3024*A*a*b**5 - 7560*B*a**2*b**4) + x**4*(-6300*A*a**2*b**4 - 8400*B*a**3
*b**3) + x**3*(-7200*A*a**3*b**3 - 5400*B*a**4*b**2) + x**2*(-4725*A*a**4*b
**2 - 1890*B*a**5*b) + x*(-1680*A*a**5*b - 280*B*a**6))/(2520*x**10)
```

3.483 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{12}}\,dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{11x^{11}}-\frac{a^5(aB+6Ab)}{10x^{10}}-\frac{a^4b(2aB+5Ab)}{3x^9}-\frac{5a^3b^2(3aB+4Ab)}{8x^8}-\frac{5a^2b^3(4aB+3Ab)}{7x^7}-\frac{b^5(6aB+Ab)}{5x^5}-\frac{ab^4(5aB+2A}{2x^6}$$

Rubi [A] time = 0.07, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{8x^8}-\frac{5a^2b^3(4aB+3Ab)}{7x^7}-\frac{a^5(aB+6Ab)}{10x^{10}}-\frac{a^4b(2aB+5Ab)}{3x^9}-\frac{a^6A}{11x^{11}}-\frac{ab^4(5aB+2Ab)}{2x^6}-\frac{b^5(6aB+Ab)}{5x^5}-\frac{b^6B}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^12,x]
```

```
[Out] -(a^6*A)/(11*x^11) - (a^5*(6*A*b + a*B))/(10*x^10) - (a^4*b*(5*A*b + 2*a*B)
)/(3*x^9) - (5*a^3*b^2*(4*A*b + 3*a*B))/(8*x^8) - (5*a^2*b^3*(3*A*b + 4*a*B
))/(7*x^7) - (a*b^4*(2*A*b + 5*a*B))/(2*x^6) - (b^5*(A*b + 6*a*B))/(5*x^5)
- (b^6*B)/(4*x^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{12}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{12}}\,dx\\ &= \int \left(\frac{a^6A}{x^{12}}+\frac{a^5(6Ab+aB)}{x^{11}}+\frac{3a^4b(5Ab+2aB)}{x^{10}}+\frac{5a^3b^2(4Ab+3aB)}{x^9}+\frac{5a^2}{}\right.\\ &= -\frac{a^6A}{11x^{11}}-\frac{a^5(6Ab+aB)}{10x^{10}}-\frac{a^4b(5Ab+2aB)}{3x^9}-\frac{5a^3b^2(4Ab+3aB)}{8x^8}-\frac{5a^2b^3(}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{84a^6(10A+11Bx)+616a^5bx(9A+10Bx)+1925a^4b^2x^2(8A+9Bx)+3300a^3b^3x^3(7A+8Bx)+3300a^2b^4x^4(6A+7Bx)+1848ab^5x^5(5A+6Bx)+462b^6x^6(4A+5Bx)}{9240x^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^12,x]
```

```
[Out] -1/9240*(462*b^6*x^6*(4*A + 5*B*x) + 1848*a*b^5*x^5*(5*A + 6*B*x) + 3300*a^
2*b^4*x^4*(6*A + 7*B*x) + 3300*a^3*b^3*x^3*(7*A + 8*B*x) + 1925*a^4*b^2*x^2
*(8*A + 9*B*x) + 616*a^5*b*x*(9*A + 10*B*x) + 84*a^6*(10*A + 11*B*x))/x^11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{12}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^12,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^12, x]
```

fricas [A] time = 0.39, size = 147, normalized size = 1.03

$$-\frac{2310\,Bb^6x^7+840\,Aa^6+1848\,\left(6\,Bab^5+Ab^6\right)x^6+4620\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+6600\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+5775\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+3080\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+924\,\left(Ba^6+6\,Aa^5b\right)x}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x, algorithm="fricas")
```

```
[Out] -1/9240*(2310*B*b^6*x^7 + 840*A*a^6 + 1848*(6*B*a*b^5 + A*b^6)*x^6 + 4620*(
5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 6600*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5775*
(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 3080*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 924*
(B*a^6 + 6*A*a^5*b)*x)/x^11
```

giac [A] time = 0.19, size = 147, normalized size = 1.03

$$-\frac{2310\,Bb^6x^7+11088\,Bab^5x^6+1848\,Ab^6x^6+23100\,Ba^2b^4x^5+9240\,Aab^5x^5+26400\,Ba^3b^3x^4+19800\,Aa^2b^4x^4+17325\,Ba^4b^2x^3+23100\,Aa^3b^3x^3+6160\,Ba^5bx^2+15400\,Aa^4b^2x^2+924\,Ba^6x+5544\,Aa^5bx+840\,Aa^6}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x, algorithm="giac")
```

```
[Out] -1/9240*(2310*B*b^6*x^7 + 11088*B*a*b^5*x^6 + 1848*A*b^6*x^6 + 23100*B*a^2*
b^4*x^5 + 9240*A*a*b^5*x^5 + 26400*B*a^3*b^3*x^4 + 19800*A*a^2*b^4*x^4 + 17
325*B*a^4*b^2*x^3 + 23100*A*a^3*b^3*x^3 + 6160*B*a^5*b*x^2 + 15400*A*a^4*b^
2*x^2 + 924*B*a^6*x + 5544*A*a^5*b*x + 840*A*a^6)/x^11
```

maple [A] time = 0.05, size = 128, normalized size = 0.90

$$-\frac{B\,b^6}{4x^4}-\frac{(Ab+6Ba)\,b^5}{5x^5}-\frac{(2Ab+5Ba)\,a\,b^4}{2x^6}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{7x^7}-\frac{5\,(4Ab+3Ba)\,a^3b^2}{8x^8}-\frac{A\,a^6}{11x^{11}}-\frac{(5Ab+2Ba)\,a^4b}{3x^9}-\frac{(6Ab+Ba)\,a^5}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x)
```

```
[Out] -1/11*a^6*A/x^11-1/10*a^5*(6*A*b+B*a)/x^10-1/3*a^4*b*(5*A*b+2*B*a)/x^9-5/8*
a^3*b^2*(4*A*b+3*B*a)/x^8-5/7*a^2*b^3*(3*A*b+4*B*a)/x^7-1/2*a*b^4*(2*A*b+5*
B*a)/x^6-1/5*b^5*(A*b+6*B*a)/x^5-1/4*b^6*B/x^4
```

maxima [A] time = 0.57, size = 147, normalized size = 1.03

$$-\frac{2310\,Bb^6x^7+840\,Aa^6+1848\,\left(6\,Bab^5+Ab^6\right)x^6+4620\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+6600\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+5775\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+3080\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+924\,\left(Ba^6+6\,Aa^5b\right)x}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x, algorithm="maxima")
```

```
[Out] -1/9240*(2310*B*b^6*x^7 + 840*A*a^6 + 1848*(6*B*a*b^5 + A*b^6)*x^6 + 4620*(
5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 6600*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5775*
(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 3080*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 924*
(B*a^6 + 6*A*a^5*b)*x)/x^11
```

mupad [B] time = 1.08, size = 142, normalized size = 0.99

$$-\frac{x\,\left(\frac{B\,a^6}{10}+\frac{3\,A\,b\,a^5}{5}\right)+\frac{A\,a^6}{11}+x^5\,\left(\frac{5\,B\,a^2\,b^4}{2}+A\,a\,b^5\right)+x^2\,\left(\frac{2\,B\,a^5\,b}{3}+\frac{5\,A\,a^4\,b^2}{3}\right)+x^6\,\left(\frac{A\,b^6}{5}+\frac{6\,B\,a\,b^5}{5}\right)+x^3\,\left(\frac{15\,B\,a^4\,b^2}{8}+\frac{5\,A\,a^3\,b^3}{2}\right)+x^4\,\left(\frac{20\,B\,a^3\,b^3}{7}+\frac{15\,A\,a^2\,b^4}{7}\right)+\frac{B\,b^6\,x^7}{4}}{x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^12,x)
```

```
[Out] -(x*((B*a^6)/10 + (3*A*a^5*b)/5) + (A*a^6)/11 + x^5*((5*B*a^2*b^4)/2 + A*a*
b^5) + x^2*((5*A*a^4*b^2)/3 + (2*B*a^5*b)/3) + x^6*((A*b^6)/5 + (6*B*a*b^5)
/5) + x^3*((5*A*a^3*b^3)/2 + (15*B*a^4*b^2)/8) + x^4*((15*A*a^2*b^4)/7 + (2
0*B*a^3*b^3)/7) + (B*b^6*x^7)/4)/x^11
```

sympy [A] time = 11.11, size = 158, normalized size = 1.10

$$\frac{-840Aa^6-2310Bb^6x^7+x^6\left(-1848Ab^6-11088Bab^5\right)+x^5\left(-9240Aab^5-23100Ba^2b^4\right)+x^4\left(-19800Aa^2b^4-26400Ba^3b^3\right)+x^3\left(-23100Aa^3b^3-17325Ba^4b^2\right)+x^2\left(-15400Aa^4b^2-6160Ba^5b\right)+x\left(-5544Aa^5b-924Ba^6\right)}{9240x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**12,x)
```

```
[Out] (-840*A*a**6 - 2310*B*b**6*x**7 + x**6*(-1848*A*b**6 - 11088*B*a*b**5) + x*
*5*(-9240*A*a*b**5 - 23100*B*a**2*b**4) + x**4*(-19800*A*a**2*b**4 - 26400*
B*a**3*b**3) + x**3*(-23100*A*a**3*b**3 - 17325*B*a**4*b**2) + x**2*(-15400
*A*a**4*b**2 - 6160*B*a**5*b) + x*(-5544*A*a**5*b - 924*B*a**6))/(9240*x**1
1)
```

3.484 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{13}}\,dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{12x^{12}}-\frac{a^5(aB+6Ab)}{11x^{11}}-\frac{3a^4b(2aB+5Ab)}{10x^{10}}-\frac{5a^3b^2(3aB+4Ab)}{9x^9}-\frac{5a^2b^3(4aB+3Ab)}{8x^8}-\frac{b^5(6aB+Ab)}{6x^6}-\frac{3ab^4(5aB}{7x}$$

Rubi [A] time = 0.07, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{9x^9}-\frac{5a^2b^3(4aB+3Ab)}{8x^8}-\frac{a^5(aB+6Ab)}{11x^{11}}-\frac{3a^4b(2aB+5Ab)}{10x^{10}}-\frac{a^6A}{12x^{12}}-\frac{3ab^4(5aB+2Ab)}{7x^7}-\frac{b^5(6aB+Ab)}{6x^6}-\frac{b^6B}{5x^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^13,x]
```

```
[Out] -(a^6*A)/(12*x^12) - (a^5*(6*A*b + a*B))/(11*x^11) - (3*a^4*b*(5*A*b + 2*a*
B))/(10*x^10) - (5*a^3*b^2*(4*A*b + 3*a*B))/(9*x^9) - (5*a^2*b^3*(3*A*b + 4
*a*B))/(8*x^8) - (3*a*b^4*(2*A*b + 5*a*B))/(7*x^7) - (b^5*(A*b + 6*a*B))/(6
*x^6) - (b^6*B)/(5*x^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{13}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{13}}\,dx\\ &= \int \left(\frac{a^6A}{x^{13}}+\frac{a^5(6Ab+aB)}{x^{12}}+\frac{3a^4b(5Ab+2aB)}{x^{11}}+\frac{5a^3b^2(4Ab+3aB)}{x^{10}}+\right.\\ &= -\frac{a^6A}{12x^{12}}-\frac{a^5(6Ab+aB)}{11x^{11}}-\frac{3a^4b(5Ab+2aB)}{10x^{10}}-\frac{5a^3b^2(4Ab+3aB)}{9x^9}-\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{210a^6(11A+12Bx)+1512a^5bx(10A+11Bx)+4620a^4b^2x^2(9A+10Bx)+7700a^3b^3x^3(8A+9Bx)+7425a^2b^4x^4(7A+8Bx)+3960ab^5x^5(6A+7Bx)+924b^6x^6(5A+6Bx)}{27720x^{12}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^13,x]
```

```
[Out] -1/27720*(924*b^6*x^6*(5*A + 6*B*x) + 3960*a*b^5*x^5*(6*A + 7*B*x) + 7425*a
^2*b^4*x^4*(7*A + 8*B*x) + 7700*a^3*b^3*x^3*(8*A + 9*B*x) + 4620*a^4*b^2*x^
```

```
2*(9*A + 10*B*x) + 1512*a^5*b*x*(10*A + 11*B*x) + 210*a^6*(11*A + 12*B*x))/
x^12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{13}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^13,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^13, x]
```

fricas [A] time = 0.41, size = 147, normalized size = 1.03

$$-\frac{5544\,Bb^6x^7+2310\,Aa^6+4620\,\left(6\,Bab^5+Ab^6\right)x^6+11880\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+17325\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+15400\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+8316\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+2520\,\left(Ba^6+6\,Aa^5b\right)x}{27720\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x, algorithm="fricas")
```

```
[Out] -1/27720*(5544*B*b^6*x^7 + 2310*A*a^6 + 4620*(6*B*a*b^5 + A*b^6)*x^6 + 1188
0*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 17325*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1
5400*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 8316*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 +
 2520*(B*a^6 + 6*A*a^5*b)*x)/x^12
```

giac [A] time = 0.16, size = 147, normalized size = 1.03

$$-\frac{5544\,Bb^6x^7+27720\,Bab^5x^6+4620\,Ab^6x^6+59400\,Ba^2b^4x^5+23760\,Aab^5x^5+69300\,Ba^3b^3x^4+51975\,Aa^2b^4x^4+46200\,Ba^4b^2x^3+61600\,Aa^3b^3x^3+16632\,Ba^5bx^2+41580\,Aa^4b^2x^2+2520\,Ba^6x+15120\,Aa^5bx+2310\,Aa^6}{27720\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x, algorithm="giac")
```

```
[Out] -1/27720*(5544*B*b^6*x^7 + 27720*B*a*b^5*x^6 + 4620*A*b^6*x^6 + 59400*B*a^2
*b^4*x^5 + 23760*A*a*b^5*x^5 + 69300*B*a^3*b^3*x^4 + 51975*A*a^2*b^4*x^4 +
46200*B*a^4*b^2*x^3 + 61600*A*a^3*b^3*x^3 + 16632*B*a^5*b*x^2 + 41580*A*a^4
*b^2*x^2 + 2520*B*a^6*x + 15120*A*a^5*b*x + 2310*A*a^6)/x^12
```

maple [A] time = 0.05, size = 128, normalized size = 0.90

$$-\frac{B\,b^6}{5x^5}-\frac{(Ab+6Ba)\,b^5}{6x^6}-\frac{3\,(2Ab+5Ba)\,a\,b^4}{7x^7}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{8x^8}-\frac{5\,(4Ab+3Ba)\,a^3b^2}{9x^9}-\frac{A\,a^6}{12x^{12}}-\frac{3\,(5Ab+2Ba)\,a^4b}{10x^{10}}-\frac{(6Ab+Ba)\,a^5}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x)
```

```
[Out] -1/12*a^6*A/x^12-1/11*a^5*(6*A*b+B*a)/x^11-3/10*a^4*b*(5*A*b+2*B*a)/x^10-5/
9*a^3*b^2*(4*A*b+3*B*a)/x^9-5/8*a^2*b^3*(3*A*b+4*B*a)/x^8-3/7*a*b^4*(2*A*b+
5*B*a)/x^7-1/6*b^5*(A*b+6*B*a)/x^6-1/5*b^6*B/x^5
```

maxima [A] time = 0.58, size = 147, normalized size = 1.03

$$-\frac{5544\,Bb^6x^7+2310\,Aa^6+4620\,\left(6\,Bab^5+Ab^6\right)x^6+11880\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+17325\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+15400\,\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+8316\,\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+2520\,\left(Ba^6+6\,Aa^5b\right)x}{27720\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x, algorithm="maxima")
```

```
[Out] -1/27720*(5544*B*b^6*x^7 + 2310*A*a^6 + 4620*(6*B*a*b^5 + A*b^6)*x^6 + 1188
0*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 17325*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1
```

```
5400*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 8316*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 +
 2520*(B*a^6 + 6*A*a^5*b)*x)/x^12
```

mupad [B] time = 0.07, size = 142, normalized size = 0.99

$$-\frac{x\left(\frac{B\,a^6}{11}+\frac{6\,A\,b\,a^5}{11}\right)+\frac{A\,a^6}{12}+x^2\left(\frac{3\,B\,a^5\,b}{5}+\frac{3\,A\,a^4\,b^2}{2}\right)+x^5\left(\frac{15\,B\,a^2\,b^4}{7}+\frac{6\,A\,a\,b^5}{7}\right)+x^6\left(\frac{A\,b^6}{6}+B\,a\,b^5\right)+x^4\left(\frac{5\,B\,a^3\,b^3}{2}+\frac{15\,A\,a^2\,b^4}{8}\right)+x^3\left(\frac{5\,B\,a^4\,b^2}{3}+\frac{20\,A\,a^3\,b^3}{9}\right)+\frac{B\,b^6\,x^7}{5}}{x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^13,x)
```

```
[Out] -(x*((B*a^6)/11 + (6*A*a^5*b)/11) + (A*a^6)/12 + x^2*((3*A*a^4*b^2)/2 + (3*
B*a^5*b)/5) + x^5*((15*B*a^2*b^4)/7 + (6*A*a*b^5)/7) + x^6*((A*b^6)/6 + B*a
*b^5) + x^4*((15*A*a^2*b^4)/8 + (5*B*a^3*b^3)/2) + x^3*((20*A*a^3*b^3)/9 +
(5*B*a^4*b^2)/3) + (B*b^6*x^7)/5)/x^12
```

sympy [A] time = 13.84, size = 158, normalized size = 1.10

$$\frac{-2310Aa^6-5544Bb^6x^7+x^6\left(-4620Ab^6-27720Bab^5\right)+x^5\left(-23760Aab^5-59400Ba^2b^4\right)+x^4\left(-51975Aa^2b^4-69300Ba^3b^3\right)+x^3\left(-61600Aa^3b^3-46200Ba^4b^2\right)+x^2\left(-41580Aa^4b^2-16632Ba^5b\right)+x\left(-15120Aa^5b-2520Ba^6\right)}{27720x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**13,x)
```

```
[Out] (-2310*A*a**6 - 5544*B*b**6*x**7 + x**6*(-4620*A*b**6 - 27720*B*a*b**5) + x
**5*(-23760*A*a*b**5 - 59400*B*a**2*b**4) + x**4*(-51975*A*a**2*b**4 - 6930
0*B*a**3*b**3) + x**3*(-61600*A*a**3*b**3 - 46200*B*a**4*b**2) + x**2*(-415
80*A*a**4*b**2 - 16632*B*a**5*b) + x*(-15120*A*a**5*b - 2520*B*a**6))/(2772
0*x**12)
```

3.485 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{14}}\,dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{13x^{13}}-\frac{a^5(aB+6Ab)}{12x^{12}}-\frac{3a^4b(2aB+5Ab)}{11x^{11}}-\frac{a^3b^2(3aB+4Ab)}{2x^{10}}-\frac{5a^2b^3(4aB+3Ab)}{9x^9}-\frac{b^5(6aB+Ab)}{7x^7}-\frac{3ab^4(5aB+2\ldots}{8x^8}$$

Rubi [A] time = 0.07, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3b^2(3aB+4Ab)}{2x^{10}}-\frac{5a^2b^3(4aB+3Ab)}{9x^9}-\frac{a^5(aB+6Ab)}{12x^{12}}-\frac{3a^4b(2aB+5Ab)}{11x^{11}}-\frac{a^6A}{13x^{13}}-\frac{3ab^4(5aB+2Ab)}{8x^8}-\frac{b^5(6aB+Ab)}{7x^7}-\frac{b^6B}{6x^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^14,x]
```

```
[Out] -(a^6*A)/(13*x^13) - (a^5*(6*A*b + a*B))/(12*x^12) - (3*a^4*b*(5*A*b + 2*a*
B))/(11*x^11) - (a^3*b^2*(4*A*b + 3*a*B))/(2*x^10) - (5*a^2*b^3*(3*A*b + 4*
a*B))/(9*x^9) - (3*a*b^4*(2*A*b + 5*a*B))/(8*x^8) - (b^5*(A*b + 6*a*B))/(7*
x^7) - (b^6*B)/(6*x^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{14}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{14}}\,dx\\ &= \int \left(\frac{a^6A}{x^{14}}+\frac{a^5(6Ab+aB)}{x^{13}}+\frac{3a^4b(5Ab+2aB)}{x^{12}}+\frac{5a^3b^2(4Ab+3aB)}{x^{11}}+\frac{5a^2\ldots}{}\right.\\ &= -\frac{a^6A}{13x^{13}}-\frac{a^5(6Ab+aB)}{12x^{12}}-\frac{3a^4b(5Ab+2aB)}{11x^{11}}-\frac{a^3b^2(4Ab+3aB)}{2x^{10}}-\frac{5a^2b^3(\ldots}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{462a^6(12A+13Bx)+3276a^5bx(11A+12Bx)+9828a^4b^2x^2(10A+11Bx)+16016a^3b^3x^3(9A+10Bx)+15015a^2b^4x^4(8A+9Bx)+7722ab^5x^5(7A+8Bx)+1716b^6x^6(6A+7Bx)}{72072x^{13}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^14,x]
```

```
[Out] -1/72072*(1716*b^6*x^6*(6*A + 7*B*x) + 7722*a*b^5*x^5*(7*A + 8*B*x) + 15015
*a^2*b^4*x^4*(8*A + 9*B*x) + 16016*a^3*b^3*x^3*(9*A + 10*B*x) + 9828*a^4*b^
```

```
2*x^2*(10*A + 11*B*x) + 3276*a^5*b*x*(11*A + 12*B*x) + 462*a^6*(12*A + 13*B
*x))/x^13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{14}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^14,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^14, x]
```

fricas [A] time = 0.42, size = 147, normalized size = 1.03

$$-\frac{12012\,Bb^6x^7+5544\,Aa^6+10296\left(6\,Bab^5+Ab^6\right)x^6+27027\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+40040\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+36036\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+19656\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+6006\left(Ba^6+6\,Aa^5b\right)x}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x, algorithm="fricas")
```

```
[Out] -1/72072*(12012*B*b^6*x^7 + 5544*A*a^6 + 10296*(6*B*a*b^5 + A*b^6)*x^6 + 27
027*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 40040*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 +
 36036*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 19656*(2*B*a^5*b + 5*A*a^4*b^2)*x^
2 + 6006*(B*a^6 + 6*A*a^5*b)*x)/x^13
```

giac [A] time = 0.15, size = 147, normalized size = 1.03

$$-\frac{12012\,Bb^6x^7+61776\,Bab^5x^6+10296\,Ab^6x^6+135135\,Ba^2b^4x^5+54054\,Aab^5x^5+160160\,Ba^3b^3x^4+120120\,Aa^2b^4x^4+108108\,Ba^4b^2x^3+144144\,Aa^3b^3x^3+39312\,Ba^5bx^2+98280\,Aa^4b^2x^2+6006\,Ba^6x+36036\,Aa^5bx+5544\,Aa^6}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x, algorithm="giac")
```

```
[Out] -1/72072*(12012*B*b^6*x^7 + 61776*B*a*b^5*x^6 + 10296*A*b^6*x^6 + 135135*B*
a^2*b^4*x^5 + 54054*A*a*b^5*x^5 + 160160*B*a^3*b^3*x^4 + 120120*A*a^2*b^4*x
^4 + 108108*B*a^4*b^2*x^3 + 144144*A*a^3*b^3*x^3 + 39312*B*a^5*b*x^2 + 9828
0*A*a^4*b^2*x^2 + 6006*B*a^6*x + 36036*A*a^5*b*x + 5544*A*a^6)/x^13
```

maple [A] time = 0.05, size = 128, normalized size = 0.90

$$-\frac{B\,b^6}{6x^6}-\frac{(Ab+6Ba)\,b^5}{7x^7}-\frac{3\,(2Ab+5Ba)\,a\,b^4}{8x^8}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{9x^9}-\frac{(4Ab+3Ba)\,a^3b^2}{2x^{10}}-\frac{A\,a^6}{13x^{13}}-\frac{3\,(5Ab+2Ba)\,a^4b}{11x^{11}}-\frac{(6Ab+Ba)\,a^5}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x)
```

```
[Out] -1/13*a^6*A/x^13-1/12*a^5*(6*A*b+B*a)/x^12-3/11*a^4*b*(5*A*b+2*B*a)/x^11-1/
2*a^3*b^2*(4*A*b+3*B*a)/x^10-5/9*a^2*b^3*(3*A*b+4*B*a)/x^9-3/8*a*b^4*(2*A*b
+5*B*a)/x^8-1/7*b^5*(A*b+6*B*a)/x^7-1/6*b^6*B/x^6
```

maxima [A] time = 0.59, size = 147, normalized size = 1.03

$$-\frac{12012\,Bb^6x^7+5544\,Aa^6+10296\left(6\,Bab^5+Ab^6\right)x^6+27027\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+40040\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+36036\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+19656\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+6006\left(Ba^6+6\,Aa^5b\right)x}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x, algorithm="maxima")
```

```
[Out] -1/72072*(12012*B*b^6*x^7 + 5544*A*a^6 + 10296*(6*B*a*b^5 + A*b^6)*x^6 + 27
027*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 40040*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 +
```

```
 36036*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 19656*(2*B*a^5*b + 5*A*a^4*b^2)*x^
2 + 6006*(B*a^6 + 6*A*a^5*b)*x)/x^13
```

mupad [B] time = 1.10, size = 143, normalized size = 1.00

$$-\frac{x\left(\frac{B\,a^6}{12}+\frac{A\,b\,a^5}{2}\right)+\frac{A\,a^6}{13}+x^5\left(\frac{15\,B\,a^2\,b^4}{8}+\frac{3\,A\,a\,b^5}{4}\right)+x^2\left(\frac{6\,B\,a^5\,b}{11}+\frac{15\,A\,a^4\,b^2}{11}\right)+x^6\left(\frac{A\,b^6}{7}+\frac{6\,B\,a\,b^5}{7}\right)+x^3\left(\frac{3\,B\,a^4\,b^2}{2}+2\,A\,a^3\,b^3\right)+x^4\left(\frac{20\,B\,a^3\,b^3}{9}+\frac{5\,A\,a^2\,b^4}{3}\right)+\frac{B\,b^6\,x^7}{6}}{x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^14,x)
```

```
[Out] -(x*((B*a^6)/12 + (A*a^5*b)/2) + (A*a^6)/13 + x^5*((15*B*a^2*b^4)/8 + (3*A*
a*b^5)/4) + x^2*((15*A*a^4*b^2)/11 + (6*B*a^5*b)/11) + x^6*((A*b^6)/7 + (6*
B*a*b^5)/7) + x^3*(2*A*a^3*b^3 + (3*B*a^4*b^2)/2) + x^4*((5*A*a^2*b^4)/3 +
(20*B*a^3*b^3)/9) + (B*b^6*x^7)/6)/x^13
```

sympy [A] time = 17.51, size = 158, normalized size = 1.10

$$\frac{-5544Aa^6-12012Bb^6x^7+x^6\left(-10296Ab^6-61776Bab^5\right)+x^5\left(-54054Aab^5-135135Ba^2b^4\right)+x^4\left(-120120Aa^2b^4-160160Ba^3b^3\right)+x^3\left(-144144Aa^3b^3-108108Ba^4b^2\right)+x^2\left(-98280Aa^4b^2-39312Ba^5b\right)+x\left(-36036Aa^5b-6006Ba^6\right)}{72072x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**14,x)
```

```
[Out] (-5544*A*a**6 - 12012*B*b**6*x**7 + x**6*(-10296*A*b**6 - 61776*B*a*b**5) +
 x**5*(-54054*A*a*b**5 - 135135*B*a**2*b**4) + x**4*(-120120*A*a**2*b**4 -
160160*B*a**3*b**3) + x**3*(-144144*A*a**3*b**3 - 108108*B*a**4*b**2) + x**
2*(-98280*A*a**4*b**2 - 39312*B*a**5*b) + x*(-36036*A*a**5*b - 6006*B*a**6)
)/(72072*x**13)
```

3.486 $\int x^7(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=131

$$\frac{1}{18}(x+1)^{18}(d-8e)-\frac{7}{17}(x+1)^{17}(d-4e)+\frac{7}{16}(x+1)^{16}(3d-8e)-\frac{7}{3}(x+1)^{15}(d-2e)+\frac{1}{2}(x+1)^{14}(5d-8e)-\frac{7}{13}(x+1)^{13}(3d-4$$

Rubi [A] time = 0.13, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{18}(x+1)^{18}(d-8e)-\frac{7}{17}(x+1)^{17}(d-4e)+\frac{7}{16}(x+1)^{16}(3d-8e)-\frac{7}{3}(x+1)^{15}(d-2e)+\frac{1}{2}(x+1)^{14}(5d-8e)-\frac{7}{13}(x+1)^{13}(3d-4e)+\frac{1}{12}(x+1)^{12}(7d-8e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{19}e(x+1)^{19}$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((7*d - 8*e)*(1 + x)^12)/12 - (7*(3*d - 4*e)*(1
+ x)^13)/13 + ((5*d - 8*e)*(1 + x)^14)/2 - (7*(d - 2*e)*(1 + x)^15)/3 + (7*
(3*d - 8*e)*(1 + x)^16)/16 - (7*(d - 4*e)*(1 + x)^17)/17 + ((d - 8*e)*(1 +
x)^18)/18 + (e*(1 + x)^19)/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^7(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^7(1+x)^{10}(d+ex)\,dx\\ &= \int\left((-d+e)(1+x)^{10}+(7d-8e)(1+x)^{11}-7(3d-4e)(1+x)^{12}+7(5d-8e\right.\\ &= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(7d-8e)(1+x)^{12}-\frac{7}{13}(3d-4e)(1+x)^{13}+\frac{1}{2}(5d-\end{aligned}$$

Mathematica [A] time = 0.03, size = 149, normalized size = 1.14

$$\frac{1}{18}x^{18}(d+10e)+\frac{5}{17}x^{17}(2d+9e)+\frac{15}{16}x^{16}(3d+8e)+2x^{15}(4d+7e)+3x^{14}(5d+6e)+\frac{42}{13}x^{13}(6d+5e)+\frac{5}{2}x^{12}(7d+4e)+\frac{15}{11}x^{11}(8d+3e)+\frac{1}{2}x^{10}(9d+2e)+\frac{1}{9}x^9(10d+e)+\frac{dx^8}{8}+\frac{ex^{19}}{19}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^8)/8 + ((10*d + e)*x^9)/9 + ((9*d + 2*e)*x^10)/2 + (15*(8*d + 3*e)*x^1
1)/11 + (5*(7*d + 4*e)*x^12)/2 + (42*(6*d + 5*e)*x^13)/13 + 3*(5*d + 6*e)*x
^14 + 2*(4*d + 7*e)*x^15 + (15*(3*d + 8*e)*x^16)/16 + (5*(2*d + 9*e)*x^17)/
17 + ((d + 10*e)*x^18)/18 + (e*x^19)/19
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^7(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^7*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^7*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.37, size = 132, normalized size = 1.01

$$\frac{1}{19}x^{19}e+\frac{5}{9}x^{18}e+\frac{1}{18}x^{18}d+\frac{45}{17}x^{17}e+\frac{10}{17}x^{17}d+\frac{15}{2}x^{16}e+\frac{45}{16}x^{16}d+14x^{15}e+8x^{15}d+18x^{14}e+15x^{14}d+\frac{210}{13}x^{13}e+\frac{252}{13}x^{13}d+10x^{12}e+\frac{35}{2}x^{12}d+\frac{45}{11}x^{11}e+\frac{120}{11}x^{11}d+x^{10}e+\frac{9}{2}x^{10}d+\frac{1}{9}x^{9}e+\frac{10}{9}x^{9}d+\frac{1}{8}x^{8}d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/19*x^19*e + 5/9*x^18*e + 1/18*x^18*d + 45/17*x^17*e + 10/17*x^17*d + 15/2
*x^16*e + 45/16*x^16*d + 14*x^15*e + 8*x^15*d + 18*x^14*e + 15*x^14*d + 210
/13*x^13*e + 252/13*x^13*d + 10*x^12*e + 35/2*x^12*d + 45/11*x^11*e + 120/1
1*x^11*d + x^10*e + 9/2*x^10*d + 1/9*x^9*e + 10/9*x^9*d + 1/8*x^8*d
```

giac [A] time = 0.17, size = 143, normalized size = 1.09

$$\frac{1}{19}x^{19}e+\frac{1}{18}dx^{18}+\frac{5}{9}x^{18}e+\frac{10}{17}dx^{17}+\frac{45}{17}x^{17}e+\frac{45}{16}dx^{16}+\frac{15}{2}x^{16}e+8dx^{15}+14x^{15}e+15dx^{14}+18x^{14}e+\frac{252}{13}dx^{13}+\frac{210}{13}x^{13}e+\frac{35}{2}dx^{12}+10x^{12}e+\frac{120}{11}dx^{11}+\frac{45}{11}x^{11}e+\frac{9}{2}dx^{10}+x^{10}e+\frac{10}{9}dx^{9}+\frac{1}{9}x^{9}e+\frac{1}{8}dx^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/19*x^19*e + 1/18*d*x^18 + 5/9*x^18*e + 10/17*d*x^17 + 45/17*x^17*e + 45/1
6*d*x^16 + 15/2*x^16*e + 8*d*x^15 + 14*x^15*e + 15*d*x^14 + 18*x^14*e + 252
/13*d*x^13 + 210/13*x^13*e + 35/2*d*x^12 + 10*x^12*e + 120/11*d*x^11 + 45/1
1*x^11*e + 9/2*d*x^10 + x^10*e + 10/9*d*x^9 + 1/9*x^9*e + 1/8*d*x^8
```

maple [A] time = 0.05, size = 130, normalized size = 0.99

$$\frac{e\,x^{19}}{19}+\frac{(d+10e)\,x^{18}}{18}+\frac{(10d+45e)\,x^{17}}{17}+\frac{(45d+120e)\,x^{16}}{16}+\frac{(120d+210e)\,x^{15}}{15}+\frac{(210d+252e)\,x^{14}}{14}+\frac{(252d+210e)\,x^{13}}{13}+\frac{(210d+120e)\,x^{12}}{12}+\frac{(120d+45e)\,x^{11}}{11}+\frac{(45d+10e)\,x^{10}}{10}+\frac{d\,x^{8}}{8}+\frac{(10d+e)\,x^{9}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/19*e*x^19+1/18*(d+10*e)*x^18+1/17*(10*d+45*e)*x^17+1/16*(45*d+120*e)*x^16
+1/15*(120*d+210*e)*x^15+1/14*(210*d+252*e)*x^14+1/13*(252*d+210*e)*x^13+1/
12*(210*d+120*e)*x^12+1/11*(120*d+45*e)*x^11+1/10*(45*d+10*e)*x^10+1/9*(10*
d+e)*x^9+1/8*d*x^8
```

maxima [A] time = 0.48, size = 129, normalized size = 0.98

$$\frac{1}{19}ex^{19}+\frac{1}{18}(d+10e)x^{18}+\frac{5}{17}(2d+9e)x^{17}+\frac{15}{16}(3d+8e)x^{16}+2(4d+7e)x^{15}+3(5d+6e)x^{14}+\frac{42}{13}(6d+5e)x^{13}+\frac{5}{2}(7d+4e)x^{12}+\frac{15}{11}(8d+3e)x^{11}+\frac{1}{2}(9d+2e)x^{10}+\frac{1}{9}(10d+e)x^{9}+\frac{1}{8}dx^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/19*e*x^19 + 1/18*(d + 10*e)*x^18 + 5/17*(2*d + 9*e)*x^17 + 15/16*(3*d + 8
*e)*x^16 + 2*(4*d + 7*e)*x^15 + 3*(5*d + 6*e)*x^14 + 42/13*(6*d + 5*e)*x^13
 + 5/2*(7*d + 4*e)*x^12 + 15/11*(8*d + 3*e)*x^11 + 1/2*(9*d + 2*e)*x^10 + 1
/9*(10*d + e)*x^9 + 1/8*d*x^8
```

mupad [B] time = 1.12, size = 121, normalized size = 0.92

$$\frac{e\,x^{19}}{19}+\left(\frac{d}{18}+\frac{5\,e}{9}\right)x^{18}+\left(\frac{10\,d}{17}+\frac{45\,e}{17}\right)x^{17}+\left(\frac{45\,d}{16}+\frac{15\,e}{2}\right)x^{16}+\left(8\,d+14\,e\right)x^{15}+\left(15\,d+18\,e\right)x^{14}+\left(\frac{252\,d}{13}+\frac{210\,e}{13}\right)x^{13}+\left(\frac{35\,d}{2}+10\,e\right)x^{12}+\left(\frac{120\,d}{11}+\frac{45\,e}{11}\right)x^{11}+\left(\frac{9\,d}{2}+e\right)x^{10}+\left(\frac{10\,d}{9}+\frac{e}{9}\right)x^9+\frac{d\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^15*(8*d + 14*e) + x^9*((10*d)/9 + e/9) + x^14*(15*d + 18*e) + x^18*(d/18
+ (5*e)/9) + x^12*((35*d)/2 + 10*e) + x^16*((45*d)/16 + (15*e)/2) + x^17*((
10*d)/17 + (45*e)/17) + x^11*((120*d)/11 + (45*e)/11) + x^13*((252*d)/13 +
(210*e)/13) + (d*x^8)/8 + (e*x^19)/19 + x^10*((9*d)/2 + e)
```

sympy [A] time = 0.10, size = 133, normalized size = 1.02

$$\frac{dx^8}{8}+\frac{ex^{19}}{19}+x^{18}\left(\frac{d}{18}+\frac{5e}{9}\right)+x^{17}\left(\frac{10d}{17}+\frac{45e}{17}\right)+x^{16}\left(\frac{45d}{16}+\frac{15e}{2}\right)+x^{15}\left(8d+14e\right)+x^{14}\left(15d+18e\right)+x^{13}\left(\frac{252d}{13}+\frac{210e}{13}\right)+x^{12}\left(\frac{35d}{2}+10e\right)+x^{11}\left(\frac{120d}{11}+\frac{45e}{11}\right)+x^{10}\left(\frac{9d}{2}+e\right)+x^9\left(\frac{10d}{9}+\frac{e}{9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**8/8 + e*x**19/19 + x**18*(d/18 + 5*e/9) + x**17*(10*d/17 + 45*e/17) +
x**16*(45*d/16 + 15*e/2) + x**15*(8*d + 14*e) + x**14*(15*d + 18*e) + x**13
*(252*d/13 + 210*e/13) + x**12*(35*d/2 + 10*e) + x**11*(120*d/11 + 45*e/11)
 + x**10*(9*d/2 + e) + x**9*(10*d/9 + e/9)
```

3.487 $\int x^6(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=119

$$\frac{1}{17}(x+1)^{17}(d-7e)-\frac{3}{16}(x+1)^{16}(2d-7e)+\frac{1}{3}(x+1)^{15}(3d-7e)-\frac{5}{14}(x+1)^{14}(4d-7e)+\frac{3}{13}(x+1)^{13}(5d-7e)-\frac{1}{12}(x+1)^{12}(6d-$$

Rubi [A] time = 0.07, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{17}(x+1)^{17}(d-7e)-\frac{3}{16}(x+1)^{16}(2d-7e)+\frac{1}{3}(x+1)^{15}(3d-7e)-\frac{5}{14}(x+1)^{14}(4d-7e)+\frac{3}{13}(x+1)^{13}(5d-7e)-\frac{1}{12}(x+1)^{12}(6d-7e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{18}e(x+1)^{18}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 - ((6*d - 7*e)*(1 + x)^12)/12 + (3*(5*d - 7*e)*(1 +
 x)^13)/13 - (5*(4*d - 7*e)*(1 + x)^14)/14 + ((3*d - 7*e)*(1 + x)^15)/3 - (
3*(2*d - 7*e)*(1 + x)^16)/16 + ((d - 7*e)*(1 + x)^17)/17 + (e*(1 + x)^18)/1
8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^6(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^6(1+x)^{10}(d+ex)\,dx\\ &= \int \left((d-e)(1+x)^{10}+(-6d+7e)(1+x)^{11}+3(5d-7e)(1+x)^{12}-5(4d-7e)(1\right.\\ &= \frac{1}{11}(d-e)(1+x)^{11}-\frac{1}{12}(6d-7e)(1+x)^{12}+\frac{3}{13}(5d-7e)(1+x)^{13}-\frac{5}{14}(4d-7e)\end{aligned}$$

Mathematica [A] time = 0.02, size = 150, normalized size = 1.26

$$\frac{1}{17}x^{17}(d+10e)+\frac{5}{16}x^{16}(2d+9e)+x^{15}(3d+8e)+\frac{15}{7}x^{14}(4d+7e)+\frac{42}{13}x^{13}(5d+6e)+\frac{7}{2}x^{12}(6d+5e)+\frac{30}{11}x^{11}(7d+4e)+\frac{3}{2}x^{10}(8d+3e)+\frac{5}{9}x^9(9d+2e)+\frac{1}{8}x^8(10d+e)+\frac{dx^7}{7}+\frac{ex^{18}}{18}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^7)/7 + ((10*d + e)*x^8)/8 + (5*(9*d + 2*e)*x^9)/9 + (3*(8*d + 3*e)*x^1
0)/2 + (30*(7*d + 4*e)*x^11)/11 + (7*(6*d + 5*e)*x^12)/2 + (42*(5*d + 6*e)*
x^13)/13 + (15*(4*d + 7*e)*x^14)/7 + (3*d + 8*e)*x^15 + (5*(2*d + 9*e)*x^16
)/16 + ((d + 10*e)*x^17)/17 + (e*x^18)/18
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^6(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^6*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^6*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.35, size = 133, normalized size = 1.12

$$\frac{1}{18}x^{18}e+\frac{10}{17}x^{17}e+\frac{1}{17}x^{17}d+\frac{45}{16}x^{16}e+\frac{5}{8}x^{16}d+8x^{15}e+3x^{15}d+15x^{14}e+\frac{60}{7}x^{14}d+\frac{252}{13}x^{13}e+\frac{210}{13}x^{13}d+\frac{35}{2}x^{12}e+21x^{12}d+\frac{120}{11}x^{11}e+\frac{210}{11}x^{11}d+\frac{9}{2}x^{10}e+12x^{10}d+\frac{10}{9}x^{9}e+5x^{9}d+\frac{1}{8}x^{8}e+\frac{5}{4}x^{8}d+\frac{1}{7}x^{7}d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/18*x^18*e + 10/17*x^17*e + 1/17*x^17*d + 45/16*x^16*e + 5/8*x^16*d + 8*x^
15*e + 3*x^15*d + 15*x^14*e + 60/7*x^14*d + 252/13*x^13*e + 210/13*x^13*d +
 35/2*x^12*e + 21*x^12*d + 120/11*x^11*e + 210/11*x^11*d + 9/2*x^10*e + 12*
x^10*d + 10/9*x^9*e + 5*x^9*d + 1/8*x^8*e + 5/4*x^8*d + 1/7*x^7*d
```

giac [A] time = 0.15, size = 144, normalized size = 1.21

$$\frac{1}{18}x^{18}e+\frac{1}{17}dx^{17}+\frac{10}{17}x^{17}e+\frac{5}{8}dx^{16}+\frac{45}{16}x^{16}e+3dx^{15}+8x^{15}e+\frac{60}{7}dx^{14}+15x^{14}e+\frac{210}{13}dx^{13}+\frac{252}{13}x^{13}e+21dx^{12}+\frac{35}{2}x^{12}e+\frac{210}{11}dx^{11}+\frac{120}{11}x^{11}e+12dx^{10}+\frac{9}{2}x^{10}e+5dx^{9}+\frac{10}{9}x^{9}e+\frac{5}{4}dx^{8}+\frac{1}{8}x^{8}e+\frac{1}{7}dx^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/18*x^18*e + 1/17*d*x^17 + 10/17*x^17*e + 5/8*d*x^16 + 45/16*x^16*e + 3*d*
x^15 + 8*x^15*e + 60/7*d*x^14 + 15*x^14*e + 210/13*d*x^13 + 252/13*x^13*e +
 21*d*x^12 + 35/2*x^12*e + 210/11*d*x^11 + 120/11*x^11*e + 12*d*x^10 + 9/2*
x^10*e + 5*d*x^9 + 10/9*x^9*e + 5/4*d*x^8 + 1/8*x^8*e + 1/7*d*x^7
```

maple [A] time = 0.04, size = 130, normalized size = 1.09

$$\frac{e\,x^{18}}{18}+\frac{(d+10e)\,x^{17}}{17}+\frac{(10d+45e)\,x^{16}}{16}+\frac{(45d+120e)\,x^{15}}{15}+\frac{(120d+210e)\,x^{14}}{14}+\frac{(210d+252e)\,x^{13}}{13}+\frac{(252d+210e)\,x^{12}}{12}+\frac{(210d+120e)\,x^{11}}{11}+\frac{(120d+45e)\,x^{10}}{10}+\frac{(45d+10e)\,x^{9}}{9}+\frac{d\,x^{7}}{7}+\frac{(10d+e)\,x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/18*e*x^18+1/17*(d+10*e)*x^17+1/16*(10*d+45*e)*x^16+1/15*(45*d+120*e)*x^15
+1/14*(120*d+210*e)*x^14+1/13*(210*d+252*e)*x^13+1/12*(252*d+210*e)*x^12+1/
11*(210*d+120*e)*x^11+1/10*(120*d+45*e)*x^10+1/9*(45*d+10*e)*x^9+1/8*(10*d+
e)*x^8+1/7*d*x^7
```

maxima [A] time = 0.63, size = 128, normalized size = 1.08

$$\frac{1}{18}ex^{18}+\frac{1}{17}(d+10e)x^{17}+\frac{5}{16}(2d+9e)x^{16}+(3d+8e)x^{15}+\frac{15}{7}(4d+7e)x^{14}+\frac{42}{13}(5d+6e)x^{13}+\frac{7}{2}(6d+5e)x^{12}+\frac{30}{11}(7d+4e)x^{11}+\frac{3}{2}(8d+3e)x^{10}+\frac{5}{9}(9d+2e)x^{9}+\frac{1}{8}(10d+e)x^{8}+\frac{1}{7}dx^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/18*e*x^18 + 1/17*(d + 10*e)*x^17 + 5/16*(2*d + 9*e)*x^16 + (3*d + 8*e)*x^
15 + 15/7*(4*d + 7*e)*x^14 + 42/13*(5*d + 6*e)*x^13 + 7/2*(6*d + 5*e)*x^12
+ 30/11*(7*d + 4*e)*x^11 + 3/2*(8*d + 3*e)*x^10 + 5/9*(9*d + 2*e)*x^9 + 1/8
*(10*d + e)*x^8 + 1/7*d*x^7
```

mupad [B] time = 0.08, size = 123, normalized size = 1.03

$$\frac{e\,x^{18}}{18}+\left(\frac{d}{17}+\frac{10\,e}{17}\right)\,x^{17}+\left(\frac{5\,d}{8}+\frac{45\,e}{16}\right)\,x^{16}+\left(3\,d+8\,e\right)\,x^{15}+\left(\frac{60\,d}{7}+15\,e\right)\,x^{14}+\left(\frac{210\,d}{13}+\frac{252\,e}{13}\right)\,x^{13}+\left(21\,d+\frac{35\,e}{2}\right)\,x^{12}+\left(\frac{210\,d}{11}+\frac{120\,e}{11}\right)\,x^{11}+\left(12\,d+\frac{9\,e}{2}\right)\,x^{10}+\left(5\,d+\frac{10\,e}{9}\right)\,x^9+\left(\frac{5\,d}{4}+\frac{e}{8}\right)\,x^8+\frac{d\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^8*((5*d)/4 + e/8) + x^15*(3*d + 8*e) + x^9*(5*d + (10*e)/9) + x^10*(12*d
+ (9*e)/2) + x^17*(d/17 + (10*e)/17) + x^12*(21*d + (35*e)/2) + x^16*((5*d)
/8 + (45*e)/16) + x^14*((60*d)/7 + 15*e) + x^11*((210*d)/11 + (120*e)/11) +
 x^13*((210*d)/13 + (252*e)/13) + (d*x^7)/7 + (e*x^18)/18
```

sympy [A] time = 0.10, size = 134, normalized size = 1.13

$$\frac{dx^{7}}{7}+\frac{ex^{18}}{18}+x^{17}\left(\frac{d}{17}+\frac{10e}{17}\right)+x^{16}\left(\frac{5d}{8}+\frac{45e}{16}\right)+x^{15}\left(3d+8e\right)+x^{14}\left(\frac{60d}{7}+15e\right)+x^{13}\left(\frac{210d}{13}+\frac{252e}{13}\right)+x^{12}\left(21d+\frac{35e}{2}\right)+x^{11}\left(\frac{210d}{11}+\frac{120e}{11}\right)+x^{10}\left(12d+\frac{9e}{2}\right)+x^{9}\left(5d+\frac{10e}{9}\right)+x^{8}\left(\frac{5d}{4}+\frac{e}{8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**7/7 + e*x**18/18 + x**17*(d/17 + 10*e/17) + x**16*(5*d/8 + 45*e/16) +
x**15*(3*d + 8*e) + x**14*(60*d/7 + 15*e) + x**13*(210*d/13 + 252*e/13) + x
**12*(21*d + 35*e/2) + x**11*(210*d/11 + 120*e/11) + x**10*(12*d + 9*e/2) +
 x**9*(5*d + 10*e/9) + x**8*(5*d/4 + e/8)
```

3.488 $\int x^5(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=99

$$\frac{1}{16}(x+1)^{16}(d-6e)-\frac{1}{3}(x+1)^{15}(d-3e)+\frac{5}{7}(x+1)^{14}(d-2e)-\frac{5}{13}(x+1)^{13}(2d-3e)+\frac{1}{12}(x+1)^{12}(5d-6e)-\frac{1}{11}(x+1)^{11}(d-e)$$

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{16}(x+1)^{16}(d-6e)-\frac{1}{3}(x+1)^{15}(d-3e)+\frac{5}{7}(x+1)^{14}(d-2e)-\frac{5}{13}(x+1)^{13}(2d-3e)+\frac{1}{12}(x+1)^{12}(5d-6e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{17}e(x+1)^{17}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((5*d - 6*e)*(1 + x)^12)/12 - (5*(2*d - 3*e)*(1
+ x)^13)/13 + (5*(d - 2*e)*(1 + x)^14)/7 - ((d - 3*e)*(1 + x)^15)/3 + ((d -
 6*e)*(1 + x)^16)/16 + (e*(1 + x)^17)/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^5(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^5(1+x)^{10}(d+ex)\,dx\\ &= \int \left((-d+e)(1+x)^{10}+(5d-6e)(1+x)^{11}-5(2d-3e)(1+x)^{12}+10(d-2e)\right.\\ &= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(5d-6e)(1+x)^{12}-\frac{5}{13}(2d-3e)(1+x)^{13}+\frac{5}{7}(d-\end{aligned}$$

Mathematica [A] time = 0.02, size = 151, normalized size = 1.53

$$\frac{1}{16}x^{16}(d+10e)+\frac{1}{3}x^{15}(2d+9e)+\frac{15}{14}x^{14}(3d+8e)+\frac{30}{13}x^{13}(4d+7e)+\frac{7}{2}x^{12}(5d+6e)+\frac{42}{11}x^{11}(6d+5e)+3x^{10}(7d+4e)+\frac{5}{3}x^9(8d+3e)+\frac{5}{8}x^8(9d+2e)+\frac{1}{7}x^7(10d+e)+\frac{dx^6}{6}+\frac{ex^{17}}{17}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^6)/6 + ((10*d + e)*x^7)/7 + (5*(9*d + 2*e)*x^8)/8 + (5*(8*d + 3*e)*x^9
)/3 + 3*(7*d + 4*e)*x^10 + (42*(6*d + 5*e)*x^11)/11 + (7*(5*d + 6*e)*x^12)/
2 + (30*(4*d + 7*e)*x^13)/13 + (15*(3*d + 8*e)*x^14)/14 + ((2*d + 9*e)*x^15
)/3 + ((d + 10*e)*x^16)/16 + (e*x^17)/17
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^5(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^5*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^5*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.42, size = 133, normalized size = 1.34

$$\frac{1}{17}x^{17}e+\frac{5}{8}x^{16}e+\frac{1}{16}x^{16}d+3x^{15}e+\frac{2}{3}x^{15}d+\frac{60}{7}x^{14}e+\frac{45}{14}x^{14}d+\frac{210}{13}x^{13}e+\frac{120}{13}x^{13}d+21x^{12}e+\frac{35}{2}x^{12}d+\frac{210}{11}x^{11}e+\frac{252}{11}x^{11}d+12x^{10}e+21x^{10}d+5x^9e+\frac{40}{3}x^9d+\frac{5}{4}x^8e+\frac{45}{8}x^8d+\frac{1}{7}x^7e+\frac{10}{7}x^7d+\frac{1}{6}x^6d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/17*x^17*e + 5/8*x^16*e + 1/16*x^16*d + 3*x^15*e + 2/3*x^15*d + 60/7*x^14*
e + 45/14*x^14*d + 210/13*x^13*e + 120/13*x^13*d + 21*x^12*e + 35/2*x^12*d
+ 210/11*x^11*e + 252/11*x^11*d + 12*x^10*e + 21*x^10*d + 5*x^9*e + 40/3*x^
9*d + 5/4*x^8*e + 45/8*x^8*d + 1/7*x^7*e + 10/7*x^7*d + 1/6*x^6*d
```

giac [A] time = 0.19, size = 144, normalized size = 1.45

$$\frac{1}{17}x^{17}e+\frac{1}{16}dx^{16}+\frac{5}{8}x^{16}e+\frac{2}{3}dx^{15}+3x^{15}e+\frac{45}{14}dx^{14}+\frac{60}{7}x^{14}e+\frac{120}{13}dx^{13}+\frac{210}{13}x^{13}e+\frac{35}{2}dx^{12}+21x^{12}e+\frac{252}{11}dx^{11}+\frac{210}{11}x^{11}e+21dx^{10}+12x^{10}e+\frac{40}{3}dx^9+5x^9e+\frac{45}{8}dx^8+\frac{5}{4}x^8e+\frac{10}{7}dx^7+\frac{1}{7}x^7e+\frac{1}{6}dx^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/17*x^17*e + 1/16*d*x^16 + 5/8*x^16*e + 2/3*d*x^15 + 3*x^15*e + 45/14*d*x^
14 + 60/7*x^14*e + 120/13*d*x^13 + 210/13*x^13*e + 35/2*d*x^12 + 21*x^12*e
+ 252/11*d*x^11 + 210/11*x^11*e + 21*d*x^10 + 12*x^10*e + 40/3*d*x^9 + 5*x^
9*e + 45/8*d*x^8 + 5/4*x^8*e + 10/7*d*x^7 + 1/7*x^7*e + 1/6*d*x^6
```

maple [A] time = 0.04, size = 130, normalized size = 1.31

$$\frac{e\,x^{17}}{17}+\frac{(d+10e)\,x^{16}}{16}+\frac{(10d+45e)\,x^{15}}{15}+\frac{(45d+120e)\,x^{14}}{14}+\frac{(120d+210e)\,x^{13}}{13}+\frac{(210d+252e)\,x^{12}}{12}+\frac{(252d+210e)\,x^{11}}{11}+\frac{(210d+120e)\,x^{10}}{10}+\frac{(120d+45e)\,x^{9}}{9}+\frac{(45d+10e)\,x^{8}}{8}+\frac{d\,x^{6}}{6}+\frac{(10d+e)\,x^{7}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/17*e*x^17+1/16*(d+10*e)*x^16+1/15*(10*d+45*e)*x^15+1/14*(45*d+120*e)*x^14
+1/13*(120*d+210*e)*x^13+1/12*(210*d+252*e)*x^12+1/11*(252*d+210*e)*x^11+1/
10*(210*d+120*e)*x^10+1/9*(120*d+45*e)*x^9+1/8*(45*d+10*e)*x^8+1/7*(10*d+e)
*x^7+1/6*d*x^6
```

maxima [A] time = 0.68, size = 129, normalized size = 1.30

$$\frac{1}{17}ex^{17}+\frac{1}{16}(d+10e)x^{16}+\frac{1}{3}(2d+9e)x^{15}+\frac{15}{14}(3d+8e)x^{14}+\frac{30}{13}(4d+7e)x^{13}+\frac{7}{2}(5d+6e)x^{12}+\frac{42}{11}(6d+5e)x^{11}+3(7d+4e)x^{10}+\frac{5}{3}(8d+3e)x^9+\frac{5}{8}(9d+2e)x^8+\frac{1}{7}(10d+e)x^7+\frac{1}{6}dx^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/17*e*x^17 + 1/16*(d + 10*e)*x^16 + 1/3*(2*d + 9*e)*x^15 + 15/14*(3*d + 8*
e)*x^14 + 30/13*(4*d + 7*e)*x^13 + 7/2*(5*d + 6*e)*x^12 + 42/11*(6*d + 5*e)
*x^11 + 3*(7*d + 4*e)*x^10 + 5/3*(8*d + 3*e)*x^9 + 5/8*(9*d + 2*e)*x^8 + 1/
7*(10*d + e)*x^7 + 1/6*d*x^6
```

mupad [B] time = 0.08, size = 123, normalized size = 1.24

$$\frac{e\,x^{17}}{17}+\left(\frac{d}{16}+\frac{5\,e}{8}\right)\,x^{16}+\left(\frac{2\,d}{3}+3\,e\right)\,x^{15}+\left(\frac{45\,d}{14}+\frac{60\,e}{7}\right)\,x^{14}+\left(\frac{120\,d}{13}+\frac{210\,e}{13}\right)\,x^{13}+\left(\frac{35\,d}{2}+21\,e\right)\,x^{12}+\left(\frac{252\,d}{11}+\frac{210\,e}{11}\right)\,x^{11}+(21\,d+12\,e)\,x^{10}+\left(\frac{40\,d}{3}+5\,e\right)\,x^9+\left(\frac{45\,d}{8}+\frac{5\,e}{4}\right)\,x^8+\left(\frac{10\,d}{7}+\frac{e}{7}\right)\,x^7+\frac{d\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^15*((2*d)/3 + 3*e) + x^7*((10*d)/7 + e/7) + x^10*(21*d + 12*e) + x^16*(d/
16 + (5*e)/8) + x^9*((40*d)/3 + 5*e) + x^8*((45*d)/8 + (5*e)/4) + x^12*((35
*d)/2 + 21*e) + x^14*((45*d)/14 + (60*e)/7) + x^13*((120*d)/13 + (210*e)/13
) + x^11*((252*d)/11 + (210*e)/11) + (d*x^6)/6 + (e*x^17)/17
```

sympy [A] time = 0.10, size = 136, normalized size = 1.37

$$\frac{dx^{6}}{6}+\frac{ex^{17}}{17}+x^{16}\left(\frac{d}{16}+\frac{5e}{8}\right)+x^{15}\left(\frac{2d}{3}+3e\right)+x^{14}\left(\frac{45d}{14}+\frac{60e}{7}\right)+x^{13}\left(\frac{120d}{13}+\frac{210e}{13}\right)+x^{12}\left(\frac{35d}{2}+21e\right)+x^{11}\left(\frac{252d}{11}+\frac{210e}{11}\right)+x^{10}\left(21d+12e\right)+x^{9}\left(\frac{40d}{3}+5e\right)+x^{8}\left(\frac{45d}{8}+\frac{5e}{4}\right)+x^{7}\left(\frac{10d}{7}+\frac{e}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**6/6 + e*x**17/17 + x**16*(d/16 + 5*e/8) + x**15*(2*d/3 + 3*e) + x**14*
(45*d/14 + 60*e/7) + x**13*(120*d/13 + 210*e/13) + x**12*(35*d/2 + 21*e) +
x**11*(252*d/11 + 210*e/11) + x**10*(21*d + 12*e) + x**9*(40*d/3 + 5*e) + x
**8*(45*d/8 + 5*e/4) + x**7*(10*d/7 + e/7)
```

3.489 $\int x^4(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=87

$$\frac{1}{15}(x+1)^{15}(d-5e)-\frac{1}{7}(x+1)^{14}(2d-5e)+\frac{2}{13}(x+1)^{13}(3d-5e)-\frac{1}{12}(x+1)^{12}(4d-5e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{16}e(x+1)^{16}$$

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{15}(x+1)^{15}(d-5e)-\frac{1}{7}(x+1)^{14}(2d-5e)+\frac{2}{13}(x+1)^{13}(3d-5e)-\frac{1}{12}(x+1)^{12}(4d-5e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{16}e(x+1)^{16}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 - ((4*d - 5*e)*(1 + x)^12)/12 + (2*(3*d - 5*e)*(1 +
 x)^13)/13 - ((2*d - 5*e)*(1 + x)^14)/7 + ((d - 5*e)*(1 + x)^15)/15 + (e*(1
 + x)^16)/16
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^4(1+x)^{10}(d+ex)\,dx\\ &= \int \left((d-e)(1+x)^{10}+(-4d+5e)(1+x)^{11}+2(3d-5e)(1+x)^{12}-2(2d-5e)(1\right.\\ &= \frac{1}{11}(d-e)(1+x)^{11}-\frac{1}{12}(4d-5e)(1+x)^{12}+\frac{2}{13}(3d-5e)(1+x)^{13}-\frac{1}{7}(2d-5e)(\end{aligned}$$

Mathematica [A] time = 0.02, size = 153, normalized size = 1.76

$$\frac{1}{15}x^{15}(d+10e)+\frac{5}{14}x^{14}(2d+9e)+\frac{15}{13}x^{13}(3d+8e)+\frac{5}{2}x^{12}(4d+7e)+\frac{42}{11}x^{11}(5d+6e)+\frac{21}{5}x^{10}(6d+5e)+\frac{10}{3}x^9(7d+4e)+\frac{15}{8}x^8(8d+3e)+\frac{5}{7}x^7(9d+2e)+\frac{1}{6}x^6(10d+e)+\frac{dx^5}{5}+\frac{ex^{16}}{16}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^5)/5 + ((10*d + e)*x^6)/6 + (5*(9*d + 2*e)*x^7)/7 + (15*(8*d + 3*e)*x^
8)/8 + (10*(7*d + 4*e)*x^9)/3 + (21*(6*d + 5*e)*x^10)/5 + (42*(5*d + 6*e)*x
^11)/11 + (5*(4*d + 7*e)*x^12)/2 + (15*(3*d + 8*e)*x^13)/13 + (5*(2*d + 9*e
)*x^14)/14 + ((d + 10*e)*x^15)/15 + (e*x^16)/16
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^4*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.38, size = 133, normalized size = 1.53

$$\frac{1}{16}x^{16}e+\frac{2}{3}x^{15}e+\frac{1}{15}x^{15}d+\frac{45}{14}x^{14}e+\frac{5}{7}x^{14}d+\frac{120}{13}x^{13}e+\frac{45}{13}x^{13}d+\frac{35}{2}x^{12}e+10x^{12}d+\frac{252}{11}x^{11}e+\frac{210}{11}x^{11}d+21x^{10}e+\frac{126}{5}x^{10}d+\frac{40}{3}x^9e+\frac{70}{3}x^9d+\frac{45}{8}x^8e+15x^8d+\frac{10}{7}x^7e+\frac{45}{7}x^7d+\frac{1}{6}x^6e+\frac{5}{3}x^6d+\frac{1}{5}x^5d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/16*x^16*e + 2/3*x^15*e + 1/15*x^15*d + 45/14*x^14*e + 5/7*x^14*d + 120/13
*x^13*e + 45/13*x^13*d + 35/2*x^12*e + 10*x^12*d + 252/11*x^11*e + 210/11*x
^11*d + 21*x^10*e + 126/5*x^10*d + 40/3*x^9*e + 70/3*x^9*d + 45/8*x^8*e + 1
5*x^8*d + 10/7*x^7*e + 45/7*x^7*d + 1/6*x^6*e + 5/3*x^6*d + 1/5*x^5*d
```

giac [A] time = 0.16, size = 144, normalized size = 1.66

$$\frac{1}{16}x^{16}e+\frac{1}{15}dx^{15}+\frac{2}{3}x^{15}e+\frac{5}{7}dx^{14}+\frac{45}{14}x^{14}e+\frac{45}{13}dx^{13}+\frac{120}{13}x^{13}e+10dx^{12}+\frac{35}{2}x^{12}e+\frac{210}{11}dx^{11}+\frac{252}{11}x^{11}e+\frac{126}{5}dx^{10}+21x^{10}e+\frac{70}{3}dx^9+\frac{40}{3}x^9e+15dx^8+\frac{45}{8}x^8e+\frac{45}{7}dx^7+\frac{10}{7}x^7e+\frac{5}{3}dx^6+\frac{1}{6}x^6e+\frac{1}{5}dx^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/16*x^16*e + 1/15*d*x^15 + 2/3*x^15*e + 5/7*d*x^14 + 45/14*x^14*e + 45/13*
d*x^13 + 120/13*x^13*e + 10*d*x^12 + 35/2*x^12*e + 210/11*d*x^11 + 252/11*x
^11*e + 126/5*d*x^10 + 21*x^10*e + 70/3*d*x^9 + 40/3*x^9*e + 15*d*x^8 + 45/
8*x^8*e + 45/7*d*x^7 + 10/7*x^7*e + 5/3*d*x^6 + 1/6*x^6*e + 1/5*d*x^5
```

maple [A] time = 0.05, size = 130, normalized size = 1.49

$$\frac{e\,x^{16}}{16}+\frac{(d+10e)\,x^{15}}{15}+\frac{(10d+45e)\,x^{14}}{14}+\frac{(45d+120e)\,x^{13}}{13}+\frac{(120d+210e)\,x^{12}}{12}+\frac{(210d+252e)\,x^{11}}{11}+\frac{(252d+210e)\,x^{10}}{10}+\frac{(210d+120e)\,x^{9}}{9}+\frac{(120d+45e)\,x^{8}}{8}+\frac{(45d+10e)\,x^{7}}{7}+\frac{d\,x^{5}}{5}+\frac{(10d+e)\,x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/16*e*x^16+1/15*(d+10*e)*x^15+1/14*(10*d+45*e)*x^14+1/13*(45*d+120*e)*x^13
+1/12*(120*d+210*e)*x^12+1/11*(210*d+252*e)*x^11+1/10*(252*d+210*e)*x^10+1/
9*(210*d+120*e)*x^9+1/8*(120*d+45*e)*x^8+1/7*(45*d+10*e)*x^7+1/6*(10*d+e)*x
^6+1/5*d*x^5
```

maxima [A] time = 0.57, size = 129, normalized size = 1.48

$$\frac{1}{16}ex^{16}+\frac{1}{15}(d+10e)x^{15}+\frac{5}{14}(2d+9e)x^{14}+\frac{15}{13}(3d+8e)x^{13}+\frac{5}{2}(4d+7e)x^{12}+\frac{42}{11}(5d+6e)x^{11}+\frac{21}{5}(6d+5e)x^{10}+\frac{10}{3}(7d+4e)x^9+\frac{15}{8}(8d+3e)x^8+\frac{5}{7}(9d+2e)x^7+\frac{1}{6}(10d+e)x^6+\frac{1}{5}dx^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/16*e*x^16 + 1/15*(d + 10*e)*x^15 + 5/14*(2*d + 9*e)*x^14 + 15/13*(3*d + 8
*e)*x^13 + 5/2*(4*d + 7*e)*x^12 + 42/11*(5*d + 6*e)*x^11 + 21/5*(6*d + 5*e)
*x^10 + 10/3*(7*d + 4*e)*x^9 + 15/8*(8*d + 3*e)*x^8 + 5/7*(9*d + 2*e)*x^7 +
 1/6*(10*d + e)*x^6 + 1/5*d*x^5
```

mupad [B] time = 0.08, size = 123, normalized size = 1.41

$$\frac{e\,x^{16}}{16}+\left(\frac{d}{15}+\frac{2\,e}{3}\right)\,x^{15}+\left(\frac{5\,d}{7}+\frac{45\,e}{14}\right)\,x^{14}+\left(\frac{45\,d}{13}+\frac{120\,e}{13}\right)\,x^{13}+\left(10\,d+\frac{35\,e}{2}\right)\,x^{12}+\left(\frac{210\,d}{11}+\frac{252\,e}{11}\right)\,x^{11}+\left(\frac{126\,d}{5}+21\,e\right)\,x^{10}+\left(\frac{70\,d}{3}+\frac{40\,e}{3}\right)\,x^9+\left(15\,d+\frac{45\,e}{8}\right)\,x^8+\left(\frac{45\,d}{7}+\frac{10\,e}{7}\right)\,x^7+\left(\frac{5\,d}{3}+\frac{e}{6}\right)\,x^6+\frac{d\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^6*((5*d)/3 + e/6) + x^15*(d/15 + (2*e)/3) + x^12*(10*d + (35*e)/2) + x^7*
((45*d)/7 + (10*e)/7) + x^8*(15*d + (45*e)/8) + x^14*((5*d)/7 + (45*e)/14)
+ x^9*((70*d)/3 + (40*e)/3) + x^10*((126*d)/5 + 21*e) + x^13*((45*d)/13 + (
120*e)/13) + x^11*((210*d)/11 + (252*e)/11) + (d*x^5)/5 + (e*x^16)/16
```

sympy [A] time = 0.10, size = 139, normalized size = 1.60

$$\frac{dx^5}{5}+\frac{ex^{16}}{16}+x^{15}\left(\frac{d}{15}+\frac{2e}{3}\right)+x^{14}\left(\frac{5d}{7}+\frac{45e}{14}\right)+x^{13}\left(\frac{45d}{13}+\frac{120e}{13}\right)+x^{12}\left(10d+\frac{35e}{2}\right)+x^{11}\left(\frac{210d}{11}+\frac{252e}{11}\right)+x^{10}\left(\frac{126d}{5}+21e\right)+x^9\left(\frac{70d}{3}+\frac{40e}{3}\right)+x^8\left(15d+\frac{45e}{8}\right)+x^7\left(\frac{45d}{7}+\frac{10e}{7}\right)+x^6\left(\frac{5d}{3}+\frac{e}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**5/5 + e*x**16/16 + x**15*(d/15 + 2*e/3) + x**14*(5*d/7 + 45*e/14) + x*
*13*(45*d/13 + 120*e/13) + x**12*(10*d + 35*e/2) + x**11*(210*d/11 + 252*e/
11) + x**10*(126*d/5 + 21*e) + x**9*(70*d/3 + 40*e/3) + x**8*(15*d + 45*e/8
) + x**7*(45*d/7 + 10*e/7) + x**6*(5*d/3 + e/6)
```

3.490 $\int x^3(d+ex)\left(1+2x+x^2\right)^5 dx$

Optimal. Leaf size=69

$$\frac{1}{14}(x+1)^{14}(d-4e)-\frac{3}{13}(x+1)^{13}(d-2e)+\frac{1}{12}(x+1)^{12}(3d-4e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{15}e(x+1)^{15}$$

Rubi [A] time = 0.05, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{14}(x+1)^{14}(d-4e)-\frac{3}{13}(x+1)^{13}(d-2e)+\frac{1}{12}(x+1)^{12}(3d-4e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{15}e(x+1)^{15}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((3*d - 4*e)*(1 + x)^12)/12 - (3*(d - 2*e)*(1 +
x)^13)/13 + ((d - 4*e)*(1 + x)^14)/14 + (e*(1 + x)^15)/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^3(d+ex)\left(1+2x+x^2\right)^5 dx &= \int x^3(1+x)^{10}(d+ex)\,dx\\ &= \int \left((-d+e)(1+x)^{10}+(3d-4e)(1+x)^{11}-3(d-2e)(1+x)^{12}+(d-4e)(1+\right.\\ &= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(3d-4e)(1+x)^{12}-\frac{3}{13}(d-2e)(1+x)^{13}+\frac{1}{14}(d-4\end{aligned}$$

Mathematica [B] time = 0.02, size = 153, normalized size = 2.22

$$\frac{1}{14}x^{14}(d+10e)+\frac{5}{13}x^{13}(2d+9e)+\frac{5}{4}x^{12}(3d+8e)+\frac{30}{11}x^{11}(4d+7e)+\frac{21}{5}x^{10}(5d+6e)+\frac{14}{3}x^9(6d+5e)+\frac{15}{4}x^8(7d+4e)+\frac{15}{7}x^7(8d+3e)+\frac{5}{6}x^6(9d+2e)+\frac{1}{5}x^5(10d+e)+\frac{dx^4}{4}+\frac{ex^{15}}{15}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^4)/4 + ((10*d + e)*x^5)/5 + (5*(9*d + 2*e)*x^6)/6 + (15*(8*d + 3*e)*x^
7)/7 + (15*(7*d + 4*e)*x^8)/4 + (14*(6*d + 5*e)*x^9)/3 + (21*(5*d + 6*e)*x^
10)/5 + (30*(4*d + 7*e)*x^11)/11 + (5*(3*d + 8*e)*x^12)/4 + (5*(2*d + 9*e)*
x^13)/13 + ((d + 10*e)*x^14)/14 + (e*x^15)/15
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^3*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.36, size = 133, normalized size = 1.93

$$\frac{1}{15}x^{15}e+\frac{5}{7}x^{14}e+\frac{1}{14}x^{14}d+\frac{45}{13}x^{13}e+\frac{10}{13}x^{13}d+10x^{12}e+\frac{15}{4}x^{12}d+\frac{210}{11}x^{11}e+\frac{120}{11}x^{11}d+\frac{126}{5}x^{10}e+21x^{10}d+\frac{70}{3}x^9e+28x^9d+15x^8e+\frac{105}{4}x^8d+\frac{45}{7}x^7e+\frac{120}{7}x^7d+\frac{5}{3}x^6e+\frac{15}{2}x^6d+\frac{1}{5}x^5e+2x^5d+\frac{1}{4}x^4d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/15*x^15*e + 5/7*x^14*e + 1/14*x^14*d + 45/13*x^13*e + 10/13*x^13*d + 10*x
^12*e + 15/4*x^12*d + 210/11*x^11*e + 120/11*x^11*d + 126/5*x^10*e + 21*x^1
0*d + 70/3*x^9*e + 28*x^9*d + 15*x^8*e + 105/4*x^8*d + 45/7*x^7*e + 120/7*x
^7*d + 5/3*x^6*e + 15/2*x^6*d + 1/5*x^5*e + 2*x^5*d + 1/4*x^4*d
```

giac [B] time = 0.15, size = 144, normalized size = 2.09

$$\frac{1}{15}x^{15}e+\frac{1}{14}dx^{14}+\frac{5}{7}x^{14}e+\frac{10}{13}dx^{13}+\frac{45}{13}x^{13}e+\frac{15}{4}dx^{12}+10x^{12}e+\frac{120}{11}dx^{11}+\frac{210}{11}x^{11}e+21dx^{10}+\frac{126}{5}x^{10}e+28dx^9+\frac{70}{3}x^9e+\frac{105}{4}dx^8+15x^8e+\frac{120}{7}dx^7+\frac{45}{7}x^7e+\frac{15}{2}dx^6+\frac{5}{3}x^6e+2dx^5+\frac{1}{5}x^5e+\frac{1}{4}dx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/15*x^15*e + 1/14*d*x^14 + 5/7*x^14*e + 10/13*d*x^13 + 45/13*x^13*e + 15/4
*d*x^12 + 10*x^12*e + 120/11*d*x^11 + 210/11*x^11*e + 21*d*x^10 + 126/5*x^1
0*e + 28*d*x^9 + 70/3*x^9*e + 105/4*d*x^8 + 15*x^8*e + 120/7*d*x^7 + 45/7*x
^7*e + 15/2*d*x^6 + 5/3*x^6*e + 2*d*x^5 + 1/5*x^5*e + 1/4*d*x^4
```

maple [B] time = 0.04, size = 130, normalized size = 1.88

$$\frac{e\,x^{15}}{15}+\frac{(d+10e)\,x^{14}}{14}+\frac{(10d+45e)\,x^{13}}{13}+\frac{(45d+120e)\,x^{12}}{12}+\frac{(120d+210e)\,x^{11}}{11}+\frac{(210d+252e)\,x^{10}}{10}+\frac{(252d+210e)\,x^9}{9}+\frac{(210d+120e)\,x^8}{8}+\frac{(120d+45e)\,x^7}{7}+\frac{(45d+10e)\,x^6}{6}+\frac{d\,x^4}{4}+\frac{(10d+e)\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/15*e*x^15+1/14*(d+10*e)*x^14+1/13*(10*d+45*e)*x^13+1/12*(45*d+120*e)*x^12
+1/11*(120*d+210*e)*x^11+1/10*(210*d+252*e)*x^10+1/9*(252*d+210*e)*x^9+1/8*
(210*d+120*e)*x^8+1/7*(120*d+45*e)*x^7+1/6*(45*d+10*e)*x^6+1/5*(10*d+e)*x^5
+1/4*d*x^4
```

maxima [B] time = 0.54, size = 129, normalized size = 1.87

$$\frac{1}{15}ex^{15}+\frac{1}{14}(d+10e)x^{14}+\frac{5}{13}(2d+9e)x^{13}+\frac{5}{4}(3d+8e)x^{12}+\frac{30}{11}(4d+7e)x^{11}+\frac{21}{5}(5d+6e)x^{10}+\frac{14}{3}(6d+5e)x^9+\frac{15}{4}(7d+4e)x^8+\frac{15}{7}(8d+3e)x^7+\frac{5}{6}(9d+2e)x^6+\frac{1}{5}(10d+e)x^5+\frac{1}{4}dx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/15*e*x^15 + 1/14*(d + 10*e)*x^14 + 5/13*(2*d + 9*e)*x^13 + 5/4*(3*d + 8*e
)*x^12 + 30/11*(4*d + 7*e)*x^11 + 21/5*(5*d + 6*e)*x^10 + 14/3*(6*d + 5*e)*
x^9 + 15/4*(7*d + 4*e)*x^8 + 15/7*(8*d + 3*e)*x^7 + 5/6*(9*d + 2*e)*x^6 + 1
/5*(10*d + e)*x^5 + 1/4*d*x^4
```

mupad [B] time = 0.08, size = 123, normalized size = 1.78

$$\frac{e\,x^{15}}{15}+\left(\frac{d}{14}+\frac{5\,e}{7}\right)\,x^{14}+\left(\frac{10\,d}{13}+\frac{45\,e}{13}\right)\,x^{13}+\left(\frac{15\,d}{4}+10\,e\right)\,x^{12}+\left(\frac{120\,d}{11}+\frac{210\,e}{11}\right)\,x^{11}+\left(21\,d+\frac{126\,e}{5}\right)\,x^{10}+\left(28\,d+\frac{70\,e}{3}\right)\,x^9+\left(\frac{105\,d}{4}+15\,e\right)\,x^8+\left(\frac{120\,d}{7}+\frac{45\,e}{7}\right)\,x^7+\left(\frac{15\,d}{2}+\frac{5\,e}{3}\right)\,x^6+\left(2\,d+\frac{e}{5}\right)\,x^5+\frac{d\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^5*(2*d + e/5) + x^6*((15*d)/2 + (5*e)/3) + x^12*((15*d)/4 + 10*e) + x^14*
(d/14 + (5*e)/7) + x^13*((10*d)/13 + (45*e)/13) + x^9*(28*d + (70*e)/3) + x
^8*((105*d)/4 + 15*e) + x^10*(21*d + (126*e)/5) + x^7*((120*d)/7 + (45*e)/7
) + x^11*((120*d)/11 + (210*e)/11) + (d*x^4)/4 + (e*x^15)/15
```

sympy [B] time = 0.10, size = 136, normalized size = 1.97

$$\frac{dx^4}{4}+\frac{ex^{15}}{15}+x^{14}\left(\frac{d}{14}+\frac{5e}{7}\right)+x^{13}\left(\frac{10d}{13}+\frac{45e}{13}\right)+x^{12}\left(\frac{15d}{4}+10e\right)+x^{11}\left(\frac{120d}{11}+\frac{210e}{11}\right)+x^{10}\left(21d+\frac{126e}{5}\right)+x^9\left(28d+\frac{70e}{3}\right)+x^8\left(\frac{105d}{4}+15e\right)+x^7\left(\frac{120d}{7}+\frac{45e}{7}\right)+x^6\left(\frac{15d}{2}+\frac{5e}{3}\right)+x^5\left(2d+\frac{e}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**4/4 + e*x**15/15 + x**14*(d/14 + 5*e/7) + x**13*(10*d/13 + 45*e/13) +
x**12*(15*d/4 + 10*e) + x**11*(120*d/11 + 210*e/11) + x**10*(21*d + 126*e/5
) + x**9*(28*d + 70*e/3) + x**8*(105*d/4 + 15*e) + x**7*(120*d/7 + 45*e/7)
+ x**6*(15*d/2 + 5*e/3) + x**5*(2*d + e/5)
```

3.491 $\int x^2(d+ex)\left(1+2x+x^2\right)^5 \, dx$

Optimal. Leaf size=55

$$\frac{1}{13}(x+1)^{13}(d-3e)-\frac{1}{12}(x+1)^{12}(2d-3e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{14}e(x+1)^{14}$$

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{13}(x+1)^{13}(d-3e)-\frac{1}{12}(x+1)^{12}(2d-3e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{14}e(x+1)^{14}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 - ((2*d - 3*e)*(1 + x)^12)/12 + ((d - 3*e)*(1 + x)^
13)/13 + (e*(1 + x)^14)/14
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int x^2(d+ex)\left(1+2x+x^2\right)^5 \, dx &= \int x^2(1+x)^{10}(d+ex) \, dx \\
&= \int \left((d-e)(1+x)^{10}+(-2d+3e)(1+x)^{11}+(d-3e)(1+x)^{12}+e(1+x)^{13}\right) dx \\
&= \frac{1}{11}(d-e)(1+x)^{11}-\frac{1}{12}(2d-3e)(1+x)^{12}+\frac{1}{13}(d-3e)(1+x)^{13}+\frac{1}{14}e(1+x)^{14}
\end{aligned}$$

Mathematica [B] time = 0.02, size = 148, normalized size = 2.69

$$\frac{1}{13}x^{13}(d+10e)+\frac{5}{12}x^{12}(2d+9e)+\frac{15}{11}x^{11}(3d+8e)+3x^{10}(4d+7e)+\frac{14}{3}x^9(5d+6e)+\frac{21}{4}x^8(6d+5e)+\frac{30}{7}x^7(7d+4e)+\frac{5}{2}x^6(8d+3e)+x^5(9d+2e)+\frac{1}{4}x^4(10d+e)+\frac{dx^3}{3}+\frac{ex^{14}}{14}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^3)/3 + ((10*d + e)*x^4)/4 + (9*d + 2*e)*x^5 + (5*(8*d + 3*e)*x^6)/2 +
(30*(7*d + 4*e)*x^7)/7 + (21*(6*d + 5*e)*x^8)/4 + (14*(5*d + 6*e)*x^9)/3 +
3*(4*d + 7*e)*x^10 + (15*(3*d + 8*e)*x^11)/11 + (5*(2*d + 9*e)*x^12)/12 + (
(d + 10*e)*x^13)/13 + (e*x^14)/14
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^2*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.37, size = 133, normalized size = 2.42

$$\frac{1}{14}x^{14}e+\frac{10}{13}x^{13}e+\frac{1}{13}x^{13}d+\frac{15}{4}x^{12}e+\frac{5}{6}x^{12}d+\frac{120}{11}x^{11}e+\frac{45}{11}x^{11}d+21x^{10}e+12x^{10}d+28x^9e+\frac{70}{3}x^9d+\frac{105}{4}x^8e+\frac{63}{2}x^8d+\frac{120}{7}x^7e+30x^7d+\frac{15}{2}x^6e+20x^6d+2x^5e+9x^5d+\frac{1}{4}x^4e+\frac{5}{2}x^4d+\frac{1}{3}x^3d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*e + 10/13*x^13*e + 1/13*x^13*d + 15/4*x^12*e + 5/6*x^12*d + 120/1
1*x^11*e + 45/11*x^11*d + 21*x^10*e + 12*x^10*d + 28*x^9*e + 70/3*x^9*d + 1
05/4*x^8*e + 63/2*x^8*d + 120/7*x^7*e + 30*x^7*d + 15/2*x^6*e + 20*x^6*d +
2*x^5*e + 9*x^5*d + 1/4*x^4*e + 5/2*x^4*d + 1/3*x^3*d
```

giac [B] time = 0.18, size = 144, normalized size = 2.62

$$\frac{1}{14}x^{14}e+\frac{1}{13}dx^{13}+\frac{10}{13}x^{13}e+\frac{5}{6}dx^{12}+\frac{15}{4}x^{12}e+\frac{45}{11}dx^{11}+\frac{120}{11}x^{11}e+12dx^{10}+21x^{10}e+\frac{70}{3}dx^9+28x^9e+\frac{63}{2}dx^8+\frac{105}{4}x^8e+30dx^7+\frac{120}{7}x^7e+20dx^6+\frac{15}{2}x^6e+9dx^5+2x^5e+\frac{5}{2}dx^4+\frac{1}{4}x^4e+\frac{1}{3}dx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/14*x^14*e + 1/13*d*x^13 + 10/13*x^13*e + 5/6*d*x^12 + 15/4*x^12*e + 45/11
*d*x^11 + 120/11*x^11*e + 12*d*x^10 + 21*x^10*e + 70/3*d*x^9 + 28*x^9*e + 6
3/2*d*x^8 + 105/4*x^8*e + 30*d*x^7 + 120/7*x^7*e + 20*d*x^6 + 15/2*x^6*e +
9*d*x^5 + 2*x^5*e + 5/2*d*x^4 + 1/4*x^4*e + 1/3*d*x^3
```

maple [B] time = 0.04, size = 130, normalized size = 2.36

$$\frac{ex^{14}}{14}+\frac{(d+10e)x^{13}}{13}+\frac{(10d+45e)x^{12}}{12}+\frac{(45d+120e)x^{11}}{11}+\frac{(120d+210e)x^{10}}{10}+\frac{(210d+252e)x^9}{9}+\frac{(252d+210e)x^8}{8}+\frac{(210d+120e)x^7}{7}+\frac{(120d+45e)x^6}{6}+\frac{(45d+10e)x^5}{5}+\frac{dx^3}{3}+\frac{(10d+e)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/14*e*x^14+1/13*(d+10*e)*x^13+1/12*(10*d+45*e)*x^12+1/11*(45*d+120*e)*x^11
+1/10*(120*d+210*e)*x^10+1/9*(210*d+252*e)*x^9+1/8*(252*d+210*e)*x^8+1/7*(2
10*d+120*e)*x^7+1/6*(120*d+45*e)*x^6+1/5*(45*d+10*e)*x^5+1/4*(10*d+e)*x^4+1
/3*d*x^3
```

maxima [B] time = 0.58, size = 128, normalized size = 2.33

$$\frac{1}{14}ex^{14}+\frac{1}{13}(d+10e)x^{13}+\frac{5}{12}(2d+9e)x^{12}+\frac{15}{11}(3d+8e)x^{11}+3(4d+7e)x^{10}+\frac{14}{3}(5d+6e)x^9+\frac{21}{4}(6d+5e)x^8+\frac{30}{7}(7d+4e)x^7+\frac{5}{2}(8d+3e)x^6+(9d+2e)x^5+\frac{1}{4}(10d+e)x^4+\frac{1}{3}dx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/14*e*x^14 + 1/13*(d + 10*e)*x^13 + 5/12*(2*d + 9*e)*x^12 + 15/11*(3*d + 8
*e)*x^11 + 3*(4*d + 7*e)*x^10 + 14/3*(5*d + 6*e)*x^9 + 21/4*(6*d + 5*e)*x^8
 + 30/7*(7*d + 4*e)*x^7 + 5/2*(8*d + 3*e)*x^6 + (9*d + 2*e)*x^5 + 1/4*(10*d
 + e)*x^4 + 1/3*d*x^3
```

mupad [B] time = 0.08, size = 123, normalized size = 2.24

$$\frac{e\,x^{14}}{14}+\left(\frac{d}{13}+\frac{10\,e}{13}\right)\,x^{13}+\left(\frac{5\,d}{6}+\frac{15\,e}{4}\right)\,x^{12}+\left(\frac{45\,d}{11}+\frac{120\,e}{11}\right)\,x^{11}+\left(12\,d+21\,e\right)\,x^{10}+\left(\frac{70\,d}{3}+28\,e\right)\,x^9+\left(\frac{63\,d}{2}+\frac{105\,e}{4}\right)\,x^8+\left(30\,d+\frac{120\,e}{7}\right)\,x^7+\left(20\,d+\frac{15\,e}{2}\right)\,x^6+\left(9\,d+2\,e\right)\,x^5+\left(\frac{5\,d}{2}+\frac{e}{4}\right)\,x^4+\frac{d\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^4*((5*d)/2 + e/4) + x^5*(9*d + 2*e) + x^12*((5*d)/6 + (15*e)/4) + x^6*(20
*d + (15*e)/2) + x^10*(12*d + 21*e) + x^13*(d/13 + (10*e)/13) + x^9*((70*d)
/3 + 28*e) + x^7*(30*d + (120*e)/7) + x^8*((63*d)/2 + (105*e)/4) + x^11*((4
5*d)/11 + (120*e)/11) + (d*x^3)/3 + (e*x^14)/14
```

sympy [B] time = 0.10, size = 133, normalized size = 2.42

$$\frac{dx^{3}}{3}+\frac{ex^{14}}{14}+x^{13}\left(\frac{d}{13}+\frac{10e}{13}\right)+x^{12}\left(\frac{5d}{6}+\frac{15e}{4}\right)+x^{11}\left(\frac{45d}{11}+\frac{120e}{11}\right)+x^{10}\left(12d+21e\right)+x^{9}\left(\frac{70d}{3}+28e\right)+x^{8}\left(\frac{63d}{2}+\frac{105e}{4}\right)+x^{7}\left(30d+\frac{120e}{7}\right)+x^{6}\left(20d+\frac{15e}{2}\right)+x^{5}\left(9d+2e\right)+x^{4}\left(\frac{5d}{2}+\frac{e}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**3/3 + e*x**14/14 + x**13*(d/13 + 10*e/13) + x**12*(5*d/6 + 15*e/4) + x
**11*(45*d/11 + 120*e/11) + x**10*(12*d + 21*e) + x**9*(70*d/3 + 28*e) + x*
*8*(63*d/2 + 105*e/4) + x**7*(30*d + 120*e/7) + x**6*(20*d + 15*e/2) + x**5
*(9*d + 2*e) + x**4*(5*d/2 + e/4)
```

3.492 $\int x(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=39

$$\frac{1}{12}(x+1)^{12}(d-2e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{13}e(x+1)^{13}$$

Rubi [A] time = 0.04, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 76}

$$\frac{1}{12}(x+1)^{12}(d-2e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{13}e(x+1)^{13}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((d - 2*e)*(1 + x)^12)/12 + (e*(1 + x)^13)/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int x(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x(1+x)^{10}(d+ex)\,dx\\
&= \int \left((-d+e)(1+x)^{10}+(d-2e)(1+x)^{11}+e(1+x)^{12}\right)dx\\
&= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(d-2e)(1+x)^{12}+\frac{1}{13}e(1+x)^{13}
\end{aligned}$$

Mathematica [B] time = 0.02, size = 147, normalized size = 3.77

$$\frac{1}{12}x^{12}(d+10e)+\frac{5}{11}x^{11}(2d+9e)+\frac{3}{2}x^{10}(3d+8e)+\frac{10}{3}x^9(4d+7e)+\frac{21}{4}x^8(5d+6e)+6x^7(6d+5e)+5x^6(7d+4e)+3x^5(8d+3e)+\frac{5}{4}x^4(9d+2e)+\frac{1}{3}x^3(10d+e)+\frac{dx^2}{2}+\frac{ex^{13}}{13}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^2)/2 + ((10*d + e)*x^3)/3 + (5*(9*d + 2*e)*x^4)/4 + 3*(8*d + 3*e)*x^5
+ 5*(7*d + 4*e)*x^6 + 6*(6*d + 5*e)*x^7 + (21*(5*d + 6*e)*x^8)/4 + (10*(4*d
 + 7*e)*x^9)/3 + (3*(3*d + 8*e)*x^10)/2 + (5*(2*d + 9*e)*x^11)/11 + ((d + 1
0*e)*x^12)/12 + (e*x^13)/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.36, size = 133, normalized size = 3.41

$$\frac{1}{13}x^{13}e+\frac{5}{6}x^{12}e+\frac{1}{12}x^{12}d+\frac{45}{11}x^{11}e+\frac{10}{11}x^{11}d+12x^{10}e+\frac{9}{2}x^{10}d+\frac{70}{3}x^{9}e+\frac{40}{3}x^{9}d+\frac{63}{2}x^{8}e+\frac{105}{4}x^{8}d+30x^{7}e+36x^{7}d+20x^{6}e+35x^{6}d+9x^{5}e+24x^{5}d+\frac{5}{2}x^{4}e+\frac{45}{4}x^{4}d+\frac{1}{3}x^{3}e+\frac{10}{3}x^{3}d+\frac{1}{2}x^{2}d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e + 5/6*x^12*e + 1/12*x^12*d + 45/11*x^11*e + 10/11*x^11*d + 12*x
^10*e + 9/2*x^10*d + 70/3*x^9*e + 40/3*x^9*d + 63/2*x^8*e + 105/4*x^8*d + 3
0*x^7*e + 36*x^7*d + 20*x^6*e + 35*x^6*d + 9*x^5*e + 24*x^5*d + 5/2*x^4*e +
 45/4*x^4*d + 1/3*x^3*e + 10/3*x^3*d + 1/2*x^2*d
```

giac [B] time = 0.15, size = 144, normalized size = 3.69

$$\frac{1}{13}x^{13}e+\frac{1}{12}dx^{12}+\frac{5}{6}x^{12}e+\frac{10}{11}dx^{11}+\frac{45}{11}x^{11}e+\frac{9}{2}dx^{10}+12x^{10}e+\frac{40}{3}dx^{9}+\frac{70}{3}x^{9}e+\frac{105}{4}dx^{8}+\frac{63}{2}x^{8}e+36dx^{7}+30x^{7}e+35dx^{6}+20x^{6}e+24dx^{5}+9x^{5}e+\frac{45}{4}dx^{4}+\frac{5}{2}x^{4}e+\frac{10}{3}dx^{3}+\frac{1}{3}x^{3}e+\frac{1}{2}dx^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/13*x^13*e + 1/12*d*x^12 + 5/6*x^12*e + 10/11*d*x^11 + 45/11*x^11*e + 9/2*
d*x^10 + 12*x^10*e + 40/3*d*x^9 + 70/3*x^9*e + 105/4*d*x^8 + 63/2*x^8*e + 3
6*d*x^7 + 30*x^7*e + 35*d*x^6 + 20*x^6*e + 24*d*x^5 + 9*x^5*e + 45/4*d*x^4
+ 5/2*x^4*e + 10/3*d*x^3 + 1/3*x^3*e + 1/2*d*x^2
```

maple [B] time = 0.04, size = 130, normalized size = 3.33

$$\frac{e\,x^{13}}{13}+\frac{(d+10e)\,x^{12}}{12}+\frac{(10d+45e)\,x^{11}}{11}+\frac{(45d+120e)\,x^{10}}{10}+\frac{(120d+210e)\,x^{9}}{9}+\frac{(210d+252e)\,x^{8}}{8}+\frac{(252d+210e)\,x^{7}}{7}+\frac{(210d+120e)\,x^{6}}{6}+\frac{(120d+45e)\,x^{5}}{5}+\frac{(45d+10e)\,x^{4}}{4}+\frac{d\,x^{2}}{2}+\frac{(10d+e)\,x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/13*e*x^13+1/12*(d+10*e)*x^12+1/11*(10*d+45*e)*x^11+1/10*(45*d+120*e)*x^10
+1/9*(120*d+210*e)*x^9+1/8*(210*d+252*e)*x^8+1/7*(252*d+210*e)*x^7+1/6*(210
*d+120*e)*x^6+1/5*(120*d+45*e)*x^5+1/4*(45*d+10*e)*x^4+1/3*(10*d+e)*x^3+1/2
*d*x^2
```

maxima [B] time = 0.56, size = 129, normalized size = 3.31

$$\frac{1}{13}ex^{13}+\frac{1}{12}(d+10e)x^{12}+\frac{5}{11}(2d+9e)x^{11}+\frac{3}{2}(3d+8e)x^{10}+\frac{10}{3}(4d+7e)x^{9}+\frac{21}{4}(5d+6e)x^{8}+6(6d+5e)x^{7}+5(7d+4e)x^{6}+3(8d+3e)x^{5}+\frac{5}{4}(9d+2e)x^{4}+\frac{1}{3}(10d+e)x^{3}+\frac{1}{2}dx^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/13*e*x^13 + 1/12*(d + 10*e)*x^12 + 5/11*(2*d + 9*e)*x^11 + 3/2*(3*d + 8*e
)*x^10 + 10/3*(4*d + 7*e)*x^9 + 21/4*(5*d + 6*e)*x^8 + 6*(6*d + 5*e)*x^7 +
5*(7*d + 4*e)*x^6 + 3*(8*d + 3*e)*x^5 + 5/4*(9*d + 2*e)*x^4 + 1/3*(10*d + e
)*x^3 + 1/2*d*x^2
```

mupad [B] time = 0.08, size = 123, normalized size = 3.15

$$\frac{e\,x^{13}}{13}+\left(\frac{d}{12}+\frac{5\,e}{6}\right)\,x^{12}+\left(\frac{10\,d}{11}+\frac{45\,e}{11}\right)\,x^{11}+\left(\frac{9\,d}{2}+12\,e\right)\,x^{10}+\left(\frac{40\,d}{3}+\frac{70\,e}{3}\right)\,x^{9}+\left(\frac{105\,d}{4}+\frac{63\,e}{2}\right)\,x^{8}+(36\,d+30\,e)\,x^{7}+(35\,d+20\,e)\,x^{6}+(24\,d+9\,e)\,x^{5}+\left(\frac{45\,d}{4}+\frac{5\,e}{2}\right)\,x^{4}+\left(\frac{10\,d}{3}+\frac{e}{3}\right)\,x^{3}+\frac{d\,x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^3*((10*d)/3 + e/3) + x^10*((9*d)/2 + 12*e) + x^12*(d/12 + (5*e)/6) + x^5*
(24*d + 9*e) + x^4*((45*d)/4 + (5*e)/2) + x^6*(35*d + 20*e) + x^7*(36*d + 3
0*e) + x^11*((10*d)/11 + (45*e)/11) + x^9*((40*d)/3 + (70*e)/3) + x^8*((105
*d)/4 + (63*e)/2) + (d*x^2)/2 + (e*x^13)/13
```

sympy [B] time = 0.10, size = 133, normalized size = 3.41

$$\frac{dx^2}{2} + \frac{ex^{13}}{13} + x^{12}\left(\frac{d}{12} + \frac{5e}{6}\right) + x^{11}\left(\frac{10d}{11} + \frac{45e}{11}\right) + x^{10}\left(\frac{9d}{2} + 12e\right) + x^9\left(\frac{40d}{3} + \frac{70e}{3}\right) + x^8\left(\frac{105d}{4} + \frac{63e}{2}\right) + x^7(36d + 30e) + x^6(35d + 20e) + x^5(24d + 9e) + x^4\left(\frac{45d}{4} + \frac{5e}{2}\right) + x^3\left(\frac{10d}{3} + \frac{e}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**2/2 + e*x**13/13 + x**12*(d/12 + 5*e/6) + x**11*(10*d/11 + 45*e/11) +
x**10*(9*d/2 + 12*e) + x**9*(40*d/3 + 70*e/3) + x**8*(105*d/4 + 63*e/2) + x
**7*(36*d + 30*e) + x**6*(35*d + 20*e) + x**5*(24*d + 9*e) + x**4*(45*d/4 +
 5*e/2) + x**3*(10*d/3 + e/3)
```

3.493 $\int (d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=25

$$\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{12}e(x+1)^{12}$$

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {27, 43}

$$\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{12}e(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 + (e*(1 + x)^12)/12
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (d+ex)\left(1+2x+x^2\right)^5\,dx &= \int (1+x)^{10}(d+ex)\,dx\\ &= \int \left((d-e)(1+x)^{10}+e(1+x)^{11}\right)\,dx\\ &= \frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}e(1+x)^{12}\end{aligned}$$

Mathematica [B] time = 0.02, size = 113, normalized size = 4.52

$$d\left(\frac{x^{11}}{11}+x^{10}+5x^9+15x^8+30x^7+42x^6+42x^5+30x^4+15x^3+5x^2+x\right)+\frac{1}{132}e\left(11x^{10}+120x^9+594x^8+1760x^7+3465x^6+4752x^5+4620x^4+3168x^3+1485x^2+440x+66\right)x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (e*x^2*(66 + 440*x + 1485*x^2 + 3168*x^3 + 4620*x^4 + 4752*x^5 + 3465*x^6 +
 1760*x^7 + 594*x^8 + 120*x^9 + 11*x^10))/132 + d*(x + 5*x^2 + 15*x^3 + 30*
x^4 + 42*x^5 + 42*x^6 + 30*x^7 + 15*x^8 + 5*x^9 + x^10 + x^11/11)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.35, size = 129, normalized size = 5.16

$$\frac{1}{12}x^{12}e+\frac{10}{11}x^{11}e+\frac{1}{11}x^{11}d+\frac{9}{2}x^{10}e+x^{10}d+\frac{40}{3}x^{9}e+5x^{9}d+\frac{105}{4}x^{8}e+15x^{8}d+36x^{7}e+30x^{7}d+35x^{6}e+42x^{6}d+24x^{5}e+42x^{5}d+\frac{45}{4}x^{4}e+30x^{4}d+\frac{10}{3}x^{3}e+15x^{3}d+\frac{1}{2}x^{2}e+5x^{2}d+xd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e + 10/11*x^11*e + 1/11*x^11*d + 9/2*x^10*e + x^10*d + 40/3*x^9*e
 + 5*x^9*d + 105/4*x^8*e + 15*x^8*d + 36*x^7*e + 30*x^7*d + 35*x^6*e + 42*x
^6*d + 24*x^5*e + 42*x^5*d + 45/4*x^4*e + 30*x^4*d + 10/3*x^3*e + 15*x^3*d
+ 1/2*x^2*e + 5*x^2*d + x*d
```

giac [B] time = 0.19, size = 140, normalized size = 5.60

$$\frac{1}{12}x^{12}e+\frac{1}{11}dx^{11}+\frac{10}{11}x^{11}e+dx^{10}+\frac{9}{2}x^{10}e+5dx^{9}+\frac{40}{3}x^{9}e+15dx^{8}+\frac{105}{4}x^{8}e+30dx^{7}+36x^{7}e+42dx^{6}+35x^{6}e+42dx^{5}+24x^{5}e+30dx^{4}+\frac{45}{4}x^{4}e+15dx^{3}+\frac{10}{3}x^{3}e+5dx^{2}+\frac{1}{2}x^{2}e+dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/12*x^12*e + 1/11*d*x^11 + 10/11*x^11*e + d*x^10 + 9/2*x^10*e + 5*d*x^9 +
40/3*x^9*e + 15*d*x^8 + 105/4*x^8*e + 30*d*x^7 + 36*x^7*e + 42*d*x^6 + 35*x
^6*e + 42*d*x^5 + 24*x^5*e + 30*d*x^4 + 45/4*x^4*e + 15*d*x^3 + 10/3*x^3*e
+ 5*d*x^2 + 1/2*x^2*e + d*x
```

maple [B] time = 0.05, size = 127, normalized size = 5.08

$$\frac{e\,x^{12}}{12}+\frac{(d+10e)\,x^{11}}{11}+\frac{(10d+45e)\,x^{10}}{10}+\frac{(45d+120e)\,x^{9}}{9}+\frac{(120d+210e)\,x^{8}}{8}+\frac{(210d+252e)\,x^{7}}{7}+\frac{(252d+210e)\,x^{6}}{6}+\frac{(210d+120e)\,x^{5}}{5}+\frac{(120d+45e)\,x^{4}}{4}+\frac{(45d+10e)\,x^{3}}{3}+dx+\frac{(10d+e)\,x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/12*e*x^12+1/11*(d+10*e)*x^11+1/10*(10*d+45*e)*x^10+1/9*(45*d+120*e)*x^9+1
/8*(120*d+210*e)*x^8+1/7*(210*d+252*e)*x^7+1/6*(252*d+210*e)*x^6+1/5*(210*d
+120*e)*x^5+1/4*(120*d+45*e)*x^4+1/3*(45*d+10*e)*x^3+1/2*(10*d+e)*x^2+d*x
```

maple is followed by **maxima [B]** time = 0.51, size = 126, normalized size = 5.04

$$\frac{1}{12}ex^{12}+\frac{1}{11}(d+10e)x^{11}+\frac{1}{2}(2d+9e)x^{10}+\frac{5}{3}(3d+8e)x^{9}+\frac{15}{4}(4d+7e)x^{8}+6(5d+6e)x^{7}+7(6d+5e)x^{6}+6(7d+4e)x^{5}+\frac{15}{4}(8d+3e)x^{4}+\frac{5}{3}(9d+2e)x^{3}+\frac{1}{2}(10d+e)x^{2}+dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/12*e*x^12 + 1/11*(d + 10*e)*x^11 + 1/2*(2*d + 9*e)*x^10 + 5/3*(3*d + 8*e)
*x^9 + 15/4*(4*d + 7*e)*x^8 + 6*(5*d + 6*e)*x^7 + 7*(6*d + 5*e)*x^6 + 6*(7*
d + 4*e)*x^5 + 15/4*(8*d + 3*e)*x^4 + 5/3*(9*d + 2*e)*x^3 + 1/2*(10*d + e)*
x^2 + d*x
```

mupad [B] time = 0.08, size = 118, normalized size = 4.72

$$\frac{e\,x^{12}}{12}+\left(\frac{d}{11}+\frac{10\,e}{11}\right)x^{11}+\left(d+\frac{9\,e}{2}\right)x^{10}+\left(5\,d+\frac{40\,e}{3}\right)x^{9}+\left(15\,d+\frac{105\,e}{4}\right)x^{8}+(30\,d+36\,e)\,x^{7}+(42\,d+35\,e)\,x^{6}+(42\,d+24\,e)\,x^{5}+\left(30\,d+\frac{45\,e}{4}\right)x^{4}+\left(15\,d+\frac{10\,e}{3}\right)x^{3}+\left(5\,d+\frac{e}{2}\right)x^{2}+d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^2*(5*d + e/2) + x^3*(15*d + (10*e)/3) + x^11*(d/11 + (10*e)/11) + x^9*(5*
d + (40*e)/3) + x^5*(42*d + 24*e) + x^7*(30*d + 36*e) + x^4*(30*d + (45*e)/
```

```
4) + x^6*(42*d + 35*e) + x^8*(15*d + (105*e)/4) + d*x + (e*x^12)/12 + x^10*
(d + (9*e)/2)
```

sympy [B] time = 0.10, size = 119, normalized size = 4.76

$$dx + \frac{ex^{12}}{12} + x^{11}\left(\frac{d}{11} + \frac{10e}{11}\right) + x^{10}\left(d + \frac{9e}{2}\right) + x^{9}\left(5d + \frac{40e}{3}\right) + x^{8}\left(15d + \frac{105e}{4}\right) + x^{7}\left(30d + 36e\right) + x^{6}\left(42d + 35e\right) + x^{5}\left(42d + 24e\right) + x^{4}\left(30d + \frac{45e}{4}\right) + x^{3}\left(15d + \frac{10e}{3}\right) + x^{2}\left(5d + \frac{e}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x + e*x**12/12 + x**11*(d/11 + 10*e/11) + x**10*(d + 9*e/2) + x**9*(5*d +
 40*e/3) + x**8*(15*d + 105*e/4) + x**7*(30*d + 36*e) + x**6*(42*d + 35*e)
+ x**5*(42*d + 24*e) + x**4*(30*d + 45*e/4) + x**3*(15*d + 10*e/3) + x**2*(
5*d + e/2)
```

3.494 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x}\,dx$

Optimal. Leaf size=87

$$\frac{dx^{10}}{10}+\frac{10dx^9}{9}+\frac{45dx^8}{8}+\frac{120dx^7}{7}+35dx^6+\frac{252dx^5}{5}+\frac{105dx^4}{2}+40dx^3+\frac{45dx^2}{2}+10dx+d\log(x)+\frac{1}{11}e(x+1)^{11}$$

Rubi [A] time = 0.02, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {27, 80, 43}

$$\frac{dx^{10}}{10}+\frac{10dx^9}{9}+\frac{45dx^8}{8}+\frac{120dx^7}{7}+35dx^6+\frac{252dx^5}{5}+\frac{105dx^4}{2}+40dx^3+\frac{45dx^2}{2}+10dx+d\log(x)+\frac{1}{11}e(x+1)^{11}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] 10*d*x + (45*d*x^2)/2 + 40*d*x^3 + (105*d*x^4)/2 + (252*d*x^5)/5 + 35*d*x^6
 + (120*d*x^7)/7 + (45*d*x^8)/8 + (10*d*x^9)/9 + (d*x^10)/10 + (e*(1 + x)^1
1)/11 + d*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x}\,dx\\ &= \frac{1}{11}e(1+x)^{11}+d\int \frac{(1+x)^{10}}{x}\,dx\\ &= \frac{1}{11}e(1+x)^{11}+d\int \left(10+\frac{1}{x}+45x+120x^2+210x^3+252x^4+210x^5+120x^6\right.\\ &= 10dx+\frac{45dx^2}{2}+40dx^3+\frac{105dx^4}{2}+\frac{252dx^5}{5}+35dx^6+\frac{120dx^7}{7}+\frac{45dx^8}{8}+\frac{10}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.98

$$d\left(\frac{x^{10}}{10}+\frac{10x^9}{9}+\frac{45x^8}{8}+\frac{120x^7}{7}+35x^6+\frac{252x^5}{5}+\frac{105x^4}{2}+40x^3+\frac{45x^2}{2}+10x+\frac{7381}{2520}\right)+d\log(-x)+\frac{1}{11}e(x+1)^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] (e*(1 + x)^11)/11 + d*(7381/2520 + 10*x + (45*x^2)/2 + 40*x^3 + (105*x^4)/2
 + (252*x^5)/5 + 35*x^6 + (120*x^7)/7 + (45*x^8)/8 + (10*x^9)/9 + x^10/10)
+ d*Log[-x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x, x]
```

fricas [A] time = 0.40, size = 124, normalized size = 1.43

$$\frac{1}{11}ex^{11}+\frac{1}{10}(d+10e)x^{10}+\frac{5}{9}(2d+9e)x^9+\frac{15}{8}(3d+8e)x^8+\frac{30}{7}(4d+7e)x^7+7(5d+6e)x^6+\frac{42}{5}(6d+5e)x^5+\frac{15}{2}(7d+4e)x^4+5(8d+3e)x^3+\frac{5}{2}(9d+2e)x^2+(10d+e)x+d\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x,x, algorithm="fricas")
```

```
[Out] 1/11*e*x^11 + 1/10*(d + 10*e)*x^10 + 5/9*(2*d + 9*e)*x^9 + 15/8*(3*d + 8*e)
*x^8 + 30/7*(4*d + 7*e)*x^7 + 7*(5*d + 6*e)*x^6 + 42/5*(6*d + 5*e)*x^5 + 15
/2*(7*d + 4*e)*x^4 + 5*(8*d + 3*e)*x^3 + 5/2*(9*d + 2*e)*x^2 + (10*d + e)*x
 + d*log(x)
```

giac [A] time = 0.17, size = 137, normalized size = 1.57

$$\frac{1}{11}x^{11}e+\frac{1}{10}dx^{10}+x^{10}e+\frac{10}{9}dx^9+5x^9e+\frac{45}{8}dx^8+15x^8e+\frac{120}{7}dx^7+30x^7e+35dx^6+42x^6e+\frac{252}{5}dx^5+42x^5e+\frac{105}{2}dx^4+30x^4e+40dx^3+15x^3e+\frac{45}{2}dx^2+5x^2e+10dx+xe+d\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x,x, algorithm="giac")
```

```
[Out] 1/11*x^11*e + 1/10*d*x^10 + x^10*e + 10/9*d*x^9 + 5*x^9*e + 45/8*d*x^8 + 15
*x^8*e + 120/7*d*x^7 + 30*x^7*e + 35*d*x^6 + 42*x^6*e + 252/5*d*x^5 + 42*x^
5*e + 105/2*d*x^4 + 30*x^4*e + 40*d*x^3 + 15*x^3*e + 45/2*d*x^2 + 5*x^2*e +
 10*d*x + x*e + d*log(abs(x))
```

maple [A] time = 0.04, size = 126, normalized size = 1.45

$$\frac{e\,x^{11}}{11}+\frac{d\,x^{10}}{10}+e\,x^{10}+\frac{10d\,x^9}{9}+5e\,x^9+\frac{45d\,x^8}{8}+15e\,x^8+\frac{120d\,x^7}{7}+30e\,x^7+35d\,x^6+42e\,x^6+\frac{252d\,x^5}{5}+42e\,x^5+\frac{105d\,x^4}{2}+30e\,x^4+40d\,x^3+15e\,x^3+\frac{45d\,x^2}{2}+5e\,x^2+10dx+d\ln(x)+ex$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x,x)
```

```
[Out] 1/11*e*x^11+1/10*d*x^10+e*x^10+10/9*d*x^9+5*e*x^9+45/8*d*x^8+15*e*x^8+120/7
*d*x^7+30*e*x^7+35*d*x^6+42*e*x^6+252/5*d*x^5+42*e*x^5+105/2*d*x^4+30*e*x^4
+40*d*x^3+15*e*x^3+45/2*d*x^2+5*e*x^2+10*d*x+e*x+d*ln(x)
```

maxima [A] time = 0.63, size = 124, normalized size = 1.43

$$\frac{1}{11}ex^{11}+\frac{1}{10}(d+10e)x^{10}+\frac{5}{9}(2d+9e)x^9+\frac{15}{8}(3d+8e)x^8+\frac{30}{7}(4d+7e)x^7+7(5d+6e)x^6+\frac{42}{5}(6d+5e)x^5+\frac{15}{2}(7d+4e)x^4+5(8d+3e)x^3+\frac{5}{2}(9d+2e)x^2+(10d+e)x+d\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x,x, algorithm="maxima")
```

```
[Out] 1/11*e*x^11 + 1/10*(d + 10*e)*x^10 + 5/9*(2*d + 9*e)*x^9 + 15/8*(3*d + 8*e)
*x^8 + 30/7*(4*d + 7*e)*x^7 + 7*(5*d + 6*e)*x^6 + 42/5*(6*d + 5*e)*x^5 + 15
/2*(7*d + 4*e)*x^4 + 5*(8*d + 3*e)*x^3 + 5/2*(9*d + 2*e)*x^2 + (10*d + e)*x
 + d*log(x)
```

mupad [B] time = 0.08, size = 115, normalized size = 1.32

$$x^9\left(\frac{10d}{9}+5e\right)+x^2\left(\frac{45d}{2}+5e\right)+x^3\,(40d+15e)+x^8\left(\frac{45d}{8}+15e\right)+x^6\,(35d+42e)+x^4\left(\frac{105d}{2}+30e\right)+x^7\left(\frac{120d}{7}+30e\right)+x^5\left(\frac{252d}{5}+42e\right)+x\,(10d+e)+\frac{e\,x^{11}}{11}+d\,\ln(x)+x^{10}\left(\frac{d}{10}+e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x,x)
```

```
[Out] x^9*((10*d)/9 + 5*e) + x^2*((45*d)/2 + 5*e) + x^3*(40*d + 15*e) + x^8*((45*
d)/8 + 15*e) + x^6*(35*d + 42*e) + x^4*((105*d)/2 + 30*e) + x^7*((120*d)/7
+ 30*e) + x^5*((252*d)/5 + 42*e) + x*(10*d + e) + (e*x^11)/11 + d*log(x) +
x^10*(d/10 + e)
```

sympy [A] time = 0.31, size = 117, normalized size = 1.34

$$d\log\left(x\right)+\frac{ex^{11}}{11}+x^{10}\left(\frac{d}{10}+e\right)+x^9\left(\frac{10d}{9}+5e\right)+x^8\left(\frac{45d}{8}+15e\right)+x^7\left(\frac{120d}{7}+30e\right)+x^6\,(35d+42e)+x^5\left(\frac{252d}{5}+42e\right)+x^4\left(\frac{105d}{2}+30e\right)+x^3\,(40d+15e)+x^2\left(\frac{45d}{2}+5e\right)+x\,(10d+e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x,x)
```

```
[Out] d*log(x) + e*x**11/11 + x**10*(d/10 + e) + x**9*(10*d/9 + 5*e) + x**8*(45*d
/8 + 15*e) + x**7*(120*d/7 + 30*e) + x**6*(35*d + 42*e) + x**5*(252*d/5 + 4
2*e) + x**4*(105*d/2 + 30*e) + x**3*(40*d + 15*e) + x**2*(45*d/2 + 5*e) + x
*(10*d + e)
```

3.495 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^2} \, dx$

Optimal. Leaf size=139

$$\frac{1}{9}x^9(d+10e)+\frac{5}{8}x^8(2d+9e)+\frac{15}{7}x^7(3d+8e)+5x^6(4d+7e)+\frac{42}{5}x^5(5d+6e)+\frac{21}{2}x^4(6d+5e)+10x^3(7d+4e)+\frac{15}{2}x^2(8d+3e)$$

Rubi [A] time = 0.07, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$\frac{1}{9}x^9(d+10e)+\frac{5}{8}x^8(2d+9e)+\frac{15}{7}x^7(3d+8e)+5x^6(4d+7e)+\frac{42}{5}x^5(5d+6e)+\frac{21}{2}x^4(6d+5e)+10x^3(7d+4e)+\frac{15}{2}x^2(8d+3e)+5x(9d+2e)+(10d+e)\log(x)-\frac{d}{x}+\frac{ex^{10}}{10}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -(d/x) + 5*(9*d + 2*e)*x + (15*(8*d + 3*e)*x^2)/2 + 10*(7*d + 4*e)*x^3 + (2
1*(6*d + 5*e)*x^4)/2 + (42*(5*d + 6*e)*x^5)/5 + 5*(4*d + 7*e)*x^6 + (15*(3*
d + 8*e)*x^7)/7 + (5*(2*d + 9*e)*x^8)/8 + ((d + 10*e)*x^9)/9 + (e*x^10)/10
+ (10*d + e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^2} \, dx &= \int \frac{(1+x)^{10}(d+ex)}{x^2} \, dx \\
&= \int \left(5(9d+2e)+\frac{d}{x^2}+\frac{10d+e}{x}+15(8d+3e)x+30(7d+4e)x^2+42(6d+5e)x^3\right. \\
&= -\frac{d}{x}+5(9d+2e)x+\frac{15}{2}(8d+3e)x^2+10(7d+4e)x^3+\frac{21}{2}(6d+5e)x^4+\frac{42}{5}(5d+
\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.00

$$\frac{1}{9}x^9(d+10e)+\frac{5}{8}x^8(2d+9e)+\frac{15}{7}x^7(3d+8e)+5x^6(4d+7e)+\frac{42}{5}x^5(5d+6e)+\frac{21}{2}x^4(6d+5e)+10x^3(7d+4e)+\frac{15}{2}x^2(8d+3e)+5x(9d+2e)+(10d+e)\log(x)-\frac{d}{x}+\frac{ex^{10}}{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -(d/x) + 5*(9*d + 2*e)*x + (15*(8*d + 3*e)*x^2)/2 + 10*(7*d + 4*e)*x^3 + (2
1*(6*d + 5*e)*x^4)/2 + (42*(5*d + 6*e)*x^5)/5 + 5*(4*d + 7*e)*x^6 + (15*(3*
```

```
d + 8*e)*x^7)/7 + (5*(2*d + 9*e)*x^8)/8 + ((d + 10*e)*x^9)/9 + (e*x^10)/10
+ (10*d + e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^2, x]
```

fricas [A] time = 0.42, size = 131, normalized size = 0.94

$$\frac{252\,ex^{11}+280\,(d+10\,e)x^{10}+1575\,(2\,d+9\,e)x^9+5400\,(3\,d+8\,e)x^8+12600\,(4\,d+7\,e)x^7+21168\,(5\,d+6\,e)x^6+26460\,(6\,d+5\,e)x^5+25200\,(7\,d+4\,e)x^4+18900\,(8\,d+3\,e)x^3+12600\,(9\,d+2\,e)x^2+2520\,(10\,d+e)x\log(x)-2520\,d}{2520\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^2,x, algorithm="fricas")
```

```
[Out] 1/2520*(252*e*x^11 + 280*(d + 10*e)*x^10 + 1575*(2*d + 9*e)*x^9 + 5400*(3*d
 + 8*e)*x^8 + 12600*(4*d + 7*e)*x^7 + 21168*(5*d + 6*e)*x^6 + 26460*(6*d +
5*e)*x^5 + 25200*(7*d + 4*e)*x^4 + 18900*(8*d + 3*e)*x^3 + 12600*(9*d + 2*e
)*x^2 + 2520*(10*d + e)*x*log(x) - 2520*d)/x
```

giac [A] time = 0.16, size = 137, normalized size = 0.99

$$\frac{1}{10}\,x^{10}e+\frac{1}{9}\,dx^9+\frac{10}{9}\,x^9e+\frac{5}{4}\,dx^8+\frac{45}{8}\,x^8e+\frac{45}{7}\,dx^7+\frac{120}{7}\,x^7e+20\,dx^6+35\,x^6e+42\,dx^5+\frac{252}{5}\,x^5e+63\,dx^4+\frac{105}{2}\,x^4e+70\,dx^3+40\,x^3e+60\,dx^2+\frac{45}{2}\,x^2e+45\,dx+10\,xe+(10\,d+e)\log\left(|x|\right)-\frac{d}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^2,x, algorithm="giac")
```

```
[Out] 1/10*x^10*e + 1/9*d*x^9 + 10/9*x^9*e + 5/4*d*x^8 + 45/8*x^8*e + 45/7*d*x^7
+ 120/7*x^7*e + 20*d*x^6 + 35*x^6*e + 42*d*x^5 + 252/5*x^5*e + 63*d*x^4 + 1
05/2*x^4*e + 70*d*x^3 + 40*x^3*e + 60*d*x^2 + 45/2*x^2*e + 45*d*x + 10*x*e
+ (10*d + e)*log(abs(x)) - d/x
```

maple [A] time = 0.06, size = 127, normalized size = 0.91

$$\frac{e\,x^{10}}{10}+\frac{d\,x^9}{9}+\frac{10e\,x^9}{9}+\frac{5d\,x^8}{4}+\frac{45e\,x^8}{8}+\frac{45d\,x^7}{7}+\frac{120e\,x^7}{7}+20d\,x^6+35e\,x^6+42d\,x^5+\frac{252e\,x^5}{5}+63d\,x^4+\frac{105e\,x^4}{2}+70d\,x^3+40e\,x^3+60d\,x^2+\frac{45e\,x^2}{2}+45dx+10d\ln(x)+10ex+e\ln(x)-\frac{d}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^2,x)
```

```
[Out] 1/10*e*x^10+1/9*d*x^9+10/9*e*x^9+5/4*d*x^8+45/8*e*x^8+45/7*d*x^7+120/7*e*x^
7+20*d*x^6+35*e*x^6+42*d*x^5+252/5*e*x^5+63*d*x^4+105/2*e*x^4+70*d*x^3+40*e
*x^3+60*d*x^2+45/2*e*x^2+45*d*x+10*e*x-d/x+10*d*ln(x)+e*ln(x)
```

maxima [A] time = 0.66, size = 125, normalized size = 0.90

$$\frac{1}{10}\,ex^{10}+\frac{1}{9}\,(d+10\,e)x^9+\frac{5}{8}\,(2\,d+9\,e)x^8+\frac{15}{7}\,(3\,d+8\,e)x^7+5\,(4\,d+7\,e)x^6+\frac{42}{5}\,(5\,d+6\,e)x^5+\frac{21}{2}\,(6\,d+5\,e)x^4+10\,(7\,d+4\,e)x^3+\frac{15}{2}\,(8\,d+3\,e)x^2+5\,(9\,d+2\,e)x+(10\,d+e)\log(x)-\frac{d}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^2,x, algorithm="maxima")
```

```
[Out] 1/10*e*x^10 + 1/9*(d + 10*e)*x^9 + 5/8*(2*d + 9*e)*x^8 + 15/7*(3*d + 8*e)*x
^7 + 5*(4*d + 7*e)*x^6 + 42/5*(5*d + 6*e)*x^5 + 21/2*(6*d + 5*e)*x^4 + 10*(
7*d + 4*e)*x^3 + 15/2*(8*d + 3*e)*x^2 + 5*(9*d + 2*e)*x + (10*d + e)*log(x)
 - d/x
```

mupad [B] time = 0.09, size = 118, normalized size = 0.85

$$x^9\left(\frac{d}{9}+\frac{10\,e}{9}\right)+x^6\,(20\,d+35\,e)+x^8\left(\frac{5\,d}{4}+\frac{45\,e}{8}\right)+x^2\left(60\,d+\frac{45\,e}{2}\right)+x^3\,(70\,d+40\,e)+x^4\left(63\,d+\frac{105\,e}{2}\right)+x^7\left(\frac{45\,d}{7}+\frac{120\,e}{7}\right)+x^5\left(42\,d+\frac{252\,e}{5}\right)-\frac{d}{x}+\frac{e\,x^{10}}{10}+x\,(45\,d+10\,e)+\ln(x)\,(10\,d+e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^2,x)
```

```
[Out] x^9*(d/9 + (10*e)/9) + x^6*(20*d + 35*e) + x^8*((5*d)/4 + (45*e)/8) + x^2*(
60*d + (45*e)/2) + x^3*(70*d + 40*e) + x^4*(63*d + (105*e)/2) + x^7*((45*d)
/7 + (120*e)/7) + x^5*(42*d + (252*e)/5) - d/x + (e*x^10)/10 + x*(45*d + 10
*e) + log(x)*(10*d + e)
```

sympy [A] time = 0.36, size = 121, normalized size = 0.87

$$-\frac{d}{x}+\frac{ex^{10}}{10}+x^9\left(\frac{d}{9}+\frac{10e}{9}\right)+x^8\left(\frac{5d}{4}+\frac{45e}{8}\right)+x^7\left(\frac{45d}{7}+\frac{120e}{7}\right)+x^6\,(20d+35e)+x^5\left(42d+\frac{252e}{5}\right)+x^4\left(63d+\frac{105e}{2}\right)+x^3\,(70d+40e)+x^2\left(60d+\frac{45e}{2}\right)+x\,(45d+10e)+(10d+e)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**2,x)
```

```
[Out] -d/x + e*x**10/10 + x**9*(d/9 + 10*e/9) + x**8*(5*d/4 + 45*e/8) + x**7*(45*
d/7 + 120*e/7) + x**6*(20*d + 35*e) + x**5*(42*d + 252*e/5) + x**4*(63*d +
105*e/2) + x**3*(70*d + 40*e) + x**2*(60*d + 45*e/2) + x*(45*d + 10*e) + (1
0*d + e)*log(x)
```

3.496 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^3}\,dx$

Optimal. Leaf size=138

$$\frac{1}{8}x^8(d+10e)+\frac{5}{7}x^7(2d+9e)+\frac{5}{2}x^6(3d+8e)+6x^5(4d+7e)+\frac{21}{2}x^4(5d+6e)+14x^3(6d+5e)+15x^2(7d+4e)+15x(8d+3e)-$$

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$\frac{1}{8}x^8(d+10e)+\frac{5}{7}x^7(2d+9e)+\frac{5}{2}x^6(3d+8e)+6x^5(4d+7e)+\frac{21}{2}x^4(5d+6e)+14x^3(6d+5e)+15x^2(7d+4e)+15x(8d+3e)-\frac{10d+e}{x}+5(9d+2e)\log(x)-\frac{d}{2x^2}+\frac{ex^9}{9}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -d/(2*x^2) - (10*d + e)/x + 15*(8*d + 3*e)*x + 15*(7*d + 4*e)*x^2 + 14*(6*d
 + 5*e)*x^3 + (21*(5*d + 6*e)*x^4)/2 + 6*(4*d + 7*e)*x^5 + (5*(3*d + 8*e)*x
^6)/2 + (5*(2*d + 9*e)*x^7)/7 + ((d + 10*e)*x^8)/8 + (e*x^9)/9 + 5*(9*d + 2
*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^3}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^3}\,dx \\
&= \int \left(15(8d+3e)+\frac{d}{x^3}+\frac{10d+e}{x^2}+\frac{5(9d+2e)}{x}+30(7d+4e)x+42(6d+5e)x^2\right. \\
&= -\frac{d}{2x^2}-\frac{10d+e}{x}+15(8d+3e)x+15(7d+4e)x^2+14(6d+5e)x^3+\frac{21}{2}(5d+6
\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{1}{8}x^8(d+10e)+\frac{5}{7}x^7(2d+9e)+\frac{5}{2}x^6(3d+8e)+6x^5(4d+7e)+\frac{21}{2}x^4(5d+6e)+14x^3(6d+5e)+15x^2(7d+4e)+15x(8d+3e)+\frac{-10d-e}{x}+5(9d+2e)\log(x)-\frac{d}{2x^2}+\frac{ex^9}{9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -1/2*d/x^2 + (-10*d - e)/x + 15*(8*d + 3*e)*x + 15*(7*d + 4*e)*x^2 + 14*(6*
d + 5*e)*x^3 + (21*(5*d + 6*e)*x^4)/2 + 6*(4*d + 7*e)*x^5 + (5*(3*d + 8*e)*
```

```
x^6)/2 + (5*(2*d + 9*e)*x^7)/7 + ((d + 10*e)*x^8)/8 + (e*x^9)/9 + 5*(9*d +
2*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^3, x]
```

fricas [A] time = 0.40, size = 131, normalized size = 0.95

$$\frac{56\,ex^{11}+63\,(d+10\,e)x^{10}+360\,(2\,d+9\,e)x^{9}+1260\,(3\,d+8\,e)x^{8}+3024\,(4\,d+7\,e)x^{7}+5292\,(5\,d+6\,e)x^{6}+7056\,(6\,d+5\,e)x^{5}+7560\,(7\,d+4\,e)x^{4}+7560\,(8\,d+3\,e)x^{3}+2520\,(9\,d+2\,e)x^{2}\log(x)-504\,(10\,d+e)x-252\,d}{504\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^3,x, algorithm="fricas")
```

```
[Out] 1/504*(56*e*x^11 + 63*(d + 10*e)*x^10 + 360*(2*d + 9*e)*x^9 + 1260*(3*d + 8
*e)*x^8 + 3024*(4*d + 7*e)*x^7 + 5292*(5*d + 6*e)*x^6 + 7056*(6*d + 5*e)*x^
5 + 7560*(7*d + 4*e)*x^4 + 7560*(8*d + 3*e)*x^3 + 2520*(9*d + 2*e)*x^2*log(
x) - 504*(10*d + e)*x - 252*d)/x^2
```

giac [A] time = 0.16, size = 137, normalized size = 0.99

$$\frac{1}{9}\,x^{9}e+\frac{1}{8}\,dx^{8}+\frac{5}{4}\,x^{8}e+\frac{10}{7}\,dx^{7}+\frac{45}{7}\,x^{7}e+\frac{15}{2}\,dx^{6}+20\,x^{6}e+24\,dx^{5}+42\,x^{5}e+\frac{105}{2}\,dx^{4}+63\,x^{4}e+84\,dx^{3}+70\,x^{3}e+105\,dx^{2}+60\,x^{2}e+120\,dx+45\,xe+5\,(9\,d+2\,e)\log\left(|x|\right)-\frac{2\,(10\,d+e)x+d}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^3,x, algorithm="giac")
```

```
[Out] 1/9*x^9*e + 1/8*d*x^8 + 5/4*x^8*e + 10/7*d*x^7 + 45/7*x^7*e + 15/2*d*x^6 +
20*x^6*e + 24*d*x^5 + 42*x^5*e + 105/2*d*x^4 + 63*x^4*e + 84*d*x^3 + 70*x^3
*e + 105*d*x^2 + 60*x^2*e + 120*d*x + 45*x*e + 5*(9*d + 2*e)*log(abs(x)) -
1/2*(2*(10*d + e)*x + d)/x^2
```

maple [A] time = 0.08, size = 128, normalized size = 0.93

$$\frac{e\,x^{9}}{9}+\frac{d\,x^{8}}{8}+\frac{5e\,x^{8}}{4}+\frac{10d\,x^{7}}{7}+\frac{45e\,x^{7}}{7}+\frac{15d\,x^{6}}{2}+20e\,x^{6}+24d\,x^{5}+42e\,x^{5}+\frac{105d\,x^{4}}{2}+63e\,x^{4}+84d\,x^{3}+70e\,x^{3}+105d\,x^{2}+60e\,x^{2}+120dx+45d\ln(x)+45ex+10e\ln(x)-\frac{10d}{x}-\frac{e}{x}-\frac{d}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^3,x)
```

```
[Out] 1/9*e*x^9+1/8*d*x^8+5/4*e*x^8+10/7*d*x^7+45/7*e*x^7+15/2*d*x^6+20*e*x^6+24*
d*x^5+42*e*x^5+105/2*d*x^4+63*e*x^4+84*d*x^3+70*e*x^3+105*d*x^2+60*e*x^2+12
0*d*x+45*e*x-1/2*d/x^2-10*d/x-e/x+45*d*ln(x)+10*e*ln(x)
```

maxima [A] time = 0.51, size = 125, normalized size = 0.91

$$\frac{1}{9}\,ex^{9}+\frac{1}{8}\,(d+10\,e)x^{8}+\frac{5}{7}\,(2\,d+9\,e)x^{7}+\frac{5}{2}\,(3\,d+8\,e)x^{6}+6\,(4\,d+7\,e)x^{5}+\frac{21}{2}\,(5\,d+6\,e)x^{4}+14\,(6\,d+5\,e)x^{3}+15\,(7\,d+4\,e)x^{2}+15\,(8\,d+3\,e)x+5\,(9\,d+2\,e)\log(x)-\frac{2\,(10\,d+e)x+d}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^3,x, algorithm="maxima")
```

```
[Out] 1/9*e*x^9 + 1/8*(d + 10*e)*x^8 + 5/7*(2*d + 9*e)*x^7 + 5/2*(3*d + 8*e)*x^6
+ 6*(4*d + 7*e)*x^5 + 21/2*(5*d + 6*e)*x^4 + 14*(6*d + 5*e)*x^3 + 15*(7*d +
 4*e)*x^2 + 15*(8*d + 3*e)*x + 5*(9*d + 2*e)*log(x) - 1/2*(2*(10*d + e)*x +
 d)/x^2
```

mupad [B] time = 0.08, size = 119, normalized size = 0.86

$$x^8\left(\frac{d}{8}+\frac{5e}{4}\right)+x^6\left(\frac{15d}{2}+20e\right)+x^5(24d+42e)+x^7\left(\frac{10d}{7}+\frac{45e}{7}\right)+x^3(84d+70e)+x^2(105d+60e)+x^4\left(\frac{105d}{2}+63e\right)+\ln(x)(45d+10e)+\frac{ex^9}{9}-\frac{\frac{d}{2}+x(10d+e)}{x^2}+x(120d+45e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^3,x)
```

```
[Out] x^8*(d/8 + (5*e)/4) + x^6*((15*d)/2 + 20*e) + x^5*(24*d + 42*e) + x^7*((10*
d)/7 + (45*e)/7) + x^3*(84*d + 70*e) + x^2*(105*d + 60*e) + x^4*((105*d)/2
+ 63*e) + log(x)*(45*d + 10*e) + (e*x^9)/9 - (d/2 + x*(10*d + e))/x^2 + x*(
120*d + 45*e)
```

sympy [A] time = 0.45, size = 122, normalized size = 0.88

$$\frac{ex^9}{9}+x^8\left(\frac{d}{8}+\frac{5e}{4}\right)+x^7\left(\frac{10d}{7}+\frac{45e}{7}\right)+x^6\left(\frac{15d}{2}+20e\right)+x^5(24d+42e)+x^4\left(\frac{105d}{2}+63e\right)+x^3(84d+70e)+x^2(105d+60e)+x(120d+45e)+5(9d+2e)\log(x)+\frac{-d+x(-20d-2e)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**3,x)
```

```
[Out] e*x**9/9 + x**8*(d/8 + 5*e/4) + x**7*(10*d/7 + 45*e/7) + x**6*(15*d/2 + 20*
e) + x**5*(24*d + 42*e) + x**4*(105*d/2 + 63*e) + x**3*(84*d + 70*e) + x**2
*(105*d + 60*e) + x*(120*d + 45*e) + 5*(9*d + 2*e)*log(x) + (-d + x*(-20*d
- 2*e))/(2*x**2)
```

3.497 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^4}\,dx$

Optimal. Leaf size=138

$$\frac{1}{7}x^7(d+10e)+\frac{5}{6}x^6(2d+9e)+3x^5(3d+8e)+\frac{15}{2}x^4(4d+7e)+14x^3(5d+6e)+21x^2(6d+5e)-\frac{10d+e}{2x^2}+30x(7d+4e)-\frac{5(9d+}{x}$$

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{7}x^7(d+10e)+\frac{5}{6}x^6(2d+9e)+3x^5(3d+8e)+\frac{15}{2}x^4(4d+7e)+14x^3(5d+6e)+21x^2(6d+5e)-\frac{10d+e}{2x^2}+30x(7d+4e)-\frac{5(9d+2e)}{x}+15(8d+3e)\log(x)-\frac{d}{3x^3}+\frac{ex^8}{8}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -d/(3*x^3) - (10*d + e)/(2*x^2) - (5*(9*d + 2*e))/x + 30*(7*d + 4*e)*x + 21
*(6*d + 5*e)*x^2 + 14*(5*d + 6*e)*x^3 + (15*(4*d + 7*e)*x^4)/2 + 3*(3*d + 8
*e)*x^5 + (5*(2*d + 9*e)*x^6)/6 + ((d + 10*e)*x^7)/7 + (e*x^8)/8 + 15*(8*d
+ 3*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^4}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^4}\,dx\\ &= \int \left(30(7d+4e)+\frac{d}{x^4}+\frac{10d+e}{x^3}+\frac{5(9d+2e)}{x^2}+\frac{15(8d+3e)}{x}+42(6d+5e)x+42\right.\\ &= -\frac{d}{3x^3}-\frac{10d+e}{2x^2}-\frac{5(9d+2e)}{x}+30(7d+4e)x+21(6d+5e)x^2+14(5d+6e)x^3+\end{aligned}$$

Mathematica [A] time = 0.04, size = 140, normalized size = 1.01

$$\frac{1}{7}x^7(d+10e)+\frac{5}{6}x^6(2d+9e)+3x^5(3d+8e)+\frac{15}{2}x^4(4d+7e)+14x^3(5d+6e)+21x^2(6d+5e)+\frac{-10d-e}{2x^2}+30x(7d+4e)-\frac{5(9d+2e)}{x}+15(8d+3e)\log(x)-\frac{d}{3x^3}+\frac{ex^8}{8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -1/3*d/x^3 + (-10*d - e)/(2*x^2) - (5*(9*d + 2*e))/x + 30*(7*d + 4*e)*x + 2
1*(6*d + 5*e)*x^2 + 14*(5*d + 6*e)*x^3 + (15*(4*d + 7*e)*x^4)/2 + 3*(3*d +
```

```
8*e)*x^5 + (5*(2*d + 9*e)*x^6)/6 + ((d + 10*e)*x^7)/7 + (e*x^8)/8 + 15*(8*d
 + 3*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^4, x]
```

fricas [A] time = 0.42, size = 131, normalized size = 0.95

$$\frac{21\,ex^{11}+24\,(d+10\,e)x^{10}+140\,(2\,d+9\,e)x^9+504\,(3\,d+8\,e)x^8+1260\,(4\,d+7\,e)x^7+2352\,(5\,d+6\,e)x^6+3528\,(6\,d+5\,e)x^5+5040\,(7\,d+4\,e)x^4+2520\,(8\,d+3\,e)x^3\log(x)-840\,(9\,d+2\,e)x^2-84\,(10\,d+e)x-56\,d}{168\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^4,x, algorithm="fricas")
```

```
[Out] 1/168*(21*e*x^11 + 24*(d + 10*e)*x^10 + 140*(2*d + 9*e)*x^9 + 504*(3*d + 8*
e)*x^8 + 1260*(4*d + 7*e)*x^7 + 2352*(5*d + 6*e)*x^6 + 3528*(6*d + 5*e)*x^5
 + 5040*(7*d + 4*e)*x^4 + 2520*(8*d + 3*e)*x^3*log(x) - 840*(9*d + 2*e)*x^2
 - 84*(10*d + e)*x - 56*d)/x^3
```

giac [A] time = 0.16, size = 139, normalized size = 1.01

$$\frac{1}{8}\,x^8e+\frac{1}{7}\,dx^7+\frac{10}{7}\,x^7e+\frac{5}{3}\,dx^6+\frac{15}{2}\,x^6e+9\,dx^5+24\,x^5e+30\,dx^4+\frac{105}{2}\,x^4e+70\,dx^3+84\,x^3e+126\,dx^2+105\,x^2e+210\,dx+120\,xe+15\,(8\,d+3\,e)\log\left(|x|\right)-\frac{30\,(9\,d+2\,e)x^2+3\,(10\,d+e)x+2\,d}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^4,x, algorithm="giac")
```

```
[Out] 1/8*x^8*e + 1/7*d*x^7 + 10/7*x^7*e + 5/3*d*x^6 + 15/2*x^6*e + 9*d*x^5 + 24*
x^5*e + 30*d*x^4 + 105/2*x^4*e + 70*d*x^3 + 84*x^3*e + 126*d*x^2 + 105*x^2*
e + 210*d*x + 120*x*e + 15*(8*d + 3*e)*log(abs(x)) - 1/6*(30*(9*d + 2*e)*x^
2 + 3*(10*d + e)*x + 2*d)/x^3
```

maple [A] time = 0.05, size = 128, normalized size = 0.93

$$\frac{e\,x^8}{8}+\frac{d\,x^7}{7}+\frac{10e\,x^7}{7}+\frac{5d\,x^6}{3}+\frac{15e\,x^6}{2}+9d\,x^5+24e\,x^5+30d\,x^4+\frac{105e\,x^4}{2}+70d\,x^3+84e\,x^3+126d\,x^2+105e\,x^2+210dx+120d\ln(x)+120ex+45e\ln(x)-\frac{45d}{x}-\frac{10e}{x}-\frac{5d}{x^2}-\frac{e}{2x^2}-\frac{d}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^4,x)
```

```
[Out] 1/8*e*x^8+1/7*d*x^7+10/7*e*x^7+5/3*d*x^6+15/2*e*x^6+9*d*x^5+24*e*x^5+30*d*x
^4+105/2*e*x^4+70*d*x^3+84*e*x^3+126*d*x^2+105*e*x^2+210*d*x+120*e*x-1/3*d/
x^3-5*d/x^2-1/2*e/x^2-45*d/x-10*e/x+120*d*ln(x)+45*e*ln(x)
```

maxima [A] time = 0.51, size = 127, normalized size = 0.92

$$\frac{1}{8}\,ex^8+\frac{1}{7}\,(d+10\,e)x^7+\frac{5}{6}\,(2\,d+9\,e)x^6+3\,(3\,d+8\,e)x^5+\frac{15}{2}\,(4\,d+7\,e)x^4+14\,(5\,d+6\,e)x^3+21\,(6\,d+5\,e)x^2+30\,(7\,d+4\,e)x+15\,(8\,d+3\,e)\log(x)-\frac{30\,(9\,d+2\,e)x^2+3\,(10\,d+e)x+2\,d}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^4,x, algorithm="maxima")
```

```
[Out] 1/8*e*x^8 + 1/7*(d + 10*e)*x^7 + 5/6*(2*d + 9*e)*x^6 + 3*(3*d + 8*e)*x^5 +
15/2*(4*d + 7*e)*x^4 + 14*(5*d + 6*e)*x^3 + 21*(6*d + 5*e)*x^2 + 30*(7*d +
4*e)*x + 15*(8*d + 3*e)*log(x) - 1/6*(30*(9*d + 2*e)*x^2 + 3*(10*d + e)*x +
 2*d)/x^3
```

mupad [B] time = 0.07, size = 121, normalized size = 0.88

$$x^6\left(\frac{5\,d}{3}+\frac{15\,e}{2}\right)+x^7\left(\frac{d}{7}+\frac{10\,e}{7}\right)+x^5\,\left(9\,d+24\,e\right)+x^4\,\left(30\,d+\frac{105\,e}{2}\right)+x^3\,\left(70\,d+84\,e\right)+x^2\,\left(126\,d+105\,e\right)+\ln(x)\,\left(120\,d+45\,e\right)-\frac{\left(45\,d+10\,e\right)\,x^2+\left(5\,d+\frac{e}{2}\right)\,x+\frac{d}{3}}{x^3}+\frac{e\,x^8}{8}+x\,\left(210\,d+120\,e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^4,x)
```

```
[Out] x^6*((5*d)/3 + (15*e)/2) + x^7*(d/7 + (10*e)/7) + x^5*(9*d + 24*e) + x^4*(3
0*d + (105*e)/2) + x^3*(70*d + 84*e) + x^2*(126*d + 105*e) + log(x)*(120*d
+ 45*e) - (d/3 + x^2*(45*d + 10*e) + x*(5*d + e/2))/x^3 + (e*x^8)/8 + x*(21
0*d + 120*e)
```

sympy [A] time = 0.65, size = 124, normalized size = 0.90

$$\frac{ex^8}{8}+x^7\left(\frac{d}{7}+\frac{10e}{7}\right)+x^6\left(\frac{5d}{3}+\frac{15e}{2}\right)+x^5\left(9d+24e\right)+x^4\left(30d+\frac{105e}{2}\right)+x^3\left(70d+84e\right)+x^2\left(126d+105e\right)+x\left(210d+120e\right)+15\left(8d+3e\right)\log\left(x\right)+\frac{-2d+x^2\left(-270d-60e\right)+x\left(-30d-3e\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**4,x)
```

```
[Out] e*x**8/8 + x**7*(d/7 + 10*e/7) + x**6*(5*d/3 + 15*e/2) + x**5*(9*d + 24*e)
+ x**4*(30*d + 105*e/2) + x**3*(70*d + 84*e) + x**2*(126*d + 105*e) + x*(21
0*d + 120*e) + 15*(8*d + 3*e)*log(x) + (-2*d + x**2*(-270*d - 60*e) + x*(-3
0*d - 3*e))/(6*x**3)
```

3.498 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^5}\,dx$

Optimal. Leaf size=137

$$\frac{1}{6}x^6(d+10e)+x^5(2d+9e)+\frac{15}{4}x^4(3d+8e)+10x^3(4d+7e)-\frac{10d+e}{3x^3}+21x^2(5d+6e)-\frac{5(9d+2e)}{2x^2}+42x(6d+5e)-\frac{15(8d}{}$$

Rubi [A] time = 0.07, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$\frac{1}{6}x^6(d+10e)+x^5(2d+9e)+\frac{15}{4}x^4(3d+8e)+10x^3(4d+7e)+21x^2(5d+6e)-\frac{5(9d+2e)}{2x^2}-\frac{10d+e}{3x^3}+42x(6d+5e)-\frac{15(8d+3e)}{x}+30(7d+4e)\log(x)-\frac{d}{4x^4}+\frac{ex^7}{7}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -d/(4*x^4) - (10*d + e)/(3*x^3) - (5*(9*d + 2*e))/(2*x^2) - (15*(8*d + 3*e)
)/x + 42*(6*d + 5*e)*x + 21*(5*d + 6*e)*x^2 + 10*(4*d + 7*e)*x^3 + (15*(3*d
 + 8*e)*x^4)/4 + (2*d + 9*e)*x^5 + ((d + 10*e)*x^6)/6 + (e*x^7)/7 + 30*(7*d
 + 4*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^5}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^5}\,dx\\
&= \int \left(42(6d+5e)+\frac{d}{x^5}+\frac{10d+e}{x^4}+\frac{5(9d+2e)}{x^3}+\frac{15(8d+3e)}{x^2}+\frac{30(7d+4e)}{x}+\right.\\
&= -\frac{d}{4x^4}-\frac{10d+e}{3x^3}-\frac{5(9d+2e)}{2x^2}-\frac{15(8d+3e)}{x}+42(6d+5e)x+21(5d+6e)x^2+
\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{1}{6}x^6(d+10e)+x^5(2d+9e)+\frac{15}{4}x^4(3d+8e)+10x^3(4d+7e)+\frac{-10d-e}{3x^3}+21x^2(5d+6e)-\frac{5(9d+2e)}{2x^2}+42x(6d+5e)-\frac{15(8d+3e)}{x}+30(7d+4e)\log(x)-\frac{d}{4x^4}+\frac{ex^7}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -1/4*d/x^4 + (-10*d - e)/(3*x^3) - (5*(9*d + 2*e))/(2*x^2) - (15*(8*d + 3*e
))/x + 42*(6*d + 5*e)*x + 21*(5*d + 6*e)*x^2 + 10*(4*d + 7*e)*x^3 + (15*(3*
```

```
d + 8*e)*x^4)/4 + (2*d + 9*e)*x^5 + ((d + 10*e)*x^6)/6 + (e*x^7)/7 + 30*(7*
d + 4*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^5, x]
```

fricas [A] time = 0.40, size = 131, normalized size = 0.96

$$\frac{12\,ex^{11}+14\,(d+10\,e)x^{10}+84\,(2\,d+9\,e)x^{9}+315\,(3\,d+8\,e)x^{8}+840\,(4\,d+7\,e)x^{7}+1764\,(5\,d+6\,e)x^{6}+3528\,(6\,d+5\,e)x^{5}+2520\,(7\,d+4\,e)x^{4}\log(x)-1260\,(8\,d+3\,e)x^{3}-210\,(9\,d+2\,e)x^{2}-28\,(10\,d+e)x-21\,d}{84\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^5,x, algorithm="fricas")
```

```
[Out] 1/84*(12*e*x^11 + 14*(d + 10*e)*x^10 + 84*(2*d + 9*e)*x^9 + 315*(3*d + 8*e)
*x^8 + 840*(4*d + 7*e)*x^7 + 1764*(5*d + 6*e)*x^6 + 3528*(6*d + 5*e)*x^5 +
2520*(7*d + 4*e)*x^4*log(x) - 1260*(8*d + 3*e)*x^3 - 210*(9*d + 2*e)*x^2 -
28*(10*d + e)*x - 21*d)/x^4
```

giac [A] time = 0.19, size = 139, normalized size = 1.01

$$\frac{1}{7}\,x^{7}e+\frac{1}{6}\,dx^{6}+\frac{5}{3}\,x^{6}e+2\,dx^{5}+9\,x^{5}e+\frac{45}{4}\,dx^{4}+30\,x^{4}e+40\,dx^{3}+70\,x^{3}e+105\,dx^{2}+126\,x^{2}e+252\,dx+210\,xe+30\,(7\,d+4\,e)\log\left(|x|\right)-\frac{180\,(8\,d+3\,e)x^{3}+30\,(9\,d+2\,e)x^{2}+4\,(10\,d+e)x+3\,d}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^5,x, algorithm="giac")
```

```
[Out] 1/7*x^7*e + 1/6*d*x^6 + 5/3*x^6*e + 2*d*x^5 + 9*x^5*e + 45/4*d*x^4 + 30*x^4
*e + 40*d*x^3 + 70*x^3*e + 105*d*x^2 + 126*x^2*e + 252*d*x + 210*x*e + 30*(
7*d + 4*e)*log(abs(x)) - 1/12*(180*(8*d + 3*e)*x^3 + 30*(9*d + 2*e)*x^2 + 4
*(10*d + e)*x + 3*d)/x^4
```

maple [A] time = 0.05, size = 128, normalized size = 0.93

$$\frac{e\,x^{7}}{7}+\frac{d\,x^{6}}{6}+\frac{5e\,x^{6}}{3}+2d\,x^{5}+9e\,x^{5}+\frac{45d\,x^{4}}{4}+30e\,x^{4}+40d\,x^{3}+70e\,x^{3}+105d\,x^{2}+126e\,x^{2}+252dx+210d\ln(x)+210ex+120e\ln(x)-\frac{120d}{x}-\frac{45e}{x}-\frac{45d}{2x^{2}}-\frac{5e}{x^{2}}-\frac{10d}{3x^{3}}-\frac{e}{3x^{3}}-\frac{d}{4x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^5,x)
```

```
[Out] 1/7*e*x^7+1/6*d*x^6+5/3*e*x^6+2*d*x^5+9*e*x^5+45/4*d*x^4+30*e*x^4+40*d*x^3+
70*e*x^3+105*d*x^2+126*e*x^2+252*d*x+210*e*x-1/4*d/x^4-10/3*d/x^3-1/3*e/x^3
-45/2*d/x^2-5*e/x^2-120*d/x-45*e/x+210*d*ln(x)+120*e*ln(x)
```

maxima [A] time = 0.64, size = 126, normalized size = 0.92

$$\frac{1}{7}\,ex^{7}+\frac{1}{6}\,(d+10\,e)x^{6}+(2\,d+9\,e)x^{5}+\frac{15}{4}\,(3\,d+8\,e)x^{4}+10\,(4\,d+7\,e)x^{3}+21\,(5\,d+6\,e)x^{2}+42\,(6\,d+5\,e)x+30\,(7\,d+4\,e)\log(x)-\frac{180\,(8\,d+3\,e)x^{3}+30\,(9\,d+2\,e)x^{2}+4\,(10\,d+e)x+3\,d}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^5,x, algorithm="maxima")
```

```
[Out] 1/7*e*x^7 + 1/6*(d + 10*e)*x^6 + (2*d + 9*e)*x^5 + 15/4*(3*d + 8*e)*x^4 + 1
0*(4*d + 7*e)*x^3 + 21*(5*d + 6*e)*x^2 + 42*(6*d + 5*e)*x + 30*(7*d + 4*e)*
log(x) - 1/12*(180*(8*d + 3*e)*x^3 + 30*(9*d + 2*e)*x^2 + 4*(10*d + e)*x +
3*d)/x^4
```

mupad [B] time = 0.06, size = 121, normalized size = 0.88

$$x^5\,\left(2\,d+9\,e\right)+x^6\,\left(\frac{d}{6}+\frac{5\,e}{3}\right)+x^4\,\left(\frac{45\,d}{4}+30\,e\right)+x^3\,\left(40\,d+70\,e\right)+x^2\,\left(105\,d+126\,e\right)+\ln(x)\,\left(210\,d+120\,e\right)-\frac{\left(120\,d+45\,e\right)\,x^3+\left(\frac{45\,d}{2}+5\,e\right)\,x^2+\left(\frac{10\,d}{3}+\frac{e}{3}\right)\,x+\frac{d}{4}}{x^4}+\frac{e\,x^7}{7}+x\,\left(252\,d+210\,e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^5,x)
```

```
[Out] x^5*(2*d + 9*e) + x^6*(d/6 + (5*e)/3) + x^4*((45*d)/4 + 30*e) + x^3*(40*d +
 70*e) + x^2*(105*d + 126*e) + log(x)*(210*d + 120*e) - (d/4 + x^2*((45*d)/
2 + 5*e) + x^3*(120*d + 45*e) + x*((10*d)/3 + e/3))/x^4 + (e*x^7)/7 + x*(25
2*d + 210*e)
```

sympy [A] time = 1.00, size = 122, normalized size = 0.89

$$\frac{ex^7}{7}+x^6\left(\frac{d}{6}+\frac{5e}{3}\right)+x^5\left(2d+9e\right)+x^4\left(\frac{45d}{4}+30e\right)+x^3\left(40d+70e\right)+x^2\left(105d+126e\right)+x\left(252d+210e\right)+30\left(7d+4e\right)\log\left(x\right)+\frac{-3d+x^3\left(-1440d-540e\right)+x^2\left(-270d-60e\right)+x\left(-40d-4e\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**5,x)
```

```
[Out] e*x**7/7 + x**6*(d/6 + 5*e/3) + x**5*(2*d + 9*e) + x**4*(45*d/4 + 30*e) + x
**3*(40*d + 70*e) + x**2*(105*d + 126*e) + x*(252*d + 210*e) + 30*(7*d + 4*
e)*log(x) + (-3*d + x**3*(-1440*d - 540*e) + x**2*(-270*d - 60*e) + x*(-40*
d - 4*e))/(12*x**4)
```

3.499 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^6} dx$

Optimal. Leaf size=140

$$\frac{1}{5}x^5(d+10e)+\frac{5}{4}x^4(2d+9e)-\frac{10d+e}{4x^4}+5x^3(3d+8e)-\frac{5(9d+2e)}{3x^3}+15x^2(4d+7e)-\frac{15(8d+3e)}{2x^2}+42x(5d+6e)-\frac{30(7d+4e)}{x}$$

Rubi [A] time = 0.07, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{5}x^5(d+10e)+\frac{5}{4}x^4(2d+9e)+5x^3(3d+8e)+15x^2(4d+7e)-\frac{15(8d+3e)}{2x^2}-\frac{5(9d+2e)}{3x^3}-\frac{10d+e}{4x^4}+42x(5d+6e)-\frac{30(7d+4e)}{x}+42(6d+5e)\log(x)-\frac{d}{5x^5}+\frac{ex^6}{6}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -d/(5*x^5) - (10*d + e)/(4*x^4) - (5*(9*d + 2*e))/(3*x^3) - (15*(8*d + 3*e)
)/(2*x^2) - (30*(7*d + 4*e))/x + 42*(5*d + 6*e)*x + 15*(4*d + 7*e)*x^2 + 5*
(3*d + 8*e)*x^3 + (5*(2*d + 9*e)*x^4)/4 + ((d + 10*e)*x^5)/5 + (e*x^6)/6 +
42*(6*d + 5*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^6}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^6}\,dx \\
&= \int \left(42(5d+6e)+\frac{d}{x^6}+\frac{10d+e}{x^5}+\frac{5(9d+2e)}{x^4}+\frac{15(8d+3e)}{x^3}+\frac{30(7d+4e)}{x^2}+\frac{42
\end{aligned}$$
$$= -\frac{d}{5x^5}-\frac{10d+e}{4x^4}-\frac{5(9d+2e)}{3x^3}-\frac{15(8d+3e)}{2x^2}-\frac{30(7d+4e)}{x}+42(5d+6e)x+15(\ldots$$

Mathematica [A] time = 0.04, size = 142, normalized size = 1.01

$$\frac{1}{5}x^5(d+10e)+\frac{5}{4}x^4(2d+9e)+\frac{-10d-e}{4x^4}+5x^3(3d+8e)-\frac{5(9d+2e)}{3x^3}+15x^2(4d+7e)-\frac{15(8d+3e)}{2x^2}+42x(5d+6e)-\frac{30(7d+4e)}{x}+42(6d+5e)\log(x)-\frac{d}{5x^5}+\frac{ex^6}{6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -1/5*d/x^5 + (-10*d - e)/(4*x^4) - (5*(9*d + 2*e))/(3*x^3) - (15*(8*d + 3*e
))/(2*x^2) - (30*(7*d + 4*e))/x + 42*(5*d + 6*e)*x + 15*(4*d + 7*e)*x^2 + 5
```

```
*(3*d + 8*e)*x^3 + (5*(2*d + 9*e)*x^4)/4 + ((d + 10*e)*x^5)/5 + (e*x^6)/6 +
 42*(6*d + 5*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^6, x]
```

fricas [A] time = 0.41, size = 131, normalized size = 0.94

$$\frac{10\,ex^{11}+12\,(d+10\,e)x^{10}+75\,(2\,d+9\,e)x^9+300\,(3\,d+8\,e)x^8+900\,(4\,d+7\,e)x^7+2520\,(5\,d+6\,e)x^6+2520\,(6\,d+5\,e)x^5\log(x)-1800\,(7\,d+4\,e)x^4-450\,(8\,d+3\,e)x^3-100\,(9\,d+2\,e)x^2-15\,(10\,d+e)x-12\,d}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(10*e*x^11 + 12*(d + 10*e)*x^10 + 75*(2*d + 9*e)*x^9 + 300*(3*d + 8*e)
*x^8 + 900*(4*d + 7*e)*x^7 + 2520*(5*d + 6*e)*x^6 + 2520*(6*d + 5*e)*x^5*lo
g(x) - 1800*(7*d + 4*e)*x^4 - 450*(8*d + 3*e)*x^3 - 100*(9*d + 2*e)*x^2 - 1
5*(10*d + e)*x - 12*d)/x^5
```

giac [A] time = 0.15, size = 139, normalized size = 0.99

$$\frac{1}{6}\,x^6e+\frac{1}{5}\,dx^5+2\,x^5e+\frac{5}{2}\,dx^4+\frac{45}{4}\,x^4e+15\,dx^3+40\,x^3e+60\,dx^2+105\,x^2e+210\,dx+252\,xe+42\,(6\,d+5\,e)\log(|x|)-\frac{1800\,(7\,d+4\,e)x^4+450\,(8\,d+3\,e)x^3+100\,(9\,d+2\,e)x^2+15\,(10\,d+e)x+12\,d}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^6,x, algorithm="giac")
```

```
[Out] 1/6*x^6*e + 1/5*d*x^5 + 2*x^5*e + 5/2*d*x^4 + 45/4*x^4*e + 15*d*x^3 + 40*x^
3*e + 60*d*x^2 + 105*x^2*e + 210*d*x + 252*x*e + 42*(6*d + 5*e)*log(abs(x))
 - 1/60*(1800*(7*d + 4*e)*x^4 + 450*(8*d + 3*e)*x^3 + 100*(9*d + 2*e)*x^2 +
 15*(10*d + e)*x + 12*d)/x^5
```

maple [A] time = 0.05, size = 128, normalized size = 0.91

$$\frac{e\,x^6}{6}+\frac{d\,x^5}{5}+2e\,x^5+\frac{5d\,x^4}{2}+\frac{45e\,x^4}{4}+15d\,x^3+40e\,x^3+60d\,x^2+105e\,x^2+210dx+252d\ln(x)+252ex+210e\ln(x)-\frac{210d}{x}-\frac{120e}{x}-\frac{60d}{x^2}-\frac{45e}{2x^2}-\frac{15d}{x^3}-\frac{10e}{3x^3}-\frac{5d}{2x^4}-\frac{e}{4x^4}-\frac{d}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^6,x)
```

```
[Out] 1/6*e*x^6+1/5*d*x^5+2*e*x^5+5/2*d*x^4+45/4*e*x^4+15*d*x^3+40*e*x^3+60*d*x^2
+105*e*x^2+210*d*x+252*e*x-1/5*d/x^5-5/2*d/x^4-1/4*e/x^4-15*d/x^3-10/3*e/x^
3-60*d/x^2-45/2*e/x^2-210*d/x-120*e/x+252*d*ln(x)+210*e*ln(x)
```

maxima [A] time = 0.54, size = 127, normalized size = 0.91

$$\frac{1}{6}\,ex^6+\frac{1}{5}\,(d+10\,e)x^5+\frac{5}{4}\,(2\,d+9\,e)x^4+5\,(3\,d+8\,e)x^3+15\,(4\,d+7\,e)x^2+42\,(5\,d+6\,e)x+42\,(6\,d+5\,e)\log(x)-\frac{1800\,(7\,d+4\,e)x^4+450\,(8\,d+3\,e)x^3+100\,(9\,d+2\,e)x^2+15\,(10\,d+e)x+12\,d}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^6,x, algorithm="maxima")
```

```
[Out] 1/6*e*x^6 + 1/5*(d + 10*e)*x^5 + 5/4*(2*d + 9*e)*x^4 + 5*(3*d + 8*e)*x^3 +
15*(4*d + 7*e)*x^2 + 42*(5*d + 6*e)*x + 42*(6*d + 5*e)*log(x) - 1/60*(1800*
(7*d + 4*e)*x^4 + 450*(8*d + 3*e)*x^3 + 100*(9*d + 2*e)*x^2 + 15*(10*d + e)
*x + 12*d)/x^5
```

mupad [B] time = 1.08, size = 121, normalized size = 0.86

$$x^5\left(\frac{d}{5}+2e\right)+x^3\left(15d+40e\right)+x^4\left(\frac{5d}{2}+\frac{45e}{4}\right)+x^2\left(60d+105e\right)+\ln(x)\left(252d+210e\right)-\frac{(210d+120e)x^4+\left(60d+\frac{45e}{2}\right)x^3+\left(15d+\frac{10e}{3}\right)x^2+\left(\frac{5d}{2}+\frac{e}{4}\right)x+\frac{d}{5}}{x^5}+\frac{ex^6}{6}+x\left(210d+252e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^6,x)
```

```
[Out] x^5*(d/5 + 2*e) + x^3*(15*d + 40*e) + x^4*((5*d)/2 + (45*e)/4) + x^2*(60*d
+ 105*e) + log(x)*(252*d + 210*e) - (d/5 + x^2*(15*d + (10*e)/3) + x^3*(60*
d + (45*e)/2) + x^4*(210*d + 120*e) + x*((5*d)/2 + e/4))/x^5 + (e*x^6)/6 +
x*(210*d + 252*e)
```

sympy [A] time = 1.42, size = 124, normalized size = 0.89

$$\frac{ex^6}{6}+x^5\left(\frac{d}{5}+2e\right)+x^4\left(\frac{5d}{2}+\frac{45e}{4}\right)+x^3\left(15d+40e\right)+x^2\left(60d+105e\right)+x\left(210d+252e\right)+42\left(6d+5e\right)\log\left(x\right)+\frac{-12d+x^4\left(-12600d-7200e\right)+x^3\left(-3600d-1350e\right)+x^2\left(-900d-200e\right)+x\left(-150d-15e\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**6,x)
```

```
[Out] e*x**6/6 + x**5*(d/5 + 2*e) + x**4*(5*d/2 + 45*e/4) + x**3*(15*d + 40*e) +
x**2*(60*d + 105*e) + x*(210*d + 252*e) + 42*(6*d + 5*e)*log(x) + (-12*d +
x**4*(-12600*d - 7200*e) + x**3*(-3600*d - 1350*e) + x**2*(-900*d - 200*e)
+ x*(-150*d - 15*e))/(60*x**5)
```

3.500 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^7} \, dx$

Optimal. Leaf size=140

$$-\frac{10d+e}{5x^5}+\frac{1}{4}x^4(d+10e)-\frac{5(9d+2e)}{4x^4}+\frac{5}{3}x^3(2d+9e)-\frac{5(8d+3e)}{x^3}+\frac{15}{2}x^2(3d+8e)-\frac{15(7d+4e)}{x^2}+30x(4d+7e)-\frac{42(6d}{}$$

Rubi [A] time = 0.07, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$\frac{1}{4}x^4(d+10e)+\frac{5}{3}x^3(2d+9e)+\frac{15}{2}x^2(3d+8e)-\frac{15(7d+4e)}{x^2}-\frac{5(8d+3e)}{x^3}-\frac{5(9d+2e)}{4x^4}-\frac{10d+e}{5x^5}+30x(4d+7e)-\frac{42(6d+5e)}{x}+42(5d+6e)\log(x)-\frac{d}{6x^6}+\frac{ex^5}{5}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -d/(6*x^6) - (10*d + e)/(5*x^5) - (5*(9*d + 2*e))/(4*x^4) - (5*(8*d + 3*e))
/x^3 - (15*(7*d + 4*e))/x^2 - (42*(6*d + 5*e))/x + 30*(4*d + 7*e)*x + (15*(
3*d + 8*e)*x^2)/2 + (5*(2*d + 9*e)*x^3)/3 + ((d + 10*e)*x^4)/4 + (e*x^5)/5
+ 42*(5*d + 6*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^7} \, dx &= \int \frac{(1+x)^{10}(d+ex)}{x^7} \, dx \\ &= \int \left(30(4d+7e)+\frac{d}{x^7}+\frac{10d+e}{x^6}+\frac{5(9d+2e)}{x^5}+\frac{15(8d+3e)}{x^4}+\frac{30(7d+4e)}{x^3}+\right. \\ &= -\frac{d}{6x^6}-\frac{10d+e}{5x^5}-\frac{5(9d+2e)}{4x^4}-\frac{5(8d+3e)}{x^3}-\frac{15(7d+4e)}{x^2}-\frac{42(6d+5e)}{x}+30\end{aligned}$$

Mathematica [A] time = 0.04, size = 142, normalized size = 1.01

$$\frac{-10d-e}{5x^5}+\frac{1}{4}x^4(d+10e)-\frac{5(9d+2e)}{4x^4}+\frac{5}{3}x^3(2d+9e)-\frac{5(8d+3e)}{x^3}+\frac{15}{2}x^2(3d+8e)-\frac{15(7d+4e)}{x^2}+30x(4d+7e)-\frac{42(6d+5e)}{x}+42(5d+6e)\log(x)-\frac{d}{6x^6}+\frac{ex^5}{5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -1/6*d/x^6 + (-10*d - e)/(5*x^5) - (5*(9*d + 2*e))/(4*x^4) - (5*(8*d + 3*e)
)/x^3 - (15*(7*d + 4*e))/x^2 - (42*(6*d + 5*e))/x + 30*(4*d + 7*e)*x + (15*
```

```
(3*d + 8*e)*x^2)/2 + (5*(2*d + 9*e)*x^3)/3 + ((d + 10*e)*x^4)/4 + (e*x^5)/5
 + 42*(5*d + 6*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^7, x]
```

fricas [A] time = 0.40, size = 131, normalized size = 0.94

$$\frac{12\,ex^{11}+15\,(d+10\,e)x^{10}+100\,(2\,d+9\,e)x^9+450\,(3\,d+8\,e)x^8+1800\,(4\,d+7\,e)x^7+2520\,(5\,d+6\,e)x^6\log(x)-2520\,(6\,d+5\,e)x^5-900\,(7\,d+4\,e)x^4-300\,(8\,d+3\,e)x^3-75\,(9\,d+2\,e)x^2-12\,(10\,d+e)x-10\,d}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(12*e*x^11 + 15*(d + 10*e)*x^10 + 100*(2*d + 9*e)*x^9 + 450*(3*d + 8*e
)*x^8 + 1800*(4*d + 7*e)*x^7 + 2520*(5*d + 6*e)*x^6*log(x) - 2520*(6*d + 5*
e)*x^5 - 900*(7*d + 4*e)*x^4 - 300*(8*d + 3*e)*x^3 - 75*(9*d + 2*e)*x^2 - 1
2*(10*d + e)*x - 10*d)/x^6
```

giac [A] time = 0.15, size = 139, normalized size = 0.99

$$\frac{1}{5}\,x^5e+\frac{1}{4}\,dx^4+\frac{5}{2}\,x^4e+\frac{10}{3}\,dx^3+15\,x^3e+\frac{45}{2}\,dx^2+60\,x^2e+120\,dx+210\,xe+42\,(5\,d+6\,e)\log\left(|x|\right)-\frac{2520\,(6\,d+5\,e)x^5+900\,(7\,d+4\,e)x^4+300\,(8\,d+3\,e)x^3+75\,(9\,d+2\,e)x^2+12\,(10\,d+e)x+10\,d}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^7,x, algorithm="giac")
```

```
[Out] 1/5*x^5*e + 1/4*d*x^4 + 5/2*x^4*e + 10/3*d*x^3 + 15*x^3*e + 45/2*d*x^2 + 60
*x^2*e + 120*d*x + 210*x*e + 42*(5*d + 6*e)*log(abs(x)) - 1/60*(2520*(6*d +
 5*e)*x^5 + 900*(7*d + 4*e)*x^4 + 300*(8*d + 3*e)*x^3 + 75*(9*d + 2*e)*x^2
+ 12*(10*d + e)*x + 10*d)/x^6
```

maple [A] time = 0.06, size = 128, normalized size = 0.91

$$\frac{e\,x^5}{5}+\frac{d\,x^4}{4}+\frac{5e\,x^4}{2}+\frac{10d\,x^3}{3}+15e\,x^3+\frac{45d\,x^2}{2}+60e\,x^2+120dx+210d\ln(x)+210ex+252e\ln(x)-\frac{252d}{x}-\frac{210e}{x}-\frac{105d}{x^2}-\frac{60e}{x^2}-\frac{40d}{x^3}-\frac{15e}{x^3}-\frac{45d}{4x^4}-\frac{5e}{2x^4}-\frac{2d}{x^5}-\frac{e}{5x^5}-\frac{d}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^7,x)
```

```
[Out] 1/5*e*x^5+1/4*d*x^4+5/2*e*x^4+10/3*d*x^3+15*e*x^3+45/2*d*x^2+60*e*x^2+120*d
*x+210*e*x-2*d/x^5-1/5*e/x^5-45/4*d/x^4-5/2*e/x^4-40*d/x^3-15*e/x^3-105*d/x
^2-60*e/x^2-1/6*d/x^6-252*d/x-210*e/x+210*d*ln(x)+252*e*ln(x)
```

maxima [A] time = 0.54, size = 127, normalized size = 0.91

$$\frac{1}{5}\,ex^5+\frac{1}{4}\,(d+10\,e)x^4+\frac{5}{3}\,(2\,d+9\,e)x^3+\frac{15}{2}\,(3\,d+8\,e)x^2+30\,(4\,d+7\,e)x+42\,(5\,d+6\,e)\log(x)-\frac{2520\,(6\,d+5\,e)x^5+900\,(7\,d+4\,e)x^4+300\,(8\,d+3\,e)x^3+75\,(9\,d+2\,e)x^2+12\,(10\,d+e)x+10\,d}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^7,x, algorithm="maxima")
```

```
[Out] 1/5*e*x^5 + 1/4*(d + 10*e)*x^4 + 5/3*(2*d + 9*e)*x^3 + 15/2*(3*d + 8*e)*x^2
 + 30*(4*d + 7*e)*x + 42*(5*d + 6*e)*log(x) - 1/60*(2520*(6*d + 5*e)*x^5 +
900*(7*d + 4*e)*x^4 + 300*(8*d + 3*e)*x^3 + 75*(9*d + 2*e)*x^2 + 12*(10*d +
 e)*x + 10*d)/x^6
```

mupad [B] time = 1.07, size = 121, normalized size = 0.86

$$x^4\left(\frac{d}{4}+\frac{5\,e}{2}\right)+x^3\left(\frac{10\,d}{3}+15\,e\right)+x^2\left(\frac{45\,d}{2}+60\,e\right)+\ln(x)\,\left(210\,d+252\,e\right)-\frac{\left(252\,d+210\,e\right)\,x^5+\left(105\,d+60\,e\right)\,x^4+\left(40\,d+15\,e\right)\,x^3+\left(\frac{45\,d}{4}+\frac{5\,e}{2}\right)\,x^2+\left(2\,d+\frac{e}{5}\right)\,x+\frac{d}{6}}{x^6}+\frac{e\,x^5}{5}+x\,\left(120\,d+210\,e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^7,x)
```

```
[Out] x^4*(d/4 + (5*e)/2) + x^3*((10*d)/3 + 15*e) + x^2*((45*d)/2 + 60*e) + log(x
)*(210*d + 252*e) - (d/6 + x^2*((45*d)/4 + (5*e)/2) + x^3*(40*d + 15*e) + x
^4*(105*d + 60*e) + x^5*(252*d + 210*e) + x*(2*d + e/5))/x^6 + (e*x^5)/5 +
x*(120*d + 210*e)
```

sympy [A] time = 2.17, size = 128, normalized size = 0.91

$$\frac{ex^5}{5}+x^4\left(\frac{d}{4}+\frac{5e}{2}\right)+x^3\left(\frac{10d}{3}+15e\right)+x^2\left(\frac{45d}{2}+60e\right)+x\left(120d+210e\right)+42\left(5d+6e\right)\log\left(x\right)+\frac{-10d+x^5\left(-15120d-12600e\right)+x^4\left(-6300d-3600e\right)+x^3\left(-2400d-900e\right)+x^2\left(-675d-150e\right)+x\left(-120d-12e\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**7,x)
```

```
[Out] e*x**5/5 + x**4*(d/4 + 5*e/2) + x**3*(10*d/3 + 15*e) + x**2*(45*d/2 + 60*e)
 + x*(120*d + 210*e) + 42*(5*d + 6*e)*log(x) + (-10*d + x**5*(-15120*d - 12
600*e) + x**4*(-6300*d - 3600*e) + x**3*(-2400*d - 900*e) + x**2*(-675*d -
150*e) + x*(-120*d - 12*e))/(60*x**6)
```

3.501 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^8}\,dx$

Optimal. Leaf size=138

$$-\frac{10d+e}{6x^6}-\frac{9d+2e}{x^5}-\frac{15(8d+3e)}{4x^4}+\frac{1}{3}x^3(d+10e)-\frac{10(7d+4e)}{x^3}+\frac{5}{2}x^2(2d+9e)-\frac{21(6d+5e)}{x^2}+15x(3d+8e)-\frac{42(5d+6e)}{x}$$

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{3}x^3(d+10e)+\frac{5}{2}x^2(2d+9e)-\frac{21(6d+5e)}{x^2}-\frac{10(7d+4e)}{x^3}-\frac{15(8d+3e)}{4x^4}-\frac{9d+2e}{x^5}-\frac{10d+e}{6x^6}+15x(3d+8e)-\frac{42(5d+6e)}{x}+30(4d+7e)\log(x)-\frac{d}{7x^7}+\frac{ex^4}{4}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -d/(7*x^7) - (10*d + e)/(6*x^6) - (9*d + 2*e)/x^5 - (15*(8*d + 3*e))/(4*x^4
) - (10*(7*d + 4*e))/x^3 - (21*(6*d + 5*e))/x^2 - (42*(5*d + 6*e))/x + 15*(
3*d + 8*e)*x + (5*(2*d + 9*e)*x^2)/2 + ((d + 10*e)*x^3)/3 + (e*x^4)/4 + 30*
(4*d + 7*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^8}\,dx=\int \frac{(1+x)^{10}(d+ex)}{x^8}\,dx$$
$$=\int \left(15(3d+8e)+\frac{d}{x^8}+\frac{10d+e}{x^7}+\frac{5(9d+2e)}{x^6}+\frac{15(8d+3e)}{x^5}+\frac{30(7d+4e)}{x^4}+42\right.$$
$$=-\frac{d}{7x^7}-\frac{10d+e}{6x^6}-\frac{9d+2e}{x^5}-\frac{15(8d+3e)}{4x^4}-\frac{10(7d+4e)}{x^3}-\frac{21(6d+5e)}{x^2}-\frac{42(5d+}{x}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{-10d-e}{6x^6}+\frac{-9d-2e}{x^5}-\frac{15(8d+3e)}{4x^4}+\frac{1}{3}x^3(d+10e)-\frac{10(7d+4e)}{x^3}+\frac{5}{2}x^2(2d+9e)-\frac{21(6d+5e)}{x^2}+15x(3d+8e)-\frac{42(5d+6e)}{x}+30(4d+7e)\log(x)-\frac{d}{7x^7}+\frac{ex^4}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -1/7*d/x^7 + (-10*d - e)/(6*x^6) + (-9*d - 2*e)/x^5 - (15*(8*d + 3*e))/(4*x
^4) - (10*(7*d + 4*e))/x^3 - (21*(6*d + 5*e))/x^2 - (42*(5*d + 6*e))/x + 15
```

```
*(3*d + 8*e)*x + (5*(2*d + 9*e)*x^2)/2 + ((d + 10*e)*x^3)/3 + (e*x^4)/4 + 3
0*(4*d + 7*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^8, x]
```

fricas [A] time = 0.40, size = 131, normalized size = 0.95

$$\frac{21\,ex^{11}+28\,(d+10\,e)x^{10}+210\,(2\,d+9\,e)x^9+1260\,(3\,d+8\,e)x^8+2520\,(4\,d+7\,e)x^7\log(x)-3528\,(5\,d+6\,e)x^6-1764\,(6\,d+5\,e)x^5-840\,(7\,d+4\,e)x^4-315\,(8\,d+3\,e)x^3-84\,(9\,d+2\,e)x^2-14\,(10\,d+e)x-12\,d}{84\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^8,x, algorithm="fricas")
```

```
[Out] 1/84*(21*e*x^11 + 28*(d + 10*e)*x^10 + 210*(2*d + 9*e)*x^9 + 1260*(3*d + 8*
e)*x^8 + 2520*(4*d + 7*e)*x^7*log(x) - 3528*(5*d + 6*e)*x^6 - 1764*(6*d + 5
*e)*x^5 - 840*(7*d + 4*e)*x^4 - 315*(8*d + 3*e)*x^3 - 84*(9*d + 2*e)*x^2 -
14*(10*d + e)*x - 12*d)/x^7
```

giac [A] time = 0.15, size = 139, normalized size = 1.01

$$\frac{1}{4}\,x^4e+\frac{1}{3}\,dx^3+\frac{10}{3}\,x^3e+5\,dx^2+\frac{45}{2}\,x^2e+45\,dx+120\,xe+30\,(4\,d+7\,e)\log\left(|x|\right)-\frac{3528\,(5\,d+6\,e)x^6+1764\,(6\,d+5\,e)x^5+840\,(7\,d+4\,e)x^4+315\,(8\,d+3\,e)x^3+84\,(9\,d+2\,e)x^2+14\,(10\,d+e)x+12\,d}{84\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^8,x, algorithm="giac")
```

```
[Out] 1/4*x^4*e + 1/3*d*x^3 + 10/3*x^3*e + 5*d*x^2 + 45/2*x^2*e + 45*d*x + 120*x*
e + 30*(4*d + 7*e)*log(abs(x)) - 1/84*(3528*(5*d + 6*e)*x^6 + 1764*(6*d + 5
*e)*x^5 + 840*(7*d + 4*e)*x^4 + 315*(8*d + 3*e)*x^3 + 84*(9*d + 2*e)*x^2 +
14*(10*d + e)*x + 12*d)/x^7
```

maple [A] time = 0.05, size = 128, normalized size = 0.93

$$\frac{e\,x^4}{4}+\frac{d\,x^3}{3}+\frac{10e\,x^3}{3}+5d\,x^2+\frac{45e\,x^2}{2}+45dx+120d\ln(x)+120ex+210e\ln(x)-\frac{210d}{x}-\frac{252e}{x}-\frac{126d}{x^2}-\frac{105e}{x^2}-\frac{70d}{x^3}-\frac{40e}{x^3}-\frac{30d}{x^4}-\frac{45e}{4x^4}-\frac{9d}{x^5}-\frac{2e}{x^5}-\frac{5d}{3x^6}-\frac{e}{6x^6}-\frac{d}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^8,x)
```

```
[Out] 1/4*e*x^4+1/3*d*x^3+10/3*e*x^3+5*d*x^2+45/2*e*x^2+45*d*x+120*e*x-9*d/x^5-2*
e/x^5-30*d/x^4-45/4*e/x^4-70*d/x^3-40*e/x^3-126*d/x^2-105*e/x^2-1/7*d/x^7-5
/3*d/x^6-1/6*e/x^6-210*d/x-252*e/x+120*d*ln(x)+210*e*ln(x)
```

maxima [A] time = 0.59, size = 127, normalized size = 0.92

$$\frac{1}{4}\,ex^4+\frac{1}{3}\,(d+10\,e)x^3+\frac{5}{2}\,(2\,d+9\,e)x^2+15\,(3\,d+8\,e)x+30\,(4\,d+7\,e)\log(x)-\frac{3528\,(5\,d+6\,e)x^6+1764\,(6\,d+5\,e)x^5+840\,(7\,d+4\,e)x^4+315\,(8\,d+3\,e)x^3+84\,(9\,d+2\,e)x^2+14\,(10\,d+e)x+12\,d}{84\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^8,x, algorithm="maxima")
```

```
[Out] 1/4*e*x^4 + 1/3*(d + 10*e)*x^3 + 5/2*(2*d + 9*e)*x^2 + 15*(3*d + 8*e)*x + 3
0*(4*d + 7*e)*log(x) - 1/84*(3528*(5*d + 6*e)*x^6 + 1764*(6*d + 5*e)*x^5 +
840*(7*d + 4*e)*x^4 + 315*(8*d + 3*e)*x^3 + 84*(9*d + 2*e)*x^2 + 14*(10*d +
 e)*x + 12*d)/x^7
```

mupad [B] time = 1.07, size = 121, normalized size = 0.88

$$x^3\left(\frac{d}{3}+\frac{10\,e}{3}\right)+x^2\left(5\,d+\frac{45\,e}{2}\right)+\ln(x)\,(120\,d+210\,e)+\frac{e\,x^4}{4}-\frac{(210\,d+252\,e)\,x^6+(126\,d+105\,e)\,x^5+(70\,d+40\,e)\,x^4+\left(30\,d+\frac{45\,e}{4}\right)x^3+(9\,d+2\,e)\,x^2+\left(\frac{5\,d}{3}+\frac{e}{6}\right)x+\frac{d}{7}}{x^7}+x\,(45\,d+120\,e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^8,x)
```

```
[Out] x^3*(d/3 + (10*e)/3) + x^2*(5*d + (45*e)/2) + log(x)*(120*d + 210*e) + (e*x
^4)/4 - (d/7 + x^2*(9*d + 2*e) + x^3*(30*d + (45*e)/4) + x^4*(70*d + 40*e)
+ x^5*(126*d + 105*e) + x^6*(210*d + 252*e) + x*((5*d)/3 + e/6))/x^7 + x*(4
5*d + 120*e)
```

sympy [A] time = 2.99, size = 128, normalized size = 0.93

$$\frac{ex^4}{4}+x^3\left(\frac{d}{3}+\frac{10e}{3}\right)+x^2\left(5d+\frac{45e}{2}\right)+x\,(45d+120e)+30\,(4d+7e)\log(x)+\frac{-12d+x^6\,(-17640d-21168e)+x^5\,(-10584d-8820e)+x^4\,(-5880d-3360e)+x^3\,(-2520d-945e)+x^2\,(-756d-168e)+x\,(-140d-14e)}{84x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**8,x)
```

```
[Out] e*x**4/4 + x**3*(d/3 + 10*e/3) + x**2*(5*d + 45*e/2) + x*(45*d + 120*e) + 3
0*(4*d + 7*e)*log(x) + (-12*d + x**6*(-17640*d - 21168*e) + x**5*(-10584*d
- 8820*e) + x**4*(-5880*d - 3360*e) + x**3*(-2520*d - 945*e) + x**2*(-756*d
 - 168*e) + x*(-140*d - 14*e))/(84*x**7)
```

3.502 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^9}\,dx$

Optimal. Leaf size=138

$$-\frac{10d+e}{7x^7}-\frac{5(9d+2e)}{6x^6}-\frac{3(8d+3e)}{x^5}-\frac{15(7d+4e)}{2x^4}-\frac{14(6d+5e)}{x^3}+\frac{1}{2}x^2(d+10e)-\frac{21(5d+6e)}{x^2}+5x(2d+9e)-\frac{30(4d+$$

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{2}x^2(d+10e)-\frac{21(5d+6e)}{x^2}-\frac{14(6d+5e)}{x^3}-\frac{15(7d+4e)}{2x^4}-\frac{3(8d+3e)}{x^5}-\frac{5(9d+2e)}{6x^6}-\frac{10d+e}{7x^7}+5x(2d+9e)-\frac{30(4d+7e)}{x}+15(3d+8e)\log(x)-\frac{d}{8x^8}+\frac{ex^3}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -d/(8*x^8) - (10*d + e)/(7*x^7) - (5*(9*d + 2*e))/(6*x^6) - (3*(8*d + 3*e))
/x^5 - (15*(7*d + 4*e))/(2*x^4) - (14*(6*d + 5*e))/x^3 - (21*(5*d + 6*e))/x
^2 - (30*(4*d + 7*e))/x + 5*(2*d + 9*e)*x + ((d + 10*e)*x^2)/2 + (e*x^3)/3
+ 15*(3*d + 8*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^9}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^9}\,dx\\ &= \int \left(5(2d+9e)+\frac{d}{x^9}+\frac{10d+e}{x^8}+\frac{5(9d+2e)}{x^7}+\frac{15(8d+3e)}{x^6}+\frac{30(7d+4e)}{x^5}+\frac{4\right.\\ &= -\frac{d}{8x^8}-\frac{10d+e}{7x^7}-\frac{5(9d+2e)}{6x^6}-\frac{3(8d+3e)}{x^5}-\frac{15(7d+4e)}{2x^4}-\frac{14(6d+5e)}{x^3}-\frac{21\end{aligned}$$

Mathematica [A] time = 0.04, size = 140, normalized size = 1.01

$$\frac{-10d-e}{7x^7}-\frac{5(9d+2e)}{6x^6}-\frac{3(8d+3e)}{x^5}-\frac{15(7d+4e)}{2x^4}-\frac{14(6d+5e)}{x^3}+\frac{1}{2}x^2(d+10e)-\frac{21(5d+6e)}{x^2}+5x(2d+9e)-\frac{30(4d+7e)}{x}+15(3d+8e)\log(x)-\frac{d}{8x^8}+\frac{ex^3}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -1/8*d/x^8 + (-10*d - e)/(7*x^7) - (5*(9*d + 2*e))/(6*x^6) - (3*(8*d + 3*e)
)/x^5 - (15*(7*d + 4*e))/(2*x^4) - (14*(6*d + 5*e))/x^3 - (21*(5*d + 6*e))/
```

```
x^2 - (30*(4*d + 7*e))/x + 5*(2*d + 9*e)*x + ((d + 10*e)*x^2)/2 + (e*x^3)/3
 + 15*(3*d + 8*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^9, x]
```

fricas [A] time = 0.42, size = 131, normalized size = 0.95

$$\frac{56\,ex^{11}+84\,(d+10\,e)x^{10}+840\,(2\,d+9\,e)x^9+2520\,(3\,d+8\,e)x^8\log(x)-5040\,(4\,d+7\,e)x^7-3528\,(5\,d+6\,e)x^6-2352\,(6\,d+5\,e)x^5-1260\,(7\,d+4\,e)x^4-504\,(8\,d+3\,e)x^3-140\,(9\,d+2\,e)x^2-24\,(10\,d+e)x-21\,d}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^9,x, algorithm="fricas")
```

```
[Out] 1/168*(56*e*x^11 + 84*(d + 10*e)*x^10 + 840*(2*d + 9*e)*x^9 + 2520*(3*d + 8
*e)*x^8*log(x) - 5040*(4*d + 7*e)*x^7 - 3528*(5*d + 6*e)*x^6 - 2352*(6*d +
5*e)*x^5 - 1260*(7*d + 4*e)*x^4 - 504*(8*d + 3*e)*x^3 - 140*(9*d + 2*e)*x^2
 - 24*(10*d + e)*x - 21*d)/x^8
```

giac [A] time = 0.16, size = 139, normalized size = 1.01

$$\frac{1}{3}\,x^3e+\frac{1}{2}\,dx^2+5\,x^2e+10\,dx+45\,xe+15\,(3\,d+8\,e)\log\left(|x|\right)-\frac{5040\,(4\,d+7\,e)x^7+3528\,(5\,d+6\,e)x^6+2352\,(6\,d+5\,e)x^5+1260\,(7\,d+4\,e)x^4+504\,(8\,d+3\,e)x^3+140\,(9\,d+2\,e)x^2+24\,(10\,d+e)x+21\,d}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^9,x, algorithm="giac")
```

```
[Out] 1/3*x^3*e + 1/2*d*x^2 + 5*x^2*e + 10*d*x + 45*x*e + 15*(3*d + 8*e)*log(abs(
x)) - 1/168*(5040*(4*d + 7*e)*x^7 + 3528*(5*d + 6*e)*x^6 + 2352*(6*d + 5*e)
*x^5 + 1260*(7*d + 4*e)*x^4 + 504*(8*d + 3*e)*x^3 + 140*(9*d + 2*e)*x^2 + 2
4*(10*d + e)*x + 21*d)/x^8
```

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$\frac{e\,x^3}{3}+\frac{d\,x^2}{2}+5e\,x^2+10dx+45d\ln(x)+45ex+120e\ln(x)-\frac{120d}{x}-\frac{210e}{x}-\frac{105d}{x^2}-\frac{126e}{x^2}-\frac{84d}{x^3}-\frac{70e}{x^3}-\frac{105d}{2x^4}-\frac{30e}{x^4}-\frac{24d}{x^5}-\frac{9e}{x^5}-\frac{15d}{2x^6}-\frac{5e}{3x^6}-\frac{10d}{7x^7}-\frac{e}{7x^7}-\frac{d}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^9,x)
```

```
[Out] 1/3*e*x^3+1/2*d*x^2+5*e*x^2+10*d*x+45*e*x-24*d/x^5-9*e/x^5-105/2*d/x^4-30*e
/x^4-84*d/x^3-70*e/x^3-1/8*d/x^8-105*d/x^2-126*e/x^2-10/7*d/x^7-1/7*e/x^7-1
5/2*d/x^6-5/3*e/x^6-120*d/x-210*e/x+45*d*ln(x)+120*e*ln(x)
```

maxima [A] time = 0.47, size = 127, normalized size = 0.92

$$\frac{1}{3}\,ex^3+\frac{1}{2}\,(d+10\,e)x^2+5\,(2\,d+9\,e)x+15\,(3\,d+8\,e)\log(x)-\frac{5040\,(4\,d+7\,e)x^7+3528\,(5\,d+6\,e)x^6+2352\,(6\,d+5\,e)x^5+1260\,(7\,d+4\,e)x^4+504\,(8\,d+3\,e)x^3+140\,(9\,d+2\,e)x^2+24\,(10\,d+e)x+21\,d}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^9,x, algorithm="maxima")
```

```
[Out] 1/3*e*x^3 + 1/2*(d + 10*e)*x^2 + 5*(2*d + 9*e)*x + 15*(3*d + 8*e)*log(x) -
1/168*(5040*(4*d + 7*e)*x^7 + 3528*(5*d + 6*e)*x^6 + 2352*(6*d + 5*e)*x^5 +
 1260*(7*d + 4*e)*x^4 + 504*(8*d + 3*e)*x^3 + 140*(9*d + 2*e)*x^2 + 24*(10*
d + e)*x + 21*d)/x^8
```

mupad [B] time = 1.08, size = 121, normalized size = 0.88

$$x^2\left(\frac{d}{2}+5e\right)+\ln(x)\,(45d+120e)+\frac{e\,x^3}{3}+x\,(10d+45e)-\frac{(120d+210e)\,x^7+(105d+126e)\,x^6+(84d+70e)\,x^5+\left(\frac{105d}{2}+30e\right)x^4+(24d+9e)\,x^3+\left(\frac{15d}{2}+\frac{5e}{3}\right)x^2+\left(\frac{10d}{7}+\frac{e}{7}\right)x+\frac{d}{8}}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^9,x)
```

```
[Out] x^2*(d/2 + 5*e) + log(x)*(45*d + 120*e) + (e*x^3)/3 + x*(10*d + 45*e) - (d/
8 + x^2*((15*d)/2 + (5*e)/3) + x^3*(24*d + 9*e) + x^4*((105*d)/2 + 30*e) +
x^5*(84*d + 70*e) + x^6*(105*d + 126*e) + x^7*(120*d + 210*e) + x*((10*d)/7
 + e/7))/x^8
```

sympy [A] time = 4.27, size = 126, normalized size = 0.91

$$\frac{ex^3}{3}+x^2\left(\frac{d}{2}+5e\right)+x\,(10d+45e)+15\,(3d+8e)\log(x)+\frac{-21d+x^7\,(-20160d-35280e)+x^6\,(-17640d-21168e)+x^5\,(-14112d-11760e)+x^4\,(-8820d-5040e)+x^3\,(-4032d-1512e)+x^2\,(-1260d-280e)+x\,(-240d-24e)}{168x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**9,x)
```

```
[Out] e*x**3/3 + x**2*(d/2 + 5*e) + x*(10*d + 45*e) + 15*(3*d + 8*e)*log(x) + (-2
1*d + x**7*(-20160*d - 35280*e) + x**6*(-17640*d - 21168*e) + x**5*(-14112*
d - 11760*e) + x**4*(-8820*d - 5040*e) + x**3*(-4032*d - 1512*e) + x**2*(-1
260*d - 280*e) + x*(-240*d - 24*e))/(168*x**8)
```

3.503 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{10}} dx$

Optimal. Leaf size=137

$$-\frac{10d+e}{8x^8}-\frac{5(9d+2e)}{7x^7}-\frac{5(8d+3e)}{2x^6}-\frac{6(7d+4e)}{x^5}-\frac{21(6d+5e)}{2x^4}-\frac{14(5d+6e)}{x^3}-\frac{15(4d+7e)}{x^2}+x(d+10e)-\frac{15(3d+8e)}{x}+$$

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$-\frac{15(4d+7e)}{x^2}-\frac{14(5d+6e)}{x^3}-\frac{21(6d+5e)}{2x^4}-\frac{6(7d+4e)}{x^5}-\frac{5(8d+3e)}{2x^6}-\frac{5(9d+2e)}{7x^7}-\frac{10d+e}{8x^8}+x(d+10e)-\frac{15(3d+8e)}{x}+5(2d+9e)\log(x)-\frac{d}{9x^9}+\frac{ex^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -d/(9*x^9) - (10*d + e)/(8*x^8) - (5*(9*d + 2*e))/(7*x^7) - (5*(8*d + 3*e))
/(2*x^6) - (6*(7*d + 4*e))/x^5 - (21*(6*d + 5*e))/(2*x^4) - (14*(5*d + 6*e)
)/x^3 - (15*(4*d + 7*e))/x^2 - (15*(3*d + 8*e))/x + (d + 10*e)*x + (e*x^2)/
2 + 5*(2*d + 9*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{10}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{10}}\,dx\\ &= \int \left(d\left(1+\frac{10e}{d}\right)+\frac{d}{x^{10}}+\frac{10d+e}{x^9}+\frac{5(9d+2e)}{x^8}+\frac{15(8d+3e)}{x^7}+\frac{30(7d+4e)}{x^6}+\frac{4\right.\\ &= -\frac{d}{9x^9}-\frac{10d+e}{8x^8}-\frac{5(9d+2e)}{7x^7}-\frac{5(8d+3e)}{2x^6}-\frac{6(7d+4e)}{x^5}-\frac{21(6d+5e)}{2x^4}-\frac{14(5d}{x^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{-10d-e}{8x^8}-\frac{5(9d+2e)}{7x^7}-\frac{5(8d+3e)}{2x^6}-\frac{6(7d+4e)}{x^5}-\frac{21(6d+5e)}{2x^4}-\frac{14(5d+6e)}{x^3}-\frac{15(4d+7e)}{x^2}+x(d+10e)-\frac{15(3d+8e)}{x}+5(2d+9e)\log(x)-\frac{d}{9x^9}+\frac{ex^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -1/9*d/x^9 + (-10*d - e)/(8*x^8) - (5*(9*d + 2*e))/(7*x^7) - (5*(8*d + 3*e)
)/(2*x^6) - (6*(7*d + 4*e))/x^5 - (21*(6*d + 5*e))/(2*x^4) - (14*(5*d + 6*e
```

```
))/x^3 - (15*(4*d + 7*e))/x^2 - (15*(3*d + 8*e))/x + (d + 10*e)*x + (e*x^2)
/2 + 5*(2*d + 9*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^10, x]
```

fricas [A] time = 0.42, size = 131, normalized size = 0.96

$$\frac{252\,ex^{11}+504\,(d+10\,e)x^{10}+2520\,(2\,d+9\,e)x^9\log(x)-7560\,(3\,d+8\,e)x^8-7560\,(4\,d+7\,e)x^7-7056\,(5\,d+6\,e)x^6-5292\,(6\,d+5\,e)x^5-3024\,(7\,d+4\,e)x^4-1260\,(8\,d+3\,e)x^3-360\,(9\,d+2\,e)x^2-63\,(10\,d+e)x-56\,d}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^10,x, algorithm="fricas")
```

```
[Out] 1/504*(252*e*x^11 + 504*(d + 10*e)*x^10 + 2520*(2*d + 9*e)*x^9*log(x) - 756
0*(3*d + 8*e)*x^8 - 7560*(4*d + 7*e)*x^7 - 7056*(5*d + 6*e)*x^6 - 5292*(6*d
 + 5*e)*x^5 - 3024*(7*d + 4*e)*x^4 - 1260*(8*d + 3*e)*x^3 - 360*(9*d + 2*e)
*x^2 - 63*(10*d + e)*x - 56*d)/x^9
```

giac [A] time = 0.17, size = 138, normalized size = 1.01

$$\frac{1}{2}\,x^2e+dx+10\,xe+5\,(2\,d+9\,e)\log\left(|x|\right)-\frac{7560\,(3\,d+8\,e)x^8+7560\,(4\,d+7\,e)x^7+7056\,(5\,d+6\,e)x^6+5292\,(6\,d+5\,e)x^5+3024\,(7\,d+4\,e)x^4+1260\,(8\,d+3\,e)x^3+360\,(9\,d+2\,e)x^2+63\,(10\,d+e)x+56\,d}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^10,x, algorithm="giac")
```

```
[Out] 1/2*x^2*e + d*x + 10*x*e + 5*(2*d + 9*e)*log(abs(x)) - 1/504*(7560*(3*d + 8
*e)*x^8 + 7560*(4*d + 7*e)*x^7 + 7056*(5*d + 6*e)*x^6 + 5292*(6*d + 5*e)*x^
5 + 3024*(7*d + 4*e)*x^4 + 1260*(8*d + 3*e)*x^3 + 360*(9*d + 2*e)*x^2 + 63*
(10*d + e)*x + 56*d)/x^9
```

maple [A] time = 0.06, size = 127, normalized size = 0.93

$$\frac{e\,x^2}{2}+dx+10d\ln(x)+10ex+45e\ln(x)-\frac{45d}{x}-\frac{120e}{x}-\frac{60d}{x^2}-\frac{105e}{x^2}-\frac{70d}{x^3}-\frac{84e}{x^3}-\frac{63d}{x^4}-\frac{105e}{2x^4}-\frac{42d}{x^5}-\frac{24e}{x^5}-\frac{20d}{x^6}-\frac{15e}{2x^6}-\frac{45d}{7x^7}-\frac{10e}{7x^7}-\frac{5d}{4x^8}-\frac{e}{8x^8}-\frac{d}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^10,x)
```

```
[Out] 1/2*e*x^2+d*x+10*e*x-42*d/x^5-24*e/x^5-63*d/x^4-105/2*e/x^4-70*d/x^3-84*e/x
^3-5/4*d/x^8-1/8*e/x^8-60*d/x^2-105*e/x^2-1/9*d/x^9-45/7*d/x^7-10/7*e/x^7-2
0*d/x^6-15/2*e/x^6-45*d/x-120*e/x+10*d*ln(x)+45*e*ln(x)
```

maxima [A] time = 0.51, size = 126, normalized size = 0.92

$$\frac{1}{2}\,ex^2+(d+10\,e)x+5\,(2\,d+9\,e)\log(x)-\frac{7560\,(3\,d+8\,e)x^8+7560\,(4\,d+7\,e)x^7+7056\,(5\,d+6\,e)x^6+5292\,(6\,d+5\,e)x^5+3024\,(7\,d+4\,e)x^4+1260\,(8\,d+3\,e)x^3+360\,(9\,d+2\,e)x^2+63\,(10\,d+e)x+56\,d}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^10,x, algorithm="maxima")
```

```
[Out] 1/2*e*x^2 + (d + 10*e)*x + 5*(2*d + 9*e)*log(x) - 1/504*(7560*(3*d + 8*e)*x
^8 + 7560*(4*d + 7*e)*x^7 + 7056*(5*d + 6*e)*x^6 + 5292*(6*d + 5*e)*x^5 + 3
024*(7*d + 4*e)*x^4 + 1260*(8*d + 3*e)*x^3 + 360*(9*d + 2*e)*x^2 + 63*(10*d
 + e)*x + 56*d)/x^9
```

mupad [B] time = 0.07, size = 119, normalized size = 0.87

$$\ln(x)\,(10\,d+45\,e)+x\,(d+10\,e)+\frac{e\,x^2}{2}-\frac{(45\,d+120\,e)\,x^8+(60\,d+105\,e)\,x^7+(70\,d+84\,e)\,x^6+\left(63\,d+\frac{105\,e}{2}\right)\,x^5+(42\,d+24\,e)\,x^4+\left(20\,d+\frac{15\,e}{2}\right)\,x^3+\left(\frac{45\,d}{7}+\frac{10\,e}{7}\right)\,x^2+\left(\frac{5\,d}{4}+\frac{e}{8}\right)\,x+\frac{d}{9}}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^10,x)
```

```
[Out] log(x)*(10*d + 45*e) + x*(d + 10*e) + (e*x^2)/2 - (d/9 + x^3*(20*d + (15*e)
/2) + x^4*(42*d + 24*e) + x^2*((45*d)/7 + (10*e)/7) + x^6*(70*d + 84*e) + x
^7*(60*d + 105*e) + x^8*(45*d + 120*e) + x^5*(63*d + (105*e)/2) + x*((5*d)/
4 + e/8))/x^9
```

sympy [A] time = 5.59, size = 126, normalized size = 0.92

$$\frac{ex^2}{2}+x\,(d+10e)+5\,(2d+9e)\log{(x)}+\frac{-56d+x^8\,(-22680d-60480e)+x^7\,(-30240d-52920e)+x^6\,(-35280d-42336e)+x^5\,(-31752d-26460e)+x^4\,(-21168d-12096e)+x^3\,(-10080d-3780e)+x^2\,(-3240d-720e)+x\,(-630d-63e)}{504x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**10,x)
```

```
[Out] e*x**2/2 + x*(d + 10*e) + 5*(2*d + 9*e)*log(x) + (-56*d + x**8*(-22680*d -
60480*e) + x**7*(-30240*d - 52920*e) + x**6*(-35280*d - 42336*e) + x**5*(-3
1752*d - 26460*e) + x**4*(-21168*d - 12096*e) + x**3*(-10080*d - 3780*e) +
x**2*(-3240*d - 720*e) + x*(-630*d - 63*e))/(504*x**9)
```

3.504 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{11}}\,dx$

Optimal. Leaf size=138

$$-\frac{10d+e}{9x^9}-\frac{5(9d+2e)}{8x^8}-\frac{15(8d+3e)}{7x^7}-\frac{5(7d+4e)}{x^6}-\frac{42(6d+5e)}{5x^5}-\frac{21(5d+6e)}{2x^4}-\frac{10(4d+7e)}{x^3}-\frac{15(3d+8e)}{2x^2}-\frac{5(2d+}{x}$$

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$-\frac{15(3d+8e)}{2x^2}-\frac{10(4d+7e)}{x^3}-\frac{21(5d+6e)}{2x^4}-\frac{42(6d+5e)}{5x^5}-\frac{5(7d+4e)}{x^6}-\frac{15(8d+3e)}{7x^7}-\frac{5(9d+2e)}{8x^8}-\frac{10d+e}{9x^9}-\frac{5(2d+9e)}{x}+(d+10e)\log(x)-\frac{d}{10x^{10}}+ex$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -d/(10*x^10) - (10*d + e)/(9*x^9) - (5*(9*d + 2*e))/(8*x^8) - (15*(8*d + 3*
e))/(7*x^7) - (5*(7*d + 4*e))/x^6 - (42*(6*d + 5*e))/(5*x^5) - (21*(5*d + 6
*e))/(2*x^4) - (10*(4*d + 7*e))/x^3 - (15*(3*d + 8*e))/(2*x^2) - (5*(2*d +
9*e))/x + e*x + (d + 10*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{11}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{11}}\,dx\\ &= \int \left(e+\frac{d}{x^{11}}+\frac{10d+e}{x^{10}}+\frac{5(9d+2e)}{x^9}+\frac{15(8d+3e)}{x^8}+\frac{30(7d+4e)}{x^7}+\frac{42(6d+5}{x^6}\right.\\ &= -\frac{d}{10x^{10}}-\frac{10d+e}{9x^9}-\frac{5(9d+2e)}{8x^8}-\frac{15(8d+3e)}{7x^7}-\frac{5(7d+4e)}{x^6}-\frac{42(6d+5e)}{5x^5}-\end{aligned}$$

Mathematica [A] time = 0.04, size = 140, normalized size = 1.01

$$\frac{-10d-e}{9x^9}-\frac{5(9d+2e)}{8x^8}-\frac{15(8d+3e)}{7x^7}-\frac{5(7d+4e)}{x^6}-\frac{42(6d+5e)}{5x^5}-\frac{21(5d+6e)}{2x^4}-\frac{10(4d+7e)}{x^3}-\frac{15(3d+8e)}{2x^2}-\frac{5(2d+9e)}{x}+(d+10e)\log(x)-\frac{d}{10x^{10}}+ex$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -1/10*d/x^10 + (-10*d - e)/(9*x^9) - (5*(9*d + 2*e))/(8*x^8) - (15*(8*d + 3
*e))/(7*x^7) - (5*(7*d + 4*e))/x^6 - (42*(6*d + 5*e))/(5*x^5) - (21*(5*d +
```

```
6*e))/(2*x^4) - (10*(4*d + 7*e))/x^3 - (15*(3*d + 8*e))/(2*x^2) - (5*(2*d +
 9*e))/x + e*x + (d + 10*e)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^11, x]
```

fricas [A] time = 0.42, size = 131, normalized size = 0.95

$$\frac{2520\,ex^{11}+2520\,(d+10\,e)x^{10}\log(x)-12600\,(2\,d+9\,e)x^9-18900\,(3\,d+8\,e)x^8-25200\,(4\,d+7\,e)x^7-26460\,(5\,d+6\,e)x^6-21168\,(6\,d+5\,e)x^5-12600\,(7\,d+4\,e)x^4-5400\,(8\,d+3\,e)x^3-1575\,(9\,d+2\,e)x^2-280\,(10\,d+e)x-252\,d}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^11,x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*e*x^11 + 2520*(d + 10*e)*x^10*log(x) - 12600*(2*d + 9*e)*x^9 -
 18900*(3*d + 8*e)*x^8 - 25200*(4*d + 7*e)*x^7 - 26460*(5*d + 6*e)*x^6 - 21
168*(6*d + 5*e)*x^5 - 12600*(7*d + 4*e)*x^4 - 5400*(8*d + 3*e)*x^3 - 1575*(
9*d + 2*e)*x^2 - 280*(10*d + e)*x - 252*d)/x^10
```

giac [A] time = 0.15, size = 137, normalized size = 0.99

$$xe+(d+10\,e)\log\left(|x|\right)-\frac{12600\,(2\,d+9\,e)x^9+18900\,(3\,d+8\,e)x^8+25200\,(4\,d+7\,e)x^7+26460\,(5\,d+6\,e)x^6+21168\,(6\,d+5\,e)x^5+12600\,(7\,d+4\,e)x^4+5400\,(8\,d+3\,e)x^3+1575\,(9\,d+2\,e)x^2+280\,(10\,d+e)x+252\,d}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^11,x, algorithm="giac")
```

```
[Out] x*e + (d + 10*e)*log(abs(x)) - 1/2520*(12600*(2*d + 9*e)*x^9 + 18900*(3*d +
 8*e)*x^8 + 25200*(4*d + 7*e)*x^7 + 26460*(5*d + 6*e)*x^6 + 21168*(6*d + 5*
e)*x^5 + 12600*(7*d + 4*e)*x^4 + 5400*(8*d + 3*e)*x^3 + 1575*(9*d + 2*e)*x^
2 + 280*(10*d + e)*x + 252*d)/x^10
```

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$d\ln(x)+ex+10e\ln(x)-\frac{10d}{x}-\frac{45e}{x}-\frac{45d}{2x^2}-\frac{60e}{x^2}-\frac{40d}{x^3}-\frac{70e}{x^3}-\frac{105d}{2x^4}-\frac{63e}{x^4}-\frac{252d}{5x^5}-\frac{42e}{x^5}-\frac{35d}{x^6}-\frac{20e}{x^6}-\frac{120d}{7x^7}-\frac{45e}{7x^7}-\frac{45d}{8x^8}-\frac{5e}{4x^8}-\frac{10d}{9x^9}-\frac{e}{9x^9}-\frac{d}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^11,x)
```

```
[Out] e*x-252/5*d/x^5-42*e/x^5-105/2*d/x^4-63*e/x^4-40*d/x^3-70*e/x^3-45/8*d/x^8-
5/4*e/x^8-1/10*d/x^10-45/2*d/x^2-60*e/x^2-10/9*d/x^9-1/9*e/x^9-120/7*d/x^7-
45/7*e/x^7-35*d/x^6-20*e/x^6-10*d/x-45*e/x+d*ln(x)+10*e*ln(x)
```

maxima [A] time = 0.50, size = 125, normalized size = 0.91

$$ex+(d+10\,e)\log(x)-\frac{12600\,(2\,d+9\,e)x^9+18900\,(3\,d+8\,e)x^8+25200\,(4\,d+7\,e)x^7+26460\,(5\,d+6\,e)x^6+21168\,(6\,d+5\,e)x^5+12600\,(7\,d+4\,e)x^4+5400\,(8\,d+3\,e)x^3+1575\,(9\,d+2\,e)x^2+280\,(10\,d+e)x+252\,d}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^11,x, algorithm="maxima")
```

```
[Out] e*x + (d + 10*e)*log(x) - 1/2520*(12600*(2*d + 9*e)*x^9 + 18900*(3*d + 8*e)
*x^8 + 25200*(4*d + 7*e)*x^7 + 26460*(5*d + 6*e)*x^6 + 21168*(6*d + 5*e)*x^
5 + 12600*(7*d + 4*e)*x^4 + 5400*(8*d + 3*e)*x^3 + 1575*(9*d + 2*e)*x^2 + 2
80*(10*d + e)*x + 252*d)/x^10
```

mupad [B] time = 1.09, size = 118, normalized size = 0.86

$$e\,x-\frac{\left(10\,d+45\,e\right)\,x^9+\left(\frac{45\,d}{2}+60\,e\right)\,x^8+\left(40\,d+70\,e\right)\,x^7+\left(\frac{105\,d}{2}+63\,e\right)\,x^6+\left(\frac{252\,d}{5}+42\,e\right)\,x^5+\left(35\,d+20\,e\right)\,x^4+\left(\frac{120\,d}{7}+\frac{45\,e}{7}\right)\,x^3+\left(\frac{45\,d}{8}+\frac{5\,e}{4}\right)\,x^2+\left(\frac{10\,d}{9}+\frac{e}{9}\right)\,x+\frac{d}{10}}{x^{10}}+\ln\left(x\right)\,\left(d+10\,e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^11,x)
```

```
[Out] e*x - (d/10 + x^4*(35*d + 20*e) + x^2*((45*d)/8 + (5*e)/4) + x^9*(10*d + 45
*e) + x^8*((45*d)/2 + 60*e) + x^7*(40*d + 70*e) + x^6*((105*d)/2 + 63*e) +
x^3*((120*d)/7 + (45*e)/7) + x^5*((252*d)/5 + 42*e) + x*((10*d)/9 + e/9))/x
^10 + log(x)*(d + 10*e)
```

sympy [A] time = 7.76, size = 124, normalized size = 0.90

$$ex+(d+10e)\log(x)+\frac{-252d+x^9(-25200d-113400e)+x^8(-56700d-151200e)+x^7(-100800d-176400e)+x^6(-132300d-158760e)+x^5(-127008d-105840e)+x^4(-88200d-50400e)+x^3(-43200d-16200e)+x^2(-14175d-3150e)+x(-2800d-280e)}{2520x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**11,x)
```

```
[Out] e*x + (d + 10*e)*log(x) + (-252*d + x**9*(-25200*d - 113400*e) + x**8*(-567
00*d - 151200*e) + x**7*(-100800*d - 176400*e) + x**6*(-132300*d - 158760*e
) + x**5*(-127008*d - 105840*e) + x**4*(-88200*d - 50400*e) + x**3*(-43200*
d - 16200*e) + x**2*(-14175*d - 3150*e) + x*(-2800*d - 280*e))/(2520*x**10)
```

3.505 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{12}}\,dx$

Optimal. Leaf size=92

$$-\frac{d(x+1)^{11}}{11x^{11}}-\frac{e}{10x^{10}}-\frac{10e}{9x^9}-\frac{45e}{8x^8}-\frac{120e}{7x^7}-\frac{35e}{x^6}-\frac{252e}{5x^5}-\frac{105e}{2x^4}-\frac{40e}{x^3}-\frac{45e}{2x^2}-\frac{10e}{x}+e\log(x)$$

Rubi [A] time = 0.03, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {27, 78, 43}

$$-\frac{d(x+1)^{11}}{11x^{11}}-\frac{45e}{2x^2}-\frac{40e}{x^3}-\frac{105e}{2x^4}-\frac{252e}{5x^5}-\frac{35e}{x^6}-\frac{120e}{7x^7}-\frac{45e}{8x^8}-\frac{10e}{9x^9}-\frac{e}{10x^{10}}-\frac{10e}{x}+e\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -e/(10*x^10) - (10*e)/(9*x^9) - (45*e)/(8*x^8) - (120*e)/(7*x^7) - (35*e)/x
^6 - (252*e)/(5*x^5) - (105*e)/(2*x^4) - (40*e)/x^3 - (45*e)/(2*x^2) - (10*
e)/x - (d*(1 + x)^11)/(11*x^11) + e*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{12}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{12}}\,dx\\
&= -\frac{d(1+x)^{11}}{11x^{11}}+e\int \frac{(1+x)^{10}}{x^{11}}\,dx\\
&= -\frac{d(1+x)^{11}}{11x^{11}}+e\int \left(\frac{1}{x^{11}}+\frac{10}{x^{10}}+\frac{45}{x^9}+\frac{120}{x^8}+\frac{210}{x^7}+\frac{252}{x^6}+\frac{210}{x^5}+\frac{120}{x^4}+\frac{45}{x^3}+\frac{1(}{x}\right.\\
&= -\frac{e}{10x^{10}}-\frac{10e}{9x^9}-\frac{45e}{8x^8}-\frac{120e}{7x^7}-\frac{35e}{x^6}-\frac{252e}{5x^5}-\frac{105e}{2x^4}-\frac{40e}{x^3}-\frac{45e}{2x^2}-\frac{10e}{x}-\frac{d(1+x}{11x^{11}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 143, normalized size = 1.55

$$-\frac{10d+e}{10x^{10}}-\frac{5(9d+2e)}{9x^9}-\frac{15(8d+3e)}{8x^8}-\frac{30(7d+4e)}{7x^7}-\frac{7(6d+5e)}{x^6}-\frac{42(5d+6e)}{5x^5}-\frac{15(4d+7e)}{2x^4}-\frac{5(3d+8e)}{x^3}-\frac{5(2d+9e)}{2x^2}-\frac{d+10e}{x}-\frac{d}{11x^{11}}+e\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -1/11*d/x^11 - (10*d + e)/(10*x^10) - (5*(9*d + 2*e))/(9*x^9) - (15*(8*d +
3*e))/(8*x^8) - (30*(7*d + 4*e))/(7*x^7) - (7*(6*d + 5*e))/x^6 - (42*(5*d +
 6*e))/(5*x^5) - (15*(4*d + 7*e))/(2*x^4) - (5*(3*d + 8*e))/x^3 - (5*(2*d +
 9*e))/(2*x^2) - (d + 10*e)/x + e*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{12}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^12, x]
```

fricas [A] time = 0.40, size = 131, normalized size = 1.42

$$\frac{27720\,e x^{11}\log(x)-27720\,(d+10\,e)x^{10}-69300\,(2\,d+9\,e)x^9-138600\,(3\,d+8\,e)x^8-207900\,(4\,d+7\,e)x^7-232848\,(5\,d+6\,e)x^6-194040\,(6\,d+5\,e)x^5-118800\,(7\,d+4\,e)x^4-51975\,(8\,d+3\,e)x^3-15400\,(9\,d+2\,e)x^2-2772\,(10\,d+e)x-2520\,d}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^12,x, algorithm="fricas")
```

```
[Out] 1/27720*(27720*e*x^11*log(x) - 27720*(d + 10*e)*x^10 - 69300*(2*d + 9*e)*x^
9 - 138600*(3*d + 8*e)*x^8 - 207900*(4*d + 7*e)*x^7 - 232848*(5*d + 6*e)*x^
6 - 194040*(6*d + 5*e)*x^5 - 118800*(7*d + 4*e)*x^4 - 51975*(8*d + 3*e)*x^3
 - 15400*(9*d + 2*e)*x^2 - 2772*(10*d + e)*x - 2520*d)/x^11
```

giac [A] time = 0.18, size = 140, normalized size = 1.52

$$e\log\left(|x|\right)-\frac{27720\,(d+10\,e)x^{10}+69300\,(2\,d+9\,e)x^9+138600\,(3\,d+8\,e)x^8+207900\,(4\,d+7\,e)x^7+232848\,(5\,d+6\,e)x^6+194040\,(6\,d+5\,e)x^5+118800\,(7\,d+4\,e)x^4+51975\,(8\,d+3\,e)x^3+15400\,(9\,d+2\,e)x^2+2772\,(10\,d+e)x+2520\,d}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^12,x, algorithm="giac")
```

```
[Out] e*log(abs(x)) - 1/27720*(27720*(d + 10*e)*x^10 + 69300*(2*d + 9*e)*x^9 + 13
8600*(3*d + 8*e)*x^8 + 207900*(4*d + 7*e)*x^7 + 232848*(5*d + 6*e)*x^6 + 19
4040*(6*d + 5*e)*x^5 + 118800*(7*d + 4*e)*x^4 + 51975*(8*d + 3*e)*x^3 + 154
00*(9*d + 2*e)*x^2 + 2772*(10*d + e)*x + 2520*d)/x^11
```

maple [A] time = 0.05, size = 132, normalized size = 1.43

$$e\ln(x)-\frac{d}{x}-\frac{10e}{x}-\frac{5d}{x^2}-\frac{45e}{2x^2}-\frac{15d}{x^3}-\frac{40e}{x^3}-\frac{30d}{x^4}-\frac{105e}{2x^4}-\frac{42d}{x^5}-\frac{252e}{5x^5}-\frac{42d}{x^6}-\frac{35e}{x^6}-\frac{30d}{x^7}-\frac{120e}{7x^7}-\frac{15d}{x^8}-\frac{45e}{8x^8}-\frac{5d}{x^9}-\frac{10e}{9x^9}-\frac{d}{x^{10}}-\frac{e}{10x^{10}}-\frac{d}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^12,x)
```

```
[Out] -42*d/x^5-252/5*e/x^5-30*d/x^4-105/2*e/x^4-15*d/x^3-40*e/x^3-15*d/x^8-45/8*
e/x^8-d/x^10-1/10*e/x^10-5*d/x^2-45/2*e/x^2-5*d/x^9-10/9*e/x^9-30*d/x^7-120
/7*e/x^7-42*d/x^6-35*e/x^6-d/x-10*e/x-1/11*d/x^11+e*ln(x)
```

maxima [A] time = 0.58, size = 128, normalized size = 1.39

$$e\log(x) - \frac{27720\,(d+10\,e)x^{10} + 69300\,(2\,d+9\,e)x^{9} + 138600\,(3\,d+8\,e)x^{8} + 207900\,(4\,d+7\,e)x^{7} + 232848\,(5\,d+6\,e)x^{6} + 194040\,(6\,d+5\,e)x^{5} + 118800\,(7\,d+4\,e)x^{4} + 51975\,(8\,d+3\,e)x^{3} + 15400\,(9\,d+2\,e)x^{2} + 2772\,(10\,d+e)x + 2520\,d}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^12,x, algorithm="maxima")
```

```
[Out] e*log(x) - 1/27720*(27720*(d + 10*e)*x^10 + 69300*(2*d + 9*e)*x^9 + 138600*
(3*d + 8*e)*x^8 + 207900*(4*d + 7*e)*x^7 + 232848*(5*d + 6*e)*x^6 + 194040*
(6*d + 5*e)*x^5 + 118800*(7*d + 4*e)*x^4 + 51975*(8*d + 3*e)*x^3 + 15400*(9
*d + 2*e)*x^2 + 2772*(10*d + e)*x + 2520*d)/x^11
```

mupad [B] time = 1.10, size = 118, normalized size = 1.28

$$e\,\ln(x) - \frac{(d+10\,e)\,x^{10} + \left(5\,d+\frac{45\,e}{2}\right)x^{9} + (15\,d+40\,e)\,x^{8} + \left(30\,d+\frac{105\,e}{2}\right)x^{7} + \left(42\,d+\frac{252\,e}{5}\right)x^{6} + (42\,d+35\,e)\,x^{5} + \left(30\,d+\frac{120\,e}{7}\right)x^{4} + \left(15\,d+\frac{45\,e}{8}\right)x^{3} + \left(5\,d+\frac{10\,e}{9}\right)x^{2} + \left(d+\frac{e}{10}\right)x + \frac{d}{11}}{x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^12,x)
```

```
[Out] e*log(x) - (d/11 + x^2*(5*d + (10*e)/9) + x^9*(5*d + (45*e)/2) + x^8*(15*d
 + 40*e) + x^3*(15*d + (45*e)/8) + x^5*(42*d + 35*e) + x^7*(30*d + (105*e)/2
) + x^4*(30*d + (120*e)/7) + x^6*(42*d + (252*e)/5) + x*(d + e/10) + x^10*(
d + 10*e))/x^11
```

sympy [A] time = 9.30, size = 129, normalized size = 1.40

$$e\log{(x)} + \frac{-2520d + x^{10}(-27720d - 277200e) + x^{9}(-138600d - 623700e) + x^{8}(-415800d - 1108800e) + x^{7}(-831600d - 1455300e) + x^{6}(-1164240d - 1397088e) + x^{5}(-1164240d - 970200e) + x^{4}(-831600d - 475200e) + x^{3}(-415800d - 155925e) + x^{2}(-138600d - 30800e) + x(-27720d - 2772e)}{27720x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**12,x)
```

```
[Out] e*log(x) + (-2520*d + x**10*(-27720*d - 277200*e) + x**9*(-138600*d - 62370
0*e) + x**8*(-415800*d - 1108800*e) + x**7*(-831600*d - 1455300*e) + x**6*(
-1164240*d - 1397088*e) + x**5*(-1164240*d - 970200*e) + x**4*(-831600*d -
475200*e) + x**3*(-415800*d - 155925*e) + x**2*(-138600*d - 30800*e) + x*(-
27720*d - 2772*e))/(27720*x**11)
```

3.506 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{13}} \, dx$

Optimal. Leaf size=31

$$\frac{(x+1)^{11}(d-12e)}{132x^{11}} - \frac{d(x+1)^{11}}{12x^{12}}$$

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {27, 78, 37}

$$\frac{(x+1)^{11}(d-12e)}{132x^{11}} - \frac{d(x+1)^{11}}{12x^{12}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -(d*(1 + x)^11)/(12*x^12) + ((d - 12*e)*(1 + x)^11)/(132*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{13}} \, dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{13}} \, dx \\
&= -\frac{d(1+x)^{11}}{12x^{12}} - \frac{1}{12}(d-12e) \int \frac{(1+x)^{10}}{x^{12}} \, dx \\
&= -\frac{d(1+x)^{11}}{12x^{12}} + \frac{(d-12e)(1+x)^{11}}{132x^{11}}
\end{aligned}$$

Mathematica [B] time = 0.03, size = 114, normalized size = 3.68

$$-\frac{d\left(66x^{10}+440x^9+1485x^8+3168x^7+4620x^6+4752x^5+3465x^4+1760x^3+594x^2+120x+11\right)+12ex\left(11x^{10}+55x^9+165x^8+330x^7+462x^6+462x^5+330x^4+165x^3+55x^2+11x+1\right)}{132x^{12}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -1/132*(12*e*x*(1 + 11*x + 55*x^2 + 165*x^3 + 330*x^4 + 462*x^5 + 462*x^6 +
 330*x^7 + 165*x^8 + 55*x^9 + 11*x^10) + d*(11 + 120*x + 594*x^2 + 1760*x^3
 + 3465*x^4 + 4752*x^5 + 4620*x^6 + 3168*x^7 + 1485*x^8 + 440*x^9 + 66*x^10
))/x^12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{13}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^13, x]
```

fricas [B] time = 0.39, size = 129, normalized size = 4.16

$$-\frac{132\,ex^{11}+66\,(d+10\,e)x^{10}+220\,(2\,d+9\,e)x^9+495\,(3\,d+8\,e)x^8+792\,(4\,d+7\,e)x^7+924\,(5\,d+6\,e)x^6+792\,(6\,d+5\,e)x^5+495\,(7\,d+4\,e)x^4+220\,(8\,d+3\,e)x^3+66\,(9\,d+2\,e)x^2+12\,(10\,d+e)x+11\,d}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^13,x, algorithm="fricas")
```

```
[Out] -1/132*(132*e*x^11 + 66*(d + 10*e)*x^10 + 220*(2*d + 9*e)*x^9 + 495*(3*d +
8*e)*x^8 + 792*(4*d + 7*e)*x^7 + 924*(5*d + 6*e)*x^6 + 792*(6*d + 5*e)*x^5
+ 495*(7*d + 4*e)*x^4 + 220*(8*d + 3*e)*x^3 + 66*(9*d + 2*e)*x^2 + 12*(10*d
 + e)*x + 11*d)/x^12
```

giac [B] time = 0.16, size = 142, normalized size = 4.58

$$-\frac{132\,x^{11}e+66\,dx^{10}+660\,x^{10}e+440\,dx^9+1980\,x^9e+1485\,dx^8+3960\,x^8e+3168\,dx^7+5544\,x^7e+4620\,dx^6+5544\,x^6e+4752\,dx^5+3960\,x^5e+3465\,dx^4+1980\,x^4e+1760\,dx^3+660\,x^3e+594\,dx^2+132\,x^2e+120\,dx+12\,xe+11\,d}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^13,x, algorithm="giac")
```

```
[Out] -1/132*(132*x^11*e + 66*d*x^10 + 660*x^10*e + 440*d*x^9 + 1980*x^9*e + 1485
*d*x^8 + 3960*x^8*e + 3168*d*x^7 + 5544*x^7*e + 4620*d*x^6 + 5544*x^6*e + 4
752*d*x^5 + 3960*x^5*e + 3465*d*x^4 + 1980*x^4*e + 1760*d*x^3 + 660*x^3*e +
 594*d*x^2 + 132*x^2*e + 120*d*x + 12*x*e + 11*d)/x^12
```

maple [B] time = 0.06, size = 130, normalized size = 4.19

$$-\frac{e}{x}-\frac{d+10e}{2x^2}-\frac{10d+45e}{3x^3}-\frac{45d+120e}{4x^4}-\frac{120d+210e}{5x^5}-\frac{210d+252e}{6x^6}-\frac{252d+210e}{7x^7}-\frac{210d+120e}{8x^8}-\frac{120d+45e}{9x^9}-\frac{45d+10e}{10x^{10}}-\frac{d}{12x^{12}}-\frac{10d+e}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^13,x)
```

```
[Out] -1/5*(120*d+210*e)/x^5-1/4*(45*d+120*e)/x^4-1/3*(10*d+45*e)/x^3-1/8*(210*d+
120*e)/x^8-1/10*(45*d+10*e)/x^10-1/2*(d+10*e)/x^2-1/9*(120*d+45*e)/x^9-1/7*
(252*d+210*e)/x^7-1/6*(210*d+252*e)/x^6-e/x-1/12*d/x^12-1/11*(10*d+e)/x^11
```

maxima [B] time = 0.56, size = 129, normalized size = 4.16

$$-\frac{132\,ex^{11}+66\,(d+10\,e)x^{10}+220\,(2\,d+9\,e)x^9+495\,(3\,d+8\,e)x^8+792\,(4\,d+7\,e)x^7+924\,(5\,d+6\,e)x^6+792\,(6\,d+5\,e)x^5+495\,(7\,d+4\,e)x^4+220\,(8\,d+3\,e)x^3+66\,(9\,d+2\,e)x^2+12\,(10\,d+e)x+11\,d}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^13,x, algorithm="maxima")
```

```
[Out] -1/132*(132*e*x^11 + 66*(d + 10*e)*x^10 + 220*(2*d + 9*e)*x^9 + 495*(3*d +
8*e)*x^8 + 792*(4*d + 7*e)*x^7 + 924*(5*d + 6*e)*x^6 + 792*(6*d + 5*e)*x^5
+ 495*(7*d + 4*e)*x^4 + 220*(8*d + 3*e)*x^3 + 66*(9*d + 2*e)*x^2 + 12*(10*d
 + e)*x + 11*d)/x^12
```

mupad [B] time = 0.12, size = 120, normalized size = 3.87

$$-\frac{e\,x^{11}+\left(\frac{d}{2}+5\,e\right)\,x^{10}+\left(\frac{10\,d}{3}+15\,e\right)\,x^9+\left(\frac{45\,d}{4}+30\,e\right)\,x^8+\left(24\,d+42\,e\right)\,x^7+\left(35\,d+42\,e\right)\,x^6+\left(36\,d+30\,e\right)\,x^5+\left(\frac{105\,d}{4}+15\,e\right)\,x^4+\left(\frac{40\,d}{3}+5\,e\right)\,x^3+\left(\frac{9\,d}{2}+e\right)\,x^2+\left(\frac{10\,d}{11}+\frac{e}{11}\right)\,x+\frac{d}{12}}{x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^13,x)
```

```
[Out] -(d/12 + x^10*(d/2 + 5*e) + x^9*((10*d)/3 + 15*e) + x^3*((40*d)/3 + 5*e) +
x^5*(36*d + 30*e) + x^7*(24*d + 42*e) + x^6*(35*d + 42*e) + x^8*((45*d)/4 +
 30*e) + x^4*((105*d)/4 + 15*e) + e*x^11 + x*((10*d)/11 + e/11) + x^2*((9*d
)/2 + e))/x^12
```

sympy [B] time = 11.46, size = 131, normalized size = 4.23

$$\frac{-11d-132ex^{11}+x^{10}\left(-66d-660e\right)+x^{9}\left(-440d-1980e\right)+x^{8}\left(-1485d-3960e\right)+x^{7}\left(-3168d-5544e\right)+x^{6}\left(-4620d-5544e\right)+x^{5}\left(-4752d-3960e\right)+x^{4}\left(-3465d-1980e\right)+x^{3}\left(-1760d-660e\right)+x^{2}\left(-594d-132e\right)+x\left(-120d-12e\right)}{132x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**13,x)
```

```
[Out] (-11*d - 132*e*x**11 + x**10*(-66*d - 660*e) + x**9*(-440*d - 1980*e) + x**
8*(-1485*d - 3960*e) + x**7*(-3168*d - 5544*e) + x**6*(-4620*d - 5544*e) +
x**5*(-4752*d - 3960*e) + x**4*(-3465*d - 1980*e) + x**3*(-1760*d - 660*e)
+ x**2*(-594*d - 132*e) + x*(-120*d - 12*e))/(132*x**12)
```

3.507 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$

Optimal. Leaf size=52

$$\frac{(x+1)^{11}(2d-13e)}{156x^{12}}-\frac{(x+1)^{11}(2d-13e)}{1716x^{11}}-\frac{d(x+1)^{11}}{13x^{13}}$$

Rubi [A] time = 0.01, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$-\frac{(x+1)^{11}(2d-13e)}{1716x^{11}}+\frac{(x+1)^{11}(2d-13e)}{156x^{12}}-\frac{d(x+1)^{11}}{13x^{13}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -(d*(1 + x)^11)/(13*x^13) + ((2*d - 13*e)*(1 + x)^11)/(156*x^12) - ((2*d -
13*e)*(1 + x)^11)/(1716*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{14}}\,dx = \int \frac{(1+x)^{10}(d+ex)}{x^{14}}\,dx$$
$$= -\frac{d(1+x)^{11}}{13x^{13}} - \frac{1}{13}(2d-13e)\int \frac{(1+x)^{10}}{x^{13}}\,dx$$
$$= -\frac{d(1+x)^{11}}{13x^{13}} + \frac{(2d-13e)(1+x)^{11}}{156x^{12}} - \frac{1}{156}(-2d+13e)\int \frac{(1+x)^{10}}{x^{12}}\,dx$$
$$= -\frac{d(1+x)^{11}}{13x^{13}} + \frac{(2d-13e)(1+x)^{11}}{156x^{12}} - \frac{(2d-13e)(1+x)^{11}}{1716x^{11}}$$

Mathematica [B] time = 0.03, size = 115, normalized size = 2.21

$$-\frac{2d\left(286x^{10}+2145x^9+7722x^8+17160x^7+25740x^6+27027x^5+20020x^4+10296x^3+3510x^2+715x+66\right)+13ex\left(66x^{10}+440x^9+1485x^8+3168x^7+4620x^6+4752x^5+3465x^4+1760x^3+594x^2+120x+11\right)}{1716x^{13}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -1/1716*(13*e*x*(11 + 120*x + 594*x^2 + 1760*x^3 + 3465*x^4 + 4752*x^5 + 46
20*x^6 + 3168*x^7 + 1485*x^8 + 440*x^9 + 66*x^10) + 2*d*(66 + 715*x + 3510*
x^2 + 10296*x^3 + 20020*x^4 + 27027*x^5 + 25740*x^6 + 17160*x^7 + 7722*x^8
+ 2145*x^9 + 286*x^10))/x^13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^14, x]
```

fricas [B] time = 0.40, size = 129, normalized size = 2.48

$$-\frac{858\,ex^{11}+572\,(d+10\,e)x^{10}+2145\,(2\,d+9\,e)x^9+5148\,(3\,d+8\,e)x^8+8580\,(4\,d+7\,e)x^7+10296\,(5\,d+6\,e)x^6+9009\,(6\,d+5\,e)x^5+5720\,(7\,d+4\,e)x^4+2574\,(8\,d+3\,e)x^3+780\,(9\,d+2\,e)x^2+143\,(10\,d+e)x+132\,d}{1716\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^14,x, algorithm="fricas")
```

```
[Out] -1/1716*(858*e*x^11 + 572*(d + 10*e)*x^10 + 2145*(2*d + 9*e)*x^9 + 5148*(3*
d + 8*e)*x^8 + 8580*(4*d + 7*e)*x^7 + 10296*(5*d + 6*e)*x^6 + 9009*(6*d + 5
*e)*x^5 + 5720*(7*d + 4*e)*x^4 + 2574*(8*d + 3*e)*x^3 + 780*(9*d + 2*e)*x^2
 + 143*(10*d + e)*x + 132*d)/x^13
```

giac [B] time = 0.16, size = 142, normalized size = 2.73

$$-\frac{858\,x^{11}e+572\,dx^{10}+5720\,x^{10}e+4290\,dx^9+19305\,x^9e+15444\,dx^8+41184\,x^8e+34320\,dx^7+60060\,x^7e+51480\,dx^6+61776\,x^6e+54054\,dx^5+45045\,x^5e+40040\,dx^4+22880\,x^4e+20592\,dx^3+7722\,x^3e+7020\,dx^2+1560\,x^2e+1430\,dx+143\,xe+132\,d}{1716\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^14,x, algorithm="giac")
```

```
[Out] -1/1716*(858*x^11*e + 572*d*x^10 + 5720*x^10*e + 4290*d*x^9 + 19305*x^9*e +
 15444*d*x^8 + 41184*x^8*e + 34320*d*x^7 + 60060*x^7*e + 51480*d*x^6 + 6177
6*x^6*e + 54054*d*x^5 + 45045*x^5*e + 40040*d*x^4 + 22880*x^4*e + 20592*d*x
^3 + 7722*x^3*e + 7020*d*x^2 + 1560*x^2*e + 1430*d*x + 143*x*e + 132*d)/x^1
3
```

maple [B] time = 0.06, size = 130, normalized size = 2.50

$$-\frac{e}{2x^2}-\frac{d+10e}{3x^3}-\frac{10d+45e}{4x^4}-\frac{45d+120e}{5x^5}-\frac{120d+210e}{6x^6}-\frac{210d+252e}{7x^7}-\frac{252d+210e}{8x^8}-\frac{210d+120e}{9x^9}-\frac{120d+45e}{10x^{10}}-\frac{45d+10e}{11x^{11}}-\frac{d}{13x^{13}}-\frac{10d+e}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^14,x)
```

```
[Out] -1/5*(45*d+120*e)/x^5-1/4*(10*d+45*e)/x^4-1/3*(d+10*e)/x^3-1/8*(252*d+210*e
)/x^8-1/12*(10*d+e)/x^12-1/10*(120*d+45*e)/x^10-1/2*e/x^2-1/9*(210*d+120*e)
/x^9-1/7*(210*d+252*e)/x^7-1/6*(120*d+210*e)/x^6-1/13*d/x^13-1/11*(45*d+10*
e)/x^11
```

maxima [B] time = 0.55, size = 129, normalized size = 2.48

$$-\frac{858\,ex^{11}+572\,(d+10\,e)x^{10}+2145\,(2\,d+9\,e)x^9+5148\,(3\,d+8\,e)x^8+8580\,(4\,d+7\,e)x^7+10296\,(5\,d+6\,e)x^6+9009\,(6\,d+5\,e)x^5+5720\,(7\,d+4\,e)x^4+2574\,(8\,d+3\,e)x^3+780\,(9\,d+2\,e)x^2+143\,(10\,d+e)x+132\,d}{1716\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^14,x, algorithm="maxima")
```

```
[Out] -1/1716*(858*e*x^11 + 572*(d + 10*e)*x^10 + 2145*(2*d + 9*e)*x^9 + 5148*(3*
d + 8*e)*x^8 + 8580*(4*d + 7*e)*x^7 + 10296*(5*d + 6*e)*x^6 + 9009*(6*d + 5
*e)*x^5 + 5720*(7*d + 4*e)*x^4 + 2574*(8*d + 3*e)*x^3 + 780*(9*d + 2*e)*x^2
 + 143*(10*d + e)*x + 132*d)/x^13
```

mupad [B] time = 1.14, size = 123, normalized size = 2.37

$$-\frac{\frac{e\,x^{11}}{2}+\left(\frac{d}{3}+\frac{10\,e}{3}\right)\,x^{10}+\left(\frac{5\,d}{2}+\frac{45\,e}{4}\right)\,x^9+\left(9\,d+24\,e\right)\,x^8+\left(20\,d+35\,e\right)\,x^7+\left(30\,d+36\,e\right)\,x^6+\left(\frac{63\,d}{2}+\frac{105\,e}{4}\right)\,x^5+\left(\frac{70\,d}{3}+\frac{40\,e}{3}\right)\,x^4+\left(12\,d+\frac{9\,e}{2}\right)\,x^3+\left(\frac{45\,d}{11}+\frac{10\,e}{11}\right)\,x^2+\left(\frac{5\,d}{6}+\frac{e}{12}\right)\,x+\frac{d}{13}}{x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^14,x)
```

```
[Out] -(d/13 + x^3*(12*d + (9*e)/2) + x^10*(d/3 + (10*e)/3) + x^8*(9*d + 24*e) +
x^7*(20*d + 35*e) + x^9*((5*d)/2 + (45*e)/4) + x^6*(30*d + 36*e) + x^2*((45
*d)/11 + (10*e)/11) + x^4*((70*d)/3 + (40*e)/3) + x^5*((63*d)/2 + (105*e)/4
) + (e*x^11)/2 + x*((5*d)/6 + e/12))/x^13
```

sympy [B] time = 13.82, size = 131, normalized size = 2.52

$$\frac{-132d-858ex^{11}+x^{10}(-572d-5720e)+x^9(-4290d-19305e)+x^8(-15444d-41184e)+x^7(-34320d-60060e)+x^6(-51480d-61776e)+x^5(-54054d-45045e)+x^4(-40040d-22880e)+x^3(-20592d-7722e)+x^2(-7020d-1560e)+x(-1430d-143e)}{1716x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**14,x)
```

```
[Out] (-132*d - 858*e*x**11 + x**10*(-572*d - 5720*e) + x**9*(-4290*d - 19305*e)
+ x**8*(-15444*d - 41184*e) + x**7*(-34320*d - 60060*e) + x**6*(-51480*d -
61776*e) + x**5*(-54054*d - 45045*e) + x**4*(-40040*d - 22880*e) + x**3*(-2
0592*d - 7722*e) + x**2*(-7020*d - 1560*e) + x*(-1430*d - 143*e))/(1716*x**
13)
```

3.508 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{15}}\,dx$

Optimal. Leaf size=71

$$\frac{(x+1)^{11}(3d-14e)}{182x^{13}}-\frac{(x+1)^{11}(3d-14e)}{1092x^{12}}+\frac{(x+1)^{11}(3d-14e)}{12012x^{11}}-\frac{d(x+1)^{11}}{14x^{14}}$$

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$\frac{(x+1)^{11}(3d-14e)}{12012x^{11}}-\frac{(x+1)^{11}(3d-14e)}{1092x^{12}}+\frac{(x+1)^{11}(3d-14e)}{182x^{13}}-\frac{d(x+1)^{11}}{14x^{14}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^15,x]

[Out] -(d*(1 + x)^11)/(14*x^14) + ((3*d - 14*e)*(1 + x)^11)/(182*x^13) - ((3*d - 14*e)*(1 + x)^11)/(1092*x^12) + ((3*d - 14*e)*(1 + x)^11)/(12012*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Cancel[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0] && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*Simplify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] && !(LtQ[m, -1] && LtQ[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimplerQ[m, 1] || !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || IntegerQ[p] || !(IntegerQ[n] || !(EqQ[e, 0] || !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{15}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{15}}\,dx \\
&= -\frac{d(1+x)^{11}}{14x^{14}} - \frac{1}{14}(3d-14e)\int \frac{(1+x)^{10}}{x^{14}}\,dx \\
&= -\frac{d(1+x)^{11}}{14x^{14}} + \frac{(3d-14e)(1+x)^{11}}{182x^{13}} - \frac{1}{91}(-3d+14e)\int \frac{(1+x)^{10}}{x^{13}}\,dx \\
&= -\frac{d(1+x)^{11}}{14x^{14}} + \frac{(3d-14e)(1+x)^{11}}{182x^{13}} - \frac{(3d-14e)(1+x)^{11}}{1092x^{12}} - \frac{(3d-14e)\int \frac{(1+x)^{10}}{x^{12}}\,dx}{1092} \\
&= -\frac{d(1+x)^{11}}{14x^{14}} + \frac{(3d-14e)(1+x)^{11}}{182x^{13}} - \frac{(3d-14e)(1+x)^{11}}{1092x^{12}} + \frac{(3d-14e)(1+x)^{11}}{12012x^{11}}
\end{aligned}
$$

Mathematica [B] time = 0.04, size = 149, normalized size = 2.10

$$
-\frac{10d+e}{13x^{13}}-\frac{5(9d+2e)}{12x^{12}}-\frac{15(8d+3e)}{11x^{11}}-\frac{3(7d+4e)}{x^{10}}-\frac{14(6d+5e)}{3x^9}-\frac{21(5d+6e)}{4x^8}-\frac{30(4d+7e)}{7x^7}-\frac{5(3d+8e)}{2x^6}-\frac{2d+9e}{x^5}-\frac{d+10e}{4x^4}-\frac{d}{14x^{14}}-\frac{e}{3x^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -1/14*d/x^14 - (10*d + e)/(13*x^13) - (5*(9*d + 2*e))/(12*x^12) - (15*(8*d
+ 3*e))/(11*x^11) - (3*(7*d + 4*e))/x^10 - (14*(6*d + 5*e))/(3*x^9) - (21*(
5*d + 6*e))/(4*x^8) - (30*(4*d + 7*e))/(7*x^7) - (5*(3*d + 8*e))/(2*x^6) -
(2*d + 9*e)/x^5 - (d + 10*e)/(4*x^4) - e/(3*x^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{15}}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^15, x]
```

fricas [B] time = 0.40, size = 129, normalized size = 1.82

$$
-\frac{4004\,ex^{11}+3003\,(d+10\,e)x^{10}+12012\,(2\,d+9\,e)x^9+30030\,(3\,d+8\,e)x^8+51480\,(4\,d+7\,e)x^7+63063\,(5\,d+6\,e)x^6+56056\,(6\,d+5\,e)x^5+36036\,(7\,d+4\,e)x^4+16380\,(8\,d+3\,e)x^3+5005\,(9\,d+2\,e)x^2+924\,(10\,d+e)x+858\,d}{12012\,x^{14}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^15,x, algorithm="fricas")
```

```
[Out] -1/12012*(4004*e*x^11 + 3003*(d + 10*e)*x^10 + 12012*(2*d + 9*e)*x^9 + 3003
0*(3*d + 8*e)*x^8 + 51480*(4*d + 7*e)*x^7 + 63063*(5*d + 6*e)*x^6 + 56056*(
6*d + 5*e)*x^5 + 36036*(7*d + 4*e)*x^4 + 16380*(8*d + 3*e)*x^3 + 5005*(9*d
+ 2*e)*x^2 + 924*(10*d + e)*x + 858*d)/x^14
```

giac [B] time = 0.17, size = 142, normalized size = 2.00

$$
-\frac{4004\,x^{11}e+3003\,dx^{10}+30030\,x^{10}e+24024\,dx^9+108108\,x^9e+90090\,dx^8+240240\,x^8e+205920\,dx^7+360360\,x^7e+315315\,dx^6+378378\,x^6e+336336\,dx^5+280280\,x^5e+252252\,dx^4+144144\,x^4e+131040\,dx^3+49140\,x^3e+45045\,dx^2+10010\,x^2e+9240\,dx+924\,xe+858\,d}{12012\,x^{14}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^15,x, algorithm="giac")
```

```
[Out] -1/12012*(4004*x^11*e + 3003*d*x^10 + 30030*x^10*e + 24024*d*x^9 + 108108*x
^9*e + 90090*d*x^8 + 240240*x^8*e + 205920*d*x^7 + 360360*x^7*e + 315315*d*
```

```
x^6 + 378378*x^6*e + 336336*d*x^5 + 280280*x^5*e + 252252*d*x^4 + 144144*x^
4*e + 131040*d*x^3 + 49140*x^3*e + 45045*d*x^2 + 10010*x^2*e + 9240*d*x + 9
24*x*e + 858*d)/x^14
```

maple [B] time = 0.05, size = 130, normalized size = 1.83

$$-\frac{e}{3x^3}-\frac{d+10e}{4x^4}-\frac{10d+45e}{5x^5}-\frac{45d+120e}{6x^6}-\frac{120d+210e}{7x^7}-\frac{210d+252e}{8x^8}-\frac{252d+210e}{9x^9}-\frac{210d+120e}{10x^{10}}-\frac{120d+45e}{11x^{11}}-\frac{45d+10e}{12x^{12}}-\frac{d}{14x^{14}}-\frac{10d+e}{13x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^15,x)
```

```
[Out] -1/5*(10*d+45*e)/x^5-1/4*(d+10*e)/x^4-1/3*e/x^3-1/8*(210*d+252*e)/x^8-1/10*
(210*d+120*e)/x^10-1/9*(252*d+210*e)/x^9-1/7*(120*d+210*e)/x^7-1/6*(45*d+12
0*e)/x^6-1/13*(10*d+e)/x^13-1/11*(120*d+45*e)/x^11-1/12*(45*d+10*e)/x^12-1/
14*d/x^14
```

maxima [B] time = 0.72, size = 129, normalized size = 1.82

$$-\frac{4004\,ex^{11}+3003\,(d+10\,e)x^{10}+12012\,(2\,d+9\,e)x^9+30030\,(3\,d+8\,e)x^8+51480\,(4\,d+7\,e)x^7+63063\,(5\,d+6\,e)x^6+56056\,(6\,d+5\,e)x^5+36036\,(7\,d+4\,e)x^4+16380\,(8\,d+3\,e)x^3+5005\,(9\,d+2\,e)x^2+924\,(10\,d+e)x+858\,d}{12012\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^15,x, algorithm="maxima")
```

```
[Out] -1/12012*(4004*e*x^11 + 3003*(d + 10*e)*x^10 + 12012*(2*d + 9*e)*x^9 + 3003
0*(3*d + 8*e)*x^8 + 51480*(4*d + 7*e)*x^7 + 63063*(5*d + 6*e)*x^6 + 56056*(
6*d + 5*e)*x^5 + 36036*(7*d + 4*e)*x^4 + 16380*(8*d + 3*e)*x^3 + 5005*(9*d
+ 2*e)*x^2 + 924*(10*d + e)*x + 858*d)/x^14
```

mupad [B] time = 0.12, size = 123, normalized size = 1.73

$$-\frac{\frac{e\,x^{11}}{3}+\left(\frac{d}{4}+\frac{5\,e}{2}\right)\,x^{10}+\left(2\,d+9\,e\right)\,x^9+\left(\frac{15\,d}{2}+20\,e\right)\,x^8+\left(\frac{120\,d}{7}+30\,e\right)\,x^7+\left(\frac{105\,d}{4}+\frac{63\,e}{2}\right)\,x^6+\left(28\,d+\frac{70\,e}{3}\right)\,x^5+\left(21\,d+12\,e\right)\,x^4+\left(\frac{120\,d}{11}+\frac{45\,e}{11}\right)\,x^3+\left(\frac{15\,d}{4}+\frac{5\,e}{6}\right)\,x^2+\left(\frac{10\,d}{13}+\frac{e}{13}\right)\,x+\frac{d}{14}}{x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^15,x)
```

```
[Out] -(d/14 + x^9*(2*d + 9*e) + x^10*(d/4 + (5*e)/2) + x^2*((15*d)/4 + (5*e)/6)
+ x^4*(21*d + 12*e) + x^8*((15*d)/2 + 20*e) + x^5*(28*d + (70*e)/3) + x^7*(
(120*d)/7 + 30*e) + x^6*((105*d)/4 + (63*e)/2) + x^3*((120*d)/11 + (45*e)/1
1) + (e*x^11)/3 + x*((10*d)/13 + e/13))/x^14
```

sympy [B] time = 16.09, size = 131, normalized size = 1.85

$$\frac{-858d-4004ex^{11}+x^{10}\,(-3003d-30030e)+x^9\,(-24024d-108108e)+x^8\,(-90090d-240240e)+x^7\,(-205920d-360360e)+x^6\,(-315315d-378378e)+x^5\,(-336336d-280280e)+x^4\,(-252252d-144144e)+x^3\,(-131040d-49140e)+x^2\,(-45045d-10010e)+x\,(-9240d-924e)}{12012x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**15,x)
```

```
[Out] (-858*d - 4004*e*x**11 + x**10*(-3003*d - 30030*e) + x**9*(-24024*d - 10810
8*e) + x**8*(-90090*d - 240240*e) + x**7*(-205920*d - 360360*e) + x**6*(-31
5315*d - 378378*e) + x**5*(-336336*d - 280280*e) + x**4*(-252252*d - 144144
*e) + x**3*(-131040*d - 49140*e) + x**2*(-45045*d - 10010*e) + x*(-9240*d -
 924*e))/(12012*x**14)
```

3.509 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{16}}\,dx$

Optimal. Leaf size=90

$$\frac{(x+1)^{11}(4d-15e)}{210x^{14}}-\frac{(x+1)^{11}(4d-15e)}{910x^{13}}+\frac{(x+1)^{11}(4d-15e)}{5460x^{12}}-\frac{(x+1)^{11}(4d-15e)}{60060x^{11}}-\frac{d(x+1)^{11}}{15x^{15}}$$

Rubi [A] time = 0.02, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$-\frac{(x+1)^{11}(4d-15e)}{60060x^{11}}+\frac{(x+1)^{11}(4d-15e)}{5460x^{12}}-\frac{(x+1)^{11}(4d-15e)}{910x^{13}}+\frac{(x+1)^{11}(4d-15e)}{210x^{14}}-\frac{d(x+1)^{11}}{15x^{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -(d*(1 + x)^11)/(15*x^15) + ((4*d - 15*e)*(1 + x)^11)/(210*x^14) - ((4*d -
15*e)*(1 + x)^11)/(910*x^13) + ((4*d - 15*e)*(1 + x)^11)/(5460*x^12) - ((4*
d - 15*e)*(1 + x)^11)/(60060*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{16}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{16}}\,dx \\
&= -\frac{d(1+x)^{11}}{15x^{15}} - \frac{1}{15}(4d-15e)\int \frac{(1+x)^{10}}{x^{15}}\,dx \\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{1}{70}(-4d+15e)\int \frac{(1+x)^{10}}{x^{14}}\,dx \\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{(4d-15e)(1+x)^{11}}{910x^{13}} - \frac{1}{455}(4d-15e)\int \frac{(
\\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{(4d-15e)(1+x)^{11}}{910x^{13}} + \frac{(4d-15e)(1+x)^{11}}{5460x^{12}}
\\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{(4d-15e)(1+x)^{11}}{910x^{13}} + \frac{(4d-15e)(1+x)^{11}}{5460x^{12}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 153, normalized size = 1.70

$$
-\frac{10d+e}{14x^{14}} - \frac{5(9d+2e)}{13x^{13}} - \frac{5(8d+3e)}{4x^{12}} - \frac{30(7d+4e)}{11x^{11}} - \frac{21(6d+5e)}{5x^{10}} - \frac{14(5d+6e)}{3x^9} - \frac{15(4d+7e)}{4x^8} - \frac{15(3d+8e)}{7x^7} - \frac{5(2d+9e)}{6x^6} - \frac{d+10e}{5x^5} - \frac{d}{15x^{15}} - \frac{e}{4x^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -1/15*d/x^15 - (10*d + e)/(14*x^14) - (5*(9*d + 2*e))/(13*x^13) - (5*(8*d + 
 3*e))/(4*x^12) - (30*(7*d + 4*e))/(11*x^11) - (21*(6*d + 5*e))/(5*x^10) - 
(14*(5*d + 6*e))/(3*x^9) - (15*(4*d + 7*e))/(4*x^8) - (15*(3*d + 8*e))/(7*x
^7) - (5*(2*d + 9*e))/(6*x^6) - (d + 10*e)/(5*x^5) - e/(4*x^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{16}}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^16, x]
```

fricas [A] time = 0.41, size = 129, normalized size = 1.43

$$
-\frac{15015\,ex^{11} + 12012\,(d+10\,e)x^{10} + 50050\,(2\,d+9\,e)x^9 + 128700\,(3\,d+8\,e)x^8 + 225225\,(4\,d+7\,e)x^7 + 280280\,(5\,d+6\,e)x^6 + 252252\,(6\,d+5\,e)x^5 + 163800\,(7\,d+4\,e)x^4 + 75075\,(8\,d+3\,e)x^3 + 23100\,(9\,d+2\,e)x^2 + 4290\,(10\,d+e)x + 4004\,d}{60060\,x^{15}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^16,x, algorithm="fricas")
```

```
[Out] -1/60060*(15015*e*x^11 + 12012*(d + 10*e)*x^10 + 50050*(2*d + 9*e)*x^9 + 12
8700*(3*d + 8*e)*x^8 + 225225*(4*d + 7*e)*x^7 + 280280*(5*d + 6*e)*x^6 + 25
2252*(6*d + 5*e)*x^5 + 163800*(7*d + 4*e)*x^4 + 75075*(8*d + 3*e)*x^3 + 231
00*(9*d + 2*e)*x^2 + 4290*(10*d + e)*x + 4004*d)/x^15
```

giac [A] time = 0.16, size = 142, normalized size = 1.58

$$
-\frac{15015\,x^{11}e + 12012\,dx^{10} + 120120\,x^{10}e + 100100\,dx^9 + 450450\,x^9e + 386100\,dx^8 + 1029600\,x^8e + 900900\,dx^7 + 1576575\,x^7e + 1401400\,dx^6 + 1681680\,x^6e + 1513512\,dx^5 + 1261260\,x^5e + 1146600\,dx^4 + 655200\,x^4e + 600600\,dx^3 + 225225\,x^3e + 207900\,dx^2 + 46200\,x^2e + 42900\,dx + 4290\,xe + 4004\,d}{60060\,x^{15}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^16,x, algorithm="giac")
```

```
[Out] -1/60060*(15015*x^11*e + 12012*d*x^10 + 120120*x^10*e + 100100*d*x^9 + 4504
50*x^9*e + 386100*d*x^8 + 1029600*x^8*e + 900900*d*x^7 + 1576575*x^7*e + 14
01400*d*x^6 + 1681680*x^6*e + 1513512*d*x^5 + 1261260*x^5*e + 1146600*d*x^4
 + 655200*x^4*e + 600600*d*x^3 + 225225*x^3*e + 207900*d*x^2 + 46200*x^2*e
+ 42900*d*x + 4290*x*e + 4004*d)/x^15
```

maple [A] time = 0.06, size = 130, normalized size = 1.44

$$-\frac{e}{4x^4}-\frac{d+10e}{5x^5}-\frac{10d+45e}{6x^6}-\frac{45d+120e}{7x^7}-\frac{120d+210e}{8x^8}-\frac{210d+252e}{9x^9}-\frac{252d+210e}{10x^{10}}-\frac{210d+120e}{11x^{11}}-\frac{120d+45e}{12x^{12}}-\frac{45d+10e}{13x^{13}}-\frac{d}{15x^{15}}-\frac{10d+e}{14x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^16,x)
```

```
[Out] -1/5*(d+10*e)/x^5-1/4*e/x^4-1/8*(120*d+210*e)/x^8-1/13*(45*d+10*e)/x^13-1/1
0*(252*d+210*e)/x^10-1/15*d/x^15-1/9*(210*d+252*e)/x^9-1/7*(45*d+120*e)/x^7
-1/14*(10*d+e)/x^14-1/6*(10*d+45*e)/x^6-1/12*(120*d+45*e)/x^12-1/11*(210*d+
120*e)/x^11
```

maxima [A] time = 0.71, size = 129, normalized size = 1.43

$$-\frac{15015\,ex^{11}+12012\,(d+10\,e)x^{10}+50050\,(2\,d+9\,e)x^9+128700\,(3\,d+8\,e)x^8+225225\,(4\,d+7\,e)x^7+280280\,(5\,d+6\,e)x^6+252252\,(6\,d+5\,e)x^5+163800\,(7\,d+4\,e)x^4+75075\,(8\,d+3\,e)x^3+23100\,(9\,d+2\,e)x^2+4290\,(10\,d+e)x+4004\,d}{60060\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^16,x, algorithm="maxima")
```

```
[Out] -1/60060*(15015*e*x^11 + 12012*(d + 10*e)*x^10 + 50050*(2*d + 9*e)*x^9 + 12
8700*(3*d + 8*e)*x^8 + 225225*(4*d + 7*e)*x^7 + 280280*(5*d + 6*e)*x^6 + 25
2252*(6*d + 5*e)*x^5 + 163800*(7*d + 4*e)*x^4 + 75075*(8*d + 3*e)*x^3 + 231
00*(9*d + 2*e)*x^2 + 4290*(10*d + e)*x + 4004*d)/x^15
```

mupad [B] time = 0.12, size = 123, normalized size = 1.37

$$-\frac{\frac{e\,x^{11}}{4}+\left(\frac{d}{5}+2\,e\right)\,x^{10}+\left(\frac{5\,d}{3}+\frac{15\,e}{2}\right)\,x^9+\left(\frac{45\,d}{7}+\frac{120\,e}{7}\right)\,x^8+\left(15\,d+\frac{105\,e}{4}\right)\,x^7+\left(\frac{70\,d}{3}+28\,e\right)\,x^6+\left(\frac{126\,d}{5}+21\,e\right)\,x^5+\left(\frac{210\,d}{11}+\frac{120\,e}{11}\right)\,x^4+\left(10\,d+\frac{15\,e}{4}\right)\,x^3+\left(\frac{45\,d}{13}+\frac{10\,e}{13}\right)\,x^2+\left(\frac{5\,d}{7}+\frac{e}{14}\right)\,x+\frac{d}{15}}{x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^16,x)
```

```
[Out] -(d/15 + x^10*(d/5 + 2*e) + x^3*(10*d + (15*e)/4) + x^9*((5*d)/3 + (15*e)/2
) + x^2*((45*d)/13 + (10*e)/13) + x^6*((70*d)/3 + 28*e) + x^7*(15*d + (105*
e)/4) + x^5*((126*d)/5 + 21*e) + x^8*((45*d)/7 + (120*e)/7) + x^4*((210*d)/
11 + (120*e)/11) + (e*x^11)/4 + x*((5*d)/7 + e/14))/x^15
```

sympy [A] time = 19.11, size = 131, normalized size = 1.46

$$\frac{-4004d-15015ex^{11}+x^{10}\,(-12012d-120120e)+x^9\,(-100100d-450450e)+x^8\,(-386100d-1029600e)+x^7\,(-900900d-1576575e)+x^6\,(-1401400d-1681680e)+x^5\,(-1513512d-1261260e)+x^4\,(-1146600d-655200e)+x^3\,(-600600d-225225e)+x^2\,(-207900d-46200e)+x\,(-42900d-4290e)}{60060x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**16,x)
```

```
[Out] (-4004*d - 15015*e*x**11 + x**10*(-12012*d - 120120*e) + x**9*(-100100*d -
450450*e) + x**8*(-386100*d - 1029600*e) + x**7*(-900900*d - 1576575*e) + x
**6*(-1401400*d - 1681680*e) + x**5*(-1513512*d - 1261260*e) + x**4*(-11466
00*d - 655200*e) + x**3*(-600600*d - 225225*e) + x**2*(-207900*d - 46200*e)
 + x*(-42900*d - 4290*e))/(60060*x**15)
```

3.510 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{17}} dx$

Optimal. Leaf size=109

$$\frac{(x+1)^{11}(5d-16e)}{240x^{15}}-\frac{(x+1)^{11}(5d-16e)}{840x^{14}}+\frac{(x+1)^{11}(5d-16e)}{3640x^{13}}-\frac{(x+1)^{11}(5d-16e)}{21840x^{12}}+\frac{(x+1)^{11}(5d-16e)}{240240x^{11}}-\frac{d(x+}{16x}$$

Rubi [A] time = 0.03, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$\frac{(x+1)^{11}(5d-16e)}{240240x^{11}}-\frac{(x+1)^{11}(5d-16e)}{21840x^{12}}+\frac{(x+1)^{11}(5d-16e)}{3640x^{13}}-\frac{(x+1)^{11}(5d-16e)}{840x^{14}}+\frac{(x+1)^{11}(5d-16e)}{240x^{15}}-\frac{d(x+1)^{11}}{16x^{16}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -(d*(1 + x)^11)/(16*x^16) + ((5*d - 16*e)*(1 + x)^11)/(240*x^15) - ((5*d -
16*e)*(1 + x)^11)/(840*x^14) + ((5*d - 16*e)*(1 + x)^11)/(3640*x^13) - ((5*
d - 16*e)*(1 + x)^11)/(21840*x^12) + ((5*d - 16*e)*(1 + x)^11)/(240240*x^11
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{17}}\,dx = \int \frac{(1+x)^{10}(d+ex)}{x^{17}}\,dx$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} - \frac{1}{16}(5d-16e)\int \frac{(1+x)^{10}}{x^{16}}\,dx$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{1}{60}(-5d+16e)\int \frac{(1+x)^{10}}{x^{15}}\,dx$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} - \frac{1}{280}(5d-16e)\int \frac{(1+}{x}$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} + \frac{(5d-16e)(1+x)^{11}}{3640x^{13}} -$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} + \frac{(5d-16e)(1+x)^{11}}{3640x^{13}} -$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} + \frac{(5d-16e)(1+x)^{11}}{3640x^{13}} -$$

Mathematica [A] time = 0.04, size = 153, normalized size = 1.40

$$-\frac{10d+e}{15x^{15}} - \frac{5(9d+2e)}{14x^{14}} - \frac{15(8d+3e)}{13x^{13}} - \frac{5(7d+4e)}{2x^{12}} - \frac{42(6d+5e)}{11x^{11}} - \frac{21(5d+6e)}{5x^{10}} - \frac{10(4d+7e)}{3x^9} - \frac{15(3d+8e)}{8x^8} - \frac{5(2d+9e)}{7x^7} - \frac{d+10e}{6x^6} - \frac{d}{16x^{16}} - \frac{e}{5x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -1/16*d/x^16 - (10*d + e)/(15*x^15) - (5*(9*d + 2*e))/(14*x^14) - (15*(8*d
+ 3*e))/(13*x^13) - (5*(7*d + 4*e))/(2*x^12) - (42*(6*d + 5*e))/(11*x^11) -
 (21*(5*d + 6*e))/(5*x^10) - (10*(4*d + 7*e))/(3*x^9) - (15*(3*d + 8*e))/(8
*x^8) - (5*(2*d + 9*e))/(7*x^7) - (d + 10*e)/(6*x^6) - e/(5*x^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^17, x]
```

fricas [A] time = 0.43, size = 129, normalized size = 1.18

$$-\frac{48048\,ex^{11} + 40040\,(d+10\,e)x^{10} + 171600\,(2\,d+9\,e)x^9 + 450450\,(3\,d+8\,e)x^8 + 800800\,(4\,d+7\,e)x^7 + 1009008\,(5\,d+6\,e)x^6 + 917280\,(6\,d+5\,e)x^5 + 600600\,(7\,d+4\,e)x^4 + 277200\,(8\,d+3\,e)x^3 + 85800\,(9\,d+2\,e)x^2 + 16016\,(10\,d+e)x + 15015\,d}{240240\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^17,x, algorithm="fricas")
```

```
[Out] -1/240240*(48048*e*x^11 + 40040*(d + 10*e)*x^10 + 171600*(2*d + 9*e)*x^9 +
450450*(3*d + 8*e)*x^8 + 800800*(4*d + 7*e)*x^7 + 1009008*(5*d + 6*e)*x^6 +
 917280*(6*d + 5*e)*x^5 + 600600*(7*d + 4*e)*x^4 + 277200*(8*d + 3*e)*x^3 +
 85800*(9*d + 2*e)*x^2 + 16016*(10*d + e)*x + 15015*d)/x^16
```

giac [A] time = 0.16, size = 142, normalized size = 1.30

$$-\frac{48048\,x^{11}e + 40040\,dx^{10} + 400400\,x^{10}e + 343200\,dx^9 + 1544400\,x^9e + 1351350\,dx^8 + 3603600\,x^8e + 3203200\,dx^7 + 5605600\,x^7e + 5045040\,dx^6 + 6054048\,x^6e + 5503680\,dx^5 + 4586400\,x^5e + 4204200\,dx^4 + 2402400\,x^4e + 2217600\,dx^3 + 831600\,x^3e + 772200\,dx^2 + 171600\,x^2e + 160160\,dx + 16016\,xe + 15015\,d}{240240\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^17,x, algorithm="giac")

[Out] -1/240240*(48048*x^11*e + 40040*d*x^10 + 400400*x^10*e + 343200*d*x^9 + 154
4400*x^9*e + 1351350*d*x^8 + 3603600*x^8*e + 3203200*d*x^7 + 5605600*x^7*e
+ 5045040*d*x^6 + 6054048*x^6*e + 5503680*d*x^5 + 4586400*x^5*e + 4204200*d
*x^4 + 2402400*x^4*e + 2217600*d*x^3 + 831600*x^3*e + 772200*d*x^2 + 171600
*x^2*e + 160160*d*x + 16016*x*e + 15015*d)/x^16

maple [A] time = 0.05, size = 130, normalized size = 1.19

$$-\frac{e}{5x^5}-\frac{d+10e}{6x^6}-\frac{10d+45e}{7x^7}-\frac{45d+120e}{8x^8}-\frac{120d+210e}{9x^9}-\frac{210d+252e}{10x^{10}}-\frac{252d+210e}{11x^{11}}-\frac{210d+120e}{12x^{12}}-\frac{120d+45e}{13x^{13}}-\frac{45d+10e}{14x^{14}}-\frac{d}{16x^{16}}-\frac{10d+e}{15x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e*x+d)*(x^2+2*x+1)^5/x^17,x)

[Out] -1/5*e/x^5-1/12*(210*d+120*e)/x^12-1/16*d/x^16-1/8*(45*d+120*e)/x^8-1/10*(2
10*d+252*e)/x^10-1/15*(10*d+e)/x^15-1/13*(120*d+45*e)/x^13-1/14*(45*d+10*e)
/x^14-1/9*(120*d+210*e)/x^9-1/7*(10*d+45*e)/x^7-1/6*(d+10*e)/x^6-1/11*(252*
d+210*e)/x^11

maxima [A] time = 0.71, size = 129, normalized size = 1.18

$$-\frac{48048\,ex^{11}+40040\,(d+10\,e)x^{10}+171600\,(2\,d+9\,e)x^{9}+450450\,(3\,d+8\,e)x^{8}+800800\,(4\,d+7\,e)x^{7}+1009008\,(5\,d+6\,e)x^{6}+917280\,(6\,d+5\,e)x^{5}+600600\,(7\,d+4\,e)x^{4}+277200\,(8\,d+3\,e)x^{3}+85800\,(9\,d+2\,e)x^{2}+16016\,(10\,d+e)x+15015\,d}{240240\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^17,x, algorithm="maxima")

[Out] -1/240240*(48048*e*x^11 + 40040*(d + 10*e)*x^10 + 171600*(2*d + 9*e)*x^9 +
450450*(3*d + 8*e)*x^8 + 800800*(4*d + 7*e)*x^7 + 1009008*(5*d + 6*e)*x^6 +
 917280*(6*d + 5*e)*x^5 + 600600*(7*d + 4*e)*x^4 + 277200*(8*d + 3*e)*x^3 +
 85800*(9*d + 2*e)*x^2 + 16016*(10*d + e)*x + 15015*d)/x^16

mupad [B] time = 0.12, size = 123, normalized size = 1.13

$$-\frac{\frac{e\,x^{11}}{5}+\left(\frac{d}{6}+\frac{5\,e}{3}\right)\,x^{10}+\left(\frac{10\,d}{7}+\frac{45\,e}{7}\right)\,x^9+\left(\frac{45\,d}{8}+15\,e\right)\,x^8+\left(\frac{40\,d}{3}+\frac{70\,e}{3}\right)\,x^7+\left(21\,d+\frac{126\,e}{5}\right)\,x^6+\left(\frac{252\,d}{11}+\frac{210\,e}{11}\right)\,x^5+\left(\frac{35\,d}{2}+10\,e\right)\,x^4+\left(\frac{120\,d}{13}+\frac{45\,e}{13}\right)\,x^3+\left(\frac{45\,d}{14}+\frac{5\,e}{7}\right)\,x^2+\left(\frac{2\,d}{3}+\frac{e}{15}\right)\,x+\frac{d}{16}}{x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^17,x)

[Out] -(d/16 + x^10*(d/6 + (5*e)/3) + x^4*((35*d)/2 + 10*e) + x^2*((45*d)/14 + (5
e)/7) + x^8((45*d)/8 + 15*e) + x^9*((10*d)/7 + (45*e)/7) + x^7*((40*d)/3
+ (70*e)/3) + x^6*(21*d + (126*e)/5) + x^3*((120*d)/13 + (45*e)/13) + x^5*(
(252*d)/11 + (210*e)/11) + (e*x^11)/5 + x*((2*d)/3 + e/15))/x^16

sympy [A] time = 21.70, size = 131, normalized size = 1.20

$$\frac{-15015d-48048ex^{11}+x^{10}(-40040d-400400e)+x^{9}(-343200d-1544400e)+x^{8}(-1351350d-3603600e)+x^{7}(-3203200d-5605600e)+x^{6}(-5045040d-6054048e)+x^{5}(-5503680d-4586400e)+x^{4}(-4204200d-2402400e)+x^{3}(-2217600d-831600e)+x^{2}(-772200d-171600e)+x(-160160d-16016e)}{240240x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**17,x)

[Out] (-15015*d - 48048*e*x**11 + x**10*(-40040*d - 400400*e) + x**9*(-343200*d -
 1544400*e) + x**8*(-1351350*d - 3603600*e) + x**7*(-3203200*d - 5605600*e)
 + x**6*(-5045040*d - 6054048*e) + x**5*(-5503680*d - 4586400*e) + x**4*(-4
204200*d - 2402400*e) + x**3*(-2217600*d - 831600*e) + x**2*(-772200*d - 17
1600*e) + x*(-160160*d - 16016*e))/(240240*x**16)

3.511 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{18}}\,dx$

Optimal. Leaf size=128

$$\frac{(x+1)^{11}(6d-17e)}{272x^{16}}-\frac{(x+1)^{11}(6d-17e)}{816x^{15}}+\frac{(x+1)^{11}(6d-17e)}{2856x^{14}}-\frac{(x+1)^{11}(6d-17e)}{12376x^{13}}+\frac{(x+1)^{11}(6d-17e)}{74256x^{12}}-\frac{(x+1)^{11}}{816\ldots}$$

Rubi [A] time = 0.03, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$-\frac{(x+1)^{11}(6d-17e)}{816816x^{11}}+\frac{(x+1)^{11}(6d-17e)}{74256x^{12}}-\frac{(x+1)^{11}(6d-17e)}{12376x^{13}}+\frac{(x+1)^{11}(6d-17e)}{2856x^{14}}-\frac{(x+1)^{11}(6d-17e)}{816x^{15}}+\frac{(x+1)^{11}(6d-17e)}{272x^{16}}-\frac{d(x+1)^{11}}{17x^{17}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -(d*(1 + x)^11)/(17*x^17) + ((6*d - 17*e)*(1 + x)^11)/(272*x^16) - ((6*d -
17*e)*(1 + x)^11)/(816*x^15) + ((6*d - 17*e)*(1 + x)^11)/(2856*x^14) - ((6*
d - 17*e)*(1 + x)^11)/(12376*x^13) + ((6*d - 17*e)*(1 + x)^11)/(74256*x^12)
 - ((6*d - 17*e)*(1 + x)^11)/(816816*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{18}}\,dx = \int \frac{(1+x)^{10}(d+ex)}{x^{18}}\,dx$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} - \frac{1}{17}(6d-17e)\int \frac{(1+x)^{10}}{x^{17}}\,dx$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} + \frac{(6d-17e)(1+x)^{11}}{272x^{16}} + \frac{1}{272}(5(6d-17e))\int \frac{(1+x)^{10}}{x^{16}}\,dx$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} + \frac{(6d-17e)(1+x)^{11}}{272x^{16}} - \frac{(6d-17e)(1+x)^{11}}{816x^{15}} + \frac{1}{204}(-6d+17e)\int$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} + \frac{(6d-17e)(1+x)^{11}}{272x^{16}} - \frac{(6d-17e)(1+x)^{11}}{816x^{15}} + \frac{(6d-17e)(1+x)^{11}}{2856x^{14}}$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} + \frac{(6d-17e)(1+x)^{11}}{272x^{16}} - \frac{(6d-17e)(1+x)^{11}}{816x^{15}} + \frac{(6d-17e)(1+x)^{11}}{2856x^{14}}$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} + \frac{(6d-17e)(1+x)^{11}}{272x^{16}} - \frac{(6d-17e)(1+x)^{11}}{816x^{15}} + \frac{(6d-17e)(1+x)^{11}}{2856x^{14}}$$
$$= -\frac{d(1+x)^{11}}{17x^{17}} + \frac{(6d-17e)(1+x)^{11}}{272x^{16}} - \frac{(6d-17e)(1+x)^{11}}{816x^{15}} + \frac{(6d-17e)(1+x)^{11}}{2856x^{14}}$$

Mathematica [A] time = 0.04, size = 151, normalized size = 1.18

$$-\frac{10d+e}{16x^{16}}-\frac{9d+2e}{3x^{15}}-\frac{15(8d+3e)}{14x^{14}}-\frac{30(7d+4e)}{13x^{13}}-\frac{7(6d+5e)}{2x^{12}}-\frac{42(5d+6e)}{11x^{11}}-\frac{3(4d+7e)}{x^{10}}-\frac{5(3d+8e)}{3x^9}-\frac{5(2d+9e)}{8x^8}-\frac{d+10e}{7x^7}-\frac{d}{17x^{17}}-\frac{e}{6x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -1/17*d/x^17 - (10*d + e)/(16*x^16) - (9*d + 2*e)/(3*x^15) - (15*(8*d + 3*e
))/(14*x^14) - (30*(7*d + 4*e))/(13*x^13) - (7*(6*d + 5*e))/(2*x^12) - (42*
(5*d + 6*e))/(11*x^11) - (3*(4*d + 7*e))/x^10 - (5*(3*d + 8*e))/(3*x^9) - (
5*(2*d + 9*e))/(8*x^8) - (d + 10*e)/(7*x^7) - e/(6*x^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^18, x]
```

fricas [A] time = 0.40, size = 129, normalized size = 1.01

$$-\frac{136136\,ex^{11}+116688\,(d+10\,e)x^{10}+510510\,(2\,d+9\,e)x^9+1361360\,(3\,d+8\,e)x^8+2450448\,(4\,d+7\,e)x^7+3118752\,(5\,d+6\,e)x^6+2858856\,(6\,d+5\,e)x^5+1884960\,(7\,d+4\,e)x^4+875160\,(8\,d+3\,e)x^3+272272\,(9\,d+2\,e)x^2+51051\,(10\,d+e)x+48048\,d}{816816\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^18,x, algorithm="fricas")
```

```
[Out] -1/816816*(136136*e*x^11 + 116688*(d + 10*e)*x^10 + 510510*(2*d + 9*e)*x^9
+ 1361360*(3*d + 8*e)*x^8 + 2450448*(4*d + 7*e)*x^7 + 3118752*(5*d + 6*e)*x
^6 + 2858856*(6*d + 5*e)*x^5 + 1884960*(7*d + 4*e)*x^4 + 875160*(8*d + 3*e)
*x^3 + 272272*(9*d + 2*e)*x^2 + 51051*(10*d + e)*x + 48048*d)/x^17
```

giac [A] time = 0.16, size = 142, normalized size = 1.11

$$-\frac{136136\,x^{11}e+116688\,dx^{10}+1166880\,x^{10}e+1021020\,dx^9+4594590\,x^9e+4084080\,dx^8+10890880\,x^8e+9801792\,dx^7+17153136\,x^7e+15593760\,dx^6+18712512\,x^6e+17153136\,dx^5+14294280\,x^5e+13194720\,dx^4+7539840\,x^4e+7001280\,dx^3+2625480\,x^3e+2450448\,dx^2+544544\,x^2e+510510\,dx+51051\,xe+48048\,d}{816816\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^18,x, algorithm="giac")
```

```
[Out] -1/816816*(136136*x^11*e + 116688*d*x^10 + 1166880*x^10*e + 1021020*d*x^9 +
 4594590*x^9*e + 4084080*d*x^8 + 10890880*x^8*e + 9801792*d*x^7 + 17153136*
x^7*e + 15593760*d*x^6 + 18712512*x^6*e + 17153136*d*x^5 + 14294280*x^5*e +
 13194720*d*x^4 + 7539840*x^4*e + 7001280*d*x^3 + 2625480*x^3*e + 2450448*d
*x^2 + 544544*x^2*e + 510510*d*x + 51051*x*e + 48048*d)/x^17
```

maple [A] time = 0.05, size = 130, normalized size = 1.02

$$-\frac{e}{6x^6}-\frac{d+10e}{7x^7}-\frac{10d+45e}{8x^8}-\frac{45d+120e}{9x^9}-\frac{120d+210e}{10x^{10}}-\frac{210d+252e}{11x^{11}}-\frac{252d+210e}{12x^{12}}-\frac{210d+120e}{13x^{13}}-\frac{120d+45e}{14x^{14}}-\frac{45d+10e}{15x^{15}}-\frac{d}{17x^{17}}-\frac{10d+e}{16x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^18,x)
```

```
[Out] -1/14*(120*d+45*e)/x^14-1/13*(210*d+120*e)/x^13-1/16*(10*d+e)/x^16-1/8*(10*
d+45*e)/x^8-1/10*(120*d+210*e)/x^10-1/15*(45*d+10*e)/x^15-1/9*(45*d+120*e)/
x^9-1/17*d/x^17-1/12*(252*d+210*e)/x^12-1/7*(d+10*e)/x^7-1/6*e/x^6-1/11*(21
0*d+252*e)/x^11
```

maxima [A] time = 0.51, size = 129, normalized size = 1.01

$$-\frac{136136\,ex^{11}+116688\,(d+10\,e)x^{10}+510510\,(2\,d+9\,e)x^{9}+1361360\,(3\,d+8\,e)x^{8}+2450448\,(4\,d+7\,e)x^{7}+3118752\,(5\,d+6\,e)x^{6}+2858856\,(6\,d+5\,e)x^{5}+1884960\,(7\,d+4\,e)x^{4}+875160\,(8\,d+3\,e)x^{3}+272272\,(9\,d+2\,e)x^{2}+51051\,(10\,d+e)x+48048\,d}{816816\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^18,x, algorithm="maxima")
```

```
[Out] -1/816816*(136136*e*x^11 + 116688*(d + 10*e)*x^10 + 510510*(2*d + 9*e)*x^9
+ 1361360*(3*d + 8*e)*x^8 + 2450448*(4*d + 7*e)*x^7 + 3118752*(5*d + 6*e)*x
^6 + 2858856*(6*d + 5*e)*x^5 + 1884960*(7*d + 4*e)*x^4 + 875160*(8*d + 3*e)
*x^3 + 272272*(9*d + 2*e)*x^2 + 51051*(10*d + e)*x + 48048*d)/x^17
```

mupad [B] time = 1.13, size = 123, normalized size = 0.96

$$-\frac{\frac{e\,x^{11}}{6}+\left(\frac{d}{7}+\frac{10\,e}{7}\right)\,x^{10}+\left(\frac{5\,d}{4}+\frac{45\,e}{8}\right)\,x^9+\left(5\,d+\frac{40\,e}{3}\right)\,x^8+\left(12\,d+21\,e\right)\,x^7+\left(\frac{210\,d}{11}+\frac{252\,e}{11}\right)\,x^6+\left(21\,d+\frac{35\,e}{2}\right)\,x^5+\left(\frac{210\,d}{13}+\frac{120\,e}{13}\right)\,x^4+\left(\frac{60\,d}{7}+\frac{45\,e}{14}\right)\,x^3+\left(3\,d+\frac{2\,e}{3}\right)\,x^2+\left(\frac{5\,d}{8}+\frac{e}{16}\right)\,x+\frac{d}{17}}{x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^18,x)
```

```
[Out] -(d/17 + x^2*(3*d + (2*e)/3) + x^10*(d/7 + (10*e)/7) + x^7*(12*d + 21*e) +
x^8*(5*d + (40*e)/3) + x^5*(21*d + (35*e)/2) + x^9*((5*d)/4 + (45*e)/8) + x
^3*((60*d)/7 + (45*e)/14) + x^4*((210*d)/13 + (120*e)/13) + x^6*((210*d)/11
 + (252*e)/11) + (e*x^11)/6 + x*((5*d)/8 + e/16))/x^17
```

sympy [A] time = 24.87, size = 131, normalized size = 1.02

$$\frac{-48048d-136136ex^{11}+x^{10}\left(-116688d-1166880e\right)+x^{9}\left(-1021020d-4594590e\right)+x^{8}\left(-4084080d-10890880e\right)+x^{7}\left(-9801792d-17153136e\right)+x^{6}\left(-15593760d-18712512e\right)+x^{5}\left(-17153136d-14294280e\right)+x^{4}\left(-13194720d-7539840e\right)+x^{3}\left(-7001280d-2625480e\right)+x^{2}\left(-2450448d-544544e\right)+x\left(-510510d-51051e\right)}{816816x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**18,x)
```

```
[Out] (-48048*d - 136136*e*x**11 + x**10*(-116688*d - 1166880*e) + x**9*(-1021020
*d - 4594590*e) + x**8*(-4084080*d - 10890880*e) + x**7*(-9801792*d - 17153
136*e) + x**6*(-15593760*d - 18712512*e) + x**5*(-17153136*d - 14294280*e)
+ x**4*(-13194720*d - 7539840*e) + x**3*(-7001280*d - 2625480*e) + x**2*(-2
450448*d - 544544*e) + x*(-510510*d - 51051*e))/(816816*x**17)
```

3.512 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{19}}\,dx$

Optimal. Leaf size=151

$$-\frac{10d+e}{17x^{17}}-\frac{5(9d+2e)}{16x^{16}}-\frac{8d+3e}{x^{15}}-\frac{15(7d+4e)}{7x^{14}}-\frac{42(6d+5e)}{13x^{13}}-\frac{7(5d+6e)}{2x^{12}}-\frac{30(4d+7e)}{11x^{11}}-\frac{3(3d+8e)}{2x^{10}}-\frac{5(2d+9e)}{9x^9}-$$

Rubi [A] time = 0.07, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$-\frac{d+10e}{8x^8}-\frac{5(2d+9e)}{9x^9}-\frac{3(3d+8e)}{2x^{10}}-\frac{30(4d+7e)}{11x^{11}}-\frac{7(5d+6e)}{2x^{12}}-\frac{42(6d+5e)}{13x^{13}}-\frac{15(7d+4e)}{7x^{14}}-\frac{8d+3e}{x^{15}}-\frac{5(9d+2e)}{16x^{16}}-\frac{10d+e}{17x^{17}}-\frac{d}{18x^{18}}-\frac{e}{7x^7}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -d/(18*x^18) - (10*d + e)/(17*x^17) - (5*(9*d + 2*e))/(16*x^16) - (8*d + 3*
e)/x^15 - (15*(7*d + 4*e))/(7*x^14) - (42*(6*d + 5*e))/(13*x^13) - (7*(5*d
+ 6*e))/(2*x^12) - (30*(4*d + 7*e))/(11*x^11) - (3*(3*d + 8*e))/(2*x^10) -
(5*(2*d + 9*e))/(9*x^9) - (d + 10*e)/(8*x^8) - e/(7*x^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{19}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{19}}\,dx\\ &= \int \left(\frac{d}{x^{19}}+\frac{10d+e}{x^{18}}+\frac{5(9d+2e)}{x^{17}}+\frac{15(8d+3e)}{x^{16}}+\frac{30(7d+4e)}{x^{15}}+\frac{42(6d+5e)}{x^{14}}+\right.\\ &= -\frac{d}{18x^{18}}-\frac{10d+e}{17x^{17}}-\frac{5(9d+2e)}{16x^{16}}-\frac{8d+3e}{x^{15}}-\frac{15(7d+4e)}{7x^{14}}-\frac{42(6d+5e)}{13x^{13}}-\frac{7(5}{2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 151, normalized size = 1.00

$$-\frac{10d+e}{17x^{17}}-\frac{5(9d+2e)}{16x^{16}}-\frac{8d+3e}{x^{15}}-\frac{15(7d+4e)}{7x^{14}}-\frac{42(6d+5e)}{13x^{13}}-\frac{7(5d+6e)}{2x^{12}}-\frac{30(4d+7e)}{11x^{11}}-\frac{3(3d+8e)}{2x^{10}}-\frac{5(2d+9e)}{9x^9}-\frac{d+10e}{8x^8}-\frac{d}{18x^{18}}-\frac{e}{7x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -1/18*d/x^18 - (10*d + e)/(17*x^17) - (5*(9*d + 2*e))/(16*x^16) - (8*d + 3*
e)/x^15 - (15*(7*d + 4*e))/(7*x^14) - (42*(6*d + 5*e))/(13*x^13) - (7*(5*d
```

```
+ 6*e))/(2*x^12) - (30*(4*d + 7*e))/(11*x^11) - (3*(3*d + 8*e))/(2*x^10) -
(5*(2*d + 9*e))/(9*x^9) - (d + 10*e)/(8*x^8) - e/(7*x^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{19}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^19, x]
```

fricas [A] time = 0.38, size = 129, normalized size = 0.85

$$-\frac{350064\,ex^{11}+306306\,(d+10\,e)x^{10}+1361360\,(2\,d+9\,e)x^{9}+3675672\,(3\,d+8\,e)x^{8}+6683040\,(4\,d+7\,e)x^{7}+8576568\,(5\,d+6\,e)x^{6}+7916832\,(6\,d+5\,e)x^{5}+5250960\,(7\,d+4\,e)x^{4}+2450448\,(8\,d+3\,e)x^{3}+765765\,(9\,d+2\,e)x^{2}+144144\,(10\,d+e)x+136136\,d}{2450448\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^19,x, algorithm="fricas")
```

```
[Out] -1/2450448*(350064*e*x^11 + 306306*(d + 10*e)*x^10 + 1361360*(2*d + 9*e)*x^
9 + 3675672*(3*d + 8*e)*x^8 + 6683040*(4*d + 7*e)*x^7 + 8576568*(5*d + 6*e)
*x^6 + 7916832*(6*d + 5*e)*x^5 + 5250960*(7*d + 4*e)*x^4 + 2450448*(8*d + 3
*e)*x^3 + 765765*(9*d + 2*e)*x^2 + 144144*(10*d + e)*x + 136136*d)/x^18
```

giac [A] time = 0.16, size = 142, normalized size = 0.94

$$-\frac{350064\,x^{11}e+306306\,dx^{10}+3063060\,x^{10}e+2722720\,dx^{9}+12252240\,x^{9}e+11027016\,dx^{8}+29405376\,x^{8}e+26732160\,dx^{7}+46781280\,x^{7}e+42882840\,dx^{6}+51459408\,x^{6}e+47500992\,dx^{5}+39584160\,x^{5}e+36756720\,dx^{4}+21003840\,x^{4}e+19603584\,dx^{3}+7351344\,x^{3}e+6891885\,dx^{2}+1531530\,x^{2}e+1441440\,dx+144144\,xe+136136\,d}{2450448\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^19,x, algorithm="giac")
```

```
[Out] -1/2450448*(350064*x^11*e + 306306*d*x^10 + 3063060*x^10*e + 2722720*d*x^9
+ 12252240*x^9*e + 11027016*d*x^8 + 29405376*x^8*e + 26732160*d*x^7 + 46781
280*x^7*e + 42882840*d*x^6 + 51459408*x^6*e + 47500992*d*x^5 + 39584160*x^5
*e + 36756720*d*x^4 + 21003840*x^4*e + 19603584*d*x^3 + 7351344*x^3*e + 689
1885*d*x^2 + 1531530*x^2*e + 1441440*d*x + 144144*x*e + 136136*d)/x^18
```

maple [A] time = 0.05, size = 130, normalized size = 0.86

$$-\frac{e}{7x^{7}}-\frac{d+10e}{8x^{8}}-\frac{10d+45e}{9x^{9}}-\frac{45d+120e}{10x^{10}}-\frac{120d+210e}{11x^{11}}-\frac{210d+252e}{12x^{12}}-\frac{252d+210e}{13x^{13}}-\frac{210d+120e}{14x^{14}}-\frac{120d+45e}{15x^{15}}-\frac{45d+10e}{16x^{16}}-\frac{d}{18x^{18}}-\frac{10d+e}{17x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^19,x)
```

```
[Out] -1/8*(d+10*e)/x^8-1/10*(45*d+120*e)/x^10-1/15*(120*d+45*e)/x^15-1/17*(10*d+
e)/x^17-1/16*(45*d+10*e)/x^16-1/14*(210*d+120*e)/x^14-1/9*(10*d+45*e)/x^9-1
/7*e/x^7-1/18*d/x^18-1/12*(210*d+252*e)/x^12-1/13*(252*d+210*e)/x^13-1/11*(
120*d+210*e)/x^11
```

maxima [A] time = 0.57, size = 129, normalized size = 0.85

$$-\frac{350064\,ex^{11}+306306\,(d+10\,e)x^{10}+1361360\,(2\,d+9\,e)x^{9}+3675672\,(3\,d+8\,e)x^{8}+6683040\,(4\,d+7\,e)x^{7}+8576568\,(5\,d+6\,e)x^{6}+7916832\,(6\,d+5\,e)x^{5}+5250960\,(7\,d+4\,e)x^{4}+2450448\,(8\,d+3\,e)x^{3}+765765\,(9\,d+2\,e)x^{2}+144144\,(10\,d+e)x+136136\,d}{2450448\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^19,x, algorithm="maxima")
```

```
[Out] -1/2450448*(350064*e*x^11 + 306306*(d + 10*e)*x^10 + 1361360*(2*d + 9*e)*x^
9 + 3675672*(3*d + 8*e)*x^8 + 6683040*(4*d + 7*e)*x^7 + 8576568*(5*d + 6*e)
```

```
*x^6 + 7916832*(6*d + 5*e)*x^5 + 5250960*(7*d + 4*e)*x^4 + 2450448*(8*d + 3
*e)*x^3 + 765765*(9*d + 2*e)*x^2 + 144144*(10*d + e)*x + 136136*d)/x^18
```

mupad [B] time = 0.12, size = 123, normalized size = 0.81

$$-\frac{\frac{e\,x^{11}}{7}+\left(\frac{d}{8}+\frac{5\,e}{4}\right)\,x^{10}+\left(\frac{10\,d}{9}+5\,e\right)\,x^9+\left(\frac{9\,d}{2}+12\,e\right)\,x^8+\left(\frac{120\,d}{11}+\frac{210\,e}{11}\right)\,x^7+\left(\frac{35\,d}{2}+21\,e\right)\,x^6+\left(\frac{252\,d}{13}+\frac{210\,e}{13}\right)\,x^5+\left(15\,d+\frac{60\,e}{7}\right)\,x^4+\left(8\,d+3\,e\right)\,x^3+\left(\frac{45\,d}{16}+\frac{5\,e}{8}\right)\,x^2+\left(\frac{10\,d}{17}+\frac{e}{17}\right)\,x+\frac{d}{18}}{x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^19,x)
```

```
[Out] -(d/18 + x^3*(8*d + 3*e) + x^10*(d/8 + (5*e)/4) + x^8*((9*d)/2 + 12*e) + x^
9*((10*d)/9 + 5*e) + x^6*((35*d)/2 + 21*e) + x^2*((45*d)/16 + (5*e)/8) + x^
4*(15*d + (60*e)/7) + x^7*((120*d)/11 + (210*e)/11) + x^5*((252*d)/13 + (21
0*e)/13) + (e*x^11)/7 + x*((10*d)/17 + e/17))/x^18
```

sympy [A] time = 27.79, size = 131, normalized size = 0.87

$$\frac{-136136d-350064ex^{11}+x^{10}\left(-306306d-3063060e\right)+x^{9}\left(-2722720d-12252240e\right)+x^{8}\left(-11027016d-29405376e\right)+x^{7}\left(-26732160d-46781280e\right)+x^{6}\left(-42882840d-51459408e\right)+x^{5}\left(-47500992d-39584160e\right)+x^{4}\left(-36756720d-21003840e\right)+x^{3}\left(-19603584d-7351344e\right)+x^{2}\left(-6891885d-1531530e\right)+x\left(-1441440d-144144e\right)}{2450448x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**19,x)
```

```
[Out] (-136136*d - 350064*e*x**11 + x**10*(-306306*d - 3063060*e) + x**9*(-272272
0*d - 12252240*e) + x**8*(-11027016*d - 29405376*e) + x**7*(-26732160*d - 4
6781280*e) + x**6*(-42882840*d - 51459408*e) + x**5*(-47500992*d - 39584160
*e) + x**4*(-36756720*d - 21003840*e) + x**3*(-19603584*d - 7351344*e) + x*
*2*(-6891885*d - 1531530*e) + x*(-1441440*d - 144144*e))/(2450448*x**18)
```

3.513 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$

Optimal. Leaf size=149

$$-\frac{10d+e}{18x^{18}}-\frac{5(9d+2e)}{17x^{17}}-\frac{15(8d+3e)}{16x^{16}}-\frac{2(7d+4e)}{x^{15}}-\frac{3(6d+5e)}{x^{14}}-\frac{42(5d+6e)}{13x^{13}}-\frac{5(4d+7e)}{2x^{12}}-\frac{15(3d+8e)}{11x^{11}}-\frac{2d+9e}{2x^{10}}-\frac{d}{\ldots}$$

Rubi [A] time = 0.07, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$-\frac{d+10e}{9x^9}-\frac{2d+9e}{2x^{10}}-\frac{15(3d+8e)}{11x^{11}}-\frac{5(4d+7e)}{2x^{12}}-\frac{42(5d+6e)}{13x^{13}}-\frac{3(6d+5e)}{x^{14}}-\frac{2(7d+4e)}{x^{15}}-\frac{15(8d+3e)}{16x^{16}}-\frac{5(9d+2e)}{17x^{17}}-\frac{10d+e}{18x^{18}}-\frac{d}{19x^{19}}-\frac{e}{8x^8}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -d/(19*x^19) - (10*d + e)/(18*x^18) - (5*(9*d + 2*e))/(17*x^17) - (15*(8*d
+ 3*e))/(16*x^16) - (2*(7*d + 4*e))/x^15 - (3*(6*d + 5*e))/x^14 - (42*(5*d
+ 6*e))/(13*x^13) - (5*(4*d + 7*e))/(2*x^12) - (15*(3*d + 8*e))/(11*x^11) -
 (2*d + 9*e)/(2*x^10) - (d + 10*e)/(9*x^9) - e/(8*x^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{20}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{20}}\,dx\\ &= \int \left(\frac{d}{x^{20}}+\frac{10d+e}{x^{19}}+\frac{5(9d+2e)}{x^{18}}+\frac{15(8d+3e)}{x^{17}}+\frac{30(7d+4e)}{x^{16}}+\frac{42(6d+5e)}{x^{15}}+\ldots\right.\\ &= -\frac{d}{19x^{19}}-\frac{10d+e}{18x^{18}}-\frac{5(9d+2e)}{17x^{17}}-\frac{15(8d+3e)}{16x^{16}}-\frac{2(7d+4e)}{x^{15}}-\frac{3(6d+5e)}{x^{14}}-\ldots\end{aligned}$$

Mathematica [A] time = 0.04, size = 149, normalized size = 1.00

$$-\frac{10d+e}{18x^{18}}-\frac{5(9d+2e)}{17x^{17}}-\frac{15(8d+3e)}{16x^{16}}-\frac{2(7d+4e)}{x^{15}}-\frac{3(6d+5e)}{x^{14}}-\frac{42(5d+6e)}{13x^{13}}-\frac{5(4d+7e)}{2x^{12}}-\frac{15(3d+8e)}{11x^{11}}-\frac{2d+9e}{2x^{10}}-\frac{d+10e}{9x^9}-\frac{d}{19x^{19}}-\frac{e}{8x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -1/19*d/x^19 - (10*d + e)/(18*x^18) - (5*(9*d + 2*e))/(17*x^17) - (15*(8*d
+ 3*e))/(16*x^16) - (2*(7*d + 4*e))/x^15 - (3*(6*d + 5*e))/x^14 - (42*(5*d
```

```
+ 6*e))/(13*x^13) - (5*(4*d + 7*e))/(2*x^12) - (15*(3*d + 8*e))/(11*x^11) -
 (2*d + 9*e)/(2*x^10) - (d + 10*e)/(9*x^9) - e/(8*x^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^20, x]
```

fricas [A] time = 0.39, size = 129, normalized size = 0.87

$$-\frac{831402\,ex^{11}+739024\,(d+10\,e)x^{10}+3325608\,(2\,d+9\,e)x^{9}+9069840\,(3\,d+8\,e)x^{8}+16628040\,(4\,d+7\,e)x^{7}+21488544\,(5\,d+6\,e)x^{6}+19953648\,(6\,d+5\,e)x^{5}+13302432\,(7\,d+4\,e)x^{4}+6235515\,(8\,d+3\,e)x^{3}+1956240\,(9\,d+2\,e)x^{2}+369512\,(10\,d+e)x+350064\,d}{6651216\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^20,x, algorithm="fricas")
```

```
[Out] -1/6651216*(831402*e*x^11 + 739024*(d + 10*e)*x^10 + 3325608*(2*d + 9*e)*x^
9 + 9069840*(3*d + 8*e)*x^8 + 16628040*(4*d + 7*e)*x^7 + 21488544*(5*d + 6*
e)*x^6 + 19953648*(6*d + 5*e)*x^5 + 13302432*(7*d + 4*e)*x^4 + 6235515*(8*d
 + 3*e)*x^3 + 1956240*(9*d + 2*e)*x^2 + 369512*(10*d + e)*x + 350064*d)/x^1
9
```

giac [A] time = 0.15, size = 142, normalized size = 0.95

$$-\frac{831402\,x^{11}e+739024\,dx^{10}+7390240\,x^{10}e+6651216\,dx^{9}+29930472\,x^{9}e+27209520\,dx^{8}+72558720\,x^{8}e+66512160\,dx^{7}+116396280\,x^{7}e+107442720\,dx^{6}+128931264\,x^{6}e+119721888\,dx^{5}+99768240\,x^{5}e+93117024\,dx^{4}+53209728\,x^{4}e+49884120\,dx^{3}+18706545\,x^{3}e+17606160\,dx^{2}+3912480\,x^{2}e+3695120\,dx+369512\,xe+350064\,d}{6651216\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^20,x, algorithm="giac")
```

```
[Out] -1/6651216*(831402*x^11*e + 739024*d*x^10 + 7390240*x^10*e + 6651216*d*x^9
+ 29930472*x^9*e + 27209520*d*x^8 + 72558720*x^8*e + 66512160*d*x^7 + 11639
6280*x^7*e + 107442720*d*x^6 + 128931264*x^6*e + 119721888*d*x^5 + 99768240
*x^5*e + 93117024*d*x^4 + 53209728*x^4*e + 49884120*d*x^3 + 18706545*x^3*e
+ 17606160*d*x^2 + 3912480*x^2*e + 3695120*d*x + 369512*x*e + 350064*d)/x^1
9
```

maple [A] time = 0.05, size = 130, normalized size = 0.87

$$-\frac{e}{8x^{8}}-\frac{d+10e}{9x^{9}}-\frac{10d+45e}{10x^{10}}-\frac{45d+120e}{11x^{11}}-\frac{120d+210e}{12x^{12}}-\frac{210d+252e}{13x^{13}}-\frac{252d+210e}{14x^{14}}-\frac{210d+120e}{15x^{15}}-\frac{120d+45e}{16x^{16}}-\frac{45d+10e}{17x^{17}}-\frac{d}{19x^{19}}-\frac{10d+e}{18x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^20,x)
```

```
[Out] -1/13*(210*d+252*e)/x^13-1/14*(252*d+210*e)/x^14-1/8*e/x^8-1/10*(10*d+45*e)
/x^10-1/17*(45*d+10*e)/x^17-1/15*(210*d+120*e)/x^15-1/12*(120*d+210*e)/x^12
-1/9*(d+10*e)/x^9-1/18*(10*d+e)/x^18-1/19*d/x^19-1/11*(45*d+120*e)/x^11-1/1
6*(120*d+45*e)/x^16
```

maxima [A] time = 0.59, size = 129, normalized size = 0.87

$$-\frac{831402\,ex^{11}+739024\,(d+10\,e)x^{10}+3325608\,(2\,d+9\,e)x^{9}+9069840\,(3\,d+8\,e)x^{8}+16628040\,(4\,d+7\,e)x^{7}+21488544\,(5\,d+6\,e)x^{6}+19953648\,(6\,d+5\,e)x^{5}+13302432\,(7\,d+4\,e)x^{4}+6235515\,(8\,d+3\,e)x^{3}+1956240\,(9\,d+2\,e)x^{2}+369512\,(10\,d+e)x+350064\,d}{6651216\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^20,x, algorithm="maxima")
```

```
[Out] -1/6651216*(831402*e*x^11 + 739024*(d + 10*e)*x^10 + 3325608*(2*d + 9*e)*x^
9 + 9069840*(3*d + 8*e)*x^8 + 16628040*(4*d + 7*e)*x^7 + 21488544*(5*d + 6*
e)*x^6 + 19953648*(6*d + 5*e)*x^5 + 13302432*(7*d + 4*e)*x^4 + 6235515*(8*d
 + 3*e)*x^3 + 1956240*(9*d + 2*e)*x^2 + 369512*(10*d + e)*x + 350064*d)/x^1
9
```

mupad [B] time = 1.14, size = 121, normalized size = 0.81

$$-\frac{\frac{e\,x^{11}}{8}+\left(\frac{d}{9}+\frac{10\,e}{9}\right)\,x^{10}+\left(d+\frac{9\,e}{2}\right)\,x^9+\left(\frac{45\,d}{11}+\frac{120\,e}{11}\right)\,x^8+\left(10\,d+\frac{35\,e}{2}\right)\,x^7+\left(\frac{210\,d}{13}+\frac{252\,e}{13}\right)\,x^6+\left(18\,d+15\,e\right)\,x^5+\left(14\,d+8\,e\right)\,x^4+\left(\frac{15\,d}{2}+\frac{45\,e}{16}\right)\,x^3+\left(\frac{45\,d}{17}+\frac{10\,e}{17}\right)\,x^2+\left(\frac{5\,d}{9}+\frac{e}{18}\right)\,x+\frac{d}{19}}{x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^20,x)
```

```
[Out] -(d/19 + x^4*(14*d + 8*e) + x^5*(18*d + 15*e) + x^10*(d/9 + (10*e)/9) + x^7
*(10*d + (35*e)/2) + x^3*((15*d)/2 + (45*e)/16) + x^2*((45*d)/17 + (10*e)/1
7) + x^8*((45*d)/11 + (120*e)/11) + x^6*((210*d)/13 + (252*e)/13) + (e*x^11
)/8 + x*((5*d)/9 + e/18) + x^9*(d + (9*e)/2))/x^19
```

sympy [A] time = 31.79, size = 131, normalized size = 0.88

$$\frac{-350064d - 831402ex^{11} + x^{10}\left(-739024d - 7390240e\right) + x^{9}\left(-6651216d - 29930472e\right) + x^{8}\left(-27209520d - 72558720e\right) + x^{7}\left(-66512160d - 116396280e\right) + x^{6}\left(-107442720d - 128931264e\right) + x^{5}\left(-119721888d - 99768240e\right) + x^{4}\left(-93117024d - 53209728e\right) + x^{3}\left(-49884120d - 18706545e\right) + x^{2}\left(-17606160d - 3912480e\right) + x\left(-3695120d - 369512e\right)}{6651216x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**20,x)
```

```
[Out] (-350064*d - 831402*e*x**11 + x**10*(-739024*d - 7390240*e) + x**9*(-665121
6*d - 29930472*e) + x**8*(-27209520*d - 72558720*e) + x**7*(-66512160*d - 1
16396280*e) + x**6*(-107442720*d - 128931264*e) + x**5*(-119721888*d - 9976
8240*e) + x**4*(-93117024*d - 53209728*e) + x**3*(-49884120*d - 18706545*e)
 + x**2*(-17606160*d - 3912480*e) + x*(-3695120*d - 369512*e))/(6651216*x**
19)
```

3.514 $\int \frac{(d+ex)(1+2x+x^2)^5}{x^{21}} dx$

Optimal. Leaf size=151

$$-\frac{10d+e}{19x^{19}}-\frac{5(9d+2e)}{18x^{18}}-\frac{15(8d+3e)}{17x^{17}}-\frac{15(7d+4e)}{8x^{16}}-\frac{14(6d+5e)}{5x^{15}}-\frac{3(5d+6e)}{x^{14}}-\frac{30(4d+7e)}{13x^{13}}-\frac{5(3d+8e)}{4x^{12}}-\frac{5(2d+}{11x^{11}}$$

Rubi [A] time = 0.06, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$-\frac{d+10e}{10x^{10}}-\frac{5(2d+9e)}{11x^{11}}-\frac{5(3d+8e)}{4x^{12}}-\frac{30(4d+7e)}{13x^{13}}-\frac{3(5d+6e)}{x^{14}}-\frac{14(6d+5e)}{5x^{15}}-\frac{15(7d+4e)}{8x^{16}}-\frac{15(8d+3e)}{17x^{17}}-\frac{5(9d+2e)}{18x^{18}}-\frac{10d+e}{19x^{19}}-\frac{d}{20x^{20}}-\frac{e}{9x^9}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -d/(20*x^20) - (10*d + e)/(19*x^19) - (5*(9*d + 2*e))/(18*x^18) - (15*(8*d
+ 3*e))/(17*x^17) - (15*(7*d + 4*e))/(8*x^16) - (14*(6*d + 5*e))/(5*x^15) -
 (3*(5*d + 6*e))/x^14 - (30*(4*d + 7*e))/(13*x^13) - (5*(3*d + 8*e))/(4*x^1
2) - (5*(2*d + 9*e))/(11*x^11) - (d + 10*e)/(10*x^10) - e/(9*x^9)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{21}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{21}}\,dx\\ &= \int \left(\frac{d}{x^{21}}+\frac{10d+e}{x^{20}}+\frac{5(9d+2e)}{x^{19}}+\frac{15(8d+3e)}{x^{18}}+\frac{30(7d+4e)}{x^{17}}+\frac{42(6d+5e)}{x^{16}}\right.\\ &= -\frac{d}{20x^{20}}-\frac{10d+e}{19x^{19}}-\frac{5(9d+2e)}{18x^{18}}-\frac{15(8d+3e)}{17x^{17}}-\frac{15(7d+4e)}{8x^{16}}-\frac{14(6d+5e)}{5x^{15}}-\end{aligned}$$

Mathematica [A] time = 0.05, size = 151, normalized size = 1.00

$$-\frac{10d+e}{19x^{19}}-\frac{5(9d+2e)}{18x^{18}}-\frac{15(8d+3e)}{17x^{17}}-\frac{15(7d+4e)}{8x^{16}}-\frac{14(6d+5e)}{5x^{15}}-\frac{3(5d+6e)}{x^{14}}-\frac{30(4d+7e)}{13x^{13}}-\frac{5(3d+8e)}{4x^{12}}-\frac{5(2d+9e)}{11x^{11}}-\frac{d+10e}{10x^{10}}-\frac{d}{20x^{20}}-\frac{e}{9x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -1/20*d/x^20 - (10*d + e)/(19*x^19) - (5*(9*d + 2*e))/(18*x^18) - (15*(8*d
+ 3*e))/(17*x^17) - (15*(7*d + 4*e))/(8*x^16) - (14*(6*d + 5*e))/(5*x^15) -
```

```
(3*(5*d + 6*e))/x^14 - (30*(4*d + 7*e))/(13*x^13) - (5*(3*d + 8*e))/(4*x^1
2) - (5*(2*d + 9*e))/(11*x^11) - (d + 10*e)/(10*x^10) - e/(9*x^9)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(1 + 2*x + x^2)^5)/x^21, x]
```

fricas [A] time = 0.39, size = 129, normalized size = 0.85

$$-\frac{1847560\,ex^{11} + 1662804\,(d + 10\,e)x^{10} + 7558200\,(2\,d + 9\,e)x^{9} + 20785050\,(3\,d + 8\,e)x^{8} + 38372400\,(4\,d + 7\,e)x^{7} + 49884120\,(5\,d + 6\,e)x^{6} + 46558512\,(6\,d + 5\,e)x^{5} + 31177575\,(7\,d + 4\,e)x^{4} + 14671800\,(8\,d + 3\,e)x^{3} + 4618900\,(9\,d + 2\,e)x^{2} + 875160\,(10\,d + e)x + 831402\,d}{16628040\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^21,x, algorithm="fricas")
```

```
[Out] -1/16628040*(1847560*e*x^11 + 1662804*(d + 10*e)*x^10 + 7558200*(2*d + 9*e)
*x^9 + 20785050*(3*d + 8*e)*x^8 + 38372400*(4*d + 7*e)*x^7 + 49884120*(5*d
+ 6*e)*x^6 + 46558512*(6*d + 5*e)*x^5 + 31177575*(7*d + 4*e)*x^4 + 14671800
*(8*d + 3*e)*x^3 + 4618900*(9*d + 2*e)*x^2 + 875160*(10*d + e)*x + 831402*d
)/x^20
```

giac [A] time = 0.18, size = 142, normalized size = 0.94

$$-\frac{1847560\,x^{11}e + 1662804\,dx^{10} + 16628040\,x^{10}e + 15116400\,dx^{9} + 68023800\,x^{9}e + 62355150\,dx^{8} + 166280400\,x^{8}e + 153489600\,dx^{7} + 268606800\,x^{7}e + 249420600\,dx^{6} + 299304720\,x^{6}e + 279351072\,dx^{5} + 232792560\,x^{5}e + 218243025\,dx^{4} + 124710300\,x^{4}e + 117374400\,dx^{3} + 44015400\,x^{3}e + 41570100\,dx^{2} + 9237800\,x^{2}e + 8751600\,dx + 875160\,xe + 831402\,d}{16628040\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^21,x, algorithm="giac")
```

```
[Out] -1/16628040*(1847560*x^11*e + 1662804*d*x^10 + 16628040*x^10*e + 15116400*d
*x^9 + 68023800*x^9*e + 62355150*d*x^8 + 166280400*x^8*e + 153489600*d*x^7
+ 268606800*x^7*e + 249420600*d*x^6 + 299304720*x^6*e + 279351072*d*x^5 + 2
32792560*x^5*e + 218243025*d*x^4 + 124710300*x^4*e + 117374400*d*x^3 + 4401
5400*x^3*e + 41570100*d*x^2 + 9237800*x^2*e + 8751600*d*x + 875160*x*e + 83
1402*d)/x^20
```

maple [A] time = 0.05, size = 130, normalized size = 0.86

$$-\frac{e}{9x^{9}} - \frac{d+10e}{10x^{10}} - \frac{10d+45e}{11x^{11}} - \frac{45d+120e}{12x^{12}} - \frac{120d+210e}{13x^{13}} - \frac{210d+252e}{14x^{14}} - \frac{252d+210e}{15x^{15}} - \frac{210d+120e}{16x^{16}} - \frac{120d+45e}{17x^{17}} - \frac{45d+10e}{18x^{18}} - \frac{d}{20x^{20}} - \frac{10d+e}{19x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^21,x)
```

```
[Out] -1/10*(d+10*e)/x^10-1/13*(120*d+210*e)/x^13-1/15*(252*d+210*e)/x^15-1/14*(2
10*d+252*e)/x^14-1/20*d/x^20-1/17*(120*d+45*e)/x^17-1/9*e/x^9-1/12*(45*d+12
0*e)/x^12-1/18*(45*d+10*e)/x^18-1/19*(10*d+e)/x^19-1/11*(10*d+45*e)/x^11-1/
16*(210*d+120*e)/x^16
```

maxima [A] time = 0.60, size = 129, normalized size = 0.85

$$-\frac{1847560\,ex^{11} + 1662804\,(d + 10\,e)x^{10} + 7558200\,(2\,d + 9\,e)x^{9} + 20785050\,(3\,d + 8\,e)x^{8} + 38372400\,(4\,d + 7\,e)x^{7} + 49884120\,(5\,d + 6\,e)x^{6} + 46558512\,(6\,d + 5\,e)x^{5} + 31177575\,(7\,d + 4\,e)x^{4} + 14671800\,(8\,d + 3\,e)x^{3} + 4618900\,(9\,d + 2\,e)x^{2} + 875160\,(10\,d + e)x + 831402\,d}{16628040\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^21,x, algorithm="maxima")
```

```
[Out] -1/16628040*(1847560*e*x^11 + 1662804*(d + 10*e)*x^10 + 7558200*(2*d + 9*e)
*x^9 + 20785050*(3*d + 8*e)*x^8 + 38372400*(4*d + 7*e)*x^7 + 49884120*(5*d
+ 6*e)*x^6 + 46558512*(6*d + 5*e)*x^5 + 31177575*(7*d + 4*e)*x^4 + 14671800
*(8*d + 3*e)*x^3 + 4618900*(9*d + 2*e)*x^2 + 875160*(10*d + e)*x + 831402*d
)/x^20
```

mupad [**B**] time = 0.12, size = 121, normalized size = 0.80

$$-\frac{\frac{e\,x^{11}}{9}+\left(\frac{d}{10}+e\right)\,x^{10}+\left(\frac{10\,d}{11}+\frac{45\,e}{11}\right)\,x^9+\left(\frac{15\,d}{4}+10\,e\right)\,x^8+\left(\frac{120\,d}{13}+\frac{210\,e}{13}\right)\,x^7+\left(15\,d+18\,e\right)\,x^6+\left(\frac{84\,d}{5}+14\,e\right)\,x^5+\left(\frac{105\,d}{8}+\frac{15\,e}{2}\right)\,x^4+\left(\frac{120\,d}{17}+\frac{45\,e}{17}\right)\,x^3+\left(\frac{5\,d}{2}+\frac{5\,e}{9}\right)\,x^2+\left(\frac{10\,d}{19}+\frac{e}{19}\right)\,x+\frac{d}{20}}{x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^21,x)
```

```
[Out] -(d/20 + x^2*((5*d)/2 + (5*e)/9) + x^8*((15*d)/4 + 10*e) + x^6*(15*d + 18*e
) + x^9*((10*d)/11 + (45*e)/11) + x^5*((84*d)/5 + 14*e) + x^4*((105*d)/8 +
(15*e)/2) + x^3*((120*d)/17 + (45*e)/17) + x^7*((120*d)/13 + (210*e)/13) +
(e*x^11)/9 + x*((10*d)/19 + e/19) + x^10*(d/10 + e))/x^20
```

sympy [**A**] time = 35.33, size = 131, normalized size = 0.87

$$\frac{-831402d-1847560ex^{11}+x^{10}\left(-1662804d-16628040e\right)+x^{9}\left(-15116400d-68023800e\right)+x^{8}\left(-62355150d-166280400e\right)+x^{7}\left(-153489600d-268606800e\right)+x^{6}\left(-249420600d-299304720e\right)+x^{5}\left(-279351072d-232792560e\right)+x^{4}\left(-218243025d-124710300e\right)+x^{3}\left(-117374400d-44015400e\right)+x^{2}\left(-41570100d-9237800e\right)+x\left(-8751600d-875160e\right)}{16628040x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**21,x)
```

```
[Out] (-831402*d - 1847560*e*x**11 + x**10*(-1662804*d - 16628040*e) + x**9*(-151
16400*d - 68023800*e) + x**8*(-62355150*d - 166280400*e) + x**7*(-153489600
*d - 268606800*e) + x**6*(-249420600*d - 299304720*e) + x**5*(-279351072*d
- 232792560*e) + x**4*(-218243025*d - 124710300*e) + x**3*(-117374400*d - 4
4015400*e) + x**2*(-41570100*d - 9237800*e) + x*(-8751600*d - 875160*e))/(1
6628040*x**20)
```

3.515 $\int x^{11}(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=83

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Rubi [A] time = 0.03, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^11*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^12/12 + (11*x^13)/13 + (55*x^14)/14 + 11*x^15 + (165*x^16)/8 + (462*x^17)
/17 + (77*x^18)/3 + (330*x^19)/19 + (33*x^20)/4 + (55*x^21)/21 + x^22/2 + x
^23/23
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^{11}(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^{11}(1+x)^{11}\,dx\\ &= \int \left(x^{11}+11x^{12}+55x^{13}+165x^{14}+330x^{15}+462x^{16}+462x^{17}+330x^{18}+165\right.\\ &= \frac{x^{12}}{12}+\frac{11x^{13}}{13}+\frac{55x^{14}}{14}+11x^{15}+\frac{165x^{16}}{8}+\frac{462x^{17}}{17}+\frac{77x^{18}}{3}+\frac{330x^{19}}{19}+\frac{33x^{20}}{4}\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.00

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^11*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^12/12 + (11*x^13)/13 + (55*x^14)/14 + 11*x^15 + (165*x^16)/8 + (462*x^17)
/17 + (77*x^18)/3 + (330*x^19)/19 + (33*x^20)/4 + (55*x^21)/21 + x^22/2 + x
^23/23
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{11}(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^11*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^11*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.36, size = 61, normalized size = 0.73

$$\frac{1}{23}x^{23}+\frac{1}{2}x^{22}+\frac{55}{21}x^{21}+\frac{33}{4}x^{20}+\frac{330}{19}x^{19}+\frac{77}{3}x^{18}+\frac{462}{17}x^{17}+\frac{165}{8}x^{16}+11x^{15}+\frac{55}{14}x^{14}+\frac{11}{13}x^{13}+\frac{1}{12}x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^11*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/23*x^23 + 1/2*x^22 + 55/21*x^21 + 33/4*x^20 + 330/19*x^19 + 77/3*x^18 + 4
62/17*x^17 + 165/8*x^16 + 11*x^15 + 55/14*x^14 + 11/13*x^13 + 1/12*x^12
```

giac [A] time = 0.18, size = 61, normalized size = 0.73

$$\frac{1}{23}\,x^{23}+\frac{1}{2}\,x^{22}+\frac{55}{21}\,x^{21}+\frac{33}{4}\,x^{20}+\frac{330}{19}\,x^{19}+\frac{77}{3}\,x^{18}+\frac{462}{17}\,x^{17}+\frac{165}{8}\,x^{16}+11\,x^{15}+\frac{55}{14}\,x^{14}+\frac{11}{13}\,x^{13}+\frac{1}{12}\,x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^11*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/23*x^23 + 1/2*x^22 + 55/21*x^21 + 33/4*x^20 + 330/19*x^19 + 77/3*x^18 + 4
62/17*x^17 + 165/8*x^16 + 11*x^15 + 55/14*x^14 + 11/13*x^13 + 1/12*x^12
```

maple [A] time = 0.06, size = 62, normalized size = 0.75

$$\frac{1}{23}x^{23}+\frac{1}{2}x^{22}+\frac{55}{21}x^{21}+\frac{33}{4}x^{20}+\frac{330}{19}x^{19}+\frac{77}{3}x^{18}+\frac{462}{17}x^{17}+\frac{165}{8}x^{16}+11x^{15}+\frac{55}{14}x^{14}+\frac{11}{13}x^{13}+\frac{1}{12}x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^11*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/12*x^12+11/13*x^13+55/14*x^14+11*x^15+165/8*x^16+462/17*x^17+77/3*x^18+33
0/19*x^19+33/4*x^20+55/21*x^21+1/2*x^22+1/23*x^23
```

maxima [A] time = 0.53, size = 61, normalized size = 0.73

$$\frac{1}{23}\,x^{23}+\frac{1}{2}\,x^{22}+\frac{55}{21}\,x^{21}+\frac{33}{4}\,x^{20}+\frac{330}{19}\,x^{19}+\frac{77}{3}\,x^{18}+\frac{462}{17}\,x^{17}+\frac{165}{8}\,x^{16}+11\,x^{15}+\frac{55}{14}\,x^{14}+\frac{11}{13}\,x^{13}+\frac{1}{12}\,x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^11*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/23*x^23 + 1/2*x^22 + 55/21*x^21 + 33/4*x^20 + 330/19*x^19 + 77/3*x^18 + 4
62/17*x^17 + 165/8*x^16 + 11*x^15 + 55/14*x^14 + 11/13*x^13 + 1/12*x^12
```

mupad [B] time = 0.06, size = 61, normalized size = 0.73

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55\,x^{21}}{21}+\frac{33\,x^{20}}{4}+\frac{330\,x^{19}}{19}+\frac{77\,x^{18}}{3}+\frac{462\,x^{17}}{17}+\frac{165\,x^{16}}{8}+11\,x^{15}+\frac{55\,x^{14}}{14}+\frac{11\,x^{13}}{13}+\frac{x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^11*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^12/12 + (11*x^13)/13 + (55*x^14)/14 + 11*x^15 + (165*x^16)/8 + (462*x^17)
/17 + (77*x^18)/3 + (330*x^19)/19 + (33*x^20)/4 + (55*x^21)/21 + x^22/2 + x
^23/23
```

sympy [**A**] time = 0.08, size = 73, normalized size = 0.88

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**11*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**23/23 + x**22/2 + 55*x**21/21 + 33*x**20/4 + 330*x**19/19 + 77*x**18/3 +
 462*x**17/17 + 165*x**16/8 + 11*x**15 + 55*x**14/14 + 11*x**13/13 + x**12/
12
```

3.516 $\int x^{10}(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=83

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

Rubi [A] time = 0.03, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In] Int[x^10*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^11/11 + (11*x^12)/12 + (55*x^13)/13 + (165*x^14)/14 + 22*x^15 + (231*x^16
)/8 + (462*x^17)/17 + (55*x^18)/3 + (165*x^19)/19 + (11*x^20)/4 + (11*x^21)
/21 + x^22/22
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int x^{10}(1+x)\left(1+2x+x^2\right)^5\,dx=\int x^{10}(1+x)^{11}\,dx$$
$$=\int\left(x^{10}+11x^{11}+55x^{12}+165x^{13}+330x^{14}+462x^{15}+462x^{16}+330x^{17}+1\right.$$
$$=\frac{x^{11}}{11}+\frac{11x^{12}}{12}+\frac{55x^{13}}{13}+\frac{165x^{14}}{14}+22x^{15}+\frac{231x^{16}}{8}+\frac{462x^{17}}{17}+\frac{55x^{18}}{3}+\frac{165}{1}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.00

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^10*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^11/11 + (11*x^12)/12 + (55*x^13)/13 + (165*x^14)/14 + 22*x^15 + (231*x^16
)/8 + (462*x^17)/17 + (55*x^18)/3 + (165*x^19)/19 + (11*x^20)/4 + (11*x^21)
/21 + x^22/22
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{10}(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^10*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^10*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.36, size = 61, normalized size = 0.73

$$\frac{1}{22}x^{22} + \frac{11}{21}x^{21} + \frac{11}{4}x^{20} + \frac{165}{19}x^{19} + \frac{55}{3}x^{18} + \frac{462}{17}x^{17} + \frac{231}{8}x^{16} + 22x^{15} + \frac{165}{14}x^{14} + \frac{55}{13}x^{13} + \frac{11}{12}x^{12} + \frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^10*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/22*x^22 + 11/21*x^21 + 11/4*x^20 + 165/19*x^19 + 55/3*x^18 + 462/17*x^17
+ 231/8*x^16 + 22*x^15 + 165/14*x^14 + 55/13*x^13 + 11/12*x^12 + 1/11*x^11
```

giac [A] time = 0.17, size = 61, normalized size = 0.73

$$\frac{1}{22}x^{22} + \frac{11}{21}x^{21} + \frac{11}{4}x^{20} + \frac{165}{19}x^{19} + \frac{55}{3}x^{18} + \frac{462}{17}x^{17} + \frac{231}{8}x^{16} + 22x^{15} + \frac{165}{14}x^{14} + \frac{55}{13}x^{13} + \frac{11}{12}x^{12} + \frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^10*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/22*x^22 + 11/21*x^21 + 11/4*x^20 + 165/19*x^19 + 55/3*x^18 + 462/17*x^17
+ 231/8*x^16 + 22*x^15 + 165/14*x^14 + 55/13*x^13 + 11/12*x^12 + 1/11*x^11
```

maple [A] time = 0.04, size = 62, normalized size = 0.75

$$\frac{1}{22}x^{22} + \frac{11}{21}x^{21} + \frac{11}{4}x^{20} + \frac{165}{19}x^{19} + \frac{55}{3}x^{18} + \frac{462}{17}x^{17} + \frac{231}{8}x^{16} + 22x^{15} + \frac{165}{14}x^{14} + \frac{55}{13}x^{13} + \frac{11}{12}x^{12} + \frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^10*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/11*x^11+11/12*x^12+55/13*x^13+165/14*x^14+22*x^15+231/8*x^16+462/17*x^17+
55/3*x^18+165/19*x^19+11/4*x^20+11/21*x^21+1/22*x^22
```

maxima [A] time = 0.60, size = 61, normalized size = 0.73

$$\frac{1}{22}x^{22} + \frac{11}{21}x^{21} + \frac{11}{4}x^{20} + \frac{165}{19}x^{19} + \frac{55}{3}x^{18} + \frac{462}{17}x^{17} + \frac{231}{8}x^{16} + 22x^{15} + \frac{165}{14}x^{14} + \frac{55}{13}x^{13} + \frac{11}{12}x^{12} + \frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^10*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/22*x^22 + 11/21*x^21 + 11/4*x^20 + 165/19*x^19 + 55/3*x^18 + 462/17*x^17
+ 231/8*x^16 + 22*x^15 + 165/14*x^14 + 55/13*x^13 + 11/12*x^12 + 1/11*x^11
```

mupad [B] time = 0.06, size = 61, normalized size = 0.73

$$\frac{x^{22}}{22} + \frac{11\,x^{21}}{21} + \frac{11\,x^{20}}{4} + \frac{165\,x^{19}}{19} + \frac{55\,x^{18}}{3} + \frac{462\,x^{17}}{17} + \frac{231\,x^{16}}{8} + 22\,x^{15} + \frac{165\,x^{14}}{14} + \frac{55\,x^{13}}{13} + \frac{11\,x^{12}}{12} + \frac{x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^10*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^11/11 + (11*x^12)/12 + (55*x^13)/13 + (165*x^14)/14 + 22*x^15 + (231*x^16
)/8 + (462*x^17)/17 + (55*x^18)/3 + (165*x^19)/19 + (11*x^20)/4 + (11*x^21)
/21 + x^22/22
```

sympy [A] time = 0.07, size = 75, normalized size = 0.90

$$\frac{x^{22}}{22} + \frac{11x^{21}}{21} + \frac{11x^{20}}{4} + \frac{165x^{19}}{19} + \frac{55x^{18}}{3} + \frac{462x^{17}}{17} + \frac{231x^{16}}{8} + 22x^{15} + \frac{165x^{14}}{14} + \frac{55x^{13}}{13} + \frac{11x^{12}}{12} + \frac{x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**10*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**22/22 + 11*x**21/21 + 11*x**20/4 + 165*x**19/19 + 55*x**18/3 + 462*x**17
/17 + 231*x**16/8 + 22*x**15 + 165*x**14/14 + 55*x**13/13 + 11*x**12/12 + x
**11/11
```

3.517 $\int x^9(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=91

$$\frac{1}{21}(x+1)^{21}-\frac{9}{20}(x+1)^{20}+\frac{36}{19}(x+1)^{19}-\frac{14}{3}(x+1)^{18}+\frac{126}{17}(x+1)^{17}-\frac{63}{8}(x+1)^{16}+\frac{28}{5}(x+1)^{15}-\frac{18}{7}(x+1)^{14}+\frac{9}{13}(x+1)^{13}-\frac{1}{12}$$

Rubi [A] time = 0.03, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{21}(x+1)^{21}-\frac{9}{20}(x+1)^{20}+\frac{36}{19}(x+1)^{19}-\frac{14}{3}(x+1)^{18}+\frac{126}{17}(x+1)^{17}-\frac{63}{8}(x+1)^{16}+\frac{28}{5}(x+1)^{15}-\frac{18}{7}(x+1)^{14}+\frac{9}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^9*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (9*(1 + x)^13)/13 - (18*(1 + x)^14)/7 + (28*(1 + x)^15)/5
- (63*(1 + x)^16)/8 + (126*(1 + x)^17)/17 - (14*(1 + x)^18)/3 + (36*(1 + x)
^19)/19 - (9*(1 + x)^20)/20 + (1 + x)^21/21
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^9(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^9(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+9(1+x)^{12}-36(1+x)^{13}+84(1+x)^{14}-126(1+x)^{15}+126(1+\right.\\ &= -\frac{1}{12}(1+x)^{12}+\frac{9}{13}(1+x)^{13}-\frac{18}{7}(1+x)^{14}+\frac{28}{5}(1+x)^{15}-\frac{63}{8}(1+x)^{16}+\frac{126}{17}(1\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 0.89

$$\frac{x^{21}}{21}+\frac{11x^{20}}{20}+\frac{55x^{19}}{19}+\frac{55x^{18}}{6}+\frac{330x^{17}}{17}+\frac{231x^{16}}{8}+\frac{154x^{15}}{5}+\frac{165x^{14}}{7}+\frac{165x^{13}}{13}+\frac{55x^{12}}{12}+x^{11}+\frac{x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^9*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^10/10 + x^11 + (55*x^12)/12 + (165*x^13)/13 + (165*x^14)/7 + (154*x^15)/5
 + (231*x^16)/8 + (330*x^17)/17 + (55*x^18)/6 + (55*x^19)/19 + (11*x^20)/20
 + x^21/21
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^9(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^9*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^9*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.36, size = 59, normalized size = 0.65

$$\frac{1}{21}x^{21} + \frac{11}{20}x^{20} + \frac{55}{19}x^{19} + \frac{55}{6}x^{18} + \frac{330}{17}x^{17} + \frac{231}{8}x^{16} + \frac{154}{5}x^{15} + \frac{165}{7}x^{14} + \frac{165}{13}x^{13} + \frac{55}{12}x^{12} + x^{11} + \frac{1}{10}x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/21*x^21 + 11/20*x^20 + 55/19*x^19 + 55/6*x^18 + 330/17*x^17 + 231/8*x^16
+ 154/5*x^15 + 165/7*x^14 + 165/13*x^13 + 55/12*x^12 + x^11 + 1/10*x^10
```

giac [A] time = 0.16, size = 59, normalized size = 0.65

$$\frac{1}{21}\,x^{21} + \frac{11}{20}\,x^{20} + \frac{55}{19}\,x^{19} + \frac{55}{6}\,x^{18} + \frac{330}{17}\,x^{17} + \frac{231}{8}\,x^{16} + \frac{154}{5}\,x^{15} + \frac{165}{7}\,x^{14} + \frac{165}{13}\,x^{13} + \frac{55}{12}\,x^{12} + x^{11} + \frac{1}{10}\,x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/21*x^21 + 11/20*x^20 + 55/19*x^19 + 55/6*x^18 + 330/17*x^17 + 231/8*x^16
+ 154/5*x^15 + 165/7*x^14 + 165/13*x^13 + 55/12*x^12 + x^11 + 1/10*x^10
```

maple [A] time = 0.04, size = 60, normalized size = 0.66

$$\frac{1}{21}x^{21} + \frac{11}{20}x^{20} + \frac{55}{19}x^{19} + \frac{55}{6}x^{18} + \frac{330}{17}x^{17} + \frac{231}{8}x^{16} + \frac{154}{5}x^{15} + \frac{165}{7}x^{14} + \frac{165}{13}x^{13} + \frac{55}{12}x^{12} + x^{11} + \frac{1}{10}x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/21*x^21+11/20*x^20+55/19*x^19+55/6*x^18+330/17*x^17+231/8*x^16+154/5*x^15
+165/7*x^14+165/13*x^13+55/12*x^12+x^11+1/10*x^10
```

maxima [A] time = 0.59, size = 59, normalized size = 0.65

$$\frac{1}{21}\,x^{21} + \frac{11}{20}\,x^{20} + \frac{55}{19}\,x^{19} + \frac{55}{6}\,x^{18} + \frac{330}{17}\,x^{17} + \frac{231}{8}\,x^{16} + \frac{154}{5}\,x^{15} + \frac{165}{7}\,x^{14} + \frac{165}{13}\,x^{13} + \frac{55}{12}\,x^{12} + x^{11} + \frac{1}{10}\,x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/21*x^21 + 11/20*x^20 + 55/19*x^19 + 55/6*x^18 + 330/17*x^17 + 231/8*x^16
+ 154/5*x^15 + 165/7*x^14 + 165/13*x^13 + 55/12*x^12 + x^11 + 1/10*x^10
```

mupad [B] time = 0.06, size = 59, normalized size = 0.65

$$\frac{x^{21}}{21} + \frac{11\,x^{20}}{20} + \frac{55\,x^{19}}{19} + \frac{55\,x^{18}}{6} + \frac{330\,x^{17}}{17} + \frac{231\,x^{16}}{8} + \frac{154\,x^{15}}{5} + \frac{165\,x^{14}}{7} + \frac{165\,x^{13}}{13} + \frac{55\,x^{12}}{12} + x^{11} + \frac{x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^10/10 + x^11 + (55*x^12)/12 + (165*x^13)/13 + (165*x^14)/7 + (154*x^15)/5
 + (231*x^16)/8 + (330*x^17)/17 + (55*x^18)/6 + (55*x^19)/19 + (11*x^20)/20
 + x^21/21
```

sympy [A] time = 0.07, size = 73, normalized size = 0.80

$$\frac{x^{21}}{21}+\frac{11x^{20}}{20}+\frac{55x^{19}}{19}+\frac{55x^{18}}{6}+\frac{330x^{17}}{17}+\frac{231x^{16}}{8}+\frac{154x^{15}}{5}+\frac{165x^{14}}{7}+\frac{165x^{13}}{13}+\frac{55x^{12}}{12}+x^{11}+\frac{x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**9*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**21/21 + 11*x**20/20 + 55*x**19/19 + 55*x**18/6 + 330*x**17/17 + 231*x**1
6/8 + 154*x**15/5 + 165*x**14/7 + 165*x**13/13 + 55*x**12/12 + x**11 + x**1
0/10
```

3.518 $\int x^8(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=80

$$\frac{1}{20}(x+1)^{20}-\frac{8}{19}(x+1)^{19}+\frac{14}{9}(x+1)^{18}-\frac{56}{17}(x+1)^{17}+\frac{35}{8}(x+1)^{16}-\frac{56}{15}(x+1)^{15}+2(x+1)^{14}-\frac{8}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.02, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{1}{20}(x+1)^{20}-\frac{8}{19}(x+1)^{19}+\frac{14}{9}(x+1)^{18}-\frac{56}{17}(x+1)^{17}+\frac{35}{8}(x+1)^{16}-\frac{56}{15}(x+1)^{15}+2(x+1)^{14}-\frac{8}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^8*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (8*(1 + x)^13)/13 + 2*(1 + x)^14 - (56*(1 + x)^15)/15 + (35
*(1 + x)^16)/8 - (56*(1 + x)^17)/17 + (14*(1 + x)^18)/9 - (8*(1 + x)^19)/19
 + (1 + x)^20/20
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^8(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^8(1+x)^{11}\,dx\\ &= \int \left((1+x)^{11}-8(1+x)^{12}+28(1+x)^{13}-56(1+x)^{14}+70(1+x)^{15}-56(1+\right.\\ &= \frac{1}{12}(1+x)^{12}-\frac{8}{13}(1+x)^{13}+2(1+x)^{14}-\frac{56}{15}(1+x)^{15}+\frac{35}{8}(1+x)^{16}-\frac{56}{17}(1+\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.01

$$\frac{x^{20}}{20}+\frac{11x^{19}}{19}+\frac{55x^{18}}{18}+\frac{165x^{17}}{17}+\frac{165x^{16}}{8}+\frac{154x^{15}}{5}+33x^{14}+\frac{330x^{13}}{13}+\frac{55x^{12}}{4}+5x^{11}+\frac{11x^{10}}{10}+\frac{x^9}{9}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^8*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^9/9 + (11*x^10)/10 + 5*x^11 + (55*x^12)/4 + (330*x^13)/13 + 33*x^14 + (15
4*x^15)/5 + (165*x^16)/8 + (165*x^17)/17 + (55*x^18)/18 + (11*x^19)/19 + x^
20/20
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^8(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^8*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^8*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.35, size = 61, normalized size = 0.76

$$\frac{1}{20}x^{20}+\frac{11}{19}x^{19}+\frac{55}{18}x^{18}+\frac{165}{17}x^{17}+\frac{165}{8}x^{16}+\frac{154}{5}x^{15}+33x^{14}+\frac{330}{13}x^{13}+\frac{55}{4}x^{12}+5x^{11}+\frac{11}{10}x^{10}+\frac{1}{9}x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^8*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/20*x^20 + 11/19*x^19 + 55/18*x^18 + 165/17*x^17 + 165/8*x^16 + 154/5*x^15
 + 33*x^14 + 330/13*x^13 + 55/4*x^12 + 5*x^11 + 11/10*x^10 + 1/9*x^9
```

giac [A] time = 0.15, size = 61, normalized size = 0.76

$$\frac{1}{20}x^{20}+\frac{11}{19}x^{19}+\frac{55}{18}x^{18}+\frac{165}{17}x^{17}+\frac{165}{8}x^{16}+\frac{154}{5}x^{15}+33x^{14}+\frac{330}{13}x^{13}+\frac{55}{4}x^{12}+5x^{11}+\frac{11}{10}x^{10}+\frac{1}{9}x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^8*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/20*x^20 + 11/19*x^19 + 55/18*x^18 + 165/17*x^17 + 165/8*x^16 + 154/5*x^15
 + 33*x^14 + 330/13*x^13 + 55/4*x^12 + 5*x^11 + 11/10*x^10 + 1/9*x^9
```

maple [A] time = 0.08, size = 62, normalized size = 0.78

$$\frac{1}{20}x^{20}+\frac{11}{19}x^{19}+\frac{55}{18}x^{18}+\frac{165}{17}x^{17}+\frac{165}{8}x^{16}+\frac{154}{5}x^{15}+33x^{14}+\frac{330}{13}x^{13}+\frac{55}{4}x^{12}+5x^{11}+\frac{11}{10}x^{10}+\frac{1}{9}x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^8*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/20*x^20+11/19*x^19+55/18*x^18+165/17*x^17+165/8*x^16+154/5*x^15+33*x^14+3
30/13*x^13+55/4*x^12+5*x^11+11/10*x^10+1/9*x^9
```

maxima [A] time = 0.63, size = 61, normalized size = 0.76

$$\frac{1}{20}x^{20}+\frac{11}{19}x^{19}+\frac{55}{18}x^{18}+\frac{165}{17}x^{17}+\frac{165}{8}x^{16}+\frac{154}{5}x^{15}+33x^{14}+\frac{330}{13}x^{13}+\frac{55}{4}x^{12}+5x^{11}+\frac{11}{10}x^{10}+\frac{1}{9}x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^8*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/20*x^20 + 11/19*x^19 + 55/18*x^18 + 165/17*x^17 + 165/8*x^16 + 154/5*x^15
 + 33*x^14 + 330/13*x^13 + 55/4*x^12 + 5*x^11 + 11/10*x^10 + 1/9*x^9
```

mupad [B] time = 0.06, size = 61, normalized size = 0.76

$$\frac{x^{20}}{20}+\frac{11\,x^{19}}{19}+\frac{55\,x^{18}}{18}+\frac{165\,x^{17}}{17}+\frac{165\,x^{16}}{8}+\frac{154\,x^{15}}{5}+33\,x^{14}+\frac{330\,x^{13}}{13}+\frac{55\,x^{12}}{4}+5\,x^{11}+\frac{11\,x^{10}}{10}+\frac{x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^8*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^9/9 + (11*x^10)/10 + 5*x^11 + (55*x^12)/4 + (330*x^13)/13 + 33*x^14 + (15
4*x^15)/5 + (165*x^16)/8 + (165*x^17)/17 + (55*x^18)/18 + (11*x^19)/19 + x^
20/20
```

sympy [A] time = 0.07, size = 73, normalized size = 0.91

$$\frac{x^{20}}{20} + \frac{11x^{19}}{19} + \frac{55x^{18}}{18} + \frac{165x^{17}}{17} + \frac{165x^{16}}{8} + \frac{154x^{15}}{5} + 33x^{14} + \frac{330x^{13}}{13} + \frac{55x^{12}}{4} + 5x^{11} + \frac{11x^{10}}{10} + \frac{x^{9}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**8*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**20/20 + 11*x**19/19 + 55*x**18/18 + 165*x**17/17 + 165*x**16/8 + 154*x**
15/5 + 33*x**14 + 330*x**13/13 + 55*x**12/4 + 5*x**11 + 11*x**10/10 + x**9/
9
```

3.519 $\int x^7(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=73

$$\frac{1}{19}(x+1)^{19}-\frac{7}{18}(x+1)^{18}+\frac{21}{17}(x+1)^{17}-\frac{35}{16}(x+1)^{16}+\frac{7}{3}(x+1)^{15}-\frac{3}{2}(x+1)^{14}+\frac{7}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{19}(x+1)^{19}-\frac{7}{18}(x+1)^{18}+\frac{21}{17}(x+1)^{17}-\frac{35}{16}(x+1)^{16}+\frac{7}{3}(x+1)^{15}-\frac{3}{2}(x+1)^{14}+\frac{7}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (7*(1 + x)^13)/13 - (3*(1 + x)^14)/2 + (7*(1 + x)^15)/3 -
(35*(1 + x)^16)/16 + (21*(1 + x)^17)/17 - (7*(1 + x)^18)/18 + (1 + x)^19/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^7(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^7(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+7(1+x)^{12}-21(1+x)^{13}+35(1+x)^{14}-35(1+x)^{15}+21(1+x\right.\\ &= -\frac{1}{12}(1+x)^{12}+\frac{7}{13}(1+x)^{13}-\frac{3}{2}(1+x)^{14}+\frac{7}{3}(1+x)^{15}-\frac{35}{16}(1+x)^{16}+\frac{21}{17}(1+x\end{aligned}$$

Mathematica [A] time = 0.00, size = 79, normalized size = 1.08

$$\frac{x^{19}}{19}+\frac{11x^{18}}{18}+\frac{55x^{17}}{17}+\frac{165x^{16}}{16}+22x^{15}+33x^{14}+\frac{462x^{13}}{13}+\frac{55x^{12}}{2}+15x^{11}+\frac{11x^{10}}{2}+\frac{11x^9}{9}+\frac{x^8}{8}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^8/8 + (11*x^9)/9 + (11*x^10)/2 + 15*x^11 + (55*x^12)/2 + (462*x^13)/13 +
33*x^14 + 22*x^15 + (165*x^16)/16 + (55*x^17)/17 + (11*x^18)/18 + x^19/19
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^7(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^7*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^7*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.35, size = 61, normalized size = 0.84

$$\frac{1}{19}x^{19} + \frac{11}{18}x^{18} + \frac{55}{17}x^{17} + \frac{165}{16}x^{16} + 22x^{15} + 33x^{14} + \frac{462}{13}x^{13} + \frac{55}{2}x^{12} + 15x^{11} + \frac{11}{2}x^{10} + \frac{11}{9}x^{9} + \frac{1}{8}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/19*x^19 + 11/18*x^18 + 55/17*x^17 + 165/16*x^16 + 22*x^15 + 33*x^14 + 462
/13*x^13 + 55/2*x^12 + 15*x^11 + 11/2*x^10 + 11/9*x^9 + 1/8*x^8
```

giac [A] time = 0.15, size = 61, normalized size = 0.84

$$\frac{1}{19}x^{19} + \frac{11}{18}x^{18} + \frac{55}{17}x^{17} + \frac{165}{16}x^{16} + 22x^{15} + 33x^{14} + \frac{462}{13}x^{13} + \frac{55}{2}x^{12} + 15x^{11} + \frac{11}{2}x^{10} + \frac{11}{9}x^{9} + \frac{1}{8}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/19*x^19 + 11/18*x^18 + 55/17*x^17 + 165/16*x^16 + 22*x^15 + 33*x^14 + 462
/13*x^13 + 55/2*x^12 + 15*x^11 + 11/2*x^10 + 11/9*x^9 + 1/8*x^8
```

maple [A] time = 0.04, size = 62, normalized size = 0.85

$$\frac{1}{19}x^{19} + \frac{11}{18}x^{18} + \frac{55}{17}x^{17} + \frac{165}{16}x^{16} + 22x^{15} + 33x^{14} + \frac{462}{13}x^{13} + \frac{55}{2}x^{12} + 15x^{11} + \frac{11}{2}x^{10} + \frac{11}{9}x^{9} + \frac{1}{8}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/19*x^19+11/18*x^18+55/17*x^17+165/16*x^16+22*x^15+33*x^14+462/13*x^13+55/
2*x^12+15*x^11+11/2*x^10+11/9*x^9+1/8*x^8
```

maxima [A] time = 0.55, size = 61, normalized size = 0.84

$$\frac{1}{19}x^{19} + \frac{11}{18}x^{18} + \frac{55}{17}x^{17} + \frac{165}{16}x^{16} + 22x^{15} + 33x^{14} + \frac{462}{13}x^{13} + \frac{55}{2}x^{12} + 15x^{11} + \frac{11}{2}x^{10} + \frac{11}{9}x^{9} + \frac{1}{8}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/19*x^19 + 11/18*x^18 + 55/17*x^17 + 165/16*x^16 + 22*x^15 + 33*x^14 + 462
/13*x^13 + 55/2*x^12 + 15*x^11 + 11/2*x^10 + 11/9*x^9 + 1/8*x^8
```

mupad [B] time = 0.06, size = 61, normalized size = 0.84

$$\frac{x^{19}}{19} + \frac{11\,x^{18}}{18} + \frac{55\,x^{17}}{17} + \frac{165\,x^{16}}{16} + 22\,x^{15} + 33\,x^{14} + \frac{462\,x^{13}}{13} + \frac{55\,x^{12}}{2} + 15\,x^{11} + \frac{11\,x^{10}}{2} + \frac{11\,x^{9}}{9} + \frac{x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^8/8 + (11*x^9)/9 + (11*x^10)/2 + 15*x^11 + (55*x^12)/2 + (462*x^13)/13 +
33*x^14 + 22*x^15 + (165*x^16)/16 + (55*x^17)/17 + (11*x^18)/18 + x^19/19
```

sympy [A] time = 0.07, size = 71, normalized size = 0.97

$$\frac{x^{19}}{19} + \frac{11x^{18}}{18} + \frac{55x^{17}}{17} + \frac{165x^{16}}{16} + 22x^{15} + 33x^{14} + \frac{462x^{13}}{13} + \frac{55x^{12}}{2} + 15x^{11} + \frac{11x^{10}}{2} + \frac{11x^{9}}{9} + \frac{x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**19/19 + 11*x**18/18 + 55*x**17/17 + 165*x**16/16 + 22*x**15 + 33*x**14 +
 462*x**13/13 + 55*x**12/2 + 15*x**11 + 11*x**10/2 + 11*x**9/9 + x**8/8
```

3.520 $\int x^6(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=64

$$\frac{1}{18}(x+1)^{18}-\frac{6}{17}(x+1)^{17}+\frac{15}{16}(x+1)^{16}-\frac{4}{3}(x+1)^{15}+\frac{15}{14}(x+1)^{14}-\frac{6}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.02, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{18}(x+1)^{18}-\frac{6}{17}(x+1)^{17}+\frac{15}{16}(x+1)^{16}-\frac{4}{3}(x+1)^{15}+\frac{15}{14}(x+1)^{14}-\frac{6}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (6*(1 + x)^13)/13 + (15*(1 + x)^14)/14 - (4*(1 + x)^15)/3 +
 (15*(1 + x)^16)/16 - (6*(1 + x)^17)/17 + (1 + x)^18/18
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int x^6(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^6(1+x)^{11}\,dx\\
&= \int \left((1+x)^{11}-6(1+x)^{12}+15(1+x)^{13}-20(1+x)^{14}+15(1+x)^{15}-6(1+x\right.\\
&= \frac{1}{12}(1+x)^{12}-\frac{6}{13}(1+x)^{13}+\frac{15}{14}(1+x)^{14}-\frac{4}{3}(1+x)^{15}+\frac{15}{16}(1+x)^{16}-\frac{6}{17}(1+
\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.27

$$\frac{x^{18}}{18}+\frac{11x^{17}}{17}+\frac{55x^{16}}{16}+11x^{15}+\frac{165x^{14}}{7}+\frac{462x^{13}}{13}+\frac{77x^{12}}{2}+30x^{11}+\frac{33x^{10}}{2}+\frac{55x^9}{9}+\frac{11x^8}{8}+\frac{x^7}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^7/7 + (11*x^8)/8 + (55*x^9)/9 + (33*x^10)/2 + 30*x^11 + (77*x^12)/2 + (46
2*x^13)/13 + (165*x^14)/7 + 11*x^15 + (55*x^16)/16 + (11*x^17)/17 + x^18/18
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^6(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^6*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^6*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.35, size = 61, normalized size = 0.95

$$\frac{1}{18}x^{18} + \frac{11}{17}x^{17} + \frac{55}{16}x^{16} + 11x^{15} + \frac{165}{7}x^{14} + \frac{462}{13}x^{13} + \frac{77}{2}x^{12} + 30x^{11} + \frac{33}{2}x^{10} + \frac{55}{9}x^{9} + \frac{11}{8}x^{8} + \frac{1}{7}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/18*x^18 + 11/17*x^17 + 55/16*x^16 + 11*x^15 + 165/7*x^14 + 462/13*x^13 +
77/2*x^12 + 30*x^11 + 33/2*x^10 + 55/9*x^9 + 11/8*x^8 + 1/7*x^7
```

giac [A] time = 0.15, size = 61, normalized size = 0.95

$$\frac{1}{18}\,x^{18} + \frac{11}{17}\,x^{17} + \frac{55}{16}\,x^{16} + 11\,x^{15} + \frac{165}{7}\,x^{14} + \frac{462}{13}\,x^{13} + \frac{77}{2}\,x^{12} + 30\,x^{11} + \frac{33}{2}\,x^{10} + \frac{55}{9}\,x^{9} + \frac{11}{8}\,x^{8} + \frac{1}{7}\,x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/18*x^18 + 11/17*x^17 + 55/16*x^16 + 11*x^15 + 165/7*x^14 + 462/13*x^13 +
77/2*x^12 + 30*x^11 + 33/2*x^10 + 55/9*x^9 + 11/8*x^8 + 1/7*x^7
```

maple [A] time = 0.04, size = 62, normalized size = 0.97

$$\frac{1}{18}x^{18} + \frac{11}{17}x^{17} + \frac{55}{16}x^{16} + 11x^{15} + \frac{165}{7}x^{14} + \frac{462}{13}x^{13} + \frac{77}{2}x^{12} + 30x^{11} + \frac{33}{2}x^{10} + \frac{55}{9}x^{9} + \frac{11}{8}x^{8} + \frac{1}{7}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/18*x^18+11/17*x^17+55/16*x^16+11*x^15+165/7*x^14+462/13*x^13+77/2*x^12+30
*x^11+33/2*x^10+55/9*x^9+11/8*x^8+1/7*x^7
```

maxima [A] time = 0.66, size = 61, normalized size = 0.95

$$\frac{1}{18}\,x^{18} + \frac{11}{17}\,x^{17} + \frac{55}{16}\,x^{16} + 11\,x^{15} + \frac{165}{7}\,x^{14} + \frac{462}{13}\,x^{13} + \frac{77}{2}\,x^{12} + 30\,x^{11} + \frac{33}{2}\,x^{10} + \frac{55}{9}\,x^{9} + \frac{11}{8}\,x^{8} + \frac{1}{7}\,x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/18*x^18 + 11/17*x^17 + 55/16*x^16 + 11*x^15 + 165/7*x^14 + 462/13*x^13 +
77/2*x^12 + 30*x^11 + 33/2*x^10 + 55/9*x^9 + 11/8*x^8 + 1/7*x^7
```

mupad [B] time = 0.06, size = 61, normalized size = 0.95

$$\frac{x^{18}}{18} + \frac{11\,x^{17}}{17} + \frac{55\,x^{16}}{16} + 11\,x^{15} + \frac{165\,x^{14}}{7} + \frac{462\,x^{13}}{13} + \frac{77\,x^{12}}{2} + 30\,x^{11} + \frac{33\,x^{10}}{2} + \frac{55\,x^{9}}{9} + \frac{11\,x^{8}}{8} + \frac{x^{7}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^7/7 + (11*x^8)/8 + (55*x^9)/9 + (33*x^10)/2 + 30*x^11 + (77*x^12)/2 + (46
2*x^13)/13 + (165*x^14)/7 + 11*x^15 + (55*x^16)/16 + (11*x^17)/17 + x^18/18
```

sympy [A] time = 0.07, size = 73, normalized size = 1.14

$$\frac{x^{18}}{18}+\frac{11x^{17}}{17}+\frac{55x^{16}}{16}+11x^{15}+\frac{165x^{14}}{7}+\frac{462x^{13}}{13}+\frac{77x^{12}}{2}+30x^{11}+\frac{33x^{10}}{2}+\frac{55x^{9}}{9}+\frac{11x^{8}}{8}+\frac{x^{7}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**18/18 + 11*x**17/17 + 55*x**16/16 + 11*x**15 + 165*x**14/7 + 462*x**13/1
3 + 77*x**12/2 + 30*x**11 + 33*x**10/2 + 55*x**9/9 + 11*x**8/8 + x**7/7
```

3.521 $\int x^5(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=55

$$\frac{1}{17}(x+1)^{17}-\frac{5}{16}(x+1)^{16}+\frac{2}{3}(x+1)^{15}-\frac{5}{7}(x+1)^{14}+\frac{5}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{17}(x+1)^{17}-\frac{5}{16}(x+1)^{16}+\frac{2}{3}(x+1)^{15}-\frac{5}{7}(x+1)^{14}+\frac{5}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (5*(1 + x)^13)/13 - (5*(1 + x)^14)/7 + (2*(1 + x)^15)/3 -
(5*(1 + x)^16)/16 + (1 + x)^17/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^5(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^5(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+5(1+x)^{12}-10(1+x)^{13}+10(1+x)^{14}-5(1+x)^{15}+(1+x)^{16}\right)\\ &= -\frac{1}{12}(1+x)^{12}+\frac{5}{13}(1+x)^{13}-\frac{5}{7}(1+x)^{14}+\frac{2}{3}(1+x)^{15}-\frac{5}{16}(1+x)^{16}+\frac{1}{17}(1+x\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.47

$$\frac{x^{17}}{17}+\frac{11x^{16}}{16}+\frac{11x^{15}}{3}+\frac{165x^{14}}{14}+\frac{330x^{13}}{13}+\frac{77x^{12}}{2}+42x^{11}+33x^{10}+\frac{55x^9}{3}+\frac{55x^8}{8}+\frac{11x^7}{7}+\frac{x^6}{6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^6/6 + (11*x^7)/7 + (55*x^8)/8 + (55*x^9)/3 + 33*x^10 + 42*x^11 + (77*x^12
)/2 + (330*x^13)/13 + (165*x^14)/14 + (11*x^15)/3 + (11*x^16)/16 + x^17/17
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^5(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^5*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^5*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.36, size = 61, normalized size = 1.11

$$\frac{1}{17}x^{17} + \frac{11}{16}x^{16} + \frac{11}{3}x^{15} + \frac{165}{14}x^{14} + \frac{330}{13}x^{13} + \frac{77}{2}x^{12} + 42x^{11} + 33x^{10} + \frac{55}{3}x^9 + \frac{55}{8}x^8 + \frac{11}{7}x^7 + \frac{1}{6}x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/17*x^17 + 11/16*x^16 + 11/3*x^15 + 165/14*x^14 + 330/13*x^13 + 77/2*x^12
+ 42*x^11 + 33*x^10 + 55/3*x^9 + 55/8*x^8 + 11/7*x^7 + 1/6*x^6
```

giac [A] time = 0.15, size = 61, normalized size = 1.11

$$\frac{1}{17}x^{17} + \frac{11}{16}x^{16} + \frac{11}{3}x^{15} + \frac{165}{14}x^{14} + \frac{330}{13}x^{13} + \frac{77}{2}x^{12} + 42\,x^{11} + 33\,x^{10} + \frac{55}{3}x^9 + \frac{55}{8}x^8 + \frac{11}{7}x^7 + \frac{1}{6}x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/17*x^17 + 11/16*x^16 + 11/3*x^15 + 165/14*x^14 + 330/13*x^13 + 77/2*x^12
+ 42*x^11 + 33*x^10 + 55/3*x^9 + 55/8*x^8 + 11/7*x^7 + 1/6*x^6
```

maple [A] time = 0.04, size = 62, normalized size = 1.13

$$\frac{1}{17}x^{17} + \frac{11}{16}x^{16} + \frac{11}{3}x^{15} + \frac{165}{14}x^{14} + \frac{330}{13}x^{13} + \frac{77}{2}x^{12} + 42x^{11} + 33x^{10} + \frac{55}{3}x^9 + \frac{55}{8}x^8 + \frac{11}{7}x^7 + \frac{1}{6}x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/17*x^17+11/16*x^16+11/3*x^15+165/14*x^14+330/13*x^13+77/2*x^12+42*x^11+33
*x^10+55/3*x^9+55/8*x^8+11/7*x^7+1/6*x^6
```

maxima [A] time = 0.66, size = 61, normalized size = 1.11

$$\frac{1}{17}x^{17} + \frac{11}{16}x^{16} + \frac{11}{3}x^{15} + \frac{165}{14}x^{14} + \frac{330}{13}x^{13} + \frac{77}{2}x^{12} + 42\,x^{11} + 33\,x^{10} + \frac{55}{3}x^9 + \frac{55}{8}x^8 + \frac{11}{7}x^7 + \frac{1}{6}x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/17*x^17 + 11/16*x^16 + 11/3*x^15 + 165/14*x^14 + 330/13*x^13 + 77/2*x^12
+ 42*x^11 + 33*x^10 + 55/3*x^9 + 55/8*x^8 + 11/7*x^7 + 1/6*x^6
```

mupad [B] time = 0.06, size = 61, normalized size = 1.11

$$\frac{x^{17}}{17} + \frac{11\,x^{16}}{16} + \frac{11\,x^{15}}{3} + \frac{165\,x^{14}}{14} + \frac{330\,x^{13}}{13} + \frac{77\,x^{12}}{2} + 42\,x^{11} + 33\,x^{10} + \frac{55\,x^9}{3} + \frac{55\,x^8}{8} + \frac{11\,x^7}{7} + \frac{x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^6/6 + (11*x^7)/7 + (55*x^8)/8 + (55*x^9)/3 + 33*x^10 + 42*x^11 + (77*x^12
)/2 + (330*x^13)/13 + (165*x^14)/14 + (11*x^15)/3 + (11*x^16)/16 + x^17/17
```

sympy [A] time = 0.07, size = 73, normalized size = 1.33

$$\frac{x^{17}}{17}+\frac{11x^{16}}{16}+\frac{11x^{15}}{3}+\frac{165x^{14}}{14}+\frac{330x^{13}}{13}+\frac{77x^{12}}{2}+42x^{11}+33x^{10}+\frac{55x^{9}}{3}+\frac{55x^{8}}{8}+\frac{11x^{7}}{7}+\frac{x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**17/17 + 11*x**16/16 + 11*x**15/3 + 165*x**14/14 + 330*x**13/13 + 77*x**1
2/2 + 42*x**11 + 33*x**10 + 55*x**9/3 + 55*x**8/8 + 11*x**7/7 + x**6/6
```

3.522 $\int x^4(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=46

$$\frac{1}{16}(x+1)^{16}-\frac{4}{15}(x+1)^{15}+\frac{3}{7}(x+1)^{14}-\frac{4}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.02, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{16}(x+1)^{16}-\frac{4}{15}(x+1)^{15}+\frac{3}{7}(x+1)^{14}-\frac{4}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (4*(1 + x)^13)/13 + (3*(1 + x)^14)/7 - (4*(1 + x)^15)/15 +
(1 + x)^16/16
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^4(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^4(1+x)^{11}\,dx\\ &= \int \left((1+x)^{11}-4(1+x)^{12}+6(1+x)^{13}-4(1+x)^{14}+(1+x)^{15}\right)dx\\ &= \frac{1}{12}(1+x)^{12}-\frac{4}{13}(1+x)^{13}+\frac{3}{7}(1+x)^{14}-\frac{4}{15}(1+x)^{15}+\frac{1}{16}(1+x)^{16}\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.80

$$\frac{x^{16}}{16}+\frac{11x^{15}}{15}+\frac{55x^{14}}{14}+\frac{165x^{13}}{13}+\frac{55x^{12}}{2}+42x^{11}+\frac{231x^{10}}{5}+\frac{110x^9}{3}+\frac{165x^8}{8}+\frac{55x^7}{7}+\frac{11x^6}{6}+\frac{x^5}{5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^5/5 + (11*x^6)/6 + (55*x^7)/7 + (165*x^8)/8 + (110*x^9)/3 + (231*x^10)/5
+ 42*x^11 + (55*x^12)/2 + (165*x^13)/13 + (55*x^14)/14 + (11*x^15)/15 + x^1
6/16
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^4*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [A] time = 0.35, size = 61, normalized size = 1.33

$$\frac{1}{16}x^{16} + \frac{11}{15}x^{15} + \frac{55}{14}x^{14} + \frac{165}{13}x^{13} + \frac{55}{2}x^{12} + 42x^{11} + \frac{231}{5}x^{10} + \frac{110}{3}x^{9} + \frac{165}{8}x^{8} + \frac{55}{7}x^{7} + \frac{11}{6}x^{6} + \frac{1}{5}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/16*x^16 + 11/15*x^15 + 55/14*x^14 + 165/13*x^13 + 55/2*x^12 + 42*x^11 + 2
31/5*x^10 + 110/3*x^9 + 165/8*x^8 + 55/7*x^7 + 11/6*x^6 + 1/5*x^5
```

giac [A] time = 0.15, size = 61, normalized size = 1.33

$$\frac{1}{16}x^{16} + \frac{11}{15}x^{15} + \frac{55}{14}x^{14} + \frac{165}{13}x^{13} + \frac{55}{2}x^{12} + 42\,x^{11} + \frac{231}{5}x^{10} + \frac{110}{3}x^{9} + \frac{165}{8}x^{8} + \frac{55}{7}x^{7} + \frac{11}{6}x^{6} + \frac{1}{5}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/16*x^16 + 11/15*x^15 + 55/14*x^14 + 165/13*x^13 + 55/2*x^12 + 42*x^11 + 2
31/5*x^10 + 110/3*x^9 + 165/8*x^8 + 55/7*x^7 + 11/6*x^6 + 1/5*x^5
```

maple [A] time = 0.04, size = 62, normalized size = 1.35

$$\frac{1}{16}x^{16} + \frac{11}{15}x^{15} + \frac{55}{14}x^{14} + \frac{165}{13}x^{13} + \frac{55}{2}x^{12} + 42x^{11} + \frac{231}{5}x^{10} + \frac{110}{3}x^{9} + \frac{165}{8}x^{8} + \frac{55}{7}x^{7} + \frac{11}{6}x^{6} + \frac{1}{5}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/16*x^16+11/15*x^15+55/14*x^14+165/13*x^13+55/2*x^12+42*x^11+231/5*x^10+11
0/3*x^9+165/8*x^8+55/7*x^7+11/6*x^6+1/5*x^5
```

maxima [A] time = 0.69, size = 61, normalized size = 1.33

$$\frac{1}{16}x^{16} + \frac{11}{15}x^{15} + \frac{55}{14}x^{14} + \frac{165}{13}x^{13} + \frac{55}{2}x^{12} + 42\,x^{11} + \frac{231}{5}x^{10} + \frac{110}{3}x^{9} + \frac{165}{8}x^{8} + \frac{55}{7}x^{7} + \frac{11}{6}x^{6} + \frac{1}{5}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/16*x^16 + 11/15*x^15 + 55/14*x^14 + 165/13*x^13 + 55/2*x^12 + 42*x^11 + 2
31/5*x^10 + 110/3*x^9 + 165/8*x^8 + 55/7*x^7 + 11/6*x^6 + 1/5*x^5
```

mupad [B] time = 0.06, size = 61, normalized size = 1.33

$$\frac{x^{16}}{16} + \frac{11\,x^{15}}{15} + \frac{55\,x^{14}}{14} + \frac{165\,x^{13}}{13} + \frac{55\,x^{12}}{2} + 42\,x^{11} + \frac{231\,x^{10}}{5} + \frac{110\,x^{9}}{3} + \frac{165\,x^{8}}{8} + \frac{55\,x^{7}}{7} + \frac{11\,x^{6}}{6} + \frac{x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^5/5 + (11*x^6)/6 + (55*x^7)/7 + (165*x^8)/8 + (110*x^9)/3 + (231*x^10)/5
+ 42*x^11 + (55*x^12)/2 + (165*x^13)/13 + (55*x^14)/14 + (11*x^15)/15 + x^1
6/16
```

sympy [B] time = 0.07, size = 75, normalized size = 1.63

$$\frac{x^{16}}{16}+\frac{11x^{15}}{15}+\frac{55x^{14}}{14}+\frac{165x^{13}}{13}+\frac{55x^{12}}{2}+42x^{11}+\frac{231x^{10}}{5}+\frac{110x^{9}}{3}+\frac{165x^{8}}{8}+\frac{55x^{7}}{7}+\frac{11x^{6}}{6}+\frac{x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**16/16 + 11*x**15/15 + 55*x**14/14 + 165*x**13/13 + 55*x**12/2 + 42*x**11
 + 231*x**10/5 + 110*x**9/3 + 165*x**8/8 + 55*x**7/7 + 11*x**6/6 + x**5/5
```

3.523 $\int x^3(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=37

$$\frac{1}{15}(x+1)^{15}-\frac{3}{14}(x+1)^{14}+\frac{3}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{15}(x+1)^{15}-\frac{3}{14}(x+1)^{14}+\frac{3}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (3*(1 + x)^13)/13 - (3*(1 + x)^14)/14 + (1 + x)^15/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^3(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^3(1+x)^{11}\,dx\\ &= \int\left(-(1+x)^{11}+3(1+x)^{12}-3(1+x)^{13}+(1+x)^{14}\right)dx\\ &= -\frac{1}{12}(1+x)^{12}+\frac{3}{13}(1+x)^{13}-\frac{3}{14}(1+x)^{14}+\frac{1}{15}(1+x)^{15}\end{aligned}$$

Mathematica [B] time = 0.00, size = 83, normalized size = 2.24

$$\frac{x^{15}}{15}+\frac{11x^{14}}{14}+\frac{55x^{13}}{13}+\frac{55x^{12}}{4}+30x^{11}+\frac{231x^{10}}{5}+\frac{154x^9}{3}+\frac{165x^8}{4}+\frac{165x^7}{7}+\frac{55x^6}{6}+\frac{11x^5}{5}+\frac{x^4}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^4/4 + (11*x^5)/5 + (55*x^6)/6 + (165*x^7)/7 + (165*x^8)/4 + (154*x^9)/3 +
 (231*x^10)/5 + 30*x^11 + (55*x^12)/4 + (55*x^13)/13 + (11*x^14)/14 + x^15/
15
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^3*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.35, size = 61, normalized size = 1.65

$$\frac{1}{15}x^{15} + \frac{11}{14}x^{14} + \frac{55}{13}x^{13} + \frac{55}{4}x^{12} + 30x^{11} + \frac{231}{5}x^{10} + \frac{154}{3}x^9 + \frac{165}{4}x^8 + \frac{165}{7}x^7 + \frac{55}{6}x^6 + \frac{11}{5}x^5 + \frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/15*x^15 + 11/14*x^14 + 55/13*x^13 + 55/4*x^12 + 30*x^11 + 231/5*x^10 + 15
4/3*x^9 + 165/4*x^8 + 165/7*x^7 + 55/6*x^6 + 11/5*x^5 + 1/4*x^4
```

giac [B] time = 0.15, size = 61, normalized size = 1.65

$$\frac{1}{15}x^{15} + \frac{11}{14}x^{14} + \frac{55}{13}x^{13} + \frac{55}{4}x^{12} + 30x^{11} + \frac{231}{5}x^{10} + \frac{154}{3}x^9 + \frac{165}{4}x^8 + \frac{165}{7}x^7 + \frac{55}{6}x^6 + \frac{11}{5}x^5 + \frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/15*x^15 + 11/14*x^14 + 55/13*x^13 + 55/4*x^12 + 30*x^11 + 231/5*x^10 + 15
4/3*x^9 + 165/4*x^8 + 165/7*x^7 + 55/6*x^6 + 11/5*x^5 + 1/4*x^4
```

maple [B] time = 0.05, size = 62, normalized size = 1.68

$$\frac{1}{15}x^{15} + \frac{11}{14}x^{14} + \frac{55}{13}x^{13} + \frac{55}{4}x^{12} + 30x^{11} + \frac{231}{5}x^{10} + \frac{154}{3}x^9 + \frac{165}{4}x^8 + \frac{165}{7}x^7 + \frac{55}{6}x^6 + \frac{11}{5}x^5 + \frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/15*x^15+11/14*x^14+55/13*x^13+55/4*x^12+30*x^11+231/5*x^10+154/3*x^9+165/
4*x^8+165/7*x^7+55/6*x^6+11/5*x^5+1/4*x^4
```

maxima [B] time = 0.60, size = 61, normalized size = 1.65

$$\frac{1}{15}x^{15} + \frac{11}{14}x^{14} + \frac{55}{13}x^{13} + \frac{55}{4}x^{12} + 30x^{11} + \frac{231}{5}x^{10} + \frac{154}{3}x^9 + \frac{165}{4}x^8 + \frac{165}{7}x^7 + \frac{55}{6}x^6 + \frac{11}{5}x^5 + \frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/15*x^15 + 11/14*x^14 + 55/13*x^13 + 55/4*x^12 + 30*x^11 + 231/5*x^10 + 15
4/3*x^9 + 165/4*x^8 + 165/7*x^7 + 55/6*x^6 + 11/5*x^5 + 1/4*x^4
```

mupad [B] time = 0.06, size = 61, normalized size = 1.65

$$\frac{x^{15}}{15} + \frac{11\,x^{14}}{14} + \frac{55\,x^{13}}{13} + \frac{55\,x^{12}}{4} + 30\,x^{11} + \frac{231\,x^{10}}{5} + \frac{154\,x^9}{3} + \frac{165\,x^8}{4} + \frac{165\,x^7}{7} + \frac{55\,x^6}{6} + \frac{11\,x^5}{5} + \frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^4/4 + (11*x^5)/5 + (55*x^6)/6 + (165*x^7)/7 + (165*x^8)/4 + (154*x^9)/3 +
 (231*x^10)/5 + 30*x^11 + (55*x^12)/4 + (55*x^13)/13 + (11*x^14)/14 + x^15/
15
```

sympy [B] time = 0.07, size = 75, normalized size = 2.03

$$\frac{x^{15}}{15}+\frac{11x^{14}}{14}+\frac{55x^{13}}{13}+\frac{55x^{12}}{4}+30x^{11}+\frac{231x^{10}}{5}+\frac{154x^{9}}{3}+\frac{165x^{8}}{4}+\frac{165x^{7}}{7}+\frac{55x^{6}}{6}+\frac{11x^{5}}{5}+\frac{x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**15/15 + 11*x**14/14 + 55*x**13/13 + 55*x**12/4 + 30*x**11 + 231*x**10/5
+ 154*x**9/3 + 165*x**8/4 + 165*x**7/7 + 55*x**6/6 + 11*x**5/5 + x**4/4
```

3.524 $\int x^2(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=28

$$\frac{1}{14}(x+1)^{14}-\frac{2}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{14}(x+1)^{14}-\frac{2}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (2*(1 + x)^13)/13 + (1 + x)^14/14
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^2(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^2(1+x)^{11}\,dx\\ &= \int\left((1+x)^{11}-2(1+x)^{12}+(1+x)^{13}\right)dx\\ &= \frac{1}{12}(1+x)^{12}-\frac{2}{13}(1+x)^{13}+\frac{1}{14}(1+x)^{14}\end{aligned}$$

Mathematica [B] time = 0.00, size = 79, normalized size = 2.82

$$\frac{x^{14}}{14}+\frac{11x^{13}}{13}+\frac{55x^{12}}{12}+15x^{11}+33x^{10}+\frac{154x^9}{3}+\frac{231x^8}{4}+\frac{330x^7}{7}+\frac{55x^6}{2}+11x^5+\frac{11x^4}{4}+\frac{x^3}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^3/3 + (11*x^4)/4 + 11*x^5 + (55*x^6)/2 + (330*x^7)/7 + (231*x^8)/4 + (154
*x^9)/3 + 33*x^10 + 15*x^11 + (55*x^12)/12 + (11*x^13)/13 + x^14/14
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[x^2*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.34, size = 61, normalized size = 2.18

$$\frac{1}{14}x^{14} + \frac{11}{13}x^{13} + \frac{55}{12}x^{12} + 15x^{11} + 33x^{10} + \frac{154}{3}x^{9} + \frac{231}{4}x^{8} + \frac{330}{7}x^{7} + \frac{55}{2}x^{6} + 11x^{5} + \frac{11}{4}x^{4} + \frac{1}{3}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/14*x^14 + 11/13*x^13 + 55/12*x^12 + 15*x^11 + 33*x^10 + 154/3*x^9 + 231/4
*x^8 + 330/7*x^7 + 55/2*x^6 + 11*x^5 + 11/4*x^4 + 1/3*x^3
```

giac [B] time = 0.15, size = 61, normalized size = 2.18

$$\frac{1}{14}\,x^{14} + \frac{11}{13}\,x^{13} + \frac{55}{12}\,x^{12} + 15\,x^{11} + 33\,x^{10} + \frac{154}{3}\,x^{9} + \frac{231}{4}\,x^{8} + \frac{330}{7}\,x^{7} + \frac{55}{2}\,x^{6} + 11\,x^{5} + \frac{11}{4}\,x^{4} + \frac{1}{3}\,x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/14*x^14 + 11/13*x^13 + 55/12*x^12 + 15*x^11 + 33*x^10 + 154/3*x^9 + 231/4
*x^8 + 330/7*x^7 + 55/2*x^6 + 11*x^5 + 11/4*x^4 + 1/3*x^3
```

maple [B] time = 0.05, size = 62, normalized size = 2.21

$$\frac{1}{14}x^{14} + \frac{11}{13}x^{13} + \frac{55}{12}x^{12} + 15x^{11} + 33x^{10} + \frac{154}{3}x^{9} + \frac{231}{4}x^{8} + \frac{330}{7}x^{7} + \frac{55}{2}x^{6} + 11x^{5} + \frac{11}{4}x^{4} + \frac{1}{3}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/14*x^14+11/13*x^13+55/12*x^12+15*x^11+33*x^10+154/3*x^9+231/4*x^8+330/7*x
^7+55/2*x^6+11*x^5+11/4*x^4+1/3*x^3
```

maxima [B] time = 0.61, size = 61, normalized size = 2.18

$$\frac{1}{14}\,x^{14} + \frac{11}{13}\,x^{13} + \frac{55}{12}\,x^{12} + 15\,x^{11} + 33\,x^{10} + \frac{154}{3}\,x^{9} + \frac{231}{4}\,x^{8} + \frac{330}{7}\,x^{7} + \frac{55}{2}\,x^{6} + 11\,x^{5} + \frac{11}{4}\,x^{4} + \frac{1}{3}\,x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/14*x^14 + 11/13*x^13 + 55/12*x^12 + 15*x^11 + 33*x^10 + 154/3*x^9 + 231/4
*x^8 + 330/7*x^7 + 55/2*x^6 + 11*x^5 + 11/4*x^4 + 1/3*x^3
```

mupad [B] time = 0.06, size = 61, normalized size = 2.18

$$\frac{x^{14}}{14} + \frac{11\,x^{13}}{13} + \frac{55\,x^{12}}{12} + 15\,x^{11} + 33\,x^{10} + \frac{154\,x^{9}}{3} + \frac{231\,x^{8}}{4} + \frac{330\,x^{7}}{7} + \frac{55\,x^{6}}{2} + 11\,x^{5} + \frac{11\,x^{4}}{4} + \frac{x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^3/3 + (11*x^4)/4 + 11*x^5 + (55*x^6)/2 + (330*x^7)/7 + (231*x^8)/4 + (154
*x^9)/3 + 33*x^10 + 15*x^11 + (55*x^12)/12 + (11*x^13)/13 + x^14/14
```

sympy [B] time = 0.07, size = 71, normalized size = 2.54

$$\frac{x^{14}}{14} + \frac{11x^{13}}{13} + \frac{55x^{12}}{12} + 15x^{11} + 33x^{10} + \frac{154x^9}{3} + \frac{231x^8}{4} + \frac{330x^7}{7} + \frac{55x^6}{2} + 11x^5 + \frac{11x^4}{4} + \frac{x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**14/14 + 11*x**13/13 + 55*x**12/12 + 15*x**11 + 33*x**10 + 154*x**9/3 + 2
31*x**8/4 + 330*x**7/7 + 55*x**6/2 + 11*x**5 + 11*x**4/4 + x**3/3
```

3.525 $\int x(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=19

$$\frac{1}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.01, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {27, 43}

$$\frac{1}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (1 + x)^13/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+(1+x)^{12}\right)dx\\ &= -\frac{1}{12}(1+x)^{12}+\frac{1}{13}(1+x)^{13}\end{aligned}$$

Mathematica [B] time = 0.00, size = 77, normalized size = 4.05

$$\frac{x^{13}}{13}+\frac{11x^{12}}{12}+5x^{11}+\frac{33x^{10}}{2}+\frac{110x^9}{3}+\frac{231x^8}{4}+66x^7+55x^6+33x^5+\frac{55x^4}{4}+\frac{11x^3}{3}+\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^2/2 + (11*x^3)/3 + (55*x^4)/4 + 33*x^5 + 55*x^6 + 66*x^7 + (231*x^8)/4 +
(110*x^9)/3 + (33*x^10)/2 + 5*x^11 + (11*x^12)/12 + x^13/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(1 + x)*(1 + 2*x + x^2)^5,x]
[Out] IntegrateAlgebraic[x*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.36, size = 61, normalized size = 3.21

$$\frac{1}{13}x^{13} + \frac{11}{12}x^{12} + 5x^{11} + \frac{33}{2}x^{10} + \frac{110}{3}x^9 + \frac{231}{4}x^8 + 66x^7 + 55x^6 + 33x^5 + \frac{55}{4}x^4 + \frac{11}{3}x^3 + \frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
[Out] 1/13*x^13 + 11/12*x^12 + 5*x^11 + 33/2*x^10 + 110/3*x^9 + 231/4*x^8 + 66*x^
7 + 55*x^6 + 33*x^5 + 55/4*x^4 + 11/3*x^3 + 1/2*x^2
```

giac [B] time = 0.17, size = 61, normalized size = 3.21

$$\frac{1}{13}x^{13} + \frac{11}{12}x^{12} + 5x^{11} + \frac{33}{2}x^{10} + \frac{110}{3}x^9 + \frac{231}{4}x^8 + 66x^7 + 55x^6 + 33x^5 + \frac{55}{4}x^4 + \frac{11}{3}x^3 + \frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
[Out] 1/13*x^13 + 11/12*x^12 + 5*x^11 + 33/2*x^10 + 110/3*x^9 + 231/4*x^8 + 66*x^
7 + 55*x^6 + 33*x^5 + 55/4*x^4 + 11/3*x^3 + 1/2*x^2
```

maple [B] time = 0.04, size = 62, normalized size = 3.26

$$\frac{1}{13}x^{13} + \frac{11}{12}x^{12} + 5x^{11} + \frac{33}{2}x^{10} + \frac{110}{3}x^9 + \frac{231}{4}x^8 + 66x^7 + 55x^6 + 33x^5 + \frac{55}{4}x^4 + \frac{11}{3}x^3 + \frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x+1)*(x^2+2*x+1)^5,x)
[Out] 1/13*x^13+11/12*x^12+5*x^11+33/2*x^10+110/3*x^9+231/4*x^8+66*x^7+55*x^6+33*
x^5+55/4*x^4+11/3*x^3+1/2*x^2
```

maxima [B] time = 0.58, size = 61, normalized size = 3.21

$$\frac{1}{13}x^{13} + \frac{11}{12}x^{12} + 5x^{11} + \frac{33}{2}x^{10} + \frac{110}{3}x^9 + \frac{231}{4}x^8 + 66x^7 + 55x^6 + 33x^5 + \frac{55}{4}x^4 + \frac{11}{3}x^3 + \frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
[Out] 1/13*x^13 + 11/12*x^12 + 5*x^11 + 33/2*x^10 + 110/3*x^9 + 231/4*x^8 + 66*x^
7 + 55*x^6 + 33*x^5 + 55/4*x^4 + 11/3*x^3 + 1/2*x^2
```

mupad [B] time = 0.06, size = 61, normalized size = 3.21

$$\frac{x^{13}}{13} + \frac{11x^{12}}{12} + 5x^{11} + \frac{33x^{10}}{2} + \frac{110x^9}{3} + \frac{231x^8}{4} + 66x^7 + 55x^6 + 33x^5 + \frac{55x^4}{4} + \frac{11x^3}{3} + \frac{x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x + 1)*(2*x + x^2 + 1)^5,x)
[Out] x^2/2 + (11*x^3)/3 + (55*x^4)/4 + 33*x^5 + 55*x^6 + 66*x^7 + (231*x^8)/4 +
(110*x^9)/3 + (33*x^10)/2 + 5*x^11 + (11*x^12)/12 + x^13/13
```

sympy [B] time = 0.07, size = 70, normalized size = 3.68

$$\frac{x^{13}}{13} + \frac{11x^{12}}{12} + 5x^{11} + \frac{33x^{10}}{2} + \frac{110x^9}{3} + \frac{231x^8}{4} + 66x^7 + 55x^6 + 33x^5 + \frac{55x^4}{4} + \frac{11x^3}{3} + \frac{x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**13/13 + 11*x**12/12 + 5*x**11 + 33*x**10/2 + 110*x**9/3 + 231*x**8/4 + 6
6*x**7 + 55*x**6 + 33*x**5 + 55*x**4/4 + 11*x**3/3 + x**2/2
```

3.526 $\int (1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=9

$$\frac{1}{12}(x+1)^{12}$$

Rubi [A] time = 0.00, antiderivative size = 9, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {27, 32}

$$\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (1+x)\left(1+2x+x^2\right)^5\,dx &= \int (1+x)^{11}\,dx\\ &= \frac{1}{12}(1+x)^{12}\end{aligned}$$

Mathematica [A] time = 0.00, size = 9, normalized size = 1.00

$$\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (1+x)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] IntegrateAlgebraic[(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.36, size = 55, normalized size = 6.11

$$\frac{1}{12}x^{12} + x^{11} + \frac{11}{2}x^{10} + \frac{55}{3}x^9 + \frac{165}{4}x^8 + 66x^7 + 77x^6 + 66x^5 + \frac{165}{4}x^4 + \frac{55}{3}x^3 + \frac{11}{2}x^2 + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/12*x^12 + x^11 + 11/2*x^10 + 55/3*x^9 + 165/4*x^8 + 66*x^7 + 77*x^6 + 66*
x^5 + 165/4*x^4 + 55/3*x^3 + 11/2*x^2 + x
```

giac [B] time = 0.15, size = 62, normalized size = 6.89

$$\frac{1}{12}\left(x^2 + 2x\right)^6 + \frac{1}{2}\left(x^2 + 2x\right)^5 + \frac{5}{4}\left(x^2 + 2x\right)^4 + \frac{5}{3}\left(x^2 + 2x\right)^3 + \frac{5}{4}\left(x^2 + 2x\right)^2 + \frac{1}{2}x^2 + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/12*(x^2 + 2*x)^6 + 1/2*(x^2 + 2*x)^5 + 5/4*(x^2 + 2*x)^4 + 5/3*(x^2 + 2*x
)^3 + 5/4*(x^2 + 2*x)^2 + 1/2*x^2 + x
```

maple [B] time = 0.04, size = 56, normalized size = 6.22

$$\frac{1}{12}x^{12} + x^{11} + \frac{11}{2}x^{10} + \frac{55}{3}x^9 + \frac{165}{4}x^8 + 66x^7 + 77x^6 + 66x^5 + \frac{165}{4}x^4 + \frac{55}{3}x^3 + \frac{11}{2}x^2 + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/12*x^12+x^11+11/2*x^10+55/3*x^9+165/4*x^8+66*x^7+77*x^6+66*x^5+165/4*x^4+
55/3*x^3+11/2*x^2+x
```

maxima [A] time = 0.67, size = 12, normalized size = 1.33

$$\frac{1}{12}\left(x^2 + 2x + 1\right)^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/12*(x^2 + 2*x + 1)^6
```

mupad [B] time = 0.06, size = 55, normalized size = 6.11

$$\frac{x^{12}}{12} + x^{11} + \frac{11\,x^{10}}{2} + \frac{55\,x^9}{3} + \frac{165\,x^8}{4} + 66\,x^7 + 77\,x^6 + 66\,x^5 + \frac{165\,x^4}{4} + \frac{55\,x^3}{3} + \frac{11\,x^2}{2} + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x + (11*x^2)/2 + (55*x^3)/3 + (165*x^4)/4 + 66*x^5 + 77*x^6 + 66*x^7 + (165
*x^8)/4 + (55*x^9)/3 + (11*x^10)/2 + x^11 + x^12/12
```

sympy [B] time = 0.08, size = 65, normalized size = 7.22

$$\frac{x^{12}}{12} + x^{11} + \frac{11x^{10}}{2} + \frac{55x^9}{3} + \frac{165x^8}{4} + 66x^7 + 77x^6 + 66x^5 + \frac{165x^4}{4} + \frac{55x^3}{3} + \frac{11x^2}{2} + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**12/12 + x**11 + 11*x**10/2 + 55*x**9/3 + 165*x**8/4 + 66*x**7 + 77*x**6
+ 66*x**5 + 165*x**4/4 + 55*x**3/3 + 11*x**2/2 + x
```

3.527 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x}\,dx$

Optimal. Leaf size=72

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^9}{9}+\frac{165x^8}{8}+\frac{330x^7}{7}+77x^6+\frac{462x^5}{5}+\frac{165x^4}{2}+55x^3+\frac{55x^2}{2}+11x+\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^9}{9}+\frac{165x^8}{8}+\frac{330x^7}{7}+77x^6+\frac{462x^5}{5}+\frac{165x^4}{2}+55x^3+\frac{55x^2}{2}+11x+\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] 11*x + (55*x^2)/2 + 55*x^3 + (165*x^4)/2 + (462*x^5)/5 + 77*x^6 + (330*x^7)
/7 + (165*x^8)/8 + (55*x^9)/9 + (11*x^10)/10 + x^11/11 + Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x}\,dx &= \int \frac{(1+x)^{11}}{x}\,dx\\ &= \int \left(11+\frac{1}{x}+55x+165x^2+330x^3+462x^4+462x^5+330x^6+165x^7+55x^8+\right.\\ &= 11x+\frac{55x^2}{2}+55x^3+\frac{165x^4}{2}+\frac{462x^5}{5}+77x^6+\frac{330x^7}{7}+\frac{165x^8}{8}+\frac{55x^9}{9}+\frac{11x^1}{10}\end{aligned}$$

Mathematica [A] time = 0.01, size = 96, normalized size = 1.33

$$\frac{1}{11}(x+1)^{11}+\frac{1}{10}(x+1)^{10}+\frac{1}{9}(x+1)^9+\frac{1}{8}(x+1)^8+\frac{1}{7}(x+1)^7+\frac{1}{6}(x+1)^6+\frac{1}{5}(x+1)^5+\frac{1}{4}(x+1)^4+\frac{1}{3}(x+1)^3+\frac{1}{2}(x+1)^2+x+\log(-x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] x + (1 + x)^2/2 + (1 + x)^3/3 + (1 + x)^4/4 + (1 + x)^5/5 + (1 + x)^6/6 + (
1 + x)^7/7 + (1 + x)^8/8 + (1 + x)^9/9 + (1 + x)^10/10 + (1 + x)^11/11 + Lo
g[-x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x,x]
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x, x]
```

fricas [A] time = 0.39, size = 56, normalized size = 0.78

$$\frac{1}{11}\,x^{11}+\frac{11}{10}\,x^{10}+\frac{55}{9}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{330}{7}\,x^{7}+77\,x^{6}+\frac{462}{5}\,x^{5}+\frac{165}{2}\,x^{4}+55\,x^{3}+\frac{55}{2}\,x^{2}+11\,x+\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x,x, algorithm="fricas")
[Out] 1/11*x^11 + 11/10*x^10 + 55/9*x^9 + 165/8*x^8 + 330/7*x^7 + 77*x^6 + 462/5*
x^5 + 165/2*x^4 + 55*x^3 + 55/2*x^2 + 11*x + log(x)
```

giac [A] time = 0.15, size = 57, normalized size = 0.79

$$\frac{1}{11}\,x^{11}+\frac{11}{10}\,x^{10}+\frac{55}{9}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{330}{7}\,x^{7}+77\,x^{6}+\frac{462}{5}\,x^{5}+\frac{165}{2}\,x^{4}+55\,x^{3}+\frac{55}{2}\,x^{2}+11\,x+\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x,x, algorithm="giac")
[Out] 1/11*x^11 + 11/10*x^10 + 55/9*x^9 + 165/8*x^8 + 330/7*x^7 + 77*x^6 + 462/5*
x^5 + 165/2*x^4 + 55*x^3 + 55/2*x^2 + 11*x + log(abs(x))
```

maple [A] time = 0.05, size = 57, normalized size = 0.79

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^{9}}{9}+\frac{165x^{8}}{8}+\frac{330x^{7}}{7}+77x^{6}+\frac{462x^{5}}{5}+\frac{165x^{4}}{2}+55x^{3}+\frac{55x^{2}}{2}+11x+\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x,x)
[Out] 11*x+55/2*x^2+55*x^3+165/2*x^4+462/5*x^5+77*x^6+330/7*x^7+165/8*x^8+55/9*x^
9+11/10*x^10+1/11*x^11+ln(x)
```

maxima [A] time = 0.63, size = 56, normalized size = 0.78

$$\frac{1}{11}\,x^{11}+\frac{11}{10}\,x^{10}+\frac{55}{9}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{330}{7}\,x^{7}+77\,x^{6}+\frac{462}{5}\,x^{5}+\frac{165}{2}\,x^{4}+55\,x^{3}+\frac{55}{2}\,x^{2}+11\,x+\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x,x, algorithm="maxima")
[Out] 1/11*x^11 + 11/10*x^10 + 55/9*x^9 + 165/8*x^8 + 330/7*x^7 + 77*x^6 + 462/5*
x^5 + 165/2*x^4 + 55*x^3 + 55/2*x^2 + 11*x + log(x)
```

mupad [B] time = 0.06, size = 56, normalized size = 0.78

$$11\,x+\ln(x)+\frac{55\,x^2}{2}+55\,x^3+\frac{165\,x^4}{2}+\frac{462\,x^5}{5}+77\,x^6+\frac{330\,x^7}{7}+\frac{165\,x^8}{8}+\frac{55\,x^9}{9}+\frac{11\,x^{10}}{10}+\frac{x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x,x)
```

```
[Out] 11*x + log(x) + (55*x^2)/2 + 55*x^3 + (165*x^4)/2 + (462*x^5)/5 + 77*x^6 +
(330*x^7)/7 + (165*x^8)/8 + (55*x^9)/9 + (11*x^10)/10 + x^11/11
```

sympy [A] time = 0.11, size = 68, normalized size = 0.94

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^{9}}{9}+\frac{165x^{8}}{8}+\frac{330x^{7}}{7}+77x^{6}+\frac{462x^{5}}{5}+\frac{165x^{4}}{2}+55x^{3}+\frac{55x^{2}}{2}+11x+\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x,x)
```

```
[Out] x**11/11 + 11*x**10/10 + 55*x**9/9 + 165*x**8/8 + 330*x**7/7 + 77*x**6 + 46
2*x**5/5 + 165*x**4/2 + 55*x**3 + 55*x**2/2 + 11*x + log(x)
```

3.528 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^2}\,dx$

Optimal. Leaf size=72

$$\frac{x^{10}}{10}+\frac{11x^9}{9}+\frac{55x^8}{8}+\frac{165x^7}{7}+55x^6+\frac{462x^5}{5}+\frac{231x^4}{2}+110x^3+\frac{165x^2}{2}+55x-\frac{1}{x}+11\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^{10}}{10}+\frac{11x^9}{9}+\frac{55x^8}{8}+\frac{165x^7}{7}+55x^6+\frac{462x^5}{5}+\frac{231x^4}{2}+110x^3+\frac{165x^2}{2}+55x-\frac{1}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -x^(-1) + 55*x + (165*x^2)/2 + 110*x^3 + (231*x^4)/2 + (462*x^5)/5 + 55*x^6
 + (165*x^7)/7 + (55*x^8)/8 + (11*x^9)/9 + x^10/10 + 11*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^2}\,dx &= \int \frac{(1+x)^{11}}{x^2}\,dx\\
&= \int \left(55+\frac{1}{x^2}+\frac{11}{x}+165x+330x^2+462x^3+462x^4+330x^5+165x^6+55x^7+11\right.\\
&= -\frac{1}{x}+55x+\frac{165x^2}{2}+110x^3+\frac{231x^4}{2}+\frac{462x^5}{5}+55x^6+\frac{165x^7}{7}+\frac{55x^8}{8}+\frac{11x^9}{9}+
\end{aligned}$$

Mathematica [A] time = 0.00, size = 72, normalized size = 1.00

$$\frac{x^{10}}{10}+\frac{11x^9}{9}+\frac{55x^8}{8}+\frac{165x^7}{7}+55x^6+\frac{462x^5}{5}+\frac{231x^4}{2}+110x^3+\frac{165x^2}{2}+55x-\frac{1}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -x^(-1) + 55*x + (165*x^2)/2 + 110*x^3 + (231*x^4)/2 + (462*x^5)/5 + 55*x^6
 + (165*x^7)/7 + (55*x^8)/8 + (11*x^9)/9 + x^10/10 + 11*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^2, x]
```

fricas [A] time = 0.40, size = 62, normalized size = 0.86

$$\frac{252\,x^{11}+3080\,x^{10}+17325\,x^{9}+59400\,x^{8}+138600\,x^{7}+232848\,x^{6}+291060\,x^{5}+277200\,x^{4}+207900\,x^{3}+138600\,x^{2}+27720\,x\log(x)-2520}{2520\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^2,x, algorithm="fricas")
```

```
[Out] 1/2520*(252*x^11 + 3080*x^10 + 17325*x^9 + 59400*x^8 + 138600*x^7 + 232848*
x^6 + 291060*x^5 + 277200*x^4 + 207900*x^3 + 138600*x^2 + 27720*x*log(x) -
2520)/x
```

giac [A] time = 0.16, size = 59, normalized size = 0.82

$$\frac{1}{10}\,x^{10}+\frac{11}{9}\,x^{9}+\frac{55}{8}\,x^{8}+\frac{165}{7}\,x^{7}+55\,x^{6}+\frac{462}{5}\,x^{5}+\frac{231}{2}\,x^{4}+110\,x^{3}+\frac{165}{2}\,x^{2}+55\,x-\frac{1}{x}+11\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^2,x, algorithm="giac")
```

```
[Out] 1/10*x^10 + 11/9*x^9 + 55/8*x^8 + 165/7*x^7 + 55*x^6 + 462/5*x^5 + 231/2*x^
4 + 110*x^3 + 165/2*x^2 + 55*x - 1/x + 11*log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.82

$$\frac{x^{10}}{10}+\frac{11x^{9}}{9}+\frac{55x^{8}}{8}+\frac{165x^{7}}{7}+55x^{6}+\frac{462x^{5}}{5}+\frac{231x^{4}}{2}+110x^{3}+\frac{165x^{2}}{2}+55x+11\ln(x)-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^2,x)
```

```
[Out] -1/x+55*x+165/2*x^2+110*x^3+231/2*x^4+462/5*x^5+55*x^6+165/7*x^7+55/8*x^8+1
1/9*x^9+1/10*x^10+11*ln(x)
```

maxima [A] time = 0.49, size = 58, normalized size = 0.81

$$\frac{1}{10}\,x^{10}+\frac{11}{9}\,x^{9}+\frac{55}{8}\,x^{8}+\frac{165}{7}\,x^{7}+55\,x^{6}+\frac{462}{5}\,x^{5}+\frac{231}{2}\,x^{4}+110\,x^{3}+\frac{165}{2}\,x^{2}+55\,x-\frac{1}{x}+11\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^2,x, algorithm="maxima")
```

```
[Out] 1/10*x^10 + 11/9*x^9 + 55/8*x^8 + 165/7*x^7 + 55*x^6 + 462/5*x^5 + 231/2*x^
4 + 110*x^3 + 165/2*x^2 + 55*x - 1/x + 11*log(x)
```

mupad [B] time = 0.06, size = 58, normalized size = 0.81

$$55\,x+11\,\ln(x)-\frac{1}{x}+\frac{165\,x^2}{2}+110\,x^3+\frac{231\,x^4}{2}+\frac{462\,x^5}{5}+55\,x^6+\frac{165\,x^7}{7}+\frac{55\,x^8}{8}+\frac{11\,x^9}{9}+\frac{x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^2,x)
```

```
[Out] 55*x + 11*log(x) - 1/x + (165*x^2)/2 + 110*x^3 + (231*x^4)/2 + (462*x^5)/5
+ 55*x^6 + (165*x^7)/7 + (55*x^8)/8 + (11*x^9)/9 + x^10/10
```

sympy [A] time = 0.11, size = 66, normalized size = 0.92

$$\frac{x^{10}}{10} + \frac{11x^9}{9} + \frac{55x^8}{8} + \frac{165x^7}{7} + 55x^6 + \frac{462x^5}{5} + \frac{231x^4}{2} + 110x^3 + \frac{165x^2}{2} + 55x + 11\log(x) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**2,x)
```

```
[Out] x**10/10 + 11*x**9/9 + 55*x**8/8 + 165*x**7/7 + 55*x**6 + 462*x**5/5 + 231*
x**4/2 + 110*x**3 + 165*x**2/2 + 55*x + 11*log(x) - 1/x
```

3.529 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^3}\,dx$

Optimal. Leaf size=70

$$\frac{x^9}{9}+\frac{11x^8}{8}+\frac{55x^7}{7}+\frac{55x^6}{2}+66x^5+\frac{231x^4}{2}+154x^3+165x^2-\frac{1}{2x^2}+165x-\frac{11}{x}+55\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^9}{9}+\frac{11x^8}{8}+\frac{55x^7}{7}+\frac{55x^6}{2}+66x^5+\frac{231x^4}{2}+154x^3+165x^2-\frac{1}{2x^2}+165x-\frac{11}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -1/(2*x^2) - 11/x + 165*x + 165*x^2 + 154*x^3 + (231*x^4)/2 + 66*x^5 + (55*
x^6)/2 + (55*x^7)/7 + (11*x^8)/8 + x^9/9 + 55*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^3}\,dx &= \int \frac{(1+x)^{11}}{x^3}\,dx\\ &= \int \left(165+\frac{1}{x^3}+\frac{11}{x^2}+\frac{55}{x}+330x+462x^2+462x^3+330x^4+165x^5+55x^6+1\right.\\ &= -\frac{1}{2x^2}-\frac{11}{x}+165x+165x^2+154x^3+\frac{231x^4}{2}+66x^5+\frac{55x^6}{2}+\frac{55x^7}{7}+\frac{11x^8}{8}+\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$\frac{x^9}{9}+\frac{11x^8}{8}+\frac{55x^7}{7}+\frac{55x^6}{2}+66x^5+\frac{231x^4}{2}+154x^3+165x^2-\frac{1}{2x^2}+165x-\frac{11}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -1/2*1/x^2 - 11/x + 165*x + 165*x^2 + 154*x^3 + (231*x^4)/2 + 66*x^5 + (55*
x^6)/2 + (55*x^7)/7 + (11*x^8)/8 + x^9/9 + 55*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^3, x]
```

fricas [A] time = 0.39, size = 62, normalized size = 0.89

$$\frac{56\,x^{11}+693\,x^{10}+3960\,x^{9}+13860\,x^{8}+33264\,x^{7}+58212\,x^{6}+77616\,x^{5}+83160\,x^{4}+83160\,x^{3}+27720\,x^{2}\log(x)-5544\,x-252}{504\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^3,x, algorithm="fricas")
```

```
[Out] 1/504*(56*x^11 + 693*x^10 + 3960*x^9 + 13860*x^8 + 33264*x^7 + 58212*x^6 +
77616*x^5 + 83160*x^4 + 83160*x^3 + 27720*x^2*log(x) - 5544*x - 252)/x^2
```

giac [A] time = 0.17, size = 59, normalized size = 0.84

$$\frac{1}{9}\,x^{9}+\frac{11}{8}\,x^{8}+\frac{55}{7}\,x^{7}+\frac{55}{2}\,x^{6}+66\,x^{5}+\frac{231}{2}\,x^{4}+154\,x^{3}+165\,x^{2}+165\,x-\frac{22\,x+1}{2\,x^{2}}+55\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^3,x, algorithm="giac")
```

```
[Out] 1/9*x^9 + 11/8*x^8 + 55/7*x^7 + 55/2*x^6 + 66*x^5 + 231/2*x^4 + 154*x^3 + 1
65*x^2 + 165*x - 1/2*(22*x + 1)/x^2 + 55*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.84

$$\frac{x^{9}}{9}+\frac{11x^{8}}{8}+\frac{55x^{7}}{7}+\frac{55x^{6}}{2}+66x^{5}+\frac{231x^{4}}{2}+154x^{3}+165x^{2}+165x+55\ln(x)-\frac{11}{x}-\frac{1}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^3,x)
```

```
[Out] -1/2/x^2-11/x+165*x+165*x^2+154*x^3+231/2*x^4+66*x^5+55/2*x^6+55/7*x^7+11/8
*x^8+1/9*x^9+55*ln(x)
```

maxima [A] time = 0.55, size = 58, normalized size = 0.83

$$\frac{1}{9}\,x^{9}+\frac{11}{8}\,x^{8}+\frac{55}{7}\,x^{7}+\frac{55}{2}\,x^{6}+66\,x^{5}+\frac{231}{2}\,x^{4}+154\,x^{3}+165\,x^{2}+165\,x-\frac{22\,x+1}{2\,x^{2}}+55\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^3,x, algorithm="maxima")
```

```
[Out] 1/9*x^9 + 11/8*x^8 + 55/7*x^7 + 55/2*x^6 + 66*x^5 + 231/2*x^4 + 154*x^3 + 1
65*x^2 + 165*x - 1/2*(22*x + 1)/x^2 + 55*log(x)
```

mupad [B] time = 0.05, size = 58, normalized size = 0.83

$$165\,x+55\,\ln(x)-\frac{11\,x+\frac{1}{2}}{x^{2}}+165\,x^{2}+154\,x^{3}+\frac{231\,x^{4}}{2}+66\,x^{5}+\frac{55\,x^{6}}{2}+\frac{55\,x^{7}}{7}+\frac{11\,x^{8}}{8}+\frac{x^{9}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^3,x)
```

```
[Out] 165*x + 55*log(x) - (11*x + 1/2)/x^2 + 165*x^2 + 154*x^3 + (231*x^4)/2 + 66
*x^5 + (55*x^6)/2 + (55*x^7)/7 + (11*x^8)/8 + x^9/9
```

sympy [A] time = 0.12, size = 66, normalized size = 0.94

$$\frac{x^9}{9} + \frac{11x^8}{8} + \frac{55x^7}{7} + \frac{55x^6}{2} + 66x^5 + \frac{231x^4}{2} + 154x^3 + 165x^2 + 165x + 55\log(x) + \frac{-22x - 1}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**3,x)
```

```
[Out] x**9/9 + 11*x**8/8 + 55*x**7/7 + 55*x**6/2 + 66*x**5 + 231*x**4/2 + 154*x**
3 + 165*x**2 + 165*x + 55*log(x) + (-22*x - 1)/(2*x**2)
```

3.530 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^4}\,dx$

Optimal. Leaf size=70

$$\frac{x^8}{8}+\frac{11x^7}{7}+\frac{55x^6}{6}+33x^5+\frac{165x^4}{2}+154x^3-\frac{1}{3x^3}+231x^2-\frac{11}{2x^2}+330x-\frac{55}{x}+165\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^8}{8}+\frac{11x^7}{7}+\frac{55x^6}{6}+33x^5+\frac{165x^4}{2}+154x^3+231x^2-\frac{11}{2x^2}-\frac{1}{3x^3}+330x-\frac{55}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -1/(3*x^3) - 11/(2*x^2) - 55/x + 330*x + 231*x^2 + 154*x^3 + (165*x^4)/2 +
33*x^5 + (55*x^6)/6 + (11*x^7)/7 + x^8/8 + 165*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^4}\,dx &= \int \frac{(1+x)^{11}}{x^4}\,dx\\ &= \int \left(330+\frac{1}{x^4}+\frac{11}{x^3}+\frac{55}{x^2}+\frac{165}{x}+462x+462x^2+330x^3+165x^4+55x^5+11x^6+\right.\\ &= -\frac{1}{3x^3}-\frac{11}{2x^2}-\frac{55}{x}+330x+231x^2+154x^3+\frac{165x^4}{2}+33x^5+\frac{55x^6}{6}+\frac{11x^7}{7}+\frac{x^8}{8}\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$\frac{x^8}{8}+\frac{11x^7}{7}+\frac{55x^6}{6}+33x^5+\frac{165x^4}{2}+154x^3-\frac{1}{3x^3}+231x^2-\frac{11}{2x^2}+330x-\frac{55}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -1/3*1/x^3 - 11/(2*x^2) - 55/x + 330*x + 231*x^2 + 154*x^3 + (165*x^4)/2 +
33*x^5 + (55*x^6)/6 + (11*x^7)/7 + x^8/8 + 165*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^4, x]
```

fricas [A] time = 0.42, size = 62, normalized size = 0.89

$$\frac{21\,x^{11}+264\,x^{10}+1540\,x^{9}+5544\,x^{8}+13860\,x^{7}+25872\,x^{6}+38808\,x^{5}+55440\,x^{4}+27720\,x^{3}\log(x)-9240\,x^{2}-924\,x-56}{168\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^4,x, algorithm="fricas")
```

```
[Out] 1/168*(21*x^11 + 264*x^10 + 1540*x^9 + 5544*x^8 + 13860*x^7 + 25872*x^6 + 3
8808*x^5 + 55440*x^4 + 27720*x^3*log(x) - 9240*x^2 - 924*x - 56)/x^3
```

giac [A] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{8}\,x^{8}+\frac{11}{7}\,x^{7}+\frac{55}{6}\,x^{6}+33\,x^{5}+\frac{165}{2}\,x^{4}+154\,x^{3}+231\,x^{2}+330\,x-\frac{330\,x^{2}+33\,x+2}{6\,x^{3}}+165\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^4,x, algorithm="giac")
```

```
[Out] 1/8*x^8 + 11/7*x^7 + 55/6*x^6 + 33*x^5 + 165/2*x^4 + 154*x^3 + 231*x^2 + 33
0*x - 1/6*(330*x^2 + 33*x + 2)/x^3 + 165*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.84

$$\frac{x^{8}}{8}+\frac{11x^{7}}{7}+\frac{55x^{6}}{6}+33x^{5}+\frac{165x^{4}}{2}+154x^{3}+231x^{2}+330x+165\ln(x)-\frac{55}{x}-\frac{11}{2x^{2}}-\frac{1}{3x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^4,x)
```

```
[Out] -1/3/x^3-11/2/x^2-55/x+330*x+231*x^2+154*x^3+165/2*x^4+33*x^5+55/6*x^6+11/7
*x^7+1/8*x^8+165*ln(x)
```

maxima [A] time = 0.52, size = 58, normalized size = 0.83

$$\frac{1}{8}\,x^{8}+\frac{11}{7}\,x^{7}+\frac{55}{6}\,x^{6}+33\,x^{5}+\frac{165}{2}\,x^{4}+154\,x^{3}+231\,x^{2}+330\,x-\frac{330\,x^{2}+33\,x+2}{6\,x^{3}}+165\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^4,x, algorithm="maxima")
```

```
[Out] 1/8*x^8 + 11/7*x^7 + 55/6*x^6 + 33*x^5 + 165/2*x^4 + 154*x^3 + 231*x^2 + 33
0*x - 1/6*(330*x^2 + 33*x + 2)/x^3 + 165*log(x)
```

mupad [B] time = 0.04, size = 58, normalized size = 0.83

$$330\,x+165\,\ln(x)-\frac{55\,x^{2}+\frac{11\,x}{2}+\frac{1}{3}}{x^{3}}+231\,x^{2}+154\,x^{3}+\frac{165\,x^{4}}{2}+33\,x^{5}+\frac{55\,x^{6}}{6}+\frac{11\,x^{7}}{7}+\frac{x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^4,x)
```

```
[Out] 330*x + 165*log(x) - ((11*x)/2 + 55*x^2 + 1/3)/x^3 + 231*x^2 + 154*x^3 + (1
65*x^4)/2 + 33*x^5 + (55*x^6)/6 + (11*x^7)/7 + x^8/8
```

sympy [A] time = 0.13, size = 65, normalized size = 0.93

$$\frac{x^8}{8} + \frac{11x^7}{7} + \frac{55x^6}{6} + 33x^5 + \frac{165x^4}{2} + 154x^3 + 231x^2 + 330x + 165\log(x) + \frac{-330x^2 - 33x - 2}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**4,x)
```

```
[Out] x**8/8 + 11*x**7/7 + 55*x**6/6 + 33*x**5 + 165*x**4/2 + 154*x**3 + 231*x**2
 + 330*x + 165*log(x) + (-330*x**2 - 33*x - 2)/(6*x**3)
```

3.531 $\int \frac{(1+x)(1+2x+x^2)^5}{x^5} \, dx$

Optimal. Leaf size=70

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}-\frac{1}{4x^4}+110x^3-\frac{11}{3x^3}+231x^2-\frac{55}{2x^2}+462x-\frac{165}{x}+330\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}+110x^3+231x^2-\frac{55}{2x^2}-\frac{11}{3x^3}-\frac{1}{4x^4}+462x-\frac{165}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -1/(4*x^4) - 11/(3*x^3) - 55/(2*x^2) - 165/x + 462*x + 231*x^2 + 110*x^3 +
(165*x^4)/4 + 11*x^5 + (11*x^6)/6 + x^7/7 + 330*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^5}\,dx &= \int \frac{(1+x)^{11}}{x^5}\,dx\\ &= \int \left(462+\frac{1}{x^5}+\frac{11}{x^4}+\frac{55}{x^3}+\frac{165}{x^2}+\frac{330}{x}+462x+330x^2+165x^3+55x^4+11x^5\right.\\ &= -\frac{1}{4x^4}-\frac{11}{3x^3}-\frac{55}{2x^2}-\frac{165}{x}+462x+231x^2+110x^3+\frac{165x^4}{4}+11x^5+\frac{11x^6}{6}+\frac{x}{7}\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}-\frac{1}{4x^4}+110x^3-\frac{11}{3x^3}+231x^2-\frac{55}{2x^2}+462x-\frac{165}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -1/4*1/x^4 - 11/(3*x^3) - 55/(2*x^2) - 165/x + 462*x + 231*x^2 + 110*x^3 +
(165*x^4)/4 + 11*x^5 + (11*x^6)/6 + x^7/7 + 330*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^5, x]
```

fricas [A] time = 0.39, size = 62, normalized size = 0.89

$$\frac{12\,x^{11}+154\,x^{10}+924\,x^9+3465\,x^8+9240\,x^7+19404\,x^6+38808\,x^5+27720\,x^4\log(x)-13860\,x^3-2310\,x^2-308\,x-21}{84\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^5,x, algorithm="fricas")
```

```
[Out] 1/84*(12*x^11 + 154*x^10 + 924*x^9 + 3465*x^8 + 9240*x^7 + 19404*x^6 + 3880
8*x^5 + 27720*x^4*log(x) - 13860*x^3 - 2310*x^2 - 308*x - 21)/x^4
```

giac [A] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{7}\,x^7+\frac{11}{6}\,x^6+11\,x^5+\frac{165}{4}\,x^4+110\,x^3+231\,x^2+462\,x-\frac{1980\,x^3+330\,x^2+44\,x+3}{12\,x^4}+330\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^5,x, algorithm="giac")
```

```
[Out] 1/7*x^7 + 11/6*x^6 + 11*x^5 + 165/4*x^4 + 110*x^3 + 231*x^2 + 462*x - 1/12*
(1980*x^3 + 330*x^2 + 44*x + 3)/x^4 + 330*log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.84

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}+110x^3+231x^2+462x+330\ln(x)-\frac{165}{x}-\frac{55}{2x^2}-\frac{11}{3x^3}-\frac{1}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^5,x)
```

```
[Out] -1/4/x^4-11/3/x^3-55/2/x^2-165/x+462*x+231*x^2+110*x^3+165/4*x^4+11*x^5+11/
6*x^6+1/7*x^7+330*ln(x)
```

maxima [A] time = 0.65, size = 58, normalized size = 0.83

$$\frac{1}{7}\,x^7+\frac{11}{6}\,x^6+11\,x^5+\frac{165}{4}\,x^4+110\,x^3+231\,x^2+462\,x-\frac{1980\,x^3+330\,x^2+44\,x+3}{12\,x^4}+330\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^5,x, algorithm="maxima")
```

```
[Out] 1/7*x^7 + 11/6*x^6 + 11*x^5 + 165/4*x^4 + 110*x^3 + 231*x^2 + 462*x - 1/12*
(1980*x^3 + 330*x^2 + 44*x + 3)/x^4 + 330*log(x)
```

mupad [B] time = 0.04, size = 58, normalized size = 0.83

$$462\,x+330\,\ln(x)+231\,x^2+110\,x^3+\frac{165\,x^4}{4}+11\,x^5+\frac{11\,x^6}{6}+\frac{x^7}{7}-\frac{165\,x^3+\frac{55\,x^2}{2}+\frac{11\,x}{3}+\frac{1}{4}}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^5,x)
```

```
[Out] 462*x + 330*log(x) + 231*x^2 + 110*x^3 + (165*x^4)/4 + 11*x^5 + (11*x^6)/6
+ x^7/7 - ((11*x)/3 + (55*x^2)/2 + 165*x^3 + 1/4)/x^4
```

sympy [A] time = 0.13, size = 63, normalized size = 0.90

$$\frac{x^7}{7} + \frac{11x^6}{6} + 11x^5 + \frac{165x^4}{4} + 110x^3 + 231x^2 + 462x + 330\log(x) + \frac{-1980x^3 - 330x^2 - 44x - 3}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**5,x)
```

```
[Out] x**7/7 + 11*x**6/6 + 11*x**5 + 165*x**4/4 + 110*x**3 + 231*x**2 + 462*x + 3
30*log(x) + (-1980*x**3 - 330*x**2 - 44*x - 3)/(12*x**4)
```

3.532 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^6}\,dx$

Optimal. Leaf size=72

$$\frac{x^6}{6}+\frac{11x^5}{5}-\frac{1}{5x^5}+\frac{55x^4}{4}-\frac{11}{4x^4}+55x^3-\frac{55}{3x^3}+165x^2-\frac{165}{2x^2}+462x-\frac{330}{x}+462\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^6}{6}+\frac{11x^5}{5}+\frac{55x^4}{4}+55x^3+165x^2-\frac{165}{2x^2}-\frac{55}{3x^3}-\frac{11}{4x^4}-\frac{1}{5x^5}+462x-\frac{330}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -1/(5*x^5) - 11/(4*x^4) - 55/(3*x^3) - 165/(2*x^2) - 330/x + 462*x + 165*x^
2 + 55*x^3 + (55*x^4)/4 + (11*x^5)/5 + x^6/6 + 462*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^6}\,dx &= \int \frac{(1+x)^{11}}{x^6}\,dx\\ &= \int \left(462+\frac{1}{x^6}+\frac{11}{x^5}+\frac{55}{x^4}+\frac{165}{x^3}+\frac{330}{x^2}+\frac{462}{x}+330x+165x^2+55x^3+11x^4+x^5\right.\\ &= -\frac{1}{5x^5}-\frac{11}{4x^4}-\frac{55}{3x^3}-\frac{165}{2x^2}-\frac{330}{x}+462x+165x^2+55x^3+\frac{55x^4}{4}+\frac{11x^5}{5}+\frac{x^6}{6}+4\end{aligned}$$

Mathematica [A] time = 0.00, size = 72, normalized size = 1.00

$$\frac{x^6}{6}+\frac{11x^5}{5}-\frac{1}{5x^5}+\frac{55x^4}{4}-\frac{11}{4x^4}+55x^3-\frac{55}{3x^3}+165x^2-\frac{165}{2x^2}+462x-\frac{330}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -1/5*1/x^5 - 11/(4*x^4) - 55/(3*x^3) - 165/(2*x^2) - 330/x + 462*x + 165*x^
2 + 55*x^3 + (55*x^4)/4 + (11*x^5)/5 + x^6/6 + 462*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^6, x]
```

fricas [A] time = 0.40, size = 62, normalized size = 0.86

$$\frac{10\,x^{11}+132\,x^{10}+825\,x^{9}+3300\,x^{8}+9900\,x^{7}+27720\,x^{6}+27720\,x^{5}\log(x)-19800\,x^{4}-4950\,x^{3}-1100\,x^{2}-165\,x-12}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(10*x^11 + 132*x^10 + 825*x^9 + 3300*x^8 + 9900*x^7 + 27720*x^6 + 2772
0*x^5*log(x) - 19800*x^4 - 4950*x^3 - 1100*x^2 - 165*x - 12)/x^5
```

giac [A] time = 0.16, size = 59, normalized size = 0.82

$$\frac{1}{6}\,x^{6}+\frac{11}{5}\,x^{5}+\frac{55}{4}\,x^{4}+55\,x^{3}+165\,x^{2}+462\,x-\frac{19800\,x^{4}+4950\,x^{3}+1100\,x^{2}+165\,x+12}{60\,x^{5}}+462\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^6,x, algorithm="giac")
```

```
[Out] 1/6*x^6 + 11/5*x^5 + 55/4*x^4 + 55*x^3 + 165*x^2 + 462*x - 1/60*(19800*x^4
+ 4950*x^3 + 1100*x^2 + 165*x + 12)/x^5 + 462*log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.82

$$\frac{x^6}{6}+\frac{11x^5}{5}+\frac{55x^4}{4}+55x^3+165x^2+462x+462\ln(x)-\frac{330}{x}-\frac{165}{2x^2}-\frac{55}{3x^3}-\frac{11}{4x^4}-\frac{1}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^6,x)
```

```
[Out] -1/5/x^5-11/4/x^4-55/3/x^3-165/2/x^2-330/x+462*x+165*x^2+55*x^3+55/4*x^4+11
/5*x^5+1/6*x^6+462*ln(x)
```

maxima [A] time = 0.61, size = 58, normalized size = 0.81

$$\frac{1}{6}\,x^{6}+\frac{11}{5}\,x^{5}+\frac{55}{4}\,x^{4}+55\,x^{3}+165\,x^{2}+462\,x-\frac{19800\,x^{4}+4950\,x^{3}+1100\,x^{2}+165\,x+12}{60\,x^{5}}+462\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^6,x, algorithm="maxima")
```

```
[Out] 1/6*x^6 + 11/5*x^5 + 55/4*x^4 + 55*x^3 + 165*x^2 + 462*x - 1/60*(19800*x^4
+ 4950*x^3 + 1100*x^2 + 165*x + 12)/x^5 + 462*log(x)
```

mupad [B] time = 0.03, size = 58, normalized size = 0.81

$$462\,x+462\,\ln(x)-\frac{330\,x^{4}+\frac{165\,x^{3}}{2}+\frac{55\,x^{2}}{3}+\frac{11\,x}{4}+\frac{1}{5}}{x^{5}}+165\,x^{2}+55\,x^{3}+\frac{55\,x^{4}}{4}+\frac{11\,x^{5}}{5}+\frac{x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^6,x)
```

```
[Out] 462*x + 462*log(x) - ((11*x)/4 + (55*x^2)/3 + (165*x^3)/2 + 330*x^4 + 1/5)/
x^5 + 165*x^2 + 55*x^3 + (55*x^4)/4 + (11*x^5)/5 + x^6/6
```

sympy [A] time = 0.14, size = 63, normalized size = 0.88

$$\frac{x^6}{6} + \frac{11x^5}{5} + \frac{55x^4}{4} + 55x^3 + 165x^2 + 462x + 462\log(x) + \frac{-19800x^4 - 4950x^3 - 1100x^2 - 165x - 12}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**6,x)
```

```
[Out] x**6/6 + 11*x**5/5 + 55*x**4/4 + 55*x**3 + 165*x**2 + 462*x + 462*log(x) +
(-19800*x**4 - 4950*x**3 - 1100*x**2 - 165*x - 12)/(60*x**5)
```

3.533 $\int \frac{(1+x)(1+2x+x^2)^5}{x^7}\,dx$

Optimal. Leaf size=72

$$-\frac{1}{6x^6}+\frac{x^5}{5}-\frac{11}{5x^5}+\frac{11x^4}{4}-\frac{55}{4x^4}+\frac{55x^3}{3}-\frac{55}{x^3}+\frac{165x^2}{2}-\frac{165}{x^2}+330x-\frac{462}{x}+462\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^5}{5}+\frac{11x^4}{4}+\frac{55x^3}{3}+\frac{165x^2}{2}-\frac{165}{x^2}-\frac{55}{x^3}-\frac{55}{4x^4}-\frac{11}{5x^5}-\frac{1}{6x^6}+330x-\frac{462}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -1/(6*x^6) - 11/(5*x^5) - 55/(4*x^4) - 55/x^3 - 165/x^2 - 462/x + 330*x + (
165*x^2)/2 + (55*x^3)/3 + (11*x^4)/4 + x^5/5 + 462*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^7}\,dx &= \int \frac{(1+x)^{11}}{x^7}\,dx\\ &= \int \left(330+\frac{1}{x^7}+\frac{11}{x^6}+\frac{55}{x^5}+\frac{165}{x^4}+\frac{330}{x^3}+\frac{462}{x^2}+\frac{462}{x}+165x+55x^2+11x^3+x\right.\\ &= -\frac{1}{6x^6}-\frac{11}{5x^5}-\frac{55}{4x^4}-\frac{55}{x^3}-\frac{165}{x^2}-\frac{462}{x}+330x+\frac{165x^2}{2}+\frac{55x^3}{3}+\frac{11x^4}{4}+\frac{x^5}{5}+\end{aligned}$$

Mathematica [A] time = 0.00, size = 72, normalized size = 1.00

$$-\frac{1}{6x^6}+\frac{x^5}{5}-\frac{11}{5x^5}+\frac{11x^4}{4}-\frac{55}{4x^4}+\frac{55x^3}{3}-\frac{55}{x^3}+\frac{165x^2}{2}-\frac{165}{x^2}+330x-\frac{462}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -1/6*1/x^6 - 11/(5*x^5) - 55/(4*x^4) - 55/x^3 - 165/x^2 - 462/x + 330*x + (
165*x^2)/2 + (55*x^3)/3 + (11*x^4)/4 + x^5/5 + 462*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^7,x]
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^7, x]
```

fricas [A] time = 0.40, size = 62, normalized size = 0.86

$$\frac{12\,x^{11}+165\,x^{10}+1100\,x^{9}+4950\,x^{8}+19800\,x^{7}+27720\,x^{6}\log\left(x\right)-27720\,x^{5}-9900\,x^{4}-3300\,x^{3}-825\,x^{2}-132\,x-10}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^7,x, algorithm="fricas")
[Out] 1/60*(12*x^11 + 165*x^10 + 1100*x^9 + 4950*x^8 + 19800*x^7 + 27720*x^6*log(
x) - 27720*x^5 - 9900*x^4 - 3300*x^3 - 825*x^2 - 132*x - 10)/x^6
```

giac [A] time = 0.15, size = 59, normalized size = 0.82

$$\frac{1}{5}\,x^{5}+\frac{11}{4}\,x^{4}+\frac{55}{3}\,x^{3}+\frac{165}{2}\,x^{2}+330\,x-\frac{27720\,x^{5}+9900\,x^{4}+3300\,x^{3}+825\,x^{2}+132\,x+10}{60\,x^{6}}+462\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^7,x, algorithm="giac")
[Out] 1/5*x^5 + 11/4*x^4 + 55/3*x^3 + 165/2*x^2 + 330*x - 1/60*(27720*x^5 + 9900*
x^4 + 3300*x^3 + 825*x^2 + 132*x + 10)/x^6 + 462*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.82

$$\frac{x^{5}}{5}+\frac{11x^{4}}{4}+\frac{55x^{3}}{3}+\frac{165x^{2}}{2}+330x+462\ln\left(x\right)-\frac{462}{x}-\frac{165}{x^{2}}-\frac{55}{x^{3}}-\frac{55}{4x^{4}}-\frac{11}{5x^{5}}-\frac{1}{6x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^7,x)
[Out] -1/6/x^6-11/5/x^5-55/4/x^4-55/x^3-165/x^2-462/x+330*x+165/2*x^2+55/3*x^3+11
/4*x^4+1/5*x^5+462*ln(x)
```

maxima [A] time = 0.66, size = 58, normalized size = 0.81

$$\frac{1}{5}\,x^{5}+\frac{11}{4}\,x^{4}+\frac{55}{3}\,x^{3}+\frac{165}{2}\,x^{2}+330\,x-\frac{27720\,x^{5}+9900\,x^{4}+3300\,x^{3}+825\,x^{2}+132\,x+10}{60\,x^{6}}+462\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^7,x, algorithm="maxima")
[Out] 1/5*x^5 + 11/4*x^4 + 55/3*x^3 + 165/2*x^2 + 330*x - 1/60*(27720*x^5 + 9900*
x^4 + 3300*x^3 + 825*x^2 + 132*x + 10)/x^6 + 462*log(x)
```

mupad [B] time = 0.03, size = 58, normalized size = 0.81

$$330\,x+462\,\ln\left(x\right)-\frac{462\,x^{5}+165\,x^{4}+55\,x^{3}+\frac{55\,x^{2}}{4}+\frac{11\,x}{5}+\frac{1}{6}}{x^{6}}+\frac{165\,x^{2}}{2}+\frac{55\,x^{3}}{3}+\frac{11\,x^{4}}{4}+\frac{x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^7,x)
```

```
[Out] 330*x + 462*log(x) - ((11*x)/5 + (55*x^2)/4 + 55*x^3 + 165*x^4 + 462*x^5 +
1/6)/x^6 + (165*x^2)/2 + (55*x^3)/3 + (11*x^4)/4 + x^5/5
```

sympy [A] time = 0.14, size = 65, normalized size = 0.90

$$\frac{x^5}{5} + \frac{11x^4}{4} + \frac{55x^3}{3} + \frac{165x^2}{2} + 330x + 462\log(x) + \frac{-27720x^5 - 9900x^4 - 3300x^3 - 825x^2 - 132x - 10}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**7,x)
```

```
[Out] x**5/5 + 11*x**4/4 + 55*x**3/3 + 165*x**2/2 + 330*x + 462*log(x) + (-27720*
x**5 - 9900*x**4 - 3300*x**3 - 825*x**2 - 132*x - 10)/(60*x**6)
```

3.534 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^8}\,dx$

Optimal. Leaf size=70

$$-\frac{1}{7x^7}-\frac{11}{6x^6}-\frac{11}{x^5}+\frac{x^4}{4}-\frac{165}{4x^4}+\frac{11x^3}{3}-\frac{110}{x^3}+\frac{55x^2}{2}-\frac{231}{x^2}+165x-\frac{462}{x}+330\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^4}{4}+\frac{11x^3}{3}+\frac{55x^2}{2}-\frac{231}{x^2}-\frac{110}{x^3}-\frac{165}{4x^4}-\frac{11}{x^5}-\frac{11}{6x^6}-\frac{1}{7x^7}+165x-\frac{462}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -1/(7*x^7) - 11/(6*x^6) - 11/x^5 - 165/(4*x^4) - 110/x^3 - 231/x^2 - 462/x
+ 165*x + (55*x^2)/2 + (11*x^3)/3 + x^4/4 + 330*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^8}\,dx &= \int \frac{(1+x)^{11}}{x^8}\,dx\\ &= \int \left(165+\frac{1}{x^8}+\frac{11}{x^7}+\frac{55}{x^6}+\frac{165}{x^5}+\frac{330}{x^4}+\frac{462}{x^3}+\frac{462}{x^2}+\frac{330}{x}+55x+11x^2+x^3\right)dx\\ &= -\frac{1}{7x^7}-\frac{11}{6x^6}-\frac{11}{x^5}-\frac{165}{4x^4}-\frac{110}{x^3}-\frac{231}{x^2}-\frac{462}{x}+165x+\frac{55x^2}{2}+\frac{11x^3}{3}+\frac{x^4}{4}+330\log(x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{7x^7}-\frac{11}{6x^6}-\frac{11}{x^5}+\frac{x^4}{4}-\frac{165}{4x^4}+\frac{11x^3}{3}-\frac{110}{x^3}+\frac{55x^2}{2}-\frac{231}{x^2}+165x-\frac{462}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -1/7*1/x^7 - 11/(6*x^6) - 11/x^5 - 165/(4*x^4) - 110/x^3 - 231/x^2 - 462/x
+ 165*x + (55*x^2)/2 + (11*x^3)/3 + x^4/4 + 330*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^8, x]
```

fricas [A] time = 0.40, size = 62, normalized size = 0.89

$$\frac{21\,x^{11}+308\,x^{10}+2310\,x^{9}+13860\,x^{8}+27720\,x^{7}\log(x)-38808\,x^{6}-19404\,x^{5}-9240\,x^{4}-3465\,x^{3}-924\,x^{2}-154\,x-12}{84\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^8,x, algorithm="fricas")
```

```
[Out] 1/84*(21*x^11 + 308*x^10 + 2310*x^9 + 13860*x^8 + 27720*x^7*log(x) - 38808*
x^6 - 19404*x^5 - 9240*x^4 - 3465*x^3 - 924*x^2 - 154*x - 12)/x^7
```

giac [A] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{4}\,x^{4}+\frac{11}{3}\,x^{3}+\frac{55}{2}\,x^{2}+165\,x-\frac{38808\,x^{6}+19404\,x^{5}+9240\,x^{4}+3465\,x^{3}+924\,x^{2}+154\,x+12}{84\,x^{7}}+330\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^8,x, algorithm="giac")
```

```
[Out] 1/4*x^4 + 11/3*x^3 + 55/2*x^2 + 165*x - 1/84*(38808*x^6 + 19404*x^5 + 9240*
x^4 + 3465*x^3 + 924*x^2 + 154*x + 12)/x^7 + 330*log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.84

$$\frac{x^4}{4}+\frac{11x^3}{3}+\frac{55x^2}{2}+165x+330\ln(x)-\frac{462}{x}-\frac{231}{x^2}-\frac{110}{x^3}-\frac{165}{4x^4}-\frac{11}{x^5}-\frac{11}{6x^6}-\frac{1}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^8,x)
```

```
[Out] -1/7/x^7-11/6/x^6-11/x^5-165/4/x^4-110/x^3-231/x^2-462/x+165*x+55/2*x^2+11/
3*x^3+1/4*x^4+330*ln(x)
```

maxima [A] time = 0.48, size = 58, normalized size = 0.83

$$\frac{1}{4}\,x^{4}+\frac{11}{3}\,x^{3}+\frac{55}{2}\,x^{2}+165\,x-\frac{38808\,x^{6}+19404\,x^{5}+9240\,x^{4}+3465\,x^{3}+924\,x^{2}+154\,x+12}{84\,x^{7}}+330\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^8,x, algorithm="maxima")
```

```
[Out] 1/4*x^4 + 11/3*x^3 + 55/2*x^2 + 165*x - 1/84*(38808*x^6 + 19404*x^5 + 9240*
x^4 + 3465*x^3 + 924*x^2 + 154*x + 12)/x^7 + 330*log(x)
```

mupad [B] time = 0.03, size = 58, normalized size = 0.83

$$165\,x+330\,\ln(x)-\frac{462\,x^6+231\,x^5+110\,x^4+\frac{165\,x^3}{4}+11\,x^2+\frac{11\,x}{6}+\frac{1}{7}}{x^7}+\frac{55\,x^2}{2}+\frac{11\,x^3}{3}+\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^8,x)
```

```
[Out] 165*x + 330*log(x) - ((11*x)/6 + 11*x^2 + (165*x^3)/4 + 110*x^4 + 231*x^5 +
 462*x^6 + 1/7)/x^7 + (55*x^2)/2 + (11*x^3)/3 + x^4/4
```

sympy [A] time = 0.15, size = 63, normalized size = 0.90

$$\frac{x^4}{4} + \frac{11x^3}{3} + \frac{55x^2}{2} + 165x + 330\log(x) + \frac{-38808x^6 - 19404x^5 - 9240x^4 - 3465x^3 - 924x^2 - 154x - 12}{84x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**8,x)
```

```
[Out] x**4/4 + 11*x**3/3 + 55*x**2/2 + 165*x + 330*log(x) + (-38808*x**6 - 19404*
x**5 - 9240*x**4 - 3465*x**3 - 924*x**2 - 154*x - 12)/(84*x**7)
```

3.535 $\int \frac{(1+x)(1+2x+x^2)^5}{x^9} \, dx$

Optimal. Leaf size=70

$$-\frac{1}{8x^8}-\frac{11}{7x^7}-\frac{55}{6x^6}-\frac{33}{x^5}-\frac{165}{2x^4}+\frac{x^3}{3}-\frac{154}{x^3}+\frac{11x^2}{2}-\frac{231}{x^2}+55x-\frac{330}{x}+165\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^3}{3}+\frac{11x^2}{2}-\frac{231}{x^2}-\frac{154}{x^3}-\frac{165}{2x^4}-\frac{33}{x^5}-\frac{55}{6x^6}-\frac{11}{7x^7}-\frac{1}{8x^8}+55x-\frac{330}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -1/(8*x^8) - 11/(7*x^7) - 55/(6*x^6) - 33/x^5 - 165/(2*x^4) - 154/x^3 - 231
/x^2 - 330/x + 55*x + (11*x^2)/2 + x^3/3 + 165*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^9}\,dx &= \int \frac{(1+x)^{11}}{x^9}\,dx\\ &= \int \left(55+\frac{1}{x^9}+\frac{11}{x^8}+\frac{55}{x^7}+\frac{165}{x^6}+\frac{330}{x^5}+\frac{462}{x^4}+\frac{462}{x^3}+\frac{330}{x^2}+\frac{165}{x}+11x+x^2\right)\,d\\ &= -\frac{1}{8x^8}-\frac{11}{7x^7}-\frac{55}{6x^6}-\frac{33}{x^5}-\frac{165}{2x^4}-\frac{154}{x^3}-\frac{231}{x^2}-\frac{330}{x}+55x+\frac{11x^2}{2}+\frac{x^3}{3}+165\,l\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{8x^8}-\frac{11}{7x^7}-\frac{55}{6x^6}-\frac{33}{x^5}-\frac{165}{2x^4}+\frac{x^3}{3}-\frac{154}{x^3}+\frac{11x^2}{2}-\frac{231}{x^2}+55x-\frac{330}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -1/8*1/x^8 - 11/(7*x^7) - 55/(6*x^6) - 33/x^5 - 165/(2*x^4) - 154/x^3 - 231
/x^2 - 330/x + 55*x + (11*x^2)/2 + x^3/3 + 165*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^9, x]
```

fricas [A] time = 0.39, size = 62, normalized size = 0.89

$$\frac{56\,x^{11} + 924\,x^{10} + 9240\,x^{9} + 27720\,x^{8}\log\left(x\right) - 55440\,x^{7} - 38808\,x^{6} - 25872\,x^{5} - 13860\,x^{4} - 5544\,x^{3} - 1540\,x^{2} - 264\,x - 21}{168\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^9,x, algorithm="fricas")
```

```
[Out] 1/168*(56*x^11 + 924*x^10 + 9240*x^9 + 27720*x^8*log(x) - 55440*x^7 - 38808
*x^6 - 25872*x^5 - 13860*x^4 - 5544*x^3 - 1540*x^2 - 264*x - 21)/x^8
```

giac [A] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{3}\,x^{3} + \frac{11}{2}\,x^{2} + 55\,x - \frac{55440\,x^{7} + 38808\,x^{6} + 25872\,x^{5} + 13860\,x^{4} + 5544\,x^{3} + 1540\,x^{2} + 264\,x + 21}{168\,x^{8}} + 165\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^9,x, algorithm="giac")
```

```
[Out] 1/3*x^3 + 11/2*x^2 + 55*x - 1/168*(55440*x^7 + 38808*x^6 + 25872*x^5 + 1386
0*x^4 + 5544*x^3 + 1540*x^2 + 264*x + 21)/x^8 + 165*log(abs(x))
```

maple [A] time = 0.04, size = 59, normalized size = 0.84

$$\frac{x^3}{3}+\frac{11x^2}{2}+55x+165\ln(x)-\frac{330}{x}-\frac{231}{x^2}-\frac{154}{x^3}-\frac{165}{2x^4}-\frac{33}{x^5}-\frac{55}{6x^6}-\frac{11}{7x^7}-\frac{1}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^9,x)
```

```
[Out] -1/8/x^8-11/7/x^7-55/6/x^6-33/x^5-165/2/x^4-154/x^3-231/x^2-330/x+55*x+11/2
*x^2+1/3*x^3+165*ln(x)
```

maxima [A] time = 0.62, size = 58, normalized size = 0.83

$$\frac{1}{3}\,x^{3} + \frac{11}{2}\,x^{2} + 55\,x - \frac{55440\,x^{7} + 38808\,x^{6} + 25872\,x^{5} + 13860\,x^{4} + 5544\,x^{3} + 1540\,x^{2} + 264\,x + 21}{168\,x^{8}} + 165\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^9,x, algorithm="maxima")
```

```
[Out] 1/3*x^3 + 11/2*x^2 + 55*x - 1/168*(55440*x^7 + 38808*x^6 + 25872*x^5 + 1386
0*x^4 + 5544*x^3 + 1540*x^2 + 264*x + 21)/x^8 + 165*log(x)
```

mupad [B] time = 0.03, size = 58, normalized size = 0.83

$$55\,x+165\,\ln\left(x\right)-\frac{330\,x^7+231\,x^6+154\,x^5+\frac{165\,x^4}{2}+33\,x^3+\frac{55\,x^2}{6}+\frac{11\,x}{7}+\frac{1}{8}}{x^8}+\frac{11\,x^2}{2}+\frac{x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^9,x)
```

```
[Out] 55*x + 165*log(x) - ((11*x)/7 + (55*x^2)/6 + 33*x^3 + (165*x^4)/2 + 154*x^5
 + 231*x^6 + 330*x^7 + 1/8)/x^8 + (11*x^2)/2 + x^3/3
```

sympy [A] time = 0.15, size = 61, normalized size = 0.87

$$\frac{x^3}{3}+\frac{11x^2}{2}+55x+165\log(x)+\frac{-55440x^7-38808x^6-25872x^5-13860x^4-5544x^3-1540x^2-264x-21}{168x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**9,x)
```

```
[Out] x**3/3 + 11*x**2/2 + 55*x + 165*log(x) + (-55440*x**7 - 38808*x**6 - 25872*
x**5 - 13860*x**4 - 5544*x**3 - 1540*x**2 - 264*x - 21)/(168*x**8)
```

3.536 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$

Optimal. Leaf size=70

$$-\frac{1}{9x^9}-\frac{11}{8x^8}-\frac{55}{7x^7}-\frac{55}{2x^6}-\frac{66}{x^5}-\frac{231}{2x^4}-\frac{154}{x^3}+\frac{x^2}{2}-\frac{165}{x^2}+11x-\frac{165}{x}+55\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = {27, 43}

$$\frac{x^2}{2}-\frac{165}{x^2}-\frac{154}{x^3}-\frac{231}{2x^4}-\frac{66}{x^5}-\frac{55}{2x^6}-\frac{55}{7x^7}-\frac{11}{8x^8}-\frac{1}{9x^9}+11x-\frac{165}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -1/(9*x^9) - 11/(8*x^8) - 55/(7*x^7) - 55/(2*x^6) - 66/x^5 - 231/(2*x^4) -
154/x^3 - 165/x^2 - 165/x + 11*x + x^2/2 + 55*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{10}}\,dx &= \int \frac{(1+x)^{11}}{x^{10}}\,dx\\
&= \int \left(11+\frac{1}{x^{10}}+\frac{11}{x^9}+\frac{55}{x^8}+\frac{165}{x^7}+\frac{330}{x^6}+\frac{462}{x^5}+\frac{462}{x^4}+\frac{330}{x^3}+\frac{165}{x^2}+\frac{55}{x}+x\right)dx\\
&= -\frac{1}{9x^9}-\frac{11}{8x^8}-\frac{55}{7x^7}-\frac{55}{2x^6}-\frac{66}{x^5}-\frac{231}{2x^4}-\frac{154}{x^3}-\frac{165}{x^2}-\frac{165}{x}+11x+\frac{x^2}{2}+55\log(x)
\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{9x^9}-\frac{11}{8x^8}-\frac{55}{7x^7}-\frac{55}{2x^6}-\frac{66}{x^5}-\frac{231}{2x^4}-\frac{154}{x^3}+\frac{x^2}{2}-\frac{165}{x^2}+11x-\frac{165}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -1/9*1/x^9 - 11/(8*x^8) - 55/(7*x^7) - 55/(2*x^6) - 66/x^5 - 231/(2*x^4) -
154/x^3 - 165/x^2 - 165/x + 11*x + x^2/2 + 55*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^10, x]
```

fricas [A] time = 0.41, size = 62, normalized size = 0.89

$$\frac{252\,x^{11}+5544\,x^{10}+27720\,x^{9}\log(x)-83160\,x^{8}-83160\,x^{7}-77616\,x^{6}-58212\,x^{5}-33264\,x^{4}-13860\,x^{3}-3960\,x^{2}-693\,x-56}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^10,x, algorithm="fricas")
```

```
[Out] 1/504*(252*x^11 + 5544*x^10 + 27720*x^9*log(x) - 83160*x^8 - 83160*x^7 - 77
616*x^6 - 58212*x^5 - 33264*x^4 - 13860*x^3 - 3960*x^2 - 693*x - 56)/x^9
```

giac [A] time = 0.17, size = 59, normalized size = 0.84

$$\frac{1}{2}\,x^{2}+11\,x-\frac{83160\,x^{8}+83160\,x^{7}+77616\,x^{6}+58212\,x^{5}+33264\,x^{4}+13860\,x^{3}+3960\,x^{2}+693\,x+56}{504\,x^{9}}+55\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^10,x, algorithm="giac")
```

```
[Out] 1/2*x^2 + 11*x - 1/504*(83160*x^8 + 83160*x^7 + 77616*x^6 + 58212*x^5 + 332
64*x^4 + 13860*x^3 + 3960*x^2 + 693*x + 56)/x^9 + 55*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.84

$$\frac{x^2}{2}+11x+55\ln(x)-\frac{165}{x}-\frac{165}{x^2}-\frac{154}{x^3}-\frac{231}{2x^4}-\frac{66}{x^5}-\frac{55}{2x^6}-\frac{55}{7x^7}-\frac{11}{8x^8}-\frac{1}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^10,x)
```

```
[Out] -1/9/x^9-11/8/x^8-55/7/x^7-55/2/x^6-66/x^5-231/2/x^4-154/x^3-165/x^2-165/x+
11*x+1/2*x^2+55*ln(x)
```

maxima [A] time = 0.55, size = 58, normalized size = 0.83

$$\frac{1}{2}\,x^{2}+11\,x-\frac{83160\,x^{8}+83160\,x^{7}+77616\,x^{6}+58212\,x^{5}+33264\,x^{4}+13860\,x^{3}+3960\,x^{2}+693\,x+56}{504\,x^{9}}+55\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^10,x, algorithm="maxima")
```

```
[Out] 1/2*x^2 + 11*x - 1/504*(83160*x^8 + 83160*x^7 + 77616*x^6 + 58212*x^5 + 332
64*x^4 + 13860*x^3 + 3960*x^2 + 693*x + 56)/x^9 + 55*log(x)
```

mupad [B] time = 0.03, size = 58, normalized size = 0.83

$$11\,x+55\,\ln(x)+\frac{x^2}{2}-\frac{165\,x^8+165\,x^7+154\,x^6+\frac{231\,x^5}{2}+66\,x^4+\frac{55\,x^3}{2}+\frac{55\,x^2}{7}+\frac{11\,x}{8}+\frac{1}{9}}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^10,x)
```

```
[Out] 11*x + 55*log(x) + x^2/2 - ((11*x)/8 + (55*x^2)/7 + (55*x^3)/2 + 66*x^4 + (
231*x^5)/2 + 154*x^6 + 165*x^7 + 165*x^8 + 1/9)/x^9
```

sympy [A] time = 0.16, size = 60, normalized size = 0.86

$$\frac{x^2}{2} + 11x + 55\log(x) + \frac{-83160x^8 - 83160x^7 - 77616x^6 - 58212x^5 - 33264x^4 - 13860x^3 - 3960x^2 - 693x - 56}{504x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**10,x)
```

```
[Out] x**2/2 + 11*x + 55*log(x) + (-83160*x**8 - 83160*x**7 - 77616*x**6 - 58212*
x**5 - 33264*x**4 - 13860*x**3 - 3960*x**2 - 693*x - 56)/(504*x**9)
```

3.537 $\int \frac{(1+x)(1+2x+x^2)^5}{x^{11}}\,dx$

Optimal. Leaf size=70

$$-\frac{1}{10x^{10}}-\frac{11}{9x^9}-\frac{55}{8x^8}-\frac{165}{7x^7}-\frac{55}{x^6}-\frac{462}{5x^5}-\frac{231}{2x^4}-\frac{110}{x^3}-\frac{165}{2x^2}+x-\frac{55}{x}+11\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$-\frac{165}{2x^2}-\frac{110}{x^3}-\frac{231}{2x^4}-\frac{462}{5x^5}-\frac{55}{x^6}-\frac{165}{7x^7}-\frac{55}{8x^8}-\frac{11}{9x^9}-\frac{1}{10x^{10}}+x-\frac{55}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -1/(10*x^10) - 11/(9*x^9) - 55/(8*x^8) - 165/(7*x^7) - 55/x^6 - 462/(5*x^5)
 - 231/(2*x^4) - 110/x^3 - 165/(2*x^2) - 55/x + x + 11*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{11}}\,dx &= \int \frac{(1+x)^{11}}{x^{11}}\,dx\\ &= \int \left(1+\frac{1}{x^{11}}+\frac{11}{x^{10}}+\frac{55}{x^9}+\frac{165}{x^8}+\frac{330}{x^7}+\frac{462}{x^6}+\frac{462}{x^5}+\frac{330}{x^4}+\frac{165}{x^3}+\frac{55}{x^2}+\frac{11}{x}\right)\\ &= -\frac{1}{10x^{10}}-\frac{11}{9x^9}-\frac{55}{8x^8}-\frac{165}{7x^7}-\frac{55}{x^6}-\frac{462}{5x^5}-\frac{231}{2x^4}-\frac{110}{x^3}-\frac{165}{2x^2}-\frac{55}{x}+x+11\log\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{10x^{10}}-\frac{11}{9x^9}-\frac{55}{8x^8}-\frac{165}{7x^7}-\frac{55}{x^6}-\frac{462}{5x^5}-\frac{231}{2x^4}-\frac{110}{x^3}-\frac{165}{2x^2}+x-\frac{55}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -1/10*1/x^10 - 11/(9*x^9) - 55/(8*x^8) - 165/(7*x^7) - 55/x^6 - 462/(5*x^5)
 - 231/(2*x^4) - 110/x^3 - 165/(2*x^2) - 55/x + x + 11*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^11, x]
```

fricas [A] time = 0.40, size = 62, normalized size = 0.89

$$\frac{2520\,x^{11}+27720\,x^{10}\log(x)-138600\,x^{9}-207900\,x^{8}-277200\,x^{7}-291060\,x^{6}-232848\,x^{5}-138600\,x^{4}-59400\,x^{3}-17325\,x^{2}-3080\,x-252}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^11,x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*x^11 + 27720*x^10*log(x) - 138600*x^9 - 207900*x^8 - 277200*x^
7 - 291060*x^6 - 232848*x^5 - 138600*x^4 - 59400*x^3 - 17325*x^2 - 3080*x -
 252)/x^10
```

giac [A] time = 0.15, size = 57, normalized size = 0.81

$$x-\frac{138600\,x^{9}+207900\,x^{8}+277200\,x^{7}+291060\,x^{6}+232848\,x^{5}+138600\,x^{4}+59400\,x^{3}+17325\,x^{2}+3080\,x+252}{2520\,x^{10}}+11\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^11,x, algorithm="giac")
```

```
[Out] x - 1/2520*(138600*x^9 + 207900*x^8 + 277200*x^7 + 291060*x^6 + 232848*x^5
+ 138600*x^4 + 59400*x^3 + 17325*x^2 + 3080*x + 252)/x^10 + 11*log(abs(x))
```

maple [A] time = 0.05, size = 57, normalized size = 0.81

$$x+11\ln(x)-\frac{55}{x}-\frac{165}{2x^{2}}-\frac{110}{x^{3}}-\frac{231}{2x^{4}}-\frac{462}{5x^{5}}-\frac{55}{x^{6}}-\frac{165}{7x^{7}}-\frac{55}{8x^{8}}-\frac{11}{9x^{9}}-\frac{1}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^11,x)
```

```
[Out] -1/10/x^10-11/9/x^9-55/8/x^8-165/7/x^7-55/x^6-462/5/x^5-231/2/x^4-110/x^3-1
65/2/x^2-55/x+x+11*ln(x)
```

maxima [A] time = 0.53, size = 56, normalized size = 0.80

$$x-\frac{138600\,x^{9}+207900\,x^{8}+277200\,x^{7}+291060\,x^{6}+232848\,x^{5}+138600\,x^{4}+59400\,x^{3}+17325\,x^{2}+3080\,x+252}{2520\,x^{10}}+11\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^11,x, algorithm="maxima")
```

```
[Out] x - 1/2520*(138600*x^9 + 207900*x^8 + 277200*x^7 + 291060*x^6 + 232848*x^5
+ 138600*x^4 + 59400*x^3 + 17325*x^2 + 3080*x + 252)/x^10 + 11*log(x)
```

mupad [B] time = 1.08, size = 62, normalized size = 0.89

$$-\frac{\frac{11\,x}{9}-11\,x^{10}\,\ln(x)+\frac{55\,x^{2}}{8}+\frac{165\,x^{3}}{7}+55\,x^{4}+\frac{462\,x^{5}}{5}+\frac{231\,x^{6}}{2}+110\,x^{7}+\frac{165\,x^{8}}{2}+55\,x^{9}-x^{11}+\frac{1}{10}}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^11,x)
```

```
[Out] -((11*x)/9 - 11*x^10*log(x) + (55*x^2)/8 + (165*x^3)/7 + 55*x^4 + (462*x^5)
/5 + (231*x^6)/2 + 110*x^7 + (165*x^8)/2 + 55*x^9 - x^11 + 1/10)/x^10
```

sympy [A] time = 0.17, size = 58, normalized size = 0.83

$$x + 11\log(x) + \frac{-138600x^9 - 207900x^8 - 277200x^7 - 291060x^6 - 232848x^5 - 138600x^4 - 59400x^3 - 17325x^2 - 3080x - 252}{2520x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**11,x)
```

```
[Out] x + 11*log(x) + (-138600*x**9 - 207900*x**8 - 277200*x**7 - 291060*x**6 - 2
32848*x**5 - 138600*x**4 - 59400*x**3 - 17325*x**2 - 3080*x - 252)/(2520*x*
*10)
```

3.538 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{12}} \, dx$

Optimal. Leaf size=74

$$-\frac{1}{11x^{11}}-\frac{11}{10x^{10}}-\frac{55}{9x^9}-\frac{165}{8x^8}-\frac{330}{7x^7}-\frac{77}{x^6}-\frac{462}{5x^5}-\frac{165}{2x^4}-\frac{55}{x^3}-\frac{55}{2x^2}-\frac{11}{x}+\log(x)$$

Rubi [A] time = 0.02, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$-\frac{55}{2x^2}-\frac{55}{x^3}-\frac{165}{2x^4}-\frac{462}{5x^5}-\frac{77}{x^6}-\frac{330}{7x^7}-\frac{165}{8x^8}-\frac{55}{9x^9}-\frac{11}{10x^{10}}-\frac{1}{11x^{11}}-\frac{11}{x}+\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -1/(11*x^11) - 11/(10*x^10) - 55/(9*x^9) - 165/(8*x^8) - 330/(7*x^7) - 77/x
^6 - 462/(5*x^5) - 165/(2*x^4) - 55/x^3 - 55/(2*x^2) - 11/x + Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned} \int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{12}} \, dx &= \int \frac{(1+x)^{11}}{x^{12}} \, dx \\ &= \int \left(\frac{1}{x^{12}}+\frac{11}{x^{11}}+\frac{55}{x^{10}}+\frac{165}{x^9}+\frac{330}{x^8}+\frac{462}{x^7}+\frac{462}{x^6}+\frac{330}{x^5}+\frac{165}{x^4}+\frac{55}{x^3}+\frac{11}{x^2}+\frac{1}{x}\right) dx \\ &= -\frac{1}{11x^{11}}-\frac{11}{10x^{10}}-\frac{55}{9x^9}-\frac{165}{8x^8}-\frac{330}{7x^7}-\frac{77}{x^6}-\frac{462}{5x^5}-\frac{165}{2x^4}-\frac{55}{x^3}-\frac{55}{2x^2}-\frac{11}{x}+\log(x) \end{aligned}$$

Mathematica [A] time = 0.00, size = 74, normalized size = 1.00

$$-\frac{1}{11x^{11}}-\frac{11}{10x^{10}}-\frac{55}{9x^9}-\frac{165}{8x^8}-\frac{330}{7x^7}-\frac{77}{x^6}-\frac{462}{5x^5}-\frac{165}{2x^4}-\frac{55}{x^3}-\frac{55}{2x^2}-\frac{11}{x}+\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -1/11*1/x^11 - 11/(10*x^10) - 55/(9*x^9) - 165/(8*x^8) - 330/(7*x^7) - 77/x
^6 - 462/(5*x^5) - 165/(2*x^4) - 55/x^3 - 55/(2*x^2) - 11/x + Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{12}} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^12, x]
```

fricas [A] time = 0.39, size = 62, normalized size = 0.84

$$\frac{27720\,x^{11}\log(x) - 304920\,x^{10} - 762300\,x^{9} - 1524600\,x^{8} - 2286900\,x^{7} - 2561328\,x^{6} - 2134440\,x^{5} - 1306800\,x^{4} - 571725\,x^{3} - 169400\,x^{2} - 30492\,x - 2520}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^12,x, algorithm="fricas")
```

```
[Out] 1/27720*(27720*x^11*log(x) - 304920*x^10 - 762300*x^9 - 1524600*x^8 - 22869
00*x^7 - 2561328*x^6 - 2134440*x^5 - 1306800*x^4 - 571725*x^3 - 169400*x^2
- 30492*x - 2520)/x^11
```

giac [A] time = 0.19, size = 59, normalized size = 0.80

$$-\frac{304920\,x^{10} + 762300\,x^{9} + 1524600\,x^{8} + 2286900\,x^{7} + 2561328\,x^{6} + 2134440\,x^{5} + 1306800\,x^{4} + 571725\,x^{3} + 169400\,x^{2} + 30492\,x + 2520}{27720\,x^{11}} + \log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^12,x, algorithm="giac")
```

```
[Out] -1/27720*(304920*x^10 + 762300*x^9 + 1524600*x^8 + 2286900*x^7 + 2561328*x^
6 + 2134440*x^5 + 1306800*x^4 + 571725*x^3 + 169400*x^2 + 30492*x + 2520)/x
^11 + log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.80

$$\ln(x) - \frac{11}{x} - \frac{55}{2x^2} - \frac{55}{x^3} - \frac{165}{2x^4} - \frac{462}{5x^5} - \frac{77}{x^6} - \frac{330}{7x^7} - \frac{165}{8x^8} - \frac{55}{9x^9} - \frac{11}{10x^{10}} - \frac{1}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^12,x)
```

```
[Out] -1/11/x^11-11/10/x^10-55/9/x^9-165/8/x^8-330/7/x^7-77/x^6-462/5/x^5-165/2/x
^4-55/x^3-55/2/x^2-11/x+ln(x)
```

maxima [A] time = 0.58, size = 58, normalized size = 0.78

$$-\frac{304920\,x^{10} + 762300\,x^{9} + 1524600\,x^{8} + 2286900\,x^{7} + 2561328\,x^{6} + 2134440\,x^{5} + 1306800\,x^{4} + 571725\,x^{3} + 169400\,x^{2} + 30492\,x + 2520}{27720\,x^{11}} + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^12,x, algorithm="maxima")
```

```
[Out] -1/27720*(304920*x^10 + 762300*x^9 + 1524600*x^8 + 2286900*x^7 + 2561328*x^
6 + 2134440*x^5 + 1306800*x^4 + 571725*x^3 + 169400*x^2 + 30492*x + 2520)/x
^11 + log(x)
```

mupad [B] time = 1.08, size = 58, normalized size = 0.78

$$\ln(x) - \frac{11\,x^{10} + \frac{55\,x^9}{2} + 55\,x^8 + \frac{165\,x^7}{2} + \frac{462\,x^6}{5} + 77\,x^5 + \frac{330\,x^4}{7} + \frac{165\,x^3}{8} + \frac{55\,x^2}{9} + \frac{11\,x}{10} + \frac{1}{11}}{x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^12,x)
```

```
[Out] log(x) - ((11*x)/10 + (55*x^2)/9 + (165*x^3)/8 + (330*x^4)/7 + 77*x^5 + (46
2*x^6)/5 + (165*x^7)/2 + 55*x^8 + (55*x^9)/2 + 11*x^10 + 1/11)/x^11
```

sympy [**A**] time = 0.18, size = 60, normalized size = 0.81

$$\log(x) + \frac{-304920x^{10} - 762300x^9 - 1524600x^8 - 2286900x^7 - 2561328x^6 - 2134440x^5 - 1306800x^4 - 571725x^3 - 169400x^2 - 30492x - 2520}{27720x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**12,x)
```

```
[Out] log(x) + (-304920*x**10 - 762300*x**9 - 1524600*x**8 - 2286900*x**7 - 25613
28*x**6 - 2134440*x**5 - 1306800*x**4 - 571725*x**3 - 169400*x**2 - 30492*x
 - 2520)/(27720*x**11)
```

3.539 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}} \, dx$

Optimal. Leaf size=12

$$-\frac{(x+1)^{12}}{12x^{12}}$$

Rubi [A] time = 0.00, antiderivative size = 12, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 37}

$$-\frac{(x+1)^{12}}{12x^{12}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -(1 + x)^12/(12*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}} \, dx &= \int \frac{(1+x)^{11}}{x^{13}} \, dx\\ &= -\frac{(1+x)^{12}}{12x^{12}}\end{aligned}$$

Mathematica [B] time = 0.00, size = 75, normalized size = 6.25

$$-\frac{1}{12x^{12}}-\frac{1}{x^{11}}-\frac{11}{2x^{10}}-\frac{55}{3x^9}-\frac{165}{4x^8}-\frac{66}{x^7}-\frac{77}{x^6}-\frac{66}{x^5}-\frac{165}{4x^4}-\frac{55}{3x^3}-\frac{11}{2x^2}-\frac{1}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -1/12*1/x^12 - x^(-11) - 11/(2*x^10) - 55/(3*x^9) - 165/(4*x^8) - 66/x^7 -
77/x^6 - 66/x^5 - 165/(4*x^4) - 55/(3*x^3) - 11/(2*x^2) - x^(-1)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^13, x]
```

fricas [B] time = 0.38, size = 60, normalized size = 5.00

$$-\frac{12\,x^{11}+66\,x^{10}+220\,x^{9}+495\,x^{8}+792\,x^{7}+924\,x^{6}+792\,x^{5}+495\,x^{4}+220\,x^{3}+66\,x^{2}+12\,x+1}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^13,x, algorithm="fricas")
```

```
[Out] -1/12*(12*x^11 + 66*x^10 + 220*x^9 + 495*x^8 + 792*x^7 + 924*x^6 + 792*x^5
+ 495*x^4 + 220*x^3 + 66*x^2 + 12*x + 1)/x^12
```

giac [B] time = 0.17, size = 60, normalized size = 5.00

$$-\frac{12\,x^{11}+66\,x^{10}+220\,x^{9}+495\,x^{8}+792\,x^{7}+924\,x^{6}+792\,x^{5}+495\,x^{4}+220\,x^{3}+66\,x^{2}+12\,x+1}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^13,x, algorithm="giac")
```

```
[Out] -1/12*(12*x^11 + 66*x^10 + 220*x^9 + 495*x^8 + 792*x^7 + 924*x^6 + 792*x^5
+ 495*x^4 + 220*x^3 + 66*x^2 + 12*x + 1)/x^12
```

maple [B] time = 0.05, size = 62, normalized size = 5.17

$$-\frac{1}{x}-\frac{11}{2x^{2}}-\frac{55}{3x^{3}}-\frac{165}{4x^{4}}-\frac{66}{x^{5}}-\frac{77}{x^{6}}-\frac{66}{x^{7}}-\frac{165}{4x^{8}}-\frac{55}{3x^{9}}-\frac{11}{2x^{10}}-\frac{1}{x^{11}}-\frac{1}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^13,x)
```

```
[Out] -66/x^5-165/4/x^4-55/3/x^3-165/4/x^8-11/2/x^10-11/2/x^2-55/3/x^9-66/x^7-77/
x^6-1/x-1/12/x^12-1/x^11
```

maxima [B] time = 0.47, size = 60, normalized size = 5.00

$$-\frac{12\,x^{11}+66\,x^{10}+220\,x^{9}+495\,x^{8}+792\,x^{7}+924\,x^{6}+792\,x^{5}+495\,x^{4}+220\,x^{3}+66\,x^{2}+12\,x+1}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^13,x, algorithm="maxima")
```

```
[Out] -1/12*(12*x^11 + 66*x^10 + 220*x^9 + 495*x^8 + 792*x^7 + 924*x^6 + 792*x^5
+ 495*x^4 + 220*x^3 + 66*x^2 + 12*x + 1)/x^12
```

mupad [B] time = 0.03, size = 56, normalized size = 4.67

$$-\frac{x^{11}+\frac{11\,x^{10}}{2}+\frac{55\,x^{9}}{3}+\frac{165\,x^{8}}{4}+66\,x^{7}+77\,x^{6}+66\,x^{5}+\frac{165\,x^{4}}{4}+\frac{55\,x^{3}}{3}+\frac{11\,x^{2}}{2}+x+\frac{1}{12}}{x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^13,x)
```

```
[Out] -(x + (11*x^2)/2 + (55*x^3)/3 + (165*x^4)/4 + 66*x^5 + 77*x^6 + 66*x^7 + (1
65*x^8)/4 + (55*x^9)/3 + (11*x^10)/2 + x^11 + 1/12)/x^12
```

sympy [B] time = 0.17, size = 61, normalized size = 5.08

$$\frac{-12x^{11} - 66x^{10} - 220x^9 - 495x^8 - 792x^7 - 924x^6 - 792x^5 - 495x^4 - 220x^3 - 66x^2 - 12x - 1}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**13,x)
```

```
[Out] (-12*x**11 - 66*x**10 - 220*x**9 - 495*x**8 - 792*x**7 - 924*x**6 - 792*x**
5 - 495*x**4 - 220*x**3 - 66*x**2 - 12*x - 1)/(12*x**12)
```

3.540 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{14}} \, dx$

Optimal. Leaf size=25

$$\frac{(x+1)^{12}}{156x^{12}}-\frac{(x+1)^{12}}{13x^{13}}$$

Rubi [A] time = 0.00, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$\frac{(x+1)^{12}}{156x^{12}}-\frac{(x+1)^{12}}{13x^{13}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -(1 + x)^12/(13*x^13) + (1 + x)^12/(156*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{14}}\,dx &= \int \frac{(1+x)^{11}}{x^{14}}\,dx\\ &= -\frac{(1+x)^{12}}{13x^{13}}-\frac{1}{13}\int \frac{(1+x)^{11}}{x^{13}}\,dx\\ &= -\frac{(1+x)^{12}}{13x^{13}}+\frac{(1+x)^{12}}{156x^{12}}\end{aligned}$$

Mathematica [B] time = 0.00, size = 77, normalized size = 3.08

$$-\frac{1}{13x^{13}}-\frac{11}{12x^{12}}-\frac{5}{x^{11}}-\frac{33}{2x^{10}}-\frac{110}{3x^9}-\frac{231}{4x^8}-\frac{66}{x^7}-\frac{55}{x^6}-\frac{33}{x^5}-\frac{55}{4x^4}-\frac{11}{3x^3}-\frac{1}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -1/13*1/x^13 - 11/(12*x^12) - 5/x^11 - 33/(2*x^10) - 110/(3*x^9) - 231/(4*x
^8) - 66/x^7 - 55/x^6 - 33/x^5 - 55/(4*x^4) - 11/(3*x^3) - 1/(2*x^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^14, x]
```

fricas [B] time = 0.38, size = 60, normalized size = 2.40

$$-\frac{78\,x^{11}+572\,x^{10}+2145\,x^{9}+5148\,x^{8}+8580\,x^{7}+10296\,x^{6}+9009\,x^{5}+5720\,x^{4}+2574\,x^{3}+780\,x^{2}+143\,x+12}{156\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^14,x, algorithm="fricas")
```

```
[Out] -1/156*(78*x^11 + 572*x^10 + 2145*x^9 + 5148*x^8 + 8580*x^7 + 10296*x^6 + 9
009*x^5 + 5720*x^4 + 2574*x^3 + 780*x^2 + 143*x + 12)/x^13
```

giac [B] time = 0.18, size = 60, normalized size = 2.40

$$-\frac{78\,x^{11}+572\,x^{10}+2145\,x^{9}+5148\,x^{8}+8580\,x^{7}+10296\,x^{6}+9009\,x^{5}+5720\,x^{4}+2574\,x^{3}+780\,x^{2}+143\,x+12}{156\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^14,x, algorithm="giac")
```

```
[Out] -1/156*(78*x^11 + 572*x^10 + 2145*x^9 + 5148*x^8 + 8580*x^7 + 10296*x^6 + 9
009*x^5 + 5720*x^4 + 2574*x^3 + 780*x^2 + 143*x + 12)/x^13
```

maple [B] time = 0.04, size = 62, normalized size = 2.48

$$-\frac{1}{2x^2}-\frac{11}{3x^3}-\frac{55}{4x^4}-\frac{33}{x^5}-\frac{55}{x^6}-\frac{66}{x^7}-\frac{231}{4x^8}-\frac{110}{3x^9}-\frac{33}{2x^{10}}-\frac{5}{x^{11}}-\frac{11}{12x^{12}}-\frac{1}{13x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^14,x)
```

```
[Out] -33/x^5-55/4/x^4-11/3/x^3-11/12/x^12-231/4/x^8-33/2/x^10-1/2/x^2-110/3/x^9-
66/x^7-55/x^6-1/13/x^13-5/x^11
```

maxima [B] time = 0.52, size = 60, normalized size = 2.40

$$-\frac{78\,x^{11}+572\,x^{10}+2145\,x^{9}+5148\,x^{8}+8580\,x^{7}+10296\,x^{6}+9009\,x^{5}+5720\,x^{4}+2574\,x^{3}+780\,x^{2}+143\,x+12}{156\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^14,x, algorithm="maxima")
```

```
[Out] -1/156*(78*x^11 + 572*x^10 + 2145*x^9 + 5148*x^8 + 8580*x^7 + 10296*x^6 + 9
009*x^5 + 5720*x^4 + 2574*x^3 + 780*x^2 + 143*x + 12)/x^13
```

mupad [B] time = 0.03, size = 60, normalized size = 2.40

$$-\frac{\frac{x^{11}}{2}+\frac{11\,x^{10}}{3}+\frac{55\,x^9}{4}+33\,x^8+55\,x^7+66\,x^6+\frac{231\,x^5}{4}+\frac{110\,x^4}{3}+\frac{33\,x^3}{2}+5\,x^2+\frac{11\,x}{12}+\frac{1}{13}}{x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^14,x)
```

```
[Out] -((11*x)/12 + 5*x^2 + (33*x^3)/2 + (110*x^4)/3 + (231*x^5)/4 + 66*x^6 + 55*
x^7 + 33*x^8 + (55*x^9)/4 + (11*x^10)/3 + x^11/2 + 1/13)/x^13
```

sympy [B] time = 0.18, size = 61, normalized size = 2.44

$$\frac{-78x^{11}-572x^{10}-2145x^9-5148x^8-8580x^7-10296x^6-9009x^5-5720x^4-2574x^3-780x^2-143x-12}{156x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**14,x)
```

```
[Out] (-78*x**11 - 572*x**10 - 2145*x**9 - 5148*x**8 - 8580*x**7 - 10296*x**6 - 9
009*x**5 - 5720*x**4 - 2574*x**3 - 780*x**2 - 143*x - 12)/(156*x**13)
```

3.541 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{15}}\,dx$

Optimal. Leaf size=37

$$-\frac{(x+1)^{12}}{14x^{14}}+\frac{(x+1)^{12}}{91x^{13}}-\frac{(x+1)^{12}}{1092x^{12}}$$

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$-\frac{(x+1)^{12}}{1092x^{12}}+\frac{(x+1)^{12}}{91x^{13}}-\frac{(x+1)^{12}}{14x^{14}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -(1 + x)^12/(14*x^14) + (1 + x)^12/(91*x^13) - (1 + x)^12/(1092*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{15}}\,dx &= \int \frac{(1+x)^{11}}{x^{15}}\,dx\\
&= -\frac{(1+x)^{12}}{14x^{14}}-\frac{1}{7}\int \frac{(1+x)^{11}}{x^{14}}\,dx\\
&= -\frac{(1+x)^{12}}{14x^{14}}+\frac{(1+x)^{12}}{91x^{13}}+\frac{1}{91}\int \frac{(1+x)^{11}}{x^{13}}\,dx\\
&= -\frac{(1+x)^{12}}{14x^{14}}+\frac{(1+x)^{12}}{91x^{13}}-\frac{(1+x)^{12}}{1092x^{12}}
\end{aligned}$$

Mathematica [B] time = 0.00, size = 79, normalized size = 2.14

$$-\frac{1}{14x^{14}}-\frac{11}{13x^{13}}-\frac{55}{12x^{12}}-\frac{15}{x^{11}}-\frac{33}{x^{10}}-\frac{154}{3x^9}-\frac{231}{4x^8}-\frac{330}{7x^7}-\frac{55}{2x^6}-\frac{11}{x^5}-\frac{11}{4x^4}-\frac{1}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -1/14*1/x^14 - 11/(13*x^13) - 55/(12*x^12) - 15/x^11 - 33/x^10 - 154/(3*x^9
) - 231/(4*x^8) - 330/(7*x^7) - 55/(2*x^6) - 11/x^5 - 11/(4*x^4) - 1/(3*x^3
)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{15}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^15, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 1.62

$$-\frac{364\,x^{11}+3003\,x^{10}+12012\,x^{9}+30030\,x^{8}+51480\,x^{7}+63063\,x^{6}+56056\,x^{5}+36036\,x^{4}+16380\,x^{3}+5005\,x^{2}+924\,x+78}{1092\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^15,x, algorithm="fricas")
```

```
[Out] -1/1092*(364*x^11 + 3003*x^10 + 12012*x^9 + 30030*x^8 + 51480*x^7 + 63063*x
^6 + 56056*x^5 + 36036*x^4 + 16380*x^3 + 5005*x^2 + 924*x + 78)/x^14
```

giac [A] time = 0.17, size = 60, normalized size = 1.62

$$-\frac{364\,x^{11}+3003\,x^{10}+12012\,x^{9}+30030\,x^{8}+51480\,x^{7}+63063\,x^{6}+56056\,x^{5}+36036\,x^{4}+16380\,x^{3}+5005\,x^{2}+924\,x+78}{1092\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^15,x, algorithm="giac")
```

```
[Out] -1/1092*(364*x^11 + 3003*x^10 + 12012*x^9 + 30030*x^8 + 51480*x^7 + 63063*x
^6 + 56056*x^5 + 36036*x^4 + 16380*x^3 + 5005*x^2 + 924*x + 78)/x^14
```

maple [A] time = 0.05, size = 62, normalized size = 1.68

$$-\frac{1}{3x^3}-\frac{11}{4x^4}-\frac{11}{x^5}-\frac{55}{2x^6}-\frac{330}{7x^7}-\frac{231}{4x^8}-\frac{154}{3x^9}-\frac{33}{x^{10}}-\frac{15}{x^{11}}-\frac{55}{12x^{12}}-\frac{11}{13x^{13}}-\frac{1}{14x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^15,x)
```

```
[Out] -11/x^5-11/4/x^4-1/3/x^3-55/12/x^12-231/4/x^8-33/x^10-154/3/x^9-1/14/x^14-3
30/7/x^7-55/2/x^6-15/x^11-11/13/x^13
```

maxima [A] time = 0.48, size = 60, normalized size = 1.62

$$-\frac{364\,x^{11}+3003\,x^{10}+12012\,x^{9}+30030\,x^{8}+51480\,x^{7}+63063\,x^{6}+56056\,x^{5}+36036\,x^{4}+16380\,x^{3}+5005\,x^{2}+924\,x+78}{1092\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^15,x, algorithm="maxima")
```

```
[Out] -1/1092*(364*x^11 + 3003*x^10 + 12012*x^9 + 30030*x^8 + 51480*x^7 + 63063*x
^6 + 56056*x^5 + 36036*x^4 + 16380*x^3 + 5005*x^2 + 924*x + 78)/x^14
```

mupad [B] time = 1.08, size = 60, normalized size = 1.62

$$-\frac{\frac{x^{11}}{3}+\frac{11\,x^{10}}{4}+11\,x^9+\frac{55\,x^8}{2}+\frac{330\,x^7}{7}+\frac{231\,x^6}{4}+\frac{154\,x^5}{3}+33\,x^4+15\,x^3+\frac{55\,x^2}{12}+\frac{11\,x}{13}+\frac{1}{14}}{x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^15,x)
```

```
[Out] -((11*x)/13 + (55*x^2)/12 + 15*x^3 + 33*x^4 + (154*x^5)/3 + (231*x^6)/4 + (
330*x^7)/7 + (55*x^8)/2 + 11*x^9 + (11*x^10)/4 + x^11/3 + 1/14)/x^14
```

sympy [B] time = 0.18, size = 61, normalized size = 1.65

$$\frac{-364x^{11}-3003x^{10}-12012x^9-30030x^8-51480x^7-63063x^6-56056x^5-36036x^4-16380x^3-5005x^2-924x-78}{1092x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**15,x)
```

```
[Out] (-364*x**11 - 3003*x**10 - 12012*x**9 - 30030*x**8 - 51480*x**7 - 63063*x**
6 - 56056*x**5 - 36036*x**4 - 16380*x**3 - 5005*x**2 - 924*x - 78)/(1092*x*
*14)
```

3.542 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{16}} \, dx$

Optimal. Leaf size=49

$$-\frac{(x+1)^{12}}{15x^{15}}+\frac{(x+1)^{12}}{70x^{14}}-\frac{(x+1)^{12}}{455x^{13}}+\frac{(x+1)^{12}}{5460x^{12}}$$

Rubi [A] time = 0.01, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$\frac{(x+1)^{12}}{5460x^{12}}-\frac{(x+1)^{12}}{455x^{13}}+\frac{(x+1)^{12}}{70x^{14}}-\frac{(x+1)^{12}}{15x^{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -(1 + x)^12/(15*x^15) + (1 + x)^12/(70*x^14) - (1 + x)^12/(455*x^13) + (1 + x)^12/(5460*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Cancel[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0] && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*Simplify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && ILtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimplerQ[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{16}} \, dx &= \int \frac{(1+x)^{11}}{x^{16}} \, dx\\
&= -\frac{(1+x)^{12}}{15x^{15}}-\frac{1}{5}\int \frac{(1+x)^{11}}{x^{15}} \, dx\\
&= -\frac{(1+x)^{12}}{15x^{15}}+\frac{(1+x)^{12}}{70x^{14}}+\frac{1}{35}\int \frac{(1+x)^{11}}{x^{14}} \, dx\\
&= -\frac{(1+x)^{12}}{15x^{15}}+\frac{(1+x)^{12}}{70x^{14}}-\frac{(1+x)^{12}}{455x^{13}}-\frac{1}{455}\int \frac{(1+x)^{11}}{x^{13}} \, dx\\
&= -\frac{(1+x)^{12}}{15x^{15}}+\frac{(1+x)^{12}}{70x^{14}}-\frac{(1+x)^{12}}{455x^{13}}+\frac{(1+x)^{12}}{5460x^{12}}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.69

$$-\frac{1}{15x^{15}}-\frac{11}{14x^{14}}-\frac{55}{13x^{13}}-\frac{55}{4x^{12}}-\frac{30}{x^{11}}-\frac{231}{5x^{10}}-\frac{154}{3x^9}-\frac{165}{4x^8}-\frac{165}{7x^7}-\frac{55}{6x^6}-\frac{11}{5x^5}-\frac{1}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -1/15*1/x^15 - 11/(14*x^14) - 55/(13*x^13) - 55/(4*x^12) - 30/x^11 - 231/(5
*x^10) - 154/(3*x^9) - 165/(4*x^8) - 165/(7*x^7) - 55/(6*x^6) - 11/(5*x^5)
- 1/(4*x^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{16}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^16, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 1.22

$$-\frac{1365\,x^{11}+12012\,x^{10}+50050\,x^{9}+128700\,x^{8}+225225\,x^{7}+280280\,x^{6}+252252\,x^{5}+163800\,x^{4}+75075\,x^{3}+23100\,x^{2}+4290\,x+364}{5460\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^16,x, algorithm="fricas")
```

```
[Out] -1/5460*(1365*x^11 + 12012*x^10 + 50050*x^9 + 128700*x^8 + 225225*x^7 + 280
280*x^6 + 252252*x^5 + 163800*x^4 + 75075*x^3 + 23100*x^2 + 4290*x + 364)/x
^15
```

giac [A] time = 0.15, size = 60, normalized size = 1.22

$$-\frac{1365\,x^{11}+12012\,x^{10}+50050\,x^{9}+128700\,x^{8}+225225\,x^{7}+280280\,x^{6}+252252\,x^{5}+163800\,x^{4}+75075\,x^{3}+23100\,x^{2}+4290\,x+364}{5460\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^16,x, algorithm="giac")
```

```
[Out] -1/5460*(1365*x^11 + 12012*x^10 + 50050*x^9 + 128700*x^8 + 225225*x^7 + 280
280*x^6 + 252252*x^5 + 163800*x^4 + 75075*x^3 + 23100*x^2 + 4290*x + 364)/x
^15
```

maple [A] time = 0.05, size = 62, normalized size = 1.27

$$-\frac{1}{4x^4}-\frac{11}{5x^5}-\frac{55}{6x^6}-\frac{165}{7x^7}-\frac{165}{4x^8}-\frac{154}{3x^9}-\frac{231}{5x^{10}}-\frac{30}{x^{11}}-\frac{55}{4x^{12}}-\frac{55}{13x^{13}}-\frac{11}{14x^{14}}-\frac{1}{15x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^16,x)
```

```
[Out] -11/5/x^5-1/4/x^4-11/14/x^14-165/4/x^8-231/5/x^10-1/15/x^15-154/3/x^9-165/7
/x^7-55/6/x^6-55/13/x^13-30/x^11-55/4/x^12
```

maxima [A] time = 0.56, size = 60, normalized size = 1.22

$$-\frac{1365\,x^{11}+12012\,x^{10}+50050\,x^{9}+128700\,x^{8}+225225\,x^{7}+280280\,x^{6}+252252\,x^{5}+163800\,x^{4}+75075\,x^{3}+23100\,x^{2}+4290\,x+364}{5460\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^16,x, algorithm="maxima")
```

```
[Out] -1/5460*(1365*x^11 + 12012*x^10 + 50050*x^9 + 128700*x^8 + 225225*x^7 + 280
280*x^6 + 252252*x^5 + 163800*x^4 + 75075*x^3 + 23100*x^2 + 4290*x + 364)/x
^15
```

mupad [B] time = 1.07, size = 60, normalized size = 1.22

$$-\frac{\frac{x^{11}}{4}+\frac{11\,x^{10}}{5}+\frac{55\,x^9}{6}+\frac{165\,x^8}{7}+\frac{165\,x^7}{4}+\frac{154\,x^6}{3}+\frac{231\,x^5}{5}+30\,x^4+\frac{55\,x^3}{4}+\frac{55\,x^2}{13}+\frac{11\,x}{14}+\frac{1}{15}}{x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^16,x)
```

```
[Out] -((11*x)/14 + (55*x^2)/13 + (55*x^3)/4 + 30*x^4 + (231*x^5)/5 + (154*x^6)/3
 + (165*x^7)/4 + (165*x^8)/7 + (55*x^9)/6 + (11*x^10)/5 + x^11/4 + 1/15)/x^
15
```

sympy [A] time = 0.19, size = 61, normalized size = 1.24

$$\frac{-1365x^{11}-12012x^{10}-50050x^9-128700x^8-225225x^7-280280x^6-252252x^5-163800x^4-75075x^3-23100x^2-4290x-364}{5460x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**16,x)
```

```
[Out] (-1365*x**11 - 12012*x**10 - 50050*x**9 - 128700*x**8 - 225225*x**7 - 28028
0*x**6 - 252252*x**5 - 163800*x**4 - 75075*x**3 - 23100*x**2 - 4290*x - 364
)/(5460*x**15)
```

3.543 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$

Optimal. Leaf size=61

$$-\frac{(x+1)^{12}}{16x^{16}}+\frac{(x+1)^{12}}{60x^{15}}-\frac{(x+1)^{12}}{280x^{14}}+\frac{(x+1)^{12}}{1820x^{13}}-\frac{(x+1)^{12}}{21840x^{12}}$$

Rubi [A] time = 0.01, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$-\frac{(x+1)^{12}}{21840x^{12}}+\frac{(x+1)^{12}}{1820x^{13}}-\frac{(x+1)^{12}}{280x^{14}}+\frac{(x+1)^{12}}{60x^{15}}-\frac{(x+1)^{12}}{16x^{16}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -(1 + x)^12/(16*x^16) + (1 + x)^12/(60*x^15) - (1 + x)^12/(280*x^14) + (1 +
 x)^12/(1820*x^13) - (1 + x)^12/(21840*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{17}}\,dx = \int \frac{(1+x)^{11}}{x^{17}}\,dx$$
$$= -\frac{(1+x)^{12}}{16x^{16}} - \frac{1}{4}\int \frac{(1+x)^{11}}{x^{16}}\,dx$$
$$= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} + \frac{1}{20}\int \frac{(1+x)^{11}}{x^{15}}\,dx$$
$$= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} - \frac{(1+x)^{12}}{280x^{14}} - \frac{1}{140}\int \frac{(1+x)^{11}}{x^{14}}\,dx$$
$$= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} - \frac{(1+x)^{12}}{280x^{14}} + \frac{(1+x)^{12}}{1820x^{13}} + \frac{\int \frac{(1+x)^{11}}{x^{13}}\,dx}{1820}$$
$$= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} - \frac{(1+x)^{12}}{280x^{14}} + \frac{(1+x)^{12}}{1820x^{13}} - \frac{(1+x)^{12}}{21840x^{12}}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.36

$$-\frac{1}{16x^{16}} - \frac{11}{15x^{15}} - \frac{55}{14x^{14}} - \frac{165}{13x^{13}} - \frac{55}{2x^{12}} - \frac{42}{x^{11}} - \frac{231}{5x^{10}} - \frac{110}{3x^9} - \frac{165}{8x^8} - \frac{55}{7x^7} - \frac{11}{6x^6} - \frac{1}{5x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -1/16*1/x^16 - 11/(15*x^15) - 55/(14*x^14) - 165/(13*x^13) - 55/(2*x^12) -
42/x^11 - 231/(5*x^10) - 110/(3*x^9) - 165/(8*x^8) - 55/(7*x^7) - 11/(6*x^6
) - 1/(5*x^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^17, x]
```

fricas [A] time = 0.40, size = 60, normalized size = 0.98

$$-\frac{4368\,x^{11} + 40040\,x^{10} + 171600\,x^9 + 450450\,x^8 + 800800\,x^7 + 1009008\,x^6 + 917280\,x^5 + 600600\,x^4 + 277200\,x^3 + 85800\,x^2 + 16016\,x + 1365}{21840\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^17,x, algorithm="fricas")
```

```
[Out] -1/21840*(4368*x^11 + 40040*x^10 + 171600*x^9 + 450450*x^8 + 800800*x^7 + 1
009008*x^6 + 917280*x^5 + 600600*x^4 + 277200*x^3 + 85800*x^2 + 16016*x + 1
365)/x^16
```

giac [A] time = 0.15, size = 60, normalized size = 0.98

$$-\frac{4368\,x^{11} + 40040\,x^{10} + 171600\,x^9 + 450450\,x^8 + 800800\,x^7 + 1009008\,x^6 + 917280\,x^5 + 600600\,x^4 + 277200\,x^3 + 85800\,x^2 + 16016\,x + 1365}{21840\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^17,x, algorithm="giac")
```

```
[Out] -1/21840*(4368*x^11 + 40040*x^10 + 171600*x^9 + 450450*x^8 + 800800*x^7 + 1
009008*x^6 + 917280*x^5 + 600600*x^4 + 277200*x^3 + 85800*x^2 + 16016*x + 1
365)/x^16
```

maple [A] time = 0.05, size = 62, normalized size = 1.02

$$-\frac{1}{5x^5}-\frac{11}{6x^6}-\frac{55}{7x^7}-\frac{165}{8x^8}-\frac{110}{3x^9}-\frac{231}{5x^{10}}-\frac{42}{x^{11}}-\frac{55}{2x^{12}}-\frac{165}{13x^{13}}-\frac{55}{14x^{14}}-\frac{11}{15x^{15}}-\frac{1}{16x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^17,x)
```

```
[Out] -1/5/x^5-165/8/x^8-231/5/x^10-55/14/x^14-11/15/x^15-110/3/x^9-55/7/x^7-55/2
/x^12-11/6/x^6-165/13/x^13-1/16/x^16-42/x^11
```

maxima [A] time = 0.58, size = 60, normalized size = 0.98

$$-\frac{4368\,x^{11}+40040\,x^{10}+171600\,x^{9}+450450\,x^{8}+800800\,x^{7}+1009008\,x^{6}+917280\,x^{5}+600600\,x^{4}+277200\,x^{3}+85800\,x^{2}+16016\,x+1365}{21840\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^17,x, algorithm="maxima")
```

```
[Out] -1/21840*(4368*x^11 + 40040*x^10 + 171600*x^9 + 450450*x^8 + 800800*x^7 + 1
009008*x^6 + 917280*x^5 + 600600*x^4 + 277200*x^3 + 85800*x^2 + 16016*x + 1
365)/x^16
```

mupad [B] time = 1.05, size = 60, normalized size = 0.98

$$-\frac{\frac{x^{11}}{5}+\frac{11\,x^{10}}{6}+\frac{55\,x^9}{7}+\frac{165\,x^8}{8}+\frac{110\,x^7}{3}+\frac{231\,x^6}{5}+42\,x^5+\frac{55\,x^4}{2}+\frac{165\,x^3}{13}+\frac{55\,x^2}{14}+\frac{11\,x}{15}+\frac{1}{16}}{x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^17,x)
```

```
[Out] -((11*x)/15 + (55*x^2)/14 + (165*x^3)/13 + (55*x^4)/2 + 42*x^5 + (231*x^6)/
5 + (110*x^7)/3 + (165*x^8)/8 + (55*x^9)/7 + (11*x^10)/6 + x^11/5 + 1/16)/x
^16
```

sympy [A] time = 0.19, size = 61, normalized size = 1.00

$$\frac{-4368x^{11}-40040x^{10}-171600x^{9}-450450x^{8}-800800x^{7}-1009008x^{6}-917280x^{5}-600600x^{4}-277200x^{3}-85800x^{2}-16016x-1365}{21840x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**17,x)
```

```
[Out] (-4368*x**11 - 40040*x**10 - 171600*x**9 - 450450*x**8 - 800800*x**7 - 1009
008*x**6 - 917280*x**5 - 600600*x**4 - 277200*x**3 - 85800*x**2 - 16016*x -
 1365)/(21840*x**16)
```

3.544 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$

Optimal. Leaf size=73

$$-\frac{(x+1)^{12}}{17x^{17}}+\frac{5(x+1)^{12}}{272x^{16}}-\frac{(x+1)^{12}}{204x^{15}}+\frac{(x+1)^{12}}{952x^{14}}-\frac{(x+1)^{12}}{6188x^{13}}+\frac{(x+1)^{12}}{74256x^{12}}$$

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$\frac{(x+1)^{12}}{74256x^{12}}-\frac{(x+1)^{12}}{6188x^{13}}+\frac{(x+1)^{12}}{952x^{14}}-\frac{(x+1)^{12}}{204x^{15}}+\frac{5(x+1)^{12}}{272x^{16}}-\frac{(x+1)^{12}}{17x^{17}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -(1 + x)^12/(17*x^17) + (5*(1 + x)^12)/(272*x^16) - (1 + x)^12/(204*x^15) +
 (1 + x)^12/(952*x^14) - (1 + x)^12/(6188*x^13) + (1 + x)^12/(74256*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{18}}\,dx = \int \frac{(1+x)^{11}}{x^{18}}\,dx$$
$$= -\frac{(1+x)^{12}}{17x^{17}} - \frac{5}{17}\int \frac{(1+x)^{11}}{x^{17}}\,dx$$
$$= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} + \frac{5}{68}\int \frac{(1+x)^{11}}{x^{16}}\,dx$$
$$= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} - \frac{1}{68}\int \frac{(1+x)^{11}}{x^{15}}\,dx$$
$$= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} + \frac{(1+x)^{12}}{952x^{14}} + \frac{1}{476}\int \frac{(1+x)^{11}}{x^{14}}\,dx$$
$$= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} + \frac{(1+x)^{12}}{952x^{14}} - \frac{(1+x)^{12}}{6188x^{13}} - \frac{\int \frac{(1+x)^{11}}{x^{13}}\,dx}{6188}$$
$$= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} + \frac{(1+x)^{12}}{952x^{14}} - \frac{(1+x)^{12}}{6188x^{13}} + \frac{(1+x)^{12}}{74256x^{12}}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.11

$$-\frac{1}{17x^{17}} - \frac{11}{16x^{16}} - \frac{11}{3x^{15}} - \frac{165}{14x^{14}} - \frac{330}{13x^{13}} - \frac{77}{2x^{12}} - \frac{42}{x^{11}} - \frac{33}{x^{10}} - \frac{55}{3x^9} - \frac{55}{8x^8} - \frac{11}{7x^7} - \frac{1}{6x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -1/17*1/x^17 - 11/(16*x^16) - 11/(3*x^15) - 165/(14*x^14) - 330/(13*x^13) -
 77/(2*x^12) - 42/x^11 - 33/x^10 - 55/(3*x^9) - 55/(8*x^8) - 11/(7*x^7) - 1
/(6*x^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^18, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 0.82

$$-\frac{12376\,x^{11} + 116688\,x^{10} + 510510\,x^9 + 1361360\,x^8 + 2450448\,x^7 + 3118752\,x^6 + 2858856\,x^5 + 1884960\,x^4 + 875160\,x^3 + 272272\,x^2 + 51051\,x + 4368}{74256\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^18,x, algorithm="fricas")
```

```
[Out] -1/74256*(12376*x^11 + 116688*x^10 + 510510*x^9 + 1361360*x^8 + 2450448*x^7
 + 3118752*x^6 + 2858856*x^5 + 1884960*x^4 + 875160*x^3 + 272272*x^2 + 5105
1*x + 4368)/x^17
```

giac [A] time = 0.15, size = 60, normalized size = 0.82

$$-\frac{12376\,x^{11} + 116688\,x^{10} + 510510\,x^9 + 1361360\,x^8 + 2450448\,x^7 + 3118752\,x^6 + 2858856\,x^5 + 1884960\,x^4 + 875160\,x^3 + 272272\,x^2 + 51051\,x + 4368}{74256\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^18,x, algorithm="giac")
```

```
[Out] -1/74256*(12376*x^11 + 116688*x^10 + 510510*x^9 + 1361360*x^8 + 2450448*x^7
 + 3118752*x^6 + 2858856*x^5 + 1884960*x^4 + 875160*x^3 + 272272*x^2 + 5105
1*x + 4368)/x^17
```

maple [A] time = 0.05, size = 62, normalized size = 0.85

$$-\frac{1}{6x^6}-\frac{11}{7x^7}-\frac{55}{8x^8}-\frac{55}{3x^9}-\frac{33}{x^{10}}-\frac{42}{x^{11}}-\frac{77}{2x^{12}}-\frac{330}{13x^{13}}-\frac{165}{14x^{14}}-\frac{11}{3x^{15}}-\frac{11}{16x^{16}}-\frac{1}{17x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^18,x)
```

```
[Out] -11/16/x^16-55/8/x^8-33/x^10-11/3/x^15-165/14/x^14-77/2/x^12-55/3/x^9-11/7/
x^7-1/17/x^17-1/6/x^6-42/x^11-330/13/x^13
```

maxima [A] time = 0.53, size = 60, normalized size = 0.82

$$-\frac{12376\,x^{11}+116688\,x^{10}+510510\,x^{9}+1361360\,x^{8}+2450448\,x^{7}+3118752\,x^{6}+2858856\,x^{5}+1884960\,x^{4}+875160\,x^{3}+272272\,x^{2}+51051\,x+4368}{74256\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^18,x, algorithm="maxima")
```

```
[Out] -1/74256*(12376*x^11 + 116688*x^10 + 510510*x^9 + 1361360*x^8 + 2450448*x^7
 + 3118752*x^6 + 2858856*x^5 + 1884960*x^4 + 875160*x^3 + 272272*x^2 + 5105
1*x + 4368)/x^17
```

mupad [B] time = 0.03, size = 60, normalized size = 0.82

$$-\frac{\frac{x^{11}}{6}+\frac{11\,x^{10}}{7}+\frac{55\,x^9}{8}+\frac{55\,x^8}{3}+33\,x^7+42\,x^6+\frac{77\,x^5}{2}+\frac{330\,x^4}{13}+\frac{165\,x^3}{14}+\frac{11\,x^2}{3}+\frac{11\,x}{16}+\frac{1}{17}}{x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^18,x)
```

```
[Out] -((11*x)/16 + (11*x^2)/3 + (165*x^3)/14 + (330*x^4)/13 + (77*x^5)/2 + 42*x^
6 + 33*x^7 + (55*x^8)/3 + (55*x^9)/8 + (11*x^10)/7 + x^11/6 + 1/17)/x^17
```

sympy [A] time = 0.20, size = 61, normalized size = 0.84

$$\frac{-12376x^{11}-116688x^{10}-510510x^{9}-1361360x^{8}-2450448x^{7}-3118752x^{6}-2858856x^{5}-1884960x^{4}-875160x^{3}-272272x^{2}-51051x-4368}{74256x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**18,x)
```

```
[Out] (-12376*x**11 - 116688*x**10 - 510510*x**9 - 1361360*x**8 - 2450448*x**7 -
3118752*x**6 - 2858856*x**5 - 1884960*x**4 - 875160*x**3 - 272272*x**2 - 51
051*x - 4368)/(74256*x**17)
```

3.545 $\int \frac{(1+x)(1+2x+x^2)^5}{x^{19}}\,dx$

Optimal. Leaf size=85

$$-\frac{(x+1)^{12}}{18x^{18}}+\frac{(x+1)^{12}}{51x^{17}}-\frac{5(x+1)^{12}}{816x^{16}}+\frac{(x+1)^{12}}{612x^{15}}-\frac{(x+1)^{12}}{2856x^{14}}+\frac{(x+1)^{12}}{18564x^{13}}-\frac{(x+1)^{12}}{222768x^{12}}$$

Rubi [A] time = 0.02, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$, Rules used = {27, 45, 37}

$$-\frac{(x+1)^{12}}{222768x^{12}}+\frac{(x+1)^{12}}{18564x^{13}}-\frac{(x+1)^{12}}{2856x^{14}}+\frac{(x+1)^{12}}{612x^{15}}-\frac{5(x+1)^{12}}{816x^{16}}+\frac{(x+1)^{12}}{51x^{17}}-\frac{(x+1)^{12}}{18x^{18}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -(1 + x)^12/(18*x^18) + (1 + x)^12/(51*x^17) - (5*(1 + x)^12)/(816*x^16) +
(1 + x)^12/(612*x^15) - (1 + x)^12/(2856*x^14) + (1 + x)^12/(18564*x^13) -
(1 + x)^12/(222768*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{19}}\,dx = \int \frac{(1+x)^{11}}{x^{19}}\,dx$$
$$= -\frac{(1+x)^{12}}{18x^{18}} - \frac{1}{3}\int \frac{(1+x)^{11}}{x^{18}}\,dx$$
$$= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} + \frac{5}{51}\int \frac{(1+x)^{11}}{x^{17}}\,dx$$
$$= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} - \frac{5}{204}\int \frac{(1+x)^{11}}{x^{16}}\,dx$$
$$= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} + \frac{1}{204}\int \frac{(1+x)^{11}}{x^{15}}\,dx$$
$$= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} - \frac{(1+x)^{12}}{2856x^{14}} - \frac{\int \frac{(1+x)^{11}}{x^{14}}\,dx}{1428}$$
$$= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} - \frac{(1+x)^{12}}{2856x^{14}} + \frac{(1+x)^{12}}{18564x^{13}} + \frac{\int \frac{(1+x)}{x^{13}}}{185}$$
$$= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} - \frac{(1+x)^{12}}{2856x^{14}} + \frac{(1+x)^{12}}{18564x^{13}} - \frac{(1+x}{22276}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 0.95

$$-\frac{1}{18x^{18}} - \frac{11}{17x^{17}} - \frac{55}{16x^{16}} - \frac{11}{x^{15}} - \frac{165}{7x^{14}} - \frac{462}{13x^{13}} - \frac{77}{2x^{12}} - \frac{30}{x^{11}} - \frac{33}{2x^{10}} - \frac{55}{9x^9} - \frac{11}{8x^8} - \frac{1}{7x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -1/18*1/x^18 - 11/(17*x^17) - 55/(16*x^16) - 11/x^15 - 165/(7*x^14) - 462/(
13*x^13) - 77/(2*x^12) - 30/x^11 - 33/(2*x^10) - 55/(9*x^9) - 11/(8*x^8) -
1/(7*x^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{19}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^19, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 0.71

$$-\frac{31824\,x^{11} + 306306\,x^{10} + 1361360\,x^{9} + 3675672\,x^{8} + 6683040\,x^{7} + 8576568\,x^{6} + 7916832\,x^{5} + 5250960\,x^{4} + 2450448\,x^{3} + 765765\,x^{2} + 144144\,x + 12376}{222768\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^19,x, algorithm="fricas")
```

```
[Out] -1/222768*(31824*x^11 + 306306*x^10 + 1361360*x^9 + 3675672*x^8 + 6683040*x
^7 + 8576568*x^6 + 7916832*x^5 + 5250960*x^4 + 2450448*x^3 + 765765*x^2 + 1
44144*x + 12376)/x^18
```

giac [A] time = 0.15, size = 60, normalized size = 0.71

$$-\frac{31824\,x^{11} + 306306\,x^{10} + 1361360\,x^{9} + 3675672\,x^{8} + 6683040\,x^{7} + 8576568\,x^{6} + 7916832\,x^{5} + 5250960\,x^{4} + 2450448\,x^{3} + 765765\,x^{2} + 144144\,x + 12376}{222768\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^19,x, algorithm="giac")
```

```
[Out] -1/222768*(31824*x^11 + 306306*x^10 + 1361360*x^9 + 3675672*x^8 + 6683040*x
^7 + 8576568*x^6 + 7916832*x^5 + 5250960*x^4 + 2450448*x^3 + 765765*x^2 + 1
44144*x + 12376)/x^18
```

maple [A] time = 0.05, size = 62, normalized size = 0.73

$$-\frac{1}{7x^7}-\frac{11}{8x^8}-\frac{55}{9x^9}-\frac{33}{2x^{10}}-\frac{30}{x^{11}}-\frac{77}{2x^{12}}-\frac{462}{13x^{13}}-\frac{165}{7x^{14}}-\frac{11}{x^{15}}-\frac{55}{16x^{16}}-\frac{11}{17x^{17}}-\frac{1}{18x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^19,x)
```

```
[Out] -462/13/x^13-77/2/x^12-11/8/x^8-33/2/x^10-11/x^15-55/9/x^9-55/16/x^16-1/18/
x^18-1/7/x^7-165/7/x^14-11/17/x^17-30/x^11
```

maxima [A] time = 0.57, size = 60, normalized size = 0.71

$$-\frac{31824\,x^{11}+306306\,x^{10}+1361360\,x^{9}+3675672\,x^{8}+6683040\,x^{7}+8576568\,x^{6}+7916832\,x^{5}+5250960\,x^{4}+2450448\,x^{3}+765765\,x^{2}+144144\,x+12376}{222768\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^19,x, algorithm="maxima")
```

```
[Out] -1/222768*(31824*x^11 + 306306*x^10 + 1361360*x^9 + 3675672*x^8 + 6683040*x
^7 + 8576568*x^6 + 7916832*x^5 + 5250960*x^4 + 2450448*x^3 + 765765*x^2 + 1
44144*x + 12376)/x^18
```

mupad [B] time = 1.06, size = 60, normalized size = 0.71

$$-\frac{\frac{x^{11}}{7}+\frac{11\,x^{10}}{8}+\frac{55\,x^9}{9}+\frac{33\,x^8}{2}+30\,x^7+\frac{77\,x^6}{2}+\frac{462\,x^5}{13}+\frac{165\,x^4}{7}+11\,x^3+\frac{55\,x^2}{16}+\frac{11\,x}{17}+\frac{1}{18}}{x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^19,x)
```

```
[Out] -((11*x)/17 + (55*x^2)/16 + 11*x^3 + (165*x^4)/7 + (462*x^5)/13 + (77*x^6)/
2 + 30*x^7 + (33*x^8)/2 + (55*x^9)/9 + (11*x^10)/8 + x^11/7 + 1/18)/x^18
```

sympy [A] time = 0.21, size = 61, normalized size = 0.72

$$\frac{-31824x^{11}-306306x^{10}-1361360x^{9}-3675672x^{8}-6683040x^{7}-8576568x^{6}-7916832x^{5}-5250960x^{4}-2450448x^{3}-765765x^{2}-144144x-12376}{222768x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**19,x)
```

```
[Out] (-31824*x**11 - 306306*x**10 - 1361360*x**9 - 3675672*x**8 - 6683040*x**7 -
 8576568*x**6 - 7916832*x**5 - 5250960*x**4 - 2450448*x**3 - 765765*x**2 -
144144*x - 12376)/(222768*x**18)
```

3.546 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$

Optimal. Leaf size=97

$$-\frac{(x+1)^{12}}{19x^{19}}+\frac{7(x+1)^{12}}{342x^{18}}-\frac{7(x+1)^{12}}{969x^{17}}+\frac{35(x+1)^{12}}{15504x^{16}}-\frac{7(x+1)^{12}}{11628x^{15}}+\frac{(x+1)^{12}}{7752x^{14}}-\frac{(x+1)^{12}}{50388x^{13}}+\frac{(x+1)^{12}}{604656x^{12}}$$

Rubi [A] time = 0.03, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$\frac{(x+1)^{12}}{604656x^{12}}-\frac{(x+1)^{12}}{50388x^{13}}+\frac{(x+1)^{12}}{7752x^{14}}-\frac{7(x+1)^{12}}{11628x^{15}}+\frac{35(x+1)^{12}}{15504x^{16}}-\frac{7(x+1)^{12}}{969x^{17}}+\frac{7(x+1)^{12}}{342x^{18}}-\frac{(x+1)^{12}}{19x^{19}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -(1 + x)^12/(19*x^19) + (7*(1 + x)^12)/(342*x^18) - (7*(1 + x)^12)/(969*x^1
7) + (35*(1 + x)^12)/(15504*x^16) - (7*(1 + x)^12)/(11628*x^15) + (1 + x)^1
2/(7752*x^14) - (1 + x)^12/(50388*x^13) + (1 + x)^12/(604656*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{20}}\,dx &= \int \frac{(1+x)^{11}}{x^{20}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} - \frac{7}{19}\int \frac{(1+x)^{11}}{x^{19}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} + \frac{7}{57}\int \frac{(1+x)^{11}}{x^{18}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} - \frac{35}{969}\int \frac{(1+x)^{11}}{x^{17}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} + \frac{35\int \frac{(1+x)^{11}}{x^{16}}\,dx}{3876} \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} - \frac{7\int \frac{(1+x)^{11}}{x^{15}}\,d}{3876} \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} + \frac{(1+x)^{12}}{7752x^{14}} + \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} + \frac{(1+x)^{12}}{7752x^{14}} - \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} + \frac{(1+x)^{12}}{7752x^{14}} -
\end{aligned}
$$

Mathematica [A] time = 0.00, size = 79, normalized size = 0.81

$$
-\frac{1}{19x^{19}} - \frac{11}{18x^{18}} - \frac{55}{17x^{17}} - \frac{165}{16x^{16}} - \frac{22}{x^{15}} - \frac{33}{x^{14}} - \frac{462}{13x^{13}} - \frac{55}{2x^{12}} - \frac{15}{x^{11}} - \frac{11}{2x^{10}} - \frac{11}{9x^9} - \frac{1}{8x^8}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -1/19*1/x^19 - 11/(18*x^18) - 55/(17*x^17) - 165/(16*x^16) - 22/x^15 - 33/x
^14 - 462/(13*x^13) - 55/(2*x^12) - 15/x^11 - 11/(2*x^10) - 11/(9*x^9) - 1/
(8*x^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{20}}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^20, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 0.62

$$
-\frac{75582\,x^{11} + 739024\,x^{10} + 3325608\,x^9 + 9069840\,x^8 + 16628040\,x^7 + 21488544\,x^6 + 19953648\,x^5 + 13302432\,x^4 + 6235515\,x^3 + 1956240\,x^2 + 369512\,x + 31824}{604656\,x^{19}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^20,x, algorithm="fricas")
```

```
[Out] -1/604656*(75582*x^11 + 739024*x^10 + 3325608*x^9 + 9069840*x^8 + 16628040*
x^7 + 21488544*x^6 + 19953648*x^5 + 13302432*x^4 + 6235515*x^3 + 1956240*x^
2 + 369512*x + 31824)/x^19
```

giac [A] time = 0.16, size = 60, normalized size = 0.62

$$-\frac{75582 x^{11} + 739024 x^{10} + 3325608 x^{9} + 9069840 x^{8} + 16628040 x^{7} + 21488544 x^{6} + 19953648 x^{5} + 13302432 x^{4} + 6235515 x^{3} + 1956240 x^{2} + 369512 x + 31824}{604656 x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^20,x, algorithm="giac")
```

```
[Out] -1/604656*(75582*x^11 + 739024*x^10 + 3325608*x^9 + 9069840*x^8 + 16628040*
x^7 + 21488544*x^6 + 19953648*x^5 + 13302432*x^4 + 6235515*x^3 + 1956240*x^
2 + 369512*x + 31824)/x^19
```

maple [A] time = 0.05, size = 62, normalized size = 0.64

$$-\frac{1}{8x^{8}} - \frac{11}{9x^{9}} - \frac{11}{2x^{10}} - \frac{15}{x^{11}} - \frac{55}{2x^{12}} - \frac{462}{13x^{13}} - \frac{33}{x^{14}} - \frac{22}{x^{15}} - \frac{165}{16x^{16}} - \frac{55}{17x^{17}} - \frac{11}{18x^{18}} - \frac{1}{19x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^20,x)
```

```
[Out] -462/13/x^13-1/8/x^8-11/18/x^18-11/2/x^10-22/x^15-55/2/x^12-33/x^14-11/9/x^
9-165/16/x^16-55/17/x^17-1/19/x^19-15/x^11
```

maxima [A] time = 0.58, size = 60, normalized size = 0.62

$$-\frac{75582 x^{11} + 739024 x^{10} + 3325608 x^{9} + 9069840 x^{8} + 16628040 x^{7} + 21488544 x^{6} + 19953648 x^{5} + 13302432 x^{4} + 6235515 x^{3} + 1956240 x^{2} + 369512 x + 31824}{604656 x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^20,x, algorithm="maxima")
```

```
[Out] -1/604656*(75582*x^11 + 739024*x^10 + 3325608*x^9 + 9069840*x^8 + 16628040*
x^7 + 21488544*x^6 + 19953648*x^5 + 13302432*x^4 + 6235515*x^3 + 1956240*x^
2 + 369512*x + 31824)/x^19
```

mupad [B] time = 0.03, size = 60, normalized size = 0.62

$$-\frac{\frac{x^{11}}{8} + \frac{11\,x^{10}}{9} + \frac{11\,x^{9}}{2} + 15\,x^{8} + \frac{55\,x^{7}}{2} + \frac{462\,x^{6}}{13} + 33\,x^{5} + 22\,x^{4} + \frac{165\,x^{3}}{16} + \frac{55\,x^{2}}{17} + \frac{11\,x}{18} + \frac{1}{19}}{x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^20,x)
```

```
[Out] -((11*x)/18 + (55*x^2)/17 + (165*x^3)/16 + 22*x^4 + 33*x^5 + (462*x^6)/13 +
 (55*x^7)/2 + 15*x^8 + (11*x^9)/2 + (11*x^10)/9 + x^11/8 + 1/19)/x^19
```

sympy [A] time = 0.21, size = 61, normalized size = 0.63

$$\frac{-75582x^{11} - 739024x^{10} - 3325608x^{9} - 9069840x^{8} - 16628040x^{7} - 21488544x^{6} - 19953648x^{5} - 13302432x^{4} - 6235515x^{3} - 1956240x^{2} - 369512x - 31824}{604656x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**20,x)
```

```
[Out] (-75582*x**11 - 739024*x**10 - 3325608*x**9 - 9069840*x**8 - 16628040*x**7
- 21488544*x**6 - 19953648*x**5 - 13302432*x**4 - 6235515*x**3 - 1956240*x*
*2 - 369512*x - 31824)/(604656*x**19)
```

3.547 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$

Optimal. Leaf size=81

$$-\frac{1}{20x^{20}}-\frac{11}{19x^{19}}-\frac{55}{18x^{18}}-\frac{165}{17x^{17}}-\frac{165}{8x^{16}}-\frac{154}{5x^{15}}-\frac{33}{x^{14}}-\frac{330}{13x^{13}}-\frac{55}{4x^{12}}-\frac{5}{x^{11}}-\frac{11}{10x^{10}}-\frac{1}{9x^9}$$

Rubi [A] time = 0.02, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$-\frac{1}{9x^9}-\frac{11}{10x^{10}}-\frac{5}{x^{11}}-\frac{55}{4x^{12}}-\frac{330}{13x^{13}}-\frac{33}{x^{14}}-\frac{154}{5x^{15}}-\frac{165}{8x^{16}}-\frac{165}{17x^{17}}-\frac{55}{18x^{18}}-\frac{11}{19x^{19}}-\frac{1}{20x^{20}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -1/(20*x^20) - 11/(19*x^19) - 55/(18*x^18) - 165/(17*x^17) - 165/(8*x^16) -
 154/(5*x^15) - 33/x^14 - 330/(13*x^13) - 55/(4*x^12) - 5/x^11 - 11/(10*x^1
0) - 1/(9*x^9)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{21}}\,dx &= \int \frac{(1+x)^{11}}{x^{21}}\,dx\\ &= \int \left(\frac{1}{x^{21}}+\frac{11}{x^{20}}+\frac{55}{x^{19}}+\frac{165}{x^{18}}+\frac{330}{x^{17}}+\frac{462}{x^{16}}+\frac{462}{x^{15}}+\frac{330}{x^{14}}+\frac{165}{x^{13}}+\frac{55}{x^{12}}+\frac{11}{x^{11}}+\right.\\ &= -\frac{1}{20x^{20}}-\frac{11}{19x^{19}}-\frac{55}{18x^{18}}-\frac{165}{17x^{17}}-\frac{165}{8x^{16}}-\frac{154}{5x^{15}}-\frac{33}{x^{14}}-\frac{330}{13x^{13}}-\frac{55}{4x^{12}}-\frac{5}{x^{11}}-\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.00

$$-\frac{1}{20x^{20}}-\frac{11}{19x^{19}}-\frac{55}{18x^{18}}-\frac{165}{17x^{17}}-\frac{165}{8x^{16}}-\frac{154}{5x^{15}}-\frac{33}{x^{14}}-\frac{330}{13x^{13}}-\frac{55}{4x^{12}}-\frac{5}{x^{11}}-\frac{11}{10x^{10}}-\frac{1}{9x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -1/20*1/x^20 - 11/(19*x^19) - 55/(18*x^18) - 165/(17*x^17) - 165/(8*x^16) -
 154/(5*x^15) - 33/x^14 - 330/(13*x^13) - 55/(4*x^12) - 5/x^11 - 11/(10*x^1
0) - 1/(9*x^9)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^21, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 0.74

$$-\frac{167960\,x^{11}+1662804\,x^{10}+7558200\,x^9+20785050\,x^8+38372400\,x^7+49884120\,x^6+46558512\,x^5+31177575\,x^4+14671800\,x^3+4618900\,x^2+875160\,x+75582}{1511640\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^21,x, algorithm="fricas")
```

```
[Out] -1/1511640*(167960*x^11 + 1662804*x^10 + 7558200*x^9 + 20785050*x^8 + 38372
400*x^7 + 49884120*x^6 + 46558512*x^5 + 31177575*x^4 + 14671800*x^3 + 46189
00*x^2 + 875160*x + 75582)/x^20
```

giac [A] time = 0.15, size = 60, normalized size = 0.74

$$-\frac{167960\,x^{11}+1662804\,x^{10}+7558200\,x^9+20785050\,x^8+38372400\,x^7+49884120\,x^6+46558512\,x^5+31177575\,x^4+14671800\,x^3+4618900\,x^2+875160\,x+75582}{1511640\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^21,x, algorithm="giac")
```

```
[Out] -1/1511640*(167960*x^11 + 1662804*x^10 + 7558200*x^9 + 20785050*x^8 + 38372
400*x^7 + 49884120*x^6 + 46558512*x^5 + 31177575*x^4 + 14671800*x^3 + 46189
00*x^2 + 875160*x + 75582)/x^20
```

maple [A] time = 0.05, size = 62, normalized size = 0.77

$$-\frac{1}{9x^9}-\frac{11}{10x^{10}}-\frac{5}{x^{11}}-\frac{55}{4x^{12}}-\frac{330}{13x^{13}}-\frac{33}{x^{14}}-\frac{154}{5x^{15}}-\frac{165}{8x^{16}}-\frac{165}{17x^{17}}-\frac{55}{18x^{18}}-\frac{11}{19x^{19}}-\frac{1}{20x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^21,x)
```

```
[Out] -1/20/x^20-11/19/x^19-55/18/x^18-165/17/x^17-165/8/x^16-154/5/x^15-33/x^14-
330/13/x^13-55/4/x^12-5/x^11-11/10/x^10-1/9/x^9
```

maxima [A] time = 0.51, size = 60, normalized size = 0.74

$$-\frac{167960\,x^{11}+1662804\,x^{10}+7558200\,x^9+20785050\,x^8+38372400\,x^7+49884120\,x^6+46558512\,x^5+31177575\,x^4+14671800\,x^3+4618900\,x^2+875160\,x+75582}{1511640\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^21,x, algorithm="maxima")
```

```
[Out] -1/1511640*(167960*x^11 + 1662804*x^10 + 7558200*x^9 + 20785050*x^8 + 38372
400*x^7 + 49884120*x^6 + 46558512*x^5 + 31177575*x^4 + 14671800*x^3 + 46189
00*x^2 + 875160*x + 75582)/x^20
```

mupad [B] time = 0.03, size = 60, normalized size = 0.74

$$-\frac{\frac{x^{11}}{9}+\frac{11\,x^{10}}{10}+5\,x^9+\frac{55\,x^8}{4}+\frac{330\,x^7}{13}+33\,x^6+\frac{154\,x^5}{5}+\frac{165\,x^4}{8}+\frac{165\,x^3}{17}+\frac{55\,x^2}{18}+\frac{11\,x}{19}+\frac{1}{20}}{x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^21,x)
```

```
[Out] -((11*x)/19 + (55*x^2)/18 + (165*x^3)/17 + (165*x^4)/8 + (154*x^5)/5 + 33*x
^6 + (330*x^7)/13 + (55*x^8)/4 + 5*x^9 + (11*x^10)/10 + x^11/9 + 1/20)/x^20
```

sympy [A] time = 0.22, size = 61, normalized size = 0.75

$$\frac{-167960x^{11} - 1662804x^{10} - 7558200x^{9} - 20785050x^{8} - 38372400x^{7} - 49884120x^{6} - 46558512x^{5} - 31177575x^{4} - 14671800x^{3} - 4618900x^{2} - 875160x - 75582}{1511640x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**21,x)
```

```
[Out] (-167960*x**11 - 1662804*x**10 - 7558200*x**9 - 20785050*x**8 - 38372400*x*
*7 - 49884120*x**6 - 46558512*x**5 - 31177575*x**4 - 14671800*x**3 - 461890
0*x**2 - 875160*x - 75582)/(1511640*x**20)
```

3.548 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{22}}\,dx$

Optimal. Leaf size=83

$$-\frac{1}{21x^{21}}-\frac{11}{20x^{20}}-\frac{55}{19x^{19}}-\frac{55}{6x^{18}}-\frac{330}{17x^{17}}-\frac{231}{8x^{16}}-\frac{154}{5x^{15}}-\frac{165}{7x^{14}}-\frac{165}{13x^{13}}-\frac{55}{12x^{12}}-\frac{1}{x^{11}}-\frac{1}{10x^{10}}$$

Rubi [A] time = 0.02, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$-\frac{1}{10x^{10}}-\frac{1}{x^{11}}-\frac{55}{12x^{12}}-\frac{165}{13x^{13}}-\frac{165}{7x^{14}}-\frac{154}{5x^{15}}-\frac{231}{8x^{16}}-\frac{330}{17x^{17}}-\frac{55}{6x^{18}}-\frac{55}{19x^{19}}-\frac{11}{20x^{20}}-\frac{1}{21x^{21}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^22,x]
```

```
[Out] -1/(21*x^21) - 11/(20*x^20) - 55/(19*x^19) - 55/(6*x^18) - 330/(17*x^17) -
231/(8*x^16) - 154/(5*x^15) - 165/(7*x^14) - 165/(13*x^13) - 55/(12*x^12) -
 x^(-11) - 1/(10*x^10)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{22}}\,dx &= \int \frac{(1+x)^{11}}{x^{22}}\,dx\\
&= \int \left(\frac{1}{x^{22}}+\frac{11}{x^{21}}+\frac{55}{x^{20}}+\frac{165}{x^{19}}+\frac{330}{x^{18}}+\frac{462}{x^{17}}+\frac{462}{x^{16}}+\frac{330}{x^{15}}+\frac{165}{x^{14}}+\frac{55}{x^{13}}+\frac{11}{x^{12}}+\frac{1}{x^{11}}\right.\\
&= -\frac{1}{21x^{21}}-\frac{11}{20x^{20}}-\frac{55}{19x^{19}}-\frac{55}{6x^{18}}-\frac{330}{17x^{17}}-\frac{231}{8x^{16}}-\frac{154}{5x^{15}}-\frac{165}{7x^{14}}-\frac{165}{13x^{13}}-\frac{55}{12x^{12}}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.00

$$-\frac{1}{21x^{21}}-\frac{11}{20x^{20}}-\frac{55}{19x^{19}}-\frac{55}{6x^{18}}-\frac{330}{17x^{17}}-\frac{231}{8x^{16}}-\frac{154}{5x^{15}}-\frac{165}{7x^{14}}-\frac{165}{13x^{13}}-\frac{55}{12x^{12}}-\frac{1}{x^{11}}-\frac{1}{10x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^22,x]
```

```
[Out] -1/21*1/x^21 - 11/(20*x^20) - 55/(19*x^19) - 55/(6*x^18) - 330/(17*x^17) -
231/(8*x^16) - 154/(5*x^15) - 165/(7*x^14) - 165/(13*x^13) - 55/(12*x^12) -
 x^(-11) - 1/(10*x^10)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{22}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^22,x]
```

```
[Out] IntegrateAlgebraic[((1 + x)*(1 + 2*x + x^2)^5)/x^22, x]
```

fricas [A] time = 0.39, size = 60, normalized size = 0.72

$$-\frac{352716\,x^{11}+3527160\,x^{10}+16166150\,x^{9}+44767800\,x^{8}+83140200\,x^{7}+108636528\,x^{6}+101846745\,x^{5}+68468400\,x^{4}+32332300\,x^{3}+10210200\,x^{2}+1939938\,x+167960}{3527160\,x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^22,x, algorithm="fricas")
```

```
[Out] -1/3527160*(352716*x^11 + 3527160*x^10 + 16166150*x^9 + 44767800*x^8 + 8314
0200*x^7 + 108636528*x^6 + 101846745*x^5 + 68468400*x^4 + 32332300*x^3 + 10
210200*x^2 + 1939938*x + 167960)/x^21
```

giac [A] time = 0.16, size = 60, normalized size = 0.72

$$-\frac{352716\,x^{11}+3527160\,x^{10}+16166150\,x^{9}+44767800\,x^{8}+83140200\,x^{7}+108636528\,x^{6}+101846745\,x^{5}+68468400\,x^{4}+32332300\,x^{3}+10210200\,x^{2}+1939938\,x+167960}{3527160\,x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^22,x, algorithm="giac")
```

```
[Out] -1/3527160*(352716*x^11 + 3527160*x^10 + 16166150*x^9 + 44767800*x^8 + 8314
0200*x^7 + 108636528*x^6 + 101846745*x^5 + 68468400*x^4 + 32332300*x^3 + 10
210200*x^2 + 1939938*x + 167960)/x^21
```

maple [A] time = 0.05, size = 62, normalized size = 0.75

$$-\frac{1}{10x^{10}}-\frac{1}{x^{11}}-\frac{55}{12x^{12}}-\frac{165}{13x^{13}}-\frac{165}{7x^{14}}-\frac{154}{5x^{15}}-\frac{231}{8x^{16}}-\frac{330}{17x^{17}}-\frac{55}{6x^{18}}-\frac{55}{19x^{19}}-\frac{11}{20x^{20}}-\frac{1}{21x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^22,x)
```

```
[Out] -1/21/x^21-11/20/x^20-55/19/x^19-55/6/x^18-330/17/x^17-231/8/x^16-154/5/x^1
5-165/7/x^14-165/13/x^13-55/12/x^12-1/x^11-1/10/x^10
```

maxima [A] time = 0.57, size = 60, normalized size = 0.72

$$-\frac{352716\,x^{11}+3527160\,x^{10}+16166150\,x^{9}+44767800\,x^{8}+83140200\,x^{7}+108636528\,x^{6}+101846745\,x^{5}+68468400\,x^{4}+32332300\,x^{3}+10210200\,x^{2}+1939938\,x+167960}{3527160\,x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^22,x, algorithm="maxima")
```

```
[Out] -1/3527160*(352716*x^11 + 3527160*x^10 + 16166150*x^9 + 44767800*x^8 + 8314
0200*x^7 + 108636528*x^6 + 101846745*x^5 + 68468400*x^4 + 32332300*x^3 + 10
210200*x^2 + 1939938*x + 167960)/x^21
```

mupad [B] time = 1.07, size = 58, normalized size = 0.70

$$-\frac{\frac{x^{11}}{10}+x^{10}+\frac{55\,x^9}{12}+\frac{165\,x^8}{13}+\frac{165\,x^7}{7}+\frac{154\,x^6}{5}+\frac{231\,x^5}{8}+\frac{330\,x^4}{17}+\frac{55\,x^3}{6}+\frac{55\,x^2}{19}+\frac{11\,x}{20}+\frac{1}{21}}{x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^22,x)
```

```
[Out] -((11*x)/20 + (55*x^2)/19 + (55*x^3)/6 + (330*x^4)/17 + (231*x^5)/8 + (154*
x^6)/5 + (165*x^7)/7 + (165*x^8)/13 + (55*x^9)/12 + x^10 + x^11/10 + 1/21)/
x^21
```

sympy [A] time = 0.22, size = 61, normalized size = 0.73

$$\frac{-352716x^{11} - 3527160x^{10} - 16166150x^9 - 44767800x^8 - 83140200x^7 - 108636528x^6 - 101846745x^5 - 68468400x^4 - 32332300x^3 - 10210200x^2 - 1939938x - 167960}{3527160x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**22,x)
```

```
[Out] (-352716*x**11 - 3527160*x**10 - 16166150*x**9 - 44767800*x**8 - 83140200*x
**7 - 108636528*x**6 - 101846745*x**5 - 68468400*x**4 - 32332300*x**3 - 102
10200*x**2 - 1939938*x - 167960)/(3527160*x**21)
```

3.549 $\int \frac{x^5(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=134

$$\frac{a^5(Ab-aB)}{b^7(a+bx)}+\frac{a^4(5Ab-6aB)\log(a+bx)}{b^7}-\frac{a^3x(4Ab-5aB)}{b^6}+\frac{a^2x^2(3Ab-4aB)}{2b^5}-\frac{ax^3(2Ab-3aB)}{3b^4}+\frac{x^4(Ab-2a}{4b^3}$$

Rubi [A] time = 0.16, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{a^2x^2(3Ab-4aB)}{2b^5}+\frac{a^5(Ab-aB)}{b^7(a+bx)}-\frac{a^3x(4Ab-5aB)}{b^6}+\frac{a^4(5Ab-6aB)\log(a+bx)}{b^7}-\frac{ax^3(2Ab-3aB)}{3b^4}+\frac{x^4(Ab-2aB)}{4b^3}+\frac{Bx^5}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((a^3*(4*A*b - 5*a*B)*x)/b^6) + (a^2*(3*A*b - 4*a*B)*x^2)/(2*b^5) - (a*(2*
A*b - 3*a*B)*x^3)/(3*b^4) + ((A*b - 2*a*B)*x^4)/(4*b^3) + (B*x^5)/(5*b^2) +
 (a^5*(A*b - a*B))/(b^7*(a + b*x)) + (a^4*(5*A*b - 6*a*B)*Log[a + b*x])/b^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^5(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(\frac{a^3(-4Ab+5aB)}{b^6}-\frac{a^2(-3Ab+4aB)x}{b^5}+\frac{a(-2Ab+3aB)x^2}{b^4}+\frac{(Ab-2aB)x^3}{b^3}+\frac{B}{}\right.\\ &= -\frac{a^3(4Ab-5aB)x}{b^6}+\frac{a^2(3Ab-4aB)x^2}{2b^5}-\frac{a(2Ab-3aB)x^3}{3b^4}+\frac{(Ab-2aB)x^4}{4b^3}+\frac{Bx^5}{5b^2}+\end{aligned}$$

Mathematica [A] time = 0.06, size = 127, normalized size = 0.95

$$\frac{\frac{60a^5(Ab-aB)}{a+bx}+60a^4(5Ab-6aB)\log(a+bx)+60a^3bx(5aB-4Ab)-30a^2b^2x^2(4aB-3Ab)+15b^4x^4(Ab-2aB)+20ab^3x^3(3aB-2Ab)+12b^5Bx^5}{60b^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (60*a^3*b*(-4*A*b + 5*a*B)*x - 30*a^2*b^2*(-3*A*b + 4*a*B)*x^2 + 20*a*b^3*(
-2*A*b + 3*a*B)*x^3 + 15*b^4*(A*b - 2*a*B)*x^4 + 12*b^5*B*x^5 + (60*a^5*(A*
b - a*B))/(a + b*x) + 60*a^4*(5*A*b - 6*a*B)*Log[a + b*x])/(60*b^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5(A+Bx)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.40, size = 188, normalized size = 1.40

$$\frac{12\,Bb^6x^6 - 60\,Ba^6 + 60\,Aa^5b - 3\left(6\,Bab^5 - 5\,Ab^6\right)x^5 + 5\left(6\,Ba^2b^4 - 5\,Aab^5\right)x^4 - 10\left(6\,Ba^3b^3 - 5\,Aa^2b^4\right)x^3 + 30\left(6\,Ba^4b^2 - 5\,Aa^3b^3\right)x^2 + 60\left(5\,Ba^5b - 4\,Aa^4b^2\right)x - 60\left(6\,Ba^6 - 5\,Aa^5b + \left(6\,Ba^5b - 5\,Aa^4b^2\right)x\right)\log\left(bx+a\right)}{60\left(b^8x + ab^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^6*x^6 - 60*B*a^6 + 60*A*a^5*b - 3*(6*B*a*b^5 - 5*A*b^6)*x^5 +
5*(6*B*a^2*b^4 - 5*A*a*b^5)*x^4 - 10*(6*B*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 30*(
6*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 60*(5*B*a^5*b - 4*A*a^4*b^2)*x - 60*(6*B*a
^6 - 5*A*a^5*b + (6*B*a^5*b - 5*A*a^4*b^2)*x)*log(b*x + a))/(b^8*x + a*b^7)
```

giac [A] time = 0.16, size = 152, normalized size = 1.13

$$-\frac{\left(6\,Ba^5 - 5\,Aa^4b\right)\log\left(|bx+a|\right)}{b^7} - \frac{Ba^6 - Aa^5b}{(bx+a)b^7} + \frac{12\,Bb^8x^5 - 30\,Bab^7x^4 + 15\,Ab^8x^4 + 60\,Ba^2b^6x^3 - 40\,Aab^7x^3 - 120\,Ba^3b^5x^2 + 90\,Aa^2b^6x^2 + 300\,Ba^4b^4x - 240\,Aa^3b^5x}{60\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(6*B*a^5 - 5*A*a^4*b)*log(abs(b*x + a))/b^7 - (B*a^6 - A*a^5*b)/((b*x + a)
*b^7) + 1/60*(12*B*b^8*x^5 - 30*B*a*b^7*x^4 + 15*A*b^8*x^4 + 60*B*a^2*b^6*x
^3 - 40*A*a*b^7*x^3 - 120*B*a^3*b^5*x^2 + 90*A*a^2*b^6*x^2 + 300*B*a^4*b^4*
x - 240*A*a^3*b^5*x)/b^10
```

maple [A] time = 0.06, size = 156, normalized size = 1.16

$$\frac{Bx^5}{5b^2} + \frac{Ax^4}{4b^2} - \frac{Bax^4}{2b^3} - \frac{2Aax^3}{3b^3} + \frac{Ba^2x^3}{b^4} + \frac{3Aa^2x^2}{2b^4} - \frac{2Ba^3x^2}{b^5} + \frac{Aa^5}{(bx+a)\,b^6} + \frac{5Aa^4\ln\left(bx+a\right)}{b^6} - \frac{4Aa^3x}{b^5} - \frac{Ba^6}{(bx+a)\,b^7} - \frac{6Ba^5\ln\left(bx+a\right)}{b^7} + \frac{5Ba^4x}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*B*x^5/b^2+1/4/b^2*A*x^4-1/2/b^3*B*x^4*a-2/3/b^3*A*x^3*a+1/b^4*B*x^3*a^2
+3/2/b^4*A*x^2*a^2-2/b^5*B*x^2*a^3-4/b^5*A*a^3*x+5/b^6*B*a^4*x+5*a^4/b^6*ln
(b*x+a)*A-6*a^5/b^7*ln(b*x+a)*B+a^5/b^6/(b*x+a)*A-a^6/b^7/(b*x+a)*B
```

maxima [A] time = 0.55, size = 149, normalized size = 1.11

$$-\frac{Ba^6 - Aa^5b}{b^8x + ab^7} + \frac{12\,Bb^4x^5 - 15\left(2\,Bab^3 - Ab^4\right)x^4 + 20\left(3\,Ba^2b^2 - 2\,Aab^3\right)x^3 - 30\left(4\,Ba^3b - 3\,Aa^2b^2\right)x^2 + 60\left(5\,Ba^4 - 4\,Aa^3b\right)x}{60\,b^6} - \frac{\left(6\,Ba^5 - 5\,Aa^4b\right)\log\left(bx+a\right)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^6 - A*a^5*b)/(b^8*x + a*b^7) + 1/60*(12*B*b^4*x^5 - 15*(2*B*a*b^3 - A
*b^4)*x^4 + 20*(3*B*a^2*b^2 - 2*A*a*b^3)*x^3 - 30*(4*B*a^3*b - 3*A*a^2*b^2)
*x^2 + 60*(5*B*a^4 - 4*A*a^3*b)*x)/b^6 - (6*B*a^5 - 5*A*a^4*b)*log(b*x + a)
/b^7
```

mupad [B] time = 1.10, size = 279, normalized size = 2.08

$$x^2\left(\frac{a\left(\frac{2a\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b}+\frac{Ba^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{2b^2}\right)+x^4\left(\frac{A}{4b^2}-\frac{Ba}{2b^3}\right)-x^3\left(\frac{2a\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{3b}+\frac{Ba^2}{3b^4}\right)-x\left(\frac{2a\left(\frac{2a\left(\frac{2a\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b}+\frac{Ba^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b^2}\right)}{b}-\frac{a^2\left(\frac{2a\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b}+\frac{Ba^2}{b^4}\right)}{b^2}\right)-\frac{\ln(a+bx)\left(6Ba^5-5Aa^4b\right)}{b^7}+\frac{Bx^5}{5b^2}-\frac{Ba^6-Aa^5b}{b\left(xb^7+ab^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((a*((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^4))/b - (a^2*(A/b^2 - (2
*B*a)/b^3))/(2*b^2)) + x^4*(A/(4*b^2) - (B*a)/(2*b^3)) - x^3*((2*a*(A/b^2 -
 (2*B*a)/b^3))/(3*b) + (B*a^2)/(3*b^4)) - x*((2*a*((2*a*((2*a*(A/b^2 - (2*B
*a)/b^3))/b + (B*a^2)/b^4))/b - (a^2*(A/b^2 - (2*B*a)/b^3))/b^2))/b - (a^2*
((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^4))/b^2) - (log(a + b*x)*(6*B*a^
5 - 5*A*a^4*b))/b^7 + (B*x^5)/(5*b^2) - (B*a^6 - A*a^5*b)/(b*(a*b^6 + b^7*x
))
```

sympy [A] time = 0.51, size = 143, normalized size = 1.07

$$\frac{Bx^5}{5b^2}-\frac{a^4\left(-5Ab+6Ba\right)\log\left(a+bx\right)}{b^7}+x^4\left(\frac{A}{4b^2}-\frac{Ba}{2b^3}\right)+x^3\left(-\frac{2Aa}{3b^3}+\frac{Ba^2}{b^4}\right)+x^2\left(\frac{3Aa^2}{2b^4}-\frac{2Ba^3}{b^5}\right)+x\left(-\frac{4Aa^3}{b^5}+\frac{5Ba^4}{b^6}\right)+\frac{Aa^5b-Ba^6}{ab^7+b^8x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**5/(5*b**2) - a**4*(-5*A*b + 6*B*a)*log(a + b*x)/b**7 + x**4*(A/(4*b**2
) - B*a/(2*b**3)) + x**3*(-2*A*a/(3*b**3) + B*a**2/b**4) + x**2*(3*A*a**2/(
2*b**4) - 2*B*a**3/b**5) + x*(-4*A*a**3/b**5 + 5*B*a**4/b**6) + (A*a**5*b -
 B*a**6)/(a*b**7 + b**8*x)
```

3.550 $\int \frac{x^4(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=113

$$-\frac{a^4(Ab-aB)}{b^6(a+bx)}-\frac{a^3(4Ab-5aB)\log(a+bx)}{b^6}+\frac{a^2x(3Ab-4aB)}{b^5}-\frac{ax^2(2Ab-3aB)}{2b^4}+\frac{x^3(Ab-2aB)}{3b^3}+\frac{Bx^4}{4b^2}$$

Rubi [A] time = 0.11, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{a^4(Ab-aB)}{b^6(a+bx)}+\frac{a^2x(3Ab-4aB)}{b^5}-\frac{a^3(4Ab-5aB)\log(a+bx)}{b^6}-\frac{ax^2(2Ab-3aB)}{2b^4}+\frac{x^3(Ab-2aB)}{3b^3}+\frac{Bx^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*(3*A*b - 4*a*B)*x)/b^5 - (a*(2*A*b - 3*a*B)*x^2)/(2*b^4) + ((A*b - 2*a
*B)*x^3)/(3*b^3) + (B*x^4)/(4*b^2) - (a^4*(A*b - a*B))/(b^6*(a + b*x)) - (a
^3*(4*A*b - 5*a*B)*Log[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^4(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(-\frac{a^2(-3Ab+4aB)}{b^5}+\frac{a(-2Ab+3aB)x}{b^4}+\frac{(Ab-2aB)x^2}{b^3}+\frac{Bx^3}{b^2}-\frac{a^4(-Ab+aB)}{b^5(a+bx)^2}+\right.\\ &= \frac{a^2(3Ab-4aB)x}{b^5}-\frac{a(2Ab-3aB)x^2}{2b^4}+\frac{(Ab-2aB)x^3}{3b^3}+\frac{Bx^4}{4b^2}-\frac{a^4(Ab-aB)}{b^6(a+bx)}-\frac{a^3(4Ab-\right.}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 107, normalized size = 0.95

$$\frac{\frac{12a^4(aB-Ab)}{a+bx}+12a^3(5aB-4Ab)\log(a+bx)-12a^2bx(4aB-3Ab)+4b^3x^3(Ab-2aB)+6ab^2x^2(3aB-2Ab)+3b^4Bx^4}{12b^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-12*a^2*b*(-3*A*b + 4*a*B)*x + 6*a*b^2*(-2*A*b + 3*a*B)*x^2 + 4*b^3*(A*b -
 2*a*B)*x^3 + 3*b^4*B*x^4 + (12*a^4*(-(A*b) + a*B))/(a + b*x) + 12*a^3*(-4*
A*b + 5*a*B)*Log[a + b*x])/(12*b^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(A+Bx)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.40, size = 164, normalized size = 1.45

$$\frac{3\,Bb^5x^5+12\,Ba^5-12\,Aa^4b-\left(5\,Bab^4-4\,Ab^5\right)x^4+2\left(5\,Ba^2b^3-4\,Aab^4\right)x^3-6\left(5\,Ba^3b^2-4\,Aa^2b^3\right)x^2-12\left(4\,Ba^4b-3\,Aa^3b^2\right)x+12\left(5\,Ba^5-4\,Aa^4b+\left(5\,Ba^4b-4\,Aa^3b^2\right)x\right)\log\left(bx+a\right)}{12\left(b^7x+ab^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^5*x^5 + 12*B*a^5 - 12*A*a^4*b - (5*B*a*b^4 - 4*A*b^5)*x^4 + 2*(
5*B*a^2*b^3 - 4*A*a*b^4)*x^3 - 6*(5*B*a^3*b^2 - 4*A*a^2*b^3)*x^2 - 12*(4*B*
a^4*b - 3*A*a^3*b^2)*x + 12*(5*B*a^5 - 4*A*a^4*b + (5*B*a^4*b - 4*A*a^3*b^2
)*x)*log(b*x + a))/(b^7*x + a*b^6)
```

giac [A] time = 0.16, size = 126, normalized size = 1.12

$$\frac{\left(5\,Ba^4-4\,Aa^3b\right)\log\left(|bx+a|\right)}{b^6}+\frac{Ba^5-Aa^4b}{(bx+a)b^6}+\frac{3\,Bb^6x^4-8\,Bab^5x^3+4\,Ab^6x^3+18\,Ba^2b^4x^2-12\,Aab^5x^2-48\,Ba^3b^3x+36\,Aa^2b^4x}{12\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (5*B*a^4 - 4*A*a^3*b)*log(abs(b*x + a))/b^6 + (B*a^5 - A*a^4*b)/((b*x + a)*
b^6) + 1/12*(3*B*b^6*x^4 - 8*B*a*b^5*x^3 + 4*A*b^6*x^3 + 18*B*a^2*b^4*x^2 -
 12*A*a*b^5*x^2 - 48*B*a^3*b^3*x + 36*A*a^2*b^4*x)/b^8
```

maple [A] time = 0.05, size = 133, normalized size = 1.18

$$\frac{B\,x^4}{4b^2}+\frac{A\,x^3}{3b^2}-\frac{2Ba\,x^3}{3b^3}-\frac{Aa\,x^2}{b^3}+\frac{3B\,a^2x^2}{2b^4}-\frac{A\,a^4}{\left(bx+a\right)b^5}-\frac{4A\,a^3\ln\left(bx+a\right)}{b^5}+\frac{3A\,a^2x}{b^4}+\frac{B\,a^5}{\left(bx+a\right)b^6}+\frac{5B\,a^4\ln\left(bx+a\right)}{b^6}-\frac{4B\,a^3x}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*B*x^4/b^2+1/3/b^2*A*x^3-2/3/b^3*B*x^3*a-1/b^3*A*x^2*a+3/2/b^4*B*x^2*a^2
+3/b^4*A*a^2*x-4/b^5*B*x*a^3-4*a^3/b^5*ln(b*x+a)*A+5*a^4/b^6*ln(b*x+a)*B-a^
4/b^5/(b*x+a)*A+a^5/b^6/(b*x+a)*B
```

maxima [A] time = 0.72, size = 123, normalized size = 1.09

$$\frac{Ba^5-Aa^4b}{b^7x+ab^6}+\frac{3\,Bb^3x^4-4\left(2\,Bab^2-Ab^3\right)x^3+6\left(3\,Ba^2b-2\,Aab^2\right)x^2-12\left(4\,Ba^3-3\,Aa^2b\right)x}{12\,b^5}+\frac{\left(5\,Ba^4-4\,Aa^3b\right)\log\left(bx+a\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a^5 - A*a^4*b)/(b^7*x + a*b^6) + 1/12*(3*B*b^3*x^4 - 4*(2*B*a*b^2 - A*b^
3)*x^3 + 6*(3*B*a^2*b - 2*A*a*b^2)*x^2 - 12*(4*B*a^3 - 3*A*a^2*b)*x)/b^5 +
(5*B*a^4 - 4*A*a^3*b)*log(b*x + a)/b^6
```

mupad [B] time = 0.06, size = 173, normalized size = 1.53

$$x\left(\frac{2a\left(\frac{2a\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b}+\frac{Ba^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b^2}\right)+x^3\left(\frac{A}{3b^2}-\frac{2Ba}{3b^3}\right)-x^2\left(\frac{a\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)}{b}+\frac{Ba^2}{2b^4}\right)+\frac{\ln(a+bx)\left(5Ba^4-4Aa^3b\right)}{b^6}+\frac{Bx^4}{4b^2}+\frac{Ba^5-Aa^4b}{b\left(xb^6+ab^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((2*a*((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^4))/b - (a^2*(A/b^2 - (2
*B*a)/b^3))/b^2) + x^3*(A/(3*b^2) - (2*B*a)/(3*b^3)) - x^2*((a*(A/b^2 - (2*
B*a)/b^3))/b + (B*a^2)/(2*b^4)) + (log(a + b*x)*(5*B*a^4 - 4*A*a^3*b))/b^6
+ (B*x^4)/(4*b^2) + (B*a^5 - A*a^4*b)/(b*(a*b^5 + b^6*x))
```

sympy [A] time = 0.46, size = 119, normalized size = 1.05

$$\frac{Bx^4}{4b^2}+\frac{a^3(-4Ab+5Ba)\log(a+bx)}{b^6}+x^3\left(\frac{A}{3b^2}-\frac{2Ba}{3b^3}\right)+x^2\left(-\frac{Aa}{b^3}+\frac{3Ba^2}{2b^4}\right)+x\left(\frac{3Aa^2}{b^4}-\frac{4Ba^3}{b^5}\right)+\frac{-Aa^4b+Ba^5}{ab^6+b^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**4/(4*b**2) + a**3*(-4*A*b + 5*B*a)*log(a + b*x)/b**6 + x**3*(A/(3*b**2
) - 2*B*a/(3*b**3)) + x**2*(-A*a/b**3 + 3*B*a**2/(2*b**4)) + x*(3*A*a**2/b*
*4 - 4*B*a**3/b**5) + (-A*a**4*b + B*a**5)/(a*b**6 + b**7*x)
```

3.551 $\int \frac{x^3(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=90

$$\frac{a^3(Ab-aB)}{b^5(a+bx)}+\frac{a^2(3Ab-4aB)\log(a+bx)}{b^5}-\frac{ax(2Ab-3aB)}{b^4}+\frac{x^2(Ab-2aB)}{2b^3}+\frac{Bx^3}{3b^2}$$

Rubi [A] time = 0.08, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{a^3(Ab-aB)}{b^5(a+bx)}+\frac{a^2(3Ab-4aB)\log(a+bx)}{b^5}+\frac{x^2(Ab-2aB)}{2b^3}-\frac{ax(2Ab-3aB)}{b^4}+\frac{Bx^3}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((a*(2*A*b - 3*a*B)*x)/b^4) + ((A*b - 2*a*B)*x^2)/(2*b^3) + (B*x^3)/(3*b^2
) + (a^3*(A*b - a*B))/(b^5*(a + b*x)) + (a^2*(3*A*b - 4*a*B)*Log[a + b*x])/
b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^3(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(\frac{a(-2Ab+3aB)}{b^4}+\frac{(Ab-2aB)x}{b^3}+\frac{Bx^2}{b^2}+\frac{a^3(-Ab+aB)}{b^4(a+bx)^2}-\frac{a^2(-3Ab+4aB)}{b^4(a+bx)}\right)dx\\ &= -\frac{a(2Ab-3aB)x}{b^4}+\frac{(Ab-2aB)x^2}{2b^3}+\frac{Bx^3}{3b^2}+\frac{a^3(Ab-aB)}{b^5(a+bx)}+\frac{a^2(3Ab-4aB)\log(a+bx)}{b^5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 0.97

$$\frac{\frac{6a^3(Ab-aB)}{a+bx}+6a^2(3Ab-4aB)\log(a+bx)+3b^2x^2(Ab-2aB)+6abx(3aB-2Ab)+2b^3Bx^3}{6b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (6*a*b*(-2*A*b + 3*a*B)*x + 3*b^2*(A*b - 2*a*B)*x^2 + 2*b^3*B*x^3 + (6*a^3*
(A*b - a*B))/(a + b*x) + 6*a^2*(3*A*b - 4*a*B)*Log[a + b*x])/(6*b^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(A+Bx)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.41, size = 140, normalized size = 1.56

$$\frac{2\,Bb^4x^4-6\,Ba^4+6\,Aa^3b-\left(4\,Bab^3-3\,Ab^4\right)x^3+3\left(4\,Ba^2b^2-3\,Aab^3\right)x^2+6\left(3\,Ba^3b-2\,Aa^2b^2\right)x-6\left(4\,Ba^4-3\,Aa^3b+\left(4\,Ba^3b-3\,Aa^2b^2\right)x\right)\log\left(bx+a\right)}{6\left(b^6x+ab^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*x^4 - 6*B*a^4 + 6*A*a^3*b - (4*B*a*b^3 - 3*A*b^4)*x^3 + 3*(4*B
*a^2*b^2 - 3*A*a*b^3)*x^2 + 6*(3*B*a^3*b - 2*A*a^2*b^2)*x - 6*(4*B*a^4 - 3*
A*a^3*b + (4*B*a^3*b - 3*A*a^2*b^2)*x)*log(b*x + a))/(b^6*x + a*b^5)
```

giac [A] time = 0.18, size = 104, normalized size = 1.16

$$-\frac{\left(4\,Ba^3-3\,Aa^2b\right)\log\left(|bx+a|\right)}{b^5}+\frac{2\,Bb^4x^3-6\,Bab^3x^2+3\,Ab^4x^2+18\,Ba^2b^2x-12\,Aab^3x}{6\,b^6}-\frac{Ba^4-Aa^3b}{(bx+a)b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(4*B*a^3 - 3*A*a^2*b)*log(abs(b*x + a))/b^5 + 1/6*(2*B*b^4*x^3 - 6*B*a*b^3
*x^2 + 3*A*b^4*x^2 + 18*B*a^2*b^2*x - 12*A*a*b^3*x)/b^6 - (B*a^4 - A*a^3*b)
/((b*x + a)*b^5)
```

maple [A] time = 0.06, size = 109, normalized size = 1.21

$$\frac{B\,x^3}{3b^2}+\frac{A\,x^2}{2b^2}-\frac{Ba\,x^2}{b^3}+\frac{A\,a^3}{(bx+a)\,b^4}+\frac{3A\,a^2\ln\left(bx+a\right)}{b^4}-\frac{2Aax}{b^3}-\frac{B\,a^4}{(bx+a)\,b^5}-\frac{4B\,a^3\ln\left(bx+a\right)}{b^5}+\frac{3B\,a^2x}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/3*B/b^2*x^3+1/2/b^2*A*x^2-1/b^3*a*B*x^2-2/b^3*A*a*x+3/b^4*B*x*a^2+3*a^2/b
^4*ln(b*x+a)*A-4*a^3/b^5*ln(b*x+a)*B+a^3/b^4/(b*x+a)*A-a^4/b^5/(b*x+a)*B
```

maxima [A] time = 0.57, size = 101, normalized size = 1.12

$$-\frac{Ba^4-Aa^3b}{b^6x+ab^5}+\frac{2\,Bb^2x^3-3\left(2\,Bab-Ab^2\right)x^2+6\left(3\,Ba^2-2\,Aab\right)x}{6\,b^4}-\frac{\left(4\,Ba^3-3\,Aa^2b\right)\log\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^4 - A*a^3*b)/(b^6*x + a*b^5) + 1/6*(2*B*b^2*x^3 - 3*(2*B*a*b - A*b^2)
*x^2 + 6*(3*B*a^2 - 2*A*a*b)*x)/b^4 - (4*B*a^3 - 3*A*a^2*b)*log(b*x + a)/b^
5
```

mupad [B] time = 0.05, size = 115, normalized size = 1.28

$$x^2\left(\frac{A}{2\,b^2}-\frac{B\,a}{b^3}\right)-x\left(\frac{2\,a\,\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{b}+\frac{B\,a^2}{b^4}\right)-\frac{\ln\left(a+b\,x\right)\,\left(4\,B\,a^3-3\,A\,a^2\,b\right)}{b^5}+\frac{B\,x^3}{3\,b^2}-\frac{B\,a^4-A\,a^3\,b}{b\,\left(x\,b^5+a\,b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*(A/(2*b^2) - (B*a)/b^3) - x*((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^
4) - (log(a + b*x)*(4*B*a^3 - 3*A*a^2*b))/b^5 + (B*x^3)/(3*b^2) - (B*a^4 -
A*a^3*b)/(b*(a*b^4 + b^5*x))
```

sympy [A] time = 0.42, size = 92, normalized size = 1.02

$$\frac{Bx^3}{3b^2}-\frac{a^2\left(-3Ab+4Ba\right)\log\left(a+bx\right)}{b^5}+x^2\left(\frac{A}{2b^2}-\frac{Ba}{b^3}\right)+x\left(-\frac{2Aa}{b^3}+\frac{3Ba^2}{b^4}\right)+\frac{Aa^3b-Ba^4}{ab^5+b^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**3/(3*b**2) - a**2*(-3*A*b + 4*B*a)*log(a + b*x)/b**5 + x**2*(A/(2*b**2
) - B*a/b**3) + x*(-2*A*a/b**3 + 3*B*a**2/b**4) + (A*a**3*b - B*a**4)/(a*b*
*5 + b**6*x)
```

3.552 $\int \frac{x^2(A+Bx)}{a^2+2abx+b^2x^2} \, dx$

Optimal. Leaf size=69

$$-\frac{a^2(Ab-aB)}{b^4(a+bx)}-\frac{a(2Ab-3aB)\log(a+bx)}{b^4}+\frac{x(Ab-2aB)}{b^3}+\frac{Bx^2}{2b^2}$$

Rubi [A] time = 0.06, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{a^2(Ab-aB)}{b^4(a+bx)}+\frac{x(Ab-2aB)}{b^3}-\frac{a(2Ab-3aB)\log(a+bx)}{b^4}+\frac{Bx^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - 2*a*B)*x)/b^3 + (B*x^2)/(2*b^2) - (a^2*(A*b - a*B))/(b^4*(a + b*x))
 - (a*(2*A*b - 3*a*B)*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^2(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(\frac{Ab-2aB}{b^3}+\frac{Bx}{b^2}-\frac{a^2(-Ab+aB)}{b^3(a+bx)^2}+\frac{a(-2Ab+3aB)}{b^3(a+bx)}\right)dx\\ &= \frac{(Ab-2aB)x}{b^3}+\frac{Bx^2}{2b^2}-\frac{a^2(Ab-aB)}{b^4(a+bx)}-\frac{a(2Ab-3aB)\log(a+bx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 66, normalized size = 0.96

$$\frac{\frac{2a^2(aB-Ab)}{a+bx}+2bx(Ab-2aB)+2a(3aB-2Ab)\log(a+bx)+b^2Bx^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*b*(A*b - 2*a*B)*x + b^2*B*x^2 + (2*a^2*(-(A*b) + a*B))/(a + b*x) + 2*a*(
-2*A*b + 3*a*B)*Log[a + b*x])/(2*b^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(A+Bx)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.42, size = 113, normalized size = 1.64

$$\frac{Bb^3x^3+2\,Ba^3-2\,Aa^2b-\left(3\,Bab^2-2\,Ab^3\right)x^2-2\left(2\,Ba^2b-Aab^2\right)x+2\left(3\,Ba^3-2\,Aa^2b+\left(3\,Ba^2b-2\,Aab^2\right)x\right)\log\left(bx+a\right)}{2\left(b^5x+ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*x^3 + 2*B*a^3 - 2*A*a^2*b - (3*B*a*b^2 - 2*A*b^3)*x^2 - 2*(2*B*a
^2*b - A*a*b^2)*x + 2*(3*B*a^3 - 2*A*a^2*b + (3*B*a^2*b - 2*A*a*b^2)*x)*log
(b*x + a))/(b^5*x + a*b^4)
```

giac [A] time = 0.16, size = 75, normalized size = 1.09

$$\frac{\left(3\,Ba^2-2\,Aab\right)\log\left(|bx+a|\right)}{b^4}+\frac{Bb^2x^2-4\,Babx+2\,Ab^2x}{2\,b^4}+\frac{Ba^3-Aa^2b}{(bx+a)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (3*B*a^2 - 2*A*a*b)*log(abs(b*x + a))/b^4 + 1/2*(B*b^2*x^2 - 4*B*a*b*x + 2*
A*b^2*x)/b^4 + (B*a^3 - A*a^2*b)/((b*x + a)*b^4)
```

maple [A] time = 0.06, size = 84, normalized size = 1.22

$$\frac{B\,x^2}{2b^2}-\frac{A\,a^2}{(bx+a)\,b^3}-\frac{2Aa\ln\left(bx+a\right)}{b^3}+\frac{Ax}{b^2}+\frac{B\,a^3}{(bx+a)\,b^4}+\frac{3B\,a^2\ln\left(bx+a\right)}{b^4}-\frac{2Bax}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/2*B*x^2/b^2+1/b^2*A*x-2/b^3*B*a*x-2*a/b^3*ln(b*x+a)*A+3*a^2/b^4*ln(b*x+a)
*B-a^2/b^3/(b*x+a)*A+a^3/b^4/(b*x+a)*B
```

maxima [A] time = 0.47, size = 74, normalized size = 1.07

$$\frac{Ba^3-Aa^2b}{b^5x+ab^4}+\frac{Bbx^2-2\left(2\,Ba-Ab\right)x}{2\,b^3}+\frac{\left(3\,Ba^2-2\,Aab\right)\log\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a^3 - A*a^2*b)/(b^5*x + a*b^4) + 1/2*(B*b*x^2 - 2*(2*B*a - A*b)*x)/b^3 +
 (3*B*a^2 - 2*A*a*b)*log(b*x + a)/b^4
```

mupad [B] time = 0.06, size = 77, normalized size = 1.12

$$x\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)+\frac{B\,x^2}{2\,b^2}+\frac{B\,a^3-A\,a^2\,b}{b\,\left(x\,b^4+a\,b^3\right)}+\frac{\ln\left(a+b\,x\right)\,\left(3\,B\,a^2-2\,A\,a\,b\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*(A/b^2 - (2*B*a)/b^3) + (B*x^2)/(2*b^2) + (B*a^3 - A*a^2*b)/(b*(a*b^3 + b
^4*x)) + (log(a + b*x)*(3*B*a^2 - 2*A*a*b))/b^4
```

sympy [A] time = 0.36, size = 68, normalized size = 0.99

$$\frac{Bx^2}{2b^2} + \frac{a(-2Ab + 3Ba)\log(a + bx)}{b^4} + x\left(\frac{A}{b^2} - \frac{2Ba}{b^3}\right) + \frac{-Aa^2b + Ba^3}{ab^4 + b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**2/(2*b**2) + a*(-2*A*b + 3*B*a)*log(a + b*x)/b**4 + x*(A/b**2 - 2*B*a/
b**3) + (-A*a**2*b + B*a**3)/(a*b**4 + b**5*x)
```

3.553 $\int \frac{x(A+Bx)}{a^2+2abx+b^2x^2} dx$

Optimal. Leaf size=45

$$\frac{a(Ab-aB)}{b^3(a+bx)}+\frac{(Ab-2aB)\log(a+bx)}{b^3}+\frac{Bx}{b^2}$$

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 77}

$$\frac{a(Ab-aB)}{b^3(a+bx)}+\frac{(Ab-2aB)\log(a+bx)}{b^3}+\frac{Bx}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*x)/b^2 + (a*(A*b - a*B))/(b^3*(a + b*x)) + ((A*b - 2*a*B)*Log[a + b*x])/
b^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{a^2+2abx+b^2x^2} dx &= \int \frac{x(A+Bx)}{(a+bx)^2} dx\\ &= \int \left(\frac{B}{b^2}+\frac{a(-Ab+aB)}{b^2(a+bx)^2}+\frac{Ab-2aB}{b^2(a+bx)}\right) dx\\ &= \frac{Bx}{b^2}+\frac{a(Ab-aB)}{b^3(a+bx)}+\frac{(Ab-2aB)\log(a+bx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{\frac{a(Ab-aB)}{a+bx}+(Ab-2aB)\log(a+bx)+bBx}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*B*x + (a*(A*b - a*B))/(a + b*x) + (A*b - 2*a*B)*Log[a + b*x])/b^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(A+Bx)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.41, size = 72, normalized size = 1.60

$$\frac{Bb^2x^2+Babx-Ba^2+Aab-\left(2\,Ba^2-Aab+\left(2\,Bab-Ab^2\right)x\right)\log\left(bx+a\right)}{b^4x+ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (B*b^2*x^2 + B*a*b*x - B*a^2 + A*a*b - (2*B*a^2 - A*a*b + (2*B*a*b - A*b^2)
*x)*log(b*x + a))/(b^4*x + a*b^3)
```

giac [A] time = 0.18, size = 51, normalized size = 1.13

$$\frac{Bx}{b^2}-\frac{(2\,Ba-Ab)\log\left(|bx+a|\right)}{b^3}-\frac{Ba^2-Aab}{(bx+a)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] B*x/b^2 - (2*B*a - A*b)*log(abs(b*x + a))/b^3 - (B*a^2 - A*a*b)/((b*x + a)*
b^3)
```

maple [A] time = 0.06, size = 61, normalized size = 1.36

$$\frac{Aa}{(bx+a)\,b^2}+\frac{A\ln\left(bx+a\right)}{b^2}-\frac{B\,a^2}{(bx+a)\,b^3}-\frac{2Ba\ln\left(bx+a\right)}{b^3}+\frac{Bx}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] B*x/b^2+1/b^2*ln(b*x+a)*A-2/b^3*ln(b*x+a)*B*a+a/b^2/(b*x+a)*A-a^2/b^3/(b*x+
a)*B
```

maxima [A] time = 0.49, size = 53, normalized size = 1.18

$$-\frac{Ba^2-Aab}{b^4x+ab^3}+\frac{Bx}{b^2}-\frac{(2\,Ba-Ab)\log\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^2 - A*a*b)/(b^4*x + a*b^3) + B*x/b^2 - (2*B*a - A*b)*log(b*x + a)/b^3
```

mupad [B] time = 1.10, size = 54, normalized size = 1.20

$$\frac{B\,x}{b^2}-\frac{B\,a^2-A\,a\,b}{b\,\left(x\,b^3+a\,b^2\right)}+\frac{\ln\left(a+b\,x\right)\,\left(A\,b-2\,B\,a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (B*x)/b^2 - (B*a^2 - A*a*b)/(b*(a*b^2 + b^3*x)) + (log(a + b*x)*(A*b - 2*B*
a))/b^3
```

sympy [**A**] time = 0.28, size = 44, normalized size = 0.98

$$\frac{Bx}{b^2} + \frac{Aab - Ba^2}{ab^3 + b^4x} - \frac{(-Ab + 2Ba)\log(a + bx)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x/b**2 + (A*a*b - B*a**2)/(a*b**3 + b**4*x) - (-A*b + 2*B*a)*log(a + b*x)
/b**3
```

3.554 $\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=32

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

Rubi [A] time = 0.02, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] -((A*b - a*B)/(b^2*(a + b*x))) + (B*Log[a + b*x])/b^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx &= \int \frac{A+Bx}{(a+bx)^2}\,dx\\ &= \int \left(\frac{Ab-aB}{b(a+bx)^2}+\frac{B}{b(a+bx)}\right)dx\\ &= -\frac{Ab-aB}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.97

$$\frac{aB-Ab}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] (-(A*b) + a*B)/(b^2*(a + b*x)) + (B*Log[a + b*x])/b^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.40, size = 37, normalized size = 1.16

$$\frac{Ba - Ab + (Bbx + Ba)\log(bx + a)}{b^3x + ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] (B*a - A*b + (B*b*x + B*a)*log(b*x + a))/(b^3*x + a*b^2)
```

giac [A] time = 0.15, size = 32, normalized size = 1.00

$$\frac{B\log(|bx + a|)}{b^2} + \frac{Ba - Ab}{(bx + a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] B*log(abs(b*x + a))/b^2 + (B*a - A*b)/((b*x + a)*b^2)
```

maple [A] time = 0.06, size = 39, normalized size = 1.22

$$-\frac{A}{(bx + a)\,b} + \frac{Ba}{(bx + a)\,b^2} + \frac{B\ln(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] B*ln(b*x+a)/b^2-1/b/(b*x+a)*A+1/b^2/(b*x+a)*B*a
```

maxima [A] time = 0.48, size = 34, normalized size = 1.06

$$\frac{Ba - Ab}{b^3x + ab^2} + \frac{B\log(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] (B*a - A*b)/(b^3*x + a*b^2) + B*log(b*x + a)/b^2
```

mupad [B] time = 1.08, size = 32, normalized size = 1.00

$$\frac{B\,\ln(a + b\,x)}{b^2} - \frac{A\,b - B\,a}{b^2\,(a + b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] (B*log(a + b*x))/b^2 - (A*b - B*a)/(b^2*(a + b*x))
```

sympy [A] time = 0.19, size = 27, normalized size = 0.84

$$\frac{B\log(a + bx)}{b^2} + \frac{-Ab + Ba}{ab^2 + b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] B*log(a + b*x)/b**2 + (-A*b + B*a)/(a*b**2 + b**3*x)
```

3.555 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=42

$$-\frac{A\log(a+bx)}{a^2}+\frac{A\log(x)}{a^2}+\frac{Ab-aB}{ab(a+bx)}$$

Rubi [A] time = 0.03, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{A\log(a+bx)}{a^2}+\frac{A\log(x)}{a^2}+\frac{Ab-aB}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (A*b - a*B)/(a*b*(a + b*x)) + (A*Log[x])/a^2 - (A*Log[a + b*x])/a^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x(a+bx)^2}\,dx\\
&= \int \left(\frac{A}{a^2x}+\frac{-Ab+aB}{a(a+bx)^2}-\frac{Ab}{a^2(a+bx)}\right)dx\\
&= \frac{Ab-aB}{ab(a+bx)}+\frac{A\log(x)}{a^2}-\frac{A\log(a+bx)}{a^2}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 38, normalized size = 0.90

$$\frac{\frac{a(Ab-aB)}{b(a+bx)}-A\log(a+bx)+A\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((a*(A*b - a*B))/(b*(a + b*x)) + A*Log[x] - A*Log[a + b*x])/a^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)),x]
[Out] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.42, size = 62, normalized size = 1.48

$$-\frac{Ba^2-Aab+\left(Ab^2x+Aab\right)\log\left(bx+a\right)-\left(Ab^2x+Aab\right)\log(x)}{a^2b^2x+a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] -(B*a^2 - A*a*b + (A*b^2*x + A*a*b)*log(b*x + a) - (A*b^2*x + A*a*b)*log(x)
)/(a^2*b^2*x + a^3*b)
```

giac [A] time = 0.15, size = 48, normalized size = 1.14

$$-\frac{A\log\left(|bx+a|\right)}{a^2}+\frac{A\log\left(|x|\right)}{a^2}-\frac{Ba^2-Aab}{(bx+a)a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] -A*log(abs(b*x + a))/a^2 + A*log(abs(x))/a^2 - (B*a^2 - A*a*b)/((b*x + a)*a
^2*b)
```

maple [A] time = 0.06, size = 46, normalized size = 1.10

$$\frac{A}{\left(bx+a\right)a}+\frac{A\ln(x)}{a^2}-\frac{A\ln\left(bx+a\right)}{a^2}-\frac{B}{\left(bx+a\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/a/(b*x+a)*A-1/b/(b*x+a)*B-A*ln(b*x+a)/a^2+A/a^2*ln(x)
```

maxima [A] time = 0.61, size = 44, normalized size = 1.05

$$-\frac{Ba-Ab}{ab^2x+a^2b}-\frac{A\log\left(bx+a\right)}{a^2}+\frac{A\log(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] -(B*a - A*b)/(a*b^2*x + a^2*b) - A*log(b*x + a)/a^2 + A*log(x)/a^2
```

mupad [B] time = 0.07, size = 39, normalized size = 0.93

$$\frac{A\,b-B\,a}{a\,b\,\left(a+b\,x\right)}-\frac{2\,A\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)),x)
[Out] (A*b - B*a)/(a*b*(a + b*x)) - (2*A*atanh((2*b*x)/a + 1))/a^2
```

sympy [A] time = 0.29, size = 32, normalized size = 0.76

$$\frac{A\left(\log\left(x\right)-\log\left(\frac{a}{b}+x\right)\right)}{a^2}+\frac{Ab-Ba}{a^2b+ab^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2),x)
[Out] A*(log(x) - log(a/b + x))/a**2 + (A*b - B*a)/(a**2*b + a*b**2*x)
```

3.556 $\int \frac{A+Bx}{x^2(a^2+2abx+b^2x^2)} dx$

Optimal. Leaf size=65

$$-\frac{\log(x)(2Ab-aB)}{a^3}+\frac{(2Ab-aB)\log(a+bx)}{a^3}-\frac{Ab-aB}{a^2(a+bx)}-\frac{A}{a^2x}$$

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{Ab-aB}{a^2(a+bx)}-\frac{\log(x)(2Ab-aB)}{a^3}+\frac{(2Ab-aB)\log(a+bx)}{a^3}-\frac{A}{a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(A/(a^2*x)) - (A*b - a*B)/(a^2*(a + b*x)) - ((2*A*b - a*B)*Log[x])/a^3 + (
(2*A*b - a*B)*Log[a + b*x])/a^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^2(a+bx)^2}\,dx\\
&= \int \left(\frac{A}{a^2x^2}+\frac{-2Ab+aB}{a^3x}-\frac{b(-Ab+aB)}{a^2(a+bx)^2}-\frac{b(-2Ab+aB)}{a^3(a+bx)}\right)dx\\
&= -\frac{A}{a^2x}-\frac{Ab-aB}{a^2(a+bx)}-\frac{(2Ab-aB)\log(x)}{a^3}+\frac{(2Ab-aB)\log(a+bx)}{a^3}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.86

$$\frac{\frac{a(aB-Ab)}{a+bx}+\log(x)(aB-2Ab)+(2Ab-aB)\log(a+bx)-\frac{aA}{x}}{a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-((a*A)/x) + (a*(-(A*b) + a*B))/(a + b*x) + (-2*A*b + a*B)*Log[x] + (2*A*b
 - a*B)*Log[a + b*x])/a^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.40, size = 107, normalized size = 1.65

$$-\frac{Aa^2-\left(Ba^2-2\,Aab\right)x+\left(\left(Bab-2\,Ab^2\right)x^2+\left(Ba^2-2\,Aab\right)x\right)\log\left(bx+a\right)-\left(\left(Bab-2\,Ab^2\right)x^2+\left(Ba^2-2\,Aab\right)x\right)\log(x)}{a^3bx^2+a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -(A*a^2 - (B*a^2 - 2*A*a*b)*x + ((B*a*b - 2*A*b^2)*x^2 + (B*a^2 - 2*A*a*b)*
x)*log(b*x + a) - ((B*a*b - 2*A*b^2)*x^2 + (B*a^2 - 2*A*a*b)*x)*log(x))/(a^
3*b*x^2 + a^4*x)
```

giac [A] time = 0.15, size = 71, normalized size = 1.09

$$\frac{(Ba-2\,Ab)\log\left(|x|\right)}{a^3}+\frac{Bax-2\,Abx-Aa}{\left(bx^2+ax\right)a^2}-\frac{\left(Bab-2\,Ab^2\right)\log\left(|bx+a|\right)}{a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*a - 2*A*b)*log(abs(x))/a^3 + (B*a*x - 2*A*b*x - A*a)/((b*x^2 + a*x)*a^2)
 - (B*a*b - 2*A*b^2)*log(abs(b*x + a))/(a^3*b)
```

maple [A] time = 0.06, size = 78, normalized size = 1.20

$$-\frac{Ab}{(bx+a)\,a^2}-\frac{2Ab\ln(x)}{a^3}+\frac{2Ab\ln\left(bx+a\right)}{a^3}+\frac{B}{(bx+a)\,a}+\frac{B\ln(x)}{a^2}-\frac{B\ln\left(bx+a\right)}{a^2}-\frac{A}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/a^3*ln(b*x+a)*A*b-1/a^2*ln(b*x+a)*B-1/a^2/(b*x+a)*A*b+1/a/(b*x+a)*B-A/a^2
/x-2/a^3*ln(x)*A*b+B/a^2*ln(x)
```

maxima [A] time = 0.53, size = 67, normalized size = 1.03

$$-\frac{Aa-(Ba-2\,Ab)x}{a^2bx^2+a^3x}-\frac{(Ba-2\,Ab)\log\left(bx+a\right)}{a^3}+\frac{(Ba-2\,Ab)\log(x)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(A*a - (B*a - 2*A*b)*x)/(a^2*b*x^2 + a^3*x) - (B*a - 2*A*b)*log(b*x + a)/a
^3 + (B*a - 2*A*b)*log(x)/a^3
```

mupad [B] time = 1.12, size = 58, normalized size = 0.89

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)\,\left(2\,A\,b-B\,a\right)}{a^3}-\frac{\frac{A}{a}+\frac{x\,\left(2\,A\,b-B\,a\right)}{a^2}}{b\,x^2+a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*atanh((2*b*x)/a + 1)*(2*A*b - B*a))/a^3 - (A/a + (x*(2*A*b - B*a))/a^2)/
(a*x + b*x^2)
```

sympy [B] time = 0.49, size = 128, normalized size = 1.97

$$\frac{-Aa+x(-2Ab+Ba)}{a^3x+a^2bx^2}+\frac{(-2Ab+Ba)\log\left(x+\frac{-2Aab+Ba^2-a(-2Ab+Ba)}{-4Ab^2+2Bab}\right)}{a^3}-\frac{(-2Ab+Ba)\log\left(x+\frac{-2Aab+Ba^2+a(-2Ab+Ba)}{-4Ab^2+2Bab}\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-A*a + x*(-2*A*b + B*a))/(a**3*x + a**2*b*x**2) + (-2*A*b + B*a)*log(x + (
-2*A*a*b + B*a**2 - a*(-2*A*b + B*a))/(-4*A*b**2 + 2*B*a*b))/a**3 - (-2*A*b
 + B*a)*log(x + (-2*A*a*b + B*a**2 + a*(-2*A*b + B*a))/(-4*A*b**2 + 2*B*a*b
))/a**3
```

3.557 $\int \frac{A+Bx}{x^3(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=85

$$\frac{b\log(x)(3Ab-2aB)}{a^4}-\frac{b(3Ab-2aB)\log(a+bx)}{a^4}+\frac{2Ab-aB}{a^3x}+\frac{b(Ab-aB)}{a^3(a+bx)}-\frac{A}{2a^2x^2}$$

Rubi [A] time = 0.07, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{2Ab-aB}{a^3x}+\frac{b(Ab-aB)}{a^3(a+bx)}+\frac{b\log(x)(3Ab-2aB)}{a^4}-\frac{b(3Ab-2aB)\log(a+bx)}{a^4}-\frac{A}{2a^2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -A/(2*a^2*x^2) + (2*A*b - a*B)/(a^3*x) + (b*(A*b - a*B))/(a^3*(a + b*x)) +
(b*(3*A*b - 2*a*B)*Log[x])/a^4 - (b*(3*A*b - 2*a*B)*Log[a + b*x])/a^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^3(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^3}+\frac{-2Ab+aB}{a^3x^2}-\frac{b(-3Ab+2aB)}{a^4x}+\frac{b^2(-Ab+aB)}{a^3(a+bx)^2}+\frac{b^2(-3Ab+2aB)}{a^4(a+bx)}\right)d\\ &= -\frac{A}{2a^2x^2}+\frac{2Ab-aB}{a^3x}+\frac{b(Ab-aB)}{a^3(a+bx)}+\frac{b(3Ab-2aB)\log(x)}{a^4}-\frac{b(3Ab-2aB)\log(a}{a^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 85, normalized size = 1.00

$$\frac{-\frac{a\left(a^2(A+2Bx)+abx(4Bx-3A)-6Ab^2x^2\right)}{x^2(a+bx)}+2b\log(x)(3Ab-2aB)+2b(2aB-3Ab)\log(a+bx)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-((a*(-6*A*b^2*x^2 + a^2*(A + 2*B*x) + a*b*x*(-3*A + 4*B*x)))/(x^2*(a + b*
x))) + 2*b*(3*A*b - 2*a*B)*Log[x] + 2*b*(-3*A*b + 2*a*B)*Log[a + b*x])/(2*a
^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.41, size = 150, normalized size = 1.76

$$-\frac{Aa^3+2\left(2\,Ba^2b-3\,Aab^2\right)x^2+\left(2\,Ba^3-3\,Aa^2b\right)x-2\left(\left(2\,Bab^2-3\,Ab^3\right)x^3+\left(2\,Ba^2b-3\,Aab^2\right)x^2\right)\log\left(bx+a\right)+2\left(\left(2\,Bab^2-3\,Ab^3\right)x^3+\left(2\,Ba^2b-3\,Aab^2\right)x^2\right)\log(x)}{2\left(a^4bx^3+a^5x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(A*a^3 + 2*(2*B*a^2*b - 3*A*a*b^2)*x^2 + (2*B*a^3 - 3*A*a^2*b)*x - 2*(
(2*B*a*b^2 - 3*A*b^3)*x^3 + (2*B*a^2*b - 3*A*a*b^2)*x^2)*log(b*x + a) + 2*(
(2*B*a*b^2 - 3*A*b^3)*x^3 + (2*B*a^2*b - 3*A*a*b^2)*x^2)*log(x))/(a^4*b*x^3
 + a^5*x^2)
```

giac [A] time = 0.16, size = 106, normalized size = 1.25

$$-\frac{\left(2\,Bab-3\,Ab^2\right)\log\left(|x|\right)}{a^4}+\frac{\left(2\,Bab^2-3\,Ab^3\right)\log\left(|bx+a|\right)}{a^4b}-\frac{Aa^3+2\left(2\,Ba^2b-3\,Aab^2\right)x^2+\left(2\,Ba^3-3\,Aa^2b\right)x}{2\left(bx+a\right)a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(2*B*a*b - 3*A*b^2)*log(abs(x))/a^4 + (2*B*a*b^2 - 3*A*b^3)*log(abs(b*x +
a))/(a^4*b) - 1/2*(A*a^3 + 2*(2*B*a^2*b - 3*A*a*b^2)*x^2 + (2*B*a^3 - 3*A*a
^2*b)*x)/((b*x + a)*a^4*x^2)
```

maple [A] time = 0.06, size = 107, normalized size = 1.26

$$\frac{A\,b^2}{\left(bx+a\right)a^3}+\frac{3A\,b^2\ln(x)}{a^4}-\frac{3A\,b^2\ln\left(bx+a\right)}{a^4}-\frac{Bb}{\left(bx+a\right)a^2}-\frac{2Bb\ln(x)}{a^3}+\frac{2Bb\ln\left(bx+a\right)}{a^3}+\frac{2Ab}{a^3x}-\frac{B}{a^2x}-\frac{A}{2a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -3*b^2/a^4*ln(b*x+a)*A+2*b/a^3*ln(b*x+a)*B+b^2/a^3/(b*x+a)*A-b/a^2/(b*x+a)*
B-1/2*A/a^2/x^2+2*A/a^3*b/x-B/a^2/x+3*b^2/a^4*ln(x)*A-2*b/a^3*ln(x)*B
```

maxima [A] time = 0.59, size = 99, normalized size = 1.16

$$-\frac{Aa^2+2\left(2\,Bab-3\,Ab^2\right)x^2+\left(2\,Ba^2-3\,Aab\right)x}{2\left(a^3bx^3+a^4x^2\right)}+\frac{\left(2\,Bab-3\,Ab^2\right)\log\left(bx+a\right)}{a^4}-\frac{\left(2\,Bab-3\,Ab^2\right)\log(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/2*(A*a^2 + 2*(2*B*a*b - 3*A*b^2)*x^2 + (2*B*a^2 - 3*A*a*b)*x)/(a^3*b*x^3
 + a^4*x^2) + (2*B*a*b - 3*A*b^2)*log(b*x + a)/a^4 - (2*B*a*b - 3*A*b^2)*lo
g(x)/a^4
```

mupad [B] time = 1.14, size = 104, normalized size = 1.22

$$\frac{\frac{x\,(3\,A\,b-2\,B\,a)}{2\,a^2}-\frac{A}{2\,a}+\frac{b\,x^2\,(3\,A\,b-2\,B\,a)}{a^3}}{b\,x^3+a\,x^2}-\frac{2\,b\,\mathrm{atanh}\left(\frac{b\,(3\,A\,b-2\,B\,a)\,(a+2\,b\,x)}{a\,\left(3\,A\,b^2-2\,B\,a\,b\right)}\right)\,(3\,A\,b-2\,B\,a)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((x*(3*A*b - 2*B*a))/(2*a^2) - A/(2*a) + (b*x^2*(3*A*b - 2*B*a))/a^3)/(a*x^
2 + b*x^3) - (2*b*atanh((b*(3*A*b - 2*B*a)*(a + 2*b*x))/(a*(3*A*b^2 - 2*B*a
*b)))*(3*A*b - 2*B*a))/a^4
```

sympy [B] time = 0.59, size = 184, normalized size = 2.16

$$\frac{-Aa^2+x^2\left(6Ab^2-4Bab\right)+x\left(3Aab-2Ba^2\right)}{2a^4x^2+2a^3bx^3}-\frac{b\,(-3Ab+2Ba)\log\left(x+\frac{-3Aab^2+2Ba^2b-ab(-3Ab+2Ba)}{-6Ab^3+4Bab^2}\right)}{a^4}+\frac{b\,(-3Ab+2Ba)\log\left(x+\frac{-3Aab^2+2Ba^2b+ab(-3Ab+2Ba)}{-6Ab^3+4Bab^2}\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-A*a**2 + x**2*(6*A*b**2 - 4*B*a*b) + x*(3*A*a*b - 2*B*a**2))/(2*a**4*x**2
 + 2*a**3*b*x**3) - b*(-3*A*b + 2*B*a)*log(x + (-3*A*a*b**2 + 2*B*a**2*b -
a*b*(-3*A*b + 2*B*a))/(-6*A*b**3 + 4*B*a*b**2))/a**4 + b*(-3*A*b + 2*B*a)*l
og(x + (-3*A*a*b**2 + 2*B*a**2*b + a*b*(-3*A*b + 2*B*a))/(-6*A*b**3 + 4*B*a
*b**2))/a**4
```

3.558 $\int \frac{A+Bx}{x^4(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=113

$$-\frac{b^2\log(x)(4Ab-3aB)}{a^5}+\frac{b^2(4Ab-3aB)\log(a+bx)}{a^5}-\frac{b^2(Ab-aB)}{a^4(a+bx)}-\frac{b(3Ab-2aB)}{a^4x}+\frac{2Ab-aB}{2a^3x^2}-\frac{A}{3a^2x^3}$$

Rubi [A] time = 0.09, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 77}

$$-\frac{b^2(Ab-aB)}{a^4(a+bx)}-\frac{b^2\log(x)(4Ab-3aB)}{a^5}+\frac{b^2(4Ab-3aB)\log(a+bx)}{a^5}+\frac{2Ab-aB}{2a^3x^2}-\frac{b(3Ab-2aB)}{a^4x}-\frac{A}{3a^2x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -A/(3*a^2*x^3) + (2*A*b - a*B)/(2*a^3*x^2) - (b*(3*A*b - 2*a*B))/(a^4*x) -
(b^2*(A*b - a*B))/(a^4*(a + b*x)) - (b^2*(4*A*b - 3*a*B)*Log[x])/a^5 + (b^2
*(4*A*b - 3*a*B)*Log[a + b*x])/a^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^4(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^4}+\frac{-2Ab+aB}{a^3x^3}-\frac{b(-3Ab+2aB)}{a^4x^2}+\frac{b^2(-4Ab+3aB)}{a^5x}-\frac{b^3(-Ab+aB)}{a^4(a+bx)^2}\right.\\ &= -\frac{A}{3a^2x^3}+\frac{2Ab-aB}{2a^3x^2}-\frac{b(3Ab-2aB)}{a^4x}-\frac{b^2(Ab-aB)}{a^4(a+bx)}-\frac{b^2(4Ab-3aB)\log(x)}{a^5}+\end{aligned}$$

Mathematica [A] time = 0.08, size = 106, normalized size = 0.94

$$\frac{-\frac{2a^3A}{x^3}-\frac{3a^2(aB-2Ab)}{x^2}+\frac{6ab^2(aB-Ab)}{a+bx}+6b^2\log(x)(3aB-4Ab)+6b^2(4Ab-3aB)\log(a+bx)+\frac{6ab(2aB-3Ab)}{x}}{6a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-2*a^3*A)/x^3 - (3*a^2*(-2*A*b + a*B))/x^2 + (6*a*b*(-3*A*b + 2*a*B))/x +
 (6*a*b^2*(-(A*b) + a*B))/(a + b*x) + 6*b^2*(-4*A*b + 3*a*B)*Log[x] + 6*b^2
*(4*A*b - 3*a*B)*Log[a + b*x])/(6*a^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^4 \left(a^2 + 2abx + b^2x^2\right)} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.41, size = 179, normalized size = 1.58

$$-\frac{2\,Aa^4 - 6\left(3\,Ba^2b^2 - 4\,Aab^3\right)x^3 - 3\left(3\,Ba^3b - 4\,Aa^2b^2\right)x^2 + \left(3\,Ba^4 - 4\,Aa^3b\right)x + 6\left(\left(3\,Bab^3 - 4\,Ab^4\right)x^4 + \left(3\,Ba^2b^2 - 4\,Aab^3\right)x^3\right)\log\left(bx + a\right) - 6\left(\left(3\,Bab^3 - 4\,Ab^4\right)x^4 + \left(3\,Ba^2b^2 - 4\,Aab^3\right)x^3\right)\log(x)}{6\left(a^5bx^4 + a^6x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*A*a^4 - 6*(3*B*a^2*b^2 - 4*A*a*b^3)*x^3 - 3*(3*B*a^3*b - 4*A*a^2*b^
2)*x^2 + (3*B*a^4 - 4*A*a^3*b)*x + 6*((3*B*a*b^3 - 4*A*b^4)*x^4 + (3*B*a^2*
b^2 - 4*A*a*b^3)*x^3)*log(b*x + a) - 6*((3*B*a*b^3 - 4*A*b^4)*x^4 + (3*B*a^
2*b^2 - 4*A*a*b^3)*x^3)*log(x))/(a^5*b*x^4 + a^6*x^3)
```

giac [A] time = 0.16, size = 133, normalized size = 1.18

$$\frac{\left(3\,Bab^2 - 4\,Ab^3\right)\log\left(|x|\right)}{a^5} - \frac{\left(3\,Bab^3 - 4\,Ab^4\right)\log\left(|bx + a|\right)}{a^5b} - \frac{2\,Aa^4 - 6\left(3\,Ba^2b^2 - 4\,Aab^3\right)x^3 - 3\left(3\,Ba^3b - 4\,Aa^2b^2\right)x^2 + \left(3\,Ba^4 - 4\,Aa^3b\right)x}{6\,(bx + a)a^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (3*B*a*b^2 - 4*A*b^3)*log(abs(x))/a^5 - (3*B*a*b^3 - 4*A*b^4)*log(abs(b*x +
 a))/(a^5*b) - 1/6*(2*A*a^4 - 6*(3*B*a^2*b^2 - 4*A*a*b^3)*x^3 - 3*(3*B*a^3*
b - 4*A*a^2*b^2)*x^2 + (3*B*a^4 - 4*A*a^3*b)*x)/((b*x + a)*a^5*x^3)
```

maple [A] time = 0.06, size = 134, normalized size = 1.19

$$-\frac{A\,b^3}{(bx + a)\,a^4} - \frac{4A\,b^3\ln(x)}{a^5} + \frac{4A\,b^3\ln(bx + a)}{a^5} + \frac{B\,b^2}{(bx + a)\,a^3} + \frac{3B\,b^2\ln(x)}{a^4} - \frac{3B\,b^2\ln(bx + a)}{a^4} - \frac{3A\,b^2}{a^4x} + \frac{2Bb}{a^3x} + \frac{Ab}{a^3x^2} - \frac{B}{2a^2x^2} - \frac{A}{3a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 4*b^3/a^5*ln(b*x+a)*A-3*b^2/a^4*ln(b*x+a)*B-b^3/a^4/(b*x+a)*A+b^2/a^3/(b*x+
a)*B-1/3*A/a^2/x^3+1/a^3/x^2*A*b-1/2/a^2/x^2*B-3*b^2/a^4/x*A+2*b/a^3/x*B-4*
A/a^5*b^3*ln(x)+3*B/a^4*b^2*ln(x)
```

maxima [A] time = 0.50, size = 128, normalized size = 1.13

$$-\frac{2\,Aa^3 - 6\left(3\,Bab^2 - 4\,Ab^3\right)x^3 - 3\left(3\,Ba^2b - 4\,Aab^2\right)x^2 + \left(3\,Ba^3 - 4\,Aa^2b\right)x}{6\left(a^4bx^4 + a^5x^3\right)} - \frac{\left(3\,Bab^2 - 4\,Ab^3\right)\log\left(bx + a\right)}{a^5} + \frac{\left(3\,Bab^2 - 4\,Ab^3\right)\log(x)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/6*(2*A*a^3 - 6*(3*B*a*b^2 - 4*A*b^3)*x^3 - 3*(3*B*a^2*b - 4*A*a*b^2)*x^2
 + (3*B*a^3 - 4*A*a^2*b)*x)/(a^4*b*x^4 + a^5*x^3) - (3*B*a*b^2 - 4*A*b^3)*l
og(b*x + a)/a^5 + (3*B*a*b^2 - 4*A*b^3)*log(x)/a^5
```

mupad [B] time = 0.11, size = 131, normalized size = 1.16

$$\frac{2\,b^2\,\mathrm{atanh}\left(\frac{b^2\,\left(4\,A\,b-3\,B\,a\right)\,\left(a+2\,b\,x\right)}{a\,\left(4\,A\,b^3-3\,B\,a\,b^2\right)}\right)\,\left(4\,A\,b-3\,B\,a\right)}{a^5}-\frac{\frac{A}{3\,a}-\frac{x\,\left(4\,A\,b-3\,B\,a\right)}{6\,a^2}+\frac{b^2\,x^3\,\left(4\,A\,b-3\,B\,a\right)}{a^4}+\frac{b\,x^2\,\left(4\,A\,b-3\,B\,a\right)}{2\,a^3}}{b\,x^4+a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b^2*atanh((b^2*(4*A*b - 3*B*a)*(a + 2*b*x))/(a*(4*A*b^3 - 3*B*a*b^2)))*(
4*A*b - 3*B*a))/a^5 - (A/(3*a) - (x*(4*A*b - 3*B*a))/(6*a^2) + (b^2*x^3*(4*
A*b - 3*B*a))/a^4 + (b*x^2*(4*A*b - 3*B*a))/(2*a^3))/(a*x^3 + b*x^4)
```

sympy [B] time = 0.65, size = 219, normalized size = 1.94

$$\frac{-2Aa^3 + x^3\left(-24Ab^3 + 18Bab^2\right) + x^2\left(-12Aab^2 + 9Ba^2b\right) + x\left(4Aa^2b - 3Ba^3\right)}{6a^5x^3 + 6a^4bx^4} + \frac{b^2\left(-4Ab + 3Ba\right)\log\left(x + \frac{-4Aab^3+3Ba^2b^2-ab^2(-4Ab+3Ba)}{-8Ab^4+6Bab^3}\right)}{a^5} - \frac{b^2\left(-4Ab + 3Ba\right)\log\left(x + \frac{-4Aab^3+3Ba^2b^2+ab^2(-4Ab+3Ba)}{-8Ab^4+6Bab^3}\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-2*A*a**3 + x**3*(-24*A*b**3 + 18*B*a*b**2) + x**2*(-12*A*a*b**2 + 9*B*a**
2*b) + x*(4*A*a**2*b - 3*B*a**3))/(6*a**5*x**3 + 6*a**4*b*x**4) + b**2*(-4*
A*b + 3*B*a)*log(x + (-4*A*a*b**3 + 3*B*a**2*b**2 - a*b**2*(-4*A*b + 3*B*a)
)/(-8*A*b**4 + 6*B*a*b**3))/a**5 - b**2*(-4*A*b + 3*B*a)*log(x + (-4*A*a*b*
*3 + 3*B*a**2*b**2 + a*b**2*(-4*A*b + 3*B*a))/(-8*A*b**4 + 6*B*a*b**3))/a**
5
```

3.559 $\int \frac{A+Bx}{x^5(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=133

$$\frac{b^3\log(x)(5Ab-4aB)}{a^6}-\frac{b^3(5Ab-4aB)\log(a+bx)}{a^6}+\frac{b^3(Ab-aB)}{a^5(a+bx)}+\frac{b^2(4Ab-3aB)}{a^5x}-\frac{b(3Ab-2aB)}{2a^4x^2}+\frac{2Ab-aB}{3a^3x^3}-\frac{A}{4a^2x^4}$$

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 77}

$$\frac{b^3(Ab-aB)}{a^5(a+bx)}+\frac{b^2(4Ab-3aB)}{a^5x}+\frac{b^3\log(x)(5Ab-4aB)}{a^6}-\frac{b^3(5Ab-4aB)\log(a+bx)}{a^6}-\frac{b(3Ab-2aB)}{2a^4x^2}+\frac{2Ab-aB}{3a^3x^3}-\frac{A}{4a^2x^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -A/(4*a^2*x^4) + (2*A*b - a*B)/(3*a^3*x^3) - (b*(3*A*b - 2*a*B))/(2*a^4*x^2
) + (b^2*(4*A*b - 3*a*B))/(a^5*x) + (b^3*(A*b - a*B))/(a^5*(a + b*x)) + (b^
3*(5*A*b - 4*a*B)*Log[x])/a^6 - (b^3*(5*A*b - 4*a*B)*Log[a + b*x])/a^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^5\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^5(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^5}+\frac{-2Ab+aB}{a^3x^4}-\frac{b(-3Ab+2aB)}{a^4x^3}+\frac{b^2(-4Ab+3aB)}{a^5x^2}-\frac{b^3(-5Ab+4aB)}{a^6x}\right.\\ &= -\frac{A}{4a^2x^4}+\frac{2Ab-aB}{3a^3x^3}-\frac{b(3Ab-2aB)}{2a^4x^2}+\frac{b^2(4Ab-3aB)}{a^5x}+\frac{b^3(Ab-aB)}{a^5(a+bx)}+\frac{b^3(5Ab}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 129, normalized size = 0.97

$$\frac{\frac{a\left(-\left(a^4(3A+4Bx)\right)+a^3bx(5A+8Bx)-2a^2b^2x^2(5A+12Bx)+6ab^3x^3(5A-8Bx)+60Ab^4x^4\right)}{x^4(a+bx)}+12b^3\log(x)(5Ab-4aB)+12b^3(4aB-5Ab)\log(a+bx)}{12a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((a*(60*A*b^4*x^4 + 6*a*b^3*x^3*(5*A - 8*B*x) - a^4*(3*A + 4*B*x) + a^3*b*x
*(5*A + 8*B*x) - 2*a^2*b^2*x^2*(5*A + 12*B*x)))/(x^4*(a + b*x)) + 12*b^3*(5
*A*b - 4*a*B)*Log[x] + 12*b^3*(-5*A*b + 4*a*B)*Log[a + b*x])/(12*a^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^5\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^5*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^5*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.40, size = 203, normalized size = 1.53

$$-\frac{3\,Aa^5+12\left(4\,Ba^2b^3-5\,Aab^4\right)x^4+6\left(4\,Ba^3b^2-5\,Aa^2b^3\right)x^3-2\left(4\,Ba^4b-5\,Aa^3b^2\right)x^2+\left(4\,Ba^5-5\,Aa^4b\right)x-12\left(\left(4\,Bab^4-5\,Ab^5\right)x^5+\left(4\,Ba^2b^3-5\,Aab^4\right)x^4\right)\log\left(bx+a\right)+12\left(\left(4\,Bab^4-5\,Ab^5\right)x^5+\left(4\,Ba^2b^3-5\,Aab^4\right)x^4\right)\log\left(x\right)}{12\left(a^6bx^5+a^7x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/12*(3*A*a^5 + 12*(4*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6*(4*B*a^3*b^2 - 5*A*a^
2*b^3)*x^3 - 2*(4*B*a^4*b - 5*A*a^3*b^2)*x^2 + (4*B*a^5 - 5*A*a^4*b)*x - 12
*((4*B*a*b^4 - 5*A*b^5)*x^5 + (4*B*a^2*b^3 - 5*A*a*b^4)*x^4)*log(b*x + a) +
 12*((4*B*a*b^4 - 5*A*b^5)*x^5 + (4*B*a^2*b^3 - 5*A*a*b^4)*x^4)*log(x))/(a^
6*b*x^5 + a^7*x^4)
```

giac [A] time = 0.18, size = 157, normalized size = 1.18

$$-\frac{\left(4\,Bab^3-5\,Ab^4\right)\log\left(|x|\right)}{a^6}+\frac{\left(4\,Bab^4-5\,Ab^5\right)\log\left(|bx+a|\right)}{a^6b}-\frac{3\,Aa^5+12\left(4\,Ba^2b^3-5\,Aab^4\right)x^4+6\left(4\,Ba^3b^2-5\,Aa^2b^3\right)x^3-2\left(4\,Ba^4b-5\,Aa^3b^2\right)x^2+\left(4\,Ba^5-5\,Aa^4b\right)x}{12\left(bx+a\right)a^6x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(4*B*a*b^3 - 5*A*b^4)*log(abs(x))/a^6 + (4*B*a*b^4 - 5*A*b^5)*log(abs(b*x
+ a))/(a^6*b) - 1/12*(3*A*a^5 + 12*(4*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6*(4*B*a
^3*b^2 - 5*A*a^2*b^3)*x^3 - 2*(4*B*a^4*b - 5*A*a^3*b^2)*x^2 + (4*B*a^5 - 5*
A*a^4*b)*x)/((b*x + a)*a^6*x^4)
```

maple [A] time = 0.06, size = 158, normalized size = 1.19

$$\frac{A\,b^4}{\left(bx+a\right)a^5}+\frac{5A\,b^4\ln\left(x\right)}{a^6}-\frac{5A\,b^4\ln\left(bx+a\right)}{a^6}-\frac{B\,b^3}{\left(bx+a\right)a^4}-\frac{4B\,b^3\ln\left(x\right)}{a^5}+\frac{4B\,b^3\ln\left(bx+a\right)}{a^5}+\frac{4A\,b^3}{a^5x}-\frac{3B\,b^2}{a^4x}-\frac{3A\,b^2}{2a^4x^2}+\frac{Bb}{a^3x^2}+\frac{2Ab}{3a^3x^3}-\frac{B}{3a^2x^3}-\frac{A}{4a^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -5*b^4/a^6*ln(b*x+a)*A+4*b^3/a^5*ln(b*x+a)*B+b^4/a^5/(b*x+a)*A-b^3/a^4/(b*x
+a)*B-1/4*A/a^2/x^4+2/3/a^3/x^3*A*b-1/3/a^2/x^3*B-3/2*A/a^4*b^2/x^2+B/a^3*b
/x^2+5*b^4/a^6*ln(x)*A-4*b^3/a^5*ln(x)*B+4*b^3/a^5/x*A-3*b^2/a^4/x*B
```

maxima [A] time = 0.50, size = 152, normalized size = 1.14

$$-\frac{3\,Aa^4+12\left(4\,Bab^3-5\,Ab^4\right)x^4+6\left(4\,Ba^2b^2-5\,Aab^3\right)x^3-2\left(4\,Ba^3b-5\,Aa^2b^2\right)x^2+\left(4\,Ba^4-5\,Aa^3b\right)x}{12\left(a^5bx^5+a^6x^4\right)}+\frac{\left(4\,Bab^3-5\,Ab^4\right)\log\left(bx+a\right)}{a^6}-\frac{\left(4\,Bab^3-5\,Ab^4\right)\log\left(x\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*A*a^4 + 12*(4*B*a*b^3 - 5*A*b^4)*x^4 + 6*(4*B*a^2*b^2 - 5*A*a*b^3)
*x^3 - 2*(4*B*a^3*b - 5*A*a^2*b^2)*x^2 + (4*B*a^4 - 5*A*a^3*b)*x)/(a^5*b*x^
5 + a^6*x^4) + (4*B*a*b^3 - 5*A*b^4)*log(b*x + a)/a^6 - (4*B*a*b^3 - 5*A*b^
4)*log(x)/a^6
```

mupad [B] time = 1.15, size = 150, normalized size = 1.13

$$\frac{\frac{x\,(5\,A\,b-4\,B\,a)}{12\,a^2}-\frac{A}{4\,a}+\frac{b^2\,x^3\,(5\,A\,b-4\,B\,a)}{2\,a^4}+\frac{b^3\,x^4\,(5\,A\,b-4\,B\,a)}{a^5}-\frac{b\,x^2\,(5\,A\,b-4\,B\,a)}{6\,a^3}}{b\,x^5+a\,x^4}-\frac{2\,b^3\,\mathrm{atanh}\left(\frac{b^3\,(5\,A\,b-4\,B\,a)\,(a+2\,b\,x)}{a\,\left(5\,A\,b^4-4\,B\,a\,b^3\right)}\right)\,(5\,A\,b-4\,B\,a)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((x*(5*A*b - 4*B*a))/(12*a^2) - A/(4*a) + (b^2*x^3*(5*A*b - 4*B*a))/(2*a^4)
 + (b^3*x^4*(5*A*b - 4*B*a))/a^5 - (b*x^2*(5*A*b - 4*B*a))/(6*a^3))/(a*x^4
+ b*x^5) - (2*b^3*atanh((b^3*(5*A*b - 4*B*a)*(a + 2*b*x))/(a*(5*A*b^4 - 4*B
*a*b^3)))*(5*A*b - 4*B*a))/a^6
```

sympy [A] time = 0.73, size = 243, normalized size = 1.83

$$\frac{-3Aa^4+x^4\left(60Ab^4-48Bab^3\right)+x^3\left(30Aab^3-24Ba^2b^2\right)+x^2\left(-10Aa^2b^2+8Ba^3b\right)+x\left(5Aa^3b-4Ba^4\right)}{12a^6x^4+12a^5bx^5}-\frac{b^3\left(-5Ab+4Ba\right)\log\left(x+\frac{-5Aab^4+4Ba^2b^3-ab^3(-5Ab+4Ba)}{-10Ab^5+8Bab^4}\right)}{a^6}+\frac{b^3\left(-5Ab+4Ba\right)\log\left(x+\frac{-5Aab^4+4Ba^2b^3+ab^3(-5Ab+4Ba)}{-10Ab^5+8Bab^4}\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-3*A*a**4 + x**4*(60*A*b**4 - 48*B*a*b**3) + x**3*(30*A*a*b**3 - 24*B*a**2
*b**2) + x**2*(-10*A*a**2*b**2 + 8*B*a**3*b) + x*(5*A*a**3*b - 4*B*a**4))/(
12*a**6*x**4 + 12*a**5*b*x**5) - b**3*(-5*A*b + 4*B*a)*log(x + (-5*A*a*b**4
 + 4*B*a**2*b**3 - a*b**3*(-5*A*b + 4*B*a))/(-10*A*b**5 + 8*B*a*b**4))/a**6
 + b**3*(-5*A*b + 4*B*a)*log(x + (-5*A*a*b**4 + 4*B*a**2*b**3 + a*b**3*(-5*
A*b + 4*B*a))/(-10*A*b**5 + 8*B*a*b**4))/a**6
```

3.560 $\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=143

$$\frac{a^5(Ab-aB)}{3b^7(a+bx)^3}-\frac{a^4(5Ab-6aB)}{2b^7(a+bx)^2}+\frac{5a^3(2Ab-3aB)}{b^7(a+bx)}+\frac{10a^2(Ab-2aB)\log(a+bx)}{b^7}-\frac{2ax(2Ab-5aB)}{b^6}+\frac{x^2(Ab-4aB)}{2b^5}$$

Rubi [A] time = 0.16, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{a^5(Ab-aB)}{3b^7(a+bx)^3}-\frac{a^4(5Ab-6aB)}{2b^7(a+bx)^2}+\frac{5a^3(2Ab-3aB)}{b^7(a+bx)}+\frac{10a^2(Ab-2aB)\log(a+bx)}{b^7}+\frac{x^2(Ab-4aB)}{2b^5}-\frac{2ax(2Ab-5aB)}{b^6}+\frac{Bx^3}{3b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*a*(2*A*b - 5*a*B)*x)/b^6 + ((A*b - 4*a*B)*x^2)/(2*b^5) + (B*x^3)/(3*b^4
) + (a^5*(A*b - a*B))/(3*b^7*(a + b*x)^3) - (a^4*(5*A*b - 6*a*B))/(2*b^7*(a
 + b*x)^2) + (5*a^3*(2*A*b - 3*a*B))/(b^7*(a + b*x)) + (10*a^2*(A*b - 2*a*B
)*Log[a + b*x])/b^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^5(A+Bx)}{(a+bx)^4}\,dx\\
&= \int \left(\frac{2a(-2Ab+5aB)}{b^6}+\frac{(Ab-4aB)x}{b^5}+\frac{Bx^2}{b^4}+\frac{a^5(-Ab+aB)}{b^6(a+bx)^4}-\frac{a^4(-5Ab+6aB)}{b^6(a+bx)^3}\right.\\
&= -\frac{2a(2Ab-5aB)x}{b^6}+\frac{(Ab-4aB)x^2}{2b^5}+\frac{Bx^3}{3b^4}+\frac{a^5(Ab-aB)}{3b^7(a+bx)^3}-\frac{a^4(5Ab-6aB)}{2b^7(a+bx)^2}+
\end{aligned}$$

Mathematica [A] time = 0.05, size = 147, normalized size = 1.03

$$\frac{-74a^6B+a^5b(47A-102Bx)+3a^4b^2x(27A+26Bx)+a^3b^3x^2(146Bx-9A)+3a^2b^4x^3(10Bx-21A)-60a^2(a+bx)^3(2aB-Ab)\log(a+bx)-3ab^5x^4(5A+2Bx)+b^6x^5(3A+2Bx)}{6b^7(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-74*a^6*B + a^5*b*(47*A - 102*B*x) + b^6*x^5*(3*A + 2*B*x) - 3*a*b^5*x^4*(
5*A + 2*B*x) + 3*a^2*b^4*x^3*(-21*A + 10*B*x) + 3*a^4*b^2*x*(27*A + 26*B*x)
 + a^3*b^3*x^2*(-9*A + 146*B*x) - 60*a^2*(-(A*b) + 2*a*B)*(a + b*x)^3*Log[a
 + b*x])/(6*b^7*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.40, size = 257, normalized size = 1.80

$$\frac{2\,Bb^6x^6-74\,Ba^6+47\,Aa^5b-3\left(2\,Bab^5-Ab^6\right)x^5+15\left(2\,Ba^2b^4-Aab^5\right)x^4+\left(146\,Ba^3b^3-63\,Aa^2b^4\right)x^3+3\left(26\,Ba^4b^2-3\,Aa^3b^3\right)x^2-3\left(34\,Ba^5b-27\,Aa^4b^2\right)x-60\left(2\,Ba^6-Aa^5b+\left(2\,Ba^3b^3-Aa^2b^4\right)x^3+3\left(2\,Ba^4b^2-Aa^3b^3\right)x^2+3\left(2\,Ba^5b-Aa^4b^2\right)x\right)\log\left(bx+a\right)}{6\left(b^{10}x^3+3\,ab^9x^2+3\,a^2b^8x+a^3b^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^6*x^6 - 74*B*a^6 + 47*A*a^5*b - 3*(2*B*a*b^5 - A*b^6)*x^5 + 15*(
2*B*a^2*b^4 - A*a*b^5)*x^4 + (146*B*a^3*b^3 - 63*A*a^2*b^4)*x^3 + 3*(26*B*a
^4*b^2 - 3*A*a^3*b^3)*x^2 - 3*(34*B*a^5*b - 27*A*a^4*b^2)*x - 60*(2*B*a^6 -
 A*a^5*b + (2*B*a^3*b^3 - A*a^2*b^4)*x^3 + 3*(2*B*a^4*b^2 - A*a^3*b^3)*x^2
+ 3*(2*B*a^5*b - A*a^4*b^2)*x)*log(b*x + a))/(b^10*x^3 + 3*a*b^9*x^2 + 3*a^
2*b^8*x + a^3*b^7)
```

giac [A] time = 0.15, size = 149, normalized size = 1.04

$$-\frac{10\left(2\,Ba^3-Aa^2b\right)\log\left(|bx+a|\right)}{b^7}-\frac{74\,Ba^6-47\,Aa^5b+30\left(3\,Ba^4b^2-2\,Aa^3b^3\right)x^2+3\left(54\,Ba^5b-35\,Aa^4b^2\right)x}{6\left(bx+a\right)^3b^7}+\frac{2\,Bb^8x^3-12\,Bab^7x^2+3\,Ab^8x^2+60\,Ba^2b^6x-24\,Aab^7x}{6\,b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -10*(2*B*a^3 - A*a^2*b)*log(abs(b*x + a))/b^7 - 1/6*(74*B*a^6 - 47*A*a^5*b
+ 30*(3*B*a^4*b^2 - 2*A*a^3*b^3)*x^2 + 3*(54*B*a^5*b - 35*A*a^4*b^2)*x)/((b
*x + a)^3*b^7) + 1/6*(2*B*b^8*x^3 - 12*B*a*b^7*x^2 + 3*A*b^8*x^2 + 60*B*a^2
*b^6*x - 24*A*a*b^7*x)/b^12
```

maple [A] time = 0.06, size = 174, normalized size = 1.22

$$\frac{A\,a^5}{3\left(bx+a\right)^3b^6}-\frac{B\,a^6}{3\left(bx+a\right)^3b^7}+\frac{B\,x^3}{3b^4}-\frac{5A\,a^4}{2\left(bx+a\right)^2b^6}+\frac{A\,x^2}{2b^4}+\frac{3B\,a^5}{\left(bx+a\right)^2b^7}-\frac{2Ba\,x^2}{b^5}+\frac{10A\,a^3}{\left(bx+a\right)b^6}+\frac{10A\,a^2\ln\left(bx+a\right)}{b^6}-\frac{4Aax}{b^5}-\frac{15B\,a^4}{\left(bx+a\right)b^7}-\frac{20B\,a^3\ln\left(bx+a\right)}{b^7}+\frac{10B\,a^2x}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/3*B*x^3/b^4+1/2/b^4*A*x^2-2/b^5*a*B*x^2-4/b^5*A*a*x+10/b^6*B*x*a^2+1/3*a^
5/b^6/(b*x+a)^3*A-1/3*a^6/b^7/(b*x+a)^3*B-5/2*a^4/b^6/(b*x+a)^2*A+3*a^5/b^7
/(b*x+a)^2*B+10*a^2/b^6*ln(b*x+a)*A-20*a^3/b^7*ln(b*x+a)*B+10*a^3/b^6/(b*x+
a)*A-15*a^4/b^7/(b*x+a)*B
```

maxima [A] time = 0.57, size = 168, normalized size = 1.17

$$-\frac{74\,Ba^6-47\,Aa^5b+30\left(3\,Ba^4b^2-2\,Aa^3b^3\right)x^2+3\left(54\,Ba^5b-35\,Aa^4b^2\right)x}{6\left(b^{10}x^3+3\,ab^9x^2+3\,a^2b^8x+a^3b^7\right)}+\frac{2\,Bb^2x^3-3\left(4\,Bab-Ab^2\right)x^2+12\left(5\,Ba^2-2\,Aab\right)x}{6\,b^6}-\frac{10\left(2\,Ba^3-Aa^2b\right)\log\left(bx+a\right)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(74*B*a^6 - 47*A*a^5*b + 30*(3*B*a^4*b^2 - 2*A*a^3*b^3)*x^2 + 3*(54*B*
a^5*b - 35*A*a^4*b^2)*x)/(b^10*x^3 + 3*a*b^9*x^2 + 3*a^2*b^8*x + a^3*b^7) +
 1/6*(2*B*b^2*x^3 - 3*(4*B*a*b - A*b^2)*x^2 + 12*(5*B*a^2 - 2*A*a*b)*x)/b^6
 - 10*(2*B*a^3 - A*a^2*b)*log(b*x + a)/b^7
```

mupad [B] time = 1.11, size = 180, normalized size = 1.26

$$x^2\left(\frac{A}{2\,b^4}-\frac{2\,B\,a}{b^5}\right)-\frac{x\,\left(27\,B\,a^5-\frac{35\,A\,a^4\,b}{2}\right)-x^2\,\left(10\,A\,a^3\,b^2-15\,B\,a^4\,b\right)+\frac{74\,B\,a^6-47\,A\,a^5\,b}{6\,b}}{a^3\,b^6+3\,a^2\,b^7\,x+3\,a\,b^8\,x^2+b^9\,x^3}-x\,\left(\frac{4\,a\,\left(\frac{A}{b^4}-\frac{4\,B\,a}{b^5}\right)}{b}+\frac{6\,B\,a^2}{b^6}\right)-\frac{\ln\left(a+b\,x\right)\,\left(20\,B\,a^3-10\,A\,a^2\,b\right)}{b^7}+\frac{B\,x^3}{3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*(A/(2*b^4) - (2*B*a)/b^5) - (x*(27*B*a^5 - (35*A*a^4*b)/2) - x^2*(10*A*
a^3*b^2 - 15*B*a^4*b) + (74*B*a^6 - 47*A*a^5*b)/(6*b))/(a^3*b^6 + b^9*x^3 +
 3*a^2*b^7*x + 3*a*b^8*x^2) - x*((4*a*(A/b^4 - (4*B*a)/b^5))/b + (6*B*a^2)/
b^6) - (log(a + b*x)*(20*B*a^3 - 10*A*a^2*b))/b^7 + (B*x^3)/(3*b^4)
```

sympy [A] time = 1.25, size = 168, normalized size = 1.17

$$\frac{Bx^3}{3b^4}-\frac{10a^2\left(-Ab+2Ba\right)\log\left(a+bx\right)}{b^7}+x^2\left(\frac{A}{2b^4}-\frac{2Ba}{b^5}\right)+x\left(-\frac{4Aa}{b^5}+\frac{10Ba^2}{b^6}\right)+\frac{47Aa^5b-74Ba^6+x^2\left(60Aa^3b^3-90Ba^4b^2\right)+x\left(105Aa^4b^2-162Ba^5b\right)}{6a^3b^7+18a^2b^8x+18ab^9x^2+6b^{10}x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*x**3/(3*b**4) - 10*a**2*(-A*b + 2*B*a)*log(a + b*x)/b**7 + x**2*(A/(2*b**
4) - 2*B*a/b**5) + x*(-4*A*a/b**5 + 10*B*a**2/b**6) + (47*A*a**5*b - 74*B*a
**6 + x**2*(60*A*a**3*b**3 - 90*B*a**4*b**2) + x*(105*A*a**4*b**2 - 162*B*a
**5*b))/(6*a**3*b**7 + 18*a**2*b**8*x + 18*a*b**9*x**2 + 6*b**10*x**3)
```

3.561 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=121

$$-\frac{a^4(Ab-aB)}{3b^6(a+bx)^3}+\frac{a^3(4Ab-5aB)}{2b^6(a+bx)^2}-\frac{2a^2(3Ab-5aB)}{b^6(a+bx)}-\frac{2a(2Ab-5aB)\log(a+bx)}{b^6}+\frac{x(Ab-4aB)}{b^5}+\frac{Bx^2}{2b^4}$$

Rubi [A] time = 0.12, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{a^4(Ab-aB)}{3b^6(a+bx)^3}+\frac{a^3(4Ab-5aB)}{2b^6(a+bx)^2}-\frac{2a^2(3Ab-5aB)}{b^6(a+bx)}+\frac{x(Ab-4aB)}{b^5}-\frac{2a(2Ab-5aB)\log(a+bx)}{b^6}+\frac{Bx^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - 4*a*B)*x)/b^5 + (B*x^2)/(2*b^4) - (a^4*(A*b - a*B))/(3*b^6*(a + b*x
)^3) + (a^3*(4*A*b - 5*a*B))/(2*b^6*(a + b*x)^2) - (2*a^2*(3*A*b - 5*a*B))/
(b^6*(a + b*x)) - (2*a*(2*A*b - 5*a*B)*Log[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^4(A+Bx)}{(a+bx)^4}\,dx\\ &= \int \left(\frac{Ab-4aB}{b^5}+\frac{Bx}{b^4}-\frac{a^4(-Ab+aB)}{b^5(a+bx)^4}+\frac{a^3(-4Ab+5aB)}{b^5(a+bx)^3}-\frac{2a^2(-3Ab+5aB)}{b^5(a+bx)^2}+\frac{2a\right.\\ &= \frac{(Ab-4aB)x}{b^5}+\frac{Bx^2}{2b^4}-\frac{a^4(Ab-aB)}{3b^6(a+bx)^3}+\frac{a^3(4Ab-5aB)}{2b^6(a+bx)^2}-\frac{2a^2(3Ab-5aB)}{b^6(a+bx)}-\frac{2a(2Ab\end{aligned}$$

Mathematica [A] time = 0.04, size = 129, normalized size = 1.07

$$\frac{2\left(5a^2B-2aAb\right)\log(a+bx)}{b^6}+\frac{a^5B-a^4Ab}{3b^6(a+bx)^3}+\frac{4a^3Ab-5a^4B}{2b^6(a+bx)^2}+\frac{2\left(5a^3B-3a^2Ab\right)}{b^6(a+bx)}+\frac{x(Ab-4aB)}{b^5}+\frac{Bx^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

[Out] ((A*b - 4*a*B)*x)/b^5 + (B*x^2)/(2*b^4) + (-(a^4*A*b) + a^5*B)/(3*b^6*(a + b*x)^3) + (4*a^3*A*b - 5*a^4*B)/(2*b^6*(a + b*x)^2) + (2*(-3*a^2*A*b + 5*a^3*B))/(b^6*(a + b*x)) + (2*(-2*a*A*b + 5*a^2*B)*Log[a + b*x])/b^6

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]

[Out] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]

fricas [A] time = 0.41, size = 231, normalized size = 1.91

$$\frac{3\,Bb^5x^5+47\,Ba^5-26\,Aa^4b-3\left(5\,Bab^4-2\,Ab^5\right)x^4-9\left(7\,Ba^2b^3-2\,Aab^4\right)x^3-9\left(Ba^3b^2+2\,Aa^2b^3\right)x^2+27\left(3\,Ba^4b-2\,Aa^3b^2\right)x+12\left(5\,Ba^5-2\,Aa^4b+\left(5\,Ba^2b^3-2\,Aab^4\right)x^3+3\left(5\,Ba^3b^2-2\,Aa^2b^3\right)x^2+3\left(5\,Ba^4b-2\,Aa^3b^2\right)x\right)\log\left(bx+a\right)}{6\left(b^9x^3+3\,ab^8x^2+3\,a^2b^7x+a^3b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")

[Out] 1/6*(3*B*b^5*x^5 + 47*B*a^5 - 26*A*a^4*b - 3*(5*B*a*b^4 - 2*A*b^5)*x^4 - 9*(7*B*a^2*b^3 - 2*A*a*b^4)*x^3 - 9*(B*a^3*b^2 + 2*A*a^2*b^3)*x^2 + 27*(3*B*a^4*b - 2*A*a^3*b^2)*x + 12*(5*B*a^5 - 2*A*a^4*b + (5*B*a^2*b^3 - 2*A*a*b^4)*x^3 + 3*(5*B*a^3*b^2 - 2*A*a^2*b^3)*x^2 + 3*(5*B*a^4*b - 2*A*a^3*b^2)*x)*log(b*x + a))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6)

giac [A] time = 0.16, size = 124, normalized size = 1.02

$$\frac{2\left(5\,Ba^2-2\,Aab\right)\log\left(|bx+a|\right)}{b^6}+\frac{Bb^4x^2-8\,Bab^3x+2\,Ab^4x}{2\,b^8}+\frac{47\,Ba^5-26\,Aa^4b+12\left(5\,Ba^3b^2-3\,Aa^2b^3\right)x^2+15\left(7\,Ba^4b-4\,Aa^3b^2\right)x}{6\left(bx+a\right)^3b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")

[Out] 2*(5*B*a^2 - 2*A*a*b)*log(abs(b*x + a))/b^6 + 1/2*(B*b^4*x^2 - 8*B*a*b^3*x + 2*A*b^4*x)/b^8 + 1/6*(47*B*a^5 - 26*A*a^4*b + 12*(5*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 15*(7*B*a^4*b - 4*A*a^3*b^2)*x)/((b*x + a)^3*b^6)

maple [A] time = 0.06, size = 149, normalized size = 1.23

$$-\frac{A\,a^4}{3\left(bx+a\right)^3b^5}+\frac{B\,a^5}{3\left(bx+a\right)^3b^6}+\frac{2A\,a^3}{\left(bx+a\right)^2b^5}-\frac{5B\,a^4}{2\left(bx+a\right)^2b^6}+\frac{B\,x^2}{2b^4}-\frac{6A\,a^2}{\left(bx+a\right)b^5}-\frac{4Aa\ln\left(bx+a\right)}{b^5}+\frac{Ax}{b^4}+\frac{10B\,a^3}{\left(bx+a\right)b^6}+\frac{10B\,a^2\ln\left(bx+a\right)}{b^6}-\frac{4Bax}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)

[Out] 1/2*B*x^2/b^4+1/b^4*A*x-4/b^5*B*a*x-1/3*a^4/b^5/(b*x+a)^3*A+1/3*a^5/b^6/(b*x+a)^3*B-4*a/b^5*ln(b*x+a)*A+10*a^2/b^6*ln(b*x+a)*B+2*a^3/b^5/(b*x+a)^2*A-5/2*a^4/b^6/(b*x+a)^2*B-6*a^2/b^5/(b*x+a)*A+10*a^3/b^6/(b*x+a)*B

maxima [A] time = 0.50, size = 143, normalized size = 1.18

$$\frac{47\,Ba^5-26\,Aa^4b+12\left(5\,Ba^3b^2-3\,Aa^2b^3\right)x^2+15\left(7\,Ba^4b-4\,Aa^3b^2\right)x}{6\left(b^9x^3+3\,ab^8x^2+3\,a^2b^7x+a^3b^6\right)}+\frac{Bbx^2-2\left(4\,Ba-Ab\right)x}{2\,b^5}+\frac{2\left(5\,Ba^2-2\,Aab\right)\log\left(bx+a\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")

```
[Out] 1/6*(47*B*a^5 - 26*A*a^4*b + 12*(5*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 15*(7*B*a
^4*b - 4*A*a^3*b^2)*x)/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6) + 1/
2*(B*b*x^2 - 2*(4*B*a - A*b)*x)/b^5 + 2*(5*B*a^2 - 2*A*a*b)*log(b*x + a)/b^
6
```

mupad [B] time = 0.08, size = 141, normalized size = 1.17

$$x\left(\frac{A}{b^4}-\frac{4\,B\,a}{b^5}\right)+\frac{x\,\left(\frac{35\,B\,a^4}{2}-10\,A\,a^3\,b\right)-x^2\,\left(6\,A\,a^2\,b^2-10\,B\,a^3\,b\right)+\frac{47\,B\,a^5-26\,A\,a^4\,b}{6\,b}}{a^3\,b^5+3\,a^2\,b^6\,x+3\,a\,b^7\,x^2+b^8\,x^3}+\frac{B\,x^2}{2\,b^4}+\frac{\ln\left(a+b\,x\right)\,\left(10\,B\,a^2-4\,A\,a\,b\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x*(A/b^4 - (4*B*a)/b^5) + (x*((35*B*a^4)/2 - 10*A*a^3*b) - x^2*(6*A*a^2*b^2
 - 10*B*a^3*b) + (47*B*a^5 - 26*A*a^4*b)/(6*b))/(a^3*b^5 + b^8*x^3 + 3*a^2*
b^6*x + 3*a*b^7*x^2) + (B*x^2)/(2*b^4) + (log(a + b*x)*(10*B*a^2 - 4*A*a*b)
)/b^6
```

sympy [A] time = 1.15, size = 144, normalized size = 1.19

$$\frac{Bx^2}{2b^4}+\frac{2a\left(-2Ab+5Ba\right)\log\left(a+bx\right)}{b^6}+x\left(\frac{A}{b^4}-\frac{4Ba}{b^5}\right)+\frac{-26Aa^4b+47Ba^5+x^2\left(-36Aa^2b^3+60Ba^3b^2\right)+x\left(-60Aa^3b^2+105Ba^4b\right)}{6a^3b^6+18a^2b^7x+18ab^8x^2+6b^9x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*x**2/(2*b**4) + 2*a*(-2*A*b + 5*B*a)*log(a + b*x)/b**6 + x*(A/b**4 - 4*B*
a/b**5) + (-26*A*a**4*b + 47*B*a**5 + x**2*(-36*A*a**2*b**3 + 60*B*a**3*b**
2) + x*(-60*A*a**3*b**2 + 105*B*a**4*b))/(6*a**3*b**6 + 18*a**2*b**7*x + 18
*a*b**8*x**2 + 6*b**9*x**3)
```

3.562 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=97

$$\frac{a^3(Ab-aB)}{3b^5(a+bx)^3}-\frac{a^2(3Ab-4aB)}{2b^5(a+bx)^2}+\frac{3a(Ab-2aB)}{b^5(a+bx)}+\frac{(Ab-4aB)\log(a+bx)}{b^5}+\frac{Bx}{b^4}$$

Rubi [A] time = 0.09, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{a^3(Ab-aB)}{3b^5(a+bx)^3}-\frac{a^2(3Ab-4aB)}{2b^5(a+bx)^2}+\frac{3a(Ab-2aB)}{b^5(a+bx)}+\frac{(Ab-4aB)\log(a+bx)}{b^5}+\frac{Bx}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (B*x)/b^4 + (a^3*(A*b - a*B))/(3*b^5*(a + b*x)^3) - (a^2*(3*A*b - 4*a*B))/(
2*b^5*(a + b*x)^2) + (3*a*(A*b - 2*a*B))/(b^5*(a + b*x)) + ((A*b - 4*a*B)*L
og[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^3(A+Bx)}{(a+bx)^4}\,dx\\
&= \int \left(\frac{B}{b^4}+\frac{a^3(-Ab+aB)}{b^4(a+bx)^4}-\frac{a^2(-3Ab+4aB)}{b^4(a+bx)^3}+\frac{3a(-Ab+2aB)}{b^4(a+bx)^2}+\frac{Ab-4aB}{b^4(a+bx)}\right)dx\\
&= \frac{Bx}{b^4}+\frac{a^3(Ab-aB)}{3b^5(a+bx)^3}-\frac{a^2(3Ab-4aB)}{2b^5(a+bx)^2}+\frac{3a(Ab-2aB)}{b^5(a+bx)}+\frac{(Ab-4aB)\log(a+bx)}{b^5}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 97, normalized size = 1.00

$$\frac{-26a^4B+a^3b(11A-54Bx)+9a^2b^2x(3A-2Bx)+18ab^3x^2(A+Bx)+6(a+bx)^3(Ab-4aB)\log(a+bx)+6b^4Bx^4}{6b^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-26*a^4*B + 6*b^4*B*x^4 + a^3*b*(11*A - 54*B*x) + 9*a^2*b^2*x*(3*A - 2*B*x
) + 18*a*b^3*x^2*(A + B*x) + 6*(A*b - 4*a*B)*(a + b*x)^3*Log[a + b*x])/(6*b
^5*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.40, size = 193, normalized size = 1.99

$$\frac{6\,Bb^4x^4+18\,Bab^3x^3-26\,Ba^4+11\,Aa^3b-18\left(Ba^2b^2-Aab^3\right)x^2-27\left(2\,Ba^3b-Aa^2b^2\right)x-6\left(4\,Ba^4-Aa^3b+\left(4\,Bab^3-Ab^4\right)x^3+3\left(4\,Ba^2b^2-Aab^3\right)x^2+3\left(4\,Ba^3b-Aa^2b^2\right)x\right)\log\left(bx+a\right)}{6\left(b^8x^3+3\,ab^7x^2+3\,a^2b^6x+a^3b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*b^4*x^4 + 18*B*a*b^3*x^3 - 26*B*a^4 + 11*A*a^3*b - 18*(B*a^2*b^2 -
 A*a*b^3)*x^2 - 27*(2*B*a^3*b - A*a^2*b^2)*x - 6*(4*B*a^4 - A*a^3*b + (4*B*
a*b^3 - A*b^4)*x^3 + 3*(4*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(4*B*a^3*b - A*a^2*b
^2)*x)*log(b*x + a))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)
```

giac [A] time = 0.16, size = 96, normalized size = 0.99

$$\frac{Bx}{b^4}-\frac{\left(4\,Ba-Ab\right)\log\left(|bx+a|\right)}{b^5}-\frac{26\,Ba^4-11\,Aa^3b+18\left(2\,Ba^2b^2-Aab^3\right)x^2+3\left(20\,Ba^3b-9\,Aa^2b^2\right)x}{6\left(bx+a\right)^3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*x/b^4 - (4*B*a - A*b)*log(abs(b*x + a))/b^5 - 1/6*(26*B*a^4 - 11*A*a^3*b
+ 18*(2*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(20*B*a^3*b - 9*A*a^2*b^2)*x)/((b*x +
a)^3*b^5)
```

maple [A] time = 0.06, size = 126, normalized size = 1.30

$$\frac{A\,a^3}{3\left(bx+a\right)^3b^4}-\frac{B\,a^4}{3\left(bx+a\right)^3b^5}-\frac{3A\,a^2}{2\left(bx+a\right)^2b^4}+\frac{2B\,a^3}{\left(bx+a\right)^2b^5}+\frac{3Aa}{\left(bx+a\right)b^4}+\frac{A\ln\left(bx+a\right)}{b^4}-\frac{6B\,a^2}{\left(bx+a\right)b^5}-\frac{4Ba\ln\left(bx+a\right)}{b^5}+\frac{Bx}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] B*x/b^4+1/3*a^3/b^4/(b*x+a)^3*A-1/3*a^4/b^5/(b*x+a)^3*B+1/b^4*ln(b*x+a)*A-4
/b^5*ln(b*x+a)*B*a+3*a/b^4/(b*x+a)*A-6*a^2/b^5/(b*x+a)*B-3/2*a^2/b^4/(b*x+a
)^2*A+2*a^3/b^5/(b*x+a)^2*B
```

maxima [A] time = 0.54, size = 120, normalized size = 1.24

$$-\frac{26\,Ba^4-11\,Aa^3b+18\left(2\,Ba^2b^2-Aab^3\right)x^2+3\left(20\,Ba^3b-9\,Aa^2b^2\right)x}{6\left(b^8x^3+3\,ab^7x^2+3\,a^2b^6x+a^3b^5\right)}+\frac{Bx}{b^4}-\frac{\left(4\,Ba-Ab\right)\log\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(26*B*a^4 - 11*A*a^3*b + 18*(2*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(20*B*a^3*
b - 9*A*a^2*b^2)*x)/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5) + B*x/b
^4 - (4*B*a - A*b)*log(b*x + a)/b^5
```

mupad [B] time = 1.12, size = 118, normalized size = 1.22

$$\frac{B\,x}{b^4}-\frac{x\,\left(10\,B\,a^3-\frac{9\,A\,a^2\,b}{2}\right)-x^2\,\left(3\,A\,a\,b^2-6\,B\,a^2\,b\right)+\frac{26\,B\,a^4-11\,A\,a^3\,b}{6\,b}}{a^3\,b^4+3\,a^2\,b^5\,x+3\,a\,b^6\,x^2+b^7\,x^3}+\frac{\ln\left(a+b\,x\right)\,\left(A\,b-4\,B\,a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (B*x)/b^4 - (x*(10*B*a^3 - (9*A*a^2*b)/2) - x^2*(3*A*a*b^2 - 6*B*a^2*b) + (
26*B*a^4 - 11*A*a^3*b)/(6*b))/(a^3*b^4 + b^7*x^3 + 3*a^2*b^5*x + 3*a*b^6*x^
2) + (log(a + b*x)*(A*b - 4*B*a))/b^5
```

sympy [A] time = 0.96, size = 119, normalized size = 1.23

$$\frac{Bx}{b^4}+\frac{11Aa^3b-26Ba^4+x^2\left(18Aab^3-36Ba^2b^2\right)+x\left(27Aa^2b^2-60Ba^3b\right)}{6a^3b^5+18a^2b^6x+18ab^7x^2+6b^8x^3}-\frac{(-Ab+4Ba)\log\left(a+bx\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*x/b**4 + (11*A*a**3*b - 26*B*a**4 + x**2*(18*A*a*b**3 - 36*B*a**2*b**2) +
 x*(27*A*a**2*b**2 - 60*B*a**3*b))/(6*a**3*b**5 + 18*a**2*b**6*x + 18*a*b**
7*x**2 + 6*b**8*x**3) - (-A*b + 4*B*a)*log(a + b*x)/b**5
```

3.563 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2} \, dx$

Optimal. Leaf size=72

$$-\frac{a^2B}{2b^4(a+bx)^2}+\frac{x^3(Ab-aB)}{3ab(a+bx)^3}+\frac{2aB}{b^4(a+bx)}+\frac{B\log(a+bx)}{b^4}$$

Rubi [A] time = 0.03, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 43}

$$-\frac{a^2B}{2b^4(a+bx)^2}+\frac{x^3(Ab-aB)}{3ab(a+bx)^3}+\frac{2aB}{b^4(a+bx)}+\frac{B\log(a+bx)}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^3)/(3*a*b*(a + b*x)^3) - (a^2*B)/(2*b^4*(a + b*x)^2) + (2*a*
B)/(b^4*(a + b*x)) + (B*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2} \, dx &= \int \frac{x^2(A+Bx)}{(a+bx)^4} \, dx \\
&= \frac{(Ab-aB)x^3}{3ab(a+bx)^3}+\frac{B\int \frac{x^2}{(a+bx)^3} \, dx}{b} \\
&= \frac{(Ab-aB)x^3}{3ab(a+bx)^3}+\frac{B\int \left(\frac{a^2}{b^2(a+bx)^3}-\frac{2a}{b^2(a+bx)^2}+\frac{1}{b^2(a+bx)}\right) \, dx}{b} \\
&= \frac{(Ab-aB)x^3}{3ab(a+bx)^3}-\frac{a^2B}{2b^4(a+bx)^2}+\frac{2aB}{b^4(a+bx)}+\frac{B\log(a+bx)}{b^4}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.01

$$\frac{11a^3B + a^2(27bBx - 2Ab) - 6ab^2x(A - 3Bx) + 6B(a + bx)^3\log(a + bx) - 6Ab^3x^2}{6b^4(a + bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (11*a^3*B - 6*A*b^3*x^2 - 6*a*b^2*x*(A - 3*B*x) + a^2*(-2*A*b + 27*b*B*x) +
 6*B*(a + b*x)^3*Log[a + b*x])/(6*b^4*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(A + Bx)}{\left(a^2 + 2abx + b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.40, size = 128, normalized size = 1.78

$$\frac{11\,Ba^3 - 2\,Aa^2b + 6\left(3\,Bab^2 - Ab^3\right)x^2 + 3\left(9\,Ba^2b - 2\,Aab^2\right)x + 6\left(Bb^3x^3 + 3\,Bab^2x^2 + 3\,Ba^2bx + Ba^3\right)\log\left(bx + a\right)}{6\left(b^7x^3 + 3\,ab^6x^2 + 3\,a^2b^5x + a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*a^3 - 2*A*a^2*b + 6*(3*B*a*b^2 - A*b^3)*x^2 + 3*(9*B*a^2*b - 2*A*
a*b^2)*x + 6*(B*b^3*x^3 + 3*B*a*b^2*x^2 + 3*B*a^2*b*x + B*a^3)*log(b*x + a)
)/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)
```

giac [A] time = 0.15, size = 76, normalized size = 1.06

$$\frac{B\log\left(|bx + a|\right)}{b^4} + \frac{6\left(3\,Bab - Ab^2\right)x^2 + 3\left(9\,Ba^2 - 2\,Aab\right)x + \frac{11\,Ba^3 - 2\,Aa^2b}{b}}{6\,(bx + a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*log(abs(b*x + a))/b^4 + 1/6*(6*(3*B*a*b - A*b^2)*x^2 + 3*(9*B*a^2 - 2*A*a
*b)*x + (11*B*a^3 - 2*A*a^2*b)/b)/((b*x + a)^3*b^3)
```

maple [A] time = 0.07, size = 101, normalized size = 1.40

$$-\frac{A\,a^2}{3\,(bx + a)^3\,b^3} + \frac{B\,a^3}{3\,(bx + a)^3\,b^4} + \frac{Aa}{(bx + a)^2\,b^3} - \frac{3B\,a^2}{2\,(bx + a)^2\,b^4} - \frac{A}{(bx + a)\,b^3} + \frac{3Ba}{(bx + a)\,b^4} + \frac{B\ln\left(bx + a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*a^2/b^3/(b*x+a)^3*A+1/3*a^3/b^4/(b*x+a)^3*B+a/b^3/(b*x+a)^2*A-3/2*a^2*
B/b^4/(b*x+a)^2+B*ln(b*x+a)/b^4-1/b^3/(b*x+a)*A+3*a*B/b^4/(b*x+a)
```

maxima [A] time = 0.62, size = 100, normalized size = 1.39

$$\frac{11\,Ba^3 - 2\,Aa^2b + 6\left(3\,Bab^2 - Ab^3\right)x^2 + 3\left(9\,Ba^2b - 2\,Aab^2\right)x}{6\left(b^7x^3 + 3\,ab^6x^2 + 3\,a^2b^5x + a^3b^4\right)} + \frac{B\log\left(bx + a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*a^3 - 2*A*a^2*b + 6*(3*B*a*b^2 - A*b^3)*x^2 + 3*(9*B*a^2*b - 2*A*
a*b^2)*x)/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4) + B*log(b*x + a)/
b^4
```

mupad [B] time = 0.08, size = 96, normalized size = 1.33

$$\frac{\frac{11\,B\,a^3-2\,A\,a^2\,b}{6\,b^4}-\frac{x^2\,\left(A\,b-3\,B\,a\right)}{b^2}+\frac{x\,\left(9\,B\,a^2-2\,A\,a\,b\right)}{2\,b^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}+\frac{B\,\ln\left(a+b\,x\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((11*B*a^3 - 2*A*a^2*b)/(6*b^4) - (x^2*(A*b - 3*B*a))/b^2 + (x*(9*B*a^2 - 2
*A*a*b))/(2*b^3))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) + (B*log(a + b*
x))/b^4
```

sympy [A] time = 0.66, size = 100, normalized size = 1.39

$$\frac{B\log\left(a + bx\right)}{b^4} + \frac{-2Aa^2b + 11Ba^3 + x^2\left(-6Ab^3 + 18Bab^2\right) + x\left(-6Aab^2 + 27Ba^2b\right)}{6a^3b^4 + 18a^2b^5x + 18ab^6x^2 + 6b^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*log(a + b*x)/b**4 + (-2*A*a**2*b + 11*B*a**3 + x**2*(-6*A*b**3 + 18*B*a*b
**2) + x*(-6*A*a*b**2 + 27*B*a**2*b))/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*
b**6*x**2 + 6*b**7*x**3)
```

3.564 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=59

$$-\frac{Ab-2aB}{2b^3(a+bx)^2}+\frac{a(Ab-aB)}{3b^3(a+bx)^3}-\frac{B}{b^3(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.080$, Rules used = $\{27, 77\}$

$$-\frac{Ab-2aB}{2b^3(a+bx)^2}+\frac{a(Ab-aB)}{3b^3(a+bx)^3}-\frac{B}{b^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a*(A*b - a*B))/(3*b^3*(a + b*x)^3) - (A*b - 2*a*B)/(2*b^3*(a + b*x)^2) - B
/(b^3*(a + b*x))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x(A+Bx)}{(a+bx)^4}\,dx\\
&= \int \left(\frac{a(-Ab+aB)}{b^2(a+bx)^4}+\frac{Ab-2aB}{b^2(a+bx)^3}+\frac{B}{b^2(a+bx)^2}\right)dx\\
&= \frac{a(Ab-aB)}{3b^3(a+bx)^3}-\frac{Ab-2aB}{2b^3(a+bx)^2}-\frac{B}{b^3(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.71

$$-\frac{2a^2B+ab(A+6Bx)+3b^2x(A+2Bx)}{6b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(2*a^2*B + 3*b^2*x*(A + 2*B*x) + a*b*(A + 6*B*x))/(b^3*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
[Out] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.40, size = 71, normalized size = 1.20

$$-\frac{6\,Bb^2x^2+2\,Ba^2+Aab+3\left(2\,Bab+Ab^2\right)x}{6\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] -1/6*(6*B*b^2*x^2 + 2*B*a^2 + A*a*b + 3*(2*B*a*b + A*b^2)*x)/(b^6*x^3 + 3*a
*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

giac [A] time = 0.19, size = 45, normalized size = 0.76

$$-\frac{6\,Bb^2x^2+6\,Babx+3\,Ab^2x+2\,Ba^2+Aab}{6\,(bx+a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
[Out] -1/6*(6*B*b^2*x^2 + 6*B*a*b*x + 3*A*b^2*x + 2*B*a^2 + A*a*b)/((b*x + a)^3*b
^3)
```

maple [A] time = 0.07, size = 56, normalized size = 0.95

$$-\frac{B}{(bx+a)\,b^3}+\frac{(Ab-Ba)\,a}{3\,(bx+a)^3\,b^3}-\frac{Ab-2Ba}{2\,(bx+a)^2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
[Out] 1/3*a*(A*b-B*a)/b^3/(b*x+a)^3-1/2*(A*b-2*B*a)/b^3/(b*x+a)^2-B/b^3/(b*x+a)
```

maxima [A] time = 0.71, size = 71, normalized size = 1.20

$$-\frac{6\,Bb^2x^2+2\,Ba^2+Aab+3\left(2\,Bab+Ab^2\right)x}{6\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
[Out] -1/6*(6*B*b^2*x^2 + 2*B*a^2 + A*a*b + 3*(2*B*a*b + A*b^2)*x)/(b^6*x^3 + 3*a
*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

mupad [B] time = 0.04, size = 68, normalized size = 1.15

$$-\frac{\frac{B\,x^2}{b}+\frac{a\,\left(A\,b+2\,B\,a\right)}{6\,b^3}+\frac{x\,\left(A\,b+2\,B\,a\right)}{2\,b^2}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((B*x^2)/b + (a*(A*b + 2*B*a))/(6*b^3) + (x*(A*b + 2*B*a))/(2*b^2))/(a^3 +
 b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [A] time = 0.45, size = 75, normalized size = 1.27

$$\frac{-Aab-2Ba^2-6Bb^2x^2+x\left(-3Ab^2-6Bab\right)}{6a^3b^3+18a^2b^4x+18ab^5x^2+6b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-A*a*b - 2*B*a**2 - 6*B*b**2*x**2 + x*(-3*A*b**2 - 6*B*a*b))/(6*a**3*b**3
+ 18*a**2*b**4*x + 18*a*b**5*x**2 + 6*b**6*x**3)
```

3.565 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2} dx$

Optimal. Leaf size=38

$$\frac{aB-Ab}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(A*b - a*B)/(3*b^2*(a + b*x)^3) - B/(2*b^2*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2} dx &= \int \frac{A+Bx}{(a+bx)^4} dx \\
&= \int \left(\frac{Ab-aB}{b(a+bx)^4}+\frac{B}{b(a+bx)^3}\right) dx \\
&= -\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{B(a+3bx)+2Ab}{6b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(2*A*b + B*(a + 3*b*x))/(b^2*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
[Out] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.42, size = 50, normalized size = 1.32

$$-\frac{3 Bbx + Ba + 2 Ab}{6 \left(b^5x^3 + 3 ab^4x^2 + 3 a^2b^3x + a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

giac [A] time = 0.15, size = 25, normalized size = 0.66

$$-\frac{3 Bbx + Ba + 2 Ab}{6 (bx + a)^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/((b*x + a)^3*b^2)
```

maple [A] time = 0.06, size = 35, normalized size = 0.92

$$-\frac{B}{2 (bx + a)^2 b^2} - \frac{Ab - Ba}{3 (bx + a)^3 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
[Out] -1/3*(A*b-B*a)/b^2/(b*x+a)^3-1/2*B/b^2/(b*x+a)^2
```

maxima [A] time = 0.51, size = 50, normalized size = 1.32

$$-\frac{3 Bbx + Ba + 2 Ab}{6 \left(b^5x^3 + 3 ab^4x^2 + 3 a^2b^3x + a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

mupad [B] time = 0.03, size = 52, normalized size = 1.37

$$-\frac{\frac{2\,A\,b+B\,a}{6\,b^2}+\frac{B\,x}{2\,b}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
[Out] -((2*A*b + B*a)/(6*b^2) + (B*x)/(2*b))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2
*b*x)
```

sympy [**A**] time = 0.35, size = 53, normalized size = 1.39

$$\frac{-2Ab - Ba - 3Bbx}{6a^3b^2 + 18a^2b^3x + 18ab^4x^2 + 6b^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-2*A*b - B*a - 3*B*b*x)/(6*a**3*b**2 + 18*a**2*b**3*x + 18*a*b**4*x**2 + 6
*b**5*x**3)
```

3.566 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=72

$$-\frac{A\log(a+bx)}{a^4}+\frac{A\log(x)}{a^4}+\frac{A}{a^3(a+bx)}+\frac{A}{2a^2(a+bx)^2}+\frac{Ab-aB}{3ab(a+bx)^3}$$

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{A}{a^3(a+bx)}+\frac{A}{2a^2(a+bx)^2}-\frac{A\log(a+bx)}{a^4}+\frac{A\log(x)}{a^4}+\frac{Ab-aB}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (A*b - a*B)/(3*a*b*(a + b*x)^3) + A/(2*a^2*(a + b*x)^2) + A/(a^3*(a + b*x))
 + (A*Log[x])/a^4 - (A*Log[a + b*x])/a^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{x(a+bx)^4}\,dx\\ &= \int \left(\frac{A}{a^4x}+\frac{-Ab+aB}{a(a+bx)^4}-\frac{Ab}{a^2(a+bx)^3}-\frac{Ab}{a^3(a+bx)^2}-\frac{Ab}{a^4(a+bx)}\right)dx\\ &= \frac{Ab-aB}{3ab(a+bx)^3}+\frac{A}{2a^2(a+bx)^2}+\frac{A}{a^3(a+bx)}+\frac{A\log(x)}{a^4}-\frac{A\log(a+bx)}{a^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 65, normalized size = 0.90

$$\frac{\frac{a\left(-2a^3B+11a^2Ab+15aAb^2x+6Ab^3x^2\right)}{b(a+bx)^3}-6A\log(a+bx)+6A\log(x)}{6a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a*(11*a^2*A*b - 2*a^3*B + 15*a*A*b^2*x + 6*A*b^3*x^2))/(b*(a + b*x)^3) +
6*A*Log[x] - 6*A*Log[a + b*x])/(6*a^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x\left(a^2 + 2abx + b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^2),x]

[Out] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^2), x]

fricas [B] time = 0.44, size = 156, normalized size = 2.17

$$\frac{6\,Aab^3x^2 + 15\,Aa^2b^2x - 2\,Ba^4 + 11\,Aa^3b - 6\left(Ab^4x^3 + 3\,Aab^3x^2 + 3\,Aa^2b^2x + Aa^3b\right)\log\left(bx + a\right) + 6\left(Ab^4x^3 + 3\,Aab^3x^2 + 3\,Aa^2b^2x + Aa^3b\right)\log(x)}{6\left(a^4b^4x^3 + 3\,a^5b^3x^2 + 3\,a^6b^2x + a^7b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")

[Out] 1/6*(6*A*a*b^3*x^2 + 15*A*a^2*b^2*x - 2*B*a^4 + 11*A*a^3*b - 6*(A*b^4*x^3 + 3*A*a*b^3*x^2 + 3*A*a^2*b^2*x + A*a^3*b)*log(b*x + a) + 6*(A*b^4*x^3 + 3*A*a*b^3*x^2 + 3*A*a^2*b^2*x + A*a^3*b)*log(x))/(a^4*b^4*x^3 + 3*a^5*b^3*x^2 + 3*a^6*b^2*x + a^7*b)

giac [A] time = 0.15, size = 71, normalized size = 0.99

$$-\frac{A\log\left(|bx + a|\right)}{a^4} + \frac{A\log\left(|x|\right)}{a^4} + \frac{6\,Aab^3x^2 + 15\,Aa^2b^2x - 2\,Ba^4 + 11\,Aa^3b}{6\left(bx + a\right)^3a^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")

[Out] -A*log(abs(b*x + a))/a^4 + A*log(abs(x))/a^4 + 1/6*(6*A*a*b^3*x^2 + 15*A*a^2*b^2*x - 2*B*a^4 + 11*A*a^3*b)/((b*x + a)^3*a^4*b)

maple [A] time = 0.05, size = 72, normalized size = 1.00

$$\frac{A}{3\left(bx + a\right)^3a} - \frac{B}{3\left(bx + a\right)^3b} + \frac{A}{2\left(bx + a\right)^2a^2} + \frac{A}{\left(bx + a\right)a^3} + \frac{A\ln(x)}{a^4} - \frac{A\ln\left(bx + a\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x)

[Out] 1/3/a/(b*x+a)^3*A-1/3/b/(b*x+a)^3*B-A*ln(b*x+a)/a^4+A/a^3/(b*x+a)+1/2*A/a^2/(b*x+a)^2+A*ln(x)/a^4

maxima [A] time = 0.59, size = 91, normalized size = 1.26

$$\frac{6\,Ab^3x^2 + 15\,Aab^2x - 2\,Ba^3 + 11\,Aa^2b}{6\left(a^3b^4x^3 + 3\,a^4b^3x^2 + 3\,a^5b^2x + a^6b\right)} - \frac{A\log\left(bx + a\right)}{a^4} + \frac{A\log(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")

[Out] 1/6*(6*A*b^3*x^2 + 15*A*a*b^2*x - 2*B*a^3 + 11*A*a^2*b)/(a^3*b^4*x^3 + 3*a^4*b^3*x^2 + 3*a^5*b^2*x + a^6*b) - A*log(b*x + a)/a^4 + A*log(x)/a^4

mupad [B] time = 1.11, size = 84, normalized size = 1.17

$$\frac{\frac{11\,A\,b-2\,B\,a}{6\,a\,b}+\frac{5\,A\,b\,x}{2\,a^2}+\frac{A\,b^2\,x^2}{a^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}-\frac{2\,A\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((11*A*b - 2*B*a)/(6*a*b) + (5*A*b*x)/(2*a^2) + (A*b^2*x^2)/a^3)/(a^3 + b^3
*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) - (2*A*atanh((2*b*x)/a + 1))/a^4
```

sympy [A] time = 0.53, size = 90, normalized size = 1.25

$$\frac{A\left(\log(x)-\log\left(\frac{a}{b}+x\right)\right)}{a^4}+\frac{11Aa^2b+15Aab^2x+6Ab^3x^2-2Ba^3}{6a^6b+18a^5b^2x+18a^4b^3x^2+6a^3b^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*(log(x) - log(a/b + x))/a**4 + (11*A*a**2*b + 15*A*a*b**2*x + 6*A*b**3*x*
*2 - 2*B*a**3)/(6*a**6*b + 18*a**5*b**2*x + 18*a**4*b**3*x**2 + 6*a**3*b**4
*x**3)
```

3.567 $\int \frac{A+Bx}{x^2(a^2+2abx+b^2x^2)^2}\,dx$

Optimal. Leaf size=111

$$-\frac{\log(x)(4Ab-aB)}{a^5}+\frac{(4Ab-aB)\log(a+bx)}{a^5}-\frac{3Ab-aB}{a^4(a+bx)}-\frac{A}{a^4x}-\frac{2Ab-aB}{2a^3(a+bx)^2}-\frac{Ab-aB}{3a^2(a+bx)^3}$$

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{3Ab-aB}{a^4(a+bx)}-\frac{2Ab-aB}{2a^3(a+bx)^2}-\frac{Ab-aB}{3a^2(a+bx)^3}-\frac{\log(x)(4Ab-aB)}{a^5}+\frac{(4Ab-aB)\log(a+bx)}{a^5}-\frac{A}{a^4x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -(A/(a^4*x)) - (A*b - a*B)/(3*a^2*(a + b*x)^3) - (2*A*b - a*B)/(2*a^3*(a +
b*x)^2) - (3*A*b - a*B)/(a^4*(a + b*x)) - ((4*A*b - a*B)*Log[x])/a^5 + ((4*
A*b - a*B)*Log[a + b*x])/a^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{x^2(a+bx)^4}\,dx\\
&= \int \left(\frac{A}{a^4x^2}+\frac{-4Ab+aB}{a^5x}-\frac{b(-Ab+aB)}{a^2(a+bx)^4}-\frac{b(-2Ab+aB)}{a^3(a+bx)^3}-\frac{b(-3Ab+aB)}{a^4(a+bx)^2}-\frac{b(-4\\
&= -\frac{A}{a^4x}-\frac{Ab-aB}{3a^2(a+bx)^3}-\frac{2Ab-aB}{2a^3(a+bx)^2}-\frac{3Ab-aB}{a^4(a+bx)}-\frac{(4Ab-aB)\log(x)}{a^5}+\frac{(4Ab-
\end{aligned}$$

Mathematica [A] time = 0.06, size = 102, normalized size = 0.92

$$\frac{\frac{2a^3(aB-Ab)}{(a+bx)^3}+\frac{3a^2(aB-2Ab)}{(a+bx)^2}+\frac{6a(aB-3Ab)}{a+bx}+6\log(x)(aB-4Ab)+6(4Ab-aB)\log(a+bx)-\frac{6aA}{x}}{6a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-6*a*A)/x + (2*a^3*(-(A*b) + a*B))/(a + b*x)^3 + (3*a^2*(-2*A*b + a*B))/(
a + b*x)^2 + (6*a*(-3*A*b + a*B))/(a + b*x) + 6*(-4*A*b + a*B)*Log[x] + 6*(
4*A*b - a*B)*Log[a + b*x])/(6*a^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.41, size = 267, normalized size = 2.41

$$-\frac{6\,Aa^4-6\left(Ba^2b^2-4\,Aab^3\right)x^3-15\left(Ba^3b-4\,Aa^2b^2\right)x^2-11\left(Ba^4-4\,Aa^3b\right)x+6\left(\left(Bab^3-4\,Ab^4\right)x^4+3\left(Ba^2b^2-4\,Aab^3\right)x^3+3\left(Ba^3b-4\,Aa^2b^2\right)x^2+\left(Ba^4-4\,Aa^3b\right)x\right)\log\left(bx+a\right)-6\left(\left(Bab^3-4\,Ab^4\right)x^4+3\left(Ba^2b^2-4\,Aab^3\right)x^3+3\left(Ba^3b-4\,Aa^2b^2\right)x^2+\left(Ba^4-4\,Aa^3b\right)x\right)\log(x)}{6\left(a^5b^3x^4+3\,a^6b^2x^3+3\,a^7bx^2+a^8x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(6*A*a^4 - 6*(B*a^2*b^2 - 4*A*a*b^3)*x^3 - 15*(B*a^3*b - 4*A*a^2*b^2)*
x^2 - 11*(B*a^4 - 4*A*a^3*b)*x + 6*((B*a*b^3 - 4*A*b^4)*x^4 + 3*(B*a^2*b^2
- 4*A*a*b^3)*x^3 + 3*(B*a^3*b - 4*A*a^2*b^2)*x^2 + (B*a^4 - 4*A*a^3*b)*x)*l
og(b*x + a) - 6*((B*a*b^3 - 4*A*b^4)*x^4 + 3*(B*a^2*b^2 - 4*A*a*b^3)*x^3 +
3*(B*a^3*b - 4*A*a^2*b^2)*x^2 + (B*a^4 - 4*A*a^3*b)*x)*log(x))/(a^5*b^3*x^4
 + 3*a^6*b^2*x^3 + 3*a^7*b*x^2 + a^8*x)
```

giac [A] time = 0.17, size = 122, normalized size = 1.10

$$\frac{(Ba-4\,Ab)\log\left(|x|\right)}{a^5}-\frac{\left(Bab-4\,Ab^2\right)\log\left(|bx+a|\right)}{a^5b}-\frac{6\,Aa^4-6\left(Ba^2b^2-4\,Aab^3\right)x^3-15\left(Ba^3b-4\,Aa^2b^2\right)x^2-11\left(Ba^4-4\,Aa^3b\right)x}{6\,(bx+a)^3a^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (B*a - 4*A*b)*log(abs(x))/a^5 - (B*a*b - 4*A*b^2)*log(abs(b*x + a))/(a^5*b)
 - 1/6*(6*A*a^4 - 6*(B*a^2*b^2 - 4*A*a*b^3)*x^3 - 15*(B*a^3*b - 4*A*a^2*b^2
)*x^2 - 11*(B*a^4 - 4*A*a^3*b)*x)/((b*x + a)^3*a^5*x)
```

maple [A] time = 0.06, size = 132, normalized size = 1.19

$$-\frac{Ab}{3\,(bx+a)^3\,a^2}+\frac{B}{3\,(bx+a)^3\,a}-\frac{Ab}{(bx+a)^2\,a^3}+\frac{B}{2\,(bx+a)^2\,a^2}-\frac{3Ab}{(bx+a)\,a^4}-\frac{4Ab\ln(x)}{a^5}+\frac{4Ab\ln\left(bx+a\right)}{a^5}+\frac{B}{(bx+a)\,a^3}+\frac{B\ln(x)}{a^4}-\frac{B\ln\left(bx+a\right)}{a^4}-\frac{A}{a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/a^3/(b*x+a)^2*A*b+1/2/a^2/(b*x+a)^2*B-3/a^4/(b*x+a)*A*b+1/a^3/(b*x+a)*B+
4/a^5*ln(b*x+a)*A*b-1/a^4*ln(b*x+a)*B-1/3/a^2/(b*x+a)^3*A*b+1/3/a/(b*x+a)^3
*B-A/a^4/x-4/a^5*ln(x)*A*b+1/a^4*ln(x)*B
```

maxima [A] time = 0.54, size = 134, normalized size = 1.21

$$-\frac{6\,Aa^3-6\left(Bab^2-4\,Ab^3\right)x^3-15\left(Ba^2b-4\,Aab^2\right)x^2-11\left(Ba^3-4\,Aa^2b\right)x}{6\left(a^4b^3x^4+3\,a^5b^2x^3+3\,a^6bx^2+a^7x\right)}-\frac{(Ba-4\,Ab)\log\left(bx+a\right)}{a^5}+\frac{(Ba-4\,Ab)\log(x)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(6*A*a^3 - 6*(B*a*b^2 - 4*A*b^3)*x^3 - 15*(B*a^2*b - 4*A*a*b^2)*x^2 -
11*(B*a^3 - 4*A*a^2*b)*x)/(a^4*b^3*x^4 + 3*a^5*b^2*x^3 + 3*a^6*b*x^2 + a^7*
x) - (B*a - 4*A*b)*log(b*x + a)/a^5 + (B*a - 4*A*b)*log(x)/a^5
```

mupad [B] time = 1.15, size = 118, normalized size = 1.06

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)\,\left(4\,A\,b-B\,a\right)}{a^5}-\frac{\frac{A}{a}+\frac{11\,x\,\left(4\,A\,b-B\,a\right)}{6\,a^2}+\frac{b^2\,x^3\,\left(4\,A\,b-B\,a\right)}{a^4}+\frac{5\,b\,x^2\,\left(4\,A\,b-B\,a\right)}{2\,a^3}}{a^3\,x+3\,a^2\,b\,x^2+3\,a\,b^2\,x^3+b^3\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (2*atanh((2*b*x)/a + 1)*(4*A*b - B*a))/a^5 - (A/a + (11*x*(4*A*b - B*a))/(6
*a^2) + (b^2*x^3*(4*A*b - B*a))/a^4 + (5*b*x^2*(4*A*b - B*a))/(2*a^3))/(a^3
*x + b^3*x^4 + 3*a^2*b*x^2 + 3*a*b^2*x^3)
```

sympy [B] time = 0.76, size = 204, normalized size = 1.84

$$\frac{-6Aa^{3}+x^{3}\left(-24Ab^{3}+6Bab^{2}\right)+x^{2}\left(-60Aab^{2}+15Ba^{2}b\right)+x\left(-44Aa^{2}b+11Ba^{3}\right)}{6a^{7}x+18a^{6}bx^{2}+18a^{5}b^{2}x^{3}+6a^{4}b^{3}x^{4}}+\frac{\left(-4Ab+Ba\right)\log\left(x+\frac{-4Aab+Ba^{2}-a\left(-4Ab+Ba\right)}{-8Ab^{2}+2Bab}\right)}{a^{5}}-\frac{\left(-4Ab+Ba\right)\log\left(x+\frac{-4Aab+Ba^{2}+a\left(-4Ab+Ba\right)}{-8Ab^{2}+2Bab}\right)}{a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-6*A*a**3 + x**3*(-24*A*b**3 + 6*B*a*b**2) + x**2*(-60*A*a*b**2 + 15*B*a**
2*b) + x*(-44*A*a**2*b + 11*B*a**3))/(6*a**7*x + 18*a**6*b*x**2 + 18*a**5*b
**2*x**3 + 6*a**4*b**3*x**4) + (-4*A*b + B*a)*log(x + (-4*A*a*b + B*a**2 -
a*(-4*A*b + B*a))/(-8*A*b**2 + 2*B*a*b))/a**5 - (-4*A*b + B*a)*log(x + (-4*
A*a*b + B*a**2 + a*(-4*A*b + B*a))/(-8*A*b**2 + 2*B*a*b))/a**5
```

3.568 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=135

$$\frac{2b\log(x)(5Ab-2aB)}{a^6}-\frac{2b(5Ab-2aB)\log(a+bx)}{a^6}+\frac{4Ab-aB}{a^5x}+\frac{3b(2Ab-aB)}{a^5(a+bx)}+\frac{b(3Ab-2aB)}{2a^4(a+bx)^2}-\frac{A}{2a^4x^2}+\frac{b(Ab}{3a^3(a}$$

Rubi [A] time = 0.12, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{4Ab-aB}{a^5x}+\frac{3b(2Ab-aB)}{a^5(a+bx)}+\frac{b(3Ab-2aB)}{2a^4(a+bx)^2}+\frac{b(Ab-aB)}{3a^3(a+bx)^3}+\frac{2b\log(x)(5Ab-2aB)}{a^6}-\frac{2b(5Ab-2aB)\log(a+bx)}{a^6}-\frac{A}{2a^4x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -A/(2*a^4*x^2) + (4*A*b - a*B)/(a^5*x) + (b*(A*b - a*B))/(3*a^3*(a + b*x)^3
) + (b*(3*A*b - 2*a*B))/(2*a^4*(a + b*x)^2) + (3*b*(2*A*b - a*B))/(a^5*(a +
 b*x)) + (2*b*(5*A*b - 2*a*B)*Log[x])/a^6 - (2*b*(5*A*b - 2*a*B)*Log[a + b*
x])/a^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^2}\,dx&=\int \frac{A+Bx}{x^3(a+bx)^4}\,dx\\&=\int \left(\frac{A}{a^4x^3}+\frac{-4Ab+aB}{a^5x^2}-\frac{2b(-5Ab+2aB)}{a^6x}+\frac{b^2(-Ab+aB)}{a^3(a+bx)^4}+\frac{b^2(-3Ab+2a}{a^4(a+bx)^3}\right.\\&=-\frac{A}{2a^4x^2}+\frac{4Ab-aB}{a^5x}+\frac{b(Ab-aB)}{3a^3(a+bx)^3}+\frac{b(3Ab-2aB)}{2a^4(a+bx)^2}+\frac{3b(2Ab-aB)}{a^5(a+bx)}+\frac{2b(5}{}\end{aligned}$$

Mathematica [A] time = 0.12, size = 123, normalized size = 0.91

$$\frac{\frac{a\left(-3a^4(A+2Bx)+a^3bx(15A-44Bx)+10a^2b^2x^2(11A-6Bx)+6ab^3x^3(25A-4Bx)+60Ab^4x^4\right)}{x^2(a+bx)^3}+12b\log(x)(5Ab-2aB)+12b(2aB-5Ab)\log(a+bx)}{6a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a*(60*A*b^4*x^4 + a^3*b*x*(15*A - 44*B*x) + 10*a^2*b^2*x^2*(11*A - 6*B*x)
 + 6*a*b^3*x^3*(25*A - 4*B*x) - 3*a^4*(A + 2*B*x)))/(x^2*(a + b*x)^3) + 12*
b*(5*A*b - 2*a*B)*Log[x] + 12*b*(-5*A*b + 2*a*B)*Log[a + b*x])/(6*a^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.42, size = 318, normalized size = 2.36

$$-\frac{3\,Aa^5+12\left(2\,Ba^2b^3-5\,Aab^4\right)x^4+30\left(2\,Ba^3b^2-5\,Aa^2b^3\right)x^3+22\left(2\,Ba^4b-5\,Aa^3b^2\right)x^2+3\left(2\,Ba^5-5\,Aa^4b\right)x-12\left(\left(2\,Bab^4-5\,Ab^5\right)x^5+3\left(2\,Ba^2b^3-5\,Aab^4\right)x^4+3\left(2\,Ba^3b^2-5\,Aa^2b^3\right)x^3+\left(2\,Ba^4b-5\,Aa^3b^2\right)x^2\right)\log\left(bx+a\right)+12\left(\left(2\,Bab^4-5\,Ab^5\right)x^5+3\left(2\,Ba^2b^3-5\,Aab^4\right)x^4+3\left(2\,Ba^3b^2-5\,Aa^2b^3\right)x^3+\left(2\,Ba^4b-5\,Aa^3b^2\right)x^2\right)\log\left(x\right)}{6\left(a^6b^3x^5+3\,a^7b^2x^4+3\,a^8bx^3+a^9x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*A*a^5 + 12*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 30*(2*B*a^3*b^2 - 5*A*a^
2*b^3)*x^3 + 22*(2*B*a^4*b - 5*A*a^3*b^2)*x^2 + 3*(2*B*a^5 - 5*A*a^4*b)*x -
 12*((2*B*a*b^4 - 5*A*b^5)*x^5 + 3*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 3*(2*B*a
^3*b^2 - 5*A*a^2*b^3)*x^3 + (2*B*a^4*b - 5*A*a^3*b^2)*x^2)*log(b*x + a) + 1
2*((2*B*a*b^4 - 5*A*b^5)*x^5 + 3*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 3*(2*B*a^3
*b^2 - 5*A*a^2*b^3)*x^3 + (2*B*a^4*b - 5*A*a^3*b^2)*x^2)*log(x))/(a^6*b^3*x
^5 + 3*a^7*b^2*x^4 + 3*a^8*b*x^3 + a^9*x^2)
```

giac [A] time = 0.15, size = 157, normalized size = 1.16

$$-\frac{2\left(2\,Bab-5\,Ab^2\right)\log\left(|x|\right)}{a^6}+\frac{2\left(2\,Bab^2-5\,Ab^3\right)\log\left(|bx+a|\right)}{a^6b}-\frac{3\,Aa^5+12\left(2\,Ba^2b^3-5\,Aab^4\right)x^4+30\left(2\,Ba^3b^2-5\,Aa^2b^3\right)x^3+22\left(2\,Ba^4b-5\,Aa^3b^2\right)x^2+3\left(2\,Ba^5-5\,Aa^4b\right)x}{6\left(bx+a\right)^3a^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -2*(2*B*a*b - 5*A*b^2)*log(abs(x))/a^6 + 2*(2*B*a*b^2 - 5*A*b^3)*log(abs(b*
x + a))/(a^6*b) - 1/6*(3*A*a^5 + 12*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 30*(2*B
*a^3*b^2 - 5*A*a^2*b^3)*x^3 + 22*(2*B*a^4*b - 5*A*a^3*b^2)*x^2 + 3*(2*B*a^5
 - 5*A*a^4*b)*x)/((b*x + a)^3*a^6*x^2)
```

maple [A] time = 0.05, size = 168, normalized size = 1.24

$$\frac{A\,b^2}{3\left(bx+a\right)^3a^3}-\frac{Bb}{3\left(bx+a\right)^3a^2}+\frac{3A\,b^2}{2\left(bx+a\right)^2a^4}-\frac{Bb}{\left(bx+a\right)^2a^3}+\frac{6A\,b^2}{\left(bx+a\right)a^5}+\frac{10A\,b^2\ln\left(x\right)}{a^6}-\frac{10A\,b^2\ln\left(bx+a\right)}{a^6}-\frac{3Bb}{\left(bx+a\right)a^4}-\frac{4Bb\ln\left(x\right)}{a^5}+\frac{4Bb\ln\left(bx+a\right)}{a^5}+\frac{4Ab}{a^5x}-\frac{B}{a^4x}-\frac{A}{2a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 6*b^2/a^5/(b*x+a)*A-3*b/a^4/(b*x+a)*B+3/2*b^2/a^4/(b*x+a)^2*A-b/a^3/(b*x+a)
^2*B-10*b^2/a^6*ln(b*x+a)*A+4*b/a^5*ln(b*x+a)*B+1/3*b^2/a^3/(b*x+a)^3*A-1/3
*b/a^2/(b*x+a)^3*B-1/2*A/a^4/x^2+4/a^5/x*A*b-1/a^4/x*B+10*b^2/a^6*ln(x)*A-4
*b/a^5*ln(x)*B
```

maxima [A] time = 0.62, size = 172, normalized size = 1.27

$$-\frac{3\,Aa^4+12\left(2\,Bab^3-5\,Ab^4\right)x^4+30\left(2\,Ba^2b^2-5\,Aab^3\right)x^3+22\left(2\,Ba^3b-5\,Aa^2b^2\right)x^2+3\left(2\,Ba^4-5\,Aa^3b\right)x}{6\left(a^5b^3x^5+3\,a^6b^2x^4+3\,a^7bx^3+a^8x^2\right)}+\frac{2\left(2\,Bab-5\,Ab^2\right)\log\left(bx+a\right)}{a^6}-\frac{2\left(2\,Bab-5\,Ab^2\right)\log\left(x\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(3*A*a^4 + 12*(2*B*a*b^3 - 5*A*b^4)*x^4 + 30*(2*B*a^2*b^2 - 5*A*a*b^3)
*x^3 + 22*(2*B*a^3*b - 5*A*a^2*b^2)*x^2 + 3*(2*B*a^4 - 5*A*a^3*b)*x)/(a^5*b
^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*b*x^3 + a^8*x^2) + 2*(2*B*a*b - 5*A*b^2)*log
(b*x + a)/a^6 - 2*(2*B*a*b - 5*A*b^2)*log(x)/a^6
```

mupad [B] time = 1.16, size = 168, normalized size = 1.24

$$\frac{\frac{x\,(5\,A\,b-2\,B\,a)}{2\,a^2}-\frac{A}{2\,a}+\frac{5\,b^2\,x^3\,(5\,A\,b-2\,B\,a)}{a^4}+\frac{2\,b^3\,x^4\,(5\,A\,b-2\,B\,a)}{a^5}+\frac{11\,b\,x^2\,(5\,A\,b-2\,B\,a)}{3\,a^3}}{a^3\,x^2+3\,a^2\,b\,x^3+3\,a\,b^2\,x^4+b^3\,x^5}-\frac{4\,b\,\mathrm{atanh}\left(\frac{2\,b\,(5\,A\,b-2\,B\,a)\,(a+2\,b\,x)}{a\,\left(10\,A\,b^2-4\,B\,a\,b\right)}\right)\,(5\,A\,b-2\,B\,a)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((x*(5*A*b - 2*B*a))/(2*a^2) - A/(2*a) + (5*b^2*x^3*(5*A*b - 2*B*a))/a^4 +
(2*b^3*x^4*(5*A*b - 2*B*a))/a^5 + (11*b*x^2*(5*A*b - 2*B*a))/(3*a^3))/(a^3*
x^2 + b^3*x^5 + 3*a^2*b*x^3 + 3*a*b^2*x^4) - (4*b*atanh((2*b*(5*A*b - 2*B*a
)*(a + 2*b*x))/(a*(10*A*b^2 - 4*B*a*b)))*(5*A*b - 2*B*a))/a^6
```

sympy [B] time = 0.88, size = 264, normalized size = 1.96

$$\frac{-3Aa^4+x^4\left(60Ab^4-24Bab^3\right)+x^3\left(150Aab^3-60Ba^2b^2\right)+x^2\left(110Aa^2b^2-44Ba^3b\right)+x\left(15Aa^3b-6Ba^4\right)}{6a^8x^2+18a^7bx^3+18a^6b^2x^4+6a^5b^3x^5}-\frac{2b\left(-5Ab+2Ba\right)\log\left(x+\frac{-10Aab^2+4Ba^2b-2ab(-5Ab+2Ba)}{-20Ab^3+8Bab^2}\right)}{a^6}+\frac{2b\left(-5Ab+2Ba\right)\log\left(x+\frac{-10Aab^2+4Ba^2b+2ab(-5Ab+2Ba)}{-20Ab^3+8Bab^2}\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-3*A*a**4 + x**4*(60*A*b**4 - 24*B*a*b**3) + x**3*(150*A*a*b**3 - 60*B*a**
2*b**2) + x**2*(110*A*a**2*b**2 - 44*B*a**3*b) + x*(15*A*a**3*b - 6*B*a**4)
)/(6*a**8*x**2 + 18*a**7*b*x**3 + 18*a**6*b**2*x**4 + 6*a**5*b**3*x**5) - 2
*b*(-5*A*b + 2*B*a)*log(x + (-10*A*a*b**2 + 4*B*a**2*b - 2*a*b*(-5*A*b + 2*
B*a))/(-20*A*b**3 + 8*B*a*b**2))/a**6 + 2*b*(-5*A*b + 2*B*a)*log(x + (-10*A
*a*b**2 + 4*B*a**2*b + 2*a*b*(-5*A*b + 2*B*a))/(-20*A*b**3 + 8*B*a*b**2))/a
**6
```

3.569 $\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=166

$$-\frac{10b^2\log(x)(2Ab-aB)}{a^7}+\frac{10b^2(2Ab-aB)\log(a+bx)}{a^7}-\frac{2b^2(5Ab-3aB)}{a^6(a+bx)}-\frac{2b(5Ab-2aB)}{a^6x}-\frac{b^2(4Ab-3aB)}{2a^5(a+bx)^2}+\frac{4Ab}{2a^5}$$

Rubi [A] time = 0.17, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 77}

$$-\frac{2b^2(5Ab-3aB)}{a^6(a+bx)}-\frac{b^2(4Ab-3aB)}{2a^5(a+bx)^2}-\frac{b^2(Ab-aB)}{3a^4(a+bx)^3}-\frac{10b^2\log(x)(2Ab-aB)}{a^7}+\frac{10b^2(2Ab-aB)\log(a+bx)}{a^7}+\frac{4Ab-aB}{2a^5x^2}-\frac{2b(5Ab-2aB)}{a^6x}-\frac{A}{3a^4x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -A/(3*a^4*x^3) + (4*A*b - a*B)/(2*a^5*x^2) - (2*b*(5*A*b - 2*a*B))/(a^6*x)
- (b^2*(A*b - a*B))/(3*a^4*(a + b*x)^3) - (b^2*(4*A*b - 3*a*B))/(2*a^5*(a +
 b*x)^2) - (2*b^2*(5*A*b - 3*a*B))/(a^6*(a + b*x)) - (10*b^2*(2*A*b - a*B)*
Log[x])/a^7 + (10*b^2*(2*A*b - a*B)*Log[a + b*x])/a^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{x^4(a+bx)^4}\,dx\\ &= \int \left(\frac{A}{a^4x^4}+\frac{-4Ab+aB}{a^5x^3}-\frac{2b(-5Ab+2aB)}{a^6x^2}+\frac{10b^2(-2Ab+aB)}{a^7x}-\frac{b^3(-Ab+aB)}{a^4(a+bx)^4}\right.\\ &= -\frac{A}{3a^4x^3}+\frac{4Ab-aB}{2a^5x^2}-\frac{2b(5Ab-2aB)}{a^6x}-\frac{b^2(Ab-aB)}{3a^4(a+bx)^3}-\frac{b^2(4Ab-3aB)}{2a^5(a+bx)^2}-\frac{2b^2(5.}{a^6(}\end{aligned}$$

Mathematica [A] time = 0.14, size = 148, normalized size = 0.89

$$\frac{\frac{a\left(-\left(a^5(2A+3Bx)\right)+3a^4bx(2A+5Bx)+10a^3b^2x^2(11Bx-3A)+10a^2b^3x^3(15Bx-22A)+60ab^4x^4(Bx-5A)-120Ab^5x^5\right)}{x^3(a+bx)^3}-60b^2\log(x)(2Ab-aB)+60b^2(2Ab-aB)\log(a+bx)}{6a^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a*(-120*A*b^5*x^5 + 60*a*b^4*x^4*(-5*A + B*x) - a^5*(2*A + 3*B*x) + 3*a^4
*b*x*(2*A + 5*B*x) + 10*a^3*b^2*x^2*(-3*A + 11*B*x) + 10*a^2*b^3*x^3*(-22*A
 + 15*B*x)))/(x^3*(a + b*x)^3) - 60*b^2*(2*A*b - a*B)*Log[x] + 60*b^2*(2*A*
b - a*B)*Log[a + b*x])/(6*a^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
[Out] IntegrateAlgebraic[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.41, size = 333, normalized size = 2.01

$$-\frac{2\,Aa^6-60\left(Ba^2b^4-2\,Aab^5\right)x^5-150\left(Ba^3b^3-2\,Aa^2b^4\right)x^4-110\left(Ba^4b^2-2\,Aa^3b^3\right)x^3-15\left(Ba^5b-2\,Aa^4b^2\right)x^2+3\left(Ba^6-2\,Aa^5b\right)x+60\left(\left(Bab^5-2\,Ab^6\right)x^6+3\left(Ba^2b^4-2\,Aab^5\right)x^5+3\left(Ba^3b^3-2\,Aa^2b^4\right)x^4+\left(Ba^4b^2-2\,Aa^3b^3\right)x^3\right)\log\left(bx+a\right)-60\left(\left(Bab^5-2\,Ab^6\right)x^6+3\left(Ba^2b^4-2\,Aab^5\right)x^5+3\left(Ba^3b^3-2\,Aa^2b^4\right)x^4+\left(Ba^4b^2-2\,Aa^3b^3\right)x^3\right)\log\left(x\right)}{6\left(a^7b^3x^6+3\,a^8b^2x^5+3\,a^9bx^4+a^{10}x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] -1/6*(2*A*a^6 - 60*(B*a^2*b^4 - 2*A*a*b^5)*x^5 - 150*(B*a^3*b^3 - 2*A*a^2*b
^4)*x^4 - 110*(B*a^4*b^2 - 2*A*a^3*b^3)*x^3 - 15*(B*a^5*b - 2*A*a^4*b^2)*x^
2 + 3*(B*a^6 - 2*A*a^5*b)*x + 60*((B*a*b^5 - 2*A*b^6)*x^6 + 3*(B*a^2*b^4 -
2*A*a*b^5)*x^5 + 3*(B*a^3*b^3 - 2*A*a^2*b^4)*x^4 + (B*a^4*b^2 - 2*A*a^3*b^3
)*x^3)*log(b*x + a) - 60*((B*a*b^5 - 2*A*b^6)*x^6 + 3*(B*a^2*b^4 - 2*A*a*b^
5)*x^5 + 3*(B*a^3*b^3 - 2*A*a^2*b^4)*x^4 + (B*a^4*b^2 - 2*A*a^3*b^3)*x^3)*l
og(x))/(a^7*b^3*x^6 + 3*a^8*b^2*x^5 + 3*a^9*b*x^4 + a^10*x^3)
```

giac [A] time = 0.15, size = 175, normalized size = 1.05

$$\frac{10\left(Bab^2-2\,Ab^3\right)\log\left(|x|\right)}{a^7}-\frac{10\left(Bab^3-2\,Ab^4\right)\log\left(|bx+a|\right)}{a^7b}+\frac{60\,Bab^4x^5-120\,Ab^5x^5+150\,Ba^2b^3x^4-300\,Aab^4x^4+110\,Ba^3b^2x^3-220\,Aa^2b^3x^3+15\,Ba^4bx^2-30\,Aa^3b^2x^2-3\,Ba^5x+6\,Aa^4bx-2\,Aa^5}{6\left(bx^2+ax\right)^3a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
[Out] 10*(B*a*b^2 - 2*A*b^3)*log(abs(x))/a^7 - 10*(B*a*b^3 - 2*A*b^4)*log(abs(b*x
 + a))/(a^7*b) + 1/6*(60*B*a*b^4*x^5 - 120*A*b^5*x^5 + 150*B*a^2*b^3*x^4 -
300*A*a*b^4*x^4 + 110*B*a^3*b^2*x^3 - 220*A*a^2*b^3*x^3 + 15*B*a^4*b*x^2 -
30*A*a^3*b^2*x^2 - 3*B*a^5*x + 6*A*a^4*b*x - 2*A*a^5)/((b*x^2 + a*x)^3*a^6)
```

maple [A] time = 0.07, size = 200, normalized size = 1.20

$$-\frac{A\,b^3}{3\left(bx+a\right)^3a^4}+\frac{B\,b^2}{3\left(bx+a\right)^3a^3}-\frac{2A\,b^3}{\left(bx+a\right)^2a^5}+\frac{3B\,b^2}{2\left(bx+a\right)^2a^4}-\frac{10A\,b^3}{\left(bx+a\right)a^6}-\frac{20A\,b^3\ln\left(x\right)}{a^7}+\frac{20A\,b^3\ln\left(bx+a\right)}{a^7}+\frac{6B\,b^2}{\left(bx+a\right)a^5}+\frac{10B\,b^2\ln\left(x\right)}{a^6}-\frac{10B\,b^2\ln\left(bx+a\right)}{a^6}-\frac{10A\,b^2}{a^6x}+\frac{4Bb}{a^5x}+\frac{2Ab}{a^5x^2}-\frac{B}{2a^4x^2}-\frac{A}{3a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
[Out] -2*b^3/a^5/(b*x+a)^2*A+3/2*b^2/a^4/(b*x+a)^2*B-1/3*b^3/a^4/(b*x+a)^3*A+1/3*
b^2/a^3/(b*x+a)^3*B+20*b^3/a^7*ln(b*x+a)*A-10*b^2/a^6*ln(b*x+a)*B-10*b^3/a^
6/(b*x+a)*A+6*b^2/a^5/(b*x+a)*B-1/3*A/a^4/x^3+2/a^5/x^2*A*b-1/2/a^4/x^2*B-1
0*b^2/a^6/x*A+4*b/a^5/x*B-20*b^3/a^7*ln(x)*A+10*b^2/a^6*ln(x)*B
```

maxima [A] time = 0.67, size = 193, normalized size = 1.16

$$-\frac{2\,Aa^5-60\left(Bab^4-2\,Ab^5\right)x^5-150\left(Ba^2b^3-2\,Aab^4\right)x^4-110\left(Ba^3b^2-2\,Aa^2b^3\right)x^3-15\left(Ba^4b-2\,Aa^3b^2\right)x^2+3\left(Ba^5-2\,Aa^4b\right)x}{6\left(a^6b^3x^6+3\,a^7b^2x^5+3\,a^8bx^4+a^9x^3\right)}-\frac{10\left(Bab^2-2\,Ab^3\right)\log\left(bx+a\right)}{a^7}+\frac{10\left(Bab^2-2\,Ab^3\right)\log\left(x\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(2*A*a^5 - 60*(B*a*b^4 - 2*A*b^5)*x^5 - 150*(B*a^2*b^3 - 2*A*a*b^4)*x^
4 - 110*(B*a^3*b^2 - 2*A*a^2*b^3)*x^3 - 15*(B*a^4*b - 2*A*a^3*b^2)*x^2 + 3*
(B*a^5 - 2*A*a^4*b)*x)/(a^6*b^3*x^6 + 3*a^7*b^2*x^5 + 3*a^8*b*x^4 + a^9*x^3
) - 10*(B*a*b^2 - 2*A*b^3)*log(b*x + a)/a^7 + 10*(B*a*b^2 - 2*A*b^3)*log(x)
/a^7
```

mupad [B] time = 1.19, size = 195, normalized size = 1.17

$$\frac{20\,b^2\,\mathrm{atanh}\left(\frac{10\,b^2\,\left(2\,A\,b-B\,a\right)\,\left(a+2\,b\,x\right)}{a\,\left(20\,A\,b^3-10\,B\,a\,b^2\right)}\right)\,\left(2\,A\,b-B\,a\right)}{a^7}-\frac{\frac{A}{3\,a}-\frac{x\,\left(2\,A\,b-B\,a\right)}{2\,a^2}+\frac{55\,b^2\,x^3\,\left(2\,A\,b-B\,a\right)}{3\,a^4}+\frac{25\,b^3\,x^4\,\left(2\,A\,b-B\,a\right)}{a^5}+\frac{10\,b^4\,x^5\,\left(2\,A\,b-B\,a\right)}{a^6}+\frac{5\,b\,x^2\,\left(2\,A\,b-B\,a\right)}{2\,a^3}}{a^3\,x^3+3\,a^2\,b\,x^4+3\,a\,b^2\,x^5+b^3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (20*b^2*atanh((10*b^2*(2*A*b - B*a)*(a + 2*b*x))/(a*(20*A*b^3 - 10*B*a*b^2)
))*(2*A*b - B*a))/a^7 - (A/(3*a) - (x*(2*A*b - B*a))/(2*a^2) + (55*b^2*x^3*
(2*A*b - B*a))/(3*a^4) + (25*b^3*x^4*(2*A*b - B*a))/a^5 + (10*b^4*x^5*(2*A*
b - B*a))/a^6 + (5*b*x^2*(2*A*b - B*a))/(2*a^3))/(a^3*x^3 + b^3*x^6 + 3*a^2
*b*x^4 + 3*a*b^2*x^5)
```

sympy [A] time = 0.94, size = 291, normalized size = 1.75

$$\frac{-2Aa^5 + x^5\left(-120Ab^5 + 60Bab^4\right) + x^4\left(-300Aab^4 + 150Ba^2b^3\right) + x^3\left(-220Aa^2b^3 + 110Ba^3b^2\right) + x^2\left(-30Aa^3b^2 + 15Ba^4b\right) + x\left(6Aa^4b - 3Ba^5\right)}{6a^9x^3 + 18a^8bx^4 + 18a^7b^2x^5 + 6a^6b^3x^6} + \frac{10b^2\left(-2Ab + Ba\right)\log\left(x + \frac{-20Aab^3 + 10Ba^2b^2 - 10ab^2(-2Ab+Ba)}{-40Ab^4 + 20Bab^3}\right)}{a^7} - \frac{10b^2\left(-2Ab + Ba\right)\log\left(x + \frac{-20Aab^3 + 10Ba^2b^2 + 10ab^2(-2Ab+Ba)}{-40Ab^4 + 20Bab^3}\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-2*A*a**5 + x**5*(-120*A*b**5 + 60*B*a*b**4) + x**4*(-300*A*a*b**4 + 150*B
*a**2*b**3) + x**3*(-220*A*a**2*b**3 + 110*B*a**3*b**2) + x**2*(-30*A*a**3*
b**2 + 15*B*a**4*b) + x*(6*A*a**4*b - 3*B*a**5))/(6*a**9*x**3 + 18*a**8*b*x
**4 + 18*a**7*b**2*x**5 + 6*a**6*b**3*x**6) + 10*b**2*(-2*A*b + B*a)*log(x
+ (-20*A*a*b**3 + 10*B*a**2*b**2 - 10*a*b**2*(-2*A*b + B*a))/(-40*A*b**4 +
20*B*a*b**3))/a**7 - 10*b**2*(-2*A*b + B*a)*log(x + (-20*A*a*b**3 + 10*B*a*
*2*b**2 + 10*a*b**2*(-2*A*b + B*a))/(-40*A*b**4 + 20*B*a*b**3))/a**7
```

3.570 $\int \frac{x^6(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=171

$$-\frac{a^6(Ab-aB)}{5b^8(a+bx)^5}+\frac{a^5(6Ab-7aB)}{4b^8(a+bx)^4}-\frac{a^4(5Ab-7aB)}{b^8(a+bx)^3}+\frac{5a^3(4Ab-7aB)}{2b^8(a+bx)^2}-\frac{5a^2(3Ab-7aB)}{b^8(a+bx)}-\frac{3a(2Ab-7aB)\log(a+}{b^8}$$

Rubi [A] time = 0.22, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 77}

$$-\frac{a^6(Ab-aB)}{5b^8(a+bx)^5}+\frac{a^5(6Ab-7aB)}{4b^8(a+bx)^4}-\frac{a^4(5Ab-7aB)}{b^8(a+bx)^3}+\frac{5a^3(4Ab-7aB)}{2b^8(a+bx)^2}-\frac{5a^2(3Ab-7aB)}{b^8(a+bx)}+\frac{x(Ab-6aB)}{b^7}-\frac{3a(2Ab-7aB)\log(a+bx)}{b^8}+\frac{Bx^2}{2b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(x^6*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - 6*a*B)*x)/b^7 + (B*x^2)/(2*b^6) - (a^6*(A*b - a*B))/(5*b^8*(a + b*x
)^5) + (a^5*(6*A*b - 7*a*B))/(4*b^8*(a + b*x)^4) - (a^4*(5*A*b - 7*a*B))/(b
^8*(a + b*x)^3) + (5*a^3*(4*A*b - 7*a*B))/(2*b^8*(a + b*x)^2) - (5*a^2*(3*A
*b - 7*a*B))/(b^8*(a + b*x)) - (3*a*(2*A*b - 7*a*B)*Log[a + b*x])/b^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^6(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} dx &= \int \frac{x^6(A+Bx)}{(a+bx)^6} dx\\ &= \int \left(\frac{Ab-6aB}{b^7}+\frac{Bx}{b^6}-\frac{a^6(-Ab+aB)}{b^7(a+bx)^6}+\frac{a^5(-6Ab+7aB)}{b^7(a+bx)^5}-\frac{3a^4(-5Ab+7aB)}{b^7(a+bx)^4}+\right.\\ &= \frac{(Ab-6aB)x}{b^7}+\frac{Bx^2}{2b^6}-\frac{a^6(Ab-aB)}{5b^8(a+bx)^5}+\frac{a^5(6Ab-7aB)}{4b^8(a+bx)^4}-\frac{a^4(5Ab-7aB)}{b^8(a+bx)^3}+\frac{5a^3(4}{2b^8(}\end{aligned}$$

Mathematica [A] time = 0.10, size = 151, normalized size = 0.88

$$\frac{\frac{4a^6(aB-Ab)}{(a+bx)^5}+\frac{5a^5(6Ab-7aB)}{(a+bx)^4}+\frac{20a^4(7aB-5Ab)}{(a+bx)^3}-\frac{50a^3(7aB-4Ab)}{(a+bx)^2}+\frac{100a^2(7aB-3Ab)}{a+bx}+20bx(Ab-6aB)+60a(7aB-2Ab)\log(a+bx)+10b^2Bx^2}{20b^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^6*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (20*b*(A*b - 6*a*B)*x + 10*b^2*B*x^2 + (4*a^6*(-(A*b) + a*B))/(a + b*x)^5 +
 (5*a^5*(6*A*b - 7*a*B))/(a + b*x)^4 + (20*a^4*(-5*A*b + 7*a*B))/(a + b*x)^
3 - (50*a^3*(-4*A*b + 7*a*B))/(a + b*x)^2 + (100*a^2*(-3*A*b + 7*a*B))/(a +
 b*x) + 60*a*(-2*A*b + 7*a*B)*Log[a + b*x])/(20*b^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^6(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^6*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^6*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.40, size = 349, normalized size = 2.04

$$\frac{10\,Bb^7x^7+459\,Ba^7-174\,Aa^6b-10\left(7\,Bab^6-2\,Ab^7\right)x^6-100\left(5\,Ba^2b^5-Aab^6\right)x^5-100\left(4\,Ba^3b^4+Aa^2b^5\right)x^4+100\left(13\,Ba^4b^3-8\,Aa^3b^4\right)x^3+300\left(9\,Ba^5b^2-4\,Aa^4b^3\right)x^2+375\left(5\,Ba^6b-2\,Aa^5b^2\right)x+60\left(7\,Ba^7-2\,Aa^6b+\left(7\,Ba^2b^5-2\,Aab^6\right)x^5+5\left(7\,Ba^3b^4-2\,Aa^2b^5\right)x^4+10\left(7\,Ba^4b^3-2\,Aa^3b^4\right)x^3+10\left(7\,Ba^5b^2-2\,Aa^4b^3\right)x^2+5\left(7\,Ba^6b-2\,Aa^5b^2\right)x\right)\log\left(bx+a\right)}{20\left(b^{13}x^5+5\,ab^{12}x^4+10\,a^2b^{11}x^3+10\,a^3b^{10}x^2+5\,a^4b^9x+a^5b^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*b^7*x^7 + 459*B*a^7 - 174*A*a^6*b - 10*(7*B*a*b^6 - 2*A*b^7)*x^6
 - 100*(5*B*a^2*b^5 - A*a*b^6)*x^5 - 100*(4*B*a^3*b^4 + A*a^2*b^5)*x^4 + 10
0*(13*B*a^4*b^3 - 8*A*a^3*b^4)*x^3 + 300*(9*B*a^5*b^2 - 4*A*a^4*b^3)*x^2 +
375*(5*B*a^6*b - 2*A*a^5*b^2)*x + 60*(7*B*a^7 - 2*A*a^6*b + (7*B*a^2*b^5 -
2*A*a*b^6)*x^5 + 5*(7*B*a^3*b^4 - 2*A*a^2*b^5)*x^4 + 10*(7*B*a^4*b^3 - 2*A*
a^3*b^4)*x^3 + 10*(7*B*a^5*b^2 - 2*A*a^4*b^3)*x^2 + 5*(7*B*a^6*b - 2*A*a^5*
b^2)*x)*log(b*x + a))/(b^13*x^5 + 5*a*b^12*x^4 + 10*a^2*b^11*x^3 + 10*a^3*b
^10*x^2 + 5*a^4*b^9*x + a^5*b^8)
```

giac [A] time = 0.16, size = 172, normalized size = 1.01

$$\frac{3\left(7\,Ba^2-2\,Aab\right)\log\left(|bx+a|\right)}{b^8}+\frac{Bb^6x^2-12\,Bab^5x+2\,Ab^6x}{2\,b^{12}}+\frac{459\,Ba^7-174\,Aa^6b+100\left(7\,Ba^3b^4-3\,Aa^2b^5\right)x^4+50\left(49\,Ba^4b^3-20\,Aa^3b^4\right)x^3+10\left(329\,Ba^5b^2-130\,Aa^4b^3\right)x^2+35\left(57\,Ba^6b-22\,Aa^5b^2\right)x}{20\left(bx+a\right)^5b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 3*(7*B*a^2 - 2*A*a*b)*log(abs(b*x + a))/b^8 + 1/2*(B*b^6*x^2 - 12*B*a*b^5*x
 + 2*A*b^6*x)/b^12 + 1/20*(459*B*a^7 - 174*A*a^6*b + 100*(7*B*a^3*b^4 - 3*A
*a^2*b^5)*x^4 + 50*(49*B*a^4*b^3 - 20*A*a^3*b^4)*x^3 + 10*(329*B*a^5*b^2 -
130*A*a^4*b^3)*x^2 + 35*(57*B*a^6*b - 22*A*a^5*b^2)*x)/((b*x + a)^5*b^8)
```

maple [A] time = 0.07, size = 213, normalized size = 1.25

$$-\frac{A\,a^6}{5\left(bx+a\right)^5b^7}+\frac{B\,a^7}{5\left(bx+a\right)^5b^8}+\frac{3A\,a^5}{2\left(bx+a\right)^4b^7}-\frac{7B\,a^6}{4\left(bx+a\right)^4b^8}-\frac{5A\,a^4}{\left(bx+a\right)^3b^7}+\frac{7B\,a^5}{\left(bx+a\right)^3b^8}+\frac{10A\,a^3}{\left(bx+a\right)^2b^7}-\frac{35B\,a^4}{2\left(bx+a\right)^2b^8}+\frac{B\,x^2}{2b^6}-\frac{15A\,a^2}{\left(bx+a\right)b^7}-\frac{6Aa\ln\left(bx+a\right)}{b^7}+\frac{Ax}{b^6}+\frac{35B\,a^3}{\left(bx+a\right)b^8}+\frac{21B\,a^2\ln\left(bx+a\right)}{b^8}-\frac{6Bax}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/2*B*x^2/b^6+1/b^6*A*x-6/b^7*B*a*x-5*a^4/b^7/(b*x+a)^3*A+7*a^5/b^8/(b*x+a)
^3*B-1/5*a^6/b^7/(b*x+a)^5*A+1/5*a^7/b^8/(b*x+a)^5*B+10*a^3/b^7/(b*x+a)^2*A
-35/2*a^4/b^8/(b*x+a)^2*B+3/2*a^5/b^7/(b*x+a)^4*A-7/4*a^6/b^8/(b*x+a)^4*B-6
*a/b^7*ln(b*x+a)*A+21*a^2/b^8*ln(b*x+a)*B-15*a^2/b^7/(b*x+a)*A+35*a^3/b^8/(
b*x+a)*B
```

maxima [A] time = 0.70, size = 213, normalized size = 1.25

$$\frac{459\,Ba^7-174\,Aa^6b+100\left(7\,Ba^3b^4-3\,Aa^2b^5\right)x^4+50\left(49\,Ba^4b^3-20\,Aa^3b^4\right)x^3+10\left(329\,Ba^5b^2-130\,Aa^4b^3\right)x^2+35\left(57\,Ba^6b-22\,Aa^5b^2\right)x}{20\left(b^{13}x^5+5\,ab^{12}x^4+10\,a^2b^{11}x^3+10\,a^3b^{10}x^2+5\,a^4b^9x+a^5b^8\right)}+\frac{Bbx^2-2\left(6\,Ba-Ab\right)x}{2\,b^7}+\frac{3\left(7\,Ba^2-2\,Aab\right)\log\left(bx+a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/20*(459*B*a^7 - 174*A*a^6*b + 100*(7*B*a^3*b^4 - 3*A*a^2*b^5)*x^4 + 50*(4
9*B*a^4*b^3 - 20*A*a^3*b^4)*x^3 + 10*(329*B*a^5*b^2 - 130*A*a^4*b^3)*x^2 +
35*(57*B*a^6*b - 22*A*a^5*b^2)*x)/(b^13*x^5 + 5*a*b^12*x^4 + 10*a^2*b^11*x^
3 + 10*a^3*b^10*x^2 + 5*a^4*b^9*x + a^5*b^8) + 1/2*(B*b*x^2 - 2*(6*B*a - A*
b)*x)/b^7 + 3*(7*B*a^2 - 2*A*a*b)*log(b*x + a)/b^8
```

mupad [B] time = 1.16, size = 210, normalized size = 1.23

$$x\left(\frac{A}{b^6}-\frac{6\,B\,a}{b^7}\right)-\frac{x^2\,\left(65\,A\,a^4\,b^2-\frac{329\,B\,a^5\,b}{2}\right)-x\,\left(\frac{399\,B\,a^6}{4}-\frac{77\,A\,a^5\,b}{2}\right)-\frac{3\,\left(153\,B\,a^7-58\,A\,a^6\,b\right)}{20\,b}+x^4\,\left(15\,A\,a^2\,b^4-35\,B\,a^3\,b^3\right)+x^3\,\left(50\,A\,a^3\,b^3-\frac{245\,B\,a^4\,b^2}{2}\right)}{a^5\,b^7+5\,a^4\,b^8\,x+10\,a^3\,b^9\,x^2+10\,a^2\,b^{10}\,x^3+5\,a\,b^{11}\,x^4+b^{12}\,x^5}+\frac{B\,x^2}{2\,b^6}+\frac{\ln\left(a+b\,x\right)\,\left(21\,B\,a^2-6\,A\,a\,b\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^6*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x*(A/b^6 - (6*B*a)/b^7) - (x^2*(65*A*a^4*b^2 - (329*B*a^5*b)/2) - x*((399*B
*a^6)/4 - (77*A*a^5*b)/2) - (3*(153*B*a^7 - 58*A*a^6*b))/(20*b) + x^4*(15*A
*a^2*b^4 - 35*B*a^3*b^3) + x^3*(50*A*a^3*b^3 - (245*B*a^4*b^2)/2))/(a^5*b^7
 + b^12*x^5 + 5*a^4*b^8*x + 5*a*b^11*x^4 + 10*a^3*b^9*x^2 + 10*a^2*b^10*x^3
) + (B*x^2)/(2*b^6) + (log(a + b*x)*(21*B*a^2 - 6*A*a*b))/b^8
```

sympy [A] time = 2.75, size = 216, normalized size = 1.26

$$\frac{Bx^2}{2b^6}+\frac{3a\left(-2Ab+7Ba\right)\log\left(a+bx\right)}{b^8}+x\left(\frac{A}{b^6}-\frac{6Ba}{b^7}\right)+\frac{-174Aa^6b+459Ba^7+x^4\left(-300Aa^2b^5+700Ba^3b^4\right)+x^3\left(-1000Aa^3b^4+2450Ba^4b^3\right)+x^2\left(-1300Aa^4b^3+3290Ba^5b^2\right)+x\left(-770Aa^5b^2+1995Ba^6b\right)}{20a^5b^8+100a^4b^9x+200a^3b^{10}x^2+200a^2b^{11}x^3+100ab^{12}x^4+20b^{13}x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] B*x**2/(2*b**6) + 3*a*(-2*A*b + 7*B*a)*log(a + b*x)/b**8 + x*(A/b**6 - 6*B*
a/b**7) + (-174*A*a**6*b + 459*B*a**7 + x**4*(-300*A*a**2*b**5 + 700*B*a**3
*b**4) + x**3*(-1000*A*a**3*b**4 + 2450*B*a**4*b**3) + x**2*(-1300*A*a**4*b
**3 + 3290*B*a**5*b**2) + x*(-770*A*a**5*b**2 + 1995*B*a**6*b))/(20*a**5*b*
*8 + 100*a**4*b**9*x + 200*a**3*b**10*x**2 + 200*a**2*b**11*x**3 + 100*a*b*
*12*x**4 + 20*b**13*x**5)
```

3.571 $\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=146

$$\frac{a^5(Ab-aB)}{5b^7(a+bx)^5}-\frac{a^4(5Ab-6aB)}{4b^7(a+bx)^4}+\frac{5a^3(2Ab-3aB)}{3b^7(a+bx)^3}-\frac{5a^2(Ab-2aB)}{b^7(a+bx)^2}+\frac{5a(Ab-3aB)}{b^7(a+bx)}+\frac{(Ab-6aB)\log(a+bx)}{b^7}+\frac{Bx}{b^6}$$

Rubi [A] time = 0.16, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{a^5(Ab-aB)}{5b^7(a+bx)^5}-\frac{a^4(5Ab-6aB)}{4b^7(a+bx)^4}+\frac{5a^3(2Ab-3aB)}{3b^7(a+bx)^3}-\frac{5a^2(Ab-2aB)}{b^7(a+bx)^2}+\frac{5a(Ab-3aB)}{b^7(a+bx)}+\frac{(Ab-6aB)\log(a+bx)}{b^7}+\frac{Bx}{b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (B*x)/b^6 + (a^5*(A*b - a*B))/(5*b^7*(a + b*x)^5) - (a^4*(5*A*b - 6*a*B))/(
4*b^7*(a + b*x)^4) + (5*a^3*(2*A*b - 3*a*B))/(3*b^7*(a + b*x)^3) - (5*a^2*(
A*b - 2*a*B))/(b^7*(a + b*x)^2) + (5*a*(A*b - 3*a*B))/(b^7*(a + b*x)) + ((A
*b - 6*a*B)*Log[a + b*x])/b^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{x^5(A+Bx)}{(a+bx)^6}\,dx$$
$$=\int \left(\frac{B}{b^6}+\frac{a^5(-Ab+aB)}{b^6(a+bx)^6}-\frac{a^4(-5Ab+6aB)}{b^6(a+bx)^5}+\frac{5a^3(-2Ab+3aB)}{b^6(a+bx)^4}-\frac{10a^2(-Ab+2aB)}{b^6(a+bx)^3}\right.$$
$$=\frac{Bx}{b^6}+\frac{a^5(Ab-aB)}{5b^7(a+bx)^5}-\frac{a^4(5Ab-6aB)}{4b^7(a+bx)^4}+\frac{5a^3(2Ab-3aB)}{3b^7(a+bx)^3}-\frac{5a^2(Ab-2aB)}{b^7(a+bx)^2}+\frac{5a(Ab}{b^7(a}$$

Mathematica [A] time = 0.08, size = 130, normalized size = 0.89

$$\frac{\frac{12a^5(Ab-aB)}{(a+bx)^5}+\frac{15a^4(6aB-5Ab)}{(a+bx)^4}+\frac{100a^3(2Ab-3aB)}{(a+bx)^3}+\frac{300a^2(2aB-Ab)}{(a+bx)^2}+\frac{300a(Ab-3aB)}{a+bx}+60(Ab-6aB)\log(a+bx)+60bBx}{60b^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

[Out] (60*b*B*x + (12*a^5*(A*b - a*B))/(a + b*x)^5 + (15*a^4*(-5*A*b + 6*a*B))/(a + b*x)^4 + (100*a^3*(2*A*b - 3*a*B))/(a + b*x)^3 + (300*a^2*(-(A*b) + 2*a*B))/(a + b*x)^2 + (300*a*(A*b - 3*a*B))/(a + b*x) + 60*(A*b - 6*a*B)*Log[a + b*x])/(60*b^7)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]

[Out] IntegrateAlgebraic[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]

fricas [B] time = 0.40, size = 311, normalized size = 2.13

$$\frac{60\,Bb^6x^6+300\,Bab^5x^5-522\,Ba^6+137\,Aa^5b-300\left(Ba^2b^4-Aab^5\right)x^4-300\left(8\,Ba^3b^3-3\,Aa^2b^4\right)x^3-100\left(36\,Ba^4b^2-11\,Aa^3b^3\right)x^2-125\left(18\,Ba^5b-5\,Aa^4b^2\right)x-60\left(6\,Ba^6-Aa^5b+\left(6\,Bab^5-Ab^6\right)x^5+5\left(6\,Ba^2b^4-Aab^5\right)x^4+10\left(6\,Ba^3b^3-Aa^2b^4\right)x^3+10\left(6\,Ba^4b^2-Aa^3b^3\right)x^2+5\left(6\,Ba^5b-Aa^4b^2\right)x\right)\log\left(bx+a\right)}{60\left(b^{12}x^5+5\,ab^{11}x^4+10\,a^2b^{10}x^3+10\,a^3b^9x^2+5\,a^4b^8x+a^5b^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")

[Out] 1/60*(60*B*b^6*x^6 + 300*B*a*b^5*x^5 - 522*B*a^6 + 137*A*a^5*b - 300*(B*a^2*b^4 - A*a*b^5)*x^4 - 300*(8*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 - 100*(36*B*a^4*b^2 - 11*A*a^3*b^3)*x^2 - 125*(18*B*a^5*b - 5*A*a^4*b^2)*x - 60*(6*B*a^6 - A*a^5*b + (6*B*a*b^5 - A*b^6)*x^5 + 5*(6*B*a^2*b^4 - A*a*b^5)*x^4 + 10*(6*B*a^3*b^3 - A*a^2*b^4)*x^3 + 10*(6*B*a^4*b^2 - A*a^3*b^3)*x^2 + 5*(6*B*a^5*b - A*a^4*b^2)*x)*log(b*x + a))/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7)

giac [A] time = 0.15, size = 144, normalized size = 0.99

$$\frac{Bx}{b^6}-\frac{(6\,Ba-Ab)\log\left(|bx+a|\right)}{b^7}-\frac{522\,Ba^6-137\,Aa^5b+300\left(3\,Ba^2b^4-Aab^5\right)x^4+300\left(10\,Ba^3b^3-3\,Aa^2b^4\right)x^3+100\left(39\,Ba^4b^2-11\,Aa^3b^3\right)x^2+5\left(462\,Ba^5b-125\,Aa^4b^2\right)x}{60\,(bx+a)^5b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")

[Out] B*x/b^6 - (6*B*a - A*b)*log(abs(b*x + a))/b^7 - 1/60*(522*B*a^6 - 137*A*a^5*b + 300*(3*B*a^2*b^4 - A*a*b^5)*x^4 + 300*(10*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 100*(39*B*a^4*b^2 - 11*A*a^3*b^3)*x^2 + 5*(462*B*a^5*b - 125*A*a^4*b^2)*x)/((b*x + a)^5*b^7)

maple [A] time = 0.07, size = 190, normalized size = 1.30

$$\frac{Aa^5}{5\,(bx+a)^5b^6}-\frac{Ba^6}{5\,(bx+a)^5b^7}-\frac{5A\,a^4}{4\,(bx+a)^4b^6}+\frac{3B\,a^5}{2\,(bx+a)^4b^7}+\frac{10A\,a^3}{3\,(bx+a)^3b^6}-\frac{5B\,a^4}{(bx+a)^3b^7}-\frac{5A\,a^2}{(bx+a)^2b^6}+\frac{10B\,a^3}{(bx+a)^2b^7}+\frac{5Aa}{(bx+a)\,b^6}+\frac{A\ln(bx+a)}{b^6}-\frac{15B\,a^2}{(bx+a)\,b^7}-\frac{6Ba\ln(bx+a)}{b^7}+\frac{Bx}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)

[Out] B*x/b^6+10/3*a^3/b^6/(b*x+a)^3*A-5*a^4/b^7/(b*x+a)^3*B+1/5*a^5/b^6/(b*x+a)^5*A-1/5*a^6/b^7/(b*x+a)^5*B-5/4*a^4/b^6/(b*x+a)^4*A+3/2*a^5/b^7/(b*x+a)^4*B-5*a^2/b^6/(b*x+a)^2*A+10*a^3/b^7/(b*x+a)^2*B+1/b^6*ln(b*x+a)*A-6/b^7*ln(b*x+a)*B*a+5*a/b^6/(b*x+a)*A-15*a^2/b^7/(b*x+a)*B

maxima [A] time = 0.64, size = 190, normalized size = 1.30

$$-\frac{522\,Ba^6-137\,Aa^5b+300\left(3\,Ba^2b^4-Aab^5\right)x^4+300\left(10\,Ba^3b^3-3\,Aa^2b^4\right)x^3+100\left(39\,Ba^4b^2-11\,Aa^3b^3\right)x^2+5\left(462\,Ba^5b-125\,Aa^4b^2\right)x}{60\left(b^{12}x^5+5\,ab^{11}x^4+10\,a^2b^{10}x^3+10\,a^3b^9x^2+5\,a^4b^8x+a^5b^7\right)}+\frac{Bx}{b^6}-\frac{(6\,Ba-Ab)\log\left(bx+a\right)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(522*B*a^6 - 137*A*a^5*b + 300*(3*B*a^2*b^4 - A*a*b^5)*x^4 + 300*(10*
B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 100*(39*B*a^4*b^2 - 11*A*a^3*b^3)*x^2 + 5*(4
62*B*a^5*b - 125*A*a^4*b^2)*x)/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 +
 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7) + B*x/b^6 - (6*B*a - A*b)*log(b*x
+ a)/b^7
```

mupad [B] time = 0.13, size = 187, normalized size = 1.28

$$\frac{B\,x}{b^6}-\frac{x\,\left(\frac{77\,B\,a^5}{2}-\frac{125\,A\,a^4\,b}{12}\right)+x^4\,\left(15\,B\,a^2\,b^3-5\,A\,a\,b^4\right)-x^2\,\left(\frac{55\,A\,a^3\,b^2}{3}-65\,B\,a^4\,b\right)+\frac{522\,B\,a^6-137\,A\,a^5\,b}{60\,b}-x^3\,\left(15\,A\,a^2\,b^3-50\,B\,a^3\,b^2\right)}{a^5\,b^6+5\,a^4\,b^7\,x+10\,a^3\,b^8\,x^2+10\,a^2\,b^9\,x^3+5\,a\,b^{10}\,x^4+b^{11}\,x^5}+\frac{\ln\left(a+b\,x\right)\,\left(A\,b-6\,B\,a\right)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (B*x)/b^6 - (x*((77*B*a^5)/2 - (125*A*a^4*b)/12) + x^4*(15*B*a^2*b^3 - 5*A*
a*b^4) - x^2*((55*A*a^3*b^2)/3 - 65*B*a^4*b) + (522*B*a^6 - 137*A*a^5*b)/(6
0*b) - x^3*(15*A*a^2*b^3 - 50*B*a^3*b^2))/(a^5*b^6 + b^11*x^5 + 5*a^4*b^7*x
 + 5*a*b^10*x^4 + 10*a^3*b^8*x^2 + 10*a^2*b^9*x^3) + (log(a + b*x)*(A*b - 6
*B*a))/b^7
```

sympy [A] time = 2.48, size = 190, normalized size = 1.30

$$\frac{Bx}{b^6}+\frac{137Aa^5b-522Ba^6+x^4\left(300Aab^5-900Ba^2b^4\right)+x^3\left(900Aa^2b^4-3000Ba^3b^3\right)+x^2\left(1100Aa^3b^3-3900Ba^4b^2\right)+x\left(625Aa^4b^2-2310Ba^5b\right)}{60a^5b^7+300a^4b^8x+600a^3b^9x^2+600a^2b^{10}x^3+300ab^{11}x^4+60b^{12}x^5}-\frac{(-Ab+6Ba)\log{(a+bx)}}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] B*x/b**6 + (137*A*a**5*b - 522*B*a**6 + x**4*(300*A*a*b**5 - 900*B*a**2*b**
4) + x**3*(900*A*a**2*b**4 - 3000*B*a**3*b**3) + x**2*(1100*A*a**3*b**3 - 3
900*B*a**4*b**2) + x*(625*A*a**4*b**2 - 2310*B*a**5*b))/(60*a**5*b**7 + 300
*a**4*b**8*x + 600*a**3*b**9*x**2 + 600*a**2*b**10*x**3 + 300*a*b**11*x**4
+ 60*b**12*x**5) - (-A*b + 6*B*a)*log(a + b*x)/b**7
```

3.572 $\int \frac{x^4(A+Bx)}{(a^2+2abx+b^2x^2)^3} dx$

Optimal. Leaf size=106

$$-\frac{a^4B}{4b^6(a+bx)^4}+\frac{4a^3B}{3b^6(a+bx)^3}-\frac{3a^2B}{b^6(a+bx)^2}+\frac{x^5(Ab-aB)}{5ab(a+bx)^5}+\frac{4aB}{b^6(a+bx)}+\frac{B\log(a+bx)}{b^6}$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 43}

$$-\frac{3a^2B}{b^6(a+bx)^2}+\frac{4a^3B}{3b^6(a+bx)^3}-\frac{a^4B}{4b^6(a+bx)^4}+\frac{x^5(Ab-aB)}{5ab(a+bx)^5}+\frac{4aB}{b^6(a+bx)}+\frac{B\log(a+bx)}{b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^5)/(5*a*b*(a + b*x)^5) - (a^4*B)/(4*b^6*(a + b*x)^4) + (4*a^
3*B)/(3*b^6*(a + b*x)^3) - (3*a^2*B)/(b^6*(a + b*x)^2) + (4*a*B)/(b^6*(a +
b*x)) + (B*Log[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(A+Bx)}{(a^2+2abx+b^2x^2)^3} dx &= \int \frac{x^4(A+Bx)}{(a+bx)^6} dx \\
&= \frac{(Ab-aB)x^5}{5ab(a+bx)^5}+\frac{B\int \frac{x^4}{(a+bx)^5} dx}{b} \\
&= \frac{(Ab-aB)x^5}{5ab(a+bx)^5}+\frac{B\int \left(\frac{a^4}{b^4(a+bx)^5}-\frac{4a^3}{b^4(a+bx)^4}+\frac{6a^2}{b^4(a+bx)^3}-\frac{4a}{b^4(a+bx)^2}+\frac{1}{b^4(a+bx)}\right) dx}{b} \\
&= \frac{(Ab-aB)x^5}{5ab(a+bx)^5}-\frac{a^4B}{4b^6(a+bx)^4}+\frac{4a^3B}{3b^6(a+bx)^3}-\frac{3a^2B}{b^6(a+bx)^2}+\frac{4aB}{b^6(a+bx)}+\frac{B\log}{}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 113, normalized size = 1.07

$$\frac{137a^5B + a^4(625bBx - 12Ab) + 20a^3b^2x(55Bx - 3A) + 60a^2b^3x^2(15Bx - 2A) + 60ab^4x^3(5Bx - 2A) + 60B(a + bx)^5\log(a + bx) - 60Ab^5x^4}{60b^6(a + bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (137*a^5*B - 60*A*b^5*x^4 + 60*a*b^4*x^3*(-2*A + 5*B*x) + 60*a^2*b^3*x^2*(-
2*A + 15*B*x) + 20*a^3*b^2*x*(-3*A + 55*B*x) + a^4*(-12*A*b + 625*b*B*x) +
60*B*(a + b*x)^5*Log[a + b*x])/(60*b^6*(a + b*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(A + Bx)}{\left(a^2 + 2abx + b^2x^2\right)^3}\, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.41, size = 222, normalized size = 2.09

$$\frac{137\,Ba^5 - 12\,Aa^4b + 60\left(5\,Bab^4 - Ab^5\right)x^4 + 60\left(15\,Ba^2b^3 - 2\,Aab^4\right)x^3 + 20\left(55\,Ba^3b^2 - 6\,Aa^2b^3\right)x^2 + 5\left(125\,Ba^4b - 12\,Aa^3b^2\right)x + 60\left(Bb^5x^5 + 5\,Bab^4x^4 + 10\,Ba^2b^3x^3 + 10\,Ba^3b^2x^2 + 5\,Ba^4bx + Ba^5\right)\log\left(bx + a\right)}{60\left(b^{11}x^5 + 5\,ab^{10}x^4 + 10\,a^2b^9x^3 + 10\,a^3b^8x^2 + 5\,a^4b^7x + a^5b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*a^5 - 12*A*a^4*b + 60*(5*B*a*b^4 - A*b^5)*x^4 + 60*(15*B*a^2*b^
3 - 2*A*a*b^4)*x^3 + 20*(55*B*a^3*b^2 - 6*A*a^2*b^3)*x^2 + 5*(125*B*a^4*b -
 12*A*a^3*b^2)*x + 60*(B*b^5*x^5 + 5*B*a*b^4*x^4 + 10*B*a^2*b^3*x^3 + 10*B*
a^3*b^2*x^2 + 5*B*a^4*b*x + B*a^5)*log(b*x + a))/(b^11*x^5 + 5*a*b^10*x^4 +
 10*a^2*b^9*x^3 + 10*a^3*b^8*x^2 + 5*a^4*b^7*x + a^5*b^6)
```

giac [A] time = 0.15, size = 124, normalized size = 1.17

$$\frac{B\log\left(|bx + a|\right)}{b^6} + \frac{60\left(5\,Bab^3 - Ab^4\right)x^4 + 60\left(15\,Ba^2b^2 - 2\,Aab^3\right)x^3 + 20\left(55\,Ba^3b - 6\,Aa^2b^2\right)x^2 + 5\left(125\,Ba^4 - 12\,Aa^3b\right)x + \frac{137\,Ba^5 - 12\,Aa^4b}{b}}{60\left(bx + a\right)^5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] B*log(abs(b*x + a))/b^6 + 1/60*(60*(5*B*a*b^3 - A*b^4)*x^4 + 60*(15*B*a^2*b
^2 - 2*A*a*b^3)*x^3 + 20*(55*B*a^3*b - 6*A*a^2*b^2)*x^2 + 5*(125*B*a^4 - 12
*A*a^3*b)*x + (137*B*a^5 - 12*A*a^4*b)/b)/((b*x + a)^5*b^5)
```

maple [A] time = 0.05, size = 165, normalized size = 1.56

$$-\frac{A\,a^4}{5\left(bx + a\right)^5b^5} + \frac{B\,a^5}{5\left(bx + a\right)^5b^6} + \frac{A\,a^3}{\left(bx + a\right)^4b^5} - \frac{5B\,a^4}{4\left(bx + a\right)^4b^6} - \frac{2A\,a^2}{\left(bx + a\right)^3b^5} + \frac{10B\,a^3}{3\left(bx + a\right)^3b^6} + \frac{2Aa}{\left(bx + a\right)^2b^5} - \frac{5B\,a^2}{\left(bx + a\right)^2b^6} - \frac{A}{\left(bx + a\right)b^5} + \frac{5Ba}{\left(bx + a\right)b^6} + \frac{B\ln\left(bx + a\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -2*a^2/b^5/(b*x+a)^3*A+10/3*a^3*B/b^6/(b*x+a)^3-1/5*a^4/b^5/(b*x+a)^5*A+1/5
*a^5/b^6/(b*x+a)^5*B+a^3/b^5/(b*x+a)^4*A-5/4*a^4*B/b^6/(b*x+a)^4+2*a/b^5/(b
*x+a)^2*A-5*a^2*B/b^6/(b*x+a)^2+B*ln(b*x+a)/b^6-1/b^5/(b*x+a)*A+5*a*B/b^6/(
b*x+a)
```

maxima [A] time = 0.60, size = 170, normalized size = 1.60

$$\frac{137\,Ba^{5}-12\,Aa^{4}b+60\left(5\,Bab^{4}-Ab^{5}\right)x^{4}+60\left(15\,Ba^{2}b^{3}-2\,Aab^{4}\right)x^{3}+20\left(55\,Ba^{3}b^{2}-6\,Aa^{2}b^{3}\right)x^{2}+5\left(125\,Ba^{4}b-12\,Aa^{3}b^{2}\right)x}{60\left(b^{11}x^{5}+5\,ab^{10}x^{4}+10\,a^{2}b^{9}x^{3}+10\,a^{3}b^{8}x^{2}+5\,a^{4}b^{7}x+a^{5}b^{6}\right)}+\frac{B\log\left(bx+a\right)}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*a^5 - 12*A*a^4*b + 60*(5*B*a*b^4 - A*b^5)*x^4 + 60*(15*B*a^2*b^
3 - 2*A*a*b^4)*x^3 + 20*(55*B*a^3*b^2 - 6*A*a^2*b^3)*x^2 + 5*(125*B*a^4*b -
 12*A*a^3*b^2)*x)/(b^11*x^5 + 5*a*b^10*x^4 + 10*a^2*b^9*x^3 + 10*a^3*b^8*x^
2 + 5*a^4*b^7*x + a^5*b^6) + B*log(b*x + a)/b^6
```

mupad [B] time = 1.17, size = 161, normalized size = 1.52

$$\frac{\frac{137\,B\,a^5-12\,A\,a^4\,b}{60\,b^6}+\frac{x^3\,\left(15\,B\,a^2-2\,A\,a\,b\right)}{b^3}+\frac{x\,\left(125\,B\,a^4-12\,A\,a^3\,b\right)}{12\,b^5}-\frac{x^4\,\left(A\,b-5\,B\,a\right)}{b^2}+\frac{x^2\,\left(55\,B\,a^3-6\,A\,a^2\,b\right)}{3\,b^4}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{B\,\ln\left(a+b\,x\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((137*B*a^5 - 12*A*a^4*b)/(60*b^6) + (x^3*(15*B*a^2 - 2*A*a*b))/b^3 + (x*(1
25*B*a^4 - 12*A*a^3*b))/(12*b^5) - (x^4*(A*b - 5*B*a))/b^2 + (x^2*(55*B*a^3
 - 6*A*a^2*b))/(3*b^4))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 + 10*
a^2*b^3*x^3 + 5*a^4*b*x) + (B*log(a + b*x))/b^6
```

sympy [A] time = 1.95, size = 172, normalized size = 1.62

$$\frac{B\log\left(a+bx\right)}{b^{6}}+\frac{-12Aa^{4}b+137Ba^{5}+x^{4}\left(-60Ab^{5}+300Bab^{4}\right)+x^{3}\left(-120Aab^{4}+900Ba^{2}b^{3}\right)+x^{2}\left(-120Aa^{2}b^{3}+1100Ba^{3}b^{2}\right)+x\left(-60Aa^{3}b^{2}+625Ba^{4}b\right)}{60a^{5}b^{6}+300a^{4}b^{7}x+600a^{3}b^{8}x^{2}+600a^{2}b^{9}x^{3}+300ab^{10}x^{4}+60b^{11}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] B*log(a + b*x)/b**6 + (-12*A*a**4*b + 137*B*a**5 + x**4*(-60*A*b**5 + 300*B
*a*b**4) + x**3*(-120*A*a*b**4 + 900*B*a**2*b**3) + x**2*(-120*A*a**2*b**3
+ 1100*B*a**3*b**2) + x*(-60*A*a**3*b**2 + 625*B*a**4*b))/(60*a**5*b**6 + 3
00*a**4*b**7*x + 600*a**3*b**8*x**2 + 600*a**2*b**9*x**3 + 300*a*b**10*x**4
 + 60*b**11*x**5)
```

3.573 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} \, dx$

Optimal. Leaf size=57

$$\frac{x^4(4aB+Ab)}{20a^2b(a+bx)^4}+\frac{x^4(Ab-aB)}{5ab(a+bx)^5}$$

Rubi [A] time = 0.01, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 37}

$$\frac{x^4(4aB+Ab)}{20a^2b(a+bx)^4}+\frac{x^4(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^4)/(5*a*b*(a + b*x)^5) + ((A*b + 4*a*B)*x^4)/(20*a^2*b*(a +
b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x^3(A+Bx)}{(a+bx)^6}\,dx\\
&= \frac{(Ab-aB)x^4}{5ab(a+bx)^5}+\frac{(Ab+4aB)\int \frac{x^3}{(a+bx)^5}\,dx}{5ab}\\
&= \frac{(Ab-aB)x^4}{5ab(a+bx)^5}+\frac{(Ab+4aB)x^4}{20a^2b(a+bx)^4}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 76, normalized size = 1.33

$$-\frac{4a^4B+a^3b(A+20Bx)+5a^2b^2x(A+8Bx)+10ab^3x^2(A+4Bx)+10b^4x^3(A+2Bx)}{20b^5(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/20*(4*a^4*B + 10*b^4*x^3*(A + 2*B*x) + 10*a*b^3*x^2*(A + 4*B*x) + 5*a^2*
b^2*x*(A + 8*B*x) + a^3*b*(A + 20*B*x))/(b^5*(a + b*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.39, size = 139, normalized size = 2.44

$$-\frac{20\,Bb^4x^4+4\,Ba^4+Aa^3b+10\left(4\,Bab^3+Ab^4\right)x^3+10\left(4\,Ba^2b^2+Aab^3\right)x^2+5\left(4\,Ba^3b+Aa^2b^2\right)x}{20\left(b^{10}x^5+5\,ab^9x^4+10\,a^2b^8x^3+10\,a^3b^7x^2+5\,a^4b^6x+a^5b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/20*(20*B*b^4*x^4 + 4*B*a^4 + A*a^3*b + 10*(4*B*a*b^3 + A*b^4)*x^3 + 10*(
4*B*a^2*b^2 + A*a*b^3)*x^2 + 5*(4*B*a^3*b + A*a^2*b^2)*x)/(b^10*x^5 + 5*a*b
^9*x^4 + 10*a^2*b^8*x^3 + 10*a^3*b^7*x^2 + 5*a^4*b^6*x + a^5*b^5)
```

giac [A] time = 0.17, size = 93, normalized size = 1.63

$$-\frac{20\,Bb^4x^4+40\,Bab^3x^3+10\,Ab^4x^3+40\,Ba^2b^2x^2+10\,Aab^3x^2+20\,Ba^3bx+5\,Aa^2b^2x+4\,Ba^4+Aa^3b}{20\,(bx+a)^5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/20*(20*B*b^4*x^4 + 40*B*a*b^3*x^3 + 10*A*b^4*x^3 + 40*B*a^2*b^2*x^2 + 10
*A*a*b^3*x^2 + 20*B*a^3*b*x + 5*A*a^2*b^2*x + 4*B*a^4 + A*a^3*b)/((b*x + a)
^5*b^5)
```

maple [A] time = 0.05, size = 102, normalized size = 1.79

$$\frac{(Ab-Ba)\,a^3}{5\,(bx+a)^5\,b^5}-\frac{(3Ab-4Ba)\,a^2}{4\,(bx+a)^4\,b^5}-\frac{B}{(bx+a)\,b^5}+\frac{(Ab-2Ba)\,a}{(bx+a)^3\,b^5}-\frac{Ab-4Ba}{2\,(bx+a)^2\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] a*(A*b-2*B*a)/b^5/(b*x+a)^3+1/5*a^3*(A*b-B*a)/b^5/(b*x+a)^5-1/4*a^2*(3*A*b-
4*B*a)/b^5/(b*x+a)^4-B/b^5/(b*x+a)-1/2*(A*b-4*B*a)/b^5/(b*x+a)^2
```

maxima [B] time = 0.65, size = 139, normalized size = 2.44

$$-\frac{20\,Bb^4x^4+4\,Ba^4+Aa^3b+10\left(4\,Bab^3+Ab^4\right)x^3+10\left(4\,Ba^2b^2+Aab^3\right)x^2+5\left(4\,Ba^3b+Aa^2b^2\right)x}{20\left(b^{10}x^5+5\,ab^9x^4+10\,a^2b^8x^3+10\,a^3b^7x^2+5\,a^4b^6x+a^5b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/20*(20*B*b^4*x^4 + 4*B*a^4 + A*a^3*b + 10*(4*B*a*b^3 + A*b^4)*x^3 + 10*(
4*B*a^2*b^2 + A*a*b^3)*x^2 + 5*(4*B*a^3*b + A*a^2*b^2)*x)/(b^10*x^5 + 5*a*b
^9*x^4 + 10*a^2*b^8*x^3 + 10*a^3*b^7*x^2 + 5*a^4*b^6*x + a^5*b^5)
```

mupad [B] time = 0.05, size = 128, normalized size = 2.25

$$-\frac{\frac{B\,x^4}{b}+\frac{a^3\,\left(A\,b+4\,B\,a\right)}{20\,b^5}+\frac{x^3\,\left(A\,b+4\,B\,a\right)}{2\,b^2}+\frac{a\,x^2\,\left(A\,b+4\,B\,a\right)}{2\,b^3}+\frac{a^2\,x\,\left(A\,b+4\,B\,a\right)}{4\,b^4}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((B*x^4)/b + (a^3*(A*b + 4*B*a))/(20*b^5) + (x^3*(A*b + 4*B*a))/(2*b^2) +
(a*x^2*(A*b + 4*B*a))/(2*b^3) + (a^2*x*(A*b + 4*B*a))/(4*b^4))/(a^5 + b^5*x
^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [B] time = 1.47, size = 150, normalized size = 2.63

$$\frac{-Aa^3b-4Ba^4-20Bb^4x^4+x^3\left(-10Ab^4-40Bab^3\right)+x^2\left(-10Aab^3-40Ba^2b^2\right)+x\left(-5Aa^2b^2-20Ba^3b\right)}{20a^5b^5+100a^4b^6x+200a^3b^7x^2+200a^2b^8x^3+100ab^9x^4+20b^{10}x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-A*a**3*b - 4*B*a**4 - 20*B*b**4*x**4 + x**3*(-10*A*b**4 - 40*B*a*b**3) +
x**2*(-10*A*a*b**3 - 40*B*a**2*b**2) + x*(-5*A*a**2*b**2 - 20*B*a**3*b))/(2
0*a**5*b**5 + 100*a**4*b**6*x + 200*a**3*b**7*x**2 + 200*a**2*b**8*x**3 + 1
00*a*b**9*x**4 + 20*b**10*x**5)
```

3.574 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=87

$$-\frac{a^2(Ab-aB)}{5b^4(a+bx)^5}+\frac{a(2Ab-3aB)}{4b^4(a+bx)^4}-\frac{Ab-3aB}{3b^4(a+bx)^3}-\frac{B}{2b^4(a+bx)^2}$$

Rubi [A] time = 0.07, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{a^2(Ab-aB)}{5b^4(a+bx)^5}+\frac{a(2Ab-3aB)}{4b^4(a+bx)^4}-\frac{Ab-3aB}{3b^4(a+bx)^3}-\frac{B}{2b^4(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(a^2*(A*b - a*B))/(5*b^4*(a + b*x)^5) + (a*(2*A*b - 3*a*B))/(4*b^4*(a + b*
x)^4) - (A*b - 3*a*B)/(3*b^4*(a + b*x)^3) - B/(2*b^4*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x^2(A+Bx)}{(a+bx)^6}\,dx\\
&= \int \left(-\frac{a^2(-Ab+aB)}{b^3(a+bx)^6}+\frac{a(-2Ab+3aB)}{b^3(a+bx)^5}+\frac{Ab-3aB}{b^3(a+bx)^4}+\frac{B}{b^3(a+bx)^3}\right)dx\\
&= -\frac{a^2(Ab-aB)}{5b^4(a+bx)^5}+\frac{a(2Ab-3aB)}{4b^4(a+bx)^4}-\frac{Ab-3aB}{3b^4(a+bx)^3}-\frac{B}{2b^4(a+bx)^2}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 0.72

$$-\frac{3a^3B+a^2b(2A+15Bx)+10ab^2x(A+3Bx)+10b^3x^2(2A+3Bx)}{60b^4(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/60*(3*a^3*B + 10*a*b^2*x*(A + 3*B*x) + 10*b^3*x^2*(2*A + 3*B*x) + a^2*b*
(2*A + 15*B*x))/(b^4*(a + b*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.39, size = 119, normalized size = 1.37

$$-\frac{30\,Bb^3x^3+3\,Ba^3+2\,Aa^2b+10\left(3\,Bab^2+2\,Ab^3\right)x^2+5\left(3\,Ba^2b+2\,Aab^2\right)x}{60\left(b^9x^5+5\,ab^8x^4+10\,a^2b^7x^3+10\,a^3b^6x^2+5\,a^4b^5x+a^5b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^3*x^3 + 3*B*a^3 + 2*A*a^2*b + 10*(3*B*a*b^2 + 2*A*b^3)*x^2 +
5*(3*B*a^2*b + 2*A*a*b^2)*x)/(b^9*x^5 + 5*a*b^8*x^4 + 10*a^2*b^7*x^3 + 10*a
^3*b^6*x^2 + 5*a^4*b^5*x + a^5*b^4)
```

giac [A] time = 0.16, size = 70, normalized size = 0.80

$$-\frac{30\,Bb^3x^3+30\,Bab^2x^2+20\,Ab^3x^2+15\,Ba^2bx+10\,Aab^2x+3\,Ba^3+2\,Aa^2b}{60\,(bx+a)^5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*b^3*x^3 + 30*B*a*b^2*x^2 + 20*A*b^3*x^2 + 15*B*a^2*b*x + 10*A*a
*b^2*x + 3*B*a^3 + 2*A*a^2*b)/((b*x + a)^5*b^4)
```

maple [A] time = 0.05, size = 80, normalized size = 0.92

$$-\frac{(Ab-Ba)\,a^2}{5\,(bx+a)^5\,b^4}-\frac{B}{2\,(bx+a)^2\,b^4}+\frac{(2Ab-3Ba)\,a}{4\,(bx+a)^4\,b^4}-\frac{Ab-3Ba}{3\,(bx+a)^3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/3*(A*b-3*B*a)/b^4/(b*x+a)^3-1/5*a^2*(A*b-B*a)/b^4/(b*x+a)^5-1/2*B/b^4/(b
*x+a)^2+1/4*a*(2*A*b-3*B*a)/b^4/(b*x+a)^4
```

maxima [A] time = 0.61, size = 119, normalized size = 1.37

$$-\frac{30\,Bb^3x^3+3\,Ba^3+2\,Aa^2b+10\left(3\,Bab^2+2\,Ab^3\right)x^2+5\left(3\,Ba^2b+2\,Aab^2\right)x}{60\left(b^9x^5+5\,ab^8x^4+10\,a^2b^7x^3+10\,a^3b^6x^2+5\,a^4b^5x+a^5b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*b^3*x^3 + 3*B*a^3 + 2*A*a^2*b + 10*(3*B*a*b^2 + 2*A*b^3)*x^2 +
5*(3*B*a^2*b + 2*A*a*b^2)*x)/(b^9*x^5 + 5*a*b^8*x^4 + 10*a^2*b^7*x^3 + 10*a
^3*b^6*x^2 + 5*a^4*b^5*x + a^5*b^4)
```

mupad [B] time = 0.04, size = 113, normalized size = 1.30

$$-\frac{\frac{B x^3}{2 b}+\frac{a^2 (2 A b+3 B a)}{60 b^4}+\frac{x^2 (2 A b+3 B a)}{6 b^2}+\frac{a x (2 A b+3 B a)}{12 b^3}}{a^5+5 a^4 b x+10 a^3 b^2 x^2+10 a^2 b^3 x^3+5 a b^4 x^4+b^5 x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((B*x^3)/(2*b) + (a^2*(2*A*b + 3*B*a))/(60*b^4) + (x^2*(2*A*b + 3*B*a))/(6
*b^2) + (a*x*(2*A*b + 3*B*a))/(12*b^3))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a
^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [A] time = 1.01, size = 126, normalized size = 1.45

$$\frac{-2Aa^2b-3Ba^3-30Bb^3x^3+x^2\left(-20Ab^3-30Bab^2\right)+x\left(-10Aab^2-15Ba^2b\right)}{60a^5b^4+300a^4b^5x+600a^3b^6x^2+600a^2b^7x^3+300ab^8x^4+60b^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-2*A*a**2*b - 3*B*a**3 - 30*B*b**3*x**3 + x**2*(-20*A*b**3 - 30*B*a*b**2)
+ x*(-10*A*a*b**2 - 15*B*a**2*b))/(60*a**5*b**4 + 300*a**4*b**5*x + 600*a**
3*b**6*x**2 + 600*a**2*b**7*x**3 + 300*a*b**8*x**4 + 60*b**9*x**5)
```

3.575 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} \, dx$

Optimal. Leaf size=61

$$-\frac{Ab-2aB}{4b^3(a+bx)^4}+\frac{a(Ab-aB)}{5b^3(a+bx)^5}-\frac{B}{3b^3(a+bx)^3}$$

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 77\}$

$$-\frac{Ab-2aB}{4b^3(a+bx)^4}+\frac{a(Ab-aB)}{5b^3(a+bx)^5}-\frac{B}{3b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a*(A*b - a*B))/(5*b^3*(a + b*x)^5) - (A*b - 2*a*B)/(4*b^3*(a + b*x)^4) - B
/(3*b^3*(a + b*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} \, dx &= \int \frac{x(A+Bx)}{(a+bx)^6} \, dx\\
&= \int \left(\frac{a(-Ab+aB)}{b^2(a+bx)^6}+\frac{Ab-2aB}{b^2(a+bx)^5}+\frac{B}{b^2(a+bx)^4}\right) dx\\
&= \frac{a(Ab-aB)}{5b^3(a+bx)^5}-\frac{Ab-2aB}{4b^3(a+bx)^4}-\frac{B}{3b^3(a+bx)^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 46, normalized size = 0.75

$$-\frac{2a^2B+ab(3A+10Bx)+5b^2x(3A+4Bx)}{60b^3(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/60*(2*a^2*B + 5*b^2*x*(3*A + 4*B*x) + a*b*(3*A + 10*B*x))/(b^3*(a + b*x)
^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(A+Bx)}{(a^2+2abx+b^2x^2)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
[Out] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.40, size = 95, normalized size = 1.56

$$-\frac{20\,Bb^2x^2+2\,Ba^2+3\,Aab+5\,\left(2\,Bab+3\,Ab^2\right)x}{60\,\left(b^8x^5+5\,ab^7x^4+10\,a^2b^6x^3+10\,a^3b^5x^2+5\,a^4b^4x+a^5b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
[Out] -1/60*(20*B*b^2*x^2 + 2*B*a^2 + 3*A*a*b + 5*(2*B*a*b + 3*A*b^2)*x)/(b^8*x^5
 + 5*a*b^7*x^4 + 10*a^2*b^6*x^3 + 10*a^3*b^5*x^2 + 5*a^4*b^4*x + a^5*b^3)
```

giac [A] time = 0.18, size = 46, normalized size = 0.75

$$-\frac{20\,Bb^2x^2+10\,Babx+15\,Ab^2x+2\,Ba^2+3\,Aab}{60\,(bx+a)^5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
[Out] -1/60*(20*B*b^2*x^2 + 10*B*a*b*x + 15*A*b^2*x + 2*B*a^2 + 3*A*a*b)/((b*x +
a)^5*b^3)
```

maple [A] time = 0.05, size = 56, normalized size = 0.92

$$-\frac{B}{3\,(bx+a)^3\,b^3}+\frac{(Ab-Ba)\,a}{5\,(bx+a)^5\,b^3}-\frac{Ab-2Ba}{4\,(bx+a)^4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
[Out] -1/3*B/b^3/(b*x+a)^3+1/5*a*(A*b-B*a)/b^3/(b*x+a)^5-1/4*(A*b-2*B*a)/b^3/(b*x
+a)^4
```

maxima [A] time = 0.63, size = 95, normalized size = 1.56

$$-\frac{20\,Bb^2x^2+2\,Ba^2+3\,Aab+5\,\left(2\,Bab+3\,Ab^2\right)x}{60\,\left(b^8x^5+5\,ab^7x^4+10\,a^2b^6x^3+10\,a^3b^5x^2+5\,a^4b^4x+a^5b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
[Out] -1/60*(20*B*b^2*x^2 + 2*B*a^2 + 3*A*a*b + 5*(2*B*a*b + 3*A*b^2)*x)/(b^8*x^5
 + 5*a*b^7*x^4 + 10*a^2*b^6*x^3 + 10*a^3*b^5*x^2 + 5*a^4*b^4*x + a^5*b^3)
```

mupad [B] time = 1.10, size = 93, normalized size = 1.52

$$-\frac{\frac{B\,x^2}{3\,b}+\frac{a\,(3\,A\,b+2\,B\,a)}{60\,b^3}+\frac{x\,(3\,A\,b+2\,B\,a)}{12\,b^2}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((B*x^2)/(3*b) + (a*(3*A*b + 2*B*a))/(60*b^3) + (x*(3*A*b + 2*B*a))/(12*b^
2))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*
b*x)
```

sympy [A] time = 0.68, size = 100, normalized size = 1.64

$$\frac{-3Aab - 2Ba^2 - 20Bb^2x^2 + x\left(-15Ab^2 - 10Bab\right)}{60a^5b^3 + 300a^4b^4x + 600a^3b^5x^2 + 600a^2b^6x^3 + 300ab^7x^4 + 60b^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-3*A*a*b - 2*B*a**2 - 20*B*b**2*x**2 + x*(-15*A*b**2 - 10*B*a*b))/(60*a**5
*b**3 + 300*a**4*b**4*x + 600*a**3*b**5*x**2 + 600*a**2*b**6*x**3 + 300*a*b
**7*x**4 + 60*b**8*x**5)
```

3.576 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=38

$$\frac{aB-Ab}{5b^2(a+bx)^5}-\frac{B}{4b^2(a+bx)^4}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$-\frac{Ab-aB}{5b^2(a+bx)^5}-\frac{B}{4b^2(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(A*b - a*B)/(5*b^2*(a + b*x)^5) - B/(4*b^2*(a + b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^3} dx &= \int \frac{A+Bx}{(a+bx)^6} dx\\ &= \int \left(\frac{Ab-aB}{b(a+bx)^6}+\frac{B}{b(a+bx)^5}\right) dx\\ &= -\frac{Ab-aB}{5b^2(a+bx)^5}-\frac{B}{4b^2(a+bx)^4}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{B(a+5bx)+4Ab}{20b^2(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/20*(4*A*b + B*(a + 5*b*x))/(b^2*(a + b*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
[Out] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.40, size = 72, normalized size = 1.89

$$-\frac{5\,Bbx+Ba+4\,Ab}{20\,\left(b^{7}x^{5}+5\,ab^{6}x^{4}+10\,a^{2}b^{5}x^{3}+10\,a^{3}b^{4}x^{2}+5\,a^{4}b^{3}x+a^{5}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
[Out] -1/20*(5*B*b*x + B*a + 4*A*b)/(b^7*x^5 + 5*a*b^6*x^4 + 10*a^2*b^5*x^3 + 10*
a^3*b^4*x^2 + 5*a^4*b^3*x + a^5*b^2)
```

giac [A] time = 0.16, size = 25, normalized size = 0.66

$$-\frac{5\,Bbx+Ba+4\,Ab}{20\,(bx+a)^{5}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
[Out] -1/20*(5*B*b*x + B*a + 4*A*b)/((b*x + a)^5*b^2)
```

maple [A] time = 0.05, size = 35, normalized size = 0.92

$$-\frac{B}{4\,(bx+a)^{4}\,b^{2}}-\frac{Ab-Ba}{5\,(bx+a)^{5}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
[Out] -1/5*(A*b-B*a)/b^2/(b*x+a)^5-1/4*B/b^2/(b*x+a)^4
```

maxima [B] time = 0.69, size = 72, normalized size = 1.89

$$-\frac{5\,Bbx+Ba+4\,Ab}{20\,\left(b^{7}x^{5}+5\,ab^{6}x^{4}+10\,a^{2}b^{5}x^{3}+10\,a^{3}b^{4}x^{2}+5\,a^{4}b^{3}x+a^{5}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
[Out] -1/20*(5*B*b*x + B*a + 4*A*b)/(b^7*x^5 + 5*a*b^6*x^4 + 10*a^2*b^5*x^3 + 10*
a^3*b^4*x^2 + 5*a^4*b^3*x + a^5*b^2)
```

mupad [B] time = 1.08, size = 74, normalized size = 1.95

$$-\frac{\frac{4\,A\,b+B\,a}{20\,b^2}+\frac{B\,x}{4\,b}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
[Out] -((4*A*b + B*a)/(20*b^2) + (B*x)/(4*b))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a
^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [B] time = 0.54, size = 76, normalized size = 2.00

$$\frac{-4Ab - Ba - 5Bbx}{20a^5b^2 + 100a^4b^3x + 200a^3b^4x^2 + 200a^2b^5x^3 + 100ab^6x^4 + 20b^7x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-4*A*b - B*a - 5*B*b*x)/(20*a**5*b**2 + 100*a**4*b**3*x + 200*a**3*b**4*x*
*2 + 200*a**2*b**5*x**3 + 100*a*b**6*x**4 + 20*b**7*x**5)
```

3.577 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{A\log(a+bx)}{a^6}+\frac{A\log(x)}{a^6}+\frac{A}{a^5(a+bx)}+\frac{A}{2a^4(a+bx)^2}+\frac{A}{3a^3(a+bx)^3}+\frac{A}{4a^2(a+bx)^4}+\frac{Ab-aB}{5ab(a+bx)^5}$$

Rubi [A] time = 0.07, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{A}{a^5(a+bx)}+\frac{A}{2a^4(a+bx)^2}+\frac{A}{3a^3(a+bx)^3}+\frac{A}{4a^2(a+bx)^4}-\frac{A\log(a+bx)}{a^6}+\frac{A\log(x)}{a^6}+\frac{Ab-aB}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (A*b - a*B)/(5*a*b*(a + b*x)^5) + A/(4*a^2*(a + b*x)^4) + A/(3*a^3*(a + b*x
)^3) + A/(2*a^4*(a + b*x)^2) + A/(a^5*(a + b*x)) + (A*Log[x])/a^6 - (A*Log[
a + b*x])/a^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{A+Bx}{x(a+bx)^6}\,dx\\
&= \int \left(\frac{A}{a^6x}+\frac{-Ab+aB}{a(a+bx)^6}-\frac{Ab}{a^2(a+bx)^5}-\frac{Ab}{a^3(a+bx)^4}-\frac{Ab}{a^4(a+bx)^3}-\frac{Ab}{a^5(a+bx)^2}-\right.\\
&= \frac{Ab-aB}{5ab(a+bx)^5}+\frac{A}{4a^2(a+bx)^4}+\frac{A}{3a^3(a+bx)^3}+\frac{A}{2a^4(a+bx)^2}+\frac{A}{a^5(a+bx)}+\frac{A\log}{a^6}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.87

$$\frac{\frac{a\left(-12a^5B+137a^4Ab+385a^3Ab^2x+470a^2Ab^3x^2+270aAb^4x^3+60Ab^5x^4\right)}{b(a+bx)^5}-60A\log(a+bx)+60A\log(x)}{60a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((a*(137*a^4*A*b - 12*a^5*B + 385*a^3*A*b^2*x + 470*a^2*A*b^3*x^2 + 270*a*A
*b^4*x^3 + 60*A*b^5*x^4))/(b*(a + b*x)^5) + 60*A*Log[x] - 60*A*Log[a + b*x]
)/(60*a^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.42, size = 250, normalized size = 2.45

$$\frac{60\,Aab^5x^4+270\,Aa^2b^4x^3+470\,Aa^3b^3x^2+385\,Aa^4b^2x-12\,Ba^6+137\,Aa^5b-60\left(Ab^6x^5+5\,Aab^5x^4+10\,Aa^2b^4x^3+10\,Aa^3b^3x^2+5\,Aa^4b^2x+Aa^5b\right)\log\left(bx+a\right)+60\left(Ab^6x^5+5\,Aab^5x^4+10\,Aa^2b^4x^3+10\,Aa^3b^3x^2+5\,Aa^4b^2x+Aa^5b\right)\log(x)}{60\left(a^6b^6x^5+5\,a^7b^5x^4+10\,a^8b^4x^3+10\,a^9b^3x^2+5\,a^{10}b^2x+a^{11}b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/60*(60*A*a*b^5*x^4 + 270*A*a^2*b^4*x^3 + 470*A*a^3*b^3*x^2 + 385*A*a^4*b^
2*x - 12*B*a^6 + 137*A*a^5*b - 60*(A*b^6*x^5 + 5*A*a*b^5*x^4 + 10*A*a^2*b^4
*x^3 + 10*A*a^3*b^3*x^2 + 5*A*a^4*b^2*x + A*a^5*b)*log(b*x + a) + 60*(A*b^6
*x^5 + 5*A*a*b^5*x^4 + 10*A*a^2*b^4*x^3 + 10*A*a^3*b^3*x^2 + 5*A*a^4*b^2*x
+ A*a^5*b)*log(x))/(a^6*b^6*x^5 + 5*a^7*b^5*x^4 + 10*a^8*b^4*x^3 + 10*a^9*b
^3*x^2 + 5*a^10*b^2*x + a^11*b)
```

giac [A] time = 0.16, size = 95, normalized size = 0.93

$$-\frac{A\log\left(|bx+a|\right)}{a^6}+\frac{A\log\left(|x|\right)}{a^6}+\frac{60\,Aab^5x^4+270\,Aa^2b^4x^3+470\,Aa^3b^3x^2+385\,Aa^4b^2x-12\,Ba^6+137\,Aa^5b}{60\,(bx+a)^5a^6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -A*log(abs(b*x + a))/a^6 + A*log(abs(x))/a^6 + 1/60*(60*A*a*b^5*x^4 + 270*A
*a^2*b^4*x^3 + 470*A*a^3*b^3*x^2 + 385*A*a^4*b^2*x - 12*B*a^6 + 137*A*a^5*b
)/((b*x + a)^5*a^6*b)
```

maple [A] time = 0.06, size = 98, normalized size = 0.96

$$\frac{A}{5\,(bx+a)^5\,a}-\frac{B}{5\,(bx+a)^5\,b}+\frac{A}{4\,(bx+a)^4\,a^2}+\frac{A}{3\,(bx+a)^3\,a^3}+\frac{A}{2\,(bx+a)^2\,a^4}+\frac{A}{(bx+a)\,a^5}+\frac{A\ln(x)}{a^6}-\frac{A\ln\left(bx+a\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/5/a/(b*x+a)^5*A-1/5/b/(b*x+a)^5*B-A*ln(b*x+a)/a^6+A/a^5/(b*x+a)+1/2*A/a^4
/(b*x+a)^2+1/3*A/a^3/(b*x+a)^3+1/4*A/a^2/(b*x+a)^4+A*ln(x)/a^6
```

maxima [A] time = 0.91, size = 137, normalized size = 1.34

$$\frac{60\,Ab^5x^4+270\,Aab^4x^3+470\,Aa^2b^3x^2+385\,Aa^3b^2x-12\,Ba^5+137\,Aa^4b}{60\left(a^5b^6x^5+5\,a^6b^5x^4+10\,a^7b^4x^3+10\,a^8b^3x^2+5\,a^9b^2x+a^{10}b\right)}-\frac{A\log\left(bx+a\right)}{a^6}+\frac{A\log(x)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/60*(60*A*b^5*x^4 + 270*A*a*b^4*x^3 + 470*A*a^2*b^3*x^2 + 385*A*a^3*b^2*x
- 12*B*a^5 + 137*A*a^4*b)/(a^5*b^6*x^5 + 5*a^6*b^5*x^4 + 10*a^7*b^4*x^3 + 1
0*a^8*b^3*x^2 + 5*a^9*b^2*x + a^10*b) - A*log(b*x + a)/a^6 + A*log(x)/a^6
```

mupad [B] time = 1.13, size = 130, normalized size = 1.27

$$\frac{\frac{137\,A\,b-12\,B\,a}{60\,a\,b}+\frac{77\,A\,b\,x}{12\,a^2}+\frac{47\,A\,b^2\,x^2}{6\,a^3}+\frac{9\,A\,b^3\,x^3}{2\,a^4}+\frac{A\,b^4\,x^4}{a^5}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}-\frac{2\,A\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((137*A*b - 12*B*a)/(60*a*b) + (77*A*b*x)/(12*a^2) + (47*A*b^2*x^2)/(6*a^3)
 + (9*A*b^3*x^3)/(2*a^4) + (A*b^4*x^4)/a^5)/(a^5 + b^5*x^5 + 5*a*b^4*x^4 +
10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x) - (2*A*atanh((2*b*x)/a + 1))/a
^6
```

sympy [A] time = 0.77, size = 141, normalized size = 1.38

$$\frac{A\left(\log{(x)}-\log{\left(\frac{a}{b}+x\right)}\right)}{a^6}+\frac{137Aa^4b+385Aa^3b^2x+470Aa^2b^3x^2+270Aab^4x^3+60Ab^5x^4-12Ba^5}{60a^{10}b+300a^9b^2x+600a^8b^3x^2+600a^7b^4x^3+300a^6b^5x^4+60a^5b^6x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*(log(x) - log(a/b + x))/a**6 + (137*A*a**4*b + 385*A*a**3*b**2*x + 470*A*
a**2*b**3*x**2 + 270*A*a*b**4*x**3 + 60*A*b**5*x**4 - 12*B*a**5)/(60*a**10*
b + 300*a**9*b**2*x + 600*a**8*b**3*x**2 + 600*a**7*b**4*x**3 + 300*a**6*b*
*5*x**4 + 60*a**5*b**6*x**5)
```

3.578 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=157

$$-\frac{\log(x)(6Ab-aB)}{a^7}+\frac{(6Ab-aB)\log(a+bx)}{a^7}-\frac{5Ab-aB}{a^6(a+bx)}-\frac{A}{a^6x}-\frac{4Ab-aB}{2a^5(a+bx)^2}-\frac{3Ab-aB}{3a^4(a+bx)^3}-\frac{2Ab-aB}{4a^3(a+bx)^4}-\frac{}{5a}$$

Rubi [A] time = 0.16, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 77}

$$-\frac{5Ab-aB}{a^6(a+bx)}-\frac{4Ab-aB}{2a^5(a+bx)^2}-\frac{3Ab-aB}{3a^4(a+bx)^3}-\frac{2Ab-aB}{4a^3(a+bx)^4}-\frac{Ab-aB}{5a^2(a+bx)^5}-\frac{\log(x)(6Ab-aB)}{a^7}+\frac{(6Ab-aB)\log(a+bx)}{a^7}-\frac{A}{a^6x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -(A/(a^6*x)) - (A*b - a*B)/(5*a^2*(a + b*x)^5) - (2*A*b - a*B)/(4*a^3*(a +
b*x)^4) - (3*A*b - a*B)/(3*a^4*(a + b*x)^3) - (4*A*b - a*B)/(2*a^5*(a + b*x
)^2) - (5*A*b - a*B)/(a^6*(a + b*x)) - ((6*A*b - a*B)*Log[x])/a^7 + ((6*A*b
 - a*B)*Log[a + b*x])/a^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{A+Bx}{x^2(a+bx)^6}\,dx\\ &= \int \left(\frac{A}{a^6x^2}+\frac{-6Ab+aB}{a^7x}-\frac{b(-Ab+aB)}{a^2(a+bx)^6}-\frac{b(-2Ab+aB)}{a^3(a+bx)^5}-\frac{b(-3Ab+aB)}{a^4(a+bx)^4}-\frac{b}{}\right.\\ &= -\frac{A}{a^6x}-\frac{Ab-aB}{5a^2(a+bx)^5}-\frac{2Ab-aB}{4a^3(a+bx)^4}-\frac{3Ab-aB}{3a^4(a+bx)^3}-\frac{4Ab-aB}{2a^5(a+bx)^2}-\frac{5Ab-}{a^6(a+}\end{aligned}$$

Mathematica [A] time = 0.09, size = 142, normalized size = 0.90

$$\frac{\frac{12a^5(aB-Ab)}{(a+bx)^5}+\frac{15a^4(aB-2Ab)}{(a+bx)^4}+\frac{20a^3(aB-3Ab)}{(a+bx)^3}+\frac{30a^2(aB-4Ab)}{(a+bx)^2}+\frac{60a(aB-5Ab)}{a+bx}+60\log(x)(aB-6Ab)+60(6Ab-aB)\log(a+bx)-\frac{60aA}{x}}{60a^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-60*a*A)/x + (12*a^5*(-(A*b) + a*B))/(a + b*x)^5 + (15*a^4*(-2*A*b + a*B)
)/(a + b*x)^4 + (20*a^3*(-3*A*b + a*B))/(a + b*x)^3 + (30*a^2*(-4*A*b + a*B
))/(a + b*x)^2 + (60*a*(-5*A*b + a*B))/(a + b*x) + 60*(-6*A*b + a*B)*Log[x]
 + 60*(6*A*b - a*B)*Log[a + b*x])/(60*a^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.43, size = 427, normalized size = 2.72

$$-\frac{60\,Aa^6-60\left(Ba^2b^4-6\,Aab^5\right)x^5-270\left(Ba^3b^3-6\,Aa^2b^4\right)x^4-470\left(Ba^4b^2-6\,Aa^3b^3\right)x^3-385\left(Ba^5b-6\,Aa^4b^2\right)x^2-137\left(Ba^6-6\,Aa^5b\right)x+60\left(\left(Bab^5-6\,Ab^6\right)x^6+5\left(Ba^2b^4-6\,Aab^5\right)x^5+10\left(Ba^3b^3-6\,Aa^2b^4\right)x^4+10\left(Ba^4b^2-6\,Aa^3b^3\right)x^3+5\left(Ba^5b-6\,Aa^4b^2\right)x^2+\left(Ba^6-6\,Aa^5b\right)x\right)\log\left(bx+a\right)-60\left(\left(Bab^5-6\,Ab^6\right)x^6+5\left(Ba^2b^4-6\,Aab^5\right)x^5+10\left(Ba^3b^3-6\,Aa^2b^4\right)x^4+10\left(Ba^4b^2-6\,Aa^3b^3\right)x^3+5\left(Ba^5b-6\,Aa^4b^2\right)x^2+\left(Ba^6-6\,Aa^5b\right)x\right)\log\left(x\right)}{60\left(a^7b^5x^6+5\,a^8b^4x^5+10\,a^9b^3x^4+10\,a^{10}b^2x^3+5\,a^{11}bx^2+a^{12}x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/60*(60*A*a^6 - 60*(B*a^2*b^4 - 6*A*a*b^5)*x^5 - 270*(B*a^3*b^3 - 6*A*a^2
*b^4)*x^4 - 470*(B*a^4*b^2 - 6*A*a^3*b^3)*x^3 - 385*(B*a^5*b - 6*A*a^4*b^2)
*x^2 - 137*(B*a^6 - 6*A*a^5*b)*x + 60*((B*a*b^5 - 6*A*b^6)*x^6 + 5*(B*a^2*b
^4 - 6*A*a*b^5)*x^5 + 10*(B*a^3*b^3 - 6*A*a^2*b^4)*x^4 + 10*(B*a^4*b^2 - 6*
A*a^3*b^3)*x^3 + 5*(B*a^5*b - 6*A*a^4*b^2)*x^2 + (B*a^6 - 6*A*a^5*b)*x)*log
(b*x + a) - 60*((B*a*b^5 - 6*A*b^6)*x^6 + 5*(B*a^2*b^4 - 6*A*a*b^5)*x^5 + 1
0*(B*a^3*b^3 - 6*A*a^2*b^4)*x^4 + 10*(B*a^4*b^2 - 6*A*a^3*b^3)*x^3 + 5*(B*a
^5*b - 6*A*a^4*b^2)*x^2 + (B*a^6 - 6*A*a^5*b)*x)*log(x))/(a^7*b^5*x^6 + 5*a
^8*b^4*x^5 + 10*a^9*b^3*x^4 + 10*a^10*b^2*x^3 + 5*a^11*b*x^2 + a^12*x)
```

giac [A] time = 0.16, size = 168, normalized size = 1.07

$$\frac{\left(Ba-6\,Ab\right)\log\left(|x|\right)}{a^7}-\frac{\left(Bab-6\,Ab^2\right)\log\left(|bx+a|\right)}{a^7b}-\frac{60\,Aa^6-60\left(Ba^2b^4-6\,Aab^5\right)x^5-270\left(Ba^3b^3-6\,Aa^2b^4\right)x^4-470\left(Ba^4b^2-6\,Aa^3b^3\right)x^3-385\left(Ba^5b-6\,Aa^4b^2\right)x^2-137\left(Ba^6-6\,Aa^5b\right)x}{60\left(bx+a\right)^5a^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] (B*a - 6*A*b)*log(abs(x))/a^7 - (B*a*b - 6*A*b^2)*log(abs(b*x + a))/(a^7*b)
 - 1/60*(60*A*a^6 - 60*(B*a^2*b^4 - 6*A*a*b^5)*x^5 - 270*(B*a^3*b^3 - 6*A*a
^2*b^4)*x^4 - 470*(B*a^4*b^2 - 6*A*a^3*b^3)*x^3 - 385*(B*a^5*b - 6*A*a^4*b^
2)*x^2 - 137*(B*a^6 - 6*A*a^5*b)*x)/((b*x + a)^5*a^7*x)
```

maple [A] time = 0.06, size = 186, normalized size = 1.18

$$-\frac{Ab}{5\left(bx+a\right)^5a^2}+\frac{B}{5\left(bx+a\right)^5a}-\frac{Ab}{2\left(bx+a\right)^4a^3}+\frac{B}{4\left(bx+a\right)^4a^2}-\frac{Ab}{\left(bx+a\right)^3a^4}+\frac{B}{3\left(bx+a\right)^3a^3}-\frac{2Ab}{\left(bx+a\right)^2a^5}+\frac{B}{2\left(bx+a\right)^2a^4}-\frac{5Ab}{\left(bx+a\right)a^6}-\frac{6Ab\ln\left(x\right)}{a^7}+\frac{6Ab\ln\left(bx+a\right)}{a^7}+\frac{B}{\left(bx+a\right)a^5}+\frac{B\ln\left(x\right)}{a^6}-\frac{B\ln\left(bx+a\right)}{a^6}-\frac{A}{a^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/2/a^3/(b*x+a)^4*A*b+1/4/a^2/(b*x+a)^4*B-1/a^4/(b*x+a)^3*A*b+1/3/a^3/(b*x
+a)^3*B-2/a^5/(b*x+a)^2*A*b+1/2/a^4/(b*x+a)^2*B-5/a^6/(b*x+a)*A*b+1/a^5/(b*
x+a)*B+6/a^7*ln(b*x+a)*A*b-1/a^6*ln(b*x+a)*B-1/5/a^2/(b*x+a)^5*A*b+1/5/a/(b
*x+a)^5*B-A/a^6/x-6/a^7*ln(x)*A*b+1/a^6*ln(x)*B
```

maxima [A] time = 0.75, size = 202, normalized size = 1.29

$$-\frac{60\,Aa^5-60\left(Bab^4-6\,Ab^5\right)x^5-270\left(Ba^2b^3-6\,Aab^4\right)x^4-470\left(Ba^3b^2-6\,Aa^2b^3\right)x^3-385\left(Ba^4b-6\,Aa^3b^2\right)x^2-137\left(Ba^5-6\,Aa^4b\right)x}{60\left(a^6b^5x^6+5\,a^7b^4x^5+10\,a^8b^3x^4+10\,a^9b^2x^3+5\,a^{10}bx^2+a^{11}x\right)}-\frac{\left(Ba-6\,Ab\right)\log\left(bx+a\right)}{a^7}+\frac{\left(Ba-6\,Ab\right)\log\left(x\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(60*A*a^5 - 60*(B*a*b^4 - 6*A*b^5)*x^5 - 270*(B*a^2*b^3 - 6*A*a*b^4)*
x^4 - 470*(B*a^3*b^2 - 6*A*a^2*b^3)*x^3 - 385*(B*a^4*b - 6*A*a^3*b^2)*x^2 -
 137*(B*a^5 - 6*A*a^4*b)*x)/(a^6*b^5*x^6 + 5*a^7*b^4*x^5 + 10*a^8*b^3*x^4 +
 10*a^9*b^2*x^3 + 5*a^10*b*x^2 + a^11*x) - (B*a - 6*A*b)*log(b*x + a)/a^7 +
 (B*a - 6*A*b)*log(x)/a^7
```

mupad [B] time = 0.15, size = 180, normalized size = 1.15

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)\,\left(6\,A\,b-B\,a\right)}{a^7}-\frac{\frac{A}{a}+\frac{137\,x\,\left(6\,A\,b-B\,a\right)}{60\,a^2}+\frac{47\,b^2\,x^3\,\left(6\,A\,b-B\,a\right)}{6\,a^4}+\frac{9\,b^3\,x^4\,\left(6\,A\,b-B\,a\right)}{2\,a^5}+\frac{b^4\,x^5\,\left(6\,A\,b-B\,a\right)}{a^6}+\frac{77\,b\,x^2\,\left(6\,A\,b-B\,a\right)}{12\,a^3}}{a^5\,x+5\,a^4\,b\,x^2+10\,a^3\,b^2\,x^3+10\,a^2\,b^3\,x^4+5\,a\,b^4\,x^5+b^5\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] (2*atanh((2*b*x)/a + 1)*(6*A*b - B*a))/a^7 - (A/a + (137*x*(6*A*b - B*a))/(
60*a^2) + (47*b^2*x^3*(6*A*b - B*a))/(6*a^4) + (9*b^3*x^4*(6*A*b - B*a))/(2
*a^5) + (b^4*x^5*(6*A*b - B*a))/a^6 + (77*b*x^2*(6*A*b - B*a))/(12*a^3))/(a
^5*x + b^5*x^6 + 5*a^4*b*x^2 + 5*a*b^4*x^5 + 10*a^3*b^2*x^3 + 10*a^2*b^3*x^
4)
```

sympy [B] time = 1.06, size = 275, normalized size = 1.75

$$\frac{-60Aa^5+x^5\left(-360Ab^5+60Bab^4\right)+x^4\left(-1620Aab^4+270Ba^2b^3\right)+x^3\left(-2820Aa^2b^3+470Ba^3b^2\right)+x^2\left(-2310Aa^3b^2+385Ba^4b\right)+x\left(-822Aa^4b+137Ba^5\right)}{60a^{11}x+300a^{10}bx^2+600a^9b^2x^3+600a^8b^3x^4+300a^7b^4x^5+60a^6b^5x^6}+\frac{(-6Ab+Ba)\log\left(x+\frac{-6Aab+Ba^2-a(-6Ab+Ba)}{-12Ab^2+2Bab}\right)}{a^7}-\frac{(-6Ab+Ba)\log\left(x+\frac{-6Aab+Ba^2+a(-6Ab+Ba)}{-12Ab^2+2Bab}\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-60*A*a**5 + x**5*(-360*A*b**5 + 60*B*a*b**4) + x**4*(-1620*A*a*b**4 + 270
*B*a**2*b**3) + x**3*(-2820*A*a**2*b**3 + 470*B*a**3*b**2) + x**2*(-2310*A*
a**3*b**2 + 385*B*a**4*b) + x*(-822*A*a**4*b + 137*B*a**5))/(60*a**11*x + 3
00*a**10*b*x**2 + 600*a**9*b**2*x**3 + 600*a**8*b**3*x**4 + 300*a**7*b**4*x
**5 + 60*a**6*b**5*x**6) + (-6*A*b + B*a)*log(x + (-6*A*a*b + B*a**2 - a*(-
6*A*b + B*a))/(-12*A*b**2 + 2*B*a*b))/a**7 - (-6*A*b + B*a)*log(x + (-6*A*a
*b + B*a**2 + a*(-6*A*b + B*a))/(-12*A*b**2 + 2*B*a*b))/a**7
```

3.579 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=177

$$\frac{3b\log(x)(7Ab-2aB)}{a^8}-\frac{3b(7Ab-2aB)\log(a+bx)}{a^8}+\frac{6Ab-aB}{a^7x}+\frac{5b(3Ab-aB)}{a^7(a+bx)}+\frac{b(5Ab-2aB)}{a^6(a+bx)^2}-\frac{A}{2a^6x^2}+\frac{b(2Ab-}{a^5(a+b}$$

Rubi [A] time = 0.20, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{6Ab-aB}{a^7x}+\frac{5b(3Ab-aB)}{a^7(a+bx)}+\frac{b(5Ab-2aB)}{a^6(a+bx)^2}+\frac{b(2Ab-aB)}{a^5(a+bx)^3}+\frac{b(3Ab-2aB)}{4a^4(a+bx)^4}+\frac{b(Ab-aB)}{5a^3(a+bx)^5}+\frac{3b\log(x)(7Ab-2aB)}{a^8}-\frac{3b(7Ab-2aB)\log(a+bx)}{a^8}-\frac{A}{2a^6x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -A/(2*a^6*x^2) + (6*A*b - a*B)/(a^7*x) + (b*(A*b - a*B))/(5*a^3*(a + b*x)^5
) + (b*(3*A*b - 2*a*B))/(4*a^4*(a + b*x)^4) + (b*(2*A*b - a*B))/(a^5*(a + b
*x)^3) + (b*(5*A*b - 2*a*B))/(a^6*(a + b*x)^2) + (5*b*(3*A*b - a*B))/(a^7*(
a + b*x)) + (3*b*(7*A*b - 2*a*B)*Log[x])/a^8 - (3*b*(7*A*b - 2*a*B)*Log[a +
 b*x])/a^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{A+Bx}{x^3(a+bx)^6}\,dx\\ &= \int \left(\frac{A}{a^6x^3}+\frac{-6Ab+aB}{a^7x^2}-\frac{3b(-7Ab+2aB)}{a^8x}+\frac{b^2(-Ab+aB)}{a^3(a+bx)^6}+\frac{b^2(-3Ab+2aB)}{a^4(a+bx)^5}\right.\\ &= -\frac{A}{2a^6x^2}+\frac{6Ab-aB}{a^7x}+\frac{b(Ab-aB)}{5a^3(a+bx)^5}+\frac{b(3Ab-2aB)}{4a^4(a+bx)^4}+\frac{b(2Ab-aB)}{a^5(a+bx)^3}+\frac{b(5Ab-}{a^6(a+b}\end{aligned}$$

Mathematica [A] time = 0.18, size = 162, normalized size = 0.92

$$\frac{\frac{a\left(-10a^6(A+2Bx)+2a^5bx(35A-137Bx)+7a^4b^2x^2(137A-110Bx)+5a^3b^3x^3(539A-188Bx)+10a^2b^4x^4(329A-54Bx)+30ab^5x^5(63A-4Bx)+420Ab^6x^6\right)}{x^2(a+bx)^5}+60b\log(x)(7Ab-2aB)+60b(2aB-7Ab)\log(a+bx)}{20a^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((a*(420*A*b^6*x^6 + 5*a^3*b^3*x^3*(539*A - 188*B*x) + 2*a^5*b*x*(35*A - 13
7*B*x) + 7*a^4*b^2*x^2*(137*A - 110*B*x) + 10*a^2*b^4*x^4*(329*A - 54*B*x)
+ 30*a*b^5*x^5*(63*A - 4*B*x) - 10*a^6*(A + 2*B*x)))/(x^2*(a + b*x)^5) + 60
*b*(7*A*b - 2*a*B)*Log[x] + 60*b*(-7*A*b + 2*a*B)*Log[a + b*x])/(20*a^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.44, size = 484, normalized size = 2.73

$$-\frac{10\,Aa^7+60\left(2\,Ba^2b^5-7\,Aab^6\right)x^6+270\left(2\,Ba^3b^4-7\,Aa^2b^5\right)x^5+470\left(2\,Ba^4b^3-7\,Aa^3b^4\right)x^4+385\left(2\,Ba^5b^2-7\,Aa^4b^3\right)x^3+137\left(2\,Ba^6b-7\,Aa^5b^2\right)x^2+10\left(2\,Ba^7-7\,Aa^6b\right)x-60\left(\left(2\,Bab^6-7\,Ab^7\right)x^7+5\left(2\,Ba^2b^5-7\,Aab^6\right)x^6+10\left(2\,Ba^3b^4-7\,Aa^2b^5\right)x^5+10\left(2\,Ba^4b^3-7\,Aa^3b^4\right)x^4+5\left(2\,Ba^5b^2-7\,Aa^4b^3\right)x^3+\left(2\,Ba^6b-7\,Aa^5b^2\right)x^2\right)\log\left(bx+a\right)+60\left(\left(2\,Bab^6-7\,Ab^7\right)x^7+5\left(2\,Ba^2b^5-7\,Aab^6\right)x^6+10\left(2\,Ba^3b^4-7\,Aa^2b^5\right)x^5+10\left(2\,Ba^4b^3-7\,Aa^3b^4\right)x^4+5\left(2\,Ba^5b^2-7\,Aa^4b^3\right)x^3+\left(2\,Ba^6b-7\,Aa^5b^2\right)x^2\right)\log\left(x\right)}{20\left(a^8b^5x^7+5\,a^9b^4x^6+10\,a^{10}b^3x^5+10\,a^{11}b^2x^4+5\,a^{12}bx^3+a^{13}x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/20*(10*A*a^7 + 60*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 270*(2*B*a^3*b^4 - 7*A
*a^2*b^5)*x^5 + 470*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 385*(2*B*a^5*b^2 - 7*
A*a^4*b^3)*x^3 + 137*(2*B*a^6*b - 7*A*a^5*b^2)*x^2 + 10*(2*B*a^7 - 7*A*a^6*
b)*x - 60*((2*B*a*b^6 - 7*A*b^7)*x^7 + 5*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 10
*(2*B*a^3*b^4 - 7*A*a^2*b^5)*x^5 + 10*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 5*(
2*B*a^5*b^2 - 7*A*a^4*b^3)*x^3 + (2*B*a^6*b - 7*A*a^5*b^2)*x^2)*log(b*x + a
) + 60*((2*B*a*b^6 - 7*A*b^7)*x^7 + 5*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 10*(2
*B*a^3*b^4 - 7*A*a^2*b^5)*x^5 + 10*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 5*(2*B
*a^5*b^2 - 7*A*a^4*b^3)*x^3 + (2*B*a^6*b - 7*A*a^5*b^2)*x^2)*log(x))/(a^8*b
^5*x^7 + 5*a^9*b^4*x^6 + 10*a^10*b^3*x^5 + 10*a^11*b^2*x^4 + 5*a^12*b*x^3 +
 a^13*x^2)
```

giac [A] time = 0.16, size = 205, normalized size = 1.16

$$-\frac{3\left(2\,Bab-7\,Ab^2\right)\log\left(|x|\right)}{a^8}+\frac{3\left(2\,Bab^2-7\,Ab^3\right)\log\left(|bx+a|\right)}{a^8b}-\frac{10\,Aa^7+60\left(2\,Ba^2b^5-7\,Aab^6\right)x^6+270\left(2\,Ba^3b^4-7\,Aa^2b^5\right)x^5+470\left(2\,Ba^4b^3-7\,Aa^3b^4\right)x^4+385\left(2\,Ba^5b^2-7\,Aa^4b^3\right)x^3+137\left(2\,Ba^6b-7\,Aa^5b^2\right)x^2+10\left(2\,Ba^7-7\,Aa^6b\right)x}{20\left(bx+a\right)^5a^8x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -3*(2*B*a*b - 7*A*b^2)*log(abs(x))/a^8 + 3*(2*B*a*b^2 - 7*A*b^3)*log(abs(b*
x + a))/(a^8*b) - 1/20*(10*A*a^7 + 60*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 270*(
2*B*a^3*b^4 - 7*A*a^2*b^5)*x^5 + 470*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 385*
(2*B*a^5*b^2 - 7*A*a^4*b^3)*x^3 + 137*(2*B*a^6*b - 7*A*a^5*b^2)*x^2 + 10*(2
*B*a^7 - 7*A*a^6*b)*x)/((b*x + a)^5*a^8*x^2)
```

maple [A] time = 0.08, size = 228, normalized size = 1.29

$$\frac{A\,b^2}{5\left(bx+a\right)^5a^3}-\frac{Bb}{5\left(bx+a\right)^5a^2}+\frac{3A\,b^2}{4\left(bx+a\right)^4a^4}-\frac{Bb}{2\left(bx+a\right)^4a^3}+\frac{2A\,b^2}{\left(bx+a\right)^3a^5}-\frac{Bb}{\left(bx+a\right)^3a^4}+\frac{5A\,b^2}{\left(bx+a\right)^2a^6}-\frac{2Bb}{\left(bx+a\right)^2a^5}+\frac{15A\,b^2}{\left(bx+a\right)a^7}+\frac{21A\,b^2\ln\left(x\right)}{a^8}-\frac{21A\,b^2\ln\left(bx+a\right)}{a^8}-\frac{5Bb}{\left(bx+a\right)a^6}-\frac{6Bb\ln\left(x\right)}{a^7}+\frac{6Bb\ln\left(bx+a\right)}{a^7}+\frac{6Ab}{a^7x}-\frac{B}{a^6x}-\frac{A}{2a^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*b^2/a^5/(b*x+a)^3*A-b/a^4/(b*x+a)^3*B+3/4*b^2/a^4/(b*x+a)^4*A-1/2*b/a^3/(
b*x+a)^4*B+15*b^2/a^7/(b*x+a)*A-5*b/a^6/(b*x+a)*B+5*b^2/a^6/(b*x+a)^2*A-2*b
/a^5/(b*x+a)^2*B-21*b^2/a^8*ln(b*x+a)*A+6*b/a^7*ln(b*x+a)*B+1/5*b^2/a^3/(b*
x+a)^5*A-1/5*b/a^2/(b*x+a)^5*B-1/2*A/a^6/x^2+6/a^7/x*A*b-1/a^6/x*B+21*b^2/a
^8*ln(x)*A-6*b/a^7*ln(x)*B
```

maxima [A] time = 0.78, size = 242, normalized size = 1.37

$$-\frac{10\,Aa^{6}+60\left(2\,Bab^{5}-7\,Ab^{6}\right)x^{6}+270\left(2\,Ba^{2}b^{4}-7\,Aab^{5}\right)x^{5}+470\left(2\,Ba^{3}b^{3}-7\,Aa^{2}b^{4}\right)x^{4}+385\left(2\,Ba^{4}b^{2}-7\,Aa^{3}b^{3}\right)x^{3}+137\left(2\,Ba^{5}b-7\,Aa^{4}b^{2}\right)x^{2}+10\left(2\,Ba^{6}-7\,Aa^{5}b\right)x}{20\left(a^{7}b^{5}x^{7}+5\,a^{8}b^{4}x^{6}+10\,a^{9}b^{3}x^{5}+10\,a^{10}b^{2}x^{4}+5\,a^{11}bx^{3}+a^{12}x^{2}\right)}+\frac{3\left(2\,Bab-7\,Ab^{2}\right)\log\left(bx+a\right)}{a^{8}}-\frac{3\left(2\,Bab-7\,Ab^{2}\right)\log\left(x\right)}{a^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/20*(10*A*a^6 + 60*(2*B*a*b^5 - 7*A*b^6)*x^6 + 270*(2*B*a^2*b^4 - 7*A*a*b
^5)*x^5 + 470*(2*B*a^3*b^3 - 7*A*a^2*b^4)*x^4 + 385*(2*B*a^4*b^2 - 7*A*a^3*
b^3)*x^3 + 137*(2*B*a^5*b - 7*A*a^4*b^2)*x^2 + 10*(2*B*a^6 - 7*A*a^5*b)*x)/
(a^7*b^5*x^7 + 5*a^8*b^4*x^6 + 10*a^9*b^3*x^5 + 10*a^10*b^2*x^4 + 5*a^11*b*
x^3 + a^12*x^2) + 3*(2*B*a*b - 7*A*b^2)*log(b*x + a)/a^8 - 3*(2*B*a*b - 7*A
*b^2)*log(x)/a^8
```

mupad [B] time = 1.21, size = 230, normalized size = 1.30

$$\frac{\frac{x\,(7\,A\,b-2\,B\,a)}{2\,a^2}-\frac{A}{2\,a}+\frac{77\,b^2\,x^3\,(7\,A\,b-2\,B\,a)}{4\,a^4}+\frac{47\,b^3\,x^4\,(7\,A\,b-2\,B\,a)}{2\,a^5}+\frac{27\,b^4\,x^5\,(7\,A\,b-2\,B\,a)}{2\,a^6}+\frac{3\,b^5\,x^6\,(7\,A\,b-2\,B\,a)}{a^7}+\frac{137\,b\,x^2\,(7\,A\,b-2\,B\,a)}{20\,a^3}}{a^5\,x^2+5\,a^4\,b\,x^3+10\,a^3\,b^2\,x^4+10\,a^2\,b^3\,x^5+5\,a\,b^4\,x^6+b^5\,x^7}-\frac{6\,b\,\mathrm{atanh}\left(\frac{3\,b\,(7\,A\,b-2\,B\,a)\,(a+2\,b\,x)}{a\,\left(21\,A\,b^2-6\,B\,a\,b\right)}\right)\,(7\,A\,b-2\,B\,a)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((x*(7*A*b - 2*B*a))/(2*a^2) - A/(2*a) + (77*b^2*x^3*(7*A*b - 2*B*a))/(4*a^
4) + (47*b^3*x^4*(7*A*b - 2*B*a))/(2*a^5) + (27*b^4*x^5*(7*A*b - 2*B*a))/(2
*a^6) + (3*b^5*x^6*(7*A*b - 2*B*a))/a^7 + (137*b*x^2*(7*A*b - 2*B*a))/(20*a
^3))/(a^5*x^2 + b^5*x^7 + 5*a^4*b*x^3 + 5*a*b^4*x^6 + 10*a^3*b^2*x^4 + 10*a
^2*b^3*x^5) - (6*b*atanh((3*b*(7*A*b - 2*B*a)*(a + 2*b*x))/(a*(21*A*b^2 - 6
*B*a*b)))*(7*A*b - 2*B*a))/a^8
```

sympy [A] time = 1.19, size = 335, normalized size = 1.89

$$\frac{-10Aa^{6}+x^{6}\left(420Ab^{6}-120Bab^{5}\right)+x^{5}\left(1890Aab^{5}-540Ba^{2}b^{4}\right)+x^{4}\left(3290Aa^{2}b^{4}-940Ba^{3}b^{3}\right)+x^{3}\left(2695Aa^{3}b^{3}-770Ba^{4}b^{2}\right)+x^{2}\left(959Aa^{4}b^{2}-274Ba^{5}b\right)+x\left(70Aa^{5}b-20Ba^{6}\right)}{20a^{12}x^{2}+100a^{11}bx^{3}+200a^{10}b^{2}x^{4}+200a^{9}b^{3}x^{5}+100a^{8}b^{4}x^{6}+20a^{7}b^{5}x^{7}}-\frac{3b\left(-7Ab+2Ba\right)\log\left(x+\frac{-21Aab^{2}+6Ba^{2}b-3ab(-7Ab+2Ba)}{-42Ab^{3}+12Bab^{2}}\right)}{a^{8}}+\frac{3b\left(-7Ab+2Ba\right)\log\left(x+\frac{-21Aab^{2}+6Ba^{2}b+3ab(-7Ab+2Ba)}{-42Ab^{3}+12Bab^{2}}\right)}{a^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-10*A*a**6 + x**6*(420*A*b**6 - 120*B*a*b**5) + x**5*(1890*A*a*b**5 - 540*
B*a**2*b**4) + x**4*(3290*A*a**2*b**4 - 940*B*a**3*b**3) + x**3*(2695*A*a**
3*b**3 - 770*B*a**4*b**2) + x**2*(959*A*a**4*b**2 - 274*B*a**5*b) + x*(70*A
*a**5*b - 20*B*a**6))/(20*a**12*x**2 + 100*a**11*b*x**3 + 200*a**10*b**2*x*
*4 + 200*a**9*b**3*x**5 + 100*a**8*b**4*x**6 + 20*a**7*b**5*x**7) - 3*b*(-7
*A*b + 2*B*a)*log(x + (-21*A*a*b**2 + 6*B*a**2*b - 3*a*b*(-7*A*b + 2*B*a))/
(-42*A*b**3 + 12*B*a*b**2))/a**8 + 3*b*(-7*A*b + 2*B*a)*log(x + (-21*A*a*b*
*2 + 6*B*a**2*b + 3*a*b*(-7*A*b + 2*B*a))/(-42*A*b**3 + 12*B*a*b**2))/a**8
```

3.580 $\int x^4(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{6(a+bx)}+\frac{aAx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{bBx^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Rubi [A] time = 0.07, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{6(a+bx)}+\frac{aAx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{bBx^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + ((A*b + a*B)*x^6*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (b*B*x^7*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^4\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^4+b(Ab+aB)x^5+b^2Bx^6\right)dx}{ab+b^2x}\\&=\frac{aAx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{(Ab+aB)x^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{bBx^7\sqrt{}}{}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$\frac{x^5\sqrt{(a+bx)^2}\,(7a(6A+5Bx)+5bx(7A+6Bx))}{210(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^5*Sqrt[(a + b*x)^2]*(7*a*(6*A + 5*B*x) + 5*b*x*(7*A + 6*B*x)))/(210*(a +
 b*x))
```

IntegrateAlgebraic [F] time = 0.82, size = 0, normalized size = 0.00

$$\int x^4(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][x^4*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]
```

fricas [A] time = 0.44, size = 27, normalized size = 0.24

$$\frac{1}{7}\,Bbx^7+\frac{1}{5}\,Aax^5+\frac{1}{6}\,(Ba+Ab)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b*x^7 + 1/5*A*a*x^5 + 1/6*(B*a + A*b)*x^6
```

giac [A] time = 0.20, size = 78, normalized size = 0.68

$$\frac{1}{7}\,Bbx^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Bax^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Abx^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Aax^5\mathrm{sgn}\left(bx+a\right)-\frac{\left(5\,Ba^7-7\,Aa^6b\right)\mathrm{sgn}\left(bx+a\right)}{210\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b*x^7*sgn(b*x + a) + 1/6*B*a*x^6*sgn(b*x + a) + 1/6*A*b*x^6*sgn(b*x +
 a) + 1/5*A*a*x^5*sgn(b*x + a) - 1/210*(5*B*a^7 - 7*A*a^6*b)*sgn(b*x + a)/b
^6
```

maple [A] time = 0.06, size = 44, normalized size = 0.39

$$\frac{\left(30Bb\,x^2+35Abx+35Bax+42Aa\right)\sqrt{\left(bx+a\right)^2}\;x^5}{210bx+210a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/210*x^5*(30*B*b*x^2+35*A*b*x+35*B*a*x+42*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.58, size = 361, normalized size = 3.17

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bx^4}{7\,b^2}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bax^3}{42\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ax^3}{6\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^5x}{2\,b^5}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aa^4x}{2\,b^4}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^2x^2}{14\,b^4}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aax^2}{10\,b^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^6}{2\,b^6}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aa^5}{2\,b^5}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^3x}{7\,b^5}+\frac{2\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^2x}{5\,b^4}+\frac{10\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^4}{21\,b^6}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^3}{15\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x^4/b^2 - 11/42*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*a*x^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*x^3/b^2 - 1/
2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5*x/b^5 + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*a^4*x/b^4 + 5/14*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*x^2/b^4 - 3/1
0*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*x^2/b^3 - 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*B*a^6/b^6 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^5/b^5 - 3/7*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*B*a^3*x/b^5 + 2/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)
```

```
*A*a^2*x/b^4 + 10/21*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^4/b^6 - 7/15*(b^2*
x^2 + 2*a*b*x + a^2)^(3/2)*A*a^3/b^5
```

mupad [B] time = 1.87, size = 431, normalized size = 3.78

$$\frac{A\,x^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{6\,b^2}+\frac{B\,x^4\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{7\,b^2}-\frac{11\,B\,a\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(a^5+5\,b^3\,x^3\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-14\,a^3\,b^2\,x^2-13\,a^4\,b\,x-9\,a\,b^2\,x^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)+12\,a^2\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)\right)}{210\,b^6}-\frac{B\,a^2\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(4\,b^2\,x^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-a^4+9\,a^2\,b^2\,x^2+8\,a^3\,b\,x-7\,a\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)\right)}{35\,b^6}-\frac{A\,a^2\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(a^3-5\,a\,b^2\,x^2+3\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-4\,a^2\,b\,x\right)}{24\,b^5}-\frac{3\,A\,a\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(4\,b^2\,x^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-a^4+9\,a^2\,b^2\,x^2+8\,a^3\,b\,x-7\,a\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)\right)}{40\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(6*b^2) + (B*x^4*(a^2 + b^2*x^2 + 2
*a*b*x)^(3/2))/(7*b^2) - (11*B*a*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b
^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 14*a^3*b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^
2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(210*b
^6) - (B*a^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*
a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x
)))/(35*b^6) - (A*a^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 +
3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(24*b^5) - (3*A*a*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2
*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(40*b^5)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{A a x^{5}}{5} + \frac{B b x^{7}}{7} + x^{6} \left(\frac{A b}{6} + \frac{B a}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**5/5 + B*b*x**7/7 + x**6*(A*b/6 + B*a/6)
```

3.581 $\int x^3(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{aAx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{bBx^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}$$

Rubi [A] time = 0.06, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{aAx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{bBx^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + ((A*b + a*B)*x^5*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (b*B*x^6*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(6*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^3\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^3+b(Ab+aB)x^4+b^2Bx^5\right)dx}{ab+b^2x}\\&=\frac{aAx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{(Ab+aB)x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{bBx^6\sqrt{a^2}}{6(}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$\frac{x^4\sqrt{(a+bx)^2}\,(3a(5A+4Bx)+2bx(6A+5Bx))}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^4*Sqrt[(a + b*x)^2]*(3*a*(5*A + 4*B*x) + 2*b*x*(6*A + 5*B*x)))/(60*(a +
b*x))
```

IntegrateAlgebraic [F] time = 0.75, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] Defer[IntegrateAlgebraic][x^3*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]
```

fricas [A] time = 0.43, size = 27, normalized size = 0.24

$$\frac{1}{6}Bbx^6 + \frac{1}{4}Aax^4 + \frac{1}{5}(Ba+Ab)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] 1/6*B*b*x^6 + 1/4*A*a*x^4 + 1/5*(B*a + A*b)*x^5
```

giac [A] time = 0.15, size = 78, normalized size = 0.68

$$\frac{1}{6}Bbx^6\mathrm{sgn}(bx+a) + \frac{1}{5}Bax^5\mathrm{sgn}(bx+a) + \frac{1}{5}Abx^5\mathrm{sgn}(bx+a) + \frac{1}{4}Aax^4\mathrm{sgn}(bx+a) + \frac{(2Ba^6 - 3Aa^5b)\mathrm{sgn}(bx+a)}{60b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] 1/6*B*b*x^6*sgn(b*x + a) + 1/5*B*a*x^5*sgn(b*x + a) + 1/5*A*b*x^5*sgn(b*x +
 a) + 1/4*A*a*x^4*sgn(b*x + a) + 1/60*(2*B*a^6 - 3*A*a^5*b)*sgn(b*x + a)/b^
5
```

maple [A] time = 0.04, size = 44, normalized size = 0.39

$$\frac{\left(10Bb\,x^2+12Abx+12Bax+15Aa\right)\sqrt{(bx+a)^2}\;x^4}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x)
[Out] 1/60*x^4*(10*B*b*x^2+12*A*b*x+12*B*a*x+15*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.59, size = 301, normalized size = 2.64

$$\frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}Bx^3}{6b^2} + \frac{\sqrt{b^2x^2+2abx+a^2}\,Ba^4x}{2b^4} - \frac{\sqrt{b^2x^2+2abx+a^2}\,Aa^3x}{2b^3} - \frac{3(b^2x^2+2abx+a^2)^{\frac{3}{2}}Bax^2}{10b^3} + \frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}Ax^2}{5b^2} + \frac{\sqrt{b^2x^2+2abx+a^2}\,Ba^5}{2b^5} - \frac{\sqrt{b^2x^2+2abx+a^2}\,Aa^4}{2b^4} + \frac{2(b^2x^2+2abx+a^2)^{\frac{3}{2}}Ba^2x}{5b^4} - \frac{7(b^2x^2+2abx+a^2)^{\frac{3}{2}}Aax}{20b^3} - \frac{7(b^2x^2+2abx+a^2)^{\frac{3}{2}}Ba^3}{15b^5} + \frac{9(b^2x^2+2abx+a^2)^{\frac{3}{2}}Aa^2}{20b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x^3/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*B*a^4*x/b^4 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^3*x/b^3 - 3/10*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*x^2/b^3 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*A*x^2/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5/b^5 - 1/2*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*A*a^4/b^4 + 2/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^
2*x/b^4 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*x/b^3 - 7/15*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*a^3/b^5 + 9/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^2
/b^4
```

mupad [B] time = 1.30, size = 340, normalized size = 2.98

$$\frac{A\,x^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{5\,b^2}+\frac{B\,x^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{6\,b^2}-\frac{7\,A\,a\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(a^3-5\,a\,b^2\,x^2+3\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-4\,a^2\,b\,x\right)}{60\,b^4}-\frac{B\,a^2\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(a^3-5\,a\,b^2\,x^2+3\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-4\,a^2\,b\,x\right)}{24\,b^5}-\frac{A\,a^2\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{60\,b^6}-\frac{3\,B\,a\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(4\,b^2\,x^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-a^4+9\,a^2\,b^2\,x^2+8\,a^3\,b\,x-7\,a\,b\,x\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)\right)}{40\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (B*x^3*(a^2 + b^2*x^2 + 2
*a*b*x)^(3/2))/(6*b^2) - (7*A*a*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*
b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (B*a^2*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 +
2*a*b*x) - 4*a^2*b*x))/(24*b^5) - (A*a^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^
2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(60*b^6) - (3*B*a*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b
^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(40*b^5)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{Aax^4}{4} + \frac{Bbx^6}{6} + x^5\left(\frac{Ab}{5} + \frac{Ba}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**4/4 + B*b*x**6/6 + x**5*(A*b/5 + B*a/5)
```

3.582 $\int x^2(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{aAx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{bBx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Rubi [A] time = 0.06, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{aAx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{bBx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + ((A*b + a*B)*x^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (b*B*x^5*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^2\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^2+b(Ab+aB)x^3+b^2Bx^4\right)dx}{ab+b^2x}\\ &= \frac{aAx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{(Ab+aB)x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{bBx^5\sqrt{\cdot}}{}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$\frac{x^3\sqrt{(a+bx)^2}\,(5a(4A+3Bx)+3bx(5A+4Bx))}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^3*Sqrt[(a + b*x)^2]*(5*a*(4*A + 3*B*x) + 3*b*x*(5*A + 4*B*x)))/(60*(a +
b*x))
```

IntegrateAlgebraic [F] time = 0.68, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] Defer[IntegrateAlgebraic][x^2*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]
```

fricas [A] time = 0.41, size = 27, normalized size = 0.24

$$\frac{1}{5}\,Bbx^5+\frac{1}{3}\,Aax^3+\frac{1}{4}\,(Ba+Ab)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] 1/5*B*b*x^5 + 1/3*A*a*x^3 + 1/4*(B*a + A*b)*x^4
```

giac [A] time = 0.22, size = 78, normalized size = 0.68

$$\frac{1}{5}\,Bbx^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}\,Bax^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}\,Abx^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Aax^3\mathrm{sgn}\left(bx+a\right)-\frac{\left(3\,Ba^5-5\,Aa^4b\right)\mathrm{sgn}\left(bx+a\right)}{60\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] 1/5*B*b*x^5*sgn(b*x + a) + 1/4*B*a*x^4*sgn(b*x + a) + 1/4*A*b*x^4*sgn(b*x +
 a) + 1/3*A*a*x^3*sgn(b*x + a) - 1/60*(3*B*a^5 - 5*A*a^4*b)*sgn(b*x + a)/b^
4
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$\frac{\left(12Bb\,x^2+15Abx+15Bax+20Aa\right)\sqrt{\left(bx+a\right)^2}\;x^3}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x)
[Out] 1/60*x^3*(12*B*b*x^2+15*A*b*x+15*B*a*x+20*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.57, size = 241, normalized size = 2.11

$$-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3x}{2\,b^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aa^2x}{2\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bx^2}{5\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^4}{2\,b^4}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aa^3}{2\,b^3}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bax}{20\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ax}{4\,b^2}+\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^2}{20\,b^4}-\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa}{12\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] -1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^3*x/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*A*a^2*x/b^2 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x^2/b^2 - 1/2*s
qrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^4/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*
A*a^3/b^3 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*x/b^3 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A*x/b^2 + 9/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2/
b^4 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a/b^3
```

mupad [B] time = 1.30, size = 271, normalized size = 2.38

$$\frac{B x^2 \left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{5 b^2}+\frac{A x \left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{4 b^2}-\frac{7 B a \sqrt{a^2+2 a b x+b^2 x^2}\, \left(a^3-5 a b^2 x^2+3 b x \left(a^2+2 a b x+b^2 x^2\right)-4 a^2 b x\right)}{60 b^4}-\frac{5 A a \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{96 b^5}-\frac{B a^2 \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{60 b^6}-\frac{A a^2 \left(\frac{x}{2}+\frac{a}{2 b}\right) \sqrt{a^2+2 a b x+b^2 x^2}}{4 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (B*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (A*x*(a^2 + b^2*x^2 + 2*a
*b*x)^(3/2))/(4*b^2) - (7*B*a*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^
2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (5*A*a*(8*
b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/
2))/(96*b^5) - (B*a^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2))/(60*b^6) - (A*a^2*(x/2 + a/(2*b))*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/(4*b^2)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{A a x^3}{3}+\frac{B b x^5}{5}+x^4 \left(\frac{A b}{4}+\frac{B a}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**3/3 + B*b*x**5/5 + x**4*(A*b/4 + B*a/4)
```

3.583 $\int x(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{aAx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{bBx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 76}

$$\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{aAx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{bBx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + ((A*b + a*B)*x^3*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b*B*x^4*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx+b(Ab+aB)x^2+b^2Bx^3\right)dx}{ab+b^2x}\\&=\frac{aAx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{(Ab+aB)x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{bBx^4\sqrt{a^2+}}{4(a}\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.41

$$\frac{x^2\sqrt{(a+bx)^2}\,(a(6A+4Bx)+bx(4A+3Bx))}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^2*Sqrt[(a + b*x)^2]*(b*x*(4*A + 3*B*x) + a*(6*A + 4*B*x)))/(12*(a + b*x)
)
```

IntegrateAlgebraic [F] time = 0.57, size = 0, normalized size = 0.00

$$\int x(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] Defer[IntegrateAlgebraic][x*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]
```

fricas [A] time = 0.41, size = 27, normalized size = 0.24

$$\frac{1}{4}\,Bbx^4+\frac{1}{2}\,Aax^2+\frac{1}{3}\,(Ba+Ab)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] 1/4*B*b*x^4 + 1/2*A*a*x^2 + 1/3*(B*a + A*b)*x^3
```

giac [A] time = 0.19, size = 77, normalized size = 0.68

$$\frac{1}{4}\,Bbx^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Bax^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Abx^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Aax^2\mathrm{sgn}\left(bx+a\right)+\frac{\left(Ba^4-2\,Aa^3b\right)\mathrm{sgn}\left(bx+a\right)}{12\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] 1/4*B*b*x^4*sgn(b*x + a) + 1/3*B*a*x^3*sgn(b*x + a) + 1/3*A*b*x^3*sgn(b*x +
 a) + 1/2*A*a*x^2*sgn(b*x + a) + 1/12*(B*a^4 - 2*A*a^3*b)*sgn(b*x + a)/b^3
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$\frac{\left(3Bb\,x^2+4Abx+4Bax+6Aa\right)\sqrt{\left(bx+a\right)^2}\;x^2}{12bx+12a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*((b*x+a)^2)^(1/2),x)
[Out] 1/12*x^2*(3*B*b*x^2+4*A*b*x+4*B*a*x+6*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.51, size = 183, normalized size = 1.61

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2x}{2\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aax}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3}{2\,b^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aa^2}{2\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bx}{4\,b^2}-\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba}{12\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2*x/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*A*a*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^3/b^3 - 1/2*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*a^2/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x/b
^2 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a/b^3 + 1/3*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*A/b^2
```

mupad [B] time = 1.28, size = 176, normalized size = 1.54

$$\frac{A\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^4}+\frac{B\,x\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{4\,b^2}-\frac{5\,B\,a\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{96\,b^5}-\frac{B\,a^2\,\left(\frac{x}{2}+\frac{a}{2\,b}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*
x)^(1/2))/(24*b^4) + (B*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (5*B*a
*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/(96*b^5) - (B*a^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/
(4*b^2)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{Aax^2}{2} + \frac{Bbx^4}{4} + x^3\left(\frac{Ab}{3} + \frac{Ba}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**2/2 + B*b*x**4/4 + x**3*(A*b/3 + B*a/3)
```

3.584 $\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^2) + (B*(a^2 + 2
*a*b*x + b^2*x^2)^(3/2))/(3*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}+\frac{\left(2Ab^2-2abB\right)\int \sqrt{a^2+2abx+b^2x^2}\,dx}{2b^2}\\ &= \frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 45, normalized size = 0.65

$$\frac{x\sqrt{(a+bx)^2}\,(3a(2A+Bx)+bx(3A+2Bx))}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3*a*(2*A + B*x) + b*x*(3*A + 2*B*x)))/(6*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.59, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]
```

fricas [A] time = 0.39, size = 24, normalized size = 0.35

$$\frac{1}{3}Bbx^3 + Aax + \frac{1}{2}(Ba + Ab)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*B*b*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

giac [A] time = 0.22, size = 74, normalized size = 1.07

$$\frac{1}{3}Bbx^3\mathrm{sgn}(bx+a) + \frac{1}{2}Bax^2\mathrm{sgn}(bx+a) + \frac{1}{2}Abx^2\mathrm{sgn}(bx+a) + Aax\mathrm{sgn}(bx+a) - \frac{(Ba^3 - 3Aa^2b)\mathrm{sgn}(bx+a)}{6b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*B*b*x^3*sgn(b*x + a) + 1/2*B*a*x^2*sgn(b*x + a) + 1/2*A*b*x^2*sgn(b*x +
 a) + A*a*x*sgn(b*x + a) - 1/6*(B*a^3 - 3*A*a^2*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.05, size = 42, normalized size = 0.61

$$\frac{(2Bbx^2 + 3Abx + 3Bax + 6Aa)\sqrt{(bx+a)^2}\,x}{6bx + 6a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*x*(2*B*b*x^2+3*A*b*x+3*B*a*x+6*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.63, size = 125, normalized size = 1.81

$$\frac{1}{2}\sqrt{b^2x^2 + 2abx + a^2}\,Ax - \frac{\sqrt{b^2x^2 + 2abx + a^2}\,Bax}{2b} - \frac{\sqrt{b^2x^2 + 2abx + a^2}\,Ba^2}{2b^2} + \frac{\sqrt{b^2x^2 + 2abx + a^2}\,Aa}{2b} + \frac{(b^2x^2 + 2abx + a^2)^{\frac{3}{2}}B}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B
*a*x/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2/b^2 + 1/2*sqrt(b^2*x^2 + 2
*a*b*x + a^2)*A*a/b + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/b^2
```

mupad [B] time = 1.25, size = 77, normalized size = 1.12

$$\frac{A\sqrt{(a+bx)^2}\,(a+bx)}{2b} + \frac{B\left(8b^2\left(a^2+b^2x^2\right) - 12a^2b^2 + 4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{24b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*((a + b*x)^2)^(1/2)*(a + b*x))/(2*b) + (B*(8*b^2*(a^2 + b^2*x^2) - 12*a^
2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4)
```

sympy [A] time = 0.10, size = 26, normalized size = 0.38

$$Aax + \frac{Bbx^3}{3} + x^2\left(\frac{Ab}{2} + \frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x + B*b*x**3/3 + x**2*(A*b/2 + B*a/2)
```

3.585 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x}\,dx$

Optimal. Leaf size=105

$$\frac{x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{aA\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{aA\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x,x]
```

```
[Out] ((A*b + a*B)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b*B*x^2*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b(Ab+aB)+\frac{aAb}{x}+b^2Bx\right)dx}{ab+b^2x}\\ &= \frac{(Ab+aB)x\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{aA\sqrt{a^2+2ab}}{a}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.42

$$\frac{\sqrt{(a+bx)^2}\,(x(2aB+2Ab+bBx)+2aA\log(x))}{2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(x*(2*A*b + 2*a*B + b*B*x) + 2*a*A*Log[x]))/(2*(a + b*x)
)
```

IntegrateAlgebraic [B] time = 0.50, size = 239, normalized size = 2.28

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab+bBx)}{4b}+\frac{1}{2}aA\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)+\frac{\left(-aA\sqrt{b^2}-aAb\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2b}-\frac{aA\sqrt{b^2}\,\log\left(b\sqrt{a^2+2abx+b^2x^2}-ab-\sqrt{b^2}\,bx\right)}{2b}+\frac{-2a\sqrt{b^2}\,Bx-2Ab\sqrt{b^2}\,x-b\sqrt{b^2}\,Bx^2}{4b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x,x]
```

```
[Out] ((2*A*b + a*B + b*B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b) + (-2*A*b*Sqrt[
b^2]*x - 2*a*Sqrt[b^2]*B*x - b*Sqrt[b^2]*B*x^2)/(4*b) + (a*A*Log[-a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 + ((-(a*A*b) - a*A*Sqrt[b^2])*Lo
g[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b) - (a*A*Sqrt[b^2]*
Log[-(a*b) - b*Sqrt[b^2]*x + b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b)
```

fricas [A] time = 0.39, size = 22, normalized size = 0.21

$$\frac{1}{2}Bbx^2+Aa\log(x)+(Ba+Ab)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] 1/2*B*b*x^2 + A*a*log(x) + (B*a + A*b)*x
```

giac [A] time = 0.16, size = 46, normalized size = 0.44

$$\frac{1}{2}Bbx^2\operatorname{sgn}(bx+a)+Bax\operatorname{sgn}(bx+a)+Abx\operatorname{sgn}(bx+a)+Aa\log(|x|)\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x,x, algorithm="giac")
```

```
[Out] 1/2*B*b*x^2*sgn(b*x + a) + B*a*x*sgn(b*x + a) + A*b*x*sgn(b*x + a) + A*a*lo
g(abs(x))*sgn(b*x + a)
```

maple [C] time = 0.07, size = 53, normalized size = 0.50

$$\frac{\left(Bb^2x^2+2Aab\ln(bx)+2Ab^2x+2Babx+2Aab+Ba^2\right)\operatorname{csgn}(bx+a)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x,x)
```

```
[Out] 1/2*csgn(b*x+a)*(B*b^2*x^2+2*A*a*b*ln(b*x)+2*A*b^2*x+2*B*a*b*x+2*A*a*b+a^2*
B)/b
```

maxima [A] time = 0.51, size = 133, normalized size = 1.27

$$(-1)^{2b^2x+2ab}Aa\log\left(2b^2x+2ab\right)-(-1)^{2abx+2a^2}Aa\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)+\frac{1}{2}\sqrt{b^2x^2+2abx+a^2}\,Bx+\sqrt{b^2x^2+2abx+a^2}\,A+\frac{\sqrt{b^2x^2+2abx+a^2}\,Ba}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*A*a*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*A*
a*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*
```

```
x + sqrt(b^2*x^2 + 2*a*b*x + a^2)*A + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a
/b
```

mupad [B] time = 1.37, size = 122, normalized size = 1.16

$$A\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}-A\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)\sqrt{a^2}+\frac{B\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)}{2\,b}+\frac{A\,a\,b\,\ln\left(a\,b+\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{b^2}+b^2\,x\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x,x)
```

```
[Out] A*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) - A*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/x)*(a^2)^(1/2) + (B*((a + b*x)^2)^(1/2)*(a + b*x
))/(2*b) + (A*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)
^(1/2)
```

sympy [A] time = 0.13, size = 22, normalized size = 0.21

$$Aa\log{\left(x \right)} + \frac{Bbx^{2}}{2} + x\left(Ab + Ba\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x,x)
```

```
[Out] A*a*log(x) + B*b*x**2/2 + x*(A*b + B*a)
```

3.586 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^2}\,dx$

Optimal. Leaf size=103

$$\frac{\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^2,x]
```

```
[Out] -((a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x))) + (b*B*x*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(a + b*x) + ((A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Lo
g[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^2}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^2B+\frac{aAb}{x^2}+\frac{b(Ab+aB)}{x}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{(Ab+aB)\sqrt{a^2+2}}{a+}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.43

$$\frac{\sqrt{(a+bx)^2}\left(x\log(x)(aB+Ab)-aA+bBx^2\right)}{x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-(a*A) + b*B*x^2 + (A*b + a*B)*x*Log[x]))/(x*(a + b*x))
```

IntegrateAlgebraic [B] time = 1.13, size = 1028, normalized size = 9.98

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^2,x]
```

```
[Out] (2*a*A*b*Sqrt[b^2]*x - 2*a*A*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 2*a*A*b^2*x*
ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - 2*A*b^3*x^2*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 2*A*b*Sqrt[b^2
]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/a])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (a*Sqrt[b^2]*B*Log[a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b) + (2*a^2*A*Sqrt[b^2] - a^
2*Sqrt[b^2]*B*x - 3*a*b*Sqrt[b^2]*B*x^2 - 2*(b^2)^(3/2)*B*x^3 + a*b*B*x*Sqr
t[a^2 + 2*a*b*x + b^2*x^2] + 2*b^2*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 2*
a^2*b*B*x*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] + 2*a*
b^2*B*x^2*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] - 2*a*
Sqrt[b^2]*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[
a^2 + 2*a*b*x + b^2*x^2]/a] - a*A*b*Sqrt[b^2]*x*Log[-a - Sqrt[b^2]*x + Sqrt
[a^2 + 2*a*b*x + b^2*x^2]] - A*(b^2)^(3/2)*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[
a^2 + 2*a*b*x + b^2*x^2]] + A*b^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a -
Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - a*A*b*Sqrt[b^2]*x*Log[a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - A*(b^2)^(3/2)*x^2*Log[a - Sqrt
[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + A*b^2*x*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2
]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])) - (a*Sqrt[b^2]*B*Log[-(a*b) - b*Sqrt[b^2]*x + b*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]])/(2*b)
```

fricas [A] time = 0.41, size = 26, normalized size = 0.25

$$\frac{Bbx^2 + (Ba + Ab)x\log(x) - Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] (B*b*x^2 + (B*a + A*b)*x*log(x) - A*a)/x
```

giac [A] time = 0.18, size = 47, normalized size = 0.46

$$Bbx\mathrm{sgn}(bx + a) + \left(Ba\mathrm{sgn}(bx + a) + Ab\mathrm{sgn}(bx + a)\right)\log(|x|) - \frac{Aa\mathrm{sgn}(bx + a)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] B*b*x*sgn(b*x + a) + (B*a*sgn(b*x + a) + A*b*sgn(b*x + a))*log(abs(x)) - A*
a*sgn(b*x + a)/x
```

maple [C] time = 0.06, size = 42, normalized size = 0.41

$$\frac{\left(Abx\ln(bx) + Bax\ln(bx) + Bb\,x^2 + Bax - Aa\right)\mathrm{csgn}(bx + a)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x)
```

```
[Out] csgn(b*x+a)*(A*ln(b*x)*x*b+B*ln(b*x)*x*a+B*b*x^2+B*a*x-A*a)/x
```

maxima [B] time = 0.72, size = 175, normalized size = 1.70

$$(-1)^{2\,b^2x+2\,ab}\,Ba\log\left(2\,b^2x+2\,ab\right)+(-1)^{2\,b^2x+2\,ab}\,Ab\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Ba\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-(-1)^{2\,abx+2\,a^2}\,Ab\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\sqrt{b^2x^2+2\,abx+a^2}\,B-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*a*log(2*b^2*x + 2*a*b) + (-1)^(2*b^2*x + 2*a*b)*A*
b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*a*log(2*a*b*x/abs(x) + 2*
a^2/abs(x)) - (-1)^(2*a*b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))
 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*B - sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/x
```

mupad [B] time = 1.46, size = 207, normalized size = 2.01

$$B\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}-B\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)\,\sqrt{a^2}+A\,\ln\left(a\,b+\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{b^2}+b^2\,x\right)\,\sqrt{b^2}-\frac{A\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}+\frac{B\,a\,b\,\ln\left(a\,b+\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{b^2}+b^2\,x\right)}{\sqrt{b^2}}-\frac{A\,a\,b\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^2,x)
```

```
[Out] B*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) - B*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/x)*(a^2)^(1/2) + A*log(a*b + ((a + b*x)^2)^(1/2)
*(b^2)^(1/2) + b^2*x)*(b^2)^(1/2) - (A*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x +
 (B*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^(1/2) - (
A*a*b*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x))/(
a^2)^(1/2)
```

sympy [A] time = 0.17, size = 19, normalized size = 0.18

$$-\frac{Aa}{x}+Bbx+(Ab+Ba)\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**2,x)
```

```
[Out] -A*a/x + B*b*x + (A*b + B*a)*log(x)
```

3.587 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx$

Optimal. Leaf size=108

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}+\frac{bB\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Rubi [A] time = 0.04, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}+\frac{bB\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^3,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*Log[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^3}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^3}+\frac{b(Ab+aB)}{x^2}+\frac{b^2B}{x}\right)dx}{ab+b^2x}\\
&= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bB\sqrt{a^2+2abx}}{a+}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.44

$$-\frac{\sqrt{(a+bx)^2}\left(a(A+2Bx)+2Abx-2bBx^2\log(x)\right)}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^3,x]
```

```
[Out] -1/2*(Sqrt[(a + b*x)^2]*(2*A*b*x + a*(A + 2*B*x) - 2*b*B*x^2*Log[x]))/(x^2*
(a + b*x))
```

IntegrateAlgebraic [B] time = 1.22, size = 270, normalized size = 2.50

$$\frac{\sqrt{a^2+2abx+b^2x^2}\left(-aAb-2abBx-2Ab^2x\right)+\sqrt{b^2}\left(a^2A+2a^2Bx+3aAbx+2abBx^2+2Ab^2x^2\right)}{2x^2\left(ab+b^2x\right)-2\sqrt{b^2}\,x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{1}{2}\sqrt{b^2}\,B\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)-\frac{1}{2}\sqrt{b^2}\,B\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)+bB\tanh^{-1}\left(\frac{\sqrt{b^2}\,x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^3,x]
```

```
[Out] ((-(a*A*b) - 2*A*b^2*x - 2*a*b*B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^
2]*(a^2*A + 3*a*A*b*x + 2*a^2*B*x + 2*A*b^2*x^2 + 2*a*b*B*x^2))/(2*x^2*(a*b
 + b^2*x) - 2*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + b*B*ArcTanh[(S
qrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] - (Sqrt[b^2]*B*Log[-a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (Sqrt[b^2]*B*Log[a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2
```

fricas [A] time = 0.41, size = 29, normalized size = 0.27

$$\frac{2\,Bbx^2\log(x)-Aa-2\,(Ba+Ab)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b*x^2*log(x) - A*a - 2*(B*a + A*b)*x)/x^2
```

giac [A] time = 0.19, size = 50, normalized size = 0.46

$$Bb\log\left(|x|\right)\mathrm{sgn}\left(bx+a\right)-\frac{Aa\mathrm{sgn}\left(bx+a\right)+2\left(Ba\mathrm{sgn}\left(bx+a\right)+Ab\mathrm{sgn}\left(bx+a\right)\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] B*b*log(abs(x))*sgn(b*x + a) - 1/2*(A*a*sgn(b*x + a) + 2*(B*a*sgn(b*x + a)
+ A*b*sgn(b*x + a))*x)/x^2
```

maple [C] time = 0.06, size = 37, normalized size = 0.34

$$-\frac{\left(-2Bb\,x^2\ln\left(bx\right)+2Abx+2Bax+Aa\right)\mathrm{csgn}\left(bx+a\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x)
```

```
[Out] -1/2*csgn(b*x+a)*(-2*B*ln(b*x)*x^2*b+2*A*b*x+2*B*a*x+A*a)/x^2
```

maxima [B] time = 0.55, size = 172, normalized size = 1.59

$$(-1)^{2\,b^2x+2\,ab}\,Bb\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Bb\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^2}{2\,a^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{x}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab}{2\,ax}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*
b*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*
```

```
b^2/a^2 - sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/x + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*b/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^2)
```

mupad [B] time = 1.33, size = 134, normalized size = 1.24

$$B\ln\left(a\,b+\sqrt{(a+b\,x)^2}\,\sqrt{b^2}+b^2\,x\right)\sqrt{b^2}-\frac{B\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}-\frac{A\,\sqrt{(a+b\,x)^2}\,(a+2\,b\,x)}{2\,x^2\,(a+b\,x)}-\frac{B\,a\,b\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^3,x)
```

```
[Out] B*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x)*(b^2)^(1/2) - (B*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/x - (A*((a + b*x)^2)^(1/2)*(a + 2*b*x))/(2*x^2*
(a + b*x)) - (B*a*b*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/x))/(a^2)^(1/2)
```

sympy [A] time = 0.25, size = 27, normalized size = 0.25

$$Bb\log\left(x\right)+\frac{-Aa+x\left(-2Ab-2Ba\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**3,x)
```

```
[Out] B*b*log(x) + (-A*a + x*(-2*A*b - 2*B*a))/(2*x**2)
```

3.588 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^4}\,dx$

Optimal. Leaf size=75

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2a^2x^2}-\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}$$

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2a^2x^2}-\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^4,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*a^2*x^2) - (A*(a^2
 + 2*a*b*x + b^2*x^2)^(3/2))/(3*a^2*x^3)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^4}\,dx &= -\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}-\frac{\left(2Ab^2-2abB\right)\int \frac{\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx}{2ab}\\
&= -\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}-\frac{\left(\left(2Ab^2-2abB\right)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{ab+b}{x^3}}{2ab\left(ab+b^2x\right)}\\
&= \frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2a^2x^2}-\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 46, normalized size = 0.61

$$-\frac{\sqrt{(a+bx)^2}\,(a(2A+3Bx)+3bx(A+2Bx))}{6x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(3*b*x*(A + 2*B*x) + a*(2*A + 3*B*x)))/(x^3*(a + b*
x))
```

IntegrateAlgebraic [B] time = 6.41, size = 403, normalized size = 5.37

$$\frac{2b^2(a+bx)^2(a+2bx)^{13}\left(2aA+3aBx+3Abx+6bBx^2\right)}{3x^3\sqrt{a^2+2abx+b^2x^2}\left(-2a^{14}b^2-54a^{13}b^3x-676a^{12}b^4x^2-5200a^{11}b^5x^3-27456a^{10}b^6x^4-105248a^9b^7x^5-302016a^8b^8x^6-658944a^7b^9x^7-1098240a^6b^{10}x^8-1391104a^5b^{11}x^9-1317888a^4b^{12}x^{10}-905216a^3b^{13}x^{11}-425984a^2b^{14}x^{12}-122880ab^{15}x^{13}-16384b^{16}x^{14}\right)+3\sqrt{b^2}x^3\left(2a^{15}b+56a^{14}b^2x+730a^{13}b^3x^2+5876a^{12}b^4x^3+32656a^{11}b^5x^4+132704a^{10}b^6x^5+407264a^9b^7x^6+960960a^8b^8x^7+1757184a^7b^9x^8+2489344a^6b^{10}x^9+2708992a^5b^{11}x^{10}+2223104a^4b^{12}x^{11}+1331200a^3b^{13}x^{12}+548864a^2b^{14}x^{13}+139264ab^{15}x^{14}+16384b^{16}x^{15}\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^4,x]
```

```
[Out] (2*b^2*(a + b*x)^2*(a + 2*b*x)^13*(2*a*A + 3*A*b*x + 3*a*B*x + 6*b*B*x^2))/
(3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*a^14*b^2 - 54*a^13*b^3*x - 676*a^1
2*b^4*x^2 - 5200*a^11*b^5*x^3 - 27456*a^10*b^6*x^4 - 105248*a^9*b^7*x^5 - 3
02016*a^8*b^8*x^6 - 658944*a^7*b^9*x^7 - 1098240*a^6*b^10*x^8 - 1391104*a^5
*b^11*x^9 - 1317888*a^4*b^12*x^10 - 905216*a^3*b^13*x^11 - 425984*a^2*b^14*
x^12 - 122880*a*b^15*x^13 - 16384*b^16*x^14) + 3*Sqrt[b^2]*x^3*(2*a^15*b +
56*a^14*b^2*x + 730*a^13*b^3*x^2 + 5876*a^12*b^4*x^3 + 32656*a^11*b^5*x^4 +
 132704*a^10*b^6*x^5 + 407264*a^9*b^7*x^6 + 960960*a^8*b^8*x^7 + 1757184*a^
7*b^9*x^8 + 2489344*a^6*b^10*x^9 + 2708992*a^5*b^11*x^10 + 2223104*a^4*b^12
*x^11 + 1331200*a^3*b^13*x^12 + 548864*a^2*b^14*x^13 + 139264*a*b^15*x^14 +
 16384*b^16*x^15))
```

fricas [A] time = 0.41, size = 27, normalized size = 0.36

$$-\frac{6\,Bbx^2+2\,Aa+3\,(Ba+Ab)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b*x^2 + 2*A*a + 3*(B*a + A*b)*x)/x^3
```

giac [A] time = 0.16, size = 77, normalized size = 1.03

$$-\frac{\left(3\,Bab^2-Ab^3\right)\mathrm{sgn}\left(bx+a\right)}{6\,a^2}-\frac{6\,Bbx^2\mathrm{sgn}\left(bx+a\right)+3\,Bax\mathrm{sgn}\left(bx+a\right)+3\,Abx\mathrm{sgn}\left(bx+a\right)+2\,Aa\mathrm{sgn}\left(bx+a\right)}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] -1/6*(3*B*a*b^2 - A*b^3)*sgn(b*x + a)/a^2 - 1/6*(6*B*b*x^2*sgn(b*x + a) + 3
*B*a*x*sgn(b*x + a) + 3*A*b*x*sgn(b*x + a) + 2*A*a*sgn(b*x + a))/x^3
```

maple [A] time = 0.05, size = 44, normalized size = 0.59

$$-\frac{\left(6Bb\,x^2+3Abx+3Bax+2Aa\right)\sqrt{(bx+a)^2}}{6\,(bx+a)\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x)
```

[Out] -1/6*(6*B*b*x^2+3*A*b*x+3*B*a*x+2*A*a)*((b*x+a)^2)^(1/2)/x^3/(b*x+a)

maxima [B] time = 0.49, size = 195, normalized size = 2.60

$$\frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Bb^2}{2\,a^2} - \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Ab^3}{2\,a^3} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Bb}{2\,ax} - \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Ab^2}{2\,a^2x} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}B}{2\,a^2x^2} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Ab}{2\,a^3x^2} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}A}{3\,a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x, algorithm="maxima")

[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^2/a^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^3/a^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b/(a*x) - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^2/(a^2*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2*x^2) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^3)

mupad [B] time = 1.11, size = 43, normalized size = 0.57

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(2\,A\,a+3\,A\,b\,x+3\,B\,a\,x+6\,B\,b\,x^2\right)}{6\,x^3\,(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^4,x)

[Out] -(((a + b*x)^2)^(1/2)*(2*A*a + 3*A*b*x + 3*B*a*x + 6*B*b*x^2))/(6*x^3*(a + b*x))

sympy [A] time = 0.30, size = 31, normalized size = 0.41

$$\frac{-2Aa - 6Bbx^2 + x(-3Ab - 3Ba)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**4,x)

[Out] (-2*A*a - 6*B*b*x**2 + x*(-3*A*b - 3*B*a))/(6*x**3)

3.589 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^5}\,dx$

Optimal. Leaf size=114

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^3(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^3(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^5,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*x^2*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^5}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^5}+\frac{b(Ab+aB)}{x^4}+\frac{b^2B}{x^3}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{bB\sqrt{a^2+2abx}}{2x^2(a+b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\,\left(3aA+4aBx+4Abx+6bBx^2\right)}{12x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(3*a*A + 4*A*b*x + 4*a*B*x + 6*b*B*x^2))/(x^4*(a +
 b*x))
```

IntegrateAlgebraic [B] time = 24.77, size = 911, normalized size = 7.99

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^5,x]
```

```
[Out] (2*b^3*(a + b*x)^3*(a + 2*b*x)^35*(3*a*A + 4*A*b*x + 4*a*B*x + 6*b*B*x^2))/
(3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-4*a^37*b^3 - 288*a^36*b^4*x - 10084*
a^35*b^5*x^2 - 228760*a^34*b^6*x^3 - 3779440*a^33*b^7*x^4 - 48464416*a^32*b
^8*x^5 - 501985792*a^31*b^9*x^6 - 4315565056*a^30*b^10*x^7 - 31402117120*a^
29*b^11*x^8 - 196248391680*a^28*b^12*x^9 - 1065250041856*a^27*b^13*x^10 - 5
066401062912*a^26*b^14*x^11 - 21259428642816*a^25*b^15*x^12 - 7913786818560
0*a^24*b^16*x^13 - 262465791590400*a^23*b^17*x^14 - 778172761374720*a^22*b^
18*x^15 - 2067755685642240*a^21*b^19*x^16 - 4933278703288320*a^20*b^20*x^17
 - 10580255087001600*a^19*b^21*x^18 - 20409249457766400*a^18*b^22*x^19 - 35
409421758627840*a^17*b^23*x^20 - 55221240075386880*a^16*b^24*x^21 - 7731415
9112355840*a^15*b^25*x^22 - 96998462482022400*a^14*b^26*x^23 - 108767506700
697600*a^13*b^27*x^24 - 108638277979865088*a^12*b^28*x^25 - 962323207799439
36*a^11*b^29*x^26 - 75182398031003648*a^10*b^30*x^27 - 51445338388561920*a^
9*b^31*x^28 - 30562203446804480*a^8*b^32*x^29 - 15586101309734912*a^7*b^33*
x^30 - 6724046179794944*a^6*b^34*x^31 - 2406264017518592*a^5*b^35*x^32 - 69
5097507184640*a^4*b^36*x^33 - 155735514152960*a^3*b^37*x^34 - 253918466539
52*a^2*b^38*x^35 - 2680059592704*a*b^39*x^36 - 137438953472*b^40*x^37) + 3*S
qrt[b^2]*x^4*(4*a^38*b^2 + 292*a^37*b^3*x + 10372*a^36*b^4*x^2 + 238844*a^3
5*b^5*x^3 + 4008200*a^34*b^6*x^4 + 52243856*a^33*b^7*x^5 + 550450208*a^32*b
^8*x^6 + 4817550848*a^31*b^9*x^7 + 35717682176*a^30*b^10*x^8 + 227650508800
*a^29*b^11*x^9 + 1261498433536*a^28*b^12*x^10 + 6131651104768*a^27*b^13*x^1
1 + 26325829705728*a^26*b^14*x^12 + 100397296828416*a^25*b^15*x^13 + 341603
659776000*a^24*b^16*x^14 + 1040638552965120*a^23*b^17*x^15 + 28459284470169
60*a^22*b^18*x^16 + 7001034388930560*a^21*b^19*x^17 + 15513533790289920*a^2
0*b^20*x^18 + 30989504544768000*a^19*b^21*x^19 + 55818671216394240*a^18*b^2
2*x^20 + 90630661834014720*a^17*b^23*x^21 + 132535399187742720*a^16*b^24*x^
22 + 174312621594378240*a^15*b^25*x^23 + 205765969182720000*a^14*b^26*x^24
+ 217405784680562688*a^13*b^27*x^25 + 204870598759809024*a^12*b^28*x^26 + 1
71414718810947584*a^11*b^29*x^27 + 126627736419565568*a^10*b^30*x^28 + 8200
7541835366400*a^9*b^31*x^29 + 46148304756539392*a^8*b^32*x^30 + 22310147489
529856*a^7*b^33*x^31 + 9130310197313536*a^6*b^34*x^32 + 3101361524703232*a^
5*b^35*x^33 + 850833021337600*a^4*b^36*x^34 + 181127360806912*a^3*b^37*x^35
 + 28071906246656*a^2*b^38*x^36 + 2817498546176*a*b^39*x^37 + 137438953472*
b^40*x^38))
```

fricas [A] time = 0.40, size = 27, normalized size = 0.24

$$-\frac{6\,Bbx^{2} + 3\,Aa + 4\,(Ba + Ab)x}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*b*x^2 + 3*A*a + 4*(B*a + A*b)*x)/x^4
```

giac [A] time = 0.16, size = 77, normalized size = 0.68

$$\frac{\left(2\,Bab^{3} - Ab^{4}\right)\mathrm{sgn}\left(bx + a\right)}{12\,a^{3}} - \frac{6\,Bbx^{2}\mathrm{sgn}\left(bx + a\right) + 4\,Baxsgn\left(bx + a\right) + 4\,Abxsgn\left(bx + a\right) + 3\,Aasgn\left(bx + a\right)}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/12*(2*B*a*b^3 - A*b^4)*sgn(b*x + a)/a^3 - 1/12*(6*B*b*x^2*sgn(b*x + a) +
4*B*a*x*sgn(b*x + a) + 4*A*b*x*sgn(b*x + a) + 3*A*a*sgn(b*x + a))/x^4
```

maple [**A**] time = 0.06, size = 44, normalized size = 0.39

$$-\frac{\left(6Bb\,x^2+4Abx+4Bax+3Aa\right)\sqrt{(bx+a)^2}}{12\,(bx+a)\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x)
```

```
[Out] -1/12*(6*B*b*x^2+4*A*b*x+4*B*a*x+3*A*a)*((b*x+a)^2)^(1/2)/x^4/(b*x+a)
```

maxima [**B**] time = 0.54, size = 255, normalized size = 2.24

$$-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^3}{2\,a^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^4}{2\,a^4}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2}{2\,a^2x}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^3}{2\,a^3x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb}{2\,a^3x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^2}{2\,a^4x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}B}{3\,a^2x^3}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab}{12\,a^3x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A}{4\,a^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3/a^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*A*b^4/a^4 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^2/(a^2*x) + 1/2*sqr
t(b^2*x^2 + 2*a*b*x + a^2)*A*b^3/(a^3*x) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*B*b/(a^3*x^2) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^2/(a^4*x^2) - 1
/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2*x^3) + 5/12*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*A*b/(a^3*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^4)
```

mupad [**B**] time = 1.13, size = 43, normalized size = 0.38

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(3\,A\,a+4\,A\,b\,x+4\,B\,a\,x+6\,B\,b\,x^2\right)}{12\,x^4\,(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^5,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(3*A*a + 4*A*b*x + 4*B*a*x + 6*B*b*x^2))/(12*x^4*(a +
 b*x))
```

sympy [**A**] time = 0.37, size = 31, normalized size = 0.27

$$\frac{-3Aa-6Bbx^2+x\,(-4Ab-4Ba)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**5,x)
```

```
[Out] (-3*A*a - 6*B*b*x**2 + x*(-4*A*b - 4*B*a))/(12*x**4)
```

3.590 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^6}\,dx$

Optimal. Leaf size=114

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^6,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(3*x^3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^6}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^6}+\frac{b(Ab+aB)}{x^5}+\frac{b^2B}{x^4}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{bB\sqrt{a^2+2a}}{3x^3(a-}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\,(3a(4A+5Bx)+5bx(3A+4Bx))}{60x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(5*b*x*(3*A + 4*B*x) + 3*a*(4*A + 5*B*x)))/(x^5*(a
 + b*x))
```

IntegrateAlgebraic [B] time = 1.52, size = 448, normalized size = 3.93

$$\frac{4b^4\sqrt{a^2+2abx+b^2x^2}\left(-12a^5Ab-15a^5bBx-63a^4Ab^2x-80a^4b^2Bx^2-132a^3Ab^3x^2-170a^3b^3Bx^3-138a^2Ab^4x^3-180a^2b^4Bx^4-72aAb^5x^4-95ab^5Bx^5-15Ab^6x^5-20b^6Bx^6\right)+4\sqrt{b^2}\,b^4\left(12a^6A+15a^6Bx+75a^5Abx+95a^5bBx^2+195a^4Ab^2x^2+250a^4b^2Bx^3+270a^3Ab^3x^3+350a^3b^3Bx^4+210a^2Ab^4x^4+275a^2b^4Bx^5+87aAb^5x^5+115ab^5Bx^6+15Ab^6x^6+20b^6Bx^7\right)}{15\sqrt{b^2}\,x^5\sqrt{a^2+2abx+b^2x^2}\left(-16a^4b^4-64a^3b^5x-96a^2b^6x^2-64ab^7x^3-16b^8x^4\right)+15x^5\left(16a^5b^5+80a^4b^6x+160a^3b^7x^2+160a^2b^8x^3+80ab^9x^4+16b^{10}x^5\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^6,x]
```

```
[Out] (4*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-12*a^5*A*b - 63*a^4*A*b^2*x - 15*a^5
*b*B*x - 132*a^3*A*b^3*x^2 - 80*a^4*b^2*B*x^2 - 138*a^2*A*b^4*x^3 - 170*a^3
*b^3*B*x^3 - 72*a*A*b^5*x^4 - 180*a^2*b^4*B*x^4 - 15*A*b^6*x^5 - 95*a*b^5*B
*x^5 - 20*b^6*B*x^6) + 4*b^4*Sqrt[b^2]*(12*a^6*A + 75*a^5*A*b*x + 15*a^6*B*
x + 195*a^4*A*b^2*x^2 + 95*a^5*b*B*x^2 + 270*a^3*A*b^3*x^3 + 250*a^4*b^2*B*
x^3 + 210*a^2*A*b^4*x^4 + 350*a^3*b^3*B*x^4 + 87*a*A*b^5*x^5 + 275*a^2*b^4*
B*x^5 + 15*A*b^6*x^6 + 115*a*b^5*B*x^6 + 20*b^6*B*x^7))/(15*Sqrt[b^2]*x^5*S
qrt[a^2 + 2*a*b*x + b^2*x^2]*(-16*a^4*b^4 - 64*a^3*b^5*x - 96*a^2*b^6*x^2 -
 64*a*b^7*x^3 - 16*b^8*x^4) + 15*x^5*(16*a^5*b^5 + 80*a^4*b^6*x + 160*a^3*b
^7*x^2 + 160*a^2*b^8*x^3 + 80*a*b^9*x^4 + 16*b^10*x^5))
```

fricas [A] time = 0.40, size = 27, normalized size = 0.24

$$-\frac{20\,Bbx^2+12\,Aa+15\,(Ba+Ab)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b*x^2 + 12*A*a + 15*(B*a + A*b)*x)/x^5
```

giac [A] time = 0.22, size = 77, normalized size = 0.68

$$-\frac{\left(5\,Bab^4-3\,Ab^5\right)\mathrm{sgn}\left(bx+a\right)}{60\,a^4}-\frac{20\,Bbx^2\mathrm{sgn}\left(bx+a\right)+15\,Bax\mathrm{sgn}\left(bx+a\right)+15\,Abx\mathrm{sgn}\left(bx+a\right)+12\,Aa\mathrm{sgn}\left(bx+a\right)}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/60*(5*B*a*b^4 - 3*A*b^5)*sgn(b*x + a)/a^4 - 1/60*(20*B*b*x^2*sgn(b*x + a
) + 15*B*a*x*sgn(b*x + a) + 15*A*b*x*sgn(b*x + a) + 12*A*a*sgn(b*x + a))/x^
5
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$-\frac{\left(20Bb\,x^2+15Abx+15Bax+12Aa\right)\sqrt{\left(bx+a\right)^2}}{60\left(bx+a\right)x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x)
```

```
[Out] -1/60*(20*B*b*x^2+15*A*b*x+15*B*a*x+12*A*a)*((b*x+a)^2)^(1/2)/x^5/(b*x+a)
```

maxima [B] time = 0.65, size = 315, normalized size = 2.76

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^4}{2\,a^4}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^5}{2\,a^5}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^3}{2\,a^3x}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^4}{2\,a^4x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^2}{2\,a^4x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^3}{2\,a^5x^2}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb}{12\,a^3x^3}-\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^2}{20\,a^4x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}B}{4\,a^2x^4}+\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab}{20\,a^3x^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A}{5\,a^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4/a^4 - 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*b^5/a^5 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3/(a^3*x) - 1/2*sqrt
(b^2*x^2 + 2*a*b*x + a^2)*A*b^4/(a^4*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*B*b^2/(a^4*x^2) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^3/(a^5*x^2) +
5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b/(a^3*x^3) - 9/20*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*A*b^2/(a^4*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2
*x^4) + 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b/(a^3*x^4) - 1/5*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A/(a^2*x^5)
```

mupad [B] time = 1.12, size = 43, normalized size = 0.38

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(12\,A\,a+15\,A\,b\,x+15\,B\,a\,x+20\,B\,b\,x^2\right)}{60\,x^5\,(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^6,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(12*A*a + 15*A*b*x + 15*B*a*x + 20*B*b*x^2))/(60*x^5*
(a + b*x))
```

sympy [A] time = 0.43, size = 31, normalized size = 0.27

$$\frac{-12Aa-20Bbx^2+x\,(-15Ab-15Ba)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**6,x)
```

```
[Out] (-12*A*a - 20*B*b*x**2 + x*(-15*A*b - 15*B*a))/(60*x**5)
```

3.591 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^7}\,dx$

Optimal. Leaf size=114

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^7,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(4*x^4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^7}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^7}+\frac{b(Ab+aB)}{x^6}+\frac{b^2B}{x^5}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{bB\sqrt{a^2+2abx}}{4x^4(a+b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\,(2a(5A+6Bx)+3bx(4A+5Bx))}{60x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(3*b*x*(4*A + 5*B*x) + 2*a*(5*A + 6*B*x)))/(x^6*(a
 + b*x))
```

IntegrateAlgebraic [**B**] time = 1.78, size = 518, normalized size = 4.54

$$\frac{8b^5\sqrt{a^2+2abx+b^2x^2}\left(-10a^6Ab-12a^6bBx-62a^5Ab^2x-75a^5b^2Bx^2-160a^4Ab^3x^2-195a^4b^3Bx^3-220a^3Ab^4x^3-270a^3b^4Bx^4-170a^2Ab^5x^4-210a^2b^5Bx^5-70aAb^6x^5-87ab^6Bx^6-12Ab^7x^6-15b^7Bx^7\right)+8\sqrt{b^2}\,b^5\left(10a^7A+12a^7Bx+72a^6Abx+87a^6bBx^2+222a^5Ab^2x^2+270a^5b^2Bx^3+380a^4Ab^3x^3+465a^4b^3Bx^4+390a^3Ab^4x^4+480a^3b^4Bx^5+240a^2Ab^5x^5+297a^2b^5Bx^6+82aAb^6x^6+102ab^6Bx^7+12Ab^7x^7+15b^7Bx^8\right)}{15\sqrt{b^2}\,x^6\sqrt{a^2+2abx+b^2x^2}\left(-32a^5b^5-160a^4b^6x-320a^3b^7x^2-320a^2b^8x^3-160ab^9x^4-32b^{10}x^5\right)+15x^6\left(32a^6b^6+192a^5b^7x+480a^4b^8x^2+640a^3b^9x^3+480a^2b^{10}x^4+192ab^{11}x^5+32b^{12}x^6\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^7,x]
```

```
[Out] (8*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-10*a^6*A*b - 62*a^5*A*b^2*x - 12*a^6
*b*B*x - 160*a^4*A*b^3*x^2 - 75*a^5*b^2*B*x^2 - 220*a^3*A*b^4*x^3 - 195*a^4
*b^3*B*x^3 - 170*a^2*A*b^5*x^4 - 270*a^3*b^4*B*x^4 - 70*a*A*b^6*x^5 - 210*a
^2*b^5*B*x^5 - 12*A*b^7*x^6 - 87*a*b^6*B*x^6 - 15*b^7*B*x^7) + 8*b^5*Sqrt[b
^2]*(10*a^7*A + 72*a^6*A*b*x + 12*a^7*B*x + 222*a^5*A*b^2*x^2 + 87*a^6*b*B*
x^2 + 380*a^4*A*b^3*x^3 + 270*a^5*b^2*B*x^3 + 390*a^3*A*b^4*x^4 + 465*a^4*b
^3*B*x^4 + 240*a^2*A*b^5*x^5 + 480*a^3*b^4*B*x^5 + 82*a*A*b^6*x^6 + 297*a^2
*b^5*B*x^6 + 12*A*b^7*x^7 + 102*a*b^6*B*x^7 + 15*b^7*B*x^8))/(15*Sqrt[b^2]*
x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-32*a^5*b^5 - 160*a^4*b^6*x - 320*a^3*b^
7*x^2 - 320*a^2*b^8*x^3 - 160*a*b^9*x^4 - 32*b^10*x^5) + 15*x^6*(32*a^6*b^6
 + 192*a^5*b^7*x + 480*a^4*b^8*x^2 + 640*a^3*b^9*x^3 + 480*a^2*b^10*x^4 + 1
92*a*b^11*x^5 + 32*b^12*x^6))
```

fricas [**A**] time = 0.40, size = 27, normalized size = 0.24

$$-\frac{15\,Bbx^2+10\,Aa+12\,(Ba+Ab)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*B*b*x^2 + 10*A*a + 12*(B*a + A*b)*x)/x^6
```

giac [**A**] time = 0.16, size = 77, normalized size = 0.68

$$\frac{\left(3\,Bab^5-2\,Ab^6\right)\mathrm{sgn}\left(bx+a\right)}{60\,a^5}-\frac{15\,Bbx^2\mathrm{sgn}\left(bx+a\right)+12\,Bax\mathrm{sgn}\left(bx+a\right)+12\,Abx\mathrm{sgn}\left(bx+a\right)+10\,Aa\mathrm{sgn}\left(bx+a\right)}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/60*(3*B*a*b^5 - 2*A*b^6)*sgn(b*x + a)/a^5 - 1/60*(15*B*b*x^2*sgn(b*x + a)
 + 12*B*a*x*sgn(b*x + a) + 12*A*b*x*sgn(b*x + a) + 10*A*a*sgn(b*x + a))/x^6
```

maple [**A**] time = 0.05, size = 44, normalized size = 0.39

$$-\frac{\left(15Bb\,x^2+12Abx+12Bax+10Aa\right)\sqrt{\left(bx+a\right)^2}}{60\left(bx+a\right)x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x)
```

```
[Out] -1/60*(15*B*b*x^2+12*A*b*x+12*B*a*x+10*A*a)*((b*x+a)^2)^(1/2)/x^6/(b*x+a)
```

maxima [**B**] time = 0.61, size = 375, normalized size = 3.29

$$-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^5}{2\,a^5}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^6}{2\,a^6}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^4}{2\,a^4x}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^5}{2\,a^5x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^3}{2\,a^5x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^4}{2\,a^6x^2}-\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^2}{20\,a^4x^3}+\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^3}{15\,a^5x^3}+\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb}{20\,a^3x^4}-\frac{2\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^2}{5\,a^4x^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}B}{5\,a^2x^5}+\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab}{10\,a^3x^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A}{6\,a^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^5/a^5 + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*A*b^6/a^6 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4/(a^4*x) + 1/2*sqr
t(b^2*x^2 + 2*a*b*x + a^2)*A*b^5/(a^5*x) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*B*b^3/(a^5*x^2) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^4/(a^6*x^2) -
 9/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^2/(a^4*x^3) + 7/15*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*A*b^3/(a^5*x^3) + 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*
b/(a^3*x^4) - 2/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^2/(a^4*x^4) - 1/5*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2*x^5) + 3/10*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*A*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^6)
```

mupad [B] time = 1.15, size = 43, normalized size = 0.38

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(10\,A\,a+12\,A\,b\,x+12\,B\,a\,x+15\,B\,b\,x^2\right)}{60\,x^6\,(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^7,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(10*A*a + 12*A*b*x + 12*B*a*x + 15*B*b*x^2))/(60*x^6*
(a + b*x))
```

sympy [A] time = 0.51, size = 31, normalized size = 0.27

$$\frac{-10Aa-15Bbx^2+x\,(-12Ab-12Ba)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**7,x)
```

```
[Out] (-10*A*a - 15*B*b*x**2 + x*(-12*A*b - 12*B*a))/(60*x**6)
```

3.592 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{3abx^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8(a+bx)}+\frac{a^2x^7\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7(a+bx)}$$

Rubi [A] time = 0.13, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{3abx^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8(a+bx)}+\frac{a^2x^7\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7(a+bx)}+\frac{a^3Ax^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{b^3Bx^{10}\sqrt{a^2+2abx+b^2x^2}}{10(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (3*a*b*(A*b + a*B)*x^8
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^9*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (b^3*B*x^10*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(10*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^5\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^5+a^2b^3(3Ab+aB)x^6+3ab^4(Ab+a\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{a^3Ax^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{a^2(3Ab+aB)x^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^6\sqrt{(a+bx)^2}\left(60a^3(7A+6Bx)+135a^2bx(8A+7Bx)+105ab^2x^2(9A+8Bx)+28b^3x^3(10A+9Bx)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^6*Sqrt[(a + b*x)^2]*(60*a^3*(7*A + 6*B*x) + 135*a^2*b*x*(8*A + 7*B*x) +
105*a*b^2*x^2*(9*A + 8*B*x) + 28*b^3*x^3*(10*A + 9*B*x)))/(2520*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.09, size = 0, normalized size = 0.00

$$\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.42, size = 73, normalized size = 0.35

$$\frac{1}{10}\,Bb^3x^{10}+\frac{1}{6}\,Aa^3x^6+\frac{1}{9}\left(3\,Bab^2+Ab^3\right)x^9+\frac{3}{8}\left(Ba^2b+Aab^2\right)x^8+\frac{1}{7}\left(Ba^3+3\,Aa^2b\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/10*B*b^3*x^10 + 1/6*A*a^3*x^6 + 1/9*(3*B*a*b^2 + A*b^3)*x^9 + 3/8*(B*a^2*
b + A*a*b^2)*x^8 + 1/7*(B*a^3 + 3*A*a^2*b)*x^7
```

giac [A] time = 0.18, size = 150, normalized size = 0.71

$$\frac{1}{10}\,Bb^3x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Bab^2x^9\mathrm{sgn}\left(bx+a\right)+\frac{1}{9}\,Ab^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,Ba^2bx^8\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,Aab^2x^8\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,Ba^3x^7\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}\,Aa^2bx^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Aa^3x^6\mathrm{sgn}\left(bx+a\right)+\frac{\left(3\,Ba^{10}-5\,Aa^9b\right)\mathrm{sgn}\left(bx+a\right)}{2520\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/10*B*b^3*x^10*sgn(b*x + a) + 1/3*B*a*b^2*x^9*sgn(b*x + a) + 1/9*A*b^3*x^9
*sgn(b*x + a) + 3/8*B*a^2*b*x^8*sgn(b*x + a) + 3/8*A*a*b^2*x^8*sgn(b*x + a)
 + 1/7*B*a^3*x^7*sgn(b*x + a) + 3/7*A*a^2*b*x^7*sgn(b*x + a) + 1/6*A*a^3*x^
6*sgn(b*x + a) + 1/2520*(3*B*a^10 - 5*A*a^9*b)*sgn(b*x + a)/b^7
```

maple [A] time = 0.06, size = 92, normalized size = 0.44

$$\frac{\left(252b^3Bx^4+280Ab^3x^3+840x^3Bab^2+945x^2Aab^2+945Ba^2bx^2+1080xAa^2b+360Ba^3x+420Aa^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^6}{2520\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x^6*(252*B*b^3*x^4+280*A*b^3*x^3+840*B*a*b^2*x^3+945*A*a*b^2*x^2+945
*B*a^2*b*x^2+1080*A*a^2*b*x+360*B*a^3*x+420*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a
)^3
```

maxima [B] time = 0.70, size = 421, normalized size = 2.00

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx^5}{10\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bax^4}{6\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ax^4}{9\,b^2}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2x^3}{24\,b^4}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aax^3}{72\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^6x}{4\,b^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^5x}{4\,b^5}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3x^2}{56\,b^5}+\frac{37\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^2x^2}{168\,b^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^7}{4\,b^7}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^6}{4\,b^6}+\frac{41\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^4x}{168\,b^6}-\frac{121\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^3x}{504\,b^5}-\frac{209\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^5}{840\,b^7}+\frac{125\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^4}{504\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^5/b^2 - 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*a*x^4/b^3 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x^4/b^2 + 5/2
4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*x^3/b^4 - 13/72*(b^2*x^2 + 2*a*b*x
```

```
+ a^2)^(5/2)*A*a*x^3/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^6*x/b^6
- 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^5*x/b^5 - 13/56*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*B*a^3*x^2/b^5 + 37/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^2
*x^2/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^7/b^7 - 1/4*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*A*a^6/b^6 + 41/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^
4*x/b^6 - 121/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^3*x/b^5 - 209/840*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5/b^7 + 125/504*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*A*a^4/b^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^5 (A + Bx) \left(a^2 + 2abx + b^2x^2\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^5 (A + Bx) \left((a + bx)^2\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**5*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.593 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8(a+bx)}+\frac{3abx^7\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{a^2x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{6(a+bx)}+$$

Rubi [A] time = 0.09, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8(a+bx)}+\frac{3abx^7\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{a^2x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{6(a+bx)}+\frac{a^3Ax^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{b^3Bx^9\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (3*a*b*(A*b + a*B)*x^7
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^8*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (b^3*B*x^9*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^4\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^4+a^2b^3(3Ab+aB)x^5+3ab^4(Ab+aB)\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{a^3Ax^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{a^2(3Ab+aB)x^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^5\sqrt{(a+bx)^2}\left(84a^3(6A+5Bx)+180a^2bx(7A+6Bx)+135ab^2x^2(8A+7Bx)+35b^3x^3(9A+8Bx)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^5*Sqrt[(a + b*x)^2]*(84*a^3*(6*A + 5*B*x) + 180*a^2*b*x*(7*A + 6*B*x) +
135*a*b^2*x^2*(8*A + 7*B*x) + 35*b^3*x^3*(9*A + 8*B*x)))/(2520*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.03, size = 0, normalized size = 0.00

$$\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.39, size = 73, normalized size = 0.35

$$\frac{1}{9}\,Bb^3x^9+\frac{1}{5}\,Aa^3x^5+\frac{1}{8}\left(3\,Bab^2+Ab^3\right)x^8+\frac{3}{7}\left(Ba^2b+Aab^2\right)x^7+\frac{1}{6}\left(Ba^3+3\,Aa^2b\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/9*B*b^3*x^9 + 1/5*A*a^3*x^5 + 1/8*(3*B*a*b^2 + A*b^3)*x^8 + 3/7*(B*a^2*b
+ A*a*b^2)*x^7 + 1/6*(B*a^3 + 3*A*a^2*b)*x^6
```

giac [A] time = 0.21, size = 150, normalized size = 0.71

$$\frac{1}{9}\,Bb^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,Bab^2x^8\mathrm{sgn}\left(bx+a\right)+\frac{1}{8}\,Ab^3x^8\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}\,Ba^2bx^7\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}\,Aab^2x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Ba^3x^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Aa^2bx^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Aa^3x^5\mathrm{sgn}\left(bx+a\right)-\frac{\left(5\,Ba^9-9\,Aa^8b\right)\mathrm{sgn}\left(bx+a\right)}{2520\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/9*B*b^3*x^9*sgn(b*x + a) + 3/8*B*a*b^2*x^8*sgn(b*x + a) + 1/8*A*b^3*x^8*s
gn(b*x + a) + 3/7*B*a^2*b*x^7*sgn(b*x + a) + 3/7*A*a*b^2*x^7*sgn(b*x + a) +
 1/6*B*a^3*x^6*sgn(b*x + a) + 1/2*A*a^2*b*x^6*sgn(b*x + a) + 1/5*A*a^3*x^5*
sgn(b*x + a) - 1/2520*(5*B*a^9 - 9*A*a^8*b)*sgn(b*x + a)/b^6
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$\frac{\left(280b^3B\,x^4+315A\,b^3x^3+945x^3Ba\,b^2+1080x^2Aa\,b^2+1080B\,a^2b\,x^2+1260xA\,a^2b+420B\,a^3x+504A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^5}{2520\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x^5*(280*B*b^3*x^4+315*A*b^3*x^3+945*B*a*b^2*x^3+1080*A*a*b^2*x^2+10
80*B*a^2*b*x^2+1260*A*a^2*b*x+420*B*a^3*x+504*A*a^3)*((b*x+a)^2)^(3/2)/(b*x
+a)^3
```

maxima [B] time = 0.57, size = 361, normalized size = 1.72

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx^4}{9\,b^2}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bax^3}{72\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ax^3}{8\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^5x}{4\,b^5}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^4x}{4\,b^4}+\frac{37\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2x^2}{168\,b^4}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aax^2}{56\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^6}{4\,b^6}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^5}{4\,b^5}-\frac{121\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3x}{504\,b^5}+\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^2x}{56\,b^4}+\frac{125\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^4}{504\,b^6}-\frac{69\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^3}{280\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^4/b^2 - 13/72*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*a*x^3/b^3 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x^3/b^2 - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5*x/b^5 + 1/4*(b^2*x^2 + 2*a*b*x + a^
```

```
2)^(3/2)*A*a^4*x/b^4 + 37/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*x^2/b^4
 - 11/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*x^2/b^3 - 1/4*(b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*B*a^6/b^6 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^5/b^5 -
 121/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*x/b^5 + 13/56*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*A*a^2*x/b^4 + 125/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a
^4/b^6 - 69/280*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^3/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{4}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.594 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^7\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{abx^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2(a+bx)}+\frac{a^2x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5(a+bx)}$$

Rubi [A] time = 0.09, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^2x^7\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{abx^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2(a+bx)}+\frac{a^2x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5(a+bx)}+\frac{a^3Ax^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{b^3Bx^8\sqrt{a^2+2abx+b^2x^2}}{8(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (a*b*(A*b + a*B)*x^6*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^7*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (b^3*B*x^8*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(8*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^3\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^3+a^2b^3(3Ab+aB)x^4+3ab^4(Ab+a\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{a^3Ax^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{a^2(3Ab+aB)x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^4\sqrt{(a+bx)^2}\left(14a^3(5A+4Bx)+28a^2bx(6A+5Bx)+20ab^2x^2(7A+6Bx)+5b^3x^3(8A+7Bx)\right)}{280(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^4*Sqrt[(a + b*x)^2]*(14*a^3*(5*A + 4*B*x) + 28*a^2*b*x*(6*A + 5*B*x) + 2
0*a*b^2*x^2*(7*A + 6*B*x) + 5*b^3*x^3*(8*A + 7*B*x)))/(280*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.97, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.41, size = 73, normalized size = 0.35

$$\frac{1}{8}Bb^3x^8+\frac{1}{4}Aa^3x^4+\frac{1}{7}\left(3\,Bab^2+Ab^3\right)x^7+\frac{1}{2}\left(Ba^2b+Aab^2\right)x^6+\frac{1}{5}\left(Ba^3+3\,Aa^2b\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/8*B*b^3*x^8 + 1/4*A*a^3*x^4 + 1/7*(3*B*a*b^2 + A*b^3)*x^7 + 1/2*(B*a^2*b
+ A*a*b^2)*x^6 + 1/5*(B*a^3 + 3*A*a^2*b)*x^5
```

giac [A] time = 0.20, size = 149, normalized size = 0.71

$$\frac{1}{8}Bb^3x^8\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}Bab^2x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}Ab^3x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Ba^2bx^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Aab^2x^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}Ba^3x^5\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}Aa^2bx^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}Aa^3x^4\mathrm{sgn}\left(bx+a\right)+\frac{\left(Ba^8-2\,Aa^7b\right)\mathrm{sgn}\left(bx+a\right)}{280\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^3*x^8*sgn(b*x + a) + 3/7*B*a*b^2*x^7*sgn(b*x + a) + 1/7*A*b^3*x^7*s
gn(b*x + a) + 1/2*B*a^2*b*x^6*sgn(b*x + a) + 1/2*A*a*b^2*x^6*sgn(b*x + a) +
 1/5*B*a^3*x^5*sgn(b*x + a) + 3/5*A*a^2*b*x^5*sgn(b*x + a) + 1/4*A*a^3*x^4*
sgn(b*x + a) + 1/280*(B*a^8 - 2*A*a^7*b)*sgn(b*x + a)/b^5
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$\frac{\left(35b^3B\,x^4+40A\,b^3x^3+120x^3Ba\,b^2+140x^2Aa\,b^2+140B\,a^2b\,x^2+168xA\,a^2b+56B\,a^3x+70A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^4}{280\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/280*x^4*(35*B*b^3*x^4+40*A*b^3*x^3+120*B*a*b^2*x^3+140*A*a*b^2*x^2+140*B*
a^2*b*x^2+168*A*a^2*b*x+56*B*a^3*x+70*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.57, size = 301, normalized size = 1.43

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx^3}{8\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^4x}{4\,b^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^3x}{4\,b^3}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bax^2}{56\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ax^2}{7\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^5}{4\,b^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^4}{4\,b^4}+\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2x}{56\,b^4}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aax}{14\,b^3}-\frac{69\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3}{280\,b^5}+\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^2}{70\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^3/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*B*a^4*x/b^4 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^3*x/b^3 - 11
/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*x^2/b^3 + 1/7*(b^2*x^2 + 2*a*b*x +
```

```
a^2)^(5/2)*A*x^2/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5/b^5 - 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^4/b^4 + 13/56*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*B*a^2*x/b^4 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*x/b^3 - 69/28
0*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3/b^5 + 17/70*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*A*a^2/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x**3*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.595 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^6\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6(a+bx)}+\frac{3abx^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{a^2x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{4(a+bx)}+$$

Rubi [A] time = 0.09, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^2x^6\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6(a+bx)}+\frac{3abx^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{a^2x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{4(a+bx)}+\frac{a^3Ax^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{b^3Bx^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (3*a*b*(A*b + a*B)*x^5
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^6*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (b^3*B*x^7*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^2\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^2+a^2b^3(3Ab+aB)x^3+3ab^4(Ab+aB)\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{a^3Ax^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{a^2(3Ab+aB)x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^3\sqrt{(a+bx)^2}\left(35a^3(4A+3Bx)+63a^2bx(5A+4Bx)+42ab^2x^2(6A+5Bx)+10b^3x^3(7A+6Bx)\right)}{420(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^3*Sqrt[(a + b*x)^2]*(35*a^3*(4*A + 3*B*x) + 63*a^2*b*x*(5*A + 4*B*x) + 4
2*a*b^2*x^2*(6*A + 5*B*x) + 10*b^3*x^3*(7*A + 6*B*x)))/(420*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.94, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.41, size = 73, normalized size = 0.35

$$\frac{1}{7}Bb^3x^7+\frac{1}{3}Aa^3x^3+\frac{1}{6}\left(3Bab^2+Ab^3\right)x^6+\frac{3}{5}\left(Ba^2b+Aab^2\right)x^5+\frac{1}{4}\left(Ba^3+3Aa^2b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b^3*x^7 + 1/3*A*a^3*x^3 + 1/6*(3*B*a*b^2 + A*b^3)*x^6 + 3/5*(B*a^2*b
+ A*a*b^2)*x^5 + 1/4*(B*a^3 + 3*A*a^2*b)*x^4
```

giac [A] time = 0.16, size = 150, normalized size = 0.71

$$\frac{1}{7}Bb^3x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Bab^2x^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}Ab^3x^6\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}Ba^2bx^5\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}Aab^2x^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}Ba^3x^4\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}Aa^2bx^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}Aa^3x^3\mathrm{sgn}\left(bx+a\right)-\frac{\left(3Ba^7-7Aa^6b\right)\mathrm{sgn}\left(bx+a\right)}{420b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^3*x^7*sgn(b*x + a) + 1/2*B*a*b^2*x^6*sgn(b*x + a) + 1/6*A*b^3*x^6*s
gn(b*x + a) + 3/5*B*a^2*b*x^5*sgn(b*x + a) + 3/5*A*a*b^2*x^5*sgn(b*x + a) +
 1/4*B*a^3*x^4*sgn(b*x + a) + 3/4*A*a^2*b*x^4*sgn(b*x + a) + 1/3*A*a^3*x^3*
sgn(b*x + a) - 1/420*(3*B*a^7 - 7*A*a^6*b)*sgn(b*x + a)/b^4
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$\frac{\left(60b^3Bx^4+70Ab^3x^3+210x^3Bab^2+252x^2Aab^2+252Ba^2bx^2+315xAa^2b+105Ba^3x+140Aa^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^3}{420\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/420*x^3*(60*B*b^3*x^4+70*A*b^3*x^3+210*B*a*b^2*x^3+252*A*a*b^2*x^2+252*B*
a^2*b*x^2+315*A*a^2*b*x+105*B*a^3*x+140*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [A] time = 0.54, size = 241, normalized size = 1.15

$$-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^3x}{4b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aa^2x}{4b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bx^2}{7b^2}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^4}{4b^4}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aa^3}{4b^3}-\frac{3\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bax}{14b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ax}{6b^2}+\frac{17\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^2}{70b^4}-\frac{7\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Aa}{30b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^3*x/b^3 + 1/4*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*A*a^2*x/b^2 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^2/b^2 - 1
/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^4/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2
```

```
)^(3/2)*A*a^3/b^3 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*x/b^3 + 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x/b^2 + 17/70*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*a^2/b^4 - 7/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a/b^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 \, (A + B\,x) \left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 (A + Bx) \left((a + bx)^2\right)^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x**2*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.596 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=121

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(Ab-2aB)}{5b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+b$$

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 76}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(Ab-2aB)}{5b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{6b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3) + ((A*b
- 2*a*B)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^3) + (B*(a + b*x)^
5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(\frac{a(-Ab+aB)\left(ab+b^2x\right)^3}{b^2}+\frac{(Ab-2aB)\left(ab+b^2x\right)^4}{b^3}+\frac{B\left(ab+b^2\right.}{b^4}\right.}{b^2\left(ab+b^2x\right)}\\&=-\frac{a(Ab-aB)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^3}+\frac{(Ab-2aB)(a+bx)^4\sqrt{a^2}}{5b^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.72

$$\frac{x^2\sqrt{(a+bx)^2}\left(10a^3(3A+2Bx)+15a^2bx(4A+3Bx)+9ab^2x^2(5A+4Bx)+2b^3x^3(6A+5Bx)\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^2*Sqrt[(a + b*x)^2]*(10*a^3*(3*A + 2*B*x) + 15*a^2*b*x*(4*A + 3*B*x) + 9
*a*b^2*x^2*(5*A + 4*B*x) + 2*b^3*x^3*(6*A + 5*B*x)))/(60*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.91, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.42, size = 73, normalized size = 0.60

$$\frac{1}{6}\,Bb^3x^6+\frac{1}{2}\,Aa^3x^2+\frac{1}{5}\left(3\,Bab^2+Ab^3\right)x^5+\frac{3}{4}\left(Ba^2b+Aab^2\right)x^4+\frac{1}{3}\left(Ba^3+3\,Aa^2b\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*B*b^3*x^6 + 1/2*A*a^3*x^2 + 1/5*(3*B*a*b^2 + A*b^3)*x^5 + 3/4*(B*a^2*b
+ A*a*b^2)*x^4 + 1/3*(B*a^3 + 3*A*a^2*b)*x^3
```

giac [A] time = 0.16, size = 148, normalized size = 1.22

$$\frac{1}{6}\,Bb^3x^6\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}\,Bab^2x^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Ab^3x^5\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}\,Ba^2bx^4\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}\,Aab^2x^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Ba^3x^3\mathrm{sgn}\left(bx+a\right)+Aa^2bx^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Aa^3x^2\mathrm{sgn}\left(bx+a\right)+\frac{\left(Ba^6-3\,Aa^5b\right)\mathrm{sgn}\left(bx+a\right)}{60\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^3*x^6*sgn(b*x + a) + 3/5*B*a*b^2*x^5*sgn(b*x + a) + 1/5*A*b^3*x^5*s
gn(b*x + a) + 3/4*B*a^2*b*x^4*sgn(b*x + a) + 3/4*A*a*b^2*x^4*sgn(b*x + a) +
 1/3*B*a^3*x^3*sgn(b*x + a) + A*a^2*b*x^3*sgn(b*x + a) + 1/2*A*a^3*x^2*sgn(
b*x + a) + 1/60*(B*a^6 - 3*A*a^5*b)*sgn(b*x + a)/b^3
```

maple [A] time = 0.05, size = 92, normalized size = 0.76

$$\frac{\left(10b^3B\,x^4+12A\,b^3x^3+36x^3Ba\,b^2+45x^2Aa\,b^2+45B\,a^2b\,x^2+60xA\,a^2b+20B\,a^3x+30A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^2}{60\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*x^2*(10*B*b^3*x^4+12*A*b^3*x^3+36*B*a*b^2*x^3+45*A*a*b^2*x^2+45*B*a^2*
b*x^2+60*A*a^2*b*x+20*B*a^3*x+30*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.66, size = 183, normalized size = 1.51

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^2x}{4\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aax}{4\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^3}{4\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^2}{4\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx}{6\,b^2}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba}{30\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*x/b^2 - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*A*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^3/b^3 - 1/4*(b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
```

```
2)*B*x/b^2 - 7/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a/b^3 + 1/5*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.597 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(4*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(5/2))/(5*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}+\frac{\left(2Ab^2-2abB\right)\int \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx}{2b^2}\\&=\frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 83, normalized size = 1.20

$$\frac{x\sqrt{(a+bx)^2}\left(10a^3(2A+Bx)+10a^2bx(3A+2Bx)+5ab^2x^2(4A+3Bx)+b^3x^3(5A+4Bx)\right)}{20(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^3*(2*A + B*x) + 10*a^2*b*x*(3*A + 2*B*x) + 5*a*b
^2*x^2*(4*A + 3*B*x) + b^3*x^3*(5*A + 4*B*x)))/(20*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.87, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.41, size = 69, normalized size = 1.00

$$\frac{1}{5}\,Bb^{3}x^{5} + Aa^{3}x + \frac{1}{4}\,\left(3\,Bab^{2} + Ab^{3}\right)x^{4} + \left(Ba^{2}b + Aab^{2}\right)x^{3} + \frac{1}{2}\,\left(Ba^{3} + 3\,Aa^{2}b\right)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b^3*x^5 + A*a^3*x + 1/4*(3*B*a*b^2 + A*b^3)*x^4 + (B*a^2*b + A*a*b^2)
*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

giac [B] time = 0.17, size = 144, normalized size = 2.09

$$\frac{1}{5}\,Bb^{3}x^{5}\mathrm{sgn}\left(bx + a\right) + \frac{3}{4}\,Bab^{2}x^{4}\mathrm{sgn}\left(bx + a\right) + \frac{1}{4}\,Ab^{3}x^{4}\mathrm{sgn}\left(bx + a\right) + Ba^{2}bx^{3}\mathrm{sgn}\left(bx + a\right) + Aab^{2}x^{3}\mathrm{sgn}\left(bx + a\right) + \frac{1}{2}\,Ba^{3}x^{2}\mathrm{sgn}\left(bx + a\right) + \frac{3}{2}\,Aa^{2}bx^{2}\mathrm{sgn}\left(bx + a\right) + Aa^{3}x\mathrm{sgn}\left(bx + a\right) - \frac{\left(Ba^{5} - 5\,Aa^{4}b\right)\mathrm{sgn}\left(bx + a\right)}{20\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^3*x^5*sgn(b*x + a) + 3/4*B*a*b^2*x^4*sgn(b*x + a) + 1/4*A*b^3*x^4*s
gn(b*x + a) + B*a^2*b*x^3*sgn(b*x + a) + A*a*b^2*x^3*sgn(b*x + a) + 1/2*B*a
^3*x^2*sgn(b*x + a) + 3/2*A*a^2*b*x^2*sgn(b*x + a) + A*a^3*x*sgn(b*x + a) -
 1/20*(B*a^5 - 5*A*a^4*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.05, size = 90, normalized size = 1.30

$$\frac{\left(4b^{3}B\,x^{4} + 5A\,b^{3}x^{3} + 15x^{3}Ba\,b^{2} + 20x^{2}Aa\,b^{2} + 20B\,a^{2}b\,x^{2} + 30xA\,a^{2}b + 10B\,a^{3}x + 20A\,a^{3}\right)\left(\left(bx + a\right)^{2}\right)^{\frac{3}{2}}\,x}{20\left(bx + a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/20*x*(4*B*b^3*x^4+5*A*b^3*x^3+15*B*a*b^2*x^3+20*A*a*b^2*x^2+20*B*a^2*b*x^
2+30*A*a^2*b*x+10*B*a^3*x+20*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.61, size = 125, normalized size = 1.81

$$\frac{1}{4}\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}Ax - \frac{\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}Bax}{4\,b} - \frac{\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}Ba^{2}}{4\,b^{2}} + \frac{\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}Aa}{4\,b} + \frac{\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{5}{2}}B}{5\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*B*a*x/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2/b^2 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A*a/b + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/b^2
```

mupad [B] time = 1.22, size = 42, normalized size = 0.61

$$\frac{\left(a + b\,x\right)\,\left(a^{2} + 2\,a\,b\,x + b^{2}\,x^{2}\right)^{3/2}\,\left(5\,A\,b - B\,a + 4\,B\,b\,x\right)}{20\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] ((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)*(5*A*b - B*a + 4*B*b*x))/(20*b^2
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\left((a + bx)^2\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.598 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=182

$$\frac{3a^2Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{3aAb^2x^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{B(a+bx)^3\sqrt{a^2+2abx}}{4b}$$

Rubi [A] time = 0.06, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 80, 43}

$$\frac{3a^2Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{3aAb^2x^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{a^3A\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{B(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x,x]
```

```
[Out] (3*a^2*A*b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (3*a*A*b^2*x^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (A*b^3*x^3*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(3*(a + b*x)) + (B*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
b) + (a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{B(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^3}{x}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{B(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int \left(3a^2b^4 + \frac{a^3b^3}{x}\right.}{b^2\left(ab+b^2x\right)}$$

$$= \frac{3a^2Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx} + \frac{3aAb^2x^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)} + \frac{Ab^3x^3\sqrt{a^2}}{3(}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.46

$$\frac{\sqrt{(a+bx)^2}\left(12a^3A\log(x)+x\left(12a^3B+18a^2b(2A+Bx)+6ab^2x(3A+2Bx)+b^3x^2(4A+3Bx)\right)\right)}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(x*(12*a^3*B + 18*a^2*b*(2*A + B*x) + 6*a*b^2*x*(3*A + 2
*B*x) + b^3*x^2*(4*A + 3*B*x)) + 12*a^3*A*Log[x]))/(12*(a + b*x))
```

IntegrateAlgebraic [A] time = 0.72, size = 361, normalized size = 1.98

$$\frac{1}{2}a^3A\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)-\frac{a^3A\sqrt{b^2}\log\left(b\sqrt{a^2+2abx+b^2x^2}-ab-\sqrt{b^2}\,bx\right)}{2b}+\frac{\left(a^3(-A)b-a^3A\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2b}+\frac{\sqrt{a^2+2abx+b^2x^2}\left(3a^3B+22a^2Ab+9a^2bBx+14aAb^2x+9ab^2Bx^2+4Ab^3x^2+3b^3Bx^3\right)}{24b}+\frac{-12a^3\sqrt{b^2}\,Bx-36a^2Ab\sqrt{b^2}\,x-18a^2b\sqrt{b^2}\,Bx^2-18aA\left(b^2\right)^{3/2}x^2-12a\left(b^2\right)^{3/2}Bx^3-4Ab^3\sqrt{b^2}\,x^3-3b^3\sqrt{b^2}\,Bx^4}{24b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(22*a^2*A*b + 3*a^3*B + 14*a*A*b^2*x + 9*a^2
*b*B*x + 4*A*b^3*x^2 + 9*a*b^2*B*x^2 + 3*b^3*B*x^3))/(24*b) + (-36*a^2*A*b*
Sqrt[b^2]*x - 12*a^3*Sqrt[b^2]*B*x - 18*a*A*(b^2)^(3/2)*x^2 - 18*a^2*b*Sqrt
[b^2]*B*x^2 - 4*A*b^3*Sqrt[b^2]*x^3 - 12*a*(b^2)^(3/2)*B*x^3 - 3*b^3*Sqrt[b
^2]*B*x^4)/(24*b) + (a^3*A*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2]])/2 + ((-(a^3*A*b) - a^3*A*Sqrt[b^2])*Log[a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/(2*b) - (a^3*A*Sqrt[b^2]*Log[-(a*b) - b*Sqrt[b^2]*x +
 b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b)
```

fricas [A] time = 0.42, size = 68, normalized size = 0.37

$$\frac{1}{4}Bb^3x^4 + Aa^3\log(x) + \frac{1}{3}\left(3\,Bab^2 + Ab^3\right)x^3 + \frac{3}{2}\left(Ba^2b + Aab^2\right)x^2 + \left(Ba^3 + 3\,Aa^2b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] 1/4*B*b^3*x^4 + A*a^3*log(x) + 1/3*(3*B*a*b^2 + A*b^3)*x^3 + 3/2*(B*a^2*b +
 A*a*b^2)*x^2 + (B*a^3 + 3*A*a^2*b)*x
```

giac [A] time = 0.16, size = 118, normalized size = 0.65

$$\frac{1}{4}Bb^3x^4\mathrm{sgn}(bx+a) + Bab^2x^3\mathrm{sgn}(bx+a) + \frac{1}{3}Ab^3x^3\mathrm{sgn}(bx+a) + \frac{3}{2}Ba^2bx^2\mathrm{sgn}(bx+a) + \frac{3}{2}Aab^2x^2\mathrm{sgn}(bx+a) + Ba^3x\mathrm{sgn}(bx+a) + 3\,Aa^2bx\mathrm{sgn}(bx+a) + Aa^3\log(|x|)\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 1/4*B*b^3*x^4*sgn(b*x + a) + B*a*b^2*x^3*sgn(b*x + a) + 1/3*A*b^3*x^3*sgn(b
*x + a) + 3/2*B*a^2*b*x^2*sgn(b*x + a) + 3/2*A*a*b^2*x^2*sgn(b*x + a) + B*a
^3*x*sgn(b*x + a) + 3*A*a^2*b*x*sgn(b*x + a) + A*a^3*log(abs(x))*sgn(b*x +
a)
```

maple [A] time = 0.06, size = 91, normalized size = 0.50

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(3B\,b^3x^4+4A\,b^3x^3+12Ba\,b^2x^3+18Aa\,b^2x^2+18B\,a^2b\,x^2+12A\,a^3\ln(x)+36A\,a^2bx+12B\,a^3x\right)}{12\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(3*b^3*B*x^4+4*A*b^3*x^3+12*x^3*B*a*b^2+18*x^2*A*a*b
^2+18*B*a^2*b*x^2+12*A*a^3*ln(x)+36*x*A*a^2*b+12*B*a^3*x)/(b*x+a)^3
```

maxima [A] time = 0.48, size = 186, normalized size = 1.02

$$(-1)^{2\,b^2x+2\,ab}\,Aa^3\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Aa^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Aabx+\frac{3}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Aa^2+\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bx+\frac{1}{3}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*A*a^3*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
A*a^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*A*a*b*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^2 + 1/4*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*B*x + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*B*a/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x, x)
```

3.599 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=200

$$\frac{3abx\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{2(a+bx)}+\frac{a^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab}{a+bx}$$

Rubi [A] time = 0.09, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{3abx\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{2(a+bx)}+\frac{a^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{a+bx}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^3Bx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^2,x]
```

```
[Out] -((a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x))) + (3*a*b*(A*b + a*B)
*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^2*(A*b + 3*a*B)*x^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^3*B*x^3*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(3*(a + b*x)) + (a^2*(3*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Lo
g[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(3ab^4(Ab+aB)+\frac{a^3Ab^3}{x^2}+\frac{a^2b^3(3Ab+aB)}{x}+b^5(Ab+3\right.}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{3ab(Ab+aB)x\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{b^2(Ab}{}$$

Mathematica [A] time = 0.03, size = 89, normalized size = 0.44

$$\frac{\sqrt{(a+bx)^2}\left(-6a^3A+6a^2x\log(x)(aB+3Ab)+18a^2bBx^2+9ab^2x^2(2A+Bx)+b^3x^3(3A+2Bx)\right)}{6x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-6*a^3*A + 18*a^2*b*B*x^2 + 9*a*b^2*x^2*(2*A + B*x) + b
^3*x^3*(3*A + 2*B*x) + 6*a^2*(3*A*b + a*B)*x*Log[x]))/(6*x*(a + b*x))
```

IntegrateAlgebraic [B] time = 1.29, size = 543, normalized size = 2.72

$$-\frac{3}{2}a^2A\sqrt{b^2}\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)-\frac{3}{2}a^2A\sqrt{b^2}\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)+3a^2Ab\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)-\frac{a^3\sqrt{b^2}B\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)}{2b}-\frac{a^3\sqrt{b^2}B\log\left(b\sqrt{a^2+2abx+b^2x^2}-ab-\sqrt{b^2}bx\right)}{2b}+a^3B\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)+\frac{\sqrt{a^2+2abx+b^2x^2}\left(-24a^3Ab+28a^3bBx-63a^2Ab^2x+72a^2b^2Bx^2+72aAb^3x^2+36ab^3Bx^3+12Ab^4x^3+8b^4Bx^4\right)+\sqrt{b^2}\left(24a^4A-28a^4Bx+87a^3Abx-100a^3bBx^2-9a^2Ab^2x^2-108a^2b^2Bx^3-84aAb^3x^3-44ab^3Bx^4-12Ab^4x^4-8b^4Bx^5\right)}{24x\left(ab+b^2x\right)-24\sqrt{b^2}x\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-24*a^3*A*b - 63*a^2*A*b^2*x + 28*a^3*b*B*x
 + 72*a*A*b^3*x^2 + 72*a^2*b^2*B*x^2 + 12*A*b^4*x^3 + 36*a*b^3*B*x^3 + 8*b^
4*B*x^4) + Sqrt[b^2]*(24*a^4*A + 87*a^3*A*b*x - 28*a^4*B*x - 9*a^2*A*b^2*x^
2 - 100*a^3*b*B*x^2 - 84*a*A*b^3*x^3 - 108*a^2*b^2*B*x^3 - 12*A*b^4*x^4 - 4
4*a*b^3*B*x^4 - 8*b^4*B*x^5))/(24*x*(a*b + b^2*x) - 24*Sqrt[b^2]*x*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) + 3*a^2*A*b*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a
*b*x + b^2*x^2]/a] + a^3*B*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b
^2*x^2]/a] - (3*a^2*A*Sqrt[b^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]])/2 - (3*a^2*A*Sqrt[b^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]])/2 - (a^3*Sqrt[b^2]*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]])/(2*b) - (a^3*Sqrt[b^2]*B*Log[-(a*b) - b*Sqrt[b^2]*x + b*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]])/(2*b)
```

fricas [A] time = 0.42, size = 75, normalized size = 0.38

$$\frac{2\,Bb^3x^4-6\,Aa^3+3\left(3\,Bab^2+Ab^3\right)x^3+18\left(Ba^2b+Aab^2\right)x^2+6\left(Ba^3+3\,Aa^2b\right)x\log(x)}{6\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^3*x^4 - 6*A*a^3 + 3*(3*B*a*b^2 + A*b^3)*x^3 + 18*(B*a^2*b + A*a*
b^2)*x^2 + 6*(B*a^3 + 3*A*a^2*b)*x*log(x))/x
```

giac [A] time = 0.18, size = 119, normalized size = 0.60

$$\frac{1}{3}Bb^3x^3\mathrm{sgn}\left(bx+a\right)+\frac{3}{2}Bab^2x^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Ab^3x^2\mathrm{sgn}\left(bx+a\right)+3\,Ba^2bx\mathrm{sgn}\left(bx+a\right)+3\,Aab^2x\mathrm{sgn}\left(bx+a\right)-\frac{Aa^3\mathrm{sgn}\left(bx+a\right)}{x}+\left(Ba^3\mathrm{sgn}\left(bx+a\right)+3\,Aa^2b\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/3*B*b^3*x^3*sgn(b*x + a) + 3/2*B*a*b^2*x^2*sgn(b*x + a) + 1/2*A*b^3*x^2*s
gn(b*x + a) + 3*B*a^2*b*x*sgn(b*x + a) + 3*A*a*b^2*x*sgn(b*x + a) - A*a^3*s
gn(b*x + a)/x + (B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*log(abs(x))
```

maple [A] time = 0.06, size = 96, normalized size = 0.48

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}\left(2B\,b^3x^4+3A\,b^3x^3+9Ba\,b^2x^3+18A\,a^2bx\ln(x)+18Aa\,b^2x^2+6B\,a^3x\ln(x)+18B\,a^2b\,x^2-6A\,a^3\right)}{6\left(bx+a\right)^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(2*B*b^3*x^4+3*A*b^3*x^3+9*B*a*b^2*x^3+18*A*ln(x)*x*a
^2*b+18*A*a*b^2*x^2+6*B*ln(x)*x*a^3+18*B*a^2*b*x^2-6*A*a^3)/(b*x+a)^3/x
```

maxima [**B**] time = 0.54, size = 283, normalized size = 1.42

$$(-1)^{2\,b^2x+2\,ab}\,Ba^3\log\left(2\,b^2x+2\,ab\right)+3\,(-1)^{2\,b^2x+2\,ab}\,Aa^2b\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Ba^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-3\,(-1)^{2\,abx+2\,a^2}\,Aa^2b\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Babx+\frac{3}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab^2x+\frac{3}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2+\frac{9}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Aab+\frac{1}{3}\,\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}B-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*a^3*log(2*b^2*x + 2*a*b) + 3*(-1)^(2*b^2*x + 2*a*b
)*A*a^2*b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*a^3*log(2*a*b*x/a
bs(x) + 2*a^2/abs(x)) - 3*(-1)^(2*a*b*x + 2*a^2)*A*a^2*b*log(2*a*b*x/abs(x)
 + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*b*x + 3/2*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*b^2*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2 + 9
/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*b + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2
)*B - (b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/x
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**2, x)
```

3.600 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=200

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{x(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}+\frac{3ab\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+A$$

Rubi [A] time = 0.09, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{x(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}+\frac{3ab\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}+\frac{b^3Bx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^3,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^2*(A*b + 3*a*B)*x*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^3*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(2*(a + b*x)) + (3*a*b*(A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^3}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^3}\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^5(Ab+3aB)+\frac{a^3Ab^3}{x^3}+\frac{a^2b^3(3Ab+aB)}{x^2}+\frac{3ab^4(Ab+}{x}\right.}{b^2\left(ab+b^2x\right)}\\&=-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^2(A}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.42

$$\frac{\sqrt{(a+bx)^2}\left(-\left(a^3(A+2Bx)\right)-6a^2Abx+6abx^2\log(x)(aB+Ab)+6ab^2Bx^3+b^3x^3(2A+Bx)\right)}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-6*a^2*A*b*x + 6*a*b^2*B*x^3 + b^3*x^3*(2*A + B*x) - a^
3*(A + 2*B*x) + 6*a*b*(A*b + a*B)*x^2*Log[x]))/(2*x^2*(a + b*x))
```

IntegrateAlgebraic [B] time = 1.58, size = 1061, normalized size = 5.30

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^3,x]
```

```
[Out] (-(A*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(a^3*b + 6*a^2*b^2*x - a*b^3*x^2 - 2*b^4
*x^3)) - A*Sqrt[b^2]*(-a^4 - 7*a^3*b*x - 5*a^2*b^2*x^2 + 3*a*b^3*x^3 + 2*b^
4*x^4))/(2*x^2*(a*b + b^2*x) - 2*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + 3*a*A*b^2*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] -
 (3*a*A*b*Sqrt[b^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/
2 - (3*a*A*b*Sqrt[b^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
)/2 + (2*a^4*Sqrt[b^2]*B - (3*a^3*b*Sqrt[b^2]*B*x)/4 - (35*a^2*(b^2)^(3/2)*
B*x^2)/4 - 7*a*b^3*Sqrt[b^2]*B*x^3 - b^4*Sqrt[b^2]*B*x^4 - 2*a^3*b*B*Sqrt[a
^2 + 2*a*b*x + b^2*x^2] + (11*a^2*b^2*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/4
+ 6*a*b^3*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + b^4*B*x^3*Sqrt[a^2 + 2*a*b*
x + b^2*x^2] - 6*a^3*b^2*B*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/a] - 6*a^2*b^3*B*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/a] + 6*a^2*b*Sqrt[b^2]*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcT
anh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - 3*a^3*b*Sqrt[b^2]
*B*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - 3*a^2*(b^2)^(3
/2)*B*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 3*a^2*b^2
*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*
x + b^2*x^2]] - 3*a^3*b*Sqrt[b^2]*B*x*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2]] - 3*a^2*(b^2)^(3/2)*B*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2]] + 3*a^2*b^2*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - S
qrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.41, size = 74, normalized size = 0.37

$$\frac{Bb^3x^4 - Aa^3 + 2\left(3\,Bab^2 + Ab^3\right)x^3 + 6\left(Ba^2b + Aab^2\right)x^2\log(x) - 2\left(Ba^3 + 3\,Aa^2b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*x^4 - A*a^3 + 2*(3*B*a*b^2 + A*b^3)*x^3 + 6*(B*a^2*b + A*a*b^2)*
x^2*log(x) - 2*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

giac [A] time = 0.16, size = 117, normalized size = 0.58

$$\frac{1}{2}\,Bb^3x^2\mathrm{sgn}\left(bx+a\right) + 3\,Bab^2x\mathrm{sgn}\left(bx+a\right) + Ab^3x\mathrm{sgn}\left(bx+a\right) + 3\left(Ba^2b\mathrm{sgn}\left(bx+a\right) + Aab^2\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right) - \frac{Aa^3\mathrm{sgn}\left(bx+a\right) + 2\left(Ba^3\mathrm{sgn}\left(bx+a\right) + 3\,Aa^2b\mathrm{sgn}\left(bx+a\right)\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/2*B*b^3*x^2*sgn(b*x + a) + 3*B*a*b^2*x*sgn(b*x + a) + A*b^3*x*sgn(b*x + a
) + 3*(B*a^2*b*sgn(b*x + a) + A*a*b^2*sgn(b*x + a))*log(abs(x)) - 1/2*(A*a^
3*sgn(b*x + a) + 2*(B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*x)/x^2
```

maple [A] time = 0.06, size = 95, normalized size = 0.48

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}} \left(B\,b^3x^4+6Aa\,b^2x^2\ln(x)+2A\,b^3x^3+6B\,a^2b\,x^2\ln(x)+6Ba\,b^2x^3-6A\,a^2bx-2B\,a^3x-A\,a^3\right)}{2\,(bx+a)^3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x)
```

```
[Out] 1/2*((b*x+a)^2)^(3/2)*(B*b^3*x^4+6*A*ln(x)*x^2*a*b^2+2*A*b^3*x^3+6*B*ln(x)*
x^2*a^2*b+6*B*a*b^2*x^3-6*A*a^2*b*x-2*B*a^3*x-A*a^3)/(b*x+a)^3/x^2
```

maxima [B] time = 0.63, size = 351, normalized size = 1.76

$$3\,(-1)^{2\,b^2x+2\,ab}\,Ba^2b\log\left(2\,b^2x+2\,ab\right)+3\,(-1)^{2\,b^2x+2\,ab}\,Aab^2\log\left(2\,b^2x+2\,ab\right)-3\,(-1)^{2\,abx+2\,a^2}\,Ba^2b\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-3\,(-1)^{2\,abx+2\,a^2}\,Aab^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{3}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2x+\frac{3\sqrt{b^2x^2+2\,abx+a^2}\,Ab^3x}{2\,a}+\frac{9}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Bab+\frac{9}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Ab^2+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^2}{2\,a^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}B}{x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab}{2\,ax}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] 3*(-1)^(2*b^2*x + 2*a*b)*B*a^2*b*log(2*b^2*x + 2*a*b) + 3*(-1)^(2*b^2*x + 2
*a*b)*A*a*b^2*log(2*b^2*x + 2*a*b) - 3*(-1)^(2*a*b*x + 2*a^2)*B*a^2*b*log(2
*a*b*x/abs(x) + 2*a^2/abs(x)) - 3*(-1)^(2*a*b*x + 2*a^2)*A*a*b^2*log(2*a*b*
x/abs(x) + 2*a^2/abs(x)) + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^2*x + 3/2*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^3*x/a + 9/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*B*a*b + 9/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^2 + 1/2*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*A*b^2/a^2 - (b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/x - 1/2*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*A*b/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a
^2*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^3} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**3, x)
```

3.601 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^4} \, dx$

Optimal. Leaf size=199

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{2x^2(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}+$$

Rubi [A] time = 0.09, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{2x^2(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}+\frac{b^3Bx\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^4,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^3*B*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(a + b*x) + (b^2*(A*b + 3*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^4}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^4}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^6B+\frac{a^3Ab^3}{x^4}+\frac{a^2b^3(3Ab+aB)}{x^3}+\frac{3ab^4(Ab+aB)}{x^2}+\frac{b^5(Ab+3a}{x}\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{3ab(Ab}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.44

$$-\frac{\sqrt{(a+bx)^2}\left(a^3(2A+3Bx)+9a^2bx(A+2Bx)-6b^2x^3\log(x)(3aB+Ab)+18aAb^2x^2-6b^3Bx^4\right)}{6x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(18*a*A*b^2*x^2 - 6*b^3*B*x^4 + 9*a^2*b*x*(A + 2*B*
x) + a^3*(2*A + 3*B*x) - 6*b^2*(A*b + 3*a*B)*x^3*Log[x]))/(x^3*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.04, size = 511, normalized size = 2.57

$$-\frac{1}{2}A\left(b^2\right)^{3/2}\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)-\frac{1}{2}A\left(b^2\right)^{3/2}\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)+Ab^3\tanh^{-1}\left(\frac{\sqrt{b^2}\,x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)-\frac{3}{2}a\sqrt{b^2}\,bB\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)-\frac{3}{2}a\sqrt{b^2}\,bB\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)+3ab^2B\tanh^{-1}\left(\frac{\sqrt{b^2}\,x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)+\frac{\sqrt{a^2+2abx+b^2x^2}\left(-2a^3Ab-3a^3bBx-9a^2Ab^2x-18a^2b^2Bx^2-18aAb^3x^2+3ab^3Bx^3+6b^4Bx^4\right)+\sqrt{b^2}\left(2a^4A+3a^4Bx+11a^3Abx+21a^3bBx^2+27a^2Ab^2x^2+15a^2b^2Bx^3+18aAb^3x^3-9ab^3Bx^4-6b^4Bx^5\right)}{6x^3\left(ab+b^2x\right)-6\sqrt{b^2}\,x^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^4,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*a^3*A*b - 9*a^2*A*b^2*x - 3*a^3*b*B*x -
18*a*A*b^3*x^2 - 18*a^2*b^2*B*x^2 + 3*a*b^3*B*x^3 + 6*b^4*B*x^4) + Sqrt[b^2
]*(2*a^4*A + 11*a^3*A*b*x + 3*a^4*B*x + 27*a^2*A*b^2*x^2 + 21*a^3*b*B*x^2 +
 18*a*A*b^3*x^3 + 15*a^2*b^2*B*x^3 - 9*a*b^3*B*x^4 - 6*b^4*B*x^5))/(6*x^3*(
a*b + b^2*x) - 6*Sqrt[b^2]*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + A*b^3*ArcTa
nh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] + 3*a*b^2*B*ArcTanh[(
Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] - (A*(b^2)^(3/2)*Log[-a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (3*a*b*Sqrt[b^2]*B*Log[-
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (A*(b^2)^(3/2)*Log[a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (3*a*b*Sqrt[b^2]*B*Log[
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2
```

fricas [A] time = 0.41, size = 75, normalized size = 0.38

$$\frac{6\,Bb^3x^4+6\left(3\,Bab^2+Ab^3\right)x^3\log\left(x\right)-2\,Aa^3-18\left(Ba^2b+Aab^2\right)x^2-3\left(Ba^3+3\,Aa^2b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*b^3*x^4 + 6*(3*B*a*b^2 + A*b^3)*x^3*log(x) - 2*A*a^3 - 18*(B*a^2*b
 + A*a*b^2)*x^2 - 3*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

giac [A] time = 0.17, size = 118, normalized size = 0.59

$$Bb^3x\mathrm{sgn}\left(bx+a\right)+\left(3\,Bab^2\mathrm{sgn}\left(bx+a\right)+Ab^3\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)-\frac{2\,Aa^3\mathrm{sgn}\left(bx+a\right)+18\left(Ba^2b\mathrm{sgn}\left(bx+a\right)+Aab^2\mathrm{sgn}\left(bx+a\right)\right)x^2+3\left(Ba^3\mathrm{sgn}\left(bx+a\right)+3\,Aa^2b\mathrm{sgn}\left(bx+a\right)\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] B*b^3*x*sgn(b*x + a) + (3*B*a*b^2*sgn(b*x + a) + A*b^3*sgn(b*x + a))*log(ab
s(x)) - 1/6*(2*A*a^3*sgn(b*x + a) + 18*(B*a^2*b*sgn(b*x + a) + A*a*b^2*sgn(
b*x + a))*x^2 + 3*(B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*x)/x^3
```

maple [A] time = 0.06, size = 96, normalized size = 0.48

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}\left(6A\,b^3x^3\ln\left(x\right)+18Ba\,b^2x^3\ln\left(x\right)+6B\,b^3x^4-18Aa\,b^2x^2-18B\,a^2b\,x^2-9A\,a^2bx-3B\,a^3x-2A\,a^3\right)}{6\left(bx+a\right)^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(6*A*ln(x)*x^3*b^3+18*B*ln(x)*x^3*a*b^2+6*B*b^3*x^4-1
8*A*a*b^2*x^2-18*B*a^2*b*x^2-9*A*a^2*b*x-3*B*a^3*x-2*A*a^3)/(b*x+a)^3/x^3
```

maxima [B] time = 0.66, size = 443, normalized size = 2.23

$$3\,(-1)^{2\,b^2x+2\,ab}Bab^2\log\left(2\,b^2x+2\,ab\right)+(-1)^{2\,b^2x+2\,ab}Ab^3\log\left(2\,b^2x+2\,ab\right)-3\,(-1)^{2\,abx+2\,a^2}Bab^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-(-1)^{2\,abx+2\,a^2}Ab^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{3\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb^3x}{2\,a}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^4x}{2\,a^2}+\frac{9}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2+\frac{3\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab^3}{2\,a}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^2}{2\,a^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^3}{6\,a^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb}{2\,ax}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^2}{2\,a^2x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{2\,a^2x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{6\,a^3x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{3\,a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] 3*(-1)^(2*b^2*x + 2*a*b)*B*a*b^2*log(2*b^2*x + 2*a*b) + (-1)^(2*b^2*x + 2*a
*b)*A*b^3*log(2*b^2*x + 2*a*b) - 3*(-1)^(2*a*b*x + 2*a^2)*B*a*b^2*log(2*a*b
*x/abs(x) + 2*a^2/abs(x)) - (-1)^(2*a*b*x + 2*a^2)*A*b^3*log(2*a*b*x/abs(x)
 + 2*a^2/abs(x)) + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3*x/a + 1/2*sqrt(b
^2*x^2 + 2*a*b*x + a^2)*A*b^4*x/a^2 + 9/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b
^2 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^3/a + 1/2*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*B*b^2/a^2 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^3/a^3 - 1/2*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*A*b^2/(a^2*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^2) + 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*A/(a^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**4, x)
```

3.602 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5} dx$

Optimal. Leaf size=187

$$-\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4}-\frac{3a^2bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{3ab^2B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^3B\log(x)\sqrt{a^2+2ab}}{a+bx}$$

Rubi [A] time = 0.06, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 78, 43}

$$-\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4}-\frac{a^3B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{3a^2bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{3ab^2B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^3B\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^5,x]
```

```
[Out] -(a^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (3*a^2*b*B*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (3*a*b^2*B*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(x*(a + b*x)) - (A*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(4*a*x^4) + (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^5}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^3}{x^4}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{a^3b^3}{x^4}+\frac{3a^2b^4}{x^3}\right.}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{a^3B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)} - \frac{3a^2bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)} - \frac{3ab^2B\sqrt{a^2+2ab}}{x(a+bx}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.47

$$-\frac{\sqrt{(a+bx)^2}\left(a^3(3A+4Bx)+6a^2bx(2A+3Bx)+18ab^2x^2(A+2Bx)+12Ab^3x^3-12b^3Bx^4\log(x)\right)}{12x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(12*A*b^3*x^3 + 18*a*b^2*x^2*(A + 2*B*x) + 6*a^2*b
*x*(2*A + 3*B*x) + a^3*(3*A + 4*B*x) - 12*b^3*B*x^4*Log[x]))/(x^4*(a + b*x)
)
```

IntegrateAlgebraic [B] time = 40.39, size = 544, normalized size = 2.91

$$-\frac{1}{2}\left(b^2\right)^{3/2}B\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)-\frac{1}{2}\left(b^2\right)^{3/2}B\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)+b^3B\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)+\frac{2b^3(a+bx)^3(a+2bx)^{12}\left(3a^2A+4a^2Bx+6aAbx+10abBx^2+6Ab^2x^2+16b^2Bx^3\right)}{3x^4\sqrt{a^2+2abx+b^2x^2}\left(-4a^{13}b^3-96a^{12}b^4x-1060a^{11}b^5x^2-7128a^{10}b^6x^3-32560a^9b^7x^4-106656a^8b^8x^5-257664a^7b^9x^6-464640a^6b^{10}x^7-625152a^5b^{11}x^8-619520a^4b^{12}x^9-439296a^3b^{13}x^{10}-210944a^2b^{14}x^{11}-61440ab^{15}x^{12}-8192b^{16}x^{13}\right)+3\sqrt{b^2}x^4\left(4a^{14}b^2+100a^{13}b^3x+1156a^{12}b^4x^2+8188a^{11}b^5x^3+39688a^{10}b^6x^4+139216a^9b^7x^5+364320a^8b^8x^6+722304a^7b^9x^7+1089792a^6b^{10}x^8+1244672a^5b^{11}x^9+1058816a^4b^{12}x^{10}+650240a^3b^{13}x^{11}+272384a^2b^{14}x^{12}+69632ab^{15}x^{13}+8192b^{16}x^{14}\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^5,x]
```

```
[Out] (2*b^3*(a + b*x)^3*(a + 2*b*x)^12*(3*a^2*A + 6*a*A*b*x + 4*a^2*B*x + 6*A*b^
2*x^2 + 10*a*b*B*x^2 + 16*b^2*B*x^3))/(3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*
(-4*a^13*b^3 - 96*a^12*b^4*x - 1060*a^11*b^5*x^2 - 7128*a^10*b^6*x^3 - 3256
0*a^9*b^7*x^4 - 106656*a^8*b^8*x^5 - 257664*a^7*b^9*x^6 - 464640*a^6*b^10*x
^7 - 625152*a^5*b^11*x^8 - 619520*a^4*b^12*x^9 - 439296*a^3*b^13*x^10 - 210
944*a^2*b^14*x^11 - 61440*a*b^15*x^12 - 8192*b^16*x^13) + 3*Sqrt[b^2]*x^4*(
4*a^14*b^2 + 100*a^13*b^3*x + 1156*a^12*b^4*x^2 + 8188*a^11*b^5*x^3 + 39688
*a^10*b^6*x^4 + 139216*a^9*b^7*x^5 + 364320*a^8*b^8*x^6 + 722304*a^7*b^9*x^
7 + 1089792*a^6*b^10*x^8 + 1244672*a^5*b^11*x^9 + 1058816*a^4*b^12*x^10 + 6
50240*a^3*b^13*x^11 + 272384*a^2*b^14*x^12 + 69632*a*b^15*x^13 + 8192*b^16*
x^14)) + b^3*B*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] -
 ((b^2)^(3/2)*B*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 -
((b^2)^(3/2)*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2
```

fricas [A] time = 0.40, size = 75, normalized size = 0.40

$$\frac{12\,Bb^3x^4\log(x)-3\,Aa^3-12\left(3\,Bab^2+Ab^3\right)x^3-18\left(Ba^2b+Aab^2\right)x^2-4\left(Ba^3+3\,Aa^2b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x, algorithm="fricas")
```

[Out] 1/12*(12*B*b^3*x^4*log(x) - 3*A*a^3 - 12*(3*B*a*b^2 + A*b^3)*x^3 - 18*(B*a^2*b + A*a*b^2)*x^2 - 4*(B*a^3 + 3*A*a^2*b)*x)/x^4

giac [A] time = 0.18, size = 121, normalized size = 0.65

$$Bb^3\log\left(|x|\right)\mathrm{sgn}\left(bx+a\right)-\frac{3\,Aa^3\mathrm{sgn}\left(bx+a\right)+12\left(3\,Bab^2\mathrm{sgn}\left(bx+a\right)+Ab^3\mathrm{sgn}\left(bx+a\right)\right)x^3+18\left(Ba^2b\mathrm{sgn}\left(bx+a\right)+Aab^2\mathrm{sgn}\left(bx+a\right)\right)x^2+4\left(Ba^3\mathrm{sgn}\left(bx+a\right)+3\,Aa^2b\mathrm{sgn}\left(bx+a\right)\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x, algorithm="giac")

[Out] B*b^3*log(abs(x))*sgn(b*x + a) - 1/12*(3*A*a^3*sgn(b*x + a) + 12*(3*B*a*b^2*sgn(b*x + a) + A*b^3*sgn(b*x + a))*x^3 + 18*(B*a^2*b*sgn(b*x + a) + A*a*b^2*sgn(b*x + a))*x^2 + 4*(B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*x)/x^4

maple [A] time = 0.06, size = 94, normalized size = 0.50

$$-\frac{\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}\left(-12B\,b^3x^4\ln\left(x\right)+12A\,b^3x^3+36Ba\,b^2x^3+18Aa\,b^2x^2+18B\,a^2b\,x^2+12A\,a^2bx+4B\,a^3x+3A\,a^3\right)}{12\left(bx+a\right)^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x)

[Out] -1/12*((b*x+a)^2)^(3/2)*(-12*b^3*B*ln(x)*x^4+12*A*b^3*x^3+36*B*a*b^2*x^3+18*A*a*b^2*x^2+18*B*a^2*b*x^2+12*A*a^2*b*x+4*B*a^3*x+3*A*a^3)/(b*x+a)^3/x^4

maxima [B] time = 0.76, size = 379, normalized size = 2.03

$$\left(-1\right)^{2\,b^2x+2\,ab}Bb^3\log\left(2\,b^2x+2\,ab\right)-\left(-1\right)^{2\,abx+2\,a^2}Bb^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^4x}{2\,a^2}+\frac{3\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb^3}{2\,a}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^3}{6\,a^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^4}{4\,a^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^2}{2\,a^2x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^3}{4\,a^3x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb}{6\,a^3x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^2}{4\,a^4x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{3\,a^2x^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{4\,a^3x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{4\,a^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x, algorithm="maxima")

[Out] (-1)^(2*b^2*x + 2*a*b)*B*b^3*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*b^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4*x/a^2 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3/a - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^3/a^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^4/a^4 - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^2/(a^2*x) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^3/(a^3*x) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^4)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{x^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^5,x)

[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^5, x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A+Bx\right)\left(\left(a+bx\right)^2\right)^{\frac{3}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**5, x)
```

3.603 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=77

$$\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{4a^2x^4}-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{4a^2x^4}-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^6,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*a^2*x^4) - (A*(a
^2 + 2*a*b*x + b^2*x^2)^(5/2))/(5*a^2*x^5)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^6}\,dx=-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}-\frac{\left(2Ab^2-2abB\right)\int \frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5}\,dx}{2ab}$$

$$=-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}-\frac{\left(\left(2Ab^2-2abB\right)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(}{}}{2ab^3\left(ab+b^2x\right)}$$

$$=\frac{(Ab-aB)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4a^2x^4}-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}$$

Mathematica [A] time = 0.03, size = 84, normalized size = 1.09

$$-\frac{\sqrt{(a+bx)^2}\left(a^3(4A+5Bx)+5a^2bx(3A+4Bx)+10ab^2x^2(2A+3Bx)+10b^3x^3(A+2Bx)\right)}{20x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^6,x]
```

```
[Out] -1/20*(Sqrt[(a + b*x)^2]*(10*b^3*x^3*(A + 2*B*x) + 10*a*b^2*x^2*(2*A + 3*B*
x) + 5*a^2*b*x*(3*A + 4*B*x) + a^3*(4*A + 5*B*x)))/(x^5*(a + b*x))
```

IntegrateAlgebraic [B] time = 1.93, size = 544, normalized size = 7.06

$$\frac{4b^4\sqrt{a^2+2abx+b^2x^2}\left(-4a^7Ab-5a^7bBx-31a^6Ab^2x-40a^6b^2Bx^2-104a^5Ab^3x^2-140a^5b^3Bx^3-196a^4Ab^4x^3-280a^4b^4Bx^4-224a^3Ab^5x^4-345a^3b^5Bx^5-155a^2Ab^6x^5-260a^2b^6Bx^6-60aAb^7x^6-110ab^7Bx^7-10Ab^8x^7-20b^8Bx^8\right)+4\sqrt{b^2}\,b^4\left(4a^8A+5a^8Bx+35a^7Abx+45a^7bBx^2+135a^6Ab^2x^2+180a^6b^2Bx^3+300a^5Ab^3x^3+420a^5b^3Bx^4+420a^4Ab^4x^4+625a^4b^4Bx^5+379a^3Ab^5x^5+605a^3b^5Bx^6+215a^2Ab^6x^6+370a^2b^6Bx^7+70aAb^7x^7+130ab^7Bx^8+10Ab^8x^8+20b^8Bx^9\right)}{5\sqrt{b^2}\,x^5\sqrt{a^2+2abx+b^2x^2}\left(-16a^4b^4-64a^3b^5x-96a^2b^6x^2-64ab^7x^3-16b^8x^4\right)+5x^5\left(16a^5b^5+80a^4b^6x+160a^3b^7x^2+160a^2b^8x^3+80ab^9x^4+16b^{10}x^5\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^6,x]
```

```
[Out] (4*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-4*a^7*A*b - 31*a^6*A*b^2*x - 5*a^7*b
*B*x - 104*a^5*A*b^3*x^2 - 40*a^6*b^2*B*x^2 - 196*a^4*A*b^4*x^3 - 140*a^5*b
^3*B*x^3 - 224*a^3*A*b^5*x^4 - 280*a^4*b^4*B*x^4 - 155*a^2*A*b^6*x^5 - 345*
a^3*b^5*B*x^5 - 60*a*A*b^7*x^6 - 260*a^2*b^6*B*x^6 - 10*A*b^8*x^7 - 110*a*b
^7*B*x^7 - 20*b^8*B*x^8) + 4*b^4*Sqrt[b^2]*(4*a^8*A + 35*a^7*A*b*x + 5*a^8*
B*x + 135*a^6*A*b^2*x^2 + 45*a^7*b*B*x^2 + 300*a^5*A*b^3*x^3 + 180*a^6*b^2*
B*x^3 + 420*a^4*A*b^4*x^4 + 420*a^5*b^3*B*x^4 + 379*a^3*A*b^5*x^5 + 625*a^4
*b^4*B*x^5 + 215*a^2*A*b^6*x^6 + 605*a^3*b^5*B*x^6 + 70*a*A*b^7*x^7 + 370*a
^2*b^6*B*x^7 + 10*A*b^8*x^8 + 130*a*b^7*B*x^8 + 20*b^8*B*x^9))/(5*Sqrt[b^2]
*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-16*a^4*b^4 - 64*a^3*b^5*x - 96*a^2*b^6
*x^2 - 64*a*b^7*x^3 - 16*b^8*x^4) + 5*x^5*(16*a^5*b^5 + 80*a^4*b^6*x + 160*
a^3*b^7*x^2 + 160*a^2*b^8*x^3 + 80*a*b^9*x^4 + 16*b^10*x^5))
```

fricas [A] time = 0.42, size = 73, normalized size = 0.95

$$-\frac{20\,Bb^3x^4+4\,Aa^3+10\left(3\,Bab^2+Ab^3\right)x^3+20\left(Ba^2b+Aab^2\right)x^2+5\left(Ba^3+3\,Aa^2b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] -1/20*(20*B*b^3*x^4 + 4*A*a^3 + 10*(3*B*a*b^2 + A*b^3)*x^3 + 20*(B*a^2*b +
A*a*b^2)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

giac [B] time = 0.16, size = 149, normalized size = 1.94

$$-\frac{\left(5\,Bab^4-Ab^5\right)\mathrm{sgn}\left(bx+a\right)}{20\,a^2}-\frac{20\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+30\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+10\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+20\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+20\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+5\,Ba^3x\mathrm{sgn}\left(bx+a\right)+15\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+4\,Aa^3\mathrm{sgn}\left(bx+a\right)}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/20*(5*B*a*b^4 - A*b^5)*sgn(b*x + a)/a^2 - 1/20*(20*B*b^3*x^4*sgn(b*x + a
) + 30*B*a*b^2*x^3*sgn(b*x + a) + 10*A*b^3*x^3*sgn(b*x + a) + 20*B*a^2*b*x^
2*sgn(b*x + a) + 20*A*a*b^2*x^2*sgn(b*x + a) + 5*B*a^3*x*sgn(b*x + a) + 15*
A*a^2*b*x*sgn(b*x + a) + 4*A*a^3*sgn(b*x + a))/x^5
```

maple [A] time = 0.05, size = 92, normalized size = 1.19

$$-\frac{\left(20B\,b^3x^4+10A\,b^3x^3+30Ba\,b^2x^3+20Aa\,b^2x^2+20B\,a^2b\,x^2+15A\,a^2bx+5B\,a^3x+4A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{20\left(bx+a\right)^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x)
```

```
[Out] -1/20*(20*B*b^3*x^4+10*A*b^3*x^3+30*B*a*b^2*x^3+20*A*a*b^2*x^2+20*B*a^2*b*x
^2+15*A*a^2*b*x+5*B*a^3*x+4*A*a^3)*((b*x+a)^2)^(3/2)/x^5/(b*x+a)^3
```

maxima [B] time = 0.81, size = 315, normalized size = 4.09

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^4}{4\,a^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^5}{4\,a^5}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^3}{4\,a^3x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^4}{4\,a^4x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^2}{4\,a^4x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^3}{4\,a^5x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb}{4\,a^3x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^2}{4\,a^4x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{4\,a^2x^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{4\,a^3x^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{5\,a^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^4/a^4 - 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*b^5/a^5 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^3/(a^3*x) - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^4/(a^4*x) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^2/(a^4*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5
*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^3) - 1/4*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
B/(a^2*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^4) - 1/5*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^5)
```

mupad [B] time = 1.17, size = 196, normalized size = 2.55

$$-\frac{\left(\frac{B\,a^3}{4}+\frac{3\,A\,b\,a^2}{4}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^4\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{2}+\frac{3\,B\,a\,b^2}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^2\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{5\,x^5\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x\,\left(a+b\,x\right)}-\frac{a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^3\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^6,x)
```

```
[Out] - (((B*a^3)/4 + (3*A*a^2*b)/4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^4*(a + b
*x)) - (((A*b^3)/2 + (3*B*a*b^2)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^2*(
a + b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x)) - (B*
b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x*(a + b*x)) - (a*b*(A*b + B*a)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(x^3*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**6, x)
```

3.604 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^5(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{3x^3(a+bx)}-\frac{b^3B\sqrt{a\cdots}}{2\cdots}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^5(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{3x^3(a+bx)}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^7,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*x^2*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^7}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^7}+\frac{a^2b^3(3Ab+aB)}{x^6}+\frac{3ab^4(Ab+aB)}{x^5}+\frac{b^5(Ab+3aB)}{x^4}+\cdots\right)}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{3ab(Ab\cdots}{\cdots}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(2a^3(5A+6Bx)+9a^2bx(4A+5Bx)+15ab^2x^2(3A+4Bx)+10b^3x^3(2A+3Bx)\right)}{60x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(10*b^3*x^3*(2*A + 3*B*x) + 15*a*b^2*x^2*(3*A + 4*
B*x) + 9*a^2*b*x*(4*A + 5*B*x) + 2*a^3*(5*A + 6*B*x)))/(x^6*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.34, size = 614, normalized size = 2.92

$$\frac{8b^5\sqrt{a^2+2abx+b^2x^2}\left(-10a^8Ab-12a^8bBx-86a^7Ab^2x-105a^7b^2Bx^2-325a^6Ab^3x^2-405a^6b^3Bx^3-705a^5Ab^4x^3-900a^5b^4Bx^4-960a^4Ab^5x^4-1260a^4b^5Bx^5-840a^3Ab^6x^5-1137a^3b^6Bx^6-461a^2Ab^7x^6-645a^2b^7Bx^7-145aAb^8x^7-210ab^8Bx^8-20Ab^9x^8-30b^9Bx^9\right)+8\sqrt{b^2}\,b^5\left(10a^9A+12a^9Bx+96a^8Abx+117a^8bBx^2+411a^7Ab^2x^2+510a^7b^2Bx^3+1030a^6Ab^3x^3+1305a^6b^3Bx^4+1665a^5Ab^4x^4+2160a^5b^4Bx^5+1800a^4Ab^5x^5+2397a^4b^5Bx^6+1301a^3Ab^6x^6+1782a^3b^6Bx^7+606a^2Ab^7x^7+855a^2b^7Bx^8+165aAb^8x^8+240ab^8Bx^9+20Ab^9x^9+30b^9Bx^{10}\right)}{15\sqrt{b^2}\,x^6\sqrt{a^2+2abx+b^2x^2}\left(-32a^5b^5-160a^4b^6x-320a^3b^7x^2-320a^2b^8x^3-160ab^9x^4-32b^{10}x^5\right)+15x^6\left(32a^6b^6+192a^5b^7x+480a^4b^8x^2+640a^3b^9x^3+480a^2b^{10}x^4+192ab^{11}x^5+32b^{12}x^6\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^7,x]
```

```
[Out] (8*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-10*a^8*A*b - 86*a^7*A*b^2*x - 12*a^8
*b*B*x - 325*a^6*A*b^3*x^2 - 105*a^7*b^2*B*x^2 - 705*a^5*A*b^4*x^3 - 405*a^
6*b^3*B*x^3 - 960*a^4*A*b^5*x^4 - 900*a^5*b^4*B*x^4 - 840*a^3*A*b^6*x^5 - 1
260*a^4*b^5*B*x^5 - 461*a^2*A*b^7*x^6 - 1137*a^3*b^6*B*x^6 - 145*a*A*b^8*x^
7 - 645*a^2*b^7*B*x^7 - 20*A*b^9*x^8 - 210*a*b^8*B*x^8 - 30*b^9*B*x^9) + 8*
b^5*Sqrt[b^2]*(10*a^9*A + 96*a^8*A*b*x + 12*a^9*B*x + 411*a^7*A*b^2*x^2 + 1
17*a^8*b*B*x^2 + 1030*a^6*A*b^3*x^3 + 510*a^7*b^2*B*x^3 + 1665*a^5*A*b^4*x^
4 + 1305*a^6*b^3*B*x^4 + 1800*a^4*A*b^5*x^5 + 2160*a^5*b^4*B*x^5 + 1301*a^3
*A*b^6*x^6 + 2397*a^4*b^5*B*x^6 + 606*a^2*A*b^7*x^7 + 1782*a^3*b^6*B*x^7 +
165*a*A*b^8*x^8 + 855*a^2*b^7*B*x^8 + 20*A*b^9*x^9 + 240*a*b^8*B*x^9 + 30*b
^9*B*x^10))/(15*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-32*a^5*b^5 -
160*a^4*b^6*x - 320*a^3*b^7*x^2 - 320*a^2*b^8*x^3 - 160*a*b^9*x^4 - 32*b^10
*x^5) + 15*x^6*(32*a^6*b^6 + 192*a^5*b^7*x + 480*a^4*b^8*x^2 + 640*a^3*b^9*
x^3 + 480*a^2*b^10*x^4 + 192*a*b^11*x^5 + 32*b^12*x^6))
```

fricas [A] time = 0.42, size = 73, normalized size = 0.35

$$-\frac{30\,Bb^3x^4+10\,Aa^3+20\left(3\,Bab^2+Ab^3\right)x^3+45\left(Ba^2b+Aab^2\right)x^2+12\left(Ba^3+3\,Aa^2b\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^3*x^4 + 10*A*a^3 + 20*(3*B*a*b^2 + A*b^3)*x^3 + 45*(B*a^2*b +
 A*a*b^2)*x^2 + 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

giac [A] time = 0.16, size = 149, normalized size = 0.71

$$\frac{\left(3\,Bab^5-Ab^6\right)\mathrm{sgn}\left(bx+a\right)}{60\,a^3}-\frac{30\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+60\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+20\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+45\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+45\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+12\,Ba^3x\mathrm{sgn}\left(bx+a\right)+36\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+10\,Aa^3\mathrm{sgn}\left(bx+a\right)}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/60*(3*B*a*b^5 - A*b^6)*sgn(b*x + a)/a^3 - 1/60*(30*B*b^3*x^4*sgn(b*x + a)
 + 60*B*a*b^2*x^3*sgn(b*x + a) + 20*A*b^3*x^3*sgn(b*x + a) + 45*B*a^2*b*x^2
*sgn(b*x + a) + 45*A*a*b^2*x^2*sgn(b*x + a) + 12*B*a^3*x*sgn(b*x + a) + 36*
A*a^2*b*x*sgn(b*x + a) + 10*A*a^3*sgn(b*x + a))/x^6
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(30B\,b^3x^4+20A\,b^3x^3+60Ba\,b^2x^3+45Aa\,b^2x^2+45B\,a^2b\,x^2+36A\,a^2bx+12B\,a^3x+10A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}}{60\left(bx+a\right)^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x)
```

```
[Out] -1/60*(30*B*b^3*x^4+20*A*b^3*x^3+60*B*a*b^2*x^3+45*A*a*b^2*x^2+45*B*a^2*b*x
^2+36*A*a^2*b*x+12*B*a^3*x+10*A*a^3)*((b*x+a)^2)^(3/2)/x^6/(b*x+a)^3
```

maxima [B] time = 0.57, size = 375, normalized size = 1.79

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^5}{4\,a^5}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^6}{4\,a^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^4}{4\,a^4x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^5}{4\,a^5x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^3}{4\,a^5x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^4}{4\,a^6x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^2}{4\,a^4x^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^3}{4\,a^5x^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb}{4\,a^3x^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^2}{4\,a^4x^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{5\,a^2x^5}+\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{30\,a^3x^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{6\,a^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^5/a^5 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*A*b^6/a^6 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^4/(a^4*x) + 1
/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^5/(a^5*x) + 1/4*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*b^3/(a^5*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^
6*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/(a^4*x^3) + 1/4*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*b/(a^3*x^4) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^4) - 1/
5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^5) + 7/30*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^6)
```

mupad [B] time = 1.18, size = 195, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{5}+\frac{3\,A\,b\,a^2}{5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{3}+B\,a\,b^2\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^3\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,x^6\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{2\,x^2\,\left(a+b\,x\right)}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,x^4\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^7,x)
```

```
[Out] - (((B*a^3)/5 + (3*A*a^2*b)/5)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b
*x)) - (((A*b^3)/3 + B*a*b^2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^3*(a + b*
x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (B*b^3*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^2*(a + b*x)) - (3*a*b*(A*b + B*a)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**7, x)
```

3.605 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{6x^6(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{4x^4(a+bx)}-\frac{b^3B}{}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{6x^6(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{4x^4(a+bx)}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^8,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(3*x^3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^8}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^8}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^8}+\frac{a^2b^3(3Ab+aB)}{x^7}+\frac{3ab^4(Ab+aB)}{x^6}+\frac{b^5(Ab+3aB)}{x^5}\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{3ab(}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(10a^3(6A+7Bx)+42a^2bx(5A+6Bx)+63ab^2x^2(4A+5Bx)+35b^3x^3(3A+4Bx)\right)}{420x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^8,x]
```

```
[Out] -1/420*(Sqrt[(a + b*x)^2]*(35*b^3*x^3*(3*A + 4*B*x) + 63*a*b^2*x^2*(4*A + 5
*B*x) + 42*a^2*b*x*(5*A + 6*B*x) + 10*a^3*(6*A + 7*B*x)))/(x^7*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.47, size = 684, normalized size = 3.26

$$\frac{16b^6\sqrt{a^2+2abx+b^2x^2}\left(-60a^9Ab-70a^9bBx-570a^8Ab^2x-672a^8b^2Bx^2-2412a^7Ab^3x^2-2877a^7b^3Bx^3-5967a^6Ab^4x^3-7210a^6b^4Bx^4-9510a^5Ab^5x^4-11655a^5b^5Bx^5-10125a^4Ab^6x^5-12600a^4b^6Bx^6-7200a^3Ab^7x^6-9107a^3b^7Bx^7-3297a^2Ab^8x^7-4242a^2b^8Bx^8-882aAb^9x^8-1155ab^9Bx^9-105Ab^{10}x^9-140b^{10}Bx^{10}\right)+16\sqrt{b^2}\,b^6\left(60a^{10}A+70a^{10}Bx+630a^9Abx+742a^9bBx^2+2982a^8Ab^2x^2+3549a^8b^2Bx^3+8379a^7Ab^3x^3+10087a^7b^3Bx^4+15477a^6Ab^4x^4+18865a^6b^4Bx^5+19635a^5Ab^5x^5+24255a^5b^5Bx^6+17325a^4Ab^6x^6+21707a^4b^6Bx^7+10497a^3Ab^7x^7+13349a^3b^7Bx^8+4179a^2Ab^8x^8+5397a^2b^8Bx^9+987aAb^9x^9+1295ab^9Bx^{10}+105Ab^{10}x^{10}+140b^{10}Bx^{11}\right)}{105\sqrt{b^2}\,x^7\sqrt{a^2+2abx+b^2x^2}\left(-64a^6b^6-384a^5b^7x-960a^4b^8x^2-1280a^3b^9x^3-960a^2b^{10}x^4-384ab^{11}x^5-64b^{12}x^6\right)+105x^7\left(64a^7b^7+448a^6b^8x+1344a^5b^9x^2+2240a^4b^{10}x^3+2240a^3b^{11}x^4+1344a^2b^{12}x^5+448ab^{13}x^6+64b^{14}x^7\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^8,x]
```

```
[Out] (16*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-60*a^9*A*b - 570*a^8*A*b^2*x - 70*a
^9*b*B*x - 2412*a^7*A*b^3*x^2 - 672*a^8*b^2*B*x^2 - 5967*a^6*A*b^4*x^3 - 28
77*a^7*b^3*B*x^3 - 9510*a^5*A*b^5*x^4 - 7210*a^6*b^4*B*x^4 - 10125*a^4*A*b^
6*x^5 - 11655*a^5*b^5*B*x^5 - 7200*a^3*A*b^7*x^6 - 12600*a^4*b^6*B*x^6 - 32
97*a^2*A*b^8*x^7 - 9107*a^3*b^7*B*x^7 - 882*a*A*b^9*x^8 - 4242*a^2*b^8*B*x^
8 - 105*A*b^10*x^9 - 1155*a*b^9*B*x^9 - 140*b^10*B*x^10) + 16*b^6*Sqrt[b^2]
*(60*a^10*A + 630*a^9*A*b*x + 70*a^10*B*x + 2982*a^8*A*b^2*x^2 + 742*a^9*b*
B*x^2 + 8379*a^7*A*b^3*x^3 + 3549*a^8*b^2*B*x^3 + 15477*a^6*A*b^4*x^4 + 100
87*a^7*b^3*B*x^4 + 19635*a^5*A*b^5*x^5 + 18865*a^6*b^4*B*x^5 + 17325*a^4*A*
b^6*x^6 + 24255*a^5*b^5*B*x^6 + 10497*a^3*A*b^7*x^7 + 21707*a^4*b^6*B*x^7 +
 4179*a^2*A*b^8*x^8 + 13349*a^3*b^7*B*x^8 + 987*a*A*b^9*x^9 + 5397*a^2*b^8*
B*x^9 + 105*A*b^10*x^10 + 1295*a*b^9*B*x^10 + 140*b^10*B*x^11))/(105*Sqrt[b
^2]*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-64*a^6*b^6 - 384*a^5*b^7*x - 960*a^
4*b^8*x^2 - 1280*a^3*b^9*x^3 - 960*a^2*b^10*x^4 - 384*a*b^11*x^5 - 64*b^12*
x^6) + 105*x^7*(64*a^7*b^7 + 448*a^6*b^8*x + 1344*a^5*b^9*x^2 + 2240*a^4*b^
10*x^3 + 2240*a^3*b^11*x^4 + 1344*a^2*b^12*x^5 + 448*a*b^13*x^6 + 64*b^14*x
^7))
```

fricas [A] time = 0.41, size = 73, normalized size = 0.35

$$-\frac{140\,Bb^3x^4+60\,Aa^3+105\left(3\,Bab^2+Ab^3\right)x^3+252\left(Ba^2b+Aab^2\right)x^2+70\left(Ba^3+3\,Aa^2b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(140*B*b^3*x^4 + 60*A*a^3 + 105*(3*B*a*b^2 + A*b^3)*x^3 + 252*(B*a^2
*b + A*a*b^2)*x^2 + 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

giac [A] time = 0.23, size = 149, normalized size = 0.71

$$-\frac{\left(7\,Bab^6-3\,Ab^7\right)\mathrm{sgn}\left(bx+a\right)}{420\,a^4}-\frac{140\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+315\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+105\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+252\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+252\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+70\,Ba^3x\mathrm{sgn}\left(bx+a\right)+210\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+60\,Aa^3\mathrm{sgn}\left(bx+a\right)}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(7*B*a*b^6 - 3*A*b^7)*sgn(b*x + a)/a^4 - 1/420*(140*B*b^3*x^4*sgn(b*
x + a) + 315*B*a*b^2*x^3*sgn(b*x + a) + 105*A*b^3*x^3*sgn(b*x + a) + 252*B*
a^2*b*x^2*sgn(b*x + a) + 252*A*a*b^2*x^2*sgn(b*x + a) + 70*B*a^3*x*sgn(b*x
+ a) + 210*A*a^2*b*x*sgn(b*x + a) + 60*A*a^3*sgn(b*x + a))/x^7
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(140B\,b^3x^4+105A\,b^3x^3+315Ba\,b^2x^3+252Aa\,b^2x^2+252B\,a^2b\,x^2+210A\,a^2bx+70B\,a^3x+60A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}}{420\left(bx+a\right)^3x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x)
```

```
[Out] -1/420*(140*B*b^3*x^4+105*A*b^3*x^3+315*B*a*b^2*x^3+252*A*a*b^2*x^2+252*B*a
^2*b*x^2+210*A*a^2*b*x+70*B*a^3*x+60*A*a^3)*((b*x+a)^2)^(3/2)/x^7/(b*x+a)^3
```

maxima [B] time = 0.55, size = 435, normalized size = 2.07

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^6}{4\,a^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^7}{4\,a^7}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^5}{4\,a^5x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^6}{4\,a^6x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^4}{4\,a^6x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^5}{4\,a^7x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^3}{4\,a^5x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^4}{4\,a^6x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^2}{4\,a^4x^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^3}{4\,a^5x^4}+\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb}{30\,a^3x^5}-\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^2}{70\,a^4x^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{6\,a^2x^6}+\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{14\,a^3x^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{7\,a^2x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^6/a^6 - 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*b^7/a^7 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^5/(a^5*x) - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^6/(a^6*x) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^4/(a^6*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7
*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/(a^5*x^3) - 1/4*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*b^2/(a^4*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^4) + 7
/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^5) - 17/70*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*A*b^2/(a^4*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2
*x^6) + 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^6) - 1/7*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*A/(a^2*x^7)
```

mupad [B] time = 1.19, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{6}+\frac{A\,b\,a^2}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{4}+\frac{3\,B\,a\,b^2}{4}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^4\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,x^3\,\left(a+b\,x\right)}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{5\,x^5\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^8,x)
```

```
[Out] - (((B*a^3)/6 + (A*a^2*b)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(a + b*x
)) - (((A*b^3)/4 + (3*B*a*b^2)/4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^4*(a
+ b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (B*b^
3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^3*(a + b*x)) - (3*a*b*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + Bx\right)\left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}{x^{8}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**8, x)
```

3.606 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^9}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7x^7(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2x^6(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5x^5(a+bx)}-\frac{b^3B\sqrt{a^2 \cdots}}{4 \cdots}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7x^7(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2x^6(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5x^5(a+bx)}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^9,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (a*b*(A*b + a*B)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*x^6*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(4*x^4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^9}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^9}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^9}+\frac{a^2b^3(3Ab+aB)}{x^8}+\frac{3ab^4(Ab+aB)}{x^7}+\frac{b^5(Ab+3aB)}{x^6}+\cdots\right)}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}-\frac{ab(Ab+\cdots}{\cdots}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(5a^3(7A+8Bx)+20a^2bx(6A+7Bx)+28ab^2x^2(5A+6Bx)+14b^3x^3(4A+5Bx)\right)}{280x^8(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^9,x]
```

```
[Out] -1/280*(Sqrt[(a + b*x)^2]*(14*b^3*x^3*(4*A + 5*B*x) + 28*a*b^2*x^2*(5*A + 6
*B*x) + 20*a^2*b*x*(6*A + 7*B*x) + 5*a^3*(7*A + 8*B*x)))/(x^8*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.85, size = 754, normalized size = 3.59

$$\frac{16b^7\sqrt{a^2+2abx+b^2x^2}\left(-35a^{10}Ab-40a^{10}bBx-365a^9Ab^2x-420a^9b^2Bx^2-1715a^8Ab^3x^2-1988a^8b^3Bx^3-4781a^7Ab^4x^3-5586a^7b^4Bx^4-8757a^6Ab^5x^4-10318a^6b^5Bx^5-11011a^5Ab^6x^5-13090a^5b^6Bx^6-9625a^4Ab^7x^6-11550a^4b^7Bx^7-5775a^3Ab^8x^7-6998a^3b^8Bx^8-2276a^2Ab^9x^8-2786a^2b^9Bx^9-532aAb^{10}x^9-658ab^{10}Bx^{10}-56Ab^{11}x^{10}-70b^{11}Bx^{11}\right)+16\sqrt{b^2}\,b^7\left(35a^{11}A+40a^{11}Bx+400a^{10}Abx+460a^{10}bBx^2+2080a^9Ab^2x^2+2408a^9b^2Bx^3+6496a^8Ab^3x^3+7574a^8b^3Bx^4+13538a^7Ab^4x^4+15904a^7b^4Bx^5+19768a^6Ab^5x^5+23408a^6b^5Bx^6+20636a^5Ab^6x^6+24640a^5b^6Bx^7+15400a^4Ab^7x^7+18548a^4b^7Bx^8+8051a^3Ab^8x^8+9784a^3b^8Bx^9+2808a^2Ab^9x^9+3444a^2b^9Bx^{10}+588aAb^{10}x^{10}+728ab^{10}Bx^{11}+56Ab^{11}x^{11}+70b^{11}Bx^{12}\right)}{35\sqrt{b^2}\,x^8\sqrt{a^2+2abx+b^2x^2}\left(-128a^7b^7-896a^6b^8x-2688a^5b^9x^2-4480a^4b^{10}x^3-4480a^3b^{11}x^4-2688a^2b^{12}x^5-896ab^{13}x^6-128b^{14}x^7\right)+35x^8\left(128a^8b^8+1024a^7b^9x+3584a^6b^{10}x^2+7168a^5b^{11}x^3+8960a^4b^{12}x^4+7168a^3b^{13}x^5+3584a^2b^{14}x^6+1024ab^{15}x^7+128b^{16}x^8\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^9,x]
```

```
[Out] (16*b^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-35*a^10*A*b - 365*a^9*A*b^2*x - 40*
a^10*b*B*x - 1715*a^8*A*b^3*x^2 - 420*a^9*b^2*B*x^2 - 4781*a^7*A*b^4*x^3 -
1988*a^8*b^3*B*x^3 - 8757*a^6*A*b^5*x^4 - 5586*a^7*b^4*B*x^4 - 11011*a^5*A*
b^6*x^5 - 10318*a^6*b^5*B*x^5 - 9625*a^4*A*b^7*x^6 - 13090*a^5*b^6*B*x^6 -
5775*a^3*A*b^8*x^7 - 11550*a^4*b^7*B*x^7 - 2276*a^2*A*b^9*x^8 - 6998*a^3*b^
8*B*x^8 - 532*a*A*b^10*x^9 - 2786*a^2*b^9*B*x^9 - 56*A*b^11*x^10 - 658*a*b^
10*B*x^10 - 70*b^11*B*x^11) + 16*b^7*Sqrt[b^2]*(35*a^11*A + 400*a^10*A*b*x
+ 40*a^11*B*x + 2080*a^9*A*b^2*x^2 + 460*a^10*b*B*x^2 + 6496*a^8*A*b^3*x^3
+ 2408*a^9*b^2*B*x^3 + 13538*a^7*A*b^4*x^4 + 7574*a^8*b^3*B*x^4 + 19768*a^6
*A*b^5*x^5 + 15904*a^7*b^4*B*x^5 + 20636*a^5*A*b^6*x^6 + 23408*a^6*b^5*B*x^
6 + 15400*a^4*A*b^7*x^7 + 24640*a^5*b^6*B*x^7 + 8051*a^3*A*b^8*x^8 + 18548*
a^4*b^7*B*x^8 + 2808*a^2*A*b^9*x^9 + 9784*a^3*b^8*B*x^9 + 588*a*A*b^10*x^10
 + 3444*a^2*b^9*B*x^10 + 56*A*b^11*x^11 + 728*a*b^10*B*x^11 + 70*b^11*B*x^1
2))/(35*Sqrt[b^2]*x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-128*a^7*b^7 - 896*a^6
*b^8*x - 2688*a^5*b^9*x^2 - 4480*a^4*b^10*x^3 - 4480*a^3*b^11*x^4 - 2688*a^
2*b^12*x^5 - 896*a*b^13*x^6 - 128*b^14*x^7) + 35*x^8*(128*a^8*b^8 + 1024*a^
7*b^9*x + 3584*a^6*b^10*x^2 + 7168*a^5*b^11*x^3 + 8960*a^4*b^12*x^4 + 7168*
a^3*b^13*x^5 + 3584*a^2*b^14*x^6 + 1024*a*b^15*x^7 + 128*b^16*x^8))
```

fricas [A] time = 0.42, size = 73, normalized size = 0.35

$$-\frac{70\,Bb^3x^4+35\,Aa^3+56\left(3\,Bab^2+Ab^3\right)x^3+140\left(Ba^2b+Aab^2\right)x^2+40\left(Ba^3+3\,Aa^2b\right)x}{280\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x, algorithm="fricas")
```

```
[Out] -1/280*(70*B*b^3*x^4 + 35*A*a^3 + 56*(3*B*a*b^2 + A*b^3)*x^3 + 140*(B*a^2*b
 + A*a*b^2)*x^2 + 40*(B*a^3 + 3*A*a^2*b)*x)/x^8
```

giac [A] time = 0.17, size = 149, normalized size = 0.71

$$\frac{\left(2\,Bab^7-Ab^8\right)\mathrm{sgn}\left(bx+a\right)}{280\,a^5}-\frac{70\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+168\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+56\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+140\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+140\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+40\,Ba^3x\mathrm{sgn}\left(bx+a\right)+120\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+35\,Aa^3\mathrm{sgn}\left(bx+a\right)}{280\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x, algorithm="giac")
```

```
[Out] 1/280*(2*B*a*b^7 - A*b^8)*sgn(b*x + a)/a^5 - 1/280*(70*B*b^3*x^4*sgn(b*x +
a) + 168*B*a*b^2*x^3*sgn(b*x + a) + 56*A*b^3*x^3*sgn(b*x + a) + 140*B*a^2*b
*x^2*sgn(b*x + a) + 140*A*a*b^2*x^2*sgn(b*x + a) + 40*B*a^3*x*sgn(b*x + a)
+ 120*A*a^2*b*x*sgn(b*x + a) + 35*A*a^3*sgn(b*x + a))/x^8
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(70B\,b^3x^4+56A\,b^3x^3+168Ba\,b^2x^3+140Aa\,b^2x^2+140B\,a^2b\,x^2+120A\,a^2bx+40B\,a^3x+35A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{280\,(bx+a)^3\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x)
```

```
[Out] -1/280*(70*B*b^3*x^4+56*A*b^3*x^3+168*B*a*b^2*x^3+140*A*a*b^2*x^2+140*B*a^2
*b*x^2+120*A*a^2*b*x+40*B*a^3*x+35*A*a^3)*((b*x+a)^2)^(3/2)/x^8/(b*x+a)^3
```

maxima [B] time = 0.52, size = 495, normalized size = 2.36

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^7}{4\,a^7}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^8}{4\,a^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^6}{4\,a^6x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^7}{4\,a^7x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^5}{4\,a^7x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^6}{4\,a^8x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^4}{4\,a^6x^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^5}{4\,a^7x^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^3}{4\,a^5x^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^4}{4\,a^6x^4}-\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^2}{70\,a^4x^5}+\frac{69\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^3}{280\,a^5x^5}+\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb}{14\,a^3x^6}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^2}{56\,a^4x^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{7\,a^2x^7}+\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{56\,a^3x^7}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A}{8\,a^2x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^7/a^7 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*A*b^8/a^8 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^6/(a^6*x) + 1
/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^7/(a^7*x) + 1/4*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*b^5/(a^7*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^
8*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/(a^6*x^3) + 1/4*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*b^3/(a^5*x^4) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^4) -
17/70*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/(a^4*x^5) + 69/280*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^5) + 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
B*b/(a^3*x^6) - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^6) - 1/7
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^7) + 11/56*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b/(a^3*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^8)
```

mupad [B] time = 1.17, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{7}+\frac{3\,A\,b\,a^2}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{5}+\frac{3\,B\,a\,b^2}{5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,x^4\,\left(a+b\,x\right)}-\frac{a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{2\,x^6\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^9,x)
```

```
[Out] - (((B*a^3)/7 + (3*A*a^2*b)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^7*(a + b
*x)) - (((A*b^3)/5 + (3*B*a*b^2)/5)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(
a + b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (B*
b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x)) - (a*b*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^6*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + Bx\right)\left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}{x^{9}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**9,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**9, x)
```

3.607 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{10}}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{8x^8(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6x^6(a+bx)}-\frac{b^3B\cdots}{\cdots}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{8x^8(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6x^6(a+bx)}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^10,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(5*x^5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{10}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{10}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{10}}+\frac{a^2b^3(3Ab+aB)}{x^9}+\frac{3ab^4(Ab+aB)}{x^8}+\frac{b^5(Ab+3aB)}{x^7}\cdots\right)}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{3ab(\cdots}{\cdots}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(35a^3(8A+9Bx)+135a^2bx(7A+8Bx)+180ab^2x^2(6A+7Bx)+84b^3x^3(5A+6Bx)\right)}{2520x^9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^10,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(84*b^3*x^3*(5*A + 6*B*x) + 180*a*b^2*x^2*(6*A +
 7*B*x) + 135*a^2*b*x*(7*A + 8*B*x) + 35*a^3*(8*A + 9*B*x)))/(x^9*(a + b*x)
)
```

IntegrateAlgebraic [B] time = 2.90, size = 824, normalized size = 3.92

$$\frac{32\sqrt{a^2+2bxa+b^2x^2}\left(-504Bx^{12}b^{12}-420Ax^{11}b^{12}-5292aBx^{11}b^{11}-4440aAx^{10}b^{11}-25272a^2Bx^{10}b^{10}-21345a^2Ax^9b^{10}-72459a^3Bx^9b^9-61600a^3Ax^8b^9-138600a^4Bx^8b^8-118580a^4Ax^7b^8-185724a^5Bx^7b^7-159880a^5Ax^6b^7-177912a^6Bx^6b^6-154070a^6Ax^5b^6-121842a^7Bx^5b^5-106120a^7Ax^4b^5-58464a^8Bx^4b^4-51200a^8Ax^3b^4-18720a^9Bx^3b^3-16480a^9Ax^2b^3-3600a^{10}Bx^2b^2-3185a^{10}Axb^2-280a^{11}Ab-315a^{11}Bxb\right)b^8+32\sqrt{b^2}\left(504b^{12}Bx^{13}+420Ab^{12}x^{12}+5796ab^{11}Bx^{12}+4860aAb^{11}x^{11}+30564a^2b^{10}Bx^{11}+25785a^2Ab^{10}x^{10}+97731a^3b^9Bx^{10}+82945a^3Ab^9x^9+211059a^4b^8Bx^9+180180a^4Ab^8x^8+324324a^5b^7Bx^8+278460a^5Ab^7x^7+363636a^6b^6Bx^7+313950a^6Ab^6x^6+299754a^7b^5Bx^6+260190a^7Ab^5x^5+180306a^8b^4Bx^5+157320a^8Ab^4x^4+77184a^9b^3Bx^4+67680a^9Ab^3x^3+22320a^{10}b^2Bx^3+19665a^{10}Ab^2x^2+3915a^{11}bBx^2+3465a^{11}Abx+315a^{12}Bx+280a^{12}A\right)b^8}{315\sqrt{b^2}\sqrt{a^2+2bxa+b^2x^2}\left(-256x^8b^{16}-2048ax^7b^{15}-7168a^2x^6b^{14}-14336a^3x^5b^{13}-17920a^4x^4b^{12}-14336a^5x^3b^{11}-7168a^6x^2b^{10}-2048a^7xb^9-256a^8b^8\right)x^9+315\left(256x^9b^{18}+2304ax^8b^{17}+9216a^2x^7b^{16}+21504a^3x^6b^{15}+32256a^4x^5b^{14}+32256a^5x^4b^{13}+21504a^6x^3b^{12}+9216a^7x^2b^{11}+2304a^8xb^{10}+256a^9b^9\right)x^9}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^10,x]
```

```
[Out] (32*b^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-280*a^11*A*b - 3185*a^10*A*b^2*x -
315*a^11*b*B*x - 16480*a^9*A*b^3*x^2 - 3600*a^10*b^2*B*x^2 - 51200*a^8*A*b^
4*x^3 - 18720*a^9*b^3*B*x^3 - 106120*a^7*A*b^5*x^4 - 58464*a^8*b^4*B*x^4 -
154070*a^6*A*b^6*x^5 - 121842*a^7*b^5*B*x^5 - 159880*a^5*A*b^7*x^6 - 177912
*a^6*b^6*B*x^6 - 118580*a^4*A*b^8*x^7 - 185724*a^5*b^7*B*x^7 - 61600*a^3*A*
b^9*x^8 - 138600*a^4*b^8*B*x^8 - 21345*a^2*A*b^10*x^9 - 72459*a^3*b^9*B*x^9
 - 4440*a*A*b^11*x^10 - 25272*a^2*b^10*B*x^10 - 420*A*b^12*x^11 - 5292*a*b^
11*B*x^11 - 504*b^12*B*x^12) + 32*b^8*Sqrt[b^2]*(280*a^12*A + 3465*a^11*A*b
*x + 315*a^12*B*x + 19665*a^10*A*b^2*x^2 + 3915*a^11*b*B*x^2 + 67680*a^9*A*
b^3*x^3 + 22320*a^10*b^2*B*x^3 + 157320*a^8*A*b^4*x^4 + 77184*a^9*b^3*B*x^4
 + 260190*a^7*A*b^5*x^5 + 180306*a^8*b^4*B*x^5 + 313950*a^6*A*b^6*x^6 + 299
754*a^7*b^5*B*x^6 + 278460*a^5*A*b^7*x^7 + 363636*a^6*b^6*B*x^7 + 180180*a^
4*A*b^8*x^8 + 324324*a^5*b^7*B*x^8 + 82945*a^3*A*b^9*x^9 + 211059*a^4*b^8*B
*x^9 + 25785*a^2*A*b^10*x^10 + 97731*a^3*b^9*B*x^10 + 4860*a*A*b^11*x^11 +
30564*a^2*b^10*B*x^11 + 420*A*b^12*x^12 + 5796*a*b^11*B*x^12 + 504*b^12*B*x
^13))/(315*Sqrt[b^2]*x^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-256*a^8*b^8 - 2048
*a^7*b^9*x - 7168*a^6*b^10*x^2 - 14336*a^5*b^11*x^3 - 17920*a^4*b^12*x^4 -
14336*a^3*b^13*x^5 - 7168*a^2*b^14*x^6 - 2048*a*b^15*x^7 - 256*b^16*x^8) +
315*x^9*(256*a^9*b^9 + 2304*a^8*b^10*x + 9216*a^7*b^11*x^2 + 21504*a^6*b^12
*x^3 + 32256*a^5*b^13*x^4 + 32256*a^4*b^14*x^5 + 21504*a^3*b^15*x^6 + 9216*
a^2*b^16*x^7 + 2304*a*b^17*x^8 + 256*b^18*x^9))
```

fricas [A] time = 0.42, size = 73, normalized size = 0.35

$$-\frac{504\,Bb^3x^4+280\,Aa^3+420\left(3\,Bab^2+Ab^3\right)x^3+1080\left(Ba^2b+Aab^2\right)x^2+315\left(Ba^3+3\,Aa^2b\right)x}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(504*B*b^3*x^4 + 280*A*a^3 + 420*(3*B*a*b^2 + A*b^3)*x^3 + 1080*(B*
a^2*b + A*a*b^2)*x^2 + 315*(B*a^3 + 3*A*a^2*b)*x)/x^9
```

giac [A] time = 0.18, size = 149, normalized size = 0.71

$$-\frac{\left(9\,Bab^8-5\,Ab^9\right)\mathrm{sgn}\left(bx+a\right)}{2520\,a^6}-\frac{504\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+1260\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+420\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+1080\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+1080\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+315\,Ba^3x\mathrm{sgn}\left(bx+a\right)+945\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+280\,Aa^3\mathrm{sgn}\left(bx+a\right)}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x, algorithm="giac")
```

```
[Out] -1/2520*(9*B*a*b^8 - 5*A*b^9)*sgn(b*x + a)/a^6 - 1/2520*(504*B*b^3*x^4*sgn(
b*x + a) + 1260*B*a*b^2*x^3*sgn(b*x + a) + 420*A*b^3*x^3*sgn(b*x + a) + 108
0*B*a^2*b*x^2*sgn(b*x + a) + 1080*A*a*b^2*x^2*sgn(b*x + a) + 315*B*a^3*x*sg
n(b*x + a) + 945*A*a^2*b*x*sgn(b*x + a) + 280*A*a^3*sgn(b*x + a))/x^9
```

maxima [B] time = 0.57, size = 555, normalized size = 2.64

$$\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}Bb^{8}}{4a^{8}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}Ab^{9}}{4a^{9}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}Bb^{7}}{4a^{7}x}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}Ab^{8}}{4a^{8}x}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Bb^{6}}{4a^{8}x^{2}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab^{7}}{4a^{9}x^{2}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Bb^{5}}{4a^{7}x^{3}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab^{6}}{4a^{8}x^{3}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Bb^{4}}{4a^{6}x^{4}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab^{5}}{4a^{7}x^{4}}+\frac{69\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Bb^{3}}{280a^{5}x^{5}}-\frac{125\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab^{4}}{504a^{6}x^{5}}-\frac{13\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Bb^{2}}{56a^{4}x^{6}}+\frac{121\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab^{3}}{504a^{5}x^{6}}+\frac{11\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Bb}{56a^{3}x^{7}}-\frac{37\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab^{2}}{168a^{4}x^{7}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}B}{8a^{2}x^{8}}+\frac{13\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ab}{72a^{3}x^{8}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}A}{9a^{2}x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^8/a^8 - 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*b^9/a^9 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^7/(a^7*x) - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^8/(a^8*x) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^6/(a^8*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^9
*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/(a^7*x^3) - 1/4*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*A*b^6/(a^8*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*b^4/(a^6*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7*x^4) + 6
9/280*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/(a^5*x^5) - 125/504*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^5) - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*b^2/(a^4*x^6) + 121/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^6)
 + 11/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^7) - 37/168*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
B/(a^2*x^8) + 13/72*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^8) - 1/9*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^9)
```

mupad [B] time = 1.17, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{8}+\frac{3\,A\,b\,a^2}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{6}+\frac{B\,a\,b^2}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{5\,x^5\,\left(a+b\,x\right)}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^10,x)
```

```
[Out] - (((B*a^3)/8 + (3*A*a^2*b)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^8*(a + b
*x)) - (((A*b^3)/6 + (B*a*b^2)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(a
+ b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (B*b^
3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x)) - (3*a*b*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**10,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**10, x)
```

3.608 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{11}}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{9x^9(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8x^8(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7x^7(a+bx)}-\frac{b^3B\sqrt{a}}{6}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{9x^9(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8x^8(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7x^7(a+bx)}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^11,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (a^2*(3*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (3*a*b*(A*b + a*B)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(6*x^6*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{11}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{11}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{11}}+\frac{a^2b^3(3Ab+aB)}{x^{10}}+\frac{3ab^4(Ab+aB)}{x^9}+\frac{b^5(Ab+3aB)}{x^8}+\frac{b^6}{x}\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{3ab(Ab}{}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(28a^3(9A+10Bx)+105a^2bx(8A+9Bx)+135ab^2x^2(7A+8Bx)+60b^3x^3(6A+7Bx)\right)}{2520x^{10}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(60*b^3*x^3*(6*A + 7*B*x) + 135*a*b^2*x^2*(7*A +
 8*B*x) + 105*a^2*b*x*(8*A + 9*B*x) + 28*a^3*(9*A + 10*B*x)))/(x^10*(a + b*
x))
```

IntegrateAlgebraic [B] time = 3.44, size = 894, normalized size = 4.26

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^11,x]
```

```
[Out] (64*b^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-252*a^12*A*b - 3108*a^11*A*b^2*x -
280*a^12*b*B*x - 17577*a^10*A*b^3*x^2 - 3465*a^11*b^2*B*x^2 - 60273*a^9*A*b
^4*x^3 - 19665*a^10*b^3*B*x^3 - 139572*a^8*A*b^5*x^4 - 67680*a^9*b^4*B*x^4
- 229932*a^7*A*b^6*x^5 - 157320*a^8*b^5*B*x^5 - 276318*a^6*A*b^7*x^6 - 2601
90*a^7*b^6*B*x^6 - 244062*a^5*A*b^8*x^7 - 313950*a^6*b^7*B*x^7 - 157248*a^4
*A*b^9*x^8 - 278460*a^5*b^8*B*x^8 - 72072*a^3*A*b^10*x^9 - 180180*a^4*b^9*B
*x^9 - 22305*a^2*A*b^11*x^10 - 82945*a^3*b^10*B*x^10 - 4185*a*A*b^12*x^11 -
 25785*a^2*b^11*B*x^11 - 360*A*b^13*x^12 - 4860*a*b^12*B*x^12 - 420*b^13*B*
x^13) + 64*b^9*Sqrt[b^2]*(252*a^13*A + 3360*a^12*A*b*x + 280*a^13*B*x + 206
85*a^11*A*b^2*x^2 + 3745*a^12*b*B*x^2 + 77850*a^10*A*b^3*x^3 + 23130*a^11*b
^2*B*x^3 + 199845*a^9*A*b^4*x^4 + 87345*a^10*b^3*B*x^4 + 369504*a^8*A*b^5*x
^5 + 225000*a^9*b^4*B*x^5 + 506250*a^7*A*b^6*x^6 + 417510*a^8*b^5*B*x^6 + 5
20380*a^6*A*b^7*x^7 + 574140*a^7*b^6*B*x^7 + 401310*a^5*A*b^8*x^8 + 592410*
a^6*b^7*B*x^8 + 229320*a^4*A*b^9*x^9 + 458640*a^5*b^8*B*x^9 + 94377*a^3*A*b
^10*x^10 + 263125*a^4*b^9*B*x^10 + 26490*a^2*A*b^11*x^11 + 108730*a^3*b^10*
B*x^11 + 4545*a*A*b^12*x^12 + 30645*a^2*b^11*B*x^12 + 360*A*b^13*x^13 + 528
0*a*b^12*B*x^13 + 420*b^13*B*x^14))/(315*Sqrt[b^2]*x^10*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]*(-512*a^9*b^9 - 4608*a^8*b^10*x - 18432*a^7*b^11*x^2 - 43008*a^6
*b^12*x^3 - 64512*a^5*b^13*x^4 - 64512*a^4*b^14*x^5 - 43008*a^3*b^15*x^6 -
18432*a^2*b^16*x^7 - 4608*a*b^17*x^8 - 512*b^18*x^9) + 315*x^10*(512*a^10*b
^10 + 5120*a^9*b^11*x + 23040*a^8*b^12*x^2 + 61440*a^7*b^13*x^3 + 107520*a^
6*b^14*x^4 + 129024*a^5*b^15*x^5 + 107520*a^4*b^16*x^6 + 61440*a^3*b^17*x^7
 + 23040*a^2*b^18*x^8 + 5120*a*b^19*x^9 + 512*b^20*x^10))
```

fricas [A] time = 0.42, size = 73, normalized size = 0.35

$$-\frac{420 \, B b^{3} x^{4} + 252 \, A a^{3} + 360 \, {\left(3 \, B a b^{2} + A b^{3}\right)} x^{3} + 945 \, {\left(B a^{2} b + A a b^{2}\right)} x^{2} + 280 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} x}{2520 \, x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(420*B*b^3*x^4 + 252*A*a^3 + 360*(3*B*a*b^2 + A*b^3)*x^3 + 945*(B*a
^2*b + A*a*b^2)*x^2 + 280*(B*a^3 + 3*A*a^2*b)*x)/x^10
```

giac [A] time = 0.16, size = 149, normalized size = 0.71

$$\frac{{\left(5 \, B a b^{9} - 3 \, A b^{10}\right)} \mathrm{sgn}\left(b x + a\right)}{2520 \, a^{7}} - \frac{420 \, B b^{3} x^{4} \mathrm{sgn}\left(b x + a\right) + 1080 \, B a b^{2} x^{3} \mathrm{sgn}\left(b x + a\right) + 360 \, A b^{3} x^{3} \mathrm{sgn}\left(b x + a\right) + 945 \, B a^{2} b x^{2} \mathrm{sgn}\left(b x + a\right) + 945 \, A a b^{2} x^{2} \mathrm{sgn}\left(b x + a\right) + 280 \, B a^{3} x \mathrm{sgn}\left(b x + a\right) + 840 \, A a^{2} b x \mathrm{sgn}\left(b x + a\right) + 252 \, A a^{3} \mathrm{sgn}\left(b x + a\right)}{2520 \, x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x, algorithm="giac")
```

```
[Out] 1/2520*(5*B*a*b^9 - 3*A*b^10)*sgn(b*x + a)/a^7 - 1/2520*(420*B*b^3*x^4*sgn(
b*x + a) + 1080*B*a*b^2*x^3*sgn(b*x + a) + 360*A*b^3*x^3*sgn(b*x + a) + 945
```

```
*B*a^2*b*x^2*sgn(b*x + a) + 945*A*a*b^2*x^2*sgn(b*x + a) + 280*B*a^3*x*sgn(
b*x + a) + 840*A*a^2*b*x*sgn(b*x + a) + 252*A*a^3*sgn(b*x + a))/x^10
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(420B\,b^{3}x^{4}+360A\,b^{3}x^{3}+1080Ba\,b^{2}x^{3}+945Aa\,b^{2}x^{2}+945B\,a^{2}b\,x^{2}+840A\,a^{2}bx+280B\,a^{3}x+252A\,a^{3}\right)\left((bx+a)^{2}\right)^{\frac{3}{2}}}{2520\,(bx+a)^{3}\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x)
```

```
[Out] -1/2520*(420*B*b^3*x^4+360*A*b^3*x^3+1080*B*a*b^2*x^3+945*A*a*b^2*x^2+945*B
*a^2*b*x^2+840*A*a^2*b*x+280*B*a^3*x+252*A*a^3)*((b*x+a)^2)^(3/2)/x^10/(b*x
+a)^3
```

maxima [B] time = 0.69, size = 615, normalized size = 2.93

$$-\frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}Bb^9}{4a^9}+\frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}Ab^{10}}{4a^{10}}-\frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}Bb^8}{4a^8x}+\frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}Ab^9}{4a^9x}+\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^7}{4a^9x^2}-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^8}{4a^{10}x^2}-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^6}{4a^8x^3}+\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^7}{4a^9x^3}+\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^5}{4a^7x^4}-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^6}{4a^8x^4}-\frac{125(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^4}{504a^6x^5}+\frac{209(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^5}{840a^7x^5}+\frac{121(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^3}{504a^5x^6}-\frac{41(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^4}{168a^6x^6}-\frac{37(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^2}{168a^4x^7}+\frac{13(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^3}{56a^5x^7}+\frac{13(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb}{72a^3x^8}-\frac{5(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^2}{24a^4x^8}-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}B}{9a^2x^9}+\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab}{6a^3x^9}-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}A}{10a^2x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^9/a^9 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*A*b^10/a^10 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^8/(a^8*x) +
 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^9/(a^9*x) + 1/4*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*B*b^7/(a^9*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^8/(
a^10*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^6/(a^8*x^3) + 1/4*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^9*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*B*b^5/(a^7*x^4) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^8*x^4)
 - 125/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/(a^6*x^5) + 209/840*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7*x^5) + 121/504*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*B*b^3/(a^5*x^6) - 41/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^
6*x^6) - 37/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/(a^4*x^7) + 13/56*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^7) + 13/72*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*b/(a^3*x^8) - 5/24*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x
^8) - 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^9) + 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*A*b/(a^3*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^
2*x^10)
```

mupad [B] time = 1.18, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{9}+\frac{A\,b\,a^2}{3}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^9\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{7}+\frac{3\,B\,a\,b^2}{7}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{10\,x^{10}\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,x^6\,\left(a+b\,x\right)}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^11,x)
```

```
[Out] - (((B*a^3)/9 + (A*a^2*b)/3)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^9*(a + b*x
)) - (((A*b^3)/7 + (3*B*a*b^2)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^7*(a
+ b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(10*x^10*(a + b*x)) - (B*
b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (3*a*b*(A*b + B*a)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^{2}\right)^{\frac{3}{2}}}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**11,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**11, x)
```

3.609 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{12}}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{10x^{10}(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^9(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8x^8(a+bx)}-\frac{b^3B\cdots}{}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{10x^{10}(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^9(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8x^8(a+bx)}-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^12,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^2*(3*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (a*b*(A*b + a*B)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^9*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(7*x^7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{12}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{12}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{12}}+\frac{a^2b^3(3Ab+aB)}{x^{11}}+\frac{3ab^4(Ab+aB)}{x^{10}}+\frac{b^5(Ab+3aB)}{x^9}\cdots\right)}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{ab(A\cdots}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(84a^3(10A+11Bx)+308a^2bx(9A+10Bx)+385ab^2x^2(8A+9Bx)+165b^3x^3(7A+8Bx)\right)}{9240x^{11}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^12,x]
```

```
[Out] -1/9240*(Sqrt[(a + b*x)^2]*(165*b^3*x^3*(7*A + 8*B*x) + 385*a*b^2*x^2*(8*A
+ 9*B*x) + 308*a^2*b*x*(9*A + 10*B*x) + 84*a^3*(10*A + 11*B*x)))/(x^11*(a +
 b*x))
```

IntegrateAlgebraic [**B**] time = 3.81, size = 964, normalized size = 4.59

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^12,x]
```

```
[Out] (128*b^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-840*a^13*A*b - 11172*a^12*A*b^2*x
 - 924*a^13*b*B*x - 68600*a^11*A*b^3*x^2 - 12320*a^12*b^2*B*x^2 - 257495*a^
10*A*b^4*x^3 - 75845*a^11*b^3*B*x^3 - 659190*a^9*A*b^5*x^4 - 285450*a^10*b^
4*B*x^4 - 1215375*a^8*A*b^6*x^5 - 732765*a^9*b^5*B*x^5 - 1660344*a^7*A*b^7*
x^6 - 1354848*a^8*b^6*B*x^6 - 1701630*a^6*A*b^8*x^7 - 1856250*a^7*b^7*B*x^7
 - 1308300*a^5*A*b^9*x^8 - 1908060*a^6*b^8*B*x^8 - 745290*a^4*A*b^10*x^9 -
1471470*a^5*b^9*B*x^9 - 305760*a^3*A*b^11*x^10 - 840840*a^4*b^10*B*x^10 - 8
5547*a^2*A*b^12*x^11 - 346049*a^3*b^11*B*x^11 - 14630*a*A*b^13*x^12 - 97130
*a^2*b^12*B*x^12 - 1155*A*b^14*x^13 - 16665*a*b^13*B*x^13 - 1320*b^14*B*x^1
4) + 128*b^10*Sqrt[b^2]*(840*a^14*A + 12012*a^13*A*b*x + 924*a^14*B*x + 797
72*a^12*A*b^2*x^2 + 13244*a^13*b*B*x^2 + 326095*a^11*A*b^3*x^3 + 88165*a^12
*b^2*B*x^3 + 916685*a^10*A*b^4*x^4 + 361295*a^11*b^3*B*x^4 + 1874565*a^9*A*
b^5*x^5 + 1018215*a^10*b^4*B*x^5 + 2875719*a^8*A*b^6*x^6 + 2087613*a^9*b^5*
B*x^6 + 3361974*a^7*A*b^7*x^7 + 3211098*a^8*b^6*B*x^7 + 3009930*a^6*A*b^8*x
^8 + 3764310*a^7*b^7*B*x^8 + 2053590*a^5*A*b^9*x^9 + 3379530*a^6*b^8*B*x^9
+ 1051050*a^4*A*b^10*x^10 + 2312310*a^5*b^9*B*x^10 + 391307*a^3*A*b^11*x^11
 + 1186889*a^4*b^10*B*x^11 + 100177*a^2*A*b^12*x^12 + 443179*a^3*b^11*B*x^1
2 + 15785*a*A*b^13*x^13 + 113795*a^2*b^12*B*x^13 + 1155*A*b^14*x^14 + 17985
*a*b^13*B*x^14 + 1320*b^14*B*x^15))/(1155*Sqrt[b^2]*x^11*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]*(-1024*a^10*b^10 - 10240*a^9*b^11*x - 46080*a^8*b^12*x^2 - 1228
80*a^7*b^13*x^3 - 215040*a^6*b^14*x^4 - 258048*a^5*b^15*x^5 - 215040*a^4*b^
16*x^6 - 122880*a^3*b^17*x^7 - 46080*a^2*b^18*x^8 - 10240*a*b^19*x^9 - 1024
*b^20*x^10) + 1155*x^11*(1024*a^11*b^11 + 11264*a^10*b^12*x + 56320*a^9*b^1
3*x^2 + 168960*a^8*b^14*x^3 + 337920*a^7*b^15*x^4 + 473088*a^6*b^16*x^5 + 4
73088*a^5*b^17*x^6 + 337920*a^4*b^18*x^7 + 168960*a^3*b^19*x^8 + 56320*a^2*
b^20*x^9 + 11264*a*b^21*x^10 + 1024*b^22*x^11))
```

fricas [**A**] time = 0.41, size = 73, normalized size = 0.35

$$-\frac{1320\,Bb^3x^4 + 840\,Aa^3 + 1155\left(3\,Bab^2 + Ab^3\right)x^3 + 3080\left(Ba^2b + Aab^2\right)x^2 + 924\left(Ba^3 + 3\,Aa^2b\right)x}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x, algorithm="fricas")
```

```
[Out] -1/9240*(1320*B*b^3*x^4 + 840*A*a^3 + 1155*(3*B*a*b^2 + A*b^3)*x^3 + 3080*(
B*a^2*b + A*a*b^2)*x^2 + 924*(B*a^3 + 3*A*a^2*b)*x)/x^11
```

giac [**A**] time = 0.20, size = 149, normalized size = 0.71

$$-\frac{\left(11\,Bab^{10} - 7\,Ab^{11}\right)\mathrm{sgn}\left(bx + a\right)}{9240\,a^8} - \frac{1320\,Bb^3x^4\mathrm{sgn}\left(bx + a\right) + 3465\,Bab^2x^3\mathrm{sgn}\left(bx + a\right) + 1155\,Ab^3x^3\mathrm{sgn}\left(bx + a\right) + 3080\,Ba^2bx^2\mathrm{sgn}\left(bx + a\right) + 3080\,Aab^2x^2\mathrm{sgn}\left(bx + a\right) + 924\,Ba^3x\mathrm{sgn}\left(bx + a\right) + 2772\,Aa^2bx\mathrm{sgn}\left(bx + a\right) + 840\,Aa^3\mathrm{sgn}\left(bx + a\right)}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x, algorithm="giac")
```

```
[Out] -1/9240*(11*B*a*b^10 - 7*A*b^11)*sgn(b*x + a)/a^8 - 1/9240*(1320*B*b^3*x^4*
sgn(b*x + a) + 3465*B*a*b^2*x^3*sgn(b*x + a) + 1155*A*b^3*x^3*sgn(b*x + a)
+ 3080*B*a^2*b*x^2*sgn(b*x + a) + 3080*A*a*b^2*x^2*sgn(b*x + a) + 924*B*a^3
*x*sgn(b*x + a) + 2772*A*a^2*b*x*sgn(b*x + a) + 840*A*a^3*sgn(b*x + a))/x^1
1
```

maple [A] time = 0.06, size = 92, normalized size = 0.44

$$-\frac{\left(1320 B\,b^{3} x^{4}+1155 A\,b^{3} x^{3}+3465 B a\,b^{2} x^{3}+3080 A a\,b^{2} x^{2}+3080 B\,a^{2} b\,x^{2}+2772 A\,a^{2} b x+924 B\,a^{3} x+840 A\,a^{3}\right)\left(\left(b x+a\right)^{2}\right)^{\frac{3}{2}}}{9240\left(b x+a\right)^{3} x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x)
```

```
[Out] -1/9240*(1320*B*b^3*x^4+1155*A*b^3*x^3+3465*B*a*b^2*x^3+3080*A*a*b^2*x^2+30
80*B*a^2*b*x^2+2772*A*a^2*b*x+924*B*a^3*x+840*A*a^3)*((b*x+a)^2)^(3/2)/x^11
/(b*x+a)^3
```

maxima [B] time = 0.65, size = 675, normalized size = 3.21

$$\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} B b^{10}}{4 a^{10}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} A b^{11}}{4 a^{11}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} B b^{9}}{4 a^{9} x}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} A b^{10}}{4 a^{10} x}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{8}}{4 a^{10} x^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{9}}{4 a^{11} x^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{7}}{4 a^{9} x^{3}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{8}}{4 a^{10} x^{3}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{6}}{4 a^{8} x^{4}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{7}}{4 a^{9} x^{4}}+\frac{209\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{5}}{840 a^{7} x^{5}}-\frac{329\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{6}}{1320 a^{8} x^{5}}-\frac{41\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{4}}{168 a^{6} x^{6}}+\frac{65\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{5}}{264 a^{7} x^{6}}+\frac{13\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{3}}{56 a^{5} x^{7}}-\frac{21\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{4}}{88 a^{6} x^{7}}-\frac{5\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{2}}{24 a^{4} x^{8}}+\frac{59\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{3}}{264 a^{5} x^{8}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b}{6 a^{3} x^{9}}-\frac{13\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{2}}{66 a^{4} x^{9}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B}{10 a^{2} x^{10}}+\frac{17\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b}{110 a^{3} x^{10}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A}{11 a^{2} x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^10/a^10 - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*A*b^11/a^11 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^9/(a^9*x)
- 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^10/(a^10*x) - 1/4*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*B*b^8/(a^10*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b
^9/(a^11*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^7/(a^9*x^3) - 1/4*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^8/(a^10*x^3) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^6/(a^8*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^9
*x^4) + 209/840*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/(a^7*x^5) - 329/1320*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^8*x^5) - 41/168*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*B*b^4/(a^6*x^6) + 65/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^
5/(a^7*x^6) + 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/(a^5*x^7) - 21/88
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^7) - 5/24*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*B*b^2/(a^4*x^8) + 59/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3
/(a^5*x^8) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^9) - 13/66*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*B/(a^2*x^10) + 17/110*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^10
) - 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^11)
```

mupad [B] time = 1.16, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{10}+\frac{3\,A\,b\,a^2}{10}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{10}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{8}+\frac{3\,B\,a\,b^2}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{11\,x^{11}\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-\frac{a\,b\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,x^9\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^12,x)
```

```
[Out] - (((B*a^3)/10 + (3*A*a^2*b)/10)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^10*(a
+ b*x)) - (((A*b^3)/8 + (3*B*a*b^2)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^
8*(a + b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(11*x^11*(a + b*x))
- (B*b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (a*b*(A*b + B
*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^9*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}{x^{12}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**12,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**12, x)
```

3.610 $\int x^6(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=303

$$\frac{a^2b^2x^{10}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^{12}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{12(a+bx)}+\frac{5ab^3x^{11}\sqrt{a^2+2abx+b^2x^2}\,(2aB$$

Rubi [A] time = 0.18, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^4x^{12}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{12(a+bx)}+\frac{5ab^3x^{11}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{11(a+bx)}+\frac{a^2b^2x^{10}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{5a^3bx^9\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{9(a+bx)}+\frac{a^4x^8\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{8(a+bx)}+\frac{a^5Ax^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{b^5Bx^{13}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^5*A*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (a^4*(5*A*b + a*B
)*x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)
*x^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (a^2*b^2*(A*b + a*B)*x^
10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a*b^3*(A*b + 2*a*B)*x^11*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^12*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(12*(a + b*x)) + (b^5*B*x^13*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^6(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^6\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^5Ab^5x^6+a^4b^5(5Ab+aB)x^7+5a^3b^6(2Ab-\right.}{}$$

$$=\frac{a^5Ax^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{a^4(5Ab+aB)x^8\sqrt{a^2+2abx+b^2x^2}}{8(a+bx)}+$$

Mathematica [A] time = 0.05, size = 125, normalized size = 0.41

$$\frac{x^7\sqrt{(a+bx)^2}\left(1287a^5(8A+7Bx)+5005a^4bx(9A+8Bx)+8008a^3b^2x^2(10A+9Bx)+6552a^2b^3x^3(11A+10Bx)+2730ab^4x^4(12A+11Bx)+462b^5x^5(13A+12Bx)\right)}{72072(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^7*Sqrt[(a + b*x)^2]*(1287*a^5*(8*A + 7*B*x) + 5005*a^4*b*x*(9*A + 8*B*x)
 + 8008*a^3*b^2*x^2*(10*A + 9*B*x) + 6552*a^2*b^3*x^3*(11*A + 10*B*x) + 273
0*a*b^4*x^4*(12*A + 11*B*x) + 462*b^5*x^5*(13*A + 12*B*x)))/(72072*(a + b*x
))
```

IntegrateAlgebraic [F] time = 1.51, size = 0, normalized size = 0.00

$$\int x^6(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^6*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^6*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.41, size = 118, normalized size = 0.39

$$\frac{1}{13}\,Bb^5x^{13}+\frac{1}{7}\,Aa^5x^7+\frac{1}{12}\left(5\,Bab^4+Ab^5\right)x^{12}+\frac{5}{11}\left(2\,Ba^2b^3+Aab^4\right)x^{11}+\left(Ba^3b^2+Aa^2b^3\right)x^{10}+\frac{5}{9}\left(Ba^4b+2\,Aa^3b^2\right)x^9+\frac{1}{8}\left(Ba^5+5\,Aa^4b\right)x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/13*B*b^5*x^13 + 1/7*A*a^5*x^7 + 1/12*(5*B*a*b^4 + A*b^5)*x^12 + 5/11*(2*B
*a^2*b^3 + A*a*b^4)*x^11 + (B*a^3*b^2 + A*a^2*b^3)*x^10 + 5/9*(B*a^4*b + 2*
A*a^3*b^2)*x^9 + 1/8*(B*a^5 + 5*A*a^4*b)*x^8
```

giac [A] time = 0.18, size = 220, normalized size = 0.73

$$\frac{1}{13}\,Bb^5x^{13}\mathrm{sgn}\left(bx+a\right)+\frac{5}{12}\,Bab^4x^{12}\mathrm{sgn}\left(bx+a\right)+\frac{1}{12}\,Ab^5x^{12}\mathrm{sgn}\left(bx+a\right)+\frac{10}{11}\,Ba^2b^3x^{11}\mathrm{sgn}\left(bx+a\right)+\frac{5}{11}\,Aab^4x^{11}\mathrm{sgn}\left(bx+a\right)+Ba^3b^2x^{10}\mathrm{sgn}\left(bx+a\right)+Aa^2b^3x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{5}{9}\,Ba^4bx^9\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}\,Aa^3b^2x^9\mathrm{sgn}\left(bx+a\right)+\frac{1}{8}\,Ba^5x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}\,Aa^4bx^8\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,Aa^5x^7\mathrm{sgn}\left(bx+a\right)-\frac{\left(7\,Ba^{13}-13\,Aa^{12}b\right)\mathrm{sgn}\left(bx+a\right)}{72072\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/13*B*b^5*x^13*sgn(b*x + a) + 5/12*B*a*b^4*x^12*sgn(b*x + a) + 1/12*A*b^5*
x^12*sgn(b*x + a) + 10/11*B*a^2*b^3*x^11*sgn(b*x + a) + 5/11*A*a*b^4*x^11*s
gn(b*x + a) + B*a^3*b^2*x^10*sgn(b*x + a) + A*a^2*b^3*x^10*sgn(b*x + a) + 5
/9*B*a^4*b*x^9*sgn(b*x + a) + 10/9*A*a^3*b^2*x^9*sgn(b*x + a) + 1/8*B*a^5*x
^8*sgn(b*x + a) + 5/8*A*a^4*b*x^8*sgn(b*x + a) + 1/7*A*a^5*x^7*sgn(b*x + a)
 - 1/72072*(7*B*a^13 - 13*A*a^12*b)*sgn(b*x + a)/b^8
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$\frac{\left(5544B\,b^5x^6+6006x^5A\,b^5+30030x^5Ba\,b^4+32760x^4Aa\,b^4+65520x^4B\,a^2b^3+72072A\,a^2b^3x^3+72072B\,a^3b^2x^3+80080x^2A\,a^3b^2+40040x^2B\,a^4b+45045xA\,a^4b+9009xB\,a^5+10296A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}x^7}{72072\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/72072*x^7*(5544*B*b^5*x^6+6006*A*b^5*x^5+30030*B*a*b^4*x^5+32760*A*a*b^4*
x^4+65520*B*a^2*b^3*x^4+72072*A*a^2*b^3*x^3+72072*B*a^3*b^2*x^3+80080*A*a^3
*b^2*x^2+40040*B*a^4*b*x^2+45045*A*a^4*b*x+9009*B*a^5*x+10296*A*a^5)*((b*x+
a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.66, size = 481, normalized size = 1.59

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^6}{13\,b^2}-\frac{19\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bax^5}{156\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ax^5}{12\,b^2}+\frac{251\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^2x^4}{1716\,b^4}-\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aax^4}{132\,b^3}-\frac{68\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^3x^3}{429\,b^5}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^2x^3}{33\,b^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^7x}{6\,b^7}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^6x}{6\,b^6}+\frac{211\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^4x^2}{1287\,b^6}-\frac{16\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^3x^2}{99\,b^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^8}{6\,b^8}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^7}{6\,b^7}-\frac{1709\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^5x}{10296\,b^7}+\frac{131\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^4x}{792\,b^6}+\frac{1715\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^6}{10296\,b^8}-\frac{923\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^5}{5544\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^6/b^2 - 19/156*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*B*a*x^5/b^3 + 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x^5/b^2 +
 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*x^4/b^4 - 17/132*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*A*a*x^4/b^3 - 68/429*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
B*a^3*x^3/b^5 + 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^2*x^3/b^4 - 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^7*x/b^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*A*a^6*x/b^6 + 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^4*x^2/b^6 -
 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^3*x^2/b^5 - 1/6*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*B*a^8/b^8 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^7/b^7 -
 1709/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^5*x/b^7 + 131/792*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*a^4*x/b^6 + 1715/10296*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*B*a^6/b^8 - 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^5/b^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^6\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^6*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^6 (A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**6*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.611 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=306

$$\frac{10a^2b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{b^4x^{11}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{ab^3x^{10}\sqrt{a^2+2abx+b^2x^2}\,(2aB+\ldots}{2(a+bx)}$$

Rubi [A] time = 0.14, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^4x^{11}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{ab^3x^{10}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{2(a+bx)}+\frac{10a^2b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{5a^3bx^8\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{8(a+bx)}+\frac{a^4x^7\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{7(a+bx)}+\frac{a^5Ax^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{b^5Bx^{12}\sqrt{a^2+2abx+b^2x^2}}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^5*A*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (a^4*(5*A*b + a*B
)*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)
*x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (10*a^2*b^2*(A*b + a*B)
*x^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (a*b^3*(A*b + 2*a*B)*x^
10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^11*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (b^5*B*x^12*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(12*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^5\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^5Ab^5x^5+a^4b^5(5Ab+aB)x^6+5a^3b^6(2Ab+a\ldots\right.}{b\ldots}$$

$$=\frac{a^5Ax^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{a^4(5Ab+aB)x^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{5a\ldots}{\ldots}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$\frac{x^6\sqrt{(a+bx)^2}\left(132a^5(7A+6Bx)+495a^4bx(8A+7Bx)+770a^3b^2x^2(9A+8Bx)+616a^2b^3x^3(10A+9Bx)+252ab^4x^4(11A+10Bx)+42b^5x^5(12A+11Bx)\right)}{5544(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^6*Sqrt[(a + b*x)^2]*(132*a^5*(7*A + 6*B*x) + 495*a^4*b*x*(8*A + 7*B*x) +
 770*a^3*b^2*x^2*(9*A + 8*B*x) + 616*a^2*b^3*x^3*(10*A + 9*B*x) + 252*a*b^4
*x^4*(11*A + 10*B*x) + 42*b^5*x^5*(12*A + 11*B*x)))/(5544*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.36, size = 0, normalized size = 0.00

$$\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.44, size = 119, normalized size = 0.39

$$\frac{1}{12}Bb^5x^{12}+\frac{1}{6}Aa^5x^6+\frac{1}{11}\left(5\,Bab^4+Ab^5\right)x^{11}+\frac{1}{2}\left(2\,Ba^2b^3+Aab^4\right)x^{10}+\frac{10}{9}\left(Ba^3b^2+Aa^2b^3\right)x^9+\frac{5}{8}\left(Ba^4b+2\,Aa^3b^2\right)x^8+\frac{1}{7}\left(Ba^5+5\,Aa^4b\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*B*b^5*x^12 + 1/6*A*a^5*x^6 + 1/11*(5*B*a*b^4 + A*b^5)*x^11 + 1/2*(2*B*
a^2*b^3 + A*a*b^4)*x^10 + 10/9*(B*a^3*b^2 + A*a^2*b^3)*x^9 + 5/8*(B*a^4*b +
 2*A*a^3*b^2)*x^8 + 1/7*(B*a^5 + 5*A*a^4*b)*x^7
```

giac [A] time = 0.17, size = 220, normalized size = 0.72

$$\frac{1}{12}Bb^5x^{12}\mathrm{sgn}\left(bx+a\right)+\frac{5}{11}Bab^4x^{11}\mathrm{sgn}\left(bx+a\right)+\frac{1}{11}Ab^5x^{11}\mathrm{sgn}\left(bx+a\right)+Ba^2b^3x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Aab^4x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}Ba^3b^2x^9\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}Aa^2b^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}Ba^4bx^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}Aa^3b^2x^8\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}Ba^5x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}Aa^4bx^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}Aa^5x^6\mathrm{sgn}\left(bx+a\right)+\frac{\left(Ba^{12}-2\,Aa^{11}b\right)\mathrm{sgn}\left(bx+a\right)}{5544\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/12*B*b^5*x^12*sgn(b*x + a) + 5/11*B*a*b^4*x^11*sgn(b*x + a) + 1/11*A*b^5*
x^11*sgn(b*x + a) + B*a^2*b^3*x^10*sgn(b*x + a) + 1/2*A*a*b^4*x^10*sgn(b*x
+ a) + 10/9*B*a^3*b^2*x^9*sgn(b*x + a) + 10/9*A*a^2*b^3*x^9*sgn(b*x + a) +
5/8*B*a^4*b*x^8*sgn(b*x + a) + 5/4*A*a^3*b^2*x^8*sgn(b*x + a) + 1/7*B*a^5*x
^7*sgn(b*x + a) + 5/7*A*a^4*b*x^7*sgn(b*x + a) + 1/6*A*a^5*x^6*sgn(b*x + a)
 + 1/5544*(B*a^12 - 2*A*a^11*b)*sgn(b*x + a)/b^7
```

maple [A] time = 0.07, size = 140, normalized size = 0.46

$$\frac{\left(462B\,b^5x^6+504x^5A\,b^5+2520x^5Ba\,b^4+2772x^4Aa\,b^4+5544x^4B\,a^2b^3+6160A\,a^2b^3x^3+6160B\,a^3b^2x^3+6930x^2A\,a^3b^2+3465x^2B\,a^4b+3960xA\,a^4b+792xB\,a^5+924A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}x^6}{5544\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/5544*x^6*(462*B*b^5*x^6+504*A*b^5*x^5+2520*B*a*b^4*x^5+2772*A*a*b^4*x^4+5
544*B*a^2*b^3*x^4+6160*A*a^2*b^3*x^3+6160*B*a^3*b^2*x^3+6930*A*a^3*b^2*x^2+
3465*B*a^4*b*x^2+3960*A*a^4*b*x+792*B*a^5*x+924*A*a^5)*((b*x+a)^2)^(5/2)/(b
*x+a)^5
```

maxima [A] time = 0.52, size = 421, normalized size = 1.38

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^5}{12\,b^2}-\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bax^4}{132\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ax^4}{11\,b^2}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^2x^3}{33\,b^4}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aax^3}{22\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^6x}{6\,b^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^5x}{6\,b^5}-\frac{16\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^3x^2}{99\,b^5}+\frac{31\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^2x^2}{198\,b^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^7}{6\,b^7}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^6}{6\,b^6}+\frac{131\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^4x}{792\,b^6}-\frac{65\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^3x}{396\,b^5}-\frac{923\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^5}{5544\,b^7}+\frac{461\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^4}{2772\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^5/b^2 - 17/132*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*B*a*x^4/b^3 + 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x^4/b^2 +
 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*x^3/b^4 - 3/22*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*A*a*x^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^6*x/b
^6 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^5*x/b^5 - 16/99*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*B*a^3*x^2/b^5 + 31/198*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*
a^2*x^2/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^7/b^7 - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*A*a^6/b^6 + 131/792*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
B*a^4*x/b^6 - 65/396*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^3*x/b^5 - 923/5544
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^5/b^7 + 461/2772*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*A*a^4/b^6
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^5\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x^{5} \left(A + Bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**5*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.612 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=306

$$\frac{5a^2b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{b^4x^{10}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{10(a+bx)}+\frac{5ab^3x^9\sqrt{a^2+2abx+b^2x^2}\,(2aB$$

Rubi [A] time = 0.13, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^4x^{10}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{10(a+bx)}+\frac{5ab^3x^9\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9(a+bx)}+\frac{5a^2b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{5a^3bx^7\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{7(a+bx)}+\frac{a^4x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{6(a+bx)}+\frac{a^5Ax^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{b^5Bx^{11}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^5*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (a^4*(5*A*b + a*B
)*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)
*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (5*a^2*b^2*(A*b + a*B)*
x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (5*a*b^3*(A*b + 2*a*B)*x
^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^10*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(10*(a + b*x)) + (b^5*B*x^11*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^4\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^5Ab^5x^4+a^4b^5(5Ab+aB)x^5+5a^3b^6(2Ab\right.}{}$$

$$=\frac{a^5Ax^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{a^4(5Ab+aB)x^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$\frac{x^5\sqrt{(a+bx)^2}\left(462a^5(6A+5Bx)+1650a^4bx(7A+6Bx)+2475a^3b^2x^2(8A+7Bx)+1925a^2b^3x^3(9A+8Bx)+770ab^4x^4(10A+9Bx)+126b^5x^5(11A+10Bx)\right)}{13860(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^5*Sqrt[(a + b*x)^2]*(462*a^5*(6*A + 5*B*x) + 1650*a^4*b*x*(7*A + 6*B*x)
+ 2475*a^3*b^2*x^2*(8*A + 7*B*x) + 1925*a^2*b^3*x^3*(9*A + 8*B*x) + 770*a*b
^4*x^4*(10*A + 9*B*x) + 126*b^5*x^5*(11*A + 10*B*x)))/(13860*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.36, size = 0, normalized size = 0.00

$$\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.42, size = 119, normalized size = 0.39

$$\frac{1}{11}\,Bb^5x^{11}+\frac{1}{5}\,Aa^5x^5+\frac{1}{10}\left(5\,Bab^4+Ab^5\right)x^{10}+\frac{5}{9}\left(2\,Ba^2b^3+Aab^4\right)x^9+\frac{5}{4}\left(Ba^3b^2+Aa^2b^3\right)x^8+\frac{5}{7}\left(Ba^4b+2\,Aa^3b^2\right)x^7+\frac{1}{6}\left(Ba^5+5\,Aa^4b\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/11*B*b^5*x^11 + 1/5*A*a^5*x^5 + 1/10*(5*B*a*b^4 + A*b^5)*x^10 + 5/9*(2*B*
a^2*b^3 + A*a*b^4)*x^9 + 5/4*(B*a^3*b^2 + A*a^2*b^3)*x^8 + 5/7*(B*a^4*b + 2
*A*a^3*b^2)*x^7 + 1/6*(B*a^5 + 5*A*a^4*b)*x^6
```

giac [A] time = 0.17, size = 222, normalized size = 0.73

$$\frac{1}{11}\,Bb^5x^{11}\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Bab^4x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{1}{10}\,Ab^5x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}\,Ba^2b^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{9}\,Aab^4x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}\,Ba^3b^2x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}\,Aa^2b^3x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}\,Ba^4bx^7\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}\,Aa^3b^2x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Ba^5x^6\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}\,Aa^4bx^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Aa^5x^5\mathrm{sgn}\left(bx+a\right)-\frac{\left(5\,Ba^{11}-11\,Aa^{10}b\right)\mathrm{sgn}\left(bx+a\right)}{13860\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/11*B*b^5*x^11*sgn(b*x + a) + 1/2*B*a*b^4*x^10*sgn(b*x + a) + 1/10*A*b^5*x
^10*sgn(b*x + a) + 10/9*B*a^2*b^3*x^9*sgn(b*x + a) + 5/9*A*a*b^4*x^9*sgn(b*
x + a) + 5/4*B*a^3*b^2*x^8*sgn(b*x + a) + 5/4*A*a^2*b^3*x^8*sgn(b*x + a) +
5/7*B*a^4*b*x^7*sgn(b*x + a) + 10/7*A*a^3*b^2*x^7*sgn(b*x + a) + 1/6*B*a^5*
x^6*sgn(b*x + a) + 5/6*A*a^4*b*x^6*sgn(b*x + a) + 1/5*A*a^5*x^5*sgn(b*x + a
) - 1/13860*(5*B*a^11 - 11*A*a^10*b)*sgn(b*x + a)/b^6
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$\frac{\left(1260B\,b^5x^6+1386x^5A\,b^5+6930x^5Ba\,b^4+7700x^4Aa\,b^4+15400x^4B\,a^2b^3+17325A\,a^2b^3x^3+17325B\,a^3b^2x^3+19800x^2A\,a^3b^2+9900x^2B\,a^4b+11550xA\,a^4b+2310xB\,a^5+2772A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}x^5}{13860\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/13860*x^5*(1260*B*b^5*x^6+1386*A*b^5*x^5+6930*B*a*b^4*x^5+7700*A*a*b^4*x^
4+15400*B*a^2*b^3*x^4+17325*A*a^2*b^3*x^3+17325*B*a^3*b^2*x^3+19800*A*a^3*b
^2*x^2+9900*B*a^4*b*x^2+11550*A*a^4*b*x+2310*B*a^5*x+2772*A*a^5)*((b*x+a)^2
)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.60, size = 361, normalized size = 1.18

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^4}{11\,b^2}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bax^3}{22\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ax^3}{10\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^5x}{6\,b^5}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^4x}{6\,b^4}+\frac{31\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^2x^2}{198\,b^4}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aax^2}{90\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^6}{6\,b^6}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^5}{6\,b^5}-\frac{65\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^3x}{396\,b^5}+\frac{29\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^2x}{180\,b^4}+\frac{461\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^4}{2772\,b^6}-\frac{209\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^3}{1260\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^4/b^2 - 3/22*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*a*x^3/b^3 + 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x^3/b^2 - 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*x/b^5 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*a^4*x/b^4 + 31/198*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*x^2/b^
4 - 13/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a*x^2/b^3 - 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*B*a^6/b^6 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^5/b^5
- 65/396*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*x/b^5 + 29/180*(b^2*x^2 + 2*
a*b*x + a^2)^(7/2)*A*a^2*x/b^4 + 461/2772*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B
*a^4/b^6 - 209/1260*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^3/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4 (A+Bx) \left((a+bx)^2\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.613 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=212

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(Ab-4aB)}{9b^5}-\frac{3a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-2aB)}{8b^5}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a+\cdots}{7b^5}$$

Rubi [A] time = 0.12, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(Ab-4aB)}{9b^5}-\frac{3a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-2aB)}{8b^5}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(3Ab-4aB)}{7b^5}-\frac{a^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6b^5}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9}{10b^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(a^3*(A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^5) + (a^2
*(3*A*b - 4*a*B)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) - (3*a*
(A*b - 2*a*B)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^5) + ((A*b -
4*a*B)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^5) + (B*(a + b*x)^9*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*b^5)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^3\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(\frac{a^3(-Ab+aB)\left(ab+b^2x\right)^5}{b^4}-\frac{a^2(-3Ab+4aB)\left(ab+b^2x\right)^6}{b^5}+\frac{3a(-\cdots}{\cdots}\right.}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a^3(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^5}+\frac{a^2(3Ab-4aB)(a+bx)^6\cdots}{7b^5}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.59

$$\frac{x^4\sqrt{(a+bx)^2}\left(126a^5(5A+4Bx)+420a^4bx(6A+5Bx)+600a^3b^2x^2(7A+6Bx)+450a^2b^3x^3(8A+7Bx)+175ab^4x^4(9A+8Bx)+28b^5x^5(10A+9Bx)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^4*Sqrt[(a + b*x)^2]*(126*a^5*(5*A + 4*B*x) + 420*a^4*b*x*(6*A + 5*B*x) +
 600*a^3*b^2*x^2*(7*A + 6*B*x) + 450*a^2*b^3*x^3*(8*A + 7*B*x) + 175*a*b^4*
x^4*(9*A + 8*B*x) + 28*b^5*x^5*(10*A + 9*B*x)))/(2520*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.34, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.42, size = 119, normalized size = 0.56

$$\frac{1}{10}Bb^5x^{10}+\frac{1}{4}Aa^5x^4+\frac{1}{9}\left(5\,Bab^4+Ab^5\right)x^9+\frac{5}{8}\left(2\,Ba^2b^3+Aab^4\right)x^8+\frac{10}{7}\left(Ba^3b^2+Aa^2b^3\right)x^7+\frac{5}{6}\left(Ba^4b+2\,Aa^3b^2\right)x^6+\frac{1}{5}\left(Ba^5+5\,Aa^4b\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/10*B*b^5*x^10 + 1/4*A*a^5*x^4 + 1/9*(5*B*a*b^4 + A*b^5)*x^9 + 5/8*(2*B*a^
2*b^3 + A*a*b^4)*x^8 + 10/7*(B*a^3*b^2 + A*a^2*b^3)*x^7 + 5/6*(B*a^4*b + 2*
A*a^3*b^2)*x^6 + 1/5*(B*a^5 + 5*A*a^4*b)*x^5
```

giac [A] time = 0.17, size = 221, normalized size = 1.04

$$\frac{1}{10}Bb^5x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{5}{9}Bab^4x^9\mathrm{sgn}\left(bx+a\right)+\frac{1}{9}Ab^5x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}Ba^2b^3x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}Aab^4x^8\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}Ba^3b^2x^7\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}Aa^2b^3x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}Ba^4bx^6\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}Aa^3b^2x^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}Ba^5x^5\mathrm{sgn}\left(bx+a\right)+Aa^4bx^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}Aa^5x^4\mathrm{sgn}\left(bx+a\right)+\frac{\left(2\,Ba^{10}-5\,Aa^9b\right)\mathrm{sgn}\left(bx+a\right)}{2520\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/10*B*b^5*x^10*sgn(b*x + a) + 5/9*B*a*b^4*x^9*sgn(b*x + a) + 1/9*A*b^5*x^9
*sgn(b*x + a) + 5/4*B*a^2*b^3*x^8*sgn(b*x + a) + 5/8*A*a*b^4*x^8*sgn(b*x +
a) + 10/7*B*a^3*b^2*x^7*sgn(b*x + a) + 10/7*A*a^2*b^3*x^7*sgn(b*x + a) + 5/
6*B*a^4*b*x^6*sgn(b*x + a) + 5/3*A*a^3*b^2*x^6*sgn(b*x + a) + 1/5*B*a^5*x^5
*sgn(b*x + a) + A*a^4*b*x^5*sgn(b*x + a) + 1/4*A*a^5*x^4*sgn(b*x + a) + 1/2
520*(2*B*a^10 - 5*A*a^9*b)*sgn(b*x + a)/b^5
```

maple [A] time = 0.05, size = 140, normalized size = 0.66

$$\frac{\left(252B\,b^5x^6+280x^5A\,b^5+1400x^5Ba\,b^4+1575x^4Aa\,b^4+3150x^4B\,a^2b^3+3600A\,a^2b^3x^3+3600B\,a^3b^2x^3+4200x^2A\,a^3b^2+2100x^2B\,a^4b+2520xA\,a^4b+504xB\,a^5+630A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}x^4}{2520\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/2520*x^4*(252*B*b^5*x^6+280*A*b^5*x^5+1400*B*a*b^4*x^5+1575*A*a*b^4*x^4+3
150*B*a^2*b^3*x^4+3600*A*a^2*b^3*x^3+3600*B*a^3*b^2*x^3+4200*A*a^3*b^2*x^2+
2100*B*a^4*b*x^2+2520*A*a^4*b*x+504*B*a^5*x+630*A*a^5)*((b*x+a)^2)^(5/2)/(b
*x+a)^5
```

maxima [B] time = 0.75, size = 301, normalized size = 1.42

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^3}{10\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^4x}{6\,b^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^3x}{6\,b^3}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bax^2}{90\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ax^2}{9\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^5}{6\,b^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^4}{6\,b^4}+\frac{29\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^2x}{180\,b^4}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aax}{72\,b^3}-\frac{209\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^3}{1260\,b^5}+\frac{83\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Aa^2}{504\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^3/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*a^4*x/b^4 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^3*x/b^3 - 1
3/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*x^2/b^3 + 1/9*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*A*x^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5/b^5 - 1/6
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^4/b^4 + 29/180*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*B*a^2*x/b^4 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a*x/b^3 - 20
9/1260*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3/b^5 + 83/504*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*A*a^2/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral(x**3*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.614 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=167

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-3aB)}{8b^4}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(2Ab-3aB)}{7b^4}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a}{6b^4}$$

Rubi [A] time = 0.10, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-3aB)}{8b^4}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(2Ab-3aB)}{7b^4}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6b^4}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^2*(A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^4) - (a*(2
*A*b - 3*a*B)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^4) + ((A*b -
3*a*B)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^4) + (B*(a + b*x)^8*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^4)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^2\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{a^2(-Ab+aB)\left(ab+b^2x\right)^5}{b^3}+\frac{a(-2Ab+3aB)\left(ab+b^2x\right)^6}{b^4}+\cdots\right.}{b^4\left(ab+b^2x\right)}$$

$$=\frac{a^2(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^4}-\frac{a(2Ab-3aB)(a+bx)^6}{7b^4}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.75

$$\frac{x^3\sqrt{(a+bx)^2}\left(42a^5(4A+3Bx)+126a^4bx(5A+4Bx)+168a^3b^2x^2(6A+5Bx)+120a^2b^3x^3(7A+6Bx)+45ab^4x^4(8A+7Bx)+7b^5x^5(9A+8Bx)\right)}{504(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^3*Sqrt[(a + b*x)^2]*(42*a^5*(4*A + 3*B*x) + 126*a^4*b*x*(5*A + 4*B*x) +
168*a^3*b^2*x^2*(6*A + 5*B*x) + 120*a^2*b^3*x^3*(7*A + 6*B*x) + 45*a*b^4*x^
4*(8*A + 7*B*x) + 7*b^5*x^5*(9*A + 8*B*x)))/(504*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.27, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.41, size = 118, normalized size = 0.71

$$\frac{1}{9}Bb^5x^9+\frac{1}{3}Aa^5x^3+\frac{1}{8}\left(5Bab^4+Ab^5\right)x^8+\frac{5}{7}\left(2Ba^2b^3+Aab^4\right)x^7+\frac{5}{3}\left(Ba^3b^2+Aa^2b^3\right)x^6+\left(Ba^4b+2Aa^3b^2\right)x^5+\frac{1}{4}\left(Ba^5+5Aa^4b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/9*B*b^5*x^9 + 1/3*A*a^5*x^3 + 1/8*(5*B*a*b^4 + A*b^5)*x^8 + 5/7*(2*B*a^2*
b^3 + A*a*b^4)*x^7 + 5/3*(B*a^3*b^2 + A*a^2*b^3)*x^6 + (B*a^4*b + 2*A*a^3*b
^2)*x^5 + 1/4*(B*a^5 + 5*A*a^4*b)*x^4
```

giac [A] time = 0.19, size = 220, normalized size = 1.32

$$\frac{1}{9}Bb^5x^9\mathrm{sgn}(bx+a)+\frac{5}{8}Bab^4x^8\mathrm{sgn}(bx+a)+\frac{1}{8}Ab^5x^8\mathrm{sgn}(bx+a)+\frac{10}{7}Ba^2b^3x^7\mathrm{sgn}(bx+a)+\frac{5}{7}Aab^4x^7\mathrm{sgn}(bx+a)+\frac{5}{3}Ba^3b^2x^6\mathrm{sgn}(bx+a)+\frac{5}{3}Aa^2b^3x^6\mathrm{sgn}(bx+a)+Ba^4bx^5\mathrm{sgn}(bx+a)+2Aa^3b^2x^5\mathrm{sgn}(bx+a)+\frac{1}{4}Ba^5x^4\mathrm{sgn}(bx+a)+\frac{5}{4}Aa^4bx^4\mathrm{sgn}(bx+a)+\frac{1}{3}Aa^5x^3\mathrm{sgn}(bx+a)-\frac{\left(Ba^9-3Aa^8b\right)\mathrm{sgn}(bx+a)}{504b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/9*B*b^5*x^9*sgn(b*x + a) + 5/8*B*a*b^4*x^8*sgn(b*x + a) + 1/8*A*b^5*x^8*s
gn(b*x + a) + 10/7*B*a^2*b^3*x^7*sgn(b*x + a) + 5/7*A*a*b^4*x^7*sgn(b*x + a
) + 5/3*B*a^3*b^2*x^6*sgn(b*x + a) + 5/3*A*a^2*b^3*x^6*sgn(b*x + a) + B*a^4
*b*x^5*sgn(b*x + a) + 2*A*a^3*b^2*x^5*sgn(b*x + a) + 1/4*B*a^5*x^4*sgn(b*x
+ a) + 5/4*A*a^4*b*x^4*sgn(b*x + a) + 1/3*A*a^5*x^3*sgn(b*x + a) - 1/504*(B
*a^9 - 3*A*a^8*b)*sgn(b*x + a)/b^4
```

maple [A] time = 0.05, size = 140, normalized size = 0.84

$$\frac{\left(56Bb^5x^6+63x^5Ab^5+315x^5Bab^4+360x^4Aab^4+720x^4Ba^2b^3+840Aa^2b^3x^3+840Ba^3b^2x^3+1008x^2Aa^3b^2+504x^2Ba^4b+630xAa^4b+126xBa^5+168Aa^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}x^3}{504(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/504*x^3*(56*B*b^5*x^6+63*A*b^5*x^5+315*B*a*b^4*x^5+360*A*a*b^4*x^4+720*B*
a^2*b^3*x^4+840*A*a^2*b^3*x^3+840*B*a^3*b^2*x^3+1008*A*a^3*b^2*x^2+504*B*a^
4*b*x^2+630*A*a^4*b*x+126*B*a^5*x+168*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.61, size = 241, normalized size = 1.44

$$-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^3x}{6b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Aa^2x}{6b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bx^2}{9b^2}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^4}{6b^4}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Aa^3}{6b^3}-\frac{11\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bax}{72b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ax}{8b^2}+\frac{83\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ba^2}{504b^4}-\frac{9\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Aa}{56b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*x/b^3 + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*A*a^2*x/b^2 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^2/b^2 - 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^4/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*A*a^3/b^3 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*x/b^3 + 1/8*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x/b^2 + 83/504*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*B*a^2/b^4 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a/b^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2 (A + B x) \left(a^2 + 2 a b x + b^2 x^2\right)^{5/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 (A + Bx) \left((a + bx)^2\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.615 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=121

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(Ab-2aB)}{7b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^3}$$

Rubi [A] time = 0.08, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 76}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(Ab-2aB)}{7b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3) + ((A*b
- 2*a*B)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^3) + (B*(a + b*x)^
7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^3)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(\frac{a(-Ab+aB)\left(ab+b^2x\right)^5}{b^2}+\frac{(Ab-2aB)\left(ab+b^2x\right)^6}{b^3}+\frac{B\left(ab+b^2x\right)^7}{b^4}\right)}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^3}+\frac{(Ab-2aB)(a+bx)^6\sqrt{a^2+}}{7b^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 1.03

$$\frac{x^2\sqrt{(a+bx)^2}\left(28a^5(3A+2Bx)+70a^4bx(4A+3Bx)+84a^3b^2x^2(5A+4Bx)+56a^2b^3x^3(6A+5Bx)+20ab^4x^4(7A+6Bx)+3b^5x^5(8A+7Bx)\right)}{168(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^2*Sqrt[(a + b*x)^2]*(28*a^5*(3*A + 2*B*x) + 70*a^4*b*x*(4*A + 3*B*x) + 8
4*a^3*b^2*x^2*(5*A + 4*B*x) + 56*a^2*b^3*x^3*(6*A + 5*B*x) + 20*a*b^4*x^4*(
7*A + 6*B*x) + 3*b^5*x^5*(8*A + 7*B*x)))/(168*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.25, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.41, size = 119, normalized size = 0.98

$$\frac{1}{8}\,Bb^5x^8+\frac{1}{2}\,Aa^5x^2+\frac{1}{7}\left(5\,Bab^4+Ab^5\right)x^7+\frac{5}{6}\left(2\,Ba^2b^3+Aab^4\right)x^6+2\left(Ba^3b^2+Aa^2b^3\right)x^5+\frac{5}{4}\left(Ba^4b+2\,Aa^3b^2\right)x^4+\frac{1}{3}\left(Ba^5+5\,Aa^4b\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/8*B*b^5*x^8 + 1/2*A*a^5*x^2 + 1/7*(5*B*a*b^4 + A*b^5)*x^7 + 5/6*(2*B*a^2*
b^3 + A*a*b^4)*x^6 + 2*(B*a^3*b^2 + A*a^2*b^3)*x^5 + 5/4*(B*a^4*b + 2*A*a^3
*b^2)*x^4 + 1/3*(B*a^5 + 5*A*a^4*b)*x^3
```

giac [B] time = 0.17, size = 221, normalized size = 1.83

$$\frac{1}{8}\,Bb^5x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}\,Bab^4x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,Ab^5x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,Ba^2b^3x^6\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}\,Aab^4x^6\mathrm{sgn}\left(bx+a\right)+2\,Ba^3b^2x^5\mathrm{sgn}\left(bx+a\right)+2\,Aa^2b^3x^5\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}\,Ba^4bx^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}\,Aa^3b^2x^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Ba^5x^3\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,Aa^4bx^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Aa^5x^2\mathrm{sgn}\left(bx+a\right)+\frac{\left(Ba^8-4\,Aa^7b\right)\mathrm{sgn}\left(bx+a\right)}{168\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^5*x^8*sgn(b*x + a) + 5/7*B*a*b^4*x^7*sgn(b*x + a) + 1/7*A*b^5*x^7*s
gn(b*x + a) + 5/3*B*a^2*b^3*x^6*sgn(b*x + a) + 5/6*A*a*b^4*x^6*sgn(b*x + a)
 + 2*B*a^3*b^2*x^5*sgn(b*x + a) + 2*A*a^2*b^3*x^5*sgn(b*x + a) + 5/4*B*a^4*
b*x^4*sgn(b*x + a) + 5/2*A*a^3*b^2*x^4*sgn(b*x + a) + 1/3*B*a^5*x^3*sgn(b*x
 + a) + 5/3*A*a^4*b*x^3*sgn(b*x + a) + 1/2*A*a^5*x^2*sgn(b*x + a) + 1/168*(
B*a^8 - 4*A*a^7*b)*sgn(b*x + a)/b^3
```

maple [A] time = 0.05, size = 140, normalized size = 1.16

$$\frac{\left(21B\,b^5x^6+24x^5A\,b^5+120x^5Ba\,b^4+140x^4Aa\,b^4+280x^4B\,a^2b^3+336A\,a^2b^3x^3+336B\,a^3b^2x^3+420x^2A\,a^3b^2+210x^2B\,a^4b+280xA\,a^4b+56xB\,a^5+84A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}x^2}{168\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/168*x^2*(21*B*b^5*x^6+24*A*b^5*x^5+120*B*a*b^4*x^5+140*A*a*b^4*x^4+280*B*
a^2*b^3*x^4+336*A*a^2*b^3*x^3+336*B*a^3*b^2*x^3+420*A*a^3*b^2*x^2+210*B*a^4
*b*x^2+280*A*a^4*b*x+56*B*a^5*x+84*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.68, size = 183, normalized size = 1.51

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2x}{6\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aax}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3}{6\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^2}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx}{8\,b^2}-\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba}{56\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}A}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*x/b^2 - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3/b^3 - 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^2/b^2 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*B*x/b^2 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a/b^3 + 1/7*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)*A/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.616 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(6*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(7/2))/(7*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}+\frac{\left(2Ab^2-2abB\right)\int \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx}{2b^2}\\&=\frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 121, normalized size = 1.75

$$\frac{x\sqrt{(a+bx)^2}\left(21a^5(2A+Bx)+35a^4bx(3A+2Bx)+35a^3b^2x^2(4A+3Bx)+21a^2b^3x^3(5A+4Bx)+7ab^4x^4(6A+5Bx)+b^5x^5(7A+6Bx)\right)}{42(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(21*a^5*(2*A + B*x) + 35*a^4*b*x*(3*A + 2*B*x) + 35*a^
3*b^2*x^2*(4*A + 3*B*x) + 21*a^2*b^3*x^3*(5*A + 4*B*x) + 7*a*b^4*x^4*(6*A +
 5*B*x) + b^5*x^5*(7*A + 6*B*x)))/(42*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.16, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.49, size = 115, normalized size = 1.67

$$\frac{1}{7} Bb^5x^7 + Aa^5x + \frac{1}{6}\left(5 Bab^4 + Ab^5\right)x^6 + \left(2 Ba^2b^3 + Aab^4\right)x^5 + \frac{5}{2}\left(Ba^3b^2 + Aa^2b^3\right)x^4 + \frac{5}{3}\left(Ba^4b + 2 Aa^3b^2\right)x^3 + \frac{1}{2}\left(Ba^5 + 5 Aa^4b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b^5*x^7 + A*a^5*x + 1/6*(5*B*a*b^4 + A*b^5)*x^6 + (2*B*a^2*b^3 + A*a*
b^4)*x^5 + 5/2*(B*a^3*b^2 + A*a^2*b^3)*x^4 + 5/3*(B*a^4*b + 2*A*a^3*b^2)*x^
3 + 1/2*(B*a^5 + 5*A*a^4*b)*x^2
```

giac [B] time = 0.20, size = 217, normalized size = 3.14

$$\frac{1}{7} Bb^5x^7\mathrm{sgn}\left(bx + a\right) + \frac{5}{6} Bab^4x^6\mathrm{sgn}\left(bx + a\right) + \frac{1}{6} Ab^5x^6\mathrm{sgn}\left(bx + a\right) + 2 Ba^2b^3x^5\mathrm{sgn}\left(bx + a\right) + Aab^4x^5\mathrm{sgn}\left(bx + a\right) + \frac{5}{2} Ba^3b^2x^4\mathrm{sgn}\left(bx + a\right) + \frac{5}{2} Aa^2b^3x^4\mathrm{sgn}\left(bx + a\right) + \frac{5}{3} Ba^4bx^3\mathrm{sgn}\left(bx + a\right) + \frac{10}{3} Aa^3b^2x^3\mathrm{sgn}\left(bx + a\right) + \frac{1}{2} Ba^5x^2\mathrm{sgn}\left(bx + a\right) + \frac{5}{2} Aa^4bx^2\mathrm{sgn}\left(bx + a\right) + Aa^5x\mathrm{sgn}\left(bx + a\right) - \frac{\left(Ba^7 - 7 Aa^6b\right)\mathrm{sgn}\left(bx + a\right)}{42 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^5*x^7*sgn(b*x + a) + 5/6*B*a*b^4*x^6*sgn(b*x + a) + 1/6*A*b^5*x^6*s
gn(b*x + a) + 2*B*a^2*b^3*x^5*sgn(b*x + a) + A*a*b^4*x^5*sgn(b*x + a) + 5/2
*B*a^3*b^2*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*x^4*sgn(b*x + a) + 5/3*B*a^4*b*
x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*x^3*sgn(b*x + a) + 1/2*B*a^5*x^2*sgn(b*x
+ a) + 5/2*A*a^4*b*x^2*sgn(b*x + a) + A*a^5*x*sgn(b*x + a) - 1/42*(B*a^7 -
7*A*a^6*b)*sgn(b*x + a)/b^2
```

maple [B] time = 0.05, size = 138, normalized size = 2.00

$$\frac{\left(6B\,b^5x^6 + 7x^5A\,b^5 + 35x^5Ba\,b^4 + 42x^4Aa\,b^4 + 84x^4B\,a^2b^3 + 105A\,a^2b^3x^3 + 105B\,a^3b^2x^3 + 140x^2A\,a^3b^2 + 70x^2B\,a^4b + 105xA\,a^4b + 21xB\,a^5 + 42A\,a^5\right)\left(\left(bx + a\right)^2\right)^{\frac{5}{2}} x}{42\left(bx + a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/42*x*(6*B*b^5*x^6+7*A*b^5*x^5+35*B*a*b^4*x^5+42*A*a*b^4*x^4+84*B*a^2*b^3*
x^4+105*A*a^2*b^3*x^3+105*B*a^3*b^2*x^3+140*A*a^3*b^2*x^2+70*B*a^4*b*x^2+10
5*A*a^4*b*x+21*B*a^5*x+42*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.52, size = 125, normalized size = 1.81

$$\frac{1}{6}\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Ax - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Bax}{6\,b} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Ba^2}{6\,b^2} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Aa}{6\,b} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} B}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*a*x/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2/b^2 + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*A*a/b + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A + B\,x)\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx) \left((a + bx)^2\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.617 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=262

$$\frac{Ab^5x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{5aAb^4x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{10a^2Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{B(a+bx)^5\sqrt{a^2+2abx}}{6b}$$

Rubi [A] time = 0.08, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = {770, 80, 43}

$$\frac{5a^4Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{5a^3Ab^2x^2\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{10a^2Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{5aAb^4x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{Ab^5x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{a^5A\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{B(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x,x]
```

```
[Out] (5*a^4*A*b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a^3*A*b^2*x^2*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a^2*A*b^3*x^3*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(3*(a + b*x)) + (5*a*A*b^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(4*(a + b*x)) + (A*b^5*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) +
 (B*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b) + (a^5*A*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x}dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{B(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^5}{x}d}{b^4\left(ab+b^2x\right)}$$
$$= \frac{B(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int\left(5a^4b^6+\right.}{b}$$
$$= \frac{5a^4Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx} + \frac{5a^3Ab^2x^2\sqrt{a^2+2abx+b^2x^2}}{a+bx} + 10a^2A$$

Mathematica [A] time = 0.06, size = 122, normalized size = 0.47

$$\frac{\sqrt{(a+bx)^2}\left(60a^5A\log(x)+x\left(60a^5B+150a^4b(2A+Bx)+100a^3b^2x(3A+2Bx)+50a^2b^3x^2(4A+3Bx)+15ab^4x^3(5A+4Bx)+2b^5x^4(6A+5Bx)\right)\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(x*(60*a^5*B + 150*a^4*b*(2*A + B*x) + 100*a^3*b^2*x*(3*
A + 2*B*x) + 50*a^2*b^3*x^2*(4*A + 3*B*x) + 15*a*b^4*x^3*(5*A + 4*B*x) + 2*
b^5*x^4*(6*A + 5*B*x)) + 60*a^5*A*Log[x]))/(60*(a + b*x))
```

IntegrateAlgebraic [A] time = 0.81, size = 485, normalized size = 1.85

$$\frac{1}{2}a^5A\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)-\frac{a^5A\sqrt{b^2}\log\left(b\sqrt{a^2+2abx+b^2x^2}-ab-\sqrt{b^2}bx\right)}{2b}+\frac{\left(a^5(-A)b-a^5A\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)}{2b}+\frac{\sqrt{a^2+2abx+b^2x^2}\left(10a^5B+137a^4Ab+50a^4bBx+163a^3Ab^2x+100a^3b^2Bx^2+137a^2Ab^3x^2+100a^2b^3Bx^3+63aAb^4x^3+50ab^4Bx^4+12Ab^5x^4+10b^5Bx^5\right)}{120b}+\frac{-60a^5\sqrt{b^2}Bx-300a^4Ab\sqrt{b^2}x-150a^4b\sqrt{b^2}Bx^2-300a^3A\left(b^2\right)^{3/2}x^2-200a^3\left(b^2\right)^{3/2}Bx^3-200a^2Ab^3\sqrt{b^2}x^3-150a^2b^3\sqrt{b^2}Bx^4-75aAb^4\sqrt{b^2}x^4-60ab^4\sqrt{b^2}Bx^5-12Ab^5\sqrt{b^2}x^5-10b^5\sqrt{b^2}Bx^6}{120b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(137*a^4*A*b + 10*a^5*B + 163*a^3*A*b^2*x +
50*a^4*b*B*x + 137*a^2*A*b^3*x^2 + 100*a^3*b^2*B*x^2 + 63*a*A*b^4*x^3 + 100
*a^2*b^3*B*x^3 + 12*A*b^5*x^4 + 50*a*b^4*B*x^4 + 10*b^5*B*x^5))/(120*b) + (
-300*a^4*A*b*Sqrt[b^2]*x - 60*a^5*Sqrt[b^2]*B*x - 300*a^3*A*(b^2)^(3/2)*x^2
 - 150*a^4*b*Sqrt[b^2]*B*x^2 - 200*a^2*A*b^3*Sqrt[b^2]*x^3 - 200*a^3*(b^2)^
(3/2)*B*x^3 - 75*a*A*b^4*Sqrt[b^2]*x^4 - 150*a^2*b^3*Sqrt[b^2]*B*x^4 - 12*A
*b^5*Sqrt[b^2]*x^5 - 60*a*b^4*Sqrt[b^2]*B*x^5 - 10*b^5*Sqrt[b^2]*B*x^6)/(12
0*b) + (a^5*A*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 + ((
-(a^5*A*b) - a^5*A*Sqrt[b^2])*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]])/(2*b) - (a^5*A*Sqrt[b^2]*Log[-(a*b) - b*Sqrt[b^2]*x + b*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/(2*b)
```

fricas [A] time = 0.43, size = 114, normalized size = 0.44

$$\frac{1}{6}Bb^5x^6+Aa^5\log(x)+\frac{1}{5}\left(5Bab^4+Ab^5\right)x^5+\frac{5}{4}\left(2Ba^2b^3+Aab^4\right)x^4+\frac{10}{3}\left(Ba^3b^2+Aa^2b^3\right)x^3+\frac{5}{2}\left(Ba^4b+2Aa^3b^2\right)x^2+\left(Ba^5+5Aa^4b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] 1/6*B*b^5*x^6 + A*a^5*log(x) + 1/5*(5*B*a*b^4 + A*b^5)*x^5 + 5/4*(2*B*a^2*b
^3 + A*a*b^4)*x^4 + 10/3*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 5/2*(B*a^4*b + 2*A*a
^3*b^2)*x^2 + (B*a^5 + 5*A*a^4*b)*x
```

giac [A] time = 0.21, size = 190, normalized size = 0.73

$$\frac{1}{6}Bb^5x^6\mathrm{sgn}\left(bx+a\right)+Bab^4x^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}Ab^5x^5\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}Ba^2b^3x^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}Aab^4x^4\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}Ba^3b^2x^3\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}Aa^2b^3x^3\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}Ba^4bx^2\mathrm{sgn}\left(bx+a\right)+5\,Aa^3b^2x^2\mathrm{sgn}\left(bx+a\right)+Ba^5x\mathrm{sgn}\left(bx+a\right)+5\,Aa^4bx\mathrm{sgn}\left(bx+a\right)+Aa^5\log\left(|x|\right)\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 1/6*B*b^5*x^6*sgn(b*x + a) + B*a*b^4*x^5*sgn(b*x + a) + 1/5*A*b^5*x^5*sgn(b
*x + a) + 5/2*B*a^2*b^3*x^4*sgn(b*x + a) + 5/4*A*a*b^4*x^4*sgn(b*x + a) + 1
0/3*B*a^3*b^2*x^3*sgn(b*x + a) + 10/3*A*a^2*b^3*x^3*sgn(b*x + a) + 5/2*B*a^
4*b*x^2*sgn(b*x + a) + 5*A*a^3*b^2*x^2*sgn(b*x + a) + B*a^5*x*sgn(b*x + a)
+ 5*A*a^4*b*x*sgn(b*x + a) + A*a^5*log(abs(x))*sgn(b*x + a)
```

maple [A] time = 0.06, size = 139, normalized size = 0.53

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(10B\,b^5x^6+12A\,b^5x^5+60Ba\,b^4x^5+75Aa\,b^4x^4+150B\,a^2b^3x^4+200A\,a^2b^3x^3+200B\,a^3b^2x^3+300A\,a^3b^2x^2+150B\,a^4b\,x^2+60A\,a^5\ln(x)+300A\,a^4bx+60B\,a^5x\right)}{60\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(10*B*b^5*x^6+12*x^5*A*b^5+60*x^5*B*a*b^4+75*x^4*A*a
*b^4+150*x^4*B*a^2*b^3+200*A*a^2*b^3*x^3+200*B*a^3*b^2*x^3+300*x^2*A*a^3*b^
2+150*x^2*B*a^4*b+60*A*a^5*ln(x)+300*x*A*a^4*b+60*x*B*a^5)/(b*x+a)^5
```

maxima [A] time = 0.53, size = 236, normalized size = 0.90

$$(-1)^{2\,b^2x+2\,ab}\,Aa^5\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Aa^5\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Aa^3bx+\frac{3}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Aa^4+\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aabx+\frac{7}{12}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^2+\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx+\frac{1}{5}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}A+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*A*a^5*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
A*a^5*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*A*a^3*b*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^4 + 1/4*(b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*A*a*b*x + 7/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^2 + 1/6
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
A + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x, x)
```

3.618 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=294

$$\frac{5a^2b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{4(a+bx)}+\frac{5ab^3x^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+$$

Rubi [A] time = 0.12, antiderivative size = 294, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$\frac{5a^3bx\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{a+bx}+\frac{5a^2b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{5ab^3x^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{3(a+bx)}+\frac{b^4x^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{4(a+bx)}+\frac{a^4\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{a+bx}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^5Bx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^2,x]
```

```
[Out] -((a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x))) + (5*a^3*b*(2*A*b +
a*B)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a^2*b^2*(A*b + a*B)*x^
2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a*b^3*(A*b + 2*a*B)*x^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (b^5*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(5*(a + b*x)) + (a^4*(5*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^2}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(5a^3b^6(2Ab+aB)+\frac{a^5Ab^5}{x^2}+\frac{a^4b^5(5Ab+aB)}{x}+10a^2\right.}{b^4\left(ab+\right.}\\ &= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{5a^3b(2Ab+aB)x\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{5}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 0.44

$$\frac{\sqrt{(a+bx)^2}\left(-60a^5A+60a^4x\log(x)(aB+5Ab)+300a^4bBx^2+300a^3b^2x^2(2A+Bx)+100a^2b^3x^3(3A+2Bx)+25ab^4x^4(4A+3Bx)+3b^5x^5(5A+4Bx)\right)}{60x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-60*a^5*A + 300*a^4*b*B*x^2 + 300*a^3*b^2*x^2*(2*A + B*
x) + 100*a^2*b^3*x^3*(3*A + 2*B*x) + 25*a*b^4*x^4*(4*A + 3*B*x) + 3*b^5*x^5
*(5*A + 4*B*x) + 60*a^4*(5*A*b + a*B)*x*Log[x]))/(60*x*(a + b*x))
```

IntegrateAlgebraic [B] time = 1.61, size = 639, normalized size = 2.17

$$-\frac{a^5\sqrt{b^2}B\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)}{2b}-\frac{a^5\sqrt{b^2}B\log\left(b\sqrt{a^2+2abx+b^2x^2}-ab-\sqrt{b^2}bx\right)}{2b}+a^5B\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)-\frac{5}{2}a^4A\sqrt{b^2}\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)-\frac{5}{2}a^4A\sqrt{b^2}\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)+5a^4Ab\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)+\frac{\sqrt{a^2+2abx+b^2x^2}\left(-960a^5Ab+1531a^5bBx-1975a^4Ab^2x+4800a^4b^2Bx^2+9600a^3Ab^3x^2+4800a^3b^3Bx^3+4800a^2Ab^4x^3+3200a^2b^4Bx^4+1600aAb^5x^4+1200ab^5Bx^5+240Ab^6x^5+192b^6Bx^6\right)+\sqrt{b^2}\left(960a^6A-1531a^6Bx+2935a^5Abx-6331a^5bBx^2-7625a^4Ab^2x^2-9600a^4b^2Bx^3-14400a^3Ab^3x^3-8000a^3b^3Bx^4-6400a^2Ab^4x^4-4400a^2b^4Bx^5-1840aAb^5x^5-1392ab^5Bx^6-240Ab^6x^6-192b^6Bx^7\right)}{960x\left(ab+b^2x\right)-960\sqrt{b^2}x\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-960*a^5*A*b - 1975*a^4*A*b^2*x + 1531*a^5*
b*B*x + 9600*a^3*A*b^3*x^2 + 4800*a^4*b^2*B*x^2 + 4800*a^2*A*b^4*x^3 + 4800
*a^3*b^3*B*x^3 + 1600*a*A*b^5*x^4 + 3200*a^2*b^4*B*x^4 + 240*A*b^6*x^5 + 12
00*a*b^5*B*x^5 + 192*b^6*B*x^6) + Sqrt[b^2]*(960*a^6*A + 2935*a^5*A*b*x - 1
531*a^6*B*x - 7625*a^4*A*b^2*x^2 - 6331*a^5*b*B*x^2 - 14400*a^3*A*b^3*x^3 -
 9600*a^4*b^2*B*x^3 - 6400*a^2*A*b^4*x^4 - 8000*a^3*b^3*B*x^4 - 1840*a*A*b^
5*x^5 - 4400*a^2*b^4*B*x^5 - 240*A*b^6*x^6 - 1392*a*b^5*B*x^6 - 192*b^6*B*x
^7))/(960*x*(a*b + b^2*x) - 960*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ 5*a^4*A*b*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] + a^
5*B*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] - (5*a^4*A*S
qrt[b^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (5*a^4*
A*Sqrt[b^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (a^5*
Sqrt[b^2]*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b) - (
a^5*Sqrt[b^2]*B*Log[-(a*b) - b*Sqrt[b^2]*x + b*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]])/(2*b)
```

fricas [A] time = 0.41, size = 121, normalized size = 0.41

$$\frac{12\,Bb^5x^6-60\,Aa^5+15\left(5\,Bab^4+Ab^5\right)x^5+100\left(2\,Ba^2b^3+Aab^4\right)x^4+300\left(Ba^3b^2+Aa^2b^3\right)x^3+300\left(Ba^4b+2\,Aa^3b^2\right)x^2+60\left(Ba^5+5\,Aa^4b\right)x\log(x)}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^5*x^6 - 60*A*a^5 + 15*(5*B*a*b^4 + A*b^5)*x^5 + 100*(2*B*a^2*b
^3 + A*a*b^4)*x^4 + 300*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 300*(B*a^4*b + 2*A*a^
3*b^2)*x^2 + 60*(B*a^5 + 5*A*a^4*b)*x*log(x))/x
```

giac [A] time = 0.22, size = 191, normalized size = 0.65

$$\frac{1}{5}Bb^5x^5\mathrm{sgn}(bx+a)+\frac{5}{4}Bab^4x^4\mathrm{sgn}(bx+a)+\frac{1}{4}Ab^5x^4\mathrm{sgn}(bx+a)+\frac{10}{3}Ba^2b^3x^3\mathrm{sgn}(bx+a)+\frac{5}{3}Aab^4x^3\mathrm{sgn}(bx+a)+5\,Ba^3b^2x^2\mathrm{sgn}(bx+a)+5\,Aa^2b^3x^2\mathrm{sgn}(bx+a)+5\,Ba^4bx\mathrm{sgn}(bx+a)+10\,Aa^3b^2x\mathrm{sgn}(bx+a)-\frac{Aa^5\mathrm{sgn}(bx+a)}{x}+\left(Ba^5\mathrm{sgn}(bx+a)+5\,Aa^4b\mathrm{sgn}(bx+a)\right)\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/5*B*b^5*x^5*sgn(b*x + a) + 5/4*B*a*b^4*x^4*sgn(b*x + a) + 1/4*A*b^5*x^4*s
gn(b*x + a) + 10/3*B*a^2*b^3*x^3*sgn(b*x + a) + 5/3*A*a*b^4*x^3*sgn(b*x + a
) + 5*B*a^3*b^2*x^2*sgn(b*x + a) + 5*A*a^2*b^3*x^2*sgn(b*x + a) + 5*B*a^4*b
*x*sgn(b*x + a) + 10*A*a^3*b^2*x*sgn(b*x + a) - A*a^5*sgn(b*x + a)/x + (B*a
^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*log(abs(x))
```

maple [A] time = 0.06, size = 144, normalized size = 0.49

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(12B\,b^5x^6+15A\,b^5x^5+75Ba\,b^4x^5+100Aa\,b^4x^4+200B\,a^2b^3x^4+300A\,a^2b^3x^3+300B\,a^3b^2x^3+300A\,a^4bx\ln(x)+600A\,a^3b^2x^2+60B\,a^5x\ln(x)+300B\,a^4b\,x^2-60A\,a^5\right)}{60\,(bx+a)^5\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(12*B*b^5*x^6+15*A*b^5*x^5+75*B*a*b^4*x^5+100*A*a*b^
4*x^4+200*B*a^2*b^3*x^4+300*A*a^2*b^3*x^3+300*B*a^3*b^2*x^3+300*A*ln(x)*x*a
^4*b+600*A*a^3*b^2*x^2+60*B*ln(x)*x*a^5+300*B*a^4*b*x^2-60*A*a^5)/(b*x+a)^5
/x
```

maxima [A] time = 0.59, size = 386, normalized size = 1.31

$$(-1)^{2\,b^2x+2\,ab} Ba^5 \log\left(2\,b^2x + 2\,ab\right) + 5\,(-1)^{2\,b^2x+2\,ab} Aa^4b \log\left(2\,b^2x + 2\,ab\right) - (-1)^{2\,abx+2\,a^2} Ba^5 \log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right) - 5\,(-1)^{2\,abx+2\,a^2} Aa^4b \log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right) + \frac{1}{2}\,\sqrt{b^2x^2 + 2\,abx + a^2}\,Ba^3bx + \frac{5}{2}\,\sqrt{b^2x^2 + 2\,abx + a^2}\,Aa^2b^2x + \frac{3}{2}\,\sqrt{b^2x^2 + 2\,abx + a^2}\,Ba^4 + \frac{15}{2}\,\sqrt{b^2x^2 + 2\,abx + a^2}\,Aa^3b + \frac{1}{4}\,\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}} Babx + \frac{5}{4}\,\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}} Ab^2x + \frac{7}{12}\,\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}} Ba^2 + \frac{35}{12}\,\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}} Aab + \frac{1}{5}\,\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} B - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*a^5*log(2*b^2*x + 2*a*b) + 5*(-1)^(2*b^2*x + 2*a*b
)*A*a^4*b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*a^5*log(2*a*b*x/a
bs(x) + 2*a^2/abs(x)) - 5*(-1)^(2*a*b*x + 2*a^2)*A*a^4*b*log(2*a*b*x/abs(x)
 + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^3*b*x + 5/2*sqrt(b
^2*x^2 + 2*a*b*x + a^2)*A*a^2*b^2*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a
^4 + 15/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^3*b + 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*a*b*x + 5/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^2*x + 7/12*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2 + 35/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*
A*a*b + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B - (b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{5}{2}}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**2, x)
```

3.619 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=297

$$\frac{10a^2b^2x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^3\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{3(a+bx)}+\frac{5ab^3x^2\sqrt{a^2+2abx+b^2x^2}\,(2aB+A$$

Rubi [A] time = 0.12, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{x(a+bx)}+\frac{10a^2b^2x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{5ab^3x^2\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{2(a+bx)}+\frac{b^4x^3\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{3(a+bx)}+\frac{5a^3b\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{a+bx}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}+\frac{b^5Bx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^3,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (10*a^2*b^2*(A*b + a*B)*x
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a*b^3*(A*b + 2*a*B)*x^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^3*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b^5*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(4*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^3}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(10a^2b^7(Ab+aB)+\frac{a^5Ab^5}{x^3}+\frac{a^4b^5(5Ab+aB)}{x^2}+\frac{5a^3b^6(2A}{x}\right.}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{10a^2b^2(}{}$$

Mathematica [A] time = 0.06, size = 126, normalized size = 0.42

$$\frac{\sqrt{(a+bx)^2}\left(-6a^5(A+2Bx)-60a^4Abx+60a^3bx^2\log(x)(aB+2Ab)+120a^3b^2Bx^3+60a^2b^3x^3(2A+Bx)+10ab^4x^4(3A+2Bx)+b^5x^5(4A+3Bx)\right)}{12x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-60*a^4*A*b*x + 120*a^3*b^2*B*x^3 + 60*a^2*b^3*x^3*(2*A
 + B*x) - 6*a^5*(A + 2*B*x) + 10*a*b^4*x^4*(3*A + 2*B*x) + b^5*x^5*(4*A + 3
*B*x) + 60*a^3*b*(2*A*b + a*B)*x^2*Log[x]))/(12*x^2*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.20, size = 719, normalized size = 2.42

$$-\frac{5}{2}a^4\sqrt{b^2}B\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)-\frac{5}{2}a^4\sqrt{b^2}B\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)+5a^4bB\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)-5a^3Ab\sqrt{b^2}\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)-5a^3Ab\sqrt{b^2}\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)+10a^3Ab^2\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)+\frac{\sqrt{a^2+2abx+b^2x^2}\left(-96a^6Ab^2-192a^6b^2Bx-1056a^5Ab^3x-587a^5b^3Bx^2-2416a^4Ab^4x^2+1525a^4b^4Bx^3+464a^3Ab^5x^3+2880a^3b^5Bx^4+2400a^2Ab^6x^4+1280a^2b^6Bx^5+544aAb^7x^5+368ab^7Bx^6+64Ab^8x^6+48b^8Bx^7\right)+\sqrt{b^2}\left(96a^7Ab+192a^7bBx+1152a^6Ab^2x+779a^6b^2Bx^2+3472a^5Ab^3x^2-938a^5b^3Bx^3+1952a^4Ab^4x^3-4405a^4b^4Bx^4-2864a^3Ab^5x^4-4160a^3b^5Bx^5-2944a^2Ab^6x^5-1648a^2b^6Bx^6-608aAb^7x^6-416ab^7Bx^7-64Ab^8x^7-48b^8Bx^8\right)}{96\sqrt{b^2}x^2\left(-2ab-2b^2x\right)\sqrt{a^2+2abx+b^2x^2}+96x^2\left(2a^2b^2+4ab^3x+2b^4x^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-96*a^6*A*b^2 - 1056*a^5*A*b^3*x - 192*a^6*
b^2*B*x - 2416*a^4*A*b^4*x^2 - 587*a^5*b^3*B*x^2 + 464*a^3*A*b^5*x^3 + 1525
*a^4*b^4*B*x^3 + 2400*a^2*A*b^6*x^4 + 2880*a^3*b^5*B*x^4 + 544*a*A*b^7*x^5
+ 1280*a^2*b^6*B*x^5 + 64*A*b^8*x^6 + 368*a*b^7*B*x^6 + 48*b^8*B*x^7) + Sqr
t[b^2]*(96*a^7*A*b + 1152*a^6*A*b^2*x + 192*a^7*b*B*x + 3472*a^5*A*b^3*x^2
+ 779*a^6*b^2*B*x^2 + 1952*a^4*A*b^4*x^3 - 938*a^5*b^3*B*x^3 - 2864*a^3*A*b
^5*x^4 - 4405*a^4*b^4*B*x^4 - 2944*a^2*A*b^6*x^5 - 4160*a^3*b^5*B*x^5 - 608
*a*A*b^7*x^6 - 1648*a^2*b^6*B*x^6 - 64*A*b^8*x^7 - 416*a*b^7*B*x^7 - 48*b^8
*B*x^8))/(96*Sqrt[b^2]*x^2*(-2*a*b - 2*b^2*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
 + 96*x^2*(2*a^2*b^2 + 4*a*b^3*x + 2*b^4*x^2)) + 10*a^3*A*b^2*ArcTanh[(Sqrt
[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] + 5*a^4*b*B*ArcTanh[(Sqrt[b^2
]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] - 5*a^3*A*b*Sqrt[b^2]*Log[-a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (5*a^4*Sqrt[b^2]*B*Log[-a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - 5*a^3*A*b*Sqrt[b^2]*Log[a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (5*a^4*Sqrt[b^2]*B*Log[a -
Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2
```

fricas [A] time = 0.41, size = 121, normalized size = 0.41

$$\frac{3\,Bb^5x^6-6\,Aa^5+4\left(5\,Bab^4+Ab^5\right)x^5+30\left(2\,Ba^2b^3+Aab^4\right)x^4+120\left(Ba^3b^2+Aa^2b^3\right)x^3+60\left(Ba^4b+2\,Aa^3b^2\right)x^2\log\left(x\right)-12\left(Ba^5+5\,Aa^4b\right)x}{12\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^5*x^6 - 6*A*a^5 + 4*(5*B*a*b^4 + A*b^5)*x^5 + 30*(2*B*a^2*b^3 +
 A*a*b^4)*x^4 + 120*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 60*(B*a^4*b + 2*A*a^3*b^2
)*x^2*log(x) - 12*(B*a^5 + 5*A*a^4*b)*x)/x^2
```

giac [A] time = 0.17, size = 191, normalized size = 0.64

$$\frac{1}{4}\,Bb^5x^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,Bab^4x^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Ab^5x^3\mathrm{sgn}\left(bx+a\right)+5\,Ba^2b^3x^2\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}\,Aab^4x^2\mathrm{sgn}\left(bx+a\right)+10\,Ba^3b^2x\mathrm{sgn}\left(bx+a\right)+10\,Aa^2b^3x\mathrm{sgn}\left(bx+a\right)+5\left(Ba^4b\mathrm{sgn}\left(bx+a\right)+2\,Aa^3b^2\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)-\frac{Aa^5\mathrm{sgn}\left(bx+a\right)+2\left(Ba^5\mathrm{sgn}\left(bx+a\right)+5\,Aa^4b\mathrm{sgn}\left(bx+a\right)\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*B*b^5*x^4*sgn(b*x + a) + 5/3*B*a*b^4*x^3*sgn(b*x + a) + 1/3*A*b^5*x^3*s
gn(b*x + a) + 5*B*a^2*b^3*x^2*sgn(b*x + a) + 5/2*A*a*b^4*x^2*sgn(b*x + a) +
 10*B*a^3*b^2*x*sgn(b*x + a) + 10*A*a^2*b^3*x*sgn(b*x + a) + 5*(B*a^4*b*sgn
(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*log(abs(x)) - 1/2*(A*a^5*sgn(b*x + a)
 + 2*(B*a^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^2
```

maple [A] time = 0.07, size = 144, normalized size = 0.48

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}\left(3B\,b^5x^6+4A\,b^5x^5+20Ba\,b^4x^5+30Aa\,b^4x^4+60B\,a^2b^3x^4+120A\,a^3b^2x^2\ln\left(x\right)+120A\,a^2b^3x^3+60B\,a^4b\,x^2\ln\left(x\right)+120B\,a^3b^2x^3-60A\,a^4bx-12B\,a^5x-6A\,a^5\right)}{12\left(bx+a\right)^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(3*B*b^5*x^6+4*A*b^5*x^5+20*B*a*b^4*x^5+30*A*a*b^4*x
^4+60*B*a^2*b^3*x^4+120*A*ln(x)*x^2*a^3*b^2+120*A*a^2*b^3*x^3+60*B*ln(x)*x^
2*a^4*b+120*B*a^3*b^2*x^3-60*A*a^4*b*x-12*B*a^5*x-6*A*a^5)/(b*x+a)^5/x^2
```

maxima [B] time = 0.58, size = 461, normalized size = 1.55

$$5\,(-1)^{2\,b^2x+2\,ab}Ba^4b\log\left(2\,b^2x+2\,ab\right)+10\,(-1)^{2\,b^2x+2\,ab}Aa^3b^2\log\left(2\,b^2x+2\,ab\right)-5\,(-1)^{2\,abx+2\,a^2}Ba^4b\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-10\,(-1)^{2\,abx+2\,a^2}Aa^3b^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{5}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2b^2x+5\sqrt{b^2x^2+2\,abx+a^2}\,Aab^3x+\frac{15}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3b+15\sqrt{b^2x^2+2\,abx+a^2}\,Aa^2b^2+\frac{5}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^2x+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^3x}{2\,a}+\frac{35}{12}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bab+\frac{35}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^2+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^2}{2\,a^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}B}{x}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab}{2\,ax}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}A}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] 5*(-1)^(2*b^2*x + 2*a*b)*B*a^4*b*log(2*b^2*x + 2*a*b) + 10*(-1)^(2*b^2*x +
2*a*b)*A*a^3*b^2*log(2*b^2*x + 2*a*b) - 5*(-1)^(2*a*b*x + 2*a^2)*B*a^4*b*lo
g(2*a*b*x/abs(x) + 2*a^2/abs(x)) - 10*(-1)^(2*a*b*x + 2*a^2)*A*a^3*b^2*log(
2*a*b*x/abs(x) + 2*a^2/abs(x)) + 5/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2*b^
2*x + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*b^3*x + 15/2*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*B*a^3*b + 15*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^2*b^2 + 5/4*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*B*b^2*x + 5/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b
^3*x/a + 35/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*b + 35/6*(b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*A*b^2 + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/a^2 - (b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/x - 3/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b
/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^{2}\right)^{\frac{5}{2}}}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**3, x)
```

3.620 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=297

$$\frac{10a^2b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^2\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{2(a+bx)}+\frac{5ab^3x\sqrt{a^2+2abx+b^2x^2}\,(2\cdots}{a+bx}$$

Rubi [A] time = 0.12, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{2x^2(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{x(a+bx)}+\frac{5ab^3x\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{a+bx}+\frac{b^4x^2\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{2(a+bx)}+\frac{10a^2b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}+\frac{b^5Bx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^4,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (5*a*b^3*(A*b + 2*a*B)*x*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^4*(A*b + 5*a*B)*x^2*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^5*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(3*(a + b*x)) + (10*a^2*b^2*(A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^4}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^4}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(5ab^8(Ab+2aB)+\frac{a^5Ab^5}{x^4}+\frac{a^4b^5(5Ab+aB)}{x^3}+\frac{5a^3b^6(\cdots}{\cdots}\right.}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{5a^3b\cdots}{\cdots}\end{aligned}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.43

$$\frac{\sqrt{(a+bx)^2}\left(-\left(a^5(2A+3Bx)\right)-15a^4bx(A+2Bx)-60a^3Ab^2x^2+60a^2b^2x^3\log(x)(aB+Ab)+60a^2b^3Bx^4+15ab^4x^4(2A+Bx)+b^5x^5(3A+2Bx)\right)}{6x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-60*a^3*A*b^2*x^2 + 60*a^2*b^3*B*x^4 + 15*a*b^4*x^4*(2*
A + B*x) - 15*a^4*b*x*(A + 2*B*x) + b^5*x^5*(3*A + 2*B*x) - a^5*(2*A + 3*B*
x) + 60*a^2*b^2*(A*b + a*B)*x^3*Log[x]))/(6*x^3*(a + b*x))
```

IntegrateAlgebraic [B] time = 16.57, size = 1633, normalized size = 5.50

result too large to display

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-4*a^19*A*b^3 - 134*a^18*A*b^4*x - 6*a^19*b
^3*B*x - 2152*a^17*A*b^5*x^2 - 216*a^18*b^4*B*x^2 - 21955*a^16*A*b^6*x^3 -
3535*a^17*b^5*B*x^3 - 158798*a^15*A*b^7*x^4 - 35054*a^16*b^6*B*x^4 - 860431
*a^14*A*b^8*x^5 - 236155*a^15*b^7*B*x^5 - 3600304*a^13*A*b^9*x^6 - 1145824*
a^14*b^8*B*x^6 - 11830658*a^12*A*b^10*x^7 - 4131458*a^13*b^9*B*x^7 - 307773
28*a^11*A*b^11*x^8 - 11225068*a^12*b^10*B*x^8 - 63475808*a^10*A*b^12*x^9 -
22938688*a^11*b^11*B*x^9 - 103276096*a^9*A*b^13*x^10 - 34421024*a^10*b^12*B
*x^10 - 130921568*a^8*A*b^14*x^11 - 35156704*a^9*b^13*B*x^11 - 126307328*a^
7*A*b^15*x^12 - 17698880*a^8*b^14*B*x^12 - 88721152*a^6*A*b^16*x^13 + 10965
248*a^7*b^15*B*x^13 - 41179136*a^5*A*b^17*x^14 + 32060416*a^6*b^16*B*x^14 -
 8998400*a^4*A*b^18*x^15 + 33432064*a^5*b^17*B*x^15 + 1937408*a^3*A*b^19*x^
16 + 20925440*a^4*b^18*B*x^16 + 1884160*a^2*A*b^20*x^17 + 8249344*a^3*b^19*
B*x^17 + 442368*a*A*b^21*x^18 + 1957888*a^2*b^20*B*x^18 + 24576*A*b^22*x^19
 + 253952*a*b^21*B*x^19 + 16384*b^22*B*x^20) + Sqrt[b^2]*(4*a^20*A*b^2 + 13
8*a^19*A*b^3*x + 6*a^20*b^2*B*x + 2286*a^18*A*b^4*x^2 + 222*a^19*b^3*B*x^2
+ 24107*a^17*A*b^5*x^3 + 3751*a^18*b^4*B*x^3 + 180753*a^16*A*b^6*x^4 + 3858
9*a^17*b^5*B*x^4 + 1019229*a^15*A*b^7*x^5 + 271209*a^16*b^6*B*x^5 + 4460735
*a^14*A*b^8*x^6 + 1381979*a^15*b^7*B*x^6 + 15430962*a^13*A*b^9*x^7 + 527728
2*a^14*b^8*B*x^7 + 42607986*a^12*A*b^10*x^8 + 15356526*a^13*b^9*B*x^8 + 942
53136*a^11*A*b^11*x^9 + 34163756*a^12*b^10*B*x^9 + 166751904*a^10*A*b^12*x^
10 + 57359712*a^11*b^11*B*x^10 + 234197664*a^9*A*b^13*x^11 + 69577728*a^10*
b^12*B*x^11 + 257228896*a^8*A*b^14*x^12 + 52855584*a^9*b^13*B*x^12 + 215028
480*a^7*A*b^15*x^13 + 6733632*a^8*b^14*B*x^13 + 129900288*a^6*A*b^16*x^14 -
 43025664*a^7*b^15*B*x^14 + 50177536*a^5*A*b^17*x^15 - 65492480*a^6*b^16*B*
x^15 + 7060992*a^4*A*b^18*x^16 - 54357504*a^5*b^17*B*x^16 - 3821568*a^3*A*b
^19*x^17 - 29174784*a^4*b^18*B*x^17 - 2326528*a^2*A*b^20*x^18 - 10207232*a^
3*b^19*B*x^18 - 466944*a*A*b^21*x^19 - 2211840*a^2*b^20*B*x^19 - 24576*A*b^
22*x^20 - 270336*a*b^21*B*x^20 - 16384*b^22*B*x^21))/(3*Sqrt[b^2]*x^3*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]*(-4*a^14*b^2 - 104*a^13*b^3*x - 1252*a^12*b^4*x^2
- 9248*a^11*b^5*x^3 - 46816*a^10*b^6*x^4 - 171776*a^9*b^7*x^5 - 470976*a^8*
b^8*x^6 - 979968*a^7*b^9*x^7 - 1554432*a^6*b^10*x^8 - 1869824*a^5*b^11*x^9
- 1678336*a^4*b^12*x^10 - 1089536*a^3*b^13*x^11 - 483328*a^2*b^14*x^12 - 13
1072*a*b^15*x^13 - 16384*b^16*x^14) + 3*x^3*(4*a^15*b^3 + 108*a^14*b^4*x +
1356*a^13*b^5*x^2 + 10500*a^12*b^6*x^3 + 56064*a^11*b^7*x^4 + 218592*a^10*b
^8*x^5 + 642752*a^9*b^9*x^6 + 1450944*a^8*b^10*x^7 + 2534400*a^7*b^11*x^8 +
 3424256*a^6*b^12*x^9 + 3548160*a^5*b^13*x^10 + 2767872*a^4*b^14*x^11 + 157
2864*a^3*b^15*x^12 + 614400*a^2*b^16*x^13 + 147456*a*b^17*x^14 + 16384*b^18
*x^15)) + 10*a^2*A*b^3*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x
^2]/a] + 10*a^3*b^2*B*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^
2]/a] - 5*a^2*A*(b^2)^(3/2)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2
*x^2]] - 5*a^3*b*Sqrt[b^2]*B*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]] - 5*a^2*A*(b^2)^(3/2)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]] - 5*a^3*b*Sqrt[b^2]*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]]
```

fricas [A] time = 0.41, size = 121, normalized size = 0.41

$$\frac{2\,Bb^5x^6 - 2\,Aa^5 + 3\left(5\,Bab^4 + Ab^5\right)x^5 + 30\left(2\,Ba^2b^3 + Aab^4\right)x^4 + 60\left(Ba^3b^2 + Aa^2b^3\right)x^3\log(x) - 30\left(Ba^4b + 2\,Aa^3b^2\right)x^2 - 3\left(Ba^5 + 5\,Aa^4b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^5*x^6 - 2*A*a^5 + 3*(5*B*a*b^4 + A*b^5)*x^5 + 30*(2*B*a^2*b^3 +
A*a*b^4)*x^4 + 60*(B*a^3*b^2 + A*a^2*b^3)*x^3*log(x) - 30*(B*a^4*b + 2*A*a^
3*b^2)*x^2 - 3*(B*a^5 + 5*A*a^4*b)*x)/x^3
```

giac [A] time = 0.20, size = 190, normalized size = 0.64

$$\frac{1}{3}\,Bb^5x^3\mathrm{sgn}\left(bx+a\right) + \frac{5}{2}\,Bab^4x^2\mathrm{sgn}\left(bx+a\right) + \frac{1}{2}\,Ab^5x^2\mathrm{sgn}\left(bx+a\right) + 10\,Ba^2b^3x\mathrm{sgn}\left(bx+a\right) + 5\,Aab^4x\mathrm{sgn}\left(bx+a\right) + 10\left(Ba^3b^2\mathrm{sgn}\left(bx+a\right) + Aa^2b^3\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right) - \frac{2\,Aa^5\mathrm{sgn}\left(bx+a\right) + 30\left(Ba^4b\mathrm{sgn}\left(bx+a\right) + 2\,Aa^3b^2\mathrm{sgn}\left(bx+a\right)\right)x^2 + 3\left(Ba^5\mathrm{sgn}\left(bx+a\right) + 5\,Aa^4b\mathrm{sgn}\left(bx+a\right)\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 1/3*B*b^5*x^3*sgn(b*x + a) + 5/2*B*a*b^4*x^2*sgn(b*x + a) + 1/2*A*b^5*x^2*s
gn(b*x + a) + 10*B*a^2*b^3*x*sgn(b*x + a) + 5*A*a*b^4*x*sgn(b*x + a) + 10*(
B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x + a))*log(abs(x)) - 1/6*(2*A*a^5
*sgn(b*x + a) + 30*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 +
3*(B*a^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^3
```

maple [A] time = 0.06, size = 144, normalized size = 0.48

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}\left(2B\,b^5x^6 + 3A\,b^5x^5 + 15Ba\,b^4x^5 + 60A\,a^2b^3x^3\ln(x) + 30Aa\,b^4x^4 + 60B\,a^3b^2x^3\ln(x) + 60B\,a^2b^3x^4 - 60A\,a^3b^2x^2 - 30B\,a^4b\,x^2 - 15A\,a^4bx - 3B\,a^5x - 2A\,a^5\right)}{6\left(bx+a\right)^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(5/2)*(2*B*b^5*x^6+3*A*b^5*x^5+15*B*a*b^4*x^5+60*A*ln(x)*x^
3*a^2*b^3+30*A*a*b^4*x^4+60*B*ln(x)*x^3*a^3*b^2+60*B*a^2*b^3*x^4-60*A*a^3*b
^2*x^2-30*B*a^4*b*x^2-15*A*a^4*b*x-3*B*a^5*x-2*A*a^5)/(b*x+a)^5/x^3
```

maxima [B] time = 0.64, size = 557, normalized size = 1.88

$$10\left(-1\right)^{2b^2x+2ab}Ba^3b^2\log\left(2b^2x+2ab\right) + 10\left(-1\right)^{2b^2x+2ab}Aa^2b^3\log\left(2b^2x+2ab\right) - 10\left(-1\right)^{2abx+2a^2}Ba^3b^2\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right) - 10\left(-1\right)^{2abx+2a^2}Aa^2b^3\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right) + 5\sqrt{b^2x^2+2abx+a^2}Bab^3x + 5\sqrt{b^2x^2+2abx+a^2}Ab^4x + 15\sqrt{b^2x^2+2abx+a^2}Ba^2b^2 + 15\sqrt{b^2x^2+2abx+a^2}Aab^3 + \frac{5\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bb^3x}{2a} + \frac{5\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ab^4x}{2a^2} + \frac{35}{6}\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bb^2 + \frac{35\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ab^3}{6a} + \frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bb^2}{2a^2} + \frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ab^3}{6a^3} - \frac{3\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bb}{2ax} - \frac{11\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ab^2}{6a^2x} - \frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}B}{2a^2x^2} - \frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab}{6a^3x^2} - \frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}A}{3a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] 10*(-1)^(2*b^2*x + 2*a*b)*B*a^3*b^2*log(2*b^2*x + 2*a*b) + 10*(-1)^(2*b^2*x
 + 2*a*b)*A*a^2*b^3*log(2*b^2*x + 2*a*b) - 10*(-1)^(2*a*b*x + 2*a^2)*B*a^3*
b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) - 10*(-1)^(2*a*b*x + 2*a^2)*A*a^2*b^
3*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*
b^3*x + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^4*x + 15*sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*B*a^2*b^2 + 15*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*b^3 + 5/2*(b^2*x^2
 + 2*a*b*x + a^2)^(3/2)*B*b^3*x/a + 5/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b
^4*x/a^2 + 35/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^2 + 35/6*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*A*b^3/a + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/a^2 +
 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/a^3 - 3/2*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*b/(a*x) - 11/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^2*x) -
1/2*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^2) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*A*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^4,x)
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**4,x)
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**4, x)
```

3.621 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^5}\,dx$

Optimal. Leaf size=296

$$-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^4x\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{a+bx}+\frac{5ab^3\log(x)\sqrt{a^2+2abx+b^2x^2}\,(2a$$

Rubi [A] time = 0.13, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{3x^3(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{2x^2(a+bx)}-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^4x\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{a+bx}+\frac{5ab^3\log(x)\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{a+bx}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}+\frac{b^5Bx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^5,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (10*a^2*b^2*(A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^4*(A*b + 5*a*B)*x*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^5*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(2*(a + b*x)) + (5*a*b^3*(A*b + 2*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^5}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^5}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^9(Ab+5aB)+\frac{a^5Ab^5}{x^5}+\frac{a^4b^5(5Ab+aB)}{x^4}+\frac{5a^3b^6(2Ab}{x^3}\right.}{b^4\left(ab+b^2x\right)}$$

$$=-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{5a^3b(}{}$$

Mathematica [A] time = 0.04, size = 126, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\left(a^5(3A+4Bx)+10a^4bx(2A+3Bx)+60a^3b^2x^2(A+2Bx)+120a^2Ab^3x^3-60ab^3x^4\log(x)(2aB+Ab)-60ab^4Bx^5-6b^5x^5(2A+Bx)\right)}{12x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(120*a^2*A*b^3*x^3 - 60*a*b^4*B*x^5 - 6*b^5*x^5*(2
*A + B*x) + 60*a^3*b^2*x^2*(A + 2*B*x) + 10*a^4*b*x*(2*A + 3*B*x) + a^5*(3*
A + 4*B*x) - 60*a*b^3*(A*b + 2*a*B)*x^4*Log[x]))/(x^4*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.90, size = 859, normalized size = 2.90

$$5aA\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2bxa+b^2x^2}}{a}\right)b^4+10a^2B\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2bxa+b^2x^2}}{a}\right)b^3-\frac{5}{2}aA\sqrt{b^2}\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^3-\frac{5}{2}aA\sqrt{b^2}\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^3+\ldots$$

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^5,x]
```

```
[Out] (-(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(6*a^8*A*b + 58*a^7*A*b^2*x + 8*a^8*b*
B*x + 258*a^6*A*b^3*x^2 + 84*a^7*b^2*B*x^2 + 726*a^5*A*b^4*x^3 + 444*a^6*b^
3*B*x^3 + 1108*a^4*A*b^5*x^4 + 851*a^5*b^4*B*x^4 + 780*a^3*A*b^6*x^5 + 489*
a^4*b^5*B*x^5 + 132*a^2*A*b^7*x^6 - 303*a^3*b^6*B*x^6 - 84*a*A*b^8*x^7 - 45
3*a^2*b^7*B*x^7 - 24*A*b^9*x^8 - 156*a*b^8*B*x^8 - 12*b^9*B*x^9)) - b^3*Sqr
t[b^2]*(-6*a^9*A - 64*a^8*A*b*x - 8*a^9*B*x - 316*a^7*A*b^2*x^2 - 92*a^8*b*
B*x^2 - 984*a^6*A*b^3*x^3 - 528*a^7*b^2*B*x^3 - 1834*a^5*A*b^4*x^4 - 1295*a
^6*b^3*B*x^4 - 1888*a^4*A*b^5*x^5 - 1340*a^5*b^4*B*x^5 - 912*a^3*A*b^6*x^6
- 186*a^4*b^5*B*x^6 - 48*a^2*A*b^7*x^7 + 756*a^3*b^6*B*x^7 + 108*a*A*b^8*x^
8 + 609*a^2*b^7*B*x^8 + 24*A*b^9*x^9 + 168*a*b^8*B*x^9 + 12*b^9*B*x^10))/(3
*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^3 - 24*a^2*b^4*x - 2
4*a*b^5*x^2 - 8*b^6*x^3) + 3*x^4*(8*a^4*b^4 + 32*a^3*b^5*x + 48*a^2*b^6*x^2
 + 32*a*b^7*x^3 + 8*b^8*x^4)) + 5*a*A*b^4*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^
2 + 2*a*b*x + b^2*x^2]/a] + 10*a^2*b^3*B*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2
 + 2*a*b*x + b^2*x^2]/a] - (5*a*A*b^3*Sqrt[b^2]*Log[-a - Sqrt[b^2]*x + Sqrt
[a^2 + 2*a*b*x + b^2*x^2]])/2 - 5*a^2*(b^2)^(3/2)*B*Log[-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (5*a*A*b^3*Sqrt[b^2]*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - 5*a^2*(b^2)^(3/2)*B*Log[a - Sqrt[b^2]*
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
```

fricas [A] time = 0.42, size = 121, normalized size = 0.41

$$\frac{6Bb^5x^6-3Aa^5+12\left(5Bab^4+Ab^5\right)x^5+60\left(2Ba^2b^3+Aab^4\right)x^4\log(x)-120\left(Ba^3b^2+Aa^2b^3\right)x^3-30\left(Ba^4b+2Aa^3b^2\right)x^2-4\left(Ba^5+5Aa^4b\right)x}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(6*B*b^5*x^6 - 3*A*a^5 + 12*(5*B*a*b^4 + A*b^5)*x^5 + 60*(2*B*a^2*b^3
+ A*a*b^4)*x^4*log(x) - 120*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 30*(B*a^4*b + 2*A
*a^3*b^2)*x^2 - 4*(B*a^5 + 5*A*a^4*b)*x)/x^4
```

giac [A] time = 0.17, size = 188, normalized size = 0.64

$$\frac{1}{2}Bb^5x^2\mathrm{sgn}(bx+a)+5Bab^4x\mathrm{sgn}(bx+a)+Ab^5x\mathrm{sgn}(bx+a)+5\left(2Ba^2b^3\mathrm{sgn}(bx+a)+Aab^4\mathrm{sgn}(bx+a)\right)\log(|x|)-\frac{3Aa^5\mathrm{sgn}(bx+a)+120\left(Ba^3b^2\mathrm{sgn}(bx+a)+Aa^2b^3\mathrm{sgn}(bx+a)\right)x^3+30\left(Ba^4b\mathrm{sgn}(bx+a)+2Aa^3b^2\mathrm{sgn}(bx+a)\right)x^2+4\left(Ba^5\mathrm{sgn}(bx+a)+5Aa^4b\mathrm{sgn}(bx+a)\right)x}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/2*B*b^5*x^2*sgn(b*x + a) + 5*B*a*b^4*x*sgn(b*x + a) + A*b^5*x*sgn(b*x + a
) + 5*(2*B*a^2*b^3*sgn(b*x + a) + A*a*b^4*sgn(b*x + a))*log(abs(x)) - 1/12*
(3*A*a^5*sgn(b*x + a) + 120*(B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x + a
))*x^3 + 30*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 + 4*(B*a^
5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^4
```

maple [A] time = 0.36, size = 144, normalized size = 0.49

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(6B\,b^5x^6+60Aa\,b^4x^4\ln(x)+12A\,b^5x^5+120B\,a^2b^3x^4\ln(x)+60Ba\,b^4x^5-120A\,a^2b^3x^3-120B\,a^3b^2x^3-60A\,a^3b^2x^2-30B\,a^4b\,x^2-20A\,a^4bx-4B\,a^5x-3A\,a^5\right)}{12\,(bx+a)^5\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(6*B*b^5*x^6+60*A*ln(x)*x^4*a*b^4+12*A*b^5*x^5+120*B
*ln(x)*x^4*a^2*b^3+60*B*a*b^4*x^5-120*A*a^2*b^3*x^3-120*B*a^3*b^2*x^3-60*A*
a^3*b^2*x^2-30*B*a^4*b*x^2-20*A*a^4*b*x-4*B*a^5*x-3*A*a^5)/(b*x+a)^5/x^4
```

maxima [B] time = 0.62, size = 615, normalized size = 2.08

$$10\,(-1)^{2\,b^2x+2\,ab}Ba^2b^3\log\left(2\,b^2x+2\,ab\right)+5\,(-1)^{2\,b^2x+2\,ab}Aab^4\log\left(2\,b^2x+2\,ab\right)-10\,(-1)^{2\,abx+2\,a^2}Ba^2b^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-5\,(-1)^{2\,abx+2\,a^2}Aab^4\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+5\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb^4x+\frac{5\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab^5x}{2\,a}+15\,\sqrt{b^2x^2+2\,abx+a^2}\,Bab^3+\frac{15}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab^4+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^4x}{2\,a^2}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^5x}{4\,a^3}+\frac{35\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^3}{6\,a}+\frac{35\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^4}{12\,a^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^3}{6\,a^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^4}{3\,a^4}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^2}{6\,a^2x}-\frac{2\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^3}{3\,a^3x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb}{6\,a^3x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^2}{3\,a^4x^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}B}{3\,a^2x^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab}{12\,a^3x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}A}{4\,a^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] 10*(-1)^(2*b^2*x + 2*a*b)*B*a^2*b^3*log(2*b^2*x + 2*a*b) + 5*(-1)^(2*b^2*x
+ 2*a*b)*A*a*b^4*log(2*b^2*x + 2*a*b) - 10*(-1)^(2*a*b*x + 2*a^2)*B*a^2*b^3
*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) - 5*(-1)^(2*a*b*x + 2*a^2)*A*a*b^4*log(
2*a*b*x/abs(x) + 2*a^2/abs(x)) + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4*x +
5/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^5*x/a + 15*sqrt(b^2*x^2 + 2*a*b*x + a
^2)*B*a*b^3 + 15/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^4 + 5/2*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*B*b^4*x/a^2 + 5/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^5*x
/a^3 + 35/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^3/a + 35/12*(b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*A*b^4/a^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/a^3
+ 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/a^4 - 11/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*b^2/(a^2*x) - 2/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^3*
x) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*A*b^2/(a^4*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(
a^2*x^3) + 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^3) - 1/4*(b^2*x^
2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**5, x)
```

3.622 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=293

$$-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^2(a+bx)}+\frac{b^4\log(x)\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{a+bx}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+ \ldots}{x(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{4x^4(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{3x^3(a+bx)}-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^2(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{x(a+bx)}+\frac{b^4\log(x)\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{a+bx}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}+\frac{b^5Bx\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^6,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (5*a^2*b^2*(A*b + a*B)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x^2*(a + b*x)) - (5*a*b^3*(A*b + 2*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^5*B*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(a + b*x) + (b^4*(A*b + 5*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^6}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^{10}B+\frac{a^5Ab^5}{x^6}+\frac{a^4b^5(5Ab+aB)}{x^5}+\frac{5a^3b^6(2Ab+aB)}{x^4}+\frac{10a^2b \ldots}{}\right.}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{5a^3b(2A \ldots}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 127, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\left(3a^5(4A+5Bx)+25a^4bx(3A+4Bx)+100a^3b^2x^2(2A+3Bx)+300a^2b^3x^3(A+2Bx)-60b^4x^5\log(x)(5aB+Ab)+300aAb^4x^4-60b^5Bx^6\right)}{60x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(300*a*A*b^4*x^4 - 60*b^5*B*x^6 + 300*a^2*b^3*x^3*
(A + 2*B*x) + 100*a^3*b^2*x^2*(2*A + 3*B*x) + 25*a^4*b*x*(3*A + 4*B*x) + 3*
a^5*(4*A + 5*B*x) - 60*b^4*(A*b + 5*a*B)*x^5*Log[x]))/(x^5*(a + b*x))
```

IntegrateAlgebraic [B] time = 3.71, size = 911, normalized size = 3.11

$$A\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2bxa+b^2x^2}}{a}\right)b^5+5aB\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2bxa+b^2x^2}}{a}\right)b^4-\frac{1}{2}A\sqrt{b^2}\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^4-\frac{1}{2}A\sqrt{b^2}\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^4-\frac{5}{2}a\sqrt{b^2}B\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^3-\frac{5}{2}a\sqrt{b^2}B\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^3+\text{[illegible]}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^6,x]
```

```
[Out] (-4*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(12*a^9*A*b + 123*a^8*A*b^2*x + 15*a^
9*b*B*x + 572*a^7*A*b^3*x^2 + 160*a^8*b^2*B*x^2 + 1598*a^6*A*b^4*x^3 + 790*
a^7*b^3*B*x^3 + 3012*a^5*A*b^5*x^4 + 2460*a^6*b^4*B*x^4 + 3875*a^4*A*b^6*x^
5 + 4585*a^5*b^5*B*x^5 + 3200*a^3*A*b^7*x^6 + 4720*a^4*b^6*B*x^6 + 1500*a^2
*A*b^8*x^7 + 2280*a^3*b^7*B*x^7 + 300*a*A*b^9*x^8 + 120*a^2*b^8*B*x^8 - 270
*a*b^9*B*x^9 - 60*b^10*B*x^10) - 4*b^4*Sqrt[b^2]*(-12*a^10*A - 135*a^9*A*b*
x - 15*a^10*B*x - 695*a^8*A*b^2*x^2 - 175*a^9*b*B*x^2 - 2170*a^7*A*b^3*x^3
- 950*a^8*b^2*B*x^3 - 4610*a^6*A*b^4*x^4 - 3250*a^7*b^3*B*x^4 - 6887*a^5*A*
b^5*x^5 - 7045*a^6*b^4*B*x^5 - 7075*a^4*A*b^6*x^6 - 9305*a^5*b^5*B*x^6 - 47
00*a^3*A*b^7*x^7 - 7000*a^4*b^6*B*x^7 - 1800*a^2*A*b^8*x^8 - 2400*a^3*b^7*B
*x^8 - 300*a*A*b^9*x^9 + 150*a^2*b^8*B*x^9 + 330*a*b^9*B*x^10 + 60*b^10*B*x
^11))/(15*Sqrt[b^2]*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-16*a^4*b^4 - 64*a^3
*b^5*x - 96*a^2*b^6*x^2 - 64*a*b^7*x^3 - 16*b^8*x^4) + 15*x^5*(16*a^5*b^5 +
 80*a^4*b^6*x + 160*a^3*b^7*x^2 + 160*a^2*b^8*x^3 + 80*a*b^9*x^4 + 16*b^10*
x^5)) + A*b^5*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] +
5*a*b^4*B*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a] - (A*b
^4*Sqrt[b^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (5*
a*b^3*Sqrt[b^2]*B*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2
- (A*b^4*Sqrt[b^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2
- (5*a*b^3*Sqrt[b^2]*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
)/2
```

fricas [A] time = 0.41, size = 121, normalized size = 0.41

$$\frac{60\,Bb^5x^6+60\left(5\,Bab^4+Ab^5\right)x^5\log(x)-12\,Aa^5-300\left(2\,Ba^2b^3+Aab^4\right)x^4-300\left(Ba^3b^2+Aa^2b^3\right)x^3-100\left(Ba^4b+2\,Aa^3b^2\right)x^2-15\left(Ba^5+5\,Aa^4b\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^5*x^6 + 60*(5*B*a*b^4 + A*b^5)*x^5*log(x) - 12*A*a^5 - 300*(2*
B*a^2*b^3 + A*a*b^4)*x^4 - 300*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 100*(B*a^4*b +
 2*A*a^3*b^2)*x^2 - 15*(B*a^5 + 5*A*a^4*b)*x)/x^5
```

giac [A] time = 0.19, size = 188, normalized size = 0.64

$$Bb^5x\,\mathrm{sgn}(bx+a)+\left(5\,Bab^4\mathrm{sgn}(bx+a)+Ab^5\mathrm{sgn}(bx+a)\right)\log(|x|)-\frac{12\,Aa^5\mathrm{sgn}(bx+a)+300\left(2\,Ba^2b^3\mathrm{sgn}(bx+a)+Aab^4\mathrm{sgn}(bx+a)\right)x^4+300\left(Ba^3b^2\mathrm{sgn}(bx+a)+Aa^2b^3\mathrm{sgn}(bx+a)\right)x^3+100\left(Ba^4b\,\mathrm{sgn}(bx+a)+2\,Aa^3b^2\mathrm{sgn}(bx+a)\right)x^2+15\left(Ba^5\mathrm{sgn}(bx+a)+5\,Aa^4b\,\mathrm{sgn}(bx+a)\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] B*b^5*x*sgn(b*x + a) + (5*B*a*b^4*sgn(b*x + a) + A*b^5*sgn(b*x + a))*log(ab
s(x)) - 1/60*(12*A*a^5*sgn(b*x + a) + 300*(2*B*a^2*b^3*sgn(b*x + a) + A*a*b
^4*sgn(b*x + a))*x^4 + 300*(B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x + a)
)*x^3 + 100*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 + 15*(B*a
^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^5
```

maple [A] time = 0.07, size = 144, normalized size = 0.49

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(60Ab^5x^5\ln(x)+300Bab^4x^5\ln(x)+60Bb^5x^6-300Aab^4x^4-600Ba^2b^3x^4-300Aa^2b^3x^3-300Ba^3b^2x^3-200Aa^3b^2x^2-100Ba^4bx^2-75Aa^4bx-15Ba^5x-12Aa^5\right)}{60(bx+a)^5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(60*A*ln(x)*x^5*b^5+300*B*ln(x)*x^5*a*b^4+60*B*b^5*x
^6-300*A*a*b^4*x^4-600*B*a^2*b^3*x^4-300*A*a^2*b^3*x^3-300*B*a^3*b^2*x^3-20
0*A*a^3*b^2*x^2-100*B*a^4*b*x^2-75*A*a^4*b*x-15*B*a^5*x-12*A*a^5)/(b*x+a)^5
/x^5
```

maxima [B] time = 0.64, size = 673, normalized size = 2.30

$$5(-1)^{2b^2x+2ab}Bab^4\log\left(2b^2x+2ab\right)+(-1)^{2b^2x+2ab}Ab^5\log\left(2b^2x+2ab\right)-5(-1)^{2abx+2a^2}Bab^4\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)-(-1)^{2abx+2a^2}Ab^5\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)+\frac{5\sqrt{b^2x^2+2abx+a^2}Bb^5x}{2a}+\frac{\sqrt{b^2x^2+2abx+a^2}Ab^6x}{2a^2}+\frac{15}{2}\sqrt{b^2x^2+2abx+a^2}Bb^4+\frac{3\sqrt{b^2x^2+2abx+a^2}Ab^5}{2a}+\frac{5\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bb^5x}{4a^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ab^6x}{4a^4}+\frac{35\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bb^4}{12a^2}+\frac{7\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ab^5}{12a^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bb^4}{3a^4}-\frac{2\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ab^5}{15a^5}-\frac{2\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bb^3}{3a^3x}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ab^4}{3a^4x}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bb^2}{3a^4x^2}+\frac{2\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab^3}{15a^5x^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bb}{12a^3x^3}-\frac{11\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab^2}{60a^4x^3}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}B}{4a^2x^4}+\frac{3\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab}{20a^3x^4}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}A}{5a^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] 5*(-1)^(2*b^2*x + 2*a*b)*B*a*b^4*log(2*b^2*x + 2*a*b) + (-1)^(2*b^2*x + 2*a
*b)*A*b^5*log(2*b^2*x + 2*a*b) - 5*(-1)^(2*a*b*x + 2*a^2)*B*a*b^4*log(2*a*b
*x/abs(x) + 2*a^2/abs(x)) - (-1)^(2*a*b*x + 2*a^2)*A*b^5*log(2*a*b*x/abs(x)
 + 2*a^2/abs(x)) + 5/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^5*x/a + 1/2*sqrt(b
^2*x^2 + 2*a*b*x + a^2)*A*b^6*x/a^2 + 15/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*
b^4 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^5/a + 5/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*b^5*x/a^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^6*x/a^4 +
35/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^4/a^2 + 7/12*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*A*b^5/a^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/a^4 - 2/1
5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/a^5 - 2/3*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*B*b^3/(a^3*x) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^4*x) -
1/3*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^2) + 2/15*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*A*b^3/(a^5*x^2) + 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/
(a^3*x^3) - 11/60*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^3) - 1/4*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^4) + 3/20*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*A*b/(a^3*x^4) - 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**6, x)
```

3.623 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=267

$$-\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6}+\frac{b^5B\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}-\frac{5ab^4B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}-\frac{5a^2b^3B\sqrt{a^2+2a}}{x^2(a+b}$$

Rubi [A] time = 0.08, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 78, 43}

$$-\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6}-\frac{a^5B\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{5a^4bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{10a^3b^2B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{5a^2b^3B\sqrt{a^2+2abx+b^2x^2}}{x^2(a+bx)}-\frac{5ab^4B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^5B\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^7,x]
```

```
[Out] -(a^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (5*a^4*b*B*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (10*a^3*b^2*B*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (5*a^2*b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(x^2*(a + b*x)) - (5*a*b^4*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*
x)) - (A*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*a*x^6) + (b^5*B*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^7}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=-\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6}+\frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^5}{x^6}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=-\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6}+\frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{a^5b^5}{x^6}+\frac{5a^4b^6}{x^5}\right.}{b^4\left(ab+\right.}$$

$$=-\frac{a^5B\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{5a^4bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{10a^3b^2B\sqrt{a^2+2}}{3x^3(a+}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.48

$$-\frac{\sqrt{(a+bx)^2}\left(2a^5(5A+6Bx)+15a^4bx(4A+5Bx)+50a^3b^2x^2(3A+4Bx)+100a^2b^3x^3(2A+3Bx)+150ab^4x^4(A+2Bx)+60Ab^5x^5-60b^5Bx^6\log(x)\right)}{60x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(60*A*b^5*x^5 + 150*a*b^4*x^4*(A + 2*B*x) + 100*a^
2*b^3*x^3*(2*A + 3*B*x) + 50*a^3*b^2*x^2*(3*A + 4*B*x) + 15*a^4*b*x*(4*A +
5*B*x) + 2*a^5*(5*A + 6*B*x) - 60*b^5*B*x^6*Log[x]))/(x^6*(a + b*x))
```

IntegrateAlgebraic [B] time = 5.56, size = 2809, normalized size = 10.52

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^7,x]
```

```
[Out] (8*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-10*a^10*A*b - 110*a^9*A*b^2*x - 12*a
^10*b*B*x - 550*a^8*A*b^3*x^2 - 135*a^9*b^2*B*x^2 - 1650*a^7*A*b^4*x^3 - 69
5*a^8*b^3*B*x^3 - 3300*a^6*A*b^5*x^4 - 2170*a^7*b^4*B*x^4 - 4620*a^5*A*b^6*
x^5 - 4610*a^6*b^5*B*x^5 - 4610*a^4*A*b^7*x^6 - 6887*a^5*b^6*B*x^6 - 3250*a
^3*A*b^8*x^7 - 7075*a^4*b^7*B*x^7 - 1550*a^2*A*b^9*x^8 - 4700*a^3*b^8*B*x^8
 - 450*a*A*b^10*x^9 - 1800*a^2*b^9*B*x^9 - 60*A*b^11*x^10 - 300*a*b^10*B*x^
10) + 8*b^5*Sqrt[b^2]*(10*a^11*A + 120*a^10*A*b*x + 12*a^11*B*x + 660*a^9*A
*b^2*x^2 + 147*a^10*b*B*x^2 + 2200*a^8*A*b^3*x^3 + 830*a^9*b^2*B*x^3 + 4950
*a^7*A*b^4*x^4 + 2865*a^8*b^3*B*x^4 + 7920*a^6*A*b^5*x^5 + 6780*a^7*b^4*B*x
^5 + 9230*a^5*A*b^6*x^6 + 11497*a^6*b^5*B*x^6 + 7860*a^4*A*b^7*x^7 + 13962*
a^5*b^6*B*x^7 + 4800*a^3*A*b^8*x^8 + 11775*a^4*b^7*B*x^8 + 2000*a^2*A*b^9*x
^9 + 6500*a^3*b^8*B*x^9 + 510*a*A*b^10*x^10 + 2100*a^2*b^9*B*x^10 + 60*A*b^
11*x^11 + 300*a*b^10*B*x^11))/(15*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^
2]*(-32*a^5*b^5 - 160*a^4*b^6*x - 320*a^3*b^7*x^2 - 320*a^2*b^8*x^3 - 160*a
*b^9*x^4 - 32*b^10*x^5) + 15*x^6*(32*a^6*b^6 + 192*a^5*b^7*x + 480*a^4*b^8*
x^2 + 640*a^3*b^9*x^3 + 480*a^2*b^10*x^4 + 192*a*b^11*x^5 + 32*b^12*x^6)) +
 (b^5*B*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (b^4*Sqr
t[b^2]*B*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/2 - (a^12*b
^5*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b
*x + b^2*x^2])^6) - (a^12*b^4*Sqrt[b^2]*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^
6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) + (3*a^10*b^5*B*(-(S
```

```
qrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*Log[a - Sqrt[b^2]*x + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2
])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) + (3*a^10*b^4*Sqr
t[b^2]*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*Log[a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) - (1
5*a^8*b^5*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*Log[a - Sqrt
[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6)
 - (15*a^8*b^4*Sqrt[b^2]*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])
^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^2]
*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])^6) + (10*a^6*b^5*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*
x^2])^6*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])^6) + (10*a^6*b^4*Sqrt[b^2]*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2
*a*b*x + b^2*x^2])^6*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/
((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])^6) - (15*a^4*b^5*B*(-(Sqrt[b^2]*x) + Sqrt[a^2
+ 2*a*b*x + b^2*x^2])^8*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/(2*(-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) - (15*a^4*b^4*Sqrt[b^2]*B*(-(Sqrt[b^2]
*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^8*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a
*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6*(
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) + (3*a^2*b^5*B*(-(Sqrt[
b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^10*Log[a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^
6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) + (3*a^2*b^4*Sqrt[b^
2]*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^10*Log[a - Sqrt[b^2]*
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) - (b^5*
B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^12*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6) - (b^4*S
qrt[b^2]*B*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^12*Log[a - Sqrt
[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2])^6*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^6)
```

fricas [A] time = 0.41, size = 121, normalized size = 0.45

$$\frac{60\,Bb^5x^6\log(x) - 10\,Aa^5 - 60\left(5\,Bab^4 + Ab^5\right)x^5 - 150\left(2\,Ba^2b^3 + Aab^4\right)x^4 - 200\left(Ba^3b^2 + Aa^2b^3\right)x^3 - 75\left(Ba^4b + 2\,Aa^3b^2\right)x^2 - 12\left(Ba^5 + 5\,Aa^4b\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^5*x^6*log(x) - 10*A*a^5 - 60*(5*B*a*b^4 + A*b^5)*x^5 - 150*(2*
B*a^2*b^3 + A*a*b^4)*x^4 - 200*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 75*(B*a^4*b +
2*A*a^3*b^2)*x^2 - 12*(B*a^5 + 5*A*a^4*b)*x)/x^6
```

giac [A] time = 0.17, size = 191, normalized size = 0.72

$$Bb^5\log(|x|)\,\mathrm{sgn}(bx+a) - \frac{10\,Aa^5\mathrm{sgn}(bx+a) + 60\left(5\,Bab^4\mathrm{sgn}(bx+a) + Ab^5\mathrm{sgn}(bx+a)\right)x^5 + 150\left(2\,Ba^2b^3\mathrm{sgn}(bx+a) + Aab^4\mathrm{sgn}(bx+a)\right)x^4 + 200\left(Ba^3b^2\mathrm{sgn}(bx+a) + Aa^2b^3\mathrm{sgn}(bx+a)\right)x^3 + 75\left(Ba^4b\,\mathrm{sgn}(bx+a) + 2\,Aa^3b^2\mathrm{sgn}(bx+a)\right)x^2 + 12\left(Ba^5\mathrm{sgn}(bx+a) + 5\,Aa^4b\,\mathrm{sgn}(bx+a)\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] B*b^5*log(abs(x))*sgn(b*x + a) - 1/60*(10*A*a^5*sgn(b*x + a) + 60*(5*B*a*b^
4*sgn(b*x + a) + A*b^5*sgn(b*x + a))*x^5 + 150*(2*B*a^2*b^3*sgn(b*x + a) +
A*a*b^4*sgn(b*x + a))*x^4 + 200*(B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x
```

```
 + a))*x^3 + 75*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 + 12*
(B*a^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^6
```

maple [A] time = 0.06, size = 142, normalized size = 0.53

$$-\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(-60B\,b^5x^6\ln(x)+60A\,b^5x^5+300Ba\,b^4x^5+150Aa\,b^4x^4+300B\,a^2b^3x^4+200A\,a^2b^3x^3+200B\,a^3b^2x^3+150A\,a^3b^2x^2+75B\,a^4b\,x^2+60A\,a^4bx+12B\,a^5x+10A\,a^5\right)}{60\,(bx+a)^5\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x)
```

```
[Out] -1/60*((b*x+a)^2)^(5/2)*(-60*B*b^5*ln(x)*x^6+60*A*b^5*x^5+300*B*a*b^4*x^5+1
50*A*a*b^4*x^4+300*B*a^2*b^3*x^4+200*A*a^2*b^3*x^3+200*B*a^3*b^2*x^3+150*A*
a^3*b^2*x^2+75*B*a^4*b*x^2+60*A*a^4*b*x+12*B*a^5*x+10*A*a^5)/(b*x+a)^5/x^6
```

maxima [B] time = 0.57, size = 554, normalized size = 2.07

$$(-1)^{2b^2x+2ab}Bb^5\log\left(2b^2x+2ab\right)-(-1)^{2abx+2a^2}Bb^5\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)+\frac{\sqrt{b^2x^2+2abx+a^2}\,Bb^6x}{2a^2}+\frac{3\sqrt{b^2x^2+2abx+a^2}\,Bb^5}{2a}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bb^6x}{4a^4}+\frac{7\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bb^5}{12a^3}-\frac{2\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bb^5}{15a^5}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ab^6}{6a^6}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bb^4}{3a^4x}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ab^5}{6a^5x}+\frac{2\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bb^3}{15a^5x^2}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab^4}{6a^6x^2}-\frac{11\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bb^2}{60a^4x^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab^3}{6a^5x^3}+\frac{3\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bb}{20a^3x^4}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab^2}{6a^4x^4}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}B}{5a^2x^5}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Ab}{6a^3x^5}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}A}{6a^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*b^5*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
B*b^5*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*B*b^6*x/a^2 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^5/a + 1/4*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*b^6*x/a^4 + 7/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b
^5/a^3 - 2/15*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/a^5 + 1/6*(b^2*x^2 + 2*
a*b*x + a^2)^(5/2)*A*b^6/a^6 - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/(a
^4*x) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^5*x) + 2/15*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*A*b^4/(a^6*x^2) - 11/60*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^3) +
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^3) + 3/20*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*B*b/(a^3*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(
a^4*x^4) - 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^5) + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A
/(a^2*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**7, x)
```

3.624 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^8} dx$

Optimal. Leaf size=77

$$\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{6a^2x^6}-\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{6a^2x^6}-\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^8,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*a^2*x^6) - (A*(a
^2 + 2*a*b*x + b^2*x^2)^(7/2))/(7*a^2*x^7)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^8}\,dx &= -\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}-\frac{\left(2Ab^2-2abB\right)\int \frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx}{2ab}\\
&= -\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}-\frac{\left(\left(2Ab^2-2abB\right)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(}{}}{2ab^5\left(ab+b^2x\right)}\\
&= \frac{(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6a^2x^6}-\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 122, normalized size = 1.58

$$-\frac{\sqrt{(a+bx)^2}\left(a^5(6A+7Bx)+7a^4bx(5A+6Bx)+21a^3b^2x^2(4A+5Bx)+35a^2b^3x^3(3A+4Bx)+35ab^4x^4(2A+3Bx)+21b^5x^5(A+2Bx)\right)}{42x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^8,x]
```

```
[Out] -1/42*(Sqrt[(a + b*x)^2]*(21*b^5*x^5*(A + 2*B*x) + 35*a*b^4*x^4*(2*A + 3*B*
x) + 35*a^2*b^3*x^3*(3*A + 4*B*x) + 21*a^3*b^2*x^2*(4*A + 5*B*x) + 7*a^4*b*
x*(5*A + 6*B*x) + a^5*(6*A + 7*B*x)))/(x^7*(a + b*x))
```

IntegrateAlgebraic [B] time = 2.80, size = 780, normalized size = 10.13

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^8,x]
```

```
[Out] (32*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-6*a^11*A*b - 71*a^10*A*b^2*x - 7*a^
11*b*B*x - 384*a^9*A*b^3*x^2 - 84*a^10*b^2*B*x^2 - 1254*a^8*A*b^4*x^3 - 462
*a^9*b^3*B*x^3 - 2750*a^7*A*b^5*x^4 - 1540*a^8*b^4*B*x^4 - 4257*a^6*A*b^6*x
^5 - 3465*a^7*b^5*B*x^5 - 4752*a^5*A*b^7*x^6 - 5544*a^6*b^6*B*x^6 - 3829*a^
4*A*b^8*x^7 - 6461*a^5*b^7*B*x^7 - 2184*a^3*A*b^9*x^8 - 5502*a^4*b^8*B*x^8
- 840*a^2*A*b^10*x^9 - 3360*a^3*b^9*B*x^9 - 196*a*A*b^11*x^10 - 1400*a^2*b^
10*B*x^10 - 21*A*b^12*x^11 - 357*a*b^11*B*x^11 - 42*b^12*B*x^12) + 32*b^6*S
qrt[b^2]*(6*a^12*A + 77*a^11*A*b*x + 7*a^12*B*x + 455*a^10*A*b^2*x^2 + 91*a
^11*b*B*x^2 + 1638*a^9*A*b^3*x^3 + 546*a^10*b^2*B*x^3 + 4004*a^8*A*b^4*x^4
+ 2002*a^9*b^3*B*x^4 + 7007*a^7*A*b^5*x^5 + 5005*a^8*b^4*B*x^5 + 9009*a^6*A
*b^6*x^6 + 9009*a^7*b^5*B*x^6 + 8581*a^5*A*b^7*x^7 + 12005*a^6*b^6*B*x^7 +
6013*a^4*A*b^8*x^8 + 11963*a^5*b^7*B*x^8 + 3024*a^3*A*b^9*x^9 + 8862*a^4*b^
8*B*x^9 + 1036*a^2*A*b^10*x^10 + 4760*a^3*b^9*B*x^10 + 217*a*A*b^11*x^11 +
1757*a^2*b^10*B*x^11 + 21*A*b^12*x^12 + 399*a*b^11*B*x^12 + 42*b^12*B*x^13)
)/(21*Sqrt[b^2]*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-64*a^6*b^6 - 384*a^5*b^
7*x - 960*a^4*b^8*x^2 - 1280*a^3*b^9*x^3 - 960*a^2*b^10*x^4 - 384*a*b^11*x^
5 - 64*b^12*x^6) + 21*x^7*(64*a^7*b^7 + 448*a^6*b^8*x + 1344*a^5*b^9*x^2 +
2240*a^4*b^10*x^3 + 2240*a^3*b^11*x^4 + 1344*a^2*b^12*x^5 + 448*a*b^13*x^6
+ 64*b^14*x^7))
```

fricas [A] time = 0.40, size = 119, normalized size = 1.55

$$-\frac{42\,Bb^5x^6+6\,Aa^5+21\left(5\,Bab^4+Ab^5\right)x^5+70\left(2\,Ba^2b^3+Aab^4\right)x^4+105\left(Ba^3b^2+Aa^2b^3\right)x^3+42\left(Ba^4b+2\,Aa^3b^2\right)x^2+7\left(Ba^5+5\,Aa^4b\right)x}{42\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] -1/42*(42*B*b^5*x^6 + 6*A*a^5 + 21*(5*B*a*b^4 + A*b^5)*x^5 + 70*(2*B*a^2*b^
3 + A*a*b^4)*x^4 + 105*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 42*(B*a^4*b + 2*A*a^3*
b^2)*x^2 + 7*(B*a^5 + 5*A*a^4*b)*x)/x^7
```

giac [B] time = 0.22, size = 221, normalized size = 2.87

$$-\frac{\left(7\,Bab^6-Ab^7\right)\mathrm{sgn}\left(bx+a\right)}{42\,a^2}-\frac{42\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+105\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+21\,Ab^5x^5\mathrm{sgn}\left(bx+a\right)+140\,Ba^2b^3x^4\mathrm{sgn}\left(bx+a\right)+70\,Aab^4x^4\mathrm{sgn}\left(bx+a\right)+105\,Ba^3b^2x^3\mathrm{sgn}\left(bx+a\right)+105\,Aa^2b^3x^3\mathrm{sgn}\left(bx+a\right)+42\,Ba^4bx^2\mathrm{sgn}\left(bx+a\right)+84\,Aa^3b^2x^2\mathrm{sgn}\left(bx+a\right)+7\,Ba^5x\mathrm{sgn}\left(bx+a\right)+35\,Aa^4bx\mathrm{sgn}\left(bx+a\right)+6\,Aa^5\mathrm{sgn}\left(bx+a\right)}{42\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] -1/42*(7*B*a*b^6 - A*b^7)*sgn(b*x + a)/a^2 - 1/42*(42*B*b^5*x^6*sgn(b*x + a
) + 105*B*a*b^4*x^5*sgn(b*x + a) + 21*A*b^5*x^5*sgn(b*x + a) + 140*B*a^2*b^
```

```
3*x^4*sgn(b*x + a) + 70*A*a*b^4*x^4*sgn(b*x + a) + 105*B*a^3*b^2*x^3*sgn(b*
x + a) + 105*A*a^2*b^3*x^3*sgn(b*x + a) + 42*B*a^4*b*x^2*sgn(b*x + a) + 84*
A*a^3*b^2*x^2*sgn(b*x + a) + 7*B*a^5*x*sgn(b*x + a) + 35*A*a^4*b*x*sgn(b*x
+ a) + 6*A*a^5*sgn(b*x + a))/x^7
```

maple [B] time = 0.08, size = 140, normalized size = 1.82

$$-\frac{\left(42 B \,b^{5} x^{6}+21 A \,b^{5} x^{5}+105 B a \,b^{4} x^{5}+70 A a \,b^{4} x^{4}+140 B \,a^{2} b^{3} x^{4}+105 A \,a^{2} b^{3} x^{3}+105 B \,a^{3} b^{2} x^{3}+84 A \,a^{3} b^{2} x^{2}+42 B \,a^{4} b \,x^{2}+35 A \,a^{4} b x+7 B \,a^{5} x+6 A \,a^{5}\right) \left(\left(b x+a\right)^{2}\right)^{\frac{5}{2}}}{42 \left(b x+a\right)^{5} x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x)
```

```
[Out] -1/42*(42*B*b^5*x^6+21*A*b^5*x^5+105*B*a*b^4*x^5+70*A*a*b^4*x^4+140*B*a^2*b
^3*x^4+105*A*a^2*b^3*x^3+105*B*a^3*b^2*x^3+84*A*a^3*b^2*x^2+42*B*a^4*b*x^2+
35*A*a^4*b*x+7*B*a^5*x+6*A*a^5)*((b*x+a)^2)^(5/2)/x^7/(b*x+a)^5
```

maxima [B] time = 0.58, size = 435, normalized size = 5.65

$$\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{6}}{6 a^{6}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{7}}{6 a^{7}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{5}}{6 a^{5} x}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{6}}{6 a^{6} x}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{4}}{6 a^{6} x^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{5}}{6 a^{7} x^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{3}}{6 a^{5} x^{3}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{4}}{6 a^{6} x^{3}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{2}}{6 a^{4} x^{4}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{3}}{6 a^{5} x^{4}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b}{6 a^{3} x^{5}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{2}}{6 a^{4} x^{5}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B}{6 a^{2} x^{6}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b}{6 a^{3} x^{6}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A}{7 a^{2} x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^6/a^6 - 1/6*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*A*b^7/a^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/(a^5*x) - 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^6*x) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^4/(a^6*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7
*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^3) - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^3) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2
)*B*b^2/(a^4*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^4) + 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*A*b^2/(a^4*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^
6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^6) - 1/7*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*A/(a^2*x^7)
```

mupad [B] time = 1.33, size = 284, normalized size = 3.69

$$-\frac{\left(\frac{B a^{5}}{6}+\frac{5 A b a^{4}}{6}\right) \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{x^{6} \left(a+b x\right)}-\frac{\left(\frac{A b^{5}}{2}+\frac{5 B a b^{4}}{2}\right) \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{x^{2} \left(a+b x\right)}-\frac{A a^{5} \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{7 x^{7} \left(a+b x\right)}-\frac{B b^{5} \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{x \left(a+b x\right)}-\frac{5 a b^{3} \left(A b+2 B a\right) \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{3 x^{3} \left(a+b x\right)}-\frac{a^{3} b \left(2 A b+B a\right) \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{x^{5} \left(a+b x\right)}-\frac{5 a^{2} b^{2} \left(A b+B a\right) \sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{2 x^{4} \left(a+b x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^8,x)
```

```
[Out] - (((B*a^5)/6 + (5*A*a^4*b)/6)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(a + b
*x)) - (((A*b^5)/2 + (5*B*a*b^4)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^2*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (B*
b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x*(a + b*x)) - (5*a*b^3*(A*b + 2*B*a)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^3*(a + b*x)) - (a^3*b*(2*A*b + B*a)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*x)) - (5*a^2*b^2*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^4*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}{x^{8}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**8, x)
```

3.625 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=130

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4aB)}{28a^2x^7}-\frac{A\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{8ax^8}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4a}{168a^3x^6}$$

Rubi [A] time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {770, 78, 45, 37}

$$-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4aB)}{168a^3x^6}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4aB)}{28a^2x^7}-\frac{A\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{8ax^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^9,x]
```

```
[Out] -(A*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*a*x^8) + ((A*b - 4*a*B)*(
a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(28*a^2*x^7) - (b*(A*b - 4*a*B)*(
a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(168*a^3*x^6)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^9}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8ax^8} + \frac{\left(\left(-2Ab^2+8abB\right)\sqrt{a^2+2abx+b^2}\right.}{8ab^5\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8ax^8} + \frac{(Ab-4aB)(a+bx)^5\sqrt{a^2+2abx+}}{28a^2x^7}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8ax^8} + \frac{(Ab-4aB)(a+bx)^5\sqrt{a^2+2abx+}}{28a^2x^7}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.96

$$-\frac{\sqrt{(a+bx)^2}\left(3a^5(7A+8Bx)+20a^4bx(6A+7Bx)+56a^3b^2x^2(5A+6Bx)+84a^2b^3x^3(4A+5Bx)+70ab^4x^4(3A+4Bx)+28b^5x^5(2A+3Bx)\right)}{168x^8(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^9,x]
```

```
[Out] -1/168*(Sqrt[(a + b*x)^2]*(28*b^5*x^5*(2*A + 3*B*x) + 70*a*b^4*x^4*(3*A + 4
*B*x) + 84*a^2*b^3*x^3*(4*A + 5*B*x) + 56*a^3*b^2*x^2*(5*A + 6*B*x) + 20*a^
4*b*x*(6*A + 7*B*x) + 3*a^5*(7*A + 8*B*x)))/(x^8*(a + b*x))
```

IntegrateAlgebraic [B] time = 3.29, size = 850, normalized size = 6.54

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^9,x]
```

```
[Out] (16*b^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-21*a^12*A*b - 267*a^11*A*b^2*x - 24
*a^12*b*B*x - 1561*a^10*A*b^3*x^2 - 308*a^11*b^2*B*x^2 - 5551*a^9*A*b^4*x^3
 - 1820*a^10*b^3*B*x^3 - 13377*a^8*A*b^5*x^4 - 6552*a^9*b^4*B*x^4 - 23023*a
^7*A*b^6*x^5 - 16016*a^8*b^5*B*x^5 - 29029*a^6*A*b^7*x^6 - 28028*a^7*b^6*B*
x^6 - 27027*a^5*A*b^8*x^7 - 36036*a^6*b^7*B*x^7 - 18446*a^4*A*b^9*x^8 - 343
24*a^5*b^8*B*x^8 - 9002*a^3*A*b^10*x^9 - 24052*a^4*b^9*B*x^9 - 2982*a^2*A*b
^11*x^10 - 12096*a^3*b^10*B*x^10 - 602*a*A*b^12*x^11 - 4144*a^2*b^11*B*x^11
 - 56*A*b^13*x^12 - 868*a*b^12*B*x^12 - 84*b^13*B*x^13) + 16*b^7*Sqrt[b^2]*
(21*a^13*A + 288*a^12*A*b*x + 24*a^13*B*x + 1828*a^11*A*b^2*x^2 + 332*a^12*
b*B*x^2 + 7112*a^10*A*b^3*x^3 + 2128*a^11*b^2*B*x^3 + 18928*a^9*A*b^4*x^4 +
 8372*a^10*b^3*B*x^4 + 36400*a^8*A*b^5*x^5 + 22568*a^9*b^4*B*x^5 + 52052*a^
7*A*b^6*x^6 + 44044*a^8*b^5*B*x^6 + 56056*a^6*A*b^7*x^7 + 64064*a^7*b^6*B*x
^7 + 45473*a^5*A*b^8*x^8 + 70360*a^6*b^7*B*x^8 + 27448*a^4*A*b^9*x^9 + 5837
6*a^5*b^8*B*x^9 + 11984*a^3*A*b^10*x^10 + 36148*a^4*b^9*B*x^10 + 3584*a^2*A
*b^11*x^11 + 16240*a^3*b^10*B*x^11 + 658*a*A*b^12*x^12 + 5012*a^2*b^11*B*x^
12 + 56*A*b^13*x^13 + 952*a*b^12*B*x^13 + 84*b^13*B*x^14))/(21*Sqrt[b^2]*x^
8*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-128*a^7*b^7 - 896*a^6*b^8*x - 2688*a^5*b^
9*x^2 - 4480*a^4*b^10*x^3 - 4480*a^3*b^11*x^4 - 2688*a^2*b^12*x^5 - 896*a*b
^13*x^6 - 128*b^14*x^7) + 21*x^8*(128*a^8*b^8 + 1024*a^7*b^9*x + 3584*a^6*b
^10*x^2 + 7168*a^5*b^11*x^3 + 8960*a^4*b^12*x^4 + 7168*a^3*b^13*x^5 + 3584*
a^2*b^14*x^6 + 1024*a*b^15*x^7 + 128*b^16*x^8))
```

fricas [A] time = 0.44, size = 119, normalized size = 0.92

$$-\frac{84\,Bb^5x^6+21\,Aa^5+56\left(5\,Bab^4+Ab^5\right)x^5+210\left(2\,Ba^2b^3+Aab^4\right)x^4+336\left(Ba^3b^2+Aa^2b^3\right)x^3+140\left(Ba^4b+2\,Aa^3b^2\right)x^2+24\left(Ba^5+5\,Aa^4b\right)x}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] -1/168*(84*B*b^5*x^6 + 21*A*a^5 + 56*(5*B*a*b^4 + A*b^5)*x^5 + 210*(2*B*a^2
*b^3 + A*a*b^4)*x^4 + 336*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 140*(B*a^4*b + 2*A*
a^3*b^2)*x^2 + 24*(B*a^5 + 5*A*a^4*b)*x)/x^8
```

giac [B] time = 0.17, size = 221, normalized size = 1.70

$$\frac{\left(4 Bab^7 - Ab^8\right)\mathrm{sgn}\left(bx + a\right)}{168 a^3} - \frac{84 Bb^5x^6\mathrm{sgn}\left(bx + a\right) + 280 Bab^4x^5\mathrm{sgn}\left(bx + a\right) + 56 Ab^5x^5\mathrm{sgn}\left(bx + a\right) + 420 Ba^2b^3x^4\mathrm{sgn}\left(bx + a\right) + 210 Aab^4x^4\mathrm{sgn}\left(bx + a\right) + 336 Ba^3b^2x^3\mathrm{sgn}\left(bx + a\right) + 336 Aa^2b^3x^3\mathrm{sgn}\left(bx + a\right) + 140 Ba^4bx^2\mathrm{sgn}\left(bx + a\right) + 280 Aa^3b^2x^2\mathrm{sgn}\left(bx + a\right) + 24 Ba^5x\mathrm{sgn}\left(bx + a\right) + 120 Aa^4bx\mathrm{sgn}\left(bx + a\right) + 21 Aa^5\mathrm{sgn}\left(bx + a\right)}{168 x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] 1/168*(4*B*a*b^7 - A*b^8)*sgn(b*x + a)/a^3 - 1/168*(84*B*b^5*x^6*sgn(b*x +
a) + 280*B*a*b^4*x^5*sgn(b*x + a) + 56*A*b^5*x^5*sgn(b*x + a) + 420*B*a^2*b
^3*x^4*sgn(b*x + a) + 210*A*a*b^4*x^4*sgn(b*x + a) + 336*B*a^3*b^2*x^3*sgn(
b*x + a) + 336*A*a^2*b^3*x^3*sgn(b*x + a) + 140*B*a^4*b*x^2*sgn(b*x + a) +
280*A*a^3*b^2*x^2*sgn(b*x + a) + 24*B*a^5*x*sgn(b*x + a) + 120*A*a^4*b*x*sg
n(b*x + a) + 21*A*a^5*sgn(b*x + a))/x^8
```

maple [A] time = 0.05, size = 140, normalized size = 1.08

$$-\frac{\left(84 B\, b^5 x^6 + 56 A\, b^5 x^5 + 280 B a\, b^4 x^5 + 210 A a\, b^4 x^4 + 420 B\, a^2 b^3 x^4 + 336 A\, a^2 b^3 x^3 + 336 B\, a^3 b^2 x^3 + 280 A\, a^3 b^2 x^2 + 140 B\, a^4 b\, x^2 + 120 A\, a^4 b x + 24 B\, a^5 x + 21 A\, a^5\right) \left(\left(bx + a\right)^2\right)^{\frac{5}{2}}}{168 \left(bx + a\right)^5 x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x)
```

```
[Out] -1/168*(84*B*b^5*x^6+56*A*b^5*x^5+280*B*a*b^4*x^5+210*A*a*b^4*x^4+420*B*a^2
*b^3*x^4+336*A*a^2*b^3*x^3+336*B*a^3*b^2*x^3+280*A*a^3*b^2*x^2+140*B*a^4*b*
x^2+120*A*a^4*b*x+24*B*a^5*x+21*A*a^5)*((b*x+a)^2)^(5/2)/x^8/(b*x+a)^5
```

maxima [B] time = 0.63, size = 495, normalized size = 3.81

$$-\frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Bb^7}{6\,a^7} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Ab^8}{6\,a^8} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Bb^6}{6\,a^6x} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Ab^7}{6\,a^7x} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Bb^5}{6\,a^7x^2} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Ab^6}{6\,a^8x^2} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Bb^4}{6\,a^6x^3} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Ab^5}{6\,a^7x^3} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Bb^3}{6\,a^5x^4} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Ab^4}{6\,a^6x^4} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Bb^2}{6\,a^4x^5} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Ab^3}{6\,a^5x^5} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Bb}{6\,a^3x^6} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Ab^2}{6\,a^4x^6} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} B}{7\,a^2x^7} + \frac{9\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} Ab}{56\,a^3x^7} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} A}{8\,a^2x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^7/a^7 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b^8/a^8 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^6/(a^6*x) + 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^7*x) + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*B*b^5/(a^7*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^
8*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^4/(a^6*x^3) + 1/6*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^3) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*B*b^3/(a^5*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^4) -
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^5) + 1/6*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*A*b^3/(a^5*x^5) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a
^3*x^6) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^6) - 1/7*(b^2*x^
2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^7) + 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*A*b/(a^3*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^8)
```

mupad [B] time = 1.31, size = 284, normalized size = 2.18

$$-\frac{\left(\frac{B\,a^5}{7}+\frac{5\,A\,b\,a^4}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{3}+\frac{5\,B\,a\,b^4}{3}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^3\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{2\,x^2\,\left(a+b\,x\right)}-\frac{5\,a\,b^3\,\left(A\,b+2\,B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,x^4\,\left(a+b\,x\right)}-\frac{5\,a^3\,b\,\left(2\,A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,x^6\,\left(a+b\,x\right)}-\frac{2\,a^2\,b^2\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^9,x)
```

```
[Out] - (((B*a^5)/7 + (5*A*a^4*b)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^7*(a + b
*x)) - (((A*b^5)/3 + (5*B*a*b^4)/3)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^3*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (B*
b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^2*(a + b*x)) - (5*a*b^3*(A*b + 2*
B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x)) - (5*a^3*b*(2*A*b +
 B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (2*a^2*b^2*(A*b
+ B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{5}{2}}}{x^9}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**9,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**9, x)
```

3.626 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=304

$$-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^6(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{4x^4(a+bx)}-\frac{ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{x^5(a+bx)}-\frac{b^5 B}{}$$

Rubi [A] time = 0.12, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{8x^8(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{7x^7(a+bx)}-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^6(a+bx)}-\frac{ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{x^5(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{4x^4(a+bx)}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^10,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (5*a^2*b^2*(A*b + a*B)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^6*(a + b*x)) - (a*b^3*(A*b + 2*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(x^5*(a + b*x)) - (b^4*(A*b + 5*a*B)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(3*x^3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{10}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{10}}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{10}}+\frac{a^4b^5(5Ab+aB)}{x^9}+\frac{5a^3b^6(2Ab+aB)}{x^8}+\frac{10a^2b^7(Ab+aB)}{x^7}\right.}{b^4\left(ab+b^2x\right)}\\
&= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{5a^3b(2A}{}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(7a^5(8A+9Bx)+45a^4bx(7A+8Bx)+120a^3b^2x^2(6A+7Bx)+168a^2b^3x^3(5A+6Bx)+126ab^4x^4(4A+5Bx)+42b^5x^5(3A+4Bx)\right)}{504x^9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^10,x]
```

```
[Out] -1/504*(Sqrt[(a + b*x)^2]*(42*b^5*x^5*(3*A + 4*B*x) + 126*a*b^4*x^4*(4*A +
5*B*x) + 168*a^2*b^3*x^3*(5*A + 6*B*x) + 120*a^3*b^2*x^2*(6*A + 7*B*x) + 45
*a^4*b*x*(7*A + 8*B*x) + 7*a^5*(8*A + 9*B*x)))/(x^9*(a + b*x))
```

IntegrateAlgebraic [**B**] time = 3.52, size = 920, normalized size = 3.03

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^10,x]
```

```
[Out] (32*b^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-56*a^13*A*b - 763*a^12*A*b^2*x - 63
*a^13*b*B*x - 4808*a^11*A*b^3*x^2 - 864*a^12*b^2*B*x^2 - 18556*a^10*A*b^4*x
^3 - 5484*a^11*b^3*B*x^3 - 48944*a^9*A*b^5*x^4 - 21336*a^10*b^4*B*x^4 - 931
84*a^8*A*b^6*x^5 - 56784*a^9*b^5*B*x^5 - 131768*a^7*A*b^7*x^6 - 109200*a^8*
b^6*B*x^6 - 140140*a^6*A*b^8*x^7 - 156156*a^7*b^7*B*x^7 - 112112*a^5*A*b^9*
x^8 - 168168*a^6*b^8*B*x^8 - 66639*a^4*A*b^10*x^9 - 136419*a^5*b^9*B*x^9 -
28608*a^3*A*b^11*x^10 - 82344*a^4*b^10*B*x^10 - 8400*a^2*A*b^12*x^11 - 3595
2*a^3*b^11*B*x^11 - 1512*a*A*b^13*x^12 - 10752*a^2*b^12*B*x^12 - 126*A*b^14
*x^13 - 1974*a*b^13*B*x^13 - 168*b^14*B*x^14) + 32*b^8*Sqrt[b^2]*(56*a^14*A
 + 819*a^13*A*b*x + 63*a^14*B*x + 5571*a^12*A*b^2*x^2 + 927*a^13*b*B*x^2 +
23364*a^11*A*b^3*x^3 + 6348*a^12*b^2*B*x^3 + 67500*a^10*A*b^4*x^4 + 26820*a
^11*b^3*B*x^4 + 142128*a^9*A*b^5*x^5 + 78120*a^10*b^4*B*x^5 + 224952*a^8*A*
b^6*x^6 + 165984*a^9*b^5*B*x^6 + 271908*a^7*A*b^7*x^7 + 265356*a^8*b^6*B*x^
7 + 252252*a^6*A*b^8*x^8 + 324324*a^7*b^7*B*x^8 + 178751*a^5*A*b^9*x^9 + 30
4587*a^6*b^8*B*x^9 + 95247*a^4*A*b^10*x^10 + 218763*a^5*b^9*B*x^10 + 37008*
a^3*A*b^11*x^11 + 118296*a^4*b^10*B*x^11 + 9912*a^2*A*b^12*x^12 + 46704*a^3
*b^11*B*x^12 + 1638*a*A*b^13*x^13 + 12726*a^2*b^12*B*x^13 + 126*A*b^14*x^14
 + 2142*a*b^13*B*x^14 + 168*b^14*B*x^15))/(63*Sqrt[b^2]*x^9*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]*(-256*a^8*b^8 - 2048*a^7*b^9*x - 7168*a^6*b^10*x^2 - 14336*a
^5*b^11*x^3 - 17920*a^4*b^12*x^4 - 14336*a^3*b^13*x^5 - 7168*a^2*b^14*x^6 -
 2048*a*b^15*x^7 - 256*b^16*x^8) + 63*x^9*(256*a^9*b^9 + 2304*a^8*b^10*x +
9216*a^7*b^11*x^2 + 21504*a^6*b^12*x^3 + 32256*a^5*b^13*x^4 + 32256*a^4*b^1
4*x^5 + 21504*a^3*b^15*x^6 + 9216*a^2*b^16*x^7 + 2304*a*b^17*x^8 + 256*b^18
*x^9))
```

fricas [**A**] time = 0.41, size = 119, normalized size = 0.39

$$-\frac{168\,Bb^5x^6 + 56\,Aa^5 + 126\,\left(5\,Bab^4 + Ab^5\right)x^5 + 504\,\left(2\,Ba^2b^3 + Aab^4\right)x^4 + 840\,\left(Ba^3b^2 + Aa^2b^3\right)x^3 + 360\,\left(Ba^4b + 2\,Aa^3b^2\right)x^2 + 63\,\left(Ba^5 + 5\,Aa^4b\right)x}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] -1/504*(168*B*b^5*x^6 + 56*A*a^5 + 126*(5*B*a*b^4 + A*b^5)*x^5 + 504*(2*B*a
^2*b^3 + A*a*b^4)*x^4 + 840*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 360*(B*a^4*b + 2*
A*a^3*b^2)*x^2 + 63*(B*a^5 + 5*A*a^4*b)*x)/x^9
```

giac [**A**] time = 0.17, size = 221, normalized size = 0.73

$$-\frac{\left(3\,Bab^8 - Ab^9\right)\mathrm{sgn}\left(bx + a\right)}{504\,a^4} - \frac{168\,Bb^5x^6\mathrm{sgn}\left(bx + a\right) + 630\,Bab^4x^5\mathrm{sgn}\left(bx + a\right) + 126\,Ab^5x^5\mathrm{sgn}\left(bx + a\right) + 1008\,Ba^2b^3x^4\mathrm{sgn}\left(bx + a\right) + 504\,Aab^4x^4\mathrm{sgn}\left(bx + a\right) + 840\,Ba^3b^2x^3\mathrm{sgn}\left(bx + a\right) + 840\,Aa^2b^3x^3\mathrm{sgn}\left(bx + a\right) + 360\,Ba^4bx^2\mathrm{sgn}\left(bx + a\right) + 720\,Aa^3b^2x^2\mathrm{sgn}\left(bx + a\right) + 63\,Ba^5x\mathrm{sgn}\left(bx + a\right) + 315\,Aa^4bx\mathrm{sgn}\left(bx + a\right) + 56\,Aa^5\mathrm{sgn}\left(bx + a\right)}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(3*B*a*b^8 - A*b^9)*sgn(b*x + a)/a^4 - 1/504*(168*B*b^5*x^6*sgn(b*x
+ a) + 630*B*a*b^4*x^5*sgn(b*x + a) + 126*A*b^5*x^5*sgn(b*x + a) + 1008*B*a
```

```
^2*b^3*x^4*sgn(b*x + a) + 504*A*a*b^4*x^4*sgn(b*x + a) + 840*B*a^3*b^2*x^3*
sgn(b*x + a) + 840*A*a^2*b^3*x^3*sgn(b*x + a) + 360*B*a^4*b*x^2*sgn(b*x + a
) + 720*A*a^3*b^2*x^2*sgn(b*x + a) + 63*B*a^5*x*sgn(b*x + a) + 315*A*a^4*b*
x*sgn(b*x + a) + 56*A*a^5*sgn(b*x + a))/x^9
```

maple [**A**] time = 0.05, size = 140, normalized size = 0.46

$$-\frac{\left(168B\,b^5x^6+126A\,b^5x^5+630Ba\,b^4x^5+504Aa\,b^4x^4+1008B\,a^2b^3x^4+840A\,a^2b^3x^3+840B\,a^3b^2x^3+720A\,a^3b^2x^2+360B\,a^4b\,x^2+315A\,a^4bx+63B\,a^5x+56A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{504\,(bx+a)^5\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x)
```

```
[Out] -1/504*(168*B*b^5*x^6+126*A*b^5*x^5+630*B*a*b^4*x^5+504*A*a*b^4*x^4+1008*B*
a^2*b^3*x^4+840*A*a^2*b^3*x^3+840*B*a^3*b^2*x^3+720*A*a^3*b^2*x^2+360*B*a^4
*b*x^2+315*A*a^4*b*x+63*B*a^5*x+56*A*a^5)*((b*x+a)^2)^(5/2)/x^9/(b*x+a)^5
```

maxima [**B**] time = 0.74, size = 555, normalized size = 1.83

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^8}{6\,a^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^9}{6\,a^9}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^7}{6\,a^7x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^8}{6\,a^8x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb^6}{6\,a^8x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^7}{6\,a^9x^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb^5}{6\,a^7x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^6}{6\,a^8x^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb^4}{6\,a^6x^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^5}{6\,a^7x^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb^3}{6\,a^5x^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^4}{6\,a^6x^5}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb^2}{6\,a^4x^6}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^3}{6\,a^5x^6}+\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bb}{56\,a^3x^7}-\frac{83\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab^2}{504\,a^4x^7}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}B}{8\,a^2x^8}+\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ab}{72\,a^3x^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}A}{9\,a^2x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^8/a^8 - 1/6*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*A*b^9/a^9 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^7/(a^7*x) - 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^8/(a^8*x) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^6/(a^8*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9
*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^5/(a^7*x^3) - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^3) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2
)*B*b^4/(a^6*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^4) + 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^5) - 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*A*b^4/(a^6*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(
a^4*x^6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^6) + 9/56*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^7) - 83/504*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*A*b^2/(a^4*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^8) +
11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^8) - 1/9*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*A/(a^2*x^9)
```

mupad [**B**] time = 1.30, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{8}+\frac{5\,A\,b\,a^4}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{4}+\frac{5\,B\,a\,b^4}{4}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^4\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,x^3\,\left(a+b\,x\right)}-\frac{a\,b^3\,\left(A\,b+2\,B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{5\,a^3\,b\,\left(2\,A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-\frac{5\,a^2\,b^2\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,x^6\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^10,x)
```

```
[Out] - (((B*a^5)/8 + (5*A*a^4*b)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^8*(a + b
*x)) - (((A*b^5)/4 + (5*B*a*b^4)/4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^4*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (B*
b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^3*(a + b*x)) - (a*b^3*(A*b + 2*B*
a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*x)) - (5*a^3*b*(2*A*b + B*a
)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (5*a^2*b^2*(A*b + B*
a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^6*(a + b*x))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**10,x)
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**10, x)
```

3.627 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{11}}\,dx$

Optimal. Leaf size=306

$$-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{5x^5(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{6x^6(a+bx)}-$$

Rubi [A] time = 0.11, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{9x^9(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{8x^8(a+bx)}-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{6x^6(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{5x^5(a+bx)}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^11,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (5*a^3*b*(2*A*b + a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (10*a^2*b^2*(A*b + a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (5*a*b^3*(A*b + 2*a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (b^4*(A*b + 5*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(4*x^4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{11}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{11}}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{11}}+\frac{a^4b^5(5Ab+aB)}{x^{10}}+\frac{5a^3b^6(2Ab+aB)}{x^9}+\frac{10a^2b^7(Ab+aB)}{x^8}\right.}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{5a^3b(2A}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(28a^5(9A+10Bx)+175a^4bx(8A+9Bx)+450a^3b^2x^2(7A+8Bx)+600a^2b^3x^3(6A+7Bx)+420ab^4x^4(5A+6Bx)+126b^5x^5(4A+5Bx)\right)}{2520x^{10}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(126*b^5*x^5*(4*A + 5*B*x) + 420*a*b^4*x^4*(5*A
+ 6*B*x) + 600*a^2*b^3*x^3*(6*A + 7*B*x) + 450*a^3*b^2*x^2*(7*A + 8*B*x) +
175*a^4*b*x*(8*A + 9*B*x) + 28*a^5*(9*A + 10*B*x)))/(x^10*(a + b*x))
```

IntegrateAlgebraic [**B**] time = 3.80, size = 990, normalized size = 3.24

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^11,x]
```

```
[Out] (64*b^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-252*a^14*A*b - 3668*a^13*A*b^2*x -
280*a^14*b*B*x - 24822*a^12*A*b^3*x^2 - 4095*a^13*b^2*B*x^2 - 103518*a^11*A
*b^4*x^3 - 27855*a^12*b^3*B*x^3 - 297252*a^10*A*b^5*x^4 - 116820*a^11*b^4*B
*x^4 - 621756*a^9*A*b^6*x^5 - 337500*a^10*b^5*B*x^5 - 977004*a^8*A*b^7*x^6
- 710640*a^9*b^6*B*x^6 - 1171716*a^7*A*b^8*x^7 - 1124760*a^8*b^7*B*x^7 - 10
77804*a^6*A*b^9*x^8 - 1359540*a^7*b^8*B*x^8 - 756756*a^5*A*b^10*x^9 - 12612
60*a^6*b^9*B*x^9 - 399254*a^4*A*b^11*x^10 - 893755*a^5*b^10*B*x^10 - 153486
*a^3*A*b^12*x^11 - 476235*a^4*b^11*B*x^11 - 40644*a^2*A*b^13*x^12 - 185040*
a^3*b^12*B*x^12 - 6636*a*A*b^14*x^13 - 49560*a^2*b^13*B*x^13 - 504*A*b^15*x
^14 - 8190*a*b^14*B*x^14 - 630*b^15*B*x^15) + 64*b^9*Sqrt[b^2]*(252*a^15*A
+ 3920*a^14*A*b*x + 280*a^15*B*x + 28490*a^13*A*b^2*x^2 + 4375*a^14*b*B*x^2
 + 128340*a^12*A*b^3*x^3 + 31950*a^13*b^2*B*x^3 + 400770*a^11*A*b^4*x^4 + 1
44675*a^12*b^3*B*x^4 + 919008*a^10*A*b^5*x^5 + 454320*a^11*b^4*B*x^5 + 1598
760*a^9*A*b^6*x^6 + 1048140*a^10*b^5*B*x^6 + 2148720*a^8*A*b^7*x^7 + 183540
0*a^9*b^6*B*x^7 + 2249520*a^7*A*b^8*x^8 + 2484300*a^8*b^7*B*x^8 + 1834560*a
^6*A*b^9*x^9 + 2620800*a^7*b^8*B*x^9 + 1156010*a^5*A*b^10*x^10 + 2155015*a^
6*b^9*B*x^10 + 552740*a^4*A*b^11*x^11 + 1369990*a^5*b^10*B*x^11 + 194130*a^
3*A*b^12*x^12 + 661275*a^4*b^11*B*x^12 + 47280*a^2*A*b^13*x^13 + 234600*a^3
*b^12*B*x^13 + 7140*a*A*b^14*x^14 + 57750*a^2*b^13*B*x^14 + 504*A*b^15*x^15
 + 8820*a*b^14*B*x^15 + 630*b^15*B*x^16))/(315*Sqrt[b^2]*x^10*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]*(-512*a^9*b^9 - 4608*a^8*b^10*x - 18432*a^7*b^11*x^2 - 430
08*a^6*b^12*x^3 - 64512*a^5*b^13*x^4 - 64512*a^4*b^14*x^5 - 43008*a^3*b^15*
x^6 - 18432*a^2*b^16*x^7 - 4608*a*b^17*x^8 - 512*b^18*x^9) + 315*x^10*(512*
a^10*b^10 + 5120*a^9*b^11*x + 23040*a^8*b^12*x^2 + 61440*a^7*b^13*x^3 + 107
520*a^6*b^14*x^4 + 129024*a^5*b^15*x^5 + 107520*a^4*b^16*x^6 + 61440*a^3*b^
17*x^7 + 23040*a^2*b^18*x^8 + 5120*a*b^19*x^9 + 512*b^20*x^10))
```

fricas [**A**] time = 0.41, size = 119, normalized size = 0.39

$$-\frac{630\, B b^{5} x^{6} + 252\, A a^{5} + 504\, {\left(5\, B a b^{4} + A b^{5}\right)} x^{5} + 2100\, {\left(2\, B a^{2} b^{3} + A a b^{4}\right)} x^{4} + 3600\, {\left(B a^{3} b^{2} + A a^{2} b^{3}\right)} x^{3} + 1575\, {\left(B a^{4} b + 2\, A a^{3} b^{2}\right)} x^{2} + 280\, {\left(B a^{5} + 5\, A a^{4} b\right)} x}{2520\, x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*b^5*x^6 + 252*A*a^5 + 504*(5*B*a*b^4 + A*b^5)*x^5 + 2100*(2*
B*a^2*b^3 + A*a*b^4)*x^4 + 3600*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 1575*(B*a^4*b
 + 2*A*a^3*b^2)*x^2 + 280*(B*a^5 + 5*A*a^4*b)*x)/x^10
```

giac [**A**] time = 0.22, size = 221, normalized size = 0.72

$$\frac{{\left(5\, B a b^{9} - 2\, A b^{10}\right)} \mathrm{sgn}\left(b x + a\right)}{2520\, a^{5}} - \frac{630\, B b^{5} x^{6} \mathrm{sgn}\left(b x + a\right) + 2520\, B a b^{4} x^{5} \mathrm{sgn}\left(b x + a\right) + 504\, A b^{5} x^{5} \mathrm{sgn}\left(b x + a\right) + 4200\, B a^{2} b^{3} x^{4} \mathrm{sgn}\left(b x + a\right) + 2100\, A a b^{4} x^{4} \mathrm{sgn}\left(b x + a\right) + 3600\, B a^{3} b^{2} x^{3} \mathrm{sgn}\left(b x + a\right) + 3600\, A a^{2} b^{3} x^{3} \mathrm{sgn}\left(b x + a\right) + 1575\, B a^{4} b x^{2} \mathrm{sgn}\left(b x + a\right) + 3150\, A a^{3} b^{2} x^{2} \mathrm{sgn}\left(b x + a\right) + 280\, B a^{5} x \mathrm{sgn}\left(b x + a\right) + 1400\, A a^{4} b x \mathrm{sgn}\left(b x + a\right) + 252\, A a^{5} \mathrm{sgn}\left(b x + a\right)}{2520\, x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x, algorithm="giac")
```

```
[Out] 1/2520*(5*B*a*b^9 - 2*A*b^10)*sgn(b*x + a)/a^5 - 1/2520*(630*B*b^5*x^6*sgn(
b*x + a) + 2520*B*a*b^4*x^5*sgn(b*x + a) + 504*A*b^5*x^5*sgn(b*x + a) + 420
0*B*a^2*b^3*x^4*sgn(b*x + a) + 2100*A*a*b^4*x^4*sgn(b*x + a) + 3600*B*a^3*b
^2*x^3*sgn(b*x + a) + 3600*A*a^2*b^3*x^3*sgn(b*x + a) + 1575*B*a^4*b*x^2*sg
n(b*x + a) + 3150*A*a^3*b^2*x^2*sgn(b*x + a) + 280*B*a^5*x*sgn(b*x + a) + 1
400*A*a^4*b*x*sgn(b*x + a) + 252*A*a^5*sgn(b*x + a))/x^10
```

maple [A] time = 0.05, size = 140, normalized size = 0.46

$$-\frac{\left(630 B\,b^{5} x^{6}+504 A\,b^{5} x^{5}+2520 B a\,b^{4} x^{5}+2100 A a\,b^{4} x^{4}+4200 B\,a^{2} b^{3} x^{4}+3600 A\,a^{2} b^{3} x^{3}+3600 B\,a^{3} b^{2} x^{3}+3150 A\,a^{3} b^{2} x^{2}+1575 B\,a^{4} b\,x^{2}+1400 A\,a^{4} b x+280 B\,a^{5} x+252 A\,a^{5}\right) \left(\left(b x+a\right)^{2}\right)^{\frac{5}{2}}}{2520 \left(b x+a\right)^{5} x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x)
```

```
[Out] -1/2520*(630*B*b^5*x^6+504*A*b^5*x^5+2520*B*a*b^4*x^5+2100*A*a*b^4*x^4+4200
*B*a^2*b^3*x^4+3600*A*a^2*b^3*x^3+3600*B*a^3*b^2*x^3+3150*A*a^3*b^2*x^2+157
5*B*a^4*b*x^2+1400*A*a^4*b*x+280*B*a^5*x+252*A*a^5)*((b*x+a)^2)^(5/2)/x^10/
(b*x+a)^5
```

maxima [B] time = 0.66, size = 615, normalized size = 2.01

$$-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{9}}{6 a^{9}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{10}}{6 a^{10}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{8}}{6 a^{8} x}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{9}}{6 a^{9} x}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{7}}{6 a^{9} x^{2}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{8}}{6 a^{10} x^{2}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{6}}{6 a^{8} x^{3}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{7}}{6 a^{9} x^{3}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{5}}{6 a^{7} x^{4}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{6}}{6 a^{8} x^{4}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{4}}{6 a^{6} x^{5}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{5}}{6 a^{7} x^{5}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{3}}{6 a^{5} x^{6}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{4}}{6 a^{6} x^{6}}-\frac{83 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{2}}{504 a^{4} x^{7}}+\frac{209 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{3}}{1260 a^{5} x^{7}}+\frac{11 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b}{72 a^{3} x^{8}}-\frac{29 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{2}}{180 a^{4} x^{8}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B}{9 a^{2} x^{9}}+\frac{13 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b}{90 a^{3} x^{9}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A}{10 a^{2} x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^9/a^9 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b^10/a^10 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^8/(a^8*x) +
 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^9/(a^9*x) + 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*B*b^7/(a^9*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8/(
a^10*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^6/(a^8*x^3) + 1/6*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9*x^3) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*B*b^5/(a^7*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^4)
 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^4/(a^6*x^5) + 1/6*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*A*b^5/(a^7*x^5) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b
^3/(a^5*x^6) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^6) - 83/504
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^7) + 209/1260*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*A*b^3/(a^5*x^7) + 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*
b/(a^3*x^8) - 29/180*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^8) - 1/9*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^9) + 13/90*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*A*b/(a^3*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^10)
```

mupad [B] time = 1.31, size = 283, normalized size = 0.92

$$-\frac{\left(\frac{B\,a^5}{9}+\frac{5\,A\,b\,a^4}{9}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^9\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{5}+B\,a\,b^4\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{10\,x^{10}\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,x^4\,\left(a+b\,x\right)}-\frac{5\,a\,b^3\,\left(A\,b+2\,B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,x^6\,\left(a+b\,x\right)}-\frac{5\,a^3\,b\,\left(2\,A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}-\frac{10\,a^2\,b^2\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^11,x)
```

```
[Out] - (((B*a^5)/9 + (5*A*a^4*b)/9)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^9*(a + b
*x)) - (((A*b^5)/5 + B*a*b^4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*
x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(10*x^10*(a + b*x)) - (B*b^5*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x)) - (5*a*b^3*(A*b + 2*B*a)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (5*a^3*b*(2*A*b + B*a
)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (10*a^2*b^2*(A*b + B
*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}{x^{11}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**11,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**11, x)
```

3.628 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{12}}\,dx$

Optimal. Leaf size=306

$$-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^8(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{6x^6(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{7x^7(a+bx)}-b^5$$

Rubi [A] time = 0.12, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{10x^{10}(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{9x^9(a+bx)}-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^8(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{7x^7(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{6x^6(a+bx)}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^12,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (5*a^3*b*(2*A*b +
 a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (5*a^2*b^2*(A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^8*(a + b*x)) - (5*a*b^3*(A*b + 2*a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^4*(A*b + 5*a*B)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(5*x^5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{12}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{12}}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{12}}+\frac{a^4b^5(5Ab+aB)}{x^{11}}+\frac{5a^3b^6(2Ab+aB)}{x^{10}}+\frac{10a^2b^7(Ab+aB)}{x^9}\right.}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{5a^3b(2A}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(126a^5(10A+11Bx)+770a^4bx(9A+10Bx)+1925a^3b^2x^2(8A+9Bx)+2475a^2b^3x^3(7A+8Bx)+1650ab^4x^4(6A+7Bx)+462b^5x^5(5A+6Bx)\right)}{13860x^{11}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^12,x]
```

```
[Out] -1/13860*(Sqrt[(a + b*x)^2]*(462*b^5*x^5*(5*A + 6*B*x) + 1650*a*b^4*x^4*(6*
A + 7*B*x) + 2475*a^2*b^3*x^3*(7*A + 8*B*x) + 1925*a^3*b^2*x^2*(8*A + 9*B*x
) + 770*a^4*b*x*(9*A + 10*B*x) + 126*a^5*(10*A + 11*B*x)))/(x^11*(a + b*x))
```

IntegrateAlgebraic [B] time = 4.08, size = 1060, normalized size = 3.46

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^12,x]
```

```
[Out] (256*b^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-1260*a^15*A*b - 19530*a^14*A*b^2*
x - 1386*a^15*b*B*x - 141400*a^13*A*b^3*x^2 - 21560*a^14*b^2*B*x^2 - 634375
*a^12*A*b^4*x^3 - 156695*a^13*b^3*B*x^3 - 1972350*a^11*A*b^5*x^4 - 705870*a
^12*b^4*B*x^4 - 4501755*a^10*A*b^6*x^5 - 2204235*a^11*b^5*B*x^5 - 7792560*a
^9*A*b^7*x^6 - 5054544*a^10*b^6*B*x^6 - 10417500*a^8*A*b^8*x^7 - 8793180*a^
9*b^7*B*x^7 - 10844400*a^7*A*b^9*x^8 - 11817960*a^8*b^8*B*x^8 - 8790600*a^6
*A*b^10*x^9 - 12372360*a^7*b^9*B*x^9 - 5503680*a^5*A*b^11*x^10 - 10090080*a
^6*b^10*B*x^10 - 2613655*a^4*A*b^12*x^11 - 6358055*a^5*b^11*B*x^11 - 911350
*a^3*A*b^13*x^12 - 3040070*a^4*b^12*B*x^12 - 220275*a^2*A*b^14*x^13 - 10677
15*a^3*b^13*B*x^13 - 33000*a*A*b^15*x^14 - 260040*a^2*b^14*B*x^14 - 2310*A*
b^16*x^15 - 39270*a*b^15*B*x^15 - 2772*b^16*B*x^16) + 256*b^10*Sqrt[b^2]*(1
260*a^16*A + 20790*a^15*A*b*x + 1386*a^16*B*x + 160930*a^14*A*b^2*x^2 + 229
46*a^15*b*B*x^2 + 775775*a^13*A*b^3*x^3 + 178255*a^14*b^2*B*x^3 + 2606725*a
^12*A*b^4*x^4 + 862565*a^13*b^3*B*x^4 + 6474105*a^11*A*b^5*x^5 + 2910105*a^
12*b^4*B*x^5 + 12294315*a^10*A*b^6*x^6 + 7258779*a^11*b^5*B*x^6 + 18210060*
a^9*A*b^7*x^7 + 13847724*a^10*b^6*B*x^7 + 21261900*a^8*A*b^8*x^8 + 20611140
*a^9*b^7*B*x^8 + 19635000*a^7*A*b^9*x^9 + 24190320*a^8*b^8*B*x^9 + 14294280
*a^6*A*b^10*x^10 + 22462440*a^7*b^9*B*x^10 + 8117335*a^5*A*b^11*x^11 + 1644
8135*a^6*b^10*B*x^11 + 3525005*a^4*A*b^12*x^12 + 9398125*a^5*b^11*B*x^12 +
1131625*a^3*A*b^13*x^13 + 4107785*a^4*b^12*B*x^13 + 253275*a^2*A*b^14*x^14
+ 1327755*a^3*b^13*B*x^14 + 35310*a*A*b^15*x^15 + 299310*a^2*b^14*B*x^15 +
2310*A*b^16*x^16 + 42042*a*b^15*B*x^16 + 2772*b^16*B*x^17))/(3465*Sqrt[b^2]
*x^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-1024*a^10*b^10 - 10240*a^9*b^11*x - 4
6080*a^8*b^12*x^2 - 122880*a^7*b^13*x^3 - 215040*a^6*b^14*x^4 - 258048*a^5*
b^15*x^5 - 215040*a^4*b^16*x^6 - 122880*a^3*b^17*x^7 - 46080*a^2*b^18*x^8 -
 10240*a*b^19*x^9 - 1024*b^20*x^10) + 3465*x^11*(1024*a^11*b^11 + 11264*a^1
0*b^12*x + 56320*a^9*b^13*x^2 + 168960*a^8*b^14*x^3 + 337920*a^7*b^15*x^4 +
 473088*a^6*b^16*x^5 + 473088*a^5*b^17*x^6 + 337920*a^4*b^18*x^7 + 168960*a
^3*b^19*x^8 + 56320*a^2*b^20*x^9 + 11264*a*b^21*x^10 + 1024*b^22*x^11))
```

fricas [A] time = 0.41, size = 119, normalized size = 0.39

$$-\frac{2772\,Bb^{5}x^{6} + 1260\,Aa^{5} + 2310\,\left(5\,Bab^{4} + Ab^{5}\right)x^{5} + 9900\,\left(2\,Ba^{2}b^{3} + Aab^{4}\right)x^{4} + 17325\,\left(Ba^{3}b^{2} + Aa^{2}b^{3}\right)x^{3} + 7700\,\left(Ba^{4}b + 2\,Aa^{3}b^{2}\right)x^{2} + 1386\,\left(Ba^{5} + 5\,Aa^{4}b\right)x}{13860\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x, algorithm="fricas")
```

```
[Out] -1/13860*(2772*B*b^5*x^6 + 1260*A*a^5 + 2310*(5*B*a*b^4 + A*b^5)*x^5 + 9900
*(2*B*a^2*b^3 + A*a*b^4)*x^4 + 17325*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 7700*(B*
a^4*b + 2*A*a^3*b^2)*x^2 + 1386*(B*a^5 + 5*A*a^4*b)*x)/x^11
```

giac [A] time = 0.20, size = 221, normalized size = 0.72

$$-\frac{\left(11\,Bab^{10} - 5\,Ab^{11}\right)\mathrm{sgn}\left(bx + a\right)}{13860\,a^{6}} - \frac{2772\,Bb^{5}x^{6}\mathrm{sgn}\left(bx + a\right) + 11550\,Bab^{4}x^{5}\mathrm{sgn}\left(bx + a\right) + 2310\,Ab^{5}x^{5}\mathrm{sgn}\left(bx + a\right) + 19800\,Ba^{2}b^{3}x^{4}\mathrm{sgn}\left(bx + a\right) + 9900\,Aab^{4}x^{4}\mathrm{sgn}\left(bx + a\right) + 17325\,Ba^{3}b^{2}x^{3}\mathrm{sgn}\left(bx + a\right) + 17325\,Aa^{2}b^{3}x^{3}\mathrm{sgn}\left(bx + a\right) + 7700\,Ba^{4}bx^{2}\mathrm{sgn}\left(bx + a\right) + 15400\,Aa^{3}b^{2}x^{2}\mathrm{sgn}\left(bx + a\right) + 1386\,Ba^{5}x\mathrm{sgn}\left(bx + a\right) + 6930\,Aa^{4}bx\mathrm{sgn}\left(bx + a\right) + 1260\,Aa^{5}\mathrm{sgn}\left(bx + a\right)}{13860\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x, algorithm="giac")
```

```
[Out] -1/13860*(11*B*a*b^10 - 5*A*b^11)*sgn(b*x + a)/a^6 - 1/13860*(2772*B*b^5*x^
6*sgn(b*x + a) + 11550*B*a*b^4*x^5*sgn(b*x + a) + 2310*A*b^5*x^5*sgn(b*x +
a) + 19800*B*a^2*b^3*x^4*sgn(b*x + a) + 9900*A*a*b^4*x^4*sgn(b*x + a) + 173
25*B*a^3*b^2*x^3*sgn(b*x + a) + 17325*A*a^2*b^3*x^3*sgn(b*x + a) + 7700*B*a
^4*b*x^2*sgn(b*x + a) + 15400*A*a^3*b^2*x^2*sgn(b*x + a) + 1386*B*a^5*x*sgn
(b*x + a) + 6930*A*a^4*b*x*sgn(b*x + a) + 1260*A*a^5*sgn(b*x + a))/x^11
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$-\frac{\left(2772 B\,b^{5} x^{6}+2310 A\,b^{5} x^{5}+11550 B a\,b^{4} x^{5}+9900 A a\,b^{4} x^{4}+19800 B\,a^{2} b^{3} x^{4}+17325 A\,a^{2} b^{3} x^{3}+17325 B\,a^{3} b^{2} x^{3}+15400 A\,a^{3} b^{2} x^{2}+7700 B\,a^{4} b\,x^{2}+6930 A\,a^{4} b x+1386 B\,a^{5} x+1260 A\,a^{5}\right) \left(\left(b x+a\right)^{2}\right)^{\frac{5}{2}}}{13860 \left(b x+a\right)^{5} x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x)
```

```
[Out] -1/13860*(2772*B*b^5*x^6+2310*A*b^5*x^5+11550*B*a*b^4*x^5+9900*A*a*b^4*x^4+
19800*B*a^2*b^3*x^4+17325*A*a^2*b^3*x^3+17325*B*a^3*b^2*x^3+15400*A*a^3*b^2
*x^2+7700*B*a^4*b*x^2+6930*A*a^4*b*x+1386*B*a^5*x+1260*A*a^5)*((b*x+a)^2)^(
5/2)/x^11/(b*x+a)^5
```

maxima [B] time = 0.74, size = 675, normalized size = 2.21

$$\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{10}}{6 a^{10}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{11}}{6 a^{11}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} B b^{9}}{6 a^{9} x}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} A b^{10}}{6 a^{10} x}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{8}}{6 a^{10} x^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{9}}{6 a^{11} x^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{7}}{6 a^{9} x^{3}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{8}}{6 a^{10} x^{3}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{6}}{6 a^{8} x^{4}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{7}}{6 a^{9} x^{4}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{5}}{6 a^{7} x^{5}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{6}}{6 a^{8} x^{5}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{4}}{6 a^{6} x^{6}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{5}}{6 a^{7} x^{6}}+\frac{209 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{3}}{1260 a^{5} x^{7}}-\frac{461 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{4}}{2772 a^{6} x^{7}}-\frac{29 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b^{2}}{180 a^{4} x^{8}}+\frac{65 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{3}}{396 a^{5} x^{8}}+\frac{13 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B b}{90 a^{3} x^{9}}-\frac{31 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b^{2}}{198 a^{4} x^{9}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} B}{10 a^{2} x^{10}}+\frac{3 \left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A b}{22 a^{3} x^{10}}-\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{7}{2}} A}{11 a^{2} x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^10/a^10 - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*b^11/a^11 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^9/(a^9*x)
- 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^10/(a^10*x) - 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*b^8/(a^10*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b
^9/(a^11*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^7/(a^9*x^3) - 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8/(a^10*x^3) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^6/(a^8*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9
*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^5/(a^7*x^5) - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2
)*B*b^4/(a^6*x^6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^6) + 2
09/1260*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^7) - 461/2772*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^7) - 29/180*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*B*b^2/(a^4*x^8) + 65/396*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x
^8) + 13/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^9) - 31/198*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*B/(a^2*x^10) + 3/22*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^10) - 1/
11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^11)
```

mupad [B] time = 1.39, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{10}+\frac{A\,b\,a^4}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{10}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{6}+\frac{5\,B\,a\,b^4}{6}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{11\,x^{11}\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{5\,x^5\,\left(a+b\,x\right)}-\frac{5\,a\,b^3\,\left(A\,b+2\,B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-\frac{5\,a^3\,b\,\left(2\,A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}-\frac{5\,a^2\,b^2\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,x^8\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^12,x)
```

```
[Out] - (((B*a^5)/10 + (A*a^4*b)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^10*(a + b
*x)) - (((A*b^5)/6 + (5*B*a*b^4)/6)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(11*x^11*(a + b*x)) - (
B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x)) - (5*a*b^3*(A*b +
```

```
2*B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (5*a^3*b*(2*A*b
 + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (5*a^2*b^2*(A*
b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^8*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{5}{2}}}{x^{12}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**12,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**12, x)
```

3.629 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{13}}\,dx$

Optimal. Leaf size=306

$$-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9x^9(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{7x^7(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{8x^8(a+bx)}-$$

Rubi [A] time = 0.11, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{11x^{11}(a+bx)}-\frac{a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{2x^{10}(a+bx)}-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9x^9(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{8x^8(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{7x^7(a+bx)}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{12x^{12}(a+bx)}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^13,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*x^12*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^3*b*(2*A*b + a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^10*(a + b*x)) - (10*a^2*b^2*(A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (5*a*b^3*(A*b + 2*a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^4*(A*b + 5*a*B)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(6*x^6*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{13}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{13}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{13}}+\frac{a^4b^5(5Ab+aB)}{x^{12}}+\frac{5a^3b^6(2Ab+aB)}{x^{11}}+\frac{10a^2b^7(Ab+aB)}{x^{10}}\right.}{b^4\left(ab+b^2x\right)}$$

$$=-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{12x^{12}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{a^3b(2Ab}{}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(42a^5(11A+12Bx)+252a^4bx(10A+11Bx)+616a^3b^2x^2(9A+10Bx)+770a^2b^3x^3(8A+9Bx)+495ab^4x^4(7A+8Bx)+132b^5x^5(6A+7Bx)\right)}{5544x^{12}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^13,x]
```

```
[Out] -1/5544*(Sqrt[(a + b*x)^2]*(132*b^5*x^5*(6*A + 7*B*x) + 495*a*b^4*x^4*(7*A
+ 8*B*x) + 770*a^2*b^3*x^3*(8*A + 9*B*x) + 616*a^3*b^2*x^2*(9*A + 10*B*x) +
 252*a^4*b*x*(10*A + 11*B*x) + 42*a^5*(11*A + 12*B*x)))/(x^12*(a + b*x))
```

IntegrateAlgebraic [B] time = 4.97, size = 1130, normalized size = 3.69

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^13,x]
```

```
[Out] (256*b^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-462*a^16*A*b - 7602*a^15*A*b^2*x
- 504*a^16*b*B*x - 58674*a^14*A*b^3*x^2 - 8316*a^15*b^2*B*x^2 - 281974*a^13
*A*b^4*x^3 - 64372*a^14*b^3*B*x^3 - 944405*a^12*A*b^5*x^4 - 310310*a^13*b^4
*B*x^4 - 2337511*a^11*A*b^6*x^5 - 1042690*a^12*b^5*B*x^5 - 4422891*a^10*A*b
^7*x^6 - 2589642*a^11*b^6*B*x^6 - 6526113*a^9*A*b^8*x^7 - 4917726*a^10*b^7*
B*x^7 - 7589208*a^8*A*b^9*x^8 - 7284024*a^9*b^8*B*x^8 - 6978840*a^7*A*b^10*
x^9 - 8504760*a^8*b^9*B*x^9 - 5057976*a^6*A*b^11*x^10 - 7854000*a^7*b^10*B*
x^10 - 2858856*a^5*A*b^12*x^11 - 5717712*a^6*b^11*B*x^11 - 1235389*a^4*A*b^
13*x^12 - 3246934*a^5*b^12*B*x^12 - 394559*a^3*A*b^14*x^13 - 1410002*a^4*b^
13*B*x^13 - 87835*a^2*A*b^15*x^14 - 452650*a^3*b^14*B*x^14 - 12177*a*A*b^16
*x^15 - 101310*a^2*b^15*B*x^15 - 792*A*b^17*x^16 - 14124*a*b^16*B*x^16 - 92
4*b^17*B*x^17) + 256*b^11*Sqrt[b^2]*(462*a^17*A + 8064*a^16*A*b*x + 504*a^1
7*B*x + 66276*a^15*A*b^2*x^2 + 8820*a^16*b*B*x^2 + 340648*a^14*A*b^3*x^3 +
72688*a^15*b^2*B*x^3 + 1226379*a^13*A*b^4*x^4 + 374682*a^14*b^3*B*x^4 + 328
1916*a^12*A*b^5*x^5 + 1353000*a^13*b^4*B*x^5 + 6760402*a^11*A*b^6*x^6 + 363
2332*a^12*b^5*B*x^6 + 10949004*a^10*A*b^7*x^7 + 7507368*a^11*b^6*B*x^7 + 14
115321*a^9*A*b^8*x^8 + 12201750*a^10*b^7*B*x^8 + 14568048*a^8*A*b^9*x^9 + 1
5788784*a^9*b^8*B*x^9 + 12036816*a^7*A*b^10*x^10 + 16358760*a^8*b^9*B*x^10
+ 7916832*a^6*A*b^11*x^11 + 13571712*a^7*b^10*B*x^11 + 4094245*a^5*A*b^12*x
^12 + 8964646*a^6*b^11*B*x^12 + 1629948*a^4*A*b^13*x^13 + 4656936*a^5*b^12*
B*x^13 + 482394*a^3*A*b^14*x^14 + 1862652*a^4*b^13*B*x^14 + 100012*a^2*A*b^
15*x^15 + 553960*a^3*b^14*B*x^15 + 12969*a*A*b^16*x^16 + 115434*a^2*b^15*B*
x^16 + 792*A*b^17*x^17 + 15048*a*b^16*B*x^17 + 924*b^17*B*x^18))/(693*Sqrt[
b^2]*x^12*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2048*a^11*b^11 - 22528*a^10*b^12*
x - 112640*a^9*b^13*x^2 - 337920*a^8*b^14*x^3 - 675840*a^7*b^15*x^4 - 94617
6*a^6*b^16*x^5 - 946176*a^5*b^17*x^6 - 675840*a^4*b^18*x^7 - 337920*a^3*b^1
9*x^8 - 112640*a^2*b^20*x^9 - 22528*a*b^21*x^10 - 2048*b^22*x^11) + 693*x^1
2*(2048*a^12*b^12 + 24576*a^11*b^13*x + 135168*a^10*b^14*x^2 + 450560*a^9*b
^15*x^3 + 1013760*a^8*b^16*x^4 + 1622016*a^7*b^17*x^5 + 1892352*a^6*b^18*x^
6 + 1622016*a^5*b^19*x^7 + 1013760*a^4*b^20*x^8 + 450560*a^3*b^21*x^9 + 135
168*a^2*b^22*x^10 + 24576*a*b^23*x^11 + 2048*b^24*x^12))
```

fricas [A] time = 0.41, size = 119, normalized size = 0.39

$$-\frac{924\,Bb^{5}x^{6} + 462\,Aa^{5} + 792\,\left(5\,Bab^{4} + Ab^{5}\right)x^{5} + 3465\,\left(2\,Ba^{2}b^{3} + Aab^{4}\right)x^{4} + 6160\,\left(Ba^{3}b^{2} + Aa^{2}b^{3}\right)x^{3} + 2772\,\left(Ba^{4}b + 2\,Aa^{3}b^{2}\right)x^{2} + 504\,\left(Ba^{5} + 5\,Aa^{4}b\right)x}{5544\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x, algorithm="fricas")
```

```
[Out] -1/5544*(924*B*b^5*x^6 + 462*A*a^5 + 792*(5*B*a*b^4 + A*b^5)*x^5 + 3465*(2*
B*a^2*b^3 + A*a*b^4)*x^4 + 6160*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 2772*(B*a^4*b
 + 2*A*a^3*b^2)*x^2 + 504*(B*a^5 + 5*A*a^4*b)*x)/x^12
```

giac [A] time = 0.22, size = 221, normalized size = 0.72

$$\frac{\left(2\,Bab^{11} - Ab^{12}\right)\mathrm{sgn}\left(bx + a\right)}{5544\,a^{7}} - \frac{924\,Bb^{5}x^{6}\mathrm{sgn}\left(bx + a\right) + 3960\,Bab^{4}x^{5}\mathrm{sgn}\left(bx + a\right) + 792\,Ab^{5}x^{5}\mathrm{sgn}\left(bx + a\right) + 6930\,Ba^{2}b^{3}x^{4}\mathrm{sgn}\left(bx + a\right) + 3465\,Aab^{4}x^{4}\mathrm{sgn}\left(bx + a\right) + 6160\,Ba^{3}b^{2}x^{3}\mathrm{sgn}\left(bx + a\right) + 6160\,Aa^{2}b^{3}x^{3}\mathrm{sgn}\left(bx + a\right) + 2772\,Ba^{4}bx^{2}\mathrm{sgn}\left(bx + a\right) + 5544\,Aa^{3}b^{2}x^{2}\mathrm{sgn}\left(bx + a\right) + 504\,Ba^{5}x\mathrm{sgn}\left(bx + a\right) + 2520\,Aa^{4}bx\mathrm{sgn}\left(bx + a\right) + 462\,Aa^{5}\mathrm{sgn}\left(bx + a\right)}{5544\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x, algorithm="giac")
```

```
[Out] 1/5544*(2*B*a*b^11 - A*b^12)*sgn(b*x + a)/a^7 - 1/5544*(924*B*b^5*x^6*sgn(b
*x + a) + 3960*B*a*b^4*x^5*sgn(b*x + a) + 792*A*b^5*x^5*sgn(b*x + a) + 6930
*B*a^2*b^3*x^4*sgn(b*x + a) + 3465*A*a*b^4*x^4*sgn(b*x + a) + 6160*B*a^3*b^
2*x^3*sgn(b*x + a) + 6160*A*a^2*b^3*x^3*sgn(b*x + a) + 2772*B*a^4*b*x^2*sgn
(b*x + a) + 5544*A*a^3*b^2*x^2*sgn(b*x + a) + 504*B*a^5*x*sgn(b*x + a) + 25
20*A*a^4*b*x*sgn(b*x + a) + 462*A*a^5*sgn(b*x + a))/x^12
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$-\frac{\left(924 B\,b^{5} x^{6}+792 A\,b^{5} x^{5}+3960 B a\,b^{4} x^{5}+3465 A a\,b^{4} x^{4}+6930 B\,a^{2} b^{3} x^{4}+6160 A\,a^{2} b^{3} x^{3}+6160 B\,a^{3} b^{2} x^{3}+5544 A\,a^{3} b^{2} x^{2}+2772 B\,a^{4} b\,x^{2}+2520 A\,a^{4} b x+504 B\,a^{5} x+462 A\,a^{5}\right) \left(\left(b x+a\right)^{2}\right)^{\frac{5}{2}}}{5544 \left(b x+a\right)^{5} x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x)
```

```
[Out] -1/5544*(924*B*b^5*x^6+792*A*b^5*x^5+3960*B*a*b^4*x^5+3465*A*a*b^4*x^4+6930
*B*a^2*b^3*x^4+6160*A*a^2*b^3*x^3+6160*B*a^3*b^2*x^3+5544*A*a^3*b^2*x^2+277
2*B*a^4*b*x^2+2520*A*a^4*b*x+504*B*a^5*x+462*A*a^5)*((b*x+a)^2)^(5/2)/x^12/
(b*x+a)^5
```

maxima [B] time = 0.83, size = 735, normalized size = 2.40

$$-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^{11}}{6a^{11}}+\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^{12}}{6a^{12}}-\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Bb^{10}}{6a^{10}x}+\frac{(b^2x^2+2abx+a^2)^{\frac{5}{2}}Ab^{11}}{6a^{11}x}+\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{9}}{6a^{11}x^2}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{10}}{6a^{12}x^2}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{8}}{6a^{10}x^3}+\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{9}}{6a^{11}x^3}+\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{7}}{6a^{9}x^4}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{8}}{6a^{10}x^4}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{6}}{6a^{8}x^5}+\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{7}}{6a^{9}x^5}+\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{5}}{6a^{7}x^6}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{6}}{6a^{8}x^6}-\frac{461(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{4}}{2772a^{6}x^7}+\frac{923(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{5}}{5544a^{7}x^7}+\frac{65(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{3}}{396a^{5}x^8}-\frac{131(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{4}}{792a^{6}x^8}-\frac{31(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb^{2}}{198a^{4}x^9}+\frac{16(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{3}}{99a^{5}x^9}+\frac{3(b^2x^2+2abx+a^2)^{\frac{7}{2}}Bb}{22a^{3}x^{10}}-\frac{5(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab^{2}}{33a^{4}x^{10}}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}B}{11a^{2}x^{11}}+\frac{17(b^2x^2+2abx+a^2)^{\frac{7}{2}}Ab}{132a^{3}x^{11}}-\frac{(b^2x^2+2abx+a^2)^{\frac{7}{2}}A}{12a^{2}x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^11/a^11 + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*A*b^12/a^12 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^10/(a^10*
x) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^11/(a^11*x) + 1/6*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*B*b^9/(a^11*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
A*b^10/(a^12*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^8/(a^10*x^3) +
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^9/(a^11*x^3) + 1/6*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*B*b^7/(a^9*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8
/(a^10*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^6/(a^8*x^5) + 1/6*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9*x^5) + 1/6*(b^2*x^2 + 2*a*b*x + a^2
)^(7/2)*B*b^5/(a^7*x^6) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^
6) - 461/2772*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^4/(a^6*x^7) + 923/5544*(b
^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^7) + 65/396*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*B*b^3/(a^5*x^8) - 131/792*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4
/(a^6*x^8) - 31/198*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^9) + 16/99
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^9) + 3/22*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*B*b/(a^3*x^10) - 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a
^4*x^10) - 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^11) + 17/132*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^11) - 1/12*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*A/(a^2*x^12)
```

mupad [B] time = 2.19, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{11}+\frac{5\,A\,b\,a^4}{11}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{11}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{7}+\frac{5\,B\,a\,b^4}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{12\,x^{12}\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,x^6\,\left(a+b\,x\right)}-\frac{5\,a\,b^3\,\left(A\,b+2\,B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}-\frac{a^3\,b\,\left(2\,A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{2\,x^{10}\,\left(a+b\,x\right)}-\frac{10\,a^2\,b^2\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^13,x)
```

```
[Out] - (((B*a^5)/11 + (5*A*a^4*b)/11)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^11*(a
+ b*x)) - (((A*b^5)/7 + (5*B*a*b^4)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^
```

```
7*(a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(12*x^12*(a + b*x))
- (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (5*a*b^3*(A*b
 + 2*B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (a^3*b*(2*A*
b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^10*(a + b*x)) - (10*a^2*b^2*
(A*b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**13,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**13, x)
```

3.630 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{14}}\,dx$

Optimal. Leaf size=304

$$-\frac{a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{10}(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{8x^8(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9x^9(a+bx)}-\frac{b^5 I}{}$$

Rubi [A] time = 0.12, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{12x^{12}(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{11x^{11}(a+bx)}-\frac{a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{10}(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9x^9(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{8x^8(a+bx)}-\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{13x^{13}(a+bx)}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^14,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*x^13*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*x^12*(a + b*x)) - (5*a^3*b*(2*A*b +
 a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^2*b^2*(A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x^10*(a + b*x)) - (5*a*b^3*(A*b + 2*a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (b^4*(A*b + 5*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(7*x^7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{14}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{14}}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{14}}+\frac{a^4b^5(5Ab+aB)}{x^{13}}+\frac{5a^3b^6(2Ab+aB)}{x^{12}}+\frac{10a^2b^7(Ab+aB)}{x^{11}}\right.}{b^4\left(ab+b^2x\right)}\\ &= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{13x^{13}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{12x^{12}(a+bx)}-\frac{5a^3b(2A}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(462a^5(12A+13Bx)+2730a^4bx(11A+12Bx)+6552a^3b^2x^2(10A+11Bx)+8008a^2b^3x^3(9A+10Bx)+5005ab^4x^4(8A+9Bx)+1287b^5x^5(7A+8Bx)\right)}{72072x^{13}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^14,x]
```

```
[Out] -1/72072*(Sqrt[(a + b*x)^2]*(1287*b^5*x^5*(7*A + 8*B*x) + 5005*a*b^4*x^4*(8
*A + 9*B*x) + 8008*a^2*b^3*x^3*(9*A + 10*B*x) + 6552*a^3*b^2*x^2*(10*A + 11
*B*x) + 2730*a^4*b*x*(11*A + 12*B*x) + 462*a^5*(12*A + 13*B*x)))/(x^13*(a +
 b*x))
```

IntegrateAlgebraic [B] time = 4.79, size = 1200, normalized size = 3.95

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^14,x]
```

```
[Out] (512*b^12*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-5544*a^17*A*b - 96558*a^16*A*b^2*
x - 6006*a^17*b*B*x - 791784*a^15*A*b^3*x^2 - 104832*a^16*b^2*B*x^2 - 40599
72*a^14*A*b^4*x^3 - 861588*a^15*b^3*B*x^3 - 14580104*a^13*A*b^5*x^4 - 44284
24*a^14*b^4*B*x^4 - 38916339*a^12*A*b^6*x^5 - 15942927*a^13*b^5*B*x^5 - 799
45404*a^11*A*b^7*x^6 - 42664908*a^12*b^6*B*x^6 - 129109442*a^10*A*b^8*x^7 -
 87885226*a^11*b^7*B*x^7 - 165951324*a^9*A*b^9*x^8 - 142337052*a^10*b^8*B*x
^8 - 170742033*a^8*A*b^10*x^9 - 183499173*a^9*b^9*B*x^9 - 140618016*a^7*A*b
^11*x^10 - 189384624*a^8*b^10*B*x^10 - 92174544*a^6*A*b^12*x^11 - 156478608
*a^7*b^11*B*x^11 - 47500992*a^5*A*b^13*x^12 - 102918816*a^6*b^12*B*x^12 - 1
8841277*a^4*A*b^14*x^13 - 53225185*a^5*b^13*B*x^13 - 5555004*a^3*A*b^15*x^1
4 - 21189324*a^4*b^14*B*x^14 - 1147146*a^2*A*b^16*x^15 - 6271122*a^3*b^15*B
*x^15 - 148148*a*A*b^17*x^16 - 1300156*a^2*b^16*B*x^16 - 9009*A*b^18*x^17 -
 168597*a*b^17*B*x^17 - 10296*b^18*B*x^18) + 512*b^12*Sqrt[b^2]*(5544*a^18*
A + 102102*a^17*A*b*x + 6006*a^18*B*x + 888342*a^16*A*b^2*x^2 + 110838*a^17
*b*B*x^2 + 4851756*a^15*A*b^3*x^3 + 966420*a^16*b^2*B*x^3 + 18640076*a^14*A
*b^4*x^4 + 5290012*a^15*b^3*B*x^4 + 53496443*a^13*A*b^5*x^5 + 20371351*a^14
*b^4*B*x^5 + 118861743*a^12*A*b^6*x^6 + 58607835*a^13*b^5*B*x^6 + 209054846
*a^11*A*b^7*x^7 + 130550134*a^12*b^6*B*x^7 + 295060766*a^10*A*b^8*x^8 + 230
222278*a^11*b^7*B*x^8 + 336693357*a^9*A*b^9*x^9 + 325836225*a^10*b^8*B*x^9
+ 311360049*a^8*A*b^10*x^10 + 372883797*a^9*b^9*B*x^10 + 232792560*a^7*A*b^
11*x^11 + 345863232*a^8*b^10*B*x^11 + 139675536*a^6*A*b^12*x^12 + 259397424
*a^7*b^11*B*x^12 + 66342269*a^5*A*b^13*x^13 + 156144001*a^6*b^12*B*x^13 + 2
4396281*a^4*A*b^14*x^14 + 74414509*a^5*b^13*B*x^14 + 6702150*a^3*A*b^15*x^1
5 + 27460446*a^4*b^14*B*x^15 + 1295294*a^2*A*b^16*x^16 + 7571278*a^3*b^15*B
*x^16 + 157157*a*A*b^17*x^17 + 1468753*a^2*b^16*B*x^17 + 9009*A*b^18*x^18 +
 178893*a*b^17*B*x^18 + 10296*b^18*B*x^19))/(9009*Sqrt[b^2]*x^13*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]*(-4096*a^12*b^12 - 49152*a^11*b^13*x - 270336*a^10*b^14
*x^2 - 901120*a^9*b^15*x^3 - 2027520*a^8*b^16*x^4 - 3244032*a^7*b^17*x^5 -
3784704*a^6*b^18*x^6 - 3244032*a^5*b^19*x^7 - 2027520*a^4*b^20*x^8 - 901120
*a^3*b^21*x^9 - 270336*a^2*b^22*x^10 - 49152*a*b^23*x^11 - 4096*b^24*x^12)
+ 9009*x^13*(4096*a^13*b^13 + 53248*a^12*b^14*x + 319488*a^11*b^15*x^2 + 11
71456*a^10*b^16*x^3 + 2928640*a^9*b^17*x^4 + 5271552*a^8*b^18*x^5 + 7028736
*a^7*b^19*x^6 + 7028736*a^6*b^20*x^7 + 5271552*a^5*b^21*x^8 + 2928640*a^4*b
^22*x^9 + 1171456*a^3*b^23*x^10 + 319488*a^2*b^24*x^11 + 53248*a*b^25*x^12
+ 4096*b^26*x^13))
```

fricas [A] time = 0.39, size = 119, normalized size = 0.39

$$-\frac{10296 \, B b^{5} x^{6} + 5544 \, A a^{5} + 9009 \, {\left(5 \, B a b^{4} + A b^{5}\right)} x^{5} + 40040 \, {\left(2 \, B a^{2} b^{3} + A a b^{4}\right)} x^{4} + 72072 \, {\left(B a^{3} b^{2} + A a^{2} b^{3}\right)} x^{3} + 32760 \, {\left(B a^{4} b + 2 \, A a^{3} b^{2}\right)} x^{2} + 6006 \, {\left(B a^{5} + 5 \, A a^{4} b\right)} x}{72072 \, x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x, algorithm="fricas")
```

```
[Out] -1/72072*(10296*B*b^5*x^6 + 5544*A*a^5 + 9009*(5*B*a*b^4 + A*b^5)*x^5 + 400
40*(2*B*a^2*b^3 + A*a*b^4)*x^4 + 72072*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 32760*
(B*a^4*b + 2*A*a^3*b^2)*x^2 + 6006*(B*a^5 + 5*A*a^4*b)*x)/x^13
```

giac [A] time = 0.20, size = 221, normalized size = 0.73

$$-\frac{\left(13\,Bab^{12}-7\,Ab^{13}\right)\mathrm{sgn}\left(bx+a\right)}{72072\,a^{8}}-\frac{10296\,Bb^{5}x^{6}\mathrm{sgn}\left(bx+a\right)+45045\,Bab^{4}x^{5}\mathrm{sgn}\left(bx+a\right)+9009\,Ab^{5}x^{5}\mathrm{sgn}\left(bx+a\right)+80080\,Ba^{2}b^{3}x^{4}\mathrm{sgn}\left(bx+a\right)+40040\,Aab^{4}x^{4}\mathrm{sgn}\left(bx+a\right)+72072\,Ba^{3}b^{2}x^{3}\mathrm{sgn}\left(bx+a\right)+72072\,Aa^{2}b^{3}x^{3}\mathrm{sgn}\left(bx+a\right)+32760\,Ba^{4}bx^{2}\mathrm{sgn}\left(bx+a\right)+65520\,Aa^{3}b^{2}x^{2}\mathrm{sgn}\left(bx+a\right)+6006\,Ba^{5}x\mathrm{sgn}\left(bx+a\right)+30030\,Aa^{4}bx\mathrm{sgn}\left(bx+a\right)+5544\,Aa^{5}\mathrm{sgn}\left(bx+a\right)}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x, algorithm="giac")
```

```
[Out] -1/72072*(13*B*a*b^12 - 7*A*b^13)*sgn(b*x + a)/a^8 - 1/72072*(10296*B*b^5*x
^6*sgn(b*x + a) + 45045*B*a*b^4*x^5*sgn(b*x + a) + 9009*A*b^5*x^5*sgn(b*x +
 a) + 80080*B*a^2*b^3*x^4*sgn(b*x + a) + 40040*A*a*b^4*x^4*sgn(b*x + a) + 7
2072*B*a^3*b^2*x^3*sgn(b*x + a) + 72072*A*a^2*b^3*x^3*sgn(b*x + a) + 32760*
B*a^4*b*x^2*sgn(b*x + a) + 65520*A*a^3*b^2*x^2*sgn(b*x + a) + 6006*B*a^5*x*
sgn(b*x + a) + 30030*A*a^4*b*x*sgn(b*x + a) + 5544*A*a^5*sgn(b*x + a))/x^13
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$-\frac{\left(10296B\,b^{5}x^{6}+9009A\,b^{5}x^{5}+45045Ba\,b^{4}x^{5}+40040Aa\,b^{4}x^{4}+80080B\,a^{2}b^{3}x^{4}+72072A\,a^{2}b^{3}x^{3}+72072B\,a^{3}b^{2}x^{3}+65520A\,a^{3}b^{2}x^{2}+32760B\,a^{4}b\,x^{2}+30030A\,a^{4}bx+6006B\,a^{5}x+5544A\,a^{5}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}}{72072\left(bx+a\right)^{5}x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x)
```

```
[Out] -1/72072*(10296*B*b^5*x^6+9009*A*b^5*x^5+45045*B*a*b^4*x^5+40040*A*a*b^4*x^
4+80080*B*a^2*b^3*x^4+72072*A*a^2*b^3*x^3+72072*B*a^3*b^2*x^3+65520*A*a^3*b
^2*x^2+32760*B*a^4*b*x^2+30030*A*a^4*b*x+6006*B*a^5*x+5544*A*a^5)*((b*x+a)^
2)^(5/2)/x^13/(b*x+a)^5
```

maxima [B] time = 0.74, size = 795, normalized size = 2.62

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}Bb^{12}}{6\,a^{12}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}Ab^{13}}{6\,a^{13}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}Bb^{11}}{6\,a^{11}x}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}Ab^{12}}{6\,a^{12}x}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{10}}{6\,a^{12}x^{2}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{11}}{6\,a^{13}x^{2}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{9}}{6\,a^{11}x^{3}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{10}}{6\,a^{12}x^{3}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{8}}{6\,a^{10}x^{4}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{9}}{6\,a^{11}x^{4}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{7}}{6\,a^{9}x^{5}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{8}}{6\,a^{10}x^{5}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{6}}{6\,a^{8}x^{6}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{7}}{6\,a^{9}x^{6}}+\frac{923\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{5}}{5544\,a^{7}x^{7}}-\frac{1715\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{6}}{10296\,a^{8}x^{7}}-\frac{131\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{4}}{792\,a^{6}x^{8}}+\frac{1709\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{5}}{10296\,a^{7}x^{8}}+\frac{16\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{3}}{99\,a^{5}x^{9}}-\frac{211\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{4}}{1287\,a^{6}x^{9}}-\frac{5\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb^{2}}{33\,a^{4}x^{10}}+\frac{68\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{3}}{429\,a^{5}x^{10}}+\frac{17\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Bb}{132\,a^{3}x^{11}}-\frac{251\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab^{2}}{1716\,a^{4}x^{11}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}B}{12\,a^{2}x^{12}}+\frac{19\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Ab}{156\,a^{3}x^{12}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}A}{13\,a^{2}x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^12/a^12 - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*b^13/a^13 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^11/(a^11*x
) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^12/(a^12*x) - 1/6*(b^2*x^2 + 2*
a*b*x + a^2)^(7/2)*B*b^10/(a^12*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
A*b^11/(a^13*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^9/(a^11*x^3) -
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^10/(a^12*x^3) - 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*b^8/(a^10*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b
^9/(a^11*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^7/(a^9*x^5) - 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8/(a^10*x^5) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^6/(a^8*x^6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9
*x^6) + 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^5/(a^7*x^7) - 1715/102
96*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^7) - 131/792*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*B*b^4/(a^6*x^8) + 1709/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*A*b^5/(a^7*x^8) + 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^9)
 - 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^9) - 5/33*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^10) + 68/429*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*A*b^3/(a^5*x^10) + 17/132*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x
^11) - 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^11) - 1/12*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^12) + 19/156*(b^2*x^2 + 2*a*b*x + a^2
)^(7/2)*A*b/(a^3*x^12) - 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^13)
```

mupad [B] time = 1.23, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{12}+\frac{5\,A\,b\,a^4}{12}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{12}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{8}+\frac{5\,B\,a\,b^4}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{13\,x^{13}\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-\frac{5\,a\,b^3\,\left(A\,b+2\,B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}-\frac{5\,a^3\,b\,\left(2\,A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{11\,x^{11}\,\left(a+b\,x\right)}-\frac{a^2\,b^2\,\left(A\,b+B\,a\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{10}\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^14,x)
```

```
[Out] - (((B*a^5)/12 + (5*A*a^4*b)/12)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^12*(a
+ b*x)) - (((A*b^5)/8 + (5*B*a*b^4)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^
8*(a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(13*x^13*(a + b*x))
- (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (5*a*b^3*(A*b
 + 2*B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (5*a^3*b*(2*
A*b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(11*x^11*(a + b*x)) - (a^2*b^2*
(A*b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^10*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{14}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**14,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**14, x)
```

3.631 $\int \frac{x^4(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=258

$$\frac{x^4(a+bx)(Ab-aB)}{4b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x^2(a+bx)(Ab-aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^3(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^5(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}+\frac{a^4(a+bx)(Ab}{b^6\sqrt{a^2+}}$$

Rubi [A] time = 0.15, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$\frac{x^4(a+bx)(Ab-aB)}{4b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^3(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x^2(a+bx)(Ab-aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a^3x(a+bx)(Ab-aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{a^4(a+bx)(Ab-aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^5(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -((a^3*(A*b - a*B)*x*(a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (a^2
*(A*b - a*B)*x^2*(a + b*x))/(2*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a*(A*b
 - a*B)*x^3*(a + b*x))/(3*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)
*x^4*(a + b*x))/(4*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^5*(a + b*x))/(
5*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^4*(A*b - a*B)*(a + b*x)*Log[a + b*x
])/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^4(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{a^3(-Ab+aB)}{b^6}-\frac{a^2(-Ab+aB)x}{b^5}+\frac{a(-Ab+aB)x^2}{b^4}+\frac{(Ab-aB)x^3}{b^3}+\frac{Bx^4}{b^2}-\frac{a^4(-Ab+aB)}{b^6(a+bx)}\right)d}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a^3(Ab-aB)x(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(Ab-aB)x^2(a+bx)}{2b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a(Ab-aB)x^3(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab}{4b^2\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 116, normalized size = 0.45

$$\frac{(a+bx)\left(bx\left(60a^4B-30a^3b(2A+Bx)+10a^2b^2x(3A+2Bx)-5ab^3x^2(4A+3Bx)+3b^4x^3(5A+4Bx)\right)-60a^4(aB-Ab)\log(a+bx)\right)}{60b^6\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(60*a^4*B - 30*a^3*b*(2*A + B*x) + 10*a^2*b^2*x*(3*A + 2*B*
x) - 5*a*b^3*x^2*(4*A + 3*B*x) + 3*b^4*x^3*(5*A + 4*B*x)) - 60*a^4*(-(A*b)
+ a*B)*Log[a + b*x]))/(60*b^6*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 0.94, size = 378, normalized size = 1.47

$$\frac{\left(a^5\sqrt{b^2}\,B+a^5bB-a^4Ab^2-a^4Ab\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2b^7}+\frac{\left(a^5\sqrt{b^2}\,B+a^5(-b)B+a^4Ab^2-a^4Ab\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2b^7}+\frac{-60a^4Bx+60a^3Abx+30a^3bBx^2-30a^2Ab^2x^2-20a^2b^2Bx^3+20aAb^3x^3+15ab^3Bx^4-15Ab^4x^4-12b^4Bx^5}{120b^4\sqrt{b^2}}+\frac{\sqrt{a^2+2abx+b^2x^2}\left(137a^4B-125a^3Ab-77a^3bBx+65a^2Ab^2x+47a^2b^2Bx^2-35aAb^3x^2-27ab^3Bx^3+15Ab^4x^3+12b^4Bx^4\right)}{120b^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-125*a^3*A*b + 137*a^4*B + 65*a^2*A*b^2*x -
 77*a^3*b*B*x - 35*a*A*b^3*x^2 + 47*a^2*b^2*B*x^2 + 15*A*b^4*x^3 - 27*a*b^3
*B*x^3 + 12*b^4*B*x^4))/(120*b^6) + (60*a^3*A*b*x - 60*a^4*B*x - 30*a^2*A*b
^2*x^2 + 30*a^3*b*B*x^2 + 20*a*A*b^3*x^3 - 20*a^2*b^2*B*x^3 - 15*A*b^4*x^4
+ 15*a*b^3*B*x^4 - 12*b^4*B*x^5)/(120*b^4*Sqrt[b^2]) + ((-(a^4*A*b^2) - a^4
*A*b*Sqrt[b^2] + a^5*b*B + a^5*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/(2*b^7) + ((a^4*A*b^2 - a^4*A*b*Sqrt[b^2] - a^5*b*B
 + a^5*Sqrt[b^2]*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(
2*b^7)
```

fricas [A] time = 0.41, size = 117, normalized size = 0.45

$$\frac{12\,Bb^5x^5-15\left(Bab^4-Ab^5\right)x^4+20\left(Ba^2b^3-Aab^4\right)x^3-30\left(Ba^3b^2-Aa^2b^3\right)x^2+60\left(Ba^4b-Aa^3b^2\right)x-60\left(Ba^5-Aa^4b\right)\log\left(bx+a\right)}{60\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^5*x^5 - 15*(B*a*b^4 - A*b^5)*x^4 + 20*(B*a^2*b^3 - A*a*b^4)*x^
3 - 30*(B*a^3*b^2 - A*a^2*b^3)*x^2 + 60*(B*a^4*b - A*a^3*b^2)*x - 60*(B*a^5
 - A*a^4*b)*log(b*x + a))/b^6
```

giac [A] time = 0.16, size = 185, normalized size = 0.72

$$\frac{12\,Bb^4x^5\mathrm{sgn}\left(bx+a\right)-15\,Bab^3x^4\mathrm{sgn}\left(bx+a\right)+15\,Ab^4x^4\mathrm{sgn}\left(bx+a\right)+20\,Ba^2b^2x^3\mathrm{sgn}\left(bx+a\right)-20\,Aab^3x^3\mathrm{sgn}\left(bx+a\right)-30\,Ba^3bx^2\mathrm{sgn}\left(bx+a\right)+30\,Aa^2b^2x^2\mathrm{sgn}\left(bx+a\right)+60\,Ba^4x\mathrm{sgn}\left(bx+a\right)-60\,Aa^3bx\mathrm{sgn}\left(bx+a\right)}{60\,b^5}-\frac{\left(Ba^5\mathrm{sgn}\left(bx+a\right)-Aa^4b\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/60*(12*B*b^4*x^5*sgn(b*x + a) - 15*B*a*b^3*x^4*sgn(b*x + a) + 15*A*b^4*x^
4*sgn(b*x + a) + 20*B*a^2*b^2*x^3*sgn(b*x + a) - 20*A*a*b^3*x^3*sgn(b*x + a
) - 30*B*a^3*b*x^2*sgn(b*x + a) + 30*A*a^2*b^2*x^2*sgn(b*x + a) + 60*B*a^4*
x*sgn(b*x + a) - 60*A*a^3*b*x*sgn(b*x + a))/b^5 - (B*a^5*sgn(b*x + a) - A*a
^4*b*sgn(b*x + a))*log(abs(b*x + a))/b^6
```

maple [A] time = 0.06, size = 138, normalized size = 0.53

$$\frac{\left(bx+a\right)\left(12B\,b^5x^5+15A\,b^5x^4-15Ba\,b^4x^4-20Aa\,b^4x^3+20B\,a^2b^3x^3+30A\,a^2b^3x^2-30B\,a^3b^2x^2+60A\,a^4b\ln\left(bx+a\right)-60A\,a^3b^2x-60B\,a^5\ln\left(bx+a\right)+60B\,a^4bx\right)}{60\sqrt{\left(bx+a\right)^2}\;b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*(b*x+a)*(12*B*b^5*x^5+15*A*x^4*b^5-15*B*x^4*a*b^4-20*A*x^3*a*b^4+20*B*
x^3*a^2*b^3+30*A*x^2*a^2*b^3-30*B*x^2*a^3*b^2+60*A*ln(b*x+a)*a^4*b-60*A*a^3
*b^2*x-60*B*ln(b*x+a)*a^5+60*B*a^4*b*x)/((b*x+a)^2)^(1/2)/b^6
```

maxima [A] time = 0.57, size = 272, normalized size = 1.05

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bx^4}{5\,b^2}-\frac{9\,\sqrt{b^2x^2+2\,abx+a^2}\,Bax^3}{20\,b^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ax^3}{4\,b^2}-\frac{77\,Ba^3x^2}{60\,b^4}+\frac{13\,Aa^2x^2}{12\,b^3}+\frac{47\,\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2x^2}{60\,b^4}-\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Aax^2}{12\,b^3}+\frac{77\,Ba^4x}{30\,b^5}-\frac{13\,Aa^3x}{6\,b^4}-\frac{Ba^5\log\left(x+\frac{a}{b}\right)}{b^6}+\frac{Aa^4\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{47\,\sqrt{b^2x^2+2\,abx+a^2}\,Ba^4}{30\,b^6}+\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Aa^3}{6\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*x^4/b^2 - 9/20*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*B*a*x^3/b^3 + 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*x^3/b^2 - 77/60*B*a
^3*x^2/b^4 + 13/12*A*a^2*x^2/b^3 + 47/60*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^
2*x^2/b^4 - 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*x^2/b^3 + 77/30*B*a^4*x/
b^5 - 13/6*A*a^3*x/b^4 - B*a^5*log(x + a/b)/b^6 + A*a^4*log(x + a/b)/b^5 -
47/30*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^4/b^6 + 7/6*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*A*a^3/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.29, size = 109, normalized size = 0.42

$$\frac{Bx^5}{5b}-\frac{a^4\left(-Ab+Ba\right)\log\left(a+bx\right)}{b^6}+x^4\left(\frac{A}{4b}-\frac{Ba}{4b^2}\right)+x^3\left(-\frac{Aa}{3b^2}+\frac{Ba^2}{3b^3}\right)+x^2\left(\frac{Aa^2}{2b^3}-\frac{Ba^3}{2b^4}\right)+x\left(-\frac{Aa^3}{b^4}+\frac{Ba^4}{b^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**5/(5*b) - a**4*(-A*b + B*a)*log(a + b*x)/b**6 + x**4*(A/(4*b) - B*a/(4
*b**2)) + x**3*(-A*a/(3*b**2) + B*a**2/(3*b**3)) + x**2*(A*a**2/(2*b**3) -
B*a**3/(2*b**4)) + x*(-A*a**3/b**4 + B*a**4/b**5)
```

3.632 $\int \frac{x^3(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=212

$$\frac{x^3(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^2(a+bx)(Ab-aB)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^4(a+bx)}{4b\sqrt{a^2+2abx+b^2x^2}}-\frac{a^3(a+bx)(A}{b^5\sqrt{a^2}}$$

Rubi [A] time = 0.11, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{x^3(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^2(a+bx)(Ab-aB)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a^3(a+bx)(Ab-aB)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^4(a+bx)}{4b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a^2*(A*b - a*B)*x*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a*(A*b
 - a*B)*x^2*(a + b*x))/(2*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)
*x^3*(a + b*x))/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^4*(a + b*x))/(
4*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^3*(A*b - a*B)*(a + b*x)*Log[a + b*x
])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^3(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(-\frac{a^2(-Ab+aB)}{b^5}+\frac{a(-Ab+aB)x}{b^4}+\frac{(Ab-aB)x^2}{b^3}+\frac{Bx^3}{b^2}+\frac{a^3(-Ab+aB)}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{a^2(Ab-aB)x(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a(Ab-aB)x^2(a+bx)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^3(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{}{4b\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 96, normalized size = 0.45

$$\frac{(a+bx)\left(12a^3(aB-Ab)\log(a+bx)+bx\left(-12a^3B+6a^2b(2A+Bx)-2ab^2x(3A+2Bx)+b^3x^2(4A+3Bx)\right)\right)}{12b^5\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

[In] Integrate[(x^3*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] ((a + b*x)*(b*x*(-12*a^3*B + 6*a^2*b*(2*A + B*x) - 2*a*b^2*x*(3*A + 2*B*x) + b^3*x^2*(4*A + 3*B*x)) + 12*a^3*(-(A*b) + a*B)*Log[a + b*x]))/(12*b^5*Sqrt[(a + b*x)^2])

IntegrateAlgebraic [A] time = 0.71, size = 330, normalized size = 1.56

$$\frac{12a^3Bx-12a^2Abx-6a^2bBx^2+6aAb^2x^2+4ab^2Bx^3-4Ab^3x^3-3b^3Bx^4}{24b^3\sqrt{b^2}}+\frac{\sqrt{a^2+2abx+b^2x^2}\left(-25a^3B+22a^2Ab+13a^2bBx-10aAb^2x-7ab^2Bx^2+4Ab^3x^2+3b^3Bx^3\right)}{24b^5}+\frac{\left(-a^4\sqrt{b^2}B+a^4(-b)B+a^3Ab^2+a^3Ab\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)}{2b^6}+\frac{\left(-a^4\sqrt{b^2}B+a^4bB-a^3Ab^2+a^3Ab\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)}{2b^6}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(x^3*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(22*a^2*A*b - 25*a^3*B - 10*a*A*b^2*x + 13*a^2*b*B*x + 4*A*b^3*x^2 - 7*a*b^2*B*x^2 + 3*b^3*B*x^3))/(24*b^5) + (-12*a^2*A*b*x + 12*a^3*B*x + 6*a*A*b^2*x^2 - 6*a^2*b*B*x^2 - 4*A*b^3*x^3 + 4*a*b^2*B*x^3 - 3*b^3*B*x^4)/(24*b^3*Sqrt[b^2]) + ((a^3*A*b^2 + a^3*A*b*Sqrt[b^2] - a^4*b*B - a^4*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^6) + ((-(a^3*A*b^2) + a^3*A*b*Sqrt[b^2] + a^4*b*B - a^4*Sqrt[b^2]*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^6)

fricas [A] time = 0.41, size = 94, normalized size = 0.44

$$\frac{3\,Bb^4x^4-4\left(Bab^3-Ab^4\right)x^3+6\left(Ba^2b^2-Aab^3\right)x^2-12\left(Ba^3b-Aa^2b^2\right)x+12\left(Ba^4-Aa^3b\right)\log\left(bx+a\right)}{12\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] 1/12*(3*B*b^4*x^4 - 4*(B*a*b^3 - A*b^4)*x^3 + 6*(B*a^2*b^2 - A*a*b^3)*x^2 - 12*(B*a^3*b - A*a^2*b^2)*x + 12*(B*a^4 - A*a^3*b)*log(b*x + a))/b^5

giac [A] time = 0.16, size = 148, normalized size = 0.70

$$\frac{3\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)-4\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+4\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+6\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)-6\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)-12\,Ba^3x\mathrm{sgn}\left(bx+a\right)+12\,Aa^2bx\mathrm{sgn}\left(bx+a\right)}{12\,b^4}+\frac{\left(Ba^4\mathrm{sgn}\left(bx+a\right)-Aa^3b\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] 1/12*(3*B*b^3*x^4*sgn(b*x + a) - 4*B*a*b^2*x^3*sgn(b*x + a) + 4*A*b^3*x^3*sgn(b*x + a) + 6*B*a^2*b*x^2*sgn(b*x + a) - 6*A*a*b^2*x^2*sgn(b*x + a) - 12*B*a^3*x*sgn(b*x + a) + 12*A*a^2*b*x*sgn(b*x + a))/b^4 + (B*a^4*sgn(b*x + a) - A*a^3*b*sgn(b*x + a))*log(abs(b*x + a))/b^5

maple [A] time = 0.05, size = 114, normalized size = 0.54

$$-\frac{\left(bx+a\right)\left(-3B\,b^4x^4-4A\,b^4x^3+4Ba\,b^3x^3+6Aa\,b^3x^2-6B\,a^2b^2x^2+12A\,a^3b\ln\left(bx+a\right)-12A\,a^2b^2x-12B\,a^4\ln\left(bx+a\right)+12B\,a^3bx\right)}{12\sqrt{\left(bx+a\right)^2}\;b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x)

[Out] -1/12*(b*x+a)*(-3*B*b^4*x^4-4*A*x^3*b^4+4*B*x^3*a*b^3+6*A*x^2*a*b^3-6*B*x^2*a^2*b^2+12*A*ln(b*x+a)*a^3*b-12*A*x*a^2*b^2-12*B*ln(b*x+a)*a^4+12*B*x*a^3*b)/((b*x+a)^2)^(1/2)/b^5

maxima [A] time = 0.75, size = 212, normalized size = 1.00

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bx^3}{4\,b^2}+\frac{13\,Ba^2x^2}{12\,b^3}-\frac{5\,Aax^2}{6\,b^2}-\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Bax^2}{12\,b^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ax^2}{3\,b^2}-\frac{13\,Ba^3x}{6\,b^4}+\frac{5\,Aa^2x}{3\,b^3}+\frac{Ba^4\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{Aa^3\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3}{6\,b^5}-\frac{2\,\sqrt{b^2x^2+2\,abx+a^2}\,Aa^2}{3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*x^3/b^2 + 13/12*B*a^2*x^2/b^3 - 5/6*A*a
*x^2/b^2 - 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*x^2/b^3 + 1/3*sqrt(b^2*x^
2 + 2*a*b*x + a^2)*A*x^2/b^2 - 13/6*B*a^3*x/b^4 + 5/3*A*a^2*x/b^3 + B*a^4*l
og(x + a/b)/b^5 - A*a^3*log(x + a/b)/b^4 + 7/6*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*B*a^3/b^5 - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^2/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,(A+B\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.27, size = 85, normalized size = 0.40

$$\frac{Bx^4}{4b} + \frac{a^3\,(-Ab+Ba)\log{(a+bx)}}{b^5} + x^3\left(\frac{A}{3b} - \frac{Ba}{3b^2}\right) + x^2\left(-\frac{Aa}{2b^2} + \frac{Ba^2}{2b^3}\right) + x\left(\frac{Aa^2}{b^3} - \frac{Ba^3}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**4/(4*b) + a**3*(-A*b + B*a)*log(a + b*x)/b**5 + x**3*(A/(3*b) - B*a/(3
*b**2)) + x**2*(-A*a/(2*b**2) + B*a**2/(2*b**3)) + x*(A*a**2/b**3 - B*a**3/
b**4)
```

3.633 $\int \frac{x^2(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=166

$$\frac{x^2(a+bx)(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(a+bx)(Ab-aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{ax(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{x^2(a+bx)(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{ax(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(a+bx)(Ab-aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -((a*(A*b - a*B)*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((A*b
 - a*B)*x^2*(a + b*x))/(2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^3*(a + b
*x))/(3*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^2*(A*b - a*B)*(a + b*x)*Log[a
 + b*x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^2(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{a(-Ab+aB)}{b^4}+\frac{(Ab-aB)x}{b^3}+\frac{Bx^2}{b^2}-\frac{a^2(-Ab+aB)}{b^4(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a(Ab-aB)x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^2(a+bx)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(Ab}{b}\end{aligned}$$

Mathematica [A] time = 0.04, size = 77, normalized size = 0.46

$$\frac{(a+bx)\left(bx\left(6a^2B-3ab(2A+Bx)+b^2x(3A+2Bx)\right)+6a^2(Ab-aB)\log(a+bx)\right)}{6b^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(6*a^2*B - 3*a*b*(2*A + B*x) + b^2*x*(3*A + 2*B*x)) + 6*a^2
*(A*b - a*B)*Log[a + b*x]))/(6*b^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 0.62, size = 279, normalized size = 1.68

$$\frac{-6a^2Bx+6aAbx+3abBx^2-3Ab^2x^2-2b^2Bx^3}{12\left(b^2\right)^{3/2}}+\frac{\sqrt{a^2+2abx+b^2x^2}\left(11a^2B-9aAb-5abBx+3Ab^2x+2b^2Bx^2\right)}{12b^4}+\frac{\left(a^3\sqrt{b^2}\,B+a^3bB-a^2Ab^2-a^2Ab\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2b^5}+\frac{\left(a^3\sqrt{b^2}\,B+a^3(-b)B+a^2Ab^2-a^2Ab\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2b^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-9*a*A*b + 11*a^2*B + 3*A*b^2*x - 5*a*b*B*x
 + 2*b^2*B*x^2))/(12*b^4) + (6*a*A*b*x - 6*a^2*B*x - 3*A*b^2*x^2 + 3*a*b*B*
x^2 - 2*b^2*B*x^3)/(12*(b^2)^(3/2)) + ((-(a^2*A*b^2) - a^2*A*b*Sqrt[b^2] +
a^3*b*B + a^3*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2]])/(2*b^5) + ((a^2*A*b^2 - a^2*A*b*Sqrt[b^2] - a^3*b*B + a^3*Sqrt[b^2]*
B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^5)
```

fricas [A] time = 0.41, size = 71, normalized size = 0.43

$$\frac{2\,Bb^3x^3-3\left(Bab^2-Ab^3\right)x^2+6\left(Ba^2b-Aab^2\right)x-6\left(Ba^3-Aa^2b\right)\log\left(bx+a\right)}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^3*x^3 - 3*(B*a*b^2 - A*b^3)*x^2 + 6*(B*a^2*b - A*a*b^2)*x - 6*(B
*a^3 - A*a^2*b)*log(b*x + a))/b^4
```

giac [A] time = 0.15, size = 113, normalized size = 0.68

$$\frac{2\,Bb^2x^3\mathrm{sgn}\left(bx+a\right)-3\,Babx^2\mathrm{sgn}\left(bx+a\right)+3\,Ab^2x^2\mathrm{sgn}\left(bx+a\right)+6\,Ba^2x\mathrm{sgn}\left(bx+a\right)-6\,Aabx\mathrm{sgn}\left(bx+a\right)}{6\,b^3}-\frac{\left(Ba^3\mathrm{sgn}\left(bx+a\right)-Aa^2b\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*(2*B*b^2*x^3*sgn(b*x + a) - 3*B*a*b*x^2*sgn(b*x + a) + 3*A*b^2*x^2*sgn(
b*x + a) + 6*B*a^2*x*sgn(b*x + a) - 6*A*a*b*x*sgn(b*x + a))/b^3 - (B*a^3*sg
n(b*x + a) - A*a^2*b*sgn(b*x + a))*log(abs(b*x + a))/b^4
```

maple [A] time = 0.05, size = 90, normalized size = 0.54

$$\frac{\left(bx+a\right)\left(2B\,b^3x^3+3A\,b^3x^2-3Ba\,b^2x^2+6A\,a^2b\ln\left(bx+a\right)-6Aa\,b^2x-6B\,a^3\ln\left(bx+a\right)+6B\,a^2bx\right)}{6\sqrt{\left(bx+a\right)^2}\;b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(2*b^3*B*x^3+3*A*x^2*b^3-3*B*x^2*a*b^2+6*A*ln(b*x+a)*a^2*b-6*A*
a*b^2*x-6*B*ln(b*x+a)*a^3+6*B*a^2*b*x)/((b*x+a)^2)^(1/2)/b^4
```

maxima [A] time = 0.54, size = 125, normalized size = 0.75

$$-\frac{5\,Bax^2}{6\,b^2}+\frac{Ax^2}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bx^2}{3\,b^2}+\frac{5\,Ba^2x}{3\,b^3}-\frac{Aax}{b^2}-\frac{Ba^3\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{Aa^2\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{2\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2}{3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5/6*B*a*x^2/b^2 + 1/2*A*x^2/b + 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*x^2/b^
2 + 5/3*B*a^2*x/b^3 - A*a*x/b^2 - B*a^3*log(x + a/b)/b^4 + A*a^2*log(x + a/
b)/b^3 - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2 \left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^2*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.24, size = 61, normalized size = 0.37

$$\frac{Bx^3}{3b} - \frac{a^2\left(-Ab+Ba\right)\log\left(a+bx\right)}{b^4} + x^2\left(\frac{A}{2b} - \frac{Ba}{2b^2}\right) + x\left(-\frac{Aa}{b^2} + \frac{Ba^2}{b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**3/(3*b) - a**2*(-A*b + B*a)*log(a + b*x)/b**4 + x**2*(A/(2*b) - B*a/(2
*b**2)) + x*(-A*a/b**2 + B*a**2/b**3)
```

3.634 $\int \frac{x(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=120

$$\frac{x(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{a(a+bx)(Ab-aB)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.06, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 77}

$$\frac{x(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{a(a+bx)(Ab-aB)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*x*(a + b*x))/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^2*(a +
 b*x))/(2*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a*(A*b - a*B)*(a + b*x)*Log[a
 + b*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{Ab-aB}{b^3}+\frac{Bx}{b^2}+\frac{a(-Ab+aB)}{b^3(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)x(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b\sqrt{a^2+2abx+b^2x^2}}-\frac{a(Ab-aB)(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 0.48

$$\frac{(a+bx)(bx(-2aB+2Ab+bBx)+2a(aB-Ab)\log(a+bx))}{2b^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(2*A*b - 2*a*B + b*B*x) + 2*a*(-(A*b) + a*B)*Log[a + b*x]))
/(2*b^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 0.46, size = 231, normalized size = 1.92

$$\frac{\left(-a^2\sqrt{b^2}\,B+a^2(-b)B+aAb^2+aAb\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2b^4}+\frac{\left(-a^2\sqrt{b^2}\,B+a^2bB-aAb^2+aAb\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(-3aB+2Ab+bBx)}{4b^3}+\frac{2aBx-2Abx-bBx^2}{4b\sqrt{b^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((2*A*b - 3*a*B + b*B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3) + (-2*A*b*x
 + 2*a*B*x - b*B*x^2)/(4*b*Sqrt[b^2]) + ((a*A*b^2 + a*A*b*Sqrt[b^2] - a^2*b
*B - a^2*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
)/(2*b^4) + ((-(a*A*b^2) + a*A*b*Sqrt[b^2] + a^2*b*B - a^2*Sqrt[b^2]*B)*Log
[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^4)
```

fricas [A] time = 0.39, size = 47, normalized size = 0.39

$$\frac{Bb^2x^2-2\left(Bab-Ab^2\right)x+2\left(Ba^2-Aab\right)\log\left(bx+a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*x^2 - 2*(B*a*b - A*b^2)*x + 2*(B*a^2 - A*a*b)*log(b*x + a))/b^3
```

giac [A] time = 0.15, size = 75, normalized size = 0.62

$$\frac{Bbx^2\mathrm{sgn}\left(bx+a\right)-2\,Bax\mathrm{sgn}\left(bx+a\right)+2\,Abx\mathrm{sgn}\left(bx+a\right)}{2\,b^2}+\frac{\left(Ba^2\mathrm{sgn}\left(bx+a\right)-Aab\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(B*b*x^2*sgn(b*x + a) - 2*B*a*x*sgn(b*x + a) + 2*A*b*x*sgn(b*x + a))/b^
2 + (B*a^2*sgn(b*x + a) - A*a*b*sgn(b*x + a))*log(abs(b*x + a))/b^3
```

maple [A] time = 0.05, size = 66, normalized size = 0.55

$$-\frac{\left(bx+a\right)\left(-B\,b^2x^2+2Aab\ln\left(bx+a\right)-2A\,b^2x-2B\,a^2\ln\left(bx+a\right)+2Babx\right)}{2\sqrt{\left(bx+a\right)^2}\;b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(-B*b^2*x^2+2*A*ln(b*x+a)*a*b-2*A*b^2*x-2*B*ln(b*x+a)*a^2+2*B*
a*b*x)/((b*x+a)^2)^(1/2)/b^3
```

maxima [A] time = 0.76, size = 72, normalized size = 0.60

$$\frac{Bx^2}{2\,b}-\frac{Bax}{b^2}+\frac{Ba^2\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{Aa\log\left(x+\frac{a}{b}\right)}{b^2}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,A}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^2/b - B*a*x/b^2 + B*a^2*log(x + a/b)/b^3 - A*a*log(x + a/b)/b^2 + s
qrt(b^2*x^2 + 2*a*b*x + a^2)*A/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\ (A+B\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.21, size = 37, normalized size = 0.31

$$\frac{Bx^2}{2b} + \frac{a\,(-Ab+Ba)\log{(a+bx)}}{b^3} + x\left(\frac{A}{b} - \frac{Ba}{b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**2/(2*b) + a*(-A*b + B*a)*log(a + b*x)/b**3 + x*(A/b - B*a/b**2)
```

3.635 $\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=69

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {640, 608, 31}

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + ((A*b - a*B)*(a + b*x)*Log[a + b*x]
)/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}} \, dx &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}} \, dx}{2b^2}\\
&= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x} \, dx}{2b^2\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{(Ab-aB)(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.58

$$\frac{(a+bx)((Ab-aB)\log(a+bx)+bBx)}{b^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*B*x + (A*b - a*B)*Log[a + b*x]))/(b^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.42, size = 196, normalized size = 2.84

$$\frac{\left(a\sqrt{b^2}\,B+abB-Ab^2-A\sqrt{b^2}\,b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2\left(b^2\right)^{3/2}}+\frac{\left(-a\sqrt{b^2}\,B+abB-Ab^2+A\sqrt{b^2}\,b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2\left(b^2\right)^{3/2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{2b^2}-\frac{Bx}{2\sqrt{b^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -1/2*(B*x)/Sqrt[b^2] + (B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^2) + ((-(A*b^
2) - A*b*Sqrt[b^2] + a*b*B + a*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/(2*(b^2)^(3/2)) + ((-(A*b^2) + A*b*Sqrt[b^2] + a*b*
B - a*Sqrt[b^2]*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2
*(b^2)^(3/2))
```

fricas [A] time = 0.41, size = 25, normalized size = 0.36

$$\frac{Bbx-(Ba-Ab)\log\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] (B*b*x - (B*a - A*b)*log(b*x + a))/b^2
```

giac [A] time = 0.16, size = 45, normalized size = 0.65

$$\frac{Bx\mathrm{sgn}\left(bx+a\right)}{b}-\frac{\left(Ba\mathrm{sgn}\left(bx+a\right)-Ab\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] B*x*sgn(b*x + a)/b - (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(b*x + a)
)/b^2
```

maple [A] time = 0.05, size = 43, normalized size = 0.62

$$\frac{\left(bx+a\right)\left(Ab\ln\left(bx+a\right)-Ba\ln\left(bx+a\right)+Bbx\right)}{\sqrt{\left(bx+a\right)^2}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*b-B*ln(b*x+a)*a+B*b*x)/((b*x+a)^2)^(1/2)/b^2
```

maxima [A] time = 0.61, size = 52, normalized size = 0.75

$$-\frac{Ba\log\left(x+\frac{a}{b}\right)}{b^2}+\frac{A\log\left(x+\frac{a}{b}\right)}{b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -B*a*log(x + a/b)/b^2 + A*log(x + a/b)/b + sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/
b^2
```

mupad [B] time = 1.47, size = 79, normalized size = 1.14

$$\frac{B\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b^2}+\frac{A\,\ln\left(a+b\,x+\sqrt{{\left(a+b\,x\right)}^2}\right)}{b}-\frac{B\,a\,b\,\ln\left(a\,b+\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{b^2}+b^2\,x\right)}{{\left(b^2\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + b*x)^2)^(1/2),x)
```

```
[Out] (B*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/b^2 + (A*log(a + b*x + ((a + b*x)^2)^(1
/2)))/b - (B*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^
(3/2)
```

sympy [A] time = 0.18, size = 20, normalized size = 0.29

$$\frac{Bx}{b}-\frac{(-Ab+Ba)\log{(a+bx)}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x/b - (-A*b + B*a)*log(a + b*x)/b**2
```

3.636 $\int \frac{A+Bx}{x\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=80

$$\frac{A\log(x)(a+bx)}{a\sqrt{a^2+2abx+b^2x^2}}-\frac{(a+bx)(Ab-aB)\log(a+bx)}{ab\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.05, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 72}

$$\frac{A\log(x)(a+bx)}{a\sqrt{a^2+2abx+b^2x^2}}-\frac{(a+bx)(Ab-aB)\log(a+bx)}{ab\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (A*(a + b*x)*Log[x])/(a*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(a +
b*x)*Log[a + b*x])/(a*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx}+\frac{-Ab+aB}{ab(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{A(a+bx)\log(x)}{a\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(a+bx)\log(a+bx)}{ab\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.55

$$\frac{(a+bx)((aB-Ab)\log(a+bx)+Ab\log(x))}{ab\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*(A*b*Log[x] + (-(A*b) + a*B)*Log[a + b*x]))/(a*b*Sqrt[(a + b*x)^
2])
```

IntegrateAlgebraic [B] time = 0.43, size = 186, normalized size = 2.32

$$\frac{\left(a\sqrt{b^2}\,B-abB-2A\sqrt{b^2}\,b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2ab\sqrt{b^2}}+\frac{(2Ab-aB)\log\left(-ab\sqrt{a^2+2abx+b^2x^2}+a^2b+ab\sqrt{b^2}\,x\right)}{2ab}-\frac{B\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2\sqrt{b^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/2*(B*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] +
((-2*A*b*Sqrt[b^2] - a*b*B + a*Sqrt[b^2]*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/(2*a*b*Sqrt[b^2]) + ((2*A*b - a*B)*Log[a^2*b + a*b*S
qrt[b^2]*x - a*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*a*b)
```

fricas [A] time = 0.42, size = 28, normalized size = 0.35

$$\frac{Ab\log(x)+(Ba-Ab)\log(bx+a)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] (A*b*log(x) + (B*a - A*b)*log(b*x + a))/(a*b)
```

giac [A] time = 0.16, size = 49, normalized size = 0.61

$$\frac{A\log(|x|)\operatorname{sgn}(bx+a)}{a}+\frac{\left(Ba\operatorname{sgn}(bx+a)-Ab\operatorname{sgn}(bx+a)\right)\log(|bx+a|)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] A*log(abs(x))*sgn(b*x + a)/a + (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(ab
s(b*x + a))/(a*b)
```

maple [A] time = 0.06, size = 49, normalized size = 0.61

$$-\frac{(bx+a)\left(-Ab\ln(x)+Ab\ln(bx+a)-Ba\ln(bx+a)\right)}{\sqrt{(bx+a)^2}\;ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/((b*x+a)^2)^(1/2),x)
```

```
[Out] -(b*x+a)*(A*b*ln(b*x+a)-A*b*ln(x)-B*a*ln(b*x+a))/((b*x+a)^2)^(1/2)/a/b
```

maxima [A] time = 0.56, size = 53, normalized size = 0.66

$$-\frac{(-1)^{2\,abx+2\,a^2}A\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a}+\frac{B\log\left(x+\frac{a}{b}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*A*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a + B*log(x +
a/b)/b
```

mupad [B] time = 1.45, size = 68, normalized size = 0.85

$$\frac{B\,\ln\left(a+b\,x+\sqrt{(a+b\,x)^2}\right)}{b}-\frac{A\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*((a + b*x)^2)^(1/2)),x)
```

```
[Out] (B*log(a + b*x + ((a + b*x)^2)^(1/2)))/b - (A*log(a*b + a^2/x + ((a^2)^(1/2
)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x))/(a^2)^(1/2)
```

sympy [A] time = 0.44, size = 41, normalized size = 0.51

$$\frac{A\log(x)}{a}+\frac{(-Ab+Ba)\log\left(x+\frac{-Aa+\frac{a(-Ab+Ba)}{b}}{-2Ab+Ba}\right)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)**2)**(1/2),x)
```

```
[Out] A*log(x)/a + (-A*b + B*a)*log(x + (-A*a + a*(-A*b + B*a)/b)/(-2*A*b + B*a))
/(a*b)
```

3.637 $\int \frac{A+Bx}{x^2\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=113

$$-\frac{\log(x)(a+bx)(Ab-aB)}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{a^2\sqrt{a^2+2abx+b^2x^2}}-\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x}$$

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {769, 646, 36, 29, 31}

$$-\frac{\log(x)(a+bx)(Ab-aB)}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{a^2\sqrt{a^2+2abx+b^2x^2}}-\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a^2*x)) - ((A*b - a*B)*(a + b*x)*Log[x
])/(a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a + b*x)*Log[a + b*x
])/(a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^2\sqrt{a^2+2abx+b^2x^2}}\,dx = -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} - \frac{\left(2Ab^2-2abB\right)\int \frac{1}{x\sqrt{a^2+2abx+b^2x^2}}\,dx}{2ab}$$
$$= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} - \frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{x\left(ab+b^2x\right)}\,dx}{2ab\sqrt{a^2+2abx+b^2x^2}}$$
$$= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} + \frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{2a^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(\left(2Ab^2-\right.\right.}{2a^2b^{\cdots}}$$
$$= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} - \frac{(Ab-aB)(a+bx)\log(x)}{a^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)(a+bx)\log(a}{a^2\sqrt{a^2+2abx+b^2x^{\cdots}}}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 0.50

$$\frac{(a+bx)(\log(x)(aBx-Abx)+x(Ab-aB)\log(a+bx)-aA)}{a^2x\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*(-(a*A) + (-(A*b*x) + a*B*x)*Log[x] + (A*b - a*B)*x*Log[a + b*x]
))/(a^2*x*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.88, size = 480, normalized size = 4.25

$$\frac{\frac{2\sqrt{b^2}Bx\tanh^{-1}\left(\frac{\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}x}{a}\right)}{a}-\frac{2B\sqrt{a^2+2abx+b^2x^2}\tanh^{-1}\left(\frac{\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}x}{a}\right)}{a}-\frac{2Ab}{a}}{\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}x}-\frac{2Ab\left(\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}x\right)^2\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)}{a^2\left(-2\sqrt{b^2}x\sqrt{a^2+2abx+b^2x^2}+a^2+2abx+2b^2x^2\right)}+\frac{-2A\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(a^2+4abx+4b^2x^2\right)-2A\left(-a^3b-5a^2b^2x-8ab^3x^2-4b^4x^3\right)}{\sqrt{a^2+2abx+b^2x^2}\left(-2a^3bx-12a^2b^2x^2-24ab^3x^3-16b^4x^4\right)+\sqrt{b^2}\left(2a^4x+14a^3bx^2+36a^2b^2x^3+40ab^3x^4+16b^4x^5\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(a^2 + 4*a*b*x + 4*b^2*x^2) -
 2*A*(-(a^3*b) - 5*a^2*b^2*x - 8*a*b^3*x^2 - 4*b^4*x^3))/(Sqrt[a^2 + 2*a*b*
x + b^2*x^2]*(-2*a^3*b*x - 12*a^2*b^2*x^2 - 24*a*b^3*x^3 - 16*b^4*x^4) + Sq
rt[b^2]*(2*a^4*x + 14*a^3*b*x^2 + 36*a^2*b^2*x^3 + 40*a*b^3*x^4 + 16*b^4*x^
5)) + ((-2*A*b)/a + (2*Sqrt[b^2]*B*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/a])/a - (2*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sq
rt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a)/(-(Sqrt[b^2]*x) + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]) - (2*A*b*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^
2*x^2])^2*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/(a^2*
(a^2 + 2*a*b*x + 2*b^2*x^2 - 2*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.43, size = 41, normalized size = 0.36

$$-\frac{(Ba-Ab)x\log(bx+a)-(Ba-Ab)x\log(x)+Aa}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -((B*a - A*b)*x*log(b*x + a) - (B*a - A*b)*x*log(x) + A*a)/(a^2*x)
```

giac [A] time = 0.16, size = 81, normalized size = 0.72

$$\frac{\left(Ba\mathrm{sgn}(bx+a)-Ab\mathrm{sgn}(bx+a)\right)\log(|x|)}{a^2}-\frac{A\mathrm{sgn}(bx+a)}{ax}-\frac{\left(Bab\mathrm{sgn}(bx+a)-Ab^2\mathrm{sgn}(bx+a)\right)\log(|bx+a|)}{a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(x))/a^2 - A*sgn(b*x + a)/(a*x
) - (B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*log(abs(b*x + a))/(a^2*b)
```

maple [A] time = 0.06, size = 61, normalized size = 0.54

$$\frac{(bx+a)(-Abx\ln(x)+Abx\ln(bx+a)+Bax\ln(x)-Bax\ln(bx+a)-Aa)}{\sqrt{(bx+a)^2}\,a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*x*b-A*ln(x)*x*b-B*ln(b*x+a)*x*a+B*ln(x)*x*a-A*a)/((b*x
+a)^2)^(1/2)/x/a^2
```

maxima [A] time = 0.51, size = 106, normalized size = 0.94

$$-\frac{(-1)^{2abx+2a^2}B\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)}{a}+\frac{(-1)^{2abx+2a^2}Ab\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)}{a^2}-\frac{\sqrt{b^2x^2+2abx+a^2}\,A}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a + (-1)^(2*a*
b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^2 - sqrt(b^2*x^2 + 2*
a*b*x + a^2)*A/(a^2*x)
```

mupad [B] time = 1.49, size = 117, normalized size = 1.04

$$\frac{A\,a\,b\,\mathrm{atanh}\left(\frac{a^2+b\,x\,a}{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}\right)}{\left(a^2\right)^{3/2}}-\frac{A\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{a^2\,x}-\frac{B\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*((a + b*x)^2)^(1/2)),x)
```

```
[Out] (A*a*b*atanh((a^2 + a*b*x)/((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))))/
(a^2)^(3/2) - (A*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a^2*x) - (B*log(a*b + a^
2/x + ((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x))/(a^2)^(1/2)
```

sympy [A] time = 0.40, size = 95, normalized size = 0.84

$$-\frac{A}{ax}+\frac{(-Ab+Ba)\log\left(x+\frac{-Aab+Ba^2-a(-Ab+Ba)}{-2Ab^2+2Bab}\right)}{a^2}-\frac{(-Ab+Ba)\log\left(x+\frac{-Aab+Ba^2+a(-Ab+Ba)}{-2Ab^2+2Bab}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] -A/(a*x) + (-A*b + B*a)*log(x + (-A*a*b + B*a**2 - a*(-A*b + B*a))/(-2*A*b*
*2 + 2*B*a*b))/a**2 - (-A*b + B*a)*log(x + (-A*a*b + B*a**2 + a*(-A*b + B*a
))/(-2*A*b**2 + 2*B*a*b))/a**2
```

3.638 $\int \frac{A+Bx}{x^3\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=162

$$\frac{(a+bx)(Ab-aB)}{a^2x\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2ax^2\sqrt{a^2+2abx+b^2x^2}}+\frac{b\log(x)(a+bx)(Ab-aB)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b(a+bx)(Ab-aB)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{(a+bx)(Ab-aB)}{a^2x\sqrt{a^2+2abx+b^2x^2}}+\frac{b\log(x)(a+bx)(Ab-aB)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b(a+bx)(Ab-aB)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2ax^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(A*(a + b*x))/(2*a*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a +
b*x))/(a^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b*(A*b - a*B)*(a + b*x)*Log[
x])/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x)*Log[a +
b*x])/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^3\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx^3}+\frac{-Ab+aB}{a^2bx^2}+\frac{Ab-aB}{a^3x}+\frac{b(-Ab+aB)}{a^3(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{A(a+bx)}{2ax^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{a^2x\sqrt{a^2+2abx+b^2x^2}}+\frac{b(Ab-aB)(a+bx)\log(}{a^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.49

$$-\frac{(a+bx)\left(2bx^2\log(x)(aB-Ab)+2bx^2(Ab-aB)\log(a+bx)+a(aA+2aBx-2Abx)\right)}{2a^3x^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/2*((a + b*x)*(a*(a*A - 2*A*b*x + 2*a*B*x) + 2*b*(-(A*b) + a*B)*x^2*Log[x
] + 2*b*(A*b - a*B)*x^2*Log[a + b*x]))/(a^3*x^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 3.82, size = 1251, normalized size = 7.72

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-(a^11*A*b^2) - 19*a^10*A*b^3*x - 2*a^11*b^
2*B*x - 162*a^9*A*b^4*x^2 - 42*a^10*b^3*B*x^2 - 816*a^8*A*b^5*x^3 - 400*a^9
*b^4*B*x^3 - 2688*a^7*A*b^6*x^4 - 2280*a^8*b^5*B*x^4 - 6048*a^6*A*b^7*x^5 -
 8640*a^7*b^6*B*x^5 - 9408*a^5*A*b^8*x^6 - 22848*a^6*b^7*B*x^6 - 9984*a^4*A
*b^9*x^7 - 43008*a^5*b^8*B*x^7 - 6912*a^3*A*b^10*x^8 - 57600*a^4*b^9*B*x^8
- 2816*a^2*A*b^11*x^9 - 53760*a^3*b^10*B*x^9 - 512*a*A*b^12*x^10 - 33280*a^
2*b^11*B*x^10 - 12288*a*b^12*B*x^11 - 2048*b^13*B*x^12) + Sqrt[b^2]*(a^12*A
*b + 20*a^11*A*b^2*x + 2*a^12*b*B*x + 181*a^10*A*b^3*x^2 + 44*a^11*b^2*B*x^
2 + 978*a^9*A*b^4*x^3 + 442*a^10*b^3*B*x^3 + 3504*a^8*A*b^5*x^4 + 2680*a^9*
b^4*B*x^4 + 8736*a^7*A*b^6*x^5 + 10920*a^8*b^5*B*x^5 + 15456*a^6*A*b^7*x^6
+ 31488*a^7*b^6*B*x^6 + 19392*a^5*A*b^8*x^7 + 65856*a^6*b^7*B*x^7 + 16896*a
^4*A*b^9*x^8 + 100608*a^5*b^8*B*x^8 + 9728*a^3*A*b^10*x^9 + 111360*a^4*b^9*
B*x^9 + 3328*a^2*A*b^11*x^10 + 87040*a^3*b^10*B*x^10 + 512*a*A*b^12*x^11 +
45568*a^2*b^11*B*x^11 + 14336*a*b^12*B*x^12 + 2048*b^13*B*x^13))/(a*Sqrt[b^
2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*a^11*b - 42*a^10*b^2*x - 400*a^9*b
^3*x^2 - 2280*a^8*b^4*x^3 - 8640*a^7*b^5*x^4 - 22848*a^6*b^6*x^5 - 43008*a^
5*b^7*x^6 - 57600*a^4*b^8*x^7 - 53760*a^3*b^9*x^8 - 33280*a^2*b^10*x^9 - 12
288*a*b^11*x^10 - 2048*b^12*x^11) + a*x^2*(2*a^12*b^2 + 44*a^11*b^3*x + 442
*a^10*b^4*x^2 + 2680*a^9*b^5*x^3 + 10920*a^8*b^6*x^4 + 31488*a^7*b^7*x^5 +
65856*a^6*b^8*x^6 + 100608*a^5*b^9*x^7 + 111360*a^4*b^10*x^8 + 87040*a^3*b^
11*x^9 + 45568*a^2*b^12*x^10 + 14336*a*b^13*x^11 + 2048*b^14*x^12)) + ((2*A
*b^2)/a^2 - (2*b*Sqrt[b^2]*B*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/a])/a^2 + (2*b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt
[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^2)/(-(Sqrt[b^2]*x) + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]) + (2*A*b^2*(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x +
b^2*x^2])^4*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/(a^
3*(a^4 + 4*a^3*b*x + 12*a^2*b^2*x^2 + 16*a*b^3*x^3 + 8*b^4*x^4 - 4*a^2*Sqrt
[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 8*a*b*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*
b*x + b^2*x^2] - 8*(b^2)^(3/2)*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.50, size = 69, normalized size = 0.43

$$\frac{2 \left(Bab - Ab^2\right)x^2 \log\left(bx + a\right) - 2 \left(Bab - Ab^2\right)x^2 \log(x) - Aa^2 - 2 \left(Ba^2 - Aab\right)x}{2 a^3 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(B*a*b - A*b^2)*x^2*log(b*x + a) - 2*(B*a*b - A*b^2)*x^2*log(x) - A*
a^2 - 2*(B*a^2 - A*a*b)*x)/(a^3*x^2)
```

giac [A] time = 0.15, size = 117, normalized size = 0.72

$$-\frac{\left(Bab\mathrm{sgn}\left(bx + a\right) - Ab^2\mathrm{sgn}\left(bx + a\right)\right) \log\left(|x|\right)}{a^3} + \frac{\left(Bab^2\mathrm{sgn}\left(bx + a\right) - Ab^3\mathrm{sgn}\left(bx + a\right)\right) \log\left(|bx + a|\right)}{a^3 b} - \frac{Aa^2\mathrm{sgn}\left(bx + a\right) + 2 \left(Ba^2\mathrm{sgn}\left(bx + a\right) - Aab\mathrm{sgn}\left(bx + a\right)\right)x}{2 a^3 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*log(abs(x))/a^3 + (B*a*b^2*sgn(b
*x + a) - A*b^3*sgn(b*x + a))*log(abs(b*x + a))/(a^3*b) - 1/2*(A*a^2*sgn(b*
x + a) + 2*(B*a^2*sgn(b*x + a) - A*a*b*sgn(b*x + a))*x)/(a^3*x^2)
```

maple [A] time = 0.06, size = 92, normalized size = 0.57

$$-\frac{(bx+a)\left(-2A\,b^2x^2\ln(x)+2A\,b^2x^2\ln(bx+a)+2Bab\,x^2\ln(x)-2Bab\,x^2\ln(bx+a)-2Aabx+2B\,a^2x+A\,a^2\right)}{2\sqrt{(bx+a)^2}\,a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*A*ln(b*x+a)*x^2*b^2-2*A*ln(x)*x^2*b^2-2*B*ln(b*x+a)*x^2*a*b
+2*B*ln(x)*x^2*a*b-2*A*a*b*x+2*B*a^2*x+A*a^2)/((b*x+a)^2)^(1/2)/x^2/a^3
```

maxima [A] time = 0.59, size = 164, normalized size = 1.01

$$\frac{(-1)^{2\,abx+2\,a^2}\,Bb\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^2}-\frac{(-1)^{2\,abx+2\,a^2}\,Ab^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{a^2x}+\frac{3\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab}{2\,a^3x}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,A}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] (-1)^(2*a*b*x + 2*a^2)*B*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^2 - (-1)^(2
*a*b*x + 2*a^2)*A*b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 - sqrt(b^2*x^2
 + 2*a*b*x + a^2)*B/(a^2*x) + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b/(a^3*x)
 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/(a^2*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^3\,\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^3*((a + b*x)^2)^(1/2)), x)
```

sympy [A] time = 0.48, size = 131, normalized size = 0.81

$$\frac{-Aa+x(2Ab-2Ba)}{2a^2x^2}-\frac{b(-Ab+Ba)\log\left(x+\frac{-Aab^2+Ba^2b-ab(-Ab+Ba)}{-2Ab^3+2Bab^2}\right)}{a^3}+\frac{b(-Ab+Ba)\log\left(x+\frac{-Aab^2+Ba^2b+ab(-Ab+Ba)}{-2Ab^3+2Bab^2}\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-A*a + x*(2*A*b - 2*B*a))/(2*a**2*x**2) - b*(-A*b + B*a)*log(x + (-A*a*b**
2 + B*a**2*b - a*b*(-A*b + B*a))/(-2*A*b**3 + 2*B*a*b**2))/a**3 + b*(-A*b +
 B*a)*log(x + (-A*a*b**2 + B*a**2*b + a*b*(-A*b + B*a))/(-2*A*b**3 + 2*B*a*
b**2))/a**3
```

3.639 $\int \frac{A+Bx}{x^4\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=211

$$\frac{(a+bx)(Ab-aB)}{2a^2x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{3ax^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b^2\log(x)(a+bx)(Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b^2(a+bx)(Ab-aB)\log(a+b}{a^4\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.10, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{b(a+bx)(Ab-aB)}{a^3x\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)}{2a^2x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{b^2\log(x)(a+bx)(Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b^2(a+bx)(Ab-aB)\log(a+bx)}{a^4\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{3ax^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(A*(a + b*x))/(3*a*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a +
b*x))/(2*a^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x))
/(a^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b^2*(A*b - a*B)*(a + b*x)*Log[x])
/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^2*(A*b - a*B)*(a + b*x)*Log[a + b
*x])/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^4\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^4\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx^4}+\frac{-Ab+aB}{a^2bx^3}+\frac{Ab-aB}{a^3x^2}+\frac{b(-Ab+aB)}{a^4x}-\frac{b^2(-Ab+aB)}{a^4(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{A(a+bx)}{3ax^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{2a^2x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)(a+bx)}{a^3x\sqrt{a^2+2abx+b^2x^2}}-
\end{aligned}$$

Mathematica [A] time = 0.05, size = 102, normalized size = 0.48

$$-\frac{(a+bx)\left(a\left(a^2(2A+3Bx)-3abx(A+2Bx)+6Ab^2x^2\right)+6b^2x^3\log(x)(Ab-aB)+6b^2x^3(aB-Ab)\log(a+bx)\right)}{6a^4x^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

[In] Integrate[(A + B*x)/(x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]

[Out] -1/6*((a + b*x)*(a*(6*A*b^2*x^2 - 3*a*b*x*(A + 2*B*x) + a^2*(2*A + 3*B*x)) + 6*b^2*(A*b - a*B)*x^3*Log[x] + 6*b^2*(-(A*b) + a*B)*x^3*Log[a + b*x]))/(a^4*x^3*Sqrt[(a + b*x)^2])

IntegrateAlgebraic [B] time = 27.26, size = 3036, normalized size = 14.39

Result too large to show

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(A + B*x)/(x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]

[Out] (-16*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*a^39*A*b^3 - 145*a^38*A*b^4*x - 3*a^39*b^3*B*x - 5114*a^37*A*b^5*x^2 - 216*a^38*b^4*B*x^2 - 116901*a^36*A*b^6*x^3 - 7551*a^37*b^5*B*x^3 - 1946910*a^35*A*b^7*x^4 - 170706*a^36*b^6*B*x^4 - 25177068*a^34*A*b^8*x^5 - 2804328*a^35*b^7*B*x^5 - 263109000*a^33*A*b^9*x^6 - 35662032*a^34*b^8*B*x^6 - 2283278976*a^32*A*b^10*x^7 - 365151024*a^33*b^9*B*x^7 - 16779949824*a^31*A*b^11*x^8 - 3091280544*a^32*b^10*B*x^8 - 105974725120*a^30*A*b^12*x^9 - 22045630464*a^31*b^11*B*x^9 - 581687118848*a^29*A*b^13*x^10 - 134239598592*a^30*b^12*B*x^10 - 2799513041920*a^28*A*b^14*x^11 - 704731180032*a^29*b^13*B*x^11 - 11896314587136*a^27*A*b^15*x^12 - 3211055622144*a^28*b^14*B*x^12 - 44883791253504*a^26*A*b^16*x^13 - 12748821356544*a^27*b^15*B*x^13 - 151017362841600*a^25*A*b^17*x^14 - 44154197950464*a^26*b^16*B*x^14 - 454702828584960*a^24*A*b^18*x^15 - 133071057764352*a^25*b^17*B*x^15 - 1228421033164800*a^23*A*b^19*x^16 - 346215966474240*a^24*b^18*B*x^16 - 2983578273054720*a^22*A*b^20*x^17 - 763419389460480*a^23*b^19*B*x^17 - 6523447219322880*a^21*A*b^21*x^18 - 1365440743342080*a^22*b^20*B*x^18 - 12849688500633600*a^20*A*b^22*x^19 - 1731924258324480*a^21*b^21*B*x^19 - 22807023243755520*a^19*A*b^23*x^20 - 507100983459840*a^20*b^22*B*x^20 - 36462975477350400*a^18*A*b^24*x^21 + 5183698942033920*a^19*b^23*B*x^21 - 52462389575024640*a^17*A*b^25*x^22 + 19811818316759040*a^18*b^24*B*x^22 - 67827771019100160*a^16*A*b^26*x^23 + 48242645941616640*a^17*b^25*B*x^23 - 78633368970854400*a^15*A*b^27*x^24 + 92914873364643840*a^16*b^26*B*x^24 - 81511015665106944*a^14*A*b^28*x^25 + 150366847311544320*a^15*b^27*B*x^25 - 75275729884938240*a^13*A*b^29*x^26 + 209516678961168384*a^14*b^28*B*x^26 - 61649279210487808*a^12*A*b^30*x^27 + 254128279517134848*a^13*b^29*B*x^27 - 44518268702031872*a^11*A*b^31*x^28 + 269528035416342528*a^12*b^30*B*x^28 - 28142436320542720*a^10*A*b^32*x^29 + 250112958548410368*a^11*b^31*B*x^29 - 15433601516568576*a^9*A*b^33*x^30 + 202625541507907584*a^10*b^32*B*x^30 - 7258548417331200*a^8*A*b^34*x^31 + 142646439183384576*a^9*b^33*B*x^31 - 2884143553708032*a^7*A*b^35*x^32 + 86643575705567232*a^8*b^34*B*x^32 - 949114757971968*a^6*A*b^36*x^33 + 44953605916065792*a^7*b^35*B*x^33 - 251642133872640*a^5*A*b^37*x^34 + 19650815408996352*a^6*b^36*B*x^34 - 51629801865216*a^4*A*b^38*x^35 + 7101990416941056*a^5*b^37*B*x^35 - 7687991459840*a^3*A*b^39*x^36 + 2066248636563456*a^4*b^38*B*x^36 - 738734374912*a^2*A*b^40*x^37 + 465196497764352*a^3*b^39*B*x^37 - 34359738368*a*A*b^41*x^38 + 76072460746752*a^2*b^40*B*x^38 + 8040178778112*a*b^41*B*x^39 + 412316860416*b^42*B*x^40) - 16*Sqrt[b^2]*(2*a^40*A*b^2 + 147*a^39*A*b^3*x + 3*a^40*b^2*B*x + 5259*a^38*A*b^4*x^2 + 219*a^39*b^3*B*x^2 + 122015*a^37*A*b^5*x^3 + 7767*a^38*b^4*B*x^3 + 2063811*a^36*A*b^6*x^4 + 178257*a^37*b^5*B*x^4 + 27123978*a^35*A*b^7*x^5 + 2975034*a^36*b^6*B*x^5 + 288286068*a^34*A*b^8*x^6 + 38466360*a^35*b^7*B*x^6 + 2546387976*a^33*A*b^9*x^7 + 400813056*a^34*b^8*B*x^7 + 19063228800*a^32*A*b^10*x^8 + 3456431568*a^33*b^9*B*x^8 + 122754674944*a^31*A*b^11*x^9 + 25136911008*a^32*b^10*B*x^9 + 687661843968*a^30*A*b^12*x^10 + 156285229056*a^31*b^11*B*x^10 + 3381200160768*a^29*A*b^13*x^11 + 838970778624*a^30*b^12*B*x^11 + 14695827629056*a^28*A*b^14*x^12 + 3915786802176*a^29*b^13*B*x^12 + 56780105840640*a^27*A*b^15*x^13 + 15959876978688*a^28*b^14*B*x^13 + 195901154095104*a^26*A*b^16*x^14 + 56903019307008*a^27*b^15*B*x^14 + 605720191426560*a^25*A*b^17*x^15 + 177225255714816*a^26*b^16*B*x^15 + 1683123861749760*a^24*A*b^1

8*x^16 + 479287024238592*a^25*b^17*B*x^16 + 4211999306219520*a^23*A*b^19*x^17 + 1109635355934720*a^24*b^18*B*x^17 + 9507025492377600*a^22*A*b^20*x^18 + 2128860132802560*a^23*b^19*B*x^18 + 19373135719956480*a^21*A*b^21*x^19 + 3097365001666560*a^22*b^20*B*x^19 + 35656711744389120*a^20*A*b^22*x^20 + 2239025241784320*a^21*b^21*B*x^20 + 59269998721105920*a^19*A*b^23*x^21 - 4676597958574080*a^20*b^22*B*x^21 + 88925365052375040*a^18*A*b^24*x^22 - 24995517258792960*a^19*b^23*B*x^22 + 120290160594124800*a^17*A*b^25*x^23 - 68054464258375680*a^18*b^24*B*x^23 + 146461139989954560*a^16*A*b^26*x^24 - 141157519306260480*a^17*b^25*B*x^24 + 160144384635961344*a^15*A*b^27*x^25 - 243281720676188160*a^16*b^26*B*x^25 + 156786745550045184*a^14*A*b^28*x^26 - 359883526272712704*a^15*b^27*B*x^26 + 136925009095426048*a^13*A*b^29*x^27 - 463644958478303232*a^14*b^28*B*x^27 + 106167547912519680*a^12*A*b^30*x^28 - 523656314933477376*a^13*b^29*B*x^28 + 72660705022574592*a^11*A*b^31*x^29 - 519640993964752896*a^12*b^30*B*x^29 + 43576037837111296*a^10*A*b^32*x^30 - 452738500056317952*a^11*b^31*B*x^30 + 22692149933899776*a^9*A*b^33*x^31 - 345271980691292160*a^10*b^32*B*x^31 + 10142691971039232*a^8*A*b^34*x^32 - 229290014888951808*a^9*b^33*B*x^32 + 3833258311680000*a^7*A*b^35*x^33 - 131597181621633024*a^8*b^34*B*x^33 + 1200756891844608*a^6*A*b^36*x^34 - 64604421325062144*a^7*b^35*B*x^34 + 303271935737856*a^5*A*b^37*x^35 - 26752805825937408*a^6*b^36*B*x^35 + 59317793325056*a^4*A*b^38*x^36 - 9168239053504512*a^5*b^37*B*x^36 + 8426725834752*a^3*A*b^39*x^37 - 2531445134327808*a^4*b^38*B*x^37 + 773094113280*a^2*A*b^40*x^38 - 541268958511104*a^3*b^39*B*x^38 + 34359738368*a*A*b^41*x^39 - 84112639524864*a^2*b^40*B*x^39 - 8452495638528*a*b^41*B*x^40 - 412316860416*b^42*B*x^41))/(3*a^2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(32*a^38*b^2*x^3 + 2368*a^37*b^3*x^4 + 85280*a^36*b^4*x^5 + 1991424*a^35*b^5*x^6 + 33895680*a^34*b^6*x^7 + 448186368*a^33*b^7*x^8 + 4791316992*a^32*b^8*x^9 + 42556293120*a^31*b^9*x^10 + 320265977856*a^30*b^10*x^11 + 2072421007360*a^29*b^11*x^12 + 11661974601728*a^28*b^12*x^13 + 57575209172992*a^27*b^13*x^14 + 251137846149120*a^26*b^14*x^15 + 973253803769856*a^25*b^15*x^16 + 3365932223692800*a^24*b^16*x^17 + 10424834756444160*a^23*b^17*x^18 + 28992809667133440*a^22*b^18*x^19 + 72550320596582400*a^21*b^19*x^20 + 163574499948625920*a^20*b^20*x^21 + 332558077054156800*a^19*b^21*x^22 + 609823365393285120*a^18*b^22*x^23 + 1008320668741140480*a^17*b^23*x^24 + 1502053114105036800*a^16*b^24*x^25 + 2013014245653872640*a^15*b^25*x^26 + 2422115453317939200*a^14*b^26*x^27 + 2609386331050082304*a^13*b^27*x^28 + 2508071013917392896*a^12*b^28*x^29 + 2141176316727132160*a^11*b^29*x^30 + 1614481075604553728*a^10*b^30*x^31 + 1067623041791426560*a^9*b^31*x^32 + 613684065626750976*a^8*b^32*x^33 + 303169990394118144*a^7*b^33*x^34 + 126834851016867840*a^6*b^34*x^35 + 44061004337774592*a^5*b^35*x^36 + 12367444228177920*a^4*b^36*x^37 + 2694902999678976*a^3*b^37*x^38 + 427710023204864*a^2*b^38*x^39 + 43980465111040*a*b^39*x^40 + 2199023255552*b^40*x^41) + 3*a^2*(-32*a^39*b^3*x^3 - 2400*a^38*b^4*x^4 - 87648*a^37*b^5*x^5 - 2076704*a^36*b^6*x^6 - 35887104*a^35*b^7*x^7 - 482082048*a^34*b^8*x^8 - 5239503360*a^33*b^9*x^9 - 47347610112*a^32*b^10*x^10 - 362822270976*a^31*b^11*x^11 - 2392686985216*a^30*b^12*x^12 - 13734395609088*a^29*b^13*x^13 - 69237183774720*a^28*b^14*x^14 - 308713055322112*a^27*b^15*x^15 - 1224391649918976*a^26*b^16*x^16 - 4339186027462656*a^25*b^17*x^17 - 13790766980136960*a^24*b^18*x^18 - 39417644423577600*a^23*b^19*x^19 - 101543130263715840*a^22*b^20*x^20 - 236124820545208320*a^21*b^21*x^21 - 496132577002782720*a^20*b^22*x^22 - 942381442447441920*a^19*b^23*x^23 - 1618144034134425600*a^18*b^24*x^24 - 2510373782846177280*a^17*b^25*x^25 - 3515067359758909440*a^16*b^26*x^26 - 4435129698971811840*a^15*b^27*x^27 - 5031501784368021504*a^14*b^28*x^28 - 5117457344967475200*a^13*b^29*x^29 - 4649247330644525056*a^12*b^30*x^30 - 3755657392331685888*a^11*b^31*x^31 - 2682104117395980288*a^10*b^32*x^32 - 1681307107418177536*a^9*b^33*x^33 - 916854056020869120*a^8*b^34*x^34 - 430004841410985984*a^7*b^35*x^35 - 170895855354642432*a^6*b^36*x^36 - 56428448565952512*a^5*b^37*x^37 - 15062347227856896*a^4*b^38*x^38 - 3122613022883840*a^3*b^39*x^39 - 471690488315904*a^2*b^40*x^40 - 46179488366592*a*b^41*x^41 - 2199023255552*b^42*x^42)) + ((-2*A*b^3)/a^3 + (2*(b^2)^(3/2)*B*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqr

```
t[a^2 + 2*a*b*x + b^2*x^2])/a])/a^3 - (2*b^2*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^3)/(-(Sqrt
[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*A*b^3*ArcTanh[(Sqrt[b^2]*x)/
a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/a^4
```

fricas [A] time = 0.43, size = 94, normalized size = 0.45

$$-\frac{6\left(Bab^2-Ab^3\right)x^3\log\left(bx+a\right)-6\left(Bab^2-Ab^3\right)x^3\log(x)+2\,Aa^3-6\left(Ba^2b-Aab^2\right)x^2+3\left(Ba^3-Aa^2b\right)x}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/6*(6*(B*a*b^2 - A*b^3)*x^3*log(b*x + a) - 6*(B*a*b^2 - A*b^3)*x^3*log(x)
 + 2*A*a^3 - 6*(B*a^2*b - A*a*b^2)*x^2 + 3*(B*a^3 - A*a^2*b)*x)/(a^4*x^3)
```

giac [A] time = 0.16, size = 153, normalized size = 0.73

$$\frac{\left(Bab^2\mathrm{sgn}\left(bx+a\right)-Ab^3\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)}{a^4}-\frac{\left(Bab^3\mathrm{sgn}\left(bx+a\right)-Ab^4\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{a^4b}-\frac{2\,Aa^3\mathrm{sgn}\left(bx+a\right)-6\left(Ba^2b\mathrm{sgn}\left(bx+a\right)-Aab^2\mathrm{sgn}\left(bx+a\right)\right)x^2+3\left(Ba^3\mathrm{sgn}\left(bx+a\right)-Aa^2b\mathrm{sgn}\left(bx+a\right)\right)x}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] (B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*log(abs(x))/a^4 - (B*a*b^3*sgn(
b*x + a) - A*b^4*sgn(b*x + a))*log(abs(b*x + a))/(a^4*b) - 1/6*(2*A*a^3*sgn
(b*x + a) - 6*(B*a^2*b*sgn(b*x + a) - A*a*b^2*sgn(b*x + a))*x^2 + 3*(B*a^3*
sgn(b*x + a) - A*a^2*b*sgn(b*x + a))*x)/(a^4*x^3)
```

maple [A] time = 0.07, size = 119, normalized size = 0.56

$$\frac{\left(bx+a\right)\left(-6A\,b^3x^3\ln(x)+6A\,b^3x^3\ln\left(bx+a\right)+6Ba\,b^2x^3\ln(x)-6Ba\,b^2x^3\ln\left(bx+a\right)-6Aa\,b^2x^2+6B\,a^2b\,x^2+3A\,a^2bx-3B\,a^3x-2A\,a^3\right)}{6\sqrt{\left(bx+a\right)^2}\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(6*A*ln(b*x+a)*x^3*b^3-6*A*b^3*x^3*ln(x)-6*B*ln(b*x+a)*x^3*a*b^
2+6*B*a*b^2*x^3*ln(x)-6*A*a*b^2*x^2+6*B*a^2*b*x^2+3*A*a^2*b*x-3*B*a^3*x-2*A
*a^3)/((b*x+a)^2)^(1/2)/a^4/x^3
```

maxima [A] time = 0.67, size = 224, normalized size = 1.06

$$-\frac{(-1)^{2\,abx+2\,a^2}Bb^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^3}+\frac{(-1)^{2\,abx+2\,a^2}Ab^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^4}+\frac{3\sqrt{b^2x^2+2\,abx+a^2}\,Bb}{2\,a^3x}-\frac{11\sqrt{b^2x^2+2\,abx+a^2}\,Ab^2}{6\,a^4x}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{2\,a^2x^2}+\frac{5\sqrt{b^2x^2+2\,abx+a^2}\,Ab}{6\,a^3x^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,A}{3\,a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 + (-1)
^(2*a*b*x + 2*a^2)*A*b^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 + 3/2*sqrt(
b^2*x^2 + 2*a*b*x + a^2)*B*b/(a^3*x) - 11/6*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A
*b^2/(a^4*x) - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/(a^2*x^2) + 5/6*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*b/(a^3*x^2) - 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/(
a^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^4\,\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^4*((a + b*x)^2)^(1/2)), x)
```

sympy [A] time = 0.53, size = 165, normalized size = 0.78

$$\frac{-2Aa^2 + x^2\left(-6Ab^2 + 6Bab\right) + x\left(3Aab - 3Ba^2\right)}{6a^3x^3} + \frac{b^2\left(-Ab + Ba\right)\log\left(x + \frac{-Aab^3 + Ba^2b^2 - ab^2(-Ab+Ba)}{-2Ab^4 + 2Bab^3}\right)}{a^4} - \frac{b^2\left(-Ab + Ba\right)\log\left(x + \frac{-Aab^3 + Ba^2b^2 + ab^2(-Ab+Ba)}{-2Ab^4 + 2Bab^3}\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-2*A*a**2 + x**2*(-6*A*b**2 + 6*B*a*b) + x*(3*A*a*b - 3*B*a**2))/(6*a**3*x
**3) + b**2*(-A*b + B*a)*log(x + (-A*a*b**3 + B*a**2*b**2 - a*b**2*(-A*b +
B*a))/(-2*A*b**4 + 2*B*a*b**3))/a**4 - b**2*(-A*b + B*a)*log(x + (-A*a*b**3
 + B*a**2*b**2 + a*b**2*(-A*b + B*a))/(-2*A*b**4 + 2*B*a*b**3))/a**4
```

3.640 $\int \frac{A+Bx}{x^5\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=256

$$\frac{(a+bx)(Ab-aB)}{3a^2x^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{4ax^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b^3\log(x)(a+bx)(Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{b^3(a+bx)(Ab-aB)\log(a-}{a^5\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.12, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{b^2(a+bx)(Ab-aB)}{a^4x\sqrt{a^2+2abx+b^2x^2}}-\frac{b(a+bx)(Ab-aB)}{2a^3x^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)}{3a^2x^3\sqrt{a^2+2abx+b^2x^2}}+\frac{b^3\log(x)(a+bx)(Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{b^3(a+bx)(Ab-aB)\log(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{4ax^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(A*(a + b*x))/(4*a*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a +
b*x))/(3*a^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x))
/(2*a^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^2*(A*b - a*B)*(a + b*x))/(a
^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^3*(A*b - a*B)*(a + b*x)*Log[x])/(a
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b^3*(A*b - a*B)*(a + b*x)*Log[a + b*x]
)/(a^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^5\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^5\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx^5}+\frac{-Ab+aB}{a^2bx^4}+\frac{Ab-aB}{a^3x^3}+\frac{b(-Ab+aB)}{a^4x^2}-\frac{b^2(-Ab+aB)}{a^5x}+\frac{b^3(-Ab+aB)}{a^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{A(a+bx)}{4ax^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{3a^2x^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)(a+bx}{2a^3x^2\sqrt{a^2+2abx+b}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 121, normalized size = 0.47

$$-\frac{(a+bx)\left(a\left(a^3(3A+4Bx)-2a^2bx(2A+3Bx)+6ab^2x^2(A+2Bx)-12Ab^3x^3\right)-12b^3x^4\log(x)(Ab-aB)+12b^3x^4(Ab-aB)\log(a+bx)\right)}{12a^5x^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/12*((a + b*x)*(a*(-12*A*b^3*x^3 + 6*a*b^2*x^2*(A + 2*B*x) - 2*a^2*b*x*(2
*A + 3*B*x) + a^3*(3*A + 4*B*x)) - 12*b^3*(A*b - a*B)*x^4*Log[x] + 12*b^3*(
A*b - a*B)*x^4*Log[a + b*x]))/(a^5*x^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 144.24, size = 4265, normalized size = 16.66

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^57*A*b - 317*a^56*A*b^2*x - 4*a^
57*b*B*x - 16435*a^55*A*b^3*x^2 - 422*a^56*b^2*B*x^2 - 557229*a^54*A*b^4*x^
3 - 21846*a^55*b^3*B*x^3 - 13894402*a^53*A*b^5*x^4 - 739670*a^54*b^4*B*x^4
- 271672850*a^52*A*b^6*x^5 - 18421342*a^53*b^5*B*x^5 - 4337143836*a^51*A*b^
7*x^6 - 359837100*a^52*b^6*B*x^6 - 58124825800*a^50*A*b^8*x^7 - 5740821008*
a^51*b^7*B*x^7 - 667238416880*a^49*A*b^9*x^8 - 76915029568*a^50*b^8*B*x^8 -
 6661915424640*a^48*A*b^10*x^9 - 883125016800*a^49*b^9*B*x^9 - 585462783270
40*a^47*A*b^11*x^10 - 8824603336640*a^48*b^10*B*x^10 - 457219477729280*a^46
*A*b^12*x^11 - 77673661112320*a^47*b^11*B*x^11 - 3197768773785600*a^45*A*b^
13*x^12 - 608095358008320*a^46*b^12*B*x^12 - 20158054194181120*a^44*A*b^14*
x^13 - 4268185542333440*a^45*b^13*B*x^13 - 115146312238684160*a^43*A*b^15*x
^14 - 27037561545164800*a^44*b^14*B*x^14 - 598690451217223680*a^42*A*b^16*x
^15 - 155445290934312960*a^43*b^15*B*x^15 - 2844164046416896000*a^41*A*b^17
*x^16 - 814995140379607040*a^42*b^16*B*x^16 - 12385260068851712000*a^40*A*b
^18*x^17 - 3912910229957263360*a^41*b^17*B*x^17 - 49572374862619607040*a^39
*A*b^19*x^18 - 17265683227604582400*a^40*b^18*B*x^18 - 1827939908990235443 2
0*a^38*A*b^20*x^19 - 70241014807366860800*a^39*b^19*B*x^19 - 62217964238272
7905280*a^37*A*b^21*x^20 - 264209995758604779520*a^38*b^20*B*x^20 - 1957960
418044046868480*a^36*A*b^22*x^21 - 921204943692974653440*a^37*b^21*B*x^21 -
 5704280886145928396800*a^35*A*b^23*x^22 - 2983982685925258035200*a^36*b^22
*B*x^22 - 15401528673924522967040*a^34*A*b^24*x^23 - 8998181559261268541440
*a^35*b^23*B*x^23 - 38569099213499054161920*a^33*A*b^25*x^24 - 253061967128
34465792000*a^34*b^24*B*x^24 - 89633271616377551060992*a^32*A*b^26*x^25 - 6
6484824642585330974720*a^33*b^25*B*x^25 - 193370972259236024680448*a^31*A*b
^27*x^26 - 163405590100169621241856*a^32*b^26*B*x^26 - 3872937358170767386 2
1440*a^30*A*b^28*x^27 - 376181863176239723839488*a^31*b^27*B*x^27 - 7200216
11882725251219456*a^29*A*b^29*x^28 - 812007574252872032845824*a^30*b^28*B*x
^28 - 1242004036400206030307328*a^28*A*b^30*x^29 - 164474033860161702985728
0*a^29*b^29*B*x^29 - 1986403135117299107758080*a^27*A*b^31*x^30 - 312783239
163014974065868 8*a^28*b^30*B*x^30 - 2942632751449592010113024*a^26*A*b^32*x
^31 - 5586162055607461598986240*a^27*b^31*B*x^31 - 403205999333790302863360
0*a^25*A*b^33*x^32 - 9369065544421249522860032*a^26*b^32*B*x^32 - 510088735
3195578638991360*a^24*A*b^34*x^33 - 14751931790742721671462912*a^25*b^33*B*
x^33 - 5943688032831047550894080*a^23*A*b^35*x^34 - 217918707165434516340 73
600*a^24*b^34*B*x^34 - 6359209726942002628526080*a^22*A*b^36*x^35 - 3017327
8340301365266350080*a^23*b^35*B*x^35 - 6221440965249143364648960*a^21*A*b^3
7*x^36 - 39110279855341317012848640*a^22*b^36*B*x^36 - 5534422942607081681 7
15200*a^20*A*b^38*x^37 - 47383825587164854186147840*a^21*b^37*B*x^37 - 4440
8531543169813603942 40*a^19*A*b^39*x^38 - 53560665008408226777006080*a^20*b^
38*B*x^38 - 3175344362316856893112320*a^18*A*b^40*x^39 - 563665377022011355
69305600*a^19*b^39*B*x^39 - 1982480817847829434204160*a^17*A*b^41*x^40 - 55
095307178765004486737920*a^18*b^40*B*x^40 - 1038716472230052836147200*a^16*
A*b^42*x^41 - 49883074555155751349780480*a^17*b^41*B*x^41 - 412810542648699
912192000*a^15*A*b^43*x^42 - 41708256158480643045457920*a^16*b^42*B*x^42 -
754328214845705211084 80*a^14*A*b^44*x^43 - 32095525534669895788134400*a^15*
```

b^43*B*x^43 + 5805266491061112406016 0*a^13*A*b^45*x^44 - 226441177490683609
48121600*a^14*b^44*B*x^44 + 7986555347535736602624 0*a^12*A*b^46*x^45 - 1458
355529601701143117824 0*a^13*b^45*B*x^45 + 5897116446687194251264 0*a^11*A*b^
47*x^46 - 853100346198294840475648 0*a^12*b^46*B*x^46 + 32893073859235178086
400*a^10*A*b^48*x^47 - 45066252062932053524480 00*a^11*b^47*B*x^47 + 1489468
4151092682424320*a^9*A*b^49*x^48 - 2135325976384711509934080*a^10*b^48*B*x^
48 + 5588333115181744783360*a^8*A*b^50*x^49 - 9001534306951899381760 00*a^9*
b^49*B*x^49 + 173872384843734371 5328*a^7*A*b^51*x^50 - 33429814780373472641
0240*a^8*b^50*B*x^50 + 443727567860816412672*a^6*A*b^52*x^51 - 108048410512
384428343296*a^7*b^51*B*x^51 + 90862937231966863360*a^5*A*b^53*x^52 - 29924
898996052754956288*a^6*b^52*B*x^52 + 14392941459122683904*a^4*A*b^54*x^53 -
 6958707127883990564864*a^5*b^53*B*x^53 + 1658450562779185152*a^3*A*b^55*x^
54 - 1321237911180285050880*a^4*b^54*B*x^54 + 123848989752688640*a^2*A*b^56
*x^55 - 196685706526151671808*a^3*b^55*B*x^55 + 4503599627370496*a*A*b^57*x
^56 - 21527206218830970880*a^2*b^56*B*x^56 - 1540231072560709632*a*b^57*B*x
^57 - 54043195528445952*b^58*B*x^58) + 2*b^3*Sqrt[b^2]*(3*a^58*A + 320*a^57
*A*b*x + 4*a^58*B*x + 16752*a^56*A*b^2*x^2 + 426*a^57*b*B*x^2 + 573664*a^55
*A*b^3*x^3 + 22268*a^56*b^2*B*x^3 + 14451631*a^54*A*b^4*x^4 + 761516*a^55*b
^3*B*x^4 + 285567252*a^53*A*b^5*x^5 + 19161012*a^54*b^4*B*x^5 + 4608816686*
a^52*A*b^6*x^6 + 378258442*a^53*b^5*B*x^6 + 62461969636*a^51*A*b^7*x^7 + 61
00658108*a^52*b^6*B*x^7 + 725363242680*a^50*A*b^8*x^8 + 82655850576*a^51*b^
7*B*x^8 + 7329153841520*a^49*A*b^9*x^9 + 960040046368*a^50*b^8*B*x^9 + 6520
8193751680*a^48*A*b^10*x^10 + 9707728353440*a^49*b^9*B*x^10 + 5157657560563
20*a^47*A*b^11*x^11 + 86498264448960*a^48*b^10*B*x^11 + 3654988251514880*a^
46*A*b^12*x^12 + 685769019120640*a^47*b^11*B*x^12 + 23355822967966720*a^45*
A*b^13*x^13 + 4876280900341760*a^46*b^12*B*x^13 + 135304366432865280*a^44*A
*b^14*x^14 + 31305747087498240*a^45*b^13*B*x^14 + 713836763455907840*a^43*A
*b^15*x^15 + 182482852479477760*a^44*b^14*B*x^15 + 3442854497634119680*a^42
*A*b^16*x^16 + 970440431313920000*a^43*b^15*B*x^16 + 15229424115268608000*a
^41*A*b^17*x^17 + 4727905370336870400*a^42*b^16*B*x^17 + 619576349314713190
40*a^40*A*b^18*x^18 + 21178593457561845760*a^41*b^17*B*x^18 + 2323663657616
43151360*a^39*A*b^19*x^19 + 87506698034971443200*a^40*b^18*B*x^19 + 8049736
33281751449600*a^38*A*b^20*x^20 + 334451010565971640320*a^39*b^19*B*x^20 +
2580140060426774773760*a^37*A*b^21*x^21 + 1185414939451579432960*a^38*b^20*
B*x^21 + 7662241304189975265280*a^36*A*b^22*x^22 + 3905187629618232688640*a
^37*b^21*B*x^22 + 21105809560070451363840*a^35*A*b^23*x^23 + 11982164245186
526576640*a^36*b^22*B*x^23 + 53970627887423577128960*a^34*A*b^24*x^24 + 343
04378272095734333440*a^35*b^23*B*x^24 + 128202370829876605222912*a^33*A*b^2
5*x^25 + 91791021355419796766720*a^34*b^24*B*x^25 + 28300424387561357574144
0*a^32*A*b^26*x^26 + 229890414742754952216576*a^33*b^25*B*x^26 + 5806647080
76312763301888*a^31*A*b^27*x^27 + 539587453276409345081344*a^32*b^26*B*x^27
 + 1107315347699801989840896*a^30*A*b^28*x^28 + 1188189437429111756685312*a
^31*b^27*B*x^28 + 1962025648282931281526784*a^29*A*b^29*x^29 + 245674791285
4489062703104*a^30*b^28*B*x^29 + 3228407171517505138065408*a^28*A*b^30*x^30
 + 4772572730231766770515968*a^29*b^29*B*x^30 + 4929035886566891117871104*a
^27*A*b^31*x^31 + 8713994447237611339644928*a^28*b^30*B*x^31 + 697469274478
7495038746624*a^26*A*b^32*x^32 + 14955227600028711121846272*a^27*b^31*B*x^3
2 + 9132947346533481667624960*a^25*A*b^33*x^33 + 24120997335163971194322944
*a^26*b^32*B*x^33 + 11044575386026626189885440*a^24*A*b^34*x^34 + 365438025
07286173305536512*a^25*b^33*B*x^34 + 12302897759773050179420160*a^23*A*b^35
*x^35 + 51965149056844816900423680*a^24*b^34*B*x^35 + 12580650692191145993 1
75040*a^22*A*b^36*x^36 + 69283558195642682279198720*a^23*b^35*B*x^36 + 1175
5863907856225046364160*a^21*A*b^37*x^37 + 86494105442506171198996480*a^22*b
^36*B*x^37 + 9975276096924063042109440*a^20*A*b^38*x^38 + 10094449059557308
0963153920*a^21*b^37*B*x^38 + 7616197516633838253506560*a^19*A*b^39*x^39 +
109927202710609362346311680*a^20*b^38*B*x^39 + 5157825180164686327316480*a^
18*A*b^40*x^40 + 111461844880966140056043520*a^19*b^39*B*x^40 + 30211972900
77882270351360*a^17*A*b^41*x^41 + 104978381733920755836518400*a^18*b^40*B*x
^41 + 1451527014878752748339200*a^16*A*b^42*x^42 + 915913307136363943952384

00*a^17*b^41*B*x^42 + 488243364133270433300480*a^15*A*b^43*x^43 + 738037816
93150538833592320*a^16*b^42*B*x^43 + 173801565739593970483 20*a^14*A*b^44*x^
44 + 547396432837382567362 56000*a^15*b^43*B*x^44 - 137918218385968490086400
*a^13*A*b^45*x^45 + 372276730450853723792998 40*a^14*b^44*B*x^45 - 138836717
942229308538880*a^12*A*b^46*x^46 + 231145587579999598359347 20*a^13*b^45*B*x
^46 - 91864238326107120599040*a^11*A*b^47*x^47 + 130376286682761537572044 80
*a^12*b^46*B*x^47 - 47787758010327860510720*a^10*A*b^48*x^48 + 664195118267
7916862382080*a^11*b^47*B*x^48 - 20483017266274427207680*a^9*A*b^49*x^49 +
3035479407079901448110080*a^10*b^48*B*x^49 - 7327056963619088498688*a^8*A*b
^50*x^50 + 1234451578498924664586240*a^9*b^49*B*x^50 - 2182451416298160128 0
00*a^7*A*b^51*x^51 + 442346558316119154753536*a^8*b^50*B*x^51 - 53459050509
2783276032*a^6*A*b^52*x^52 + 137973309508437183299584*a^7*b^51*B*x^52 - 105
255878691089547264*a^5*A*b^53*x^53 + 36883606123936745521152*a^6*b^52*B*x^5
3 - 16051392021901869056*a^4*A*b^54*x^54 + 8279945039064275615744*a^5*b^53*
B*x^54 - 1782299552531873792*a^3*A*b^55*x^55 + 1517923617706436722688*a^4*b
^54*B*x^55 - 128352589380059136*a^2*A*b^56*x^56 + 218212912744982642688*a^3
*b^55*B*x^56 - 4503599627370496*a*A*b^57*x^57 + 23067437291391680512*a^2*b^
56*B*x^57 + 1594274268089155584*a*b^57*B*x^58 + 54043195528445952*b^58*B*x^
59))/(3*a^3*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^55*b^3 - 856*
a^54*b^4*x - 44952*a^53*b^5*x^2 - 1544200*a^52*b^6*x^3 - 39024128*a^51*b^7*
x^4 - 773577792*a^50*b^8*x^5 - 12524936320*a^49*b^9*x^6 - 170296730240*a^48
*b^10*x^7 - 1984120320000*a^47*b^11*x^8 - 20114496962560*a^46*b^12*x^9 - 17
9566706708480*a^45*b^13*x^10 - 1425197285191680*a^44*b^14*x^11 - 1013546689
2328960*a^43*b^15*x^12 - 65002731573248000*a^42*b^16*x^13 - 377988278551511
040*a^41*b^17*x^14 - 2001964503866736640*a^40*b^18*x^15 - 96948023800600985
60*a^39*b^19*x^16 - 43067676513699102720*a^38*b^20*x^17 - 17599913724510208
0000*a^37*b^21*x^18 - 663215667843765370880*a^36*b^22*x^19 - 23092359774162
91123200*a^35*b^23*x^20 - 7442172334443656642560*a^34*b^24*x^21 - 222319136
87939148677120*a^33*b^25*x^22 - 61633746954246684672000*a^32*b^26*x^23 - 15
8724528652723242926080*a^31*b^27*x^24 - 379996732316684052856832*a^30*b^28*
x^25 - 846185238869335798185984*a^29*b^29*x^26 - 1753302809859695604400128*
a^28*b^30*x^27 - 3380879175384770071756800*a^27*b^31*x^28 - 606707511675836
7775752192*a^26*b^32*x^29 - 10130299260198164646330368*a^25*b^33*x^30 - 157
32354628864642687959040*a^24*b^34*x^31 - 22711497744187913435873280*a^23*b^
35*x^32 - 30453924162774845358080000*a^22*b^36*x^33 - 378929496922012582622
00320*a^21*b^37*x^34 - 43698211760659985344757760*a^20*b^38*x^35 - 46636119
738715911602831360*a^19*b^39*x^36 - 45980874342910364923985920*a^18*b^40*x^
37 - 41796027702620083716096000*a^17*b^41*x^38 - 34942032882729039775662080
*a^16*b^42*x^39 - 26791115326544811214766080*a^15*b^43*x^40 - 1877708665859
1383586078720*a^14*b^44*x^41 - 11983335077592433311088640*a^13*b^45*x^42 -
6931978138751221104640000*a^12*b^46*x^43 - 3615072567383554586050560*a^11*b
^47*x^44 - 1688681358787565374668800*a^10*b^48*x^45 - 701054748617095008747
520*a^9*b^49*x^46 - 256189999332369408983040*a^8*b^50*x^47 - 81427614537648
963584000*a^7*b^51*x^48 - 22167719416834671247360*a^6*b^52*x^49 - 506555653
7073972805632*a^5*b^53*x^50 - 944974547212455378944*a^4*b^54*x^51 - 1382064
65364745781248*a^3*b^55*x^52 - 14861878770322636800*a^2*b^56*x^53 - 1044835
113549955072*a*b^57*x^54 - 36028797018963968*b^58*x^55) + 3*a^3*x^4*(8*a^56
*b^4 + 864*a^55*b^5*x + 45808*a^54*b^6*x^2 + 1589152*a^53*b^7*x^3 + 4056832
8*a^52*b^8*x^4 + 812601920*a^51*b^9*x^5 + 13298514112*a^50*b^10*x^6 + 18282
1666560*a^49*b^11*x^7 + 2154417050240*a^48*b^12*x^8 + 22098617282560*a^47*b
^13*x^9 + 199681203671040*a^46*b^14*x^10 + 1604763991900160*a^45*b^15*x^11
+ 11560664177520640*a^44*b^16*x^12 + 75138198465576960*a^43*b^17*x^13 + 442
991010124759040*a^42*b^18*x^14 + 2379952782418247680*a^41*b^19*x^15 + 11696
766883926835200*a^40*b^20*x^16 + 52762478893759201280*a^39*b^21*x^17 + 2190
66813758801182720*a^38*b^22*x^18 + 839214805088867450880*a^37*b^23*x^19 + 2
972451645260056494080*a^36*b^24*x^20 + 9751408311859947765760*a^35*b^25*x^2
1 + 29674086022382805319680*a^34*b^26*x^22 + 83865660642185833349120*a^33*b
^27*x^23 + 220358275606969927598080*a^32*b^28*x^24 + 538721260969407295782 9
12*a^31*b^29*x^25 + 1226181971186019851042816*a^30*b^30*x^26 + 259948804872

```
9031402586112*a^29*b^31*x^27 + 5134181985244465676156928*a^28*b^32*x^28 + 9
447954292143137847508992*a^27*b^33*x^29 + 16197374376956532422082560*a^26*b
^34*x^30 + 25862653889062807334289408*a^25*b^35*x^31 + 38443852373052556123
832320*a^24*b^36*x^32 + 53165421906962758793953280*a^23*b^37*x^33 + 6834687
3854976103620280320*a^22*b^38*x^34 + 81591161452861243606958080*a^21*b^39*x
^35 + 90334331499375896947589120*a^20*b^40*x^36 + 9261699408162627652681728
0*a^19*b^41*x^37 + 87776902045530448640081920*a^18*b^42*x^38 + 767380605853
49123491758080*a^17*b^43*x^39 + 61733148209273850990428160*a^16*b^44*x^40 +
 45568201985136194800844800*a^15*b^45*x^41 + 30760421736183816897167360*a^1
4*b^46*x^42 + 18915313216343654415728640*a^13*b^47*x^43 + 10547050706134775
690690560*a^12*b^48*x^44 + 5303753926171119960719360*a^11*b^49*x^45 + 23897
36107404660383416320*a^10*b^50*x^46 + 957244747949464417730560*a^9*b^51*x^4
7 + 337617613870018372567040*a^8*b^52*x^48 + 103595333954483634831360*a^7*b
^53*x^49 + 27233275953908644052992*a^6*b^54*x^50 + 6010531084286428184576*a
^5*b^55*x^51 + 1083181012577201160192*a^4*b^56*x^52 + 153068344135068418048
*a^3*b^57*x^53 + 15906713883872591872*a^2*b^58*x^54 + 1080863910568919040*a
*b^59*x^55 + 36028797018963968*b^60*x^56)) + ((2*A*b^4)/a^4 - (2*b^3*Sqrt[b
^2]*B*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^4 +
(2*b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/a])/a^4)/(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^
2]) + (2*A*b^4*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/
a^5
```

fricas [**A**] time = 0.42, size = 117, normalized size = 0.46

$$\frac{12\left(Bab^{3}-Ab^{4}\right)x^{4}\log\left(bx+a\right)-12\left(Bab^{3}-Ab^{4}\right)x^{4}\log(x)-3\,Aa^{4}-12\left(Ba^{2}b^{2}-Aab^{3}\right)x^{3}+6\left(Ba^{3}b-Aa^{2}b^{2}\right)x^{2}-4\left(Ba^{4}-Aa^{3}b\right)x}{12\,a^{5}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*(B*a*b^3 - A*b^4)*x^4*log(b*x + a) - 12*(B*a*b^3 - A*b^4)*x^4*log(
x) - 3*A*a^4 - 12*(B*a^2*b^2 - A*a*b^3)*x^3 + 6*(B*a^3*b - A*a^2*b^2)*x^2 -
 4*(B*a^4 - A*a^3*b)*x)/(a^5*x^4)
```

giac [**A**] time = 0.23, size = 188, normalized size = 0.73

$$-\frac{\left(Bab^{3}\mathrm{sgn}\left(bx+a\right)-Ab^{4}\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)}{a^{5}}+\frac{\left(Bab^{4}\mathrm{sgn}\left(bx+a\right)-Ab^{5}\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{a^{5}b}-\frac{3\,Aa^{4}\mathrm{sgn}\left(bx+a\right)+12\left(Ba^{2}b^{2}\mathrm{sgn}\left(bx+a\right)-Aab^{3}\mathrm{sgn}\left(bx+a\right)\right)x^{3}-6\left(Ba^{3}b\mathrm{sgn}\left(bx+a\right)-Aa^{2}b^{2}\mathrm{sgn}\left(bx+a\right)\right)x^{2}+4\left(Ba^{4}\mathrm{sgn}\left(bx+a\right)-Aa^{3}b\mathrm{sgn}\left(bx+a\right)\right)x}{12\,a^{5}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b^3*sgn(b*x + a) - A*b^4*sgn(b*x + a))*log(abs(x))/a^5 + (B*a*b^4*sgn
(b*x + a) - A*b^5*sgn(b*x + a))*log(abs(b*x + a))/(a^5*b) - 1/12*(3*A*a^4*s
gn(b*x + a) + 12*(B*a^2*b^2*sgn(b*x + a) - A*a*b^3*sgn(b*x + a))*x^3 - 6*(B
*a^3*b*sgn(b*x + a) - A*a^2*b^2*sgn(b*x + a))*x^2 + 4*(B*a^4*sgn(b*x + a) -
 A*a^3*b*sgn(b*x + a))*x)/(a^5*x^4)
```

maple [**A**] time = 0.07, size = 143, normalized size = 0.56

$$-\frac{\left(bx+a\right)\left(-12A\,b^{4}x^{4}\ln(x)+12A\,b^{4}x^{4}\ln\left(bx+a\right)+12Ba\,b^{3}x^{4}\ln(x)-12Ba\,b^{3}x^{4}\ln\left(bx+a\right)-12Aa\,b^{3}x^{3}+12B\,a^{2}b^{2}x^{3}+6A\,a^{2}b^{2}x^{2}-6B\,a^{3}b\,x^{2}-4A\,a^{3}bx+4B\,a^{4}x+3A\,a^{4}\right)}{12\sqrt{\left(bx+a\right)^{2}}\,a^{5}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/12*(b*x+a)*(12*A*ln(b*x+a)*x^4*b^4-12*A*ln(x)*x^4*b^4-12*B*ln(b*x+a)*x^4
*a*b^3+12*B*ln(x)*x^4*a*b^3-12*A*a*b^3*x^3+12*B*x^3*a^2*b^2+6*A*a^2*b^2*x^2
-6*B*x^2*a^3*b-4*A*a^3*b*x+4*B*a^4*x+3*A*a^4)/((b*x+a)^2)^(1/2)/x^4/a^5
```

maxima [A] time = 0.54, size = 284, normalized size = 1.11

$$\frac{(-1)^{2\,abx+2\,a^2}\,Bb^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^4}-\frac{(-1)^{2\,abx+2\,a^2}\,Ab^4\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^5}-\frac{11\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2}{6\,a^4x}+\frac{25\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab^3}{12\,a^5x}+\frac{5\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb}{6\,a^3x^2}-\frac{13\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab^2}{12\,a^4x^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{3\,a^2x^3}+\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Ab}{12\,a^3x^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,A}{4\,a^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] (-1)^(2*a*b*x + 2*a^2)*B*b^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 - (-1)^
(2*a*b*x + 2*a^2)*A*b^4*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 - 11/6*sqrt(
b^2*x^2 + 2*a*b*x + a^2)*B*b^2/(a^4*x) + 25/12*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*A*b^3/(a^5*x) + 5/6*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b/(a^3*x^2) - 13/12*s
qrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^2/(a^4*x^2) - 1/3*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*B/(a^2*x^3) + 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b/(a^3*x^3) - 1/4*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/(a^2*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^5\,\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^5*((a + b*x)^2)^(1/2)), x)
```

sympy [A] time = 0.59, size = 189, normalized size = 0.74

$$\frac{-3Aa^3+x^3\left(12Ab^3-12Bab^2\right)+x^2\left(-6Aab^2+6Ba^2b\right)+x\left(4Aa^2b-4Ba^3\right)}{12a^4x^4}-\frac{b^3\left(-Ab+Ba\right)\log\left(x+\frac{-Aab^4+Ba^2b^3-ab^3(-Ab+Ba)}{-2Ab^5+2Bab^4}\right)}{a^5}+\frac{b^3\left(-Ab+Ba\right)\log\left(x+\frac{-Aab^4+Ba^2b^3+ab^3(-Ab+Ba)}{-2Ab^5+2Bab^4}\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-3*A*a**3 + x**3*(12*A*b**3 - 12*B*a*b**2) + x**2*(-6*A*a*b**2 + 6*B*a**2*
b) + x*(4*A*a**2*b - 4*B*a**3))/(12*a**4*x**4) - b**3*(-A*b + B*a)*log(x +
(-A*a*b**4 + B*a**2*b**3 - a*b**3*(-A*b + B*a))/(-2*A*b**5 + 2*B*a*b**4))/a
**5 + b**3*(-A*b + B*a)*log(x + (-A*a*b**4 + B*a**2*b**3 + a*b**3*(-A*b + B
*a))/(-2*A*b**5 + 2*B*a*b**4))/a**5
```

3.641 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=249

$$\frac{2a^2(a+bx)(3Ab-5aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{3ax(a+bx)(Ab-2aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x^2(a+bx)(Ab-3aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.18, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{a^4(Ab-aB)}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(4Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{3ax(a+bx)(Ab-2aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x^2(a+bx)(Ab-3aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2(a+bx)(3Ab-5aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*(4*A*b - 5*a*B))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^4*(A*b - a*B
))/(2*b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*a*(A*b - 2*a*B)*x*(
a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 3*a*B)*x^2*(a + b*x
))/(2*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^3*(a + b*x))/(3*b^3*Sqrt[a^
2 + 2*a*b*x + b^2*x^2]) + (2*a^2*(3*A*b - 5*a*B)*(a + b*x)*Log[a + b*x])/(b
^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^4(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{3a(-Ab+2aB)}{b^8}+\frac{(Ab-3aB)x}{b^7}+\frac{Bx^2}{b^6}-\frac{a^4(-Ab+aB)}{b^8(a+bx)^3}+\frac{a^3(-4Ab+5aB)}{b^8(a+bx)^2}-2a\ldots\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{a^3(4Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{a^4(Ab-aB)}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3a(Ab-2aB)x(a+b\ldots}{b^5\sqrt{a^2+2abx+b^2\ldots}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 140, normalized size = 0.56

$$\frac{-27a^5B+3a^4b(7A+2Bx)+3a^3b^2x(2A+21Bx)+a^2b^3x^2(20Bx-33A)-12a^2(a+bx)^2(5aB-3Ab)\log(a+bx)-ab^4x^3(12A+5Bx)+b^5x^4(3A+2Bx)}{6b^6(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-27*a^5*B + b^5*x^4*(3*A + 2*B*x) + 3*a^4*b*(7*A + 2*B*x) - a*b^4*x^3*(12*
A + 5*B*x) + a^2*b^3*x^2*(-33*A + 20*B*x) + 3*a^3*b^2*x*(2*A + 21*B*x) - 12
*a^2*(-3*A*b + 5*a*B)*(a + b*x)^2*Log[a + b*x])/(6*b^6*(a + b*x)*Sqrt[(a +
b*x)^2])
```

IntegrateAlgebraic [B] time = 2.46, size = 3062, normalized size = 12.30

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((-20*a^5*A*x)/(b^3*Sqrt[b^2]) - (34*a^4*A*x^2)/(b^2)^(3/2) + (24*a^3*A*x^3
)/(b*Sqrt[b^2]) + (70*a^2*A*x^4)/Sqrt[b^2] + (28*a*A*b*x^5)/Sqrt[b^2] + (4*
a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^5 + (16*a^4*A*x*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/b^4 + (18*a^3*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (42*a^2
*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (28*a*A*x^4*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/b + (48*a^4*A*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/a])/b^3 + (96*a^3*A*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/a])/b^2 + (48*a^2*A*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/a])/b - (48*a^3*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b^2)^(3/2) -
 (48*a^2*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*Sqrt[b^2]))/((-a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^
2) + ((4*a^6*A)/(b^4*Sqrt[b^2]) + (20*a^5*A*x)/(b^3*Sqrt[b^2]) + (24*a^6*B*
x)/(b^4*Sqrt[b^2]) + (19*a^4*A*x^2)/(b^2)^(3/2) + (86*a^5*B*x^2)/(3*b^3*Sqr
t[b^2]) - (6*a^3*A*x^3)/(b*Sqrt[b^2]) - (260*a^4*B*x^3)/(3*(b^2)^(3/2)) - (
13*a^2*A*x^4)/Sqrt[b^2] - (490*a^3*B*x^4)/(3*b*Sqrt[b^2]) - (12*a*A*b*x^5)/
Sqrt[b^2] - (224*a^2*B*x^5)/(3*Sqrt[b^2]) - 4*A*Sqrt[b^2]*x^6 - (28*a*b*B*x
^6)/(3*Sqrt[b^2]) - (8*Sqrt[b^2]*B*x^7)/3 - (4*a^6*B*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/b^6 - (20*a^4*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 - (20*a^5*B*x
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^5 + (a^3*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/b^3 - (26*a^4*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (5*a^2*A*
x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (286*a^3*B*x^3*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(3*b^3) + (8*a*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (68*a^2
*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + 4*A*x^5*Sqrt[a^2 + 2*a*b*x + b^
2*x^2] + (20*a*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b) + (8*B*x^6*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/3 - (80*a^5*B*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/a])/b^4 - (160*a^4*B*x^3*ArcTanh[(-(Sqrt[b^2]*x) +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^3 - (80*a^3*B*x^4*ArcTanh[(-(Sqrt[b^2
]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 + (80*a^4*B*x^2*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a
])/(b^3*Sqrt[b^2]) + (80*a^3*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-
(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b^2)^(3/2) - (24*a^4*A*
x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (4
8*a^3*A*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[
b^2]) - (24*a^2*A*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
)/Sqrt[b^2] + (24*a^3*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2
]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3 + (24*a^2*A*x^3*Sqrt[a^2 + 2*a*b*
x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 - (
24*a^4*A*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3
/2) - (48*a^3*A*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(
b*Sqrt[b^2]) - (24*a^2*A*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2
*x^2]])/Sqrt[b^2] + (24*a^3*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqr
t[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3 + (24*a^2*A*x^3*Sqrt[a^2 + 2
```

```
*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2
)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2) + ((-4*a^7*B)/(b^5*Sqrt[b^2]) - (24*a^6*B
*x)/(b^4*Sqrt[b^2]) - (20*a^5*B*x^2)/(b^3*Sqrt[b^2]) + (24*a^4*B*x^3)/(b^2)
^(3/2) + (52*a^3*B*x^4)/(b*Sqrt[b^2]) + (48*a^2*B*x^5)/Sqrt[b^2] + (16*a*b*
B*x^6)/Sqrt[b^2] + (24*a^5*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^5 - (4*a^4*
B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 - (20*a^3*B*x^3*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/b^3 - (32*a^2*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (16*a
*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (40*a^5*B*x^2*Log[-a - Sqrt[b^2]*
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^3*Sqrt[b^2]) + (80*a^4*B*x^3*Log[-a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) + (40*a^3*B*x^4
*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) - (40
*a^4*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2]])/b^4 - (40*a^3*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3 + (40*a^5*B*x^2*Log[
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^3*Sqrt[b^2]) + (80*a^4
*B*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) +
(40*a^3*B*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt
[b^2]) - (40*a^4*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4 - (40*a^3*B*x^3*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3)/((-a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2])^2)
```

fricas [A] time = 0.42, size = 197, normalized size = 0.79

$$\frac{2\,Bb^5x^5 - 27\,Ba^5 + 21\,Aa^4b - \left(5\,Bab^4 - 3\,Ab^5\right)x^4 + 4\left(5\,Ba^2b^3 - 3\,Aab^4\right)x^3 + 3\left(21\,Ba^3b^2 - 11\,Aa^2b^3\right)x^2 + 6\left(Ba^4b + Aa^3b^2\right)x - 12\left(5\,Ba^5 - 3\,Aa^4b + \left(5\,Ba^3b^2 - 3\,Aa^2b^3\right)x^2 + 2\left(5\,Ba^4b - 3\,Aa^3b^2\right)x\right)\log\left(bx + a\right)}{6\left(b^8x^2 + 2\,ab^7x + a^2b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^5*x^5 - 27*B*a^5 + 21*A*a^4*b - (5*B*a*b^4 - 3*A*b^5)*x^4 + 4*(5
*B*a^2*b^3 - 3*A*a*b^4)*x^3 + 3*(21*B*a^3*b^2 - 11*A*a^2*b^3)*x^2 + 6*(B*a^
4*b + A*a^3*b^2)*x - 12*(5*B*a^5 - 3*A*a^4*b + (5*B*a^3*b^2 - 3*A*a^2*b^3)*
x^2 + 2*(5*B*a^4*b - 3*A*a^3*b^2)*x)*log(b*x + a))/(b^8*x^2 + 2*a*b^7*x + a
^2*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 217, normalized size = 0.87

$$\frac{\left(2B\,b^5x^5 + 3A\,b^5x^4 - 5Ba\,b^4x^4 + 36A\,a^2b^3x^2\ln\left(bx + a\right) - 12Aa\,b^4x^3 - 60B\,a^3b^2x^2\ln\left(bx + a\right) + 20B\,a^2b^3x^3 + 72A\,a^3b^2x\ln\left(bx + a\right) - 33A\,a^2b^3x^2 - 120B\,a^4bx\ln\left(bx + a\right) + 63B\,a^3b^2x^2 + 36A\,a^4b\ln\left(bx + a\right) + 6A\,a^3b^2x - 60B\,a^5\ln\left(bx + a\right) + 6B\,a^4bx + 21A\,a^4b - 27B\,a^5\right)\left(bx + a\right)}{6\left(\left(bx + a\right)^2\right)^{\frac{3}{2}}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/6*(2*B*b^5*x^5+3*A*b^5*x^4-5*B*a*b^4*x^4+36*A*ln(b*x+a)*x^2*a^2*b^3-12*A*
a*b^4*x^3-60*B*ln(b*x+a)*x^2*a^3*b^2+20*B*a^2*b^3*x^3+72*A*ln(b*x+a)*x*a^3*
b^2-33*A*a^2*b^3*x^2-120*B*ln(b*x+a)*x*a^4*b+63*B*a^3*b^2*x^2+36*A*a^4*b*ln
(b*x+a)+6*A*a^3*b^2*x-60*B*a^5*ln(b*x+a)+6*B*a^4*b*x+21*A*a^4*b-27*B*a^5)*(
b*x+a)/b^6/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.59, size = 303, normalized size = 1.22

$$\frac{Bx^4}{3\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{7\,Bax^3}{6\sqrt{b^2x^2+2\,abx+a^2}\,b^3}+\frac{Ax^3}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{9\,Ba^2x^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^4}-\frac{5\,Aax^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^3}-\frac{10\,Ba^3\log\left(x+\frac{a}{b}\right)}{b^6}+\frac{6\,Aa^2\log\left(x+\frac{a}{b}\right)}{b^5}+\frac{9\,Ba^4}{\sqrt{b^2x^2+2\,abx+a^2}\,b^6}-\frac{5\,Aa^3}{\sqrt{b^2x^2+2\,abx+a^2}\,b^5}-\frac{20\,Ba^4x}{b^7\left(x+\frac{a}{b}\right)^2}+\frac{12\,Aa^3x}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{39\,Ba^5}{2\,b^8\left(x+\frac{a}{b}\right)^2}+\frac{23\,Aa^4}{2\,b^7\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*B*x^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 7/6*B*a*x^3/(sqrt(b^2*x^2 +
 2*a*b*x + a^2)*b^3) + 1/2*A*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 9/2*
B*a^2*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - 5/2*A*a*x^2/(sqrt(b^2*x^2 +
 2*a*b*x + a^2)*b^3) - 10*B*a^3*log(x + a/b)/b^6 + 6*A*a^2*log(x + a/b)/b^5
 + 9*B*a^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^6) - 5*A*a^3/(sqrt(b^2*x^2 + 2*
a*b*x + a^2)*b^5) - 20*B*a^4*x/(b^7*(x + a/b)^2) + 12*A*a^3*x/(b^6*(x + a/b
)^2) - 39/2*B*a^5/(b^8*(x + a/b)^2) + 23/2*A*a^4/(b^7*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(A + Bx\right)}{\left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.642 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=202

$$-\frac{a^2(3Ab-4aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3a(a+bx)(Ab-2aB)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x(a+bx)(Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+$$

Rubi [A] time = 0.14, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$\frac{a^3(Ab-aB)}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{a^2(3Ab-4aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x(a+bx)(Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{3a(a+bx)(Ab-2aB)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((a^2*(3*A*b - 4*a*B))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (a^3*(A*b -
a*B))/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 3*a*B)*x*(a
 + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^2*(a + b*x))/(2*b^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - (3*a*(A*b - 2*a*B)*(a + b*x)*Log[a + b*x])/(b
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^3(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-3aB}{b^7}+\frac{Bx}{b^6}+\frac{a^3(-Ab+aB)}{b^7(a+bx)^3}-\frac{a^2(-3Ab+4aB)}{b^7(a+bx)^2}+\frac{3a(-Ab+2aB)}{b^7(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a^2(3Ab-4aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(Ab-aB)}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-3aB)x(a+b}{b^4\sqrt{a^2+2abx+b^2}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 117, normalized size = 0.58

$$\frac{7a^4B+a^3(2bBx-5Ab)-a^2b^2x(4A+11Bx)+4ab^3x^2(A-Bx)+6a(a+bx)^2(2aB-Ab)\log(a+bx)+b^4x^3(2A+Bx)}{2b^5(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (7*a^4*B + 4*a*b^3*x^2*(A - B*x) + b^4*x^3*(2*A + B*x) - a^2*b^2*x*(4*A + 1
1*B*x) + a^3*(-5*A*b + 2*b*B*x) + 6*a*(-(A*b) + 2*a*B)*(a + b*x)^2*Log[a +
b*x])/(2*b^5*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 2.19, size = 2737, normalized size = 13.55

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((16*a^4*A*Sqrt[b^2]*x)/b^4 + (32*a^3*A*Sqrt[b^2]*x^2)/b^3 + (8*a^2*A*(b^2)
^(3/2)*x^3)/b^4 - (20*a*A*Sqrt[b^2]*x^4)/b - 8*A*Sqrt[b^2]*x^5 - (4*a^4*A*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 - (12*a^3*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/b^3 - (20*a^2*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (12*a*A*x^3*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/b + 8*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (2
4*a^3*A*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^
2 - (48*a^2*A*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
a])/b - 24*a*A*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/a] + (24*a^2*A*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt
[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^3 + (24*a*A*(b^2)^(3/2)*x^3
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/a])/b^4)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2
*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2) + ((-4*a^5*A)/(b^3*Sq
rt[b^2]) - (16*a^4*A*x)/(b^2)^(3/2) - (20*a^5*B*x)/(b^3*Sqrt[b^2]) - (16*a^
3*A*x^2)/(b*Sqrt[b^2]) - (34*a^4*B*x^2)/(b^2)^(3/2) + (24*a^3*B*x^3)/(b*Sqr
t[b^2]) + (70*a^2*B*x^4)/Sqrt[b^2] + (28*a*b*B*x^5)/Sqrt[b^2] + (4*a^5*B*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/b^5 + (16*a^3*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/b^3 + (16*a^4*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 + (18*a^3*B*x^2*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (42*a^2*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/b^2 - (28*a*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (48*a^4*B*x^2*ArcT
anh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^3 + (96*a^3*B*x^
3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 + (48*a^
2*B*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b - (4
8*a^3*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/a])/(b^2)^(3/2) - (48*a^2*B*x^3*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*
Sqrt[b^2]) + (12*a^3*A*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2]])/(b*Sqrt[b^2]) + (24*a^2*A*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2]])/Sqrt[b^2] + (12*a*A*b*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (12*a^2*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 - (12*a*A*x^
3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]])/b + (12*a^3*A*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]])/(b*Sqrt[b^2]) + (24*a^2*A*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a
*b*x + b^2*x^2]])/Sqrt[b^2] + (12*a*A*b*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (12*a^2*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 - (12*a*A*x^3
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b
^2*x^2]])/b)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqr
t[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2) + ((4*a^6*B)/(b^4*Sqrt[b^2]) +
 (20*a^5*B*x)/(b^3*Sqrt[b^2]) + (19*a^4*B*x^2)/(b^2)^(3/2) - (6*a^3*B*x^3)/
(b*Sqrt[b^2]) - (13*a^2*B*x^4)/Sqrt[b^2] - (12*a*b*B*x^5)/Sqrt[b^2] - 4*Sqr
t[b^2]*B*x^6 - (20*a^4*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 + (a^3*B*x^2*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (5*a^2*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/b^2 + (8*a*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + 4*B*x^5*Sqrt[a^2
```

```
+ 2*a*b*x + b^2*x^2] - (24*a^4*B*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2]])/(b^2)^(3/2) - (48*a^3*B*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) - (24*a^2*B*x^4*Log[-a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (24*a^3*B*x^2*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3
+ (24*a^2*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]])/b^2 - (24*a^4*B*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (48*a^3*B*x^3*Log[a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) - (24*a^2*B*x^4*Log[a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (24*a^3*B*x^2*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])
/b^3 + (24*a^2*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/b^2)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2)
```

fricas [A] time = 0.41, size = 171, normalized size = 0.85

$$\frac{Bb^4x^4 + 7\,Ba^4 - 5\,Aa^3b - 2\left(2\,Bab^3 - Ab^4\right)x^3 - \left(11\,Ba^2b^2 - 4\,Aab^3\right)x^2 + 2\left(Ba^3b - 2\,Aa^2b^2\right)x + 6\left(2\,Ba^4 - Aa^3b + \left(2\,Ba^2b^2 - Aab^3\right)x^2 + 2\left(2\,Ba^3b - Aa^2b^2\right)x\right)\log\left(bx + a\right)}{2\left(b^7x^2 + 2\,ab^6x + a^2b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^4*x^4 + 7*B*a^4 - 5*A*a^3*b - 2*(2*B*a*b^3 - A*b^4)*x^3 - (11*B*a^
2*b^2 - 4*A*a*b^3)*x^2 + 2*(B*a^3*b - 2*A*a^2*b^2)*x + 6*(2*B*a^4 - A*a^3*b
 + (2*B*a^2*b^2 - A*a*b^3)*x^2 + 2*(2*B*a^3*b - A*a^2*b^2)*x)*log(b*x + a))
/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.10, size = 191, normalized size = 0.95

$$-\frac{\left(-B\,b^4x^4 + 6Aa\,b^3x^2\ln\left(bx + a\right) - 2A\,b^4x^3 - 12B\,a^2b^2x^2\ln\left(bx + a\right) + 4Ba\,b^3x^3 + 12A\,a^2b^2x\ln\left(bx + a\right) - 4Aa\,b^3x^2 - 24B\,a^3bx\ln\left(bx + a\right) + 11B\,a^2b^2x^2 + 6A\,a^3b\ln\left(bx + a\right) + 4A\,a^2b^2x - 12B\,a^4\ln\left(bx + a\right) - 2B\,a^3bx + 5A\,a^3b - 7B\,a^4\right)\left(bx + a\right)}{2\left(\left(bx + a\right)^2\right)^{\frac{3}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-B*b^4*x^4+6*A*ln(b*x+a)*x^2*a*b^3-2*A*b^4*x^3-12*B*ln(b*x+a)*x^2*a^2
*b^2+4*B*x^3*a*b^3+12*A*ln(b*x+a)*x*a^2*b^2-4*A*x^2*a*b^3-24*B*ln(b*x+a)*x*
a^3*b+11*B*x^2*a^2*b^2+6*A*a^3*b*ln(b*x+a)+4*A*x*a^2*b^2-12*B*a^4*ln(b*x+a)
-2*B*a^3*b*x+5*A*a^3*b-7*B*a^4)*(b*x+a)/b^5/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.51, size = 242, normalized size = 1.20

$$\frac{Bx^3}{2\sqrt{b^2x^2 + 2\,abx + a^2}\,b^2} - \frac{5\,Bax^2}{2\sqrt{b^2x^2 + 2\,abx + a^2}\,b^3} + \frac{Ax^2}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^2} + \frac{6\,Ba^2\log\left(x + \frac{a}{b}\right)}{b^5} - \frac{3\,Aa\log\left(x + \frac{a}{b}\right)}{b^4} - \frac{5\,Ba^3}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^5} + \frac{2\,Aa^2}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^4} + \frac{12\,Ba^3x}{b^6\left(x + \frac{a}{b}\right)^2} - \frac{6\,Aa^2x}{b^5\left(x + \frac{a}{b}\right)^2} + \frac{23\,Ba^4}{2\,b^7\left(x + \frac{a}{b}\right)^2} - \frac{11\,Aa^3}{2\,b^6\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 5/2*B*a*x^2/(sqrt(b^2*x^2 +
 2*a*b*x + a^2)*b^3) + A*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 6*B*a^2*
log(x + a/b)/b^5 - 3*A*a*log(x + a/b)/b^4 - 5*B*a^3/(sqrt(b^2*x^2 + 2*a*b*x
```

```
 + a^2)*b^5) + 2*A*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) + 12*B*a^3*x/(b^
6*(x + a/b)^2) - 6*A*a^2*x/(b^5*(x + a/b)^2) + 23/2*B*a^4/(b^7*(x + a/b)^2)
 - 11/2*A*a^3/(b^6*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x**3*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.643 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=154

$$-\frac{a^2(Ab-aB)}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a(2Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-3aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.11, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{a^2(Ab-aB)}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a(2Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-3aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a*(2*A*b - 3*a*B))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^2*(A*b - a*B))
/(2*b^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x*(a + b*x))/(b^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 3*a*B)*(a + b*x)*Log[a + b*x])/(b^4*S
qrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^2(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{B}{b^6}-\frac{a^2(-Ab+aB)}{b^6(a+bx)^3}+\frac{a(-2Ab+3aB)}{b^6(a+bx)^2}+\frac{Ab-3aB}{b^6(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{a(2Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a^2(Ab-aB)}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.58

$$\frac{-5a^3B+a^2b(3A-4Bx)+4ab^2x(A+Bx)+2(a+bx)^2(Ab-3aB)\log(a+bx)+2b^3Bx^3}{2b^4(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-5*a^3*B + 2*b^3*B*x^3 + a^2*b*(3*A - 4*B*x) + 4*a*b^2*x*(A + B*x) + 2*(A*
b - 3*a*B)*(a + b*x)^2*Log[a + b*x])/(2*b^4*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 2.00, size = 2422, normalized size = 15.73

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((-12*a^3*A*x)/(b*Sqrt[b^2]) - (24*a^2*A*x^2)/Sqrt[b^2] - (16*a*A*b*x^3)/Sq
rt[b^2] + (4*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (8*a^2*A*x*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/b^2 + (16*a*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b +
 (8*a^2*A*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/
b + 16*a*A*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a]
+ 8*A*b*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (
8*a*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - (8*A*b*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2])
/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + S
qrt[a^2 + 2*a*b*x + b^2*x^2])^2) + ((4*a^4*A*Sqrt[b^2])/b^4 + (12*a^3*A*Sqr
t[b^2]*x)/b^3 + (16*a^4*Sqrt[b^2]*B*x)/b^4 + (12*a^2*A*(b^2)^(3/2)*x^2)/b^4
 + (32*a^3*Sqrt[b^2]*B*x^2)/b^3 + (8*a^2*(b^2)^(3/2)*B*x^3)/b^4 - (20*a*Sqr
t[b^2]*B*x^4)/b - 8*Sqrt[b^2]*B*x^5 - (4*a^4*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/b^4 - (12*a^2*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (12*a^3*B*x*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/b^3 - (20*a^2*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/b^2 + (12*a*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + 8*B*x^4*Sqrt[a^2 + 2
*a*b*x + b^2*x^2] - (24*a^3*B*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/a])/b^2 - (48*a^2*B*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/a])/b - 24*a*B*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/a] + (24*a^2*Sqrt[b^2]*B*x^2*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^3 + (
24*a*(b^2)^(3/2)*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x
) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^4 - (4*a^2*A*(b^2)^(3/2)*x^2*Log[-
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4 - (8*a*A*Sqrt[b^2]*x^
3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b - 4*A*Sqrt[b^2]*
x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + (4*a*A*x^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2]])/b + 4*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt
[a^2 + 2*a*b*x + b^2*x^2]] - (4*a^2*A*(b^2)^(3/2)*x^2*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4 - (8*a*A*Sqrt[b^2]*x^3*Log[a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b - 4*A*Sqrt[b^2]*x^4*Log[a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + (4*a*A*x^2*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 4*A*x^3*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]
*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2) + ((-4*a^5*B)/(b^3*Sqrt[b^2]) - (16*
a^4*B*x)/(b^2)^(3/2) - (16*a^3*B*x^2)/(b*Sqrt[b^2]) + (16*a^3*B*x*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/b^3 + (12*a^3*B*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (24*a^2*B*x^3*Log[-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (12*a*b*B*x^4*Log[-a - Sqrt[b^2
]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (12*a^2*B*x^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b
^2 - (12*a*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[
a^2 + 2*a*b*x + b^2*x^2]])/b + (12*a^3*B*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (24*a^2*B*x^3*Log[a - Sqrt[b^2]*x +
```

```
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (12*a*b*B*x^4*Log[a - Sqrt[b^2
]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (12*a^2*B*x^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^
2 - (12*a*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/b)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2)
```

fricas [A] time = 0.41, size = 134, normalized size = 0.87

$$\frac{2\,Bb^3x^3 + 4\,Bab^2x^2 - 5\,Ba^3 + 3\,Aa^2b - 4\left(Ba^2b - Aab^2\right)x - 2\left(3\,Ba^3 - Aa^2b + \left(3\,Bab^2 - Ab^3\right)x^2 + 2\left(3\,Ba^2b - Aab^2\right)x\right)\log\left(bx + a\right)}{2\left(b^6x^2 + 2\,ab^5x + a^2b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b^3*x^3 + 4*B*a*b^2*x^2 - 5*B*a^3 + 3*A*a^2*b - 4*(B*a^2*b - A*a*b
^2)*x - 2*(3*B*a^3 - A*a^2*b + (3*B*a*b^2 - A*b^3)*x^2 + 2*(3*B*a^2*b - A*a
*b^2)*x)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.09, size = 153, normalized size = 0.99

$$\frac{\left(2A\,b^3x^2\ln\left(bx+a\right) - 6Ba\,b^2x^2\ln\left(bx+a\right) + 2B\,b^3x^3 + 4Aa\,b^2x\ln\left(bx+a\right) - 12B\,a^2bx\ln\left(bx+a\right) + 4Ba\,b^2x^2 + 2A\,a^2b\ln\left(bx+a\right) + 4Aa\,b^2x - 6B\,a^3\ln\left(bx+a\right) - 4B\,a^2bx + 3A\,a^2b - 5B\,a^3\right)\left(bx+a\right)}{2\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(2*A*ln(b*x+a)*x^2*b^3-6*B*ln(b*x+a)*x^2*a*b^2+2*B*b^3*x^3+4*A*ln(b*x+a
)*x*a*b^2-12*B*ln(b*x+a)*x*a^2*b+4*B*a*b^2*x^2+2*A*a^2*b*ln(b*x+a)+4*A*a*b^
2*x-6*B*a^3*ln(b*x+a)-4*B*a^2*b*x+3*A*a^2*b-5*B*a^3)*(b*x+a)/b^4/((b*x+a)^2
)^(3/2)
```

maxima [A] time = 0.53, size = 154, normalized size = 1.00

$$\frac{Bx^2}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^2} - \frac{3\,Ba\log\left(x + \frac{a}{b}\right)}{b^4} + \frac{A\log\left(x + \frac{a}{b}\right)}{b^3} + \frac{2\,Ba^2}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^4} - \frac{6\,Ba^2x}{b^5\left(x + \frac{a}{b}\right)^2} + \frac{2\,Aax}{b^4\left(x + \frac{a}{b}\right)^2} - \frac{11\,Ba^3}{2\,b^6\left(x + \frac{a}{b}\right)^2} + \frac{3\,Aa^2}{2\,b^5\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 3*B*a*log(x + a/b)/b^4 + A*log(
x + a/b)/b^3 + 2*B*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - 6*B*a^2*x/(b^5
*(x + a/b)^2) + 2*A*a*x/(b^4*(x + a/b)^2) - 11/2*B*a^3/(b^6*(x + a/b)^2) +
3/2*A*a^2/(b^5*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A + B\,x\right)}{{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (A + Bx)}{\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x**2*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.644 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=113

$$-\frac{Ab-2aB}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.07, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 77}

$$-\frac{Ab-2aB}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((A*b - 2*a*B)/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (a*(A*b - a*B))/(2*b
^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*(a + b*x)*Log[a + b*x])/(b
^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{a(-Ab+aB)}{b^5(a+bx)^3}+\frac{Ab-2aB}{b^5(a+bx)^2}+\frac{B}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{Ab-2aB}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+}{b^3\sqrt{a^2+2abx+b^2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 65, normalized size = 0.58

$$\frac{3a^2B-ab(A-4Bx)+2B(a+bx)^2\log(a+bx)-2Ab^2x}{2b^3(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*a^2*B - 2*A*b^2*x - a*b*(A - 4*B*x) + 2*B*(a + b*x)^2*Log[a + b*x])/(2*b
^3*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.32, size = 1415, normalized size = 12.52

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (((4*A*x)/Sqrt[b^2] - (4*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2)*(a^2 + a*b*x
 + b^2*x^2 - Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))/((-a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])^2) + ((-4*a^3*A)/(b*Sqrt[b^2]) - (8*a^2*A*x)/Sqrt[b^2] - (12*a^3
*B*x)/(b*Sqrt[b^2]) - (8*a*A*b*x^2)/Sqrt[b^2] - (24*a^2*B*x^2)/Sqrt[b^2] -
(16*a*b*B*x^3)/Sqrt[b^2] + (4*a^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (8
*a*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (8*a^2*B*x*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/b^2 + (16*a*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (8*a^2*B*x^2*
ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 16*a*B*x^3
*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 8*b*B*x^4*Ar
cTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (8*a*B*x^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/a])/Sqrt[b^2] - (8*b*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-
(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2])/((-a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])^2) + ((4*a^4*Sqrt[b^2]*B)/b^4 + (12*a^3*Sqrt[b^2]*B*x)/b^3
+ (12*a^2*(b^2)^(3/2)*B*x^2)/b^4 - (12*a^2*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/b^2 - (4*a^2*(b^2)^(3/2)*B*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]])/b^4 - (8*a*Sqrt[b^2]*B*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2]])/b - 4*Sqrt[b^2]*B*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]] + (4*a*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - S
qrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 4*B*x^3*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (4*a^2*
(b^2)^(3/2)*B*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4
 - (8*a*Sqrt[b^2]*B*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/b - 4*Sqrt[b^2]*B*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2
]] + (4*a*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/b + 4*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a -
Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^
2)
```

fricas [A] time = 0.43, size = 81, normalized size = 0.72

$$\frac{3\,Ba^2 - Aab + 2\left(2\,Bab - Ab^2\right)x + 2\left(Bb^2x^2 + 2\,Babx + Ba^2\right)\log\left(bx + a\right)}{2\left(b^5x^2 + 2\,ab^4x + a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(3*B*a^2 - A*a*b + 2*(2*B*a*b - A*b^2)*x + 2*(B*b^2*x^2 + 2*B*a*b*x + B
*a^2)*log(b*x + a))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
[Out] sage0*x
```

maple [A] time = 0.06, size = 83, normalized size = 0.73

$$-\frac{\left(-2B\,b^{2}x^{2}\ln\left(bx+a\right)-4Babx\ln\left(bx+a\right)+2A\,b^{2}x-2B\,a^{2}\ln\left(bx+a\right)-4Babx+Aab-3B\,a^{2}\right)\left(bx+a\right)}{2\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
[Out] -1/2*(-2*B*ln(b*x+a)*x^2*b^2-4*B*ln(b*x+a)*x*a*b+2*A*b^2*x-2*B*a^2*ln(b*x+a
)-4*B*a*b*x+A*a*b-3*B*a^2)*(b*x+a)/b^3/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.50, size = 89, normalized size = 0.79

$$\frac{B\log\left(x+\frac{a}{b}\right)}{b^{3}}-\frac{A}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b^{2}}+\frac{2\,Bax}{b^{4}\left(x+\frac{a}{b}\right)^{2}}+\frac{3\,Ba^{2}}{2\,b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{Aa}{2\,b^{4}\left(x+\frac{a}{b}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
[Out] B*log(x + a/b)/b^3 - A/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 2*B*a*x/(b^4*(
x + a/b)^2) + 3/2*B*a^2/(b^5*(x + a/b)^2) + 1/2*A*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(A+Bx\right)}{\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.645 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=69

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(B/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(2*b^2*(a + b*x)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= -\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{2b^2}\\ &= -\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 39, normalized size = 0.57

$$\frac{-B(a+2bx)-Ab}{2b^2(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b) - B*(a + 2*b*x))/(2*b^2*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.73, size = 178, normalized size = 2.58

$$\frac{-a^3bB+\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(a^2(-B)+aAb+abBx-Ab^2x-2b^2Bx^2\right)+a^2Ab^2+ab^3Bx^2+Ab^4x^2+2b^4Bx^3}{x^2\left(-2ab^5-2b^6x\right)\sqrt{a^2+2abx+b^2x^2}+\sqrt{b^2}\,x^2\left(2a^2b^4+4ab^5x+2b^6x^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^2*A*b^2 - a^3*b*B + A*b^4*x^2 + a*b^3*B*x^2 + 2*b^4*B*x^3 + Sqrt[b^2]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*(a*A*b - a^2*B - A*b^2*x + a*b*B*x - 2*b^2*B*x^
2))/(x^2*(-2*a*b^5 - 2*b^6*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^2]*x^2
*(2*a^2*b^4 + 4*a*b^5*x + 2*b^6*x^2))
```

fricas [A] time = 0.41, size = 38, normalized size = 0.55

$$-\frac{2 Bbx + Ba + Ab}{2 \left(b^4x^2 + 2 ab^3x + a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*B*b*x + B*a + A*b)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 32, normalized size = 0.46

$$-\frac{(bx + a)(2Bbx + Ab + Ba)}{2 \left((bx + a)^2\right)^{\frac{3}{2}} b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*B*b*x+A*b+B*a)/b^2/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.46, size = 56, normalized size = 0.81

$$-\frac{B}{\sqrt{b^2x^2 + 2 abx + a^2}\, b^2} + \frac{Ba}{2 b^4\left(x + \frac{a}{b}\right)^2} - \frac{A}{2 b^3\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 1/2*B*a/(b^4*(x + a/b)^2) - 1/2*A/
(b^3*(x + a/b)^2)
```

mupad [B] time = 1.19, size = 42, normalized size = 0.61

$$-\frac{\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}\;\left(A\,b + B\,a + 2\,B\,b\,x\right)}{2\,b^2\,{\left(a + b\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(A*b + B*a + 2*B*b*x))/(2*b^2*(a + b*x)^3
)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)

[Out] Integral((A + B*x)/((a + b*x)**2)**(3/2), x)

3.646 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=140

$$\frac{Ab-aB}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{Ab-aB}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] A/(a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*B)/(2*a*b*(a + b*x)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2]) + (A*(a + b*x)*Log[x])/(a^3*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) - (A*(a + b*x)*Log[a + b*x])/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^3b^3x}+\frac{-Ab+aB}{ab^3(a+bx)^3}-\frac{A}{a^2b^2(a+bx)^2}-\frac{A}{a^3b^2(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{A}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A(a+bx)\log(x}{a^3\sqrt{a^2+2abx+b}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.57

$$\frac{a\left(a^2(-B)+3aAb+2Ab^2x\right)+2Ab\log(x)(a+bx)^2-2Ab(a+bx)^2\log(a+bx)}{2a^3b(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (a*(3*a*A*b - a^2*B + 2*A*b^2*x) + 2*A*b*(a + b*x)^2*Log[x] - 2*A*b*(a + b*
x)^2*Log[a + b*x])/(2*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 0.76, size = 241, normalized size = 1.72

$$\frac{2A\tanh^{-1}\left(\frac{\sqrt{b^2}\,x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)}{a^3}+\frac{a^4bB-a^3Ab^2+a^2b^3Bx^2+\sqrt{b^2}\,\sqrt{a^2+2abx+b^2x^2}\,\left(a^3B-a^2Ab-a^2bBx+aAb^2x+2Ab^3x^2\right)-3aAb^4x^2-2Ab^5x^3}{a^2b\sqrt{b^2}\,x^2\left(2a^2b^2+4ab^3x+2b^4x^2\right)+a^2bx^2\left(-2ab^3-2b^4x\right)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-(a^3*A*b^2) + a^4*b*B - 3*a*A*b^4*x^2 + a^2*b^3*B*x^2 - 2*A*b^5*x^3 + Sqr
t[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-(a^2*A*b) + a^3*B + a*A*b^2*x - a^2*
b*B*x + 2*A*b^3*x^2))/(a^2*b*x^2*(-2*a*b^3 - 2*b^4*x)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2] + a^2*b*Sqrt[b^2]*x^2*(2*a^2*b^2 + 4*a*b^3*x + 2*b^4*x^2)) + (2*A*
ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/a^3
```

fricas [A] time = 0.43, size = 109, normalized size = 0.78

$$\frac{2\,Aab^2x-Ba^3+3\,Aa^2b-2\,\left(Ab^3x^2+2\,Aab^2x+Aa^2b\right)\log\left(bx+a\right)+2\,\left(Ab^3x^2+2\,Aab^2x+Aa^2b\right)\log(x)}{2\,\left(a^3b^3x^2+2\,a^4b^2x+a^5b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*A*a*b^2*x - B*a^3 + 3*A*a^2*b - 2*(A*b^3*x^2 + 2*A*a*b^2*x + A*a^2*b
)*log(b*x + a) + 2*(A*b^3*x^2 + 2*A*a*b^2*x + A*a^2*b)*log(x))/(a^3*b^3*x^2
 + 2*a^4*b^2*x + a^5*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 116, normalized size = 0.83

$$-\frac{\left(-2A\,b^3x^2\ln(x)+2A\,b^3x^2\ln\left(bx+a\right)-4Aa\,b^2x\ln(x)+4Aa\,b^2x\ln\left(bx+a\right)-2A\,a^2b\ln(x)+2A\,a^2b\ln\left(bx+a\right)-2Aa\,b^2x-3A\,a^2b+B\,a^3\right)\left(bx+a\right)}{2\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(2*A*b^3*x^2*ln(b*x+a)-2*A*ln(x)*x^2*b^3+4*A*a*b^2*x*ln(b*x+a)-4*A*ln(
x)*x*a*b^2+2*A*a^2*b*ln(b*x+a)-2*A*ln(x)*a^2*b-2*A*a*b^2*x-3*A*a^2*b+B*a^3)
*(b*x+a)/b/a^3/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.47, size = 96, normalized size = 0.69

$$-\frac{(-1)^{2\,abx+2\,a^2}A\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^3}+\frac{A}{\sqrt{b^2x^2+2\,abx+a^2}\,a^2}-\frac{B}{2\,b^3\left(x+\frac{a}{b}\right)^2}+\frac{A}{2\,ab^2\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*A*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 + A/(sqrt(
b^2*x^2 + 2*a*b*x + a^2)*a^2) - 1/2*B/(b^3*(x + a/b)^2) + 1/2*A/(a*b^2*(x +
 a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*((a + b*x)**2)**(3/2)), x)
```

3.647 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=196

$$-\frac{Ab-aB}{2a^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(3Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)\log(a+bx)}{a^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-aB}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.14, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$-\frac{Ab-aB}{2a^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-aB}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(3Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)\log(a+bx)}{a^4\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{a^3x\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((2*A*b - a*B)/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(2*a^2*(
a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*(a + b*x))/(a^3*x*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]) - ((3*A*b - a*B)*(a + b*x)*Log[x])/(a^4*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]) + ((3*A*b - a*B)*(a + b*x)*Log[a + b*x])/(a^4*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^2\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^3b^3x^2}+\frac{-3Ab+aB}{a^4b^3x}+\frac{Ab-aB}{a^2b^2(a+bx)^3}+\frac{2Ab-aB}{a^3b^2(a+bx)^2}+\frac{3Ab-aB}{a^4b^2(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2Ab-aB}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2a^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{a^3x\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 110, normalized size = 0.56

$$\frac{a\left(a^2(3Bx-2A)+abx(2Bx-9A)-6Ab^2x^2\right)+2x\log(x)(a+bx)^2(aB-3Ab)+2x(a+bx)^2(3Ab-aB)\log(a+bx)}{2a^4x(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (a*(-6*A*b^2*x^2 + a*b*x*(-9*A + 2*B*x) + a^2*(-2*A + 3*B*x)) + 2*(-3*A*b +
 a*B)*x*(a + b*x)^2*Log[x] + 2*(3*A*b - a*B)*x*(a + b*x)^2*Log[a + b*x])/(2
*a^4*x*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [**B**] time = 5.36, size = 1428, normalized size = 7.29

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-(a^15*A*b^2) + a^16*b*B + 2*a^14*A*b^3*x + 49*a^13*A*b^4*x^2 - 3*a^14*b^3
*B*x^2 + 552*a^12*A*b^5*x^3 - 80*a^13*b^4*B*x^3 + 3784*a^11*A*b^6*x^4 - 988
*a^12*b^5*B*x^4 + 17600*a^10*A*b^7*x^5 - 7488*a^11*b^6*B*x^5 + 58608*a^9*A*
b^8*x^6 - 38896*a^10*b^7*B*x^6 + 143616*a^8*A*b^9*x^7 - 146432*a^9*b^8*B*x^
7 + 261888*a^7*A*b^10*x^8 - 411840*a^8*b^9*B*x^8 + 354816*a^6*A*b^11*x^9 -
878592*a^7*b^10*B*x^9 + 352000*a^5*A*b^12*x^10 - 1427712*a^6*b^11*B*x^10 +
247808*a^4*A*b^13*x^11 - 1757184*a^5*b^12*B*x^11 + 116736*a^3*A*b^14*x^12 -
 1610752*a^4*b^13*B*x^12 + 32768*a^2*A*b^15*x^13 - 1064960*a^3*b^14*B*x^13
+ 4096*a*A*b^16*x^14 - 479232*a^2*b^15*B*x^14 - 131072*a*b^16*B*x^15 - 1638
4*b^17*B*x^16 + Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-(a^14*A*b) + a^15
*B - a^13*A*b^2*x - a^14*b*B*x - 48*a^12*A*b^3*x^2 + 4*a^13*b^2*B*x^2 - 504
*a^11*A*b^4*x^3 + 76*a^12*b^3*B*x^3 - 3280*a^10*A*b^5*x^4 + 912*a^11*b^4*B*
x^4 - 14320*a^9*A*b^6*x^5 + 6576*a^10*b^5*B*x^5 - 44288*a^8*A*b^7*x^6 + 323
20*a^9*b^6*B*x^6 - 99328*a^7*A*b^8*x^7 + 114112*a^8*b^7*B*x^7 - 162560*a^6*
A*b^9*x^8 + 297728*a^7*b^8*B*x^8 - 192256*a^5*A*b^10*x^9 + 580864*a^6*b^9*B
*x^9 - 159744*a^4*A*b^11*x^10 + 846848*a^5*b^10*B*x^10 - 88064*a^3*A*b^12*x
^11 + 910336*a^4*b^11*B*x^11 - 28672*a^2*A*b^13*x^12 + 700416*a^3*b^12*B*x^
12 - 4096*a*A*b^14*x^13 + 364544*a^2*b^13*B*x^13 + 114688*a*b^14*B*x^14 + 1
6384*b^15*B*x^15))/(a^2*b*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*a^14*b^2 -
54*a^13*b^3*x - 676*a^12*b^4*x^2 - 5200*a^11*b^5*x^3 - 27456*a^10*b^6*x^4 -
 105248*a^9*b^7*x^5 - 302016*a^8*b^8*x^6 - 658944*a^7*b^9*x^7 - 1098240*a^6
*b^10*x^8 - 1391104*a^5*b^11*x^9 - 1317888*a^4*b^12*x^10 - 905216*a^3*b^13*
x^11 - 425984*a^2*b^14*x^12 - 122880*a*b^15*x^13 - 16384*b^16*x^14) + a^2*b
*Sqrt[b^2]*x^2*(2*a^15*b + 56*a^14*b^2*x + 730*a^13*b^3*x^2 + 5876*a^12*b^4
*x^3 + 32656*a^11*b^5*x^4 + 132704*a^10*b^6*x^5 + 407264*a^9*b^7*x^6 + 9609
60*a^8*b^8*x^7 + 1757184*a^7*b^9*x^8 + 2489344*a^6*b^10*x^9 + 2708992*a^5*b
^11*x^10 + 2223104*a^4*b^12*x^11 + 1331200*a^3*b^13*x^12 + 548864*a^2*b^14*
x^13 + 139264*a*b^15*x^14 + 16384*b^16*x^15)) + ((-(Sqrt[b^2]*x) + Sqrt[a^2
 + 2*a*b*x + b^2*x^2])^3*((-6*A*b)/a^3 + (2*Sqrt[b^2]*B*x*ArcTanh[(-(Sqrt[b
^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^3 - (2*B*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^3)
)/(a^4 + 4*a^3*b*x + 12*a^2*b^2*x^2 + 16*a*b^3*x^3 + 8*b^4*x^4 - 4*a^2*Sqrt
[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 8*a*b*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*
b*x + b^2*x^2] - 8*(b^2)^(3/2)*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (6*A*b*
ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/a^4
```

fricas [**A**] time = 0.44, size = 187, normalized size = 0.95

$$-\frac{2\,Aa^3 - 2\left(Ba^2b - 3\,Aab^2\right)x^2 - 3\left(Ba^3 - 3\,Aa^2b\right)x + 2\left(\left(Bab^2 - 3\,Ab^3\right)x^3 + 2\left(Ba^2b - 3\,Aab^2\right)x^2 + \left(Ba^3 - 3\,Aa^2b\right)x\right)\log\left(bx + a\right) - 2\left(\left(Bab^2 - 3\,Ab^3\right)x^3 + 2\left(Ba^2b - 3\,Aab^2\right)x^2 + \left(Ba^3 - 3\,Aa^2b\right)x\right)\log\left(x\right)}{2\left(a^4b^2x^3 + 2\,a^5bx^2 + a^6x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*A*a^3 - 2*(B*a^2*b - 3*A*a*b^2)*x^2 - 3*(B*a^3 - 3*A*a^2*b)*x + 2*(
(B*a*b^2 - 3*A*b^3)*x^3 + 2*(B*a^2*b - 3*A*a*b^2)*x^2 + (B*a^3 - 3*A*a^2*b)
```

```
*x)*log(b*x + a) - 2*((B*a*b^2 - 3*A*b^3)*x^3 + 2*(B*a^2*b - 3*A*a*b^2)*x^2
 + (B*a^3 - 3*A*a^2*b)*x)*log(x))/(a^4*b^2*x^3 + 2*a^5*b*x^2 + a^6*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 221, normalized size = 1.13

$$\frac{\left(-6A\,b^{3}x^{3}\ln(x)+6A\,b^{3}x^{3}\ln(bx+a)+2Ba\,b^{2}x^{3}\ln(x)-2Ba\,b^{2}x^{3}\ln(bx+a)-12Aa\,b^{2}x^{2}\ln(x)+12Aa\,b^{2}x^{2}\ln(bx+a)+4B\,a^{2}b\,x^{2}\ln(x)-4B\,a^{2}b\,x^{2}\ln(bx+a)-6A\,a^{2}bx\ln(x)+6A\,a^{2}bx\ln(bx+a)-6Aa\,b^{2}x^{2}+2B\,a^{3}x\ln(x)-2B\,a^{3}x\ln(bx+a)+2B\,a^{2}b\,x^{2}-9A\,a^{2}bx+3B\,a^{3}x-2A\,a^{3}\right)(bx+a)}{2\left((bx+a)^{2}\right)^{\frac{3}{2}}a^{4}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(6*A*b^3*x^3*ln(b*x+a)-6*A*b^3*x^3*ln(x)-2*B*a*b^2*x^3*ln(b*x+a)+2*B*a*
b^2*x^3*ln(x)+12*A*ln(b*x+a)*x^2*a*b^2-12*A*a*b^2*x^2*ln(x)-4*B*ln(b*x+a)*x
^2*a^2*b+4*B*a^2*b*x^2*ln(x)+6*A*ln(b*x+a)*x*a^2*b-6*A*ln(x)*x*a^2*b-6*A*a*
b^2*x^2-2*B*ln(b*x+a)*x*a^3+2*B*a^3*x*ln(x)+2*B*a^2*b*x^2-9*A*a^2*b*x+3*B*a
^3*x-2*A*a^3)*(b*x+a)/x/a^4/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.52, size = 191, normalized size = 0.97

$$-\frac{(-1)^{2\,abx+2\,a^{2}}B\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^{2}}{|x|}\right)}{a^{3}}+\frac{3\,(-1)^{2\,abx+2\,a^{2}}Ab\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^{2}}{|x|}\right)}{a^{4}}+\frac{B}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,a^{2}}-\frac{3\,Ab}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,a^{3}}-\frac{A}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,a^{2}x}+\frac{B}{2\,ab^{2}\left(x+\frac{a}{b}\right)^{2}}-\frac{A}{2\,a^{2}b\left(x+\frac{a}{b}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 + 3*(-1)^(
2*a*b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 + B/(sqrt(b^2*x
^2 + 2*a*b*x + a^2)*a^2) - 3*A*b/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3) - A/(s
qrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x) + 1/2*B/(a*b^2*(x + a/b)^2) - 1/2*A/(a^
2*b*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{2}\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*((a + b*x)**2)**(3/2)), x)
```

3.648 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=243

$$\frac{3b\log(x)(a+bx)(2Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3b(a+bx)(2Ab-aB)\log(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}+\frac{b(3Ab-2aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB}{a^4x\sqrt{a^2+2abx+b^2}}$$

Rubi [A] time = 0.16, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{b(3Ab-2aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)}{a^4x\sqrt{a^2+2abx+b^2x^2}}+\frac{b(Ab-aB)}{2a^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{3b\log(x)(a+bx)(2Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3b(a+bx)(2Ab-aB)\log(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2a^3x^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (b*(3*A*b - 2*a*B))/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b*(A*b - a*B))/(
2*a^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*(a + b*x))/(2*a^3*x^2*S
qrt[a^2 + 2*a*b*x + b^2*x^2]) + ((3*A*b - a*B)*(a + b*x))/(a^4*x*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) + (3*b*(2*A*b - a*B)*(a + b*x)*Log[x])/(a^5*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) - (3*b*(2*A*b - a*B)*(a + b*x)*Log[a + b*x])/(a^5*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx=\frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^3\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^3b^3x^3}+\frac{-3Ab+aB}{a^4b^3x^2}-\frac{3(-2Ab+aB)}{a^5b^2x}+\frac{-Ab+aB}{a^3b(a+bx)^3}+\frac{-3Ab+2aB}{a^4b(a+bx)^2}+\frac{3(-}{a}\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{b(3Ab-2aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b(Ab-aB)}{2a^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2a^3x^2\sqrt{a^2+2abx}}$$

Mathematica [A] time = 0.07, size = 133, normalized size = 0.55

$$\frac{-a\left(a^3(A+2Bx)+a^2bx(9Bx-4A)+6ab^2x^2(Bx-3A)-12Ab^3x^3\right)+6bx^2\log(x)(a+bx)^2(2Ab-aB)+6bx^2(a+bx)^2(aB-2Ab)\log(a+bx)}{2a^5x^2(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-(a*(-12*A*b^3*x^3 + 6*a*b^2*x^2*(-3*A + B*x) + a^3*(A + 2*B*x) + a^2*b*x*
(-4*A + 9*B*x))) + 6*b*(2*A*b - a*B)*x^2*(a + b*x)^2*Log[x] + 6*b*(-2*A*b +
 a*B)*x^2*(a + b*x)^2*Log[a + b*x])/(2*a^5*x^2*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 5.97, size = 1948, normalized size = 8.02

result too large to display

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*a^15*A*b^2 + a^16*b*B - 22*a^14*A*b^3*
x - 3*a^15*b^2*B*x - 236*a^13*A*b^4*x^2 - 62*a^14*b^3*B*x^2 - 1376*a^12*A*b
^5*x^3 - 924*a^13*b^4*B*x^3 - 4864*a^11*A*b^6*x^4 - 8344*a^12*b^5*B*x^4 - 8
864*a^10*A*b^7*x^5 - 52080*a^11*b^6*B*x^5 + 4288*a^9*A*b^8*x^6 - 237664*a^1
0*b^7*B*x^6 + 78080*a^8*A*b^9*x^7 - 819392*a^9*b^8*B*x^7 + 251392*a^7*A*b^1
0*x^8 - 2173312*a^8*b^9*B*x^8 + 480768*a^6*A*b^11*x^9 - 4471040*a^7*b^10*B*
x^9 + 617472*a^5*A*b^12*x^10 - 7133696*a^6*b^11*B*x^10 + 540672*a^4*A*b^13*
x^11 - 8754176*a^5*b^12*B*x^11 + 311296*a^3*A*b^14*x^12 - 8112128*a^4*b^13*
B*x^12 + 106496*a^2*A*b^15*x^13 - 5492736*a^3*b^14*B*x^13 + 16384*a*A*b^16*
x^14 - 2564096*a^2*b^15*B*x^14 - 737280*a*b^16*B*x^15 - 98304*b^17*B*x^16)
+ 4*Sqrt[b^2]*(a^17*B + 24*a^15*A*b^2*x + 2*a^16*b*B*x + 258*a^14*A*b^3*x^2
 + 65*a^15*b^2*B*x^2 + 1612*a^13*A*b^4*x^3 + 986*a^14*b^3*B*x^3 + 6240*a^12
*A*b^5*x^4 + 9268*a^13*b^4*B*x^4 + 13728*a^11*A*b^6*x^5 + 60424*a^12*b^5*B*
x^5 + 4576*a^10*A*b^7*x^6 + 289744*a^11*b^6*B*x^6 - 82368*a^9*A*b^8*x^7 + 1
057056*a^10*b^7*B*x^7 - 329472*a^8*A*b^9*x^8 + 2992704*a^9*b^8*B*x^8 - 7321
60*a^7*A*b^10*x^9 + 6644352*a^8*b^9*B*x^9 - 1098240*a^6*A*b^11*x^10 + 11604
736*a^7*b^10*B*x^10 - 1158144*a^5*A*b^12*x^11 + 15887872*a^6*b^11*B*x^11 -
851968*a^4*A*b^13*x^12 + 16866304*a^5*b^12*B*x^12 - 417792*a^3*A*b^14*x^13
+ 13604864*a^4*b^13*B*x^13 - 122880*a^2*A*b^15*x^14 + 8056832*a^3*b^14*B*x^
14 - 16384*a*A*b^16*x^15 + 3301376*a^2*b^15*B*x^15 + 835584*a*b^16*B*x^16 +
 98304*b^17*B*x^17))/(a^3*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^15*
b*x^2 - 232*a^14*b^2*x^3 - 3136*a^13*b^3*x^4 - 26208*a^12*b^4*x^5 - 151424*
a^11*b^5*x^6 - 640640*a^10*b^6*x^7 - 2050048*a^9*b^7*x^8 - 5051904*a^8*b^8*
x^9 - 9664512*a^7*b^9*x^10 - 14350336*a^6*b^10*x^11 - 16400384*a^5*b^11*x^1
2 - 14163968*a^4*b^12*x^13 - 8945664*a^3*b^13*x^14 - 3899392*a^2*b^14*x^15
- 1048576*a*b^15*x^16 - 131072*b^16*x^17) + a^3*(8*a^16*b^2*x^2 + 240*a^15*
b^3*x^3 + 3368*a^14*b^4*x^4 + 29344*a^13*b^5*x^5 + 177632*a^12*b^6*x^6 + 79
2064*a^11*b^7*x^7 + 2690688*a^10*b^8*x^8 + 7101952*a^9*b^9*x^9 + 14716416*a
^8*b^10*x^10 + 24014848*a^7*b^11*x^11 + 30750720*a^6*b^12*x^12 + 30564352*a
^5*b^13*x^13 + 23109632*a^4*b^14*x^14 + 12845056*a^3*b^15*x^15 + 4947968*a^
2*b^16*x^16 + 1179648*a*b^17*x^17 + 131072*b^18*x^18)) + ((-36*A*(b^2)^(3/2
)*x)/a^2 - (72*A*b^3*Sqrt[b^2]*x^2)/a^3 - (48*A*b^4*Sqrt[b^2]*x^3)/a^4 + (1
2*A*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a^2 + (24*A*b^3*x*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/a^3 + (48*A*b^4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a^4 + 6*b*B
*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + (24*b^2*B*x*
ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a + (72*b^3*B*
x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^2 + (96*
b^4*B*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^3
+ (48*b^5*B*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a]
)/a^4 - (24*b*Sqrt[b^2]*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b
^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^2 - (48*(b^2)^(3/2)*B*x^2*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/a])/a^3 - (48*b^3*Sqrt[b^2]*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Ar
cTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/a^4)/(a^4 + 4*a^
3*b*x + 12*a^2*b^2*x^2 + 16*a*b^3*x^3 + 8*b^4*x^4 - 4*a^2*Sqrt[b^2]*x*Sqrt[
a^2 + 2*a*b*x + b^2*x^2] - 8*a*b*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
```

```
] - 8*(b^2)^(3/2)*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (12*A*b^2*ArcTanh[(S
qrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/a^5
```

fricas [A] time = 0.42, size = 225, normalized size = 0.93

$$-\frac{Aa^4 + 6\left(Ba^2b^2 - 2\,Aab^3\right)x^3 + 9\left(Ba^3b - 2\,Aa^2b^2\right)x^2 + 2\left(Ba^4 - 2\,Aa^3b\right)x - 6\left(\left(Bab^3 - 2\,Ab^4\right)x^4 + 2\left(Ba^2b^2 - 2\,Aab^3\right)x^3 + \left(Ba^3b - 2\,Aa^2b^2\right)x^2\right)\log\left(bx + a\right) + 6\left(\left(Bab^3 - 2\,Ab^4\right)x^4 + 2\left(Ba^2b^2 - 2\,Aab^3\right)x^3 + \left(Ba^3b - 2\,Aa^2b^2\right)x^2\right)\log\left(x\right)}{2\left(a^5b^2x^4 + 2\,a^6bx^3 + a^7x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(A*a^4 + 6*(B*a^2*b^2 - 2*A*a*b^3)*x^3 + 9*(B*a^3*b - 2*A*a^2*b^2)*x^2
 + 2*(B*a^4 - 2*A*a^3*b)*x - 6*((B*a*b^3 - 2*A*b^4)*x^4 + 2*(B*a^2*b^2 - 2*
A*a*b^3)*x^3 + (B*a^3*b - 2*A*a^2*b^2)*x^2)*log(b*x + a) + 6*((B*a*b^3 - 2*
A*b^4)*x^4 + 2*(B*a^2*b^2 - 2*A*a*b^3)*x^3 + (B*a^3*b - 2*A*a^2*b^2)*x^2)*l
og(x))/(a^5*b^2*x^4 + 2*a^6*b*x^3 + a^7*x^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 262, normalized size = 1.08

$$-\frac{\left(-12A\,b^4x^4\ln(x) + 12A\,b^4x^4\ln\left(bx + a\right) + 6Ba\,b^3x^4\ln(x) - 6Ba\,b^3x^4\ln\left(bx + a\right) - 24Aa\,b^3x^3\ln(x) + 24Aa\,b^3x^3\ln\left(bx + a\right) + 12B\,a^2b^2x^3\ln(x) - 12B\,a^2b^2x^3\ln\left(bx + a\right) - 12A\,a^2b^2x^2\ln(x) + 12A\,a^2b^2x^2\ln\left(bx + a\right) - 12Aa\,b^3x^3 + 6B\,a^3b\,x^2\ln(x) - 6B\,a^3b\,x^2\ln\left(bx + a\right) + 6B\,a^2b^2x^3 - 18A\,a^2b^2x^2 + 9B\,a^3b\,x^2 - 4A\,a^3bx + 2B\,a^4x + A\,a^4\right)\left(bx + a\right)}{2\left(\left(bx + a\right)^2\right)^{\frac{3}{2}}a^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(12*A*b^4*x^4*ln(b*x+a)-12*A*b^4*x^4*ln(x)-6*B*a*b^3*x^4*ln(b*x+a)+6*B
*a*b^3*x^4*ln(x)+24*A*ln(b*x+a)*x^3*a*b^3-24*A*ln(x)*x^3*a*b^3-12*B*ln(b*x+
a)*x^3*a^2*b^2+12*B*ln(x)*x^3*a^2*b^2+12*A*ln(b*x+a)*x^2*a^2*b^2-12*A*ln(x)
*x^2*a^2*b^2-12*A*a*b^3*x^3-6*B*ln(b*x+a)*x^2*a^3*b+6*B*ln(x)*x^2*a^3*b+6*B
*a^2*b^2*x^3-18*A*a^2*b^2*x^2+9*B*a^3*b*x^2-4*A*a^3*b*x+2*B*a^4*x+A*a^4)*(b
*x+a)/x^2/a^5/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.49, size = 250, normalized size = 1.03

$$\frac{3\,(-1)^{2\,abx+2\,a^2}\,Bb\log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right)}{a^4} - \frac{6\,(-1)^{2\,abx+2\,a^2}\,Ab^2\log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right)}{a^5} - \frac{3\,Bb}{\sqrt{b^2x^2 + 2\,abx + a^2}\,a^3} + \frac{6\,Ab^2}{\sqrt{b^2x^2 + 2\,abx + a^2}\,a^4} - \frac{B}{\sqrt{b^2x^2 + 2\,abx + a^2}\,a^2x} + \frac{5\,Ab}{2\,\sqrt{b^2x^2 + 2\,abx + a^2}\,a^3x} - \frac{A}{2\,\sqrt{b^2x^2 + 2\,abx + a^2}\,a^2x^2} + \frac{A}{2\,a^3\left(x + \frac{a}{b}\right)^2} - \frac{B}{2\,a^2b\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 3*(-1)^(2*a*b*x + 2*a^2)*B*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 - 6*(-1
)^(2*a*b*x + 2*a^2)*A*b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 - 3*B*b/(s
qrt(b^2*x^2 + 2*a*b*x + a^2)*a^3) + 6*A*b^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*
a^4) - B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x) + 5/2*A*b/(sqrt(b^2*x^2 + 2*
a*b*x + a^2)*a^3*x) - 1/2*A/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x^2) + 1/2*A
/(a^3*(x + a/b)^2) - 1/2*B/(a^2*b*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{x^3\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
[Out] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{3} \left((a + bx)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)/(x**3*((a + b*x)**2)**(3/2)), x)
```

3.649 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=245

$$-\frac{a^2(3Ab-5aB)}{b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2a(2Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-5aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.18, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{a^4(Ab-aB)}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(4Ab-5aB)}{3b^6(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{a^2(3Ab-5aB)}{b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2a(2Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-5aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a*(2*A*b - 5*a*B))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^4*(A*b - a*B
))/(4*b^6*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^3*(4*A*b - 5*a*B)
)/(3*b^6*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^2*(3*A*b - 5*a*B))
/(b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x*(a + b*x))/(b^5*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 5*a*B)*(a + b*x)*Log[a + b*x])/(b^6*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^4(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{B}{b^{10}}-\frac{a^4(-Ab+aB)}{b^{10}(a+bx)^5}+\frac{a^3(-4Ab+5aB)}{b^{10}(a+bx)^4}-\frac{2a^2(-3Ab+5aB)}{b^{10}(a+bx)^3}+\frac{2a(-2Ab+5aB)}{b^{10}(a+bx)^2}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2a(2Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{a^4(Ab-aB)}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(4Ab-5}{3b^6(a+bx)^2\sqrt{a^2+}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 127, normalized size = 0.52

$$\frac{-77a^5B+a^4b(25A-248Bx)+4a^3b^2x(22A-63Bx)+12a^2b^3x^2(9A-4Bx)+48ab^4x^3(A+Bx)+12(a+bx)^4(Ab-5aB)\log(a+bx)+12b^5Bx^5}{12b^6(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-77*a^5*B + 12*b^5*B*x^5 + a^4*b*(25*A - 248*B*x) + 4*a^3*b^2*x*(22*A - 63
*B*x) + 12*a^2*b^3*x^2*(9*A - 4*B*x) + 48*a*b^4*x^3*(A + B*x) + 12*(A*b - 5
*a*B)*(a + b*x)^4*Log[a + b*x])/(12*b^6*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 5.00, size = 4635, normalized size = 18.92

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((-448*a^7*A*x)/(3*b^3*Sqrt[b^2]) - (1888*a^6*A*x^2)/(3*(b^2)^(3/2)) - (160
0*a^5*A*x^3)/(b*Sqrt[b^2]) - (8000*a^4*A*x^4)/(3*Sqrt[b^2]) - (8576*a^3*A*b
*x^5)/(3*Sqrt[b^2]) - 1792*a^2*A*Sqrt[b^2]*x^6 - (512*a*A*b^3*x^7)/Sqrt[b^2
] + (32*a^7*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^5 + (352*a^6*A*x*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(3*b^4) + (512*a^5*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/b^3 + (1088*a^4*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (4736*a^3*A*x^4
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b) + 1280*a^2*A*x^5*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2] + 512*a*A*b*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (128*a^4*A*x^4*Ar
cTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 512*a^3*A*x^
5*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 768*a^2*A*b
*x^6*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 512*a*A*
b^2*x^7*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 128*A
*b^3*x^8*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128
*a^3*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - (384*a^2*A*b*x^5*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqr
t[b^2] - 384*a*A*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqr
t[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128*A*b^3*x^7*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
a])/Sqrt[b^2])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(a - S
qrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4) + ((32*a^8*A)/(b^4*Sqrt[b^2]
) + (448*a^7*A*x)/(3*b^3*Sqrt[b^2]) + (512*a^8*B*x)/(3*b^4*Sqrt[b^2]) + (18
88*a^6*A*x^2)/(3*(b^2)^(3/2)) + (2528*a^7*B*x^2)/(3*b^3*Sqrt[b^2]) + (1600*
a^5*A*x^3)/(b*Sqrt[b^2]) + (2624*a^6*B*x^3)/(b^2)^(3/2) + (2400*a^4*A*x^4)/
Sqrt[b^2] + (15808*a^5*B*x^4)/(3*b*Sqrt[b^2]) + (1920*a^3*A*b*x^5)/Sqrt[b^2
] + (18688*a^4*B*x^5)/(3*Sqrt[b^2]) + 640*a^2*A*Sqrt[b^2]*x^6 + (3584*a^3*b
*B*x^6)/Sqrt[b^2] + 256*a^2*Sqrt[b^2]*B*x^7 - (576*a*b^3*B*x^8)/Sqrt[b^2] -
 (128*b^4*B*x^9)/Sqrt[b^2] - (32*a^8*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^6 -
 (448*a^6*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) - (416*a^7*B*x*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(3*b^5) - (480*a^5*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/b^3 - (704*a^6*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 - (1120*a^4*A*
x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (1920*a^5*B*x^3*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/b^3 - (1280*a^3*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (1004
8*a^4*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^2) - 640*a^2*A*x^5*Sqrt[a^2
 + 2*a*b*x + b^2*x^2] - (2880*a^3*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b -
704*a^2*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 448*a*b*B*x^7*Sqrt[a^2 + 2*a*
b*x + b^2*x^2] + 128*b^2*B*x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (640*a^5*B*x
^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 - (2560
*a^4*B*x^5*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b -
 3840*a^3*B*x^6*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a]
 - 2560*a^2*b*B*x^7*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/a] - 640*a*b^2*B*x^8*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/a] + (640*a^4*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]
*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*Sqrt[b^2]) + (1920*a^3*B*x^5*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x +
```

```
b^2*x^2])/a])/Sqrt[b^2] + (1920*a^2*b*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] + 640
*a*Sqrt[b^2]*B*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) +
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (64*a^4*A*x^4*Log[-a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (256*a^3*A*b*x^5*Log[-a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - 384*a^2*A*Sqrt[b^2]*x^6*
Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (256*a*A*b^3*x^7*Lo
g[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (64*A*b^4*
x^8*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (64*
a^3*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]])/b + 192*a^2*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 192*a*A*b*x^6*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 6
4*A*b^2*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]] - (64*a^4*A*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b
*x + b^2*x^2]])/Sqrt[b^2] - (256*a^3*A*b*x^5*Log[a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - 384*a^2*A*Sqrt[b^2]*x^6*Log[a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (256*a*A*b^3*x^7*Log[a - Sqrt[b^2]*
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (64*A*b^4*x^8*Log[a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (64*a^3*A*x^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])
/b + 192*a^2*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt
[a^2 + 2*a*b*x + b^2*x^2]] + 192*a*A*b*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Lo
g[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 64*A*b^2*x^7*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/
((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])^4) + ((-32*a^9*B)/(b^5*Sqrt[b^2]) - (512*a^8*B
*x)/(3*b^4*Sqrt[b^2]) - (2528*a^7*B*x^2)/(3*b^3*Sqrt[b^2]) - (2624*a^6*B*x^
3)/(b^2)^(3/2) - (4512*a^5*B*x^4)/(b*Sqrt[b^2]) - (3840*a^4*B*x^5)/Sqrt[b^2
] - (1280*a^3*b*B*x^6)/Sqrt[b^2] + (512*a^7*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(3*b^5) + (672*a^6*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 + (1952*a^5
*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (2560*a^4*B*x^4*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/b^2 + (1280*a^3*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (3
20*a^5*B*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt
[b^2]) + (1280*a^4*B*x^5*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^
2]])/Sqrt[b^2] + (1920*a^3*b*B*x^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*
x + b^2*x^2]])/Sqrt[b^2] + 1280*a^2*Sqrt[b^2]*B*x^7*Log[-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + (320*a*b^3*B*x^8*Log[-a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (320*a^4*B*x^4*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 - (9
60*a^3*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/b - 960*a^2*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - 320*a*b*B*x^7*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
+ (320*a^5*B*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*S
qrt[b^2]) + (1280*a^4*B*x^5*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2]])/Sqrt[b^2] + (1920*a^3*b*B*x^6*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b
*x + b^2*x^2]])/Sqrt[b^2] + 1280*a^2*Sqrt[b^2]*B*x^7*Log[a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + (320*a*b^3*B*x^8*Log[a - Sqrt[b^2]*x + Sqr
t[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (320*a^4*B*x^4*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 - (960
*a^3*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]])/b - 960*a^2*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - 320*a*b*B*x^7*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a
 - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(a - Sqrt[b^2]*x + Sqrt[a
^2 + 2*a*b*x + b^2*x^2])^4)
```

fricas [A] time = 0.42, size = 252, normalized size = 1.03

$$\frac{12\,Bb^5x^5 + 48\,Bab^4x^4 - 77\,Ba^5 + 25\,Aa^4b - 48\left(Ba^2b^3 - Aab^4\right)x^3 - 36\left(7\,Ba^3b^2 - 3\,Aa^2b^3\right)x^2 - 8\left(31\,Ba^4b - 11\,Aa^3b^2\right)x - 12\left(5\,Ba^5 - Aa^4b + \left(5\,Bab^4 - Ab^5\right)x^4 + 4\left(5\,Ba^2b^3 - Aab^4\right)x^3 + 6\left(5\,Ba^3b^2 - Aa^2b^3\right)x^2 + 4\left(5\,Ba^4b - Aa^3b^2\right)x\right)\log\left(bx + a\right)}{12\left(b^{10}x^4 + 4\,ab^9x^3 + 6\,a^2b^8x^2 + 4\,a^3b^7x + a^4b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^5*x^5 + 48*B*a*b^4*x^4 - 77*B*a^5 + 25*A*a^4*b - 48*(B*a^2*b^3
 - A*a*b^4)*x^3 - 36*(7*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 - 8*(31*B*a^4*b - 11*A
*a^3*b^2)*x - 12*(5*B*a^5 - A*a^4*b + (5*B*a*b^4 - A*b^5)*x^4 + 4*(5*B*a^2*
b^3 - A*a*b^4)*x^3 + 6*(5*B*a^3*b^2 - A*a^2*b^3)*x^2 + 4*(5*B*a^4*b - A*a^3
*b^2)*x)*log(b*x + a))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*
x + a^4*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 273, normalized size = 1.11

$$\frac{\left(12A\,b^5x^4\ln\left(bx+a\right) - 60Ba\,b^4x^4\ln\left(bx+a\right) + 12B\,b^5x^5 + 48Aa\,b^4x^3\ln\left(bx+a\right) - 240B\,a^2b^3x^3\ln\left(bx+a\right) + 48Ba\,b^4x^4 + 72A\,a^2b^3x^2\ln\left(bx+a\right) + 48Aa\,b^4x^3 - 360B\,a^3b^2x^2\ln\left(bx+a\right) - 48B\,a^2b^3x^3 + 48A\,a^3b^2x\ln\left(bx+a\right) + 108A\,a^2b^3x^2 - 240B\,a^4bx\ln\left(bx+a\right) - 252B\,a^3b^2x^2 + 12A\,a^4b\ln\left(bx+a\right) + 88A\,a^3b^2x - 60B\,a^5\ln\left(bx+a\right) - 248B\,a^4bx + 25A\,a^4b - 77B\,a^5\right)\left(bx+a\right)}{12\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(12*A*ln(b*x+a)*x^4*b^5-60*B*ln(b*x+a)*x^4*a*b^4+12*B*b^5*x^5+48*A*ln(
b*x+a)*x^3*a*b^4-240*B*ln(b*x+a)*x^3*a^2*b^3+48*B*a*b^4*x^4+72*A*a^2*b^3*x^
2*ln(b*x+a)+48*A*a*b^4*x^3-360*B*a^3*b^2*x^2*ln(b*x+a)-48*B*a^2*b^3*x^3+48*
A*a^3*b^2*x*ln(b*x+a)+108*A*a^2*b^3*x^2-240*B*a^4*b*x*ln(b*x+a)-252*B*a^3*b
^2*x^2+12*A*a^4*b*ln(b*x+a)+88*A*a^3*b^2*x-60*B*a^5*ln(b*x+a)-248*B*a^4*b*x
+25*A*a^4*b-77*B*a^5)*(b*x+a)/b^6/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.79, size = 211, normalized size = 0.86

$$\frac{1}{12}\,B\left(\frac{12\,b^5x^5 + 48\,ab^4x^4 - 48\,a^2b^3x^3 - 252\,a^3b^2x^2 - 248\,a^4bx - 77\,a^5}{b^{10}x^4 + 4\,ab^9x^3 + 6\,a^2b^8x^2 + 4\,a^3b^7x + a^4b^6} - \frac{60\,a\log\left(bx + a\right)}{b^6}\right) + \frac{1}{12}\,A\left(\frac{48\,ab^3x^3 + 108\,a^2b^2x^2 + 88\,a^3bx + 25\,a^4}{b^9x^4 + 4\,ab^8x^3 + 6\,a^2b^7x^2 + 4\,a^3b^6x + a^4b^5} + \frac{12\,\log\left(bx + a\right)}{b^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*B*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 - 248
*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x +
a^4*b^6) - 60*a*log(b*x + a)/b^6) + 1/12*A*((48*a*b^3*x^3 + 108*a^2*b^2*x^2
 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*
x + a^4*b^5) + 12*log(b*x + a)/b^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{\left((a + bx)^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.650 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=188

$$\frac{x^4(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{3aB}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3a^2B}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.10, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 78, 43}

$$\frac{x^4(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{3aB}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3a^2B}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3B}{3b^5(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (3*a*B)/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*x^4)/(4*a*b*(a +
 b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^3*B)/(3*b^5*(a + b*x)^2*Sqrt[a^
2 + 2*a*b*x + b^2*x^2]) - (3*a^2*B)/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) + (B*(a + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^3(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^4}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \frac{x^3}{\left(ab+b^2x\right)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^4}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \left(-\frac{a^3}{b^7(a+bx)^4}+\frac{3a^2}{b^7(a+bx)^3}-\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{3aB}{b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^4}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{a^3B}{3b^5(a+bx)^2\sqrt{a^2+}}$$

Mathematica [A] time = 0.05, size = 103, normalized size = 0.55

$$\frac{25a^4B+a^3(88bBx-3Ab)-12a^2b^2x(A-9Bx)+6ab^3x^2(8Bx-3A)+12B(a+bx)^4\log(a+bx)-12Ab^4x^3}{12b^5(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (25*a^4*B - 12*A*b^4*x^3 - 12*a^2*b^2*x*(A - 9*B*x) + 6*a*b^3*x^2*(-3*A + 8
*B*x) + a^3*(-3*A*b + 88*b*B*x) + 12*B*(a + b*x)^4*Log[a + b*x])/(12*b^5*(a
 + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 3.34, size = 2849, normalized size = 15.15

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-a^6 - 3*a^5*b*x - 11*a^4*b^2*x^2 - 17*
a^3*b^3*x^3 - 18*a^2*b^4*x^4 - 10*a*b^5*x^5 - 4*b^6*x^6) + 2*A*Sqrt[b^2]*(4
*a^6*x + 14*a^5*b*x^2 + 28*a^4*b^2*x^3 + 35*a^3*b^3*x^4 + 28*a^2*b^4*x^5 +
14*a*b^5*x^6 + 4*b^6*x^7))/(b^4*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
*(-8*a^3*b^3 - 24*a^2*b^4*x - 24*a*b^5*x^2 - 8*b^6*x^3) + b^4*x^4*(8*a^4*b^
4 + 32*a^3*b^5*x + 48*a^2*b^6*x^2 + 32*a*b^7*x^3 + 8*b^8*x^4)) + ((-32*a^7*
A)/(b^3*Sqrt[b^2]) - (128*a^6*A*x)/(b^2)^(3/2) - (448*a^7*B*x)/(3*b^3*Sqrt[
b^2]) - (448*a^5*A*x^2)/(b*Sqrt[b^2]) - (1888*a^6*B*x^2)/(3*(b^2)^(3/2)) -
(896*a^4*A*x^3)/Sqrt[b^2] - (1600*a^5*B*x^3)/(b*Sqrt[b^2]) - (1088*a^3*A*b*
x^4)/Sqrt[b^2] - (8000*a^4*B*x^4)/(3*Sqrt[b^2]) - 768*a^2*A*Sqrt[b^2]*x^5 -
 (8576*a^3*b*B*x^5)/(3*Sqrt[b^2]) - (256*a*A*b^3*x^6)/Sqrt[b^2] - 1792*a^2*
Sqrt[b^2]*B*x^6 - (512*a*b^3*B*x^7)/Sqrt[b^2] + (32*a^7*B*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/b^5 + (128*a^5*A*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (352*
a^6*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (320*a^4*A*x^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/b^2 + (512*a^5*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3
 + (576*a^3*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (1088*a^4*B*x^3*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/b^2 + 512*a^2*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
+ (4736*a^3*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b) + 256*a*A*b*x^5*Sqrt
[a^2 + 2*a*b*x + b^2*x^2] + 1280*a^2*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2] +
512*a*b*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (128*a^4*B*x^4*ArcTanh[(-(Sqr
t[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 512*a^3*B*x^5*ArcTanh[(-
(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 768*a^2*b*B*x^6*ArcTanh
```

```
[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 512*a*b^2*B*x^7*ArcT
anh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 128*b^3*B*x^8*Arc
Tanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128*a^3*B*x^4*S
qrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/a])/Sqrt[b^2] - (384*a^2*b*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - 384
*a*Sqrt[b^2]*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) +
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128*b^3*B*x^7*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2
])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4) + ((32*a^8*B)/(b^4*Sqrt[b^2]) + (448*a^7
*B*x)/(3*b^3*Sqrt[b^2]) + (1888*a^6*B*x^2)/(3*(b^2)^(3/2)) + (1600*a^5*B*x^
3)/(b*Sqrt[b^2]) + (2400*a^4*B*x^4)/Sqrt[b^2] + (1920*a^3*b*B*x^5)/Sqrt[b^2
] + 640*a^2*Sqrt[b^2]*B*x^6 - (448*a^6*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
3*b^4) - (480*a^5*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (1120*a^4*B*x^
3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (1280*a^3*B*x^4*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/b - 640*a^2*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (64*a^4*B*x^4*
Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (256*a^3
*b*B*x^5*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] -
 384*a^2*Sqrt[b^2]*B*x^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^
2]] - (256*a*b^3*B*x^7*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/Sqrt[b^2] - (64*b^4*B*x^8*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]])/Sqrt[b^2] + (64*a^3*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - S
qrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 192*a^2*B*x^5*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 1
92*a*b*B*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]] + 64*b^2*B*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (64*a^4*B*x^4*Log[a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (256*a^3*b*B*x^5*Log[a
 - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - 384*a^2*Sqrt[b
^2]*B*x^6*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (256*a*b^3
*B*x^7*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (6
4*b^4*B*x^8*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2]
 + (64*a^3*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]])/b + 192*a^2*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 192*a*b*B*x^6*Sqrt[a^
2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
 + 64*b^2*B*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)^4*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4)
```

fricas [A] time = 0.43, size = 175, normalized size = 0.93

$$\frac{25\,Ba^4 - 3\,Aa^3b + 12\left(4\,Bab^3 - Ab^4\right)x^3 + 18\left(6\,Ba^2b^2 - Aab^3\right)x^2 + 4\left(22\,Ba^3b - 3\,Aa^2b^2\right)x + 12\left(Bb^4x^4 + 4\,Bab^3x^3 + 6\,Ba^2b^2x^2 + 4\,Ba^3bx + Ba^4\right)\log\left(bx + a\right)}{12\left(b^9x^4 + 4\,ab^8x^3 + 6\,a^2b^7x^2 + 4\,a^3b^6x + a^4b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(25*B*a^4 - 3*A*a^3*b + 12*(4*B*a*b^3 - A*b^4)*x^3 + 18*(6*B*a^2*b^2 -
 A*a*b^3)*x^2 + 4*(22*B*a^3*b - 3*A*a^2*b^2)*x + 12*(B*b^4*x^4 + 4*B*a*b^3*
x^3 + 6*B*a^2*b^2*x^2 + 4*B*a^3*b*x + B*a^4)*log(b*x + a))/(b^9*x^4 + 4*a*b
^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 168, normalized size = 0.89

$$-\frac{\left(-12B\,b^4x^4\ln\left(bx+a\right)-48Ba\,b^3x^3\ln\left(bx+a\right)+12A\,b^4x^3-72B\,a^2b^2x^2\ln\left(bx+a\right)-48Ba\,b^3x^3+18Aa\,b^3x^2-48B\,a^3bx\ln\left(bx+a\right)-108B\,a^2b^2x^2+12A\,a^2b^2x-12B\,a^4\ln\left(bx+a\right)-88B\,a^3bx+3A\,a^3b-25B\,a^4\right)\left(bx+a\right)}{12\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(-12*B*ln(b*x+a)*x^4*b^4-48*B*ln(b*x+a)*x^3*a*b^3+12*A*b^4*x^3-72*B*a
^2*b^2*x^2*ln(b*x+a)-48*B*a*b^3*x^3+18*A*a*b^3*x^2-48*B*a^3*b*x*ln(b*x+a)-1
08*B*a^2*b^2*x^2+12*A*a^2*b^2*x-12*B*a^4*ln(b*x+a)-88*B*a^3*b*x+3*A*a^3*b-2
5*B*a^4)*(b*x+a)/b^5/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.65, size = 201, normalized size = 1.07

$$\frac{1}{12}\,B\left(\frac{48\,ab^3x^3+108\,a^2b^2x^2+88\,a^3bx+25\,a^4}{b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5}+\frac{12\,\log\left(bx+a\right)}{b^5}\right)-\frac{1}{12}\,A\left(\frac{12\,x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\frac{8\,a^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}+\frac{6\,a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8\,a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3\,a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*B*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4
*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5)
- 1/12*A*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 +
2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3)
 - 3*a^3/(b^8*(x + a/b)^4))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.651 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=77

$$\frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{x^4(Ab-aB)}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{x^4(Ab-aB)}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (A*x^3)/(3*a^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - ((A*b - a*B)*x^4)/(4*a^2*
(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{\left(2Ab^2-2abB\right)\int \frac{x^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{2ab}$$

$$= \frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{\left(b^3\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{x^3}{\left(ab+b^2x\right)^5}\,dx}{2a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{(Ab-aB)x^4}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.95

$$\frac{-3a^3B-a^2b(A+12Bx)-2ab^2x(2A+9Bx)-6b^3x^2(A+2Bx)}{12b^4(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*a^3*B - 6*b^3*x^2*(A + 2*B*x) - 2*a*b^2*x*(2*A + 9*B*x) - a^2*b*(A + 12
*B*x))/(12*b^4*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.29, size = 381, normalized size = 4.95

$$\frac{-2\left(3a^7bB-3a^6Ab^2-3a^3b^5Bx^4-a^2Ab^6x^4-12a^2b^6Bx^5-4aAb^7x^5-18ab^7Bx^6-6Ab^8x^6-12b^8Bx^7\right)-2\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(3a^6B-3a^5Ab-3a^5bBx+3a^4Ab^2x+3a^4b^2Bx^2-3a^3Ab^3x^2-3a^3b^3Bx^3+3a^2Ab^4x^3+6a^2b^4Bx^4-2aAb^5x^4+6ab^5Bx^5+6Ab^6x^5+12b^6Bx^6\right)}{3b^4x^4\sqrt{a^2+2abx+b^2x^2}\left(-8a^3b^5-24a^2b^6x-24ab^7x^2-8b^8x^3\right)+3b^4\sqrt{b^2}x^4\left(8a^4b^4+32a^3b^5x+48a^2b^6x^2+32ab^7x^3+8b^8x^4\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^5*A*b + 3*a^6*B + 3*a^4*A
*b^2*x - 3*a^5*b*B*x - 3*a^3*A*b^3*x^2 + 3*a^4*b^2*B*x^2 + 3*a^2*A*b^4*x^3
- 3*a^3*b^3*B*x^3 - 2*a*A*b^5*x^4 + 6*a^2*b^4*B*x^4 + 6*A*b^6*x^5 + 6*a*b^5
*B*x^5 + 12*b^6*B*x^6) - 2*(-3*a^6*A*b^2 + 3*a^7*b*B - a^2*A*b^6*x^4 - 3*a^
3*b^5*B*x^4 - 4*a*A*b^7*x^5 - 12*a^2*b^6*B*x^5 - 6*A*b^8*x^6 - 18*a*b^7*B*x
^6 - 12*b^8*B*x^7))/(3*b^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^5 -
24*a^2*b^6*x - 24*a*b^7*x^2 - 8*b^8*x^3) + 3*b^4*Sqrt[b^2]*x^4*(8*a^4*b^4 +
 32*a^3*b^5*x + 48*a^2*b^6*x^2 + 32*a*b^7*x^3 + 8*b^8*x^4))
```

fricas [A] time = 0.44, size = 105, normalized size = 1.36

$$-\frac{12\,Bb^3x^3+3\,Ba^3+Aa^2b+6\left(3\,Bab^2+Ab^3\right)x^2+4\left(3\,Ba^2b+Aab^2\right)x}{12\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*b^3*x^3 + 3*B*a^3 + A*a^2*b + 6*(3*B*a*b^2 + A*b^3)*x^2 + 4*(3*
B*a^2*b + A*a*b^2)*x)/(b^8*x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x
+ a^4*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 77, normalized size = 1.00

$$-\frac{(bx+a)\left(12B\,b^3x^3+6A\,b^3x^2+18Ba\,b^2x^2+4Aa\,b^2x+12B\,a^2bx+A\,a^2b+3B\,a^3\right)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)*(12*B*b^3*x^3+6*A*b^3*x^2+18*B*a*b^2*x^2+4*A*a*b^2*x+12*B*a^2
*b*x+A*a^2*b+3*B*a^3)/b^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.52, size = 156, normalized size = 2.03

$$-\frac{Bx^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{2\,Ba^2}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}-\frac{Ba}{2\,b^6\left(x+\frac{a}{b}\right)^2}-\frac{A}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,Ba^2}{3\,b^7\left(x+\frac{a}{b}\right)^3}+\frac{2\,Aa}{3\,b^6\left(x+\frac{a}{b}\right)^3}+\frac{Ba^3}{4\,b^8\left(x+\frac{a}{b}\right)^4}-\frac{Aa^2}{4\,b^7\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -B*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 2/3*B*a^2/((b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*b^4) - 1/2*B*a/(b^6*(x + a/b)^2) - 1/2*A/(b^5*(x + a/b)^2) +
 2/3*B*a^2/(b^7*(x + a/b)^3) + 2/3*A*a/(b^6*(x + a/b)^3) + 1/4*B*a^3/(b^8*(
x + a/b)^4) - 1/4*A*a^2/(b^7*(x + a/b)^4)
```

mupad [B] time = 1.27, size = 201, normalized size = 2.61

$$-\frac{\left(\frac{B\,a^2-A\,a\,b}{3\,b^4}-\frac{a\,\left(\frac{A\,b^2-B\,a\,b}{3\,b^4}-\frac{B\,a}{3\,b^3}\right)}{b}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^4}-\frac{\left(\frac{A\,b-2\,B\,a}{2\,b^4}-\frac{B\,a}{2\,b^4}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^3}-\frac{B\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b^4\,{\left(a+b\,x\right)}^2}-\frac{a^2\,\left(\frac{A}{4\,b}-\frac{B\,a}{4\,b^2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b^2\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] - (((B*a^2 - A*a*b)/(3*b^4) - (a*((A*b^2 - B*a*b)/(3*b^4) - (B*a)/(3*b^3)))
/b)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^4 - (((A*b - 2*B*a)/(2*b^4)
- (B*a)/(2*b^4))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^3 - (B*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/(b^4*(a + b*x)^2) - (a^2*(A/(4*b) - (B*a)/(4*b^2))
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(b^2*(a + b*x)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(A+Bx)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.652 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=121

$$-\frac{Ab-2aB}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 77}

$$-\frac{Ab-2aB}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a*(A*b - a*B))/(4*b^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b -
2*a*B)/(3*b^3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - B/(2*b^3*(a + b*
x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{a(-Ab+aB)}{b^7(a+bx)^5}+\frac{Ab-2aB}{b^7(a+bx)^4}+\frac{B}{b^7(a+bx)^3}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{a(Ab-aB)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-2aB}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b^3(a+b}\end{aligned}$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.46

$$\frac{a^2(-B)-ab(A+4Bx)-2b^2x(2A+3Bx)}{12b^3(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(a^2*B) - 2*b^2*x*(2*A + 3*B*x) - a*b*(A + 4*B*x))/(12*b^3*(a + b*x)^3*Sq
rt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.07, size = 333, normalized size = 2.75

$$\frac{-2\left(-3a^6bB+3a^5Ab^2-a^2b^5Bx^4-aAb^6x^4-4ab^6Bx^5-4Ab^7x^5-6b^7Bx^6\right)-2\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(-3a^5B+3a^4Ab+3a^4bBx-3a^3Ab^2x-3a^3b^2Bx^2+3a^2Ab^3x^2+3a^2b^3Bx^3-3aAb^4x^3-2ab^4Bx^4+4Ab^5x^4+6b^5Bx^5\right)}{3b^3x^4\sqrt{a^2+2abx+b^2x^2}\left(-8a^3b^5-24a^2b^6x-24ab^7x^2-8b^8x^3\right)+3b^3\sqrt{b^2}x^4\left(8a^4b^4+32a^3b^5x+48a^2b^6x^2+32ab^7x^3+8b^8x^4\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(3*a^4*A*b - 3*a^5*B - 3*a^3*A*
b^2*x + 3*a^4*b*B*x + 3*a^2*A*b^3*x^2 - 3*a^3*b^2*B*x^2 - 3*a*A*b^4*x^3 + 3
*a^2*b^3*B*x^3 + 4*A*b^5*x^4 - 2*a*b^4*B*x^4 + 6*b^5*B*x^5) - 2*(3*a^5*A*b^
2 - 3*a^6*b*B - a*A*b^6*x^4 - a^2*b^5*B*x^4 - 4*A*b^7*x^5 - 4*a*b^6*B*x^5 -
 6*b^7*B*x^6))/(3*b^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^5 - 24*a^
2*b^6*x - 24*a*b^7*x^2 - 8*b^8*x^3) + 3*b^3*Sqrt[b^2]*x^4*(8*a^4*b^4 + 32*a
^3*b^5*x + 48*a^2*b^6*x^2 + 32*a*b^7*x^3 + 8*b^8*x^4))
```

fricas [A] time = 0.44, size = 80, normalized size = 0.66

$$-\frac{6\,Bb^2x^2+Ba^2+Aab+4\left(Bab+Ab^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*b^2*x^2 + B*a^2 + A*a*b + 4*(B*a*b + A*b^2)*x)/(b^7*x^4 + 4*a*b^
6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 52, normalized size = 0.43

$$-\frac{(bx+a)\left(6B\,b^2x^2+4A\,b^2x+4Babx+Aab+B\,a^2\right)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^3*(6*B*b^2*x^2+4*A*b^2*x+4*B*a*b*x+A*a*b+B*a^2)/((b*x+a)^2)
^(5/2)
```

maxima [A] time = 0.55, size = 90, normalized size = 0.74

$$-\frac{A}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{B}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,Ba}{3\,b^6\left(x+\frac{a}{b}\right)^3}-\frac{Ba^2}{4\,b^7\left(x+\frac{a}{b}\right)^4}+\frac{Aa}{4\,b^6\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*A/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 1/2*B/(b^5*(x + a/b)^2) + 2/
3*B*a/(b^6*(x + a/b)^3) - 1/4*B*a^2/(b^7*(x + a/b)^4) + 1/4*A*a/(b^6*(x + a
/b)^4)
```

mupad [B] time = 1.25, size = 62, normalized size = 0.51

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(B\,a^2+4\,B\,a\,b\,x+A\,a\,b+6\,B\,b^2\,x^2+4\,A\,b^2\,x\right)}{12\,b^3\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(B*a^2 + 6*B*b^2*x^2 + A*a*b + 4*A*b^2*x
+ 4*B*a*b*x))/(12*b^3*(a + b*x)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(A+Bx\right)}{\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.653 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -B/(3*b^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (A*b - a*B)/(4*b^2*(a + b*x)*(
a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{2b^2}\\ &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 0.55

$$\frac{-B(a+4bx)-3Ab}{12b^2(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*A*b - B*(a + 4*b*x))/(12*b^2*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.98, size = 281, normalized size = 3.96

$$\frac{-2\left(3a^5bB-3a^4Ab^2-ab^5Bx^4-3Ab^6x^4-4b^6Bx^5\right)-2\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(3a^4B-3a^3Ab-3a^3bBx+3a^2Ab^2x+3a^2b^2Bx^2-3aAb^3x^2-3ab^3Bx^3+3Ab^4x^3+4b^4Bx^4\right)}{3x^4\sqrt{a^2+2abx+b^2x^2}\left(-8a^3b^7-24a^2b^8x-24ab^9x^2-8b^{10}x^3\right)+3\sqrt{b^2}x^4\left(8a^4b^6+32a^3b^7x+48a^2b^8x^2+32ab^9x^3+8b^{10}x^4\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^3*A*b + 3*a^4*B + 3*a^2*A
*b^2*x - 3*a^3*b*B*x - 3*a*A*b^3*x^2 + 3*a^2*b^2*B*x^2 + 3*A*b^4*x^3 - 3*a*
b^3*B*x^3 + 4*b^4*B*x^4) - 2*(-3*a^4*A*b^2 + 3*a^5*b*B - 3*A*b^6*x^4 - a*b^
5*B*x^4 - 4*b^6*B*x^5))/(3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^7 -
24*a^2*b^8*x - 24*a*b^9*x^2 - 8*b^10*x^3) + 3*Sqrt[b^2]*x^4*(8*a^4*b^6 + 32
*a^3*b^7*x + 48*a^2*b^8*x^2 + 32*a*b^9*x^3 + 8*b^10*x^4))
```

fricas [A] time = 0.42, size = 61, normalized size = 0.86

$$-\frac{4\,Bbx+Ba+3\,Ab}{12\left(b^6x^4+4\,ab^5x^3+6\,a^2b^4x^2+4\,a^3b^3x+a^4b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(4*B*b*x + B*a + 3*A*b)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 33, normalized size = 0.46

$$-\frac{(bx+a)\,(4Bbx+3Ab+Ba)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^2*(4*B*b*x+3*A*b+B*a)/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.52, size = 56, normalized size = 0.79

$$-\frac{B}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\frac{Ba}{4\,b^6\left(x+\frac{a}{b}\right)^4}-\frac{A}{4\,b^5\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 1/4*B*a/(b^6*(x + a/b)^4) -
1/4*A/(b^5*(x + a/b)^4)
```

mupad [B] time = 1.20, size = 43, normalized size = 0.61

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(3\,A\,b+B\,a+4\,B\,b\,x\right)}{12\,b^2\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(3*A*b + B*a + 4*B*b*x))/(12*b^2*(a + b*x
)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.654 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=210

$$\frac{Ab-aB}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{3a^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+$$

Rubi [A] time = 0.12, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{Ab-aB}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{2a^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{3a^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] A/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*B)/(4*a*b*(a + b*x)^3*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) + A/(3*a^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) + A/(2*a^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*(a + b*x)*Lo
g[x])/(a^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*(a + b*x)*Log[a + b*x])/(a^5
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^5b^5x}+\frac{-Ab+aB}{ab^5(a+bx)^5}-\frac{A}{a^2b^4(a+bx)^4}-\frac{A}{a^3b^4(a+bx)^3}-\frac{A}{a^4b^4(a+bx)^2}-\frac{A}{a^5\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{A}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{3a^2(a+bx)^2\sqrt{a^2}}$$

Mathematica [A] time = 0.06, size = 104, normalized size = 0.50

$$\frac{a\left(-3a^4B+25a^3Ab+52a^2Ab^2x+42aAb^3x^2+12Ab^4x^3\right)+12Ab\log(x)(a+bx)^4-12Ab(a+bx)^4\log(a+bx)}{12a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (a*(25*a^3*A*b - 3*a^4*B + 52*a^2*A*b^2*x + 42*a*A*b^3*x^2 + 12*A*b^4*x^3)
+ 12*A*b*(a + b*x)^4*Log[x] - 12*A*b*(a + b*x)^4*Log[a + b*x])/(12*a^5*b*(a
 + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 1.17, size = 391, normalized size = 1.86

$$\frac{2A\tanh^{-1}\left(\frac{\sqrt{b^2}x}{a}-\frac{\sqrt{a^2+2abx+b^2x^2}}{a}\right)}{a^5}+\frac{2\left(3a^8bB-3a^7Ab^2+3a^4b^5Bx^4-25a^3Ab^6x^4-52a^2Ab^7x^5-42aAb^8x^6-12Ab^9x^7\right)+2\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(3a^7B-3a^6Ab-3a^6bBx+3a^5Ab^2x+3a^5b^2Bx^2-3a^4Ab^3x^2-3a^4b^3Bx^3+3a^3Ab^4x^3+22a^2Ab^5x^4+30aAb^6x^5+12Ab^7x^6\right)}{3a^4bx^4\sqrt{a^2+2abx+b^2x^2}\left(-8a^3b^5-24a^2b^6x-24ab^7x^2-8b^8x^3\right)+3a^4b\sqrt{b^2}x^4\left(8a^4b^4+32a^3b^5x+48a^2b^6x^2+32ab^7x^3+8b^8x^4\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^6*A*b + 3*a^7*B + 3*a^5*A*
b^2*x - 3*a^6*b*B*x - 3*a^4*A*b^3*x^2 + 3*a^5*b^2*B*x^2 + 3*a^3*A*b^4*x^3 -
 3*a^4*b^3*B*x^3 + 22*a^2*A*b^5*x^4 + 30*a*A*b^6*x^5 + 12*A*b^7*x^6) + 2*(-
3*a^7*A*b^2 + 3*a^8*b*B - 25*a^3*A*b^6*x^4 + 3*a^4*b^5*B*x^4 - 52*a^2*A*b^7
*x^5 - 42*a*A*b^8*x^6 - 12*A*b^9*x^7))/(3*a^4*b*x^4*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]*(-8*a^3*b^5 - 24*a^2*b^6*x - 24*a*b^7*x^2 - 8*b^8*x^3) + 3*a^4*b*Sqr
t[b^2]*x^4*(8*a^4*b^4 + 32*a^3*b^5*x + 48*a^2*b^6*x^2 + 32*a*b^7*x^3 + 8*b^
8*x^4)) + (2*A*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/
a^5
```

fricas [A] time = 0.41, size = 203, normalized size = 0.97

$$\frac{12\,Aab^4x^3+42\,Aa^2b^3x^2+52\,Aa^3b^2x-3\,Ba^5+25\,Aa^4b-12\left(Ab^5x^4+4\,Aab^4x^3+6\,Aa^2b^3x^2+4\,Aa^3b^2x+Aa^4b\right)\log\left(bx+a\right)+12\left(Ab^5x^4+4\,Aab^4x^3+6\,Aa^2b^3x^2+4\,Aa^3b^2x+Aa^4b\right)\log(x)}{12\left(a^5b^5x^4+4\,a^6b^4x^3+6\,a^7b^3x^2+4\,a^8b^2x+a^9b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*A*a*b^4*x^3 + 42*A*a^2*b^3*x^2 + 52*A*a^3*b^2*x - 3*B*a^5 + 25*A*a
^4*b - 12*(A*b^5*x^4 + 4*A*a*b^4*x^3 + 6*A*a^2*b^3*x^2 + 4*A*a^3*b^2*x + A*
a^4*b)*log(b*x + a) + 12*(A*b^5*x^4 + 4*A*a*b^4*x^3 + 6*A*a^2*b^3*x^2 + 4*A
*a^3*b^2*x + A*a^4*b)*log(x))/(a^5*b^5*x^4 + 4*a^6*b^4*x^3 + 6*a^7*b^3*x^2
+ 4*a^8*b^2*x + a^9*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 205, normalized size = 0.98

$$-\frac{\left(-12A\,b^5x^4\ln(x)+12A\,b^5x^4\ln\left(bx+a\right)-48Aa\,b^4x^3\ln(x)+48Aa\,b^4x^3\ln\left(bx+a\right)-72A\,a^2b^3x^2\ln(x)+72A\,a^2b^3x^2\ln\left(bx+a\right)-12Aa\,b^4x^3-48A\,a^3b^2x\ln(x)+48A\,a^3b^2x\ln\left(bx+a\right)-42A\,a^2b^3x^2-12A\,a^4b\ln(x)+12A\,a^4b\ln\left(bx+a\right)-52A\,a^3b^2x-25A\,a^4b+3B\,a^5\right)\left(bx+a\right)}{12\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}a^5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(12*A*b^5*x^4*ln(b*x+a)-12*A*ln(x)*x^4*b^5+48*A*a*b^4*x^3*ln(b*x+a)-4
8*A*ln(x)*x^3*a*b^4+72*A*a^2*b^3*x^2*ln(b*x+a)-72*A*ln(x)*x^2*a^2*b^3-12*A*
a*b^4*x^3+48*A*a^3*b^2*x*ln(b*x+a)-48*A*ln(x)*x*a^3*b^2-42*A*a^2*b^3*x^2+12
*A*a^4*b*ln(b*x+a)-12*A*ln(x)*a^4*b-52*A*a^3*b^2*x-25*A*a^4*b+3*B*a^5)*(b*x
+a)/b/a^5/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.49, size = 138, normalized size = 0.66

$$-\frac{(-1)^{2\,abx+2\,a^2} A \log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right)}{a^5} + \frac{A}{3\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}} a^2} + \frac{A}{\sqrt{b^2x^2 + 2\,abx + a^2}\,a^4} + \frac{A}{2\,a^3b^2\left(x + \frac{a}{b}\right)^2} - \frac{B}{4\,b^5\left(x + \frac{a}{b}\right)^4} + \frac{A}{4\,ab^4\left(x + \frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*A*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 + 1/3*A/((
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2) + A/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4)
 + 1/2*A/(a^3*b^2*(x + a/b)^2) - 1/4*B/(b^5*(x + a/b)^4) + 1/4*A/(a*b^4*(x
+ a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{x\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x\left(\left(a + bx\right)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*((a + b*x)**2)**(5/2)), x)
```

3.655 $\int \frac{A+Bx}{x^2(a^2+2abx+b^2x^2)^{5/2}} dx$

Optimal. Leaf size=282

$$-\frac{Ab-aB}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(5Ab-aB)}{a^6\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(5Ab-aB)\log(a+bx)}{a^6\sqrt{a^2+2abx+b^2x^2}}-\frac{4Ab-aB}{a^5\sqrt{a^2+2abx+}}$$

Rubi [A] time = 0.21, antiderivative size = 282, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{Ab-aB}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{4Ab-aB}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3Ab-aB}{2a^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-aB}{3a^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(5Ab-aB)}{a^6\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(5Ab-aB)\log(a+bx)}{a^6\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{a^5x\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -((4*A*b - a*B)/(a^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(4*a^2*(
a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*A*b - a*B)/(3*a^3*(a + b*x)^
2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*A*b - a*B)/(2*a^4*(a + b*x)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) - (A*(a + b*x))/(a^5*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - ((5*A*b - a*B)*(a + b*x)*Log[x])/(a^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (
(5*A*b - a*B)*(a + b*x)*Log[a + b*x])/(a^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^2\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^5b^5x^2}+\frac{-5Ab+aB}{a^6b^5x}+\frac{Ab-aB}{a^2b^4(a+bx)^5}+\frac{2Ab-aB}{a^3b^4(a+bx)^4}+\frac{3Ab-aB}{a^4b^4(a+bx)^3}+\frac{4A}{a^5b^4}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{4Ab-aB}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-}{3a^3(a+bx)^2\sqrt{a^2+}}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 148, normalized size = 0.52

$$\frac{a\left(a^4(25Bx-12A)+a^3bx(52Bx-125A)+2a^2b^2x^2(21Bx-130A)+6ab^3x^3(2Bx-35A)-60Ab^4x^4\right)+12x\log(x)(a+bx)^4(aB-5Ab)+12x(a+bx)^4(5Ab-aB)\log(a+bx)}{12a^6x(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (a*(-60*A*b^4*x^4 + 6*a*b^3*x^3*(-35*A + 2*B*x) + 2*a^2*b^2*x^2*(-130*A + 2
1*B*x) + a^4*(-12*A + 25*B*x) + a^3*b*x*(-125*A + 52*B*x)) + 12*(-5*A*b + a
*B)*x*(a + b*x)^4*Log[x] + 12*(5*A*b - a*B)*x*(a + b*x)^4*Log[a + b*x])/(12
*a^6*x*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 180.07, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.45, size = 347, normalized size = 1.23

$$-\frac{12 \, A a^{5} - 12 \, {\left(B a^{2} b^{3} - 5 \, A a b^{4}\right)} x^{4} - 42 \, {\left(B a^{3} b^{2} - 5 \, A a^{2} b^{3}\right)} x^{3} - 52 \, {\left(B a^{4} b - 5 \, A a^{3} b^{2}\right)} x^{2} - 25 \, {\left(B a^{5} - 5 \, A a^{4} b\right)} x + 12 \, {\left({\left(B a b^{4} - 5 \, A b^{5}\right)} x^{5} + 4 \, {\left(B a^{2} b^{3} - 5 \, A a b^{4}\right)} x^{4} + 6 \, {\left(B a^{3} b^{2} - 5 \, A a^{2} b^{3}\right)} x^{3} + 4 \, {\left(B a^{4} b - 5 \, A a^{3} b^{2}\right)} x^{2} + {\left(B a^{5} - 5 \, A a^{4} b\right)} x\right)} \log\left(b x + a\right) - 12 \, {\left({\left(B a b^{4} - 5 \, A b^{5}\right)} x^{5} + 4 \, {\left(B a^{2} b^{3} - 5 \, A a b^{4}\right)} x^{4} + 6 \, {\left(B a^{3} b^{2} - 5 \, A a^{2} b^{3}\right)} x^{3} + 4 \, {\left(B a^{4} b - 5 \, A a^{3} b^{2}\right)} x^{2} + {\left(B a^{5} - 5 \, A a^{4} b\right)} x\right)} \log\left(x\right)}{12 \, {\left(a^{6} b^{4} x^{5} + 4 \, a^{7} b^{3} x^{4} + 6 \, a^{8} b^{2} x^{3} + 4 \, a^{9} b x^{2} + a^{10} x\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(12*A*a^5 - 12*(B*a^2*b^3 - 5*A*a*b^4)*x^4 - 42*(B*a^3*b^2 - 5*A*a^2*
b^3)*x^3 - 52*(B*a^4*b - 5*A*a^3*b^2)*x^2 - 25*(B*a^5 - 5*A*a^4*b)*x + 12*(
(B*a*b^4 - 5*A*b^5)*x^5 + 4*(B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6*(B*a^3*b^2 - 5*
A*a^2*b^3)*x^3 + 4*(B*a^4*b - 5*A*a^3*b^2)*x^2 + (B*a^5 - 5*A*a^4*b)*x)*log
(b*x + a) - 12*((B*a*b^4 - 5*A*b^5)*x^5 + 4*(B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6
*(B*a^3*b^2 - 5*A*a^2*b^3)*x^3 + 4*(B*a^4*b - 5*A*a^3*b^2)*x^2 + (B*a^5 - 5
*A*a^4*b)*x)*log(x))/(a^6*b^4*x^5 + 4*a^7*b^3*x^4 + 6*a^8*b^2*x^3 + 4*a^9*b
*x^2 + a^10*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.06, size = 397, normalized size = 1.41

$$\frac{\left(-60 A \,b^{5} x^{5} \ln \left(x \right)+60 A \,b^{5} x^{5} \ln \left(b x +a \right)+12 B a \,b^{4} x^{5} \ln \left(x \right)-12 B a \,b^{4} x^{5} \ln \left(b x +a \right)-240 A a \,b^{4} x^{4} \ln \left(x \right)+240 A a \,b^{4} x^{4} \ln \left(b x +a \right)+48 B \,a^{2} b^{3} x^{4} \ln \left(x \right)-48 B \,a^{2} b^{3} x^{4} \ln \left(b x +a \right)-360 A \,a^{2} b^{3} x^{3} \ln \left(x \right)+360 A \,a^{2} b^{3} x^{3} \ln \left(b x +a \right)-60 A a \,b^{4} x^{4}+72 B \,a^{3} b^{2} x^{3} \ln \left(x \right)-72 B \,a^{3} b^{2} x^{3} \ln \left(b x +a \right)+12 B \,a^{2} b^{3} x^{4}-240 A \,a^{3} b^{2} x^{2} \ln \left(x \right)+240 A \,a^{3} b^{2} x^{2} \ln \left(b x +a \right)-210 A \,a^{2} b^{3} x^{3}+48 B \,a^{4} b \,x^{2} \ln \left(x \right)-48 B \,a^{4} b \,x^{2} \ln \left(b x +a \right)+42 B \,a^{3} b^{2} x^{3}-60 A \,a^{4} b x \ln \left(x \right)+60 A \,a^{4} b x \ln \left(b x +a \right)-260 A \,a^{3} b^{2} x^{2}+12 B \,a^{5} x \ln \left(x \right)-12 B \,a^{5} x \ln \left(b x +a \right)+52 B \,a^{4} b \,x^{2}-125 A \,a^{4} b x +25 B \,a^{5} x -12 A \,a^{5}\right) \left(b x +a \right)}{12 \left(\left(b x +a \right)^{2}\right)^{\frac{5}{2}} a^{6} x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(52*B*a^4*b*x^2-125*A*a^4*b*x-60*A*a*b^4*x^4+12*B*a^2*b^3*x^4-260*A*a^
3*b^2*x^2-210*A*a^2*b^3*x^3+42*B*a^3*b^2*x^3-60*A*b^5*x^5*ln(x)+12*B*a^5*x*
ln(x)-12*A*a^5+12*B*a*b^4*x^5*ln(x)-240*A*a^3*b^2*x^2*ln(x)+48*B*a^4*b*x^2*
ln(x)-60*A*ln(x)*x*a^4*b-12*B*ln(b*x+a)*x^5*a*b^4+240*A*ln(b*x+a)*x^4*a*b^4
+25*B*a^5*x+60*A*ln(b*x+a)*x^5*b^5-12*B*ln(b*x+a)*x*a^5-48*B*ln(b*x+a)*x^4*
a^2*b^3-240*A*ln(x)*x^4*a*b^4+48*B*ln(x)*x^4*a^2*b^3-360*A*ln(x)*x^3*a^2*b^
3+72*B*ln(x)*x^3*a^3*b^2+360*A*ln(b*x+a)*x^3*a^2*b^3-72*B*ln(b*x+a)*x^3*a^3
*b^2+240*A*ln(b*x+a)*x^2*a^3*b^2-48*B*ln(b*x+a)*x^2*a^4*b+60*A*ln(b*x+a)*x*
a^4*b)*(b*x+a)/x/a^6/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.47, size = 276, normalized size = 0.98

$$-\frac{(-1)^{2abx+2a^2}B\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)}{a^5}+\frac{5(-1)^{2abx+2a^2}Ab\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)}{a^6}+\frac{B}{3\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2}-\frac{5Ab}{3\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^3}+\frac{B}{\sqrt{b^2x^2+2abx+a^2}\,a^4}-\frac{5Ab}{\sqrt{b^2x^2+2abx+a^2}\,a^5}-\frac{A}{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2x}+\frac{B}{2a^3b^2\left(x+\frac{a}{b}\right)^2}-\frac{5A}{2a^4b\left(x+\frac{a}{b}\right)^2}+\frac{B}{4ab^4\left(x+\frac{a}{b}\right)^4}-\frac{A}{4a^2b^3\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 + 5*(-1)^(
2*a*b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^6 + 1/3*B/((b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*a^2) - 5/3*A*b/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a
^3) + B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4) - 5*A*b/(sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*a^5) - A/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x) + 1/2*B/(a^3*b^2*(
x + a/b)^2) - 5/2*A/(a^4*b*(x + a/b)^2) + 1/4*B/(a*b^4*(x + a/b)^4) - 1/4*A
/(a^2*b^3*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left((a+bx)^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*((a + b*x)**2)**(5/2)), x)
```

3.656 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{13}bx^{13/2}(2aB+Ab)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{15}b^2Bx^{15/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{13}bx^{13/2}(2aB+Ab)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{15}b^2Bx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(9/2))/9 + (2*a*(2*A*b + a*B)*x^(11/2))/11 + (2*b*(A*b + 2*a*B)*
x^(13/2))/13 + (2*b^2*B*x^(15/2))/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x^{7/2}(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax^{7/2}+a(2Ab+aB)x^{9/2}+b(Ab+2aB)x^{11/2}+b^2Bx^{13/2}\right)dx\\ &= \frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a(2Ab+aB)x^{11/2}+\frac{2}{13}b(Ab+2aB)x^{13/2}+\frac{2}{15}b^2Bx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2x^{9/2}\left(65a^2(11A+9Bx)+90abx(13A+11Bx)+33b^2x^2(15A+13Bx)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(9/2)*(65*a^2*(11*A + 9*B*x) + 90*a*b*x*(13*A + 11*B*x) + 33*b^2*x^2*(
15*A + 13*B*x)))/6435
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.10

$$\frac{2\left(715a^2Ax^{9/2}+585a^2Bx^{11/2}+1170aAbx^{11/2}+990abBx^{13/2}+495Ab^2x^{13/2}+429b^2Bx^{15/2}\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(715*a^2*A*x^(9/2) + 1170*a*A*b*x^(11/2) + 585*a^2*B*x^(11/2) + 495*A*b^
2*x^(13/2) + 990*a*b*B*x^(13/2) + 429*b^2*B*x^(15/2)))/6435
```

fricas [A] time = 0.42, size = 56, normalized size = 0.89

$$\frac{2}{6435}\left(429\,Bb^2x^7+715\,Aa^2x^4+495\left(2\,Bab+Ab^2\right)x^6+585\left(Ba^2+2\,Aab\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*b^2*x^7 + 715*A*a^2*x^4 + 495*(2*B*a*b + A*b^2)*x^6 + 585*(B*
a^2 + 2*A*a*b)*x^5)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{15}\,Bb^2x^{\frac{15}{2}}+\frac{4}{13}\,Babx^{\frac{13}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}+\frac{2}{11}\,Ba^2x^{\frac{11}{2}}+\frac{4}{11}\,Aabx^{\frac{11}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^2*x^(15/2) + 4/13*B*a*b*x^(13/2) + 2/13*A*b^2*x^(13/2) + 2/11*B*a^
2*x^(11/2) + 4/11*A*a*b*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(429Bb^2x^3+495Ab^2x^2+990Babx^2+1170Aabx+585Ba^2x+715Aa^2\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*b^2*x^3+495*A*b^2*x^2+990*B*a*b*x^2+1170*A*a*b*x+585*
B*a^2*x+715*A*a^2)
```

maxima [A] time = 0.59, size = 51, normalized size = 0.81

$$\frac{2}{15}\,Bb^2x^{\frac{15}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}+\frac{2}{13}\left(2\,Bab+Ab^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Ba^2+2\,Aab\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 2/15*B*b^2*x^(15/2) + 2/9*A*a^2*x^(9/2) + 2/13*(2*B*a*b + A*b^2)*x^(13/2) +
 2/11*(B*a^2 + 2*A*a*b)*x^(11/2)
```

mupad [B] time = 0.06, size = 51, normalized size = 0.81

$$x^{11/2}\left(\frac{2\,B\,a^2}{11}+\frac{4\,A\,b\,a}{11}\right)+x^{13/2}\left(\frac{2\,A\,b^2}{13}+\frac{4\,B\,a\,b}{13}\right)+\frac{2\,A\,a^2\,x^{9/2}}{9}+\frac{2\,B\,b^2\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(11/2)*((2*B*a^2)/11 + (4*A*a*b)/11) + x^(13/2)*((2*A*b^2)/13 + (4*B*a*b)
/13) + (2*A*a^2*x^(9/2))/9 + (2*B*b^2*x^(15/2))/15
```

sympy [A] time = 8.08, size = 80, normalized size = 1.27

$$\frac{2Aa^2x^{\frac{9}{2}}}{9}+\frac{4Aabx^{\frac{11}{2}}}{11}+\frac{2Ab^2x^{\frac{13}{2}}}{13}+\frac{2Ba^2x^{\frac{11}{2}}}{11}+\frac{4Babx^{\frac{13}{2}}}{13}+\frac{2Bb^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*A*a**2*x**(9/2)/9 + 4*A*a*b*x**(11/2)/11 + 2*A*b**2*x**(13/2)/13 + 2*B*a*
*2*x**(11/2)/11 + 4*B*a*b*x**(13/2)/13 + 2*B*b**2*x**(15/2)/15
```

3.657 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{11}bx^{11/2}(2aB+Ab)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{13}b^2Bx^{13/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{11}bx^{11/2}(2aB+Ab)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{13}b^2Bx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(7/2))/7 + (2*a*(2*A*b + a*B)*x^(9/2))/9 + (2*b*(A*b + 2*a*B)*x^
(11/2))/11 + (2*b^2*B*x^(13/2))/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)dx&=\int x^{5/2}(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^{5/2}+a(2Ab+aB)x^{7/2}+b(Ab+2aB)x^{9/2}+b^2Bx^{11/2}\right)dx\\&=\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a(2Ab+aB)x^{9/2}+\frac{2}{11}b(Ab+2aB)x^{11/2}+\frac{2}{13}b^2Bx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2x^{7/2}\left(143a^2(9A+7Bx)+182abx(11A+9Bx)+63b^2x^2(13A+11Bx)\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(7/2)*(143*a^2*(9*A + 7*B*x) + 182*a*b*x*(11*A + 9*B*x) + 63*b^2*x^2*(
13*A + 11*B*x)))/9009
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 1.10

$$\frac{2\left(1287a^2Ax^{7/2}+1001a^2Bx^{9/2}+2002aAbx^{9/2}+1638abBx^{11/2}+819Ab^2x^{11/2}+693b^2Bx^{13/2}\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(1287*a^2*A*x^(7/2) + 2002*a*A*b*x^(9/2) + 1001*a^2*B*x^(9/2) + 819*A*b^
2*x^(11/2) + 1638*a*b*B*x^(11/2) + 693*b^2*B*x^(13/2)))/9009
```

fricas [A] time = 0.42, size = 56, normalized size = 0.89

$$\frac{2}{9009}\left(693\,Bb^2x^6+1287\,Aa^2x^3+819\left(2\,Bab+Ab^2\right)x^5+1001\left(Ba^2+2\,Aab\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*b^2*x^6 + 1287*A*a^2*x^3 + 819*(2*B*a*b + A*b^2)*x^5 + 1001*(
B*a^2 + 2*A*a*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.84

$$\frac{2}{13}Bb^2x^{\frac{13}{2}}+\frac{4}{11}Babx^{\frac{11}{2}}+\frac{2}{11}Ab^2x^{\frac{11}{2}}+\frac{2}{9}Ba^2x^{\frac{9}{2}}+\frac{4}{9}Aabx^{\frac{9}{2}}+\frac{2}{7}Aa^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^2*x^(13/2) + 4/11*B*a*b*x^(11/2) + 2/11*A*b^2*x^(11/2) + 2/9*B*a^2
*x^(9/2) + 4/9*A*a*b*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(693B\,b^2x^3+819A\,b^2x^2+1638Bab\,x^2+2002Aabx+1001B\,a^2x+1287A\,a^2\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*b^2*x^3+819*A*b^2*x^2+1638*B*a*b*x^2+2002*A*a*b*x+100
1*B*a^2*x+1287*A*a^2)
```

maxima [A] time = 0.57, size = 51, normalized size = 0.81

$$\frac{2}{13}Bb^2x^{\frac{13}{2}}+\frac{2}{7}Aa^2x^{\frac{7}{2}}+\frac{2}{11}\left(2\,Bab+Ab^2\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Ba^2+2\,Aab\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 2/13*B*b^2*x^(13/2) + 2/7*A*a^2*x^(7/2) + 2/11*(2*B*a*b + A*b^2)*x^(11/2) +
 2/9*(B*a^2 + 2*A*a*b)*x^(9/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{9/2}\left(\frac{2\,B\,a^2}{9}+\frac{4\,A\,b\,a}{9}\right)+x^{11/2}\left(\frac{2\,A\,b^2}{11}+\frac{4\,B\,a\,b}{11}\right)+\frac{2\,A\,a^2\,x^{7/2}}{7}+\frac{2\,B\,b^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(9/2)*((2*B*a^2)/9 + (4*A*a*b)/9) + x^(11/2)*((2*A*b^2)/11 + (4*B*a*b)/11
) + (2*A*a^2*x^(7/2))/7 + (2*B*b^2*x^(13/2))/13
```

sympy [A] time = 3.98, size = 80, normalized size = 1.27

$$\frac{2Aa^2x^{\frac{7}{2}}}{7}+\frac{4Aabx^{\frac{9}{2}}}{9}+\frac{2Ab^2x^{\frac{11}{2}}}{11}+\frac{2Ba^2x^{\frac{9}{2}}}{9}+\frac{4Babx^{\frac{11}{2}}}{11}+\frac{2Bb^2x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*A*a**2*x**(7/2)/7 + 4*A*a*b*x**(9/2)/9 + 2*A*b**2*x**(11/2)/11 + 2*B*a**2
*x**(9/2)/9 + 4*B*a*b*x**(11/2)/11 + 2*B*b**2*x**(13/2)/13
```

3.658 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{9}bx^{9/2}(2aB+Ab)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{11}b^2Bx^{11/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{9}bx^{9/2}(2aB+Ab)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{11}b^2Bx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(5/2))/5 + (2*a*(2*A*b + a*B)*x^(7/2))/7 + (2*b*(A*b + 2*a*B)*x^
(9/2))/9 + (2*b^2*B*x^(11/2))/11
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x^{3/2}(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax^{3/2}+a(2Ab+aB)x^{5/2}+b(Ab+2aB)x^{7/2}+b^2Bx^{9/2}\right)\,dx\\ &= \frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a(2Ab+aB)x^{7/2}+\frac{2}{9}b(Ab+2aB)x^{9/2}+\frac{2}{11}b^2Bx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2x^{5/2}\left(99a^2(7A+5Bx)+110abx(9A+7Bx)+35b^2x^2(11A+9Bx)\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(5/2)*(99*a^2*(7*A + 5*B*x) + 110*a*b*x*(9*A + 7*B*x) + 35*b^2*x^2*(11
*A + 9*B*x)))/3465
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 1.10

$$\frac{2\left(693a^2Ax^{5/2}+495a^2Bx^{7/2}+990aAbx^{7/2}+770abBx^{9/2}+385Ab^2x^{9/2}+315b^2Bx^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(693*a^2*A*x^(5/2) + 990*a*A*b*x^(7/2) + 495*a^2*B*x^(7/2) + 385*A*b^2*x
^(9/2) + 770*a*b*B*x^(9/2) + 315*b^2*B*x^(11/2)))/3465
```

fricas [A] time = 0.40, size = 56, normalized size = 0.89

$$\frac{2}{3465}\left(315\,Bb^2x^5+693\,Aa^2x^2+385\left(2\,Bab+Ab^2\right)x^4+495\left(Ba^2+2\,Aab\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*b^2*x^5 + 693*A*a^2*x^2 + 385*(2*B*a*b + A*b^2)*x^4 + 495*(B*
a^2 + 2*A*a*b)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{11}\,Bb^2x^{\frac{11}{2}}+\frac{4}{9}\,Babx^{\frac{9}{2}}+\frac{2}{9}\,Ab^2x^{\frac{9}{2}}+\frac{2}{7}\,Ba^2x^{\frac{7}{2}}+\frac{4}{7}\,Aabx^{\frac{7}{2}}+\frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^2*x^(11/2) + 4/9*B*a*b*x^(9/2) + 2/9*A*b^2*x^(9/2) + 2/7*B*a^2*x^(
7/2) + 4/7*A*a*b*x^(7/2) + 2/5*A*a^2*x^(5/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(315B\,b^2x^3+385A\,b^2x^2+770Bab\,x^2+990Aabx+495B\,a^2x+693A\,a^2\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*b^2*x^3+385*A*b^2*x^2+770*B*a*b*x^2+990*A*a*b*x+495*B
*a^2*x+693*A*a^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.81

$$\frac{2}{11}\,Bb^2x^{\frac{11}{2}}+\frac{2}{5}\,Aa^2x^{\frac{5}{2}}+\frac{2}{9}\left(2\,Bab+Ab^2\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Ba^2+2\,Aab\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 2/11*B*b^2*x^(11/2) + 2/5*A*a^2*x^(5/2) + 2/9*(2*B*a*b + A*b^2)*x^(9/2) + 2
/7*(B*a^2 + 2*A*a*b)*x^(7/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{7/2}\left(\frac{2\,B\,a^2}{7}+\frac{4\,A\,b\,a}{7}\right)+x^{9/2}\left(\frac{2\,A\,b^2}{9}+\frac{4\,B\,a\,b}{9}\right)+\frac{2\,A\,a^2\,x^{5/2}}{5}+\frac{2\,B\,b^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(7/2)*((2*B*a^2)/7 + (4*A*a*b)/7) + x^(9/2)*((2*A*b^2)/9 + (4*B*a*b)/9) +
 (2*A*a^2*x^(5/2))/5 + (2*B*b^2*x^(11/2))/11
```

sympy [A] time = 1.77, size = 80, normalized size = 1.27

$$\frac{2Aa^2x^{\frac{5}{2}}}{5}+\frac{4Aabx^{\frac{7}{2}}}{7}+\frac{2Ab^2x^{\frac{9}{2}}}{9}+\frac{2Ba^2x^{\frac{7}{2}}}{7}+\frac{4Babx^{\frac{9}{2}}}{9}+\frac{2Bb^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*A*a**2*x**(5/2)/5 + 4*A*a*b*x**(7/2)/7 + 2*A*b**2*x**(9/2)/9 + 2*B*a**2*x
**(7/2)/7 + 4*B*a*b*x**(9/2)/9 + 2*B*b**2*x**(11/2)/11
```

3.659 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{7}bx^{7/2}(2aB+Ab)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{9}b^2Bx^{9/2}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{7}bx^{7/2}(2aB+Ab)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{9}b^2Bx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(3/2))/3 + (2*a*(2*A*b + a*B)*x^(5/2))/5 + (2*b*(A*b + 2*a*B)*x^
(7/2))/7 + (2*b^2*B*x^(9/2))/9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int \sqrt{x}\,(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2A\sqrt{x}+a(2Ab+aB)x^{3/2}+b(Ab+2aB)x^{5/2}+b^2Bx^{7/2}\right)dx\\ &= \frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a(2Ab+aB)x^{5/2}+\frac{2}{7}b(Ab+2aB)x^{7/2}+\frac{2}{9}b^2Bx^{9/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2}{315}x^{3/2}\left(21a^2(5A+3Bx)+18abx(7A+5Bx)+5b^2x^2(9A+7Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(3/2)*(21*a^2*(5*A + 3*B*x) + 18*a*b*x*(7*A + 5*B*x) + 5*b^2*x^2*(9*A
+ 7*B*x)))/315
```

IntegrateAlgebraic [A] time = 0.04, size = 69, normalized size = 1.10

$$\frac{2}{315}\left(105a^2Ax^{3/2}+63a^2Bx^{5/2}+126aAbx^{5/2}+90abBx^{7/2}+45Ab^2x^{7/2}+35b^2Bx^{9/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(105*a^2*A*x^(3/2) + 126*a*A*b*x^(5/2) + 63*a^2*B*x^(5/2) + 45*A*b^2*x^(
7/2) + 90*a*b*B*x^(7/2) + 35*b^2*B*x^(9/2)))/315
```

fricas [A] time = 0.40, size = 54, normalized size = 0.86

$$\frac{2}{315}\left(35\,Bb^2x^4+105\,Aa^2x+45\left(2\,Bab+Ab^2\right)x^3+63\left(Ba^2+2\,Aab\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b^2*x^4 + 105*A*a^2*x + 45*(2*B*a*b + A*b^2)*x^3 + 63*(B*a^2 +
2*A*a*b)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{9}\,Bb^2x^{\frac{9}{2}}+\frac{4}{7}\,Babx^{\frac{7}{2}}+\frac{2}{7}\,Ab^2x^{\frac{7}{2}}+\frac{2}{5}\,Ba^2x^{\frac{5}{2}}+\frac{4}{5}\,Aabx^{\frac{5}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^2*x^(9/2) + 4/7*B*a*b*x^(7/2) + 2/7*A*b^2*x^(7/2) + 2/5*B*a^2*x^(5/
2) + 4/5*A*a*b*x^(5/2) + 2/3*A*a^2*x^(3/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(35B\,b^2x^3+45A\,b^2x^2+90Bab\,x^2+126Aabx+63B\,a^2x+105A\,a^2\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*b^2*x^3+45*A*b^2*x^2+90*B*a*b*x^2+126*A*a*b*x+63*B*a^2*
x+105*A*a^2)
```

maxima [A] time = 0.55, size = 51, normalized size = 0.81

$$\frac{2}{9}\,Bb^2x^{\frac{9}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}+\frac{2}{7}\left(2\,Bab+Ab^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Ba^2+2\,Aab\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*b^2*x^(9/2) + 2/3*A*a^2*x^(3/2) + 2/7*(2*B*a*b + A*b^2)*x^(7/2) + 2/5
*(B*a^2 + 2*A*a*b)*x^(5/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{5/2}\left(\frac{2\,B\,a^2}{5}+\frac{4\,A\,b\,a}{5}\right)+x^{7/2}\left(\frac{2\,A\,b^2}{7}+\frac{4\,B\,a\,b}{7}\right)+\frac{2\,A\,a^2\,x^{3/2}}{3}+\frac{2\,B\,b^2\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(5/2)*((2*B*a^2)/5 + (4*A*a*b)/5) + x^(7/2)*((2*A*b^2)/7 + (4*B*a*b)/7) +
 (2*A*a^2*x^(3/2))/3 + (2*B*b^2*x^(9/2))/9
```

sympy [A] time = 2.90, size = 66, normalized size = 1.05

$$\frac{2Aa^2x^{\frac{3}{2}}}{3} + \frac{2Bb^2x^{\frac{9}{2}}}{9} + \frac{2x^{\frac{7}{2}}\left(Ab^2 + 2Bab\right)}{7} + \frac{2x^{\frac{5}{2}}\left(2Aab + Ba^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)*x**(1/2),x)
```

```
[Out] 2*A*a**2*x**(3/2)/3 + 2*B*b**2*x**(9/2)/9 + 2*x**(7/2)*(A*b**2 + 2*B*a*b)/7
 + 2*x**(5/2)*(2*A*a*b + B*a**2)/5
```

3.660 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{x}}\,dx$

Optimal. Leaf size=61

$$2a^2A\sqrt{x}+\frac{2}{5}bx^{5/2}(2aB+Ab)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{7}b^2Bx^{7/2}$$

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$2a^2A\sqrt{x}+\frac{2}{5}bx^{5/2}(2aB+Ab)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{7}b^2Bx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[x],x]
```

```
[Out] 2*a^2*A*Sqrt[x] + (2*a*(2*A*b + a*B)*x^(3/2))/3 + (2*b*(A*b + 2*a*B)*x^(5/2
))/5 + (2*b^2*B*x^(7/2))/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{x}}\,dx&=\int \frac{(a+bx)^2(A+Bx)}{\sqrt{x}}\,dx\\&=\int \left(\frac{a^2A}{\sqrt{x}}+a(2Ab+aB)\sqrt{x}+b(Ab+2aB)x^{3/2}+b^2Bx^{5/2}\right)dx\\&=2a^2A\sqrt{x}+\frac{2}{3}a(2Ab+aB)x^{3/2}+\frac{2}{5}b(Ab+2aB)x^{5/2}+\frac{2}{7}b^2Bx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.84

$$\frac{2}{105}\sqrt{x}\left(35a^2(3A+Bx)+14abx(5A+3Bx)+3b^2x^2(7A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(35*a^2*(3*A + B*x) + 14*a*b*x*(5*A + 3*B*x) + 3*b^2*x^2*(7*A +
5*B*x)))/105
```

IntegrateAlgebraic [A] time = 0.03, size = 69, normalized size = 1.13

$$\frac{2}{105}\left(105a^2A\sqrt{x}+35a^2Bx^{3/2}+70aAbx^{3/2}+42abBx^{5/2}+21Ab^2x^{5/2}+15b^2Bx^{7/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[x],x]
[Out] (2*(105*a^2*A*Sqrt[x] + 70*a*A*b*x^(3/2) + 35*a^2*B*x^(3/2) + 21*A*b^2*x^(5
/2) + 42*a*b*B*x^(5/2) + 15*b^2*B*x^(7/2)))/105
```

fricas [A] time = 0.42, size = 51, normalized size = 0.84

$$\frac{2}{105}\left(15\,Bb^2x^3+105\,Aa^2+21\left(2\,Bab+Ab^2\right)x^2+35\left(Ba^2+2\,Aab\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="fricas")
[Out] 2/105*(15*B*b^2*x^3 + 105*A*a^2 + 21*(2*B*a*b + A*b^2)*x^2 + 35*(B*a^2 + 2*
A*a*b)*x)*sqrt(x)
```

giac [A] time = 0.18, size = 53, normalized size = 0.87

$$\frac{2}{7}\,Bb^2x^{\frac{7}{2}}+\frac{4}{5}\,Babx^{\frac{5}{2}}+\frac{2}{5}\,Ab^2x^{\frac{5}{2}}+\frac{2}{3}\,Ba^2x^{\frac{3}{2}}+\frac{4}{3}\,Aabx^{\frac{3}{2}}+2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="giac")
[Out] 2/7*B*b^2*x^(7/2) + 4/5*B*a*b*x^(5/2) + 2/5*A*b^2*x^(5/2) + 2/3*B*a^2*x^(3/
2) + 4/3*A*a*b*x^(3/2) + 2*A*a^2*sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.85

$$\frac{2\left(15B\,b^2x^3+21A\,b^2x^2+42Bab\,x^2+70Aabx+35B\,a^2x+105A\,a^2\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x)
[Out] 2/105*x^(1/2)*(15*B*b^2*x^3+21*A*b^2*x^2+42*B*a*b*x^2+70*A*a*b*x+35*B*a^2*x
+105*A*a^2)
```

maxima [A] time = 0.48, size = 51, normalized size = 0.84

$$\frac{2}{7}\,Bb^2x^{\frac{7}{2}}+2\,Aa^2\sqrt{x}+\frac{2}{5}\left(2\,Bab+Ab^2\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Ba^2+2\,Aab\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="maxima")
[Out] 2/7*B*b^2*x^(7/2) + 2*A*a^2*sqrt(x) + 2/5*(2*B*a*b + A*b^2)*x^(5/2) + 2/3*(
B*a^2 + 2*A*a*b)*x^(3/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.84

$$x^{3/2}\left(\frac{2\,B\,a^2}{3}+\frac{4\,A\,b\,a}{3}\right)+x^{5/2}\left(\frac{2\,A\,b^2}{5}+\frac{4\,B\,a\,b}{5}\right)+2\,A\,a^2\,\sqrt{x}+\frac{2\,B\,b^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^2)/3 + (4*A*a*b)/3) + x^(5/2)*((2*A*b^2)/5 + (4*B*a*b)/5) +
 2*A*a^2*x^(1/2) + (2*B*b^2*x^(7/2))/7
```

sympy [A] time = 0.46, size = 78, normalized size = 1.28

$$2Aa^2\sqrt{x} + \frac{4Aabx^{\frac{3}{2}}}{3} + \frac{2Ab^2x^{\frac{5}{2}}}{5} + \frac{2Ba^2x^{\frac{3}{2}}}{3} + \frac{4Babx^{\frac{5}{2}}}{5} + \frac{2Bb^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(1/2),x)
```

```
[Out] 2*A*a**2*sqrt(x) + 4*A*a*b*x**(3/2)/3 + 2*A*b**2*x**(5/2)/5 + 2*B*a**2*x**(
3/2)/3 + 4*B*a*b*x**(5/2)/5 + 2*B*b**2*x**(7/2)/7
```

3.661 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{3/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{3}bx^{3/2}(2aB+Ab)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{5}b^2Bx^{5/2}$$

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{3}bx^{3/2}(2aB+Ab)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{5}b^2Bx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(3/2),x]
```

```
[Out] (-2*a^2*A)/Sqrt[x] + 2*a*(2*A*b + a*B)*Sqrt[x] + (2*b*(A*b + 2*a*B)*x^(3/2)
)/3 + (2*b^2*B*x^(5/2))/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{3/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{3/2}}\,dx\\ &= \int \left(\frac{a^2A}{x^{3/2}}+\frac{a(2Ab+aB)}{\sqrt{x}}+b(Ab+2aB)\sqrt{x}+b^2Bx^{3/2}\right)dx\\ &= -\frac{2a^2A}{\sqrt{x}}+2a(2Ab+aB)\sqrt{x}+\frac{2}{3}b(Ab+2aB)x^{3/2}+\frac{2}{5}b^2Bx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.83

$$\frac{-30a^2(A-Bx)+20abx(3A+Bx)+2b^2x^2(5A+3Bx)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(3/2),x]
```

```
[Out] (-30*a^2*(A - B*x) + 20*a*b*x*(3*A + B*x) + 2*b^2*x^2*(5*A + 3*B*x))/(15*Sq
rt[x])
```

IntegrateAlgebraic [A] time = 0.04, size = 55, normalized size = 0.93

$$\frac{2\left(-15a^2A+15a^2Bx+30aAbx+10abBx^2+5Ab^2x^2+3b^2Bx^3\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(3/2),x]
```

```
[Out] (2*(-15*a^2*A + 30*a*A*b*x + 15*a^2*B*x + 5*A*b^2*x^2 + 10*a*b*B*x^2 + 3*b^
2*B*x^3))/(15*Sqrt[x])
```

fricas [A] time = 0.41, size = 51, normalized size = 0.86

$$\frac{2\left(3\,Bb^2x^3-15\,Aa^2+5\left(2\,Bab+Ab^2\right)x^2+15\left(Ba^2+2\,Aab\right)x\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b^2*x^3 - 15*A*a^2 + 5*(2*B*a*b + A*b^2)*x^2 + 15*(B*a^2 + 2*A*a*
b)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.90

$$\frac{2}{5}\,Bb^2x^{\frac{5}{2}}+\frac{4}{3}\,Babx^{\frac{3}{2}}+\frac{2}{3}\,Ab^2x^{\frac{3}{2}}+2\,Ba^2\sqrt{x}+4\,Aab\sqrt{x}-\frac{2\,Aa^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^2*x^(5/2) + 4/3*B*a*b*x^(3/2) + 2/3*A*b^2*x^(3/2) + 2*B*a^2*sqrt(x)
 + 4*A*a*b*sqrt(x) - 2*A*a^2/sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.88

$$-\frac{2\left(-3B\,b^2x^3-5A\,b^2x^2-10Bab\,x^2-30Aabx-15B\,a^2x+15A\,a^2\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x)
```

```
[Out] -2/15*(-3*B*b^2*x^3-5*A*b^2*x^2-10*B*a*b*x^2-30*A*a*b*x-15*B*a^2*x+15*A*a^2
)/x^(1/2)
```

maxima [A] time = 0.52, size = 51, normalized size = 0.86

$$\frac{2}{5}\,Bb^2x^{\frac{5}{2}}-\frac{2\,Aa^2}{\sqrt{x}}+\frac{2}{3}\left(2\,Bab+Ab^2\right)x^{\frac{3}{2}}+2\left(Ba^2+2\,Aab\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*b^2*x^(5/2) - 2*A*a^2/sqrt(x) + 2/3*(2*B*a*b + A*b^2)*x^(3/2) + 2*(B*
a^2 + 2*A*a*b)*sqrt(x)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.86

$$\sqrt{x}\,\left(2\,B\,a^2+4\,A\,b\,a\right)+x^{3/2}\,\left(\frac{2\,A\,b^2}{3}+\frac{4\,B\,a\,b}{3}\right)-\frac{2\,A\,a^2}{\sqrt{x}}+\frac{2\,B\,b^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^2 + 4*A*a*b) + x^(3/2)*((2*A*b^2)/3 + (4*B*a*b)/3) - (2*A*a^
2)/x^(1/2) + (2*B*b^2*x^(5/2))/5
```

sympy [A] time = 0.66, size = 75, normalized size = 1.27

$$-\frac{2Aa^2}{\sqrt{x}}+4Aab\sqrt{x}+\frac{2Ab^2x^{\frac{3}{2}}}{3}+2Ba^2\sqrt{x}+\frac{4Babx^{\frac{3}{2}}}{3}+\frac{2Bb^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(3/2),x)
```

```
[Out] -2*A*a**2/sqrt(x) + 4*A*a*b*sqrt(x) + 2*A*b**2*x**(3/2)/3 + 2*B*a**2*sqrt(x
) + 4*B*a*b*x**(3/2)/3 + 2*B*b**2*x**(5/2)/5
```

3.662 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{5/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a(aB+2Ab)}{\sqrt{x}}+2b\sqrt{x}\,(2aB+Ab)+\frac{2}{3}b^2Bx^{3/2}$$

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a(aB+2Ab)}{\sqrt{x}}+2b\sqrt{x}\,(2aB+Ab)+\frac{2}{3}b^2Bx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(5/2),x]
```

```
[Out] (-2*a^2*A)/(3*x^(3/2)) - (2*a*(2*A*b + a*B))/Sqrt[x] + 2*b*(A*b + 2*a*B)*Sq
rt[x] + (2*b^2*B*x^(3/2))/3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{5/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{5/2}}\,dx\\ &= \int \left(\frac{a^2A}{x^{5/2}}+\frac{a(2Ab+aB)}{x^{3/2}}+\frac{b(Ab+2aB)}{\sqrt{x}}+b^2B\sqrt{x}\right)dx\\ &= -\frac{2a^2A}{3x^{3/2}}-\frac{2a(2Ab+aB)}{\sqrt{x}}+2b(Ab+2aB)\sqrt{x}+\frac{2}{3}b^2Bx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.80

$$\frac{2\left(-\left(a^2(A+3Bx)\right)+6abx(Bx-A)+b^2x^2(3A+Bx)\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(5/2),x]
```

```
[Out] (2*(6*a*b*x*(-A + B*x) + b^2*x^2*(3*A + B*x) - a^2*(A + 3*B*x)))/(3*x^(3/2)
)
```

IntegrateAlgebraic [A] time = 0.04, size = 54, normalized size = 0.92

$$\frac{2\left(-a^2A-3a^2Bx-6aAbx+6abBx^2+3Ab^2x^2+b^2Bx^3\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(5/2),x]
```

```
[Out] (2*(-(a^2*A) - 6*a*A*b*x - 3*a^2*B*x + 3*A*b^2*x^2 + 6*a*b*B*x^2 + b^2*B*x^
3))/(3*x^(3/2))
```

fricas [A] time = 0.43, size = 50, normalized size = 0.85

$$\frac{2\left(Bb^2x^3-Aa^2+3\left(2\,Bab+Ab^2\right)x^2-3\left(Ba^2+2\,Aab\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*b^2*x^3 - A*a^2 + 3*(2*B*a*b + A*b^2)*x^2 - 3*(B*a^2 + 2*A*a*b)*x)/x
^(3/2)
```

giac [A] time = 0.15, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bb^2x^{\frac{3}{2}}+4\,Bab\sqrt{x}+2\,Ab^2\sqrt{x}-\frac{2\left(3\,Ba^2x+6\,Aabx+Aa^2\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b^2*x^(3/2) + 4*B*a*b*sqrt(x) + 2*A*b^2*sqrt(x) - 2/3*(3*B*a^2*x + 6*
A*a*b*x + A*a^2)/x^(3/2)
```

maple [A] time = 0.05, size = 51, normalized size = 0.86

$$-\frac{2\left(-B\,b^2x^3-3A\,b^2x^2-6Bab\,x^2+6Aabx+3B\,a^2x+A\,a^2\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x)
```

```
[Out] -2/3*(-B*b^2*x^3-3*A*b^2*x^2-6*B*a*b*x^2+6*A*a*b*x+3*B*a^2*x+A*a^2)/x^(3/2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bb^2x^{\frac{3}{2}}+2\left(2\,Bab+Ab^2\right)\sqrt{x}-\frac{2\left(Aa^2+3\left(Ba^2+2\,Aab\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*b^2*x^(3/2) + 2*(2*B*a*b + A*b^2)*sqrt(x) - 2/3*(A*a^2 + 3*(B*a^2 + 2
*A*a*b)*x)/x^(3/2)
```

mupad [B] time = 1.13, size = 51, normalized size = 0.86

$$-\frac{6\,B\,a^2\,x+2\,A\,a^2-12\,B\,a\,b\,x^2+12\,A\,a\,b\,x-2\,B\,b^2\,x^3-6\,A\,b^2\,x^2}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(5/2),x)
```

```
[Out] -(2*A*a^2 - 6*A*b^2*x^2 - 2*B*b^2*x^3 + 6*B*a^2*x - 12*B*a*b*x^2 + 12*A*a*b
*x)/(3*x^(3/2))
```

sympy [A] time = 0.80, size = 73, normalized size = 1.24

$$-\frac{2Aa^2}{3x^{\frac{3}{2}}} - \frac{4Aab}{\sqrt{x}} + 2Ab^2\sqrt{x} - \frac{2Ba^2}{\sqrt{x}} + 4Bab\sqrt{x} + \frac{2Bb^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(5/2),x)
```

```
[Out] -2*A*a**2/(3*x**(3/2)) - 4*A*a*b/sqrt(x) + 2*A*b**2*sqrt(x) - 2*B*a**2/sqrt
(x) + 4*B*a*b*sqrt(x) + 2*B*b**2*x**(3/2)/3
```

3.663 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{7/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a(aB+2Ab)}{3x^{3/2}}-\frac{2b(2aB+Ab)}{\sqrt{x}}+2b^2B\sqrt{x}$$

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a(aB+2Ab)}{3x^{3/2}}-\frac{2b(2aB+Ab)}{\sqrt{x}}+2b^2B\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(7/2),x]
```

```
[Out] (-2*a^2*A)/(5*x^(5/2)) - (2*a*(2*A*b + a*B))/(3*x^(3/2)) - (2*b*(A*b + 2*a*
B))/Sqrt[x] + 2*b^2*B*Sqrt[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{7/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{7/2}}\,dx\\
&= \int \left(\frac{a^2A}{x^{7/2}}+\frac{a(2Ab+aB)}{x^{5/2}}+\frac{b(Ab+2aB)}{x^{3/2}}+\frac{b^2B}{\sqrt{x}}\right)dx\\
&= -\frac{2a^2A}{5x^{5/2}}-\frac{2a(2Ab+aB)}{3x^{3/2}}-\frac{2b(Ab+2aB)}{\sqrt{x}}+2b^2B\sqrt{x}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.80

$$-\frac{2\left(a^2(3A+5Bx)+10abx(A+3Bx)+15b^2x^2(A-Bx)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(7/2),x]
```

```
[Out] (-2*(15*b^2*x^2*(A - B*x) + 10*a*b*x*(A + 3*B*x) + a^2*(3*A + 5*B*x)))/(15*
x^(5/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 55, normalized size = 0.93

$$\frac{2\left(-3a^2A-5a^2Bx-10aAbx-30abBx^2-15Ab^2x^2+15b^2Bx^3\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(7/2),x]
```

```
[Out] (2*(-3*a^2*A - 10*a*A*b*x - 5*a^2*B*x - 15*A*b^2*x^2 - 30*a*b*B*x^2 + 15*b^
2*B*x^3))/(15*x^(5/2))
```

fricas [A] time = 0.42, size = 51, normalized size = 0.86

$$\frac{2\left(15\,Bb^2x^3-3\,Aa^2-15\left(2\,Bab+Ab^2\right)x^2-5\left(Ba^2+2\,Aab\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*b^2*x^3 - 3*A*a^2 - 15*(2*B*a*b + A*b^2)*x^2 - 5*(B*a^2 + 2*A*a*
b)*x)/x^(5/2)
```

giac [A] time = 0.15, size = 52, normalized size = 0.88

$$2\,Bb^2\sqrt{x}-\frac{2\left(30\,Babx^2+15\,Ab^2x^2+5\,Ba^2x+10\,Aabx+3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*B*b^2*sqrt(x) - 2/15*(30*B*a*b*x^2 + 15*A*b^2*x^2 + 5*B*a^2*x + 10*A*a*b*
x + 3*A*a^2)/x^(5/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.88

$$-\frac{2\left(-15B\,b^2x^3+15A\,b^2x^2+30Bab\,x^2+10Aabx+5B\,a^2x+3A\,a^2\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x)
```

```
[Out] -2/15*(-15*B*b^2*x^3+15*A*b^2*x^2+30*B*a*b*x^2+10*A*a*b*x+5*B*a^2*x+3*A*a^2
)/x^(5/2)
```

maxima [A] time = 0.51, size = 52, normalized size = 0.88

$$2\,Bb^2\sqrt{x}-\frac{2\left(3\,Aa^2+15\left(2\,Bab+Ab^2\right)x^2+5\left(Ba^2+2\,Aab\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2*B*b^2*sqrt(x) - 2/15*(3*A*a^2 + 15*(2*B*a*b + A*b^2)*x^2 + 5*(B*a^2 + 2*A
*a*b)*x)/x^(5/2)
```

mupad [B] time = 0.06, size = 52, normalized size = 0.88

$$2\,B\,b^2\,\sqrt{x}-\frac{x^2\,\left(2\,A\,b^2+4\,B\,a\,b\right)+\frac{2\,A\,a^2}{5}+x\,\left(\frac{2\,B\,a^2}{3}+\frac{4\,A\,b\,a}{3}\right)}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(7/2),x)
```

```
[Out] 2*B*b^2*x^(1/2) - (x^2*(2*A*b^2 + 4*B*a*b) + (2*A*a^2)/5 + x*((2*B*a^2)/3 +
 (4*A*a*b)/3))/x^(5/2)
```

sympy [A] time = 1.47, size = 75, normalized size = 1.27

$$-\frac{2Aa^2}{5x^{\frac{5}{2}}}-\frac{4Aab}{3x^{\frac{3}{2}}}-\frac{2Ab^2}{\sqrt{x}}-\frac{2Ba^2}{3x^{\frac{3}{2}}}-\frac{4Bab}{\sqrt{x}}+2Bb^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(7/2),x)
```

```
[Out] -2*A*a**2/(5*x**(5/2)) - 4*A*a*b/(3*x**(3/2)) - 2*A*b**2/sqrt(x) - 2*B*a**2
/(3*x**(3/2)) - 4*B*a*b/sqrt(x) + 2*B*b**2*sqrt(x)
```

3.664 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)}{x^{9/2}} \, dx$

Optimal. Leaf size=61

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a(aB+2Ab)}{5x^{5/2}}-\frac{2b(2aB+Ab)}{3x^{3/2}}-\frac{2b^2B}{\sqrt{x}}$$

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a(aB+2Ab)}{5x^{5/2}}-\frac{2b(2aB+Ab)}{3x^{3/2}}-\frac{2b^2B}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(9/2),x]
```

```
[Out] (-2*a^2*A)/(7*x^(7/2)) - (2*a*(2*A*b + a*B))/(5*x^(5/2)) - (2*b*(A*b + 2*a*
B))/(3*x^(3/2)) - (2*b^2*B)/Sqrt[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{9/2}} \, dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{9/2}} \, dx\\
&= \int \left(\frac{a^2A}{x^{9/2}}+\frac{a(2Ab+aB)}{x^{7/2}}+\frac{b(Ab+2aB)}{x^{5/2}}+\frac{b^2B}{x^{3/2}}\right) dx\\
&= -\frac{2a^2A}{7x^{7/2}}-\frac{2a(2Ab+aB)}{5x^{5/2}}-\frac{2b(Ab+2aB)}{3x^{3/2}}-\frac{2b^2B}{\sqrt{x}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.82

$$-\frac{2\left(3a^2(5A+7Bx)+14abx(3A+5Bx)+35b^2x^2(A+3Bx)\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(9/2),x]
```

```
[Out] (-2*(35*b^2*x^2*(A + 3*B*x) + 14*a*b*x*(3*A + 5*B*x) + 3*a^2*(5*A + 7*B*x))
)/(105*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 55, normalized size = 0.90

$$-\frac{2\left(15a^2A+21a^2Bx+42aAbx+70abBx^2+35Ab^2x^2+105b^2Bx^3\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(9/2),x]
```

```
[Out] (-2*(15*a^2*A + 42*a*A*b*x + 21*a^2*B*x + 35*A*b^2*x^2 + 70*a*b*B*x^2 + 105
*b^2*B*x^3))/(105*x^(7/2))
```

fricas [A] time = 0.41, size = 51, normalized size = 0.84

$$-\frac{2\left(105\,Bb^2x^3+15\,Aa^2+35\left(2\,Bab+Ab^2\right)x^2+21\left(Ba^2+2\,Aab\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(105*B*b^2*x^3 + 15*A*a^2 + 35*(2*B*a*b + A*b^2)*x^2 + 21*(B*a^2 + 2
*A*a*b)*x)/x^(7/2)
```

giac [A] time = 0.18, size = 51, normalized size = 0.84

$$-\frac{2\left(105\,Bb^2x^3+70\,Babx^2+35\,Ab^2x^2+21\,Ba^2x+42\,Aabx+15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(105*B*b^2*x^3 + 70*B*a*b*x^2 + 35*A*b^2*x^2 + 21*B*a^2*x + 42*A*a*b
*x + 15*A*a^2)/x^(7/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.85

$$-\frac{2\left(105B\,b^2x^3+35A\,b^2x^2+70Bab\,x^2+42Aabx+21B\,a^2x+15A\,a^2\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x)
```

```
[Out] -2/105*(105*B*b^2*x^3+35*A*b^2*x^2+70*B*a*b*x^2+42*A*a*b*x+21*B*a^2*x+15*A*
a^2)/x^(7/2)
```

maxima [A] time = 0.54, size = 51, normalized size = 0.84

$$-\frac{2\left(105\,Bb^2x^3+15\,Aa^2+35\left(2\,Bab+Ab^2\right)x^2+21\left(Ba^2+2\,Aab\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(105*B*b^2*x^3 + 15*A*a^2 + 35*(2*B*a*b + A*b^2)*x^2 + 21*(B*a^2 + 2
*A*a*b)*x)/x^(7/2)
```

mupad [B] time = 1.12, size = 51, normalized size = 0.84

$$-\frac{x^2\left(\frac{2Ab^2}{3}+\frac{4Bab}{3}\right)+\frac{2Aa^2}{7}+x\left(\frac{2Ba^2}{5}+\frac{4Aba}{5}\right)+2Bb^2x^3}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(9/2),x)
```

```
[Out] -(x^2*((2*A*b^2)/3 + (4*B*a*b)/3) + (2*A*a^2)/7 + x*((2*B*a^2)/5 + (4*A*a*b
)/5) + 2*B*b^2*x^3)/x^(7/2)
```

sympy [A] time = 3.07, size = 80, normalized size = 1.31

$$-\frac{2Aa^2}{7x^{\frac{7}{2}}}-\frac{4Aab}{5x^{\frac{5}{2}}}-\frac{2Ab^2}{3x^{\frac{3}{2}}}-\frac{2Ba^2}{5x^{\frac{5}{2}}}-\frac{4Bab}{3x^{\frac{3}{2}}}-\frac{2Bb^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(9/2),x)
```

```
[Out] -2*A*a**2/(7*x**(7/2)) - 4*A*a*b/(5*x**(5/2)) - 2*A*b**2/(3*x**(3/2)) - 2*B
*a**2/(5*x**(5/2)) - 4*B*a*b/(3*x**(3/2)) - 2*B*b**2/sqrt(x)
```

3.665 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{9}a^4Ax^{9/2}+\frac{2}{11}a^3x^{11/2}(aB+4Ab)+\frac{4}{13}a^2bx^{13/2}(2aB+3Ab)+\frac{2}{17}b^3x^{17/2}(4aB+Ab)+\frac{4}{15}ab^2x^{15/2}(3aB+2Ab)+\frac{2}{19}b^4Bx^{19/2}$$

Rubi [A] time = 0.06, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{13}a^2bx^{13/2}(2aB+3Ab)+\frac{2}{11}a^3x^{11/2}(aB+4Ab)+\frac{2}{9}a^4Ax^{9/2}+\frac{2}{17}b^3x^{17/2}(4aB+Ab)+\frac{4}{15}ab^2x^{15/2}(3aB+2Ab)+\frac{2}{19}b^4Bx^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(9/2))/9 + (2*a^3*(4*A*b + a*B)*x^(11/2))/11 + (4*a^2*b*(3*A*b +
 2*a*B)*x^(13/2))/13 + (4*a*b^2*(2*A*b + 3*a*B)*x^(15/2))/15 + (2*b^3*(A*b
+ 4*a*B)*x^(17/2))/17 + (2*b^4*B*x^(19/2))/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^{7/2}(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^{7/2}+a^3(4Ab+aB)x^{9/2}+2a^2b(3Ab+2aB)x^{11/2}+2ab^2(2Ab+\right.\\ &= \frac{2}{9}a^4Ax^{9/2}+\frac{2}{11}a^3(4Ab+aB)x^{11/2}+\frac{4}{13}a^2b(3Ab+2aB)x^{13/2}+\frac{4}{15}ab^2(2\end{aligned}$$

Mathematica [A] time = 0.07, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{9/2}\left(12155a^4+39780a^3bx+50490a^2b^2x^2+29172ab^3x^3+6435b^4x^4\right)(19Ab-9aB)}{109395}+Bx^{9/2}(a+bx)^5\right)}{19b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(9/2)*(a + b*x)^5 + ((19*A*b - 9*a*B)*x^(9/2)*(12155*a^4 + 39780*a^
3*b*x + 50490*a^2*b^2*x^2 + 29172*a*b^3*x^3 + 6435*b^4*x^4))/109395))/(19*b
)
```

IntegrateAlgebraic [A] time = 0.06, size = 125, normalized size = 1.13

$$\frac{2\left(230945a^4Ax^{9/2}+188955a^4Bx^{11/2}+755820a^3Abx^{11/2}+639540a^3bBx^{13/2}+959310a^2Ab^2x^{13/2}+831402a^2b^2Bx^{15/2}+554268aAb^3x^{15/2}+489060ab^3Bx^{17/2}+122265Ab^4x^{17/2}+109395b^4Bx^{19/2}\right)}{2078505}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(230945*a^4*A*x^(9/2) + 755820*a^3*A*b*x^(11/2) + 188955*a^4*B*x^(11/2)
+ 959310*a^2*A*b^2*x^(13/2) + 639540*a^3*b*B*x^(13/2) + 554268*a*A*b^3*x^(1
5/2) + 831402*a^2*b^2*B*x^(15/2) + 122265*A*b^4*x^(17/2) + 489060*a*b^3*B*x
^(17/2) + 109395*b^4*B*x^(19/2)))/2078505
```

fricas [A] time = 0.43, size = 104, normalized size = 0.94

$$\frac{2}{2078505}\left(109395\,Bb^4x^9+230945\,Aa^4x^4+122265\left(4\,Bab^3+Ab^4\right)x^8+277134\left(3\,Ba^2b^2+2\,Aab^3\right)x^7+319770\left(2\,Ba^3b+3\,Aa^2b^2\right)x^6+188955\left(Ba^4+4\,Aa^3b\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*b^4*x^9 + 230945*A*a^4*x^4 + 122265*(4*B*a*b^3 + A*b^4)
*x^8 + 277134*(3*B*a^2*b^2 + 2*A*a*b^3)*x^7 + 319770*(2*B*a^3*b + 3*A*a^2*b
^2)*x^6 + 188955*(B*a^4 + 4*A*a^3*b)*x^5)*sqrt(x)
```

giac [A] time = 0.19, size = 101, normalized size = 0.91

$$\frac{2}{19}\,Bb^4x^{\frac{19}{2}}+\frac{8}{17}\,Bab^3x^{\frac{17}{2}}+\frac{2}{17}\,Ab^4x^{\frac{17}{2}}+\frac{4}{5}\,Ba^2b^2x^{\frac{15}{2}}+\frac{8}{15}\,Aab^3x^{\frac{15}{2}}+\frac{8}{13}\,Ba^3bx^{\frac{13}{2}}+\frac{12}{13}\,Aa^2b^2x^{\frac{13}{2}}+\frac{2}{11}\,Ba^4x^{\frac{11}{2}}+\frac{8}{11}\,Aa^3bx^{\frac{11}{2}}+\frac{2}{9}\,Aa^4x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*b^4*x^(19/2) + 8/17*B*a*b^3*x^(17/2) + 2/17*A*b^4*x^(17/2) + 4/5*B*a
^2*b^2*x^(15/2) + 8/15*A*a*b^3*x^(15/2) + 8/13*B*a^3*b*x^(13/2) + 12/13*A*a
^2*b^2*x^(13/2) + 2/11*B*a^4*x^(11/2) + 8/11*A*a^3*b*x^(11/2) + 2/9*A*a^4*x
^(9/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.90

$$\frac{2\left(109395b^4Bx^5+122265Ab^4x^4+489060x^4Bab^3+554268Aab^3x^3+831402Ba^2b^2x^3+959310Aa^2b^2x^2+639540Ba^3bx^2+755820Aa^3bx+188955Ba^4x+230945Aa^4\right)x^{\frac{9}{2}}}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/2078505*x^(9/2)*(109395*B*b^4*x^5+122265*A*b^4*x^4+489060*B*a*b^3*x^4+554
268*A*a*b^3*x^3+831402*B*a^2*b^2*x^3+959310*A*a^2*b^2*x^2+639540*B*a^3*b*x^
2+755820*A*a^3*b*x+188955*B*a^4*x+230945*A*a^4)
```

maxima [A] time = 0.60, size = 99, normalized size = 0.89

$$\frac{2}{19}\,Bb^4x^{\frac{19}{2}}+\frac{2}{9}\,Aa^4x^{\frac{9}{2}}+\frac{2}{17}\left(4\,Bab^3+Ab^4\right)x^{\frac{17}{2}}+\frac{4}{15}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{15}{2}}+\frac{4}{13}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Ba^4+4\,Aa^3b\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*b^4*x^(19/2) + 2/9*A*a^4*x^(9/2) + 2/17*(4*B*a*b^3 + A*b^4)*x^(17/2)
 + 4/15*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(15/2) + 4/13*(2*B*a^3*b + 3*A*a^2*b^2)
*x^(13/2) + 2/11*(B*a^4 + 4*A*a^3*b)*x^(11/2)
```

mupad [B] time = 0.05, size = 91, normalized size = 0.82

$$x^{11/2}\left(\frac{2\,B\,a^4}{11}+\frac{8\,A\,b\,a^3}{11}\right)+x^{17/2}\left(\frac{2\,A\,b^4}{17}+\frac{8\,B\,a\,b^3}{17}\right)+\frac{2\,A\,a^4\,x^{9/2}}{9}+\frac{2\,B\,b^4\,x^{19/2}}{19}+\frac{4\,a^2\,b\,x^{13/2}\,\left(3\,A\,b+2\,B\,a\right)}{13}+\frac{4\,a\,b^2\,x^{15/2}\,\left(2\,A\,b+3\,B\,a\right)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(11/2)*((2*B*a^4)/11 + (8*A*a^3*b)/11) + x^(17/2)*((2*A*b^4)/17 + (8*B*a*
b^3)/17) + (2*A*a^4*x^(9/2))/9 + (2*B*b^4*x^(19/2))/19 + (4*a^2*b*x^(13/2)*
(3*A*b + 2*B*a))/13 + (4*a*b^2*x^(15/2)*(2*A*b + 3*B*a))/15
```

sympy [A] time = 15.90, size = 148, normalized size = 1.33

$$\frac{2Aa^4x^{\frac{9}{2}}}{9}+\frac{8Aa^3bx^{\frac{11}{2}}}{11}+\frac{12Aa^2b^2x^{\frac{13}{2}}}{13}+\frac{8Aab^3x^{\frac{15}{2}}}{15}+\frac{2Ab^4x^{\frac{17}{2}}}{17}+\frac{2Ba^4x^{\frac{11}{2}}}{11}+\frac{8Ba^3bx^{\frac{13}{2}}}{13}+\frac{4Ba^2b^2x^{\frac{15}{2}}}{5}+\frac{8Bab^3x^{\frac{17}{2}}}{17}+\frac{2Bb^4x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 2*A*a**4*x**(9/2)/9 + 8*A*a**3*b*x**(11/2)/11 + 12*A*a**2*b**2*x**(13/2)/13
 + 8*A*a*b**3*x**(15/2)/15 + 2*A*b**4*x**(17/2)/17 + 2*B*a**4*x**(11/2)/11
+ 8*B*a**3*b*x**(13/2)/13 + 4*B*a**2*b**2*x**(15/2)/5 + 8*B*a*b**3*x**(17/2
)/17 + 2*B*b**4*x**(19/2)/19
```

3.666 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{7}a^4Ax^{7/2}+\frac{2}{9}a^3x^{9/2}(aB+4Ab)+\frac{4}{11}a^2bx^{11/2}(2aB+3Ab)+\frac{2}{15}b^3x^{15/2}(4aB+Ab)+\frac{4}{13}ab^2x^{13/2}(3aB+2Ab)+\frac{2}{17}b^4Bx^{17}$$

Rubi [A] time = 0.06, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{11}a^2bx^{11/2}(2aB+3Ab)+\frac{2}{9}a^3x^{9/2}(aB+4Ab)+\frac{2}{7}a^4Ax^{7/2}+\frac{2}{15}b^3x^{15/2}(4aB+Ab)+\frac{4}{13}ab^2x^{13/2}(3aB+2Ab)+\frac{2}{17}b^4Bx^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(7/2))/7 + (2*a^3*(4*A*b + a*B)*x^(9/2))/9 + (4*a^2*b*(3*A*b + 2
*a*B)*x^(11/2))/11 + (4*a*b^2*(2*A*b + 3*a*B)*x^(13/2))/13 + (2*b^3*(A*b +
4*a*B)*x^(15/2))/15 + (2*b^4*B*x^(17/2))/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^{5/2}(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^{5/2}+a^3(4Ab+aB)x^{7/2}+2a^2b(3Ab+2aB)x^{9/2}+2ab^2(2A\right.\\ &= \frac{2}{7}a^4Ax^{7/2}+\frac{2}{9}a^3(4Ab+aB)x^{9/2}+\frac{4}{11}a^2b(3Ab+2aB)x^{11/2}+\frac{4}{13}ab^2(\end{aligned}$$

Mathematica [A] time = 0.08, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{7/2}\left(6435a^4+20020a^3bx+24570a^2b^2x^2+13860ab^3x^3+3003b^4x^4\right)(17Ab-7aB)}{45045}+Bx^{7/2}(a+bx)^5\right)}{17b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(7/2)*(a + b*x)^5 + ((17*A*b - 7*a*B)*x^(7/2)*(6435*a^4 + 20020*a^3
*b*x + 24570*a^2*b^2*x^2 + 13860*a*b^3*x^3 + 3003*b^4*x^4))/45045))/(17*b)
```

IntegrateAlgebraic [A] time = 0.05, size = 125, normalized size = 1.13

$$\frac{2\left(109395a^4Ax^{7/2}+85085a^4Bx^{9/2}+340340a^3Abx^{9/2}+278460a^3bBx^{11/2}+417690a^2Ab^2x^{11/2}+353430a^2b^2Bx^{13/2}+235620aAb^3x^{13/2}+204204ab^3Bx^{15/2}+51051Ab^4x^{15/2}+45045b^4Bx^{17/2}\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(109395*a^4*A*x^(7/2) + 340340*a^3*A*b*x^(9/2) + 85085*a^4*B*x^(9/2) + 4
17690*a^2*A*b^2*x^(11/2) + 278460*a^3*b*B*x^(11/2) + 235620*a*A*b^3*x^(13/2
) + 353430*a^2*b^2*B*x^(13/2) + 51051*A*b^4*x^(15/2) + 204204*a*b^3*B*x^(15
/2) + 45045*b^4*B*x^(17/2)))/765765
```

fricas [A] time = 0.41, size = 104, normalized size = 0.94

$$\frac{2}{765765}\left(45045\,Bb^4x^8+109395\,Aa^4x^3+51051\left(4\,Bab^3+Ab^4\right)x^7+117810\left(3\,Ba^2b^2+2\,Aab^3\right)x^6+139230\left(2\,Ba^3b+3\,Aa^2b^2\right)x^5+85085\left(Ba^4+4\,Aa^3b\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*b^4*x^8 + 109395*A*a^4*x^3 + 51051*(4*B*a*b^3 + A*b^4)*x^
7 + 117810*(3*B*a^2*b^2 + 2*A*a*b^3)*x^6 + 139230*(2*B*a^3*b + 3*A*a^2*b^2)
*x^5 + 85085*(B*a^4 + 4*A*a^3*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 101, normalized size = 0.91

$$\frac{2}{17}\,Bb^4x^{\frac{17}{2}}+\frac{8}{15}\,Bab^3x^{\frac{15}{2}}+\frac{2}{15}\,Ab^4x^{\frac{15}{2}}+\frac{12}{13}\,Ba^2b^2x^{\frac{13}{2}}+\frac{8}{13}\,Aab^3x^{\frac{13}{2}}+\frac{8}{11}\,Ba^3bx^{\frac{11}{2}}+\frac{12}{11}\,Aa^2b^2x^{\frac{11}{2}}+\frac{2}{9}\,Ba^4x^{\frac{9}{2}}+\frac{8}{9}\,Aa^3bx^{\frac{9}{2}}+\frac{2}{7}\,Aa^4x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*b^4*x^(17/2) + 8/15*B*a*b^3*x^(15/2) + 2/15*A*b^4*x^(15/2) + 12/13*B
*a^2*b^2*x^(13/2) + 8/13*A*a*b^3*x^(13/2) + 8/11*B*a^3*b*x^(11/2) + 12/11*A
*a^2*b^2*x^(11/2) + 2/9*B*a^4*x^(9/2) + 8/9*A*a^3*b*x^(9/2) + 2/7*A*a^4*x^(
7/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.90

$$\frac{2\left(45045b^4B\,x^5+51051A\,b^4x^4+204204x^4Ba\,b^3+235620Aa\,b^3x^3+353430B\,a^2b^2x^3+417690A\,a^2b^2x^2+278460B\,a^3b\,x^2+340340A\,a^3bx+85085B\,a^4x+109395A\,a^4\right)x^{\frac{7}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/765765*x^(7/2)*(45045*B*b^4*x^5+51051*A*b^4*x^4+204204*B*a*b^3*x^4+235620
*A*a*b^3*x^3+353430*B*a^2*b^2*x^3+417690*A*a^2*b^2*x^2+278460*B*a^3*b*x^2+3
40340*A*a^3*b*x+85085*B*a^4*x+109395*A*a^4)
```

maxima [A] time = 0.59, size = 99, normalized size = 0.89

$$\frac{2}{17}\,Bb^4x^{\frac{17}{2}}+\frac{2}{7}\,Aa^4x^{\frac{7}{2}}+\frac{2}{15}\left(4\,Bab^3+Ab^4\right)x^{\frac{15}{2}}+\frac{4}{13}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{13}{2}}+\frac{4}{11}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Ba^4+4\,Aa^3b\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*b^4*x^(17/2) + 2/7*A*a^4*x^(7/2) + 2/15*(4*B*a*b^3 + A*b^4)*x^(15/2)
 + 4/13*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(13/2) + 4/11*(2*B*a^3*b + 3*A*a^2*b^2)
*x^(11/2) + 2/9*(B*a^4 + 4*A*a^3*b)*x^(9/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.82

$$x^{9/2}\left(\frac{2\,B\,a^4}{9}+\frac{8\,A\,b\,a^3}{9}\right)+x^{15/2}\left(\frac{2\,A\,b^4}{15}+\frac{8\,B\,a\,b^3}{15}\right)+\frac{2\,A\,a^4\,x^{7/2}}{7}+\frac{2\,B\,b^4\,x^{17/2}}{17}+\frac{4\,a^2\,b\,x^{11/2}\,\left(3\,A\,b+2\,B\,a\right)}{11}+\frac{4\,a\,b^2\,x^{13/2}\,\left(2\,A\,b+3\,B\,a\right)}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(9/2)*((2*B*a^4)/9 + (8*A*a^3*b)/9) + x^(15/2)*((2*A*b^4)/15 + (8*B*a*b^3
)/15) + (2*A*a^4*x^(7/2))/7 + (2*B*b^4*x^(17/2))/17 + (4*a^2*b*x^(11/2)*(3*
A*b + 2*B*a))/11 + (4*a*b^2*x^(13/2)*(2*A*b + 3*B*a))/13
```

sympy [A] time = 8.75, size = 148, normalized size = 1.33

$$\frac{2Aa^4x^{\frac{7}{2}}}{7}+\frac{8Aa^3bx^{\frac{9}{2}}}{9}+\frac{12Aa^2b^2x^{\frac{11}{2}}}{11}+\frac{8Aab^3x^{\frac{13}{2}}}{13}+\frac{2Ab^4x^{\frac{15}{2}}}{15}+\frac{2Ba^4x^{\frac{9}{2}}}{9}+\frac{8Ba^3bx^{\frac{11}{2}}}{11}+\frac{12Ba^2b^2x^{\frac{13}{2}}}{13}+\frac{8Bab^3x^{\frac{15}{2}}}{15}+\frac{2Bb^4x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 2*A*a**4*x**(7/2)/7 + 8*A*a**3*b*x**(9/2)/9 + 12*A*a**2*b**2*x**(11/2)/11 +
 8*A*a*b**3*x**(13/2)/13 + 2*A*b**4*x**(15/2)/15 + 2*B*a**4*x**(9/2)/9 + 8*
B*a**3*b*x**(11/2)/11 + 12*B*a**2*b**2*x**(13/2)/13 + 8*B*a*b**3*x**(15/2)/
15 + 2*B*b**4*x**(17/2)/17
```

3.667 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{5}a^4Ax^{5/2}+\frac{2}{7}a^3x^{7/2}(aB+4Ab)+\frac{4}{9}a^2bx^{9/2}(2aB+3Ab)+\frac{2}{13}b^3x^{13/2}(4aB+Ab)+\frac{4}{11}ab^2x^{11/2}(3aB+2Ab)+\frac{2}{15}b^4Bx^{15/2}$$

Rubi [A] time = 0.05, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{9}a^2bx^{9/2}(2aB+3Ab)+\frac{2}{7}a^3x^{7/2}(aB+4Ab)+\frac{2}{5}a^4Ax^{5/2}+\frac{2}{13}b^3x^{13/2}(4aB+Ab)+\frac{4}{11}ab^2x^{11/2}(3aB+2Ab)+\frac{2}{15}b^4Bx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(5/2))/5 + (2*a^3*(4*A*b + a*B)*x^(7/2))/7 + (4*a^2*b*(3*A*b + 2
*a*B)*x^(9/2))/9 + (4*a*b^2*(2*A*b + 3*a*B)*x^(11/2))/11 + (2*b^3*(A*b + 4*
a*B)*x^(13/2))/13 + (2*b^4*B*x^(15/2))/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^{3/2}(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^{3/2}+a^3(4Ab+aB)x^{5/2}+2a^2b(3Ab+2aB)x^{7/2}+2ab^2(2Ab+\right.\\ &= \frac{2}{5}a^4Ax^{5/2}+\frac{2}{7}a^3(4Ab+aB)x^{7/2}+\frac{4}{9}a^2b(3Ab+2aB)x^{9/2}+\frac{4}{11}ab^2(2Ab\end{aligned}$$

Mathematica [A] time = 0.06, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{5/2}\left(3003a^4+8580a^3bx+10010a^2b^2x^2+5460ab^3x^3+1155b^4x^4\right)(3Ab-aB)}{3003}+Bx^{5/2}(a+bx)^5\right)}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(5/2)*(a + b*x)^5 + ((3*A*b - a*B)*x^(5/2)*(3003*a^4 + 8580*a^3*b*x
 + 10010*a^2*b^2*x^2 + 5460*a*b^3*x^3 + 1155*b^4*x^4))/3003))/(15*b)
```

IntegrateAlgebraic [A] time = 0.05, size = 125, normalized size = 1.13

$$\frac{2\left(9009a^4Ax^{5/2}+6435a^4Bx^{7/2}+25740a^3Abx^{7/2}+20020a^3bBx^{9/2}+30030a^2Ab^2x^{9/2}+24570a^2b^2Bx^{11/2}+16380aAb^3x^{11/2}+13860ab^3Bx^{13/2}+3465Ab^4x^{13/2}+3003b^4Bx^{15/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(9009*a^4*A*x^(5/2) + 25740*a^3*A*b*x^(7/2) + 6435*a^4*B*x^(7/2) + 30030
*a^2*A*b^2*x^(9/2) + 20020*a^3*b*B*x^(9/2) + 16380*a*A*b^3*x^(11/2) + 24570
*a^2*b^2*B*x^(11/2) + 3465*A*b^4*x^(13/2) + 13860*a*b^3*B*x^(13/2) + 3003*b
^4*B*x^(15/2)))/45045
```

fricas [A] time = 0.41, size = 104, normalized size = 0.94

$$\frac{2}{45045}\left(3003\,Bb^4x^7+9009\,Aa^4x^2+3465\left(4\,Bab^3+Ab^4\right)x^6+8190\left(3\,Ba^2b^2+2\,Aab^3\right)x^5+10010\left(2\,Ba^3b+3\,Aa^2b^2\right)x^4+6435\left(Ba^4+4\,Aa^3b\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*b^4*x^7 + 9009*A*a^4*x^2 + 3465*(4*B*a*b^3 + A*b^4)*x^6 + 8
190*(3*B*a^2*b^2 + 2*A*a*b^3)*x^5 + 10010*(2*B*a^3*b + 3*A*a^2*b^2)*x^4 + 6
435*(B*a^4 + 4*A*a^3*b)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 101, normalized size = 0.91

$$\frac{2}{15}\,Bb^4x^{\frac{15}{2}}+\frac{8}{13}\,Bab^3x^{\frac{13}{2}}+\frac{2}{13}\,Ab^4x^{\frac{13}{2}}+\frac{12}{11}\,Ba^2b^2x^{\frac{11}{2}}+\frac{8}{11}\,Aab^3x^{\frac{11}{2}}+\frac{8}{9}\,Ba^3bx^{\frac{9}{2}}+\frac{4}{3}\,Aa^2b^2x^{\frac{9}{2}}+\frac{2}{7}\,Ba^4x^{\frac{7}{2}}+\frac{8}{7}\,Aa^3bx^{\frac{7}{2}}+\frac{2}{5}\,Aa^4x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*b^4*x^(15/2) + 8/13*B*a*b^3*x^(13/2) + 2/13*A*b^4*x^(13/2) + 12/11*B
*a^2*b^2*x^(11/2) + 8/11*A*a*b^3*x^(11/2) + 8/9*B*a^3*b*x^(9/2) + 4/3*A*a^2
*b^2*x^(9/2) + 2/7*B*a^4*x^(7/2) + 8/7*A*a^3*b*x^(7/2) + 2/5*A*a^4*x^(5/2)
```

maple [A] time = 0.06, size = 100, normalized size = 0.90

$$\frac{2\left(3003b^4B\,x^5+3465A\,b^4x^4+13860x^4Ba\,b^3+16380Aa\,b^3x^3+24570B\,a^2b^2x^3+30030A\,a^2b^2x^2+20020B\,a^3b\,x^2+25740A\,a^3bx+6435B\,a^4x+9009A\,a^4\right)x^{\frac{5}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/45045*x^(5/2)*(3003*B*b^4*x^5+3465*A*b^4*x^4+13860*B*a*b^3*x^4+16380*A*a*
b^3*x^3+24570*B*a^2*b^2*x^3+30030*A*a^2*b^2*x^2+20020*B*a^3*b*x^2+25740*A*a
^3*b*x+6435*B*a^4*x+9009*A*a^4)
```

maxima [A] time = 0.50, size = 99, normalized size = 0.89

$$\frac{2}{15}\,Bb^4x^{\frac{15}{2}}+\frac{2}{5}\,Aa^4x^{\frac{5}{2}}+\frac{2}{13}\left(4\,Bab^3+Ab^4\right)x^{\frac{13}{2}}+\frac{4}{11}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{11}{2}}+\frac{4}{9}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Ba^4+4\,Aa^3b\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*b^4*x^(15/2) + 2/5*A*a^4*x^(5/2) + 2/13*(4*B*a*b^3 + A*b^4)*x^(13/2)
 + 4/11*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(11/2) + 4/9*(2*B*a^3*b + 3*A*a^2*b^2)*
x^(9/2) + 2/7*(B*a^4 + 4*A*a^3*b)*x^(7/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.82

$$x^{7/2}\left(\frac{2\,B\,a^4}{7}+\frac{8\,A\,b\,a^3}{7}\right)+x^{13/2}\left(\frac{2\,A\,b^4}{13}+\frac{8\,B\,a\,b^3}{13}\right)+\frac{2\,A\,a^4\,x^{5/2}}{5}+\frac{2\,B\,b^4\,x^{15/2}}{15}+\frac{4\,a^2\,b\,x^{9/2}\,\left(3\,A\,b+2\,B\,a\right)}{9}+\frac{4\,a\,b^2\,x^{11/2}\,\left(2\,A\,b+3\,B\,a\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(7/2)*((2*B*a^4)/7 + (8*A*a^3*b)/7) + x^(13/2)*((2*A*b^4)/13 + (8*B*a*b^3
)/13) + (2*A*a^4*x^(5/2))/5 + (2*B*b^4*x^(15/2))/15 + (4*a^2*b*x^(9/2)*(3*A
*b + 2*B*a))/9 + (4*a*b^2*x^(11/2)*(2*A*b + 3*B*a))/11
```

sympy [A] time = 4.30, size = 148, normalized size = 1.33

$$\frac{2Aa^4x^{\frac{5}{2}}}{5}+\frac{8Aa^3bx^{\frac{7}{2}}}{7}+\frac{4Aa^2b^2x^{\frac{9}{2}}}{3}+\frac{8Aab^3x^{\frac{11}{2}}}{11}+\frac{2Ab^4x^{\frac{13}{2}}}{13}+\frac{2Ba^4x^{\frac{7}{2}}}{7}+\frac{8Ba^3bx^{\frac{9}{2}}}{9}+\frac{12Ba^2b^2x^{\frac{11}{2}}}{11}+\frac{8Bab^3x^{\frac{13}{2}}}{13}+\frac{2Bb^4x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 2*A*a**4*x**(5/2)/5 + 8*A*a**3*b*x**(7/2)/7 + 4*A*a**2*b**2*x**(9/2)/3 + 8*
A*a*b**3*x**(11/2)/11 + 2*A*b**4*x**(13/2)/13 + 2*B*a**4*x**(7/2)/7 + 8*B*a
**3*b*x**(9/2)/9 + 12*B*a**2*b**2*x**(11/2)/11 + 8*B*a*b**3*x**(13/2)/13 +
2*B*b**4*x**(15/2)/15
```

3.668 $\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{3}a^4Ax^{3/2}+\frac{2}{5}a^3x^{5/2}(aB+4Ab)+\frac{4}{7}a^2bx^{7/2}(2aB+3Ab)+\frac{2}{11}b^3x^{11/2}(4aB+Ab)+\frac{4}{9}ab^2x^{9/2}(3aB+2Ab)+\frac{2}{13}b^4Bx^{13/2}$$

Rubi [A] time = 0.05, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{7}a^2bx^{7/2}(2aB+3Ab)+\frac{2}{5}a^3x^{5/2}(aB+4Ab)+\frac{2}{3}a^4Ax^{3/2}+\frac{2}{11}b^3x^{11/2}(4aB+Ab)+\frac{4}{9}ab^2x^{9/2}(3aB+2Ab)+\frac{2}{13}b^4Bx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(3/2))/3 + (2*a^3*(4*A*b + a*B)*x^(5/2))/5 + (4*a^2*b*(3*A*b + 2
*a*B)*x^(7/2))/7 + (4*a*b^2*(2*A*b + 3*a*B)*x^(9/2))/9 + (2*b^3*(A*b + 4*a*
B)*x^(11/2))/11 + (2*b^4*B*x^(13/2))/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int \sqrt{x}(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4A\sqrt{x}+a^3(4Ab+aB)x^{3/2}+2a^2b(3Ab+2aB)x^{5/2}+2ab^2(2Al\right.\\ &= \frac{2}{3}a^4Ax^{3/2}+\frac{2}{5}a^3(4Ab+aB)x^{5/2}+\frac{4}{7}a^2b(3Ab+2aB)x^{7/2}+\frac{4}{9}ab^2(2A\end{aligned}$$

Mathematica [A] time = 0.06, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{3/2}\left(1155a^4+2772a^3bx+2970a^2b^2x^2+1540ab^3x^3+315b^4x^4\right)(13Ab-3aB)}{3465}+Bx^{3/2}(a+bx)^5\right)}{13b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(3/2)*(a + b*x)^5 + ((13*A*b - 3*a*B)*x^(3/2)*(1155*a^4 + 2772*a^3*
b*x + 2970*a^2*b^2*x^2 + 1540*a*b^3*x^3 + 315*b^4*x^4))/3465))/(13*b)
```

IntegrateAlgebraic [A] time = 0.05, size = 125, normalized size = 1.13

$$\frac{2\left(15015a^4Ax^{3/2}+9009a^4Bx^{5/2}+36036a^3Abx^{5/2}+25740a^3bBx^{7/2}+38610a^2Ab^2x^{7/2}+30030a^2b^2Bx^{9/2}+20020aAb^3x^{9/2}+16380ab^3Bx^{11/2}+4095Ab^4x^{11/2}+3465b^4Bx^{13/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(15015*a^4*A*x^(3/2) + 36036*a^3*A*b*x^(5/2) + 9009*a^4*B*x^(5/2) + 3861
0*a^2*A*b^2*x^(7/2) + 25740*a^3*b*B*x^(7/2) + 20020*a*A*b^3*x^(9/2) + 30030
*a^2*b^2*B*x^(9/2) + 4095*A*b^4*x^(11/2) + 16380*a*b^3*B*x^(11/2) + 3465*b^
4*B*x^(13/2)))/45045
```

fricas [A] time = 0.42, size = 102, normalized size = 0.92

$$\frac{2}{45045}\left(3465\,Bb^4x^6+15015\,Aa^4x+4095\left(4\,Bab^3+Ab^4\right)x^5+10010\left(3\,Ba^2b^2+2\,Aab^3\right)x^4+12870\left(2\,Ba^3b+3\,Aa^2b^2\right)x^3+9009\left(Ba^4+4\,Aa^3b\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*b^4*x^6 + 15015*A*a^4*x + 4095*(4*B*a*b^3 + A*b^4)*x^5 + 10
010*(3*B*a^2*b^2 + 2*A*a*b^3)*x^4 + 12870*(2*B*a^3*b + 3*A*a^2*b^2)*x^3 + 9
009*(B*a^4 + 4*A*a^3*b)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 101, normalized size = 0.91

$$\frac{2}{13}\,Bb^4x^{\frac{13}{2}}+\frac{8}{11}\,Bab^3x^{\frac{11}{2}}+\frac{2}{11}\,Ab^4x^{\frac{11}{2}}+\frac{4}{3}\,Ba^2b^2x^{\frac{9}{2}}+\frac{8}{9}\,Aab^3x^{\frac{9}{2}}+\frac{8}{7}\,Ba^3bx^{\frac{7}{2}}+\frac{12}{7}\,Aa^2b^2x^{\frac{7}{2}}+\frac{2}{5}\,Ba^4x^{\frac{5}{2}}+\frac{8}{5}\,Aa^3bx^{\frac{5}{2}}+\frac{2}{3}\,Aa^4x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^4*x^(13/2) + 8/11*B*a*b^3*x^(11/2) + 2/11*A*b^4*x^(11/2) + 4/3*B*a
^2*b^2*x^(9/2) + 8/9*A*a*b^3*x^(9/2) + 8/7*B*a^3*b*x^(7/2) + 12/7*A*a^2*b^2
*x^(7/2) + 2/5*B*a^4*x^(5/2) + 8/5*A*a^3*b*x^(5/2) + 2/3*A*a^4*x^(3/2)
```

maple [A] time = 0.06, size = 100, normalized size = 0.90

$$\frac{2\left(3465b^4B\,x^5+4095A\,b^4x^4+16380x^4Ba\,b^3+20020Aa\,b^3x^3+30030B\,a^2b^2x^3+38610A\,a^2b^2x^2+25740B\,a^3b\,x^2+36036A\,a^3bx+9009B\,a^4x+15015A\,a^4\right)x^{\frac{3}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3465*B*b^4*x^5+4095*A*b^4*x^4+16380*B*a*b^3*x^4+20020*A*a*
b^3*x^3+30030*B*a^2*b^2*x^3+38610*A*a^2*b^2*x^2+25740*B*a^3*b*x^2+36036*A*a
^3*b*x+9009*B*a^4*x+15015*A*a^4)
```

maxima [A] time = 0.56, size = 99, normalized size = 0.89

$$\frac{2}{13}\,Bb^4x^{\frac{13}{2}}+\frac{2}{3}\,Aa^4x^{\frac{3}{2}}+\frac{2}{11}\left(4\,Bab^3+Ab^4\right)x^{\frac{11}{2}}+\frac{4}{9}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{9}{2}}+\frac{4}{7}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Ba^4+4\,Aa^3b\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*b^4*x^(13/2) + 2/3*A*a^4*x^(3/2) + 2/11*(4*B*a*b^3 + A*b^4)*x^(11/2)
 + 4/9*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(9/2) + 4/7*(2*B*a^3*b + 3*A*a^2*b^2)*x^
(7/2) + 2/5*(B*a^4 + 4*A*a^3*b)*x^(5/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.82

$$x^{5/2}\left(\frac{2\,B\,a^4}{5}+\frac{8\,A\,b\,a^3}{5}\right)+x^{11/2}\left(\frac{2\,A\,b^4}{11}+\frac{8\,B\,a\,b^3}{11}\right)+\frac{2\,A\,a^4\,x^{3/2}}{3}+\frac{2\,B\,b^4\,x^{13/2}}{13}+\frac{4\,a^2\,b\,x^{7/2}\,\left(3\,A\,b+2\,B\,a\right)}{7}+\frac{4\,a\,b^2\,x^{9/2}\,\left(2\,A\,b+3\,B\,a\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(5/2)*((2*B*a^4)/5 + (8*A*a^3*b)/5) + x^(11/2)*((2*A*b^4)/11 + (8*B*a*b^3
)/11) + (2*A*a^4*x^(3/2))/3 + (2*B*b^4*x^(13/2))/13 + (4*a^2*b*x^(7/2)*(3*A
*b + 2*B*a))/7 + (4*a*b^2*x^(9/2)*(2*A*b + 3*B*a))/9
```

sympy [A] time = 4.38, size = 124, normalized size = 1.12

$$\frac{2Aa^4x^{\frac{3}{2}}}{3}+\frac{2Bb^4x^{\frac{13}{2}}}{13}+\frac{2x^{\frac{11}{2}}\left(Ab^4+4Bab^3\right)}{11}+\frac{2x^{\frac{9}{2}}\left(4Aab^3+6Ba^2b^2\right)}{9}+\frac{2x^{\frac{7}{2}}\left(6Aa^2b^2+4Ba^3b\right)}{7}+\frac{2x^{\frac{5}{2}}\left(4Aa^3b+Ba^4\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2*x**(1/2),x)
```

```
[Out] 2*A*a**4*x**(3/2)/3 + 2*B*b**4*x**(13/2)/13 + 2*x**(11/2)*(A*b**4 + 4*B*a*b
**3)/11 + 2*x**(9/2)*(4*A*a*b**3 + 6*B*a**2*b**2)/9 + 2*x**(7/2)*(6*A*a**2*
b**2 + 4*B*a**3*b)/7 + 2*x**(5/2)*(4*A*a**3*b + B*a**4)/5
```

3.669 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{x}} \, dx$

Optimal. Leaf size=109

$$2a^4A\sqrt{x}+\frac{2}{3}a^3x^{3/2}(aB+4Ab)+\frac{4}{5}a^2bx^{5/2}(2aB+3Ab)+\frac{2}{9}b^3x^{9/2}(4aB+Ab)+\frac{4}{7}ab^2x^{7/2}(3aB+2Ab)+\frac{2}{11}b^4Bx^{11/2}$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{5}a^2bx^{5/2}(2aB+3Ab)+\frac{2}{3}a^3x^{3/2}(aB+4Ab)+2a^4A\sqrt{x}+\frac{2}{9}b^3x^{9/2}(4aB+Ab)+\frac{4}{7}ab^2x^{7/2}(3aB+2Ab)+\frac{2}{11}b^4Bx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[x],x]
```

```
[Out] 2*a^4*A*Sqrt[x] + (2*a^3*(4*A*b + a*B)*x^(3/2))/3 + (4*a^2*b*(3*A*b + 2*a*B
)*x^(5/2))/5 + (4*a*b^2*(2*A*b + 3*a*B)*x^(7/2))/7 + (2*b^3*(A*b + 4*a*B)*x
^(9/2))/9 + (2*b^4*B*x^(11/2))/11
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{x}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{\sqrt{x}}\,dx\\ &= \int \left(\frac{a^4A}{\sqrt{x}}+a^3(4Ab+aB)\sqrt{x}+2a^2b(3Ab+2aB)x^{3/2}+2ab^2(2Ab+3aB)x^{5/2}\right.\\ &= 2a^4A\sqrt{x}+\frac{2}{3}a^3(4Ab+aB)x^{3/2}+\frac{4}{5}a^2b(3Ab+2aB)x^{5/2}+\frac{4}{7}ab^2(2Ab+3a\end{aligned}$$

Mathematica [A] time = 0.03, size = 89, normalized size = 0.82

$$\frac{2\sqrt{x}\left(1155a^4(3A+Bx)+924a^3bx(5A+3Bx)+594a^2b^2x^2(7A+5Bx)+220ab^3x^3(9A+7Bx)+35b^4x^4(11A+9Bx)\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(1155*a^4*(3*A + B*x) + 924*a^3*b*x*(5*A + 3*B*x) + 594*a^2*b^2*
x^2*(7*A + 5*B*x) + 220*a*b^3*x^3*(9*A + 7*B*x) + 35*b^4*x^4*(11*A + 9*B*x)
))/3465
```

IntegrateAlgebraic [A] time = 0.05, size = 125, normalized size = 1.15

$$\frac{2\left(3465a^4A\sqrt{x}+1155a^4Bx^{3/2}+4620a^3Abx^{3/2}+2772a^3bBx^{5/2}+4158a^2Ab^2x^{5/2}+2970a^2b^2Bx^{7/2}+1980aAb^3x^{7/2}+1540ab^3Bx^{9/2}+385Ab^4x^{9/2}+315b^4Bx^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*(3465*a^4*A*Sqrt[x] + 4620*a^3*A*b*x^(3/2) + 1155*a^4*B*x^(3/2) + 4158*a
^2*A*b^2*x^(5/2) + 2772*a^3*b*B*x^(5/2) + 1980*a*A*b^3*x^(7/2) + 2970*a^2*b
^2*B*x^(7/2) + 385*A*b^4*x^(9/2) + 1540*a*b^3*B*x^(9/2) + 315*b^4*B*x^(11/2
)))/3465
```

fricas [A] time = 0.43, size = 99, normalized size = 0.91

$$\frac{2}{3465}\left(315\,Bb^4x^5+3465\,Aa^4+385\left(4\,Bab^3+Ab^4\right)x^4+990\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+1386\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+1155\left(Ba^4+4\,Aa^3b\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*b^4*x^5 + 3465*A*a^4 + 385*(4*B*a*b^3 + A*b^4)*x^4 + 990*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 1386*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 1155*(B*a^
4 + 4*A*a^3*b)*x)*sqrt(x)
```

giac [A] time = 0.15, size = 101, normalized size = 0.93

$$\frac{2}{11}\,Bb^4x^{\frac{11}{2}}+\frac{8}{9}\,Bab^3x^{\frac{9}{2}}+\frac{2}{9}\,Ab^4x^{\frac{9}{2}}+\frac{12}{7}\,Ba^2b^2x^{\frac{7}{2}}+\frac{8}{7}\,Aab^3x^{\frac{7}{2}}+\frac{8}{5}\,Ba^3bx^{\frac{5}{2}}+\frac{12}{5}\,Aa^2b^2x^{\frac{5}{2}}+\frac{2}{3}\,Ba^4x^{\frac{3}{2}}+\frac{8}{3}\,Aa^3bx^{\frac{3}{2}}+2\,Aa^4\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^4*x^(11/2) + 8/9*B*a*b^3*x^(9/2) + 2/9*A*b^4*x^(9/2) + 12/7*B*a^2*
b^2*x^(7/2) + 8/7*A*a*b^3*x^(7/2) + 8/5*B*a^3*b*x^(5/2) + 12/5*A*a^2*b^2*x^
(5/2) + 2/3*B*a^4*x^(3/2) + 8/3*A*a^3*b*x^(3/2) + 2*A*a^4*sqrt(x)
```

maple [A] time = 0.05, size = 100, normalized size = 0.92

$$\frac{2\left(315b^4B\,x^5+385A\,b^4x^4+1540x^4Ba\,b^3+1980Aa\,b^3x^3+2970B\,a^2b^2x^3+4158A\,a^2b^2x^2+2772B\,a^3b\,x^2+4620A\,a^3bx+1155B\,a^4x+3465A\,a^4\right)\sqrt{x}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(1/2)*(315*B*b^4*x^5+385*A*b^4*x^4+1540*B*a*b^3*x^4+1980*A*a*b^3*x
^3+2970*B*a^2*b^2*x^3+4158*A*a^2*b^2*x^2+2772*B*a^3*b*x^2+4620*A*a^3*b*x+11
55*B*a^4*x+3465*A*a^4)
```

maxima [A] time = 0.47, size = 99, normalized size = 0.91

$$\frac{2}{11}\,Bb^4x^{\frac{11}{2}}+2\,Aa^4\sqrt{x}+\frac{2}{9}\left(4\,Bab^3+Ab^4\right)x^{\frac{9}{2}}+\frac{4}{7}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{7}{2}}+\frac{4}{5}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Ba^4+4\,Aa^3b\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*b^4*x^(11/2) + 2*A*a^4*sqrt(x) + 2/9*(4*B*a*b^3 + A*b^4)*x^(9/2) + 4
/7*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(7/2) + 4/5*(2*B*a^3*b + 3*A*a^2*b^2)*x^(5/2
) + 2/3*(B*a^4 + 4*A*a^3*b)*x^(3/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.83

$$x^{3/2}\left(\frac{2\,B\,a^4}{3}+\frac{8\,A\,b\,a^3}{3}\right)+x^{9/2}\left(\frac{2\,A\,b^4}{9}+\frac{8\,B\,a\,b^3}{9}\right)+2\,A\,a^4\,\sqrt{x}+\frac{2\,B\,b^4\,x^{11/2}}{11}+\frac{4\,a^2\,b\,x^{5/2}\,\left(3\,A\,b+2\,B\,a\right)}{5}+\frac{4\,a\,b^2\,x^{7/2}\,\left(2\,A\,b+3\,B\,a\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^4)/3 + (8*A*a^3*b)/3) + x^(9/2)*((2*A*b^4)/9 + (8*B*a*b^3)/
9) + 2*A*a^4*x^(1/2) + (2*B*b^4*x^(11/2))/11 + (4*a^2*b*x^(5/2)*(3*A*b + 2*
B*a))/5 + (4*a*b^2*x^(7/2)*(2*A*b + 3*B*a))/7
```

sympy [A] time = 1.58, size = 146, normalized size = 1.34

$$2Aa^4\sqrt{x}+\frac{8Aa^3bx^{\frac{3}{2}}}{3}+\frac{12Aa^2b^2x^{\frac{5}{2}}}{5}+\frac{8Aab^3x^{\frac{7}{2}}}{7}+\frac{2Ab^4x^{\frac{9}{2}}}{9}+\frac{2Ba^4x^{\frac{3}{2}}}{3}+\frac{8Ba^3bx^{\frac{5}{2}}}{5}+\frac{12Ba^2b^2x^{\frac{7}{2}}}{7}+\frac{8Bab^3x^{\frac{9}{2}}}{9}+\frac{2Bb^4x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(1/2),x)
```

```
[Out] 2*A*a**4*sqrt(x) + 8*A*a**3*b*x**(3/2)/3 + 12*A*a**2*b**2*x**(5/2)/5 + 8*A*
a*b**3*x**(7/2)/7 + 2*A*b**4*x**(9/2)/9 + 2*B*a**4*x**(3/2)/3 + 8*B*a**3*b*
x**(5/2)/5 + 12*B*a**2*b**2*x**(7/2)/7 + 8*B*a*b**3*x**(9/2)/9 + 2*B*b**4*x
**(11/2)/11
```

3.670 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{\sqrt{x}}+2a^3\sqrt{x}\,(aB+4Ab)+\frac{4}{3}a^2bx^{3/2}(2aB+3Ab)+\frac{2}{7}b^3x^{7/2}(4aB+Ab)+\frac{4}{5}ab^2x^{5/2}(3aB+2Ab)+\frac{2}{9}b^4Bx^{9/2}$$

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{3}a^2bx^{3/2}(2aB+3Ab)+2a^3\sqrt{x}\,(aB+4Ab)-\frac{2a^4A}{\sqrt{x}}+\frac{2}{7}b^3x^{7/2}(4aB+Ab)+\frac{4}{5}ab^2x^{5/2}(3aB+2Ab)+\frac{2}{9}b^4Bx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(3/2),x]
```

```
[Out] (-2*a^4*A)/Sqrt[x] + 2*a^3*(4*A*b + a*B)*Sqrt[x] + (4*a^2*b*(3*A*b + 2*a*B)
*x^(3/2))/3 + (4*a*b^2*(2*A*b + 3*a*B)*x^(5/2))/5 + (2*b^3*(A*b + 4*a*B)*x^
(7/2))/7 + (2*b^4*B*x^(9/2))/9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{3/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{3/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{3/2}}+\frac{a^3(4Ab+aB)}{\sqrt{x}}+2a^2b(3Ab+2aB)\sqrt{x}+2ab^2(2Ab+3aB)x^{3}\right.\\ &= -\frac{2a^4A}{\sqrt{x}}+2a^3(4Ab+aB)\sqrt{x}+\frac{4}{3}a^2b(3Ab+2aB)x^{3/2}+\frac{4}{5}ab^2(2Ab+3a\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.81

$$\frac{-630a^4(A-Bx)+840a^3bx(3A+Bx)+252a^2b^2x^2(5A+3Bx)+72ab^3x^3(7A+5Bx)+10b^4x^4(9A+7Bx)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(3/2),x]
```

[Out] (-630*a^4*(A - B*x) + 840*a^3*b*x*(3*A + B*x) + 252*a^2*b^2*x^2*(5*A + 3*B*x) + 72*a*b^3*x^3*(7*A + 5*B*x) + 10*b^4*x^4*(9*A + 7*B*x))/(315*Sqrt[x])

IntegrateAlgebraic [A] time = 0.07, size = 103, normalized size = 0.96

$$\frac{2\left(-315a^4A+315a^4Bx+1260a^3Abx+420a^3bBx^2+630a^2Ab^2x^2+378a^2b^2Bx^3+252aAb^3x^3+180ab^3Bx^4+45Ab^4x^4+35b^4Bx^5\right)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(3/2),x]

[Out] (2*(-315*a^4*A + 1260*a^3*A*b*x + 315*a^4*B*x + 630*a^2*A*b^2*x^2 + 420*a^3*b*B*x^2 + 252*a*A*b^3*x^3 + 378*a^2*b^2*B*x^3 + 45*A*b^4*x^4 + 180*a*b^3*B*x^4 + 35*b^4*B*x^5))/(315*Sqrt[x])

fricas [A] time = 0.41, size = 99, normalized size = 0.93

$$\frac{2\left(35\,Bb^4x^5-315\,Aa^4+45\left(4\,Bab^3+Ab^4\right)x^4+126\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+210\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+315\left(Ba^4+4\,Aa^3b\right)x\right)}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x, algorithm="fricas")

[Out] 2/315*(35*B*b^4*x^5 - 315*A*a^4 + 45*(4*B*a*b^3 + A*b^4)*x^4 + 126*(3*B*a^2*b^2 + 2*A*a*b^3)*x^3 + 210*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 315*(B*a^4 + 4*A*a^3*b)*x)/sqrt(x)

giac [A] time = 0.20, size = 101, normalized size = 0.94

$$\frac{2}{9}\,Bb^4x^{\frac{9}{2}}+\frac{8}{7}\,Bab^3x^{\frac{7}{2}}+\frac{2}{7}\,Ab^4x^{\frac{7}{2}}+\frac{12}{5}\,Ba^2b^2x^{\frac{5}{2}}+\frac{8}{5}\,Aab^3x^{\frac{5}{2}}+\frac{8}{3}\,Ba^3bx^{\frac{3}{2}}+4\,Aa^2b^2x^{\frac{3}{2}}+2\,Ba^4\sqrt{x}+8\,Aa^3b\sqrt{x}-\frac{2\,Aa^4}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x, algorithm="giac")

[Out] 2/9*B*b^4*x^(9/2) + 8/7*B*a*b^3*x^(7/2) + 2/7*A*b^4*x^(7/2) + 12/5*B*a^2*b^2*x^(5/2) + 8/5*A*a*b^3*x^(5/2) + 8/3*B*a^3*b*x^(3/2) + 4*A*a^2*b^2*x^(3/2) + 2*B*a^4*sqrt(x) + 8*A*a^3*b*sqrt(x) - 2*A*a^4/sqrt(x)

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2\left(-35b^4B\,x^5-45A\,b^4x^4-180x^4Ba\,b^3-252Aa\,b^3x^3-378B\,a^2b^2x^3-630A\,a^2b^2x^2-420B\,a^3b\,x^2-1260A\,a^3bx-315B\,a^4x+315A\,a^4\right)}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x)

[Out] -2/315*(-35*B*b^4*x^5-45*A*b^4*x^4-180*B*a*b^3*x^4-252*A*a*b^3*x^3-378*B*a^2*b^2*x^3-630*A*a^2*b^2*x^2-420*B*a^3*b*x^2-1260*A*a^3*b*x-315*B*a^4*x+315*A*a^4)/x^(1/2)

maxima [A] time = 0.62, size = 99, normalized size = 0.93

$$\frac{2}{9}\,Bb^4x^{\frac{9}{2}}-\frac{2\,Aa^4}{\sqrt{x}}+\frac{2}{7}\left(4\,Bab^3+Ab^4\right)x^{\frac{7}{2}}+\frac{4}{5}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{5}{2}}+\frac{4}{3}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^{\frac{3}{2}}+2\left(Ba^4+4\,Aa^3b\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x, algorithm="maxima")

```
[Out] 2/9*B*b^4*x^(9/2) - 2*A*a^4/sqrt(x) + 2/7*(4*B*a*b^3 + A*b^4)*x^(7/2) + 4/5
*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(5/2) + 4/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^(3/2)
+ 2*(B*a^4 + 4*A*a^3*b)*sqrt(x)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.85

$$\sqrt{x}\,\left(2\,B\,a^4+8\,A\,b\,a^3\right)+x^{7/2}\,\left(\frac{2\,A\,b^4}{7}+\frac{8\,B\,a\,b^3}{7}\right)-\frac{2\,A\,a^4}{\sqrt{x}}+\frac{2\,B\,b^4\,x^{9/2}}{9}+\frac{4\,a^2\,b\,x^{3/2}\,\left(3\,A\,b+2\,B\,a\right)}{3}+\frac{4\,a\,b^2\,x^{5/2}\,\left(2\,A\,b+3\,B\,a\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^4 + 8*A*a^3*b) + x^(7/2)*((2*A*b^4)/7 + (8*B*a*b^3)/7) - (2*
A*a^4)/x^(1/2) + (2*B*b^4*x^(9/2))/9 + (4*a^2*b*x^(3/2)*(3*A*b + 2*B*a))/3
+ (4*a*b^2*x^(5/2)*(2*A*b + 3*B*a))/5
```

sympy [A] time = 1.80, size = 141, normalized size = 1.32

$$-\frac{2Aa^4}{\sqrt{x}}+8Aa^3b\sqrt{x}+4Aa^2b^2x^{\frac{3}{2}}+\frac{8Aab^3x^{\frac{5}{2}}}{5}+\frac{2Ab^4x^{\frac{7}{2}}}{7}+2Ba^4\sqrt{x}+\frac{8Ba^3bx^{\frac{3}{2}}}{3}+\frac{12Ba^2b^2x^{\frac{5}{2}}}{5}+\frac{8Bab^3x^{\frac{7}{2}}}{7}+\frac{2Bb^4x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(3/2),x)
```

```
[Out] -2*A*a**4/sqrt(x) + 8*A*a**3*b*sqrt(x) + 4*A*a**2*b**2*x**(3/2) + 8*A*a*b**
3*x**(5/2)/5 + 2*A*b**4*x**(7/2)/7 + 2*B*a**4*sqrt(x) + 8*B*a**3*b*x**(3/2)
/3 + 12*B*a**2*b**2*x**(5/2)/5 + 8*B*a*b**3*x**(7/2)/7 + 2*B*b**4*x**(9/2)/
9
```

3.671 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{3x^{3/2}}-\frac{2a^3(aB+4Ab)}{\sqrt{x}}+4a^2b\sqrt{x}\,(2aB+3Ab)+\frac{2}{5}b^3x^{5/2}(4aB+Ab)+\frac{4}{3}ab^2x^{3/2}(3aB+2Ab)+\frac{2}{7}b^4Bx^{7/2}$$

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$-\frac{2a^3(aB+4Ab)}{\sqrt{x}}+4a^2b\sqrt{x}\,(2aB+3Ab)-\frac{2a^4A}{3x^{3/2}}+\frac{4}{3}ab^2x^{3/2}(3aB+2Ab)+\frac{2}{5}b^3x^{5/2}(4aB+Ab)+\frac{2}{7}b^4Bx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(5/2),x]
```

```
[Out] (-2*a^4*A)/(3*x^(3/2)) - (2*a^3*(4*A*b + a*B))/Sqrt[x] + 4*a^2*b*(3*A*b + 2
*a*B)*Sqrt[x] + (4*a*b^2*(2*A*b + 3*a*B)*x^(3/2))/3 + (2*b^3*(A*b + 4*a*B)*
x^(5/2))/5 + (2*b^4*B*x^(7/2))/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{5/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{5/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{5/2}}+\frac{a^3(4Ab+aB)}{x^{3/2}}+\frac{2a^2b(3Ab+2aB)}{\sqrt{x}}+2ab^2(2Ab+3aB)\sqrt{x}+b^{\cdot}\right.\\ &= -\frac{2a^4A}{3x^{3/2}}-\frac{2a^3(4Ab+aB)}{\sqrt{x}}+4a^2b(3Ab+2aB)\sqrt{x}+\frac{4}{3}ab^2(2Ab+3aB)x^{3/2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.80

$$\frac{-70a^4(A+3Bx)+840a^3bx(Bx-A)+420a^2b^2x^2(3A+Bx)+56ab^3x^3(5A+3Bx)+6b^4x^4(7A+5Bx)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(5/2),x]
```

[Out] (840*a^3*b*x*(-A + B*x) + 420*a^2*b^2*x^2*(3*A + B*x) - 70*a^4*(A + 3*B*x) + 56*a*b^3*x^3*(5*A + 3*B*x) + 6*b^4*x^4*(7*A + 5*B*x))/(105*x^(3/2))

IntegrateAlgebraic [A] time = 0.07, size = 103, normalized size = 0.96

$$\frac{2\left(-35a^4A-105a^4Bx-420a^3Abx+420a^3bBx^2+630a^2Ab^2x^2+210a^2b^2Bx^3+140aAb^3x^3+84ab^3Bx^4+21Ab^4x^4+15b^4Bx^5\right)}{105x^{3/2}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(5/2),x]

[Out] (2*(-35*a^4*A - 420*a^3*A*b*x - 105*a^4*B*x + 630*a^2*A*b^2*x^2 + 420*a^3*b*B*x^2 + 140*a*A*b^3*x^3 + 210*a^2*b^2*B*x^3 + 21*A*b^4*x^4 + 84*a*b^3*B*x^4 + 15*b^4*B*x^5))/(105*x^(3/2))

fricas [A] time = 0.42, size = 99, normalized size = 0.93

$$\frac{2\left(15\,Bb^4x^5-35\,Aa^4+21\left(4\,Bab^3+Ab^4\right)x^4+70\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+210\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-105\left(Ba^4+4\,Aa^3b\right)x\right)}{105\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x, algorithm="fricas")

[Out] 2/105*(15*B*b^4*x^5 - 35*A*a^4 + 21*(4*B*a*b^3 + A*b^4)*x^4 + 70*(3*B*a^2*b^2 + 2*A*a*b^3)*x^3 + 210*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 105*(B*a^4 + 4*A*a^3*b)*x)/x^(3/2)

giac [A] time = 0.16, size = 99, normalized size = 0.93

$$\frac{2}{7}\,Bb^4x^{\frac{7}{2}}+\frac{8}{5}\,Bab^3x^{\frac{5}{2}}+\frac{2}{5}\,Ab^4x^{\frac{5}{2}}+4\,Ba^2b^2x^{\frac{3}{2}}+\frac{8}{3}\,Aab^3x^{\frac{3}{2}}+8\,Ba^3b\sqrt{x}+12\,Aa^2b^2\sqrt{x}-\frac{2\left(3\,Ba^4x+12\,Aa^3bx+Aa^4\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x, algorithm="giac")

[Out] 2/7*B*b^4*x^(7/2) + 8/5*B*a*b^3*x^(5/2) + 2/5*A*b^4*x^(5/2) + 4*B*a^2*b^2*x^(3/2) + 8/3*A*a*b^3*x^(3/2) + 8*B*a^3*b*sqrt(x) + 12*A*a^2*b^2*sqrt(x) - 2/3*(3*B*a^4*x + 12*A*a^3*b*x + A*a^4)/x^(3/2)

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2\left(-15b^4Bx^5-21Ab^4x^4-84x^4Bab^3-140Aab^3x^3-210Ba^2b^2x^3-630Aa^2b^2x^2-420Ba^3bx^2+420Aa^3bx+105Ba^4x+35Aa^4\right)}{105x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x)

[Out] -2/105*(-15*B*b^4*x^5-21*A*b^4*x^4-84*B*a*b^3*x^4-140*A*a*b^3*x^3-210*B*a^2*b^2*x^3-630*A*a^2*b^2*x^2-420*B*a^3*b*x^2+420*A*a^3*b*x+105*B*a^4*x+35*A*a^4)/x^(3/2)

maxima [A] time = 0.51, size = 99, normalized size = 0.93

$$\frac{2}{7}\,Bb^4x^{\frac{7}{2}}+\frac{2}{5}\left(4\,Bab^3+Ab^4\right)x^{\frac{5}{2}}+\frac{4}{3}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{3}{2}}+4\left(2\,Ba^3b+3\,Aa^2b^2\right)\sqrt{x}-\frac{2\left(Aa^4+3\left(Ba^4+4\,Aa^3b\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x, algorithm="maxima")

```
[Out] 2/7*B*b^4*x^(7/2) + 2/5*(4*B*a*b^3 + A*b^4)*x^(5/2) + 4/3*(3*B*a^2*b^2 + 2*
A*a*b^3)*x^(3/2) + 4*(2*B*a^3*b + 3*A*a^2*b^2)*sqrt(x) - 2/3*(A*a^4 + 3*(B*
a^4 + 4*A*a^3*b)*x)/x^(3/2)
```

mupad [B] time = 0.04, size = 92, normalized size = 0.86

$$x^{5/2}\left(\frac{2\,A\,b^4}{5}+\frac{8\,B\,a\,b^3}{5}\right)-\frac{x\,\left(2\,B\,a^4+8\,A\,b\,a^3\right)+\frac{2\,A\,a^4}{3}}{x^{3/2}}+\frac{2\,B\,b^4\,x^{7/2}}{7}+4\,a^2\,b\,\sqrt{x}\,\left(3\,A\,b+2\,B\,a\right)+\frac{4\,a\,b^2\,x^{3/2}\,\left(2\,A\,b+3\,B\,a\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(5/2),x)
```

```
[Out] x^(5/2)*((2*A*b^4)/5 + (8*B*a*b^3)/5) - (x*(2*B*a^4 + 8*A*a^3*b) + (2*A*a^4
)/3)/x^(3/2) + (2*B*b^4*x^(7/2))/7 + 4*a^2*b*x^(1/2)*(3*A*b + 2*B*a) + (4*a
*b^2*x^(3/2)*(2*A*b + 3*B*a))/3
```

sympy [A] time = 2.16, size = 139, normalized size = 1.30

$$-\frac{2Aa^4}{3x^{\frac{3}{2}}}-\frac{8Aa^3b}{\sqrt{x}}+12Aa^2b^2\sqrt{x}+\frac{8Aab^3x^{\frac{3}{2}}}{3}+\frac{2Ab^4x^{\frac{5}{2}}}{5}-\frac{2Ba^4}{\sqrt{x}}+8Ba^3b\sqrt{x}+4Ba^2b^2x^{\frac{3}{2}}+\frac{8Bab^3x^{\frac{5}{2}}}{5}+\frac{2Bb^4x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(5/2),x)
```

```
[Out] -2*A*a**4/(3*x**(3/2)) - 8*A*a**3*b/sqrt(x) + 12*A*a**2*b**2*sqrt(x) + 8*A*
a*b**3*x**(3/2)/3 + 2*A*b**4*x**(5/2)/5 - 2*B*a**4/sqrt(x) + 8*B*a**3*b*sqr
t(x) + 4*B*a**2*b**2*x**(3/2) + 8*B*a*b**3*x**(5/2)/5 + 2*B*b**4*x**(7/2)/7
```

3.672 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{5x^{5/2}}-\frac{2a^3(aB+4Ab)}{3x^{3/2}}-\frac{4a^2b(2aB+3Ab)}{\sqrt{x}}+\frac{2}{3}b^3x^{3/2}(4aB+Ab)+4ab^2\sqrt{x}\,(3aB+2Ab)+\frac{2}{5}b^4Bx^{5/2}$$

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$-\frac{2a^3(aB+4Ab)}{3x^{3/2}}-\frac{4a^2b(2aB+3Ab)}{\sqrt{x}}-\frac{2a^4A}{5x^{5/2}}+\frac{2}{3}b^3x^{3/2}(4aB+Ab)+4ab^2\sqrt{x}\,(3aB+2Ab)+\frac{2}{5}b^4Bx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^4*A)/(5*x^(5/2)) - (2*a^3*(4*A*b + a*B))/(3*x^(3/2)) - (4*a^2*b*(3*A*
b + 2*a*B))/Sqrt[x] + 4*a*b^2*(2*A*b + 3*a*B)*Sqrt[x] + (2*b^3*(A*b + 4*a*B
)*x^(3/2))/3 + (2*b^4*B*x^(5/2))/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{7/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{7/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{7/2}}+\frac{a^3(4Ab+aB)}{x^{5/2}}+\frac{2a^2b(3Ab+2aB)}{x^{3/2}}+\frac{2ab^2(2Ab+3aB)}{\sqrt{x}}+b^3\right.\\ &= -\frac{2a^4A}{5x^{5/2}}-\frac{2a^3(4Ab+aB)}{3x^{3/2}}-\frac{4a^2b(3Ab+2aB)}{\sqrt{x}}+4ab^2(2Ab+3aB)\sqrt{x}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.79

$$\frac{2\left(-\left(a^4(3A+5Bx)\right)-20a^3bx(A+3Bx)+90a^2b^2x^2(Bx-A)+20ab^3x^3(3A+Bx)+b^4x^4(5A+3Bx)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(7/2),x]
```

```
[Out] (2*(90*a^2*b^2*x^2*(-A + B*x) + 20*a*b^3*x^3*(3*A + B*x) - 20*a^3*b*x*(A +
3*B*x) + b^4*x^4*(5*A + 3*B*x) - a^4*(3*A + 5*B*x)))/(15*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.06, size = 103, normalized size = 0.96

$$\frac{2\left(-3a^4A-5a^4Bx-20a^3Abx-60a^3bBx^2-90a^2Ab^2x^2+90a^2b^2Bx^3+60aAb^3x^3+20ab^3Bx^4+5Ab^4x^4+3b^4Bx^5\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(7/2),x]
```

```
[Out] (2*(-3*a^4*A - 20*a^3*A*b*x - 5*a^4*B*x - 90*a^2*A*b^2*x^2 - 60*a^3*b*B*x^2
 + 60*a*A*b^3*x^3 + 90*a^2*b^2*B*x^3 + 5*A*b^4*x^4 + 20*a*b^3*B*x^4 + 3*b^4
*B*x^5))/(15*x^(5/2))
```

fricas [A] time = 0.41, size = 99, normalized size = 0.93

$$\frac{2\left(3\,Bb^4x^5-3\,Aa^4+5\left(4\,Bab^3+Ab^4\right)x^4+30\left(3\,Ba^2b^2+2\,Aab^3\right)x^3-30\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-5\left(Ba^4+4\,Aa^3b\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b^4*x^5 - 3*A*a^4 + 5*(4*B*a*b^3 + A*b^4)*x^4 + 30*(3*B*a^2*b^2 +
 2*A*a*b^3)*x^3 - 30*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 5*(B*a^4 + 4*A*a^3*b)*
x)/x^(5/2)
```

giac [A] time = 0.19, size = 100, normalized size = 0.93

$$\frac{2}{5}\,Bb^4x^{\frac{5}{2}}+\frac{8}{3}\,Bab^3x^{\frac{3}{2}}+\frac{2}{3}\,Ab^4x^{\frac{3}{2}}+12\,Ba^2b^2\sqrt{x}+8\,Aab^3\sqrt{x}-\frac{2\left(60\,Ba^3bx^2+90\,Aa^2b^2x^2+5\,Ba^4x+20\,Aa^3bx+3\,Aa^4\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^4*x^(5/2) + 8/3*B*a*b^3*x^(3/2) + 2/3*A*b^4*x^(3/2) + 12*B*a^2*b^2*
sqrt(x) + 8*A*a*b^3*sqrt(x) - 2/15*(60*B*a^3*b*x^2 + 90*A*a^2*b^2*x^2 + 5*B
*a^4*x + 20*A*a^3*b*x + 3*A*a^4)/x^(5/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2\left(-3b^4B\,x^5-5A\,b^4x^4-20x^4Ba\,b^3-60Aa\,b^3x^3-90B\,a^2b^2x^3+90A\,a^2b^2x^2+60B\,a^3b\,x^2+20A\,a^3bx+5B\,a^4x+3A\,a^4\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x)
```

```
[Out] -2/15*(-3*B*b^4*x^5-5*A*b^4*x^4-20*B*a*b^3*x^4-60*A*a*b^3*x^3-90*B*a^2*b^2*
x^3+90*A*a^2*b^2*x^2+60*B*a^3*b*x^2+20*A*a^3*b*x+5*B*a^4*x+3*A*a^4)/x^(5/2)
```

maxima [A] time = 0.48, size = 100, normalized size = 0.93

$$\frac{2}{5}\,Bb^4x^{\frac{5}{2}}+\frac{2}{3}\left(4\,Bab^3+Ab^4\right)x^{\frac{3}{2}}+4\left(3\,Ba^2b^2+2\,Aab^3\right)\sqrt{x}-\frac{2\left(3\,Aa^4+30\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+5\left(Ba^4+4\,Aa^3b\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*b^4*x^(5/2) + 2/3*(4*B*a*b^3 + A*b^4)*x^(3/2) + 4*(3*B*a^2*b^2 + 2*A*
a*b^3)*sqrt(x) - 2/15*(3*A*a^4 + 30*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 5*(B*a^
4 + 4*A*a^3*b)*x)/x^(5/2)
```

mupad [B] time = 0.07, size = 95, normalized size = 0.89

$$x^{3/2}\left(\frac{2\,A\,b^4}{3}+\frac{8\,B\,a\,b^3}{3}\right)-\frac{x\,\left(\frac{2\,B\,a^4}{3}+\frac{8\,A\,b\,a^3}{3}\right)+\frac{2\,A\,a^4}{5}+x^2\,\left(8\,B\,a^3\,b+12\,A\,a^2\,b^2\right)}{x^{5/2}}+\frac{2\,B\,b^4\,x^{5/2}}{5}+4\,a\,b^2\,\sqrt{x}\,\left(2\,A\,b+3\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(7/2),x)
```

```
[Out] x^(3/2)*((2*A*b^4)/3 + (8*B*a*b^3)/3) - (x*((2*B*a^4)/3 + (8*A*a^3*b)/3) +
(2*A*a^4)/5 + x^2*(12*A*a^2*b^2 + 8*B*a^3*b))/x^(5/2) + (2*B*b^4*x^(5/2))/5
 + 4*a*b^2*x^(1/2)*(2*A*b + 3*B*a)
```

sympy [A] time = 3.14, size = 141, normalized size = 1.32

$$-\frac{2Aa^4}{5x^{\frac{5}{2}}}-\frac{8Aa^3b}{3x^{\frac{3}{2}}}-\frac{12Aa^2b^2}{\sqrt{x}}+8Aab^3\sqrt{x}+\frac{2Ab^4x^{\frac{3}{2}}}{3}-\frac{2Ba^4}{3x^{\frac{3}{2}}}-\frac{8Ba^3b}{\sqrt{x}}+12Ba^2b^2\sqrt{x}+\frac{8Bab^3x^{\frac{3}{2}}}{3}+\frac{2Bb^4x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(7/2),x)
```

```
[Out] -2*A*a**4/(5*x**(5/2)) - 8*A*a**3*b/(3*x**(3/2)) - 12*A*a**2*b**2/sqrt(x) +
 8*A*a*b**3*sqrt(x) + 2*A*b**4*x**(3/2)/3 - 2*B*a**4/(3*x**(3/2)) - 8*B*a**
3*b/sqrt(x) + 12*B*a**2*b**2*sqrt(x) + 8*B*a*b**3*x**(3/2)/3 + 2*B*b**4*x**
(5/2)/5
```

3.673 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{9/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{7x^{7/2}}-\frac{2a^3(aB+4Ab)}{5x^{5/2}}-\frac{4a^2b(2aB+3Ab)}{3x^{3/2}}+2b^3\sqrt{x}\,(4aB+Ab)-\frac{4ab^2(3aB+2Ab)}{\sqrt{x}}+\frac{2}{3}b^4Bx^{3/2}$$

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$-\frac{2a^3(aB+4Ab)}{5x^{5/2}}-\frac{4a^2b(2aB+3Ab)}{3x^{3/2}}-\frac{2a^4A}{7x^{7/2}}-\frac{4ab^2(3aB+2Ab)}{\sqrt{x}}+2b^3\sqrt{x}\,(4aB+Ab)+\frac{2}{3}b^4Bx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*a^4*A)/(7*x^(7/2)) - (2*a^3*(4*A*b + a*B))/(5*x^(5/2)) - (4*a^2*b*(3*A*
b + 2*a*B))/(3*x^(3/2)) - (4*a*b^2*(2*A*b + 3*a*B))/Sqrt[x] + 2*b^3*(A*b +
4*a*B)*Sqrt[x] + (2*b^4*B*x^(3/2))/3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{9/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{9/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{9/2}}+\frac{a^3(4Ab+aB)}{x^{7/2}}+\frac{2a^2b(3Ab+2aB)}{x^{5/2}}+\frac{2ab^2(2Ab+3aB)}{x^{3/2}}+\frac{b^3(A\right.\\ &= -\frac{2a^4A}{7x^{7/2}}-\frac{2a^3(4Ab+aB)}{5x^{5/2}}-\frac{4a^2b(3Ab+2aB)}{3x^{3/2}}-\frac{4ab^2(2Ab+3aB)}{\sqrt{x}}+2b^3(A\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.79

$$-\frac{2\left(3a^4(5A+7Bx)+28a^3bx(3A+5Bx)+210a^2b^2x^2(A+3Bx)+420ab^3x^3(A-Bx)-35b^4x^4(3A+Bx)\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(9/2),x]
```

[Out] (-2*(420*a*b^3*x^3*(A - B*x) - 35*b^4*x^4*(3*A + B*x) + 210*a^2*b^2*x^2*(A + 3*B*x) + 28*a^3*b*x*(3*A + 5*B*x) + 3*a^4*(5*A + 7*B*x)))/(105*x^(7/2))

IntegrateAlgebraic [A] time = 0.07, size = 103, normalized size = 0.96

$$\frac{2\left(-15a^4A-21a^4Bx-84a^3Abx-140a^3bBx^2-210a^2Ab^2x^2-630a^2b^2Bx^3-420aAb^3x^3+420ab^3Bx^4+105Ab^4x^4+35b^4Bx^5\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(9/2),x]

[Out] (2*(-15*a^4*A - 84*a^3*A*b*x - 21*a^4*B*x - 210*a^2*A*b^2*x^2 - 140*a^3*b*B*x^2 - 420*a*A*b^3*x^3 - 630*a^2*b^2*B*x^3 + 105*A*b^4*x^4 + 420*a*b^3*B*x^4 + 35*b^4*B*x^5))/(105*x^(7/2))

fricas [A] time = 0.42, size = 99, normalized size = 0.93

$$\frac{2\left(35\,Bb^4x^5-15\,Aa^4+105\left(4\,Bab^3+Ab^4\right)x^4-210\left(3\,Ba^2b^2+2\,Aab^3\right)x^3-70\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-21\left(Ba^4+4\,Aa^3b\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x, algorithm="fricas")

[Out] 2/105*(35*B*b^4*x^5 - 15*A*a^4 + 105*(4*B*a*b^3 + A*b^4)*x^4 - 210*(3*B*a^2*b^2 + 2*A*a*b^3)*x^3 - 70*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 21*(B*a^4 + 4*A*a^3*b)*x)/x^(7/2)

giac [A] time = 0.17, size = 100, normalized size = 0.93

$$\frac{2}{3}\,Bb^4x^{\frac{3}{2}}+8\,Bab^3\sqrt{x}+2\,Ab^4\sqrt{x}-\frac{2\left(630\,Ba^2b^2x^3+420\,Aab^3x^3+140\,Ba^3bx^2+210\,Aa^2b^2x^2+21\,Ba^4x+84\,Aa^3bx+15\,Aa^4\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x, algorithm="giac")

[Out] 2/3*B*b^4*x^(3/2) + 8*B*a*b^3*sqrt(x) + 2*A*b^4*sqrt(x) - 2/105*(630*B*a^2*b^2*x^3 + 420*A*a*b^3*x^3 + 140*B*a^3*b*x^2 + 210*A*a^2*b^2*x^2 + 21*B*a^4*x + 84*A*a^3*b*x + 15*A*a^4)/x^(7/2)

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2\left(-35b^4B\,x^5-105A\,b^4x^4-420x^4Ba\,b^3+420Aa\,b^3x^3+630B\,a^2b^2x^3+210A\,a^2b^2x^2+140B\,a^3b\,x^2+84A\,a^3bx+21B\,a^4x+15A\,a^4\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x)

[Out] -2/105*(-35*B*b^4*x^5-105*A*b^4*x^4-420*B*a*b^3*x^4+420*A*a*b^3*x^3+630*B*a^2*b^2*x^3+210*A*a^2*b^2*x^2+140*B*a^3*b*x^2+84*A*a^3*b*x+21*B*a^4*x+15*A*a^4)/x^(7/2)

maxima [A] time = 0.58, size = 100, normalized size = 0.93

$$\frac{2}{3}\,Bb^4x^{\frac{3}{2}}+2\left(4\,Bab^3+Ab^4\right)\sqrt{x}-\frac{2\left(15\,Aa^4+210\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+70\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+21\left(Ba^4+4\,Aa^3b\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x, algorithm="maxima")

```
[Out] 2/3*B*b^4*x^(3/2) + 2*(4*B*a*b^3 + A*b^4)*sqrt(x) - 2/105*(15*A*a^4 + 210*(
3*B*a^2*b^2 + 2*A*a*b^3)*x^3 + 70*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 21*(B*a^4
 + 4*A*a^3*b)*x)/x^(7/2)
```

mupad [B] time = 0.06, size = 98, normalized size = 0.92

$$\sqrt{x}\,\left(2\,A\,b^4+8\,B\,a\,b^3\right)-\frac{x\,\left(\frac{2\,B\,a^4}{5}+\frac{8\,A\,b\,a^3}{5}\right)+\frac{2\,A\,a^4}{7}+x^2\,\left(\frac{8\,B\,a^3\,b}{3}+4\,A\,a^2\,b^2\right)+x^3\,\left(12\,B\,a^2\,b^2+8\,A\,a\,b^3\right)}{x^{7/2}}+\frac{2\,B\,b^4\,x^{3/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*A*b^4 + 8*B*a*b^3) - (x*((2*B*a^4)/5 + (8*A*a^3*b)/5) + (2*A*a^4
)/7 + x^2*(4*A*a^2*b^2 + (8*B*a^3*b)/3) + x^3*(12*B*a^2*b^2 + 8*A*a*b^3))/x
^(7/2) + (2*B*b^4*x^(3/2))/3
```

sympy [A] time = 4.10, size = 139, normalized size = 1.30

$$-\frac{2Aa^4}{7x^{\frac{7}{2}}}-\frac{8Aa^3b}{5x^{\frac{5}{2}}}-\frac{4Aa^2b^2}{x^{\frac{3}{2}}}-\frac{8Aab^3}{\sqrt{x}}+2Ab^4\sqrt{x}-\frac{2Ba^4}{5x^{\frac{5}{2}}}-\frac{8Ba^3b}{3x^{\frac{3}{2}}}-\frac{12Ba^2b^2}{\sqrt{x}}+8Bab^3\sqrt{x}+\frac{2Bb^4x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(9/2),x)
```

```
[Out] -2*A*a**4/(7*x**(7/2)) - 8*A*a**3*b/(5*x**(5/2)) - 4*A*a**2*b**2/x**(3/2) -
 8*A*a*b**3/sqrt(x) + 2*A*b**4*sqrt(x) - 2*B*a**4/(5*x**(5/2)) - 8*B*a**3*b
/(3*x**(3/2)) - 12*B*a**2*b**2/sqrt(x) + 8*B*a*b**3*sqrt(x) + 2*B*b**4*x**(
3/2)/3
```

3.674 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{9}a^6Ax^{9/2}+\frac{2}{11}a^5x^{11/2}(aB+6Ab)+\frac{6}{13}a^4bx^{13/2}(2aB+5Ab)+\frac{2}{3}a^3b^2x^{15/2}(3aB+4Ab)+\frac{10}{17}a^2b^3x^{17/2}(4aB+3Ab)+\frac{2}{21}b$$

Rubi [A] time = 0.09, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{17}a^2b^3x^{17/2}(4aB+3Ab)+\frac{2}{3}a^3b^2x^{15/2}(3aB+4Ab)+\frac{6}{13}a^4bx^{13/2}(2aB+5Ab)+\frac{2}{11}a^5x^{11/2}(aB+6Ab)+\frac{2}{9}a^6Ax^{9/2}+\frac{2}{21}b^5x^{21/2}(6aB+Ab)+\frac{6}{19}ab^4x^{19/2}(5aB+2Ab)+\frac{2}{23}b^6Bx^{23/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(9/2))/9 + (2*a^5*(6*A*b + a*B)*x^(11/2))/11 + (6*a^4*b*(5*A*b +
 2*a*B)*x^(13/2))/13 + (2*a^3*b^2*(4*A*b + 3*a*B)*x^(15/2))/3 + (10*a^2*b^3
*(3*A*b + 4*a*B)*x^(17/2))/17 + (6*a*b^4*(2*A*b + 5*a*B)*x^(19/2))/19 + (2*
b^5*(A*b + 6*a*B)*x^(21/2))/21 + (2*b^6*B*x^(23/2))/23
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^{7/2}(a+bx)^6(A+Bx)\,dx\\&=\int \left(a^6Ax^{7/2}+a^5(6Ab+aB)x^{9/2}+3a^4b(5Ab+2aB)x^{11/2}+5a^3b^2(4A\right.\\&=\frac{2}{9}a^6Ax^{9/2}+\frac{2}{11}a^5(6Ab+aB)x^{11/2}+\frac{6}{13}a^4b(5Ab+2aB)x^{13/2}+\frac{2}{3}a^3b\end{aligned}$$

Mathematica [A] time = 0.10, size = 131, normalized size = 0.82

$$\frac{2\left(\frac{1}{2}\left(\frac{2}{9}a^6x^{9/2}+\frac{12}{11}a^5bx^{11/2}+\frac{30}{13}a^4b^2x^{13/2}+\frac{8}{3}a^3b^3x^{15/2}+\frac{30}{17}a^2b^4x^{17/2}+\frac{12}{19}ab^5x^{19/2}+\frac{2}{21}b^6x^{21/2}\right)(23Ab-9aB)+Bx^{9/2}(a+bx)^7\right)}{23b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(9/2)*(a + b*x)^7 + ((23*A*b - 9*a*B)*((2*a^6*x^(9/2))/9 + (12*a^5*
b*x^(11/2))/11 + (30*a^4*b^2*x^(13/2))/13 + (8*a^3*b^3*x^(15/2))/3 + (30*a^
```

```
2*b^4*x^(17/2))/17 + (12*a*b^5*x^(19/2))/19 + (2*b^6*x^(21/2))/21))/2))/(23
*b)
```

IntegrateAlgebraic [A] time = 0.08, size = 181, normalized size = 1.14

$$\frac{2\left(7436429a^6Ax^{9/2}+6084351a^6Bx^{11/2}+36506106a^5Abx^{11/2}+30889782a^5bBx^{13/2}+77224455a^4Ab^2x^{13/2}+66927861a^4b^2Bx^{15/2}+89237148a^3Ab^3x^{15/2}+78738660a^3b^3Bx^{17/2}+59053995a^2Ab^4x^{17/2}+52837785a^2b^4Bx^{19/2}+21135114aAb^5x^{19/2}+19122246ab^5Bx^{21/2}+3187041Ab^6x^{21/2}+2909907b^6Bx^{23/2}\right)}{66927861}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(7436429*a^6*A*x^(9/2) + 36506106*a^5*A*b*x^(11/2) + 6084351*a^6*B*x^(11
/2) + 77224455*a^4*A*b^2*x^(13/2) + 30889782*a^5*b*B*x^(13/2) + 89237148*a^
3*A*b^3*x^(15/2) + 66927861*a^4*b^2*B*x^(15/2) + 59053995*a^2*A*b^4*x^(17/2
) + 78738660*a^3*b^3*B*x^(17/2) + 21135114*a*A*b^5*x^(19/2) + 52837785*a^2*
b^4*B*x^(19/2) + 3187041*A*b^6*x^(21/2) + 19122246*a*b^5*B*x^(21/2) + 29099
07*b^6*B*x^(23/2)))/66927861
```

fricas [A] time = 0.41, size = 152, normalized size = 0.96

$$\frac{2}{66927861}\left(2909907\,Bb^6x^{11}+7436429\,Aa^6x^4+3187041\left(6\,Bab^5+Ab^6\right)x^{10}+10567557\left(5\,Ba^2b^4+2\,Aab^5\right)x^9+19684665\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^8+22309287\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^7+15444891\left(2\,Ba^5b+5\,Aa^4b^2\right)x^6+6084351\left(Ba^6+6\,Aa^5b\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 2/66927861*(2909907*B*b^6*x^11 + 7436429*A*a^6*x^4 + 3187041*(6*B*a*b^5 + A
*b^6)*x^10 + 10567557*(5*B*a^2*b^4 + 2*A*a*b^5)*x^9 + 19684665*(4*B*a^3*b^3
 + 3*A*a^2*b^4)*x^8 + 22309287*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^7 + 15444891*(
2*B*a^5*b + 5*A*a^4*b^2)*x^6 + 6084351*(B*a^6 + 6*A*a^5*b)*x^5)*sqrt(x)
```

giac [A] time = 0.17, size = 149, normalized size = 0.94

$$\frac{2}{23}\,Bb^6x^{\frac{23}{2}}+\frac{4}{7}\,Bab^5x^{\frac{21}{2}}+\frac{2}{21}\,Ab^6x^{\frac{21}{2}}+\frac{30}{19}\,Ba^2b^4x^{\frac{19}{2}}+\frac{12}{19}\,Aab^5x^{\frac{19}{2}}+\frac{40}{17}\,Ba^3b^3x^{\frac{17}{2}}+\frac{30}{17}\,Aa^2b^4x^{\frac{17}{2}}+2\,Ba^4b^2x^{\frac{15}{2}}+\frac{8}{3}\,Aa^3b^3x^{\frac{15}{2}}+\frac{12}{13}\,Ba^5bx^{\frac{13}{2}}+\frac{30}{13}\,Aa^4b^2x^{\frac{13}{2}}+\frac{2}{11}\,Ba^6x^{\frac{11}{2}}+\frac{12}{11}\,Aa^5bx^{\frac{11}{2}}+\frac{2}{9}\,Aa^6x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*b^6*x^(23/2) + 4/7*B*a*b^5*x^(21/2) + 2/21*A*b^6*x^(21/2) + 30/19*B*
a^2*b^4*x^(19/2) + 12/19*A*a*b^5*x^(19/2) + 40/17*B*a^3*b^3*x^(17/2) + 30/1
7*A*a^2*b^4*x^(17/2) + 2*B*a^4*b^2*x^(15/2) + 8/3*A*a^3*b^3*x^(15/2) + 12/1
3*B*a^5*b*x^(13/2) + 30/13*A*a^4*b^2*x^(13/2) + 2/11*B*a^6*x^(11/2) + 12/11
*A*a^5*b*x^(11/2) + 2/9*A*a^6*x^(9/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.93

$$\frac{2\left(2909907B\,b^6x^7+3187041A\,b^6x^6+19122246x^6Ba\,b^5+21135114Aa\,b^5x^5+52837785x^5B\,a^2b^4+59053995A\,a^2b^4x^4+78738660x^4B\,a^3b^3+89237148A\,a^3b^3x^3+66927861B\,a^4b^2x^3+77224455A\,a^4b^2x^2+30889782x^2B\,a^5b+36506106A\,a^5bx+6084351xB\,a^6+7436429A\,a^6\right)x^{\frac{9}{2}}}{66927861}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/66927861*x^(9/2)*(2909907*B*b^6*x^7+3187041*A*b^6*x^6+19122246*B*a*b^5*x^
6+21135114*A*a*b^5*x^5+52837785*B*a^2*b^4*x^5+59053995*A*a^2*b^4*x^4+787386
60*B*a^3*b^3*x^4+89237148*A*a^3*b^3*x^3+66927861*B*a^4*b^2*x^3+77224455*A*a
^4*b^2*x^2+30889782*B*a^5*b*x^2+36506106*A*a^5*b*x+6084351*B*a^6*x+7436429*
A*a^6)
```

maxima [A] time = 0.54, size = 147, normalized size = 0.92

$$\frac{2}{23}\,Bb^6x^{\frac{23}{2}}+\frac{2}{9}\,Aa^6x^{\frac{9}{2}}+\frac{2}{21}\left(6\,Bab^5+Ab^6\right)x^{\frac{21}{2}}+\frac{6}{19}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{19}{2}}+\frac{10}{17}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{17}{2}}+\frac{2}{3}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{15}{2}}+\frac{6}{13}\left(2\,Ba^5b+5\,Aa^4b^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Ba^6+6\,Aa^5b\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*b^6*x^(23/2) + 2/9*A*a^6*x^(9/2) + 2/21*(6*B*a*b^5 + A*b^6)*x^(21/2)
 + 6/19*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(19/2) + 10/17*(4*B*a^3*b^3 + 3*A*a^2*b
^4)*x^(17/2) + 2/3*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(15/2) + 6/13*(2*B*a^5*b +
 5*A*a^4*b^2)*x^(13/2) + 2/11*(B*a^6 + 6*A*a^5*b)*x^(11/2)
```

mupad [B] time = 0.07, size = 131, normalized size = 0.82

$$x^{11/2}\left(\frac{2\,B\,a^6}{11}+\frac{12\,A\,b\,a^5}{11}\right)+x^{21/2}\left(\frac{2\,A\,b^6}{21}+\frac{4\,B\,a\,b^5}{7}\right)+\frac{2\,A\,a^6\,x^{9/2}}{9}+\frac{2\,B\,b^6\,x^{23/2}}{23}+\frac{2\,a^3\,b^2\,x^{15/2}\,\left(4\,A\,b+3\,B\,a\right)}{3}+\frac{10\,a^2\,b^3\,x^{17/2}\,\left(3\,A\,b+4\,B\,a\right)}{17}+\frac{6\,a^4\,b\,x^{13/2}\,\left(5\,A\,b+2\,B\,a\right)}{13}+\frac{6\,a\,b^4\,x^{19/2}\,\left(2\,A\,b+5\,B\,a\right)}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(11/2)*((2*B*a^6)/11 + (12*A*a^5*b)/11) + x^(21/2)*((2*A*b^6)/21 + (4*B*a
*b^5)/7) + (2*A*a^6*x^(9/2))/9 + (2*B*b^6*x^(23/2))/23 + (2*a^3*b^2*x^(15/2
)*(4*A*b + 3*B*a))/3 + (10*a^2*b^3*x^(17/2)*(3*A*b + 4*B*a))/17 + (6*a^4*b*
x^(13/2)*(5*A*b + 2*B*a))/13 + (6*a*b^4*x^(19/2)*(2*A*b + 5*B*a))/19
```

sympy [A] time = 28.78, size = 214, normalized size = 1.35

$$\frac{2Aa^{6}x^{\frac{9}{2}}}{9}+\frac{12Aa^{5}bx^{\frac{11}{2}}}{11}+\frac{30Aa^{4}b^{2}x^{\frac{13}{2}}}{13}+\frac{8Aa^{3}b^{3}x^{\frac{15}{2}}}{3}+\frac{30Aa^{2}b^{4}x^{\frac{17}{2}}}{17}+\frac{12Aab^{5}x^{\frac{19}{2}}}{19}+\frac{2Ab^{6}x^{\frac{21}{2}}}{21}+\frac{2Ba^{6}x^{\frac{11}{2}}}{11}+\frac{12Ba^{5}bx^{\frac{13}{2}}}{13}+2Ba^{4}b^{2}x^{\frac{15}{2}}+\frac{40Ba^{3}b^{3}x^{\frac{17}{2}}}{17}+\frac{30Ba^{2}b^{4}x^{\frac{19}{2}}}{19}+\frac{4Bab^{5}x^{\frac{21}{2}}}{7}+\frac{2Bb^{6}x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 2*A*a**6*x**(9/2)/9 + 12*A*a**5*b*x**(11/2)/11 + 30*A*a**4*b**2*x**(13/2)/1
3 + 8*A*a**3*b**3*x**(15/2)/3 + 30*A*a**2*b**4*x**(17/2)/17 + 12*A*a*b**5*x
**(19/2)/19 + 2*A*b**6*x**(21/2)/21 + 2*B*a**6*x**(11/2)/11 + 12*B*a**5*b*x
**(13/2)/13 + 2*B*a**4*b**2*x**(15/2) + 40*B*a**3*b**3*x**(17/2)/17 + 30*B*
a**2*b**4*x**(19/2)/19 + 4*B*a*b**5*x**(21/2)/7 + 2*B*b**6*x**(23/2)/23
```

3.675 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{7}a^6Ax^{7/2}+\frac{2}{9}a^5x^{9/2}(aB+6Ab)+\frac{6}{11}a^4bx^{11/2}(2aB+5Ab)+\frac{10}{13}a^3b^2x^{13/2}(3aB+4Ab)+\frac{2}{3}a^2b^3x^{15/2}(4aB+3Ab)+\frac{2}{19}b^5x^{19/2}$$

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{2}{3}a^2b^3x^{15/2}(4aB+3Ab)+\frac{10}{13}a^3b^2x^{13/2}(3aB+4Ab)+\frac{6}{11}a^4bx^{11/2}(2aB+5Ab)+\frac{2}{9}a^5x^{9/2}(aB+6Ab)+\frac{2}{7}a^6Ax^{7/2}+\frac{2}{19}b^5x^{19/2}(6aB+Ab)+\frac{6}{17}ab^4x^{17/2}(5aB+2Ab)+\frac{2}{21}b^6Bx^{21/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(7/2))/7 + (2*a^5*(6*A*b + a*B)*x^(9/2))/9 + (6*a^4*b*(5*A*b + 2
*a*B)*x^(11/2))/11 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(13/2))/13 + (2*a^2*b^3*
(3*A*b + 4*a*B)*x^(15/2))/3 + (6*a*b^4*(2*A*b + 5*a*B)*x^(17/2))/17 + (2*b^
5*(A*b + 6*a*B)*x^(19/2))/19 + (2*b^6*B*x^(21/2))/21
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^{5/2}(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6Ax^{5/2}+a^5(6Ab+aB)x^{7/2}+3a^4b(5Ab+2aB)x^{9/2}+5a^3b^2(4Ab\right.\\ &= \frac{2}{7}a^6Ax^{7/2}+\frac{2}{9}a^5(6Ab+aB)x^{9/2}+\frac{6}{11}a^4b(5Ab+2aB)x^{11/2}+\frac{10}{13}a^3b^2(4\end{aligned}$$

Mathematica [A] time = 0.09, size = 128, normalized size = 0.81

$$\frac{2\left(Bx^{7/2}(a+bx)^7-\frac{7}{2}\left(\frac{2}{7}a^6x^{7/2}+\frac{4}{3}a^5bx^{9/2}+\frac{30}{11}a^4b^2x^{11/2}+\frac{40}{13}a^3b^3x^{13/2}+2a^2b^4x^{15/2}+\frac{12}{17}ab^5x^{17/2}+\frac{2}{19}b^6x^{19/2}\right)(aB-3Ab)\right)}{21b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(7/2)*(a + b*x)^7 - (7*(-3*A*b + a*B)*((2*a^6*x^(7/2))/7 + (4*a^5*b
*x^(9/2))/3 + (30*a^4*b^2*x^(11/2))/11 + (40*a^3*b^3*x^(13/2))/13 + 2*a^2*b
^4*x^(15/2) + (12*a*b^5*x^(17/2))/17 + (2*b^6*x^(19/2))/19))/2))/(21*b)
```

IntegrateAlgebraic [A] time = 0.07, size = 181, normalized size = 1.14

$$\frac{2\left(415701a^6Ax^{7/2}+323323a^6Bx^{9/2}+1939938a^5Abx^{9/2}+1587222a^5bBx^{11/2}+3968055a^4Ab^2x^{11/2}+3357585a^4b^2Bx^{13/2}+4476780a^3Ab^3x^{13/2}+3879876a^3b^3Bx^{15/2}+2909907a^2Ab^4x^{15/2}+2567565a^2b^4Bx^{17/2}+1027026aAb^5x^{17/2}+918918ab^5Bx^{19/2}+153153Ab^6x^{19/2}+138567b^6Bx^{21/2}\right)}{2909907}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(415701*a^6*A*x^(7/2) + 1939938*a^5*A*b*x^(9/2) + 323323*a^6*B*x^(9/2) +
 3968055*a^4*A*b^2*x^(11/2) + 1587222*a^5*b*B*x^(11/2) + 4476780*a^3*A*b^3*
x^(13/2) + 3357585*a^4*b^2*B*x^(13/2) + 2909907*a^2*A*b^4*x^(15/2) + 387987
6*a^3*b^3*B*x^(15/2) + 1027026*a*A*b^5*x^(17/2) + 2567565*a^2*b^4*B*x^(17/2
) + 153153*A*b^6*x^(19/2) + 918918*a*b^5*B*x^(19/2) + 138567*b^6*B*x^(21/2)
))/2909907
```

fricas [A] time = 0.41, size = 152, normalized size = 0.96

$$\frac{2}{2909907}\left(138567\,Bb^6x^{10}+415701\,Aa^6x^3+153153\left(6\,Bab^5+Ab^6\right)x^9+513513\left(5\,Ba^2b^4+2\,Aab^5\right)x^8+969969\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^7+1119195\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^6+793611\left(2\,Ba^5b+5\,Aa^4b^2\right)x^5+323323\left(Ba^6+6\,Aa^5b\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 2/2909907*(138567*B*b^6*x^10 + 415701*A*a^6*x^3 + 153153*(6*B*a*b^5 + A*b^6
)*x^9 + 513513*(5*B*a^2*b^4 + 2*A*a*b^5)*x^8 + 969969*(4*B*a^3*b^3 + 3*A*a^
2*b^4)*x^7 + 1119195*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^6 + 793611*(2*B*a^5*b +
5*A*a^4*b^2)*x^5 + 323323*(B*a^6 + 6*A*a^5*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.94

$$\frac{2}{21}\,Bb^6x^{\frac{21}{2}}+\frac{12}{19}\,Bab^5x^{\frac{19}{2}}+\frac{2}{19}\,Ab^6x^{\frac{19}{2}}+\frac{30}{17}\,Ba^2b^4x^{\frac{17}{2}}+\frac{12}{17}\,Aab^5x^{\frac{17}{2}}+\frac{8}{3}\,Ba^3b^3x^{\frac{15}{2}}+2\,Aa^2b^4x^{\frac{15}{2}}+\frac{30}{13}\,Ba^4b^2x^{\frac{13}{2}}+\frac{40}{13}\,Aa^3b^3x^{\frac{13}{2}}+\frac{12}{11}\,Ba^5bx^{\frac{11}{2}}+\frac{30}{11}\,Aa^4b^2x^{\frac{11}{2}}+\frac{2}{9}\,Ba^6x^{\frac{9}{2}}+\frac{4}{3}\,Aa^5bx^{\frac{9}{2}}+\frac{2}{7}\,Aa^6x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*b^6*x^(21/2) + 12/19*B*a*b^5*x^(19/2) + 2/19*A*b^6*x^(19/2) + 30/17*
B*a^2*b^4*x^(17/2) + 12/17*A*a*b^5*x^(17/2) + 8/3*B*a^3*b^3*x^(15/2) + 2*A*
a^2*b^4*x^(15/2) + 30/13*B*a^4*b^2*x^(13/2) + 40/13*A*a^3*b^3*x^(13/2) + 12
/11*B*a^5*b*x^(11/2) + 30/11*A*a^4*b^2*x^(11/2) + 2/9*B*a^6*x^(9/2) + 4/3*A
*a^5*b*x^(9/2) + 2/7*A*a^6*x^(7/2)
```

maple [A] time = 0.06, size = 148, normalized size = 0.93

$$\frac{2\left(138567B\,b^6x^7+153153A\,b^6x^6+918918x^6Ba\,b^5+1027026Aa\,b^5x^5+2567565x^5B\,a^2b^4+2909907A\,a^2b^4x^4+3879876x^4B\,a^3b^3+4476780A\,a^3b^3x^3+3357585B\,a^4b^2x^3+3968055A\,a^4b^2x^2+1587222x^2B\,a^5b+1939938A\,a^5bx+323323xB\,a^6+415701A\,a^6\right)x^{\frac{7}{2}}}{2909907}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/2909907*x^(7/2)*(138567*B*b^6*x^7+153153*A*b^6*x^6+918918*B*a*b^5*x^6+102
7026*A*a*b^5*x^5+2567565*B*a^2*b^4*x^5+2909907*A*a^2*b^4*x^4+3879876*B*a^3*
b^3*x^4+4476780*A*a^3*b^3*x^3+3357585*B*a^4*b^2*x^3+3968055*A*a^4*b^2*x^2+1
587222*B*a^5*b*x^2+1939938*A*a^5*b*x+323323*B*a^6*x+415701*A*a^6)
```

maxima [A] time = 0.57, size = 147, normalized size = 0.92

$$\frac{2}{21}\,Bb^6x^{\frac{21}{2}}+\frac{2}{7}\,Aa^6x^{\frac{7}{2}}+\frac{2}{19}\left(6\,Bab^5+Ab^6\right)x^{\frac{19}{2}}+\frac{6}{17}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{17}{2}}+\frac{2}{3}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{15}{2}}+\frac{10}{13}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{13}{2}}+\frac{6}{11}\left(2\,Ba^5b+5\,Aa^4b^2\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Ba^6+6\,Aa^5b\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*b^6*x^(21/2) + 2/7*A*a^6*x^(7/2) + 2/19*(6*B*a*b^5 + A*b^6)*x^(19/2)
 + 6/17*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(17/2) + 2/3*(4*B*a^3*b^3 + 3*A*a^2*b^4
)*x^(15/2) + 10/13*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(13/2) + 6/11*(2*B*a^5*b +
 5*A*a^4*b^2)*x^(11/2) + 2/9*(B*a^6 + 6*A*a^5*b)*x^(9/2)
```

mupad [**B**] time = 0.05, size = 131, normalized size = 0.82

$$x^{9/2}\left(\frac{2\,B\,a^6}{9}+\frac{4\,A\,b\,a^5}{3}\right)+x^{19/2}\left(\frac{2\,A\,b^6}{19}+\frac{12\,B\,a\,b^5}{19}\right)+\frac{2\,A\,a^6\,x^{7/2}}{7}+\frac{2\,B\,b^6\,x^{21/2}}{21}+\frac{10\,a^3\,b^2\,x^{13/2}\,\left(4\,A\,b+3\,B\,a\right)}{13}+\frac{2\,a^2\,b^3\,x^{15/2}\,\left(3\,A\,b+4\,B\,a\right)}{3}+\frac{6\,a^4\,b\,x^{11/2}\,\left(5\,A\,b+2\,B\,a\right)}{11}+\frac{6\,a\,b^4\,x^{17/2}\,\left(2\,A\,b+5\,B\,a\right)}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(9/2)*((2*B*a^6)/9 + (4*A*a^5*b)/3) + x^(19/2)*((2*A*b^6)/19 + (12*B*a*b^
5)/19) + (2*A*a^6*x^(7/2))/7 + (2*B*b^6*x^(21/2))/21 + (10*a^3*b^2*x^(13/2)
*(4*A*b + 3*B*a))/13 + (2*a^2*b^3*x^(15/2)*(3*A*b + 4*B*a))/3 + (6*a^4*b*x^
(11/2)*(5*A*b + 2*B*a))/11 + (6*a*b^4*x^(17/2)*(2*A*b + 5*B*a))/17
```

sympy [**A**] time = 19.55, size = 214, normalized size = 1.35

$$\frac{2Aa^6x^{\frac{7}{2}}}{7}+\frac{4Aa^5bx^{\frac{9}{2}}}{3}+\frac{30Aa^4b^2x^{\frac{11}{2}}}{11}+\frac{40Aa^3b^3x^{\frac{13}{2}}}{13}+2Aa^2b^4x^{\frac{15}{2}}+\frac{12Aab^5x^{\frac{17}{2}}}{17}+\frac{2Ab^6x^{\frac{19}{2}}}{19}+\frac{2Ba^6x^{\frac{9}{2}}}{9}+\frac{12Ba^5bx^{\frac{11}{2}}}{11}+\frac{30Ba^4b^2x^{\frac{13}{2}}}{13}+\frac{8Ba^3b^3x^{\frac{15}{2}}}{3}+\frac{30Ba^2b^4x^{\frac{17}{2}}}{17}+\frac{12Bab^5x^{\frac{19}{2}}}{19}+\frac{2Bb^6x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 2*A*a**6*x**(7/2)/7 + 4*A*a**5*b*x**(9/2)/3 + 30*A*a**4*b**2*x**(11/2)/11 +
 40*A*a**3*b**3*x**(13/2)/13 + 2*A*a**2*b**4*x**(15/2) + 12*A*a*b**5*x**(17
/2)/17 + 2*A*b**6*x**(19/2)/19 + 2*B*a**6*x**(9/2)/9 + 12*B*a**5*b*x**(11/2
)/11 + 30*B*a**4*b**2*x**(13/2)/13 + 8*B*a**3*b**3*x**(15/2)/3 + 30*B*a**2*
b**4*x**(17/2)/17 + 12*B*a*b**5*x**(19/2)/19 + 2*B*b**6*x**(21/2)/21
```

3.676 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{5}a^6Ax^{5/2}+\frac{2}{7}a^5x^{7/2}(aB+6Ab)+\frac{2}{3}a^4bx^{9/2}(2aB+5Ab)+\frac{10}{11}a^3b^2x^{11/2}(3aB+4Ab)+\frac{10}{13}a^2b^3x^{13/2}(4aB+3Ab)+\frac{2}{17}b^5x^1$$

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{13}a^2b^3x^{13/2}(4aB+3Ab)+\frac{10}{11}a^3b^2x^{11/2}(3aB+4Ab)+\frac{2}{3}a^4bx^{9/2}(2aB+5Ab)+\frac{2}{7}a^5x^{7/2}(aB+6Ab)+\frac{2}{5}a^6Ax^{5/2}+\frac{2}{17}b^5x^{17/2}(6aB+Ab)+\frac{2}{5}ab^4x^{15/2}(5aB+2Ab)+\frac{2}{19}b^6Bx^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(5/2))/5 + (2*a^5*(6*A*b + a*B)*x^(7/2))/7 + (2*a^4*b*(5*A*b + 2
*a*B)*x^(9/2))/3 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(11/2))/11 + (10*a^2*b^3*(
3*A*b + 4*a*B)*x^(13/2))/13 + (2*a*b^4*(2*A*b + 5*a*B)*x^(15/2))/5 + (2*b^5
*(A*b + 6*a*B)*x^(17/2))/17 + (2*b^6*B*x^(19/2))/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^{3/2}(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6Ax^{3/2}+a^5(6Ab+aB)x^{5/2}+3a^4b(5Ab+2aB)x^{7/2}+5a^3b^2(4A\right.\\ &= \frac{2}{5}a^6Ax^{5/2}+\frac{2}{7}a^5(6Ab+aB)x^{7/2}+\frac{2}{3}a^4b(5Ab+2aB)x^{9/2}+\frac{10}{11}a^3b^2(4\end{aligned}$$

Mathematica [A] time = 0.09, size = 103, normalized size = 0.65

$$\frac{2\left(\frac{x^{5/2}\left(51051a^6+218790a^5bx+425425a^4b^2x^2+464100a^3b^3x^3+294525a^2b^4x^4+102102ab^5x^5+15015b^6x^6\right)(19Ab-5aB)}{255255}+Bx^{5/2}(a+bx)^7\right)}{19b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(5/2)*(a + b*x)^7 + ((19*A*b - 5*a*B)*x^(5/2)*(51051*a^6 + 218790*a
^5*b*x + 425425*a^4*b^2*x^2 + 464100*a^3*b^3*x^3 + 294525*a^2*b^4*x^4 + 102
102*a*b^5*x^5 + 15015*b^6*x^6))/255255))/(19*b)
```

IntegrateAlgebraic [A] time = 0.07, size = 181, normalized size = 1.14

$$\frac{2\left(969969a^6Ax^{5/2}+692835a^6Bx^{7/2}+4157010a^5Abx^{7/2}+3233230a^5bBx^{9/2}+8083075a^4Ab^2x^{9/2}+6613425a^4b^2Bx^{11/2}+8817900a^3Ab^3x^{11/2}+7461300a^3b^3Bx^{13/2}+5595975a^2Ab^4x^{13/2}+4849845a^2b^4Bx^{15/2}+1939938aAb^5x^{15/2}+1711710ab^5Bx^{17/2}+285285Ab^6x^{17/2}+255255b^6Bx^{19/2}\right)}{4849845}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(969969*a^6*A*x^(5/2) + 4157010*a^5*A*b*x^(7/2) + 692835*a^6*B*x^(7/2) +
 8083075*a^4*A*b^2*x^(9/2) + 3233230*a^5*b*B*x^(9/2) + 8817900*a^3*A*b^3*x^
(11/2) + 6613425*a^4*b^2*B*x^(11/2) + 5595975*a^2*A*b^4*x^(13/2) + 7461300*
a^3*b^3*B*x^(13/2) + 1939938*a*A*b^5*x^(15/2) + 4849845*a^2*b^4*B*x^(15/2)
+ 285285*A*b^6*x^(17/2) + 1711710*a*b^5*B*x^(17/2) + 255255*b^6*B*x^(19/2))
)/4849845
```

fricas [A] time = 0.42, size = 152, normalized size = 0.96

$$\frac{2}{4849845}\left(255255\,Bb^6x^9+969969\,Aa^6x^2+285285\left(6\,Bab^5+Ab^6\right)x^8+969969\left(5\,Ba^2b^4+2\,Aab^5\right)x^7+1865325\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^6+2204475\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^5+1616615\left(2\,Ba^5b+5\,Aa^4b^2\right)x^4+692835\left(Ba^6+6\,Aa^5b\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(255255*B*b^6*x^9 + 969969*A*a^6*x^2 + 285285*(6*B*a*b^5 + A*b^6)
*x^8 + 969969*(5*B*a^2*b^4 + 2*A*a*b^5)*x^7 + 1865325*(4*B*a^3*b^3 + 3*A*a^
2*b^4)*x^6 + 2204475*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^5 + 1616615*(2*B*a^5*b +
 5*A*a^4*b^2)*x^4 + 692835*(B*a^6 + 6*A*a^5*b)*x^3)*sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.94

$$\frac{2}{19}\,Bb^6x^{\frac{19}{2}}+\frac{12}{17}\,Bab^5x^{\frac{17}{2}}+\frac{2}{17}\,Ab^6x^{\frac{17}{2}}+2\,Ba^2b^4x^{\frac{15}{2}}+\frac{4}{5}\,Aab^5x^{\frac{15}{2}}+\frac{40}{13}\,Ba^3b^3x^{\frac{13}{2}}+\frac{30}{13}\,Aa^2b^4x^{\frac{13}{2}}+\frac{30}{11}\,Ba^4b^2x^{\frac{11}{2}}+\frac{40}{11}\,Aa^3b^3x^{\frac{11}{2}}+\frac{4}{3}\,Ba^5bx^{\frac{9}{2}}+\frac{10}{3}\,Aa^4b^2x^{\frac{9}{2}}+\frac{2}{7}\,Ba^6x^{\frac{7}{2}}+\frac{12}{7}\,Aa^5bx^{\frac{7}{2}}+\frac{2}{5}\,Aa^6x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*b^6*x^(19/2) + 12/17*B*a*b^5*x^(17/2) + 2/17*A*b^6*x^(17/2) + 2*B*a^
2*b^4*x^(15/2) + 4/5*A*a*b^5*x^(15/2) + 40/13*B*a^3*b^3*x^(13/2) + 30/13*A*
a^2*b^4*x^(13/2) + 30/11*B*a^4*b^2*x^(11/2) + 40/11*A*a^3*b^3*x^(11/2) + 4/
3*B*a^5*b*x^(9/2) + 10/3*A*a^4*b^2*x^(9/2) + 2/7*B*a^6*x^(7/2) + 12/7*A*a^5
*b*x^(7/2) + 2/5*A*a^6*x^(5/2)
```

maple [A] time = 0.06, size = 148, normalized size = 0.93

$$\frac{2\left(255255B\,b^6x^7+285285A\,b^6x^6+1711710x^6Ba\,b^5+1939938Aa\,b^5x^5+4849845x^5B\,a^2b^4+5595975A\,a^2b^4x^4+7461300x^4B\,a^3b^3+8817900A\,a^3b^3x^3+6613425B\,a^4b^2x^3+8083075A\,a^4b^2x^2+3233230x^2B\,a^5b+4157010A\,a^5bx+692835xB\,a^6+969969A\,a^6\right)x^{\frac{5}{2}}}{4849845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/4849845*x^(5/2)*(255255*B*b^6*x^7+285285*A*b^6*x^6+1711710*B*a*b^5*x^6+19
39938*A*a*b^5*x^5+4849845*B*a^2*b^4*x^5+5595975*A*a^2*b^4*x^4+7461300*B*a^3
*b^3*x^4+8817900*A*a^3*b^3*x^3+6613425*B*a^4*b^2*x^3+8083075*A*a^4*b^2*x^2+
3233230*B*a^5*b*x^2+4157010*A*a^5*b*x+692835*B*a^6*x+969969*A*a^6)
```

maxima [A] time = 0.54, size = 147, normalized size = 0.92

$$\frac{2}{19}\,Bb^6x^{\frac{19}{2}}+\frac{2}{5}\,Aa^6x^{\frac{5}{2}}+\frac{2}{17}\left(6\,Bab^5+Ab^6\right)x^{\frac{17}{2}}+\frac{2}{5}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{15}{2}}+\frac{10}{13}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{13}{2}}+\frac{10}{11}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{11}{2}}+\frac{2}{3}\left(2\,Ba^5b+5\,Aa^4b^2\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Ba^6+6\,Aa^5b\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*b^6*x^(19/2) + 2/5*A*a^6*x^(5/2) + 2/17*(6*B*a*b^5 + A*b^6)*x^(17/2)
 + 2/5*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(15/2) + 10/13*(4*B*a^3*b^3 + 3*A*a^2*b^
4)*x^(13/2) + 10/11*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(11/2) + 2/3*(2*B*a^5*b +
 5*A*a^4*b^2)*x^(9/2) + 2/7*(B*a^6 + 6*A*a^5*b)*x^(7/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.82

$$x^{7/2}\left(\frac{2\,B\,a^6}{7}+\frac{12\,A\,b\,a^5}{7}\right)+x^{17/2}\left(\frac{2\,A\,b^6}{17}+\frac{12\,B\,a\,b^5}{17}\right)+\frac{2\,A\,a^6\,x^{5/2}}{5}+\frac{2\,B\,b^6\,x^{19/2}}{19}+\frac{10\,a^3\,b^2\,x^{11/2}\,\left(4\,A\,b+3\,B\,a\right)}{11}+\frac{10\,a^2\,b^3\,x^{13/2}\,\left(3\,A\,b+4\,B\,a\right)}{13}+\frac{2\,a^4\,b\,x^{9/2}\,\left(5\,A\,b+2\,B\,a\right)}{3}+\frac{2\,a\,b^4\,x^{15/2}\,\left(2\,A\,b+5\,B\,a\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(7/2)*((2*B*a^6)/7 + (12*A*a^5*b)/7) + x^(17/2)*((2*A*b^6)/17 + (12*B*a*b
^5)/17) + (2*A*a^6*x^(5/2))/5 + (2*B*b^6*x^(19/2))/19 + (10*a^3*b^2*x^(11/2
)*(4*A*b + 3*B*a))/11 + (10*a^2*b^3*x^(13/2)*(3*A*b + 4*B*a))/13 + (2*a^4*b
*x^(9/2)*(5*A*b + 2*B*a))/3 + (2*a*b^4*x^(15/2)*(2*A*b + 5*B*a))/5
```

sympy [A] time = 10.11, size = 214, normalized size = 1.35

$$\frac{2Aa^6x^{\frac{5}{2}}}{5}+\frac{12Aa^5bx^{\frac{7}{2}}}{7}+\frac{10Aa^4b^2x^{\frac{9}{2}}}{3}+\frac{40Aa^3b^3x^{\frac{11}{2}}}{11}+\frac{30Aa^2b^4x^{\frac{13}{2}}}{13}+\frac{4Aab^5x^{\frac{15}{2}}}{5}+\frac{2Ab^6x^{\frac{17}{2}}}{17}+\frac{2Ba^6x^{\frac{7}{2}}}{7}+\frac{4Ba^5bx^{\frac{9}{2}}}{3}+\frac{30Ba^4b^2x^{\frac{11}{2}}}{11}+\frac{40Ba^3b^3x^{\frac{13}{2}}}{13}+2Ba^2b^4x^{\frac{15}{2}}+\frac{12Bab^5x^{\frac{17}{2}}}{17}+\frac{2Bb^6x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 2*A*a**6*x**(5/2)/5 + 12*A*a**5*b*x**(7/2)/7 + 10*A*a**4*b**2*x**(9/2)/3 +
40*A*a**3*b**3*x**(11/2)/11 + 30*A*a**2*b**4*x**(13/2)/13 + 4*A*a*b**5*x**(
15/2)/5 + 2*A*b**6*x**(17/2)/17 + 2*B*a**6*x**(7/2)/7 + 4*B*a**5*b*x**(9/2)
/3 + 30*B*a**4*b**2*x**(11/2)/11 + 40*B*a**3*b**3*x**(13/2)/13 + 2*B*a**2*b
**4*x**(15/2) + 12*B*a*b**5*x**(17/2)/17 + 2*B*b**6*x**(19/2)/19
```

3.677 $\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{3}a^6Ax^{3/2}+\frac{2}{5}a^5x^{5/2}(aB+6Ab)+\frac{6}{7}a^4bx^{7/2}(2aB+5Ab)+\frac{10}{9}a^3b^2x^{9/2}(3aB+4Ab)+\frac{10}{11}a^2b^3x^{11/2}(4aB+3Ab)+\frac{2}{15}b^5x^{15/2}($$

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{11}a^2b^3x^{11/2}(4aB+3Ab)+\frac{10}{9}a^3b^2x^{9/2}(3aB+4Ab)+\frac{6}{7}a^4bx^{7/2}(2aB+5Ab)+\frac{2}{5}a^5x^{5/2}(aB+6Ab)+\frac{2}{3}a^6Ax^{3/2}+\frac{2}{15}b^5x^{15/2}(6aB+Ab)+\frac{6}{13}ab^4x^{13/2}(5aB+2Ab)+\frac{2}{17}b^6Bx^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(3/2))/3 + (2*a^5*(6*A*b + a*B)*x^(5/2))/5 + (6*a^4*b*(5*A*b + 2
*a*B)*x^(7/2))/7 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(9/2))/9 + (10*a^2*b^3*(3*
A*b + 4*a*B)*x^(11/2))/11 + (6*a*b^4*(2*A*b + 5*a*B)*x^(13/2))/13 + (2*b^5*
(A*b + 6*a*B)*x^(15/2))/15 + (2*b^6*B*x^(17/2))/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int \sqrt{x}(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6A\sqrt{x}+a^5(6Ab+aB)x^{3/2}+3a^4b(5Ab+2aB)x^{5/2}+5a^3b^2(4Ab+\right.\\ &= \frac{2}{3}a^6Ax^{3/2}+\frac{2}{5}a^5(6Ab+aB)x^{5/2}+\frac{6}{7}a^4b(5Ab+2aB)x^{7/2}+\frac{10}{9}a^3b^2(4Ab\end{aligned}$$

Mathematica [A] time = 0.08, size = 103, normalized size = 0.65

$$\frac{2\left(\frac{x^{3/2}\left(15015a^6+54054a^5bx+96525a^4b^2x^2+100100a^3b^3x^3+61425a^2b^4x^4+20790ab^5x^5+3003b^6x^6\right)(17Ab-3aB)}{45045}+Bx^{3/2}(a+bx)^7\right)}{17b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(3/2)*(a + b*x)^7 + ((17*A*b - 3*a*B)*x^(3/2)*(15015*a^6 + 54054*a^
5*b*x + 96525*a^4*b^2*x^2 + 100100*a^3*b^3*x^3 + 61425*a^2*b^4*x^4 + 20790*
a*b^5*x^5 + 3003*b^6*x^6))/45045))/(17*b)
```

IntegrateAlgebraic [A] time = 0.07, size = 181, normalized size = 1.14

$$\frac{2\left(255255a^6Ax^{3/2}+153153a^6Bx^{5/2}+918918a^5Abx^{5/2}+656370a^5bBx^{7/2}+1640925a^4Ab^2x^{7/2}+1276275a^4b^2Bx^{9/2}+1701700a^3Ab^3x^{9/2}+1392300a^3b^3Bx^{11/2}+1044225a^2Ab^4x^{11/2}+883575a^2b^4Bx^{13/2}+353430aAb^5x^{13/2}+306306ab^5Bx^{15/2}+51051Ab^6x^{15/2}+45045b^6Bx^{17/2}\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(255255*a^6*A*x^(3/2) + 918918*a^5*A*b*x^(5/2) + 153153*a^6*B*x^(5/2) +
1640925*a^4*A*b^2*x^(7/2) + 656370*a^5*b*B*x^(7/2) + 1701700*a^3*A*b^3*x^(9
/2) + 1276275*a^4*b^2*B*x^(9/2) + 1044225*a^2*A*b^4*x^(11/2) + 1392300*a^3*
b^3*B*x^(11/2) + 353430*a*A*b^5*x^(13/2) + 883575*a^2*b^4*B*x^(13/2) + 5105
1*A*b^6*x^(15/2) + 306306*a*b^5*B*x^(15/2) + 45045*b^6*B*x^(17/2)))/765765
```

fricas [A] time = 0.42, size = 150, normalized size = 0.94

$$\frac{2}{765765}\left(45045\,Bb^6x^8+255255\,Aa^6x+51051\left(6\,Bab^5+Ab^6\right)x^7+176715\left(5\,Ba^2b^4+2\,Aab^5\right)x^6+348075\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^5+425425\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^4+328185\left(2\,Ba^5b+5\,Aa^4b^2\right)x^3+153153\left(Ba^6+6\,Aa^5b\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*b^6*x^8 + 255255*A*a^6*x + 51051*(6*B*a*b^5 + A*b^6)*x^7
+ 176715*(5*B*a^2*b^4 + 2*A*a*b^5)*x^6 + 348075*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*x^5 + 425425*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^4 + 328185*(2*B*a^5*b + 5*A*a^4
*b^2)*x^3 + 153153*(B*a^6 + 6*A*a^5*b)*x^2)*sqrt(x)
```

giac [A] time = 0.17, size = 149, normalized size = 0.94

$$\frac{2}{17}\,Bb^6x^{\frac{17}{2}}+\frac{4}{5}\,Bab^5x^{\frac{15}{2}}+\frac{2}{15}\,Ab^6x^{\frac{15}{2}}+\frac{30}{13}\,Ba^2b^4x^{\frac{13}{2}}+\frac{12}{13}\,Aab^5x^{\frac{13}{2}}+\frac{40}{11}\,Ba^3b^3x^{\frac{11}{2}}+\frac{30}{11}\,Aa^2b^4x^{\frac{11}{2}}+\frac{10}{3}\,Ba^4b^2x^{\frac{9}{2}}+\frac{40}{9}\,Aa^3b^3x^{\frac{9}{2}}+\frac{12}{7}\,Ba^5bx^{\frac{7}{2}}+\frac{30}{7}\,Aa^4b^2x^{\frac{7}{2}}+\frac{2}{5}\,Ba^6x^{\frac{5}{2}}+\frac{12}{5}\,Aa^5bx^{\frac{5}{2}}+\frac{2}{3}\,Aa^6x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*b^6*x^(17/2) + 4/5*B*a*b^5*x^(15/2) + 2/15*A*b^6*x^(15/2) + 30/13*B*
a^2*b^4*x^(13/2) + 12/13*A*a*b^5*x^(13/2) + 40/11*B*a^3*b^3*x^(11/2) + 30/1
1*A*a^2*b^4*x^(11/2) + 10/3*B*a^4*b^2*x^(9/2) + 40/9*A*a^3*b^3*x^(9/2) + 12
/7*B*a^5*b*x^(7/2) + 30/7*A*a^4*b^2*x^(7/2) + 2/5*B*a^6*x^(5/2) + 12/5*A*a^
5*b*x^(5/2) + 2/3*A*a^6*x^(3/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.93

$$\frac{2\left(45045B\,b^6x^7+51051A\,b^6x^6+306306x^6Ba\,b^5+353430Aa\,b^5x^5+883575x^5B\,a^2b^4+1044225A\,a^2b^4x^4+1392300x^4B\,a^3b^3+1701700A\,a^3b^3x^3+1276275B\,a^4b^2x^3+1640925A\,a^4b^2x^2+656370x^2B\,a^5b+918918A\,a^5bx+153153xB\,a^6+255255A\,a^6\right)x^{\frac{3}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x)
```

```
[Out] 2/765765*x^(3/2)*(45045*B*b^6*x^7+51051*A*b^6*x^6+306306*B*a*b^5*x^6+353430
*A*a*b^5*x^5+883575*B*a^2*b^4*x^5+1044225*A*a^2*b^4*x^4+1392300*B*a^3*b^3*x
^4+1701700*A*a^3*b^3*x^3+1276275*B*a^4*b^2*x^3+1640925*A*a^4*b^2*x^2+656370
*B*a^5*b*x^2+918918*A*a^5*b*x+153153*B*a^6*x+255255*A*a^6)
```

maxima [A] time = 0.50, size = 147, normalized size = 0.92

$$\frac{2}{17}\,Bb^6x^{\frac{17}{2}}+\frac{2}{3}\,Aa^6x^{\frac{3}{2}}+\frac{2}{15}\left(6\,Bab^5+Ab^6\right)x^{\frac{15}{2}}+\frac{6}{13}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{13}{2}}+\frac{10}{11}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{11}{2}}+\frac{10}{9}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{9}{2}}+\frac{6}{7}\left(2\,Ba^5b+5\,Aa^4b^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Ba^6+6\,Aa^5b\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*b^6*x^(17/2) + 2/3*A*a^6*x^(3/2) + 2/15*(6*B*a*b^5 + A*b^6)*x^(15/2)
 + 6/13*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(13/2) + 10/11*(4*B*a^3*b^3 + 3*A*a^2*b
```

```
^4)*x^(11/2) + 10/9*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(9/2) + 6/7*(2*B*a^5*b +
5*A*a^4*b^2)*x^(7/2) + 2/5*(B*a^6 + 6*A*a^5*b)*x^(5/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.82

$$x^{5/2}\left(\frac{2\,B\,a^6}{5}+\frac{12\,A\,b\,a^5}{5}\right)+x^{15/2}\left(\frac{2\,A\,b^6}{15}+\frac{4\,B\,a\,b^5}{5}\right)+\frac{2\,A\,a^6\,x^{3/2}}{3}+\frac{2\,B\,b^6\,x^{17/2}}{17}+\frac{10\,a^3\,b^2\,x^{9/2}\,\left(4\,A\,b+3\,B\,a\right)}{9}+\frac{10\,a^2\,b^3\,x^{11/2}\,\left(3\,A\,b+4\,B\,a\right)}{11}+\frac{6\,a^4\,b\,x^{7/2}\,\left(5\,A\,b+2\,B\,a\right)}{7}+\frac{6\,a\,b^4\,x^{13/2}\,\left(2\,A\,b+5\,B\,a\right)}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(5/2)*((2*B*a^6)/5 + (12*A*a^5*b)/5) + x^(15/2)*((2*A*b^6)/15 + (4*B*a*b^
5)/5) + (2*A*a^6*x^(3/2))/3 + (2*B*b^6*x^(17/2))/17 + (10*a^3*b^2*x^(9/2)*(
4*A*b + 3*B*a))/9 + (10*a^2*b^3*x^(11/2)*(3*A*b + 4*B*a))/11 + (6*a^4*b*x^(
7/2)*(5*A*b + 2*B*a))/7 + (6*a*b^4*x^(13/2)*(2*A*b + 5*B*a))/13
```

sympy [A] time = 5.91, size = 182, normalized size = 1.14

$$\frac{2Aa^6x^{\frac{3}{2}}}{3}+\frac{2Bb^6x^{\frac{17}{2}}}{17}+\frac{2x^{\frac{15}{2}}\left(Ab^6+6Bab^5\right)}{15}+\frac{2x^{\frac{13}{2}}\left(6Aab^5+15Ba^2b^4\right)}{13}+\frac{2x^{\frac{11}{2}}\left(15Aa^2b^4+20Ba^3b^3\right)}{11}+\frac{2x^{\frac{9}{2}}\left(20Aa^3b^3+15Ba^4b^2\right)}{9}+\frac{2x^{\frac{7}{2}}\left(15Aa^4b^2+6Ba^5b\right)}{7}+\frac{2x^{\frac{5}{2}}\left(6Aa^5b+Ba^6\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3*x**(1/2),x)
```

```
[Out] 2*A*a**6*x**(3/2)/3 + 2*B*b**6*x**(17/2)/17 + 2*x**(15/2)*(A*b**6 + 6*B*a*b
**5)/15 + 2*x**(13/2)*(6*A*a*b**5 + 15*B*a**2*b**4)/13 + 2*x**(11/2)*(15*A*
a**2*b**4 + 20*B*a**3*b**3)/11 + 2*x**(9/2)*(20*A*a**3*b**3 + 15*B*a**4*b**
2)/9 + 2*x**(7/2)*(15*A*a**4*b**2 + 6*B*a**5*b)/7 + 2*x**(5/2)*(6*A*a**5*b
+ B*a**6)/5
```

3.678 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=157

$$2a^6A\sqrt{x}+\frac{2}{3}a^5x^{3/2}(aB+6Ab)+\frac{6}{5}a^4bx^{5/2}(2aB+5Ab)+\frac{10}{7}a^3b^2x^{7/2}(3aB+4Ab)+\frac{10}{9}a^2b^3x^{9/2}(4aB+3Ab)+\frac{2}{13}b^5x^{13/2}$$

Rubi [A] time = 0.08, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$\frac{10}{9}a^2b^3x^{9/2}(4aB+3Ab)+\frac{10}{7}a^3b^2x^{7/2}(3aB+4Ab)+\frac{6}{5}a^4bx^{5/2}(2aB+5Ab)+\frac{2}{3}a^5x^{3/2}(aB+6Ab)+2a^6A\sqrt{x}+\frac{2}{13}b^5x^{13/2}(6aB+Ab)+\frac{6}{11}ab^4x^{11/2}(5aB+2Ab)+\frac{2}{15}b^6Bx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[x],x]
```

```
[Out] 2*a^6*A*Sqrt[x] + (2*a^5*(6*A*b + a*B)*x^(3/2))/3 + (6*a^4*b*(5*A*b + 2*a*B
)*x^(5/2))/5 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(7/2))/7 + (10*a^2*b^3*(3*A*b
+ 4*a*B)*x^(9/2))/9 + (6*a*b^4*(2*A*b + 5*a*B)*x^(11/2))/11 + (2*b^5*(A*b +
 6*a*B)*x^(13/2))/13 + (2*b^6*B*x^(15/2))/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{x}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{\sqrt{x}}\,dx\\ &= \int \left(\frac{a^6A}{\sqrt{x}}+a^5(6Ab+aB)\sqrt{x}+3a^4b(5Ab+2aB)x^{3/2}+5a^3b^2(4Ab+3a\right.\\ &= 2a^6A\sqrt{x}+\frac{2}{3}a^5(6Ab+aB)x^{3/2}+\frac{6}{5}a^4b(5Ab+2aB)x^{5/2}+\frac{10}{7}a^3b^2(4Ab\end{aligned}$$

Mathematica [A] time = 0.09, size = 103, normalized size = 0.66

$$\frac{2\left(\frac{\sqrt{x}\left(3003a^6+6006a^5bx+9009a^4b^2x^2+8580a^3b^3x^3+5005a^2b^4x^4+1638ab^5x^5+231b^6x^6\right)(15Ab-aB)}{3003}+B\sqrt{x}(a+bx)^7\right)}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(B*Sqrt[x]*(a + b*x)^7 + ((15*A*b - a*B)*Sqrt[x]*(3003*a^6 + 6006*a^5*b*
x + 9009*a^4*b^2*x^2 + 8580*a^3*b^3*x^3 + 5005*a^2*b^4*x^4 + 1638*a*b^5*x^5
 + 231*b^6*x^6))/3003))/(15*b)
```

IntegrateAlgebraic [A] time = 0.07, size = 181, normalized size = 1.15

$$\frac{2\left(45045a^6A\sqrt{x}+15015a^6Bx^{3/2}+90090a^5Abx^{3/2}+54054a^5bBx^{5/2}+135135a^4Ab^2x^{5/2}+96525a^4b^2Bx^{7/2}+128700a^3Ab^3x^{7/2}+100100a^3b^3Bx^{9/2}+75075a^2Ab^4x^{9/2}+61425a^2b^4Bx^{11/2}+24570aAb^5x^{11/2}+20790ab^5Bx^{13/2}+3465Ab^6x^{13/2}+3003b^6Bx^{15/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(45045*a^6*A*Sqrt[x] + 90090*a^5*A*b*x^(3/2) + 15015*a^6*B*x^(3/2) + 135
135*a^4*A*b^2*x^(5/2) + 54054*a^5*b*B*x^(5/2) + 128700*a^3*A*b^3*x^(7/2) +
96525*a^4*b^2*B*x^(7/2) + 75075*a^2*A*b^4*x^(9/2) + 100100*a^3*b^3*B*x^(9/2
) + 24570*a*A*b^5*x^(11/2) + 61425*a^2*b^4*B*x^(11/2) + 3465*A*b^6*x^(13/2)
 + 20790*a*b^5*B*x^(13/2) + 3003*b^6*B*x^(15/2)))/45045
```

fricas [A] time = 0.40, size = 147, normalized size = 0.94

$$\frac{2}{45045}\left(3003\,Bb^6x^7+45045\,Aa^6+3465\left(6\,Bab^5+Ab^6\right)x^6+12285\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+25025\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+32175\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+27027\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+15015\left(Ba^6+6\,Aa^5b\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*b^6*x^7 + 45045*A*a^6 + 3465*(6*B*a*b^5 + A*b^6)*x^6 + 1228
5*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 25025*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 3
2175*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 27027*(2*B*a^5*b + 5*A*a^4*b^2)*x^2
+ 15015*(B*a^6 + 6*A*a^5*b)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.95

$$\frac{2}{15}\,Bb^6x^{\frac{15}{2}}+\frac{12}{13}\,Bab^5x^{\frac{13}{2}}+\frac{2}{13}\,Ab^6x^{\frac{13}{2}}+\frac{30}{11}\,Ba^2b^4x^{\frac{11}{2}}+\frac{12}{11}\,Aab^5x^{\frac{11}{2}}+\frac{40}{9}\,Ba^3b^3x^{\frac{9}{2}}+\frac{10}{3}\,Aa^2b^4x^{\frac{9}{2}}+\frac{30}{7}\,Ba^4b^2x^{\frac{7}{2}}+\frac{40}{7}\,Aa^3b^3x^{\frac{7}{2}}+\frac{12}{5}\,Ba^5bx^{\frac{5}{2}}+6\,Aa^4b^2x^{\frac{5}{2}}+\frac{2}{3}\,Ba^6x^{\frac{3}{2}}+4\,Aa^5bx^{\frac{3}{2}}+2\,Aa^6\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^6*x^(15/2) + 12/13*B*a*b^5*x^(13/2) + 2/13*A*b^6*x^(13/2) + 30/11*
B*a^2*b^4*x^(11/2) + 12/11*A*a*b^5*x^(11/2) + 40/9*B*a^3*b^3*x^(9/2) + 10/3
*A*a^2*b^4*x^(9/2) + 30/7*B*a^4*b^2*x^(7/2) + 40/7*A*a^3*b^3*x^(7/2) + 12/5
*B*a^5*b*x^(5/2) + 6*A*a^4*b^2*x^(5/2) + 2/3*B*a^6*x^(3/2) + 4*A*a^5*b*x^(3
/2) + 2*A*a^6*sqrt(x)
```

maple [A] time = 0.05, size = 148, normalized size = 0.94

$$\frac{2\left(3003B\,b^6x^7+3465A\,b^6x^6+20790x^6Ba\,b^5+24570Aa\,b^5x^5+61425x^5B\,a^2b^4+75075A\,a^2b^4x^4+100100x^4B\,a^3b^3+128700A\,a^3b^3x^3+96525B\,a^4b^2x^3+135135A\,a^4b^2x^2+54054x^2B\,a^5b+90090A\,a^5bx+15015xB\,a^6+45045A\,a^6\right)\sqrt{x}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x)
```

```
[Out] 2/45045*x^(1/2)*(3003*B*b^6*x^7+3465*A*b^6*x^6+20790*B*a*b^5*x^6+24570*A*a*
b^5*x^5+61425*B*a^2*b^4*x^5+75075*A*a^2*b^4*x^4+100100*B*a^3*b^3*x^4+128700
*A*a^3*b^3*x^3+96525*B*a^4*b^2*x^3+135135*A*a^4*b^2*x^2+54054*B*a^5*b*x^2+9
0090*A*a^5*b*x+15015*B*a^6*x+45045*A*a^6)
```

maxima [A] time = 0.60, size = 147, normalized size = 0.94

$$\frac{2}{15}\,Bb^6x^{\frac{15}{2}}+2\,Aa^6\sqrt{x}+\frac{2}{13}\left(6\,Bab^5+Ab^6\right)x^{\frac{13}{2}}+\frac{6}{11}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{11}{2}}+\frac{10}{9}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{9}{2}}+\frac{10}{7}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{7}{2}}+\frac{6}{5}\left(2\,Ba^5b+5\,Aa^4b^2\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Ba^6+6\,Aa^5b\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*b^6*x^(15/2) + 2*A*a^6*sqrt(x) + 2/13*(6*B*a*b^5 + A*b^6)*x^(13/2) +
 6/11*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(11/2) + 10/9*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*x^(9/2) + 10/7*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(7/2) + 6/5*(2*B*a^5*b + 5*A*
a^4*b^2)*x^(5/2) + 2/3*(B*a^6 + 6*A*a^5*b)*x^(3/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.83

$$x^{3/2}\left(\frac{2\,B\,a^6}{3}+4\,A\,b\,a^5\right)+x^{13/2}\left(\frac{2\,A\,b^6}{13}+\frac{12\,B\,a\,b^5}{13}\right)+2\,A\,a^6\,\sqrt{x}+\frac{2\,B\,b^6\,x^{15/2}}{15}+\frac{10\,a^3\,b^2\,x^{7/2}\,\left(4\,A\,b+3\,B\,a\right)}{7}+\frac{10\,a^2\,b^3\,x^{9/2}\,\left(3\,A\,b+4\,B\,a\right)}{9}+\frac{6\,a^4\,b\,x^{5/2}\,\left(5\,A\,b+2\,B\,a\right)}{5}+\frac{6\,a\,b^4\,x^{11/2}\,\left(2\,A\,b+5\,B\,a\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^6)/3 + 4*A*a^5*b) + x^(13/2)*((2*A*b^6)/13 + (12*B*a*b^5)/1
3) + 2*A*a^6*x^(1/2) + (2*B*b^6*x^(15/2))/15 + (10*a^3*b^2*x^(7/2)*(4*A*b +
 3*B*a))/7 + (10*a^2*b^3*x^(9/2)*(3*A*b + 4*B*a))/9 + (6*a^4*b*x^(5/2)*(5*A
*b + 2*B*a))/5 + (6*a*b^4*x^(11/2)*(2*A*b + 5*B*a))/11
```

sympy [A] time = 4.11, size = 211, normalized size = 1.34

$$2Aa^6\sqrt{x}+4Aa^5bx^{\frac{3}{2}}+6Aa^4b^2x^{\frac{5}{2}}+\frac{40Aa^3b^3x^{\frac{7}{2}}}{7}+\frac{10Aa^2b^4x^{\frac{9}{2}}}{3}+\frac{12Aab^5x^{\frac{11}{2}}}{11}+\frac{2Ab^6x^{\frac{13}{2}}}{13}+\frac{2Ba^6x^{\frac{3}{2}}}{3}+\frac{12Ba^5bx^{\frac{5}{2}}}{5}+\frac{30Ba^4b^2x^{\frac{7}{2}}}{7}+\frac{40Ba^3b^3x^{\frac{9}{2}}}{9}+\frac{30Ba^2b^4x^{\frac{11}{2}}}{11}+\frac{12Bab^5x^{\frac{13}{2}}}{13}+\frac{2Bb^6x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(1/2),x)
```

```
[Out] 2*A*a**6*sqrt(x) + 4*A*a**5*b*x**(3/2) + 6*A*a**4*b**2*x**(5/2) + 40*A*a**3
*b**3*x**(7/2)/7 + 10*A*a**2*b**4*x**(9/2)/3 + 12*A*a*b**5*x**(11/2)/11 + 2
*A*b**6*x**(13/2)/13 + 2*B*a**6*x**(3/2)/3 + 12*B*a**5*b*x**(5/2)/5 + 30*B*
a**4*b**2*x**(7/2)/7 + 40*B*a**3*b**3*x**(9/2)/9 + 30*B*a**2*b**4*x**(11/2)
/11 + 12*B*a*b**5*x**(13/2)/13 + 2*B*b**6*x**(15/2)/15
```

3.679 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=151

$$-\frac{2a^6A}{\sqrt{x}}+2a^5\sqrt{x}\,(aB+6Ab)+2a^4bx^{3/2}(2aB+5Ab)+2a^3b^2x^{5/2}(3aB+4Ab)+\frac{10}{7}a^2b^3x^{7/2}(4aB+3Ab)+\frac{2}{11}b^5x^{11/2}(6aB+$$

Rubi [A] time = 0.08, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{7}a^2b^3x^{7/2}(4aB+3Ab)+2a^3b^2x^{5/2}(3aB+4Ab)+2a^4bx^{3/2}(2aB+5Ab)+2a^5\sqrt{x}\,(aB+6Ab)-\frac{2a^6A}{\sqrt{x}}+\frac{2}{11}b^5x^{11/2}(6aB+Ab)+\frac{2}{3}ab^4x^{9/2}(5aB+2Ab)+\frac{2}{13}b^6Bx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(3/2),x]
```

```
[Out] (-2*a^6*A)/Sqrt[x] + 2*a^5*(6*A*b + a*B)*Sqrt[x] + 2*a^4*b*(5*A*b + 2*a*B)*
x^(3/2) + 2*a^3*b^2*(4*A*b + 3*a*B)*x^(5/2) + (10*a^2*b^3*(3*A*b + 4*a*B)*x
^(7/2))/7 + (2*a*b^4*(2*A*b + 5*a*B)*x^(9/2))/3 + (2*b^5*(A*b + 6*a*B)*x^(1
1/2))/11 + (2*b^6*B*x^(13/2))/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{3/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{3/2}}\,dx\\
&= \int \left(\frac{a^6A}{x^{3/2}}+\frac{a^5(6Ab+aB)}{\sqrt{x}}+3a^4b(5Ab+2aB)\sqrt{x}+5a^3b^2(4Ab+3aB)x^{3/2}\right.\\
&= -\frac{2a^6A}{\sqrt{x}}+2a^5(6Ab+aB)\sqrt{x}+2a^4b(5Ab+2aB)x^{3/2}+2a^3b^2(4Ab+3aB)
\end{aligned}$$

Mathematica [A] time = 0.08, size = 101, normalized size = 0.67

$$\frac{2\left(\frac{\sqrt{x}\left(3003a^6+6006a^5bx+9009a^4b^2x^2+8580a^3b^3x^3+5005a^2b^4x^4+1638ab^5x^5+231b^6x^6\right)(aB+13Ab)}{3003}-\frac{A(a+bx)^7}{\sqrt{x}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(-((A*(a + b*x)^7)/Sqrt[x]) + ((13*A*b + a*B)*Sqrt[x]*(3003*a^6 + 6006*a
^5*b*x + 9009*a^4*b^2*x^2 + 8580*a^3*b^3*x^3 + 5005*a^2*b^4*x^4 + 1638*a*b^
5*x^5 + 231*b^6*x^6))/3003))/a
```

IntegrateAlgebraic [A] time = 0.08, size = 151, normalized size = 1.00

$$\frac{2\left(-3003a^6A+3003a^6Bx+18018a^5Abx+6006a^5bBx^2+15015a^4Ab^2x^2+9009a^4b^2Bx^3+12012a^3Ab^3x^3+8580a^3b^3Bx^4+6435a^2Ab^4x^4+5005a^2b^4Bx^5+2002aAb^5x^5+1638ab^5Bx^6+273Ab^6x^6+231b^6Bx^7\right)}{3003\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(-3003*a^6*A + 18018*a^5*A*b*x + 3003*a^6*B*x + 15015*a^4*A*b^2*x^2 + 60
06*a^5*b*B*x^2 + 12012*a^3*A*b^3*x^3 + 9009*a^4*b^2*B*x^3 + 6435*a^2*A*b^4*
x^4 + 8580*a^3*b^3*B*x^4 + 2002*a*A*b^5*x^5 + 5005*a^2*b^4*B*x^5 + 273*A*b^
6*x^6 + 1638*a*b^5*B*x^6 + 231*b^6*B*x^7))/(3003*Sqrt[x])
```

fricas [A] time = 0.40, size = 147, normalized size = 0.97

$$\frac{2\left(231\,Bb^6x^7-3003\,Aa^6+273\left(6\,Bab^5+Ab^6\right)x^6+1001\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+2145\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+3003\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+3003\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+3003\left(Ba^6+6\,Aa^5b\right)x\right)}{3003\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3003*(231*B*b^6*x^7 - 3003*A*a^6 + 273*(6*B*a*b^5 + A*b^6)*x^6 + 1001*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 2145*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 3003*(3
*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 3003*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 3003*(
B*a^6 + 6*A*a^5*b)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.99

$$\frac{2}{13}\,Bb^6x^{\frac{13}{2}}+\frac{12}{11}\,Bab^5x^{\frac{11}{2}}+\frac{2}{11}\,Ab^6x^{\frac{11}{2}}+\frac{10}{3}\,Ba^2b^4x^{\frac{9}{2}}+\frac{4}{3}\,Aab^5x^{\frac{9}{2}}+\frac{40}{7}\,Ba^3b^3x^{\frac{7}{2}}+\frac{30}{7}\,Aa^2b^4x^{\frac{7}{2}}+6\,Ba^4b^2x^{\frac{5}{2}}+8\,Aa^3b^3x^{\frac{5}{2}}+4\,Ba^5bx^{\frac{3}{2}}+10\,Aa^4b^2x^{\frac{3}{2}}+2\,Ba^6\sqrt{x}+12\,Aa^5b\sqrt{x}-\frac{2\,Aa^6}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^6*x^(13/2) + 12/11*B*a*b^5*x^(11/2) + 2/11*A*b^6*x^(11/2) + 10/3*B
*a^2*b^4*x^(9/2) + 4/3*A*a*b^5*x^(9/2) + 40/7*B*a^3*b^3*x^(7/2) + 30/7*A*a^
2*b^4*x^(7/2) + 6*B*a^4*b^2*x^(5/2) + 8*A*a^3*b^3*x^(5/2) + 4*B*a^5*b*x^(3/
2) + 10*A*a^4*b^2*x^(3/2) + 2*B*a^6*sqrt(x) + 12*A*a^5*b*sqrt(x) - 2*A*a^6/
sqrt(x)
```

maple [A] time = 0.05, size = 148, normalized size = 0.98

$$-\frac{2\left(-231B\,b^6x^7-273A\,b^6x^6-1638x^6Ba\,b^5-2002Aa\,b^5x^5-5005x^5B\,a^2b^4-6435A\,a^2b^4x^4-8580x^4B\,a^3b^3-12012A\,a^3b^3x^3-9009B\,a^4b^2x^3-15015A\,a^4b^2x^2-6006x^2B\,a^5b-18018A\,a^5bx-3003xB\,a^6+3003A\,a^6\right)}{3003\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x)
```

```
[Out] -2/3003*(-231*B*b^6*x^7-273*A*b^6*x^6-1638*B*a*b^5*x^6-2002*A*a*b^5*x^5-500
5*B*a^2*b^4*x^5-6435*A*a^2*b^4*x^4-8580*B*a^3*b^3*x^4-12012*A*a^3*b^3*x^3-9
009*B*a^4*b^2*x^3-15015*A*a^4*b^2*x^2-6006*B*a^5*b*x^2-18018*A*a^5*b*x-3003
*B*a^6*x+3003*A*a^6)/x^(1/2)
```

maxima [A] time = 0.56, size = 147, normalized size = 0.97

$$\frac{2}{13}\,Bb^6x^{\frac{13}{2}}-\frac{2\,Aa^6}{\sqrt{x}}+\frac{2}{11}\left(6\,Bab^5+Ab^6\right)x^{\frac{11}{2}}+\frac{2}{3}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{9}{2}}+\frac{10}{7}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{7}{2}}+2\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{5}{2}}+2\left(2\,Ba^5b+5\,Aa^4b^2\right)x^{\frac{3}{2}}+2\left(Ba^6+6\,Aa^5b\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*b^6*x^(13/2) - 2*A*a^6/sqrt(x) + 2/11*(6*B*a*b^5 + A*b^6)*x^(11/2) +
 2/3*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(9/2) + 10/7*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x
^(7/2) + 2*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(5/2) + 2*(2*B*a^5*b + 5*A*a^4*b^2
)*x^(3/2) + 2*(B*a^6 + 6*A*a^5*b)*sqrt(x)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.87

$$\sqrt{x}\,\left(2\,B\,a^6+12\,A\,b\,a^5\right)+x^{11/2}\,\left(\frac{2\,A\,b^6}{11}+\frac{12\,B\,a\,b^5}{11}\right)-\frac{2\,A\,a^6}{\sqrt{x}}+\frac{2\,B\,b^6\,x^{13/2}}{13}+2\,a^3\,b^2\,x^{5/2}\,\left(4\,A\,b+3\,B\,a\right)+\frac{10\,a^2\,b^3\,x^{7/2}\,\left(3\,A\,b+4\,B\,a\right)}{7}+2\,a^4\,b\,x^{3/2}\,\left(5\,A\,b+2\,B\,a\right)+\frac{2\,a\,b^4\,x^{9/2}\,\left(2\,A\,b+5\,B\,a\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^6 + 12*A*a^5*b) + x^(11/2)*((2*A*b^6)/11 + (12*B*a*b^5)/11)
- (2*A*a^6)/x^(1/2) + (2*B*b^6*x^(13/2))/13 + 2*a^3*b^2*x^(5/2)*(4*A*b + 3*
B*a) + (10*a^2*b^3*x^(7/2)*(3*A*b + 4*B*a))/7 + 2*a^4*b*x^(3/2)*(5*A*b + 2*
B*a) + (2*a*b^4*x^(9/2)*(2*A*b + 5*B*a))/3
```

sympy [A] time = 4.60, size = 204, normalized size = 1.35

$$-\frac{2Aa^{6}}{\sqrt{x}}+12Aa^{5}b\sqrt{x}+10Aa^{4}b^{2}x^{\frac{3}{2}}+8Aa^{3}b^{3}x^{\frac{5}{2}}+\frac{30Aa^{2}b^{4}x^{\frac{7}{2}}}{7}+\frac{4Aab^{5}x^{\frac{9}{2}}}{3}+\frac{2Ab^{6}x^{\frac{11}{2}}}{11}+2Ba^{6}\sqrt{x}+4Ba^{5}bx^{\frac{3}{2}}+6Ba^{4}b^{2}x^{\frac{5}{2}}+\frac{40Ba^{3}b^{3}x^{\frac{7}{2}}}{7}+\frac{10Ba^{2}b^{4}x^{\frac{9}{2}}}{3}+\frac{12Bab^{5}x^{\frac{11}{2}}}{11}+\frac{2Bb^{6}x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(3/2),x)
```

```
[Out] -2*A*a**6/sqrt(x) + 12*A*a**5*b*sqrt(x) + 10*A*a**4*b**2*x**(3/2) + 8*A*a**
3*b**3*x**(5/2) + 30*A*a**2*b**4*x**(7/2)/7 + 4*A*a*b**5*x**(9/2)/3 + 2*A*b
**6*x**(11/2)/11 + 2*B*a**6*sqrt(x) + 4*B*a**5*b*x**(3/2) + 6*B*a**4*b**2*x
**(5/2) + 40*B*a**3*b**3*x**(7/2)/7 + 10*B*a**2*b**4*x**(9/2)/3 + 12*B*a*b*
*5*x**(11/2)/11 + 2*B*b**6*x**(13/2)/13
```

3.680 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=153

$$-\frac{2a^6A}{3x^{3/2}}-\frac{2a^5(aB+6Ab)}{\sqrt{x}}+6a^4b\sqrt{x}\,(2aB+5Ab)+\frac{10}{3}a^3b^2x^{3/2}(3aB+4Ab)+2a^2b^3x^{5/2}(4aB+3Ab)+\frac{2}{9}b^5x^{9/2}(6aB+A$$

Rubi [A] time = 0.08, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{3}a^3b^2x^{3/2}(3aB+4Ab)+2a^2b^3x^{5/2}(4aB+3Ab)-\frac{2a^5(aB+6Ab)}{\sqrt{x}}+6a^4b\sqrt{x}\,(2aB+5Ab)-\frac{2a^6A}{3x^{3/2}}+\frac{6}{7}ab^4x^{7/2}(5aB+2Ab)+\frac{2}{9}b^5x^{9/2}(6aB+Ab)+\frac{2}{11}b^6Bx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(5/2),x]
```

```
[Out] (-2*a^6*A)/(3*x^(3/2)) - (2*a^5*(6*A*b + a*B))/Sqrt[x] + 6*a^4*b*(5*A*b + 2
*a*B)*Sqrt[x] + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(3/2))/3 + 2*a^2*b^3*(3*A*b +
 4*a*B)*x^(5/2) + (6*a*b^4*(2*A*b + 5*a*B)*x^(7/2))/7 + (2*b^5*(A*b + 6*a*B
)*x^(9/2))/9 + (2*b^6*B*x^(11/2))/11
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{5/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{5/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{5/2}}+\frac{a^5(6Ab+aB)}{x^{3/2}}+\frac{3a^4b(5Ab+2aB)}{\sqrt{x}}+5a^3b^2(4Ab+3aB)\sqrt{x}\right.\\ &= -\frac{2a^6A}{3x^{3/2}}-\frac{2a^5(6Ab+aB)}{\sqrt{x}}+6a^4b(5Ab+2aB)\sqrt{x}+\frac{10}{3}a^3b^2(4Ab+3aB\end{aligned}$$

Mathematica [A] time = 0.07, size = 97, normalized size = 0.63

$$\frac{2\left(x\left(-231a^6+1386a^5bx+1155a^4b^2x^2+924a^3b^3x^3+495a^2b^4x^4+154ab^5x^5+21b^6x^6\right)(3aB+11Ab)-231A(a+bx)^7\right)}{693ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-231*A*(a + b*x)^7 + (11*A*b + 3*a*B)*x*(-231*a^6 + 1386*a^5*b*x + 1155
*a^4*b^2*x^2 + 924*a^3*b^3*x^3 + 495*a^2*b^4*x^4 + 154*a*b^5*x^5 + 21*b^6*x
^6)))/(693*a*x^(3/2))
```

IntegrateAlgebraic [A]   time = 0.09, size = 151, normalized size = 0.99

$$\frac{2\left(-231a^6A-693a^6Bx-4158a^5Abx+4158a^5bBx^2+10395a^4Ab^2x^2+3465a^4b^2Bx^3+4620a^3Ab^3x^3+2772a^3b^3Bx^4+2079a^2Ab^4x^4+1485a^2b^4Bx^5+594aAb^5x^5+462ab^5Bx^6+77Ab^6x^6+63b^6Bx^7\right)}{693x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-231*a^6*A - 4158*a^5*A*b*x - 693*a^6*B*x + 10395*a^4*A*b^2*x^2 + 4158*
a^5*b*B*x^2 + 4620*a^3*A*b^3*x^3 + 3465*a^4*b^2*B*x^3 + 2079*a^2*A*b^4*x^4
+ 2772*a^3*b^3*B*x^4 + 594*a*A*b^5*x^5 + 1485*a^2*b^4*B*x^5 + 77*A*b^6*x^6
+ 462*a*b^5*B*x^6 + 63*b^6*B*x^7))/(693*x^(3/2))
```

fricas [A]   time = 0.40, size = 147, normalized size = 0.96

$$\frac{2\left(63\,Bb^6x^7-231\,Aa^6+77\left(6\,Bab^5+Ab^6\right)x^6+297\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+693\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+1155\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+2079\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-693\left(Ba^6+6\,Aa^5b\right)x\right)}{693\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*b^6*x^7 - 231*A*a^6 + 77*(6*B*a*b^5 + A*b^6)*x^6 + 297*(5*B*a^2
*b^4 + 2*A*a*b^5)*x^5 + 693*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1155*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^3 + 2079*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 693*(B*a^6 +
 6*A*a^5*b)*x)/x^(3/2)
```

giac [A]   time = 0.17, size = 147, normalized size = 0.96

$$\frac{2}{11}\,Bb^6x^{\frac{11}{2}}+\frac{4}{3}\,Bab^5x^{\frac{9}{2}}+\frac{2}{9}\,Ab^6x^{\frac{9}{2}}+\frac{30}{7}\,Ba^2b^4x^{\frac{7}{2}}+\frac{12}{7}\,Aab^5x^{\frac{7}{2}}+8\,Ba^3b^3x^{\frac{5}{2}}+6\,Aa^2b^4x^{\frac{5}{2}}+10\,Ba^4b^2x^{\frac{3}{2}}+\frac{40}{3}\,Aa^3b^3x^{\frac{3}{2}}+12\,Ba^5b\sqrt{x}+30\,Aa^4b^2\sqrt{x}-\frac{2\left(3\,Ba^6x+18\,Aa^5bx+Aa^6\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^6*x^(11/2) + 4/3*B*a*b^5*x^(9/2) + 2/9*A*b^6*x^(9/2) + 30/7*B*a^2*
b^4*x^(7/2) + 12/7*A*a*b^5*x^(7/2) + 8*B*a^3*b^3*x^(5/2) + 6*A*a^2*b^4*x^(5
/2) + 10*B*a^4*b^2*x^(3/2) + 40/3*A*a^3*b^3*x^(3/2) + 12*B*a^5*b*sqrt(x) +
30*A*a^4*b^2*sqrt(x) - 2/3*(3*B*a^6*x + 18*A*a^5*b*x + A*a^6)/x^(3/2)
```

maple [A]   time = 0.06, size = 148, normalized size = 0.97

$$-\frac{2\left(-63B\,b^6x^7-77A\,b^6x^6-462x^6Ba\,b^5-594Aa\,b^5x^5-1485x^5B\,a^2b^4-2079A\,a^2b^4x^4-2772x^4B\,a^3b^3-4620A\,a^3b^3x^3-3465B\,a^4b^2x^3-10395A\,a^4b^2x^2-4158x^2B\,a^5b+4158A\,a^5bx+693xB\,a^6+231A\,a^6\right)}{693x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x)
```

```
[Out] -2/693*(-63*B*b^6*x^7-77*A*b^6*x^6-462*B*a*b^5*x^6-594*A*a*b^5*x^5-1485*B*a
^2*b^4*x^5-2079*A*a^2*b^4*x^4-2772*B*a^3*b^3*x^4-4620*A*a^3*b^3*x^3-3465*B*
a^4*b^2*x^3-10395*A*a^4*b^2*x^2-4158*B*a^5*b*x^2+4158*A*a^5*b*x+693*B*a^6*x
+231*A*a^6)/x^(3/2)
```

maxima [A]   time = 0.66, size = 147, normalized size = 0.96

$$\frac{2}{11}\,Bb^6x^{\frac{11}{2}}+\frac{2}{9}\left(6\,Bab^5+Ab^6\right)x^{\frac{9}{2}}+\frac{6}{7}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{7}{2}}+2\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{5}{2}}+\frac{10}{3}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^{\frac{3}{2}}+6\left(2\,Ba^5b+5\,Aa^4b^2\right)\sqrt{x}-\frac{2\left(Aa^6+3\left(Ba^6+6\,Aa^5b\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*b^6*x^(11/2) + 2/9*(6*B*a*b^5 + A*b^6)*x^(9/2) + 6/7*(5*B*a^2*b^4 +
2*A*a*b^5)*x^(7/2) + 2*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^(5/2) + 10/3*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*x^(3/2) + 6*(2*B*a^5*b + 5*A*a^4*b^2)*sqrt(x) - 2/3*(A*a
^6 + 3*(B*a^6 + 6*A*a^5*b)*x)/x^(3/2)
```

mupad [B] time = 0.05, size = 132, normalized size = 0.86

$$x^{9/2}\left(\frac{2\,A\,b^6}{9}+\frac{4\,B\,a\,b^5}{3}\right)-\frac{x\,\left(2\,B\,a^6+12\,A\,b\,a^5\right)+\frac{2\,A\,a^6}{3}}{x^{3/2}}+\frac{2\,B\,b^6\,x^{11/2}}{11}+\frac{10\,a^3\,b^2\,x^{3/2}\,\left(4\,A\,b+3\,B\,a\right)}{3}+2\,a^2\,b^3\,x^{5/2}\,\left(3\,A\,b+4\,B\,a\right)+6\,a^4\,b\,\sqrt{x}\,\left(5\,A\,b+2\,B\,a\right)+\frac{6\,a\,b^4\,x^{7/2}\,\left(2\,A\,b+5\,B\,a\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(5/2),x)
```

```
[Out] x^(9/2)*((2*A*b^6)/9 + (4*B*a*b^5)/3) - (x*(2*B*a^6 + 12*A*a^5*b) + (2*A*a^
6)/3)/x^(3/2) + (2*B*b^6*x^(11/2))/11 + (10*a^3*b^2*x^(3/2)*(4*A*b + 3*B*a)
)/3 + 2*a^2*b^3*x^(5/2)*(3*A*b + 4*B*a) + 6*a^4*b*x^(1/2)*(5*A*b + 2*B*a) +
 (6*a*b^4*x^(7/2)*(2*A*b + 5*B*a))/7
```

sympy [A] time = 5.44, size = 204, normalized size = 1.33

$$-\frac{2Aa^6}{3x^{\frac{3}{2}}}-\frac{12Aa^5b}{\sqrt{x}}+30Aa^4b^2\sqrt{x}+\frac{40Aa^3b^3x^{\frac{3}{2}}}{3}+6Aa^2b^4x^{\frac{5}{2}}+\frac{12Aab^5x^{\frac{7}{2}}}{7}+\frac{2Ab^6x^{\frac{9}{2}}}{9}-\frac{2Ba^6}{\sqrt{x}}+12Ba^5b\sqrt{x}+10Ba^4b^2x^{\frac{3}{2}}+8Ba^3b^3x^{\frac{5}{2}}+\frac{30Ba^2b^4x^{\frac{7}{2}}}{7}+\frac{4Bab^5x^{\frac{9}{2}}}{3}+\frac{2Bb^6x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(5/2),x)
```

```
[Out] -2*A*a**6/(3*x**(3/2)) - 12*A*a**5*b/sqrt(x) + 30*A*a**4*b**2*sqrt(x) + 40*
A*a**3*b**3*x**(3/2)/3 + 6*A*a**2*b**4*x**(5/2) + 12*A*a*b**5*x**(7/2)/7 +
2*A*b**6*x**(9/2)/9 - 2*B*a**6/sqrt(x) + 12*B*a**5*b*sqrt(x) + 10*B*a**4*b*
*2*x**(3/2) + 8*B*a**3*b**3*x**(5/2) + 30*B*a**2*b**4*x**(7/2)/7 + 4*B*a*b*
*5*x**(9/2)/3 + 2*B*b**6*x**(11/2)/11
```

3.681 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{2a^6A}{5x^{5/2}}-\frac{2a^5(aB+6Ab)}{3x^{3/2}}-\frac{6a^4b(2aB+5Ab)}{\sqrt{x}}+10a^3b^2\sqrt{x}\,(3aB+4Ab)+\frac{10}{3}a^2b^3x^{3/2}(4aB+3Ab)+\frac{2}{7}b^5x^{7/2}(6aB+Ab)+$$

Rubi [A] time = 0.08, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{3}a^2b^3x^{3/2}(4aB+3Ab)+10a^3b^2\sqrt{x}\,(3aB+4Ab)-\frac{2a^5(aB+6Ab)}{3x^{3/2}}-\frac{6a^4b(2aB+5Ab)}{\sqrt{x}}-\frac{2a^6A}{5x^{5/2}}+\frac{6}{5}ab^4x^{5/2}(5aB+2Ab)+\frac{2}{7}b^5x^{7/2}(6aB+Ab)+\frac{2}{9}b^6Bx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(7/2),x]
```

```
[Out] (-2*a^6*A)/(5*x^(5/2)) - (2*a^5*(6*A*b + a*B))/(3*x^(3/2)) - (6*a^4*b*(5*A*
b + 2*a*B))/Sqrt[x] + 10*a^3*b^2*(4*A*b + 3*a*B)*Sqrt[x] + (10*a^2*b^3*(3*A
*b + 4*a*B)*x^(3/2))/3 + (6*a*b^4*(2*A*b + 5*a*B)*x^(5/2))/5 + (2*b^5*(A*b
+ 6*a*B)*x^(7/2))/7 + (2*b^6*B*x^(9/2))/9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{7/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{7/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{7/2}}+\frac{a^5(6Ab+aB)}{x^{5/2}}+\frac{3a^4b(5Ab+2aB)}{x^{3/2}}+\frac{5a^3b^2(4Ab+3aB)}{\sqrt{x}}+5a^2\right.\\ &= -\frac{2a^6A}{5x^{5/2}}-\frac{2a^5(6Ab+aB)}{3x^{3/2}}-\frac{6a^4b(5Ab+2aB)}{\sqrt{x}}+10a^3b^2(4Ab+3aB)\sqrt{x}+\end{aligned}$$

Mathematica [A] time = 0.04, size = 124, normalized size = 0.80

$$\frac{2\left(-21a^6(3A+5Bx)-630a^5bx(A+3Bx)+4725a^4b^2x^2(Bx-A)+2100a^3b^3x^3(3A+Bx)+315a^2b^4x^4(5A+3Bx)+54ab^5x^5(7A+5Bx)+5b^6x^6(9A+7Bx)\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(4725*a^4*b^2*x^2*(-A + B*x) + 2100*a^3*b^3*x^3*(3*A + B*x) - 630*a^5*b*
x*(A + 3*B*x) + 315*a^2*b^4*x^4*(5*A + 3*B*x) - 21*a^6*(3*A + 5*B*x) + 54*a
*b^5*x^5*(7*A + 5*B*x) + 5*b^6*x^6*(9*A + 7*B*x)))/(315*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.08, size = 151, normalized size = 0.97

$$\frac{2\left(-63a^6A-105a^6Bx-630a^5Abx-1890a^5bBx^2-4725a^4Ab^2x^2+4725a^4b^2Bx^3+6300a^3Ab^3x^3+2100a^3b^3Bx^4+1575a^2Ab^4x^4+945a^2b^4Bx^5+378aAb^5x^5+270ab^5Bx^6+45Ab^6x^6+35b^6Bx^7\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(-63*a^6*A - 630*a^5*A*b*x - 105*a^6*B*x - 4725*a^4*A*b^2*x^2 - 1890*a^5
*b*B*x^2 + 6300*a^3*A*b^3*x^3 + 4725*a^4*b^2*B*x^3 + 1575*a^2*A*b^4*x^4 + 2
100*a^3*b^3*B*x^4 + 378*a*A*b^5*x^5 + 945*a^2*b^4*B*x^5 + 45*A*b^6*x^6 + 27
0*a*b^5*B*x^6 + 35*b^6*B*x^7))/(315*x^(5/2))
```

fricas [A] time = 0.41, size = 147, normalized size = 0.95

$$\frac{2\left(35\,Bb^6x^7-63\,Aa^6+45\left(6\,Bab^5+Ab^6\right)x^6+189\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+525\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+1575\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-945\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-105\left(Ba^6+6\,Aa^5b\right)x\right)}{315\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b^6*x^7 - 63*A*a^6 + 45*(6*B*a*b^5 + A*b^6)*x^6 + 189*(5*B*a^2*
b^4 + 2*A*a*b^5)*x^5 + 525*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1575*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*x^3 - 945*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 105*(B*a^6 + 6
*A*a^5*b)*x)/x^(5/2)
```

giac [A] time = 0.20, size = 148, normalized size = 0.95

$$\frac{2}{9}\,Bb^6x^{\frac{9}{2}}+\frac{12}{7}\,Bab^5x^{\frac{7}{2}}+\frac{2}{7}\,Ab^6x^{\frac{7}{2}}+6\,Ba^2b^4x^{\frac{5}{2}}+\frac{12}{5}\,Aab^5x^{\frac{5}{2}}+\frac{40}{3}\,Ba^3b^3x^{\frac{3}{2}}+10\,Aa^2b^4x^{\frac{3}{2}}+30\,Ba^4b^2\sqrt{x}+40\,Aa^3b^3\sqrt{x}-\frac{2\left(90\,Ba^5bx^2+225\,Aa^4b^2x^2+5\,Ba^6x+30\,Aa^5bx+3\,Aa^6\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^6*x^(9/2) + 12/7*B*a*b^5*x^(7/2) + 2/7*A*b^6*x^(7/2) + 6*B*a^2*b^4*
x^(5/2) + 12/5*A*a*b^5*x^(5/2) + 40/3*B*a^3*b^3*x^(3/2) + 10*A*a^2*b^4*x^(3
/2) + 30*B*a^4*b^2*sqrt(x) + 40*A*a^3*b^3*sqrt(x) - 2/15*(90*B*a^5*b*x^2 +
225*A*a^4*b^2*x^2 + 5*B*a^6*x + 30*A*a^5*b*x + 3*A*a^6)/x^(5/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.95

$$-\frac{2\left(-35B\,b^6x^7-45A\,b^6x^6-270x^6Ba\,b^5-378Aa\,b^5x^5-945x^5B\,a^2b^4-1575A\,a^2b^4x^4-2100x^4B\,a^3b^3-6300A\,a^3b^3x^3-4725B\,a^4b^2x^3+4725A\,a^4b^2x^2+1890x^2B\,a^5b+630A\,a^5bx+105xB\,a^6+63A\,a^6\right)}{315x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x)
```

```
[Out] -2/315*(-35*B*b^6*x^7-45*A*b^6*x^6-270*B*a*b^5*x^6-378*A*a*b^5*x^5-945*B*a^
2*b^4*x^5-1575*A*a^2*b^4*x^4-2100*B*a^3*b^3*x^4-6300*A*a^3*b^3*x^3-4725*B*a
^4*b^2*x^3+4725*A*a^4*b^2*x^2+1890*B*a^5*b*x^2+630*A*a^5*b*x+105*B*a^6*x+63
*A*a^6)/x^(5/2)
```

maxima [A] time = 0.54, size = 148, normalized size = 0.95

$$\frac{2}{9}\,Bb^6x^{\frac{9}{2}}+\frac{2}{7}\left(6\,Bab^5+Ab^6\right)x^{\frac{7}{2}}+\frac{6}{5}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{5}{2}}+\frac{10}{3}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{3}{2}}+10\left(3\,Ba^4b^2+4\,Aa^3b^3\right)\sqrt{x}-\frac{2\left(3\,Aa^6+45\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+5\left(Ba^6+6\,Aa^5b\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*b^6*x^(9/2) + 2/7*(6*B*a*b^5 + A*b^6)*x^(7/2) + 6/5*(5*B*a^2*b^4 + 2*
A*a*b^5)*x^(5/2) + 10/3*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^(3/2) + 10*(3*B*a^4*b
^2 + 4*A*a^3*b^3)*sqrt(x) - 2/15*(3*A*a^6 + 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^
2 + 5*(B*a^6 + 6*A*a^5*b)*x)/x^(5/2)
```

mupad [B] time = 0.05, size = 135, normalized size = 0.87

$$x^{7/2}\left(\frac{2\,A\,b^6}{7}+\frac{12\,B\,a\,b^5}{7}\right)-\frac{x\,\left(\frac{2\,B\,a^6}{3}+4\,A\,b\,a^5\right)+\frac{2\,A\,a^6}{5}+x^2\,\left(12\,B\,a^5\,b+30\,A\,a^4\,b^2\right)}{x^{5/2}}+\frac{2\,B\,b^6\,x^{9/2}}{9}+10\,a^3\,b^2\,\sqrt{x}\,\left(4\,A\,b+3\,B\,a\right)+\frac{10\,a^2\,b^3\,x^{3/2}\,\left(3\,A\,b+4\,B\,a\right)}{3}+\frac{6\,a\,b^4\,x^{5/2}\,\left(2\,A\,b+5\,B\,a\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(7/2),x)
```

```
[Out] x^(7/2)*((2*A*b^6)/7 + (12*B*a*b^5)/7) - (x*((2*B*a^6)/3 + 4*A*a^5*b) + (2*
A*a^6)/5 + x^2*(30*A*a^4*b^2 + 12*B*a^5*b))/x^(5/2) + (2*B*b^6*x^(9/2))/9 +
 10*a^3*b^2*x^(1/2)*(4*A*b + 3*B*a) + (10*a^2*b^3*x^(3/2)*(3*A*b + 4*B*a))/
3 + (6*a*b^4*x^(5/2)*(2*A*b + 5*B*a))/5
```

sympy [A] time = 7.32, size = 204, normalized size = 1.32

$$-\frac{2Aa^6}{5x^{\frac{5}{2}}}-\frac{4Aa^5b}{x^{\frac{3}{2}}}-\frac{30Aa^4b^2}{\sqrt{x}}+40Aa^3b^3\sqrt{x}+10Aa^2b^4x^{\frac{3}{2}}+\frac{12Aab^5x^{\frac{5}{2}}}{5}+\frac{2Ab^6x^{\frac{7}{2}}}{7}-\frac{2Ba^6}{3x^{\frac{3}{2}}}-\frac{12Ba^5b}{\sqrt{x}}+30Ba^4b^2\sqrt{x}+\frac{40Ba^3b^3x^{\frac{3}{2}}}{3}+6Ba^2b^4x^{\frac{5}{2}}+\frac{12Bab^5x^{\frac{7}{2}}}{7}+\frac{2Bb^6x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(7/2),x)
```

```
[Out] -2*A*a**6/(5*x**(5/2)) - 4*A*a**5*b/x**(3/2) - 30*A*a**4*b**2/sqrt(x) + 40*
A*a**3*b**3*sqrt(x) + 10*A*a**2*b**4*x**(3/2) + 12*A*a*b**5*x**(5/2)/5 + 2*
A*b**6*x**(7/2)/7 - 2*B*a**6/(3*x**(3/2)) - 12*B*a**5*b/sqrt(x) + 30*B*a**4
*b**2*sqrt(x) + 40*B*a**3*b**3*x**(3/2)/3 + 6*B*a**2*b**4*x**(5/2) + 12*B*a
*b**5*x**(7/2)/7 + 2*B*b**6*x**(9/2)/9
```

3.682 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{9/2}}\,dx$

Optimal. Leaf size=151

$$-\frac{2a^6A}{7x^{7/2}}-\frac{2a^5(aB+6Ab)}{5x^{5/2}}-\frac{2a^4b(2aB+5Ab)}{x^{3/2}}-\frac{10a^3b^2(3aB+4Ab)}{\sqrt{x}}+10a^2b^3\sqrt{x}\,(4aB+3Ab)+\frac{2}{5}b^5x^{5/2}(6aB+Ab)+$$

Rubi [A] time = 0.08, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$-\frac{10a^3b^2(3aB+4Ab)}{\sqrt{x}}+10a^2b^3\sqrt{x}\,(4aB+3Ab)-\frac{2a^5(aB+6Ab)}{5x^{5/2}}-\frac{2a^4b(2aB+5Ab)}{x^{3/2}}-\frac{2a^6A}{7x^{7/2}}+2ab^4x^{3/2}(5aB+2Ab)+\frac{2}{5}b^5x^{5/2}(6aB+Ab)+\frac{2}{7}b^6Bx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*a^6*A)/(7*x^(7/2)) - (2*a^5*(6*A*b + a*B))/(5*x^(5/2)) - (2*a^4*b*(5*A*
b + 2*a*B))/x^(3/2) - (10*a^3*b^2*(4*A*b + 3*a*B))/Sqrt[x] + 10*a^2*b^3*(3*
A*b + 4*a*B)*Sqrt[x] + 2*a*b^4*(2*A*b + 5*a*B)*x^(3/2) + (2*b^5*(A*b + 6*a*
B)*x^(5/2))/5 + (2*b^6*B*x^(7/2))/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{9/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{9/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{9/2}}+\frac{a^5(6Ab+aB)}{x^{7/2}}+\frac{3a^4b(5Ab+2aB)}{x^{5/2}}+\frac{5a^3b^2(4Ab+3aB)}{x^{3/2}}+\right.\\ &= -\frac{2a^6A}{7x^{7/2}}-\frac{2a^5(6Ab+aB)}{5x^{5/2}}-\frac{2a^4b(5Ab+2aB)}{x^{3/2}}-\frac{10a^3b^2(4Ab+3aB)}{\sqrt{x}}+\end{aligned}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.81

$$\frac{2\left(-\left(a^6(5A+7Bx)\right)-14a^5bx(3A+5Bx)-175a^4b^2x^2(A+3Bx)+700a^3b^3x^3(Bx-A)+175a^2b^4x^4(3A+Bx)+14ab^5x^5(5A+3Bx)+b^6x^6(7A+5Bx)\right)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(700*a^3*b^3*x^3*(-A + B*x) + 175*a^2*b^4*x^4*(3*A + B*x) - 175*a^4*b^2*
x^2*(A + 3*B*x) + 14*a*b^5*x^5*(5*A + 3*B*x) - 14*a^5*b*x*(3*A + 5*B*x) + b
^6*x^6*(7*A + 5*B*x) - a^6*(5*A + 7*B*x)))/(35*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.08, size = 151, normalized size = 1.00

$$\frac{2\left(-5a^6A-7a^6Bx-42a^5Abx-70a^5bBx^2-175a^4Ab^2x^2-525a^4b^2Bx^3-700a^3Ab^3x^3+700a^3b^3Bx^4+525a^2Ab^4x^4+175a^2b^4Bx^5+70aAb^5x^5+42ab^5Bx^6+7Ab^6x^6+5b^6Bx^7\right)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(-5*a^6*A - 42*a^5*A*b*x - 7*a^6*B*x - 175*a^4*A*b^2*x^2 - 70*a^5*b*B*x^
2 - 700*a^3*A*b^3*x^3 - 525*a^4*b^2*B*x^3 + 525*a^2*A*b^4*x^4 + 700*a^3*b^3
*B*x^4 + 70*a*A*b^5*x^5 + 175*a^2*b^4*B*x^5 + 7*A*b^6*x^6 + 42*a*b^5*B*x^6
+ 5*b^6*B*x^7))/(35*x^(7/2))
```

fricas [A] time = 0.42, size = 147, normalized size = 0.97

$$\frac{2\left(5\,Bb^6x^7-5\,Aa^6+7\left(6\,Bab^5+Ab^6\right)x^6+35\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+175\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4-175\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-35\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-7\left(Ba^6+6\,Aa^5b\right)x\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*b^6*x^7 - 5*A*a^6 + 7*(6*B*a*b^5 + A*b^6)*x^6 + 35*(5*B*a^2*b^4 +
 2*A*a*b^5)*x^5 + 175*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 175*(3*B*a^4*b^2 +
4*A*a^3*b^3)*x^3 - 35*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 7*(B*a^6 + 6*A*a^5*b)
*x)/x^(7/2)
```

giac [A] time = 0.18, size = 148, normalized size = 0.98

$$\frac{2}{7}\,Bb^6x^{\frac{7}{2}}+\frac{12}{5}\,Bab^5x^{\frac{5}{2}}+\frac{2}{5}\,Ab^6x^{\frac{5}{2}}+10\,Ba^2b^4x^{\frac{3}{2}}+4\,Aab^5x^{\frac{3}{2}}+40\,Ba^3b^3\sqrt{x}+30\,Aa^2b^4\sqrt{x}-\frac{2\left(525\,Ba^4b^2x^3+700\,Aa^3b^3x^3+70\,Ba^5bx^2+175\,Aa^4b^2x^2+7\,Ba^6x+42\,Aa^5bx+5\,Aa^6\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^6*x^(7/2) + 12/5*B*a*b^5*x^(5/2) + 2/5*A*b^6*x^(5/2) + 10*B*a^2*b^4
*x^(3/2) + 4*A*a*b^5*x^(3/2) + 40*B*a^3*b^3*sqrt(x) + 30*A*a^2*b^4*sqrt(x)
- 2/35*(525*B*a^4*b^2*x^3 + 700*A*a^3*b^3*x^3 + 70*B*a^5*b*x^2 + 175*A*a^4*
b^2*x^2 + 7*B*a^6*x + 42*A*a^5*b*x + 5*A*a^6)/x^(7/2)
```

maple [A] time = 0.06, size = 148, normalized size = 0.98

$$-\frac{2\left(-5B\,b^6x^7-7A\,b^6x^6-42x^6Ba\,b^5-70Aa\,b^5x^5-175x^5B\,a^2b^4-525A\,a^2b^4x^4-700x^4B\,a^3b^3+700A\,a^3b^3x^3+525B\,a^4b^2x^3+175A\,a^4b^2x^2+70x^2B\,a^5b+42A\,a^5bx+7xB\,a^6+5A\,a^6\right)}{35x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x)
```

```
[Out] -2/35*(-5*B*b^6*x^7-7*A*b^6*x^6-42*B*a*b^5*x^6-70*A*a*b^5*x^5-175*B*a^2*b^4
*x^5-525*A*a^2*b^4*x^4-700*B*a^3*b^3*x^4+700*A*a^3*b^3*x^3+525*B*a^4*b^2*x^
3+175*A*a^4*b^2*x^2+70*B*a^5*b*x^2+42*A*a^5*b*x+7*B*a^6*x+5*A*a^6)/x^(7/2)
```

maxima [A] time = 0.56, size = 148, normalized size = 0.98

$$\frac{2}{7}\,Bb^6x^{\frac{7}{2}}+\frac{2}{5}\left(6\,Bab^5+Ab^6\right)x^{\frac{5}{2}}+2\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{3}{2}}+10\left(4\,Ba^3b^3+3\,Aa^2b^4\right)\sqrt{x}-\frac{2\left(5\,Aa^6+175\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+35\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+7\left(Ba^6+6\,Aa^5b\right)x\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*b^6*x^(7/2) + 2/5*(6*B*a*b^5 + A*b^6)*x^(5/2) + 2*(5*B*a^2*b^4 + 2*A*
a*b^5)*x^(3/2) + 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*sqrt(x) - 2/35*(5*A*a^6 + 1
75*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 35*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 7*(
B*a^6 + 6*A*a^5*b)*x)/x^(7/2)
```

mupad [B] time = 1.15, size = 138, normalized size = 0.91

$$x^{5/2}\left(\frac{2\,A\,b^6}{5}+\frac{12\,B\,a\,b^5}{5}\right)-\frac{x\,\left(\frac{2\,B\,a^6}{5}+\frac{12\,A\,b\,a^5}{5}\right)+\frac{2\,A\,a^6}{7}+x^2\,\left(4\,B\,a^5\,b+10\,A\,a^4\,b^2\right)+x^3\,\left(30\,B\,a^4\,b^2+40\,A\,a^3\,b^3\right)}{x^{7/2}}+\frac{2\,B\,b^6\,x^{7/2}}{7}+10\,a^2\,b^3\,\sqrt{x}\,\left(3\,A\,b+4\,B\,a\right)+2\,a\,b^4\,x^{3/2}\,\left(2\,A\,b+5\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(9/2),x)
```

```
[Out] x^(5/2)*((2*A*b^6)/5 + (12*B*a*b^5)/5) - (x*((2*B*a^6)/5 + (12*A*a^5*b)/5)
+ (2*A*a^6)/7 + x^2*(10*A*a^4*b^2 + 4*B*a^5*b) + x^3*(40*A*a^3*b^3 + 30*B*a
^4*b^2))/x^(7/2) + (2*B*b^6*x^(7/2))/7 + 10*a^2*b^3*x^(1/2)*(3*A*b + 4*B*a)
 + 2*a*b^4*x^(3/2)*(2*A*b + 5*B*a)
```

sympy [A] time = 9.61, size = 202, normalized size = 1.34

$$-\frac{2Aa^6}{7x^{\frac{7}{2}}}-\frac{12Aa^5b}{5x^{\frac{5}{2}}}-\frac{10Aa^4b^2}{x^{\frac{3}{2}}}-\frac{40Aa^3b^3}{\sqrt{x}}+30Aa^2b^4\sqrt{x}+4Aab^5x^{\frac{3}{2}}+\frac{2Ab^6x^{\frac{5}{2}}}{5}-\frac{2Ba^6}{5x^{\frac{5}{2}}}-\frac{4Ba^5b}{x^{\frac{3}{2}}}-\frac{30Ba^4b^2}{\sqrt{x}}+40Ba^3b^3\sqrt{x}+10Ba^2b^4x^{\frac{3}{2}}+\frac{12Bab^5x^{\frac{5}{2}}}{5}+\frac{2Bb^6x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(9/2),x)
```

```
[Out] -2*A*a**6/(7*x**(7/2)) - 12*A*a**5*b/(5*x**(5/2)) - 10*A*a**4*b**2/x**(3/2)
 - 40*A*a**3*b**3/sqrt(x) + 30*A*a**2*b**4*sqrt(x) + 4*A*a*b**5*x**(3/2) +
2*A*b**6*x**(5/2)/5 - 2*B*a**6/(5*x**(5/2)) - 4*B*a**5*b/x**(3/2) - 30*B*a*
*4*b**2/sqrt(x) + 40*B*a**3*b**3*sqrt(x) + 10*B*a**2*b**4*x**(3/2) + 12*B*a
*b**5*x**(5/2)/5 + 2*B*b**6*x**(7/2)/7
```

3.683 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{2a^6A}{9x^{9/2}}-\frac{2a^5(aB+6Ab)}{7x^{7/2}}-\frac{6a^4b(2aB+5Ab)}{5x^{5/2}}-\frac{10a^3b^2(3aB+4Ab)}{3x^{3/2}}-\frac{10a^2b^3(4aB+3Ab)}{\sqrt{x}}+\frac{2}{3}b^5x^{3/2}(6aB+Ab)+6ab^4$$

Rubi [A] time = 0.08, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {27, 76}

$$-\frac{10a^3b^2(3aB+4Ab)}{3x^{3/2}}-\frac{10a^2b^3(4aB+3Ab)}{\sqrt{x}}-\frac{2a^5(aB+6Ab)}{7x^{7/2}}-\frac{6a^4b(2aB+5Ab)}{5x^{5/2}}-\frac{2a^6A}{9x^{9/2}}+\frac{2}{3}b^5x^{3/2}(6aB+Ab)+6ab^4\sqrt{x}(5aB+2Ab)+\frac{2}{5}b^6Bx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*a^6*A)/(9*x^(9/2)) - (2*a^5*(6*A*b + a*B))/(7*x^(7/2)) - (6*a^4*b*(5*A*
b + 2*a*B))/(5*x^(5/2)) - (10*a^3*b^2*(4*A*b + 3*a*B))/(3*x^(3/2)) - (10*a^
2*b^3*(3*A*b + 4*a*B))/Sqrt[x] + 6*a*b^4*(2*A*b + 5*a*B)*Sqrt[x] + (2*b^5*(
A*b + 6*a*B)*x^(3/2))/3 + (2*b^6*B*x^(5/2))/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{11/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{11/2}}+\frac{a^5(6Ab+aB)}{x^{9/2}}+\frac{3a^4b(5Ab+2aB)}{x^{7/2}}+\frac{5a^3b^2(4Ab+3aB)}{x^{5/2}}+\frac{5a^2}{}\right.\\ &= -\frac{2a^6A}{9x^{9/2}}-\frac{2a^5(6Ab+aB)}{7x^{7/2}}-\frac{6a^4b(5Ab+2aB)}{5x^{5/2}}-\frac{10a^3b^2(4Ab+3aB)}{3x^{3/2}}-\frac{10a}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.79

$$-\frac{2\left(5a^6(7A+9Bx)+54a^5bx(5A+7Bx)+315a^4b^2x^2(3A+5Bx)+2100a^3b^3x^3(A+3Bx)+4725a^2b^4x^4(A-Bx)-630ab^5x^5(3A+Bx)-21b^6x^6(5A+3Bx)\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*(4725*a^2*b^4*x^4*(A - B*x) - 630*a*b^5*x^5*(3*A + B*x) + 2100*a^3*b^3*
x^3*(A + 3*B*x) - 21*b^6*x^6*(5*A + 3*B*x) + 315*a^4*b^2*x^2*(3*A + 5*B*x)
+ 54*a^5*b*x*(5*A + 7*B*x) + 5*a^6*(7*A + 9*B*x)))/(315*x^(9/2))
```

IntegrateAlgebraic [A] time = 0.10, size = 151, normalized size = 0.97

$$\frac{2\left(-35a^6A-45a^6Bx-270a^5Abx-378a^5bBx^2-945a^4Ab^2x^2-1575a^4b^2Bx^3-2100a^3Ab^3x^3-6300a^3b^3Bx^4-4725a^2Ab^4x^4+4725a^2b^4Bx^5+1890aAb^5x^5+630ab^5Bx^6+105Ab^6x^6+63b^6Bx^7\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(11/2),x]
```

```
[Out] (2*(-35*a^6*A - 270*a^5*A*b*x - 45*a^6*B*x - 945*a^4*A*b^2*x^2 - 378*a^5*b*
B*x^2 - 2100*a^3*A*b^3*x^3 - 1575*a^4*b^2*B*x^3 - 4725*a^2*A*b^4*x^4 - 6300
*a^3*b^3*B*x^4 + 1890*a*A*b^5*x^5 + 4725*a^2*b^4*B*x^5 + 105*A*b^6*x^6 + 63
0*a*b^5*B*x^6 + 63*b^6*B*x^7))/(315*x^(9/2))
```

fricas [A] time = 0.42, size = 147, normalized size = 0.95

$$\frac{2\left(63\,Bb^6x^7-35\,Aa^6+105\left(6\,Bab^5+Ab^6\right)x^6+945\left(5\,Ba^2b^4+2\,Aab^5\right)x^5-1575\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4-525\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3-189\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2-45\left(Ba^6+6\,Aa^5b\right)x\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*b^6*x^7 - 35*A*a^6 + 105*(6*B*a*b^5 + A*b^6)*x^6 + 945*(5*B*a^2
*b^4 + 2*A*a*b^5)*x^5 - 1575*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 525*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^3 - 189*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 45*(B*a^6 + 6
*A*a^5*b)*x)/x^(9/2)
```

giac [A] time = 0.16, size = 148, normalized size = 0.95

$$\frac{2}{5}\,Bb^6x^{\frac{5}{2}}+4\,Bab^5x^{\frac{3}{2}}+\frac{2}{3}\,Ab^6x^{\frac{3}{2}}+30\,Ba^2b^4\sqrt{x}+12\,Aab^5\sqrt{x}-\frac{2\left(6300\,Ba^3b^3x^4+4725\,Aa^2b^4x^4+1575\,Ba^4b^2x^3+2100\,Aa^3b^3x^3+378\,Ba^5bx^2+945\,Aa^4b^2x^2+45\,Ba^6x+270\,Aa^5bx+35\,Aa^6\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^6*x^(5/2) + 4*B*a*b^5*x^(3/2) + 2/3*A*b^6*x^(3/2) + 30*B*a^2*b^4*sq
rt(x) + 12*A*a*b^5*sqrt(x) - 2/315*(6300*B*a^3*b^3*x^4 + 4725*A*a^2*b^4*x^4
 + 1575*B*a^4*b^2*x^3 + 2100*A*a^3*b^3*x^3 + 378*B*a^5*b*x^2 + 945*A*a^4*b^
2*x^2 + 45*B*a^6*x + 270*A*a^5*b*x + 35*A*a^6)/x^(9/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.95

$$-\frac{2\left(-63B\,b^6x^7-105A\,b^6x^6-630x^6Ba\,b^5-1890Aa\,b^5x^5-4725x^5B\,a^2b^4+4725A\,a^2b^4x^4+6300x^4B\,a^3b^3+2100A\,a^3b^3x^3+1575B\,a^4b^2x^3+945A\,a^4b^2x^2+378x^2B\,a^5b+270A\,a^5bx+45xB\,a^6+35A\,a^6\right)}{315x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x)
```

```
[Out] -2/315*(-63*B*b^6*x^7-105*A*b^6*x^6-630*B*a*b^5*x^6-1890*A*a*b^5*x^5-4725*B
*a^2*b^4*x^5+4725*A*a^2*b^4*x^4+6300*B*a^3*b^3*x^4+2100*A*a^3*b^3*x^3+1575*
B*a^4*b^2*x^3+945*A*a^4*b^2*x^2+378*B*a^5*b*x^2+270*A*a^5*b*x+45*B*a^6*x+35
*A*a^6)/x^(9/2)
```

maxima [A] time = 0.46, size = 148, normalized size = 0.95

$$\frac{2}{5}\,Bb^6x^{\frac{5}{2}}+\frac{2}{3}\left(6\,Bab^5+Ab^6\right)x^{\frac{3}{2}}+6\left(5\,Ba^2b^4+2\,Aab^5\right)\sqrt{x}-\frac{2\left(35\,Aa^6+1575\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+525\left(3\,Ba^4b^2+4\,Aa^3b^3\right)x^3+189\left(2\,Ba^5b+5\,Aa^4b^2\right)x^2+45\left(Ba^6+6\,Aa^5b\right)x\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*b^6*x^(5/2) + 2/3*(6*B*a*b^5 + A*b^6)*x^(3/2) + 6*(5*B*a^2*b^4 + 2*A*
a*b^5)*sqrt(x) - 2/315*(35*A*a^6 + 1575*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5
25*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 189*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 45
*(B*a^6 + 6*A*a^5*b)*x)/x^(9/2)
```

mupad [B] time = 1.16, size = 141, normalized size = 0.91

$$x^{3/2}\left(\frac{2\,A\,b^6}{3}+4\,B\,a\,b^5\right)-\frac{x\,\left(\frac{2\,B\,a^6}{7}+\frac{12\,A\,b\,a^5}{7}\right)+\frac{2\,A\,a^6}{9}+x^2\,\left(\frac{12\,B\,a^5\,b}{5}+6\,A\,a^4\,b^2\right)+x^3\,\left(10\,B\,a^4\,b^2+\frac{40\,A\,a^3\,b^3}{3}\right)+x^4\,\left(40\,B\,a^3\,b^3+30\,A\,a^2\,b^4\right)}{x^{9/2}}+\frac{2\,B\,b^6\,x^{5/2}}{5}+6\,a\,b^4\,\sqrt{x}\,\left(2\,A\,b+5\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(11/2),x)
```

```
[Out] x^(3/2)*((2*A*b^6)/3 + 4*B*a*b^5) - (x*((2*B*a^6)/7 + (12*A*a^5*b)/7) + (2*
A*a^6)/9 + x^2*(6*A*a^4*b^2 + (12*B*a^5*b)/5) + x^3*((40*A*a^3*b^3)/3 + 10*
B*a^4*b^2) + x^4*(30*A*a^2*b^4 + 40*B*a^3*b^3))/x^(9/2) + (2*B*b^6*x^(5/2))
/5 + 6*a*b^4*x^(1/2)*(2*A*b + 5*B*a)
```

sympy [A] time = 12.62, size = 204, normalized size = 1.32

$$-\frac{2Aa^6}{9x^{\frac{9}{2}}}-\frac{12Aa^5b}{7x^{\frac{7}{2}}}-\frac{6Aa^4b^2}{x^{\frac{5}{2}}}-\frac{40Aa^3b^3}{3x^{\frac{3}{2}}}-\frac{30Aa^2b^4}{\sqrt{x}}+12Aab^5\sqrt{x}+\frac{2Ab^6x^{\frac{3}{2}}}{3}-\frac{2Ba^6}{7x^{\frac{7}{2}}}-\frac{12Ba^5b}{5x^{\frac{5}{2}}}-\frac{10Ba^4b^2}{x^{\frac{3}{2}}}-\frac{40Ba^3b^3}{\sqrt{x}}+30Ba^2b^4\sqrt{x}+4Bab^5x^{\frac{3}{2}}+\frac{2Bb^6x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(11/2),x)
```

```
[Out] -2*A*a**6/(9*x**(9/2)) - 12*A*a**5*b/(7*x**(7/2)) - 6*A*a**4*b**2/x**(5/2)
- 40*A*a**3*b**3/(3*x**(3/2)) - 30*A*a**2*b**4/sqrt(x) + 12*A*a*b**5*sqrt(x
) + 2*A*b**6*x**(3/2)/3 - 2*B*a**6/(7*x**(7/2)) - 12*B*a**5*b/(5*x**(5/2))
- 10*B*a**4*b**2/x**(3/2) - 40*B*a**3*b**3/sqrt(x) + 30*B*a**2*b**4*sqrt(x)
 + 4*B*a*b**5*x**(3/2) + 2*B*b**6*x**(5/2)/5
```

3.684 $\int \frac{x^{7/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=154

$$-\frac{a^{5/2}(7Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}}+\frac{a^2\sqrt{x}\,(7Ab-9aB)}{b^5}-\frac{ax^{3/2}(7Ab-9aB)}{3b^4}+\frac{x^{5/2}(7Ab-9aB)}{5b^3}-\frac{x^{7/2}(7Ab-9aB)}{7ab^2}-$$

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 50, 63, 205}

$$\frac{a^2\sqrt{x}\,(7Ab-9aB)}{b^5}-\frac{a^{5/2}(7Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}}-\frac{x^{7/2}(7Ab-9aB)}{7ab^2}+\frac{x^{5/2}(7Ab-9aB)}{5b^3}-\frac{ax^{3/2}(7Ab-9aB)}{3b^4}+\frac{x^{9/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*(7*A*b - 9*a*B)*Sqrt[x])/b^5 - (a*(7*A*b - 9*a*B)*x^(3/2))/(3*b^4) + (
(7*A*b - 9*a*B)*x^(5/2))/(5*b^3) - ((7*A*b - 9*a*B)*x^(7/2))/(7*a*b^2) + ((
A*b - a*B)*x^(9/2))/(a*b*(a + b*x)) - (a^(5/2)*(7*A*b - 9*a*B)*ArcTan[(Sqrt
[b]*Sqrt[x])/Sqrt[a]])/b^(11/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^{7/2}(A+Bx)}{(a+bx)^2}\,dx\\
&= \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} - \frac{\left(\frac{7Ab}{2}-\frac{9aB}{2}\right)\int \frac{x^{7/2}}{a+bx}\,dx}{ab}\\
&= -\frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} + \frac{(7Ab-9aB)\int \frac{x^{5/2}}{a+bx}\,dx}{2b^2}\\
&= \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} - \frac{(a(7Ab-9aB))\int \frac{x^{3/2}}{a+bx}\,dx}{2b^3}\\
&= -\frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} + \frac{\left(a^2(7Ab\right.}{}\\
&= \frac{a^2(7Ab-9aB)\sqrt{x}}{b^5} - \frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-}{ab(}\\
&= \frac{a^2(7Ab-9aB)\sqrt{x}}{b^5} - \frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-}{ab(}\\
&= \frac{a^2(7Ab-9aB)\sqrt{x}}{b^5} - \frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-}{ab(}
\end{aligned}$$

Mathematica [**A**] time = 0.09, size = 128, normalized size = 0.83

$$\frac{a^{5/2}(9aB-7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}} + \frac{\sqrt{x}\left(-945a^4B+105a^3b(7A-6Bx)+14a^2b^2x(35A+9Bx)-2ab^3x^2(49A+27Bx)+6b^4x^3(7A+5Bx)\right)}{105b^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-945*a^4*B + 105*a^3*b*(7*A - 6*B*x) + 6*b^4*x^3*(7*A + 5*B*x) +
14*a^2*b^2*x*(35*A + 9*B*x) - 2*a*b^3*x^2*(49*A + 27*B*x)))/(105*b^5*(a + b
*x)) + (a^(5/2)*(-7*A*b + 9*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(11/2
)
```

IntegrateAlgebraic [**A**] time = 0.16, size = 143, normalized size = 0.93

$$\frac{\left(9a^{7/2}B-7a^{5/2}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}} + \frac{\sqrt{x}\left(-945a^4B+735a^3Ab-630a^3bBx+490a^2Ab^2x+126a^2b^2Bx^2-98aAb^3x^2-54ab^3Bx^3+42Ab^4x^3+30b^4Bx^4\right)}{105b^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(735*a^3*A*b - 945*a^4*B + 490*a^2*A*b^2*x - 630*a^3*b*B*x - 98*a*
A*b^3*x^2 + 126*a^2*b^2*B*x^2 + 42*A*b^4*x^3 - 54*a*b^3*B*x^3 + 30*b^4*B*x^
4))/(105*b^5*(a + b*x)) + ((-7*a^(5/2)*A*b + 9*a^(7/2)*B)*ArcTan[(Sqrt[b]*S
qrt[x])/Sqrt[a]])/b^(11/2)
```

fricas [**A**] time = 0.43, size = 341, normalized size = 2.21

$$\left[-\frac{105\left(9Ba^4-7Aa^3b+\left(9Ba^3b-7Aa^2b^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(30Bb^4x^4-945Ba^4+735Aa^3b-6\left(9Bab^3-7Ab^4\right)x^3+14\left(9Ba^2b^2-7Aab^3\right)x^2-70\left(9Ba^3b-7Aa^2b^2\right)x\right)\sqrt{x}}{210\left(b^6x+ab^5\right)}, \frac{105\left(9Ba^4-7Aa^3b+\left(9Ba^3b-7Aa^2b^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+\left(30Bb^4x^4-945Ba^4+735Aa^3b-6\left(9Bab^3-7Ab^4\right)x^3+14\left(9Ba^2b^2-7Aab^3\right)x^2-70\left(9Ba^3b-7Aa^2b^2\right)x\right)\sqrt{x}}{105\left(b^6x+ab^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/210*(105*(9*B*a^4 - 7*A*a^3*b + (9*B*a^3*b - 7*A*a^2*b^2)*x)*sqrt(-a/b)
*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(30*B*b^4*x^4 - 945*
B*a^4 + 735*A*a^3*b - 6*(9*B*a*b^3 - 7*A*b^4)*x^3 + 14*(9*B*a^2*b^2 - 7*A*a
*b^3)*x^2 - 70*(9*B*a^3*b - 7*A*a^2*b^2)*x)*sqrt(x))/(b^6*x + a*b^5), 1/105
*(105*(9*B*a^4 - 7*A*a^3*b + (9*B*a^3*b - 7*A*a^2*b^2)*x)*sqrt(a/b)*arctan(
b*sqrt(x)*sqrt(a/b)/a) + (30*B*b^4*x^4 - 945*B*a^4 + 735*A*a^3*b - 6*(9*B*a
*b^3 - 7*A*b^4)*x^3 + 14*(9*B*a^2*b^2 - 7*A*a*b^3)*x^2 - 70*(9*B*a^3*b - 7*
A*a^2*b^2)*x)*sqrt(x))/(b^6*x + a*b^5)]
```

giac [A] time = 0.19, size = 146, normalized size = 0.95

$$\frac{\left(9\,Ba^4-7\,Aa^3b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5}-\frac{Ba^4\sqrt{x}-Aa^3b\sqrt{x}}{(bx+a)b^5}+\frac{2\left(15\,Bb^{12}x^{\frac{7}{2}}-42\,Bab^{11}x^{\frac{5}{2}}+21\,Ab^{12}x^{\frac{5}{2}}+105\,Ba^2b^{10}x^{\frac{3}{2}}-70\,Aab^{11}x^{\frac{3}{2}}-420\,Ba^3b^9\sqrt{x}+315\,Aa^2b^{10}\sqrt{x}\right)}{105\,b^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (9*B*a^4 - 7*A*a^3*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) - (B*a^4*
sqrt(x) - A*a^3*b*sqrt(x))/((b*x + a)*b^5) + 2/105*(15*B*b^12*x^(7/2) - 42*
B*a*b^11*x^(5/2) + 21*A*b^12*x^(5/2) + 105*B*a^2*b^10*x^(3/2) - 70*A*a*b^11
*x^(3/2) - 420*B*a^3*b^9*sqrt(x) + 315*A*a^2*b^10*sqrt(x))/b^14
```

maple [A] time = 0.07, size = 163, normalized size = 1.06

$$\frac{2B\,x^{\frac{7}{2}}}{7b^2}+\frac{2A\,x^{\frac{5}{2}}}{5b^2}-\frac{4Ba\,x^{\frac{5}{2}}}{5b^3}-\frac{7A\,a^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^4}+\frac{9B\,a^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^5}+\frac{A\,a^3\sqrt{x}}{(bx+a)\,b^4}-\frac{4Aa\,x^{\frac{3}{2}}}{3b^3}-\frac{B\,a^4\sqrt{x}}{(bx+a)\,b^5}+\frac{2B\,a^2x^{\frac{3}{2}}}{b^4}+\frac{6A\,a^2\sqrt{x}}{b^4}-\frac{8B\,a^3\sqrt{x}}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/7/b^2*B*x^(7/2)+2/5/b^2*A*x^(5/2)-4/5/b^3*B*x^(5/2)*a-4/3/b^3*A*x^(3/2)*a
+2/b^4*B*x^(3/2)*a^2+6/b^4*A*a^2*x^(1/2)-8/b^5*B*x^(1/2)*a^3+a^3/b^4*x^(1/2
)/(b*x+a)*A-a^4/b^5*x^(1/2)/(b*x+a)*B-7*a^3/b^4/(a*b)^(1/2)*arctan(x^(1/2)*
b/(a*b)^(1/2))*A+9*a^4/b^5/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))*B
```

maxima [A] time = 1.32, size = 139, normalized size = 0.90

$$-\frac{\left(Ba^4-Aa^3b\right)\sqrt{x}}{b^6x+ab^5}+\frac{\left(9\,Ba^4-7\,Aa^3b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5}+\frac{2\left(15\,Bb^3x^{\frac{7}{2}}-21\left(2\,Bab^2-Ab^3\right)x^{\frac{5}{2}}+35\left(3\,Ba^2b-2\,Aab^2\right)x^{\frac{3}{2}}-105\left(4\,Ba^3-3\,Aa^2b\right)\sqrt{x}\right)}{105\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^4 - A*a^3*b)*sqrt(x)/(b^6*x + a*b^5) + (9*B*a^4 - 7*A*a^3*b)*arctan(b
*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) + 2/105*(15*B*b^3*x^(7/2) - 21*(2*B*a*b
^2 - A*b^3)*x^(5/2) + 35*(3*B*a^2*b - 2*A*a*b^2)*x^(3/2) - 105*(4*B*a^3 - 3
*A*a^2*b)*sqrt(x))/b^5
```

mupad [B] time = 0.07, size = 209, normalized size = 1.36

$$\sqrt{x}\left(\frac{2\,a\left(\frac{2\,a\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)}{b}+\frac{2\,B\,a^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)}{b^2}\right)+x^{5/2}\left(\frac{2\,A}{5\,b^2}-\frac{4\,B\,a}{5\,b^3}\right)-x^{3/2}\left(\frac{2\,a\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)}{3\,b}+\frac{2\,B\,a^2}{3\,b^4}\right)+\frac{2\,B\,x^{7/2}}{7\,b^2}-\frac{\sqrt{x}\,\left(B\,a^4-A\,a^3\,b\right)}{x\,b^6+a\,b^5}+\frac{a^{5/2}\,\mathrm{atan}\left(\frac{a^{5/2}\,\sqrt{b}\,\sqrt{x}\,(7\,A\,b-9\,B\,a)}{9\,B\,a^4-7\,A\,a^3\,b}\right)(7\,A\,b-9\,B\,a)}{b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(1/2)*((2*a*((2*a*((2*A)/b^2 - (4*B*a)/b^3))/b + (2*B*a^2)/b^4))/b - (a^2
*((2*A)/b^2 - (4*B*a)/b^3))/b^2) + x^(5/2)*((2*A)/(5*b^2) - (4*B*a)/(5*b^3)
```

```
) - x^(3/2)*((2*a*((2*A)/b^2 - (4*B*a)/b^3))/(3*b) + (2*B*a^2)/(3*b^4)) + (
2*B*x^(7/2))/(7*b^2) - (x^(1/2)*(B*a^4 - A*a^3*b))/(a*b^5 + b^6*x) + (a^(5/
2)*atan((a^(5/2)*b^(1/2)*x^(1/2)*(7*A*b - 9*B*a))/(9*B*a^4 - 7*A*a^3*b))*(7
*A*b - 9*B*a))/b^(11/2)
```

sympy [A] time = 153.51, size = 1197, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(2*A*x**(5/2)/5 + 2*B*x**(7/2)/7), Eq(a, 0) & Eq(b, 0)), ((2
*A*x**(9/2)/9 + 2*B*x**(11/2)/11)/a**2, Eq(b, 0)), ((2*A*x**(5/2)/5 + 2*B*x
**(7/2)/7)/b**2, Eq(a, 0)), (1470*I*A*a**(7/2)*b**2*sqrt(x)*sqrt(1/b)/(210*
I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 980*I*A*a**(5
/2)*b**3*x**(3/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*
b**7*x*sqrt(1/b)) - 196*I*A*a**(3/2)*b**4*x**(5/2)*sqrt(1/b)/(210*I*a**(3/2
)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 84*I*A*sqrt(a)*b**5*x*
*(7/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt
(1/b)) - 735*A*a**4*b*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b
**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 735*A*a**4*b*log(I*sqrt(a
)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*
x*sqrt(1/b)) - 735*A*a**3*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I
*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 735*A*a**3*b**
2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210
*I*sqrt(a)*b**7*x*sqrt(1/b)) - 1890*I*B*a**(9/2)*b*sqrt(x)*sqrt(1/b)/(210*I
*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) - 1260*I*B*a**(7
/2)*b**2*x**(3/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*
b**7*x*sqrt(1/b)) + 252*I*B*a**(5/2)*b**3*x**(5/2)*sqrt(1/b)/(210*I*a**(3/2
)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) - 108*I*B*a**(3/2)*b**4*
x**(7/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sq
rt(1/b)) + 60*I*B*sqrt(a)*b**5*x**(9/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt
(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 945*B*a**5*log(-I*sqrt(a)*sqrt(1/
b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/
b)) - 945*B*a**5*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sq
rt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 945*B*a**4*b*x*log(-I*sqrt(a)*s
qrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*s
qrt(1/b)) - 945*B*a**4*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/
2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)), True))
```

3.685 $\int \frac{x^{5/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=130

$$\frac{a^{3/2}(5Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}-\frac{a\sqrt{x}\,(5Ab-7aB)}{b^4}+\frac{x^{3/2}(5Ab-7aB)}{3b^3}-\frac{x^{5/2}(5Ab-7aB)}{5ab^2}+\frac{x^{7/2}(Ab-aB)}{ab(a+bx)}$$

Rubi [A] time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {27, 78, 50, 63, 205}

$$\frac{a^{3/2}(5Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}-\frac{x^{5/2}(5Ab-7aB)}{5ab^2}+\frac{x^{3/2}(5Ab-7aB)}{3b^3}-\frac{a\sqrt{x}\,(5Ab-7aB)}{b^4}+\frac{x^{7/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((a*(5*A*b - 7*a*B)*Sqrt[x])/b^4) + ((5*A*b - 7*a*B)*x^(3/2))/(3*b^3) - ((
5*A*b - 7*a*B)*x^(5/2))/(5*a*b^2) + ((A*b - a*B)*x^(7/2))/(a*b*(a + b*x)) +
 (a^(3/2)*(5*A*b - 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^{5/2}(A+Bx)}{(a+bx)^2}\,dx \\
&= \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} - \frac{\left(\frac{5Ab}{2}-\frac{7aB}{2}\right)\int \frac{x^{5/2}}{a+bx}\,dx}{ab} \\
&= -\frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{(5Ab-7aB)\int \frac{x^{3/2}}{a+bx}\,dx}{2b^2} \\
&= \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} - \frac{(a(5Ab-7aB))\int \frac{\sqrt{x}}{a+bx}\,dx}{2b^3} \\
&= -\frac{a(5Ab-7aB)\sqrt{x}}{b^4} + \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{\left(a^2(5Ab \ldots\right.}{\ldots} \\
&= -\frac{a(5Ab-7aB)\sqrt{x}}{b^4} + \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{\left(a^2(5Ab \ldots\right.}{\ldots} \\
&= -\frac{a(5Ab-7aB)\sqrt{x}}{b^4} + \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{a^{3/2}(5Ab \ldots}{\ldots}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 110, normalized size = 0.85

$$
\frac{\sqrt{x}\left(105a^3B+a^2(70bBx-75Ab)-2ab^2x(25A+7Bx)+2b^3x^2(5A+3Bx)\right)}{15b^4(a+bx)} - \frac{a^{3/2}(7aB-5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(105*a^3*B + 2*b^3*x^2*(5*A + 3*B*x) - 2*a*b^2*x*(25*A + 7*B*x) +
a^2*(-75*A*b + 70*b*B*x)))/(15*b^4*(a + b*x)) - (a^(3/2)*(-5*A*b + 7*a*B)*A
rcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(9/2)
```

IntegrateAlgebraic [A] time = 0.14, size = 119, normalized size = 0.92

$$
\frac{\left(5a^{3/2}Ab-7a^{5/2}B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}} + \frac{\sqrt{x}\left(105a^3B-75a^2Ab+70a^2bBx-50aAb^2x-14ab^2Bx^2+10Ab^3x^2+6b^3Bx^3\right)}{15b^4(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-75*a^2*A*b + 105*a^3*B - 50*a*A*b^2*x + 70*a^2*b*B*x + 10*A*b^3*
x^2 - 14*a*b^2*B*x^2 + 6*b^3*B*x^3))/(15*b^4*(a + b*x)) + ((5*a^(3/2)*A*b -
 7*a^(5/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(9/2)
```

fricas [A] time = 0.43, size = 290, normalized size = 2.23

$$
\left[-\frac{15\left(7Ba^3-5Aa^2b+\left(7Ba^2b-5Aab^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(6Bb^3x^3+105Ba^3-75Aa^2b-2\left(7Bab^2-5Ab^3\right)x^2+10\left(7Ba^2b-5Aab^2\right)x\right)\sqrt{x}}{30\left(b^5x+ab^4\right)}, -\frac{15\left(7Ba^3-5Aa^2b+\left(7Ba^2b-5Aab^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)-\left(6Bb^3x^3+105Ba^3-75Aa^2b-2\left(7Bab^2-5Ab^3\right)x^2+10\left(7Ba^2b-5Aab^2\right)x\right)\sqrt{x}}{15\left(b^5x+ab^4\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/30*(15*(7*B*a^3 - 5*A*a^2*b + (7*B*a^2*b - 5*A*a*b^2)*x)*sqrt(-a/b)*log
((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(6*B*b^3*x^3 + 105*B*a^3
 - 75*A*a^2*b - 2*(7*B*a*b^2 - 5*A*b^3)*x^2 + 10*(7*B*a^2*b - 5*A*a*b^2)*x)
*sqrt(x))/(b^5*x + a*b^4), -1/15*(15*(7*B*a^3 - 5*A*a^2*b + (7*B*a^2*b - 5*
A*a*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) - (6*B*b^3*x^3 + 105*B*
a^3 - 75*A*a^2*b - 2*(7*B*a*b^2 - 5*A*b^3)*x^2 + 10*(7*B*a^2*b - 5*A*a*b^2)
*x)*sqrt(x))/(b^5*x + a*b^4)]
```

giac [A] time = 0.18, size = 122, normalized size = 0.94

$$-\frac{\left(7\,Ba^{3}-5\,Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{4}}+\frac{Ba^{3}\sqrt{x}-Aa^{2}b\sqrt{x}}{(bx+a)b^{4}}+\frac{2\left(3\,Bb^{8}x^{\frac{5}{2}}-10\,Bab^{7}x^{\frac{3}{2}}+5\,Ab^{8}x^{\frac{3}{2}}+45\,Ba^{2}b^{6}\sqrt{x}-30\,Aab^{7}\sqrt{x}\right)}{15\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(7*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + (B*a^3
*sqrt(x) - A*a^2*b*sqrt(x))/((b*x + a)*b^4) + 2/15*(3*B*b^8*x^(5/2) - 10*B*
a*b^7*x^(3/2) + 5*A*b^8*x^(3/2) + 45*B*a^2*b^6*sqrt(x) - 30*A*a*b^7*sqrt(x)
)/b^10
```

maple [A] time = 0.10, size = 139, normalized size = 1.07

$$\frac{2B\,x^{\frac{5}{2}}}{5b^{2}}+\frac{5A\,a^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^{3}}-\frac{7B\,a^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^{4}}-\frac{A\,a^{2}\sqrt{x}}{(bx+a)\,b^{3}}+\frac{2A\,x^{\frac{3}{2}}}{3b^{2}}+\frac{B\,a^{3}\sqrt{x}}{(bx+a)\,b^{4}}-\frac{4Ba\,x^{\frac{3}{2}}}{3b^{3}}-\frac{4Aa\sqrt{x}}{b^{3}}+\frac{6B\,a^{2}\sqrt{x}}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/5/b^2*B*x^(5/2)+2/3/b^2*A*x^(3/2)-4/3/b^3*a*B*x^(3/2)-4/b^3*A*x^(1/2)*a+6
/b^4*B*x^(1/2)*a^2-a^2/b^3*x^(1/2)/(b*x+a)*A+a^3/b^4*x^(1/2)/(b*x+a)*B+5*a^
2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-7*a^3/b^4/(a*b)^(1/2)*a
rctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.21, size = 115, normalized size = 0.88

$$\frac{\left(Ba^{3}-Aa^{2}b\right)\sqrt{x}}{b^{5}x+ab^{4}}-\frac{\left(7\,Ba^{3}-5\,Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{4}}+\frac{2\left(3\,Bb^{2}x^{\frac{5}{2}}-5\left(2\,Bab-Ab^{2}\right)x^{\frac{3}{2}}+15\left(3\,Ba^{2}-2\,Aab\right)\sqrt{x}\right)}{15\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a^3 - A*a^2*b)*sqrt(x)/(b^5*x + a*b^4) - (7*B*a^3 - 5*A*a^2*b)*arctan(b*
sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + 2/15*(3*B*b^2*x^(5/2) - 5*(2*B*a*b - A
*b^2)*x^(3/2) + 15*(3*B*a^2 - 2*A*a*b)*sqrt(x))/b^4
```

mupad [B] time = 1.15, size = 146, normalized size = 1.12

$$x^{3/2}\left(\frac{2\,A}{3\,b^{2}}-\frac{4\,B\,a}{3\,b^{3}}\right)-\sqrt{x}\left(\frac{2\,a\left(\frac{2\,A}{b^{2}}-\frac{4\,B\,a}{b^{3}}\right)}{b}+\frac{2\,B\,a^{2}}{b^{4}}\right)+\frac{2\,B\,x^{5/2}}{5\,b^{2}}+\frac{\sqrt{x}\,\left(B\,a^{3}-A\,a^{2}\,b\right)}{x\,b^{5}+a\,b^{4}}-\frac{a^{3/2}\,\mathrm{atan}\left(\frac{a^{3/2}\,\sqrt{b}\,\sqrt{x}\,(5\,A\,b-7\,B\,a)}{7\,B\,a^{3}-5\,A\,a^{2}\,b}\right)(5\,A\,b-7\,B\,a)}{b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(3/2)*((2*A)/(3*b^2) - (4*B*a)/(3*b^3)) - x^(1/2)*((2*a*((2*A)/b^2 - (4*B
*a)/b^3))/b + (2*B*a^2)/b^4) + (2*B*x^(5/2))/(5*b^2) + (x^(1/2)*(B*a^3 - A*
a^2*b))/(a*b^4 + b^5*x) - (a^(3/2)*atan((a^(3/2)*b^(1/2)*x^(1/2)*(5*A*b - 7
*B*a))/(7*B*a^3 - 5*A*a^2*b))*(5*A*b - 7*B*a))/b^(9/2)
```

sympy [A] time = 52.86, size = 1068, normalized size = 8.22

$$\begin{cases} \tilde{\infty} \left(\frac{2Ax^{\frac{3}{2}}}{3} + \frac{2Bx^{\frac{5}{2}}}{5}\right) & \text{for}\: a = 0 \wedge b = 0 \\ \frac{\frac{2Ax^{\frac{7}{2}}}{7} + \frac{2Bx^{\frac{9}{2}}}{9}}{a^{2}} & \text{for}\: b = 0 \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3} + \frac{2Bx^{\frac{5}{2}}}{5}}{b^{2}} & \text{for}\: a = 0 \\ - \frac{150 i A a^{\frac{5}{2}} b^{2} \sqrt{x} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} - \frac{100 i A a^{\frac{3}{2}} b^{3} x^{\frac{3}{2}} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{20 i A \sqrt{a} b^{4} x^{\frac{5}{2}} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{75 A a^{3} b \log{\left(- i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} - \frac{75 A a^{3} b \log{\left(i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{75 A a^{2} b^{2} x \log{\left(- i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} - \frac{75 A a^{2} b^{2} x \log{\left(i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{210 i B a^{\frac{7}{2}} b \sqrt{x} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{140 i B a^{\frac{5}{2}} b^{2} x^{\frac{3}{2}} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} - \frac{28 i B a^{\frac{3}{2}} b^{3} x^{\frac{5}{2}} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{12 i B \sqrt{a} b^{4} x^{\frac{7}{2}} \sqrt{\frac{1}{b}}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} - \frac{105 B a^{4} \log{\left(- i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{105 B a^{4} \log{\left(i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} - \frac{105 B a^{3} b x \log{\left(- i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} + \frac{105 B a^{3} b x \log{\left(i \sqrt{a} \sqrt{\frac{1}{b}} + \sqrt{x} \right)}}{30 i a^{\frac{3}{2}} b^{5} \sqrt{\frac{1}{b}} + 30 i \sqrt{a} b^{6} x \sqrt{\frac{1}{b}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(2*A*x**(3/2)/3 + 2*B*x**(5/2)/5), Eq(a, 0) & Eq(b, 0)), ((2
*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a**2, Eq(b, 0)), ((2*A*x**(3/2)/3 + 2*B*x**
(5/2)/5)/b**2, Eq(a, 0)), (-150*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(30*I*a
**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) - 100*I*A*a**(3/2)*
b**3*x**(3/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x
*sqrt(1/b)) + 20*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sq
rt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 75*A*a**3*b*log(-I*sqrt(a)*sqrt(
1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/
b)) - 75*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sq
rt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 75*A*a**2*b**2*x*log(-I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sq
rt(1/b)) - 75*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/
2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 210*I*B*a**(7/2)*b*sqr
t(x)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b
)) + 140*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b)
 + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) - 28*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/b)
/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 12*I*B*sq
rt(a)*b**4*x**(7/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*
b**6*x*sqrt(1/b)) - 105*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a*
*(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 105*B*a**4*log(I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b*
*6*x*sqrt(1/b)) - 105*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*
a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 105*B*a**3*b*x*l
og(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt
(a)*b**6*x*sqrt(1/b)), True))
```

3.686 $\int \frac{x^{3/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=108

$$-\frac{\sqrt{a}\,(3Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{\sqrt{x}\,(3Ab-5aB)}{b^3}-\frac{x^{3/2}(3Ab-5aB)}{3ab^2}+\frac{x^{5/2}(Ab-aB)}{ab(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 50, 63, 205}

$$-\frac{x^{3/2}(3Ab-5aB)}{3ab^2}+\frac{\sqrt{x}\,(3Ab-5aB)}{b^3}-\frac{\sqrt{a}\,(3Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{x^{5/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((3*A*b - 5*a*B)*Sqrt[x])/b^3 - ((3*A*b - 5*a*B)*x^(3/2))/(3*a*b^2) + ((A*b
 - a*B)*x^(5/2))/(a*b*(a + b*x)) - (Sqrt[a]*(3*A*b - 5*a*B)*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(a+bx)^2}\,dx \\
&= \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{\left(\frac{3Ab}{2}-\frac{5aB}{2}\right)\int \frac{x^{3/2}}{a+bx}\,dx}{ab} \\
&= -\frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} + \frac{(3Ab-5aB)\int \frac{\sqrt{x}}{a+bx}\,dx}{2b^2} \\
&= \frac{(3Ab-5aB)\sqrt{x}}{b^3} - \frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{(a(3Ab-5aB))\int \frac{1}{\sqrt{x}(a+bx)}\,dx}{2b^3} \\
&= \frac{(3Ab-5aB)\sqrt{x}}{b^3} - \frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{(a(3Ab-5aB))\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\right.}{b^3} \\
&= \frac{(3Ab-5aB)\sqrt{x}}{b^3} - \frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{\sqrt{a}\,(3Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 88, normalized size = 0.81

$$
\frac{\sqrt{x}\left(-15a^2B+ab(9A-10Bx)+2b^2x(3A+Bx)\right)}{3b^3(a+bx)} + \frac{\sqrt{a}\,(5aB-3Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-15*a^2*B + a*b*(9*A - 10*B*x) + 2*b^2*x*(3*A + B*x)))/(3*b^3*(a
+ b*x)) + (Sqrt[a]*(-3*A*b + 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7
/2)
```

IntegrateAlgebraic [A] time = 0.12, size = 95, normalized size = 0.88

$$
\frac{\left(5a^{3/2}B-3\sqrt{a}\,Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}} + \frac{\sqrt{x}\left(-15a^2B+9aAb-10abBx+6Ab^2x+2b^2Bx^2\right)}{3b^3(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(9*a*A*b - 15*a^2*B + 6*A*b^2*x - 10*a*b*B*x + 2*b^2*B*x^2))/(3*b^
3*(a + b*x)) + ((-3*Sqrt[a]*A*b + 5*a^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a]])/b^(7/2)
```

fricas [A] time = 0.44, size = 231, normalized size = 2.14

$$
\left[-\frac{3\left(5Ba^2-3Aab+\left(5Bab-3Ab^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(2Bb^2x^2-15Ba^2+9Aab-2\left(5Bab-3Ab^2\right)x\right)\sqrt{x}}{6\left(b^4x+ab^3\right)},\ \frac{3\left(5Ba^2-3Aab+\left(5Bab-3Ab^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+\left(2Bb^2x^2-15Ba^2+9Aab-2\left(5Bab-3Ab^2\right)x\right)\sqrt{x}}{3\left(b^4x+ab^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(5*B*a^2 - 3*A*a*b + (5*B*a*b - 3*A*b^2)*x)*sqrt(-a/b)*log((b*x -
2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(2*B*b^2*x^2 - 15*B*a^2 + 9*A*a*
```

```
b - 2*(5*B*a*b - 3*A*b^2)*x)*sqrt(x))/(b^4*x + a*b^3), 1/3*(3*(5*B*a^2 - 3*
A*a*b + (5*B*a*b - 3*A*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (2
*B*b^2*x^2 - 15*B*a^2 + 9*A*a*b - 2*(5*B*a*b - 3*A*b^2)*x)*sqrt(x))/(b^4*x
+ a*b^3)]
```

giac [A] time = 0.19, size = 95, normalized size = 0.88

$$\frac{\left(5\,Ba^{2}-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{3}}-\frac{Ba^{2}\sqrt{x}-Aab\sqrt{x}}{(bx+a)b^{3}}+\frac{2\left(Bb^{4}x^{\frac{3}{2}}-6\,Bab^{3}\sqrt{x}+3\,Ab^{4}\sqrt{x}\right)}{3\,b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (5*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) - (B*a^2*sq
rt(x) - A*a*b*sqrt(x))/((b*x + a)*b^3) + 2/3*(B*b^4*x^(3/2) - 6*B*a*b^3*sqr
t(x) + 3*A*b^4*sqrt(x))/b^6
```

maple [A] time = 0.13, size = 113, normalized size = 1.05

$$-\frac{3Aa\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^{2}}+\frac{5B\,a^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^{3}}+\frac{Aa\sqrt{x}}{(bx+a)\,b^{2}}-\frac{B\,a^{2}\sqrt{x}}{(bx+a)\,b^{3}}+\frac{2B\,x^{\frac{3}{2}}}{3b^{2}}+\frac{2A\sqrt{x}}{b^{2}}-\frac{4Ba\sqrt{x}}{b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3/b^2*B*x^(3/2)+2/b^2*A*x^(1/2)-4/b^3*B*a*x^(1/2)+a/b^2*x^(1/2)/(b*x+a)*A
-a^2/b^3*x^(1/2)/(b*x+a)*B-3*a/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*A+5*a^2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.35, size = 88, normalized size = 0.81

$$-\frac{\left(Ba^{2}-Aab\right)\sqrt{x}}{b^{4}x+ab^{3}}+\frac{\left(5\,Ba^{2}-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{3}}+\frac{2\left(Bbx^{\frac{3}{2}}-3\,(2\,Ba-Ab)\sqrt{x}\right)}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^2 - A*a*b)*sqrt(x)/(b^4*x + a*b^3) + (5*B*a^2 - 3*A*a*b)*arctan(b*sqr
t(x)/sqrt(a*b))/(sqrt(a*b)*b^3) + 2/3*(B*b*x^(3/2) - 3*(2*B*a - A*b)*sqrt(x
))/b^3
```

mupad [B] time = 0.08, size = 107, normalized size = 0.99

$$\sqrt{x}\,\left(\frac{2\,A}{b^{2}}-\frac{4\,B\,a}{b^{3}}\right)-\frac{\sqrt{x}\,\left(B\,a^{2}-A\,a\,b\right)}{x\,b^{4}+a\,b^{3}}+\frac{2\,B\,x^{3/2}}{3\,b^{2}}+\frac{\sqrt{a}\,\mathrm{atan}\left(\frac{\sqrt{a}\,\sqrt{b}\,\sqrt{x}\,(3\,A\,b-5\,B\,a)}{5\,B\,a^{2}-3\,A\,a\,b}\right)\,(3\,A\,b-5\,B\,a)}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(1/2)*((2*A)/b^2 - (4*B*a)/b^3) - (x^(1/2)*(B*a^2 - A*a*b))/(a*b^3 + b^4*
x) + (2*B*x^(3/2))/(3*b^2) + (a^(1/2)*atan((a^(1/2)*b^(1/2)*x^(1/2)*(3*A*b
- 5*B*a))/(5*B*a^2 - 3*A*a*b))*(3*A*b - 5*B*a))/b^(7/2)
```

sympy [A] time = 14.34, size = 932, normalized size = 8.63

$$\begin{cases} \tilde{\infty}\left(2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}\right) & \text{for}\: a=0 \wedge b=0 \\ \frac{\frac{2Ax^{\frac{5}{2}}}{5}+\frac{2Bx^{\frac{7}{2}}}{7}}{a^{2}} & \text{for}\: b=0 \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{b^{2}} & \text{for}\: a=0 \\ \frac{18iAa^{\frac{3}{2}}b^{2}\sqrt{x}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}+\frac{12iA\sqrt{a}b^{3}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}-\frac{9Aa^{2}b\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}+\frac{9Aa^{2}b\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}-\frac{9Aab^{2}x\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}+\frac{9Aab^{2}x\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}-\frac{30iBa^{\frac{5}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}-\frac{20iBa^{\frac{3}{2}}b^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}+\frac{4iB\sqrt{a}b^{3}x^{\frac{5}{2}}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}+\frac{15Ba^{3}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}-\frac{15Ba^{3}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}+\frac{15Ba^{2}bx\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}}-\frac{15Ba^{2}bx\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^{4}\sqrt{\frac{1}{b}}+6i\sqrt{a}b^{5}x\sqrt{\frac{1}{b}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(2*A*sqrt(x) + 2*B*x**(3/2)/3), Eq(a, 0) & Eq(b, 0)), ((2*A*
x**(5/2)/5 + 2*B*x**(7/2)/7)/a**2, Eq(b, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/
3)/b**2, Eq(a, 0)), (18*I*A*a**(3/2)*b**2*sqrt(x)*sqrt(1/b)/(6*I*a**(3/2)*b
**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 12*I*A*sqrt(a)*b**3*x**(3/2
)*sqrt(1/b)/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) -
9*A*a**2*b*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b)
 + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 9*A*a**2*b*log(I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) - 9*A*a*
b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6
*I*sqrt(a)*b**5*x*sqrt(1/b)) + 9*A*a*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) - 30*I*B*a
**(5/2)*b*sqrt(x)*sqrt(1/b)/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5
*x*sqrt(1/b)) - 20*I*B*a**(3/2)*b**2*x**(3/2)*sqrt(1/b)/(6*I*a**(3/2)*b**4*
sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 4*I*B*sqrt(a)*b**3*x**(5/2)*sqr
t(1/b)/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 15*B*
a**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I
*sqrt(a)*b**5*x*sqrt(1/b)) - 15*B*a**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(
6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 15*B*a**2*b*x
*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqr
t(a)*b**5*x*sqrt(1/b)) - 15*B*a**2*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(
6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)), True))
```

3.687 $\int \frac{\sqrt{x}(A+Bx)}{a^2+2abx+b^2x^2} dx$

Optimal. Leaf size=85

$$\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}}-\frac{\sqrt{x}\,(Ab-3aB)}{ab^2}+\frac{x^{3/2}(Ab-aB)}{ab(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 50, 63, 205}

$$-\frac{\sqrt{x}\,(Ab-3aB)}{ab^2}+\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}}+\frac{x^{3/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((A*b - 3*a*B)*Sqrt[x])/(a*b^2)) + ((A*b - a*B)*x^(3/2))/(a*b*(a + b*x))
+ ((A*b - 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{\sqrt{x}(A+Bx)}{(a+bx)^2}\,dx\\
&= \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} - \frac{\left(\frac{Ab}{2}-\frac{3aB}{2}\right)\int \frac{\sqrt{x}}{a+bx}\,dx}{ab}\\
&= -\frac{(Ab-3aB)\sqrt{x}}{ab^2} + \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} + \frac{(Ab-3aB)\int \frac{1}{\sqrt{x}(a+bx)}\,dx}{2b^2}\\
&= -\frac{(Ab-3aB)\sqrt{x}}{ab^2} + \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} + \frac{(Ab-3aB)\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{x}\right)}{b^2}\\
&= -\frac{(Ab-3aB)\sqrt{x}}{ab^2} + \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} + \frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 67, normalized size = 0.79

$$
\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}} + \frac{\sqrt{x}(3aB-Ab+2bBx)}{b^2(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-(A*b) + 3*a*B + 2*b*B*x))/(b^2*(a + b*x)) + ((A*b - 3*a*B)*ArcTa
n[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(5/2))
```

IntegrateAlgebraic [A] time = 0.11, size = 67, normalized size = 0.79

$$
\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}} + \frac{\sqrt{x}(3aB-Ab+2bBx)}{b^2(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-(A*b) + 3*a*B + 2*b*B*x))/(b^2*(a + b*x)) + ((A*b - 3*a*B)*ArcTa
n[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(5/2))
```

fricas [A] time = 0.44, size = 198, normalized size = 2.33

$$
\left[\frac{\left(3\,Ba^2-Aab+\left(3\,Bab-Ab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(2\,Bab^2x+3\,Ba^2b-Aab^2\right)\sqrt{x}}{2\left(ab^4x+a^2b^3\right)}, \frac{\left(3\,Ba^2-Aab+\left(3\,Bab-Ab^2\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(2\,Bab^2x+3\,Ba^2b-Aab^2\right)\sqrt{x}}{ab^4x+a^2b^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [1/2*((3*B*a^2 - A*a*b + (3*B*a*b - A*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*s
qrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(2*B*a*b^2*x + 3*B*a^2*b - A*a*b^2)*sqrt(
x))/(a*b^4*x + a^2*b^3), ((3*B*a^2 - A*a*b + (3*B*a*b - A*b^2)*x)*sqrt(a*b)
*arctan(sqrt(a*b)/(b*sqrt(x))) + (2*B*a*b^2*x + 3*B*a^2*b - A*a*b^2)*sqrt(x
))/(a*b^4*x + a^2*b^3)]
```

giac [A] time = 0.16, size = 65, normalized size = 0.76

$$\frac{2\,B\sqrt{x}}{b^2} - \frac{(3\,Ba - Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^2} + \frac{Ba\sqrt{x} - Ab\sqrt{x}}{(bx+a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/b^2 - (3*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2)
 + (B*a*sqrt(x) - A*b*sqrt(x))/((b*x + a)*b^2)
```

maple [A] time = 0.08, size = 87, normalized size = 1.02

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b} - \frac{3Ba\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^2} - \frac{A\sqrt{x}}{(bx+a)\,b} + \frac{Ba\sqrt{x}}{(bx+a)\,b^2} + \frac{2B\sqrt{x}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*B/b^2*x^(1/2)-1/b*x^(1/2)/(b*x+a)*A+1/b^2*x^(1/2)/(b*x+a)*B*a+1/b/(a*b)^(
1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-3/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/
2)*b*x^(1/2))*B*a
```

maxima [A] time = 1.33, size = 65, normalized size = 0.76

$$\frac{(Ba - Ab)\sqrt{x}}{b^3x + ab^2} + \frac{2\,B\sqrt{x}}{b^2} - \frac{(3\,Ba - Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a - A*b)*sqrt(x)/(b^3*x + a*b^2) + 2*B*sqrt(x)/b^2 - (3*B*a - A*b)*arcta
n(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2)
```

mupad [B] time = 0.09, size = 62, normalized size = 0.73

$$\frac{2\,B\,\sqrt{x}}{b^2} - \frac{\sqrt{x}\;(A\,b - B\,a)}{x\,b^3 + a\,b^2} + \frac{\mathrm{atan}\left(\frac{\sqrt{b}\;\sqrt{x}}{\sqrt{a}}\right)\,(A\,b - 3\,B\,a)}{\sqrt{a}\;b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*B*x^(1/2))/b^2 - (x^(1/2)*(A*b - B*a))/(a*b^2 + b^3*x) + (atan((b^(1/2)*
x^(1/2))/a^(1/2))*(A*b - 3*B*a))/(a^(1/2)*b^(5/2))
```

sympy [A] time = 10.57, size = 782, normalized size = 9.20

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}\right) & \text{for}\: a = 0 \wedge b = 0 \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3} + \frac{2Bx^{\frac{5}{2}}}{5}}{a^2} & \text{for}\: b = 0 \\ \frac{-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}}{b^2} & \text{for}\: a = 0 \\ -\frac{2iA\sqrt{a}b^2\sqrt{x}\sqrt{\frac{1}{b}}}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} + \frac{Aab\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} - \frac{Aab\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} + \frac{Ab^2x\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} - \frac{Ab^2x\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} + \frac{6iBa^{\frac{3}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} + \frac{4iB\sqrt{a}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} - \frac{3Ba^2\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} + \frac{3Ba^2\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} - \frac{3Babx\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} + \frac{3Babx\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{3}{2}}b^3\sqrt{\frac{1}{b}} + 2i\sqrt{a}b^4x\sqrt{\frac{1}{b}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((2*A*x*
*(3/2)/3 + 2*B*x**(5/2)/5)/a**2, Eq(b, 0)), ((-2*A/sqrt(x) + 2*B*sqrt(x))/b
**2, Eq(a, 0)), (-2*I*A*sqrt(a)*b**2*sqrt(x)*sqrt(1/b)/(2*I*a**(3/2)*b**3*s
qrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) + A*a*b*log(-I*sqrt(a)*sqrt(1/b) +
 sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - A*
a*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*s
qrt(a)*b**4*x*sqrt(1/b)) + A*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*
I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - A*b**2*x*log(I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**
4*x*sqrt(1/b)) + 6*I*B*a**(3/2)*b*sqrt(x)*sqrt(1/b)/(2*I*a**(3/2)*b**3*sqrt
(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) + 4*I*B*sqrt(a)*b**2*x**(3/2)*sqrt(1/
b)/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - 3*B*a**2*
log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt
(a)*b**4*x*sqrt(1/b)) + 3*B*a**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a*
*(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - 3*B*a*b*x*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*
x*sqrt(1/b)) + 3*B*a*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b
**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)), True))
```

3.688 $\int \frac{A+Bx}{\sqrt{x}(a^2+2abx+b^2x^2)} dx$

Optimal. Leaf size=63

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}}+\frac{\sqrt{x}(Ab-aB)}{ab(a+bx)}$$

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {27, 78, 63, 205}

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}}+\frac{\sqrt{x}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(a*b*(a + b*x)) + ((A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x
])/Sqrt[a]])/(a^(3/2)*b^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{\sqrt{x}\,(a+bx)^2}\,dx$$
$$= \frac{(Ab-aB)\sqrt{x}}{ab(a+bx)} + \frac{(Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2ab}$$
$$= \frac{(Ab-aB)\sqrt{x}}{ab(a+bx)} + \frac{(Ab+aB)\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{x}\right)}{ab}$$
$$= \frac{(Ab-aB)\sqrt{x}}{ab(a+bx)} + \frac{(Ab+aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 1.00

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}} + \frac{\sqrt{x}\,(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(a*b*(a + b*x)) + ((A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x
])/Sqrt[a]])/(a^(3/2)*b^(3/2))
```

IntegrateAlgebraic [A] time = 0.10, size = 64, normalized size = 1.02

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}} - \frac{\sqrt{x}\,(aB-Ab)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(((-(A*b) + a*B)*Sqrt[x])/(a*b*(a + b*x))) + ((A*b + a*B)*ArcTan[(Sqrt[b]*
Sqrt[x])/Sqrt[a]])/(a^(3/2)*b^(3/2))
```

fricas [A] time = 0.43, size = 177, normalized size = 2.81

$$\left[-\frac{\left(Ba^2+Aab+\left(Bab+Ab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(Ba^2b-Aab^2\right)\sqrt{x}}{2\left(a^2b^3x+a^3b^2\right)},\ -\frac{\left(Ba^2+Aab+\left(Bab+Ab^2\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(Ba^2b-Aab^2\right)\sqrt{x}}{a^2b^3x+a^3b^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((B*a^2 + A*a*b + (B*a*b + A*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(B*a^2*b - A*a*b^2)*sqrt(x))/(a^2*b^3*x + a^
3*b^2), -((B*a^2 + A*a*b + (B*a*b + A*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b
*sqrt(x))) + (B*a^2*b - A*a*b^2)*sqrt(x))/(a^2*b^3*x + a^3*b^2)]
```

giac [A] time = 0.19, size = 60, normalized size = 0.95

$$\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,ab} - \frac{Ba\sqrt{x}-Ab\sqrt{x}}{(bx+a)ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="giac")
```

```
[Out] (B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b) - (B*a*sqrt(x) - A*
b*sqrt(x))/((b*x + a)*a*b)
```

maple [A] time = 0.07, size = 69, normalized size = 1.10

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a}+\frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b}+\frac{(Ab-Ba)\sqrt{x}}{(bx+a)\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x)
```

```
[Out] (A*b-B*a)*x^(1/2)/a/b/(b*x+a)+1/a/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*A+1/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.43, size = 58, normalized size = 0.92

$$-\frac{(Ba-Ab)\sqrt{x}}{ab^2x+a^2b}+\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] -(B*a - A*b)*sqrt(x)/(a*b^2*x + a^2*b) + (B*a + A*b)*arctan(b*sqrt(x)/sqrt(
a*b))/(sqrt(a*b)*a*b)
```

mupad [B] time = 1.18, size = 51, normalized size = 0.81

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)(A\,b+B\,a)}{a^{3/2}\,b^{3/2}}+\frac{\sqrt{x}\,\left(A\,b-B\,a\right)}{a\,b\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + B*a))/(a^(3/2)*b^(3/2)) + (x^(1/2)*
(A*b - B*a))/(a*b*(a + b*x))
```

sympy [A] time = 8.36, size = 716, normalized size = 11.37

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) & \text{for}\ a=0\wedge b=0 \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{a^2} & \text{for}\ b=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{b^2} & \text{for}\ a=0 \\ \frac{2iA\sqrt{a}b^2\sqrt{x}\sqrt{\frac{1}{b}}}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}+\frac{Aab\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{Aab\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}+\frac{Ab^2x\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{Ab^2x\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{2iBa^{\frac{3}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}+\frac{Ba^2\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{Ba^2\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}+\frac{Babx\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{Babx\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((2
*A*sqrt(x) + 2*B*x**(3/2)/3)/a**2, Eq(b, 0)), ((-2*A/(3*x**(3/2)) - 2*B/sqr
t(x))/b**2, Eq(a, 0)), (2*I*A*sqrt(a)*b**2*sqrt(x)*sqrt(1/b)/(2*I*a**(5/2)*
b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + A*a*b*log(-I*sqrt(a)*sqrt
(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/
b)) - A*a*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b)
 + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + A*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) - A*b**
```

```
2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a
**(3/2)*b**3*x*sqrt(1/b)) - 2*I*B*a**(3/2)*b*sqrt(x)*sqrt(1/b)/(2*I*a**(5/2
)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + B*a**2*log(-I*sqrt(a)*s
qrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt
(1/b)) - B*a**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(
1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + B*a*b*x*log(-I*sqrt(a)*sqrt(1/b) +
sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) - B*
a*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I
*a**(3/2)*b**3*x*sqrt(1/b)), True))
```

3.689 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=88

$$-\frac{(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}-\frac{3Ab-aB}{a^2b\sqrt{x}}+\frac{Ab-aB}{ab\sqrt{x}\,(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{3Ab-aB}{a^2b\sqrt{x}}-\frac{(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}+\frac{Ab-aB}{ab\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((3*A*b - a*B)/(a^2*b*Sqrt[x])) + (A*b - a*B)/(a*b*Sqrt[x]*(a + b*x)) - ((
3*A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(5/2)*Sqrt[b])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^{3/2}(a+bx)^2}\,dx \\
&= \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{\left(-\frac{3Ab}{2}+\frac{aB}{2}\right)\int \frac{1}{x^{3/2}(a+bx)}\,dx}{ab} \\
&= -\frac{3Ab-aB}{a^2b\sqrt{x}} + \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{(3Ab-aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2a^2} \\
&= -\frac{3Ab-aB}{a^2b\sqrt{x}} + \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{(3Ab-aB)\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{x}\right)}{a^2} \\
&= -\frac{3Ab-aB}{a^2b\sqrt{x}} + \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.67

$$
\frac{(a+bx)(aB-3Ab)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{bx}{a}\right)+a(Ab-aB)}{a^2b\sqrt{x}\,(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (a*(A*b - a*B) + (-3*A*b + a*B)*(a + b*x)*Hypergeometric2F1[-1/2, 1, 1/2, -
((b*x)/a)])/(a^2*b*Sqrt[x]*(a + b*x))
```

IntegrateAlgebraic [A] time = 0.10, size = 67, normalized size = 0.76

$$
\frac{(aB-3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}+\frac{-2aA+aBx-3Abx}{a^2\sqrt{x}\,(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*a*A - 3*A*b*x + a*B*x)/(a^2*Sqrt[x]*(a + b*x)) + ((-3*A*b + a*B)*ArcTan
[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(5/2)*Sqrt[b])
```

fricas [A] time = 0.44, size = 215, normalized size = 2.44

$$
\left[\frac{\left(\left(Bab-3\,Ab^2\right)x^2+\left(Ba^2-3\,Aab\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a+2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)-2\left(2\,Aa^2b-\left(Ba^2b-3\,Aab^2\right)x\right)\sqrt{x}}{2\left(a^3b^2x^2+a^4bx\right)}, -\frac{\left(\left(Bab-3\,Ab^2\right)x^2+\left(Ba^2-3\,Aab\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(2\,Aa^2b-\left(Ba^2b-3\,Aab^2\right)x\right)\sqrt{x}}{a^3b^2x^2+a^4bx}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [1/2*(((B*a*b - 3*A*b^2)*x^2 + (B*a^2 - 3*A*a*b)*x)*sqrt(-a*b)*log((b*x - a
 + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(2*A*a^2*b - (B*a^2*b - 3*A*a*b^2)*
x)*sqrt(x))/(a^3*b^2*x^2 + a^4*b*x), -(((B*a*b - 3*A*b^2)*x^2 + (B*a^2 - 3*
A*a*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (2*A*a^2*b - (B*a^2*b -
 3*A*a*b^2)*x)*sqrt(x))/(a^3*b^2*x^2 + a^4*b*x)]
```

giac [A] time = 0.16, size = 60, normalized size = 0.68

$$\frac{(Ba - 3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^2} + \frac{Bax - 3\,Abx - 2\,Aa}{\left(bx^{\frac{3}{2}} + a\sqrt{x}\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*a - 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) + (B*a*x - 3*A*b*
x - 2*A*a)/((b*x^(3/2) + a*sqrt(x))*a^2)
```

maple [A] time = 0.09, size = 87, normalized size = 0.99

$$-\frac{3Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^2} + \frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a} - \frac{Ab\sqrt{x}}{(bx+a)\,a^2} + \frac{B\sqrt{x}}{(bx+a)\,a} - \frac{2A}{a^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/a^2*x^(1/2)/(b*x+a)*A*b+1/a*x^(1/2)/(b*x+a)*B-3/a^2/(a*b)^(1/2)*arctan(1
/(a*b)^(1/2)*b*x^(1/2))*A*b+1/a/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))
*B-2*A/a^2/x^(1/2)
```

maxima [A] time = 1.41, size = 65, normalized size = 0.74

$$-\frac{2\,Aa - (Ba - 3\,Ab)x}{a^2bx^{\frac{3}{2}} + a^3\sqrt{x}} + \frac{(Ba - 3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(2*A*a - (B*a - 3*A*b)*x)/(a^2*b*x^(3/2) + a^3*sqrt(x)) + (B*a - 3*A*b)*ar
ctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2)
```

mupad [B] time = 1.17, size = 65, normalized size = 0.74

$$-\frac{\frac{2\,A}{a} + \frac{x\,(3\,A\,b - B\,a)}{a^2}}{a\,\sqrt{x} + b\,x^{3/2}} - \frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(3\,A\,b - B\,a)}{a^{5/2}\,\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((2*A)/a + (x*(3*A*b - B*a))/a^2)/(a*x^(1/2) + b*x^(3/2)) - (atan((b^(1/2
)*x^(1/2))/a^(1/2))*(3*A*b - B*a))/(a^(5/2)*b^(1/2))
```

sympy [A] time = 19.07, size = 884, normalized size = 10.05

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}} - \frac{2B}{3x^{\frac{3}{2}}}\right) & \text{for}\: a = 0 \wedge b = 0 \\ \frac{-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}}{a^2} & \text{for}\: b = 0 \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}} - \frac{2B}{3x^{\frac{3}{2}}}}{b^2} & \text{for}\: a = 0 \\ -\frac{4iAa^{\frac{3}{2}}b\sqrt{\frac{1}{b}}}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} - \frac{6iA\sqrt{a}b^2x\sqrt{\frac{1}{b}}}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} - \frac{3Aab\sqrt{x}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} + \frac{3Aab\sqrt{x}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} - \frac{3Ab^2x^{\frac{3}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} + \frac{3Ab^2x^{\frac{3}{2}}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} + \frac{2iBa^{\frac{3}{2}}bx\sqrt{\frac{1}{b}}}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} + \frac{Ba^2\sqrt{x}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} - \frac{Ba^2\sqrt{x}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} + \frac{Babx^{\frac{3}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} - \frac{Babx^{\frac{3}{2}}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}} + \sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}} + 2ia^{\frac{5}{2}}b^2x^{\frac{3}{2}}\sqrt{\frac{1}{b}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/sqrt(x) + 2*B*sqrt(x))/a**2, Eq(b, 0)), ((-2*A/(5*x**(5/2)) - 2*B/
(3*x**(3/2)))/b**2, Eq(a, 0)), (-4*I*A*a**(3/2)*b*sqrt(1/b)/(2*I*a**(7/2)*b
*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) - 6*I*A*sqrt(a)*
b**2*x*sqrt(1/b)/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(
3/2)*sqrt(1/b)) - 3*A*a*b*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*
a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) + 3*A*
a*b*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt
(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) - 3*A*b**2*x**(3/2)*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)
*b**2*x**(3/2)*sqrt(1/b)) + 3*A*b**2*x**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1
/b)) + 2*I*B*a**(3/2)*b*x*sqrt(1/b)/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I
*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) + B*a**2*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b
) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)
*sqrt(1/b)) - B*a**2*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/
2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) + B*a*b*x**(
3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b)
+ 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) - B*a*b*x**(3/2)*log(I*sqrt(a)*sqrt
(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(
3/2)*sqrt(1/b)), True))
```

3.690 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)} \, dx$

Optimal. Leaf size=107

$$\frac{\sqrt{b}\,(5Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}-\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}+\frac{\sqrt{b}\,(5Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(5*A*b - 3*a*B)/(3*a^2*b*x^(3/2)) + (5*A*b - 3*a*B)/(a^3*Sqrt[x]) + (A*b -
 a*B)/(a*b*x^(3/2)*(a + b*x)) + (Sqrt[b]*(5*A*b - 3*a*B)*ArcTan[(Sqrt[b]*Sq
rt[x])/Sqrt[a]])/a^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^{5/2}(a+bx)^2}\,dx\\
&= \frac{Ab-aB}{abx^{3/2}(a+bx)} - \frac{\left(-\frac{5Ab}{2}+\frac{3aB}{2}\right)\int \frac{1}{x^{5/2}(a+bx)}\,dx}{ab}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}} + \frac{Ab-aB}{abx^{3/2}(a+bx)} - \frac{(5Ab-3aB)\int \frac{1}{x^{3/2}(a+bx)}\,dx}{2a^2}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}} + \frac{5Ab-3aB}{a^3\sqrt{x}} + \frac{Ab-aB}{abx^{3/2}(a+bx)} + \frac{(b(5Ab-3aB))\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2a^3}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}} + \frac{5Ab-3aB}{a^3\sqrt{x}} + \frac{Ab-aB}{abx^{3/2}(a+bx)} + \frac{(b(5Ab-3aB))\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx\right.}{a^3}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}} + \frac{5Ab-3aB}{a^3\sqrt{x}} + \frac{Ab-aB}{abx^{3/2}(a+bx)} + \frac{\sqrt{b}\,(5Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.60

$$\frac{(a+bx)(3aB-5Ab)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{bx}{a}\right)+3a(Ab-aB)}{3a^2bx^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (3*a*(A*b - a*B) + (-5*A*b + 3*a*B)*(a + b*x)*Hypergeometric2F1[-3/2, 1, -1
/2, -((b*x)/a)])/(3*a^2*b*x^(3/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 0.12, size = 98, normalized size = 0.92

$$\frac{\left(5Ab^{3/2}-3a\sqrt{b}\,B\right)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}} + \frac{-2a^2A-6a^2Bx+10aAbx-9abBx^2+15Ab^2x^2}{3a^3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*a^2*A + 10*a*A*b*x - 6*a^2*B*x + 15*A*b^2*x^2 - 9*a*b*B*x^2)/(3*a^3*x^(
3/2)*(a + b*x)) + ((5*A*b^(3/2) - 3*a*Sqrt[b]*B)*ArcTan[(Sqrt[b]*Sqrt[x])/S
qrt[a]])/a^(7/2)
```

fricas [A] time = 0.44, size = 262, normalized size = 2.45

$$\left[-\frac{3\left(\left(3Bab-5Ab^2\right)x^3+\left(3Ba^2-5Aab\right)x^2\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(2Aa^2+3\left(3Bab-5Ab^2\right)x^2+2\left(3Ba^2-5Aab\right)x\right)\sqrt{x}}{6\left(a^3bx^3+a^4x^2\right)}, \frac{3\left(\left(3Bab-5Ab^2\right)x^3+\left(3Ba^2-5Aab\right)x^2\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-\left(2Aa^2+3\left(3Bab-5Ab^2\right)x^2+2\left(3Ba^2-5Aab\right)x\right)\sqrt{x}}{3\left(a^3bx^3+a^4x^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((3*B*a*b - 5*A*b^2)*x^3 + (3*B*a^2 - 5*A*a*b)*x^2)*sqrt(-b/a)*log
((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(2*A*a^2 + 3*(3*B*a*b -
5*A*b^2)*x^2 + 2*(3*B*a^2 - 5*A*a*b)*x)*sqrt(x))/(a^3*b*x^3 + a^4*x^2), 1/3
```

```
*(3*((3*B*a*b - 5*A*b^2)*x^3 + (3*B*a^2 - 5*A*a*b)*x^2)*sqrt(b/a)*arctan(a*
sqrt(b/a)/(b*sqrt(x))) - (2*A*a^2 + 3*(3*B*a*b - 5*A*b^2)*x^2 + 2*(3*B*a^2
- 5*A*a*b)*x)*sqrt(x))/(a^3*b*x^3 + a^4*x^2)]
```

giac [A] time = 0.16, size = 85, normalized size = 0.79

$$-\frac{\left(3\,Bab-5\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^3}-\frac{Bab\sqrt{x}-Ab^2\sqrt{x}}{(bx+a)a^3}-\frac{2\,(3\,Bax-6\,Abx+Aa)}{3\,a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(3*B*a*b - 5*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) - (B*a*b*s
qrt(x) - A*b^2*sqrt(x))/((b*x + a)*a^3) - 2/3*(3*B*a*x - 6*A*b*x + A*a)/(a^
3*x^(3/2))
```

maple [A] time = 0.07, size = 113, normalized size = 1.06

$$\frac{5A\,b^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^3}-\frac{3Bb\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^2}+\frac{A\,b^2\sqrt{x}}{(bx+a)\,a^3}-\frac{Bb\sqrt{x}}{(bx+a)\,a^2}+\frac{4Ab}{a^3\sqrt{x}}-\frac{2B}{a^2\sqrt{x}}-\frac{2A}{3a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] b^2/a^3*x^(1/2)/(b*x+a)*A-b/a^2*x^(1/2)/(b*x+a)*B+5*b^2/a^3/(a*b)^(1/2)*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))*A-3*b/a^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x
^(1/2))*B-2/3*A/a^2/x^(3/2)+4/a^3/x^(1/2)*A*b-2*B/a^2/x^(1/2)
```

maxima [A] time = 1.51, size = 93, normalized size = 0.87

$$-\frac{2\,Aa^2+3\left(3\,Bab-5\,Ab^2\right)x^2+2\left(3\,Ba^2-5\,Aab\right)x}{3\left(a^3bx^{\frac{5}{2}}+a^4x^{\frac{3}{2}}\right)}-\frac{\left(3\,Bab-5\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/3*(2*A*a^2 + 3*(3*B*a*b - 5*A*b^2)*x^2 + 2*(3*B*a^2 - 5*A*a*b)*x)/(a^3*b
*x^(5/2) + a^4*x^(3/2)) - (3*B*a*b - 5*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*a^3)
```

mupad [B] time = 1.18, size = 81, normalized size = 0.76

$$\frac{\frac{2\,x\,(5\,A\,b-3\,B\,a)}{3\,a^2}-\frac{2\,A}{3\,a}+\frac{b\,x^2\,(5\,A\,b-3\,B\,a)}{a^3}}{a\,x^{3/2}+b\,x^{5/2}}+\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(5\,A\,b-3\,B\,a)}{a^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((2*x*(5*A*b - 3*B*a))/(3*a^2) - (2*A)/(3*a) + (b*x^2*(5*A*b - 3*B*a))/a^3)
/(a*x^(3/2) + b*x^(5/2)) + (b^(1/2)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(5*A*b
- 3*B*a))/a^(7/2)
```

sympy [A] time = 53.23, size = 983, normalized size = 9.19

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) & \text{for}\; a=0\wedge b=0 \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{b^2} & \text{for}\; a=0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{a^2} & \text{for}\; b=0 \\ -\frac{4iAa^{\frac{5}{2}}\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{20iAa^{\frac{3}{2}}bx\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{30iA\sqrt{a}b^2x^2\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{15Aabx^{\frac{3}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{15Aabx^{\frac{3}{2}}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{15Ab^2x^{\frac{5}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{15Ab^2x^{\frac{5}{2}}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{12iBa^{\frac{5}{2}}x\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{18iBa^{\frac{3}{2}}bx^2\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{9Ba^2x^{\frac{3}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{9Ba^2x^{\frac{3}{2}}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{9Babx^{\frac{5}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{9Babx^{\frac{5}{2}}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/b**2, Eq(a, 0)), ((-2*A/(3*x**(3/
2)) - 2*B/sqrt(x))/a**2, Eq(b, 0)), (-4*I*A*a**(5/2)*sqrt(1/b)/(6*I*a**(9/2
)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 20*I*A*a**(3/2)
*b*x*sqrt(1/b)/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*s
qrt(1/b)) + 30*I*A*sqrt(a)*b**2*x**2*sqrt(1/b)/(6*I*a**(9/2)*x**(3/2)*sqrt(
1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 15*A*a*b*x**(3/2)*log(-I*sqrt(a
)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x*
*(5/2)*sqrt(1/b)) - 15*A*a*b*x**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6
*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 15*A*
b**2*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sq
rt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) - 15*A*b**2*x**(5/2)*log(I*sqr
t(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b
*x**(5/2)*sqrt(1/b)) - 12*I*B*a**(5/2)*x*sqrt(1/b)/(6*I*a**(9/2)*x**(3/2)*s
qrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) - 18*I*B*a**(3/2)*b*x**2*sqrt
(1/b)/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b))
 - 9*B*a**2*x**(3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(
3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 9*B*a**2*x**(3/2)*log
(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(
7/2)*b*x**(5/2)*sqrt(1/b)) - 9*B*a*b*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sq
rt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)
) + 9*B*a*b*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3
/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)), True))
```

3.691 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=131

$$-\frac{b^{3/2}(7Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}}-\frac{b(7Ab-5aB)}{a^4\sqrt{x}}+\frac{7Ab-5aB}{3a^3x^{3/2}}-\frac{7Ab-5aB}{5a^2bx^{5/2}}+\frac{Ab-aB}{abx^{5/2}(a+bx)}$$

Rubi [A] time = 0.06, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{b^{3/2}(7Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}}+\frac{7Ab-5aB}{3a^3x^{3/2}}-\frac{7Ab-5aB}{5a^2bx^{5/2}}-\frac{b(7Ab-5aB)}{a^4\sqrt{x}}+\frac{Ab-aB}{abx^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(7*A*b - 5*a*B)/(5*a^2*b*x^(5/2)) + (7*A*b - 5*a*B)/(3*a^3*x^(3/2)) - (b*(
7*A*b - 5*a*B))/(a^4*Sqrt[x]) + (A*b - a*B)/(a*b*x^(5/2)*(a + b*x)) - (b^(3
/2)*(7*A*b - 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{x^{7/2}(a+bx)^2}\,dx$$

$$= \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{\left(-\frac{7Ab}{2}+\frac{5aB}{2}\right)\int \frac{1}{x^{7/2}(a+bx)}\,dx}{ab}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{(7Ab-5aB)\int \frac{1}{x^{5/2}(a+bx)}\,dx}{2a^2}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} + \frac{(b(7Ab-5aB))\int \frac{1}{x^{3/2}(a+bx)}\,dx}{2a^3}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} - \frac{b(7Ab-5aB)}{a^4\sqrt{x}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{\left(b^2(7Ab-5aB)\right)}{2a^4}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} - \frac{b(7Ab-5aB)}{a^4\sqrt{x}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{\left(b^2(7Ab-5aB)\right)}{}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} - \frac{b(7Ab-5aB)}{a^4\sqrt{x}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{b^{3/2}(7Ab-5aB)}{a^{9/2}}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.49

$$\frac{(a+bx)(5aB-7Ab)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{bx}{a}\right)+5a(Ab-aB)}{5a^2bx^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (5*a*(A*b - a*B) + (-7*A*b + 5*a*B)*(a + b*x)*Hypergeometric2F1[-5/2, 1, -3
/2, -((b*x)/a)])/(5*a^2*b*x^(5/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 0.14, size = 122, normalized size = 0.93

$$\frac{\left(5ab^{3/2}B-7Ab^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}}+\frac{-6a^3A-10a^3Bx+14a^2Abx+50a^2bBx^2-70aAb^2x^2+75ab^2Bx^3-105Ab^3x^3}{15a^4x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-6*a^3*A + 14*a^2*A*b*x - 10*a^3*B*x - 70*a*A*b^2*x^2 + 50*a^2*b*B*x^2 - 1
05*A*b^3*x^3 + 75*a*b^2*B*x^3)/(15*a^4*x^(5/2)*(a + b*x)) + ((-7*A*b^(5/2)
+ 5*a*b^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(9/2)
```

fricas [A] time = 0.43, size = 319, normalized size = 2.44

$$\left[-\frac{15\left(\left(5Bab^2-7Ab^3\right)x^4+\left(5Ba^2b-7Aab^2\right)x^3\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(6Aa^3-15\left(5Bab^2-7Ab^3\right)x^3-10\left(5Ba^2b-7Aab^2\right)x^2+2\left(5Ba^3-7Aa^2b\right)x\right)\sqrt{x}}{30\left(a^4bx^4+a^5x^3\right)}, -\frac{15\left(\left(5Bab^2-7Ab^3\right)x^4+\left(5Ba^2b-7Aab^2\right)x^3\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)+\left(6Aa^3-15\left(5Bab^2-7Ab^3\right)x^3-10\left(5Ba^2b-7Aab^2\right)x^2+2\left(5Ba^3-7Aa^2b\right)x\right)\sqrt{x}}{15\left(a^4bx^4+a^5x^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/30*(15*((5*B*a*b^2 - 7*A*b^3)*x^4 + (5*B*a^2*b - 7*A*a*b^2)*x^3)*sqrt(-
b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(6*A*a^3 - 15*(5
```

```
*B*a*b^2 - 7*A*b^3)*x^3 - 10*(5*B*a^2*b - 7*A*a*b^2)*x^2 + 2*(5*B*a^3 - 7*A
*a^2*b)*x)*sqrt(x))/(a^4*b*x^4 + a^5*x^3), -1/15*(15*((5*B*a*b^2 - 7*A*b^3)
*x^4 + (5*B*a^2*b - 7*A*a*b^2)*x^3)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x)
)) + (6*A*a^3 - 15*(5*B*a*b^2 - 7*A*b^3)*x^3 - 10*(5*B*a^2*b - 7*A*a*b^2)*x
^2 + 2*(5*B*a^3 - 7*A*a^2*b)*x)*sqrt(x))/(a^4*b*x^4 + a^5*x^3)]
```

giac [A] time = 0.16, size = 110, normalized size = 0.84

$$\frac{\left(5 Bab^2 - 7 Ab^3\right) \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\, a^4} + \frac{Bab^2\sqrt{x} - Ab^3\sqrt{x}}{(bx+a)a^4} + \frac{2\left(30 Babx^2 - 45 Ab^2x^2 - 5 Ba^2x + 10 Aabx - 3 Aa^2\right)}{15 a^4 x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (5*B*a*b^2 - 7*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + (B*a*b^
2*sqrt(x) - A*b^3*sqrt(x))/((b*x + a)*a^4) + 2/15*(30*B*a*b*x^2 - 45*A*b^2*
x^2 - 5*B*a^2*x + 10*A*a*b*x - 3*A*a^2)/(a^4*x^(5/2))
```

maple [A] time = 0.07, size = 139, normalized size = 1.06

$$-\frac{7A\, b^3 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\; a^4} + \frac{5B\, b^2 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\; a^3} - \frac{A\, b^3\sqrt{x}}{(bx+a)\, a^4} + \frac{B\, b^2\sqrt{x}}{(bx+a)\, a^3} - \frac{6A\, b^2}{a^4\sqrt{x}} + \frac{4Bb}{a^3\sqrt{x}} + \frac{4Ab}{3a^3x^{\frac{3}{2}}} - \frac{2B}{3a^2x^{\frac{3}{2}}} - \frac{2A}{5a^2x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/a^4*b^3*x^(1/2)/(b*x+a)*A+1/a^3*b^2*x^(1/2)/(b*x+a)*B-7/a^4*b^3/(a*b)^(1
/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+5/a^3*b^2/(a*b)^(1/2)*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*B-2/5*A/a^2/x^(5/2)+4/3/a^3/x^(3/2)*A*b-2/3/a^2/x^(3/2)*B-
6*b^2/a^4/x^(1/2)*A+4*b/a^3/x^(1/2)*B
```

maxima [A] time = 1.32, size = 118, normalized size = 0.90

$$-\frac{6 Aa^3 - 15\left(5 Bab^2 - 7 Ab^3\right)x^3 - 10\left(5 Ba^2b - 7 Aab^2\right)x^2 + 2\left(5 Ba^3 - 7 Aa^2b\right)x}{15\left(a^4bx^{\frac{7}{2}} + a^5x^{\frac{5}{2}}\right)} + \frac{\left(5 Bab^2 - 7 Ab^3\right) \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\, a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/15*(6*A*a^3 - 15*(5*B*a*b^2 - 7*A*b^3)*x^3 - 10*(5*B*a^2*b - 7*A*a*b^2)*
x^2 + 2*(5*B*a^3 - 7*A*a^2*b)*x)/(a^4*b*x^(7/2) + a^5*x^(5/2)) + (5*B*a*b^2
 - 7*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4)
```

mupad [B] time = 1.19, size = 103, normalized size = 0.79

$$-\frac{\frac{2\,A}{5\,a} - \frac{2\,x\,(7\,A\,b-5\,B\,a)}{15\,a^2} + \frac{b^2\,x^3\,(7\,A\,b-5\,B\,a)}{a^4} + \frac{2\,b\,x^2\,(7\,A\,b-5\,B\,a)}{3\,a^3}}{a\,x^{5/2} + b\,x^{7/2}} - \frac{b^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(7\,A\,b - 5\,B\,a)}{a^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((2*A)/(5*a) - (2*x*(7*A*b - 5*B*a))/(15*a^2) + (b^2*x^3*(7*A*b - 5*B*a))
/a^4 + (2*b*x^2*(7*A*b - 5*B*a))/(3*a^3))/(a*x^(5/2) + b*x^(7/2)) - (b^(3/2
)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(7*A*b - 5*B*a))/a^(9/2)
```

sympy [A] time = 155.21, size = 1127, normalized size = 8.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/a**2, Eq(b, 0)), ((-2*A/(9*x**(9/
2)) - 2*B/(7*x**(7/2)))/b**2, Eq(a, 0)), (-12*I*A*a**(7/2)*sqrt(1/b)/(30*I*
a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 28*I*A
*a**(5/2)*b*x*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*
b*x**(7/2)*sqrt(1/b)) - 140*I*A*a**(3/2)*b**2*x**2*sqrt(1/b)/(30*I*a**(11/2
)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) - 210*I*A*sqrt(a
)*b**3*x**3*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*
x**(7/2)*sqrt(1/b)) - 105*A*a*b**2*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt
(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b
)) + 105*A*a*b**2*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/
2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) - 105*A*b**3*x*
*(7/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/
b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 105*A*b**3*x**(7/2)*log(I*sqrt(a
)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b
*x**(7/2)*sqrt(1/b)) - 20*I*B*a**(7/2)*x*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)
*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 100*I*B*a**(5/2)*b*x**2*
sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqr
t(1/b)) + 150*I*B*a**(3/2)*b**2*x**3*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqr
t(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 75*B*a**2*b*x**(5/2)*log(-I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(
9/2)*b*x**(7/2)*sqrt(1/b)) - 75*B*a**2*b*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) +
 sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqr
t(1/b)) + 75*B*a*b**2*x**(7/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a*
*(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) - 75*B*a*b
**2*x**(7/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sq
rt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)), True))
```

3.692 $\int \frac{A+Bx}{x^{9/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=153

$$\frac{b^{5/2}(9Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{11/2}}+\frac{b^2(9Ab-7aB)}{a^5\sqrt{x}}-\frac{b(9Ab-7aB)}{3a^4x^{3/2}}+\frac{9Ab-7aB}{5a^3x^{5/2}}-\frac{9Ab-7aB}{7a^2bx^{7/2}}+\frac{Ab-aB}{abx^{7/2}(a+bx)}$$

Rubi [A] time = 0.08, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$\frac{b^2(9Ab-7aB)}{a^5\sqrt{x}}+\frac{b^{5/2}(9Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{11/2}}-\frac{b(9Ab-7aB)}{3a^4x^{3/2}}+\frac{9Ab-7aB}{5a^3x^{5/2}}-\frac{9Ab-7aB}{7a^2bx^{7/2}}+\frac{Ab-aB}{abx^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(9*A*b - 7*a*B)/(7*a^2*b*x^(7/2)) + (9*A*b - 7*a*B)/(5*a^3*x^(5/2)) - (b*(
9*A*b - 7*a*B))/(3*a^4*x^(3/2)) + (b^2*(9*A*b - 7*a*B))/(a^5*Sqrt[x]) + (A*
b - a*B)/(a*b*x^(7/2)*(a + b*x)) + (b^(5/2)*(9*A*b - 7*a*B)*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/a^(11/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{x^{9/2}(a+bx)^2}\,dx$$

$$= \frac{Ab-aB}{abx^{7/2}(a+bx)} - \frac{\left(-\frac{9Ab}{2}+\frac{7aB}{2}\right)\int \frac{1}{x^{9/2}(a+bx)}\,dx}{ab}$$

$$= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} - \frac{(9Ab-7aB)\int \frac{1}{x^{7/2}(a+bx)}\,dx}{2a^2}$$

$$= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} + \frac{(b(9Ab-7aB))\int \frac{1}{x^{5/2}(a+bx)}\,dx}{2a^3}$$

$$= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} - \frac{\left(b^2(9Ab-7aB)\right)}{2a^4}$$

$$= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{b^2(9Ab-7aB)}{a^5\sqrt{x}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} -$$

$$= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{b^2(9Ab-7aB)}{a^5\sqrt{x}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} -$$

$$= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{b^2(9Ab-7aB)}{a^5\sqrt{x}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} -$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.42

$$\frac{(a+bx)(7aB-9Ab)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};-\frac{bx}{a}\right)+7a(Ab-aB)}{7a^2bx^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (7*a*(A*b - a*B) + (-9*A*b + 7*a*B)*(a + b*x)*Hypergeometric2F1[-7/2, 1, -5
/2, -((b*x)/a)])/(7*a^2*b*x^(7/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 0.16, size = 146, normalized size = 0.95

$$\frac{\left(9Ab^{7/2}-7ab^{5/2}B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{11/2}}+\frac{-30a^4A-42a^4Bx+54a^3Abx+98a^3bBx^2-126a^2Ab^2x^2-490a^2b^2Bx^3+630aAb^3x^3-735ab^3Bx^4+945Ab^4x^4}{105a^5x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(9/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-30*a^4*A + 54*a^3*A*b*x - 42*a^4*B*x - 126*a^2*A*b^2*x^2 + 98*a^3*b*B*x^2
 + 630*a*A*b^3*x^3 - 490*a^2*b^2*B*x^3 + 945*A*b^4*x^4 - 735*a*b^3*B*x^4)/(
105*a^5*x^(7/2)*(a + b*x)) + ((9*A*b^(7/2) - 7*a*b^(5/2)*B)*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/a^(11/2)
```

fricas [A] time = 0.42, size = 372, normalized size = 2.43

$$\left[-\frac{105\left(\left(7Bab^3-9Ab^4\right)x^5+\left(7Ba^2b^2-9Aab^3\right)x^4\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(30Aa^4+105\left(7Bab^3-9Ab^4\right)x^4+70\left(7Ba^2b^2-9Aab^3\right)x^3-14\left(7Ba^3b-9Aa^2b^2\right)x^2+6\left(7Ba^4-9Aa^3b\right)x\right)\sqrt{x}}{210\left(a^5bx^5+a^6x^4\right)},\ \frac{105\left(\left(7Bab^3-9Ab^4\right)x^5+\left(7Ba^2b^2-9Aab^3\right)x^4\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-\left(30Aa^4+105\left(7Bab^3-9Ab^4\right)x^4+70\left(7Ba^2b^2-9Aab^3\right)x^3-14\left(7Ba^3b-9Aa^2b^2\right)x^2+6\left(7Ba^4-9Aa^3b\right)x\right)\sqrt{x}}{105\left(a^5bx^5+a^6x^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/210*(105*((7*B*a*b^3 - 9*A*b^4)*x^5 + (7*B*a^2*b^2 - 9*A*a*b^3)*x^4)*sq
rt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(30*A*a^4 +
105*(7*B*a*b^3 - 9*A*b^4)*x^4 + 70*(7*B*a^2*b^2 - 9*A*a*b^3)*x^3 - 14*(7*B*
a^3*b - 9*A*a^2*b^2)*x^2 + 6*(7*B*a^4 - 9*A*a^3*b)*x)*sqrt(x))/(a^5*b*x^5 +
 a^6*x^4), 1/105*(105*((7*B*a*b^3 - 9*A*b^4)*x^5 + (7*B*a^2*b^2 - 9*A*a*b^3
)*x^4)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (30*A*a^4 + 105*(7*B*a*b
^3 - 9*A*b^4)*x^4 + 70*(7*B*a^2*b^2 - 9*A*a*b^3)*x^3 - 14*(7*B*a^3*b - 9*A*
a^2*b^2)*x^2 + 6*(7*B*a^4 - 9*A*a^3*b)*x)*sqrt(x))/(a^5*b*x^5 + a^6*x^4)]
```

giac [A] time = 0.17, size = 136, normalized size = 0.89

$$-\frac{\left(7\,Bab^{3}-9\,Ab^{4}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{5}}-\frac{Bab^{3}\sqrt{x}-Ab^{4}\sqrt{x}}{(bx+a)a^{5}}-\frac{2\left(315\,Bab^{2}x^{3}-420\,Ab^{3}x^{3}-70\,Ba^{2}bx^{2}+105\,Aab^{2}x^{2}+21\,Ba^{3}x-42\,Aa^{2}bx+15\,Aa^{3}\right)}{105\,a^{5}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(7*B*a*b^3 - 9*A*b^4)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5) - (B*a*b
^3*sqrt(x) - A*b^4*sqrt(x))/((b*x + a)*a^5) - 2/105*(315*B*a*b^2*x^3 - 420*
A*b^3*x^3 - 70*B*a^2*b*x^2 + 105*A*a*b^2*x^2 + 21*B*a^3*x - 42*A*a^2*b*x +
15*A*a^3)/(a^5*x^(7/2))
```

maple [A] time = 0.08, size = 163, normalized size = 1.07

$$\frac{9A\,b^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^{5}}-\frac{7B\,b^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^{4}}+\frac{A\,b^{4}\sqrt{x}}{(bx+a)\,a^{5}}-\frac{B\,b^{3}\sqrt{x}}{(bx+a)\,a^{4}}+\frac{8A\,b^{3}}{a^{5}\sqrt{x}}-\frac{6B\,b^{2}}{a^{4}\sqrt{x}}-\frac{2A\,b^{2}}{a^{4}x^{\frac{3}{2}}}+\frac{4Bb}{3a^{3}x^{\frac{3}{2}}}+\frac{4Ab}{5a^{3}x^{\frac{5}{2}}}-\frac{2B}{5a^{2}x^{\frac{5}{2}}}-\frac{2A}{7a^{2}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/a^5*b^4*x^(1/2)/(b*x+a)*A-1/a^4*b^3*x^(1/2)/(b*x+a)*B+9/a^5*b^4/(a*b)^(1/
2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-7/a^4*b^3/(a*b)^(1/2)*arctan(1/(a*b)^(
1/2)*b*x^(1/2))*B-2/7*A/a^2/x^(7/2)+4/5/a^3/x^(5/2)*A*b-2/5/a^2/x^(5/2)*B-2
*b^2/a^4/x^(3/2)*A+4/3*b/a^3/x^(3/2)*B+8*b^3/a^5/x^(1/2)*A-6*b^2/a^4/x^(1/2
)*B
```

maxima [A] time = 1.36, size = 143, normalized size = 0.93

$$-\frac{30\,Aa^{4}+105\left(7\,Bab^{3}-9\,Ab^{4}\right)x^{4}+70\left(7\,Ba^{2}b^{2}-9\,Aab^{3}\right)x^{3}-14\left(7\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x^{2}+6\left(7\,Ba^{4}-9\,Aa^{3}b\right)x}{105\left(a^{5}bx^{\frac{9}{2}}+a^{6}x^{\frac{7}{2}}\right)}-\frac{\left(7\,Bab^{3}-9\,Ab^{4}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/105*(30*A*a^4 + 105*(7*B*a*b^3 - 9*A*b^4)*x^4 + 70*(7*B*a^2*b^2 - 9*A*a*
b^3)*x^3 - 14*(7*B*a^3*b - 9*A*a^2*b^2)*x^2 + 6*(7*B*a^4 - 9*A*a^3*b)*x)/(a
^5*b*x^(9/2) + a^6*x^(7/2)) - (7*B*a*b^3 - 9*A*b^4)*arctan(b*sqrt(x)/sqrt(a
*b))/(sqrt(a*b)*a^5)
```

mupad [B] time = 1.26, size = 121, normalized size = 0.79

$$\frac{\frac{2\,x\,(9\,A\,b-7\,B\,a)}{35\,a^{2}}-\frac{2\,A}{7\,a}+\frac{2\,b^{2}\,x^{3}\,(9\,A\,b-7\,B\,a)}{3\,a^{4}}+\frac{b^{3}\,x^{4}\,(9\,A\,b-7\,B\,a)}{a^{5}}-\frac{2\,b\,x^{2}\,(9\,A\,b-7\,B\,a)}{15\,a^{3}}}{a\,x^{7/2}+b\,x^{9/2}}+\frac{b^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(9\,A\,b-7\,B\,a)}{a^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((2*x*(9*A*b - 7*B*a))/(35*a^2) - (2*A)/(7*a) + (2*b^2*x^3*(9*A*b - 7*B*a))
/(3*a^4) + (b^3*x^4*(9*A*b - 7*B*a))/a^5 - (2*b*x^2*(9*A*b - 7*B*a))/(15*a^
3))/(a*x^(7/2) + b*x^(9/2)) + (b^(5/2)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(9*A
*b - 7*B*a))/a^(11/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.693 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=173

$$-\frac{35\sqrt{a}\,(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8b^{11/2}}+\frac{35\sqrt{x}\,(Ab-3aB)}{8b^5}-\frac{35x^{3/2}(Ab-3aB)}{24ab^4}+\frac{7x^{5/2}(Ab-3aB)}{8ab^3(a+bx)}+\frac{x^{7/2}(Ab-3aB)}{4ab^2(a+bx)^2}+$$

Rubi [A] time = 0.08, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 50, 63, 205}

$$\frac{x^{7/2}(Ab-3aB)}{4ab^2(a+bx)^2}+\frac{7x^{5/2}(Ab-3aB)}{8ab^3(a+bx)}-\frac{35x^{3/2}(Ab-3aB)}{24ab^4}+\frac{35\sqrt{x}\,(Ab-3aB)}{8b^5}-\frac{35\sqrt{a}\,(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8b^{11/2}}+\frac{x^{9/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (35*(A*b - 3*a*B)*Sqrt[x])/(8*b^5) - (35*(A*b - 3*a*B)*x^(3/2))/(24*a*b^4)
+ ((A*b - a*B)*x^(9/2))/(3*a*b*(a + b*x)^3) + ((A*b - 3*a*B)*x^(7/2))/(4*a*
b^2*(a + b*x)^2) + (7*(A*b - 3*a*B)*x^(5/2))/(8*a*b^3*(a + b*x)) - (35*Sqrt
[a]*(A*b - 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^{7/2}(A+Bx)}{(a+bx)^4}\,dx \\
&= \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} - \frac{\left(\frac{3Ab}{2}-\frac{9aB}{2}\right)\int \frac{x^{7/2}}{(a+bx)^3}\,dx}{3ab} \\
&= \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} + \frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2} - \frac{(7(Ab-3aB))\int \frac{x^{5/2}}{(a+bx)^2}\,dx}{8ab^2} \\
&= \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} + \frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2} + \frac{7(Ab-3aB)x^{5/2}}{8ab^3(a+bx)} - \frac{(35(Ab-3aB))\int \frac{x^{3/2}}{a+bx}\,dx}{16ab^3} \\
&= -\frac{35(Ab-3aB)x^{3/2}}{24ab^4} + \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} + \frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2} + \frac{7(Ab-3aB)x^{5/2}}{8ab^3(a+bx)} + \frac{(35(A
\\
&= \frac{35(Ab-3aB)\sqrt{x}}{8b^5} - \frac{35(Ab-3aB)x^{3/2}}{24ab^4} + \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} + \frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2} + \frac{7(Ab-}{8ab^3(}
\\
&= \frac{35(Ab-3aB)\sqrt{x}}{8b^5} - \frac{35(Ab-3aB)x^{3/2}}{24ab^4} + \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} + \frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2} + \frac{7(Ab-}{8ab^3(}
\\
&= \frac{35(Ab-3aB)\sqrt{x}}{8b^5} - \frac{35(Ab-3aB)x^{3/2}}{24ab^4} + \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3} + \frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2} + \frac{7(Ab-}{8ab^3(}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.35

$$
\frac{x^{9/2}\left(\frac{9a^3(Ab-aB)}{(a+bx)^3}+(9aB-3Ab)\,{}_2F_1\left(3,\frac{9}{2};\frac{11}{2};-\frac{bx}{a}\right)\right)}{27a^4b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(9/2)*((9*a^3*(A*b - a*B))/(a + b*x)^3 + (-3*A*b + 9*a*B)*Hypergeometric
2F1[3, 9/2, 11/2, -((b*x)/a)]))/(27*a^4*b)
```

IntegrateAlgebraic [A] time = 0.26, size = 146, normalized size = 0.84

$$
\frac{35\left(3a^{3/2}B-\sqrt{a}\,Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{11/2}}+\frac{\sqrt{x}\left(-315a^4B+105a^3Ab-840a^3bBx+280a^2Ab^2x-693a^2b^2Bx^2+231aAb^3x^2-144ab^3Bx^3+48Ab^4x^3+16b^4Bx^4\right)}{24b^5(a+bx)^3}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

[Out] (Sqrt[x]*(105*a^3*A*b - 315*a^4*B + 280*a^2*A*b^2*x - 840*a^3*b*B*x + 231*a*A*b^3*x^2 - 693*a^2*b^2*B*x^2 + 48*A*b^4*x^3 - 144*a*b^3*B*x^3 + 16*b^4*B*x^4))/(24*b^5*(a + b*x)^3) + (35*(-(Sqrt[a]*A*b) + 3*a^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*b^(11/2))

fricas [A] time = 0.44, size = 467, normalized size = 2.70

$$\left[-\frac{105\left(3Ba^4 - Aa^3b + \left(3Bab^3 - Ab^4\right)x^3 + 3\left(3Ba^2b^2 - Aab^3\right)x^2 + 3\left(3Ba^3b - Aa^2b^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx - 2b\sqrt{x}\sqrt{-\frac{a}{b}} - a}{bx + a}\right) - 2\left(16Bb^4x^4 - 315Ba^4 + 105Aa^3b - 48\left(3Bab^3 - Ab^4\right)x^3 - 231\left(3Ba^2b^2 - Aab^3\right)x^2 - 280\left(3Ba^3b - Aa^2b^2\right)x\right)\sqrt{x}}{48\left(b^8x^3 + 3ab^7x^2 + 3a^2b^6x + a^3b^5\right)}, \frac{105\left(3Ba^4 - Aa^3b + \left(3Bab^3 - Ab^4\right)x^3 + 3\left(3Ba^2b^2 - Aab^3\right)x^2 + 3\left(3Ba^3b - Aa^2b^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right) + \left(16Bb^4x^4 - 315Ba^4 + 105Aa^3b - 48\left(3Bab^3 - Ab^4\right)x^3 - 231\left(3Ba^2b^2 - Aab^3\right)x^2 - 280\left(3Ba^3b - Aa^2b^2\right)x\right)\sqrt{x}}{24\left(b^8x^3 + 3ab^7x^2 + 3a^2b^6x + a^3b^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")

[Out] [-1/48*(105*(3*B*a^4 - A*a^3*b + (3*B*a*b^3 - A*b^4)*x^3 + 3*(3*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(3*B*a^3*b - A*a^2*b^2)*x)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(16*B*b^4*x^4 - 315*B*a^4 + 105*A*a^3*b - 48*(3*B*a*b^3 - A*b^4)*x^3 - 231*(3*B*a^2*b^2 - A*a*b^3)*x^2 - 280*(3*B*a^3*b - A*a^2*b^2)*x)*sqrt(x))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5), 1/24*(105*(3*B*a^4 - A*a^3*b + (3*B*a*b^3 - A*b^4)*x^3 + 3*(3*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(3*B*a^3*b - A*a^2*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (16*B*b^4*x^4 - 315*B*a^4 + 105*A*a^3*b - 48*(3*B*a*b^3 - A*b^4)*x^3 - 231*(3*B*a^2*b^2 - A*a*b^3)*x^2 - 280*(3*B*a^3*b - A*a^2*b^2)*x)*sqrt(x))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)]

giac [A] time = 0.17, size = 143, normalized size = 0.83

$$\frac{35\left(3Ba^2 - Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}b^5} - \frac{165Ba^2b^2x^{\frac{5}{2}} - 87Aab^3x^{\frac{5}{2}} + 280Ba^3bx^{\frac{3}{2}} - 136Aa^2b^2x^{\frac{3}{2}} + 123Ba^4\sqrt{x} - 57Aa^3b\sqrt{x}}{24(bx + a)^3b^5} + \frac{2\left(Bb^8x^{\frac{3}{2}} - 12Bab^7\sqrt{x} + 3Ab^8\sqrt{x}\right)}{3b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")

[Out] 35/8*(3*B*a^2 - A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) - 1/24*(165*B*a^2*b^2*x^(5/2) - 87*A*a*b^3*x^(5/2) + 280*B*a^3*b*x^(3/2) - 136*A*a^2*b^2*x^(3/2) + 123*B*a^4*sqrt(x) - 57*A*a^3*b*sqrt(x))/((b*x + a)^3*b^5) + 2/3*(B*b^8*x^(3/2) - 12*B*a*b^7*sqrt(x) + 3*A*b^8*sqrt(x))/b^12

maple [A] time = 0.07, size = 190, normalized size = 1.10

$$\frac{29Aa\,x^{\frac{5}{2}}}{8(bx + a)^3b^2} - \frac{55B\,a^2x^{\frac{5}{2}}}{8(bx + a)^3b^3} + \frac{17A\,a^2x^{\frac{3}{2}}}{3(bx + a)^3b^3} - \frac{35B\,a^3x^{\frac{3}{2}}}{3(bx + a)^3b^4} + \frac{19A\,a^3\sqrt{x}}{8(bx + a)^3b^4} - \frac{41B\,a^4\sqrt{x}}{8(bx + a)^3b^5} - \frac{35Aa\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,b^4} + \frac{105B\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,b^5} + \frac{2B\,x^{\frac{3}{2}}}{3b^4} + \frac{2A\sqrt{x}}{b^4} - \frac{8Ba\sqrt{x}}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)

[Out] 2/3/b^4*B*x^(3/2)+2/b^4*A*x^(1/2)-8/b^5*B*a*x^(1/2)+29/8*a/b^2/(b*x+a)^3*x^(5/2)*A-55/8*a^2/b^3/(b*x+a)^3*x^(5/2)*B+17/3*a^2/b^3/(b*x+a)^3*A*x^(3/2)-35/3*a^3/b^4/(b*x+a)^3*B*x^(3/2)+19/8*a^3/b^4/(b*x+a)^3*x^(1/2)*A-41/8*a^4/b^5/(b*x+a)^3*x^(1/2)*B-35/8*a/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+105/8*a^2/b^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B

maxima [A] time = 1.17, size = 161, normalized size = 0.93

$$-\frac{3\left(55Ba^2b^2 - 29Aab^3\right)x^{\frac{5}{2}} + 8\left(35Ba^3b - 17Aa^2b^2\right)x^{\frac{3}{2}} + 3\left(41Ba^4 - 19Aa^3b\right)\sqrt{x}}{24\left(b^8x^3 + 3ab^7x^2 + 3a^2b^6x + a^3b^5\right)} + \frac{35\left(3Ba^2 - Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}b^5} + \frac{2\left(Bbx^{\frac{3}{2}} - 3(4Ba - Ab)\sqrt{x}\right)}{3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")

[Out] -1/24*(3*(55*B*a^2*b^2 - 29*A*a*b^3)*x^(5/2) + 8*(35*B*a^3*b - 17*A*a^2*b^2)*x^(3/2) + 3*(41*B*a^4 - 19*A*a^3*b)*sqrt(x))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a

```
^2*b^6*x + a^3*b^5) + 35/8*(3*B*a^2 - A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(s
qrt(a*b)*b^5) + 2/3*(B*b*x^(3/2) - 3*(4*B*a - A*b)*sqrt(x))/b^5
```

mupad [B] time = 1.22, size = 176, normalized size = 1.02

$$\sqrt{x}\left(\frac{2A}{b^4}-\frac{8Ba}{b^5}\right)-\frac{x^{5/2}\left(\frac{55Ba^2b^2}{8}-\frac{29Aab^3}{8}\right)-x^{3/2}\left(\frac{17Aa^2b^2}{3}-\frac{35Ba^3b}{3}\right)+\sqrt{x}\left(\frac{41Ba^4}{8}-\frac{19Aa^3b}{8}\right)}{a^3b^5+3a^2b^6x+3ab^7x^2+b^8x^3}+\frac{2Bx^{3/2}}{3b^4}+\frac{35\sqrt{a}\,\mathrm{atan}\left(\frac{\sqrt{a}\sqrt{b}\sqrt{x}\,(Ab-3Ba)}{3Ba^2-Aab}\right)(Ab-3Ba)}{8b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(1/2)*((2*A)/b^4 - (8*B*a)/b^5) - (x^(5/2)*((55*B*a^2*b^2)/8 - (29*A*a*b^
3)/8) - x^(3/2)*((17*A*a^2*b^2)/3 - (35*B*a^3*b)/3) + x^(1/2)*((41*B*a^4)/8
 - (19*A*a^3*b)/8))/(a^3*b^5 + b^8*x^3 + 3*a^2*b^6*x + 3*a*b^7*x^2) + (2*B*
x^(3/2))/(3*b^4) + (35*a^(1/2)*atan((a^(1/2)*b^(1/2)*x^(1/2)*(A*b - 3*B*a))
/(3*B*a^2 - A*a*b))*(A*b - 3*B*a))/(8*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.694 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=153

$$\frac{5(Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{a}\,b^{9/2}}-\frac{5\sqrt{x}\,(Ab-7aB)}{8ab^4}+\frac{5x^{3/2}(Ab-7aB)}{24ab^3(a+bx)}+\frac{x^{5/2}(Ab-7aB)}{12ab^2(a+bx)^2}+\frac{x^{7/2}(Ab-aB)}{3ab(a+bx)^3}$$

Rubi [A] time = 0.07, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 50, 63, 205}

$$\frac{x^{5/2}(Ab-7aB)}{12ab^2(a+bx)^2}+\frac{5x^{3/2}(Ab-7aB)}{24ab^3(a+bx)}-\frac{5\sqrt{x}\,(Ab-7aB)}{8ab^4}+\frac{5(Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{a}\,b^{9/2}}+\frac{x^{7/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-5*(A*b - 7*a*B)*Sqrt[x])/(8*a*b^4) + ((A*b - a*B)*x^(7/2))/(3*a*b*(a + b*
x)^3) + ((A*b - 7*a*B)*x^(5/2))/(12*a*b^2*(a + b*x)^2) + (5*(A*b - 7*a*B)*x
^(3/2))/(24*a*b^3*(a + b*x)) + (5*(A*b - 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sq
rt[a]])/(8*Sqrt[a]*b^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{x^{5/2}(A+Bx)}{(a+bx)^4}\,dx$$

$$=\frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3}-\frac{\left(\frac{Ab}{2}-\frac{7aB}{2}\right)\int \frac{x^{5/2}}{(a+bx)^3}\,dx}{3ab}$$

$$=\frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3}+\frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2}-\frac{(5(Ab-7aB))\int \frac{x^{3/2}}{(a+bx)^2}\,dx}{24ab^2}$$

$$=\frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3}+\frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2}+\frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)}-\frac{(5(Ab-7aB))\int \frac{\sqrt{x}}{a+bx}\,dx}{16ab^3}$$

$$=-\frac{5(Ab-7aB)\sqrt{x}}{8ab^4}+\frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3}+\frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2}+\frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)}+\frac{(5(Ab-}{}$$

$$=-\frac{5(Ab-7aB)\sqrt{x}}{8ab^4}+\frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3}+\frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2}+\frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)}+\frac{(5(Ab-}{}$$

$$=-\frac{5(Ab-7aB)\sqrt{x}}{8ab^4}+\frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3}+\frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2}+\frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)}+\frac{5(Ab-}{}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.40

$$\frac{x^{7/2}\left(\frac{7a^3(Ab-aB)}{(a+bx)^3}+(7aB-Ab)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};-\frac{bx}{a}\right)\right)}{21a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(7/2)*((7*a^3*(A*b - a*B))/(a + b*x)^3 + (-(A*b) + 7*a*B)*Hypergeometric
2F1[3, 7/2, 9/2, -((b*x)/a)]))/(21*a^4*b)
```

IntegrateAlgebraic [A] time = 0.23, size = 118, normalized size = 0.77

$$\frac{\sqrt{x}\left(105a^3B-15a^2Ab+280a^2bBx-40aAb^2x+231ab^2Bx^2-33Ab^3x^2+48b^3Bx^3\right)}{24b^4(a+bx)^3}-\frac{5(7aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{a}\,b^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(-15*a^2*A*b + 105*a^3*B - 40*a*A*b^2*x + 280*a^2*b*B*x - 33*A*b^3
*x^2 + 231*a*b^2*B*x^2 + 48*b^3*B*x^3))/(24*b^4*(a + b*x)^3) - (5*(-(A*b) +
 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*Sqrt[a]*b^(9/2))
```

fricas [A] time = 0.44, size = 437, normalized size = 2.86

$$\left[\frac{15\left(7Ba^4 - Aa^3b + \left(7Bab^3 - Ab^4\right)x^3 + 3\left(7Ba^2b^2 - Aab^3\right)x^2 + 3\left(7Ba^3b - Aa^2b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right) + 2\left(48Bab^4x^3 + 105Ba^4b - 15Aa^3b^2 + 33\left(7Ba^2b^3 - Aab^4\right)x^2 + 40\left(7Ba^3b^2 - Aa^2b^3\right)x\right)\sqrt{x}}{48\left(ab^8x^3 + 3a^2b^7x^2 + 3a^3b^6x + a^4b^5\right)}, \frac{15\left(7Ba^4 - Aa^3b + \left(7Bab^3 - Ab^4\right)x^3 + 3\left(7Ba^2b^2 - Aab^3\right)x^2 + 3\left(7Ba^3b - Aa^2b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right) + \left(48Bab^4x^3 + 105Ba^4b - 15Aa^3b^2 + 33\left(7Ba^2b^3 - Aab^4\right)x^2 + 40\left(7Ba^3b^2 - Aa^2b^3\right)x\right)\sqrt{x}}{24\left(ab^8x^3 + 3a^2b^7x^2 + 3a^3b^6x + a^4b^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [1/48*(15*(7*B*a^4 - A*a^3*b + (7*B*a*b^3 - A*b^4)*x^3 + 3*(7*B*a^2*b^2 - A
*a*b^3)*x^2 + 3*(7*B*a^3*b - A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(48*B*a*b^4*x^3 + 105*B*a^4*b - 15*A*a^3*b^2
 + 33*(7*B*a^2*b^3 - A*a*b^4)*x^2 + 40*(7*B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x)
)/(a*b^8*x^3 + 3*a^2*b^7*x^2 + 3*a^3*b^6*x + a^4*b^5), 1/24*(15*(7*B*a^4 -
A*a^3*b + (7*B*a*b^3 - A*b^4)*x^3 + 3*(7*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(7*B*
a^3*b - A*a^2*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (48*B*a*b^4
*x^3 + 105*B*a^4*b - 15*A*a^3*b^2 + 33*(7*B*a^2*b^3 - A*a*b^4)*x^2 + 40*(7*
B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x))/(a*b^8*x^3 + 3*a^2*b^7*x^2 + 3*a^3*b^6*x
 + a^4*b^5)]
```

giac [A] time = 0.17, size = 111, normalized size = 0.73

$$\frac{2B\sqrt{x}}{b^4} - \frac{5(7Ba - Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,b^4} + \frac{87Bab^2x^{\frac{5}{2}} - 33Ab^3x^{\frac{5}{2}} + 136Ba^2bx^{\frac{3}{2}} - 40Aab^2x^{\frac{3}{2}} + 57Ba^3\sqrt{x} - 15Aa^2b\sqrt{x}}{24(bx+a)^3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/b^4 - 5/8*(7*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*
b^4) + 1/24*(87*B*a*b^2*x^(5/2) - 33*A*b^3*x^(5/2) + 136*B*a^2*b*x^(3/2) -
40*A*a*b^2*x^(3/2) + 57*B*a^3*sqrt(x) - 15*A*a^2*b*sqrt(x))/((b*x + a)^3*b^
4)
```

maple [A] time = 0.07, size = 163, normalized size = 1.07

$$-\frac{11Ax^{\frac{5}{2}}}{8(bx+a)^3b} + \frac{29Bax^{\frac{5}{2}}}{8(bx+a)^3b^2} - \frac{5Aax^{\frac{3}{2}}}{3(bx+a)^3b^2} + \frac{17Ba^2x^{\frac{3}{2}}}{3(bx+a)^3b^3} - \frac{5Aa^2\sqrt{x}}{8(bx+a)^3b^3} + \frac{19Ba^3\sqrt{x}}{8(bx+a)^3b^4} + \frac{5A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,b^3} - \frac{35Ba\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,b^4} + \frac{2B\sqrt{x}}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*B/b^4*x^(1/2)+29/8/b^2/(b*x+a)^3*x^(5/2)*B*a-11/8/b/(b*x+a)^3*x^(5/2)*A-5
/3/b^2/(b*x+a)^3*A*x^(3/2)*a+17/3/b^3/(b*x+a)^3*B*x^(3/2)*a^2+19/8/b^4/(b*x
+a)^3*x^(1/2)*B*a^3-5/8/b^3/(b*x+a)^3*x^(1/2)*A*a^2+5/8/b^3/(a*b)^(1/2)*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))*A-35/8/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*
x^(1/2))*B*a
```

maxima [A] time = 1.20, size = 136, normalized size = 0.89

$$\frac{3\left(29Bab^2 - 11Ab^3\right)x^{\frac{5}{2}} + 8\left(17Ba^2b - 5Aab^2\right)x^{\frac{3}{2}} + 3\left(19Ba^3 - 5Aa^2b\right)\sqrt{x}}{24\left(b^7x^3 + 3ab^6x^2 + 3a^2b^5x + a^3b^4\right)} + \frac{2B\sqrt{x}}{b^4} - \frac{5(7Ba - Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/24*(3*(29*B*a*b^2 - 11*A*b^3)*x^(5/2) + 8*(17*B*a^2*b - 5*A*a*b^2)*x^(3/2
) + 3*(19*B*a^3 - 5*A*a^2*b)*sqrt(x))/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x
```

```
+ a^3*b^4) + 2*B*sqrt(x)/b^4 - 5/8*(7*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b)
)/(sqrt(a*b)*b^4)
```

mupad [B] time = 1.25, size = 131, normalized size = 0.86

$$\frac{2B\sqrt{x}}{b^4} - \frac{x^{3/2}\left(\frac{5Aab^2}{3} - \frac{17Ba^2b}{3}\right) - \sqrt{x}\left(\frac{19Ba^3}{8} - \frac{5Aa^2b}{8}\right) + x^{5/2}\left(\frac{11Ab^3}{8} - \frac{29Bab^2}{8}\right)}{a^3b^4 + 3a^2b^5x + 3ab^6x^2 + b^7x^3} + \frac{5\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)(Ab - 7Ba)}{8\sqrt{a}\,b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*B*x^(1/2))/b^4 - (x^(3/2)*((5*A*a*b^2)/3 - (17*B*a^2*b)/3) - x^(1/2)*((1
9*B*a^3)/8 - (5*A*a^2*b)/8) + x^(5/2)*((11*A*b^3)/8 - (29*B*a*b^2)/8))/(a^3
*b^4 + b^7*x^3 + 3*a^2*b^5*x + 3*a*b^6*x^2) + (5*atan((b^(1/2)*x^(1/2))/a^(
1/2))*(A*b - 7*B*a))/(8*a^(1/2)*b^(9/2))
```

sympy [A] time = 151.18, size = 2649, normalized size = 17.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/b**4, Eq(a, 0)), ((2*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a
**4, Eq(b, 0)), (-30*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) - 80*I*A*a**(3/2)*b**3*x**(3/2)
*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b)
+ 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) -
66*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*
I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqr
t(a)*b**8*x**3*sqrt(1/b)) + 15*A*a**3*b*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))
/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a*
*(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) - 15*A*a**3*
b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(
a)*b**8*x**3*sqrt(1/b)) + 45*A*a**2*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I
*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) - 45*A*a*
*2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b)
+ 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48
*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 45*A*a*b**3*x**2*log(-I*sqrt(a)*sqrt(1/b)
 + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b)
 + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) -
 45*A*a*b**3*x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sq
rt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1
/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 15*A*b**4*x**3*log(-I*sqrt(a)*sqr
t(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqr
t(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1
/b)) - 15*A*b**4*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 210*I*B*a**(7/2)*b*sqrt(x)*sq
rt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 1
44*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 560
*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I
*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt
(a)*b**8*x**3*sqrt(1/b)) + 462*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/b)/(48*I*a
**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b
**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 96*I*B*sqrt(a)*b**
```

```
4*x**(7/2)*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*
sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqr
t(1/b)) - 105*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 105*B*a**4*log(I*sqrt(a)*sqrt
(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt
(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/
b)) - 315*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 315*B*a**3*b*x*log(I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*
sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqr
t(1/b)) - 315*B*a**2*b**2*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a*
*(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b*
*7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 315*B*a**2*b**2*x**
2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(
a)*b**8*x**3*sqrt(1/b)) - 105*B*a*b**3*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt
(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*
I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 105*B*
a*b**3*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b
) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) +
48*I*sqrt(a)*b**8*x**3*sqrt(1/b)), True))
```

3.695 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=130

$$\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{\sqrt{x}\,(5aB+Ab)}{8ab^3(a+bx)}-\frac{x^{3/2}(5aB+Ab)}{12ab^2(a+bx)^2}+\frac{x^{5/2}(Ab-aB)}{3ab(a+bx)^3}$$

Rubi [A] time = 0.06, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 47, 63, 205}

$$\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{x^{3/2}(5aB+Ab)}{12ab^2(a+bx)^2}-\frac{\sqrt{x}\,(5aB+Ab)}{8ab^3(a+bx)}+\frac{x^{5/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^(5/2))/(3*a*b*(a + b*x)^3) - ((A*b + 5*a*B)*x^(3/2))/(12*a*b
^2*(a + b*x)^2) - ((A*b + 5*a*B)*Sqrt[x])/(8*a*b^3*(a + b*x)) + ((A*b + 5*a
*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(3/2)*b^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(a+bx)^4}\,dx\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}+\frac{(Ab+5aB)\int \frac{x^{3/2}}{(a+bx)^3}\,dx}{6ab}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}+\frac{(Ab+5aB)\int \frac{\sqrt{x}}{(a+bx)^2}\,dx}{8ab^2}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}-\frac{(Ab+5aB)\sqrt{x}}{8ab^3(a+bx)}+\frac{(Ab+5aB)\int \frac{1}{\sqrt{x}(a+bx)}\,dx}{16ab^3}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}-\frac{(Ab+5aB)\sqrt{x}}{8ab^3(a+bx)}+\frac{(Ab+5aB)\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\right.}{8ab^3}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}-\frac{(Ab+5aB)\sqrt{x}}{8ab^3(a+bx)}+\frac{(Ab+5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 105, normalized size = 0.81

$$\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{\sqrt{x}\left(15a^3B+a^2b(3A+40Bx)+ab^2x(8A+33Bx)-3Ab^3x^2\right)}{24ab^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/24*(Sqrt[x]*(15*a^3*B - 3*A*b^3*x^2 + a*b^2*x*(8*A + 33*B*x) + a^2*b*(3*
A + 40*B*x)))/(a*b^3*(a + b*x)^3) + ((A*b + 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])
/Sqrt[a]])/(8*a^(3/2)*b^(7/2))
```

IntegrateAlgebraic [A] time = 0.22, size = 111, normalized size = 0.85

$$\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{\sqrt{x}\left(15a^3B+3a^2Ab+40a^2bBx+8aAb^2x+33ab^2Bx^2-3Ab^3x^2\right)}{24ab^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/24*(Sqrt[x]*(3*a^2*A*b + 15*a^3*B + 8*a*A*b^2*x + 40*a^2*b*B*x - 3*A*b^3
*x^2 + 33*a*b^2*B*x^2))/(a*b^3*(a + b*x)^3) + ((A*b + 5*a*B)*ArcTan[(Sqrt[b
]*Sqrt[x])/Sqrt[a]])/(8*a^(3/2)*b^(7/2))
```

fricas [A] time = 0.46, size = 411, normalized size = 3.16

$$\left[-\frac{3\left(5Ba^4+Aa^3b+\left(5Bab^3+Ab^4\right)x^3+3\left(5Ba^2b^2+Aab^3\right)x^2+3\left(5Ba^3b+Aa^2b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(15Ba^4b+3Aa^3b^2+3\left(11Ba^2b^3-Aab^4\right)x^2+8\left(5Ba^3b^2+Aa^2b^3\right)x\right)\sqrt{x}}{48\left(a^2b^7x^3+3a^3b^6x^2+3a^4b^5x+a^5b^4\right)},-\frac{3\left(5Ba^4+Aa^3b+\left(5Bab^3+Ab^4\right)x^3+3\left(5Ba^2b^2+Aab^3\right)x^2+3\left(5Ba^3b+Aa^2b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(15Ba^4b+3Aa^3b^2+3\left(11Ba^2b^3-Aab^4\right)x^2+8\left(5Ba^3b^2+Aa^2b^3\right)x\right)\sqrt{x}}{24\left(a^2b^7x^3+3a^3b^6x^2+3a^4b^5x+a^5b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(5*B*a^4 + A*a^3*b + (5*B*a*b^3 + A*b^4)*x^3 + 3*(5*B*a^2*b^2 + A
*a*b^3)*x^2 + 3*(5*B*a^3*b + A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(15*B*a^4*b + 3*A*a^3*b^2 + 3*(11*B*a^2*b^3
```

```
- A*a*b^4)*x^2 + 8*(5*B*a^3*b^2 + A*a^2*b^3)*x)*sqrt(x))/(a^2*b^7*x^3 + 3*a
^3*b^6*x^2 + 3*a^4*b^5*x + a^5*b^4), -1/24*(3*(5*B*a^4 + A*a^3*b + (5*B*a*b
^3 + A*b^4)*x^3 + 3*(5*B*a^2*b^2 + A*a*b^3)*x^2 + 3*(5*B*a^3*b + A*a^2*b^2)
*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (15*B*a^4*b + 3*A*a^3*b^2 + 3
*(11*B*a^2*b^3 - A*a*b^4)*x^2 + 8*(5*B*a^3*b^2 + A*a^2*b^3)*x)*sqrt(x))/(a^
2*b^7*x^3 + 3*a^3*b^6*x^2 + 3*a^4*b^5*x + a^5*b^4)]
```

giac [A] time = 0.16, size = 107, normalized size = 0.82

$$\frac{(5\,Ba + Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,ab^3} - \frac{33\,Bab^2x^{\frac{5}{2}} - 3\,Ab^3x^{\frac{5}{2}} + 40\,Ba^2bx^{\frac{3}{2}} + 8\,Aab^2x^{\frac{3}{2}} + 15\,Ba^3\sqrt{x} + 3\,Aa^2b\sqrt{x}}{24\,(bx + a)^3ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*(5*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^3) - 1/24*(33*
B*a*b^2*x^(5/2) - 3*A*b^3*x^(5/2) + 40*B*a^2*b*x^(3/2) + 8*A*a*b^2*x^(3/2)
+ 15*B*a^3*sqrt(x) + 3*A*a^2*b*sqrt(x))/((b*x + a)^3*a*b^3)
```

maple [A] time = 0.10, size = 111, normalized size = 0.85

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a\,b^2} + \frac{5B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;b^3} + \frac{\frac{(Ab-11Ba)x^{\frac{5}{2}}}{8ab} - \frac{(Ab+5Ba)x^{\frac{3}{2}}}{3b^2} - \frac{(Ab+5Ba)a\sqrt{x}}{8b^3}}{(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*(1/16*(A*b-11*B*a)/a/b*x^(5/2)-1/6/b^2*(A*b+5*B*a)*x^(3/2)-1/16*(A*b+5*B*
a)*a/b^3*x^(1/2))/(b*x+a)^3+1/8/a/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^
(1/2))*A+5/8/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.10, size = 130, normalized size = 1.00

$$-\frac{3\left(11\,Bab^2 - Ab^3\right)x^{\frac{5}{2}} + 8\left(5\,Ba^2b + Aab^2\right)x^{\frac{3}{2}} + 3\left(5\,Ba^3 + Aa^2b\right)\sqrt{x}}{24\left(ab^6x^3 + 3\,a^2b^5x^2 + 3\,a^3b^4x + a^4b^3\right)} + \frac{(5\,Ba + Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(3*(11*B*a*b^2 - A*b^3)*x^(5/2) + 8*(5*B*a^2*b + A*a*b^2)*x^(3/2) + 3
*(5*B*a^3 + A*a^2*b)*sqrt(x))/(a*b^6*x^3 + 3*a^2*b^5*x^2 + 3*a^3*b^4*x + a^
4*b^3) + 1/8*(5*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^3)
```

mupad [B] time = 1.25, size = 112, normalized size = 0.86

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,\left(A\,b+5\,B\,a\right)}{8\,a^{3/2}\,b^{7/2}} - \frac{\frac{x^{3/2}\,\left(A\,b+5\,B\,a\right)}{3\,b^2} - \frac{x^{5/2}\,\left(A\,b-11\,B\,a\right)}{8\,a\,b} + \frac{a\,\sqrt{x}\,\left(A\,b+5\,B\,a\right)}{8\,b^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + 5*B*a))/(8*a^(3/2)*b^(7/2)) - ((x^(
3/2)*(A*b + 5*B*a))/(3*b^2) - (x^(5/2)*(A*b - 11*B*a))/(8*a*b) + (a*x^(1/2)
*(A*b + 5*B*a))/(8*b^3))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [A] time = 84.21, size = 2547, normalized size = 19.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((2
*A*x**(5/2)/5 + 2*B*x**(7/2)/7)/a**4, Eq(b, 0)), ((-2*A/(3*x**(3/2)) - 2*B/
sqrt(x))/b**4, Eq(a, 0)), (-6*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(48*I*a**
(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**
6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 16*I*A*a**(3/2)*b**
3*x**(3/2)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*
sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sq
rt(1/b)) + 6*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1
/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b)
+ 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 3*A*a**3*b*log(-I*sqrt(a)*sqrt(1/b)
+ sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b)
+ 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) -
 3*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b
) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) +
48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 9*A*a**2*b**2*x*log(-I*sqrt(a)*sqrt(1/
b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/
b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)
) - 9*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*
sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt
(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 9*A*a*b**3*x**2*log(-I*sqrt(a)
*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x
*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*s
qrt(1/b)) - 9*A*a*b**3*x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/
2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x
**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 3*A*b**4*x**3*log(-I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*
b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*
x**3*sqrt(1/b)) - 3*A*b**4*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a*
*(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b*
*6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 30*I*B*a**(7/2)*b*
sqrt(x)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqr
t(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(
1/b)) - 80*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1/
b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) +
 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 66*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/
b)/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 15*B*a*
*4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*
I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**
(3/2)*b**7*x**3*sqrt(1/b)) - 15*B*a**4*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(
48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(
5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 45*B*a**3*b
*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*
I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**
(3/2)*b**7*x**3*sqrt(1/b)) - 45*B*a**3*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x
))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 45*B*a*
*2*b**2*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1
/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b)
+ 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 45*B*a**2*b**2*x**2*log(I*sqrt(a)*sq
rt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sq
rt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt
(1/b)) + 15*B*a*b**3*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2
)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*
```

```
*2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 15*B*a*b**3*x**3*log(I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)
*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7
*x**3*sqrt(1/b)), True))
```

3.696 $\int \frac{\sqrt{x}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=127

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}+\frac{\sqrt{x}\,(aB+Ab)}{8a^2b^2(a+bx)}-\frac{\sqrt{x}\,(aB+Ab)}{4ab^2(a+bx)^2}+\frac{x^{3/2}(Ab-aB)}{3ab(a+bx)^3}$$

Rubi [A] time = 0.06, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 51, 63, 205}

$$\frac{\sqrt{x}\,(aB+Ab)}{8a^2b^2(a+bx)}+\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}-\frac{\sqrt{x}\,(aB+Ab)}{4ab^2(a+bx)^2}+\frac{x^{3/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^(3/2))/(3*a*b*(a + b*x)^3) - ((A*b + a*B)*Sqrt[x])/(4*a*b^2*
(a + b*x)^2) + ((A*b + a*B)*Sqrt[x])/(8*a^2*b^2*(a + b*x)) + ((A*b + a*B)*A
rcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(5/2)*b^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{(a+bx)^4}\,dx\\
&= \frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}+\frac{(Ab+aB)\int \frac{\sqrt{x}}{(a+bx)^3}\,dx}{2ab}\\
&= \frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)^2}\,dx}{8ab^2}\\
&= \frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\sqrt{x}}{8a^2b^2(a+bx)}+\frac{(Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{16a^2b^2}\\
&= \frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\sqrt{x}}{8a^2b^2(a+bx)}+\frac{(Ab+aB)\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx,x,\right.}{8a^2b^2}\\
&= \frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\sqrt{x}}{8a^2b^2(a+bx)}+\frac{(Ab+aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.47

$$\frac{x^{3/2}\left(\frac{3a^3(Ab-aB)}{(a+bx)^3}+3(aB+Ab)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};-\frac{bx}{a}\right)\right)}{9a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(3/2)*((3*a^3*(A*b - a*B))/(a + b*x)^3 + 3*(A*b + a*B)*Hypergeometric2F1
[3/2, 3, 5/2, -((b*x)/a)]))/(9*a^4*b)
```

IntegrateAlgebraic [A] time = 0.21, size = 110, normalized size = 0.87

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}-\frac{\sqrt{x}\,\left(3a^3B+3a^2Ab+8a^2bBx-8aAb^2x-3ab^2Bx^2-3Ab^3x^2\right)}{24a^2b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/24*(Sqrt[x]*(3*a^2*A*b + 3*a^3*B - 8*a*A*b^2*x + 8*a^2*b*B*x - 3*A*b^3*x
^2 - 3*a*b^2*B*x^2))/(a^2*b^2*(a + b*x)^3) + ((A*b + a*B)*ArcTan[(Sqrt[b]*S
qrt[x])/Sqrt[a]])/(8*a^(5/2)*b^(5/2))
```

fricas [A] time = 0.44, size = 399, normalized size = 3.14

$$\left[-\frac{3\left(Ba^{4}+Aa^{3}b+\left(Bab^{3}+Ab^{4}\right)x^{3}+3\left(Ba^{2}b^{2}+Aab^{3}\right)x^{2}+3\left(Ba^{3}b+Aa^{2}b^{2}\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(3\,Ba^{4}b+3\,Aa^{3}b^{2}-3\left(Ba^{2}b^{3}+Aab^{4}\right)x^{2}+8\left(Ba^{3}b^{2}-Aa^{2}b^{3}\right)x\right)\sqrt{x}}{48\left(a^{3}b^{6}x^{3}+3\,a^{4}b^{5}x^{2}+3\,a^{5}b^{4}x+a^{6}b^{3}\right)},\,-\frac{3\left(Ba^{4}+Aa^{3}b+\left(Bab^{3}+Ab^{4}\right)x^{3}+3\left(Ba^{2}b^{2}+Aab^{3}\right)x^{2}+3\left(Ba^{3}b+Aa^{2}b^{2}\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(3\,Ba^{4}b+3\,Aa^{3}b^{2}-3\left(Ba^{2}b^{3}+Aab^{4}\right)x^{2}+8\left(Ba^{3}b^{2}-Aa^{2}b^{3}\right)x\right)\sqrt{x}}{24\left(a^{3}b^{6}x^{3}+3\,a^{4}b^{5}x^{2}+3\,a^{5}b^{4}x+a^{6}b^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*a^4 + A*a^3*b + (B*a*b^3 + A*b^4)*x^3 + 3*(B*a^2*b^2 + A*a*b^3
)*x^2 + 3*(B*a^3*b + A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*s
qrt(x))/(b*x + a)) + 2*(3*B*a^4*b + 3*A*a^3*b^2 - 3*(B*a^2*b^3 + A*a*b^4)*x
^2 + 8*(B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x))/(a^3*b^6*x^3 + 3*a^4*b^5*x^2 + 3
*a^5*b^4*x + a^6*b^3), -1/24*(3*(B*a^4 + A*a^3*b + (B*a*b^3 + A*b^4)*x^3 +
3*(B*a^2*b^2 + A*a*b^3)*x^2 + 3*(B*a^3*b + A*a^2*b^2)*x)*sqrt(a*b)*arctan(s
qrt(a*b)/(b*sqrt(x))) + (3*B*a^4*b + 3*A*a^3*b^2 - 3*(B*a^2*b^3 + A*a*b^4)*
x^2 + 8*(B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x))/(a^3*b^6*x^3 + 3*a^4*b^5*x^2 +
3*a^5*b^4*x + a^6*b^3)]
```

giac [A] time = 0.16, size = 106, normalized size = 0.83

$$\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,a^{2}b^{2}}+\frac{3\,Bab^{2}x^{\frac{5}{2}}+3\,Ab^{3}x^{\frac{5}{2}}-8\,Ba^{2}bx^{\frac{3}{2}}+8\,Aab^{2}x^{\frac{3}{2}}-3\,Ba^{3}\sqrt{x}-3\,Aa^{2}b\sqrt{x}}{24\,(bx+a)^{3}a^{2}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*(B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^2) + 1/24*(3*B
*a*b^2*x^(5/2) + 3*A*b^3*x^(5/2) - 8*B*a^2*b*x^(3/2) + 8*A*a*b^2*x^(3/2) -
3*B*a^3*sqrt(x) - 3*A*a^2*b*sqrt(x))/((b*x + a)^3*a^2*b^2)
```

maple [A] time = 0.10, size = 111, normalized size = 0.87

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^{2}b}+\frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a\,b^{2}}+\frac{\frac{(Ab+Ba)x^{\frac{5}{2}}}{8a^{2}}+\frac{(Ab-Ba)x^{\frac{3}{2}}}{3ab}-\frac{(Ab+Ba)\sqrt{x}}{8b^{2}}}{(bx+a)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*(1/16*(A*b+B*a)/a^2*x^(5/2)+1/6*(A*b-B*a)/a/b*x^(3/2)-1/16*(A*b+B*a)/b^2*
x^(1/2))/(b*x+a)^3+1/8/a^2/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+
1/8/a/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.23, size = 128, normalized size = 1.01

$$\frac{3\left(Bab^{2}+Ab^{3}\right)x^{\frac{5}{2}}-8\left(Ba^{2}b-Aab^{2}\right)x^{\frac{3}{2}}-3\left(Ba^{3}+Aa^{2}b\right)\sqrt{x}}{24\left(a^{2}b^{5}x^{3}+3\,a^{3}b^{4}x^{2}+3\,a^{4}b^{3}x+a^{5}b^{2}\right)}+\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,a^{2}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/24*(3*(B*a*b^2 + A*b^3)*x^(5/2) - 8*(B*a^2*b - A*a*b^2)*x^(3/2) - 3*(B*a^
3 + A*a^2*b)*sqrt(x))/(a^2*b^5*x^3 + 3*a^3*b^4*x^2 + 3*a^4*b^3*x + a^5*b^2)
 + 1/8*(B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^2)
```

mupad [B] time = 1.24, size = 107, normalized size = 0.84

$$\frac{\frac{x^{5/2}\,(A\,b+B\,a)}{8\,a^{2}}-\frac{\sqrt{x}\,(A\,b+B\,a)}{8\,b^{2}}+\frac{x^{3/2}\,(A\,b-B\,a)}{3\,a\,b}}{a^{3}+3\,a^{2}\,b\,x+3\,a\,b^{2}\,x^{2}+b^{3}\,x^{3}}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b+B\,a)}{8\,a^{5/2}\,b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((x^(5/2)*(A*b + B*a))/(8*a^2) - (x^(1/2)*(A*b + B*a))/(8*b^2) + (x^(3/2)*(
A*b - B*a))/(3*a*b))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) + (atan((b^(
1/2)*x^(1/2))/a^(1/2))*(A*b + B*a))/(8*a^(5/2)*b^(5/2))
```

sympy [A] time = 49.70, size = 2550, normalized size = 20.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/b**4, Eq(a, 0)), ((2*A*x**(3/2)/3
 + 2*B*x**(5/2)/5)/a**4, Eq(b, 0)), (-6*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)
/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a
**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 16*I*A*a
**(3/2)*b**3*x**(3/2)*sqrt(1/b)/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(
9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*
b**6*x**3*sqrt(1/b)) + 6*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(11/2
)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*
*2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 3*A*a**3*b*log(-I*sqrt(
a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**
4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**
3*sqrt(1/b)) - 3*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2
)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*
*2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 9*A*a**2*b**2*x*log(-I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2
)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**
6*x**3*sqrt(1/b)) - 9*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*
I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/
2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 9*A*a*b**3*x*
*2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144
*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a*
*(5/2)*b**6*x**3*sqrt(1/b)) - 9*A*a*b**3*x**2*log(I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 14
4*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 3*A
*b**4*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/
b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) +
 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 3*A*b**4*x**3*log(I*sqrt(a)*sqrt(1/b)
 + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b
) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b))
 - 6*I*B*a**(7/2)*b*sqrt(x)*sqrt(1/b)/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*
I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**
(5/2)*b**6*x**3*sqrt(1/b)) - 16*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(48*I*
a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)
*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 6*I*B*a**(3/2)*
b**3*x**(5/2)*sqrt(1/b)/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**
4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**
3*sqrt(1/b)) + 3*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)
*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**
2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 3*B*a**4*log(I*sqrt(a)*s
qrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*
sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sq
rt(1/b)) + 9*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)
*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**
2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 9*B*a**3*b*x*log(I*sqrt(
a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**
```

```
4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**
3*sqrt(1/b)) + 9*B*a**2*b**2*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I
*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2
)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 9*B*a**2*b**2*
x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 14
4*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a
**(5/2)*b**6*x**3*sqrt(1/b)) + 3*B*a*b**3*x**3*log(-I*sqrt(a)*sqrt(1/b) + s
qrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) +
144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 3
*B*a*b**3*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt
(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b
) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)), True))
```

3.697 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=130

$$\frac{(aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{7/2}b^{3/2}}+\frac{\sqrt{x}\,(aB+5Ab)}{8a^3b(a+bx)}+\frac{\sqrt{x}\,(aB+5Ab)}{12a^2b(a+bx)^2}+\frac{\sqrt{x}\,(Ab-aB)}{3ab(a+bx)^3}$$

Rubi [A] time = 0.06, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$\frac{(aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{7/2}b^{3/2}}+\frac{\sqrt{x}\,(aB+5Ab)}{8a^3b(a+bx)}+\frac{\sqrt{x}\,(aB+5Ab)}{12a^2b(a+bx)^2}+\frac{\sqrt{x}\,(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(3*a*b*(a + b*x)^3) + ((5*A*b + a*B)*Sqrt[x])/(12*a^2
*b*(a + b*x)^2) + ((5*A*b + a*B)*Sqrt[x])/(8*a^3*b*(a + b*x)) + ((5*A*b + a
*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(7/2)*b^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{A+Bx}{\sqrt{x}(a+bx)^4}\,dx$$

$$=\frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\int \frac{1}{\sqrt{x}(a+bx)^3}\,dx}{6ab}$$

$$=\frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\int \frac{1}{\sqrt{x}(a+bx)^2}\,dx}{8a^2b}$$

$$=\frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\sqrt{x}}{8a^3b(a+bx)}+\frac{(5Ab+aB)\int \frac{1}{\sqrt{x}(a+bx)}}{16a^3b}$$

$$=\frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\sqrt{x}}{8a^3b(a+bx)}+\frac{(5Ab+aB)\,\text{Subst}\left(\int \frac{}{a}\right.}{8a^3b}$$

$$=\frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\sqrt{x}}{8a^3b(a+bx)}+\frac{(5Ab+aB)\tan^{-1}\left(\frac{\sqrt{b}}{\sqrt{a}}\right.}{8a^{7/2}b^{3/2}}$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.45

$$\frac{\sqrt{x}\left(\frac{a^3(Ab-aB)}{(a+bx)^3}+(aB+5Ab)\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};-\frac{bx}{a}\right)\right)}{3a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (Sqrt[x]*((a^3*(A*b - a*B))/(a + b*x)^3 + (5*A*b + a*B)*Hypergeometric2F1[1
/2, 3, 3/2, -((b*x)/a)]))/(3*a^4*b)
```

IntegrateAlgebraic [A] time = 0.18, size = 111, normalized size = 0.85

$$\frac{(aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{7/2}b^{3/2}}-\frac{\sqrt{x}\left(3a^3B-33a^2Ab-8a^2bBx-40aAb^2x-3ab^2Bx^2-15Ab^3x^2\right)}{24a^3b(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -1/24*(Sqrt[x]*(-33*a^2*A*b + 3*a^3*B - 40*a*A*b^2*x - 8*a^2*b*B*x - 15*A*b
^3*x^2 - 3*a*b^2*B*x^2))/(a^3*b*(a + b*x)^3) + ((5*A*b + a*B)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/(8*a^(7/2)*b^(3/2))
```

fricas [A] time = 0.44, size = 409, normalized size = 3.15

$$\left[-\frac{3\left(Ba^4+5Aa^3b+\left(Bab^3+5Ab^4\right)x^3+3\left(Ba^2b^2+5Aab^3\right)x^2+3\left(Ba^3b+5Aa^2b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(3Ba^4b-33Aa^3b^2-3\left(Ba^2b^3+5Aab^4\right)x^2-8\left(Ba^3b^2+5Aa^2b^3\right)x\right)\sqrt{x}}{48\left(a^4b^5x^3+3a^5b^4x^2+3a^6b^3x+a^7b^2\right)},-\frac{3\left(Ba^4+5Aa^3b+\left(Bab^3+5Ab^4\right)x^3+3\left(Ba^2b^2+5Aab^3\right)x^2+3\left(Ba^3b+5Aa^2b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(3Ba^4b-33Aa^3b^2-3\left(Ba^2b^3+5Aab^4\right)x^2-8\left(Ba^3b^2+5Aa^2b^3\right)x\right)\sqrt{x}}{24\left(a^4b^5x^3+3a^5b^4x^2+3a^6b^3x+a^7b^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*a^4 + 5*A*a^3*b + (B*a*b^3 + 5*A*b^4)*x^3 + 3*(B*a^2*b^2 + 5*A
*a*b^3)*x^2 + 3*(B*a^3*b + 5*A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(3*B*a^4*b - 33*A*a^3*b^2 - 3*(B*a^2*b^3 + 5
*A*a*b^4)*x^2 - 8*(B*a^3*b^2 + 5*A*a^2*b^3)*x)*sqrt(x))/(a^4*b^5*x^3 + 3*a^
```

```
5*b^4*x^2 + 3*a^6*b^3*x + a^7*b^2), -1/24*(3*(B*a^4 + 5*A*a^3*b + (B*a*b^3
+ 5*A*b^4)*x^3 + 3*(B*a^2*b^2 + 5*A*a*b^3)*x^2 + 3*(B*a^3*b + 5*A*a^2*b^2)*
x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (3*B*a^4*b - 33*A*a^3*b^2 - 3*
(B*a^2*b^3 + 5*A*a*b^4)*x^2 - 8*(B*a^3*b^2 + 5*A*a^2*b^3)*x)*sqrt(x))/(a^4*
b^5*x^3 + 3*a^5*b^4*x^2 + 3*a^6*b^3*x + a^7*b^2)]
```

giac [A] time = 0.21, size = 107, normalized size = 0.82

$$\frac{(Ba+5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^3b}+\frac{3\,Bab^2x^{\frac{5}{2}}+15\,Ab^3x^{\frac{5}{2}}+8\,Ba^2bx^{\frac{3}{2}}+40\,Aab^2x^{\frac{3}{2}}-3\,Ba^3\sqrt{x}+33\,Aa^2b\sqrt{x}}{24\,(bx+a)^3a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*(B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b) + 1/24*(3*B
*a*b^2*x^(5/2) + 15*A*b^3*x^(5/2) + 8*B*a^2*b*x^(3/2) + 40*A*a*b^2*x^(3/2)
- 3*B*a^3*sqrt(x) + 33*A*a^2*b*sqrt(x))/((b*x + a)^3*a^3*b)
```

maple [A] time = 0.06, size = 112, normalized size = 0.86

$$\frac{5A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^3}+\frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^2b}+\frac{\frac{(5Ab+Ba)b\,x^{\frac{5}{2}}}{8a^3}+\frac{(5Ab+Ba)x^{\frac{3}{2}}}{3a^2}+\frac{(11Ab-Ba)\sqrt{x}}{8ab}}{(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x)
```

```
[Out] 2*(1/16*(5*A*b+B*a)/a^3*b*x^(5/2)+1/6/a^2*(5*A*b+B*a)*x^(3/2)+1/16*(11*A*b-
B*a)/a/b*x^(1/2))/(b*x+a)^3+5/8/a^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1
/2))*A+1/8/a^2/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.24, size = 129, normalized size = 0.99

$$\frac{3\left(Bab^2+5\,Ab^3\right)x^{\frac{5}{2}}+8\left(Ba^2b+5\,Aab^2\right)x^{\frac{3}{2}}-3\left(Ba^3-11\,Aa^2b\right)\sqrt{x}}{24\left(a^3b^4x^3+3\,a^4b^3x^2+3\,a^5b^2x+a^6b\right)}+\frac{(Ba+5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/24*(3*(B*a*b^2 + 5*A*b^3)*x^(5/2) + 8*(B*a^2*b + 5*A*a*b^2)*x^(3/2) - 3*(
B*a^3 - 11*A*a^2*b)*sqrt(x))/(a^3*b^4*x^3 + 3*a^4*b^3*x^2 + 3*a^5*b^2*x + a
^6*b) + 1/8*(B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b)
```

mupad [B] time = 1.23, size = 112, normalized size = 0.86

$$\frac{\frac{x^{3/2}\,(5\,A\,b+B\,a)}{3\,a^2}+\frac{\sqrt{x}\,(11\,A\,b-B\,a)}{8\,a\,b}+\frac{b\,x^{5/2}\,(5\,A\,b+B\,a)}{8\,a^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(5\,A\,b+B\,a)}{8\,a^{7/2}\,b^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((x^(3/2)*(5*A*b + B*a))/(3*a^2) + (x^(1/2)*(11*A*b - B*a))/(8*a*b) + (b*x^
(5/2)*(5*A*b + B*a))/(8*a^3))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) + (
atan((b^(1/2)*x^(1/2))/a^(1/2))*(5*A*b + B*a))/(8*a^(7/2)*b^(3/2))
```

sympy [A] time = 70.82, size = 2548, normalized size = 19.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(b, 0))
, ((2*A*sqrt(x) + 2*B*x**(3/2)/3)/a**4, Eq(b, 0)), ((-2*A/(7*x**(7/2)) - 2*
B/(5*x**(5/2)))/b**4, Eq(a, 0)), (66*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(4
8*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**
(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 80*I*A*a**
(3/2)*b**3*x**(3/2)*sqrt(1/b)/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11
/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b
**5*x**3*sqrt(1/b)) + 30*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(13/2
)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x
**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 15*A*a**3*b*log(-I*sqr
t(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*
b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*
x**3*sqrt(1/b)) - 15*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(
13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b*
*4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 45*A*a**2*b**2*x*l
og(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a
**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7
/2)*b**5*x**3*sqrt(1/b)) - 45*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144
*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 45*A
*a*b**3*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(
1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b
) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 45*A*a*b**3*x**2*log(I*sqrt(a)*sqr
t(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*s
qrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqr
t(1/b)) + 15*A*b**4*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2
)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x
**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 15*A*b**4*x**3*log(I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2
)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**
5*x**3*sqrt(1/b)) - 6*I*B*a**(7/2)*b*sqrt(x)*sqrt(1/b)/(48*I*a**(13/2)*b**2
*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sq
rt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 16*I*B*a**(5/2)*b**2*x**(3/2
)*sqrt(1/b)/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/
b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)
) + 6*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/b)/(48*I*a**(13/2)*b**2*sqrt(1/b) +
 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48
*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 3*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt
(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 14
4*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 3*B
*a**4*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 1
44*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I
*a**(7/2)*b**5*x**3*sqrt(1/b)) + 9*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sq
rt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) +
144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 9
*B*a**3*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/
b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b)
+ 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 9*B*a**2*b**2*x**2*log(-I*sqrt(a)*sq
rt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*
sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sq
rt(1/b)) - 9*B*a**2*b**2*x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(
13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b*
*4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 3*B*a*b**3*x**3*lo
g(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a*
```

```
*(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/
2)*b**5*x**3*sqrt(1/b)) - 3*B*a*b**3*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x)
)/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I
*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)), True))
```

3.698 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=157

$$-\frac{5(7Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{9/2}\sqrt{b}}-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}(a+bx)}+\frac{7Ab-aB}{12a^2b\sqrt{x}(a+bx)^2}+\frac{Ab-aB}{3ab\sqrt{x}(a+bx)^3}$$

Rubi [A] time = 0.07, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}(a+bx)}+\frac{7Ab-aB}{12a^2b\sqrt{x}(a+bx)^2}-\frac{5(7Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{9/2}\sqrt{b}}+\frac{Ab-aB}{3ab\sqrt{x}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-5*(7*A*b - a*B))/(8*a^4*b*Sqrt[x]) + (A*b - a*B)/(3*a*b*Sqrt[x]*(a + b*x)
^3) + (7*A*b - a*B)/(12*a^2*b*Sqrt[x]*(a + b*x)^2) + (5*(7*A*b - a*B))/(24*
a^3*b*Sqrt[x]*(a + b*x)) - (5*(7*A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a
]])/(8*a^(9/2)*Sqrt[b])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{A+Bx}{x^{3/2}(a+bx)^4}\,dx$$
$$=\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}-\frac{\left(-\frac{7Ab}{2}+\frac{aB}{2}\right)\int \frac{1}{x^{3/2}(a+bx)^3}\,dx}{3ab}$$
$$=\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}+\frac{(5(7Ab-aB))\int \frac{1}{x^{3/2}(a+bx)^2}\,dx}{24a^2b}$$
$$=\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}+\frac{(5(7Ab-aB))\int}{16a^3b}$$
$$=-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}-$$
$$=-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}-$$
$$=-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}-$$

Mathematica [C] time = 0.04, size = 59, normalized size = 0.38

$$\frac{\frac{a^3(Ab-aB)}{(a+bx)^3}+(aB-7Ab)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};-\frac{bx}{a}\right)}{3a^4b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a^3*(A*b - a*B))/(a + b*x)^3 + (-7*A*b + a*B)*Hypergeometric2F1[-1/2, 3,
1/2, -((b*x)/a)])/(3*a^4*b*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.21, size = 120, normalized size = 0.76

$$\frac{5(aB-7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{9/2}\sqrt{b}}+\frac{-48a^3A+33a^3Bx-231a^2Abx+40a^2bBx^2-280aAb^2x^2+15ab^2Bx^3-105Ab^3x^3}{24a^4\sqrt{x}\,(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-48*a^3*A - 231*a^2*A*b*x + 33*a^3*B*x - 280*a*A*b^2*x^2 + 40*a^2*b*B*x^2
- 105*A*b^3*x^3 + 15*a*b^2*B*x^3)/(24*a^4*Sqrt[x]*(a + b*x)^3) + (5*(-7*A*b
 + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(9/2)*Sqrt[b])
```

fricas [A] time = 0.45, size = 445, normalized size = 2.83

$$\left[\frac{15\left(\left(Bab^3-7\,Ab^4\right)x^4+3\left(Ba^2b^2-7\,Aab^3\right)x^3+3\left(Ba^3b-7\,Aa^2b^2\right)x^2+\left(Ba^4-7\,Aa^3b\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a+2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)-2\left(48\,Aa^4b-15\left(Ba^2b^3-7\,Aab^4\right)x^3-40\left(Ba^3b^2-7\,Aa^2b^3\right)x^2-33\left(Ba^4b-7\,Aa^3b^2\right)x\right)\sqrt{x}}{48\left(a^5b^4x^4+3\,a^6b^3x^3+3\,a^7b^2x^2+a^8bx\right)},-\frac{15\left(\left(Bab^3-7\,Ab^4\right)x^4+3\left(Ba^2b^2-7\,Aab^3\right)x^3+3\left(Ba^3b-7\,Aa^2b^2\right)x^2+\left(Ba^4-7\,Aa^3b\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(48\,Aa^4b-15\left(Ba^2b^3-7\,Aab^4\right)x^3-40\left(Ba^3b^2-7\,Aa^2b^3\right)x^2-33\left(Ba^4b-7\,Aa^3b^2\right)x\right)\sqrt{x}}{24\left(a^5b^4x^4+3\,a^6b^3x^3+3\,a^7b^2x^2+a^8bx\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [1/48*(15*((B*a*b^3 - 7*A*b^4)*x^4 + 3*(B*a^2*b^2 - 7*A*a*b^3)*x^3 + 3*(B*a
^3*b - 7*A*a^2*b^2)*x^2 + (B*a^4 - 7*A*a^3*b)*x)*sqrt(-a*b)*log((b*x - a +
2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(48*A*a^4*b - 15*(B*a^2*b^3 - 7*A*a*b^
4)*x^3 - 40*(B*a^3*b^2 - 7*A*a^2*b^3)*x^2 - 33*(B*a^4*b - 7*A*a^3*b^2)*x)*s
qrt(x))/(a^5*b^4*x^4 + 3*a^6*b^3*x^3 + 3*a^7*b^2*x^2 + a^8*b*x), -1/24*(15*
((B*a*b^3 - 7*A*b^4)*x^4 + 3*(B*a^2*b^2 - 7*A*a*b^3)*x^3 + 3*(B*a^3*b - 7*A
*a^2*b^2)*x^2 + (B*a^4 - 7*A*a^3*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x
))) + (48*A*a^4*b - 15*(B*a^2*b^3 - 7*A*a*b^4)*x^3 - 40*(B*a^3*b^2 - 7*A*a^
2*b^3)*x^2 - 33*(B*a^4*b - 7*A*a^3*b^2)*x)*sqrt(x))/(a^5*b^4*x^4 + 3*a^6*b^
3*x^3 + 3*a^7*b^2*x^2 + a^8*b*x)]
```

giac [A] time = 0.16, size = 110, normalized size = 0.70

$$\frac{5\,(Ba-7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^4}-\frac{2\,A}{a^4\sqrt{x}}+\frac{15\,Bab^2x^{\frac{5}{2}}-57\,Ab^3x^{\frac{5}{2}}+40\,Ba^2bx^{\frac{3}{2}}-136\,Aab^2x^{\frac{3}{2}}+33\,Ba^3\sqrt{x}-87\,Aa^2b\sqrt{x}}{24\,(bx+a)^3a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 5/8*(B*a - 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) - 2*A/(a^4*sq
rt(x)) + 1/24*(15*B*a*b^2*x^(5/2) - 57*A*b^3*x^(5/2) + 40*B*a^2*b*x^(3/2) -
 136*A*a*b^2*x^(3/2) + 33*B*a^3*sqrt(x) - 87*A*a^2*b*sqrt(x))/((b*x + a)^3*
a^4)
```

maple [A] time = 0.09, size = 163, normalized size = 1.04

$$-\frac{19A\,b^3x^{\frac{5}{2}}}{8\,(bx+a)^3\,a^4}+\frac{5B\,b^2x^{\frac{5}{2}}}{8\,(bx+a)^3\,a^3}-\frac{17A\,b^2x^{\frac{3}{2}}}{3\,(bx+a)^3\,a^3}+\frac{5Bb\,x^{\frac{3}{2}}}{3\,(bx+a)^3\,a^2}-\frac{29Ab\sqrt{x}}{8\,(bx+a)^3\,a^2}+\frac{11B\sqrt{x}}{8\,(bx+a)^3\,a}-\frac{35Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,a^4}+\frac{5B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\,a^3}-\frac{2A}{a^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -19/8/a^4/(b*x+a)^3*x^(5/2)*A*b^3+5/8/a^3/(b*x+a)^3*x^(5/2)*B*b^2-17/3/a^3/
(b*x+a)^3*A*x^(3/2)*b^2+5/3/a^2/(b*x+a)^3*B*x^(3/2)*b-29/8/a^2/(b*x+a)^3*x^
(1/2)*A*b+11/8/a/(b*x+a)^3*x^(1/2)*B-35/8/a^4/(a*b)^(1/2)*arctan(1/(a*b)^(1
/2)*b*x^(1/2))*A*b+5/8/a^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B-2*
A/a^4/x^(1/2)
```

maxima [A] time = 1.15, size = 132, normalized size = 0.84

$$-\frac{48\,Aa^3-15\left(Bab^2-7\,Ab^3\right)x^3-40\left(Ba^2b-7\,Aab^2\right)x^2-33\left(Ba^3-7\,Aa^2b\right)x}{24\left(a^4b^3x^{\frac{7}{2}}+3\,a^5b^2x^{\frac{5}{2}}+3\,a^6bx^{\frac{3}{2}}+a^7\sqrt{x}\right)}+\frac{5\,(Ba-7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(48*A*a^3 - 15*(B*a*b^2 - 7*A*b^3)*x^3 - 40*(B*a^2*b - 7*A*a*b^2)*x^2
 - 33*(B*a^3 - 7*A*a^2*b)*x)/(a^4*b^3*x^(7/2) + 3*a^5*b^2*x^(5/2) + 3*a^6*b
*x^(3/2) + a^7*sqrt(x)) + 5/8*(B*a - 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sq
rt(a*b)*a^4)
```

mupad [B] time = 1.28, size = 147, normalized size = 0.94

$$-\frac{\frac{2\,A}{a}+\frac{11\,x\,(7\,A\,b-B\,a)}{8\,a^2}+\frac{5\,b^2\,x^3\,(7\,A\,b-B\,a)}{8\,a^4}+\frac{5\,b\,x^2\,(7\,A\,b-B\,a)}{3\,a^3}}{a^3\,\sqrt{x}+b^3\,x^{7/2}+3\,a^2\,b\,x^{3/2}+3\,a\,b^2\,x^{5/2}}-\frac{5\,\mathrm{atan}\left(\frac{5\,\sqrt{b}\,\sqrt{x}\,(7\,A\,b-B\,a)}{\sqrt{a}\,(35\,A\,b-5\,B\,a)}\right)\,(7\,A\,b-B\,a)}{8\,a^{9/2}\,\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*A)/a + (11*x*(7*A*b - B*a))/(8*a^2) + (5*b^2*x^3*(7*A*b - B*a))/(8*a^
4) + (5*b*x^2*(7*A*b - B*a))/(3*a^3))/(a^3*x^(1/2) + b^3*x^(7/2) + 3*a^2*b*
x^(3/2) + 3*a*b^2*x^(5/2)) - (5*atan((5*b^(1/2)*x^(1/2)*(7*A*b - B*a))/(a^(
1/2)*(35*A*b - 5*B*a)))*(7*A*b - B*a))/(8*a^(9/2)*b^(1/2))
```

sympy [A] time = 144.73, size = 2917, normalized size = 18.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/sqrt(x) + 2*B*sqrt(x))/a**4, Eq(b, 0)), ((-2*A/(9*x**(9/2)) - 2*B/
(7*x**(7/2)))/b**4, Eq(a, 0)), (-96*I*A*a**(7/2)*b*sqrt(1/b)/(48*I*a**(15/2
)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**
(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 4
62*I*A*a**(5/2)*b**2*x*sqrt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*
I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/
b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 560*I*A*a**(3/2)*b**3*x**2*sq
rt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)
*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x
**(7/2)*sqrt(1/b)) - 210*I*A*sqrt(a)*b**4*x**3*sqrt(1/b)/(48*I*a**(15/2)*b*
sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/
2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 105*A
*a**3*b*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(
x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b*
*3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 105*A*a**3
*b*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqr
t(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**
(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 315*A*a**2*b**2*
x**(3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt
(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(
5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 315*A*a**2*b**2*x
**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1
/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/
2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 315*A*a*b**3*x**(5/
2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b)
+ 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*s
qrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 315*A*a*b**3*x**(5/2)*l
og(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144
*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1
/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 105*A*b**4*x**(7/2)*log(-I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**
(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) +
48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 105*A*b**4*x**(7/2)*log(I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*
b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a*
*(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 66*I*B*a**(7/2)*b*x*sqrt(1/b)/(48*I*a**(1
5/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*
a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b))
+ 80*I*B*a**(5/2)*b**2*x**2*sqrt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) +
 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sq
rt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 30*I*B*a**(3/2)*b**3*x**
3*sqrt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(
3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b*
*4*x**(7/2)*sqrt(1/b)) + 15*B*a**4*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(
```

```
x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqr
t(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7
/2)*sqrt(1/b)) - 15*B*a**4*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I
*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) +
144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(
1/b)) + 45*B*a**3*b*x**(3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(
15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I
*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b))
 - 45*B*a**3*b*x**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*
b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(1
1/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 45*
B*a**2*b**2*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*
sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/
2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 45*B*
a**2*b**2*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqr
t(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*
b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 15*B*a*b
**3*x**(7/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*
sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*
x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 15*B*a*b**3*x
**(7/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1
/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/
2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)), True))
```

3.699 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^2} dx$

Optimal. Leaf size=178

$$\frac{35\sqrt{b}\,(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{11/2}}+\frac{35(3Ab-aB)}{8a^5\sqrt{x}}-\frac{35(3Ab-aB)}{24a^4bx^{3/2}}+\frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)}+\frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2}+\frac{Ab-}{3abx^{3/2}(a}$$

Rubi [A] time = 0.08, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$\frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)}-\frac{35(3Ab-aB)}{24a^4bx^{3/2}}+\frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2}+\frac{35(3Ab-aB)}{8a^5\sqrt{x}}+\frac{35\sqrt{b}\,(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{11/2}}+\frac{Ab-aB}{3abx^{3/2}(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-35*(3*A*b - a*B))/(24*a^4*b*x^(3/2)) + (35*(3*A*b - a*B))/(8*a^5*Sqrt[x])
 + (A*b - a*B)/(3*a*b*x^(3/2)*(a + b*x)^3) + (3*A*b - a*B)/(4*a^2*b*x^(3/2)
*(a + b*x)^2) + (7*(3*A*b - a*B))/(8*a^3*b*x^(3/2)*(a + b*x)) + (35*Sqrt[b]
*(3*A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{A+Bx}{x^{5/2}(a+bx)^4}\,dx$$

$$= \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} - \frac{\left(-\frac{9Ab}{2}+\frac{3aB}{2}\right)\int \frac{1}{x^{5/2}(a+bx)^3}\,dx}{3ab}$$

$$= \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{(7(3Ab-aB))\int \frac{1}{x^{5/2}(a+bx)^2}\,dx}{8a^2b}$$

$$= \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)} + \frac{(35(3Ab-aB))}{16a^3}$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)}$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{35(3Ab-aB)}{8a^5\sqrt{x}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} +$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{35(3Ab-aB)}{8a^5\sqrt{x}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} +$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{35(3Ab-aB)}{8a^5\sqrt{x}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} +$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.34

$$\frac{\frac{3a^3(Ab-aB)}{(a+bx)^3} + (3aB-9Ab)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};-\frac{bx}{a}\right)}{9a^4bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((3*a^3*(A*b - a*B))/(a + b*x)^3 + (-9*A*b + 3*a*B)*Hypergeometric2F1[-3/2,
 3, -1/2, -((b*x)/a)])/(9*a^4*b*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.26, size = 148, normalized size = 0.83

$$\frac{-16a^4A-48a^4Bx+144a^3Abx-231a^3bBx^2+693a^2Ab^2x^2-280a^2b^2Bx^3+840aAb^3x^3-105ab^3Bx^4+315Ab^4x^4}{24a^5x^{3/2}(a+bx)^3} - \frac{35\left(a\sqrt{b}B-3Ab^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-16*a^4*A + 144*a^3*A*b*x - 48*a^4*B*x + 693*a^2*A*b^2*x^2 - 231*a^3*b*B*x
^2 + 840*a*A*b^3*x^3 - 280*a^2*b^2*B*x^3 + 315*A*b^4*x^4 - 105*a*b^3*B*x^4)
/(24*a^5*x^(3/2)*(a + b*x)^3) - (35*(-3*A*b^(3/2) + a*Sqrt[b]*B)*ArcTan[(Sq
rt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(11/2))
```

fricas [A] time = 0.45, size = 482, normalized size = 2.71

$$\left[-\frac{105\left(\left(Bab^3-3Ab^4\right)x^5+3\left(Ba^2b^2-3Aab^3\right)x^4+3\left(Ba^3b-3Aa^2b^2\right)x^3+\left(Ba^4-3Aa^3b\right)x^2\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(16Aa^4+105\left(Bab^3-3Ab^4\right)x^4+280\left(Ba^2b^2-3Aab^3\right)x^3+231\left(Ba^3b-3Aa^2b^2\right)x^2+48\left(Ba^4-3Aa^3b\right)x\right)\sqrt{x}}{48\left(a^5b^3x^5+3a^6b^2x^4+3a^7bx^3+a^8x^2\right)}, \frac{105\left(\left(Bab^3-3Ab^4\right)x^5+3\left(Ba^2b^2-3Aab^3\right)x^4+3\left(Ba^3b-3Aa^2b^2\right)x^3+\left(Ba^4-3Aa^3b\right)x^2\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-\left(16Aa^4+105\left(Bab^3-3Ab^4\right)x^4+280\left(Ba^2b^2-3Aab^3\right)x^3+231\left(Ba^3b-3Aa^2b^2\right)x^2+48\left(Ba^4-3Aa^3b\right)x\right)\sqrt{x}}{24\left(a^5b^3x^5+3a^6b^2x^4+3a^7bx^3+a^8x^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(105*((B*a*b^3 - 3*A*b^4)*x^5 + 3*(B*a^2*b^2 - 3*A*a*b^3)*x^4 + 3*(B
*a^3*b - 3*A*a^2*b^2)*x^3 + (B*a^4 - 3*A*a^3*b)*x^2)*sqrt(-b/a)*log((b*x +
2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(16*A*a^4 + 105*(B*a*b^3 - 3*A*b
^4)*x^4 + 280*(B*a^2*b^2 - 3*A*a*b^3)*x^3 + 231*(B*a^3*b - 3*A*a^2*b^2)*x^2
 + 48*(B*a^4 - 3*A*a^3*b)*x)*sqrt(x))/(a^5*b^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*
b*x^3 + a^8*x^2), 1/24*(105*((B*a*b^3 - 3*A*b^4)*x^5 + 3*(B*a^2*b^2 - 3*A*a
*b^3)*x^4 + 3*(B*a^3*b - 3*A*a^2*b^2)*x^3 + (B*a^4 - 3*A*a^3*b)*x^2)*sqrt(b
/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (16*A*a^4 + 105*(B*a*b^3 - 3*A*b^4)*x
^4 + 280*(B*a^2*b^2 - 3*A*a*b^3)*x^3 + 231*(B*a^3*b - 3*A*a^2*b^2)*x^2 + 48
*(B*a^4 - 3*A*a^3*b)*x)*sqrt(x))/(a^5*b^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*b*x^3
 + a^8*x^2)]
```

giac [A] time = 0.17, size = 136, normalized size = 0.76

$$-\frac{35\left(Bab-3\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^{5}}-\frac{105\,Bab^{3}x^{4}-315\,Ab^{4}x^{4}+280\,Ba^{2}b^{2}x^{3}-840\,Aab^{3}x^{3}+231\,Ba^{3}bx^{2}-693\,Aa^{2}b^{2}x^{2}+48\,Ba^{4}x-144\,Aa^{3}bx+16\,Aa^{4}}{24\left(bx^{\frac{3}{2}}+a\sqrt{x}\right)^{3}a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -35/8*(B*a*b - 3*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5) - 1/24*
(105*B*a*b^3*x^4 - 315*A*b^4*x^4 + 280*B*a^2*b^2*x^3 - 840*A*a*b^3*x^3 + 23
1*B*a^3*b*x^2 - 693*A*a^2*b^2*x^2 + 48*B*a^4*x - 144*A*a^3*b*x + 16*A*a^4)/
((b*x^(3/2) + a*sqrt(x))^3*a^5)
```

maple [A] time = 0.08, size = 190, normalized size = 1.07

$$\frac{41A\,b^{4}x^{\frac{5}{2}}}{8\left(bx+a\right)^{3}a^{5}}-\frac{19B\,b^{3}x^{\frac{5}{2}}}{8\left(bx+a\right)^{3}a^{4}}+\frac{35A\,b^{3}x^{\frac{3}{2}}}{3\left(bx+a\right)^{3}a^{4}}-\frac{17B\,b^{2}x^{\frac{3}{2}}}{3\left(bx+a\right)^{3}a^{3}}+\frac{55A\,b^{2}\sqrt{x}}{8\left(bx+a\right)^{3}a^{3}}-\frac{29Bb\sqrt{x}}{8\left(bx+a\right)^{3}a^{2}}+\frac{105A\,b^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^{5}}-\frac{35Bb\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^{4}}+\frac{8Ab}{a^{5}\sqrt{x}}-\frac{2B}{a^{4}\sqrt{x}}-\frac{2A}{3a^{4}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 41/8/a^5*b^4/(b*x+a)^3*x^(5/2)*A-19/8/a^4*b^3/(b*x+a)^3*x^(5/2)*B+35/3/a^4*
b^3/(b*x+a)^3*A*x^(3/2)-17/3/a^3*b^2/(b*x+a)^3*B*x^(3/2)+55/8/a^3*b^2/(b*x+
a)^3*x^(1/2)*A-29/8/a^2*b/(b*x+a)^3*x^(1/2)*B+105/8/a^5*b^2/(a*b)^(1/2)*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))*A-35/8/a^4*b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*
b*x^(1/2))*B-2/3*A/a^4/x^(3/2)+8/a^5/x^(1/2)*A*b-2/a^4/x^(1/2)*B
```

maxima [A] time = 1.40, size = 158, normalized size = 0.89

$$-\frac{16\,Aa^{4}+105\left(Bab^{3}-3\,Ab^{4}\right)x^{4}+280\left(Ba^{2}b^{2}-3\,Aab^{3}\right)x^{3}+231\left(Ba^{3}b-3\,Aa^{2}b^{2}\right)x^{2}+48\left(Ba^{4}-3\,Aa^{3}b\right)x}{24\left(a^{5}b^{3}x^{\frac{9}{2}}+3\,a^{6}b^{2}x^{\frac{7}{2}}+3\,a^{7}bx^{\frac{5}{2}}+a^{8}x^{\frac{3}{2}}\right)}-\frac{35\left(Bab-3\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(16*A*a^4 + 105*(B*a*b^3 - 3*A*b^4)*x^4 + 280*(B*a^2*b^2 - 3*A*a*b^3)
*x^3 + 231*(B*a^3*b - 3*A*a^2*b^2)*x^2 + 48*(B*a^4 - 3*A*a^3*b)*x)/(a^5*b^3
*x^(9/2) + 3*a^6*b^2*x^(7/2) + 3*a^7*b*x^(5/2) + a^8*x^(3/2)) - 35/8*(B*a*b
 - 3*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5)
```

mupad [B] time = 1.25, size = 145, normalized size = 0.81

$$\frac{\frac{2\,x\,\left(3\,A\,b-B\,a\right)}{a^{2}}-\frac{2\,A}{3\,a}+\frac{35\,b^{2}\,x^{3}\,\left(3\,A\,b-B\,a\right)}{3\,a^{4}}+\frac{35\,b^{3}\,x^{4}\,\left(3\,A\,b-B\,a\right)}{8\,a^{5}}+\frac{77\,b\,x^{2}\,\left(3\,A\,b-B\,a\right)}{8\,a^{3}}}{a^{3}\,x^{3/2}+b^{3}\,x^{9/2}+3\,a^{2}\,b\,x^{5/2}+3\,a\,b^{2}\,x^{7/2}}+\frac{35\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,\left(3\,A\,b-B\,a\right)}{8\,a^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((2*x*(3*A*b - B*a))/a^2 - (2*A)/(3*a) + (35*b^2*x^3*(3*A*b - B*a))/(3*a^4)
 + (35*b^3*x^4*(3*A*b - B*a))/(8*a^5) + (77*b*x^2*(3*A*b - B*a))/(8*a^3))/(
a^3*x^(3/2) + b^3*x^(9/2) + 3*a^2*b*x^(5/2) + 3*a*b^2*x^(7/2)) + (35*b^(1/2
)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(3*A*b - B*a))/(8*a^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.700 $\int \frac{x^{11/2}(A+Bx)}{(a^2+2abx+b^2x^2)^3} \, dx$

Optimal. Leaf size=240

$$-\frac{231\sqrt{a}\,(3Ab-13aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128b^{15/2}}+\frac{231\sqrt{x}\,(3Ab-13aB)}{128b^7}-\frac{77x^{3/2}(3Ab-13aB)}{128ab^6}+\frac{231x^{5/2}(3Ab-13aB)}{640ab^5(a+bx)}+\frac{33x^{7/2}}{320}$$

Rubi [A] time = 0.12, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 50, 63, 205}

$$\frac{x^{11/2}(3Ab-13aB)}{40ab^2(a+bx)^4}+\frac{11x^{9/2}(3Ab-13aB)}{240ab^3(a+bx)^3}+\frac{33x^{7/2}(3Ab-13aB)}{320ab^4(a+bx)^2}+\frac{231x^{5/2}(3Ab-13aB)}{640ab^5(a+bx)}-\frac{77x^{3/2}(3Ab-13aB)}{128ab^6}+\frac{231\sqrt{x}\,(3Ab-13aB)}{128b^7}-\frac{231\sqrt{a}\,(3Ab-13aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128b^{15/2}}+\frac{x^{13/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (231*(3*A*b - 13*a*B)*Sqrt[x])/(128*b^7) - (77*(3*A*b - 13*a*B)*x^(3/2))/(1
28*a*b^6) + ((A*b - a*B)*x^(13/2))/(5*a*b*(a + b*x)^5) + ((3*A*b - 13*a*B)*
x^(11/2))/(40*a*b^2*(a + b*x)^4) + (11*(3*A*b - 13*a*B)*x^(9/2))/(240*a*b^3
*(a + b*x)^3) + (33*(3*A*b - 13*a*B)*x^(7/2))/(320*a*b^4*(a + b*x)^2) + (23
1*(3*A*b - 13*a*B)*x^(5/2))/(640*a*b^5*(a + b*x)) - (231*Sqrt[a]*(3*A*b - 1
3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*b^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{11/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} - \frac{\left(\frac{3Ab}{2}-\frac{13aB}{2}\right)\int \frac{x^{11/2}}{(a+bx)^5}\,dx}{5ab}$$

$$= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} - \frac{(11(3Ab-13aB))\int \frac{x^{9/2}}{(a+bx)^4}\,dx}{80ab^2}$$

$$= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} - \frac{(33(3Ab-13aB))}{160ab^3}$$

$$= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} + \frac{33(3Ab-13aB)x^{7}}{320ab^4(a+bx)^2}$$

$$= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} + \frac{33(3Ab-13aB)x^{7}}{320ab^4(a+bx)^2}$$

$$= -\frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)}{240ab^3(a+bx}$$

$$= \frac{231(3Ab-13aB)\sqrt{x}}{128b^7} - \frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x}{40ab^2(a+bx)}$$

$$= \frac{231(3Ab-13aB)\sqrt{x}}{128b^7} - \frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x}{40ab^2(a+bx)}$$

$$= \frac{231(3Ab-13aB)\sqrt{x}}{128b^7} - \frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x}{40ab^2(a+bx)}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.25

$$\frac{x^{13/2}\left(\frac{13a^5(Ab-aB)}{(a+bx)^5}+(13aB-3Ab)\,{}_2F_1\left(5,\frac{13}{2};\frac{15}{2};-\frac{bx}{a}\right)\right)}{65a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(13/2)*((13*a^5*(A*b - a*B))/(a + b*x)^5 + (-3*A*b + 13*a*B)*Hypergeomet
ric2F1[5, 13/2, 15/2, -((b*x)/a)]))/(65*a^6*b)
```

IntegrateAlgebraic [A] time = 0.41, size = 194, normalized size = 0.81

$$\frac{231\left(13a^{3/2}B-3\sqrt{a}\,Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128b^{15/2}}+\frac{\sqrt{x}\left(-45045a^6B+10395a^5Ab-210210a^5bBx+48510a^4Ab^2x-384384a^4b^2Bx^2+88704a^3Ab^3x^2-338910a^3b^3Bx^3+78210a^2Ab^4x^3-137995a^2b^4Bx^4+31845aAb^5x^4-16640ab^5Bx^5+3840Ab^6x^5+1280b^6Bx^6\right)}{1920b^7(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(10395*a^5*A*b - 45045*a^6*B + 48510*a^4*A*b^2*x - 210210*a^5*b*B*
x + 88704*a^3*A*b^3*x^2 - 384384*a^4*b^2*B*x^2 + 78210*a^2*A*b^4*x^3 - 3389
10*a^3*b^3*B*x^3 + 31845*a*A*b^5*x^4 - 137995*a^2*b^4*B*x^4 + 3840*A*b^6*x^
5 - 16640*a*b^5*B*x^5 + 1280*b^6*B*x^6))/(1920*b^7*(a + b*x)^5) + (231*(-3*
Sqrt[a]*A*b + 13*a^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*b^(15/2
))
```

fricas [A] time = 0.47, size = 703, normalized size = 2.93

$$\left[-\frac{3465\left(13Ba^6-3Aa^5b+\left(13Bab^5-3Ab^6\right)x^5+5\left(13Ba^2b^4-3Aab^5\right)x^4+10\left(13Ba^3b^3-3Aa^2b^4\right)x^3+10\left(13Ba^4b^2-3Aa^3b^3\right)x^2+5\left(13Ba^5b-3Aa^4b^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(1280Bb^6x^6-45045Ba^6+10395Aa^5b-1280\left(13Bab^5-3Ab^6\right)x^5-10615\left(13Ba^2b^4-3Aab^5\right)x^4-26070\left(13Ba^3b^3-3Aa^2b^4\right)x^3-29568\left(13Ba^4b^2-3Aa^3b^3\right)x^2-16170\left(13Ba^5b-3Aa^4b^2\right)x\right)\sqrt{x}}{3840\left(b^{12}x^5+5ab^{11}x^4+10a^2b^{10}x^3+10a^3b^9x^2+5a^4b^8x+a^5b^7\right)},\ \frac{3465\left(13Ba^6-3Aa^5b+\left(13Bab^5-3Ab^6\right)x^5+5\left(13Ba^2b^4-3Aab^5\right)x^4+10\left(13Ba^3b^3-3Aa^2b^4\right)x^3+10\left(13Ba^4b^2-3Aa^3b^3\right)x^2+5\left(13Ba^5b-3Aa^4b^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+\left(1280Bb^6x^6-45045Ba^6+10395Aa^5b-1280\left(13Bab^5-3Ab^6\right)x^5-10615\left(13Ba^2b^4-3Aab^5\right)x^4-26070\left(13Ba^3b^3-3Aa^2b^4\right)x^3-29568\left(13Ba^4b^2-3Aa^3b^3\right)x^2-16170\left(13Ba^5b-3Aa^4b^2\right)x\right)\sqrt{x}}{1920\left(b^{12}x^5+5ab^{11}x^4+10a^2b^{10}x^3+10a^3b^9x^2+5a^4b^8x+a^5b^7\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(3465*(13*B*a^6 - 3*A*a^5*b + (13*B*a*b^5 - 3*A*b^6)*x^5 + 5*(13*B
*a^2*b^4 - 3*A*a*b^5)*x^4 + 10*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 10*(13*B*
a^4*b^2 - 3*A*a^3*b^3)*x^2 + 5*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(-a/b)*log
((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(1280*B*b^6*x^6 - 45045*
B*a^6 + 10395*A*a^5*b - 1280*(13*B*a*b^5 - 3*A*b^6)*x^5 - 10615*(13*B*a^2*b
^4 - 3*A*a*b^5)*x^4 - 26070*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 - 29568*(13*B*
a^4*b^2 - 3*A*a^3*b^3)*x^2 - 16170*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(x))/(
b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x +
a^5*b^7), 1/1920*(3465*(13*B*a^6 - 3*A*a^5*b + (13*B*a*b^5 - 3*A*b^6)*x^5 +
 5*(13*B*a^2*b^4 - 3*A*a*b^5)*x^4 + 10*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 1
0*(13*B*a^4*b^2 - 3*A*a^3*b^3)*x^2 + 5*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(a
/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (1280*B*b^6*x^6 - 45045*B*a^6 + 10395*A
*a^5*b - 1280*(13*B*a*b^5 - 3*A*b^6)*x^5 - 10615*(13*B*a^2*b^4 - 3*A*a*b^5)
*x^4 - 26070*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 - 29568*(13*B*a^4*b^2 - 3*A*a
^3*b^3)*x^2 - 16170*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(x))/(b^12*x^5 + 5*a*
b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7)]
```

giac [A] time = 0.18, size = 191, normalized size = 0.80

$$\frac{231\left(13Ba^2-3Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,b^7}-\frac{35595Ba^2b^4x^{\frac{9}{2}}-12645Aab^5x^{\frac{9}{2}}+121310Ba^3b^3x^{\frac{7}{2}}-39810Aa^2b^4x^{\frac{7}{2}}+160384Ba^4b^2x^{\frac{5}{2}}-50304Aa^3b^3x^{\frac{5}{2}}+96290Ba^5bx^{\frac{3}{2}}-29310Aa^4b^2x^{\frac{3}{2}}+22005Ba^6\sqrt{x}-6555Aa^5b\sqrt{x}}{1920(bx+a)^5b^7}+\frac{2\left(Bb^{12}x^{\frac{3}{2}}-18Bab^{11}\sqrt{x}+3Ab^{12}\sqrt{x}\right)}{3b^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 231/128*(13*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^7) -
1/1920*(35595*B*a^2*b^4*x^(9/2) - 12645*A*a*b^5*x^(9/2) + 121310*B*a^3*b^3*
x^(7/2) - 39810*A*a^2*b^4*x^(7/2) + 160384*B*a^4*b^2*x^(5/2) - 50304*A*a^3*
b^3*x^(5/2) + 96290*B*a^5*b*x^(3/2) - 29310*A*a^4*b^2*x^(3/2) + 22005*B*a^6
*sqrt(x) - 6555*A*a^5*b*sqrt(x))/((b*x + a)^5*b^7) + 2/3*(B*b^12*x^(3/2) -
18*B*a*b^11*sqrt(x) + 3*A*b^12*sqrt(x))/b^18
```

maple [A] time = 0.08, size = 266, normalized size = 1.11

$$\frac{843Aa\,x^{\frac{9}{2}}}{128(bx+a)^5b^2}-\frac{2373B\,a^2x^{\frac{9}{2}}}{128(bx+a)^5b^3}+\frac{1327A\,a^2x^{\frac{7}{2}}}{64(bx+a)^5b^3}-\frac{12131B\,a^3x^{\frac{7}{2}}}{192(bx+a)^5b^4}+\frac{131A\,a^3x^{\frac{5}{2}}}{5(bx+a)^5b^4}-\frac{1253B\,a^4x^{\frac{5}{2}}}{15(bx+a)^5b^5}+\frac{977A\,a^4x^{\frac{3}{2}}}{64(bx+a)^5b^5}-\frac{9629B\,a^5x^{\frac{3}{2}}}{192(bx+a)^5b^6}+\frac{437A\,a^5\sqrt{x}}{128(bx+a)^5b^6}-\frac{1467B\,a^6\sqrt{x}}{128(bx+a)^5b^7}-\frac{693Aa\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,b^6}+\frac{3003B\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,b^7}+\frac{2B\,x^{\frac{3}{2}}}{3b^6}+\frac{2A\sqrt{x}}{b^6}-\frac{12Ba\sqrt{x}}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3/b^6*B*x^(3/2)+2/b^6*A*x^(1/2)-12/b^7*B*a*x^(1/2)+843/128*a/b^2/(b*x+a)^
5*x^(9/2)*A-2373/128*a^2/b^3/(b*x+a)^5*x^(9/2)*B+1327/64*a^2/b^3/(b*x+a)^5*
x^(7/2)*A-12131/192*a^3/b^4/(b*x+a)^5*x^(7/2)*B+131/5*a^3/b^4/(b*x+a)^5*x^(
5/2)*A-1253/15*a^4/b^5/(b*x+a)^5*x^(5/2)*B+977/64*a^4/b^5/(b*x+a)^5*A*x^(3/
2)-9629/192*a^5/b^6/(b*x+a)^5*B*x^(3/2)+437/128*a^5/b^6/(b*x+a)^5*x^(1/2)*A
-1467/128*a^6/b^7/(b*x+a)^5*x^(1/2)*B-693/128*a/b^6/(a*b)^(1/2)*arctan(1/(a
*b)^(1/2)*b*x^(1/2))*A+3003/128*a^2/b^7/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*
x^(1/2))*B
```

maxima [A] time = 1.18, size = 231, normalized size = 0.96

$$-\frac{45\left(791\,Ba^2b^4-281\,Aab^5\right)x^{\frac{9}{2}}+10\left(12131\,Ba^3b^3-3981\,Aa^2b^4\right)x^{\frac{7}{2}}+128\left(1253\,Ba^4b^2-393\,Aa^3b^3\right)x^{\frac{5}{2}}+10\left(9629\,Ba^5b-2931\,Aa^4b^2\right)x^{\frac{3}{2}}+15\left(1467\,Ba^6-437\,Aa^5b\right)\sqrt{x}}{1920\left(b^{12}x^5+5\,ab^{11}x^4+10\,a^2b^{10}x^3+10\,a^3b^9x^2+5\,a^4b^8x+a^5b^7\right)}+\frac{231\left(13\,Ba^2-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,b^7}+\frac{2\left(Bbx^{\frac{3}{2}}-3\,(6\,Ba-Ab)\sqrt{x}\right)}{3\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/1920*(45*(791*B*a^2*b^4 - 281*A*a*b^5)*x^(9/2) + 10*(12131*B*a^3*b^3 - 3
981*A*a^2*b^4)*x^(7/2) + 128*(1253*B*a^4*b^2 - 393*A*a^3*b^3)*x^(5/2) + 10*
(9629*B*a^5*b - 2931*A*a^4*b^2)*x^(3/2) + 15*(1467*B*a^6 - 437*A*a^5*b)*sqr
t(x))/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b
^8*x + a^5*b^7) + 231/128*(13*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*b^7) + 2/3*(B*b*x^(3/2) - 3*(6*B*a - A*b)*sqrt(x))/b^7
```

mupad [B] time = 1.24, size = 246, normalized size = 1.02

$$\sqrt{x}\,\left(\frac{2\,A}{b^6}-\frac{12\,B\,a}{b^7}\right)+\frac{x^{3/2}\,\left(\frac{977\,A\,a^4\,b^2}{64}-\frac{9629\,B\,a^5\,b}{192}\right)-x^{9/2}\,\left(\frac{2373\,B\,a^2\,b^4}{128}-\frac{843\,A\,a\,b^5}{128}\right)-\sqrt{x}\,\left(\frac{1467\,B\,a^6}{128}-\frac{437\,A\,a^5\,b}{128}\right)+x^{5/2}\,\left(\frac{131\,A\,a^3\,b^3}{5}-\frac{1253\,B\,a^4\,b^2}{15}\right)+x^{7/2}\,\left(\frac{1327\,A\,a^2\,b^4}{64}-\frac{12131\,B\,a^3\,b^3}{192}\right)}{a^5\,b^7+5\,a^4\,b^8\,x+10\,a^3\,b^9\,x^2+10\,a^2\,b^{10}\,x^3+5\,a\,b^{11}\,x^4+b^{12}\,x^5}+\frac{2\,B\,x^{3/2}}{3\,b^6}+\frac{231\,\sqrt{a}\,\mathrm{atan}\left(\frac{\sqrt{a}\,\sqrt{b}\,\sqrt{x}\,(3\,A\,b-13\,B\,a)}{13\,B\,a^2-3\,A\,a\,b}\right)\,(3\,A\,b-13\,B\,a)}{128\,b^{15/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(1/2)*((2*A)/b^6 - (12*B*a)/b^7) + (x^(3/2)*((977*A*a^4*b^2)/64 - (9629*B
*a^5*b)/192) - x^(9/2)*((2373*B*a^2*b^4)/128 - (843*A*a*b^5)/128) - x^(1/2)
*((1467*B*a^6)/128 - (437*A*a^5*b)/128) + x^(5/2)*((131*A*a^3*b^3)/5 - (125
3*B*a^4*b^2)/15) + x^(7/2)*((1327*A*a^2*b^4)/64 - (12131*B*a^3*b^3)/192))/(
a^5*b^7 + b^12*x^5 + 5*a^4*b^8*x + 5*a*b^11*x^4 + 10*a^3*b^9*x^2 + 10*a^2*b
^10*x^3) + (2*B*x^(3/2))/(3*b^6) + (231*a^(1/2)*atan((a^(1/2)*b^(1/2)*x^(1/
2)*(3*A*b - 13*B*a))/(13*B*a^2 - 3*A*a*b))*(3*A*b - 13*B*a))/(128*b^(15/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.701 $\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=213

$$\frac{63(Ab-11aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128\sqrt{a}\,b^{13/2}}-\frac{63\sqrt{x}\,(Ab-11aB)}{128ab^6}+\frac{21x^{3/2}(Ab-11aB)}{128ab^5(a+bx)}+\frac{21x^{5/2}(Ab-11aB)}{320ab^4(a+bx)^2}+\frac{3x^{7/2}(Ab-11aB)}{80ab^3(a+bx)^3}+\cdots$$

Rubi [A] time = 0.10, antiderivative size = 213, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 50, 63, 205}

$$\frac{x^{9/2}(Ab-11aB)}{40ab^2(a+bx)^4}+\frac{3x^{7/2}(Ab-11aB)}{80ab^3(a+bx)^3}+\frac{21x^{5/2}(Ab-11aB)}{320ab^4(a+bx)^2}+\frac{21x^{3/2}(Ab-11aB)}{128ab^5(a+bx)}-\frac{63\sqrt{x}\,(Ab-11aB)}{128ab^6}+\frac{63(Ab-11aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128\sqrt{a}\,b^{13/2}}+\frac{x^{11/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-63*(A*b - 11*a*B)*Sqrt[x])/(128*a*b^6) + ((A*b - a*B)*x^(11/2))/(5*a*b*(a
 + b*x)^5) + ((A*b - 11*a*B)*x^(9/2))/(40*a*b^2*(a + b*x)^4) + (3*(A*b - 11
*a*B)*x^(7/2))/(80*a*b^3*(a + b*x)^3) + (21*(A*b - 11*a*B)*x^(5/2))/(320*a*
b^4*(a + b*x)^2) + (21*(A*b - 11*a*B)*x^(3/2))/(128*a*b^5*(a + b*x)) + (63*
(A*b - 11*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*Sqrt[a]*b^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{9/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} - \frac{(Ab-11aB)\int \frac{x^{9/2}}{(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} - \frac{(9(Ab-11aB))\int \frac{x^{7/2}}{(a+bx)^4}\,dx}{80ab^2}$$

$$= \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} + \frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3} - \frac{(21(Ab-11aB))\int \frac{x^{5/}}{(a+b}}{160ab^3}$$

$$= \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} + \frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3} + \frac{21(Ab-11aB)x^{5/2}}{320ab^4(a+bx)^2} - \frac{(2}{}$$

$$= \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} + \frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3} + \frac{21(Ab-11aB)x^{5/2}}{320ab^4(a+bx)^2} + \frac{2}{}$$

$$= -\frac{63(Ab-11aB)\sqrt{x}}{128ab^6} + \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} + \frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3} +$$

$$= -\frac{63(Ab-11aB)\sqrt{x}}{128ab^6} + \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} + \frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3} +$$

$$= -\frac{63(Ab-11aB)\sqrt{x}}{128ab^6} + \frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5} + \frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4} + \frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3} +$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.29

$$\frac{x^{11/2}\left(\frac{11a^5(Ab-aB)}{(a+bx)^5}+(11aB-Ab)\,{}_2F_1\left(5,\frac{11}{2};\frac{13}{2};-\frac{bx}{a}\right)\right)}{55a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(11/2)*((11*a^5*(A*b - a*B))/(a + b*x)^5 + (-(A*b) + 11*a*B)*Hypergeomet
ric2F1[5, 11/2, 13/2, -((b*x)/a)]))/(55*a^6*b)
```

IntegrateAlgebraic [A] time = 0.39, size = 166, normalized size = 0.78

$$\frac{\sqrt{x}\left(3465a^5B-315a^4Ab+16170a^4bBx-1470a^3Ab^2x+29568a^3b^2Bx^2-2688a^2Ab^3x^2+26070a^2b^3Bx^3-2370aAb^4x^3+10615ab^4Bx^4-965Ab^5x^4+1280b^5Bx^5\right)}{640b^6(a+bx)^5}-\frac{63(11aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128\sqrt{a}\,b^{13/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(-315*a^4*A*b + 3465*a^5*B - 1470*a^3*A*b^2*x + 16170*a^4*b*B*x -
2688*a^2*A*b^3*x^2 + 29568*a^3*b^2*B*x^2 - 2370*a*A*b^4*x^3 + 26070*a^2*b^3
*B*x^3 - 965*A*b^5*x^4 + 10615*a*b^4*B*x^4 + 1280*b^5*B*x^5))/(640*b^6*(a +
 b*x)^5) - (63*(-(A*b) + 11*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*Sq
rt[a]*b^(13/2))
```

fricas [A] time = 0.45, size = 673, normalized size = 3.16

$$\left[\frac{315\left(11 Ba^6 - Aa^5b + \left(11 Bab^5 - Ab^6\right)x^5 + 5\left(11 Ba^2b^4 - Aab^5\right)x^4 + 10\left(11 Ba^3b^3 - Aa^2b^4\right)x^3 + 10\left(11 Ba^4b^2 - Aa^3b^3\right)x^2 + 5\left(11 Ba^5b - Aa^4b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx - a - 2\sqrt{-ab}\sqrt{x}}{bx + a}\right) + 2\left(1280 Bab^6x^5 + 3465 Ba^6b - 315 Aa^5b^2 + 965\left(11 Ba^2b^5 - Aab^6\right)x^4 + 2370\left(11 Ba^3b^4 - Aa^2b^5\right)x^3 + 2688\left(11 Ba^4b^3 - Aa^3b^4\right)x^2 + 1470\left(11 Ba^5b^2 - Aa^4b^3\right)x\right)\sqrt{x}}{1280\left(ab^{12}x^5 + 5a^2b^{11}x^4 + 10a^3b^{10}x^3 + 10a^4b^9x^2 + 5a^5b^8x + a^6b^7\right)}, \frac{315\left(11 Ba^6 - Aa^5b + \left(11 Bab^5 - Ab^6\right)x^5 + 5\left(11 Ba^2b^4 - Aab^5\right)x^4 + 10\left(11 Ba^3b^3 - Aa^2b^4\right)x^3 + 10\left(11 Ba^4b^2 - Aa^3b^3\right)x^2 + 5\left(11 Ba^5b - Aa^4b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right) + \left(1280 Bab^6x^5 + 3465 Ba^6b - 315 Aa^5b^2 + 965\left(11 Ba^2b^5 - Aab^6\right)x^4 + 2370\left(11 Ba^3b^4 - Aa^2b^5\right)x^3 + 2688\left(11 Ba^4b^3 - Aa^3b^4\right)x^2 + 1470\left(11 Ba^5b^2 - Aa^4b^3\right)x\right)\sqrt{x}}{640\left(ab^{12}x^5 + 5a^2b^{11}x^4 + 10a^3b^{10}x^3 + 10a^4b^9x^2 + 5a^5b^8x + a^6b^7\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [1/1280*(315*(11*B*a^6 - A*a^5*b + (11*B*a*b^5 - A*b^6)*x^5 + 5*(11*B*a^2*b
^4 - A*a*b^5)*x^4 + 10*(11*B*a^3*b^3 - A*a^2*b^4)*x^3 + 10*(11*B*a^4*b^2 -
A*a^3*b^3)*x^2 + 5*(11*B*a^5*b - A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*
sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(1280*B*a*b^6*x^5 + 3465*B*a^6*b - 315*A
*a^5*b^2 + 965*(11*B*a^2*b^5 - A*a*b^6)*x^4 + 2370*(11*B*a^3*b^4 - A*a^2*b^
5)*x^3 + 2688*(11*B*a^4*b^3 - A*a^3*b^4)*x^2 + 1470*(11*B*a^5*b^2 - A*a^4*b
^3)*x)*sqrt(x))/(a*b^12*x^5 + 5*a^2*b^11*x^4 + 10*a^3*b^10*x^3 + 10*a^4*b^9
*x^2 + 5*a^5*b^8*x + a^6*b^7), 1/640*(315*(11*B*a^6 - A*a^5*b + (11*B*a*b^5
 - A*b^6)*x^5 + 5*(11*B*a^2*b^4 - A*a*b^5)*x^4 + 10*(11*B*a^3*b^3 - A*a^2*b
^4)*x^3 + 10*(11*B*a^4*b^2 - A*a^3*b^3)*x^2 + 5*(11*B*a^5*b - A*a^4*b^2)*x)
*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (1280*B*a*b^6*x^5 + 3465*B*a^6*b
 - 315*A*a^5*b^2 + 965*(11*B*a^2*b^5 - A*a*b^6)*x^4 + 2370*(11*B*a^3*b^4 -
A*a^2*b^5)*x^3 + 2688*(11*B*a^4*b^3 - A*a^3*b^4)*x^2 + 1470*(11*B*a^5*b^2 -
 A*a^4*b^3)*x)*sqrt(x))/(a*b^12*x^5 + 5*a^2*b^11*x^4 + 10*a^3*b^10*x^3 + 10
*a^4*b^9*x^2 + 5*a^5*b^8*x + a^6*b^7)]
```

giac [A] time = 0.17, size = 159, normalized size = 0.75

$$\frac{2 B\sqrt{x}}{b^6} - \frac{63\left(11 Ba - Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\, b^6} + \frac{4215 Bab^4x^{\frac{9}{2}} - 965 Ab^5x^{\frac{9}{2}} + 13270 Ba^2b^3x^{\frac{7}{2}} - 2370 Aab^4x^{\frac{7}{2}} + 16768 Ba^3b^2x^{\frac{5}{2}} - 2688 Aa^2b^3x^{\frac{5}{2}} + 9770 Ba^4bx^{\frac{3}{2}} - 1470 Aa^3b^2x^{\frac{3}{2}} + 2185 Ba^5\sqrt{x} - 315 Aa^4b\sqrt{x}}{640\left(bx + a\right)^5 b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/b^6 - 63/128*(11*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a
*b)*b^6) + 1/640*(4215*B*a*b^4*x^(9/2) - 965*A*b^5*x^(9/2) + 13270*B*a^2*b^
3*x^(7/2) - 2370*A*a*b^4*x^(7/2) + 16768*B*a^3*b^2*x^(5/2) - 2688*A*a^2*b^3
*x^(5/2) + 9770*B*a^4*b*x^(3/2) - 1470*A*a^3*b^2*x^(3/2) + 2185*B*a^5*sqrt(
x) - 315*A*a^4*b*sqrt(x))/((b*x + a)^5*b^6)
```

maple [A] time = 0.08, size = 239, normalized size = 1.12

$$-\frac{193 A x^{\frac{9}{2}}}{128\left(bx + a\right)^5 b} + \frac{843 Ba x^{\frac{9}{2}}}{128\left(bx + a\right)^5 b^2} - \frac{237 Aa x^{\frac{7}{2}}}{64\left(bx + a\right)^5 b^2} + \frac{1327 B a^2 x^{\frac{7}{2}}}{64\left(bx + a\right)^5 b^3} - \frac{21 A a^2 x^{\frac{5}{2}}}{5\left(bx + a\right)^5 b^3} + \frac{131 B a^3 x^{\frac{5}{2}}}{5\left(bx + a\right)^5 b^4} - \frac{147 A a^3 x^{\frac{3}{2}}}{64\left(bx + a\right)^5 b^4} + \frac{977 B a^4 x^{\frac{3}{2}}}{64\left(bx + a\right)^5 b^5} - \frac{63 A a^4\sqrt{x}}{128\left(bx + a\right)^5 b^5} + \frac{437 B a^5\sqrt{x}}{128\left(bx + a\right)^5 b^6} + \frac{63 A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\, b^5} - \frac{693 Ba\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\, b^6} + \frac{2 B\sqrt{x}}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*B/b^6*x^(1/2)-193/128/b/(b*x+a)^5*x^(9/2)*A+843/128/b^2/(b*x+a)^5*x^(9/2)
*B*a+1327/64/b^3/(b*x+a)^5*x^(7/2)*B*a^2-237/64/b^2/(b*x+a)^5*x^(7/2)*A*a+1
31/5/b^4/(b*x+a)^5*x^(5/2)*B*a^3-21/5/b^3/(b*x+a)^5*x^(5/2)*A*a^2-147/64/b^
4/(b*x+a)^5*A*x^(3/2)*a^3+977/64/b^5/(b*x+a)^5*B*x^(3/2)*a^4+437/128/b^6/(b
*x+a)^5*x^(1/2)*B*a^5-63/128/b^5/(b*x+a)^5*x^(1/2)*A*a^4+63/128/b^5/(a*b)^(
1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-693/128/b^6/(a*b)^(1/2)*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*B*a
```

maxima [A] time = 1.34, size = 206, normalized size = 0.97

$$\frac{5\left(843\,Bab^{4}-193\,Ab^{5}\right)x^{\frac{9}{2}}+10\left(1327\,Ba^{2}b^{3}-237\,Aab^{4}\right)x^{\frac{7}{2}}+128\left(131\,Ba^{3}b^{2}-21\,Aa^{2}b^{3}\right)x^{\frac{5}{2}}+10\left(977\,Ba^{4}b-147\,Aa^{3}b^{2}\right)x^{\frac{3}{2}}+5\left(437\,Ba^{5}-63\,Aa^{4}b\right)\sqrt{x}}{640\left(b^{11}x^{5}+5\,ab^{10}x^{4}+10\,a^{2}b^{9}x^{3}+10\,a^{3}b^{8}x^{2}+5\,a^{4}b^{7}x+a^{5}b^{6}\right)}+\frac{2\,B\sqrt{x}}{b^{6}}-\frac{63\,(11\,Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/640*(5*(843*B*a*b^4 - 193*A*b^5)*x^(9/2) + 10*(1327*B*a^2*b^3 - 237*A*a*b
^4)*x^(7/2) + 128*(131*B*a^3*b^2 - 21*A*a^2*b^3)*x^(5/2) + 10*(977*B*a^4*b
- 147*A*a^3*b^2)*x^(3/2) + 5*(437*B*a^5 - 63*A*a^4*b)*sqrt(x))/(b^11*x^5 +
5*a*b^10*x^4 + 10*a^2*b^9*x^3 + 10*a^3*b^8*x^2 + 5*a^4*b^7*x + a^5*b^6) + 2
*B*sqrt(x)/b^6 - 63/128*(11*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*
b)*b^6)
```

mupad [B] time = 0.18, size = 200, normalized size = 0.94

$$\frac{2\,B\,\sqrt{x}}{b^{6}}-\frac{x^{3/2}\left(\frac{147\,A\,a^{3}\,b^{2}}{64}-\frac{977\,B\,a^{4}\,b}{64}\right)-x^{7/2}\left(\frac{1327\,B\,a^{2}\,b^{3}}{64}-\frac{237\,A\,a\,b^{4}}{64}\right)-\sqrt{x}\left(\frac{437\,B\,a^{5}}{128}-\frac{63\,A\,a^{4}\,b}{128}\right)+x^{9/2}\left(\frac{193\,A\,b^{5}}{128}-\frac{843\,B\,a\,b^{4}}{128}\right)+x^{5/2}\left(\frac{21\,A\,a^{2}\,b^{3}}{5}-\frac{131\,B\,a^{3}\,b^{2}}{5}\right)}{a^{5}\,b^{6}+5\,a^{4}\,b^{7}\,x+10\,a^{3}\,b^{8}\,x^{2}+10\,a^{2}\,b^{9}\,x^{3}+5\,a\,b^{10}\,x^{4}+b^{11}\,x^{5}}+\frac{63\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)(A\,b-11\,B\,a)}{128\,\sqrt{a}\,b^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*B*x^(1/2))/b^6 - (x^(3/2)*((147*A*a^3*b^2)/64 - (977*B*a^4*b)/64) - x^(7
/2)*((1327*B*a^2*b^3)/64 - (237*A*a*b^4)/64) - x^(1/2)*((437*B*a^5)/128 - (
63*A*a^4*b)/128) + x^(9/2)*((193*A*b^5)/128 - (843*B*a*b^4)/128) + x^(5/2)*
((21*A*a^2*b^3)/5 - (131*B*a^3*b^2)/5))/(a^5*b^6 + b^11*x^5 + 5*a^4*b^7*x +
 5*a*b^10*x^4 + 10*a^3*b^8*x^2 + 10*a^2*b^9*x^3) + (63*atan((b^(1/2)*x^(1/2
))/a^(1/2))*(A*b - 11*B*a))/(128*a^(1/2)*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.702 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=190

$$\frac{7(9aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{3/2}b^{11/2}}-\frac{7\sqrt{x}\,(9aB+Ab)}{128ab^5(a+bx)}-\frac{7x^{3/2}(9aB+Ab)}{192ab^4(a+bx)^2}-\frac{7x^{5/2}(9aB+Ab)}{240ab^3(a+bx)^3}-\frac{x^{7/2}(9aB+Ab)}{40ab^2(a+bx)^4}+\frac{x^{9/2}(Ab-a}{5ab(a+bx}$$

Rubi [A] time = 0.09, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 47, 63, 205}

$$\frac{7(9aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{3/2}b^{11/2}}-\frac{x^{7/2}(9aB+Ab)}{40ab^2(a+bx)^4}-\frac{7x^{5/2}(9aB+Ab)}{240ab^3(a+bx)^3}-\frac{7x^{3/2}(9aB+Ab)}{192ab^4(a+bx)^2}-\frac{7\sqrt{x}\,(9aB+Ab)}{128ab^5(a+bx)}+\frac{x^{9/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(9/2))/(5*a*b*(a + b*x)^5) - ((A*b + 9*a*B)*x^(7/2))/(40*a*b
^2*(a + b*x)^4) - (7*(A*b + 9*a*B)*x^(5/2))/(240*a*b^3*(a + b*x)^3) - (7*(A
*b + 9*a*B)*x^(3/2))/(192*a*b^4*(a + b*x)^2) - (7*(A*b + 9*a*B)*Sqrt[x])/(1
28*a*b^5*(a + b*x)) + (7*(A*b + 9*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
128*a^(3/2)*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{7/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} + \frac{(Ab+9aB)\int \frac{x^{7/2}}{(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} + \frac{(7(Ab+9aB))\int \frac{x^{5/2}}{(a+bx)^4}\,dx}{80ab^2}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} + \frac{(7(Ab+9aB))\int \frac{x^{3/2}}{(a+bx)^3}\,dx}{96ab^3}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} + \frac{(7(Ab}{}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} - \frac{7(Ab}{128ab}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} - \frac{7(Ab}{128ab}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} - \frac{7(Ab}{128ab}$$

Mathematica [A] time = 0.18, size = 134, normalized size = 0.71

$$\frac{(9aB+Ab)\left(105(a+bx)^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)-\sqrt{a}\sqrt{b}\sqrt{x}\left(105a^3+385a^2bx+511ab^2x^2+279b^3x^3\right)\right)}{1920a^{3/2}b^{11/2}(a+bx)^4}+\frac{x^{9/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(9/2))/(5*a*b*(a + b*x)^5) + ((A*b + 9*a*B)*(-(Sqrt[a]*Sqrt[
b]*Sqrt[x]*(105*a^3 + 385*a^2*b*x + 511*a*b^2*x^2 + 279*b^3*x^3)) + 105*(a
+ b*x)^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(1920*a^(3/2)*b^(11/2)*(a + b*
x)^4)
```

IntegrateAlgebraic [A] time = 0.36, size = 159, normalized size = 0.84

$$\frac{7(9aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{3/2}b^{11/2}}-\frac{\sqrt{x}\left(945a^5B+105a^4Ab+4410a^4bBx+490a^3Ab^2x+8064a^3b^2Bx^2+896a^2Ab^3x^2+7110a^2b^3Bx^3+790aAb^4x^3+2895ab^4Bx^4-105Ab^5x^4\right)}{1920ab^5(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/1920*(Sqrt[x]*(105*a^4*A*b + 945*a^5*B + 490*a^3*A*b^2*x + 4410*a^4*b*B*
x + 896*a^2*A*b^3*x^2 + 8064*a^3*b^2*B*x^2 + 790*a*A*b^4*x^3 + 7110*a^2*b^3
*B*x^3 - 105*A*b^5*x^4 + 2895*a*b^4*B*x^4))/(a*b^5*(a + b*x)^5) + (7*(A*b +
 9*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(3/2)*b^(11/2))
```

fricas [A] time = 0.45, size = 639, normalized size = 3.36

$$\left[-\frac{105\,\left(9\,Ba^{6}+Aa^{5}b+\left(9\,Bab^{5}+Ab^{6}\right)x^{5}+5\,\left(9\,Ba^{2}b^{4}+Aab^{5}\right)x^{4}+10\,\left(9\,Ba^{3}b^{3}+Aa^{2}b^{4}\right)x^{3}+10\,\left(9\,Ba^{4}b^{2}+Aa^{3}b^{3}\right)x^{2}+5\,\left(9\,Ba^{5}b+Aa^{4}b^{2}\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\,\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\,\left(945\,Ba^{6}b+105\,Aa^{5}b^{2}+15\,\left(193\,Ba^{2}b^{5}-7\,Aab^{6}\right)x^{4}+790\,\left(9\,Ba^{3}b^{4}+Aa^{2}b^{5}\right)x^{3}+896\,\left(9\,Ba^{4}b^{3}+Aa^{3}b^{4}\right)x^{2}+490\,\left(9\,Ba^{5}b^{2}+Aa^{4}b^{3}\right)x\right)\sqrt{x}}{3840\,\left(a^{2}b^{11}x^{5}+5\,a^{3}b^{10}x^{4}+10\,a^{4}b^{9}x^{3}+10\,a^{5}b^{8}x^{2}+5\,a^{6}b^{7}x+a^{7}b^{6}\right)},\ -\frac{105\,\left(9\,Ba^{6}+Aa^{5}b+\left(9\,Bab^{5}+Ab^{6}\right)x^{5}+5\,\left(9\,Ba^{2}b^{4}+Aab^{5}\right)x^{4}+10\,\left(9\,Ba^{3}b^{3}+Aa^{2}b^{4}\right)x^{3}+10\,\left(9\,Ba^{4}b^{2}+Aa^{3}b^{3}\right)x^{2}+5\,\left(9\,Ba^{5}b+Aa^{4}b^{2}\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(945\,Ba^{6}b+105\,Aa^{5}b^{2}+15\,\left(193\,Ba^{2}b^{5}-7\,Aab^{6}\right)x^{4}+790\,\left(9\,Ba^{3}b^{4}+Aa^{2}b^{5}\right)x^{3}+896\,\left(9\,Ba^{4}b^{3}+Aa^{3}b^{4}\right)x^{2}+490\,\left(9\,Ba^{5}b^{2}+Aa^{4}b^{3}\right)x\right)\sqrt{x}}{1920\,\left(a^{2}b^{11}x^{5}+5\,a^{3}b^{10}x^{4}+10\,a^{4}b^{9}x^{3}+10\,a^{5}b^{8}x^{2}+5\,a^{6}b^{7}x+a^{7}b^{6}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(105*(9*B*a^6 + A*a^5*b + (9*B*a*b^5 + A*b^6)*x^5 + 5*(9*B*a^2*b^4
 + A*a*b^5)*x^4 + 10*(9*B*a^3*b^3 + A*a^2*b^4)*x^3 + 10*(9*B*a^4*b^2 + A*a^
3*b^3)*x^2 + 5*(9*B*a^5*b + A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(
-a*b)*sqrt(x))/(b*x + a)) + 2*(945*B*a^6*b + 105*A*a^5*b^2 + 15*(193*B*a^2*
b^5 - 7*A*a*b^6)*x^4 + 790*(9*B*a^3*b^4 + A*a^2*b^5)*x^3 + 896*(9*B*a^4*b^3
 + A*a^3*b^4)*x^2 + 490*(9*B*a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^2*b^11*x^5
 + 5*a^3*b^10*x^4 + 10*a^4*b^9*x^3 + 10*a^5*b^8*x^2 + 5*a^6*b^7*x + a^7*b^6
), -1/1920*(105*(9*B*a^6 + A*a^5*b + (9*B*a*b^5 + A*b^6)*x^5 + 5*(9*B*a^2*b
^4 + A*a*b^5)*x^4 + 10*(9*B*a^3*b^3 + A*a^2*b^4)*x^3 + 10*(9*B*a^4*b^2 + A*
a^3*b^3)*x^2 + 5*(9*B*a^5*b + A*a^4*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*s
qrt(x))) + (945*B*a^6*b + 105*A*a^5*b^2 + 15*(193*B*a^2*b^5 - 7*A*a*b^6)*x^
4 + 790*(9*B*a^3*b^4 + A*a^2*b^5)*x^3 + 896*(9*B*a^4*b^3 + A*a^3*b^4)*x^2 +
 490*(9*B*a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^2*b^11*x^5 + 5*a^3*b^10*x^4 +
 10*a^4*b^9*x^3 + 10*a^5*b^8*x^2 + 5*a^6*b^7*x + a^7*b^6)]
```

giac [A] time = 0.17, size = 155, normalized size = 0.82

$$\frac{7\,(9\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,ab^{5}}-\frac{2895\,Bab^{4}x^{\frac{9}{2}}-105\,Ab^{5}x^{\frac{9}{2}}+7110\,Ba^{2}b^{3}x^{\frac{7}{2}}+790\,Aab^{4}x^{\frac{7}{2}}+8064\,Ba^{3}b^{2}x^{\frac{5}{2}}+896\,Aa^{2}b^{3}x^{\frac{5}{2}}+4410\,Ba^{4}bx^{\frac{3}{2}}+490\,Aa^{3}b^{2}x^{\frac{3}{2}}+945\,Ba^{5}\sqrt{x}+105\,Aa^{4}b\sqrt{x}}{1920\,(bx+a)^{5}ab^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 7/128*(9*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^5) - 1/1920*
(2895*B*a*b^4*x^(9/2) - 105*A*b^5*x^(9/2) + 7110*B*a^2*b^3*x^(7/2) + 790*A*
a*b^4*x^(7/2) + 8064*B*a^3*b^2*x^(5/2) + 896*A*a^2*b^3*x^(5/2) + 4410*B*a^4
*b*x^(3/2) + 490*A*a^3*b^2*x^(3/2) + 945*B*a^5*sqrt(x) + 105*A*a^4*b*sqrt(x
))/((b*x + a)^5*a*b^5)
```

maple [A] time = 0.06, size = 150, normalized size = 0.79

$$\frac{7A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a\,b^{4}}+\frac{63B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;b^{5}}+\frac{\frac{(7Ab-193Ba)x^{\frac{9}{2}}}{128ab}-\frac{79(Ab+9Ba)x^{\frac{7}{2}}}{192b^{2}}-\frac{7(Ab+9Ba)a\,x^{\frac{5}{2}}}{15b^{3}}-\frac{49(Ab+9Ba)a^{2}x^{\frac{3}{2}}}{192b^{4}}-\frac{7(Ab+9Ba)a^{3}\sqrt{x}}{128b^{5}}}{(bx+a)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(1/256*(7*A*b-193*B*a)/a/b*x^(9/2)-79/384*(A*b+9*B*a)/b^2*x^(7/2)-7/30*a*
(A*b+9*B*a)/b^3*x^(5/2)-49/384*a^2*(A*b+9*B*a)/b^4*x^(3/2)-7/256*(A*b+9*B*a
)*a^3/b^5*x^(1/2))/(b*x+a)^5+7/128/a/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b
*x^(1/2))*A+63/128/b^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.38, size = 198, normalized size = 1.04

$$-\frac{15\left(193\,Bab^{4}-7\,Ab^{5}\right)x^{\frac{9}{2}}+790\left(9\,Ba^{2}b^{3}+Aab^{4}\right)x^{\frac{7}{2}}+896\left(9\,Ba^{3}b^{2}+Aa^{2}b^{3}\right)x^{\frac{5}{2}}+490\left(9\,Ba^{4}b+Aa^{3}b^{2}\right)x^{\frac{3}{2}}+105\left(9\,Ba^{5}+Aa^{4}b\right)\sqrt{x}}{1920\left(ab^{10}x^{5}+5\,a^{2}b^{9}x^{4}+10\,a^{3}b^{8}x^{3}+10\,a^{4}b^{7}x^{2}+5\,a^{5}b^{6}x+a^{6}b^{5}\right)}+\frac{7\,(9\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,ab^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/1920*(15*(193*B*a*b^4 - 7*A*b^5)*x^(9/2) + 790*(9*B*a^2*b^3 + A*a*b^4)*x
^(7/2) + 896*(9*B*a^3*b^2 + A*a^2*b^3)*x^(5/2) + 490*(9*B*a^4*b + A*a^3*b^2
```

```
)*x^(3/2) + 105*(9*B*a^5 + A*a^4*b)*sqrt(x))/(a*b^10*x^5 + 5*a^2*b^9*x^4 +
10*a^3*b^8*x^3 + 10*a^4*b^7*x^2 + 5*a^5*b^6*x + a^6*b^5) + 7/128*(9*B*a + A
*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^5)
```

mupad [B] time = 1.28, size = 173, normalized size = 0.91

$$\frac{7\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,\left(A\,b+9\,B\,a\right)}{128\,a^{3/2}\,b^{11/2}}-\frac{\frac{79\,x^{7/2}\,\left(A\,b+9\,B\,a\right)}{192\,b^2}+\frac{49\,a^2\,x^{3/2}\,\left(A\,b+9\,B\,a\right)}{192\,b^4}+\frac{7\,a^3\,\sqrt{x}\,\left(A\,b+9\,B\,a\right)}{128\,b^5}-\frac{x^{9/2}\,\left(7\,A\,b-193\,B\,a\right)}{128\,a\,b}+\frac{7\,a\,x^{5/2}\,\left(A\,b+9\,B\,a\right)}{15\,b^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (7*atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + 9*B*a))/(128*a^(3/2)*b^(11/2)) -
((79*x^(7/2)*(A*b + 9*B*a))/(192*b^2) + (49*a^2*x^(3/2)*(A*b + 9*B*a))/(192
*b^4) + (7*a^3*x^(1/2)*(A*b + 9*B*a))/(128*b^5) - (x^(9/2)*(7*A*b - 193*B*a
))/(128*a*b) + (7*a*x^(5/2)*(A*b + 9*B*a))/(15*b^3))/(a^5 + b^5*x^5 + 5*a*b
^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.703 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=195

$$\frac{(7aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{5/2}b^{9/2}}+\frac{\sqrt{x}\,(7aB+3Ab)}{128a^2b^4(a+bx)}-\frac{\sqrt{x}\,(7aB+3Ab)}{64ab^4(a+bx)^2}-\frac{x^{3/2}(7aB+3Ab)}{48ab^3(a+bx)^3}-\frac{x^{5/2}(7aB+3Ab)}{40ab^2(a+bx)^4}+\frac{x^{7/2}(Ab-}{5ab(a+b}$$

Rubi [A] time = 0.09, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 51, 63, 205}

$$\frac{\sqrt{x}\,(7aB+3Ab)}{128a^2b^4(a+bx)}+\frac{(7aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{5/2}b^{9/2}}-\frac{x^{5/2}(7aB+3Ab)}{40ab^2(a+bx)^4}-\frac{x^{3/2}(7aB+3Ab)}{48ab^3(a+bx)^3}-\frac{\sqrt{x}\,(7aB+3Ab)}{64ab^4(a+bx)^2}+\frac{x^{7/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(7/2))/(5*a*b*(a + b*x)^5) - ((3*A*b + 7*a*B)*x^(5/2))/(40*a
*b^2*(a + b*x)^4) - ((3*A*b + 7*a*B)*x^(3/2))/(48*a*b^3*(a + b*x)^3) - ((3*
A*b + 7*a*B)*Sqrt[x])/(64*a*b^4*(a + b*x)^2) + ((3*A*b + 7*a*B)*Sqrt[x])/(1
28*a^2*b^4*(a + b*x)) + ((3*A*b + 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])
/(128*a^(5/2)*b^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{5/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} + \frac{(3Ab+7aB)\int \frac{x^{5/2}}{(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} + \frac{(3Ab+7aB)\int \frac{x^{3/2}}{(a+bx)^4}\,dx}{16ab^2}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} + \frac{(3Ab+7aB)\int \frac{\sqrt{x}}{(a+bx)^3}\,dx}{32ab^3}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \ldots$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \ldots$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \ldots$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \ldots$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.31

$$\frac{x^{7/2}\left(\frac{7a^5(Ab-aB)}{(a+bx)^5} + (7aB+3Ab)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};-\frac{bx}{a}\right)\right)}{35a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(7/2)*((7*a^5*(A*b - a*B))/(a + b*x)^5 + (3*A*b + 7*a*B)*Hypergeometric2
F1[7/2, 5, 9/2, -((b*x)/a)]))/(35*a^6*b)
```

IntegrateAlgebraic [A] time = 0.35, size = 160, normalized size = 0.82

$$\frac{(7aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{5/2}b^{9/2}} - \frac{\sqrt{x}\left(105a^5B+45a^4Ab+490a^4bBx+210a^3Ab^2x+896a^3b^2Bx^2+384a^2Ab^3x^2+790a^2b^3Bx^3-210aAb^4x^3-105ab^4Bx^4-45Ab^5x^4\right)}{1920a^2b^4(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/1920*(Sqrt[x]*(45*a^4*A*b + 105*a^5*B + 210*a^3*A*b^2*x + 490*a^4*b*B*x
+ 384*a^2*A*b^3*x^2 + 896*a^3*b^2*B*x^2 - 210*a*A*b^4*x^3 + 790*a^2*b^3*B*x
^3 - 45*A*b^5*x^4 - 105*a*b^4*B*x^4))/(a^2*b^4*(a + b*x)^5) + ((3*A*b + 7*a
*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(5/2)*b^(9/2))
```

fricas [A] time = 0.46, size = 657, normalized size = 3.37

$$\left[-\frac{15\left(7Ba^6+3Aa^5b+\left(7Bab^5+3Ab^6\right)x^5+5\left(7Ba^2b^4+3Aab^5\right)x^4+10\left(7Ba^3b^3+3Aa^2b^4\right)x^3+10\left(7Ba^4b^2+3Aa^3b^3\right)x^2+5\left(7Ba^5b+3Aa^4b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(105Ba^6b+45Aa^5b^2-15\left(7Ba^2b^5+3Aab^6\right)x^4+10\left(79Ba^3b^4-21Aa^2b^5\right)x^3+128\left(7Ba^4b^3+3Aa^3b^4\right)x^2+70\left(7Ba^5b^2+3Aa^4b^3\right)x\right)\sqrt{x}}{3840\left(a^3b^{10}x^5+5a^4b^9x^4+10a^5b^8x^3+10a^6b^7x^2+5a^7b^6x+a^8b^5\right)}, -\frac{15\left(7Ba^6+3Aa^5b+\left(7Bab^5+3Ab^6\right)x^5+5\left(7Ba^2b^4+3Aab^5\right)x^4+10\left(7Ba^3b^3+3Aa^2b^4\right)x^3+10\left(7Ba^4b^2+3Aa^3b^3\right)x^2+5\left(7Ba^5b+3Aa^4b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(105Ba^6b+45Aa^5b^2-15\left(7Ba^2b^5+3Aab^6\right)x^4+10\left(79Ba^3b^4-21Aa^2b^5\right)x^3+128\left(7Ba^4b^3+3Aa^3b^4\right)x^2+70\left(7Ba^5b^2+3Aa^4b^3\right)x\right)\sqrt{x}}{1920\left(a^3b^{10}x^5+5a^4b^9x^4+10a^5b^8x^3+10a^6b^7x^2+5a^7b^6x+a^8b^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(7*B*a^6 + 3*A*a^5*b + (7*B*a*b^5 + 3*A*b^6)*x^5 + 5*(7*B*a^2*
b^4 + 3*A*a*b^5)*x^4 + 10*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x^3 + 10*(7*B*a^4*b^2
 + 3*A*a^3*b^3)*x^2 + 5*(7*B*a^5*b + 3*A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x -
a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(105*B*a^6*b + 45*A*a^5*b^2 - 15*(
7*B*a^2*b^5 + 3*A*a*b^6)*x^4 + 10*(79*B*a^3*b^4 - 21*A*a^2*b^5)*x^3 + 128*(
7*B*a^4*b^3 + 3*A*a^3*b^4)*x^2 + 70*(7*B*a^5*b^2 + 3*A*a^4*b^3)*x)*sqrt(x))
/(a^3*b^10*x^5 + 5*a^4*b^9*x^4 + 10*a^5*b^8*x^3 + 10*a^6*b^7*x^2 + 5*a^7*b^
6*x + a^8*b^5), -1/1920*(15*(7*B*a^6 + 3*A*a^5*b + (7*B*a*b^5 + 3*A*b^6)*x^
5 + 5*(7*B*a^2*b^4 + 3*A*a*b^5)*x^4 + 10*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x^3 +
10*(7*B*a^4*b^2 + 3*A*a^3*b^3)*x^2 + 5*(7*B*a^5*b + 3*A*a^4*b^2)*x)*sqrt(a*
b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (105*B*a^6*b + 45*A*a^5*b^2 - 15*(7*B*a^
2*b^5 + 3*A*a*b^6)*x^4 + 10*(79*B*a^3*b^4 - 21*A*a^2*b^5)*x^3 + 128*(7*B*a^
4*b^3 + 3*A*a^3*b^4)*x^2 + 70*(7*B*a^5*b^2 + 3*A*a^4*b^3)*x)*sqrt(x))/(a^3*
b^10*x^5 + 5*a^4*b^9*x^4 + 10*a^5*b^8*x^3 + 10*a^6*b^7*x^2 + 5*a^7*b^6*x +
a^8*b^5)]
```

giac [A] time = 0.17, size = 156, normalized size = 0.80

$$\frac{(7Ba+3Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}a^2b^4}+\frac{105Bab^4x^{\frac{9}{2}}+45Ab^5x^{\frac{9}{2}}-790Ba^2b^3x^{\frac{7}{2}}+210Aab^4x^{\frac{7}{2}}-896Ba^3b^2x^{\frac{5}{2}}-384Aa^2b^3x^{\frac{5}{2}}-490Ba^4bx^{\frac{3}{2}}-210Aa^3b^2x^{\frac{3}{2}}-105Ba^5\sqrt{x}-45Aa^4b\sqrt{x}}{1920(bx+a)^5a^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/128*(7*B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^4) + 1/1
920*(105*B*a*b^4*x^(9/2) + 45*A*b^5*x^(9/2) - 790*B*a^2*b^3*x^(7/2) + 210*A
*a*b^4*x^(7/2) - 896*B*a^3*b^2*x^(5/2) - 384*A*a^2*b^3*x^(5/2) - 490*B*a^4*
b*x^(3/2) - 210*A*a^3*b^2*x^(3/2) - 105*B*a^5*sqrt(x) - 45*A*a^4*b*sqrt(x))
/((b*x + a)^5*a^2*b^4)
```

maple [A] time = 0.07, size = 154, normalized size = 0.79

$$\frac{3A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^2b^3}+\frac{7B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a\,b^4}+\frac{\frac{(3Ab+7Ba)x^{\frac{9}{2}}}{128a^2}+\frac{(21Ab-79Ba)x^{\frac{7}{2}}}{192ab}-\frac{(3Ab+7Ba)x^{\frac{5}{2}}}{15b^2}-\frac{7(3Ab+7Ba)a\,x^{\frac{3}{2}}}{192b^3}-\frac{(3Ab+7Ba)a^2\sqrt{x}}{128b^4}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(1/256*(3*A*b+7*B*a)/a^2*x^(9/2)+1/384*(21*A*b-79*B*a)/a/b*x^(7/2)-1/30/b
^2*(3*A*b+7*B*a)*x^(5/2)-7/384*a/b^3*(3*A*b+7*B*a)*x^(3/2)-1/256*(3*A*b+7*B
*a)*a^2/b^4*x^(1/2))/(b*x+a)^5+3/128/a^2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/
2)*b*x^(1/2))*A+7/128/a/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.54, size = 205, normalized size = 1.05

$$\frac{15\left(7Bab^4+3Ab^5\right)x^{\frac{9}{2}}-10\left(79Ba^2b^3-21Aab^4\right)x^{\frac{7}{2}}-128\left(7Ba^3b^2+3Aa^2b^3\right)x^{\frac{5}{2}}-70\left(7Ba^4b+3Aa^3b^2\right)x^{\frac{3}{2}}-15\left(7Ba^5+3Aa^4b\right)\sqrt{x}}{1920\left(a^2b^9x^5+5a^3b^8x^4+10a^4b^7x^3+10a^5b^6x^2+5a^6b^5x+a^7b^4\right)}+\frac{(7Ba+3Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}a^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/1920*(15*(7*B*a*b^4 + 3*A*b^5)*x^(9/2) - 10*(79*B*a^2*b^3 - 21*A*a*b^4)*x
^(7/2) - 128*(7*B*a^3*b^2 + 3*A*a^2*b^3)*x^(5/2) - 70*(7*B*a^4*b + 3*A*a^3*
b^2)*x^(3/2) - 15*(7*B*a^5 + 3*A*a^4*b)*sqrt(x))/(a^2*b^9*x^5 + 5*a^3*b^8*x
^4 + 10*a^4*b^7*x^3 + 10*a^5*b^6*x^2 + 5*a^6*b^5*x + a^7*b^4) + 1/128*(7*B*
a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^4)
```

mupad [B] time = 1.24, size = 175, normalized size = 0.90

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,\left(3\,A\,b+7\,B\,a\right)}{128\,a^{5/2}\,b^{9/2}}-\frac{\frac{x^{5/2}\,\left(3\,A\,b+7\,B\,a\right)}{15\,b^2}-\frac{x^{9/2}\,\left(3\,A\,b+7\,B\,a\right)}{128\,a^2}+\frac{a^2\,\sqrt{x}\,\left(3\,A\,b+7\,B\,a\right)}{128\,b^4}-\frac{x^{7/2}\,\left(21\,A\,b-79\,B\,a\right)}{192\,a\,b}+\frac{7\,a\,x^{3/2}\,\left(3\,A\,b+7\,B\,a\right)}{192\,b^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (atan((b^(1/2)*x^(1/2))/a^(1/2))*(3*A*b + 7*B*a))/(128*a^(5/2)*b^(9/2)) - (
(x^(5/2)*(3*A*b + 7*B*a))/(15*b^2) - (x^(9/2)*(3*A*b + 7*B*a))/(128*a^2) +
(a^2*x^(1/2)*(3*A*b + 7*B*a))/(128*b^4) - (x^(7/2)*(21*A*b - 79*B*a))/(192*
a*b) + (7*a*x^(3/2)*(3*A*b + 7*B*a))/(192*b^3))/(a^5 + b^5*x^5 + 5*a*b^4*x^
4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.704 $\int \frac{x^{3/2}(A+Bx)}{(a^2+2abx+b^2x^2)^3} dx$

Optimal. Leaf size=185

$$\frac{3(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{7/2}b^{7/2}}+\frac{3\sqrt{x}(aB+Ab)}{128a^3b^3(a+bx)}+\frac{\sqrt{x}(aB+Ab)}{64a^2b^3(a+bx)^2}-\frac{\sqrt{x}(aB+Ab)}{16ab^3(a+bx)^3}-\frac{x^{3/2}(aB+Ab)}{8ab^2(a+bx)^4}+\frac{x^{5/2}(Ab-aB)}{5ab(a+bx)^5}$$

Rubi [A] time = 0.09, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 51, 63, 205}

$$\frac{3\sqrt{x}(aB+Ab)}{128a^3b^3(a+bx)}+\frac{\sqrt{x}(aB+Ab)}{64a^2b^3(a+bx)^2}+\frac{3(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{7/2}b^{7/2}}-\frac{x^{3/2}(aB+Ab)}{8ab^2(a+bx)^4}-\frac{\sqrt{x}(aB+Ab)}{16ab^3(a+bx)^3}+\frac{x^{5/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(5/2))/(5*a*b*(a + b*x)^5) - ((A*b + a*B)*x^(3/2))/(8*a*b^2*
(a + b*x)^4) - ((A*b + a*B)*Sqrt[x])/(16*a*b^3*(a + b*x)^3) + ((A*b + a*B)*
Sqrt[x])/(64*a^2*b^3*(a + b*x)^2) + (3*(A*b + a*B)*Sqrt[x])/(128*a^3*b^3*(a
 + b*x)) + (3*(A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(7/2)*b
^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(a+bx)^6}\,dx\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} + \frac{(Ab+aB)\int \frac{x^{3/2}}{(a+bx)^5}\,dx}{2ab}\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} + \frac{(3(Ab+aB))\int \frac{\sqrt{x}}{(a+bx)^4}\,dx}{16ab^2}\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\int \frac{1}{\sqrt{x}(a+bx)^3}\,dx}{32ab^3}\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{(3(Ab+\ldots}{\ldots}\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{3(Ab+\ldots}{128a^3b^3(\ldots}\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{3(Ab+\ldots}{128a^3b^3(\ldots}\\
&= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{3(Ab+\ldots}{128a^3b^3(\ldots}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 60, normalized size = 0.32

$$\frac{x^{5/2}\left(\frac{5a^5(Ab-aB)}{(a+bx)^5}+5(aB+Ab)\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};-\frac{bx}{a}\right)\right)}{25a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(5/2)*((5*a^5*(A*b - a*B))/(a + b*x)^5 + 5*(A*b + a*B)*Hypergeometric2F1
[5/2, 5, 7/2, -((b*x)/a)]))/(25*a^6*b)
```

IntegrateAlgebraic [A] time = 0.33, size = 158, normalized size = 0.85

$$\frac{3(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{7/2}b^{7/2}}-\frac{\sqrt{x}\left(15a^5B+15a^4Ab+70a^4bBx+70a^3Ab^2x+128a^3b^2Bx^2-128a^2Ab^3x^2-70a^2b^3Bx^3-70aAb^4x^3-15ab^4Bx^4-15Ab^5x^4\right)}{640a^3b^3(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/640*(Sqrt[x]*(15*a^4*A*b + 15*a^5*B + 70*a^3*A*b^2*x + 70*a^4*b*B*x - 12
8*a^2*A*b^3*x^2 + 128*a^3*b^2*B*x^2 - 70*a*A*b^4*x^3 - 70*a^2*b^3*B*x^3 - 1
5*A*b^5*x^4 - 15*a*b^4*B*x^4))/(a^3*b^3*(a + b*x)^5) + (3*(A*b + a*B)*ArcTa
n[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(7/2)*b^(7/2))
```

fricas [A] time = 0.46, size = 619, normalized size = 3.35

$$\left[-\frac{15\left(Ba^{6}+Aa^{5}b+\left(Bab^{5}+Ab^{6}\right)x^{5}+5\left(Ba^{2}b^{4}+Aab^{5}\right)x^{4}+10\left(Ba^{3}b^{3}+Aa^{2}b^{4}\right)x^{3}+10\left(Ba^{4}b^{2}+Aa^{3}b^{3}\right)x^{2}+5\left(Ba^{5}b+Aa^{4}b^{2}\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(15Ba^{6}b+15Aa^{5}b^{2}-15\left(Ba^{2}b^{5}+Aab^{6}\right)x^{4}-70\left(Ba^{3}b^{4}+Aa^{2}b^{5}\right)x^{3}+128\left(Ba^{4}b^{3}-Aa^{3}b^{4}\right)x^{2}+70\left(Ba^{5}b^{2}+Aa^{4}b^{3}\right)x\right)\sqrt{x}}{1280\left(a^{4}b^{9}x^{5}+5a^{5}b^{8}x^{4}+10a^{6}b^{7}x^{3}+10a^{7}b^{6}x^{2}+5a^{8}b^{5}x+a^{9}b^{4}\right)},-\frac{15\left(Ba^{6}+Aa^{5}b+\left(Bab^{5}+Ab^{6}\right)x^{5}+5\left(Ba^{2}b^{4}+Aab^{5}\right)x^{4}+10\left(Ba^{3}b^{3}+Aa^{2}b^{4}\right)x^{3}+10\left(Ba^{4}b^{2}+Aa^{3}b^{3}\right)x^{2}+5\left(Ba^{5}b+Aa^{4}b^{2}\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(15Ba^{6}b+15Aa^{5}b^{2}-15\left(Ba^{2}b^{5}+Aab^{6}\right)x^{4}-70\left(Ba^{3}b^{4}+Aa^{2}b^{5}\right)x^{3}+128\left(Ba^{4}b^{3}-Aa^{3}b^{4}\right)x^{2}+70\left(Ba^{5}b^{2}+Aa^{4}b^{3}\right)x\right)\sqrt{x}}{640\left(a^{4}b^{9}x^{5}+5a^{5}b^{8}x^{4}+10a^{6}b^{7}x^{3}+10a^{7}b^{6}x^{2}+5a^{8}b^{5}x+a^{9}b^{4}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(B*a^6 + A*a^5*b + (B*a*b^5 + A*b^6)*x^5 + 5*(B*a^2*b^4 + A*a*
b^5)*x^4 + 10*(B*a^3*b^3 + A*a^2*b^4)*x^3 + 10*(B*a^4*b^2 + A*a^3*b^3)*x^2
+ 5*(B*a^5*b + A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x)
)/(b*x + a)) + 2*(15*B*a^6*b + 15*A*a^5*b^2 - 15*(B*a^2*b^5 + A*a*b^6)*x^4
- 70*(B*a^3*b^4 + A*a^2*b^5)*x^3 + 128*(B*a^4*b^3 - A*a^3*b^4)*x^2 + 70*(B*
a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^4*b^9*x^5 + 5*a^5*b^8*x^4 + 10*a^6*b^7*
x^3 + 10*a^7*b^6*x^2 + 5*a^8*b^5*x + a^9*b^4), -1/640*(15*(B*a^6 + A*a^5*b
+ (B*a*b^5 + A*b^6)*x^5 + 5*(B*a^2*b^4 + A*a*b^5)*x^4 + 10*(B*a^3*b^3 + A*a
^2*b^4)*x^3 + 10*(B*a^4*b^2 + A*a^3*b^3)*x^2 + 5*(B*a^5*b + A*a^4*b^2)*x)*s
qrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (15*B*a^6*b + 15*A*a^5*b^2 - 15*(B
*a^2*b^5 + A*a*b^6)*x^4 - 70*(B*a^3*b^4 + A*a^2*b^5)*x^3 + 128*(B*a^4*b^3 -
 A*a^3*b^4)*x^2 + 70*(B*a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^4*b^9*x^5 + 5*a
^5*b^8*x^4 + 10*a^6*b^7*x^3 + 10*a^7*b^6*x^2 + 5*a^8*b^5*x + a^9*b^4)]
```

giac [A] time = 0.16, size = 154, normalized size = 0.83

$$\frac{3\left(Ba+Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}a^{3}b^{3}}+\frac{15Bab^{4}x^{\frac{9}{2}}+15Ab^{5}x^{\frac{9}{2}}+70Ba^{2}b^{3}x^{\frac{7}{2}}+70Aab^{4}x^{\frac{7}{2}}-128Ba^{3}b^{2}x^{\frac{5}{2}}+128Aa^{2}b^{3}x^{\frac{5}{2}}-70Ba^{4}bx^{\frac{3}{2}}-70Aa^{3}b^{2}x^{\frac{3}{2}}-15Ba^{5}\sqrt{x}-15Aa^{4}b\sqrt{x}}{640\left(bx+a\right)^{5}a^{3}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 3/128*(B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b^3) + 1/640*(
15*B*a*b^4*x^(9/2) + 15*A*b^5*x^(9/2) + 70*B*a^2*b^3*x^(7/2) + 70*A*a*b^4*x
^(7/2) - 128*B*a^3*b^2*x^(5/2) + 128*A*a^2*b^3*x^(5/2) - 70*B*a^4*b*x^(3/2)
 - 70*A*a^3*b^2*x^(3/2) - 15*B*a^5*sqrt(x) - 15*A*a^4*b*sqrt(x))/((b*x + a)
^5*a^3*b^3)
```

maple [A] time = 0.07, size = 143, normalized size = 0.77

$$\frac{3A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^{3}b^{2}}+\frac{3B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^{2}b^{3}}+\frac{\frac{3(Ab+Ba)b\,x^{\frac{9}{2}}}{128a^{3}}+\frac{7(Ab+Ba)x^{\frac{7}{2}}}{64a^{2}}+\frac{(Ab-Ba)x^{\frac{5}{2}}}{5ab}-\frac{7(Ab+Ba)x^{\frac{3}{2}}}{64b^{2}}-\frac{3(Ab+Ba)a\sqrt{x}}{128b^{3}}}{\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(3/256*(A*b+B*a)/a^3*b*x^(9/2)+7/128*(A*b+B*a)/a^2*x^(7/2)+1/10*(A*b-B*a)
/a/b*x^(5/2)-7/128*(A*b+B*a)/b^2*x^(3/2)-3/256*(A*b+B*a)*a/b^3*x^(1/2))/(b*
x+a)^5+3/128/a^3/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+3/128/a^
2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.19, size = 194, normalized size = 1.05

$$\frac{15\left(Bab^{4}+Ab^{5}\right)x^{\frac{9}{2}}+70\left(Ba^{2}b^{3}+Aab^{4}\right)x^{\frac{7}{2}}-128\left(Ba^{3}b^{2}-Aa^{2}b^{3}\right)x^{\frac{5}{2}}-70\left(Ba^{4}b+Aa^{3}b^{2}\right)x^{\frac{3}{2}}-15\left(Ba^{5}+Aa^{4}b\right)\sqrt{x}}{640\left(a^{3}b^{8}x^{5}+5a^{4}b^{7}x^{4}+10a^{5}b^{6}x^{3}+10a^{6}b^{5}x^{2}+5a^{7}b^{4}x+a^{8}b^{3}\right)}+\frac{3\left(Ba+Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}a^{3}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/640*(15*(B*a*b^4 + A*b^5)*x^(9/2) + 70*(B*a^2*b^3 + A*a*b^4)*x^(7/2) - 12
8*(B*a^3*b^2 - A*a^2*b^3)*x^(5/2) - 70*(B*a^4*b + A*a^3*b^2)*x^(3/2) - 15*(
B*a^5 + A*a^4*b)*sqrt(x))/(a^3*b^8*x^5 + 5*a^4*b^7*x^4 + 10*a^5*b^6*x^3 + 1
0*a^6*b^5*x^2 + 5*a^7*b^4*x + a^8*b^3) + 3/128*(B*a + A*b)*arctan(b*sqrt(x)
/sqrt(a*b))/(sqrt(a*b)*a^3*b^3)
```

mupad [B] time = 1.23, size = 161, normalized size = 0.87

$$\frac{\frac{7\,x^{7/2}\,(A\,b+B\,a)}{64\,a^2}-\frac{7\,x^{3/2}\,(A\,b+B\,a)}{64\,b^2}+\frac{x^{5/2}\,(A\,b-B\,a)}{5\,a\,b}-\frac{3\,a\,\sqrt{x}\,(A\,b+B\,a)}{128\,b^3}+\frac{3\,b\,x^{9/2}\,(A\,b+B\,a)}{128\,a^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{3\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b+B\,a)}{128\,a^{7/2}\,b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((7*x^(7/2)*(A*b + B*a))/(64*a^2) - (7*x^(3/2)*(A*b + B*a))/(64*b^2) + (x^(
5/2)*(A*b - B*a))/(5*a*b) - (3*a*x^(1/2)*(A*b + B*a))/(128*b^3) + (3*b*x^(9
/2)*(A*b + B*a))/(128*a^3))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 +
 10*a^2*b^3*x^3 + 5*a^4*b*x) + (3*atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + B*
a))/(128*a^(7/2)*b^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.705 $\int \frac{\sqrt{x}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=195

$$\frac{(3aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{9/2}b^{5/2}}+\frac{\sqrt{x}(3aB+7Ab)}{128a^4b^2(a+bx)}+\frac{\sqrt{x}(3aB+7Ab)}{192a^3b^2(a+bx)^2}+\frac{\sqrt{x}(3aB+7Ab)}{240a^2b^2(a+bx)^3}-\frac{\sqrt{x}(3aB+7Ab)}{40ab^2(a+bx)^4}+\frac{x^{3/2}(Ab}{5ab(a+}$$

Rubi [A] time = 0.09, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 51, 63, 205}

$$\frac{\sqrt{x}(3aB+7Ab)}{128a^4b^2(a+bx)}+\frac{\sqrt{x}(3aB+7Ab)}{192a^3b^2(a+bx)^2}+\frac{\sqrt{x}(3aB+7Ab)}{240a^2b^2(a+bx)^3}+\frac{(3aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{9/2}b^{5/2}}-\frac{\sqrt{x}(3aB+7Ab)}{40ab^2(a+bx)^4}+\frac{x^{3/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(3/2))/(5*a*b*(a + b*x)^5) - ((7*A*b + 3*a*B)*Sqrt[x])/(40*a
*b^2*(a + b*x)^4) + ((7*A*b + 3*a*B)*Sqrt[x])/(240*a^2*b^2*(a + b*x)^3) + (
(7*A*b + 3*a*B)*Sqrt[x])/(192*a^3*b^2*(a + b*x)^2) + ((7*A*b + 3*a*B)*Sqrt[
x])/(128*a^4*b^2*(a + b*x)) + ((7*A*b + 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a]])/(128*a^(9/2)*b^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{\sqrt{x}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} + \frac{(7Ab+3aB)\int \frac{\sqrt{x}}{(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\int \frac{1}{\sqrt{x}(a+bx)^4}\,dx}{80ab^2}$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\int \frac{1}{\sqrt{x}(a+bx)}}{96a^2b^2}$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7A}{}$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7A}{128}$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7A}{128}$$

$$= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7A}{128}$$

Mathematica [C]   time = 0.03, size = 61, normalized size = 0.31

$$\frac{x^{3/2}\left(\frac{3a^5(Ab-aB)}{(a+bx)^5} + (3aB+7Ab)\,{}_2F_1\left(\frac{3}{2},5;\frac{5}{2};-\frac{bx}{a}\right)\right)}{15a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(3/2)*((3*a^5*(A*b - a*B))/(a + b*x)^5 + (7*A*b + 3*a*B)*Hypergeometric2
F1[3/2, 5, 5/2, -((b*x)/a)]))/(15*a^6*b)
```

IntegrateAlgebraic [A]   time = 0.28, size = 160, normalized size = 0.82

$$\frac{(3aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{9/2}b^{5/2}} - \frac{\sqrt{x}\left(45a^5B+105a^4Ab+210a^4bBx-790a^3Ab^2x-384a^3b^2Bx^2-896a^2Ab^3x^2-210a^2b^3Bx^3-490aAb^4x^3-45ab^4Bx^4-105Ab^5x^4\right)}{1920a^4b^2(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/1920*(Sqrt[x]*(105*a^4*A*b + 45*a^5*B - 790*a^3*A*b^2*x + 210*a^4*b*B*x
- 896*a^2*A*b^3*x^2 - 384*a^3*b^2*B*x^2 - 490*a*A*b^4*x^3 - 210*a^2*b^3*B*x
^3 - 105*A*b^5*x^4 - 45*a*b^4*B*x^4))/(a^4*b^2*(a + b*x)^5) + ((7*A*b + 3*a
*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(9/2)*b^(5/2))
```

fricas [A] time = 0.47, size = 657, normalized size = 3.37

$$\left[-\frac{15\left(3Ba^6+7Aa^5b+\left(3Bab^5+7Ab^6\right)x^5+5\left(3Ba^2b^4+7Aab^5\right)x^4+10\left(3Ba^3b^3+7Aa^2b^4\right)x^3+10\left(3Ba^4b^2+7Aa^3b^3\right)x^2+5\left(3Ba^5b+7Aa^4b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(45Ba^6b+105Aa^5b^2-15\left(3Ba^2b^5+7Aab^6\right)x^4-70\left(3Ba^3b^4+7Aa^2b^5\right)x^3-128\left(3Ba^4b^3+7Aa^3b^4\right)x^2+10\left(21Ba^5b^2-79Aa^4b^3\right)x\right)\sqrt{x}}{3840\left(a^5b^8x^5+5a^6b^7x^4+10a^7b^6x^3+10a^8b^5x^2+5a^9b^4x+a^{10}b^3\right)}, -\frac{15\left(3Ba^6+7Aa^5b+\left(3Bab^5+7Ab^6\right)x^5+5\left(3Ba^2b^4+7Aab^5\right)x^4+10\left(3Ba^3b^3+7Aa^2b^4\right)x^3+10\left(3Ba^4b^2+7Aa^3b^3\right)x^2+5\left(3Ba^5b+7Aa^4b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(45Ba^6b+105Aa^5b^2-15\left(3Ba^2b^5+7Aab^6\right)x^4-70\left(3Ba^3b^4+7Aa^2b^5\right)x^3-128\left(3Ba^4b^3+7Aa^3b^4\right)x^2+10\left(21Ba^5b^2-79Aa^4b^3\right)x\right)\sqrt{x}}{1920\left(a^5b^8x^5+5a^6b^7x^4+10a^7b^6x^3+10a^8b^5x^2+5a^9b^4x+a^{10}b^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(3*B*a^6 + 7*A*a^5*b + (3*B*a*b^5 + 7*A*b^6)*x^5 + 5*(3*B*a^2*
b^4 + 7*A*a*b^5)*x^4 + 10*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x^3 + 10*(3*B*a^4*b^2
 + 7*A*a^3*b^3)*x^2 + 5*(3*B*a^5*b + 7*A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x -
a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(45*B*a^6*b + 105*A*a^5*b^2 - 15*(
3*B*a^2*b^5 + 7*A*a*b^6)*x^4 - 70*(3*B*a^3*b^4 + 7*A*a^2*b^5)*x^3 - 128*(3*
B*a^4*b^3 + 7*A*a^3*b^4)*x^2 + 10*(21*B*a^5*b^2 - 79*A*a^4*b^3)*x)*sqrt(x))
/(a^5*b^8*x^5 + 5*a^6*b^7*x^4 + 10*a^7*b^6*x^3 + 10*a^8*b^5*x^2 + 5*a^9*b^4
*x + a^10*b^3), -1/1920*(15*(3*B*a^6 + 7*A*a^5*b + (3*B*a*b^5 + 7*A*b^6)*x^
5 + 5*(3*B*a^2*b^4 + 7*A*a*b^5)*x^4 + 10*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x^3 +
10*(3*B*a^4*b^2 + 7*A*a^3*b^3)*x^2 + 5*(3*B*a^5*b + 7*A*a^4*b^2)*x)*sqrt(a*
b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (45*B*a^6*b + 105*A*a^5*b^2 - 15*(3*B*a^
2*b^5 + 7*A*a*b^6)*x^4 - 70*(3*B*a^3*b^4 + 7*A*a^2*b^5)*x^3 - 128*(3*B*a^4*
b^3 + 7*A*a^3*b^4)*x^2 + 10*(21*B*a^5*b^2 - 79*A*a^4*b^3)*x)*sqrt(x))/(a^5*
b^8*x^5 + 5*a^6*b^7*x^4 + 10*a^7*b^6*x^3 + 10*a^8*b^5*x^2 + 5*a^9*b^4*x + a
^10*b^3)]
```

giac [A] time = 0.18, size = 156, normalized size = 0.80

$$\frac{(3\,Ba+7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^4b^2}+\frac{45\,Bab^4x^{\frac{9}{2}}+105\,Ab^5x^{\frac{9}{2}}+210\,Ba^2b^3x^{\frac{7}{2}}+490\,Aab^4x^{\frac{7}{2}}+384\,Ba^3b^2x^{\frac{5}{2}}+896\,Aa^2b^3x^{\frac{5}{2}}-210\,Ba^4bx^{\frac{3}{2}}+790\,Aa^3b^2x^{\frac{3}{2}}-45\,Ba^5\sqrt{x}-105\,Aa^4b\sqrt{x}}{1920\,(bx+a)^5a^4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/128*(3*B*a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b^2) + 1/1
920*(45*B*a*b^4*x^(9/2) + 105*A*b^5*x^(9/2) + 210*B*a^2*b^3*x^(7/2) + 490*A
*a*b^4*x^(7/2) + 384*B*a^3*b^2*x^(5/2) + 896*A*a^2*b^3*x^(5/2) - 210*B*a^4*
b*x^(3/2) + 790*A*a^3*b^2*x^(3/2) - 45*B*a^5*sqrt(x) - 105*A*a^4*b*sqrt(x))
/((b*x + a)^5*a^4*b^2)
```

maple [A] time = 0.08, size = 154, normalized size = 0.79

$$\frac{7A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^4b}+\frac{3B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^3b^2}+\frac{\frac{(7Ab+3Ba)b^2x^{\frac{9}{2}}}{128a^4}+\frac{7(7Ab+3Ba)b\,x^{\frac{7}{2}}}{192a^3}+\frac{(7Ab+3Ba)x^{\frac{5}{2}}}{15a^2}+\frac{(79Ab-21Ba)x^{\frac{3}{2}}}{192ab}-\frac{(7Ab+3Ba)\sqrt{x}}{128b^2}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(1/256*(7*A*b+3*B*a)/a^4*b^2*x^(9/2)+7/384/a^3*b*(7*A*b+3*B*a)*x^(7/2)+1/
30/a^2*(7*A*b+3*B*a)*x^(5/2)+1/384*(79*A*b-21*B*a)/a/b*x^(3/2)-1/256*(7*A*b
+3*B*a)/b^2*x^(1/2))/(b*x+a)^5+7/128/a^4/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*A+3/128/a^3/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.38, size = 205, normalized size = 1.05

$$\frac{15\left(3\,Bab^4+7\,Ab^5\right)x^{\frac{9}{2}}+70\left(3\,Ba^2b^3+7\,Aab^4\right)x^{\frac{7}{2}}+128\left(3\,Ba^3b^2+7\,Aa^2b^3\right)x^{\frac{5}{2}}-10\left(21\,Ba^4b-79\,Aa^3b^2\right)x^{\frac{3}{2}}-15\left(3\,Ba^5+7\,Aa^4b\right)\sqrt{x}}{1920\left(a^4b^7x^5+5\,a^5b^6x^4+10\,a^6b^5x^3+10\,a^7b^4x^2+5\,a^8b^3x+a^9b^2\right)}+\frac{(3\,Ba+7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/1920*(15*(3*B*a*b^4 + 7*A*b^5)*x^(9/2) + 70*(3*B*a^2*b^3 + 7*A*a*b^4)*x^(
7/2) + 128*(3*B*a^3*b^2 + 7*A*a^2*b^3)*x^(5/2) - 10*(21*B*a^4*b - 79*A*a^3*
b^2)*x^(3/2) - 15*(3*B*a^5 + 7*A*a^4*b)*sqrt(x))/(a^4*b^7*x^5 + 5*a^5*b^6*x
^4 + 10*a^6*b^5*x^3 + 10*a^7*b^4*x^2 + 5*a^8*b^3*x + a^9*b^2) + 1/128*(3*B*
a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b^2)
```

mupad [B] time = 1.26, size = 174, normalized size = 0.89

$$\frac{\frac{x^{5/2}\,(7\,A\,b+3\,B\,a)}{15\,a^2}-\frac{\sqrt{x}\,(7\,A\,b+3\,B\,a)}{128\,b^2}+\frac{b^2\,x^{9/2}\,(7\,A\,b+3\,B\,a)}{128\,a^4}+\frac{x^{3/2}\,(79\,A\,b-21\,B\,a)}{192\,a\,b}+\frac{7\,b\,x^{7/2}\,(7\,A\,b+3\,B\,a)}{192\,a^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(7\,A\,b+3\,B\,a)}{128\,a^{9/2}\,b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((x^(5/2)*(7*A*b + 3*B*a))/(15*a^2) - (x^(1/2)*(7*A*b + 3*B*a))/(128*b^2) +
 (b^2*x^(9/2)*(7*A*b + 3*B*a))/(128*a^4) + (x^(3/2)*(79*A*b - 21*B*a))/(192
*a*b) + (7*b*x^(7/2)*(7*A*b + 3*B*a))/(192*a^3))/(a^5 + b^5*x^5 + 5*a*b^4*x
^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x) + (atan((b^(1/2)*x^(1/2))
/a^(1/2))*(7*A*b + 3*B*a))/(128*a^(9/2)*b^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.706 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=190

$$\frac{7(aB+9Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{11/2}b^{3/2}}+\frac{7\sqrt{x}\,(aB+9Ab)}{128a^5b(a+bx)}+\frac{7\sqrt{x}\,(aB+9Ab)}{192a^4b(a+bx)^2}+\frac{7\sqrt{x}\,(aB+9Ab)}{240a^3b(a+bx)^3}+\frac{\sqrt{x}\,(aB+9Ab)}{40a^2b(a+bx)^4}+\frac{\sqrt{x}\,(Ab-a}{5ab(a+bx}$$

Rubi [A] time = 0.08, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$\frac{7(aB+9Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{11/2}b^{3/2}}+\frac{7\sqrt{x}\,(aB+9Ab)}{128a^5b(a+bx)}+\frac{7\sqrt{x}\,(aB+9Ab)}{192a^4b(a+bx)^2}+\frac{7\sqrt{x}\,(aB+9Ab)}{240a^3b(a+bx)^3}+\frac{\sqrt{x}\,(aB+9Ab)}{40a^2b(a+bx)^4}+\frac{\sqrt{x}\,(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(5*a*b*(a + b*x)^5) + ((9*A*b + a*B)*Sqrt[x])/(40*a^2
*b*(a + b*x)^4) + (7*(9*A*b + a*B)*Sqrt[x])/(240*a^3*b*(a + b*x)^3) + (7*(9
*A*b + a*B)*Sqrt[x])/(192*a^4*b*(a + b*x)^2) + (7*(9*A*b + a*B)*Sqrt[x])/(1
28*a^5*b*(a + b*x)) + (7*(9*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
128*a^(11/2)*b^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{\sqrt{x}\,(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{(7(9Ab+aB))\int \frac{1}{\sqrt{x}\,(a+bx)^4}\,dx}{80a^2b}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{(7(9Ab+aB))\int \frac{1}{\sqrt{x}\,(a\cdots}}{96a^3b}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \cdots$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \cdots$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \cdots$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \cdots$$

Mathematica [C] time = 0.03, size = 59, normalized size = 0.31

$$\frac{\sqrt{x}\left(\frac{a^5(Ab-aB)}{(a+bx)^5} + (aB+9Ab)\,{}_2F_1\left(\frac{1}{2},5;\frac{3}{2};-\frac{bx}{a}\right)\right)}{5a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (Sqrt[x]*((a^5*(A*b - a*B))/(a + b*x)^5 + (9*A*b + a*B)*Hypergeometric2F1[1
/2, 5, 3/2, -((b*x)/a)]))/(5*a^6*b)
```

IntegrateAlgebraic [A] time = 0.24, size = 184, normalized size = 0.97

$$\frac{7(aB+9Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{11/2}b^{3/2}} + \frac{-105a^5B\sqrt{x} + 2895a^4Ab\sqrt{x} + 790a^4bBx^{3/2} + 7110a^3Ab^2x^{3/2} + 896a^3b^2Bx^{5/2} + 8064a^2Ab^3x^{5/2} + 490a^2b^3Bx^{7/2} + 4410aAb^4x^{7/2} + 105ab^4Bx^{9/2} + 945Ab^5x^{9/2}}{1920a^5b(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (2895*a^4*A*b*Sqrt[x] - 105*a^5*B*Sqrt[x] + 7110*a^3*A*b^2*x^(3/2) + 790*a^
4*b*B*x^(3/2) + 8064*a^2*A*b^3*x^(5/2) + 896*a^3*b^2*B*x^(5/2) + 4410*a*A*b
^4*x^(7/2) + 490*a^2*b^3*B*x^(7/2) + 945*A*b^5*x^(9/2) + 105*a*b^4*B*x^(9/2
))/(1920*a^5*b*(a + b*x)^5) + (7*(9*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a]])/(128*a^(11/2)*b^(3/2))
```

fricas [A] time = 0.45, size = 637, normalized size = 3.35

$$\left[-\frac{105\left(Ba^6+9Aa^5b+\left(Bab^5+9Ab^6\right)x^5+5\left(Ba^2b^4+9Aab^5\right)x^4+10\left(Ba^3b^3+9Aa^2b^4\right)x^3+10\left(Ba^4b^2+9Aa^3b^3\right)x^2+5\left(Ba^5b+9Aa^4b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(105Ba^6b-2895Aa^5b^2-105\left(Ba^2b^5+9Aab^6\right)x^4-490\left(Ba^3b^4+9Aa^2b^5\right)x^3-896\left(Ba^4b^3+9Aa^3b^4\right)x^2-790\left(Ba^5b^2+9Aa^4b^3\right)x\right)\sqrt{x}}{3840\left(a^6b^7x^5+5a^7b^6x^4+10a^8b^5x^3+10a^9b^4x^2+5a^{10}b^3x+a^{11}b^2\right)}, -\frac{105\left(Ba^6+9Aa^5b+\left(Bab^5+9Ab^6\right)x^5+5\left(Ba^2b^4+9Aab^5\right)x^4+10\left(Ba^3b^3+9Aa^2b^4\right)x^3+10\left(Ba^4b^2+9Aa^3b^3\right)x^2+5\left(Ba^5b+9Aa^4b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(105Ba^6b-2895Aa^5b^2-105\left(Ba^2b^5+9Aab^6\right)x^4-490\left(Ba^3b^4+9Aa^2b^5\right)x^3-896\left(Ba^4b^3+9Aa^3b^4\right)x^2-790\left(Ba^5b^2+9Aa^4b^3\right)x\right)\sqrt{x}}{1920\left(a^6b^7x^5+5a^7b^6x^4+10a^8b^5x^3+10a^9b^4x^2+5a^{10}b^3x+a^{11}b^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(105*(B*a^6 + 9*A*a^5*b + (B*a*b^5 + 9*A*b^6)*x^5 + 5*(B*a^2*b^4 +
 9*A*a*b^5)*x^4 + 10*(B*a^3*b^3 + 9*A*a^2*b^4)*x^3 + 10*(B*a^4*b^2 + 9*A*a^
3*b^3)*x^2 + 5*(B*a^5*b + 9*A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(
-a*b)*sqrt(x))/(b*x + a)) + 2*(105*B*a^6*b - 2895*A*a^5*b^2 - 105*(B*a^2*b^
5 + 9*A*a*b^6)*x^4 - 490*(B*a^3*b^4 + 9*A*a^2*b^5)*x^3 - 896*(B*a^4*b^3 + 9
*A*a^3*b^4)*x^2 - 790*(B*a^5*b^2 + 9*A*a^4*b^3)*x)*sqrt(x))/(a^6*b^7*x^5 +
5*a^7*b^6*x^4 + 10*a^8*b^5*x^3 + 10*a^9*b^4*x^2 + 5*a^10*b^3*x + a^11*b^2),
 -1/1920*(105*(B*a^6 + 9*A*a^5*b + (B*a*b^5 + 9*A*b^6)*x^5 + 5*(B*a^2*b^4 +
 9*A*a*b^5)*x^4 + 10*(B*a^3*b^3 + 9*A*a^2*b^4)*x^3 + 10*(B*a^4*b^2 + 9*A*a^
3*b^3)*x^2 + 5*(B*a^5*b + 9*A*a^4*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqr
t(x))) + (105*B*a^6*b - 2895*A*a^5*b^2 - 105*(B*a^2*b^5 + 9*A*a*b^6)*x^4 -
490*(B*a^3*b^4 + 9*A*a^2*b^5)*x^3 - 896*(B*a^4*b^3 + 9*A*a^3*b^4)*x^2 - 790
*(B*a^5*b^2 + 9*A*a^4*b^3)*x)*sqrt(x))/(a^6*b^7*x^5 + 5*a^7*b^6*x^4 + 10*a^
8*b^5*x^3 + 10*a^9*b^4*x^2 + 5*a^10*b^3*x + a^11*b^2)]
```

giac [A] time = 0.18, size = 155, normalized size = 0.82

$$\frac{7\,(Ba+9\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^5b}+\frac{105\,Bab^4x^{\frac{9}{2}}+945\,Ab^5x^{\frac{9}{2}}+490\,Ba^2b^3x^{\frac{7}{2}}+4410\,Aab^4x^{\frac{7}{2}}+896\,Ba^3b^2x^{\frac{5}{2}}+8064\,Aa^2b^3x^{\frac{5}{2}}+790\,Ba^4bx^{\frac{3}{2}}+7110\,Aa^3b^2x^{\frac{3}{2}}-105\,Ba^5\sqrt{x}+2895\,Aa^4b\sqrt{x}}{1920\,(bx+a)^5a^5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 7/128*(B*a + 9*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*b) + 1/1920*
(105*B*a*b^4*x^(9/2) + 945*A*b^5*x^(9/2) + 490*B*a^2*b^3*x^(7/2) + 4410*A*a
*b^4*x^(7/2) + 896*B*a^3*b^2*x^(5/2) + 8064*A*a^2*b^3*x^(5/2) + 790*B*a^4*b
*x^(3/2) + 7110*A*a^3*b^2*x^(3/2) - 105*B*a^5*sqrt(x) + 2895*A*a^4*b*sqrt(x
))/((b*x + a)^5*a^5*b)
```

maple [A] time = 0.07, size = 150, normalized size = 0.79

$$\frac{63A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^5}+\frac{7B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^4b}+\frac{\frac{7(9Ab+Ba)b^3x^{\frac{9}{2}}}{128a^5}+\frac{49(9Ab+Ba)b^2x^{\frac{7}{2}}}{192a^4}+\frac{7(9Ab+Ba)b\,x^{\frac{5}{2}}}{15a^3}+\frac{79(9Ab+Ba)x^{\frac{3}{2}}}{192a^2}+\frac{(193Ab-7Ba)\sqrt{x}}{128ab}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x)
```

```
[Out] 2*(7/256*(9*A*b+B*a)/a^5*b^3*x^(9/2)+49/384/a^4*b^2*(9*A*b+B*a)*x^(7/2)+7/3
0/a^3*(9*A*b+B*a)*b*x^(5/2)+79/384/a^2*(9*A*b+B*a)*x^(3/2)+1/256*(193*A*b-7
*B*a)/a/b*x^(1/2))/(b*x+a)^5+63/128/a^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*
x^(1/2))*A+7/128/a^4/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.19, size = 198, normalized size = 1.04

$$\frac{105\left(Bab^4+9\,Ab^5\right)x^{\frac{9}{2}}+490\left(Ba^2b^3+9\,Aab^4\right)x^{\frac{7}{2}}+896\left(Ba^3b^2+9\,Aa^2b^3\right)x^{\frac{5}{2}}+790\left(Ba^4b+9\,Aa^3b^2\right)x^{\frac{3}{2}}-15\left(7\,Ba^5-193\,Aa^4b\right)\sqrt{x}}{1920\left(a^5b^6x^5+5\,a^6b^5x^4+10\,a^7b^4x^3+10\,a^8b^3x^2+5\,a^9b^2x+a^{10}b\right)}+\frac{7\,(Ba+9\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/1920*(105*(B*a*b^4 + 9*A*b^5)*x^(9/2) + 490*(B*a^2*b^3 + 9*A*a*b^4)*x^(7/
2) + 896*(B*a^3*b^2 + 9*A*a^2*b^3)*x^(5/2) + 790*(B*a^4*b + 9*A*a^3*b^2)*x^
(3/2) - 15*(7*B*a^5 - 193*A*a^4*b)*sqrt(x))/(a^5*b^6*x^5 + 5*a^6*b^5*x^4 +
10*a^7*b^4*x^3 + 10*a^8*b^3*x^2 + 5*a^9*b^2*x + a^10*b) + 7/128*(B*a + 9*A*
b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*b)
```

mupad [B] time = 1.24, size = 172, normalized size = 0.91

$$\frac{\frac{79\,x^{3/2}\,(9\,A\,b+B\,a)}{192\,a^2}+\frac{49\,b^2\,x^{7/2}\,(9\,A\,b+B\,a)}{192\,a^4}+\frac{7\,b^3\,x^{9/2}\,(9\,A\,b+B\,a)}{128\,a^5}+\frac{\sqrt{x}\,(193\,A\,b-7\,B\,a)}{128\,a\,b}+\frac{7\,b\,x^{5/2}\,(9\,A\,b+B\,a)}{15\,a^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{7\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(9\,A\,b+B\,a)}{128\,a^{11/2}\,b^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((79*x^(3/2)*(9*A*b + B*a))/(192*a^2) + (49*b^2*x^(7/2)*(9*A*b + B*a))/(192
*a^4) + (7*b^3*x^(9/2)*(9*A*b + B*a))/(128*a^5) + (x^(1/2)*(193*A*b - 7*B*a
))/(128*a*b) + (7*b*x^(5/2)*(9*A*b + B*a))/(15*a^3))/(a^5 + b^5*x^5 + 5*a*b
^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x) + (7*atan((b^(1/2)*x^
(1/2))/a^(1/2))*(9*A*b + B*a))/(128*a^(11/2)*b^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3/x**(1/2),x)
```

```
[Out] Timed out
```

3.707 $\int \frac{A+Bx}{x^{3/2}(a^2+2abx+b^2x^2)^3}\,dx$

Optimal. Leaf size=219

$$-\frac{63(11Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{13/2}\sqrt{b}}-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{21(11Ab-aB)}{128a^5b\sqrt{x}\,(a+bx)}+\frac{21(11Ab-aB)}{320a^4b\sqrt{x}\,(a+bx)^2}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+$$

Rubi [A] time = 0.10, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{21(11Ab-aB)}{128a^5b\sqrt{x}\,(a+bx)}+\frac{21(11Ab-aB)}{320a^4b\sqrt{x}\,(a+bx)^2}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}-\frac{63(11Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{13/2}\sqrt{b}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-63*(11*A*b - a*B))/(128*a^6*b*Sqrt[x]) + (A*b - a*B)/(5*a*b*Sqrt[x]*(a +
b*x)^5) + (11*A*b - a*B)/(40*a^2*b*Sqrt[x]*(a + b*x)^4) + (3*(11*A*b - a*B)
)/(80*a^3*b*Sqrt[x]*(a + b*x)^3) + (21*(11*A*b - a*B))/(320*a^4*b*Sqrt[x]*(
a + b*x)^2) + (21*(11*A*b - a*B))/(128*a^5*b*Sqrt[x]*(a + b*x)) - (63*(11*A
*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(13/2)*Sqrt[b])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{A+Bx}{x^{3/2}(a+bx)^6}\,dx$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{(11Ab-aB)\int \frac{1}{x^{3/2}(a+bx)^5}\,dx}{10ab}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{(9(11Ab-aB))\int \frac{1}{x^{3/2}(a+bx)^4}\,dx}{80a^2b}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{(21(11Ab-a}{1}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{21(11Ab-}{320a^4b\sqrt{x}\,(a}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{21(11Ab-}{320a^4b\sqrt{x}\,(a}$$

$$=-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB}{80a^3b\sqrt{x}\,(a+b}$$

$$=-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB}{80a^3b\sqrt{x}\,(a+b}$$

$$=-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB}{80a^3b\sqrt{x}\,(a+b}$$

Mathematica [C] time = 0.03, size = 59, normalized size = 0.27

$$\frac{\frac{a^5(Ab-aB)}{(a+bx)^5}+(aB-11Ab)\,{}_2F_1\left(-\frac{1}{2},5;\frac{1}{2};-\frac{bx}{a}\right)}{5a^6b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((a^5*(A*b - a*B))/(a + b*x)^5 + (-11*A*b + a*B)*Hypergeometric2F1[-1/2, 5,
 1/2, -((b*x)/a)])/(5*a^6*b*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.39, size = 168, normalized size = 0.77

$$\frac{63(aB-11Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{13/2}\sqrt{b}}+\frac{-1280a^5A+965a^5Bx-10615a^4Abx+2370a^4bBx^2-26070a^3Ab^2x^2+2688a^3b^2Bx^3-29568a^2Ab^3x^3+1470a^2b^3Bx^4-16170aAb^4x^4+315ab^4Bx^5-3465Ab^5x^5}{640a^6\sqrt{x}\,(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-1280*a^5*A - 10615*a^4*A*b*x + 965*a^5*B*x - 26070*a^3*A*b^2*x^2 + 2370*a
^4*b*B*x^2 - 29568*a^2*A*b^3*x^3 + 2688*a^3*b^2*B*x^3 - 16170*a*A*b^4*x^4 +
 1470*a^2*b^3*B*x^4 - 3465*A*b^5*x^5 + 315*a*b^4*B*x^5)/(640*a^6*Sqrt[x]*(a
```

```
 + b*x)^5) + (63*(-11*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^
(13/2)*Sqrt[b])
```

fricas [A] time = 0.48, size = 673, normalized size = 3.07

$$\left[\frac{315\left(\left(Bab^{5}-11\,Ab^{6}\right)x^{6}+5\left(Ba^{2}b^{4}-11\,Aab^{5}\right)x^{5}+10\left(Ba^{3}b^{3}-11\,Aa^{2}b^{4}\right)x^{4}+10\left(Ba^{4}b^{2}-11\,Aa^{3}b^{3}\right)x^{3}+5\left(Ba^{5}b-11\,Aa^{4}b^{2}\right)x^{2}+\left(Ba^{6}-11\,Aa^{5}b\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a+2\sqrt{-ab}\sqrt{x}}{bx+a}\right)-2\left(1280\,Aa^{6}b-315\left(Ba^{2}b^{5}-11\,Aab^{6}\right)x^{5}-1470\left(Ba^{3}b^{4}-11\,Aa^{2}b^{5}\right)x^{4}-2688\left(Ba^{4}b^{3}-11\,Aa^{3}b^{4}\right)x^{3}-2370\left(Ba^{5}b^{2}-11\,Aa^{4}b^{3}\right)x^{2}-965\left(Ba^{6}b-11\,Aa^{5}b^{2}\right)x\right)\sqrt{x}}{1280\left(a^{7}b^{6}x^{6}+5\,a^{8}b^{5}x^{5}+10\,a^{9}b^{4}x^{4}+10\,a^{10}b^{3}x^{3}+5\,a^{11}b^{2}x^{2}+a^{12}bx\right)},\ -\frac{315\left(\left(Bab^{5}-11\,Ab^{6}\right)x^{6}+5\left(Ba^{2}b^{4}-11\,Aab^{5}\right)x^{5}+10\left(Ba^{3}b^{3}-11\,Aa^{2}b^{4}\right)x^{4}+10\left(Ba^{4}b^{2}-11\,Aa^{3}b^{3}\right)x^{3}+5\left(Ba^{5}b-11\,Aa^{4}b^{2}\right)x^{2}+\left(Ba^{6}-11\,Aa^{5}b\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(1280\,Aa^{6}b-315\left(Ba^{2}b^{5}-11\,Aab^{6}\right)x^{5}-1470\left(Ba^{3}b^{4}-11\,Aa^{2}b^{5}\right)x^{4}-2688\left(Ba^{4}b^{3}-11\,Aa^{3}b^{4}\right)x^{3}-2370\left(Ba^{5}b^{2}-11\,Aa^{4}b^{3}\right)x^{2}-965\left(Ba^{6}b-11\,Aa^{5}b^{2}\right)x\right)\sqrt{x}}{640\left(a^{7}b^{6}x^{6}+5\,a^{8}b^{5}x^{5}+10\,a^{9}b^{4}x^{4}+10\,a^{10}b^{3}x^{3}+5\,a^{11}b^{2}x^{2}+a^{12}bx\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [1/1280*(315*((B*a*b^5 - 11*A*b^6)*x^6 + 5*(B*a^2*b^4 - 11*A*a*b^5)*x^5 + 1
0*(B*a^3*b^3 - 11*A*a^2*b^4)*x^4 + 10*(B*a^4*b^2 - 11*A*a^3*b^3)*x^3 + 5*(B
*a^5*b - 11*A*a^4*b^2)*x^2 + (B*a^6 - 11*A*a^5*b)*x)*sqrt(-a*b)*log((b*x -
a + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(1280*A*a^6*b - 315*(B*a^2*b^5 - 1
1*A*a*b^6)*x^5 - 1470*(B*a^3*b^4 - 11*A*a^2*b^5)*x^4 - 2688*(B*a^4*b^3 - 11
*A*a^3*b^4)*x^3 - 2370*(B*a^5*b^2 - 11*A*a^4*b^3)*x^2 - 965*(B*a^6*b - 11*A
*a^5*b^2)*x)*sqrt(x))/(a^7*b^6*x^6 + 5*a^8*b^5*x^5 + 10*a^9*b^4*x^4 + 10*a^
10*b^3*x^3 + 5*a^11*b^2*x^2 + a^12*b*x), -1/640*(315*((B*a*b^5 - 11*A*b^6)*
x^6 + 5*(B*a^2*b^4 - 11*A*a*b^5)*x^5 + 10*(B*a^3*b^3 - 11*A*a^2*b^4)*x^4 +
10*(B*a^4*b^2 - 11*A*a^3*b^3)*x^3 + 5*(B*a^5*b - 11*A*a^4*b^2)*x^2 + (B*a^6
 - 11*A*a^5*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (1280*A*a^6*b -
 315*(B*a^2*b^5 - 11*A*a*b^6)*x^5 - 1470*(B*a^3*b^4 - 11*A*a^2*b^5)*x^4 - 2
688*(B*a^4*b^3 - 11*A*a^3*b^4)*x^3 - 2370*(B*a^5*b^2 - 11*A*a^4*b^3)*x^2 -
965*(B*a^6*b - 11*A*a^5*b^2)*x)*sqrt(x))/(a^7*b^6*x^6 + 5*a^8*b^5*x^5 + 10*
a^9*b^4*x^4 + 10*a^10*b^3*x^3 + 5*a^11*b^2*x^2 + a^12*b*x)]
```

giac [A] time = 0.21, size = 158, normalized size = 0.72

$$\frac{63\,(Ba-11\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^{6}}-\frac{2\,A}{a^{6}\sqrt{x}}+\frac{315\,Bab^{4}x^{\frac{9}{2}}-2185\,Ab^{5}x^{\frac{9}{2}}+1470\,Ba^{2}b^{3}x^{\frac{7}{2}}-9770\,Aab^{4}x^{\frac{7}{2}}+2688\,Ba^{3}b^{2}x^{\frac{5}{2}}-16768\,Aa^{2}b^{3}x^{\frac{5}{2}}+2370\,Ba^{4}bx^{\frac{3}{2}}-13270\,Aa^{3}b^{2}x^{\frac{3}{2}}+965\,Ba^{5}\sqrt{x}-4215\,Aa^{4}b\sqrt{x}}{640\,(bx+a)^{5}a^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 63/128*(B*a - 11*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6) - 2*A/(a^
6*sqrt(x)) + 1/640*(315*B*a*b^4*x^(9/2) - 2185*A*b^5*x^(9/2) + 1470*B*a^2*b
^3*x^(7/2) - 9770*A*a*b^4*x^(7/2) + 2688*B*a^3*b^2*x^(5/2) - 16768*A*a^2*b^
3*x^(5/2) + 2370*B*a^4*b*x^(3/2) - 13270*A*a^3*b^2*x^(3/2) + 965*B*a^5*sqrt
(x) - 4215*A*a^4*b*sqrt(x))/((b*x + a)^5*a^6)
```

maple [A] time = 0.11, size = 239, normalized size = 1.09

$$-\frac{437A\,b^{5}x^{\frac{9}{2}}}{128\,(bx+a)^{5}\,a^{6}}+\frac{63B\,b^{4}x^{\frac{9}{2}}}{128\,(bx+a)^{5}\,a^{5}}-\frac{977A\,b^{4}x^{\frac{7}{2}}}{64\,(bx+a)^{5}\,a^{5}}+\frac{147B\,b^{3}x^{\frac{7}{2}}}{64\,(bx+a)^{5}\,a^{4}}-\frac{131A\,b^{3}x^{\frac{5}{2}}}{5\,(bx+a)^{5}\,a^{4}}+\frac{21B\,b^{2}x^{\frac{5}{2}}}{5\,(bx+a)^{5}\,a^{3}}-\frac{1327A\,b^{2}x^{\frac{3}{2}}}{64\,(bx+a)^{5}\,a^{3}}+\frac{237Bb\,x^{\frac{3}{2}}}{64\,(bx+a)^{5}\,a^{2}}-\frac{843Ab\sqrt{x}}{128\,(bx+a)^{5}\,a^{2}}+\frac{193B\sqrt{x}}{128\,(bx+a)^{5}\,a}-\frac{693Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^{6}}+\frac{63B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^{5}}-\frac{2A}{a^{6}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -437/128/a^6/(b*x+a)^5*x^(9/2)*A*b^5+63/128/a^5/(b*x+a)^5*x^(9/2)*B*b^4-977
/64/a^5/(b*x+a)^5*A*x^(7/2)*b^4+147/64/a^4/(b*x+a)^5*B*x^(7/2)*b^3-131/5/a^
4/(b*x+a)^5*x^(5/2)*A*b^3+21/5/a^3/(b*x+a)^5*x^(5/2)*b^2*B-1327/64/a^3/(b*x
+a)^5*x^(3/2)*A*b^2+237/64/a^2/(b*x+a)^5*x^(3/2)*b*B-843/128/a^2/(b*x+a)^5*
x^(1/2)*A*b+193/128/a/(b*x+a)^5*x^(1/2)*B-693/128/a^6/(a*b)^(1/2)*arctan(1/
(a*b)^(1/2)*b*x^(1/2))*A*b+63/128/a^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^
(1/2))*B-2*A/a^6/x^(1/2)
```

maxima [A] time = 1.25, size = 200, normalized size = 0.91

$$-\frac{1280\,Aa^{5}-315\left(Bab^{4}-11\,Ab^{5}\right)x^{5}-1470\left(Ba^{2}b^{3}-11\,Aab^{4}\right)x^{4}-2688\left(Ba^{3}b^{2}-11\,Aa^{2}b^{3}\right)x^{3}-2370\left(Ba^{4}b-11\,Aa^{3}b^{2}\right)x^{2}-965\left(Ba^{5}-11\,Aa^{4}b\right)x}{640\left(a^{6}b^{5}x^{\frac{11}{2}}+5\,a^{7}b^{4}x^{\frac{9}{2}}+10\,a^{8}b^{3}x^{\frac{7}{2}}+10\,a^{9}b^{2}x^{\frac{5}{2}}+5\,a^{10}bx^{\frac{3}{2}}+a^{11}\sqrt{x}\right)}+\frac{63\,(Ba-11\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/640*(1280*A*a^5 - 315*(B*a*b^4 - 11*A*b^5)*x^5 - 1470*(B*a^2*b^3 - 11*A*
a*b^4)*x^4 - 2688*(B*a^3*b^2 - 11*A*a^2*b^3)*x^3 - 2370*(B*a^4*b - 11*A*a^3
*b^2)*x^2 - 965*(B*a^5 - 11*A*a^4*b)*x)/(a^6*b^5*x^(11/2) + 5*a^7*b^4*x^(9/
2) + 10*a^8*b^3*x^(7/2) + 10*a^9*b^2*x^(5/2) + 5*a^10*b*x^(3/2) + a^11*sqrt
(x)) + 63/128*(B*a - 11*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6)
```

mupad [B] time = 1.36, size = 209, normalized size = 0.95

$$-\frac{\frac{2\,A}{a}+\frac{193\,x\,\left(11\,A\,b-B\,a\right)}{128\,a^2}+\frac{21\,b^2\,x^3\,\left(11\,A\,b-B\,a\right)}{5\,a^4}+\frac{147\,b^3\,x^4\,\left(11\,A\,b-B\,a\right)}{64\,a^5}+\frac{63\,b^4\,x^5\,\left(11\,A\,b-B\,a\right)}{128\,a^6}+\frac{237\,b\,x^2\,\left(11\,A\,b-B\,a\right)}{64\,a^3}}{a^5\,\sqrt{x}+b^5\,x^{11/2}+5\,a^4\,b\,x^{3/2}+5\,a\,b^4\,x^{9/2}+10\,a^3\,b^2\,x^{5/2}+10\,a^2\,b^3\,x^{7/2}}-\frac{63\,\mathrm{atan}\left(\frac{63\,\sqrt{b}\,\sqrt{x}\,\left(11\,A\,b-B\,a\right)}{\sqrt{a}\,\left(693\,A\,b-63\,B\,a\right)}\right)\,\left(11\,A\,b-B\,a\right)}{128\,a^{13/2}\,\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] - ((2*A)/a + (193*x*(11*A*b - B*a))/(128*a^2) + (21*b^2*x^3*(11*A*b - B*a))
/(5*a^4) + (147*b^3*x^4*(11*A*b - B*a))/(64*a^5) + (63*b^4*x^5*(11*A*b - B*
a))/(128*a^6) + (237*b*x^2*(11*A*b - B*a))/(64*a^3))/(a^5*x^(1/2) + b^5*x^(
11/2) + 5*a^4*b*x^(3/2) + 5*a*b^4*x^(9/2) + 10*a^3*b^2*x^(5/2) + 10*a^2*b^3
*x^(7/2)) - (63*atan((63*b^(1/2)*x^(1/2)*(11*A*b - B*a))/(a^(1/2)*(693*A*b
- 63*B*a)))*(11*A*b - B*a))/(128*a^(13/2)*b^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.708 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=240

$$\frac{231\sqrt{b}\,(13Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{128a^{15/2}}+\frac{231(13Ab-3aB)}{128a^7\sqrt{x}}-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{231(13Ab-3aB)}{640a^5bx^{3/2}(a+bx)}+\frac{33(13Ab-3aB)}{320a^4bx^{3/2}(a+b}$$

Rubi [A] time = 0.12, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$\frac{231(13Ab-3aB)}{640a^5bx^{3/2}(a+bx)}-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{33(13Ab-3aB)}{320a^4bx^{3/2}(a+bx)^2}+\frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{231(13Ab-3aB)}{128a^7\sqrt{x}}+\frac{231\sqrt{b}\,(13Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{128a^{15/2}}+\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-77*(13*A*b - 3*a*B))/(128*a^6*b*x^(3/2)) + (231*(13*A*b - 3*a*B))/(128*a^
7*Sqrt[x]) + (A*b - a*B)/(5*a*b*x^(3/2)*(a + b*x)^5) + (13*A*b - 3*a*B)/(40
*a^2*b*x^(3/2)*(a + b*x)^4) + (11*(13*A*b - 3*a*B))/(240*a^3*b*x^(3/2)*(a +
 b*x)^3) + (33*(13*A*b - 3*a*B))/(320*a^4*b*x^(3/2)*(a + b*x)^2) + (231*(13
*A*b - 3*a*B))/(640*a^5*b*x^(3/2)*(a + b*x)) + (231*Sqrt[b]*(13*A*b - 3*a*B
)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{A+Bx}{x^{5/2}(a+bx)^6}\,dx$$

$$=\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}-\frac{\left(-\frac{13Ab}{2}+\frac{3aB}{2}\right)\int \frac{1}{x^{5/2}(a+bx)^5}\,dx}{5ab}$$

$$=\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{(11(13Ab-3aB))\int \frac{1}{x^{5/2}(a+bx)^4}\,dx}{80a^2b}$$

$$=\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3}+\frac{(33(13Ab-$$

$$=\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3}+\frac{33(13Ab}{320a^4bx^{3/2}(}$$

$$=\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3}+\frac{33(13Ab}{320a^4bx^{3/2}(}$$

$$=-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{11(13Ab-3}{240a^3bx^{3/2}(a}$$

$$=-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{231(13Ab-3aB)}{128a^7\sqrt{x}}+\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+b}$$

$$=-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{231(13Ab-3aB)}{128a^7\sqrt{x}}+\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+b}$$

$$=-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{231(13Ab-3aB)}{128a^7\sqrt{x}}+\frac{Ab-aB}{5abx^{3/2}(a+bx)^5}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+b}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.25

$$\frac{\frac{3a^5(Ab-aB)}{(a+bx)^5}+(3aB-13Ab)\,{}_2F_1\left(-\frac{3}{2},5;-\frac{1}{2};-\frac{bx}{a}\right)}{15a^6bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((3*a^5*(A*b - a*B))/(a + b*x)^5 + (-13*A*b + 3*a*B)*Hypergeometric2F1[-3/2
, 5, -1/2, -((b*x)/a)])/(15*a^6*b*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.43, size = 197, normalized size = 0.82

$$\frac{-1280a^6A-3840a^6Bx+16640a^5Abx-31845a^5bBx^2+137995a^4Ab^2x^2-78210a^4b^2Bx^3+338910a^3Ab^3x^3-88704a^3b^3Bx^4+384384a^2Ab^4x^4-48510a^2b^4Bx^5+210210aAb^5x^5-10395ab^5Bx^6+45045Ab^6x^6}{1920a^7x^{3/2}(a+bx)^5}-\frac{231\left(3a\sqrt{b}B-13Ab^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{15/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-1280*a^6*A + 16640*a^5*A*b*x - 3840*a^6*B*x + 137995*a^4*A*b^2*x^2 - 3184
5*a^5*b*B*x^2 + 338910*a^3*A*b^3*x^3 - 78210*a^4*b^2*B*x^3 + 384384*a^2*A*b
```

```
^4*x^4 - 88704*a^3*b^3*B*x^4 + 210210*a*A*b^5*x^5 - 48510*a^2*b^4*B*x^5 + 4
5045*A*b^6*x^6 - 10395*a*b^5*B*x^6)/(1920*a^7*x^(3/2)*(a + b*x)^5) - (231*(
-13*A*b^(3/2) + 3*a*Sqrt[b]*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(1
5/2))
```

fricas [A] time = 0.46, size = 734, normalized size = 3.06

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(3465*((3*B*a*b^5 - 13*A*b^6)*x^7 + 5*(3*B*a^2*b^4 - 13*A*a*b^5)*x
^6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^5 + 10*(3*B*a^4*b^2 - 13*A*a^3*b^3)*
x^4 + 5*(3*B*a^5*b - 13*A*a^4*b^2)*x^3 + (3*B*a^6 - 13*A*a^5*b)*x^2)*sqrt(-
b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(1280*A*a^6 + 34
65*(3*B*a*b^5 - 13*A*b^6)*x^6 + 16170*(3*B*a^2*b^4 - 13*A*a*b^5)*x^5 + 2956
8*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^4 + 26070*(3*B*a^4*b^2 - 13*A*a^3*b^3)*x^3
 + 10615*(3*B*a^5*b - 13*A*a^4*b^2)*x^2 + 1280*(3*B*a^6 - 13*A*a^5*b)*x)*sq
rt(x))/(a^7*b^5*x^7 + 5*a^8*b^4*x^6 + 10*a^9*b^3*x^5 + 10*a^10*b^2*x^4 + 5*
a^11*b*x^3 + a^12*x^2), 1/1920*(3465*((3*B*a*b^5 - 13*A*b^6)*x^7 + 5*(3*B*a
^2*b^4 - 13*A*a*b^5)*x^6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^5 + 10*(3*B*a^
4*b^2 - 13*A*a^3*b^3)*x^4 + 5*(3*B*a^5*b - 13*A*a^4*b^2)*x^3 + (3*B*a^6 - 1
3*A*a^5*b)*x^2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (1280*A*a^6 + 3
465*(3*B*a*b^5 - 13*A*b^6)*x^6 + 16170*(3*B*a^2*b^4 - 13*A*a*b^5)*x^5 + 295
68*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^4 + 26070*(3*B*a^4*b^2 - 13*A*a^3*b^3)*x^
3 + 10615*(3*B*a^5*b - 13*A*a^4*b^2)*x^2 + 1280*(3*B*a^6 - 13*A*a^5*b)*x)*s
qrt(x))/(a^7*b^5*x^7 + 5*a^8*b^4*x^6 + 10*a^9*b^3*x^5 + 10*a^10*b^2*x^4 + 5
*a^11*b*x^3 + a^12*x^2)]
```

giac [A] time = 0.18, size = 180, normalized size = 0.75

$$-\frac{231\,\left(3\,Bab-13\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^{7}}-\frac{2\,(3\,Bax-18\,Abx+Aa)}{3\,a^{7}x^{\frac{3}{2}}}-\frac{6555\,Bab^{5}x^{\frac{9}{2}}-22005\,Ab^{6}x^{\frac{9}{2}}+29310\,Ba^{2}b^{4}x^{\frac{7}{2}}-96290\,Aab^{5}x^{\frac{7}{2}}+50304\,Ba^{3}b^{3}x^{\frac{5}{2}}-160384\,Aa^{2}b^{4}x^{\frac{5}{2}}+39810\,Ba^{4}b^{2}x^{\frac{3}{2}}-121310\,Aa^{3}b^{3}x^{\frac{3}{2}}+12645\,Ba^{5}b\sqrt{x}-35595\,Aa^{4}b^{2}\sqrt{x}}{1920\,(bx+a)^{5}a^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -231/128*(3*B*a*b - 13*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7) -
 2/3*(3*B*a*x - 18*A*b*x + A*a)/(a^7*x^(3/2)) - 1/1920*(6555*B*a*b^5*x^(9/2
) - 22005*A*b^6*x^(9/2) + 29310*B*a^2*b^4*x^(7/2) - 96290*A*a*b^5*x^(7/2) +
 50304*B*a^3*b^3*x^(5/2) - 160384*A*a^2*b^4*x^(5/2) + 39810*B*a^4*b^2*x^(3/
2) - 121310*A*a^3*b^3*x^(3/2) + 12645*B*a^5*b*sqrt(x) - 35595*A*a^4*b^2*sqr
t(x))/((b*x + a)^5*a^7)
```

maple [A] time = 0.10, size = 266, normalized size = 1.11

$$\frac{1467A\,b^{6}x^{\frac{9}{2}}}{128\,(bx+a)^{5}\,a^{7}}-\frac{437B\,b^{5}x^{\frac{9}{2}}}{128\,(bx+a)^{5}\,a^{6}}+\frac{9629A\,b^{5}x^{\frac{7}{2}}}{192\,(bx+a)^{5}\,a^{6}}-\frac{977B\,b^{4}x^{\frac{7}{2}}}{64\,(bx+a)^{5}\,a^{5}}+\frac{1253A\,b^{4}x^{\frac{5}{2}}}{15\,(bx+a)^{5}\,a^{5}}-\frac{131B\,b^{3}x^{\frac{5}{2}}}{5\,(bx+a)^{5}\,a^{4}}+\frac{12131A\,b^{3}x^{\frac{3}{2}}}{192\,(bx+a)^{5}\,a^{4}}-\frac{1327B\,b^{2}x^{\frac{3}{2}}}{64\,(bx+a)^{5}\,a^{3}}+\frac{2373A\,b^{2}\sqrt{x}}{128\,(bx+a)^{5}\,a^{3}}-\frac{843Bb\sqrt{x}}{128\,(bx+a)^{5}\,a^{2}}+\frac{3003A\,b^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^{7}}-\frac{693Bb\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\,a^{6}}+\frac{12Ab}{a^{7}\sqrt{x}}-\frac{2B}{a^{6}\sqrt{x}}-\frac{2A}{3a^{6}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1467/128/a^7*b^6/(b*x+a)^5*x^(9/2)*A-437/128/a^6*b^5/(b*x+a)^5*x^(9/2)*B+96
29/192/a^6*b^5/(b*x+a)^5*A*x^(7/2)-977/64/a^5*b^4/(b*x+a)^5*B*x^(7/2)+1253/
15/a^5*b^4/(b*x+a)^5*x^(5/2)*A-131/5/a^4*b^3/(b*x+a)^5*x^(5/2)*B+12131/192/
a^4*b^3/(b*x+a)^5*x^(3/2)*A-1327/64/a^3*b^2/(b*x+a)^5*x^(3/2)*B+2373/128/a^
3*b^2/(b*x+a)^5*x^(1/2)*A-843/128/a^2*b/(b*x+a)^5*x^(1/2)*B+3003/128/a^7*b^
2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-693/128/a^6*b/(a*b)^(1/2)*a
rctan(1/(a*b)^(1/2)*b*x^(1/2))*B-2/3*A/a^6/x^(3/2)+12/a^7/x^(1/2)*A*b-2/a^6
/x^(1/2)*B
```

maxima [A] time = 1.44, size = 233, normalized size = 0.97

$$-\frac{1280\,Aa^{6}+3465\,\left(3\,Bab^{5}-13\,Ab^{6}\right)x^{6}+16170\,\left(3\,Ba^{2}b^{4}-13\,Aab^{5}\right)x^{5}+29568\,\left(3\,Ba^{3}b^{3}-13\,Aa^{2}b^{4}\right)x^{4}+26070\,\left(3\,Ba^{4}b^{2}-13\,Aa^{3}b^{3}\right)x^{3}+10615\,\left(3\,Ba^{5}b-13\,Aa^{4}b^{2}\right)x^{2}+1280\,\left(3\,Ba^{6}-13\,Aa^{5}b\right)x}{1920\,\left(a^{7}b^{5}x^{\frac{13}{2}}+5\,a^{8}b^{4}x^{\frac{11}{2}}+10\,a^{9}b^{3}x^{\frac{9}{2}}+10\,a^{10}b^{2}x^{\frac{7}{2}}+5\,a^{11}bx^{\frac{5}{2}}+a^{12}x^{\frac{3}{2}}\right)}-\frac{231\,\left(3\,Bab-13\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/1920*(1280*A*a^6 + 3465*(3*B*a*b^5 - 13*A*b^6)*x^6 + 16170*(3*B*a^2*b^4
- 13*A*a*b^5)*x^5 + 29568*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^4 + 26070*(3*B*a^4
*b^2 - 13*A*a^3*b^3)*x^3 + 10615*(3*B*a^5*b - 13*A*a^4*b^2)*x^2 + 1280*(3*B
*a^6 - 13*A*a^5*b)*x)/(a^7*b^5*x^(13/2) + 5*a^8*b^4*x^(11/2) + 10*a^9*b^3*x
^(9/2) + 10*a^10*b^2*x^(7/2) + 5*a^11*b*x^(5/2) + a^12*x^(3/2)) - 231/128*(
3*B*a*b - 13*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7)
```

mupad [B] time = 1.33, size = 207, normalized size = 0.86

$$\frac{\frac{2\,x\,(13\,A\,b-3\,B\,a)}{3\,a^2}-\frac{2\,A}{3\,a}+\frac{869\,b^2\,x^3\,(13\,A\,b-3\,B\,a)}{64\,a^4}+\frac{77\,b^3\,x^4\,(13\,A\,b-3\,B\,a)}{5\,a^5}+\frac{539\,b^4\,x^5\,(13\,A\,b-3\,B\,a)}{64\,a^6}+\frac{231\,b^5\,x^6\,(13\,A\,b-3\,B\,a)}{128\,a^7}+\frac{2123\,b\,x^2\,(13\,A\,b-3\,B\,a)}{384\,a^3}}{a^5\,x^{3/2}+b^5\,x^{13/2}+5\,a^4\,b\,x^{5/2}+5\,a\,b^4\,x^{11/2}+10\,a^3\,b^2\,x^{7/2}+10\,a^2\,b^3\,x^{9/2}}+\frac{231\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(13\,A\,b-3\,B\,a)}{128\,a^{15/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((2*x*(13*A*b - 3*B*a))/(3*a^2) - (2*A)/(3*a) + (869*b^2*x^3*(13*A*b - 3*B*
a))/(64*a^4) + (77*b^3*x^4*(13*A*b - 3*B*a))/(5*a^5) + (539*b^4*x^5*(13*A*b
 - 3*B*a))/(64*a^6) + (231*b^5*x^6*(13*A*b - 3*B*a))/(128*a^7) + (2123*b*x^
2*(13*A*b - 3*B*a))/(384*a^3))/(a^5*x^(3/2) + b^5*x^(13/2) + 5*a^4*b*x^(5/2
) + 5*a*b^4*x^(11/2) + 10*a^3*b^2*x^(7/2) + 10*a^2*b^3*x^(9/2)) + (231*b^(1
/2)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(13*A*b - 3*B*a))/(128*a^(15/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.709 $\int x^{7/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2aAx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2bBx^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2aAx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2bBx^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*(A*b + a*B
)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b*B*x^(13/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{7/2}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^{7/2}+b(Ab+aB)x^{9/2}+b^2Bx^{11/2}\right)dx}{ab+b^2x}\\&=\frac{2aAx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2(Ab+aB)x^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}+\frac{2b}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{9/2}\sqrt{(a+bx)^2}\,(13a(11A+9Bx)+9bx(13A+11Bx))}{1287(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(9/2)*Sqrt[(a + b*x)^2]*(13*a*(11*A + 9*B*x) + 9*b*x*(13*A + 11*B*x)))
/(1287*(a + b*x))
```

IntegrateAlgebraic [A] time = 9.97, size = 59, normalized size = 0.49

$$\frac{2\sqrt{(a+bx)^2}\left(143aAx^{9/2}+117aBx^{11/2}+117Abx^{11/2}+99bBx^{13/2}\right)}{1287(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(143*a*A*x^(9/2) + 117*A*b*x^(11/2) + 117*a*B*x^(11/2)
 + 99*b*B*x^(13/2)))/(1287*(a + b*x))
```

fricas [A] time = 0.42, size = 32, normalized size = 0.27

$$\frac{2}{1287}\left(99\,Bbx^{6}+143\,Aax^{4}+117\,(Ba+Ab)x^{5}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*B*b*x^6 + 143*A*a*x^4 + 117*(B*a + A*b)*x^5)*sqrt(x)
```

giac [A] time = 0.18, size = 53, normalized size = 0.44

$$\frac{2}{13}\,Bbx^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{2}{11}\,Bax^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{11}\,Abx^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Aax^{\frac{9}{2}}\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b*x^(13/2)*sgn(b*x + a) + 2/11*B*a*x^(11/2)*sgn(b*x + a) + 2/11*A*b*
x^(11/2)*sgn(b*x + a) + 2/9*A*a*x^(9/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(99Bb\,x^{2}+117Abx+117Bax+143Aa\right)\sqrt{(bx+a)^{2}}\;x^{\frac{9}{2}}}{1287\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/1287*x^(9/2)*(99*B*b*x^2+117*A*b*x+117*B*a*x+143*A*a)*((b*x+a)^2)^(1/2)/(
b*x+a)
```

maxima [A] time = 0.54, size = 35, normalized size = 0.29

$$\frac{2}{143}\left(11\,bx^{2}+13\,ax\right)Bx^{\frac{9}{2}}+\frac{2}{99}\left(9\,bx^{2}+11\,ax\right)Ax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/143*(11*b*x^2 + 13*a*x)*B*x^(9/2) + 2/99*(9*b*x^2 + 11*a*x)*A*x^(7/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{7/2}\,\sqrt{(a+b\,x)^2}\;(A+B\,x)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(7/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.710 $\int x^{5/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{2aAx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2bBx^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{2aAx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2bBx^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*(A*b + a*B
)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b*B*x^(11/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{5/2}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^{5/2}+b(Ab+aB)x^{7/2}+b^2Bx^{9/2}\right)dx}{ab+b^2x}\\&=\frac{2aAx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2(Ab+aB)x^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{7/2}\sqrt{(a+bx)^2}\,(11a(9A+7Bx)+7bx(11A+9Bx))}{693(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(7/2)*Sqrt[(a + b*x)^2]*(11*a*(9*A + 7*B*x) + 7*b*x*(11*A + 9*B*x)))/(
693*(a + b*x))
```

IntegrateAlgebraic [A] time = 8.40, size = 59, normalized size = 0.49

$$\frac{2\sqrt{(a+bx)^2}\left(99aAx^{7/2}+77aBx^{9/2}+77Abx^{9/2}+63bBx^{11/2}\right)}{693(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(99*a*A*x^(7/2) + 77*A*b*x^(9/2) + 77*a*B*x^(9/2) + 63
*b*B*x^(11/2)))/(693*(a + b*x))
```

fricas [A] time = 0.40, size = 32, normalized size = 0.27

$$\frac{2}{693}\left(63\,Bbx^5+99\,Aax^3+77\,(Ba+Ab)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*b*x^5 + 99*A*a*x^3 + 77*(B*a + A*b)*x^4)*sqrt(x)
```

giac [A] time = 0.23, size = 53, normalized size = 0.44

$$\frac{2}{11}\,Bbx^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Bax^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Abx^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{7}\,Aax^{\frac{7}{2}}\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b*x^(11/2)*sgn(b*x + a) + 2/9*B*a*x^(9/2)*sgn(b*x + a) + 2/9*A*b*x^(
9/2)*sgn(b*x + a) + 2/7*A*a*x^(7/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(63Bb\,x^2+77Abx+77Bax+99Aa\right)\sqrt{(bx+a)^2}\;x^{\frac{7}{2}}}{693\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/693*x^(7/2)*(63*B*b*x^2+77*A*b*x+77*B*a*x+99*A*a)*((b*x+a)^2)^(1/2)/(b*x+
a)
```

maxima [A] time = 0.62, size = 35, normalized size = 0.29

$$\frac{2}{99}\left(9\,bx^2+11\,ax\right)Bx^{\frac{7}{2}}+\frac{2}{63}\left(7\,bx^2+9\,ax\right)Ax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/99*(9*b*x^2 + 11*a*x)*B*x^(7/2) + 2/63*(7*b*x^2 + 9*a*x)*A*x^(5/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{5/2}\,\sqrt{(a+b\,x)^2}\;(A+B\,x)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(5/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.711 $\int x^{3/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2aAx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2bBx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2aAx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2bBx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*(A*b + a*B
)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b*B*x^(9/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^{3/2}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^{3/2}+b(Ab+aB)x^{5/2}+b^2Bx^{7/2}\right)dx}{ab+b^2x}\\ &= \frac{2aAx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2(Ab+aB)x^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2bB}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{5/2}\sqrt{(a+bx)^2}\,(9a(7A+5Bx)+5bx(9A+7Bx))}{315(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(5/2)*Sqrt[(a + b*x)^2]*(9*a*(7*A + 5*B*x) + 5*b*x*(9*A + 7*B*x)))/(31
5*(a + b*x))
```

IntegrateAlgebraic [A] time = 6.66, size = 59, normalized size = 0.49

$$\frac{2\sqrt{(a+bx)^2}\left(63aAx^{5/2}+45aBx^{7/2}+45Abx^{7/2}+35bBx^{9/2}\right)}{315(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(63*a*A*x^(5/2) + 45*A*b*x^(7/2) + 45*a*B*x^(7/2) + 35
*b*B*x^(9/2)))/(315*(a + b*x))
```

fricas [A] time = 0.41, size = 32, normalized size = 0.27

$$\frac{2}{315}\left(35\,Bbx^4+63\,Aax^2+45\,(Ba+Ab)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b*x^4 + 63*A*a*x^2 + 45*(B*a + A*b)*x^3)*sqrt(x)
```

giac [A] time = 0.21, size = 53, normalized size = 0.44

$$\frac{2}{9}\,Bbx^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Bax^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Abx^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Aax^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b*x^(9/2)*sgn(b*x + a) + 2/7*B*a*x^(7/2)*sgn(b*x + a) + 2/7*A*b*x^(7/
2)*sgn(b*x + a) + 2/5*A*a*x^(5/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(35Bb\,x^2+45Abx+45Bax+63Aa\right)\sqrt{(bx+a)^2}\;x^{\frac{5}{2}}}{315\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*x^(5/2)*(35*B*b*x^2+45*A*b*x+45*B*a*x+63*A*a)*((b*x+a)^2)^(1/2)/(b*x+
a)
```

maxima [A] time = 0.52, size = 35, normalized size = 0.29

$$\frac{2}{63}\left(7\,bx^2+9\,ax\right)Bx^{\frac{5}{2}}+\frac{2}{35}\left(5\,bx^2+7\,ax\right)Ax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*b*x^2 + 9*a*x)*B*x^(5/2) + 2/35*(5*b*x^2 + 7*a*x)*A*x^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3/2}\,\sqrt{(a+b\,x)^2}\;(A+B\,x)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.712 $\int \sqrt{x}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2aAx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2bBx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2aAx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2bBx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*(A*b + a*B
)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*b*B*x^(7/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \sqrt{x}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(aAb\sqrt{x}+b(Ab+aB)x^{3/2}+b^2Bx^{5/2}\right)dx}{ab+b^2x}\\ &= \frac{2aAx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2(Ab+aB)x^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{3/2}\sqrt{(a+bx)^2}\,(7a(5A+3Bx)+3bx(7A+5Bx))}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(3/2)*Sqrt[(a + b*x)^2]*(7*a*(5*A + 3*B*x) + 3*b*x*(7*A + 5*B*x)))/(10
5*(a + b*x))
```

IntegrateAlgebraic [A] time = 5.83, size = 59, normalized size = 0.49

$$\frac{2\sqrt{(a+bx)^2}\left(35aAx^{3/2}+21aBx^{5/2}+21Abx^{5/2}+15bBx^{7/2}\right)}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(35*a*A*x^(3/2) + 21*A*b*x^(5/2) + 21*a*B*x^(5/2) + 15
*b*B*x^(7/2)))/(105*(a + b*x))
```

fricas [A] time = 0.41, size = 30, normalized size = 0.25

$$\frac{2}{105}\left(15\,Bbx^3+35\,Aax+21\,(Ba+Ab)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*b*x^3 + 35*A*a*x + 21*(B*a + A*b)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.44

$$\frac{2}{7}\,Bbx^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Bax^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Abx^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Aax^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b*x^(7/2)*sgn(b*x + a) + 2/5*B*a*x^(5/2)*sgn(b*x + a) + 2/5*A*b*x^(5/
2)*sgn(b*x + a) + 2/3*A*a*x^(3/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(15Bb\,x^2+21Abx+21Bax+35Aa\right)\sqrt{\left(bx+a\right)^2}\;x^{\frac{3}{2}}}{105\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*x^(3/2)*(15*B*b*x^2+21*A*b*x+21*B*a*x+35*A*a)*((b*x+a)^2)^(1/2)/(b*x+
a)
```

maxima [A] time = 0.59, size = 35, normalized size = 0.29

$$\frac{2}{35}\left(5\,bx^2+7\,ax\right)Bx^{\frac{3}{2}}+\frac{2}{15}\left(3\,bx^2+5\,ax\right)A\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*b*x^2 + 7*a*x)*B*x^(3/2) + 2/15*(3*b*x^2 + 5*a*x)*A*sqrt(x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.713 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=118

$$\frac{2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2aA\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2bBx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2aA\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2bBx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[x],x]
```

```
[Out] (2*a*A*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*(A*b + a*B)*x^
(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*b*B*x^(5/2)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{\sqrt{x}}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{\sqrt{x}}+b(Ab+aB)\sqrt{x}+b^2Bx^{3/2}\right)dx}{ab+b^2x}\\
&= \frac{2aA\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2(Ab+aB)x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2bBx^{5/}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.42

$$\frac{2\sqrt{x}\,\sqrt{(a+bx)^2}\,(5a(3A+Bx)+bx(5A+3Bx))}{15(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[(a + b*x)^2]*(5*a*(3*A + B*x) + b*x*(5*A + 3*B*x)))/(15*(a
+ b*x))
```

IntegrateAlgebraic [A] time = 5.14, size = 59, normalized size = 0.50

$$\frac{2\sqrt{(a+bx)^2}\left(15aA\sqrt{x}+5aBx^{3/2}+5Abx^{3/2}+3bBx^{5/2}\right)}{15(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(15*a*A*Sqrt[x] + 5*A*b*x^(3/2) + 5*a*B*x^(3/2) + 3*b*
B*x^(5/2)))/(15*(a + b*x))
```

fricas [A] time = 0.41, size = 27, normalized size = 0.23

$$\frac{2}{15}\left(3\,Bbx^2+15\,Aa+5\,(Ba+Ab)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b*x^2 + 15*A*a + 5*(B*a + A*b)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.45

$$\frac{2}{5}\,Bbx^{\frac{5}{2}}\mathrm{sgn}\,(bx+a)+\frac{2}{3}\,Bax^{\frac{3}{2}}\mathrm{sgn}\,(bx+a)+\frac{2}{3}\,Abx^{\frac{3}{2}}\mathrm{sgn}\,(bx+a)+2\,Aa\sqrt{x}\,\mathrm{sgn}\,(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b*x^(5/2)*sgn(b*x + a) + 2/3*B*a*x^(3/2)*sgn(b*x + a) + 2/3*A*b*x^(3/
2)*sgn(b*x + a) + 2*A*a*sqrt(x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(3Bb\,x^2+5Abx+5Bax+15Aa\right)\sqrt{(bx+a)^2}\,\sqrt{x}}{15\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x)
```

```
[Out] 2/15*x^(1/2)*(3*B*b*x^2+5*A*b*x+5*B*a*x+15*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [A] time = 0.50, size = 34, normalized size = 0.29

$$\frac{2}{15}\left(3\,bx^2+5\,ax\right)B\sqrt{x}+\frac{2\left(bx^2+3\,ax\right)A}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*b*x^2 + 5*a*x)*B*sqrt(x) + 2/3*(b*x^2 + 3*a*x)*A/sqrt(x)
```

mupad [B] time = 1.31, size = 56, normalized size = 0.47

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^3}{5}+\frac{x^2\,(10\,A\,b+10\,B\,a)}{15\,b}+\frac{2\,A\,a\,x}{b}\right)}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^3)/5 + (x^2*(10*A*b + 10*B*a))/(15*b) + (2*A*a
*x)/b))/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{(a+bx)^2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt((a + b*x)**2)/sqrt(x), x)
```

3.714 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2bBx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2bBx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(3/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*(A*b + a*B)
*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b*B*x^(3/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^{3/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{3/2}}+\frac{b(Ab+aB)}{\sqrt{x}}+b^2B\sqrt{x}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2(Ab+aB)\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2bBx^{3}}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 0.41

$$\frac{2\sqrt{(a+bx)^2}\,(bx(3A+Bx)-3a(A-Bx))}{3\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-3*a*(A - B*x) + b*x*(3*A + B*x)))/(3*Sqrt[x]*(a + b*
x))
```

IntegrateAlgebraic [A] time = 5.04, size = 48, normalized size = 0.41

$$\frac{2\sqrt{(a+bx)^2}\left(-3aA+3aBx+3Abx+bBx^2\right)}{3\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-3*a*A + 3*A*b*x + 3*a*B*x + b*B*x^2))/(3*Sqrt[x]*(a
+ b*x))
```

fricas [A] time = 0.42, size = 26, normalized size = 0.22

$$\frac{2\left(Bbx^2-3\,Aa+3\,(Ba+Ab)x\right)}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*b*x^2 - 3*A*a + 3*(B*a + A*b)*x)/sqrt(x)
```

giac [A] time = 0.18, size = 53, normalized size = 0.46

$$\frac{2}{3}\,Bbx^{\frac{3}{2}}\mathrm{sgn}\,(bx+a)+2\,Ba\sqrt{x}\,\mathrm{sgn}\,(bx+a)+2\,Ab\sqrt{x}\,\mathrm{sgn}\,(bx+a)-\frac{2\,Aa\mathrm{sgn}\,(bx+a)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b*x^(3/2)*sgn(b*x + a) + 2*B*a*sqrt(x)*sgn(b*x + a) + 2*A*b*sqrt(x)*s
gn(b*x + a) - 2*A*a*sgn(b*x + a)/sqrt(x)
```

maple [A] time = 0.05, size = 44, normalized size = 0.38

$$-\frac{2\left(-Bb\,x^2-3Abx-3Bax+3Aa\right)\sqrt{(bx+a)^2}}{3\,(bx+a)\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x)
```

```
[Out] -2/3*(-B*b*x^2-3*A*b*x-3*B*a*x+3*A*a)*((b*x+a)^2)^(1/2)/x^(1/2)/(b*x+a)
```

maxima [A] time = 0.62, size = 33, normalized size = 0.28

$$\frac{2\left(bx^2+3\,ax\right)B}{3\,\sqrt{x}}+\frac{2\left(bx^2-ax\right)A}{x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*x^2 + 3*a*x)*B/sqrt(x) + 2*(b*x^2 - a*x)*A/x^(3/2)
```

mupad [B] time = 1.32, size = 53, normalized size = 0.46

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^2}{3}-\frac{2\,A\,a}{b}+\frac{x\,(6\,A\,b+6\,B\,a)}{3\,b}\right)}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^2)/3 - (2*A*a)/b + (x*(6*A*b + 6*B*a))/(3*b)))
/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(3/2),x)
```

```
[Out] Timed out
```

3.715 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{5/2}}\,dx$

Optimal. Leaf size=116

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}+\frac{2bB\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Rubi [A] time = 0.04, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}+\frac{2bB\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(5/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*(A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*b*B*Sqrt[x]*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^{5/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{5/2}}+\frac{b(Ab+aB)}{x^{3/2}}+\frac{b^2B}{\sqrt{x}}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2bB\sqrt{x}\,\sqrt{a^2\cdots}}{a\cdots}\end{aligned}$$

Mathematica [A] time = 0.03, size = 46, normalized size = 0.40

$$-\frac{2\sqrt{(a+bx)^2}\,(a(A+3Bx)+3bx(A-Bx))}{3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*b*x*(A - B*x) + a*(A + 3*B*x)))/(3*x^(3/2)*(a + b*
x))
```

IntegrateAlgebraic [A] time = 9.42, size = 49, normalized size = 0.42

$$\frac{2\sqrt{(a+bx)^2}\left(-aA-3aBx-3Abx+3bBx^2\right)}{3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-(a*A) - 3*A*b*x - 3*a*B*x + 3*b*B*x^2))/(3*x^(3/2)*(
a + b*x))
```

fricas [A] time = 0.42, size = 27, normalized size = 0.23

$$\frac{2\left(3\,Bbx^2-Aa-3\,(Ba+Ab)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*b*x^2 - A*a - 3*(B*a + A*b)*x)/x^(3/2)
```

giac [A] time = 0.16, size = 51, normalized size = 0.44

$$2\,Bb\sqrt{x}\,\mathrm{sgn}\,(bx+a)-\frac{2\left(3\,Bax\mathrm{sgn}\,(bx+a)+3\,Abx\mathrm{sgn}\,(bx+a)+Aa\mathrm{sgn}\,(bx+a)\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2*B*b*sqrt(x)*sgn(b*x + a) - 2/3*(3*B*a*x*sgn(b*x + a) + 3*A*b*x*sgn(b*x +
a) + A*a*sgn(b*x + a))/x^(3/2)
```

maple [A] time = 0.05, size = 43, normalized size = 0.37

$$-\frac{2\left(-3Bb\,x^2+3Abx+3Bax+Aa\right)\sqrt{(bx+a)^2}}{3\,(bx+a)\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x)
```

```
[Out] -2/3*(-3*B*b*x^2+3*A*b*x+3*B*a*x+A*a)*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)
```

maxima [A] time = 0.64, size = 33, normalized size = 0.28

$$\frac{2\left(bx^2-ax\right)B}{x^{\frac{3}{2}}}-\frac{2\left(3\,bx^2+ax\right)A}{3\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2*(b*x^2 - a*x)*B/x^(3/2) - 2/3*(3*b*x^2 + a*x)*A/x^(5/2)
```

mupad [B] time = 1.36, size = 54, normalized size = 0.47

$$-\frac{\sqrt{(a+bx)^2}\left(\frac{2Aa}{3b}-2Bx^2+\frac{x(6Ab+6Ba)}{3b}\right)}{x^{5/2}+\frac{ax^{3/2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*A*a)/(3*b) - 2*B*x^2 + (x*(6*A*b + 6*B*a))/(3*b))
)/(x^(5/2) + (a*x^(3/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(5/2),x)
```

```
[Out] Timed out
```

3.716 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{7/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^{3/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^{3/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(7/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*(A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*b*B*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^{7/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{7/2}}+\frac{b(Ab+aB)}{x^{5/2}}+\frac{b^2B}{x^{3/2}}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2bB\sqrt{a^2+\cdots}}{\sqrt{x}\,(\cdots}\end{aligned}$$

Mathematica [A] time = 0.03, size = 48, normalized size = 0.41

$$-\frac{2\sqrt{(a+bx)^2}\,(a(3A+5Bx)+5bx(A+3Bx))}{15x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(5*b*x*(A + 3*B*x) + a*(3*A + 5*B*x)))/(15*x^(5/2)*(a
 + b*x))
```

IntegrateAlgebraic [A] time = 16.10, size = 49, normalized size = 0.42

$$-\frac{2\sqrt{(a+bx)^2}\left(3aA+5aBx+5Abx+15bBx^2\right)}{15x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a*A + 5*A*b*x + 5*a*B*x + 15*b*B*x^2))/(15*x^(5/2)
*(a + b*x))
```

fricas [A] time = 0.40, size = 27, normalized size = 0.23

$$-\frac{2\left(15\,Bbx^2+3\,Aa+5\,(Ba+Ab)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*B*b*x^2 + 3*A*a + 5*(B*a + A*b)*x)/x^(5/2)
```

giac [A] time = 0.17, size = 51, normalized size = 0.43

$$-\frac{2\left(15\,Bbx^2\mathrm{sgn}\,(bx+a)+5\,Bax\mathrm{sgn}\,(bx+a)+5\,Abx\mathrm{sgn}\,(bx+a)+3\,Aa\mathrm{sgn}\,(bx+a)\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*B*b*x^2*sgn(b*x + a) + 5*B*a*x*sgn(b*x + a) + 5*A*b*x*sgn(b*x + a
) + 3*A*a*sgn(b*x + a))/x^(5/2)
```

maple [A] time = 0.06, size = 44, normalized size = 0.37

$$-\frac{2\left(15Bb\,x^2+5Abx+5Bax+3Aa\right)\sqrt{(bx+a)^2}}{15\,(bx+a)\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x)
```

```
[Out] -2/15*(15*B*b*x^2+5*A*b*x+5*B*a*x+3*A*a)*((b*x+a)^2)^(1/2)/x^(5/2)/(b*x+a)
```

maxima [A] time = 0.57, size = 34, normalized size = 0.29

$$-\frac{2\left(3\,bx^2+ax\right)B}{3\,x^{\frac{5}{2}}}-\frac{2\left(5\,bx^2+3\,ax\right)A}{15\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*x^2 + a*x)*B/x^(5/2) - 2/15*(5*b*x^2 + 3*a*x)*A/x^(7/2)
```

mupad [B] time = 1.36, size = 54, normalized size = 0.46

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(2\,B\,x^2+\frac{2\,A\,a}{5\,b}+\frac{x\,(10\,A\,b+10\,B\,a)}{15\,b}\right)}{x^{7/2}+\frac{a\,x^{5/2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(2*B*x^2 + (2*A*a)/(5*b) + (x*(10*A*b + 10*B*a))/(15*
b)))/(x^(7/2) + (a*x^(5/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(7/2),x)
```

```
[Out] Timed out
```

3.717 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{9/2}}\,dx$

Optimal. Leaf size=120

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^{5/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}$$

Rubi [A] time = 0.04, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^{5/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(9/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^(7/2)*(a + b*x)) - (2*(A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*b*B*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{9/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^{9/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{9/2}}+\frac{b(Ab+aB)}{x^{7/2}}+\frac{b^2B}{x^{5/2}}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2bB\sqrt{a^2+2a}}{3x^{3/2}(a}\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$-\frac{2\sqrt{(a+bx)^2}\,(3a(5A+7Bx)+7bx(3A+5Bx))}{105x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(7*b*x*(3*A + 5*B*x) + 3*a*(5*A + 7*B*x)))/(105*x^(7/
2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 22.22, size = 49, normalized size = 0.41

$$-\frac{2\sqrt{(a+bx)^2}\left(15aA+21aBx+21Abx+35bBx^2\right)}{105x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(15*a*A + 21*A*b*x + 21*a*B*x + 35*b*B*x^2))/(105*x^(
7/2)*(a + b*x))
```

fricas [A] time = 0.42, size = 27, normalized size = 0.22

$$-\frac{2\left(35\,Bbx^2+15\,Aa+21\,(Ba+Ab)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(35*B*b*x^2 + 15*A*a + 21*(B*a + A*b)*x)/x^(7/2)
```

giac [A] time = 0.19, size = 51, normalized size = 0.42

$$-\frac{2\left(35\,Bbx^2\mathrm{sgn}\,(bx+a)+21\,Bax\mathrm{sgn}\,(bx+a)+21\,Abx\mathrm{sgn}\,(bx+a)+15\,Aa\mathrm{sgn}\,(bx+a)\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(35*B*b*x^2*sgn(b*x + a) + 21*B*a*x*sgn(b*x + a) + 21*A*b*x*sgn(b*x
+ a) + 15*A*a*sgn(b*x + a))/x^(7/2)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$-\frac{2\left(35Bb\,x^2+21Abx+21Bax+15Aa\right)\sqrt{(bx+a)^2}}{105\,(bx+a)\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x)
```

```
[Out] -2/105*(35*B*b*x^2+21*A*b*x+21*B*a*x+15*A*a)*((b*x+a)^2)^(1/2)/x^(7/2)/(b*x
+a)
```

maxima [A] time = 0.66, size = 35, normalized size = 0.29

$$-\frac{2\left(5\,bx^2+3\,ax\right)B}{15\,x^{\frac{7}{2}}}-\frac{2\left(7\,bx^2+5\,ax\right)A}{35\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x, algorithm="maxima")
```

[Out] -2/15*(5*b*x^2 + 3*a*x)*B/x^(7/2) - 2/35*(7*b*x^2 + 5*a*x)*A/x^(9/2)

mupad [B] time = 1.35, size = 54, normalized size = 0.45

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^2}{3}+\frac{2\,A\,a}{7\,b}+\frac{x\,(42\,A\,b+42\,B\,a)}{105\,b}\right)}{x^{9/2}+\frac{a\,x^{7/2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(9/2),x)

[Out] -(((a + b*x)^2)^(1/2)*((2*B*x^2)/3 + (2*A*a)/(7*b) + (x*(42*A*b + 42*B*a))/(105*b)))/(x^(9/2) + (a*x^(7/2))/b)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(9/2),x)

[Out] Timed out

3.718 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{15(a+bx)}+\frac{6abx^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{2a^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(a}{11(a+bx)}$$

Rubi [A] time = 0.09, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{15(a+bx)}+\frac{6abx^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{2a^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{11(a+bx)}+\frac{2a^3Ax^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2b^3Bx^{17/2}\sqrt{a^2+2abx+b^2x^2}}{17(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (6*a*b*(
A*b + a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x)) + (2*b^2*
(A*b + 3*a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a + b*x)) + (2*b
^3*B*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{7/2}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^{7/2}+a^2b^3(3Ab+aB)x^{9/2}+3ab^4(Ab\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{2a^3Ax^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2a^2(3Ab+aB)x^{11/2}\sqrt{a^2+2abx+}}{11(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{9/2}\sqrt{(a+bx)^2}\left(1105a^3(11A+9Bx)+2295a^2bx(13A+11Bx)+1683ab^2x^2(15A+13Bx)+429b^3x^3(17A+15Bx)\right)}{109395(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(9/2)*Sqrt[(a + b*x)^2]*(1105*a^3*(11*A + 9*B*x) + 2295*a^2*b*x*(13*A
+ 11*B*x) + 1683*a*b^2*x^2*(15*A + 13*B*x) + 429*b^3*x^3*(17*A + 15*B*x)))/
(109395*(a + b*x))
```

IntegrateAlgebraic [A] time = 13.75, size = 115, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\left(12155a^3Ax^{9/2}+9945a^3Bx^{11/2}+29835a^2Abx^{11/2}+25245a^2bBx^{13/2}+25245aAb^2x^{13/2}+21879ab^2Bx^{15/2}+7293Ab^3x^{15/2}+6435b^3Bx^{17/2}\right)}{109395(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(12155*a^3*A*x^(9/2) + 29835*a^2*A*b*x^(11/2) + 9945*a
^3*B*x^(11/2) + 25245*a*A*b^2*x^(13/2) + 25245*a^2*b*B*x^(13/2) + 7293*A*b^
3*x^(15/2) + 21879*a*b^2*B*x^(15/2) + 6435*b^3*B*x^(17/2)))/(109395*(a + b*
x))
```

fricas [A] time = 0.42, size = 78, normalized size = 0.35

$$\frac{2}{109395}\left(6435\,Bb^3x^8+12155\,Aa^3x^4+7293\left(3\,Bab^2+Ab^3\right)x^7+25245\left(Ba^2b+Aab^2\right)x^6+9945\left(Ba^3+3\,Aa^2b\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/109395*(6435*B*b^3*x^8 + 12155*A*a^3*x^4 + 7293*(3*B*a*b^2 + A*b^3)*x^7 +
 25245*(B*a^2*b + A*a*b^2)*x^6 + 9945*(B*a^3 + 3*A*a^2*b)*x^5)*sqrt(x)
```

giac [A] time = 0.20, size = 125, normalized size = 0.57

$$\frac{2}{17}\,Bb^3x^{\frac{17}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Bab^2x^{\frac{15}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{15}\,Ab^3x^{\frac{15}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{13}\,Ba^2bx^{\frac{13}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{13}\,Aab^2x^{\frac{13}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{11}\,Ba^3x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{11}\,Aa^2bx^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{9}\,Aa^3x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/17*B*b^3*x^(17/2)*sgn(b*x + a) + 2/5*B*a*b^2*x^(15/2)*sgn(b*x + a) + 2/15
*A*b^3*x^(15/2)*sgn(b*x + a) + 6/13*B*a^2*b*x^(13/2)*sgn(b*x + a) + 6/13*A*
a*b^2*x^(13/2)*sgn(b*x + a) + 2/11*B*a^3*x^(11/2)*sgn(b*x + a) + 6/11*A*a^2
*b*x^(11/2)*sgn(b*x + a) + 2/9*A*a^3*x^(9/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(6435B\,b^3x^4+7293A\,b^3x^3+21879Ba\,b^2x^3+25245Aa\,b^2x^2+25245B\,a^2b\,x^2+29835A\,a^2bx+9945B\,a^3x+12155A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^{\frac{9}{2}}}{109395\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/109395*x^(9/2)*(6435*B*b^3*x^4+7293*A*b^3*x^3+21879*B*a*b^2*x^3+25245*A*a
*b^2*x^2+25245*B*a^2*b*x^2+29835*A*a^2*b*x+9945*B*a^3*x+12155*A*a^3)*((b*x+
a)^2)^(3/2)/(b*x+a)^3
```

maxima [A] time = 0.57, size = 137, normalized size = 0.62

$$\frac{2}{6435}\left(33\left(13\,b^3x^2+15\,ab^2x\right)x^{\frac{11}{2}}+90\left(11\,ab^2x^2+13\,a^2bx\right)x^{\frac{9}{2}}+65\left(9\,a^2bx^2+11\,a^3x\right)x^{\frac{7}{2}}\right)A+\frac{2}{36465}\left(143\left(15\,b^3x^2+17\,ab^2x\right)x^{\frac{13}{2}}+374\left(13\,ab^2x^2+15\,a^2bx\right)x^{\frac{11}{2}}+255\left(11\,a^2bx^2+13\,a^3x\right)x^{\frac{9}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/6435*(33*(13*b^3*x^2 + 15*a*b^2*x)*x^(11/2) + 90*(11*a*b^2*x^2 + 13*a^2*b
*x)*x^(9/2) + 65*(9*a^2*b*x^2 + 11*a^3*x)*x^(7/2))*A + 2/36465*(143*(15*b^3
*x^2 + 17*a*b^2*x)*x^(13/2) + 374*(13*a*b^2*x^2 + 15*a^2*b*x)*x^(11/2) + 25
5*(11*a^2*b*x^2 + 13*a^3*x)*x^(9/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{7/2} (A + B x) \left(a^2 + 2 a b x + b^2 x^2\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.719 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{13(a+bx)}+\frac{6abx^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2a^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+$$

Rubi [A] time = 0.08, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{13(a+bx)}+\frac{6abx^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2a^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{9(a+bx)}+\frac{2a^3Ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2b^3Bx^{15/2}\sqrt{a^2+2abx+b^2x^2}}{15(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (6*a*b*(A*
b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b^2*(A
*b + 3*a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x)) + (2*b^3
*B*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{5/2}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^{5/2}+a^2b^3(3Ab+aB)x^{7/2}+3ab^4(Ab+\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{2a^3Ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2a^2(3Ab+aB)x^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{7/2}\sqrt{(a+bx)^2}\,\left(715a^3(9A+7Bx)+1365a^2bx(11A+9Bx)+945ab^2x^2(13A+11Bx)+231b^3x^3(15A+13Bx)\right)}{45045(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(7/2)*Sqrt[(a + b*x)^2]*(715*a^3*(9*A + 7*B*x) + 1365*a^2*b*x*(11*A +
9*B*x) + 945*a*b^2*x^2*(13*A + 11*B*x) + 231*b^3*x^3*(15*A + 13*B*x)))/(450
45*(a + b*x))
```

IntegrateAlgebraic [A] time = 11.47, size = 115, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\left(6435a^3Ax^{7/2}+5005a^3Bx^{9/2}+15015a^2Abx^{9/2}+12285a^2bBx^{11/2}+12285aAb^2x^{11/2}+10395ab^2Bx^{13/2}+3465Ab^3x^{13/2}+3003b^3Bx^{15/2}\right)}{45045(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(6435*a^3*A*x^(7/2) + 15015*a^2*A*b*x^(9/2) + 5005*a^3
*B*x^(9/2) + 12285*a*A*b^2*x^(11/2) + 12285*a^2*b*B*x^(11/2) + 3465*A*b^3*x
^(13/2) + 10395*a*b^2*B*x^(13/2) + 3003*b^3*B*x^(15/2)))/(45045*(a + b*x))
```

fricas [A] time = 0.42, size = 78, normalized size = 0.35

$$\frac{2}{45045}\left(3003\,Bb^3x^7+6435\,Aa^3x^3+3465\left(3\,Bab^2+Ab^3\right)x^6+12285\left(Ba^2b+Aab^2\right)x^5+5005\left(Ba^3+3\,Aa^2b\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/45045*(3003*B*b^3*x^7 + 6435*A*a^3*x^3 + 3465*(3*B*a*b^2 + A*b^3)*x^6 + 1
2285*(B*a^2*b + A*a*b^2)*x^5 + 5005*(B*a^3 + 3*A*a^2*b)*x^4)*sqrt(x)
```

giac [A] time = 0.17, size = 125, normalized size = 0.57

$$\frac{2}{15}\,Bb^3x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{6}{13}\,Bab^2x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{6}{11}\,Ba^2bx^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{6}{11}\,Aab^2x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Ba^3x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Aa^2bx^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{7}\,Aa^3x^{\frac{7}{2}}\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^3*x^(15/2)*sgn(b*x + a) + 6/13*B*a*b^2*x^(13/2)*sgn(b*x + a) + 2/1
3*A*b^3*x^(13/2)*sgn(b*x + a) + 6/11*B*a^2*b*x^(11/2)*sgn(b*x + a) + 6/11*A
*a*b^2*x^(11/2)*sgn(b*x + a) + 2/9*B*a^3*x^(9/2)*sgn(b*x + a) + 2/3*A*a^2*b
*x^(9/2)*sgn(b*x + a) + 2/7*A*a^3*x^(7/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(3003B\,b^3x^4+3465A\,b^3x^3+10395Ba\,b^2x^3+12285Aa\,b^2x^2+12285B\,a^2b\,x^2+15015A\,a^2bx+5005B\,a^3x+6435A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}x^{\frac{7}{2}}}{45045\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/45045*x^(7/2)*(3003*B*b^3*x^4+3465*A*b^3*x^3+10395*B*a*b^2*x^3+12285*A*a*
b^2*x^2+12285*B*a^2*b*x^2+15015*A*a^2*b*x+5005*B*a^3*x+6435*A*a^3)*((b*x+a)
^2)^(3/2)/(b*x+a)^3
```

maxima [A] time = 0.63, size = 137, normalized size = 0.62

$$\frac{2}{9009}\left(63\left(11\,b^3x^2+13\,ab^2x\right)x^{\frac{9}{2}}+182\left(9\,ab^2x^2+11\,a^2bx\right)x^{\frac{7}{2}}+143\left(7\,a^2bx^2+9\,a^3x\right)x^{\frac{5}{2}}\right)A+\frac{2}{6435}\left(33\left(13\,b^3x^2+15\,ab^2x\right)x^{\frac{11}{2}}+90\left(11\,ab^2x^2+13\,a^2bx\right)x^{\frac{9}{2}}+65\left(9\,a^2bx^2+11\,a^3x\right)x^{\frac{7}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/9009*(63*(11*b^3*x^2 + 13*a*b^2*x)*x^(9/2) + 182*(9*a*b^2*x^2 + 11*a^2*b*
x)*x^(7/2) + 143*(7*a^2*b*x^2 + 9*a^3*x)*x^(5/2))*A + 2/6435*(33*(13*b^3*x^
2 + 15*a*b^2*x)*x^(11/2) + 90*(11*a*b^2*x^2 + 13*a^2*b*x)*x^(9/2) + 65*(9*a
^2*b*x^2 + 11*a^3*x)*x^(7/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{5/2}\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.720 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{11(a+bx)}+\frac{2abx^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2a^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB}{7(a+bx)}$$

Rubi [A] time = 0.08, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{11(a+bx)}+\frac{2abx^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2a^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7(a+bx)}+\frac{2a^3Ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2b^3Bx^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*a*b*(A*
b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*b^2*(A*b
 + 3*a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b^3*B
*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^{3/2}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^{3/2}+a^2b^3(3Ab+aB)x^{5/2}+3ab^4(Ab\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{2a^3Ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2a^2(3Ab+aB)x^{7/2}\sqrt{a^2+2abx+b}}{7(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{5/2}\sqrt{(a+bx)^2}\left(429a^3(7A+5Bx)+715a^2bx(9A+7Bx)+455ab^2x^2(11A+9Bx)+105b^3x^3(13A+11Bx)\right)}{15015(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(5/2)*Sqrt[(a + b*x)^2]*(429*a^3*(7*A + 5*B*x) + 715*a^2*b*x*(9*A + 7*
B*x) + 455*a*b^2*x^2*(11*A + 9*B*x) + 105*b^3*x^3*(13*A + 11*B*x)))/(15015*
(a + b*x))
```

IntegrateAlgebraic [A] time = 10.28, size = 115, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\left(3003a^3Ax^{5/2}+2145a^3Bx^{7/2}+6435a^2Abx^{7/2}+5005a^2bBx^{9/2}+5005aAb^2x^{9/2}+4095ab^2Bx^{11/2}+1365Ab^3x^{11/2}+1155b^3Bx^{13/2}\right)}{15015(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(3003*a^3*A*x^(5/2) + 6435*a^2*A*b*x^(7/2) + 2145*a^3*
B*x^(7/2) + 5005*a*A*b^2*x^(9/2) + 5005*a^2*b*B*x^(9/2) + 1365*A*b^3*x^(11/
2) + 4095*a*b^2*B*x^(11/2) + 1155*b^3*B*x^(13/2)))/(15015*(a + b*x))
```

fricas [A] time = 0.43, size = 78, normalized size = 0.35

$$\frac{2}{15015}\left(1155\,Bb^3x^6+3003\,Aa^3x^2+1365\left(3\,Bab^2+Ab^3\right)x^5+5005\left(Ba^2b+Aab^2\right)x^4+2145\left(Ba^3+3\,Aa^2b\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/15015*(1155*B*b^3*x^6 + 3003*A*a^3*x^2 + 1365*(3*B*a*b^2 + A*b^3)*x^5 + 5
005*(B*a^2*b + A*a*b^2)*x^4 + 2145*(B*a^3 + 3*A*a^2*b)*x^3)*sqrt(x)
```

giac [A] time = 0.16, size = 125, normalized size = 0.57

$$\frac{2}{13}\,Bb^3x^{\frac{13}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{11}\,Bab^2x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Ba^2bx^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Aab^2x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Ba^3x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,Aa^2bx^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Aa^3x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^3*x^(13/2)*sgn(b*x + a) + 6/11*B*a*b^2*x^(11/2)*sgn(b*x + a) + 2/1
1*A*b^3*x^(11/2)*sgn(b*x + a) + 2/3*B*a^2*b*x^(9/2)*sgn(b*x + a) + 2/3*A*a*
b^2*x^(9/2)*sgn(b*x + a) + 2/7*B*a^3*x^(7/2)*sgn(b*x + a) + 6/7*A*a^2*b*x^(
7/2)*sgn(b*x + a) + 2/5*A*a^3*x^(5/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(1155B\,b^3x^4+1365A\,b^3x^3+4095Ba\,b^2x^3+5005Aa\,b^2x^2+5005B\,a^2b\,x^2+6435A\,a^2bx+2145B\,a^3x+3003A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^{\frac{5}{2}}}{15015\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/15015*x^(5/2)*(1155*B*b^3*x^4+1365*A*b^3*x^3+4095*B*a*b^2*x^3+5005*A*a*b^
2*x^2+5005*B*a^2*b*x^2+6435*A*a^2*b*x+2145*B*a^3*x+3003*A*a^3)*((b*x+a)^2)^
(3/2)/(b*x+a)^3
```

maxima [A] time = 0.54, size = 137, normalized size = 0.62

$$\frac{2}{3465}\left(35\left(9\,b^3x^2+11\,ab^2x\right)x^{\frac{7}{2}}+110\left(7\,ab^2x^2+9\,a^2bx\right)x^{\frac{5}{2}}+99\left(5\,a^2bx^2+7\,a^3x\right)x^{\frac{3}{2}}\right)A+\frac{2}{9009}\left(63\left(11\,b^3x^2+13\,ab^2x\right)x^{\frac{9}{2}}+182\left(9\,ab^2x^2+11\,a^2bx\right)x^{\frac{7}{2}}+143\left(7\,a^2bx^2+9\,a^3x\right)x^{\frac{5}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/3465*(35*(9*b^3*x^2 + 11*a*b^2*x)*x^(7/2) + 110*(7*a*b^2*x^2 + 9*a^2*b*x)
*x^(5/2) + 99*(5*a^2*b*x^2 + 7*a^3*x)*x^(3/2))*A + 2/9009*(63*(11*b^3*x^2 +
 13*a*b^2*x)*x^(9/2) + 182*(9*a*b^2*x^2 + 11*a^2*b*x)*x^(7/2) + 143*(7*a^2*
b*x^2 + 9*a^3*x)*x^(5/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3/2}\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{3}{2}}\,(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.721 $\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{6abx^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3}{5(a+bx)}$$

Rubi [A] time = 0.08, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{6abx^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5(a+bx)}+\frac{2a^3Ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2b^3Bx^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (6*a*b*(A*
b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^2*(A*b
 + 3*a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b^3*B*x
^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \sqrt{x}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(a^3Ab^3\sqrt{x}+a^2b^3(3Ab+aB)x^{3/2}+3ab^4(Ab+\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{2a^3Ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2a^2(3Ab+aB)x^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{3/2}\sqrt{(a+bx)^2}\left(231a^3(5A+3Bx)+297a^2bx(7A+5Bx)+165ab^2x^2(9A+7Bx)+35b^3x^3(11A+9Bx)\right)}{3465(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(3/2)*Sqrt[(a + b*x)^2]*(231*a^3*(5*A + 3*B*x) + 297*a^2*b*x*(7*A + 5*
B*x) + 165*a*b^2*x^2*(9*A + 7*B*x) + 35*b^3*x^3*(11*A + 9*B*x)))/(3465*(a +
 b*x))
```

IntegrateAlgebraic [A] time = 8.78, size = 115, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\left(1155a^3Ax^{3/2}+693a^3Bx^{5/2}+2079a^2Abx^{5/2}+1485a^2bBx^{7/2}+1485aAb^2x^{7/2}+1155ab^2Bx^{9/2}+385Ab^3x^{9/2}+315b^3Bx^{11/2}\right)}{3465(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(1155*a^3*A*x^(3/2) + 2079*a^2*A*b*x^(5/2) + 693*a^3*B
*x^(5/2) + 1485*a*A*b^2*x^(7/2) + 1485*a^2*b*B*x^(7/2) + 385*A*b^3*x^(9/2)
+ 1155*a*b^2*B*x^(9/2) + 315*b^3*B*x^(11/2)))/(3465*(a + b*x))
```

fricas [A] time = 0.41, size = 76, normalized size = 0.35

$$\frac{2}{3465}\left(315\,Bb^3x^5+1155\,Aa^3x+385\left(3\,Bab^2+Ab^3\right)x^4+1485\left(Ba^2b+Aab^2\right)x^3+693\left(Ba^3+3\,Aa^2b\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/3465*(315*B*b^3*x^5 + 1155*A*a^3*x + 385*(3*B*a*b^2 + A*b^3)*x^4 + 1485*(
B*a^2*b + A*a*b^2)*x^3 + 693*(B*a^3 + 3*A*a^2*b)*x^2)*sqrt(x)
```

giac [A] time = 0.33, size = 125, normalized size = 0.57

$$\frac{2}{11}\,Bb^3x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Bab^2x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{9}\,Ab^3x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,Ba^2bx^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,Aab^2x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Ba^3x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{5}\,Aa^2bx^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Aa^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^3*x^(11/2)*sgn(b*x + a) + 2/3*B*a*b^2*x^(9/2)*sgn(b*x + a) + 2/9*A
*b^3*x^(9/2)*sgn(b*x + a) + 6/7*B*a^2*b*x^(7/2)*sgn(b*x + a) + 6/7*A*a*b^2*
x^(7/2)*sgn(b*x + a) + 2/5*B*a^3*x^(5/2)*sgn(b*x + a) + 6/5*A*a^2*b*x^(5/2)
*sgn(b*x + a) + 2/3*A*a^3*x^(3/2)*sgn(b*x + a)
```

maple [A] time = 0.06, size = 92, normalized size = 0.42

$$\frac{2\left(315B\,b^3x^4+385A\,b^3x^3+1155Ba\,b^2x^3+1485Aa\,b^2x^2+1485B\,a^2b\,x^2+2079A\,a^2bx+693B\,a^3x+1155A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x^{\frac{3}{2}}}{3465\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x)
```

```
[Out] 2/3465*x^(3/2)*(315*B*b^3*x^4+385*A*b^3*x^3+1155*B*a*b^2*x^3+1485*A*a*b^2*x
^2+1485*B*a^2*b*x^2+2079*A*a^2*b*x+693*B*a^3*x+1155*A*a^3)*((b*x+a)^2)^(3/2
)/(b*x+a)^3
```

maxima [A] time = 0.62, size = 137, normalized size = 0.62

$$\frac{2}{315}\left(5\left(7\,b^3x^2+9\,ab^2x\right)x^{\frac{5}{2}}+18\left(5\,ab^2x^2+7\,a^2bx\right)x^{\frac{3}{2}}+21\left(3\,a^2bx^2+5\,a^3x\right)\sqrt{x}\right)A+\frac{2}{3465}\left(35\left(9\,b^3x^2+11\,ab^2x\right)x^{\frac{7}{2}}+110\left(7\,ab^2x^2+9\,a^2bx\right)x^{\frac{5}{2}}+99\left(5\,a^2bx^2+7\,a^3x\right)x^{\frac{3}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(5*(7*b^3*x^2 + 9*a*b^2*x)*x^(5/2) + 18*(5*a*b^2*x^2 + 7*a^2*b*x)*x^(
3/2) + 21*(3*a^2*b*x^2 + 5*a^3*x)*sqrt(x))*A + 2/3465*(35*(9*b^3*x^2 + 11*a
*b^2*x)*x^(7/2) + 110*(7*a*b^2*x^2 + 9*a^2*b*x)*x^(5/2) + 99*(5*a^2*b*x^2 +
 7*a^3*x)*x^(3/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{x}\ (A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.722 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=218

$$\frac{2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{6abx^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB$$

Rubi [A] time = 0.08, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{6abx^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{3(a+bx)}+\frac{2a^3A\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2b^3Bx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*a^3*A*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*a^2*(3*A*b +
 a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (6*a*b*(A*b +
a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*b^2*(A*b + 3
*a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^3*B*x^(9/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{x}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{\sqrt{x}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{\sqrt{x}}+a^2b^3(3Ab+aB)\sqrt{x}+3ab^4(Ab+aB)x\right.}{b^2\left(ab+b^2x\right)}\\
&= \frac{2a^3A\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2a^2(3Ab+aB)x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 88, normalized size = 0.40

$$\frac{2\sqrt{x}\sqrt{(a+bx)^2}\left(105a^3(3A+Bx)+63a^2bx(5A+3Bx)+27ab^2x^2(7A+5Bx)+5b^3x^3(9A+7Bx)\right)}{315(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[(a + b*x)^2]*(105*a^3*(3*A + B*x) + 63*a^2*b*x*(5*A + 3*B*x
) + 27*a*b^2*x^2*(7*A + 5*B*x) + 5*b^3*x^3*(9*A + 7*B*x)))/(315*(a + b*x))
```

IntegrateAlgebraic [A] time = 7.34, size = 115, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(315a^3A\sqrt{x}+105a^3Bx^{3/2}+315a^2Abx^{3/2}+189a^2bBx^{5/2}+189aAb^2x^{5/2}+135ab^2Bx^{7/2}+45Ab^3x^{7/2}+35b^3Bx^{9/2}\right)}{315(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(315*a^3*A*Sqrt[x] + 315*a^2*A*b*x^(3/2) + 105*a^3*B*x
^(3/2) + 189*a*A*b^2*x^(5/2) + 189*a^2*b*B*x^(5/2) + 45*A*b^3*x^(7/2) + 135
*a*b^2*B*x^(7/2) + 35*b^3*B*x^(9/2)))/(315*(a + b*x))
```

fricas [A] time = 0.41, size = 73, normalized size = 0.33

$$\frac{2}{315}\left(35\,Bb^3x^4+315\,Aa^3+45\left(3\,Bab^2+Ab^3\right)x^3+189\left(Ba^2b+Aab^2\right)x^2+105\left(Ba^3+3\,Aa^2b\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/315*(35*B*b^3*x^4 + 315*A*a^3 + 45*(3*B*a*b^2 + A*b^3)*x^3 + 189*(B*a^2*b
 + A*a*b^2)*x^2 + 105*(B*a^3 + 3*A*a^2*b)*x)*sqrt(x)
```

giac [A] time = 0.19, size = 125, normalized size = 0.57

$$\frac{2}{9}\,Bb^3x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,Bab^2x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Ab^3x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{5}\,Ba^2bx^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{5}\,Aab^2x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Ba^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Aa^2bx^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Aa^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^3*x^(9/2)*sgn(b*x + a) + 6/7*B*a*b^2*x^(7/2)*sgn(b*x + a) + 2/7*A*b
^3*x^(7/2)*sgn(b*x + a) + 6/5*B*a^2*b*x^(5/2)*sgn(b*x + a) + 6/5*A*a*b^2*x^
(5/2)*sgn(b*x + a) + 2/3*B*a^3*x^(3/2)*sgn(b*x + a) + 2*A*a^2*b*x^(3/2)*sgn
(b*x + a) + 2*A*a^3*sqrt(x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(35B\,b^3x^4+45A\,b^3x^3+135Ba\,b^2x^3+189Aa\,b^2x^2+189B\,a^2b\,x^2+315A\,a^2bx+105B\,a^3x+315A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}\sqrt{x}}{315\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x)
```

```
[Out] 2/315*x^(1/2)*(35*B*b^3*x^4+45*A*b^3*x^3+135*B*a*b^2*x^3+189*A*a*b^2*x^2+18
9*B*a^2*b*x^2+315*A*a^2*b*x+105*B*a^3*x+315*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a
)^3
```

maxima [A] time = 0.62, size = 136, normalized size = 0.62

$$\frac{2}{105}\left(3\left(5\,b^3x^2+7\,ab^2x\right)x^{\frac{3}{2}}+14\left(3\,ab^2x^2+5\,a^2bx\right)\sqrt{x}+\frac{35\left(a^2bx^2+3\,a^3x\right)}{\sqrt{x}}\right)A+\frac{2}{315}\left(5\left(7\,b^3x^2+9\,ab^2x\right)x^{\frac{5}{2}}+18\left(5\,ab^2x^2+7\,a^2bx\right)x^{\frac{3}{2}}+21\left(3\,a^2bx^2+5\,a^3x\right)\sqrt{x}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/105*(3*(5*b^3*x^2 + 7*a*b^2*x)*x^(3/2) + 14*(3*a*b^2*x^2 + 5*a^2*b*x)*sqr
t(x) + 35*(a^2*b*x^2 + 3*a^3*x)/sqrt(x))*A + 2/315*(5*(7*b^3*x^2 + 9*a*b^2*
x)*x^(5/2) + 18*(5*a*b^2*x^2 + 7*a^2*b*x)*x^(3/2) + 21*(3*a^2*b*x^2 + 5*a^3
*x)*sqrt(x))*B
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(1/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/sqrt(x), x)
```

3.723 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{2a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{a+bx}+\frac{2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5(a+bx)}+\frac{2abx^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5(a+bx)}+\frac{2abx^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{a+bx}-\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2b^3Bx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*a^2*(3*A*
b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*a*b*(A*b + a
*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^2*(A*b + 3*a*B)
*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*b^3*B*x^(7/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{3/2}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{3/2}}+\frac{a^2b^3(3Ab+aB)}{\sqrt{x}}+3ab^4(Ab+aB)\sqrt{x}+b^5(Ab\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2a^2(3Ab+aB)\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2a}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.40

$$\frac{2\sqrt{(a+bx)^2}\left(-35a^3(A-Bx)+35a^2bx(3A+Bx)+7ab^2x^2(5A+3Bx)+b^3x^3(7A+5Bx)\right)}{35\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-35*a^3*(A - B*x) + 35*a^2*b*x*(3*A + B*x) + 7*a*b^2*
x^2*(5*A + 3*B*x) + b^3*x^3*(7*A + 5*B*x)))/(35*Sqrt[x]*(a + b*x))
```

IntegrateAlgebraic [A] time = 6.45, size = 97, normalized size = 0.45

$$\frac{2\sqrt{(a+bx)^2}\left(-35a^3A+35a^3Bx+105a^2Abx+35a^2bBx^2+35aAb^2x^2+21ab^2Bx^3+7Ab^3x^3+5b^3Bx^4\right)}{35\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-35*a^3*A + 105*a^2*A*b*x + 35*a^3*B*x + 35*a*A*b^2*x
^2 + 35*a^2*b*B*x^2 + 7*A*b^3*x^3 + 21*a*b^2*B*x^3 + 5*b^3*B*x^4))/(35*Sqrt
[x]*(a + b*x))
```

fricas [A] time = 0.43, size = 73, normalized size = 0.34

$$\frac{2\left(5\,Bb^3x^4-35\,Aa^3+7\left(3\,Bab^2+Ab^3\right)x^3+35\left(Ba^2b+Aab^2\right)x^2+35\left(Ba^3+3\,Aa^2b\right)x\right)}{35\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/35*(5*B*b^3*x^4 - 35*A*a^3 + 7*(3*B*a*b^2 + A*b^3)*x^3 + 35*(B*a^2*b + A*
a*b^2)*x^2 + 35*(B*a^3 + 3*A*a^2*b)*x)/sqrt(x)
```

giac [A] time = 0.17, size = 125, normalized size = 0.58

$$\frac{2}{7}\,Bb^3x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{6}{5}\,Bab^2x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Ab^3x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Ba^2bx^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Aab^2x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Ba^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+6\,Aa^2b\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\,Aa^3\mathrm{sgn}\left(bx+a\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^3*x^(7/2)*sgn(b*x + a) + 6/5*B*a*b^2*x^(5/2)*sgn(b*x + a) + 2/5*A*b
^3*x^(5/2)*sgn(b*x + a) + 2*B*a^2*b*x^(3/2)*sgn(b*x + a) + 2*A*a*b^2*x^(3/2
)*sgn(b*x + a) + 2*B*a^3*sqrt(x)*sgn(b*x + a) + 6*A*a^2*b*sqrt(x)*sgn(b*x +
 a) - 2*A*a^3*sgn(b*x + a)/sqrt(x)
```

maple [A] time = 0.05, size = 92, normalized size = 0.43

$$-\frac{2\left(-5B\,b^3x^4-7A\,b^3x^3-21Ba\,b^2x^3-35Aa\,b^2x^2-35B\,a^2b\,x^2-105A\,a^2bx-35B\,a^3x+35A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}}{35\left(bx+a\right)^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x)
```

```
[Out] -2/35*(-5*B*b^3*x^4-7*A*b^3*x^3-21*B*a*b^2*x^3-35*A*a*b^2*x^2-35*B*a^2*b*x^
2-105*A*a^2*b*x-35*B*a^3*x+35*A*a^3)*((b*x+a)^2)^(3/2)/x^(1/2)/(b*x+a)^3
```

maxima [A] time = 0.56, size = 133, normalized size = 0.62

$$\frac{2}{15}\left(\left(3\,b^3x^2+5\,ab^2x\right)\sqrt{x}+\frac{10\left(ab^2x^2+3\,a^2bx\right)}{\sqrt{x}}+\frac{15\left(a^2bx^2-a^3x\right)}{x^{\frac{3}{2}}}\right)A+\frac{2}{105}\left(3\left(5\,b^3x^2+7\,ab^2x\right)x^{\frac{3}{2}}+14\left(3\,ab^2x^2+5\,a^2bx\right)\sqrt{x}+\frac{35\left(a^2bx^2+3\,a^3x\right)}{\sqrt{x}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^3*x^2 + 5*a*b^2*x)*sqrt(x) + 10*(a*b^2*x^2 + 3*a^2*b*x)/sqrt(x)
+ 15*(a^2*b*x^2 - a^3*x)/x^(3/2))*A + 2/105*(3*(5*b^3*x^2 + 7*a*b^2*x)*x^(3
/2) + 14*(3*a*b^2*x^2 + 5*a^2*b*x)*sqrt(x) + 35*(a^2*b*x^2 + 3*a^3*x)/sqrt(
x))*B
```

mupad [B] time = 1.64, size = 107, normalized size = 0.50

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x\,\left(70\,B\,a^3+210\,A\,b\,a^2\right)}{35\,b}-\frac{2\,A\,a^3}{b}+\frac{2\,B\,b^2\,x^4}{7}+\frac{x^3\,\left(14\,A\,b^3+42\,B\,a\,b^2\right)}{35\,b}+2\,a\,x^2\,\left(A\,b+B\,a\right)\right)}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x*(70*B*a^3 + 210*A*a^2*b))/(35*b) - (2*
A*a^3)/b + (2*B*b^2*x^4)/7 + (x^3*(14*A*b^3 + 42*B*a*b^2))/(35*b) + 2*a*x^2
*(A*b + B*a)))/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(3/2), x)
```

3.724 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{5/2}} dx$

Optimal. Leaf size=216

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{\sqrt{x}\,(a+bx)}+\frac{6ab\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+$$

Rubi [A] time = 0.08, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{\sqrt{x}\,(a+bx)}+\frac{6ab\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{3(a+bx)}-\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}+\frac{2b^3Bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*a^2*(3*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (6*a*b*(A*b
 + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^2*(A*b + 3*
a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*b^3*B*x^(5/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{5/2}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{5/2}}+\frac{a^2b^3(3Ab+aB)}{x^{3/2}}+\frac{3ab^4(Ab+aB)}{\sqrt{x}}+b^5(Ab+3a\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{6a}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 84, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(5a^3(A+3Bx)+45a^2bx(A-Bx)-15ab^2x^2(3A+Bx)-b^3x^3(5A+3Bx)\right)}{15x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(45*a^2*b*x*(A - B*x) - 15*a*b^2*x^2*(3*A + B*x) + 5*
a^3*(A + 3*B*x) - b^3*x^3*(5*A + 3*B*x)))/(15*x^(3/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 9.93, size = 97, normalized size = 0.45

$$\frac{2\sqrt{(a+bx)^2}\left(-5a^3A-15a^3Bx-45a^2Abx+45a^2bBx^2+45aAb^2x^2+15ab^2Bx^3+5Ab^3x^3+3b^3Bx^4\right)}{15x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*a^3*A - 45*a^2*A*b*x - 15*a^3*B*x + 45*a*A*b^2*x^2
 + 45*a^2*b*B*x^2 + 5*A*b^3*x^3 + 15*a*b^2*B*x^3 + 3*b^3*B*x^4))/(15*x^(3/2
)*(a + b*x))
```

fricas [A] time = 0.42, size = 73, normalized size = 0.34

$$\frac{2\left(3\,Bb^3x^4-5\,Aa^3+5\left(3\,Bab^2+Ab^3\right)x^3+45\left(Ba^2b+Aab^2\right)x^2-15\left(Ba^3+3\,Aa^2b\right)x\right)}{15\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(3*B*b^3*x^4 - 5*A*a^3 + 5*(3*B*a*b^2 + A*b^3)*x^3 + 45*(B*a^2*b + A*a
*b^2)*x^2 - 15*(B*a^3 + 3*A*a^2*b)*x)/x^(3/2)
```

giac [A] time = 0.16, size = 123, normalized size = 0.57

$$\frac{2}{5}\,Bb^3x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Bab^2x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Ab^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+6\,Ba^2b\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+6\,Aab^2\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(3\,Ba^3x\mathrm{sgn}\left(bx+a\right)+9\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+Aa^3\mathrm{sgn}\left(bx+a\right)\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^3*x^(5/2)*sgn(b*x + a) + 2*B*a*b^2*x^(3/2)*sgn(b*x + a) + 2/3*A*b^3
*x^(3/2)*sgn(b*x + a) + 6*B*a^2*b*sqrt(x)*sgn(b*x + a) + 6*A*a*b^2*sqrt(x)*
sgn(b*x + a) - 2/3*(3*B*a^3*x*sgn(b*x + a) + 9*A*a^2*b*x*sgn(b*x + a) + A*a
^3*sgn(b*x + a))/x^(3/2)
```

maple [A] time = 0.05, size = 92, normalized size = 0.43

$$-\frac{2\left(-3B\,b^3x^4-5A\,b^3x^3-15Ba\,b^2x^3-45Aa\,b^2x^2-45B\,a^2b\,x^2+45A\,a^2bx+15B\,a^3x+5A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{15\,(bx+a)^3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x)
```

```
[Out] -2/15*(-3*B*b^3*x^4-5*A*b^3*x^3-15*B*a*b^2*x^3-45*A*a*b^2*x^2-45*B*a^2*b*x^
2+45*A*a^2*b*x+15*B*a^3*x+5*A*a^3)*((b*x+a)^2)^(3/2)/x^(3/2)/(b*x+a)^3
```

maxima [A] time = 0.65, size = 130, normalized size = 0.60

$$\frac{2}{15}\left(\left(3\,b^3x^2+5\,ab^2x\right)\sqrt{x}+\frac{10\left(ab^2x^2+3\,a^2bx\right)}{\sqrt{x}}+\frac{15\left(a^2bx^2-a^3x\right)}{x^{\frac{3}{2}}}\right)B+\frac{2}{3}\,A\left(\frac{b^3x^2+3\,ab^2x}{\sqrt{x}}+\frac{6\left(ab^2x^2-a^2bx\right)}{x^{\frac{3}{2}}}-\frac{3\,a^2bx^2+a^3x}{x^{\frac{5}{2}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^3*x^2 + 5*a*b^2*x)*sqrt(x) + 10*(a*b^2*x^2 + 3*a^2*b*x)/sqrt(x)
+ 15*(a^2*b*x^2 - a^3*x)/x^(3/2))*B + 2/3*A*((b^3*x^2 + 3*a*b^2*x)/sqrt(x)
+ 6*(a*b^2*x^2 - a^2*b*x)/x^(3/2) - (3*a^2*b*x^2 + a^3*x)/x^(5/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(5/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{3}{2}}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(5/2), x)
```

3.725 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{6ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{2b^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{3x^{3/2}(a+bx)}+$$

Rubi [A] time = 0.08, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{3x^{3/2}(a+bx)}-\frac{6ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{2b^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}-\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}+\frac{2b^3Bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*a^2*(3*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (6*a*b*(A
*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*b^2*(A*b
+ 3*a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^3*B*x^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{7/2}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{7/2}}+\frac{a^2b^3(3Ab+aB)}{x^{5/2}}+\frac{3ab^4(Ab+aB)}{x^{3/2}}+\frac{b^5(Ab+3aB)}{\sqrt{x}}+b\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{6ab(A}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 83, normalized size = 0.38

$$-\frac{2\sqrt{(a+bx)^2}\left(a^3(3A+5Bx)+15a^2bx(A+3Bx)+45ab^2x^2(A-Bx)-5b^3x^3(3A+Bx)\right)}{15x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(45*a*b^2*x^2*(A - B*x) - 5*b^3*x^3*(3*A + B*x) + 15*
a^2*b*x*(A + 3*B*x) + a^3*(3*A + 5*B*x)))/(15*x^(5/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 14.38, size = 97, normalized size = 0.45

$$\frac{2\sqrt{(a+bx)^2}\left(-3a^3A-5a^3Bx-15a^2Abx-45a^2bBx^2-45aAb^2x^2+45ab^2Bx^3+15Ab^3x^3+5b^3Bx^4\right)}{15x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-3*a^3*A - 15*a^2*A*b*x - 5*a^3*B*x - 45*a*A*b^2*x^2
- 45*a^2*b*B*x^2 + 15*A*b^3*x^3 + 45*a*b^2*B*x^3 + 5*b^3*B*x^4))/(15*x^(5/2
)*(a + b*x))
```

fricas [A] time = 0.41, size = 73, normalized size = 0.34

$$\frac{2\left(5\,Bb^3x^4-3\,Aa^3+15\left(3\,Bab^2+Ab^3\right)x^3-45\left(Ba^2b+Aab^2\right)x^2-5\left(Ba^3+3\,Aa^2b\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(5*B*b^3*x^4 - 3*A*a^3 + 15*(3*B*a*b^2 + A*b^3)*x^3 - 45*(B*a^2*b + A*
a*b^2)*x^2 - 5*(B*a^3 + 3*A*a^2*b)*x)/x^(5/2)
```

giac [A] time = 0.17, size = 124, normalized size = 0.57

$$\frac{2}{3}\,Bb^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+6\,Bab^2\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+2\,Ab^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(45\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+45\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+5\,Ba^3x\mathrm{sgn}\left(bx+a\right)+15\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+3\,Aa^3\mathrm{sgn}\left(bx+a\right)\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b^3*x^(3/2)*sgn(b*x + a) + 6*B*a*b^2*sqrt(x)*sgn(b*x + a) + 2*A*b^3*s
qrt(x)*sgn(b*x + a) - 2/15*(45*B*a^2*b*x^2*sgn(b*x + a) + 45*A*a*b^2*x^2*sg
n(b*x + a) + 5*B*a^3*x*sgn(b*x + a) + 15*A*a^2*b*x*sgn(b*x + a) + 3*A*a^3*s
gn(b*x + a))/x^(5/2)
```

maple [A] time = 0.07, size = 92, normalized size = 0.43

$$-\frac{2\left(-5B\,b^3x^4-15A\,b^3x^3-45Ba\,b^2x^3+45Aa\,b^2x^2+45B\,a^2b\,x^2+15A\,a^2bx+5B\,a^3x+3A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}}{15\left(bx+a\right)^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x)
```

```
[Out] -2/15*(-5*B*b^3*x^4-15*A*b^3*x^3-45*B*a*b^2*x^3+45*A*a*b^2*x^2+45*B*a^2*b*x
^2+15*A*a^2*b*x+5*B*a^3*x+3*A*a^3)*((b*x+a)^2)^(3/2)/x^(5/2)/(b*x+a)^3
```

maxima [A] time = 0.65, size = 131, normalized size = 0.61

$$\frac{2}{3}\,B\left(\frac{b^3x^2+3\,ab^2x}{\sqrt{x}}+\frac{6\left(ab^2x^2-a^2bx\right)}{x^{\frac{3}{2}}}-\frac{3\,a^2bx^2+a^3x}{x^{\frac{5}{2}}}\right)+\frac{2}{15}\,A\left(\frac{15\left(b^3x^2-ab^2x\right)}{x^{\frac{3}{2}}}-\frac{10\left(3\,ab^2x^2+a^2bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^2bx^2+3\,a^3x}{x^{\frac{7}{2}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/3*B*((b^3*x^2 + 3*a*b^2*x)/sqrt(x) + 6*(a*b^2*x^2 - a^2*b*x)/x^(3/2) - (3
*a^2*b*x^2 + a^3*x)/x^(5/2)) + 2/15*A*(15*(b^3*x^2 - a*b^2*x)/x^(3/2) - 10*
(3*a*b^2*x^2 + a^2*b*x)/x^(5/2) - (5*a^2*b*x^2 + 3*a^3*x)/x^(7/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(7/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(7/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(7/2), x)
```

3.726 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^{5/2}(a+bx)}-\frac{2ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{3/2}(a+bx)}+$$

Rubi [A] time = 0.08, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^{5/2}(a+bx)}-\frac{2ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{3/2}(a+bx)}-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}+\frac{2b^3B\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^(7/2)*(a + b*x)) - (2*a^2*(3*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*a*b*(A
*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x^(3/2)*(a + b*x)) - (2*b^2*(A*b
+ 3*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*b^3*B*Sqrt
[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{9/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{9/2}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{9/2}}+\frac{a^2b^3(3Ab+aB)}{x^{7/2}}+\frac{3ab^4(Ab+aB)}{x^{5/2}}+\frac{b^5(Ab+3aB)}{x^{3/2}}\right.}{b^2\left(ab+b^2x\right)}$$
$$=-\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-$$

Mathematica [A] time = 0.04, size = 84, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(a^3(5A+7Bx)+7a^2bx(3A+5Bx)+35ab^2x^2(A+3Bx)+35b^3x^3(A-Bx)\right)}{35x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(35*b^3*x^3*(A - B*x) + 35*a*b^2*x^2*(A + 3*B*x) + 7*
a^2*b*x*(3*A + 5*B*x) + a^3*(5*A + 7*B*x)))/(35*x^(7/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 16.92, size = 97, normalized size = 0.45

$$\frac{2\sqrt{(a+bx)^2}\left(-5a^3A-7a^3Bx-21a^2Abx-35a^2bBx^2-35aAb^2x^2-105ab^2Bx^3-35Ab^3x^3+35b^3Bx^4\right)}{35x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*a^3*A - 21*a^2*A*b*x - 7*a^3*B*x - 35*a*A*b^2*x^2
- 35*a^2*b*B*x^2 - 35*A*b^3*x^3 - 105*a*b^2*B*x^3 + 35*b^3*B*x^4))/(35*x^(7
/2)*(a + b*x))
```

fricas [A] time = 0.41, size = 73, normalized size = 0.34

$$\frac{2\left(35\,Bb^3x^4-5\,Aa^3-35\left(3\,Bab^2+Ab^3\right)x^3-35\left(Ba^2b+Aab^2\right)x^2-7\left(Ba^3+3\,Aa^2b\right)x\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x, algorithm="fricas"
)
```

```
[Out] 2/35*(35*B*b^3*x^4 - 5*A*a^3 - 35*(3*B*a*b^2 + A*b^3)*x^3 - 35*(B*a^2*b + A
*a*b^2)*x^2 - 7*(B*a^3 + 3*A*a^2*b)*x)/x^(7/2)
```

giac [A] time = 0.18, size = 124, normalized size = 0.58

$$2\,Bb^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(105\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+35\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+35\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+35\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+7\,Ba^3x\mathrm{sgn}\left(bx+a\right)+21\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+5\,Aa^3\mathrm{sgn}\left(bx+a\right)\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 2*B*b^3*sqrt(x)*sgn(b*x + a) - 2/35*(105*B*a*b^2*x^3*sgn(b*x + a) + 35*A*b^
3*x^3*sgn(b*x + a) + 35*B*a^2*b*x^2*sgn(b*x + a) + 35*A*a*b^2*x^2*sgn(b*x +
 a) + 7*B*a^3*x*sgn(b*x + a) + 21*A*a^2*b*x*sgn(b*x + a) + 5*A*a^3*sgn(b*x
+ a))/x^(7/2)
```

maple [A] time = 0.06, size = 92, normalized size = 0.43

$$-\frac{2\left(-35B\,b^3x^4+35A\,b^3x^3+105Ba\,b^2x^3+35Aa\,b^2x^2+35B\,a^2b\,x^2+21A\,a^2bx+7B\,a^3x+5A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{35\,(bx+a)^3\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x)
```

```
[Out] -2/35*(-35*B*b^3*x^4+35*A*b^3*x^3+105*B*a*b^2*x^3+35*A*a*b^2*x^2+35*B*a^2*b
*x^2+21*A*a^2*b*x+7*B*a^3*x+5*A*a^3)*((b*x+a)^2)^(3/2)/x^(7/2)/(b*x+a)^3
```

maxima [A] time = 0.60, size = 134, normalized size = 0.63

$$\frac{2}{15}\,B\left(\frac{15\left(b^3x^2-ab^2x\right)}{x^{\frac{3}{2}}}-\frac{10\left(3\,ab^2x^2+a^2bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^2bx^2+3\,a^3x}{x^{\frac{7}{2}}}\right)-\frac{2}{105}\,A\left(\frac{35\left(3\,b^3x^2+ab^2x\right)}{x^{\frac{5}{2}}}+\frac{14\left(5\,ab^2x^2+3\,a^2bx\right)}{x^{\frac{7}{2}}}+\frac{3\left(7\,a^2bx^2+5\,a^3x\right)}{x^{\frac{9}{2}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*B*(15*(b^3*x^2 - a*b^2*x)/x^(3/2) - 10*(3*a*b^2*x^2 + a^2*b*x)/x^(5/2)
 - (5*a^2*b*x^2 + 3*a^3*x)/x^(7/2)) - 2/105*A*(35*(3*b^3*x^2 + a*b^2*x)/x^(
5/2) + 14*(5*a*b^2*x^2 + 3*a^2*b*x)/x^(7/2) + 3*(7*a^2*b*x^2 + 5*a^3*x)/x^(
9/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(9/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(9/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(9/2), x)
```

3.727 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{4a^2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2b^4x^{19/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{19(a+bx)}+\frac{10ab^3x^{17/2}\sqrt{a^2+2abx+b^2x^2}}{17(a+bx)}$$

Rubi [A] time = 0.13, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^4x^{19/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{19(a+bx)}+\frac{10ab^3x^{17/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{17(a+bx)}+\frac{4a^2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{10a^3bx^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{13(a+bx)}+\frac{2a^4x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{11(a+bx)}+\frac{2a^5Ax^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2b^5Bx^{21/2}\sqrt{a^2+2abx+b^2x^2}}{21(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (10*a^3*
b*(2*A*b + a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x)) + (4
*a^2*b^2*(A*b + a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x))
 + (10*a*b^3*(A*b + 2*a*B)*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a +
b*x)) + (2*b^4*(A*b + 5*a*B)*x^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*(a
 + b*x)) + (2*b^5*B*x^(21/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(21*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^{7/2}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^5Ab^5x^{7/2}+a^4b^5(5Ab+aB)x^{9/2}+5a^3b^6(2Ab\right.}{}$$

$$=\frac{2a^5Ax^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2a^4(5Ab+aB)x^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Mathematica [A] time = 0.09, size = 110, normalized size = 0.34

$$\frac{2\sqrt{(a+bx)^2}\left(\frac{x^{9/2}\left(46189a^5+188955a^4bx+319770a^3b^2x^2+277134a^2b^3x^3+122265ab^4x^4+21879b^5x^5\right)(7Ab-3aB)}{138567}+Bx^{9/2}(a+bx)^6\right)}{21b(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(B*x^(9/2)*(a + b*x)^6 + ((7*A*b - 3*a*B)*x^(9/2)*(461
89*a^5 + 188955*a^4*b*x + 319770*a^3*b^2*x^2 + 277134*a^2*b^3*x^3 + 122265*
a*b^4*x^4 + 21879*b^5*x^5))/138567))/(21*b*(a + b*x))
```

IntegrateAlgebraic [A] time = 20.50, size = 171, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(323323a^5Ax^{9/2}+264537a^5Bx^{11/2}+1322685a^4Abx^{11/2}+1119195a^4bBx^{13/2}+2238390a^3Ab^2x^{13/2}+1939938a^3b^2Bx^{15/2}+1939938a^2Ab^3x^{15/2}+1711710a^2b^3Bx^{17/2}+855855aAb^4x^{17/2}+765765ab^4Bx^{19/2}+153153Ab^5x^{19/2}+138567b^5Bx^{21/2}\right)}{2909907(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(323323*a^5*A*x^(9/2) + 1322685*a^4*A*b*x^(11/2) + 264
537*a^5*B*x^(11/2) + 2238390*a^3*A*b^2*x^(13/2) + 1119195*a^4*b*B*x^(13/2)
+ 1939938*a^2*A*b^3*x^(15/2) + 1939938*a^3*b^2*B*x^(15/2) + 855855*a*A*b^4*
x^(17/2) + 1711710*a^2*b^3*B*x^(17/2) + 153153*A*b^5*x^(19/2) + 765765*a*b^
4*B*x^(19/2) + 138567*b^5*B*x^(21/2)))/(2909907*(a + b*x))
```

fricas [A] time = 0.43, size = 124, normalized size = 0.39

$$\frac{2}{2909907}\left(138567\,Bb^5x^{10}+323323\,Aa^5x^4+153153\left(5\,Bab^4+Ab^5\right)x^9+855855\left(2\,Ba^2b^3+Aab^4\right)x^8+1939938\left(Ba^3b^2+Aa^2b^3\right)x^7+1119195\left(Ba^4b+2\,Aa^3b^2\right)x^6+264537\left(Ba^5+5\,Aa^4b\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/2909907*(138567*B*b^5*x^10 + 323323*A*a^5*x^4 + 153153*(5*B*a*b^4 + A*b^5
)*x^9 + 855855*(2*B*a^2*b^3 + A*a*b^4)*x^8 + 1939938*(B*a^3*b^2 + A*a^2*b^3
)*x^7 + 1119195*(B*a^4*b + 2*A*a^3*b^2)*x^6 + 264537*(B*a^5 + 5*A*a^4*b)*x^
5)*sqrt(x)
```

giac [A] time = 0.21, size = 197, normalized size = 0.62

$$\frac{2}{21}\,Bb^5x^{\frac{21}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{19}\,Bab^4x^{\frac{19}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{19}\,Ab^5x^{\frac{19}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{17}\,Ba^2b^3x^{\frac{17}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{17}\,Aab^4x^{\frac{17}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{4}{3}\,Ba^3b^2x^{\frac{15}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{4}{3}\,Aa^2b^3x^{\frac{15}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{13}\,Ba^4bx^{\frac{13}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{13}\,Aa^3b^2x^{\frac{13}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{11}\,Ba^5x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{11}\,Aa^4bx^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{9}\,Aa^5x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/21*B*b^5*x^(21/2)*sgn(b*x + a) + 10/19*B*a*b^4*x^(19/2)*sgn(b*x + a) + 2/
19*A*b^5*x^(19/2)*sgn(b*x + a) + 20/17*B*a^2*b^3*x^(17/2)*sgn(b*x + a) + 10
/17*A*a*b^4*x^(17/2)*sgn(b*x + a) + 4/3*B*a^3*b^2*x^(15/2)*sgn(b*x + a) + 4
/3*A*a^2*b^3*x^(15/2)*sgn(b*x + a) + 10/13*B*a^4*b*x^(13/2)*sgn(b*x + a) +
20/13*A*a^3*b^2*x^(13/2)*sgn(b*x + a) + 2/11*B*a^5*x^(11/2)*sgn(b*x + a) +
10/11*A*a^4*b*x^(11/2)*sgn(b*x + a) + 2/9*A*a^5*x^(9/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(138567B\,b^5x^6+153153A\,b^5x^5+765765Ba\,b^4x^5+855855Aa\,b^4x^4+1711710B\,a^2b^3x^4+1939938A\,a^2b^3x^3+1939938B\,a^3b^2x^3+2238390A\,a^3b^2x^2+1119195B\,a^4b\,x^2+1322685A\,a^4bx+264537B\,a^5x+323323A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}x^{\frac{9}{2}}}{2909907\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*x^(9/2)*(138567*B*b^5*x^6+153153*A*b^5*x^5+765765*B*a*b^4*x^5+855
855*A*a*b^4*x^4+1711710*B*a^2*b^3*x^4+1939938*A*a^2*b^3*x^3+1939938*B*a^3*b
^2*x^3+2238390*A*a^3*b^2*x^2+1119195*B*a^4*b*x^2+1322685*A*a^4*b*x+264537*B
*a^5*x+323323*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.68, size = 241, normalized size = 0.75

$$\frac{2}{2078505}\left(6435\left(17\,b^5x^2+19\,ab^4x\right)x^{\frac{15}{2}}+32604\left(15\,ab^4x^2+17\,a^2b^3x\right)x^{\frac{13}{2}}+63954\left(13\,a^2b^3x^2+15\,a^3b^2x\right)x^{\frac{11}{2}}+58140\left(11\,a^3b^2x^2+13\,a^4bx\right)x^{\frac{9}{2}}+20995\left(9\,a^4bx^2+11\,a^5x\right)x^{\frac{7}{2}}\right)A+\frac{2}{4849845}\left(12155\left(19\,b^5x^2+21\,ab^4x\right)x^{\frac{17}{2}}+60060\left(17\,ab^4x^2+19\,a^2b^3x\right)x^{\frac{15}{2}}+114114\left(15\,a^2b^3x^2+17\,a^3b^2x\right)x^{\frac{13}{2}}+99484\left(13\,a^3b^2x^2+15\,a^4bx\right)x^{\frac{11}{2}}+33915\left(11\,a^4bx^2+13\,a^5x\right)x^{\frac{9}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/2078505*(6435*(17*b^5*x^2 + 19*a*b^4*x)*x^(15/2) + 32604*(15*a*b^4*x^2 +
17*a^2*b^3*x)*x^(13/2) + 63954*(13*a^2*b^3*x^2 + 15*a^3*b^2*x)*x^(11/2) + 5
8140*(11*a^3*b^2*x^2 + 13*a^4*b*x)*x^(9/2) + 20995*(9*a^4*b*x^2 + 11*a^5*x)
*x^(7/2))*A + 2/4849845*(12155*(19*b^5*x^2 + 21*a*b^4*x)*x^(17/2) + 60060*(
17*a*b^4*x^2 + 19*a^2*b^3*x)*x^(15/2) + 114114*(15*a^2*b^3*x^2 + 17*a^3*b^2
*x)*x^(13/2) + 99484*(13*a^3*b^2*x^2 + 15*a^4*b*x)*x^(11/2) + 33915*(11*a^4
*b*x^2 + 13*a^5*x)*x^(9/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{7/2}\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.728 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{20a^2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{2b^4x^{17/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{17(a+bx)}+\frac{2ab^3x^{15/2}\sqrt{a^2+2abx+b^2}}{3(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^4x^{17/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{17(a+bx)}+\frac{2ab^3x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{3(a+bx)}+\frac{20a^2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{10a^3bx^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{11(a+bx)}+\frac{2a^4x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{9(a+bx)}+\frac{2a^5Ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2b^5Bx^{19/2}\sqrt{a^2+2abx+b^2x^2}}{19(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (10*a^3*b*
(2*A*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (20*
a^2*b^2*(A*b + a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
+ (2*a*b^3*(A*b + 2*a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*
x)) + (2*b^4*(A*b + 5*a*B)*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a +
 b*x)) + (2*b^5*B*x^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{5/2}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^5Ab^5x^{5/2}+a^4b^5(5Ab+aB)x^{7/2}+5a^3b^6(2\right.}{}\\&=\frac{2a^5Ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2a^4(5Ab+aB)x^{9/2}\sqrt{a^2+2abx+b}}{9(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.08, size = 110, normalized size = 0.34

$$\frac{2\sqrt{(a+bx)^2}\left(\frac{x^{7/2}\left(21879a^5+85085a^4bx+139230a^3b^2x^2+117810a^2b^3x^3+51051ab^4x^4+9009b^5x^5\right)(19Ab-7aB)}{153153}+Bx^{7/2}(a+bx)^6\right)}{19b(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(B*x^(7/2)*(a + b*x)^6 + ((19*A*b - 7*a*B)*x^(7/2)*(21
879*a^5 + 85085*a^4*b*x + 139230*a^3*b^2*x^2 + 117810*a^2*b^3*x^3 + 51051*a
*b^4*x^4 + 9009*b^5*x^5))/153153))/(19*b*(a + b*x))
```

IntegrateAlgebraic [A] time = 16.13, size = 171, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(415701a^5Ax^{7/2}+323323a^5Bx^{9/2}+1616615a^4Abx^{9/2}+1322685a^4bBx^{11/2}+2645370a^3Ab^2x^{11/2}+2238390a^3b^2Bx^{13/2}+2238390a^2Ab^3x^{13/2}+1939938a^2b^3Bx^{15/2}+969969aAb^4x^{15/2}+855855ab^4Bx^{17/2}+171171Ab^5x^{17/2}+153153b^5Bx^{19/2}\right)}{2909907(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(415701*a^5*A*x^(7/2) + 1616615*a^4*A*b*x^(9/2) + 3233
23*a^5*B*x^(9/2) + 2645370*a^3*A*b^2*x^(11/2) + 1322685*a^4*b*B*x^(11/2) +
2238390*a^2*A*b^3*x^(13/2) + 2238390*a^3*b^2*B*x^(13/2) + 969969*a*A*b^4*x^
(15/2) + 1939938*a^2*b^3*B*x^(15/2) + 171171*A*b^5*x^(17/2) + 855855*a*b^4*
B*x^(17/2) + 153153*b^5*B*x^(19/2)))/(2909907*(a + b*x))
```

fricas [A] time = 0.43, size = 124, normalized size = 0.39

$$\frac{2}{2909907}\left(153153\,Bb^5x^9+415701\,Aa^5x^3+171171\left(5\,Bab^4+Ab^5\right)x^8+969969\left(2\,Ba^2b^3+Aab^4\right)x^7+2238390\left(Ba^3b^2+Aa^2b^3\right)x^6+1322685\left(Ba^4b+2\,Aa^3b^2\right)x^5+323323\left(Ba^5+5\,Aa^4b\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/2909907*(153153*B*b^5*x^9 + 415701*A*a^5*x^3 + 171171*(5*B*a*b^4 + A*b^5)
*x^8 + 969969*(2*B*a^2*b^3 + A*a*b^4)*x^7 + 2238390*(B*a^3*b^2 + A*a^2*b^3)
*x^6 + 1322685*(B*a^4*b + 2*A*a^3*b^2)*x^5 + 323323*(B*a^5 + 5*A*a^4*b)*x^4
)*sqrt(x)
```

giac [A] time = 0.19, size = 197, normalized size = 0.62

$$\frac{2}{19}Bb^5x^{\frac{19}{2}}\mathrm{sgn}(bx+a)+\frac{10}{17}Bab^4x^{\frac{17}{2}}\mathrm{sgn}(bx+a)+\frac{2}{17}Ab^5x^{\frac{17}{2}}\mathrm{sgn}(bx+a)+\frac{4}{3}Ba^2b^3x^{\frac{15}{2}}\mathrm{sgn}(bx+a)+\frac{2}{3}Aab^4x^{\frac{15}{2}}\mathrm{sgn}(bx+a)+\frac{20}{13}Ba^3b^2x^{\frac{13}{2}}\mathrm{sgn}(bx+a)+\frac{20}{13}Aa^2b^3x^{\frac{13}{2}}\mathrm{sgn}(bx+a)+\frac{10}{11}Ba^4bx^{\frac{11}{2}}\mathrm{sgn}(bx+a)+\frac{20}{11}Aa^3b^2x^{\frac{11}{2}}\mathrm{sgn}(bx+a)+\frac{2}{9}Ba^5x^{\frac{9}{2}}\mathrm{sgn}(bx+a)+\frac{10}{9}Aa^4bx^{\frac{9}{2}}\mathrm{sgn}(bx+a)+\frac{2}{7}Aa^5x^{\frac{7}{2}}\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/19*B*b^5*x^(19/2)*sgn(b*x + a) + 10/17*B*a*b^4*x^(17/2)*sgn(b*x + a) + 2/
17*A*b^5*x^(17/2)*sgn(b*x + a) + 4/3*B*a^2*b^3*x^(15/2)*sgn(b*x + a) + 2/3*
A*a*b^4*x^(15/2)*sgn(b*x + a) + 20/13*B*a^3*b^2*x^(13/2)*sgn(b*x + a) + 20/
13*A*a^2*b^3*x^(13/2)*sgn(b*x + a) + 10/11*B*a^4*b*x^(11/2)*sgn(b*x + a) +
20/11*A*a^3*b^2*x^(11/2)*sgn(b*x + a) + 2/9*B*a^5*x^(9/2)*sgn(b*x + a) + 10
/9*A*a^4*b*x^(9/2)*sgn(b*x + a) + 2/7*A*a^5*x^(7/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(153153Bb^5x^6+171171Ab^5x^5+855855Bab^4x^5+969969Aab^4x^4+1939938Ba^2b^3x^4+2238390Aa^2b^3x^3+2238390Ba^3b^2x^3+2645370Aa^3b^2x^2+1322685Ba^4bx^2+1616615Aa^4bx+323323Ba^5x+415701Aa^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}x^{\frac{7}{2}}}{2909907\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*x^(7/2)*(153153*B*b^5*x^6+171171*A*b^5*x^5+855855*B*a*b^4*x^5+969
969*A*a*b^4*x^4+1939938*B*a^2*b^3*x^4+2238390*A*a^2*b^3*x^3+2238390*B*a^3*b
^2*x^3+2645370*A*a^3*b^2*x^2+1322685*B*a^4*b*x^2+1616615*A*a^4*b*x+323323*B
*a^5*x+415701*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.73, size = 241, normalized size = 0.75

$$\frac{2}{765765}\left(3003\left(15 b^5x^2+17 ab^4x\right)x^{\frac{13}{2}}+15708\left(13 ab^4x^2+15 a^2b^3x\right)x^{\frac{11}{2}}+32130\left(11 a^2b^3x^2+13 a^3b^2x\right)x^{\frac{9}{2}}+30940\left(9 a^3b^2x^2+11 a^4bx\right)x^{\frac{7}{2}}+12155\left(7 a^4bx^2+9 a^5x\right)x^{\frac{5}{2}}\right)A+\frac{2}{2078505}\left(6435\left(17 b^5x^2+19 ab^4x\right)x^{\frac{15}{2}}+32604\left(15 ab^4x^2+17 a^2b^3x\right)x^{\frac{13}{2}}+63954\left(13 a^2b^3x^2+15 a^3b^2x\right)x^{\frac{11}{2}}+58140\left(11 a^3b^2x^2+13 a^4bx\right)x^{\frac{9}{2}}+20995\left(9 a^4bx^2+11 a^5x\right)x^{\frac{7}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/765765*(3003*(15*b^5*x^2 + 17*a*b^4*x)*x^(13/2) + 15708*(13*a*b^4*x^2 + 1
5*a^2*b^3*x)*x^(11/2) + 32130*(11*a^2*b^3*x^2 + 13*a^3*b^2*x)*x^(9/2) + 309
40*(9*a^3*b^2*x^2 + 11*a^4*b*x)*x^(7/2) + 12155*(7*a^4*b*x^2 + 9*a^5*x)*x^(
5/2))*A + 2/2078505*(6435*(17*b^5*x^2 + 19*a*b^4*x)*x^(15/2) + 32604*(15*a*
b^4*x^2 + 17*a^2*b^3*x)*x^(13/2) + 63954*(13*a^2*b^3*x^2 + 15*a^3*b^2*x)*x^
(11/2) + 58140*(11*a^3*b^2*x^2 + 13*a^4*b*x)*x^(9/2) + 20995*(9*a^4*b*x^2 +
 11*a^5*x)*x^(7/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{5/2}\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.729 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{20a^2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2b^4x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{15(a+bx)}+\frac{10ab^3x^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^4x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{15(a+bx)}+\frac{10ab^3x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{13(a+bx)}+\frac{20a^2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{10a^3bx^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{9(a+bx)}+\frac{2a^4x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{7(a+bx)}+\frac{2a^5Ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2b^5Bx^{17/2}\sqrt{a^2+2abx+b^2x^2}}{17(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (10*a^3*b*
(2*A*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (20*a^
2*b^2*(A*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) +
(10*a*b^3*(A*b + 2*a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*
x)) + (2*b^4*(A*b + 5*a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a +
 b*x)) + (2*b^5*B*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{3/2}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^5Ab^5x^{3/2}+a^4b^5(5Ab+aB)x^{5/2}+5a^3b^6(2Ab\right.}{}$$

$$=\frac{2a^5Ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2a^4(5Ab+aB)x^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.40

$$\frac{2x^{5/2}\sqrt{(a+bx)^2}\left(21879a^5(7A+5Bx)+60775a^4bx(9A+7Bx)+77350a^3b^2x^2(11A+9Bx)+53550a^2b^3x^3(13A+11Bx)+19635ab^4x^4(15A+13Bx)+3003b^5x^5(17A+15Bx)\right)}{765765(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*x^(5/2)*Sqrt[(a + b*x)^2]*(21879*a^5*(7*A + 5*B*x) + 60775*a^4*b*x*(9*A
+ 7*B*x) + 77350*a^3*b^2*x^2*(11*A + 9*B*x) + 53550*a^2*b^3*x^3*(13*A + 11*
B*x) + 19635*a*b^4*x^4*(15*A + 13*B*x) + 3003*b^5*x^5*(17*A + 15*B*x)))/(76
5765*(a + b*x))
```

IntegrateAlgebraic [A] time = 13.34, size = 171, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(153153a^5Ax^{5/2}+109395a^5Bx^{7/2}+546975a^4Abx^{7/2}+425425a^4bBx^{9/2}+850850a^3Ab^2x^{9/2}+696150a^3b^2Bx^{11/2}+696150a^2Ab^3x^{11/2}+589050a^2b^3Bx^{13/2}+294525aAb^4x^{13/2}+255255ab^4Bx^{15/2}+51051Ab^5x^{15/2}+45045b^5Bx^{17/2}\right)}{765765(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(153153*a^5*A*x^(5/2) + 546975*a^4*A*b*x^(7/2) + 10939
5*a^5*B*x^(7/2) + 850850*a^3*A*b^2*x^(9/2) + 425425*a^4*b*B*x^(9/2) + 69615
0*a^2*A*b^3*x^(11/2) + 696150*a^3*b^2*B*x^(11/2) + 294525*a*A*b^4*x^(13/2)
+ 589050*a^2*b^3*B*x^(13/2) + 51051*A*b^5*x^(15/2) + 255255*a*b^4*B*x^(15/2
) + 45045*b^5*B*x^(17/2)))/(765765*(a + b*x))
```

fricas [A] time = 0.44, size = 124, normalized size = 0.39

$$\frac{2}{765765}\left(45045\,Bb^5x^8+153153\,Aa^5x^2+51051\left(5\,Bab^4+Ab^5\right)x^7+294525\left(2\,Ba^2b^3+Aab^4\right)x^6+696150\left(Ba^3b^2+Aa^2b^3\right)x^5+425425\left(Ba^4b+2\,Aa^3b^2\right)x^4+109395\left(Ba^5+5\,Aa^4b\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/765765*(45045*B*b^5*x^8 + 153153*A*a^5*x^2 + 51051*(5*B*a*b^4 + A*b^5)*x^
7 + 294525*(2*B*a^2*b^3 + A*a*b^4)*x^6 + 696150*(B*a^3*b^2 + A*a^2*b^3)*x^5
 + 425425*(B*a^4*b + 2*A*a^3*b^2)*x^4 + 109395*(B*a^5 + 5*A*a^4*b)*x^3)*sqr
t(x)
```

giac [A] time = 0.17, size = 197, normalized size = 0.62

$$\frac{2}{17}\,Bb^5x^{\frac{17}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Bab^4x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{2}{15}\,Ab^5x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{20}{13}\,Ba^2b^3x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{10}{13}\,Aab^4x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{20}{11}\,Ba^3b^2x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{20}{11}\,Aa^2b^3x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{10}{9}\,Ba^4bx^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{20}{9}\,Aa^3b^2x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{7}\,Ba^5x^{\frac{7}{2}}\operatorname{sgn}(bx+a)+\frac{10}{7}\,Aa^4bx^{\frac{7}{2}}\operatorname{sgn}(bx+a)+\frac{2}{5}\,Aa^5x^{\frac{5}{2}}\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/17*B*b^5*x^(17/2)*sgn(b*x + a) + 2/3*B*a*b^4*x^(15/2)*sgn(b*x + a) + 2/15
*A*b^5*x^(15/2)*sgn(b*x + a) + 20/13*B*a^2*b^3*x^(13/2)*sgn(b*x + a) + 10/1
3*A*a*b^4*x^(13/2)*sgn(b*x + a) + 20/11*B*a^3*b^2*x^(11/2)*sgn(b*x + a) + 2
0/11*A*a^2*b^3*x^(11/2)*sgn(b*x + a) + 10/9*B*a^4*b*x^(9/2)*sgn(b*x + a) +
20/9*A*a^3*b^2*x^(9/2)*sgn(b*x + a) + 2/7*B*a^5*x^(7/2)*sgn(b*x + a) + 10/7
*A*a^4*b*x^(7/2)*sgn(b*x + a) + 2/5*A*a^5*x^(5/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(45045B\,b^5x^6+51051A\,b^5x^5+255255Ba\,b^4x^5+294525Aa\,b^4x^4+589050B\,a^2b^3x^4+696150A\,a^2b^3x^3+696150B\,a^3b^2x^3+850850A\,a^3b^2x^2+425425B\,a^4b\,x^2+546975A\,a^4bx+109395B\,a^5x+153153A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}x^{\frac{5}{2}}}{765765\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/765765*x^(5/2)*(45045*B*b^5*x^6+51051*A*b^5*x^5+255255*B*a*b^4*x^5+294525
*A*a*b^4*x^4+589050*B*a^2*b^3*x^4+696150*A*a^2*b^3*x^3+696150*B*a^3*b^2*x^3
```

```
+850850*A*a^3*b^2*x^2+425425*B*a^4*b*x^2+546975*A*a^4*b*x+109395*B*a^5*x+15
3153*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**A**] time = 0.69, size = 241, normalized size = 0.75

$$\frac{2}{45045}\left(231\left(13\,b^5x^2+15\,ab^4x\right)x^{\frac{11}{2}}+1260\left(11\,ab^4x^2+13\,a^2b^3x\right)x^{\frac{9}{2}}+2730\left(9\,a^2b^3x^2+11\,a^3b^2x\right)x^{\frac{7}{2}}+2860\left(7\,a^3b^2x^2+9\,a^4bx\right)x^{\frac{5}{2}}+1287\left(5\,a^4bx^2+7\,a^5x\right)x^{\frac{3}{2}}\right)A+\frac{2}{765765}\left(3003\left(15\,b^5x^2+17\,ab^4x\right)x^{\frac{13}{2}}+15708\left(13\,ab^4x^2+15\,a^2b^3x\right)x^{\frac{11}{2}}+32130\left(11\,a^2b^3x^2+13\,a^3b^2x\right)x^{\frac{9}{2}}+30940\left(9\,a^3b^2x^2+11\,a^4bx\right)x^{\frac{7}{2}}+12155\left(7\,a^4bx^2+9\,a^5x\right)x^{\frac{5}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/45045*(231*(13*b^5*x^2 + 15*a*b^4*x)*x^(11/2) + 1260*(11*a*b^4*x^2 + 13*a
^2*b^3*x)*x^(9/2) + 2730*(9*a^2*b^3*x^2 + 11*a^3*b^2*x)*x^(7/2) + 2860*(7*a
^3*b^2*x^2 + 9*a^4*b*x)*x^(5/2) + 1287*(5*a^4*b*x^2 + 7*a^5*x)*x^(3/2))*A +
 2/765765*(3003*(15*b^5*x^2 + 17*a*b^4*x)*x^(13/2) + 15708*(13*a*b^4*x^2 +
15*a^2*b^3*x)*x^(11/2) + 32130*(11*a^2*b^3*x^2 + 13*a^3*b^2*x)*x^(9/2) + 30
940*(9*a^3*b^2*x^2 + 11*a^4*b*x)*x^(7/2) + 12155*(7*a^4*b*x^2 + 9*a^5*x)*x^
(5/2))*B
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3/2}\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.730 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{20a^2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{2b^4x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{13(a+bx)}+\frac{10ab^3x^{11/2}\sqrt{a^2+2abx+b^2}}{11(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^4x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{13(a+bx)}+\frac{10ab^3x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{11(a+bx)}+\frac{20a^2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{10a^3bx^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{7(a+bx)}+\frac{2a^4x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{5(a+bx)}+\frac{2a^5Ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2b^5Bx^{15/2}\sqrt{a^2+2abx+b^2x^2}}{15(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (10*a^3*b*
(2*A*b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (20*a^
2*b^2*(A*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (1
0*a*b^3*(A*b + 2*a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)
) + (2*b^4*(A*b + 5*a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b
*x)) + (2*b^5*B*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \sqrt{x}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(a^5Ab^5\sqrt{x}+a^4b^5(5Ab+aB)x^{3/2}+5a^3b^6(2.\right.}{}\\
&= \frac{2a^5Ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2a^4(5Ab+aB)x^{5/2}\sqrt{a^2+2abx+b}}{5(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.40

$$\frac{2x^{3/2}\sqrt{(a+bx)^2}\left(3003a^5(5A+3Bx)+6435a^4bx(7A+5Bx)+7150a^3b^2x^2(9A+7Bx)+4550a^2b^3x^3(11A+9Bx)+1575ab^4x^4(13A+11Bx)+231b^5x^5(15A+13Bx)\right)}{45045(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*Sqrt[(a + b*x)^2]*(3003*a^5*(5*A + 3*B*x) + 6435*a^4*b*x*(7*A +
5*B*x) + 7150*a^3*b^2*x^2*(9*A + 7*B*x) + 4550*a^2*b^3*x^3*(11*A + 9*B*x) +
 1575*a*b^4*x^4*(13*A + 11*B*x) + 231*b^5*x^5*(15*A + 13*B*x)))/(45045*(a +
 b*x))
```

IntegrateAlgebraic [A] time = 11.35, size = 171, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(15015a^5Ax^{3/2}+9009a^5Bx^{5/2}+45045a^4Abx^{5/2}+32175a^4bBx^{7/2}+64350a^3Ab^2x^{7/2}+50050a^3b^2Bx^{9/2}+50050a^2Ab^3x^{9/2}+40950a^2b^3Bx^{11/2}+20475aAb^4x^{11/2}+17325ab^4Bx^{13/2}+3465Ab^5x^{13/2}+3003b^5Bx^{15/2}\right)}{45045(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(15015*a^5*A*x^(3/2) + 45045*a^4*A*b*x^(5/2) + 9009*a^
5*B*x^(5/2) + 64350*a^3*A*b^2*x^(7/2) + 32175*a^4*b*B*x^(7/2) + 50050*a^2*A
*b^3*x^(9/2) + 50050*a^3*b^2*B*x^(9/2) + 20475*a*A*b^4*x^(11/2) + 40950*a^2
*b^3*B*x^(11/2) + 3465*A*b^5*x^(13/2) + 17325*a*b^4*B*x^(13/2) + 3003*b^5*B
*x^(15/2)))/(45045*(a + b*x))
```

fricas [A] time = 0.43, size = 122, normalized size = 0.38

$$\frac{2}{45045}\left(3003\,Bb^5x^7+15015\,Aa^5x+3465\left(5\,Bab^4+Ab^5\right)x^6+20475\left(2\,Ba^2b^3+Aab^4\right)x^5+50050\left(Ba^3b^2+Aa^2b^3\right)x^4+32175\left(Ba^4b+2\,Aa^3b^2\right)x^3+9009\left(Ba^5+5\,Aa^4b\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/45045*(3003*B*b^5*x^7 + 15015*A*a^5*x + 3465*(5*B*a*b^4 + A*b^5)*x^6 + 20
475*(2*B*a^2*b^3 + A*a*b^4)*x^5 + 50050*(B*a^3*b^2 + A*a^2*b^3)*x^4 + 32175
*(B*a^4*b + 2*A*a^3*b^2)*x^3 + 9009*(B*a^5 + 5*A*a^4*b)*x^2)*sqrt(x)
```

giac [A] time = 0.17, size = 197, normalized size = 0.62

$$\frac{2}{15}\,Bb^5x^{\frac{15}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{10}{13}\,Bab^4x^{\frac{13}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{13}\,Ab^5x^{\frac{13}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{20}{11}\,Ba^2b^3x^{\frac{11}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{10}{11}\,Aab^4x^{\frac{11}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{20}{9}\,Ba^3b^2x^{\frac{9}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{20}{9}\,Aa^2b^3x^{\frac{9}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}\,Ba^4bx^{\frac{7}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{20}{7}\,Aa^3b^2x^{\frac{7}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Ba^5x^{\frac{5}{2}}\,\mathrm{sgn}\left(bx+a\right)+2\,Aa^4bx^{\frac{5}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Aa^5x^{\frac{3}{2}}\,\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^5*x^(15/2)*sgn(b*x + a) + 10/13*B*a*b^4*x^(13/2)*sgn(b*x + a) + 2/
13*A*b^5*x^(13/2)*sgn(b*x + a) + 20/11*B*a^2*b^3*x^(11/2)*sgn(b*x + a) + 10
/11*A*a*b^4*x^(11/2)*sgn(b*x + a) + 20/9*B*a^3*b^2*x^(9/2)*sgn(b*x + a) + 2
0/9*A*a^2*b^3*x^(9/2)*sgn(b*x + a) + 10/7*B*a^4*b*x^(7/2)*sgn(b*x + a) + 20
/7*A*a^3*b^2*x^(7/2)*sgn(b*x + a) + 2/5*B*a^5*x^(5/2)*sgn(b*x + a) + 2*A*a^
4*b*x^(5/2)*sgn(b*x + a) + 2/3*A*a^5*x^(3/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(3003B\,b^5x^6+3465A\,b^5x^5+17325Ba\,b^4x^5+20475Aa\,b^4x^4+40950B\,a^2b^3x^4+50050A\,a^2b^3x^3+50050B\,a^3b^2x^3+64350A\,a^3b^2x^2+32175B\,a^4b\,x^2+45045A\,a^4bx+9009B\,a^5x+15015A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}x^{\frac{3}{2}}}{45045\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3003*B*b^5*x^6+3465*A*b^5*x^5+17325*B*a*b^4*x^5+20475*A*a*
b^4*x^4+40950*B*a^2*b^3*x^4+50050*A*a^2*b^3*x^3+50050*B*a^3*b^2*x^3+64350*A
*a^3*b^2*x^2+32175*B*a^4*b*x^2+45045*A*a^4*b*x+9009*B*a^5*x+15015*A*a^5)*((
b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.78, size = 241, normalized size = 0.75

$$\frac{2}{45045}\left(315\left(11b^5x^2+13ab^4x\right)x^{\frac{9}{2}}+1820\left(9ab^4x^2+11a^2b^3x\right)x^{\frac{7}{2}}+4290\left(7a^2b^3x^2+9a^3b^2x\right)x^{\frac{5}{2}}+5148\left(5a^3b^2x^2+7a^4bx\right)x^{\frac{3}{2}}+3003\left(3a^4bx^2+5a^5x\right)\sqrt{x}\right)A+\frac{2}{45045}\left(231\left(13b^5x^2+15ab^4x\right)x^{\frac{11}{2}}+1260\left(11ab^4x^2+13a^2b^3x\right)x^{\frac{9}{2}}+2730\left(9a^2b^3x^2+11a^3b^2x\right)x^{\frac{7}{2}}+2860\left(7a^3b^2x^2+9a^4bx\right)x^{\frac{5}{2}}+1287\left(5a^4bx^2+7a^5x\right)x^{\frac{3}{2}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/45045*(315*(11*b^5*x^2 + 13*a*b^4*x)*x^(9/2) + 1820*(9*a*b^4*x^2 + 11*a^2
*b^3*x)*x^(7/2) + 4290*(7*a^2*b^3*x^2 + 9*a^3*b^2*x)*x^(5/2) + 5148*(5*a^3*
b^2*x^2 + 7*a^4*b*x)*x^(3/2) + 3003*(3*a^4*b*x^2 + 5*a^5*x)*sqrt(x))*A + 2/
45045*(231*(13*b^5*x^2 + 15*a*b^4*x)*x^(11/2) + 1260*(11*a*b^4*x^2 + 13*a^2
*b^3*x)*x^(9/2) + 2730*(9*a^2*b^3*x^2 + 11*a^3*b^2*x)*x^(7/2) + 2860*(7*a^3
*b^2*x^2 + 9*a^4*b*x)*x^(5/2) + 1287*(5*a^4*b*x^2 + 7*a^5*x)*x^(3/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{x}\ \left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.731 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=316

$$\frac{20a^2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2b^4x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{10ab^3x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(}{9(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^4x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{10ab^3x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9(a+bx)}+\frac{20a^2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2a^3bx^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{a+bx}+\frac{2a^4x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{3(a+bx)}+\frac{2a^5A\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2b^5Bx^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*a^5*A*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*a^4*(5*A*b +
 a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a^3*b*(2*A*
b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (20*a^2*b^2*(A*
b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (10*a*b^3*(
A*b + 2*a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b^4*
(A*b + 5*a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b
^5*B*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{x}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{\sqrt{x}}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{\sqrt{x}}+a^4b^5(5Ab+aB)\sqrt{x}+5a^3b^6(2Ab+aB)x^3\right.}{b}\\ &= \frac{2a^5A\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2a^4(5Ab+aB)x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.06, size = 126, normalized size = 0.40

$$\frac{2\sqrt{x}\sqrt{(a+bx)^2}\left(3003a^5(3A+Bx)+3003a^4bx(5A+3Bx)+2574a^3b^2x^2(7A+5Bx)+1430a^2b^3x^3(9A+7Bx)+455ab^4x^4(11A+9Bx)+63b^5x^5(13A+11Bx)\right)}{9009(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[(a + b*x)^2]*(3003*a^5*(3*A + B*x) + 3003*a^4*b*x*(5*A + 3*
B*x) + 2574*a^3*b^2*x^2*(7*A + 5*B*x) + 1430*a^2*b^3*x^3*(9*A + 7*B*x) + 45
5*a*b^4*x^4*(11*A + 9*B*x) + 63*b^5*x^5*(13*A + 11*B*x)))/(9009*(a + b*x))
```

IntegrateAlgebraic [A] time = 10.45, size = 171, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\left(9009a^5A\sqrt{x}+3003a^5Bx^{3/2}+15015a^4Abx^{3/2}+9009a^4bBx^{5/2}+18018a^3Ab^2x^{5/2}+12870a^3b^2Bx^{7/2}+12870a^2Ab^3x^{7/2}+10010a^2b^3Bx^{9/2}+5005aAb^4x^{9/2}+4095ab^4Bx^{11/2}+819Ab^5x^{11/2}+693b^5Bx^{13/2}\right)}{9009(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(9009*a^5*A*Sqrt[x] + 15015*a^4*A*b*x^(3/2) + 3003*a^5
*B*x^(3/2) + 18018*a^3*A*b^2*x^(5/2) + 9009*a^4*b*B*x^(5/2) + 12870*a^2*A*b
^3*x^(7/2) + 12870*a^3*b^2*B*x^(7/2) + 5005*a*A*b^4*x^(9/2) + 10010*a^2*b^3
*B*x^(9/2) + 819*A*b^5*x^(11/2) + 4095*a*b^4*B*x^(11/2) + 693*b^5*B*x^(13/2
)))/(9009*(a + b*x))
```

fricas [A] time = 0.42, size = 119, normalized size = 0.38

$$\frac{2}{9009}\left(693\,Bb^5x^6+9009\,Aa^5+819\left(5\,Bab^4+Ab^5\right)x^5+5005\left(2\,Ba^2b^3+Aab^4\right)x^4+12870\left(Ba^3b^2+Aa^2b^3\right)x^3+9009\left(Ba^4b+2\,Aa^3b^2\right)x^2+3003\left(Ba^5+5\,Aa^4b\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/9009*(693*B*b^5*x^6 + 9009*A*a^5 + 819*(5*B*a*b^4 + A*b^5)*x^5 + 5005*(2*
B*a^2*b^3 + A*a*b^4)*x^4 + 12870*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 9009*(B*a^4*
b + 2*A*a^3*b^2)*x^2 + 3003*(B*a^5 + 5*A*a^4*b)*x)*sqrt(x)
```

giac [A] time = 0.17, size = 197, normalized size = 0.62

$$\frac{2}{13}\,Bb^5x^{\frac{13}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{11}\,Bab^4x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{11}\,Ab^5x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{9}\,Ba^2b^3x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}\,Aab^4x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{7}\,Ba^3b^2x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{7}\,Aa^2b^3x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Ba^4bx^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+4\,Aa^3b^2x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Ba^5x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}\,Aa^4bx^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Aa^5\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^5*x^(13/2)*sgn(b*x + a) + 10/11*B*a*b^4*x^(11/2)*sgn(b*x + a) + 2/
11*A*b^5*x^(11/2)*sgn(b*x + a) + 20/9*B*a^2*b^3*x^(9/2)*sgn(b*x + a) + 10/9
*A*a*b^4*x^(9/2)*sgn(b*x + a) + 20/7*B*a^3*b^2*x^(7/2)*sgn(b*x + a) + 20/7*
A*a^2*b^3*x^(7/2)*sgn(b*x + a) + 2*B*a^4*b*x^(5/2)*sgn(b*x + a) + 4*A*a^3*b
^2*x^(5/2)*sgn(b*x + a) + 2/3*B*a^5*x^(3/2)*sgn(b*x + a) + 10/3*A*a^4*b*x^(
3/2)*sgn(b*x + a) + 2*A*a^5*sqrt(x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(693B\,b^5x^6+819A\,b^5x^5+4095Ba\,b^4x^5+5005Aa\,b^4x^4+10010B\,a^2b^3x^4+12870A\,a^2b^3x^3+12870B\,a^3b^2x^3+18018A\,a^3b^2x^2+9009B\,a^4b\,x^2+15015A\,a^4bx+3003B\,a^5x+9009A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}\sqrt{x}}{9009\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x)
```

```
[Out] 2/9009*x^(1/2)*(693*B*b^5*x^6+819*A*b^5*x^5+4095*B*a*b^4*x^5+5005*A*a*b^4*x
^4+10010*B*a^2*b^3*x^4+12870*A*a^2*b^3*x^3+12870*B*a^3*b^2*x^3+18018*A*a^3*
b^2*x^2+9009*B*a^4*b*x^2+15015*A*a^4*b*x+3003*B*a^5*x+9009*A*a^5)*((b*x+a)^
2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.77, size = 240, normalized size = 0.76

$$\frac{2}{3465}\left(35\left(9\,b^5x^2+11\,ab^4x\right)x^{\frac{7}{2}}+220\left(7\,ab^4x^2+9\,a^2b^3x\right)x^{\frac{5}{2}}+594\left(5\,a^2b^3x^2+7\,a^3b^2x\right)x^{\frac{3}{2}}+924\left(3\,a^3b^2x^2+5\,a^4bx\right)\sqrt{x}+\frac{1155\left(a^4bx^2+3\,a^5x\right)}{\sqrt{x}}\right)A+\frac{2}{45045}\left(315\left(11\,b^5x^2+13\,ab^4x\right)x^{\frac{9}{2}}+1820\left(9\,ab^4x^2+11\,a^2b^3x\right)x^{\frac{7}{2}}+4290\left(7\,a^2b^3x^2+9\,a^3b^2x\right)x^{\frac{5}{2}}+5148\left(5\,a^3b^2x^2+7\,a^4bx\right)x^{\frac{3}{2}}+3003\left(3\,a^4bx^2+5\,a^5x\right)\sqrt{x}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/3465*(35*(9*b^5*x^2 + 11*a*b^4*x)*x^(7/2) + 220*(7*a*b^4*x^2 + 9*a^2*b^3*
x)*x^(5/2) + 594*(5*a^2*b^3*x^2 + 7*a^3*b^2*x)*x^(3/2) + 924*(3*a^3*b^2*x^2
 + 5*a^4*b*x)*sqrt(x) + 1155*(a^4*b*x^2 + 3*a^5*x)/sqrt(x))*A + 2/45045*(31
5*(11*b^5*x^2 + 13*a*b^4*x)*x^(9/2) + 1820*(9*a*b^4*x^2 + 11*a^2*b^3*x)*x^(
7/2) + 4290*(7*a^2*b^3*x^2 + 9*a^3*b^2*x)*x^(5/2) + 5148*(5*a^3*b^2*x^2 + 7
*a^4*b*x)*x^(3/2) + 3003*(3*a^4*b*x^2 + 5*a^5*x)*sqrt(x))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(1/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/sqrt(x), x)
```

3.732 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{3/2}} dx$

Optimal. Leaf size=314

$$\frac{4a^2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^4x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{9(a+bx)}+\frac{10ab^3x^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2b^4x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{9(a+bx)}+\frac{10ab^3x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{7(a+bx)}+\frac{4a^2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{10a^3bx^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{3(a+bx)}+\frac{2a^4\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{a+bx}-\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2b^5Bx^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*a^4*(5*A*
b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a^3*b*(2*A*
b + a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (4*a^2*b^2*
(A*b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a*b^3*(A
*b + 2*a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^4*(
A*b + 5*a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b^5*
B*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{3/2}}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{3/2}}+\frac{a^4b^5(5Ab+aB)}{\sqrt{x}}+5a^3b^6(2Ab+aB)\sqrt{x}+1\right.}{b^4}\\
&= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2a^4(5Ab+aB)\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+
\end{aligned}$$

Mathematica [A] time = 0.04, size = 124, normalized size = 0.39

$$\frac{2\sqrt{(a+bx)^2}\left(-693a^5(A-Bx)+1155a^4bx(3A+Bx)+462a^3b^2x^2(5A+3Bx)+198a^2b^3x^3(7A+5Bx)+55ab^4x^4(9A+7Bx)+7b^5x^5(11A+9Bx)\right)}{693\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-693*a^5*(A - B*x) + 1155*a^4*b*x*(3*A + B*x) + 462*a
^3*b^2*x^2*(5*A + 3*B*x) + 198*a^2*b^3*x^3*(7*A + 5*B*x) + 55*a*b^4*x^4*(9*
A + 7*B*x) + 7*b^5*x^5*(11*A + 9*B*x)))/(693*Sqrt[x]*(a + b*x))
```

IntegrateAlgebraic [A] time = 9.36, size = 145, normalized size = 0.46

$$\frac{2\sqrt{(a+bx)^2}\left(-693a^5A+693a^5Bx+3465a^4Abx+1155a^4bBx^2+2310a^3Ab^2x^2+1386a^3b^2Bx^3+1386a^2Ab^3x^3+990a^2b^3Bx^4+495aAb^4x^4+385ab^4Bx^5+77Ab^5x^5+63b^5Bx^6\right)}{693\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-693*a^5*A + 3465*a^4*A*b*x + 693*a^5*B*x + 2310*a^3*
A*b^2*x^2 + 1155*a^4*b*B*x^2 + 1386*a^2*A*b^3*x^3 + 1386*a^3*b^2*B*x^3 + 49
5*a*A*b^4*x^4 + 990*a^2*b^3*B*x^4 + 77*A*b^5*x^5 + 385*a*b^4*B*x^5 + 63*b^5
*B*x^6))/(693*Sqrt[x]*(a + b*x))
```

fricas [A] time = 0.47, size = 119, normalized size = 0.38

$$\frac{2\left(63\,Bb^5x^6-693\,Aa^5+77\left(5\,Bab^4+Ab^5\right)x^5+495\left(2\,Ba^2b^3+Aab^4\right)x^4+1386\left(Ba^3b^2+Aa^2b^3\right)x^3+1155\left(Ba^4b+2\,Aa^3b^2\right)x^2+693\left(Ba^5+5\,Aa^4b\right)x\right)}{693\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/693*(63*B*b^5*x^6 - 693*A*a^5 + 77*(5*B*a*b^4 + A*b^5)*x^5 + 495*(2*B*a^2
*b^3 + A*a*b^4)*x^4 + 1386*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 1155*(B*a^4*b + 2*
A*a^3*b^2)*x^2 + 693*(B*a^5 + 5*A*a^4*b)*x)/sqrt(x)
```

giac [A] time = 0.18, size = 197, normalized size = 0.63

$$\frac{2}{11}\,Bb^5x^{\frac{11}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}\,Bab^4x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{9}\,Ab^5x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{7}\,Ba^2b^3x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}\,Aab^4x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+4\,Ba^3b^2x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+4\,Aa^2b^3x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}\,Ba^4bx^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{3}\,Aa^3b^2x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Ba^5\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+10\,Aa^4b\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\,Aa^5\mathrm{sgn}\left(bx+a\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^5*x^(11/2)*sgn(b*x + a) + 10/9*B*a*b^4*x^(9/2)*sgn(b*x + a) + 2/9*
A*b^5*x^(9/2)*sgn(b*x + a) + 20/7*B*a^2*b^3*x^(7/2)*sgn(b*x + a) + 10/7*A*a
*b^4*x^(7/2)*sgn(b*x + a) + 4*B*a^3*b^2*x^(5/2)*sgn(b*x + a) + 4*A*a^2*b^3*
x^(5/2)*sgn(b*x + a) + 10/3*B*a^4*b*x^(3/2)*sgn(b*x + a) + 20/3*A*a^3*b^2*x
^(3/2)*sgn(b*x + a) + 2*B*a^5*sqrt(x)*sgn(b*x + a) + 10*A*a^4*b*sqrt(x)*sgn
(b*x + a) - 2*A*a^5*sgn(b*x + a)/sqrt(x)
```

maple [A] time = 0.06, size = 140, normalized size = 0.45

$$-\frac{2\left(-63B\,b^5x^6-77A\,b^5x^5-385Ba\,b^4x^5-495Aa\,b^4x^4-990B\,a^2b^3x^4-1386A\,a^2b^3x^3-1386B\,a^3b^2x^3-2310A\,a^3b^2x^2-1155B\,a^4b\,x^2-3465A\,a^4bx-693B\,a^5x+693A\,a^5\right)\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}}{693\left(bx+a\right)^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x)
```

```
[Out] -2/693*(-63*B*b^5*x^6-77*A*b^5*x^5-385*B*a*b^4*x^5-495*A*a*b^4*x^4-990*B*a^
2*b^3*x^4-1386*A*a^2*b^3*x^3-1386*B*a^3*b^2*x^3-2310*A*a^3*b^2*x^2-1155*B*a
^4*b*x^2-3465*A*a^4*b*x-693*B*a^5*x+693*A*a^5)*((b*x+a)^2)^(5/2)/x^(1/2)/(b
*x+a)^5
```

maxima [A] time = 0.64, size = 238, normalized size = 0.76

$$\frac{2}{315}\left(5\left(7b^5x^2+9ab^4x\right)x^{\frac{5}{2}}+36\left(5ab^4x^2+7a^2b^3x\right)x^{\frac{3}{2}}+126\left(3a^2b^3x^2+5a^3b^2x\right)\sqrt{x}+\frac{420\left(a^3b^2x^2+3a^4bx\right)}{\sqrt{x}}+\frac{315\left(a^4bx^2-a^5x\right)}{x^{\frac{3}{2}}}\right)A+\frac{2}{3465}\left(35\left(9b^5x^2+11ab^4x\right)x^{\frac{7}{2}}+220\left(7ab^4x^2+9a^2b^3x\right)x^{\frac{5}{2}}+594\left(5a^2b^3x^2+7a^3b^2x\right)x^{\frac{3}{2}}+924\left(3a^3b^2x^2+5a^4bx\right)\sqrt{x}+\frac{1155\left(a^4bx^2+3a^5x\right)}{\sqrt{x}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(5*(7*b^5*x^2 + 9*a*b^4*x)*x^(5/2) + 36*(5*a*b^4*x^2 + 7*a^2*b^3*x)*x
^(3/2) + 126*(3*a^2*b^3*x^2 + 5*a^3*b^2*x)*sqrt(x) + 420*(a^3*b^2*x^2 + 3*a
^4*b*x)/sqrt(x) + 315*(a^4*b*x^2 - a^5*x)/x^(3/2))*A + 2/3465*(35*(9*b^5*x^
2 + 11*a*b^4*x)*x^(7/2) + 220*(7*a*b^4*x^2 + 9*a^2*b^3*x)*x^(5/2) + 594*(5*
a^2*b^3*x^2 + 7*a^3*b^2*x)*x^(3/2) + 924*(3*a^3*b^2*x^2 + 5*a^4*b*x)*sqrt(x
) + 1155*(a^4*b*x^2 + 3*a^5*x)/sqrt(x))*B
```

mupad [B] time = 1.85, size = 140, normalized size = 0.45

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,B\,b^4\,x^6}{11}-\frac{2\,A\,a^5}{b}+\frac{10\,a^3\,x^2\,\left(2\,A\,b+B\,a\right)}{3}+\frac{x^5\,\left(154\,A\,b^5+770\,B\,a\,b^4\right)}{693\,b}+4\,a^2\,b\,x^3\,\left(A\,b+B\,a\right)+\frac{10\,a\,b^2\,x^4\,\left(A\,b+2\,B\,a\right)}{7}+\frac{2\,a^4\,x\,\left(5\,A\,b+B\,a\right)}{b}\right)}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*B*b^4*x^6)/11 - (2*A*a^5)/b + (10*a^3*
x^2*(2*A*b + B*a))/3 + (x^5*(154*A*b^5 + 770*B*a*b^4))/(693*b) + 4*a^2*b*x^
3*(A*b + B*a) + (10*a*b^2*x^4*(A*b + 2*B*a))/7 + (2*a^4*x*(5*A*b + B*a))/b)
)/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(3/2), x)
```

3.733 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=314

$$\frac{20a^2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2b^4x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{7(a+bx)}+\frac{2ab^3x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(2a$$

Rubi [A] time = 0.12, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{\sqrt{x}\,(a+bx)}+\frac{10a^3b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{a+bx}+\frac{20a^2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2ab^3x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{a+bx}+\frac{2b^4x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{7(a+bx)}-\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}+\frac{2b^5Bx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*a^4*(5*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (10*a^3*b*(
2*A*b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (20*a^2*b^2
*(A*b + a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a*b^
3*(A*b + 2*a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^4*(
A*b + 5*a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^5*
B*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{5/2}}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{5/2}}+\frac{a^4b^5(5Ab+aB)}{x^{3/2}}+\frac{5a^3b^6(2Ab+aB)}{\sqrt{x}}+10a^2b^7(Ab+\right.}{b^4\left(ab+b\right.}\\ &= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{10a^3b}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 122, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(21a^5(A+3Bx)+315a^4bx(A-Bx)-210a^3b^2x^2(3A+Bx)-42a^2b^3x^3(5A+3Bx)-9ab^4x^4(7A+5Bx)-b^5x^5(9A+7Bx)\right)}{63x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(315*a^4*b*x*(A - B*x) - 210*a^3*b^2*x^2*(3*A + B*x)
+ 21*a^5*(A + 3*B*x) - 42*a^2*b^3*x^3*(5*A + 3*B*x) - 9*a*b^4*x^4*(7*A + 5*
B*x) - b^5*x^5*(9*A + 7*B*x)))/(63*x^(3/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 11.70, size = 145, normalized size = 0.46

$$\frac{2\sqrt{(a+bx)^2}\left(-21a^5A-63a^5Bx-315a^4Abx+315a^4bBx^2+630a^3Ab^2x^2+210a^3b^2Bx^3+210a^2Ab^3x^3+126a^2b^3Bx^4+63aAb^4x^4+45ab^4Bx^5+9Ab^5x^5+7b^5Bx^6\right)}{63x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*a^5*A - 315*a^4*A*b*x - 63*a^5*B*x + 630*a^3*A*b^
2*x^2 + 315*a^4*b*B*x^2 + 210*a^2*A*b^3*x^3 + 210*a^3*b^2*B*x^3 + 63*a*A*b^
4*x^4 + 126*a^2*b^3*B*x^4 + 9*A*b^5*x^5 + 45*a*b^4*B*x^5 + 7*b^5*B*x^6))/(6
3*x^(3/2)*(a + b*x))
```

fricas [A] time = 0.60, size = 119, normalized size = 0.38

$$\frac{2\left(7\,Bb^5x^6-21\,Aa^5+9\left(5\,Bab^4+Ab^5\right)x^5+63\left(2\,Ba^2b^3+Aab^4\right)x^4+210\left(Ba^3b^2+Aa^2b^3\right)x^3+315\left(Ba^4b+2\,Aa^3b^2\right)x^2-63\left(Ba^5+5\,Aa^4b\right)x\right)}{63\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/63*(7*B*b^5*x^6 - 21*A*a^5 + 9*(5*B*a*b^4 + A*b^5)*x^5 + 63*(2*B*a^2*b^3
+ A*a*b^4)*x^4 + 210*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 315*(B*a^4*b + 2*A*a^3*b
^2)*x^2 - 63*(B*a^5 + 5*A*a^4*b)*x)/x^(3/2)
```

giac [A] time = 0.18, size = 195, normalized size = 0.62

$$\frac{2}{9}\,Bb^5x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}\,Bab^4x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Ab^5x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+4\,Ba^2b^3x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Aab^4x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{3}\,Ba^3b^2x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{3}\,Aa^2b^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+10\,Ba^4b\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+20\,Aa^3b^2\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(3\,Ba^5x\mathrm{sgn}\left(bx+a\right)+15\,Aa^4bx\mathrm{sgn}\left(bx+a\right)+Aa^5\mathrm{sgn}\left(bx+a\right)\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^5*x^(9/2)*sgn(b*x + a) + 10/7*B*a*b^4*x^(7/2)*sgn(b*x + a) + 2/7*A*
b^5*x^(7/2)*sgn(b*x + a) + 4*B*a^2*b^3*x^(5/2)*sgn(b*x + a) + 2*A*a*b^4*x^(
5/2)*sgn(b*x + a) + 20/3*B*a^3*b^2*x^(3/2)*sgn(b*x + a) + 20/3*A*a^2*b^3*x^
(3/2)*sgn(b*x + a) + 10*B*a^4*b*sqrt(x)*sgn(b*x + a) + 20*A*a^3*b^2*sqrt(x)
*sgn(b*x + a) - 2/3*(3*B*a^5*x*sgn(b*x + a) + 15*A*a^4*b*x*sgn(b*x + a) + A
*a^5*sgn(b*x + a))/x^(3/2)
```

maple [A] time = 0.06, size = 140, normalized size = 0.45

$$-\frac{2\left(-7B\,b^5x^6-9A\,b^5x^5-45Ba\,b^4x^5-63Aa\,b^4x^4-126B\,a^2b^3x^4-210A\,a^2b^3x^3-210B\,a^3b^2x^3-630A\,a^3b^2x^2-315B\,a^4b\,x^2+315A\,a^4bx+63B\,a^5x+21A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{63\,(bx+a)^5\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x)
```

```
[Out] -2/63*(-7*B*b^5*x^6-9*A*b^5*x^5-45*B*a*b^4*x^5-63*A*a*b^4*x^4-126*B*a^2*b^3
*x^4-210*A*a^2*b^3*x^3-210*B*a^3*b^2*x^3-630*A*a^3*b^2*x^2-315*B*a^4*b*x^2+
315*A*a^4*b*x+63*B*a^5*x+21*A*a^5)*((b*x+a)^2)^(5/2)/x^(3/2)/(b*x+a)^5
```

maxima [A] time = 0.57, size = 236, normalized size = 0.75

$$\frac{2}{105}\left(3\left(5\,b^5x^2+7\,ab^4x\right)x^{\frac{3}{2}}+28\left(3\,ab^4x^2+5\,a^2b^3x\right)\sqrt{x}+\frac{210\left(a^2b^3x^2+3\,a^3b^2x\right)}{\sqrt{x}}+\frac{420\left(a^3b^2x^2-a^4bx\right)}{x^{\frac{3}{2}}}-\frac{35\left(3\,a^4bx^2+a^5x\right)}{x^{\frac{5}{2}}}\right)A+\frac{2}{315}\left(5\left(7\,b^5x^2+9\,ab^4x\right)x^{\frac{5}{2}}+36\left(5\,ab^4x^2+7\,a^2b^3x\right)x^{\frac{3}{2}}+126\left(3\,a^2b^3x^2+5\,a^3b^2x\right)\sqrt{x}+\frac{420\left(a^3b^2x^2+3\,a^4bx\right)}{\sqrt{x}}+\frac{315\left(a^4bx^2-a^5x\right)}{x^{\frac{3}{2}}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/105*(3*(5*b^5*x^2 + 7*a*b^4*x)*x^(3/2) + 28*(3*a*b^4*x^2 + 5*a^2*b^3*x)*s
qrt(x) + 210*(a^2*b^3*x^2 + 3*a^3*b^2*x)/sqrt(x) + 420*(a^3*b^2*x^2 - a^4*b
*x)/x^(3/2) - 35*(3*a^4*b*x^2 + a^5*x)/x^(5/2))*A + 2/315*(5*(7*b^5*x^2 + 9
*a*b^4*x)*x^(5/2) + 36*(5*a*b^4*x^2 + 7*a^2*b^3*x)*x^(3/2) + 126*(3*a^2*b^3
*x^2 + 5*a^3*b^2*x)*sqrt(x) + 420*(a^3*b^2*x^2 + 3*a^4*b*x)/sqrt(x) + 315*(
a^4*b*x^2 - a^5*x)/x^(3/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(5/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(5/2), x)
```

3.734 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{7/2}} \, dx$

Optimal. Leaf size=316

$$\frac{20a^2b^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^4x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{5(a+bx)}+\frac{10ab^3x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Rubi [A] time = 0.12, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{3x^{3/2}(a+bx)}-\frac{10a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{\sqrt{x}\,(a+bx)}+\frac{20a^2b^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{10ab^3x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{3(a+bx)}+\frac{2b^4x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{5(a+bx)}-\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}+\frac{2b^5Bx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*a^4*(5*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (10*a^3*b
*(2*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (20*a^2
*b^2*(A*b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a*b
^3*(A*b + 2*a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*
b^4*(A*b + 5*a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2
*b^5*B*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{7/2}} \, dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{7/2}} \, dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{7/2}}+\frac{a^4b^5(5Ab+aB)}{x^{5/2}}+\frac{5a^3b^6(2Ab+aB)}{x^{3/2}}+\frac{10a^2b^7(Ab+}{\sqrt{x}}\right.}{b^4\left(ab+b^2\right.}\\
&= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-10
\end{aligned}$$

Mathematica [A] time = 0.04, size = 122, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(7a^5(3A+5Bx)+175a^4bx(A+3Bx)+1050a^3b^2x^2(A-Bx)-350a^2b^3x^3(3A+Bx)-35ab^4x^4(5A+3Bx)-3b^5x^5(7A+5Bx)\right)}{105x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(1050*a^3*b^2*x^2*(A - B*x) - 350*a^2*b^3*x^3*(3*A +
B*x) + 175*a^4*b*x*(A + 3*B*x) - 35*a*b^4*x^4*(5*A + 3*B*x) + 7*a^5*(3*A +
5*B*x) - 3*b^5*x^5*(7*A + 5*B*x)))/(105*x^(5/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 15.28, size = 145, normalized size = 0.46

$$\frac{2\sqrt{(a+bx)^2}\left(-21a^5A-35a^5Bx-175a^4Abx-525a^4bBx^2-1050a^3Ab^2x^2+1050a^3b^2Bx^3+1050a^2Ab^3x^3+350a^2b^3Bx^4+175aAb^4x^4+105ab^4Bx^5+21Ab^5x^5+15b^5Bx^6\right)}{105x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*a^5*A - 175*a^4*A*b*x - 35*a^5*B*x - 1050*a^3*A*b
^2*x^2 - 525*a^4*b*B*x^2 + 1050*a^2*A*b^3*x^3 + 1050*a^3*b^2*B*x^3 + 175*a*
A*b^4*x^4 + 350*a^2*b^3*B*x^4 + 21*A*b^5*x^5 + 105*a*b^4*B*x^5 + 15*b^5*B*x
^6))/(105*x^(5/2)*(a + b*x))
```

fricas [A] time = 0.56, size = 119, normalized size = 0.38

$$\frac{2\left(15\,Bb^5x^6-21\,Aa^5+21\left(5\,Bab^4+Ab^5\right)x^5+175\left(2\,Ba^2b^3+Aab^4\right)x^4+1050\left(Ba^3b^2+Aa^2b^3\right)x^3-525\left(Ba^4b+2\,Aa^3b^2\right)x^2-35\left(Ba^5+5\,Aa^4b\right)x\right)}{105\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/105*(15*B*b^5*x^6 - 21*A*a^5 + 21*(5*B*a*b^4 + A*b^5)*x^5 + 175*(2*B*a^2*
b^3 + A*a*b^4)*x^4 + 1050*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 525*(B*a^4*b + 2*A*
a^3*b^2)*x^2 - 35*(B*a^5 + 5*A*a^4*b)*x)/x^(5/2)
```

giac [A] time = 0.18, size = 196, normalized size = 0.62

$$\frac{2}{7}\,Bb^5x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Bab^4x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Ab^5x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{3}\,Ba^2b^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}\,Aab^4x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+20\,Ba^3b^2\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+20\,Aa^2b^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(75\,Ba^4bx^2\mathrm{sgn}\left(bx+a\right)+150\,Aa^3b^2x^2\mathrm{sgn}\left(bx+a\right)+5\,Ba^5x\mathrm{sgn}\left(bx+a\right)+25\,Aa^4bx\mathrm{sgn}\left(bx+a\right)+3\,Aa^5\mathrm{sgn}\left(bx+a\right)\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^5*x^(7/2)*sgn(b*x + a) + 2*B*a*b^4*x^(5/2)*sgn(b*x + a) + 2/5*A*b^5
*x^(5/2)*sgn(b*x + a) + 20/3*B*a^2*b^3*x^(3/2)*sgn(b*x + a) + 10/3*A*a*b^4*
x^(3/2)*sgn(b*x + a) + 20*B*a^3*b^2*sqrt(x)*sgn(b*x + a) + 20*A*a^2*b^3*sqr
t(x)*sgn(b*x + a) - 2/15*(75*B*a^4*b*x^2*sgn(b*x + a) + 150*A*a^3*b^2*x^2*s
gn(b*x + a) + 5*B*a^5*x*sgn(b*x + a) + 25*A*a^4*b*x*sgn(b*x + a) + 3*A*a^5*
sgn(b*x + a))/x^(5/2)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$-\frac{2\left(-15B\,b^5x^6-21A\,b^5x^5-105Ba\,b^4x^5-175Aa\,b^4x^4-350B\,a^2b^3x^4-1050A\,a^2b^3x^3-1050B\,a^3b^2x^3+1050A\,a^3b^2x^2+525B\,a^4b\,x^2+175A\,a^4bx+35B\,a^5x+21A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{105\left(bx+a\right)^5x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x)
```

```
[Out] -2/105*(-15*B*b^5*x^6-21*A*b^5*x^5-105*B*a*b^4*x^5-175*A*a*b^4*x^4-350*B*a^
2*b^3*x^4-1050*A*a^2*b^3*x^3-1050*B*a^3*b^2*x^3+1050*A*a^3*b^2*x^2+525*B*a^
4*b*x^2+175*A*a^4*b*x+35*B*a^5*x+21*A*a^5)*((b*x+a)^2)^(5/2)/x^(5/2)/(b*x+a
)^5
```

maxima [A] time = 0.58, size = 234, normalized size = 0.74

$$\frac{2}{15}\left(\left(3\,b^5x^2+5\,ab^4x\right)\sqrt{x}+\frac{20\left(ab^4x^2+3\,a^2b^3x\right)}{\sqrt{x}}+\frac{90\left(a^2b^3x^2-a^3b^2x\right)}{x^{\frac{3}{2}}}-\frac{20\left(3\,a^3b^2x^2+a^4bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^4bx^2+3\,a^5x}{x^{\frac{7}{2}}}\right)A+\frac{2}{105}\left(3\left(5\,b^5x^2+7\,ab^4x\right)x^{\frac{3}{2}}+28\left(3\,ab^4x^2+5\,a^2b^3x\right)\sqrt{x}+\frac{210\left(a^2b^3x^2+3\,a^3b^2x\right)}{\sqrt{x}}+\frac{420\left(a^3b^2x^2-a^4bx\right)}{x^{\frac{3}{2}}}-\frac{35\left(3\,a^4bx^2+a^5x\right)}{x^{\frac{5}{2}}}\right)B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^5*x^2 + 5*a*b^4*x)*sqrt(x) + 20*(a*b^4*x^2 + 3*a^2*b^3*x)/sqrt(x
) + 90*(a^2*b^3*x^2 - a^3*b^2*x)/x^(3/2) - 20*(3*a^3*b^2*x^2 + a^4*b*x)/x^(
5/2) - (5*a^4*b*x^2 + 3*a^5*x)/x^(7/2))*A + 2/105*(3*(5*b^5*x^2 + 7*a*b^4*x
)*x^(3/2) + 28*(3*a*b^4*x^2 + 5*a^2*b^3*x)*sqrt(x) + 210*(a^2*b^3*x^2 + 3*a
^3*b^2*x)/sqrt(x) + 420*(a^3*b^2*x^2 - a^4*b*x)/x^(3/2) - 35*(3*a^4*b*x^2 +
 a^5*x)/x^(5/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(7/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(7/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(7/2), x)
```

3.735 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{9/2}} \, dx$

Optimal. Leaf size=316

$$-\frac{20a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{2b^4x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{3(a+bx)}+\frac{10ab^3\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(2al}{a+bx}$$

Rubi [A] time = 0.12, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{5x^{5/2}(a+bx)}-\frac{10a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{3x^{3/2}(a+bx)}-\frac{20a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{10ab^3\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{a+bx}+\frac{2b^4x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{3(a+bx)}-\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}+\frac{2b^5Bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^(7/2)*(a + b*x)) - (2*a^4*(5*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (10*a^3*b
*(2*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (20*a
^2*b^2*(A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (10
*a*b^3*(A*b + 2*a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*
b^4*(A*b + 5*a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2
*b^5*B*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{9/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{9/2}}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{9/2}}+\frac{a^4b^5(5Ab+aB)}{x^{7/2}}+\frac{5a^3b^6(2Ab+aB)}{x^{5/2}}+\frac{10a^2b^7(Ab+aB)}{x^{3/2}}\right.}{b^4\left(ab+b^2x\right)}\\
&= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{10a^3b}{}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 122, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(3a^5(5A+7Bx)+35a^4bx(3A+5Bx)+350a^3b^2x^2(A+3Bx)+1050a^2b^3x^3(A-Bx)-175ab^4x^4(3A+Bx)-7b^5x^5(5A+3Bx)\right)}{105x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(1050*a^2*b^3*x^3*(A - B*x) - 175*a*b^4*x^4*(3*A + B*
x) + 350*a^3*b^2*x^2*(A + 3*B*x) - 7*b^5*x^5*(5*A + 3*B*x) + 35*a^4*b*x*(3*
A + 5*B*x) + 3*a^5*(5*A + 7*B*x)))/(105*x^(7/2)*(a + b*x))
```

IntegrateAlgebraic [A] time = 17.44, size = 145, normalized size = 0.46

$$\frac{2\sqrt{(a+bx)^2}\left(-15a^5A-21a^5Bx-105a^4Abx-175a^4bBx^2-350a^3Ab^2x^2-1050a^3b^2Bx^3-1050a^2Ab^3x^3+1050a^2b^3Bx^4+525aAb^4x^4+175ab^4Bx^5+35Ab^5x^5+21b^5Bx^6\right)}{105x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-15*a^5*A - 105*a^4*A*b*x - 21*a^5*B*x - 350*a^3*A*b^
2*x^2 - 175*a^4*b*B*x^2 - 1050*a^2*A*b^3*x^3 - 1050*a^3*b^2*B*x^3 + 525*a*A
*b^4*x^4 + 1050*a^2*b^3*B*x^4 + 35*A*b^5*x^5 + 175*a*b^4*B*x^5 + 21*b^5*B*x
^6))/(105*x^(7/2)*(a + b*x))
```

fricas [A] time = 0.44, size = 119, normalized size = 0.38

$$\frac{2\left(21\,Bb^5x^6-15\,Aa^5+35\left(5\,Bab^4+Ab^5\right)x^5+525\left(2\,Ba^2b^3+Aab^4\right)x^4-1050\left(Ba^3b^2+Aa^2b^3\right)x^3-175\left(Ba^4b+2\,Aa^3b^2\right)x^2-21\left(Ba^5+5\,Aa^4b\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x, algorithm="fricas"
)
```

```
[Out] 2/105*(21*B*b^5*x^6 - 15*A*a^5 + 35*(5*B*a*b^4 + A*b^5)*x^5 + 525*(2*B*a^2*
b^3 + A*a*b^4)*x^4 - 1050*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 175*(B*a^4*b + 2*A*
a^3*b^2)*x^2 - 21*(B*a^5 + 5*A*a^4*b)*x)/x^(7/2)
```

giac [A] time = 0.18, size = 196, normalized size = 0.62

$$\frac{2}{5}\,Bb^5x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}\,Bab^4x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Ab^5x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+20\,Ba^2b^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+10\,Aab^4\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(1050\,Ba^3b^2x^3\mathrm{sgn}\left(bx+a\right)+1050\,Aa^2b^3x^3\mathrm{sgn}\left(bx+a\right)+175\,Ba^4bx^2\mathrm{sgn}\left(bx+a\right)+350\,Aa^3b^2x^2\mathrm{sgn}\left(bx+a\right)+21\,Ba^5x\mathrm{sgn}\left(bx+a\right)+105\,Aa^4bx\mathrm{sgn}\left(bx+a\right)+15\,Aa^5\mathrm{sgn}\left(bx+a\right)\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^5*x^(5/2)*sgn(b*x + a) + 10/3*B*a*b^4*x^(3/2)*sgn(b*x + a) + 2/3*A*
b^5*x^(3/2)*sgn(b*x + a) + 20*B*a^2*b^3*sqrt(x)*sgn(b*x + a) + 10*A*a*b^4*s
qrt(x)*sgn(b*x + a) - 2/105*(1050*B*a^3*b^2*x^3*sgn(b*x + a) + 1050*A*a^2*b
^3*x^3*sgn(b*x + a) + 175*B*a^4*b*x^2*sgn(b*x + a) + 350*A*a^3*b^2*x^2*sgn(
b*x + a) + 21*B*a^5*x*sgn(b*x + a) + 105*A*a^4*b*x*sgn(b*x + a) + 15*A*a^5*
sgn(b*x + a))/x^(7/2)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$-\frac{2\left(-21B\,b^5x^6-35A\,b^5x^5-175Ba\,b^4x^5-525Aa\,b^4x^4-1050B\,a^2b^3x^4+1050A\,a^2b^3x^3+1050B\,a^3b^2x^3+350A\,a^3b^2x^2+175B\,a^4b\,x^2+105A\,a^4bx+21B\,a^5x+15A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{105\,(bx+a)^5\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x)
```

```
[Out] -2/105*(-21*B*b^5*x^6-35*A*b^5*x^5-175*B*a*b^4*x^5-525*A*a*b^4*x^4-1050*B*a
^2*b^3*x^4+1050*A*a^2*b^3*x^3+1050*B*a^3*b^2*x^3+350*A*a^3*b^2*x^2+175*B*a^
4*b*x^2+105*A*a^4*b*x+21*B*a^5*x+15*A*a^5)*((b*x+a)^2)^(5/2)/x^(7/2)/(b*x+a
)^5
```

maxima [A] time = 0.63, size = 234, normalized size = 0.74

$$\frac{2}{15}\left(\left(3\,b^5x^2+5\,ab^4x\right)\sqrt{x}+\frac{20\left(ab^4x^2+3\,a^2b^3x\right)}{\sqrt{x}}+\frac{90\left(a^2b^3x^2-a^3b^2x\right)}{x^{\frac{3}{2}}}-\frac{20\left(3\,a^3b^2x^2+a^4bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^4bx^2+3\,a^5x}{x^{\frac{7}{2}}}\right)B+\frac{2}{105}\,A\left(\frac{35\left(b^5x^2+3\,ab^4x\right)}{\sqrt{x}}+\frac{420\left(ab^4x^2-a^2b^3x\right)}{x^{\frac{3}{2}}}-\frac{210\left(3\,a^2b^3x^2+a^3b^2x\right)}{x^{\frac{5}{2}}}-\frac{28\left(5\,a^3b^2x^2+3\,a^4bx\right)}{x^{\frac{7}{2}}}-\frac{3\left(7\,a^4bx^2+5\,a^5x\right)}{x^{\frac{9}{2}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^5*x^2 + 5*a*b^4*x)*sqrt(x) + 20*(a*b^4*x^2 + 3*a^2*b^3*x)/sqrt(x
) + 90*(a^2*b^3*x^2 - a^3*b^2*x)/x^(3/2) - 20*(3*a^3*b^2*x^2 + a^4*b*x)/x^(
5/2) - (5*a^4*b*x^2 + 3*a^5*x)/x^(7/2))*B + 2/105*A*(35*(b^5*x^2 + 3*a*b^4*
x)/sqrt(x) + 420*(a*b^4*x^2 - a^2*b^3*x)/x^(3/2) - 210*(3*a^2*b^3*x^2 + a^3
*b^2*x)/x^(5/2) - 28*(5*a^3*b^2*x^2 + 3*a^4*b*x)/x^(7/2) - 3*(7*a^4*b*x^2 +
 5*a^5*x)/x^(9/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(9/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(9/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(9/2), x)
```

3.736 $\int \frac{x^{7/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=286

$$\frac{2x^{7/2}(a+bx)(Ab-aB)}{7b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2x^{3/2}(a+bx)(Ab-aB)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{5/2}(a+bx)(Ab-aB)}{5b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{7/2}(a}{}$$

Rubi [A] time = 0.13, antiderivative size = 286, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 80, 50, 63, 205}

$$\frac{2x^{7/2}(a+bx)(Ab-aB)}{7b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{5/2}(a+bx)(Ab-aB)}{5b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2x^{3/2}(a+bx)(Ab-aB)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a^3\sqrt{x}(a+bx)(Ab-aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{7/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (-2*a^3*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (2*a^2*(A*b - a*B)*x^(3/2)*(a + b*x))/(3*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) - (2*a*(A*b - a*B)*x^(5/2)*(a + b*x))/(5*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2]) + (2*(A*b - a*B)*x^(7/2)*(a + b*x))/(7*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (2*B*x^(9/2)*(a + b*x))/(9*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*a^(7/
2)*(A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(11/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{x^{7/2}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{9Ab^2}{2}-\frac{9abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{x^{7/2}}{ab+b^2x}\,dx}{9b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)x^{7/2}(a+bx)}{7b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2a\left(\frac{9Ab^2}{2}-\frac{9abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{}{a}}{9b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{7/2}(a+bx)}{7b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}} + \frac{(2a}{}$$

$$= \frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{7/2}(a+bx)}{7b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{}{9b}$$

$$= -\frac{2a^3(Ab-aB)\sqrt{x}\,(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}} -$$

$$= -\frac{2a^3(Ab-aB)\sqrt{x}\,(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}} -$$

$$= -\frac{2a^3(Ab-aB)\sqrt{x}\,(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}} -$$

Mathematica [A] time = 0.08, size = 139, normalized size = 0.49

$$\frac{2(a+bx)\left(\sqrt{b}\sqrt{x}\left(315a^4B-105a^3b(3A+Bx)+21a^2b^2x(5A+3Bx)-9ab^3x^2(7A+5Bx)+5b^4x^3(9A+7Bx)\right)-315a^{7/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)\right)}{315b^{11/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(315*a^4*B - 105*a^3*b*(3*A + B*x) + 21*a^2*b
^2*x*(5*A + 3*B*x) - 9*a*b^3*x^2*(7*A + 5*B*x) + 5*b^4*x^3*(9*A + 7*B*x)) -
 315*a^(7/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(315*b^(11/
2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 17.42, size = 153, normalized size = 0.53

$$\frac{(a+bx)\left(\frac{2\sqrt{x}\left(315a^4B-315a^3Ab-105a^3bBx+105a^2Ab^2x+63a^2b^2Bx^2-63aAb^3x^2-45ab^3Bx^3+45Ab^4x^3+35b^4Bx^4\right)}{315b^5}-\frac{2\left(a^{9/2}B-a^{7/2}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*((2*Sqrt[x]*(-315*a^3*A*b + 315*a^4*B + 105*a^2*A*b^2*x - 105*a^
3*b*B*x - 63*a*A*b^3*x^2 + 63*a^2*b^2*B*x^2 + 45*A*b^4*x^3 - 45*a*b^3*B*x^3
```

```
 + 35*b^4*B*x^4))/(315*b^5) - (2*(-(a^(7/2)*A*b) + a^(9/2)*B)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/b^(11/2)))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.47, size = 276, normalized size = 0.97

$$\left[-\frac{315\left(Ba^4-Aa^3b\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(35Bb^4x^4+315Ba^4-315Aa^3b-45\left(Bab^3-Ab^4\right)x^3+63\left(Ba^2b^2-Aab^3\right)x^2-105\left(Ba^3b-Aa^2b^2\right)x\right)\sqrt{x}}{315b^5}, -\frac{2\left(315\left(Ba^4-Aa^3b\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)-\left(35Bb^4x^4+315Ba^4-315Aa^3b-45\left(Bab^3-Ab^4\right)x^3+63\left(Ba^2b^2-Aab^3\right)x^2-105\left(Ba^3b-Aa^2b^2\right)x\right)\sqrt{x}\right)}{315b^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/315*(315*(B*a^4 - A*a^3*b)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b)
 - a)/(b*x + a)) - 2*(35*B*b^4*x^4 + 315*B*a^4 - 315*A*a^3*b - 45*(B*a*b^3
- A*b^4)*x^3 + 63*(B*a^2*b^2 - A*a*b^3)*x^2 - 105*(B*a^3*b - A*a^2*b^2)*x)*
sqrt(x))/b^5, -2/315*(315*(B*a^4 - A*a^3*b)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt
(a/b)/a) - (35*B*b^4*x^4 + 315*B*a^4 - 315*A*a^3*b - 45*(B*a*b^3 - A*b^4)*x
^3 + 63*(B*a^2*b^2 - A*a*b^3)*x^2 - 105*(B*a^3*b - A*a^2*b^2)*x)*sqrt(x))/b
^5]
```

giac [A] time = 0.37, size = 205, normalized size = 0.72

$$-\frac{2\left(Ba^5\mathrm{sgn}\left(bx+a\right)-Aa^4b\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5}+\frac{2\left(35Bb^8x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)-45Bab^7x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+45Ab^8x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+63Ba^2b^6x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)-63Aab^7x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)-105Ba^3b^5x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+105Aa^2b^6x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+315Ba^4b^4\sqrt{x}\mathrm{sgn}\left(bx+a\right)-315Aa^3b^5\sqrt{x}\mathrm{sgn}\left(bx+a\right)\right)}{315b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a^5*sgn(b*x + a) - A*a^4*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*b^5) + 2/315*(35*B*b^8*x^(9/2)*sgn(b*x + a) - 45*B*a*b^7*x^(7/2)
*sgn(b*x + a) + 45*A*b^8*x^(7/2)*sgn(b*x + a) + 63*B*a^2*b^6*x^(5/2)*sgn(b*
x + a) - 63*A*a*b^7*x^(5/2)*sgn(b*x + a) - 105*B*a^3*b^5*x^(3/2)*sgn(b*x +
a) + 105*A*a^2*b^6*x^(3/2)*sgn(b*x + a) + 315*B*a^4*b^4*sqrt(x)*sgn(b*x + a
) - 315*A*a^3*b^5*sqrt(x)*sgn(b*x + a))/b^9
```

maple [A] time = 0.06, size = 197, normalized size = 0.69

$$\frac{2\left(bx+a\right)\left(35\sqrt{ab}\,Bb^4x^{\frac{9}{2}}+45\sqrt{ab}\,Ab^4x^{\frac{7}{2}}-45\sqrt{ab}\,Bab^3x^{\frac{7}{2}}-63\sqrt{ab}\,Aab^3x^{\frac{5}{2}}+63\sqrt{ab}\,Ba^2b^2x^{\frac{5}{2}}+315Aa^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-315Ba^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105\sqrt{ab}\,Aa^2b^2x^{\frac{3}{2}}-105\sqrt{ab}\,Ba^3bx^{\frac{3}{2}}-315\sqrt{ab}\,Aa^3b\sqrt{x}+315\sqrt{ab}\,Ba^4\sqrt{x}\right)}{315\sqrt{\left(bx+a\right)^2}\,\sqrt{ab}\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*(b*x+a)*(35*B*x^(9/2)*(a*b)^(1/2)*b^4+45*A*x^(7/2)*(a*b)^(1/2)*b^4-45
*B*x^(7/2)*(a*b)^(1/2)*a*b^3-63*A*x^(5/2)*(a*b)^(1/2)*a*b^3+63*B*x^(5/2)*(a
*b)^(1/2)*a^2*b^2+105*A*x^(3/2)*(a*b)^(1/2)*a^2*b^2-105*B*x^(3/2)*(a*b)^(1/
2)*a^3*b-315*A*x^(1/2)*(a*b)^(1/2)*a^3*b+315*A*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*a^4*b+315*B*x^(1/2)*(a*b)^(1/2)*a^4-315*B*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*a^5)/((b*x+a)^2)^(1/2)/b^5/(a*b)^(1/2)
```

maxima [A] time = 1.52, size = 257, normalized size = 0.90

$$\frac{10\left(7Bb^4x^2+9Bab^3x\right)x^{\frac{7}{2}}-2\left(5\left(11Bab^3-9Ab^4\right)x^2+9\left(9Ba^2b^2-7Aab^3\right)x\right)x^{\frac{5}{2}}+6\left(3\left(11Ba^2b^2-9Aab^3\right)x^2+7\left(9Ba^3b-7Aa^2b^2\right)x\right)x^{\frac{3}{2}}+21\left(3\left(11Ba^3b-9Aa^2b^2\right)x^2+5\left(9Ba^4-7Aa^3b\right)x\right)\sqrt{x}}{315\left(b^5x+ab^4\right)}-\frac{2\left(Ba^5-Aa^4b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5}-\frac{\left(11Ba^3b-9Aa^2b^2\right)x^{\frac{3}{2}}-6\left(Ba^4-Aa^3b\right)\sqrt{x}}{3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/315*(10*(7*B*b^4*x^2 + 9*B*a*b^3*x)*x^(7/2) - 2*(5*(11*B*a*b^3 - 9*A*b^4)
*x^2 + 9*(9*B*a^2*b^2 - 7*A*a*b^3)*x)*x^(5/2) + 6*(3*(11*B*a^2*b^2 - 9*A*a*
b^3)*x^2 + 7*(9*B*a^3*b - 7*A*a^2*b^2)*x)*x^(3/2) + 21*(3*(11*B*a^3*b - 9*A
*a^2*b^2)*x^2 + 5*(9*B*a^4 - 7*A*a^3*b)*x)*sqrt(x))/(b^5*x + a*b^4) - 2*(B*
```

```
a^5 - A*a^4*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) - 1/3*((11*B*a^3
*b - 9*A*a^2*b^2)*x^(3/2) - 6*(B*a^4 - A*a^3*b)*sqrt(x))/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{7/2}\,(A+B\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
[Out] int((x^(7/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.737 $\int \frac{x^{5/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=238

$$\frac{2x^{5/2}(a+bx)(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2\sqrt{x}\,(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{3/2}(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}}-\frac{2a^{5/2}(a}{}$$

Rubi [A] time = 0.11, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 80, 50, 63, 205}

$$\frac{2x^{5/2}(a+bx)(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{3/2}(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2\sqrt{x}\,(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a^{5/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a^2*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 (2*a*(A*b - a*B)*x^(3/2)*(a + b*x))/(3*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (2*(A*b - a*B)*x^(5/2)*(a + b*x))/(5*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (2*B*x^(7/2)*(a + b*x))/(7*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*a^(5/2)*(
A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(9/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{x^{5/2}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{7Ab^2}{2}-\frac{7abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{x^{5/2}}{ab+b^2x}\,dx}{7b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2a\left(\frac{7Ab^2}{2}-\frac{7abB}{2}\right)\left(ab+b^2x\right)\right)\int \cdots}{7b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}} + \cdots$$

$$= \frac{2a^2(Ab-aB)\sqrt{x}\,(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \cdots$$

$$= \frac{2a^2(Ab-aB)\sqrt{x}\,(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \cdots$$

$$= \frac{2a^2(Ab-aB)\sqrt{x}\,(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \cdots$$

Mathematica [A] time = 0.06, size = 120, normalized size = 0.50

$$\frac{2(a+bx)\left(105a^{5/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)+\sqrt{b}\sqrt{x}\left(-105a^3B+35a^2b(3A+Bx)-7ab^2x(5A+3Bx)+3b^3x^2(7A+5Bx)\right)\right)}{105b^{9/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(-105*a^3*B + 35*a^2*b*(3*A + B*x) - 7*a*b^2*
x*(5*A + 3*B*x) + 3*b^3*x^2*(7*A + 5*B*x)) + 105*a^(5/2)*(-(A*b) + a*B)*Arc
Tan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(105*b^(9/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 11.70, size = 148, normalized size = 0.62

$$\frac{(a+bx)\left(\frac{2\left(a^{7/2}B-a^{5/2}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}+\frac{2\left(-105a^3B\sqrt{x}+105a^2Ab\sqrt{x}+35a^2bBx^{3/2}-35aAb^2x^{3/2}-21ab^2Bx^{5/2}+21Ab^3x^{5/2}+15b^3Bx^{7/2}\right)}{105b^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*((2*(105*a^2*A*b*Sqrt[x] - 105*a^3*B*Sqrt[x] - 35*a*A*b^2*x^(3/2
) + 35*a^2*b*B*x^(3/2) + 21*A*b^3*x^(5/2) - 21*a*b^2*B*x^(5/2) + 15*b^3*B*x
^(7/2)))/(105*b^4) + (2*(-(a^(5/2)*A*b) + a^(7/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x
])/Sqrt[a]])/b^(9/2)))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.47, size = 229, normalized size = 0.96

$$\left[-\frac{105\left(Ba^3-Aa^2b\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(15Bb^3x^3-105Ba^3+105Aa^2b-21\left(Bab^2-Ab^3\right)x^2+35\left(Ba^2b-Aab^2\right)x\right)\sqrt{x}}{105b^4}, \frac{2\left(105\left(Ba^3-Aa^2b\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+\left(15Bb^3x^3-105Ba^3+105Aa^2b-21\left(Bab^2-Ab^3\right)x^2+35\left(Ba^2b-Aab^2\right)x\right)\sqrt{x}\right)}{105b^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*a^3 - A*a^2*b)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b)
 - a)/(b*x + a)) - 2*(15*B*b^3*x^3 - 105*B*a^3 + 105*A*a^2*b - 21*(B*a*b^2
- A*b^3)*x^2 + 35*(B*a^2*b - A*a*b^2)*x)*sqrt(x))/b^4, 2/105*(105*(B*a^3 -
A*a^2*b)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (15*B*b^3*x^3 - 105*B*a^
3 + 105*A*a^2*b - 21*(B*a*b^2 - A*b^3)*x^2 + 35*(B*a^2*b - A*a*b^2)*x)*sqrt
(x))/b^4]
```

giac [A] time = 0.20, size = 169, normalized size = 0.71

$$\frac{2\left(Ba^4\mathrm{sgn}\left(bx+a\right)-Aa^3b\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^4}+\frac{2\left(15Bb^6x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)-21Bab^5x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+21Ab^6x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+35Ba^2b^4x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)-35Aab^5x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)-105Ba^3b^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+105Aa^2b^4\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)\right)}{105b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a^4*sgn(b*x + a) - A*a^3*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*b^4) + 2/105*(15*B*b^6*x^(7/2)*sgn(b*x + a) - 21*B*a*b^5*x^(5/2)*
sgn(b*x + a) + 21*A*b^6*x^(5/2)*sgn(b*x + a) + 35*B*a^2*b^4*x^(3/2)*sgn(b*x
 + a) - 35*A*a*b^5*x^(3/2)*sgn(b*x + a) - 105*B*a^3*b^3*sqrt(x)*sgn(b*x + a
) + 105*A*a^2*b^4*sqrt(x)*sgn(b*x + a))/b^7
```

maple [A] time = 0.07, size = 163, normalized size = 0.68

$$\frac{2\left(bx+a\right)\left(15\sqrt{ab}\,Bb^3x^{\frac{7}{2}}+21\sqrt{ab}\,Ab^3x^{\frac{5}{2}}-21\sqrt{ab}\,Bab^2x^{\frac{5}{2}}-105Aa^3b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105Ba^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-35\sqrt{ab}\,Aab^2x^{\frac{3}{2}}+35\sqrt{ab}\,Ba^2bx^{\frac{3}{2}}+105\sqrt{ab}\,Aa^2b\sqrt{x}-105\sqrt{ab}\,Ba^3\sqrt{x}\right)}{105\sqrt{\left(bx+a\right)^2}\,\sqrt{ab}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)*(15*B*x^(7/2)*(a*b)^(1/2)*b^3+21*A*x^(5/2)*(a*b)^(1/2)*b^3-21
*B*x^(5/2)*(a*b)^(1/2)*a*b^2-35*A*x^(3/2)*(a*b)^(1/2)*a*b^2+35*B*x^(3/2)*(a
*b)^(1/2)*a^2*b+105*A*x^(1/2)*(a*b)^(1/2)*a^2*b-105*A*arctan(1/(a*b)^(1/2)*
b*x^(1/2))*a^3*b-105*B*x^(1/2)*(a*b)^(1/2)*a^3+105*B*arctan(1/(a*b)^(1/2)*b
*x^(1/2))*a^4)/((b*x+a)^2)^(1/2)/b^4/(a*b)^(1/2)
```

maxima [A] time = 1.74, size = 203, normalized size = 0.85

$$\frac{6\left(5Bb^3x^2+7Bab^2x\right)x^{\frac{5}{2}}-2\left(3\left(9Bab^2-7Ab^3\right)x^2+7\left(7Ba^2b-5Aab^2\right)x\right)x^{\frac{3}{2}}-7\left(3\left(9Ba^2b-7Aab^2\right)x^2+5\left(7Ba^3-5Aa^2b\right)x\right)\sqrt{x}}{105\left(b^4x+ab^3\right)}+\frac{2\left(Ba^4-Aa^3b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^4}+\frac{\left(9Ba^2b-7Aab^2\right)x^{\frac{3}{2}}-6\left(Ba^3-Aa^2b\right)\sqrt{x}}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/105*(6*(5*B*b^3*x^2 + 7*B*a*b^2*x)*x^(5/2) - 2*(3*(9*B*a*b^2 - 7*A*b^3)*x
^2 + 7*(7*B*a^2*b - 5*A*a*b^2)*x)*x^(3/2) - 7*(3*(9*B*a^2*b - 7*A*a*b^2)*x^
2 + 5*(7*B*a^3 - 5*A*a^2*b)*x)*sqrt(x))/(b^4*x + a*b^3) + 2*(B*a^4 - A*a^3*
b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + 1/3*((9*B*a^2*b - 7*A*a*b^
2)*x^(3/2) - 6*(B*a^3 - A*a^2*b)*sqrt(x))/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5/2}\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.738 $\int \frac{x^{3/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=190

$$\frac{2x^{3/2}(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2a\sqrt{x}\,(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 80, 50, 63, 205}

$$\frac{2x^{3/2}(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2a\sqrt{x}\,(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (-2*a*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(2*(A*b - a*B)*x^(3/2)*(a + b*x))/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (
2*B*x^(5/2)*(a + b*x))/(5*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*a^(3/2)*(A*
b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^{3/2}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{5Ab^2}{2}-\frac{5abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{x^{3/2}}{ab+b^2x}\,dx}{5b^2\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2a\left(\frac{5Ab^2}{2}-\frac{5abB}{2}\right)\left(ab+b^2x\right)\right)\int \cdots}{5b^3\sqrt{a^2+2abx+b^2x^2}} \\
&= -\frac{2a(Ab-aB)\sqrt{x}\,(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2a\cdots\right.}{\cdots} \\
&= -\frac{2a(Ab-aB)\sqrt{x}\,(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4a\cdots\right.}{\cdots} \\
&= -\frac{2a(Ab-aB)\sqrt{x}\,(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \frac{2a^{3/\cdots}}{\cdots}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 100, normalized size = 0.53

$$\frac{2(a+bx)\left(\sqrt{b}\sqrt{x}\left(15a^2B-5ab(3A+Bx)+b^2x(5A+3Bx)\right)-15a^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)\right)}{15b^{7/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(15*a^2*B - 5*a*b*(3*A + B*x) + b^2*x*(5*A +
3*B*x)) - 15*a^(3/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(15
*b^(7/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 10.36, size = 105, normalized size = 0.55

$$\frac{(a+bx)\left(\frac{2\sqrt{x}\left(15a^2B-15aAb-5abBx+5Ab^2x+3b^2Bx^2\right)}{15b^3}-\frac{2\left(a^{5/2}B-a^{3/2}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*((2*Sqrt[x]*(-15*a*A*b + 15*a^2*B + 5*A*b^2*x - 5*a*b*B*x + 3*b^
2*B*x^2))/(15*b^3) - (2*(-(a^(3/2)*A*b) + a^(5/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x
])/Sqrt[a]])/b^(7/2)))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.45, size = 180, normalized size = 0.95

$$\left[-\frac{15\left(Ba^2-Aab\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(3Bb^2x^2+15Ba^2-15Aab-5\left(Bab-Ab^2\right)x\right)\sqrt{x}}{15b^3}, -\frac{2\left(15\left(Ba^2-Aab\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)-\left(3Bb^2x^2+15Ba^2-15Aab-5\left(Bab-Ab^2\right)x\right)\sqrt{x}\right)}{15b^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*a^2 - A*a*b)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a
)/(b*x + a)) - 2*(3*B*b^2*x^2 + 15*B*a^2 - 15*A*a*b - 5*(B*a*b - A*b^2)*x)*
sqrt(x))/b^3, -2/15*(15*(B*a^2 - A*a*b)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b
)/a) - (3*B*b^2*x^2 + 15*B*a^2 - 15*A*a*b - 5*(B*a*b - A*b^2)*x)*sqrt(x))/b
^3]
```

giac [A] time = 0.17, size = 133, normalized size = 0.70

$$-\frac{2\left(Ba^{3}\mathrm{sgn}\left(bx+a\right)-Aa^{2}b\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{3}}+\frac{2\left(3\,Bb^{4}x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)-5\,Bab^{3}x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+5\,Ab^{4}x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+15\,Ba^{2}b^{2}\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-15\,Aab^{3}\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)\right)}{15\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a^3*sgn(b*x + a) - A*a^2*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*b^3) + 2/15*(3*B*b^4*x^(5/2)*sgn(b*x + a) - 5*B*a*b^3*x^(3/2)*sg
n(b*x + a) + 5*A*b^4*x^(3/2)*sgn(b*x + a) + 15*B*a^2*b^2*sqrt(x)*sgn(b*x +
a) - 15*A*a*b^3*sqrt(x)*sgn(b*x + a))/b^5
```

maple [A] time = 0.06, size = 129, normalized size = 0.68

$$\frac{2\left(bx+a\right)\left(3\sqrt{ab}\;B\,b^{2}x^{\frac{5}{2}}+15A\,a^{2}b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-15B\,a^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+5\sqrt{ab}\;A\,b^{2}x^{\frac{3}{2}}-5\sqrt{ab}\;Bab\,x^{\frac{3}{2}}-15\sqrt{ab}\;Aab\sqrt{x}\;+15\sqrt{ab}\;B\,a^{2}\sqrt{x}\right)}{15\sqrt{\left(bx+a\right)^{2}}\;\sqrt{ab}\;b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/15*(b*x+a)*(3*B*x^(5/2)*(a*b)^(1/2)*b^2+5*A*x^(3/2)*(a*b)^(1/2)*b^2-5*B*x
^(3/2)*(a*b)^(1/2)*a*b-15*A*x^(1/2)*(a*b)^(1/2)*a*b+15*A*arctan(1/(a*b)^(1/
2)*b*x^(1/2))*a^2*b+15*B*x^(1/2)*(a*b)^(1/2)*a^2-15*B*arctan(1/(a*b)^(1/2)*
b*x^(1/2))*a^3)/((b*x+a)^2)^(1/2)/b^3/(a*b)^(1/2)
```

maxima [A] time = 1.59, size = 147, normalized size = 0.77

$$\frac{2\left(3\,Bb^{2}x^{2}+5\,Babx\right)x^{\frac{3}{2}}+\left(3\left(7\,Bab-5\,Ab^{2}\right)x^{2}+5\left(5\,Ba^{2}-3\,Aab\right)x\right)\sqrt{x}}{15\left(b^{3}x+ab^{2}\right)}-\frac{2\left(Ba^{3}-Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{3}}-\frac{\left(7\,Bab-5\,Ab^{2}\right)x^{\frac{3}{2}}-6\left(Ba^{2}-Aab\right)\sqrt{x}}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/15*(2*(3*B*b^2*x^2 + 5*B*a*b*x)*x^(3/2) + (3*(7*B*a*b - 5*A*b^2)*x^2 + 5*
(5*B*a^2 - 3*A*a*b)*x)*sqrt(x))/(b^3*x + a*b^2) - 2*(B*a^3 - A*a^2*b)*arcta
n(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) - 1/3*((7*B*a*b - 5*A*b^2)*x^(3/2) -
 6*(B*a^2 - A*a*b)*sqrt(x))/b^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.739 $\int \frac{\sqrt{x}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=144

$$\frac{2\sqrt{x}(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2\sqrt{a}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.07, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 80, 50, 63, 205}

$$\frac{2\sqrt{x}(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2\sqrt{a}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*
B*x^(3/2)*(a + b*x))/(3*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*Sqrt[a]*(A*b
- a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(5/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{\sqrt{x}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{3Ab^2}{2}-\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}}{ab+b^2x}\,dx}{3b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)\sqrt{x}(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2a\left(\frac{3Ab^2}{2}-\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)\int \cdots}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)\sqrt{x}(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(4a\left(\frac{3Ab^2}{2}-\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)\text{Sub}\cdots}{3b^3\sqrt{a^2+2abx\cdots}}$$

$$= \frac{2(Ab-aB)\sqrt{x}(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} - \frac{2\sqrt{a}(Ab-aB)(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\cdots}{\cdots}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.04, size = 82, normalized size = 0.57

$$\frac{2(a+bx)\left(\sqrt{b}\sqrt{x}(-3aB+3Ab+bBx)+3\sqrt{a}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)\right)}{3b^{5/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(3*A*b - 3*a*B + b*B*x) + 3*Sqrt[a]*(-(A*b) +
 a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(3*b^(5/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 9.27, size = 84, normalized size = 0.58

$$\frac{(a+bx)\left(\frac{2\left(a^{3/2}B-\sqrt{a}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}+\frac{2\sqrt{x}(-3aB+3Ab+bBx)}{3b^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] ((a + b*x)*((2*Sqrt[x]*(3*A*b - 3*a*B + b*B*x))/(3*b^2) + (2*(-(Sqrt[a]*A*b
) + a^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)))/Sqrt[(a + b*x)^
2]
```

fricas [A] time = 0.43, size = 129, normalized size = 0.90

$$\left[-\frac{3(Ba-Ab)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2(Bbx-3Ba+3Ab)\sqrt{x}}{3b^2}, \frac{2\left(3(Ba-Ab)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+(Bbx-3Ba+3Ab)\sqrt{x}\right)}{3b^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*a - A*b)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x
 + a)) - 2*(B*b*x - 3*B*a + 3*A*b)*sqrt(x))/b^2, 2/3*(3*(B*a - A*b)*sqrt(a/
b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (B*b*x - 3*B*a + 3*A*b)*sqrt(x))/b^2]
```

giac [A] time = 0.16, size = 94, normalized size = 0.65

$$\frac{2\left(Ba^{2}\mathrm{sgn}\left(bx+a\right)-Aab\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{2}}+\frac{2\left(Bb^{2}x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)-3\,Bab\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)+3\,Ab^{2}\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)\right)}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a^2*sgn(b*x + a) - A*a*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(sq
rt(a*b)*b^2) + 2/3*(B*b^2*x^(3/2)*sgn(b*x + a) - 3*B*a*b*sqrt(x)*sgn(b*x +
a) + 3*A*b^2*sqrt(x)*sgn(b*x + a))/b^3
```

maple [A] time = 0.07, size = 94, normalized size = 0.65

$$\frac{2\left(bx+a\right)\left(-3Aab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3B\,a^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\,\,Bb\,x^{\frac{3}{2}}+3\sqrt{ab}\,\,Ab\sqrt{x}\,-3\sqrt{ab}\,\,Ba\sqrt{x}\right)}{3\sqrt{\left(bx+a\right)^{2}}\,\sqrt{ab}\,\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(B*x^(3/2)*(a*b)^(1/2)*b+3*A*x^(1/2)*(a*b)^(1/2)*b-3*A*arctan(1
/(a*b)^(1/2)*b*x^(1/2))*a*b-3*B*x^(1/2)*(a*b)^(1/2)*a+3*B*arctan(1/(a*b)^(1
/2)*b*x^(1/2))*a^2)/((b*x+a)^2)^(1/2)/b^2/(a*b)^(1/2)
```

maxima [A] time = 1.34, size = 122, normalized size = 0.85

$$-\frac{\left(\left(Bab-Ab^{2}\right)x^{2}+\left(Ba^{2}-Aab\right)x\right)\sqrt{x}}{ab^{2}x+a^{2}b}+\frac{2\left(Ba^{2}-Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{2}}+\frac{\left(5\,Bab-3\,Ab^{2}\right)x^{\frac{3}{2}}-6\left(Ba^{2}-Aab\right)\sqrt{x}}{3\,ab^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -((B*a*b - A*b^2)*x^2 + (B*a^2 - A*a*b)*x)*sqrt(x)/(a*b^2*x + a^2*b) + 2*(B
*a^2 - A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2) + 1/3*((5*B*a*b -
 3*A*b^2)*x^(3/2) - 6*(B*a^2 - A*a*b)*sqrt(x))/(a*b^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,\left(A+Bx\right)}{\sqrt{\left(a+bx\right)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/sqrt((a + b*x)**2), x)
```

3.740 $\int \frac{A+Bx}{\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=99

$$\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {770, 80, 63, 205}

$$\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*B*Sqrt[x]*(a + b*x))/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*B)*
(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(3/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\sqrt{x}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{Ab^2}{2}-\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)}\,dx}{b^2\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(\frac{Ab^2}{2}-\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\mathrm{Subst}\left(\int \frac{1}{ab+b^2x^2}\,dx, x, \sqrt{x}\right)}{b^2\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.04, size = 72, normalized size = 0.73

$$\frac{2(a+bx)\left((Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)+\sqrt{a}\sqrt{b}\,B\sqrt{x}\right)}{\sqrt{a}\,b^{3/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(Sqrt[a]*Sqrt[b]*B*Sqrt[x] + (A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[
x])/Sqrt[a]]))/(Sqrt[a]*b^(3/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 6.90, size = 66, normalized size = 0.67

$$\frac{(a+bx)\left(\frac{2B\sqrt{x}}{b}-\frac{2(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((2*B*Sqrt[x])/b - (2*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sq
rt[a]])/(Sqrt[a]*b^(3/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.45, size = 102, normalized size = 1.03

$$\left[\frac{2\,Bab\sqrt{x}+(Ba-Ab)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)}{ab^2}, \frac{2\left(Bab\sqrt{x}+(Ba-Ab)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)\right)}{ab^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [(2*B*a*b*sqrt(x) + (B*a - A*b)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt
(x))/(b*x + a)))/(a*b^2), 2*(B*a*b*sqrt(x) + (B*a - A*b)*sqrt(a*b)*arctan(s
qrt(a*b)/(b*sqrt(x))))/(a*b^2)]
```

giac [A] time = 0.16, size = 57, normalized size = 0.58

$$\frac{2\,B\sqrt{x}\,\mathrm{sgn}\,(bx+a)}{b}-\frac{2\left(Ba\mathrm{sgn}\,(bx+a)-Ab\mathrm{sgn}\,(bx+a)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)*sgn(b*x + a)/b - 2*(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*arctan
(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b)
```

maple [A] time = 0.06, size = 65, normalized size = 0.66

$$\frac{2\left(bx+a\right)\left(Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-Ba\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\,B\sqrt{x}\right)}{\sqrt{\left(bx+a\right)^{2}}\,\sqrt{ab}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2*(b*x+a)*(A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b+B*x^(1/2)*(a*b)^(1/2)-B*arct
an(1/(a*b)^(1/2)*b*x^(1/2))*a)/((b*x+a)^2)^(1/2)/b/(a*b)^(1/2)
```

maxima [B] time = 1.54, size = 140, normalized size = 1.41

$$-\frac{2\left(Ba-Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b}+\frac{\left(\left(3\,Bab-Ab^{2}\right)x^{2}+3\left(Ba^{2}+Aab\right)x\right)\sqrt{x}+\frac{2\left(Aabx^{2}+3\,Aa^{2}x\right)}{\sqrt{x}}}{3\left(a^{2}bx+a^{3}\right)}-\frac{\left(3\,Bab-Ab^{2}\right)x^{\frac{3}{2}}-6\left(Ba^{2}-Aab\right)\sqrt{x}}{3\,a^{2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2*(B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b) + 1/3*(((3*B*a*b -
 A*b^2)*x^2 + 3*(B*a^2 + A*a*b)*x)*sqrt(x) + 2*(A*a*b*x^2 + 3*A*a^2*x)/sqrt
(x))/(a^2*b*x + a^3) - 1/3*((3*B*a*b - A*b^2)*x^(3/2) - 6*(B*a^2 - A*a*b)*s
qrt(x))/(a^2*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x}\,\sqrt{\left(a+bx\right)^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x)*sqrt((a + b*x)**2)), x)
```

3.741 $\int \frac{A+Bx}{x^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=99

$$-\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {770, 78, 63, 205}

$$-\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(a*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*(A*b - a*B)
*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{3/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$
$$= -\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{Ab^2}{2}+\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)}\,dx}{ab\sqrt{a^2+2abx+b^2x^2}}$$
$$= -\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(-\frac{Ab^2}{2}+\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\text{Subst}\left(\int \frac{1}{ab+b^2x^2}\,dx,\right.}{ab\sqrt{a^2+2abx+b^2x^2}}$$
$$= -\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.80

$$\frac{2(a+bx)\left(-\sqrt{x}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)-\sqrt{a}A\sqrt{b}\right)}{a^{3/2}\sqrt{b}\sqrt{x}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-(Sqrt[a]*A*Sqrt[b]) - (A*b - a*B)*Sqrt[x]*ArcTan[(Sqrt[b]*Sq
rt[x])/Sqrt[a]]))/(a^(3/2)*Sqrt[b]*Sqrt[x]*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 5.92, size = 66, normalized size = 0.67

$$\frac{(a+bx)\left(\frac{2(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}-\frac{2A}{a\sqrt{x}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((-2*A)/(a*Sqrt[x]) + (2*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])
/Sqrt[a]])/(a^(3/2)*Sqrt[b])))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.46, size = 112, normalized size = 1.13

$$\left[-\frac{2\,Aab\sqrt{x}-(Ba-Ab)\sqrt{-ab}\,x\log\left(\frac{bx-a+2\sqrt{-ab}\sqrt{x}}{bx+a}\right)}{a^2bx}, -\frac{2\left(Aab\sqrt{x}+(Ba-Ab)\sqrt{ab}\,x\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)\right)}{a^2bx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-(2*A*a*b*sqrt(x) - (B*a - A*b)*sqrt(-a*b)*x*log((b*x - a + 2*sqrt(-a*b)*s
qrt(x))/(b*x + a)))/(a^2*b*x), -2*(A*a*b*sqrt(x) + (B*a - A*b)*sqrt(a*b)*x*
arctan(sqrt(a*b)/(b*sqrt(x))))/(a^2*b*x)]
```

giac [A] time = 0.16, size = 57, normalized size = 0.58

$$\frac{2\left(B a\operatorname{sgn}(bx+a)-A b\operatorname{sgn}(bx+a)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a}-\frac{2\,A\operatorname{sgn}(bx+a)}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a
*b)*a) - 2*A*sgn(b*x + a)/(a*sqrt(x))
```

maple [A] time = 0.06, size = 71, normalized size = 0.72

$$-\frac{2\left(bx+a\right)\left(Ab\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-Ba\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\,A\right)}{\sqrt{\left(bx+a\right)^{2}}\,\sqrt{ab}\,a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2*(b*x+a)*(A*x^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b-B*x^(1/2)*arctan(1/
(a*b)^(1/2)*b*x^(1/2))*a+A*(a*b)^(1/2))/((b*x+a)^2)^(1/2)/a/(a*b)^(1/2)/x^(
1/2)
```

maxima [B] time = 1.61, size = 180, normalized size = 1.82

$$\frac{2\left(Ba-Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a}-\frac{\left(\left(Bab^{2}+Ab^{3}\right)x^{2}-3\left(Ba^{2}b-3\,Aab^{2}\right)x\right)\sqrt{x}-\frac{2\left(\left(Ba^{2}b+Aab^{2}\right)x^{2}+3\left(Ba^{3}-3\,Aa^{2}b\right)x\right)}{\sqrt{x}}-\frac{6\left(Aa^{2}bx^{2}-Aa^{3}x\right)}{x^{\frac{3}{2}}}}{3\left(a^{3}bx+a^{4}\right)}+\frac{\left(Bab+Ab^{2}\right)x^{\frac{3}{2}}-6\left(Ba^{2}-Aab\right)\sqrt{x}}{3\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*(B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a) - 1/3*(((B*a*b^2 +
A*b^3)*x^2 - 3*(B*a^2*b - 3*A*a*b^2)*x)*sqrt(x) - 2*((B*a^2*b + A*a*b^2)*x^
2 + 3*(B*a^3 - 3*A*a^2*b)*x)/sqrt(x) - 6*(A*a^2*b*x^2 - A*a^3*x)/x^(3/2))/(
a^3*b*x + a^4) + 1/3*((B*a*b + A*b^2)*x^(3/2) - 6*(B*a^2 - A*a*b)*sqrt(x))/
a^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{3/2}\,\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{3}{2}}\sqrt{\left(a+bx\right)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*sqrt((a + b*x)**2)), x)
```

3.742 $\int \frac{A+Bx}{x^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=144

$$\frac{2(a+bx)(Ab-aB)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.07, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{2(a+bx)(Ab-aB)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(3*a*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*
B)*(a + b*x))/(a^2*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*Sqrt[b]*(A*b
 - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(5/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{5/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{3Ab^2}{2}+\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{x^{3/2}\left(ab+b^2x\right)}\,dx}{3ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2\left(-\frac{3Ab^2}{2}+\frac{3abB}{2}\right)\left(ab\right.\right.}{3a^2\sqrt{a^2+}}$$

$$= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(4\left(-\frac{3Ab^2}{2}+\frac{3abB}{2}\right)\left(ab\right.\right.}{3a^2}$$

$$= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{2\sqrt{b}\,(Ab-aB)(a+bx}{a^{5/2}\sqrt{a^2+2ab}}$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.41

$$-\frac{2(a+bx)\left({}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{bx}{a}\right)(3aBx-3Abx)+aA\right)}{3a^2x^{3/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x)*(a*A + (-3*A*b*x + 3*a*B*x)*Hypergeometric2F1[-1/2, 1, 1/2, -
((b*x)/a)]))/(3*a^2*x^(3/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 15.80, size = 85, normalized size = 0.59

$$\frac{(a+bx)\left(-\frac{2\left(a\sqrt{b}B-Ab^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{2(aA+3aBx-3Abx)}{3a^2x^{3/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((-2*(a*A - 3*A*b*x + 3*a*B*x))/(3*a^2*x^(3/2)) - (2*(-(A*b^(3/2
)) + a*Sqrt[b]*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(5/2)))/Sqrt[(a + b*
x)^2]
```

fricas [A] time = 0.45, size = 146, normalized size = 1.01

$$\left[-\frac{3\,(Ba-Ab)x^2\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx+2\,a\sqrt{x}\,\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\,(Aa+3\,(Ba-Ab)x)\sqrt{x}}{3\,a^2x^2},\ \frac{2\left(3\,(Ba-Ab)x^2\sqrt{\frac{b}{a}}\,\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-(Aa+3\,(Ba-Ab)x)\sqrt{x}\right)}{3\,a^2x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*a - A*b)*x^2*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/
(b*x + a)) + 2*(A*a + 3*(B*a - A*b)*x)*sqrt(x))/(a^2*x^2), 2/3*(3*(B*a - A*
b)*x^2*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (A*a + 3*(B*a - A*b)*x)*
sqrt(x))/(a^2*x^2)]
```

giac [A] time = 0.17, size = 85, normalized size = 0.59

$$-\frac{2\left(Bab\mathrm{sgn}\left(bx+a\right)-Ab^{2}\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{2}}-\frac{2\left(3\,Bax\mathrm{sgn}\left(bx+a\right)-3\,Abx\mathrm{sgn}\left(bx+a\right)+Aa\mathrm{sgn}\left(bx+a\right)\right)}{3\,a^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(s
qrt(a*b)*a^2) - 2/3*(3*B*a*x*sgn(b*x + a) - 3*A*b*x*sgn(b*x + a) + A*a*sgn(
b*x + a))/(a^2*x^(3/2))
```

maple [A] time = 0.06, size = 97, normalized size = 0.67

$$\frac{2\left(bx+a\right)\left(3A\,b^{2}x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3Bab\,x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3\sqrt{ab}\,Abx-3\sqrt{ab}\,Bax-\sqrt{ab}\,Aa\right)}{3\sqrt{\left(bx+a\right)^{2}}\,\sqrt{ab}\,a^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(3*A*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b^2-3*B*x^(3/2)*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b+3*A*x*(a*b)^(1/2)*b-3*B*x*(a*b)^(1/2)*a-A
*a*(a*b)^(1/2))/((b*x+a)^2)^(1/2)/a^2/(a*b)^(1/2)/x^(3/2)
```

maxima [B] time = 1.67, size = 244, normalized size = 1.69

$$-\frac{\left(\left(Bab^{3}-3\,Ab^{4}\right)x^{2}+3\left(3\,Ba^{2}b^{2}-5\,Aab^{3}\right)x\right)\sqrt{x}-\frac{2\left(\left(Ba^{2}b^{2}-3\,Aab^{3}\right)x^{2}-3\left(3\,Ba^{3}b-5\,Aa^{2}b^{2}\right)x\right)}{\sqrt{x}}-\frac{2\left(3\left(Ba^{3}b-3\,Aa^{2}b^{2}\right)x^{2}-\left(3\,Ba^{4}-5\,Aa^{3}b\right)x\right)}{x^{\frac{3}{2}}}+\frac{2\left(3\,Aa^{3}bx^{2}+Aa^{4}x\right)}{x^{\frac{5}{2}}}}{3\left(a^{4}bx+a^{5}\right)}-\frac{2\left(Bab-Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{2}}+\frac{\left(Bab^{2}-3\,Ab^{3}\right)x^{\frac{3}{2}}+6\left(Ba^{2}b-Aab^{2}\right)\sqrt{x}}{3\,a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*(((B*a*b^3 - 3*A*b^4)*x^2 + 3*(3*B*a^2*b^2 - 5*A*a*b^3)*x)*sqrt(x) - 2
*((B*a^2*b^2 - 3*A*a*b^3)*x^2 - 3*(3*B*a^3*b - 5*A*a^2*b^2)*x)/sqrt(x) - 2*
(3*(B*a^3*b - 3*A*a^2*b^2)*x^2 - (3*B*a^4 - 5*A*a^3*b)*x)/x^(3/2) + 2*(3*A*
a^3*b*x^2 + A*a^4*x)/x^(5/2))/(a^4*b*x + a^5) - 2*(B*a*b - A*b^2)*arctan(b*
sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) + 1/3*((B*a*b^2 - 3*A*b^3)*x^(3/2) + 6*(
B*a^2*b - A*a*b^2)*sqrt(x))/a^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{5/2}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.743 $\int \frac{A+Bx}{x^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=190

$$\frac{2(a+bx)(Ab-aB)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b(a+bx)(\ldots}{a^3\sqrt{x}\sqrt{a^2+2\ldots}}$$

Rubi [A] time = 0.09, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$-\frac{2b(a+bx)(Ab-aB)}{a^3\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)(Ab-aB)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(5*a*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*
B)*(a + b*x))/(3*a^2*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*(A*b - a
*B)*(a + b*x))/(a^3*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b^(3/2)*(A*
b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{7/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{5Ab^2}{2}+\frac{5abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{x^{5/2}\left(ab+b^2x\right)}\,dx}{5ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2\left(-\frac{5Ab^2}{2}+\frac{5abB}{2}\right)(a\right.}{5a^2\sqrt{a^2 -}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+b}{a^3\sqrt{x}\sqrt{a^2+2abx+}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+b}{a^3\sqrt{x}\sqrt{a^2+2abx+}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+b}{a^3\sqrt{x}\sqrt{a^2+2abx+}}$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.32

$$-\frac{2(a+bx)\left({}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{bx}{a}\right)(5aBx-5Abx)+3aA\right)}{15a^2x^{5/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x)*(3*a*A + (-5*A*b*x + 5*a*B*x)*Hypergeometric2F1[-3/2, 1, -1/2
, -((b*x)/a)]))/(15*a^2*x^(5/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 24.83, size = 108, normalized size = 0.57

$$\frac{(a+bx)\left(\frac{2\left(ab^{3/2}B-Ab^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{2\left(3a^2A+5a^2Bx-5aAbx-15abBx^2+15Ab^2x^2\right)}{15a^3x^{5/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((-2*(3*a^2*A - 5*a*A*b*x + 5*a^2*B*x + 15*A*b^2*x^2 - 15*a*b*B*
x^2))/(15*a^3*x^(5/2)) + (2*(-(A*b^(5/2)) + a*b^(3/2)*B)*ArcTan[(Sqrt[b]*Sq
rt[x])/Sqrt[a]])/a^(7/2)))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.55, size = 195, normalized size = 1.03

$$\left[-\frac{15\left(Bab-Ab^2\right)x^3\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(3Aa^2-15\left(Bab-Ab^2\right)x^2+5\left(Ba^2-Aab\right)x\right)\sqrt{x}}{15a^3x^3}, -\frac{2\left(15\left(Bab-Ab^2\right)x^3\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)+\left(3Aa^2-15\left(Bab-Ab^2\right)x^2+5\left(Ba^2-Aab\right)x\right)\sqrt{x}\right)}{15a^3x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*a*b - A*b^2)*x^3*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a)
 - a)/(b*x + a)) + 2*(3*A*a^2 - 15*(B*a*b - A*b^2)*x^2 + 5*(B*a^2 - A*a*b)*
x)*sqrt(x))/(a^3*x^3), -2/15*(15*(B*a*b - A*b^2)*x^3*sqrt(b/a)*arctan(a*sqr
t(b/a)/(b*sqrt(x))) + (3*A*a^2 - 15*(B*a*b - A*b^2)*x^2 + 5*(B*a^2 - A*a*b)
*x)*sqrt(x))/(a^3*x^3)]
```

giac [**A**] time = 0.16, size = 122, normalized size = 0.64

$$\frac{2\left(Bab^{2}\mathrm{sgn}\left(bx+a\right)-Ab^{3}\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{3}}+\frac{2\left(15\,Babx^{2}\mathrm{sgn}\left(bx+a\right)-15\,Ab^{2}x^{2}\mathrm{sgn}\left(bx+a\right)-5\,Ba^{2}x\mathrm{sgn}\left(bx+a\right)+5\,Aabx\mathrm{sgn}\left(bx+a\right)-3\,Aa^{2}\mathrm{sgn}\left(bx+a\right)\right)}{15\,a^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*a^3) + 2/15*(15*B*a*b*x^2*sgn(b*x + a) - 15*A*b^2*x^2*sgn(b*x + a
) - 5*B*a^2*x*sgn(b*x + a) + 5*A*a*b*x*sgn(b*x + a) - 3*A*a^2*sgn(b*x + a))
/(a^3*x^(5/2))
```

maple [**A**] time = 0.06, size = 131, normalized size = 0.69

$$-\frac{2\left(bx+a\right)\left(15A\,b^{3}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-15Ba\,b^{2}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15\sqrt{ab}\;A\,b^{2}x^{2}-15\sqrt{ab}\;Bab\,x^{2}-5\sqrt{ab}\;Aabx+5\sqrt{ab}\;B\,a^{2}x+3\sqrt{ab}\;A\,a^{2}\right)}{15\sqrt{\left(bx+a\right)^{2}}\;\sqrt{ab}\;a^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2/15*(b*x+a)*(15*A*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b^3-15*B*x^(5/2
)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^2+15*A*x^2*(a*b)^(1/2)*b^2-15*B*x^2*(
a*b)^(1/2)*a*b-5*A*x*(a*b)^(1/2)*a*b+5*B*x*(a*b)^(1/2)*a^2+3*A*a^2*(a*b)^(1
/2))/((b*x+a)^2)^(1/2)/a^3/(a*b)^(1/2)/x^(5/2)
```

maxima [**B**] time = 1.65, size = 305, normalized size = 1.61

$$\frac{5\left(\left(3\,Bab^{4}-5\,Ab^{5}\right)x^{2}+3\left(5\,Ba^{2}b^{3}-7\,Aab^{4}\right)x\right)\sqrt{x}-\frac{10\left(\left(3\,Ba^{2}b^{3}-5\,Aab^{4}\right)x^{2}-3\left(5\,Ba^{3}b^{2}-7\,Aa^{2}b^{3}\right)x\right)}{\sqrt{x}}-\frac{10\left(3\left(3\,Ba^{3}b^{2}-5\,Aa^{2}b^{3}\right)x^{2}-\left(5\,Ba^{4}b-7\,Aa^{3}b^{2}\right)x\right)}{x^{\frac{3}{2}}}-\frac{2\left(5\left(3\,Ba^{4}b-5\,Aa^{3}b^{2}\right)x^{2}+\left(5\,Ba^{5}-7\,Aa^{4}b\right)x\right)}{x^{\frac{5}{2}}}-\frac{2\left(5\,Aa^{4}bx^{2}+3\,Aa^{5}x\right)}{x^{\frac{7}{2}}}}{15\left(a^{5}bx+a^{6}\right)}+\frac{2\left(Bab^{2}-Ab^{3}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{3}}-\frac{\left(3\,Bab^{3}-5\,Ab^{4}\right)x^{\frac{3}{2}}+6\left(Ba^{2}b^{2}-Aab^{3}\right)\sqrt{x}}{3\,a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/15*(5*((3*B*a*b^4 - 5*A*b^5)*x^2 + 3*(5*B*a^2*b^3 - 7*A*a*b^4)*x)*sqrt(x)
 - 10*((3*B*a^2*b^3 - 5*A*a*b^4)*x^2 - 3*(5*B*a^3*b^2 - 7*A*a^2*b^3)*x)/sqr
t(x) - 10*(3*(3*B*a^3*b^2 - 5*A*a^2*b^3)*x^2 - (5*B*a^4*b - 7*A*a^3*b^2)*x)
/x^(3/2) - 2*(5*(3*B*a^4*b - 5*A*a^3*b^2)*x^2 + (5*B*a^5 - 7*A*a^4*b)*x)/x^
(5/2) - 2*(5*A*a^4*b*x^2 + 3*A*a^5*x)/x^(7/2))/(a^5*b*x + a^6) + 2*(B*a*b^2
 - A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) - 1/3*((3*B*a*b^3 - 5
*A*b^4)*x^(3/2) + 6*(B*a^2*b^2 - A*a*b^3)*sqrt(x))/a^5
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{7/2}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.744 $\int \frac{A+Bx}{x^{9/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=238

$$\frac{2(a+bx)(Ab-aB)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2b^{5/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2b^2(a+bx)(}{a^4\sqrt{x}\sqrt{a^2+2}}$$

Rubi [A] time = 0.12, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{2b^2(a+bx)(Ab-aB)}{a^4\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b(a+bx)(Ab-aB)}{3a^3x^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)(Ab-aB)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2b^{5/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(7*a*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*
B)*(a + b*x))/(5*a^2*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*(A*b - a
*B)*(a + b*x))/(3*a^3*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b^2*(A*b
- a*B)*(a + b*x))/(a^4*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b^(5/2)*
(A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(9/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{9/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{7Ab^2}{2}+\frac{7abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{x^{7/2}\left(ab+b^2x\right)}\,dx}{7ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2\left(-\frac{7Ab^2}{2}+\frac{7abB}{2}\right)(a\ldots}{7a^2\sqrt{a^2 \ldots}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+\ldots}{3a^3x^{3/2}\sqrt{a^2+2abx+\ldots}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+\ldots}{3a^3x^{3/2}\sqrt{a^2+2abx+\ldots}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+\ldots}{3a^3x^{3/2}\sqrt{a^2+2abx+\ldots}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a+\ldots}{3a^3x^{3/2}\sqrt{a^2+2abx+\ldots}}$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.25

$$-\frac{2(a+bx)\left({}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{bx}{a}\right)(7aBx-7Abx)+5aA\right)}{35a^2x^{7/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x)*(5*a*A + (-7*A*b*x + 7*a*B*x)*Hypergeometric2F1[-5/2, 1, -3/2
, -((b*x)/a)]))/(35*a^2*x^(7/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 34.26, size = 132, normalized size = 0.55

$$\frac{(a+bx)\left(-\frac{2\left(ab^{5/2}B-Ab^{7/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}}-\frac{2\left(15a^3A+21a^3Bx-21a^2Abx-35a^2bBx^2+35aAb^2x^2+105ab^2Bx^3-105Ab^3x^3\right)}{105a^4x^{7/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((-2*(15*a^3*A - 21*a^2*A*b*x + 21*a^3*B*x + 35*a*A*b^2*x^2 - 35
*a^2*b*B*x^2 - 105*A*b^3*x^3 + 105*a*b^2*B*x^3))/(105*a^4*x^(7/2)) - (2*(-(
A*b^(7/2)) + a*b^(5/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(9/2)))/Sqrt
[(a + b*x)^2]
```

fricas [A] time = 0.66, size = 246, normalized size = 1.03

$$\left[-\frac{105\left(Bab^2-Ab^3\right)x^4\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(15Aa^3+105\left(Bab^2-Ab^3\right)x^3-35\left(Ba^2b-Aab^2\right)x^2+21\left(Ba^3-Aa^2b\right)x\right)\sqrt{x}}{105a^4x^4}, \frac{2\left(105\left(Bab^2-Ab^3\right)x^4\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-\left(15Aa^3+105\left(Bab^2-Ab^3\right)x^3-35\left(Ba^2b-Aab^2\right)x^2+21\left(Ba^3-Aa^2b\right)x\right)\sqrt{x}\right)}{105a^4x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*a*b^2 - A*b^3)*x^4*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-
b/a) - a)/(b*x + a)) + 2*(15*A*a^3 + 105*(B*a*b^2 - A*b^3)*x^3 - 35*(B*a^2*
b - A*a*b^2)*x^2 + 21*(B*a^3 - A*a^2*b)*x)*sqrt(x))/(a^4*x^4), 2/105*(105*(
B*a*b^2 - A*b^3)*x^4*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (15*A*a^3
+ 105*(B*a*b^2 - A*b^3)*x^3 - 35*(B*a^2*b - A*a*b^2)*x^2 + 21*(B*a^3 - A*a^
2*b)*x)*sqrt(x))/(a^4*x^4)]
```

giac [A] time = 0.18, size = 158, normalized size = 0.66

$$-\frac{2\left(Bab^3\mathrm{sgn}\left(bx+a\right)-Ab^4\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^4}-\frac{2\left(105\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)-105\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)-35\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+35\,Aab^2x^2\mathrm{sgn}\left(bx+a\right)+21\,Ba^3x\mathrm{sgn}\left(bx+a\right)-21\,Aa^2bx\mathrm{sgn}\left(bx+a\right)+15\,Aa^3\mathrm{sgn}\left(bx+a\right)\right)}{105\,a^4x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^3*sgn(b*x + a) - A*b^4*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*a^4) - 2/105*(105*B*a*b^2*x^3*sgn(b*x + a) - 105*A*b^3*x^3*sgn(b
*x + a) - 35*B*a^2*b*x^2*sgn(b*x + a) + 35*A*a*b^2*x^2*sgn(b*x + a) + 21*B*
a^3*x*sgn(b*x + a) - 21*A*a^2*b*x*sgn(b*x + a) + 15*A*a^3*sgn(b*x + a))/(a^
4*x^(7/2))
```

maple [A] time = 0.07, size = 165, normalized size = 0.69

$$\frac{2\left(bx+a\right)\left(105A\,b^4x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-105Ba\,b^3x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105\sqrt{ab}\,A\,b^3x^3-105\sqrt{ab}\,Ba\,b^2x^3-35\sqrt{ab}\,Aa\,b^2x^2+35\sqrt{ab}\,B\,a^2b\,x^2+21\sqrt{ab}\,A\,a^2bx-21\sqrt{ab}\,B\,a^3x-15\sqrt{ab}\,A\,a^3\right)}{105\sqrt{\left(bx+a\right)^2}\,\sqrt{ab}\,a^4x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)*(105*A*x^(7/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b^4-105*B*x^(7
/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^3+105*A*x^3*(a*b)^(1/2)*b^3-105*B*x
^3*(a*b)^(1/2)*a*b^2-35*A*x^2*(a*b)^(1/2)*a*b^2+35*B*x^2*(a*b)^(1/2)*a^2*b+
21*A*x*(a*b)^(1/2)*a^2*b-21*B*x*(a*b)^(1/2)*a^3-15*A*a^3*(a*b)^(1/2))/((b*x
+a)^2)^(1/2)/a^4/(a*b)^(1/2)/x^(7/2)
```

maxima [B] time = 1.51, size = 357, normalized size = 1.50

$$-\frac{35\left(\left(5\,Bab^5-7\,Ab^6\right)x^2+3\left(7\,Ba^2b^4-9\,Aab^5\right)x\right)\sqrt{x}-\frac{70\left(\left(5\,Ba^2b^4-7\,Aab^5\right)x^2-3\left(7\,Ba^3b^3-9\,Aa^2b^4\right)x\right)}{\sqrt{x}}-\frac{70\left(3\left(5\,Ba^3b^3-7\,Aa^2b^4\right)x^2-\left(7\,Ba^4b^2-9\,Aa^3b^3\right)x\right)}{x^{\frac{3}{2}}}-\frac{14\left(5\left(5\,Ba^4b^2-7\,Aa^3b^3\right)x^2+\left(7\,Ba^5b-9\,Aa^4b^2\right)x\right)}{x^{\frac{5}{2}}}+\frac{2\left(7\left(5\,Ba^5b-7\,Aa^4b^2\right)x^2+3\left(7\,Ba^6-9\,Aa^5b\right)x\right)}{x^{\frac{7}{2}}}+\frac{6\left(7\,Aa^5bx^2+5\,Aa^6x\right)}{x^{\frac{9}{2}}}}{105\left(a^6bx+a^7\right)}-\frac{2\left(Bab^3-Ab^4\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^4}+\frac{\left(5\,Bab^4-7\,Ab^5\right)x^{\frac{3}{2}}+6\left(Ba^2b^3-Aab^4\right)\sqrt{x}}{3\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/105*(35*((5*B*a*b^5 - 7*A*b^6)*x^2 + 3*(7*B*a^2*b^4 - 9*A*a*b^5)*x)*sqrt
(x) - 70*((5*B*a^2*b^4 - 7*A*a*b^5)*x^2 - 3*(7*B*a^3*b^3 - 9*A*a^2*b^4)*x)/
sqrt(x) - 70*(3*(5*B*a^3*b^3 - 7*A*a^2*b^4)*x^2 - (7*B*a^4*b^2 - 9*A*a^3*b^
3)*x)/x^(3/2) - 14*(5*(5*B*a^4*b^2 - 7*A*a^3*b^3)*x^2 + (7*B*a^5*b - 9*A*a^
4*b^2)*x)/x^(5/2) + 2*(7*(5*B*a^5*b - 7*A*a^4*b^2)*x^2 + 3*(7*B*a^6 - 9*A*a
^5*b)*x)/x^(7/2) + 6*(7*A*a^5*b*x^2 + 5*A*a^6*x)/x^(9/2))/(a^6*b*x + a^7) -
 2*(B*a*b^3 - A*b^4)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + 1/3*((5*
B*a*b^4 - 7*A*b^5)*x^(3/2) + 6*(B*a^2*b^3 - A*a*b^4)*sqrt(x))/a^6
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{9/2}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*((a + b*x)^2)^(1/2)),x)
[Out] int((A + B*x)/(x^(9/2)*((a + b*x)^2)^(1/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.745 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=302

$$\frac{x^{9/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(5Ab-9aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{7a\sqrt{x}\,(a+bx)(5Ab-9aB)}{4b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{7x^{3/2}(a+bx)(5Ab-9}{12b^4\sqrt{a^2+2abx+b^2}}$$

Rubi [A] time = 0.15, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{9/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(5Ab-9aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{7x^{5/2}(a+bx)(5Ab-9aB)}{20ab^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7x^{3/2}(a+bx)(5Ab-9aB)}{12b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{7a\sqrt{x}\,(a+bx)(5Ab-9aB)}{4b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{7a^{3/2}(a+bx)(5Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{11/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((5*A*b - 9*a*B)*x^(7/2))/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b -
 a*B)*x^(9/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*a*(5*A*
b - 9*a*B)*Sqrt[x]*(a + b*x))/(4*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*(5
*A*b - 9*a*B)*x^(3/2)*(a + b*x))/(12*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
7*(5*A*b - 9*a*B)*x^(5/2)*(a + b*x))/(20*a*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (7*a^(3/2)*(5*A*b - 9*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]
)/(4*b^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] && !(IntegerQ[n] && !Intege
rQ[m]) && !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^{7/2}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((5Ab-9aB)\left(ab+b^2x\right)\right)\int \frac{x^{7/2}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7(5Ab-9aB)\left(ab+\right.\right.}{8ab^2\sqrt{a^2+2a}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(5Ab-9aB)x^{5/2}(a}{20ab^3\sqrt{a^2+2abx+}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{7(5Ab-9aB)x^{3/2}(a}{12b^4\sqrt{a^2+2abx+b}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7a(5Ab-9aB)\sqrt{x}\,(a}{4b^5\sqrt{a^2+2abx+b}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7a(5Ab-9aB)\sqrt{x}\,(a}{4b^5\sqrt{a^2+2abx+b}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7a(5Ab-9aB)\sqrt{x}\,(a}{4b^5\sqrt{a^2+2abx+b}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.26

$$\frac{x^{9/2}\left(9a^2(Ab-aB)+(a+bx)^2(9aB-5Ab)\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};-\frac{bx}{a}\right)\right)}{18a^3b(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^(9/2)*(9*a^2*(A*b - a*B) + (-5*A*b + 9*a*B)*(a + b*x)^2*Hypergeometric2F
1[2, 9/2, 11/2, -((b*x)/a)]))/(18*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 28.48, size = 163, normalized size = 0.54

$$\frac{(a+bx)\left(\frac{\sqrt{x}\left(945a^4B-525a^3Ab+1575a^3bBx-875a^2Ab^2x+504a^2b^2Bx^2-280aAb^3x^2-72ab^3Bx^3+40Ab^4x^3+24b^4Bx^4\right)}{60b^5(a+bx)^2}-\frac{7\left(9a^{5/2}B-5a^{3/2}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{11/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*((Sqrt[x]*(-525*a^3*A*b + 945*a^4*B - 875*a^2*A*b^2*x + 1575*a^3
*b*B*x - 280*a*A*b^3*x^2 + 504*a^2*b^2*B*x^2 + 40*A*b^4*x^3 - 72*a*b^3*B*x^
3 + 24*b^4*B*x^4))/(60*b^5*(a + b*x)^2) - (7*(-5*a^(3/2)*A*b + 9*a^(5/2)*B)
*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(11/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.47, size = 408, normalized size = 1.35

$$\left[-\frac{105\left(9Ba^4-5Aa^3b+\left(9Ba^2b^2-5Aab^3\right)x^2+2\left(9Ba^3b-5Aa^2b^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(24Bb^4x^4+945Ba^4-525Aa^3b-8\left(9Bab^3-5Ab^4\right)x^3+56\left(9Ba^2b^2-5Aab^3\right)x^2+175\left(9Ba^3b-5Aa^2b^2\right)x\right)\sqrt{x}}{120\left(b^7x^2+2ab^6x+a^2b^5\right)}, -\frac{105\left(9Ba^4-5Aa^3b+\left(9Ba^2b^2-5Aab^3\right)x^2+2\left(9Ba^3b-5Aa^2b^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)-\left(24Bb^4x^4+945Ba^4-525Aa^3b-8\left(9Bab^3-5Ab^4\right)x^3+56\left(9Ba^2b^2-5Aab^3\right)x^2+175\left(9Ba^3b-5Aa^2b^2\right)x\right)\sqrt{x}}{60\left(b^7x^2+2ab^6x+a^2b^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/120*(105*(9*B*a^4 - 5*A*a^3*b + (9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 2*(9*B*
a^3*b - 5*A*a^2*b^2)*x)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a)/(
b*x + a)) - 2*(24*B*b^4*x^4 + 945*B*a^4 - 525*A*a^3*b - 8*(9*B*a*b^3 - 5*A*
b^4)*x^3 + 56*(9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 175*(9*B*a^3*b - 5*A*a^2*b^2)
*x)*sqrt(x))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5), -1/60*(105*(9*B*a^4 - 5*A*a^3
*b + (9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 2*(9*B*a^3*b - 5*A*a^2*b^2)*x)*sqrt(a/
b)*arctan(b*sqrt(x)*sqrt(a/b)/a) - (24*B*b^4*x^4 + 945*B*a^4 - 525*A*a^3*b
- 8*(9*B*a*b^3 - 5*A*b^4)*x^3 + 56*(9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 175*(9*B
*a^3*b - 5*A*a^2*b^2)*x)*sqrt(x))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)]
```

giac [A] time = 0.22, size = 170, normalized size = 0.56

$$-\frac{7\left(9Ba^3-5Aa^2b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}\,b^5\mathrm{sgn}\left(bx+a\right)}+\frac{17Ba^3bx^{\frac{3}{2}}-13Aa^2b^2x^{\frac{3}{2}}+15Ba^4\sqrt{x}-11Aa^3b\sqrt{x}}{4\left(bx+a\right)^2b^5\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(3Bb^{12}x^{\frac{5}{2}}-15Bab^{11}x^{\frac{3}{2}}+5Ab^{12}x^{\frac{3}{2}}+90Ba^2b^{10}\sqrt{x}-45Aab^{11}\sqrt{x}\right)}{15b^{15}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -7/4*(9*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5*sgn(b
*x + a)) + 1/4*(17*B*a^3*b*x^(3/2) - 13*A*a^2*b^2*x^(3/2) + 15*B*a^4*sqrt(x
) - 11*A*a^3*b*sqrt(x))/((b*x + a)^2*b^5*sgn(b*x + a)) + 2/15*(3*B*b^12*x^(
5/2) - 15*B*a*b^11*x^(3/2) + 5*A*b^12*x^(3/2) + 90*B*a^2*b^10*sqrt(x) - 45*
A*a*b^11*sqrt(x))/(b^15*sgn(b*x + a))
```

maple [A] time = 0.07, size = 283, normalized size = 0.94

$$\frac{\left(24\sqrt{ab}\,Bb^4x^{\frac{9}{2}}+525Aa^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-945Ba^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+40\sqrt{ab}\,Ab^4x^{\frac{7}{2}}-72\sqrt{ab}\,Bab^3x^{\frac{7}{2}}+1050Aa^3b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-1890Ba^4bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-280\sqrt{ab}\,Aab^3x^{\frac{5}{2}}+504\sqrt{ab}\,Ba^2b^2x^{\frac{5}{2}}+525Aa^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-945Ba^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-875\sqrt{ab}\,Aa^2b^2x^{\frac{3}{2}}+1575\sqrt{ab}\,Ba^3bx^{\frac{3}{2}}-525\sqrt{ab}\,Aa^3b\sqrt{x}+945\sqrt{ab}\,Ba^4\sqrt{x}\right)\left(bx+a\right)}{60\sqrt{ab}\,\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*(24*(a*b)^(1/2)*B*b^4*x^(9/2)-72*(a*b)^(1/2)*B*a*b^3*x^(7/2)+40*(a*b)^
(1/2)*A*b^4*x^(7/2)+504*(a*b)^(1/2)*B*a^2*b^2*x^(5/2)-280*(a*b)^(1/2)*A*a*b
^3*x^(5/2)-875*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+525*A*arctan(1/(a*b)^(1/2)*b*x
^(1/2))*x^2*a^2*b^3+1575*(a*b)^(1/2)*B*a^3*b*x^(3/2)-945*B*arctan(1/(a*b)^(
1/2)*b*x^(1/2))*x^2*a^3*b^2+1050*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^3*b^
```

```
2-1890*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^4*b-525*(a*b)^(1/2)*A*a^3*b*x^
(1/2)+525*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))+945*(a*b)^(1/2)*B*a^4*x^(
1/2)-945*B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^5/((b
*x+a)^2)^(3/2)
```

maxima [A] time = 1.86, size = 273, normalized size = 0.90

$$\frac{16\left(3\,Bb^4x^2+5\,Bab^3x\right)x^{\frac{7}{2}}+\left(89\left(11\,Bab^3-5\,Ab^4\right)x^2+285\left(3\,Ba^2b^2-Aab^3\right)x\right)x^{\frac{5}{2}}+12\left(12\left(11\,Ba^2b^2-5\,Aab^3\right)x^2+35\left(3\,Ba^3b-Aa^2b^2\right)x\right)x^{\frac{3}{2}}+7\left(9\left(11\,Ba^3b-5\,Aa^2b^2\right)x^2+25\left(3\,Ba^4-Aa^3b\right)x\right)\sqrt{x}}{120\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}-\frac{7\left(9\,Ba^3-5\,Aa^2b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,b^5}-\frac{7\left(\left(11\,Bab-5\,Ab^2\right)x^{\frac{3}{2}}-2\left(9\,Ba^2-5\,Aab\right)\sqrt{x}\right)}{8\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/120*(16*(3*B*b^4*x^2 + 5*B*a*b^3*x)*x^(7/2) + (89*(11*B*a*b^3 - 5*A*b^4)*
x^2 + 285*(3*B*a^2*b^2 - A*a*b^3)*x)*x^(5/2) + 12*(12*(11*B*a^2*b^2 - 5*A*a
*b^3)*x^2 + 35*(3*B*a^3*b - A*a^2*b^2)*x)*x^(3/2) + 7*(9*(11*B*a^3*b - 5*A*
a^2*b^2)*x^2 + 25*(3*B*a^4 - A*a^3*b)*x)*sqrt(x))/(b^7*x^3 + 3*a*b^6*x^2 +
3*a^2*b^5*x + a^3*b^4) - 7/4*(9*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*
b))/(sqrt(a*b)*b^5) - 7/8*((11*B*a*b - 5*A*b^2)*x^(3/2) - 2*(9*B*a^2 - 5*A*
a*b)*sqrt(x))/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.746 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=255

$$\frac{x^{7/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{5/2}(3Ab-7aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5\sqrt{a}\,(a+bx)(3Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(a+}{4b^4\sqrt{a^2}}$$

Rubi [A] time = 0.12, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{7/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{5/2}(3Ab-7aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5x^{3/2}(a+bx)(3Ab-7aB)}{12ab^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(a+bx)(3Ab-7aB)}{4b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{5\sqrt{a}\,(a+bx)(3Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((3*A*b - 7*a*B)*x^(5/2))/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b -
 a*B)*x^(7/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*(3*A*b
- 7*a*B)*Sqrt[x]*(a + b*x))/(4*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*(3*A
*b - 7*a*B)*x^(3/2)*(a + b*x))/(12*a*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
5*Sqrt[a]*(3*A*b - 7*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^{5/2}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((3Ab-7aB)\left(ab+b^2x\right)\right)\int \frac{x^{5/2}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(5(3Ab-7aB)\left(ab+\right.\right.}{8ab^2\sqrt{a^2+2a}}$$

$$= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(3Ab-7aB)x^{3/2}(a}{12ab^3\sqrt{a^2+2abx+}}$$

$$= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{5(3Ab-7aB)\sqrt{x}(a}{4b^4\sqrt{a^2+2abx+b}}$$

$$= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{5(3Ab-7aB)\sqrt{x}(a}{4b^4\sqrt{a^2+2abx+b}}$$

$$= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{5(3Ab-7aB)\sqrt{x}(a}{4b^4\sqrt{a^2+2abx+b}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.31

$$\frac{x^{7/2}\left(7a^2(Ab-aB)+(a+bx)^2(7aB-3Ab)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};-\frac{bx}{a}\right)\right)}{14a^3b(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^(7/2)*(7*a^2*(A*b - a*B) + (-3*A*b + 7*a*B)*(a + b*x)^2*Hypergeometric2F
1[2, 7/2, 9/2, -((b*x)/a)]))/(14*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 21.47, size = 139, normalized size = 0.55

$$\frac{(a+bx)\left(\frac{5\left(7a^{3/2}B-3\sqrt{a}\,Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}+\frac{\sqrt{x}\left(-105a^3B+45a^2Ab-175a^2bBx+75aAb^2x-56ab^2Bx^2+24Ab^3x^2+8b^3Bx^3\right)}{12b^4(a+bx)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*((Sqrt[x]*(45*a^2*A*b - 105*a^3*B + 75*a*A*b^2*x - 175*a^2*b*B*x
 + 24*A*b^3*x^2 - 56*a*b^2*B*x^2 + 8*b^3*B*x^3))/(12*b^4*(a + b*x)^2) + (5*
(-3*Sqrt[a]*A*b + 7*a^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(9/2
))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.43, size = 349, normalized size = 1.37

$$\left[-\frac{15\left(7Ba^3-3Aa^2b+\left(7Bab^2-3Ab^3\right)x^2+2\left(7Ba^2b-3Aab^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(8Bb^3x^3-105Ba^3+45Aa^2b-8\left(7Bab^2-3Ab^3\right)x^2-25\left(7Ba^2b-3Aab^2\right)x\right)\sqrt{x}}{24\left(b^6x^2+2ab^5x+a^2b^4\right)},\ \frac{15\left(7Ba^3-3Aa^2b+\left(7Bab^2-3Ab^3\right)x^2+2\left(7Ba^2b-3Aab^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+\left(8Bb^3x^3-105Ba^3+45Aa^2b-8\left(7Bab^2-3Ab^3\right)x^2-25\left(7Ba^2b-3Aab^2\right)x\right)\sqrt{x}}{12\left(b^6x^2+2ab^5x+a^2b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/24*(15*(7*B*a^3 - 3*A*a^2*b + (7*B*a*b^2 - 3*A*b^3)*x^2 + 2*(7*B*a^2*b
- 3*A*a*b^2)*x)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)
) - 2*(8*B*b^3*x^3 - 105*B*a^3 + 45*A*a^2*b - 8*(7*B*a*b^2 - 3*A*b^3)*x^2 -
 25*(7*B*a^2*b - 3*A*a*b^2)*x)*sqrt(x))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4), 1/
12*(15*(7*B*a^3 - 3*A*a^2*b + (7*B*a*b^2 - 3*A*b^3)*x^2 + 2*(7*B*a^2*b - 3*
A*a*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (8*B*b^3*x^3 - 105*B*
a^3 + 45*A*a^2*b - 8*(7*B*a*b^2 - 3*A*b^3)*x^2 - 25*(7*B*a^2*b - 3*A*a*b^2)
*x)*sqrt(x))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)]
```

giac [A] time = 0.26, size = 143, normalized size = 0.56

$$\frac{5\left(7Ba^2-3Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}\,b^4\mathrm{sgn}\left(bx+a\right)}-\frac{13Ba^2bx^{\frac{3}{2}}-9Aab^2x^{\frac{3}{2}}+11Ba^3\sqrt{x}-7Aa^2b\sqrt{x}}{4\left(bx+a\right)^2b^4\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(Bb^6x^{\frac{3}{2}}-9Bab^5\sqrt{x}+3Ab^6\sqrt{x}\right)}{3b^9\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 5/4*(7*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4*sgn(b*x
+ a)) - 1/4*(13*B*a^2*b*x^(3/2) - 9*A*a*b^2*x^(3/2) + 11*B*a^3*sqrt(x) - 7*
A*a^2*b*sqrt(x))/((b*x + a)^2*b^4*sgn(b*x + a)) + 2/3*(B*b^6*x^(3/2) - 9*B*
a*b^5*sqrt(x) + 3*A*b^6*sqrt(x))/(b^9*sgn(b*x + a))
```

maple [A] time = 0.07, size = 247, normalized size = 0.97

$$\frac{\left(-45Aab^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105Ba^2b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+8\sqrt{ab}\,Bb^3x^{\frac{7}{2}}-90Aa^2b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+210Ba^3bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+24\sqrt{ab}\,Ab^3x^{\frac{5}{2}}-56\sqrt{ab}\,Bab^2x^{\frac{5}{2}}-45Aa^3b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105Ba^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+75\sqrt{ab}\,Aab^2x^{\frac{3}{2}}-175\sqrt{ab}\,Ba^2bx^{\frac{3}{2}}+45\sqrt{ab}\,Aa^2b\sqrt{x}-105\sqrt{ab}\,Ba^3\sqrt{x}\right)(bx+a)}{12\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{3}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(8*(a*b)^(1/2)*B*b^3*x^(7/2)-56*(a*b)^(1/2)*B*a*b^2*x^(5/2)+75*(a*b)^(
1/2)*A*a*b^2*x^(3/2)+24*(a*b)^(1/2)*A*b^3*x^(5/2)-45*A*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*x^2*a*b^3-175*(a*b)^(1/2)*B*a^2*b*x^(3/2)+105*B*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*x^2*a^2*b^2-90*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^2*b^2
+210*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^3*b+45*(a*b)^(1/2)*A*a^2*b*x^(1/
```

```
2)-45*A*a^3*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-105*(a*b)^(1/2)*B*a^3*x^(1/2)
+105*B*a^4*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^4/((b*x+a
)^2)^(3/2)
```

maxima [A] time = 1.70, size = 252, normalized size = 0.99

$$-\frac{\left(\left(89\,Bab^{3}-35\,Ab^{4}\right)x^{2}+3\left(19\,Ba^{2}b^{2}-5\,Aab^{3}\right)x\right)x^{\frac{5}{2}}+12\left(4\left(3\,Ba^{2}b^{2}-Aab^{3}\right)x^{2}+\left(7\,Ba^{3}b-Aa^{2}b^{2}\right)x\right)x^{\frac{3}{2}}+\left(21\left(3\,Ba^{3}b-Aa^{2}b^{2}\right)x^{2}+5\left(7\,Ba^{4}-Aa^{3}b\right)x\right)\sqrt{x}}{24\left(ab^{6}x^{3}+3\,a^{2}b^{5}x^{2}+3\,a^{3}b^{4}x+a^{4}b^{3}\right)}+\frac{5\left(7\,Ba^{2}-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,b^{4}}+\frac{5\left(7\left(3\,Bab-Ab^{2}\right)x^{\frac{3}{2}}-6\left(7\,Ba^{2}-3\,Aab\right)\sqrt{x}\right)}{24\,ab^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] -1/24*(((89*B*a*b^3 - 35*A*b^4)*x^2 + 3*(19*B*a^2*b^2 - 5*A*a*b^3)*x)*x^(5/
2) + 12*(4*(3*B*a^2*b^2 - A*a*b^3)*x^2 + (7*B*a^3*b - A*a^2*b^2)*x)*x^(3/2)
 + (21*(3*B*a^3*b - A*a^2*b^2)*x^2 + 5*(7*B*a^4 - A*a^3*b)*x)*sqrt(x))/(a*b
^6*x^3 + 3*a^2*b^5*x^2 + 3*a^3*b^4*x + a^4*b^3) + 5/4*(7*B*a^2 - 3*A*a*b)*a
rctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + 5/24*(7*(3*B*a*b - A*b^2)*x^(3
/2) - 6*(7*B*a^2 - 3*A*a*b)*sqrt(x))/(a*b^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.747 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=206

$$\frac{x^{5/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-5aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3(a+bx)(Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}\,b^{7/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{3\sqrt{x}\,(a+bx)(}{4ab^3\sqrt{a^2+2a}}$$

Rubi [A] time = 0.11, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{5/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-5aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{3\sqrt{x}\,(a+bx)(Ab-5aB)}{4ab^3\sqrt{a^2+2abx+b^2x^2}}+\frac{3(a+bx)(Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}\,b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - 5*a*B)*x^(3/2))/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a
*B)*x^(5/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*(A*b - 5*
a*B)*Sqrt[x]*(a + b*x))/(4*a*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*(A*b -
 5*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(7/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^{3/2}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((Ab-5aB)\left(ab+b^2x\right)\right)\int \frac{x^{3/2}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(3(Ab-5aB)\left(ab+b\right.\right.}{8ab^2\sqrt{a^2+2a}}$$

$$= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(Ab-5aB)\sqrt{x}\,(a+}{4ab^3\sqrt{a^2+2abx+b}}$$

$$= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(Ab-5aB)\sqrt{x}\,(a+}{4ab^3\sqrt{a^2+2abx+b}}$$

$$= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(Ab-5aB)\sqrt{x}\,(a+}{4ab^3\sqrt{a^2+2abx+b}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.38

$$\frac{x^{5/2}\left(5a^2(Ab-aB)+(a+bx)^2(5aB-Ab)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};-\frac{bx}{a}\right)\right)}{10a^3b(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^(5/2)*(5*a^2*(A*b - a*B) + (-(A*b) + 5*a*B)*(a + b*x)^2*Hypergeometric2F
1[2, 5/2, 7/2, -((b*x)/a)]))/(10*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 14.46, size = 111, normalized size = 0.54

$$\frac{(a+bx)\left(\frac{\sqrt{x}\left(15a^2B-3aAb+25abBx-5Ab^2x+8b^2Bx^2\right)}{4b^3(a+bx)^2} - \frac{3(5aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}\,b^{7/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*((Sqrt[x]*(-3*a*A*b + 15*a^2*B - 5*A*b^2*x + 25*a*b*B*x + 8*b^2*
B*x^2))/(4*b^3*(a + b*x)^2) - (3*(-(A*b) + 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/
Sqrt[a]])/(4*Sqrt[a]*b^(7/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.44, size = 319, normalized size = 1.55

$$\left[\frac{3\left(5Ba^3-Aa^2b+\left(5Bab^2-Ab^3\right)x^2+2\left(5Ba^2b-Aab^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(8Bab^3x^2+15Ba^3b-3Aa^2b^2+5\left(5Ba^2b^2-Aab^3\right)x\right)\sqrt{x}}{8\left(ab^6x^2+2a^2b^5x+a^3b^4\right)},\frac{3\left(5Ba^3-Aa^2b+\left(5Bab^2-Ab^3\right)x^2+2\left(5Ba^2b-Aab^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(8Bab^3x^2+15Ba^3b-3Aa^2b^2+5\left(5Ba^2b^2-Aab^3\right)x\right)\sqrt{x}}{4\left(ab^6x^2+2a^2b^5x+a^3b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [1/8*(3*(5*B*a^3 - A*a^2*b + (5*B*a*b^2 - A*b^3)*x^2 + 2*(5*B*a^2*b - A*a*b
^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(8*B*
a*b^3*x^2 + 15*B*a^3*b - 3*A*a^2*b^2 + 5*(5*B*a^2*b^2 - A*a*b^3)*x)*sqrt(x)
)/(a*b^6*x^2 + 2*a^2*b^5*x + a^3*b^4), 1/4*(3*(5*B*a^3 - A*a^2*b + (5*B*a*b
^2 - A*b^3)*x^2 + 2*(5*B*a^2*b - A*a*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*
sqrt(x))) + (8*B*a*b^3*x^2 + 15*B*a^3*b - 3*A*a^2*b^2 + 5*(5*B*a^2*b^2 - A*
a*b^3)*x)*sqrt(x))/(a*b^6*x^2 + 2*a^2*b^5*x + a^3*b^4)]
```

giac [A] time = 0.21, size = 111, normalized size = 0.54

$$\frac{2B\sqrt{x}}{b^3\mathrm{sgn}\left(bx+a\right)}-\frac{3\left(5Ba-Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}\,b^3\mathrm{sgn}\left(bx+a\right)}+\frac{9Babx^{\frac{3}{2}}-5Ab^2x^{\frac{3}{2}}+7Ba^2\sqrt{x}-3Aab\sqrt{x}}{4\left(bx+a\right)^2b^3\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/(b^3*sgn(b*x + a)) - 3/4*(5*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*
b))/(sqrt(a*b)*b^3*sgn(b*x + a)) + 1/4*(9*B*a*b*x^(3/2) - 5*A*b^2*x^(3/2) +
 7*B*a^2*sqrt(x) - 3*A*a*b*sqrt(x))/((b*x + a)^2*b^3*sgn(b*x + a))
```

maple [A] time = 0.07, size = 208, normalized size = 1.01

$$-\frac{\left(-3Ab^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15Bab^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-6Aab^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+30Ba^2bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-8\sqrt{ab}\,Bb^2x^{\frac{5}{2}}-3Aa^2b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15Ba^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+5\sqrt{ab}\,Ab^2x^{\frac{3}{2}}-25\sqrt{ab}\,Babx^{\frac{3}{2}}+3\sqrt{ab}\,Aab\sqrt{x}-15\sqrt{ab}\,Ba^2\sqrt{x}\right)\left(bx+a\right)}{4\sqrt{ab}\,\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(5*(a*b)^(1/2)*A*b^2*x^(3/2)-3*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^2*b
^3-25*(a*b)^(1/2)*B*a*b*x^(3/2)-8*(a*b)^(1/2)*B*b^2*x^(5/2)+15*B*arctan(1/(
a*b)^(1/2)*b*x^(1/2))*x^2*a*b^2-6*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a*b^2
+30*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^2*b+3*(a*b)^(1/2)*A*a*b*x^(1/2)-3
*A*a^2*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*B*a^2*x^(1/2)+15*B*
a^3*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^3/((b*x+a)^2)^(3
/2)
```

maxima [A] time = 1.58, size = 237, normalized size = 1.15

$$\frac{\left(5\left(7Bab^3-Ab^4\right)x^2+3\left(5Ba^2b^2+Aab^3\right)x\right)x^{\frac{5}{2}}+12\left(4Ba^2b^2x^2+\left(Ba^3b+Aa^2b^2\right)x\right)x^{\frac{3}{2}}+\left(3\left(7Ba^3b-Aa^2b^2\right)x^2+\left(5Ba^4+Aa^3b\right)x\right)\sqrt{x}}{24\left(a^2b^5x^3+3a^3b^4x^2+3a^4b^3x+a^5b^2\right)}-\frac{3\left(5Ba-Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}\,b^3}-\frac{5\left(7Bab-Ab^2\right)x^{\frac{3}{2}}-18\left(5Ba^2-Aab\right)\sqrt{x}}{24a^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*((5*(7*B*a*b^3 - A*b^4)*x^2 + 3*(5*B*a^2*b^2 + A*a*b^3)*x)*x^(5/2) + 1
2*(4*B*a^2*b^2*x^2 + (B*a^3*b + A*a^2*b^2)*x)*x^(3/2) + (3*(7*B*a^3*b - A*a
^2*b^2)*x^2 + (5*B*a^4 + A*a^3*b)*x)*sqrt(x))/(a^2*b^5*x^3 + 3*a^3*b^4*x^2
+ 3*a^4*b^3*x + a^5*b^2) - 3/4*(5*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(s
qrt(a*b)*b^3) - 1/24*(5*(7*B*a*b - A*b^2)*x^(3/2) - 18*(5*B*a^2 - A*a*b)*sq
rt(x))/(a^2*b^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.748 $\int \frac{\sqrt{x}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{x}(3aB+Ab)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 47, 63, 205}

$$\frac{x^{3/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}(3aB+Ab)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((A*b + 3*a*B)*Sqrt[x])/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b -
a*B)*x^(3/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b + 3*a
*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(3/2)*b^(5/2)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab+3aB)\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab+3aB)\sqrt{x}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab+3aB)\left(ab+\right.\right.}{8ab^2\sqrt{a^2+}}$$

$$= -\frac{(Ab+3aB)\sqrt{x}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab+3aB)\left(ab+\right.\right.}{4ab^2}$$

$$= -\frac{(Ab+3aB)\sqrt{x}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab+3aB)(a+bx}{4a^{3/2}b^{5/2}\sqrt{a^2+}}$$

Mathematica [A] time = 0.05, size = 105, normalized size = 0.66

$$\frac{\sqrt{a}\,\sqrt{b}\,\sqrt{x}\left(-3a^2B-ab(A+5Bx)+Ab^2x\right)+(a+bx)^2(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a]*Sqrt[b]*Sqrt[x]*(-3*a^2*B + A*b^2*x - a*b*(A + 5*B*x)) + (A*b + 3*
a*B)*(a + b*x)^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(3/2)*b^(5/2)*(a +
 b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 10.32, size = 103, normalized size = 0.65

$$\frac{(a+bx)\left(\frac{(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}}-\frac{\sqrt{x}\left(3a^2B+aAb+5abBx-Ab^2x\right)}{4ab^2(a+bx)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(-1/4*(Sqrt[x]*(a*A*b + 3*a^2*B - A*b^2*x + 5*a*b*B*x))/(a*b^2*(
a + b*x)^2) + ((A*b + 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(3/2)*
b^(5/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.45, size = 291, normalized size = 1.84

$$\left[-\frac{\left(3\,Ba^3+Aa^2b+\left(3\,Bab^2+Ab^3\right)x^2+2\left(3\,Ba^2b+Aab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(3\,Ba^3b+Aa^2b^2+\left(5\,Ba^2b^2-Aab^3\right)x\right)\sqrt{x}}{8\left(a^2b^5x^2+2\,a^3b^4x+a^4b^3\right)},\ -\frac{\left(3\,Ba^3+Aa^2b+\left(3\,Bab^2+Ab^3\right)x^2+2\left(3\,Ba^2b+Aab^2\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(3\,Ba^3b+Aa^2b^2+\left(5\,Ba^2b^2-Aab^3\right)x\right)\sqrt{x}}{4\left(a^2b^5x^2+2\,a^3b^4x+a^4b^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/8*((3*B*a^3 + A*a^2*b + (3*B*a*b^2 + A*b^3)*x^2 + 2*(3*B*a^2*b + A*a*b^
2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(3*B*a
^3*b + A*a^2*b^2 + (5*B*a^2*b^2 - A*a*b^3)*x)*sqrt(x))/(a^2*b^5*x^2 + 2*a^3
*b^4*x + a^4*b^3), -1/4*((3*B*a^3 + A*a^2*b + (3*B*a*b^2 + A*b^3)*x^2 + 2*(
3*B*a^2*b + A*a*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (3*B*a^3*
b + A*a^2*b^2 + (5*B*a^2*b^2 - A*a*b^3)*x)*sqrt(x))/(a^2*b^5*x^2 + 2*a^3*b^
4*x + a^4*b^3)]
```

giac [A] time = 0.30, size = 98, normalized size = 0.62

$$\frac{(3\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,ab^2\mathrm{sgn}\left(bx+a\right)}-\frac{5\,Babx^{\frac{3}{2}}-Ab^2x^{\frac{3}{2}}+3\,Ba^2\sqrt{x}+Aab\sqrt{x}}{4\,(bx+a)^2ab^2\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*(3*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^2*sgn(b*x + a)
) - 1/4*(5*B*a*b*x^(3/2) - A*b^2*x^(3/2) + 3*B*a^2*sqrt(x) + A*a*b*sqrt(x))
/((b*x + a)^2*a*b^2*sgn(b*x + a))
```

maple [A] time = 0.07, size = 194, normalized size = 1.23

$$\frac{\left(A\,b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3Ba\,b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+2Aa\,b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+6B\,a^2bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+A\,a^2b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3B\,a^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\;A\,b^2x^{\frac{3}{2}}-5\sqrt{ab}\;Bab\,x^{\frac{3}{2}}-\sqrt{ab}\;Aab\sqrt{x}-3\sqrt{ab}\;B\,a^2\sqrt{x}\right)(bx+a)}{4\sqrt{ab}\;\left((bx+a)^2\right)^{\frac{3}{2}}a\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/4*((a*b)^(1/2)*A*b^2*x^(3/2)+A*b^3*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))-5*
(a*b)^(1/2)*B*a*b*x^(3/2)+3*B*a*b^2*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+2*A
*a*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+6*B*a^2*b*x*arctan(1/(a*b)^(1/2)*b
*x^(1/2))-(a*b)^(1/2)*A*a*b*x^(1/2)+A*a^2*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))
-3*(a*b)^(1/2)*B*a^2*x^(1/2)+3*B*a^3*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+
a)/(a*b)^(1/2)/b^2/a/((b*x+a)^2)^(3/2)
```

maxima [B] time = 1.68, size = 218, normalized size = 1.38

$$\frac{12\left(Ba^3b+Aa^2b^2\right)x^{\frac{5}{2}}-\left(\left(5\,Bab^3+Ab^4\right)x^2-3\left(Ba^2b^2+Aab^3\right)x\right)x^{\frac{5}{2}}-\left(3\left(Ba^3b-3\,Aa^2b^2\right)x^2-\left(Ba^4+17\,Aa^3b\right)x\right)\sqrt{x}}{24\left(a^3b^4x^3+3\,a^4b^3x^2+3\,a^5b^2x+a^6b\right)}+\frac{(3\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,ab^2}+\frac{\left(5\,Bab+Ab^2\right)x^{\frac{3}{2}}-6\left(3\,Ba^2+Aab\right)\sqrt{x}}{24\,a^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*(12*(B*a^3*b + A*a^2*b^2)*x^(5/2) - ((5*B*a*b^3 + A*b^4)*x^2 - 3*(B*a^
2*b^2 + A*a*b^3)*x)*x^(5/2) - (3*(B*a^3*b - 3*A*a^2*b^2)*x^2 - (B*a^4 + 17*
A*a^3*b)*x)*sqrt(x))/(a^3*b^4*x^3 + 3*a^4*b^3*x^2 + 3*a^5*b^2*x + a^6*b) +
1/4*(3*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^2) + 1/24*((5*
B*a*b + A*b^2)*x^(3/2) - 6*(3*B*a^2 + A*a*b)*sqrt(x))/(a^3*b^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(sqrt(x)*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.749 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{x}\,(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+3Ab)}{4a^2b\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{\sqrt{x}\,(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+3Ab)}{4a^2b\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((3*A*b + a*B)*Sqrt[x])/(4*a^2*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a
*B)*Sqrt[x])/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((3*A*b + a*
B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*b^(3/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\sqrt{x}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+aB)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(3Ab+aB)\sqrt{x}}{4a^2b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+aB)\left(ab\right.\right.}{8a^2b\sqrt{a^2}}$$

$$= \frac{(3Ab+aB)\sqrt{x}}{4a^2b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+aB)\left(ab\right.\right.}{4a}$$

$$= \frac{(3Ab+aB)\sqrt{x}}{4a^2b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab+aB)(a+}{4a^{5/2}b^{3/2}\sqrt{a^2}}$$

Mathematica [A] time = 0.05, size = 106, normalized size = 0.67

$$\frac{\sqrt{a}\sqrt{b}\sqrt{x}\left(a^2(-B)+ab(5A+Bx)+3Ab^2x\right)+(a+bx)^2(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[a]*Sqrt[b]*Sqrt[x]*(-(a^2*B) + 3*A*b^2*x + a*b*(5*A + B*x)) + (3*A*b
+ a*B)*(a + b*x)^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*b^(3/2)*(a
 + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 12.60, size = 103, normalized size = 0.65

$$\frac{(a+bx)\left(\frac{(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}}-\frac{\sqrt{x}\left(a^2B-5aAb-abBx-3Ab^2x\right)}{4a^2b(a+bx)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-1/4*(Sqrt[x]*(-5*a*A*b + a^2*B - 3*A*b^2*x - a*b*B*x))/(a^2*b*
(a + b*x)^2) + ((3*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)
*b^(3/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.45, size = 291, normalized size = 1.84

$$\left[-\frac{\left(Ba^3+3\,Aa^2b+\left(Bab^2+3\,Ab^3\right)x^2+2\left(Ba^2b+3\,Aab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(Ba^3b-5\,Aa^2b^2-\left(Ba^2b^2+3\,Aab^3\right)x\right)\sqrt{x}}{8\left(a^3b^4x^2+2\,a^4b^3x+a^5b^2\right)}, -\frac{\left(Ba^3+3\,Aa^2b+\left(Bab^2+3\,Ab^3\right)x^2+2\left(Ba^2b+3\,Aab^2\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(Ba^3b-5\,Aa^2b^2-\left(Ba^2b^2+3\,Aab^3\right)x\right)\sqrt{x}}{4\left(a^3b^4x^2+2\,a^4b^3x+a^5b^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] [-1/8*((B*a^3 + 3*A*a^2*b + (B*a*b^2 + 3*A*b^3)*x^2 + 2*(B*a^2*b + 3*A*a*b^
2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(B*a^3
*b - 5*A*a^2*b^2 - (B*a^2*b^2 + 3*A*a*b^3)*x)*sqrt(x))/(a^3*b^4*x^2 + 2*a^4
*b^3*x + a^5*b^2), -1/4*((B*a^3 + 3*A*a^2*b + (B*a*b^2 + 3*A*b^3)*x^2 + 2*(
B*a^2*b + 3*A*a*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (B*a^3*b
- 5*A*a^2*b^2 - (B*a^2*b^2 + 3*A*a*b^3)*x)*sqrt(x))/(a^3*b^4*x^2 + 2*a^4*b^
3*x + a^5*b^2)]
```

giac [A] time = 0.23, size = 98, normalized size = 0.62

$$\frac{(Ba+3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^2b\mathrm{sgn}\,(bx+a)}+\frac{Babx^{\frac{3}{2}}+3\,Ab^2x^{\frac{3}{2}}-Ba^2\sqrt{x}+5\,Aab\sqrt{x}}{4\,(bx+a)^2a^2b\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b*sgn(b*x + a)
) + 1/4*(B*a*b*x^(3/2) + 3*A*b^2*x^(3/2) - B*a^2*sqrt(x) + 5*A*a*b*sqrt(x))
/((b*x + a)^2*a^2*b*sgn(b*x + a))
```

maple [A] time = 0.07, size = 194, normalized size = 1.23

$$\frac{\left(3A\,b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+Ba\,b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+6Aa\,b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+2B\,a^2bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3A\,a^2b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+B\,a^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3\sqrt{ab}\,A\,b^2x^{\frac{3}{2}}+\sqrt{ab}\,Bab\,x^{\frac{3}{2}}+5\sqrt{ab}\,Aab\sqrt{x}-\sqrt{ab}\,B\,a^2\sqrt{x}\right)(bx+a)}{4\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{3}{2}}a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x)
```

```
[Out] 1/4*(3*(a*b)^(1/2)*A*b^2*x^(3/2)+3*A*b^3*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2)
)+(a*b)^(1/2)*B*a*b*x^(3/2)+B*a*b^2*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+6*A
*a*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+2*B*a^2*b*x*arctan(1/(a*b)^(1/2)*b
*x^(1/2))+5*(a*b)^(1/2)*A*a*b*x^(1/2)+3*A*a^2*b*arctan(1/(a*b)^(1/2)*b*x^(1
/2))-(a*b)^(1/2)*B*a^2*x^(1/2)+B*a^3*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+
a)/(a*b)^(1/2)/b/a^2/((b*x+a)^2)^(3/2)
```

maxima [B] time = 1.71, size = 234, normalized size = 1.48

$$\frac{12\left(Ba^3b+5\,Aa^2b^2\right)x^{\frac{5}{2}}-\left(\left(Bab^3+Ab^4\right)x^2-3\left(Ba^2b^2+5\,Aab^3\right)x\right)x^{\frac{5}{2}}+\left(9\left(Ba^3b+Aa^2b^2\right)x^2+17\left(Ba^4+5\,Aa^3b\right)x\right)\sqrt{x}+\frac{16\left(Aa^3bx^2+3\,Aa^4x\right)}{\sqrt{x}}}{24\left(a^4b^3x^3+3\,a^5b^2x^2+3\,a^6bx+a^7\right)}+\frac{(Ba+3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^2b}+\frac{\left(Bab+Ab^2\right)x^{\frac{3}{2}}-6\left(Ba^2+3\,Aab\right)\sqrt{x}}{24\,a^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*(12*(B*a^3*b + 5*A*a^2*b^2)*x^(5/2) - ((B*a*b^3 + A*b^4)*x^2 - 3*(B*a^
2*b^2 + 5*A*a*b^3)*x)*x^(5/2) + (9*(B*a^3*b + A*a^2*b^2)*x^2 + 17*(B*a^4 +
5*A*a^3*b)*x)*sqrt(x) + 16*(A*a^3*b*x^2 + 3*A*a^4*x)/sqrt(x))/(a^4*b^3*x^3
+ 3*a^5*b^2*x^2 + 3*a^6*b*x + a^7) + 1/4*(B*a + 3*A*b)*arctan(b*sqrt(x)/sqr
t(a*b))/(sqrt(a*b)*a^2*b) + 1/24*((B*a*b + A*b^2)*x^(3/2) - 6*(B*a^2 + 3*A*
a*b)*sqrt(x))/(a^4*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x}\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x)*((a + b*x)**2)**(3/2)), x)
```

3.750 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=209

$$\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+bx)(5Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a}{4a^3b\sqrt{}}$$

Rubi [A] time = 0.11, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+bx)(5Ab-aB)}{4a^3b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+bx)(5Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (5*A*b - a*B)/(4*a^2*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*B)
/(2*a*b*Sqrt[x]*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*(5*A*b - a*B)
*(a + b*x))/(4*a^3*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*(5*A*b - a
*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(7/2)*Sqrt[b]*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{3/2}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((5Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{3/2}\left(ab+b^2x\right)^2}\,d}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{5Ab-aB}{4a^2b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3(5Ab-\right.}{8}$$

$$= \frac{5Ab-aB}{4a^2b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(5A}{4a^3b\sqrt{x}}$$

$$= \frac{5Ab-aB}{4a^2b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(5A}{4a^3b\sqrt{x}}$$

$$= \frac{5Ab-aB}{4a^2b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(5A}{4a^3b\sqrt{x}}$$

Mathematica [C] time = 0.03, size = 77, normalized size = 0.37

$$\frac{a^2(Ab-aB)+(a+bx)^2(aB-5Ab)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};-\frac{bx}{a}\right)}{2a^3b\sqrt{x}\,(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (a^2*(A*b - a*B) + (-5*A*b + a*B)*(a + b*x)^2*Hypergeometric2F1[-1/2, 2, 1/
2, -((b*x)/a)])/(2*a^3*b*Sqrt[x]*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 17.13, size = 113, normalized size = 0.54

$$\frac{(a+bx)\left(\frac{3(aB-5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}\sqrt{b}}+\frac{-8a^2A+5a^2Bx-25aAbx+3abBx^2-15Ab^2x^2}{4a^3\sqrt{x}\,(a+bx)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*((-8*a^2*A - 25*a*A*b*x + 5*a^2*B*x - 15*A*b^2*x^2 + 3*a*b*B*x^2
)/(4*a^3*Sqrt[x]*(a + b*x)^2) + (3*(-5*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/
Sqrt[a]])/(4*a^(7/2)*Sqrt[b])))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.43, size = 331, normalized size = 1.58

$$\left[\frac{3\left(\left(Bab^2-5\,Ab^3\right)x^3+2\left(Ba^2b-5\,Aab^2\right)x^2+\left(Ba^3-5\,Aa^2b\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a+2\sqrt{-ab}\sqrt{x}}{bx+a}\right)-2\left(8\,Aa^3b-3\left(Ba^2b^2-5\,Aab^3\right)x^2-5\left(Ba^3b-5\,Aa^2b^2\right)x\right)\sqrt{x}}{8\left(a^4b^3x^3+2\,a^5b^2x^2+a^6bx\right)}, -\frac{3\left(\left(Bab^2-5\,Ab^3\right)x^3+2\left(Ba^2b-5\,Aab^2\right)x^2+\left(Ba^3-5\,Aa^2b\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(8\,Aa^3b-3\left(Ba^2b^2-5\,Aab^3\right)x^2-5\left(Ba^3b-5\,Aa^2b^2\right)x\right)\sqrt{x}}{4\left(a^4b^3x^3+2\,a^5b^2x^2+a^6bx\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [1/8*(3*((B*a*b^2 - 5*A*b^3)*x^3 + 2*(B*a^2*b - 5*A*a*b^2)*x^2 + (B*a^3 - 5
*A*a^2*b)*x)*sqrt(-a*b)*log((b*x - a + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2
*(8*A*a^3*b - 3*(B*a^2*b^2 - 5*A*a*b^3)*x^2 - 5*(B*a^3*b - 5*A*a^2*b^2)*x)*
sqrt(x))/(a^4*b^3*x^3 + 2*a^5*b^2*x^2 + a^6*b*x), -1/4*(3*((B*a*b^2 - 5*A*b
^3)*x^3 + 2*(B*a^2*b - 5*A*a*b^2)*x^2 + (B*a^3 - 5*A*a^2*b)*x)*sqrt(a*b)*ar
ctan(sqrt(a*b)/(b*sqrt(x))) + (8*A*a^3*b - 3*(B*a^2*b^2 - 5*A*a*b^3)*x^2 -
5*(B*a^3*b - 5*A*a^2*b^2)*x)*sqrt(x))/(a^4*b^3*x^3 + 2*a^5*b^2*x^2 + a^6*b*
x)]
```

giac [A] time = 0.21, size = 110, normalized size = 0.53

$$\frac{3\,(Ba-5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^3\mathrm{sgn}\,(bx+a)}-\frac{2\,A}{a^3\sqrt{x}\,\mathrm{sgn}\,(bx+a)}+\frac{3\,Babx^{\frac{3}{2}}-7\,Ab^2x^{\frac{3}{2}}+5\,Ba^2\sqrt{x}-9\,Aab\sqrt{x}}{4\,(bx+a)^2a^3\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 3/4*(B*a - 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*sgn(b*x + a))
- 2*A/(a^3*sqrt(x)*sgn(b*x + a)) + 1/4*(3*B*a*b*x^(3/2) - 7*A*b^2*x^(3/2) +
 5*B*a^2*sqrt(x) - 9*A*a*b*sqrt(x))/((b*x + a)^2*a^3*sgn(b*x + a))
```

maple [A] time = 0.07, size = 214, normalized size = 1.02

$$-\frac{\left(15A\,b^3x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3Ba\,b^2x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+30Aa\,b^2x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-6B\,a^2b\,x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15A\,a^2b\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3B\,a^3\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15\sqrt{ab}\,A\,b^2x^2-3\sqrt{ab}\,Bab\,x^2+25\sqrt{ab}\,Aabx-5\sqrt{ab}\,B\,a^2x+8\sqrt{ab}\,A\,a^2\right)(bx+a)}{4\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{3}{2}}a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(15*(a*b)^(1/2)*A*b^2*x^2+15*A*b^3*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1
/2))-3*(a*b)^(1/2)*B*a*b*x^2-3*B*a*b^2*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/
2))+30*A*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^2-6*B*x^(3/2)*arctan(1
/(a*b)^(1/2)*b*x^(1/2))*a^2*b+25*(a*b)^(1/2)*A*a*b*x+15*A*x^(1/2)*arctan(1/
(a*b)^(1/2)*b*x^(1/2))*a^2*b-5*(a*b)^(1/2)*B*a^2*x-3*B*x^(1/2)*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*a^3+8*(a*b)^(1/2)*A*a^2)*(b*x+a)/x^(1/2)/(a*b)^(1/2)/a^
3/((b*x+a)^2)^(3/2)
```

maxima [B] time = 1.65, size = 280, normalized size = 1.34

$$\frac{60\left(Ba^3b^2-7\,Aa^2b^3\right)x^{\frac{5}{2}}-\left(\left(Bab^4+5\,Ab^5\right)x^2-15\left(Ba^2b^3-7\,Aab^4\right)x\right)x^{\frac{5}{2}}+\left(9\left(Ba^3b^2+5\,Aa^2b^3\right)x^2+85\left(Ba^4b-7\,Aa^3b^2\right)x\right)\sqrt{x}+\frac{16\left(\left(Ba^4b+5\,Aa^3b^2\right)x^2+3\left(Ba^5-7\,Aa^4b\right)x\right)}{\sqrt{x}}+\frac{48\left(Aa^4bx^2-Aa^5x\right)}{x^{\frac{3}{2}}}}{24\left(a^5b^3x^3+3\,a^6b^2x^2+3\,a^7bx+a^8\right)}+\frac{3\,(Ba-5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^3}+\frac{\left(Bab+5\,Ab^2\right)x^{\frac{3}{2}}-18\left(Ba^2-5\,Aab\right)\sqrt{x}}{24\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*(60*(B*a^3*b^2 - 7*A*a^2*b^3)*x^(5/2) - ((B*a*b^4 + 5*A*b^5)*x^2 - 15*
(B*a^2*b^3 - 7*A*a*b^4)*x)*x^(5/2) + (9*(B*a^3*b^2 + 5*A*a^2*b^3)*x^2 + 85*
(B*a^4*b - 7*A*a^3*b^2)*x)*sqrt(x) + 16*((B*a^4*b + 5*A*a^3*b^2)*x^2 + 3*(B
*a^5 - 7*A*a^4*b)*x)/sqrt(x) + 48*(A*a^4*b*x^2 - A*a^5*x)/x^(3/2))/(a^5*b^3
*x^3 + 3*a^6*b^2*x^2 + 3*a^7*b*x + a^8) + 3/4*(B*a - 5*A*b)*arctan(b*sqrt(x
)/sqrt(a*b))/(sqrt(a*b)*a^3) + 1/24*((B*a*b + 5*A*b^2)*x^(3/2) - 18*(B*a^2
- 5*A*a*b)*sqrt(x))/a^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
[Out] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{3}{2}} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)/(x**(3/2)*((a + b*x)**2)**(3/2)), x)
```

3.751 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=255

$$\frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{b}\,(a+bx)(7Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}\sqrt{a^2+2abx+b^2x^2}}+-\ 4$$

Rubi [A] time = 0.13, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{5(a+bx)(7Ab-3aB)}{4a^4\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{5(a+bx)(7Ab-3aB)}{12a^3bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{b}\,(a+bx)(7Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (7*A*b - 3*a*B)/(4*a^2*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*
B)/(2*a*b*x^(3/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*(7*A*b - 3*
a*B)*(a + b*x))/(12*a^3*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*(7*A*
b - 3*a*B)*(a + b*x))/(4*a^4*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*Sq
rt[b]*(7*A*b - 3*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(9/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{5/2}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((7Ab-3aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{5/2}\left(ab+b^2x\right)^2}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(5(7Ab-\right.}{}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(7A}{12a^3bx^{3/2}}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(7A}{12a^3bx^{3/2}}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(7A}{12a^3bx^{3/2}}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(7A}{12a^3bx^{3/2}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.31

$$\frac{3a^2(Ab-aB)+(a+bx)^2(3aB-7Ab)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};-\frac{bx}{a}\right)}{6a^3bx^{3/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (3*a^2*(A*b - a*B) + (-7*A*b + 3*a*B)*(a + b*x)^2*Hypergeometric2F1[-3/2, 2
, -1/2, -((b*x)/a)])/(6*a^3*b*x^(3/2)*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 27.61, size = 142, normalized size = 0.56

$$\frac{(a+bx)\left(\frac{-8a^3A-24a^3Bx+56a^2Abx-75a^2bBx^2+175aAb^2x^2-45ab^2Bx^3+105Ab^3x^3}{12a^4x^{3/2}(a+bx)^2}-\frac{5\left(3a\sqrt{b}B-7Ab^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*((-8*a^3*A + 56*a^2*A*b*x - 24*a^3*B*x + 175*a*A*b^2*x^2 - 75*a^
2*b*B*x^2 + 105*A*b^3*x^3 - 45*a*b^2*B*x^3)/(12*a^4*x^(3/2)*(a + b*x)^2) -
```

```
(5*(-7*A*b^(3/2) + 3*a*Sqrt[b]*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(
9/2))))/Sqrt[(a + b*x)^2]
```

fricas [A]   time = 0.45, size = 380, normalized size = 1.49

$$\left[-\frac{15\left(\left(3\,Bab^2-7\,Ab^3\right)x^4+2\left(3\,Ba^2b-7\,Aab^2\right)x^3+\left(3\,Ba^3-7\,Aa^2b\right)x^2\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(8\,Aa^3+15\left(3\,Bab^2-7\,Ab^3\right)x^3+25\left(3\,Ba^2b-7\,Aab^2\right)x^2+8\left(3\,Ba^3-7\,Aa^2b\right)x\right)\sqrt{x}}{24\left(a^4b^2x^4+2\,a^5bx^3+a^6x^2\right)},\ \frac{15\left(\left(3\,Bab^2-7\,Ab^3\right)x^4+2\left(3\,Ba^2b-7\,Aab^2\right)x^3+\left(3\,Ba^3-7\,Aa^2b\right)x^2\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-\left(8\,Aa^3+15\left(3\,Bab^2-7\,Ab^3\right)x^3+25\left(3\,Ba^2b-7\,Aab^2\right)x^2+8\left(3\,Ba^3-7\,Aa^2b\right)x\right)\sqrt{x}}{12\left(a^4b^2x^4+2\,a^5bx^3+a^6x^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/24*(15*((3*B*a*b^2 - 7*A*b^3)*x^4 + 2*(3*B*a^2*b - 7*A*a*b^2)*x^3 + (3*
B*a^3 - 7*A*a^2*b)*x^2)*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(
b*x + a)) + 2*(8*A*a^3 + 15*(3*B*a*b^2 - 7*A*b^3)*x^3 + 25*(3*B*a^2*b - 7*A
*a*b^2)*x^2 + 8*(3*B*a^3 - 7*A*a^2*b)*x)*sqrt(x))/(a^4*b^2*x^4 + 2*a^5*b*x^
3 + a^6*x^2), 1/12*(15*((3*B*a*b^2 - 7*A*b^3)*x^4 + 2*(3*B*a^2*b - 7*A*a*b^
2)*x^3 + (3*B*a^3 - 7*A*a^2*b)*x^2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x)
)) - (8*A*a^3 + 15*(3*B*a*b^2 - 7*A*b^3)*x^3 + 25*(3*B*a^2*b - 7*A*a*b^2)*x
^2 + 8*(3*B*a^3 - 7*A*a^2*b)*x)*sqrt(x))/(a^4*b^2*x^4 + 2*a^5*b*x^3 + a^6*x
^2)]
```

giac [A]   time = 0.21, size = 132, normalized size = 0.52

$$-\frac{5\left(3\,Bab-7\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^4\mathrm{sgn}\left(bx+a\right)}-\frac{2\left(3\,Bax-9\,Abx+Aa\right)}{3\,a^4x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)}-\frac{7\,Bab^2x^{\frac{3}{2}}-11\,Ab^3x^{\frac{3}{2}}+9\,Ba^2b\sqrt{x}-13\,Aab^2\sqrt{x}}{4\left(bx+a\right)^2a^4\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -5/4*(3*B*a*b - 7*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*sgn(b*x
 + a)) - 2/3*(3*B*a*x - 9*A*b*x + A*a)/(a^4*x^(3/2)*sgn(b*x + a)) - 1/4*(7*
B*a*b^2*x^(3/2) - 11*A*b^3*x^(3/2) + 9*B*a^2*b*sqrt(x) - 13*A*a*b^2*sqrt(x)
)/((b*x + a)^2*a^4*sgn(b*x + a))
```

maple [A]   time = 0.07, size = 253, normalized size = 0.99

$$\frac{\left(105A\,b^4x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-45Ba\,b^3x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+210Aa\,b^3x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-90B\,a^2b^2x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105A\,a^2b^2x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-45B\,a^3b\,x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105\sqrt{ab}\,A\,b^3x^3-45\sqrt{ab}\,Ba\,b^2x^3+175\sqrt{ab}\,Aa\,b^2x^2-75\sqrt{ab}\,B\,a^2b\,x^2+56\sqrt{ab}\,A\,a^2bx-24\sqrt{ab}\,B\,a^3x-8\sqrt{ab}\,A\,a^3\right)\left(bx+a\right)}{12\sqrt{ab}\,\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}a^4x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(105*(a*b)^(1/2)*A*b^3*x^3+105*A*b^4*x^(7/2)*arctan(1/(a*b)^(1/2)*b*x^
(1/2))-45*(a*b)^(1/2)*B*a*b^2*x^3-45*B*a*b^3*x^(7/2)*arctan(1/(a*b)^(1/2)*b
*x^(1/2))+210*A*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^3-90*B*x^(5/2)*
arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^2*b^2+175*(a*b)^(1/2)*A*a*b^2*x^2+105*A*x
^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^2*b^2-75*(a*b)^(1/2)*B*a^2*b*x^2-4
5*B*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^3*b+56*(a*b)^(1/2)*A*a^2*b*x-
24*(a*b)^(1/2)*B*a^3*x-8*(a*b)^(1/2)*A*a^3)*(b*x+a)/x^(3/2)/(a*b)^(1/2)/a^4
/((b*x+a)^2)^(3/2)
```

maxima [A]   time = 1.66, size = 341, normalized size = 1.34

$$-\frac{420\left(Ba^3b^3-3\,Aa^2b^4\right)x^{\frac{5}{2}}+5\left(\left(Bab^5-7\,Ab^6\right)x^2+21\left(Ba^2b^4-3\,Aab^5\right)x\right)x^{\frac{5}{2}}-5\left(9\left(Ba^3b^3-7\,Aa^2b^4\right)x^2-119\left(Ba^4b^2-3\,Aa^3b^3\right)x\right)\sqrt{x}-\frac{16\left(5\left(Ba^4b^2-7\,Aa^3b^3\right)x^2-21\left(Ba^5b-3\,Aa^4b^2\right)x\right)}{\sqrt{x}}-\frac{48\left(\left(Ba^5b-7\,Aa^4b^2\right)x^2-\left(Ba^6-3\,Aa^5b\right)x\right)}{x^{\frac{3}{2}}}+\frac{16\left(3\,Aa^5bx^2+Aa^6x\right)}{x^{\frac{5}{2}}}}{24\left(a^6b^3x^3+3\,a^7b^2x^2+3\,a^8bx+a^9\right)}-\frac{5\left(3\,Bab-7\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^4}+\frac{5\left(\left(Bab^2-7\,Ab^3\right)x^{\frac{3}{2}}+6\left(3\,Ba^2b-7\,Aab^2\right)\sqrt{x}\right)}{24\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] -1/24*(420*(B*a^3*b^3 - 3*A*a^2*b^4)*x^(5/2) + 5*((B*a*b^5 - 7*A*b^6)*x^2 +
 21*(B*a^2*b^4 - 3*A*a*b^5)*x)*x^(5/2) - 5*(9*(B*a^3*b^3 - 7*A*a^2*b^4)*x^2
 - 119*(B*a^4*b^2 - 3*A*a^3*b^3)*x)*sqrt(x) - 16*(5*(B*a^4*b^2 - 7*A*a^3*b^
3)*x^2 - 21*(B*a^5*b - 3*A*a^4*b^2)*x)/sqrt(x) - 48*((B*a^5*b - 7*A*a^4*b^2
)*x^2 - (B*a^6 - 3*A*a^5*b)*x)/x^(3/2) + 16*(3*A*a^5*b*x^2 + A*a^6*x)/x^(5/
2))/(a^6*b^3*x^3 + 3*a^7*b^2*x^2 + 3*a^8*b*x + a^9) - 5/4*(3*B*a*b - 7*A*b^
2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + 5/24*((B*a*b^2 - 7*A*b^3)*
x^(3/2) + 6*(3*B*a^2*b - 7*A*a*b^2)*sqrt(x))/a^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.752 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=302

$$\frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{7b^{3/2}(a+bx)(9Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{11/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{}{4}$$

Rubi [A] time = 0.15, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$-\frac{7b(a+bx)(9Ab-5aB)}{4a^5\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{7(a+bx)(9Ab-5aB)}{12a^4x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{7(a+bx)(9Ab-5aB)}{20a^3bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{7b^{3/2}(a+bx)(9Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{11/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (9*A*b - 5*a*B)/(4*a^2*b*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*
B)/(2*a*b*x^(5/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*(9*A*b - 5*
a*B)*(a + b*x))/(20*a^3*b*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*(9*A*
b - 5*a*B)*(a + b*x))/(12*a^4*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*b
*(9*A*b - 5*a*B)*(a + b*x))/(4*a^5*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 (7*b^(3/2)*(9*A*b - 5*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4
*a^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{7/2}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((9Ab-5aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{7/2}\left(ab+b^2x\right)^2}}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(7(9Ab-\right.}{}$$

$$= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(9A}{20a^3bx^{5/2}}$$

$$= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(9A}{20a^3bx^{5/2}}$$

$$= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(9A}{20a^3bx^{5/2}}$$

$$= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(9A}{20a^3bx^{5/2}}$$

$$= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(9A}{20a^3bx^{5/2}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.26

$$\frac{5a^2(Ab-aB)+(a+bx)^2(5aB-9Ab)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};-\frac{bx}{a}\right)}{10a^3bx^{5/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (5*a^2*(A*b - a*B) + (-9*A*b + 5*a*B)*(a + b*x)^2*Hypergeometric2F1[-5/2, 2
, -3/2, -((b*x)/a)])/(10*a^3*b*x^(5/2)*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 33.99, size = 166, normalized size = 0.55

$$\frac{(a+bx)\left(\frac{7\left(5ab^{3/2}B-9Ab^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{11/2}}+\frac{-24a^4A-40a^4Bx+72a^3Abx+280a^3bBx^2-504a^2Ab^2x^2+875a^2b^2Bx^3-1575aAb^3x^3+525ab^3Bx^4-945Ab^4x^4}{60a^5x^{5/2}(a+bx)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*((-24*a^4*A + 72*a^3*A*b*x - 40*a^4*B*x - 504*a^2*A*b^2*x^2 + 28
0*a^3*b*B*x^2 - 1575*a*A*b^3*x^3 + 875*a^2*b^2*B*x^3 - 945*A*b^4*x^4 + 525*
a*b^3*B*x^4)/(60*a^5*x^(5/2)*(a + b*x)^2) + (7*(-9*A*b^(5/2) + 5*a*b^(3/2)*
B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(11/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.46, size = 437, normalized size = 1.45

$$\left[-\frac{105\left(\left(5\,Bab^{3}-9\,Ab^{4}\right)x^{5}+2\left(5\,Ba^{2}b^{2}-9\,Aab^{3}\right)x^{4}+\left(5\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x^{3}\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(24\,Aa^{4}-105\left(5\,Bab^{3}-9\,Ab^{4}\right)x^{4}-175\left(5\,Ba^{2}b^{2}-9\,Aab^{3}\right)x^{3}-56\left(5\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x^{2}+8\left(5\,Ba^{4}-9\,Aa^{3}b\right)x\right)\sqrt{x}}{120\left(a^{5}b^{2}x^{5}+2\,a^{6}bx^{4}+a^{7}x^{3}\right)}, -\frac{105\left(\left(5\,Bab^{3}-9\,Ab^{4}\right)x^{5}+2\left(5\,Ba^{2}b^{2}-9\,Aab^{3}\right)x^{4}+\left(5\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x^{3}\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)+\left(24\,Aa^{4}-105\left(5\,Bab^{3}-9\,Ab^{4}\right)x^{4}-175\left(5\,Ba^{2}b^{2}-9\,Aab^{3}\right)x^{3}-56\left(5\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x^{2}+8\left(5\,Ba^{4}-9\,Aa^{3}b\right)x\right)\sqrt{x}}{60\left(a^{5}b^{2}x^{5}+2\,a^{6}bx^{4}+a^{7}x^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/120*(105*((5*B*a*b^3 - 9*A*b^4)*x^5 + 2*(5*B*a^2*b^2 - 9*A*a*b^3)*x^4 +
 (5*B*a^3*b - 9*A*a^2*b^2)*x^3)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a
) - a)/(b*x + a)) + 2*(24*A*a^4 - 105*(5*B*a*b^3 - 9*A*b^4)*x^4 - 175*(5*B*
a^2*b^2 - 9*A*a*b^3)*x^3 - 56*(5*B*a^3*b - 9*A*a^2*b^2)*x^2 + 8*(5*B*a^4 -
9*A*a^3*b)*x)*sqrt(x))/(a^5*b^2*x^5 + 2*a^6*b*x^4 + a^7*x^3), -1/60*(105*((
5*B*a*b^3 - 9*A*b^4)*x^5 + 2*(5*B*a^2*b^2 - 9*A*a*b^3)*x^4 + (5*B*a^3*b - 9
*A*a^2*b^2)*x^3)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) + (24*A*a^4 - 10
5*(5*B*a*b^3 - 9*A*b^4)*x^4 - 175*(5*B*a^2*b^2 - 9*A*a*b^3)*x^3 - 56*(5*B*a
^3*b - 9*A*a^2*b^2)*x^2 + 8*(5*B*a^4 - 9*A*a^3*b)*x)*sqrt(x))/(a^5*b^2*x^5
+ 2*a^6*b*x^4 + a^7*x^3)]
```

giac [A] time = 0.21, size = 159, normalized size = 0.53

$$\frac{7\left(5\,Bab^{2}-9\,Ab^{3}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^{5}\mathrm{sgn}\left(bx+a\right)}+\frac{11\,Bab^{3}x^{\frac{3}{2}}-15\,Ab^{4}x^{\frac{3}{2}}+13\,Ba^{2}b^{2}\sqrt{x}-17\,Aab^{3}\sqrt{x}}{4\left(bx+a\right)^{2}a^{5}\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(45\,Babx^{2}-90\,Ab^{2}x^{2}-5\,Ba^{2}x+15\,Aabx-3\,Aa^{2}\right)}{15\,a^{5}x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 7/4*(5*B*a*b^2 - 9*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*sgn(b*
x + a)) + 1/4*(11*B*a*b^3*x^(3/2) - 15*A*b^4*x^(3/2) + 13*B*a^2*b^2*sqrt(x)
 - 17*A*a*b^3*sqrt(x))/((b*x + a)^2*a^5*sgn(b*x + a)) + 2/15*(45*B*a*b*x^2
- 90*A*b^2*x^2 - 5*B*a^2*x + 15*A*a*b*x - 3*A*a^2)/(a^5*x^(5/2)*sgn(b*x + a
))
```

maple [A] time = 0.07, size = 289, normalized size = 0.96

$$-\frac{\left(945A\,b^{5}x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-525Ba\,b^{4}x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+1890Aa\,b^{4}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-1050B\,a^{2}b^{3}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+945A\,a^{2}b^{3}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-525B\,a^{3}b^{2}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+945\sqrt{ab}\,A\,b^{4}x^{4}-525\sqrt{ab}\,Ba\,b^{3}x^{4}+1575\sqrt{ab}\,Aa\,b^{3}x^{3}-875\sqrt{ab}\,B\,a^{2}b^{2}x^{3}+504\sqrt{ab}\,A\,a^{2}b^{2}x^{2}-280\sqrt{ab}\,B\,a^{3}b\,x^{2}-72\sqrt{ab}\,A\,a^{3}bx+40\sqrt{ab}\,B\,a^{4}x+24\sqrt{ab}\,A\,a^{4}\right)\left(bx+a\right)}{60\sqrt{ab}\,\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}a^{5}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/60*(-1050*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a^2*b^3+1890*A*arcta
n(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a*b^4-525*B*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*x^(9/2)*a*b^4-280*B*(a*b)^(1/2)*x^2*a^3*b-72*A*(a*b)^(1/2)*x*a^3*b+945*
A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^2*b^3-875*B*(a*b)^(1/2)*x^3*a^2
*b^2-525*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^3*b^2+504*A*(a*b)^(1/2
)*x^2*a^2*b^2+24*A*(a*b)^(1/2)*a^4+945*A*(a*b)^(1/2)*x^4*b^4+40*B*(a*b)^(1/
2)*x*a^4+945*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*b^5-525*B*(a*b)^(1/2
)*x^4*a*b^3+1575*A*(a*b)^(1/2)*x^3*a*b^3)*(b*x+a)/x^(5/2)/(a*b)^(1/2)/a^5/(
(b*x+a)^2)^(3/2)
```

maxima [A] time = 1.68, size = 404, normalized size = 1.34

$$\frac{1260\left(5\,Ba^{3}b^{4}-11\,Aa^{2}b^{5}\right)x^{\frac{5}{2}}+35\left(5\left(Bab^{6}-3\,Ab^{7}\right)x^{2}+9\left(5\,Ba^{2}b^{5}-11\,Aab^{6}\right)x\right)x^{\frac{5}{2}}-105\left(15\left(Ba^{3}b^{4}-3\,Aa^{2}b^{5}\right)x^{2}-17\left(5\,Ba^{4}b^{3}-11\,Aa^{3}b^{4}\right)x\right)\sqrt{x}-\frac{112\left(25\left(Ba^{4}b^{3}-3\,Aa^{3}b^{4}\right)x^{2}-9\left(5\,Ba^{5}b^{2}-11\,Aa^{4}b^{3}\right)x\right)}{\sqrt{x}}-\frac{48\left(35\left(Ba^{5}b^{2}-3\,Aa^{4}b^{3}\right)x^{2}-3\left(5\,Ba^{6}b-11\,Aa^{5}b^{2}\right)x\right)}{x^{\frac{3}{2}}}-\frac{16\left(15\left(Ba^{6}b-3\,Aa^{5}b^{2}\right)x^{2}+\left(5\,Ba^{7}-11\,Aa^{6}b\right)x\right)}{x^{\frac{5}{2}}}-\frac{16\left(5\,Aa^{6}bx^{2}+3\,Aa^{7}x\right)}{x^{\frac{7}{2}}}}{120\left(a^{7}b^{3}x^{3}+3\,a^{8}b^{2}x^{2}+3\,a^{9}bx+a^{10}\right)}+\frac{7\left(5\,Bab^{2}-9\,Ab^{3}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^{5}}-\frac{7\left(5\left(Bab^{3}-3\,Ab^{4}\right)x^{\frac{3}{2}}+6\left(5\,Ba^{2}b^{2}-9\,Aab^{3}\right)\sqrt{x}\right)}{24\,a^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/120*(1260*(5*B*a^3*b^4 - 11*A*a^2*b^5)*x^(5/2) + 35*(5*(B*a*b^6 - 3*A*b^7
)*x^2 + 9*(5*B*a^2*b^5 - 11*A*a*b^6)*x)*x^(5/2) - 105*(15*(B*a^3*b^4 - 3*A*
a^2*b^5)*x^2 - 17*(5*B*a^4*b^3 - 11*A*a^3*b^4)*x)*sqrt(x) - 112*(25*(B*a^4*
b^3 - 3*A*a^3*b^4)*x^2 - 9*(5*B*a^5*b^2 - 11*A*a^4*b^3)*x)/sqrt(x) - 48*(35
*(B*a^5*b^2 - 3*A*a^4*b^3)*x^2 - 3*(5*B*a^6*b - 11*A*a^5*b^2)*x)/x^(3/2) -
16*(15*(B*a^6*b - 3*A*a^5*b^2)*x^2 + (5*B*a^7 - 11*A*a^6*b)*x)/x^(5/2) - 16
*(5*A*a^6*b*x^2 + 3*A*a^7*x)/x^(7/2))/(a^7*b^3*x^3 + 3*a^8*b^2*x^2 + 3*a^9*
b*x + a^10) + 7/4*(5*B*a*b^2 - 9*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a
*b)*a^5) - 7/24*(5*(B*a*b^3 - 3*A*b^4)*x^(3/2) + 6*(5*B*a^2*b^2 - 9*A*a*b^3
)*sqrt(x))/a^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{7/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.753 $\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=404

$$\frac{x^{13/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{11/2}(5Ab-13aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{231a\sqrt{x}\,(a+bx)(5Ab-13aB)}{64b^7\sqrt{a^2+2abx+b^2x^2}}+\frac{77x^{3/2}(}{64b^6}$$

Rubi [A] time = 0.20, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{13/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{11/2}(5Ab-13aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{11x^{9/2}(5Ab-13aB)}{96ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{33x^{7/2}(5Ab-13aB)}{64ab^4\sqrt{a^2+2abx+b^2x^2}}-\frac{231x^{5/2}(a+bx)(5Ab-13aB)}{320ab^5\sqrt{a^2+2abx+b^2x^2}}+\frac{77x^{3/2}(a+bx)(5Ab-13aB)}{64b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{231a\sqrt{x}\,(a+bx)(5Ab-13aB)}{64b^7\sqrt{a^2+2abx+b^2x^2}}+\frac{231a^{3/2}(a+bx)(5Ab-13aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{15/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (33*(5*A*b - 13*a*B)*x^(7/2))/(64*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
A*b - a*B)*x^(13/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
5*A*b - 13*a*B)*x^(11/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^
2]) + (11*(5*A*b - 13*a*B)*x^(9/2))/(96*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - (231*a*(5*A*b - 13*a*B)*Sqrt[x]*(a + b*x))/(64*b^7*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) + (77*(5*A*b - 13*a*B)*x^(3/2)*(a + b*x))/(64*b^6*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - (231*(5*A*b - 13*a*B)*x^(5/2)*(a + b*x))/(320*
a*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (231*a^(3/2)*(5*A*b - 13*a*B)*(a + b
*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*b^(15/2)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{11/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(b^2(5Ab-13aB)\left(ab+b^2x\right)\right)\int \frac{x^{11/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13aB)x^{11/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(11(5Ab\ \cdots\right.}{\cdots}$$

$$= \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13aB)x^{11/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{11\cdots}{96ab^3(a\cdots}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13\cdots}{24ab^2(a+bx)^2\sqrt{a\cdots}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13\cdots}{24ab^2(a+bx)^2\sqrt{a\cdots}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13\cdots}{24ab^2(a+bx)^2\sqrt{a\cdots}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13\cdots}{24ab^2(a+bx)^2\sqrt{a\cdots}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13\cdots}{24ab^2(a+bx)^2\sqrt{a\cdots}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13\cdots}{24ab^2(a+bx)^2\sqrt{a\cdots}}$$

Mathematica [C] time = 0.04, size = 80, normalized size = 0.20

$$\frac{x^{13/2}\left(13a^4(Ab-aB)-(a+bx)^4(5Ab-13aB)\,{}_2F_1\left(4,\frac{13}{2};\frac{15}{2};-\frac{bx}{a}\right)\right)}{52a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(13/2)*(13*a^4*(A*b - a*B) - (5*A*b - 13*a*B)*(a + b*x)^4*Hypergeometric
2F1[4, 13/2, 15/2, -((b*x)/a)]))/(52*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 48.62, size = 211, normalized size = 0.52

$$\frac{(a+bx)\left(\frac{\sqrt{x}\left(45045a^6B-17325a^5Ab+165165a^5bBx-63525a^4Ab^2x+219219a^4b^2Bx^2-84315a^3Ab^3x^2+119691a^3b^3Bx^3-46035a^2Ab^4x^3+18304a^2b^4Bx^4-7040aAb^5x^4-1664ab^5Bx^5+640Ab^6x^5+384b^6Bx^6\right)}{960b^7(a+bx)^4}-\frac{231\left(13a^{5/2}B-5a^{3/2}Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{15/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)*((Sqrt[x]*(-17325*a^5*A*b + 45045*a^6*B - 63525*a^4*A*b^2*x + 16
5165*a^5*b*B*x - 84315*a^3*A*b^3*x^2 + 219219*a^4*b^2*B*x^2 - 46035*a^2*A*b
^4*x^3 + 119691*a^3*b^3*B*x^3 - 7040*a*A*b^5*x^4 + 18304*a^2*b^4*B*x^4 + 64
0*A*b^6*x^5 - 1664*a*b^5*B*x^5 + 384*b^6*B*x^6))/(960*b^7*(a + b*x)^4) - (2
31*(-5*a^(3/2)*A*b + 13*a^(5/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*b
^(15/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.45, size = 644, normalized size = 1.59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas
")
```

```
[Out] [-1/1920*(3465*(13*B*a^6 - 5*A*a^5*b + (13*B*a^2*b^4 - 5*A*a*b^5)*x^4 + 4*(
13*B*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 6*(13*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 4*(1
3*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) -
a)/(b*x + a)) - 2*(384*B*b^6*x^6 + 45045*B*a^6 - 17325*A*a^5*b - 128*(13*B*
a*b^5 - 5*A*b^6)*x^5 + 1408*(13*B*a^2*b^4 - 5*A*a*b^5)*x^4 + 9207*(13*B*a^3
*b^3 - 5*A*a^2*b^4)*x^3 + 16863*(13*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 12705*(1
3*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(x))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*x
^2 + 4*a^3*b^8*x + a^4*b^7), -1/960*(3465*(13*B*a^6 - 5*A*a^5*b + (13*B*a^2
*b^4 - 5*A*a*b^5)*x^4 + 4*(13*B*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 6*(13*B*a^4*b^
2 - 5*A*a^3*b^3)*x^2 + 4*(13*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(a/b)*arctan(b*s
qrt(x)*sqrt(a/b)/a) - (384*B*b^6*x^6 + 45045*B*a^6 - 17325*A*a^5*b - 128*(1
3*B*a*b^5 - 5*A*b^6)*x^5 + 1408*(13*B*a^2*b^4 - 5*A*a*b^5)*x^4 + 9207*(13*B
*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 16863*(13*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 1270
5*(13*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(x))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b
^9*x^2 + 4*a^3*b^8*x + a^4*b^7)]
```

giac [A] time = 0.29, size = 218, normalized size = 0.54

$$-\frac{231\left(13\,Ba^3-5\,Aa^2b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\sqrt{ab}\,b^7\mathrm{sgn}\left(bx+a\right)}+\frac{4431\,Ba^3b^3x^{\frac{7}{2}}-2295\,Aa^2b^4x^{\frac{7}{2}}+11767\,Ba^4b^2x^{\frac{5}{2}}-5855\,Aa^3b^3x^{\frac{5}{2}}+10633\,Ba^5bx^{\frac{3}{2}}-5153\,Aa^4b^2x^{\frac{3}{2}}+3249\,Ba^6\sqrt{x}-1545\,Aa^5b\sqrt{x}}{192\left(bx+a\right)^4b^7\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(3\,Bb^{20}x^{\frac{5}{2}}-25\,Bab^{19}x^{\frac{3}{2}}+5\,Ab^{20}x^{\frac{3}{2}}+225\,Ba^2b^{18}\sqrt{x}-75\,Aab^{19}\sqrt{x}\right)}{15\,b^{25}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] -231/64*(13*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^7*s
gn(b*x + a)) + 1/192*(4431*B*a^3*b^3*x^(7/2) - 2295*A*a^2*b^4*x^(7/2) + 117
67*B*a^4*b^2*x^(5/2) - 5855*A*a^3*b^3*x^(5/2) + 10633*B*a^5*b*x^(3/2) - 515
3*A*a^4*b^2*x^(3/2) + 3249*B*a^6*sqrt(x) - 1545*A*a^5*b*sqrt(x))/((b*x + a)
^4*b^7*sgn(b*x + a)) + 2/15*(3*B*b^20*x^(5/2) - 25*B*a*b^19*x^(3/2) + 5*A*b
^20*x^(3/2) + 225*B*a^2*b^18*sqrt(x) - 75*A*a*b^19*sqrt(x))/(b^25*sgn(b*x +
 a))
```

maple [A] time = 0.10, size = 443, normalized size = 1.10

$$\frac{\left(384\sqrt{ab}\,B b^6 x^{\frac{13}{2}} + 17325 A a^2 b^5 x^4 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 45045 B a^3 b^4 x^4 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 640\sqrt{ab}\,A b^6 x^{\frac{11}{2}} - 1664\sqrt{ab}\,B a b^5 x^{\frac{11}{2}} + 69300 A a^3 b^4 x^3 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 180180 B a^4 b^3 x^3 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 7040\sqrt{ab}\,A a b^5 x^{\frac{9}{2}} + 18304\sqrt{ab}\,B a^2 b^4 x^{\frac{9}{2}} + 103950 A a^4 b^3 x^2 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 270270 B a^5 b^2 x^2 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 46035\sqrt{ab}\,A a^2 b^4 x^{\frac{7}{2}} + 119691\sqrt{ab}\,B a^3 b^3 x^{\frac{7}{2}} + 69300 A a^5 b^2 x \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 180180 B a^6 b x \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 84315\sqrt{ab}\,A a^3 b^3 x^{\frac{5}{2}} + 219219\sqrt{ab}\,B a^4 b^2 x^{\frac{5}{2}} + 17325 A a^6 b \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 45045 B a^7 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 63525\sqrt{ab}\,A a^4 b^2 x^{\frac{3}{2}} + 165165\sqrt{ab}\,B a^5 b x^{\frac{3}{2}} - 17325\sqrt{ab}\,A a^5 b\sqrt{x} + 45045\sqrt{ab}\,B a^6\sqrt{x}\right)(bx+a)}{960\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{5}{2}} b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/960*(384*B*(a*b)^(1/2)*x^(13/2)*b^6+640*A*(a*b)^(1/2)*x^(11/2)*b^6-1664*B
*(a*b)^(1/2)*x^(11/2)*a*b^5-7040*A*(a*b)^(1/2)*x^(9/2)*a*b^5+18304*B*(a*b)^
(1/2)*x^(9/2)*a^2*b^4-46035*A*(a*b)^(1/2)*x^(7/2)*a^2*b^4+119691*B*(a*b)^(1
/2)*x^(7/2)*a^3*b^3-84315*A*(a*b)^(1/2)*x^(5/2)*a^3*b^3+17325*A*arctan(1/(a
*b)^(1/2)*b*x^(1/2))*x^4*a^2*b^5+219219*B*(a*b)^(1/2)*x^(5/2)*a^4*b^2-45045
*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a^3*b^4+69300*A*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*x^3*a^3*b^4-180180*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^3*a^4*b^
3-63525*A*(a*b)^(1/2)*x^(3/2)*a^4*b^2+103950*A*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*x^2*a^4*b^3+165165*B*(a*b)^(1/2)*x^(3/2)*a^5*b-270270*B*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*x^2*a^5*b^2+69300*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^5*
b^2-180180*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^6*b-17325*A*(a*b)^(1/2)*x^
(1/2)*a^5*b+17325*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^6*b+45045*B*(a*b)^(1/
2)*x^(1/2)*a^6-45045*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^7)*(b*x+a)/(a*b)^(
1/2)/b^7/((b*x+a)^2)^(5/2)
```

maxima [A] time = 1.87, size = 401, normalized size = 0.99

$$\frac{256\left(3 B b^6 x^2 + 5 B a b^5 x\right)x^{\frac{11}{2}} + 5\left(2747\left(3 B a b^5 - A b^6\right)x^2 + 437\left(13 B a^2 b^4 - 3 A a b^5\right)x\right)x^{\frac{9}{2}} + 10\left(4667\left(3 B a^2 b^4 - A a b^5\right)x^2 + 671\left(13 B a^3 b^3 - 3 A a^2 b^4\right)x\right)x^{\frac{7}{2}} + 2860\left(22\left(3 B a^3 b^3 - A a^2 b^4\right)x^2 + 3\left(13 B a^4 b^2 - 3 A a^3 b^3\right)x\right)x^{\frac{5}{2}} + 66\left(585\left(3 B a^4 b^2 - A a^3 b^3\right)x^2 + 77\left(13 B a^5 b - 3 A a^4 b^2\right)x\right)x^{\frac{3}{2}} + 231\left(39\left(3 B a^5 b - A a^4 b^2\right)x^2 + 5\left(13 B a^6 - 3 A a^5 b\right)x\right)\sqrt{x}}{1920\left(b^{11}x^5 + 5 a b^{10} x^4 + 10 a^2 b^9 x^3 + 10 a^3 b^8 x^2 + 5 a^4 b^7 x + a^5 b^6\right)} - \frac{231\left(13 B a^3 - 5 A a^2 b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\sqrt{ab}\,b^7} - \frac{77\left(13\left(3 B a b - A b^2\right)x^{\frac{3}{2}} - 6\left(13 B a^2 - 5 A a b\right)\sqrt{x}\right)}{128 b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima
")
```

```
[Out] 1/1920*(256*(3*B*b^6*x^2 + 5*B*a*b^5*x)*x^(11/2) + 5*(2747*(3*B*a*b^5 - A*b
^6)*x^2 + 437*(13*B*a^2*b^4 - 3*A*a*b^5)*x)*x^(9/2) + 10*(4667*(3*B*a^2*b^4
 - A*a*b^5)*x^2 + 671*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x)*x^(7/2) + 2860*(22*(3
*B*a^3*b^3 - A*a^2*b^4)*x^2 + 3*(13*B*a^4*b^2 - 3*A*a^3*b^3)*x)*x^(5/2) + 6
6*(585*(3*B*a^4*b^2 - A*a^3*b^3)*x^2 + 77*(13*B*a^5*b - 3*A*a^4*b^2)*x)*x^(
3/2) + 231*(39*(3*B*a^5*b - A*a^4*b^2)*x^2 + 5*(13*B*a^6 - 3*A*a^5*b)*x)*sq
rt(x))/(b^11*x^5 + 5*a*b^10*x^4 + 10*a^2*b^9*x^3 + 10*a^3*b^8*x^2 + 5*a^4*b
^7*x + a^5*b^6) - 231/64*(13*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))
/(sqrt(a*b)*b^7) - 77/128*(13*(3*B*a*b - A*b^2)*x^(3/2) - 6*(13*B*a^2 - 5*A
*a*b)*sqrt(x))/b^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{11/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(11/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.754 $\int \frac{x^{9/2}(A+Bx)}{(a^2+2abx+b^2x^2)^{5/2}}\,dx$

Optimal. Leaf size=357

$$\frac{x^{11/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{9/2}(3Ab-11aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{105\sqrt{a}\,(a+bx)(3Ab-11aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{64b^{13/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.18, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{11/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{9/2}(3Ab-11aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3x^{7/2}(3Ab-11aB)}{32ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{21x^{5/2}(3Ab-11aB)}{64ab^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35x^{3/2}(a+bx)(3Ab-11aB)}{64ab^5\sqrt{a^2+2abx+b^2x^2}}+\frac{105\sqrt{x}\,(a+bx)(3Ab-11aB)}{64b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{105\sqrt{a}\,(a+bx)(3Ab-11aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{64b^{13/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (21*(3*A*b - 11*a*B)*x^(5/2))/(64*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
A*b - a*B)*x^(11/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
3*A*b - 11*a*B)*x^(9/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (3*(3*A*b - 11*a*B)*x^(7/2))/(32*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + (105*(3*A*b - 11*a*B)*Sqrt[x]*(a + b*x))/(64*b^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) - (35*(3*A*b - 11*a*B)*x^(3/2)*(a + b*x))/(64*a*b^5*Sqrt[a
^2 + 2*a*b*x + b^2*x^2]) - (105*Sqrt[a]*(3*A*b - 11*a*B)*(a + b*x)*ArcTan[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*b^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{9/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(b^2(3Ab-11aB)\left(ab+b^2x\right)\right)\int \frac{x^{9/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11aB)x^{9/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(3(3A}{}$$

$$= \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11aB)x^{9/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{}{32ab^3}$$

$$= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-}{24ab^2(a+bx)^2}$$

$$= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-}{24ab^2(a+bx)^2}$$

$$= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-}{24ab^2(a+bx)^2}$$

$$= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-}{24ab^2(a+bx)^2}$$

$$= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-}{24ab^2(a+bx)^2}$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.22

$$\frac{x^{11/2}\left(11a^4(Ab-aB)-(a+bx)^4(3Ab-11aB)\,{}_2F_1\left(4,\frac{11}{2};\frac{13}{2};-\frac{bx}{a}\right)\right)}{44a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(11/2)*(11*a^4*(A*b - a*B) - (3*A*b - 11*a*B)*(a + b*x)^4*Hypergeometric
2F1[4, 11/2, 13/2, -((b*x)/a)]))/(44*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 42.60, size = 187, normalized size = 0.52

$$\frac{(a+bx)\left(\frac{105\left(11a^{3/2}B-3\sqrt{a}\,Ab\right)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{64b^{13/2}}+\frac{\sqrt{x}\left(-3465a^5B+945a^4Ab-12705a^4bBx+3465a^3Ab^2x-16863a^3b^2Bx^2+4599a^2Ab^3x^2-9207a^2b^3Bx^3+2511aAb^4x^3-1408ab^4Bx^4+384Ab^5x^4+128b^5Bx^5\right)}{192b^6(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)*((Sqrt[x]*(945*a^4*A*b - 3465*a^5*B + 3465*a^3*A*b^2*x - 12705*a
^4*b*B*x + 4599*a^2*A*b^3*x^2 - 16863*a^3*b^2*B*x^2 + 2511*a*A*b^4*x^3 - 92
07*a^2*b^3*B*x^3 + 384*A*b^5*x^4 - 1408*a*b^4*B*x^4 + 128*b^5*B*x^5))/(192*
b^6*(a + b*x)^4) + (105*(-3*Sqrt[a]*A*b + 11*a^(3/2)*B)*ArcTan[(Sqrt[b]*Sqr
t[x])/Sqrt[a]])/(64*b^(13/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.56, size = 585, normalized size = 1.64

$$\left[-\frac{315\left(11Ba^5-3Aa^4b+\left(11Bab^4-3Ab^5\right)x^4+4\left(11Ba^2b^3-3Aab^4\right)x^3+6\left(11Ba^3b^2-3Aa^2b^3\right)x^2+4\left(11Ba^4b-3Aa^3b^2\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(128Bb^5x^5-3465Ba^5+945Aa^4b-128\left(11Bab^4-3Ab^5\right)x^4-837\left(11Ba^2b^3-3Aab^4\right)x^3-1533\left(11Ba^3b^2-3Aa^2b^3\right)x^2-1155\left(11Ba^4b-3Aa^3b^2\right)x\right)\sqrt{x}}{384\left(b^{10}x^4+4ab^9x^3+6a^2b^8x^2+4a^3b^7x+a^4b^6\right)},\ \frac{315\left(11Ba^5-3Aa^4b+\left(11Bab^4-3Ab^5\right)x^4+4\left(11Ba^2b^3-3Aab^4\right)x^3+6\left(11Ba^3b^2-3Aa^2b^3\right)x^2+4\left(11Ba^4b-3Aa^3b^2\right)x\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{b\sqrt{x}\sqrt{\frac{a}{b}}}{a}\right)+\left(128Bb^5x^5-3465Ba^5+945Aa^4b-128\left(11Bab^4-3Ab^5\right)x^4-837\left(11Ba^2b^3-3Aab^4\right)x^3-1533\left(11Ba^3b^2-3Aa^2b^3\right)x^2-1155\left(11Ba^4b-3Aa^3b^2\right)x\right)\sqrt{x}}{192\left(b^{10}x^4+4ab^9x^3+6a^2b^8x^2+4a^3b^7x+a^4b^6\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(315*(11*B*a^5 - 3*A*a^4*b + (11*B*a*b^4 - 3*A*b^5)*x^4 + 4*(11*B*a
^2*b^3 - 3*A*a*b^4)*x^3 + 6*(11*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 4*(11*B*a^4*
b - 3*A*a^3*b^2)*x)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x
+ a)) - 2*(128*B*b^5*x^5 - 3465*B*a^5 + 945*A*a^4*b - 128*(11*B*a*b^4 - 3*A
*b^5)*x^4 - 837*(11*B*a^2*b^3 - 3*A*a*b^4)*x^3 - 1533*(11*B*a^3*b^2 - 3*A*a
^2*b^3)*x^2 - 1155*(11*B*a^4*b - 3*A*a^3*b^2)*x)*sqrt(x))/(b^10*x^4 + 4*a*b
^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6), 1/192*(315*(11*B*a^5 - 3*A
*a^4*b + (11*B*a*b^4 - 3*A*b^5)*x^4 + 4*(11*B*a^2*b^3 - 3*A*a*b^4)*x^3 + 6*
(11*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 4*(11*B*a^4*b - 3*A*a^3*b^2)*x)*sqrt(a/b
)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (128*B*b^5*x^5 - 3465*B*a^5 + 945*A*a^4*b
 - 128*(11*B*a*b^4 - 3*A*b^5)*x^4 - 837*(11*B*a^2*b^3 - 3*A*a*b^4)*x^3 - 15
33*(11*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 - 1155*(11*B*a^4*b - 3*A*a^3*b^2)*x)*sq
rt(x))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6)]
```

giac [A] time = 0.23, size = 191, normalized size = 0.54

$$\frac{105\left(11\,Ba^2-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,b^6\mathrm{sgn}\left(bx+a\right)}-\frac{2295\,Ba^2b^3x^{\frac{7}{2}}-975\,Aab^4x^{\frac{7}{2}}+5855\,Ba^3b^2x^{\frac{5}{2}}-2295\,Aa^2b^3x^{\frac{5}{2}}+5153\,Ba^4bx^{\frac{3}{2}}-1929\,Aa^3b^2x^{\frac{3}{2}}+1545\,Ba^5\sqrt{x}-561\,Aa^4b\sqrt{x}}{192\left(bx+a\right)^4b^6\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(Bb^{10}x^{\frac{3}{2}}-15\,Bab^9\sqrt{x}+3\,Ab^{10}\sqrt{x}\right)}{3\,b^{15}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 105/64*(11*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^6*sgn(
b*x + a)) - 1/192*(2295*B*a^2*b^3*x^(7/2) - 975*A*a*b^4*x^(7/2) + 5855*B*a^
3*b^2*x^(5/2) - 2295*A*a^2*b^3*x^(5/2) + 5153*B*a^4*b*x^(3/2) - 1929*A*a^3*
b^2*x^(3/2) + 1545*B*a^5*sqrt(x) - 561*A*a^4*b*sqrt(x))/((b*x + a)^4*b^6*sg
n(b*x + a)) + 2/3*(B*b^10*x^(3/2) - 15*B*a*b^9*sqrt(x) + 3*A*b^10*sqrt(x))/
(b^15*sgn(b*x + a))
```

maple [A] time = 0.08, size = 407, normalized size = 1.14

$$\frac{\left(-945Aab^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3465Ba^2b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+128\sqrt{ab}\,Bb^5x^{\frac{11}{2}}-3780Aa^2b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+13860Ba^3b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+384\sqrt{ab}\,Ab^5x^{\frac{9}{2}}-1408\sqrt{ab}\,Bab^4x^{\frac{9}{2}}-5670Aa^3b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+20790Ba^4b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+2511\sqrt{ab}\,Aab^4x^{\frac{7}{2}}-9207\sqrt{ab}\,Ba^2b^3x^{\frac{7}{2}}-3780Aa^4b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+13860Ba^5bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+4599\sqrt{ab}\,Aa^2b^3x^{\frac{5}{2}}-16863\sqrt{ab}\,Ba^3b^2x^{\frac{5}{2}}-945Aa^5b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3465Ba^6\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3465\sqrt{ab}\,Aa^3b^2x^{\frac{3}{2}}-12705\sqrt{ab}\,Ba^4bx^{\frac{3}{2}}+945\sqrt{ab}\,Aa^4b\sqrt{x}-3465\sqrt{ab}\,Ba^5\sqrt{x}\right)(bx+a)}{192\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{5}{2}}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-1408*B*(a*b)^(1/2)*x^(9/2)*a*b^4+2511*A*(a*b)^(1/2)*x^(7/2)*a*b^4-9
207*B*(a*b)^(1/2)*x^(7/2)*a^2*b^3+128*B*(a*b)^(1/2)*x^(11/2)*b^5+4599*A*(a*
b)^(1/2)*x^(5/2)*a^2*b^3-945*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^5*b-3465*B
*(a*b)^(1/2)*x^(1/2)*a^5+3465*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^6-945*A*a
rctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a*b^5-16863*B*(a*b)^(1/2)*x^(5/2)*a^3*b^
2+3465*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a^2*b^4-3780*A*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*x^3*a^2*b^4+13860*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^3*a^
3*b^3+3465*A*(a*b)^(1/2)*x^(3/2)*a^3*b^2-5670*A*arctan(1/(a*b)^(1/2)*b*x^(1
/2))*x^2*a^3*b^3-12705*B*(a*b)^(1/2)*x^(3/2)*a^4*b+20790*B*arctan(1/(a*b)^(
1/2)*b*x^(1/2))*x^2*a^4*b^2-3780*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^4*b^
2+13860*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^5*b+945*A*(a*b)^(1/2)*x^(1/2)
*a^4*b+384*A*(a*b)^(1/2)*x^(9/2)*b^5)*(b*x+a)/(a*b)^(1/2)/b^6/((b*x+a)^2)^(
5/2)
```

maxima [A] time = 1.76, size = 381, normalized size = 1.07

$$-\frac{5\left(\left(2747\,Bab^{5}-693\,Ab^{6}\right)x^{2}+3\left(437\,Ba^{2}b^{4}-63\,Aab^{5}\right)x\right)x^{\frac{9}{2}}+10\left(359\left(13\,Ba^{2}b^{4}-3\,Aab^{5}\right)x^{2}+183\left(11\,Ba^{3}b^{3}-Aa^{2}b^{4}\right)x\right)x^{\frac{7}{2}}+20\left(242\left(13\,Ba^{3}b^{3}-3\,Aa^{2}b^{4}\right)x^{2}+117\left(11\,Ba^{4}b^{2}-Aa^{3}b^{3}\right)x\right)x^{\frac{5}{2}}+198\left(15\left(13\,Ba^{4}b^{2}-3\,Aa^{3}b^{3}\right)x^{2}+7\left(11\,Ba^{5}b-Aa^{4}b^{2}\right)x\right)x^{\frac{3}{2}}+63\left(11\left(13\,Ba^{5}b-3\,Aa^{4}b^{2}\right)x^{2}+5\left(11\,Ba^{6}-Aa^{5}b\right)x\right)\sqrt{x}}{1920\left(ab^{10}x^{5}+5\,a^{2}b^{9}x^{4}+10\,a^{3}b^{8}x^{3}+10\,a^{4}b^{7}x^{2}+5\,a^{5}b^{6}x+a^{6}b^{5}\right)}+\frac{105\left(11\,Ba^{2}-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,b^{6}}+\frac{7\left(11\left(13\,Bab-3\,Ab^{2}\right)x^{\frac{3}{2}}-30\left(11\,Ba^{2}-3\,Aab\right)\sqrt{x}\right)}{128\,ab^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*((2747*B*a*b^5 - 693*A*b^6)*x^2 + 3*(437*B*a^2*b^4 - 63*A*a*b^5)
*x)*x^(9/2) + 10*(359*(13*B*a^2*b^4 - 3*A*a*b^5)*x^2 + 183*(11*B*a^3*b^3 -
A*a^2*b^4)*x)*x^(7/2) + 20*(242*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^2 + 117*(11*
B*a^4*b^2 - A*a^3*b^3)*x)*x^(5/2) + 198*(15*(13*B*a^4*b^2 - 3*A*a^3*b^3)*x^
2 + 7*(11*B*a^5*b - A*a^4*b^2)*x)*x^(3/2) + 63*(11*(13*B*a^5*b - 3*A*a^4*b^
2)*x^2 + 5*(11*B*a^6 - A*a^5*b)*x)*sqrt(x))/(a*b^10*x^5 + 5*a^2*b^9*x^4 + 1
0*a^3*b^8*x^3 + 10*a^4*b^7*x^2 + 5*a^5*b^6*x + a^6*b^5) + 105/64*(11*B*a^2
- 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^6) + 7/128*(11*(13*B*a*
b - 3*A*b^2)*x^(3/2) - 30*(11*B*a^2 - 3*A*a*b)*sqrt(x))/(a*b^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{9/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(9/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.755 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=306

$$\frac{x^{9/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(Ab-9aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{35(a+bx)(Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64\sqrt{a}\,b^{11/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{35\sqrt{\ }}{64a}$$

Rubi [A] time = 0.15, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{9/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(Ab-9aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{7x^{5/2}(Ab-9aB)}{96ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{35x^{3/2}(Ab-9aB)}{192ab^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35\sqrt{x}(a+bx)(Ab-9aB)}{64ab^5\sqrt{a^2+2abx+b^2x^2}}+\frac{35(a+bx)(Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64\sqrt{a}\,b^{11/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (35*(A*b - 9*a*B)*x^(3/2))/(192*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*
b - a*B)*x^(9/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
 - 9*a*B)*x^(7/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (
7*(A*b - 9*a*B)*x^(5/2))/(96*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - (35*(A*b - 9*a*B)*Sqrt[x]*(a + b*x))/(64*a*b^5*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) + (35*(A*b - 9*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*
Sqrt[a]*b^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{7/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(b^2(Ab-9aB)\left(ab+b^2x\right)\right)\int \frac{x^{7/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-9aB)x^{7/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7(Ab\right.}{}$$

$$= \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-9aB)x^{7/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{}{96ab^3}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab}{24ab^2(a+bx)}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab}{24ab^2(a+bx)}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab}{24ab^2(a+bx)}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab}{24ab^2(a+bx)}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.26

$$\frac{x^{9/2}\left(9a^4(Ab-aB)-(a+bx)^4(Ab-9aB)\,{}_2F_1\left(4,\frac{9}{2};\frac{11}{2};-\frac{bx}{a}\right)\right)}{36a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(9/2)*(9*a^4*(A*b - a*B) - (A*b - 9*a*B)*(a + b*x)^4*Hypergeometric2F1[4
, 9/2, 11/2, -((b*x)/a)]))/(36*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 32.09, size = 159, normalized size = 0.52

$$\frac{(a+bx)\left(\frac{\sqrt{x}\left(945a^4B-105a^3Ab+3465a^3bBx-385a^2Ab^2x+4599a^2b^2Bx^2-511aAb^3x^2+2511ab^3Bx^3-279Ab^4x^3+384b^4Bx^4\right)}{192b^5(a+bx)^4}-\frac{35(9aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64\sqrt{a}\,b^{11/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)*((Sqrt[x]*(-105*a^3*A*b + 945*a^4*B - 385*a^2*A*b^2*x + 3465*a^3
*b*B*x - 511*a*A*b^3*x^2 + 4599*a^2*b^2*B*x^2 - 279*A*b^4*x^3 + 2511*a*b^3*
B*x^3 + 384*b^4*B*x^4))/(192*b^5*(a + b*x)^4) - (35*(-(A*b) + 9*a*B)*ArcTan
[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*Sqrt[a]*b^(11/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.47, size = 555, normalized size = 1.81

$$\left[\frac{105\left(9Ba^5-Aa^4b+\left(9Bab^4-Ab^5\right)x^4+4\left(9Ba^2b^3-Aab^4\right)x^3+6\left(9Ba^3b^2-Aa^2b^3\right)x^2+4\left(9Ba^4b-Aa^3b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(384Bab^5x^4+945Ba^5b-105Aa^4b^2+279\left(9Ba^2b^4-Aab^5\right)x^3+511\left(9Ba^3b^3-Aa^2b^4\right)x^2+385\left(9Ba^4b^2-Aa^3b^3\right)x\right)\sqrt{x}}{384\left(ab^{10}x^4+4a^2b^9x^3+6a^3b^8x^2+4a^4b^7x+a^5b^6\right)}, \frac{105\left(9Ba^5-Aa^4b+\left(9Bab^4-Ab^5\right)x^4+4\left(9Ba^2b^3-Aab^4\right)x^3+6\left(9Ba^3b^2-Aa^2b^3\right)x^2+4\left(9Ba^4b-Aa^3b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(384Bab^5x^4+945Ba^5b-105Aa^4b^2+279\left(9Ba^2b^4-Aab^5\right)x^3+511\left(9Ba^3b^3-Aa^2b^4\right)x^2+385\left(9Ba^4b^2-Aa^3b^3\right)x\right)\sqrt{x}}{192\left(ab^{10}x^4+4a^2b^9x^3+6a^3b^8x^2+4a^4b^7x+a^5b^6\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [1/384*(105*(9*B*a^5 - A*a^4*b + (9*B*a*b^4 - A*b^5)*x^4 + 4*(9*B*a^2*b^3 -
 A*a*b^4)*x^3 + 6*(9*B*a^3*b^2 - A*a^2*b^3)*x^2 + 4*(9*B*a^4*b - A*a^3*b^2)
*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(384*B*a
*b^5*x^4 + 945*B*a^5*b - 105*A*a^4*b^2 + 279*(9*B*a^2*b^4 - A*a*b^5)*x^3 +
511*(9*B*a^3*b^3 - A*a^2*b^4)*x^2 + 385*(9*B*a^4*b^2 - A*a^3*b^3)*x)*sqrt(x
))/(a*b^10*x^4 + 4*a^2*b^9*x^3 + 6*a^3*b^8*x^2 + 4*a^4*b^7*x + a^5*b^6), 1/
192*(105*(9*B*a^5 - A*a^4*b + (9*B*a*b^4 - A*b^5)*x^4 + 4*(9*B*a^2*b^3 - A*
a*b^4)*x^3 + 6*(9*B*a^3*b^2 - A*a^2*b^3)*x^2 + 4*(9*B*a^4*b - A*a^3*b^2)*x)
*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (384*B*a*b^5*x^4 + 945*B*a^5*b -
 105*A*a^4*b^2 + 279*(9*B*a^2*b^4 - A*a*b^5)*x^3 + 511*(9*B*a^3*b^3 - A*a^2
*b^4)*x^2 + 385*(9*B*a^4*b^2 - A*a^3*b^3)*x)*sqrt(x))/(a*b^10*x^4 + 4*a^2*b
^9*x^3 + 6*a^3*b^8*x^2 + 4*a^4*b^7*x + a^5*b^6)]
```

giac [A] time = 0.38, size = 159, normalized size = 0.52

$$\frac{2B\sqrt{x}}{b^5\mathrm{sgn}(bx+a)}-\frac{35(9Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\sqrt{ab}\,b^5\mathrm{sgn}(bx+a)}+\frac{975Bab^3x^{\frac{7}{2}}-279Ab^4x^{\frac{7}{2}}+2295Ba^2b^2x^{\frac{5}{2}}-511Aab^3x^{\frac{5}{2}}+1929Ba^3bx^{\frac{3}{2}}-385Aa^2b^2x^{\frac{3}{2}}+561Ba^4\sqrt{x}-105Aa^3b\sqrt{x}}{192(bx+a)^4b^5\mathrm{sgn}(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/(b^5*sgn(b*x + a)) - 35/64*(9*B*a - A*b)*arctan(b*sqrt(x)/sqrt(
a*b))/(sqrt(a*b)*b^5*sgn(b*x + a)) + 1/192*(975*B*a*b^3*x^(7/2) - 279*A*b^4
*x^(7/2) + 2295*B*a^2*b^2*x^(5/2) - 511*A*a*b^3*x^(5/2) + 1929*B*a^3*b*x^(3
/2) - 385*A*a^2*b^2*x^(3/2) + 561*B*a^4*sqrt(x) - 105*A*a^3*b*sqrt(x))/((b*
x + a)^4*b^5*sgn(b*x + a))
```

maple [A] time = 0.08, size = 368, normalized size = 1.20

$$-\frac{\left(-105Ab^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+945Bab^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-420Aab^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3780Ba^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-384\sqrt{ab}\,Bb^4x^{\frac{9}{2}}-630Aa^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+5670Ba^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+279\sqrt{ab}\,Ab^4x^{\frac{7}{2}}-2511\sqrt{ab}\,Bab^3x^{\frac{7}{2}}-420Aa^3b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3780Ba^4bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+511\sqrt{ab}\,Aab^3x^{\frac{5}{2}}-4599\sqrt{ab}\,Ba^2b^2x^{\frac{5}{2}}-105Aa^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+945Ba^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+385\sqrt{ab}\,Aa^2b^2x^{\frac{3}{2}}-3465\sqrt{ab}\,Ba^3bx^{\frac{3}{2}}+105\sqrt{ab}\,Aa^3b\sqrt{x}-945\sqrt{ab}\,Ba^4\sqrt{x}\right)(bx+a)}{192\sqrt{ab}\left((bx+a)^2\right)^{\frac{5}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(279*(a*b)^(1/2)*A*b^4*x^(7/2)-2511*(a*b)^(1/2)*B*a*b^3*x^(7/2)+511*
(a*b)^(1/2)*A*a*b^3*x^(5/2)-105*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*b^5-4
```

```
599*(a*b)^(1/2)*B*a^2*b^2*x^(5/2)-384*(a*b)^(1/2)*B*b^4*x^(9/2)+945*B*arcta
n(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a*b^4-420*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*
x^3*a*b^4+3780*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^3*a^2*b^3+385*(a*b)^(1/2
)*A*a^2*b^2*x^(3/2)-630*A*a^2*b^3*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))-3465*
(a*b)^(1/2)*B*a^3*b*x^(3/2)+5670*B*a^3*b^2*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/
2))-420*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+3780*B*a^4*b*x*arctan(1
/(a*b)^(1/2)*b*x^(1/2))+105*(a*b)^(1/2)*A*a^3*b*x^(1/2)-105*A*a^4*b*arctan(
1/(a*b)^(1/2)*b*x^(1/2))-945*(a*b)^(1/2)*B*a^4*x^(1/2)+945*B*a^5*arctan(1/(
a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^5/((b*x+a)^2)^(5/2)
```

maxima [A] time = 1.62, size = 374, normalized size = 1.22

$$\frac{105\left(3\left(11\,Bab^5-Ab^6\right)x^2+\left(9\,Ba^2b^4+Aab^5\right)x\right)x^{\frac{9}{2}}+30\left(\left(359\,Ba^2b^4-21\,Aab^5\right)x^2+\left(61\,Ba^3b^3+21\,Aa^2b^4\right)x\right)x^{\frac{7}{2}}+20\left(66\left(11\,Ba^3b^3-Aa^2b^4\right)x^2+13\left(9\,Ba^4b^2+Aa^3b^3\right)x\right)x^{\frac{5}{2}}+2\left(405\left(11\,Ba^4b^2-Aa^3b^3\right)x^2+77\left(9\,Ba^5b+Aa^4b^2\right)x\right)x^{\frac{3}{2}}+7\left(27\left(11\,Ba^5b-Aa^4b^2\right)x^2+5\left(9\,Ba^6+Aa^5b\right)x\right)\sqrt{x}}{1920\left(a^2b^9x^5+5\,a^3b^8x^4+10\,a^4b^7x^3+10\,a^5b^6x^2+5\,a^6b^5x+a^7b^4\right)}-\frac{35\left(9\,Ba-Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,b^5}-\frac{7\left(3\left(11\,Bab-Ab^2\right)x^{\frac{3}{2}}-10\left(9\,Ba^2-Aab\right)\sqrt{x}\right)}{128\,a^2b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/1920*(105*(3*(11*B*a*b^5 - A*b^6)*x^2 + (9*B*a^2*b^4 + A*a*b^5)*x)*x^(9/2
) + 30*((359*B*a^2*b^4 - 21*A*a*b^5)*x^2 + (61*B*a^3*b^3 + 21*A*a^2*b^4)*x)
*x^(7/2) + 20*(66*(11*B*a^3*b^3 - A*a^2*b^4)*x^2 + 13*(9*B*a^4*b^2 + A*a^3*
b^3)*x)*x^(5/2) + 2*(405*(11*B*a^4*b^2 - A*a^3*b^3)*x^2 + 77*(9*B*a^5*b + A
*a^4*b^2)*x)*x^(3/2) + 7*(27*(11*B*a^5*b - A*a^4*b^2)*x^2 + 5*(9*B*a^6 + A*
a^5*b)*x)*sqrt(x))/(a^2*b^9*x^5 + 5*a^3*b^8*x^4 + 10*a^4*b^7*x^3 + 10*a^5*b
^6*x^2 + 5*a^6*b^5*x + a^7*b^4) - 35/64*(9*B*a - A*b)*arctan(b*sqrt(x)/sqrt
(a*b))/(sqrt(a*b)*b^5) - 7/128*(3*(11*B*a*b - A*b^2)*x^(3/2) - 10*(9*B*a^2
- A*a*b)*sqrt(x))/(a^2*b^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.756 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=258

$$\frac{x^{7/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{5/2}(7aB+Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5\sqrt{x}\,(7aB+Ab)}{64ab^4\sqrt{a^2+2abx+b^2x^2}}-\frac{5x^{3/2}(7}{96ab^3(a+bx)\sqrt{}}$$

Rubi [A] time = 0.13, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 78, 47, 63, 205}

$$\frac{x^{7/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{5/2}(7aB+Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5x^{3/2}(7aB+Ab)}{96ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{5\sqrt{x}\,(7aB+Ab)}{64ab^4\sqrt{a^2+2abx+b^2x^2}}+\frac{5(a+bx)(7aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{3/2}b^{9/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-5*(A*b + 7*a*B)*Sqrt[x])/(64*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
 - a*B)*x^(7/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b
+ 7*a*B)*x^(5/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5
*(A*b + 7*a*B)*x^(3/2))/(96*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (5*(A*b + 7*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(3/2)
*b^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{5/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(Ab+7aB)\left(ab+b^2x\right)\right)\int \frac{x^{5/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+7aB)x^{5/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(5(Ab\right.}{}$$

$$= \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+7aB)x^{5/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{}{96ab^3(}$$

$$= -\frac{5(Ab+7aB)\sqrt{x}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab}{24ab^2(a+bx)}$$

$$= -\frac{5(Ab+7aB)\sqrt{x}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab}{24ab^2(a+bx)}$$

$$= -\frac{5(Ab+7aB)\sqrt{x}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab}{24ab^2(a+bx)}$$

Mathematica [A] time = 0.08, size = 146, normalized size = 0.57

$$\frac{15(a+bx)^4(7aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)-\sqrt{a}\sqrt{b}\sqrt{x}\left(105a^4B+5a^3b(3A+77Bx)+a^2b^2x(55A+511Bx)+ab^3x^2(73A+279Bx)-15Ab^4x^3\right)}{192a^{3/2}b^{9/2}(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[a]*Sqrt[b]*Sqrt[x]*(105*a^4*B - 15*A*b^4*x^3 + 5*a^3*b*(3*A + 77*B*
x) + a*b^3*x^2*(73*A + 279*B*x) + a^2*b^2*x*(55*A + 511*B*x))) + 15*(A*b +
7*a*B)*(a + b*x)^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(192*a^(3/2)*b^(9/2)*
(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 23.55, size = 152, normalized size = 0.59

$$\frac{(a+bx)\left(\frac{5(7aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{3/2}b^{9/2}}-\frac{\sqrt{x}\left(105a^4B+15a^3Ab+385a^3bBx+55a^2Ab^2x+511a^2b^2Bx^2+73aAb^3x^2+279ab^3Bx^3-15Ab^4x^3\right)}{192ab^4(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)*(-1/192*(Sqrt[x]*(15*a^3*A*b + 105*a^4*B + 55*a^2*A*b^2*x + 385*
a^3*b*B*x + 73*a*A*b^3*x^2 + 511*a^2*b^2*B*x^2 - 15*A*b^4*x^3 + 279*a*b^3*B
*x^3))/(a*b^4*(a + b*x)^4) + (5*(A*b + 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt
[a]])/(64*a^(3/2)*b^(9/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.47, size = 525, normalized size = 2.03

$$\left[-\frac{15\left(7\,Ba^5+Aa^4b+\left(7\,Bab^4+Ab^5\right)x^4+4\left(7\,Ba^2b^3+Aab^4\right)x^3+6\left(7\,Ba^3b^2+Aa^2b^3\right)x^2+4\left(7\,Ba^4b+Aa^3b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(105\,Ba^5b+15\,Aa^4b^2+3\left(93\,Ba^2b^4-5\,Aab^5\right)x^3+73\left(7\,Ba^3b^3+Aa^2b^4\right)x^2+55\left(7\,Ba^4b^2+Aa^3b^3\right)x\right)\sqrt{x}}{384\left(a^2b^9x^4+4\,a^3b^8x^3+6\,a^4b^7x^2+4\,a^5b^6x+a^6b^5\right)},-\frac{15\left(7\,Ba^5+Aa^4b+\left(7\,Bab^4+Ab^5\right)x^4+4\left(7\,Ba^2b^3+Aab^4\right)x^3+6\left(7\,Ba^3b^2+Aa^2b^3\right)x^2+4\left(7\,Ba^4b+Aa^3b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(105\,Ba^5b+15\,Aa^4b^2+3\left(93\,Ba^2b^4-5\,Aab^5\right)x^3+73\left(7\,Ba^3b^3+Aa^2b^4\right)x^2+55\left(7\,Ba^4b^2+Aa^3b^3\right)x\right)\sqrt{x}}{192\left(a^2b^9x^4+4\,a^3b^8x^3+6\,a^4b^7x^2+4\,a^5b^6x+a^6b^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(15*(7*B*a^5 + A*a^4*b + (7*B*a*b^4 + A*b^5)*x^4 + 4*(7*B*a^2*b^3 +
 A*a*b^4)*x^3 + 6*(7*B*a^3*b^2 + A*a^2*b^3)*x^2 + 4*(7*B*a^4*b + A*a^3*b^2)
*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(105*B*a
^5*b + 15*A*a^4*b^2 + 3*(93*B*a^2*b^4 - 5*A*a*b^5)*x^3 + 73*(7*B*a^3*b^3 +
A*a^2*b^4)*x^2 + 55*(7*B*a^4*b^2 + A*a^3*b^3)*x)*sqrt(x))/(a^2*b^9*x^4 + 4*
a^3*b^8*x^3 + 6*a^4*b^7*x^2 + 4*a^5*b^6*x + a^6*b^5), -1/192*(15*(7*B*a^5 +
 A*a^4*b + (7*B*a*b^4 + A*b^5)*x^4 + 4*(7*B*a^2*b^3 + A*a*b^4)*x^3 + 6*(7*B
*a^3*b^2 + A*a^2*b^3)*x^2 + 4*(7*B*a^4*b + A*a^3*b^2)*x)*sqrt(a*b)*arctan(s
qrt(a*b)/(b*sqrt(x))) + (105*B*a^5*b + 15*A*a^4*b^2 + 3*(93*B*a^2*b^4 - 5*A
*a*b^5)*x^3 + 73*(7*B*a^3*b^3 + A*a^2*b^4)*x^2 + 55*(7*B*a^4*b^2 + A*a^3*b^
3)*x)*sqrt(x))/(a^2*b^9*x^4 + 4*a^3*b^8*x^3 + 6*a^4*b^7*x^2 + 4*a^5*b^6*x +
 a^6*b^5)]
```

giac [A] time = 0.36, size = 147, normalized size = 0.57

$$\frac{5\left(7\,Ba+Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,ab^4\mathrm{sgn}\left(bx+a\right)}-\frac{279\,Bab^3x^{\frac{7}{2}}-15\,Ab^4x^{\frac{7}{2}}+511\,Ba^2b^2x^{\frac{5}{2}}+73\,Aab^3x^{\frac{5}{2}}+385\,Ba^3bx^{\frac{3}{2}}+55\,Aa^2b^2x^{\frac{3}{2}}+105\,Ba^4\sqrt{x}+15\,Aa^3b\sqrt{x}}{192\left(bx+a\right)^4ab^4\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 5/64*(7*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^4*sgn(b*x + a
)) - 1/192*(279*B*a*b^3*x^(7/2) - 15*A*b^4*x^(7/2) + 511*B*a^2*b^2*x^(5/2)
+ 73*A*a*b^3*x^(5/2) + 385*B*a^3*b*x^(3/2) + 55*A*a^2*b^2*x^(3/2) + 105*B*a
^4*sqrt(x) + 15*A*a^3*b*sqrt(x))/((b*x + a)^4*a*b^4*sgn(b*x + a))
```

maple [B] time = 0.07, size = 357, normalized size = 1.38

$$\frac{\left(15A\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105Ba\,b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60Aa\,b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+420B\,a^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+90A\,a^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+630B\,a^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15\sqrt{ab}\,A\,b^4x^{\frac{7}{2}}-279\sqrt{ab}\,Ba\,b^3x^{\frac{7}{2}}+60A\,a^3b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+420B\,a^4bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-73\sqrt{ab}\,Aa\,b^3x^{\frac{5}{2}}-511\sqrt{ab}\,B\,a^2b^2x^{\frac{5}{2}}+15A\,a^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105B\,a^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-55\sqrt{ab}\,A\,a^2b^2x^{\frac{3}{2}}-385\sqrt{ab}\,B\,a^3b\,x^{\frac{3}{2}}-15\sqrt{ab}\,A\,a^3b\sqrt{x}-105\sqrt{ab}\,B\,a^4\sqrt{x}\right)\left(bx+a\right)}{192\sqrt{ab}\,\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}a\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(15*(a*b)^(1/2)*A*b^4*x^(7/2)-279*(a*b)^(1/2)*B*a*b^3*x^(7/2)-73*(a*b
)^(1/2)*A*a*b^3*x^(5/2)+15*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))-511*(a
*b)^(1/2)*B*a^2*b^2*x^(5/2)+105*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+60*A*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+420*B*a^2*b^3*x^3*arctan(1/
(a*b)^(1/2)*b*x^(1/2))-55*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+90*A*a^2*b^3*x^2*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))-385*(a*b)^(1/2)*B*a^3*b*x^(3/2)+630*B*a^3*b^2
*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*
x^(1/2))+420*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*A*a^3
*b*x^(1/2)+15*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-105*(a*b)^(1/2)*B*a^4
*x^(1/2)+105*B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^4
/a/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.75, size = 376, normalized size = 1.46

$$-\frac{5\left(7\left(9\,Bab^5+Ab^6\right)x^2-3\left(7\,Ba^2b^4+3\,Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(7\left(9\,Ba^2b^4+Aab^5\right)x^2-9\left(7\,Ba^3b^3+3\,Aa^2b^4\right)x\right)x^{\frac{7}{2}}+20\left(2\left(33\,Ba^3b^3-7\,Aa^2b^4\right)x^2-\left(13\,Ba^4b^2+33\,Aa^3b^3\right)x\right)x^{\frac{5}{2}}+2\left(45\left(9\,Ba^4b^2+Aa^3b^3\right)x^2-11\left(7\,Ba^5b+3\,Aa^4b^2\right)x\right)x^{\frac{3}{2}}+\left(21\left(9\,Ba^5b+Aa^4b^2\right)x^2-5\left(7\,Ba^6+3\,Aa^5b\right)x\right)\sqrt{x}}{1920\left(a^3b^8x^5+5\,a^4b^7x^4+10\,a^5b^6x^3+10\,a^6b^5x^2+5\,a^7b^4x+a^8b^3\right)}+\frac{5\left(7\,Ba+Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,ab^4}+\frac{7\left(9\,Bab+Ab^2\right)x^{\frac{3}{2}}-30\left(7\,Ba^2+Aab\right)\sqrt{x}}{384\,a^3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*(7*(9*B*a*b^5 + A*b^6)*x^2 - 3*(7*B*a^2*b^4 + 3*A*a*b^5)*x)*x^(9
/2) + 10*(7*(9*B*a^2*b^4 + A*a*b^5)*x^2 - 9*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x)*
x^(7/2) + 20*(2*(33*B*a^3*b^3 - 7*A*a^2*b^4)*x^2 - (13*B*a^4*b^2 + 33*A*a^3
*b^3)*x)*x^(5/2) + 2*(45*(9*B*a^4*b^2 + A*a^3*b^3)*x^2 - 11*(7*B*a^5*b + 3*
A*a^4*b^2)*x)*x^(3/2) + (21*(9*B*a^5*b + A*a^4*b^2)*x^2 - 5*(7*B*a^6 + 3*A*
a^5*b)*x)*sqrt(x))/(a^3*b^8*x^5 + 5*a^4*b^7*x^4 + 10*a^5*b^6*x^3 + 10*a^6*b
^5*x^2 + 5*a^7*b^4*x + a^8*b^3) + 5/64*(7*B*a + A*b)*arctan(b*sqrt(x)/sqrt(
a*b))/(sqrt(a*b)*a*b^4) + 1/384*(7*(9*B*a*b + A*b^2)*x^(3/2) - 30*(7*B*a^2
+ A*a*b)*sqrt(x))/(a^3*b^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5/2}\,(A+B\,x)}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.757 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=262

$$\frac{x^{5/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{3/2}(5aB+3Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(5aB+3Ab)}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}\,(5}{32ab^3(a+bx)}$$

Rubi [A] time = 0.15, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 51, 63, 205}

$$\frac{x^{5/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{3/2}(5aB+3Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(5aB+3Ab)}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}\,(5aB+3Ab)}{32ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(5aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{5/2}b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((3*A*b + 5*a*B)*Sqrt[x])/(64*a^2*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*
b - a*B)*x^(5/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((3*A
*b + 5*a*B)*x^(3/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 ((3*A*b + 5*a*B)*Sqrt[x])/(32*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + ((3*A*b + 5*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(5
/2)*b^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{3/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(3Ab+5aB)\left(ab+b^2x\right)\right)\int \frac{x^{3/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+5aB)x^{3/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{((3Ab}{}$$

$$= \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+5aB)x^{3/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{}{32ab^3(}$$

$$= \frac{(3Ab+5aB)\sqrt{x}}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab}{24ab^2(a+bx)}$$

$$= \frac{(3Ab+5aB)\sqrt{x}}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab}{24ab^2(a+bx)}$$

$$= \frac{(3Ab+5aB)\sqrt{x}}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab}{24ab^2(a+bx)}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.30

$$\frac{x^{5/2}\left(5a^4(Ab-aB)+(a+bx)^4(5aB+3Ab)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};-\frac{bx}{a}\right)\right)}{20a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(5/2)*(5*a^4*(A*b - a*B) + (3*A*b + 5*a*B)*(a + b*x)^4*Hypergeometric2F1
[5/2, 4, 7/2, -((b*x)/a)]))/(20*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 20.95, size = 153, normalized size = 0.58

$$\frac{(a+bx)\left(\frac{(5aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{5/2}b^{7/2}}-\frac{\sqrt{x}\left(15a^4B+9a^3Ab+55a^3bBx+33a^2Ab^2x+73a^2b^2Bx^2-33aAb^3x^2-15ab^3Bx^3-9Ab^4x^3\right)}{192a^2b^3(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)*(-1/192*(Sqrt[x]*(9*a^3*A*b + 15*a^4*B + 33*a^2*A*b^2*x + 55*a^3
*b*B*x - 33*a*A*b^3*x^2 + 73*a^2*b^2*B*x^2 - 9*A*b^4*x^3 - 15*a*b^3*B*x^3))
/(a^2*b^3*(a + b*x)^4) + ((3*A*b + 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]
)/(64*a^(5/2)*b^(7/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.45, size = 537, normalized size = 2.05

$$\left[-\frac{3\left(5Ba^5+3Aa^4b+\left(5Bab^4+3Ab^5\right)x^4+4\left(5Ba^2b^3+3Aab^4\right)x^3+6\left(5Ba^3b^2+3Aa^2b^3\right)x^2+4\left(5Ba^4b+3Aa^3b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(15Ba^5b+9Aa^4b^2-3\left(5Ba^2b^4+3Aab^5\right)x^3+\left(73Ba^3b^3-33Aa^2b^4\right)x^2+11\left(5Ba^4b^2+3Aa^3b^3\right)x\right)\sqrt{x}}{384\left(a^3b^8x^4+4a^4b^7x^3+6a^5b^6x^2+4a^6b^5x+a^7b^4\right)}, -\frac{3\left(5Ba^5+3Aa^4b+\left(5Bab^4+3Ab^5\right)x^4+4\left(5Ba^2b^3+3Aab^4\right)x^3+6\left(5Ba^3b^2+3Aa^2b^3\right)x^2+4\left(5Ba^4b+3Aa^3b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(15Ba^5b+9Aa^4b^2-3\left(5Ba^2b^4+3Aab^5\right)x^3+\left(73Ba^3b^3-33Aa^2b^4\right)x^2+11\left(5Ba^4b^2+3Aa^3b^3\right)x\right)\sqrt{x}}{192\left(a^3b^8x^4+4a^4b^7x^3+6a^5b^6x^2+4a^6b^5x+a^7b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(3*(5*B*a^5 + 3*A*a^4*b + (5*B*a*b^4 + 3*A*b^5)*x^4 + 4*(5*B*a^2*b^
3 + 3*A*a*b^4)*x^3 + 6*(5*B*a^3*b^2 + 3*A*a^2*b^3)*x^2 + 4*(5*B*a^4*b + 3*A
*a^3*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2
*(15*B*a^5*b + 9*A*a^4*b^2 - 3*(5*B*a^2*b^4 + 3*A*a*b^5)*x^3 + (73*B*a^3*b^
3 - 33*A*a^2*b^4)*x^2 + 11*(5*B*a^4*b^2 + 3*A*a^3*b^3)*x)*sqrt(x))/(a^3*b^8
*x^4 + 4*a^4*b^7*x^3 + 6*a^5*b^6*x^2 + 4*a^6*b^5*x + a^7*b^4), -1/192*(3*(5
*B*a^5 + 3*A*a^4*b + (5*B*a*b^4 + 3*A*b^5)*x^4 + 4*(5*B*a^2*b^3 + 3*A*a*b^4
)*x^3 + 6*(5*B*a^3*b^2 + 3*A*a^2*b^3)*x^2 + 4*(5*B*a^4*b + 3*A*a^3*b^2)*x)*
sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (15*B*a^5*b + 9*A*a^4*b^2 - 3*(5*
B*a^2*b^4 + 3*A*a*b^5)*x^3 + (73*B*a^3*b^3 - 33*A*a^2*b^4)*x^2 + 11*(5*B*a^
4*b^2 + 3*A*a^3*b^3)*x)*sqrt(x))/(a^3*b^8*x^4 + 4*a^4*b^7*x^3 + 6*a^5*b^6*x
^2 + 4*a^6*b^5*x + a^7*b^4)]
```

giac [A] time = 0.27, size = 148, normalized size = 0.56

$$\frac{(5\,Ba+3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^2b^3\mathrm{sgn}\left(bx+a\right)}+\frac{15\,Bab^3x^{\frac{7}{2}}+9\,Ab^4x^{\frac{7}{2}}-73\,Ba^2b^2x^{\frac{5}{2}}+33\,Aab^3x^{\frac{5}{2}}-55\,Ba^3bx^{\frac{3}{2}}-33\,Aa^2b^2x^{\frac{3}{2}}-15\,Ba^4\sqrt{x}-9\,Aa^3b\sqrt{x}}{192\,(bx+a)^4a^2b^3\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/64*(5*B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^3*sgn(b*x
 + a)) + 1/192*(15*B*a*b^3*x^(7/2) + 9*A*b^4*x^(7/2) - 73*B*a^2*b^2*x^(5/2)
 + 33*A*a*b^3*x^(5/2) - 55*B*a^3*b*x^(3/2) - 33*A*a^2*b^2*x^(3/2) - 15*B*a^
4*sqrt(x) - 9*A*a^3*b*sqrt(x))/((b*x + a)^4*a^2*b^3*sgn(b*x + a))
```

maple [A] time = 0.07, size = 357, normalized size = 1.36

$$\frac{\left(9A\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15Ba\,b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+36Aa\,b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60B\,a^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+54A\,a^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+90B\,a^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+9\sqrt{ab}\,A\,b^4x^{\frac{7}{2}}+15\sqrt{ab}\,Ba\,b^3x^{\frac{7}{2}}+36A\,a^3b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60B\,a^4bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+33\sqrt{ab}\,Aa\,b^3x^{\frac{5}{2}}-73\sqrt{ab}\,B\,a^2b^2x^{\frac{5}{2}}+9A\,a^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15B\,a^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-33\sqrt{ab}\,A\,a^2b^2x^{\frac{3}{2}}-55\sqrt{ab}\,B\,a^3bx^{\frac{3}{2}}-9\sqrt{ab}\,A\,a^3b\sqrt{x}-15\sqrt{ab}\,B\,a^4\sqrt{x}\right)(bx+a)}{192\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{5}{2}}a^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(9*(a*b)^(1/2)*A*b^4*x^(7/2)+15*(a*b)^(1/2)*B*a*b^3*x^(7/2)+33*(a*b)^
(1/2)*A*a*b^3*x^(5/2)+9*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))-73*(a*b)^
```

```
(1/2)*B*a^2*b^2*x^(5/2)+15*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+36*A
*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*B*a^2*b^3*x^3*arctan(1/(a*b)^
(1/2)*b*x^(1/2))-33*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+54*A*a^2*b^3*x^2*arctan(1
/(a*b)^(1/2)*b*x^(1/2))-55*(a*b)^(1/2)*B*a^3*b*x^(3/2)+90*B*a^3*b^2*x^2*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))+36*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+60*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))-9*(a*b)^(1/2)*A*a^3*b*x^(1/2)
+9*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*B*a^4*x^(1/2)+15*
B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^3/a^2/((b*x+a)
^2)^(5/2)
```

maxima [B]   time = 1.80, size = 372, normalized size = 1.42

$$-\frac{5\left(\left(7\,Bab^{5}+3\,Ab^{6}\right)x^{2}-9\left(Ba^{2}b^{4}+Aab^{5}\right)x\right)x^{\frac{9}{2}}+10\left(\left(7\,Ba^{2}b^{4}+3\,Aab^{5}\right)x^{2}-27\left(Ba^{3}b^{3}+Aa^{2}b^{4}\right)x\right)x^{\frac{7}{2}}-20\left(2\left(7\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{2}+33\left(Ba^{4}b^{2}+Aa^{3}b^{3}\right)x\right)x^{\frac{5}{2}}+6\left(5\left(3\,Ba^{4}b^{2}-17\,Aa^{3}b^{3}\right)x^{2}-\left(11\,Ba^{5}b+139\,Aa^{4}b^{2}\right)x\right)x^{\frac{3}{2}}+3\left(\left(7\,Ba^{5}b+3\,Aa^{4}b^{2}\right)x^{2}-5\left(Ba^{6}+Aa^{5}b\right)x\right)\sqrt{x}}{1920\left(a^{4}b^{7}x^{5}+5\,a^{5}b^{6}x^{4}+10\,a^{6}b^{5}x^{3}+10\,a^{7}b^{4}x^{2}+5\,a^{8}b^{3}x+a^{9}b^{2}\right)}+\frac{\left(5\,Ba+3\,Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^{2}b^{3}}+\frac{\left(7\,Bab+3\,Ab^{2}\right)x^{\frac{3}{2}}-6\left(5\,Ba^{2}+3\,Aab\right)\sqrt{x}}{384\,a^{4}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*((7*B*a*b^5 + 3*A*b^6)*x^2 - 9*(B*a^2*b^4 + A*a*b^5)*x)*x^(9/2)
+ 10*((7*B*a^2*b^4 + 3*A*a*b^5)*x^2 - 27*(B*a^3*b^3 + A*a^2*b^4)*x)*x^(7/2)
 - 20*(2*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x^2 + 33*(B*a^4*b^2 + A*a^3*b^3)*x)*x^
(5/2) + 6*(5*(3*B*a^4*b^2 - 17*A*a^3*b^3)*x^2 - (11*B*a^5*b + 139*A*a^4*b^2
)*x)*x^(3/2) + 3*((7*B*a^5*b + 3*A*a^4*b^2)*x^2 - 5*(B*a^6 + A*a^5*b)*x)*sq
rt(x))/(a^4*b^7*x^5 + 5*a^5*b^6*x^4 + 10*a^6*b^5*x^3 + 10*a^7*b^4*x^2 + 5*a
^8*b^3*x + a^9*b^2) + 1/64*(5*B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqr
t(a*b)*a^2*b^3) + 1/384*((7*B*a*b + 3*A*b^2)*x^(3/2) - 6*(5*B*a^2 + 3*A*a*b
)*sqrt(x))/(a^4*b^3)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.758 $\int \frac{\sqrt{x}(A+Bx)}{(a^2+2abx+b^2x^2)^{5/2}}\,dx$

Optimal. Leaf size=262

$$\frac{\sqrt{x}(3aB+5Ab)}{96a^2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}(3aB+5Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+b}{64}$$

Rubi [A] time = 0.14, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = {770, 78, 47, 51, 63, 205}

$$\frac{x^{3/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}(3aB+5Ab)}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}(3aB+5Ab)}{96a^2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}(3aB+5Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{7/2}b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((5*A*b + 3*a*B)*Sqrt[x])/(64*a^3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*
b - a*B)*x^(3/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((5*A
*b + 3*a*B)*Sqrt[x])/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 ((5*A*b + 3*a*B)*Sqrt[x])/(96*a^2*b^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + ((5*A*b + 3*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^
(7/2)*b^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}\,(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(5Ab+3aB)\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+3aB)\sqrt{x}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{((5Ab \ldots}{\ldots}$$

$$= \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+3aB)\sqrt{x}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{\ldots}{96a^2b\ldots}$$

$$= \frac{(5Ab+3aB)\sqrt{x}}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab \ldots}{24ab^2(a+bx)\ldots}$$

$$= \frac{(5Ab+3aB)\sqrt{x}}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab \ldots}{24ab^2(a+bx)\ldots}$$

$$= \frac{(5Ab+3aB)\sqrt{x}}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab \ldots}{24ab^2(a+bx)\ldots}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.30

$$\frac{x^{3/2}\left(3a^4(Ab-aB)+(a+bx)^4(3aB+5Ab)\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};-\frac{bx}{a}\right)\right)}{12a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(3/2)*(3*a^4*(A*b - a*B) + (5*A*b + 3*a*B)*(a + b*x)^4*Hypergeometric2F1
[3/2, 4, 5/2, -((b*x)/a)]))/(12*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 18.73, size = 153, normalized size = 0.58

$$\frac{(a+bx)\left(\frac{(3aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{7/2}b^{5/2}}-\frac{\sqrt{x}\left(9a^4B+15a^3Ab+33a^3bBx-73a^2Ab^2x-33a^2b^2Bx^2-55aAb^3x^2-9ab^3Bx^3-15Ab^4x^3\right)}{192a^3b^2(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)*(-1/192*(Sqrt[x]*(15*a^3*A*b + 9*a^4*B - 73*a^2*A*b^2*x + 33*a^3
*b*B*x - 55*a*A*b^3*x^2 - 33*a^2*b^2*B*x^2 - 15*A*b^4*x^3 - 9*a*b^3*B*x^3))
/(a^3*b^2*(a + b*x)^4) + ((5*A*b + 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]
)/(64*a^(7/2)*b^(5/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.47, size = 537, normalized size = 2.05

$$\left[-\frac{3\left(3Ba^5+5Aa^4b+\left(3Bab^4+5Ab^5\right)x^4+4\left(3Ba^2b^3+5Aab^4\right)x^3+6\left(3Ba^3b^2+5Aa^2b^3\right)x^2+4\left(3Ba^4b+5Aa^3b^2\right)x\right)\sqrt{-ab}\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(9Ba^5b+15Aa^4b^2-3\left(3Ba^2b^4+5Aab^5\right)x^3-11\left(3Ba^3b^3+5Aa^2b^4\right)x^2+\left(33Ba^4b^2-73Aa^3b^3\right)x\right)\sqrt{x}}{384\left(a^4b^7x^4+4a^5b^6x^3+6a^6b^5x^2+4a^7b^4x+a^8b^3\right)}, -\frac{3\left(3Ba^5+5Aa^4b+\left(3Bab^4+5Ab^5\right)x^4+4\left(3Ba^2b^3+5Aab^4\right)x^3+6\left(3Ba^3b^2+5Aa^2b^3\right)x^2+4\left(3Ba^4b+5Aa^3b^2\right)x\right)\sqrt{ab}\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(9Ba^5b+15Aa^4b^2-3\left(3Ba^2b^4+5Aab^5\right)x^3-11\left(3Ba^3b^3+5Aa^2b^4\right)x^2+\left(33Ba^4b^2-73Aa^3b^3\right)x\right)\sqrt{x}}{192\left(a^4b^7x^4+4a^5b^6x^3+6a^6b^5x^2+4a^7b^4x+a^8b^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(3*(3*B*a^5 + 5*A*a^4*b + (3*B*a*b^4 + 5*A*b^5)*x^4 + 4*(3*B*a^2*b^
3 + 5*A*a*b^4)*x^3 + 6*(3*B*a^3*b^2 + 5*A*a^2*b^3)*x^2 + 4*(3*B*a^4*b + 5*A
*a^3*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2
*(9*B*a^5*b + 15*A*a^4*b^2 - 3*(3*B*a^2*b^4 + 5*A*a*b^5)*x^3 - 11*(3*B*a^3*
b^3 + 5*A*a^2*b^4)*x^2 + (33*B*a^4*b^2 - 73*A*a^3*b^3)*x)*sqrt(x))/(a^4*b^7
*x^4 + 4*a^5*b^6*x^3 + 6*a^6*b^5*x^2 + 4*a^7*b^4*x + a^8*b^3), -1/192*(3*(3
*B*a^5 + 5*A*a^4*b + (3*B*a*b^4 + 5*A*b^5)*x^4 + 4*(3*B*a^2*b^3 + 5*A*a*b^4
)*x^3 + 6*(3*B*a^3*b^2 + 5*A*a^2*b^3)*x^2 + 4*(3*B*a^4*b + 5*A*a^3*b^2)*x)*
sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (9*B*a^5*b + 15*A*a^4*b^2 - 3*(3*
B*a^2*b^4 + 5*A*a*b^5)*x^3 - 11*(3*B*a^3*b^3 + 5*A*a^2*b^4)*x^2 + (33*B*a^4
*b^2 - 73*A*a^3*b^3)*x)*sqrt(x))/(a^4*b^7*x^4 + 4*a^5*b^6*x^3 + 6*a^6*b^5*x
^2 + 4*a^7*b^4*x + a^8*b^3)]
```

giac [A] time = 0.22, size = 148, normalized size = 0.56

$$\frac{(3\,Ba+5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^3b^2\mathrm{sgn}\,(bx+a)}+\frac{9\,Bab^3x^{\frac{7}{2}}+15\,Ab^4x^{\frac{7}{2}}+33\,Ba^2b^2x^{\frac{5}{2}}+55\,Aab^3x^{\frac{5}{2}}-33\,Ba^3bx^{\frac{3}{2}}+73\,Aa^2b^2x^{\frac{3}{2}}-9\,Ba^4\sqrt{x}-15\,Aa^3b\sqrt{x}}{192\,(bx+a)^4a^3b^2\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/64*(3*B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b^2*sgn(b*x
 + a)) + 1/192*(9*B*a*b^3*x^(7/2) + 15*A*b^4*x^(7/2) + 33*B*a^2*b^2*x^(5/2)
 + 55*A*a*b^3*x^(5/2) - 33*B*a^3*b*x^(3/2) + 73*A*a^2*b^2*x^(3/2) - 9*B*a^4
*sqrt(x) - 15*A*a^3*b*sqrt(x))/((b*x + a)^4*a^3*b^2*sgn(b*x + a))
```

maple [A] time = 0.07, size = 357, normalized size = 1.36

$$\frac{\left(15Ab^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+9Bab^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60Aab^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+36Ba^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+90Aa^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+54Ba^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15\sqrt{ab}\,Ab^4x^{\frac{7}{2}}+9\sqrt{ab}\,Bab^3x^{\frac{7}{2}}+60Aa^3b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+36Ba^4bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+55\sqrt{ab}\,Aab^3x^{\frac{5}{2}}+33\sqrt{ab}\,Ba^2b^2x^{\frac{5}{2}}+15Aa^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+9Ba^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+73\sqrt{ab}\,Aa^2b^2x^{\frac{3}{2}}-33\sqrt{ab}\,Ba^3bx^{\frac{3}{2}}-15\sqrt{ab}\,Aa^3b\sqrt{x}-9\sqrt{ab}\,Ba^4\sqrt{x}\right)(bx+a)}{192\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{5}{2}}a^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(15*(a*b)^(1/2)*A*b^4*x^(7/2)+9*(a*b)^(1/2)*B*a*b^3*x^(7/2)+55*(a*b)^
(1/2)*A*a*b^3*x^(5/2)+15*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+33*(a*b)
```

```
^(1/2)*B*a^2*b^2*x^(5/2)+9*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*A
*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+36*B*a^2*b^3*x^3*arctan(1/(a*b)^
(1/2)*b*x^(1/2))+73*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+90*A*a^2*b^3*x^2*arctan(1
/(a*b)^(1/2)*b*x^(1/2))-33*(a*b)^(1/2)*B*a^3*b*x^(3/2)+54*B*a^3*b^2*x^2*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))+60*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+36*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*A*a^3*b*x^(1/2
)+15*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-9*(a*b)^(1/2)*B*a^4*x^(1/2)+9*
B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^2/a^3/((b*x+a)
^2)^(5/2)
```

maxima [B] time = 1.53, size = 368, normalized size = 1.40

$$-\frac{15\left(\left(Bab^{5}+Ab^{6}\right)x^{2}-\left(3\,Ba^{2}b^{4}+7\,Aab^{5}\right)x\right)x^{\frac{9}{2}}+30\left(\left(Ba^{2}b^{4}+Aab^{5}\right)x^{2}-3\left(3\,Ba^{3}b^{3}+7\,Aa^{2}b^{4}\right)x\right)x^{\frac{7}{2}}-20\left(6\left(Ba^{3}b^{3}+Aa^{2}b^{4}\right)x^{2}+11\left(3\,Ba^{4}b^{2}+7\,Aa^{3}b^{3}\right)x\right)x^{\frac{5}{2}}-2\left(255\left(Ba^{4}b^{2}+Aa^{3}b^{3}\right)x^{2}+139\left(3\,Ba^{5}b+7\,Aa^{4}b^{2}\right)x\right)x^{\frac{3}{2}}+\left(3\left(3\,Ba^{5}b-253\,Aa^{4}b^{2}\right)x^{2}-5\left(3\,Ba^{6}+263\,Aa^{5}b\right)x\right)\sqrt{x}}{1920\left(a^{5}b^{6}x^{5}+5\,a^{6}b^{5}x^{4}+10\,a^{7}b^{4}x^{3}+10\,a^{8}b^{3}x^{2}+5\,a^{9}b^{2}x+a^{10}b\right)}+\frac{\left(3\,Ba+5\,Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^{3}b^{2}}+\frac{\left(Bab+Ab^{2}\right)x^{\frac{3}{2}}-2\left(3\,Ba^{2}+5\,Aab\right)\sqrt{x}}{128\,a^{5}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(15*((B*a*b^5 + A*b^6)*x^2 - (3*B*a^2*b^4 + 7*A*a*b^5)*x)*x^(9/2) +
 30*((B*a^2*b^4 + A*a*b^5)*x^2 - 3*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x)*x^(7/2) -
 20*(6*(B*a^3*b^3 + A*a^2*b^4)*x^2 + 11*(3*B*a^4*b^2 + 7*A*a^3*b^3)*x)*x^(5
/2) - 2*(255*(B*a^4*b^2 + A*a^3*b^3)*x^2 + 139*(3*B*a^5*b + 7*A*a^4*b^2)*x)
*x^(3/2) + (3*(3*B*a^5*b - 253*A*a^4*b^2)*x^2 - 5*(3*B*a^6 + 263*A*a^5*b)*x
)*sqrt(x))/(a^5*b^6*x^5 + 5*a^6*b^5*x^4 + 10*a^7*b^4*x^3 + 10*a^8*b^3*x^2 +
 5*a^9*b^2*x + a^10*b) + 1/64*(3*B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*a^3*b^2) + 1/128*((B*a*b + A*b^2)*x^(3/2) - 2*(3*B*a^2 + 5*A*a*b)
*sqrt(x))/(a^5*b^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.759 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=258

$$\frac{\sqrt{x}\,(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+7Ab)}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{5(a+bx)(aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{64a^{9/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{5}{64a^4}$$

Rubi [A] time = 0.14, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{\sqrt{x}\,(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(aB+7Ab)}{64a^4b\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(aB+7Ab)}{96a^3b(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+7Ab)}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{5(a+bx)(aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{64a^{9/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (5*(7*A*b + a*B)*Sqrt[x])/(64*a^4*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
- a*B)*Sqrt[x])/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((7*A*b
 + a*B)*Sqrt[x])/(24*a^2*b*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*
(7*A*b + a*B)*Sqrt[x])/(96*a^3*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (5*(7*A*b + a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(9/2)*
b^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\sqrt{x}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(7Ab+aB)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)^4}$$

$$= \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(7Ab+aB)\sqrt{x}}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(5$$

$$= \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(7Ab+aB)\sqrt{x}}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{}{96$$

$$= \frac{5(7Ab+aB)\sqrt{x}}{64a^4b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(7}{24a^2b(a+b$$

$$= \frac{5(7Ab+aB)\sqrt{x}}{64a^4b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(7}{24a^2b(a+b$$

$$= \frac{5(7Ab+aB)\sqrt{x}}{64a^4b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(7}{24a^2b(a+b$$

Mathematica [C] time = 0.03, size = 77, normalized size = 0.30

$$\frac{\sqrt{x}\left(a^4(Ab-aB)+(a+bx)^4(aB+7Ab)\,{}_2F_1\left(\frac{1}{2},4;\frac{3}{2};-\frac{bx}{a}\right)\right)}{4a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[x]*(a^4*(A*b - a*B) + (7*A*b + a*B)*(a + b*x)^4*Hypergeometric2F1[1/2
, 4, 3/2, -((b*x)/a)]))/(4*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 20.73, size = 152, normalized size = 0.59

$$\frac{(a+bx)\left(\frac{5(aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{9/2}b^{3/2}}-\frac{\sqrt{x}\left(15a^4B-279a^3Ab-73a^3bBx-511a^2Ab^2x-55a^2b^2Bx^2-385aAb^3x^2-15ab^3Bx^3-105Ab^4x^3\right)}{192a^4b(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] ((a + b*x)*(-1/192*(Sqrt[x]*(-279*a^3*A*b + 15*a^4*B - 511*a^2*A*b^2*x - 73
*a^3*b*B*x - 385*a*A*b^3*x^2 - 55*a^2*b^2*B*x^2 - 105*A*b^4*x^3 - 15*a*b^3*
```

```
B*x^3))/(a^4*b*(a + b*x)^4) + (5*(7*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a]])/(64*a^(9/2)*b^(3/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.43, size = 523, normalized size = 2.03

$$\left[-\frac{15\left(Ba^5+7\,Aa^4b+\left(Bab^4+7\,Ab^5\right)x^4+4\left(Ba^2b^3+7\,Aab^4\right)x^3+6\left(Ba^3b^2+7\,Aa^2b^3\right)x^2+4\left(Ba^4b+7\,Aa^3b^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right)+2\left(15\,Ba^5b-279\,Aa^4b^2-15\left(Ba^2b^4+7\,Aab^5\right)x^3-55\left(Ba^3b^3+7\,Aa^2b^4\right)x^2-73\left(Ba^4b^2+7\,Aa^3b^3\right)x\right)\sqrt{x}}{384\left(a^5b^6x^4+4\,a^6b^5x^3+6\,a^7b^4x^2+4\,a^8b^3x+a^9b^2\right)},\ -\frac{15\left(Ba^5+7\,Aa^4b+\left(Bab^4+7\,Ab^5\right)x^4+4\left(Ba^2b^3+7\,Aab^4\right)x^3+6\left(Ba^3b^2+7\,Aa^2b^3\right)x^2+4\left(Ba^4b+7\,Aa^3b^2\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)+\left(15\,Ba^5b-279\,Aa^4b^2-15\left(Ba^2b^4+7\,Aab^5\right)x^3-55\left(Ba^3b^3+7\,Aa^2b^4\right)x^2-73\left(Ba^4b^2+7\,Aa^3b^3\right)x\right)\sqrt{x}}{192\left(a^5b^6x^4+4\,a^6b^5x^3+6\,a^7b^4x^2+4\,a^8b^3x+a^9b^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(15*(B*a^5 + 7*A*a^4*b + (B*a*b^4 + 7*A*b^5)*x^4 + 4*(B*a^2*b^3 + 7
*A*a*b^4)*x^3 + 6*(B*a^3*b^2 + 7*A*a^2*b^3)*x^2 + 4*(B*a^4*b + 7*A*a^3*b^2)
*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(15*B*a^
5*b - 279*A*a^4*b^2 - 15*(B*a^2*b^4 + 7*A*a*b^5)*x^3 - 55*(B*a^3*b^3 + 7*A*
a^2*b^4)*x^2 - 73*(B*a^4*b^2 + 7*A*a^3*b^3)*x)*sqrt(x))/(a^5*b^6*x^4 + 4*a^
6*b^5*x^3 + 6*a^7*b^4*x^2 + 4*a^8*b^3*x + a^9*b^2), -1/192*(15*(B*a^5 + 7*A
*a^4*b + (B*a*b^4 + 7*A*b^5)*x^4 + 4*(B*a^2*b^3 + 7*A*a*b^4)*x^3 + 6*(B*a^3
*b^2 + 7*A*a^2*b^3)*x^2 + 4*(B*a^4*b + 7*A*a^3*b^2)*x)*sqrt(a*b)*arctan(sqr
t(a*b)/(b*sqrt(x))) + (15*B*a^5*b - 279*A*a^4*b^2 - 15*(B*a^2*b^4 + 7*A*a*b
^5)*x^3 - 55*(B*a^3*b^3 + 7*A*a^2*b^4)*x^2 - 73*(B*a^4*b^2 + 7*A*a^3*b^3)*x
)*sqrt(x))/(a^5*b^6*x^4 + 4*a^6*b^5*x^3 + 6*a^7*b^4*x^2 + 4*a^8*b^3*x + a^9
*b^2)]
```

giac [A] time = 0.24, size = 147, normalized size = 0.57

$$\frac{5\,(Ba+7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^4b\mathrm{sgn}\,(bx+a)}+\frac{15\,Bab^3x^{\frac{7}{2}}+105\,Ab^4x^{\frac{7}{2}}+55\,Ba^2b^2x^{\frac{5}{2}}+385\,Aab^3x^{\frac{5}{2}}+73\,Ba^3bx^{\frac{3}{2}}+511\,Aa^2b^2x^{\frac{3}{2}}-15\,Ba^4\sqrt{x}+279\,Aa^3b\sqrt{x}}{192\,(bx+a)^4a^4b\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 5/64*(B*a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b*sgn(b*x + a
)) + 1/192*(15*B*a*b^3*x^(7/2) + 105*A*b^4*x^(7/2) + 55*B*a^2*b^2*x^(5/2) +
 385*A*a*b^3*x^(5/2) + 73*B*a^3*b*x^(3/2) + 511*A*a^2*b^2*x^(3/2) - 15*B*a^
4*sqrt(x) + 279*A*a^3*b*sqrt(x))/((b*x + a)^4*a^4*b*sgn(b*x + a))
```

maple [B] time = 0.07, size = 357, normalized size = 1.38

$$\frac{\left(105A\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15Ba\,b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+420Aa\,b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60B\,a^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+630A\,a^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+90B\,a^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105\sqrt{ab}\,A\,b^4x^{\frac{7}{2}}+15\sqrt{ab}\,Ba\,b^3x^{\frac{7}{2}}+420A\,a^3b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60B\,a^4bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+385\sqrt{ab}\,Aa\,b^3x^{\frac{5}{2}}+55\sqrt{ab}\,B\,a^2b^2x^{\frac{5}{2}}+105A\,a^4b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15B\,a^5\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+511\sqrt{ab}\,A\,a^2b^2x^{\frac{3}{2}}+73\sqrt{ab}\,B\,a^3b\,x^{\frac{3}{2}}+279\sqrt{ab}\,A\,a^3b\sqrt{x}-15\sqrt{ab}\,B\,a^4\sqrt{x}\right)(bx+a)}{192\sqrt{ab}\,\left((bx+a)^2\right)^{\frac{5}{2}}a^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x)
```

```
[Out] 1/192*(105*(a*b)^(1/2)*A*b^4*x^(7/2)+15*(a*b)^(1/2)*B*a*b^3*x^(7/2)+385*(a*
b)^(1/2)*A*a*b^3*x^(5/2)+105*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+55*(
a*b)^(1/2)*B*a^2*b^2*x^(5/2)+15*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+420*A*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*B*a^2*b^3*x^3*arctan(1/
(a*b)^(1/2)*b*x^(1/2))+511*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+630*A*a^2*b^3*x^2*
arctan(1/(a*b)^(1/2)*b*x^(1/2))+73*(a*b)^(1/2)*B*a^3*b*x^(3/2)+90*B*a^3*b^2
*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+420*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b
*x^(1/2))+60*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+279*(a*b)^(1/2)*A*a^
3*b*x^(1/2)+105*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*B*a^
4*x^(1/2)+15*B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b/a
^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.87, size = 390, normalized size = 1.51

$$-\frac{5\left(\left(3\,Bab^5+7\,Ab^6\right)x^2-21\left(Ba^2b^4+9\,Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(\left(3\,Ba^2b^4+7\,Aab^5\right)x^2-63\left(Ba^3b^3+9\,Aa^2b^4\right)x\right)x^{\frac{7}{2}}-20\left(2\left(3\,Ba^3b^3+7\,Aa^2b^4\right)x^2+77\left(Ba^4b^2+9\,Aa^3b^3\right)x\right)x^{\frac{5}{2}}-2\left(85\left(3\,Ba^4b^2+7\,Aa^3b^3\right)x^2+973\left(Ba^5b+9\,Aa^4b^2\right)x\right)x^{\frac{3}{2}}-\left(253\left(3\,Ba^5b+7\,Aa^4b^2\right)x^2+1315\left(Ba^6+9\,Aa^5b\right)x\right)\sqrt{x}-\frac{1280\left(Aa^5bx^2+3\,Aa^6x\right)}{\sqrt{x}}}{1920\left(a^6b^5x^5+5\,a^7b^4x^4+10\,a^8b^3x^3+10\,a^9b^2x^2+5\,a^{10}bx+a^{11}\right)}+\frac{5\,(Ba+7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^4b}+\frac{\left(3\,Bab+7\,Ab^2\right)x^{\frac{3}{2}}-30\left(Ba^2+7\,Aab\right)\sqrt{x}}{384\,a^6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*((3*B*a*b^5 + 7*A*b^6)*x^2 - 21*(B*a^2*b^4 + 9*A*a*b^5)*x)*x^(9/
2) + 10*((3*B*a^2*b^4 + 7*A*a*b^5)*x^2 - 63*(B*a^3*b^3 + 9*A*a^2*b^4)*x)*x^
(7/2) - 20*(2*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x^2 + 77*(B*a^4*b^2 + 9*A*a^3*b^3
)*x)*x^(5/2) - 2*(85*(3*B*a^4*b^2 + 7*A*a^3*b^3)*x^2 + 973*(B*a^5*b + 9*A*a
^4*b^2)*x)*x^(3/2) - (253*(3*B*a^5*b + 7*A*a^4*b^2)*x^2 + 1315*(B*a^6 + 9*A
*a^5*b)*x)*sqrt(x) - 1280*(A*a^5*b*x^2 + 3*A*a^6*x)/sqrt(x))/(a^6*b^5*x^5 +
 5*a^7*b^4*x^4 + 10*a^8*b^3*x^3 + 10*a^9*b^2*x^2 + 5*a^10*b*x + a^11) + 5/6
4*(B*a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b) + 1/384*((3*B
*a*b + 7*A*b^2)*x^(3/2) - 30*(B*a^2 + 7*A*a*b)*sqrt(x))/(a^6*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{x}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(1/2),x)
```

```
[Out] Timed out
```

3.760 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=311

$$\frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(9Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{11/2}\sqrt{b}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.16, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 78, 51, 63, 205}

$$\frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(9Ab-aB)}{64a^5b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{35(9Ab-aB)}{192a^4b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{7(9Ab-aB)}{96a^3b\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(9Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{11/2}\sqrt{b}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (35*(9*A*b - a*B))/(192*a^4*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b
 - a*B)/(4*a*b*Sqrt[x]*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (9*A*b
- a*B)/(24*a^2*b*Sqrt[x]*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*(9
*A*b - a*B))/(96*a^3*b*Sqrt[x]*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
35*(9*A*b - a*B)*(a + b*x))/(64*a^5*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) - (35*(9*A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(1
1/2)*Sqrt[b]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{3/2}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(9Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{3/2}\left(ab+\right.}}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x}}$$

$$= \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x}}$$

$$= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24}$$

$$= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24}$$

$$= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24}$$

$$= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.25

$$\frac{a^4(Ab-aB)-(a+bx)^4(9Ab-aB)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};-\frac{bx}{a}\right)}{4a^5b\sqrt{x}\,(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (a^4*(A*b - a*B) - (9*A*b - a*B)*(a + b*x)^4*Hypergeometric2F1[-1/2, 4, 1/2
, -((b*x)/a)])/(4*a^5*b*Sqrt[x]*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 23.47, size = 161, normalized size = 0.52

$$\frac{(a+bx)\left(\frac{35(aB-9Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{11/2}\sqrt{b}}+\frac{-384a^4A+279a^4Bx-2511a^3Abx+511a^3bBx^2-4599a^2Ab^2x^2+385a^2b^2Bx^3-3465aAb^3x^3+105ab^3Bx^4-945Ab^4x^4}{192a^5\sqrt{x}\,(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] ((a + b*x)*((-384*a^4*A - 2511*a^3*A*b*x + 279*a^4*B*x - 4599*a^2*A*b^2*x^2
 + 511*a^3*b*B*x^2 - 3465*a*A*b^3*x^3 + 385*a^2*b^2*B*x^3 - 945*A*b^4*x^4 +
 105*a*b^3*B*x^4)/(192*a^5*Sqrt[x]*(a + b*x)^4) + (35*(-9*A*b + a*B)*ArcTan
[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(11/2)*Sqrt[b])))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.44, size = 559, normalized size = 1.80

$$\left[\frac{105\,\left(\left(Bab^{4} - 9\,Ab^{5}\right)x^{5} + 4\,\left(Ba^{2}b^{3} - 9\,Aab^{4}\right)x^{4} + 6\,\left(Ba^{3}b^{2} - 9\,Aa^{2}b^{3}\right)x^{3} + 4\,\left(Ba^{4}b - 9\,Aa^{3}b^{2}\right)x^{2} + \left(Ba^{5} - 9\,Aa^{4}b\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx - a + 2\,\sqrt{-ab}\,\sqrt{x}}{bx + a}\right) - 2\,\left(384\,Aa^{5}b - 105\,\left(Ba^{2}b^{4} - 9\,Aab^{5}\right)x^{4} - 385\,\left(Ba^{3}b^{3} - 9\,Aa^{2}b^{4}\right)x^{3} - 511\,\left(Ba^{4}b^{2} - 9\,Aa^{3}b^{3}\right)x^{2} - 279\,\left(Ba^{5}b - 9\,Aa^{4}b^{2}\right)x\right)\sqrt{x}}{384\,\left(a^{6}b^{5}x^{5} + 4\,a^{7}b^{4}x^{4} + 6\,a^{8}b^{3}x^{3} + 4\,a^{9}b^{2}x^{2} + a^{10}bx\right)},\ -\frac{105\,\left(\left(Bab^{4} - 9\,Ab^{5}\right)x^{5} + 4\,\left(Ba^{2}b^{3} - 9\,Aab^{4}\right)x^{4} + 6\,\left(Ba^{3}b^{2} - 9\,Aa^{2}b^{3}\right)x^{3} + 4\,\left(Ba^{4}b - 9\,Aa^{3}b^{2}\right)x^{2} + \left(Ba^{5} - 9\,Aa^{4}b\right)x\right)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right) + \left(384\,Aa^{5}b - 105\,\left(Ba^{2}b^{4} - 9\,Aab^{5}\right)x^{4} - 385\,\left(Ba^{3}b^{3} - 9\,Aa^{2}b^{4}\right)x^{3} - 511\,\left(Ba^{4}b^{2} - 9\,Aa^{3}b^{3}\right)x^{2} - 279\,\left(Ba^{5}b - 9\,Aa^{4}b^{2}\right)x\right)\sqrt{x}}{192\,\left(a^{6}b^{5}x^{5} + 4\,a^{7}b^{4}x^{4} + 6\,a^{8}b^{3}x^{3} + 4\,a^{9}b^{2}x^{2} + a^{10}bx\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [1/384*(105*((B*a*b^4 - 9*A*b^5)*x^5 + 4*(B*a^2*b^3 - 9*A*a*b^4)*x^4 + 6*(B
*a^3*b^2 - 9*A*a^2*b^3)*x^3 + 4*(B*a^4*b - 9*A*a^3*b^2)*x^2 + (B*a^5 - 9*A*
a^4*b)*x)*sqrt(-a*b)*log((b*x - a + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(3
84*A*a^5*b - 105*(B*a^2*b^4 - 9*A*a*b^5)*x^4 - 385*(B*a^3*b^3 - 9*A*a^2*b^4
)*x^3 - 511*(B*a^4*b^2 - 9*A*a^3*b^3)*x^2 - 279*(B*a^5*b - 9*A*a^4*b^2)*x)*
sqrt(x))/(a^6*b^5*x^5 + 4*a^7*b^4*x^4 + 6*a^8*b^3*x^3 + 4*a^9*b^2*x^2 + a^1
0*b*x), -1/192*(105*((B*a*b^4 - 9*A*b^5)*x^5 + 4*(B*a^2*b^3 - 9*A*a*b^4)*x^
4 + 6*(B*a^3*b^2 - 9*A*a^2*b^3)*x^3 + 4*(B*a^4*b - 9*A*a^3*b^2)*x^2 + (B*a^
5 - 9*A*a^4*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (384*A*a^5*b -
105*(B*a^2*b^4 - 9*A*a*b^5)*x^4 - 385*(B*a^3*b^3 - 9*A*a^2*b^4)*x^3 - 511*(
B*a^4*b^2 - 9*A*a^3*b^3)*x^2 - 279*(B*a^5*b - 9*A*a^4*b^2)*x)*sqrt(x))/(a^6
*b^5*x^5 + 4*a^7*b^4*x^4 + 6*a^8*b^3*x^3 + 4*a^9*b^2*x^2 + a^10*b*x)]
```

giac [A] time = 0.27, size = 158, normalized size = 0.51

$$\frac{35\,\left(Ba - 9\,Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^{5}\mathrm{sgn}\left(bx + a\right)} - \frac{2\,A}{a^{5}\sqrt{x}\,\mathrm{sgn}\left(bx + a\right)} + \frac{105\,Bab^{3}x^{\frac{7}{2}} - 561\,Ab^{4}x^{\frac{7}{2}} + 385\,Ba^{2}b^{2}x^{\frac{5}{2}} - 1929\,Aab^{3}x^{\frac{5}{2}} + 511\,Ba^{3}bx^{\frac{3}{2}} - 2295\,Aa^{2}b^{2}x^{\frac{3}{2}} + 279\,Ba^{4}\sqrt{x} - 975\,Aa^{3}b\sqrt{x}}{192\,\left(bx + a\right)^{4}a^{5}\mathrm{sgn}\left(bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 35/64*(B*a - 9*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*sgn(b*x + a)
) - 2*A/(a^5*sqrt(x)*sgn(b*x + a)) + 1/192*(105*B*a*b^3*x^(7/2) - 561*A*b^4
*x^(7/2) + 385*B*a^2*b^2*x^(5/2) - 1929*A*a*b^3*x^(5/2) + 511*B*a^3*b*x^(3/
2) - 2295*A*a^2*b^2*x^(3/2) + 279*B*a^4*sqrt(x) - 975*A*a^3*b*sqrt(x))/((b*
x + a)^4*a^5*sgn(b*x + a))
```

maple [A] time = 0.07, size = 374, normalized size = 1.20

$$-\frac{\left(945Ab^{5}x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 105Bab^{4}x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 3780Aab^{4}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 420Ba^{2}b^{3}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 5670Aa^{2}b^{3}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 630Ba^{3}b^{2}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 945\sqrt{ab}\,Ab^{4}x^{4} - 105\sqrt{ab}\,Bab^{3}x^{4} + 3780Aa^{3}b^{2}x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 420Ba^{4}bx^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 3465\sqrt{ab}\,Aab^{3}x^{3} - 385\sqrt{ab}\,Ba^{2}b^{2}x^{3} + 945Aa^{4}b\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 105Ba^{5}\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 4599\sqrt{ab}\,Aa^{2}b^{2}x^{2} - 511\sqrt{ab}\,Ba^{3}bx^{2} + 2511\sqrt{ab}\,Aa^{3}bx - 279\sqrt{ab}\,Ba^{4}x + 384\sqrt{ab}\,Aa^{4}\right)\left(bx + a\right)}{192\sqrt{ab}\,\left(\left(bx + a\right)^{2}\right)^{\frac{5}{2}}a^{5}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(945*(a*b)^(1/2)*A*b^4*x^4-105*(a*b)^(1/2)*B*a*b^3*x^4+3465*(a*b)^(1
/2)*A*a*b^3*x^3+945*A*b^5*x^(9/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))-385*(a*b)
^(1/2)*B*a^2*b^2*x^3-105*B*a*b^4*x^(9/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))+37
80*A*a*b^4*x^(7/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))-420*B*a^2*b^3*x^(7/2)*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))+4599*(a*b)^(1/2)*A*a^2*b^2*x^2+5670*A*a^2*b^3
*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))-511*(a*b)^(1/2)*B*a^3*b*x^2-630*B*
a^3*b^2*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))+3780*A*x^(3/2)*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*a^3*b^2-420*B*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a
^4*b+2511*(a*b)^(1/2)*A*a^3*b*x+945*A*x^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*a^4*b-279*(a*b)^(1/2)*B*a^4*x-105*B*x^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/
```

```
2))*a^5+384*(a*b)^(1/2)*A*a^4)*(b*x+a)/x^(1/2)/(a*b)^(1/2)/a^5/((b*x+a)^2)^
(5/2)
```

maxima [B] time = 1.93, size = 427, normalized size = 1.37

$$-\frac{35\left(\left(Bab^6+9\,Ab^7\right)x^2-27\left(Ba^2b^5-11\,Aab^6\right)x\right)x^{\frac{9}{2}}+70\left(\left(Ba^2b^5+9\,Aab^6\right)x^2-81\left(Ba^3b^4-11\,Aa^2b^5\right)x\right)x^{\frac{7}{2}}-140\left(2\left(Ba^3b^4+9\,Aa^2b^5\right)x^2+99\left(Ba^4b^3-11\,Aa^3b^4\right)x\right)x^{\frac{5}{2}}-14\left(85\left(Ba^4b^3+9\,Aa^3b^4\right)x^2+1251\left(Ba^5b^2-11\,Aa^4b^3\right)x\right)x^{\frac{3}{2}}-\left(1771\left(Ba^5b^2+9\,Aa^4b^3\right)x^2+11835\left(Ba^6b-11\,Aa^5b^2\right)x\right)\sqrt{x}-\frac{1280\left(\left(Ba^6b+9\,Aa^5b^2\right)x^2+3\left(Ba^7-11\,Aa^6b\right)x\right)}{\sqrt{x}}-\frac{3840\left(Aa^6bx^2-Aa^7x\right)}{x^{\frac{3}{2}}}}{1920\left(a^7b^5x^5+5\,a^8b^4x^4+10\,a^9b^3x^3+10\,a^{10}b^2x^2+5\,a^{11}bx+a^{12}\right)}+\frac{35\left(Ba-9\,Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^5}+\frac{7\left(\left(Bab+9\,Ab^2\right)x^{\frac{3}{2}}-30\left(Ba^2-9\,Aab\right)\sqrt{x}\right)}{384\,a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(35*((B*a*b^6 + 9*A*b^7)*x^2 - 27*(B*a^2*b^5 - 11*A*a*b^6)*x)*x^(9/
2) + 70*((B*a^2*b^5 + 9*A*a*b^6)*x^2 - 81*(B*a^3*b^4 - 11*A*a^2*b^5)*x)*x^(
7/2) - 140*(2*(B*a^3*b^4 + 9*A*a^2*b^5)*x^2 + 99*(B*a^4*b^3 - 11*A*a^3*b^4)
*x)*x^(5/2) - 14*(85*(B*a^4*b^3 + 9*A*a^3*b^4)*x^2 + 1251*(B*a^5*b^2 - 11*A
*a^4*b^3)*x)*x^(3/2) - (1771*(B*a^5*b^2 + 9*A*a^4*b^3)*x^2 + 11835*(B*a^6*b
 - 11*A*a^5*b^2)*x)*sqrt(x) - 1280*((B*a^6*b + 9*A*a^5*b^2)*x^2 + 3*(B*a^7
- 11*A*a^6*b)*x)/sqrt(x) - 3840*(A*a^6*b*x^2 - A*a^7*x)/x^(3/2))/(a^7*b^5*x
^5 + 5*a^8*b^4*x^4 + 10*a^9*b^3*x^3 + 10*a^10*b^2*x^2 + 5*a^11*b*x + a^12)
+ 35/64*(B*a - 9*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5) + 7/384*(
(B*a*b + 9*A*b^2)*x^(3/2) - 30*(B*a^2 - 9*A*a*b)*sqrt(x))/a^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.761 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=357

$$\frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{105\sqrt{b}\,(a+bx)(11Ab-3aB)\tan^{-1}}{64a^{13/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.19, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{105(a+bx)(11Ab-3aB)}{64a^6\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(11Ab-3aB)}{64a^5bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{3(11Ab-3aB)}{32a^3bx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{105\sqrt{b}\,(a+bx)(11Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{13/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (21*(11*A*b - 3*a*B))/(64*a^4*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A
*b - a*B)/(4*a*b*x^(3/2)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (11*A
*b - 3*a*B)/(24*a^2*b*x^(3/2)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(3*(11*A*b - 3*a*B))/(32*a^3*b*x^(3/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - (35*(11*A*b - 3*a*B)*(a + b*x))/(64*a^5*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (105*(11*A*b - 3*a*B)*(a + b*x))/(64*a^6*Sqrt[x]*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (105*Sqrt[b]*(11*A*b - 3*a*B)*(a + b*x)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/(64*a^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{5/2}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(11Ab-3aB)\left(ab+b^2x\right)\right)\int \frac{}{x^{5/2}(a}}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2}}$$

$$= \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2}}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a}$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.22

$$\frac{3a^4(Ab-aB)-(a+bx)^4(11Ab-3aB)\,{}_2F_1\left(-\frac{3}{2},4;-\frac{1}{2};-\frac{bx}{a}\right)}{12a^5bx^{3/2}(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (3*a^4*(A*b - a*B) - (11*A*b - 3*a*B)*(a + b*x)^4*Hypergeometric2F1[-3/2, 4
, -1/2, -((b*x)/a)])/(12*a^5*b*x^(3/2)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 31.43, size = 190, normalized size = 0.53

$$\frac{(a+bx)\left(\frac{-128a^5A-384a^5Bx+1408a^4Abx-2511a^4bBx^2+9207a^3Ab^2x^2-4599a^3b^2Bx^3+16863a^2Ab^3x^3-3465a^2b^3Bx^4+12705aAb^4x^4-945ab^4Bx^5+3465Ab^5x^5}{192a^6x^{3/2}(a+bx)^4}-\frac{105\left(3a\sqrt{b}B-11Ab^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{13/2}}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] ((a + b*x)*((-128*a^5*A + 1408*a^4*A*b*x - 384*a^5*B*x + 9207*a^3*A*b^2*x^2
 - 2511*a^4*b*B*x^2 + 16863*a^2*A*b^3*x^3 - 4599*a^3*b^2*B*x^3 + 12705*a*A*
b^4*x^4 - 3465*a^2*b^3*B*x^4 + 3465*A*b^5*x^5 - 945*a*b^4*B*x^5)/(192*a^6*x
^(3/2)*(a + b*x)^4) - (105*(-11*A*b^(3/2) + 3*a*Sqrt[b]*B)*ArcTan[(Sqrt[b]*
Sqrt[x])/Sqrt[a]])/(64*a^(13/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.44, size = 616, normalized size = 1.73

$$\left[-\frac{315\left((3Bab^4-11Ab^5)x^6+4(3Ba^2b^3-11Aab^4)x^5+6(3Ba^3b^2-11Aa^2b^3)x^4+4(3Ba^4b-11Aa^3b^2)x^3+(3Ba^5-11Aa^4b)x^2\right)\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(128Aa^5+315(3Bab^4-11Ab^5)x^5+1155(3Ba^2b^3-11Aab^4)x^4+1533(3Ba^3b^2-11Aa^2b^3)x^3+837(3Ba^4b-11Aa^3b^2)x^2+128(3Ba^5-11Aa^4b)x\right)\sqrt{x}}{384(a^6b^4x^6+4a^7b^3x^5+6a^8b^2x^4+4a^9bx^3+a^{10}x^2)},\ \frac{315\left((3Bab^4-11Ab^5)x^6+4(3Ba^2b^3-11Aab^4)x^5+6(3Ba^3b^2-11Aa^2b^3)x^4+4(3Ba^4b-11Aa^3b^2)x^3+(3Ba^5-11Aa^4b)x^2\right)\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-\left(128Aa^5+315(3Bab^4-11Ab^5)x^5+1155(3Ba^2b^3-11Aab^4)x^4+1533(3Ba^3b^2-11Aa^2b^3)x^3+837(3Ba^4b-11Aa^3b^2)x^2+128(3Ba^5-11Aa^4b)x\right)\sqrt{x}}{192(a^6b^4x^6+4a^7b^3x^5+6a^8b^2x^4+4a^9bx^3+a^{10}x^2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(315*((3*B*a*b^4 - 11*A*b^5)*x^6 + 4*(3*B*a^2*b^3 - 11*A*a*b^4)*x^5
 + 6*(3*B*a^3*b^2 - 11*A*a^2*b^3)*x^4 + 4*(3*B*a^4*b - 11*A*a^3*b^2)*x^3 +
(3*B*a^5 - 11*A*a^4*b)*x^2)*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) -
a)/(b*x + a)) + 2*(128*A*a^5 + 315*(3*B*a*b^4 - 11*A*b^5)*x^5 + 1155*(3*B*a
^2*b^3 - 11*A*a*b^4)*x^4 + 1533*(3*B*a^3*b^2 - 11*A*a^2*b^3)*x^3 + 837*(3*B
*a^4*b - 11*A*a^3*b^2)*x^2 + 128*(3*B*a^5 - 11*A*a^4*b)*x)*sqrt(x))/(a^6*b^
4*x^6 + 4*a^7*b^3*x^5 + 6*a^8*b^2*x^4 + 4*a^9*b*x^3 + a^10*x^2), 1/192*(315
*((3*B*a*b^4 - 11*A*b^5)*x^6 + 4*(3*B*a^2*b^3 - 11*A*a*b^4)*x^5 + 6*(3*B*a^
3*b^2 - 11*A*a^2*b^3)*x^4 + 4*(3*B*a^4*b - 11*A*a^3*b^2)*x^3 + (3*B*a^5 - 1
1*A*a^4*b)*x^2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (128*A*a^5 + 31
5*(3*B*a*b^4 - 11*A*b^5)*x^5 + 1155*(3*B*a^2*b^3 - 11*A*a*b^4)*x^4 + 1533*(
3*B*a^3*b^2 - 11*A*a^2*b^3)*x^3 + 837*(3*B*a^4*b - 11*A*a^3*b^2)*x^2 + 128*
(3*B*a^5 - 11*A*a^4*b)*x)*sqrt(x))/(a^6*b^4*x^6 + 4*a^7*b^3*x^5 + 6*a^8*b^2
*x^4 + 4*a^9*b*x^3 + a^10*x^2)]
```

giac [A] time = 0.24, size = 180, normalized size = 0.50

$$-\frac{105\left(3Bab-11Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\sqrt{ab}\,a^6\operatorname{sgn}(bx+a)}-\frac{2(3Bax-15Abx+Aa)}{3a^6x^{\frac{3}{2}}\operatorname{sgn}(bx+a)}-\frac{561Bab^4x^{\frac{7}{2}}-1545Ab^5x^{\frac{7}{2}}+1929Ba^2b^3x^{\frac{5}{2}}-5153Aab^4x^{\frac{5}{2}}+2295Ba^3b^2x^{\frac{3}{2}}-5855Aa^2b^3x^{\frac{3}{2}}+975Ba^4b\sqrt{x}-2295Aa^3b^2\sqrt{x}}{192(bx+a)^4a^6\operatorname{sgn}(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] -105/64*(3*B*a*b - 11*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6*sgn
(b*x + a)) - 2/3*(3*B*a*x - 15*A*b*x + A*a)/(a^6*x^(3/2)*sgn(b*x + a)) - 1/
192*(561*B*a*b^4*x^(7/2) - 1545*A*b^5*x^(7/2) + 1929*B*a^2*b^3*x^(5/2) - 51
53*A*a*b^4*x^(5/2) + 2295*B*a^3*b^2*x^(3/2) - 5855*A*a^2*b^3*x^(3/2) + 975*
B*a^4*b*sqrt(x) - 2295*A*a^3*b^2*sqrt(x))/((b*x + a)^4*a^6*sgn(b*x + a))
```

maple [A] time = 0.08, size = 413, normalized size = 1.16

$$\frac{\left(3465Ab^6x^{\frac{11}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-945Bab^5x^{\frac{11}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+13860Aab^5x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3780Ba^2b^4x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+20790Aa^2b^4x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-5670Ba^3b^3x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3465\sqrt{ab}\,Ab^5x^5-945\sqrt{ab}\,Bab^4x^5+13860Aa^3b^3x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3780Ba^4b^2x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+12705\sqrt{ab}\,Aab^4x^4-3465\sqrt{ab}\,Ba^2b^3x^4+3465Aa^4b^2x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-945Ba^5bx^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+16863\sqrt{ab}\,Aa^2b^3x^3-4599\sqrt{ab}\,Ba^3b^2x^3+9207\sqrt{ab}\,Aa^3b^2x^2-2511\sqrt{ab}\,Ba^4bx^2+1408\sqrt{ab}\,Aa^4bx-384\sqrt{ab}\,Ba^5x-128\sqrt{ab}\,Aa^5\right)(bx+a)}{192\sqrt{ab}\left((bx+a)^2\right)^{\frac{5}{2}}a^6x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(13860*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^3*b^3-3780*B*arcta
n(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^4*b^2-945*B*arctan(1/(a*b)^(1/2)*b*x^(
1/2))*x^(11/2)*a*b^5+13860*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*a*b^5-
3780*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*a^2*b^4+20790*A*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*x^(7/2)*a^2*b^4-5670*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*
x^(7/2)*a^3*b^3+3465*A*(a*b)^(1/2)*x^5*b^5-384*B*(a*b)^(1/2)*x*a^5-128*A*(a
```

```
*b)^(1/2)*a^5-945*B*(a*b)^(1/2)*x^5*a*b^4+12705*A*(a*b)^(1/2)*x^4*a*b^4+346
5*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(11/2)*b^6-3465*B*(a*b)^(1/2)*x^4*a^2
*b^3+16863*A*(a*b)^(1/2)*x^3*a^2*b^3-4599*B*(a*b)^(1/2)*x^3*a^3*b^2+9207*A*
(a*b)^(1/2)*x^2*a^3*b^2+3465*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(3/2)*a^4*
b^2-2511*B*(a*b)^(1/2)*x^2*a^4*b-945*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(3
/2)*a^5*b+1408*A*(a*b)^(1/2)*x*a^4*b)*(b*x+a)/x^(3/2)/(a*b)^(1/2)/a^6/((b*x
+a)^2)^(5/2)
```

maxima [B] time = 2.03, size = 495, normalized size = 1.39

$$-\frac{315\left(\left(Bab^{7}-11\,Ab^{8}\right)x^{2}+11\left(3\,Ba^{2}b^{6}-13\,Aab^{7}\right)x\right)x^{\frac{9}{2}}+630\left(\left(Ba^{2}b^{6}-11\,Aab^{7}\right)x^{2}+33\left(3\,Ba^{3}b^{5}-13\,Aa^{2}b^{6}\right)x\right)x^{\frac{7}{2}}-420\left(6\left(Ba^{3}b^{5}-11\,Aa^{2}b^{6}\right)x^{2}-121\left(3\,Ba^{4}b^{4}-13\,Aa^{3}b^{5}\right)x\right)x^{\frac{5}{2}}-42\left(255\left(Ba^{4}b^{4}-11\,Aa^{3}b^{5}\right)x^{2}-1529\left(3\,Ba^{5}b^{3}-13\,Aa^{4}b^{4}\right)x\right)x^{\frac{3}{2}}-33\left(483\left(Ba^{5}b^{3}-11\,Aa^{4}b^{4}\right)x^{2}-1315\left(3\,Ba^{6}b^{2}-13\,Aa^{5}b^{3}\right)x\right)\sqrt{x}-\frac{1280\left(9\left(Ba^{6}b^{2}-11\,Aa^{5}b^{3}\right)x^{2}-11\left(3\,Ba^{7}b-13\,Aa^{6}b^{2}\right)x\right)}{\sqrt{x}}-\frac{1280\left(3\left(Ba^{7}b-11\,Aa^{6}b^{2}\right)x^{2}-\left(3\,Ba^{8}-13\,Aa^{7}b\right)x\right)}{x^{\frac{3}{2}}}+\frac{1280\left(3\,Aa^{7}bx^{2}+Aa^{8}x\right)}{x^{\frac{5}{2}}}}{1920\left(a^{8}b^{5}x^{5}+5\,a^{9}b^{4}x^{4}+10\,a^{10}b^{3}x^{3}+10\,a^{11}b^{2}x^{2}+5\,a^{12}bx+a^{13}\right)}-\frac{105\left(3\,Bab-11\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^{6}}+\frac{21\left(\left(Bab^{2}-11\,Ab^{3}\right)x^{\frac{3}{2}}+10\left(3\,Ba^{2}b-11\,Aab^{2}\right)\sqrt{x}\right)}{128\,a^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(315*((B*a*b^7 - 11*A*b^8)*x^2 + 11*(3*B*a^2*b^6 - 13*A*a*b^7)*x)*x
^(9/2) + 630*((B*a^2*b^6 - 11*A*a*b^7)*x^2 + 33*(3*B*a^3*b^5 - 13*A*a^2*b^6
)*x)*x^(7/2) - 420*(6*(B*a^3*b^5 - 11*A*a^2*b^6)*x^2 - 121*(3*B*a^4*b^4 - 1
3*A*a^3*b^5)*x)*x^(5/2) - 42*(255*(B*a^4*b^4 - 11*A*a^3*b^5)*x^2 - 1529*(3*
B*a^5*b^3 - 13*A*a^4*b^4)*x)*x^(3/2) - 33*(483*(B*a^5*b^3 - 11*A*a^4*b^4)*x
^2 - 1315*(3*B*a^6*b^2 - 13*A*a^5*b^3)*x)*sqrt(x) - 1280*(9*(B*a^6*b^2 - 11
*A*a^5*b^3)*x^2 - 11*(3*B*a^7*b - 13*A*a^6*b^2)*x)/sqrt(x) - 1280*(3*(B*a^7
*b - 11*A*a^6*b^2)*x^2 - (3*B*a^8 - 13*A*a^7*b)*x)/x^(3/2) + 1280*(3*A*a^7*
b*x^2 + A*a^8*x)/x^(5/2))/(a^8*b^5*x^5 + 5*a^9*b^4*x^4 + 10*a^10*b^3*x^3 +
10*a^11*b^2*x^2 + 5*a^12*b*x + a^13) - 105/64*(3*B*a*b - 11*A*b^2)*arctan(b
*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6) + 21/128*((B*a*b^2 - 11*A*b^3)*x^(3/2)
+ 10*(3*B*a^2*b - 11*A*a*b^2)*sqrt(x))/a^8
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.762 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=404

$$\frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{231b^{3/2}(a+bx)(13Ab-5aB)\tan^{-1}}{64a^{15/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.21, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$-\frac{231b(a+bx)(13Ab-5aB)}{64a^7\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{77(a+bx)(13Ab-5aB)}{64a^6x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{231(a+bx)(13Ab-5aB)}{320a^5bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{11(13Ab-5aB)}{96a^3bx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{231b^{3/2}(a+bx)(13Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{15/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (33*(13*A*b - 5*a*B))/(64*a^4*b*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A
*b - a*B)/(4*a*b*x^(5/2)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (13*A
*b - 5*a*B)/(24*a^2*b*x^(5/2)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(11*(13*A*b - 5*a*B))/(96*a^3*b*x^(5/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) - (231*(13*A*b - 5*a*B)*(a + b*x))/(320*a^5*b*x^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (77*(13*A*b - 5*a*B)*(a + b*x))/(64*a^6*x^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) - (231*b*(13*A*b - 5*a*B)*(a + b*x))/(64*a^7*Sqrt[x]*
Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*b^(3/2)*(13*A*b - 5*a*B)*(a + b*x)*Ar
cTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{7/2}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(13Ab-5aB)\left(ab+b^2x\right)\right)\int \frac{\quad}{x^{7/2}(\ldots}}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2\ldots}}$$

$$= \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2\ldots}}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\quad}{24a\ldots}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\quad}{24a\ldots}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\quad}{24a\ldots}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\quad}{24a\ldots}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\quad}{24a\ldots}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\quad}{24a\ldots}$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.20

$$\frac{5a^4(Ab-aB)-(a+bx)^4(13Ab-5aB)\,{}_2F_1\left(-\frac{5}{2},4;-\frac{3}{2};-\frac{bx}{a}\right)}{20a^5bx^{5/2}(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (5*a^4*(A*b - a*B) - (13*A*b - 5*a*B)*(a + b*x)^4*Hypergeometric2F1[-5/2, 4
, -3/2, -((b*x)/a)])/(20*a^5*b*x^(5/2)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 43.64, size = 214, normalized size = 0.53

$$\frac{(a+bx)\left(\frac{231\left(5ab^{3/2}B-13Ab^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{15/2}}+\frac{-384a^6A-640a^6Bx+1664a^5Abx+7040a^5bBx^2-18304a^4Ab^2x^2+46035a^4b^2Bx^3-119691a^3Ab^3x^3+84315a^3b^3Bx^4-219219a^2Ab^4x^4+63525a^2b^4Bx^5-165165aAb^5x^5+17325ab^5Bx^6-45045Ab^6x^6}{960a^7x^{5/2}(a+bx)^4}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] ((a + b*x)*((-384*a^6*A + 1664*a^5*A*b*x - 640*a^6*B*x - 18304*a^4*A*b^2*x^
2 + 7040*a^5*b*B*x^2 - 119691*a^3*A*b^3*x^3 + 46035*a^4*b^2*B*x^3 - 219219*
a^2*A*b^4*x^4 + 84315*a^3*b^3*B*x^4 - 165165*a*A*b^5*x^5 + 63525*a^2*b^4*B*
x^5 - 45045*A*b^6*x^6 + 17325*a*b^5*B*x^6)/(960*a^7*x^(5/2)*(a + b*x)^4) +
(231*(-13*A*b^(5/2) + 5*a*b^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64
*a^(15/2))))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.46, size = 673, normalized size = 1.67

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/1920*(3465*((5*B*a*b^5 - 13*A*b^6)*x^7 + 4*(5*B*a^2*b^4 - 13*A*a*b^5)*x
^6 + 6*(5*B*a^3*b^3 - 13*A*a^2*b^4)*x^5 + 4*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^
4 + (5*B*a^5*b - 13*A*a^4*b^2)*x^3)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(
-b/a) - a)/(b*x + a)) + 2*(384*A*a^6 - 3465*(5*B*a*b^5 - 13*A*b^6)*x^6 - 12
705*(5*B*a^2*b^4 - 13*A*a*b^5)*x^5 - 16863*(5*B*a^3*b^3 - 13*A*a^2*b^4)*x^4
 - 9207*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^3 - 1408*(5*B*a^5*b - 13*A*a^4*b^2)*
x^2 + 128*(5*B*a^6 - 13*A*a^5*b)*x)*sqrt(x))/(a^7*b^4*x^7 + 4*a^8*b^3*x^6 +
 6*a^9*b^2*x^5 + 4*a^10*b*x^4 + a^11*x^3), -1/960*(3465*((5*B*a*b^5 - 13*A*
b^6)*x^7 + 4*(5*B*a^2*b^4 - 13*A*a*b^5)*x^6 + 6*(5*B*a^3*b^3 - 13*A*a^2*b^4
)*x^5 + 4*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^4 + (5*B*a^5*b - 13*A*a^4*b^2)*x^3
)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) + (384*A*a^6 - 3465*(5*B*a*b^5
- 13*A*b^6)*x^6 - 12705*(5*B*a^2*b^4 - 13*A*a*b^5)*x^5 - 16863*(5*B*a^3*b^3
 - 13*A*a^2*b^4)*x^4 - 9207*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^3 - 1408*(5*B*a^
5*b - 13*A*a^4*b^2)*x^2 + 128*(5*B*a^6 - 13*A*a^5*b)*x)*sqrt(x))/(a^7*b^4*x
^7 + 4*a^8*b^3*x^6 + 6*a^9*b^2*x^5 + 4*a^10*b*x^4 + a^11*x^3)]
```

giac [A] time = 0.23, size = 207, normalized size = 0.51

$$\frac{231\left(5Bab^2-13Ab^3\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\sqrt{ab}\,a^7\mathrm{sgn}(bx+a)}+\frac{2\left(75Babx^2-225Ab^2x^2-5Ba^2x+25Aabx-3Aa^2\right)}{15a^7x^{\frac{5}{2}}\mathrm{sgn}(bx+a)}+\frac{1545Bab^5x^{\frac{7}{2}}-3249Ab^6x^{\frac{7}{2}}+5153Ba^2b^4x^{\frac{5}{2}}-10633Aab^5x^{\frac{5}{2}}+5855Ba^3b^3x^{\frac{3}{2}}-11767Aa^2b^4x^{\frac{3}{2}}+2295Ba^4b^2\sqrt{x}-4431Aa^3b^3\sqrt{x}}{192(bx+a)^4a^7\mathrm{sgn}(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 231/64*(5*B*a*b^2 - 13*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7*sg
n(b*x + a)) + 2/15*(75*B*a*b*x^2 - 225*A*b^2*x^2 - 5*B*a^2*x + 25*A*a*b*x -
 3*A*a^2)/(a^7*x^(5/2)*sgn(b*x + a)) + 1/192*(1545*B*a*b^5*x^(7/2) - 3249*A
*b^6*x^(7/2) + 5153*B*a^2*b^4*x^(5/2) - 10633*A*a*b^5*x^(5/2) + 5855*B*a^3*
b^3*x^(3/2) - 11767*A*a^2*b^4*x^(3/2) + 2295*B*a^4*b^2*sqrt(x) - 4431*A*a^3
*b^3*sqrt(x))/((b*x + a)^4*a^7*sgn(b*x + a))
```

maple [A] time = 0.08, size = 449, normalized size = 1.11

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/960*(180180*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a^3*b^4-69300*B*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a^4*b^3-103950*B*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*x^(9/2)*a^3*b^4+180180*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(11/
2)*a*b^6-69300*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(11/2)*a^2*b^5+270270*A*
arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*a^2*b^5-17325*B*arctan(1/(a*b)^(1/2
)*b*x^(1/2))*x^(13/2)*a*b^6+45045*A*(a*b)^(1/2)*x^6*b^6+640*B*(a*b)^(1/2)*x
*a^6+384*A*(a*b)^(1/2)*a^6-7040*B*(a*b)^(1/2)*x^2*a^5*b-1664*A*(a*b)^(1/2)*
x*a^5*b-17325*B*(a*b)^(1/2)*x^6*a*b^5+165165*A*(a*b)^(1/2)*x^5*a*b^5+45045*
A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(13/2)*b^7-63525*B*(a*b)^(1/2)*x^5*a^2*
b^4+219219*A*(a*b)^(1/2)*x^4*a^2*b^4-84315*B*(a*b)^(1/2)*x^4*a^3*b^3+119691
*A*(a*b)^(1/2)*x^3*a^3*b^3+45045*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*
a^4*b^3-46035*B*(a*b)^(1/2)*x^3*a^4*b^2-17325*B*arctan(1/(a*b)^(1/2)*b*x^(1
/2))*x^(5/2)*a^5*b^2+18304*A*(a*b)^(1/2)*x^2*a^4*b^2)*(b*x+a)/x^(5/2)/(a*b)
^(1/2)/a^7/((b*x+a)^2)^(5/2)
```

maxima [A] time = 2.12, size = 550, normalized size = 1.36

$$\frac{1155 \left(\left(3 \, B a b^{8} - 13 \, A b^{9}\right) x^{2} + 39 \left(B a^{2} b^{7} - 3 \, A a b^{8}\right) x\right) x^{\frac{9}{2}} + 2310 \left(\left(3 \, B a^{2} b^{7} - 13 \, A a b^{8}\right) x^{2} + 117 \left(B a^{3} b^{6} - 3 \, A a^{2} b^{7}\right) x\right) x^{\frac{7}{2}} - 4620 \left(2 \left(3 \, B a^{3} b^{6} - 13 \, A a^{2} b^{7}\right) x^{2} - 143 \left(B a^{4} b^{5} - 3 \, A a^{3} b^{6}\right) x\right) x^{\frac{5}{2}} - 462 \left(85 \left(3 \, B a^{4} b^{5} - 13 \, A a^{3} b^{6}\right) x^{2} - 1807 \left(B a^{5} b^{4} - 3 \, A a^{4} b^{5}\right) x\right) x^{\frac{3}{2}} - 33 \left(1771 \left(3 \, B a^{5} b^{4} - 13 \, A a^{4} b^{5}\right) x^{2} - 17095 \left(B a^{6} b^{3} - 3 \, A a^{5} b^{4}\right) x\right) \sqrt{x} - \frac{14080 \left(3 \left(3 \, B a^{6} b^{3} - 13 \, A a^{5} b^{4}\right) x^{2} - 13 \left(B a^{7} b^{2} - 3 \, A a^{6} b^{3}\right) x\right)}{\sqrt{x}} - \frac{1280 \left(11 \left(3 \, B a^{7} b^{2} - 13 \, A a^{6} b^{3}\right) x^{2} - 13 \left(B a^{8} b - 3 \, A a^{7} b^{2}\right) x\right)}{x^{\frac{3}{2}}} - \frac{1280 \left(\left(3 \, B a^{8} b - 13 \, A a^{7} b^{2}\right) x^{2} + \left(B a^{9} - 3 \, A a^{8} b\right) x\right)}{x^{\frac{5}{2}}} - \frac{256 \left(5 \, A a^{8} b x^{2} + 3 \, A a^{9} x\right)}{x^{\frac{7}{2}}}}{1920 \left(a^{9} b^{5} x^{5} + 5 \, a^{10} b^{4} x^{4} + 10 \, a^{11} b^{3} x^{3} + 10 \, a^{12} b^{2} x^{2} + 5 \, a^{13} b x + a^{14}\right)} + \frac{231 \left(5 \, B a b^{2} - 13 \, A b^{3}\right) \arctan\left(\frac{b \sqrt{x}}{\sqrt{a b}}\right)}{64 \, \sqrt{a b} a^{7}} - \frac{77 \left(\left(3 \, B a b^{3} - 13 \, A b^{4}\right) x^{\frac{3}{2}} + 6 \left(5 \, B a^{2} b^{2} - 13 \, A a b^{3}\right) \sqrt{x}\right)}{128 \, a^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/1920*(1155*((3*B*a*b^8 - 13*A*b^9)*x^2 + 39*(B*a^2*b^7 - 3*A*a*b^8)*x)*x^
(9/2) + 2310*((3*B*a^2*b^7 - 13*A*a*b^8)*x^2 + 117*(B*a^3*b^6 - 3*A*a^2*b^7
)*x)*x^(7/2) - 4620*(2*(3*B*a^3*b^6 - 13*A*a^2*b^7)*x^2 - 143*(B*a^4*b^5 -
3*A*a^3*b^6)*x)*x^(5/2) - 462*(85*(3*B*a^4*b^5 - 13*A*a^3*b^6)*x^2 - 1807*(
B*a^5*b^4 - 3*A*a^4*b^5)*x)*x^(3/2) - 33*(1771*(3*B*a^5*b^4 - 13*A*a^4*b^5)
*x^2 - 17095*(B*a^6*b^3 - 3*A*a^5*b^4)*x)*sqrt(x) - 14080*(3*(3*B*a^6*b^3 -
 13*A*a^5*b^4)*x^2 - 13*(B*a^7*b^2 - 3*A*a^6*b^3)*x)/sqrt(x) - 1280*(11*(3*
B*a^7*b^2 - 13*A*a^6*b^3)*x^2 - 13*(B*a^8*b - 3*A*a^7*b^2)*x)/x^(3/2) - 128
0*((3*B*a^8*b - 13*A*a^7*b^2)*x^2 + (B*a^9 - 3*A*a^8*b)*x)/x^(5/2) - 256*(5
*A*a^8*b*x^2 + 3*A*a^9*x)/x^(7/2))/(a^9*b^5*x^5 + 5*a^10*b^4*x^4 + 10*a^11*
b^3*x^3 + 10*a^12*b^2*x^2 + 5*a^13*b*x + a^14) + 231/64*(5*B*a*b^2 - 13*A*b
^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7) - 77/128*((3*B*a*b^3 - 13*A
*b^4)*x^(3/2) + 6*(5*B*a^2*b^2 - 13*A*a*b^3)*sqrt(x))/a^9
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{7/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.763 $\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=179

$$\frac{a^6Ax^{m+1}}{m+1}+\frac{a^5x^{m+2}(aB+6Ab)}{m+2}+\frac{3a^4bx^{m+3}(2aB+5Ab)}{m+3}+\frac{5a^3b^2x^{m+4}(3aB+4Ab)}{m+4}+\frac{5a^2b^3x^{m+5}(4aB+3Ab)}{m+5}+\frac{b^5x^{m+}}{}$$

Rubi [A] time = 0.12, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}=0.074$, Rules used = $\{27,76\}$

$$\frac{5a^3b^2x^{m+4}(3aB+4Ab)}{m+4}+\frac{5a^2b^3x^{m+5}(4aB+3Ab)}{m+5}+\frac{a^5x^{m+2}(aB+6Ab)}{m+2}+\frac{3a^4bx^{m+3}(2aB+5Ab)}{m+3}+\frac{a^6Ax^{m+1}}{m+1}+\frac{3ab^4x^{m+6}(5aB+2Ab)}{m+6}+\frac{b^5x^{m+7}(6aB+Ab)}{m+7}+\frac{b^6Bx^{m+8}}{m+8}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^(1 + m))/(1 + m) + (a^5*(6*A*b + a*B)*x^(2 + m))/(2 + m) + (3*a^4*
b*(5*A*b + 2*a*B)*x^(3 + m))/(3 + m) + (5*a^3*b^2*(4*A*b + 3*a*B)*x^(4 + m)
)/(4 + m) + (5*a^2*b^3*(3*A*b + 4*a*B)*x^(5 + m))/(5 + m) + (3*a*b^4*(2*A*b
 + 5*a*B)*x^(6 + m))/(6 + m) + (b^5*(A*b + 6*a*B)*x^(7 + m))/(7 + m) + (b^6
*B*x^(8 + m))/(8 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^m(a+bx)^6(A+Bx)\,dx\\&=\int\left(a^6Ax^m+a^5(6Ab+aB)x^{1+m}+3a^4b(5Ab+2aB)x^{2+m}+5a^3b^2(4Ab\right.\\&=\frac{a^6Ax^{1+m}}{1+m}+\frac{a^5(6Ab+aB)x^{2+m}}{2+m}+\frac{3a^4b(5Ab+2aB)x^{3+m}}{3+m}+\frac{5a^3b^2(4Ab}{4+}\end{aligned}$$

Mathematica [A] time = 0.20, size = 135, normalized size = 0.75

$$\frac{x^{m+1}\left(\left(\frac{a^6}{m+1}+\frac{6a^5bx}{m+2}+\frac{15a^4b^2x^2}{m+3}+\frac{20a^3b^3x^3}{m+4}+\frac{15a^2b^4x^4}{m+5}+\frac{6ab^5x^5}{m+6}+\frac{b^6x^6}{m+7}\right)(Ab(m+8)-aB(m+1))+B(a+bx)^7\right)}{b(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(1 + m)*(B*(a + b*x)^7 + (-(a*B*(1 + m)) + A*b*(8 + m))*(a^6/(1 + m) + (
6*a^5*b*x)/(2 + m) + (15*a^4*b^2*x^2)/(3 + m) + (20*a^3*b^3*x^3)/(4 + m) +
```

```
(15*a^2*b^4*x^4)/(5 + m) + (6*a*b^5*x^5)/(6 + m) + (b^6*x^6)/(7 + m))))/(b*
(8 + m))
```

IntegrateAlgebraic [F] time = 0.92, size = 0, normalized size = 0.00

$$\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.45, size = 1191, normalized size = 6.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] ((B*b^6*m^7 + 28*B*b^6*m^6 + 322*B*b^6*m^5 + 1960*B*b^6*m^4 + 6769*B*b^6*m^
3 + 13132*B*b^6*m^2 + 13068*B*b^6*m + 5040*B*b^6)*x^8 + ((6*B*a*b^5 + A*b^6
)*m^7 + 34560*B*a*b^5 + 5760*A*b^6 + 29*(6*B*a*b^5 + A*b^6)*m^6 + 343*(6*B*
a*b^5 + A*b^6)*m^5 + 2135*(6*B*a*b^5 + A*b^6)*m^4 + 7504*(6*B*a*b^5 + A*b^6
)*m^3 + 14756*(6*B*a*b^5 + A*b^6)*m^2 + 14832*(6*B*a*b^5 + A*b^6)*m)*x^7 +
3*((5*B*a^2*b^4 + 2*A*a*b^5)*m^7 + 33600*B*a^2*b^4 + 13440*A*a*b^5 + 30*(5*
B*a^2*b^4 + 2*A*a*b^5)*m^6 + 366*(5*B*a^2*b^4 + 2*A*a*b^5)*m^5 + 2340*(5*B*
a^2*b^4 + 2*A*a*b^5)*m^4 + 8409*(5*B*a^2*b^4 + 2*A*a*b^5)*m^3 + 16830*(5*B*
a^2*b^4 + 2*A*a*b^5)*m^2 + 17144*(5*B*a^2*b^4 + 2*A*a*b^5)*m)*x^6 + 5*((4*B
*a^3*b^3 + 3*A*a^2*b^4)*m^7 + 32256*B*a^3*b^3 + 24192*A*a^2*b^4 + 31*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*m^6 + 391*(4*B*a^3*b^3 + 3*A*a^2*b^4)*m^5 + 2581*(4*B
*a^3*b^3 + 3*A*a^2*b^4)*m^4 + 9544*(4*B*a^3*b^3 + 3*A*a^2*b^4)*m^3 + 19564*
(4*B*a^3*b^3 + 3*A*a^2*b^4)*m^2 + 20304*(4*B*a^3*b^3 + 3*A*a^2*b^4)*m)*x^5
+ 5*((3*B*a^4*b^2 + 4*A*a^3*b^3)*m^7 + 30240*B*a^4*b^2 + 40320*A*a^3*b^3 +
32*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^6 + 418*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^5 +
2864*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^4 + 10993*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^
3 + 23312*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^2 + 24876*(3*B*a^4*b^2 + 4*A*a^3*b^
3)*m)*x^4 + 3*((2*B*a^5*b + 5*A*a^4*b^2)*m^7 + 26880*B*a^5*b + 67200*A*a^4*
b^2 + 33*(2*B*a^5*b + 5*A*a^4*b^2)*m^6 + 447*(2*B*a^5*b + 5*A*a^4*b^2)*m^5
+ 3195*(2*B*a^5*b + 5*A*a^4*b^2)*m^4 + 12864*(2*B*a^5*b + 5*A*a^4*b^2)*m^3
+ 28692*(2*B*a^5*b + 5*A*a^4*b^2)*m^2 + 32048*(2*B*a^5*b + 5*A*a^4*b^2)*m)*
x^3 + ((B*a^6 + 6*A*a^5*b)*m^7 + 20160*B*a^6 + 120960*A*a^5*b + 34*(B*a^6 +
 6*A*a^5*b)*m^6 + 478*(B*a^6 + 6*A*a^5*b)*m^5 + 3580*(B*a^6 + 6*A*a^5*b)*m^
4 + 15289*(B*a^6 + 6*A*a^5*b)*m^3 + 36706*(B*a^6 + 6*A*a^5*b)*m^2 + 44712*(
B*a^6 + 6*A*a^5*b)*m)*x^2 + (A*a^6*m^7 + 35*A*a^6*m^6 + 511*A*a^6*m^5 + 402
5*A*a^6*m^4 + 18424*A*a^6*m^3 + 48860*A*a^6*m^2 + 69264*A*a^6*m + 40320*A*a
^6)*x)*x^m/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118
124*m^2 + 109584*m + 40320)
```

giac [B] time = 0.27, size = 1808, normalized size = 10.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] (B*b^6*m^7*x^8*x^m + 6*B*a*b^5*m^7*x^7*x^m + A*b^6*m^7*x^7*x^m + 28*B*b^6*m
^6*x^8*x^m + 15*B*a^2*b^4*m^7*x^6*x^m + 6*A*a*b^5*m^7*x^6*x^m + 174*B*a*b^5
*m^6*x^7*x^m + 29*A*b^6*m^6*x^7*x^m + 322*B*b^6*m^5*x^8*x^m + 20*B*a^3*b^3*
m^7*x^5*x^m + 15*A*a^2*b^4*m^7*x^5*x^m + 450*B*a^2*b^4*m^6*x^6*x^m + 180*A*
a*b^5*m^6*x^6*x^m + 2058*B*a*b^5*m^5*x^7*x^m + 343*A*b^6*m^5*x^7*x^m + 1960
*B*b^6*m^4*x^8*x^m + 15*B*a^4*b^2*m^7*x^4*x^m + 20*A*a^3*b^3*m^7*x^4*x^m +
```

```
620*B*a^3*b^3*m^6*x^5*x^m + 465*A*a^2*b^4*m^6*x^5*x^m + 5490*B*a^2*b^4*m^5*
x^6*x^m + 2196*A*a*b^5*m^5*x^6*x^m + 12810*B*a*b^5*m^4*x^7*x^m + 2135*A*b^6
*m^4*x^7*x^m + 6769*B*b^6*m^3*x^8*x^m + 6*B*a^5*b*m^7*x^3*x^m + 15*A*a^4*b^
2*m^7*x^3*x^m + 480*B*a^4*b^2*m^6*x^4*x^m + 640*A*a^3*b^3*m^6*x^4*x^m + 782
0*B*a^3*b^3*m^5*x^5*x^m + 5865*A*a^2*b^4*m^5*x^5*x^m + 35100*B*a^2*b^4*m^4*
x^6*x^m + 14040*A*a*b^5*m^4*x^6*x^m + 45024*B*a*b^5*m^3*x^7*x^m + 7504*A*b^
6*m^3*x^7*x^m + 13132*B*b^6*m^2*x^8*x^m + B*a^6*m^7*x^2*x^m + 6*A*a^5*b*m^7
*x^2*x^m + 198*B*a^5*b*m^6*x^3*x^m + 495*A*a^4*b^2*m^6*x^3*x^m + 6270*B*a^4
*b^2*m^5*x^4*x^m + 8360*A*a^3*b^3*m^5*x^4*x^m + 51620*B*a^3*b^3*m^4*x^5*x^m
 + 38715*A*a^2*b^4*m^4*x^5*x^m + 126135*B*a^2*b^4*m^3*x^6*x^m + 50454*A*a*b
^5*m^3*x^6*x^m + 88536*B*a*b^5*m^2*x^7*x^m + 14756*A*b^6*m^2*x^7*x^m + 1306
8*B*b^6*m*x^8*x^m + A*a^6*m^7*x*x^m + 34*B*a^6*m^6*x^2*x^m + 204*A*a^5*b*m^
6*x^2*x^m + 2682*B*a^5*b*m^5*x^3*x^m + 6705*A*a^4*b^2*m^5*x^3*x^m + 42960*B
*a^4*b^2*m^4*x^4*x^m + 57280*A*a^3*b^3*m^4*x^4*x^m + 190880*B*a^3*b^3*m^3*x
^5*x^m + 143160*A*a^2*b^4*m^3*x^5*x^m + 252450*B*a^2*b^4*m^2*x^6*x^m + 1009
80*A*a*b^5*m^2*x^6*x^m + 88992*B*a*b^5*m*x^7*x^m + 14832*A*b^6*m*x^7*x^m +
5040*B*b^6*x^8*x^m + 35*A*a^6*m^6*x*x^m + 478*B*a^6*m^5*x^2*x^m + 2868*A*a^
5*b*m^5*x^2*x^m + 19170*B*a^5*b*m^4*x^3*x^m + 47925*A*a^4*b^2*m^4*x^3*x^m +
 164895*B*a^4*b^2*m^3*x^4*x^m + 219860*A*a^3*b^3*m^3*x^4*x^m + 391280*B*a^3
*b^3*m^2*x^5*x^m + 293460*A*a^2*b^4*m^2*x^5*x^m + 257160*B*a^2*b^4*m*x^6*x^
m + 102864*A*a*b^5*m*x^6*x^m + 34560*B*a*b^5*x^7*x^m + 5760*A*b^6*x^7*x^m +
 511*A*a^6*m^5*x*x^m + 3580*B*a^6*m^4*x^2*x^m + 21480*A*a^5*b*m^4*x^2*x^m +
 77184*B*a^5*b*m^3*x^3*x^m + 192960*A*a^4*b^2*m^3*x^3*x^m + 349680*B*a^4*b^
2*m^2*x^4*x^m + 466240*A*a^3*b^3*m^2*x^4*x^m + 406080*B*a^3*b^3*m*x^5*x^m +
 304560*A*a^2*b^4*m*x^5*x^m + 100800*B*a^2*b^4*x^6*x^m + 40320*A*a*b^5*x^6*
x^m + 4025*A*a^6*m^4*x*x^m + 15289*B*a^6*m^3*x^2*x^m + 91734*A*a^5*b*m^3*x^
2*x^m + 172152*B*a^5*b*m^2*x^3*x^m + 430380*A*a^4*b^2*m^2*x^3*x^m + 373140*
B*a^4*b^2*m*x^4*x^m + 497520*A*a^3*b^3*m*x^4*x^m + 161280*B*a^3*b^3*x^5*x^m
 + 120960*A*a^2*b^4*x^5*x^m + 18424*A*a^6*m^3*x*x^m + 36706*B*a^6*m^2*x^2*x
^m + 220236*A*a^5*b*m^2*x^2*x^m + 192288*B*a^5*b*m*x^3*x^m + 480720*A*a^4*b
^2*m*x^3*x^m + 151200*B*a^4*b^2*x^4*x^m + 201600*A*a^3*b^3*x^4*x^m + 48860*
A*a^6*m^2*x*x^m + 44712*B*a^6*m*x^2*x^m + 268272*A*a^5*b*m*x^2*x^m + 80640*
B*a^5*b*x^3*x^m + 201600*A*a^4*b^2*x^3*x^m + 69264*A*a^6*m*x*x^m + 20160*B*
a^6*x^2*x^m + 120960*A*a^5*b*x^2*x^m + 40320*A*a^6*x*x^m)/(m^8 + 36*m^7 + 5
46*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

maple [B] time = 0.06, size = 1438, normalized size = 8.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] x^(m+1)*(B*b^6*m^7*x^7+A*b^6*m^7*x^6+6*B*a*b^5*m^7*x^6+28*B*b^6*m^6*x^7+6*A
*a*b^5*m^7*x^5+29*A*b^6*m^6*x^6+15*B*a^2*b^4*m^7*x^5+174*B*a*b^5*m^6*x^6+32
2*B*b^6*m^5*x^7+15*A*a^2*b^4*m^7*x^4+180*A*a*b^5*m^6*x^5+343*A*b^6*m^5*x^6+
20*B*a^3*b^3*m^7*x^4+450*B*a^2*b^4*m^6*x^5+2058*B*a*b^5*m^5*x^6+1960*B*b^6*
m^4*x^7+20*A*a^3*b^3*m^7*x^3+465*A*a^2*b^4*m^6*x^4+2196*A*a*b^5*m^5*x^5+213
5*A*b^6*m^4*x^6+15*B*a^4*b^2*m^7*x^3+620*B*a^3*b^3*m^6*x^4+5490*B*a^2*b^4*m
^5*x^5+12810*B*a*b^5*m^4*x^6+6769*B*b^6*m^3*x^7+15*A*a^4*b^2*m^7*x^2+640*A*
a^3*b^3*m^6*x^3+5865*A*a^2*b^4*m^5*x^4+14040*A*a*b^5*m^4*x^5+7504*A*b^6*m^3
*x^6+6*B*a^5*b*m^7*x^2+480*B*a^4*b^2*m^6*x^3+7820*B*a^3*b^3*m^5*x^4+35100*B
*a^2*b^4*m^4*x^5+45024*B*a*b^5*m^3*x^6+13132*B*b^6*m^2*x^7+6*A*a^5*b*m^7*x+
495*A*a^4*b^2*m^6*x^2+8360*A*a^3*b^3*m^5*x^3+38715*A*a^2*b^4*m^4*x^4+50454*
A*a*b^5*m^3*x^5+14756*A*b^6*m^2*x^6+B*a^6*m^7*x+198*B*a^5*b*m^6*x^2+6270*B*
a^4*b^2*m^5*x^3+51620*B*a^3*b^3*m^4*x^4+126135*B*a^2*b^4*m^3*x^5+88536*B*a*
b^5*m^2*x^6+13068*B*b^6*m*x^7+A*a^6*m^7+204*A*a^5*b*m^6*x+6705*A*a^4*b^2*m^
5*x^2+57280*A*a^3*b^3*m^4*x^3+143160*A*a^2*b^4*m^3*x^4+100980*A*a*b^5*m^2*x
^5+14832*A*b^6*m*x^6+34*B*a^6*m^6*x+2682*B*a^5*b*m^5*x^2+42960*B*a^4*b^2*m^
4*x^3+190880*B*a^3*b^3*m^3*x^4+252450*B*a^2*b^4*m^2*x^5+88992*B*a*b^5*m*x^6
```

```
+5040*B*b^6*x^7+35*A*a^6*m^6+2868*A*a^5*b*m^5*x+47925*A*a^4*b^2*m^4*x^2+219
860*A*a^3*b^3*m^3*x^3+293460*A*a^2*b^4*m^2*x^4+102864*A*a*b^5*m*x^5+5760*A*
b^6*x^6+478*B*a^6*m^5*x+19170*B*a^5*b*m^4*x^2+164895*B*a^4*b^2*m^3*x^3+3912
80*B*a^3*b^3*m^2*x^4+257160*B*a^2*b^4*m*x^5+34560*B*a*b^5*x^6+511*A*a^6*m^5
+21480*A*a^5*b*m^4*x+192960*A*a^4*b^2*m^3*x^2+466240*A*a^3*b^3*m^2*x^3+3045
60*A*a^2*b^4*m*x^4+40320*A*a*b^5*x^5+3580*B*a^6*m^4*x+77184*B*a^5*b*m^3*x^2
+349680*B*a^4*b^2*m^2*x^3+406080*B*a^3*b^3*m*x^4+100800*B*a^2*b^4*x^5+4025*
A*a^6*m^4+91734*A*a^5*b*m^3*x+430380*A*a^4*b^2*m^2*x^2+497520*A*a^3*b^3*m*x
^3+120960*A*a^2*b^4*x^4+15289*B*a^6*m^3*x+172152*B*a^5*b*m^2*x^2+373140*B*a
^4*b^2*m*x^3+161280*B*a^3*b^3*x^4+18424*A*a^6*m^3+220236*A*a^5*b*m^2*x+4807
20*A*a^4*b^2*m*x^2+201600*A*a^3*b^3*x^3+36706*B*a^6*m^2*x+192288*B*a^5*b*m*
x^2+151200*B*a^4*b^2*x^3+48860*A*a^6*m^2+268272*A*a^5*b*m*x+201600*A*a^4*b^
2*x^2+44712*B*a^6*m*x+80640*B*a^5*b*x^2+69264*A*a^6*m+120960*A*a^5*b*x+2016
0*B*a^6*x+40320*A*a^6)/(m+8)/(m+7)/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.48, size = 243, normalized size = 1.36

$$\frac{Bb^6x^{m+8}}{m+8}+\frac{6\,Bab^5x^{m+7}}{m+7}+\frac{Ab^6x^{m+7}}{m+7}+\frac{15\,Ba^2b^4x^{m+6}}{m+6}+\frac{6\,Aab^5x^{m+6}}{m+6}+\frac{20\,Ba^3b^3x^{m+5}}{m+5}+\frac{15\,Aa^2b^4x^{m+5}}{m+5}+\frac{15\,Ba^4b^2x^{m+4}}{m+4}+\frac{20\,Aa^3b^3x^{m+4}}{m+4}+\frac{6\,Ba^5bx^{m+3}}{m+3}+\frac{15\,Aa^4b^2x^{m+3}}{m+3}+\frac{Ba^6x^{m+2}}{m+2}+\frac{6\,Aa^5bx^{m+2}}{m+2}+\frac{Aa^6x^{m+1}}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] B*b^6*x^(m + 8)/(m + 8) + 6*B*a*b^5*x^(m + 7)/(m + 7) + A*b^6*x^(m + 7)/(m
+ 7) + 15*B*a^2*b^4*x^(m + 6)/(m + 6) + 6*A*a*b^5*x^(m + 6)/(m + 6) + 20*B*
a^3*b^3*x^(m + 5)/(m + 5) + 15*A*a^2*b^4*x^(m + 5)/(m + 5) + 15*B*a^4*b^2*x
^(m + 4)/(m + 4) + 20*A*a^3*b^3*x^(m + 4)/(m + 4) + 6*B*a^5*b*x^(m + 3)/(m
+ 3) + 15*A*a^4*b^2*x^(m + 3)/(m + 3) + B*a^6*x^(m + 2)/(m + 2) + 6*A*a^5*b
*x^(m + 2)/(m + 2) + A*a^6*x^(m + 1)/(m + 1)
```

mupad [B] time = 1.77, size = 729, normalized size = 4.07

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (A*a^6*x*x^m*(69264*m + 48860*m^2 + 18424*m^3 + 4025*m^4 + 511*m^5 + 35*m^6
 + m^7 + 40320))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
+ 546*m^6 + 36*m^7 + m^8 + 40320) + (B*b^6*x^m*x^8*(13068*m + 13132*m^2 + 6
769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2
 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (a^
5*x^m*x^2*(6*A*b + B*a)*(44712*m + 36706*m^2 + 15289*m^3 + 3580*m^4 + 478*m
^5 + 34*m^6 + m^7 + 20160))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
+ 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (b^5*x^m*x^7*(A*b + 6*B*a)*(
14832*m + 14756*m^2 + 7504*m^3 + 2135*m^4 + 343*m^5 + 29*m^6 + m^7 + 5760))
/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m
^7 + m^8 + 40320) + (3*a*b^4*x^m*x^6*(2*A*b + 5*B*a)*(17144*m + 16830*m^2 +
 8409*m^3 + 2340*m^4 + 366*m^5 + 30*m^6 + m^7 + 6720))/(109584*m + 118124*m
^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (
3*a^4*b*x^m*x^3*(5*A*b + 2*B*a)*(32048*m + 28692*m^2 + 12864*m^3 + 3195*m^4
 + 447*m^5 + 33*m^6 + m^7 + 13440))/(109584*m + 118124*m^2 + 67284*m^3 + 22
449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (5*a^2*b^3*x^m*x^5*(
3*A*b + 4*B*a)*(20304*m + 19564*m^2 + 9544*m^3 + 2581*m^4 + 391*m^5 + 31*m^
6 + m^7 + 8064))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
+ 546*m^6 + 36*m^7 + m^8 + 40320) + (5*a^3*b^2*x^m*x^4*(4*A*b + 3*B*a)*(248
76*m + 23312*m^2 + 10993*m^3 + 2864*m^4 + 418*m^5 + 32*m^6 + m^7 + 10080))/
(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^
7 + m^8 + 40320)
```

sympy [A] time = 5.08, size = 7745, normalized size = 43.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((-A*a**6/(7*x**7) - A*a**5*b/x**6 - 3*A*a**4*b**2/x**5 - 5*A*a**3
*b**3/x**4 - 5*A*a**2*b**4/x**3 - 3*A*a*b**5/x**2 - A*b**6/x - B*a**6/(6*x*
*6) - 6*B*a**5*b/(5*x**5) - 15*B*a**4*b**2/(4*x**4) - 20*B*a**3*b**3/(3*x**
3) - 15*B*a**2*b**4/(2*x**2) - 6*B*a*b**5/x + B*b**6*log(x), Eq(m, -8)), (-
A*a**6/(6*x**6) - 6*A*a**5*b/(5*x**5) - 15*A*a**4*b**2/(4*x**4) - 20*A*a**3
*b**3/(3*x**3) - 15*A*a**2*b**4/(2*x**2) - 6*A*a*b**5/x + A*b**6*log(x) - B
*a**6/(5*x**5) - 3*B*a**5*b/(2*x**4) - 5*B*a**4*b**2/x**3 - 10*B*a**3*b**3/
x**2 - 15*B*a**2*b**4/x + 6*B*a*b**5*log(x) + B*b**6*x, Eq(m, -7)), (-A*a**
6/(5*x**5) - 3*A*a**5*b/(2*x**4) - 5*A*a**4*b**2/x**3 - 10*A*a**3*b**3/x**2
 - 15*A*a**2*b**4/x + 6*A*a*b**5*log(x) + A*b**6*x - B*a**6/(4*x**4) - 2*B*
a**5*b/x**3 - 15*B*a**4*b**2/(2*x**2) - 20*B*a**3*b**3/x + 15*B*a**2*b**4*l
og(x) + 6*B*a*b**5*x + B*b**6*x**2/2, Eq(m, -6)), (-A*a**6/(4*x**4) - 2*A*a
**5*b/x**3 - 15*A*a**4*b**2/(2*x**2) - 20*A*a**3*b**3/x + 15*A*a**2*b**4*lo
g(x) + 6*A*a*b**5*x + A*b**6*x**2/2 - B*a**6/(3*x**3) - 3*B*a**5*b/x**2 - 1
5*B*a**4*b**2/x + 20*B*a**3*b**3*log(x) + 15*B*a**2*b**4*x + 3*B*a*b**5*x**
2 + B*b**6*x**3/3, Eq(m, -5)), (-A*a**6/(3*x**3) - 3*A*a**5*b/x**2 - 15*A*a
**4*b**2/x + 20*A*a**3*b**3*log(x) + 15*A*a**2*b**4*x + 3*A*a*b**5*x**2 + A
*b**6*x**3/3 - B*a**6/(2*x**2) - 6*B*a**5*b/x + 15*B*a**4*b**2*log(x) + 20*
B*a**3*b**3*x + 15*B*a**2*b**4*x**2/2 + 2*B*a*b**5*x**3 + B*b**6*x**4/4, Eq
(m, -4)), (-A*a**6/(2*x**2) - 6*A*a**5*b/x + 15*A*a**4*b**2*log(x) + 20*A*a
**3*b**3*x + 15*A*a**2*b**4*x**2/2 + 2*A*a*b**5*x**3 + A*b**6*x**4/4 - B*a*
*6/x + 6*B*a**5*b*log(x) + 15*B*a**4*b**2*x + 10*B*a**3*b**3*x**2 + 5*B*a**
2*b**4*x**3 + 3*B*a*b**5*x**4/2 + B*b**6*x**5/5, Eq(m, -3)), (-A*a**6/x + 6
*A*a**5*b*log(x) + 15*A*a**4*b**2*x + 10*A*a**3*b**3*x**2 + 5*A*a**2*b**4*x
**3 + 3*A*a*b**5*x**4/2 + A*b**6*x**5/5 + B*a**6*log(x) + 6*B*a**5*b*x + 15
*B*a**4*b**2*x**2/2 + 20*B*a**3*b**3*x**3/3 + 15*B*a**2*b**4*x**4/4 + 6*B*a
*b**5*x**5/5 + B*b**6*x**6/6, Eq(m, -2)), (A*a**6*log(x) + 6*A*a**5*b*x + 1
5*A*a**4*b**2*x**2/2 + 20*A*a**3*b**3*x**3/3 + 15*A*a**2*b**4*x**4/4 + 6*A*
a*b**5*x**5/5 + A*b**6*x**6/6 + B*a**6*x + 3*B*a**5*b*x**2 + 5*B*a**4*b**2*
x**3 + 5*B*a**3*b**3*x**4 + 3*B*a**2*b**4*x**5 + B*a*b**5*x**6 + B*b**6*x**
7/7, Eq(m, -1)), (A*a**6*m**7*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 35*A*a**6*m*
*6*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 511*A*a**6*m**5*x*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 4025*A*a**6*m**4*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 18424*A*a**6*m*
*3*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 48860*A*a**6*m**2*x*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 69264*A*a**6*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**6*x*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 6*A*a**5*b*m**7*x**2*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 204*A*a**5*b*m**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2868*A*a**5*b
*m**5*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 21480*A*a**5*b*m**4*x**2*x**m/(m*
*8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
 + 109584*m + 40320) + 91734*A*a**5*b*m**3*x**2*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 220236*A*a**5*b*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 268272*A*a**5*
```

```
b*m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 120960*A*a**5*b*x**2*x**m/(m**8 + 3
6*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 15*A*a**4*b**2*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 49
5*A*a**4*b**2*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449
*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6705*A*a**4*b**2*m**
5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 47925*A*a**4*b**2*m**4*x**3*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 192960*A*a**4*b**2*m**3*x**3*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 430380*A*a**4*b**2*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 480720*A
*a**4*b**2*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 201600*A*a**4*b**2*x**3*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 20*A*a**3*b**3*m**7*x**4*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 640*A*a**3*b**3*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 8360*A*a
**3*b**3*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 57280*A*a**3*b**3*m**4*x*
*4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 219860*A*a**3*b**3*m**3*x**4*x**m/(m**8 +
 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1
09584*m + 40320) + 466240*A*a**3*b**3*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 497520*A*a**3*b**3*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 201600*A*a**3*
b**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 15*A*a**2*b**4*m**7*x**5*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 465*A*a**2*b**4*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 5865*A*a**2*b**4*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38715*A*a**2*
b**4*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 143160*A*a**2*b**4*m**3*x**5*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 293460*A*a**2*b**4*m**2*x**5*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 304560*A*a**2*b**4*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 12
0960*A*a**2*b**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m
**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6*A*a*b**5*m**7*x**6*x
**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 180*A*a*b**5*m**6*x**6*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 2196*A*a*b**5*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14040*A*a*b
**5*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 50454*A*a*b**5*m**3*x**6*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m
**2 + 109584*m + 40320) + 100980*A*a*b**5*m**2*x**6*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 102864*A*a*b**5*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a*b**
5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
```

3 + 118124*m**2 + 109584*m + 40320) + A*b**6*m**7*x**7*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 29*A*b**6*m**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 343*A*b**6*m*
*5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 2135*A*b**6*m**4*x**7*x**m/(m**8 + 3
6*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 7504*A*b**6*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14756
*A*b**6*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14832*A*b**6*m*x**7*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 5760*A*b**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + B*
a**6*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 34*B*a**6*m**6*x**2*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 478*B*a**6*m**5*x**2*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3
580*B*a**6*m**4*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m*
*4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 15289*B*a**6*m**3*x**2*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 36706*B*a**6*m**2*x**2*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 44712*B*a**6*m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 20160*B*a**6*x
2*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
 118124*m**2 + 109584*m + 40320) + 6*B*a**5*b*m**7*x**3*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 198*B*a**5*b*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
5 + 22449*m4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2682*B*a*
*5*b*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 19170*B*a**5*b*m**4*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*
m**2 + 109584*m + 40320) + 77184*B*a**5*b*m**3*x**3*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 172152*B*a**5*b*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 192288*B*a
5*b*m*x3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 80640*B*a**5*b*x**3*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
109584*m + 40320) + 15*B*a**4*b**2*m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 480*B*a**4*b**2*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22
449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6270*B*a**4*b**2*
m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 42960*B*a**4*b**2*m**4*x**4*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 164895*B*a**4*b**2*m**3*x**4*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 349680*B*a**4*b**2*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 37314
0*B*a**4*b**2*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m*
*4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 151200*B*a**4*b**2*x**4
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 20*B*a**3*b**3*m**7*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 620*B*a**3*b**3*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7820*

```
B*a**3*b**3*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m
**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 51620*B*a**3*b**3*m**4
*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
 + 118124*m**2 + 109584*m + 40320) + 190880*B*a**3*b**3*m**3*x**5*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 391280*B*a**3*b**3*m**2*x**5*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 406080*B*a**3*b**3*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 161280*B*a*
*3*b**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 15*B*a**2*b**4*m**7*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 450*B*a**2*b**4*m**6*x**6*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 5490*B*a**2*b**4*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 35100*B*a*
*2*b**4*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 126135*B*a**2*b**4*m**3*x*
*6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 252450*B*a**2*b**4*m**2*x**6*x**m/(m**8 +
 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1
09584*m + 40320) + 257160*B*a**2*b**4*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 100800*B*a**2*b**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6*B*a*b**5*m**7*x**
7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1
18124*m**2 + 109584*m + 40320) + 174*B*a*b**5*m**6*x**7*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 2058*B*a*b**5*m**5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 12810*B*
a*b**5*m**4*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 45024*B*a*b**5*m**3*x**7*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 88536*B*a*b**5*m**2*x**7*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 88992*B*a*b**5*m*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 34560*B*a*b*
*5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + B*b**6*m**7*x**8*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 28*B*b**6*m**6*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 322*B*b**6*m
**5*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 1960*B*b**6*m**4*x**8*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10
9584*m + 40320) + 6769*B*b**6*m**3*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4
536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1313
2*B*b**6*m**2*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13068*B*b**6*m*x**8*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m
**2 + 109584*m + 40320) + 5040*B*b**6*x**8*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320), Tr
ue))
```

3.764 $\int x^m (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=125

$$\frac{a^4Ax^{m+1}}{m+1}+\frac{a^3x^{m+2}(aB+4Ab)}{m+2}+\frac{2a^2bx^{m+3}(2aB+3Ab)}{m+3}+\frac{b^3x^{m+5}(4aB+Ab)}{m+5}+\frac{2ab^2x^{m+4}(3aB+2Ab)}{m+4}+\frac{b^4Bx^{m+6}}{m+6}$$

Rubi [A] time = 0.07, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{a^3x^{m+2}(aB+4Ab)}{m+2}+\frac{2a^2bx^{m+3}(2aB+3Ab)}{m+3}+\frac{a^4Ax^{m+1}}{m+1}+\frac{2ab^2x^{m+4}(3aB+2Ab)}{m+4}+\frac{b^3x^{m+5}(4aB+Ab)}{m+5}+\frac{b^4Bx^{m+6}}{m+6}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^(1 + m))/(1 + m) + (a^3*(4*A*b + a*B)*x^(2 + m))/(2 + m) + (2*a^2*
b*(3*A*b + 2*a*B)*x^(3 + m))/(3 + m) + (2*a*b^2*(2*A*b + 3*a*B)*x^(4 + m))/
(4 + m) + (b^3*(A*b + 4*a*B)*x^(5 + m))/(5 + m) + (b^4*B*x^(6 + m))/(6 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^m(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^m+a^3(4Ab+aB)x^{1+m}+2a^2b(3Ab+2aB)x^{2+m}+2ab^2(2Ab+\right.\\ &= \frac{a^4Ax^{1+m}}{1+m}+\frac{a^3(4Ab+aB)x^{2+m}}{2+m}+\frac{2a^2b(3Ab+2aB)x^{3+m}}{3+m}+\frac{2ab^2(2Ab+}{4+}\end{aligned}$$

Mathematica [A] time = 0.13, size = 103, normalized size = 0.82

$$\frac{x^{m+1}\left(\left(\frac{a^4}{m+1}+\frac{4a^3bx}{m+2}+\frac{6a^2b^2x^2}{m+3}+\frac{4ab^3x^3}{m+4}+\frac{b^4x^4}{m+5}\right)(Ab(m+6)-aB(m+1))+B(a+bx)^5\right)}{b(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(1 + m)*(B*(a + b*x)^5 + (-(a*B*(1 + m)) + A*b*(6 + m))*(a^4/(1 + m) + (
4*a^3*b*x)/(2 + m) + (6*a^2*b^2*x^2)/(3 + m) + (4*a*b^3*x^3)/(4 + m) + (b^4
*x^4)/(5 + m))))/(b*(6 + m))
```

IntegrateAlgebraic [F] time = 0.42, size = 0, normalized size = 0.00

$$\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.45, size = 607, normalized size = 4.86

$$\frac{\left(\left(Bb^4m^5+15\,Bb^4m^4+85\,Bb^4m^3+225\,Bb^4m^2+274\,Bb^4m+120\,Bb^4\right)x^6+\left(\left(4\,Bab^3+Ab^4\right)m^5+576\,Bab^3+144\,Ab^4+16\left(4\,Bab^3+Ab^4\right)m^4+95\left(4\,Bab^3+Ab^4\right)m^3+260\left(4\,Bab^3+Ab^4\right)m^2+324\left(4\,Bab^3+Ab^4\right)m\right)x^5+2\left(\left(3\,Ba^2b^2+2\,Aab^3\right)m^5+540\,Ba^2b^2+360\,Aab^3+17\left(3\,Ba^2b^2+2\,Aab^3\right)m^4+107\left(3\,Ba^2b^2+2\,Aab^3\right)m^3+307\left(3\,Ba^2b^2+2\,Aab^3\right)m^2+396\left(3\,Ba^2b^2+2\,Aab^3\right)m\right)x^4+2\left(\left(2\,Ba^3b+3\,Aa^2b^2\right)m^5+480\,Ba^3b+720\,Aa^2b^2+18\left(2\,Ba^3b+3\,Aa^2b^2\right)m^4+121\left(2\,Ba^3b+3\,Aa^2b^2\right)m^3+372\left(2\,Ba^3b+3\,Aa^2b^2\right)m^2+508\left(2\,Ba^3b+3\,Aa^2b^2\right)m\right)x^3+\left(\left(Ba^4+4\,Aa^3b\right)m^5+360\,Ba^4+1440\,Aa^3b+19\left(Ba^4+4\,Aa^3b\right)m^4+137\left(Ba^4+4\,Aa^3b\right)m^3+461\left(Ba^4+4\,Aa^3b\right)m^2+702\left(Ba^4+4\,Aa^3b\right)m\right)x^2+\left(Aa^4m^5+20\,Aa^4m^4+155\,Aa^4m^3+580\,Aa^4m^2+1044\,Aa^4m+720\,Aa^4\right)x\right)x^m}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] ((B*b^4*m^5 + 15*B*b^4*m^4 + 85*B*b^4*m^3 + 225*B*b^4*m^2 + 274*B*b^4*m + 1
20*B*b^4)*x^6 + ((4*B*a*b^3 + A*b^4)*m^5 + 576*B*a*b^3 + 144*A*b^4 + 16*(4*
B*a*b^3 + A*b^4)*m^4 + 95*(4*B*a*b^3 + A*b^4)*m^3 + 260*(4*B*a*b^3 + A*b^4)
*m^2 + 324*(4*B*a*b^3 + A*b^4)*m)*x^5 + 2*((3*B*a^2*b^2 + 2*A*a*b^3)*m^5 +
540*B*a^2*b^2 + 360*A*a*b^3 + 17*(3*B*a^2*b^2 + 2*A*a*b^3)*m^4 + 107*(3*B*a
^2*b^2 + 2*A*a*b^3)*m^3 + 307*(3*B*a^2*b^2 + 2*A*a*b^3)*m^2 + 396*(3*B*a^2*
b^2 + 2*A*a*b^3)*m)*x^4 + 2*((2*B*a^3*b + 3*A*a^2*b^2)*m^5 + 480*B*a^3*b +
720*A*a^2*b^2 + 18*(2*B*a^3*b + 3*A*a^2*b^2)*m^4 + 121*(2*B*a^3*b + 3*A*a^2
*b^2)*m^3 + 372*(2*B*a^3*b + 3*A*a^2*b^2)*m^2 + 508*(2*B*a^3*b + 3*A*a^2*b^
2)*m)*x^3 + ((B*a^4 + 4*A*a^3*b)*m^5 + 360*B*a^4 + 1440*A*a^3*b + 19*(B*a^4
 + 4*A*a^3*b)*m^4 + 137*(B*a^4 + 4*A*a^3*b)*m^3 + 461*(B*a^4 + 4*A*a^3*b)*m
^2 + 702*(B*a^4 + 4*A*a^3*b)*m)*x^2 + (A*a^4*m^5 + 20*A*a^4*m^4 + 155*A*a^4
*m^3 + 580*A*a^4*m^2 + 1044*A*a^4*m + 720*A*a^4)*x)*x^m/(m^6 + 21*m^5 + 175
*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)
```

giac [B] time = 0.20, size = 926, normalized size = 7.41

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (B*b^4*m^5*x^6*x^m + 4*B*a*b^3*m^5*x^5*x^m + A*b^4*m^5*x^5*x^m + 15*B*b^4*m
^4*x^6*x^m + 6*B*a^2*b^2*m^5*x^4*x^m + 4*A*a*b^3*m^5*x^4*x^m + 64*B*a*b^3*m
^4*x^5*x^m + 16*A*b^4*m^4*x^5*x^m + 85*B*b^4*m^3*x^6*x^m + 4*B*a^3*b*m^5*x^
3*x^m + 6*A*a^2*b^2*m^5*x^3*x^m + 102*B*a^2*b^2*m^4*x^4*x^m + 68*A*a*b^3*m^
4*x^4*x^m + 380*B*a*b^3*m^3*x^5*x^m + 95*A*b^4*m^3*x^5*x^m + 225*B*b^4*m^2*
x^6*x^m + B*a^4*m^5*x^2*x^m + 4*A*a^3*b*m^5*x^2*x^m + 72*B*a^3*b*m^4*x^3*x^
m + 108*A*a^2*b^2*m^4*x^3*x^m + 642*B*a^2*b^2*m^3*x^4*x^m + 428*A*a*b^3*m^3
*x^4*x^m + 1040*B*a*b^3*m^2*x^5*x^m + 260*A*b^4*m^2*x^5*x^m + 274*B*b^4*m*x
^6*x^m + A*a^4*m^5*x*x^m + 19*B*a^4*m^4*x^2*x^m + 76*A*a^3*b*m^4*x^2*x^m +
484*B*a^3*b*m^3*x^3*x^m + 726*A*a^2*b^2*m^3*x^3*x^m + 1842*B*a^2*b^2*m^2*x^
4*x^m + 1228*A*a*b^3*m^2*x^4*x^m + 1296*B*a*b^3*m*x^5*x^m + 324*A*b^4*m*x^5
*x^m + 120*B*b^4*x^6*x^m + 20*A*a^4*m^4*x*x^m + 137*B*a^4*m^3*x^2*x^m + 548
*A*a^3*b*m^3*x^2*x^m + 1488*B*a^3*b*m^2*x^3*x^m + 2232*A*a^2*b^2*m^2*x^3*x^
m + 2376*B*a^2*b^2*m*x^4*x^m + 1584*A*a*b^3*m*x^4*x^m + 576*B*a*b^3*x^5*x^m
 + 144*A*b^4*x^5*x^m + 155*A*a^4*m^3*x*x^m + 461*B*a^4*m^2*x^2*x^m + 1844*A
*a^3*b*m^2*x^2*x^m + 2032*B*a^3*b*m*x^3*x^m + 3048*A*a^2*b^2*m*x^3*x^m + 10
80*B*a^2*b^2*x^4*x^m + 720*A*a*b^3*x^4*x^m + 580*A*a^4*m^2*x*x^m + 702*B*a^
4*m*x^2*x^m + 2808*A*a^3*b*m*x^2*x^m + 960*B*a^3*b*x^3*x^m + 1440*A*a^2*b^2
*x^3*x^m + 1044*A*a^4*m*x*x^m + 360*B*a^4*x^2*x^m + 1440*A*a^3*b*x^2*x^m +
```

```
720*A*a^4*x*x^m)/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 72
0)
```

maple [B] time = 0.05, size = 722, normalized size = 5.78

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] x^(m+1)*(B*b^4*m^5*x^5+A*b^4*m^5*x^4+4*B*a*b^3*m^5*x^4+15*B*b^4*m^4*x^5+4*A
*a*b^3*m^5*x^3+16*A*b^4*m^4*x^4+6*B*a^2*b^2*m^5*x^3+64*B*a*b^3*m^4*x^4+85*B
*b^4*m^3*x^5+6*A*a^2*b^2*m^5*x^2+68*A*a*b^3*m^4*x^3+95*A*b^4*m^3*x^4+4*B*a^
3*b*m^5*x^2+102*B*a^2*b^2*m^4*x^3+380*B*a*b^3*m^3*x^4+225*B*b^4*m^2*x^5+4*A
*a^3*b*m^5*x+108*A*a^2*b^2*m^4*x^2+428*A*a*b^3*m^3*x^3+260*A*b^4*m^2*x^4+B*
a^4*m^5*x+72*B*a^3*b*m^4*x^2+642*B*a^2*b^2*m^3*x^3+1040*B*a*b^3*m^2*x^4+274
*B*b^4*m*x^5+A*a^4*m^5+76*A*a^3*b*m^4*x+726*A*a^2*b^2*m^3*x^2+1228*A*a*b^3*
m^2*x^3+324*A*b^4*m*x^4+19*B*a^4*m^4*x+484*B*a^3*b*m^3*x^2+1842*B*a^2*b^2*m
^2*x^3+1296*B*a*b^3*m*x^4+120*B*b^4*x^5+20*A*a^4*m^4+548*A*a^3*b*m^3*x+2232
*A*a^2*b^2*m^2*x^2+1584*A*a*b^3*m*x^3+144*A*b^4*x^4+137*B*a^4*m^3*x+1488*B*
a^3*b*m^2*x^2+2376*B*a^2*b^2*m*x^3+576*B*a*b^3*x^4+155*A*a^4*m^3+1844*A*a^3
*b*m^2*x+3048*A*a^2*b^2*m*x^2+720*A*a*b^3*x^3+461*B*a^4*m^2*x+2032*B*a^3*b*
m*x^2+1080*B*a^2*b^2*x^3+580*A*a^4*m^2+2808*A*a^3*b*m*x+1440*A*a^2*b^2*x^2+
702*B*a^4*m*x+960*B*a^3*b*x^2+1044*A*a^4*m+1440*A*a^3*b*x+360*B*a^4*x+720*A
*a^4)/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.61, size = 167, normalized size = 1.34

$$\frac{Bb^4x^{m+6}}{m+6}+\frac{4\,Bab^3x^{m+5}}{m+5}+\frac{Ab^4x^{m+5}}{m+5}+\frac{6\,Ba^2b^2x^{m+4}}{m+4}+\frac{4\,Aab^3x^{m+4}}{m+4}+\frac{4\,Ba^3bx^{m+3}}{m+3}+\frac{6\,Aa^2b^2x^{m+3}}{m+3}+\frac{Ba^4x^{m+2}}{m+2}+\frac{4\,Aa^3bx^{m+2}}{m+2}+\frac{Aa^4x^{m+1}}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] B*b^4*x^(m + 6)/(m + 6) + 4*B*a*b^3*x^(m + 5)/(m + 5) + A*b^4*x^(m + 5)/(m
+ 5) + 6*B*a^2*b^2*x^(m + 4)/(m + 4) + 4*A*a*b^3*x^(m + 4)/(m + 4) + 4*B*a^
3*b*x^(m + 3)/(m + 3) + 6*A*a^2*b^2*x^(m + 3)/(m + 3) + B*a^4*x^(m + 2)/(m
+ 2) + 4*A*a^3*b*x^(m + 2)/(m + 2) + A*a^4*x^(m + 1)/(m + 1)
```

mupad [B] time = 1.48, size = 417, normalized size = 3.34

$$\frac{B\,b^4\,x^m\,x^6\,\left(m^5+15\,m^4+85\,m^3+225\,m^2+274\,m+120\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{a^3\,x^m\,x^2\,\left(4\,A\,b+B\,a\right)\,\left(m^5+19\,m^4+137\,m^3+461\,m^2+702\,m+360\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{b^3\,x^m\,x^5\,\left(A\,b+4\,B\,a\right)\,\left(m^5+16\,m^4+95\,m^3+260\,m^2+324\,m+144\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{A\,a^4\,x\,x^m\,\left(m^5+20\,m^4+155\,m^3+580\,m^2+1044\,m+720\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{2\,a\,b^2\,x^m\,x^4\,\left(2\,A\,b+3\,B\,a\right)\,\left(m^5+17\,m^4+107\,m^3+307\,m^2+396\,m+180\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{2\,a^2\,b\,x^m\,x^3\,\left(3\,A\,b+2\,B\,a\right)\,\left(m^5+18\,m^4+121\,m^3+372\,m^2+508\,m+240\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (B*b^4*x^m*x^6*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (a^3*x^m*x^2*(4*A*b + B
*a)*(702*m + 461*m^2 + 137*m^3 + 19*m^4 + m^5 + 360))/(1764*m + 1624*m^2 +
735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (b^3*x^m*x^5*(A*b + 4*B*a)*(324*m
 + 260*m^2 + 95*m^3 + 16*m^4 + m^5 + 144))/(1764*m + 1624*m^2 + 735*m^3 + 1
75*m^4 + 21*m^5 + m^6 + 720) + (A*a^4*x*x^m*(1044*m + 580*m^2 + 155*m^3 + 2
0*m^4 + m^5 + 720))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 +
 720) + (2*a*b^2*x^m*x^4*(2*A*b + 3*B*a)*(396*m + 307*m^2 + 107*m^3 + 17*m^
4 + m^5 + 180))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720
) + (2*a^2*b*x^m*x^3*(3*A*b + 2*B*a)*(508*m + 372*m^2 + 121*m^3 + 18*m^4 +
m^5 + 240))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)
```

sympy [A] time = 2.54, size = 3417, normalized size = 27.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((-A*a**4/(5*x**5) - A*a**3*b/x**4 - 2*A*a**2*b**2/x**3 - 2*A*a*b*
*3/x**2 - A*b**4/x - B*a**4/(4*x**4) - 4*B*a**3*b/(3*x**3) - 3*B*a**2*b**2/
x**2 - 4*B*a*b**3/x + B*b**4*log(x), Eq(m, -6)), (-A*a**4/(4*x**4) - 4*A*a*
*3*b/(3*x**3) - 3*A*a**2*b**2/x**2 - 4*A*a*b**3/x + A*b**4*log(x) - B*a**4/
(3*x**3) - 2*B*a**3*b/x**2 - 6*B*a**2*b**2/x + 4*B*a*b**3*log(x) + B*b**4*x
, Eq(m, -5)), (-A*a**4/(3*x**3) - 2*A*a**3*b/x**2 - 6*A*a**2*b**2/x + 4*A*a
*b**3*log(x) + A*b**4*x - B*a**4/(2*x**2) - 4*B*a**3*b/x + 6*B*a**2*b**2*lo
g(x) + 4*B*a*b**3*x + B*b**4*x**2/2, Eq(m, -4)), (-A*a**4/(2*x**2) - 4*A*a*
*3*b/x + 6*A*a**2*b**2*log(x) + 4*A*a*b**3*x + A*b**4*x**2/2 - B*a**4/x + 4
*B*a**3*b*log(x) + 6*B*a**2*b**2*x + 2*B*a*b**3*x**2 + B*b**4*x**3/3, Eq(m,
 -3)), (-A*a**4/x + 4*A*a**3*b*log(x) + 6*A*a**2*b**2*x + 2*A*a*b**3*x**2 +
 A*b**4*x**3/3 + B*a**4*log(x) + 4*B*a**3*b*x + 3*B*a**2*b**2*x**2 + 4*B*a*
b**3*x**3/3 + B*b**4*x**4/4, Eq(m, -2)), (A*a**4*log(x) + 4*A*a**3*b*x + 3*
A*a**2*b**2*x**2 + 4*A*a*b**3*x**3/3 + A*b**4*x**4/4 + B*a**4*x + 2*B*a**3*
b*x**2 + 2*B*a**2*b**2*x**3 + B*a*b**3*x**4 + B*b**4*x**5/5, Eq(m, -1)), (A
*a**4*m**5*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*
m + 720) + 20*A*a**4*m**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 16
24*m**2 + 1764*m + 720) + 155*A*a**4*m**3*x*x**m/(m**6 + 21*m**5 + 175*m**4
 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 580*A*a**4*m**2*x*x**m/(m**6 + 21
*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1044*A*a**4*m*x*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 720
*A*a**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + 4*A*a**3*b*m**5*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 76*A*a**3*b*m**4*x**2*x**m/(m**6 + 21*m**5 + 175
*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 548*A*a**3*b*m**3*x**2*x**m/
(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1844*A*
a**3*b*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1
764*m + 720) + 2808*A*a**3*b*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m
**3 + 1624*m**2 + 1764*m + 720) + 1440*A*a**3*b*x**2*x**m/(m**6 + 21*m**5 +
 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 6*A*a**2*b**2*m**5*x**3*
x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 10
8*A*a**2*b**2*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m
**2 + 1764*m + 720) + 726*A*a**2*b**2*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*
m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2232*A*a**2*b**2*m**2*x**3*x*
*m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 3048
*A*a**2*b**2*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2
+ 1764*m + 720) + 1440*A*a**2*b**2*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 7
35*m**3 + 1624*m**2 + 1764*m + 720) + 4*A*a*b**3*m**5*x**4*x**m/(m**6 + 21*
m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 68*A*a*b**3*m**4*x
**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
+ 428*A*a*b**3*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*
m**2 + 1764*m + 720) + 1228*A*a*b**3*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1584*A*a*b**3*m*x**4*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 720*A*a*b**
3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 72
0) + A*b**4*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 16*A*b**4*m**4*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 7
35*m**3 + 1624*m**2 + 1764*m + 720) + 95*A*b**4*m**3*x**5*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 260*A*b**4*m**2*x**
5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
324*A*b**4*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
1764*m + 720) + 144*A*b**4*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
+ 1624*m**2 + 1764*m + 720) + B*a**4*m**5*x**2*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 19*B*a**4*m**4*x**2*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 137*B*a**4*m
**3*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
```

```
720) + 461*B*a**4*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 16
24*m**2 + 1764*m + 720) + 702*B*a**4*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4
 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 360*B*a**4*x**2*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 4*B*a**3*b*m**5*x**
3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
72*B*a**3*b*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 484*B*a**3*b*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*m**4
+ 735*m**3 + 1624*m**2 + 1764*m + 720) + 1488*B*a**3*b*m**2*x**3*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2032*B*a**3*
b*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 960*B*a**3*b*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*
m**2 + 1764*m + 720) + 6*B*a**2*b**2*m**5*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 102*B*a**2*b**2*m**4*x**4*x**m
/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 642*B*
a**2*b**2*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2
+ 1764*m + 720) + 1842*B*a**2*b**2*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2376*B*a**2*b**2*m*x**4*x**m/(m*
*6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1080*B*a**
2*b**2*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
 + 720) + 4*B*a*b**3*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
 1624*m**2 + 1764*m + 720) + 64*B*a*b**3*m**4*x**5*x**m/(m**6 + 21*m**5 + 1
75*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 380*B*a*b**3*m**3*x**5*x**
m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1040*
B*a*b**3*m**2*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
 1764*m + 720) + 1296*B*a*b**3*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735
*m**3 + 1624*m**2 + 1764*m + 720) + 576*B*a*b**3*x**5*x**m/(m**6 + 21*m**5
+ 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + B*b**4*m**5*x**6*x**m/(
m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 15*B*b**
4*m**4*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
 + 720) + 85*B*b**4*m**3*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
1624*m**2 + 1764*m + 720) + 225*B*b**4*m**2*x**6*x**m/(m**6 + 21*m**5 + 175
*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 274*B*b**4*m*x**6*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 120*B*b**4*x
**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720),
 True))
```

3.765 $\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=71

$$\frac{a^2Ax^{m+1}}{m+1}+\frac{ax^{m+2}(aB+2Ab)}{m+2}+\frac{bx^{m+3}(2aB+Ab)}{m+3}+\frac{b^2Bx^{m+4}}{m+4}$$

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 76\}$

$$\frac{a^2Ax^{m+1}}{m+1}+\frac{ax^{m+2}(aB+2Ab)}{m+2}+\frac{bx^{m+3}(2aB+Ab)}{m+3}+\frac{b^2Bx^{m+4}}{m+4}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^(1 + m))/(1 + m) + (a*(2*A*b + a*B)*x^(2 + m))/(2 + m) + (b*(A*b +
 2*a*B)*x^(3 + m))/(3 + m) + (b^2*B*x^(4 + m))/(4 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x^m(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax^m+a(2Ab+aB)x^{1+m}+b(Ab+2aB)x^{2+m}+b^2Bx^{3+m}\right)dx\\ &= \frac{a^2Ax^{1+m}}{1+m}+\frac{a(2Ab+aB)x^{2+m}}{2+m}+\frac{b(Ab+2aB)x^{3+m}}{3+m}+\frac{b^2Bx^{4+m}}{4+m}\end{aligned}$$

Mathematica [A] time = 0.09, size = 71, normalized size = 1.00

$$\frac{x^{m+1}\left(\left(\frac{a^2}{m+1}+\frac{2abx}{m+2}+\frac{b^2x^2}{m+3}\right)(Ab(m+4)-aB(m+1))+B(a+bx)^3\right)}{b(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^(1 + m)*(B*(a + b*x)^3 + (-(a*B*(1 + m)) + A*b*(4 + m))*(a^2/(1 + m) + (
2*a*b*x)/(2 + m) + (b^2*x^2)/(3 + m))))/(b*(4 + m))
```

IntegrateAlgebraic [F] time = 0.09, size = 0, normalized size = 0.00

$$\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.43, size = 215, normalized size = 3.03

$$\frac{\left(\left(Bb^2m^3+6\,Bb^2m^2+11\,Bb^2m+6\,Bb^2\right)x^4+\left(\left(2\,Bab+Ab^2\right)m^3+16\,Bab+8\,Ab^2+7\left(2\,Bab+Ab^2\right)m^2+14\left(2\,Bab+Ab^2\right)m\right)x^3+\left(\left(Ba^2+2\,Aab\right)m^3+12\,Ba^2+24\,Aab+8\left(Ba^2+2\,Aab\right)m^2+19\left(Ba^2+2\,Aab\right)m\right)x^2+\left(Aa^2m^3+9\,Aa^2m^2+26\,Aa^2m+24\,Aa^2\right)x\right)x^m}{m^4+10\,m^3+35\,m^2+50\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] ((B*b^2*m^3 + 6*B*b^2*m^2 + 11*B*b^2*m + 6*B*b^2)*x^4 + ((2*B*a*b + A*b^2)*
m^3 + 16*B*a*b + 8*A*b^2 + 7*(2*B*a*b + A*b^2)*m^2 + 14*(2*B*a*b + A*b^2)*m
)*x^3 + ((B*a^2 + 2*A*a*b)*m^3 + 12*B*a^2 + 24*A*a*b + 8*(B*a^2 + 2*A*a*b)*
m^2 + 19*(B*a^2 + 2*A*a*b)*m)*x^2 + (A*a^2*m^3 + 9*A*a^2*m^2 + 26*A*a^2*m +
 24*A*a^2)*x)*x^m/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

giac [B] time = 0.18, size = 332, normalized size = 4.68

$$\frac{Bb^2m^3x^4x^m+2\,Babm^3x^3x^m+Ab^2m^3x^3x^m+6\,Bb^2m^2x^4x^m+Ba^2m^3x^2x^m+2\,Aabm^3x^2x^m+14\,Babm^2x^3x^m+7\,Ab^2m^2x^3x^m+11\,Bb^2mx^4x^m+Aa^2m^3xx^m+8\,Ba^2m^2x^2x^m+16\,Aabm^2x^2x^m+28\,Babmx^3x^m+14\,Ab^2mx^3x^m+6\,Bb^2x^4x^m+9\,Aa^2m^2xx^m+19\,Ba^2mx^2x^m+38\,Aabmx^2x^m+16\,Babx^3x^m+8\,Ab^2x^3x^m+26\,Aa^2mxx^m+12\,Ba^2x^2x^m+24\,Aabx^2x^m+24\,Aa^2xx^m}{m^4+10\,m^3+35\,m^2+50\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^2*m^3*x^4*x^m + 2*B*a*b*m^3*x^3*x^m + A*b^2*m^3*x^3*x^m + 6*B*b^2*m^2*
x^4*x^m + B*a^2*m^3*x^2*x^m + 2*A*a*b*m^3*x^2*x^m + 14*B*a*b*m^2*x^3*x^m +
7*A*b^2*m^2*x^3*x^m + 11*B*b^2*m*x^4*x^m + A*a^2*m^3*x*x^m + 8*B*a^2*m^2*x^
2*x^m + 16*A*a*b*m^2*x^2*x^m + 28*B*a*b*m*x^3*x^m + 14*A*b^2*m*x^3*x^m + 6*
B*b^2*x^4*x^m + 9*A*a^2*m^2*x*x^m + 19*B*a^2*m*x^2*x^m + 38*A*a*b*m*x^2*x^m
 + 16*B*a*b*x^3*x^m + 8*A*b^2*x^3*x^m + 26*A*a^2*m*x*x^m + 12*B*a^2*x^2*x^m
 + 24*A*a*b*x^2*x^m + 24*A*a^2*x*x^m)/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

maple [B] time = 0.06, size = 246, normalized size = 3.46

$$\frac{\left(B\,b^2m^3x^3+A\,b^2m^3x^2+2Bab\,m^3x^2+6B\,b^2m^2x^3+2Aab\,m^3x+7A\,b^2m^2x^2+B\,a^2m^3x+14Bab\,m^2x^2+11B\,b^2m\,x^3+A\,a^2m^3+16Aab\,m^2x+14A\,b^2m\,x^2+8B\,a^2m^2x+28Babm\,x^2+6B\,b^2x^3+9A\,a^2m^2+38Aabmx+8A\,b^2x^2+19B\,a^2mx+16Bab\,x^2+26A\,a^2m+24Aabx+12B\,a^2x+24A\,a^2\right)x^{m+1}}{(m+4)\,(m+3)\,(m+2)\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] x^(m+1)*(B*b^2*m^3*x^3+A*b^2*m^3*x^2+2*B*a*b*m^3*x^2+6*B*b^2*m^2*x^3+2*A*a*
b*m^3*x+7*A*b^2*m^2*x^2+B*a^2*m^3*x+14*B*a*b*m^2*x^2+11*B*b^2*m*x^3+A*a^2*m
^3+16*A*a*b*m^2*x+14*A*b^2*m*x^2+8*B*a^2*m^2*x+28*B*a*b*m*x^2+6*B*b^2*x^3+9
*A*a^2*m^2+38*A*a*b*m*x+8*A*b^2*x^2+19*B*a^2*m*x+16*B*a*b*x^2+26*A*a^2*m+24
*A*a*b*x+12*B*a^2*x+24*A*a^2)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.46, size = 91, normalized size = 1.28

$$\frac{Bb^2x^{m+4}}{m+4}+\frac{2\,Babx^{m+3}}{m+3}+\frac{Ab^2x^{m+3}}{m+3}+\frac{Ba^2x^{m+2}}{m+2}+\frac{2\,Aabx^{m+2}}{m+2}+\frac{Aa^2x^{m+1}}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] B*b^2*x^(m + 4)/(m + 4) + 2*B*a*b*x^(m + 3)/(m + 3) + A*b^2*x^(m + 3)/(m +
3) + B*a^2*x^(m + 2)/(m + 2) + 2*A*a*b*x^(m + 2)/(m + 2) + A*a^2*x^(m + 1)/
(m + 1)
```

mupad [B] time = 1.29, size = 177, normalized size = 2.49

$$x^m\left(\frac{B\,b^2\,x^4\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{A\,a^2\,x\,\left(m^3+9\,m^2+26\,m+24\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{a\,x^2\,\left(2\,A\,b+B\,a\right)\,\left(m^3+8\,m^2+19\,m+12\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{b\,x^3\,\left(A\,b+2\,B\,a\right)\,\left(m^3+7\,m^2+14\,m+8\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^m*((B*b^2*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 2
4) + (A*a^2*x*(26*m + 9*m^2 + m^3 + 24))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24
) + (a*x^2*(2*A*b + B*a)*(19*m + 8*m^2 + m^3 + 12))/(50*m + 35*m^2 + 10*m^3
 + m^4 + 24) + (b*x^3*(A*b + 2*B*a)*(14*m + 7*m^2 + m^3 + 8))/(50*m + 35*m^
2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 1.13, size = 1020, normalized size = 14.37

$$\begin{cases} -\frac{Aa^2}{3x^3}-\frac{Aab}{x^2}-\frac{Ab^2}{x}-\frac{Ba^2}{2x^2}-\frac{2Bab}{x}+Bb^2\log(x) & \text{for}\: m=-4 \\ -\frac{Aa^2}{2x^2}-\frac{2Aab}{x}+Ab^2\log(x)-\frac{Ba^2}{x}+2Bab\log(x)+Bb^2x & \text{for}\: m=-3 \\ -\frac{Aa^2}{x}+2Aab\log(x)+Ab^2x+Ba^2\log(x)+2Babx+\frac{Bb^2x^2}{2} & \text{for}\: m=-2 \\ Aa^2\log(x)+2Aabx+\frac{Ab^2x^2}{2}+Ba^2x+Babx^2+\frac{Bb^2x^3}{3} & \text{for}\: m=-1 \\ \frac{Aa^2m^3xx^m}{m^4+10m^3+35m^2+50m+24}+\frac{9Aa^2m^2xx^m}{m^4+10m^3+35m^2+50m+24}+\frac{26Aa^2mxx^m}{m^4+10m^3+35m^2+50m+24}+\frac{24Aa^2xx^m}{m^4+10m^3+35m^2+50m+24}+\frac{2Aabm^3x^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{16Aabm^2x^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{38Aabmx^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{24Aabx^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{Ab^2m^3x^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{7Ab^2m^2x^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{14Ab^2mx^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{8Ab^2x^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{Ba^2m^3x^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{8Ba^2m^2x^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{19Ba^2mx^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{12Ba^2x^2x^m}{m^4+10m^3+35m^2+50m+24}+\frac{2Babm^3x^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{14Babm^2x^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{28Babmx^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{16Babx^3x^m}{m^4+10m^3+35m^2+50m+24}+\frac{Bb^2m^3x^4x^m}{m^4+10m^3+35m^2+50m+24}+\frac{6Bb^2m^2x^4x^m}{m^4+10m^3+35m^2+50m+24}+\frac{11Bb^2mx^4x^m}{m^4+10m^3+35m^2+50m+24}+\frac{6Bb^2x^4x^m}{m^4+10m^3+35m^2+50m+24} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((-A*a**2/(3*x**3) - A*a*b/x**2 - A*b**2/x - B*a**2/(2*x**2) - 2*B
*a*b/x + B*b**2*log(x), Eq(m, -4)), (-A*a**2/(2*x**2) - 2*A*a*b/x + A*b**2*
log(x) - B*a**2/x + 2*B*a*b*log(x) + B*b**2*x, Eq(m, -3)), (-A*a**2/x + 2*A
*a*b*log(x) + A*b**2*x + B*a**2*log(x) + 2*B*a*b*x + B*b**2*x**2/2, Eq(m, -
2)), (A*a**2*log(x) + 2*A*a*b*x + A*b**2*x**2/2 + B*a**2*x + B*a*b*x**2 + B
*b**2*x**3/3, Eq(m, -1)), (A*a**2*m**3*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 5
0*m + 24) + 9*A*a**2*m**2*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 2
6*A*a**2*m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 24*A*a**2*x*x**m
/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 2*A*a*b*m**3*x**2*x**m/(m**4 + 10
*m**3 + 35*m**2 + 50*m + 24) + 16*A*a*b*m**2*x**2*x**m/(m**4 + 10*m**3 + 35
*m**2 + 50*m + 24) + 38*A*a*b*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m
+ 24) + 24*A*a*b*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + A*b**2*
m**3*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 7*A*b**2*m**2*x**3*
x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 14*A*b**2*m*x**3*x**m/(m**4 +
 10*m**3 + 35*m**2 + 50*m + 24) + 8*A*b**2*x**3*x**m/(m**4 + 10*m**3 + 35*m
**2 + 50*m + 24) + B*a**2*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
 24) + 8*B*a**2*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 19*
B*a**2*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 12*B*a**2*x**2*
x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 2*B*a*b*m**3*x**3*x**m/(m**4
+ 10*m**3 + 35*m**2 + 50*m + 24) + 14*B*a*b*m**2*x**3*x**m/(m**4 + 10*m**3
+ 35*m**2 + 50*m + 24) + 28*B*a*b*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 5
0*m + 24) + 16*B*a*b*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B*b
**2*m**3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*b**2*m**2*x
**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*B*b**2*m*x**4*x**m/(m*
*4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*b**2*x**4*x**m/(m**4 + 10*m**3 +
35*m**2 + 50*m + 24), True))
```

3.766 $\int x^m(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=143

$$\frac{x^{m+1}}{m+1}+\frac{11x^{m+2}}{m+2}+\frac{55x^{m+3}}{m+3}+\frac{165x^{m+4}}{m+4}+\frac{330x^{m+5}}{m+5}+\frac{462x^{m+6}}{m+6}+\frac{462x^{m+7}}{m+7}+\frac{330x^{m+8}}{m+8}+\frac{165x^{m+9}}{m+9}+\frac{55x^{m+10}}{m+10}+\frac{11x^{m+11}}{m+11}+\cdots$$

Rubi [A] time = 0.04, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^{m+1}}{m+1}+\frac{11x^{m+2}}{m+2}+\frac{55x^{m+3}}{m+3}+\frac{165x^{m+4}}{m+4}+\frac{330x^{m+5}}{m+5}+\frac{462x^{m+6}}{m+6}+\frac{462x^{m+7}}{m+7}+\frac{330x^{m+8}}{m+8}+\frac{165x^{m+9}}{m+9}+\frac{55x^{m+10}}{m+10}+\frac{11x^{m+11}}{m+11}+\frac{x^{m+12}}{m+12}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^(1 + m)/(1 + m) + (11*x^(2 + m))/(2 + m) + (55*x^(3 + m))/(3 + m) + (165*
x^(4 + m))/(4 + m) + (330*x^(5 + m))/(5 + m) + (462*x^(6 + m))/(6 + m) + (4
62*x^(7 + m))/(7 + m) + (330*x^(8 + m))/(8 + m) + (165*x^(9 + m))/(9 + m) +
 (55*x^(10 + m))/(10 + m) + (11*x^(11 + m))/(11 + m) + x^(12 + m)/(12 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^m(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^m(1+x)^{11}\,dx\\ &= \int \left(x^m+11x^{1+m}+55x^{2+m}+165x^{3+m}+330x^{4+m}+462x^{5+m}+462x^{6+m}+330\cdots\right.\\ &= \frac{x^{1+m}}{1+m}+\frac{11x^{2+m}}{2+m}+\frac{55x^{3+m}}{3+m}+\frac{165x^{4+m}}{4+m}+\frac{330x^{5+m}}{5+m}+\frac{462x^{6+m}}{6+m}+\frac{462x^{7+m}}{7+m}+\cdots\end{aligned}$$

Mathematica [A] time = 0.05, size = 119, normalized size = 0.83

$$x^{m+1}\left(\frac{x^{11}}{m+12}+\frac{11x^{10}}{m+11}+\frac{55x^9}{m+10}+\frac{165x^8}{m+9}+\frac{330x^7}{m+8}+\frac{462x^6}{m+7}+\frac{462x^5}{m+6}+\frac{330x^4}{m+5}+\frac{165x^3}{m+4}+\frac{55x^2}{m+3}+\frac{11x}{m+2}+\frac{1}{m+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^(1 + m)*((1 + m)^(-1) + (11*x)/(2 + m) + (55*x^2)/(3 + m) + (165*x^3)/(4
+ m) + (330*x^4)/(5 + m) + (462*x^5)/(6 + m) + (462*x^6)/(7 + m) + (330*x^7
)/(8 + m) + (165*x^8)/(9 + m) + (55*x^9)/(10 + m) + (11*x^10)/(11 + m) + x^
11/(12 + m))
```

IntegrateAlgebraic [F] time = 0.07, size = 0, normalized size = 0.00

$$\int x^m(1+x)\left(1+2x+x^2\right)^5 dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(1 + x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.43, size = 757, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] ((m^11 + 66*m^10 + 1925*m^9 + 32670*m^8 + 357423*m^7 + 2637558*m^6 + 133395
35*m^5 + 45995730*m^4 + 105258076*m^3 + 150917976*m^2 + 120543840*m + 39916
800)*x^12 + 11*(m^11 + 67*m^10 + 1980*m^9 + 33990*m^8 + 375573*m^7 + 279533
1*m^6 + 14241590*m^5 + 49412660*m^4 + 113667576*m^3 + 163671552*m^2 + 13117
2480*m + 43545600)*x^11 + 55*(m^11 + 68*m^10 + 2037*m^9 + 35400*m^8 + 39546
3*m^7 + 2972004*m^6 + 15270191*m^5 + 53368240*m^4 + 123524436*m^3 + 1787705
28*m^2 + 143854272*m + 47900160)*x^10 + 165*(m^11 + 69*m^10 + 2096*m^9 + 36
906*m^8 + 417309*m^7 + 3170853*m^6 + 16452554*m^5 + 57997164*m^4 + 13523236
0*m^3 + 196923648*m^2 + 159246720*m + 53222400)*x^9 + 330*(m^11 + 70*m^10 +
 2157*m^9 + 38514*m^8 + 441351*m^7 + 3395826*m^6 + 17823623*m^5 + 63481166*
m^4 + 149357508*m^3 + 219154824*m^2 + 178320960*m + 59875200)*x^8 + 462*(m^
11 + 71*m^10 + 2220*m^9 + 40230*m^8 + 467853*m^7 + 3651663*m^6 + 19428590*m
^5 + 70070020*m^4 + 166716696*m^3 + 246998016*m^2 + 202573440*m + 68428800)
*x^7 + 462*(m^11 + 72*m^10 + 2285*m^9 + 42060*m^8 + 497103*m^7 + 3944016*m^
6 + 21326135*m^5 + 78113340*m^4 + 188526796*m^3 + 282854112*m^2 + 234434880
*m + 79833600)*x^6 + 330*(m^11 + 73*m^10 + 2352*m^9 + 44010*m^8 + 529413*m^
7 + 4279569*m^6 + 23592386*m^5 + 88108220*m^4 + 216665736*m^3 + 330686208*m
^2 + 278128512*m + 95800320)*x^5 + 165*(m^11 + 74*m^10 + 2421*m^9 + 46086*m
^8 + 565119*m^7 + 4666158*m^6 + 26325599*m^5 + 100767754*m^4 + 254135820*m^
3 + 397471608*m^2 + 341673120*m + 119750400)*x^4 + 55*(m^11 + 75*m^10 + 249
2*m^9 + 48294*m^8 + 604581*m^7 + 5112891*m^6 + 29651558*m^5 + 117115476*m^4
 + 305860408*m^3 + 496433664*m^2 + 442258560*m + 159667200)*x^3 + 11*(m^11
+ 76*m^10 + 2565*m^9 + 50640*m^8 + 648183*m^7 + 5630268*m^6 + 33729695*m^5
+ 138610760*m^4 + 379985316*m^3 + 654044256*m^2 + 623471040*m + 239500800)*
x^2 + (m^11 + 77*m^10 + 2640*m^9 + 53130*m^8 + 696333*m^7 + 6230301*m^6 + 3
8759930*m^5 + 167310220*m^4 + 489896616*m^3 + 924118272*m^2 + 1007441280*m
+ 479001600)*x)*x^m/(m^12 + 78*m^11 + 2717*m^10 + 55770*m^9 + 749463*m^8 +
6926634*m^7 + 44990231*m^6 + 206070150*m^5 + 657206836*m^4 + 1414014888*m^3
 + 1931559552*m^2 + 1486442880*m + 479001600)
```

giac [B] time = 0.24, size = 1560, normalized size = 10.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] (m^11*x^12*x^m + 11*m^11*x^11*x^m + 66*m^10*x^12*x^m + 55*m^11*x^10*x^m + 7
37*m^10*x^11*x^m + 1925*m^9*x^12*x^m + 165*m^11*x^9*x^m + 3740*m^10*x^10*x^
m + 21780*m^9*x^11*x^m + 32670*m^8*x^12*x^m + 330*m^11*x^8*x^m + 11385*m^10
*x^9*x^m + 112035*m^9*x^10*x^m + 373890*m^8*x^11*x^m + 357423*m^7*x^12*x^m
+ 462*m^11*x^7*x^m + 23100*m^10*x^8*x^m + 345840*m^9*x^9*x^m + 1947000*m^8*
x^10*x^m + 4131303*m^7*x^11*x^m + 2637558*m^6*x^12*x^m + 462*m^11*x^6*x^m +
 32802*m^10*x^7*x^m + 711810*m^9*x^8*x^m + 6089490*m^8*x^9*x^m + 21750465*m
```

```
^7*x^10*x^m + 30748641*m^6*x^11*x^m + 13339535*m^5*x^12*x^m + 330*m^11*x^5*
x^m + 33264*m^10*x^6*x^m + 1025640*m^9*x^7*x^m + 12709620*m^8*x^8*x^m + 688
55985*m^7*x^9*x^m + 163460220*m^6*x^10*x^m + 156657490*m^5*x^11*x^m + 45995
730*m^4*x^12*x^m + 165*m^11*x^4*x^m + 24090*m^10*x^5*x^m + 1055670*m^9*x^6*
x^m + 18586260*m^8*x^7*x^m + 145645830*m^7*x^8*x^m + 523190745*m^6*x^9*x^m
+ 839860505*m^5*x^10*x^m + 543539260*m^4*x^11*x^m + 105258076*m^3*x^12*x^m
+ 55*m^11*x^3*x^m + 12210*m^10*x^4*x^m + 776160*m^9*x^5*x^m + 19431720*m^8*
x^6*x^m + 216148086*m^7*x^7*x^m + 1120622580*m^6*x^8*x^m + 2714671410*m^5*x
^9*x^m + 2935253200*m^4*x^10*x^m + 1250343336*m^3*x^11*x^m + 150917976*m^2*
x^12*x^m + 11*m^11*x^2*x^m + 4125*m^10*x^3*x^m + 399465*m^9*x^4*x^m + 14523
300*m^8*x^5*x^m + 229661586*m^7*x^6*x^m + 1687068306*m^6*x^7*x^m + 58817955
90*m^5*x^8*x^m + 9569532060*m^4*x^9*x^m + 6793843980*m^3*x^10*x^m + 1800387
072*m^2*x^11*x^m + 120543840*m*x^12*x^m + m^11*x*x^m + 836*m^10*x^2*x^m + 1
37060*m^9*x^3*x^m + 7604190*m^8*x^4*x^m + 174706290*m^7*x^5*x^m + 182213539
2*m^6*x^6*x^m + 8976008580*m^5*x^7*x^m + 20948784780*m^4*x^8*x^m + 22313339
400*m^3*x^9*x^m + 9832379040*m^2*x^10*x^m + 1442897280*m*x^11*x^m + 3991680
0*x^12*x^m + 77*m^10*x*x^m + 28215*m^9*x^2*x^m + 2656170*m^8*x^3*x^m + 9324
4635*m^7*x^4*x^m + 1412257770*m^6*x^5*x^m + 9852674370*m^5*x^6*x^m + 323723
49240*m^4*x^7*x^m + 49287977640*m^3*x^8*x^m + 32492401920*m^2*x^9*x^m + 791
1984960*m*x^10*x^m + 479001600*x^11*x^m + 2640*m^9*x*x^m + 557040*m^8*x^2*x
^m + 33251955*m^7*x^3*x^m + 769916070*m^6*x^4*x^m + 7785487380*m^5*x^5*x^m
+ 36088363080*m^4*x^6*x^m + 77023113552*m^3*x^7*x^m + 72321091920*m^2*x^8*x
^m + 26275708800*m*x^9*x^m + 2634508800*x^10*x^m + 53130*m^8*x*x^m + 713001
3*m^7*x^2*x^m + 281209005*m^6*x^3*x^m + 4343723835*m^5*x^4*x^m + 2907571260
0*m^4*x^5*x^m + 87099379752*m^3*x^6*x^m + 114113083392*m^2*x^7*x^m + 588459
16800*m*x^8*x^m + 8781696000*x^9*x^m + 696333*m^7*x*x^m + 61932948*m^6*x^2*
x^m + 1630835690*m^5*x^3*x^m + 16626679410*m^4*x^4*x^m + 71499692880*m^3*x^
5*x^m + 130678599744*m^2*x^6*x^m + 93588929280*m*x^7*x^m + 19758816000*x^8*
x^m + 6230301*m^6*x*x^m + 371026645*m^5*x^2*x^m + 6441351180*m^4*x^3*x^m +
41932410300*m^3*x^4*x^m + 109126448640*m^2*x^5*x^m + 108308914560*m*x^6*x^m
 + 31614105600*x^7*x^m + 38759930*m^5*x*x^m + 1524718360*m^4*x^2*x^m + 1682
2322440*m^3*x^3*x^m + 65582815320*m^2*x^4*x^m + 91782408960*m*x^5*x^m + 368
83123200*x^6*x^m + 167310220*m^4*x*x^m + 4179838476*m^3*x^2*x^m + 273038515
20*m^2*x^3*x^m + 56376064800*m*x^4*x^m + 31614105600*x^5*x^m + 489896616*m^
3*x*x^m + 7194486816*m^2*x^2*x^m + 24324220800*m*x^3*x^m + 19758816000*x^4*
x^m + 924118272*m^2*x*x^m + 6858181440*m*x^2*x^m + 8781696000*x^3*x^m + 100
7441280*m*x*x^m + 2634508800*x^2*x^m + 479001600*x*x^m)/(m^12 + 78*m^11 + 2
717*m^10 + 55770*m^9 + 749463*m^8 + 6926634*m^7 + 44990231*m^6 + 206070150*
m^5 + 657206836*m^4 + 1414014888*m^3 + 1931559552*m^2 + 1486442880*m + 4790
01600)
```

maple [B] time = 0.05, size = 1096, normalized size = 7.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] x^(m+1)*(m^11*x^11+11*m^11*x^10+66*m^10*x^11+55*m^11*x^9+737*m^10*x^10+1925
*m^9*x^11+165*m^11*x^8+3740*m^10*x^9+21780*m^9*x^10+32670*m^8*x^11+330*m^11
*x^7+11385*m^10*x^8+112035*m^9*x^9+373890*m^8*x^10+357423*m^7*x^11+462*m^11
*x^6+23100*m^10*x^7+345840*m^9*x^8+1947000*m^8*x^9+4131303*m^7*x^10+2637558
*m^6*x^11+462*m^11*x^5+32802*m^10*x^6+711810*m^9*x^7+6089490*m^8*x^8+217504
65*m^7*x^9+30748641*m^6*x^10+13339535*m^5*x^11+330*m^11*x^4+33264*m^10*x^5+
1025640*m^9*x^6+12709620*m^8*x^7+68855985*m^7*x^8+163460220*m^6*x^9+1566574
90*m^5*x^10+45995730*m^4*x^11+165*m^11*x^3+24090*m^10*x^4+1055670*m^9*x^5+1
8586260*m^8*x^6+145645830*m^7*x^7+523190745*m^6*x^8+839860505*m^5*x^9+54353
9260*m^4*x^10+105258076*m^3*x^11+55*m^11*x^2+12210*m^10*x^3+776160*m^9*x^4+
19431720*m^8*x^5+216148086*m^7*x^6+1120622580*m^6*x^7+2714671410*m^5*x^8+29
35253200*m^4*x^9+1250343336*m^3*x^10+150917976*m^2*x^11+11*m^11*x+4125*m^10
```

```
*x^2+399465*m^9*x^3+14523300*m^8*x^4+229661586*m^7*x^5+1687068306*m^6*x^6+5
881795590*m^5*x^7+9569532060*m^4*x^8+6793843980*m^3*x^9+1800387072*m^2*x^10
+120543840*m*x^11+m^11+836*m^10*x+137060*m^9*x^2+7604190*m^8*x^3+174706290*
m^7*x^4+1822135392*m^6*x^5+8976008580*m^5*x^6+20948784780*m^4*x^7+223133394
00*m^3*x^8+9832379040*m^2*x^9+1442897280*m*x^10+39916800*x^11+77*m^10+28215
*m^9*x+2656170*m^8*x^2+93244635*m^7*x^3+1412257770*m^6*x^4+9852674370*m^5*x
^5+32372349240*m^4*x^6+49287977640*m^3*x^7+32492401920*m^2*x^8+7911984960*m
*x^9+479001600*x^10+2640*m^9+557040*m^8*x+33251955*m^7*x^2+769916070*m^6*x^
3+7785487380*m^5*x^4+36088363080*m^4*x^5+77023113552*m^3*x^6+72321091920*m^
2*x^7+26275708800*m*x^8+2634508800*x^9+53130*m^8+7130013*m^7*x+281209005*m^
6*x^2+4343723835*m^5*x^3+29075712600*m^4*x^4+87099379752*m^3*x^5+1141130833
92*m^2*x^6+58845916800*m*x^7+8781696000*x^8+696333*m^7+61932948*m^6*x+16308
35690*m^5*x^2+16626679410*m^4*x^3+71499692880*m^3*x^4+130678599744*m^2*x^5+
93588929280*m*x^6+19758816000*x^7+6230301*m^6+371026645*m^5*x+6441351180*m^
4*x^2+41932410300*m^3*x^3+109126448640*m^2*x^4+108308914560*m*x^5+316141056
00*x^6+38759930*m^5+1524718360*m^4*x+16822322440*m^3*x^2+65582815320*m^2*x^
3+91782408960*m*x^4+36883123200*x^5+167310220*m^4+4179838476*m^3*x+27303851
520*m^2*x^2+56376064800*m*x^3+31614105600*x^4+489896616*m^3+7194486816*m^2*
x+24324220800*m*x^2+19758816000*x^3+924118272*m^2+6858181440*m*x+8781696000
*x^2+1007441280*m+2634508800*x+479001600)/(12+m)/(m+11)/(m+10)/(m+9)/(m+8)/
(m+7)/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.59, size = 143, normalized size = 1.00

$$\frac{x^{m+12}}{m+12}+\frac{11\,x^{m+11}}{m+11}+\frac{55\,x^{m+10}}{m+10}+\frac{165\,x^{m+9}}{m+9}+\frac{330\,x^{m+8}}{m+8}+\frac{462\,x^{m+7}}{m+7}+\frac{462\,x^{m+6}}{m+6}+\frac{330\,x^{m+5}}{m+5}+\frac{165\,x^{m+4}}{m+4}+\frac{55\,x^{m+3}}{m+3}+\frac{11\,x^{m+2}}{m+2}+\frac{x^{m+1}}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] x^(m + 12)/(m + 12) + 11*x^(m + 11)/(m + 11) + 55*x^(m + 10)/(m + 10) + 165
*x^(m + 9)/(m + 9) + 330*x^(m + 8)/(m + 8) + 462*x^(m + 7)/(m + 7) + 462*x^
(m + 6)/(m + 6) + 330*x^(m + 5)/(m + 5) + 165*x^(m + 4)/(m + 4) + 55*x^(m +
 3)/(m + 3) + 11*x^(m + 2)/(m + 2) + x^(m + 1)/(m + 1)
```

mupad [B] time = 2.07, size = 1459, normalized size = 10.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] (x^m*x^8*(58845916800*m + 72321091920*m^2 + 49287977640*m^3 + 20948784780*m
^4 + 5881795590*m^5 + 1120622580*m^6 + 145645830*m^7 + 12709620*m^8 + 71181
0*m^9 + 23100*m^10 + 330*m^11 + 19758816000))/(1486442880*m + 1931559552*m^
2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634
*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (
x^m*x^10*(7911984960*m + 9832379040*m^2 + 6793843980*m^3 + 2935253200*m^4 +
 839860505*m^5 + 163460220*m^6 + 21750465*m^7 + 1947000*m^8 + 112035*m^9 +
3740*m^10 + 55*m^11 + 2634508800))/(1486442880*m + 1931559552*m^2 + 1414014
888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 7494
63*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^2*(68
58181440*m + 7194486816*m^2 + 4179838476*m^3 + 1524718360*m^4 + 371026645*m
^5 + 61932948*m^6 + 7130013*m^7 + 557040*m^8 + 28215*m^9 + 836*m^10 + 11*m^
11 + 2634508800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 6572068
36*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^
9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^11*(1442897280*m + 180
0387072*m^2 + 1250343336*m^3 + 543539260*m^4 + 156657490*m^5 + 30748641*m^6
 + 4131303*m^7 + 373890*m^8 + 21780*m^9 + 737*m^10 + 11*m^11 + 479001600))/
(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150
*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78
```

```
*m^11 + m^12 + 479001600) + (x^m*x^6*(108308914560*m + 130678599744*m^2 + 8
7099379752*m^3 + 36088363080*m^4 + 9852674370*m^5 + 1822135392*m^6 + 229661
586*m^7 + 19431720*m^8 + 1055670*m^9 + 33264*m^10 + 462*m^11 + 36883123200)
)/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 2060701
50*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 +
78*m^11 + m^12 + 479001600) + (x^m*x^7*(93588929280*m + 114113083392*m^2 +
77023113552*m^3 + 32372349240*m^4 + 8976008580*m^5 + 1687068306*m^6 + 21614
8086*m^7 + 18586260*m^8 + 1025640*m^9 + 32802*m^10 + 462*m^11 + 31614105600
))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070
150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 +
 78*m^11 + m^12 + 479001600) + (x^m*x^12*(120543840*m + 150917976*m^2 + 105
258076*m^3 + 45995730*m^4 + 13339535*m^5 + 2637558*m^6 + 357423*m^7 + 32670
*m^8 + 1925*m^9 + 66*m^10 + m^11 + 39916800))/(1486442880*m + 1931559552*m^
2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634
*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (
x^m*x^5*(91782408960*m + 109126448640*m^2 + 71499692880*m^3 + 29075712600*m
^4 + 7785487380*m^5 + 1412257770*m^6 + 174706290*m^7 + 14523300*m^8 + 77616
0*m^9 + 24090*m^10 + 330*m^11 + 31614105600))/(1486442880*m + 1931559552*m^
2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634
*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (
x^m*x^4*(56376064800*m + 65582815320*m^2 + 41932410300*m^3 + 16626679410*m^
4 + 4343723835*m^5 + 769916070*m^6 + 93244635*m^7 + 7604190*m^8 + 399465*m^
9 + 12210*m^10 + 165*m^11 + 19758816000))/(1486442880*m + 1931559552*m^2 +
1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7
 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*
x^9*(26275708800*m + 32492401920*m^2 + 22313339400*m^3 + 9569532060*m^4 + 2
714671410*m^5 + 523190745*m^6 + 68855985*m^7 + 6089490*m^8 + 345840*m^9 + 1
1385*m^10 + 165*m^11 + 8781696000))/(1486442880*m + 1931559552*m^2 + 141401
4888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749
463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^3*(2
4324220800*m + 27303851520*m^2 + 16822322440*m^3 + 6441351180*m^4 + 1630835
690*m^5 + 281209005*m^6 + 33251955*m^7 + 2656170*m^8 + 137060*m^9 + 4125*m^
10 + 55*m^11 + 8781696000))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3
 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8
+ 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x*x^m*(1007441280*
m + 924118272*m^2 + 489896616*m^3 + 167310220*m^4 + 38759930*m^5 + 6230301*
m^6 + 696333*m^7 + 53130*m^8 + 2640*m^9 + 77*m^10 + m^11 + 479001600))/(148
6442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5
 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^1
1 + m^12 + 479001600)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] Timed out
```

3.767 $\int x^m(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=209

$$\frac{(10d+e)x^{m+2}}{m+2}+\frac{5(9d+2e)x^{m+3}}{m+3}+\frac{15(8d+3e)x^{m+4}}{m+4}+\frac{30(7d+4e)x^{m+5}}{m+5}+\frac{42(6d+5e)x^{m+6}}{m+6}+\frac{42(5d+6e)x^{m+7}}{m+7}+3\cdots$$

Rubi [A] time = 0.10, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{(10d+e)x^{m+2}}{m+2}+\frac{5(9d+2e)x^{m+3}}{m+3}+\frac{15(8d+3e)x^{m+4}}{m+4}+\frac{30(7d+4e)x^{m+5}}{m+5}+\frac{42(6d+5e)x^{m+6}}{m+6}+\frac{42(5d+6e)x^{m+7}}{m+7}+\frac{30(4d+7e)x^{m+8}}{m+8}+\frac{15(3d+8e)x^{m+9}}{m+9}+\frac{5(2d+9e)x^{m+10}}{m+10}+\frac{(d+10e)x^{m+11}}{m+11}+\frac{dx^{m+1}}{m+1}+\frac{ex^{m+12}}{m+12}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^(1 + m))/(1 + m) + ((10*d + e)*x^(2 + m))/(2 + m) + (5*(9*d + 2*e)*x^(
3 + m))/(3 + m) + (15*(8*d + 3*e)*x^(4 + m))/(4 + m) + (30*(7*d + 4*e)*x^(5
 + m))/(5 + m) + (42*(6*d + 5*e)*x^(6 + m))/(6 + m) + (42*(5*d + 6*e)*x^(7
+ m))/(7 + m) + (30*(4*d + 7*e)*x^(8 + m))/(8 + m) + (15*(3*d + 8*e)*x^(9 +
 m))/(9 + m) + (5*(2*d + 9*e)*x^(10 + m))/(10 + m) + ((d + 10*e)*x^(11 + m)
)/(11 + m) + (e*x^(12 + m))/(12 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^m(1+x)^{10}(d+ex)\,dx\\ &= \int \left(dx^m+(10d+e)x^{1+m}+5(9d+2e)x^{2+m}+15(8d+3e)x^{3+m}+30(7d+4e\cdots\right.\\ &= \frac{dx^{1+m}}{1+m}+\frac{(10d+e)x^{2+m}}{2+m}+\frac{5(9d+2e)x^{3+m}}{3+m}+\frac{15(8d+3e)x^{4+m}}{4+m}+\frac{30(7d+4\cdots}{5+\cdots}\end{aligned}$$

Mathematica [A] time = 0.66, size = 135, normalized size = 0.65

$$\frac{x^{m+1}\left(\left(\frac{x^{10}}{m+11}+\frac{10x^9}{m+10}+\frac{45x^8}{m+9}+\frac{120x^7}{m+8}+\frac{210x^6}{m+7}+\frac{252x^5}{m+6}+\frac{210x^4}{m+5}+\frac{120x^3}{m+4}+\frac{45x^2}{m+3}+\frac{10x}{m+2}+\frac{1}{m+1}\right)(d(m+12)-e(m+1))+e(x+1)^{11}\right)}{m+12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (x^(1 + m)*(e*(1 + x)^11 + (-(e*(1 + m)) + d*(12 + m))*((1 + m)^(-1) + (10*
x)/(2 + m) + (45*x^2)/(3 + m) + (120*x^3)/(4 + m) + (210*x^4)/(5 + m) + (25
2*x^5)/(6 + m) + (210*x^6)/(7 + m) + (120*x^7)/(8 + m) + (45*x^8)/(9 + m) +
 (10*x^9)/(10 + m) + x^10/(11 + m))))/(12 + m)
```

IntegrateAlgebraic [F] time = 0.41, size = 0, normalized size = 0.00

$$\int x^m(d+ex)\left(1+2x+x^2\right)^5\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^m*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] Defer[IntegrateAlgebraic][x^m*(d + e*x)*(1 + 2*x + x^2)^5, x]
```

fricas [B] time = 0.46, size = 1569, normalized size = 7.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] ((e*m^11 + 66*e*m^10 + 1925*e*m^9 + 32670*e*m^8 + 357423*e*m^7 + 2637558*e*
m^6 + 13339535*e*m^5 + 45995730*e*m^4 + 105258076*e*m^3 + 150917976*e*m^2 +
 120543840*e*m + 39916800*e)*x^12 + ((d + 10*e)*m^11 + 67*(d + 10*e)*m^10 +
 1980*(d + 10*e)*m^9 + 33990*(d + 10*e)*m^8 + 375573*(d + 10*e)*m^7 + 27953
31*(d + 10*e)*m^6 + 14241590*(d + 10*e)*m^5 + 49412660*(d + 10*e)*m^4 + 113
667576*(d + 10*e)*m^3 + 163671552*(d + 10*e)*m^2 + 131172480*(d + 10*e)*m +
 43545600*d + 435456000*e)*x^11 + 5*((2*d + 9*e)*m^11 + 68*(2*d + 9*e)*m^10
 + 2037*(2*d + 9*e)*m^9 + 35400*(2*d + 9*e)*m^8 + 395463*(2*d + 9*e)*m^7 +
2972004*(2*d + 9*e)*m^6 + 15270191*(2*d + 9*e)*m^5 + 53368240*(2*d + 9*e)*m
^4 + 123524436*(2*d + 9*e)*m^3 + 178770528*(2*d + 9*e)*m^2 + 143854272*(2*d
 + 9*e)*m + 95800320*d + 431101440*e)*x^10 + 15*((3*d + 8*e)*m^11 + 69*(3*d
 + 8*e)*m^10 + 2096*(3*d + 8*e)*m^9 + 36906*(3*d + 8*e)*m^8 + 417309*(3*d +
 8*e)*m^7 + 3170853*(3*d + 8*e)*m^6 + 16452554*(3*d + 8*e)*m^5 + 57997164*(
3*d + 8*e)*m^4 + 135232360*(3*d + 8*e)*m^3 + 196923648*(3*d + 8*e)*m^2 + 15
9246720*(3*d + 8*e)*m + 159667200*d + 425779200*e)*x^9 + 30*((4*d + 7*e)*m^
11 + 70*(4*d + 7*e)*m^10 + 2157*(4*d + 7*e)*m^9 + 38514*(4*d + 7*e)*m^8 + 4
41351*(4*d + 7*e)*m^7 + 3395826*(4*d + 7*e)*m^6 + 17823623*(4*d + 7*e)*m^5
+ 63481166*(4*d + 7*e)*m^4 + 149357508*(4*d + 7*e)*m^3 + 219154824*(4*d + 7
*e)*m^2 + 178320960*(4*d + 7*e)*m + 239500800*d + 419126400*e)*x^8 + 42*((5
*d + 6*e)*m^11 + 71*(5*d + 6*e)*m^10 + 2220*(5*d + 6*e)*m^9 + 40230*(5*d +
6*e)*m^8 + 467853*(5*d + 6*e)*m^7 + 3651663*(5*d + 6*e)*m^6 + 19428590*(5*d
 + 6*e)*m^5 + 70070020*(5*d + 6*e)*m^4 + 166716696*(5*d + 6*e)*m^3 + 246998
016*(5*d + 6*e)*m^2 + 202573440*(5*d + 6*e)*m + 342144000*d + 410572800*e)*
x^7 + 42*((6*d + 5*e)*m^11 + 72*(6*d + 5*e)*m^10 + 2285*(6*d + 5*e)*m^9 + 4
2060*(6*d + 5*e)*m^8 + 497103*(6*d + 5*e)*m^7 + 3944016*(6*d + 5*e)*m^6 + 2
1326135*(6*d + 5*e)*m^5 + 78113340*(6*d + 5*e)*m^4 + 188526796*(6*d + 5*e)*
m^3 + 282854112*(6*d + 5*e)*m^2 + 234434880*(6*d + 5*e)*m + 479001600*d + 3
99168000*e)*x^6 + 30*((7*d + 4*e)*m^11 + 73*(7*d + 4*e)*m^10 + 2352*(7*d +
4*e)*m^9 + 44010*(7*d + 4*e)*m^8 + 529413*(7*d + 4*e)*m^7 + 4279569*(7*d +
4*e)*m^6 + 23592386*(7*d + 4*e)*m^5 + 88108220*(7*d + 4*e)*m^4 + 216665736*
(7*d + 4*e)*m^3 + 330686208*(7*d + 4*e)*m^2 + 278128512*(7*d + 4*e)*m + 670
602240*d + 383201280*e)*x^5 + 15*((8*d + 3*e)*m^11 + 74*(8*d + 3*e)*m^10 +
2421*(8*d + 3*e)*m^9 + 46086*(8*d + 3*e)*m^8 + 565119*(8*d + 3*e)*m^7 + 466
6158*(8*d + 3*e)*m^6 + 26325599*(8*d + 3*e)*m^5 + 100767754*(8*d + 3*e)*m^4
 + 254135820*(8*d + 3*e)*m^3 + 397471608*(8*d + 3*e)*m^2 + 341673120*(8*d +
 3*e)*m + 958003200*d + 359251200*e)*x^4 + 5*((9*d + 2*e)*m^11 + 75*(9*d +
2*e)*m^10 + 2492*(9*d + 2*e)*m^9 + 48294*(9*d + 2*e)*m^8 + 604581*(9*d + 2*
e)*m^7 + 5112891*(9*d + 2*e)*m^6 + 29651558*(9*d + 2*e)*m^5 + 117115476*(9*
d + 2*e)*m^4 + 305860408*(9*d + 2*e)*m^3 + 496433664*(9*d + 2*e)*m^2 + 4422
```

```
58560*(9*d + 2*e)*m + 1437004800*d + 319334400*e)*x^3 + ((10*d + e)*m^11 +
76*(10*d + e)*m^10 + 2565*(10*d + e)*m^9 + 50640*(10*d + e)*m^8 + 648183*(1
0*d + e)*m^7 + 5630268*(10*d + e)*m^6 + 33729695*(10*d + e)*m^5 + 138610760
*(10*d + e)*m^4 + 379985316*(10*d + e)*m^3 + 654044256*(10*d + e)*m^2 + 623
471040*(10*d + e)*m + 2395008000*d + 239500800*e)*x^2 + (d*m^11 + 77*d*m^10
 + 2640*d*m^9 + 53130*d*m^8 + 696333*d*m^7 + 6230301*d*m^6 + 38759930*d*m^5
 + 167310220*d*m^4 + 489896616*d*m^3 + 924118272*d*m^2 + 1007441280*d*m + 4
79001600*d)*x)*x^m/(m^12 + 78*m^11 + 2717*m^10 + 55770*m^9 + 749463*m^8 + 6
926634*m^7 + 44990231*m^6 + 206070150*m^5 + 657206836*m^4 + 1414014888*m^3
+ 1931559552*m^2 + 1486442880*m + 479001600)
```

giac [B] time = 0.33, size = 3224, normalized size = 15.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] (m^11*x^12*x^m*e + d*m^11*x^11*x^m + 10*m^11*x^11*x^m*e + 66*m^10*x^12*x^m*
e + 10*d*m^11*x^10*x^m + 67*d*m^10*x^11*x^m + 45*m^11*x^10*x^m*e + 670*m^10
*x^11*x^m*e + 1925*m^9*x^12*x^m*e + 45*d*m^11*x^9*x^m + 680*d*m^10*x^10*x^m
 + 1980*d*m^9*x^11*x^m + 120*m^11*x^9*x^m*e + 3060*m^10*x^10*x^m*e + 19800*
m^9*x^11*x^m*e + 32670*m^8*x^12*x^m*e + 120*d*m^11*x^8*x^m + 3105*d*m^10*x^
9*x^m + 20370*d*m^9*x^10*x^m + 33990*d*m^8*x^11*x^m + 210*m^11*x^8*x^m*e +
8280*m^10*x^9*x^m*e + 91665*m^9*x^10*x^m*e + 339900*m^8*x^11*x^m*e + 357423
*m^7*x^12*x^m*e + 210*d*m^11*x^7*x^m + 8400*d*m^10*x^8*x^m + 94320*d*m^9*x^
9*x^m + 354000*d*m^8*x^10*x^m + 375573*d*m^7*x^11*x^m + 252*m^11*x^7*x^m*e
+ 14700*m^10*x^8*x^m*e + 251520*m^9*x^9*x^m*e + 1593000*m^8*x^10*x^m*e + 37
55730*m^7*x^11*x^m*e + 2637558*m^6*x^12*x^m*e + 252*d*m^11*x^6*x^m + 14910*
d*m^10*x^7*x^m + 258840*d*m^9*x^8*x^m + 1660770*d*m^8*x^9*x^m + 3954630*d*m
^7*x^10*x^m + 2795331*d*m^6*x^11*x^m + 210*m^11*x^6*x^m*e + 17892*m^10*x^7*
x^m*e + 452970*m^9*x^8*x^m*e + 4428720*m^8*x^9*x^m*e + 17795835*m^7*x^10*x^
m*e + 27953310*m^6*x^11*x^m*e + 13339535*m^5*x^12*x^m*e + 210*d*m^11*x^5*x^
m + 18144*d*m^10*x^6*x^m + 466200*d*m^9*x^7*x^m + 4621680*d*m^8*x^8*x^m + 1
8778905*d*m^7*x^9*x^m + 29720040*d*m^6*x^10*x^m + 14241590*d*m^5*x^11*x^m +
 120*m^11*x^5*x^m*e + 15120*m^10*x^6*x^m*e + 559440*m^9*x^7*x^m*e + 8087940
*m^8*x^8*x^m*e + 50077080*m^7*x^9*x^m*e + 133740180*m^6*x^10*x^m*e + 142415
900*m^5*x^11*x^m*e + 45995730*m^4*x^12*x^m*e + 120*d*m^11*x^4*x^m + 15330*d
*m^10*x^5*x^m + 575820*d*m^9*x^6*x^m + 8448300*d*m^8*x^7*x^m + 52962120*d*m
^7*x^8*x^m + 142688385*d*m^6*x^9*x^m + 152701910*d*m^5*x^10*x^m + 49412660*
d*m^4*x^11*x^m + 45*m^11*x^4*x^m*e + 8760*m^10*x^5*x^m*e + 479850*m^9*x^6*x
^m*e + 10137960*m^8*x^7*x^m*e + 92683710*m^7*x^8*x^m*e + 380502360*m^6*x^9*
x^m*e + 687158595*m^5*x^10*x^m*e + 494126600*m^4*x^11*x^m*e + 105258076*m^3
*x^12*x^m*e + 45*d*m^11*x^3*x^m + 8880*d*m^10*x^4*x^m + 493920*d*m^9*x^5*x^
m + 10599120*d*m^8*x^6*x^m + 98249130*d*m^7*x^7*x^m + 407499120*d*m^6*x^8*x
^m + 740364930*d*m^5*x^9*x^m + 533682400*d*m^4*x^10*x^m + 113667576*d*m^3*x
^11*x^m + 10*m^11*x^3*x^m*e + 3330*m^10*x^4*x^m*e + 282240*m^9*x^5*x^m*e +
8832600*m^8*x^6*x^m*e + 117898956*m^7*x^7*x^m*e + 713123460*m^6*x^8*x^m*e +
 1974306480*m^5*x^9*x^m*e + 2401570800*m^4*x^10*x^m*e + 1136675760*m^3*x^11
*x^m*e + 150917976*m^2*x^12*x^m*e + 10*d*m^11*x^2*x^m + 3375*d*m^10*x^3*x^m
 + 290520*d*m^9*x^4*x^m + 9242100*d*m^8*x^5*x^m + 125269956*d*m^7*x^6*x^m +
 766849230*d*m^6*x^7*x^m + 2138834760*d*m^5*x^8*x^m + 2609872380*d*m^4*x^9*
x^m + 1235244360*d*m^3*x^10*x^m + 163671552*d*m^2*x^11*x^m + m^11*x^2*x^m*e
 + 750*m^10*x^3*x^m*e + 108945*m^9*x^4*x^m*e + 5281200*m^8*x^5*x^m*e + 1043
91630*m^7*x^6*x^m*e + 920219076*m^6*x^7*x^m*e + 3742960830*m^5*x^8*x^m*e +
6959659680*m^4*x^9*x^m*e + 5558599620*m^3*x^10*x^m*e + 1636715520*m^2*x^11*
x^m*e + 120543840*m*x^12*x^m*e + d*m^11*x*x^m + 760*d*m^10*x^2*x^m + 112140
*d*m^9*x^3*x^m + 5530320*d*m^8*x^4*x^m + 111176730*d*m^7*x^5*x^m + 99389203
2*d*m^6*x^6*x^m + 4080003900*d*m^5*x^7*x^m + 7617739920*d*m^4*x^8*x^m + 608
5456200*d*m^3*x^9*x^m + 1787705280*d*m^2*x^10*x^m + 131172480*d*m*x^11*x^m
```

```
+ 76*m^10*x^2*x^m*e + 24920*m^9*x^3*x^m*e + 2073870*m^8*x^4*x^m*e + 6352956
0*m^7*x^5*x^m*e + 828243360*m^6*x^6*x^m*e + 4896004680*m^5*x^7*x^m*e + 1333
1044860*m^4*x^8*x^m*e + 16227883200*m^3*x^9*x^m*e + 8044673760*m^2*x^10*x^m
*e + 1311724800*m*x^11*x^m*e + 39916800*x^12*x^m*e + 77*d*m^10*x*x^m + 2565
0*d*m^9*x^2*x^m + 2173230*d*m^8*x^3*x^m + 67814280*d*m^7*x^4*x^m + 89870949
0*d*m^6*x^5*x^m + 5374186020*d*m^5*x^6*x^m + 14714704200*d*m^4*x^7*x^m + 17
922900960*d*m^3*x^8*x^m + 8861564160*d*m^2*x^9*x^m + 1438542720*d*m*x^10*x^
m + 43545600*d*x^11*x^m + 2565*m^9*x^2*x^m*e + 482940*m^8*x^3*x^m*e + 25430
355*m^7*x^4*x^m*e + 513548280*m^6*x^5*x^m*e + 4478488350*m^5*x^6*x^m*e + 17
657645040*m^4*x^7*x^m*e + 31365076680*m^3*x^8*x^m*e + 23630837760*m^2*x^9*x
^m*e + 6473442240*m*x^10*x^m*e + 435456000*x^11*x^m*e + 2640*d*m^9*x*x^m +
506400*d*m^8*x^2*x^m + 27206145*d*m^7*x^3*x^m + 559938960*d*m^6*x^4*x^m + 4
954401060*d*m^5*x^5*x^m + 19684561680*d*m^4*x^6*x^m + 35010506160*d*m^3*x^7
*x^m + 26298578880*d*m^2*x^8*x^m + 7166102400*d*m*x^9*x^m + 479001600*d*x^1
0*x^m + 50640*m^8*x^2*x^m*e + 6045810*m^7*x^3*x^m*e + 209977110*m^6*x^4*x^m
*e + 2831086320*m^5*x^5*x^m*e + 16403801400*m^4*x^6*x^m*e + 42012607392*m^3
*x^7*x^m*e + 46022513040*m^2*x^8*x^m*e + 19109606400*m*x^9*x^m*e + 21555072
00*x^10*x^m*e + 53130*d*m^8*x*x^m + 6481830*d*m^7*x^2*x^m + 230080095*d*m^6
*x^3*x^m + 3159071880*d*m^5*x^4*x^m + 18502726200*d*m^4*x^5*x^m + 475087525
92*d*m^3*x^6*x^m + 51869583360*d*m^2*x^7*x^m + 21398515200*d*m*x^8*x^m + 23
95008000*d*x^9*x^m + 648183*m^7*x^2*x^m*e + 51128910*m^6*x^3*x^m*e + 118465
1955*m^5*x^4*x^m*e + 10572986400*m^4*x^5*x^m*e + 39590627160*m^3*x^6*x^m*e
+ 62243500032*m^2*x^7*x^m*e + 37447401600*m*x^8*x^m*e + 6386688000*x^9*x^m*
e + 696333*d*m^7*x*x^m + 56302680*d*m^6*x^2*x^m + 1334320110*d*m^5*x^3*x^m
+ 12092130480*d*m^4*x^4*x^m + 45499804560*d*m^3*x^5*x^m + 71279236224*d*m^2
*x^6*x^m + 42540422400*d*m*x^7*x^m + 7185024000*d*x^8*x^m + 5630268*m^6*x^2
*x^m*e + 296515580*m^5*x^3*x^m*e + 4534548930*m^4*x^4*x^m*e + 25999888320*m
^3*x^5*x^m*e + 59399363520*m^2*x^6*x^m*e + 51048506880*m*x^7*x^m*e + 125737
92000*x^8*x^m*e + 6230301*d*m^6*x*x^m + 337296950*d*m^5*x^2*x^m + 527019642
0*d*m^4*x^3*x^m + 30496298400*d*m^3*x^4*x^m + 69444103680*d*m^2*x^5*x^m + 5
9077589760*d*m*x^6*x^m + 14370048000*d*x^7*x^m + 33729695*m^5*x^2*x^m*e + 1
171154760*m^4*x^3*x^m*e + 11436111900*m^3*x^4*x^m*e + 39682344960*m^2*x^5*x
^m*e + 49231324800*m*x^6*x^m*e + 17244057600*x^7*x^m*e + 38759930*d*m^5*x*x
^m + 1386107600*d*m^4*x^2*x^m + 13763718360*d*m^3*x^3*x^m + 47696592960*d*m
^2*x^4*x^m + 58406987520*d*m*x^5*x^m + 20118067200*d*x^6*x^m + 138610760*m^
4*x^2*x^m*e + 3058604080*m^3*x^3*x^m*e + 17886222360*m^2*x^4*x^m*e + 333754
21440*m*x^5*x^m*e + 16765056000*x^6*x^m*e + 167310220*d*m^4*x*x^m + 3799853
160*d*m^3*x^2*x^m + 22339514880*d*m^2*x^3*x^m + 41000774400*d*m*x^4*x^m + 2
0118067200*d*x^5*x^m + 379985316*m^3*x^2*x^m*e + 4964336640*m^2*x^3*x^m*e +
 15375290400*m*x^4*x^m*e + 11496038400*x^5*x^m*e + 489896616*d*m^3*x*x^m +
6540442560*d*m^2*x^2*x^m + 19901635200*d*m*x^3*x^m + 14370048000*d*x^4*x^m
+ 654044256*m^2*x^2*x^m*e + 4422585600*m*x^3*x^m*e + 5388768000*x^4*x^m*e +
 924118272*d*m^2*x*x^m + 6234710400*d*m*x^2*x^m + 7185024000*d*x^3*x^m + 62
3471040*m*x^2*x^m*e + 1596672000*x^3*x^m*e + 1007441280*d*m*x*x^m + 2395008
000*d*x^2*x^m + 239500800*x^2*x^m*e + 479001600*d*x*x^m)/(m^12 + 78*m^11 +
2717*m^10 + 55770*m^9 + 749463*m^8 + 6926634*m^7 + 44990231*m^6 + 206070150
*m^5 + 657206836*m^4 + 1414014888*m^3 + 1931559552*m^2 + 1486442880*m + 479
001600)
```

maple [B] time = 0.05, size = 2246, normalized size = 10.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] x^(m+1)*(e*m^11*x^11+d*m^11*x^10+10*e*m^11*x^10+66*e*m^10*x^11+10*d*m^11*x^
9+67*d*m^10*x^10+45*e*m^11*x^9+670*e*m^10*x^10+1925*e*m^9*x^11+45*d*m^11*x^
8+680*d*m^10*x^9+1980*d*m^9*x^10+120*e*m^11*x^8+3060*e*m^10*x^9+19800*e*m^9
*x^10+32670*e*m^8*x^11+120*d*m^11*x^7+3105*d*m^10*x^8+20370*d*m^9*x^9+33990
```

*d*m^8*x^10+210*e*m^11*x^7+8280*e*m^10*x^8+91665*e*m^9*x^9+339900*e*m^8*x^1
0+357423*e*m^7*x^11+210*d*m^11*x^6+8400*d*m^10*x^7+94320*d*m^9*x^8+354000*d
*m^8*x^9+375573*d*m^7*x^10+252*e*m^11*x^6+14700*e*m^10*x^7+251520*e*m^9*x^8
+1593000*e*m^8*x^9+3755730*e*m^7*x^10+2637558*e*m^6*x^11+252*d*m^11*x^5+149
10*d*m^10*x^6+258840*d*m^9*x^7+1660770*d*m^8*x^8+3954630*d*m^7*x^9+2795331*
d*m^6*x^10+210*e*m^11*x^5+17892*e*m^10*x^6+452970*e*m^9*x^7+4428720*e*m^8*x
^8+17795835*e*m^7*x^9+27953310*e*m^6*x^10+13339535*e*m^5*x^11+210*d*m^11*x^
4+18144*d*m^10*x^5+466200*d*m^9*x^6+4621680*d*m^8*x^7+18778905*d*m^7*x^8+29
720040*d*m^6*x^9+14241590*d*m^5*x^10+120*e*m^11*x^4+15120*e*m^10*x^5+559440
*e*m^9*x^6+8087940*e*m^8*x^7+50077080*e*m^7*x^8+133740180*e*m^6*x^9+1424159
00*e*m^5*x^10+45995730*e*m^4*x^11+120*d*m^11*x^3+15330*d*m^10*x^4+575820*d*
m^9*x^5+8448300*d*m^8*x^6+52962120*d*m^7*x^7+142688385*d*m^6*x^8+152701910*
d*m^5*x^9+49412660*d*m^4*x^10+45*e*m^11*x^3+8760*e*m^10*x^4+479850*e*m^9*x^
5+10137960*e*m^8*x^6+92683710*e*m^7*x^7+380502360*e*m^6*x^8+687158595*e*m^5
*x^9+494126600*e*m^4*x^10+105258076*e*m^3*x^11+45*d*m^11*x^2+8880*d*m^10*x^
3+493920*d*m^9*x^4+10599120*d*m^8*x^5+98249130*d*m^7*x^6+407499120*d*m^6*x^
7+740364930*d*m^5*x^8+533682400*d*m^4*x^9+113667576*d*m^3*x^10+10*e*m^11*x^
2+3330*e*m^10*x^3+282240*e*m^9*x^4+8832600*e*m^8*x^5+117898956*e*m^7*x^6+71
3123460*e*m^6*x^7+1974306480*e*m^5*x^8+2401570800*e*m^4*x^9+1136675760*e*m^
3*x^10+150917976*e*m^2*x^11+10*d*m^11*x+3375*d*m^10*x^2+290520*d*m^9*x^3+92
42100*d*m^8*x^4+125269956*d*m^7*x^5+766849230*d*m^6*x^6+2138834760*d*m^5*x^
7+2609872380*d*m^4*x^8+1235244360*d*m^3*x^9+163671552*d*m^2*x^10+e*m^11*x+7
50*e*m^10*x^2+108945*e*m^9*x^3+5281200*e*m^8*x^4+104391630*e*m^7*x^5+920219
076*e*m^6*x^6+3742960830*e*m^5*x^7+6959659680*e*m^4*x^8+5558599620*e*m^3*x^
9+1636715520*e*m^2*x^10+120543840*e*m*x^11+d*m^11+760*d*m^10*x+112140*d*m^9
*x^2+5530320*d*m^8*x^3+111176730*d*m^7*x^4+993892032*d*m^6*x^5+4080003900*d
*m^5*x^6+7617739920*d*m^4*x^7+6085456200*d*m^3*x^8+1787705280*d*m^2*x^9+131
172480*d*m*x^10+76*e*m^10*x+24920*e*m^9*x^2+2073870*e*m^8*x^3+63529560*e*m^
7*x^4+828243360*e*m^6*x^5+4896004680*e*m^5*x^6+13331044860*e*m^4*x^7+162278
83200*e*m^3*x^8+8044673760*e*m^2*x^9+1311724800*e*m*x^10+39916800*e*x^11+77
*d*m^10+25650*d*m^9*x+2173230*d*m^8*x^2+67814280*d*m^7*x^3+898709490*d*m^6*
x^4+5374186020*d*m^5*x^5+14714704200*d*m^4*x^6+17922900960*d*m^3*x^7+886156
4160*d*m^2*x^8+1438542720*d*m*x^9+43545600*d*x^10+2565*e*m^9*x+482940*e*m^8
*x^2+25430355*e*m^7*x^3+513548280*e*m^6*x^4+4478488350*e*m^5*x^5+1765764504
0*e*m^4*x^6+31365076680*e*m^3*x^7+23630837760*e*m^2*x^8+6473442240*e*m*x^9+
435456000*e*x^10+2640*d*m^9+506400*d*m^8*x+27206145*d*m^7*x^2+559938960*d*m
^6*x^3+4954401060*d*m^5*x^4+19684561680*d*m^4*x^5+35010506160*d*m^3*x^6+262
98578880*d*m^2*x^7+7166102400*d*m*x^8+479001600*d*x^9+50640*e*m^8*x+6045810
*e*m^7*x^2+209977110*e*m^6*x^3+2831086320*e*m^5*x^4+16403801400*e*m^4*x^5+4
2012607392*e*m^3*x^6+46022513040*e*m^2*x^7+19109606400*e*m*x^8+2155507200*e
*x^9+53130*d*m^8+6481830*d*m^7*x+230080095*d*m^6*x^2+3159071880*d*m^5*x^3+1
8502726200*d*m^4*x^4+47508752592*d*m^3*x^5+51869583360*d*m^2*x^6+2139851520
0*d*m*x^7+2395008000*d*x^8+648183*e*m^7*x+51128910*e*m^6*x^2+1184651955*e*m
^5*x^3+10572986400*e*m^4*x^4+39590627160*e*m^3*x^5+62243500032*e*m^2*x^6+37
447401600*e*m*x^7+6386688000*e*x^8+696333*d*m^7+56302680*d*m^6*x+1334320110
*d*m^5*x^2+12092130480*d*m^4*x^3+45499804560*d*m^3*x^4+71279236224*d*m^2*x^
5+42540422400*d*m*x^6+7185024000*d*x^7+5630268*e*m^6*x+296515580*e*m^5*x^2+
4534548930*e*m^4*x^3+25999888320*e*m^3*x^4+59399363520*e*m^2*x^5+5104850688
0*e*m*x^6+12573792000*e*x^7+6230301*d*m^6+337296950*d*m^5*x+5270196420*d*m^
4*x^2+30496298400*d*m^3*x^3+69444103680*d*m^2*x^4+59077589760*d*m*x^5+14370
048000*d*x^6+33729695*e*m^5*x+1171154760*e*m^4*x^2+11436111900*e*m^3*x^3+39
682344960*e*m^2*x^4+49231324800*e*m*x^5+17244057600*e*x^6+38759930*d*m^5+13
86107600*d*m^4*x+13763718360*d*m^3*x^2+47696592960*d*m^2*x^3+58406987520*d*
m*x^4+20118067200*d*x^5+138610760*e*m^4*x+3058604080*e*m^3*x^2+17886222360*
e*m^2*x^3+33375421440*e*m*x^4+16765056000*e*x^5+167310220*d*m^4+3799853160*
d*m^3*x+22339514880*d*m^2*x^2+41000774400*d*m*x^3+20118067200*d*x^4+3799853
16*e*m^3*x+4964336640*e*m^2*x^2+15375290400*e*m*x^3+11496038400*e*x^4+48989
6616*d*m^3+6540442560*d*m^2*x+19901635200*d*m*x^2+14370048000*d*x^3+6540442
56*e*m^2*x+4422585600*e*m*x^2+5388768000*e*x^3+924118272*d*m^2+6234710400*d

```
*m*x+7185024000*d*x^2+623471040*e*m*x+1596672000*e*x^2+1007441280*d*m+23950
08000*d*x+239500800*e*x+479001600*d)/(m+12)/(m+11)/(m+10)/(m+9)/(m+8)/(m+7)
/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.58, size = 283, normalized size = 1.35

$$\frac{ex^{m+12}}{m+12}+\frac{dx^{m+11}}{m+11}+\frac{10\,ex^{m+11}}{m+11}+\frac{10\,dx^{m+10}}{m+10}+\frac{45\,ex^{m+10}}{m+10}+\frac{45\,dx^{m+9}}{m+9}+\frac{120\,ex^{m+9}}{m+9}+\frac{120\,dx^{m+8}}{m+8}+\frac{210\,ex^{m+8}}{m+8}+\frac{210\,dx^{m+7}}{m+7}+\frac{252\,ex^{m+7}}{m+7}+\frac{252\,dx^{m+6}}{m+6}+\frac{210\,ex^{m+6}}{m+6}+\frac{210\,dx^{m+5}}{m+5}+\frac{120\,ex^{m+5}}{m+5}+\frac{120\,dx^{m+4}}{m+4}+\frac{45\,ex^{m+4}}{m+4}+\frac{45\,dx^{m+3}}{m+3}+\frac{10\,ex^{m+3}}{m+3}+\frac{10\,dx^{m+2}}{m+2}+\frac{ex^{m+2}}{m+2}+\frac{dx^{m+1}}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] e*x^(m + 12)/(m + 12) + d*x^(m + 11)/(m + 11) + 10*e*x^(m + 11)/(m + 11) +
10*d*x^(m + 10)/(m + 10) + 45*e*x^(m + 10)/(m + 10) + 45*d*x^(m + 9)/(m + 9
) + 120*e*x^(m + 9)/(m + 9) + 120*d*x^(m + 8)/(m + 8) + 210*e*x^(m + 8)/(m
+ 8) + 210*d*x^(m + 7)/(m + 7) + 252*e*x^(m + 7)/(m + 7) + 252*d*x^(m + 6)/
(m + 6) + 210*e*x^(m + 6)/(m + 6) + 210*d*x^(m + 5)/(m + 5) + 120*e*x^(m +
5)/(m + 5) + 120*d*x^(m + 4)/(m + 4) + 45*e*x^(m + 4)/(m + 4) + 45*d*x^(m +
 3)/(m + 3) + 10*e*x^(m + 3)/(m + 3) + 10*d*x^(m + 2)/(m + 2) + e*x^(m + 2)
/(m + 2) + d*x^(m + 1)/(m + 1)
```

mupad [B] time = 2.45, size = 1515, normalized size = 7.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] (e*x^m*x^12*(120543840*m + 150917976*m^2 + 105258076*m^3 + 45995730*m^4 + 1
3339535*m^5 + 2637558*m^6 + 357423*m^7 + 32670*m^8 + 1925*m^9 + 66*m^10 + m
^11 + 39916800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 65720683
6*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9
 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^11*(d + 10*e)*(13117248
0*m + 163671552*m^2 + 113667576*m^3 + 49412660*m^4 + 14241590*m^5 + 2795331
*m^6 + 375573*m^7 + 33990*m^8 + 1980*m^9 + 67*m^10 + m^11 + 43545600))/(148
6442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5
 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^1
1 + m^12 + 479001600) + (d*x*x^m*(1007441280*m + 924118272*m^2 + 489896616*
m^3 + 167310220*m^4 + 38759930*m^5 + 6230301*m^6 + 696333*m^7 + 53130*m^8 +
 2640*m^9 + 77*m^10 + m^11 + 479001600))/(1486442880*m + 1931559552*m^2 + 1
414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7
+ 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x
^2*(10*d + e)*(623471040*m + 654044256*m^2 + 379985316*m^3 + 138610760*m^4
+ 33729695*m^5 + 5630268*m^6 + 648183*m^7 + 50640*m^8 + 2565*m^9 + 76*m^10
+ m^11 + 239500800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 6572
06836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770
*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (5*x^m*x^10*(2*d + 9*e)*(1
43854272*m + 178770528*m^2 + 123524436*m^3 + 53368240*m^4 + 15270191*m^5 +
2972004*m^6 + 395463*m^7 + 35400*m^8 + 2037*m^9 + 68*m^10 + m^11 + 47900160
))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070
150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 +
 78*m^11 + m^12 + 479001600) + (15*x^m*x^9*(3*d + 8*e)*(159246720*m + 19692
3648*m^2 + 135232360*m^3 + 57997164*m^4 + 16452554*m^5 + 3170853*m^6 + 4173
09*m^7 + 36906*m^8 + 2096*m^9 + 69*m^10 + m^11 + 53222400))/(1486442880*m +
 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231
*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 +
479001600) + (30*x^m*x^8*(4*d + 7*e)*(178320960*m + 219154824*m^2 + 1493575
08*m^3 + 63481166*m^4 + 17823623*m^5 + 3395826*m^6 + 441351*m^7 + 38514*m^8
 + 2157*m^9 + 70*m^10 + m^11 + 59875200))/(1486442880*m + 1931559552*m^2 +
1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7
 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (42*x
^m*x^7*(5*d + 6*e)*(202573440*m + 246998016*m^2 + 166716696*m^3 + 70070020*
```

```
m^4 + 19428590*m^5 + 3651663*m^6 + 467853*m^7 + 40230*m^8 + 2220*m^9 + 71*m
^10 + m^11 + 68428800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 6
57206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55
770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (42*x^m*x^6*(6*d + 5*e)
*(234434880*m + 282854112*m^2 + 188526796*m^3 + 78113340*m^4 + 21326135*m^5
 + 3944016*m^6 + 497103*m^7 + 42060*m^8 + 2285*m^9 + 72*m^10 + m^11 + 79833
600))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206
070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^1
0 + 78*m^11 + m^12 + 479001600) + (30*x^m*x^5*(7*d + 4*e)*(278128512*m + 33
0686208*m^2 + 216665736*m^3 + 88108220*m^4 + 23592386*m^5 + 4279569*m^6 + 5
29413*m^7 + 44010*m^8 + 2352*m^9 + 73*m^10 + m^11 + 95800320))/(1486442880*
m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990
231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12
 + 479001600) + (15*x^m*x^4*(8*d + 3*e)*(341673120*m + 397471608*m^2 + 2541
35820*m^3 + 100767754*m^4 + 26325599*m^5 + 4666158*m^6 + 565119*m^7 + 46086
*m^8 + 2421*m^9 + 74*m^10 + m^11 + 119750400))/(1486442880*m + 1931559552*m
^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 692663
4*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) +
(5*x^m*x^3*(9*d + 2*e)*(442258560*m + 496433664*m^2 + 305860408*m^3 + 11711
5476*m^4 + 29651558*m^5 + 5112891*m^6 + 604581*m^7 + 48294*m^8 + 2492*m^9 +
 75*m^10 + m^11 + 159667200))/(1486442880*m + 1931559552*m^2 + 1414014888*m
^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^
8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] Timed out
```

3.768 $\int x^3(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{5}x^5(aB+Ab)+\frac{1}{4}aAx^4+\frac{1}{6}x^6(Ac+bB)+\frac{1}{7}Bcx^7$$

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{5}x^5(aB+Ab)+\frac{1}{4}aAx^4+\frac{1}{6}x^6(Ac+bB)+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2),x]
[Out] (a*A*x^4)/4 + ((A*b + a*B)*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^3+(Ab+aB)x^4+(bB+Ac)x^5+Bcx^6\right)\,dx\\&=\frac{1}{4}aAx^4+\frac{1}{5}(Ab+aB)x^5+\frac{1}{6}(bB+Ac)x^6+\frac{1}{7}Bcx^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.00

$$\frac{1}{5}x^5(aB+Ab)+\frac{1}{4}aAx^4+\frac{1}{6}x^6(Ac+bB)+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2),x]
[Out] (a*A*x^4)/4 + ((A*b + a*B)*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3(A+Bx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + b*x + c*x^2),x]
[Out] IntegrateAlgebraic[x^3*(A + B*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.34, size = 43, normalized size = 0.91

$$\frac{1}{7}x^7cB+\frac{1}{6}x^6bB+\frac{1}{6}x^6cA+\frac{1}{5}x^5aB+\frac{1}{5}x^5bA+\frac{1}{4}x^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c*B + 1/6*x^6*b*B + 1/6*x^6*c*A + 1/5*x^5*a*B + 1/5*x^5*b*A + 1/4*x
^4*a*A
```

giac [A] time = 0.17, size = 43, normalized size = 0.91

$$\frac{1}{7}Bcx^7 + \frac{1}{6}Bbx^6 + \frac{1}{6}Acx^6 + \frac{1}{5}Bax^5 + \frac{1}{5}Abx^5 + \frac{1}{4}Aax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7 + 1/6*B*b*x^6 + 1/6*A*c*x^6 + 1/5*B*a*x^5 + 1/5*A*b*x^5 + 1/4*A
*a*x^4
```

maple [A] time = 0.04, size = 40, normalized size = 0.85

$$\frac{Bc\,x^7}{7} + \frac{Aa\,x^4}{4} + \frac{(Ac + bB)\,x^6}{6} + \frac{(Ab + Ba)\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/4*A*a*x^4+1/5*(A*b+B*a)*x^5+1/6*(A*c+B*b)*x^6+1/7*B*c*x^7
```

maxima [A] time = 0.48, size = 39, normalized size = 0.83

$$\frac{1}{7}Bcx^7 + \frac{1}{6}(Bb + Ac)x^6 + \frac{1}{4}Aax^4 + \frac{1}{5}(Ba + Ab)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*x^7 + 1/6*(B*b + A*c)*x^6 + 1/4*A*a*x^4 + 1/5*(B*a + A*b)*x^5
```

mupad [B] time = 0.05, size = 41, normalized size = 0.87

$$\frac{B\,c\,x^7}{7} + \left(\frac{A\,c}{6} + \frac{B\,b}{6}\right)x^6 + \left(\frac{A\,b}{5} + \frac{B\,a}{5}\right)x^5 + \frac{A\,a\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^5*((A*b)/5 + (B*a)/5) + x^6*((A*c)/6 + (B*b)/6) + (A*a*x^4)/4 + (B*c*x^7)
/7
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{Aax^4}{4} + \frac{Bcx^7}{7} + x^6\left(\frac{Ac}{6} + \frac{Bb}{6}\right) + x^5\left(\frac{Ab}{5} + \frac{Ba}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x**4/4 + B*c*x**7/7 + x**6*(A*c/6 + B*b/6) + x**5*(A*b/5 + B*a/5)
```

3.769 $\int x^2(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{4}x^4(aB+Ab)+\frac{1}{3}aAx^3+\frac{1}{5}x^5(Ac+bB)+\frac{1}{6}Bcx^6$$

Rubi [A] time = 0.05, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{4}x^4(aB+Ab)+\frac{1}{3}aAx^3+\frac{1}{5}x^5(Ac+bB)+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2),x]
[Out] (a*A*x^3)/3 + ((A*b + a*B)*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^2+(Ab+aB)x^3+(bB+Ac)x^4+Bcx^5\right)\,dx\\&=\frac{1}{3}aAx^3+\frac{1}{4}(Ab+aB)x^4+\frac{1}{5}(bB+Ac)x^5+\frac{1}{6}Bcx^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.00

$$\frac{1}{4}x^4(aB+Ab)+\frac{1}{3}aAx^3+\frac{1}{5}x^5(Ac+bB)+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2),x]
[Out] (a*A*x^3)/3 + ((A*b + a*B)*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2),x]
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.36, size = 43, normalized size = 0.91

$$\frac{1}{6}x^6cB+\frac{1}{5}x^5bB+\frac{1}{5}x^5cA+\frac{1}{4}x^4aB+\frac{1}{4}x^4bA+\frac{1}{3}x^3aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c*B + 1/5*x^5*b*B + 1/5*x^5*c*A + 1/4*x^4*a*B + 1/4*x^4*b*A + 1/3*x
^3*a*A
```

giac [A] time = 0.22, size = 43, normalized size = 0.91

$$\frac{1}{6}\,Bcx^{6}+\frac{1}{5}\,Bbx^{5}+\frac{1}{5}\,Acx^{5}+\frac{1}{4}\,Bax^{4}+\frac{1}{4}\,Abx^{4}+\frac{1}{3}\,Aax^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6 + 1/5*B*b*x^5 + 1/5*A*c*x^5 + 1/4*B*a*x^4 + 1/4*A*b*x^4 + 1/3*A
*a*x^3
```

maple [A] time = 0.04, size = 40, normalized size = 0.85

$$\frac{Bc\,x^{6}}{6}+\frac{Aa\,x^{3}}{3}+\frac{(Ac+bB)\,x^{5}}{5}+\frac{(Ab+Ba)\,x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/3*A*a*x^3+1/4*(A*b+B*a)*x^4+1/5*(A*c+B*b)*x^5+1/6*B*c*x^6
```

maxima [A] time = 0.60, size = 39, normalized size = 0.83

$$\frac{1}{6}\,Bcx^{6}+\frac{1}{5}\,(Bb+Ac)x^{5}+\frac{1}{3}\,Aax^{3}+\frac{1}{4}\,(Ba+Ab)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*x^6 + 1/5*(B*b + A*c)*x^5 + 1/3*A*a*x^3 + 1/4*(B*a + A*b)*x^4
```

mupad [B] time = 0.04, size = 41, normalized size = 0.87

$$\frac{B\,c\,x^{6}}{6}+\left(\frac{A\,c}{5}+\frac{B\,b}{5}\right)\,x^{5}+\left(\frac{A\,b}{4}+\frac{B\,a}{4}\right)\,x^{4}+\frac{A\,a\,x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((A*b)/4 + (B*a)/4) + x^5*((A*c)/5 + (B*b)/5) + (A*a*x^3)/3 + (B*c*x^6)
/6
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{Aax^{3}}{3}+\frac{Bcx^{6}}{6}+x^{5}\left(\frac{Ac}{5}+\frac{Bb}{5}\right)+x^{4}\left(\frac{Ab}{4}+\frac{Ba}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x**3/3 + B*c*x**6/6 + x**5*(A*c/5 + B*b/5) + x**4*(A*b/4 + B*a/4)
```

3.770 $\int x(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{3}x^3(aB+Ab)+\frac{1}{2}aAx^2+\frac{1}{4}x^4(Ac+bB)+\frac{1}{5}Bcx^5$$

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {765}

$$\frac{1}{3}x^3(aB+Ab)+\frac{1}{2}aAx^2+\frac{1}{4}x^4(Ac+bB)+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2),x]
[Out] (a*A*x^2)/2 + ((A*b + a*B)*x^3)/3 + ((b*B + A*c)*x^4)/4 + (B*c*x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx+(Ab+aB)x^2+(bB+Ac)x^3+Bcx^4\right)\,dx\\&=\frac{1}{2}aAx^2+\frac{1}{3}(Ab+aB)x^3+\frac{1}{4}(bB+Ac)x^4+\frac{1}{5}Bcx^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 41, normalized size = 0.87

$$\frac{1}{60}x^2\left(20x(aB+Ab)+30aA+15x^2(Ac+bB)+12Bcx^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2),x]
[Out] (x^2*(30*a*A + 20*(A*b + a*B)*x + 15*(b*B + A*c)*x^2 + 12*B*c*x^3))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2),x]
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 43, normalized size = 0.91

$$\frac{1}{5}x^5cB+\frac{1}{4}x^4bB+\frac{1}{4}x^4cA+\frac{1}{3}x^3aB+\frac{1}{3}x^3bA+\frac{1}{2}x^2aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*c*B + 1/4*x^4*b*B + 1/4*x^4*c*A + 1/3*x^3*a*B + 1/3*x^3*b*A + 1/2*x
^2*a*A
```

giac [A] time = 0.15, size = 43, normalized size = 0.91

$$\frac{1}{5}Bcx^5 + \frac{1}{4}Bbx^4 + \frac{1}{4}Acx^4 + \frac{1}{3}Bax^3 + \frac{1}{3}Abx^3 + \frac{1}{2}Aax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5 + 1/4*B*b*x^4 + 1/4*A*c*x^4 + 1/3*B*a*x^3 + 1/3*A*b*x^3 + 1/2*A
*a*x^2
```

maple [A] time = 0.08, size = 40, normalized size = 0.85

$$\frac{Bc\,x^5}{5} + \frac{Aa\,x^2}{2} + \frac{(Ac+bB)\,x^4}{4} + \frac{(Ab+Ba)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*A*a*x^2+1/3*(A*b+B*a)*x^3+1/4*(A*c+B*b)*x^4+1/5*B*c*x^5
```

maxima [A] time = 0.53, size = 39, normalized size = 0.83

$$\frac{1}{5}Bcx^5 + \frac{1}{4}(Bb+Ac)x^4 + \frac{1}{2}Aax^2 + \frac{1}{3}(Ba+Ab)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*x^5 + 1/4*(B*b + A*c)*x^4 + 1/2*A*a*x^2 + 1/3*(B*a + A*b)*x^3
```

mupad [B] time = 0.04, size = 41, normalized size = 0.87

$$\frac{B\,c\,x^5}{5} + \left(\frac{A\,c}{4} + \frac{B\,b}{4}\right)\,x^4 + \left(\frac{A\,b}{3} + \frac{B\,a}{3}\right)\,x^3 + \frac{A\,a\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*b)/3 + (B*a)/3) + x^4*((A*c)/4 + (B*b)/4) + (A*a*x^2)/2 + (B*c*x^5)
/5
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{Aax^2}{2} + \frac{Bcx^5}{5} + x^4\left(\frac{Ac}{4} + \frac{Bb}{4}\right) + x^3\left(\frac{Ab}{3} + \frac{Ba}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x**2/2 + B*c*x**5/5 + x**4*(A*c/4 + B*b/4) + x**3*(A*b/3 + B*a/3)
```

3.771 $\int (A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=42

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Rubi [A] time = 0.03, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {631}

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)\,dx &= \int \left(aA+(Ab+aB)x+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= aAx+\frac{1}{2}(Ab+aB)x^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 40, normalized size = 0.95

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+\frac{1}{2}x^2bA+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*a*B + 1/2*x^2*b*A + x*a*A
```

giac [A] time = 0.15, size = 40, normalized size = 0.95

$$\frac{1}{4}Bcx^4 + \frac{1}{3}Bbx^3 + \frac{1}{3}Acx^3 + \frac{1}{2}Bax^2 + \frac{1}{2}Abx^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + 1/2*A*b*x^2 + A*a*x
```

maple [A] time = 0.06, size = 37, normalized size = 0.88

$$\frac{Bc\,x^4}{4} + Aax + \frac{(Ac+bB)\,x^3}{3} + \frac{(Ab+Ba)\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] A*a*x+1/2*(A*b+B*a)*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

maxima [A] time = 0.56, size = 36, normalized size = 0.86

$$\frac{1}{4}Bcx^4 + \frac{1}{3}(Bb+Ac)x^3 + Aax + \frac{1}{2}(Ba+Ab)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/3*(B*b + A*c)*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

mupad [B] time = 0.04, size = 38, normalized size = 0.90

$$\frac{B\,c\,x^4}{4} + \left(\frac{A\,c}{3} + \frac{B\,b}{3}\right)x^3 + \left(\frac{A\,b}{2} + \frac{B\,a}{2}\right)x^2 + A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*b)/2 + (B*a)/2) + x^3*((A*c)/3 + (B*b)/3) + A*a*x + (B*c*x^4)/4
```

sympy [A] time = 0.07, size = 39, normalized size = 0.93

$$Aax + \frac{Bcx^4}{4} + x^3\left(\frac{Ac}{3} + \frac{Bb}{3}\right) + x^2\left(\frac{Ab}{2} + \frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x + B*c*x**4/4 + x**3*(A*c/3 + B*b/3) + x**2*(A*b/2 + B*a/2)
```

3.772 $\int \frac{(A+Bx)(a+bx+cx^2)}{x}\,dx$

Optimal. Leaf size=38

$$x(aB+Ab)+aA\log(x)+\frac{1}{2}x^2(Ac+bB)+\frac{1}{3}Bcx^3$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$x(aB+Ab)+aA\log(x)+\frac{1}{2}x^2(Ac+bB)+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x,x]
```

```
[Out] (A*b + a*B)*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x}\,dx &= \int \left(Ab+aB+\frac{aA}{x}+(bB+Ac)x+Bcx^2\right)dx\\ &= (Ab+aB)x+\frac{1}{2}(bB+Ac)x^2+\frac{1}{3}Bcx^3+aA\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 1.00

$$x(aB+Ab)+aA\log(x)+\frac{1}{2}x^2(Ac+bB)+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x,x]
```

```
[Out] (A*b + a*B)*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x, x]
```

fricas [A] time = 0.40, size = 34, normalized size = 0.89

$$\frac{1}{3}Bcx^3+\frac{1}{2}(Bb+Ac)x^2+Aa\log(x)+(Ba+Ab)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*c*x^3 + 1/2*(B*b + A*c)*x^2 + A*a*log(x) + (B*a + A*b)*x
```

giac [A] time = 0.15, size = 36, normalized size = 0.95

$$\frac{1}{3}Bcx^3 + \frac{1}{2}Bbx^2 + \frac{1}{2}Acx^2 + Bax + Abx + Aa\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + 1/2*B*b*x^2 + 1/2*A*c*x^2 + B*a*x + A*b*x + A*a*log(abs(x))
```

maple [A] time = 0.04, size = 36, normalized size = 0.95

$$\frac{Bc\,x^3}{3} + \frac{Ac\,x^2}{2} + \frac{Bb\,x^2}{2} + Aa\ln(x) + Abx + Bax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x,x)
```

```
[Out] 1/3*B*c*x^3+1/2*A*c*x^2+1/2*B*b*x^2+A*b*x+B*a*x+A*a*ln(x)
```

maxima [A] time = 0.53, size = 34, normalized size = 0.89

$$\frac{1}{3}Bcx^3 + \frac{1}{2}(Bb + Ac)x^2 + Aa\log(x) + (Ba + Ab)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + 1/2*(B*b + A*c)*x^2 + A*a*log(x) + (B*a + A*b)*x
```

mupad [B] time = 0.04, size = 35, normalized size = 0.92

$$x\,(A\,b + B\,a) + x^2\left(\frac{A\,c}{2} + \frac{B\,b}{2}\right) + \frac{B\,c\,x^3}{3} + A\,a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x,x)
```

```
[Out] x*(A*b + B*a) + x^2*((A*c)/2 + (B*b)/2) + (B*c*x^3)/3 + A*a*log(x)
```

sympy [A] time = 0.13, size = 36, normalized size = 0.95

$$Aa\log(x) + \frac{Bcx^3}{3} + x^2\left(\frac{Ac}{2} + \frac{Bb}{2}\right) + x\,(Ab + Ba)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x,x)
```

```
[Out] A*a*log(x) + B*c*x**3/3 + x**2*(A*c/2 + B*b/2) + x*(A*b + B*a)
```

3.773 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^2}\,dx$

Optimal. Leaf size=36

$$\log(x)(aB+Ab)-\frac{aA}{x}+x(Ac+bB)+\frac{1}{2}Bcx^2$$

Rubi [A] time = 0.03, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\log(x)(aB+Ab)-\frac{aA}{x}+x(Ac+bB)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^2,x]
[Out] -((a*A)/x) + (b*B + A*c)*x + (B*c*x^2)/2 + (A*b + a*B)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^2}\,dx &= \int \left(bB\left(1+\frac{Ac}{bB}\right)+\frac{aA}{x^2}+\frac{Ab+aB}{x}+Bcx\right)dx\\ &= -\frac{aA}{x}+(bB+Ac)x+\frac{1}{2}Bcx^2+(Ab+aB)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 36, normalized size = 1.00

$$\log(x)(aB+Ab)-\frac{aA}{x}+x(Ac+bB)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^2,x]
[Out] -((a*A)/x) + (b*B + A*c)*x + (B*c*x^2)/2 + (A*b + a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^2,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^2, x]
```

fricas [A] time = 0.39, size = 40, normalized size = 1.11

$$\frac{Bcx^3+2\,(Bb+Ac)x^2+2\,(Ba+Ab)x\log(x)-2\,Aa}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*x^3 + 2*(B*b + A*c)*x^2 + 2*(B*a + A*b)*x*log(x) - 2*A*a)/x
```

giac [A] time = 0.18, size = 34, normalized size = 0.94

$$\frac{1}{2}\,Bcx^{2}+Bbx+Acx+(Ba+Ab)\log\left(|x|\right)-\frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^2,x, algorithm="giac")
```

```
[Out] 1/2*B*c*x^2 + B*b*x + A*c*x + (B*a + A*b)*log(abs(x)) - A*a/x
```

maple [A] time = 0.05, size = 34, normalized size = 0.94

$$\frac{Bc\,x^{2}}{2}+Ab\ln(x)+Acx+Ba\ln(x)+Bbx-\frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^2,x)
```

```
[Out] 1/2*B*c*x^2+A*c*x+B*b*x-A*a/x+A*b*ln(x)+B*a*ln(x)
```

maxima [A] time = 0.53, size = 34, normalized size = 0.94

$$\frac{1}{2}\,Bcx^{2}+(Bb+Ac)x+(Ba+Ab)\log(x)-\frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*c*x^2 + (B*b + A*c)*x + (B*a + A*b)*log(x) - A*a/x
```

mupad [B] time = 0.04, size = 34, normalized size = 0.94

$$x\,\left(A\,c+B\,b\right)+\ln(x)\,\left(A\,b+B\,a\right)-\frac{A\,a}{x}+\frac{B\,c\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^2,x)
```

```
[Out] x*(A*c + B*b) + log(x)*(A*b + B*a) - (A*a)/x + (B*c*x^2)/2
```

sympy [A] time = 0.17, size = 31, normalized size = 0.86

$$-\frac{Aa}{x}+\frac{Bcx^{2}}{2}+x\left(Ac+Bb\right)+\left(Ab+Ba\right)\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**2,x)
```

```
[Out] -A*a/x + B*c*x**2/2 + x*(A*c + B*b) + (A*b + B*a)*log(x)
```

3.774 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^3}\,dx$

Optimal. Leaf size=36

$$-\frac{aB+Ab}{x}-\frac{aA}{2x^2}+\log(x)(Ac+bB)+Bcx$$

Rubi [A] time = 0.02, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{x}-\frac{aA}{2x^2}+\log(x)(Ac+bB)+Bcx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^3,x]
[Out] -(a*A)/(2*x^2) - (A*b + a*B)/x + B*c*x + (b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^3}\,dx &= \int \left(Bc+\frac{aA}{x^3}+\frac{Ab+aB}{x^2}+\frac{bB+Ac}{x}\right)dx\\ &= -\frac{aA}{2x^2}-\frac{Ab+aB}{x}+Bcx+(bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 37, normalized size = 1.03

$$\frac{-aB-Ab}{x}-\frac{aA}{2x^2}+\log(x)(Ac+bB)+Bcx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^3,x]
[Out] -1/2*(a*A)/x^2 + (-(A*b) - a*B)/x + B*c*x + (b*B + A*c)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^3,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^3, x]
```

fricas [A] time = 0.40, size = 41, normalized size = 1.14

$$\frac{2\,Bcx^3+2\,(Bb+Ac)x^2\log(x)-Aa-2\,(Ba+Ab)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*x^3 + 2*(B*b + A*c)*x^2*log(x) - A*a - 2*(B*a + A*b)*x)/x^2
```

giac [A] time = 0.15, size = 35, normalized size = 0.97

$$Bcx + (Bb + Ac)\log\left(|x|\right) - \frac{Aa + 2\,(Ba + Ab)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^3,x, algorithm="giac")
```

```
[Out] B*c*x + (B*b + A*c)*log(abs(x)) - 1/2*(A*a + 2*(B*a + A*b)*x)/x^2
```

maple [A] time = 0.05, size = 37, normalized size = 1.03

$$Ac\ln(x) + Bb\ln(x) + Bcx - \frac{Ab}{x} - \frac{Ba}{x} - \frac{Aa}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^3,x)
```

```
[Out] B*c*x-1/2*A*a/x^2-A*b/x-B*a/x+A*c*ln(x)+B*b*ln(x)
```

maxima [A] time = 0.50, size = 34, normalized size = 0.94

$$Bcx + (Bb + Ac)\log(x) - \frac{Aa + 2\,(Ba + Ab)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^3,x, algorithm="maxima")
```

```
[Out] B*c*x + (B*b + A*c)*log(x) - 1/2*(A*a + 2*(B*a + A*b)*x)/x^2
```

mupad [B] time = 1.17, size = 34, normalized size = 0.94

$$\ln(x)\,\left(A\,c + B\,b\right) - \frac{\frac{A\,a}{2} + x\,\left(A\,b + B\,a\right)}{x^2} + B\,c\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^3,x)
```

```
[Out] log(x)*(A*c + B*b) - ((A*a)/2 + x*(A*b + B*a))/x^2 + B*c*x
```

sympy [A] time = 0.31, size = 36, normalized size = 1.00

$$Bcx + (Ac + Bb)\log{(x)} + \frac{-Aa + x\,(-2Ab - 2Ba)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**3,x)
```

```
[Out] B*c*x + (A*c + B*b)*log(x) + (-A*a + x*(-2*A*b - 2*B*a))/(2*x**2)
```

3.775 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^4}\,dx$

Optimal. Leaf size=41

$$-\frac{aB+Ab}{2x^2}-\frac{aA}{3x^3}-\frac{Ac+bB}{x}+Bc\log(x)$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{2x^2}-\frac{aA}{3x^3}-\frac{Ac+bB}{x}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^4,x]
```

```
[Out] -(a*A)/(3*x^3) - (A*b + a*B)/(2*x^2) - (b*B + A*c)/x + B*c*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^4}\,dx &= \int \left(\frac{aA}{x^4}+\frac{Ab+aB}{x^3}+\frac{bB+Ac}{x^2}+\frac{Bc}{x}\right)dx\\ &= -\frac{aA}{3x^3}-\frac{Ab+aB}{2x^2}-\frac{bB+Ac}{x}+Bc\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 41, normalized size = 1.00

$$Bc\log(x)-\frac{a(2A+3Bx)+3x(Ab+2Acx+2bBx)}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^4,x]
```

```
[Out] -1/6*(a*(2*A + 3*B*x) + 3*x*(A*b + 2*b*B*x + 2*A*c*x))/x^3 + B*c*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^4, x]
```

fricas [A] time = 0.39, size = 41, normalized size = 1.00

$$\frac{6\,Bcx^3\log(x)-6\,(Bb+Ac)x^2-2\,Aa-3\,(Ba+Ab)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^4,x, algorithm="fricas")
[Out] 1/6*(6*B*c*x^3*log(x) - 6*(B*b + A*c)*x^2 - 2*A*a - 3*(B*a + A*b)*x)/x^3
```

giac [A] time = 0.17, size = 39, normalized size = 0.95

$$Bc\log(|x|) - \frac{6\,(Bb + Ac)x^2 + 2\,Aa + 3\,(Ba + Ab)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^4,x, algorithm="giac")
[Out] B*c*log(abs(x)) - 1/6*(6*(B*b + A*c)*x^2 + 2*A*a + 3*(B*a + A*b)*x)/x^3
```

maple [A] time = 0.05, size = 42, normalized size = 1.02

$$Bc\ln(x) - \frac{Ac}{x} - \frac{Bb}{x} - \frac{Ab}{2x^2} - \frac{Ba}{2x^2} - \frac{Aa}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^4,x)
[Out] -1/3*A*a/x^3-1/2*A*b/x^2-1/2*B*a/x^2-1/x*A*c-1/x*b*B+B*c*ln(x)
```

maxima [A] time = 0.62, size = 38, normalized size = 0.93

$$Bc\log(x) - \frac{6\,(Bb + Ac)x^2 + 2\,Aa + 3\,(Ba + Ab)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^4,x, algorithm="maxima")
[Out] B*c*log(x) - 1/6*(6*(B*b + A*c)*x^2 + 2*A*a + 3*(B*a + A*b)*x)/x^3
```

mupad [B] time = 1.18, size = 38, normalized size = 0.93

$$B\,c\,\ln(x) - \frac{(A\,c + B\,b)\,x^2 + \left(\frac{A\,b}{2} + \frac{B\,a}{2}\right)\,x + \frac{A\,a}{3}}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^4,x)
[Out] B*c*log(x) - ((A*a)/3 + x*((A*b)/2 + (B*a)/2) + x^2*(A*c + B*b))/x^3
```

sympy [A] time = 0.58, size = 44, normalized size = 1.07

$$Bc\log(x) + \frac{-2Aa + x^2(-6Ac - 6Bb) + x(-3Ab - 3Ba)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**4,x)
[Out] B*c*log(x) + (-2*A*a + x**2*(-6*A*c - 6*B*b) + x*(-3*A*b - 3*B*a))/(6*x**3)
```

3.776 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^5}\,dx$

Optimal. Leaf size=45

$$-\frac{aB+Ab}{3x^3}-\frac{aA}{4x^4}-\frac{Ac+bB}{2x^2}-\frac{Bc}{x}$$

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{3x^3}-\frac{aA}{4x^4}-\frac{Ac+bB}{2x^2}-\frac{Bc}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^5,x]
[Out] -(a*A)/(4*x^4) - (A*b + a*B)/(3*x^3) - (b*B + A*c)/(2*x^2) - (B*c)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^5}\,dx &= \int \left(\frac{aA}{x^5}+\frac{Ab+aB}{x^4}+\frac{bB+Ac}{x^3}+\frac{Bc}{x^2}\right)dx\\ &= -\frac{aA}{4x^4}-\frac{Ab+aB}{3x^3}-\frac{bB+Ac}{2x^2}-\frac{Bc}{x}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.93

$$-\frac{a(3A+4Bx)+2x(A(2b+3cx)+3Bx(b+2cx))}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^5,x]
[Out] -1/12*(a*(3*A + 4*B*x) + 2*x*(3*B*x*(b + 2*c*x) + A*(2*b + 3*c*x)))/x^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^5,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^5, x]
```

fricas [A] time = 0.39, size = 39, normalized size = 0.87

$$-\frac{12\,Bcx^3+6\,(Bb+Ac)x^2+3\,Aa+4\,(Ba+Ab)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*x^3 + 6*(B*b + A*c)*x^2 + 3*A*a + 4*(B*a + A*b)*x)/x^4
```

giac [A] time = 0.17, size = 41, normalized size = 0.91

$$-\frac{12\,Bcx^3+6\,Bbx^2+6\,Acx^2+4\,Bax+4\,Abx+3\,Aa}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*x^3 + 6*B*b*x^2 + 6*A*c*x^2 + 4*B*a*x + 4*A*b*x + 3*A*a)/x^4
```

maple [A] time = 0.06, size = 40, normalized size = 0.89

$$-\frac{Bc}{x}-\frac{Aa}{4x^4}-\frac{Ac+bB}{2x^2}-\frac{Ab+Ba}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^5,x)
```

```
[Out] -1/4*A*a/x^4-1/3*(A*b+B*a)/x^3-1/2*(A*c+B*b)/x^2-B*c/x
```

maxima [A] time = 0.65, size = 39, normalized size = 0.87

$$-\frac{12\,Bcx^3+6\,(Bb+Ac)x^2+3\,Aa+4\,(Ba+Ab)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*x^3 + 6*(B*b + A*c)*x^2 + 3*A*a + 4*(B*a + A*b)*x)/x^4
```

mupad [B] time = 0.03, size = 40, normalized size = 0.89

$$-\frac{B\,c\,x^3+\left(\frac{A\,c}{2}+\frac{B\,b}{2}\right)\,x^2+\left(\frac{A\,b}{3}+\frac{B\,a}{3}\right)\,x+\frac{A\,a}{4}}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^5,x)
```

```
[Out] -((A*a)/4 + x*((A*b)/3 + (B*a)/3) + x^2*((A*c)/2 + (B*b)/2) + B*c*x^3)/x^4
```

sympy [A] time = 1.04, size = 46, normalized size = 1.02

$$\frac{-3Aa-12Bcx^3+x^2\,(-6Ac-6Bb)+x\,(-4Ab-4Ba)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**5,x)
```

```
[Out] (-3*A*a - 12*B*c*x**3 + x**2*(-6*A*c - 6*B*b) + x*(-4*A*b - 4*B*a))/(12*x**
4)
```

3.777 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^6} \, dx$

Optimal. Leaf size=47

$$-\frac{aB+Ab}{4x^4}-\frac{aA}{5x^5}-\frac{Ac+bB}{3x^3}-\frac{Bc}{2x^2}$$

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{4x^4}-\frac{aA}{5x^5}-\frac{Ac+bB}{3x^3}-\frac{Bc}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^6,x]
```

```
[Out] -(a*A)/(5*x^5) - (A*b + a*B)/(4*x^4) - (b*B + A*c)/(3*x^3) - (B*c)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^6} \, dx &= \int \left(\frac{aA}{x^6}+\frac{Ab+aB}{x^5}+\frac{bB+Ac}{x^4}+\frac{Bc}{x^3}\right) dx \\ &= -\frac{aA}{5x^5}-\frac{Ab+aB}{4x^4}-\frac{bB+Ac}{3x^3}-\frac{Bc}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.94

$$-\frac{3a(4A+5Bx)+5x\left(3Ab+4Acx+4bBx+6Bcx^2\right)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^6,x]
```

```
[Out] -1/60*(3*a*(4*A + 5*B*x) + 5*x*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2))/x^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^6} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^6, x]
```

fricas [A] time = 0.39, size = 39, normalized size = 0.83

$$-\frac{30\,Bcx^3+20\,(Bb+Ac)x^2+12\,Aa+15\,(Ba+Ab)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*x^3 + 20*(B*b + A*c)*x^2 + 12*A*a + 15*(B*a + A*b)*x)/x^5
```

giac [A] time = 0.15, size = 41, normalized size = 0.87

$$-\frac{30\,Bcx^3+20\,Bbx^2+20\,Acx^2+15\,Bax+15\,Abx+12\,Aa}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3 + 20*B*b*x^2 + 20*A*c*x^2 + 15*B*a*x + 15*A*b*x + 12*A*a)
/x^5
```

maple [A] time = 0.05, size = 40, normalized size = 0.85

$$-\frac{Bc}{2x^2}-\frac{Aa}{5x^5}-\frac{Ac+bB}{3x^3}-\frac{Ab+Ba}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^6,x)
```

```
[Out] -1/5*A*a/x^5-1/4*(A*b+B*a)/x^4-1/3*(A*c+B*b)/x^3-1/2*B*c/x^2
```

maxima [A] time = 0.67, size = 39, normalized size = 0.83

$$-\frac{30\,Bcx^3+20\,(Bb+Ac)x^2+12\,Aa+15\,(Ba+Ab)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*x^3 + 20*(B*b + A*c)*x^2 + 12*A*a + 15*(B*a + A*b)*x)/x^5
```

mupad [B] time = 0.03, size = 41, normalized size = 0.87

$$-\frac{\frac{B\,c\,x^3}{2}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x^2+\left(\frac{A\,b}{4}+\frac{B\,a}{4}\right)\,x+\frac{A\,a}{5}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^6,x)
```

```
[Out] -((A*a)/5 + x*((A*b)/4 + (B*a)/4) + x^2*((A*c)/3 + (B*b)/3) + (B*c*x^3)/2)/
x^5
```

sympy [A] time = 1.70, size = 46, normalized size = 0.98

$$\frac{-12Aa-30Bcx^3+x^2\,(-20Ac-20Bb)+x\,(-15Ab-15Ba)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**6,x)
```

```
[Out] (-12*A*a - 30*B*c*x**3 + x**2*(-20*A*c - 20*B*b) + x*(-15*A*b - 15*B*a))/(6
0*x**5)
```

3.778 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^7} dx$

Optimal. Leaf size=47

$$-\frac{aB+Ab}{5x^5}-\frac{aA}{6x^6}-\frac{Ac+bB}{4x^4}-\frac{Bc}{3x^3}$$

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{5x^5}-\frac{aA}{6x^6}-\frac{Ac+bB}{4x^4}-\frac{Bc}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^7,x]
```

```
[Out] -(a*A)/(6*x^6) - (A*b + a*B)/(5*x^5) - (b*B + A*c)/(4*x^4) - (B*c)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^7}\,dx &= \int \left(\frac{aA}{x^7}+\frac{Ab+aB}{x^6}+\frac{bB+Ac}{x^5}+\frac{Bc}{x^4}\right)dx\\ &= -\frac{aA}{6x^6}-\frac{Ab+aB}{5x^5}-\frac{bB+Ac}{4x^4}-\frac{Bc}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 45, normalized size = 0.96

$$-\frac{2a(5A+6Bx)+x(3A(4b+5cx)+5Bx(3b+4cx))}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^7,x]
```

```
[Out] -1/60*(2*a*(5*A + 6*B*x) + x*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*x)))/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^7, x]
```

fricas [A] time = 0.38, size = 39, normalized size = 0.83

$$-\frac{20\,Bcx^3+15\,(Bb+Ac)x^2+10\,Aa+12\,(Ba+Ab)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*x^3 + 15*(B*b + A*c)*x^2 + 10*A*a + 12*(B*a + A*b)*x)/x^6
```

giac [A] time = 0.15, size = 41, normalized size = 0.87

$$-\frac{20 \, B c x^{3} + 15 \, B b x^{2} + 15 \, A c x^{2} + 12 \, B a x + 12 \, A b x + 10 \, A a}{60 \, x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^3 + 15*B*b*x^2 + 15*A*c*x^2 + 12*B*a*x + 12*A*b*x + 10*A*a)
/x^6
```

maple [A] time = 0.05, size = 40, normalized size = 0.85

$$-\frac{Bc}{3x^{3}}-\frac{Aa}{6x^{6}}-\frac{Ac+bB}{4x^{4}}-\frac{Ab+Ba}{5x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^7,x)
```

```
[Out] -1/5*(A*b+B*a)/x^5-1/4*(A*c+B*b)/x^4-1/3*B*c/x^3-1/6*A*a/x^6
```

maxima [A] time = 0.59, size = 39, normalized size = 0.83

$$-\frac{20 \, B c x^{3} + 15 \, {\left(B b + A c\right)} x^{2} + 10 \, A a + 12 \, {\left(B a + A b\right)} x}{60 \, x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*x^3 + 15*(B*b + A*c)*x^2 + 10*A*a + 12*(B*a + A*b)*x)/x^6
```

mupad [B] time = 0.03, size = 41, normalized size = 0.87

$$-\frac{\frac{B\,c\,x^3}{3}+\left(\frac{A\,c}{4}+\frac{B\,b}{4}\right)\,x^2+\left(\frac{A\,b}{5}+\frac{B\,a}{5}\right)\,x+\frac{A\,a}{6}}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^7,x)
```

```
[Out] -((A*a)/6 + x*((A*b)/5 + (B*a)/5) + x^2*((A*c)/4 + (B*b)/4) + (B*c*x^3)/3)/
x^6
```

sympy [A] time = 2.67, size = 46, normalized size = 0.98

$$\frac{-10Aa-20Bcx^{3}+x^{2}\left(-15Ac-15Bb\right)+x\left(-12Ab-12Ba\right)}{60x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**7,x)
```

```
[Out] (-10*A*a - 20*B*c*x**3 + x**2*(-15*A*c - 15*B*b) + x*(-12*A*b - 12*B*a))/(6
0*x**6)
```

3.779 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^8}\,dx$

Optimal. Leaf size=47

$$-\frac{aB+Ab}{6x^6}-\frac{aA}{7x^7}-\frac{Ac+bB}{5x^5}-\frac{Bc}{4x^4}$$

Rubi [A] time = 0.03, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{6x^6}-\frac{aA}{7x^7}-\frac{Ac+bB}{5x^5}-\frac{Bc}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^8,x]
```

```
[Out] -(a*A)/(7*x^7) - (A*b + a*B)/(6*x^6) - (b*B + A*c)/(5*x^5) - (B*c)/(4*x^4)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^8}\,dx &= \int \left(\frac{aA}{x^8}+\frac{Ab+aB}{x^7}+\frac{bB+Ac}{x^6}+\frac{Bc}{x^5}\right)dx\\ &= -\frac{aA}{7x^7}-\frac{Ab+aB}{6x^6}-\frac{bB+Ac}{5x^5}-\frac{Bc}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 46, normalized size = 0.98

$$-\frac{10a(6A+7Bx)+7x(2A(5b+6cx)+3Bx(4b+5cx))}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^8,x]
```

```
[Out] -1/420*(10*a*(6*A + 7*B*x) + 7*x*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6*c*x)))
/x^7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^8, x]
```

fricas [**A**] time = 0.38, size = 39, normalized size = 0.83

$$-\frac{105\,Bcx^3+84\,(Bb+Ac)x^2+60\,Aa+70\,(Ba+Ab)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(105*B*c*x^3 + 84*(B*b + A*c)*x^2 + 60*A*a + 70*(B*a + A*b)*x)/x^7
```

giac [**A**] time = 0.17, size = 41, normalized size = 0.87

$$-\frac{105\,Bcx^3+84\,Bbx^2+84\,Acx^2+70\,Bax+70\,Abx+60\,Aa}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(105*B*c*x^3 + 84*B*b*x^2 + 84*A*c*x^2 + 70*B*a*x + 70*A*b*x + 60*A*
a)/x^7
```

maple [**A**] time = 0.06, size = 40, normalized size = 0.85

$$-\frac{Bc}{4x^4}-\frac{Aa}{7x^7}-\frac{Ac+bB}{5x^5}-\frac{Ab+Ba}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^8,x)
```

```
[Out] -1/5*(A*c+B*b)/x^5-1/4*B*c/x^4-1/7*a*A/x^7-1/6*(A*b+B*a)/x^6
```

maxima [**A**] time = 0.49, size = 39, normalized size = 0.83

$$-\frac{105\,Bcx^3+84\,(Bb+Ac)x^2+60\,Aa+70\,(Ba+Ab)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(105*B*c*x^3 + 84*(B*b + A*c)*x^2 + 60*A*a + 70*(B*a + A*b)*x)/x^7
```

mupad [**B**] time = 0.03, size = 41, normalized size = 0.87

$$-\frac{\frac{B\,c\,x^3}{4}+\left(\frac{A\,c}{5}+\frac{B\,b}{5}\right)\,x^2+\left(\frac{A\,b}{6}+\frac{B\,a}{6}\right)\,x+\frac{A\,a}{7}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^8,x)
```

```
[Out] -((A*a)/7 + x*((A*b)/6 + (B*a)/6) + x^2*((A*c)/5 + (B*b)/5) + (B*c*x^3)/4)/
x^7
```

sympy [**A**] time = 3.87, size = 46, normalized size = 0.98

$$\frac{-60Aa-105Bcx^3+x^2\,(-84Ac-84Bb)+x\,(-70Ab-70Ba)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**8,x)
```

```
[Out] (-60*A*a - 105*B*c*x**3 + x**2*(-84*A*c - 84*B*b) + x*(-70*A*b - 70*B*a))/(
420*x**7)
```

3.780 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=101

$$\frac{1}{3}a^2Ax^3+\frac{1}{6}x^6\left(2aBc+2Abc+b^2B\right)+\frac{1}{5}x^5\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{8}Bc^2x^8$$

Rubi [A] time = 0.14, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{1}{3}a^2Ax^3+\frac{1}{6}x^6\left(2aBc+2Abc+b^2B\right)+\frac{1}{5}x^5\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a*(2*A*b + a*B)*x^4)/4 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^5)
/5 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2
*x^8)/8
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)^2\,dx=\int\left(a^2Ax^2+a(2Ab+aB)x^3+\left(2abB+A\left(b^2+2ac\right)\right)x^4+\left(b^2B+2Abc+2a\right.\right.$$
$$=\frac{1}{3}a^2Ax^3+\frac{1}{4}a(2Ab+aB)x^4+\frac{1}{5}\left(2abB+A\left(b^2+2ac\right)\right)x^5+\frac{1}{6}\left(b^2B+2Abc\right.$$

Mathematica [A] time = 0.03, size = 101, normalized size = 1.00

$$\frac{1}{3}a^2Ax^3+\frac{1}{6}x^6\left(2aBc+2Abc+b^2B\right)+\frac{1}{5}x^5\left(2aAc+2abB+Ab^2\right)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a*(2*A*b + a*B)*x^4)/4 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^5)
/5 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2
*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.37, size = 103, normalized size = 1.02

$$\frac{1}{8}x^8c^2B + \frac{2}{7}x^7cbB + \frac{1}{7}x^7c^2A + \frac{1}{6}x^6b^2B + \frac{1}{3}x^6caB + \frac{1}{3}x^6cbA + \frac{2}{5}x^5baB + \frac{1}{5}x^5b^2A + \frac{2}{5}x^5caA + \frac{1}{4}x^4a^2B + \frac{1}{2}x^4baA + \frac{1}{3}x^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*B + 2/7*x^7*c*b*B + 1/7*x^7*c^2*A + 1/6*x^6*b^2*B + 1/3*x^6*c*a
*B + 1/3*x^6*c*b*A + 2/5*x^5*b*a*B + 1/5*x^5*b^2*A + 2/5*x^5*c*a*A + 1/4*x^
4*a^2*B + 1/2*x^4*b*a*A + 1/3*x^3*a^2*A
```

giac [A] time = 0.15, size = 103, normalized size = 1.02

$$\frac{1}{8}Bc^2x^8 + \frac{2}{7}Bbcx^7 + \frac{1}{7}Ac^2x^7 + \frac{1}{6}Bb^2x^6 + \frac{1}{3}Bacx^6 + \frac{1}{3}Abcx^6 + \frac{2}{5}Babx^5 + \frac{1}{5}Ab^2x^5 + \frac{2}{5}Aacx^5 + \frac{1}{4}Ba^2x^4 + \frac{1}{2}Aabx^4 + \frac{1}{3}Aa^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 2/7*B*b*c*x^7 + 1/7*A*c^2*x^7 + 1/6*B*b^2*x^6 + 1/3*B*a*c*x
^6 + 1/3*A*b*c*x^6 + 2/5*B*a*b*x^5 + 1/5*A*b^2*x^5 + 2/5*A*a*c*x^5 + 1/4*B*
a^2*x^4 + 1/2*A*a*b*x^4 + 1/3*A*a^2*x^3
```

maple [A] time = 0.05, size = 94, normalized size = 0.93

$$\frac{B\,c^2x^8}{8} + \frac{\left(A\,c^2+2bBc\right)x^7}{7} + \frac{A\,a^2x^3}{3} + \frac{\left(2Abc+\left(2ac+b^2\right)B\right)x^6}{6} + \frac{\left(2Bab+\left(2ac+b^2\right)A\right)x^5}{5} + \frac{\left(2Aab+B\,a^2\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/8*B*c^2*x^8+1/7*(A*c^2+2*B*b*c)*x^7+1/6*(2*A*b*c+B*(2*a*c+b^2))*x^6+1/5*(
2*a*b*B+A*(2*a*c+b^2))*x^5+1/4*(2*A*a*b+B*a^2)*x^4+1/3*A*a^2*x^3
```

maxima [A] time = 0.56, size = 93, normalized size = 0.92

$$\frac{1}{8}Bc^2x^8 + \frac{1}{7}\left(2\,Bbc + Ac^2\right)x^7 + \frac{1}{6}\left(Bb^2 + 2\,(Ba + Ab)c\right)x^6 + \frac{1}{3}Aa^2x^3 + \frac{1}{5}\left(2\,Bab + Ab^2 + 2\,Aac\right)x^5 + \frac{1}{4}\left(Ba^2 + 2\,Aab\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/7*(2*B*b*c + A*c^2)*x^7 + 1/6*(B*b^2 + 2*(B*a + A*b)*c)*x
^6 + 1/3*A*a^2*x^3 + 1/5*(2*B*a*b + A*b^2 + 2*A*a*c)*x^5 + 1/4*(B*a^2 + 2*A
*a*b)*x^4
```

mupad [B] time = 1.16, size = 93, normalized size = 0.92

$$x^4\left(\frac{B\,a^2}{4}+\frac{A\,b\,a}{2}\right)+x^7\left(\frac{A\,c^2}{7}+\frac{2\,B\,b\,c}{7}\right)+x^5\left(\frac{A\,b^2}{5}+\frac{2\,B\,a\,b}{5}+\frac{2\,A\,a\,c}{5}\right)+x^6\left(\frac{B\,b^2}{6}+\frac{A\,c\,b}{3}+\frac{B\,a\,c}{3}\right)+\frac{A\,a^2\,x^3}{3}+\frac{B\,c^2\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^4*((B*a^2)/4 + (A*a*b)/2) + x^7*((A*c^2)/7 + (2*B*b*c)/7) + x^5*((A*b^2)/
5 + (2*A*a*c)/5 + (2*B*a*b)/5) + x^6*((B*b^2)/6 + (A*b*c)/3 + (B*a*c)/3) +
(A*a^2*x^3)/3 + (B*c^2*x^8)/8
```

sympy [A] time = 0.09, size = 105, normalized size = 1.04

$$\frac{Aa^2x^3}{3} + \frac{Bc^2x^8}{8} + x^7\left(\frac{Ac^2}{7} + \frac{2Bbc}{7}\right) + x^6\left(\frac{Abc}{3} + \frac{Bac}{3} + \frac{Bb^2}{6}\right) + x^5\left(\frac{2Aac}{5} + \frac{Ab^2}{5} + \frac{2Bab}{5}\right) + x^4\left(\frac{Aab}{2} + \frac{Ba^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x**3/3 + B*c**2*x**8/8 + x**7*(A*c**2/7 + 2*B*b*c/7) + x**6*(A*b*c/3
 + B*a*c/3 + B*b**2/6) + x**5*(2*A*a*c/5 + A*b**2/5 + 2*B*a*b/5) + x**4*(A*
a*b/2 + B*a**2/4)
```

3.781 $\int x(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=101

$$\frac{1}{2}a^2Ax^2+\frac{1}{5}x^5\left(2aBc+2Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{7}Bc^2x^7$$

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{2}a^2Ax^2+\frac{1}{5}x^5\left(2aBc+2Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a*(2*A*b + a*B)*x^3)/3 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^4)
/4 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2
*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ax+a(2Ab+aB)x^2+\left(2abB+A\left(b^2+2ac\right)\right)x^3+\left(b^2B+2Abc+2\right.\right.\\ &= \frac{1}{2}a^2Ax^2+\frac{1}{3}a(2Ab+aB)x^3+\frac{1}{4}\left(2abB+A\left(b^2+2ac\right)\right)x^4+\frac{1}{5}\left(b^2B+2Ab\right.\end{aligned}$$

Mathematica [A] time = 0.02, size = 101, normalized size = 1.00

$$\frac{1}{2}a^2Ax^2+\frac{1}{5}x^5\left(2aBc+2Abc+b^2B\right)+\frac{1}{4}x^4\left(2aAc+2abB+Ab^2\right)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a*(2*A*b + a*B)*x^3)/3 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^4)
/4 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2
*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 103, normalized size = 1.02

$$\frac{1}{7}x^7c^2B+\frac{1}{3}x^6cbB+\frac{1}{6}x^6c^2A+\frac{1}{5}x^5b^2B+\frac{2}{5}x^5caB+\frac{2}{5}x^5cbA+\frac{1}{2}x^4baB+\frac{1}{4}x^4b^2A+\frac{1}{2}x^4caA+\frac{1}{3}x^3a^2B+\frac{2}{3}x^3baA+\frac{1}{2}x^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c^2*B + 1/3*x^6*c*b*B + 1/6*x^6*c^2*A + 1/5*x^5*b^2*B + 2/5*x^5*c*a
*B + 2/5*x^5*c*b*A + 1/2*x^4*b*a*B + 1/4*x^4*b^2*A + 1/2*x^4*c*a*A + 1/3*x^
3*a^2*B + 2/3*x^3*b*a*A + 1/2*x^2*a^2*A
```

giac [A] time = 0.15, size = 103, normalized size = 1.02

$$\frac{1}{7}Bc^2x^7+\frac{1}{3}Bbcx^6+\frac{1}{6}Ac^2x^6+\frac{1}{5}Bb^2x^5+\frac{2}{5}Bacx^5+\frac{2}{5}Abcx^5+\frac{1}{2}Babx^4+\frac{1}{4}Ab^2x^4+\frac{1}{2}Aacx^4+\frac{1}{3}Ba^2x^3+\frac{2}{3}Aabx^3+\frac{1}{2}Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 1/3*B*b*c*x^6 + 1/6*A*c^2*x^6 + 1/5*B*b^2*x^5 + 2/5*B*a*c*x
^5 + 2/5*A*b*c*x^5 + 1/2*B*a*b*x^4 + 1/4*A*b^2*x^4 + 1/2*A*a*c*x^4 + 1/3*B*
a^2*x^3 + 2/3*A*a*b*x^3 + 1/2*A*a^2*x^2
```

maple [A] time = 0.04, size = 94, normalized size = 0.93

$$\frac{Bc^2x^7}{7}+\frac{(Ac^2+2bBc)x^6}{6}+\frac{Aa^2x^2}{2}+\frac{(2Abc+(2ac+b^2)B)x^5}{5}+\frac{(2Bab+(2ac+b^2)A)x^4}{4}+\frac{(2Aab+Ba^2)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/7*B*c^2*x^7+1/6*(A*c^2+2*B*b*c)*x^6+1/5*(2*A*b*c+(2*a*c+b^2)*B)*x^5+1/4*(
2*B*a*b+(2*a*c+b^2)*A)*x^4+1/3*(2*A*a*b+B*a^2)*x^3+1/2*A*a^2*x^2
```

maxima [A] time = 0.54, size = 93, normalized size = 0.92

$$\frac{1}{7}Bc^2x^7+\frac{1}{6}(2Bbc+Ac^2)x^6+\frac{1}{5}(Bb^2+2(Ba+Ab)c)x^5+\frac{1}{2}Aa^2x^2+\frac{1}{4}(2Bab+Ab^2+2Aac)x^4+\frac{1}{3}(Ba^2+2Aab)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/6*(2*B*b*c + A*c^2)*x^6 + 1/5*(B*b^2 + 2*(B*a + A*b)*c)*x
^5 + 1/2*A*a^2*x^2 + 1/4*(2*B*a*b + A*b^2 + 2*A*a*c)*x^4 + 1/3*(B*a^2 + 2*A
*a*b)*x^3
```

mupad [B] time = 0.03, size = 93, normalized size = 0.92

$$x^3\left(\frac{Ba^2}{3}+\frac{2Aba}{3}\right)+x^6\left(\frac{Ac^2}{6}+\frac{Bbc}{3}\right)+x^4\left(\frac{Ab^2}{4}+\frac{Bab}{2}+\frac{Aac}{2}\right)+x^5\left(\frac{Bb^2}{5}+\frac{2Acb}{5}+\frac{2Bac}{5}\right)+\frac{Aa^2x^2}{2}+\frac{Bc^2x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((B*a^2)/3 + (2*A*a*b)/3) + x^6*((A*c^2)/6 + (B*b*c)/3) + x^4*((A*b^2)/
4 + (A*a*c)/2 + (B*a*b)/2) + x^5*((B*b^2)/5 + (2*A*b*c)/5 + (2*B*a*c)/5) +
(A*a^2*x^2)/2 + (B*c^2*x^7)/7
```

sympy [A] time = 0.09, size = 105, normalized size = 1.04

$$\frac{Aa^2x^2}{2}+\frac{Bc^2x^7}{7}+x^6\left(\frac{Ac^2}{6}+\frac{Bbc}{3}\right)+x^5\left(\frac{2Abc}{5}+\frac{2Bac}{5}+\frac{Bb^2}{5}\right)+x^4\left(\frac{Aac}{2}+\frac{Ab^2}{4}+\frac{Bab}{2}\right)+x^3\left(\frac{2Aab}{3}+\frac{Ba^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x**2/2 + B*c**2*x**7/7 + x**6*(A*c**2/6 + B*b*c/3) + x**5*(2*A*b*c/5
 + 2*B*a*c/5 + B*b**2/5) + x**4*(A*a*c/2 + A*b**2/4 + B*a*b/2) + x**3*(2*A*
a*b/3 + B*a**2/3)
```

3.782 $\int (A+Bx)\left(a+bx+cx^2\right)^2 dx$

Optimal. Leaf size=96

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Rubi [A] time = 0.07, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\int (A+Bx)\left(a+bx+cx^2\right)^2 dx = \int \left(a^2A+a(2Ab+aB)x+\left(2abB+A\left(b^2+2ac\right)\right)x^2+\left(b^2B+2Abc+2aBc\right)x^3\right.$$
$$= a^2Ax+\frac{1}{2}a(2Ab+aB)x^2+\frac{1}{3}\left(2abB+A\left(b^2+2ac\right)\right)x^3+\frac{1}{4}\left(b^2B+2Abc+2aB\right.$$

Mathematica [A] time = 0.02, size = 96, normalized size = 1.00

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(2aAc+2abB+Ab^2\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)^2 dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.37, size = 99, normalized size = 1.03

$$\frac{1}{6}x^6c^2B + \frac{2}{5}x^5cbB + \frac{1}{5}x^5c^2A + \frac{1}{4}x^4b^2B + \frac{1}{2}x^4caB + \frac{1}{2}x^4cbA + \frac{2}{3}x^3baB + \frac{1}{3}x^3b^2A + \frac{2}{3}x^3caA + \frac{1}{2}x^2a^2B + x^2baA + xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*a
*B + 1/2*x^4*c*b*A + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 2/3*x^3*c*a*A + 1/2*x^
2*a^2*B + x^2*b*a*A + x*a^2*A
```

giac [A] time = 0.15, size = 99, normalized size = 1.03

$$\frac{1}{6}Bc^2x^6 + \frac{2}{5}Bbcx^5 + \frac{1}{5}Ac^2x^5 + \frac{1}{4}Bb^2x^4 + \frac{1}{2}Bacx^4 + \frac{1}{2}Abcx^4 + \frac{2}{3}Babx^3 + \frac{1}{3}Ab^2x^3 + \frac{2}{3}Aacx^3 + \frac{1}{2}Ba^2x^2 + Aabx^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*B*a*c*x
^4 + 1/2*A*b*c*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 2/3*A*a*c*x^3 + 1/2*B*
a^2*x^2 + A*a*b*x^2 + A*a^2*x
```

maple [A] time = 0.04, size = 91, normalized size = 0.95

$$\frac{Bc^2x^6}{6} + \frac{(Ac^2 + 2bBc)x^5}{5} + Aa^2x + \frac{(2Abc + (2ac + b^2)B)x^4}{4} + \frac{(2Bab + (2ac + b^2)A)x^3}{3} + \frac{(2Aab + Ba^2)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+(2*a*c+b^2)*B)*x^4+1/3*(
2*B*a*b+(2*a*c+b^2)*A)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.52, size = 90, normalized size = 0.94

$$\frac{1}{6}Bc^2x^6 + \frac{1}{5}(2Bbc + Ac^2)x^5 + \frac{1}{4}(Bb^2 + 2(Ba + Ab)c)x^4 + Aa^2x + \frac{1}{3}(2Bab + Ab^2 + 2Aac)x^3 + \frac{1}{2}(Ba^2 + 2Aab)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*(B*a + A*b)*c)*x
^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2 + 2*A*a*c)*x^3 + 1/2*(B*a^2 + 2*A*a*b)*
x^2
```

mupad [B] time = 0.03, size = 89, normalized size = 0.93

$$x^2\left(\frac{Ba^2}{2} + Aba\right) + x^5\left(\frac{Ac^2}{5} + \frac{2Bbc}{5}\right) + x^3\left(\frac{Ab^2}{3} + \frac{2Bab}{3} + \frac{2Aac}{3}\right) + x^4\left(\frac{Bb^2}{4} + \frac{Acb}{2} + \frac{Bac}{2}\right) + \frac{Bc^2x^6}{6} + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^2*((B*a^2)/2 + A*a*b) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + x^3*((A*b^2)/3 +
(2*A*a*c)/3 + (2*B*a*b)/3) + x^4*((B*b^2)/4 + (A*b*c)/2 + (B*a*c)/2) + (B*c
^2*x^6)/6 + A*a^2*x
```

sympy [A] time = 0.09, size = 100, normalized size = 1.04

$$Aa^2x + \frac{Bc^2x^6}{6} + x^5\left(\frac{Ac^2}{5} + \frac{2Bbc}{5}\right) + x^4\left(\frac{Abc}{2} + \frac{Bac}{2} + \frac{Bb^2}{4}\right) + x^3\left(\frac{2Aac}{3} + \frac{Ab^2}{3} + \frac{2Bab}{3}\right) + x^2\left(Aab + \frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2 + B*
a*c/2 + B*b**2/4) + x**3*(2*A*a*c/3 + A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b +
 B*a**2/2)
```

3.783 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{x} dx$

Optimal. Leaf size=92

$$a^2A\log(x)+\frac{1}{3}x^3\left(2aBc+2Abc+b^2B\right)+\frac{1}{2}x^2\left(A\left(2ac+b^2\right)+2abB\right)+ax(aB+2Ab)+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{5}Bc^2x^5$$

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$a^2A\log(x)+\frac{1}{3}x^3\left(2aBc+2Abc+b^2B\right)+\frac{1}{2}x^2\left(A\left(2ac+b^2\right)+2abB\right)+ax(aB+2Ab)+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x,x]
```

```
[Out] a*(2*A*b + a*B)*x + ((2*a*b*B + A*(b^2 + 2*a*c))*x^2)/2 + ((b^2*B + 2*A*b*c
 + 2*a*B*c)*x^3)/3 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*x^5)/5 + a^2*A*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x}dx &= \int \left(a(2Ab+aB)+\frac{a^2A}{x}+\left(2abB+A\left(b^2+2ac\right)\right)x+\left(b^2B+2Abc+2aBc\right)\right.\\ &= a(2Ab+aB)x+\frac{1}{2}\left(2abB+A\left(b^2+2ac\right)\right)x^2+\frac{1}{3}\left(b^2B+2Abc+2aBc\right)x^3+\end{aligned}$$

Mathematica [A] time = 0.03, size = 92, normalized size = 1.00

$$a^2A\log(x)+\frac{1}{3}x^3\left(2aBc+2Abc+b^2B\right)+\frac{1}{2}x^2\left(2aAc+2abB+Ab^2\right)+ax(aB+2Ab)+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x,x]
```

```
[Out] a*(2*A*b + a*B)*x + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^2)/2 + ((b^2*B + 2*A*b*c
 + 2*a*B*c)*x^3)/3 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*x^5)/5 + a^2*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x, x]
```

fricas [A] time = 0.42, size = 88, normalized size = 0.96

$$\frac{1}{5}Bc^2x^5 + \frac{1}{4}\left(2Bbc + Ac^2\right)x^4 + \frac{1}{3}\left(Bb^2 + 2(Ba + Ab)c\right)x^3 + Aa^2\log(x) + \frac{1}{2}\left(2Bab + Ab^2 + 2Aac\right)x^2 + \left(Ba^2 + 2Aab\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*(B*a + A*b)*c)*x
^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + (B*a^2 + 2*A*a*b)
*x
```

giac [A] time = 0.16, size = 95, normalized size = 1.03

$$\frac{1}{5}Bc^2x^5 + \frac{1}{2}Bbcx^4 + \frac{1}{4}Ac^2x^4 + \frac{1}{3}Bb^2x^3 + \frac{2}{3}Bacx^3 + \frac{2}{3}Abcx^3 + Babx^2 + \frac{1}{2}Ab^2x^2 + Aacx^2 + Ba^2x + 2Aabx + Aa^2\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*B*b*c*x^4 + 1/4*A*c^2*x^4 + 1/3*B*b^2*x^3 + 2/3*B*a*c*x
^3 + 2/3*A*b*c*x^3 + B*a*b*x^2 + 1/2*A*b^2*x^2 + A*a*c*x^2 + B*a^2*x + 2*A*
a*b*x + A*a^2*log(abs(x))
```

maple [A] time = 0.05, size = 95, normalized size = 1.03

$$\frac{Bc^2x^5}{5} + \frac{Ac^2x^4}{4} + \frac{Bbcx^4}{2} + \frac{2Abcx^3}{3} + \frac{2Bacx^3}{3} + \frac{Bb^2x^3}{3} + Aacx^2 + \frac{Ab^2x^2}{2} + Babx^2 + Aa^2\ln(x) + 2Aabx + Ba^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x,x)
```

```
[Out] 1/5*B*c^2*x^5+1/4*A*c^2*x^4+1/2*B*x^4*b*c+2/3*A*x^3*b*c+2/3*B*a*c*x^3+1/3*B
*b^2*x^3+A*a*c*x^2+1/2*A*b^2*x^2+B*a*b*x^2+2*A*a*b*x+B*a^2*x+A*a^2*ln(x)
```

maxima [A] time = 0.45, size = 88, normalized size = 0.96

$$\frac{1}{5}Bc^2x^5 + \frac{1}{4}\left(2Bbc + Ac^2\right)x^4 + \frac{1}{3}\left(Bb^2 + 2(Ba + Ab)c\right)x^3 + Aa^2\log(x) + \frac{1}{2}\left(2Bab + Ab^2 + 2Aac\right)x^2 + \left(Ba^2 + 2Aab\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*(B*a + A*b)*c)*x
^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + (B*a^2 + 2*A*a*b)
*x
```

mupad [B] time = 0.04, size = 86, normalized size = 0.93

$$x^4\left(\frac{Ac^2}{4} + \frac{Bbc}{2}\right) + x^2\left(\frac{Ab^2}{2} + Bab + Aac\right) + x^3\left(\frac{Bb^2}{3} + \frac{2Acb}{3} + \frac{2Bac}{3}\right) + x\left(Ba^2 + 2Aba\right) + \frac{Bc^2x^5}{5} + Aa^2\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x,x)
```

```
[Out] x^4*((A*c^2)/4 + (B*b*c)/2) + x^2*((A*b^2)/2 + A*a*c + B*a*b) + x^3*((B*b^2
)/3 + (2*A*b*c)/3 + (2*B*a*c)/3) + x*(B*a^2 + 2*A*a*b) + (B*c^2*x^5)/5 + A*
a^2*log(x)
```

sympy [A] time = 0.21, size = 95, normalized size = 1.03

$$Aa^2\log(x) + \frac{Bc^2x^5}{5} + x^4\left(\frac{Ac^2}{4} + \frac{Bbc}{2}\right) + x^3\left(\frac{2Abc}{3} + \frac{2Bac}{3} + \frac{Bb^2}{3}\right) + x^2\left(Aac + \frac{Ab^2}{2} + Bab\right) + x\left(2Aab + Ba^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x,x)
```

```
[Out] A*a**2*log(x) + B*c**2*x**5/5 + x**4*(A*c**2/4 + B*b*c/2) + x**3*(2*A*b*c/3
 + 2*B*a*c/3 + B*b**2/3) + x**2*(A*a*c + A*b**2/2 + B*a*b) + x*(2*A*a*b + B
*a**2)
```

3.784 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^2}\,dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{x}+\frac{1}{2}x^2\left(2aBc+2Abc+b^2B\right)+x\left(A\left(2ac+b^2\right)+2abB\right)+a\log(x)(aB+2Ab)+\frac{1}{3}cx^3(Ac+2bB)+\frac{1}{4}Bc^2x^4$$

Rubi [A] time = 0.07, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{x}+\frac{1}{2}x^2\left(2aBc+2Abc+b^2B\right)+x\left(A\left(2ac+b^2\right)+2abB\right)+a\log(x)(aB+2Ab)+\frac{1}{3}cx^3(Ac+2bB)+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + (2*a*b*B + A*(b^2 + 2*a*c))*x + ((b^2*B + 2*A*b*c + 2*a*B*c)
*x^2)/2 + (c*(2*b*B + A*c)*x^3)/3 + (B*c^2*x^4)/4 + a*(2*A*b + a*B)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^2}\,dx = \int \left(Ab^2\left(1+\frac{2a(bB+Ac)}{Ab^2}\right)+\frac{a^2A}{x^2}+\frac{a(2Ab+aB)}{x}+\left(b^2B+2Abc+2aBc\right)x+\right.$$
$$= -\frac{a^2A}{x}+\left(2abB+A\left(b^2+2ac\right)\right)x+\frac{1}{2}\left(b^2B+2Abc+2aBc\right)x^2+\frac{1}{3}c(2bB+Ac$$

Mathematica [A] time = 0.06, size = 87, normalized size = 0.97

$$-\frac{a^2A}{x}+ax(2Ac+2bB+Bcx)+a\log(x)(aB+2Ab)+\frac{1}{12}x\left(4A\left(3b^2+3bcx+c^2x^2\right)+Bx\left(6b^2+8bcx+3c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + a*x*(2*b*B + 2*A*c + B*c*x) + (x*(4*A*(3*b^2 + 3*b*c*x + c^2
*x^2) + B*x*(6*b^2 + 8*b*c*x + 3*c^2*x^2)))/12 + a*(2*A*b + a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^2, x]
```

fricas [A] time = 0.40, size = 95, normalized size = 1.06

$$\frac{3\,Bc^2x^5+4\left(2\,Bbc+Ac^2\right)x^4+6\left(Bb^2+2\,(Ba+Ab)c\right)x^3-12\,Aa^2+12\left(2\,Bab+Ab^2+2\,Aac\right)x^2+12\left(Ba^2+2\,Aab\right)x\log(x)}{12\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*x^5 + 4*(2*B*b*c + A*c^2)*x^4 + 6*(B*b^2 + 2*(B*a + A*b)*c)*x
^3 - 12*A*a^2 + 12*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 12*(B*a^2 + 2*A*a*b)*x
*log(x))/x
```

giac [A] time = 0.20, size = 92, normalized size = 1.02

$$\frac{1}{4}\,Bc^2x^4+\frac{2}{3}\,Bbcx^3+\frac{1}{3}\,Ac^2x^3+\frac{1}{2}\,Bb^2x^2+Bacx^2+Abcx^2+2\,Babx+Ab^2x+2\,Aacx-\frac{Aa^2}{x}+\left(Ba^2+2\,Aab\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + 2/3*B*b*c*x^3 + 1/3*A*c^2*x^3 + 1/2*B*b^2*x^2 + B*a*c*x^2 +
 A*b*c*x^2 + 2*B*a*b*x + A*b^2*x + 2*A*a*c*x - A*a^2/x + (B*a^2 + 2*A*a*b)*
log(abs(x))
```

maple [A] time = 0.05, size = 92, normalized size = 1.02

$$\frac{B\,c^2x^4}{4}+\frac{A\,c^2x^3}{3}+\frac{2Bbc\,x^3}{3}+Abc\,x^2+Bac\,x^2+\frac{B\,b^2x^2}{2}+2Aab\ln(x)+2Aacx+A\,b^2x+B\,a^2\ln(x)+2Babx-\frac{A\,a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^2,x)
```

```
[Out] 1/4*B*c^2*x^4+1/3*A*c^2*x^3+2/3*B*x^3*b*c+A*b*c*x^2+B*a*c*x^2+1/2*B*b^2*x^2
+2*A*a*c*x+A*b^2*x+2*B*a*b*x-A*a^2/x+2*A*a*b*ln(x)+B*a^2*ln(x)
```

maxima [A] time = 0.58, size = 88, normalized size = 0.98

$$\frac{1}{4}\,Bc^2x^4+\frac{1}{3}\left(2\,Bbc+Ac^2\right)x^3+\frac{1}{2}\left(Bb^2+2\,(Ba+Ab)c\right)x^2-\frac{Aa^2}{x}+\left(2\,Bab+Ab^2+2\,Aac\right)x+\left(Ba^2+2\,Aab\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + 1/3*(2*B*b*c + A*c^2)*x^3 + 1/2*(B*b^2 + 2*(B*a + A*b)*c)*x
^2 - A*a^2/x + (2*B*a*b + A*b^2 + 2*A*a*c)*x + (B*a^2 + 2*A*a*b)*log(x)
```

mupad [B] time = 0.04, size = 86, normalized size = 0.96

$$x^3\left(\frac{A\,c^2}{3}+\frac{2\,B\,b\,c}{3}\right)+x\,\left(A\,b^2+2\,B\,a\,b+2\,A\,a\,c\right)+\ln(x)\,\left(B\,a^2+2\,A\,b\,a\right)+x^2\,\left(\frac{B\,b^2}{2}+A\,c\,b+B\,a\,c\right)-\frac{A\,a^2}{x}+\frac{B\,c^2\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x)
```

```
[Out] x^3*((A*c^2)/3 + (2*B*b*c)/3) + x*(A*b^2 + 2*A*a*c + 2*B*a*b) + log(x)*(B*a
^2 + 2*A*a*b) + x^2*((B*b^2)/2 + A*b*c + B*a*c) - (A*a^2)/x + (B*c^2*x^4)/4
```

sympy [A] time = 0.26, size = 88, normalized size = 0.98

$$-\frac{Aa^2}{x}+\frac{Bc^2x^4}{4}+a\,(2Ab+Ba)\log{(x)}+x^3\left(\frac{Ac^2}{3}+\frac{2Bbc}{3}\right)+x^2\left(Abc+Bac+\frac{Bb^2}{2}\right)+x\left(2Aac+Ab^2+2Bab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**2,x)
```

```
[Out] -A*a**2/x + B*c**2*x**4/4 + a*(2*A*b + B*a)*log(x) + x**3*(A*c**2/3 + 2*B*b
*c/3) + x**2*(A*b*c + B*a*c + B*b**2/2) + x*(2*A*a*c + A*b**2 + 2*B*a*b)
```

3.785 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^3} \, dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{2x^2}+x\left(2aBc+2Abc+b^2B\right)+\log(x)\left(A\left(2ac+b^2\right)+2abB\right)-\frac{a(aB+2Ab)}{x}+\frac{1}{2}cx^2(Ac+2bB)+\frac{1}{3}Bc^2x^3$$

Rubi [A] time = 0.07, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{2x^2}+x\left(2aBc+2Abc+b^2B\right)+\log(x)\left(A\left(2ac+b^2\right)+2abB\right)-\frac{a(aB+2Ab)}{x}+\frac{1}{2}cx^2(Ac+2bB)+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x]
```

```
[Out] -(a^2*A)/(2*x^2) - (a*(2*A*b + a*B))/x + (b^2*B + 2*A*b*c + 2*a*B*c)*x + (c
*(2*b*B + A*c)*x^2)/2 + (B*c^2*x^3)/3 + (2*a*b*B + A*(b^2 + 2*a*c))*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^3}\,dx &= \int \left(b^2B\left(1+\frac{2(Ab+aB)c}{b^2B}\right)+\frac{a^2A}{x^3}+\frac{a(2Ab+aB)}{x^2}+\frac{2abB+A\left(b^2+2ac\right)}{x}\right. \\ &= -\frac{a^2A}{2x^2}-\frac{a(2Ab+aB)}{x}+\left(b^2B+2Abc+2aBc\right)x+\frac{1}{2}c(2bB+Ac)x^2+\frac{1}{3}Bc^2\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.96

$$-\frac{a^2(A+2Bx)}{2x^2}+A\log(x)\left(2ac+b^2\right)+a\left(2Bcx-\frac{2Ab}{x}\right)+2abB\log(x)+bcx(2A+Bx)+\frac{1}{6}c^2x^2(3A+2Bx)+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x]
```

```
[Out] b^2*B*x + b*c*x*(2*A + B*x) - (a^2*(A + 2*B*x))/(2*x^2) + (c^2*x^2*(3*A + 2
*B*x))/6 + a*((-2*A*b)/x + 2*B*c*x) + 2*a*b*B*Log[x] + A*(b^2 + 2*a*c)*Log[
x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^3, x]
```

fricas [A] time = 0.42, size = 95, normalized size = 1.06

$$\frac{2\,Bc^2x^5+3\left(2\,Bbc+Ac^2\right)x^4+6\left(Bb^2+2\,(Ba+Ab)c\right)x^3+6\left(2\,Bab+Ab^2+2\,Aac\right)x^2\log(x)-3\,Aa^2-6\left(Ba^2+2\,Aab\right)x}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*x^5 + 3*(2*B*b*c + A*c^2)*x^4 + 6*(B*b^2 + 2*(B*a + A*b)*c)*x^
3 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2*log(x) - 3*A*a^2 - 6*(B*a^2 + 2*A*a*b
)*x)/x^2
```

giac [A] time = 0.16, size = 89, normalized size = 0.99

$$\frac{1}{3}\,Bc^2x^3+Bbcx^2+\frac{1}{2}\,Ac^2x^2+Bb^2x+2\,Bacx+2\,Abcx+\left(2\,Bab+Ab^2+2\,Aac\right)\log\left(|x|\right)-\frac{Aa^2+2\left(Ba^2+2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + B*b*c*x^2 + 1/2*A*c^2*x^2 + B*b^2*x + 2*B*a*c*x + 2*A*b*c*x
 + (2*B*a*b + A*b^2 + 2*A*a*c)*log(abs(x)) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*
b)*x)/x^2
```

maple [A] time = 0.06, size = 92, normalized size = 1.02

$$\frac{B\,c^2x^3}{3}+\frac{A\,c^2x^2}{2}+Bbc\,x^2+2Aac\ln(x)+A\,b^2\ln(x)+2Abcx+2Bab\ln(x)+2Bacx+B\,b^2x-\frac{2Aab}{x}-\frac{B\,a^2}{x}-\frac{A\,a^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^3,x)
```

```
[Out] 1/3*B*c^2*x^3+1/2*A*c^2*x^2+B*x^2*b*c+2*A*b*c*x+2*B*a*c*x+B*b^2*x-1/2*A*a^2
/x^2-2*a/x*A*b-B*a^2/x+2*A*a*c*ln(x)+A*b^2*ln(x)+2*B*ln(x)*a*b
```

maxima [A] time = 0.53, size = 88, normalized size = 0.98

$$\frac{1}{3}\,Bc^2x^3+\frac{1}{2}\left(2\,Bbc+Ac^2\right)x^2+\left(Bb^2+2\,(Ba+Ab)c\right)x+\left(2\,Bab+Ab^2+2\,Aac\right)\log(x)-\frac{Aa^2+2\left(Ba^2+2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + 1/2*(2*B*b*c + A*c^2)*x^2 + (B*b^2 + 2*(B*a + A*b)*c)*x + (
2*B*a*b + A*b^2 + 2*A*a*c)*log(x) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*b)*x)/x^2
```

mupad [B] time = 1.15, size = 87, normalized size = 0.97

$$x^2\left(\frac{A\,c^2}{2}+B\,b\,c\right)+x\,\left(B\,b^2+2\,A\,c\,b+2\,B\,a\,c\right)+\ln(x)\,\left(A\,b^2+2\,B\,a\,b+2\,A\,a\,c\right)-\frac{\frac{A\,a^2}{2}+x\,\left(B\,a^2+2\,A\,b\,a\right)}{x^2}+\frac{B\,c^2\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x)
```

```
[Out] x^2*((A*c^2)/2 + B*b*c) + x*(B*b^2 + 2*A*b*c + 2*B*a*c) + log(x)*(A*b^2 + 2
*A*a*c + 2*B*a*b) - ((A*a^2)/2 + x*(B*a^2 + 2*A*a*b))/x^2 + (B*c^2*x^3)/3
```

sympy [A] time = 0.44, size = 94, normalized size = 1.04

$$\frac{Bc^2x^3}{3} + x^2\left(\frac{Ac^2}{2} + Bbc\right) + x\left(2Abc + 2Bac + Bb^2\right) + \left(2Aac + Ab^2 + 2Bab\right)\log\left(x\right) + \frac{-Aa^2 + x\left(-4Aab - 2Ba^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**3,x)
```

```
[Out] B*c**2*x**3/3 + x**2*(A*c**2/2 + B*b*c) + x*(2*A*b*c + 2*B*a*c + B*b**2) +
(2*A*a*c + A*b**2 + 2*B*a*b)*log(x) + (-A*a**2 + x*(-4*A*a*b - 2*B*a**2))/(
2*x**2)
```

3.786 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^4} \, dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{3x^3}-\frac{A\left(2ac+b^2\right)+2abB}{x}+\log(x)\left(2aBc+2Abc+b^2B\right)-\frac{a(aB+2Ab)}{2x^2}+cx(Ac+2bB)+\frac{1}{2}Bc^2x^2$$

Rubi [A] time = 0.06, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{3x^3}-\frac{A\left(2ac+b^2\right)+2abB}{x}+\log(x)\left(2aBc+2Abc+b^2B\right)-\frac{a(aB+2Ab)}{2x^2}+cx(Ac+2bB)+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x]
```

```
[Out] -(a^2*A)/(3*x^3) - (a*(2*A*b + a*B))/(2*x^2) - (2*a*b*B + A*(b^2 + 2*a*c))/
x + c*(2*b*B + A*c)*x + (B*c^2*x^2)/2 + (b^2*B + 2*A*b*c + 2*a*B*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^4}\,dx=\int \left(c(2bB+Ac)+\frac{a^2A}{x^4}+\frac{a(2Ab+aB)}{x^3}+\frac{2abB+A\left(b^2+2ac\right)}{x^2}+\frac{b^2B+2Abc}{x}\right.$$

$$=-\frac{a^2A}{3x^3}-\frac{a(2Ab+aB)}{2x^2}-\frac{2abB+A\left(b^2+2ac\right)}{x}+c(2bB+Ac)x+\frac{1}{2}Bc^2x^2+\left(b^2\right.$$

Mathematica [A] time = 0.05, size = 90, normalized size = 1.00

$$-\frac{a^2(2A+3Bx)}{6x^3}+\log(x)\left(2aBc+2Abc+b^2B\right)-\frac{a(Ab+2Acx+2bBx)}{x^2}-\frac{Ab^2}{x}+Ac^2x+2bBcx+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x]
```

```
[Out] -((A*b^2)/x) + 2*b*B*c*x + A*c^2*x + (B*c^2*x^2)/2 - (a^2*(2*A + 3*B*x))/(6
*x^3) - (a*(A*b + 2*b*B*x + 2*A*c*x))/x^2 + (b^2*B + 2*A*b*c + 2*a*B*c)*Log
[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^4, x]
```

fricas [A] time = 0.40, size = 95, normalized size = 1.06

$$\frac{3\,Bc^2x^5+6\left(2\,Bbc+Ac^2\right)x^4+6\left(Bb^2+2\,(Ba+Ab)c\right)x^3\log(x)-2\,Aa^2-6\left(2\,Bab+Ab^2+2\,Aac\right)x^2-3\left(Ba^2+2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*x^5 + 6*(2*B*b*c + A*c^2)*x^4 + 6*(B*b^2 + 2*(B*a + A*b)*c)*x^
3*log(x) - 2*A*a^2 - 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 3*(B*a^2 + 2*A*a*b
)*x)/x^3
```

giac [A] time = 0.17, size = 89, normalized size = 0.99

$$\frac{1}{2}\,Bc^2x^2+2\,Bbcx+Ac^2x+\left(Bb^2+2\,Bac+2\,Abc\right)\log\left(|x|\right)-\frac{2\,Aa^2+6\left(2\,Bab+Ab^2+2\,Aac\right)x^2+3\left(Ba^2+2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*B*c^2*x^2 + 2*B*b*c*x + A*c^2*x + (B*b^2 + 2*B*a*c + 2*A*b*c)*log(abs(x
)) - 1/6*(2*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 3*(B*a^2 + 2*A*a*b)
*x)/x^3
```

maple [A] time = 0.06, size = 95, normalized size = 1.06

$$\frac{B\,c^2x^2}{2}+2Abc\ln(x)+A\,c^2x+2Bac\ln(x)+B\,b^2\ln(x)+2Bbcx-\frac{2Aac}{x}-\frac{A\,b^2}{x}-\frac{2Bab}{x}-\frac{Aab}{x^2}-\frac{B\,a^2}{2x^2}-\frac{A\,a^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^4,x)
```

```
[Out] 1/2*B*c^2*x^2+A*c^2*x+2*b*B*c*x-1/3*A*a^2/x^3-A*a*b/x^2-1/2*B*a^2/x^2-2/x*A
*a*c-A*b^2/x-2*B*a*b/x+2*A*ln(x)*b*c+2*B*ln(x)*a*c+B*b^2*ln(x)
```

maxima [A] time = 0.50, size = 89, normalized size = 0.99

$$\frac{1}{2}\,Bc^2x^2+\left(2\,Bbc+Ac^2\right)x+\left(Bb^2+2\,(Ba+Ab)c\right)\log(x)-\frac{2\,Aa^2+6\left(2\,Bab+Ab^2+2\,Aac\right)x^2+3\left(Ba^2+2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^2*x^2 + (2*B*b*c + A*c^2)*x + (B*b^2 + 2*(B*a + A*b)*c)*log(x) - 1/
6*(2*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 3*(B*a^2 + 2*A*a*b)*x)/x^3
```

mupad [B] time = 0.05, size = 87, normalized size = 0.97

$$x\,\left(A\,c^2+2\,B\,b\,c\right)-\frac{\frac{A\,a^2}{3}+x^2\,\left(A\,b^2+2\,B\,a\,b+2\,A\,a\,c\right)+x\,\left(\frac{B\,a^2}{2}+A\,b\,a\right)}{x^3}+\ln(x)\,\left(B\,b^2+2\,A\,c\,b+2\,B\,a\,c\right)+\frac{B\,c^2\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x)
```

```
[Out] x*(A*c^2 + 2*B*b*c) - ((A*a^2)/3 + x^2*(A*b^2 + 2*A*a*c + 2*B*a*b) + x*((B*
a^2)/2 + A*a*b))/x^3 + log(x)*(B*b^2 + 2*A*b*c + 2*B*a*c) + (B*c^2*x^2)/2
```

sympy [A] time = 1.07, size = 99, normalized size = 1.10

$$\frac{Bc^2x^2}{2} + x\left(Ac^2 + 2Bbc\right) + \left(2Abc + 2Bac + Bb^2\right)\log\left(x\right) + \frac{-2Aa^2 + x^2\left(-12Aac - 6Ab^2 - 12Bab\right) + x\left(-6Aab - 3Ba^2\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**4,x)
```

```
[Out] B*c**2*x**2/2 + x*(A*c**2 + 2*B*b*c) + (2*A*b*c + 2*B*a*c + B*b**2)*log(x)
+ (-2*A*a**2 + x**2*(-12*A*a*c - 6*A*b**2 - 12*B*a*b) + x*(-6*A*a*b - 3*B*a
**2))/(6*x**3)
```

3.787 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^5}\,dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{4x^4}-\frac{A\left(2ac+b^2\right)+2abB}{2x^2}-\frac{2aBc+2Abc+b^2B}{x}-\frac{a(aB+2Ab)}{3x^3}+c\log(x)(Ac+2bB)+Bc^2x$$

Rubi [A] time = 0.06, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{4x^4}-\frac{A\left(2ac+b^2\right)+2abB}{2x^2}-\frac{2aBc+2Abc+b^2B}{x}-\frac{a(aB+2Ab)}{3x^3}+c\log(x)(Ac+2bB)+Bc^2x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x]
```

```
[Out] -(a^2*A)/(4*x^4) - (a*(2*A*b + a*B))/(3*x^3) - (2*a*b*B + A*(b^2 + 2*a*c))/
(2*x^2) - (b^2*B + 2*A*b*c + 2*a*B*c)/x + B*c^2*x + c*(2*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^5}\,dx=\int \left(Bc^2+\frac{a^2A}{x^5}+\frac{a(2Ab+aB)}{x^4}+\frac{2abB+A\left(b^2+2ac\right)}{x^3}+\frac{b^2B+2Abc+2aB}{x^2}\right.$$
$$=-\frac{a^2A}{4x^4}-\frac{a(2Ab+aB)}{3x^3}-\frac{2abB+A\left(b^2+2ac\right)}{2x^2}-\frac{b^2B+2Abc+2aBc}{x}+Bc^2x$$

Mathematica [A] time = 0.05, size = 92, normalized size = 1.02

$$-\frac{a^2(3A+4Bx)+4ax(A(2b+3cx)+3Bx(b+2cx))+6x^2\left(Ab(b+4cx)+2Bx\left(b^2-c^2x^2\right)\right)-12cx^4\log(x)(Ac+2bB)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x]
```

```
[Out] -1/12*(a^2*(3*A + 4*B*x) + 4*a*x*(3*B*x*(b + 2*c*x) + A*(2*b + 3*c*x)) + 6*
x^2*(A*b*(b + 4*c*x) + 2*B*x*(b^2 - c^2*x^2)) - 12*c*(2*b*B + A*c)*x^4*Log[
x])/x^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^5, x]
```

fricas [A] time = 0.41, size = 95, normalized size = 1.06

$$\frac{12\,Bc^2x^5+12\left(2\,Bbc+Ac^2\right)x^4\log(x)-12\left(Bb^2+2\,(Ba+Ab)c\right)x^3-3\,Aa^2-6\left(2\,Bab+Ab^2+2\,Aac\right)x^2-4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*x^5 + 12*(2*B*b*c + A*c^2)*x^4*log(x) - 12*(B*b^2 + 2*(B*a +
 A*b)*c)*x^3 - 3*A*a^2 - 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 4*(B*a^2 + 2*A
*a*b)*x)/x^4
```

giac [A] time = 0.15, size = 90, normalized size = 1.00

$$Bc^2x+\left(2\,Bbc+Ac^2\right)\log\left(|x|\right)-\frac{12\left(Bb^2+2\,Bac+2\,Abc\right)x^3+3\,Aa^2+6\left(2\,Bab+Ab^2+2\,Aac\right)x^2+4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^5,x, algorithm="giac")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(abs(x)) - 1/12*(12*(B*b^2 + 2*B*a*c + 2*A*b
*c)*x^3 + 3*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 4*(B*a^2 + 2*A*a*b)
*x)/x^4
```

maple [A] time = 0.05, size = 98, normalized size = 1.09

$$A\,c^2\ln(x)+2Bbc\ln(x)+B\,c^2x-\frac{2Abc}{x}-\frac{2Bac}{x}-\frac{B\,b^2}{x}-\frac{Aac}{x^2}-\frac{A\,b^2}{2x^2}-\frac{Bab}{x^2}-\frac{2Aab}{3x^3}-\frac{B\,a^2}{3x^3}-\frac{A\,a^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^5,x)
```

```
[Out] B*c^2*x-1/4*A*a^2/x^4-2/3*a/x^3*A*b-1/3*a^2/x^3*B-1/x^2*A*a*c-1/2*A*b^2/x^2
-1/x^2*B*a*b-2/x*A*b*c-2/x*a*B*c-1/x*b^2*B+A*ln(x)*c^2+2*B*ln(x)*b*c
```

maxima [A] time = 0.75, size = 89, normalized size = 0.99

$$Bc^2x+\left(2\,Bbc+Ac^2\right)\log(x)-\frac{12\left(Bb^2+2\,(Ba+Ab)c\right)x^3+3\,Aa^2+6\left(2\,Bab+Ab^2+2\,Aac\right)x^2+4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^5,x, algorithm="maxima")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(x) - 1/12*(12*(B*b^2 + 2*(B*a + A*b)*c)*x^3
 + 3*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 4*(B*a^2 + 2*A*a*b)*x)/x^4
```

mupad [B] time = 0.07, size = 86, normalized size = 0.96

$$\ln(x)\,\left(A\,c^2+2\,B\,b\,c\right)-\frac{\frac{A\,a^2}{4}+x^2\,\left(\frac{A\,b^2}{2}+B\,a\,b+A\,a\,c\right)+x^3\,\left(B\,b^2+2\,A\,c\,b+2\,B\,a\,c\right)+x\,\left(\frac{B\,a^2}{3}+\frac{2\,A\,b\,a}{3}\right)}{x^4}+B\,c^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x)
```

```
[Out] log(x)*(A*c^2 + 2*B*b*c) - ((A*a^2)/4 + x^2*((A*b^2)/2 + A*a*c + B*a*b) + x
^3*(B*b^2 + 2*A*b*c + 2*B*a*c) + x*((B*a^2)/3 + (2*A*a*b)/3))/x^4 + B*c^2*x
```

sympy [A] time = 3.05, size = 99, normalized size = 1.10

$$Bc^2x + c(Ac + 2Bb)\log(x) + \frac{-3Aa^2 + x^3(-24Abc - 24Bac - 12Bb^2) + x^2(-12Aac - 6Ab^2 - 12Bab) + x(-8Aab - 4Ba^2)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**5,x)
```

```
[Out] B*c**2*x + c*(A*c + 2*B*b)*log(x) + (-3*A*a**2 + x**3*(-24*A*b*c - 24*B*a*c
 - 12*B*b**2) + x**2*(-12*A*a*c - 6*A*b**2 - 12*B*a*b) + x*(-8*A*a*b - 4*B*
a**2))/(12*x**4)
```

3.788 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^6}\,dx$

Optimal. Leaf size=95

$$-\frac{a^2A}{5x^5}-\frac{A\left(2ac+b^2\right)+2abB}{3x^3}-\frac{2aBc+2Abc+b^2B}{2x^2}-\frac{a(aB+2Ab)}{4x^4}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

Rubi [A] time = 0.05, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{5x^5}-\frac{2aBc+2Abc+b^2B}{2x^2}-\frac{A\left(2ac+b^2\right)+2abB}{3x^3}-\frac{a(aB+2Ab)}{4x^4}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -(a^2*A)/(5*x^5) - (a*(2*A*b + a*B))/(4*x^4) - (2*a*b*B + A*(b^2 + 2*a*c))/
(3*x^3) - (b^2*B + 2*A*b*c + 2*a*B*c)/(2*x^2) - (c*(2*b*B + A*c))/x + B*c^2
*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^6}\,dx=\int \left(\frac{a^2A}{x^6}+\frac{a(2Ab+aB)}{x^5}+\frac{2abB+A\left(b^2+2ac\right)}{x^4}+\frac{b^2B+2Abc+2aBc}{x^3}+\frac{c(2b$$
$$=-\frac{a^2A}{5x^5}-\frac{a(2Ab+aB)}{4x^4}-\frac{2abB+A\left(b^2+2ac\right)}{3x^3}-\frac{b^2B+2Abc+2aBc}{2x^2}-\frac{c(2bB+}{x}$$

Mathematica [A] time = 0.06, size = 92, normalized size = 0.97

$$Bc^2\log(x)-\frac{3a^2(4A+5Bx)+10ax\left(3Ab+4Acx+4bBx+6Bcx^2\right)+10x^2\left(2A\left(b^2+3bcx+3c^2x^2\right)+3bBx(b+4cx)\right)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -1/60*(3*a^2*(4*A + 5*B*x) + 10*a*x*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2)
 + 10*x^2*(3*b*B*x*(b + 4*c*x) + 2*A*(b^2 + 3*b*c*x + 3*c^2*x^2)))/x^5 + B*
c^2*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^6, x]
```

fricas [A] time = 0.40, size = 95, normalized size = 1.00

$$\frac{60\,Bc^2x^5\log(x) - 60\left(2\,Bbc + Ac^2\right)x^4 - 30\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 - 12\,Aa^2 - 20\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 - 15\left(Ba^2 + 2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^6,x, algorithm="fricas")
[Out] 1/60*(60*B*c^2*x^5*log(x) - 60*(2*B*b*c + A*c^2)*x^4 - 30*(B*b^2 + 2*(B*a +
 A*b)*c)*x^3 - 12*A*a^2 - 20*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 15*(B*a^2 +
2*A*a*b)*x)/x^5
```

giac [A] time = 0.18, size = 93, normalized size = 0.98

$$Bc^2\log\left(|x|\right) - \frac{60\left(2\,Bbc + Ac^2\right)x^4 + 30\left(Bb^2 + 2\,Bac + 2\,Abc\right)x^3 + 12\,Aa^2 + 20\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 15\left(Ba^2 + 2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^6,x, algorithm="giac")
[Out] B*c^2*log(abs(x)) - 1/60*(60*(2*B*b*c + A*c^2)*x^4 + 30*(B*b^2 + 2*B*a*c +
2*A*b*c)*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 15*(B*a^2 +
2*A*a*b)*x)/x^5
```

maple [A] time = 0.05, size = 102, normalized size = 1.07

$$B\,c^2\ln(x) - \frac{A\,c^2}{x} - \frac{2Bbc}{x} - \frac{Abc}{x^2} - \frac{Bac}{x^2} - \frac{B\,b^2}{2x^2} - \frac{2Aac}{3x^3} - \frac{A\,b^2}{3x^3} - \frac{2Bab}{3x^3} - \frac{Aab}{2x^4} - \frac{B\,a^2}{4x^4} - \frac{A\,a^2}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^6,x)
[Out] -1/5*A*a^2/x^5-1/2*a/x^4*A*b-1/4*a^2/x^4*B-2/3/x^3*A*a*c-1/3*A*b^2/x^3-2/3/
x^3*B*a*b-1/x^2*A*b*c-1/x^2*a*B*c-1/2*B*b^2/x^2-c^2/x*A-2*c/x*b*B+B*c^2*ln(
x)
```

maxima [A] time = 0.72, size = 92, normalized size = 0.97

$$Bc^2\log(x) - \frac{60\left(2\,Bbc + Ac^2\right)x^4 + 30\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 12\,Aa^2 + 20\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 15\left(Ba^2 + 2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^6,x, algorithm="maxima")
[Out] B*c^2*log(x) - 1/60*(60*(2*B*b*c + A*c^2)*x^4 + 30*(B*b^2 + 2*(B*a + A*b)*c
)*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 15*(B*a^2 + 2*A*a*b
)*x)/x^5
```

mupad [B] time = 0.07, size = 89, normalized size = 0.94

$$B\,c^2\,\ln(x) - \frac{x^4\,\left(A\,c^2 + 2\,B\,b\,c\right) + \frac{A\,a^2}{5} + x^2\,\left(\frac{A\,b^2}{3} + \frac{2\,B\,a\,b}{3} + \frac{2\,A\,a\,c}{3}\right) + x^3\,\left(\frac{B\,b^2}{2} + A\,c\,b + B\,a\,c\right) + x\,\left(\frac{B\,a^2}{4} + \frac{A\,b\,a}{2}\right)}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x)
```

```
[Out] B*c^2*log(x) - (x^4*(A*c^2 + 2*B*b*c) + (A*a^2)/5 + x^2*((A*b^2)/3 + (2*A*a
*c)/3 + (2*B*a*b)/3) + x^3*((B*b^2)/2 + A*b*c + B*a*c) + x*((B*a^2)/4 + (A*
a*b)/2))/x^5
```

sympy [A] time = 7.11, size = 105, normalized size = 1.11

$$Bc^2 \log(x) + \frac{-12Aa^2 + x^4(-60Ac^2 - 120Bbc) + x^3(-60Abc - 60Bac - 30Bb^2) + x^2(-40Aac - 20Ab^2 - 40Bab) + x(-30Aab - 15Ba^2)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**6,x)
```

```
[Out] B*c**2*log(x) + (-12*A*a**2 + x**4*(-60*A*c**2 - 120*B*b*c) + x**3*(-60*A*b
*c - 60*B*a*c - 30*B*b**2) + x**2*(-40*A*a*c - 20*A*b**2 - 40*B*a*b) + x*(-
30*A*a*b - 15*B*a**2))/(60*x**5)
```

3.789 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^7} \, dx$

Optimal. Leaf size=99

$$-\frac{a^2A}{6x^6}-\frac{A\left(2ac+b^2\right)+2abB}{4x^4}-\frac{2aBc+2Abc+b^2B}{3x^3}-\frac{a(aB+2Ab)}{5x^5}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{6x^6}-\frac{2aBc+2Abc+b^2B}{3x^3}-\frac{A\left(2ac+b^2\right)+2abB}{4x^4}-\frac{a(aB+2Ab)}{5x^5}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -(a^2*A)/(6*x^6) - (a*(2*A*b + a*B))/(5*x^5) - (2*a*b*B + A*(b^2 + 2*a*c))/
(4*x^4) - (b^2*B + 2*A*b*c + 2*a*B*c)/(3*x^3) - (c*(2*b*B + A*c))/(2*x^2) -
 (B*c^2)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^7} \, dx = \int \left(\frac{a^2A}{x^7}+\frac{a(2Ab+aB)}{x^6}+\frac{2abB+A\left(b^2+2ac\right)}{x^5}+\frac{b^2B+2Abc+2aBc}{x^4}+\frac{c(\ldots}{\ldots}\right.$$
$$=-\frac{a^2A}{6x^6}-\frac{a(2Ab+aB)}{5x^5}-\frac{2abB+A\left(b^2+2ac\right)}{4x^4}-\frac{b^2B+2Abc+2aBc}{3x^3}-\frac{c(2b\ldots}{\ldots}$$

Mathematica [A] time = 0.03, size = 97, normalized size = 0.98

$$-\frac{2a^2(5A+6Bx)+2ax(3A(4b+5cx)+5Bx(3b+4cx))+5x^2\left(A\left(3b^2+8bcx+6c^2x^2\right)+4Bx\left(b^2+3bcx+3c^2x^2\right)\right)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -1/60*(2*a^2*(5*A + 6*B*x) + 2*a*x*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*x)
) + 5*x^2*(4*B*x*(b^2 + 3*b*c*x + 3*c^2*x^2) + A*(3*b^2 + 8*b*c*x + 6*c^2*x
^2)))/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^7} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^7, x]
```

fricas [A] time = 0.40, size = 93, normalized size = 0.94

$$-\frac{60 Bc^2x^5 + 30 \left(2 Bbc + Ac^2\right)x^4 + 20 \left(Bb^2 + 2 (Ba + Ab)c\right)x^3 + 10 Aa^2 + 15 \left(2 Bab + Ab^2 + 2 Aac\right)x^2 + 12 \left(Ba^2 + 2 Aab\right)x}{60 x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(60*B*c^2*x^5 + 30*(2*B*b*c + A*c^2)*x^4 + 20*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 12*(B*a^2 + 2*A*a*
b)*x)/x^6
```

giac [A] time = 0.15, size = 101, normalized size = 1.02

$$-\frac{60 Bc^2x^5 + 60 Bbcx^4 + 30 Ac^2x^4 + 20 Bb^2x^3 + 40 Bacx^3 + 40 Abcx^3 + 30 Babx^2 + 15 Ab^2x^2 + 30 Aacx^2 + 12 Ba^2x + 24 Aabx + 10 Aa^2}{60 x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(60*B*c^2*x^5 + 60*B*b*c*x^4 + 30*A*c^2*x^4 + 20*B*b^2*x^3 + 40*B*a*c
*x^3 + 40*A*b*c*x^3 + 30*B*a*b*x^2 + 15*A*b^2*x^2 + 30*A*a*c*x^2 + 12*B*a^2
*x + 24*A*a*b*x + 10*A*a^2)/x^6
```

maple [A] time = 0.05, size = 90, normalized size = 0.91

$$-\frac{B c^2}{x} - \frac{(Ac + 2bB) c}{2x^2} - \frac{A a^2}{6x^6} - \frac{2Abc + 2aBc + b^2 B}{3x^3} - \frac{(2Ab + Ba) a}{5x^5} - \frac{2Aac + A b^2 + 2Bab}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^7,x)
```

```
[Out] -1/5*(2*A*b+B*a)*a/x^5-1/4*(2*A*a*c+A*b^2+2*B*a*b)/x^4-1/3*(2*A*b*c+2*B*a*c
+B*b^2)/x^3-1/2*(A*c+2*B*b)*c/x^2-1/6*A*a^2/x^6-B*c^2/x
```

maxima [A] time = 0.46, size = 93, normalized size = 0.94

$$-\frac{60 Bc^2x^5 + 30 \left(2 Bbc + Ac^2\right)x^4 + 20 \left(Bb^2 + 2 (Ba + Ab)c\right)x^3 + 10 Aa^2 + 15 \left(2 Bab + Ab^2 + 2 Aac\right)x^2 + 12 \left(Ba^2 + 2 Aab\right)x}{60 x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(60*B*c^2*x^5 + 30*(2*B*b*c + A*c^2)*x^4 + 20*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 12*(B*a^2 + 2*A*a*
b)*x)/x^6
```

mupad [B] time = 0.05, size = 91, normalized size = 0.92

$$-\frac{x^4 \left(\frac{A c^2}{2} + B\,b\,c\right) + \frac{A\,a^2}{6} + x^2 \left(\frac{A\,b^2}{4} + \frac{B\,a\,b}{2} + \frac{A\,a\,c}{2}\right) + x^3 \left(\frac{B\,b^2}{3} + \frac{2\,A\,c\,b}{3} + \frac{2\,B\,a\,c}{3}\right) + x \left(\frac{B\,a^2}{5} + \frac{2\,A\,b\,a}{5}\right) + B\,c^2\,x^5}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x)
```

```
[Out] -(x^4*((A*c^2)/2 + B*b*c) + (A*a^2)/6 + x^2*((A*b^2)/4 + (A*a*c)/2 + (B*a*b
)/2) + x^3*((B*b^2)/3 + (2*A*b*c)/3 + (2*B*a*c)/3) + x*((B*a^2)/5 + (2*A*a*
b)/5) + B*c^2*x^5)/x^6
```

sympy [A] time = 14.09, size = 107, normalized size = 1.08

$$\frac{-10Aa^2 - 60Bc^2x^5 + x^4\left(-30Ac^2 - 60Bbc\right) + x^3\left(-40Abc - 40Bac - 20Bb^2\right) + x^2\left(-30Aac - 15Ab^2 - 30Bab\right) + x\left(-24Aab - 12Ba^2\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**7,x)
```

```
[Out] (-10*A*a**2 - 60*B*c**2*x**5 + x**4*(-30*A*c**2 - 60*B*b*c) + x**3*(-40*A*b
*c - 40*B*a*c - 20*B*b**2) + x**2*(-30*A*a*c - 15*A*b**2 - 30*B*a*b) + x*(-
24*A*a*b - 12*B*a**2))/(60*x**6)
```

3.790 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^8} dx$

Optimal. Leaf size=101

$$-\frac{a^2A}{7x^7}-\frac{A(2ac+b^2)+2abB}{5x^5}-\frac{2aBc+2Abc+b^2B}{4x^4}-\frac{a(aB+2Ab)}{6x^6}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

Rubi [A] time = 0.05, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{7x^7}-\frac{2aBc+2Abc+b^2B}{4x^4}-\frac{A(2ac+b^2)+2abB}{5x^5}-\frac{a(aB+2Ab)}{6x^6}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -(a^2*A)/(7*x^7) - (a*(2*A*b + a*B))/(6*x^6) - (2*a*b*B + A*(b^2 + 2*a*c))/
(5*x^5) - (b^2*B + 2*A*b*c + 2*a*B*c)/(4*x^4) - (c*(2*b*B + A*c))/(3*x^3) -
 (B*c^2)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^8} dx = \int \left(\frac{a^2A}{x^8}+\frac{a(2Ab+aB)}{x^7}+\frac{2abB+A(b^2+2ac)}{x^6}+\frac{b^2B+2Abc+2aBc}{x^5}+\frac{c(2b\right.$$

$$= -\frac{a^2A}{7x^7}-\frac{a(2Ab+aB)}{6x^6}-\frac{2abB+A(b^2+2ac)}{5x^5}-\frac{b^2B+2Abc+2aBc}{4x^4}-\frac{c(2bB+}{3x^3}$$

Mathematica [A] time = 0.04, size = 100, normalized size = 0.99

$$-\frac{10a^2(6A+7Bx)+14ax(2A(5b+6cx)+3Bx(4b+5cx))+7x^2(2A(6b^2+15bcx+10c^2x^2)+5Bx(3b^2+8bcx+6c^2x^2))}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -1/420*(10*a^2*(6*A + 7*B*x) + 14*a*x*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6*c
*x)) + 7*x^2*(5*B*x*(3*b^2 + 8*b*c*x + 6*c^2*x^2) + 2*A*(6*b^2 + 15*b*c*x +
 10*c^2*x^2)))/x^7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^8} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^8, x]
```

fricas [A] time = 0.40, size = 93, normalized size = 0.92

$$-\frac{210 Bc^2x^5 + 140 \left(2 Bbc + Ac^2\right)x^4 + 105 \left(Bb^2 + 2 (Ba + Ab)c\right)x^3 + 60 Aa^2 + 84 \left(2 Bab + Ab^2 + 2 Aac\right)x^2 + 70 \left(Ba^2 + 2 Aab\right)x}{420 x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(210*B*c^2*x^5 + 140*(2*B*b*c + A*c^2)*x^4 + 105*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 70*(B*a^2 + 2*
A*a*b)*x)/x^7
```

giac [A] time = 0.15, size = 101, normalized size = 1.00

$$-\frac{210 Bc^2x^5 + 280 Bbcx^4 + 140 Ac^2x^4 + 105 Bb^2x^3 + 210 Bacx^3 + 210 Abcx^3 + 168 Babx^2 + 84 Ab^2x^2 + 168 Aacx^2 + 70 Ba^2x + 140 Aabx + 60 Aa^2}{420 x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(210*B*c^2*x^5 + 280*B*b*c*x^4 + 140*A*c^2*x^4 + 105*B*b^2*x^3 + 210
*B*a*c*x^3 + 210*A*b*c*x^3 + 168*B*a*b*x^2 + 84*A*b^2*x^2 + 168*A*a*c*x^2 +
 70*B*a^2*x + 140*A*a*b*x + 60*A*a^2)/x^7
```

maple [A] time = 0.05, size = 90, normalized size = 0.89

$$-\frac{B c^2}{2x^2} - \frac{(Ac + 2bB) c}{3x^3} - \frac{A a^2}{7x^7} - \frac{2Abc + 2aBc + b^2B}{4x^4} - \frac{(2Ab + Ba) a}{6x^6} - \frac{2Aac + A b^2 + 2Bab}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^8,x)
```

```
[Out] -1/5*(2*A*a*c+A*b^2+2*B*a*b)/x^5-1/4*(2*A*b*c+2*B*a*c+B*b^2)/x^4-1/3*(A*c+2
*B*b)*c/x^3-1/2*B*c^2/x^2-1/7*A*a^2/x^7-1/6*(2*A*b+B*a)*a/x^6
```

maxima [A] time = 0.63, size = 93, normalized size = 0.92

$$-\frac{210 Bc^2x^5 + 140 \left(2 Bbc + Ac^2\right)x^4 + 105 \left(Bb^2 + 2 (Ba + Ab)c\right)x^3 + 60 Aa^2 + 84 \left(2 Bab + Ab^2 + 2 Aac\right)x^2 + 70 \left(Ba^2 + 2 Aab\right)x}{420 x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(210*B*c^2*x^5 + 140*(2*B*b*c + A*c^2)*x^4 + 105*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 70*(B*a^2 + 2*
A*a*b)*x)/x^7
```

mupad [B] time = 1.17, size = 93, normalized size = 0.92

$$-\frac{x^4 \left(\frac{A c^2}{3} + \frac{2 B b c}{3}\right) + \frac{A a^2}{7} + x^2 \left(\frac{A b^2}{5} + \frac{2 B a b}{5} + \frac{2 A a c}{5}\right) + x^3 \left(\frac{B b^2}{4} + \frac{A c b}{2} + \frac{B a c}{2}\right) + x \left(\frac{B a^2}{6} + \frac{A b a}{3}\right) + \frac{B c^2 x^5}{2}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x)
```

```
[Out] -(x^4*((A*c^2)/3 + (2*B*b*c)/3) + (A*a^2)/7 + x^2*((A*b^2)/5 + (2*A*a*c)/5
+ (2*B*a*b)/5) + x^3*((B*b^2)/4 + (A*b*c)/2 + (B*a*c)/2) + x*((B*a^2)/6 + (
A*a*b)/3) + (B*c^2*x^5)/2)/x^7
```

sympy [A] time = 24.02, size = 107, normalized size = 1.06

$$\frac{-60Aa^2 - 210Bc^2x^5 + x^4\left(-140Ac^2 - 280Bbc\right) + x^3\left(-210Abc - 210Bac - 105Bb^2\right) + x^2\left(-168Aac - 84Ab^2 - 168Bab\right) + x\left(-140Aab - 70Ba^2\right)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**8,x)
```

```
[Out] (-60*A*a**2 - 210*B*c**2*x**5 + x**4*(-140*A*c**2 - 280*B*b*c) + x**3*(-210
*A*b*c - 210*B*a*c - 105*B*b**2) + x**2*(-168*A*a*c - 84*A*b**2 - 168*B*a*b
) + x*(-140*A*a*b - 70*B*a**2))/(420*x**7)
```

3.791 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^9}\,dx$

Optimal. Leaf size=101

$$-\frac{a^2A}{8x^8}-\frac{A\left(2ac+b^2\right)+2abB}{6x^6}-\frac{2aBc+2Abc+b^2B}{5x^5}-\frac{a(aB+2Ab)}{7x^7}-\frac{c(Ac+2bB)}{4x^4}-\frac{Bc^2}{3x^3}$$

Rubi [A] time = 0.05, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{8x^8}-\frac{2aBc+2Abc+b^2B}{5x^5}-\frac{A\left(2ac+b^2\right)+2abB}{6x^6}-\frac{a(aB+2Ab)}{7x^7}-\frac{c(Ac+2bB)}{4x^4}-\frac{Bc^2}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x]
```

```
[Out] -(a^2*A)/(8*x^8) - (a*(2*A*b + a*B))/(7*x^7) - (2*a*b*B + A*(b^2 + 2*a*c))/
(6*x^6) - (b^2*B + 2*A*b*c + 2*a*B*c)/(5*x^5) - (c*(2*b*B + A*c))/(4*x^4) -
 (B*c^2)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^9}\,dx=\int\left(\frac{a^2A}{x^9}+\frac{a(2Ab+aB)}{x^8}+\frac{2abB+A\left(b^2+2ac\right)}{x^7}+\frac{b^2B+2Abc+2aBc}{x^6}+\frac{c(\ldots$$
$$=-\frac{a^2A}{8x^8}-\frac{a(2Ab+aB)}{7x^7}-\frac{2abB+A\left(b^2+2ac\right)}{6x^6}-\frac{b^2B+2Abc+2aBc}{5x^5}-\frac{c(2b\ldots$$

Mathematica [A] time = 0.04, size = 99, normalized size = 0.98

$$-\frac{15a^2(7A+8Bx)+8ax(5A(6b+7cx)+7Bx(5b+6cx))+14x^2\left(A\left(10b^2+24bcx+15c^2x^2\right)+2Bx\left(6b^2+15bcx+10c^2x^2\right)\right)}{840x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x]
```

```
[Out] -1/840*(15*a^2*(7*A + 8*B*x) + 8*a*x*(7*B*x*(5*b + 6*c*x) + 5*A*(6*b + 7*c*
x)) + 14*x^2*(2*B*x*(6*b^2 + 15*b*c*x + 10*c^2*x^2) + A*(10*b^2 + 24*b*c*x
+ 15*c^2*x^2)))/x^8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^9, x]
```

fricas [A] time = 0.39, size = 93, normalized size = 0.92

$$-\frac{280\,Bc^2x^5 + 210\left(2\,Bbc + Ac^2\right)x^4 + 168\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 105\,Aa^2 + 140\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 120\left(Ba^2 + 2\,Aab\right)x}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*c^2*x^5 + 210*(2*B*b*c + A*c^2)*x^4 + 168*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 105*A*a^2 + 140*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 120*(B*a^2 +
 2*A*a*b)*x)/x^8
```

giac [A] time = 0.19, size = 101, normalized size = 1.00

$$-\frac{280\,Bc^2x^5 + 420\,Bbcx^4 + 210\,Ac^2x^4 + 168\,Bb^2x^3 + 336\,Bacx^3 + 336\,Abcx^3 + 280\,Babx^2 + 140\,Ab^2x^2 + 280\,Aacx^2 + 120\,Ba^2x + 240\,Aabx + 105\,Aa^2}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*c^2*x^5 + 420*B*b*c*x^4 + 210*A*c^2*x^4 + 168*B*b^2*x^3 + 336
*B*a*c*x^3 + 336*A*b*c*x^3 + 280*B*a*b*x^2 + 140*A*b^2*x^2 + 280*A*a*c*x^2
+ 120*B*a^2*x + 240*A*a*b*x + 105*A*a^2)/x^8
```

maple [A] time = 0.05, size = 90, normalized size = 0.89

$$-\frac{B\,c^2}{3x^3}-\frac{(Ac+2bB)\,c}{4x^4}-\frac{A\,a^2}{8x^8}-\frac{2Abc+2aBc+b^2B}{5x^5}-\frac{(2Ab+Ba)\,a}{7x^7}-\frac{2Aac+A\,b^2+2Bab}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^9,x)
```

```
[Out] -1/5*(2*A*b*c+2*B*a*c+B*b^2)/x^5-1/4*c*(A*c+2*B*b)/x^4-1/3*B*c^2/x^3-1/8*A*
a^2/x^8-1/7*a*(2*A*b+B*a)/x^7-1/6*(2*A*a*c+A*b^2+2*B*a*b)/x^6
```

maxima [A] time = 0.60, size = 93, normalized size = 0.92

$$-\frac{280\,Bc^2x^5 + 210\left(2\,Bbc + Ac^2\right)x^4 + 168\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 105\,Aa^2 + 140\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 120\left(Ba^2 + 2\,Aab\right)x}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*c^2*x^5 + 210*(2*B*b*c + A*c^2)*x^4 + 168*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 105*A*a^2 + 140*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 120*(B*a^2 +
 2*A*a*b)*x)/x^8
```

mupad [B] time = 0.05, size = 93, normalized size = 0.92

$$-\frac{x^4\left(\frac{A\,c^2}{4}+\frac{B\,b\,c}{2}\right)+\frac{A\,a^2}{8}+x^2\left(\frac{A\,b^2}{6}+\frac{B\,a\,b}{3}+\frac{A\,a\,c}{3}\right)+x^3\left(\frac{B\,b^2}{5}+\frac{2\,A\,c\,b}{5}+\frac{2\,B\,a\,c}{5}\right)+x\left(\frac{B\,a^2}{7}+\frac{2\,A\,b\,a}{7}\right)+\frac{B\,c^2\,x^5}{3}}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x)
```

```
[Out] -(x^4*((A*c^2)/4 + (B*b*c)/2) + (A*a^2)/8 + x^2*((A*b^2)/6 + (A*a*c)/3 + (B
*a*b)/3) + x^3*((B*b^2)/5 + (2*A*b*c)/5 + (2*B*a*c)/5) + x*((B*a^2)/7 + (2*
A*a*b)/7) + (B*c^2*x^5)/3)/x^8
```

sympy [A] time = 41.52, size = 107, normalized size = 1.06

$$\frac{-105Aa^2 - 280Bc^2x^5 + x^4\left(-210Ac^2 - 420Bbc\right) + x^3\left(-336Abc - 336Bac - 168Bb^2\right) + x^2\left(-280Aac - 140Ab^2 - 280Bab\right) + x\left(-240Aab - 120Ba^2\right)}{840x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**9,x)
```

```
[Out] (-105*A*a**2 - 280*B*c**2*x**5 + x**4*(-210*A*c**2 - 420*B*b*c) + x**3*(-33
6*A*b*c - 336*B*a*c - 168*B*b**2) + x**2*(-280*A*a*c - 140*A*b**2 - 280*B*a
*b) + x*(-240*A*a*b - 120*B*a**2))/(840*x**8)
```

3.792 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=166

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^2x^4(aB+3Ab)+\frac{3}{8}cx^8\left(aBc+Abc+b^2B\right)+\frac{3}{5}ax^5\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{7}x^7\left(3aAc^2+6abBc+3Ab^2c+\right.$$

Rubi [A] time = 0.26, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{1}{4}a^2x^4(aB+3Ab)+\frac{1}{3}a^3Ax^3+\frac{1}{7}x^7\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{8}cx^8\left(aBc+Abc+b^2B\right)+\frac{1}{6}x^6\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{3}{5}ax^5\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^2*(3*A*b + a*B)*x^4)/4 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
5)/5 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^6)/6 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^7)/7 + (3*c*(b^2*B + A*b*c + a*B*c)*x^8)/8 + (
c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3Ax^2+a^2(3Ab+aB)x^3+3a\left(abB+A\left(b^2+ac\right)\right)x^4+\left(3aB\left(b^2+ac\right)+\right.\right.\\ &= \frac{1}{3}a^3Ax^3+\frac{1}{4}a^2(3Ab+aB)x^4+\frac{3}{5}a\left(abB+A\left(b^2+ac\right)\right)x^5+\frac{1}{6}\left(3aB\left(b^2+ac\right.\right.\end{aligned}$$

Mathematica [A] time = 0.05, size = 166, normalized size = 1.00

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^2x^4(aB+3Ab)+\frac{3}{8}cx^8\left(aBc+Abc+b^2B\right)+\frac{3}{5}ax^5\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{7}x^7\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{6}x^6\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^2*(3*A*b + a*B)*x^4)/4 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
5)/5 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^6)/6 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^7)/7 + (3*c*(b^2*B + A*b*c + a*B*c)*x^8)/8 + (
c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.36, size = 192, normalized size = 1.16

$$\frac{1}{10}x^{10}c^3B+\frac{1}{3}x^9c^2bB+\frac{1}{9}x^9c^3A+\frac{3}{8}x^8cb^2B+\frac{3}{8}x^8c^2aB+\frac{3}{8}x^8c^2bA+\frac{1}{7}x^7b^3B+\frac{6}{7}x^7cbaB+\frac{3}{7}x^7cb^2A+\frac{3}{7}x^7c^2aA+\frac{1}{2}x^6b^2aB+\frac{1}{2}x^6ca^2B+\frac{1}{6}x^6b^3A+x^6cbaA+\frac{3}{5}x^5ba^2B+\frac{3}{5}x^5b^2aA+\frac{3}{5}x^5ca^2A+\frac{1}{4}x^4a^3B+\frac{3}{4}x^4ba^2A+\frac{1}{3}x^3a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^3*B + 1/3*x^9*c^2*b*B + 1/9*x^9*c^3*A + 3/8*x^8*c*b^2*B + 3/8*x
^8*c^2*a*B + 3/8*x^8*c^2*b*A + 1/7*x^7*b^3*B + 6/7*x^7*c*b*a*B + 3/7*x^7*c*
b^2*A + 3/7*x^7*c^2*a*A + 1/2*x^6*b^2*a*B + 1/2*x^6*c*a^2*B + 1/6*x^6*b^3*A
 + x^6*c*b*a*A + 3/5*x^5*b*a^2*B + 3/5*x^5*b^2*a*A + 3/5*x^5*c*a^2*A + 1/4*
x^4*a^3*B + 3/4*x^4*b*a^2*A + 1/3*x^3*a^3*A
```

giac [A] time = 0.20, size = 192, normalized size = 1.16

$$\frac{1}{10}Bc^3x^{10}+\frac{1}{3}Bbc^2x^9+\frac{1}{9}Ac^3x^9+\frac{3}{8}Bb^2cx^8+\frac{3}{8}Bac^2x^8+\frac{3}{8}Abc^2x^8+\frac{1}{7}Bb^3x^7+\frac{6}{7}Babcx^7+\frac{3}{7}Ab^2cx^7+\frac{3}{7}Aac^2x^7+\frac{1}{2}Bab^2x^6+\frac{1}{6}Ab^3x^6+\frac{1}{2}Ba^2cx^6+Aabcx^6+\frac{3}{5}Ba^2bx^5+\frac{3}{5}Aab^2x^5+\frac{3}{5}Aa^2cx^5+\frac{1}{4}Ba^3x^4+\frac{3}{4}Aa^2bx^4+\frac{1}{3}Aa^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 1/3*B*b*c^2*x^9 + 1/9*A*c^3*x^9 + 3/8*B*b^2*c*x^8 + 3/8*B
*a*c^2*x^8 + 3/8*A*b*c^2*x^8 + 1/7*B*b^3*x^7 + 6/7*B*a*b*c*x^7 + 3/7*A*b^2*
c*x^7 + 3/7*A*a*c^2*x^7 + 1/2*B*a*b^2*x^6 + 1/6*A*b^3*x^6 + 1/2*B*a^2*c*x^6
 + A*a*b*c*x^6 + 3/5*B*a^2*b*x^5 + 3/5*A*a*b^2*x^5 + 3/5*A*a^2*c*x^5 + 1/4*
B*a^3*x^4 + 3/4*A*a^2*b*x^4 + 1/3*A*a^3*x^3
```

maple [A] time = 0.04, size = 226, normalized size = 1.36

$$\frac{Bc^3x^{10}}{10}+\frac{(Ac^3+3Bbc^2)x^9}{9}+\frac{(3Abc^2+(ac^2+2b^2c+(2ac+b^2)c)B)x^8}{8}+\frac{Aa^3x^3}{3}+\frac{((ac^2+2b^2c+(2ac+b^2)c)A+(4abc+(2ac+b^2)b)B)x^7}{7}+\frac{((4abc+(2ac+b^2)b)A+(a^2c+2ab^2+(2ac+b^2)a)B)x^6}{6}+\frac{(3Ba^2b+(a^2c+2ab^2+(2ac+b^2)a)A)x^5}{5}+\frac{(3Aa^2b+Ba^3)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/10*B*c^3*x^10+1/9*(A*c^3+3*B*b*c^2)*x^9+1/8*(3*A*b*c^2+B*(a*c^2+2*b^2*c+c
*(2*a*c+b^2)))*x^8+1/7*(A*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+B*(4*a*b*c+b*(2*a*c
+b^2)))*x^7+1/6*(A*(4*a*b*c+b*(2*a*c+b^2))+B*(a*(2*a*c+b^2)+2*a*b^2+c*a^2))
*x^6+1/5*(A*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*B*a^2*b)*x^5+1/4*(3*A*a^2*b+B*a
^3)*x^4+1/3*A*a^3*x^3
```

maxima [A] time = 0.71, size = 166, normalized size = 1.00

$$\frac{1}{10}Bc^3x^{10}+\frac{1}{9}\left(3Bbc^2+Ac^3\right)x^9+\frac{3}{8}\left(Bb^2c+(Ba+Ab)c^2\right)x^8+\frac{1}{7}\left(Bb^3+3Aac^2+3\left(2Bab+Ab^2\right)c\right)x^7+\frac{1}{3}Aa^3x^3+\frac{1}{6}\left(3Bab^2+Ab^3+3\left(Ba^2+2Aab\right)c\right)x^6+\frac{3}{5}\left(Ba^2b+Aab^2+Aa^2c\right)x^5+\frac{1}{4}\left(Ba^3+3Aa^2b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/9*(3*B*b*c^2 + A*c^3)*x^9 + 3/8*(B*b^2*c + (B*a + A*b)*
c^2)*x^8 + 1/7*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^7 + 1/3*A*a^3*
x^3 + 1/6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^6 + 3/5*(B*a^2*b +
A*a*b^2 + A*a^2*c)*x^5 + 1/4*(B*a^3 + 3*A*a^2*b)*x^4
```

mupad [B] time = 0.07, size = 168, normalized size = 1.01

$$x^6\left(\frac{Bca^2}{2}+\frac{Bab^2}{2}+Acab+\frac{Ab^3}{6}\right)+x^7\left(\frac{Bb^3}{7}+\frac{3Ab^2c}{7}+\frac{6Babc}{7}+\frac{3Aac^2}{7}\right)+x^4\left(\frac{Ba^3}{4}+\frac{3Aba^2}{4}\right)+x^9\left(\frac{Ac^3}{9}+\frac{Bbc^2}{3}\right)+x^5\left(\frac{3Ba^2b}{5}+\frac{3Aca^2}{5}+\frac{3Aab^2}{5}\right)+x^8\left(\frac{3Bb^2c}{8}+\frac{3Abc^2}{8}+\frac{3Bac^2}{8}\right)+\frac{Aa^3x^3}{3}+\frac{Bc^3x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^6*((A*b^3)/6 + (B*a*b^2)/2 + (B*a^2*c)/2 + A*a*b*c) + x^7*((B*b^3)/7 + (3
*A*a*c^2)/7 + (3*A*b^2*c)/7 + (6*B*a*b*c)/7) + x^4*((B*a^3)/4 + (3*A*a^2*b)
/4) + x^9*((A*c^3)/9 + (B*b*c^2)/3) + x^5*((3*A*a*b^2)/5 + (3*A*a^2*c)/5 +
(3*B*a^2*b)/5) + x^8*((3*A*b*c^2)/8 + (3*B*a*c^2)/8 + (3*B*b^2*c)/8) + (A*a
^3*x^3)/3 + (B*c^3*x^10)/10
```

sympy [A] time = 0.11, size = 201, normalized size = 1.21

$$\frac{Aa^3x^3}{3} + \frac{Bc^3x^{10}}{10} + x^9\left(\frac{Ac^3}{9} + \frac{Bbc^2}{3}\right) + x^8\left(\frac{3Abc^2}{8} + \frac{3Bac^2}{8} + \frac{3Bb^2c}{8}\right) + x^7\left(\frac{3Aac^2}{7} + \frac{3Ab^2c}{7} + \frac{6Babc}{7} + \frac{Bb^3}{7}\right) + x^6\left(Aabc + \frac{Ab^3}{6} + \frac{Ba^2c}{2} + \frac{Bab^2}{2}\right) + x^5\left(\frac{3Aa^2c}{5} + \frac{3Aab^2}{5} + \frac{3Ba^2b}{5}\right) + x^4\left(\frac{3Aa^2b}{4} + \frac{Ba^3}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x**3/3 + B*c**3*x**10/10 + x**9*(A*c**3/9 + B*b*c**2/3) + x**8*(3*A*
b*c**2/8 + 3*B*a*c**2/8 + 3*B*b**2*c/8) + x**7*(3*A*a*c**2/7 + 3*A*b**2*c/7
 + 6*B*a*b*c/7 + B*b**3/7) + x**6*(A*a*b*c + A*b**3/6 + B*a**2*c/2 + B*a*b*
*2/2) + x**5*(3*A*a**2*c/5 + 3*A*a*b**2/5 + 3*B*a**2*b/5) + x**4*(3*A*a**2*
b/4 + B*a**3/4)
```

3.793 $\int x(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=166

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^2x^3(aB+3Ab)+\frac{3}{7}cx^7\left(aBc+Abc+b^2B\right)+\frac{3}{4}ax^4\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{6}x^6\left(3aAc^2+6abBc+3Ab^2\right.$$

Rubi [A] time = 0.20, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{3}a^2x^3(aB+3Ab)+\frac{1}{2}a^3Ax^2+\frac{1}{6}x^6\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{7}cx^7\left(aBc+Abc+b^2B\right)+\frac{1}{5}x^5\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{3}{4}ax^4\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^2*(3*A*b + a*B)*x^3)/3 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
4)/4 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^5)/5 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^6)/6 + (3*c*(b^2*B + A*b*c + a*B*c)*x^7)/7 + (
c^2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int\left(a^3Ax+a^2(3Ab+aB)x^2+3a\left(abB+A\left(b^2+ac\right)\right)x^3+\left(3aB\left(b^2+ac\right)\right.\right.\\ &= \frac{1}{2}a^3Ax^2+\frac{1}{3}a^2(3Ab+aB)x^3+\frac{3}{4}a\left(abB+A\left(b^2+ac\right)\right)x^4+\frac{1}{5}\left(3aB\left(b^2+a\right.\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 166, normalized size = 1.00

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^2x^3(aB+3Ab)+\frac{3}{7}cx^7\left(aBc+Abc+b^2B\right)+\frac{3}{4}ax^4\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{6}x^6\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{5}x^5\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^2*(3*A*b + a*B)*x^3)/3 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
4)/4 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^5)/5 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^6)/6 + (3*c*(b^2*B + A*b*c + a*B*c)*x^7)/7 + (
c^2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.36, size = 191, normalized size = 1.15

$$\frac{1}{9}x^9c^3B+\frac{3}{8}x^8c^2bB+\frac{1}{8}x^8c^3A+\frac{3}{7}x^7cb^2B+\frac{3}{7}x^7c^2aB+\frac{3}{7}x^7c^2bA+\frac{1}{6}x^6b^3B+x^6cbaB+\frac{1}{2}x^6cb^2A+\frac{1}{2}x^6c^2aA+\frac{3}{5}x^5b^2aB+\frac{3}{5}x^5ca^2B+\frac{1}{5}x^5b^3A+\frac{6}{5}x^5cbaA+\frac{3}{4}x^4ba^2B+\frac{3}{4}x^4b^2aA+\frac{3}{4}x^4ca^2A+\frac{1}{3}x^3a^3B+x^3ba^2A+\frac{1}{2}x^2a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*B + 3/8*x^8*c^2*b*B + 1/8*x^8*c^3*A + 3/7*x^7*c*b^2*B + 3/7*x^7
*c^2*a*B + 3/7*x^7*c^2*b*A + 1/6*x^6*b^3*B + x^6*c*b*a*B + 1/2*x^6*c*b^2*A
+ 1/2*x^6*c^2*a*A + 3/5*x^5*b^2*a*B + 3/5*x^5*c*a^2*B + 1/5*x^5*b^3*A + 6/5
*x^5*c*b*a*A + 3/4*x^4*b*a^2*B + 3/4*x^4*b^2*a*A + 3/4*x^4*c*a^2*A + 1/3*x^
3*a^3*B + x^3*b*a^2*A + 1/2*x^2*a^3*A
```

giac [A] time = 0.15, size = 191, normalized size = 1.15

$$\frac{1}{9}Bc^3x^9+\frac{3}{8}Bbc^2x^8+\frac{1}{8}Ac^3x^8+\frac{3}{7}Bb^2cx^7+\frac{3}{7}Bac^2x^7+\frac{3}{7}Abc^2x^7+\frac{1}{6}Bb^3x^6+Babcx^6+\frac{1}{2}Ab^2cx^6+\frac{1}{2}Aac^2x^6+\frac{3}{5}Bab^2x^5+\frac{1}{5}Ab^3x^5+\frac{3}{5}Ba^2cx^5+\frac{6}{5}Aabcx^5+\frac{3}{4}Ba^2bx^4+\frac{3}{4}Aab^2x^4+\frac{3}{4}Aa^2cx^4+\frac{1}{3}Ba^3x^3+Aa^2bx^3+\frac{1}{2}Aa^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9 + 3/8*B*b*c^2*x^8 + 1/8*A*c^3*x^8 + 3/7*B*b^2*c*x^7 + 3/7*B*a
*c^2*x^7 + 3/7*A*b*c^2*x^7 + 1/6*B*b^3*x^6 + B*a*b*c*x^6 + 1/2*A*b^2*c*x^6
+ 1/2*A*a*c^2*x^6 + 3/5*B*a*b^2*x^5 + 1/5*A*b^3*x^5 + 3/5*B*a^2*c*x^5 + 6/5
*A*a*b*c*x^5 + 3/4*B*a^2*b*x^4 + 3/4*A*a*b^2*x^4 + 3/4*A*a^2*c*x^4 + 1/3*B*
a^3*x^3 + A*a^2*b*x^3 + 1/2*A*a^3*x^2
```

maple [A] time = 0.04, size = 226, normalized size = 1.36

$$\frac{Bc^3x^9}{9}+\frac{\left(Ac^3+3Bbc^2\right)x^8}{8}+\frac{\left(3Abc^2+\left(ac^2+2b^2c+\left(2ac+b^2\right)c\right)B\right)x^7}{7}+\frac{Aa^3x^2}{2}+\frac{\left(\left(ac^2+2b^2c+\left(2ac+b^2\right)c\right)A+\left(4abc+\left(2ac+b^2\right)b\right)B\right)x^6}{6}+\frac{\left(\left(4abc+\left(2ac+b^2\right)b\right)A+\left(a^2c+2ab^2+\left(2ac+b^2\right)a\right)B\right)x^5}{5}+\frac{\left(3Ba^2b+\left(a^2c+2ab^2+\left(2ac+b^2\right)a\right)A\right)x^4}{4}+\frac{\left(3Aa^2b+Ba^3\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/9*B*c^3*x^9+1/8*(A*c^3+3*B*b*c^2)*x^8+1/7*(3*A*b*c^2+(a*c^2+2*b^2*c+(2*a*
c+b^2)*c)*B)*x^7+1/6*((a*c^2+2*b^2*c+(2*a*c+b^2)*c)*A+(4*a*b*c+(2*a*c+b^2)*
b)*B)*x^6+1/5*((4*a*b*c+(2*a*c+b^2)*b)*A+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*B)*x
^5+1/4*(3*B*a^2*b+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*A)*x^4+1/3*(3*A*a^2*b+B*a^3
)*x^3+1/2*A*a^3*x^2
```

maxima [A] time = 0.66, size = 166, normalized size = 1.00

$$\frac{1}{9}Bc^3x^9+\frac{1}{8}\left(3Bbc^2+Ac^3\right)x^8+\frac{3}{7}\left(Bb^2c+(Ba+Ab)c^2\right)x^7+\frac{1}{6}\left(Bb^3+3Aac^2+3\left(2Bab+Ab^2\right)c\right)x^6+\frac{1}{2}Aa^3x^2+\frac{1}{5}\left(3Bab^2+Ab^3+3\left(Ba^2+2Aab\right)c\right)x^5+\frac{3}{4}\left(Ba^2b+Aab^2+Aa^2c\right)x^4+\frac{1}{3}\left(Ba^3+3Aa^2b\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*x^9 + 1/8*(3*B*b*c^2 + A*c^3)*x^8 + 3/7*(B*b^2*c + (B*a + A*b)*c^
2)*x^7 + 1/6*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^6 + 1/2*A*a^3*x^
2 + 1/5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^5 + 3/4*(B*a^2*b + A*
a*b^2 + A*a^2*c)*x^4 + 1/3*(B*a^3 + 3*A*a^2*b)*x^3
```

mupad [B] time = 1.16, size = 167, normalized size = 1.01

$$x^5\left(\frac{3Bca^2}{5}+\frac{3Bab^2}{5}+\frac{6Acab}{5}+\frac{Ab^3}{5}\right)+x^6\left(\frac{Bb^3}{6}+\frac{Ab^2c}{2}+Babc+\frac{Aac^2}{2}\right)+x^3\left(\frac{Ba^3}{3}+Aba^2\right)+x^8\left(\frac{Ac^3}{8}+\frac{3Bbc^2}{8}\right)+x^4\left(\frac{3Ba^2b}{4}+\frac{3Aca^2}{4}+\frac{3Aab^2}{4}\right)+x^7\left(\frac{3Bb^2c}{7}+\frac{3Abc^2}{7}+\frac{3Bac^2}{7}\right)+\frac{Aa^3x^2}{2}+\frac{Bc^3x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^5*((A*b^3)/5 + (3*B*a*b^2)/5 + (3*B*a^2*c)/5 + (6*A*a*b*c)/5) + x^6*((B*b
^3)/6 + (A*a*c^2)/2 + (A*b^2*c)/2 + B*a*b*c) + x^3*((B*a^3)/3 + A*a^2*b) +
x^8*((A*c^3)/8 + (3*B*b*c^2)/8) + x^4*((3*A*a*b^2)/4 + (3*A*a^2*c)/4 + (3*B
*a^2*b)/4) + x^7*((3*A*b*c^2)/7 + (3*B*a*c^2)/7 + (3*B*b^2*c)/7) + (A*a^3*x
^2)/2 + (B*c^3*x^9)/9
```

sympy [A] time = 0.10, size = 199, normalized size = 1.20

$$\frac{Aa^3x^2}{2}+\frac{Bc^3x^9}{9}+x^8\left(\frac{Ac^3}{8}+\frac{3Bbc^2}{8}\right)+x^7\left(\frac{3Abc^2}{7}+\frac{3Bac^2}{7}+\frac{3Bb^2c}{7}\right)+x^6\left(\frac{Aac^2}{2}+\frac{Ab^2c}{2}+Babc+\frac{Bb^3}{6}\right)+x^5\left(\frac{6Aabc}{5}+\frac{Ab^3}{5}+\frac{3Ba^2c}{5}+\frac{3Bab^2}{5}\right)+x^4\left(\frac{3Aa^2c}{4}+\frac{3Aab^2}{4}+\frac{3Ba^2b}{4}\right)+x^3\left(Aa^2b+\frac{Ba^3}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x**2/2 + B*c**3*x**9/9 + x**8*(A*c**3/8 + 3*B*b*c**2/8) + x**7*(3*A*
b*c**2/7 + 3*B*a*c**2/7 + 3*B*b**2*c/7) + x**6*(A*a*c**2/2 + A*b**2*c/2 + B
*a*b*c + B*b**3/6) + x**5*(6*A*a*b*c/5 + A*b**3/5 + 3*B*a**2*c/5 + 3*B*a*b*
*2/5) + x**4*(3*A*a**2*c/4 + 3*A*a*b**2/4 + 3*B*a**2*b/4) + x**3*(A*a**2*b
+ B*a**3/3)
```

3.794 $\int (A+Bx) \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=158

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right.$$

Rubi [A] time = 0.15, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$\frac{1}{2}a^2x^2(aB+3Ab)+a^3Ax+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3A+a^2(3Ab+aB)x+3a\left(abB+A\left(b^2+ac\right)\right)x^2+\left(3aB\left(b^2+ac\right)+A\left(b^3\right.\right.\right.\\ &= a^3Ax+\frac{1}{2}a^2(3Ab+aB)x^2+a\left(abB+A\left(b^2+ac\right)\right)x^3+\frac{1}{4}\left(3aB\left(b^2+ac\right)+A\left(b\right.\right.\end{aligned}$$

Mathematica [A] time = 0.03, size = 158, normalized size = 1.00

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{4}x^4\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 187, normalized size = 1.18

$$\frac{1}{8}x^8c^3B + \frac{3}{7}x^7c^2bB + \frac{1}{7}x^7c^3A + \frac{1}{2}x^6cb^2B + \frac{1}{2}x^6c^2aB + \frac{1}{2}x^6c^2bA + \frac{1}{5}x^5b^3B + \frac{6}{5}x^5cbaB + \frac{3}{5}x^5cb^2A + \frac{3}{5}x^5c^2aA + \frac{3}{4}x^4b^2aB + \frac{3}{4}x^4ca^2B + \frac{1}{4}x^4b^3A + \frac{3}{2}x^4cbaA + x^3ba^2B + x^3b^2aA + x^3ca^2A + \frac{1}{2}x^2a^3B + \frac{3}{2}x^2ba^2A + xa^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*a*B + 1/2*x^6*c^2*b*A + 1/5*x^5*b^3*B + 6/5*x^5*c*b*a*B + 3/5*x^5*c*b^
2*A + 3/5*x^5*c^2*a*A + 3/4*x^4*b^2*a*B + 3/4*x^4*c*a^2*B + 1/4*x^4*b^3*A +
 3/2*x^4*c*b*a*A + x^3*b*a^2*B + x^3*b^2*a*A + x^3*c*a^2*A + 1/2*x^2*a^3*B
+ 3/2*x^2*b*a^2*A + x*a^3*A
```

giac [A] time = 0.15, size = 187, normalized size = 1.18

$$\frac{1}{8}Bc^3x^8 + \frac{3}{7}Bbc^2x^7 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bb^2cx^6 + \frac{1}{2}Bac^2x^6 + \frac{1}{2}Abc^2x^6 + \frac{1}{5}Bb^3x^5 + \frac{6}{5}Babcx^5 + \frac{3}{5}Ab^2cx^5 + \frac{3}{5}Aac^2x^5 + \frac{3}{4}Bab^2x^4 + \frac{1}{4}Ab^3x^4 + \frac{3}{4}Ba^2cx^4 + \frac{3}{2}Aabcx^4 + Ba^2bx^3 + Aab^2x^3 + Aa^2cx^3 + \frac{1}{2}Ba^3x^2 + \frac{3}{2}Aa^2bx^2 + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*B*a
*c^2*x^6 + 1/2*A*b*c^2*x^6 + 1/5*B*b^3*x^5 + 6/5*B*a*b*c*x^5 + 3/5*A*b^2*c*
x^5 + 3/5*A*a*c^2*x^5 + 3/4*B*a*b^2*x^4 + 1/4*A*b^3*x^4 + 3/4*B*a^2*c*x^4 +
 3/2*A*a*b*c*x^4 + B*a^2*b*x^3 + A*a*b^2*x^3 + A*a^2*c*x^3 + 1/2*B*a^3*x^2
+ 3/2*A*a^2*b*x^2 + A*a^3*x
```

maple [A] time = 0.05, size = 223, normalized size = 1.41

$$\frac{Bc^3x^8}{8} + \frac{(Ac^3 + 3Bbc^2)x^7}{7} + \frac{(3Abc^2 + (ac^2 + 2b^2c + (2ac + b^2)c)B)x^6}{6} + Aa^3x + \frac{((ac^2 + 2b^2c + (2ac + b^2)c)A + (4abc + (2ac + b^2)b)B)x^5}{5} + \frac{((4abc + (2ac + b^2)b)A + (a^2c + 2ab^2 + (2ac + b^2)a)B)x^4}{4} + \frac{(3Ba^2b + (a^2c + 2ab^2 + (2ac + b^2)a)A)x^3}{3} + \frac{(3Aa^2b + Ba^3)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+(a*c^2+2*b^2*c+(2*a*
c+b^2)*c)*B)*x^6+1/5*((a*c^2+2*b^2*c+(2*a*c+b^2)*c)*A+(4*a*b*c+(2*a*c+b^2)*
b)*B)*x^5+1/4*((4*a*b*c+(2*a*c+b^2)*b)*A+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*B)*x
^4+1/3*(3*B*a^2*b+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*A)*x^3+1/2*(3*A*a^2*b+B*a^3
)*x^2+A*a^3*x
```

maxima [A] time = 0.58, size = 162, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8 + \frac{1}{7}(3Bbc^2 + Ac^3)x^7 + \frac{1}{2}(Bb^2c + (Ba + Ab)c^2)x^6 + \frac{1}{5}(Bb^3 + 3Aac^2 + 3(2Bab + Ab^2)c)x^5 + Aa^3x + \frac{1}{4}(3Bab^2 + Ab^3 + 3(Ba^2 + 2Aab)c)x^4 + (Ba^2b + Aab^2 + Aa^2c)x^3 + \frac{1}{2}(Ba^3 + 3Aa^2b)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c + (B*a + A*b)*c^
2)*x^6 + 1/5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^5 + A*a^3*x + 1/
4*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^4 + (B*a^2*b + A*a*b^2 + A*
a^2*c)*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

mupad [B] time = 0.05, size = 163, normalized size = 1.03

$$x^4\left(\frac{3Bca^2}{4} + \frac{3Bab^2}{4} + \frac{3Acab}{2} + \frac{Ab^3}{4}\right) + x^5\left(\frac{Bb^3}{5} + \frac{3Ab^2c}{5} + \frac{6Babc}{5} + \frac{3Aac^2}{5}\right) + x^2\left(\frac{Ba^3}{2} + \frac{3Aba^2}{2}\right) + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^3\left(Ba^2b + Aca^2 + Aab^2\right) + x^6\left(\frac{Bb^2c}{2} + \frac{Abc^2}{2} + \frac{Bac^2}{2}\right) + \frac{Bc^3x^8}{8} + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((A*b^3)/4 + (3*B*a*b^2)/4 + (3*B*a^2*c)/4 + (3*A*a*b*c)/2) + x^5*((B*b
^3)/5 + (3*A*a*c^2)/5 + (3*A*b^2*c)/5 + (6*B*a*b*c)/5) + x^2*((B*a^3)/2 + (
3*A*a^2*b)/2) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + x^3*(A*a*b^2 + A*a^2*c +
B*a^2*b) + x^6*((A*b*c^2)/2 + (B*a*c^2)/2 + (B*b^2*c)/2) + (B*c^3*x^8)/8 +
A*a^3*x
```

sympy [**A**] time = 0.10, size = 190, normalized size = 1.20

$$Aa^3x + \frac{Bc^3x^8}{8} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^6\left(\frac{Abc^2}{2} + \frac{Bac^2}{2} + \frac{Bb^2c}{2}\right) + x^5\left(\frac{3Aac^2}{5} + \frac{3Ab^2c}{5} + \frac{6Babc}{5} + \frac{Bb^3}{5}\right) + x^4\left(\frac{3Aabc}{2} + \frac{Ab^3}{4} + \frac{3Ba^2c}{4} + \frac{3Bab^2}{4}\right) + x^3\left(Aa^2c + Aab^2 + Ba^2b\right) + x^2\left(\frac{3Aa^2b}{2} + \frac{Ba^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*c**2/
2 + B*a*c**2/2 + B*b**2*c/2) + x**5*(3*A*a*c**2/5 + 3*A*b**2*c/5 + 6*B*a*b*
c/5 + B*b**3/5) + x**4*(3*A*a*b*c/2 + A*b**3/4 + 3*B*a**2*c/4 + 3*B*a*b**2/
4) + x**3*(A*a**2*c + A*a*b**2 + B*a**2*b) + x**2*(3*A*a**2*b/2 + B*a**3/2)
```

3.795 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{x} \, dx$

Optimal. Leaf size=157

$$a^3 A \log(x)+a^2 x(aB+3Ab)+\frac{3}{5}cx^5\left(aBc+Abc+b^2B\right)+\frac{3}{2}ax^2\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{4}x^4\left(3aAc^2+6abBc+3Ab^2\right.$$

Rubi [A] time = 0.11, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$a^2x(aB+3Ab)+a^3A\log(x)+\frac{1}{4}x^4\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{5}cx^5\left(aBc+Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{3}{2}ax^2\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x,x]
```

```
[Out] a^2*(3*A*b + a*B)*x + (3*a*(a*b*B + A*(b^2 + a*c))*x^2)/2 + ((3*a*B*(b^2 +
a*c) + A*(b^3 + 6*a*b*c))*x^3)/3 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*
c^2)*x^4)/4 + (3*c*(b^2*B + A*b*c + a*B*c)*x^5)/5 + (c^2*(3*b*B + A*c)*x^6)
/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x}\,dx = \int \left(a^2(3Ab+aB)+\frac{a^3A}{x}+3a\left(abB+A\left(b^2+ac\right)\right)x+\left(3aB\left(b^2+ac\right)+A\left(\right.\right.\right.$$

$$= a^2(3Ab+aB)x+\frac{3}{2}a\left(abB+A\left(b^2+ac\right)\right)x^2+\frac{1}{3}\left(3aB\left(b^2+ac\right)+A\left(b^3+6\right.\right.$$

Mathematica [A] time = 0.06, size = 157, normalized size = 1.00

$$a^3A\log(x)+a^2x(aB+3Ab)+\frac{3}{5}cx^5\left(aBc+Abc+b^2B\right)+\frac{3}{2}ax^2\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{4}x^4\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{3}x^3\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x,x]
```

```
[Out] a^2*(3*A*b + a*B)*x + (3*a*(a*b*B + A*(b^2 + a*c))*x^2)/2 + ((3*a*B*(b^2 +
a*c) + A*(b^3 + 6*a*b*c))*x^3)/3 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*
c^2)*x^4)/4 + (3*c*(b^2*B + A*b*c + a*B*c)*x^5)/5 + (c^2*(3*b*B + A*c)*x^6)
/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x, x]
```

fricas [A] time = 0.39, size = 161, normalized size = 1.03

$$\frac{1}{7}Bc^3x^7 + \frac{1}{6}\left(3Bbc^2 + Ac^3\right)x^6 + \frac{3}{5}\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + \frac{1}{4}\left(Bb^3 + 3Aac^2 + 3\left(2Bab + Ab^2\right)c\right)x^4 + Aa^3\log(x) + \frac{1}{3}\left(3Bab^2 + Ab^3 + 3\left(Ba^2 + 2Aab\right)c\right)x^3 + \frac{3}{2}\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + \left(Ba^3 + 3Aa^2b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c + (B*a + A*b)*c^
2)*x^5 + 1/4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + A*a^3*log(x)
 + 1/3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 3/2*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 + (B*a^3 + 3*A*a^2*b)*x
```

giac [A] time = 0.15, size = 185, normalized size = 1.18

$$\frac{1}{7}Bc^3x^7 + \frac{1}{2}Bbc^2x^6 + \frac{1}{6}Ac^3x^6 + \frac{3}{5}Bb^2cx^5 + \frac{3}{5}Bac^2x^5 + \frac{3}{5}Abc^2x^5 + \frac{1}{4}Bb^3x^4 + \frac{3}{2}Babcx^4 + \frac{3}{4}Ab^2cx^4 + \frac{3}{4}Aac^2x^4 + Bab^2x^3 + \frac{1}{3}Ab^3x^3 + Ba^2cx^3 + 2Aabcx^3 + \frac{3}{2}Ba^2bx^2 + \frac{3}{2}Aab^2x^2 + \frac{3}{2}Aa^2cx^2 + Ba^3x + 3Aa^2bx + Aa^3\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 1/2*B*b*c^2*x^6 + 1/6*A*c^3*x^6 + 3/5*B*b^2*c*x^5 + 3/5*B*a
*c^2*x^5 + 3/5*A*b*c^2*x^5 + 1/4*B*b^3*x^4 + 3/2*B*a*b*c*x^4 + 3/4*A*b^2*c*
x^4 + 3/4*A*a*c^2*x^4 + B*a*b^2*x^3 + 1/3*A*b^3*x^3 + B*a^2*c*x^3 + 2*A*a*b
*c*x^3 + 3/2*B*a^2*b*x^2 + 3/2*A*a*b^2*x^2 + 3/2*A*a^2*c*x^2 + B*a^3*x + 3*
A*a^2*b*x + A*a^3*log(abs(x))
```

maple [A] time = 0.05, size = 185, normalized size = 1.18

$$\frac{Bc^3x^7}{7} + \frac{Ac^3x^6}{6} + \frac{Bbc^2x^6}{2} + \frac{3Abc^2x^5}{5} + \frac{3Bac^2x^5}{5} + \frac{3Bb^2cx^5}{5} + \frac{3Aac^2x^4}{4} + \frac{3Ab^2cx^4}{4} + \frac{3Babcx^4}{2} + \frac{Bb^3x^4}{4} + 2Aabcx^3 + \frac{Ab^3x^3}{3} + Ba^2cx^3 + Bab^2x^3 + \frac{3Aa^2cx^2}{2} + \frac{3Aab^2x^2}{2} + \frac{3Ba^2bx^2}{2} + Aa^3\ln(x) + 3Aa^2bx + Ba^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x,x)
```

```
[Out] 1/7*B*c^3*x^7+1/6*A*c^3*x^6+1/2*B*x^6*b*c^2+3/5*A*x^5*b*c^2+3/5*B*a*c^2*x^5
+3/5*B*x^5*b^2*c+3/4*A*a*c^2*x^4+3/4*A*x^4*b^2*c+3/2*B*x^4*a*b*c+1/4*B*b^3*
x^4+2*A*x^3*a*b*c+1/3*A*b^3*x^3+B*a^2*c*x^3+B*a*b^2*x^3+3/2*A*a^2*c*x^2+3/2
*A*x^2*a*b^2+3/2*B*a^2*b*x^2+3*A*a^2*b*x+B*a^3*x+A*a^3*ln(x)
```

maxima [A] time = 0.48, size = 161, normalized size = 1.03

$$\frac{1}{7}Bc^3x^7 + \frac{1}{6}\left(3Bbc^2 + Ac^3\right)x^6 + \frac{3}{5}\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + \frac{1}{4}\left(Bb^3 + 3Aac^2 + 3\left(2Bab + Ab^2\right)c\right)x^4 + Aa^3\log(x) + \frac{1}{3}\left(3Bab^2 + Ab^3 + 3\left(Ba^2 + 2Aab\right)c\right)x^3 + \frac{3}{2}\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + \left(Ba^3 + 3Aa^2b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c + (B*a + A*b)*c^
2)*x^5 + 1/4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + A*a^3*log(x)
 + 1/3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 3/2*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 + (B*a^3 + 3*A*a^2*b)*x
```

mupad [B] time = 0.05, size = 162, normalized size = 1.03

$$x^3\left(Bca^2 + Bab^2 + 2Acab + \frac{Ab^3}{3}\right) + x^4\left(\frac{Bb^3}{4} + \frac{3Ab^2c}{4} + \frac{3Babc}{2} + \frac{3Aac^2}{4}\right) + x\left(Ba^3 + 3Aba^2\right) + x^6\left(\frac{Ac^3}{6} + \frac{Bbc^2}{2}\right) + x^2\left(\frac{3Ba^2b}{2} + \frac{3Aca^2}{2} + \frac{3Aab^2}{2}\right) + x^5\left(\frac{3Bb^2c}{5} + \frac{3Abc^2}{5} + \frac{3Bac^2}{5}\right) + \frac{Bc^3x^7}{7} + Aa^3\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x,x)
```

```
[Out] x^3*((A*b^3)/3 + B*a*b^2 + B*a^2*c + 2*A*a*b*c) + x^4*((B*b^3)/4 + (3*A*a*c
^2)/4 + (3*A*b^2*c)/4 + (3*B*a*b*c)/2) + x*(B*a^3 + 3*A*a^2*b) + x^6*((A*c^
3)/6 + (B*b*c^2)/2) + x^2*((3*A*a*b^2)/2 + (3*A*a^2*c)/2 + (3*B*a^2*b)/2) +
 x^5*((3*A*b*c^2)/5 + (3*B*a*c^2)/5 + (3*B*b^2*c)/5) + (B*c^3*x^7)/7 + A*a^
3*log(x)
```

sympy [A] time = 0.31, size = 192, normalized size = 1.22

$$Aa^3\log(x) + \frac{Bc^3x^7}{7} + x^6\left(\frac{Ac^3}{6} + \frac{Bbc^2}{2}\right) + x^5\left(\frac{3Abc^2}{5} + \frac{3Bac^2}{5} + \frac{3Bb^2c}{5}\right) + x^4\left(\frac{3Aac^2}{4} + \frac{3Ab^2c}{4} + \frac{3Babc}{2} + \frac{Bb^3}{4}\right) + x^3\left(2Aabc + \frac{Ab^3}{3} + Ba^2c + Bab^2\right) + x^2\left(\frac{3Aa^2c}{2} + \frac{3Aab^2}{2} + \frac{3Ba^2b}{2}\right) + x\left(3Aa^2b + Ba^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x,x)
```

```
[Out] A*a**3*log(x) + B*c**3*x**7/7 + x**6*(A*c**3/6 + B*b*c**2/2) + x**5*(3*A*b*
c**2/5 + 3*B*a*c**2/5 + 3*B*b**2*c/5) + x**4*(3*A*a*c**2/4 + 3*A*b**2*c/4 +
 3*B*a*b*c/2 + B*b**3/4) + x**3*(2*A*a*b*c + A*b**3/3 + B*a**2*c + B*a*b**2
) + x**2*(3*A*a**2*c/2 + 3*A*a*b**2/2 + 3*B*a**2*b/2) + x*(3*A*a**2*b + B*a
**3)
```

3.796 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=156

$$-\frac{a^3A}{x}+a^2\log(x)(aB+3Ab)+\frac{3}{4}cx^4\left(aBc+Abc+b^2B\right)+3ax\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{3}x^3\left(3aAc^2+6abBc+3Ab^2c+\right.$$

Rubi [A] time = 0.11, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$a^2\log(x)(aB+3Ab)-\frac{a^3A}{x}+\frac{1}{3}x^3\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{4}cx^4\left(aBc+Abc+b^2B\right)+\frac{1}{2}x^2\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+3ax\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}c^2x^5(Ac+3bB)+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a*(a*b*B + A*(b^2 + a*c))*x + ((3*a*B*(b^2 + a*c) + A*(b^3
 + 6*a*b*c))*x^2)/2 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^3)/3 +
 (3*c*(b^2*B + A*b*c + a*B*c)*x^4)/4 + (c^2*(3*b*B + A*c)*x^5)/5 + (B*c^3*x
^6)/6 + a^2*(3*A*b + a*B)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^2}\,dx=\int \left(3a\left(abB+A\left(b^2+ac\right)\right)+\frac{a^3A}{x^2}+\frac{a^2(3Ab+aB)}{x}+\left(3aB\left(b^2+ac\right)+A\left(b^3+\right.\right.\right.$$
$$=-\frac{a^3A}{x}+3a\left(abB+A\left(b^2+ac\right)\right)x+\frac{1}{2}\left(3aB\left(b^2+ac\right)+A\left(b^3+6abc\right)\right)x^2+\frac{1}{3}\left(\right.$$

Mathematica [A] time = 0.08, size = 156, normalized size = 1.00

$$-\frac{a^3A}{x}+a^2\log(x)(aB+3Ab)+\frac{3}{4}cx^4\left(aBc+Abc+b^2B\right)+3ax\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{3}x^3\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{2}x^2\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{5}c^2x^5(Ac+3bB)+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a*(a*b*B + A*(b^2 + a*c))*x + ((3*a*B*(b^2 + a*c) + A*(b^3
 + 6*a*b*c))*x^2)/2 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^3)/3 +
 (3*c*(b^2*B + A*b*c + a*B*c)*x^4)/4 + (c^2*(3*b*B + A*c)*x^5)/5 + (B*c^3*x
^6)/6 + a^2*(3*A*b + a*B)*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^2, x]
```

fricas [A] time = 0.40, size = 168, normalized size = 1.08

$$\frac{10 \, B c^{3} x^{7} + 12 \, {\left(3 \, B b c^{2} + A c^{3}\right)} x^{6} + 45 \, {\left(B b^{2} c + {\left(B a + A b\right)} c^{2}\right)} x^{5} + 20 \, {\left(B b^{3} + 3 \, A a c^{2} + 3 \, {\left(2 \, B a b + A b^{2}\right)} c\right)} x^{4} - 60 \, A a^{3} + 30 \, {\left(3 \, B a b^{2} + A b^{3} + 3 \, {\left(B a^{2} + 2 \, A a b\right)} c\right)} x^{3} + 180 \, {\left(B a^{2} b + A a b^{2} + A a^{2} c\right)} x^{2} + 60 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} x \log\left(x\right)}{60 \, x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*x^7 + 12*(3*B*b*c^2 + A*c^3)*x^6 + 45*(B*b^2*c + (B*a + A*b)
*c^2)*x^5 + 20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 60*A*a^3 +
 30*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 180*(B*a^2*b + A*a*b^
2 + A*a^2*c)*x^2 + 60*(B*a^3 + 3*A*a^2*b)*x*log(x))/x
```

giac [A] time = 0.15, size = 183, normalized size = 1.17

$$\frac{1}{6} \, B c^{3} x^{6} + \frac{3}{5} \, B b c^{2} x^{5} + \frac{1}{5} \, A c^{3} x^{5} + \frac{3}{4} \, B b^{2} c x^{4} + \frac{3}{4} \, B a c^{2} x^{4} + \frac{3}{4} \, A b c^{2} x^{4} + \frac{1}{3} \, B b^{3} x^{3} + 2 \, B a b c x^{3} + A b^{2} c x^{3} + A a c^{2} x^{3} + \frac{3}{2} \, B a b^{2} x^{2} + \frac{1}{2} \, A b^{3} x^{2} + \frac{3}{2} \, B a^{2} c x^{2} + 3 \, A a b c x^{2} + 3 \, B a^{2} b x + 3 \, A a b^{2} x + 3 \, A a^{2} c x - \frac{A a^{3}}{x} + {\left(B a^{3} + 3 \, A a^{2} b\right)} \log\left({\left| x \right|}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 3/5*B*b*c^2*x^5 + 1/5*A*c^3*x^5 + 3/4*B*b^2*c*x^4 + 3/4*B*a
*c^2*x^4 + 3/4*A*b*c^2*x^4 + 1/3*B*b^3*x^3 + 2*B*a*b*c*x^3 + A*b^2*c*x^3 +
A*a*c^2*x^3 + 3/2*B*a*b^2*x^2 + 1/2*A*b^3*x^2 + 3/2*B*a^2*c*x^2 + 3*A*a*b*c
*x^2 + 3*B*a^2*b*x + 3*A*a*b^2*x + 3*A*a^2*c*x - A*a^3/x + (B*a^3 + 3*A*a^2
*b)*log(abs(x))
```

maple [A] time = 0.06, size = 183, normalized size = 1.17

$$\frac{B \,c^{3} x^{6}}{6}+\frac{A \,c^{3} x^{5}}{5}+\frac{3 B b \,c^{2} x^{5}}{5}+\frac{3 A b \,c^{2} x^{4}}{4}+\frac{3 B a \,c^{2} x^{4}}{4}+\frac{3 B \,b^{2} c \,x^{4}}{4}+A a \,c^{2} x^{3}+A \,b^{2} c \,x^{3}+2 B a b c \,x^{3}+\frac{B \,b^{3} x^{3}}{3}+3 A a b c \,x^{2}+\frac{A \,b^{3} x^{2}}{2}+\frac{3 B \,a^{2} c \,x^{2}}{2}+\frac{3 B a \,b^{2} x^{2}}{2}+3 A \,a^{2} b \ln \left(x \right)+3 A \,a^{2} c x +3 A a \,b^{2} x +B \,a^{3} \ln \left(x \right)+3 B \,a^{2} b x -\frac{A \,a^{3}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^2,x)
```

```
[Out] 1/6*B*c^3*x^6+1/5*A*c^3*x^5+3/5*B*x^5*b*c^2+3/4*A*b*c^2*x^4+3/4*B*a*c^2*x^4
+3/4*B*x^4*b^2*c+A*a*c^2*x^3+A*x^3*b^2*c+2*B*x^3*a*b*c+1/3*b^3*B*x^3+3*A*x^
2*a*b*c+1/2*A*x^2*b^3+3/2*B*a^2*c*x^2+3/2*B*x^2*a*b^2+3*A*a^2*c*x+3*A*a*b^2
*x+3*B*a^2*b*x-A*a^3/x+3*A*ln(x)*a^2*b+B*a^3*ln(x)
```

maxima [A] time = 0.52, size = 162, normalized size = 1.04

$$\frac{1}{6} \, B c^{3} x^{6} + \frac{1}{5} \, {\left(3 \, B b c^{2} + A c^{3}\right)} x^{5} + \frac{3}{4} \, {\left(B b^{2} c + {\left(B a + A b\right)} c^{2}\right)} x^{4} + \frac{1}{3} \, {\left(B b^{3} + 3 \, A a c^{2} + 3 \, {\left(2 \, B a b + A b^{2}\right)} c\right)} x^{3} - \frac{A a^{3}}{x} + \frac{1}{2} \, {\left(3 \, B a b^{2} + A b^{3} + 3 \, {\left(B a^{2} + 2 \, A a b\right)} c\right)} x^{2} + 3 \, {\left(B a^{2} b + A a b^{2} + A a^{2} c\right)} x + {\left(B a^{3} + 3 \, A a^{2} b\right)} \log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + 3/4*(B*b^2*c + (B*a + A*b)*c^
2)*x^4 + 1/3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^3 - A*a^3/x + 1/
2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^2 + 3*(B*a^2*b + A*a*b^2 +
A*a^2*c)*x + (B*a^3 + 3*A*a^2*b)*log(x)
```

mupad [B] time = 1.19, size = 163, normalized size = 1.04

$$x^2\,\left(\frac{3\,B\,c\,a^2}{2}+\frac{3\,B\,a\,b^2}{2}+3\,A\,c\,a\,b+\frac{A\,b^3}{2}\right)+x^3\,\left(\frac{B\,b^3}{3}+A\,b^2\,c+2\,B\,a\,b\,c+A\,a\,c^2\right)+x\,\left(3\,B\,a^2\,b+3\,A\,c\,a^2+3\,A\,a\,b^2\right)+x^5\,\left(\frac{A\,c^3}{5}+\frac{3\,B\,b\,c^2}{5}\right)+\ln\left(x\right)\,\left(B\,a^3+3\,A\,b\,a^2\right)+x^4\,\left(\frac{3\,B\,b^2\,c}{4}+\frac{3\,A\,b\,c^2}{4}+\frac{3\,B\,a\,c^2}{4}\right)-\frac{A\,a^3}{x}+\frac{B\,c^3\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x)
```

```
[Out] x^2*((A*b^3)/2 + (3*B*a*b^2)/2 + (3*B*a^2*c)/2 + 3*A*a*b*c) + x^3*((B*b^3)/
3 + A*a*c^2 + A*b^2*c + 2*B*a*b*c) + x*(3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b)
+ x^5*((A*c^3)/5 + (3*B*b*c^2)/5) + log(x)*(B*a^3 + 3*A*a^2*b) + x^4*((3*A*
b*c^2)/4 + (3*B*a*c^2)/4 + (3*B*b^2*c)/4) - (A*a^3)/x + (B*c^3*x^6)/6
```

sympy [A] time = 0.36, size = 184, normalized size = 1.18

$$-\frac{Aa^3}{x} + \frac{Bc^3x^6}{6} + a^2(3Ab + Ba)\log(x) + x^5\left(\frac{Ac^3}{5} + \frac{3Bbc^2}{5}\right) + x^4\left(\frac{3Abc^2}{4} + \frac{3Bac^2}{4} + \frac{3Bb^2c}{4}\right) + x^3\left(Aac^2 + Ab^2c + 2Babc + \frac{Bb^3}{3}\right) + x^2\left(3Aabc + \frac{Ab^3}{2} + \frac{3Ba^2c}{2} + \frac{3Bab^2}{2}\right) + x\left(3Aa^2c + 3Aab^2 + 3Ba^2b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**2,x)
```

```
[Out] -A*a**3/x + B*c**3*x**6/6 + a**2*(3*A*b + B*a)*log(x) + x**5*(A*c**3/5 + 3*
B*b*c**2/5) + x**4*(3*A*b*c**2/4 + 3*B*a*c**2/4 + 3*B*b**2*c/4) + x**3*(A*a
*c**2 + A*b**2*c + 2*B*a*b*c + B*b**3/3) + x**2*(3*A*a*b*c + A*b**3/2 + 3*B
*a**2*c/2 + 3*B*a*b**2/2) + x*(3*A*a**2*c + 3*A*a*b**2 + 3*B*a**2*b)
```

3.797 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=153

$$-\frac{a^3A}{2x^2}-\frac{a^2(aB+3Ab)}{x}+cx^3\left(aBc+Abc+b^2B\right)+3a\log(x)\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{2}x^2\left(3aAc^2+6abBc+3Ab^2c\right.$$

Rubi [A] time = 0.12, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{x}-\frac{a^3A}{2x^2}+\frac{1}{2}x^2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+cx^3\left(aBc+Abc+b^2B\right)+x\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+3a\log(x)\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{4}c^2x^4(Ac+3bB)+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x]
```

```
[Out] -(a^3*A)/(2*x^2) - (a^2*(3*A*b + a*B))/x + (3*a*B*(b^2 + a*c) + A*(b^3 + 6*
a*b*c))*x + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^2)/2 + c*(b^2*B
+ A*b*c + a*B*c)*x^3 + (c^2*(3*b*B + A*c)*x^4)/4 + (B*c^3*x^5)/5 + 3*a*(a*b
*B + A*(b^2 + a*c))*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^3}\,dx &= \int \left(Ab^3\left(1+\frac{3a\left(b^2B+2Abc+aBc\right)}{Ab^3}\right)+\frac{a^3A}{x^3}+\frac{a^2(3Ab+aB)}{x^2}+\frac{3a\left(abB+\right.}{}\right.\\ &= -\frac{a^3A}{2x^2}-\frac{a^2(3Ab+aB)}{x}+\left(3aB\left(b^2+ac\right)+A\left(b^3+6abc\right)\right)x+\frac{1}{2}\left(b^3B+3A\right.\end{aligned}$$

Mathematica [A] time = 0.08, size = 153, normalized size = 1.00

$$-\frac{a^3A}{2x^2}-\frac{a^2(aB+3Ab)}{x}+cx^3\left(aBc+Abc+b^2B\right)+3a\log(x)\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{2}x^2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+x\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{4}c^2x^4(Ac+3bB)+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x]
```

```
[Out] -1/2*(a^3*A)/x^2 - (a^2*(3*A*b + a*B))/x + (3*a*B*(b^2 + a*c) + A*(b^3 + 6*
a*b*c))*x + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^2)/2 + c*(b^2*B
+ A*b*c + a*B*c)*x^3 + (c^2*(3*b*B + A*c)*x^4)/4 + (B*c^3*x^5)/5 + 3*a*(a*b
*B + A*(b^2 + a*c))*Log[x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^3, x]
```

fricas [A] time = 0.41, size = 168, normalized size = 1.10

$$\frac{4 Bc^3x^7 + 5\left(3 Bbc^2 + Ac^3\right)x^6 + 20\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 10\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^4 - 10 Aa^3 + 20\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 + 60\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 \log(x) - 20\left(Ba^3 + 3 Aa^2b\right)x}{20 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*x^7 + 5*(3*B*b*c^2 + A*c^3)*x^6 + 20*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 10*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 10*A*a^3 + 2
0*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 60*(B*a^2*b + A*a*b^2 +
 A*a^2*c)*x^2*log(x) - 20*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

giac [A] time = 0.17, size = 174, normalized size = 1.14

$$\frac{1}{5} Bc^3x^5 + \frac{3}{4} Bbc^2x^4 + \frac{1}{4} Ac^3x^4 + Bb^2cx^3 + Bac^2x^3 + Abc^2x^3 + \frac{1}{2} Bb^3x^2 + 3 Babcx^2 + \frac{3}{2} Ab^2cx^2 + \frac{3}{2} Aac^2x^2 + 3 Bab^2x + Ab^3x + 3 Ba^2cx + 6 Aabcx + 3\left(Ba^2b + Aab^2 + Aa^2c\right)\log\left(|x|\right) - \frac{Aa^3 + 2\left(Ba^3 + 3 Aa^2b\right)x}{2 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + 3/4*B*b*c^2*x^4 + 1/4*A*c^3*x^4 + B*b^2*c*x^3 + B*a*c^2*x^3
 + A*b*c^2*x^3 + 1/2*B*b^3*x^2 + 3*B*a*b*c*x^2 + 3/2*A*b^2*c*x^2 + 3/2*A*a*
c^2*x^2 + 3*B*a*b^2*x + A*b^3*x + 3*B*a^2*c*x + 6*A*a*b*c*x + 3*(B*a^2*b +
A*a*b^2 + A*a^2*c)*log(abs(x)) - 1/2*(A*a^3 + 2*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

maple [A] time = 0.06, size = 179, normalized size = 1.17

$$\frac{B c^3x^5}{5} + \frac{A c^3x^4}{4} + \frac{3Bb c^2x^4}{4} + Ab c^2x^3 + Ba c^2x^3 + B b^2c x^3 + \frac{3Aa c^2x^2}{2} + \frac{3A b^2c x^2}{2} + 3Babc x^2 + \frac{B b^3x^2}{2} + 3A a^2c \ln(x) + 3Aa b^2 \ln(x) + 6Aabcx + A b^3x + 3B a^2b \ln(x) + 3B a^2cx + 3Ba b^2x - \frac{3A a^2b}{x} - \frac{B a^3}{x} - \frac{A a^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^3,x)
```

```
[Out] 1/5*B*c^3*x^5+1/4*A*c^3*x^4+3/4*B*x^4*b*c^2+A*x^3*b*c^2+B*a*c^2*x^3+B*x^3*b
^2*c+3/2*A*a*c^2*x^2+3/2*A*b^2*c*x^2+3*B*x^2*a*b*c+1/2*B*x^2*b^3+6*A*a*b*c*
x+A*b^3*x+3*B*a^2*c*x+3*B*a*b^2*x-1/2*A*a^3/x^2-3*a^2/x*A*b-B*a^3/x+3*A*a^2
*c*ln(x)+3*A*ln(x)*a*b^2+3*B*ln(x)*a^2*b
```

maxima [A] time = 0.58, size = 161, normalized size = 1.05

$$\frac{1}{5} Bc^3x^5 + \frac{1}{4}\left(3 Bbc^2 + Ac^3\right)x^4 + \left(Bb^2c + (Ba + Ab)c^2\right)x^3 + \frac{1}{2}\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^2 + \left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x + 3\left(Ba^2b + Aab^2 + Aa^2c\right)\log(x) - \frac{Aa^3 + 2\left(Ba^3 + 3 Aa^2b\right)x}{2 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + (B*b^2*c + (B*a + A*b)*c^2)*x
^3 + 1/2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^2 + (3*B*a*b^2 + A*b
^3 + 3*(B*a^2 + 2*A*a*b)*c)*x + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*log(x) - 1/
2*(A*a^3 + 2*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

mupad [B] time = 0.06, size = 162, normalized size = 1.06

$$x^2\left(\frac{B b^3}{2} + \frac{3 A b^2 c}{2} + 3 B a b c + \frac{3 A a c^2}{2}\right) - \frac{x\left(B a^3 + 3 A b a^2\right) + \frac{A a^3}{2}}{x^2} + x^4\left(\frac{A c^3}{4} + \frac{3 B b c^2}{4}\right) + x^3\left(B b^2 c + A b c^2 + B a c^2\right) + x\left(3 B c a^2 + 3 B a b^2 + 6 A c a b + A b^3\right) + \ln(x)\left(3 B a^2 b + 3 A c a^2 + 3 A a b^2\right) + \frac{B c^3 x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x)
```

```
[Out] x^2*((B*b^3)/2 + (3*A*a*c^2)/2 + (3*A*b^2*c)/2 + 3*B*a*b*c) - (x*(B*a^3 + 3
*A*a^2*b) + (A*a^3)/2)/x^2 + x^4*((A*c^3)/4 + (3*B*b*c^2)/4) + x^3*(A*b*c^2
 + B*a*c^2 + B*b^2*c) + x*(A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c) + log
(x)*(3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b) + (B*c^3*x^5)/5
```

sympy [A] time = 0.60, size = 175, normalized size = 1.14

$$\frac{Bc^3x^5}{5} + 3a\left(Aac + Ab^2 + Bab\right)\log(x) + x^4\left(\frac{Ac^3}{4} + \frac{3Bbc^2}{4}\right) + x^3\left(Abc^2 + Bac^2 + Bb^2c\right) + x^2\left(\frac{3Aac^2}{2} + \frac{3Ab^2c}{2} + 3Babc + \frac{Bb^3}{2}\right) + x\left(6Aabc + Ab^3 + 3Ba^2c + 3Bab^2\right) + \frac{-Aa^3 + x\left(-6Aa^2b - 2Ba^3\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**3,x)
```

```
[Out] B*c**3*x**5/5 + 3*a*(A*a*c + A*b**2 + B*a*b)*log(x) + x**4*(A*c**3/4 + 3*B*
b*c**2/4) + x**3*(A*b*c**2 + B*a*c**2 + B*b**2*c) + x**2*(3*A*a*c**2/2 + 3*
A*b**2*c/2 + 3*B*a*b*c + B*b**3/2) + x*(6*A*a*b*c + A*b**3 + 3*B*a**2*c + 3
*B*a*b**2) + (-A*a**3 + x*(-6*A*a**2*b - 2*B*a**3))/(2*x**2)
```

3.798 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^4}\,dx$

Optimal. Leaf size=155

$$-\frac{a^3A}{3x^3}-\frac{a^2(aB+3Ab)}{2x^2}+\frac{3}{2}cx^2\left(aBc+Abc+b^2B\right)-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{x}+x\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\text{lo}$$

Rubi [A] time = 0.14, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{2x^2}-\frac{a^3A}{3x^3}+x\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{2}cx^2\left(aBc+Abc+b^2B\right)-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{x}+\log(x)\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{3}c^2x^3(Ac+3bB)+\frac{1}{4}Bc^3x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x]
```

```
[Out] -(a^3*A)/(3*x^3) - (a^2*(3*A*b + a*B))/(2*x^2) - (3*a*(a*b*B + A*(b^2 + a*c
)))/x + (b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x + (3*c*(b^2*B + A*b*c
 + a*B*c)*x^2)/2 + (c^2*(3*b*B + A*c)*x^3)/3 + (B*c^3*x^4)/4 + (3*a*B*(b^2
+ a*c) + A*(b^3 + 6*a*b*c))*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^4}\,dx &= \int \left(b^3B\left(1+\frac{3c\left(2abB+A\left(b^2+ac\right)\right)}{b^3B}\right)+\frac{a^3A}{x^4}+\frac{a^2(3Ab+aB)}{x^3}+\frac{3a\left(abB+A\right.}{x^2}\right.\\ &= -\frac{a^3A}{3x^3}-\frac{a^2(3Ab+aB)}{2x^2}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x}+\left(b^3B+3Ab^2c+6abBc+3\right.\end{aligned}$$

Mathematica [A] time = 0.06, size = 160, normalized size = 1.03

$$\frac{-2a^3(2A+3Bx)-18a^2x(A(b+2cx)+2bBx)+18ax^2\left(Bcx^2(4b+cx)-2A\left(b^2-c^2x^2\right)\right)+12x^3\log(x)\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+x^4\left(18b^2c(2A+Bx)+6bc^2x(3A+2Bx)+c^3x^2(4A+3Bx)+12b^3B\right)}{12x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x]
```

```
[Out] (-2*a^3*(2*A + 3*B*x) + x^4*(12*b^3*B + 18*b^2*c*(2*A + B*x) + 6*b*c^2*x*(3
*A + 2*B*x) + c^3*x^2*(4*A + 3*B*x)) - 18*a^2*x*(2*b*B*x + A*(b + 2*c*x)) +
 18*a*x^2*(B*c*x^2*(4*b + c*x) - 2*A*(b^2 - c^2*x^2)) + 12*(3*a*B*(b^2 + a*
c) + A*(b^3 + 6*a*b*c))*x^3*Log[x])/(12*x^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^4, x]
```

fricas [A] time = 0.42, size = 168, normalized size = 1.08

$$\frac{3\,Bc^3x^7+4\left(3\,Bbc^2+Ac^3\right)x^6+18\left(Bb^2c+(Ba+Ab)c^2\right)x^5+12\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4+12\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^3\log(x)-4\,Aa^3-36\left(Ba^2b+Aab^2+Aa^2c\right)x^2-6\left(Ba^3+3\,Aa^2b\right)x}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*x^7 + 4*(3*B*b*c^2 + A*c^3)*x^6 + 18*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 12*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 12*(3*B*a*b^
2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3*log(x) - 4*A*a^3 - 36*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 - 6*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

giac [A] time = 0.17, size = 169, normalized size = 1.09

$$\frac{1}{4}\,Bc^3x^4+Bbc^2x^3+\frac{1}{3}\,Ac^3x^3+\frac{3}{2}\,Bb^2cx^2+\frac{3}{2}\,Bac^2x^2+\frac{3}{2}\,Abc^2x^2+Bb^3x+6\,Babcx+3\,Ab^2cx+3\,Aac^2x+\left(3\,Bab^2+Ab^3+3\,Ba^2c+6\,Aabc\right)\log\left(|x|\right)-\frac{2\,Aa^3+18\left(Ba^2b+Aab^2+Aa^2c\right)x^2+3\left(Ba^3+3\,Aa^2b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^4,x, algorithm="giac")
```

```
[Out] 1/4*B*c^3*x^4 + B*b*c^2*x^3 + 1/3*A*c^3*x^3 + 3/2*B*b^2*c*x^2 + 3/2*B*a*c^2
*x^2 + 3/2*A*b*c^2*x^2 + B*b^3*x + 6*B*a*b*c*x + 3*A*b^2*c*x + 3*A*a*c^2*x
+ (3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*log(abs(x)) - 1/6*(2*A*a^3 +
18*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 3*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

maple [A] time = 0.05, size = 179, normalized size = 1.15

$$\frac{B\,c^3x^4}{4}+\frac{A\,c^3x^3}{3}+Bb\,c^2x^3+\frac{3Ab\,c^2x^2}{2}+\frac{3Ba\,c^2x^2}{2}+\frac{3B\,b^2c\,x^2}{2}+6Aabc\ln(x)+3Aa\,c^2x+A\,b^3\ln(x)+3A\,b^2cx+3B\,a^2c\ln(x)+3Ba\,b^2\ln(x)+6Babcx+B\,b^3x-\frac{3A\,a^2c}{x}-\frac{3Aa\,b^2}{x}-\frac{3B\,a^2b}{x}-\frac{3A\,a^2b}{2x^2}-\frac{B\,a^3}{2x^2}-\frac{A\,a^3}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^4,x)
```

```
[Out] 1/4*B*c^3*x^4+1/3*A*x^3*c^3+B*x^3*b*c^2+3/2*A*x^2*b*c^2+3/2*B*x^2*a*c^2+3/2
*B*x^2*b^2*c+3*A*a*c^2*x+3*A*b^2*c*x+6*a*b*B*c*x+b^3*B*x-1/3*A*a^3/x^3-3/2*
a^2/x^2*A*b-1/2*B*a^3/x^2-3*a^2/x*A*c-3*a/x*A*b^2-3*a^2/x*B*b+6*A*ln(x)*a*b
*c+A*b^3*ln(x)+3*B*ln(x)*a^2*c+3*B*ln(x)*a*b^2
```

maxima [A] time = 0.49, size = 162, normalized size = 1.05

$$\frac{1}{4}\,Bc^3x^4+\frac{1}{3}\left(3\,Bbc^2+Ac^3\right)x^3+\frac{3}{2}\left(Bb^2c+(Ba+Ab)c^2\right)x^2+\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x+\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)\log(x)-\frac{2\,Aa^3+18\left(Ba^2b+Aab^2+Aa^2c\right)x^2+3\left(Ba^3+3\,Aa^2b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^4,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^3*x^4 + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3/2*(B*b^2*c + (B*a + A*b)*c^
2)*x^2 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x + (3*B*a*b^2 + A*b^3
 + 3*(B*a^2 + 2*A*a*b)*c)*log(x) - 1/6*(2*A*a^3 + 18*(B*a^2*b + A*a*b^2 + A
*a^2*c)*x^2 + 3*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

mupad [B] time = 0.06, size = 164, normalized size = 1.06

$$\ln(x)\,\left(3\,B\,c\,a^2+3\,B\,a\,b^2+6\,A\,c\,a\,b+A\,b^3\right)-\frac{x\,\left(\frac{B\,a^3}{2}+\frac{3\,A\,b\,a^2}{2}\right)+\frac{A\,a^3}{3}+x^2\,\left(3\,B\,a^2\,b+3\,A\,c\,a^2+3\,A\,a\,b^2\right)}{x^3}+x^3\,\left(\frac{A\,c^3}{3}+B\,b\,c^2\right)+x^2\,\left(\frac{3\,B\,b^2\,c}{2}+\frac{3\,A\,b\,c^2}{2}+\frac{3\,B\,a\,c^2}{2}\right)+x\,\left(B\,b^3+3\,A\,b^2\,c+6\,B\,a\,b\,c+3\,A\,a\,c^2\right)+\frac{B\,c^3\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x)
```

```
[Out] log(x)*(A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c) - (x*((B*a^3)/2 + (3*A*a
^2*b)/2) + (A*a^3)/3 + x^2*(3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b))/x^3 + x^3*(
(A*c^3)/3 + B*b*c^2) + x^2*((3*A*b*c^2)/2 + (3*B*a*c^2)/2 + (3*B*b^2*c)/2)
+ x*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c) + (B*c^3*x^4)/4
```

sympy [A] time = 1.36, size = 187, normalized size = 1.21

$$\frac{Bc^3x^4}{4} + x^3\left(\frac{Ac^3}{3} + Bbc^2\right) + x^2\left(\frac{3Abc^2}{2} + \frac{3Bac^2}{2} + \frac{3Bb^2c}{2}\right) + x\left(3Aac^2 + 3Ab^2c + 6Babc + Bb^3\right) + \left(6Aabc + Ab^3 + 3Ba^2c + 3Bab^2\right)\log(x) + \frac{-2Aa^3 + x^2\left(-18Aa^2c - 18Aab^2 - 18Ba^2b\right) + x\left(-9Aa^2b - 3Ba^3\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**4,x)
```

```
[Out] B*c**3*x**4/4 + x**3*(A*c**3/3 + B*b*c**2) + x**2*(3*A*b*c**2/2 + 3*B*a*c**
2/2 + 3*B*b**2*c/2) + x*(3*A*a*c**2 + 3*A*b**2*c + 6*B*a*b*c + B*b**3) + (6
*A*a*b*c + A*b**3 + 3*B*a**2*c + 3*B*a*b**2)*log(x) + (-2*A*a**3 + x**2*(-1
8*A*a**2*c - 18*A*a*b**2 - 18*B*a**2*b) + x*(-9*A*a**2*b - 3*B*a**3))/(6*x*
*3)
```

3.799 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^5}\,dx$

Optimal. Leaf size=156

$$-\frac{a^3A}{4x^4}-\frac{a^2(aB+3Ab)}{3x^3}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{2x^2}+3cx\left(aBc+Abc+b^2B\right)+\log(x)\left(3aAc^2+6abBc+3Ab^2c+b^3\right.$$

Rubi [A] time = 0.12, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{3x^3}-\frac{a^3A}{4x^4}+\log(x)\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{2x^2}+3cx\left(aBc+Abc+b^2B\right)-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{x}+\frac{1}{2}c^2x^2(Ac+3bB)+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x]
```

```
[Out] -(a^3*A)/(4*x^4) - (a^2*(3*A*b + a*B))/(3*x^3) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(2*x^2) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/x + 3*c*(b^2*B + A*b*
c + a*B*c)*x + (c^2*(3*b*B + A*c)*x^2)/2 + (B*c^3*x^3)/3 + (b^3*B + 3*A*b^2
*c + 6*a*b*B*c + 3*a*A*c^2)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^5}\,dx &= \int \left(3c\left(b^2B+Abc+aBc\right)+\frac{a^3A}{x^5}+\frac{a^2(3Ab+aB)}{x^4}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^3}\right.\\ &= -\frac{a^3A}{4x^4}-\frac{a^2(3Ab+aB)}{3x^3}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{2x^2}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x}\end{aligned}$$

Mathematica [A] time = 0.06, size = 154, normalized size = 0.99

$$\frac{-3a^3A-4a^2x(aB+3Ab)+36cx^5\left(aBc+Abc+b^2B\right)-18ax^2\left(A\left(ac+b^2\right)+abB\right)+12x^4\log(x)\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)-12x^3\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+6c^2x^6(Ac+3bB)+4Bc^3x^7}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x]
```

```
[Out] (-3*a^3*A - 4*a^2*(3*A*b + a*B)*x - 18*a*(a*b*B + A*(b^2 + a*c))*x^2 - 12*(
3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^3 + 36*c*(b^2*B + A*b*c + a*B*c)*x
^5 + 6*c^2*(3*b*B + A*c)*x^6 + 4*B*c^3*x^7 + 12*(b^3*B + 3*A*b^2*c + 6*a*b*
B*c + 3*a*A*c^2)*x^4*Log[x])/(12*x^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^5, x]
```

fricas [A] time = 0.41, size = 168, normalized size = 1.08

$$\frac{4 Bc^3x^7 + 6 \left(3 Bbc^2 + Ac^3\right)x^6 + 36 \left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 12 \left(Bb^3 + 3 Aac^2 + 3 \left(2 Bab + Ab^2\right)c\right)x^4 \log(x) - 3 Aa^3 - 12 \left(3 Bab^2 + Ab^3 + 3 \left(Ba^2 + 2 Aab\right)c\right)x^3 - 18 \left(Ba^2b + Aab^2 + Aa^2c\right)x^2 - 4 \left(Ba^3 + 3 Aa^2b\right)x}{12 x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*c^3*x^7 + 6*(3*B*b*c^2 + A*c^3)*x^6 + 36*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 12*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4*log(x) - 3*A*a
^3 - 12*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 18*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 - 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

giac [A] time = 0.18, size = 166, normalized size = 1.06

$$\frac{1}{3} Bc^3x^3 + \frac{3}{2} Bbc^2x^2 + \frac{1}{2} Ac^3x^2 + 3 Bb^2cx + 3 Bac^2x + 3 Abc^2x + \left(Bb^3 + 6 Babc + 3 Ab^2c + 3 Aac^2\right) \log\left(|x|\right) - \frac{3 Aa^3 + 12 \left(3 Bab^2 + Ab^3 + 3 Ba^2c + 6 Aabc\right)x^3 + 18 \left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 4 \left(Ba^3 + 3 Aa^2b\right)x}{12 x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^5,x, algorithm="giac")
```

```
[Out] 1/3*B*c^3*x^3 + 3/2*B*b*c^2*x^2 + 1/2*A*c^3*x^2 + 3*B*b^2*c*x + 3*B*a*c^2*x
 + 3*A*b*c^2*x + (B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*log(abs(x)) -
1/12*(3*A*a^3 + 12*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 18*(B*
a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

maple [A] time = 0.07, size = 183, normalized size = 1.17

$$\frac{B c^3x^3}{3} + \frac{A c^3x^2}{2} + \frac{3Bb c^2x^2}{2} + 3Aa c^2 \ln(x) + 3A b^2c \ln(x) + 3Ab c^2x + 6Babc \ln(x) + 3Ba c^2x + B b^3 \ln(x) + 3B b^2cx - \frac{6Aabc}{x} - \frac{A b^3}{x} - \frac{3B a^2c}{x} - \frac{3Ba b^2}{x} - \frac{3A a^2c}{2x^2} - \frac{3Aa b^2}{2x^2} - \frac{3B a^2b}{2x^2} - \frac{A a^2b}{x^3} - \frac{B a^3}{3x^3} - \frac{A a^3}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^5,x)
```

```
[Out] 1/3*B*c^3*x^3+1/2*A*x^2*c^3+3/2*B*x^2*b*c^2+3*A*b*c^2*x+3*B*a*c^2*x+3*B*b^2
*c*x-1/4*a^3*A/x^4-a^2/x^3*A*b-1/3*a^3/x^3*B-3/2*a^2/x^2*A*c-3/2*a/x^2*A*b^
2-3/2*a^2/x^2*B*b-6/x*A*a*b*c-A*b^3/x-3/x*B*a^2*c-3/x*B*a*b^2+3*A*ln(x)*a*c
^2+3*A*ln(x)*b^2*c+6*B*ln(x)*a*b*c+B*ln(x)*b^3
```

maxima [A] time = 0.49, size = 163, normalized size = 1.04

$$\frac{1}{3} Bc^3x^3 + \frac{1}{2} \left(3 Bbc^2 + Ac^3\right)x^2 + 3 \left(Bb^2c + (Ba + Ab)c^2\right)x + \left(Bb^3 + 3 Aac^2 + 3 \left(2 Bab + Ab^2\right)c\right) \log(x) - \frac{3 Aa^3 + 12 \left(3 Bab^2 + Ab^3 + 3 \left(Ba^2 + 2 Aab\right)c\right)x^3 + 18 \left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 4 \left(Ba^3 + 3 Aa^2b\right)x}{12 x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^3*x^3 + 1/2*(3*B*b*c^2 + A*c^3)*x^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)
*x + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*log(x) - 1/12*(3*A*a^3 + 1
2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 18*(B*a^2*b + A*a*b^2 +
 A*a^2*c)*x^2 + 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

mupad [B] time = 1.17, size = 164, normalized size = 1.05

$$\ln(x) \left(B b^3 + 3 A b^2 c + 6 B a b c + 3 A a c^2\right) - \frac{x^3 \left(3 B c a^2 + 3 B a b^2 + 6 A c a b + A b^3\right) + x \left(\frac{B a^3}{3} + A b a^2\right) + \frac{A a^3}{4} + x^2 \left(\frac{3 B a^2 b}{2} + \frac{3 A c a^2}{2} + \frac{3 A a b^2}{2}\right)}{x^4} + x \left(3 B b^2 c + 3 A b c^2 + 3 B a c^2\right) + x^2 \left(\frac{A c^3}{2} + \frac{3 B b c^2}{2}\right) + \frac{B c^3 x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x)
```

```
[Out] log(x)*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c) - (x^3*(A*b^3 + 3*B*a*b^
2 + 3*B*a^2*c + 6*A*a*b*c) + x*((B*a^3)/3 + A*a^2*b) + (A*a^3)/4 + x^2*((3*
A*a*b^2)/2 + (3*A*a^2*c)/2 + (3*B*a^2*b)/2))/x^4 + x*(3*A*b*c^2 + 3*B*a*c^2
 + 3*B*b^2*c) + x^2*((A*c^3)/2 + (3*B*b*c^2)/2) + (B*c^3*x^3)/3
```

sympy [A] time = 4.21, size = 189, normalized size = 1.21

$$\frac{Bc^3x^3}{3} + x^2\left(\frac{Ac^3}{2} + \frac{3Bbc^2}{2}\right) + x\left(3Abc^2 + 3Bac^2 + 3Bb^2c\right) + \left(3Aac^2 + 3Ab^2c + 6Babc + Bb^3\right)\log\left(x\right) + \frac{-3Aa^3 + x^3\left(-72Aabc - 12Ab^3 - 36Ba^2c - 36Bab^2\right) + x^2\left(-18Aa^2c - 18Aab^2 - 18Ba^2b\right) + x\left(-12Aa^2b - 4Ba^3\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**5,x)
```

```
[Out] B*c**3*x**3/3 + x**2*(A*c**3/2 + 3*B*b*c**2/2) + x*(3*A*b*c**2 + 3*B*a*c**2
 + 3*B*b**2*c) + (3*A*a*c**2 + 3*A*b**2*c + 6*B*a*b*c + B*b**3)*log(x) + (-
3*A*a**3 + x**3*(-72*A*a*b*c - 12*A*b**3 - 36*B*a**2*c - 36*B*a*b**2) + x**
2*(-18*A*a**2*c - 18*A*a*b**2 - 18*B*a**2*b) + x*(-12*A*a**2*b - 4*B*a**3))
/(12*x**4)
```

3.800 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^6}\,dx$

Optimal. Leaf size=154

$$-\frac{a^3A}{5x^5}-\frac{a^2(aB+3Ab)}{4x^4}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{x^3}+3c\log(x)\left(aBc+Abc+b^2B\right)-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{x}-\frac{A(\cdots$$

Rubi [A] time = 0.12, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{4x^4}-\frac{a^3A}{5x^5}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{x}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{x^3}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{2x^2}+3c\log(x)\left(aBc+Abc+b^2B\right)+c^2x(Ac+3bB)+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -(a^3*A)/(5*x^5) - (a^2*(3*A*b + a*B))/(4*x^4) - (a*(a*b*B + A*(b^2 + a*c))
)/x^3 - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(2*x^2) - (b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^2)/2 + 3*c*(b
^2*B + A*b*c + a*B*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^6}\,dx &= \int \left(c^2(3bB+Ac)+\frac{a^3A}{x^6}+\frac{a^2(3Ab+aB)}{x^5}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^4}+\frac{3aB\left(b^2\cdots\right.}{\cdots}\right.\\ &= -\frac{a^3A}{5x^5}-\frac{a^2(3Ab+aB)}{4x^4}-\frac{a\left(abB+A\left(b^2+ac\right)\right)}{x^3}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+6ab\cdots\right.}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.09, size = 161, normalized size = 1.05

$$-\frac{a^3(4A+5Bx)+5a^2x\left(3Ab+4Acx+4bBx+6Bcx^2\right)+10ax^2\left(2A\left(b^2+3bcx+3c^2x^2\right)+3bBx(b+4cx)\right)-60cx^5\log(x)\left(aBc+Abc+b^2B\right)+10x^3\left(A\left(b^3+6b^2cx-2c^3x^3\right)-Bx\left(-2b^3+6bc^2x^2+c^3x^3\right)\right)}{20x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -1/20*(a^3*(4*A + 5*B*x) + 5*a^2*x*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2)
+ 10*a*x^2*(3*b*B*x*(b + 4*c*x) + 2*A*(b^2 + 3*b*c*x + 3*c^2*x^2)) + 10*x^3
*(A*(b^3 + 6*b^2*c*x - 2*c^3*x^3) - B*x*(-2*b^3 + 6*b*c^2*x^2 + c^3*x^3)) -
 60*c*(b^2*B + A*b*c + a*B*c)*x^5*Log[x])/x^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^6, x]
```

fricas [A] time = 0.40, size = 168, normalized size = 1.09

$$\frac{10\,Bc^3x^7+20\left(3\,Bbc^2+Ac^3\right)x^6+60\left(Bb^2c+(Ba+Ab)c^2\right)x^5\log(x)-20\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4-4\,Aa^3-10\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^3-20\left(Ba^2b+Aab^2+Aa^2c\right)x^2-5\left(Ba^3+3\,Aa^2b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*c^3*x^7 + 20*(3*B*b*c^2 + A*c^3)*x^6 + 60*(B*b^2*c + (B*a + A*b)
*c^2)*x^5*log(x) - 20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 4*A
*a^3 - 10*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 20*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 - 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

giac [A] time = 0.16, size = 162, normalized size = 1.05

$$\frac{1}{2}\,Bc^3x^2+3\,Bbc^2x+Ac^3x+3\left(Bb^2c+Bac^2+Abc^2\right)\log\left(|x|\right)-\frac{20\left(Bb^3+6\,Babc+3\,Ab^2c+3\,Aac^2\right)x^4+4\,Aa^3+10\left(3\,Bab^2+Ab^3+3\,Ba^2c+6\,Aabc\right)x^3+20\left(Ba^2b+Aab^2+Aa^2c\right)x^2+5\left(Ba^3+3\,Aa^2b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^6,x, algorithm="giac")
```

```
[Out] 1/2*B*c^3*x^2 + 3*B*b*c^2*x + A*c^3*x + 3*(B*b^2*c + B*a*c^2 + A*b*c^2)*log
(abs(x)) - 1/20*(20*(B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*x^4 + 4*A*a
^3 + 10*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 20*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

maple [A] time = 0.05, size = 186, normalized size = 1.21

$$\frac{B\,c^3x^2}{2}+3Ab\,c^2\ln(x)+A\,c^3x+3Ba\,c^2\ln(x)+3B\,b^2c\ln(x)+3Bb\,c^2x-\frac{3Aa\,c^2}{x}-\frac{3A\,b^2c}{x}-\frac{6Babc}{x}-\frac{B\,b^3}{x}-\frac{3Aabc}{x^2}-\frac{A\,b^3}{2x^2}-\frac{3B\,a^2c}{2x^2}-\frac{3Ba\,b^2}{2x^2}-\frac{A\,a^2c}{x^3}-\frac{Aa\,b^2}{x^3}-\frac{B\,a^2b}{x^3}-\frac{3A\,a^2b}{4x^4}-\frac{B\,a^3}{4x^4}-\frac{A\,a^3}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^6,x)
```

```
[Out] 1/2*B*c^3*x^2+A*c^3*x+3*B*b*c^2*x-1/5*a^3*A/x^5-3/4*a^2/x^4*A*b-1/4*a^3/x^4
*B-a^2/x^3*A*c-a/x^3*A*b^2-a^2/x^3*B*b-3/x^2*A*a*b*c-1/2*A*b^3/x^2-3/2/x^2*
B*a^2*c-3/2/x^2*B*a*b^2-3/x*A*a*c^2-3/x*A*b^2*c-6/x*a*b*B*c-1/x*b^3*B+3*A*l
n(x)*b*c^2+3*B*ln(x)*a*c^2+3*B*ln(x)*b^2*c
```

maxima [A] time = 0.62, size = 163, normalized size = 1.06

$$\frac{1}{2}\,Bc^3x^2+\left(3\,Bbc^2+Ac^3\right)x+3\left(Bb^2c+(Ba+Ab)c^2\right)\log(x)-\frac{20\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4+4\,Aa^3+10\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^3+20\left(Ba^2b+Aab^2+Aa^2c\right)x^2+5\left(Ba^3+3\,Aa^2b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^3*x^2 + (3*B*b*c^2 + A*c^3)*x + 3*(B*b^2*c + (B*a + A*b)*c^2)*log(x
) - 1/20*(20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 4*A*a^3 + 10
*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 20*(B*a^2*b + A*a*b^2 +
A*a^2*c)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

mupad [B] time = 1.18, size = 162, normalized size = 1.05

$$x\,\left(A\,c^3+3\,B\,b\,c^2\right)-\frac{x^3\,\left(\frac{3\,B\,c\,a^2}{2}+\frac{3\,B\,a\,b^2}{2}+3\,A\,c\,a\,b+\frac{A\,b^3}{2}\right)+x^4\,\left(B\,b^3+3\,A\,b^2\,c+6\,B\,a\,b\,c+3\,A\,a\,c^2\right)+x\,\left(\frac{B\,a^3}{4}+\frac{3\,A\,b\,a^2}{4}\right)+\frac{A\,a^3}{5}+x^2\,\left(B\,a^2\,b+A\,c\,a^2+A\,a\,b^2\right)}{x^5}+\ln(x)\,\left(3\,B\,b^2\,c+3\,A\,b\,c^2+3\,B\,a\,c^2\right)+\frac{B\,c^3\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x)
```

```
[Out] x*(A*c^3 + 3*B*b*c^2) - (x^3*((A*b^3)/2 + (3*B*a*b^2)/2 + (3*B*a^2*c)/2 + 3
*A*a*b*c) + x^4*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c) + x*((B*a^3)/4
+ (3*A*a^2*b)/4) + (A*a^3)/5 + x^2*(A*a*b^2 + A*a^2*c + B*a^2*b))/x^5 + log
(x)*(3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c) + (B*c^3*x^2)/2
```

sympy [A] time = 11.62, size = 182, normalized size = 1.18

$$\frac{Bc^3x^2}{2}+3c\left(Abc+Bac+Bb^2\right)\log\left(x\right)+x\left(Ac^3+3Bbc^2\right)+\frac{-4Aa^3+x^4\left(-60Aac^2-60Ab^2c-120Babc-20Bb^3\right)+x^3\left(-60Aabc-10Ab^3-30Ba^2c-30Bab^2\right)+x^2\left(-20Aa^2c-20Aab^2-20Ba^2b\right)+x\left(-15Aa^2b-5Ba^3\right)}{20x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**6,x)
```

```
[Out] B*c**3*x**2/2 + 3*c*(A*b*c + B*a*c + B*b**2)*log(x) + x*(A*c**3 + 3*B*b*c**
2) + (-4*A*a**3 + x**4*(-60*A*a*c**2 - 60*A*b**2*c - 120*B*a*b*c - 20*B*b**
3) + x**3*(-60*A*a*b*c - 10*A*b**3 - 30*B*a**2*c - 30*B*a*b**2) + x**2*(-20
*A*a**2*c - 20*A*a*b**2 - 20*B*a**2*b) + x*(-15*A*a**2*b - 5*B*a**3))/(20*x
**5)
```

3.801 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{x^7}\,dx$

Optimal. Leaf size=155

$$-\frac{a^3A}{6x^6}-\frac{a^2(aB+3Ab)}{5x^5}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{4x^4}-\frac{3c\left(aBc+Abc+b^2B\right)}{x}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{2x^2}-\frac{A\left(6a\right.}{}$$

Rubi [A] time = 0.11, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{5x^5}-\frac{a^3A}{6x^6}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{2x^2}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{4x^4}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{3x^3}-\frac{3c\left(aBc+Abc+b^2B\right)}{x}+c^2\log(x)(Ac+3bB)+Bc^3x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -(a^3*A)/(6*x^6) - (a^2*(3*A*b + a*B))/(5*x^5) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(4*x^4) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(3*x^3) - (b^3*B + 3*
A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(2*x^2) - (3*c*(b^2*B + A*b*c + a*B*c))/x
+ B*c^3*x + c^2*(3*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^7}\,dx &= \int \left(Bc^3+\frac{a^3A}{x^7}+\frac{a^2(3Ab+aB)}{x^6}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^5}+\frac{3aB\left(b^2+ac\right)}{}\right.\\ &= -\frac{a^3A}{6x^6}-\frac{a^2(3Ab+aB)}{5x^5}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{4x^4}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.09, size = 169, normalized size = 1.09

$$-\frac{2a^3(5A+6Bx)+3a^2x(3A(4b+5cx)+5Bx(3b+4cx))+15ax^2\left(A\left(3b^2+8bcx+6c^2x^2\right)+4Bx\left(b^2+3bcx+3c^2x^2\right)\right)+10x^3\left(Ab\left(2b^2+9bcx+18c^2x^2\right)+3Bx\left(b^3+6b^2cx-2c^3x^3\right)\right)-60c^2x^6\log(x)(Ac+3bB)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -1/60*(2*a^3*(5*A + 6*B*x) + 3*a^2*x*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*
x)) + 15*a*x^2*(4*B*x*(b^2 + 3*b*c*x + 3*c^2*x^2) + A*(3*b^2 + 8*b*c*x + 6*
c^2*x^2)) + 10*x^3*(A*b*(2*b^2 + 9*b*c*x + 18*c^2*x^2) + 3*B*x*(b^3 + 6*b^2
*c*x - 2*c^3*x^3)) - 60*c^2*(3*b*B + A*c)*x^6*Log[x])/x^6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^7, x]
```

fricas [A] time = 0.40, size = 168, normalized size = 1.08

$$\frac{60 Bc^3x^7 + 60\left(3 Bbc^2 + Ac^3\right)x^6 \log(x) - 180\left(Bb^2c + (Ba + Ab)c^2\right)x^5 - 30\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^4 - 10 Aa^3 - 20\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 - 45\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 - 12\left(Ba^3 + 3 Aa^2b\right)x}{60 x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^3*x^7 + 60*(3*B*b*c^2 + A*c^3)*x^6*log(x) - 180*(B*b^2*c + (B*
a + A*b)*c^2)*x^5 - 30*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 10
*A*a^3 - 20*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 45*(B*a^2*b +
 A*a*b^2 + A*a^2*c)*x^2 - 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

giac [A] time = 0.15, size = 162, normalized size = 1.05

$$Bc^3x + \left(3 Bbc^2 + Ac^3\right)\log\left(|x|\right) - \frac{180\left(Bb^2c + Bac^2 + Abc^2\right)x^5 + 30\left(Bb^3 + 6 Babc + 3 Ab^2c + 3 Aac^2\right)x^4 + 10 Aa^3 + 20\left(3 Bab^2 + Ab^3 + 3 Ba^2c + 6 Aabc\right)x^3 + 45\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 12\left(Ba^3 + 3 Aa^2b\right)x}{60 x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^7,x, algorithm="giac")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(abs(x)) - 1/60*(180*(B*b^2*c + B*a*c^2 +
A*b*c^2)*x^5 + 30*(B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*x^4 + 10*A*a^
3 + 20*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 45*(B*a^2*b + A*a*
b^2 + A*a^2*c)*x^2 + 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

maple [A] time = 0.06, size = 188, normalized size = 1.21

$$A c^3 \ln(x) + 3Bb c^2 \ln(x) + B c^3 x - \frac{3Ab c^2}{x} - \frac{3Ba c^2}{x} - \frac{3B b^2 c}{x} - \frac{3Aa c^2}{2x^2} - \frac{3A b^2 c}{2x^2} - \frac{3Babc}{x^2} - \frac{B b^3}{2x^2} - \frac{2Aabc}{x^3} - \frac{A b^3}{3x^3} - \frac{B a^2 c}{x^3} - \frac{Ba b^2}{x^3} - \frac{3A a^2 c}{4x^4} - \frac{3Aa b^2}{4x^4} - \frac{3B a^2 b}{4x^4} - \frac{3A a^2 b}{5x^5} - \frac{B a^3}{5x^5} - \frac{A a^3}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^7,x)
```

```
[Out] B*c^3*x-3/5*a^2/x^5*A*b-1/5*a^3/x^5*B-3/4*a^2/x^4*A*c-3/4*a/x^4*A*b^2-3/4*a
^2/x^4*B*b-2/x^3*A*a*b*c-1/3*A*b^3/x^3-1/x^3*B*a^2*c-1/x^3*B*a*b^2-3/2/x^2*
A*a*c^2-3/2/x^2*A*b^2*c-3/x^2*a*b*B*c-1/2/x^2*b^3*B-1/6*a^3*A/x^6-3*c^2/x*A
*b-3*c^2/x*a*B-3*c/x*b^2*B+A*ln(x)*c^3+3*B*ln(x)*b*c^2
```

maxima [A] time = 0.54, size = 162, normalized size = 1.05

$$Bc^3x + \left(3 Bbc^2 + Ac^3\right)\log(x) - \frac{180\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 30\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^4 + 10 Aa^3 + 20\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 + 45\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 12\left(Ba^3 + 3 Aa^2b\right)x}{60 x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^7,x, algorithm="maxima")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(x) - 1/60*(180*(B*b^2*c + (B*a + A*b)*c^2
)*x^5 + 30*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 10*A*a^3 + 20*
(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 45*(B*a^2*b + A*a*b^2 + A
*a^2*c)*x^2 + 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

mupad [B] time = 0.09, size = 163, normalized size = 1.05

$$\ln(x)\left(A c^3 + 3 B b c^2\right) - \frac{x^3\left(B c a^2 + B a b^2 + 2 A c a b + \frac{A b^3}{3}\right) + x^4\left(\frac{B b^3}{2} + \frac{3 A b^2 c}{2} + 3 B a b c + \frac{3 A a c^2}{2}\right) + x\left(\frac{B a^3}{5} + \frac{3 A b a^2}{5}\right) + \frac{A a^3}{6} + x^2\left(\frac{3 B a^2 b}{4} + \frac{3 A c a^2}{4} + \frac{3 A a b^2}{4}\right) + x^5\left(3 B b^2 c + 3 A b c^2 + 3 B a c^2\right)}{x^6} + B c^3 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x)
```

```
[Out] log(x)*(A*c^3 + 3*B*b*c^2) - (x^3*((A*b^3)/3 + B*a*b^2 + B*a^2*c + 2*A*a*b*
c) + x^4*((B*b^3)/2 + (3*A*a*c^2)/2 + (3*A*b^2*c)/2 + 3*B*a*b*c) + x*((B*a^
3)/5 + (3*A*a^2*b)/5) + (A*a^3)/6 + x^2*((3*A*a*b^2)/4 + (3*A*a^2*c)/4 + (3
*B*a^2*b)/4) + x^5*(3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c))/x^6 + B*c^3*x
```

sympy [A] time = 28.65, size = 187, normalized size = 1.21

$$Bc^3x + c^2(Ac + 3Bb)\log(x) + \frac{-10Aa^3 + x^5(-180Abc^2 - 180Bac^2 - 180Bb^2c) + x^4(-90Aac^2 - 90Ab^2c - 180Babc - 30Bb^3) + x^3(-120Aabc - 20Ab^3 - 60Ba^2c - 60Bab^2) + x^2(-45Aa^2c - 45Aab^2 - 45Ba^2b) + x(-36Aa^2b - 12Ba^3)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**7,x)
```

```
[Out] B*c**3*x + c**2*(A*c + 3*B*b)*log(x) + (-10*A*a**3 + x**5*(-180*A*b*c**2 -
180*B*a*c**2 - 180*B*b**2*c) + x**4*(-90*A*a*c**2 - 90*A*b**2*c - 180*B*a*b
*c - 30*B*b**3) + x**3*(-120*A*a*b*c - 20*A*b**3 - 60*B*a**2*c - 60*B*a*b**
2) + x**2*(-45*A*a**2*c - 45*A*a*b**2 - 45*B*a**2*b) + x*(-36*A*a**2*b - 12
*B*a**3))/(60*x**6)
```

3.802 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^8}\,dx$

Optimal. Leaf size=160

$$-\frac{a^3A}{7x^7}-\frac{a^2(aB+3Ab)}{6x^6}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{5x^5}-\frac{3c\left(aBc+Abc+b^2B\right)}{2x^2}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{3x^3}-\frac{A\left(6abc\right.}{}$$

Rubi [A] time = 0.11, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{6x^6}-\frac{a^3A}{7x^7}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{3x^3}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{5x^5}-\frac{3c\left(aBc+Abc+b^2B\right)}{2x^2}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{4x^4}-\frac{c^2(Ac+3bB)}{x}+Bc^3\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -(a^3*A)/(7*x^7) - (a^2*(3*A*b + a*B))/(6*x^6) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(5*x^5) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(4*x^4) - (b^3*B + 3*
A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(3*x^3) - (3*c*(b^2*B + A*b*c + a*B*c))/(2
*x^2) - (c^2*(3*b*B + A*c))/x + B*c^3*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^8}\,dx &= \int \left(\frac{a^3A}{x^8}+\frac{a^2(3Ab+aB)}{x^7}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^6}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x^5}\right.\\ &= -\frac{a^3A}{7x^7}-\frac{a^2(3Ab+aB)}{6x^6}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{5x^5}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+6a\right.}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 175, normalized size = 1.09

$$-\frac{10a^3(6A+7Bx)+21a^2x(2A(5b+6cx)+3Bx(4b+5cx))+21ax^2\left(2A\left(6b^2+15bcx+10c^2x^2\right)+5Bx\left(3b^2+8bcx+6c^2x^2\right)\right)+35x^3\left(3A\left(b^3+4b^2cx+6bc^2x^2+4c^3x^3\right)+2bBx\left(2b^2+9bcx+18c^2x^2\right)\right)-420Bc^3x^7\log(x)}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -1/420*(10*a^3*(6*A + 7*B*x) + 21*a^2*x*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6
*c*x)) + 21*a*x^2*(5*B*x*(3*b^2 + 8*b*c*x + 6*c^2*x^2) + 2*A*(6*b^2 + 15*b*
c*x + 10*c^2*x^2)) + 35*x^3*(2*b*B*x*(2*b^2 + 9*b*c*x + 18*c^2*x^2) + 3*A*(
b^3 + 4*b^2*c*x + 6*b*c^2*x^2 + 4*c^3*x^3)) - 420*B*c^3*x^7*Log[x])/x^7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^8, x]
```

fricas [A] time = 0.39, size = 168, normalized size = 1.05

$$\frac{420\,Bc^3x^7\log(x) - 420\left(3\,Bbc^2 + Ac^3\right)x^6 - 630\left(Bb^2c + (Ba + Ab)c^2\right)x^5 - 140\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 - 60\,Aa^3 - 105\left(3\,Bab^2 + Ab^3 + 3\left(Ba^2 + 2\,Aab\right)c\right)x^3 - 252\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 - 70\left(Ba^3 + 3\,Aa^2b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^8,x, algorithm="fricas")
```

```
[Out] 1/420*(420*B*c^3*x^7*log(x) - 420*(3*B*b*c^2 + A*c^3)*x^6 - 630*(B*b^2*c +
(B*a + A*b)*c^2)*x^5 - 140*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4
- 60*A*a^3 - 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 252*(B*a
^2*b + A*a*b^2 + A*a^2*c)*x^2 - 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

giac [A] time = 0.19, size = 165, normalized size = 1.03

$$Bc^3\log\left(|x|\right) - \frac{420\left(3\,Bbc^2 + Ac^3\right)x^6 + 630\left(Bb^2c + Bac^2 + Abc^2\right)x^5 + 140\left(Bb^3 + 6\,Babc + 3\,Ab^2c + 3\,Aac^2\right)x^4 + 60\,Aa^3 + 105\left(3\,Bab^2 + Ab^3 + 3\,Ba^2c + 6\,Aabc\right)x^3 + 252\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 70\left(Ba^3 + 3\,Aa^2b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^8,x, algorithm="giac")
```

```
[Out] B*c^3*log(abs(x)) - 1/420*(420*(3*B*b*c^2 + A*c^3)*x^6 + 630*(B*b^2*c + B*a
*c^2 + A*b*c^2)*x^5 + 140*(B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*x^4 +
 60*A*a^3 + 105*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 252*(B*a^
2*b + A*a*b^2 + A*a^2*c)*x^2 + 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

maple [A] time = 0.04, size = 192, normalized size = 1.20

$$B\,c^3\ln(x) - \frac{A\,c^3}{x} - \frac{3Bb\,c^2}{x} - \frac{3Ab\,c^2}{2x^2} - \frac{3Ba\,c^2}{2x^2} - \frac{3B\,b^2c}{2x^2} - \frac{Aa\,c^2}{x^3} - \frac{A\,b^2c}{x^3} - \frac{2Babc}{x^3} - \frac{B\,b^3}{3x^3} - \frac{3Aabc}{2x^4} - \frac{A\,b^3}{4x^4} - \frac{3B\,a^2c}{4x^4} - \frac{3Ba\,b^2}{4x^4} - \frac{3A\,a^2c}{5x^5} - \frac{3Aa\,b^2}{5x^5} - \frac{3B\,a^2b}{5x^5} - \frac{A\,a^2b}{2x^6} - \frac{B\,a^3}{6x^6} - \frac{A\,a^3}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^8,x)
```

```
[Out] -3/5*a^2/x^5*A*c-3/5*a/x^5*A*b^2-3/5*a^2/x^5*B*b-3/2/x^4*A*a*b*c-1/4*A*b^3/
x^4-3/4/x^4*B*a^2*c-3/4/x^4*B*a*b^2-1/x^3*A*a*c^2-1/x^3*A*b^2*c-2/x^3*a*b*B
*c-1/3/x^3*b^3*B-3/2*c^2/x^2*A*b-3/2*c^2/x^2*a*B-3/2*c/x^2*b^2*B-1/7*a^3*A/
x^7-1/2*a^2/x^6*A*b-1/6*a^3/x^6*B-c^3/x*A-3*c^2/x*b*B+B*c^3*ln(x)
```

maxima [A] time = 0.54, size = 165, normalized size = 1.03

$$Bc^3\log(x) - \frac{420\left(3\,Bbc^2 + Ac^3\right)x^6 + 630\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 140\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 + 60\,Aa^3 + 105\left(3\,Bab^2 + Ab^3 + 3\left(Ba^2 + 2\,Aab\right)c\right)x^3 + 252\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 70\left(Ba^3 + 3\,Aa^2b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^8,x, algorithm="maxima")
```

```
[Out] B*c^3*log(x) - 1/420*(420*(3*B*b*c^2 + A*c^3)*x^6 + 630*(B*b^2*c + (B*a + A
*b)*c^2)*x^5 + 140*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 60*A*a
^3 + 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 252*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 + 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

mupad [B] time = 1.22, size = 165, normalized size = 1.03

$$B\,c^3\,\ln(x) - \frac{x^3\left(\frac{3\,B\,c\,a^2}{4} + \frac{3\,B\,a\,b^2}{4} + \frac{3\,A\,c\,a\,b}{2} + \frac{A\,b^3}{4}\right) + x^4\left(\frac{B\,b^3}{3} + A\,b^2\,c + 2\,B\,a\,b\,c + A\,a\,c^2\right) + x\left(\frac{B\,a^3}{6} + \frac{A\,b\,a^2}{2}\right) + \frac{A\,a^3}{7} + x^6\left(A\,c^3 + 3\,B\,b\,c^2\right) + x^2\left(\frac{3\,B\,a^2\,b}{5} + \frac{3\,A\,c\,a^2}{5} + \frac{3\,A\,a\,b^2}{5}\right) + x^5\left(\frac{3\,B\,b^2\,c}{2} + \frac{3\,A\,b\,c^2}{2} + \frac{3\,B\,a\,c^2}{2}\right)}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x)
```

```
[Out] B*c^3*log(x) - (x^3*((A*b^3)/4 + (3*B*a*b^2)/4 + (3*B*a^2*c)/4 + (3*A*a*b*c
)/2) + x^4*((B*b^3)/3 + A*a*c^2 + A*b^2*c + 2*B*a*b*c) + x*((B*a^3)/6 + (A*
a^2*b)/2) + (A*a^3)/7 + x^6*(A*c^3 + 3*B*b*c^2) + x^2*((3*A*a*b^2)/5 + (3*A
*a^2*c)/5 + (3*B*a^2*b)/5) + x^5*((3*A*b*c^2)/2 + (3*B*a*c^2)/2 + (3*B*b^2*
c)/2))/x^7
```

sympy [A] time = 57.14, size = 194, normalized size = 1.21

$$Bc^3\log(x) + \frac{-60Aa^3 + x^6(-420Ac^3 - 1260Bbc^2) + x^5(-630Abc^2 - 630Bac^2 - 630Bb^2c) + x^4(-420Aac^2 - 420Ab^2c - 840Babc - 140Bb^3) + x^3(-630Aabc - 105Ab^3 - 315Ba^2c - 315Bab^2) + x^2(-252Aa^2c - 252Aab^2 - 252Ba^2b) + x(-210Aa^2b - 70Ba^3)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**8,x)
```

```
[Out] B*c**3*log(x) + (-60*A*a**3 + x**6*(-420*A*c**3 - 1260*B*b*c**2) + x**5*(-6
30*A*b*c**2 - 630*B*a*c**2 - 630*B*b**2*c) + x**4*(-420*A*a*c**2 - 420*A*b*
*2*c - 840*B*a*b*c - 140*B*b**3) + x**3*(-630*A*a*b*c - 105*A*b**3 - 315*B*
a**2*c - 315*B*a*b**2) + x**2*(-252*A*a**2*c - 252*A*a*b**2 - 252*B*a**2*b)
 + x*(-210*A*a**2*b - 70*B*a**3))/(420*x**7)
```

3.803 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^9}\,dx$

Optimal. Leaf size=162

$$-\frac{a^3A}{8x^8}-\frac{a^2(aB+3Ab)}{7x^7}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{2x^6}-\frac{c\left(aBc+Abc+b^2B\right)}{x^3}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{4x^4}-\frac{A\left(6abc\right.}{}$$

Rubi [A] time = 0.10, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{7x^7}-\frac{a^3A}{8x^8}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{4x^4}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{2x^6}-\frac{c\left(aBc+Abc+b^2B\right)}{x^3}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{5x^5}-\frac{c^2(Ac+3bB)}{2x^2}-\frac{Bc^3}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -(a^3*A)/(8*x^8) - (a^2*(3*A*b + a*B))/(7*x^7) - (a*(a*b*B + A*(b^2 + a*c))
)/(2*x^6) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(5*x^5) - (b^3*B + 3*A*
b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(4*x^4) - (c*(b^2*B + A*b*c + a*B*c))/x^3 -
(c^2*(3*b*B + A*c))/(2*x^2) - (B*c^3)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^9}\,dx=\int \left(\frac{a^3A}{x^9}+\frac{a^2(3Ab+aB)}{x^8}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^7}+\frac{3aB\left(b^2+ac\right)+A\left(b\right.}{x^6}\right.$$

$$=-\frac{a^3A}{8x^8}-\frac{a^2(3Ab+aB)}{7x^7}-\frac{a\left(abB+A\left(b^2+ac\right)\right)}{2x^6}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{5x^5}$$

Mathematica [A] time = 0.06, size = 172, normalized size = 1.06

$$-\frac{5a^3(7A+8Bx)+4a^2x(5A(6b+7cx)+7Bx(5b+6cx))+14ax^2\left(A\left(10b^2+24bcx+15c^2x^2\right)+2Bx\left(6b^2+15bcx+10c^2x^2\right)\right)+14x^3\left(A\left(4b^3+15b^2cx+20bc^2x^2+10c^3x^3\right)+5Bx\left(b^3+4b^2cx+6bc^2x^2+4c^3x^3\right)\right)}{280x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -1/280*(5*a^3*(7*A + 8*B*x) + 4*a^2*x*(7*B*x*(5*b + 6*c*x) + 5*A*(6*b + 7*c
*x)) + 14*a*x^2*(2*B*x*(6*b^2 + 15*b*c*x + 10*c^2*x^2) + A*(10*b^2 + 24*b*c
*x + 15*c^2*x^2)) + 14*x^3*(5*B*x*(b^3 + 4*b^2*c*x + 6*b*c^2*x^2 + 4*c^3*x^
3) + A*(4*b^3 + 15*b^2*c*x + 20*b*c^2*x^2 + 10*c^3*x^3)))/x^8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^9, x]
```

fricas [A] time = 0.41, size = 166, normalized size = 1.02

$$-\frac{280\,Bc^3x^7+140\,\left(3\,Bbc^2+Ac^3\right)x^6+280\,\left(Bb^2c+(Ba+Ab)c^2\right)x^5+70\,\left(Bb^3+3\,Aac^2+3\,\left(2\,Bab+Ab^2\right)c\right)x^4+35\,Aa^3+56\,\left(3\,Bab^2+Ab^3+3\,\left(Ba^2+2\,Aab\right)c\right)x^3+140\,\left(Ba^2b+Aab^2+Aa^2c\right)x^2+40\,\left(Ba^3+3\,Aa^2b\right)x}{280\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^9,x, algorithm="fricas")
```

```
[Out] -1/280*(280*B*c^3*x^7 + 140*(3*B*b*c^2 + A*c^3)*x^6 + 280*(B*b^2*c + (B*a +
 A*b)*c^2)*x^5 + 70*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 35*A*
a^3 + 56*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 140*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 + 40*(B*a^3 + 3*A*a^2*b)*x)/x^8
```

giac [A] time = 0.17, size = 191, normalized size = 1.18

$$-\frac{280\,Bc^3x^7+420\,Bbc^2x^6+140\,Ac^3x^6+280\,Bb^2cx^5+280\,Bac^2x^5+280\,Abc^2x^5+70\,Bb^3x^4+420\,Babcx^4+210\,Ab^2cx^4+210\,Aac^2x^4+168\,Bab^2x^3+56\,Ab^3x^3+168\,Ba^2cx^3+336\,Aabcx^3+140\,Ba^2bx^2+140\,Aab^2x^2+140\,Aa^2cx^2+40\,Ba^3x+120\,Aa^2bx+35\,Aa^3}{280\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^9,x, algorithm="giac")
```

```
[Out] -1/280*(280*B*c^3*x^7 + 420*B*b*c^2*x^6 + 140*A*c^3*x^6 + 280*B*b^2*c*x^5 +
 280*B*a*c^2*x^5 + 280*A*b*c^2*x^5 + 70*B*b^3*x^4 + 420*B*a*b*c*x^4 + 210*A
*b^2*c*x^4 + 210*A*a*c^2*x^4 + 168*B*a*b^2*x^3 + 56*A*b^3*x^3 + 168*B*a^2*c
*x^3 + 336*A*a*b*c*x^3 + 140*B*a^2*b*x^2 + 140*A*a*b^2*x^2 + 140*A*a^2*c*x^
2 + 40*B*a^3*x + 120*A*a^2*b*x + 35*A*a^3)/x^8
```

maple [A] time = 0.05, size = 154, normalized size = 0.95

$$-\frac{B\,c^3}{x}-\frac{(Ac+3bB)\,c^2}{2x^2}-\frac{\left(Abc+aBc+b^2B\right)c}{x^3}-\frac{A\,a^3}{8x^8}-\frac{3Aa\,c^2+3A\,b^2c+6abBc+b^3B}{4x^4}-\frac{(3Ab+Ba)\,a^2}{7x^7}-\frac{\left(Aac+A\,b^2+Bab\right)a}{2x^6}-\frac{6Aabc+A\,b^3+3B\,a^2c+3Ba\,b^2}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^9,x)
```

```
[Out] -1/5*(6*A*a*b*c+A*b^3+3*B*a^2*c+3*B*a*b^2)/x^5-1/4*(3*A*a*c^2+3*A*b^2*c+6*B
*a*b*c+B*b^3)/x^4-c*(A*b*c+B*a*c+B*b^2)/x^3-1/8*a^3*A/x^8-1/2*(A*c+3*B*b)*c
^2/x^2-1/7*a^2*(3*A*b+B*a)/x^7-1/2*a*(A*a*c+A*b^2+B*a*b)/x^6-B*c^3/x
```

maxima [A] time = 0.56, size = 166, normalized size = 1.02

$$-\frac{280\,Bc^3x^7+140\,\left(3\,Bbc^2+Ac^3\right)x^6+280\,\left(Bb^2c+(Ba+Ab)c^2\right)x^5+70\,\left(Bb^3+3\,Aac^2+3\,\left(2\,Bab+Ab^2\right)c\right)x^4+35\,Aa^3+56\,\left(3\,Bab^2+Ab^3+3\,\left(Ba^2+2\,Aab\right)c\right)x^3+140\,\left(Ba^2b+Aab^2+Aa^2c\right)x^2+40\,\left(Ba^3+3\,Aa^2b\right)x}{280\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^9,x, algorithm="maxima")
```

```
[Out] -1/280*(280*B*c^3*x^7 + 140*(3*B*b*c^2 + A*c^3)*x^6 + 280*(B*b^2*c + (B*a +
 A*b)*c^2)*x^5 + 70*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 35*A*
a^3 + 56*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 140*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 + 40*(B*a^3 + 3*A*a^2*b)*x)/x^8
```

mupad [B] time = 1.18, size = 165, normalized size = 1.02

$$-\frac{x^3\,\left(\frac{3\,B\,c\,a^2}{5}+\frac{3\,B\,a\,b^2}{5}+\frac{6\,A\,c\,a\,b}{5}+\frac{A\,b^3}{5}\right)+x^4\,\left(\frac{B\,b^3}{4}+\frac{3\,A\,b^2\,c}{4}+\frac{3\,B\,a\,b\,c}{2}+\frac{3\,A\,a\,c^2}{4}\right)+x\,\left(\frac{B\,a^3}{7}+\frac{3\,A\,b\,a^2}{7}\right)+\frac{A\,a^3}{8}+x^6\,\left(\frac{A\,c^3}{2}+\frac{3\,B\,b\,c^2}{2}\right)+x^2\,\left(\frac{B\,a^2\,b}{2}+\frac{A\,c\,a^2}{2}+\frac{A\,a\,b^2}{2}\right)+x^5\,\left(B\,b^2\,c+A\,b\,c^2+B\,a\,c^2\right)+B\,c^3\,x^7}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x)
```

```
[Out] -(x^3*((A*b^3)/5 + (3*B*a*b^2)/5 + (3*B*a^2*c)/5 + (6*A*a*b*c)/5) + x^4*((B
*b^3)/4 + (3*A*a*c^2)/4 + (3*A*b^2*c)/4 + (3*B*a*b*c)/2) + x*((B*a^3)/7 + (
3*A*a^2*b)/7) + (A*a^3)/8 + x^6*((A*c^3)/2 + (3*B*b*c^2)/2) + x^2*((A*a*b^2
)/2 + (A*a^2*c)/2 + (B*a^2*b)/2) + x^5*(A*b*c^2 + B*a*c^2 + B*b^2*c) + B*c^
3*x^7)/x^8
```

sympy [A] time = 119.40, size = 196, normalized size = 1.21

$$\frac{-35Aa^3 - 280Bc^3x^7 + x^6\left(-140Ac^3 - 420Bbc^2\right) + x^5\left(-280Abc^2 - 280Bac^2 - 280Bb^2c\right) + x^4\left(-210Aac^2 - 210Ab^2c - 420Babc - 70Bb^3\right) + x^3\left(-336Aabc - 56Ab^3 - 168Ba^2c - 168Bab^2\right) + x^2\left(-140Aa^2c - 140Aab^2 - 140Ba^2b\right) + x\left(-120Aa^2b - 40Ba^3\right)}{280x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**9,x)
```

```
[Out] (-35*A*a**3 - 280*B*c**3*x**7 + x**6*(-140*A*c**3 - 420*B*b*c**2) + x**5*(-
280*A*b*c**2 - 280*B*a*c**2 - 280*B*b**2*c) + x**4*(-210*A*a*c**2 - 210*A*b
**2*c - 420*B*a*b*c - 70*B*b**3) + x**3*(-336*A*a*b*c - 56*A*b**3 - 168*B*a
**2*c - 168*B*a*b**2) + x**2*(-140*A*a**2*c - 140*A*a*b**2 - 140*B*a**2*b)
+ x*(-120*A*a**2*b - 40*B*a**3))/(280*x**8)
```

3.804 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{10}} \, dx$

Optimal. Leaf size=166

$$-\frac{a^3A}{9x^9}-\frac{a^2(aB+3Ab)}{8x^8}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{7x^7}-\frac{3c\left(aBc+Abc+b^2B\right)}{4x^4}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{5x^5}-\frac{A\left(6abc\right.}{}$$

Rubi [A] time = 0.11, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{8x^8}-\frac{a^3A}{9x^9}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{5x^5}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{7x^7}-\frac{3c\left(aBc+Abc+b^2B\right)}{4x^4}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{6x^6}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{Bc^3}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -(a^3*A)/(9*x^9) - (a^2*(3*A*b + a*B))/(8*x^8) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(7*x^7) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(6*x^6) - (b^3*B + 3*
A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(5*x^5) - (3*c*(b^2*B + A*b*c + a*B*c))/(4
*x^4) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{10}} \, dx = \int \left(\frac{a^3A}{x^{10}}+\frac{a^2(3Ab+aB)}{x^9}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^8}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x^7}\right.$$

$$= -\frac{a^3A}{9x^9}-\frac{a^2(3Ab+aB)}{8x^8}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{7x^7}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+6a\right.}{6x^6}$$

Mathematica [A] time = 0.06, size = 175, normalized size = 1.05

$$-\frac{35a^3(8A+9Bx)+45a^2x(3A(7b+8cx)+4Bx(6b+7cx))+18ax^2\left(4A\left(15b^2+35bcx+21c^2x^2\right)+7Bx\left(10b^2+24bcx+15c^2x^2\right)\right)+42x^3\left(A\left(10b^3+36b^2cx+45bc^2x^2+20c^3x^3\right)+3Bx\left(4b^3+15b^2cx+20bc^2x^2+10c^3x^3\right)\right)}{2520x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -1/2520*(35*a^3*(8*A + 9*B*x) + 45*a^2*x*(4*B*x*(6*b + 7*c*x) + 3*A*(7*b +
8*c*x)) + 18*a*x^2*(7*B*x*(10*b^2 + 24*b*c*x + 15*c^2*x^2) + 4*A*(15*b^2 +
35*b*c*x + 21*c^2*x^2)) + 42*x^3*(3*B*x*(4*b^3 + 15*b^2*c*x + 20*b*c^2*x^2
+ 10*c^3*x^3) + A*(10*b^3 + 36*b^2*c*x + 45*b*c^2*x^2 + 20*c^3*x^3)))/x^9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{10}} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^10, x]
```

fricas [**A**] time = 0.41, size = 166, normalized size = 1.00

$$-\frac{1260\,Bc^3x^7 + 840\left(3\,Bbc^2 + Ac^3\right)x^6 + 1890\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 504\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 + 280\,Aa^3 + 420\left(3\,Bab^2 + Ab^3 + 3\left(Ba^2 + 2\,Aab\right)c\right)x^3 + 1080\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 315\left(Ba^3 + 3\,Aa^2b\right)x}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(1260*B*c^3*x^7 + 840*(3*B*b*c^2 + A*c^3)*x^6 + 1890*(B*b^2*c + (B*
a + A*b)*c^2)*x^5 + 504*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 2
80*A*a^3 + 420*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 1080*(B*a^
2*b + A*a*b^2 + A*a^2*c)*x^2 + 315*(B*a^3 + 3*A*a^2*b)*x)/x^9
```

giac [**A**] time = 0.16, size = 191, normalized size = 1.15

$$-\frac{1260\,Bc^3x^7 + 2520\,Bbc^2x^6 + 840\,Ac^3x^6 + 1890\,Bb^2cx^5 + 1890\,Bac^2x^5 + 1890\,Abc^2x^5 + 504\,Bb^3x^4 + 3024\,Babcx^4 + 1512\,Ab^2cx^4 + 1512\,Aac^2x^4 + 1260\,Bab^2x^3 + 420\,Ab^3x^3 + 1260\,Ba^2cx^3 + 2520\,Aabcx^3 + 1080\,Ba^2bx^2 + 1080\,Aab^2x^2 + 1080\,Aa^2cx^2 + 315\,Ba^3x + 945\,Aa^2bx + 280\,Aa^3}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/2520*(1260*B*c^3*x^7 + 2520*B*b*c^2*x^6 + 840*A*c^3*x^6 + 1890*B*b^2*c*x
^5 + 1890*B*a*c^2*x^5 + 1890*A*b*c^2*x^5 + 504*B*b^3*x^4 + 3024*B*a*b*c*x^4
 + 1512*A*b^2*c*x^4 + 1512*A*a*c^2*x^4 + 1260*B*a*b^2*x^3 + 420*A*b^3*x^3 +
 1260*B*a^2*c*x^3 + 2520*A*a*b*c*x^3 + 1080*B*a^2*b*x^2 + 1080*A*a*b^2*x^2
+ 1080*A*a^2*c*x^2 + 315*B*a^3*x + 945*A*a^2*b*x + 280*A*a^3)/x^9
```

maple [**A**] time = 0.06, size = 154, normalized size = 0.93

$$-\frac{B\,c^3}{2x^2}-\frac{(Ac+3bB)\,c^2}{3x^3}-\frac{3\left(Abc+aBc+b^2B\right)c}{4x^4}-\frac{A\,a^3}{9x^9}-\frac{3Aa\,c^2+3A\,b^2c+6abBc+b^3B}{5x^5}-\frac{(3Ab+Ba)\,a^2}{8x^8}-\frac{3\left(Aac+A\,b^2+Bab\right)a}{7x^7}-\frac{6Aabc+A\,b^3+3B\,a^2c+3Ba\,b^2}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^10,x)
```

```
[Out] -1/5*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)/x^5-3/4*c*(A*b*c+B*a*c+B*b^2)/x^
4-1/3*(A*c+3*B*b)*c^2/x^3-1/8*a^2*(3*A*b+B*a)/x^8-1/2*B*c^3/x^2-1/9*a^3*A/x
^9-3/7*a*(A*a*c+A*b^2+B*a*b)/x^7-1/6*(6*A*a*b*c+A*b^3+3*B*a^2*c+3*B*a*b^2)/
x^6
```

maxima [**A**] time = 0.52, size = 166, normalized size = 1.00

$$-\frac{1260\,Bc^3x^7 + 840\left(3\,Bbc^2 + Ac^3\right)x^6 + 1890\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 504\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 + 280\,Aa^3 + 420\left(3\,Bab^2 + Ab^3 + 3\left(Ba^2 + 2\,Aab\right)c\right)x^3 + 1080\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 315\left(Ba^3 + 3\,Aa^2b\right)x}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(1260*B*c^3*x^7 + 840*(3*B*b*c^2 + A*c^3)*x^6 + 1890*(B*b^2*c + (B*
a + A*b)*c^2)*x^5 + 504*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 2
80*A*a^3 + 420*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 1080*(B*a^
2*b + A*a*b^2 + A*a^2*c)*x^2 + 315*(B*a^3 + 3*A*a^2*b)*x)/x^9
```

mupad [**B**] time = 1.19, size = 167, normalized size = 1.01

$$-\frac{x^3\left(\frac{B\,c\,a^2}{2}+\frac{B\,a\,b^2}{2}+A\,c\,a\,b+\frac{A\,b^3}{6}\right)+x^4\left(\frac{B\,b^3}{5}+\frac{3\,A\,b^2\,c}{5}+\frac{6\,B\,a\,b\,c}{5}+\frac{3\,A\,a\,c^2}{5}\right)+x\left(\frac{B\,a^3}{8}+\frac{3\,A\,b\,a^2}{8}\right)+\frac{A\,a^3}{9}+x^6\left(\frac{A\,c^3}{3}+B\,b\,c^2\right)+x^2\left(\frac{3\,B\,a^2\,b}{7}+\frac{3\,A\,c\,a^2}{7}+\frac{3\,A\,a\,b^2}{7}\right)+x^5\left(\frac{3\,B\,b^2\,c}{4}+\frac{3\,A\,b\,c^2}{4}+\frac{3\,B\,a\,c^2}{4}\right)+\frac{B\,c^3\,x^7}{2}}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x)
```

```
[Out] -(x^3*((A*b^3)/6 + (B*a*b^2)/2 + (B*a^2*c)/2 + A*a*b*c) + x^4*((B*b^3)/5 +
(3*A*a*c^2)/5 + (3*A*b^2*c)/5 + (6*B*a*b*c)/5) + x*((B*a^3)/8 + (3*A*a^2*b)
/8) + (A*a^3)/9 + x^6*((A*c^3)/3 + B*b*c^2) + x^2*((3*A*a*b^2)/7 + (3*A*a^2
*c)/7 + (3*B*a^2*b)/7) + x^5*((3*A*b*c^2)/4 + (3*B*a*c^2)/4 + (3*B*b^2*c)/4
) + (B*c^3*x^7)/2)/x^9
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**10,x)
```

```
[Out] Timed out
```

3.805 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11}}\,dx$

Optimal. Leaf size=166

$$-\frac{a^3A}{10x^{10}}-\frac{a^2(aB+3Ab)}{9x^9}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{8x^8}-\frac{3c\left(aBc+Abc+b^2B\right)}{5x^5}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{6x^6}-\frac{A(\ldots$$

Rubi [A] time = 0.10, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{9x^9}-\frac{a^3A}{10x^{10}}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{6x^6}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{8x^8}-\frac{3c\left(aBc+Abc+b^2B\right)}{5x^5}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{7x^7}-\frac{c^2(Ac+3bB)}{4x^4}-\frac{Bc^3}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -(a^3*A)/(10*x^10) - (a^2*(3*A*b + a*B))/(9*x^9) - (3*a*(a*b*B + A*(b^2 + a
*c)))/(8*x^8) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(7*x^7) - (b^3*B +
3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(6*x^6) - (3*c*(b^2*B + A*b*c + a*B*c))/
(5*x^5) - (c^2*(3*b*B + A*c))/(4*x^4) - (B*c^3)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11}}\,dx=\int \left(\frac{a^3A}{x^{11}}+\frac{a^2(3Ab+aB)}{x^{10}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^9}+\frac{3aB\left(b^2+ac\right)+A\left(b\ldots\right.}{x^8}\ldots\right.$$
$$=-\frac{a^3A}{10x^{10}}-\frac{a^2(3Ab+aB)}{9x^9}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{8x^8}-\frac{3aB\left(b^2+ac\right)+A\left(b^3\ldots\right.}{7x^7}\ldots$$

Mathematica [A] time = 0.06, size = 176, normalized size = 1.06

$$-\frac{28a^3(9A+10Bx)+15a^2x(7A(8b+9cx)+9Bx(7b+8cx))+9ax^2\left(5A\left(21b^2+48bcx+28c^2x^2\right)+8Bx\left(15b^2+35bcx+21c^2x^2\right)\right)+6x^3\left(3A\left(20b^3+70b^2cx+84bc^2x^2+35c^3x^3\right)+7Bx\left(10b^3+36b^2cx+45bc^2x^2+20c^3x^3\right)\right)}{2520x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -1/2520*(28*a^3*(9*A + 10*B*x) + 15*a^2*x*(9*B*x*(7*b + 8*c*x) + 7*A*(8*b +
 9*c*x)) + 9*a*x^2*(8*B*x*(15*b^2 + 35*b*c*x + 21*c^2*x^2) + 5*A*(21*b^2 +
48*b*c*x + 28*c^2*x^2)) + 6*x^3*(7*B*x*(10*b^3 + 36*b^2*c*x + 45*b*c^2*x^2
+ 20*c^3*x^3) + 3*A*(20*b^3 + 70*b^2*c*x + 84*b*c^2*x^2 + 35*c^3*x^3)))/x^1
0
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^11, x]
```

fricas [A] time = 0.40, size = 166, normalized size = 1.00

$$-\frac{840 Bc^3x^7 + 630\left(3 Bbc^2 + Ac^3\right)x^6 + 1512\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 420\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^4 + 252 Aa^3 + 360\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 + 945\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 280\left(Ba^3 + 3 Aa^2b\right)x}{2520 x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*c^3*x^7 + 630*(3*B*b*c^2 + A*c^3)*x^6 + 1512*(B*b^2*c + (B*a
 + A*b)*c^2)*x^5 + 420*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 25
2*A*a^3 + 360*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 945*(B*a^2*
b + A*a*b^2 + A*a^2*c)*x^2 + 280*(B*a^3 + 3*A*a^2*b)*x)/x^10
```

giac [A] time = 0.16, size = 191, normalized size = 1.15

$$-\frac{840 Bc^3x^7 + 1890 Bbc^2x^6 + 630 Ac^3x^6 + 1512 Bb^2cx^5 + 1512 Bac^2x^5 + 1512 Abc^2x^5 + 420 Bb^3x^4 + 2520 Babcx^4 + 1260 Ab^2cx^4 + 1260 Aac^2x^4 + 1080 Bab^2x^3 + 360 Ab^3x^3 + 1080 Ba^2cx^3 + 2160 Aabcx^3 + 945 Ba^2bx^2 + 945 Aab^2x^2 + 945 Aa^2cx^2 + 280 Ba^3x + 840 Aa^2bx + 252 Aa^3}{2520 x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*c^3*x^7 + 1890*B*b*c^2*x^6 + 630*A*c^3*x^6 + 1512*B*b^2*c*x^
5 + 1512*B*a*c^2*x^5 + 1512*A*b*c^2*x^5 + 420*B*b^3*x^4 + 2520*B*a*b*c*x^4
+ 1260*A*b^2*c*x^4 + 1260*A*a*c^2*x^4 + 1080*B*a*b^2*x^3 + 360*A*b^3*x^3 +
1080*B*a^2*c*x^3 + 2160*A*a*b*c*x^3 + 945*B*a^2*b*x^2 + 945*A*a*b^2*x^2 + 9
45*A*a^2*c*x^2 + 280*B*a^3*x + 840*A*a^2*b*x + 252*A*a^3)/x^10
```

maple [A] time = 0.06, size = 154, normalized size = 0.93

$$-\frac{B c^3}{3x^3} - \frac{(Ac + 3bB) c^2}{4x^4} - \frac{3\left(Abc + aBc + b^2B\right) c}{5x^5} - \frac{A a^3}{10x^{10}} - \frac{3Aa c^2 + 3A b^2c + 6abBc + b^3B}{6x^6} - \frac{(3Ab + Ba) a^2}{9x^9} - \frac{3\left(Aac + A b^2 + Bab\right) a}{8x^8} - \frac{6Aabc + A b^3 + 3B a^2c + 3Ba b^2}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^11,x)
```

```
[Out] -3/5*c*(A*b*c+B*a*c+B*b^2)/x^5-1/4*(A*c+3*B*b)*c^2/x^4-1/3*B*c^3/x^3-3/8*a*
(A*a*c+A*b^2+B*a*b)/x^8-1/9*a^2*(3*A*b+B*a)/x^9-1/10*a^3*A/x^10-1/7*(6*A*a*
b*c+A*b^3+3*B*a^2*c+3*B*a*b^2)/x^7-1/6*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3
)/x^6
```

maxima [A] time = 0.46, size = 166, normalized size = 1.00

$$-\frac{840 Bc^3x^7 + 630\left(3 Bbc^2 + Ac^3\right)x^6 + 1512\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 420\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^4 + 252 Aa^3 + 360\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 + 945\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 280\left(Ba^3 + 3 Aa^2b\right)x}{2520 x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*c^3*x^7 + 630*(3*B*b*c^2 + A*c^3)*x^6 + 1512*(B*b^2*c + (B*a
 + A*b)*c^2)*x^5 + 420*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 25
2*A*a^3 + 360*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 945*(B*a^2*
b + A*a*b^2 + A*a^2*c)*x^2 + 280*(B*a^3 + 3*A*a^2*b)*x)/x^10
```

mupad [B] time = 1.19, size = 168, normalized size = 1.01

$$-\frac{x^3\left(\frac{3 B c a^2}{7} + \frac{3 B a b^2}{7} + \frac{6 A c a b}{7} + \frac{A b^3}{7}\right) + x^4\left(\frac{B b^3}{6} + \frac{A b^2 c}{2} + B a b c + \frac{A a c^2}{2}\right) + x\left(\frac{B a^3}{9} + \frac{A b a^2}{3}\right) + \frac{A a^3}{10} + x^6\left(\frac{A c^3}{4} + \frac{3 B b c^2}{4}\right) + x^2\left(\frac{3 B a^2 b}{8} + \frac{3 A c a^2}{8} + \frac{3 A a b^2}{8}\right) + x^5\left(\frac{3 B b^2 c}{5} + \frac{3 A b c^2}{5} + \frac{3 B a c^2}{5}\right) + \frac{B c^3 x^7}{3}}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x)
```

```
[Out] -(x^3*((A*b^3)/7 + (3*B*a*b^2)/7 + (3*B*a^2*c)/7 + (6*A*a*b*c)/7) + x^4*((B
*b^3)/6 + (A*a*c^2)/2 + (A*b^2*c)/2 + B*a*b*c) + x*((B*a^3)/9 + (A*a^2*b)/3
) + (A*a^3)/10 + x^6*((A*c^3)/4 + (3*B*b*c^2)/4) + x^2*((3*A*a*b^2)/8 + (3*
A*a^2*c)/8 + (3*B*a^2*b)/8) + x^5*((3*A*b*c^2)/5 + (3*B*a*c^2)/5 + (3*B*b^2
*c)/5) + (B*c^3*x^7)/3)/x^10
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**11,x)
```

```
[Out] Timed out
```

3.806 $\int \frac{x^4(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=229

$$-\frac{\left(-a^2c^2e+3ab^2ce-2abc^2d+b^4(-e)+b^3cd\right)\log\left(a+bx+cx^2\right)}{2c^5}-\frac{\left(-5a^2bc^2e+2a^2c^3d+5ab^3ce-4ab^2c^2d+b^5(-\right.}{c^5\sqrt{b^2-4ac}}$$

Rubi [A] time = 0.42, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(-a^2c^2e+3ab^2ce-2abc^2d+b^3cd+b^4(-e)\right)\log\left(a+bx+cx^2\right)}{2c^5}-\frac{\left(-5a^2bc^2e+2a^2c^3d-4ab^2c^2d+5ab^3ce+b^4cd+b^5(-e)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^5\sqrt{b^2-4ac}}-\frac{x^2\left(ace+b^2(-e)+bcd\right)}{2c^3}+\frac{x\left(2abce-ac^2d+b^2cd+b^3(-e)\right)}{c^4}+\frac{x^3(cd-be)}{3c^2}+\frac{ex^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] ((b^2*c*d - a*c^2*d - b^3*e + 2*a*b*c*e)*x)/c^4 - ((b*c*d - b^2*e + a*c*e)*
x^2)/(2*c^3) + ((c*d - b*e)*x^3)/(3*c^2) + (e*x^4)/(4*c) - ((b^4*c*d - 4*a*
b^2*c^2*d + 2*a^2*c^3*d - b^5*e + 5*a*b^3*c*e - 5*a^2*b*c^2*e)*ArcTanh[(b +
 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^5*Sqrt[b^2 - 4*a*c]) - ((b^3*c*d - 2*a*b*c^2
*d - b^4*e + 3*a*b^2*c*e - a^2*c^2*e)*Log[a + b*x + c*x^2])/(2*c^5)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4(d+ex)}{a+bx+cx^2}\,dx = \int \left(\frac{b^2cd-ac^2d-b^3e+2abce}{c^4} - \frac{\left(bcd-b^2e+ace\right)x}{c^3} + \frac{(cd-be)x^2}{c^2} + \frac{ex^3}{c} - \frac{a\left(b^2cd-ac^2\right.}{} \right.$$

$$= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4} - \frac{\left(bcd-b^2e+ace\right)x^2}{2c^3} + \frac{(cd-be)x^3}{3c^2} + \frac{ex^4}{4c} - \int \frac{a\left(b^2cd-ac^2d\right.}{}$$

$$= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4} - \frac{\left(bcd-b^2e+ace\right)x^2}{2c^3} + \frac{(cd-be)x^3}{3c^2} + \frac{ex^4}{4c} - \frac{\left(b^3cd-2ab\right.}{}$$

$$= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4} - \frac{\left(bcd-b^2e+ace\right)x^2}{2c^3} + \frac{(cd-be)x^3}{3c^2} + \frac{ex^4}{4c} - \frac{\left(b^3cd-2ab\right.}{}$$

$$= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4} - \frac{\left(bcd-b^2e+ace\right)x^2}{2c^3} + \frac{(cd-be)x^3}{3c^2} + \frac{ex^4}{4c} - \frac{\left(b^4cd-4ab\right.}{}$$

Mathematica [A] time = 0.14, size = 222, normalized size = 0.97

$$\frac{6\left(a^2c^2e-3ab^2ce+2abc^2d+b^4e-b^3cd\right)\log(a+x(b+cx))+\frac{12\left(-5a^2bc^2e+2a^2c^3d+5ab^3ce-4ab^2c^2d+b^5(-e)+b^4cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-6c^2x^2\left(ace+b^2(-e)+bcd\right)-12cx\left(-2abce+ac^2d+b^3e-b^2cd\right)+4c^3x^3(cd-be)+3c^4ex^4}{12c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-12*c*(-(b^2*c*d) + a*c^2*d + b^3*e - 2*a*b*c*e)*x - 6*c^2*(b*c*d - b^2*e
+ a*c*e)*x^2 + 4*c^3*(c*d - b*e)*x^3 + 3*c^4*e*x^4 + (12*(b^4*c*d - 4*a*b^2
*c^2*d + 2*a^2*c^3*d - b^5*e + 5*a*b^3*c*e - 5*a^2*b*c^2*e)*ArcTan[(b + 2*c
*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 6*(-(b^3*c*d) + 2*a*b*c^2*d +
 b^4*e - 3*a*b^2*c*e + a^2*c^2*e)*Log[a + x*(b + c*x)])/(12*c^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.45, size = 730, normalized size = 3.19

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(b^2*c^4 - 4*a*c^5)*e*x^4 + 4*((b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 -
4*a*b*c^4)*e)*x^3 - 6*((b^3*c^3 - 4*a*b*c^4)*d - (b^4*c^2 - 5*a*b^2*c^3 + 4
*a^2*c^4)*e)*x^2 - 6*sqrt(b^2 - 4*a*c)*((b^4*c - 4*a*b^2*c^2 + 2*a^2*c^3)*d
 - (b^5 - 5*a*b^3*c + 5*a^2*b*c^2)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*
c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 12*((b^4*c^2 - 5*a*
b^2*c^3 + 4*a^2*c^4)*d - (b^5*c - 6*a*b^3*c^2 + 8*a^2*b*c^3)*e)*x - 6*((b^5
*c - 6*a*b^3*c^2 + 8*a^2*b*c^3)*d - (b^6 - 7*a*b^4*c + 13*a^2*b^2*c^2 - 4*a
^3*c^3)*e)*log(c*x^2 + b*x + a))/(b^2*c^5 - 4*a*c^6), 1/12*(3*(b^2*c^4 - 4*
a*c^5)*e*x^4 + 4*((b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)*e)*x^3 - 6*
((b^3*c^3 - 4*a*b*c^4)*d - (b^4*c^2 - 5*a*b^2*c^3 + 4*a^2*c^4)*e)*x^2 - 12*
```

```
sqrt(-b^2 + 4*a*c)*((b^4*c - 4*a*b^2*c^2 + 2*a^2*c^3)*d - (b^5 - 5*a*b^3*c
+ 5*a^2*b*c^2)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 1
2*((b^4*c^2 - 5*a*b^2*c^3 + 4*a^2*c^4)*d - (b^5*c - 6*a*b^3*c^2 + 8*a^2*b*c
^3)*e)*x - 6*((b^5*c - 6*a*b^3*c^2 + 8*a^2*b*c^3)*d - (b^6 - 7*a*b^4*c + 13
*a^2*b^2*c^2 - 4*a^3*c^3)*e)*log(c*x^2 + b*x + a))/(b^2*c^5 - 4*a*c^6)]
```

giac [**A**] time = 0.18, size = 247, normalized size = 1.08

$$\frac{3c^3x^4e + 4c^3dx^3 - 4bc^2x^3e - 6bc^2dx^2 + 6b^2cx^2e - 6ac^2x^2e + 12b^2cdx - 12ac^2dx - 12b^3xe + 24abcxe}{12c^4} - \frac{\left(b^3cd - 2abc^2d - b^4e + 3ab^2ce - a^2c^2e\right)\log\left(cx^2 + bx + a\right)}{2c^5} + \frac{\left(b^4cd - 4ab^2c^2d + 2a^2c^3d - b^5e + 5ab^3ce - 5a^2bc^2e\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\sqrt{-b^2 + 4ac}\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/12*(3*c^3*x^4*e + 4*c^3*d*x^3 - 4*b*c^2*x^3*e - 6*b*c^2*d*x^2 + 6*b^2*c*x
^2*e - 6*a*c^2*x^2*e + 12*b^2*c*d*x - 12*a*c^2*d*x - 12*b^3*x*e + 24*a*b*c*
x*e)/c^4 - 1/2*(b^3*c*d - 2*a*b*c^2*d - b^4*e + 3*a*b^2*c*e - a^2*c^2*e)*lo
g(c*x^2 + b*x + a)/c^5 + (b^4*c*d - 4*a*b^2*c^2*d + 2*a^2*c^3*d - b^5*e + 5
*a*b^3*c*e - 5*a^2*b*c^2*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b
^2 + 4*a*c)*c^5)
```

maple [**B**] time = 0.06, size = 445, normalized size = 1.94

$$\frac{e x^4}{4c} - \frac{be x^3}{3c^2} + \frac{d x^3}{3c} - \frac{5a^2be \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, c^3} + \frac{2a^2d \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, c^2} + \frac{5ab^3e \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, c^4} - \frac{4ab^2d \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, c^3} - \frac{ae x^2}{2c^2} - \frac{b^5e \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, c^5} + \frac{b^4d \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, c^4} + \frac{b^2e x^2}{2c^3} - \frac{bd x^2}{2c^2} + \frac{a^2e \ln\left(cx^2+bx+a\right)}{2c^3} - \frac{3ab^2e \ln\left(cx^2+bx+a\right)}{2c^4} + \frac{abd \ln\left(cx^2+bx+a\right)}{c^3} + \frac{2abex}{c^3} - \frac{adx}{c^2} + \frac{b^4e \ln\left(cx^2+bx+a\right)}{2c^5} - \frac{b^3d \ln\left(cx^2+bx+a\right)}{2c^4} - \frac{b^3ex}{c^4} + \frac{b^2dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/4/c*e*x^4-1/3/c^2*x^3*b*e+1/3/c*d*x^3-1/2*a/c^2*e*x^2+1/2/c^3*x^2*b^2*e-1
/2/c^2*x^2*b*d+2/c^3*a*b*e*x-a/c^2*d*x-1/c^4*b^3*e*x+1/c^3*b^2*d*x+1/2/c^3*
ln(c*x^2+b*x+a)*e*a^2-3/2/c^4*ln(c*x^2+b*x+a)*a*b^2*e+1/c^3*ln(c*x^2+b*x+a)
*a*b*d+1/2/c^5*ln(c*x^2+b*x+a)*b^4*e-1/2/c^4*ln(c*x^2+b*x+a)*b^3*d-5/c^3/(4
*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*b*e+2/c^2/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*d+5/c^4/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e-4/c^3/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*d-1/c^5/(4*a*c-b^2)^(1/2)*arctan((2*c*x+
b)/(4*a*c-b^2)^(1/2))*b^5*e+1/c^4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c
-b^2)^(1/2))*b^4*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 0.23, size = 302, normalized size = 1.32

$$x^3\left(\frac{d}{3c} - \frac{be}{3c^2}\right) + x\left(\frac{b\left(\frac{b\left(\frac{d}{c}-\frac{be}{c^2}\right)}{c} + \frac{ae}{c^2}\right)}{c} - \frac{a\left(\frac{d}{c} - \frac{be}{c^2}\right)}{c}\right) - x^2\left(\frac{b\left(\frac{d}{c} - \frac{be}{c^2}\right)}{2c} + \frac{ae}{2c^2}\right) + \frac{\ln\left(cx^2 + bx + a\right)\left(4ea^3c^3 - 13ea^2b^2c^2 + 8da^2bc^3 + 7eab^4c - 6dab^3c^2 - eb^6 + db^5c\right)}{2\left(4ac^6 - b^2c^5\right)} + \frac{ex^4}{4c} - \frac{\operatorname{atan}\left(\frac{b}{\sqrt{4ac-b^2}} + \frac{2cx}{\sqrt{4ac-b^2}}\right)\left(5ea^2bc^2 - 2da^2c^3 - 5eab^3c + 4dab^2c^2 + eb^5 - db^4c\right)}{c^5\sqrt{4ac - b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^3*(d/(3*c) - (b*e)/(3*c^2)) + x*((b*((b*(d/c - (b*e)/c^2))/c + (a*e)/c^2)
)/c - (a*(d/c - (b*e)/c^2))/c) - x^2*((b*(d/c - (b*e)/c^2))/(2*c) + (a*e)/(
2*c^2)) + (log(a + b*x + c*x^2)*(4*a^3*c^3*e - b^6*e + b^5*c*d - 13*a^2*b^2
*c^2*e + 7*a*b^4*c*e - 6*a*b^3*c^2*d + 8*a^2*b*c^3*d))/(2*(4*a*c^6 - b^2*c^
5)) + (e*x^4)/(4*c) - (atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(
1/2))*(b^5*e - 2*a^2*c^3*d - b^4*c*d - 5*a*b^3*c*e + 4*a*b^2*c^2*d + 5*a^2*
b*c^2*e))/(c^5*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 3.92, size = 1100, normalized size = 4.80

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] x**3*(-b*e/(3*c**2) + d/(3*c)) + x**2*(-a*e/(2*c**2) + b**2*e/(2*c**3) - b*
d/(2*c**2)) + x*(2*a*b*e/c**3 - a*d/c**2 - b**3*e/c**4 + b**2*d/c**3) + (-s
qrt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b*
*2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a
*b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5))*log(x + (2*a**3*c**
2*e - 4*a**2*b**2*c*e + 3*a**2*b*c**2*d + a*b**4*e - a*b**3*c*d - 4*a*c**5*
(-sqrt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a
*b**2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e -
3*a*b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)) + b**2*c**4*(-sq
rt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**
2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a*
b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)))/(5*a**2*b*c**2*e -
2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**2*c**2*d + b**5*e - b**4*c*d)) + (sqr
t(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**2
*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a*b
**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5))*log(x + (2*a**3*c**2*
e - 4*a**2*b**2*c*e + 3*a**2*b*c**2*d + a*b**4*e - a*b**3*c*d - 4*a*c**5*(s
qrt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b*
*2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a
*b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)) + b**2*c**4*(sqrt(-
4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**2*c*
*2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a*b**2
*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)))/(5*a**2*b*c**2*e - 2*a*
*2*c**3*d - 5*a*b**3*c*e + 4*a*b**2*c**2*d + b**5*e - b**4*c*d)) + e*x**4/(
4*c)
```

3.807 $\int \frac{x^3(d+ex)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=169

$$\frac{\left(-2a^2c^2e+4ab^2ce-3abc^2d+b^4(-e)+b^3cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\sqrt{b^2-4ac}}-\frac{x\left(ace+b^2(-e)+bcd\right)}{c^3}+\frac{\left(2abce-ac^2d+b^3(-e)\right.}{2}$$

Rubi [A] time = 0.24, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(-2a^2c^2e+4ab^2ce-3abc^2d+b^3cd+b^4(-e)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\sqrt{b^2-4ac}}+\frac{\left(2abce-ac^2d+b^2cd+b^3(-e)\right)\log\left(a+bx+cx^2\right)}{2c^4}-\frac{x\left(ace+b^2(-e)+bcd\right)}{c^3}+\frac{x^2(cd-be)}{2c^2}+\frac{ex^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] -(((b*c*d - b^2*e + a*c*e)*x)/c^3) + ((c*d - b*e)*x^2)/(2*c^2) + (e*x^3)/(3
*c) + ((b^3*c*d - 3*a*b*c^2*d - b^4*e + 4*a*b^2*c*e - 2*a^2*c^2*e)*ArcTanh[
(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^4*Sqrt[b^2 - 4*a*c]) + ((b^2*c*d - a*c^2
*d - b^3*e + 2*a*b*c*e)*Log[a + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3(d+ex)}{a+bx+cx^2}\,dx = \int \left(-\frac{bcd-b^2e+ace}{c^3}+\frac{(cd-be)x}{c^2}+\frac{ex^2}{c}+\frac{a\left(bcd-b^2e+ace\right)+\left(b^2cd-ac^2d-b^3e+2a\right.}{c^3\left(a+bx+cx^2\right)}\right.$$

$$= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\int \frac{a\left(bcd-b^2e+ace\right)+\left(b^2cd-ac^2d-b^3e+2abce\right)x}{a+bx+cx^2}\,dx}{c^3}$$

$$= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\left(b^2cd-ac^2d-b^3e+2abce\right)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^4}-$$

$$= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\left(b^2cd-ac^2d-b^3e+2abce\right)\log\left(a+bx+c\right.}{2c^4}$$

$$= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\left(b^3cd-3abc^2d-b^4e+4ab^2ce-2a^2c^2e\right)\tan}{c^4\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.10, size = 165, normalized size = 0.98

$$\frac{\frac{6\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-6cx\left(ace+b^2(-e)+bcd\right)-3\left(-2abce+ac^2d+b^3e-b^2cd\right)\log(a+x(b+cx))+3c^2x^2(cd-be)+2c^3ex^3}{6c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-6*c*(b*c*d - b^2*e + a*c*e)*x + 3*c^2*(c*d - b*e)*x^2 + 2*c^3*e*x^3 + (6*
(-(b^3*c*d) + 3*a*b*c^2*d + b^4*e - 4*a*b^2*c*e + 2*a^2*c^2*e)*ArcTan[(b +
2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 3*(-(b^2*c*d) + a*c^2*d +
b^3*e - 2*a*b*c*e)*Log[a + x*(b + c*x)])/(6*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.45, size = 563, normalized size = 3.33

$$\left[\frac{2\left(b^2c^3-4ac^4\right)ex^3+3\left(\left(b^2c^3-4ac^4\right)d-\left(b^3c^2-4abc^3\right)e\right)x^2-3\sqrt{b^2-4ac}\left(\left(b^3c-3abc^2\right)d-\left(b^4-4ab^2c+2a^2c^2\right)e\right)\log\left(\frac{2c^2x^2+2bcx+b^2-2ac-\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)-6\left(\left(b^3c^2-4abc^3\right)d-\left(b^4c-5ab^2c^2+4a^2c^3\right)e\right)x+3\left(\left(b^4c-5ab^2c^2+4a^2c^3\right)d-\left(b^5-6ab^3c+8a^2bc^2\right)e\right)\log\left(cx^2+bx+a\right)}{6\left(b^2c^4-4ac^5\right)}, \frac{2\left(b^2c^3-4ac^4\right)ex^3+3\left(\left(b^2c^3-4ac^4\right)d-\left(b^3c^2-4abc^3\right)e\right)x^2+6\sqrt{-b^2+4ac}\left(\left(b^3c-3abc^2\right)d-\left(b^4-4ab^2c+2a^2c^2\right)e\right)\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)-6\left(\left(b^3c^2-4abc^3\right)d-\left(b^4c-5ab^2c^2+4a^2c^3\right)e\right)x+3\left(\left(b^4c-5ab^2c^2+4a^2c^3\right)d-\left(b^5-6ab^3c+8a^2bc^2\right)e\right)\log\left(cx^2+bx+a\right)}{6\left(b^2c^4-4ac^5\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*(b^2*c^3 - 4*a*c^4)*e*x^3 + 3*((b^2*c^3 - 4*a*c^4)*d - (b^3*c^2 - 4
*a*b*c^3)*e)*x^2 - 3*sqrt(b^2 - 4*a*c)*((b^3*c - 3*a*b*c^2)*d - (b^4 - 4*a*
b^2*c + 2*a^2*c^2)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4
*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - 6*((b^3*c^2 - 4*a*b*c^3)*d - (b^4*c
 - 5*a*b^2*c^2 + 4*a^2*c^3)*e)*x + 3*((b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d -
 (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*e)*log(c*x^2 + b*x + a))/(b^2*c^4 - 4*a*c^
5), 1/6*(2*(b^2*c^3 - 4*a*c^4)*e*x^3 + 3*((b^2*c^3 - 4*a*c^4)*d - (b^3*c^2
- 4*a*b*c^3)*e)*x^2 + 6*sqrt(-b^2 + 4*a*c)*((b^3*c - 3*a*b*c^2)*d - (b^4 -
4*a*b^2*c + 2*a^2*c^2)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a
*c)) - 6*((b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e)*x
```

```
+ 3*((b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d - (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*
e)*log(c*x^2 + b*x + a))/(b^2*c^4 - 4*a*c^5)]
```

giac [A] time = 0.16, size = 178, normalized size = 1.05

$$\frac{2\,c^2x^3e+3\,c^2dx^2-3\,bcx^2e-6\,bcdx+6\,b^2xe-6\,acxe}{6\,c^3}+\frac{\left(b^2cd-ac^2d-b^3e+2\,abce\right)\log\left(cx^2+bx+a\right)}{2\,c^4}-\frac{\left(b^3cd-3\,abc^2d-b^4e+4\,ab^2ce-2\,a^2c^2e\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*(2*c^2*x^3*e + 3*c^2*d*x^2 - 3*b*c*x^2*e - 6*b*c*d*x + 6*b^2*x*e - 6*a*
c*x*e)/c^3 + 1/2*(b^2*c*d - a*c^2*d - b^3*e + 2*a*b*c*e)*log(c*x^2 + b*x +
a)/c^4 - (b^3*c*d - 3*a*b*c^2*d - b^4*e + 4*a*b^2*c*e - 2*a^2*c^2*e)*arctan
((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^4)
```

maple [B] time = 0.05, size = 335, normalized size = 1.98

$$\frac{e\,x^3}{3c}+\frac{2a^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}-\frac{4a\,b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^3}+\frac{3abd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}+\frac{b^4e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^4}-\frac{b^3d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^3}-\frac{be\,x^2}{2c^2}+\frac{d\,x^2}{2c}+\frac{abe\ln\left(c\,x^2+bx+a\right)}{c^3}-\frac{ad\ln\left(c\,x^2+bx+a\right)}{2c^2}-\frac{aex}{c^2}-\frac{b^3e\ln\left(c\,x^2+bx+a\right)}{2c^4}+\frac{b^2d\ln\left(c\,x^2+bx+a\right)}{2c^3}+\frac{b^2ex}{c^3}-\frac{bdx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/3/c*e*x^3-1/2*b/c^2*e*x^2+1/2/c*d*x^2-a/c^2*e*x+b^2/c^3*e*x-b/c^2*d*x+1/c
^3*ln(c*x^2+b*x+a)*a*b*e-1/2/c^2*ln(c*x^2+b*x+a)*a*d-1/2/c^4*ln(c*x^2+b*x+a
)*b^3*e+1/2/c^3*ln(c*x^2+b*x+a)*b^2*d+2/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*a^2*e-4/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*a*b^2*e+3/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^
(1/2))*a*b*d+1/c^4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^
4*e-1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.30, size = 221, normalized size = 1.31

$$x^2\left(\frac{d}{2c}-\frac{b\,e}{2c^2}\right)-x\left(\frac{b\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)}{c}+\frac{a\,e}{c^2}\right)+\frac{\ln\left(c\,x^2+b\,x+a\right)\left(8\,e\,a^2\,b\,c^2-4\,d\,a^2\,c^3-6\,e\,a\,b^3\,c+5\,d\,a\,b^2\,c^2+e\,b^5-d\,b^4\,c\right)}{2\left(4\,a\,c^5-b^2\,c^4\right)}+\frac{e\,x^3}{3\,c}+\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\left(2\,e\,a^2\,c^2-4\,e\,a\,b^2\,c+3\,d\,a\,b\,c^2+e\,b^4-d\,b^3\,c\right)}{c^4\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^2*(d/(2*c) - (b*e)/(2*c^2)) - x*((b*(d/c - (b*e)/c^2))/c + (a*e)/c^2) + (
log(a + b*x + c*x^2)*(b^5*e - 4*a^2*c^3*d - b^4*c*d - 6*a*b^3*c*e + 5*a*b^2
*c^2*d + 8*a^2*b*c^2*e))/(2*(4*a*c^5 - b^2*c^4)) + (e*x^3)/(3*c) + (atan(b/
(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(b^4*e + 2*a^2*c^2*e - b
^3*c*d + 3*a*b*c^2*d - 4*a*b^2*c*e))/(c^4*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 2.96, size = 840, normalized size = 4.97

$$x^2\left(-\frac{be}{2c^2}+\frac{d}{2c}\right)+x\left(-\frac{ae}{c^2}+\frac{b^2e}{c^3}-\frac{bd}{c^2}\right)+\left(-\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4\left(4ac-b^2\right)}+\frac{2abce-ac^2d-b^3e+b^2cd}{2c^4}\right)\log\left(x+\frac{-3a^2bce+2a^2c^2d+ab^3e-ab^2cd+4ac^4\left(-\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4(4ac-b^2)}+\frac{2abce-ac^2d-b^3e+b^2cd}{2c^4}\right)-b^2c^3\left(-\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4(4ac-b^2)}+\frac{2abce-ac^2d-b^3e+b^2cd}{2c^4}\right)}{2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd}\right)+\left(\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4\left(4ac-b^2\right)}+\frac{2abce-ac^2d-b^3e+b^2cd}{2c^4}\right)\log\left(x+\frac{-3a^2bce+2a^2c^2d+ab^3e-ab^2cd+4ac^4\left(\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4(4ac-b^2)}+\frac{2abce-ac^2d-b^3e+b^2cd}{2c^4}\right)-b^2c^3\left(\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4(4ac-b^2)}+\frac{2abce-ac^2d-b^3e+b^2cd}{2c^4}\right)}{2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd}\right)+\frac{ex^3}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] x**2*(-b*e/(2*c**2) + d/(2*c)) + x*(-a*e/c**2 + b**2*e/c**3 - b*d/c**2) + (
-sqrt(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e
- b**3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2
*c*d)/(2*c**4))*log(x + (-3*a**2*b*c*e + 2*a**2*c**2*d + a*b**3*e - a*b**2*
c*d + 4*a*c**4*(-sqrt(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*
c**2*d + b**4*e - b**3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d
 - b**3*e + b**2*c*d)/(2*c**4)) - b**2*c**3*(-sqrt(-4*a*c + b**2)*(2*a**2*c
**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**4*(4*a*c - b
**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2*c*d)/(2*c**4)))/(2*a**2*c**2*
e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d)) + (sqrt(-4*a*c + b**2
)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**4
*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2*c*d)/(2*c**4))*log
(x + (-3*a**2*b*c*e + 2*a**2*c**2*d + a*b**3*e - a*b**2*c*d + 4*a*c**4*(sqr
t(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b*
*3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2*c*d
)/(2*c**4)) - b**2*c**3*(sqrt(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e
+ 3*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e -
a*c**2*d - b**3*e + b**2*c*d)/(2*c**4)))/(2*a**2*c**2*e - 4*a*b**2*c*e + 3*
a*b*c**2*d + b**4*e - b**3*c*d)) + e*x**3/(3*c)
```

3.808 $\int \frac{x^2(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=121

$$-\frac{\left(ace+b^2(-e)+bcd\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{\left(3abce-2ac^2d+b^3(-e)+b^2cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}+\frac{x(cd-be)}{c^2}+\frac{ex^2}{2c}$$

Rubi [A] time = 0.15, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(ace+b^2(-e)+bcd\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{\left(3abce-2ac^2d+b^2cd+b^3(-e)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}+\frac{x(cd-be)}{c^2}+\frac{ex^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] ((c*d - b*e)*x)/c^2 + (e*x^2)/(2*c) - ((b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b
*c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*Sqrt[b^2 - 4*a*c]) - ((b
*c*d - b^2*e + a*c*e)*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^2(d+ex)}{a+bx+cx^2}\,dx = \int \left(\frac{cd-be}{c^2}+\frac{ex}{c}-\frac{a(cd-be)+\left(bcd-b^2e+ace\right)x}{c^2\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\int \frac{a(cd-be)+\left(bcd-b^2e+ace\right)x}{a+bx+cx^2}\,dx}{c^2}$$

$$= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\left(bcd-b^2e+ace\right)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^3}+\frac{\left(b^2cd-2ac^2d-b^3e+3abce\right)\int \frac{}{a+b}}{2c^3}$$

$$= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\left(bcd-b^2e+ace\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{\left(b^2cd-2ac^2d-b^3e+3abce\right)}{}$$

$$= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\left(b^2cd-2ac^2d-b^3e+3abce\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}-\frac{\left(bcd-b^2e+ace\right)\mathrm{l}}{2c}$$

Mathematica [A] time = 0.08, size = 119, normalized size = 0.98

$$\frac{\left(-ace+b^2e-bcd\right)\log(a+x(b+cx))+\frac{2\left(3abce-2ac^2d+b^3(-e)+b^2cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+2cx(cd-be)+c^2ex^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*(c*d - b*e)*x + c^2*e*x^2 + (2*(b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b*c*
e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + (-(b*c*d) +
 b^2*e - a*c*e)*Log[a + x*(b + c*x)])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.44, size = 414, normalized size = 3.42

$$\left[\frac{\left(b^2c^2-4ac^3\right)ex^2+\sqrt{b^2-4ac}\left(\left(b^2c-2ac^2\right)d-\left(b^3-3abc\right)e\right)\log\left(\frac{2c^2x^2+2bcx+b^2-2ac-\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+2\left(\left(b^2c^2-4ac^3\right)d-\left(b^3c-4abc^2\right)e\right)x-\left(\left(b^3c-4abc^2\right)d-\left(b^4-5ab^2c+4a^2c^2\right)e\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c^3-4ac^4\right)}, \frac{\left(b^2c^2-4ac^3\right)ex^2-2\sqrt{-b^2+4ac}\left(\left(b^2c-2ac^2\right)d-\left(b^3-3abc\right)e\right)\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+2\left(\left(b^2c^2-4ac^3\right)d-\left(b^3c-4abc^2\right)e\right)x-\left(\left(b^3c-4abc^2\right)d-\left(b^4-5ab^2c+4a^2c^2\right)e\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c^3-4ac^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((b^2*c^2 - 4*a*c^3)*e*x^2 + sqrt(b^2 - 4*a*c)*((b^2*c - 2*a*c^2)*d -
(b^3 - 3*a*b*c)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*
c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*((b^2*c^2 - 4*a*c^3)*d - (b^3*c - 4*
a*b*c^2)*e)*x - ((b^3*c - 4*a*b*c^2)*d - (b^4 - 5*a*b^2*c + 4*a^2*c^2)*e)*l
og(c*x^2 + b*x + a))/(b^2*c^3 - 4*a*c^4), 1/2*((b^2*c^2 - 4*a*c^3)*e*x^2 -
2*sqrt(-b^2 + 4*a*c)*((b^2*c - 2*a*c^2)*d - (b^3 - 3*a*b*c)*e)*arctan(-sqrt
(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*((b^2*c^2 - 4*a*c^3)*d - (b^3
*c - 4*a*b*c^2)*e)*x - ((b^3*c - 4*a*b*c^2)*d - (b^4 - 5*a*b^2*c + 4*a^2*c^
2)*e)*log(c*x^2 + b*x + a))/(b^2*c^3 - 4*a*c^4)]
```

giac [A] time = 0.17, size = 122, normalized size = 1.01

$$\frac{cx^2e + 2\,cdx - 2\,bxe}{2\,c^2} - \frac{\left(bcd - b^2e + ace\right)\log\left(cx^2 + bx + a\right)}{2\,c^3} + \frac{\left(b^2cd - 2\,ac^2d - b^3e + 3\,abce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2 + 4\,ac}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(c*x^2*e + 2*c*d*x - 2*b*x*e)/c^2 - 1/2*(b*c*d - b^2*e + a*c*e)*log(c*x
^2 + b*x + a)/c^3 + (b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b*c*e)*arctan((2*c*x
 + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^3)
```

maple [B] time = 0.04, size = 241, normalized size = 1.99

$$\frac{3abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{2ad\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} - \frac{b^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3} + \frac{b^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} + \frac{e\,x^2}{2c} - \frac{ae\ln\left(c\,x^2+bx+a\right)}{2c^2} + \frac{b^2e\ln\left(c\,x^2+bx+a\right)}{2c^3} - \frac{bd\ln\left(c\,x^2+bx+a\right)}{2c^2} - \frac{bex}{c^2} + \frac{dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/c*e*x^2-1/c^2*b*e*x+1/c*d*x-1/2/c^2*ln(c*x^2+b*x+a)*a*e+1/2/c^3*ln(c*x^
2+b*x+a)*e*b^2-1/2/c^2*ln(c*x^2+b*x+a)*b*d+3/c^2/(4*a*c-b^2)^(1/2)*arctan((
2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*e-2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*a*d-1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*b^3*e+1/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2
*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.17, size = 168, normalized size = 1.39

$$x\left(\frac{d}{c} - \frac{b\,e}{c^2}\right) - \frac{\ln\left(c\,x^2 + b\,x + a\right)\left(4\,e\,a^2\,c^2 - 5\,e\,a\,b^2\,c + 4\,d\,a\,b\,c^2 + e\,b^4 - d\,b^3\,c\right)}{2\left(4\,a\,c^4 - b^2\,c^3\right)} + \frac{e\,x^2}{2\,c} - \frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}} + \frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\left(e\,b^3 - d\,b^2\,c - 3\,a\,e\,b\,c + 2\,a\,d\,c^2\right)}{c^3\,\sqrt{4\,a\,c - b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] x*(d/c - (b*e)/c^2) - (log(a + b*x + c*x^2)*(b^4*e + 4*a^2*c^2*e - b^3*c*d
+ 4*a*b*c^2*d - 5*a*b^2*c*e))/(2*(4*a*c^4 - b^2*c^3)) + (e*x^2)/(2*c) - (at
an(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(b^3*e + 2*a*c^2*d
- b^2*c*d - 3*a*b*c*e))/(c^3*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 2.04, size = 609, normalized size = 5.03

$$x\left(-\frac{be}{c^2} + \frac{d}{c}\right) + \left(-\frac{\sqrt{-4ac+b^2}\left(3abce - 2ac^2d - b^3e + b^2cd\right)}{2c^3\left(4ac-b^2\right)} - \frac{ace - b^2e + bcd}{2c^3}\right)\log\left(x + \frac{2a^2ce - ab^2e + abcd + 4ac^3\left(-\frac{\sqrt{-4ac+b^2}\left(3abce-2ac^2d-b^3e+b^2cd\right)}{2c^3\left(4ac-b^2\right)} - \frac{ace-b^2e+bcd}{2c^3}\right) - b^2c^2\left(-\frac{\sqrt{-4ac+b^2}\left(3abce-2ac^2d-b^3e+b^2cd\right)}{2c^3\left(4ac-b^2\right)} - \frac{ace-b^2e+bcd}{2c^3}\right)}{3abce - 2ac^2d - b^3e + b^2cd}\right) + \left(\frac{\sqrt{-4ac+b^2}\left(3abce - 2ac^2d - b^3e + b^2cd\right)}{2c^3\left(4ac-b^2\right)} - \frac{ace - b^2e + bcd}{2c^3}\right)\log\left(x + \frac{2a^2ce - ab^2e + abcd + 4ac^3\left(\frac{\sqrt{-4ac+b^2}\left(3abce-2ac^2d-b^3e+b^2cd\right)}{2c^3\left(4ac-b^2\right)} - \frac{ace-b^2e+bcd}{2c^3}\right) - b^2c^2\left(\frac{\sqrt{-4ac+b^2}\left(3abce-2ac^2d-b^3e+b^2cd\right)}{2c^3\left(4ac-b^2\right)} - \frac{ace-b^2e+bcd}{2c^3}\right)}{3abce - 2ac^2d - b^3e + b^2cd}\right) + \frac{ex^2}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] x*(-b*e/c**2 + d/c) + (-sqrt(-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*
e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3))*
log(x + (2*a**2*c*e - a*b**2*e + a*b*c*d + 4*a*c**3*(-sqrt(-4*a*c + b**2)*(
3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*
e - b**2*e + b*c*d)/(2*c**3)) - b**2*c**2*(-sqrt(-4*a*c + b**2)*(3*a*b*c*e
- 2*a*c**2*d - b**3*e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e
 + b*c*d)/(2*c**3)))/(3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*d)) + (sqrt(
-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*d)/(2*c**3*(4*a*c
- b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3))*log(x + (2*a**2*c*e - a*b**2*
e + a*b*c*d + 4*a*c**3*(sqrt(-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*
e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3))
- b**2*c**2*(sqrt(-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*
d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3)))/(3*a*b*c*e
 - 2*a*c**2*d - b**3*e + b**2*c*d)) + e*x**2/(2*c)
```

3.809 $\int \frac{x(d+ex)}{a+bx+cx^2} dx$

Optimal. Leaf size=85

$$\frac{\left(2ace+b^2(-e)+bcd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}+\frac{ex}{c}$$

Rubi [A] time = 0.08, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {773, 634, 618, 206, 628}

$$\frac{\left(2ace+b^2(-e)+bcd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (e*x)/c + ((b*c*d - b^2*e + 2*a*c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]]
)/(c^2*Sqrt[b^2 - 4*a*c]) + ((c*d - b*e)*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x(d+ex)}{a+bx+cx^2}\,dx &= \frac{ex}{c}+\frac{\int \frac{-ae+(cd-be)x}{a+bx+cx^2}\,dx}{c}\\
&= \frac{ex}{c}+\frac{(cd-be)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2}-\frac{\left(bcd-b^2e+2ace\right)\int \frac{1}{a+bx+cx^2}\,dx}{2c^2}\\
&= \frac{ex}{c}+\frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}+\frac{\left(bcd-b^2e+2ace\right)\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{c^2}\\
&= \frac{ex}{c}+\frac{\left(bcd-b^2e+2ace\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 86, normalized size = 1.01

$$
\frac{\frac{2\left(-2ace+b^2e-bcd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+(cd-be)\log(a+x(b+cx))+2cex}{2c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*e*x + (2*(-(b*c*d) + b^2*e - 2*a*c*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4
*a*c]])/Sqrt[-b^2 + 4*a*c] + (c*d - b*e)*Log[a + x*(b + c*x)])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{x(d+ex)}{a+bx+cx^2}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.43, size = 289, normalized size = 3.40

$$
\left[\frac{2\left(b^2c-4ac^2\right)ex+\left(bcd-\left(b^2-2ac\right)e\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+\left(\left(b^2c-4ac^2\right)d-\left(b^3-4abc\right)e\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c^2-4ac^3\right)}, \frac{2\left(b^2c-4ac^2\right)ex+2\left(bcd-\left(b^2-2ac\right)e\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+\left(\left(b^2c-4ac^2\right)d-\left(b^3-4abc\right)e\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c^2-4ac^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(b^2*c - 4*a*c^2)*e*x + (b*c*d - (b^2 - 2*a*c)*e)*sqrt(b^2 - 4*a*c)
*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c
*x^2 + b*x + a)) + ((b^2*c - 4*a*c^2)*d - (b^3 - 4*a*b*c)*e)*log(c*x^2 + b*
x + a))/(b^2*c^2 - 4*a*c^3), 1/2*(2*(b^2*c - 4*a*c^2)*e*x + 2*(b*c*d - (b^2
 - 2*a*c)*e)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2
 - 4*a*c)) + ((b^2*c - 4*a*c^2)*d - (b^3 - 4*a*b*c)*e)*log(c*x^2 + b*x + a)
)/(b^2*c^2 - 4*a*c^3)]
```

giac [A] time = 0.16, size = 88, normalized size = 1.04

$$
\frac{xe}{c}+\frac{(cd-be)\log\left(cx^2+bx+a\right)}{2\,c^2}-\frac{\left(bcd-b^2e+2\,ace\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] x*e/c + 1/2*(c*d - b*e)*log(c*x^2 + b*x + a)/c^2 - (b*c*d - b^2*e + 2*a*c*e
)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^2)
```

maple [B] time = 0.04, size = 161, normalized size = 1.89

$$-\frac{2ae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}-\frac{bd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{be\ln\left(cx^2+bx+a\right)}{2c^2}+\frac{d\ln\left(cx^2+bx+a\right)}{2c}+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/c*e*x-1/2/c^2*ln(c*x^2+b*x+a)*b*e+1/2/c*ln(c*x^2+b*x+a)*d-2/c/(4*a*c-b^2)
^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*e+1/c^2/(4*a*c-b^2)^(1/2)*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e-1/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.34, size = 127, normalized size = 1.49

$$\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(e\,b^3-d\,b^2\,c-4\,a\,e\,b\,c+4\,a\,d\,c^2\right)}{2\,\left(4\,a\,c^3-b^2\,c^2\right)}+\frac{e\,x}{c}-\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\,\left(-e\,b^2+c\,d\,b+2\,a\,c\,e\right)}{c^2\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] (log(a + b*x + c*x^2)*(b^3*e + 4*a*c^2*d - b^2*c*d - 4*a*b*c*e))/(2*(4*a*c^
3 - b^2*c^2)) + (e*x)/c - (atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^
2)^(1/2))*(2*a*c*e - b^2*e + b*c*d))/(c^2*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 1.35, size = 423, normalized size = 4.98

$$\left(-\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)\log\left(x+\frac{-abe-4ac^2\left(-\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)+2acd+b^2c\left(-\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)}{2ace-b^2e+bcd}\right)+\left(\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)\log\left(x+\frac{-abe-4ac^2\left(\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)+2acd+b^2c\left(\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)}{2ace-b^2e+bcd}\right)+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] (-sqrt(-4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) -
(b*e - c*d)/(2*c**2))*log(x + (-a*b*e - 4*a*c**2*(-sqrt(-4*a*c + b**2)*(2*a
*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) - (b*e - c*d)/(2*c**2)) + 2*
a*c*d + b**2*c*(-sqrt(-4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*
a*c - b**2)) - (b*e - c*d)/(2*c**2)))/(2*a*c*e - b**2*e + b*c*d)) + (sqrt(-
4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) - (b*e - c
*d)/(2*c**2))*log(x + (-a*b*e - 4*a*c**2*(sqrt(-4*a*c + b**2)*(2*a*c*e - b*
*2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) - (b*e - c*d)/(2*c**2)) + 2*a*c*d + b
**2*c*(sqrt(-4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2
)) - (b*e - c*d)/(2*c**2)))/(2*a*c*e - b**2*e + b*c*d)) + e*x/c
```

3.810 $\int \frac{d+ex}{a+bx+cx^2} dx$

Optimal. Leaf size=66

$$\frac{e\log\left(a+bx+cx^2\right)}{2c}-\frac{(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}$$

Rubi [A] time = 0.03, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {634, 618, 206, 628}

$$\frac{e\log\left(a+bx+cx^2\right)}{2c}-\frac{(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] -(((2*c*d - b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*Sqrt[b^2 - 4*a*
c])) + (e*Log[a + b*x + c*x^2])/(2*c)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{a+bx+cx^2}\,dx &= \frac{e\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c}+\frac{(2cd-be)\int \frac{1}{a+bx+cx^2}\,dx}{2c}\\
&= \frac{e\log\left(a+bx+cx^2\right)}{2c}-\frac{(2cd-be)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{c}\\
&= -\frac{(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{e\log\left(a+bx+cx^2\right)}{2c}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 66, normalized size = 1.00

$$\frac{e\log(a+x(b+cx))-\frac{2(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((-2*(-2*c*d + b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a
*c] + e*Log[a + x*(b + c*x)])/(2*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.44, size = 204, normalized size = 3.09

$$\left[\frac{(b^2-4\,ac)e\log\left(cx^2+bx+a\right)-\sqrt{b^2-4\,ac}\,(2\,cd-be)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)}{2\left(b^2c-4\,ac^2\right)},\ \frac{(b^2-4\,ac)e\log\left(cx^2+bx+a\right)-2\,\sqrt{-b^2+4\,ac}\,(2\,cd-be)\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right)}{2\left(b^2c-4\,ac^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((b^2 - 4*a*c)*e*log(c*x^2 + b*x + a) - sqrt(b^2 - 4*a*c)*(2*c*d - b*e
)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(
c*x^2 + b*x + a)))/(b^2*c - 4*a*c^2), 1/2*((b^2 - 4*a*c)*e*log(c*x^2 + b*x
+ a) - 2*sqrt(-b^2 + 4*a*c)*(2*c*d - b*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x
 + b)/(b^2 - 4*a*c)))/(b^2*c - 4*a*c^2)]
```

giac [A] time = 0.17, size = 65, normalized size = 0.98

$$\frac{e\log\left(cx^2+bx+a\right)}{2\,c}+\frac{(2\,cd-be)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*e*log(c*x^2 + b*x + a)/c + (2*c*d - b*e)*arctan((2*c*x + b)/sqrt(-b^2 +
 4*a*c))/(sqrt(-b^2 + 4*a*c)*c)
```

maple [A] time = 0.05, size = 93, normalized size = 1.41

$$-\frac{be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{e\ln\left(c\,x^2+bx+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/c*e*ln(c*x^2+b*x+a)+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*d-1/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b/c*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.12, size = 162, normalized size = 2.45

$$\frac{2\,d\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{\sqrt{4\,a\,c-b^2}}-\frac{b^2\,e\,\ln\left(c\,x^2+b\,x+a\right)}{2\,\left(4\,a\,c^2-b^2\,c\right)}+\frac{2\,a\,c\,e\,\ln\left(c\,x^2+b\,x+a\right)}{4\,a\,c^2-b^2\,c}-\frac{b\,e\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{c\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2),x)
```

```
[Out] (2*d*atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2)))/(4*a*c - b^
2)^(1/2) - (b^2*e*log(a + b*x + c*x^2))/(2*(4*a*c^2 - b^2*c)) + (2*a*c*e*lo
g(a + b*x + c*x^2))/(4*a*c^2 - b^2*c) - (b*e*atan(b/(4*a*c - b^2)^(1/2) + (
2*c*x)/(4*a*c - b^2)^(1/2)))/(c*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 0.74, size = 280, normalized size = 4.24

$$\left(\frac{e}{2c}-\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)\log\left(x+\frac{-4ac\left(\frac{e}{2c}-\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)+2ae+b^2\left(\frac{e}{2c}-\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)-bd}{be-2cd}\right)+\left(\frac{e}{2c}+\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)\log\left(x+\frac{-4ac\left(\frac{e}{2c}+\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)+2ae+b^2\left(\frac{e}{2c}+\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)-bd}{be-2cd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] (e/(2*c) - sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c*(4*a*c - b**2)))*log(x +
(-4*a*c*(e/(2*c) - sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c*(4*a*c - b**2)))
+ 2*a*e + b**2*(e/(2*c) - sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c*(4*a*c - b
**2))) - b*d)/(b*e - 2*c*d)) + (e/(2*c) + sqrt(-4*a*c + b**2)*(b*e - 2*c*d)
/(2*c*(4*a*c - b**2)))*log(x + (-4*a*c*(e/(2*c) + sqrt(-4*a*c + b**2)*(b*e
- 2*c*d)/(2*c*(4*a*c - b**2))) + 2*a*e + b**2*(e/(2*c) + sqrt(-4*a*c + b**2
)*(b*e - 2*c*d)/(2*c*(4*a*c - b**2))) - b*d)/(b*e - 2*c*d))
```

3.811 $\int \frac{d+ex}{x(a+bx+cx^2)}\,dx$

Optimal. Leaf size=71

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}-\frac{d\log\left(a+bx+cx^2\right)}{2a}+\frac{d\log(x)}{a}$$

Rubi [A] time = 0.09, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}-\frac{d\log\left(a+bx+cx^2\right)}{2a}+\frac{d\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] ((b*d - 2*a*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]
) + (d*Log[x])/a - (d*Log[a + b*x + c*x^2])/(2*a)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x\left(a+bx+cx^2\right)}\,dx &= \int \left(\frac{d}{ax}+\frac{-bd+ae-cdx}{a\left(a+bx+cx^2\right)}\right)dx \\
&= \frac{d\log(x)}{a}+\frac{\int \frac{-bd+ae-cdx}{a+bx+cx^2}\,dx}{a} \\
&= \frac{d\log(x)}{a}-\frac{d\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a}+\frac{(-bd+2ae)\int \frac{1}{a+bx+cx^2}\,dx}{2a} \\
&= \frac{d\log(x)}{a}-\frac{d\log\left(a+bx+cx^2\right)}{2a}-\frac{(-bd+2ae)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{a} \\
&= \frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}+\frac{d\log(x)}{a}-\frac{d\log\left(a+bx+cx^2\right)}{2a}
\end{aligned}
$$

Mathematica [A] time = 0.11, size = 71, normalized size = 1.00

$$
-\frac{\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+d(\log(a+x(b+cx))-2\log(x))}{2a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] -1/2*((2*(b*d - 2*a*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 +
4*a*c] + d*(-2*Log[x] + Log[a + x*(b + c*x)]))/a
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{d+ex}{x\left(a+bx+cx^2\right)}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x*(a + b*x + c*x^2)), x]
```

fricas [A] time = 0.53, size = 228, normalized size = 3.21

$$
\left[-\frac{\left(b^2-4\,ac\right)d\log\left(cx^2+bx+a\right)-2\left(b^2-4\,ac\right)d\log(x)+\sqrt{b^2-4\,ac}\,(bd-2\,ae)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)}{2\left(ab^2-4\,a^2c\right)},-\frac{\left(b^2-4\,ac\right)d\log\left(cx^2+bx+a\right)-2\left(b^2-4\,ac\right)d\log(x)-2\,\sqrt{-b^2+4\,ac}\,(bd-2\,ae)\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right)}{2\left(ab^2-4\,a^2c\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [-1/2*((b^2 - 4*a*c)*d*log(c*x^2 + b*x + a) - 2*(b^2 - 4*a*c)*d*log(x) + sq
rt(b^2 - 4*a*c)*(b*d - 2*a*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt
(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)))/(a*b^2 - 4*a^2*c), -1/2*((b^
2 - 4*a*c)*d*log(c*x^2 + b*x + a) - 2*(b^2 - 4*a*c)*d*log(x) - 2*sqrt(-b^2
+ 4*a*c)*(b*d - 2*a*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)
))/(a*b^2 - 4*a^2*c)]
```

giac [A] time = 0.16, size = 72, normalized size = 1.01

$$
-\frac{d\log\left(cx^2+bx+a\right)}{2\,a}+\frac{d\log\left(|x|\right)}{a}-\frac{(bd-2\,ae)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/2*d*log(c*x^2 + b*x + a)/a + d*log(abs(x))/a - (b*d - 2*a*e)*arctan((2*c
*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*a)
```

maple [A] time = 0.06, size = 100, normalized size = 1.41

$$-\frac{bd \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\, a}+\frac{2e \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{d\ln(x)}{a}-\frac{d\ln\left(c\,x^2+bx+a\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x+a),x)
```

```
[Out] -1/2*d*ln(c*x^2+b*x+a)/a+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*e-1/a/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d+1/a*d
*ln(x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.95, size = 375, normalized size = 5.28

$$\ln\left(a^2 e\sqrt{b^2-4ac}-2ab^2 d+a^2 be+6a^2 cd-2b^3 dx-2abd\sqrt{b^2-4ac}+ab^2 ex-2a^2 cex-2b^2 dx\sqrt{b^2-4ac}+7abcdx+abex\sqrt{b^2-4ac}+3acdx\sqrt{b^2-4ac}\right)\left(\frac{2ae\sqrt{b^2-4ac}-bd\sqrt{b^2-4ac}}{2ab^2-8a^2c}-\frac{d}{2a}\right)-\ln\left(a^2 e\sqrt{b^2-4ac}+2ab^2 d-a^2 be-6a^2 cd+2b^3 dx-2abd\sqrt{b^2-4ac}-ab^2 ex+2a^2 cex-2b^2 dx\sqrt{b^2-4ac}-7abcdx+abex\sqrt{b^2-4ac}+3acdx\sqrt{b^2-4ac}\right)\left(\frac{2ae\sqrt{b^2-4ac}-bd\sqrt{b^2-4ac}}{2ab^2-8a^2c}+\frac{d}{2a}\right)+\frac{d\ln(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + b*x + c*x^2)),x)
```

```
[Out] log(a^2*e*(b^2 - 4*a*c)^(1/2) - 2*a*b^2*d + a^2*b*e + 6*a^2*c*d - 2*b^3*d*x
 - 2*a*b*d*(b^2 - 4*a*c)^(1/2) + a*b^2*e*x - 2*a^2*c*e*x - 2*b^2*d*x*(b^2 -
 4*a*c)^(1/2) + 7*a*b*c*d*x + a*b*e*x*(b^2 - 4*a*c)^(1/2) + 3*a*c*d*x*(b^2
- 4*a*c)^(1/2))*((2*a*e*(b^2 - 4*a*c)^(1/2) - b*d*(b^2 - 4*a*c)^(1/2))/(2*a
*b^2 - 8*a^2*c) - d/(2*a)) - log(a^2*e*(b^2 - 4*a*c)^(1/2) + 2*a*b^2*d - a^
2*b*e - 6*a^2*c*d + 2*b^3*d*x - 2*a*b*d*(b^2 - 4*a*c)^(1/2) - a*b^2*e*x + 2
*a^2*c*e*x - 2*b^2*d*x*(b^2 - 4*a*c)^(1/2) - 7*a*b*c*d*x + a*b*e*x*(b^2 - 4
*a*c)^(1/2) + 3*a*c*d*x*(b^2 - 4*a*c)^(1/2))*((2*a*e*(b^2 - 4*a*c)^(1/2) -
b*d*(b^2 - 4*a*c)^(1/2))/(2*a*b^2 - 8*a^2*c) + d/(2*a)) + (d*log(x))/a
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.812 $\int \frac{d+ex}{x^2(a+bx+cx^2)}\,dx$

Optimal. Leaf size=104

$$-\frac{\left(-abe-2acd+b^2d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\sqrt{b^2-4ac}}+\frac{(bd-ae)\log\left(a+bx+cx^2\right)}{2a^2}-\frac{\log(x)(bd-ae)}{a^2}-\frac{d}{ax}$$

Rubi [A] time = 0.15, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(-abe-2acd+b^2d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\sqrt{b^2-4ac}}+\frac{(bd-ae)\log\left(a+bx+cx^2\right)}{2a^2}-\frac{\log(x)(bd-ae)}{a^2}-\frac{d}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] -(d/(a*x)) - ((b^2*d - 2*a*c*d - a*b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*
c]])/(a^2*Sqrt[b^2 - 4*a*c]) - ((b*d - a*e)*Log[x])/a^2 + ((b*d - a*e)*Log[
a + b*x + c*x^2])/(2*a^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{d}{ax^2}+\frac{-bd+ae}{a^2x}+\frac{b^2d-acd-abe+c(bd-ae)x}{a^2\left(a+bx+cx^2\right)}\right)dx$$
$$= -\frac{d}{ax}-\frac{(bd-ae)\log(x)}{a^2}+\frac{\int \frac{b^2d-acd-abe+c(bd-ae)x}{a+bx+cx^2}\,dx}{a^2}$$
$$= -\frac{d}{ax}-\frac{(bd-ae)\log(x)}{a^2}+\frac{(bd-ae)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a^2}+\frac{\left(b^2d-2acd-abe\right)\int \frac{1}{a+bx+cx^2}\,dx}{2a^2}$$
$$= -\frac{d}{ax}-\frac{(bd-ae)\log(x)}{a^2}+\frac{(bd-ae)\log\left(a+bx+cx^2\right)}{2a^2}-\frac{\left(b^2d-2acd-abe\right)\text{Subst}\left(\int \frac{1}{b}\right.}{a^2}$$
$$= -\frac{d}{ax}-\frac{\left(b^2d-2acd-abe\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\sqrt{b^2-4ac}}-\frac{(bd-ae)\log(x)}{a^2}+\frac{(bd-ae)\log\left(a+bx\right.}{2a^2}$$

Mathematica [A] time = 0.08, size = 100, normalized size = 0.96

$$\frac{\frac{2\left(-abe-2acd+b^2d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+(bd-ae)\log(a+x(b+cx))+2\log(x)(ae-bd)-\frac{2ad}{x}}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a*d)/x + (2*(b^2*d - 2*a*c*d - a*b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4
*a*c]])/Sqrt[-b^2 + 4*a*c] + 2*(-(b*d) + a*e)*Log[x] + (b*d - a*e)*Log[a +
x*(b + c*x)])/(2*a^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(a + b*x + c*x^2)), x]
```

fricas [A] time = 0.68, size = 361, normalized size = 3.47

$$\left[\frac{\left(abe-\left(b^2-2ac\right)d\right)\sqrt{b^2-4ac}\,x\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+\left(\left(b^3-4abc\right)d-\left(ab^2-4a^2c\right)e\right)x\log\left(cx^2+bx+a\right)-2\left(\left(b^3-4abc\right)d-\left(ab^2-4a^2c\right)e\right)x\log(x)-2\left(ab^2-4a^2c\right)d}{2\left(a^2b^2-4a^3c\right)x}, \frac{2\left(abe-\left(b^2-2ac\right)d\right)\sqrt{-b^2+4ac}\,x\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+\left(\left(b^3-4abc\right)d-\left(ab^2-4a^2c\right)e\right)x\log\left(cx^2+bx+a\right)-2\left(\left(b^3-4abc\right)d-\left(ab^2-4a^2c\right)e\right)x\log(x)-2\left(ab^2-4a^2c\right)d}{2\left(a^2b^2-4a^3c\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((a*b*e - (b^2 - 2*a*c)*d)*sqrt(b^2 - 4*a*c)*x*log((2*c^2*x^2 + 2*b*c*
x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + ((b^3
 - 4*a*b*c)*d - (a*b^2 - 4*a^2*c)*e)*x*log(c*x^2 + b*x + a) - 2*((b^3 - 4*a
*b*c)*d - (a*b^2 - 4*a^2*c)*e)*x*log(x) - 2*(a*b^2 - 4*a^2*c)*d)/((a^2*b^2
- 4*a^3*c)*x), 1/2*(2*(a*b*e - (b^2 - 2*a*c)*d)*sqrt(-b^2 + 4*a*c)*x*arctan
(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + ((b^3 - 4*a*b*c)*d - (a*b
^2 - 4*a^2*c)*e)*x*log(c*x^2 + b*x + a) - 2*((b^3 - 4*a*b*c)*d - (a*b^2 - 4
*a^2*c)*e)*x*log(x) - 2*(a*b^2 - 4*a^2*c)*d)/((a^2*b^2 - 4*a^3*c)*x)]
```

giac [A] time = 0.15, size = 105, normalized size = 1.01

$$\frac{(bd-ae)\log\left(cx^2+bx+a\right)}{2a^2}-\frac{(bd-ae)\log\left(|x|\right)}{a^2}+\frac{\left(b^2d-2acd-abe\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\sqrt{-b^2+4ac}\,a^2}-\frac{d}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(b*d - a*e)*log(c*x^2 + b*x + a)/a^2 - (b*d - a*e)*log(abs(x))/a^2 + (b
^2*d - 2*a*c*d - a*b*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 +
 4*a*c)*a^2) - d/(a*x)
```

maple [A] time = 0.06, size = 180, normalized size = 1.73

$$-\frac{be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a}-\frac{2cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a}+\frac{b^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a^2}+\frac{e\ln(x)}{a}-\frac{e\ln\left(cx^2+bx+a\right)}{2a}-\frac{bd\ln(x)}{a^2}+\frac{bd\ln\left(cx^2+bx+a\right)}{2a^2}-\frac{d}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x+a),x)
```

```
[Out] -1/2/a*ln(c*x^2+b*x+a)*e+1/2/a^2*ln(c*x^2+b*x+a)*b*d-1/a/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*e-2/a/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*c*d+1/a^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-
b^2)^(1/2))*b^2*d-1/a*d/x+1/a*e*ln(x)-1/a^2*ln(x)*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.96, size = 791, normalized size = 7.61

$$\frac{\ln(x)\,(ae-bd)}{a^2}-\frac{d}{ax}+\frac{\ln\left(\frac{bc^2d^2-ac^2de}{a^2}+\frac{\left(\frac{ea^2bc+da^2c^2-dab^2c}{a^2}+\frac{\left(\frac{x\left(6a^3c^2-2a^2b^2c\right)}{a^2}-abc\right)\left(d\left(b^2-4ac\right)^{3/2}+b^2d\sqrt{b^2-4ac}-2ae\left(4ac-b^2\right)+2bd\left(4ac-b^2\right)-2abe\sqrt{b^2-4ac}\right)}{16a^3c-4a^2b^2}+\frac{x\left(3a^2c^2e-2abc^2d\right)}{a^2}\right)\left(d\left(b^2-4ac\right)^{3/2}+b^2d\sqrt{b^2-4ac}-2ae\left(4ac-b^2\right)+2bd\left(4ac-b^2\right)-2abe\sqrt{b^2-4ac}\right)}{16a^3c-4a^2b^2}+\frac{c^3d^2x}{a^2}\right)\left(d\left(b^2-4ac\right)^{3/2}+b^2d\sqrt{b^2-4ac}-2ae\left(4ac-b^2\right)+2bd\left(4ac-b^2\right)-2abe\sqrt{b^2-4ac}\right)}{16a^3c-4a^2b^2}-\frac{\ln\left(\frac{bc^2d^2-ac^2de}{a^2}-\frac{\left(\frac{ea^2bc+da^2c^2-dab^2c}{a^2}-\frac{\left(\frac{x\left(6a^3c^2-2a^2b^2c\right)}{a^2}-abc\right)\left(d\left(b^2-4ac\right)^{3/2}+b^2d\sqrt{b^2-4ac}+2ae\left(4ac-b^2\right)-2bd\left(4ac-b^2\right)-2abe\sqrt{b^2-4ac}\right)}{16a^3c-4a^2b^2}+\frac{x\left(3a^2c^2e-2abc^2d\right)}{a^2}\right)\left(d\left(b^2-4ac\right)^{3/2}+b^2d\sqrt{b^2-4ac}+2ae\left(4ac-b^2\right)-2bd\left(4ac-b^2\right)-2abe\sqrt{b^2-4ac}\right)}{16a^3c-4a^2b^2}+\frac{c^3d^2x}{a^2}\right)\left(d\left(b^2-4ac\right)^{3/2}+b^2d\sqrt{b^2-4ac}+2ae\left(4ac-b^2\right)-2bd\left(4ac-b^2\right)-2abe\sqrt{b^2-4ac}\right)}{16a^3c-4a^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + b*x + c*x^2)),x)
```

```
[Out] (log(x)*(a*e - b*d))/a^2 - d/(a*x) + (log((b*c^2*d^2 - a*c^2*d*e)/a^2 + (((
a^2*c^2*d - a*b^2*c*d + a^2*b*c*e)/a^2 + (((x*(6*a^3*c^2 - 2*a^2*b^2*c))/a^
2 - a*b*c)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*e*(4*a*
c - b^2) + 2*b*d*(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c -
4*a^2*b^2) + (x*(3*a^2*c^2*e - 2*a*b*c^2*d))/a^2)*(d*(b^2 - 4*a*c)^(3/2) +
b^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*e*(4*a*c - b^2) + 2*b*d*(4*a*c - b^2) - 2*a
*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*a^2*b^2) + (c^3*d^2*x)/a^2)*(d*(b^
2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*e*(4*a*c - b^2) + 2*b*d*
(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*a^2*b^2) - (log
((b*c^2*d^2 - a*c^2*d*e)/a^2 - (((a^2*c^2*d - a*b^2*c*d + a^2*b*c*e)/a^2 -
(((x*(6*a^3*c^2 - 2*a^2*b^2*c))/a^2 - a*b*c)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d
*(b^2 - 4*a*c)^(1/2) + 2*a*e*(4*a*c - b^2) - 2*b*d*(4*a*c - b^2) - 2*a*b*e*
(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*a^2*b^2) + (x*(3*a^2*c^2*e - 2*a*b*c^2*
```

```
d))/a^2)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1/2) + 2*a*e*(4*a*c
- b^2) - 2*b*d*(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*
a^2*b^2) + (c^3*d^2*x)/a^2)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1
/2) + 2*a*e*(4*a*c - b^2) - 2*b*d*(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/
2)))/(16*a^3*c - 4*a^2*b^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.813 $\int \frac{d+ex}{x^3(a+bx+cx^2)}\,dx$

Optimal. Leaf size=145

$$-\frac{(-abe-acd+b^2d)\log(a+bx+cx^2)}{2a^3}+\frac{\log(x)(-abe-acd+b^2d)}{a^3}+\frac{bd-ae}{a^2x}+\frac{(2a^2ce-ab^2e-3abcd+b^3d)\,\mathrm{ta}}{a^3\sqrt{b^2-4ac}}$$

Rubi [A] time = 0.23, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {800, 634, 618, 206, 628}

$$-\frac{(-abe-acd+b^2d)\log(a+bx+cx^2)}{2a^3}+\frac{\log(x)(-abe-acd+b^2d)}{a^3}+\frac{(2a^2ce-ab^2e-3abcd+b^3d)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^3\sqrt{b^2-4ac}}+\frac{bd-ae}{a^2x}-\frac{d}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -d/(2*a*x^2) + (b*d - a*e)/(a^2*x) + ((b^3*d - 3*a*b*c*d - a*b^2*e + 2*a^2*
c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(a^3*Sqrt[b^2 - 4*a*c]) + ((b^
2*d - a*c*d - a*b*e)*Log[x])/a^3 - ((b^2*d - a*c*d - a*b*e)*Log[a + b*x + c
*x^2])/(2*a^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{d}{ax^3}+\frac{-bd+ae}{a^2x^2}+\frac{b^2d-acd-abe}{a^3x}+\frac{-b^3d+2abcd+ab^2e-a^2ce-c\left(b^2d-acd-\right.}{a^3\left(a+bx+cx^2\right)}\right.$$

$$= -\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^2d-acd-abe\right)\log(x)}{a^3}+\frac{\int \frac{-b^3d+2abcd+ab^2e-a^2ce-c\left(b^2d-acd-abe\right)x}{a+bx+cx^2}\,dx}{a^3}$$

$$= -\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^2d-acd-abe\right)\log(x)}{a^3}-\frac{\left(b^2d-acd-abe\right)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a^3}-\frac{\left(b^3d\right.}{}$$

$$= -\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^2d-acd-abe\right)\log(x)}{a^3}-\frac{\left(b^2d-acd-abe\right)\log\left(a+bx+cx^2\right)}{2a^3}+$$

$$= -\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^3d-3abcd-ab^2e+2a^2ce\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^3\sqrt{b^2-4ac}}+\frac{\left(b^2d-acd-abe\right.}{a^3}$$

Mathematica [A] time = 0.13, size = 141, normalized size = 0.97

$$\frac{\frac{2\left(-2a^2ce+ab^2e+3abcd+b^3(-d)\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{a^2d}{x^2}+2\log(x)\left(-abe-acd+b^2d\right)+\left(abe+acd+b^2(-d)\right)\log(a+x(b+cx))+\frac{2a(bd-ae)}{x}}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] (-((a^2*d)/x^2) + (2*a*(b*d - a*e))/x + (2*(-(b^3*d) + 3*a*b*c*d + a*b^2*e
- 2*a^2*c*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 2
*(b^2*d - a*c*d - a*b*e)*Log[x] + (-(b^2*d) + a*c*d + a*b*e)*Log[a + x*(b +
 c*x)])/(2*a^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(a + b*x + c*x^2)), x]
```

fricas [A] time = 0.83, size = 517, normalized size = 3.57

$$\left[\frac{\sqrt{b^2-4ac}\left(\left(b^3-3abc\right)d-\left(ab^2-2a^2c\right)e\right)x^2\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)-\left(\left(b^4-5ab^2c+4a^2c^2\right)d-\left(ab^3-4a^2bc\right)e\right)x^2\log\left(cx^2+bx+a\right)+2\left(\left(b^4-5ab^2c+4a^2c^2\right)d-\left(ab^3-4a^2bc\right)e\right)x^2\log(x)-\left(a^2b^2-4a^3c\right)d+2\left(\left(ab^3-4a^2bc\right)d-\left(a^2b^2-4a^3c\right)e\right)x}{2\left(a^3b^2-4a^4c\right)x^2}, \frac{2\sqrt{-b^2+4ac}\left(\left(b^3-3abc\right)d-\left(ab^2-2a^2c\right)e\right)x^2\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)-\left(\left(b^4-5ab^2c+4a^2c^2\right)d-\left(ab^3-4a^2bc\right)e\right)x^2\log\left(cx^2+bx+a\right)+2\left(\left(b^4-5ab^2c+4a^2c^2\right)d-\left(ab^3-4a^2bc\right)e\right)x^2\log(x)-\left(a^2b^2-4a^3c\right)d+2\left(\left(ab^3-4a^2bc\right)d-\left(a^2b^2-4a^3c\right)e\right)x}{2\left(a^3b^2-4a^4c\right)x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b^2 - 4*a*c)*((b^3 - 3*a*b*c)*d - (a*b^2 - 2*a^2*c)*e)*x^2*log((
2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
 b*x + a)) - ((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d - (a*b^3 - 4*a^2*b*c)*e)*x^2*
log(c*x^2 + b*x + a) + 2*((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d - (a*b^3 - 4*a^2*
b*c)*e)*x^2*log(x) - (a^2*b^2 - 4*a^3*c)*d + 2*((a*b^3 - 4*a^2*b*c)*d - (a^
2*b^2 - 4*a^3*c)*e)*x)/((a^3*b^2 - 4*a^4*c)*x^2), 1/2*(2*sqrt(-b^2 + 4*a*c)
*((b^3 - 3*a*b*c)*d - (a*b^2 - 2*a^2*c)*e)*x^2*arctan(-sqrt(-b^2 + 4*a*c)*(
2*c*x + b)/(b^2 - 4*a*c)) - ((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d - (a*b^3 - 4*a
^2*b*c)*e)*x^2*log(c*x^2 + b*x + a) + 2*((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d -
```

```
(a*b^3 - 4*a^2*b*c)*e)*x^2*log(x) - (a^2*b^2 - 4*a^3*c)*d + 2*((a*b^3 - 4*a
^2*b*c)*d - (a^2*b^2 - 4*a^3*c)*e)*x)/((a^3*b^2 - 4*a^4*c)*x^2)]
```

giac [A] time = 0.18, size = 152, normalized size = 1.05

$$-\frac{\left(b^2d-acd-abe\right)\log\left(cx^2+bx+a\right)}{2\,a^3}+\frac{\left(b^2d-acd-abe\right)\log\left(|x|\right)}{a^3}-\frac{\left(b^3d-3\,abcd-ab^2e+2\,a^2ce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,a^3}-\frac{a^2d-2\left(abd-a^2e\right)x}{2\,a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/2*(b^2*d - a*c*d - a*b*e)*log(c*x^2 + b*x + a)/a^3 + (b^2*d - a*c*d - a*
b*e)*log(abs(x))/a^3 - (b^3*d - 3*a*b*c*d - a*b^2*e + 2*a^2*c*e)*arctan((2*
c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*a^3) - 1/2*(a^2*d - 2*(a*b
*d - a^2*e)*x)/(a^3*x^2)
```

maple [A] time = 0.07, size = 273, normalized size = 1.88

$$-\frac{2ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,a}+\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,a^2}+\frac{3bcd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,a^2}-\frac{b^3d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,a^3}-\frac{be\ln(x)}{a^2}+\frac{be\ln\left(cx^2+bx+a\right)}{2a^2}-\frac{cd\ln(x)}{a^2}+\frac{cd\ln\left(cx^2+bx+a\right)}{2a^2}+\frac{b^2d\ln(x)}{a^3}-\frac{b^2d\ln\left(cx^2+bx+a\right)}{2a^3}-\frac{e}{ax}+\frac{bd}{a^2x}-\frac{d}{2a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/a^2*ln(c*x^2+b*x+a)*b*e+1/2/a^2*c*ln(c*x^2+b*x+a)*d-1/2/a^3*ln(c*x^2+b*
x+a)*b^2*d-2/a/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c*e+1/
a^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e+3/a^2/(4*a*
c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d-1/a^3/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d-1/2/a*d/x^2-1/a*e/x+1/a^2/x*b
*d-1/a^2*ln(x)*b*e-1/a^2*c*d*ln(x)+1/a^3*ln(x)*b^2*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.49, size = 814, normalized size = 5.61

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + b*x + c*x^2)),x)
```

```
[Out] (log(6*a^3*c^2*d - 2*a^2*b^3*e + 2*a*b^4*d + 2*b^5*d*x + 7*a^3*b*c*e - 2*a*
b^4*e*x + 2*a*b^3*d*(b^2 - 4*a*c)^(1/2) + a^3*c*e*(b^2 - 4*a*c)^(1/2) + 2*b
^4*d*x*(b^2 - 4*a*c)^(1/2) - 9*a^2*b^2*c*d - 2*a^3*c^2*e*x - 2*a^2*b^2*e*(b
^2 - 4*a*c)^(1/2) - 2*a*b^3*e*x*(b^2 - 4*a*c)^(1/2) + 9*a^2*b*c^2*d*x + 8*a
^2*b^2*c*e*x + 3*a^2*c^2*d*x*(b^2 - 4*a*c)^(1/2) - 10*a*b^3*c*d*x - 3*a^2*b
*c*d*(b^2 - 4*a*c)^(1/2) - 6*a*b^2*c*d*x*(b^2 - 4*a*c)^(1/2) + 4*a^2*b*c*e*
x*(b^2 - 4*a*c)^(1/2))*(a^2*(2*c^2*d + 2*b*c*e + c*e*(b^2 - 4*a*c)^(1/2)) +
 (b^4*d)/2 - a*((b^3*e)/2 + (b^2*e*(b^2 - 4*a*c)^(1/2))/2 + (5*b^2*c*d)/2 +
 (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) + (b^3*d*(b^2 - 4*a*c)^(1/2))/2))/(4*a^4*
c - a^3*b^2) - (log(x)*(a*(b*e + c*d) - b^2*d))/a^3 - (d/(2*a) + (x*(a*e -
```

```
b*d))/a^2)/x^2 + (log(2*a^2*b^3*e - 6*a^3*c^2*d - 2*a*b^4*d - 2*b^5*d*x - 7
*a^3*b*c*e + 2*a*b^4*e*x + 2*a*b^3*d*(b^2 - 4*a*c)^(1/2) + a^3*c*e*(b^2 - 4
*a*c)^(1/2) + 2*b^4*d*x*(b^2 - 4*a*c)^(1/2) + 9*a^2*b^2*c*d + 2*a^3*c^2*e*x
 - 2*a^2*b^2*e*(b^2 - 4*a*c)^(1/2) - 2*a*b^3*e*x*(b^2 - 4*a*c)^(1/2) - 9*a^
2*b*c^2*d*x - 8*a^2*b^2*c*e*x + 3*a^2*c^2*d*x*(b^2 - 4*a*c)^(1/2) + 10*a*b^
3*c*d*x - 3*a^2*b*c*d*(b^2 - 4*a*c)^(1/2) - 6*a*b^2*c*d*x*(b^2 - 4*a*c)^(1/
2) + 4*a^2*b*c*e*x*(b^2 - 4*a*c)^(1/2))*(a^2*(2*c^2*d + 2*b*c*e - c*e*(b^2
- 4*a*c)^(1/2)) + (b^4*d)/2 - a*((b^3*e)/2 - (b^2*e*(b^2 - 4*a*c)^(1/2))/2
+ (5*b^2*c*d)/2 - (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) - (b^3*d*(b^2 - 4*a*c)^(
1/2))/2))/(4*a^4*c - a^3*b^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.814 $\int \frac{d+ex}{x^4(a+bx+cx^2)}\,dx$

Optimal. Leaf size=204

$$-\frac{-abe-acd+b^2d}{a^3x}+\frac{bd-ae}{2a^2x^2}+\frac{\left(a^2ce-ab^2e-2abcd+b^3d\right)\log\left(a+bx+cx^2\right)}{2a^4}-\frac{\log(x)\left(a^2ce-ab^2e-2abcd+b\right.}{a^4}$$

Rubi [A] time = 0.29, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(3a^2bce+2a^2c^2d-4ab^2cd-ab^3e+b^4d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^4\sqrt{b^2-4ac}}+\frac{\left(a^2ce-ab^2e-2abcd+b^3d\right)\log\left(a+bx+cx^2\right)}{2a^4}-\frac{-abe-acd+b^2d}{a^3x}-\frac{\log(x)\left(a^2ce-ab^2e-2abcd+b^3d\right)}{a^4}+\frac{bd-ae}{2a^2x^2}-\frac{d}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^4*(a + b*x + c*x^2)),x]
```

```
[Out] -d/(3*a*x^3) + (b*d - a*e)/(2*a^2*x^2) - (b^2*d - a*c*d - a*b*e)/(a^3*x) -
((b^4*d - 4*a*b^2*c*d + 2*a^2*c^2*d - a*b^3*e + 3*a^2*b*c*e)*ArcTanh[(b + 2
*c*x)/Sqrt[b^2 - 4*a*c]])/(a^4*Sqrt[b^2 - 4*a*c]) - ((b^3*d - 2*a*b*c*d - a
*b^2*e + a^2*c*e)*Log[x])/a^4 + ((b^3*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*Lo
g[a + b*x + c*x^2])/(2*a^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{d+ex}{x^4\left(a+bx+cx^2\right)}dx = \int \left(\frac{d}{ax^4} + \frac{-bd+ae}{a^2x^3} + \frac{b^2d-acd-abe}{a^3x^2} + \frac{-b^3d+2abcd+ab^2e-a^2ce}{a^4x} + \frac{b^4d-3ab^2cd \cdots}{\cdots}\right.$$

$$= -\frac{d}{3ax^3} + \frac{bd-ae}{2a^2x^2} - \frac{b^2d-acd-abe}{a^3x} - \frac{\left(b^3d-2abcd-ab^2e+a^2ce\right)\log(x)}{a^4} + \int \frac{b^4d-3ab^2 \cdots}{\cdots}$$

$$= -\frac{d}{3ax^3} + \frac{bd-ae}{2a^2x^2} - \frac{b^2d-acd-abe}{a^3x} - \frac{\left(b^3d-2abcd-ab^2e+a^2ce\right)\log(x)}{a^4} + \frac{\left(b^3d-2a \cdots\right.}{\cdots}$$

$$= -\frac{d}{3ax^3} + \frac{bd-ae}{2a^2x^2} - \frac{b^2d-acd-abe}{a^3x} - \frac{\left(b^3d-2abcd-ab^2e+a^2ce\right)\log(x)}{a^4} + \frac{\left(b^3d-2a \cdots\right.}{\cdots}$$

$$= -\frac{d}{3ax^3} + \frac{bd-ae}{2a^2x^2} - \frac{b^2d-acd-abe}{a^3x} - \frac{\left(b^4d-4ab^2cd+2a^2c^2d-ab^3e+3a^2bce\right)\tanh^{-1} \cdots}{a^4\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.14, size = 196, normalized size = 0.96

$$\frac{-\frac{2a^3d}{x^3} - 6\log(x)\left(a^2ce-ab^2e-2abcd+b^3d\right) + 3\left(a^2ce-ab^2e-2abcd+b^3d\right)\log(a+x(b+cx)) + \frac{6\left(3a^2bce+2a^2c^2d-ab^3e-4ab^2cd+b^4d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{3a^2(bd-ae)}{x^2} + \frac{6a\left(abe+acd+b^2(-d)\right)}{x}}{6a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^4*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a^3*d)/x^3 + (3*a^2*(b*d - a*e))/x^2 + (6*a*(-(b^2*d) + a*c*d + a*b*e)
)/x + (6*(b^4*d - 4*a*b^2*c*d + 2*a^2*c^2*d - a*b^3*e + 3*a^2*b*c*e)*ArcTan
[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 6*(b^3*d - 2*a*b*c*d
 - a*b^2*e + a^2*c*e)*Log[x] + 3*(b^3*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*Lo
g[a + x*(b + c*x)])/(6*a^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^4\left(a+bx+cx^2\right)}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^4*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^4*(a + b*x + c*x^2)), x]
```

fricas [A] time = 1.54, size = 687, normalized size = 3.37

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(3*sqrt(b^2 - 4*a*c)*((b^4 - 4*a*b^2*c + 2*a^2*c^2)*d - (a*b^3 - 3*a^2
*b*c)*e)*x^3*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*
c*x + b))/(c*x^2 + b*x + a)) + 3*((b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d - (a*b^
4 - 5*a^2*b^2*c + 4*a^3*c^2)*e)*x^3*log(c*x^2 + b*x + a) - 6*((b^5 - 6*a*b^
3*c + 8*a^2*b*c^2)*d - (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e)*x^3*log(x) - 6*
((a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d - (a^2*b^3 - 4*a^3*b*c)*e)*x^2 - 2*(a^
3*b^2 - 4*a^4*c)*d + 3*((a^2*b^3 - 4*a^3*b*c)*d - (a^3*b^2 - 4*a^4*c)*e)*x)
/((a^4*b^2 - 4*a^5*c)*x^3), -1/6*(6*sqrt(-b^2 + 4*a*c)*((b^4 - 4*a*b^2*c +
2*a^2*c^2)*d - (a*b^3 - 3*a^2*b*c)*e)*x^3*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x
```

```
 + b)/(b^2 - 4*a*c)) - 3*((b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d - (a*b^4 - 5*a^
2*b^2*c + 4*a^3*c^2)*e)*x^3*log(c*x^2 + b*x + a) + 6*((b^5 - 6*a*b^3*c + 8*
a^2*b*c^2)*d - (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e)*x^3*log(x) + 6*((a*b^4
- 5*a^2*b^2*c + 4*a^3*c^2)*d - (a^2*b^3 - 4*a^3*b*c)*e)*x^2 + 2*(a^3*b^2 -
4*a^4*c)*d - 3*((a^2*b^3 - 4*a^3*b*c)*d - (a^3*b^2 - 4*a^4*c)*e)*x)/((a^4*b
^2 - 4*a^5*c)*x^3)]
```

giac [A] time = 0.18, size = 214, normalized size = 1.05

$$\frac{\left(b^{3} d-2 a b c d-a b^{2} e+a^{2} c e\right) \log \left(c x^{2}+b x+a\right)}{2 a^{4}}-\frac{\left(b^{3} d-2 a b c d-a b^{2} e+a^{2} c e\right) \log (|x|)}{a^{4}}+\frac{\left(b^{4} d-4 a b^{2} c d+2 a^{2} c^{2} d-a b^{3} e+3 a^{2} b c e\right) \arctan \left(\frac{2 c x+b}{\sqrt{-b^{2}+4 a c}}\right)}{\sqrt{-b^{2}+4 a c}\, a^{4}}-\frac{2 a^{3} d+6\left(a b^{2} d-a^{2} c d-a^{2} b e\right) x^{2}-3\left(a^{2} b d-a^{3} e\right) x}{6 a^{4} x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(b^3*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*log(c*x^2 + b*x + a)/a^4 - (b^3
*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*log(abs(x))/a^4 + (b^4*d - 4*a*b^2*c*d
+ 2*a^2*c^2*d - a*b^3*e + 3*a^2*b*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c
))/(sqrt(-b^2 + 4*a*c)*a^4) - 1/6*(2*a^3*d + 6*(a*b^2*d - a^2*c*d - a^2*b*e
)*x^2 - 3*(a^2*b*d - a^3*e)*x)/(a^4*x^3)
```

maple [A] time = 0.07, size = 381, normalized size = 1.87

$$\frac{3 b c e \arctan \left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\sqrt{4 a c-b^{2}}\, a^{2}}+\frac{2 c^{2} d \arctan \left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\sqrt{4 a c-b^{2}}\, a^{2}}-\frac{b^{3} e \arctan \left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\sqrt{4 a c-b^{2}}\, a^{3}}-\frac{4 b^{2} c d \arctan \left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\sqrt{4 a c-b^{2}}\, a^{3}}+\frac{b^{4} d \arctan \left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\sqrt{4 a c-b^{2}}\, a^{4}}-\frac{c e \ln (x)}{a^{2}}+\frac{c e \ln \left(c x^{2}+b x+a\right)}{2 a^{2}}+\frac{b^{2} e \ln (x)}{a^{3}}-\frac{b^{2} e \ln \left(c x^{2}+b x+a\right)}{2 a^{3}}+\frac{2 b c d \ln (x)}{a^{3}}-\frac{b c d \ln \left(c x^{2}+b x+a\right)}{a^{3}}-\frac{b^{3} d \ln (x)}{a^{4}}+\frac{b^{3} d \ln \left(c x^{2}+b x+a\right)}{2 a^{4}}+\frac{b e}{a^{2} x}+\frac{c d}{a^{2} x}-\frac{b^{2} d}{a^{3} x}-\frac{e}{2 a x^{2}}+\frac{b d}{2 a^{2} x^{2}}-\frac{d}{3 a x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^4/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/a^2*c*ln(c*x^2+b*x+a)*e-1/2/a^3*ln(c*x^2+b*x+a)*b^2*e-1/a^3*c*ln(c*x^2+
b*x+a)*b*d+1/2/a^4*ln(c*x^2+b*x+a)*b^3*d+3/a^2/(4*a*c-b^2)^(1/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*b*c*e+2/a^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*c^2*d-1/a^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b^3*e-4/a^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b
^2*c*d+1/a^4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d-1/
3/a*d/x^3-1/2/a*e/x^2+1/2/a^2/x^2*b*d+1/a^2*b*e/x+1/a^2*c*d/x-1/a^3*b^2*d/x
-1/a^2*c*e*ln(x)+1/a^3*ln(x)*b^2*e+2/a^3*ln(x)*b*c*d-1/a^4*ln(x)*b^3*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.75, size = 1063, normalized size = 5.21

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^4*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*a^2*b^4*e + 6*a^4*c^2*e - 2*a*b^5*d - 2*b^6*d*x + 2*a*b^5*e*x + 2*a*
b^4*d*(b^2 - 4*a*c)^(1/2) + 2*b^5*d*x*(b^2 - 4*a*c)^(1/2) + 11*a^2*b^3*c*d
- 13*a^3*b*c^2*d - 9*a^3*b^2*c*e + 2*a^3*c^3*d*x - 2*a^2*b^3*e*(b^2 - 4*a*c
)^(1/2) + a^3*c^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*b^4*e*x*(b^2 - 4*a*c)^(1/2) -
```

```
 10*a^2*b^3*c*e*x + 9*a^3*b*c^2*e*x - 5*a^2*b^2*c*d*(b^2 - 4*a*c)^(1/2) - 3
*a^3*c^2*e*x*(b^2 - 4*a*c)^(1/2) - 17*a^2*b^2*c^2*d*x + 12*a*b^4*c*d*x + 3*
a^3*b*c*e*(b^2 - 4*a*c)^(1/2) - 8*a*b^3*c*d*x*(b^2 - 4*a*c)^(1/2) + 7*a^2*b
*c^2*d*x*(b^2 - 4*a*c)^(1/2) + 6*a^2*b^2*c*e*x*(b^2 - 4*a*c)^(1/2))*(b^4*d*
(b^2 - 4*a*c)^(1/2) - b^5*d + 4*a^3*c^2*e + a*b^4*e + 6*a*b^3*c*d - a*b^3*e
*(b^2 - 4*a*c)^(1/2) - 8*a^2*b*c^2*d - 5*a^2*b^2*c*e + 2*a^2*c^2*d*(b^2 - 4
*a*c)^(1/2) - 4*a*b^2*c*d*(b^2 - 4*a*c)^(1/2) + 3*a^2*b*c*e*(b^2 - 4*a*c)^(
1/2)))/(2*(4*a^5*c - a^4*b^2)) - (d/(3*a) + (x*(a*e - b*d))/(2*a^2) - (x^2*
(a*b*e - b^2*d + a*c*d))/a^3)/x^3 - (log(2*a^2*b^4*e + 6*a^4*c^2*e - 2*a*b^
5*d - 2*b^6*d*x + 2*a*b^5*e*x - 2*a*b^4*d*(b^2 - 4*a*c)^(1/2) - 2*b^5*d*x*(
b^2 - 4*a*c)^(1/2) + 11*a^2*b^3*c*d - 13*a^3*b*c^2*d - 9*a^3*b^2*c*e + 2*a^
3*c^3*d*x + 2*a^2*b^3*e*(b^2 - 4*a*c)^(1/2) - a^3*c^2*d*(b^2 - 4*a*c)^(1/2)
 + 2*a*b^4*e*x*(b^2 - 4*a*c)^(1/2) - 10*a^2*b^3*c*e*x + 9*a^3*b*c^2*e*x + 5
*a^2*b^2*c*d*(b^2 - 4*a*c)^(1/2) + 3*a^3*c^2*e*x*(b^2 - 4*a*c)^(1/2) - 17*a
^2*b^2*c^2*d*x + 12*a*b^4*c*d*x - 3*a^3*b*c*e*(b^2 - 4*a*c)^(1/2) + 8*a*b^3
*c*d*x*(b^2 - 4*a*c)^(1/2) - 7*a^2*b*c^2*d*x*(b^2 - 4*a*c)^(1/2) - 6*a^2*b^
2*c*e*x*(b^2 - 4*a*c)^(1/2))*(b^5*d + b^4*d*(b^2 - 4*a*c)^(1/2) - 4*a^3*c^2
*e - a*b^4*e - 6*a*b^3*c*d - a*b^3*e*(b^2 - 4*a*c)^(1/2) + 8*a^2*b*c^2*d +
5*a^2*b^2*c*e + 2*a^2*c^2*d*(b^2 - 4*a*c)^(1/2) - 4*a*b^2*c*d*(b^2 - 4*a*c)
^(1/2) + 3*a^2*b*c*e*(b^2 - 4*a*c)^(1/2)))/(2*(4*a^5*c - a^4*b^2)) - (log(x
)*(b^3*d - a*(b^2*e + 2*b*c*d) + a^2*c*e))/a^4
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**4/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.815 $\int \frac{x^4(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=262

$$-\frac{\left(-30a^2bc^2e+12a^2c^3d+20ab^3ce-12ab^2c^2d-3b^5e+2b^4cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\left(b^2-4ac\right)^{3/2}}-\frac{\left(2ace-3b^2e+2bcd\right)\log\left(a\right.}{2c^4}$$

Rubi [A] time = 0.64, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 800, 634, 618, 206, 628}

$$-\frac{\left(-30a^2bc^2e+12a^2c^3d-12ab^2c^2d+20ab^3ce+2b^4cd-3b^5e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\left(b^2-4ac\right)^{3/2}}-\frac{x^2\left(8ace-3b^2e+2bcd\right)}{2c^2\left(b^2-4ac\right)}-\frac{\left(2ace-3b^2e+2bcd\right)\log\left(a+bx+cx^2\right)}{2c^4}+\frac{x\left(11abce-6ac^2d+2b^2cd-3b^3e\right)}{c^3\left(b^2-4ac\right)}+\frac{x^3\left(x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((2*b^2*c*d - 6*a*c^2*d - 3*b^3*e + 11*a*b*c*e)*x)/(c^3*(b^2 - 4*a*c)) - ((
2*b*c*d - 3*b^2*e + 8*a*c*e)*x^2)/(2*c^2*(b^2 - 4*a*c)) + (x^3*(a*(2*c*d -
b*e) + (b*c*d - b^2*e + 2*a*c*e)*x))/(c*(b^2 - 4*a*c)*(a + b*x + c*x^2)) -
((2*b^4*c*d - 12*a*b^2*c^2*d + 12*a^2*c^3*d - 3*b^5*e + 20*a*b^3*c*e - 30*a
^2*b*c^2*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^4*(b^2 - 4*a*c)^(3/2
)) - ((2*b*c*d - 3*b^2*e + 2*a*c*e)*Log[a + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^4(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx = \frac{x^3\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{x^2\left(-3a(2cd-be)-\left(2bcd-3b^2e+8ace\right)x\right)}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$= \frac{x^3\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \left(\frac{2b^2cd-6ac^2d-3b^3e+11abce}{c^2}-\frac{\left(2bcd-3b^2e+8ace\right)x}{c}-\frac{a(\cdots}{\cdots}\right.}{c\left(b^2\cdots\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bcd-\cdots\right.\right.}{c\left(b^2-4ac\right)\left(a+b\cdots\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bcd-\cdots\right.\right.}{c\left(b^2-4ac\right)\left(a+b\cdots\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bcd-\cdots\right.\right.}{c\left(b^2-4ac\right)\left(a+b\cdots\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bcd-\cdots\right.\right.}{c\left(b^2-4ac\right)\left(a+b\cdots\right.}$$

Mathematica [A] time = 0.36, size = 249, normalized size = 0.95

$$\frac{\frac{2\left(30a^2bc^2e-12a^2c^3d-20ab^3ce+12ab^2c^2d+3b^5e-2b^4cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+\frac{2\left(2a^3c^2e+a^2c\left(-4b^2e+bc(3d+5ex)-2c^2dx\right)+ab^2\left(b^2e-bc(d+5ex)+4c^2dx\right)+b^4x(be-cd)\right)}{\left(b^2-4ac\right)(a+x(b+cx))}+\left(-2ace+3b^2e-2bcd\right)\log(a+x(b+cx))+2cx(cd-2be)+c^2ex^2}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*c*(c*d - 2*b*e)*x + c^2*e*x^2 + (2*(2*a^3*c^2*e + b^4*(-(c*d) + b*e)*x +
 a*b^2*(b^2*e + 4*c^2*d*x - b*c*(d + 5*e*x)) + a^2*c*(-4*b^2*e - 2*c^2*d*x
+ b*c*(3*d + 5*e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) + (2*(-2*b^4*c*d +
 12*a*b^2*c^2*d - 12*a^2*c^3*d + 3*b^5*e - 20*a*b^3*c*e + 30*a^2*b*c^2*e)*A
rcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + (-2*b*c*d + 3
*b^2*e - 2*a*c*e)*Log[a + x*(b + c*x)])/(2*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^4*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^4*(d + e*x))/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.48, size = 1696, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*e*x^4 + (2*(b^4*c^3 - 8*a*b^2*c^
4 + 16*a^2*c^5)*d - 3*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e)*x^3 + (2*(b
^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d - (4*b^6*c - 33*a*b^4*c^2 + 72*a^2*b
^2*c^3 - 16*a^3*c^4)*e)*x^2 + ((2*(b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*d - (
3*b^5*c - 20*a*b^3*c^2 + 30*a^2*b*c^3)*e)*x^2 + 2*(a*b^4*c - 6*a^2*b^2*c^2
+ 6*a^3*c^3)*d - (3*a*b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*e + (2*(b^5*c - 6*
a*b^3*c^2 + 6*a^2*b*c^3)*d - (3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*e)*x)*sq
rt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*
(2*c*x + b))/(c*x^2 + b*x + a)) - 2*(a*b^5*c - 7*a^2*b^3*c^2 + 12*a^3*b*c^3
)*d + 2*(a*b^6 - 8*a^2*b^4*c + 18*a^3*b^2*c^2 - 8*a^4*c^3)*e - 2*((b^6*c -
9*a*b^4*c^2 + 26*a^2*b^2*c^3 - 24*a^3*c^4)*d - (b^7 - 11*a*b^5*c + 41*a^2*b
^3*c^2 - 52*a^3*b*c^3)*e)*x - ((2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d
- (3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*e)*x^2 + 2*(a*b^5*
c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d - (3*a*b^6 - 26*a^2*b^4*c + 64*a^3*b^2*
c^2 - 32*a^4*c^3)*e + (2*(b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*d - (3*b^7
- 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*e)*x)*log(c*x^2 + b*x + a))/(
a*b^4*c^4 - 8*a^2*b^2*c^5 + 16*a^3*c^6 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^
7)*x^2 + (b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x), 1/2*((b^4*c^3 - 8*a*b^2
*c^4 + 16*a^2*c^5)*e*x^4 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d - 3*(b
^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e)*x^3 + (2*(b^5*c^2 - 8*a*b^3*c^3 + 1
6*a^2*b*c^4)*d - (4*b^6*c - 33*a*b^4*c^2 + 72*a^2*b^2*c^3 - 16*a^3*c^4)*e)*
x^2 - 2*((2*(b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*d - (3*b^5*c - 20*a*b^3*c^2
 + 30*a^2*b*c^3)*e)*x^2 + 2*(a*b^4*c - 6*a^2*b^2*c^2 + 6*a^3*c^3)*d - (3*a*
b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*e + (2*(b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^
3)*d - (3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*e)*x)*sqrt(-b^2 + 4*a*c)*arcta
n(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(a*b^5*c - 7*a^2*b^3*c
^2 + 12*a^3*b*c^3)*d + 2*(a*b^6 - 8*a^2*b^4*c + 18*a^3*b^2*c^2 - 8*a^4*c^3)
*e - 2*((b^6*c - 9*a*b^4*c^2 + 26*a^2*b^2*c^3 - 24*a^3*c^4)*d - (b^7 - 11*a
*b^5*c + 41*a^2*b^3*c^2 - 52*a^3*b*c^3)*e)*x - ((2*(b^5*c^2 - 8*a*b^3*c^3 +
 16*a^2*b*c^4)*d - (3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*e
)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d - (3*a*b^6 - 26*a^2*b^
4*c + 64*a^3*b^2*c^2 - 32*a^4*c^3)*e + (2*(b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2
*c^3)*d - (3*b^7 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*e)*x)*log(c*
x^2 + b*x + a))/(a*b^4*c^4 - 8*a^2*b^2*c^5 + 16*a^3*c^6 + (b^4*c^5 - 8*a*b^
2*c^6 + 16*a^2*c^7)*x^2 + (b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x)]
```

giac [A] time = 0.16, size = 297, normalized size = 1.13

$$\frac{\left(2 \, b^{4} c d - 12 \, a b^{2} c^{2} d + 12 \, a^{2} c^{3} d - 3 \, b^{5} e + 20 \, a b^{3} c e - 30 \, a^{2} b c^{2} e\right) \arctan\left(\frac{2 \, c x + b}{\sqrt{-b^{2} + 4 \, a c}}\right)}{{\left(b^{2} c^{4} - 4 \, a c^{5}\right)} \sqrt{-b^{2} + 4 \, a c}} - \frac{{\left(2 \, b c d - 3 \, b^{2} e + 2 \, a c e\right)} \log\left(c x^{2} + b x + a\right)}{2 \, c^{4}} + \frac{c^{2} x^{2} e + 2 \, c^{2} d x - 4 \, b c x e}{2 \, c^{4}} - \frac{a b^{3} c d - 3 \, a^{2} b c^{2} d - a b^{4} e + 4 \, a^{2} b^{2} c e - 2 \, a^{3} c^{2} e + {\left(b^{4} c d - 4 \, a b^{2} c^{2} d + 2 \, a^{2} c^{3} d - b^{5} e + 5 \, a b^{3} c e - 5 \, a^{2} b c^{2} e\right)} x}{{\left(c x^{2} + b x + a\right)} {\left(b^{2} - 4 \, a c\right)} c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (2*b^4*c*d - 12*a*b^2*c^2*d + 12*a^2*c^3*d - 3*b^5*e + 20*a*b^3*c*e - 30*a^
2*b*c^2*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^4 - 4*a*c^5)*sqrt
(-b^2 + 4*a*c)) - 1/2*(2*b*c*d - 3*b^2*e + 2*a*c*e)*log(c*x^2 + b*x + a)/c^
4 + 1/2*(c^2*x^2*e + 2*c^2*d*x - 4*b*c*x*e)/c^4 - (a*b^3*c*d - 3*a^2*b*c^2*
d - a*b^4*e + 4*a^2*b^2*c*e - 2*a^3*c^2*e + (b^4*c*d - 4*a*b^2*c^2*d + 2*a^
```

```
2*c^3*d - b^5*e + 5*a*b^3*c*e - 5*a^2*b*c^2*e)*x)/((c*x^2 + b*x + a)*(b^2 -
 4*a*c)*c^4)
```

maple [B] time = 0.06, size = 809, normalized size = 3.09

$$-\frac{5a^2bex}{(cx^2+bx+a)(4ac-b^2)c^2}+\frac{30a^2be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}c^2}+\frac{2a^2dx}{(cx^2+bx+a)(4ac-b^2)c}-\frac{12a^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}c}+\frac{5ab^3ex}{(cx^2+bx+a)(4ac-b^2)c^3}-\frac{20ab^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}c^3}-\frac{4ab^2dx}{(cx^2+bx+a)(4ac-b^2)c^2}+\frac{12ab^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}c^2}-\frac{b^5ex}{(cx^2+bx+a)(4ac-b^2)c^4}+\frac{3b^5e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}c^4}+\frac{b^4dx}{(cx^2+bx+a)(4ac-b^2)c^3}-\frac{2b^4d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}c^3}-\frac{2a^3e}{(cx^2+bx+a)(4ac-b^2)c^2}+\frac{4a^2b^2e}{(cx^2+bx+a)(4ac-b^2)c^3}-\frac{3a^2bd}{(cx^2+bx+a)(4ac-b^2)c^2}-\frac{4a^2e\ln(cx^2+bx+a)}{(4ac-b^2)c^2}-\frac{ab^4e}{(cx^2+bx+a)(4ac-b^2)c^4}+\frac{ab^3d}{(cx^2+bx+a)(4ac-b^2)c^3}+\frac{7ab^2e\ln(cx^2+bx+a)}{(4ac-b^2)c^3}-\frac{4abd\ln(cx^2+bx+a)}{(4ac-b^2)c^2}-\frac{3b^4e\ln(cx^2+bx+a)}{2(4ac-b^2)c^4}+\frac{b^3d\ln(cx^2+bx+a)}{(4ac-b^2)c^3}+\frac{ex^2}{2c^2}-\frac{2bex}{c^3}+\frac{dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -5/c^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x*a^2*b*e+5/c^3/(c*x^2+b*x+a)/(4*a*c-b^2)*
x*a*b^3*e-4/c^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x*a*b^2*d-20/c^3/(4*a*c-b^2)^(3/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e+12/c^2/(4*a*c-b^2)^(3/2)*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*d+7/c^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a
*b^2*e-4/c^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a*b*d+30/c^2/(4*a*c-b^2)^(3/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*b*e+1/c^3/(c*x^2+b*x+a)*a/(4*a*c-b^2)*
b^3*d-3/c^2/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*b*d-1/c^4/(c*x^2+b*x+a)*a/(4*a*c-
b^2)*b^4*e-1/c^4/(c*x^2+b*x+a)/(4*a*c-b^2)*x*b^5*e+1/c^3/(c*x^2+b*x+a)/(4*a
*c-b^2)*x*b^4*d+4/c^3/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*b^2*e+2/c/(c*x^2+b*x+a)
/(4*a*c-b^2)*x*a^2*d-4/c^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*e*a^2-3/2/c^4/(4*a*c
-b^2)*ln(c*x^2+b*x+a)*b^4*e+1/c^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3*d-12/c/(4
*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*d+1/2/c^2*e*x^2+1/c
^2*d*x+3/c^4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*e-2/
c^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d-2/c^2/(c*x^
2+b*x+a)*a^3/(4*a*c-b^2)*e-2/c^3*b*e*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.98, size = 427, normalized size = 1.63

$$x\left(\frac{d}{c^2}-\frac{2be}{c^3}\right)-\frac{\frac{a\left(2ea^2c^2-4eab^2c+3dabc^2+eb^4-db^3c\right)}{c\left(4ac-b^2\right)}+\frac{x\left(5ea^2bc^2-2da^2c^3-5eab^3c+4dab^2c^2+eb^5-db^4c\right)}{c\left(4ac-b^2\right)}}{c^4x^2+bc^3x+ac^3}+\frac{ex^2}{2c^2}-\frac{\ln\left(cx^2+bx+a\right)\left(128ea^4c^4-288ea^3b^2c^3+128da^3bc^4+168ea^2b^4c^2-96da^2b^3c^3-38eab^6c+24dab^5c^2+3eb^8-2db^7c\right)}{2\left(64a^3c^7-48a^2b^2c^6+12ab^4c^5-b^6c^4\right)}+\frac{\mathrm{atan}\left(\frac{2cx}{\sqrt{4ac-b^2}}-\frac{b^3c^3-4abc^4}{c^3\left(4ac-b^2\right)^{3/2}}\right)\left(30ea^2bc^2-12da^2c^3-20eab^3c+12dab^2c^2+3eb^5-2db^4c\right)}{c^4\left(4ac-b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] x*(d/c^2 - (2*b*e)/c^3) - ((a*(b^4*e + 2*a^2*c^2*e - b^3*c*d + 3*a*b*c^2*d
- 4*a*b^2*c*e))/(c*(4*a*c - b^2)) + (x*(b^5*e - 2*a^2*c^3*d - b^4*c*d - 5*a
*b^3*c*e + 4*a*b^2*c^2*d + 5*a^2*b*c^2*e))/(c*(4*a*c - b^2)))/(a*c^3 + c^4*
x^2 + b*c^3*x) + (e*x^2)/(2*c^2) - (log(a + b*x + c*x^2)*(3*b^8*e + 128*a^4
*c^4*e - 2*b^7*c*d - 96*a^2*b^3*c^3*d + 168*a^2*b^4*c^2*e - 288*a^3*b^2*c^3
*e - 38*a*b^6*c*e + 24*a*b^5*c^2*d + 128*a^3*b*c^4*d))/(2*(64*a^3*c^7 - b^6
*c^4 + 12*a*b^4*c^5 - 48*a^2*b^2*c^6)) + (atan((2*c*x)/(4*a*c - b^2)^(1/2)
- (b^3*c^3 - 4*a*b*c^4)/(c^3*(4*a*c - b^2)^(3/2)))*(3*b^5*e - 12*a^2*c^3*d
- 2*b^4*c*d - 20*a*b^3*c*e + 12*a*b^2*c^2*d + 30*a^2*b*c^2*e))/(c^4*(4*a*c
- b^2)^(3/2))
```

sympy [B] time = 7.71, size = 1572, normalized size = 6.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] x*(-2*b*e/c**3 + d/c**2) + (-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*e - 1
2*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)/(
2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a*c*e
- 3*b**2*e + 2*b*c*d)/(2*c**4))*log(x + (16*a**3*c**2*e - 17*a**2*b**2*c*e
+ 10*a**2*b*c**2*d + 16*a**2*c**5*(-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**
2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4
*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2
*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)) + 3*a*b**4*e - 2*a*b**3*c*d - 8*a*b*
*2*c**4*(-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*
a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**
3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*
d)/(2*c**4)) + b**4*c**3*(-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*e - 12*
a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)/(2*
c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a*c*e -
3*b**2*e + 2*b*c*d)/(2*c**4)))/(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b*
*3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)) + (sqrt(-(4*a*c - b**2)
**3)*(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d
+ 3*b**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b
**4*c - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4))*log(x + (16*a**3*
c**2*e - 17*a**2*b**2*c*e + 10*a**2*b*c**2*d + 16*a**2*c**5*(sqrt(-(4*a*c -
 b**2)**3)*(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c
**2*d + 3*b**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 +
12*a*b**4*c - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)) + 3*a*b**4*
e - 2*a*b**3*c*d - 8*a*b**2*c**4*(sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*
e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c
*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a
*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)) + b**4*c**3*(sqrt(-(4*a*c - b**2)**3)*
(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b
**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c
 - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)))/(30*a**2*b*c**2*e - 1
2*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d))
+ (-2*a**3*c**2*e + 4*a**2*b**2*c*e - 3*a**2*b*c**2*d - a*b**4*e + a*b**3*c
*d + x*(-5*a**2*b*c**2*e + 2*a**2*c**3*d + 5*a*b**3*c*e - 4*a*b**2*c**2*d -
 b**5*e + b**4*c*d))/(4*a**2*c**5 - a*b**2*c**4 + x**2*(4*a*c**6 - b**2*c**
5) + x*(4*a*b*c**5 - b**3*c**4)) + e*x**2/(2*c**2)
```

3.816 $\int \frac{x^3(d+ex)}{(a+bx+cx^2)^2} \, dx$

Optimal. Leaf size=192

$$\frac{\left(-12a^2c^2e+12ab^2ce-6abc^2d-2b^4e+b^3cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\left(b^2-4ac\right)^{3/2}}-\frac{x\left(6ace-2b^2e+bcd\right)}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(x\left(2ace+b^2(-e)+bc\right.\right.}{c\left(b^2-4ac\right)\left(a+\right.}$$

Rubi [A] time = 0.31, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 773, 634, 618, 206, 628}

$$\frac{\left(-12a^2c^2e+12ab^2ce-6abc^2d+b^3cd-2b^4e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\left(b^2-4ac\right)^{3/2}}-\frac{x\left(6ace-2b^2e+bcd\right)}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(cd-2be)\log\left(a+bx+cx^2\right)}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((b*c*d - 2*b^2*e + 6*a*c*e)*x)/(c^2*(b^2 - 4*a*c))) + (x^2*(a*(2*c*d - b
*e) + (b*c*d - b^2*e + 2*a*c*e)*x))/(c*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (
(b^3*c*d - 6*a*b*c^2*d - 2*b^4*e + 12*a*b^2*c*e - 12*a^2*c^2*e)*ArcTanh[(b
+ 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*(b^2 - 4*a*c)^(3/2)) + ((c*d - 2*b*e)*Log
[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^3(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx = \frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{x\left(-2a(2cd-be)-\left(bcd-2b^2e+6ace\right)x\right)}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{-a\left(-bcd+2b^2e-6ac\right.}{}}{}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(cd-2be)\int \frac{b+2}{a+bx}}{2c^3}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(cd-2be)\log\left(a\right.}{2c^3}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(b^3cd-6abc^2d-\right.}{}$$

Mathematica [A] time = 0.29, size = 190, normalized size = 0.99

$$\frac{\frac{2\left(a^2c(3be-2c(d+ex))+ab\left(b^2(-e)+bc(d+4ex)-3c^2dx\right)+b^3x(cd-be)\right)}{\left(b^2-4ac\right)(a+x(b+cx))}-\frac{2\left(12a^2c^2e-12ab^2ce+6abc^2d+2b^4e-b^3cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+(cd-2be)\log(a+x(b+cx))+2cex}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*c*e*x + (2*(b^3*(c*d - b*e)*x + a^2*c*(3*b*e - 2*c*(d + e*x)) + a*b*(-(b
^2*e) - 3*c^2*d*x + b*c*(d + 4*e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) -
(2*(-(b^3*c*d) + 6*a*b*c^2*d + 2*b^4*e - 12*a*b^2*c*e + 12*a^2*c^2*e)*ArcTa
n[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + (c*d - 2*b*e)*Log
[a + x*(b + c*x)])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^3*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

[Out] IntegrateAlgebraic[(x^3*(d + e*x))/(a + b*x + c*x^2)^2, x]

fricas [B] time = 0.46, size = 1283, normalized size = 6.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*e*x^3 + 2*(b^5*c - 8*a*b^3*c^2
 + 16*a^2*b*c^3)*e*x^2 + (((b^3*c^2 - 6*a*b*c^3)*d - 2*(b^4*c - 6*a*b^2*c^2
 + 6*a^2*c^3)*e)*x^2 + (a*b^3*c - 6*a^2*b*c^2)*d - 2*(a*b^4 - 6*a^2*b^2*c +
 6*a^3*c^2)*e + ((b^4*c - 6*a*b^2*c^2)*d - 2*(b^5 - 6*a*b^3*c + 6*a^2*b*c^2
)*e)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2
 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(a*b^4*c - 6*a^2*b^2*c^2 + 8*
a^3*c^3)*d - 2*(a*b^5 - 7*a^2*b^3*c + 12*a^3*b*c^2)*e + 2*((b^5*c - 7*a*b^3
*c^2 + 12*a^2*b*c^3)*d - (b^6 - 9*a*b^4*c + 26*a^2*b^2*c^2 - 24*a^3*c^3)*e)
*x + (((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d - 2*(b^5*c - 8*a*b^3*c^2 + 16
*a^2*b*c^3)*e)*x^2 + (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*d - 2*(a*b^5 -
8*a^2*b^3*c + 16*a^3*b*c^2)*e + ((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d - 2
*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c^2)*e)*x)*log(c*x^2 + b*x + a))/(a*b^4*c^3
- 8*a^2*b^2*c^4 + 16*a^3*c^5 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^2 + (
b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x), 1/2*(2*(b^4*c^2 - 8*a*b^2*c^3 + 1
6*a^2*c^4)*e*x^3 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*e*x^2 + 2*(((b^3*
c^2 - 6*a*b*c^3)*d - 2*(b^4*c - 6*a*b^2*c^2 + 6*a^2*c^3)*e)*x^2 + (a*b^3*c
- 6*a^2*b*c^2)*d - 2*(a*b^4 - 6*a^2*b^2*c + 6*a^3*c^2)*e + ((b^4*c - 6*a*b^
2*c^2)*d - 2*(b^5 - 6*a*b^3*c + 6*a^2*b*c^2)*e)*x)*sqrt(-b^2 + 4*a*c)*arcta
n(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(a*b^4*c - 6*a^2*b^2*c
^2 + 8*a^3*c^3)*d - 2*(a*b^5 - 7*a^2*b^3*c + 12*a^3*b*c^2)*e + 2*((b^5*c -
7*a*b^3*c^2 + 12*a^2*b*c^3)*d - (b^6 - 9*a*b^4*c + 26*a^2*b^2*c^2 - 24*a^3*
c^3)*e)*x + (((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d - 2*(b^5*c - 8*a*b^3*c
^2 + 16*a^2*b*c^3)*e)*x^2 + (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*d - 2*(a
*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e + ((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3
)*d - 2*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c^2)*e)*x)*log(c*x^2 + b*x + a))/(a*b
^4*c^3 - 8*a^2*b^2*c^4 + 16*a^3*c^5 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*
x^2 + (b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x)]
```

giac [A] time = 0.16, size = 235, normalized size = 1.22

$$-\frac{\left(b^{3} c d - 6 \, a b c^{2} d - 2 \, b^{4} e + 12 \, a b^{2} c e - 12 \, a^{2} c^{2} e\right) \arctan\left(\frac{2 \, c x + b}{\sqrt{-b^{2} + 4 \, a c}}\right)}{\left(b^{2} c^{3} - 4 \, a c^{4}\right) \sqrt{-b^{2} + 4 \, a c}} + \frac{x e}{c^{2}} + \frac{{\left(c d - 2 \, b e\right)} \log\left(c x^{2} + b x + a\right)}{2 \, c^{3}} + \frac{\frac{{\left(b^{3} c d - 3 \, a b c^{2} d - b^{4} e + 4 \, a b^{2} c e - 2 \, a^{2} c^{2} e\right)} x}{c} + \frac{a b^{2} c d - 2 \, a^{2} c^{2} d - a b^{3} e + 3 \, a^{2} b c e}{c}}{{\left(c x^{2} + b x + a\right)} {\left(b^{2} - 4 \, a c\right)} c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(b^3*c*d - 6*a*b*c^2*d - 2*b^4*e + 12*a*b^2*c*e - 12*a^2*c^2*e)*arctan((2*
c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^3 - 4*a*c^4)*sqrt(-b^2 + 4*a*c)) + x*e
/c^2 + 1/2*(c*d - 2*b*e)*log(c*x^2 + b*x + a)/c^3 + ((b^3*c*d - 3*a*b*c^2*d
 - b^4*e + 4*a*b^2*c*e - 2*a^2*c^2*e)*x/c + (a*b^2*c*d - 2*a^2*c^2*d - a*b^
3*e + 3*a^2*b*c*e)/c)/((c*x^2 + b*x + a)*(b^2 - 4*a*c)*c^2)
```

maple [B] time = 0.06, size = 639, normalized size = 3.33

$$\frac{2 a^{2} e x}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c}-\frac{12 a^{2} e \arctan\left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\left(4 a c-b^{2}\right)^{\frac{3}{2}} c}-\frac{4 a b^{2} e x}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c^{2}}+\frac{12 a b^{2} e \arctan\left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\left(4 a c-b^{2}\right)^{\frac{3}{2}} c^{2}}+\frac{3 a b d x}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c}-\frac{6 a b d \arctan\left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\left(4 a c-b^{2}\right)^{\frac{3}{2}} c}+\frac{b^{4} e x}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c^{3}}-\frac{2 b^{4} e \arctan\left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\left(4 a c-b^{2}\right)^{\frac{3}{2}} c^{3}}-\frac{b^{3} d x}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c^{2}}+\frac{b^{3} d \arctan\left(\frac{2 c x+b}{\sqrt{4 a c-b^{2}}}\right)}{\left(4 a c-b^{2}\right)^{\frac{3}{2}} c^{2}}-\frac{3 a^{2} b e}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c^{2}}+\frac{2 a^{2} d}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c}+\frac{a b^{3} e}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c^{3}}-\frac{a b^{2} d}{\left(c x^{2}+b x+a\right) \left(4 a c-b^{2}\right) c^{2}}-\frac{4 a b e \ln\left(c x^{2}+b x+a\right)}{\left(4 a c-b^{2}\right) c^{2}}+\frac{2 a d \ln\left(c x^{2}+b x+a\right)}{\left(4 a c-b^{2}\right) c}+\frac{b^{3} e \ln\left(c x^{2}+b x+a\right)}{\left(4 a c-b^{2}\right) c^{3}}-\frac{b^{2} d \ln\left(c x^{2}+b x+a\right)}{2 \left(4 a c-b^{2}\right) c^{2}}+\frac{e x}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/c^2*e*x+2/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x*e*a^2-4/c^2/(c*x^2+b*x+a)/(4*a*c-
b^2)*x*a*b^2*e+3/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x*a*b*d+1/c^3/(c*x^2+b*x+a)/(4
```

```
*a*c-b^2)*x*b^4*e-1/c^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x*b^3*d-3/c^2/(c*x^2+b*x+
a)*a^2/(4*a*c-b^2)*b*e+2/c/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*d+1/c^3/(c*x^2+b*x
+a)*a/(4*a*c-b^2)*b^3*e-1/c^2/(c*x^2+b*x+a)*a/(4*a*c-b^2)*b^2*d-4/c^2/(4*a*
c-b^2)*ln(c*x^2+b*x+a)*a*b*e+2/c/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a*d+1/c^3/(4*a
*c-b^2)*ln(c*x^2+b*x+a)*b^3*e-1/2/c^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^2*d-12/
c/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e+12/c^2/(4*a*c
-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*e-6/c/(4*a*c-b^2)^(3/
2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d-2/c^3/(4*a*c-b^2)^(3/2)*arctan
((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*e+1/c^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*b^3*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.85, size = 360, normalized size = 1.88

$$\frac{\frac{a\left(e b^3-d b^2 c-3 a e b c+2 a d c^2\right)}{c\left(4 a c-b^2\right)}+\frac{x\left(2 e a^2 c^2-4 e a b^2 c+3 d a b c^2+e b^4-d b^3 c\right)}{c\left(4 a c-b^2\right)}}{c^3 x^2+b c^2 x+a c^2}+\frac{\ln\left(c x^2+b x+a\right)\left(-128 e a^3 b c^3+64 d a^3 c^4+96 e a^2 b^3 c^2-48 d a^2 b^2 c^3-24 e a b^5 c+12 d a b^4 c^2+2 e b^7-d b^6 c\right)}{2\left(64 a^3 c^6-48 a^2 b^2 c^5+12 a b^4 c^4-b^6 c^3\right)}+\frac{e x}{c^2}-\frac{\mathrm{atan}\left(\frac{2 c x}{\sqrt{4 a c-b^2}}-\frac{b^3 c^2-4 a b c^3}{c^2\left(4 a c-b^2\right)^{3/2}}\right)\left(12 e a^2 c^2-12 e a b^2 c+6 d a b c^2+2 e b^4-d b^3 c\right)}{c^3\left(4 a c-b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((a*(b^3*e + 2*a*c^2*d - b^2*c*d - 3*a*b*c*e))/(c*(4*a*c - b^2)) + (x*(b^4*
e + 2*a^2*c^2*e - b^3*c*d + 3*a*b*c^2*d - 4*a*b^2*c*e))/(c*(4*a*c - b^2)))/
(a*c^2 + c^3*x^2 + b*c^2*x) + (log(a + b*x + c*x^2)*(2*b^7*e + 64*a^3*c^4*d
 - b^6*c*d - 48*a^2*b^2*c^3*d + 96*a^2*b^3*c^2*e - 24*a*b^5*c*e + 12*a*b^4*
c^2*d - 128*a^3*b*c^3*e))/(2*(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*
b^2*c^5)) + (e*x)/c^2 - (atan((2*c*x)/(4*a*c - b^2)^(1/2) - (b^3*c^2 - 4*a*
b*c^3)/(c^2*(4*a*c - b^2)^(3/2)))*(2*b^4*e + 12*a^2*c^2*e - b^3*c*d + 6*a*b
*c^2*d - 12*a*b^2*c*e))/(c^3*(4*a*c - b^2)^(3/2))
```

sympy [B] time = 5.40, size = 1248, normalized size = 6.50

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] (-sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d +
 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4
*c - b**6)) - (2*b*e - c*d)/(2*c**3))*log(x + (-10*a**2*b*c*e - 16*a**2*c**
4*(-sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d
 + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b*
*4*c - b**6)) - (2*b*e - c*d)/(2*c**3)) + 8*a**2*c**2*d + 2*a*b**3*e + 8*a*
b**2*c**3*(-sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*
b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 +
 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3)) - a*b**2*c*d - b**4*c**2*(-
sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2
*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c
 - b**6)) - (2*b*e - c*d)/(2*c**3)))/(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*
b*c**2*d + 2*b**4*e - b**3*c*d)) + (sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*
```

```
e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c*
*3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3))*log
(x + (-10*a**2*b*c*e - 16*a**2*c**4*(sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2
*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c
**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3)) +
8*a**2*c**2*d + 2*a*b**3*e + 8*a*b**2*c**3*(sqrt(-(4*a*c - b**2)**3)*(12*a*
*2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64
*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c*
*3)) - a*b**2*c*d - b**4*c**2*(sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 1
2*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 -
48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3)))/(12*a**
2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)) + (-3*a**2*
b*c*e + 2*a**2*c**2*d + a*b**3*e - a*b**2*c*d + x*(2*a**2*c**2*e - 4*a*b**2
*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d))/(4*a**2*c**4 - a*b**2*c**3 + x**2
*(4*a*c**5 - b**2*c**4) + x*(4*a*b*c**4 - b**3*c**3)) + e*x/c**2
```

3.817 $\int \frac{x^2(d+ex)}{\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=132

$$\frac{x\left(x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(2ac(2cd-3be)+b^3e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{e\log\left(a+bx+cx^2\right)}{2c^2}$$

Rubi [A] time = 0.11, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {818, 634, 618, 206, 628}

$$\frac{\left(2ac(2cd-3be)+b^3e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{x\left(x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e\log\left(a+bx+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (x*(a*(2*c*d - b*e) + (b*c*d - b^2*e + 2*a*c*e)*x))/(c*(b^2 - 4*a*c)*(a + b
*x + c*x^2)) + ((b^3*e + 2*a*c*(2*c*d - 3*b*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^
2 - 4*a*c]])/(c^2*(b^2 - 4*a*c)^(3/2)) + (e*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
```

```
2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^2(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx = \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\int \frac{-a(2cd-be)+\left(b^2-4ac\right)ex}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{e\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2} - \frac{\left(b^3e+2ac(2cd-3be)\right)\int \frac{1}{a+bx}}{2c^2\left(b^2-4ac\right)}$$

$$= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{e\log\left(a+bx+cx^2\right)}{2c^2} + \frac{\left(b^3e+2ac(2cd-3be)\right)S}{c^2}$$

$$= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(b^3e+2ac(2cd-3be)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}} + \frac{e\log}{}$$

Mathematica [A] time = 0.19, size = 146, normalized size = 1.11

$$\frac{-\frac{2\left(2a^2ce+a\left(b^2(-e)+bc(d+3ex)-2c^2dx\right)+b^2x(cd-be)\right)}{\left(b^2-4ac\right)(a+x(b+cx))}+\frac{2\left(2ac(2cd-3be)+b^3e\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+e\log(a+x(b+cx))}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-2*(2*a^2*c*e + b^2*(c*d - b*e)*x + a*(-(b^2*e) - 2*c^2*d*x + b*c*(d + 3*
e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) + (2*(b^3*e + 2*a*c*(2*c*d - 3*b*
e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + e*Log[a
+ x*(b + c*x)])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x^2*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x^2*(d + e*x))/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.46, size = 813, normalized size = 6.16

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((4*a^2*c^2*d + (4*a*c^3*d + (b^3*c - 6*a*b*c^2)*e)*x^2 + (a*b^3 - 6*a
^2*b*c)*e + (4*a*b*c^2*d + (b^4 - 6*a*b^2*c)*e)*x)*sqrt(b^2 - 4*a*c)*log((2
```

```
*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
b*x + a)) - 2*(a*b^3*c - 4*a^2*b*c^2)*d + 2*(a*b^4 - 6*a^2*b^2*c + 8*a^3*c^
2)*e - 2*((b^4*c - 6*a*b^2*c^2 + 8*a^2*c^3)*d - (b^5 - 7*a*b^3*c + 12*a^2*b
*c^2)*e)*x + ((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*e*x^2 + (b^5 - 8*a*b^3*c +
 16*a^2*b*c^2)*e*x + (a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*e)*log(c*x^2 + b*x
+ a))/(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4 + (b^4*c^3 - 8*a*b^2*c^4 + 16
*a^2*c^5)*x^2 + (b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x), 1/2*(2*(4*a^2*c^
2*d + (4*a*c^3*d + (b^3*c - 6*a*b*c^2)*e)*x^2 + (a*b^3 - 6*a^2*b*c)*e + (4*
a*b*c^2*d + (b^4 - 6*a*b^2*c)*e)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 +
4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(a*b^3*c - 4*a^2*b*c^2)*d + 2*(a*b^4
- 6*a^2*b^2*c + 8*a^3*c^2)*e - 2*((b^4*c - 6*a*b^2*c^2 + 8*a^2*c^3)*d - (b^
5 - 7*a*b^3*c + 12*a^2*b*c^2)*e)*x + ((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*e*
x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e*x + (a*b^4 - 8*a^2*b^2*c + 16*a^3*
c^2)*e)*log(c*x^2 + b*x + a))/(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4 + (b^
4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^2 + (b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c
^4)*x)]
```

giac [A] time = 0.20, size = 169, normalized size = 1.28

$$-\frac{\left(4\,ac^{2}d+b^{3}e-6\,abce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{2}c^{2}-4\,ac^{3}\right)\sqrt{-b^{2}+4\,ac}}+\frac{e\log\left(cx^{2}+bx+a\right)}{2\,c^{2}}-\frac{abcd-ab^{2}e+2\,a^{2}ce+\left(b^{2}cd-2\,ac^{2}d-b^{3}e+3\,abce\right)x}{\left(cx^{2}+bx+a\right)\left(b^{2}-4\,ac\right)c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(4*a*c^2*d + b^3*e - 6*a*b*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b
^2*c^2 - 4*a*c^3)*sqrt(-b^2 + 4*a*c)) + 1/2*e*log(c*x^2 + b*x + a)/c^2 - (a
*b*c*d - a*b^2*e + 2*a^2*c*e + (b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b*c*e)*x)
/((c*x^2 + b*x + a)*(b^2 - 4*a*c)*c^2)
```

maple [B] time = 0.07, size = 270, normalized size = 2.05

$$-\frac{6abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c}+\frac{4ad\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{b^{3}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c^{2}}+\frac{2ae\ln\left(cx^{2}+bx+a\right)}{\left(4ac-b^{2}\right)c}-\frac{b^{2}e\ln\left(cx^{2}+bx+a\right)}{2\left(4ac-b^{2}\right)c^{2}}+\frac{\frac{\left(2ace-eb^{2}+bcd\right)a}{\left(4ac-b^{2}\right)c^{2}}+\frac{\left(3abce-2ac^{2}d-b^{3}e+b^{2}cd\right)x}{\left(4ac-b^{2}\right)c^{2}}}{cx^{2}+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (1/c^2*(3*a*b*c*e-2*a*c^2*d-b^3*e+b^2*c*d)/(4*a*c-b^2)*x+a*(2*a*c*e-b^2*e+b
*c*d)/c^2/(4*a*c-b^2))/(c*x^2+b*x+a)+2/(4*a*c-b^2)/c*ln(c*x^2+b*x+a)*a*e-1/
2/(4*a*c-b^2)/c^2*ln(c*x^2+b*x+a)*e*b^2-6/(4*a*c-b^2)^(3/2)/c*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*a*b*e+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*a*d+1/(4*a*c-b^2)^(3/2)/c^2*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b
^3*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.54, size = 895, normalized size = 6.78

$$\frac{2a^{2}ce}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}-\frac{ab^{2}e}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}-\frac{b^{3}ex}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}+\frac{4ad\,\mathrm{atan}\left(\frac{2cx}{\sqrt{4ac-b^{2}}}-\frac{b^{3}}{\left(4ac-b^{2}\right)^{3/2}}+\frac{4abc}{\left(4ac-b^{2}\right)^{3/2}}\right)}{\left(4ac-b^{2}\right)^{3/2}}-\frac{b^{6}e\ln\left(cx^{2}+bx+a\right)}{2\left(64a^{3}c^{5}-48a^{2}b^{2}c^{4}+12ab^{4}c^{3}-b^{6}c^{2}\right)}-\frac{2ac^{2}dx}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}+\frac{b^{2}cdx}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}+\frac{abcd}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}+\frac{32a^{3}c^{3}e\ln\left(cx^{2}+bx+a\right)}{64a^{3}c^{5}-48a^{2}b^{2}c^{4}+12ab^{4}c^{3}-b^{6}c^{2}}+\frac{b^{3}e\,\mathrm{atan}\left(\frac{2cx}{\sqrt{4ac-b^{2}}}-\frac{b^{3}}{\left(4ac-b^{2}\right)^{3/2}}+\frac{4abc}{\left(4ac-b^{2}\right)^{3/2}}\right)}{c^{2}\left(4ac-b^{2}\right)^{3/2}}+\frac{3abcex}{4a^{2}c^{3}-ab^{2}c^{2}+4abc^{3}x+4ac^{4}x^{2}-b^{3}c^{2}x-b^{2}c^{3}x^{2}}-\frac{24a^{2}b^{2}c^{2}e\ln\left(cx^{2}+bx+a\right)}{64a^{3}c^{5}-48a^{2}b^{2}c^{4}+12ab^{4}c^{3}-b^{6}c^{2}}+\frac{6ab^{4}ce\ln\left(cx^{2}+bx+a\right)}{64a^{3}c^{5}-48a^{2}b^{2}c^{4}+12ab^{4}c^{3}-b^{6}c^{2}}-\frac{6abe\,\mathrm{atan}\left(\frac{2cx}{\sqrt{4ac-b^{2}}}-\frac{b^{3}}{\left(4ac-b^{2}\right)^{3/2}}+\frac{4abc}{\left(4ac-b^{2}\right)^{3/2}}\right)}{c\left(4ac-b^{2}\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*a^2*c*e)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2
+ 4*a*b*c^3*x) - (a*b^2*e)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x
 - b^2*c^3*x^2 + 4*a*b*c^3*x) - (b^3*e*x)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*
x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b*c^3*x) + (4*a*d*atan((2*c*x)/(4*a*c -
 b^2)^(1/2) - b^3/(4*a*c - b^2)^(3/2) + (4*a*b*c)/(4*a*c - b^2)^(3/2)))/(4*
a*c - b^2)^(3/2) - (b^6*e*log(a + b*x + c*x^2))/(2*(64*a^3*c^5 - b^6*c^2 +
12*a*b^4*c^3 - 48*a^2*b^2*c^4)) - (2*a*c^2*d*x)/(4*a^2*c^3 - a*b^2*c^2 + 4*
a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b*c^3*x) + (b^2*c*d*x)/(4*a^2*c^3
 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b*c^3*x) + (a*b*
c*d)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b
*c^3*x) + (32*a^3*c^3*e*log(a + b*x + c*x^2))/(64*a^3*c^5 - b^6*c^2 + 12*a*
b^4*c^3 - 48*a^2*b^2*c^4) + (b^3*e*atan((2*c*x)/(4*a*c - b^2)^(1/2) - b^3/(
4*a*c - b^2)^(3/2) + (4*a*b*c)/(4*a*c - b^2)^(3/2)))/(c^2*(4*a*c - b^2)^(3/
2)) + (3*a*b*c*e*x)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*
c^3*x^2 + 4*a*b*c^3*x) - (24*a^2*b^2*c^2*e*log(a + b*x + c*x^2))/(64*a^3*c^
5 - b^6*c^2 + 12*a*b^4*c^3 - 48*a^2*b^2*c^4) + (6*a*b^4*c*e*log(a + b*x + c
*x^2))/(64*a^3*c^5 - b^6*c^2 + 12*a*b^4*c^3 - 48*a^2*b^2*c^4) - (6*a*b*e*at
an((2*c*x)/(4*a*c - b^2)^(1/2) - b^3/(4*a*c - b^2)^(3/2) + (4*a*b*c)/(4*a*c
 - b^2)^(3/2)))/(c*(4*a*c - b^2)^(3/2))
```

sympy [B] time = 2.84, size = 901, normalized size = 6.83

$$\left(\frac{e}{2c^2} - \frac{\sqrt{-(4ac-b^2)^3}\,(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right)\log\left(x + \frac{-16a^2c^3\left(\frac{e}{2c^2} - \frac{\sqrt{-(4ac-b^2)^3}(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right) + 8a^2ce + 8ab^2c^2\left(\frac{e}{2c^2} - \frac{\sqrt{-(4ac-b^2)^3}(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right) - ab^2e - 2abcd - b^4c\left(\frac{e}{2c^2} - \frac{\sqrt{-(4ac-b^2)^3}(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right)}{6abce-4ac^2d-b^3e}\right) + \left(\frac{e}{2c^2} + \frac{\sqrt{-(4ac-b^2)^3}\,(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right)\log\left(x + \frac{-16a^2c^3\left(\frac{e}{2c^2} + \frac{\sqrt{-(4ac-b^2)^3}(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right) + 8a^2ce + 8ab^2c^2\left(\frac{e}{2c^2} + \frac{\sqrt{-(4ac-b^2)^3}(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right) - ab^2e - 2abcd - b^4c\left(\frac{e}{2c^2} + \frac{\sqrt{-(4ac-b^2)^3}(6abce-4ac^2d-b^3e)}{2c^2(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6)}\right)}{6abce-4ac^2d-b^3e}\right) + \frac{2a^2ce - ab^2e + abcd + x(3abce-2ac^2d-b^3e+b^2cd)}{4a^2c^3 - ab^2c^2 + x^2(4ac^4-b^2c^3) + x(4abc^3-b^3c^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] (e/(2*c**2) - sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)/(2
*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)))*log(x + (-1
6*a**2*c**3*(e/(2*c**2) - sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d
- b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)))
 + 8*a**2*c*e + 8*a*b**2*c**2*(e/(2*c**2) - sqrt(-(4*a*c - b**2)**3)*(6*a*b
*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*
a*b**4*c - b**6))) - a*b**2*e - 2*a*b*c*d - b**4*c*(e/(2*c**2) - sqrt(-(4*a
*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48
*a**2*b**2*c**2 + 12*a*b**4*c - b**6))))/(6*a*b*c*e - 4*a*c**2*d - b**3*e))
 + (e/(2*c**2) + sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)
/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)))*log(x +
(-16*a**2*c**3*(e/(2*c**2) + sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2
*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6
))) + 8*a**2*c*e + 8*a*b**2*c**2*(e/(2*c**2) + sqrt(-(4*a*c - b**2)**3)*(6*
a*b*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 +
12*a*b**4*c - b**6))) - a*b**2*e - 2*a*b*c*d - b**4*c*(e/(2*c**2) + sqrt(-(
4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 -
 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))))/(6*a*b*c*e - 4*a*c**2*d - b**3*
e)) + (2*a**2*c*e - a*b**2*e + a*b*c*d + x*(3*a*b*c*e - 2*a*c**2*d - b**3*e
 + b**2*c*d))/(4*a**2*c**3 - a*b**2*c**2 + x**2*(4*a*c**4 - b**2*c**3) + x*
(4*a*b*c**3 - b**3*c**2))
```

3.818 $\int \frac{x(d+ex)}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=99

$$\frac{x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {777, 618, 206}

$$\frac{x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (a*(2*c*d - b*e) + (b*c*d - b^2*e + 2*a*c*e)*x)/(c*(b^2 - 4*a*c)*(a + b*x +
 c*x^2)) - (2*(b*d - 2*a*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 -
4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx &= \frac{a(2cd-be)+\left(bcd-b^2e+2ace\right)x}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(bd-2ae)\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac}\\ &= \frac{a(2cd-be)+\left(bcd-b^2e+2ace\right)x}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(2(bd-2ae))\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{b^2-4ac}\\ &= \frac{a(2cd-be)+\left(bcd-b^2e+2ace\right)x}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 99, normalized size = 1.00

$$\frac{abe-2ac(d+ex)+bx(be-cd)}{c\left(4ac-b^2\right)(a+x(b+cx))}-\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (a*b*e + b*(-(c*d) + b*e)*x - 2*a*c*(d + e*x))/(c*(-b^2 + 4*a*c)*(a + x*(b
+ c*x))) - (2*(b*d - 2*a*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 +
 4*a*c)^(3/2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(x*(d + e*x))/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.43, size = 521, normalized size = 5.26

$$\left[\frac{\left(abcd-2a^2ce+\left(bc^2d-2ac^2e\right)x^2+\left(b^2cd-2abce\right)x\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac-\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+2\left(ab^2c-4a^2c^2\right)d-\left(ab^3-4a^2bc\right)e+\left(\left(b^3c-4abc^2\right)d-\left(b^4-6ab^2c+8a^2c^2\right)e\right)x}{ab^4c-8a^2b^2c^2+16a^3c^3+\left(b^4c^2-8ab^2c^3+16a^2c^4\right)x^2+\left(b^5c-8ab^3c^2+16a^2bc^3\right)x},\ -\frac{2\left(abcd-2a^2ce+\left(bc^2d-2ac^2e\right)x^2+\left(b^2cd-2abce\right)x\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)-2\left(ab^2c-4a^2c^2\right)d+\left(ab^3-4a^2bc\right)e-\left(\left(b^3c-4abc^2\right)d-\left(b^4-6ab^2c+8a^2c^2\right)e\right)x}{ab^4c-8a^2b^2c^2+16a^3c^3+\left(b^4c^2-8ab^2c^3+16a^2c^4\right)x^2+\left(b^5c-8ab^3c^2+16a^2bc^3\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [((a*b*c*d - 2*a^2*c*e + (b*c^2*d - 2*a*c^2*e)*x^2 + (b^2*c*d - 2*a*b*c*e)*
x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*
a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(a*b^2*c - 4*a^2*c^2)*d - (a*b^3 -
 4*a^2*b*c)*e + ((b^3*c - 4*a*b*c^2)*d - (b^4 - 6*a*b^2*c + 8*a^2*c^2)*e)*x
)/(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c
^4)*x^2 + (b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x), -(2*(a*b*c*d - 2*a^2*c*e
 + (b*c^2*d - 2*a*c^2*e)*x^2 + (b^2*c*d - 2*a*b*c*e)*x)*sqrt(-b^2 + 4*a*c)*
arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(a*b^2*c - 4*a^2*
c^2)*d + (a*b^3 - 4*a^2*b*c)*e - ((b^3*c - 4*a*b*c^2)*d - (b^4 - 6*a*b^2*c
+ 8*a^2*c^2)*e)*x)/(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3 + (b^4*c^2 - 8*a*b
^2*c^3 + 16*a^2*c^4)*x^2 + (b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x)]
```

giac [A] time = 0.16, size = 113, normalized size = 1.14

$$\frac{2\,(bd-2\,ae)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^2-4\,ac\right)\sqrt{-b^2+4\,ac}}+\frac{bcdx-b^2xe+2\,acxe+2\,acd-abe}{\left(b^2c-4\,ac^2\right)\left(cx^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*(b*d - 2*a*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2 - 4*a*c)*sqrt(
-b^2 + 4*a*c)) + (b*c*d*x - b^2*x*e + 2*a*c*x*e + 2*a*c*d - a*b*e)/((b^2*c
- 4*a*c^2)*(c*x^2 + b*x + a))
```

maple [A] time = 0.06, size = 147, normalized size = 1.48

$$\frac{4ae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}-\frac{2bd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{\frac{(be-2cd)a}{\left(4ac-b^2\right)c}-\frac{\left(2ace-e\,b^2+bcd\right)x}{\left(4ac-b^2\right)c}}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (-(2*a*c*e-b^2*e+b*c*d)/c/(4*a*c-b^2)*x+a*(b*e-2*c*d)/(4*a*c-b^2)/c)/(c*x^2
+b*x+a)+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*e-2/(4*a*
c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.28, size = 177, normalized size = 1.79

$$\frac{\frac{a\,(b\,e-2\,c\,d)}{c\,\left(4\,a\,c-b^2\right)}-\frac{x\,\left(-e\,b^2+c\,d\,b+2\,a\,c\,e\right)}{c\,\left(4\,a\,c-b^2\right)}}{c\,x^2+b\,x+a}-\frac{2\,\mathrm{atan}\left(\frac{\left(4\,a\,c-b^2\right)\,\left(\frac{\left(b^3-4\,a\,b\,c\right)\,(2\,a\,e-b\,d)}{\left(4\,a\,c-b^2\right)^{5/2}}-\frac{2\,c\,x\,(2\,a\,e-b\,d)}{\left(4\,a\,c-b^2\right)^{3/2}}\right)}{2\,a\,e-b\,d}\right)\,(2\,a\,e-b\,d)}{\left(4\,a\,c-b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((a*(b*e - 2*c*d))/(c*(4*a*c - b^2)) - (x*(2*a*c*e - b^2*e + b*c*d))/(c*(4*
a*c - b^2)))/(a + b*x + c*x^2) - (2*atan(((4*a*c - b^2)*(((b^3 - 4*a*b*c)*(
2*a*e - b*d))/(4*a*c - b^2)^(5/2) - (2*c*x*(2*a*e - b*d))/(4*a*c - b^2)^(3/
2)))/(2*a*e - b*d))*(2*a*e - b*d))/(4*a*c - b^2)^(3/2)
```

sympy [B] time = 1.05, size = 379, normalized size = 3.83

$$-\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)\log\left(x+\frac{-16a^2c^2\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)+8ab^2c\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)+2abe-b^4\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)-b^2d}{4ace-2bcd}\right)+\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)\log\left(x+\frac{16a^2c^2\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)-8ab^2c\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)+2abe+b^4\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)-b^2d}{4ace-2bcd}\right)+\frac{abe-2acd+x\left(-2ace+b^2e-bcd\right)}{4a^2c^2-ab^2c+x^2\left(4ac^3-b^2c^2\right)+x\left(4abc^2-b^3c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] -sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d)*log(x + (-16*a**2*c**2*sqrt(-1/(4
*a*c - b**2)**3)*(2*a*e - b*d) + 8*a*b**2*c*sqrt(-1/(4*a*c - b**2)**3)*(2*a
*e - b*d) + 2*a*b*e - b**4*sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d) - b**2*
d)/(4*a*c*e - 2*b*c*d)) + sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d)*log(x +
(16*a**2*c**2*sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d) - 8*a*b**2*c*sqrt(-1
/(4*a*c - b**2)**3)*(2*a*e - b*d) + 2*a*b*e + b**4*sqrt(-1/(4*a*c - b**2)**
3)*(2*a*e - b*d) - b**2*d)/(4*a*c*e - 2*b*c*d)) + (a*b*e - 2*a*c*d + x*(-2*
a*c*e + b**2*e - b*c*d))/(4*a**2*c**2 - a*b**2*c + x**2*(4*a*c**3 - b**2*c*
*2) + x*(4*a*b*c**2 - b**3*c))
```

3.819 $\int \frac{d+ex}{\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=87

$$\frac{2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{-2ae+x(2cd-be)+bd}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Rubi [A] time = 0.04, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {638, 618, 206}

$$\frac{2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{-2ae+x(2cd-be)+bd}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((b*d - 2*a*e + (2*c*d - b*e)*x)/((b^2 - 4*a*c)*(a + b*x + c*x^2))) + (2*(
2*c*d - b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{\left(a+bx+cx^2\right)^2} \, dx &= -\frac{bd-2ae+(2cd-be)x}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(2cd-be)\int \frac{1}{a+bx+cx^2} \, dx}{b^2-4ac}\\
&= -\frac{bd-2ae+(2cd-be)x}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(2(2cd-be))\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2} \, dx,x,b+2cx\right)}{b^2-4ac}\\
&= -\frac{bd-2ae+(2cd-be)x}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 88, normalized size = 1.01

$$\frac{\frac{2(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{2ae-bd+bex-2cdx}{a+x(b+cx)}}{b^2-4ac}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(a + x*(b + c*x)) + (2*(-2*c*d + b*e)*A
rcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c])/(b^2 - 4*a*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.47, size = 459, normalized size = 5.28

$$\left[\frac{\left(2acd-abe+\left(2c^2d-bce\right)x^2+\left(2bcd-b^2e\right)x\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)-\left(b^3-4abc\right)d+2\left(ab^2-4a^2c\right)e-\left(2\left(b^2c-4ac^2\right)d-\left(b^3-4abc\right)e\right)x}{ab^4-8a^2b^2c+16a^3c^2+\left(b^4c-8ab^2c^2+16a^2c^3\right)x^2+\left(b^5-8ab^3c+16a^2bc^2\right)x},\ \frac{2\left(2acd-abe+\left(2c^2d-bce\right)x^2+\left(2bcd-b^2e\right)x\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)-\left(b^3-4abc\right)d+2\left(ab^2-4a^2c\right)e-\left(2\left(b^2c-4ac^2\right)d-\left(b^3-4abc\right)e\right)x}{ab^4-8a^2b^2c+16a^3c^2+\left(b^4c-8ab^2c^2+16a^2c^3\right)x^2+\left(b^5-8ab^3c+16a^2bc^2\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [((2*a*c*d - a*b*e + (2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*x)*sqrt(b^2
- 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x
+ b))/(c*x^2 + b*x + a)) - (b^3 - 4*a*b*c)*d + 2*(a*b^2 - 4*a^2*c)*e - (2*(
b^2*c - 4*a*c^2)*d - (b^3 - 4*a*b*c)*e)*x)/(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^
2 + (b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^
2)*x), (2*(2*a*c*d - a*b*e + (2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*x)*s
qrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - (
b^3 - 4*a*b*c)*d + 2*(a*b^2 - 4*a^2*c)*e - (2*(b^2*c - 4*a*c^2)*d - (b^3 -
4*a*b*c)*e)*x)/(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2 + (b^4*c - 8*a*b^2*c^2 + 1
6*a^2*c^3)*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*x)]
```

giac [A] time = 0.16, size = 99, normalized size = 1.14

$$-\frac{2\,(2\,cd-be)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^2-4\,ac\right)\sqrt{-b^2+4\,ac}}-\frac{2\,cdx-bxe+bd-2\,ae}{\left(cx^2+bx+a\right)\left(b^2-4\,ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -2*(2*c*d - b*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2 - 4*a*c)*sqrt
(-b^2 + 4*a*c)) - (2*c*d*x - b*x*e + b*d - 2*a*e)/((c*x^2 + b*x + a)*(b^2 -
 4*a*c))
```

maple [A] time = 0.05, size = 118, normalized size = 1.36

$$-\frac{2be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{4cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{-2ae+bd+(-be+2cd)\,x}{\left(4ac-b^2\right)\left(c\,x^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (-2*a*e+b*d+(-b*e+2*c*d)*x)/(4*a*c-b^2)/(c*x^2+b*x+a)-2/(4*a*c-b^2)^(3/2)*a
rctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*e+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*c*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 0.11, size = 159, normalized size = 1.83

$$\frac{2\,\mathrm{atan}\left(\frac{\left(4\,a\,c-b^2\right)\left(\frac{\left(b^3-4\,a\,b\,c\right)\,\left(b\,e-2\,c\,d\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}-\frac{2\,c\,x\,\left(b\,e-2\,c\,d\right)}{{\left(4\,a\,c-b^2\right)}^{3/2}}\right)}{b\,e-2\,c\,d}\right)\,\left(b\,e-2\,c\,d\right)}{{\left(4\,a\,c-b^2\right)}^{3/2}}-\frac{\frac{2\,a\,e-b\,d}{4\,a\,c-b^2}+\frac{x\,\left(b\,e-2\,c\,d\right)}{4\,a\,c-b^2}}{c\,x^2+b\,x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*atan(((4*a*c - b^2)*(((b^3 - 4*a*b*c)*(b*e - 2*c*d))/(4*a*c - b^2)^(5/2)
 - (2*c*x*(b*e - 2*c*d))/(4*a*c - b^2)^(3/2)))/(b*e - 2*c*d))*(b*e - 2*c*d)
)/(4*a*c - b^2)^(3/2) - ((2*a*e - b*d)/(4*a*c - b^2) + (x*(b*e - 2*c*d))/(4
*a*c - b^2))/(a + b*x + c*x^2)
```

sympy [**B**] time = 0.95, size = 359, normalized size = 4.13

$$\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)\log\left(x+\frac{-16a^2c^2\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)+8ab^2c\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)-b^4\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)+b^2e-2bcd}{2bce-4c^2d}\right)-\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)\log\left(x+\frac{16a^2c^2\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)-8ab^2c\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)+b^4\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)+b^2e-2bcd}{2bce-4c^2d}\right)+\frac{-2ae+bd+x\,(-be+2cd)}{4a^2c-ab^2+x^2\left(4ac^2-b^2c\right)+x\left(4abc-b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d)*log(x + (-16*a**2*c**2*sqrt(-1/(4*
a*c - b**2)**3)*(b*e - 2*c*d) + 8*a*b**2*c*sqrt(-1/(4*a*c - b**2)**3)*(b*e
- 2*c*d) - b**4*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**2*e - 2*b*c*d
)/(2*b*c*e - 4*c**2*d)) - sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d)*log(x +
(16*a**2*c**2*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) - 8*a*b**2*c*sqrt(-1
/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**4*sqrt(-1/(4*a*c - b**2)**3)*(b*e -
2*c*d) + b**2*e - 2*b*c*d)/(2*b*c*e - 4*c**2*d)) + (-2*a*e + b*d + x*(-b*e
+ 2*c*d))/(4*a**2*c - a*b**2 + x**2*(4*a*c**2 - b**2*c) + x*(4*a*b*c - b**3
))
```

3.820 $\int \frac{d+ex}{x\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=135

$$\frac{\left(4a^2ce-6abcd+b^3d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\left(b^2-4ac\right)^{3/2}}-\frac{d\log\left(a+bx+cx^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{cx(bd-2ae)-abe-2acd+b^2d}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Rubi [A] time = 0.20, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{\left(4a^2ce-6abcd+b^3d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\left(b^2-4ac\right)^{3/2}}-\frac{d\log\left(a+bx+cx^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{cx(bd-2ae)-abe-2acd+b^2d}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + b*x + c*x^2)^2),x]
```

```
[Out] (b^2*d - 2*a*c*d - a*b*e + c*(b*d - 2*a*e)*x)/(a*(b^2 - 4*a*c)*(a + b*x + c
*x^2)) + ((b^3*d - 6*a*b*c*d + 4*a^2*c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*
a*c]])/(a^2*(b^2 - 4*a*c)^(3/2)) + (d*Log[x])/a^2 - (d*Log[a + b*x + c*x^2]
)/(2*a^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x\left(a+bx+cx^2\right)^2}\,dx = \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{-\left(\left(b^2-4ac\right)d\right)-c(bd-2ae)x}{x\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\int \left(\frac{\left(-b^2+4ac\right)d}{ax} + \frac{b^3d-5abcd+2a^2ce+c\left(b^2-4ac\right)dx}{a\left(a+bx+cx^2\right)}\right)dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{\int \frac{b^3d-5abcd+2a^2ce+c\left(b^2-4ac\right)dx}{a+bx+cx^2}\,dx}{a^2\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{d\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a^2} - \frac{\left(b^3d-6abcd+4a^2ce\right)}{2a^2\left(b^2-4\right.}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{d\log\left(a+bx+cx^2\right)}{2a^2} + \frac{\left(b^3d-6abcd+4\right.}{}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(b^3d-6abcd+4a^2ce\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\left(b^2-4ac\right)^{3/2}} + \frac{d\log(x)}{a^2}$$

Mathematica [A] time = 0.20, size = 134, normalized size = 0.99

$$\frac{\frac{2\left(4a^2ce-6abcd+b^3d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} - \frac{2a\left(b(ae-cdx)+2ac(d+ex)+b^2(-d)\right)}{\left(b^2-4ac\right)(a+x(b+cx))} - d\log(a+x(b+cx)) + 2d\log(x)}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-2*a*(-(b^2*d) + b*(a*e - c*d*x) + 2*a*c*(d + e*x)))/((b^2 - 4*a*c)*(a +
x*(b + c*x))) + (2*(b^3*d - 6*a*b*c*d + 4*a^2*c*e)*ArcTan[(b + 2*c*x)/Sqrt[
-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*d*Log[x] - d*Log[a + x*(b + c*x)])
/(2*a^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x*(a + b*x + c*x^2)^2),x]
[Out] IntegrateAlgebraic[(d + e*x)/(x*(a + b*x + c*x^2)^2), x]
```

fricas [B] time = 0.85, size = 955, normalized size = 7.07

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a)^2,x, algorithm="fricas")
[Out] [-1/2*((4*a^3*c*e + (4*a^2*c^2*e + (b^3*c - 6*a*b*c^2)*d)*x^2 + (a*b^3 - 6*
a^2*b*c)*d + (4*a^2*b*c*e + (b^4 - 6*a*b^2*c)*d)*x)*sqrt(b^2 - 4*a*c)*log((
2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
 b*x + a)) - 2*(a*b^4 - 6*a^2*b^2*c + 8*a^3*c^2)*d + 2*(a^2*b^3 - 4*a^3*b*c
)*e - 2*((a*b^3*c - 4*a^2*b*c^2)*d - 2*(a^2*b^2*c - 4*a^3*c^2)*e)*x + ((b^4
*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x
 + (a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*d)*log(c*x^2 + b*x + a) - 2*((b^4*c -
 8*a*b^2*c^2 + 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x + (
a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*d)*log(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^
5*c^2 + (a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*x^2 + (a^2*b^5 - 8*a^3*b^3
*c + 16*a^4*b*c^2)*x), 1/2*(2*(4*a^3*c*e + (4*a^2*c^2*e + (b^3*c - 6*a*b*c^
2)*d)*x^2 + (a*b^3 - 6*a^2*b*c)*d + (4*a^2*b*c*e + (b^4 - 6*a*b^2*c)*d)*x)*
sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) +
2*(a*b^4 - 6*a^2*b^2*c + 8*a^3*c^2)*d - 2*(a^2*b^3 - 4*a^3*b*c)*e + 2*((a*b
^3*c - 4*a^2*b*c^2)*d - 2*(a^2*b^2*c - 4*a^3*c^2)*e)*x - ((b^4*c - 8*a*b^2*
c^2 + 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x + (a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2)*d)*log(c*x^2 + b*x + a) + 2*((b^4*c - 8*a*b^2*c^2
+ 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x + (a*b^4 - 8*a^2
*b^2*c + 16*a^3*c^2)*d)*log(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a^2*
b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*x^2 + (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b
*c^2)*x)]
```

giac [A] time = 0.16, size = 160, normalized size = 1.19

$$-\frac{\left(b^{3} d - 6 \, a b c d + 4 \, a^{2} c e\right) \arctan\left(\frac{2 \, c x + b}{\sqrt{-b^{2} + 4 \, a c}}\right)}{\left(a^{2} b^{2} - 4 \, a^{3} c\right) \sqrt{-b^{2} + 4 \, a c}} - \frac{d \log\left(c x^{2} + b x + a\right)}{2 \, a^{2}} + \frac{d \log\left({\left| x \right|}\right)}{a^{2}} + \frac{a b^{2} d - 2 \, a^{2} c d - a^{2} b e + {\left(a b c d - 2 \, a^{2} c e\right)} x}{{\left(c x^{2} + b x + a\right)} {\left(b^{2} - 4 \, a c\right)} a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a)^2,x, algorithm="giac")
[Out] -(b^3*d - 6*a*b*c*d + 4*a^2*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((a
^2*b^2 - 4*a^3*c)*sqrt(-b^2 + 4*a*c)) - 1/2*d*log(c*x^2 + b*x + a)/a^2 + d*
log(abs(x))/a^2 + (a*b^2*d - 2*a^2*c*d - a^2*b*e + (a*b*c*d - 2*a^2*c*e)*x)
/((c*x^2 + b*x + a)*(b^2 - 4*a*c)*a^2)
```

maple [B] time = 0.06, size = 337, normalized size = 2.50

$$-\frac{bcdx}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)a}-\frac{6bcd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}a}+\frac{b^{3}d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}a^{2}}+\frac{2cex}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)}+\frac{4ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}-\frac{b^{2}d}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)a}-\frac{2cd\ln\left(c\,x^{2}+bx+a\right)}{\left(4ac-b^{2}\right)a}+\frac{b^{2}d\ln\left(c\,x^{2}+bx+a\right)}{2\left(4ac-b^{2}\right)a^{2}}+\frac{be}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)}+\frac{2cd}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)}+\frac{d\ln(x)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x+a)^2,x)
[Out] 2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*e-1/a/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b*d+1/(
c*x^2+b*x+a)/(4*a*c-b^2)*b*e+2/(c*x^2+b*x+a)/(4*a*c-b^2)*c*d-1/a/(c*x^2+b*x
+a)/(4*a*c-b^2)*b^2*d-2/a/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*d+1/2/a^2/(4*a*c-b^
2)*ln(c*x^2+b*x+a)*b^2*d+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*c*e-6/a/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d+1
```

/a^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d+1/a^2*d*ln
(x)

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.42, size = 920, normalized size = 6.81

$$\frac{\frac{a b e-b^2 d+2 a c d}{a\left(4 a c-b^2\right)}+\frac{c x\left(2 a e-b d\right)}{a\left(4 a c-b^2\right)}}{c x^2+b x+a}-\ln\left(96 a^4 c^3 d-2 a b^6 d-2 b^7 d x-84 a^3 b^2 c^2 d+2 a b^3 d \sqrt{-\left(4 a c-b^2\right)^3}+23 a^2 b^4 c d-2 a^3 b^3 c e+8 a^4 b c^2 e+2 a^3 c e \sqrt{-\left(4 a c-b^2\right)^3}+2 b^4 d x \sqrt{-\left(4 a c-b^2\right)^3}-16 a^4 c^3 e x-9 a^2 b c d \sqrt{-\left(4 a c-b^2\right)^3}+120 a^3 b c^3 d x-2 a^2 b^4 c e x-94 a^2 b^3 c^2 d x+12 a^2 c^2 d x \sqrt{-\left(4 a c-b^2\right)^3}+12 a^3 b^2 c^2 e x+24 a b^5 c d x-12 a b^2 c d x \sqrt{-\left(4 a c-b^2\right)^3}+2 a^2 b c e x \sqrt{-\left(4 a c-b^2\right)^3}\right)\left(\frac{d}{2 a^2}-\frac{\frac{b^3 d \sqrt{-\left(4 a c-b^2\right)^3}}{2}+2 a^2 c e \sqrt{-\left(4 a c-b^2\right)^3}-3 a b c d \sqrt{-\left(4 a c-b^2\right)^3}}{-64 a^5 c^3+48 a^4 b^2 c^2-12 a^3 b^4 c+a^2 b^6}\right)-\ln\left(2 a b^6 d-96 a^4 c^3 d+2 b^7 d x+84 a^3 b^2 c^2 d+2 a b^3 d \sqrt{-\left(4 a c-b^2\right)^3}-23 a^2 b^4 c d+2 a^3 b^3 c e-8 a^4 b c^2 e+2 a^3 c e \sqrt{-\left(4 a c-b^2\right)^3}+2 b^4 d x \sqrt{-\left(4 a c-b^2\right)^3}+16 a^4 c^3 e x-9 a^2 b c d \sqrt{-\left(4 a c-b^2\right)^3}-120 a^3 b c^3 d x+2 a^2 b^4 c e x+94 a^2 b^3 c^2 d x+12 a^2 c^2 d x \sqrt{-\left(4 a c-b^2\right)^3}-12 a^3 b^2 c^2 e x-24 a b^5 c d x-12 a b^2 c d x \sqrt{-\left(4 a c-b^2\right)^3}+2 a^2 b c e x \sqrt{-\left(4 a c-b^2\right)^3}\right)\left(\frac{d}{2 a^2}+\frac{\frac{b^3 d \sqrt{-\left(4 a c-b^2\right)^3}}{2}+2 a^2 c e \sqrt{-\left(4 a c-b^2\right)^3}-3 a b c d \sqrt{-\left(4 a c-b^2\right)^3}}{-64 a^5 c^3+48 a^4 b^2 c^2-12 a^3 b^4 c+a^2 b^6}\right)+\frac{d \ln\left(x\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((a*b*e - b^2*d + 2*a*c*d)/(a*(4*a*c - b^2)) + (c*x*(2*a*e - b*d))/(a*(4*a*
c - b^2)))/(a + b*x + c*x^2) - log(96*a^4*c^3*d - 2*a*b^6*d - 2*b^7*d*x - 8
4*a^3*b^2*c^2*d + 2*a*b^3*d*(-(4*a*c - b^2)^3)^(1/2) + 23*a^2*b^4*c*d - 2*a
^3*b^3*c*e + 8*a^4*b*c^2*e + 2*a^3*c*e*(-(4*a*c - b^2)^3)^(1/2) + 2*b^4*d*x
*(-(4*a*c - b^2)^3)^(1/2) - 16*a^4*c^3*e*x - 9*a^2*b*c*d*(-(4*a*c - b^2)^3)
^(1/2) + 120*a^3*b*c^3*d*x - 2*a^2*b^4*c*e*x - 94*a^2*b^3*c^2*d*x + 12*a^2*
c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) + 12*a^3*b^2*c^2*e*x + 24*a*b^5*c*d*x - 12
*a*b^2*c*d*x*(-(4*a*c - b^2)^3)^(1/2) + 2*a^2*b*c*e*x*(-(4*a*c - b^2)^3)^(1
/2))*(d/(2*a^2) - ((b^3*d*(-(4*a*c - b^2)^3)^(1/2))/2 + 2*a^2*c*e*(-(4*a*c
- b^2)^3)^(1/2) - 3*a*b*c*d*(-(4*a*c - b^2)^3)^(1/2))/(a^2*b^6 - 64*a^5*c^3
 - 12*a^3*b^4*c + 48*a^4*b^2*c^2)) - log(2*a*b^6*d - 96*a^4*c^3*d + 2*b^7*d
*x + 84*a^3*b^2*c^2*d + 2*a*b^3*d*(-(4*a*c - b^2)^3)^(1/2) - 23*a^2*b^4*c*d
 + 2*a^3*b^3*c*e - 8*a^4*b*c^2*e + 2*a^3*c*e*(-(4*a*c - b^2)^3)^(1/2) + 2*b
^4*d*x*(-(4*a*c - b^2)^3)^(1/2) + 16*a^4*c^3*e*x - 9*a^2*b*c*d*(-(4*a*c - b
^2)^3)^(1/2) - 120*a^3*b*c^3*d*x + 2*a^2*b^4*c*e*x + 94*a^2*b^3*c^2*d*x + 1
2*a^2*c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) - 12*a^3*b^2*c^2*e*x - 24*a*b^5*c*d*
x - 12*a*b^2*c*d*x*(-(4*a*c - b^2)^3)^(1/2) + 2*a^2*b*c*e*x*(-(4*a*c - b^2)
^3)^(1/2))*(d/(2*a^2) + ((b^3*d*(-(4*a*c - b^2)^3)^(1/2))/2 + 2*a^2*c*e*(-(
4*a*c - b^2)^3)^(1/2) - 3*a*b*c*d*(-(4*a*c - b^2)^3)^(1/2))/(a^2*b^6 - 64*a
^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2)) + (d*log(x))/a^2
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.821 $\int \frac{d+ex}{x^2(a+bx+cx^2)^2} \, dx$

Optimal. Leaf size=211

$$\frac{(2bd-ae)\log\left(a+bx+cx^2\right)}{2a^3}-\frac{\log(x)(2bd-ae)}{a^3}-\frac{-abe-6acd+2b^2d}{a^2x\left(b^2-4ac\right)}-\frac{\left(6a^2bce+12a^2c^2d-ab^3e-12ab^2cd+\right.}{a^3\left(b^2-4ac\right)^{3/2}}$$

Rubi [A] time = 0.36, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 800, 634, 618, 206, 628}

$$-\frac{\left(6a^2bce+12a^2c^2d-12ab^2cd-ab^3e+2b^4d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^3\left(b^2-4ac\right)^{3/2}}-\frac{-abe-6acd+2b^2d}{a^2x\left(b^2-4ac\right)}+\frac{(2bd-ae)\log\left(a+bx+cx^2\right)}{2a^3}-\frac{\log(x)(2bd-ae)}{a^3}+\frac{cx(bd-2ae)-abe-2acd+b^2d}{ax\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((2*b^2*d - 6*a*c*d - a*b*e)/(a^2*(b^2 - 4*a*c)*x)) + (b^2*d - 2*a*c*d - a
*b*e + c*(b*d - 2*a*e)*x)/(a*(b^2 - 4*a*c)*x*(a + b*x + c*x^2)) - ((2*b^4*d
 - 12*a*b^2*c*d + 12*a^2*c^2*d - a*b^3*e + 6*a^2*b*c*e)*ArcTanh[(b + 2*c*x)
/Sqrt[b^2 - 4*a*c]])/(a^3*(b^2 - 4*a*c)^(3/2)) - ((2*b*d - a*e)*Log[x])/a^3
 + ((2*b*d - a*e)*Log[a + b*x + c*x^2])/(2*a^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)^2}\,dx = \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{\int \frac{-2b^2d+6acd+abe-2c(bd-2ae)x}{x^2\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{\int \left(\frac{-2b^2d+6acd+abe}{ax^2} + \frac{\left(-b^2+4ac\right)(-2bd+ae)}{a^2x} + \frac{-2b^4d+10ab^2c\cdots}{\cdots}\right)}{a\left(b^2-4ac\right)}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{(2bd-ae)\log(x)}{a^3} - \int \frac{-2b^4d\cdots}{\cdots}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{(2bd-ae)\log(x)}{a^3} + \frac{(2bd-\cdots}{\cdots}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{(2bd-ae)\log(x)}{a^3} + \frac{(2bd-\cdots}{\cdots}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{\left(2b^4d-12ab^2cd+12a^2c^2d\cdots\right.}{a^3\left(\cdots\right.}$$

Mathematica [A] time = 0.34, size = 192, normalized size = 0.91

$$\frac{-\frac{2\left(6a^2bce+12a^2c^2d-ab^3e-12ab^2cd+2b^4d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} - \frac{2a\left(b^2(cdx-ae)-abc(3d+ex)+2ac(ae-cdx)+b^3d\right)}{\left(b^2-4ac\right)(a+x(b+cx))} + (2bd-ae)\log(a+x(b+cx)) + 2\log(x)(ae-2bd) - \frac{2ad}{x}}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-2*a*d)/x - (2*a*(b^3*d + 2*a*c*(a*e - c*d*x) + b^2*(-(a*e) + c*d*x) - a*
b*c*(3*d + e*x)))/((b^2 - 4*a*c)*(a + x*(b + c*x))) - (2*(2*b^4*d - 12*a*b^
2*c*d + 12*a^2*c^2*d - a*b^3*e + 6*a^2*b*c*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2
+ 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*(-2*b*d + a*e)*Log[x] + (2*b*d - a*e)*L
og[a + x*(b + c*x)])/(2*a^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^2*(a + b*x + c*x^2)^2), x]
```

fricas [B] time = 2.03, size = 1615, normalized size = 7.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(2*(a*b^4*c - 7*a^2*b^2*c^2 + 12*a^3*c^3)*d - (a^2*b^3*c - 4*a^3*b
*c^2)*e)*x^2 + ((2*(b^4*c - 6*a*b^2*c^2 + 6*a^2*c^3)*d - (a*b^3*c - 6*a^2*b
*c^2)*e)*x^3 + (2*(b^5 - 6*a*b^3*c + 6*a^2*b*c^2)*d - (a*b^4 - 6*a^2*b^2*c)
*e)*x^2 + (2*(a*b^4 - 6*a^2*b^2*c + 6*a^3*c^2)*d - (a^2*b^3 - 6*a^3*b*c)*e)
*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4
*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c
^2)*d + 2*((2*a*b^5 - 15*a^2*b^3*c + 28*a^3*b*c^2)*d - (a^2*b^4 - 6*a^3*b^2
*c + 8*a^4*c^2)*e)*x - ((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d - (a*b^4*
c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c
^2)*d - (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a*b^5 - 8*a^2*b^3
*c + 16*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*e)*x)*log(c*x^2
 + b*x + a) + 2*((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d - (a*b^4*c - 8*a
^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c^2)*d -
 (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a*b^5 - 8*a^2*b^3*c + 16
*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*e)*x)*log(x))/((a^3*b^
4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)*x^3 + (a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c
^2)*x^2 + (a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*x), -1/2*(2*(2*(a*b^4*c - 7*
a^2*b^2*c^2 + 12*a^3*c^3)*d - (a^2*b^3*c - 4*a^3*b*c^2)*e)*x^2 + 2*((2*(b^4
*c - 6*a*b^2*c^2 + 6*a^2*c^3)*d - (a*b^3*c - 6*a^2*b*c^2)*e)*x^3 + (2*(b^5
- 6*a*b^3*c + 6*a^2*b*c^2)*d - (a*b^4 - 6*a^2*b^2*c)*e)*x^2 + (2*(a*b^4 - 6
*a^2*b^2*c + 6*a^3*c^2)*d - (a^2*b^3 - 6*a^3*b*c)*e)*x)*sqrt(-b^2 + 4*a*c)*
arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(a^2*b^4 - 8*a^3*
b^2*c + 16*a^4*c^2)*d + 2*((2*a*b^5 - 15*a^2*b^3*c + 28*a^3*b*c^2)*d - (a^2
*b^4 - 6*a^3*b^2*c + 8*a^4*c^2)*e)*x - ((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*
c^3)*d - (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*
c + 16*a^2*b^2*c^2)*d - (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a
*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)
*e)*x)*log(c*x^2 + b*x + a) + 2*((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d
- (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*c + 16*
a^2*b^2*c^2)*d - (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a*b^5 -
8*a^2*b^3*c + 16*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*e)*x)*
log(x))/((a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)*x^3 + (a^3*b^5 - 8*a^4*b^
3*c + 16*a^5*b*c^2)*x^2 + (a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*x)]
```

giac [A] time = 0.16, size = 245, normalized size = 1.16

$$\frac{\left(2\,b^4 d - 12\,ab^2 cd + 12\,a^2 c^2 d - ab^3 e + 6\,a^2 bce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(a^3 b^2 - 4\,a^4 c\right)\sqrt{-b^2+4\,ac}} - \frac{2\,b^2 cdx^2 - 6\,ac^2 dx^2 - abcx^2 e + 2\,b^3 dx - 7\,abcdx - ab^2 xe + 2\,a^2 cxe + ab^2 d - 4\,a^2 cd}{\left(a^2 b^2 - 4\,a^3 c\right)\left(cx^3 + bx^2 + ax\right)} + \frac{(2\,bd - ae)\log\left(cx^2 + bx + a\right)}{2\,a^3} - \frac{(2\,bd - ae)\log\left(|x|\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (2*b^4*d - 12*a*b^2*c*d + 12*a^2*c^2*d - a*b^3*e + 6*a^2*b*c*e)*arctan((2*c
*x + b)/sqrt(-b^2 + 4*a*c))/((a^3*b^2 - 4*a^4*c)*sqrt(-b^2 + 4*a*c)) - (2*b
^2*c*d*x^2 - 6*a*c^2*d*x^2 - a*b*c*x^2*e + 2*b^3*d*x - 7*a*b*c*d*x - a*b^2*
x*e + 2*a^2*c*x*e + a*b^2*d - 4*a^2*c*d)/((a^2*b^2 - 4*a^3*c)*(c*x^3 + b*x^
2 + a*x)) + 1/2*(2*b*d - a*e)*log(c*x^2 + b*x + a)/a^3 - (2*b*d - a*e)*log(
abs(x))/a^3
```

maple [B] time = 0.06, size = 582, normalized size = 2.76

$$-\frac{bcex}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)a} - \frac{6bce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a} - \frac{2c^2dx}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)a} - \frac{12c^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a} + \frac{b^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a^2} + \frac{b^2cdx}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)a^2} + \frac{12b^2cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a^2} - \frac{2b^4d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a^3} - \frac{b^2e}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)a} - \frac{3bcd}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)a} - \frac{2ce\ln\left(cx^2+bx+a\right)}{\left(4ac-b^2\right)a} + \frac{b^3d}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)a^2} + \frac{b^2e\ln\left(cx^2+bx+a\right)}{2\left(4ac-b^2\right)a^2} + \frac{4bcd\ln\left(cx^2+bx+a\right)}{\left(4ac-b^2\right)a^2} - \frac{b^3d\ln\left(cx^2+bx+a\right)}{\left(4ac-b^2\right)a^3} + \frac{2ce}{\left(cx^2+bx+a\right)\left(4ac-b^2\right)} + \frac{e\ln(x)}{a^2} - \frac{2bd\ln(x)}{a^3} - \frac{d}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x+a)^2,x)
```

```
[Out] -1/a/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b*e-2/a/(c*x^2+b*x+a)*c^2/(4*a*c-b^2)*x*
d+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b^2*d+2/(c*x^2+b*x+a)/(4*a*c-b^2)*c*e
-1/a/(c*x^2+b*x+a)/(4*a*c-b^2)*b^2*e-3/a/(c*x^2+b*x+a)/(4*a*c-b^2)*b*c*d+1/
a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*b^3*d-2/a/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*e+1/2
/a^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^2*e+4/a^2/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*
b*d-1/a^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3*d-6/a/(4*a*c-b^2)^(3/2)*arctan((2
*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*e-12/a/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*c^2*d+1/a^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b^3*e+12/a^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*
b^2*c*d-2/a^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d-1
/a^2*d/x+1/a^2*e*ln(x)-2/a^3*ln(x)*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.09, size = 1366, normalized size = 6.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + b*x + c*x^2)^2),x)
```

```
[Out] log(96*a^5*c^3*e - 2*a^2*b^6*e + 4*a*b^7*d + 4*b^8*d*x + 174*a^3*b^3*c^2*d
- 2*a^2*b^3*e*(-(4*a*c - b^2)^3)^(1/2) + 6*a^3*c^2*d*(-(4*a*c - b^2)^3)^(1/
2) - 84*a^4*b^2*c^2*e - 2*a*b^7*e*x + 4*a*b^4*d*(-(4*a*c - b^2)^3)^(1/2) -
46*a^2*b^5*c*d - 216*a^4*b*c^3*d + 23*a^3*b^4*c*e + 48*a^4*c^4*d*x + 4*b^5*
d*x*(-(4*a*c - b^2)^3)^(1/2) + 9*a^3*b*c*e*(-(4*a*c - b^2)^3)^(1/2) - 2*a*b
^4*e*x*(-(4*a*c - b^2)^3)^(1/2) + 24*a^2*b^5*c*e*x + 120*a^4*b*c^3*e*x - 18
*a^2*b^2*c*d*(-(4*a*c - b^2)^3)^(1/2) + 194*a^2*b^4*c^2*d*x - 276*a^3*b^2*c
^3*d*x - 94*a^3*b^3*c^2*e*x - 12*a^3*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2) - 48*
a*b^6*c*d*x - 24*a*b^3*c*d*x*(-(4*a*c - b^2)^3)^(1/2) + 30*a^2*b*c^2*d*x*(-
(4*a*c - b^2)^3)^(1/2) + 12*a^2*b^2*c*e*x*(-(4*a*c - b^2)^3)^(1/2))*((b^4*d
*(-(4*a*c - b^2)^3)^(1/2) + 6*a^2*c^2*d*(-(4*a*c - b^2)^3)^(1/2) - (a*b^3*e
*(-(4*a*c - b^2)^3)^(1/2))/2 - 6*a*b^2*c*d*(-(4*a*c - b^2)^3)^(1/2) + 3*a^2
*b*c*e*(-(4*a*c - b^2)^3)^(1/2))/(a^3*b^6 - 64*a^6*c^3 - 12*a^4*b^4*c + 48*
a^5*b^2*c^2) - e/(2*a^2) + (b*d)/a^3) - log(2*a^2*b^6*e - 96*a^5*c^3*e - 4*
a*b^7*d - 4*b^8*d*x - 174*a^3*b^3*c^2*d - 2*a^2*b^3*e*(-(4*a*c - b^2)^3)^(1
/2) + 6*a^3*c^2*d*(-(4*a*c - b^2)^3)^(1/2) + 84*a^4*b^2*c^2*e + 2*a*b^7*e*x
 + 4*a*b^4*d*(-(4*a*c - b^2)^3)^(1/2) + 46*a^2*b^5*c*d + 216*a^4*b*c^3*d -
23*a^3*b^4*c*e - 48*a^4*c^4*d*x + 4*b^5*d*x*(-(4*a*c - b^2)^3)^(1/2) + 9*a^
3*b*c*e*(-(4*a*c - b^2)^3)^(1/2) - 2*a*b^4*e*x*(-(4*a*c - b^2)^3)^(1/2) - 2
4*a^2*b^5*c*e*x - 120*a^4*b*c^3*e*x - 18*a^2*b^2*c*d*(-(4*a*c - b^2)^3)^(1/
2) - 194*a^2*b^4*c^2*d*x + 276*a^3*b^2*c^3*d*x + 94*a^3*b^3*c^2*e*x - 12*a^
3*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2) + 48*a*b^6*c*d*x - 24*a*b^3*c*d*x*(-(4*a
*c - b^2)^3)^(1/2) + 30*a^2*b*c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b^2
*c*e*x*(-(4*a*c - b^2)^3)^(1/2))*((b^4*d*(-(4*a*c - b^2)^3)^(1/2) + 6*a^2*c
^2*d*(-(4*a*c - b^2)^3)^(1/2) - (a*b^3*e*(-(4*a*c - b^2)^3)^(1/2))/2 - 6*a*
```

```
b^2*c*d*(-(4*a*c - b^2)^3)^(1/2) + 3*a^2*b*c*e*(-(4*a*c - b^2)^3)^(1/2))/(a
^3*b^6 - 64*a^6*c^3 - 12*a^4*b^4*c + 48*a^5*b^2*c^2) + e/(2*a^2) - (b*d)/a^
3) - (d/a - (x*(2*b^3*d - a*b^2*e + 2*a^2*c*e - 7*a*b*c*d))/(a^2*(4*a*c - b
^2)) + (c*x^2*(a*b*e - 2*b^2*d + 6*a*c*d))/(a^2*(4*a*c - b^2)))/(a*x + b*x^
2 + c*x^3) + (log(x)*(a*e - 2*b*d))/a^3
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.822 $\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=283

$$-\frac{\left(-2abe-2acd+3b^2d\right)\log\left(a+bx+cx^2\right)}{2a^4}+\frac{\log(x)\left(-2abe-2acd+3b^2d\right)}{a^4}-\frac{-2abe-8acd+3b^2d}{2a^2x^2\left(b^2-4ac\right)}+\frac{6a^2ce-2ab^2}{a^3x\,(}$$

Rubi [A] time = 0.61, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{\left(12a^2b^2ce+30a^2bc^2d-12a^3c^2e-20ab^3cd-2ab^4e+3b^5d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^4\left(b^2-4ac\right)^{3/2}}-\frac{-2abe-8acd+3b^2d}{2a^2x^2\left(b^2-4ac\right)}-\frac{\left(-2abe-2acd+3b^2d\right)\log\left(a+bx+cx^2\right)}{2a^4}+\frac{6a^2ce-2ab^2e-11abcd+3b^3d}{a^3x\left(b^2-4ac\right)}+\frac{\log(x)\left(-2abe-2acd+3b^2d\right)}{a^4}+\frac{cx(bd-2ae)-abe-2acd+b^2d}{ax^2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + b*x + c*x^2)^2),x]
```

```
[Out] -(3*b^2*d - 8*a*c*d - 2*a*b*e)/(2*a^2*(b^2 - 4*a*c)*x^2) + (3*b^3*d - 11*a*
b*c*d - 2*a*b^2*e + 6*a^2*c*e)/(a^3*(b^2 - 4*a*c)*x) + (b^2*d - 2*a*c*d - a
*b*e + c*(b*d - 2*a*e)*x)/(a*(b^2 - 4*a*c)*x^2*(a + b*x + c*x^2)) + ((3*b^5
*d - 20*a*b^3*c*d + 30*a^2*b*c^2*d - 2*a*b^4*e + 12*a^2*b^2*c*e - 12*a^3*c^
2*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(a^4*(b^2 - 4*a*c)^(3/2)) + ((
3*b^2*d - 2*a*c*d - 2*a*b*e)*Log[x])/a^4 - ((3*b^2*d - 2*a*c*d - 2*a*b*e)*L
og[a + b*x + c*x^2])/(2*a^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)^2}\,dx = \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)} - \frac{\int \frac{-3b^2d+8acd+2abe-3c(bd-2ae)x}{x^3\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)} - \frac{\int \left(\frac{-3b^2d+8acd+2abe}{ax^3} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^2x^2} - \frac{(-b^2}{}\right.}{}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd}{a\left(b^2-4ac\right)x^2\left(a+bx\right.}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd}{a\left(b^2-4ac\right)x^2\left(a+bx\right.}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd}{a\left(b^2-4ac\right)x^2\left(a+bx\right.}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd}{a\left(b^2-4ac\right)x^2\left(a+bx\right.}$$

Mathematica [A] time = 0.45, size = 253, normalized size = 0.89

$$\frac{\frac{2a\left(2a^2c^2(d+ex)+b^3(cdx-ae)-ab^2c(4d+ex)+3abc(ae-cdx)+b^4d\right)}{\left(b^2-4ac\right)(a+x(b+cx))} - \frac{a^2d}{x^2} + \frac{2\left(-12a^3c^2e+12a^2b^2ce+30a^2bc^2d-2ab^4e-20ab^3cd+3b^5d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} + 2\log(x)\left(-2abe-2acd+3b^2d\right) + \left(2abe+2acd-3b^2d\right)\log(a+x(b+cx)) - \frac{2a(ae-2bd)}{x}}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + b*x + c*x^2)^2),x]
```

```
[Out] (-((a^2*d)/x^2) - (2*a*(-2*b*d + a*e))/x + (2*a*(b^4*d + 3*a*b*c*(a*e - c*d
*x) + b^3*(-(a*e) + c*d*x) + 2*a^2*c^2*(d + e*x) - a*b^2*c*(4*d + e*x)))/((
b^2 - 4*a*c)*(a + x*(b + c*x))) + (2*(3*b^5*d - 20*a*b^3*c*d + 30*a^2*b*c^2
*d - 2*a*b^4*e + 12*a^2*b^2*c*e - 12*a^3*c^2*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*(3*b^2*d - 2*a*c*d - 2*a*b*e)*Log[x]
+ (-3*b^2*d + 2*a*c*d + 2*a*b*e)*Log[a + x*(b + c*x)])/(2*a^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)/(x^3*(a + b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(d + e*x)/(x^3*(a + b*x + c*x^2)^2), x]
```

fricas [B] time = 4.08, size = 2003, normalized size = 7.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*((3*a*b^5*c - 23*a^2*b^3*c^2 + 44*a^3*b*c^3)*d - 2*(a^2*b^4*c - 7*a
^3*b^2*c^2 + 12*a^4*c^3)*e)*x^3 + ((6*a*b^6 - 49*a^2*b^4*c + 108*a^3*b^2*c^
2 - 32*a^4*c^3)*d - 2*(2*a^2*b^5 - 15*a^3*b^3*c + 28*a^4*b*c^2)*e)*x^2 + ((
(3*b^5*c - 20*a*b^3*c^2 + 30*a^2*b*c^3)*d - 2*(a*b^4*c - 6*a^2*b^2*c^2 + 6*
a^3*c^3)*e)*x^4 + ((3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*d - 2*(a*b^5 - 6*a
^2*b^3*c + 6*a^3*b*c^2)*e)*x^3 + ((3*a*b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*d
 - 2*(a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e)*x^2)*sqrt(b^2 - 4*a*c)*log((2*c
^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*
x + a)) - (a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*d + (3*(a^2*b^5 - 8*a^3*b^3*
c + 16*a^4*b*c^2)*d - 2*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*e)*x - (((3*b^
6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*d - 2*(a*b^5*c - 8*a^2*b^
3*c^2 + 16*a^3*b*c^3)*e)*x^4 + ((3*b^7 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a
^3*b*c^3)*d - 2*(a*b^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e)*x^3 + ((3*a*b^6 -
 26*a^2*b^4*c + 64*a^3*b^2*c^2 - 32*a^4*c^3)*d - 2*(a^2*b^5 - 8*a^3*b^3*c +
 16*a^4*b*c^2)*e)*x^2)*log(c*x^2 + b*x + a) + 2*(((3*b^6*c - 26*a*b^4*c^2 +
 64*a^2*b^2*c^3 - 32*a^3*c^4)*d - 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3
)*e)*x^4 + ((3*b^7 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*d - 2*(a*b
^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e)*x^3 + ((3*a*b^6 - 26*a^2*b^4*c + 64*a
^3*b^2*c^2 - 32*a^4*c^3)*d - 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e)*x^
2)*log(x))/((a^4*b^4*c - 8*a^5*b^2*c^2 + 16*a^6*c^3)*x^4 + (a^4*b^5 - 8*a^5
*b^3*c + 16*a^6*b*c^2)*x^3 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x^2), 1/2
*(2*((3*a*b^5*c - 23*a^2*b^3*c^2 + 44*a^3*b*c^3)*d - 2*(a^2*b^4*c - 7*a^3*b
^2*c^2 + 12*a^4*c^3)*e)*x^3 + ((6*a*b^6 - 49*a^2*b^4*c + 108*a^3*b^2*c^2 -
32*a^4*c^3)*d - 2*(2*a^2*b^5 - 15*a^3*b^3*c + 28*a^4*b*c^2)*e)*x^2 + 2*(((3
*b^5*c - 20*a*b^3*c^2 + 30*a^2*b*c^3)*d - 2*(a*b^4*c - 6*a^2*b^2*c^2 + 6*a^
3*c^3)*e)*x^4 + ((3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*d - 2*(a*b^5 - 6*a^2
*b^3*c + 6*a^3*b*c^2)*e)*x^3 + ((3*a*b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*d -
 2*(a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e)*x^2)*sqrt(-b^2 + 4*a*c)*arctan(-s
qrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - (a^3*b^4 - 8*a^4*b^2*c + 16*
a^5*c^2)*d + (3*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*d - 2*(a^3*b^4 - 8*a
^4*b^2*c + 16*a^5*c^2)*e)*x - (((3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 -
32*a^3*c^4)*d - 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*e)*x^4 + ((3*b^7
 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*d - 2*(a*b^6 - 8*a^2*b^4*c +
 16*a^3*b^2*c^2)*e)*x^3 + ((3*a*b^6 - 26*a^2*b^4*c + 64*a^3*b^2*c^2 - 32*a^
4*c^3)*d - 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e)*x^2)*log(c*x^2 + b*x
 + a) + 2*(((3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*d - 2*(a
*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*e)*x^4 + ((3*b^7 - 26*a*b^5*c + 64*a
^2*b^3*c^2 - 32*a^3*b*c^3)*d - 2*(a*b^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e)*
x^3 + ((3*a*b^6 - 26*a^2*b^4*c + 64*a^3*b^2*c^2 - 32*a^4*c^3)*d - 2*(a^2*b^
5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e)*x^2)*log(x))/((a^4*b^4*c - 8*a^5*b^2*c^2
 + 16*a^6*c^3)*x^4 + (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x^3 + (a^5*b^4
- 8*a^6*b^2*c + 16*a^7*c^2)*x^2)]
```

giac [A] time = 0.17, size = 345, normalized size = 1.22

$$-\frac{\left(3\,b^{5}d - 20\,ab^{3}cd + 30\,a^{2}bc^{2}d - 2\,ab^{4}e + 12\,a^{2}b^{2}ce - 12\,a^{3}c^{2}e\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(a^{4}b^{2} - 4\,a^{5}c\right)\sqrt{-b^{2}+4\,ac}} - \frac{\left(3\,b^{2}d - 2\,acd - 2\,abe\right)\log\left(cx^{2}+bx+a\right)}{2\,a^{4}} + \frac{\left(3\,b^{2}d - 2\,acd - 2\,abe\right)\log\left(|x|\right)}{a^{4}} - \frac{a^{3}b^{2}d - 4\,a^{4}cd - 2\left(3\,ab^{3}cd - 11\,a^{2}bc^{2}d - 2\,a^{2}b^{2}ce + 6\,a^{3}c^{2}e\right)x^{3} - \left(6\,ab^{4}d - 25\,a^{2}b^{2}cd + 8\,a^{3}c^{2}d - 4\,a^{2}b^{3}e + 14\,a^{3}bce\right)x^{2} - \left(3\,a^{2}b^{3}d - 12\,a^{3}bcd - 2\,a^{3}b^{2}e + 8\,a^{4}ce\right)x}{2\left(cx^{2}+bx+a\right)\left(b^{2}-4\,ac\right)a^{4}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(3*b^5*d - 20*a*b^3*c*d + 30*a^2*b*c^2*d - 2*a*b^4*e + 12*a^2*b^2*c*e - 12
*a^3*c^2*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((a^4*b^2 - 4*a^5*c)*sqr
t(-b^2 + 4*a*c)) - 1/2*(3*b^2*d - 2*a*c*d - 2*a*b*e)*log(c*x^2 + b*x + a)/a
^4 + (3*b^2*d - 2*a*c*d - 2*a*b*e)*log(abs(x))/a^4 - 1/2*(a^3*b^2*d - 4*a^4
*c*d - 2*(3*a*b^3*c*d - 11*a^2*b*c^2*d - 2*a^2*b^2*c*e + 6*a^3*c^2*e)*x^3 -
 (6*a*b^4*d - 25*a^2*b^2*c*d + 8*a^3*c^2*d - 4*a^2*b^3*e + 14*a^3*b*c*e)*x^
2 - (3*a^2*b^3*d - 12*a^3*b*c*d - 2*a^3*b^2*e + 8*a^4*c*e)*x)/((c*x^2 + b*x
 + a)*(b^2 - 4*a*c)*a^4*x^2)
```

maple [B] time = 0.07, size = 770, normalized size = 2.72

$$-\frac{2c^2ex}{(cx^2+bx+a)(4ac-b^2)a}-\frac{12c^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}a}+\frac{b^2cex}{(cx^2+bx+a)(4ac-b^2)a^2}+\frac{12b^2ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}a^2}+\frac{3bc^2dx}{(cx^2+bx+a)(4ac-b^2)a^2}+\frac{30bc^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}a^2}-\frac{2b^4e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}a^3}-\frac{b^3cdx}{(cx^2+bx+a)(4ac-b^2)a^3}-\frac{20b^3cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}a^3}+\frac{3b^5d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(4ac-b^2)^{\frac{3}{2}}a^4}-\frac{3bce}{(cx^2+bx+a)(4ac-b^2)a}-\frac{2c^2d}{(cx^2+bx+a)(4ac-b^2)a}+\frac{b^3e}{(cx^2+bx+a)(4ac-b^2)a^2}+\frac{4b^2cd}{(cx^2+bx+a)(4ac-b^2)a^2}+\frac{4bce\ln(cx^2+bx+a)}{(4ac-b^2)a^2}+\frac{4c^2d\ln(cx^2+bx+a)}{(4ac-b^2)a^2}-\frac{b^4d}{(cx^2+bx+a)(4ac-b^2)a^3}-\frac{b^3e\ln(cx^2+bx+a)}{(4ac-b^2)a^3}-\frac{7b^2cd\ln(cx^2+bx+a)}{(4ac-b^2)a^3}+\frac{3b^4d\ln(cx^2+bx+a)}{2(4ac-b^2)a^4}-\frac{2be\ln(x)}{a^3}-\frac{2cd\ln(x)}{a^3}+\frac{3b^2d\ln(x)}{a^4}-\frac{e}{a^2x}+\frac{2bd}{a^3x}-\frac{d}{2a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+b*x+a)^2,x)
```

```
[Out] -1/2/a^2*d/x^2-1/a^2*e/x-20/a^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*b^3*c*d+4/a^2/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*b*e+4/a^2/(c*x^2+b*x
+a)/(4*a*c-b^2)*b^2*c*d-2/a/(c*x^2+b*x+a)*c^2/(4*a*c-b^2)*x*e-3/a/(c*x^2+b*
x+a)/(4*a*c-b^2)*b*c*e-7/a^3/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*b^2*d+12/a^2/(4*
a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*c*e+30/a^2/(4*a*c-b^
2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c^2*d-1/a^3/(c*x^2+b*x+a)*c/
(4*a*c-b^2)*x*b^3*d+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b^2*e+3/a^2/(c*x^2+
b*x+a)*c^2/(4*a*c-b^2)*x*b*d+2/a^3/x*b*d-2/a^3*ln(x)*b*e+3/a^4*ln(x)*b^2*d-
2/a/(c*x^2+b*x+a)/(4*a*c-b^2)*c^2*d+1/a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*b^3*e-1
/a^3/(c*x^2+b*x+a)/(4*a*c-b^2)*b^4*d+4/a^2/(4*a*c-b^2)*c^2*ln(c*x^2+b*x+a)*
d-1/a^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3*e+3/2/a^4/(4*a*c-b^2)*ln(c*x^2+b*x+
a)*b^4*d-12/a/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^2*e-2
/a^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*e+3/a^4/(4*a
*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*d-2/a^3*c*d*ln(x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.06, size = 1661, normalized size = 5.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + b*x + c*x^2)^2),x)
```

```
[Out] log(192*a^5*c^4*d - 4*a^2*b^7*e + 6*a*b^8*d + 6*b^9*d*x + 307*a^3*b^4*c^2*d
 - 492*a^4*b^2*c^3*d + 4*a^2*b^4*e*(-(4*a*c - b^2)^3)^(1/2) - 174*a^4*b^3*c
^2*e + 6*a^4*c^2*e*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^8*e*x - 6*a*b^5*d*(-(4*
a*c - b^2)^3)^(1/2) - 73*a^2*b^6*c*d + 46*a^3*b^5*c*e + 216*a^5*b*c^3*e - 6
*b^6*d*x*(-(4*a*c - b^2)^3)^(1/2) - 48*a^5*c^4*e*x + 312*a^4*b*c^4*d*x + 4*
a*b^5*e*x*(-(4*a*c - b^2)^3)^(1/2) + 48*a^2*b^6*c*e*x + 31*a^2*b^3*c*d*(-(4
*a*c - b^2)^3)^(1/2) - 27*a^3*b*c^2*d*(-(4*a*c - b^2)^3)^(1/2) - 18*a^3*b^2
*c*e*(-(4*a*c - b^2)^3)^(1/2) + 339*a^2*b^5*c^2*d*x - 602*a^3*b^3*c^3*d*x +
 24*a^3*c^3*d*x*(-(4*a*c - b^2)^3)^(1/2) - 194*a^3*b^4*c^2*e*x + 276*a^4*b^
```

```
2*c^3*e*x - 76*a*b^7*c*d*x - 69*a^2*b^2*c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) +
40*a*b^4*c*d*x*(-(4*a*c - b^2)^3)^(1/2) - 24*a^2*b^3*c*e*x*(-(4*a*c - b^2)^
3)^(1/2) + 30*a^3*b*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2))*(((3*b^5*d*(-(4*a*c -
 b^2)^3)^(1/2))/2 - 6*a^3*c^2*e*(-(4*a*c - b^2)^3)^(1/2) - a*b^4*e*(-(4*a*c
 - b^2)^3)^(1/2) - 10*a*b^3*c*d*(-(4*a*c - b^2)^3)^(1/2) + 15*a^2*b*c^2*d*(
-(4*a*c - b^2)^3)^(1/2) + 6*a^2*b^2*c*e*(-(4*a*c - b^2)^3)^(1/2))/(a^4*b^6
- 64*a^7*c^3 - 12*a^5*b^4*c + 48*a^6*b^2*c^2) - (3*b^2*d)/(2*a^4) + (b*e)/a
^3 + (c*d)/a^3) - log(4*a^2*b^7*e - 192*a^5*c^4*d - 6*a*b^8*d - 6*b^9*d*x -
 307*a^3*b^4*c^2*d + 492*a^4*b^2*c^3*d + 4*a^2*b^4*e*(-(4*a*c - b^2)^3)^(1/
2) + 174*a^4*b^3*c^2*e + 6*a^4*c^2*e*(-(4*a*c - b^2)^3)^(1/2) + 4*a*b^8*e*x
 - 6*a*b^5*d*(-(4*a*c - b^2)^3)^(1/2) + 73*a^2*b^6*c*d - 46*a^3*b^5*c*e - 2
16*a^5*b*c^3*e - 6*b^6*d*x*(-(4*a*c - b^2)^3)^(1/2) + 48*a^5*c^4*e*x - 312*
a^4*b*c^4*d*x + 4*a*b^5*e*x*(-(4*a*c - b^2)^3)^(1/2) - 48*a^2*b^6*c*e*x + 3
1*a^2*b^3*c*d*(-(4*a*c - b^2)^3)^(1/2) - 27*a^3*b*c^2*d*(-(4*a*c - b^2)^3)^
(1/2) - 18*a^3*b^2*c*e*(-(4*a*c - b^2)^3)^(1/2) - 339*a^2*b^5*c^2*d*x + 602
*a^3*b^3*c^3*d*x + 24*a^3*c^3*d*x*(-(4*a*c - b^2)^3)^(1/2) + 194*a^3*b^4*c^
2*e*x - 276*a^4*b^2*c^3*e*x + 76*a*b^7*c*d*x - 69*a^2*b^2*c^2*d*x*(-(4*a*c
- b^2)^3)^(1/2) + 40*a*b^4*c*d*x*(-(4*a*c - b^2)^3)^(1/2) - 24*a^2*b^3*c*e*
x*(-(4*a*c - b^2)^3)^(1/2) + 30*a^3*b*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2))*(((
3*b^5*d*(-(4*a*c - b^2)^3)^(1/2))/2 - 6*a^3*c^2*e*(-(4*a*c - b^2)^3)^(1/2)
- a*b^4*e*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^3*c*d*(-(4*a*c - b^2)^3)^(1/2)
+ 15*a^2*b*c^2*d*(-(4*a*c - b^2)^3)^(1/2) + 6*a^2*b^2*c*e*(-(4*a*c - b^2)^3
)^(1/2))/(a^4*b^6 - 64*a^7*c^3 - 12*a^5*b^4*c + 48*a^6*b^2*c^2) + (3*b^2*d)
/(2*a^4) - (b*e)/a^3 - (c*d)/a^3) - (d/(2*a) + (x*(2*a*e - 3*b*d))/(2*a^2)
+ (x^2*(6*b^4*d + 8*a^2*c^2*d - 4*a*b^3*e - 25*a*b^2*c*d + 14*a^2*b*c*e))/(
2*a^3*(4*a*c - b^2)) + (c*x^3*(3*b^3*d - 2*a*b^2*e + 6*a^2*c*e - 11*a*b*c*d
))/(a^3*(4*a*c - b^2)))/(a*x^2 + b*x^3 + c*x^4) - (log(x)*(a*(2*b*e + 2*c*d
) - 3*b^2*d))/a^4
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.823 $\int \frac{5+2x}{4+5x+x^2} \, dx$

Optimal. Leaf size=9

$$\log\left(x^2+5x+4\right)$$

Rubi [A] time = 0.00, antiderivative size = 9, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {628}

$$\log\left(x^2+5x+4\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 + 2*x)/(4 + 5*x + x^2),x]
```

```
[Out] Log[4 + 5*x + x^2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{5+2x}{4+5x+x^2} \, dx = \log\left(4+5x+x^2\right)$$

Mathematica [A] time = 0.00, size = 9, normalized size = 1.00

$$\log\left(x^2+5x+4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 + 2*x)/(4 + 5*x + x^2),x]
```

```
[Out] Log[4 + 5*x + x^2]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5+2x}{4+5x+x^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 + 2*x)/(4 + 5*x + x^2),x]
```

```
[Out] IntegrateAlgebraic[(5 + 2*x)/(4 + 5*x + x^2), x]
```

fricas [A] time = 0.38, size = 9, normalized size = 1.00

$$\log\left(x^2+5x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+5*x+4),x, algorithm="fricas")
```

```
[Out] log(x^2 + 5*x + 4)
```

giac [A] time = 0.19, size = 10, normalized size = 1.11

$$\log\left(\left|x^2+5\,x+4\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+5*x+4),x, algorithm="giac")
[Out] log(abs(x^2 + 5*x + 4))
```

maple [A] time = 0.04, size = 10, normalized size = 1.11

$$\ln\left(x^2+5x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5+2*x)/(x^2+5*x+4),x)
[Out] ln(x^2+5*x+4)
```

maxima [A] time = 0.49, size = 9, normalized size = 1.00

$$\log\left(x^2+5\,x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+5*x+4),x, algorithm="maxima")
[Out] log(x^2 + 5*x + 4)
```

mupad [B] time = 0.04, size = 9, normalized size = 1.00

$$\ln\left(x^2+5\,x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x + 5)/(5*x + x^2 + 4),x)
[Out] log(5*x + x^2 + 4)
```

sympy [A] time = 0.10, size = 8, normalized size = 0.89

$$\log\left(x^2+5x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x**2+5*x+4),x)
[Out] log(x**2 + 5*x + 4)
```

3.824 $\int \frac{7+3x}{8+6x+x^2} \, dx$

Optimal. Leaf size=17

$$\frac{1}{2}\log(x+2)+\frac{5}{2}\log(x+4)$$

Rubi [A] time = 0.00, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {632, 31}

$$\frac{1}{2}\log(x+2)+\frac{5}{2}\log(x+4)$$

Antiderivative was successfully verified.

```
[In] Int[(7 + 3*x)/(8 + 6*x + x^2),x]
```

```
[Out] Log[2 + x]/2 + (5*Log[4 + x])/2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{7+3x}{8+6x+x^2} \, dx &= \frac{1}{2}\int \frac{1}{2+x} \, dx+\frac{5}{2}\int \frac{1}{4+x} \, dx\\ &= \frac{1}{2}\log(2+x)+\frac{5}{2}\log(4+x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 17, normalized size = 1.00

$$\frac{1}{2}\log(x+2)+\frac{5}{2}\log(x+4)$$

Antiderivative was successfully verified.

```
[In] Integrate[(7 + 3*x)/(8 + 6*x + x^2),x]
```

```
[Out] Log[2 + x]/2 + (5*Log[4 + x])/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{7+3x}{8+6x+x^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(7 + 3*x)/(8 + 6*x + x^2),x]
```

```
[Out] IntegrateAlgebraic[(7 + 3*x)/(8 + 6*x + x^2), x]
```

fricas [A] time = 0.39, size = 13, normalized size = 0.76

$$\frac{5}{2}\,\log\left(x+4\right)+\frac{1}{2}\,\log\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x^2+6*x+8),x, algorithm="fricas")
[Out] 5/2*log(x + 4) + 1/2*log(x + 2)
```

giac [A] time = 0.15, size = 15, normalized size = 0.88

$$\frac{5}{2}\,\log\left(|x+4|\right)+\frac{1}{2}\,\log\left(|x+2|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x^2+6*x+8),x, algorithm="giac")
[Out] 5/2*log(abs(x + 4)) + 1/2*log(abs(x + 2))
```

maple [A] time = 0.06, size = 14, normalized size = 0.82

$$\frac{\ln\left(x+2\right)}{2}+\frac{5\ln\left(x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x+7)/(x^2+6*x+8),x)
[Out] 1/2*ln(x+2)+5/2*ln(x+4)
```

maxima [A] time = 0.45, size = 13, normalized size = 0.76

$$\frac{5}{2}\,\log\left(x+4\right)+\frac{1}{2}\,\log\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x^2+6*x+8),x, algorithm="maxima")
[Out] 5/2*log(x + 4) + 1/2*log(x + 2)
```

mupad [B] time = 0.05, size = 13, normalized size = 0.76

$$\frac{\ln\left(x+2\right)}{2}+\frac{5\,\ln\left(x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x + 7)/(6*x + x^2 + 8),x)
[Out] log(x + 2)/2 + (5*log(x + 4))/2
```

sympy [A] time = 0.11, size = 14, normalized size = 0.82

$$\frac{\log\left(x+2\right)}{2}+\frac{5\log\left(x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x**2+6*x+8),x)
[Out] log(x + 2)/2 + 5*log(x + 4)/2
```

3.825 $\int \frac{5+2x}{5+4x+x^2} \, dx$

Optimal. Leaf size=14

$$\log \left(x^2+4 x+5\right)+\tan ^{-1}(x+2)$$

Rubi [A] time = 0.01, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {634, 618, 204, 628}

$$\log \left(x^2+4 x+5\right)+\tan ^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 + 2*x)/(5 + 4*x + x^2),x]
```

```
[Out] ArcTan[2 + x] + Log[5 + 4*x + x^2]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned} \int \frac{5+2 x}{5+4 x+x^2} \, dx &= \int \frac{1}{5+4 x+x^2} \, dx+\int \frac{4+2 x}{5+4 x+x^2} \, dx\\ &= \log \left(5+4 x+x^2\right)-2 \text{Subst}\left(\int \frac{1}{-4-x^2} \, dx,x,4+2 x\right)\\ &= \tan ^{-1}(2+x)+\log \left(5+4 x+x^2\right)\\ \end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\log \left(x^2+4 x+5\right)+\tan ^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 + 2*x)/(5 + 4*x + x^2),x]
```

```
[Out] ArcTan[2 + x] + Log[5 + 4*x + x^2]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5+2x}{5+4x+x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 + 2*x)/(5 + 4*x + x^2),x]
```

```
[Out] IntegrateAlgebraic[(5 + 2*x)/(5 + 4*x + x^2), x]
```

fricas [A] time = 0.41, size = 14, normalized size = 1.00

$$\arctan\left(x+2\right)+\log\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+4*x+5),x, algorithm="fricas")
```

```
[Out] arctan(x + 2) + log(x^2 + 4*x + 5)
```

giac [A] time = 0.15, size = 14, normalized size = 1.00

$$\arctan\left(x+2\right)+\log\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+4*x+5),x, algorithm="giac")
```

```
[Out] arctan(x + 2) + log(x^2 + 4*x + 5)
```

maple [A] time = 0.05, size = 15, normalized size = 1.07

$$\arctan\left(x+2\right)+\ln\left(x^2+4x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5+2*x)/(x^2+4*x+5),x)
```

```
[Out] arctan(x+2)+ln(x^2+4*x+5)
```

maxima [A] time = 1.42, size = 14, normalized size = 1.00

$$\arctan\left(x+2\right)+\log\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+4*x+5),x, algorithm="maxima")
```

```
[Out] arctan(x + 2) + log(x^2 + 4*x + 5)
```

mupad [B] time = 1.18, size = 14, normalized size = 1.00

$$\mathrm{atan}\left(x+2\right)+\ln\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x + 5)/(4*x + x^2 + 5),x)
```

```
[Out] atan(x + 2) + log(4*x + x^2 + 5)
```

sympy [**A**] time = 0.12, size = 14, normalized size = 1.00

$$\log\left(x^2+4x+5\right)+\operatorname{atan}(x+2)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x**2+4*x+5),x)
```

```
[Out] log(x**2 + 4*x + 5) + atan(x + 2)
```

3.826 $\int \frac{-2+7x}{42-16x+2x^2}\,dx$

Optimal. Leaf size=33

$$\frac{7}{4}\log\left(x^2-8x+21\right)-\frac{13\tan^{-1}\left(\frac{4-x}{\sqrt{5}}\right)}{\sqrt{5}}$$

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {634, 618, 204, 628}

$$\frac{7}{4}\log\left(x^2-8x+21\right)-\frac{13\tan^{-1}\left(\frac{4-x}{\sqrt{5}}\right)}{\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(-2 + 7*x)/(42 - 16*x + 2*x^2),x]
```

```
[Out] (-13*ArcTan[(4 - x)/Sqrt[5]])/Sqrt[5] + (7*Log[21 - 8*x + x^2])/4
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{-2+7x}{42-16x+2x^2}\,dx &= \frac{7}{4}\int \frac{-16+4x}{42-16x+2x^2}\,dx+26\int \frac{1}{42-16x+2x^2}\,dx\\
&= \frac{7}{4}\log\left(21-8x+x^2\right)-52\,\text{Subst}\left(\int \frac{1}{-80-x^2}\,dx,x,-16+4x\right)\\
&= -\frac{13\tan^{-1}\left(\frac{4-x}{\sqrt{5}}\right)}{\sqrt{5}}+\frac{7}{4}\log\left(21-8x+x^2\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 1.06

$$\frac{1}{2}\left(\frac{7}{2}\log\left(x^2-8x+21\right)+\frac{26\tan^{-1}\left(\frac{x-4}{\sqrt{5}}\right)}{\sqrt{5}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-2 + 7*x)/(42 - 16*x + 2*x^2),x]
[Out] ((26*ArcTan[(-4 + x)/Sqrt[5]])/Sqrt[5] + (7*Log[21 - 8*x + x^2])/2)/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{-2+7x}{42-16x+2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(-2 + 7*x)/(42 - 16*x + 2*x^2),x]
[Out] IntegrateAlgebraic[(-2 + 7*x)/(42 - 16*x + 2*x^2), x]
```

fricas [A] time = 0.40, size = 26, normalized size = 0.79

$$\frac{13}{5}\sqrt{5}\arctan\left(\frac{1}{5}\sqrt{5}(x-4)\right)+\frac{7}{4}\log\left(x^2-8x+21\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x^2-16*x+42),x, algorithm="fricas")
[Out] 13/5*sqrt(5)*arctan(1/5*sqrt(5)*(x - 4)) + 7/4*log(x^2 - 8*x + 21)
```

giac [A] time = 0.15, size = 26, normalized size = 0.79

$$\frac{13}{5}\sqrt{5}\arctan\left(\frac{1}{5}\sqrt{5}(x-4)\right)+\frac{7}{4}\log\left(x^2-8x+21\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x^2-16*x+42),x, algorithm="giac")
[Out] 13/5*sqrt(5)*arctan(1/5*sqrt(5)*(x - 4)) + 7/4*log(x^2 - 8*x + 21)
```

maple [A] time = 0.06, size = 29, normalized size = 0.88

$$\frac{13\sqrt{5}\arctan\left(\frac{(2x-8)\sqrt{5}}{10}\right)}{5}+\frac{7\ln\left(x^2-8x+21\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-2+7*x)/(2*x^2-16*x+42),x)
[Out] 7/4*ln(x^2-8*x+21)+13/5*5^(1/2)*arctan(1/10*(2*x-8)*5^(1/2))
```

maxima [A] time = 1.36, size = 26, normalized size = 0.79

$$\frac{13}{5}\sqrt{5}\arctan\left(\frac{1}{5}\sqrt{5}(x-4)\right)+\frac{7}{4}\log\left(x^2-8x+21\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x^2-16*x+42),x, algorithm="maxima")
```

```
[Out] 13/5*sqrt(5)*arctan(1/5*sqrt(5)*(x - 4)) + 7/4*log(x^2 - 8*x + 21)
```

mupad [B] time = 1.17, size = 30, normalized size = 0.91

$$\frac{7\,\ln\left(x^2-8\,x+21\right)}{4}+\frac{13\,\sqrt{5}\,\mathrm{atan}\left(\frac{\sqrt{5}\,x}{5}-\frac{4\,\sqrt{5}}{5}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7*x - 2)/(2*x^2 - 16*x + 42),x)
```

```
[Out] (7*log(x^2 - 8*x + 21))/4 + (13*5^(1/2)*atan((5^(1/2)*x)/5 - (4*5^(1/2))/5)
)/5
```

sympy [A] time = 0.15, size = 39, normalized size = 1.18

$$\frac{7\log\left(x^2-8x+21\right)}{4}+\frac{13\sqrt{5}\,\mathrm{atan}\left(\frac{\sqrt{5}\,x}{5}-\frac{4\sqrt{5}}{5}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x**2-16*x+42),x)
```

```
[Out] 7*log(x**2 - 8*x + 21)/4 + 13*sqrt(5)*atan(sqrt(5)*x/5 - 4*sqrt(5)/5)/5
```

3.827 $\int \frac{3+x}{1+3x+x^2}\,dx$

Optimal. Leaf size=51

$$\frac{1}{10}\left(5+3\sqrt{5}\right)\log\left(2x-\sqrt{5}+3\right)+\frac{1}{10}\left(5-3\sqrt{5}\right)\log\left(2x+\sqrt{5}+3\right)$$

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {632, 31}

$$\frac{1}{10}\left(5+3\sqrt{5}\right)\log\left(2x-\sqrt{5}+3\right)+\frac{1}{10}\left(5-3\sqrt{5}\right)\log\left(2x+\sqrt{5}+3\right)$$

Antiderivative was successfully verified.

```
[In] Int[(3 + x)/(1 + 3*x + x^2),x]
```

```
[Out] ((5 + 3*Sqrt[5])*Log[3 - Sqrt[5] + 2*x])/10 + ((5 - 3*Sqrt[5])*Log[3 + Sqrt
[5] + 2*x])/10
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{3+x}{1+3x+x^2}\,dx &= -\left(\frac{1}{10}\left(-5+3\sqrt{5}\right)\int \frac{1}{\frac{3}{2}+\frac{\sqrt{5}}{2}+x}\,dx\right)+\frac{1}{10}\left(5+3\sqrt{5}\right)\int \frac{1}{\frac{3}{2}-\frac{\sqrt{5}}{2}+x}\,dx\\ &= \frac{1}{10}\left(5+3\sqrt{5}\right)\log\left(3-\sqrt{5}+2x\right)+\frac{1}{10}\left(5-3\sqrt{5}\right)\log\left(3+\sqrt{5}+2x\right)\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.96

$$\frac{1}{10}\left(5+3\sqrt{5}\right)\log\left(-2x+\sqrt{5}-3\right)+\frac{1}{10}\left(5-3\sqrt{5}\right)\log\left(2x+\sqrt{5}+3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + x)/(1 + 3*x + x^2),x]
```

```
[Out] ((5 + 3*Sqrt[5])*Log[-3 + Sqrt[5] - 2*x])/10 + ((5 - 3*Sqrt[5])*Log[3 + Sqr
t[5] + 2*x])/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{3+x}{1+3x+x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(3 + x)/(1 + 3*x + x^2),x]
```

```
[Out] IntegrateAlgebraic[(3 + x)/(1 + 3*x + x^2), x]
```

fricas [A] time = 0.41, size = 49, normalized size = 0.96

$$\frac{3}{10} \sqrt{5} \log\left(\frac{2 x^2 - \sqrt{5} (2 x + 3) + 6 x + 7}{x^2 + 3 x + 1}\right) + \frac{1}{2} \log\left(x^2 + 3 x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+3*x+1),x, algorithm="fricas")
```

```
[Out] 3/10*sqrt(5)*log((2*x^2 - sqrt(5)*(2*x + 3) + 6*x + 7)/(x^2 + 3*x + 1)) + 1
/2*log(x^2 + 3*x + 1)
```

giac [A] time = 0.15, size = 42, normalized size = 0.82

$$\frac{3}{10} \sqrt{5} \log\left(\frac{\left|2 x - \sqrt{5} + 3\right|}{\left|2 x + \sqrt{5} + 3\right|}\right) + \frac{1}{2} \log\left(\left|x^2 + 3 x + 1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+3*x+1),x, algorithm="giac")
```

```
[Out] 3/10*sqrt(5)*log(abs(2*x - sqrt(5) + 3)/abs(2*x + sqrt(5) + 3)) + 1/2*log(a
bs(x^2 + 3*x + 1))
```

maple [A] time = 0.05, size = 29, normalized size = 0.57

$$-\frac{3\sqrt{5}\ \operatorname{arctanh}\left(\frac{(2x+3)\sqrt{5}}{5}\right)}{5} + \frac{\ln\left(x^2 + 3x + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+3)/(x^2+3*x+1),x)
```

```
[Out] 1/2*ln(x^2+3*x+1)-3/5*5^(1/2)*arctanh(1/5*(2*x+3)*5^(1/2))
```

maxima [A] time = 1.32, size = 39, normalized size = 0.76

$$\frac{3}{10} \sqrt{5} \log\left(\frac{2 x - \sqrt{5} + 3}{2 x + \sqrt{5} + 3}\right) + \frac{1}{2} \log\left(x^2 + 3 x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+3*x+1),x, algorithm="maxima")
```

```
[Out] 3/10*sqrt(5)*log((2*x - sqrt(5) + 3)/(2*x + sqrt(5) + 3)) + 1/2*log(x^2 + 3
*x + 1)
```

mupad [B] time = 0.12, size = 36, normalized size = 0.71

$$\ln\left(x - \frac{\sqrt{5}}{2} + \frac{3}{2}\right) \left(\frac{3\sqrt{5}}{10} + \frac{1}{2}\right) - \ln\left(x + \frac{\sqrt{5}}{2} + \frac{3}{2}\right) \left(\frac{3\sqrt{5}}{10} - \frac{1}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 3)/(3*x + x^2 + 1),x)
```

```
[Out] log(x - 5^(1/2)/2 + 3/2)*((3*5^(1/2))/10 + 1/2) - log(x + 5^(1/2)/2 + 3/2)*
((3*5^(1/2))/10 - 1/2)
```

sympy [A]   time = 0.12, size = 49, normalized size = 0.96

$$\left(\frac{1}{2} + \frac{3\sqrt{5}}{10}\right)\log\left(x - \frac{\sqrt{5}}{2} + \frac{3}{2}\right) + \left(\frac{1}{2} - \frac{3\sqrt{5}}{10}\right)\log\left(x + \frac{\sqrt{5}}{2} + \frac{3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x**2+3*x+1),x)
```

```
[Out] (1/2 + 3*sqrt(5)/10)*log(x - sqrt(5)/2 + 3/2) + (1/2 - 3*sqrt(5)/10)*log(x
+ sqrt(5)/2 + 3/2)
```

3.828 $\int \frac{-1+2x}{1+8x+4x^2} \, dx$

Optimal. Leaf size=49

$$\frac{1}{4}\left(1-\sqrt{3}\right)\log\left(2x-\sqrt{3}+2\right)+\frac{1}{4}\left(1+\sqrt{3}\right)\log\left(2x+\sqrt{3}+2\right)$$

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {632, 31}

$$\frac{1}{4}\left(1-\sqrt{3}\right)\log\left(2x-\sqrt{3}+2\right)+\frac{1}{4}\left(1+\sqrt{3}\right)\log\left(2x+\sqrt{3}+2\right)$$

Antiderivative was successfully verified.

```
[In] Int[(-1 + 2*x)/(1 + 8*x + 4*x^2),x]
```

```
[Out] ((1 - Sqrt[3])*Log[2 - Sqrt[3] + 2*x])/4 + ((1 + Sqrt[3])*Log[2 + Sqrt[3] +
 2*x])/4
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{-1+2x}{1+8x+4x^2} \, dx &= -\left(\left(-1+\sqrt{3}\right)\int \frac{1}{4-2\sqrt{3}+4x} \, dx\right)+\left(1+\sqrt{3}\right)\int \frac{1}{4+2\sqrt{3}+4x} \, dx\\ &= \frac{1}{4}\left(1-\sqrt{3}\right)\log\left(2-\sqrt{3}+2x\right)+\frac{1}{4}\left(1+\sqrt{3}\right)\log\left(2+\sqrt{3}+2x\right)\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.90

$$\frac{1}{4}\left(\left(1+\sqrt{3}\right)\log\left(2x+\sqrt{3}+2\right)-\left(\sqrt{3}-1\right)\log\left(-2x+\sqrt{3}-2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-1 + 2*x)/(1 + 8*x + 4*x^2),x]
```

```
[Out] (-((-1 + Sqrt[3])*Log[-2 + Sqrt[3] - 2*x]) + (1 + Sqrt[3])*Log[2 + Sqrt[3]
+ 2*x])/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{-1+2x}{1+8x+4x^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(-1 + 2*x)/(1 + 8*x + 4*x^2),x]
[Out] IntegrateAlgebraic[(-1 + 2*x)/(1 + 8*x + 4*x^2), x]
```

fricas [A] time = 0.44, size = 51, normalized size = 1.04

$$\frac{1}{4}\sqrt{3}\log\left(\frac{4x^2+4\sqrt{3}(x+1)+8x+7}{4x^2+8x+1}\right)+\frac{1}{4}\log\left(4x^2+8x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x^2+8*x+1),x, algorithm="fricas")
[Out] 1/4*sqrt(3)*log((4*x^2 + 4*sqrt(3)*(x + 1) + 8*x + 7)/(4*x^2 + 8*x + 1)) +
1/4*log(4*x^2 + 8*x + 1)
```

giac [A] time = 0.15, size = 46, normalized size = 0.94

$$-\frac{1}{4}\sqrt{3}\log\left(\frac{\left|8x-4\sqrt{3}+8\right|}{\left|8x+4\sqrt{3}+8\right|}\right)+\frac{1}{4}\log\left(\left|4x^2+8x+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x^2+8*x+1),x, algorithm="giac")
[Out] -1/4*sqrt(3)*log(abs(8*x - 4*sqrt(3) + 8)/abs(8*x + 4*sqrt(3) + 8)) + 1/4*l
og(abs(4*x^2 + 8*x + 1))
```

maple [A] time = 0.04, size = 31, normalized size = 0.63

$$\frac{\sqrt{3}\,\operatorname{arctanh}\left(\frac{(8x+8)\sqrt{3}}{12}\right)}{2}+\frac{\ln\left(4x^2+8x+1\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x-1)/(4*x^2+8*x+1),x)
[Out] 1/4*ln(4*x^2+8*x+1)+1/2*3^(1/2)*arctanh(1/12*(8*x+8)*3^(1/2))
```

maxima [A] time = 1.14, size = 41, normalized size = 0.84

$$-\frac{1}{4}\sqrt{3}\log\left(\frac{2x-\sqrt{3}+2}{2x+\sqrt{3}+2}\right)+\frac{1}{4}\log\left(4x^2+8x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x^2+8*x+1),x, algorithm="maxima")
[Out] -1/4*sqrt(3)*log((2*x - sqrt(3) + 2)/(2*x + sqrt(3) + 2)) + 1/4*log(4*x^2 +
 8*x + 1)
```

mupad [B] time = 0.17, size = 36, normalized size = 0.73

$$\ln\left(x+\frac{\sqrt{3}}{2}+1\right)\left(\frac{\sqrt{3}}{4}+\frac{1}{4}\right)-\ln\left(x-\frac{\sqrt{3}}{2}+1\right)\left(\frac{\sqrt{3}}{4}-\frac{1}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x - 1)/(8*x + 4*x^2 + 1),x)
[Out] log(x + 3^(1/2)/2 + 1)*(3^(1/2)/4 + 1/4) - log(x - 3^(1/2)/2 + 1)*(3^(1/2)/
4 - 1/4)
```

sympy [A] time = 0.12, size = 42, normalized size = 0.86

$$\left(\frac{1}{4}-\frac{\sqrt{3}}{4}\right)\log\left(x-\frac{\sqrt{3}}{2}+1\right)+\left(\frac{1}{4}+\frac{\sqrt{3}}{4}\right)\log\left(x+\frac{\sqrt{3}}{2}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x**2+8*x+1),x)
```

```
[Out] (1/4 - sqrt(3)/4)*log(x - sqrt(3)/2 + 1) + (1/4 + sqrt(3)/4)*log(x + sqrt(3
)/2 + 1)
```

3.829 $\int \frac{3+2x}{(13+12x+4x^2)^2}\,dx$

Optimal. Leaf size=16

$$-\frac{1}{4(4x^2+12x+13)}$$

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {629}

$$-\frac{1}{4(4x^2+12x+13)}$$

Antiderivative was successfully verified.

```
[In] Int[(3 + 2*x)/(13 + 12*x + 4*x^2)^2,x]
```

```
[Out] -1/(4*(13 + 12*x + 4*x^2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{3+2x}{(13+12x+4x^2)^2}\,dx = -\frac{1}{4(13+12x+4x^2)}$$

Mathematica [A] time = 0.01, size = 16, normalized size = 1.00

$$-\frac{1}{4(4x^2+12x+13)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + 2*x)/(13 + 12*x + 4*x^2)^2,x]
```

```
[Out] -1/4*1/(13 + 12*x + 4*x^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{3+2x}{(13+12x+4x^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(3 + 2*x)/(13 + 12*x + 4*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(3 + 2*x)/(13 + 12*x + 4*x^2)^2, x]
```

fricas [A] time = 0.44, size = 14, normalized size = 0.88

$$-\frac{1}{4(4x^2+12x+13)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x^2+12*x+13)^2,x, algorithm="fricas")
```

```
[Out] -1/4/(4*x^2 + 12*x + 13)
```

giac [A] time = 0.15, size = 14, normalized size = 0.88

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x^2+12*x+13)^2,x, algorithm="giac")
```

```
[Out] -1/4/(4*x^2 + 12*x + 13)
```

maple [A] time = 0.05, size = 15, normalized size = 0.94

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x+3)/(4*x^2+12*x+13)^2,x)
```

```
[Out] -1/4/(4*x^2+12*x+13)
```

maxima [A] time = 0.53, size = 14, normalized size = 0.88

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x^2+12*x+13)^2,x, algorithm="maxima")
```

```
[Out] -1/4/(4*x^2 + 12*x + 13)
```

mupad [B] time = 1.16, size = 14, normalized size = 0.88

$$-\frac{1}{16x^2+48x+52}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x + 3)/(12*x + 4*x^2 + 13)^2,x)
```

```
[Out] -1/(48*x + 16*x^2 + 52)
```

sympy [A] time = 0.11, size = 12, normalized size = 0.75

$$-\frac{1}{16x^2+48x+52}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x**2+12*x+13)**2,x)
```

```
[Out] -1/(16*x**2 + 48*x + 52)
```

3.830 $\int \frac{4+x}{\left(5+4x+x^2\right)^2} \, dx$

Optimal. Leaf size=24

$$\frac{2x+3}{2\left(x^2+4x+5\right)}+\tan^{-1}(x+2)$$

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {638, 618, 204}

$$\frac{2x+3}{2\left(x^2+4x+5\right)}+\tan^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(4 + x)/(5 + 4*x + x^2)^2,x]
```

```
[Out] (3 + 2*x)/(2*(5 + 4*x + x^2)) + ArcTan[2 + x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{4+x}{\left(5+4x+x^2\right)^2} \, dx &= \frac{3+2x}{2\left(5+4x+x^2\right)}+\int \frac{1}{5+4x+x^2} \, dx\\
&= \frac{3+2x}{2\left(5+4x+x^2\right)}-2 \operatorname{Subst}\left(\int \frac{1}{-4-x^2} \, dx,x,4+2x\right)\\
&= \frac{3+2x}{2\left(5+4x+x^2\right)}+\tan^{-1}(2+x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 24, normalized size = 1.00

$$\frac{2x+3}{2\left(x^2+4x+5\right)}+\tan^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(4 + x)/(5 + 4*x + x^2)^2,x]
[Out] (3 + 2*x)/(2*(5 + 4*x + x^2)) + ArcTan[2 + x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{4+x}{(5+4x+x^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(4 + x)/(5 + 4*x + x^2)^2,x]
[Out] IntegrateAlgebraic[(4 + x)/(5 + 4*x + x^2)^2, x]
```

fricas [A] time = 0.43, size = 31, normalized size = 1.29

$$\frac{2\left(x^{2}+4\,x+5\right)\arctan\left(x+2\right)+2\,x+3}{2\left(x^{2}+4\,x+5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x^2+4*x+5)^2,x, algorithm="fricas")
[Out] 1/2*(2*(x^2 + 4*x + 5)*arctan(x + 2) + 2*x + 3)/(x^2 + 4*x + 5)
```

giac [A] time = 0.16, size = 22, normalized size = 0.92

$$\frac{2\,x+3}{2\left(x^{2}+4\,x+5\right)}+\arctan\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x^2+4*x+5)^2,x, algorithm="giac")
[Out] 1/2*(2*x + 3)/(x^2 + 4*x + 5) + arctan(x + 2)
```

maple [A] time = 0.05, size = 23, normalized size = 0.96

$$\arctan\left(x+2\right)+\frac{4x+6}{4x^{2}+16x+20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+4)/(x^2+4*x+5)^2,x)
[Out] 1/4*(4*x+6)/(x^2+4*x+5)+arctan(x+2)
```

maxima [A] time = 1.18, size = 22, normalized size = 0.92

$$\frac{2\,x+3}{2\left(x^{2}+4\,x+5\right)}+\arctan\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x^2+4*x+5)^2,x, algorithm="maxima")
[Out] 1/2*(2*x + 3)/(x^2 + 4*x + 5) + arctan(x + 2)
```

mupad [B] time = 0.03, size = 19, normalized size = 0.79

$$\mathrm{atan}\left(x+2\right)+\frac{x+\frac{3}{2}}{x^2+4\,x+5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 4)/(4*x + x^2 + 5)^2,x)
```

```
[Out] atan(x + 2) + (x + 3/2)/(4*x + x^2 + 5)
```

sympy [A] time = 0.12, size = 19, normalized size = 0.79

$$\frac{2x+3}{2x^2+8x+10}+\operatorname{atan}(x+2)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x**2+4*x+5)**2,x)
```

```
[Out] (2*x + 3)/(2*x**2 + 8*x + 10) + atan(x + 2)
```

3.831 $\int \frac{-1+3x}{(1+x+x^2)^2}\,dx$

Optimal. Leaf size=39

$$-\frac{5x+7}{3(x^2+x+1)}-\frac{10\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.01, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {638, 618, 204}

$$-\frac{5x+7}{3(x^2+x+1)}-\frac{10\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(-1 + 3*x)/(1 + x + x^2)^2,x]
[Out] -(7 + 5*x)/(3*(1 + x + x^2)) - (10*ArcTan[(1 + 2*x)/Sqrt[3]])/(3*Sqrt[3])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{-1+3x}{(1+x+x^2)^2}\,dx &= -\frac{7+5x}{3(1+x+x^2)}-\frac{5}{3}\int \frac{1}{1+x+x^2}\,dx\\
&= -\frac{7+5x}{3(1+x+x^2)}+\frac{10}{3}\,\text{Subst}\left(\int \frac{1}{-3-x^2}\,dx,x,1+2x\right)\\
&= -\frac{7+5x}{3(1+x+x^2)}-\frac{10\tan^{-1}\left(\frac{1+2x}{\sqrt{3}}\right)}{3\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 1.00

$$\frac{-5x-7}{3(x^2+x+1)}-\frac{10\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-1 + 3*x)/(1 + x + x^2)^2,x]
```

```
[Out] (-7 - 5*x)/(3*(1 + x + x^2)) - (10*ArcTan[(1 + 2*x)/Sqrt[3]])/(3*Sqrt[3])
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{-1+3x}{\left(1+x+x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(-1 + 3*x)/(1 + x + x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(-1 + 3*x)/(1 + x + x^2)^2, x]
```

fricas [A] time = 0.42, size = 37, normalized size = 0.95

$$-\frac{10\sqrt{3}\left(x^2+x+1\right)\arctan\left(\frac{1}{3}\sqrt{3}\left(2x+1\right)\right)+15x+21}{9\left(x^2+x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x^2+x+1)^2,x, algorithm="fricas")
```

```
[Out] -1/9*(10*sqrt(3)*(x^2 + x + 1)*arctan(1/3*sqrt(3)*(2*x + 1)) + 15*x + 21)/(
x^2 + x + 1)
```

giac [A] time = 0.15, size = 32, normalized size = 0.82

$$-\frac{10}{9}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}\left(2x+1\right)\right)-\frac{5x+7}{3\left(x^2+x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x^2+x+1)^2,x, algorithm="giac")
```

```
[Out] -10/9*sqrt(3)*arctan(1/3*sqrt(3)*(2*x + 1)) - 1/3*(5*x + 7)/(x^2 + x + 1)
```

maple [A] time = 0.04, size = 33, normalized size = 0.85

$$-\frac{10\sqrt{3}\,\arctan\left(\frac{(2x+1)\sqrt{3}}{3}\right)}{9}+\frac{-5x-7}{3x^2+3x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x-1)/(x^2+x+1)^2,x)
```

```
[Out] 1/3*(-7-5*x)/(x^2+x+1)-10/9*3^(1/2)*arctan(1/3*(2*x+1)*3^(1/2))
```

maxima [A] time = 1.30, size = 32, normalized size = 0.82

$$-\frac{10}{9}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}\left(2x+1\right)\right)-\frac{5x+7}{3\left(x^2+x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x^2+x+1)^2,x, algorithm="maxima")
```

```
[Out] -10/9*sqrt(3)*arctan(1/3*sqrt(3)*(2*x + 1)) - 1/3*(5*x + 7)/(x^2 + x + 1)
```

mupad [B] time = 0.04, size = 34, normalized size = 0.87

$$-\frac{10\,\sqrt{3}\,\mathrm{atan}\left(\frac{2\,\sqrt{3}\,x}{3}+\frac{\sqrt{3}}{3}\right)}{9}-\frac{\frac{5\,x}{3}+\frac{7}{3}}{x^2+x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x - 1)/(x + x^2 + 1)^2,x)
```

```
[Out] - (10*3^(1/2)*atan((2*3^(1/2)*x)/3 + 3^(1/2)/3))/9 - ((5*x)/3 + 7/3)/(x + x
^2 + 1)
```

sympy [A] time = 0.14, size = 42, normalized size = 1.08

$$\frac{-5x-7}{3x^2+3x+3}-\frac{10\sqrt{3}\,\mathrm{atan}\left(\frac{2\sqrt{3}x}{3}+\frac{\sqrt{3}}{3}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x**2+x+1)**2,x)
```

```
[Out] (-5*x - 7)/(3*x**2 + 3*x + 3) - 10*sqrt(3)*atan(2*sqrt(3)*x/3 + sqrt(3)/3)/
9
```

3.832 $\int \frac{1+x}{(1-x+x^2)^3} \, dx$

Optimal. Leaf size=58

$$-\frac{1-2x}{2(x^2-x+1)}-\frac{1-x}{2(x^2-x+1)^2}-\frac{2\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {638, 614, 618, 204}

$$-\frac{1-2x}{2(x^2-x+1)}-\frac{1-x}{2(x^2-x+1)^2}-\frac{2\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)/(1 - x + x^2)^3,x]
```

```
[Out] -(1 - x)/(2*(1 - x + x^2)^2) - (1 - 2*x)/(2*(1 - x + x^2)) - (2*ArcTan[(1 -
 2*x)/Sqrt[3]])/Sqrt[3]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{1+x}{\left(1-x+x^2\right)^3} dx = -\frac{1-x}{2\left(1-x+x^2\right)^2} + \frac{3}{2}\int \frac{1}{\left(1-x+x^2\right)^2} dx$$
$$= -\frac{1-x}{2\left(1-x+x^2\right)^2} - \frac{1-2x}{2\left(1-x+x^2\right)} + \int \frac{1}{1-x+x^2} dx$$
$$= -\frac{1-x}{2\left(1-x+x^2\right)^2} - \frac{1-2x}{2\left(1-x+x^2\right)} - 2\,\text{Subst}\left(\int \frac{1}{-3-x^2} dx, x, -1+2x\right)$$
$$= -\frac{1-x}{2\left(1-x+x^2\right)^2} - \frac{1-2x}{2\left(1-x+x^2\right)} - \frac{2\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.84

$$\frac{2x^3-3x^2+4x-2}{2\left(x^2-x+1\right)^2} + \frac{2\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)/(1 - x + x^2)^3,x]
[Out] (-2 + 4*x - 3*x^2 + 2*x^3)/(2*(1 - x + x^2)^2) + (2*ArcTan[(-1 + 2*x)/Sqrt[
3]])/Sqrt[3]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1+x}{\left(1-x+x^2\right)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(1 + x)/(1 - x + x^2)^3,x]
[Out] IntegrateAlgebraic[(1 + x)/(1 - x + x^2)^3, x]
```

fricas [A] time = 0.45, size = 71, normalized size = 1.22

$$\frac{6\,x^3 + 4\,\sqrt{3}\left(x^4-2\,x^3+3\,x^2-2\,x+1\right)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right) - 9\,x^2 + 12\,x - 6}{6\left(x^4-2\,x^3+3\,x^2-2\,x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x^2-x+1)^3,x, algorithm="fricas")
[Out] 1/6*(6*x^3 + 4*sqrt(3)*(x^4 - 2*x^3 + 3*x^2 - 2*x + 1)*arctan(1/3*sqrt(3)*(
2*x - 1)) - 9*x^2 + 12*x - 6)/(x^4 - 2*x^3 + 3*x^2 - 2*x + 1)
```

giac [A] time = 0.15, size = 44, normalized size = 0.76

$$\frac{2}{3}\,\sqrt{3}\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right) + \frac{2\,x^3-3\,x^2+4\,x-2}{2\left(x^2-x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x^2-x+1)^3,x, algorithm="giac")
```

```
[Out] 2/3*sqrt(3)*arctan(1/3*sqrt(3)*(2*x - 1)) + 1/2*(2*x^3 - 3*x^2 + 4*x - 2)/(
x^2 - x + 1)^2
```

maple [A] time = 0.08, size = 52, normalized size = 0.90

$$\frac{2\sqrt{3}\ \arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{3}+\frac{3x-3}{6\left(x^{2}-x+1\right)^{2}}+\frac{2x-1}{2x^{2}-2x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)/(x^2-x+1)^3,x)
```

```
[Out] 1/6*(3*x-3)/(x^2-x+1)^2+1/2*(2*x-1)/(x^2-x+1)+2/3*3^(1/2)*arctan(1/3*(2*x-1
)*3^(1/2))
```

maxima [A] time = 1.26, size = 54, normalized size = 0.93

$$\frac{2}{3}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}\left(2x-1\right)\right)+\frac{2x^{3}-3x^{2}+4x-2}{2\left(x^{4}-2x^{3}+3x^{2}-2x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x^2-x+1)^3,x, algorithm="maxima")
```

```
[Out] 2/3*sqrt(3)*arctan(1/3*sqrt(3)*(2*x - 1)) + 1/2*(2*x^3 - 3*x^2 + 4*x - 2)/(
x^4 - 2*x^3 + 3*x^2 - 2*x + 1)
```

mupad [B] time = 0.05, size = 53, normalized size = 0.91

$$\frac{2\sqrt{3}\ \mathrm{atan}\left(\frac{2\sqrt{3}\,x}{3}-\frac{\sqrt{3}}{3}\right)}{3}+\frac{x^{3}-\frac{3x^{2}}{2}+2x-1}{x^{4}-2x^{3}+3x^{2}-2x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)/(x^2 - x + 1)^3,x)
```

```
[Out] (2*3^(1/2)*atan((2*3^(1/2)*x)/3 - 3^(1/2)/3))/3 + (2*x - (3*x^2)/2 + x^3 -
1)/(3*x^2 - 2*x - 2*x^3 + x^4 + 1)
```

sympy [A] time = 0.16, size = 61, normalized size = 1.05

$$\frac{2x^{3}-3x^{2}+4x-2}{2x^{4}-4x^{3}+6x^{2}-4x+2}+\frac{2\sqrt{3}\ \mathrm{atan}\left(\frac{2\sqrt{3}\,x}{3}-\frac{\sqrt{3}}{3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x**2-x+1)**3,x)
```

```
[Out] (2*x**3 - 3*x**2 + 4*x - 2)/(2*x**4 - 4*x**3 + 6*x**2 - 4*x + 2) + 2*sqrt(3
)*atan(2*sqrt(3)*x/3 - sqrt(3)/3)/3
```

3.833 $\int \frac{1}{A+Bx}\,dx$

Optimal. Leaf size=10

$$\frac{\log(A+Bx)}{B}$$

Rubi [A] time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {31}

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)^(-1),x]
```

```
[Out] Log[A + B*x]/B
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{1}{A+Bx}\,dx = \frac{\log(A+Bx)}{B}$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)^(-1),x]
```

```
[Out] Log[A + B*x]/B
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{A+Bx}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)^(-1),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)^(-1), x]
```

fricas [A] time = 0.41, size = 10, normalized size = 1.00

$$\frac{\log(Bx+A)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x, algorithm="fricas")
```

```
[Out] log(B*x + A)/B
```

giac [A] time = 0.15, size = 11, normalized size = 1.10

$$\frac{\log\left(|Bx + A|\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x, algorithm="giac")
[Out] log(abs(B*x + A))/B
```

maple [A] time = 0.04, size = 11, normalized size = 1.10

$$\frac{\ln\left(Bx + A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(B*x+A),x)
[Out] ln(B*x+A)/B
```

maxima [A] time = 0.48, size = 10, normalized size = 1.00

$$\frac{\log\left(Bx + A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x, algorithm="maxima")
[Out] log(B*x + A)/B
```

mupad [B] time = 1.15, size = 10, normalized size = 1.00

$$\frac{\ln\left(A + B\,x\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(A + B*x),x)
[Out] log(A + B*x)/B
```

sympy [A] time = 0.07, size = 7, normalized size = 0.70

$$\frac{\log\left(A + Bx\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x)
[Out] log(A + B*x)/B
```

3.834 $\int \frac{A+Bx}{A^2+2ABx+B^2x^2}\,dx$

Optimal. Leaf size=10

$$\frac{\log(A+Bx)}{B}$$

Rubi [A] time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 31}

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(A^2 + 2*A*B*x + B^2*x^2),x]
```

```
[Out] Log[A + B*x]/B
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{A^2+2ABx+B^2x^2}\,dx &= \int \frac{1}{A+Bx}\,dx\\ &= \frac{\log(A+Bx)}{B}\end{aligned}$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(A^2 + 2*A*B*x + B^2*x^2),x]
```

```
[Out] Log[A + B*x]/B
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{A^2+2ABx+B^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(A^2 + 2*A*B*x + B^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(A^2 + 2*A*B*x + B^2*x^2), x]
```

fricas [A] time = 0.47, size = 10, normalized size = 1.00

$$\frac{\log\left(Bx+A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x, algorithm="fricas")
[Out] log(B*x + A)/B
```

giac [B] time = 0.15, size = 22, normalized size = 2.20

$$\frac{\log\left(A^2+\left(Bx^2+2\,Ax\right)B\right)}{2\,B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x, algorithm="giac")
[Out] 1/2*log(A^2 + (B*x^2 + 2*A*x)*B)/B
```

maple [A] time = 0.08, size = 11, normalized size = 1.10

$$\frac{\ln\left(Bx+A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x)
[Out] 1/B*ln(B*x+A)
```

maxima [B] time = 0.71, size = 22, normalized size = 2.20

$$\frac{\log\left(B^2x^2+2\,ABx+A^2\right)}{2\,B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x, algorithm="maxima")
[Out] 1/2*log(B^2*x^2 + 2*A*B*x + A^2)/B
```

mupad [B] time = 0.02, size = 10, normalized size = 1.00

$$\frac{\ln\left(A+B\,x\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(A^2 + B^2*x^2 + 2*A*B*x),x)
[Out] log(A + B*x)/B
```

sympy [A] time = 0.07, size = 7, normalized size = 0.70

$$\frac{\log\left(A+Bx\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B**2*x**2+2*A*B*x+A**2),x)
[Out] log(A + B*x)/B
```

3.835 $\int x^4(A + Bx)\sqrt{a + bx + cx^2}\, dx$

Optimal. Leaf size=367

$$\frac{\left(a + bx + cx^2\right)^{3/2}\left(1024a^2Bc^2 - 6cx\left(280aAc^2 - 444abBc - 294Ab^2c + 231b^3B\right) + 2744aAbc^2 - 3276ab^2Bc - 147\right.}{13440c^5}$$

Rubi [A] time = 0.51, antiderivative size = 367, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a + bx + cx^2\right)^{3/2}\left(1024a^2Bc^2 - 6cx\left(280aAc^2 - 444abBc - 294Ab^2c + 231b^3B\right) + 2744aAbc^2 - 3276ab^2Bc - 1470Ab^3c + 1155b^4B\right)}{13440c^5} - \frac{(b + 2cx)\sqrt{a + bx + cx^2}\left(-32a^2Ac^3 + 80a^2bBc^2 + 112aAb^2c^2 - 120ab^3Bc - 42Ab^4c + 33b^5B\right)}{1024c^6} + \frac{\left(b^2 - 4ac\right)\left(-32a^2Ac^3 + 80a^2bBc^2 + 112aAb^2c^2 - 120ab^3Bc - 42Ab^4c + 33b^5B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2048c^{13/2}} + \frac{x^2\left(a + bx + cx^2\right)^{3/2}\left(-32aBc - 42Abc + 33b^2B\right)}{280c^3} - \frac{x^3\left(a + bx + cx^2\right)^{3/2}(11bB - 14Ac)}{84c^2} + \frac{Bx^4\left(a + bx + cx^2\right)^{3/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((33*b^5*B - 42*A*b^4*c - 120*a*b^3*B*c + 112*a*A*b^2*c^2 + 80*a^2*b*B*c^2
 - 32*a^2*A*c^3)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(1024*c^6) + ((33*b^2*B
 - 42*A*b*c - 32*a*B*c)*x^2*(a + b*x + c*x^2)^(3/2))/(280*c^3) - ((11*b*B -
 14*A*c)*x^3*(a + b*x + c*x^2)^(3/2))/(84*c^2) + (B*x^4*(a + b*x + c*x^2)^(
3/2))/(7*c) + ((1155*b^4*B - 1470*A*b^3*c - 3276*a*b^2*B*c + 2744*a*A*b*c^2
 + 1024*a^2*B*c^2 - 6*c*(231*b^3*B - 294*A*b^2*c - 444*a*b*B*c + 280*a*A*c^
2)*x)*(a + b*x + c*x^2)^(3/2))/(13440*c^5) + ((b^2 - 4*a*c)*(33*b^5*B - 42*
A*b^4*c - 120*a*b^3*B*c + 112*a*A*b^2*c^2 + 80*a^2*b*B*c^2 - 32*a^2*A*c^3)*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2048*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\sqrt{a+bx+cx^2}\,dx = \frac{Bx^4\left(a+bx+cx^2\right)^{3/2}}{7c} + \frac{\int x^3\left(-4aB-\frac{1}{2}(11bB-14Ac)x\right)\sqrt{a+bx+cx^2}\,dx}{7c}$$

$$= -\frac{(11bB-14Ac)x^3\left(a+bx+cx^2\right)^{3/2}}{84c^2} + \frac{Bx^4\left(a+bx+cx^2\right)^{3/2}}{7c} + \frac{\int x^2\left(\frac{3}{2}a(11\right.}{}$$

$$= \frac{\left(33b^2B-42Abc-32aBc\right)x^2\left(a+bx+cx^2\right)^{3/2}}{280c^3} - \frac{(11bB-14Ac)x^3\left(a+bx\right.}{84c^2}$$

$$= \frac{\left(33b^2B-42Abc-32aBc\right)x^2\left(a+bx+cx^2\right)^{3/2}}{280c^3} - \frac{(11bB-14Ac)x^3\left(a+bx\right.}{84c^2}$$

$$= -\frac{\left(33b^5B-42Ab^4c-120ab^3Bc+112aAb^2c^2+80a^2bBc^2-32a^2Ac^3\right)(b+2}{1024c^6}$$

$$= -\frac{\left(33b^5B-42Ab^4c-120ab^3Bc+112aAb^2c^2+80a^2bBc^2-32a^2Ac^3\right)(b+2}{1024c^6}$$

$$= -\frac{\left(33b^5B-42Ab^4c-120ab^3Bc+112aAb^2c^2+80a^2bBc^2-32a^2Ac^3\right)(b+2}{1024c^6}$$

Mathematica [A] time = 0.54, size = 312, normalized size = 0.85

$$\frac{\frac{7\left(32a^2Ac^3-80a^2bBc^2-112aAb^2c^2+120ab^3Bc+42Ab^4c-33b^5B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{2048c^{11/2}}+\frac{x^2(a+x(b+cx))^{3/2}\left(-32aBc-42Abc+33b^2B\right)}{40c^2}+\frac{(a+x(b+cx))^{3/2}\left(252b^2c(7Acx-13aB)+8abc^2(343A+333Bx)+16ac^2(64aB-105Acx)-42b^3c(35A+33Bx)+1155b^4B\right)}{1920c^4}+\frac{x^3(a+x(b+cx))^{3/2}(14Ac-11bB)}{12c}+Bx^4(a+x(b+cx))^{3/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (((33*b^2*B - 42*A*b*c - 32*a*B*c)*x^2*(a + x*(b + c*x))^(3/2))/(40*c^2) +
((-11*b*B + 14*A*c)*x^3*(a + x*(b + c*x))^(3/2))/(12*c) + B*x^4*(a + x*(b +
 c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(1155*b^4*B - 42*b^3*c*(35*A + 33*B
*x) + 8*a*b*c^2*(343*A + 333*B*x) + 16*a*c^2*(64*a*B - 105*A*c*x) + 252*b^2
*c*(-13*a*B + 7*A*c*x)))/(1920*c^4) + (7*(-33*b^5*B + 42*A*b^4*c + 120*a*b^
3*B*c - 112*a*A*b^2*c^2 - 80*a^2*b*B*c^2 + 32*a^2*A*c^3)*(2*Sqrt[c]*(b + 2*
c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*S
qrt[a + x*(b + c*x)])]))/(2048*c^(11/2)))/(7*c)
```

IntegrateAlgebraic [A] time = 1.82, size = 423, normalized size = 1.15

$$\frac{\sqrt{a+bx+cx^2}\left(8192a^3Bc^3+25312a^2Abc^3-6720a^2Ac^4x-34608a^2b^2Bc^2+12704a^2bBc^3x-4096a^2Bc^4x^2-23520aAb^3c^2+12544aAb^2c^3x-7616aAbc^4x^2+4480aAc^5x^3+21840ab^4Bc-12096ab^3Bc^2x+7776ab^2Bc^3x^2-5056abBc^4x^3+3072aBc^5x^4+4410Ab^5c-2940Ab^4c^2x+2352Ab^3c^3x^2-2016Ab^2c^4x^3+1792Abc^5x^4+17920Ac^6x^5-3465b^6B+2310b^5Bcx-1848b^4Bc^2x^2+1584b^3Bc^3x^3-1408b^2Bc^4x^4+1280bBc^5x^5+15360Bc^6x^6\right)}{107520c^6}+\frac{\left(-128a^3Ac^4+320a^3bBc^3+480a^2Ab^2c^3-560a^2b^3Bc^2-280aAb^4c^2+252ab^5Bc+42Ab^6c-33b^7B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{2048c^{13/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-3465*b^6*B + 4410*A*b^5*c + 21840*a*b^4*B*c - 2352
0*a*A*b^3*c^2 - 34608*a^2*b^2*B*c^2 + 25312*a^2*A*b*c^3 + 8192*a^3*B*c^3 +
```

```
2310*b^5*B*c*x - 2940*A*b^4*c^2*x - 12096*a*b^3*B*c^2*x + 12544*a*A*b^2*c^3
*x + 12704*a^2*b*B*c^3*x - 6720*a^2*A*c^4*x - 1848*b^4*B*c^2*x^2 + 2352*A*b
^3*c^3*x^2 + 7776*a*b^2*B*c^3*x^2 - 7616*a*A*b*c^4*x^2 - 4096*a^2*B*c^4*x^2
 + 1584*b^3*B*c^3*x^3 - 2016*A*b^2*c^4*x^3 - 5056*a*b*B*c^4*x^3 + 4480*a*A*
c^5*x^3 - 1408*b^2*B*c^4*x^4 + 1792*A*b*c^5*x^4 + 3072*a*B*c^5*x^4 + 1280*b
*B*c^5*x^5 + 17920*A*c^6*x^5 + 15360*B*c^6*x^6))/(107520*c^6) + ((-33*b^7*B
 + 42*A*b^6*c + 252*a*b^5*B*c - 280*a*A*b^4*c^2 - 560*a^2*b^3*B*c^2 + 480*a
^2*A*b^2*c^3 + 320*a^3*b*B*c^3 - 128*a^3*A*c^4)*Log[b + 2*c*x - 2*Sqrt[c]*S
qrt[a + b*x + c*x^2]])/(2048*c^(13/2))
```

fricas [A] time = 0.56, size = 843, normalized size = 2.30

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/430080*(105*(33*B*b^7 + 128*A*a^3*c^4 - 160*(2*B*a^3*b + 3*A*a^2*b^2)*c^
3 + 280*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 42*(6*B*a*b^5 + A*b^6)*c)*sqrt(c)*log
(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) -
 4*a*c) + 4*(15360*B*c^7*x^6 - 3465*B*b^6*c + 1280*(B*b*c^6 + 14*A*c^7)*x^5
 + 32*(256*B*a^3 + 791*A*a^2*b)*c^4 - 128*(11*B*b^2*c^5 - 2*(12*B*a + 7*A*b
)*c^6)*x^4 - 336*(103*B*a^2*b^2 + 70*A*a*b^3)*c^3 + 16*(99*B*b^3*c^4 + 280*
A*a*c^6 - 2*(158*B*a*b + 63*A*b^2)*c^5)*x^3 + 210*(104*B*a*b^4 + 21*A*b^5)*
c^2 - 8*(231*B*b^4*c^3 + 8*(64*B*a^2 + 119*A*a*b)*c^5 - 6*(162*B*a*b^2 + 49
*A*b^3)*c^4)*x^2 + 2*(1155*B*b^5*c^2 - 3360*A*a^2*c^5 + 16*(397*B*a^2*b + 3
92*A*a*b^2)*c^4 - 42*(144*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a)
)/c^7, -1/215040*(105*(33*B*b^7 + 128*A*a^3*c^4 - 160*(2*B*a^3*b + 3*A*a^2*
b^2)*c^3 + 280*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 42*(6*B*a*b^5 + A*b^6)*c)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) - 2*(15360*B*c^7*x^6 - 3465*B*b^6*c + 1280*(B*b*c^6 + 14*A*c^7)*x^
5 + 32*(256*B*a^3 + 791*A*a^2*b)*c^4 - 128*(11*B*b^2*c^5 - 2*(12*B*a + 7*A*
b)*c^6)*x^4 - 336*(103*B*a^2*b^2 + 70*A*a*b^3)*c^3 + 16*(99*B*b^3*c^4 + 280
*A*a*c^6 - 2*(158*B*a*b + 63*A*b^2)*c^5)*x^3 + 210*(104*B*a*b^4 + 21*A*b^5)
*c^2 - 8*(231*B*b^4*c^3 + 8*(64*B*a^2 + 119*A*a*b)*c^5 - 6*(162*B*a*b^2 + 4
9*A*b^3)*c^4)*x^2 + 2*(1155*B*b^5*c^2 - 3360*A*a^2*c^5 + 16*(397*B*a^2*b +
392*A*a*b^2)*c^4 - 42*(144*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a
))/c^7]
```

giac [A] time = 0.24, size = 414, normalized size = 1.13

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(12*B*x + (B*b*c^5 + 14*A*c^
6)/c^6)*x - (11*B*b^2*c^4 - 24*B*a*c^5 - 14*A*b*c^5)/c^6)*x + (99*B*b^3*c^3
 - 316*B*a*b*c^4 - 126*A*b^2*c^4 + 280*A*a*c^5)/c^6)*x - (231*B*b^4*c^2 - 9
72*B*a*b^2*c^3 - 294*A*b^3*c^3 + 512*B*a^2*c^4 + 952*A*a*b*c^4)/c^6)*x + (1
155*B*b^5*c - 6048*B*a*b^3*c^2 - 1470*A*b^4*c^2 + 6352*B*a^2*b*c^3 + 6272*A
*a*b^2*c^3 - 3360*A*a^2*c^4)/c^6)*x - (3465*B*b^6 - 21840*B*a*b^4*c - 4410*
A*b^5*c + 34608*B*a^2*b^2*c^2 + 23520*A*a*b^3*c^2 - 8192*B*a^3*c^3 - 25312*
A*a^2*b*c^3)/c^6) - 1/2048*(33*B*b^7 - 252*B*a*b^5*c - 42*A*b^6*c + 560*B*a
^2*b^3*c^2 + 280*A*a*b^4*c^2 - 320*B*a^3*b*c^3 - 480*A*a^2*b^2*c^3 + 128*A*
a^3*c^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(13
/2)
```

maple [B] time = 0.06, size = 872, normalized size = 2.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -4/35*B*a/c^2*x^2*(c*x^2+b*x+a)^(3/2)-11/84*B*b/c^2*x^3*(c*x^2+b*x+a)^(3/2)
-5/32*B*b/c^3*a^2*(c*x^2+b*x+a)^(1/2)*x+15/64*B*b^3/c^4*a*(c*x^2+b*x+a)^(1/
2)*x-7/32*A*b^2/c^3*a*(c*x^2+b*x+a)^(1/2)*x+111/560*B*b/c^3*a*x*(c*x^2+b*x+
a)^(3/2)+1/16*A*a^2/c^2*(c*x^2+b*x+a)^(1/2)*x-1/8*A*a/c^2*x*(c*x^2+b*x+a)^(
3/2)+1/32*A*a^2/c^3*(c*x^2+b*x+a)^(1/2)*b+21/256*A*b^4/c^4*(c*x^2+b*x+a)^(1
/2)*x+15/128*B*b^4/c^5*a*(c*x^2+b*x+a)^(1/2)-15/64*A*b^2/c^(7/2)*a^2*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+35/128*B*b^3/c^(9/2)*a^2*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/32*B*b/c^(7/2)*a^3*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))-39/160*B*b^2/c^4*a*(c*x^2+b*x+a)^(3/2)+33/280*B*b^2/c
^3*x^2*(c*x^2+b*x+a)^(3/2)-33/320*B*b^3/c^4*x*(c*x^2+b*x+a)^(3/2)-33/512*B*
b^5/c^5*(c*x^2+b*x+a)^(1/2)*x+21/160*A*b^2/c^3*x*(c*x^2+b*x+a)^(3/2)-5/64*B
*b^2/c^4*a^2*(c*x^2+b*x+a)^(1/2)-63/512*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))*a+35/256*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))*a-7/64*A*b^3/c^4*a*(c*x^2+b*x+a)^(1/2)+49/240*A*b/c^3*a*(c*
x^2+b*x+a)^(3/2)-3/20*A*b/c^2*x^2*(c*x^2+b*x+a)^(3/2)+1/6*A*x^3*(c*x^2+b*x+
a)^(3/2)/c-7/64*A*b^3/c^4*(c*x^2+b*x+a)^(3/2)+8/105*B*a^2/c^3*(c*x^2+b*x+a)
^(3/2)+33/2048*B*b^7/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1
1/128*B*b^4/c^5*(c*x^2+b*x+a)^(3/2)-33/1024*B*b^6/c^6*(c*x^2+b*x+a)^(1/2)+2
1/512*A*b^5/c^5*(c*x^2+b*x+a)^(1/2)-21/1024*A*b^6/c^(11/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x+a)^(1/2))+1/16*A*a^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))+1/7*B*x^4*(c*x^2+b*x+a)^(3/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 3.91, size = 992, normalized size = 2.70

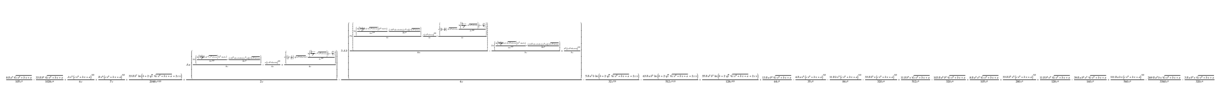

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (8*B*a^3*(a + b*x + c*x^2)^(1/2))/(105*c^3) - (33*B*b^6*(a + b*x + c*x^2)^(
1/2))/(1024*c^6) + (A*x^3*(a + b*x + c*x^2)^(3/2))/(6*c) + (B*x^4*(a + b*x
+ c*x^2)^(3/2))/(7*c) + (33*B*b^7*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2)
 + 2*c*x))/(2048*c^(13/2)) + (A*a*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a +
b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x
^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2
+ c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c
)))/(2*c) - (3*A*b*((7*b*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x
^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*
c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2)
)/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^
(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c
) - (2*a*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*
```

```
b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)
^(1/2))/(24*c^2)))/(5*c) + (x^2*(a + b*x + c*x^2)^(3/2))/(5*c)))/(4*c) - (5
*B*a^3*b*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(32*c^(7/2)) -
 (63*B*a*b^5*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(512*c^(11
/2)) + (35*B*a^2*b^3*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(1
28*c^(9/2)) + (13*B*a*b^4*(a + b*x + c*x^2)^(1/2))/(64*c^5) - (4*B*a*x^2*(a
 + b*x + c*x^2)^(3/2))/(35*c^2) - (11*B*b*x^3*(a + b*x + c*x^2)^(3/2))/(84*
c^2) - (33*B*b^3*x*(a + b*x + c*x^2)^(3/2))/(320*c^4) + (11*B*b^5*x*(a + b*
x + c*x^2)^(1/2))/(512*c^5) - (103*B*a^2*b^2*(a + b*x + c*x^2)^(1/2))/(320*
c^4) + (8*B*a^2*x^2*(a + b*x + c*x^2)^(1/2))/(105*c^2) + (33*B*b^2*x^2*(a +
 b*x + c*x^2)^(3/2))/(280*c^3) + (11*B*b^4*x^2*(a + b*x + c*x^2)^(1/2))/(12
8*c^4) - (39*B*a*b^2*x^2*(a + b*x + c*x^2)^(1/2))/(160*c^3) + (111*B*a*b*x*
(a + b*x + c*x^2)^(3/2))/(560*c^3) - (269*B*a^2*b*x*(a + b*x + c*x^2)^(1/2)
)/(3360*c^3) - (3*B*a*b^3*x*(a + b*x + c*x^2)^(1/2))/(320*c^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4 (A + Bx) \sqrt{a + bx + cx^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.836 $\int x^3(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=280

$$-\frac{(b^2-4ac)\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{11/2}}+\frac{(b+2cx)\sqrt{a+bx+}}{}$$

Rubi [A] time = 0.32, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)}{512c^5}-\frac{(b^2-4ac)\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{11/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-6cx\left(-20aBc-28Abc+21b^2B\right)+128aAc^2-196abBc-140Ab^2c+105b^3B\right)}{960c^4}-\frac{x^2\left(a+bx+cx^2\right)^{3/2}(3bB-4Ac)}{20c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((21*b^4*B - 28*A*b^3*c - 56*a*b^2*B*c + 48*a*A*b*c^2 + 16*a^2*B*c^2)*(b +
2*c*x)*Sqrt[a + b*x + c*x^2])/(512*c^5) - ((3*b*B - 4*A*c)*x^2*(a + b*x + c
*x^2)^(3/2))/(20*c^2) + (B*x^3*(a + b*x + c*x^2)^(3/2))/(6*c) - ((105*b^3*B
 - 140*A*b^2*c - 196*a*b*B*c + 128*a*A*c^2 - 6*c*(21*b^2*B - 28*A*b*c - 20*
a*B*c)*x)*(a + b*x + c*x^2)^(3/2))/(960*c^4) - ((b^2 - 4*a*c)*(21*b^4*B - 2
8*A*b^3*c - 56*a*b^2*B*c + 48*a*A*b*c^2 + 16*a^2*B*c^2)*ArcTanh[(b + 2*c*x)
/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(1024*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
```

```
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^3(A+Bx)\sqrt{a+bx+cx^2}\,dx = \frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c}+\frac{\int x^2\left(-3aB-\frac{3}{2}(3bB-4Ac)x\right)\sqrt{a+bx+cx^2}\,dx}{6c}$$

$$= -\frac{(3bB-4Ac)x^2\left(a+bx+cx^2\right)^{3/2}}{20c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c}+\frac{\int x\left(3a(3bB-4\ldots\right.}{}$$

$$= -\frac{(3bB-4Ac)x^2\left(a+bx+cx^2\right)^{3/2}}{20c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c}-\frac{\left(105b^3B-140A\ldots\right.}{}$$

$$= \frac{\left(21b^4B-28Ab^3c-56ab^2Bc+48aAbc^2+16a^2Bc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^5}-\ldots$$

$$= \frac{\left(21b^4B-28Ab^3c-56ab^2Bc+48aAbc^2+16a^2Bc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^5}-\ldots$$

$$= \frac{\left(21b^4B-28Ab^3c-56ab^2Bc+48aAbc^2+16a^2Bc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^5}-\ldots$$

Mathematica [A] time = 0.36, size = 241, normalized size = 0.86

$$\frac{\frac{3\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{512c^{9/2}}+\frac{(a+x(b+cx))^{3/2}\left(28bc(7aB-6Acx)-8ac^2(16A+15Bx)+14b^2c(10A+9Bx)-105b^3B\right)}{160c^3}+\frac{3x^2(a+x(b+cx))^{3/2}(4Ac-3bB)}{10c}+Bx^3(a+x(b+cx))^{3/2}}{6c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((3*(-3*b*B + 4*A*c)*x^2*(a + x*(b + c*x))^(3/2))/(10*c) + B*x^3*(a + x*(b
+ c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(-105*b^3*B + 14*b^2*c*(10*A + 9*B
*x) - 8*a*c^2*(16*A + 15*B*x) + 28*b*c*(7*a*B - 6*A*c*x)))/(160*c^3) + (3*(
21*b^4*B - 28*A*b^3*c - 56*a*b^2*B*c + 48*a*A*b*c^2 + 16*a^2*B*c^2)*(2*Sqrt
[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(
2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(512*c^(9/2)))/(6*c)
```

IntegrateAlgebraic [A] time = 1.29, size = 326, normalized size = 1.16

$$\frac{\sqrt{a+bx+cx^2}\left(-1024a^2Ac^3+1808a^2bBc^2-480a^2Bc^3x+1840aAb^2c^2-928aAbc^3x+512aAc^4x^2-1680ab^3Bc+896ab^2Bc^2x-544abBc^3x^2+320aBc^4x^3-420Ab^4c+280Ab^3c^2x-224Ab^2c^3x^2+192Abc^4x^3+1536Ac^5x^4+315b^5B-210b^4Bcx+168b^3Bc^2x^2-144b^2Bc^3x^3+128bBc^4x^4+1280Bc^5x^5\right)}{7680c^5}+\frac{\left(-64a^3Bc^3-192a^2Abc^3+240a^2b^2Bc^2+160aAb^3c^2-140ab^4Bc-28Ab^5c+21b^6B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{1024c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(315*b^5*B - 420*A*b^4*c - 1680*a*b^3*B*c + 1840*a*A
*b^2*c^2 + 1808*a^2*b*B*c^2 - 1024*a^2*A*c^3 - 210*b^4*B*c*x + 280*A*b^3*c^
2*x + 896*a*b^2*B*c^2*x - 928*a*A*b*c^3*x - 480*a^2*B*c^3*x + 168*b^3*B*c^2
*x^2 - 224*A*b^2*c^3*x^2 - 544*a*b*B*c^3*x^2 + 512*a*A*c^4*x^2 - 144*b^2*B*
c^3*x^3 + 192*A*b*c^4*x^3 + 320*a*B*c^4*x^3 + 128*b*B*c^4*x^4 + 1536*A*c^5*
x^4 + 1280*B*c^5*x^5))/(7680*c^5) + ((21*b^6*B - 28*A*b^5*c - 140*a*b^4*B*c
 + 160*a*A*b^3*c^2 + 240*a^2*b^2*B*c^2 - 192*a^2*A*b*c^3 - 64*a^3*B*c^3)*Lo
g[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(1024*c^(11/2))
```

fricas [A] time = 0.53, size = 667, normalized size = 2.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/30720*(15*(21*B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*
A*a*b^3)*c^2 - 28*(5*B*a*b^4 + A*b^5)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x -
 b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1280*B*c^6
*x^5 + 315*B*b^5*c - 1024*A*a^2*c^4 + 128*(B*b*c^5 + 12*A*c^6)*x^4 + 16*(11
3*B*a^2*b + 115*A*a*b^2)*c^3 - 16*(9*B*b^2*c^4 - 4*(5*B*a + 3*A*b)*c^5)*x^3
 - 420*(4*B*a*b^3 + A*b^4)*c^2 + 8*(21*B*b^3*c^3 + 64*A*a*c^5 - 4*(17*B*a*b
 + 7*A*b^2)*c^4)*x^2 - 2*(105*B*b^4*c^2 + 16*(15*B*a^2 + 29*A*a*b)*c^4 - 28
*(16*B*a*b^2 + 5*A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6, 1/15360*(15*(21
*B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 28
*(5*B*a*b^4 + A*b^5)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1280*B*c^6*x^5 + 315*B*b^5*c - 10
24*A*a^2*c^4 + 128*(B*b*c^5 + 12*A*c^6)*x^4 + 16*(113*B*a^2*b + 115*A*a*b^2
)*c^3 - 16*(9*B*b^2*c^4 - 4*(5*B*a + 3*A*b)*c^5)*x^3 - 420*(4*B*a*b^3 + A*b
^4)*c^2 + 8*(21*B*b^3*c^3 + 64*A*a*c^5 - 4*(17*B*a*b + 7*A*b^2)*c^4)*x^2 -
2*(105*B*b^4*c^2 + 16*(15*B*a^2 + 29*A*a*b)*c^4 - 28*(16*B*a*b^2 + 5*A*b^3)
*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6]
```

giac [A] time = 0.26, size = 323, normalized size = 1.15

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*B*x + (B*b*c^4 + 12*A*c^5)/c^5
)*x - (9*B*b^2*c^3 - 20*B*a*c^4 - 12*A*b*c^4)/c^5)*x + (21*B*b^3*c^2 - 68*B
*a*b*c^3 - 28*A*b^2*c^3 + 64*A*a*c^4)/c^5)*x - (105*B*b^4*c - 448*B*a*b^2*c
^2 - 140*A*b^3*c^2 + 240*B*a^2*c^3 + 464*A*a*b*c^3)/c^5)*x + (315*B*b^5 - 1
680*B*a*b^3*c - 420*A*b^4*c + 1808*B*a^2*b*c^2 + 1840*A*a*b^2*c^2 - 1024*A*
a^2*c^3)/c^5) + 1/1024*(21*B*b^6 - 140*B*a*b^4*c - 28*A*b^5*c + 240*B*a^2*b
^2*c^2 + 160*A*a*b^3*c^2 - 64*B*a^3*c^3 - 192*A*a^2*b*c^3)*log(abs(-2*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 671, normalized size = 2.40

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -7/32*B*b^2/c^3*a*(c*x^2+b*x+a)^(1/2)*x+3/16*A*b/c^2*a*(c*x^2+b*x+a)^(1/2)*
x-7/40*A*b/c^2*x*(c*x^2+b*x+a)^(3/2)-7/64*A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x+4
9/240*B*b/c^3*a*(c*x^2+b*x+a)^(3/2)-1/8*B*a/c^2*x*(c*x^2+b*x+a)^(3/2)+35/25
6*B*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-7/64*B*b^3/c^
4*a*(c*x^2+b*x+a)^(1/2)-15/64*B*b^2/c^(7/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))+3/32*A*b^2/c^3*a*(c*x^2+b*x+a)^(1/2)+3/16*A*b/c^(5/2)*a^2*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/32*A*b^3/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-3/20*B*b/c^2*x^2*(c*x^2+b*x+a)^(3/2)+21/1
60*B*b^2/c^3*x*(c*x^2+b*x+a)^(3/2)+21/256*B*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x+1
/16*B*a^2/c^2*(c*x^2+b*x+a)^(1/2)*x+1/32*B*a^2/c^3*(c*x^2+b*x+a)^(1/2)*b+7/
256*A*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/15*A*a/c^2*
(c*x^2+b*x+a)^(3/2)-7/64*B*b^3/c^4*(c*x^2+b*x+a)^(3/2)+21/512*B*b^5/c^5*(c*
```

```
x^2+b*x+a)^(1/2)-21/1024*B*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+1/16*B*a^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/5
*A*x^2*(c*x^2+b*x+a)^(3/2)/c+7/48*A*b^2/c^3*(c*x^2+b*x+a)^(3/2)-7/128*A*b^4
/c^4*(c*x^2+b*x+a)^(1/2)+1/6*B*x^3*(c*x^2+b*x+a)^(3/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.96, size = 781, normalized size = 2.79

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) + (B*x^3*(a + b*x + c*x^2)^(3/2))/(6*
c) - (2*A*a*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4
*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x
^2)^(1/2))/(24*c^2)))/(5*c) + (7*A*b*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a
 + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) -
3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x +
c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b
/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(
4*c)))/(10*c) + (B*a*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^
(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)
*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4
*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2
) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(2*c) - (
3*B*b*((7*b*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b
^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x
 + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*
((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a +
b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c) - (2*a*((lo
g((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(
5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c
^2)))/(5*c) + (x^2*(a + b*x + c*x^2)^(3/2))/(5*c)))/(4*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3\,(A+Bx)\,\sqrt{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.837 $\int x^2(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=205

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aBc-6cx(7bB-10Ac)-50Abc+35b^2B\right)}{240c^3}+\frac{\left(b^2-4ac\right)\left(8aAc^2-12abBc-10Ab^2c+7b\right.}{256c^{9/2}}$$

Rubi [A] time = 0.20, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aBc-6cx(7bB-10Ac)-50Abc+35b^2B\right)}{240c^3}-\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(8aAc^2-12abBc-10Ab^2c+7b^3B\right)}{128c^4}+\frac{\left(b^2-4ac\right)\left(8aAc^2-12abBc-10Ab^2c+7b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{9/2}}+\frac{Bx^2\left(a+bx+cx^2\right)^{3/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((7*b^3*B - 10*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*Sqrt[a + b*x
+ c*x^2])/(128*c^4) + (B*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) + ((35*b^2*B -
50*A*b*c - 32*a*B*c - 6*c*(7*b*B - 10*A*c)*x)*(a + b*x + c*x^2)^(3/2))/(240
*c^3) + ((b^2 - 4*a*c)*(7*b^3*B - 10*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*ArcT
anh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\sqrt{a+bx+cx^2}\,dx &= \frac{Bx^2\left(a+bx+cx^2\right)^{3/2}}{5c}+\frac{\int x\left(-2aB-\frac{1}{2}(7bB-10Ac)x\right)\sqrt{a+bx+cx^2}\,dx}{5c} \\
&= \frac{Bx^2\left(a+bx+cx^2\right)^{3/2}}{5c}+\frac{\left(35b^2B-50Abc-32aBc-6c(7bB-10Ac)x\right)\left(a+bx\right.}{240c^3} \\
&= -\frac{\left(7b^3B-10Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{128c^4}+\frac{Bx^2\left(a+bx\right.}{5c} \\
&= -\frac{\left(7b^3B-10Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{128c^4}+\frac{Bx^2\left(a+bx\right.}{5c} \\
&= -\frac{\left(7b^3B-10Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{128c^4}+\frac{Bx^2\left(a+bx\right.}{5c}
\end{aligned}
$$

Mathematica [A] time = 0.23, size = 179, normalized size = 0.87

$$
\frac{\frac{(a+x(b+cx))^{3/2}\left(4c(15Acx-8aB)-2bc(25A+21Bx)+35b^2B\right)}{48c^2}+\frac{5\left(8aAc^2-12abBc-10Ab^2c+7b^3B\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{256c^{7/2}}+Bx^2(a+x(b+cx))^{3/2}}{5c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*x^2*(a + x*(b + c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(35*b^2*B - 2*b*c
*(25*A + 21*B*x) + 4*c*(-8*a*B + 15*A*c*x)))/(48*c^2) + (5*(7*b^3*B - 10*A*
b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x
)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))
/(256*c^(7/2)))/(5*c)
```

IntegrateAlgebraic [A] time = 0.94, size = 244, normalized size = 1.19

$$
\frac{\sqrt{a+bx+cx^2}\left(-256a^2Bc^2-520aAbc^2+240aAc^3x+460ab^2Bc-232abBc^2x+128aBc^3x^2+150Ab^3c-100Ab^2c^2x+80Abc^3x^2+480Ac^4x^3-105b^4B+70b^3Bcx-56b^2Bc^2x^2+48bBc^3x^3+384Bc^4x^4\right)}{1920c^4}+\frac{\left(32a^2Ac^3-48a^2bBc^2-48aAb^2c^2+40ab^3Bc+10Ab^4c-7b^5B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{256c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-105*b^4*B + 150*A*b^3*c + 460*a*b^2*B*c - 520*a*A*
b*c^2 - 256*a^2*B*c^2 + 70*b^3*B*c*x - 100*A*b^2*c^2*x - 232*a*b*B*c^2*x +
240*a*A*c^3*x - 56*b^2*B*c^2*x^2 + 80*A*b*c^3*x^2 + 128*a*B*c^3*x^2 + 48*b*
B*c^3*x^3 + 480*A*c^4*x^3 + 384*B*c^4*x^4))/(1920*c^4) + ((-7*b^5*B + 10*A*
b^4*c + 40*a*b^3*B*c - 48*a*A*b^2*c^2 - 48*a^2*b*B*c^2 + 32*a^2*A*c^3)*Log[
b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(256*c^(9/2))
```

fricas [A] time = 0.50, size = 517, normalized size = 2.52

$$
\left[-\frac{15\left(7Bb^5-32Aa^2c^3+48\left(Ba^2b+Aab^2\right)c^2-10\left(4Bab^3+Ab^4\right)c\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)-4\left(384Bc^5x^4-105Bb^4c-8\left(32Ba^2+65Aab\right)c^3+48\left(Bbc^4+10Ac^5\right)x^3+10\left(46Bab^2+15Ab^3\right)c^2-8\left(7Bb^2c^3-2(8Ba+5Ab)c^4\right)x^2+2\left(35Bb^3c^2+120Aac^4-2\left(58Bab+25Ab^2\right)c^3\right)x\right)\sqrt{cx^2+bx+a}}{7680c^5}, -\frac{15\left(7Bb^5-32Aa^2c^3+48\left(Ba^2b+Aab^2\right)c^2-10\left(4Bab^3+Ab^4\right)c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(384Bc^5x^4-105Bb^4c-8\left(32Ba^2+65Aab\right)c^3+48\left(Bbc^4+10Ac^5\right)x^3+10\left(46Bab^2+15Ab^3\right)c^2-8\left(7Bb^2c^3-2(8Ba+5Ab)c^4\right)x^2+2\left(35Bb^3c^2+120Aac^4-2\left(58Bab+25Ab^2\right)c^3\right)x\right)\sqrt{cx^2+bx+a}}{3840c^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(7*B*b^5 - 32*A*a^2*c^3 + 48*(B*a^2*b + A*a*b^2)*c^2 - 10*(4*B
*a*b^3 + A*b^4)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 +
b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(384*B*c^5*x^4 - 105*B*b^4*c - 8*
(32*B*a^2 + 65*A*a*b)*c^3 + 48*(B*b*c^4 + 10*A*c^5)*x^3 + 10*(46*B*a*b^2 +
15*A*b^3)*c^2 - 8*(7*B*b^2*c^3 - 2*(8*B*a + 5*A*b)*c^4)*x^2 + 2*(35*B*b^3*c
^2 + 120*A*a*c^4 - 2*(58*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c
^5, -1/3840*(15*(7*B*b^5 - 32*A*a^2*c^3 + 48*(B*a^2*b + A*a*b^2)*c^2 - 10*(
4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)
*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(384*B*c^5*x^4 - 105*B*b^4*c - 8*(32
*B*a^2 + 65*A*a*b)*c^3 + 48*(B*b*c^4 + 10*A*c^5)*x^3 + 10*(46*B*a*b^2 + 15*
A*b^3)*c^2 - 8*(7*B*b^2*c^3 - 2*(8*B*a + 5*A*b)*c^4)*x^2 + 2*(35*B*b^3*c^2
+ 120*A*a*c^4 - 2*(58*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [**A**] time = 0.23, size = 245, normalized size = 1.20

$$\frac{1}{1920}\sqrt{cx^2+bx+a}\left(2\left(4\left(6\left(8\,Bx+\frac{Bbc^3+10\,Ac^4}{c^4}\right)x-\frac{7\,Bb^2c^2-16\,Bac^3-10\,Abc^3}{c^4}\right)x+\frac{35\,Bb^3c-116\,Babc^2-50\,Ab^2c^2+120\,Aac^3}{c^4}\right)x-\frac{105\,Bb^4-460\,Bab^2c-150\,Ab^3c+256\,Ba^2c^2+520\,Aabc^2}{c^4}\right)-\frac{\left(7\,Bb^5-40\,Bab^3c-10\,Ab^4c+48\,Ba^2bc^2+48\,Aab^2c^2-32\,Aa^2c^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{256\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x + a)*(2*(4*(6*(8*B*x + (B*b*c^3 + 10*A*c^4)/c^4)*x
- (7*B*b^2*c^2 - 16*B*a*c^3 - 10*A*b*c^3)/c^4)*x + (35*B*b^3*c - 116*B*a*b*
c^2 - 50*A*b^2*c^2 + 120*A*a*c^3)/c^4)*x - (105*B*b^4 - 460*B*a*b^2*c - 150
*A*b^3*c + 256*B*a^2*c^2 + 520*A*a*b*c^2)/c^4) - 1/256*(7*B*b^5 - 40*B*a*b^
3*c - 10*A*b^4*c + 48*B*a^2*b*c^2 + 48*A*a*b^2*c^2 - 32*A*a^2*c^3)*log(abs(
-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [**B**] time = 0.06, size = 497, normalized size = 2.42

$$-\frac{Aa^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{3}{2}}}+\frac{3Aab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{5Ab^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{128c^{\frac{7}{2}}}+\frac{3Ba^2b\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{5Bab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{32c^{\frac{7}{2}}}+\frac{7Bb^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{256c^{\frac{9}{2}}}-\frac{\sqrt{cx^2+bx+a}\,Aax}{8c}+\frac{5\sqrt{cx^2+bx+a}\,Ab^2x}{32c^2}+\frac{3\sqrt{cx^2+bx+a}\,Babx}{16c^2}-\frac{7\sqrt{cx^2+bx+a}\,Bb^3x}{64c^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bx^2}{5c}-\frac{\sqrt{cx^2+bx+a}\,Aab}{16c^2}+\frac{5\sqrt{cx^2+bx+a}\,Ab^3}{64c^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ax}{4c}+\frac{3\sqrt{cx^2+bx+a}\,Bab^2}{32c^3}-\frac{7\sqrt{cx^2+bx+a}\,Bb^4}{128c^4}-\frac{7\left(cx^2+bx+a\right)^{\frac{3}{2}}Bbx}{40c^2}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab}{24c^2}-\frac{2\left(cx^2+bx+a\right)^{\frac{3}{2}}Ba}{15c^2}+\frac{7\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb^2}{48c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/5*B*x^2*(c*x^2+b*x+a)^(3/2)/c-7/40*B*b/c^2*x*(c*x^2+b*x+a)^(3/2)+7/48*B*b
^2/c^3*(c*x^2+b*x+a)^(3/2)-7/64*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x-7/128*B*b^4
/c^4*(c*x^2+b*x+a)^(1/2)-5/32*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x+a)^(1/2))*a+7/256*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))+3/16*B*b/c^2*a*(c*x^2+b*x+a)^(1/2)*x+3/32*B*b^2/c^3*a*(c*x^2+b*x+a)^(1/
2)+3/16*B*b/c^(5/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/15*B*
a/c^2*(c*x^2+b*x+a)^(3/2)+1/4*A*x*(c*x^2+b*x+a)^(3/2)/c-5/24*A*b/c^2*(c*x^2
+b*x+a)^(3/2)+5/32*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)*x+5/64*A*b^3/c^3*(c*x^2+b*
x+a)^(1/2)+3/16*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a
-5/128*A*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/8*A*a/c*
(c*x^2+b*x+a)^(1/2)*x-1/16*A*a/c^2*(c*x^2+b*x+a)^(1/2)*b-1/8*A*a^2/c^(3/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.72, size = 463, normalized size = 2.26

$$\frac{B x^2 \left(c x^2+b x+a\right)^{3/2}}{5 c}-\frac{A a \left(\left(\frac{x}{2}+\frac{b}{4 c}\right) \sqrt{c x^2+b x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c x}{\sqrt{c}}+\sqrt{c x^2+b x+a}\right) \left(a c-\frac{b^2}{4}\right)}{2 c^{3/2}}\right)}{4 c}-\frac{5 A b \left(\frac{\ln\left(\frac{b+2 c x}{\sqrt{c}}+2 \sqrt{c x^2+b x+a}\right) \left(b^3-4 a b c\right)}{16 c^{5/2}}+\frac{\left(-3 b^2+2 c x b+8 c \left(c x^2+a\right)\right) \sqrt{c x^2+b x+a}}{24 c^2}\right)}{8 c}-\frac{2 B a \left(\frac{\ln\left(\frac{b+2 c x}{\sqrt{c}}+2 \sqrt{c x^2+b x+a}\right) \left(b^3-4 a b c\right)}{16 c^{5/2}}+\frac{\left(-3 b^2+2 c x b+8 c \left(c x^2+a\right)\right) \sqrt{c x^2+b x+a}}{24 c^2}\right)}{5 c}+\frac{A x \left(c x^2+b x+a\right)^{3/2}}{4 c}+\frac{7 B b \left(\frac{5 b \left(\frac{\ln\left(\frac{b+2 c x}{\sqrt{c}}+2 \sqrt{c x^2+b x+a}\right) \left(b^3-4 a b c\right)}{16 c^{5/2}}+\frac{\left(-3 b^2+2 c x b+8 c \left(c x^2+a\right)\right) \sqrt{c x^2+b x+a}}{24 c^2}\right)}{8 c}-\frac{x \left(c x^2+b x+a\right)^{3/2}}{4 c}+\frac{a \left(\left(\frac{x}{2}+\frac{b}{4 c}\right) \sqrt{c x^2+b x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c x}{\sqrt{c}}+\sqrt{c x^2+b x+a}\right) \left(a c-\frac{b^2}{4}\right)}{2 c^{3/2}}\right)}{4 c}\right)}{10 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (B*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) - (A*a*((x/2 + b/(4*c))*(a + b*x + c*
x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2
/4))/(2*c^(3/2))))/(4*c) - (5*A*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x +
c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2
*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (2*B*a*((log((b + 2*c*x
)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*
c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c)
+ (A*x*(a + b*x + c*x^2)^(3/2))/(4*c) + (7*B*b*((5*b*((log((b + 2*c*x)/c^(1
/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a +
 c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(
a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2)
 + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^
(3/2))))/(4*c)))/(10*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 (A + Bx) \sqrt{a + bx + cx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.838 $\int x(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=144

$$-\frac{\left(b^2-4ac\right)\left(-4aBc-8Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{7/2}}+\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-8Abc+5b^2B\right)}{64c^3}$$

Rubi [A] time = 0.06, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {779, 612, 621, 206}

$$\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-8Abc+5b^2B\right)}{64c^3}-\frac{\left(b^2-4ac\right)\left(-4aBc-8Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{7/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}(-8Ac+5bB-6Bcx)}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((5*b^2*B - 8*A*b*c - 4*a*B*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(64*c^3)
- ((5*b*B - 8*A*c - 6*B*c*x)*(a + b*x + c*x^2)^(3/2))/(24*c^2) - ((b^2 - 4*
a*c)*(5*b^2*B - 8*A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
b*x + c*x^2])])/(128*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\sqrt{a+bx+cx^2}\,dx = -\frac{(5bB-8Ac-6Bcx)\left(a+bx+cx^2\right)^{3/2}}{24c^2}+\frac{\left(5b^2B-8Abc-4aBc\right)\int \sqrt{a+bx+c}}{16c^2}$$
$$=\frac{\left(5b^2B-8Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(a+bx\right.}{24c^2}$$
$$=\frac{\left(5b^2B-8Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(a+bx\right.}{24c^2}$$
$$=\frac{\left(5b^2B-8Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(a+bx\right.}{24c^2}$$

Mathematica [A] time = 0.13, size = 127, normalized size = 0.88

$$\frac{(a+x(b+cx))^{3/2}(8Ac-5bB+6Bcx)-\frac{3\left(-4aBc-8Abc+5b^2B\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{16c^{3/2}}}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((-5*b*B + 8*A*c + 6*B*c*x)*(a + x*(b + c*x))^(3/2) - (3*(5*b^2*B - 8*A*b*c
 - 4*a*B*c)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*A
rcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(16*c^(3/2)))/(24*c
^2)
```

IntegrateAlgebraic [A] time = 0.63, size = 177, normalized size = 1.23

$$\frac{\left(16a^2Bc^2+32aAbc^2-24ab^2Bc-8Ab^3c+5b^4B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{128c^{7/2}}+\frac{\sqrt{a+bx+cx^2}\left(64aAc^2-52abBc+24aBc^2x-24Ab^2c+16Abc^2x+64Ac^3x^2+15b^3B-10b^2Bcx+8bBc^2x^2+48Bc^3x^3\right)}{192c^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(15*b^3*B - 24*A*b^2*c - 52*a*b*B*c + 64*a*A*c^2 - 1
0*b^2*B*c*x + 16*A*b*c^2*x + 24*a*B*c^2*x + 8*b*B*c^2*x^2 + 64*A*c^3*x^2 +
48*B*c^3*x^3))/(192*c^3) + ((5*b^4*B - 8*A*b^3*c - 24*a*b^2*B*c + 32*a*A*b*
c^2 + 16*a^2*B*c^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(128*
c^(7/2))
```

fricas [A] time = 0.48, size = 393, normalized size = 2.73

$$\left[\frac{3\left(5Bb^4+16\left(Ba^2+2Aab\right)c^2-8\left(3Bab^2+Ab^3\right)c\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4\left(48Bc^4x^3+15Bb^3c+64Aac^3-4\left(13Bab+6Ab^2\right)c^2+8\left(Bbc^3+8Ac^4\right)x^2-2\left(5Bb^2c^2-4(3Ba+2Ab)c^3\right)x\right)\sqrt{cx^2+bx+a}}{768c^4},\ \frac{3\left(5Bb^4+16\left(Ba^2+2Aab\right)c^2-8\left(3Bab^2+Ab^3\right)c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+2\left(48Bc^4x^3+15Bb^3c+64Aac^3-4\left(13Bab+6Ab^2\right)c^2+8\left(Bbc^3+8Ac^4\right)x^2-2\left(5Bb^2c^2-4(3Ba+2Ab)c^3\right)x\right)\sqrt{cx^2+bx+a}}{384c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/768*(3*(5*B*b^4 + 16*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sq
rt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 + 15*B*b^3*c + 64*A*a*c^3 - 4*(13*B*a*b
+ 6*A*b^2)*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^2 - 2*(5*B*b^2*c^2 - 4*(3*B*a + 2*
A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/384*(3*(5*B*b^4 + 16*(B*a^2 + 2*
A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x
+ a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*B*c^4*x^3 + 15*B
*b^3*c + 64*A*a*c^3 - 4*(13*B*a*b + 6*A*b^2)*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^
2 - 2*(5*B*b^2*c^2 - 4*(3*B*a + 2*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.25, size = 178, normalized size = 1.24

$$\frac{1}{192}\sqrt{cx^2+bx+a}\left(2\left(4\left(6Bx+\frac{Bbc^2+8Ac^3}{c^3}\right)x-\frac{5Bb^2c-12Bac^2-8Abc^2}{c^3}\right)x+\frac{15Bb^3-52Babc-24Ab^2c+64Aac^2}{c^3}\right)+\frac{\left(5Bb^4-24Bab^2c-8Ab^3c+16Ba^2c^2+32Aabc^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{128c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*x + (B*b*c^2 + 8*A*c^3)/c^3)*x - (5*
B*b^2*c - 12*B*a*c^2 - 8*A*b*c^2)/c^3)*x + (15*B*b^3 - 52*B*a*b*c - 24*A*b^
2*c + 64*A*a*c^2)/c^3) + 1/128*(5*B*b^4 - 24*B*a*b^2*c - 8*A*b^3*c + 16*B*a
^2*c^2 + 32*A*a*b*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(
c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 352, normalized size = 2.44

$$-\frac{Aab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{3}{2}}}+\frac{Ab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{Ba^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{3}{2}}}+\frac{3Bab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{5Bb^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{128c^{\frac{7}{2}}}-\frac{\sqrt{cx^2+bx+a}\,Abx}{4c}-\frac{\sqrt{cx^2+bx+a}\,Bax}{8c}+\frac{5\sqrt{cx^2+bx+a}\,Bb^2x}{32c^2}-\frac{\sqrt{cx^2+bx+a}\,Ab^2}{8c^2}-\frac{\sqrt{cx^2+bx+a}\,Bab}{16c^2}+\frac{5\sqrt{cx^2+bx+a}\,Bb^3}{64c^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bx}{4c}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}A}{3c}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb}{24c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x+a)^(3/2)/c-5/24*B*b/c^2*(c*x^2+b*x+a)^(3/2)+5/32*B*b^2/c
^2*x*(c*x^2+b*x+a)^(1/2)+5/64*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)+3/16*B*b^2/c^(5
/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-5/128*B*b^4/c^(7/2)*ln((c
*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/8*B*a/c*x*(c*x^2+b*x+a)^(1/2)-1/16
*B*a/c^2*(c*x^2+b*x+a)^(1/2)*b-1/8*B*a^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))+1/3*A*(c*x^2+b*x+a)^(3/2)/c-1/4*A*b/c*x*(c*x^2+b*x+a)^(1/
2)-1/8*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)-1/4*A*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*a+1/16*A*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.51, size = 256, normalized size = 1.78

$$\frac{A\ln\left(\frac{b+2cx}{\sqrt{c}}+2\sqrt{cx^2+bx+a}\right)\left(b^3-4abc\right)}{16c^{5/2}}-\frac{Ba\left(\left(\frac{x}{2}+\frac{b}{4c}\right)\sqrt{cx^2+bx+a}+\frac{\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)\left(ac-\frac{b^2}{4}\right)}{2c^{3/2}}\right)}{4c}-\frac{5Bb\left(\frac{\ln\left(\frac{b+2cx}{\sqrt{c}}+2\sqrt{cx^2+bx+a}\right)\left(b^3-4abc\right)}{16c^{5/2}}+\frac{\left(-3b^2+2cxb+8c\left(cx^2+a\right)\right)\sqrt{cx^2+bx+a}}{24c^2}\right)}{8c}+\frac{A\left(-3b^2+2cxb+8c\left(cx^2+a\right)\right)\sqrt{cx^2+bx+a}}{24c^2}+\frac{Bx\left(cx^2+bx+a\right)^{3/2}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(1
6*c^(5/2)) - (B*a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*
x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c) -
(5*B*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*
c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(
1/2))/(24*c^2)))/(8*c) + (A*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x +
c*x^2)^(1/2))/(24*c^2) + (B*x*(a + b*x + c*x^2)^(3/2))/(4*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\sqrt{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.839 $\int (A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=113

$$\frac{(b^2-4ac)(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16c^{5/2}}-\frac{(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(a+bx+cx^2\right)^{3/2}}{3c}$$

Rubi [A] time = 0.05, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$\frac{(b^2-4ac)(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16c^{5/2}}-\frac{(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(a+bx+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(8*c^2) + (B*(a + b*x +
c*x^2)^(3/2))/(3*c) + ((b^2 - 4*a*c)*(b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*S
qrt[c]*Sqrt[a + b*x + c*x^2])])/(16*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\sqrt{a+bx+cx^2}\,dx = \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{(-bB+2Ac)\int \sqrt{a+bx+cx^2}\,dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{8c^2} + \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{\left(\left(b^2-4ac\right)(bB-2\right.}{1}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{8c^2} + \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{\left(\left(b^2-4ac\right)(bB-2\right.}{}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{8c^2} + \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2-4ac\right)(bB-2A}{}$$

Mathematica [A] time = 0.11, size = 114, normalized size = 1.01

$$\frac{2\sqrt{c}\sqrt{a+x(b+cx)}\left(4c(2aB+cx(3A+2Bx))+2bc(3A+Bx)-3b^2B\right)+3\left(b^2-4ac\right)(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{48c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(-3*b^2*B + 2*b*c*(3*A + B*x) + 4*c*(2*a*B
 + c*x*(3*A + 2*B*x))) + 3*(b^2 - 4*a*c)*(b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/
(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(48*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.52, size = 125, normalized size = 1.11

$$\frac{\sqrt{a+bx+cx^2}\left(8aBc+6Abc+12Ac^2x-3b^2B+2bBcx+8Bc^2x^2\right)}{24c^2}+\frac{\left(-8aAc^2+4abBc+2Ab^2c+b^3(-B)\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{16c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-3*b^2*B + 6*A*b*c + 8*a*B*c + 2*b*B*c*x + 12*A*c^2
*x + 8*B*c^2*x^2))/(24*c^2) + ((-(b^3*B) + 2*A*b^2*c + 4*a*b*B*c - 8*a*A*c^
2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(16*c^(5/2))
```

fricas [A] time = 0.48, size = 291, normalized size = 2.58

$$\left[\frac{3\left(Bb^3+8\,Aac^2-2\left(2\,Bab+Ab^2\right)c\right)\sqrt{c}\log\left(-8\,c^2x^2-8\,bcx-b^2-4\sqrt{cx^2+bx+a}(2\,cx+b)\sqrt{c}-4\,ac\right)+4\left(8\,Bc^3x^2-3\,Bb^2c+2\,(4\,Ba+3\,Ab)c^2+2\left(Bbc^2+6\,Ac^3\right)x\right)\sqrt{cx^2+bx+a}}{96\,c^3},\ -\frac{3\left(Bb^3+8\,Aac^2-2\left(2\,Bab+Ab^2\right)c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2\,cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(8\,Bc^3x^2-3\,Bb^2c+2\,(4\,Ba+3\,Ab)c^2+2\left(Bbc^2+6\,Ac^3\right)x\right)\sqrt{cx^2+bx+a}}{48\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(B*b^3 + 8*A*a*c^2 - 2*(2*B*a*b + A*b^2)*c)*sqrt(c)*log(-8*c^2*x^2
 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4
*(8*B*c^3*x^2 - 3*B*b^2*c + 2*(4*B*a + 3*A*b)*c^2 + 2*(B*b*c^2 + 6*A*c^3)*x
)*sqrt(c*x^2 + b*x + a))/c^3, -1/48*(3*(B*b^3 + 8*A*a*c^2 - 2*(2*B*a*b + A*
b^2)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2
*x^2 + b*c*x + a*c)) - 2*(8*B*c^3*x^2 - 3*B*b^2*c + 2*(4*B*a + 3*A*b)*c^2 +
 2*(B*b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [A] time = 0.25, size = 123, normalized size = 1.09

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(4\,Bx+\frac{Bbc+6\,Ac^2}{c^2}\right)x-\frac{3\,Bb^2-8\,Bac-6\,Abc}{c^2}\right)-\frac{\left(Bb^3-4\,Babc-2\,Ab^2c+8\,Aac^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{16\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*x + (B*b*c + 6*A*c^2)/c^2)*x - (3*B*b^2
- 8*B*a*c - 6*A*b*c)/c^2) - 1/16*(B*b^3 - 4*B*a*b*c - 2*A*b^2*c + 8*A*a*c^2
)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.05, size = 229, normalized size = 2.03

$$\frac{Aa\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2\sqrt{c}}-\frac{A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{3}{2}}}-\frac{Bab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{3}{2}}}+\frac{B\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\,Ax}{2}-\frac{\sqrt{c\,x^2+bx+a}\,Bbx}{4c}+\frac{\sqrt{c\,x^2+bx+a}\,Ab}{4c}-\frac{\sqrt{c\,x^2+bx+a}\,B\,b^2}{8c^2}+\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*B*(c*x^2+b*x+a)^(3/2)/c-1/4*B*b/c*x*(c*x^2+b*x+a)^(1/2)-1/8*B*b^2/c^2*(
c*x^2+b*x+a)^(1/2)-1/4*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))*a+1/16*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/2*A*
x*(c*x^2+b*x+a)^(1/2)+1/4*A/c*(c*x^2+b*x+a)^(1/2)*b+1/2*A/c^(1/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/8*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))*b^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.43, size = 145, normalized size = 1.28

$$A\left(\frac{x}{2}+\frac{b}{4\,c}\right)\sqrt{c\,x^2+b\,x+a}+\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)\left(a\,c-\frac{b^2}{4}\right)}{2\,c^{3/2}}+\frac{B\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right)\left(b^3-4\,a\,b\,c\right)}{16\,c^{5/2}}+\frac{B\,\left(-3\,b^2+2\,c\,x\,b+8\,c\,\left(c\,x^2+a\right)\right)\sqrt{c\,x^2+b\,x+a}}{24\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] A*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (A*log((b/2 + c*x)/c^(1/2) + (a
 + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2)) + (B*log((b + 2*c*x)/c^(1
/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + (B*(8*c*(a
 + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.840 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x}\,dx$

Optimal. Leaf size=129

$$-\frac{\left(-4aBc-4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(4Ac+bB+2Bcx)}{4c}-\sqrt{a}\,A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)$$

Rubi [A] time = 0.10, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {814, 843, 621, 206, 724}

$$-\frac{\left(-4aBc-4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(4Ac+bB+2Bcx)}{4c}-\sqrt{a}\,A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x,x]
```

```
[Out] ((b*B + 4*A*c + 2*B*c*x)*Sqrt[a + b*x + c*x^2])/(4*c) - Sqrt[a]*A*ArcTanh[(
2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])] - ((b^2*B - 4*A*b*c - 4*a*B*c
)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(8*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x}\,dx = \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c} - \frac{\int \frac{-4aAc+\frac{1}{2}\left(b^2B-4Abc-4aBc\right)x}{x\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c} + (aA)\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx - \frac{\left(b^2B-4\right.}{}$$

$$= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c} - (2aA)\,\text{Subst}\left(\int \frac{1}{4a-x^2}\,dx, x, \frac{2a+}{\sqrt{a+bx}}\right.$$

$$= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c} - \sqrt{a}\,A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right) - $$

Mathematica [A] time = 0.17, size = 127, normalized size = 0.98

$$\frac{\left(4aBc+4Abc+b^2(-B)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{8c^{3/2}} + \frac{\sqrt{a+x(b+cx)}\,(4Ac+bB+2Bcx)}{4c} - \sqrt{a}\,A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x,x]
```

```
[Out] ((b*B + 4*A*c + 2*B*c*x)*Sqrt[a + x*(b + c*x)])/(4*c) - Sqrt[a]*A*ArcTanh[(
2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])] + ((-(b^2*B) + 4*A*b*c + 4*a*
B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(8*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.57, size = 135, normalized size = 1.05

$$\frac{\left(-4aBc-4Abc+b^2B\right)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{8c^{3/2}} + \frac{\sqrt{a+bx+cx^2}\,(4Ac+bB+2Bcx)}{4c} + 2\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x,x]
```

```
[Out] ((b*B + 4*A*c + 2*B*c*x)*Sqrt[a + b*x + c*x^2])/(4*c) + 2*Sqrt[a]*A*ArcTanh
[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]] + ((b^2*B - 4*A*b*c -
 4*a*B*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[a + b*x + c*x^2]])/(8*c^(3/2))
```

fricas [A] time = 1.41, size = 651, normalized size = 5.05

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] [1/16*(8*A*sqrt(a)*c^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b
*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - (B*b^2 - 4*(B*a + A*b)*c)*sqrt(
c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
```

```
t(c) - 4*a*c) + 4*(2*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^2,
 1/8*(4*A*sqrt(a)*c^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*
x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + (B*b^2 - 4*(B*a + A*b)*c)*sqrt(-
c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x +
 a*c)) + 2*(2*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^2, 1/16*(
16*A*sqrt(-a)*c^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*
c*x^2 + a*b*x + a^2)) - (B*b^2 - 4*(B*a + A*b)*c)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(2
*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^2, 1/8*(8*A*sqrt(-a)*c
^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
 a^2)) + (B*b^2 - 4*(B*a + A*b)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(2*B*c^2*x + B*b*c + 4*
A*c^2)*sqrt(c*x^2 + b*x + a))/c^2]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, replacing 0 by ` u`, a substitution
 variable should perhaps be purged.Warning, replacing 0 by ` u`, a substitu
tion variable should perhaps be purged.Warning, replacing 0 by ` u`, a subs
titution variable should perhaps be purged.index.cc index_m operator + Erro
r: Bad Argument Value
```

maple [A] time = 0.06, size = 184, normalized size = 1.43

$$-A\sqrt{a}\,\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)+\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{2\sqrt{c}}+\frac{Ba\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{2\sqrt{c}}-\frac{B\,b^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{8c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^{2}+bx+a}\;Bx}{2}+\sqrt{c\,x^{2}+bx+a}\;A+\frac{\sqrt{c\,x^{2}+bx+a}\;Bb}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x)
```

```
[Out] 1/2*B*x*(c*x^2+b*x+a)^(1/2)+1/4*B/c*(c*x^2+b*x+a)^(1/2)*b+1/2*B/c^(1/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/8*B/c^(3/2)*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x+a)^(1/2))*b^2+A*(c*x^2+b*x+a)^(1/2)+1/2*A*b*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-A*a^(1/2)*ln((2*a+b*x+2*a^(1/2)*(c*x^2
+b*x+a)^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.37, size = 146, normalized size = 1.13

$$A\,\sqrt{c\,x^{2}+b\,x+a}\,+B\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)\,\sqrt{c\,x^{2}+b\,x+a}-A\,\sqrt{a}\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^{2}+b\,x+a}}{x}\right)+\frac{A\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}+b\,x+a}\right)}{2\,\sqrt{c}}+\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}+b\,x+a}\right)\,\left(a\,c-\frac{b^{2}}{4}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x,x)
```

```
[Out] A*(a + b*x + c*x^2)^(1/2) + B*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) - A*a
^(1/2)*log(b/2 + a/x + (a^(1/2)*(a + b*x + c*x^2)^(1/2))/x) + (A*b*log((b/2
 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/(2*c^(1/2)) + (B*log((b/2 + c*x
)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\sqrt{a + bx + cx^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x, x)
```

3.841 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^2}\,dx$

Optimal. Leaf size=121

$$-\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{a}}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{c}}$$

Rubi [A] time = 0.09, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{a}}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^2,x]
```

```
[Out] -(((A - B*x)*Sqrt[a + b*x + c*x^2])/x) - ((A*b + 2*a*B)*ArcTanh[(2*a + b*x)
/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2*Sqrt[a]) + ((b*B + 2*A*c)*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
```

```
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^2}\,dx &= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{1}{2}\int \frac{-Ab-2aB-(bB+2Ac)x}{x\sqrt{a+bx+cx^2}}\,dx\\ &= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{1}{2}(-Ab-2aB)\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx-\frac{1}{2}(-bB-\\ &= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-(Ab+2aB)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx,x,\frac{2a+bx}{\sqrt{a+bx+c}}\right.\\ &= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{(Ab+2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{a}}+\frac{(bB+2Ac}{}\end{aligned}$$

Mathematica [A] time = 0.17, size = 118, normalized size = 0.98

$$\frac{(Bx-A)\sqrt{a+x(b+cx)}}{x}-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2\sqrt{a}}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^2,x]
```

```
[Out] ((-A + B*x)*Sqrt[a + x*(b + c*x)])/x - ((A*b + 2*a*B)*ArcTanh[(2*a + b*x)/(
2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(2*Sqrt[a]) + ((b*B + 2*A*c)*ArcTanh[(b
+ 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(2*Sqrt[c])
```

IntegrateAlgebraic [A] time = 0.54, size = 117, normalized size = 0.97

$$\frac{(Bx-A)\sqrt{a+bx+cx^2}}{x}+\frac{(-2Ac-bB)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{2\sqrt{c}}+\frac{(-2aB-Ab)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^2,x]
```

```
[Out] ((-A + B*x)*Sqrt[a + b*x + c*x^2])/x + ((-(A*b) - 2*a*B)*ArcTanh[(-(Sqrt[c]
*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/Sqrt[a] + ((-(b*B) - 2*A*c)*Log[b +
2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(2*Sqrt[c])
```

fricas [A] time = 0.91, size = 648, normalized size = 5.36

$$\left[\frac{(2Ba+Ab)\sqrt{a}cx\log\left(-\frac{8abx+(b^2+4ac)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)+(Bab+2Aac)\sqrt{c}x\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4(Bacx-Aac)\sqrt{cx^2+bx+a}}{4acx},\ \frac{(2Ba+Ab)\sqrt{a}cx\log\left(-\frac{8abx+(b^2+4ac)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)-2(Bab+2Aac)\sqrt{-c}x\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2(c^2x^2+bcx+ac)}\right)+4(Bacx-Aac)\sqrt{cx^2+bx+a}}{4acx},\ \frac{2(2Ba+Ab)\sqrt{-a}cx\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2(acx^2+abx+a^2)}\right)+(Bab+2Aac)\sqrt{c}x\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4(Bacx-Aac)\sqrt{cx^2+bx+a}}{4acx},\ \frac{(2Ba+Ab)\sqrt{-a}cx\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2(acx^2+abx+a^2)}\right)-(Bab+2Aac)\sqrt{-c}x\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2(c^2x^2+bcx+ac)}\right)+2(Bacx-Aac)\sqrt{cx^2+bx+a}}{2acx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/4*((2*B*a + A*b)*sqrt(a)*c*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(
c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + (B*a*b + 2*A*a*c)*sqrt
(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(c) - 4*a*c) + 4*(B*a*c*x - A*a*c)*sqrt(c*x^2 + b*x + a))/(a*c*x), 1/4*
((2*B*a + A*b)*sqrt(a)*c*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2
```

```
 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 2*(B*a*b + 2*A*a*c)*sqrt(-c
)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
+ a*c)) + 4*(B*a*c*x - A*a*c)*sqrt(c*x^2 + b*x + a))/(a*c*x), 1/4*(2*(2*B*a
 + A*b)*sqrt(-a)*c*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/
(a*c*x^2 + a*b*x + a^2)) + (B*a*b + 2*A*a*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b
*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(B*a*
c*x - A*a*c)*sqrt(c*x^2 + b*x + a))/(a*c*x), 1/2*((2*B*a + A*b)*sqrt(-a)*c*
x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
a^2)) - (B*a*b + 2*A*a*c)*sqrt(-c)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(B*a*c*x - A*a*c)*sqrt(c*x^2 +
 b*x + a))/(a*c*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{2,[4,4,0]%%%}+%%%{%%%{-16,[1]%%%},[4,2,1]%%%}+%%%{%%%{32,[2]%%%},[4,
0,2]%%%}+%%%{-4,[2,4,1]%%%}+%%%{%%%{32,[1]%%%},[2,2,2]%%%}+%%%{%%%{-64,[2]%
%%},[2,0,3]%%%}+%%%{2,[0,4,2]%%%}+%%%{%%%{-16,[1]%%%},[0,2,3]%%%}+%%%{%%%{3
2,[2]%%%},[0,0,4]%%%} / %%%{4,[4,0,0]%%%}+%%%{-8,[2,0,1]%%%}+%%%{4,[0,0,2]%
%%} Error: Bad Argument Value
```

maple [B] time = 0.08, size = 207, normalized size = 1.71

$$-\frac{Ab\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+A\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)-B\sqrt{a}\,\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)+\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2\sqrt{c}}+\frac{\sqrt{cx^2+bx+a}\,Acx}{a}+\frac{\sqrt{cx^2+bx+a}\,Ab}{a}+\sqrt{cx^2+bx+a}\,B-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+b*x+a)^(3/2)+A/a*b*(c*x^2+b*x+a)^(1/2)-1/2*A/a^(1/2)*b*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+A*c/a*(c*x^2+b*x+a)^(1/2)*x+A*c^(1/
2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+B*(c*x^2+b*x+a)^(1/2)+1/2*B*
b*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-B*a^(1/2)*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.56, size = 166, normalized size = 1.37

$$B\sqrt{cx^2+bx+a}-\frac{A\sqrt{cx^2+bx+a}}{x}-B\sqrt{a}\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{cx^2+bx+a}}{x}\right)+A\sqrt{c}\,\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)+\frac{Bb\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2\sqrt{c}}-\frac{Ab\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{cx^2+bx+a}}{x}\right)}{2\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^2,x)
```

```
[Out] B*(a + b*x + c*x^2)^(1/2) - (A*(a + b*x + c*x^2)^(1/2))/x - B*a^(1/2)*log(b
/2 + a/x + (a^(1/2)*(a + b*x + c*x^2)^(1/2))/x) + A*c^(1/2)*log((b/2 + c*x)
/c^(1/2) + (a + b*x + c*x^2)^(1/2)) + (B*b*log((b/2 + c*x)/c^(1/2) + (a + b
*x + c*x^2)^(1/2)))/(2*c^(1/2)) - (A*b*log(b/2 + a/x + (a^(1/2)*(a + b*x +
c*x^2)^(1/2))/x))/(2*a^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**2, x)
```

3.842 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^3}\,dx$

Optimal. Leaf size=133

$$\frac{\left(-4aAc-4abB+Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{3/2}}-\frac{\sqrt{a+bx+cx^2}\,(x(4aB+Ab)+2aA)}{4ax^2}+B\sqrt{c}\tanh^{-1}\left(\frac{b+2c}{2\sqrt{c}\sqrt{a+b}}\right.$$

Rubi [A] time = 0.10, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {810, 843, 621, 206, 724}

$$\frac{\left(-4aAc-4abB+Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{3/2}}-\frac{\sqrt{a+bx+cx^2}\,(x(4aB+Ab)+2aA)}{4ax^2}+B\sqrt{c}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^3,x]
```

```
[Out] -((2*a*A + (A*b + 4*a*B)*x)*Sqrt[a + b*x + c*x^2])/(4*a*x^2) + ((A*b^2 - 4*
a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(8
*a^(3/2)) + B*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])
]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^3}\,dx = -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2} - \frac{\int \frac{\frac{1}{2}\left(-4abB+A\left(b^2-4ac\right)\right)-4aBcx}{x\sqrt{a+bx+cx^2}}\,dx}{4a}$$

$$= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2} + (Bc)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx - \frac{(-4abB}{\ldots}$$

$$= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2} + (2Bc)\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b}{\sqrt{a+\ldots}}\right.$$

$$= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2} - \frac{\left(4abB-A\left(b^2-4ac\right)\right)\tanh^{-1}\left(\frac{\ldots}{2\sqrt{a}\ldots}\right.}{8a^{3/2}}$$

Mathematica [A] time = 0.35, size = 129, normalized size = 0.97

$$\frac{\left(A\left(b^2-4ac\right)-4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{8a^{3/2}} - \frac{\sqrt{a+x(b+cx)}\,(2a(A+2Bx)+Abx)}{4ax^2} + B\sqrt{c}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^3,x]
```

```
[Out] -1/4*((A*b*x + 2*a*(A + 2*B*x))*Sqrt[a + x*(b + c*x)])/(a*x^2) + ((-4*a*b*B
 + A*(b^2 - 4*a*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])
/(8*a^(3/2)) + B*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x
)])]
```

IntegrateAlgebraic [A] time = 0.70, size = 131, normalized size = 0.98

$$\frac{\left(-4aAc-4abB+Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{4a^{3/2}} + \frac{\sqrt{a+bx+cx^2}\,(-2aA-4aBx-Abx)}{4ax^2} - B\sqrt{c}\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^3,x]
```

```
[Out] ((-2*a*A - A*b*x - 4*a*B*x)*Sqrt[a + b*x + c*x^2])/(4*a*x^2) + ((A*b^2 - 4*
a*b*B - 4*a*A*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(
4*a^(3/2)) - B*Sqrt[c]*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]]
```

fricas [A] time = 0.96, size = 699, normalized size = 5.26

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/16*(8*B*a^2*sqrt(c)*x^2*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 +
b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + (4*B*a*b - A*b^2 + 4*A*a*c)*sqrt(a)
*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a
)*sqrt(a) + 8*a^2)/x^2) - 4*(2*A*a^2 + (4*B*a^2 + A*a*b)*x)*sqrt(c*x^2 + b*
x + a))/(a^2*x^2), -1/16*(16*B*a^2*sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - (4*B*a*b - A*b^2 + 4*
A*a*c)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
 a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(2*A*a^2 + (4*B*a^2 + A*a*b)*x)*s
qrt(c*x^2 + b*x + a))/(a^2*x^2), 1/8*(4*B*a^2*sqrt(c)*x^2*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + (4*B
*a*b - A*b^2 + 4*A*a*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x
+ 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(2*A*a^2 + (4*B*a^2 + A*a*b)*x
)*sqrt(c*x^2 + b*x + a))/(a^2*x^2), -1/8*(8*B*a^2*sqrt(-c)*x^2*arctan(1/2*s
qrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - (4*B*a
*b - A*b^2 + 4*A*a*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(2*A*a^2 + (4*B*a^2 + A*a*b)*x)*
sqrt(c*x^2 + b*x + a))/(a^2*x^2)]
```

giac [B] time = 0.30, size = 359, normalized size = 2.70

$$-B\sqrt{c}\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)c-b\sqrt{c}\right|\right)+\frac{\left(4Bab-Ab^2+4Aac\right)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}a}+\frac{4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Bab+\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Ab^2+4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Aac+8\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2Ba^2\sqrt{c}+8\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2Aab\sqrt{c}-4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Ba^2b+\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Aab^2+4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Aa^2c-8Ba^3\sqrt{c}}{4\left(\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2-a\right)^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] -B*sqrt(c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c))) +
 1/4*(4*B*a*b - A*b^2 + 4*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)/sqrt(-a))/(sqrt(-a)*a) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a
*b + (sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*A*a*c + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(
c) + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b*sqrt(c) - 4*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*B*a^2*b + (sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b
^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*sqrt(c))/(((sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2*a)
```

maple [B] time = 0.06, size = 304, normalized size = 2.29

$$-\frac{Ac\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+\frac{Ab^2\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{Bb\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+B\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)-\frac{\sqrt{cx^2+bx+a}\,Abcx}{4a^2}+\frac{\sqrt{cx^2+bx+a}\,Bcx}{a}+\frac{\sqrt{cx^2+bx+a}\,Ac}{2a}-\frac{\sqrt{cx^2+bx+a}\,Ab^2}{4a^2}+\frac{\sqrt{cx^2+bx+a}\,Bb}{a}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab}{4a^2x}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}B}{ax}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}A}{2ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+b*x+a)^(3/2)+1/4*A/a^2*b/x*(c*x^2+b*x+a)^(3/2)-1/4*A/a^
2*b^2*(c*x^2+b*x+a)^(1/2)+1/8*A/a^(3/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/
2)*a^(1/2))/x)-1/4*A/a^2*b*c*(c*x^2+b*x+a)^(1/2)*x+1/2*A*c/a*(c*x^2+b*x+a)^
(1/2)-1/2*A*c/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a/x*(
c*x^2+b*x+a)^(3/2)+B/a*b*(c*x^2+b*x+a)^(1/2)-1/2*B/a^(1/2)*b*ln((b*x+2*a+2*
(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+B*c/a*(c*x^2+b*x+a)^(1/2)*x+B*c^(1/2)*ln((c
*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+Bx)\sqrt{cx^2+bx+a}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**3, x)
```

3.843 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^4}\,dx$

Optimal. Leaf size=121

$$-\frac{\left(b^2-4ac\right)(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{5/2}}+\frac{(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{8a^2x^2}-\frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3}$$

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {806, 720, 724, 206}

$$-\frac{\left(b^2-4ac\right)(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{5/2}}+\frac{(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{8a^2x^2}-\frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^4,x]
```

```
[Out] ((A*b - 2*a*B)*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(8*a^2*x^2) - (A*(a + b*x
 + c*x^2)^(3/2))/(3*a*x^3) - ((A*b - 2*a*B)*(b^2 - 4*a*c)*ArcTanh[(2*a + b*
x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(16*a^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^4}\,dx = -\frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} - \frac{(Ab-2aB)\int \frac{\sqrt{a+bx+cx^2}}{x^3}\,dx}{2a}$$
$$= \frac{(Ab-2aB)(2a+bx)\sqrt{a+bx+cx^2}}{8a^2x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} + \frac{\left((Ab-2aB)\left(b^2 \right.\right.}{}$$
$$= \frac{(Ab-2aB)(2a+bx)\sqrt{a+bx+cx^2}}{8a^2x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} - \frac{\left((Ab-2aB)\left(b^2 \right.\right.}{}$$
$$= \frac{(Ab-2aB)(2a+bx)\sqrt{a+bx+cx^2}}{8a^2x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} - \frac{(Ab-2aB)\left(b^2 \right.}{}$$

Mathematica [A] time = 0.16, size = 116, normalized size = 0.96

$$\frac{3x(Ab-2aB)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)} - x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+x(b+cx)}}\right)\right) - 16a^{3/2}A(a+x(b+cx))^{3/2}}{48a^{5/2}x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^4,x]
```

```
[Out] (-16*a^(3/2)*A*(a + x*(b + c*x))^(3/2) + 3*(A*b - 2*a*B)*x*(2*Sqrt[a]*(2*a
+ b*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqr
t[a]*Sqrt[a + x*(b + c*x)])]))/(48*a^(5/2)*x^3)
```

IntegrateAlgebraic [A] time = 0.98, size = 173, normalized size = 1.43

$$\frac{\left(2Abc+b^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)}{4a^{3/2}} + \frac{\sqrt{a+bx+cx^2}\,\left(-8a^2A-12a^2Bx-2aAbx-8aAcx^2-6abBx^2+3Ab^2x^2\right)}{24a^2x^3} + \frac{\left(8a^2Bc+Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{c}\,x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^4,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-8*a^2*A - 2*a*A*b*x - 12*a^2*B*x + 3*A*b^2*x^2 - 6
*a*b*B*x^2 - 8*a*A*c*x^2))/(24*a^2*x^3) + ((A*b^3 + 8*a^2*B*c)*ArcTanh[(Sqr
t[c]*x - Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(8*a^(5/2)) + ((b^2*B + 2*A*b*c)*
ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(4*a^(3/2))
```

fricas [A] time = 0.70, size = 317, normalized size = 2.62

$$\left[\frac{3\left(2Bab^2-Ab^3-4\left(2Ba^2-Aab\right)c\right)\sqrt{a}\,x^3\log\left(-\frac{8abx+\left(b^2+4ac\right)x^2+4\sqrt{cx^2+bx+a}\,(bx+2a)\sqrt{a}+8a^2}{x^2}\right)-4\left(8Aa^3+\left(6Ba^2b-3Aab^2+8Aa^2c\right)x^2+2\left(6Ba^3+Aa^2b\right)x\right)\sqrt{cx^2+bx+a}}{96a^3x^3}, -\frac{3\left(2Bab^2-Ab^3-4\left(2Ba^2-Aab\right)c\right)\sqrt{-a}\,x^3\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(bx+2a)\sqrt{-a}}{2\left(acx^2+abx+a^2\right)}\right)+2\left(8Aa^3+\left(6Ba^2b-3Aab^2+8Aa^2c\right)x^2+2\left(6Ba^3+Aa^2b\right)x\right)\sqrt{cx^2+bx+a}}{48a^3x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/96*(3*(2*B*a*b^2 - A*b^3 - 4*(2*B*a^2 - A*a*b)*c)*sqrt(a)*x^3*log(-(8*a*
b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a
^2)/x^2) - 4*(8*A*a^3 + (6*B*a^2*b - 3*A*a*b^2 + 8*A*a^2*c)*x^2 + 2*(6*B*a^
3 + A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^3), -1/48*(3*(2*B*a*b^2 - A*b
^3 - 4*(2*B*a^2 - A*a*b)*c)*sqrt(-a)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(
b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(8*A*a^3 + (6*B*a^2*b - 3*
A*a*b^2 + 8*A*a^2*c)*x^2 + 2*(6*B*a^3 + A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/
(a^3*x^3)]
```

giac [B] time = 0.22, size = 524, normalized size = 4.33

$$-\frac{\left(2Bab^2-Ab^3-8Ba^2c+4Aabc\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{8\sqrt{-a}\,a^2}+\frac{6\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^5Bab^2-3\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^5Ab^3+24\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^5Ba^2c+12\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^5Aabc+48\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^4Ba^2b\sqrt{c}+48\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^4Aa^2c^{\frac{3}{2}}+8\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^3Aab^3+48\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^3Aa^2bc-48\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2Ba^3b\sqrt{c}+48\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2Aa^2b^2\sqrt{c}-6\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Ba^3b^2+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Aa^2b^3-24\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Ba^4c+36\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Aa^3bc+16Aa^4c^{\frac{3}{2}}}{24\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2-a\right)^3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] -1/8*(2*B*a*b^2 - A*b^3 - 8*B*a^2*c + 4*A*a*b*c)*arctan(-(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/24*(6*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*B*a*b^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^3 + 2
4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c + 12*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*A*a*b*c + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*b*
sqrt(c) + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*c^(3/2) + 8*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^3*A*a^2*b*c - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c
) + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^2*b^2*sqrt(c) - 6*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*A*a^2*b^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*c + 36*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c + 16*A*a^4*c^(3/2))/(((sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^2 - a)^3*a^2)
```

maple [B] time = 0.06, size = 386, normalized size = 3.19

$$\frac{Abc\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{4a^{\frac{3}{2}}}-\frac{A\,b^3\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{5}{2}}}-\frac{Bc\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+\frac{B\,b^2\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\,A\,b^2cx}{8a^3}-\frac{\sqrt{c\,x^2+bx+a}\,Bbcx}{4a^2}-\frac{\sqrt{c\,x^2+bx+a}\,Abc}{4a^2}+\frac{\sqrt{c\,x^2+bx+a}\,A\,b^3}{8a^3}+\frac{\sqrt{c\,x^2+bx+a}\,Bc}{2a}-\frac{\sqrt{c\,x^2+bx+a}\,B\,b^2}{4a^2}-\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}A\,b^2}{8a^3x}+\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}Bb}{4a^2x}+\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}Ab}{4a^2x^2}-\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}B}{2a\,x^2}-\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}A}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x)
```

```
[Out] -1/3*A*(c*x^2+b*x+a)^(3/2)/a/x^3+1/4*A/a^2*b/x^2*(c*x^2+b*x+a)^(3/2)-1/8*A/
a^3*b^2/x*(c*x^2+b*x+a)^(3/2)+1/8*A/a^3*b^3*(c*x^2+b*x+a)^(1/2)-1/16*A/a^(5
/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*A/a^3*b^2*c*(c*x^
2+b*x+a)^(1/2)*x-1/4*A/a^2*b*c*(c*x^2+b*x+a)^(1/2)+1/4*A/a^(3/2)*b*c*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/2*B/a/x^2*(c*x^2+b*x+a)^(3/2)+1/4
*B/a^2*b/x*(c*x^2+b*x+a)^(3/2)-1/4*B/a^2*b^2*(c*x^2+b*x+a)^(1/2)+1/8*B/a^(3
/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/4*B/a^2*b*c*(c*x^2+
b*x+a)^(1/2)*x+1/2*B*c/a*(c*x^2+b*x+a)^(1/2)-1/2*B*c/a^(1/2)*ln((b*x+2*a+2*
(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**4, x)
```

3.844 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^5}\,dx$

Optimal. Leaf size=172

$$\frac{(b^2-4ac)(-4aAc-8abB+5Ab^2)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{7/2}}-\frac{(2a+bx)\sqrt{a+bx+cx^2}\,(-4aAc-8abB+5Ab^2)}{64a^3x^2}+\cdots$$

Rubi [A] time = 0.14, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{(2a+bx)\sqrt{a+bx+cx^2}\,(-4aAc-8abB+5Ab^2)}{64a^3x^2}+\frac{(b^2-4ac)(-4aAc-8abB+5Ab^2)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{7/2}}+\frac{(5Ab-8aB)(a+bx+cx^2)^{3/2}}{24a^2x^3}-\frac{A(a+bx+cx^2)^{3/2}}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^5,x]
```

```
[Out] -((5*A*b^2 - 8*a*b*B - 4*a*A*c)*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(64*a^3*
x^2) - (A*(a + b*x + c*x^2)^(3/2))/(4*a*x^4) + ((5*A*b - 8*a*B)*(a + b*x +
c*x^2)^(3/2))/(24*a^2*x^3) + ((b^2 - 4*a*c)*(5*A*b^2 - 8*a*b*B - 4*a*A*c)*A
rcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(128*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
```

```
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^5}\,dx = -\frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} - \frac{\int \frac{\left(\frac{1}{2}(5Ab-8aB)+Acx\right)\sqrt{a+bx+cx^2}}{x^4}\,dx}{4a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + \frac{(5Ab-8aB)\left(a+bx+cx^2\right)^{3/2}}{24a^2x^3} + \frac{\left(5Ab^2-8abB-4a\right.}{16}$$

$$= -\frac{\left(5Ab^2-8abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{64a^3x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + \frac{(5}{}$$

$$= -\frac{\left(5Ab^2-8abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{64a^3x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + \frac{(5}{}$$

$$= -\frac{\left(5Ab^2-8abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{64a^3x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + \frac{(5}{}$$

Mathematica [A] time = 0.18, size = 153, normalized size = 0.89

$$\frac{\frac{3\left(-4aAc-8abB+5Ab^2\right)\left(x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)-2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}\right)}{16a^{3/2}x^2}+\frac{(5Ab-8aB)(a+x(b+cx))^{3/2}}{x^3}-\frac{6aA(a+x(b+cx))^{3/2}}{x^4}}{24a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^5,x]
```

```
[Out] ((-6*a*A*(a + x*(b + c*x))^(3/2))/x^4 + ((5*A*b - 8*a*B)*(a + x*(b + c*x))^
(3/2))/x^3 + (3*(5*A*b^2 - 8*a*b*B - 4*a*A*c)*(-2*Sqrt[a]*(2*a + b*x)*Sqrt[
a + x*(b + c*x)] + (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a
+ x*(b + c*x)])]))/(16*a^(3/2)*x^2))/(24*a^2)
```

IntegrateAlgebraic [A] time = 1.49, size = 229, normalized size = 1.33

$$-\frac{5Ab^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{64a^{7/2}}+\frac{\left(2aAc^2+4abBc-3Ab^2c+b^3(-B)\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{\sqrt{a+bx+cx^2}\left(-48a^3A-64a^3Bx-8a^2Abx-24a^2Acx^2-16a^2bBx^2-64a^2Bcx^3+10aAb^2x^2+52aAbcx^3+24ab^2Bx^3-15Ab^3x^3\right)}{192a^3x^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^5,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-48*a^3*A - 8*a^2*A*b*x - 64*a^3*B*x + 10*a*A*b^2*x
^2 - 16*a^2*b*B*x^2 - 24*a^2*A*c*x^2 - 15*A*b^3*x^3 + 24*a*b^2*B*x^3 + 52*a
*A*b*c*x^3 - 64*a^2*B*c*x^3))/(192*a^3*x^4) + ((-(b^3*B) - 3*A*b^2*c + 4*a*
b*B*c + 2*a*A*c^2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])
/(8*a^(5/2)) - (5*A*b^4*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]
/Sqrt[a]])/(64*a^(7/2))
```

fricas [A] time = 1.02, size = 425, normalized size = 2.47

$$\left[-\frac{3\left(8Bab^3-5Ab^4-16Aa^2c^2-8\left(4Ba^2b-3Aab^2\right)c\right)\sqrt{a}x^4\log\left(-\frac{8abx+\left(b^2+4ac\right)x^2+4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)+4\left(48Aa^4-\left(24Ba^2b^2-15Aab^3-4\left(16Ba^3-13Aa^2b\right)c\right)x^3+2\left(8Ba^3b-5Aa^2b^2+12Aa^3c\right)x^2+8\left(8Ba^4+Aa^3b\right)x\right)\sqrt{cx^2+bx+a}}{768a^4x^4}, \frac{3\left(8Bab^3-5Ab^4-16Aa^2c^2-8\left(4Ba^2b-3Aab^2\right)c\right)\sqrt{-a}x^4\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2\left(acx^2+abx+a^2\right)}\right)-2\left(48Aa^4-\left(24Ba^2b^2-15Aab^3-4\left(16Ba^3-13Aa^2b\right)c\right)x^3+2\left(8Ba^3b-5Aa^2b^2+12Aa^3c\right)x^2+8\left(8Ba^4+Aa^3b\right)x\right)\sqrt{cx^2+bx+a}}{384a^4x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(8*B*a*b^3 - 5*A*b^4 - 16*A*a^2*c^2 - 8*(4*B*a^2*b - 3*A*a*b^2)*
c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*
(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(48*A*a^4 - (24*B*a^2*b^2 - 15*A*a*b^
3 - 4*(16*B*a^3 - 13*A*a^2*b)*c)*x^3 + 2*(8*B*a^3*b - 5*A*a^2*b^2 + 12*A*a^
3*c)*x^2 + 8*(8*B*a^4 + A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^4), 1/384
*(3*(8*B*a*b^3 - 5*A*b^4 - 16*A*a^2*c^2 - 8*(4*B*a^2*b - 3*A*a*b^2)*c)*sqrt
(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a
*b*x + a^2)) - 2*(48*A*a^4 - (24*B*a^2*b^2 - 15*A*a*b^3 - 4*(16*B*a^3 - 13*
A*a^2*b)*c)*x^3 + 2*(8*B*a^3*b - 5*A*a^2*b^2 + 12*A*a^3*c)*x^2 + 8*(8*B*a^4
 + A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^4)]
```

giac [B] time = 0.27, size = 991, normalized size = 5.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/64*(8*B*a*b^3 - 5*A*b^4 - 32*B*a^2*b*c + 24*A*a*b^2*c - 16*A*a^2*c^2)*arc
tan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^3) - 1/192*(
24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 - 15*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*A*b^4 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^2*b*c
 + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^2*c - 48*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^7*A*a^2*c^2 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6
*B*a^3*c^(3/2) - 88*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*b^3 + 55*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^5*B*a^3*b*c - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^
2*c - 336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*c^2 - 384*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^4*B*a^3*b^2*sqrt(c) + 384*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^4*B*a^4*c^(3/2) - 1152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*
a^3*b*c^(3/2) + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 - 73*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^2*b^4 + 96*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^3*B*a^4*b*c - 648*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^
2*c - 336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 384*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^2*B*a^4*b^2*sqrt(c) - 384*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^2*A*a^3*b^3*sqrt(c) - 128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
*B*a^5*c^(3/2) - 256*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c^(3/2)
+ 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 - 15*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*A*a^3*b^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^5*
b*c - 312*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c - 48*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*A*a^5*c^2 + 128*B*a^6*c^(3/2) - 128*A*a^5*b*c^(3/2)
)/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^4*a^3)
```

maple [B] time = 0.06, size = 569, normalized size = 3.31

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x)
```

```
[Out] -1/4*A*(c*x^2+b*x+a)^(3/2)/a/x^4+5/24*A/a^2*b/x^3*(c*x^2+b*x+a)^(3/2)-5/32*
A/a^3*b^2/x^2*(c*x^2+b*x+a)^(3/2)+5/64*A/a^4*b^3/x*(c*x^2+b*x+a)^(3/2)-5/64
*A/a^4*b^4*(c*x^2+b*x+a)^(1/2)+5/128*A/a^(7/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x
+a)^(1/2)*a^(1/2))/x)-5/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)*x+7/32*A/a^3*b^2
*c*(c*x^2+b*x+a)^(1/2)-3/16*A/a^(5/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/
2)*a^(1/2))/x)+1/8*A*c/a^2/x^2*(c*x^2+b*x+a)^(3/2)-1/16*A*c/a^3*b/x*(c*x^2+
```

```
b*x+a)^(3/2)+1/16*A*c^2/a^3*b*(c*x^2+b*x+a)^(1/2)*x-1/8*A*c^2/a^2*(c*x^2+b*
x+a)^(1/2)+1/8*A*c^2/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
1/3*B/a/x^3*(c*x^2+b*x+a)^(3/2)+1/4*B/a^2*b/x^2*(c*x^2+b*x+a)^(3/2)-1/8*B/a
^3*b^2/x*(c*x^2+b*x+a)^(3/2)+1/8*B/a^3*b^3*(c*x^2+b*x+a)^(1/2)-1/16*B/a^(5/
2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*B/a^3*b^2*c*(c*x^2
+b*x+a)^(1/2)*x-1/4*B/a^2*b*c*(c*x^2+b*x+a)^(1/2)+1/4*B/a^(3/2)*b*c*ln((b*x
+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**5, x)
```

3.845 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^6} \, dx$

Optimal. Leaf size=235

$$\frac{(b^2-4ac)\left(2aB\left(5b^2-4ac\right)-A\left(7b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{9/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aAc-50abB+35\right.}{240a^3x^3}$$

Rubi [A] time = 0.27, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aAc-50abB+35Ab^2\right)}{240a^3x^3}+\frac{(2a+bx)\sqrt{a+bx+cx^2}\left(8a^2Bc-12aAbc-10ab^2B+7Ab^3\right)}{128a^4x^2}+\frac{\left(b^2-4ac\right)\left(2aB\left(5b^2-4ac\right)-A\left(7b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{9/2}}+\frac{(7Ab-10aB)\left(a+bx+cx^2\right)^{3/2}}{40a^2x^4}-\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^6,x]
```

```
[Out] ((7*A*b^3 - 10*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*(2*a + b*x)*Sqrt[a + b*x +
 c*x^2])/(128*a^4*x^2) - (A*(a + b*x + c*x^2)^(3/2))/(5*a*x^5) + ((7*A*b -
10*a*B)*(a + b*x + c*x^2)^(3/2))/(40*a^2*x^4) - ((35*A*b^2 - 50*a*b*B - 32*
a*A*c)*(a + b*x + c*x^2)^(3/2))/(240*a^3*x^3) + ((b^2 - 4*a*c)*(2*a*B*(5*b^
2 - 4*a*c) - A*(7*b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a +
b*x + c*x^2])])/(256*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^6}\,dx = -\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5} - \frac{\int \frac{\left(\frac{1}{2}(7Ab-10aB)+2Acx\right)\sqrt{a+bx+cx^2}}{x^5}\,dx}{5a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5} + \frac{(7Ab-10aB)\left(a+bx+cx^2\right)^{3/2}}{40a^2x^4} + \int \frac{\left(\frac{1}{4}(35Ab^2-50abB-32 \ldots$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5} + \frac{(7Ab-10aB)\left(a+bx+cx^2\right)^{3/2}}{40a^2x^4} - \frac{\left(35Ab^2-50abB- \ldots\right.}{2 \ldots}$$

$$= \frac{\left(7Ab^3-10ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^4x^2} - \frac{A\left(a+bx+ \ldots\right.}{5ax^5}$$

$$= \frac{\left(7Ab^3-10ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^4x^2} - \frac{A\left(a+bx+ \ldots\right.}{5ax^5}$$

$$= \frac{\left(7Ab^3-10ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^4x^2} - \frac{A\left(a+bx+ \ldots\right.}{5ax^5}$$

Mathematica [A] time = 0.39, size = 206, normalized size = 0.88

$$\frac{-\frac{5\left(A\left(7b^3-12abc\right)+2aB\left(4ac-5b^2\right)\right)\left(x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)-2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}\right)}{32a^{7/2}x^2}+\frac{(a+x(b+cx))^{3/2}\left(32aAc+50abB-35Ab^2\right)}{6a^2x^3}+\frac{(7Ab-10aB)(a+x(b+cx))^{3/2}}{ax^4}-\frac{8A(a+x(b+cx))^{3/2}}{x^5}}{40a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^6,x]
```

```
[Out] ((-8*A*(a + x*(b + c*x))^(3/2))/x^5 + ((7*A*b - 10*a*B)*(a + x*(b + c*x))^(
3/2))/(a*x^4) + ((-35*A*b^2 + 50*a*b*B + 32*a*A*c)*(a + x*(b + c*x))^(3/2))
/(6*a^2*x^3) - (5*(2*a*B*(-5*b^2 + 4*a*c) + A*(7*b^3 - 12*a*b*c))*(-2*Sqrt[
a]*(2*a + b*x)*Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x
)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))/(32*a^(7/2)*x^2))/(40*a)
```

IntegrateAlgebraic [A] time = 2.11, size = 300, normalized size = 1.28

$$\frac{\left(-24aAbc^2-24ab^2Bc+20Ab^3c+5b^4B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{64a^{7/2}}+\frac{\left(7Ab^5-32a^3Bc^2\right)\tanh^{-1}\left(\frac{\sqrt{c}x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{128a^{9/2}}+\frac{\sqrt{a+bx+cx^2}\left(-384a^4A-480a^4Bx-48a^3Abx-128a^3Acx^2-80a^3bBx^2-240a^3Bcx^3+56a^2Ab^2x^2+232a^2Abcx^3+256a^2Ac^2x^4+100a^2b^2Bx^3+520a^2bBcx^4-70aAb^3x^3-460aAb^2cx^4-150ab^3Bx^4+105Ab^4x^4\right)}{1920a^4x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^6,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-384*a^4*A - 48*a^3*A*b*x - 480*a^4*B*x + 56*a^2*A*
b^2*x^2 - 80*a^3*b*B*x^2 - 128*a^3*A*c*x^2 - 70*a*A*b^3*x^3 + 100*a^2*b^2*B
*x^3 + 232*a^2*A*b*c*x^3 - 240*a^3*B*c*x^3 + 105*A*b^4*x^4 - 150*a*b^3*B*x^
4 - 460*a*A*b^2*c*x^4 + 520*a^2*b*B*c*x^4 + 256*a^2*A*c^2*x^4))/(1920*a^4*x
^5) + ((7*A*b^5 - 32*a^3*B*c^2)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x + c*x^2])
```

```
/Sqrt[a]])/(128*a^(9/2)) + ((5*b^4*B + 20*A*b^3*c - 24*a*b^2*B*c - 24*a*A*b
*c^2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(64*a^(7/2))
```

fricas [A] time = 1.95, size = 553, normalized size = 2.35

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(10*B*a*b^4 - 7*A*b^5 + 16*(2*B*a^3 - 3*A*a^2*b)*c^2 - 8*(6*B*
a^2*b^2 - 5*A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*s
qrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(384*A*a^5 + (15
0*B*a^2*b^3 - 105*A*a*b^4 - 256*A*a^3*c^2 - 20*(26*B*a^3*b - 23*A*a^2*b^2)*
c)*x^4 - 2*(50*B*a^3*b^2 - 35*A*a^2*b^3 - 4*(30*B*a^4 - 29*A*a^3*b)*c)*x^3
+ 8*(10*B*a^4*b - 7*A*a^3*b^2 + 16*A*a^4*c)*x^2 + 48*(10*B*a^5 + A*a^4*b)*x
)*sqrt(c*x^2 + b*x + a))/(a^5*x^5), -1/3840*(15*(10*B*a*b^4 - 7*A*b^5 + 16*
(2*B*a^3 - 3*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c)*sqrt(-a)*x^5*arc
tan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2))
 + 2*(384*A*a^5 + (150*B*a^2*b^3 - 105*A*a*b^4 - 256*A*a^3*c^2 - 20*(26*B*a
^3*b - 23*A*a^2*b^2)*c)*x^4 - 2*(50*B*a^3*b^2 - 35*A*a^2*b^3 - 4*(30*B*a^4
- 29*A*a^3*b)*c)*x^3 + 8*(10*B*a^4*b - 7*A*a^3*b^2 + 16*A*a^4*c)*x^2 + 48*(
10*B*a^5 + A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^5)]
```

giac [B] time = 0.26, size = 1407, normalized size = 5.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/128*(10*B*a*b^4 - 7*A*b^5 - 48*B*a^2*b^2*c + 40*A*a*b^3*c + 32*B*a^3*c^2
 - 48*A*a^2*b*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(s
qrt(-a)*a^4) + 1/1920*(150*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^4 -
105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*b^5 - 720*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^9*B*a^2*b^2*c + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*
a*b^3*c + 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 - 720*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b*c^2 - 700*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^7*B*a^2*b^4 + 490*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^5 +
 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^2*c - 2800*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^7*B*a^4*c^2 + 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^3*b*c^2
+ 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b*c^(3/2) + 7680*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^4*c^(5/2) + 1280*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*B*a^3*b^4 - 896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2
*b^5 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*b^2*c + 5120*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*b^3*c + 15360*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^5*A*a^4*b*c^2 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a
^4*b^3*sqrt(c) - 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2)
 + 24320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^4*b^2*c^(3/2) + 2560*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*c^(5/2) - 580*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*B*a^4*b^4 + 790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a
^3*b^5 - 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c + 9200*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^3*c - 2880*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*B*a^6*c^2 + 12000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a
^5*b*c^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^5*b^3*sqrt(c) + 3
840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b^4*sqrt(c) - 1280*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) + 5120*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*A*a^5*b^2*c^(3/2) + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*A*a^6*c^(5/2) - 150*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^5*b^4 + 105
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^5 - 3120*(sqrt(c)*x - sqrt(c*x
```

```
^2 + b*x + a))*B*a^6*b^2*c + 3240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^5
*b^3*c - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*c^2 + 720*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*A*a^6*b*c^2 - 1280*B*a^7*b*c^(3/2) + 1280*A*a^6*b
^2*c^(3/2) - 512*A*a^7*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a
)^5*a^4)
```

maple [B] time = 0.07, size = 777, normalized size = 3.31

$$[illegible]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x)
```

```
[Out] -13/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)+5/32*A/a^(7/2)*b^3*c*ln((b*x+2*a+2*(
c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+3/16*A/a^3*b*c^2*(c*x^2+b*x+a)^(1/2)-3/16*A/
a^(5/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+2/15*A*c/a^2/x^
3*(c*x^2+b*x+a)^(3/2)+7/32*B/a^3*b^2*c*(c*x^2+b*x+a)^(1/2)-3/16*B/a^(5/2)*b
^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*B*c/a^2/x^2*(c*x^2+b
*x+a)^(3/2)+7/128*A/a^5*b^4*c*(c*x^2+b*x+a)^(1/2)*x-3/16*A/a^3*b*c/x^2*(c*x
^2+b*x+a)^(3/2)+3/32*A/a^4*b^2*c/x*(c*x^2+b*x+a)^(3/2)-3/32*A/a^4*b^2*c^2*(
c*x^2+b*x+a)^(1/2)*x-1/16*B*c/a^3*b/x*(c*x^2+b*x+a)^(3/2)+1/16*B*c^2/a^3*b*
(c*x^2+b*x+a)^(1/2)*x-5/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)*x-5/32*B/a^3*b^2
/x^2*(c*x^2+b*x+a)^(3/2)+5/24*B/a^2*b/x^3*(c*x^2+b*x+a)^(3/2)+7/128*A/a^5*b
^5*(c*x^2+b*x+a)^(1/2)-7/256*A/a^(9/2)*b^5*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2
)*a^(1/2))/x)-1/4*B/a/x^4*(c*x^2+b*x+a)^(3/2)-5/64*B/a^4*b^4*(c*x^2+b*x+a)^
(1/2)+5/128*B/a^(7/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/8
*B*c^2/a^2*(c*x^2+b*x+a)^(1/2)+1/8*B*c^2/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a
)^(1/2)*a^(1/2))/x)+7/40*A/a^2*b/x^4*(c*x^2+b*x+a)^(3/2)-7/48*A/a^3*b^2/x^3
*(c*x^2+b*x+a)^(3/2)+7/64*A/a^4*b^3/x^2*(c*x^2+b*x+a)^(3/2)-7/128*A/a^5*b^4
/x*(c*x^2+b*x+a)^(3/2)+5/64*B/a^4*b^3/x*(c*x^2+b*x+a)^(3/2)-1/5*A*(c*x^2+b*
x+a)^(3/2)/a/x^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**6,x)
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**6, x)
```

3.846 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^7} dx$

Optimal. Leaf size=310

$$-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-20aAc-28abB+21Ab^2\right)}{160a^3x^4}+\frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5}-\frac{\left(b^2-4ac\right)\left(4abB\left(7b^2-12ac\right.\right.}{}$$

Rubi [A] time = 0.36, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$\frac{(2a+bx)\sqrt{a+bx+cx^2}\left(4abB\left(7b^2-12ac\right)-A\left(16a^2c^2-56ab^2c+21b^4\right)\right)}{512a^5x^2}-\frac{\left(b^2-4ac\right)\left(4abB\left(7b^2-12ac\right)-A\left(16a^2c^2-56ab^2c+21b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{1024a^{11/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}\left(128a^2Bc-196aAbc-140ab^2B+105Ab^3\right)}{960a^4x^3}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-20aAc-28abB+21Ab^2\right)}{160a^3x^4}+\frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5}-\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^7,x]
```

```
[Out] ((4*a*b*B*(7*b^2 - 12*a*c) - A*(21*b^4 - 56*a*b^2*c + 16*a^2*c^2))*(2*a + b
*x)*Sqrt[a + b*x + c*x^2])/(512*a^5*x^2) - (A*(a + b*x + c*x^2)^(3/2))/(6*a
*x^6) + ((3*A*b - 4*a*B)*(a + b*x + c*x^2)^(3/2))/(20*a^2*x^5) - ((21*A*b^2
 - 28*a*b*B - 20*a*A*c)*(a + b*x + c*x^2)^(3/2))/(160*a^3*x^4) + ((105*A*b^
3 - 140*a*b^2*B - 196*a*A*b*c + 128*a^2*B*c)*(a + b*x + c*x^2)^(3/2))/(960*
a^4*x^3) - ((b^2 - 4*a*c)*(4*a*b*B*(7*b^2 - 12*a*c) - A*(21*b^4 - 56*a*b^2*
c + 16*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(1
024*a^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^7}\,dx = -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6} - \frac{\int \frac{\left(\frac{3}{2}(3Ab-4aB)+3Acx\right)\sqrt{a+bx+cx^2}}{x^6}\,dx}{6a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6} + \frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5} + \frac{\int \frac{\left(\frac{3}{4}\left(21Ab^2-28abB-20aAc\right)\right.}{}}{3}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6} + \frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5} - \frac{\left(21Ab^2-28abB-20a\right.}{160a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6} + \frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5} - \frac{\left(21Ab^2-28abB-20a\right.}{160a}$$

$$= \frac{\left(4abB\left(7b^2-12ac\right)-A\left(21b^4-56ab^2c+16a^2c^2\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^5x^2} - \frac{A}{}$$

$$= \frac{\left(4abB\left(7b^2-12ac\right)-A\left(21b^4-56ab^2c+16a^2c^2\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^5x^2} - \frac{A}{}$$

$$= \frac{\left(4abB\left(7b^2-12ac\right)-A\left(21b^4-56ab^2c+16a^2c^2\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^5x^2} - \frac{A}{}$$

Mathematica [A] time = 0.44, size = 262, normalized size = 0.85

$$\frac{\frac{2x^3(a+x(b+cx))^{3/2}\left(7A\left(15b^3-28abc\right)+4aB\left(32ac-35b^2\right)\right)}{a^2}+\frac{15x^4\left(A\left(16a^2c^2-56ab^2c+21b^4\right)+4abB\left(12ac-7b^2\right)\right)\left(x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)-2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}\right)}{8a^{7/2}}+\frac{12x^2(a+x(b+cx))^{3/2}\left(20aAc+28abB-21Ab^2\right)}{a}+96x(3Ab-4aB)(a+x(b+cx))^{3/2}-320aA(a+x(b+cx))^{3/2}}{1920a^2x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^7,x]
```

```
[Out] (-320*a*A*(a + x*(b + c*x))^(3/2) + 96*(3*A*b - 4*a*B)*x*(a + x*(b + c*x))^
(3/2) + (12*(-21*A*b^2 + 28*a*b*B + 20*a*A*c)*x^2*(a + x*(b + c*x))^(3/2))/
a + (2*(4*a*B*(-35*b^2 + 32*a*c) + 7*A*(15*b^3 - 28*a*b*c))*x^3*(a + x*(b +
 c*x))^(3/2))/a^2 + (15*(4*a*b*B*(-7*b^2 + 12*a*c) + A*(21*b^4 - 56*a*b^2*c
 + 16*a^2*c^2))*x^4*(-2*Sqrt[a]*(2*a + b*x)*Sqrt[a + x*(b + c*x)] + (b^2 -
4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))/(8*a^(7
/2)))/(1920*a^2*x^6)
```

IntegrateAlgebraic [A] time = 3.05, size = 388, normalized size = 1.25

$$-\frac{21Ab^6\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{512a^{11/2}}+\frac{\left(-16a^2Ac^3-48a^2bBc^2+60aAb^2c^2+40ab^3Bc-35Ab^4c-7b^5B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{128a^{9/2}}+\frac{\sqrt{a+bx+cx^2}\left(-1280a^5A-1536a^5Bx-128a^4Abx-320a^4Acx^2-192a^4bBx^2-512a^4Bcx^3+144a^3Ab^2x^2+544a^3Abcx^3+480a^3Ac^2x^4+224a^3b^2Bx^3+928a^3bBcx^4+1024a^3Bc^2x^5-168a^2Ab^3x^3-896a^2Ab^2cx^4-1808a^2Abc^2x^5-280a^2b^3Bx^4-1840a^2b^2Bcx^5+210aAb^4x^4+1680aAb^3cx^5+420ab^4Bx^5-315Ab^5x^5\right)}{7680a^5x^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^7,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-1280*a^5*A - 128*a^4*A*b*x - 1536*a^5*B*x + 144*a^
3*A*b^2*x^2 - 192*a^4*b*B*x^2 - 320*a^4*A*c*x^2 - 168*a^2*A*b^3*x^3 + 224*a
^3*b^2*B*x^3 + 544*a^3*A*b*c*x^3 - 512*a^4*B*c*x^3 + 210*a*A*b^4*x^4 - 280*
a^2*b^3*B*x^4 - 896*a^2*A*b^2*c*x^4 + 928*a^3*b*B*c*x^4 + 480*a^3*A*c^2*x^4
 - 315*A*b^5*x^5 + 420*a*b^4*B*x^5 + 1680*a*A*b^3*c*x^5 - 1840*a^2*b^2*B*c*
x^5 - 1808*a^2*A*b*c^2*x^5 + 1024*a^3*B*c^2*x^5))/(7680*a^5*x^6) + ((-7*b^5
*B - 35*A*b^4*c + 40*a*b^3*B*c + 60*a*A*b^2*c^2 - 48*a^2*b*B*c^2 - 16*a^2*A
*c^3)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(128*a^(9/2)
) - (21*A*b^6*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])
/(512*a^(11/2))
```

fricas [A] time = 3.40, size = 709, normalized size = 2.29

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/30720*(15*(28*B*a*b^5 - 21*A*b^6 + 64*A*a^3*c^3 + 48*(4*B*a^3*b - 5*A*a^
2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 7*A*a*b^4)*c)*sqrt(a)*x^6*log(-(8*a*b*x + (b
^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2)
 - 4*(1280*A*a^6 - (420*B*a^2*b^4 - 315*A*a*b^5 + 16*(64*B*a^4 - 113*A*a^3*
b)*c^2 - 80*(23*B*a^3*b^2 - 21*A*a^2*b^3)*c)*x^5 + 2*(140*B*a^3*b^3 - 105*A
*a^2*b^4 - 240*A*a^4*c^2 - 16*(29*B*a^4*b - 28*A*a^3*b^2)*c)*x^4 - 8*(28*B*
a^4*b^2 - 21*A*a^3*b^3 - 4*(16*B*a^5 - 17*A*a^4*b)*c)*x^3 + 16*(12*B*a^5*b
- 9*A*a^4*b^2 + 20*A*a^5*c)*x^2 + 128*(12*B*a^6 + A*a^5*b)*x)*sqrt(c*x^2 +
b*x + a))/(a^6*x^6), 1/15360*(15*(28*B*a*b^5 - 21*A*b^6 + 64*A*a^3*c^3 + 48
*(4*B*a^3*b - 5*A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 7*A*a*b^4)*c)*sqrt(-a)*x
^6*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
 a^2)) - 2*(1280*A*a^6 - (420*B*a^2*b^4 - 315*A*a*b^5 + 16*(64*B*a^4 - 113*
A*a^3*b)*c^2 - 80*(23*B*a^3*b^2 - 21*A*a^2*b^3)*c)*x^5 + 2*(140*B*a^3*b^3 -
 105*A*a^2*b^4 - 240*A*a^4*c^2 - 16*(29*B*a^4*b - 28*A*a^3*b^2)*c)*x^4 - 8*
(28*B*a^4*b^2 - 21*A*a^3*b^3 - 4*(16*B*a^5 - 17*A*a^4*b)*c)*x^3 + 16*(12*B*
a^5*b - 9*A*a^4*b^2 + 20*A*a^5*c)*x^2 + 128*(12*B*a^6 + A*a^5*b)*x)*sqrt(c*
x^2 + b*x + a))/(a^6*x^6)]
```

giac [B] time = 0.32, size = 1955, normalized size = 6.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/512*(28*B*a*b^5 - 21*A*b^6 - 160*B*a^2*b^3*c + 140*A*a*b^4*c + 192*B*a^3*
b*c^2 - 240*A*a^2*b^2*c^2 + 64*A*a^3*c^3)*arctan(-(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))/sqrt(-a))/(sqrt(-a)*a^5) - 1/7680*(420*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^11*B*a*b^5 - 315*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*b^6 -
2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^3*c + 2100*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^11*A*a*b^4*c + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^11*B*a^3*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^2
*c^2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*c^3 - 2380*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^9*B*a^2*b^5 + 1785*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*A*a*b^6 + 13600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^3*c
 - 11900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b^4*c - 16320*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b*c^2 + 20400*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^9*A*a^3*b^2*c^2 - 5440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a
^4*c^3 - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*c^(5/2) + 5544*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^5 - 4158*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*A*a^2*b^6 - 31680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*
a^4*b^3*c + 27720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^3*b^4*c - 48000
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b*c^2 - 47520*(sqrt(c)*x - sqr
```

```
t(c*x^2 + b*x + a))^7*A*a^4*b^2*c^2 - 36480*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^7*A*a^5*c^3 - 97280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^5*b^2*c^
(3/2) + 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*c^(5/2) - 163840*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b*c^(5/2) - 6744*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^5*B*a^4*b^5 + 5058*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*A*a^3*b^6 - 16320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^3*c - 3
3720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b^4*c + 13440*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^5*B*a^6*b*c^2 - 170400*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^5*A*a^5*b^2*c^2 - 36480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6
*c^3 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b^4*sqrt(c) + 7680
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^6*b^2*c^(3/2) - 168960*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*b^3*c^(3/2) - 61440*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^4*A*a^6*b*c^(5/2) + 2740*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^3*B*a^5*b^5 - 3335*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^6 + 238
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*b^3*c - 47740*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^3*A*a^5*b^4*c + 45120*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^3*B*a^7*b*c^2 - 102480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^2
*c^2 - 5440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*c^3 + 15360*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b^4*sqrt(c) - 15360*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^2*A*a^5*b^5*sqrt(c) + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^2*B*a^7*b^2*c^(3/2) - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*
a^6*b^3*c^(3/2) + 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^8*c^(5/2)
 - 24576*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^7*b*c^(5/2) + 420*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^5 - 315*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))*A*a^5*b^6 + 12960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*b^3*c -
13260*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^4*c + 2880*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*B*a^8*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*A*a^7*b^2*c^2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^8*c^3 + 5120*
B*a^8*b^2*c^(3/2) - 5120*A*a^7*b^3*c^(3/2) - 2048*B*a^9*c^(5/2) + 4096*A*a^
8*b*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^6*a^5)
```

maple [B] time = 0.07, size = 1014, normalized size = 3.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x)
```

```
[Out] 7/128*B/a^5*b^4*c*(c*x^2+b*x+a)^(1/2)*x-3/32*B/a^4*b^2*c^2*(c*x^2+b*x+a)^(1
/2)*x+3/32*B/a^4*b^2*c/x*(c*x^2+b*x+a)^(3/2)-3/16*B/a^3*b*c/x^2*(c*x^2+b*x+
a)^(3/2)+7/64*A/a^5*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x-7/64*A/a^5*b^3*c/x*(c*x^2
+b*x+a)^(3/2)-49/240*A/a^3*b*c/x^3*(c*x^2+b*x+a)^(3/2)+1/32*A*c^2/a^4*b/x*(
c*x^2+b*x+a)^(3/2)-1/32*A*c^3/a^4*b*(c*x^2+b*x+a)^(1/2)*x-21/512*A/a^6*b^5*
c*(c*x^2+b*x+a)^(1/2)*x+7/32*A/a^4*b^2*c/x^2*(c*x^2+b*x+a)^(3/2)+21/1024*A/
a^(11/2)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-21/512*A/a^6*b^6
*(c*x^2+b*x+a)^(1/2)-1/16*A*c^3/a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a
^(1/2))/x)+1/16*A*c^3/a^3*(c*x^2+b*x+a)^(1/2)-1/5*B/a/x^5*(c*x^2+b*x+a)^(3/
2)+7/128*B/a^5*b^5*(c*x^2+b*x+a)^(1/2)-7/256*B/a^(9/2)*b^5*ln((b*x+2*a+2*(c
*x^2+b*x+a)^(1/2)*a^(1/2))/x)-21/160*A/a^3*b^2/x^4*(c*x^2+b*x+a)^(3/2)+3/20
*A/a^2*b/x^5*(c*x^2+b*x+a)^(3/2)+7/64*A/a^4*b^3/x^3*(c*x^2+b*x+a)^(3/2)-21/
256*A/a^5*b^4/x^2*(c*x^2+b*x+a)^(3/2)+21/512*A/a^6*b^5/x*(c*x^2+b*x+a)^(3/2
)+49/256*A/a^5*b^4*c*(c*x^2+b*x+a)^(1/2)-1/4*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(1
/2)+1/8*A*c/a^2/x^4*(c*x^2+b*x+a)^(3/2)-1/16*A*c^2/a^3/x^2*(c*x^2+b*x+a)^(3
/2)-35/256*A/a^(9/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15
/64*A/a^(7/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+7/40*B/
a^2*b/x^4*(c*x^2+b*x+a)^(3/2)-7/48*B/a^3*b^2/x^3*(c*x^2+b*x+a)^(3/2)+7/64*B
/a^4*b^3/x^2*(c*x^2+b*x+a)^(3/2)-7/128*B/a^5*b^4/x*(c*x^2+b*x+a)^(3/2)-13/6
4*B/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)+5/32*B/a^(7/2)*b^3*c*ln((b*x+2*a+2*(c*x^2
+b*x+a)^(1/2)*a^(1/2))/x)+3/16*B/a^3*b*c^2*(c*x^2+b*x+a)^(1/2)-3/16*B/a^(5/
2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+2/15*B*c/a^2/x^3*(c*
```

```
x^2+b*x+a)^(3/2)-1/6*A*(c*x^2+b*x+a)^(3/2)/a/x^6
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{c\,x^2 + b\,x + a}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^7, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\sqrt{a + bx + cx^2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**7, x)
```

3.847 $\int x^4(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=455

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(2048a^2Bc^2-10cx\left(504aAc^2-748abBc-594Ab^2c+429b^3B\right)+6696aAbc^2-7524ab^2Bc-41\right.}{80640c^5}$$

Rubi [A] time = 0.63, antiderivative size = 455, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(2048a^2Bc^2-10cx\left(504aAc^2-748abBc-594Ab^2c+429b^3B\right)+6696aAbc^2-7524ab^2Bc-4158Ab^3c+3003b^4B\right)}{80640c^5}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(-96a^2Ac^3+240a^2bBc^2+432aAb^2c^2-440ab^3Bc-198Ab^4c+143b^5B\right)}{12288c^6}+\frac{\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\left(-96a^2Ac^3+240a^2bBc^2+432aAb^2c^2-440ab^3Bc-198Ab^4c+143b^5B\right)}{32768c^7}-\frac{\left(b^2-4ac\right)^2\left(-96a^2Ac^3+240a^2bBc^2+432aAb^2c^2-440ab^3Bc-198Ab^4c+143b^5B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{65536c^{15/2}}+\frac{x^2\left(a+bx+cx^2\right)^{5/2}\left(-128aBc-198Abc+143b^2B\right)}{2016c^3}-\frac{x^3\left(a+bx+cx^2\right)^{5/2}(13bB-18Ac)}{144c^2}+\frac{Bx^4\left(a+bx+cx^2\right)^{5/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((b^2 - 4*a*c)*(143*b^5*B - 198*A*b^4*c - 440*a*b^3*B*c + 432*a*A*b^2*c^2 +
 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(32768*
c^7) - ((143*b^5*B - 198*A*b^4*c - 440*a*b^3*B*c + 432*a*A*b^2*c^2 + 240*a^
2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(12288*c^6)
+ ((143*b^2*B - 198*A*b*c - 128*a*B*c)*x^2*(a + b*x + c*x^2)^(5/2))/(2016*c
^3) - ((13*b*B - 18*A*c)*x^3*(a + b*x + c*x^2)^(5/2))/(144*c^2) + (B*x^4*(a
 + b*x + c*x^2)^(5/2))/(9*c) + ((3003*b^4*B - 4158*A*b^3*c - 7524*a*b^2*B*c
 + 6696*a*A*b*c^2 + 2048*a^2*B*c^2 - 10*c*(429*b^3*B - 594*A*b^2*c - 748*a*
b*B*c + 504*a*A*c^2)*x)*(a + b*x + c*x^2)^(5/2))/(80640*c^5) - ((b^2 - 4*a*
c)^2*(143*b^5*B - 198*A*b^4*c - 440*a*b^3*B*c + 432*a*A*b^2*c^2 + 240*a^2*b
*B*c^2 - 96*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2]
)])/(65536*c^(15/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx = \frac{Bx^4\left(a+bx+cx^2\right)^{5/2}}{9c} + \frac{\int x^3\left(-4aB-\frac{1}{2}(13bB-18Ac)x\right)\left(a+bx+cx^2\right)^{\ldots}}{9c}$$

$$= -\frac{(13bB-18Ac)x^3\left(a+bx+cx^2\right)^{5/2}}{144c^2} + \frac{Bx^4\left(a+bx+cx^2\right)^{5/2}}{9c} + \frac{\int x^2\left(\frac{3}{2}a\ldots\right.}{\ldots}$$

$$= \frac{\left(143b^2B-198Abc-128aBc\right)x^2\left(a+bx+cx^2\right)^{5/2}}{2016c^3} - \frac{(13bB-18Ac)x^3\left(a\ldots\right.}{144c^{\ldots}}$$

$$= \frac{\left(143b^2B-198Abc-128aBc\right)x^2\left(a+bx+cx^2\right)^{5/2}}{2016c^3} - \frac{(13bB-18Ac)x^3\left(a\ldots\right.}{144c^{\ldots}}$$

$$= -\frac{\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-96a^2Ac^3\ldots\right.}{12288c^6}$$

$$= \frac{\left(b^2-4ac\right)\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-\ldots\right.}{32768c^7}$$

$$= \frac{\left(b^2-4ac\right)\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-\ldots\right.}{32768c^7}$$

$$= \frac{\left(b^2-4ac\right)\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-\ldots\right.}{32768c^7}$$

Mathematica [A] time = 0.82, size = 338, normalized size = 0.74

$$\frac{\frac{3\left(96a^2Ac^3-240a^2bBc^2-432aAb^2c^2+440ab^3Bc+198Ab^4c-143b^5B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{65536c^{13/2}}+\frac{x^2(a+x(b+cx))^{5/2}\left(-128aBc-198Abc+143b^2B\right)}{224c^2}+\frac{(a+x(b+cx))^{5/2}\left(396b^2c(15Acx-19aB)+8abc^2(837A+935Bx)+16ac^2(128aB-315Acx)-66b^3c(63A+65Bx)+3003b^4B\right)}{8960c^4}+\frac{x^3(a+x(b+cx))^{5/2}(18Ac-13bB)}{16c}+Bx^4(a+x(b+cx))^{5/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (((143*b^2*B - 198*A*b*c - 128*a*B*c)*x^2*(a + x*(b + c*x))^(5/2))/(224*c^2
) + ((-13*b*B + 18*A*c)*x^3*(a + x*(b + c*x))^(5/2))/(16*c) + B*x^4*(a + x*
(b + c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(3003*b^4*B - 66*b^3*c*(63*A +
65*B*x) + 8*a*b*c^2*(837*A + 935*B*x) + 16*a*c^2*(128*a*B - 315*A*c*x) + 39
6*b^2*c*(-19*a*B + 15*A*c*x)))/(8960*c^4) + (3*(-143*b^5*B + 198*A*b^4*c +
440*a*b^3*B*c - 432*a*A*b^2*c^2 - 240*a^2*b*B*c^2 + 96*a^2*A*c^3)*(2*Sqrt[c
]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)
) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])
]))/(65536*c^(13/2)))/(9*c)
```

IntegrateAlgebraic [A] time = 3.50, size = 662, normalized size = 1.45

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(45045*b^8*B - 62370*A*b^7*c - 438900*a*b^6*B*c + 55
1880*a*A*b^5*c^2 + 1383984*a^2*b^4*B*c^2 - 1469664*a^2*A*b^3*c^3 - 1467072*
a^3*b^2*B*c^3 + 1058688*a^3*A*b*c^4 + 262144*a^4*B*c^4 - 30030*b^7*B*c*x +
41580*A*b^6*c^2*x + 260568*a*b^5*B*c^2*x - 323568*a*A*b^4*c^3*x - 677664*a^
2*b^3*B*c^3*x + 680256*a^2*A*b^2*c^4*x + 473728*a^3*b*B*c^4*x - 241920*a^3*
A*c^5*x + 24024*b^6*B*c^2*x^2 - 33264*A*b^5*c^3*x^2 - 183744*a*b^4*B*c^3*x^
2 + 224640*a*A*b^3*c^4*x^2 + 378240*a^2*b^2*B*c^4*x^2 - 347904*a^2*A*b*c^5*
x^2 - 131072*a^3*B*c^5*x^2 - 20592*b^5*B*c^3*x^3 + 28512*A*b^4*c^4*x^3 + 13
6576*a*b^3*B*c^4*x^3 - 163584*a*A*b^2*c^5*x^3 - 206592*a^2*b*B*c^5*x^3 + 16
1280*a^2*A*c^6*x^3 + 18304*b^4*B*c^4*x^4 - 25344*A*b^3*c^5*x^4 - 102912*a*b
^2*B*c^5*x^4 + 119808*a*A*b*c^6*x^4 + 98304*a^2*B*c^6*x^4 - 16640*b^3*B*c^5
*x^5 + 23040*A*b^2*c^6*x^5 + 76800*a*b*B*c^6*x^5 + 1935360*a*A*c^7*x^5 + 15
360*b^2*B*c^6*x^6 + 1566720*A*b*c^7*x^6 + 1638400*a*B*c^7*x^6 + 1361920*b*B
*c^7*x^7 + 1290240*A*c^8*x^7 + 1146880*B*c^8*x^8))/(10321920*c^7) + ((143*b
^9*B - 198*A*b^8*c - 1584*a*b^7*B*c + 2016*a*A*b^6*c^2 + 6048*a^2*b^5*B*c^2
 - 6720*a^2*A*b^4*c^3 - 8960*a^3*b^3*B*c^3 + 7680*a^3*A*b^2*c^4 + 3840*a^4*
b*B*c^4 - 1536*a^4*A*c^5)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])
/(65536*c^(15/2))
```

fricas [A] time = 0.72, size = 1263, normalized size = 2.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/41287680*(315*(143*B*b^9 - 1536*A*a^4*c^5 + 3840*(B*a^4*b + 2*A*a^3*b^2
)*c^4 - 2240*(4*B*a^3*b^3 + 3*A*a^2*b^4)*c^3 + 2016*(3*B*a^2*b^5 + A*a*b^6)
*c^2 - 198*(8*B*a*b^7 + A*b^8)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 -
4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1146880*B*c^9*x^8
 + 45045*B*b^8*c + 71680*(19*B*b*c^8 + 18*A*c^9)*x^7 + 5120*(3*B*b^2*c^7 +
2*(160*B*a + 153*A*b)*c^8)*x^6 + 128*(2048*B*a^4 + 8271*A*a^3*b)*c^5 - 1280
*(13*B*b^3*c^6 - 1512*A*a*c^8 - 6*(10*B*a*b + 3*A*b^2)*c^7)*x^5 - 2592*(566
*B*a^3*b^2 + 567*A*a^2*b^3)*c^4 + 128*(143*B*b^4*c^5 + 24*(32*B*a^2 + 39*A*
a*b)*c^7 - 6*(134*B*a*b^2 + 33*A*b^3)*c^6)*x^4 + 504*(2746*B*a^2*b^4 + 1095
*A*a*b^5)*c^3 - 16*(1287*B*b^5*c^4 - 10080*A*a^2*c^7 + 48*(269*B*a^2*b + 21
3*A*a*b^2)*c^6 - 22*(388*B*a*b^3 + 81*A*b^4)*c^5)*x^3 - 2310*(190*B*a*b^6 +
 27*A*b^7)*c^2 + 8*(3003*B*b^6*c^3 - 32*(512*B*a^3 + 1359*A*a^2*b)*c^6 + 24
0*(197*B*a^2*b^2 + 117*A*a*b^3)*c^5 - 198*(116*B*a*b^4 + 21*A*b^5)*c^4)*x^2
 - 2*(15015*B*b^7*c^2 + 120960*A*a^3*c^6 - 32*(7402*B*a^3*b + 10629*A*a^2*b
^2)*c^5 + 72*(4706*B*a^2*b^3 + 2247*A*a*b^4)*c^4 - 1386*(94*B*a*b^5 + 15*A*
b^6)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^8, 1/20643840*(315*(143*B*b^9 - 1536*
A*a^4*c^5 + 3840*(B*a^4*b + 2*A*a^3*b^2)*c^4 - 2240*(4*B*a^3*b^3 + 3*A*a^2*
b^4)*c^3 + 2016*(3*B*a^2*b^5 + A*a*b^6)*c^2 - 198*(8*B*a*b^7 + A*b^8)*c)*sq
rt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c
*x + a*c)) + 2*(1146880*B*c^9*x^8 + 45045*B*b^8*c + 71680*(19*B*b*c^8 + 18*
A*c^9)*x^7 + 5120*(3*B*b^2*c^7 + 2*(160*B*a + 153*A*b)*c^8)*x^6 + 128*(2048
*B*a^4 + 8271*A*a^3*b)*c^5 - 1280*(13*B*b^3*c^6 - 1512*A*a*c^8 - 6*(10*B*a*
b + 3*A*b^2)*c^7)*x^5 - 2592*(566*B*a^3*b^2 + 567*A*a^2*b^3)*c^4 + 128*(143
*B*b^4*c^5 + 24*(32*B*a^2 + 39*A*a*b)*c^7 - 6*(134*B*a*b^2 + 33*A*b^3)*c^6)
*x^4 + 504*(2746*B*a^2*b^4 + 1095*A*a*b^5)*c^3 - 16*(1287*B*b^5*c^4 - 10080
*A*a^2*c^7 + 48*(269*B*a^2*b + 213*A*a*b^2)*c^6 - 22*(388*B*a*b^3 + 81*A*b^
4)*c^5)*x^3 - 2310*(190*B*a*b^6 + 27*A*b^7)*c^2 + 8*(3003*B*b^6*c^3 - 32*(5
12*B*a^3 + 1359*A*a^2*b)*c^6 + 240*(197*B*a^2*b^2 + 117*A*a*b^3)*c^5 - 198*
(116*B*a*b^4 + 21*A*b^5)*c^4)*x^2 - 2*(15015*B*b^7*c^2 + 120960*A*a^3*c^6 -
 32*(7402*B*a^3*b + 10629*A*a^2*b^2)*c^5 + 72*(4706*B*a^2*b^3 + 2247*A*a*b^
4)*c^4 - 1386*(94*B*a*b^5 + 15*A*b^6)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^8]
```

giac [A] time = 0.32, size = 639, normalized size = 1.40

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/10321920*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(4*(14*(16*B*c*x + (19*B*b
*c^8 + 18*A*c^9)/c^8)*x + (3*B*b^2*c^7 + 320*B*a*c^8 + 306*A*b*c^8)/c^8)*x
- (13*B*b^3*c^6 - 60*B*a*b*c^7 - 18*A*b^2*c^7 - 1512*A*a*c^8)/c^8)*x + (143
*B*b^4*c^5 - 804*B*a*b^2*c^6 - 198*A*b^3*c^6 + 768*B*a^2*c^7 + 936*A*a*b*c^
7)/c^8)*x - (1287*B*b^5*c^4 - 8536*B*a*b^3*c^5 - 1782*A*b^4*c^5 + 12912*B*a
^2*b*c^6 + 10224*A*a*b^2*c^6 - 10080*A*a^2*c^7)/c^8)*x + (3003*B*b^6*c^3 -
22968*B*a*b^4*c^4 - 4158*A*b^5*c^4 + 47280*B*a^2*b^2*c^5 + 28080*A*a*b^3*c^
5 - 16384*B*a^3*c^6 - 43488*A*a^2*b*c^6)/c^8)*x - (15015*B*b^7*c^2 - 130284
*B*a*b^5*c^3 - 20790*A*b^6*c^3 + 338832*B*a^2*b^3*c^4 + 161784*A*a*b^4*c^4
- 236864*B*a^3*b*c^5 - 340128*A*a^2*b^2*c^5 + 120960*A*a^3*c^6)/c^8)*x + (4
5045*B*b^8*c - 438900*B*a*b^6*c^2 - 62370*A*b^7*c^2 + 1383984*B*a^2*b^4*c^3
 + 551880*A*a*b^5*c^3 - 1467072*B*a^3*b^2*c^4 - 1469664*A*a^2*b^3*c^4 + 262
144*B*a^4*c^5 + 1058688*A*a^3*b*c^5)/c^8) + 1/65536*(143*B*b^9 - 1584*B*a*b
^7*c - 198*A*b^8*c + 6048*B*a^2*b^5*c^2 + 2016*A*a*b^6*c^2 - 8960*B*a^3*b^3
*c^3 - 6720*A*a^2*b^4*c^3 + 3840*B*a^4*b*c^4 + 7680*A*a^3*b^2*c^4 - 1536*A*
a^4*c^5)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(15
/2)
```

maple [B] time = 0.06, size = 1311, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -253/4096*B*b^5/c^5*(c*x^2+b*x+a)^(1/2)*x*a-15/256*B*b/c^3*a^3*(c*x^2+b*x+a
)^(1/2)*x-9/128*A*b^2/c^3*a*(c*x^2+b*x+a)^(3/2)*x-57/512*A*b^2/c^3*a^2*(c*x
^2+b*x+a)^(1/2)*x+153/2048*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x*a-5/128*B*b/c^3*
a^2*(c*x^2+b*x+a)^(3/2)*x+125/1024*B*b^3/c^4*a^2*(c*x^2+b*x+a)^(1/2)*x+55/7
68*B*b^3/c^4*a*(c*x^2+b*x+a)^(3/2)*x+187/2016*B*b/c^3*a*x*(c*x^2+b*x+a)^(5/
2)+1/8*A*x^3*(c*x^2+b*x+a)^(5/2)/c+99/32768*A*b^8/c^(13/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x+a)^(1/2))+3/128*A*a^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))-33/640*A*b^3/c^4*(c*x^2+b*x+a)^(5/2)+33/2048*A*b^5/c^5*(c*
x^2+b*x+a)^(3/2)-99/16384*A*b^7/c^6*(c*x^2+b*x+a)^(1/2)+8/315*B*a^2/c^3*(c*
x^2+b*x+a)^(5/2)-143/65536*B*b^9/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))+143/3840*B*b^4/c^5*(c*x^2+b*x+a)^(5/2)-143/12288*B*b^6/c^6*(c*x^
2+b*x+a)^(3/2)+143/32768*B*b^8/c^7*(c*x^2+b*x+a)^(1/2)+3/256*A*a^3/c^3*(c*x
^2+b*x+a)^(1/2)*b+3/128*A*a^3/c^2*(c*x^2+b*x+a)^(1/2)*x-15/128*A*b^2/c^(7/2
)*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-63/2048*A*b^6/c^(11/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-143/6144*B*b^5/c^5*(c*x^2+b*x+a
)^(3/2)*x-99/8192*A*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x+153/4096*A*b^5/c^5*(c*x^2
+b*x+a)^(1/2)*a-9/256*A*b^3/c^4*a*(c*x^2+b*x+a)^(3/2)-57/1024*A*b^3/c^4*a^2
*(c*x^2+b*x+a)^(1/2)+1/64*A*a^2/c^2*(c*x^2+b*x+a)^(3/2)*x+1/128*A*a^2/c^3*(
c*x^2+b*x+a)^(3/2)*b+105/1024*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x+a)^(1/2))*a^2-11/112*A*b/c^2*x^2*(c*x^2+b*x+a)^(5/2)+93/1120*A*b/c^3*a*(
c*x^2+b*x+a)^(5/2)+33/448*A*b^2/c^3*x*(c*x^2+b*x+a)^(5/2)+33/1024*A*b^4/c^4
*(c*x^2+b*x+a)^(3/2)*x-4/63*B*a/c^2*x^2*(c*x^2+b*x+a)^(5/2)-15/256*B*b/c^(7
/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+35/256*B*b^3/c^(9/2)*a^
3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+99/4096*B*b^7/c^(13/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-189/2048*B*b^5/c^(11/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+143/16384*B*b^7/c^6*(c*x^2+b*x+a)^(1/2
)*x-253/8192*B*b^6/c^6*(c*x^2+b*x+a)^(1/2)*a+55/1536*B*b^4/c^5*a*(c*x^2+b*x
+a)^(3/2)+125/2048*B*b^4/c^5*a^2*(c*x^2+b*x+a)^(1/2)-13/144*B*b/c^2*x^3*(c*
```

```
x^2+b*x+a)^(5/2)-5/256*B*b^2/c^4*a^2*(c*x^2+b*x+a)^(3/2)-15/512*B*b^2/c^4*a
^3*(c*x^2+b*x+a)^(1/2)+143/2016*B*b^2/c^3*x^2*(c*x^2+b*x+a)^(5/2)-209/2240*
B*b^2/c^4*a*(c*x^2+b*x+a)^(5/2)-143/2688*B*b^3/c^4*x*(c*x^2+b*x+a)^(5/2)-1/
16*A*a/c^2*x*(c*x^2+b*x+a)^(5/2)+1/9*B*x^4*(c*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{4}\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.848 $\int x^3(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=356

$$\frac{3\left(b^2-4ac\right)^2\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{32768c^{13/2}}-\frac{3\left(b^2-4ac\right)(b+2c}{}$$

Rubi [A] time = 0.40, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)}{2048c^5}-\frac{3\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)}{16384c^6}+\frac{3\left(b^2-4ac\right)^2\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{32768c^{13/2}}-\frac{\left(a+bx+cx^2\right)^{5/2}\left(-10cx\left(-28aBc-48Abc+33b^2B\right)+256aAc^2-372abBc-336Ab^2c+231b^3B\right)}{4480c^4}-\frac{x^2\left(a+bx+cx^2\right)^{5/2}(11bB-16Ac)}{112c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-3*(b^2 - 4*a*c)*(33*b^4*B - 48*A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16
*a^2*B*c^2)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(16384*c^6) + ((33*b^4*B - 4
8*A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16*a^2*B*c^2)*(b + 2*c*x)*(a + b*
x + c*x^2)^(3/2))/(2048*c^5) - ((11*b*B - 16*A*c)*x^2*(a + b*x + c*x^2)^(5/
2))/(112*c^2) + (B*x^3*(a + b*x + c*x^2)^(5/2))/(8*c) - ((231*b^3*B - 336*A
*b^2*c - 372*a*b*B*c + 256*a*A*c^2 - 10*c*(33*b^2*B - 48*A*b*c - 28*a*B*c)*
x)*(a + b*x + c*x^2)^(5/2))/(4480*c^4) + (3*(b^2 - 4*a*c)^2*(33*b^4*B - 48*
A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(
2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(32768*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^3(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx = \frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c} + \frac{\int x^2\left(-3aB-\frac{1}{2}(11bB-16Ac)x\right)\left(a+bx+cx^2\right)^{3/2}}{8c}$$

$$= -\frac{(11bB-16Ac)x^2\left(a+bx+cx^2\right)^{5/2}}{112c^2} + \frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c} + \frac{\int x\left(a(11bB\right.}{}$$

$$= -\frac{(11bB-16Ac)x^2\left(a+bx+cx^2\right)^{5/2}}{112c^2} + \frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c} - \frac{\left(231b^3B-3\right.}{}$$

$$= \frac{\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2cx)\left(a+bx+cx^2\right.}{2048c^5}$$

$$= -\frac{3\left(b^2-4ac\right)\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2cx}{16384c^6}$$

$$= -\frac{3\left(b^2-4ac\right)\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2cx}{16384c^6}$$

$$= -\frac{3\left(b^2-4ac\right)\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2cx}{16384c^6}$$

Mathematica [A] time = 0.52, size = 267, normalized size = 0.75

$$\frac{\frac{\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{4096c^{11/2}}+\frac{(a+x(b+cx))^{5/2}\left(12bc(31aB-40Acx)-8ac^2(32A+35Bx)+6b^2c(56A+55Bx)-231b^3B\right)}{560c^3}+\frac{x^2(a+x(b+cx))^{5/2}(16Ac-11bB)}{14c}+Bx^3(a+x(b+cx))^{5/2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (((-11*b*B + 16*A*c)*x^2*(a + x*(b + c*x))^(5/2))/(14*c) + B*x^3*(a + x*(b
+ c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(-231*b^3*B - 8*a*c^2*(32*A + 35*B
*x) + 6*b^2*c*(56*A + 55*B*x) + 12*b*c*(31*a*B - 40*A*c*x)))/(560*c^3) + ((
33*b^4*B - 48*A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16*a^2*B*c^2)*(2*Sqrt
[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^
2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)
])]))/(4096*c^(11/2)))/(8*c)
```

IntegrateAlgebraic [A] time = 2.50, size = 535, normalized size = 1.50

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-3465*b^7*B + 5040*A*b^6*c + 30660*a*b^5*B*c - 4032
0*a*A*b^4*c^2 - 81648*a^2*b^3*B*c^2 + 87808*a^2*A*b^2*c^3 + 58816*a^3*b*B*c
^3 - 32768*a^3*A*c^4 + 2310*b^6*B*c*x - 3360*A*b^5*c^2*x - 17976*a*b^4*B*c^
```

```
2*x + 23296*a*A*b^3*c^3*x + 37792*a^2*b^2*B*c^3*x - 37376*a^2*A*b*c^4*x - 1
3440*a^3*B*c^4*x - 1848*b^5*B*c^2*x^2 + 2688*A*b^4*c^3*x^2 + 12480*a*b^3*B*
c^3*x^2 - 15872*a*A*b^2*c^4*x^2 - 19328*a^2*b*B*c^4*x^2 + 16384*a^2*A*c^5*x
^2 + 1584*b^4*B*c^3*x^3 - 2304*A*b^3*c^4*x^3 - 9088*a*b^2*B*c^4*x^3 + 11264
*a*A*b*c^5*x^3 + 8960*a^2*B*c^5*x^3 - 1408*b^3*B*c^4*x^4 + 2048*A*b^2*c^5*x
^4 + 6656*a*b*B*c^5*x^4 + 131072*a*A*c^6*x^4 + 1280*b^2*B*c^5*x^5 + 102400*
A*b*c^6*x^5 + 107520*a*B*c^6*x^5 + 87040*b*B*c^6*x^6 + 81920*A*c^7*x^6 + 71
680*B*c^7*x^7))/(573440*c^6) - (3*(33*b^8*B - 48*A*b^7*c - 336*a*b^6*B*c +
448*a*A*b^5*c^2 + 1120*a^2*b^4*B*c^2 - 1280*a^2*A*b^3*c^3 - 1280*a^3*b^2*B*
c^3 + 1024*a^3*A*b*c^4 + 256*a^4*B*c^4)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a +
b*x + c*x^2]])/(32768*c^(13/2))
```

fricas [A] time = 0.62, size = 1037, normalized size = 2.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2293760*(105*(33*B*b^8 + 256*(B*a^4 + 4*A*a^3*b)*c^4 - 1280*(B*a^3*b^2 +
 A*a^2*b^3)*c^3 + 224*(5*B*a^2*b^4 + 2*A*a*b^5)*c^2 - 48*(7*B*a*b^6 + A*b^7
)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(c) - 4*a*c) + 4*(71680*B*c^8*x^7 - 3465*B*b^7*c - 32768*A*a^3*c
^5 + 5120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c^6 + 4*(21*B*a + 20*A*
b)*c^7)*x^5 + 64*(919*B*a^3*b + 1372*A*a^2*b^2)*c^4 - 128*(11*B*b^3*c^5 - 1
024*A*a*c^7 - 4*(13*B*a*b + 4*A*b^2)*c^6)*x^4 - 1008*(81*B*a^2*b^3 + 40*A*a
*b^4)*c^3 + 16*(99*B*b^4*c^4 + 16*(35*B*a^2 + 44*A*a*b)*c^6 - 8*(71*B*a*b^2
 + 18*A*b^3)*c^5)*x^3 + 420*(73*B*a*b^5 + 12*A*b^6)*c^2 - 8*(231*B*b^5*c^3
- 2048*A*a^2*c^6 + 16*(151*B*a^2*b + 124*A*a*b^2)*c^5 - 24*(65*B*a*b^3 + 14
*A*b^4)*c^4)*x^2 + 2*(1155*B*b^6*c^2 - 64*(105*B*a^3 + 292*A*a^2*b)*c^5 + 1
6*(1181*B*a^2*b^2 + 728*A*a*b^3)*c^4 - 84*(107*B*a*b^4 + 20*A*b^5)*c^3)*x)*
sqrt(c*x^2 + b*x + a))/c^7, -1/1146880*(105*(33*B*b^8 + 256*(B*a^4 + 4*A*a^
3*b)*c^4 - 1280*(B*a^3*b^2 + A*a^2*b^3)*c^3 + 224*(5*B*a^2*b^4 + 2*A*a*b^5)
*c^2 - 48*(7*B*a*b^6 + A*b^7)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(71680*B*c^8*x^7 - 3465*B
*b^7*c - 32768*A*a^3*c^5 + 5120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c
^6 + 4*(21*B*a + 20*A*b)*c^7)*x^5 + 64*(919*B*a^3*b + 1372*A*a^2*b^2)*c^4 -
 128*(11*B*b^3*c^5 - 1024*A*a*c^7 - 4*(13*B*a*b + 4*A*b^2)*c^6)*x^4 - 1008*
(81*B*a^2*b^3 + 40*A*a*b^4)*c^3 + 16*(99*B*b^4*c^4 + 16*(35*B*a^2 + 44*A*a*
b)*c^6 - 8*(71*B*a*b^2 + 18*A*b^3)*c^5)*x^3 + 420*(73*B*a*b^5 + 12*A*b^6)*c
^2 - 8*(231*B*b^5*c^3 - 2048*A*a^2*c^6 + 16*(151*B*a^2*b + 124*A*a*b^2)*c^5
 - 24*(65*B*a*b^3 + 14*A*b^4)*c^4)*x^2 + 2*(1155*B*b^6*c^2 - 64*(105*B*a^3
+ 292*A*a^2*b)*c^5 + 16*(1181*B*a^2*b^2 + 728*A*a*b^3)*c^4 - 84*(107*B*a*b^
4 + 20*A*b^5)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^7]
```

giac [A] time = 0.27, size = 524, normalized size = 1.47

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/573440*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(4*(14*B*c*x + (17*B*b*c^7 +
 16*A*c^8)/c^7)*x + (B*b^2*c^6 + 84*B*a*c^7 + 80*A*b*c^7)/c^7)*x - (11*B*b^
3*c^5 - 52*B*a*b*c^6 - 16*A*b^2*c^6 - 1024*A*a*c^7)/c^7)*x + (99*B*b^4*c^4
- 568*B*a*b^2*c^5 - 144*A*b^3*c^5 + 560*B*a^2*c^6 + 704*A*a*b*c^6)/c^7)*x -
 (231*B*b^5*c^3 - 1560*B*a*b^3*c^4 - 336*A*b^4*c^4 + 2416*B*a^2*b*c^5 + 198
4*A*a*b^2*c^5 - 2048*A*a^2*c^6)/c^7)*x + (1155*B*b^6*c^2 - 8988*B*a*b^4*c^3
 - 1680*A*b^5*c^3 + 18896*B*a^2*b^2*c^4 + 11648*A*a*b^3*c^4 - 6720*B*a^3*c^
5 - 18688*A*a^2*b*c^5)/c^7)*x - (3465*B*b^7*c - 30660*B*a*b^5*c^2 - 5040*A*
```

```
b^6*c^2 + 81648*B*a^2*b^3*c^3 + 40320*A*a*b^4*c^3 - 58816*B*a^3*b*c^4 - 878
08*A*a^2*b^2*c^4 + 32768*A*a^3*c^5)/c^7) - 3/32768*(33*B*b^8 - 336*B*a*b^6*
c - 48*A*b^7*c + 1120*B*a^2*b^4*c^2 + 448*A*a*b^5*c^2 - 1280*B*a^3*b^2*c^3
- 1280*A*a^2*b^3*c^3 + 256*B*a^4*c^4 + 1024*A*a^3*b*c^4)*log(abs(-2*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(13/2)
```

maple [B] time = 0.06, size = 1061, normalized size = 2.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -57/512*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(1/2)*x-9/128*B*b^2/c^3*a*(c*x^2+b*x+a)
^(3/2)*x+153/2048*B*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x*a-3/32*A*b^3/c^3*(c*x^2+b
*x+a)^(1/2)*x*a+1/16*A*b/c^2*a*(c*x^2+b*x+a)^(3/2)*x+3/32*A*b/c^2*a^2*(c*x^
2+b*x+a)^(1/2)*x-99/8192*B*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x+105/1024*B*b^4/c^(
9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-11/112*B*b/c^2*x^2*(c*
x^2+b*x+a)^(5/2)-57/1024*B*b^3/c^4*a^2*(c*x^2+b*x+a)^(1/2)+21/512*A*b^5/c^(
9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+3/32*A*b/c^(5/2)*a^3*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/256*B*a^3/c^3*(c*x^2+b*x+a)^(1/2
)*b-15/128*B*b^2/c^(7/2)*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+33
/448*B*b^2/c^3*x*(c*x^2+b*x+a)^(5/2)-63/2048*B*b^6/c^(11/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+3/64*A*b^2/c^3*a^2*(c*x^2+b*x+a)^(1/2)-3/28*
A*b/c^2*x*(c*x^2+b*x+a)^(5/2)-3/64*A*b^3/c^3*(c*x^2+b*x+a)^(3/2)*x+9/512*A*
b^5/c^4*(c*x^2+b*x+a)^(1/2)*x-3/64*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*a+1/32*A*b
^2/c^3*a*(c*x^2+b*x+a)^(3/2)-15/128*A*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))*a^2+3/128*B*a^3/c^2*(c*x^2+b*x+a)^(1/2)*x+33/1024*B*b^4/
c^4*(c*x^2+b*x+a)^(3/2)*x+153/4096*B*b^5/c^5*(c*x^2+b*x+a)^(1/2)*a-9/256*B*
b^3/c^4*a*(c*x^2+b*x+a)^(3/2)+93/1120*B*b/c^3*a*(c*x^2+b*x+a)^(5/2)-1/16*B*
a/c^2*x*(c*x^2+b*x+a)^(5/2)+1/64*B*a^2/c^2*(c*x^2+b*x+a)^(3/2)*x+1/128*B*a^
2/c^3*(c*x^2+b*x+a)^(3/2)*b+33/2048*B*b^5/c^5*(c*x^2+b*x+a)^(3/2)-99/16384*
B*b^7/c^6*(c*x^2+b*x+a)^(1/2)-33/640*B*b^3/c^4*(c*x^2+b*x+a)^(5/2)+99/32768
*B*b^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/128*B*a^4/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/7*A*x^2*(c*x^2+b*x+a)^(5
/2)/c+9/1024*A*b^6/c^5*(c*x^2+b*x+a)^(1/2)+3/40*A*b^2/c^3*(c*x^2+b*x+a)^(5/
2)-3/128*A*b^4/c^4*(c*x^2+b*x+a)^(3/2)-9/2048*A*b^7/c^(11/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/35*A*a/c^2*(c*x^2+b*x+a)^(5/2)+1/8*B*x^3*(c
*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3 (A + Bx) \left(a + bx + cx^2\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.849 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=269

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(-48aBc-10cx(9bB-14Ac)-98Abc+63b^2B\right)}{840c^3}-\frac{\left(b^2-4ac\right)^2\left(8aAc^2-12abBc-14Ab^2c+9b^3\right.}{2048c^{11/2}}$$

Rubi [A] time = 0.25, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(-48aBc-10cx(9bB-14Ac)-98Abc+63b^2B\right)}{840c^3}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(8aAc^2-12abBc-14Ab^2c+9b^3B\right)}{384c^4}+\frac{\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\left(8aAc^2-12abBc-14Ab^2c+9b^3B\right)}{1024c^5}-\frac{\left(b^2-4ac\right)^2\left(8aAc^2-12abBc-14Ab^2c+9b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2048c^{11/2}}+\frac{Bx^2\left(a+bx+cx^2\right)^{5/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((b^2 - 4*a*c)*(9*b^3*B - 14*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*
Sqrt[a + b*x + c*x^2])/(1024*c^5) - ((9*b^3*B - 14*A*b^2*c - 12*a*b*B*c + 8
*a*A*c^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(384*c^4) + (B*x^2*(a + b*x
+ c*x^2)^(5/2))/(7*c) + ((63*b^2*B - 98*A*b*c - 48*a*B*c - 10*c*(9*b*B - 14
*A*c)*x)*(a + b*x + c*x^2)^(5/2))/(840*c^3) - ((b^2 - 4*a*c)^2*(9*b^3*B - 1
4*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
 b*x + c*x^2])])/(2048*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
```

```
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx &= \frac{Bx^2\left(a+bx+cx^2\right)^{5/2}}{7c} + \frac{\int x\left(-2aB-\frac{1}{2}(9bB-14Ac)x\right)\left(a+bx+cx^2\right)^{3/2}}{7c} \\
&= \frac{Bx^2\left(a+bx+cx^2\right)^{5/2}}{7c} + \frac{\left(63b^2B-98Abc-48aBc-10c(9bB-14Ac)x\right)}{840c^3} \\
&= -\frac{\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{384c^4} + \frac{Bx^2}{} \\
&= \frac{\left(b^2-4ac\right)\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^5} \\
&= \frac{\left(b^2-4ac\right)\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^5} \\
&= \frac{\left(b^2-4ac\right)\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^5}
\end{aligned}
$$

Mathematica [A] time = 0.33, size = 206, normalized size = 0.77

$$
\frac{\frac{(a+x(b+cx))^{5/2}\left(4c(35Acx-12aB)-2bc(49A+45Bx)+63b^2B\right)}{120c^2} - \frac{7\left(8aAc^2-12abBc-14Ab^2c+9b^3B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{6144c^{9/2}} + Bx^2(a+x(b+cx))^{5/2}}{7c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (B*x^2*(a + x*(b + c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(63*b^2*B - 2*b*c
*(49*A + 45*B*x) + 4*c*(-12*a*B + 35*A*c*x)))/(120*c^2) - (7*(9*b^3*B - 14*
A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*
x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(6144*c^(9/2)))/(7*c)
```

IntegrateAlgebraic [A] time = 1.80, size = 423, normalized size = 1.57

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(945*b^6*B - 1470*A*b^5*c - 7560*a*b^4*B*c + 10640*a
*A*b^3*c^2 + 16464*a^2*b^2*B*c^2 - 18144*a^2*A*b*c^3 - 6144*a^3*B*c^3 - 630
*b^5*B*c*x + 980*A*b^4*c^2*x + 4368*a*b^3*B*c^2*x - 6048*a*A*b^2*c^3*x - 70
08*a^2*b*B*c^3*x + 6720*a^2*A*c^4*x + 504*b^4*B*c^2*x^2 - 784*A*b^3*c^3*x^2
 - 2976*a*b^2*B*c^3*x^2 + 4032*a*A*b*c^4*x^2 + 3072*a^2*B*c^4*x^2 - 432*b^3
*B*c^3*x^3 + 672*A*b^2*c^4*x^3 + 2112*a*b*B*c^4*x^3 + 31360*a*A*c^5*x^3 + 3
84*b^2*B*c^4*x^4 + 23296*A*b*c^5*x^4 + 24576*a*B*c^5*x^4 + 19200*b*B*c^5*x^
5 + 17920*A*c^6*x^5 + 15360*B*c^6*x^6))/(107520*c^5) + ((9*b^7*B - 14*A*b^6
*c - 84*a*b^5*B*c + 120*a*A*b^4*c^2 + 240*a^2*b^3*B*c^2 - 288*a^2*A*b^2*c^3
```

```
 - 192*a^3*b*B*c^3 + 128*a^3*A*c^4)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x
+ c*x^2]])/(2048*c^(11/2))
```

fricas [A] time = 0.59, size = 845, normalized size = 3.14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/430080*(105*(9*B*b^7 + 128*A*a^3*c^4 - 96*(2*B*a^3*b + 3*A*a^2*b^2)*c^3
+ 120*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 14*(6*B*a*b^5 + A*b^6)*c)*sqrt(c)*log(-
8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4
*a*c) + 4*(15360*B*c^7*x^6 + 945*B*b^6*c + 1280*(15*B*b*c^6 + 14*A*c^7)*x^5
 - 96*(64*B*a^3 + 189*A*a^2*b)*c^4 + 128*(3*B*b^2*c^5 + 2*(96*B*a + 91*A*b)
*c^6)*x^4 + 112*(147*B*a^2*b^2 + 95*A*a*b^3)*c^3 - 16*(27*B*b^3*c^4 - 1960*
A*a*c^6 - 6*(22*B*a*b + 7*A*b^2)*c^5)*x^3 - 210*(36*B*a*b^4 + 7*A*b^5)*c^2
+ 8*(63*B*b^4*c^3 + 24*(16*B*a^2 + 21*A*a*b)*c^5 - 2*(186*B*a*b^2 + 49*A*b^
3)*c^4)*x^2 - 2*(315*B*b^5*c^2 - 3360*A*a^2*c^5 + 48*(73*B*a^2*b + 63*A*a*b
^2)*c^4 - 14*(156*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6, 1
/215040*(105*(9*B*b^7 + 128*A*a^3*c^4 - 96*(2*B*a^3*b + 3*A*a^2*b^2)*c^3 +
120*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 14*(6*B*a*b^5 + A*b^6)*c)*sqrt(-c)*arctan
(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) +
2*(15360*B*c^7*x^6 + 945*B*b^6*c + 1280*(15*B*b*c^6 + 14*A*c^7)*x^5 - 96*(6
4*B*a^3 + 189*A*a^2*b)*c^4 + 128*(3*B*b^2*c^5 + 2*(96*B*a + 91*A*b)*c^6)*x^
4 + 112*(147*B*a^2*b^2 + 95*A*a*b^3)*c^3 - 16*(27*B*b^3*c^4 - 1960*A*a*c^6
- 6*(22*B*a*b + 7*A*b^2)*c^5)*x^3 - 210*(36*B*a*b^4 + 7*A*b^5)*c^2 + 8*(63*
B*b^4*c^3 + 24*(16*B*a^2 + 21*A*a*b)*c^5 - 2*(186*B*a*b^2 + 49*A*b^3)*c^4)*
x^2 - 2*(315*B*b^5*c^2 - 3360*A*a^2*c^5 + 48*(73*B*a^2*b + 63*A*a*b^2)*c^4
- 14*(156*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6]
```

giac [A] time = 0.24, size = 422, normalized size = 1.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(12*B*c*x + (15*B*b*c^6 + 14
*A*c^7)/c^6)*x + (3*B*b^2*c^5 + 192*B*a*c^6 + 182*A*b*c^6)/c^6)*x - (27*B*b
^3*c^4 - 132*B*a*b*c^5 - 42*A*b^2*c^5 - 1960*A*a*c^6)/c^6)*x + (63*B*b^4*c^
3 - 372*B*a*b^2*c^4 - 98*A*b^3*c^4 + 384*B*a^2*c^5 + 504*A*a*b*c^5)/c^6)*x
- (315*B*b^5*c^2 - 2184*B*a*b^3*c^3 - 490*A*b^4*c^3 + 3504*B*a^2*b*c^4 + 30
24*A*a*b^2*c^4 - 3360*A*a^2*c^5)/c^6)*x + (945*B*b^6*c - 7560*B*a*b^4*c^2 -
 1470*A*b^5*c^2 + 16464*B*a^2*b^2*c^3 + 10640*A*a*b^3*c^3 - 6144*B*a^3*c^4
- 18144*A*a^2*b*c^4)/c^6) + 1/2048*(9*B*b^7 - 84*B*a*b^5*c - 14*A*b^6*c + 2
40*B*a^2*b^3*c^2 + 120*A*a*b^4*c^2 - 192*B*a^3*b*c^3 - 288*A*a^2*b^2*c^3 +
128*A*a^3*c^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))
/c^(11/2)
```

maple [B] time = 0.06, size = 838, normalized size = 3.12

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -3/32*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x*a+1/16*B*b/c^2*a*(c*x^2+b*x+a)^(3/2)*
x+1/8*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)*x*a+3/32*B*b/c^2*a^2*(c*x^2+b*x+a)^(1/2
```

```
)*x+3/40*B*b^2/c^3*(c*x^2+b*x+a)^(5/2)-3/128*B*b^4/c^4*(c*x^2+b*x+a)^(3/2)+
9/1024*B*b^6/c^5*(c*x^2+b*x+a)^(1/2)-1/16*A*a^3/c^(3/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))-3/64*B*b^4/c^4*(c*x^2+b*x+a)^(1/2)*a+1/32*B*b^2/c^
3*a*(c*x^2+b*x+a)^(3/2)+9/64*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*a^2-1/48*A*a/c^2*(c*x^2+b*x+a)^(3/2)*b-15/256*A*b^4/c^(7/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-3/28*B*b/c^2*x*(c*x^2+b*x+a)^(5/
2)+7/96*A*b^2/c^2*(c*x^2+b*x+a)^(3/2)*x-1/16*A*a^2/c*(c*x^2+b*x+a)^(1/2)*x+
3/64*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(1/2)-15/128*B*b^3/c^(7/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-1/24*A*a/c*(c*x^2+b*x+a)^(3/2)*x+9/512*B*b
^5/c^4*(c*x^2+b*x+a)^(1/2)*x-3/64*B*b^3/c^3*(c*x^2+b*x+a)^(3/2)*x-7/256*A*b
^4/c^3*(c*x^2+b*x+a)^(1/2)*x+1/16*A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*a-1/32*A*a^
2/c^2*(c*x^2+b*x+a)^(1/2)*b+21/512*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))*a+3/32*B*b/c^(5/2)*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))+1/6*A*x*(c*x^2+b*x+a)^(5/2)/c-7/60*A*b/c^2*(c*x^2+b*x+a)^(5/2)+7/
192*A*b^3/c^3*(c*x^2+b*x+a)^(3/2)-7/512*A*b^5/c^4*(c*x^2+b*x+a)^(1/2)+7/102
4*A*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/35*B*a/c^2*(c
*x^2+b*x+a)^(5/2)-9/2048*B*b^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+1/7*B*x^2*(c*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2} \left(A + B x\right) \left(a + b x + c x^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.850 $\int x(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=198

$$\frac{\left(b^2-4ac\right)^2\left(-4aBc-12Abc+7b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{9/2}}-\frac{\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-12Ab\right.}{512c^4}$$

Rubi [A] time = 0.09, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(-4aBc-12Abc+7b^2B\right)}{192c^3}-\frac{\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-12Abc+7b^2B\right)}{512c^4}+\frac{\left(b^2-4ac\right)^2\left(-4aBc-12Abc+7b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{9/2}}-\frac{\left(a+bx+cx^2\right)^{5/2}(-12Ac+7bB-10Bcx)}{60c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((b^2 - 4*a*c)*(7*b^2*B - 12*A*b*c - 4*a*B*c)*(b + 2*c*x)*Sqrt[a + b*x + c
*x^2])/(512*c^4) + ((7*b^2*B - 12*A*b*c - 4*a*B*c)*(b + 2*c*x)*(a + b*x + c
*x^2)^(3/2))/(192*c^3) - ((7*b*B - 12*A*c - 10*B*c*x)*(a + b*x + c*x^2)^(5/
2))/(60*c^2) + ((b^2 - 4*a*c)^2*(7*b^2*B - 12*A*b*c - 4*a*B*c)*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(1024*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx=-\frac{(7bB-12Ac-10Bcx)\left(a+bx+cx^2\right)^{5/2}}{60c^2}+\frac{\left(7b^2B-12Abc-4aBc\right)\int\left(a\right.}{24c^2}$$

$$=\frac{\left(7b^2B-12Abc-4aBc\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{192c^3}-\frac{(7bB-12Ac-10B}{6(}$$

$$=-\frac{\left(b^2-4ac\right)\left(7b^2B-12Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^4}+\frac{\left(7b^2B-1\right.}{}$$

$$=-\frac{\left(b^2-4ac\right)\left(7b^2B-12Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^4}+\frac{\left(7b^2B-1\right.}{}$$

$$=-\frac{\left(b^2-4ac\right)\left(7b^2B-12Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^4}+\frac{\left(7b^2B-1\right.}{}$$

Mathematica [A] time = 0.21, size = 156, normalized size = 0.79

$$\frac{\frac{5\left(-4aBc-12Abc+7b^2B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{256c^{5/2}}+(a+x(b+cx))^{5/2}(2c(6A+5Bx)-7bB)}{60c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((-7*b*B + 2*c*(6*A + 5*B*x))*(a + x*(b + c*x))^(5/2) + (5*(7*b^2*B - 12*A*
b*c - 4*a*B*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c
*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c
]*Sqrt[a + x*(b + c*x)])]))/(256*c^(5/2)))/(60*c^2)
```

IntegrateAlgebraic [A] time = 1.26, size = 326, normalized size = 1.65

$$\frac{\sqrt{a+bx+cx^2}\left(1536a^2Ac^3-1296a^2bBc^2+480a^2Bc^3x-1200aAb^2c^2+672aAbc^3x+3072aAc^4x^2+760ab^3Bc-432ab^2Bc^2x+288abBc^3x^2+2240aBc^4x^3+180Ab^4c-120Ab^3c^2x+96Ab^2c^3x^2+2112Abc^4x^3+1536Ac^5x^4-105b^5B+70b^4Bcx-56b^3Bc^2x^2+48b^2Bc^3x^3+1664bBc^4x^4+1280Bc^5x^5\right)}{7680c^4}+\frac{\left(64a^3Bc^3+192a^2Abc^3-144a^2b^2Bc^2-96aAb^3c^2+60ab^4Bc+12Ab^5c-7b^6B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{1024c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-105*b^5*B + 180*A*b^4*c + 760*a*b^3*B*c - 1200*a*A
*b^2*c^2 - 1296*a^2*b*B*c^2 + 1536*a^2*A*c^3 + 70*b^4*B*c*x - 120*A*b^3*c^2
*x - 432*a*b^2*B*c^2*x + 672*a*A*b*c^3*x + 480*a^2*B*c^3*x - 56*b^3*B*c^2*x
^2 + 96*A*b^2*c^3*x^2 + 288*a*b*B*c^3*x^2 + 3072*a*A*c^4*x^2 + 48*b^2*B*c^3
*x^3 + 2112*A*b*c^4*x^3 + 2240*a*B*c^4*x^3 + 1664*b*B*c^4*x^4 + 1536*A*c^5*
x^4 + 1280*B*c^5*x^5))/(7680*c^4) + ((-7*b^6*B + 12*A*b^5*c + 60*a*b^4*B*c
- 96*a*A*b^3*c^2 - 144*a^2*b^2*B*c^2 + 192*a^2*A*b*c^3 + 64*a^3*B*c^3)*Log[
b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(1024*c^(9/2))
```

fricas [A] time = 0.53, size = 669, normalized size = 3.38

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/30720*(15*(7*B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 48*(3*B*a^2*b^2 + 2*A
*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x -
b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1280*B*c^6*
x^5 - 105*B*b^5*c + 1536*A*a^2*c^4 + 128*(13*B*b*c^5 + 12*A*c^6)*x^4 - 48*(
```

```
27*B*a^2*b + 25*A*a*b^2)*c^3 + 16*(3*B*b^2*c^4 + 4*(35*B*a + 33*A*b)*c^5)*x
^3 + 20*(38*B*a*b^3 + 9*A*b^4)*c^2 - 8*(7*B*b^3*c^3 - 384*A*a*c^5 - 12*(3*B
*a*b + A*b^2)*c^4)*x^2 + 2*(35*B*b^4*c^2 + 48*(5*B*a^2 + 7*A*a*b)*c^4 - 12*
(18*B*a*b^2 + 5*A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/15360*(15*(7*
B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 48*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 12*
(5*B*a*b^4 + A*b^5)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b
)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(1280*B*c^6*x^5 - 105*B*b^5*c + 153
6*A*a^2*c^4 + 128*(13*B*b*c^5 + 12*A*c^6)*x^4 - 48*(27*B*a^2*b + 25*A*a*b^2
)*c^3 + 16*(3*B*b^2*c^4 + 4*(35*B*a + 33*A*b)*c^5)*x^3 + 20*(38*B*a*b^3 + 9
*A*b^4)*c^2 - 8*(7*B*b^3*c^3 - 384*A*a*c^5 - 12*(3*B*a*b + A*b^2)*c^4)*x^2
+ 2*(35*B*b^4*c^2 + 48*(5*B*a^2 + 7*A*a*b)*c^4 - 12*(18*B*a*b^2 + 5*A*b^3)*
c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [A]   time = 0.27, size = 332, normalized size = 1.68

$$\frac{1}{7680}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\,Bcx+\frac{13\,Bbc^5+12\,Ac^6}{c^5}\right)x+\frac{3\,Bb^2c^4+140\,Bac^5+132\,Abc^5}{c^5}\right)x-\frac{7\,Bb^3c^3-36\,Babc^4-12\,Ab^2c^4-384\,Aac^5}{c^5}\right)x+\frac{35\,Bb^4c^2-216\,Bab^2c^3-60\,Ab^3c^3+240\,Ba^2c^4+336\,Aabc^4}{c^5}\right)x-\frac{105\,Bb^5c-760\,Bab^3c^2-180\,Ab^4c^2+1296\,Ba^2bc^3+1200\,Aab^2c^3-1536\,Aa^2c^4}{c^5}\right)-\frac{\left(7\,Bb^6-60\,Bab^4c-12\,Ab^5c+144\,Ba^2b^2c^2+96\,Aab^3c^2-64\,Ba^3c^3-192\,Aa^2bc^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{1024\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*B*c*x + (13*B*b*c^5 + 12*A*c^6
)/c^5)*x + (3*B*b^2*c^4 + 140*B*a*c^5 + 132*A*b*c^5)/c^5)*x - (7*B*b^3*c^3
- 36*B*a*b*c^4 - 12*A*b^2*c^4 - 384*A*a*c^5)/c^5)*x + (35*B*b^4*c^2 - 216*B
*a*b^2*c^3 - 60*A*b^3*c^3 + 240*B*a^2*c^4 + 336*A*a*b*c^4)/c^5)*x - (105*B*
b^5*c - 760*B*a*b^3*c^2 - 180*A*b^4*c^2 + 1296*B*a^2*b*c^3 + 1200*A*a*b^2*c
^3 - 1536*A*a^2*c^4)/c^5) - 1/1024*(7*B*b^6 - 60*B*a*b^4*c - 12*A*b^5*c + 1
44*B*a^2*b^2*c^2 + 96*A*a*b^3*c^2 - 64*B*a^3*c^3 - 192*A*a^2*b*c^3)*log(abs
(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B]   time = 0.05, size = 644, normalized size = 3.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -3/16*A*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-1/8*A*b/c
*x*(c*x^2+b*x+a)^(3/2)+3/64*A*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x-1/16*B*a^2/c*(c
*x^2+b*x+a)^(1/2)*x-1/32*B*a^2/c^2*(c*x^2+b*x+a)^(1/2)*b-1/48*B*a/c^2*(c*x^
2+b*x+a)^(3/2)*b-15/256*B*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))*a-1/24*B*a/c*x*(c*x^2+b*x+a)^(3/2)+9/64*B*b^2/c^(5/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-7/256*B*b^4/c^3*(c*x^2+b*x+a)^(1/2)*x+1/1
6*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*a+7/96*B*b^2/c^2*x*(c*x^2+b*x+a)^(3/2)+1/8*
B*b^2/c^2*(c*x^2+b*x+a)^(1/2)*x*a-3/16*A*b/c*(c*x^2+b*x+a)^(1/2)*x*a+7/192*
B*b^3/c^3*(c*x^2+b*x+a)^(3/2)+1/6*B*x*(c*x^2+b*x+a)^(5/2)/c-7/60*B*b/c^2*(c
*x^2+b*x+a)^(5/2)-7/512*B*b^5/c^4*(c*x^2+b*x+a)^(1/2)+7/1024*B*b^6/c^(9/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/16*B*a^3/c^(3/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/16*A*b^2/c^2*(c*x^2+b*x+a)^(3/2)+3/128*A*
b^4/c^3*(c*x^2+b*x+a)^(1/2)-3/256*A*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))-3/32*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)*a+3/32*A*b^3/c^(5/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+1/5*A*(c*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.851 $\int (A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=158

$$-\frac{3\left(b^2-4ac\right)^2(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{7/2}}+\frac{3\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{(b+2cx)\left(a\right.}{}$$

Rubi [A] time = 0.07, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$\frac{3\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{3\left(b^2-4ac\right)^2(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{7/2}}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+\frac{B\left(a+bx+cx^2\right)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (3*(b^2 - 4*a*c)*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(128*c^3)
 - ((b*B - 2*A*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(16*c^2) + (B*(a + b
*x + c*x^2)^(5/2))/(5*c) - (3*(b^2 - 4*a*c)^2*(b*B - 2*A*c)*ArcTanh[(b + 2*
c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(a+bx+cx^2\right)^{3/2}dx = \frac{B\left(a+bx+cx^2\right)^{5/2}}{5c}+\frac{(-bB+2Ac)\int\left(a+bx+cx^2\right)^{3/2}dx}{2c}$$
$$= -\frac{(bB-2Ac)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{16c^2}+\frac{B\left(a+bx+cx^2\right)^{5/2}}{5c}+\frac{\left(3\left(b^2-4\right.\right.}{}$$
$$= \frac{3\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{128c^3}-\frac{(bB-2Ac)(b+2cx)\left(a\right.}{16c^2}$$
$$= \frac{3\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{128c^3}-\frac{(bB-2Ac)(b+2cx)\left(a\right.}{16c^2}$$
$$= \frac{3\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{128c^3}-\frac{(bB-2Ac)(b+2cx)\left(a\right.}{16c^2}$$

Mathematica [A] time = 0.28, size = 144, normalized size = 0.91

$$\frac{5(2Ac-bB)\left(\frac{3\left(b^2-4ac\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{128c^{5/2}}+\frac{(b+2cx)(a+x(b+cx))^{3/2}}{8c}\right)+2B(a+x(b+cx))^{5/2}}{10c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*B*(a + x*(b + c*x))^(5/2) + 5*(-(b*B) + 2*A*c)*(((b + 2*c*x)*(a + x*(b +
 c*x))^(3/2))/(8*c) + (3*(b^2 - 4*a*c)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(
b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*
x)])]))/(128*c^(5/2))))/(10*c)
```

IntegrateAlgebraic [A] time = 0.85, size = 243, normalized size = 1.54

$$\frac{\sqrt{a+bx+cx^2}\left(128a^2Bc^2+200aAbc^2+400aAc^3x-100ab^2Bc+56abBc^2x+256aBc^3x^2-30Ab^3c+20Ab^2c^2x+240Abc^3x^2+160Ac^4x^3+15b^4B-10b^3Bcx+8b^2Bc^2x^2+176bBc^3x^3+128Bc^4x^4\right)}{640c^3}+\frac{3\left(-32a^2Ac^3+16a^2bBc^2+16aAb^2c^2-8ab^3Bc-2Ab^4c+b^5B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{256c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(15*b^4*B - 30*A*b^3*c - 100*a*b^2*B*c + 200*a*A*b*c
^2 + 128*a^2*B*c^2 - 10*b^3*B*c*x + 20*A*b^2*c^2*x + 56*a*b*B*c^2*x + 400*a
*A*c^3*x + 8*b^2*B*c^2*x^2 + 240*A*b*c^3*x^2 + 256*a*B*c^3*x^2 + 176*b*B*c^
3*x^3 + 160*A*c^4*x^3 + 128*B*c^4*x^4))/(640*c^3) + (3*(b^5*B - 2*A*b^4*c -
 8*a*b^3*B*c + 16*a*A*b^2*c^2 + 16*a^2*b*B*c^2 - 32*a^2*A*c^3)*Log[b + 2*c*
x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(256*c^(7/2))
```

fricas [A] time = 0.47, size = 515, normalized size = 3.26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2560*(15*(B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b + A*a*b^2)*c^2 - 2*(4*B*a*b
^3 + A*b^4)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x
+ a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(128*B*c^5*x^4 + 15*B*b^4*c + 8*(16*B
*a^2 + 25*A*a*b)*c^3 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 - 10*(10*B*a*b^2 + 3*
A*b^3)*c^2 + 8*(B*b^2*c^3 + 2*(16*B*a + 15*A*b)*c^4)*x^2 - 2*(5*B*b^3*c^2 -
```

```
 200*A*a*c^4 - 2*(14*B*a*b + 5*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1
/1280*(15*(B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b + A*a*b^2)*c^2 - 2*(4*B*a*b^3
 + A*b^4)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)
/(c^2*x^2 + b*c*x + a*c)) + 2*(128*B*c^5*x^4 + 15*B*b^4*c + 8*(16*B*a^2 + 2
5*A*a*b)*c^3 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 - 10*(10*B*a*b^2 + 3*A*b^3)*c
^2 + 8*(B*b^2*c^3 + 2*(16*B*a + 15*A*b)*c^4)*x^2 - 2*(5*B*b^3*c^2 - 200*A*a
*c^4 - 2*(14*B*a*b + 5*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.23, size = 251, normalized size = 1.59

$$\frac{1}{640}\,\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\,Bcx+\frac{11\,Bbc^4+10\,Ac^5}{c^4}\right)x+\frac{Bb^2c^3+32\,Bac^4+30\,Abc^4}{c^4}\right)x-\frac{5\,Bb^3c^2-28\,Babc^3-10\,Ab^2c^3-200\,Aac^4}{c^4}\right)x+\frac{15\,Bb^4c-100\,Bab^2c^2-30\,Ab^3c^2+128\,Ba^2c^3+200\,Aabc^3}{c^4}\right)+\frac{3\left(Bb^5-8\,Bab^3c-2\,Ab^4c+16\,Ba^2bc^2+16\,Aab^2c^2-32\,Aa^2c^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{256\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/640*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*B*c*x + (11*B*b*c^4 + 10*A*c^5)/c^4
)*x + (B*b^2*c^3 + 32*B*a*c^4 + 30*A*b*c^4)/c^4)*x - (5*B*b^3*c^2 - 28*B*a*
b*c^3 - 10*A*b^2*c^3 - 200*A*a*c^4)/c^4)*x + (15*B*b^4*c - 100*B*a*b^2*c^2
- 30*A*b^3*c^2 + 128*B*a^2*c^3 + 200*A*a*b*c^3)/c^4) + 3/256*(B*b^5 - 8*B*a
*b^3*c - 2*A*b^4*c + 16*B*a^2*b*c^2 + 16*A*a*b^2*c^2 - 32*A*a^2*c^3)*log(ab
s(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 469, normalized size = 2.97

$$\frac{3Aa^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8\sqrt{c}}-\frac{3Aab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3Ab^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{128c^{\frac{5}{2}}}-\frac{3Ba^2b\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3Bab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{32c^{\frac{5}{2}}}-\frac{3Bb^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{256c^{\frac{7}{2}}}+\frac{3\sqrt{cx^2+bx+a}\,Aax}{8}-\frac{3\sqrt{cx^2+bx+a}\,Ab^2x}{32c}-\frac{3\sqrt{cx^2+bx+a}\,Babx}{16c}+\frac{3\sqrt{cx^2+bx+a}\,Bb^3x}{64c^2}+\frac{3\sqrt{cx^2+bx+a}\,Aab}{16c}-\frac{3\sqrt{cx^2+bx+a}\,Ab^3}{64c^2}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ax}{4}-\frac{3\sqrt{cx^2+bx+a}\,Bab^2}{32c^2}+\frac{3\sqrt{cx^2+bx+a}\,Bb^4}{128c^3}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bbx}{8c}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab}{8c}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb^2}{16c^2}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}B}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 1/5*B*(c*x^2+b*x+a)^(5/2)/c-1/8*B*b/c*x*(c*x^2+b*x+a)^(3/2)-1/16*B*b^2/c^2*
(c*x^2+b*x+a)^(3/2)-3/16*B*b/c*(c*x^2+b*x+a)^(1/2)*x*a+3/64*B*b^3/c^2*(c*x^
2+b*x+a)^(1/2)*x-3/32*B*b^2/c^2*(c*x^2+b*x+a)^(1/2)*a+3/128*B*b^4/c^3*(c*x^
2+b*x+a)^(1/2)-3/16*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
*a^2+3/32*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-3/256
*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/4*A*x*(c*x^2+b
*x+a)^(3/2)+1/8*A/c*(c*x^2+b*x+a)^(3/2)*b+3/8*A*(c*x^2+b*x+a)^(1/2)*x*a-3/3
2*A/c*(c*x^2+b*x+a)^(1/2)*x*b^2+3/16*A/c*(c*x^2+b*x+a)^(1/2)*b*a-3/64*A/c^2
*(c*x^2+b*x+a)^(1/2)*b^3+3/8*A/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))*a^2-3/16*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^2*
a+3/128*A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.61, size = 305, normalized size = 1.93

$$\frac{B\left(cx^2+bx+a\right)^{5/2}}{5c}+\frac{A\left(\left(\frac{x}{2}+\frac{b}{4c}\right)\sqrt{cx^2+bx+a}+\frac{\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)\left(ac-\frac{b^2}{4}\right)}{2c^{3/2}}\right)\left(3ac-\frac{3b^2}{4}\right)}{4c}-\frac{Bb\left(\frac{3a\left(\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)\left(\frac{a}{2\sqrt{c}}-\frac{b^2}{8c^{3/2}}\right)+\frac{(b+2cx)\sqrt{cx^2+bx+a}}{4c}\right)}{4}+\frac{x\left(cx^2+bx+a\right)^{3/2}}{4}+\frac{b\left(cx^2+bx+a\right)^{3/2}}{8c}-\frac{3b^2\left(\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)\left(\frac{a}{2\sqrt{c}}-\frac{b^2}{8c^{3/2}}\right)+\frac{(b+2cx)\sqrt{cx^2+bx+a}}{4c}\right)}{16c}\right)}{2c}+\frac{A\left(\frac{b}{2}+cx\right)\left(cx^2+bx+a\right)^{3/2}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*(a + b*x + c*x^2)^(5/2))/(5*c) + (A*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(
1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(
2*c^(3/2)))*(3*a*c - (3*b^2)/4))/(4*c) - (B*b*((3*a*(log((b/2 + c*x)/c^(1/2
) + (a + b*x + c*x^2)^(1/2))*(a/(2*c^(1/2)) - b^2/(8*c^(3/2))) + ((b + 2*c*
x)*(a + b*x + c*x^2)^(1/2))/(4*c)))/4 + (x*(a + b*x + c*x^2)^(3/2))/4 + (b*
(a + b*x + c*x^2)^(3/2))/(8*c) - (3*b^2*(log((b/2 + c*x)/c^(1/2) + (a + b*x
 + c*x^2)^(1/2))*(a/(2*c^(1/2)) - b^2/(8*c^(3/2))) + ((b + 2*c*x)*(a + b*x
+ c*x^2)^(1/2))/(4*c)))/(16*c)))/(2*c) + (A*(b/2 + c*x)*(a + b*x + c*x^2)^(
3/2))/(4*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx) \left(a + bx + cx^2\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.852 $\int \frac{(A+Bx)(a+bx+cx^2)^{3/2}}{x} dx$

Optimal. Leaf size=218

$$a^{3/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)+\frac{\left((b^2-4ac)\left(-12aBc-8Abc+3b^2B\right)+64aAbc^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{5/2}}$$

Rubi [A] time = 0.25, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {814, 843, 621, 206, 724}

$$a^{3/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)-\frac{\sqrt{a+bx+cx^2}\left(2cx\left(-12aBc-8Abc+3b^2B\right)-64aAc^2-12abBc-8Ab^2c+3b^3B\right)}{64c^2}+\frac{\left((b^2-4ac)\left(-12aBc-8Abc+3b^2B\right)+64aAbc^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{5/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(8Ac+3bB+6Bcx)}{24c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] -((3*b^3*B - 8*A*b^2*c - 12*a*b*B*c - 64*a*A*c^2 + 2*c*(3*b^2*B - 8*A*b*c -
 12*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(64*c^2) + ((3*b*B + 8*A*c + 6*B*c*x)*
(a + b*x + c*x^2)^(3/2))/(24*c) - a^(3/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*
Sqrt[a + b*x + c*x^2])] + ((64*a*A*b*c^2 + (b^2 - 4*a*c)*(3*b^2*B - 8*A*b*c
 - 12*a*B*c))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(128*
c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x}\,dx = \frac{(3bB+8Ac+6Bcx)\left(a+bx+cx^2\right)^{3/2}}{24c} - \int \frac{\frac{\left(-8aAc-\frac{1}{2}\left(8Abc-3B\left(b^2-4ac\right)\right)x\right)\sqrt{a+bx}}{x}}{8c}$$

$$= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+}}{64c^2}$$

$$= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+}}{64c^2}$$

$$= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+}}{64c^2}$$

$$= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+}}{64c^2}$$

Mathematica [A] time = 0.34, size = 206, normalized size = 0.94

$$a^{3/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)+\frac{\left(48a^2Bc^2+96aAbc^2-24ab^2Bc-8Ab^3c+3b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{128c^{5/2}}+\frac{\sqrt{a+x(b+cx)}\left(4bc(15aB+2cx(14A+9Bx))+8c^2\left(32aA+15aBx+8Acx^2+6Bcx^3\right)+6b^2c(4A+Bx)-9b^3B\right)}{192c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-9*b^3*B + 6*b^2*c*(4*A + B*x) + 8*c^2*(32*a*A + 15
*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + 4*b*c*(15*a*B + 2*c*x*(14*A + 9*B*x))))/(
192*c^2) - a^(3/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]
 + ((3*b^4*B - 8*A*b^3*c - 24*a*b^2*B*c + 96*a*A*b*c^2 + 48*a^2*B*c^2)*ArcT
anh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(128*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.95, size = 226, normalized size = 1.04

$$2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)+\frac{\left(-48a^2Bc^2-96aAbc^2+24ab^2Bc+8Ab^3c-3b^4B\right)\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{128c^{5/2}}+\frac{\sqrt{a+bx+cx^2}\left(256aAc^2+60abBc+120aBc^2x+24Ab^2c+112Abc^2x+64Ac^3x^2-9b^3B+6b^2Bcx+72bBc^2x^2+48Bc^3x^3\right)}{192c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-9*b^3*B + 24*A*b^2*c + 60*a*b*B*c + 256*a*A*c^2 +
6*b^2*B*c*x + 112*A*b*c^2*x + 120*a*B*c^2*x + 72*b*B*c^2*x^2 + 64*A*c^3*x^2
 + 48*B*c^3*x^3))/(192*c^2) + 2*a^(3/2)*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqr
t[a + b*x + c*x^2]/Sqrt[a]] + ((-3*b^4*B + 8*A*b^3*c + 24*a*b^2*B*c - 96*a*
A*b*c^2 - 48*a^2*B*c^2)*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^
2]])/(128*c^(5/2))
```

fricas [A] time = 5.17, size = 1023, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [1/768*(384*A*a^(3/2)*c^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2
+ b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 3*(3*B*b^4 + 48*(B*a^2 + 2*A
*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 -
 9*B*b^3*c + 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*A*
c^4)*x^2 + 2*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x +
a))/c^3, 1/384*(192*A*a^(3/2)*c^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 3*(3*B*b^4 + 48*(B*a
^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2
 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*B*c^4*x^3
 - 9*B*b^3*c + 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*
A*c^4)*x^2 + 2*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x
+ a))/c^3, 1/768*(768*A*sqrt(-a)*a*c^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*
x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 3*(3*B*b^4 + 48*(B*a^2 + 2*A*a
*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 -
 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 - 9
*B*b^3*c + 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*A*c^
4)*x^2 + 2*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a)
)/c^3, 1/384*(384*A*sqrt(-a)*a*c^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 3*(3*B*b^4 + 48*(B*a^2 + 2*A*a*b)*
c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2
*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*B*c^4*x^3 - 9*B*b^3*c +
 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*A*c^4)*x^2 + 2
*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, replacing 0 by ` u`, a substitution
 variable should perhaps be purged.Warning, replacing 0 by ` u`, a substitu
tion variable should perhaps be purged.Warning, replacing 0 by ` u`, a subs
titution variable should perhaps be purged.index.cc index_m operator + Erro
r: Bad Argument Value
```

maple [B] time = 0.05, size = 390, normalized size = 1.79

$$-A a^{\frac{3}{2}} \ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)+\frac{3Aab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{4\sqrt{c}}-\frac{A b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3B a^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{8\sqrt{c}}-\frac{3Ba b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3B b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{128c^{\frac{5}{2}}}+\frac{\sqrt{c x^2+bx+a}\,Abx}{4}+\frac{3\sqrt{c x^2+bx+a}\,Bax}{8}-\frac{3\sqrt{c x^2+bx+a}\,B b^2x}{32c}+\sqrt{c x^2+bx+a}\,Aa+\frac{\sqrt{c x^2+bx+a}\,A b^2}{8c}+\frac{3\sqrt{c x^2+bx+a}\,Bab}{16c}-\frac{3\sqrt{c x^2+bx+a}\,B b^3}{64c^2}+\frac{\left(c x^2+bx+a\right)^{\frac{3}{2}} Bx}{4}+\frac{\left(c x^2+bx+a\right)^{\frac{3}{2}} A}{3}+\frac{\left(c x^2+bx+a\right)^{\frac{3}{2}} Bb}{8c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x+a)^(3/2)+1/8*B/c*(c*x^2+b*x+a)^(3/2)*b+3/8*B*(c*x^2+b*x+
a)^(1/2)*x*a-3/32*B/c*(c*x^2+b*x+a)^(1/2)*x*b^2+3/16*B/c*(c*x^2+b*x+a)^(1/2
)*b*a-3/64*B/c^2*(c*x^2+b*x+a)^(1/2)*b^3+3/8*B/c^(1/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))*a^2-3/16*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*b^2*a+3/128*B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*b^4+1/3*A*(c*x^2+b*x+a)^(3/2)+1/4*A*b*(c*x^2+b*x+a)^(1/2)*x+1/8*A/c*(c*x
^2+b*x+a)^(1/2)*b^2+3/4*A*b/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*a-1/16*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^3+A*a*(
c*x^2+b*x+a)^(1/2)-A*a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x, x)
```

3.853 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=193

$$\frac{\sqrt{a+bx+cx^2}\left(8aBc+2cx(6Ac+bB)+18Abc+b^2B\right)}{8c}-\frac{\left(-24aAc^2-12abBc-6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+}}\right.}{16c^{3/2}}$$

Rubi [A] time = 0.18, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{\left(-24aAc^2-12abBc-6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\left(8aBc+2cx(6Ac+bB)+18Abc+b^2B\right)}{8c}-\frac{(3A-Bx)\left(a+bx+cx^2\right)^{3/2}}{3x}-\frac{1}{2}\sqrt{a}(2aB+3Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((b^2*B + 18*A*b*c + 8*a*B*c + 2*c*(b*B + 6*A*c)*x)*Sqrt[a + b*x + c*x^2])/
(8*c) - ((3*A - B*x)*(a + b*x + c*x^2)^(3/2))/(3*x) - (Sqrt[a]*(3*A*b + 2*a
*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/2 - ((b^3*B - 6
*A*b^2*c - 12*a*b*B*c - 24*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
 b*x + c*x^2])])/(16*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^2}\,dx = -\frac{(3A-Bx)\left(a+bx+cx^2\right)^{3/2}}{3x} - \frac{1}{2}\int \frac{(-3Ab-2aB-(bB+6Ac)x)\sqrt{a+b\cdots}}{x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+\cdots\right.}{3x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+\cdots\right.}{3x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+\cdots\right.}{3x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+\cdots\right.}{3x}$$

Mathematica [A] time = 0.32, size = 183, normalized size = 0.95

$$\frac{1}{48}\left(\frac{2\sqrt{a+x(b+cx)}\left(x\left(2bc(15A+7Bx)+4c^2x(3A+2Bx)+3b^2B\right)-8ac(3A-4Bx)\right)}{cx}+\frac{3\left(24aAc^2+12abBc+6Ab^2c+b^3(-B)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{c^{3/2}}-24\sqrt{a}(2aB+3Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((2*Sqrt[a + x*(b + c*x)]*(-8*a*c*(3*A - 4*B*x) + x*(3*b^2*B + 4*c^2*x*(3*A
 + 2*B*x) + 2*b*c*(15*A + 7*B*x))))/(c*x) - 24*Sqrt[a]*(3*A*b + 2*a*B)*ArcT
anh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])] + (3*(-(b^3*B) + 6*A*b^2
*c + 12*a*b*B*c + 24*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b
+ c*x)])])/c^(3/2))/48
```

IntegrateAlgebraic [A] time = 1.00, size = 197, normalized size = 1.02

$$\left(2a^{3/2}B+3\sqrt{a}\,Ab\right)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)+\frac{\sqrt{a+bx+cx^2}\left(-24aAc+32aBcx+30Abcx+12Ac^2x^2+3b^2Bx+14bBcx^2+8Bc^2x^3\right)}{24cx}+\frac{\left(-24aAc^2-12abBc-6Ab^2c+b^3B\right)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{16c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-24*a*A*c + 3*b^2*B*x + 30*A*b*c*x + 32*a*B*c*x + 1
4*b*B*c*x^2 + 12*A*c^2*x^2 + 8*B*c^2*x^3))/(24*c*x) + (3*Sqrt[a]*A*b + 2*a^
(3/2)*B)*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]] + ((b
^3*B - 6*A*b^2*c - 12*a*b*B*c - 24*a*A*c^2)*Log[b*c + 2*c^2*x - 2*c^(3/2)*S
qrt[a + b*x + c*x^2]])/(16*c^(3/2))
```

fricas [A] time = 2.34, size = 917, normalized size = 4.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/96*(24*(2*B*a + 3*A*b)*sqrt(a)*c^2*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 -
 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 3*(B*b^3 - 24*
A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 -
 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(8*B*c^3*x^3 - 24
*A*a*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2 + (3*B*b^2*c + 2*(16*B*a + 15*A*b)*c
^2)*x)*sqrt(c*x^2 + b*x + a))/(c^2*x), 1/48*(12*(2*B*a + 3*A*b)*sqrt(a)*c^2
*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*
sqrt(a) + 8*a^2)/x^2) + 3*(B*b^3 - 24*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt
(-c)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c
*x + a*c)) + 2*(8*B*c^3*x^3 - 24*A*a*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2 + (3
*B*b^2*c + 2*(16*B*a + 15*A*b)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^2*x), 1/96
*(48*(2*B*a + 3*A*b)*sqrt(-a)*c^2*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 3*(B*b^3 - 24*A*a*c^2 - 6*(2*B*a*
b + A*b^2)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(8*B*c^3*x^3 - 24*A*a*c^2 + 2*(7*B*b
*c^2 + 6*A*c^3)*x^2 + (3*B*b^2*c + 2*(16*B*a + 15*A*b)*c^2)*x)*sqrt(c*x^2 +
 b*x + a))/(c^2*x), 1/48*(24*(2*B*a + 3*A*b)*sqrt(-a)*c^2*x*arctan(1/2*sqrt
(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 3*(B*b^3
- 24*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt(-c)*x*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(8*B*c^3*x^3 - 24*
A*a*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2 + (3*B*b^2*c + 2*(16*B*a + 15*A*b)*c^
2)*x)*sqrt(c*x^2 + b*x + a))/(c^2*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,0,0,0]%%%}+%%%{%%{[-2,0]:[1,0,
%%%{-1,[1]%%%}]%%},[2,0,1,0,0]%%%}+%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,
0,2,0,0]%%%} / %%%{%%%{1,[1]%%%},[4,0,0,0,0]%%%}+%%%{%%%{-2,[1]%%%},[2,0,1,
0,0]%%%}+%%%{%%%{1,[1]%%%},[0,0,2,0,0]%%%} Error: Bad Argument Value
```

maple [B] time = 0.06, size = 365, normalized size = 1.89

$$\frac{3Aa\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{2}-\frac{3A\sqrt{a}\,b\ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{2}+\frac{3Ab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{8\sqrt{c}}-B a^{\frac{3}{2}}\ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)+\frac{3Bab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{4\sqrt{c}}-\frac{Bb^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3\sqrt{c x^2+bx+a}\,Acx}{2}+\frac{\sqrt{c x^2+bx+a}\,Bbx}{4}+\frac{\left(c x^2+bx+a\right)^{\frac{3}{2}}Acx}{a}+\frac{9\sqrt{c x^2+bx+a}\,Ab}{4}+\sqrt{c x^2+bx+a}\,Ba+\frac{\sqrt{c x^2+bx+a}\,Bb^2}{8c}+\frac{\left(c x^2+bx+a\right)^{\frac{3}{2}}Ab}{a}+\frac{\left(c x^2+bx+a\right)^{\frac{3}{2}}B}{3}-\frac{\left(c x^2+bx+a\right)^{\frac{5}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+b*x+a)^(5/2)+A/a*b*(c*x^2+b*x+a)^(3/2)+3/8*A*b^2/c^(1/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+9/4*A*b*(c*x^2+b*x+a)^(1/2)-3/2*A*a
^(1/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+A*c/a*(c*x^2+b*x+a)^
(3/2)*x+3/2*A*c*(c*x^2+b*x+a)^(1/2)*x+3/2*A*c^(1/2)*a*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))+1/3*B*(c*x^2+b*x+a)^(3/2)+1/4*B*b*(c*x^2+b*x+a)^(1/2
)*x+1/8*B/c*(c*x^2+b*x+a)^(1/2)*b^2+3/4*B*b/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x+a)^(1/2))*a-1/16*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))*b^3+B*a*(c*x^2+b*x+a)^(1/2)-B*a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1
/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**2, x)
```

3.854 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=179

$$-\frac{3\left(A\left(4ac+b^2\right)+4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{a}}+\frac{3\left(4aBc+4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{c}}-\frac{(A-Bx)\left(a\right.}{2}$$

Rubi [A] time = 0.17, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {812, 843, 621, 206, 724}

$$-\frac{3\left(A\left(4ac+b^2\right)+4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{a}}+\frac{3\left(4aBc+4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{c}}-\frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2}-\frac{3\sqrt{a+bx+cx^2}\,(2aB-x(2Ac+bB)+Ab)}{4x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (-3*(A*b + 2*a*B - (b*B + 2*A*c)*x)*Sqrt[a + b*x + c*x^2])/(4*x) - ((A - B*
x)*(a + b*x + c*x^2)^(3/2))/(2*x^2) - (3*(4*a*b*B + A*(b^2 + 4*a*c))*ArcTan
h[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(8*Sqrt[a]) + (3*(b^2*B +
 4*A*b*c + 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])
/(8*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^3}\,dx = -\frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2} - \frac{3}{8}\int \frac{(-2(Ab+2aB)-2(bB+2Ac)x)\sqrt{a+}}{x^2}$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2}$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2}$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2}$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2}$$

Mathematica [A] time = 0.44, size = 162, normalized size = 0.91

$$\frac{1}{8}\left(-\frac{3\left(A\left(4ac+b^2\right)+4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{\sqrt{a}}+\frac{3\left(4aBc+4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}}+\frac{2\sqrt{a+x(b+cx)}\,(x(A(4cx-5b)+Bx(5b+2cx))-2a(A+2Bx))}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] ((2*Sqrt[a + x*(b + c*x)]*(-2*a*(A + 2*B*x) + x*(B*x*(5*b + 2*c*x) + A*(-5*
b + 4*c*x))))/x^2 - (3*(4*a*b*B + A*(b^2 + 4*a*c))*ArcTanh[(2*a + b*x)/(2*S
qrt[a]*Sqrt[a + x*(b + c*x)])])/Sqrt[a] + (3*(b^2*B + 4*A*b*c + 4*a*B*c)*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c])/8
```

IntegrateAlgebraic [A] time = 1.28, size = 166, normalized size = 0.93

$$-\frac{3\left(4aBc+4Abc+b^2B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{8\sqrt{c}}-\frac{3\left(4aAc+4abB+Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{4\sqrt{a}}+\frac{\sqrt{a+bx+cx^2}\left(-2aA-4aBx-5Abx+4Acx^2+5bBx^2+2Bcx^3\right)}{4x^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-2*a*A - 5*A*b*x - 4*a*B*x + 5*b*B*x^2 + 4*A*c*x^2
+ 2*B*c*x^3))/(4*x^2) - (3*(A*b^2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(-(Sqrt[c]*x
) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(4*Sqrt[a]) - (3*(b^2*B + 4*A*b*c + 4*
a*B*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(8*Sqrt[c])
```

fricas [A] time = 1.90, size = 921, normalized size = 5.15

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/16*(3*(B*a*b^2 + 4*(B*a^2 + A*a*b)*c)*sqrt(c)*x^2*log(-8*c^2*x^2 - 8*b*c
*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 3*(4*A*a*
c^2 + (4*B*a*b + A*b^2)*c)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 -
4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(2*B*a*c^2*x^
3 - 2*A*a^2*c - (4*B*a^2 + 5*A*a*b)*c*x + (5*B*a*b*c + 4*A*a*c^2)*x^2)*sqrt
(c*x^2 + b*x + a))/(a*c*x^2), -1/16*(6*(B*a*b^2 + 4*(B*a^2 + A*a*b)*c)*sqrt
(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b
*c*x + a*c)) - 3*(4*A*a*c^2 + (4*B*a*b + A*b^2)*c)*sqrt(a)*x^2*log(-(8*a*b*
x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2
)/x^2) - 4*(2*B*a*c^2*x^3 - 2*A*a^2*c - (4*B*a^2 + 5*A*a*b)*c*x + (5*B*a*b*
c + 4*A*a*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^2), 1/16*(6*(4*A*a*c^2 +
(4*B*a*b + A*b^2)*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2
*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 3*(B*a*b^2 + 4*(B*a^2 + A*a*b)*c)*s
qrt(c)*x^2*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x
+ b)*sqrt(c) - 4*a*c) + 4*(2*B*a*c^2*x^3 - 2*A*a^2*c - (4*B*a^2 + 5*A*a*b)*
c*x + (5*B*a*b*c + 4*A*a*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^2), 1/8*(3
*(4*A*a*c^2 + (4*B*a*b + A*b^2)*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 3*(B*a*b^2 + 4*(B*a^2
 + A*a*b)*c)*sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt
(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(2*B*a*c^2*x^3 - 2*A*a^2*c - (4*B*a^2 + 5
*A*a*b)*c*x + (5*B*a*b*c + 4*A*a*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^2)
]
```

giac [B] time = 0.38, size = 412, normalized size = 2.30

$$\frac{1}{4}\left(2Bcx+\frac{5Bbc+4Ac^2}{c}\right)\sqrt{cx^2+bx+a}+\frac{3\left(4Bab+Ab^2+4Aac\right)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}}-\frac{3\left(Bb^2+4Bac+4Abc\right)\log\left(\left|2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}+b\right|\right)}{8\sqrt{c}}+\frac{4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Bab+5\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Ab^2+4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Aac+8\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2Ba^2\sqrt{c}+16\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2Aab\sqrt{c}-4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Ba^2b-3\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Aab^2+4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Aa^2c-8Ba^3\sqrt{c}-8Aa^2b\sqrt{c}}{4\left(\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2-a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*c*x + (5*B*b*c + 4*A*c^2)/c)*sqrt(c*x^2 + b*x + a) + 3/4*(4*B*a*b
+ A*b^2 + 4*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/sq
rt(-a) - 3/8*(B*b^2 + 4*B*a*c + 4*A*b*c)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*sqrt(c) + b))/sqrt(c) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^3*B*a*b + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*A*a*c + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*
B*a^2*sqrt(c) + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b*sqrt(c) - 4*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b - 3*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*
sqrt(c) - 8*A*a^2*b*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2
```

maple [B] time = 0.06, size = 463, normalized size = 2.59

$$-\frac{3A\sqrt{a}\,c\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2}-\frac{3Ab^2\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3Ab\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2}+\frac{3Ba\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2}-\frac{3B\sqrt{a}\,b\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2}+\frac{3Bb^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8\sqrt{c}}+\frac{3\sqrt{cx^2+bx+a}\,Abcx}{4a}+\frac{3\sqrt{cx^2+bx+a}\,Bcx}{2}+\frac{3\sqrt{cx^2+bx+a}\,Ab^2}{4a}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Abcx}{4a^2}+\frac{3\sqrt{cx^2+bx+a}\,Ac}{2}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bcx}{a}+\frac{9\sqrt{cx^2+bx+a}\,Bb}{4}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ac}{2a}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab^2}{4a^2}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb}{a}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ab}{4a^2x}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}B}{ax}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}A}{2ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+b*x+a)^(5/2)-1/4*A/a^2*b/x*(c*x^2+b*x+a)^(5/2)+1/4*A/a^
2*b^2*(c*x^2+b*x+a)^(3/2)+3/4*A/a*b^2*(c*x^2+b*x+a)^(1/2)-3/8*A/a^(1/2)*b^2
*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/4*A/a^2*b*c*(c*x^2+b*x+a)^
(3/2)*x+3/4*A/a*b*c*(c*x^2+b*x+a)^(1/2)*x+3/2*A*b*c^(1/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))+1/2*A*c/a*(c*x^2+b*x+a)^(3/2)+3/2*A*c*(c*x^2+b*x
+a)^(1/2)-3/2*A*c*a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a
/x*(c*x^2+b*x+a)^(5/2)+B/a*b*(c*x^2+b*x+a)^(3/2)+3/8*B*b^2/c^(1/2)*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+9/4*B*b*(c*x^2+b*x+a)^(1/2)-3/2*B*a^(1/
2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+B*c/a*(c*x^2+b*x+a)^(3/2
)*x+3/2*B*c*(c*x^2+b*x+a)^(1/2)*x+3/2*B*c^(1/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**3, x)
```

3.855 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^4}\,dx$

Optimal. Leaf size=206

$$-\frac{\left(6aB\left(4ac+b^2\right)-A\left(b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{3/2}}+\frac{\sqrt{a+bx+cx^2}\left(2cx(6aB+Ab)-8aAc-6abB+A\right.}{8ax}$$

Rubi [A] time = 0.22, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {810, 812, 843, 621, 206, 724}

$$-\frac{\left(6aB\left(4ac+b^2\right)-A\left(b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{3/2}}+\frac{\sqrt{a+bx+cx^2}\left(2cx(6aB+Ab)-8aAc-6abB+Ab^2\right)}{8ax}-\frac{\left(a+bx+cx^2\right)^{3/2}(3x(2aB+Ab)+4aA)}{12ax^3}+\frac{1}{2}\sqrt{c}(2Ac+3bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] ((A*b^2 - 6*a*b*B - 8*a*A*c + 2*(A*b + 6*a*B)*c*x)*Sqrt[a + b*x + c*x^2])/(
8*a*x) - ((4*a*A + 3*(A*b + 2*a*B)*x)*(a + b*x + c*x^2)^(3/2))/(12*a*x^3) -
 ((6*a*B*(b^2 + 4*a*c) - A*(b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]
*Sqrt[a + b*x + c*x^2])])/(16*a^(3/2)) + (Sqrt[c]*(3*b*B + 2*A*c)*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^4}\,dx = -\frac{(4aA+3(Ab+2aB)x)\left(a+bx+cx^2\right)^{3/2}}{12ax^3} - \frac{\int \frac{\left(\frac{1}{2}\left(-6abB+A\left(b^2-8ac\right)\right)-(Ab+6aB)c}{x^2}}{4a}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+}{}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+}{}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+}{}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+}{}$$

Mathematica [A] time = 0.50, size = 182, normalized size = 0.88

$$\frac{1}{48}\left(\frac{3\left(A\left(b^3-12abc\right)-6aB\left(4ac+b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{a^{3/2}} - \frac{2\sqrt{a+x(b+cx)}\left(4a^2(2A+3Bx)+2ax(A(7b+16cx)+3Bx(5b-4cx))+3Ab^2x^2\right)}{ax^3} + 24\sqrt{c}(2Ac+3bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] ((-2*Sqrt[a + x*(b + c*x)]*(3*A*b^2*x^2 + 4*a^2*(2*A + 3*B*x) + 2*a*x*(3*B*
x*(5*b - 4*c*x) + A*(7*b + 16*c*x))))/(a*x^3) + (3*(-6*a*B*(b^2 + 4*a*c) +
A*(b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])
/a^(3/2) + 24*Sqrt[c]*(3*b*B + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
 + x*(b + c*x)])])/48
```

IntegrateAlgebraic [A] time = 1.51, size = 193, normalized size = 0.94

$$\frac{\sqrt{a+bx+cx^2}\left(-8a^2A-12a^2Bx-14aAbx-32aAcx^2-30abBx^2+24aBcx^3-3Ab^2x^2\right)}{24ax^3} + \frac{\left(-24a^2Bc-12aAbc-6ab^2B+Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{3/2}} + \frac{1}{2}\left(-2Ac^{3/2}-3bB\sqrt{c}\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-8*a^2*A - 14*a*A*b*x - 12*a^2*B*x - 3*A*b^2*x^2 -
30*a*b*B*x^2 - 32*a*A*c*x^2 + 24*a*B*c*x^3))/(24*a*x^3) + ((A*b^3 - 6*a*b^2
*B - 12*a*A*b*c - 24*a^2*B*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2]
)/Sqrt[a]])/(8*a^(3/2)) + ((-3*b*B*Sqrt[c] - 2*A*c^(3/2))*Log[b + 2*c*x - 2
*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/2
```

fricas [A] time = 2.01, size = 953, normalized size = 4.63

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/96*(24*(3*B*a^2*b + 2*A*a^2*c)*sqrt(c)*x^3*log(-8*c^2*x^2 - 8*b*c*x - b^
2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 3*(6*B*a*b^2 - A
*b^3 + 12*(2*B*a^2 + A*a*b)*c)*sqrt(a)*x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^
2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(24*B*a^2
*c*x^3 - 8*A*a^3 - (30*B*a^2*b + 3*A*a*b^2 + 32*A*a^2*c)*x^2 - 2*(6*B*a^3 +
 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^3), -1/96*(48*(3*B*a^2*b + 2*A
*a^2*c)*sqrt(-c)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/
(c^2*x^2 + b*c*x + a*c)) - 3*(6*B*a*b^2 - A*b^3 + 12*(2*B*a^2 + A*a*b)*c)*s
qrt(a)*x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x
 + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(24*B*a^2*c*x^3 - 8*A*a^3 - (30*B*a^2*b +
 3*A*a*b^2 + 32*A*a^2*c)*x^2 - 2*(6*B*a^3 + 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x
+ a))/(a^2*x^3), 1/48*(3*(6*B*a*b^2 - A*b^3 + 12*(2*B*a^2 + A*a*b)*c)*sqrt(
-a)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*
b*x + a^2)) + 12*(3*B*a^2*b + 2*A*a^2*c)*sqrt(c)*x^3*log(-8*c^2*x^2 - 8*b*c
*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 2*(24*B*a
^2*c*x^3 - 8*A*a^3 - (30*B*a^2*b + 3*A*a*b^2 + 32*A*a^2*c)*x^2 - 2*(6*B*a^3
 + 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^3), 1/48*(3*(6*B*a*b^2 - A*b
^3 + 12*(2*B*a^2 + A*a*b)*c)*sqrt(-a)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*
(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 24*(3*B*a^2*b + 2*A*a^2*c)*
sqrt(-c)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2
 + b*c*x + a*c)) + 2*(24*B*a^2*c*x^3 - 8*A*a^3 - (30*B*a^2*b + 3*A*a*b^2 +
32*A*a^2*c)*x^2 - 2*(6*B*a^3 + 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^
3)]
```

giac [B] time = 0.44, size = 630, normalized size = 3.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B*c - 1/2*(3*B*b*c^(3/2) + 2*A*c^(5/2))*log(abs(-2*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c)))/c + 1/8*(6*B*a*b^2 - A*b^
3 + 24*B*a^2*c + 12*A*a*b*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sq
rt(-a))/(sqrt(-a)*a) + 1/24*(30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a*b
^2 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^3 + 24*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*B*a^2*c + 60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b
*c + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*b*sqrt(c) + 48*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*A*a*b^2*sqrt(c) + 96*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^4*A*a^2*c^(3/2) - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^
2*b^2 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3 - 144*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c) - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^2*A*a^3*c^(3/2) + 18*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2 -
```

```
 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^3 - 24*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*B*a^4*c + 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c +
 48*B*a^4*b*sqrt(c) + 64*A*a^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2 - a)^3*a)
```

maple [B] time = 0.06, size = 635, normalized size = 3.08

$$-\frac{3Abc\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{4\sqrt{a}}+\frac{Ab^3\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}+Ac^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)-\frac{3B\sqrt{a}\,c\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2}-\frac{3Bb^2\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3Bb\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2}+\frac{\sqrt{cx^2+bx+a}\,Ac^2x}{a}-\frac{\sqrt{cx^2+bx+a}\,Ab^2cx}{8a^2}+\frac{3\sqrt{cx^2+bx+a}\,Bbcx}{4a}+\frac{5\sqrt{cx^2+bx+a}\,Abc}{4a}-\frac{\sqrt{cx^2+bx+a}\,Ab^3}{8a^2}+\frac{2\left(cx^2+bx+a\right)^{\frac{3}{2}}Ac^2x}{3a^2}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab^2cx}{24a^3}+\frac{3\sqrt{cx^2+bx+a}\,Bb^2}{4a}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bbcx}{4a^2}+\frac{3\sqrt{cx^2+bx+a}\,Bc}{2}+\frac{7\left(cx^2+bx+a\right)^{\frac{3}{2}}Abc}{12a^2}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab^3}{24a^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bc}{2a}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb^2}{4a^2}-\frac{2\left(cx^2+bx+a\right)^{\frac{5}{2}}Ac}{3a^2x}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ab^2}{24a^3x}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Bb}{4a^2x}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ab}{12a^2x^2}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}B}{2a\,x^2}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}A}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x)
```

```
[Out] 5/4*A/a*b*c*(c*x^2+b*x+a)^(1/2)-3/4*A/a^(1/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)-2/3*A*c/a^2/x*(c*x^2+b*x+a)^(5/2)-1/8*A/a^2*b^2*c*(c*x
^2+b*x+a)^(1/2)*x-1/24*A/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)*x+3/4*B/a*b*c*(c*x^2
+b*x+a)^(1/2)*x+1/4*B/a^2*b*c*(c*x^2+b*x+a)^(3/2)*x-1/4*B/a^2*b/x*(c*x^2+b*
x+a)^(5/2)+1/12*A/a^2*b/x^2*(c*x^2+b*x+a)^(5/2)+3/2*B*b*c^(1/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/2*B*c/a*(c*x^2+b*x+a)^(3/2)-3/2*B*c*a^(1
/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/3*A/a/x^3*(c*x^2+b*x+a)
^(5/2)-1/24*A/a^3*b^3*(c*x^2+b*x+a)^(3/2)-1/8*A/a^2*b^3*(c*x^2+b*x+a)^(1/2)
+1/16*A/a^(3/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+A*c^(3/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/2*B*c*(c*x^2+b*x+a)^(1/2)-1/
2*B/a/x^2*(c*x^2+b*x+a)^(5/2)+1/4*B/a^2*b^2*(c*x^2+b*x+a)^(3/2)+3/4*B/a*b^2
*(c*x^2+b*x+a)^(1/2)-3/8*B/a^(1/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+1/24*A/a^3*b^2/x*(c*x^2+b*x+a)^(5/2)+7/12*A/a^2*b*c*(c*x^2+b*x+a)
^(3/2)+2/3*A*c^2/a^2*(c*x^2+b*x+a)^(3/2)*x+A*c^2/a*(c*x^2+b*x+a)^(1/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left(a + bx + cx^{2}\right)^{\frac{3}{2}}}{x^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**4, x)
```

3.856 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^5}\,dx$

Optimal. Leaf size=217

$$\frac{\left(8abB\left(b^2-12ac\right)-3A\left(b^2-4ac\right)^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{5/2}}-\frac{\sqrt{a+bx+cx^2}\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+x\left(8a\right.\right.}{64a^2x^2}$$

Rubi [A] time = 0.25, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {810, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\left(x\left(8aB\left(8ac+b^2\right)-3A\left(b^3-4abc\right)\right)+2a\left(8abB-3A\left(b^2-4ac\right)\right)\right)}{64a^2x^2}+\frac{\left(8abB\left(b^2-12ac\right)-3A\left(b^2-4ac\right)^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{5/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}(x(8aB+3Ab)+6aA)}{24ax^4}+Bc^{3/2}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -((2*a*(8*a*b*B - 3*A*(b^2 - 4*a*c)) + (8*a*B*(b^2 + 8*a*c) - 3*A*(b^3 - 4*
a*b*c))*x)*Sqrt[a + b*x + c*x^2])/(64*a^2*x^2) - ((6*a*A + (3*A*b + 8*a*B)*
x)*(a + b*x + c*x^2)^(3/2))/(24*a*x^4) + ((8*a*b*B*(b^2 - 12*a*c) - 3*A*(b^
2 - 4*a*c)^2)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(128*
a^(5/2)) + B*c^(3/2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^5}\,dx = -\frac{(6aA+(3Ab+8aB)x)\left(a+bx+cx^2\right)^{3/2}}{24ax^4} - \frac{\int \frac{\left(\frac{1}{2}\left(-8abB+3A\left(b^2-4ac\right)\right)-8aBcx\right)\sqrt{a}}{x^3}}{8a}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

Mathematica [A] time = 0.63, size = 202, normalized size = 0.93

$$-\frac{\left(3A\left(b^2-4ac\right)^2+8abB\left(12ac-b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{128a^{5/2}}-\frac{\sqrt{a+x(b+cx)}\left(16a^3(3A+4Bx)+8a^2x(3A(3b+5cx)+2Bx(7b+16cx))+6abx^2(A(b+10cx)+4bBx)-9Ab^3x^3\right)}{192a^2x^4}+Bc^{3/2}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -1/192*(Sqrt[a + x*(b + c*x)]*(-9*A*b^3*x^3 + 16*a^3*(3*A + 4*B*x) + 6*a*b*
x^2*(4*b*B*x + A*(b + 10*c*x)) + 8*a^2*x*(3*A*(3*b + 5*c*x) + 2*B*x*(7*b +
16*c*x))))/(a^2*x^4) - ((3*A*(b^2 - 4*a*c)^2 + 8*a*b*B*(-b^2 + 12*a*c))*Arc
Tanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)]])/(128*a^(5/2)) + B*c^(3
/2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]
```

IntegrateAlgebraic [A] time = 1.73, size = 229, normalized size = 1.06

$$\frac{\left(-48a^2Ac^2-96a^2bBc+24aAb^2c+8ab^3B-3Ab^4\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)}{64a^{5/2}}+\frac{\sqrt{a+bx+cx^2}\left(-48a^3A-64a^3Bx-72a^2Abx-120a^2Acx^2-112a^2bBx^2-256a^2Bcx^3-6aAb^2x^2-60aAbcx^3-24ab^2Bx^3+9Ab^3x^3\right)}{192a^2x^4}-Bc^{3/2}\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-48*a^3*A - 72*a^2*A*b*x - 64*a^3*B*x - 6*a*A*b^2*x
^2 - 112*a^2*b*B*x^2 - 120*a^2*A*c*x^2 + 9*A*b^3*x^3 - 24*a*b^2*B*x^3 - 60*
a*A*b*c*x^3 - 256*a^2*B*c*x^3))/(192*a^2*x^4) + ((-3*A*b^4 + 8*a*b^3*B + 24
*a*A*b^2*c - 96*a^2*b*B*c - 48*a^2*A*c^2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a +
b*x + c*x^2])/Sqrt[a]])/(64*a^(5/2)) - B*c^(3/2)*Log[b + 2*c*x - 2*Sqrt[c]*
Sqrt[a + b*x + c*x^2]]
```

fricas [A] time = 2.57, size = 1083, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/768*(384*B*a^3*c^(3/2)*x^4*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2
 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 3*(8*B*a*b^3 - 3*A*b^4 - 48*A*a^
2*c^2 - 24*(4*B*a^2*b - A*a*b^2)*c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*
c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(48*
A*a^4 + (24*B*a^2*b^2 - 9*A*a*b^3 + 4*(64*B*a^3 + 15*A*a^2*b)*c)*x^3 + 2*(5
6*B*a^3*b + 3*A*a^2*b^2 + 60*A*a^3*c)*x^2 + 8*(8*B*a^4 + 9*A*a^3*b)*x)*sqrt
(c*x^2 + b*x + a))/(a^3*x^4), -1/768*(768*B*a^3*sqrt(-c)*c*x^4*arctan(1/2*s
qrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 3*(8*B
*a*b^3 - 3*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*b - A*a*b^2)*c)*sqrt(a)*x^4*l
og(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt
(a) + 8*a^2)/x^2) + 4*(48*A*a^4 + (24*B*a^2*b^2 - 9*A*a*b^3 + 4*(64*B*a^3 +
 15*A*a^2*b)*c)*x^3 + 2*(56*B*a^3*b + 3*A*a^2*b^2 + 60*A*a^3*c)*x^2 + 8*(8*
B*a^4 + 9*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^4), 1/384*(192*B*a^3*c^
(3/2)*x^4*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) - 3*(8*B*a*b^3 - 3*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*
b - A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(48*A*a^4 + (24*B*a^2*b^2 - 9*A*a*b^3
+ 4*(64*B*a^3 + 15*A*a^2*b)*c)*x^3 + 2*(56*B*a^3*b + 3*A*a^2*b^2 + 60*A*a^3
*c)*x^2 + 8*(8*B*a^4 + 9*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^4), -1/3
84*(384*B*a^3*sqrt(-c)*c*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*s
qrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 3*(8*B*a*b^3 - 3*A*b^4 - 48*A*a^2*c^2 -
24*(4*B*a^2*b - A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(
b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(48*A*a^4 + (24*B*a^2*b^2
- 9*A*a*b^3 + 4*(64*B*a^3 + 15*A*a^2*b)*c)*x^3 + 2*(56*B*a^3*b + 3*A*a^2*b^
2 + 60*A*a^3*c)*x^2 + 8*(8*B*a^4 + 9*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^
3*x^4)]
```

giac [B] time = 0.59, size = 1019, normalized size = 4.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] -B*c^(3/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c))) -
 1/64*(8*B*a*b^3 - 3*A*b^4 - 96*B*a^2*b*c + 24*A*a*b^2*c - 48*A*a^2*c^2)*ar
ctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/192*
(24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 - 9*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*A*b^4 + 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^2*b*
c + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^2*c + 240*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^7*A*a^2*c^2 + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^6*B*a^2*b^2*sqrt(c) + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^3*c^(3
/2) + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^2*b*c^(3/2) + 40*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*b^3 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^5*A*a*b^4 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^3*b*c + 5
04*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^2*c + 144*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^5*A*a^3*c^2 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4
*B*a^3*b^2*sqrt(c) + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*b^3*sq
rt(c) - 1536*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^4*c^(3/2) - 88*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 + 33*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^3*A*a^2*b^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^4*b*c
+ 504*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^2*c + 144*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*B*a^5*c^(3/2) + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c^(3
/2) + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 - 9*(sqrt(c)*x - sqr
```

```
t(c*x^2 + b*x + a))*A*a^3*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a
^5*b*c + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c + 240*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*A*a^5*c^2 - 512*B*a^6*c^(3/2))/(((sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^2 - a)^4*a^2)
```

maple [B] time = 0.08, size = 838, normalized size = 3.86

$$-\frac{3Ac^2\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3Ab^2c\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{3Ab^4\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{5}{2}}}-\frac{3Bbc\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{4\sqrt{a}}+\frac{Bb^3\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}+Bc^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)-\frac{3\sqrt{cx^2+bx+a}\,Abc^2x}{16a^2}+\frac{3\sqrt{cx^2+bx+a}\,Ab^3cx}{64a^3}+\frac{\sqrt{cx^2+bx+a}\,Bc^2x}{a}-\frac{\sqrt{cx^2+bx+a}\,Bb^2cx}{8a^2}+\frac{3\sqrt{cx^2+bx+a}\,Ac^2}{8a}-\frac{9\sqrt{cx^2+bx+a}\,Ab^2c}{32a^2}+\frac{3\sqrt{cx^2+bx+a}\,Ab^4}{64a^3}-\frac{3\left(cx^2+bx+a\right)^{\frac{3}{2}}Abc^2x}{16a^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab^3cx}{64a^4}+\frac{5\sqrt{cx^2+bx+a}\,Bbc}{4a}-\frac{\sqrt{cx^2+bx+a}\,Bb^3}{8a^2}+\frac{2\left(cx^2+bx+a\right)^{\frac{3}{2}}Bc^2x}{3a^2}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb^2cx}{24a^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ac^2}{8a^2}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab^2c}{32a^3}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Ab^4}{64a^4}+\frac{7\left(cx^2+bx+a\right)^{\frac{3}{2}}Bbc}{12a^2}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}Bb^3}{24a^3}+\frac{3\left(cx^2+bx+a\right)^{\frac{5}{2}}Abc}{16a^3x}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ab^3}{64a^4x}-\frac{2\left(cx^2+bx+a\right)^{\frac{5}{2}}Bc}{3a^2x}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Bb^2}{24a^3x}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ac}{8a^2x^2}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ab^2}{32a^3x^2}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Bb}{12a^2x^2}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}Ab}{8a^2x^3}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}B}{3ax^3}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}A}{4ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x)
```

```
[Out] 3/64*A/a^3*b^3*c*(c*x^2+b*x+a)^(1/2)*x+1/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)
*x-1/24*B/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)*x-1/8*B/a^2*b^2*c*(c*x^2+b*x+a)^(1/
2)*x-3/16*A/a^3*b*c^2*(c*x^2+b*x+a)^(3/2)*x-3/16*A/a^2*b*c^2*(c*x^2+b*x+a)^
(1/2)*x+3/16*A/a^3*b*c/x*(c*x^2+b*x+a)^(5/2)+5/4*B/a*b*c*(c*x^2+b*x+a)^(1/2
)-2/3*B*c/a^2/x*(c*x^2+b*x+a)^(5/2)-1/3*B/a/x^3*(c*x^2+b*x+a)^(5/2)-1/24*B/
a^3*b^3*(c*x^2+b*x+a)^(3/2)-1/8*B/a^2*b^3*(c*x^2+b*x+a)^(1/2)+1/16*B/a^(3/2
)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-3/128*A/a^(5/2)*b^4*ln(
(b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*A*c^2/a^2*(c*x^2+b*x+a)^(3/2
)+3/8*A*c^2/a*(c*x^2+b*x+a)^(1/2)+1/64*A/a^4*b^4*(c*x^2+b*x+a)^(3/2)+3/64*A
/a^3*b^4*(c*x^2+b*x+a)^(1/2)-1/4*A/a/x^4*(c*x^2+b*x+a)^(5/2)-3/8*A*c^2/a^(1
/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+B*c^(3/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/16*A/a^(3/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)-3/4*B/a^(1/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+2/3*B*c^2/a^2*(c*x^2+b*x+a)^(3/2)*x+B*c^2/a*(c*x^2+b*x+a)^(1/2)*x
-1/32*A/a^3*b^2/x^2*(c*x^2+b*x+a)^(5/2)-1/8*A*c/a^2/x^2*(c*x^2+b*x+a)^(5/2)
+1/8*A/a^2*b/x^3*(c*x^2+b*x+a)^(5/2)+1/12*B/a^2*b/x^2*(c*x^2+b*x+a)^(5/2)+1
/24*B/a^3*b^2/x*(c*x^2+b*x+a)^(5/2)+7/12*B/a^2*b*c*(c*x^2+b*x+a)^(3/2)-1/64
*A/a^4*b^3/x*(c*x^2+b*x+a)^(5/2)-5/32*A/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)-9/32*
A/a^2*b^2*c*(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(c\,x^2 + b\,x + a\right)^{3/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left(a + bx + cx^2\right)^{\frac{3}{2}}}{x^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**5, x)
```

3.857 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=170

$$\frac{3\left(b^2-4ac\right)^2(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{7/2}}-\frac{3\left(b^2-4ac\right)(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{128a^3x^2}+(2a+bx)($$

Rubi [A] time = 0.10, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {806, 720, 724, 206}

$$-\frac{3\left(b^2-4ac\right)(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{128a^3x^2}+\frac{3\left(b^2-4ac\right)^2(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{7/2}}+\frac{(2a+bx)(Ab-2aB)\left(a+bx+cx^2\right)^{3/2}}{16a^2x^4}-\frac{A\left(a+bx+cx^2\right)^{5/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-3*(A*b - 2*a*B)*(b^2 - 4*a*c)*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(128*a^3
*x^2) + ((A*b - 2*a*B)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(16*a^2*x^4) -
(A*(a + b*x + c*x^2)^(5/2))/(5*a*x^5) + (3*(A*b - 2*a*B)*(b^2 - 4*a*c)^2*Ar
cTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(256*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^6}\,dx = -\frac{A\left(a+bx+cx^2\right)^{5/2}}{5ax^5} - \frac{(Ab-2aB)\int \frac{\left(a+bx+cx^2\right)^{3/2}}{x^5}\,dx}{2a}$$

$$= \frac{(Ab-2aB)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{16a^2x^4} - \frac{A\left(a+bx+cx^2\right)^{5/2}}{5ax^5} + \frac{\left(3(Ab-2aB)\right.}{}$$

$$= -\frac{3(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^3x^2} + \frac{(Ab-2aB)(2a+bx)\left(a\right.}{16a^2x^4}$$

$$= -\frac{3(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^3x^2} + \frac{(Ab-2aB)(2a+bx)\left(a\right.}{16a^2x^4}$$

$$= -\frac{3(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^3x^2} + \frac{(Ab-2aB)(2a+bx)\left(a\right.}{16a^2x^4}$$

Mathematica [**A**] time = 0.26, size = 157, normalized size = 0.92

$$\frac{(Ab-2aB)\left(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}-x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+x(b+cx)}}\right)\right)\right)}{256a^{7/2}x^4}-\frac{A(a+x(b+cx))^{5/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] -1/5*(A*(a + x*(b + c*x))^(5/2))/(a*x^5) + ((A*b - 2*a*B)*(16*a^(3/2)*(2*a
+ b*x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]*(2*a + b*x)
*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*S
qrt[a + x*(b + c*x)])])))/(256*a^(7/2)*x^4)
```

IntegrateAlgebraic [**A**] time = 2.51, size = 300, normalized size = 1.76

$$\frac{3\left(8aAbc^2+8ab^2Bc-4Ab^3c+b^4(-B)\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)}{64a^{5/2}}+\frac{3\left(32a^3Bc^2-Ab^5\right)\tanh^{-1}\left(\frac{\sqrt{c}\,x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{128a^{7/2}}+\frac{\sqrt{a+bx+cx^2}\left(-128a^4A-160a^4Bx-176a^3Abx-256a^3Acx^2-240a^3bBx^2-400a^3Bcx^3-8a^2Ab^2x^2-56a^2Abcx^3-128a^2Ac^2x^4-20a^2b^2Bx^3-200a^2bBcx^4+10aAb^3x^3+100aAb^2cx^4+30ab^3Bx^4-15Ab^4x^4\right)}{640a^3x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-128*a^4*A - 176*a^3*A*b*x - 160*a^4*B*x - 8*a^2*A*
b^2*x^2 - 240*a^3*b*B*x^2 - 256*a^3*A*c*x^2 + 10*a*A*b^3*x^3 - 20*a^2*b^2*B
*x^3 - 56*a^2*A*b*c*x^3 - 400*a^3*B*c*x^3 - 15*A*b^4*x^4 + 30*a*b^3*B*x^4 +
 100*a*A*b^2*c*x^4 - 200*a^2*b*B*c*x^4 - 128*a^2*A*c^2*x^4))/(640*a^3*x^5)
+ (3*(-(A*b^5) + 32*a^3*B*c^2)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x + c*x^2])/
Sqrt[a]])/(128*a^(7/2)) + (3*(-(b^4*B) - 4*A*b^3*c + 8*a*b^2*B*c + 8*a*A*b*
c^2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(64*a^(5/2))
```

fricas [**A**] time = 1.93, size = 555, normalized size = 3.26

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/2560*(15*(2*B*a*b^4 - A*b^5 + 16*(2*B*a^3 - A*a^2*b)*c^2 - 8*(2*B*a^2*b^
2 - A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^
2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(128*A*a^5 - (30*B*a^2*b
^3 - 15*A*a*b^4 - 128*A*a^3*c^2 - 100*(2*B*a^3*b - A*a^2*b^2)*c)*x^4 + 2*(1
0*B*a^3*b^2 - 5*A*a^2*b^3 + 4*(50*B*a^4 + 7*A*a^3*b)*c)*x^3 + 8*(30*B*a^4*b
```

```
 + A*a^3*b^2 + 32*A*a^4*c)*x^2 + 16*(10*B*a^5 + 11*A*a^4*b)*x)*sqrt(c*x^2 +
 b*x + a))/(a^4*x^5), 1/1280*(15*(2*B*a*b^4 - A*b^5 + 16*(2*B*a^3 - A*a^2*b
)*c^2 - 8*(2*B*a^2*b^2 - A*a*b^3)*c)*sqrt(-a)*x^5*arctan(1/2*sqrt(c*x^2 + b
*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(128*A*a^5 - (30*
B*a^2*b^3 - 15*A*a*b^4 - 128*A*a^3*c^2 - 100*(2*B*a^3*b - A*a^2*b^2)*c)*x^4
 + 2*(10*B*a^3*b^2 - 5*A*a^2*b^3 + 4*(50*B*a^4 + 7*A*a^3*b)*c)*x^3 + 8*(30*
B*a^4*b + A*a^3*b^2 + 32*A*a^4*c)*x^2 + 16*(10*B*a^5 + 11*A*a^4*b)*x)*sqrt(
c*x^2 + b*x + a))/(a^4*x^5)]
```

giac [B] time = 0.29, size = 1357, normalized size = 7.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] 3/128*(2*B*a*b^4 - A*b^5 - 16*B*a^2*b^2*c + 8*A*a*b^3*c + 32*B*a^3*c^2 - 16
*A*a^2*b*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-
a)*a^3) - 1/640*(30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^4 - 15*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^9*A*b^5 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^9*B*a^2*b^2*c + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^3*c
- 800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 - 240*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^9*A*a^2*b*c^2 - 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^8*B*a^3*b*c^(3/2) - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^3*c^(
5/2) - 140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^2*b^4 + 70*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^7*A*a*b^5 - 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^7*B*a^3*b^2*c - 560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c +
320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^4*c^2 - 2720*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^7*A*a^3*b*c^2 - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^6*B*a^3*b^3*sqrt(c) + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b*
c^(3/2) - 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^3*b^2*c^(3/2) - 12
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^5 - 2560*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*A*a^3*b^3*c - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
5*A*a^4*b*c^2 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^4*b^3*sqrt(c
) - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^3*b^4*sqrt(c) - 2560*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2) - 2560*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^4*A*a^4*b^2*c^(3/2) - 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*A*a^5*c^(5/2) + 140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^4*b^
4 - 70*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^5 + 1440*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c - 2000*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^3*A*a^4*b^3*c - 320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*c^2 -
2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^5*b*c^2 + 2560*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) - 2560*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^2*A*a^5*b^2*c^(3/2) - 30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^5
*b^4 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^5 + 240*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*B*a^6*b^2*c - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*A*a^5*b^3*c + 800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*c^2 - 1040*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b*c^2 - 256*A*a^7*c^(5/2))/(((sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^5*a^3)
```

maple [B] time = 0.09, size = 978, normalized size = 5.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x)
```

```
[Out] -3/16*B/a^3*b*c^2*(c*x^2+b*x+a)^(3/2)*x-3/16*B/a^2*b*c^2*(c*x^2+b*x+a)^(1/2
)*x+3/32*A/a^3*b^2*c^2*(c*x^2+b*x+a)^(1/2)*x+1/16*A/a^3*b*c/x^2*(c*x^2+b*x+
a)^(5/2)+3/32*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x-3/32*A/a^4*b^2*c/x*(c*x^2
```

```
+b*x+a)^(5/2)-1/128*A/a^5*b^4*c*(c*x^2+b*x+a)^(3/2)*x-3/128*A/a^4*b^4*c*(c*
x^2+b*x+a)^(1/2)*x+1/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)*x+3/64*B/a^3*b^3*c*
(c*x^2+b*x+a)^(1/2)*x+3/16*B/a^3*b*c/x*(c*x^2+b*x+a)^(5/2)+1/64*A/a^4*b^3/x
^2*(c*x^2+b*x+a)^(5/2)-1/128*A/a^5*b^5*(c*x^2+b*x+a)^(3/2)-3/128*A/a^4*b^5*
(c*x^2+b*x+a)^(1/2)+3/256*A/a^(7/2)*b^5*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a
^(1/2))/x)-3/8*B*c^2/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+
1/64*B/a^4*b^4*(c*x^2+b*x+a)^(3/2)+3/64*B/a^3*b^4*(c*x^2+b*x+a)^(1/2)+1/8*B
*c^2/a^2*(c*x^2+b*x+a)^(3/2)+3/8*B*c^2/a*(c*x^2+b*x+a)^(1/2)-1/4*B/a/x^4*(c
*x^2+b*x+a)^(5/2)-3/128*B/a^(5/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)+5/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)+9/64*A/a^3*b^3*c*(c*x^2+b*x+a
)^(1/2)+3/16*A/a^(3/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
1/16*A/a^3*b*c^2*(c*x^2+b*x+a)^(3/2)-3/16*A/a^2*b*c^2*(c*x^2+b*x+a)^(1/2)+1
/8*A/a^2*b/x^4*(c*x^2+b*x+a)^(5/2)-3/32*A/a^(5/2)*b^3*c*ln((b*x+2*a+2*(c*x^
2+b*x+a)^(1/2)*a^(1/2))/x)-1/16*A/a^3*b^2/x^3*(c*x^2+b*x+a)^(5/2)+1/8*B/a^2
*b/x^3*(c*x^2+b*x+a)^(5/2)-1/32*B/a^3*b^2/x^2*(c*x^2+b*x+a)^(5/2)-1/64*B/a^
4*b^3/x*(c*x^2+b*x+a)^(5/2)-5/32*B/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)-9/32*B/a^2
*b^2*c*(c*x^2+b*x+a)^(1/2)-1/8*B*c/a^2/x^2*(c*x^2+b*x+a)^(5/2)+3/16*B/a^(3/
2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/128*A/a^5*b^4/x*(c
*x^2+b*x+a)^(5/2)-1/5*A*(c*x^2+b*x+a)^(5/2)/a/x^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**6, x)
```

3.858 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=230

$$-\frac{\left(b^2-4ac\right)^2\left(-4aAc-12abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{1024a^{9/2}}+\frac{\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}\left(-4aAc-\right.}{512a^4x^2}$$

Rubi [A] time = 0.20, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{(2a+bx)\left(a+bx+cx^2\right)^{3/2}\left(-4aAc-12abB+7Ab^2\right)}{192a^3x^4}+\frac{\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}\left(-4aAc-12abB+7Ab^2\right)}{512a^4x^2}-\frac{\left(b^2-4ac\right)^2\left(-4aAc-12abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{1024a^{9/2}}+\frac{(7Ab-12aB)\left(a+bx+cx^2\right)^{5/2}}{60a^2x^5}-\frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] ((b^2 - 4*a*c)*(7*A*b^2 - 12*a*b*B - 4*a*A*c)*(2*a + b*x)*Sqrt[a + b*x + c*
x^2])/(512*a^4*x^2) - ((7*A*b^2 - 12*a*b*B - 4*a*A*c)*(2*a + b*x)*(a + b*x
+ c*x^2)^(3/2))/(192*a^3*x^4) - (A*(a + b*x + c*x^2)^(5/2))/(6*a*x^6) + ((7
*A*b - 12*a*B)*(a + b*x + c*x^2)^(5/2))/(60*a^2*x^5) - ((b^2 - 4*a*c)^2*(7*
A*b^2 - 12*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c
*x^2])])/(1024*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^7}\,dx = -\frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6} - \frac{\int \frac{\left(\frac{1}{2}(7Ab-12aB)+Acx\right)\left(a+bx+cx^2\right)^{3/2}}{x^6}\,dx}{6a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6} + \frac{(7Ab-12aB)\left(a+bx+cx^2\right)^{5/2}}{60a^2x^5} + \frac{\left(7Ab^2-12abB-4\right.}{2}$$

$$= -\frac{\left(7Ab^2-12abB-4aAc\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{192a^3x^4} - \frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6} +$$

$$= \frac{\left(b^2-4ac\right)\left(7Ab^2-12abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^4x^2} - \frac{\left(7Ab^2-12abB\right.}{}$$

$$= \frac{\left(b^2-4ac\right)\left(7Ab^2-12abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^4x^2} - \frac{\left(7Ab^2-12abB\right.}{}$$

$$= \frac{\left(b^2-4ac\right)\left(7Ab^2-12abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^4x^2} - \frac{\left(7Ab^2-12abB\right.}{}$$

Mathematica [A] time = 0.33, size = 182, normalized size = 0.79

$$\frac{-\frac{5\left(-4aAc-12abB+7Ab^2\right)\left(2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}\left(8a^2+4ax(2b+5cx)-3b^2x^2\right)+3x^4\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)}{256a^{5/2}x^4}+\frac{(7Ab-12aB)(a+x(b+cx))^{5/2}}{x^5}-\frac{10aA(a+x(b+cx))^{5/2}}{x^6}}{60a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] ((-10*a*A*(a + x*(b + c*x))^(5/2))/x^6 + ((7*A*b - 12*a*B)*(a + x*(b + c*x)
)^(5/2))/x^5 - (5*(7*A*b^2 - 12*a*b*B - 4*a*A*c)*(2*Sqrt[a]*(2*a + b*x)*Sqr
t[a + x*(b + c*x)]*(8*a^2 - 3*b^2*x^2 + 4*a*x*(2*b + 5*c*x)) + 3*(b^2 - 4*a
*c)^2*x^4*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))/(256*a^(
5/2)*x^4))/(60*a^2)
```

IntegrateAlgebraic [A] time = 3.65, size = 388, normalized size = 1.69

$$\frac{7Ab^6\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{512a^{9/2}}+\frac{\left(16a^2Ac^3+48a^2bBc^2-36aAb^2c^2-24ab^3Bc+15Ab^4c+3b^5B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{128a^{7/2}}+\frac{\sqrt{a+bx+cx^2}\left(-1280a^5A-1536a^5Bx-1664a^4Abx-2240a^4Acx^2-2112a^4bBx^2-3072a^4Bcx^3-48a^3Ab^2x^2-288a^3Abcx^3-480a^3Ac^2x^4-96a^3b^2Bx^3-672a^3bBcx^4-1536a^3Bc^2x^5+56a^2Ab^3x^3+432a^2Ab^2cx^4+1296a^2Abc^2x^5+120a^2b^3Bx^4+1200a^2b^2Bcx^5-70aAb^4x^4-760aAb^3cx^5-180ab^4Bx^5+105Ab^5x^5\right)}{7680a^4x^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-1280*a^5*A - 1664*a^4*A*b*x - 1536*a^5*B*x - 48*a^
3*A*b^2*x^2 - 2112*a^4*b*B*x^2 - 2240*a^4*A*c*x^2 + 56*a^2*A*b^3*x^3 - 96*a
^3*b^2*B*x^3 - 288*a^3*A*b*c*x^3 - 3072*a^4*B*c*x^3 - 70*a*A*b^4*x^4 + 120*
a^2*b^3*B*x^4 + 432*a^2*A*b^2*c*x^4 - 672*a^3*b*B*c*x^4 - 480*a^3*A*c^2*x^4
```

```
 + 105*A*b^5*x^5 - 180*a*b^4*B*x^5 - 760*a*A*b^3*c*x^5 + 1200*a^2*b^2*B*c*x
^5 + 1296*a^2*A*b*c^2*x^5 - 1536*a^3*B*c^2*x^5))/(7680*a^4*x^6) + ((3*b^5*B
 + 15*A*b^4*c - 24*a*b^3*B*c - 36*a*A*b^2*c^2 + 48*a^2*b*B*c^2 + 16*a^2*A*c
^3)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(128*a^(7/2))
+ (7*A*b^6*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])/(5
12*a^(9/2))
```

fricas [A] time = 3.58, size = 709, normalized size = 3.08

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/30720*(15*(12*B*a*b^5 - 7*A*b^6 + 64*A*a^3*c^3 + 48*(4*B*a^3*b - 3*A*a^2
*b^2)*c^2 - 12*(8*B*a^2*b^3 - 5*A*a*b^4)*c)*sqrt(a)*x^6*log(-(8*a*b*x + (b^
2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2)
- 4*(1280*A*a^6 + (180*B*a^2*b^4 - 105*A*a*b^5 + 48*(32*B*a^4 - 27*A*a^3*b)
*c^2 - 40*(30*B*a^3*b^2 - 19*A*a^2*b^3)*c)*x^5 - 2*(60*B*a^3*b^3 - 35*A*a^2
*b^4 - 240*A*a^4*c^2 - 24*(14*B*a^4*b - 9*A*a^3*b^2)*c)*x^4 + 8*(12*B*a^4*b
^2 - 7*A*a^3*b^3 + 12*(32*B*a^5 + 3*A*a^4*b)*c)*x^3 + 16*(132*B*a^5*b + 3*A
*a^4*b^2 + 140*A*a^5*c)*x^2 + 128*(12*B*a^6 + 13*A*a^5*b)*x)*sqrt(c*x^2 + b
*x + a))/(a^5*x^6), -1/15360*(15*(12*B*a*b^5 - 7*A*b^6 + 64*A*a^3*c^3 + 48*
(4*B*a^3*b - 3*A*a^2*b^2)*c^2 - 12*(8*B*a^2*b^3 - 5*A*a*b^4)*c)*sqrt(-a)*x^
6*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
a^2)) + 2*(1280*A*a^6 + (180*B*a^2*b^4 - 105*A*a*b^5 + 48*(32*B*a^4 - 27*A*
a^3*b)*c^2 - 40*(30*B*a^3*b^2 - 19*A*a^2*b^3)*c)*x^5 - 2*(60*B*a^3*b^3 - 35
*A*a^2*b^4 - 240*A*a^4*c^2 - 24*(14*B*a^4*b - 9*A*a^3*b^2)*c)*x^4 + 8*(12*B
*a^4*b^2 - 7*A*a^3*b^3 + 12*(32*B*a^5 + 3*A*a^4*b)*c)*x^3 + 16*(132*B*a^5*b
 + 3*A*a^4*b^2 + 140*A*a^5*c)*x^2 + 128*(12*B*a^6 + 13*A*a^5*b)*x)*sqrt(c*x
^2 + b*x + a))/(a^5*x^6)]
```

giac [B] time = 0.36, size = 2059, normalized size = 8.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] -1/512*(12*B*a*b^5 - 7*A*b^6 - 96*B*a^2*b^3*c + 60*A*a*b^4*c + 192*B*a^3*b*
c^2 - 144*A*a^2*b^2*c^2 + 64*A*a^3*c^3)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/7680*(180*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^11*B*a*b^5 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*b^6 - 14
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^3*c + 900*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^11*A*a*b^4*c + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^11*B*a^3*b*c^2 - 2160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^2*c^
2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*c^3 + 15360*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^10*B*a^4*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^9*B*a^2*b^5 + 595*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^6
+ 8160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^3*c - 5100*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^9*A*a^2*b^4*c + 29760*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*B*a^4*b*c^2 + 12240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b
^2*c^2 + 15040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*c^3 + 61440*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^4*b^2*c^(3/2) - 15360*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^8*B*a^5*c^(5/2) + 76800*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^8*A*a^4*b*c^(5/2) + 2376*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*
b^5 - 1386*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^6 + 24000*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^7*B*a^4*b^3*c + 11880*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^7*A*a^3*b^4*c + 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^
5*b*c^2 + 97440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^4*b^2*c^2 + 24960
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*c^3 + 15360*(sqrt(c)*x - sqrt(
```

```
c*x^2 + b*x + a))^6*B*a^4*b^4*sqrt(c) - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^6*B*a^5*b^2*c^(3/2) + 112640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A
*a^4*b^3*c^(3/2) + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*c^(5/2
) + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b*c^(5/2) - 696*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*b^5 + 1686*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^5*A*a^3*b^6 - 6720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b
^3*c + 42600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b^4*c - 17280*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6*b*c^2 + 128160*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^5*A*a^5*b^2*c^2 + 24960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^6*c^3 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b^4*sqrt(c
) + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^4*b^5*sqrt(c) + 61440*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*b^3*c^(3/2) - 30720*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^4*B*a^7*c^(5/2) + 92160*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^4*A*a^6*b*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a
^5*b^5 + 595*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^6 - 22560*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*b^3*c + 25620*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*A*a^5*b^4*c - 16320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*
a^7*b*c^2 + 58320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^2*c^2 + 150
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*c^3 - 30720*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*B*a^7*b^2*c^(3/2) + 30720*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^2*A*a^6*b^3*c^(3/2) + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B
*a^8*c^(5/2) + 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^7*b*c^(5/2)
+ 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^5 - 105*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))*A*a^5*b^6 - 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a
^7*b^3*c + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^4*c - 12480*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*B*a^8*b*c^2 + 13200*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*A*a^7*b^2*c^2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^8*
c^3 - 3072*B*a^9*c^(5/2) + 3072*A*a^8*b*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^2 - a)^6*a^4)
```

maple [B] time = 0.08, size = 1264, normalized size = 5.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x)
```

```
[Out] 7/1536*A/a^6*b^5*c*(c*x^2+b*x+a)^(3/2)*x+7/512*A/a^5*b^5*c*(c*x^2+b*x+a)^(1
/2)*x+11/192*A/a^5*b^3*c/x*(c*x^2+b*x+a)^(5/2)-1/32*A/a^4*b^2*c/x^2*(c*x^2+
b*x+a)^(5/2)-1/16*A/a^4*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x-11/192*A/a^5*b^3*c^2*
(c*x^2+b*x+a)^(3/2)*x-1/32*A*c^2/a^4*b/x*(c*x^2+b*x+a)^(5/2)-1/48*A*c/a^3*b
/x^3*(c*x^2+b*x+a)^(5/2)+1/32*A*c^3/a^3*b*(c*x^2+b*x+a)^(1/2)*x+1/32*A*c^3/
a^4*b*(c*x^2+b*x+a)^(3/2)*x+3/32*B/a^3*b^2*c^2*(c*x^2+b*x+a)^(1/2)*x+3/32*B
/a^4*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x+1/16*B/a^3*b*c/x^2*(c*x^2+b*x+a)^(5/2)-3
/32*B/a^4*b^2*c/x*(c*x^2+b*x+a)^(5/2)-3/128*B/a^4*b^4*c*(c*x^2+b*x+a)^(1/2)
*x-1/128*B/a^5*b^4*c*(c*x^2+b*x+a)^(3/2)*x-7/768*A/a^5*b^4/x^2*(c*x^2+b*x+a
)^(5/2)-7/1536*A/a^6*b^5/x*(c*x^2+b*x+a)^(5/2)-37/768*A/a^5*b^4*c*(c*x^2+b*
x+a)^(3/2)-23/256*A/a^4*b^4*c*(c*x^2+b*x+a)^(1/2)+3/256*B/a^(7/2)*b^5*ln((b
*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+7/1536*A/a^6*b^6*(c*x^2+b*x+a)^(3/
2)-3/32*B/a^(5/2)*b^3*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*B
/a^2*b/x^4*(c*x^2+b*x+a)^(5/2)+7/512*A/a^5*b^6*(c*x^2+b*x+a)^(1/2)-1/48*A*c
^3/a^3*(c*x^2+b*x+a)^(3/2)-1/16*A*c^3/a^2*(c*x^2+b*x+a)^(1/2)-1/5*B/a/x^5*(
c*x^2+b*x+a)^(5/2)-1/128*B/a^5*b^5*(c*x^2+b*x+a)^(3/2)-7/1024*A/a^(9/2)*b^6
*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/16*A*c^3/a^(3/2)*ln((b*x+2
*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-3/128*B/a^4*b^5*(c*x^2+b*x+a)^(1/2)+1/
24*A*c/a^2/x^4*(c*x^2+b*x+a)^(5/2)+1/48*A*c^2/a^3/x^2*(c*x^2+b*x+a)^(5/2)+1
5/256*A/a^(7/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-9/64*A/
a^(5/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/128*B/a^5*b
^4/x*(c*x^2+b*x+a)^(5/2)+5/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)+9/64*B/a^3*b^
3*c*(c*x^2+b*x+a)^(1/2)+7/60*A/a^2*b/x^5*(c*x^2+b*x+a)^(5/2)-7/96*A/a^3*b^2
```

```
/x^4*(c*x^2+b*x+a)^(5/2)+1/16*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(3/2)+5/32*A/a^3*
b^2*c^2*(c*x^2+b*x+a)^(1/2)+7/192*A/a^4*b^3/x^3*(c*x^2+b*x+a)^(5/2)-1/16*B/
a^3*b*c^2*(c*x^2+b*x+a)^(3/2)-3/16*B/a^2*b*c^2*(c*x^2+b*x+a)^(1/2)+3/16*B/a
^(3/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/16*B/a^3*b^2/x
^3*(c*x^2+b*x+a)^(5/2)+1/64*B/a^4*b^3/x^2*(c*x^2+b*x+a)^(5/2)-1/6*A*(c*x^2+
b*x+a)^(5/2)/a/x^6
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}{x^{7}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**7, x)
```

3.859 $\int \frac{(A+Bx)(a+bx+cx^2)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=303

$$-\frac{(b^2-4ac)^2\left(2aB(7b^2-4ac)-A(9b^3-12abc)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2048a^{11/2}}-\frac{(a+bx+cx^2)^{5/2}(-48aAc-98abB+}{840a^3x^5}$$

Rubi [A] time = 0.39, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{(a+bx+cx^2)^{5/2}(-48aAc-98abB+63Ab^2)}{840a^3x^5}+\frac{(2a+bx)(a+bx+cx^2)^{3/2}(8a^2Bc-12aAbc-14ab^2B+9Ab^3)}{384a^4x^4}-\frac{(b^2-4ac)(2a+bx)\sqrt{a+bx+cx^2}(8a^2Bc-12aAbc-14ab^2B+9Ab^3)}{1024a^5x^2}-\frac{(b^2-4ac)^2\left(2aB(7b^2-4ac)-A(9b^3-12abc)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2048a^{11/2}}+\frac{(9Ab-14aB)(a+bx+cx^2)^{5/2}}{84a^2x^6}-\frac{A(a+bx+cx^2)^{5/2}}{7ax^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] -((b^2 - 4*a*c)*(9*A*b^3 - 14*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*(2*a + b*x)
*Sqrt[a + b*x + c*x^2])/(1024*a^5*x^2) + ((9*A*b^3 - 14*a*b^2*B - 12*a*A*b*
c + 8*a^2*B*c)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(384*a^4*x^4) - (A*(a +
 b*x + c*x^2)^(5/2))/(7*a*x^7) + ((9*A*b - 14*a*B)*(a + b*x + c*x^2)^(5/2))
/(84*a^2*x^6) - ((63*A*b^2 - 98*a*b*B - 48*a*A*c)*(a + b*x + c*x^2)^(5/2))/
(840*a^3*x^5) - ((b^2 - 4*a*c)^2*(2*a*B*(7*b^2 - 4*a*c) - A*(9*b^3 - 12*a*b
*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2048*a^(11/2)
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^8}\,dx = -\frac{A\left(a+bx+cx^2\right)^{5/2}}{7ax^7} - \frac{\int \frac{\left(\frac{1}{2}(9Ab-14aB)+2Acx\right)\left(a+bx+cx^2\right)^{3/2}}{x^7}\,dx}{7a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{7ax^7} + \frac{(9Ab-14aB)\left(a+bx+cx^2\right)^{5/2}}{84a^2x^6} + \int \frac{\left(\frac{1}{4}\left(63Ab^2-98abB\right.\right.}{}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{7ax^7} + \frac{(9Ab-14aB)\left(a+bx+cx^2\right)^{5/2}}{84a^2x^6} - \frac{\left(63Ab^2-98abB\right.}{}$$

$$= \frac{\left(9Ab^3-14ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{384a^4x^4} - \frac{A\left(a+b\right.}{}$$

$$= \frac{\left(b^2-4ac\right)\left(2aB\left(7b^2-4ac\right)-3A\left(3b^3-4abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{1024a^5x^2} +$$

$$= \frac{\left(b^2-4ac\right)\left(2aB\left(7b^2-4ac\right)-3A\left(3b^3-4abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{1024a^5x^2} +$$

$$= \frac{\left(b^2-4ac\right)\left(2aB\left(7b^2-4ac\right)-3A\left(3b^3-4abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{1024a^5x^2} +$$

Mathematica [A] time = 0.56, size = 234, normalized size = 0.77

$$\frac{\frac{7\left(3A\left(3b^3-4abc\right)+2aB\left(4ac-7b^2\right)\right)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}\left(8a^2+4ax(2b+5cx)-3b^2x^2\right)+3x^4\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)}{512a^{7/2}x^4}+\frac{(a+x(b+cx))^{5/2}\left(48aAc+98abB-63Ab^2\right)}{10ax^5}+\frac{(9Ab-14aB)(a+x(b+cx))^{5/2}}{x^6}-\frac{12aA(a+x(b+cx))^{5/2}}{x^7}}{84a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] ((-12*a*A*(a + x*(b + c*x))^(5/2))/x^7 + ((9*A*b - 14*a*B)*(a + x*(b + c*x)
)^(5/2))/x^6 + ((-63*A*b^2 + 98*a*b*B + 48*a*A*c)*(a + x*(b + c*x))^(5/2))/
(10*a*x^5) + (7*(2*a*B*(-7*b^2 + 4*a*c) + 3*A*(3*b^3 - 4*a*b*c))*(2*Sqrt[a]
*(2*a + b*x)*Sqrt[a + x*(b + c*x)]*(8*a^2 - 3*b^2*x^2 + 4*a*x*(2*b + 5*c*x)
) + 3*(b^2 - 4*a*c)^2*x^4*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*
x)])]))/(512*a^(7/2)*x^4))/(84*a^2)
```

IntegrateAlgebraic [A] time = 4.66, size = 489, normalized size = 1.61

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-15360*a^6*A - 19200*a^5*A*b*x - 17920*a^6*B*x - 38
4*a^4*A*b^2*x^2 - 23296*a^5*b*B*x^2 - 24576*a^5*A*c*x^2 + 432*a^3*A*b^3*x^3
 - 672*a^4*b^2*B*x^3 - 2112*a^4*A*b*c*x^3 - 31360*a^5*B*c*x^3 - 504*a^2*A*b
^4*x^4 + 784*a^3*b^3*B*x^4 + 2976*a^3*A*b^2*c*x^4 - 4032*a^4*b*B*c*x^4 - 30
72*a^4*A*c^2*x^4 + 630*a*A*b^5*x^5 - 980*a^2*b^4*B*x^5 - 4368*a^2*A*b^3*c*x
^5 + 6048*a^3*b^2*B*c*x^5 + 7008*a^3*A*b*c^2*x^5 - 6720*a^4*B*c^2*x^5 - 945
*A*b^6*x^6 + 1470*a*b^5*B*x^6 + 7560*a*A*b^4*c*x^6 - 10640*a^2*b^3*B*c*x^6
- 16464*a^2*A*b^2*c^2*x^6 + 18144*a^3*b*B*c^2*x^6 + 6144*a^3*A*c^3*x^6))/(1
07520*a^5*x^7) + ((-9*A*b^7 - 128*a^4*B*c^3)*ArcTanh[(Sqrt[c]*x - Sqrt[a +
b*x + c*x^2])/Sqrt[a]])/(1024*a^(11/2)) + ((-7*b^6*B - 42*A*b^5*c + 60*a*b^
4*B*c + 120*a*A*b^3*c^2 - 144*a^2*b^2*B*c^2 - 96*a^2*A*b*c^3)*ArcTanh[(-(Sq
rt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(512*a^(9/2))
```

fricas [A] time = 4.54, size = 889, normalized size = 2.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/430080*(105*(14*B*a*b^6 - 9*A*b^7 - 64*(2*B*a^4 - 3*A*a^3*b)*c^3 + 48*(6
*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 - 12*(10*B*a^2*b^4 - 7*A*a*b^5)*c)*sqrt(a)*x^
7*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(a) + 8*a^2)/x^2) - 4*(15360*A*a^7 - (1470*B*a^2*b^5 - 945*A*a*b^6 + 614
4*A*a^4*c^3 + 336*(54*B*a^4*b - 49*A*a^3*b^2)*c^2 - 280*(38*B*a^3*b^3 - 27*
A*a^2*b^4)*c)*x^6 + 2*(490*B*a^3*b^4 - 315*A*a^2*b^5 + 48*(70*B*a^5 - 73*A*
a^4*b)*c^2 - 168*(18*B*a^4*b^2 - 13*A*a^3*b^3)*c)*x^5 - 8*(98*B*a^4*b^3 - 6
3*A*a^3*b^4 - 384*A*a^5*c^2 - 12*(42*B*a^5*b - 31*A*a^4*b^2)*c)*x^4 + 16*(4
2*B*a^5*b^2 - 27*A*a^4*b^3 + 4*(490*B*a^6 + 33*A*a^5*b)*c)*x^3 + 128*(182*B
*a^6*b + 3*A*a^5*b^2 + 192*A*a^6*c)*x^2 + 1280*(14*B*a^7 + 15*A*a^6*b)*x)*s
qrt(c*x^2 + b*x + a))/(a^6*x^7), 1/215040*(105*(14*B*a*b^6 - 9*A*b^7 - 64*(
2*B*a^4 - 3*A*a^3*b)*c^3 + 48*(6*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 - 12*(10*B*a^
2*b^4 - 7*A*a*b^5)*c)*sqrt(-a)*x^7*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(15360*A*a^7 - (1470*B*a^2*b^5 -
 945*A*a*b^6 + 6144*A*a^4*c^3 + 336*(54*B*a^4*b - 49*A*a^3*b^2)*c^2 - 280*(
38*B*a^3*b^3 - 27*A*a^2*b^4)*c)*x^6 + 2*(490*B*a^3*b^4 - 315*A*a^2*b^5 + 48
*(70*B*a^5 - 73*A*a^4*b)*c^2 - 168*(18*B*a^4*b^2 - 13*A*a^3*b^3)*c)*x^5 - 8
*(98*B*a^4*b^3 - 63*A*a^3*b^4 - 384*A*a^5*c^2 - 12*(42*B*a^5*b - 31*A*a^4*b
^2)*c)*x^4 + 16*(42*B*a^5*b^2 - 27*A*a^4*b^3 + 4*(490*B*a^6 + 33*A*a^5*b)*c
)*x^3 + 128*(182*B*a^6*b + 3*A*a^5*b^2 + 192*A*a^6*c)*x^2 + 1280*(14*B*a^7
+ 15*A*a^6*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^7)]
```

giac [B] time = 0.36, size = 2713, normalized size = 8.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] 1/1024*(14*B*a*b^6 - 9*A*b^7 - 120*B*a^2*b^4*c + 84*A*a*b^5*c + 288*B*a^3*b
^2*c^2 - 240*A*a^2*b^3*c^2 - 128*B*a^4*c^3 + 192*A*a^3*b*c^3)*arctan(-(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^5) - 1/107520*(1470*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a*b^6 - 945*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^13*A*b^7 - 12600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^2*b
^4*c + 8820*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a*b^5*c + 30240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^3*b^2*c^2 - 25200*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^13*A*a^2*b^3*c^2 - 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^13*B*a^4*c^3 + 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b*c^3 -
 9800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^6 + 6300*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^11*A*a*b^7 + 84000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^11*B*a^3*b^4*c - 58800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^5*
```

```
c - 201600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^4*b^2*c^2 + 168000*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*b^3*c^2 - 197120*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^11*B*a^5*c^3 - 134400*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^11*A*a^4*b*c^3 - 1075200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^5*b
*c^(5/2) - 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^5*c^(7/2) + 27
734*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^6 - 17829*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^9*A*a^2*b^7 - 237720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^9*B*a^4*b^4*c + 166404*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b^5*c
 - 1192800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^5*b^2*c^2 - 475440*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^3*c^2 - 138880*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^9*B*a^6*c^3 - 1512000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^9*A*a^5*b*c^3 - 1576960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*b^3*c
^(3/2) + 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b*c^(5/2) - 365
5680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^5*b^2*c^(5/2) - 430080*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*c^(7/2) - 43008*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^7*B*a^4*b^6 + 27648*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A
*a^3*b^7 - 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b^4*c - 25804
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^4*b^5*c - 430080*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^7*B*a^6*b^2*c^2 - 3225600*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^7*A*a^5*b^3*c^2 - 2580480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*
a^6*b*c^3 - 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^5*b^5*sqrt(c)
+ 716800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*b^3*c^(3/2) - 2580480*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b^4*c^(3/2) - 430080*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^6*B*a^7*b*c^(5/2) - 3440640*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^6*A*a^6*b^2*c^(5/2) - 860160*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^6*A*a^7*c^(7/2) + 15274*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^
6 - 25179*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b^7 + 237720*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^5*B*a^6*b^4*c - 768516*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^5*A*a^5*b^5*c + 977760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*
a^7*b^2*c^2 - 3610320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*b^3*c^2 +
 138880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^8*c^3 - 1928640*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^5*A*a^7*b*c^3 + 215040*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^4*B*a^6*b^5*sqrt(c) - 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*A*a^5*b^6*sqrt(c) + 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^7*b
^3*c^(3/2) - 1290240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^6*b^4*c^(3/2
) + 1118208*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^8*b*c^(5/2) - 2838528
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^7*b^2*c^(5/2) - 172032*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^4*A*a^8*c^(7/2) + 9800*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^3*B*a^6*b^6 - 6300*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^5*b
^7 + 346080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^7*b^4*c - 371280*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^5*c + 631680*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*B*a^8*b^2*c^2 - 1243200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^3*A*a^7*b^3*c^2 + 197120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*c^3
 - 725760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^8*b*c^3 + 430080*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^8*b^3*c^(3/2) - 430080*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*A*a^7*b^4*c^(3/2) + 129024*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^2*B*a^9*b*c^(5/2) - 344064*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*
A*a^8*b^2*c^(5/2) - 86016*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^9*c^(7/
2) - 1470*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*b^6 + 945*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*A*a^6*b^7 + 12600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*B*a^8*b^4*c - 8820*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^7*b^5*c + 1848
00*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^2*c^2 - 189840*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*A*a^8*b^3*c^2 + 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*B*a^10*c^3 - 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b*c^3 +
43008*B*a^10*b*c^(5/2) - 43008*A*a^9*b^2*c^(5/2) + 12288*A*a^10*c^(7/2))/((
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^7*a^5)
```

maple [B] time = 0.08, size = 1575, normalized size = 5.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x)
```

```
[Out] -5/128*A/a^6*b^4*c/x*(c*x^2+b*x+a)^(5/2)-1/16*B/a^4*b^3*c^2*(c*x^2+b*x+a)^(
1/2)*x+11/192*B/a^5*b^3*c/x*(c*x^2+b*x+a)^(5/2)+1/64*A/a^5*b^3*c/x^2*(c*x^2
+b*x+a)^(5/2)-1/32*A/a^4*b*c^2/x^2*(c*x^2+b*x+a)^(5/2)-1/16*A/a^3*b*c/x^4*(
c*x^2+b*x+a)^(5/2)-3/64*A/a^5*b^2*c^3*(c*x^2+b*x+a)^(3/2)*x+3/64*A/a^5*b^2*
c^2/x*(c*x^2+b*x+a)^(5/2)-3/64*A/a^4*b^2*c^3*(c*x^2+b*x+a)^(1/2)*x-1/48*B*c
/a^3*b/x^3*(c*x^2+b*x+a)^(5/2)+1/32*B*c^3/a^3*b*(c*x^2+b*x+a)^(1/2)*x-1/32*
B*c^2/a^4*b/x*(c*x^2+b*x+a)^(5/2)+1/32*B*c^3/a^4*b*(c*x^2+b*x+a)^(3/2)*x-1/
32*B/a^4*b^2*c/x^2*(c*x^2+b*x+a)^(5/2)-11/192*B/a^5*b^3*c^2*(c*x^2+b*x+a)^(
3/2)*x+7/1536*B/a^6*b^5*c*(c*x^2+b*x+a)^(3/2)*x+7/512*B/a^5*b^5*c*(c*x^2+b*
x+a)^(1/2)*x+1/32*A/a^4*b^2*c/x^3*(c*x^2+b*x+a)^(5/2)+5/128*A/a^6*b^4*c^2*(
c*x^2+b*x+a)^(3/2)*x-3/1024*A/a^7*b^6*c*(c*x^2+b*x+a)^(3/2)*x-9/1024*A/a^6*
b^6*c*(c*x^2+b*x+a)^(1/2)*x+3/64*A/a^5*b^4*c^2*(c*x^2+b*x+a)^(1/2)*x+1/16*B
*c^3/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+7/1536*B/a^6*b^6
*(c*x^2+b*x+a)^(3/2)+7/512*B/a^5*b^6*(c*x^2+b*x+a)^(1/2)-1/48*B*c^3/a^3*(c*
x^2+b*x+a)^(3/2)-1/16*B*c^3/a^2*(c*x^2+b*x+a)^(1/2)-1/6*B/a/x^6*(c*x^2+b*x+
a)^(5/2)-7/1024*B/a^(9/2)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
-3/1024*A/a^7*b^7*(c*x^2+b*x+a)^(3/2)-9/1024*A/a^6*b^7*(c*x^2+b*x+a)^(1/2)+
9/2048*A/a^(11/2)*b^7*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-7/96*B/
a^3*b^2/x^4*(c*x^2+b*x+a)^(5/2)+7/192*B/a^4*b^3/x^3*(c*x^2+b*x+a)^(5/2)-7/7
68*B/a^5*b^4/x^2*(c*x^2+b*x+a)^(5/2)-9/64*B/a^(5/2)*b^2*c^2*ln((b*x+2*a+2*(
c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15/256*B/a^(7/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)-7/1536*B/a^6*b^5/x*(c*x^2+b*x+a)^(5/2)-37/768*B/a^
5*b^4*c*(c*x^2+b*x+a)^(3/2)-23/256*B/a^4*b^4*c*(c*x^2+b*x+a)^(1/2)+1/48*B*c
^2/a^3/x^2*(c*x^2+b*x+a)^(5/2)+1/24*B*c/a^2/x^4*(c*x^2+b*x+a)^(5/2)+3/512*A
/a^6*b^5/x^2*(c*x^2+b*x+a)^(5/2)+1/32*A/a^4*b*c^3*(c*x^2+b*x+a)^(3/2)+3/32*
A/a^3*b*c^3*(c*x^2+b*x+a)^(1/2)+3/28*A/a^2*b/x^6*(c*x^2+b*x+a)^(5/2)+3/1024
*A/a^7*b^6/x*(c*x^2+b*x+a)^(5/2)+17/512*A/a^6*b^5*c*(c*x^2+b*x+a)^(3/2)+33/
512*A/a^5*b^5*c*(c*x^2+b*x+a)^(1/2)-3/32*A/a^(5/2)*b*c^3*ln((b*x+2*a+2*(c*x
^2+b*x+a)^(1/2)*a^(1/2))/x)+15/128*A/a^(7/2)*b^3*c^2*ln((b*x+2*a+2*(c*x^2+b
*x+a)^(1/2)*a^(1/2))/x)-21/512*A/a^(9/2)*b^5*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^
(1/2)*a^(1/2))/x)+7/60*B/a^2*b/x^5*(c*x^2+b*x+a)^(5/2)+1/16*B/a^4*b^2*c^2*(
c*x^2+b*x+a)^(3/2)+5/32*B/a^3*b^2*c^2*(c*x^2+b*x+a)^(1/2)+2/35*A*c/a^2/x^5*
(c*x^2+b*x+a)^(5/2)-3/40*A/a^3*b^2/x^5*(c*x^2+b*x+a)^(5/2)-1/16*A/a^5*b^3*c
^2*(c*x^2+b*x+a)^(3/2)-9/64*A/a^4*b^3*c^2*(c*x^2+b*x+a)^(1/2)+3/64*A/a^4*b^
3/x^4*(c*x^2+b*x+a)^(5/2)-3/128*A/a^5*b^4/x^3*(c*x^2+b*x+a)^(5/2)-1/7*A*(c*
x^2+b*x+a)^(5/2)/a/x^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left(a + bx + cx^2\right)^{\frac{3}{2}}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**8, x)
```

3.860 $\int x^4(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=543

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(10240a^2Bc^2-14cx\left(2376aAc^2-3380abBc-3146Ab^2c+2145b^3B\right)+39688aAbc^2-42900ab\right.}{887040c^5}$$

Rubi [A] time = 0.72, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -((b^2 - 4*a*c)^2*(195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528*a*A*b^2*c^
2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(262
144*c^8) + ((b^2 - 4*a*c)*(195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528*a*
A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*(a + b*x + c*x^2)^(
3/2))/(98304*c^7) - ((195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528*a*A*b^2
*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))
/(30720*c^6) + ((195*b^2*B - 286*A*b*c - 160*a*B*c)*x^2*(a + b*x + c*x^2)^(
7/2))/(3960*c^3) - ((15*b*B - 22*A*c)*x^3*(a + b*x + c*x^2)^(7/2))/(220*c^2
) + (B*x^4*(a + b*x + c*x^2)^(7/2))/(11*c) + ((19305*b^4*B - 28314*A*b^3*c
- 42900*a*b^2*B*c + 39688*a*A*b*c^2 + 10240*a^2*B*c^2 - 14*c*(2145*b^3*B -
3146*A*b^2*c - 3380*a*b*B*c + 2376*a*A*c^2)*x)*(a + b*x + c*x^2)^(7/2))/(88
7040*c^5) + ((b^2 - 4*a*c)^3*(195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528
*a*A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[
c]*Sqrt[a + b*x + c*x^2])])/(524288*c^(17/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx=\frac{Bx^4\left(a+bx+cx^2\right)^{7/2}}{11c}+\frac{\int x^3\left(-4aB-\frac{1}{2}(15bB-22Ac)x\right)\left(a+bx+cx^2\right)}{11c}$$

$$=-\frac{(15bB-22Ac)x^3\left(a+bx+cx^2\right)^{7/2}}{220c^2}+\frac{Bx^4\left(a+bx+cx^2\right)^{7/2}}{11c}+\frac{\int x^2\left(\frac{3}{2}a\right.}{}$$

$$=\frac{\left(195b^2B-286Abc-160aBc\right)x^2\left(a+bx+cx^2\right)^{7/2}}{3960c^3}-\frac{(15bB-22Ac)x^3\left(a\right.}{220c}$$

$$=\frac{\left(195b^2B-286Abc-160aBc\right)x^2\left(a+bx+cx^2\right)^{7/2}}{3960c^3}-\frac{(15bB-22Ac)x^3\left(a\right.}{220c}$$

$$=-\frac{\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2-96a^2Ac^3\right.}{30720c^6}$$

$$=\frac{\left(b^2-4ac\right)\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2-\right.}{98304c^7}$$

$$=-\frac{\left(b^2-4ac\right)^2\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2\right.}{262144c^8}$$

$$=-\frac{\left(b^2-4ac\right)^2\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2\right.}{262144c^8}$$

$$=-\frac{\left(b^2-4ac\right)^2\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2\right.}{262144c^8}$$

Mathematica [A] time = 1.01, size = 386, normalized size = 0.71

$$\frac{\frac{11\left(96a^2Ac^3-240a^2bBc^2-528aAb^2c^2+520ab^3Bc+286Ab^4c-195b^5B\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(16c^2\left(33a^2+26acx^2+8c^2x^4\right)+8b^2c\left(11cx^2-20a\right)+32bc^2x\left(13a+8cx^2\right)+15b^4-40b^3cx\right)-15\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{7864320c^{15/2}}+\frac{x^2(a+x(b+cx))^{7/2}\left(-160aBc-286Abc+195b^2B\right)}{360c^2}+\frac{(a+x(b+cx))^{7/2}\left(572b^2c(77Acx-75aB)+8abc^2(4961A+5915Bx)+16ac^2(640aB-2079Acx)-858b^3c(33A+35Bx)+19305b^4B\right)}{80640c^4}+\frac{x^3(a+x(b+cx))^{7/2}(22Ac-15bB)}{20c}+Bx^4(a+x(b+cx))^{7/2}}{11c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (((195*b^2*B - 286*A*b*c - 160*a*B*c)*x^2*(a + x*(b + c*x))^(7/2))/(360*c^2
) + ((-15*b*B + 22*A*c)*x^3*(a + x*(b + c*x))^(7/2))/(20*c) + B*x^4*(a + x*
(b + c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(19305*b^4*B - 858*b^3*c*(33*A
+ 35*B*x) + 8*a*b*c^2*(4961*A + 5915*B*x) + 16*a*c^2*(640*a*B - 2079*A*c*x)
 + 572*b^2*c*(-75*a*B + 77*A*c*x)))/(80640*c^4) + (11*(-195*b^5*B + 286*A*b
^4*c + 520*a*b^3*B*c - 528*a*A*b^2*c^2 - 240*a^2*b*B*c^2 + 96*a^2*A*c^3)*(2
*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(15*b^4 - 40*b^3*c*x + 32*b*c^2*
```

```
x*(13*a + 8*c*x^2) + 8*b^2*c*(-20*a + 11*c*x^2) + 16*c^2*(33*a^2 + 26*a*c*x
^2 + 8*c^2*x^4)) - 15*(b^2 - 4*a*c)^3*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
 + x*(b + c*x)])]))/(7864320*c^(15/2)))/(11*c)
```

IntegrateAlgebraic [A] time = 7.38, size = 961, normalized size = 1.77

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-675675*b^10*B + 990990*A*b^9*c + 9009000*a*b^8*B*c
 - 12400080*a*A*b^7*c^2 - 43834560*a^2*b^6*B*c^2 + 54730368*a^2*A*b^5*c^3 +
 92062080*a^3*b^4*B*c^3 - 96940800*a^3*A*b^3*c^4 - 73201920*a^4*b^2*B*c^4 +
 52349440*a^4*A*b*c^5 + 10485760*a^5*B*c^5 + 450450*b^9*B*c*x - 660660*A*b^
8*c^2*x - 5525520*a*b^7*B*c^2*x + 7562016*a*A*b^6*c^3*x + 23823360*a^2*b^5*
B*c^3*x - 29145600*a^2*A*b^4*c^4*x - 41015040*a^3*b^3*B*c^4*x + 40353280*a^
3*A*b^2*c^5*x + 21368320*a^4*b*B*c^5*x - 10644480*a^4*A*c^6*x - 360360*b^8*
B*c^2*x^2 + 528528*A*b^7*c^3*x^2 + 4049760*a*b^6*B*c^3*x^2 - 5505984*a*A*b^
5*c^4*x^2 - 15269760*a^2*b^4*B*c^4*x^2 + 18205440*a^2*A*b^3*c^5*x^2 + 20574
720*a^3*b^2*B*c^5*x^2 - 18191360*a^3*A*b*c^6*x^2 - 5242880*a^4*B*c^6*x^2 +
308880*b^7*B*c^3*x^3 - 453024*A*b^6*c^4*x^3 - 3157440*a*b^5*B*c^4*x^3 + 425
9200*a*A*b^4*c^5*x^3 + 10197760*a^2*b^3*B*c^5*x^3 - 11742720*a^2*A*b^2*c^6*
x^3 - 9876480*a^3*b*B*c^6*x^3 + 7096320*a^3*A*c^7*x^3 - 274560*b^6*B*c^4*x^
4 + 402688*A*b^5*c^5*x^4 + 2529280*a*b^4*B*c^5*x^4 - 3379200*a*A*b^3*c^6*x^
4 - 6789120*a^2*b^2*B*c^6*x^4 + 7434240*a^2*A*b*c^7*x^4 + 3932160*a^3*B*c^7
*x^4 + 249600*b^5*B*c^5*x^5 - 366080*A*b^4*c^6*x^5 - 2048000*a*b^3*B*c^6*x^
5 + 2703360*a*A*b^2*c^7*x^5 + 4362240*a^2*b*B*c^7*x^5 + 175988736*a^2*A*c^8
*x^5 - 230400*b^4*B*c^6*x^6 + 337920*A*b^3*c^7*x^6 + 1658880*a*b^2*B*c^7*x^
6 + 286646272*a*A*b*c^8*x^6 + 148111360*a^2*B*c^8*x^6 + 215040*b^3*B*c^7*x^
7 + 120795136*A*b^2*c^8*x^7 + 248012800*a*b*B*c^8*x^7 + 238436352*a*A*c^9*x
^7 + 106659840*b^2*B*c^8*x^8 + 206897152*A*b*c^9*x^8 + 211025920*a*B*c^9*x^
8 + 185794560*b*B*c^9*x^9 + 90832896*A*c^10*x^9 + 82575360*B*c^10*x^10))/(9
08328960*c^8) + ((-195*b^11*B + 286*A*b^10*c + 2860*a*b^9*B*c - 3960*a*A*b^
8*c^2 - 15840*a^2*b^7*B*c^2 + 20160*a^2*A*b^6*c^3 + 40320*a^3*b^5*B*c^3 - 4
4800*a^3*A*b^4*c^4 - 44800*a^4*b^3*B*c^4 + 38400*a^4*A*b^2*c^5 + 15360*a^5*
b*B*c^5 - 6144*a^5*A*c^6)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])
/(524288*c^(17/2))
```

fricas [A] time = 0.85, size = 1775, normalized size = 3.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3633315840*(3465*(195*B*b^11 + 6144*A*a^5*c^6 - 7680*(2*B*a^5*b + 5*A*a^
4*b^2)*c^5 + 44800*(B*a^4*b^3 + A*a^3*b^4)*c^4 - 20160*(2*B*a^3*b^5 + A*a^2
*b^6)*c^3 + 3960*(4*B*a^2*b^7 + A*a*b^8)*c^2 - 286*(10*B*a*b^9 + A*b^10)*c)
*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(c) - 4*a*c) + 4*(82575360*B*c^11*x^10 - 675675*B*b^10*c + 4128768*(
45*B*b*c^10 + 22*A*c^11)*x^9 + 229376*(465*B*b^2*c^9 + 2*(460*B*a + 451*A*b
)*c^10)*x^8 + 14336*(15*B*b^3*c^8 + 16632*A*a*c^10 + 2*(8650*B*a*b + 4213*A
*b^2)*c^9)*x^7 + 2560*(4096*B*a^5 + 20449*A*a^4*b)*c^6 - 1024*(225*B*b^4*c^
7 - 8*(18080*B*a^2 + 34991*A*a*b)*c^9 - 30*(54*B*a*b^2 + 11*A*b^3)*c^8)*x^6
 - 42240*(1733*B*a^4*b^2 + 2295*A*a^3*b^3)*c^5 + 256*(975*B*b^5*c^6 + 68745
6*A*a^2*c^9 + 240*(71*B*a^2*b + 44*A*a*b^2)*c^8 - 10*(800*B*a*b^3 + 143*A*b
^4)*c^7)*x^5 + 12672*(7265*B*a^3*b^4 + 4319*A*a^2*b^5)*c^4 - 128*(2145*B*b^
6*c^5 - 480*(64*B*a^3 + 121*A*a^2*b)*c^8 + 240*(221*B*a^2*b^2 + 110*A*a*b^3
)*c^7 - 26*(760*B*a*b^4 + 121*A*b^5)*c^6)*x^4 - 18480*(2372*B*a^2*b^6 + 671
```

```
*A*a*b^7)*c^3 + 16*(19305*B*b^7*c^4 + 443520*A*a^3*c^8 - 480*(1286*B*a^3*b
+ 1529*A*a^2*b^2)*c^7 + 40*(15934*B*a^2*b^3 + 6655*A*a*b^4)*c^6 - 858*(230*
B*a*b^5 + 33*A*b^6)*c^5)*x^3 + 90090*(100*B*a*b^8 + 11*A*b^9)*c^2 - 8*(4504
5*B*b^8*c^3 + 640*(1024*B*a^4 + 3553*A*a^3*b)*c^7 - 480*(5358*B*a^3*b^2 + 4
741*A*a^2*b^3)*c^6 + 792*(2410*B*a^2*b^4 + 869*A*a*b^5)*c^5 - 858*(590*B*a*
b^6 + 77*A*b^7)*c^4)*x^2 + 2*(225225*B*b^9*c^2 - 5322240*A*a^4*c^7 + 1280*(
8347*B*a^4*b + 15763*A*a^3*b^2)*c^6 - 21120*(971*B*a^3*b^3 + 690*A*a^2*b^4)
*c^5 + 1584*(7520*B*a^2*b^5 + 2387*A*a*b^6)*c^4 - 30030*(92*B*a*b^7 + 11*A*
b^8)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^9, -1/1816657920*(3465*(195*B*b^11 +
6144*A*a^5*c^6 - 7680*(2*B*a^5*b + 5*A*a^4*b^2)*c^5 + 44800*(B*a^4*b^3 + A*
a^3*b^4)*c^4 - 20160*(2*B*a^3*b^5 + A*a^2*b^6)*c^3 + 3960*(4*B*a^2*b^7 + A*
a*b^8)*c^2 - 286*(10*B*a*b^9 + A*b^10)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 +
b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(82575360*B*c^11
*x^10 - 675675*B*b^10*c + 4128768*(45*B*b*c^10 + 22*A*c^11)*x^9 + 229376*(4
65*B*b^2*c^9 + 2*(460*B*a + 451*A*b)*c^10)*x^8 + 14336*(15*B*b^3*c^8 + 1663
2*A*a*c^10 + 2*(8650*B*a*b + 4213*A*b^2)*c^9)*x^7 + 2560*(4096*B*a^5 + 2044
9*A*a^4*b)*c^6 - 1024*(225*B*b^4*c^7 - 8*(18080*B*a^2 + 34991*A*a*b)*c^9 -
30*(54*B*a*b^2 + 11*A*b^3)*c^8)*x^6 - 42240*(1733*B*a^4*b^2 + 2295*A*a^3*b^
3)*c^5 + 256*(975*B*b^5*c^6 + 687456*A*a^2*c^9 + 240*(71*B*a^2*b + 44*A*a*b
^2)*c^8 - 10*(800*B*a*b^3 + 143*A*b^4)*c^7)*x^5 + 12672*(7265*B*a^3*b^4 + 4
319*A*a^2*b^5)*c^4 - 128*(2145*B*b^6*c^5 - 480*(64*B*a^3 + 121*A*a^2*b)*c^8
 + 240*(221*B*a^2*b^2 + 110*A*a*b^3)*c^7 - 26*(760*B*a*b^4 + 121*A*b^5)*c^6
)*x^4 - 18480*(2372*B*a^2*b^6 + 671*A*a*b^7)*c^3 + 16*(19305*B*b^7*c^4 + 44
3520*A*a^3*c^8 - 480*(1286*B*a^3*b + 1529*A*a^2*b^2)*c^7 + 40*(15934*B*a^2*
b^3 + 6655*A*a*b^4)*c^6 - 858*(230*B*a*b^5 + 33*A*b^6)*c^5)*x^3 + 90090*(10
0*B*a*b^8 + 11*A*b^9)*c^2 - 8*(45045*B*b^8*c^3 + 640*(1024*B*a^4 + 3553*A*a
^3*b)*c^7 - 480*(5358*B*a^3*b^2 + 4741*A*a^2*b^3)*c^6 + 792*(2410*B*a^2*b^4
 + 869*A*a*b^5)*c^5 - 858*(590*B*a*b^6 + 77*A*b^7)*c^4)*x^2 + 2*(225225*B*b
^9*c^2 - 5322240*A*a^4*c^7 + 1280*(8347*B*a^4*b + 15763*A*a^3*b^2)*c^6 - 21
120*(971*B*a^3*b^3 + 690*A*a^2*b^4)*c^5 + 1584*(7520*B*a^2*b^5 + 2387*A*a*b
^6)*c^4 - 30030*(92*B*a*b^7 + 11*A*b^8)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^9]
```

giac [A] time = 0.31, size = 908, normalized size = 1.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/908328960*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*(18*(20*B*c^2*x
 + (45*B*b*c^11 + 22*A*c^12)/c^10)*x + (465*B*b^2*c^10 + 920*B*a*c^11 + 902
*A*b*c^11)/c^10)*x + (15*B*b^3*c^9 + 17300*B*a*b*c^10 + 8426*A*b^2*c^10 + 1
6632*A*a*c^11)/c^10)*x - (225*B*b^4*c^8 - 1620*B*a*b^2*c^9 - 330*A*b^3*c^9
- 144640*B*a^2*c^10 - 279928*A*a*b*c^10)/c^10)*x + (975*B*b^5*c^7 - 8000*B*
a*b^3*c^8 - 1430*A*b^4*c^8 + 17040*B*a^2*b*c^9 + 10560*A*a*b^2*c^9 + 687456
*A*a^2*c^10)/c^10)*x - (2145*B*b^6*c^6 - 19760*B*a*b^4*c^7 - 3146*A*b^5*c^7
 + 53040*B*a^2*b^2*c^8 + 26400*A*a*b^3*c^8 - 30720*B*a^3*c^9 - 58080*A*a^2*
b*c^9)/c^10)*x + (19305*B*b^7*c^5 - 197340*B*a*b^5*c^6 - 28314*A*b^6*c^6 +
637360*B*a^2*b^3*c^7 + 266200*A*a*b^4*c^7 - 617280*B*a^3*b*c^8 - 733920*A*a
^2*b^2*c^8 + 443520*A*a^3*c^9)/c^10)*x - (45045*B*b^8*c^4 - 506220*B*a*b^6*
c^5 - 66066*A*b^7*c^5 + 1908720*B*a^2*b^4*c^6 + 688248*A*a*b^5*c^6 - 257184
0*B*a^3*b^2*c^7 - 2275680*A*a^2*b^3*c^7 + 655360*B*a^4*c^8 + 2273920*A*a^3*
b*c^8)/c^10)*x + (225225*B*b^9*c^3 - 2762760*B*a*b^7*c^4 - 330330*A*b^8*c^4
 + 11911680*B*a^2*b^5*c^5 + 3781008*A*a*b^6*c^5 - 20507520*B*a^3*b^3*c^6 -
14572800*A*a^2*b^4*c^6 + 10684160*B*a^4*b*c^7 + 20176640*A*a^3*b^2*c^7 - 53
22240*A*a^4*c^8)/c^10)*x - (675675*B*b^10*c^2 - 9009000*B*a*b^8*c^3 - 99099
0*A*b^9*c^3 + 43834560*B*a^2*b^6*c^4 + 12400080*A*a*b^7*c^4 - 92062080*B*a^
3*b^4*c^5 - 54730368*A*a^2*b^5*c^5 + 73201920*B*a^4*b^2*c^6 + 96940800*A*a^
3*b^3*c^6 - 10485760*B*a^5*c^7 - 52349440*A*a^4*b*c^7)/c^10) - 1/524288*(19
5*B*b^11 - 2860*B*a*b^9*c - 286*A*b^10*c + 15840*B*a^2*b^7*c^2 + 3960*A*a*b
```

```
^8*c^2 - 40320*B*a^3*b^5*c^3 - 20160*A*a^2*b^6*c^3 + 44800*B*a^4*b^3*c^4 +
44800*A*a^3*b^4*c^4 - 15360*B*a^5*b*c^5 - 38400*A*a^4*b^2*c^5 + 6144*A*a^5*
c^6)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(17/2)
```

maple [B] time = 0.07, size = 1848, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -15/512*B*b/c^3*a^4*(c*x^2+b*x+a)^(1/2)*x+13/384*B*b^3/c^4*a*(c*x^2+b*x+a)^
(5/2)*x-5/256*B*b/c^3*a^3*(c*x^2+b*x+a)^(3/2)*x+65/4096*B*b^7/c^6*(c*x^2+b*
x+a)^(1/2)*x*a+145/3072*B*b^3/c^4*a^2*(c*x^2+b*x+a)^(3/2)*x+5/64*B*b^3/c^4*
a^3*(c*x^2+b*x+a)^(1/2)*x-1/64*B*b/c^3*a^2*(c*x^2+b*x+a)^(5/2)*x-143/262144
*A*b^10/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/10*A*x^3*(c*
x^2+b*x+a)^(7/2)/c+3/256*A*a^5/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))+143/131072*A*b^9/c^7*(c*x^2+b*x+a)^(1/2)-325/12288*B*b^5/c^5*(c*x^2
+b*x+a)^(3/2)*x*a-9/128*A*b^2/c^3*a^3*(c*x^2+b*x+a)^(1/2)*x+209/6144*A*b^4/
c^4*(c*x^2+b*x+a)^(3/2)*x*a+139/2048*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x*a^2-11
/320*A*b^2/c^3*a*(c*x^2+b*x+a)^(5/2)*x-23/512*A*b^2/c^3*a^2*(c*x^2+b*x+a)^(
3/2)*x-11/512*A*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x*a+3/512*A*a^4/c^3*(c*x^2+b*x+
a)^(1/2)*b+1/160*A*a^2/c^2*(c*x^2+b*x+a)^(5/2)*x-5/512*B*b^2/c^4*a^3*(c*x^2
+b*x+a)^(3/2)+175/2048*B*b^3/c^(9/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))-235/4096*B*b^5/c^5*(c*x^2+b*x+a)^(1/2)*x*a^2+169/3168*B*b/c^3*a*x
*(c*x^2+b*x+a)^(7/2)+143/15360*A*b^5/c^5*(c*x^2+b*x+a)^(5/2)-143/49152*A*b^
7/c^6*(c*x^2+b*x+a)^(3/2)-143/4480*A*b^3/c^4*(c*x^2+b*x+a)^(7/2)-195/262144
*B*b^10/c^8*(c*x^2+b*x+a)^(1/2)-13/2048*B*b^6/c^6*(c*x^2+b*x+a)^(5/2)+65/32
768*B*b^8/c^7*(c*x^2+b*x+a)^(3/2)+39/1792*B*b^4/c^5*(c*x^2+b*x+a)^(7/2)+8/6
93*B*a^2/c^3*(c*x^2+b*x+a)^(7/2)+195/524288*B*b^11/c^(17/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))+143/65536*A*b^8/c^6*(c*x^2+b*x+a)^(1/2)*x+451/
10080*A*b/c^3*a*(c*x^2+b*x+a)^(7/2)-13/180*A*b/c^2*x^2*(c*x^2+b*x+a)^(7/2)-
9/256*A*b^3/c^4*a^3*(c*x^2+b*x+a)^(1/2)-11/640*A*b^3/c^4*a*(c*x^2+b*x+a)^(5
/2)-23/1024*A*b^3/c^4*a^2*(c*x^2+b*x+a)^(3/2)+139/4096*A*b^5/c^5*(c*x^2+b*x
+a)^(1/2)*a^2-11/1024*A*b^7/c^6*(c*x^2+b*x+a)^(1/2)*a+143/2880*A*b^2/c^3*x*
(c*x^2+b*x+a)^(7/2)+143/7680*A*b^4/c^4*(c*x^2+b*x+a)^(5/2)*x-143/24576*A*b^
6/c^5*(c*x^2+b*x+a)^(3/2)*x+209/12288*A*b^5/c^5*(c*x^2+b*x+a)^(3/2)*a+3/256
*A*a^4/c^2*(c*x^2+b*x+a)^(1/2)*x-325/24576*B*b^6/c^6*(c*x^2+b*x+a)^(3/2)*a-
15/1024*B*b^2/c^4*a^4*(c*x^2+b*x+a)^(1/2)-1/128*B*b^2/c^4*a^2*(c*x^2+b*x+a)
^(5/2)+5/128*B*b^4/c^5*a^3*(c*x^2+b*x+a)^(1/2)+13/768*B*b^4/c^5*a*(c*x^2+b*
x+a)^(5/2)+145/6144*B*b^4/c^5*a^2*(c*x^2+b*x+a)^(3/2)-235/8192*B*b^6/c^6*(c
*x^2+b*x+a)^(1/2)*a^2+65/8192*B*b^8/c^7*(c*x^2+b*x+a)^(1/2)*a-13/384*B*b^3/
c^4*x*(c*x^2+b*x+a)^(7/2)-13/1024*B*b^5/c^5*(c*x^2+b*x+a)^(5/2)*x+65/16384*
B*b^7/c^6*(c*x^2+b*x+a)^(3/2)*x-315/4096*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))*a^3+495/16384*B*b^7/c^(13/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a^2-15/512*B*b/c^(7/2)*a^5*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))-715/131072*B*b^9/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))*a-4/99*B*a/c^2*x^2*(c*x^2+b*x+a)^(7/2)-3/44*B*b/c^2*x^3*(c*x^
2+b*x+a)^(7/2)-195/131072*B*b^9/c^7*(c*x^2+b*x+a)^(1/2)*x-65/1344*B*b^2/c^4
*a*(c*x^2+b*x+a)^(7/2)+13/264*B*b^2/c^3*x^2*(c*x^2+b*x+a)^(7/2)+1/320*A*a^2
/c^3*(c*x^2+b*x+a)^(5/2)*b+1/128*A*a^3/c^2*(c*x^2+b*x+a)^(3/2)*x+1/256*A*a^
3/c^3*(c*x^2+b*x+a)^(3/2)*b+495/65536*A*b^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*a-75/1024*A*b^2/c^(7/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))+175/2048*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*a^3-315/8192*A*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))*a^2-3/80*A*a/c^2*x*(c*x^2+b*x+a)^(7/2)+1/11*B*x^4*(c*x^2+b*x+a)^(7/
2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4\,(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.861 $\int x^3(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=432

$$-\frac{\left(b^2-4ac\right)^3\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{262144c^{15/2}}+\frac{\left(b^2-4ac\right)^2(b+2\cdots}{}$$

Rubi [A] time = 0.49, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)}{15360c^5}-\frac{\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)}{49152c^6}+\frac{\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)}{131072c^7}-\frac{\left(b^2-4ac\right)^3\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{262144c^{15/2}}-\frac{\left(a+bx+cx^2\right)^{7/2}\left(-14cx\left(-108aBc-220Abc+143b^2B\right)+1280aAc^2-1804abBc-1980Ab^2c+1287b^3B\right)}{40320c^4}-\frac{x^2\left(a+bx+cx^2\right)^{7/2}(13bB-20Ac)}{180c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] ((b^2 - 4*a*c)^2*(143*b^4*B - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 +
 48*a^2*B*c^2)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(131072*c^7) - ((b^2 - 4*
a*c)*(143*b^4*B - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^
2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(49152*c^6) + ((143*b^4*B - 220*A*b
^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^2)*(b + 2*c*x)*(a + b*x +
 c*x^2)^(5/2))/(15360*c^5) - ((13*b*B - 20*A*c)*x^2*(a + b*x + c*x^2)^(7/2)
)/(180*c^2) + (B*x^3*(a + b*x + c*x^2)^(7/2))/(10*c) - ((1287*b^3*B - 1980*
A*b^2*c - 1804*a*b*B*c + 1280*a*A*c^2 - 14*c*(143*b^2*B - 220*A*b*c - 108*a
*B*c)*x)*(a + b*x + c*x^2)^(7/2))/(40320*c^4) - ((b^2 - 4*a*c)^3*(143*b^4*B
 - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^2)*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(262144*c^(15/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^3(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx=\frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}+\frac{\int x^2\left(-3aB-\frac{1}{2}(13bB-20Ac)x\right)\left(a+bx+cx^2\right)}{10c}$$

$$=-\frac{(13bB-20Ac)x^2\left(a+bx+cx^2\right)^{7/2}}{180c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}+\frac{\int x\left(a(13\right.}{}$$

$$=-\frac{(13bB-20Ac)x^2\left(a+bx+cx^2\right)^{7/2}}{180c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}-\frac{\left(1287b^3\right.}{}$$

$$=\frac{\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b+2cx)\left(a+\right.}{15360c^5}$$

$$=-\frac{\left(b^2-4ac\right)\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{49152c^6}$$

$$=\frac{\left(b^2-4ac\right)^2\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{131072c^7}$$

$$=\frac{\left(b^2-4ac\right)^2\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{131072c^7}$$

$$=\frac{\left(b^2-4ac\right)^2\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{131072c^7}$$

Mathematica [A] time = 0.76, size = 315, normalized size = 0.73

$$\frac{\frac{\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)\left(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(16c^{3/2}(b+2cx)(a+x(b+cx))^{3/2}-3\left(b^2-4ac\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{393216c^{13/2}}+\frac{(a+x(b+cx))^{7/2}\left(44bc(41aB-70Acx)-8ac^2(160A+189Bx)+22b^2c(90A+91Bx)-1287b^3B\right)}{4032c^3}+\frac{x^2(a+x(b+cx))^{7/2}(20Ac-13bB)}{18c}+Bx^3(a+x(b+cx))^{7/2}}{10c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (((-13*b*B + 20*A*c)*x^2*(a + x*(b + c*x))^(7/2))/(18*c) + B*x^3*(a + x*(b
+ c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(-1287*b^3*B + 22*b^2*c*(90*A + 91
*B*x) - 8*a*c^2*(160*A + 189*B*x) + 44*b*c*(41*a*B - 70*A*c*x)))/(4032*c^3)
 + ((143*b^4*B - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^2
)*(256*c^(5/2)*(b + 2*c*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^
(3/2)*(b + 2*c*x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b +
 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c
]*Sqrt[a + x*(b + c*x)])]))))/(393216*c^(13/2)))/(10*c)
```

IntegrateAlgebraic [A] time = 5.17, size = 804, normalized size = 1.86

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(45045*b^9*B - 69300*A*b^8*c - 563640*a*b^7*B*c + 81
4800*a*A*b^6*c^2 + 2487744*a^2*b^5*B*c^2 - 3245760*a^2*A*b^4*c^3 - 4406400*
a^3*b^3*B*c^3 + 4688640*a^3*A*b^2*c^4 + 2379520*a^4*b*B*c^4 - 1310720*a^4*A
*c^5 - 30030*b^8*B*c*x + 46200*A*b^7*c^2*x + 343728*a*b^6*B*c^2*x - 493920*
a*A*b^5*c^3*x - 1324800*a^2*b^4*B*c^3*x + 1687680*a^2*A*b^3*c^4*x + 1834240
*a^3*b^2*B*c^4*x - 1763840*a^3*A*b*c^5*x - 483840*a^4*B*c^5*x + 24024*b^7*B
*c^2*x^2 - 36960*A*b^6*c^3*x^2 - 250272*a*b^5*B*c^3*x^2 + 357120*a*A*b^4*c^
4*x^2 + 827520*a^2*b^3*B*c^4*x^2 - 1021440*a^2*A*b^2*c^5*x^2 - 826880*a^3*b
*B*c^5*x^2 + 655360*a^3*A*c^6*x^2 - 20592*b^6*B*c^3*x^3 + 31680*A*b^5*c^4*x
^3 + 193600*a*b^4*B*c^4*x^3 - 273920*a*A*b^3*c^5*x^3 - 533760*a^2*b^2*B*c^5
*x^3 + 629760*a^2*A*b*c^6*x^3 + 322560*a^3*B*c^6*x^3 + 18304*b^5*B*c^4*x^4
- 28160*A*b^4*c^5*x^4 - 153600*a*b^3*B*c^5*x^4 + 215040*a*A*b^2*c^6*x^4 + 3
37920*a^2*b*B*c^6*x^4 + 9830400*a^2*A*c^7*x^4 - 16640*b^4*B*c^5*x^5 + 25600
*A*b^3*c^6*x^5 + 122880*a*b^2*B*c^6*x^5 + 15421440*a*A*b*c^7*x^5 + 7999488*
a^2*B*c^7*x^5 + 15360*b^3*B*c^6*x^6 + 6328320*A*b^2*c^7*x^6 + 13029376*a*b*
B*c^7*x^6 + 12451840*a*A*c^8*x^6 + 5490688*b^2*B*c^7*x^7 + 10608640*A*b*c^8
*x^7 + 10838016*a*B*c^8*x^7 + 9404416*b*B*c^8*x^8 + 4587520*A*c^9*x^8 + 412
8768*B*c^9*x^9))/(41287680*c^7) + ((143*b^10*B - 220*A*b^9*c - 1980*a*b^8*B
*c + 2880*a*A*b^7*c^2 + 10080*a^2*b^6*B*c^2 - 13440*a^2*A*b^5*c^3 - 22400*a
^3*b^4*B*c^3 + 25600*a^3*A*b^3*c^4 + 19200*a^4*b^2*B*c^4 - 15360*a^4*A*b*c^
5 - 3072*a^5*B*c^5)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(2621
44*c^(15/2))
```

fricas [A] time = 0.76, size = 1511, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/165150720*(315*(143*B*b^10 - 3072*(B*a^5 + 5*A*a^4*b)*c^5 + 6400*(3*B*a
^4*b^2 + 4*A*a^3*b^3)*c^4 - 4480*(5*B*a^3*b^4 + 3*A*a^2*b^5)*c^3 + 1440*(7*
B*a^2*b^6 + 2*A*a*b^7)*c^2 - 220*(9*B*a*b^8 + A*b^9)*c)*sqrt(c)*log(-8*c^2*
x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c)
- 4*(4128768*B*c^10*x^9 + 45045*B*b^9*c - 1310720*A*a^4*c^6 + 229376*(41*B*
b*c^9 + 20*A*c^10)*x^8 + 14336*(383*B*b^2*c^8 + 4*(189*B*a + 185*A*b)*c^9)*
x^7 + 1024*(15*B*b^3*c^7 + 12160*A*a*c^9 + 4*(3181*B*a*b + 1545*A*b^2)*c^8)
*x^6 + 14080*(169*B*a^4*b + 333*A*a^3*b^2)*c^5 - 256*(65*B*b^4*c^6 - 48*(65
1*B*a^2 + 1255*A*a*b)*c^8 - 20*(24*B*a*b^2 + 5*A*b^3)*c^7)*x^5 - 2880*(1530
*B*a^3*b^3 + 1127*A*a^2*b^4)*c^4 + 128*(143*B*b^5*c^5 + 76800*A*a^2*c^8 + 2
40*(11*B*a^2*b + 7*A*a*b^2)*c^7 - 20*(60*B*a*b^3 + 11*A*b^4)*c^6)*x^4 + 336
*(7404*B*a^2*b^5 + 2425*A*a*b^6)*c^3 - 16*(1287*B*b^6*c^4 - 960*(21*B*a^3 +
 41*A*a^2*b)*c^7 + 80*(417*B*a^2*b^2 + 214*A*a*b^3)*c^6 - 220*(55*B*a*b^4 +
 9*A*b^5)*c^5)*x^3 - 4620*(122*B*a*b^7 + 15*A*b^8)*c^2 + 8*(3003*B*b^7*c^3
+ 81920*A*a^3*c^7 - 6080*(17*B*a^3*b + 21*A*a^2*b^2)*c^6 + 240*(431*B*a^2*b
^3 + 186*A*a*b^4)*c^5 - 132*(237*B*a*b^5 + 35*A*b^6)*c^4)*x^2 - 2*(15015*B*
b^8*c^2 + 1280*(189*B*a^4 + 689*A*a^3*b)*c^6 - 320*(2866*B*a^3*b^2 + 2637*A
*a^2*b^3)*c^5 + 720*(920*B*a^2*b^4 + 343*A*a*b^5)*c^4 - 924*(186*B*a*b^6 +
25*A*b^7)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^8, 1/82575360*(315*(143*B*b^10 -
 3072*(B*a^5 + 5*A*a^4*b)*c^5 + 6400*(3*B*a^4*b^2 + 4*A*a^3*b^3)*c^4 - 4480
*(5*B*a^3*b^4 + 3*A*a^2*b^5)*c^3 + 1440*(7*B*a^2*b^6 + 2*A*a*b^7)*c^2 - 220
*(9*B*a*b^8 + A*b^9)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(4128768*B*c^10*x^9 + 45045*B*b^9*
c - 1310720*A*a^4*c^6 + 229376*(41*B*b*c^9 + 20*A*c^10)*x^8 + 14336*(383*B*
b^2*c^8 + 4*(189*B*a + 185*A*b)*c^9)*x^7 + 1024*(15*B*b^3*c^7 + 12160*A*a*c
^9 + 4*(3181*B*a*b + 1545*A*b^2)*c^8)*x^6 + 14080*(169*B*a^4*b + 333*A*a^3*
b^2)*c^5 - 256*(65*B*b^4*c^6 - 48*(651*B*a^2 + 1255*A*a*b)*c^8 - 20*(24*B*a
*b^2 + 5*A*b^3)*c^7)*x^5 - 2880*(1530*B*a^3*b^3 + 1127*A*a^2*b^4)*c^4 + 128
*(143*B*b^5*c^5 + 76800*A*a^2*c^8 + 240*(11*B*a^2*b + 7*A*a*b^2)*c^7 - 20*(
```

```
60*B*a*b^3 + 11*A*b^4)*c^6)*x^4 + 336*(7404*B*a^2*b^5 + 2425*A*a*b^6)*c^3 -
 16*(1287*B*b^6*c^4 - 960*(21*B*a^3 + 41*A*a^2*b)*c^7 + 80*(417*B*a^2*b^2 +
 214*A*a*b^3)*c^6 - 220*(55*B*a*b^4 + 9*A*b^5)*c^5)*x^3 - 4620*(122*B*a*b^7
 + 15*A*b^8)*c^2 + 8*(3003*B*b^7*c^3 + 81920*A*a^3*c^7 - 6080*(17*B*a^3*b +
 21*A*a^2*b^2)*c^6 + 240*(431*B*a^2*b^3 + 186*A*a*b^4)*c^5 - 132*(237*B*a*b
^5 + 35*A*b^6)*c^4)*x^2 - 2*(15015*B*b^8*c^2 + 1280*(189*B*a^4 + 689*A*a^3*
b)*c^6 - 320*(2866*B*a^3*b^2 + 2637*A*a^2*b^3)*c^5 + 720*(920*B*a^2*b^4 + 3
43*A*a*b^5)*c^4 - 924*(186*B*a*b^6 + 25*A*b^7)*c^3)*x)*sqrt(c*x^2 + b*x + a
))/c^8]
```

giac [A] time = 0.32, size = 769, normalized size = 1.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/41287680*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*(18*B*c^2*x + (4
1*B*b*c^10 + 20*A*c^11)/c^9)*x + (383*B*b^2*c^9 + 756*B*a*c^10 + 740*A*b*c^
10)/c^9)*x + (15*B*b^3*c^8 + 12724*B*a*b*c^9 + 6180*A*b^2*c^9 + 12160*A*a*c
^10)/c^9)*x - (65*B*b^4*c^7 - 480*B*a*b^2*c^8 - 100*A*b^3*c^8 - 31248*B*a^2
*c^9 - 60240*A*a*b*c^9)/c^9)*x + (143*B*b^5*c^6 - 1200*B*a*b^3*c^7 - 220*A*
b^4*c^7 + 2640*B*a^2*b*c^8 + 1680*A*a*b^2*c^8 + 76800*A*a^2*c^9)/c^9)*x - (
1287*B*b^6*c^5 - 12100*B*a*b^4*c^6 - 1980*A*b^5*c^6 + 33360*B*a^2*b^2*c^7 +
 17120*A*a*b^3*c^7 - 20160*B*a^3*c^8 - 39360*A*a^2*b*c^8)/c^9)*x + (3003*B*
b^7*c^4 - 31284*B*a*b^5*c^5 - 4620*A*b^6*c^5 + 103440*B*a^2*b^3*c^6 + 44640
*A*a*b^4*c^6 - 103360*B*a^3*b*c^7 - 127680*A*a^2*b^2*c^7 + 81920*A*a^3*c^8)
/c^9)*x - (15015*B*b^8*c^3 - 171864*B*a*b^6*c^4 - 23100*A*b^7*c^4 + 662400*
B*a^2*b^4*c^5 + 246960*A*a*b^5*c^5 - 917120*B*a^3*b^2*c^6 - 843840*A*a^2*b^
3*c^6 + 241920*B*a^4*c^7 + 881920*A*a^3*b*c^7)/c^9)*x + (45045*B*b^9*c^2 -
563640*B*a*b^7*c^3 - 69300*A*b^8*c^3 + 2487744*B*a^2*b^5*c^4 + 814800*A*a*b
^6*c^4 - 4406400*B*a^3*b^3*c^5 - 3245760*A*a^2*b^4*c^5 + 2379520*B*a^4*b*c^
6 + 4688640*A*a^3*b^2*c^6 - 1310720*A*a^4*c^7)/c^9) + 1/262144*(143*B*b^10
- 1980*B*a*b^8*c - 220*A*b^9*c + 10080*B*a^2*b^6*c^2 + 2880*A*a*b^7*c^2 - 2
2400*B*a^3*b^4*c^3 - 13440*A*a^2*b^5*c^3 + 19200*B*a^4*b^2*c^4 + 25600*A*a^
3*b^3*c^4 - 3072*B*a^5*c^5 - 15360*A*a^4*b*c^5)*log(abs(-2*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*sqrt(c) - b))/c^(15/2)
```

maple [B] time = 0.07, size = 1549, normalized size = 3.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 125/4096*A*b^5/c^4*(c*x^2+b*x+a)^(1/2)*x*a-35/768*A*b^3/c^3*(c*x^2+b*x+a)^(
3/2)*x*a+15/256*A*b/c^2*a^3*(c*x^2+b*x+a)^(1/2)*x+5/128*A*b/c^2*a^2*(c*x^2+
b*x+a)^(3/2)*x-85/1024*A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x*a^2-11/320*B*b^2/c^3
*a*(c*x^2+b*x+a)^(5/2)*x-23/512*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(3/2)*x-9/128*B
*b^2/c^3*a^3*(c*x^2+b*x+a)^(1/2)*x+209/6144*B*b^4/c^4*(c*x^2+b*x+a)^(3/2)*x
*a-11/512*B*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x*a+139/2048*B*b^4/c^4*(c*x^2+b*x+a
)^(1/2)*x*a^2+1/32*A*b/c^2*a*(c*x^2+b*x+a)^(5/2)*x+139/4096*B*b^5/c^5*(c*x^
2+b*x+a)^(1/2)*a^2-11/1024*B*b^7/c^6*(c*x^2+b*x+a)^(1/2)*a-45/4096*A*b^7/c^
(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+15/256*A*b/c^(5/2)*a^4
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-25/256*A*b^3/c^(7/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-55/16384*A*b^7/c^5*(c*x^2+b*x+a)^(1/
2)*x-85/2048*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*a^2+125/8192*A*b^6/c^5*(c*x^2+b*
x+a)^(1/2)*a+55/6144*A*b^5/c^4*(c*x^2+b*x+a)^(3/2)*x-35/1536*A*b^4/c^4*(c*x
^2+b*x+a)^(3/2)*a-11/384*A*b^3/c^3*(c*x^2+b*x+a)^(5/2)*x+1/64*A*b^2/c^3*a*(
c*x^2+b*x+a)^(5/2)+5/256*A*b^2/c^3*a^2*(c*x^2+b*x+a)^(3/2)+15/512*A*b^2/c^3
```

```
*a^3*(c*x^2+b*x+a)^(1/2)+105/2048*A*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))*a^2-11/144*A*b/c^2*x*(c*x^2+b*x+a)^(7/2)+143/7680*B*b^4/c^
4*(c*x^2+b*x+a)^(5/2)*x-11/640*B*b^3/c^4*a*(c*x^2+b*x+a)^(5/2)-23/1024*B*b^
3/c^4*a^2*(c*x^2+b*x+a)^(3/2)-9/256*B*b^3/c^4*a^3*(c*x^2+b*x+a)^(1/2)+143/2
880*B*b^2/c^3*x*(c*x^2+b*x+a)^(7/2)+1/128*B*a^3/c^2*(c*x^2+b*x+a)^(3/2)*x+1
/256*B*a^3/c^3*(c*x^2+b*x+a)^(3/2)*b+3/256*B*a^4/c^2*(c*x^2+b*x+a)^(1/2)*x+
3/512*B*a^4/c^3*(c*x^2+b*x+a)^(1/2)*b-143/24576*B*b^6/c^5*(c*x^2+b*x+a)^(3/
2)*x+209/12288*B*b^5/c^5*(c*x^2+b*x+a)^(3/2)*a+143/65536*B*b^8/c^6*(c*x^2+b
*x+a)^(1/2)*x+451/10080*B*b/c^3*a*(c*x^2+b*x+a)^(7/2)+3/256*B*a^5/c^(5/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-143/262144*B*b^10/c^(15/2)*ln((c
*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+143/15360*B*b^5/c^5*(c*x^2+b*x+a)^(5
/2)-143/49152*B*b^7/c^6*(c*x^2+b*x+a)^(3/2)+143/131072*B*b^9/c^7*(c*x^2+b*x
+a)^(1/2)-143/4480*B*b^3/c^4*(c*x^2+b*x+a)^(7/2)-2/63*A*a/c^2*(c*x^2+b*x+a)
^(7/2)-11/768*A*b^4/c^4*(c*x^2+b*x+a)^(5/2)+55/12288*A*b^6/c^5*(c*x^2+b*x+a
)^(3/2)-55/32768*A*b^8/c^6*(c*x^2+b*x+a)^(1/2)+11/224*A*b^2/c^3*(c*x^2+b*x+
a)^(7/2)+1/9*A*x^2*(c*x^2+b*x+a)^(7/2)/c+55/65536*A*b^9/c^(13/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-13/180*B*b/c^2*x^2*(c*x^2+b*x+a)^(7/2)+1/
320*B*a^2/c^3*(c*x^2+b*x+a)^(5/2)*b-75/1024*B*b^2/c^(7/2)*a^4*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+175/2048*B*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a^3-315/8192*B*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))*a^2+1/160*B*a^2/c^2*(c*x^2+b*x+a)^(5/2)*x-3/80*B*a/c^2*
x*(c*x^2+b*x+a)^(7/2)+495/65536*B*b^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))*a+1/10*B*x^3*(c*x^2+b*x+a)^(7/2)/c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3}\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.862 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=333

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(-64aBc-14cx(11bB-18Ac)-162Abc+99b^2B\right)}{2016c^3}+\frac{5\left(b^2-4ac\right)^3\left(8aAc^2-12abBc-18Ab^2\right.}{65536c^1}$$

Rubi [A] time = 0.31, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(-64aBc-14cx(11bB-18Ac)-162Abc+99b^2B\right)}{2016c^3}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(8aAc^2-12abBc-18Ab^2c+11b^3B\right)}{768c^4}+\frac{5\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(8aAc^2-12abBc-18Ab^2c+11b^3B\right)}{12288c^5}-\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\left(8aAc^2-12abBc-18Ab^2c+11b^3B\right)}{32768c^6}+\frac{5\left(b^2-4ac\right)^3\left(8aAc^2-12abBc-18Ab^2c+11b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{65536c^{13/2}}+\frac{Bx^2\left(a+bx+cx^2\right)^{7/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(11*b^3*B - 18*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2
*c*x)*Sqrt[a + b*x + c*x^2])/(32768*c^6) + (5*(b^2 - 4*a*c)*(11*b^3*B - 18*
A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(122
88*c^5) - ((11*b^3*B - 18*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*(a
+ b*x + c*x^2)^(5/2))/(768*c^4) + (B*x^2*(a + b*x + c*x^2)^(7/2))/(9*c) + (
(99*b^2*B - 162*A*b*c - 64*a*B*c - 14*c*(11*b*B - 18*A*c)*x)*(a + b*x + c*x
^2)^(7/2))/(2016*c^3) + (5*(b^2 - 4*a*c)^3*(11*b^3*B - 18*A*b^2*c - 12*a*b*
B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(6
5536*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx = \frac{Bx^2\left(a+bx+cx^2\right)^{7/2}}{9c} + \frac{\int x\left(-2aB-\frac{1}{2}(11bB-18Ac)x\right)\left(a+bx+cx^2\right)^{5/2}\,d}{9c}$$

$$= \frac{Bx^2\left(a+bx+cx^2\right)^{7/2}}{9c} + \frac{\left(99b^2B-162Abc-64aBc-14c(11bB-18Ac)x\right)(}{2016c^3}$$

$$= -\frac{\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{768c^4} + \frac{Bx^2(a}{}$$

$$= \frac{5\left(b^2-4ac\right)\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\left(a+bx+cx^2\right)^{3/}}{12288c^5}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx}}{32768c^6}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx}}{32768c^6}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx}}{32768c^6}$$

Mathematica [A] time = 0.45, size = 254, normalized size = 0.76

$$\frac{\frac{(a+x(b+cx))^{7/2}\left(4c(63Acx-16aB)-2bc(81A+77Bx)+99b^2B\right)}{224c^2}+\frac{3\left(-8aAc^2+12abBc+18Ab^2c-11b^3B\right)\left(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(16c^{3/2}(b+2cx)(a+x(b+cx))^{3/2}-3\left(b^2-4ac\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{65536c^{11/2}}+Bx^2(a+x(b+cx))^{7/2}}{9c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (B*x^2*(a + x*(b + c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(99*b^2*B - 2*b*c
*(81*A + 77*B*x) + 4*c*(-16*a*B + 63*A*c*x)))/(224*c^2) + (3*(-11*b^3*B + 1
8*A*b^2*c + 12*a*b*B*c - 8*a*A*c^2)*(256*c^(5/2)*(b + 2*c*x)*(a + x*(b + c*
x))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^(3/2)*(b + 2*c*x)*(a + x*(b + c*x))^(3/2)
 - 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*
a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))))/(65536*c^(1
1/2)))/(9*c)
```

IntegrateAlgebraic [A] time = 3.55, size = 662, normalized size = 1.99

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-3465*b^8*B + 5670*A*b^7*c + 40740*a*b^6*B*c - 6300
0*a*A*b^5*c^2 - 162288*a^2*b^4*B*c^2 + 226464*a^2*A*b^3*c^3 + 234432*a^3*b^
2*B*c^3 - 254592*a^3*A*b*c^4 - 65536*a^4*B*c^4 + 2310*b^7*B*c*x - 3780*A*b^
```

```
6*c^2*x - 24696*a*b^5*B*c^2*x + 37968*a*A*b^4*c^3*x + 84384*a^2*b^3*B*c^3*x
 - 114624*a^2*A*b^2*c^4*x - 88192*a^3*b*B*c^4*x + 80640*a^3*A*c^5*x - 1848*
b^6*B*c^2*x^2 + 3024*A*b^5*c^3*x^2 + 17856*a*b^4*B*c^3*x^2 - 27264*a*A*b^3*
c^4*x^2 - 51072*a^2*b^2*B*c^4*x^2 + 66816*a^2*A*b*c^5*x^2 + 32768*a^3*B*c^5
*x^2 + 1584*b^5*B*c^3*x^3 - 2592*A*b^4*c^4*x^3 - 13696*a*b^3*B*c^4*x^3 + 20
736*a*A*b^2*c^5*x^3 + 31488*a^2*b*B*c^5*x^3 + 634368*a^2*A*c^6*x^3 - 1408*b
^4*B*c^4*x^4 + 2304*A*b^3*c^5*x^4 + 10752*a*b^2*B*c^5*x^4 + 943104*a*A*b*c^
6*x^4 + 491520*a^2*B*c^6*x^4 + 1280*b^3*B*c^5*x^5 + 373248*A*b^2*c^6*x^5 +
771072*a*b*B*c^6*x^5 + 731136*a*A*c^7*x^5 + 316416*b^2*B*c^6*x^6 + 608256*A
*b*c^7*x^6 + 622592*a*B*c^7*x^6 + 530432*b*B*c^7*x^7 + 258048*A*c^8*x^7 + 2
29376*B*c^8*x^8))/(2064384*c^6) - (5*(11*b^9*B - 18*A*b^8*c - 144*a*b^7*B*c
 + 224*a*A*b^6*c^2 + 672*a^2*b^5*B*c^2 - 960*a^2*A*b^4*c^3 - 1280*a^3*b^3*B
*c^3 + 1536*a^3*A*b^2*c^4 + 768*a^4*b*B*c^4 - 512*a^4*A*c^5)*Log[b + 2*c*x
- 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(65536*c^(13/2))
```

fricas [B] time = 0.66, size = 1263, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/8257536*(315*(11*B*b^9 - 512*A*a^4*c^5 + 768*(B*a^4*b + 2*A*a^3*b^2)*c^4
 - 320*(4*B*a^3*b^3 + 3*A*a^2*b^4)*c^3 + 224*(3*B*a^2*b^5 + A*a*b^6)*c^2 -
18*(8*B*a*b^7 + A*b^8)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(229376*B*c^9*x^8 - 3465*B
*b^8*c + 14336*(37*B*b*c^8 + 18*A*c^9)*x^7 + 1024*(309*B*b^2*c^7 + 2*(304*B
*a + 297*A*b)*c^8)*x^6 - 128*(512*B*a^4 + 1989*A*a^3*b)*c^5 + 256*(5*B*b^3*
c^6 + 2856*A*a*c^8 + 6*(502*B*a*b + 243*A*b^2)*c^7)*x^5 + 96*(2442*B*a^3*b^
2 + 2359*A*a^2*b^3)*c^4 - 128*(11*B*b^4*c^5 - 24*(160*B*a^2 + 307*A*a*b)*c^
7 - 6*(14*B*a*b^2 + 3*A*b^3)*c^6)*x^4 - 504*(322*B*a^2*b^4 + 125*A*a*b^5)*c
^3 + 16*(99*B*b^5*c^4 + 39648*A*a^2*c^7 + 48*(41*B*a^2*b + 27*A*a*b^2)*c^6
- 2*(428*B*a*b^3 + 81*A*b^4)*c^5)*x^3 + 210*(194*B*a*b^6 + 27*A*b^7)*c^2 -
8*(231*B*b^6*c^3 - 32*(128*B*a^3 + 261*A*a^2*b)*c^6 + 48*(133*B*a^2*b^2 + 7
1*A*a*b^3)*c^5 - 18*(124*B*a*b^4 + 21*A*b^5)*c^4)*x^2 + 2*(1155*B*b^7*c^2 +
 40320*A*a^3*c^6 - 32*(1378*B*a^3*b + 1791*A*a^2*b^2)*c^5 + 24*(1758*B*a^2*
b^3 + 791*A*a*b^4)*c^4 - 126*(98*B*a*b^5 + 15*A*b^6)*c^3)*x)*sqrt(c*x^2 + b
*x + a))/c^7, -1/4128768*(315*(11*B*b^9 - 512*A*a^4*c^5 + 768*(B*a^4*b + 2*
A*a^3*b^2)*c^4 - 320*(4*B*a^3*b^3 + 3*A*a^2*b^4)*c^3 + 224*(3*B*a^2*b^5 + A
*a*b^6)*c^2 - 18*(8*B*a*b^7 + A*b^8)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(229376*B*c^9*x^8
- 3465*B*b^8*c + 14336*(37*B*b*c^8 + 18*A*c^9)*x^7 + 1024*(309*B*b^2*c^7 +
2*(304*B*a + 297*A*b)*c^8)*x^6 - 128*(512*B*a^4 + 1989*A*a^3*b)*c^5 + 256*(
5*B*b^3*c^6 + 2856*A*a*c^8 + 6*(502*B*a*b + 243*A*b^2)*c^7)*x^5 + 96*(2442*
B*a^3*b^2 + 2359*A*a^2*b^3)*c^4 - 128*(11*B*b^4*c^5 - 24*(160*B*a^2 + 307*A
*a*b)*c^7 - 6*(14*B*a*b^2 + 3*A*b^3)*c^6)*x^4 - 504*(322*B*a^2*b^4 + 125*A*
a*b^5)*c^3 + 16*(99*B*b^5*c^4 + 39648*A*a^2*c^7 + 48*(41*B*a^2*b + 27*A*a*b
^2)*c^6 - 2*(428*B*a*b^3 + 81*A*b^4)*c^5)*x^3 + 210*(194*B*a*b^6 + 27*A*b^7
)*c^2 - 8*(231*B*b^6*c^3 - 32*(128*B*a^3 + 261*A*a^2*b)*c^6 + 48*(133*B*a^2
*b^2 + 71*A*a*b^3)*c^5 - 18*(124*B*a*b^4 + 21*A*b^5)*c^4)*x^2 + 2*(1155*B*b
^7*c^2 + 40320*A*a^3*c^6 - 32*(1378*B*a^3*b + 1791*A*a^2*b^2)*c^5 + 24*(175
8*B*a^2*b^3 + 791*A*a*b^4)*c^4 - 126*(98*B*a*b^5 + 15*A*b^6)*c^3)*x)*sqrt(c
*x^2 + b*x + a))/c^7]
```

giac [B] time = 0.27, size = 643, normalized size = 1.93

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/2064384*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*B*c^2*x + (37*B*b
*c^9 + 18*A*c^10)/c^8)*x + (309*B*b^2*c^8 + 608*B*a*c^9 + 594*A*b*c^9)/c^8)
*x + (5*B*b^3*c^7 + 3012*B*a*b*c^8 + 1458*A*b^2*c^8 + 2856*A*a*c^9)/c^8)*x
- (11*B*b^4*c^6 - 84*B*a*b^2*c^7 - 18*A*b^3*c^7 - 3840*B*a^2*c^8 - 7368*A*a
*b*c^8)/c^8)*x + (99*B*b^5*c^5 - 856*B*a*b^3*c^6 - 162*A*b^4*c^6 + 1968*B*a
^2*b*c^7 + 1296*A*a*b^2*c^7 + 39648*A*a^2*c^8)/c^8)*x - (231*B*b^6*c^4 - 22
32*B*a*b^4*c^5 - 378*A*b^5*c^5 + 6384*B*a^2*b^2*c^6 + 3408*A*a*b^3*c^6 - 40
96*B*a^3*c^7 - 8352*A*a^2*b*c^7)/c^8)*x + (1155*B*b^7*c^3 - 12348*B*a*b^5*c
^4 - 1890*A*b^6*c^4 + 42192*B*a^2*b^3*c^5 + 18984*A*a*b^4*c^5 - 44096*B*a^3
*b*c^6 - 57312*A*a^2*b^2*c^6 + 40320*A*a^3*c^7)/c^8)*x - (3465*B*b^8*c^2 -
40740*B*a*b^6*c^3 - 5670*A*b^7*c^3 + 162288*B*a^2*b^4*c^4 + 63000*A*a*b^5*c
^4 - 234432*B*a^3*b^2*c^5 - 226464*A*a^2*b^3*c^5 + 65536*B*a^4*c^6 + 254592
*A*a^3*b*c^6)/c^8) - 5/65536*(11*B*b^9 - 144*B*a*b^7*c - 18*A*b^8*c + 672*B
*a^2*b^5*c^2 + 224*A*a*b^6*c^2 - 1280*B*a^3*b^3*c^3 - 960*A*a^2*b^4*c^3 + 7
68*B*a^4*b*c^4 + 1536*A*a^3*b^2*c^4 - 512*A*a^4*c^5)*log(abs(-2*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(13/2)
```

maple [B] time = 0.06, size = 1277, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 125/4096*B*b^5/c^4*(c*x^2+b*x+a)^(1/2)*x*a-35/768*B*b^3/c^3*(c*x^2+b*x+a)^(
3/2)*x*a-85/1024*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x*a^2+25/384*A*b^2/c^2*(c*x^
2+b*x+a)^(3/2)*x*a-95/2048*A*b^4/c^3*(c*x^2+b*x+a)^(1/2)*x*a+55/512*A*b^2/c
^2*(c*x^2+b*x+a)^(1/2)*x*a^2+1/32*B*b/c^2*a*(c*x^2+b*x+a)^(5/2)*x+15/256*B*
b/c^2*a^3*(c*x^2+b*x+a)^(1/2)*x-5/256*A*a^3/c^2*(c*x^2+b*x+a)^(1/2)*b-5/128
*A*a^3/c*(c*x^2+b*x+a)^(1/2)*x-1/48*A*a/c*(c*x^2+b*x+a)^(5/2)*x+1/64*B*b^2/
c^3*a*(c*x^2+b*x+a)^(5/2)+15/512*B*b^2/c^3*a^3*(c*x^2+b*x+a)^(1/2)-15/2048*
A*b^5/c^4*(c*x^2+b*x+a)^(3/2)-5/128*A*a^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))+1/8*A*x*(c*x^2+b*x+a)^(7/2)/c-45/32768*A*b^8/c^(11/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+45/16384*A*b^7/c^5*(c*x^2+b*x+a)^
(1/2)-9/112*A*b/c^2*(c*x^2+b*x+a)^(7/2)+3/128*A*b^3/c^3*(c*x^2+b*x+a)^(5/2)
-2/63*B*a/c^2*(c*x^2+b*x+a)^(7/2)+55/65536*B*b^9/c^(13/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))+55/12288*B*b^6/c^5*(c*x^2+b*x+a)^(3/2)-55/32768*
B*b^8/c^6*(c*x^2+b*x+a)^(1/2)+11/224*B*b^2/c^3*(c*x^2+b*x+a)^(7/2)-11/768*B
*b^4/c^4*(c*x^2+b*x+a)^(5/2)+5/128*B*b/c^2*a^2*(c*x^2+b*x+a)^(3/2)*x-25/256
*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3+25/768*A*b^3
/c^3*(c*x^2+b*x+a)^(3/2)*a+45/8192*A*b^6/c^4*(c*x^2+b*x+a)^(1/2)*x+55/1024*
A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*a^2-95/4096*A*b^5/c^4*(c*x^2+b*x+a)^(1/2)*a+1
5/128*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-5/384*A
*a^2/c^2*(c*x^2+b*x+a)^(3/2)*b+15/256*B*b/c^(5/2)*a^4*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))+105/2048*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*a^2-35/1536*B*b^4/c^4*(c*x^2+b*x+a)^(3/2)*a-11/384*B*b^3/c^3
*(c*x^2+b*x+a)^(5/2)*x+55/6144*B*b^5/c^4*(c*x^2+b*x+a)^(3/2)*x-11/144*B*b/c
^2*x*(c*x^2+b*x+a)^(7/2)-55/16384*B*b^7/c^5*(c*x^2+b*x+a)^(1/2)*x+125/8192*
B*b^6/c^5*(c*x^2+b*x+a)^(1/2)*a+35/2048*A*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a-75/1024*A*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))*a^2+3/64*A*b^2/c^2*(c*x^2+b*x+a)^(5/2)*x-15/1024*A*b^4/c^3*
(c*x^2+b*x+a)^(3/2)*x+5/256*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(3/2)-1/96*A*a/c^2*
(c*x^2+b*x+a)^(5/2)*b-5/192*A*a^2/c*(c*x^2+b*x+a)^(3/2)*x-45/4096*B*b^7/c^(
11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-85/2048*B*b^4/c^4*(c*x^
2+b*x+a)^(1/2)*a^2+1/9*B*x^2*(c*x^2+b*x+a)^(7/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2}\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.863 $\int x(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=252

$$-\frac{5\left(b^2-4ac\right)^3\left(-4aBc-16Abc+9b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{32768c^{11/2}}+\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-\right.}{16384c^5}$$

Rubi [A] time = 0.12, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(-4aBc-16Abc+9b^2B\right)}{384c^3}-\frac{5\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(-4aBc-16Abc+9b^2B\right)}{6144c^4}+\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-16Abc+9b^2B\right)}{16384c^5}-\frac{5\left(b^2-4ac\right)^3\left(-4aBc-16Abc+9b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{32768c^{11/2}}-\frac{\left(a+bx+cx^2\right)^{7/2}(-16Ac+9bB-14Bcx)}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*(b^2 - 4*a*c)^2*(9*b^2*B - 16*A*b*c - 4*a*B*c)*(b + 2*c*x)*Sqrt[a + b*x
+ c*x^2])/(16384*c^5) - (5*(b^2 - 4*a*c)*(9*b^2*B - 16*A*b*c - 4*a*B*c)*(b
+ 2*c*x)*(a + b*x + c*x^2)^(3/2))/(6144*c^4) + ((9*b^2*B - 16*A*b*c - 4*a*B
*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(384*c^3) - ((9*b*B - 16*A*c - 14*
B*c*x)*(a + b*x + c*x^2)^(7/2))/(112*c^2) - (5*(b^2 - 4*a*c)^3*(9*b^2*B - 1
6*A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/
(32768*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx = -\frac{(9bB-16Ac-14Bcx)\left(a+bx+cx^2\right)^{7/2}}{112c^2} + \frac{\left(9b^2B-16Abc-4aBc\right)\int \left(a\right.}{32c^2}$$

$$= \frac{\left(9b^2B-16Abc-4aBc\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{384c^3} - \frac{(9bB-16Ac-14B}{11}$$

$$= -\frac{5\left(b^2-4ac\right)\left(9b^2B-16Abc-4aBc\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{6144c^4} + \frac{\left(9b^2\right.}{}$$

$$= \frac{5\left(b^2-4ac\right)^2\left(9b^2B-16Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{16384c^5} - \frac{5\left(b^2-4\right.}{}$$

$$= \frac{5\left(b^2-4ac\right)^2\left(9b^2B-16Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{16384c^5} - \frac{5\left(b^2-4\right.}{}$$

$$= \frac{5\left(b^2-4ac\right)^2\left(9b^2B-16Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{16384c^5} - \frac{5\left(b^2-4\right.}{}$$

Mathematica [A] time = 0.60, size = 205, normalized size = 0.81

$$\frac{\frac{7\left(-2aBc-8Abc+\frac{9b^2B}{2}\right)\left(2(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(\frac{3\left(b^2-4ac\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{128c^{5/2}}+\frac{(b+2cx)(a+x(b+cx))^{3/2}}{8c}\right)\right)}{24c}+(a+x(b+cx))^{7/2}(2c(8A+7Bx)-9bB)}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] ((-9*b*B + 2*c*(8*A + 7*B*x))*(a + x*(b + c*x))^(7/2) + (7*((9*b^2*B)/2 - 8
*A*b*c - 2*a*B*c)*(2*(b + 2*c*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*
(((b + 2*c*x)*(a + x*(b + c*x))^(3/2))/(8*c) + (3*(b^2 - 4*a*c)*(-2*Sqrt[c]
*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*S
qrt[c]*Sqrt[a + x*(b + c*x)])]))/(128*c^(5/2)))))/(24*c))/(112*c^2)
```

IntegrateAlgebraic [B] time = 2.45, size = 535, normalized size = 2.12

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(945*b^7*B - 1680*A*b^6*c - 10500*a*b^5*B*c + 17920*
a*A*b^4*c^2 + 37744*a^2*b^3*B*c^2 - 59136*a^2*A*b^2*c^3 - 42432*a^3*b*B*c^3
 + 49152*a^3*A*c^4 - 630*b^6*B*c*x + 1120*A*b^5*c^2*x + 6328*a*b^4*B*c^2*x
- 10752*a*A*b^3*c^3*x - 19104*a^2*b^2*B*c^3*x + 29184*a^2*A*b*c^4*x + 13440
*a^3*B*c^4*x + 504*b^5*B*c^2*x^2 - 896*A*b^4*c^3*x^2 - 4544*a*b^3*B*c^3*x^2
 + 7680*a*A*b^2*c^4*x^2 + 11136*a^2*b*B*c^4*x^2 + 147456*a^2*A*c^5*x^2 - 43
2*b^4*B*c^3*x^3 + 768*A*b^3*c^4*x^3 + 3456*a*b^2*B*c^4*x^3 + 201728*a*A*b*c
^5*x^3 + 105728*a^2*B*c^5*x^3 + 384*b^3*B*c^4*x^4 + 75776*A*b^2*c^5*x^4 + 1
57184*a*b*B*c^5*x^4 + 147456*a*A*c^6*x^4 + 62208*b^2*B*c^5*x^5 + 118784*A*b
*c^6*x^5 + 121856*a*B*c^6*x^5 + 101376*b*B*c^6*x^6 + 49152*A*c^7*x^6 + 4300
8*B*c^7*x^7))/(344064*c^5) + (5*(9*b^8*B - 16*A*b^7*c - 112*a*b^6*B*c + 192
*a*A*b^5*c^2 + 480*a^2*b^4*B*c^2 - 768*a^2*A*b^3*c^3 - 768*a^3*b^2*B*c^3 +
1024*a^3*A*b*c^4 + 256*a^4*B*c^4)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x +
c*x^2]])/(32768*c^(11/2))
```

fricas [B] time = 0.59, size = 1039, normalized size = 4.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/1376256*(105*(9*B*b^8 + 256*(B*a^4 + 4*A*a^3*b)*c^4 - 768*(B*a^3*b^2 + A
*a^2*b^3)*c^3 + 96*(5*B*a^2*b^4 + 2*A*a*b^5)*c^2 - 16*(7*B*a*b^6 + A*b^7)*c
)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) + 4*(43008*B*c^8*x^7 + 945*B*b^7*c + 49152*A*a^3*c^5 +
 3072*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 + 4*(119*B*a + 116*A
*b)*c^7)*x^5 - 192*(221*B*a^3*b + 308*A*a^2*b^2)*c^4 + 128*(3*B*b^3*c^5 + 1
152*A*a*c^7 + 4*(307*B*a*b + 148*A*b^2)*c^6)*x^4 + 112*(337*B*a^2*b^3 + 160
*A*a*b^4)*c^3 - 16*(27*B*b^4*c^4 - 16*(413*B*a^2 + 788*A*a*b)*c^6 - 24*(9*B
*a*b^2 + 2*A*b^3)*c^5)*x^3 - 420*(25*B*a*b^5 + 4*A*b^6)*c^2 + 8*(63*B*b^5*c
^3 + 18432*A*a^2*c^6 + 48*(29*B*a^2*b + 20*A*a*b^2)*c^5 - 8*(71*B*a*b^3 + 1
4*A*b^4)*c^4)*x^2 - 2*(315*B*b^6*c^2 - 192*(35*B*a^3 + 76*A*a^2*b)*c^5 + 48
*(199*B*a^2*b^2 + 112*A*a*b^3)*c^4 - 28*(113*B*a*b^4 + 20*A*b^5)*c^3)*x)*sq
rt(c*x^2 + b*x + a))/c^6, 1/688128*(105*(9*B*b^8 + 256*(B*a^4 + 4*A*a^3*b)*
c^4 - 768*(B*a^3*b^2 + A*a^2*b^3)*c^3 + 96*(5*B*a^2*b^4 + 2*A*a*b^5)*c^2 -
16*(7*B*a*b^6 + A*b^7)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x
+ b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(43008*B*c^8*x^7 + 945*B*b^7*c +
 49152*A*a^3*c^5 + 3072*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 +
4*(119*B*a + 116*A*b)*c^7)*x^5 - 192*(221*B*a^3*b + 308*A*a^2*b^2)*c^4 + 12
8*(3*B*b^3*c^5 + 1152*A*a*c^7 + 4*(307*B*a*b + 148*A*b^2)*c^6)*x^4 + 112*(3
37*B*a^2*b^3 + 160*A*a*b^4)*c^3 - 16*(27*B*b^4*c^4 - 16*(413*B*a^2 + 788*A*
a*b)*c^6 - 24*(9*B*a*b^2 + 2*A*b^3)*c^5)*x^3 - 420*(25*B*a*b^5 + 4*A*b^6)*c
^2 + 8*(63*B*b^5*c^3 + 18432*A*a^2*c^6 + 48*(29*B*a^2*b + 20*A*a*b^2)*c^5 -
 8*(71*B*a*b^3 + 14*A*b^4)*c^4)*x^2 - 2*(315*B*b^6*c^2 - 192*(35*B*a^3 + 76
*A*a^2*b)*c^5 + 48*(199*B*a^2*b^2 + 112*A*a*b^3)*c^4 - 28*(113*B*a*b^4 + 20
*A*b^5)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6]
```

giac [B] time = 0.31, size = 528, normalized size = 2.10

$$\frac{1}{344064}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(2\left(12\left(14\,Bc^2x+\frac{33\,Bbc^8+16\,Ac^9}{c^7}\right)x+\frac{243\,Bb^2c^7+476\,Bac^8+464\,Abc^8}{c^7}\right)x+\frac{3\,Bb^3c^6+1228\,Babc^7+592\,Ab^2c^7+1152\,Aac^8}{c^7}\right)x-\frac{27\,Bb^4c^5-216\,Bab^2c^6-48\,Ab^3c^6-6608\,Ba^2c^7-12608\,Aabc^7}{c^7}\right)x+\frac{63\,Bb^5c^4-568\,Bab^3c^5-112\,Ab^4c^5+1392\,Ba^2bc^6+960\,Aab^2c^6+18432\,Aa^2c^7}{c^7}\right)x-\frac{315\,Bb^6c^3-3164\,Bab^4c^4-560\,Ab^5c^4+9552\,Ba^2b^2c^5+5376\,Aab^3c^5-6720\,Ba^3c^6-14592\,Aa^2bc^6}{c^7}\right)x+\frac{945\,Bb^7c^2-10500\,Bab^5c^3-1680\,Ab^6c^3+37744\,Ba^2b^3c^4+17920\,Aab^4c^4-42432\,Ba^3bc^5-59136\,Aa^2b^2c^5+49152\,Aa^3c^6}{c^7}\right)+\frac{5\left(9\,Bb^8-112\,Bab^6c-16\,Ab^7c+480\,Ba^2b^4c^2+192\,Aab^5c^2-768\,Ba^3b^2c^3-768\,Aa^2b^3c^3+256\,Ba^4c^4+1024\,Aa^3bc^4\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{32768\,c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/344064*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(12*(14*B*c^2*x + (33*B*b*c^8
 + 16*A*c^9)/c^7)*x + (243*B*b^2*c^7 + 476*B*a*c^8 + 464*A*b*c^8)/c^7)*x +
(3*B*b^3*c^6 + 1228*B*a*b*c^7 + 592*A*b^2*c^7 + 1152*A*a*c^8)/c^7)*x - (27*
B*b^4*c^5 - 216*B*a*b^2*c^6 - 48*A*b^3*c^6 - 6608*B*a^2*c^7 - 12608*A*a*b*c
^7)/c^7)*x + (63*B*b^5*c^4 - 568*B*a*b^3*c^5 - 112*A*b^4*c^5 + 1392*B*a^2*b
*c^6 + 960*A*a*b^2*c^6 + 18432*A*a^2*c^7)/c^7)*x - (315*B*b^6*c^3 - 3164*B*
a*b^4*c^4 - 560*A*b^5*c^4 + 9552*B*a^2*b^2*c^5 + 5376*A*a*b^3*c^5 - 6720*B*
a^3*c^6 - 14592*A*a^2*b*c^6)/c^7)*x + (945*B*b^7*c^2 - 10500*B*a*b^5*c^3 -
1680*A*b^6*c^3 + 37744*B*a^2*b^3*c^4 + 17920*A*a*b^4*c^4 - 42432*B*a^3*b*c^
5 - 59136*A*a^2*b^2*c^5 + 49152*A*a^3*c^6)/c^7) + 5/32768*(9*B*b^8 - 112*B*
a*b^6*c - 16*A*b^7*c + 480*B*a^2*b^4*c^2 + 192*A*a*b^5*c^2 - 768*B*a^3*b^2*
c^3 - 768*A*a^2*b^3*c^3 + 256*B*a^4*c^4 + 1024*A*a^3*b*c^4)*log(abs(-2*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 1034, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -95/2048*B*b^4/c^3*(c*x^2+b*x+a)^(1/2)*x*a-5/32*A*b/c*(c*x^2+b*x+a)^(1/2)*x
*a^2+5/64*A*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x*a-5/48*A*b/c*(c*x^2+b*x+a)^(3/2)*
```

```
x*a+25/384*B*b^2/c^2*(c*x^2+b*x+a)^(3/2)*x*a+55/512*B*b^2/c^2*(c*x^2+b*x+a)
^(1/2)*x*a^2+15/128*B*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*a^3-5/256*B*a^3/c^2*(c*x^2+b*x+a)^(1/2)*b+55/1024*B*b^3/c^3*(c*x^2+b*x+a
)^(1/2)*a^2-15/1024*B*b^4/c^3*(c*x^2+b*x+a)^(3/2)*x-1/48*B*a/c*x*(c*x^2+b*x
+a)^(5/2)+5/192*A*b^3/c^2*(c*x^2+b*x+a)^(3/2)*x-5/128*B*a^3/c*(c*x^2+b*x+a)
^(1/2)*x+3/128*B*b^3/c^3*(c*x^2+b*x+a)^(5/2)-9/112*B*b/c^2*(c*x^2+b*x+a)^(7
/2)+25/768*B*b^3/c^3*(c*x^2+b*x+a)^(3/2)*a-5/192*B*a^2/c*(c*x^2+b*x+a)^(3/2
)*x+45/8192*B*b^6/c^4*(c*x^2+b*x+a)^(1/2)*x+3/64*B*b^2/c^2*x*(c*x^2+b*x+a)^
(5/2)-45/32768*B*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5
/128*B*a^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/8*B*x*(c*x
^2+b*x+a)^(7/2)/c-1/12*A*b/c*x*(c*x^2+b*x+a)^(5/2)+45/16384*B*b^7/c^5*(c*x^
2+b*x+a)^(1/2)+1/7*A*(c*x^2+b*x+a)^(7/2)/c-5/96*A*b^2/c^2*(c*x^2+b*x+a)^(3/
2)*a-75/1024*B*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-
15/512*A*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+35/2048*
B*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+15/128*A*b^3/c^
(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-5/384*B*a^2/c^2*(c*x^
2+b*x+a)^(3/2)*b-1/96*B*a/c^2*(c*x^2+b*x+a)^(5/2)*b-95/4096*B*b^5/c^4*(c*x^
2+b*x+a)^(1/2)*a-5/512*A*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x-5/64*A*b^2/c^2*(c*x^
2+b*x+a)^(1/2)*a^2+5/128*A*b^4/c^3*(c*x^2+b*x+a)^(1/2)*a-5/32*A*b/c^(3/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-1/24*A*b^2/c^2*(c*x^2+b*x+a)
^(5/2)+5/384*A*b^4/c^3*(c*x^2+b*x+a)^(3/2)-5/1024*A*b^6/c^4*(c*x^2+b*x+a)^(
1/2)+5/2048*A*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/20
48*B*b^5/c^4*(c*x^2+b*x+a)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.864 $\int (A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=203

$$\frac{5\left(b^2-4ac\right)^3(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2048c^{9/2}}-\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5\left(b^2-4ac\right)}{}$$

Rubi [A] time = 0.10, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$\frac{5\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}-\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5\left(b^2-4ac\right)^3(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2048c^{9/2}}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}(bB-2Ac)}{24c^2}+\frac{B\left(a+bx+cx^2\right)^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(1024*
c^4) + (5*(b^2 - 4*a*c)*(b*B - 2*A*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/
(384*c^3) - ((b*B - 2*A*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(24*c^2) +
(B*(a + b*x + c*x^2)^(7/2))/(7*c) + (5*(b^2 - 4*a*c)^3*(b*B - 2*A*c)*ArcTan
h[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2048*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx = \frac{B\left(a+bx+cx^2\right)^{7/2}}{7c} + \frac{(-bB+2Ac)\int\left(a+bx+cx^2\right)^{5/2}\,dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{24c^2} + \frac{B\left(a+bx+cx^2\right)^{7/2}}{7c} + \frac{\left(5\left(b^2-4\right.\right.}{}$$

$$= \frac{5\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{384c^3} - \frac{(bB-2Ac)(b+2cx)\left(\right.}{24c^2}$$

$$= -\frac{5\left(b^2-4ac\right)^2(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^4} + \frac{5\left(b^2-4ac\right)(bB-2A}{}$$

$$= -\frac{5\left(b^2-4ac\right)^2(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^4} + \frac{5\left(b^2-4ac\right)(bB-2A}{}$$

$$= -\frac{5\left(b^2-4ac\right)^2(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^4} + \frac{5\left(b^2-4ac\right)(bB-2A}{}$$

Mathematica [A] time = 0.29, size = 179, normalized size = 0.88

$$\frac{B(a+x(b+cx))^{7/2}}{7c} - \frac{(bB-2Ac)\left(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2} - 5\left(b^2-4ac\right)\left(16c^{3/2}(b+2cx)(a+x(b+cx))^{3/2} - 3\left(b^2-4ac\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)} - \left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{6144c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (B*(a + x*(b + c*x))^(7/2))/(7*c) - ((b*B - 2*A*c)*(256*c^(5/2)*(b + 2*c*x)
*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^(3/2)*(b + 2*c*x)*(a + x*(
b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*
x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])
)))/(6144*c^(9/2))
```

IntegrateAlgebraic [B] time = 1.72, size = 422, normalized size = 2.08

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-105*b^6*B + 210*A*b^5*c + 1120*a*b^4*B*c - 2240*a*
A*b^3*c^2 - 3696*a^2*b^2*B*c^2 + 7392*a^2*A*b*c^3 + 3072*a^3*B*c^3 + 70*b^5
*B*c*x - 140*A*b^4*c^2*x - 672*a*b^3*B*c^2*x + 1344*a*A*b^2*c^3*x + 1824*a^
2*b*B*c^3*x + 14784*a^2*A*c^4*x - 56*b^4*B*c^2*x^2 + 112*A*b^3*c^3*x^2 + 48
0*a*b^2*B*c^3*x^2 + 17472*a*A*b*c^4*x^2 + 9216*a^2*B*c^4*x^2 + 48*b^3*B*c^3
*x^3 + 6048*A*b^2*c^4*x^3 + 12608*a*b*B*c^4*x^3 + 11648*a*A*c^5*x^3 + 4736*
b^2*B*c^4*x^4 + 8960*A*b*c^5*x^4 + 9216*a*B*c^5*x^4 + 7424*b*B*c^5*x^5 + 35
84*A*c^6*x^5 + 3072*B*c^6*x^6))/(21504*c^4) - (5*(b^7*B - 2*A*b^6*c - 12*a*
b^5*B*c + 24*a*A*b^4*c^2 + 48*a^2*b^3*B*c^2 - 96*a^2*A*b^2*c^3 - 64*a^3*b*B
*c^3 + 128*a^3*A*c^4)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(20
48*c^(9/2))
```

fricas [B] time = 0.52, size = 843, normalized size = 4.15

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/86016*(105*(B*b^7 + 128*A*a^3*c^4 - 32*(2*B*a^3*b + 3*A*a^2*b^2)*c^3 +
24*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 2*(6*B*a*b^5 + A*b^6)*c)*sqrt(c)*log(-8*c^
2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c
) - 4*(3072*B*c^7*x^6 - 105*B*b^6*c + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 96*
(32*B*a^3 + 77*A*a^2*b)*c^4 + 128*(37*B*b^2*c^5 + 2*(36*B*a + 35*A*b)*c^6)*
x^4 - 112*(33*B*a^2*b^2 + 20*A*a*b^3)*c^3 + 16*(3*B*b^3*c^4 + 728*A*a*c^6 +
 2*(394*B*a*b + 189*A*b^2)*c^5)*x^3 + 70*(16*B*a*b^4 + 3*A*b^5)*c^2 - 8*(7*
B*b^4*c^3 - 24*(48*B*a^2 + 91*A*a*b)*c^5 - 2*(30*B*a*b^2 + 7*A*b^3)*c^4)*x^
2 + 2*(35*B*b^5*c^2 + 7392*A*a^2*c^5 + 48*(19*B*a^2*b + 14*A*a*b^2)*c^4 - 1
4*(24*B*a*b^3 + 5*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/43008*(105*
(B*b^7 + 128*A*a^3*c^4 - 32*(2*B*a^3*b + 3*A*a^2*b^2)*c^3 + 24*(2*B*a^2*b^3
 + A*a*b^4)*c^2 - 2*(6*B*a*b^5 + A*b^6)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 +
 b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(3072*B*c^7*x^6
 - 105*B*b^6*c + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 96*(32*B*a^3 + 77*A*a^2*
b)*c^4 + 128*(37*B*b^2*c^5 + 2*(36*B*a + 35*A*b)*c^6)*x^4 - 112*(33*B*a^2*b
^2 + 20*A*a*b^3)*c^3 + 16*(3*B*b^3*c^4 + 728*A*a*c^6 + 2*(394*B*a*b + 189*A
*b^2)*c^5)*x^3 + 70*(16*B*a*b^4 + 3*A*b^5)*c^2 - 8*(7*B*b^4*c^3 - 24*(48*B*
a^2 + 91*A*a*b)*c^5 - 2*(30*B*a*b^2 + 7*A*b^3)*c^4)*x^2 + 2*(35*B*b^5*c^2 +
 7392*A*a^2*c^5 + 48*(19*B*a^2*b + 14*A*a*b^2)*c^4 - 14*(24*B*a*b^3 + 5*A*b
^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [B] time = 0.31, size = 425, normalized size = 2.09

$$\frac{1}{21504}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(2\left(12Bc^2x+\frac{29Bbc^7+14Ac^8}{c^6}\right)x+\frac{37Bb^2c^6+72Bac^7+70Abc^7}{c^6}\right)x+\frac{3Bb^3c^5+788Babc^6+378Ab^2c^6+728Aac^7}{c^6}\right)x-\frac{7Bb^4c^4-60Bab^2c^5-14Ab^3c^5-1152Ba^2c^6-2184Aabc^6}{c^6}\right)x+\frac{35Bb^5c^3-336Bab^3c^4-70Ab^4c^4+912Ba^2bc^5+672Aab^2c^5+7392Aa^2c^6}{c^6}\right)x-\frac{105Bb^6c^2-1120Bab^4c^3-210Ab^5c^3+3696Ba^2b^2c^4+2240Aab^3c^4-3072Ba^3c^5-7392Aa^2bc^5}{c^6}\right)-\frac{5\left(Bb^7-12Bab^5c-2Ab^6c+48Ba^2b^3c^2+24Aab^4c^2-64Ba^3bc^3-96Aa^2b^2c^3+128Aa^3c^4\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2048c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/21504*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(12*B*c^2*x + (29*B*b*c^7 + 14
*A*c^8)/c^6)*x + (37*B*b^2*c^6 + 72*B*a*c^7 + 70*A*b*c^7)/c^6)*x + (3*B*b^3
*c^5 + 788*B*a*b*c^6 + 378*A*b^2*c^6 + 728*A*a*c^7)/c^6)*x - (7*B*b^4*c^4 -
 60*B*a*b^2*c^5 - 14*A*b^3*c^5 - 1152*B*a^2*c^6 - 2184*A*a*b*c^6)/c^6)*x +
(35*B*b^5*c^3 - 336*B*a*b^3*c^4 - 70*A*b^4*c^4 + 912*B*a^2*b*c^5 + 672*A*a*
b^2*c^5 + 7392*A*a^2*c^6)/c^6)*x - (105*B*b^6*c^2 - 1120*B*a*b^4*c^3 - 210*
A*b^5*c^3 + 3696*B*a^2*b^2*c^4 + 2240*A*a*b^3*c^4 - 3072*B*a^3*c^5 - 7392*A
*a^2*b*c^5)/c^6) - 5/2048*(B*b^7 - 12*B*a*b^5*c - 2*A*b^6*c + 48*B*a^2*b^3*
c^2 + 24*A*a*b^4*c^2 - 64*B*a^3*b*c^3 - 96*A*a^2*b^2*c^3 + 128*A*a^3*c^4)*l
og(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 807, normalized size = 3.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -1/24*B*b^2/c^2*(c*x^2+b*x+a)^(5/2)+5/384*B*b^4/c^3*(c*x^2+b*x+a)^(3/2)-5/1
92*A/c^2*(c*x^2+b*x+a)^(3/2)*b^3+1/12*A/c*(c*x^2+b*x+a)^(5/2)*b-5/1024*B*b^
6/c^4*(c*x^2+b*x+a)^(1/2)+5/2048*B*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))+5/16*A/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*
a^3+5/16*A*(c*x^2+b*x+a)^(1/2)*x*a^2+5/24*A*(c*x^2+b*x+a)^(3/2)*x*a-5/1024*
A/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^6+5/512*A/c^3*(c*x^
2+b*x+a)^(1/2)*b^5+1/6*A*x*(c*x^2+b*x+a)^(5/2)-5/48*B*b/c*(c*x^2+b*x+a)^(3/
2)*x*a+5/64*B*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x*a-5/32*B*b/c*(c*x^2+b*x+a)^(1/2
)*x*a^2-5/32*A/c*(c*x^2+b*x+a)^(1/2)*x*a*b^2+5/48*A/c*(c*x^2+b*x+a)^(3/2)*b
*a-5/64*B*b^2/c^2*(c*x^2+b*x+a)^(1/2)*a^2+5/128*B*b^4/c^3*(c*x^2+b*x+a)^(1/
2)*a+5/256*A/c^2*(c*x^2+b*x+a)^(1/2)*x*b^4+15/128*B*b^3/c^(5/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-15/512*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^
```

```
(1/2)+(c*x^2+b*x+a)^(1/2))*a+15/256*A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*b^4*a+5/32*A/c*(c*x^2+b*x+a)^(1/2)*b*a^2-5/32*B*b/c^(3/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-1/12*B*b/c*x*(c*x^2+b*x+a)^(5
/2)-15/64*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^2*a^2-5/5
12*B*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x+5/192*B*b^3/c^2*(c*x^2+b*x+a)^(3/2)*x-5/
96*B*b^2/c^2*(c*x^2+b*x+a)^(3/2)*a-5/96*A/c*(c*x^2+b*x+a)^(3/2)*x*b^2-5/64*
A/c^2*(c*x^2+b*x+a)^(1/2)*b^3*a+1/7*B*(c*x^2+b*x+a)^(7/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,{\left(c\,x^2 + b\,x + a\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\left(a + bx + cx^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.865 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=350

$$a^{5/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)+\frac{\sqrt{a+bx+cx^2}\left(512a^2Ac^3+2cx\left(\left(b^2-4ac\right)\left(-20aBc-12Abc+5b^2B\right)+\right.\right.}{512c^3}$$

Rubi [A] time = 0.42, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {814, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(512a^2Ac^3+2cx\left(\left(b^2-4ac\right)\left(-20aBc-12Abc+5b^2B\right)+64aAbc^2\right)+b\left(b^2-4ac\right)\left(-20aBc-12Abc+5b^2B\right)+64aAb^2c^2\right)}{512c^3}+\frac{\left(512a^2Abc^3-\left(b^2-4ac\right)\left(80a^2Bc^2+112aAbc^2-40ab^2Bc-12Ab^3c+5b^4B\right)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{7/2}}+a^{5/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)-\frac{\left(a+bx+cx^2\right)^{3/2}\left(2cx\left(-20aBc-12Abc+5b^2B\right)-64aAc^2-20abBc-12Ab^2c+5b^3B\right)}{192c^2}+\frac{\left(a+bx+cx^2\right)^{5/2}(12Ac+5bB+10Bcx)}{60c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] ((64*a*A*b^2*c^2 + 512*a^2*A*c^3 + b*(b^2 - 4*a*c)*(5*b^2*B - 12*A*b*c - 20
*a*B*c) + 2*c*(64*a*A*b*c^2 + (b^2 - 4*a*c)*(5*b^2*B - 12*A*b*c - 20*a*B*c)
)*x)*Sqrt[a + b*x + c*x^2])/(512*c^3) - ((5*b^3*B - 12*A*b^2*c - 20*a*b*B*c
 - 64*a*A*c^2 + 2*c*(5*b^2*B - 12*A*b*c - 20*a*B*c)*x)*(a + b*x + c*x^2)^(3
/2))/(192*c^2) + ((5*b*B + 12*A*c + 10*B*c*x)*(a + b*x + c*x^2)^(5/2))/(60*
c) - a^(5/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])] + ((5
12*a^2*A*b*c^3 - (b^2 - 4*a*c)*(5*b^4*B - 12*A*b^3*c - 40*a*b^2*B*c + 112*a
*A*b*c^2 + 80*a^2*B*c^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x
^2])])/(1024*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
```

```
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x}\,dx = \frac{(5bB+12Ac+10Bcx)\left(a+bx+cx^2\right)^{5/2}}{60c} - \int \frac{\frac{\left(-12aAc-\frac{1}{2}\left(12Abc-5B\left(b^2-4ac\right)\right)x\right)(a}{x}}{12c}$$

$$= -\frac{\left(5b^3B-12Ab^2c-20abBc-64aAc^2+2c\left(5b^2B-12Abc-20aBc\right)x\right)(a}{192c^2}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\left(64a\right.}{512c^3}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\left(64a\right.}{512c^3}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\left(64a\right.}{512c^3}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\left(64a\right.}{512c^3}$$

Mathematica [A] time = 0.46, size = 349, normalized size = 1.00

$$a^{5/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)+\frac{\left(512a^2Abc^3-\left(b^2-4ac\right)\left(80a^2Bc^2+112aAbc^2-40ab^2Bc-12Ab^3c+5b^4B\right)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{1024c^{7/2}}+\frac{\sqrt{a+x(b+cx)}\left(32a^2c^3(16A+5Bx)-8b^3c(5aB+3Acx)+16ab^2c^2(7A-5Bx)+16abc^2(5aB+14Acx)-2b^4c(6A-5Bx)+5b^5B\right)}{512c^3}+\frac{(a+x(b+cx))^{3/2}\left(4bc(5aB+6Acx)+8ac^2(8A+5Bx)+2b^2c(6A-5Bx)-5b^3B\right)}{192c^2}+\frac{(a+x(b+cx))^{5/2}(2c(6A+5Bx)+5bB)}{60c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] ((5*b*B + 2*c*(6*A + 5*B*x))*(a + x*(b + c*x))^(5/2))/(60*c) + ((a + x*(b +
 c*x))^(3/2)*(-5*b^3*B + 2*b^2*c*(6*A - 5*B*x) + 8*a*c^2*(8*A + 5*B*x) + 4*
b*c*(5*a*B + 6*A*c*x)))/(192*c^2) + (Sqrt[a + x*(b + c*x)]*(5*b^5*B - 2*b^4
*c*(6*A - 5*B*x) + 16*a*b^2*c^2*(7*A - 5*B*x) + 32*a^2*c^3*(16*A + 5*B*x) -
 8*b^3*c*(5*a*B + 3*A*c*x) + 16*a*b*c^2*(5*a*B + 14*A*c*x)))/(512*c^3) - a^
(5/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])] + ((512*a^2*
A*b*c^3 - (b^2 - 4*a*c)*(5*b^4*B - 12*A*b^3*c - 40*a*b^2*B*c + 112*a*A*b*c^
2 + 80*a^2*B*c^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/
(1024*c^(7/2))
```

IntegrateAlgebraic [A] time = 1.94, size = 369, normalized size = 1.05

$$2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)+\frac{\sqrt{a+bx+cx^2}\left(11776a^2Ac^3+2640a^2bBc^2+5280a^2Bc^3x+2160aAb^2c^2+9952aAbc^3x+5632aAc^4x^2-800ab^3Bc+480ab^2Bc^2x+6240abBc^3x^2+4160aBc^4x^3-180Ab^4c+120Ab^3c^2x+2976Ab^2c^3x^2+4032Abc^4x^3+1536Ac^5x^4+75b^5B-50b^4Bcx+40b^3Bc^2x^2+2160b^2Bc^3x^3+3200bBc^4x^4+1280Bc^5x^5\right)}{7680c^3}+\frac{\left(-320a^3Bc^3-960a^2Abc^3+240a^2b^2Bc^2+160aAb^3c^2-60ab^4Bc-12Ab^5c+5b^6B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{1024c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(75*b^5*B - 180*A*b^4*c - 800*a*b^3*B*c + 2160*a*A*b
^2*c^2 + 2640*a^2*b*B*c^2 + 11776*a^2*A*c^3 - 50*b^4*B*c*x + 120*A*b^3*c^2*
x + 480*a*b^2*B*c^2*x + 9952*a*A*b*c^3*x + 5280*a^2*B*c^3*x + 40*b^3*B*c^2*
x^2 + 2976*A*b^2*c^3*x^2 + 6240*a*b*B*c^3*x^2 + 5632*a*A*c^4*x^2 + 2160*b^2
*B*c^3*x^3 + 4032*A*b*c^4*x^3 + 4160*a*B*c^4*x^3 + 3200*b*B*c^4*x^4 + 1536*
A*c^5*x^4 + 1280*B*c^5*x^5))/(7680*c^3) + 2*a^(5/2)*A*ArcTanh[(Sqrt[c]*x)/S
qrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]] + ((5*b^6*B - 12*A*b^5*c - 60*a*b^4
*B*c + 160*a*A*b^3*c^2 + 240*a^2*b^2*B*c^2 - 960*a^2*A*b*c^3 - 320*a^3*B*c^
3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(1024*c^(7/2))
```

fricas [A] time = 16.45, size = 1575, normalized size = 4.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [1/30720*(15360*A*a^(5/2)*c^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*
x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 15*(5*B*b^6 - 320*(B*a^3
 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^
5)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c
*x + b)*sqrt(c) - 4*a*c) + 4*(1280*B*c^6*x^5 + 75*B*b^5*c + 11776*A*a^2*c^4
 + 128*(25*B*b*c^5 + 12*A*c^6)*x^4 + 240*(11*B*a^2*b + 9*A*a*b^2)*c^3 + 16*
(135*B*b^2*c^4 + 4*(65*B*a + 63*A*b)*c^5)*x^3 - 20*(40*B*a*b^3 + 9*A*b^4)*c
^2 + 8*(5*B*b^3*c^3 + 704*A*a*c^5 + 12*(65*B*a*b + 31*A*b^2)*c^4)*x^2 - 2*(
25*B*b^4*c^2 - 16*(165*B*a^2 + 311*A*a*b)*c^4 - 60*(4*B*a*b^2 + A*b^3)*c^3)
*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/15360*(7680*A*a^(5/2)*c^4*log(-(8*a*b*x +
 (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x
^2) + 15*(5*B*b^6 - 320*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b
^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x +
a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1280*B*c^6*x^5 + 75*B
*b^5*c + 11776*A*a^2*c^4 + 128*(25*B*b*c^5 + 12*A*c^6)*x^4 + 240*(11*B*a^2*
b + 9*A*a*b^2)*c^3 + 16*(135*B*b^2*c^4 + 4*(65*B*a + 63*A*b)*c^5)*x^3 - 20*
(40*B*a*b^3 + 9*A*b^4)*c^2 + 8*(5*B*b^3*c^3 + 704*A*a*c^5 + 12*(65*B*a*b +
31*A*b^2)*c^4)*x^2 - 2*(25*B*b^4*c^2 - 16*(165*B*a^2 + 311*A*a*b)*c^4 - 60*
(4*B*a*b^2 + A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/30720*(30720*A*sq
rt(-a)*a^2*c^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x
^2 + a*b*x + a^2)) - 15*(5*B*b^6 - 320*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^
2*b^2 + 2*A*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqrt(c)*log(-8*c^2*x^2 -
 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(
1280*B*c^6*x^5 + 75*B*b^5*c + 11776*A*a^2*c^4 + 128*(25*B*b*c^5 + 12*A*c^6)
*x^4 + 240*(11*B*a^2*b + 9*A*a*b^2)*c^3 + 16*(135*B*b^2*c^4 + 4*(65*B*a + 6
3*A*b)*c^5)*x^3 - 20*(40*B*a*b^3 + 9*A*b^4)*c^2 + 8*(5*B*b^3*c^3 + 704*A*a*
c^5 + 12*(65*B*a*b + 31*A*b^2)*c^4)*x^2 - 2*(25*B*b^4*c^2 - 16*(165*B*a^2 +
 311*A*a*b)*c^4 - 60*(4*B*a*b^2 + A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4
, 1/15360*(15360*A*sqrt(-a)*a^2*c^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 15*(5*B*b^6 - 320*(B*a^3 + 3*A*a^
2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqr
t(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*
x + a*c)) + 2*(1280*B*c^6*x^5 + 75*B*b^5*c + 11776*A*a^2*c^4 + 128*(25*B*b*
c^5 + 12*A*c^6)*x^4 + 240*(11*B*a^2*b + 9*A*a*b^2)*c^3 + 16*(135*B*b^2*c^4
+ 4*(65*B*a + 63*A*b)*c^5)*x^3 - 20*(40*B*a*b^3 + 9*A*b^4)*c^2 + 8*(5*B*b^3
*c^3 + 704*A*a*c^5 + 12*(65*B*a*b + 31*A*b^2)*c^4)*x^2 - 2*(25*B*b^4*c^2 -
16*(165*B*a^2 + 311*A*a*b)*c^4 - 60*(4*B*a*b^2 + A*b^3)*c^3)*x)*sqrt(c*x^2
+ b*x + a))/c^4]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, replacing 0 by ` u`, a substitution
 variable should perhaps be purged.Warning, replacing 0 by ` u`, a substitu
tion variable should perhaps be purged.Warning, replacing 0 by ` u`, a subs
titution variable should perhaps be purged.index.cc index_m operator + Erro
r: Bad Argument Value
```

maple [B] time = 0.06, size = 694, normalized size = 1.98

$$-A a^{\frac{5}{2}} \ln\left(\frac{b x+2 a+2 \sqrt{c x^{2}+b x+a}\, \sqrt{a}}{x}\right)+\frac{15 A a^{2} b \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{16 \sqrt{c}}-\frac{5 A a b^{3} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{32 c^{\frac{3}{2}}}+\frac{3 A b^{5} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{256 c^{\frac{5}{2}}}+\frac{5 B a^{3} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{16 \sqrt{c}}-\frac{15 B a^{2} b^{2} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{64 c^{\frac{3}{2}}}+\frac{15 B a b^{4} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{256 c^{\frac{5}{2}}}-\frac{5 B b^{6} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{1024 c^{\frac{7}{2}}}+\frac{7 \sqrt{c x^{2}+b x+a}\, A a b x}{16}-\frac{3 \sqrt{c x^{2}+b x+a}\, A b^{3} x}{64 c}+\frac{5 \sqrt{c x^{2}+b x+a}\, B a^{2} x}{16}-\frac{5 \sqrt{c x^{2}+b x+a}\, B a b^{2} x}{32 c}+\frac{5 \sqrt{c x^{2}+b x+a}\, B b^{4} x}{256 c^{2}}+\sqrt{c x^{2}+b x+a}\, A a^{2}+\frac{7 \sqrt{c x^{2}+b x+a}\, A a b^{2}}{32 c}-\frac{3 \sqrt{c x^{2}+b x+a}\, A b^{4}}{128 c^{2}}+\frac{\left(c x^{2}+b x+a\right)^{\frac{3}{2}} A b x}{8}+\frac{5 \sqrt{c x^{2}+b x+a}\, B a^{2} b}{32 c}-\frac{5 \sqrt{c x^{2}+b x+a}\, B a b^{3}}{64 c^{2}}+\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} B a x}{24}+\frac{5 \sqrt{c x^{2}+b x+a}\, B b^{5}}{512 c^{3}}-\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} B b^{2} x}{96 c}+\frac{\left(c x^{2}+b x+a\right)^{\frac{3}{2}} A a}{3}+\frac{\left(c x^{2}+b x+a\right)^{\frac{3}{2}} A b^{2}}{16 c}+\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} B a b}{48 c}-\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} B b^{3}}{192 c^{2}}+\frac{\left(c x^{2}+b x+a\right)^{\frac{5}{2}} B x}{6}+\frac{\left(c x^{2}+b x+a\right)^{\frac{5}{2}} A}{5}+\frac{\left(c x^{2}+b x+a\right)^{\frac{5}{2}} B b}{12 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x)
```

```
[Out] -5/32*B/c*(c*x^2+b*x+a)^(1/2)*x*a*b^2+1/3*A*a*(c*x^2+b*x+a)^(3/2)+A*a^2*(c*
x^2+b*x+a)^(1/2)-15/64*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)*b^2*a^2+15/256*B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4*
a+1/5*A*(c*x^2+b*x+a)^(5/2)-5/192*B/c^2*(c*x^2+b*x+a)^(3/2)*b^3+1/8*A*b*(c*
x^2+b*x+a)^(3/2)*x+1/16*A/c*(c*x^2+b*x+a)^(3/2)*b^2-3/128*A/c^2*(c*x^2+b*x+
a)^(1/2)*b^4+3/256*A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^
5+5/512*B/c^3*(c*x^2+b*x+a)^(1/2)*b^5+5/16*B/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*a^3+1/12*B/c*(c*x^2+b*x+a)^(5/2)*b+5/24*B*(c*x^2+b*x+
a)^(3/2)*x*a+5/16*B*(c*x^2+b*x+a)^(1/2)*x*a^2-5/1024*B/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^6+5/256*B/c^2*(c*x^2+b*x+a)^(1/2)*x*b^4+5
/48*B/c*(c*x^2+b*x+a)^(3/2)*b*a-5/96*B/c*(c*x^2+b*x+a)^(3/2)*x*b^2+7/32*A/c
*(c*x^2+b*x+a)^(1/2)*b^2*a-3/64*A/c*(c*x^2+b*x+a)^(1/2)*x*b^3+15/16*A*b/c^(
1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-5/32*A/c^(3/2)*ln((c*x
+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^3*a+7/16*A*b*(c*x^2+b*x+a)^(1/2)*x*a
-A*a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/6*B*x*(c*x^2+b*x
+a)^(5/2)+5/32*B/c*(c*x^2+b*x+a)^(1/2)*b*a^2-5/64*B/c^2*(c*x^2+b*x+a)^(1/2)
*b^3*a
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x, x)
```

3.866 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=310

$$-\frac{1}{2}a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)-\frac{\sqrt{a+bx+cx^2}\left(-128a^2Bc^2+2cx\left(-120aAc^2-28abBc-10\right.\right.}{128c}$$

Rubi [A] time = 0.31, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\left(-128a^2Bc^2+2cx\left(-120aAc^2-28abBc-10Ab^2c+3b^3B\right)-440aAbc^2-28ab^2Bc-10Ab^3c+3b^4B\right)}{128c^2}+\frac{\left(480a^2Ac^3+240a^2bBc^2+240aAb^2c^2-40ab^3Bc-10Ab^4c+3b^5B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{5/2}}-\frac{1}{2}a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)+\frac{\left(a+bx+cx^2\right)^{3/2}\left(16aBc+6cx(10Ac+bB)+70Abc+3b^2B\right)}{48c}-\frac{(5A-Bx)\left(a+bx+cx^2\right)^{5/2}}{5x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] -((3*b^4*B - 10*A*b^3*c - 28*a*b^2*B*c - 440*a*A*b*c^2 - 128*a^2*B*c^2 + 2*
c*(3*b^3*B - 10*A*b^2*c - 28*a*b*B*c - 120*a*A*c^2)*x)*Sqrt[a + b*x + c*x^2
])/(128*c^2) + ((3*b^2*B + 70*A*b*c + 16*a*B*c + 6*c*(b*B + 10*A*c)*x)*(a +
 b*x + c*x^2)^(3/2))/(48*c) - ((5*A - B*x)*(a + b*x + c*x^2)^(5/2))/(5*x) -
 (a^(3/2)*(5*A*b + 2*a*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x
^2])])/2 + ((3*b^5*B - 10*A*b^4*c - 40*a*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^
2*b*B*c^2 + 480*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*
x^2])])/(256*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^2}\,dx = -\frac{(5A-Bx)\left(a+bx+cx^2\right)^{5/2}}{5x} - \frac{1}{2}\int \frac{(-5Ab-2aB-(bB+10Ac)x)\left(a+bx+\ldots\right.}{x}$$

$$= \frac{\left(3b^2B+70Abc+16aBc+6c(bB+10Ac)x\right)\left(a+bx+cx^2\right)^{3/2}}{48c} - \frac{(5A-Bx)\left(a\ldots\right.}{\ldots}$$

$$= -\frac{\left(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\left(3b^3B-10Ab^2c-\ldots\right.\right.}{128c^2}$$

$$= -\frac{\left(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\left(3b^3B-10Ab^2c-\ldots\right.\right.}{128c^2}$$

$$= -\frac{\left(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\left(3b^3B-10Ab^2c-\ldots\right.\right.}{128c^2}$$

$$= -\frac{\left(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\left(3b^3B-10Ab^2c-\ldots\right.\right.}{128c^2}$$

Mathematica [A] time = 0.52, size = 288, normalized size = 0.93

$$-\frac{1}{2}a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)+\frac{\sqrt{a+x(b+cx)}\left(-128a^2c^2(15A-23Bx)+4acx\left(2bc(695A+311Bx)+4c^2x(135A+88Bx)+135b^2B\right)+x\left(30b^3c(5A+Bx)+4b^2c^2x(295A+186Bx)+16bc^3x^2(85A+63Bx)+96c^4x^3(5A+4Bx)-45b^4B\right)\right)}{1920c^2x}+\frac{\left(480a^2Ac^3+240a^2bBc^2+240aAb^2c^2-40ab^3Bc-10Ab^4c+3b^5B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{256c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-128*a^2*c^2*(15*A - 23*B*x) + x*(-45*b^4*B + 30*b^
3*c*(5*A + B*x) + 96*c^4*x^3*(5*A + 4*B*x) + 16*b*c^3*x^2*(85*A + 63*B*x) +
 4*b^2*c^2*x*(295*A + 186*B*x)) + 4*a*c*x*(135*b^2*B + 4*c^2*x*(135*A + 88*
B*x) + 2*b*c*(695*A + 311*B*x))))/(1920*c^2*x) - (a^(3/2)*(5*A*b + 2*a*B)*A
rcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/2 + ((3*b^5*B - 10*A
```

```
*b^4*c - 40*a*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^2*b*B*c^2 + 480*a^2*A*c^3)*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(256*c^(5/2))
```

IntegrateAlgebraic [A] time = 1.86, size = 329, normalized size = 1.06

$$\left(5a^{3/2}Ab+2a^{5/2}B\right)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)+\frac{\sqrt{a+bx+cx^2}\left(-1920a^2Ac^2+2944a^2Bc^2x+5560aAbc^2x+2160aAc^3x^2+540ab^2Bcx+2488abBc^2x^2+1408aBc^3x^3+150Ab^3cx+1180Ab^2c^2x^2+1360Abc^3x^3+480Ac^4x^4-45b^4Bx+30b^3Bcx^2+744b^2Bc^2x^3+1008bBc^3x^4+384Bc^4x^5\right)}{1920c^2x}+\frac{\left(-480a^2Ac^3-240a^2bBc^2-240aAb^2c^2+40ab^3Bc+10Ab^4c-3b^5B\right)\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{256c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-1920*a^2*A*c^2 - 45*b^4*B*x + 150*A*b^3*c*x + 540*
a*b^2*B*c*x + 5560*a*A*b*c^2*x + 2944*a^2*B*c^2*x + 30*b^3*B*c*x^2 + 1180*A
*b^2*c^2*x^2 + 2488*a*b*B*c^2*x^2 + 2160*a*A*c^3*x^2 + 744*b^2*B*c^2*x^3 +
1360*A*b*c^3*x^3 + 1408*a*B*c^3*x^3 + 1008*b*B*c^3*x^4 + 480*A*c^4*x^4 + 38
4*B*c^4*x^5))/(1920*c^2*x) + (5*a^(3/2)*A*b + 2*a^(5/2)*B)*ArcTanh[(Sqrt[c]
*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]] + ((-3*b^5*B + 10*A*b^4*c + 40
*a*b^3*B*c - 240*a*A*b^2*c^2 - 240*a^2*b*B*c^2 - 480*a^2*A*c^3)*Log[b*c^2 +
 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]])/(256*c^(5/2))
```

fricas [A] time = 8.46, size = 1393, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/7680*(1920*(2*B*a^2 + 5*A*a*b)*sqrt(a)*c^3*x*log(-(8*a*b*x + (b^2 + 4*a*
c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 15*(3*
B*b^5 + 480*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2)*c^2 - 10*(4*B*a*b^3 + A*b^4
)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*
c*x + b)*sqrt(c) - 4*a*c) + 4*(384*B*c^5*x^5 - 1920*A*a^2*c^3 + 48*(21*B*b*
c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c^3 + 2*(88*B*a + 85*A*b)*c^4)*x^3 + 2*(1
5*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622*B*a*b + 295*A*b^2)*c^3)*x^2 - (45*B*b^4
*c - 8*(368*B*a^2 + 695*A*a*b)*c^3 - 30*(18*B*a*b^2 + 5*A*b^3)*c^2)*x)*sqrt
(c*x^2 + b*x + a))/(c^3*x), 1/3840*(960*(2*B*a^2 + 5*A*a*b)*sqrt(a)*c^3*x*l
og(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt
(a) + 8*a^2)/x^2) - 15*(3*B*b^5 + 480*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2)*c
^2 - 10*(4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(384*B*c^5*x^5 - 1920*A*a
^2*c^3 + 48*(21*B*b*c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c^3 + 2*(88*B*a + 85*
A*b)*c^4)*x^3 + 2*(15*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622*B*a*b + 295*A*b^2)*
c^3)*x^2 - (45*B*b^4*c - 8*(368*B*a^2 + 695*A*a*b)*c^3 - 30*(18*B*a*b^2 + 5
*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x), 1/7680*(3840*(2*B*a^2 + 5*A
*a*b)*sqrt(-a)*c^3*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/
(a*c*x^2 + a*b*x + a^2)) + 15*(3*B*b^5 + 480*A*a^2*c^3 + 240*(B*a^2*b + A*a
*b^2)*c^2 - 10*(4*B*a*b^3 + A*b^4)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x -
b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(384*B*c^5*x
^5 - 1920*A*a^2*c^3 + 48*(21*B*b*c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c^3 + 2*
(88*B*a + 85*A*b)*c^4)*x^3 + 2*(15*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622*B*a*b
+ 295*A*b^2)*c^3)*x^2 - (45*B*b^4*c - 8*(368*B*a^2 + 695*A*a*b)*c^3 - 30*(1
8*B*a*b^2 + 5*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x), 1/3840*(1920*(
2*B*a^2 + 5*A*a*b)*sqrt(-a)*c^3*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2
*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 15*(3*B*b^5 + 480*A*a^2*c^3 + 240*(
B*a^2*b + A*a*b^2)*c^2 - 10*(4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*x*arctan(1/2*sq
rt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(384*
B*c^5*x^5 - 1920*A*a^2*c^3 + 48*(21*B*b*c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c
^3 + 2*(88*B*a + 85*A*b)*c^4)*x^3 + 2*(15*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622
*B*a*b + 295*A*b^2)*c^3)*x^2 - (45*B*b^4*c - 8*(368*B*a^2 + 695*A*a*b)*c^3
- 30*(18*B*a*b^2 + 5*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,0,0,0]%%%}+%%%{%%{[-2,0]:[1,0,
%%%{-1,[1]%%%}]%%},[2,0,1,0,0]%%%}+%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,
0,2,0,0]%%%} / %%%{%%%{1,[1]%%%},[4,0,0,0,0]%%%}+%%%{%%%{-2,[1]%%%},[2,0,1,
0,0]%%%}+%%%{%%%{1,[1]%%%},[0,0,2,0,0]%%%} Error: Bad Argument Value
```

maple [B] time = 0.06, size = 615, normalized size = 1.98

$$\frac{15Aa^{2}\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{8}-\frac{5Aa^{\frac{3}{2}}b\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{2}+\frac{15Aab^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{16\sqrt{c}}-\frac{5Ab^{4}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{128c^{\frac{3}{2}}}-Ba^{\frac{5}{2}}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)+\frac{15Ba^{2}b\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{16\sqrt{c}}-\frac{5Bab^{3}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{32c^{\frac{3}{2}}}+\frac{3Bb^{5}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{256c^{\frac{5}{2}}}+\frac{15\sqrt{cx^{2}+bx+a}\,Aacx}{8}+\frac{5\sqrt{cx^{2}+bx+a}\,Ab^{2}x}{32}+\frac{7\sqrt{cx^{2}+bx+a}\,Babx}{16}-\frac{3\sqrt{cx^{2}+bx+a}\,Bb^{3}x}{64c}+\frac{55\sqrt{cx^{2}+bx+a}\,Aab}{16}+\frac{5\sqrt{cx^{2}+bx+a}\,Ab^{3}}{64c}+\frac{5\left(cx^{2}+bx+a\right)^{\frac{3}{2}}Acx}{4}+\sqrt{cx^{2}+bx+a}\,Ba^{2}+\frac{7\sqrt{cx^{2}+bx+a}\,Bab^{2}}{32c}-\frac{3\sqrt{cx^{2}+bx+a}\,Bb^{4}}{128c^{2}}+\frac{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}Bbx}{8}+\frac{\left(cx^{2}+bx+a\right)^{\frac{5}{2}}Acx}{a}+\frac{35\left(cx^{2}+bx+a\right)^{\frac{3}{2}}Ab}{24}+\frac{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}Ba}{3}+\frac{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}Bb^{2}}{16c}+\frac{\left(cx^{2}+bx+a\right)^{\frac{5}{2}}Ab}{a}+\frac{\left(cx^{2}+bx+a\right)^{\frac{5}{2}}B}{5}-\frac{\left(cx^{2}+bx+a\right)^{\frac{7}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x)
```

```
[Out] 1/5*B*(c*x^2+b*x+a)^(5/2)+15/16*A/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*a*b^2+15/8*A*(c*x^2+b*x+a)^(1/2)*x*a*c+A/a*b*(c*x^2+b*x+a)^(5/2)
-5/2*A*a^(3/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/4*A*c*(c*x
^2+b*x+a)^(3/2)*x+5/32*A*(c*x^2+b*x+a)^(1/2)*x*b^2+5/64*A/c*(c*x^2+b*x+a)^(
1/2)*b^3-5/128*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4+55
/16*A*(c*x^2+b*x+a)^(1/2)*b*a-A/a/x*(c*x^2+b*x+a)^(7/2)+15/8*A*c^(1/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+1/8*B*b*(c*x^2+b*x+a)^(3/2)*x+1
/16*B/c*(c*x^2+b*x+a)^(3/2)*b^2-3/128*B/c^2*(c*x^2+b*x+a)^(1/2)*b^4-5/32*B/
c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^3*a+A*c/a*(c*x^2+b*x+
a)^(5/2)*x+3/256*B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^5+
B*a^2*(c*x^2+b*x+a)^(1/2)+35/24*A*b*(c*x^2+b*x+a)^(3/2)-B*a^(5/2)*ln((b*x+2
*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/3*B*a*(c*x^2+b*x+a)^(3/2)+7/16*B*b*(
c*x^2+b*x+a)^(1/2)*x*a-3/64*B/c*(c*x^2+b*x+a)^(1/2)*x*b^3+7/32*B/c*(c*x^2+b
*x+a)^(1/2)*b^2*a+15/16*B*b/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*a^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**2, x)
```

3.867 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=273

$$-\frac{5\left(-48a^2Bc^2-96aAbc^2-24ab^2Bc-8Ab^3c+b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{3/2}}-\frac{5}{8}\sqrt{a}\left(4aAc+4abB+3Ab^2\right)\tanh$$

Rubi [A] time = 0.26, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{5\left(-48a^2Bc^2-96aAbc^2-24ab^2Bc-8Ab^3c+b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{3/2}}+\frac{5\sqrt{a+bx+cx^2}\left(2cx\left(12aBc+16Abc+b^2B\right)+32aAc^2+44abBc+40Ab^2c+b^3B\right)}{64c}-\frac{5}{8}\sqrt{a}\left(4aAc+4abB+3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)-\frac{(2A-Bx)\left(a+bx+cx^2\right)^{5/2}}{4x^2}-\frac{5\left(a+bx+cx^2\right)^{3/2}(6(aB+Ab)-x(4Ac+bB))}{24x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (5*(b^3*B + 40*A*b^2*c + 44*a*b*B*c + 32*a*A*c^2 + 2*c*(b^2*B + 16*A*b*c +
12*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(64*c) - (5*(6*(A*b + a*B) - (b*B + 4*A
*c)*x)*(a + b*x + c*x^2)^(3/2))/(24*x) - ((2*A - B*x)*(a + b*x + c*x^2)^(5/
2))/(4*x^2) - (5*Sqrt[a]*(3*A*b^2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(2*a + b*x)/
(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/8 - (5*(b^4*B - 8*A*b^3*c - 24*a*b^2*B*
c - 96*a*A*b*c^2 - 48*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*
x + c*x^2])])/(128*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^3}\,dx = -\frac{(2A-Bx)\left(a+bx+cx^2\right)^{5/2}}{4x^2} - \frac{5}{16}\int \frac{(-4(Ab+aB)-2(bB+4Ac)x)\left(a+\right.}{x^2}$$

$$= -\frac{5(6(Ab+aB)-(bB+4Ac)x)\left(a+bx+cx^2\right)^{3/2}}{24x} - \frac{(2A-Bx)\left(a+bx+cx\right.}{4x^2}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

Mathematica [A] time = 0.46, size = 254, normalized size = 0.93

$$\frac{\sqrt{a+x(b+cx)}\left(-96a^2c(A+2Bx)+4acx(Bx(139b+54cx)-4A(27b-28cx))+x^2\left(2b^2c(132A+59Bx)+8bc^2x(26A+17Bx)+16c^3x^2(4A+3Bx)+15b^3B\right)\right)}{192cx^2}+\frac{5\left(48a^2Bc^2+96aAbc^2+24ab^2Bc+8Ab^3c+b^4(-B)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{128c^{3/2}}-\frac{5}{8}\sqrt{a}\left(4aAc+4abB+3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-96*a^2*c*(A + 2*B*x) + x^2*(15*b^3*B + 16*c^3*x^2*
(4*A + 3*B*x) + 8*b*c^2*x*(26*A + 17*B*x) + 2*b^2*c*(132*A + 59*B*x)) + 4*a
*c*x*(-4*A*(27*b - 28*c*x) + B*x*(139*b + 54*c*x))))/(192*c*x^2) - (5*Sqrt[
a]*(3*A*b^2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*
(b + c*x)]])/8 + (5*(-(b^4*B) + 8*A*b^3*c + 24*a*b^2*B*c + 96*a*A*b*c^2 +
48*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)]])/(128*
c^(3/2))
```

IntegrateAlgebraic [A] time = 2.12, size = 287, normalized size = 1.05

$$-\frac{5}{4}\left(4a^{3/2}Ac+4a^{3/2}bB+3\sqrt{a}\,Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)+\frac{\sqrt{a+bx+cx^2}\left(-96a^2Ac-192a^2Bcx-432aAbcx+448aAc^2x^2+556abBcx^2+216aBc^2x^3+264Ab^2cx^2+208Abc^2x^3+64Ac^3x^4+15b^3Bx^2+118b^2Bcx^3+136bBc^2x^4+48Bc^3x^5\right)}{192cx^2}+\frac{5\left(-48a^2Bc^2-96aAbc^2-24ab^2Bc-8Ab^3c+b^4B\right)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{128c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-96*a^2*A*c - 432*a*A*b*c*x - 192*a^2*B*c*x + 15*b^
3*B*x^2 + 264*A*b^2*c*x^2 + 556*a*b*B*c*x^2 + 448*a*A*c^2*x^2 + 118*b^2*B*c
*x^3 + 208*A*b*c^2*x^3 + 216*a*B*c^2*x^3 + 136*b*B*c^2*x^4 + 64*A*c^3*x^4 +
 48*B*c^3*x^5))/(192*c*x^2) - (5*(3*Sqrt[a]*A*b^2 + 4*a^(3/2)*b*B + 4*a^(3/
2)*A*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/4 + (5*(b^
4*B - 8*A*b^3*c - 24*a*b^2*B*c - 96*a*A*b*c^2 - 48*a^2*B*c^2)*Log[b*c + 2*c
^2*x - 2*c^(3/2)*Sqrt[a + b*x + c*x^2]])/(128*c^(3/2))
```

fricas [A] time = 5.68, size = 1269, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [-1/768*(15*(B*b^4 - 48*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sq
rt(c)*x^2*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) - 240*(4*A*a*c^3 + (4*B*a*b + 3*A*b^2)*c^2)*sqrt(a)*x^
2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(a) + 8*a^2)/x^2) - 4*(48*B*c^4*x^5 - 96*A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A
*c^4)*x^4 - 48*(4*B*a^2 + 9*A*a*b)*c^2*x + 2*(59*B*b^2*c^2 + 4*(27*B*a + 26
*A*b)*c^3)*x^3 + (15*B*b^3*c + 448*A*a*c^3 + 4*(139*B*a*b + 66*A*b^2)*c^2)*
x^2)*sqrt(c*x^2 + b*x + a))/(c^2*x^2), 1/384*(15*(B*b^4 - 48*(B*a^2 + 2*A*a
*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 120*(4*A*a*c^3 + (4*B
*a*b + 3*A*b^2)*c^2)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt
(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 2*(48*B*c^4*x^5 - 96*
A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4)*x^4 - 48*(4*B*a^2 + 9*A*a*b)*c^2*x + 2
*(59*B*b^2*c^2 + 4*(27*B*a + 26*A*b)*c^3)*x^3 + (15*B*b^3*c + 448*A*a*c^3 +
 4*(139*B*a*b + 66*A*b^2)*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(c^2*x^2), 1/768
*(480*(4*A*a*c^3 + (4*B*a*b + 3*A*b^2)*c^2)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*
x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 15*(B*b^4 -
48*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(c)*x^2*log(-8*c^2*
x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c)
+ 4*(48*B*c^4*x^5 - 96*A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4)*x^4 - 48*(4*B*a
^2 + 9*A*a*b)*c^2*x + 2*(59*B*b^2*c^2 + 4*(27*B*a + 26*A*b)*c^3)*x^3 + (15*
B*b^3*c + 448*A*a*c^3 + 4*(139*B*a*b + 66*A*b^2)*c^2)*x^2)*sqrt(c*x^2 + b*x
 + a))/(c^2*x^2), 1/384*(240*(4*A*a*c^3 + (4*B*a*b + 3*A*b^2)*c^2)*sqrt(-a)
*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x
 + a^2)) + 15*(B*b^4 - 48*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*
sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2
 + b*c*x + a*c)) + 2*(48*B*c^4*x^5 - 96*A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4
)*x^4 - 48*(4*B*a^2 + 9*A*a*b)*c^2*x + 2*(59*B*b^2*c^2 + 4*(27*B*a + 26*A*b
)*c^3)*x^3 + (15*B*b^3*c + 448*A*a*c^3 + 4*(139*B*a*b + 66*A*b^2)*c^2)*x^2)
*sqrt(c*x^2 + b*x + a))/(c^2*x^2)]
```

giac [B] time = 0.42, size = 527, normalized size = 1.93

$$\frac{1}{192}\sqrt{cx^2+bx+a}\left(2\left(4\left(6Bc^2x+\frac{17Bbc^4+8Ac^5}{c^3}\right)x+\frac{59Bb^2c^3+108Bac^4+104Abc^4}{c^3}\right)x+\frac{15Bb^3c^2+556Babc^3+264Ab^2c^3+448Aac^4}{c^3}\right)+\frac{5\left(4Ba^2b+3Aab^2+4Aa^2c\right)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}}+\frac{5\left(Bb^4-24Bab^2c-8Ab^3c-48Ba^2c^2-96Aabc^2\right)\log\left(\left|2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}+b\right|\right)}{128c^{\frac{3}{2}}}+\frac{4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Ba^2b+9\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Aab^2+4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^3Aa^2c+8\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2Ba^3\sqrt{c}+24\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2Aa^2b\sqrt{c}-4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Ba^3b-7\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Aa^2b^2+4\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Aa^3c-8Ba^4\sqrt{c}-16Aa^3b\sqrt{c}}{4\left(\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2-a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*c^2*x + (17*B*b*c^4 + 8*A*c^5)/c^3)*
x + (59*B*b^2*c^3 + 108*B*a*c^4 + 104*A*b*c^4)/c^3)*x + (15*B*b^3*c^2 + 556
*B*a*b*c^3 + 264*A*b^2*c^3 + 448*A*a*c^4)/c^3) + 5/4*(4*B*a^2*b + 3*A*a*b^2
 + 4*A*a^2*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/sqrt(-a
) + 5/128*(B*b^4 - 24*B*a*b^2*c - 8*A*b^3*c - 48*B*a^2*c^2 - 96*A*a*b*c^2)*
log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) + b))/c^(3/2) + 1/4*(
4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b + 9*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^2*c +
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*sqrt(c) + 24*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*A*a^2*b*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*B*a^3*b - 7*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^2 + 4*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*A*a^3*c - 8*B*a^4*sqrt(c) - 16*A*a^3*b*sqrt(c))/(
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2
```

maple [B] time = 0.06, size = 663, normalized size = 2.43

$$-\frac{5 A a^{\frac{3}{2}} c \ln \left(\frac{b x+2 a+2 \sqrt{c x^{2}+b x+a}\, \sqrt{a}}{x}\right)}{2}+\frac{15 A a b \sqrt{c}\, \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{4}-\frac{15 A \sqrt{a}\, b^{2} \ln \left(\frac{b x+2 a+2 \sqrt{c x^{2}+b x+a}\, \sqrt{a}}{x}\right)}{8}+\frac{5 A b^{3} \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{16 \sqrt{c}}+\frac{15 B a^{2} \sqrt{c}\, \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{8}-\frac{5 B a^{\frac{3}{2}} b \ln \left(\frac{b x+2 a+2 \sqrt{c x^{2}+b x+a}\, \sqrt{a}}{x}\right)}{2}+\frac{15 B a b^{2} \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{16 \sqrt{c}}-\frac{5 B b^{4} \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{128 c^{\frac{3}{2}}}+\frac{5 \sqrt{c x^{2}+b x+a}\, A b c x}{2}+\frac{15 \sqrt{c x^{2}+b x+a}\, B a c x}{8}+\frac{5 \sqrt{c x^{2}+b x+a}\, B b^{2} x}{32}+\frac{5 \sqrt{c x^{2}+b x+a}\, A a c}{2}+\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} A b c x}{4 a}+\frac{25 \sqrt{c x^{2}+b x+a}\, A b^{2}}{8}+\frac{55 \sqrt{c x^{2}+b x+a}\, B a b}{16}+\frac{5 \sqrt{c x^{2}+b x+a}\, B b^{3}}{64 c}+\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} B c x}{4}+\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} A b^{2}}{4 a}+\frac{3 \left(c x^{2}+b x+a\right)^{\frac{5}{2}} A b c x}{4 a^{2}}+\frac{5 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} A c}{6}+\frac{\left(c x^{2}+b x+a\right)^{\frac{5}{2}} B c x}{a}+\frac{35 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} B b}{24}+\frac{\left(c x^{2}+b x+a\right)^{\frac{5}{2}} A c}{2 a}+\frac{3 \left(c x^{2}+b x+a\right)^{\frac{5}{2}} A b^{2}}{4 a^{2}}+\frac{\left(c x^{2}+b x+a\right)^{\frac{5}{2}} B b}{a}-\frac{3 \left(c x^{2}+b x+a\right)^{\frac{7}{2}} A b}{4 a^{2} x}-\frac{\left(c x^{2}+b x+a\right)^{\frac{7}{2}} B}{a x}-\frac{\left(c x^{2}+b x+a\right)^{\frac{7}{2}} A}{2 a x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x)
```

```
[Out] 5/4*A/a*b*c*(c*x^2+b*x+a)^(3/2)*x+3/4*A/a^2*b*c*(c*x^2+b*x+a)^(5/2)*x+35/24
*B*b*(c*x^2+b*x+a)^(3/2)+5/6*A*c*(c*x^2+b*x+a)^(3/2)+25/8*A*b^2*(c*x^2+b*x+
a)^(1/2)+15/16*B/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*b^2-
3/4*A/a^2*b/x*(c*x^2+b*x+a)^(7/2)+15/4*A*a*b*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))+5/2*A*b*(c*x^2+b*x+a)^(1/2)*x*c+B*c/a*(c*x^2+b*x+a)^(
5/2)*x+15/8*B*(c*x^2+b*x+a)^(1/2)*x*a*c-5/2*A*c*a^(3/2)*ln((b*x+2*a+2*(c*x^
2+b*x+a)^(1/2)*a^(1/2))/x)+5/16*A*b^3/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))+3/4*A/a^2*b^2*(c*x^2+b*x+a)^(5/2)+5/4*A/a*b^2*(c*x^2+b*x+a)^
(3/2)-1/2*A/a/x^2*(c*x^2+b*x+a)^(7/2)-15/8*A*a^(1/2)*b^2*ln((b*x+2*a+2*(c*x
^2+b*x+a)^(1/2)*a^(1/2))/x)+1/2*A*c/a*(c*x^2+b*x+a)^(5/2)+5/2*A*c*a*(c*x^2+
b*x+a)^(1/2)+15/8*B*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2
+5/32*B*(c*x^2+b*x+a)^(1/2)*x*b^2-5/2*B*a^(3/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)+B/a*b*(c*x^2+b*x+a)^(5/2)+55/16*B*(c*x^2+b*x+a)^(1/2)*
b*a+5/64*B/c*(c*x^2+b*x+a)^(1/2)*b^3-5/128*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*b^4-B/a/x*(c*x^2+b*x+a)^(7/2)+5/4*B*c*(c*x^2+b*x+a)^(
3/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**3, x)
```

3.868 $\int \frac{(A+Bx)(a+bx+cx^2)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=255

$$-\frac{5\sqrt{a+bx+cx^2}\left(-x\left(4aBc+4Abc+b^2B\right)+A\left(4ac+b^2\right)+4abB\right)}{8x}+\frac{5\left(8aAc^2+12abBc+6Ab^2c+b^3B\right)\tan}{16\sqrt{c}}$$

Rubi [A] time = 0.32, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {812, 843, 621, 206, 724}

$$\frac{5\left(8aAc^2+12abBc+6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16\sqrt{c}}-\frac{5\sqrt{a+bx+cx^2}\left(-x\left(4aBc+4Abc+b^2B\right)+A\left(4ac+b^2\right)+4abB\right)}{8x}-\frac{5\left(A\left(12abc+b^3\right)+2aB\left(4ac+3b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16\sqrt{a}}-\frac{(A-Bx)\left(a+bx+cx^2\right)^{5/2}}{3x^3}-\frac{5\left(a+bx+cx^2\right)^{3/2}(2aB-x(2Ac+bB)+Ab)}{12x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (-5*(4*a*b*B + A*(b^2 + 4*a*c) - (b^2*B + 4*A*b*c + 4*a*B*c)*x)*Sqrt[a + b*
x + c*x^2])/(8*x) - (5*(A*b + 2*a*B - (b*B + 2*A*c)*x)*(a + b*x + c*x^2)^(3
/2))/(12*x^2) - ((A - B*x)*(a + b*x + c*x^2)^(5/2))/(3*x^3) - (5*(2*a*B*(3*
b^2 + 4*a*c) + A*(b^3 + 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a +
b*x + c*x^2])])/(16*Sqrt[a]) + (5*(b^3*B + 6*A*b^2*c + 12*a*b*B*c + 8*a*A*c
^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^4}\,dx = -\frac{(A-Bx)\left(a+bx+cx^2\right)^{5/2}}{3x^3} - \frac{5}{18}\int \frac{(-3(Ab+2aB)-3(bB+2Ac)x)\left(a+bx\right.}{x^3}$$

$$= -\frac{5(Ab+2aB-(bB+2Ac)x)\left(a+bx+cx^2\right)^{3/2}}{12x^2} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{5/2}}{3x^3}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

Mathematica [A] time = 0.72, size = 236, normalized size = 0.93

$$\frac{1}{48}\left(\frac{2\sqrt{a+x(b+cx)}\left(-4a^2(2A+3Bx)-2ax(A(13b+28cx)+Bx(27b-28cx))+x^2\left(A\left(-33b^2+54bcx+12c^2x^2\right)+Bx\left(33b^2+26bcx+8c^2x^2\right)\right)\right)}{x^3}+\frac{15\left(8aAc^2+12abBc+6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}}-\frac{15\left(A\left(12abc+b^3\right)+2aB\left(4ac+3b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] ((2*Sqrt[a + x*(b + c*x)]*(-4*a^2*(2*A + 3*B*x) - 2*a*x*(B*x*(27*b - 28*c*x
) + A*(13*b + 28*c*x)) + x^2*(B*x*(33*b^2 + 26*b*c*x + 8*c^2*x^2) + A*(-33*
b^2 + 54*b*c*x + 12*c^2*x^2))))/x^3 - (15*(2*a*B*(3*b^2 + 4*a*c) + A*(b^3 +
 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/Sqrt[a]
 + (15*(b^3*B + 6*A*b^2*c + 12*a*b*B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*
Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c])/48
```

IntegrateAlgebraic [A] time = 2.53, size = 246, normalized size = 0.96

$$\frac{\sqrt{a+bx+cx^2}\left(-8a^2A-12a^2Bx-26aAbx-56aAcx^2-54abBx^2+56aBcx^3-33Ab^2x^2+54Abcx^3+12Ac^2x^4+33b^2Bx^3+26bBcx^4+8Bc^2x^5\right)}{24x^3}-\frac{5\left(8a^2Bc+12aAbc+6ab^2B+Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{5\left(8aAc^2+12abBc+6Ab^2c+b^3B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{16\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-8*a^2*A - 26*a*A*b*x - 12*a^2*B*x - 33*A*b^2*x^2 -
 54*a*b*B*x^2 - 56*a*A*c*x^2 + 33*b^2*B*x^3 + 54*A*b*c*x^3 + 56*a*B*c*x^3 +
 26*b*B*c*x^4 + 12*A*c^2*x^4 + 8*B*c^2*x^5))/(24*x^3) - (5*(A*b^3 + 6*a*b^2
*B + 12*a*A*b*c + 8*a^2*B*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])
/Sqrt[a]])/(8*Sqrt[a]) - (5*(b^3*B + 6*A*b^2*c + 12*a*b*B*c + 8*a*A*c^2)*Lo
g[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(16*Sqrt[c])
```

fricas [A] time = 3.27, size = 1293, normalized size = 5.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/96*(15*(B*a*b^3 + 8*A*a^2*c^2 + 6*(2*B*a^2*b + A*a*b^2)*c)*sqrt(c)*x^3*l
og(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c)
 - 4*a*c) + 15*(4*(2*B*a^2 + 3*A*a*b)*c^2 + (6*B*a*b^2 + A*b^3)*c)*sqrt(a)*
x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)
*sqrt(a) + 8*a^2)/x^2) + 4*(8*B*a*c^3*x^5 - 8*A*a^3*c + 2*(13*B*a*b*c^2 + 6
*A*a*c^3)*x^4 + (33*B*a*b^2*c + 2*(28*B*a^2 + 27*A*a*b)*c^2)*x^3 - 2*(6*B*a
^3 + 13*A*a^2*b)*c*x - (56*A*a^2*c^2 + 3*(18*B*a^2*b + 11*A*a*b^2)*c)*x^2)*
sqrt(c*x^2 + b*x + a))/(a*c*x^3), -1/96*(30*(B*a*b^3 + 8*A*a^2*c^2 + 6*(2*B
*a^2*b + A*a*b^2)*c)*sqrt(-c)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 15*(4*(2*B*a^2 + 3*A*a*b)*c^2 + (6*
B*a*b^2 + A*b^3)*c)*sqrt(a)*x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(
c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(8*B*a*c^3*x^5 - 8*A
*a^3*c + 2*(13*B*a*b*c^2 + 6*A*a*c^3)*x^4 + (33*B*a*b^2*c + 2*(28*B*a^2 + 2
7*A*a*b)*c^2)*x^3 - 2*(6*B*a^3 + 13*A*a^2*b)*c*x - (56*A*a^2*c^2 + 3*(18*B*
a^2*b + 11*A*a*b^2)*c)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^3), 1/96*(30*(4*(
2*B*a^2 + 3*A*a*b)*c^2 + (6*B*a*b^2 + A*b^3)*c)*sqrt(-a)*x^3*arctan(1/2*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 15*(B*a*
b^3 + 8*A*a^2*c^2 + 6*(2*B*a^2*b + A*a*b^2)*c)*sqrt(c)*x^3*log(-8*c^2*x^2 -
 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(
8*B*a*c^3*x^5 - 8*A*a^3*c + 2*(13*B*a*b*c^2 + 6*A*a*c^3)*x^4 + (33*B*a*b^2*
c + 2*(28*B*a^2 + 27*A*a*b)*c^2)*x^3 - 2*(6*B*a^3 + 13*A*a^2*b)*c*x - (56*A
*a^2*c^2 + 3*(18*B*a^2*b + 11*A*a*b^2)*c)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*
x^3), 1/48*(15*(4*(2*B*a^2 + 3*A*a*b)*c^2 + (6*B*a*b^2 + A*b^3)*c)*sqrt(-a)
*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x
 + a^2)) - 15*(B*a*b^3 + 8*A*a^2*c^2 + 6*(2*B*a^2*b + A*a*b^2)*c)*sqrt(-c)*
x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
+ a*c)) + 2*(8*B*a*c^3*x^5 - 8*A*a^3*c + 2*(13*B*a*b*c^2 + 6*A*a*c^3)*x^4 +
 (33*B*a*b^2*c + 2*(28*B*a^2 + 27*A*a*b)*c^2)*x^3 - 2*(6*B*a^3 + 13*A*a^2*b
)*c*x - (56*A*a^2*c^2 + 3*(18*B*a^2*b + 11*A*a*b^2)*c)*x^2)*sqrt(c*x^2 + b*
x + a))/(a*c*x^3)]
```

giac [B] time = 0.62, size = 784, normalized size = 3.07

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(4Bc^2x+\frac{13Bbc^3+6Ac^4}{c^2}\right)x+\frac{33Bb^2c^2+56Bac^3+54Abc^3}{c^2}\right)+\frac{5\left(6Bab^2+Ab^3+8Ba^2c+12Aabc\right)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{8\sqrt{-a}}-\frac{5\left(Bb^3+12Babc+6Ab^2c+8Aac^2\right)\log\left(\left|2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}+b\right|\right)}{16\sqrt{c}}+\ldots$$ [illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*c^2*x + (13*B*b*c^3 + 6*A*c^4)/c^2)*x +
(33*B*b^2*c^2 + 56*B*a*c^3 + 54*A*b*c^3)/c^2) + 5/8*(6*B*a*b^2 + A*b^3 + 8*
B*a^2*c + 12*A*a*b*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))
/sqrt(-a) - 5/16*(B*b^3 + 12*B*a*b*c + 6*A*b^2*c + 8*A*a*c^2)*log(abs(2*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) + b))/sqrt(c) + 1/24*(54*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^5*B*a*b^2*sqrt(c) + 33*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^5*A*b^3*sqrt(c) + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2
*c^(3/2) + 108*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b*c^(3/2) + 144*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*b*c + 144*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*A*a*b^2*c + 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*
c^2 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b^2*sqrt(c) - 40*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3*sqrt(c) - 48*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^3*A*a^2*b*c^(3/2) - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
2*B*a^3*b*c - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^2*b^2*c - 192*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^3*c^2 + 42*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^3*b^2*sqrt(c) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a
^2*b^3*sqrt(c) - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*c^(3/2) + 36*
```

```
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c^(3/2) + 96*B*a^4*b*c + 48*A*a
^3*b^2*c + 112*A*a^4*c^2)/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^3*sq
rt(c))
```

maple [B] time = 0.07, size = 840, normalized size = 3.29

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x)
```

```
[Out] 3/4*B/a^2*b*c*(c*x^2+b*x+a)^(5/2)*x+5/24*A/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)*x+
1/8*A/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)*x+5/8*A/a*b^2*(c*x^2+b*x+a)^(1/2)*x*c+5
/4*B/a*b*c*(c*x^2+b*x+a)^(3/2)*x+5/6*B*c*(c*x^2+b*x+a)^(3/2)+25/8*B*b^2*(c*
x^2+b*x+a)^(1/2)-3/4*B/a^2*b/x*(c*x^2+b*x+a)^(7/2)+5/2*B*b*(c*x^2+b*x+a)^(1
/2)*x*c+5*A*b*c*(c*x^2+b*x+a)^(1/2)-5/16*A/a^(1/2)*b^3*ln((b*x+2*a+2*(c*x^2
+b*x+a)^(1/2)*a^(1/2))/x)-1/3*A/a/x^3*(c*x^2+b*x+a)^(7/2)+5/2*A*c^(3/2)*a*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+5/2*A*c^2*(c*x^2+b*x+a)^(1/2)*x+
5/8*A/a*b^3*(c*x^2+b*x+a)^(1/2)+15/8*A*b^2*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))+1/8*A/a^3*b^3*(c*x^2+b*x+a)^(5/2)+5/24*A/a^2*b^3*(c*x^2
+b*x+a)^(3/2)+5/2*B*c*a*(c*x^2+b*x+a)^(1/2)+1/2*B*c/a*(c*x^2+b*x+a)^(5/2)-5
/2*B*c*a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/2*B/a/x^2*(c
*x^2+b*x+a)^(7/2)-15/8*B*a^(1/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1
/2))/x)+3/4*B/a^2*b^2*(c*x^2+b*x+a)^(5/2)+5/4*B/a*b^2*(c*x^2+b*x+a)^(3/2)+5
/16*B*b^3/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+15/4*B*a*b*c^
(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/4*A*a^(1/2)*b*c*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/3*A*c^2/a*(c*x^2+b*x+a)^(3/2)*x-4
/3*A*c/a^2/x*(c*x^2+b*x+a)^(7/2)+25/12*A/a*b*c*(c*x^2+b*x+a)^(3/2)-1/12*A/a
^2*b/x^2*(c*x^2+b*x+a)^(7/2)-1/8*A/a^3*b^2/x*(c*x^2+b*x+a)^(7/2)+4/3*A*c^2/
a^2*(c*x^2+b*x+a)^(5/2)*x+17/12*A/a^2*b*c*(c*x^2+b*x+a)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**4,x)

[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**4, x)
```

3.869 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^5}\,dx$

Optimal. Leaf size=284

$$-\frac{5\left(8abB\left(12ac+b^2\right)-A\left(-48a^2c^2-24ab^2c+b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{3/2}}+\frac{5}{8}\sqrt{c}\left(4aBc+4Abc+3b^2B\right)\tanh^{-1}$$

Rubi [A] time = 0.39, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{5\left(8abB\left(12ac+b^2\right)-A\left(-48a^2c^2-24ab^2c+b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{3/2}}-\frac{5\left(a+bx+cx^2\right)^{3/2}\left(3x\left(A\left(4ac+b^2\right)+8abB\right)+4a(4aB+Ab)\right)}{96ax^3}-\frac{5\sqrt{a+bx+cx^2}\left(-2cx\left(A\left(12ac+b^2\right)+16abB\right)-A\left(b^3-20abc\right)+8aB\left(4ac+b^2\right)\right)}{64ax}+\frac{5}{8}\sqrt{c}\left(4aBc+4Abc+3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)-\frac{(A-2Bx)\left(a+bx+cx^2\right)^{5/2}}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (-5*(8*a*B*(b^2 + 4*a*c) - A*(b^3 - 20*a*b*c) - 2*c*(16*a*b*B + A*(b^2 + 12
*a*c))*x)*Sqrt[a + b*x + c*x^2])/(64*a*x) - (5*(4*a*(A*b + 4*a*B) + 3*(8*a*
b*B + A*(b^2 + 4*a*c))*x)*(a + b*x + c*x^2)^(3/2))/(96*a*x^3) - ((A - 2*B*x
)*(a + b*x + c*x^2)^(5/2))/(4*x^4) - (5*(8*a*b*B*(b^2 + 12*a*c) - A*(b^4 -
24*a*b^2*c - 48*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x
^2])])/(128*a^(3/2)) + (5*Sqrt[c]*(3*b^2*B + 4*A*b*c + 4*a*B*c)*ArcTanh[(b
+ 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/8
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
```

```
LtQ[m, -2] && LtQ[m + 2*p, 0] && !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] && !RationalQ[m])) && NeQ[m, -1] && !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^5}\,dx = -\frac{(A-2Bx)\left(a+bx+cx^2\right)^{5/2}}{4x^4} - \frac{5}{16}\int \frac{(-2(Ab+4aB)-4(bB+Ac)x)\left(a+\right.}{x^4}$$

$$= -\frac{5\left(4a(Ab+4aB)+3\left(8abB+A\left(b^2+4ac\right)\right)x\right)\left(a+bx+cx^2\right)^{3/2}}{96ax^3} - \frac{(A-}{}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a-}}{64ax}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a-}}{64ax}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a-}}{64ax}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a-}}{64ax}$$

Mathematica [A] time = 0.69, size = 255, normalized size = 0.90

$$\frac{5\left(A\left(-48a^2c^2-24ab^2c+b^4\right)-8abB\left(12ac+b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{128a^{3/2}} - \frac{\sqrt{a+x(b+cx)}\left(16a^3(3A+4Bx)+8a^2x\left(17Ab+27Acx+26bBx+56Bcx^2\right)+2ax^2\left(A\left(59b^2+278bcx-96c^2x^2\right)-12Bx\left(-11b^2+18bcx+4c^2x^2\right)\right)+15Ab^3x^3\right)}{192ax^4} + \frac{5}{8}\sqrt{c}\left(4aBc+4Abc+3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] -1/192*(Sqrt[a + x*(b + c*x)]*(15*A*b^3*x^3 + 16*a^3*(3*A + 4*B*x) + 8*a^2*
x*(17*A*b + 26*b*B*x + 27*A*c*x + 56*B*c*x^2) + 2*a*x^2*(A*(59*b^2 + 278*b*
c*x - 96*c^2*x^2) - 12*B*x*(-11*b^2 + 18*b*c*x + 4*c^2*x^2))))/(a*x^4) + (5
*(-8*a*b*B*(b^2 + 12*a*c) + A*(b^4 - 24*a*b^2*c - 48*a^2*c^2))*ArcTanh[(2*a
 + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)]])/(128*a^(3/2)) + (5*Sqrt[c]*(3*b
```

```
^2*B + 4*A*b*c + 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*
x)])])/8
```

IntegrateAlgebraic [A] time = 2.91, size = 319, normalized size = 1.12

$$-\frac{5Ab^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{64a^{3/2}}+\frac{\sqrt{a+bx+cx^2}\left(-48a^3A-64a^3Bx-136a^2Abx-216a^2Acx^2-208a^2bBx^2-448a^2Bcx^3-118aAb^2x^2-556aAbcx^3+192aAc^2x^4-264ab^2Bx^3+432abBcx^4+96aBc^2x^5-15Ab^3x^3\right)}{192ax^4}-\frac{5}{8}\left(4aBc^{3/2}+4Abc^{3/2}+3b^2B\sqrt{c}\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)-\frac{5\left(6aAc^2+12abBc+3Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{8\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-48*a^3*A - 136*a^2*A*b*x - 64*a^3*B*x - 118*a*A*b^
2*x^2 - 208*a^2*b*B*x^2 - 216*a^2*A*c*x^2 - 15*A*b^3*x^3 - 264*a*b^2*B*x^3
- 556*a*A*b*c*x^3 - 448*a^2*B*c*x^3 + 432*a*b*B*c*x^4 + 192*a*A*c^2*x^4 + 9
6*a*B*c^2*x^5))/(192*a*x^4) - (5*(b^3*B + 3*A*b^2*c + 12*a*b*B*c + 6*a*A*c^
2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(8*Sqrt[a]) - (
5*A*b^4*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])/(64*a
^(3/2)) - (5*(3*b^2*B*Sqrt[c] + 4*A*b*c^(3/2) + 4*a*B*c^(3/2))*Log[b + 2*c*
x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/8
```

fricas [A] time = 4.51, size = 1305, normalized size = 4.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/768*(240*(3*B*a^2*b^2 + 4*(B*a^3 + A*a^2*b)*c)*sqrt(c)*x^4*log(-8*c^2*x^
2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) +
15*(8*B*a*b^3 - A*b^4 + 48*A*a^2*c^2 + 24*(4*B*a^2*b + A*a*b^2)*c)*sqrt(a)*
x^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)
*sqrt(a) + 8*a^2)/x^2) + 4*(96*B*a^2*c^2*x^5 - 48*A*a^4 + 48*(9*B*a^2*b*c +
 4*A*a^2*c^2)*x^4 - (264*B*a^2*b^2 + 15*A*a*b^3 + 4*(112*B*a^3 + 139*A*a^2*
b)*c)*x^3 - 2*(104*B*a^3*b + 59*A*a^2*b^2 + 108*A*a^3*c)*x^2 - 8*(8*B*a^4 +
 17*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^4), -1/768*(480*(3*B*a^2*b^2
+ 4*(B*a^3 + A*a^2*b)*c)*sqrt(-c)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c
*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 15*(8*B*a*b^3 - A*b^4 + 48*A*a^
2*c^2 + 24*(4*B*a^2*b + A*a*b^2)*c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*
c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(96*
B*a^2*c^2*x^5 - 48*A*a^4 + 48*(9*B*a^2*b*c + 4*A*a^2*c^2)*x^4 - (264*B*a^2*
b^2 + 15*A*a*b^3 + 4*(112*B*a^3 + 139*A*a^2*b)*c)*x^3 - 2*(104*B*a^3*b + 59
*A*a^2*b^2 + 108*A*a^3*c)*x^2 - 8*(8*B*a^4 + 17*A*a^3*b)*x)*sqrt(c*x^2 + b*
x + a))/(a^2*x^4), 1/384*(15*(8*B*a*b^3 - A*b^4 + 48*A*a^2*c^2 + 24*(4*B*a^
2*b + A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)
*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 120*(3*B*a^2*b^2 + 4*(B*a^3 + A*a^2*b)
*c)*sqrt(c)*x^4*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2
*c*x + b)*sqrt(c) - 4*a*c) + 2*(96*B*a^2*c^2*x^5 - 48*A*a^4 + 48*(9*B*a^2*b
*c + 4*A*a^2*c^2)*x^4 - (264*B*a^2*b^2 + 15*A*a*b^3 + 4*(112*B*a^3 + 139*A*
a^2*b)*c)*x^3 - 2*(104*B*a^3*b + 59*A*a^2*b^2 + 108*A*a^3*c)*x^2 - 8*(8*B*a
^4 + 17*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^4), 1/384*(15*(8*B*a*b^3
- A*b^4 + 48*A*a^2*c^2 + 24*(4*B*a^2*b + A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/
2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 240
*(3*B*a^2*b^2 + 4*(B*a^3 + A*a^2*b)*c)*sqrt(-c)*x^4*arctan(1/2*sqrt(c*x^2 +
 b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(96*B*a^2*c^2*x
^5 - 48*A*a^4 + 48*(9*B*a^2*b*c + 4*A*a^2*c^2)*x^4 - (264*B*a^2*b^2 + 15*A*
a*b^3 + 4*(112*B*a^3 + 139*A*a^2*b)*c)*x^3 - 2*(104*B*a^3*b + 59*A*a^2*b^2
+ 108*A*a^3*c)*x^2 - 8*(8*B*a^4 + 17*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^
2*x^4)]
```

giac [B] time = 0.67, size = 1163, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*c^2*x + (9*B*b*c^2 + 4*A*c^3)/c)*sqrt(c*x^2 + b*x + a) - 5/8*(3*B*
b^2*c + 4*B*a*c^2 + 4*A*b*c^2)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*sqrt(c) + b))/sqrt(c) + 5/64*(8*B*a*b^3 - A*b^4 + 96*B*a^2*b*c + 24*A*a*b
^2*c + 48*A*a^2*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/
(sqrt(-a)*a) + 1/192*(264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 + 1
5*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*b^4 + 864*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^7*B*a^2*b*c + 792*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^
2*c + 432*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*c^2 + 1152*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^6*B*a^2*b^2*sqrt(c) + 384*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^6*A*a*b^3*sqrt(c) + 1152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6
*B*a^3*c^(3/2) + 2304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^2*b*c^(3/2)
 - 584*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*b^3 + 73*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^5*A*a*b^4 - 1248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5
*B*a^3*b*c - 600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^2*c - 48*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*c^2 - 2304*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*B*a^3*b^2*sqrt(c) - 2688*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*B*a^4*c^(3/2) - 3456*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^3*b*c^(3/
2) + 440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 - 55*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*A*a^2*b^4 + 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^3*B*a^4*b*c + 1320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^2*c - 48
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 1536*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2*B*a^4*b^2*sqrt(c) + 2432*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2*B*a^5*c^(3/2) + 3584*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c
^(3/2) - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 + 15*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*A*a^3*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*B*a^5*b*c - 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c + 432*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^5*c^2 - 384*B*a^5*b^2*sqrt(c) - 896*B*
a^6*c^(3/2) - 896*A*a^5*b*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
- a)^4*a)
```

maple [B] time = 0.07, size = 1094, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x)
```

```
[Out] -19/48*A/a^3*b*c/x*(c*x^2+b*x+a)^(7/2)+35/48*A/a^2*b*c^2*(c*x^2+b*x+a)^(3/2
)*x+25/16*A/a*b*c^2*(c*x^2+b*x+a)^(1/2)*x-5/64*A/a^2*b^3*(c*x^2+b*x+a)^(1/2
)*x*c-5/192*A/a^3*b^3*c*(c*x^2+b*x+a)^(3/2)*x+19/48*A/a^3*b*c^2*(c*x^2+b*x+
a)^(5/2)*x+5/24*B/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)*x-1/64*A/a^4*b^3*c*(c*x^2+b
*x+a)^(5/2)*x+1/8*B/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)*x+5/8*B/a*b^2*(c*x^2+b*x+
a)^(1/2)*x*c+5/8*A*c^2/a*(c*x^2+b*x+a)^(3/2)-1/4*A/a/x^4*(c*x^2+b*x+a)^(7/2
)+5/128*A/a^(3/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-15/8*A*
c^2*a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/2*B*c^(3/2)*a*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/3*B/a/x^3*(c*x^2+b*x+a)^(7/2)-
5/16*B/a^(1/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5*B*b*c*(c
*x^2+b*x+a)^(1/2)+5/8*B/a*b^3*(c*x^2+b*x+a)^(1/2)+1/8*B/a^3*b^3*(c*x^2+b*x+
a)^(5/2)+5/24*B/a^2*b^3*(c*x^2+b*x+a)^(3/2)+15/8*B*b^2*c^(1/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+15/8*A*c^2*(c*x^2+b*x+a)^(1/2)+5/2*B*c^2*(c
*x^2+b*x+a)^(1/2)*x-15/16*A/a^(1/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)
*a^(1/2))/x)+1/24*A/a^2*b/x^3*(c*x^2+b*x+a)^(7/2)+5/2*A*b*c^(3/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/64*A/a^2*b^4*(c*x^2+b*x+a)^(1/2)-1/64*
A/a^4*b^4*(c*x^2+b*x+a)^(5/2)-5/192*A/a^3*b^4*(c*x^2+b*x+a)^(3/2)+3/8*A*c^2
/a^2*(c*x^2+b*x+a)^(5/2)+37/96*A/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)+1/96*A/a^3*b
^2/x^2*(c*x^2+b*x+a)^(7/2)+65/96*A/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)+1/64*A/a^4
*b^3/x*(c*x^2+b*x+a)^(7/2)+55/32*A/a*b^2*c*(c*x^2+b*x+a)^(1/2)-3/8*A*c/a^2/
```

```
x^2*(c*x^2+b*x+a)^(7/2)+17/12*B/a^2*b*c*(c*x^2+b*x+a)^(5/2)-1/12*B/a^2*b/x^
2*(c*x^2+b*x+a)^(7/2)+25/12*B/a*b*c*(c*x^2+b*x+a)^(3/2)-1/8*B/a^3*b^2/x*(c*
x^2+b*x+a)^(7/2)-15/4*B*a^(1/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/
2))/x)-4/3*B*c/a^2/x*(c*x^2+b*x+a)^(7/2)+5/3*B*c^2/a*(c*x^2+b*x+a)^(3/2)*x+
4/3*B*c^2/a^2*(c*x^2+b*x+a)^(5/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\left(cx^2+bx+a\right)^{5/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**5, x)
```

3.870 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=346

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(4a\left(-16aAc-10abB+3Ab^2\right)-3x\left(10aB\left(4ac+b^2\right)-A\left(3b^3-20abc\right)\right)\right)}{192a^2x^3}+\frac{\sqrt{a+bx+cx^2}\,\left(\right.}{}$$

Rubi [A] time = 0.49, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(-A\left(128a^2c^2-28ab^2c+3b^4\right)+2cx\left(10aB\left(12ac+b^2\right)-A\left(3b^3-28abc\right)\right)+10abB\left(b^2-20ac\right)\right)}{128a^2x}+\frac{\left(10aB\left(-48a^2c^2-24ab^2c+b^4\right)-A\left(240a^2bc^2-40ab^3c+3b^5\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{5/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}\left(4a\left(-16aAc-10abB+3Ab^2\right)-3x\left(10aB\left(4ac+b^2\right)-A\left(3b^3-20abc\right)\right)\right)}{192a^2x^3}+\frac{1}{2}c^{3/2}(2Ac+5bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)-\frac{\left(a+bx+cx^2\right)^{5/2}(5x(2aB+Ab)+8aA)}{40ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] ((10*a*b*B*(b^2 - 20*a*c) - A*(3*b^4 - 28*a*b^2*c + 128*a^2*c^2) + 2*c*(10*
a*B*(b^2 + 12*a*c) - A*(3*b^3 - 28*a*b*c))*x)*Sqrt[a + b*x + c*x^2])/(128*a
^2*x) + ((4*a*(3*A*b^2 - 10*a*b*B - 16*a*A*c) - 3*(10*a*B*(b^2 + 4*a*c) - A
*(3*b^3 - 20*a*b*c))*x)*(a + b*x + c*x^2)^(3/2))/(192*a^2*x^3) - ((8*a*A +
5*(A*b + 2*a*B)*x)*(a + b*x + c*x^2)^(5/2))/(40*a*x^5) + ((10*a*B*(b^4 - 24
*a*b^2*c - 48*a^2*c^2) - A*(3*b^5 - 40*a*b^3*c + 240*a^2*b*c^2))*ArcTanh[(2
*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(256*a^(5/2)) + (c^(3/2)*(5*b
*B + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
```

```
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^6}\,dx = -\frac{(8aA+5(Ab+2aB)x)\left(a+bx+cx^2\right)^{5/2}}{40ax^5} - \frac{\int \frac{\left(\frac{1}{2}\left(3Ab^2-10abB-16aAc\right)-(Ab+10aB)cx\right.}{x^4}}{8a}$$

$$= \frac{\left(4a\left(3Ab^2-10abB-16aAc\right)-3\left(10aB\left(b^2+4ac\right)-A\left(3b^3-20abc\right)\right)x\right)\left(a+\right.}{192a^2x^3}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

Mathematica [A] time = 0.85, size = 289, normalized size = 0.84

$$-\frac{\left(A\left(240a^2bc^2-40ab^3c+3b^5\right)+10aB\left(48a^2c^2+24ab^2c-b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{256a^{5/2}}-\frac{\sqrt{a+x(b+cx)}\left(96a^4(4A+5Bx)+16a^3x(A(63b+88cx)+5Bx(17b+27cx))+4a^2x^2\left(2A\left(93b^2+311bcx+368c^2x^2\right)+5Bx\left(59b^2+278bcx-96c^2x^2\right)\right)+30ab^2x^3(A(b+18cx)+5bBx)-45Ab^4x^4\right)}{1920a^2x^5}+\frac{1}{2}c^{3/2}(2Ac+5bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] -1/1920*(Sqrt[a + x*(b + c*x)]*(-45*A*b^4*x^4 + 96*a^4*(4*A + 5*B*x) + 30*a
*b^2*x^3*(5*b*B*x + A*(b + 18*c*x)) + 16*a^3*x*(5*B*x*(17*b + 27*c*x) + A*(
63*b + 88*c*x)) + 4*a^2*x^2*(5*B*x*(59*b^2 + 278*b*c*x - 96*c^2*x^2) + 2*A*
```

```
(93*b^2 + 311*b*c*x + 368*c^2*x^2))))/(a^2*x^5) - ((10*a*B*(-b^4 + 24*a*b^2
*c + 48*a^2*c^2) + A*(3*b^5 - 40*a*b^3*c + 240*a^2*b*c^2))*ArcTanh[(2*a + b
*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(256*a^(5/2)) + (c^(3/2)*(5*b*B + 2
*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/2
```

IntegrateAlgebraic [A] time = 4.11, size = 327, normalized size = 0.95

$$\frac{\left(-480a^3Bc^2-240a^2Abc^2-240a^2b^2Bc+40aAb^3c+10ab^4B-3Ab^5\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{128a^{5/2}}+\frac{\sqrt{a+bx+cx^2}\left(-384a^4A-480a^4Bx-1008a^3Abx-1408a^3Acx^2-1360a^3bBx^2-2160a^3Bcx^3-744a^2Ab^2x^2-2488a^2Abcx^3-2944a^2Ac^2x^4-1180a^2b^2Bx^3-5560a^2bBcx^4+1920a^2Bc^2x^5-30aAb^3x^3-540aAb^2cx^4-150ab^3Bx^4+45Ab^4x^4\right)}{1920a^2x^5}+\frac{1}{2}\left(-2Ac^{5/2}-5bBc^{3/2}\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-384*a^4*A - 1008*a^3*A*b*x - 480*a^4*B*x - 744*a^2
*A*b^2*x^2 - 1360*a^3*b*B*x^2 - 1408*a^3*A*c*x^2 - 30*a*A*b^3*x^3 - 1180*a^
2*b^2*B*x^3 - 2488*a^2*A*b*c*x^3 - 2160*a^3*B*c*x^3 + 45*A*b^4*x^4 - 150*a*
b^3*B*x^4 - 540*a*A*b^2*c*x^4 - 5560*a^2*b*B*c*x^4 - 2944*a^2*A*c^2*x^4 + 1
920*a^2*B*c^2*x^5))/(1920*a^2*x^5) + ((-3*A*b^5 + 10*a*b^4*B + 40*a*A*b^3*c
 - 240*a^2*b^2*B*c - 240*a^2*A*b*c^2 - 480*a^3*B*c^2)*ArcTanh[(-(Sqrt[c]*x)
 + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(128*a^(5/2)) + ((-5*b*B*c^(3/2) - 2*A*
c^(5/2))*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/2
```

fricas [A] time = 6.85, size = 1445, normalized size = 4.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/7680*(1920*(5*B*a^3*b*c + 2*A*a^3*c^2)*sqrt(c)*x^5*log(-8*c^2*x^2 - 8*b*
c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 15*(10*B
*a*b^4 - 3*A*b^5 - 240*(2*B*a^3 + A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - A*a*b^3)
*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)
*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(1920*B*a^3*c^2*x^5 - 384*A*a^5 - (1
50*B*a^2*b^3 - 45*A*a*b^4 + 2944*A*a^3*c^2 + 20*(278*B*a^3*b + 27*A*a^2*b^2
)*c)*x^4 - 2*(590*B*a^3*b^2 + 15*A*a^2*b^3 + 4*(270*B*a^4 + 311*A*a^3*b)*c)
*x^3 - 8*(170*B*a^4*b + 93*A*a^3*b^2 + 176*A*a^4*c)*x^2 - 48*(10*B*a^5 + 21
*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^5), -1/7680*(3840*(5*B*a^3*b*c +
 2*A*a^3*c^2)*sqrt(-c)*x^5*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(-c)/(c^2*x^2 + b*c*x + a*c)) + 15*(10*B*a*b^4 - 3*A*b^5 - 240*(2*B*a^3 +
A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b
^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2)
 - 4*(1920*B*a^3*c^2*x^5 - 384*A*a^5 - (150*B*a^2*b^3 - 45*A*a*b^4 + 2944*A
*a^3*c^2 + 20*(278*B*a^3*b + 27*A*a^2*b^2)*c)*x^4 - 2*(590*B*a^3*b^2 + 15*A
*a^2*b^3 + 4*(270*B*a^4 + 311*A*a^3*b)*c)*x^3 - 8*(170*B*a^4*b + 93*A*a^3*b
^2 + 176*A*a^4*c)*x^2 - 48*(10*B*a^5 + 21*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a)
)/(a^3*x^5), -1/3840*(15*(10*B*a*b^4 - 3*A*b^5 - 240*(2*B*a^3 + A*a^2*b)*c^
2 - 40*(6*B*a^2*b^2 - A*a*b^3)*c)*sqrt(-a)*x^5*arctan(1/2*sqrt(c*x^2 + b*x
+ a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 960*(5*B*a^3*b*c + 2*A
*a^3*c^2)*sqrt(c)*x^5*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x +
 a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 2*(1920*B*a^3*c^2*x^5 - 384*A*a^5 - (150
*B*a^2*b^3 - 45*A*a*b^4 + 2944*A*a^3*c^2 + 20*(278*B*a^3*b + 27*A*a^2*b^2)*
c)*x^4 - 2*(590*B*a^3*b^2 + 15*A*a^2*b^3 + 4*(270*B*a^4 + 311*A*a^3*b)*c)*x
^3 - 8*(170*B*a^4*b + 93*A*a^3*b^2 + 176*A*a^4*c)*x^2 - 48*(10*B*a^5 + 21*A
*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^5), -1/3840*(15*(10*B*a*b^4 - 3*A*
b^5 - 240*(2*B*a^3 + A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - A*a*b^3)*c)*sqrt(-a)*
x^5*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x
+ a^2)) + 1920*(5*B*a^3*b*c + 2*A*a^3*c^2)*sqrt(-c)*x^5*arctan(1/2*sqrt(c*x
^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(1920*B*a^3
*c^2*x^5 - 384*A*a^5 - (150*B*a^2*b^3 - 45*A*a*b^4 + 2944*A*a^3*c^2 + 20*(2
78*B*a^3*b + 27*A*a^2*b^2)*c)*x^4 - 2*(590*B*a^3*b^2 + 15*A*a^2*b^3 + 4*(27
```

```
0*B*a^4 + 311*A*a^3*b)*c)*x^3 - 8*(170*B*a^4*b + 93*A*a^3*b^2 + 176*A*a^4*c
)*x^2 - 48*(10*B*a^5 + 21*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^5)]
```

giac [B] time = 0.99, size = 1526, normalized size = 4.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B*c^2 - 1/2*(5*B*b*c^(5/2) + 2*A*c^(7/2))*log(abs(-2*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c)))/c - 1/128*(10*B*a*b^4 -
 3*A*b^5 - 240*B*a^2*b^2*c + 40*A*a*b^3*c - 480*B*a^3*c^2 - 240*A*a^2*b*c^2
)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/
1920*(150*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^4 - 45*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^9*A*b^5 + 7920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*
B*a^2*b^2*c + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^3*c + 4320*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 + 7920*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^9*A*a^2*b*c^2 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*
a^2*b^3*sqrt(c) + 23040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^3*b*c^(3/
2) + 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^2*b^2*c^(3/2) + 11520*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^3*c^(5/2) + 580*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*B*a^2*b^4 + 210*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*
A*a*b^5 - 13920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^2*c + 6160*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c - 4800*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^7*B*a^4*c^2 - 2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*
a^3*b*c^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^3*b^3*sqrt(c) +
3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^2*b^4*sqrt(c) - 57600*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b*c^(3/2) - 23040*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^6*A*a^4*c^(5/2) - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*B*a^3*b^4 + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^5 + 19200*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*b^2*c + 6400*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*A*a^3*b^3*c + 19200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^4*b*c^2 + 70400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2
) + 19200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^4*b^2*c^(3/2) + 35840*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*c^(5/2) + 700*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^3*B*a^4*b^4 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^3*b^5 - 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c + 2800*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^3*c + 4800*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*B*a^6*c^2 + 2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^5*b*c^2 - 44800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) -
17920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^6*c^(5/2) - 150*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*B*a^5*b^4 + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*A*a^4*b^5 + 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^2*c - 600*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^5*b^3*c - 4320*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^7*c^2 + 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b*c
^2 + 8960*B*a^7*b*c^(3/2) + 5888*A*a^7*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2 - a)^5*a^2)
```

maple [B] time = 0.07, size = 1371, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x)
```

```
[Out] -21/320*A/a^4*b^3*c*(c*x^2+b*x+a)^(5/2)+15/8*B*c^2*(c*x^2+b*x+a)^(1/2)+A*c^
(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+19/240*A/a^3*b*c/x^2*(c*x
^2+b*x+a)^(7/2)-13/96*A/a^3*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x+35/48*B/a^2*b*c^2
*(c*x^2+b*x+a)^(3/2)*x+25/16*B/a*b*c^2*(c*x^2+b*x+a)^(1/2)*x-7/32*A/a^2*b^2
*c^2*(c*x^2+b*x+a)^(1/2)*x+11/160*A/a^4*b^2*c/x*(c*x^2+b*x+a)^(7/2)+3/128*A
```

```
/a^3*b^4*(c*x^2+b*x+a)^(1/2)*x*c-11/160*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(5/2)*x
+1/128*A/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)*x+3/640*A/a^5*b^4*c*(c*x^2+b*x+a)^(5
/2)*x-19/48*B/a^3*b*c/x*(c*x^2+b*x+a)^(7/2)+19/48*B/a^3*b*c^2*(c*x^2+b*x+a)
^(5/2)*x-5/64*B/a^2*b^3*(c*x^2+b*x+a)^(1/2)*x*c-5/192*B/a^3*b^3*c*(c*x^2+b*
x+a)^(3/2)*x-1/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(5/2)*x+109/240*A/a^3*b*c^2*(c*
x^2+b*x+a)^(5/2)-5/64*B/a^2*b^4*(c*x^2+b*x+a)^(1/2)-5/192*B/a^3*b^4*(c*x^2+
b*x+a)^(3/2)-1/64*B/a^4*b^4*(c*x^2+b*x+a)^(5/2)+5/2*B*b*c^(3/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/8*B*c^2/a^2*(c*x^2+b*x+a)^(5/2)+5/8*B*c^
2/a*(c*x^2+b*x+a)^(3/2)-1/5*A/a/x^5*(c*x^2+b*x+a)^(7/2)-3/256*A/a^(5/2)*b^5
*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+3/128*A/a^3*b^5*(c*x^2+b*x+a
)^(1/2)+1/128*A/a^4*b^5*(c*x^2+b*x+a)^(3/2)+3/640*A/a^5*b^5*(c*x^2+b*x+a)^(
5/2)+5/128*B/a^(3/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/4*
B/a/x^4*(c*x^2+b*x+a)^(7/2)-15/8*B*c^2*a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^
(1/2)*a^(1/2))/x)+23/16*A/a*b*c^2*(c*x^2+b*x+a)^(1/2)+31/48*A/a^2*b*c^2*(c*
x^2+b*x+a)^(3/2)+3/40*A/a^2*b/x^4*(c*x^2+b*x+a)^(7/2)-23/192*A/a^3*b^3*c*(c
*x^2+b*x+a)^(3/2)-1/320*A/a^4*b^3/x^2*(c*x^2+b*x+a)^(7/2)-17/64*A/a^2*b^3*c
*(c*x^2+b*x+a)^(1/2)-1/80*A/a^3*b^2/x^3*(c*x^2+b*x+a)^(7/2)-3/640*A/a^5*b^4
/x*(c*x^2+b*x+a)^(7/2)-2/15*A*c/a^2/x^3*(c*x^2+b*x+a)^(7/2)+A*c^3/a*(c*x^2+
b*x+a)^(1/2)*x-8/15*A*c^2/a^3/x*(c*x^2+b*x+a)^(7/2)+2/3*A*c^3/a^2*(c*x^2+b*
x+a)^(3/2)*x+8/15*A*c^3/a^3*(c*x^2+b*x+a)^(5/2)*x-15/16*A/a^(1/2)*b*c^2*ln(
(b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/32*A/a^(3/2)*b^3*c*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+65/96*B/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)+1/
96*B/a^3*b^2/x^2*(c*x^2+b*x+a)^(7/2)+55/32*B/a*b^2*c*(c*x^2+b*x+a)^(1/2)+1/
24*B/a^2*b/x^3*(c*x^2+b*x+a)^(7/2)+1/64*B/a^4*b^3/x*(c*x^2+b*x+a)^(7/2)+37/
96*B/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)-3/8*B*c/a^2/x^2*(c*x^2+b*x+a)^(7/2)-15/1
6*B/a^(1/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**6, x)
```

3.871 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=332

$$-\frac{\left(a+bx+cx^2\right)^{3/2}\left(2a\left(12abB-5A\left(b^2-4ac\right)\right)+x\left(4aB\left(16ac+3b^2\right)-5A\left(b^3-4abc\right)\right)\right)}{192a^2x^4}+\frac{\left(5A\left(b^2-4ac\right)^3-4a\right.}{}$$

Rubi [A] time = 0.47, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {810, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-x\left(5Ab\left(b^2-4ac\right)^2-4aB\left(-128a^2c^2-28ab^2c+3b^4\right)\right)\right)}{512a^3x^2}+\frac{\left(5A\left(b^2-4ac\right)^3-4abB\left(240a^2c^2-40ab^2c+3b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{1024a^{7/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(x\left(4aB\left(16ac+3b^2\right)-5A\left(b^3-4abc\right)\right)+2a\left(12abB-5A\left(b^2-4ac\right)\right)\right)}{192a^2x^4}-\frac{\left(a+bx+cx^2\right)^{5/2}(x(12aB+5Ab)+10aA)}{60ax^6}+Bc^{5/2}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] ((2*a*(4*a*b*B*(3*b^2 - 28*a*c) - 5*A*(b^2 - 4*a*c)^2) - (5*A*b*(b^2 - 4*a*
c)^2 - 4*a*B*(3*b^4 - 28*a*b^2*c - 128*a^2*c^2))*x)*Sqrt[a + b*x + c*x^2])/
(512*a^3*x^2) - ((2*a*(12*a*b*B - 5*A*(b^2 - 4*a*c)) + (4*a*B*(3*b^2 + 16*a
*c) - 5*A*(b^3 - 4*a*b*c))*x)*(a + b*x + c*x^2)^(3/2))/(192*a^2*x^4) - ((10
*a*A + (5*A*b + 12*a*B)*x)*(a + b*x + c*x^2)^(5/2))/(60*a*x^6) + ((5*A*(b^2
 - 4*a*c)^3 - 4*a*b*B*(3*b^4 - 40*a*b^2*c + 240*a^2*c^2))*ArcTanh[(2*a + b*
x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(1024*a^(7/2)) + B*c^(5/2)*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
```

```
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^7}\,dx = -\frac{(10aA+(5Ab+12aB)x)\left(a+bx+cx^2\right)^{5/2}}{60ax^6} - \frac{\int \frac{\left(\frac{1}{2}\left(-12abB+5A\left(b^2-4ac\right)\right)-12aBc\right.}{x^5}}{12a}$$

$$= -\frac{\left(2a\left(12abB-5A\left(b^2-4ac\right)\right)+\left(4aB\left(3b^2+16ac\right)-5A\left(b^3-4abc\right)\right)x\right)\left(a\right.}{192a^2x^4}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4\right.\right.\right.}{512a^3x^2}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4\right.\right.\right.}{512a^3x^2}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4\right.\right.\right.}{512a^3x^2}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4\right.\right.\right.}{512a^3x^2}$$

Mathematica [A] time = 0.98, size = 308, normalized size = 0.93

$$\frac{\left(5A\left(b^2-4ac\right)^3-4abB\left(240a^2c^2-40ab^2c+3b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{1024a^{7/2}}-\frac{\sqrt{a+x(b+cx)}\left(256a^5(5A+6Bx)+64a^4x(A(50b+65cx)+Bx(63b+88cx))+16a^3x^2\left(15A\left(9b^2+26bcx+22c^2x^2\right)+2Bx\left(93b^2+311bcx+368c^2x^2\right)\right)+40a^2bx^3\left(A\left(b^2+12bcx+66c^2x^2\right)+3bBx(b+18cx)\right)-10ab^3x^4(5A(b+16cx)+18bBx)+75Ab^5x^5\right)}{7680a^3x^6}+Bc^{5/2}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] -1/7680*(Sqrt[a + x*(b + c*x)]*(75*A*b^5*x^5 + 256*a^5*(5*A + 6*B*x) - 10*a
*b^3*x^4*(18*b*B*x + 5*A*(b + 16*c*x)) + 64*a^4*x*(A*(50*b + 65*c*x) + B*x*
(63*b + 88*c*x)) + 40*a^2*b*x^3*(3*b*B*x*(b + 18*c*x) + A*(b^2 + 12*b*c*x +
 66*c^2*x^2)) + 16*a^3*x^2*(15*A*(9*b^2 + 26*b*c*x + 22*c^2*x^2) + 2*B*x*(9
3*b^2 + 311*b*c*x + 368*c^2*x^2))))/(a^3*x^6) + ((5*A*(b^2 - 4*a*c)^3 - 4*a
*b*B*(3*b^4 - 40*a*b^2*c + 240*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqr
t[a + x*(b + c*x)])])/(1024*a^(7/2)) + B*c^(5/2)*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + x*(b + c*x)])]
```

IntegrateAlgebraic [A] time = 3.62, size = 388, normalized size = 1.17

$$\frac{\left(-320a^3Ac^3-960a^3bBc^2+240a^2Ab^2c^2+160a^2b^3Bc-60aAb^4c-12ab^5B+5Ab^6\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)}{512a^{7/2}}+\frac{\sqrt{a+bx+cx^2}\left(-1280a^5A-1536a^5Bx-3200a^4Abx-4160a^4Acx^2-4032a^4bBx^2-5632a^4Bcx^3-2160a^3Ab^2x^2-6240a^3Abcx^3-5280a^3Ac^2x^4-2976a^3b^2Bx^3-9952a^3bBcx^4-11776a^3Bc^2x^5-40a^2Ab^3x^3-480a^2Ab^2cx^4-2640a^2Abc^2x^5-120a^2b^3Bx^4-2160a^2b^2Bcx^5+50aAb^4x^4+800aAb^3cx^5+180ab^4Bx^5-75Ab^5x^5\right)}{7680a^3x^6}-Bc^{5/2}\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-1280*a^5*A - 3200*a^4*A*b*x - 1536*a^5*B*x - 2160*
a^3*A*b^2*x^2 - 4032*a^4*b*B*x^2 - 4160*a^4*A*c*x^2 - 40*a^2*A*b^3*x^3 - 29
76*a^3*b^2*B*x^3 - 6240*a^3*A*b*c*x^3 - 5632*a^4*B*c*x^3 + 50*a*A*b^4*x^4 -
 120*a^2*b^3*B*x^4 - 480*a^2*A*b^2*c*x^4 - 9952*a^3*b*B*c*x^4 - 5280*a^3*A*
c^2*x^4 - 75*A*b^5*x^5 + 180*a*b^4*B*x^5 + 800*a*A*b^3*c*x^5 - 2160*a^2*b^2
*B*c*x^5 - 2640*a^2*A*b*c^2*x^5 - 11776*a^3*B*c^2*x^5))/(7680*a^3*x^6) + ((
5*A*b^6 - 12*a*b^5*B - 60*a*A*b^4*c + 160*a^2*b^3*B*c + 240*a^2*A*b^2*c^2 -
 960*a^3*b*B*c^2 - 320*a^3*A*c^3)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*
x^2])/Sqrt[a]])/(512*a^(7/2)) - B*c^(5/2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a
+ b*x + c*x^2]]
```

fricas [A] time = 8.72, size = 1659, normalized size = 5.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/30720*(15360*B*a^4*c^(5/2)*x^6*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 15*(12*B*a*b^5 - 5*A*b^6 + 3
20*A*a^3*c^3 + 240*(4*B*a^3*b - A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 3*A*a*b^
4)*c)*sqrt(a)*x^6*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(1280*A*a^6 - (180*B*a^2*b^4 - 75*
A*a*b^5 - 16*(736*B*a^4 + 165*A*a^3*b)*c^2 - 80*(27*B*a^3*b^2 - 10*A*a^2*b^
3)*c)*x^5 + 2*(60*B*a^3*b^3 - 25*A*a^2*b^4 + 2640*A*a^4*c^2 + 16*(311*B*a^4
*b + 15*A*a^3*b^2)*c)*x^4 + 8*(372*B*a^4*b^2 + 5*A*a^3*b^3 + 4*(176*B*a^5 +
 195*A*a^4*b)*c)*x^3 + 16*(252*B*a^5*b + 135*A*a^4*b^2 + 260*A*a^5*c)*x^2 +
 128*(12*B*a^6 + 25*A*a^5*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^6), -1/30720*
(30720*B*a^4*sqrt(-c)*c^2*x^6*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 15*(12*B*a*b^5 - 5*A*b^6 + 320*A*a^3*c^
3 + 240*(4*B*a^3*b - A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 3*A*a*b^4)*c)*sqrt(
a)*x^6*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2
*a)*sqrt(a) + 8*a^2)/x^2) + 4*(1280*A*a^6 - (180*B*a^2*b^4 - 75*A*a*b^5 - 1
6*(736*B*a^4 + 165*A*a^3*b)*c^2 - 80*(27*B*a^3*b^2 - 10*A*a^2*b^3)*c)*x^5 +
 2*(60*B*a^3*b^3 - 25*A*a^2*b^4 + 2640*A*a^4*c^2 + 16*(311*B*a^4*b + 15*A*a
^3*b^2)*c)*x^4 + 8*(372*B*a^4*b^2 + 5*A*a^3*b^3 + 4*(176*B*a^5 + 195*A*a^4*
b)*c)*x^3 + 16*(252*B*a^5*b + 135*A*a^4*b^2 + 260*A*a^5*c)*x^2 + 128*(12*B*
a^6 + 25*A*a^5*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^6), 1/15360*(7680*B*a^4*
c^(5/2)*x^6*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x
 + b)*sqrt(c) - 4*a*c) + 15*(12*B*a*b^5 - 5*A*b^6 + 320*A*a^3*c^3 + 240*(4*
B*a^3*b - A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 3*A*a*b^4)*c)*sqrt(-a)*x^6*arc
tan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2))
 - 2*(1280*A*a^6 - (180*B*a^2*b^4 - 75*A*a*b^5 - 16*(736*B*a^4 + 165*A*a^3*
b)*c^2 - 80*(27*B*a^3*b^2 - 10*A*a^2*b^3)*c)*x^5 + 2*(60*B*a^3*b^3 - 25*A*a
^2*b^4 + 2640*A*a^4*c^2 + 16*(311*B*a^4*b + 15*A*a^3*b^2)*c)*x^4 + 8*(372*B
*a^4*b^2 + 5*A*a^3*b^3 + 4*(176*B*a^5 + 195*A*a^4*b)*c)*x^3 + 16*(252*B*a^5
*b + 135*A*a^4*b^2 + 260*A*a^5*c)*x^2 + 128*(12*B*a^6 + 25*A*a^5*b)*x)*sqrt
(c*x^2 + b*x + a))/(a^4*x^6), -1/15360*(15360*B*a^4*sqrt(-c)*c^2*x^6*arctan
(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) -
15*(12*B*a*b^5 - 5*A*b^6 + 320*A*a^3*c^3 + 240*(4*B*a^3*b - A*a^2*b^2)*c^2
- 20*(8*B*a^2*b^3 - 3*A*a*b^4)*c)*sqrt(-a)*x^6*arctan(1/2*sqrt(c*x^2 + b*x
+ a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(1280*A*a^6 - (180*B
*a^2*b^4 - 75*A*a*b^5 - 16*(736*B*a^4 + 165*A*a^3*b)*c^2 - 80*(27*B*a^3*b^2
 - 10*A*a^2*b^3)*c)*x^5 + 2*(60*B*a^3*b^3 - 25*A*a^2*b^4 + 2640*A*a^4*c^2 +
 16*(311*B*a^4*b + 15*A*a^3*b^2)*c)*x^4 + 8*(372*B*a^4*b^2 + 5*A*a^3*b^3 +
4*(176*B*a^5 + 195*A*a^4*b)*c)*x^3 + 16*(252*B*a^5*b + 135*A*a^4*b^2 + 260*
A*a^5*c)*x^2 + 128*(12*B*a^6 + 25*A*a^5*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x
^6)]
```

giac [B] time = 1.45, size = 2089, normalized size = 6.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] -B*c^(5/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c))) +
 1/512*(12*B*a*b^5 - 5*A*b^6 - 160*B*a^2*b^3*c + 60*A*a*b^4*c + 960*B*a^3*b
*c^2 - 240*A*a^2*b^2*c^2 + 320*A*a^3*c^3)*arctan(-(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))/sqrt(-a))/(sqrt(-a)*a^3) - 1/7680*(180*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^11*B*a*b^5 - 75*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*b^6 - 2
400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^3*c + 900*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^11*A*a*b^4*c - 31680*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^11*B*a^3*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^2*
c^2 - 10560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*c^3 - 46080*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^3*b^2*c^(3/2) - 46080*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^10*B*a^4*c^(5/2) - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^10*A*a^3*b*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^2
*b^5 + 425*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^6 - 22240*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^3*c - 5100*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*A*a^2*b^4*c + 41280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b
*c^2 - 56400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b^2*c^2 - 1600*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*c^3 - 15360*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^8*B*a^3*b^4*sqrt(c) + 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^8*B*a^4*b^2*c^(3/2) - 76800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^3*
b^3*c^(3/2) + 138240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*c^(5/2) -
696*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^5 - 990*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*A*a^2*b^6 - 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*
B*a^4*b^3*c - 34200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^3*b^4*c - 864
00*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b*c^2 - 93600*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^7*A*a^4*b^2*c^2 - 28800*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^7*A*a^5*c^3 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b^4*
sqrt(c) - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^3*b^5*sqrt(c) - 7
6800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^5*b^2*c^(3/2) - 51200*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^4*b^3*c^(3/2) - 235520*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^6*B*a^6*c^(5/2) - 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^6*A*a^5*b*c^(5/2) + 2376*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*
b^5 - 990*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*b^6 + 14400*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^3*c - 34200*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^5*A*a^4*b^4*c + 67200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6
*b*c^2 - 93600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^5*b^2*c^2 - 28800*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*c^3 + 76800*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^4*B*a^6*b^2*c^(3/2) - 76800*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^4*A*a^5*b^3*c^(3/2) + 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*
a^7*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^5 + 425*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^6 + 13600*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^3*B*a^6*b^3*c - 5100*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^5*b^4*c - 4800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^7*b*c^2 - 56400
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^2*c^2 - 1600*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^3*A*a^7*c^3 - 95232*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*B*a^8*c^(5/2) - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^7*b*c^(
5/2) + 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^5 - 75*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*A*a^5*b^6 - 2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*B*a^7*b^3*c + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^4*c + 14400*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^8*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*A*a^7*b^2*c^2 - 10560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A
*a^8*c^3 + 23552*B*a^9*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a
)^6*a^3)
```

maple [B] time = 0.09, size = 1677, normalized size = 5.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x)
```

```
[Out] -1/32*A/a^4*b^2*c/x^2*(c*x^2+b*x+a)^(7/2)+5/96*A/a^4*b^3*c^2*(c*x^2+b*x+a)^
(3/2)*x-5/1536*A/a^5*b^5*c*(c*x^2+b*x+a)^(3/2)*x-1/512*A/a^6*b^5*c*(c*x^2+b
*x+a)^(5/2)*x+5/64*A/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x+5/192*A/a^5*b^3*c^2*
(c*x^2+b*x+a)^(5/2)*x-5/512*A/a^4*b^5*(c*x^2+b*x+a)^(1/2)*x*c-5/192*A/a^5*b
^3*c/x*(c*x^2+b*x+a)^(7/2)+5/32*A/a^4*b*c^2/x*(c*x^2+b*x+a)^(7/2)+19/240*B/
a^3*b*c/x^2*(c*x^2+b*x+a)^(7/2)-13/96*B/a^3*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x+1
1/160*B/a^4*b^2*c/x*(c*x^2+b*x+a)^(7/2)+3/640*B/a^5*b^4*c*(c*x^2+b*x+a)^(5/
2)*x+1/128*B/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)*x-11/160*B/a^4*b^2*c^2*(c*x^2+b*
x+a)^(5/2)*x-7/32*B/a^2*b^2*c^2*(c*x^2+b*x+a)^(1/2)*x+3/128*B/a^3*b^4*(c*x^
2+b*x+a)^(1/2)*x*c-5/32*A/a^3*b*c^3*(c*x^2+b*x+a)^(3/2)*x-5/32*A/a^2*b*c^3*
(c*x^2+b*x+a)^(1/2)*x-5/32*A/a^4*b*c^3*(c*x^2+b*x+a)^(5/2)*x+1/16*A/a^3*b*c
/x^3*(c*x^2+b*x+a)^(7/2)+B*c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))+1/128*B/a^4*b^5*(c*x^2+b*x+a)^(3/2)+3/640*B/a^5*b^5*(c*x^2+b*x+a)^(5/2)
+3/128*B/a^3*b^5*(c*x^2+b*x+a)^(1/2)-1/5*B/a/x^5*(c*x^2+b*x+a)^(7/2)-3/256*
B/a^(5/2)*b^5*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/1024*A/a^(7/2
)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/16*A*c^3/a^(1/2)*ln((
b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/1536*A/a^5*b^6*(c*x^2+b*x+a)^(3
/2)-1/512*A/a^6*b^6*(c*x^2+b*x+a)^(5/2)-5/512*A/a^4*b^6*(c*x^2+b*x+a)^(1/2)
+5/48*A*c^3/a^2*(c*x^2+b*x+a)^(3/2)+1/16*A*c^3/a^3*(c*x^2+b*x+a)^(5/2)+5/16
*A*c^3/a*(c*x^2+b*x+a)^(1/2)-1/6*A/a/x^6*(c*x^2+b*x+a)^(7/2)+31/48*B/a^2*b*
c^2*(c*x^2+b*x+a)^(3/2)+109/240*B/a^3*b*c^2*(c*x^2+b*x+a)^(5/2)+1/512*A/a^6
*b^5/x*(c*x^2+b*x+a)^(7/2)+1/12*A/a^2*b/x^5*(c*x^2+b*x+a)^(7/2)-1/16*A*c^2/
a^3/x^2*(c*x^2+b*x+a)^(7/2)-15/256*A/a^(5/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x
+a)^(1/2)*a^(1/2))/x)+15/64*A/a^(3/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(
1/2)*a^(1/2))/x)+5/32*B/a^(3/2)*b^3*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)-15/16*B/a^(1/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x
)-8/15*B*c^2/a^3/x*(c*x^2+b*x+a)^(7/2)+2/3*B*c^3/a^2*(c*x^2+b*x+a)^(3/2)*x+
B*c^3/a*(c*x^2+b*x+a)^(1/2)*x+8/15*B*c^3/a^3*(c*x^2+b*x+a)^(5/2)*x-2/15*B*c
/a^2/x^3*(c*x^2+b*x+a)^(7/2)-23/192*B/a^3*b^3*c*(c*x^2+b*x+a)^(3/2)-21/320*
B/a^4*b^3*c*(c*x^2+b*x+a)^(5/2)-1/320*B/a^4*b^3/x^2*(c*x^2+b*x+a)^(7/2)-3/6
40*B/a^5*b^4/x*(c*x^2+b*x+a)^(7/2)+23/16*B/a*b*c^2*(c*x^2+b*x+a)^(1/2)+3/40
*B/a^2*b/x^4*(c*x^2+b*x+a)^(7/2)-1/80*B/a^3*b^2/x^3*(c*x^2+b*x+a)^(7/2)-17/
64*B/a^2*b^3*c*(c*x^2+b*x+a)^(1/2)-1/24*A*c/a^2/x^4*(c*x^2+b*x+a)^(7/2)-5/3
2*A/a^3*b^2*c^2*(c*x^2+b*x+a)^(3/2)-1/8*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(5/2)-5
/16*A/a^2*b^2*c^2*(c*x^2+b*x+a)^(1/2)-1/32*A/a^3*b^2/x^4*(c*x^2+b*x+a)^(7/2
)+1/192*A/a^4*b^3/x^3*(c*x^2+b*x+a)^(7/2)+25/256*A/a^3*b^4*c*(c*x^2+b*x+a)^
(1/2)+35/768*A/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)+19/768*A/a^5*b^4*c*(c*x^2+b*x+
a)^(5/2)+1/768*A/a^5*b^4/x^2*(c*x^2+b*x+a)^(7/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(c\,x^2 + b\,x + a\right)^{5/2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**7, x)
```

3.872 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^8}\,dx$

Optimal. Leaf size=219

$$-\frac{5\left(b^2-4ac\right)^3(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2048a^{9/2}}+\frac{5\left(b^2-4ac\right)^2(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{1024a^4x^2}-\frac{5\left(b^2-4ac\right.}{}$$

Rubi [A] time = 0.13, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {806, 720, 724, 206}

$$-\frac{5\left(b^2-4ac\right)(2a+bx)(Ab-2aB)\left(a+bx+cx^2\right)^{3/2}}{384a^3x^4}+\frac{5\left(b^2-4ac\right)^2(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{1024a^4x^2}-\frac{5\left(b^2-4ac\right)^3(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2048a^{9/2}}+\frac{(2a+bx)(Ab-2aB)\left(a+bx+cx^2\right)^{5/2}}{24a^2x^6}-\frac{A\left(a+bx+cx^2\right)^{7/2}}{7ax^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (5*(A*b - 2*a*B)*(b^2 - 4*a*c)^2*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(1024*a
^4*x^2) - (5*(A*b - 2*a*B)*(b^2 - 4*a*c)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2
))/(384*a^3*x^4) + ((A*b - 2*a*B)*(2*a + b*x)*(a + b*x + c*x^2)^(5/2))/(24*
a^2*x^6) - (A*(a + b*x + c*x^2)^(7/2))/(7*a*x^7) - (5*(A*b - 2*a*B)*(b^2 -
4*a*c)^3*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2048*a^(9
/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^8}\,dx = -\frac{A\left(a+bx+cx^2\right)^{7/2}}{7ax^7} - \frac{(Ab-2aB)\int \frac{\left(a+bx+cx^2\right)^{5/2}}{x^7}\,dx}{2a}$$

$$= \frac{(Ab-2aB)(2a+bx)\left(a+bx+cx^2\right)^{5/2}}{24a^2x^6} - \frac{A\left(a+bx+cx^2\right)^{7/2}}{7ax^7} + \frac{(5(Ab-2\ldots}{}$$

$$= -\frac{5(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{384a^3x^4} + \frac{(Ab-2aB)(2a+b\ldots}{24a\ldots}$$

$$= \frac{5(Ab-2aB)\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}}{1024a^4x^2} - \frac{5(Ab-2aB)\left(b^2-4ac\ldots}{3\ldots}$$

$$= \frac{5(Ab-2aB)\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}}{1024a^4x^2} - \frac{5(Ab-2aB)\left(b^2-4ac\ldots}{3\ldots}$$

$$= \frac{5(Ab-2aB)\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}}{1024a^4x^2} - \frac{5(Ab-2aB)\left(b^2-4ac\ldots}{3\ldots}$$

Mathematica [A] time = 0.47, size = 198, normalized size = 0.90

$$\frac{(Ab-2aB)\left(256a^{5/2}(2a+bx)(a+x(b+cx))^{5/2}-5x^2\left(b^2-4ac\right)\left(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)\left(2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}-x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{6144a^{9/2}x^6}-\frac{A(a+x(b+cx))^{7/2}}{7ax^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] -1/7*(A*(a + x*(b + c*x))^(7/2))/(a*x^7) + ((A*b - 2*a*B)*(256*a^(5/2)*(2*a
 + b*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*x^2*(16*a^(3/2)*(2*a + b*
x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]*(2*a + b*x)*Sqr
t[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[
a + x*(b + c*x)])]))))/(6144*a^(9/2)*x^6)
```

IntegrateAlgebraic [B] time = 5.14, size = 487, normalized size = 2.22

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-3072*a^6*A - 7424*a^5*A*b*x - 3584*a^6*B*x - 4736*
a^4*A*b^2*x^2 - 8960*a^5*b*B*x^2 - 9216*a^5*A*c*x^2 - 48*a^3*A*b^3*x^3 - 60
48*a^4*b^2*B*x^3 - 12608*a^4*A*b*c*x^3 - 11648*a^5*B*c*x^3 + 56*a^2*A*b^4*x
^4 - 112*a^3*b^3*B*x^4 - 480*a^3*A*b^2*c*x^4 - 17472*a^4*b*B*c*x^4 - 9216*a
^4*A*c^2*x^4 - 70*a*A*b^5*x^5 + 140*a^2*b^4*B*x^5 + 672*a^2*A*b^3*c*x^5 - 1
344*a^3*b^2*B*c*x^5 - 1824*a^3*A*b*c^2*x^5 - 14784*a^4*B*c^2*x^5 + 105*A*b^
6*x^6 - 210*a*b^5*B*x^6 - 1120*a*A*b^4*c*x^6 + 2240*a^2*b^3*B*c*x^6 + 3696*
a^2*A*b^2*c^2*x^6 - 7392*a^3*b*B*c^2*x^6 - 3072*a^3*A*c^3*x^6))/(21504*a^4*
x^7) + (5*(A*b^7 + 128*a^4*B*c^3)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x + c*x^2
])/Sqrt[a]])/(1024*a^(9/2)) + (5*(b^6*B + 6*A*b^5*c - 12*a*b^4*B*c - 24*a*A
*b^3*c^2 + 48*a^2*b^2*B*c^2 + 32*a^2*A*b*c^3)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[
a + b*x + c*x^2])/Sqrt[a]])/(512*a^(7/2))
```

fricas [B] time = 4.40, size = 887, normalized size = 4.05

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] [-1/86016*(105*(2*B*a*b^6 - A*b^7 - 64*(2*B*a^4 - A*a^3*b)*c^3 + 48*(2*B*a^
3*b^2 - A*a^2*b^3)*c^2 - 12*(2*B*a^2*b^4 - A*a*b^5)*c)*sqrt(a)*x^7*log(-(8*
a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8
*a^2)/x^2) + 4*(3072*A*a^7 + (210*B*a^2*b^5 - 105*A*a*b^6 + 3072*A*a^4*c^3
+ 3696*(2*B*a^4*b - A*a^3*b^2)*c^2 - 1120*(2*B*a^3*b^3 - A*a^2*b^4)*c)*x^6
- 2*(70*B*a^3*b^4 - 35*A*a^2*b^5 - 48*(154*B*a^5 + 19*A*a^4*b)*c^2 - 336*(2
*B*a^4*b^2 - A*a^3*b^3)*c)*x^5 + 8*(14*B*a^4*b^3 - 7*A*a^3*b^4 + 1152*A*a^5
*c^2 + 12*(182*B*a^5*b + 5*A*a^4*b^2)*c)*x^4 + 16*(378*B*a^5*b^2 + 3*A*a^4*
b^3 + 4*(182*B*a^6 + 197*A*a^5*b)*c)*x^3 + 128*(70*B*a^6*b + 37*A*a^5*b^2 +
 72*A*a^6*c)*x^2 + 256*(14*B*a^7 + 29*A*a^6*b)*x)*sqrt(c*x^2 + b*x + a))/(a
^5*x^7), -1/43008*(105*(2*B*a*b^6 - A*b^7 - 64*(2*B*a^4 - A*a^3*b)*c^3 + 48
*(2*B*a^3*b^2 - A*a^2*b^3)*c^2 - 12*(2*B*a^2*b^4 - A*a*b^5)*c)*sqrt(-a)*x^7
*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a
^2)) + 2*(3072*A*a^7 + (210*B*a^2*b^5 - 105*A*a*b^6 + 3072*A*a^4*c^3 + 3696
*(2*B*a^4*b - A*a^3*b^2)*c^2 - 1120*(2*B*a^3*b^3 - A*a^2*b^4)*c)*x^6 - 2*(7
0*B*a^3*b^4 - 35*A*a^2*b^5 - 48*(154*B*a^5 + 19*A*a^4*b)*c^2 - 336*(2*B*a^4
*b^2 - A*a^3*b^3)*c)*x^5 + 8*(14*B*a^4*b^3 - 7*A*a^3*b^4 + 1152*A*a^5*c^2 +
 12*(182*B*a^5*b + 5*A*a^4*b^2)*c)*x^4 + 16*(378*B*a^5*b^2 + 3*A*a^4*b^3 +
4*(182*B*a^6 + 197*A*a^5*b)*c)*x^3 + 128*(70*B*a^6*b + 37*A*a^5*b^2 + 72*A*
a^6*c)*x^2 + 256*(14*B*a^7 + 29*A*a^6*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^7
)]
```

giac [B] time = 0.43, size = 2598, normalized size = 11.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] -5/1024*(2*B*a*b^6 - A*b^7 - 24*B*a^2*b^4*c + 12*A*a*b^5*c + 96*B*a^3*b^2*c
^2 - 48*A*a^2*b^3*c^2 - 128*B*a^4*c^3 + 64*A*a^3*b*c^3)*arctan(-(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/21504*(210*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^13*B*a*b^6 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^13*A*b^7 - 2520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^2*b^4*c + 12
60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a*b^5*c + 10080*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^13*B*a^3*b^2*c^2 - 5040*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^13*A*a^2*b^3*c^2 + 29568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^4
*c^3 + 6720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b*c^3 + 129024*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^4*b*c^(5/2) + 43008*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^12*A*a^4*c^(7/2) - 1400*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^11*B*a^2*b^6 + 700*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a*b^7 + 1
6800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^3*b^4*c - 8400*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^11*A*a^2*b^5*c + 147840*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^11*B*a^4*b^2*c^2 + 33600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*
a^3*b^3*c^2 - 25088*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^5*c^3 + 1415
68*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^4*b*c^3 + 215040*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^10*B*a^4*b^3*c^(3/2) - 129024*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^10*B*a^5*b*c^(5/2) + 387072*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^10*A*a^4*b^2*c^(5/2) + 3962*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3
*b^6 - 1981*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b^7 + 81480*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b^4*c + 23772*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^9*A*a^3*b^5*c + 104160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*
a^5*b^2*c^2 + 378000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^3*c^2 +
76160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^6*c^3 + 284480*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^9*A*a^5*b*c^3 + 43008*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^8*B*a^4*b^5*sqrt(c) - 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*
a^5*b^3*c^(3/2) + 358400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^4*b^4*c^
```

```
(3/2) + 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b*c^(5/2) + 4300
80*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^5*b^2*c^(5/2) + 215040*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*c^(7/2) + 3072*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^7*A*a^3*b^7 + 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a
^4*b^5*c + 645120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*b^3*c^2 + 430
080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^6*b*c^3 - 43008*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^6*B*a^5*b^5*sqrt(c) + 43008*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^6*A*a^4*b^6*sqrt(c) + 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^6*B*a^6*b^3*c^(3/2) + 286720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b
^4*c^(3/2) - 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^7*b*c^(5/2) +
 860160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^6*b^2*c^(5/2) - 3962*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^6 + 1981*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^5*A*a^4*b^7 - 81480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6
*b^4*c + 105252*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^5*b^5*c - 104160*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^7*b^2*c^2 + 482160*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^5*A*a^6*b^3*c^2 - 76160*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^5*B*a^8*c^3 + 360640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^7*b*c
^3 - 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^7*b^3*c^(3/2) + 21504
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^6*b^4*c^(3/2) + 129024*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*B*a^8*b*c^(5/2) + 258048*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^4*A*a^7*b^2*c^(5/2) + 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^4*A*a^8*c^(7/2) + 1400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*b^
6 - 700*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^5*b^7 - 16800*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*B*a^7*b^4*c + 8400*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^3*A*a^6*b^5*c - 147840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^8*b
^2*c^2 + 181440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*b^3*c^2 + 25088
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*c^3 + 116480*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*A*a^8*b*c^3 - 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*B*a^9*b*c^(5/2) + 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^8*b
^2*c^(5/2) - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*b^6 + 105*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^7 + 2520*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*B*a^8*b^4*c - 1260*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^7*b^5*c
- 10080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^2*c^2 + 5040*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*A*a^8*b^3*c^2 - 29568*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))*B*a^10*c^3 + 36288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b*c^3
 + 6144*A*a^10*c^(7/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^7*a^4)
```

maple [B] time = 0.11, size = 1874, normalized size = 8.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x)
```

```
[Out] -1/512*B/a^6*b^5*c*(c*x^2+b*x+a)^(5/2)*x-5/1536*B/a^5*b^5*c*(c*x^2+b*x+a)^(
3/2)*x+5/64*B/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x+1/16*B/a^3*b*c/x^3*(c*x^2+b
*x+a)^(7/2)-5/192*B/a^5*b^3*c/x*(c*x^2+b*x+a)^(7/2)-5/32*B/a^2*b*c^3*(c*x^2
+b*x+a)^(1/2)*x+5/32*B/a^4*b*c^2/x*(c*x^2+b*x+a)^(7/2)-5/32*B/a^4*b*c^3*(c*
x^2+b*x+a)^(5/2)*x-5/32*B/a^3*b*c^3*(c*x^2+b*x+a)^(3/2)*x-1/32*B/a^4*b^2*c/
x^2*(c*x^2+b*x+a)^(7/2)-5/512*B/a^4*b^5*(c*x^2+b*x+a)^(1/2)*x*c-5/192*A/a^5
*b^4*c^2*(c*x^2+b*x+a)^(3/2)*x-5/64*A/a^5*b^2*c^2/x*(c*x^2+b*x+a)^(7/2)+5/6
4*A/a^3*b^2*c^3*(c*x^2+b*x+a)^(1/2)*x+1/1024*A/a^7*b^6*c*(c*x^2+b*x+a)^(5/2
)*x-1/32*A/a^4*b^2*c/x^3*(c*x^2+b*x+a)^(7/2)+1/32*A/a^4*b*c^2/x^2*(c*x^2+b*
x+a)^(7/2)+1/48*A/a^3*b*c/x^4*(c*x^2+b*x+a)^(7/2)+5/64*A/a^5*b^2*c^3*(c*x^2
+b*x+a)^(5/2)*x+5/192*B/a^5*b^3*c^2*(c*x^2+b*x+a)^(5/2)*x+5/96*B/a^4*b^3*c^
2*(c*x^2+b*x+a)^(3/2)*x-25/512*A/a^4*b^5*c*(c*x^2+b*x+a)^(1/2)-1/1024*A/a^7
*b^6/x*(c*x^2+b*x+a)^(7/2)-19/1536*A/a^6*b^5*c*(c*x^2+b*x+a)^(5/2)-1/1536*A
/a^6*b^5/x^2*(c*x^2+b*x+a)^(7/2)-35/1536*A/a^5*b^5*c*(c*x^2+b*x+a)^(3/2)+1/
16*A/a^5*b^3*c^2*(c*x^2+b*x+a)^(5/2)+5/32*A/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)
+5/64*A/a^4*b^3*c^2*(c*x^2+b*x+a)^(3/2)+1/64*A/a^4*b^3/x^4*(c*x^2+b*x+a)^(7
```

```
/2)-1/32*A/a^4*b*c^3*(c*x^2+b*x+a)^(5/2)-5/32*A/a^2*b*c^3*(c*x^2+b*x+a)^(1/
2)-5/96*A/a^3*b*c^3*(c*x^2+b*x+a)^(3/2)+1/12*A/a^2*b/x^6*(c*x^2+b*x+a)^(7/2
)+5/32*A/a^(3/2)*b*c^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-15/128
*A/a^(5/2)*b^3*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15/512*A/a
^(7/2)*b^5*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/64*A/a^4*b^2*c
^3*(c*x^2+b*x+a)^(3/2)*x+1/64*A/a^5*b^3*c/x^2*(c*x^2+b*x+a)^(7/2)+5/1024*A/
a^5*b^6*(c*x^2+b*x+a)^(1/2)*x*c-5/128*A/a^4*b^4*c^2*(c*x^2+b*x+a)^(1/2)*x+5
/3072*A/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)*x+5/384*A/a^6*b^4*c/x*(c*x^2+b*x+a)^(
7/2)-5/384*A/a^6*b^4*c^2*(c*x^2+b*x+a)^(5/2)*x-1/32*B/a^3*b^2/x^4*(c*x^2+b*
x+a)^(7/2)+15/64*B/a^(3/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2
))/x)-15/256*B/a^(5/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
1/24*B*c/a^2/x^4*(c*x^2+b*x+a)^(7/2)-1/16*B*c^2/a^3/x^2*(c*x^2+b*x+a)^(7/2)
+1/12*B/a^2*b/x^5*(c*x^2+b*x+a)^(7/2)+1/192*B/a^4*b^3/x^3*(c*x^2+b*x+a)^(7/
2)+25/256*B/a^3*b^4*c*(c*x^2+b*x+a)^(1/2)+1/512*B/a^6*b^5/x*(c*x^2+b*x+a)^(
7/2)+19/768*B/a^5*b^4*c*(c*x^2+b*x+a)^(5/2)+1/768*B/a^5*b^4/x^2*(c*x^2+b*x+
a)^(7/2)+35/768*B/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)-1/8*B/a^4*b^2*c^2*(c*x^2+b*
x+a)^(5/2)-1/24*A/a^3*b^2/x^5*(c*x^2+b*x+a)^(7/2)-1/384*A/a^5*b^4/x^3*(c*x^
2+b*x+a)^(7/2)-5/16*B/a^2*b^2*c^2*(c*x^2+b*x+a)^(1/2)-5/32*B/a^3*b^2*c^2*(c
*x^2+b*x+a)^(3/2)+5/1024*A/a^5*b^7*(c*x^2+b*x+a)^(1/2)+5/3072*A/a^6*b^7*(c*
x^2+b*x+a)^(3/2)-5/2048*A/a^(9/2)*b^7*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)+1/1024*A/a^7*b^7*(c*x^2+b*x+a)^(5/2)+1/16*B*c^3/a^3*(c*x^2+b*x+a)^
(5/2)+5/16*B*c^3/a*(c*x^2+b*x+a)^(1/2)+5/48*B*c^3/a^2*(c*x^2+b*x+a)^(3/2)+5
/1024*B/a^(7/2)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/16*B*c^
3/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/6*B/a/x^6*(c*x^2+
b*x+a)^(7/2)-1/512*B/a^6*b^6*(c*x^2+b*x+a)^(5/2)-5/512*B/a^4*b^6*(c*x^2+b*x
+a)^(1/2)-5/1536*B/a^5*b^6*(c*x^2+b*x+a)^(3/2)-1/7*A*(c*x^2+b*x+a)^(7/2)/a/
x^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**8, x)
```

3.873 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=288

$$\frac{5\left(b^2-4ac\right)^3\left(-4aAc-16abB+9Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{32768a^{11/2}}-\frac{5\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}\left(-4aA\right.}{16384a^5x^2}$$

Rubi [A] time = 0.25, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{(2a+bx)\left(a+bx+cx^2\right)^{5/2}\left(-4aAc-16abB+9Ab^2\right)}{384a^3x^6}+\frac{5\left(b^2-4ac\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}\left(-4aAc-16abB+9Ab^2\right)}{6144a^4x^4}-\frac{5\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}\left(-4aAc-16abB+9Ab^2\right)}{16384a^5x^2}+\frac{5\left(b^2-4ac\right)^3\left(-4aAc-16abB+9Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{32768a^{11/2}}+\frac{(9Ab-16aB)\left(a+bx+cx^2\right)^{7/2}}{112a^2x^7}-\frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(9*A*b^2 - 16*a*b*B - 4*a*A*c)*(2*a + b*x)*Sqrt[a + b*x
 + c*x^2])/(16384*a^5*x^2) + (5*(b^2 - 4*a*c)*(9*A*b^2 - 16*a*b*B - 4*a*A*c
)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(6144*a^4*x^4) - ((9*A*b^2 - 16*a*b*
B - 4*a*A*c)*(2*a + b*x)*(a + b*x + c*x^2)^(5/2))/(384*a^3*x^6) - (A*(a + b
*x + c*x^2)^(7/2))/(8*a*x^8) + ((9*A*b - 16*a*B)*(a + b*x + c*x^2)^(7/2))/(
112*a^2*x^7) + (5*(b^2 - 4*a*c)^3*(9*A*b^2 - 16*a*b*B - 4*a*A*c)*ArcTanh[(2
*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(32768*a^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^9}\,dx = -\frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8} - \frac{\int \frac{\left(\frac{1}{2}(9Ab-16aB)+Acx\right)\left(a+bx+cx^2\right)^{5/2}}{x^8}\,dx}{8a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8} + \frac{(9Ab-16aB)\left(a+bx+cx^2\right)^{7/2}}{112a^2x^7} + \frac{\left(9Ab^2-16abB-4\right.}{3}$$

$$= -\frac{\left(9Ab^2-16abB-4aAc\right)(2a+bx)\left(a+bx+cx^2\right)^{5/2}}{384a^3x^6} - \frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8} +$$

$$= \frac{5\left(b^2-4ac\right)\left(9Ab^2-16abB-4aAc\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{6144a^4x^4} - \frac{\left(9Ab^2-16\right.}{}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(9Ab^2-16abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{16384a^5x^2} + \frac{5\left(b^2-4ac\right.}{}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(9Ab^2-16abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{16384a^5x^2} + \frac{5\left(b^2-4ac\right.}{}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(9Ab^2-16abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{16384a^5x^2} + \frac{5\left(b^2-4ac\right.}{}$$

Mathematica [A] time = 0.75, size = 242, normalized size = 0.84

$$-\frac{\frac{\left(-2aAc-8abB+\frac{9Ab^2}{2}\right)\left(256a^{5/2}(2a+bx)(a+x(b+cx))^{5/2}-5x^2\left(b^2-4ac\right)\left(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)\left(2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}-x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{6144a^{9/2}x^6}+\frac{(16aB-9Ab)(a+x(b+cx))^{7/2}}{14ax^7}+\frac{A(a+x(b+cx))^{7/2}}{x^8}}{8a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] -1/8*((A*(a + x*(b + c*x))^(7/2))/x^8 + ((-9*A*b + 16*a*B)*(a + x*(b + c*x)
)^(7/2))/(14*a*x^7) + (((9*A*b^2)/2 - 8*a*b*B - 2*a*A*c)*(256*a^(5/2)*(2*a
+ b*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*x^2*(16*a^(3/2)*(2*a + b*x
)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]*(2*a + b*x)*Sqrt
[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a
 + x*(b + c*x)])]))))/(6144*a^(9/2)*x^6))/a
```

IntegrateAlgebraic [B] time = 6.93, size = 607, normalized size = 2.11

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-43008*a^7*A - 101376*a^6*A*b*x - 49152*a^7*B*x - 6
2208*a^5*A*b^2*x^2 - 118784*a^6*b*B*x^2 - 121856*a^6*A*c*x^2 - 384*a^4*A*b^
3*x^3 - 75776*a^5*b^2*B*x^3 - 157184*a^5*A*b*c*x^3 - 147456*a^6*B*c*x^3 + 4
32*a^3*A*b^4*x^4 - 768*a^4*b^3*B*x^4 - 3456*a^4*A*b^2*c*x^4 - 201728*a^5*b*
B*c*x^4 - 105728*a^5*A*c^2*x^4 - 504*a^2*A*b^5*x^5 + 896*a^3*b^4*B*x^5 + 45
44*a^3*A*b^3*c*x^5 - 7680*a^4*b^2*B*c*x^5 - 11136*a^4*A*b*c^2*x^5 - 147456*
a^5*B*c^2*x^5 + 630*a*A*b^6*x^6 - 1120*a^2*b^5*B*x^6 - 6328*a^2*A*b^4*c*x^6
 + 10752*a^3*b^3*B*c*x^6 + 19104*a^3*A*b^2*c^2*x^6 - 29184*a^4*b*B*c^2*x^6
- 13440*a^4*A*c^3*x^6 - 945*A*b^7*x^7 + 1680*a*b^6*B*x^7 + 10500*a*A*b^5*c*
x^7 - 17920*a^2*b^4*B*c*x^7 - 37744*a^2*A*b^3*c^2*x^7 + 59136*a^3*b^2*B*c^2
*x^7 + 42432*a^3*A*b*c^3*x^7 - 49152*a^4*B*c^3*x^7))/(344064*a^5*x^8) + (5*
(-(b^7*B) - 7*A*b^6*c + 12*a*b^5*B*c + 30*a*A*b^4*c^2 - 48*a^2*b^3*B*c^2 -
48*a^2*A*b^2*c^3 + 64*a^3*b*B*c^3 + 16*a^3*A*c^4)*ArcTanh[(-(Sqrt[c]*x) + S
qrt[a + b*x + c*x^2])/Sqrt[a]])/(1024*a^(9/2)) - (45*A*b^8*ArcTanh[(Sqrt[c]
*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])/(16384*a^(11/2))
```

fricas [B] time = 8.07, size = 1091, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] [-1/1376256*(105*(16*B*a*b^7 - 9*A*b^8 - 256*A*a^4*c^4 - 256*(4*B*a^4*b - 3
*A*a^3*b^2)*c^3 + 96*(8*B*a^3*b^3 - 5*A*a^2*b^4)*c^2 - 16*(12*B*a^2*b^5 - 7
*A*a*b^6)*c)*sqrt(a)*x^8*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 +
 b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(43008*A*a^8 - (1680*B*a^2*
b^6 - 945*A*a*b^7 - 192*(256*B*a^5 - 221*A*a^4*b)*c^3 + 112*(528*B*a^4*b^2
- 337*A*a^3*b^3)*c^2 - 140*(128*B*a^3*b^4 - 75*A*a^2*b^5)*c)*x^7 + 2*(560*B
*a^3*b^5 - 315*A*a^2*b^6 + 6720*A*a^5*c^3 + 48*(304*B*a^5*b - 199*A*a^4*b^2
)*c^2 - 28*(192*B*a^4*b^3 - 113*A*a^3*b^4)*c)*x^6 - 8*(112*B*a^4*b^4 - 63*A
*a^3*b^5 - 48*(384*B*a^6 + 29*A*a^5*b)*c^2 - 8*(120*B*a^5*b^2 - 71*A*a^4*b^
3)*c)*x^5 + 16*(48*B*a^5*b^3 - 27*A*a^4*b^4 + 6608*A*a^6*c^2 + 8*(1576*B*a^
6*b + 27*A*a^5*b^2)*c)*x^4 + 128*(592*B*a^6*b^2 + 3*A*a^5*b^3 + 4*(288*B*a^
7 + 307*A*a^6*b)*c)*x^3 + 256*(464*B*a^7*b + 243*A*a^6*b^2 + 476*A*a^7*c)*x
^2 + 3072*(16*B*a^8 + 33*A*a^7*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^8), 1/68
8128*(105*(16*B*a*b^7 - 9*A*b^8 - 256*A*a^4*c^4 - 256*(4*B*a^4*b - 3*A*a^3*
b^2)*c^3 + 96*(8*B*a^3*b^3 - 5*A*a^2*b^4)*c^2 - 16*(12*B*a^2*b^5 - 7*A*a*b^
6)*c)*sqrt(-a)*x^8*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a
*c*x^2 + a*b*x + a^2)) - 2*(43008*A*a^8 - (1680*B*a^2*b^6 - 945*A*a*b^7 - 1
92*(256*B*a^5 - 221*A*a^4*b)*c^3 + 112*(528*B*a^4*b^2 - 337*A*a^3*b^3)*c^2
- 140*(128*B*a^3*b^4 - 75*A*a^2*b^5)*c)*x^7 + 2*(560*B*a^3*b^5 - 315*A*a^2*
b^6 + 6720*A*a^5*c^3 + 48*(304*B*a^5*b - 199*A*a^4*b^2)*c^2 - 28*(192*B*a^4
*b^3 - 113*A*a^3*b^4)*c)*x^6 - 8*(112*B*a^4*b^4 - 63*A*a^3*b^5 - 48*(384*B*
a^6 + 29*A*a^5*b)*c^2 - 8*(120*B*a^5*b^2 - 71*A*a^4*b^3)*c)*x^5 + 16*(48*B*
a^5*b^3 - 27*A*a^4*b^4 + 6608*A*a^6*c^2 + 8*(1576*B*a^6*b + 27*A*a^5*b^2)*c
)*x^4 + 128*(592*B*a^6*b^2 + 3*A*a^5*b^3 + 4*(288*B*a^7 + 307*A*a^6*b)*c)*x
^3 + 256*(464*B*a^7*b + 243*A*a^6*b^2 + 476*A*a^7*c)*x^2 + 3072*(16*B*a^8 +
 33*A*a^7*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^8)]
```

giac [B] time = 0.47, size = 3603, normalized size = 12.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] 5/16384*(16*B*a*b^7 - 9*A*b^8 - 192*B*a^2*b^5*c + 112*A*a*b^6*c + 768*B*a^3
*b^3*c^2 - 480*A*a^2*b^4*c^2 - 1024*B*a^4*b*c^3 + 768*A*a^3*b^2*c^3 - 256*A
*a^4*c^4)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a
^5) - 1/344064*(1680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a*b^7 - 945*(
```

sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*b^8 - 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^2*b^5*c + 11760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a*b^6*c + 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^3*b^3*c^2 - 50400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^2*b^4*c^2 - 107520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^4*b*c^3 + 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^3*b^2*c^3 - 26880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^4*c^4 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^14*B*a^5*c^(7/2) - 12880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^2*b^7 + 7245*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a*b^8 + 154560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^3*b^5*c - 90160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^2*b^6*c - 618240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^4*b^3*c^2 + 386400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b^4*c^2 - 2157568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^5*b*c^3 - 618240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^4*b^2*c^3 - 711424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^5*c^4 - 6193152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^5*b^2*c^(5/2) + 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^6*c^(7/2) - 4816896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*A*a^5*b*c^(7/2) + 42896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^3*b^7 - 24129*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^8 - 514752*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^4*b^5*c + 300272*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*b^6*c - 5510400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^5*b^3*c^2 - 1286880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^4*b^4*c^2 - 2286592*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^6*b*c^3 - 9639168*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^5*b^2*c^3 - 1603840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^6*c^4 - 5734400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^5*b^4*c^(3/2) - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^6*b^2*c^(5/2) - 16744448*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^5*b^3*c^(5/2) - 3440640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^7*c^(7/2) - 6881280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^6*b*c^(7/2) - 80848*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b^7 + 45477*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b^8 - 1684032*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^5*b^5*c - 565936*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^6*c - 4273920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^6*b^3*c^2 - 12811680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^5*b^4*c^2 - 2329600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^7*b*c^3 - 21477120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^6*b^2*c^3 - 3162880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^7*c^4 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*b^6*sqrt(c) + 1146880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b^4*c^(3/2) - 8945664*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^5*b^5*c^(3/2) - 6881280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^7*b^2*c^(5/2) - 22937600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*b^3*c^(5/2) + 3440640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^8*c^(7/2) - 17203200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^7*b*c^(7/2) + 17456*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b^7 - 52827*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^4*b^8 + 380352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^6*b^5*c - 2630320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*b^6*c + 2607360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^7*b^3*c^2 - 19692960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^6*b^4*c^2 + 1111040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^8*b*c^3 - 24917760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^7*b^2*c^3 - 3162880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^8*c^4 + 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*b^6*sqrt(c) - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b^7*sqrt(c) + 1146880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^7*b^4*c^(3/2) - 6881280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^6*b^5*c^(3/2) + 9633792*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^8*b^2*c^(5/2) - 27066368*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^7*b^3*c^(5/2) - 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^9*c^(7/2) - 8257536*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^8*b*c^(7/2) + 42896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6*b^7 - 24129*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^5*b^8 + 1549632*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^7*b^5*c - 1764112*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*b^6*c + 4811520*(sqrt(c)

```
*x - sqrt(c*x^2 + b*x + a))^5*B*a^8*b^3*c^2 - 11608800*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^5*A*a^7*b^4*c^2 + 3906560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^5*B*a^9*b*c^3 - 15832320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^8*b^2
*c^3 - 1603840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^9*c^4 + 3440640*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^8*b^4*c^(3/2) - 3440640*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^4*A*a^7*b^5*c^(3/2) + 2064384*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^4*B*a^9*b^2*c^(5/2) - 8257536*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*A*a^8*b^3*c^(5/2) + 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*
B*a^10*c^(7/2) - 6193152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^9*b*c^(7
/2) - 12880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^7*b^7 + 7245*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^8 + 154560*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^3*B*a^8*b^5*c - 90160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7
*b^6*c + 2822400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*b^3*c^2 - 3054
240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^8*b^4*c^2 + 1283072*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^3*B*a^10*b*c^3 - 4058880*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*A*a^9*b^2*c^3 - 711424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3
*A*a^10*c^4 + 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^10*b^2*c^(5
/2) - 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^9*b^3*c^(5/2) - 983
04*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^11*c^(7/2) - 589824*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^2*A*a^10*b*c^(7/2) + 1680*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^8*b^7 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^7*b^8
- 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^5*c + 11760*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*A*a^8*b^6*c + 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*B*a^10*b^3*c^2 - 50400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b^4*
c^2 + 580608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^11*b*c^3 - 607488*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*A*a^10*b^2*c^3 - 26880*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*A*a^11*c^4 + 98304*B*a^12*c^(7/2) - 98304*A*a^11*b*c^(7/2))
/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^8*a^5)
```

maple [B] time = 0.17, size = 2263, normalized size = 7.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x)
```

```
[Out] -5/2048*B/a^(9/2)*b^7*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/384*B
/a^6*b^4*c^2*(c*x^2+b*x+a)^(5/2)*x+13/768*A/a^5*b^3*c/x^3*(c*x^2+b*x+a)^(7/
2)-1/96*A*c/a^3*b/x^5*(c*x^2+b*x+a)^(7/2)+31/4096*A/a^7*b^5*c^2*(c*x^2+b*x+
a)^(5/2)*x+1/48*B/a^3*b*c/x^4*(c*x^2+b*x+a)^(7/2)+1/32*B/a^4*b*c^2/x^2*(c*x
^2+b*x+a)^(7/2)-1/32*B/a^4*b^2*c/x^3*(c*x^2+b*x+a)^(7/2)+5/64*B/a^3*b^2*c^3
*(c*x^2+b*x+a)^(1/2)*x-5/64*B/a^5*b^2*c^2/x*(c*x^2+b*x+a)^(7/2)+5/64*B/a^4*
b^2*c^3*(c*x^2+b*x+a)^(3/2)*x+5/64*B/a^5*b^2*c^3*(c*x^2+b*x+a)^(5/2)*x+5/10
24*B/a^5*b^6*(c*x^2+b*x+a)^(1/2)*x*c+5/3072*B/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)
*x+1/1024*B/a^7*b^6*c*(c*x^2+b*x+a)^(5/2)*x-5/128*B/a^4*b^4*c^2*(c*x^2+b*x+
a)^(1/2)*x-31/4096*A/a^7*b^5*c/x*(c*x^2+b*x+a)^(7/2)-55/6144*A/a^6*b^4*c/x^
2*(c*x^2+b*x+a)^(7/2)+185/12288*A/a^6*b^5*c^2*(c*x^2+b*x+a)^(3/2)*x+95/4096
*A/a^5*b^5*c^2*(c*x^2+b*x+a)^(1/2)*x-9/16384*A/a^8*b^7*c*(c*x^2+b*x+a)^(5/2
)*x-45/16384*A/a^6*b^7*(c*x^2+b*x+a)^(1/2)*x*c-15/16384*A/a^7*b^7*c*(c*x^2+
b*x+a)^(3/2)*x-155/3072*A/a^5*b^3*c^3*(c*x^2+b*x+a)^(3/2)*x-145/3072*A/a^6*
b^3*c^3*(c*x^2+b*x+a)^(5/2)*x-1/128*A/a^4*b^2*c/x^4*(c*x^2+b*x+a)^(7/2)+5/2
56*A*c^4/a^5*b*(c*x^2+b*x+a)^(5/2)*x+5/256*A*c^4/a^4*b*(c*x^2+b*x+a)^(3/2)*
x+5/256*A*c^4/a^3*b*(c*x^2+b*x+a)^(1/2)*x-5/256*A*c^3/a^5*b/x*(c*x^2+b*x+a)
^(7/2)-1/128*A*c^2/a^4*b/x^3*(c*x^2+b*x+a)^(7/2)+145/3072*A/a^6*b^3*c^2/x*(
c*x^2+b*x+a)^(7/2)-55/1024*A/a^4*b^3*c^3*(c*x^2+b*x+a)^(1/2)*x-7/512*A/a^5*
b^2*c^2/x^2*(c*x^2+b*x+a)^(7/2)+5/384*B/a^6*b^4*c/x*(c*x^2+b*x+a)^(7/2)+1/6
4*B/a^5*b^3*c/x^2*(c*x^2+b*x+a)^(7/2)-5/192*B/a^5*b^4*c^2*(c*x^2+b*x+a)^(3/
2)*x-25/512*B/a^4*b^5*c*(c*x^2+b*x+a)^(1/2)-235/6144*A/a^6*b^4*c^2*(c*x^2+b
*x+a)^(5/2)-205/2048*A/a^4*b^4*c^2*(c*x^2+b*x+a)^(1/2)-9/1024*A/a^5*b^4/x^4
*(c*x^2+b*x+a)^(7/2)+3/2048*A/a^6*b^5/x^3*(c*x^2+b*x+a)^(7/2)-35/1536*B/a^5
```

```
*b^5*c*(c*x^2+b*x+a)^(3/2)-1/1536*B/a^6*b^5/x^2*(c*x^2+b*x+a)^(7/2)-19/1536
*B/a^6*b^5*c*(c*x^2+b*x+a)^(5/2)+235/8192*A/a^5*b^6*c*(c*x^2+b*x+a)^(1/2)+9
/112*A/a^2*b/x^7*(c*x^2+b*x+a)^(7/2)-15/128*A/a^(5/2)*b^2*c^3*ln((b*x+2*a+2
*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+75/1024*A/a^(7/2)*b^4*c^2*ln((b*x+2*a+2*(c
*x^2+b*x+a)^(1/2)*a^(1/2))/x)-35/2048*A/a^(9/2)*b^6*c*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)+9/16384*A/a^8*b^7/x*(c*x^2+b*x+a)^(7/2)-305/6144*A
/a^5*b^4*c^2*(c*x^2+b*x+a)^(3/2)+1/48*A*c/a^2/x^6*(c*x^2+b*x+a)^(7/2)+1/192
*A*c^2/a^3/x^4*(c*x^2+b*x+a)^(7/2)+1/128*A*c^3/a^4/x^2*(c*x^2+b*x+a)^(7/2)+
325/24576*A/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)+3/8192*A/a^7*b^6/x^2*(c*x^2+b*x+a
)^(7/2)+59/8192*A/a^7*b^6*c*(c*x^2+b*x+a)^(5/2)+3/128*A/a^4*b^3/x^5*(c*x^2+
b*x+a)^(7/2)+25/512*A/a^4*b^2*c^3*(c*x^2+b*x+a)^(3/2)+17/512*A/a^5*b^2*c^3*
(c*x^2+b*x+a)^(5/2)+65/512*A/a^3*b^2*c^3*(c*x^2+b*x+a)^(1/2)-3/64*A/a^3*b^2
/x^6*(c*x^2+b*x+a)^(7/2)-1/24*B/a^3*b^2/x^5*(c*x^2+b*x+a)^(7/2)-5/96*B/a^3*
b*c^3*(c*x^2+b*x+a)^(3/2)-1/32*B/a^4*b*c^3*(c*x^2+b*x+a)^(5/2)-5/32*B/a^2*b
*c^3*(c*x^2+b*x+a)^(1/2)+5/32*B/a^(3/2)*b*c^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(
1/2)*a^(1/2))/x)-15/128*B/a^(5/2)*b^3*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)
*a^(1/2))/x)+15/512*B/a^(7/2)*b^5*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/
2))/x)+1/12*B/a^2*b/x^6*(c*x^2+b*x+a)^(7/2)-1/1024*B/a^7*b^6/x*(c*x^2+b*x+a
)^(7/2)+5/64*B/a^4*b^3*c^2*(c*x^2+b*x+a)^(3/2)+1/16*B/a^5*b^3*c^2*(c*x^2+b*
x+a)^(5/2)+5/32*B/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)+1/64*B/a^4*b^3/x^4*(c*x^2
+b*x+a)^(7/2)-1/384*B/a^5*b^4/x^3*(c*x^2+b*x+a)^(7/2)-45/16384*A/a^6*b^8*(c
*x^2+b*x+a)^(1/2)-15/16384*A/a^7*b^8*(c*x^2+b*x+a)^(3/2)-9/16384*A/a^8*b^8*
(c*x^2+b*x+a)^(5/2)-5/384*A*c^4/a^3*(c*x^2+b*x+a)^(3/2)-1/128*A*c^4/a^4*(c*
x^2+b*x+a)^(5/2)-5/128*A*c^4/a^2*(c*x^2+b*x+a)^(1/2)+45/32768*A/a^(11/2)*b^
8*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/128*A*c^4/a^(3/2)*ln((b*x
+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/1024*B/a^5*b^7*(c*x^2+b*x+a)^(1/2)
+5/3072*B/a^6*b^7*(c*x^2+b*x+a)^(3/2)+1/1024*B/a^7*b^7*(c*x^2+b*x+a)^(5/2)-
1/7*B/a/x^7*(c*x^2+b*x+a)^(7/2)-1/8*A*(c*x^2+b*x+a)^(7/2)/a/x^8
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**9,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**9, x)
```

3.874 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=375

$$\frac{5\left(b^2-4ac\right)^3\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{65536a^{13/2}}-\frac{5\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+}}{3}$$

Rubi [A] time = 0.48, antiderivative size = 375, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{\left(a+bx+cx^2\right)^{7/2}\left(-64aAc-162abB+99Ab^2\right)}{2016a^3x^7}+\frac{(2a+bx)\left(a+bx+cx^2\right)^{5/2}\left(8a^2Bc-12aAbc-18ab^2B+11Ab^3\right)}{768a^4x^6}+\frac{5\left(b^2-4ac\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)}{12288a^5x^4}-\frac{5\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)}{32768a^6x^2}+\frac{5\left(b^2-4ac\right)^3\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{65536a^{13/2}}+\frac{(11Ab-18aB)\left(a+bx+cx^2\right)^{7/2}}{144a^2x^8}-\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(2*a*B*(9*b^2 - 4*a*c) - A*(11*b^3 - 12*a*b*c))*(2*a +
b*x)*Sqrt[a + b*x + c*x^2])/(32768*a^6*x^2) + (5*(b^2 - 4*a*c)*(2*a*B*(9*b^
2 - 4*a*c) - A*(11*b^3 - 12*a*b*c))*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(1
2288*a^5*x^4) + ((11*A*b^3 - 18*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*(2*a + b*
x)*(a + b*x + c*x^2)^(5/2))/(768*a^4*x^6) - (A*(a + b*x + c*x^2)^(7/2))/(9*
a*x^9) + ((11*A*b - 18*a*B)*(a + b*x + c*x^2)^(7/2))/(144*a^2*x^8) - ((99*A
*b^2 - 162*a*b*B - 64*a*A*c)*(a + b*x + c*x^2)^(7/2))/(2016*a^3*x^7) + (5*(
b^2 - 4*a*c)^3*(2*a*B*(9*b^2 - 4*a*c) - A*(11*b^3 - 12*a*b*c))*ArcTanh[(2*a
 + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(65536*a^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
```

```
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^{10}}\,dx = -\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9} - \frac{\int \frac{\left(\frac{1}{2}(11Ab-18aB)+2Acx\right)\left(a+bx+cx^2\right)^{5/2}}{x^9}\,dx}{9a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9} + \frac{(11Ab-18aB)\left(a+bx+cx^2\right)^{7/2}}{144a^2x^8} + \frac{\int \frac{\frac{1}{4}\left(99Ab^2-162abB-\right.}{}}{}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9} + \frac{(11Ab-18aB)\left(a+bx+cx^2\right)^{7/2}}{144a^2x^8} - \frac{\left(99Ab^2-162abB\right.}{}$$

$$= \frac{\left(11Ab^3-18ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\left(a+bx+cx^2\right)^{5/2}}{768a^4x^6} - \frac{A\left(a+bx\right.}{9a}$$

$$= \frac{5\left(b^2-4ac\right)\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{12288a^5x^4}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{32768a^6x^2}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{32768a^6x^2}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{32768a^6x^2}$$

Mathematica [A] time = 0.73, size = 292, normalized size = 0.78

$$\frac{\frac{3\left(A\left(11b^3-12abc\right)+2aB\left(4ac-9b^2\right)\right)\left(256a^{5/2}(2a+bx)(a+x(b+cx))^{5/2}-5x^2\left(b^2-4ac\right)\left(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)\left(2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}-x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{65536a^{11/2}x^6}+\frac{(a+x(b+cx))^{7/2}\left(64aAc+162abB-99Ab^2\right)}{224a^2x^7}+\frac{(11Ab-18aB)(a+x(b+cx))^{7/2}}{16ax^8}-\frac{A(a+x(b+cx))^{7/2}}{x^9}}{9a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-((A*(a + x*(b + c*x))^(7/2))/x^9) + ((11*A*b - 18*a*B)*(a + x*(b + c*x))^
(7/2))/(16*a*x^8) + ((-99*A*b^2 + 162*a*b*B + 64*a*A*c)*(a + x*(b + c*x))^(
7/2))/(224*a^2*x^7) + (3*(2*a*B*(-9*b^2 + 4*a*c) + A*(11*b^3 - 12*a*b*c))*(
256*a^(5/2)*(2*a + b*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*x^2*(16*a
^(3/2)*(2*a + b*x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]
*(2*a + b*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/
(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))))/(65536*a^(11/2)*x^6))/(9*a)
```

IntegrateAlgebraic [A] time = 9.94, size = 738, normalized size = 1.97

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-229376*a^8*A - 530432*a^7*A*b*x - 258048*a^8*B*x -
 316416*a^6*A*b^2*x^2 - 608256*a^7*b*B*x^2 - 622592*a^7*A*c*x^2 - 1280*a^5*
A*b^3*x^3 - 373248*a^6*b^2*B*x^3 - 771072*a^6*A*b*c*x^3 - 731136*a^7*B*c*x^
3 + 1408*a^4*A*b^4*x^4 - 2304*a^5*b^3*B*x^4 - 10752*a^5*A*b^2*c*x^4 - 94310
4*a^6*b*B*c*x^4 - 491520*a^6*A*c^2*x^4 - 1584*a^3*A*b^5*x^5 + 2592*a^4*b^4*
B*x^5 + 13696*a^4*A*b^3*c*x^5 - 20736*a^5*b^2*B*c*x^5 - 31488*a^5*A*b*c^2*x
^5 - 634368*a^6*B*c^2*x^5 + 1848*a^2*A*b^6*x^6 - 3024*a^3*b^5*B*x^6 - 17856
*a^3*A*b^4*c*x^6 + 27264*a^4*b^3*B*c*x^6 + 51072*a^4*A*b^2*c^2*x^6 - 66816*
a^5*b*B*c^2*x^6 - 32768*a^5*A*c^3*x^6 - 2310*a*A*b^7*x^7 + 3780*a^2*b^6*B*x
^7 + 24696*a^2*A*b^5*c*x^7 - 37968*a^3*b^4*B*c*x^7 - 84384*a^3*A*b^3*c^2*x^
7 + 114624*a^4*b^2*B*c^2*x^7 + 88192*a^4*A*b*c^3*x^7 - 80640*a^5*B*c^3*x^7
+ 3465*A*b^8*x^8 - 5670*a*b^7*B*x^8 - 40740*a*A*b^6*c*x^8 + 63000*a^2*b^5*B
*c*x^8 + 162288*a^2*A*b^4*c^2*x^8 - 226464*a^3*b^3*B*c^2*x^8 - 234432*a^3*A
*b^2*c^3*x^8 + 254592*a^4*b*B*c^3*x^8 + 65536*a^4*A*c^4*x^8))/(2064384*a^6*
x^9) - (5*(-11*A*b^9 + 512*a^5*B*c^4)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x + c
*x^2])/Sqrt[a]])/(32768*a^(13/2)) - (5*(-9*b^8*B - 72*A*b^7*c + 112*a*b^6*B
*c + 336*a*A*b^5*c^2 - 480*a^2*b^4*B*c^2 - 640*a^2*A*b^3*c^3 + 768*a^3*b^2*
B*c^3 + 384*a^3*A*b*c^4)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqr
t[a]])/(16384*a^(11/2))
```

fricas [A] time = 9.92, size = 1315, normalized size = 3.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] [1/8257536*(315*(18*B*a*b^8 - 11*A*b^9 + 256*(2*B*a^5 - 3*A*a^4*b)*c^4 - 25
6*(6*B*a^4*b^2 - 5*A*a^3*b^3)*c^3 + 96*(10*B*a^3*b^4 - 7*A*a^2*b^5)*c^2 - 1
6*(14*B*a^2*b^6 - 9*A*a*b^7)*c)*sqrt(a)*x^9*log(-(8*a*b*x + (b^2 + 4*a*c)*x
^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(229376*
A*a^9 + (5670*B*a^2*b^7 - 3465*A*a*b^8 - 65536*A*a^5*c^4 - 576*(442*B*a^5*b
 - 407*A*a^4*b^2)*c^3 + 336*(674*B*a^4*b^3 - 483*A*a^3*b^4)*c^2 - 420*(150*
B*a^3*b^5 - 97*A*a^2*b^6)*c)*x^8 - 2*(1890*B*a^3*b^6 - 1155*A*a^2*b^7 - 64*
(630*B*a^6 - 689*A*a^5*b)*c^3 + 144*(398*B*a^5*b^2 - 293*A*a^4*b^3)*c^2 - 8
4*(226*B*a^4*b^4 - 147*A*a^3*b^5)*c)*x^7 + 8*(378*B*a^4*b^5 - 231*A*a^3*b^6
 + 4096*A*a^6*c^3 + 48*(174*B*a^6*b - 133*A*a^5*b^2)*c^2 - 24*(142*B*a^5*b^
3 - 93*A*a^4*b^4)*c)*x^6 - 16*(162*B*a^5*b^4 - 99*A*a^4*b^5 - 48*(826*B*a^7
 + 41*A*a^6*b)*c^2 - 8*(162*B*a^6*b^2 - 107*A*a^5*b^3)*c)*x^5 + 128*(18*B*a
^6*b^3 - 11*A*a^5*b^4 + 3840*A*a^7*c^2 + 12*(614*B*a^7*b + 7*A*a^6*b^2)*c)*
x^4 + 256*(1458*B*a^7*b^2 + 5*A*a^6*b^3 + 12*(238*B*a^8 + 251*A*a^7*b)*c)*x
^3 + 1024*(594*B*a^8*b + 309*A*a^7*b^2 + 608*A*a^8*c)*x^2 + 14336*(18*B*a^9
 + 37*A*a^8*b)*x)*sqrt(c*x^2 + b*x + a))/(a^7*x^9), -1/4128768*(315*(18*B*a
*b^8 - 11*A*b^9 + 256*(2*B*a^5 - 3*A*a^4*b)*c^4 - 256*(6*B*a^4*b^2 - 5*A*a^
3*b^3)*c^3 + 96*(10*B*a^3*b^4 - 7*A*a^2*b^5)*c^2 - 16*(14*B*a^2*b^6 - 9*A*a
*b^7)*c)*sqrt(-a)*x^9*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)
/(a*c*x^2 + a*b*x + a^2)) + 2*(229376*A*a^9 + (5670*B*a^2*b^7 - 3465*A*a*b^
8 - 65536*A*a^5*c^4 - 576*(442*B*a^5*b - 407*A*a^4*b^2)*c^3 + 336*(674*B*a^
4*b^3 - 483*A*a^3*b^4)*c^2 - 420*(150*B*a^3*b^5 - 97*A*a^2*b^6)*c)*x^8 - 2*
(1890*B*a^3*b^6 - 1155*A*a^2*b^7 - 64*(630*B*a^6 - 689*A*a^5*b)*c^3 + 144*(
398*B*a^5*b^2 - 293*A*a^4*b^3)*c^2 - 84*(226*B*a^4*b^4 - 147*A*a^3*b^5)*c)*
x^7 + 8*(378*B*a^4*b^5 - 231*A*a^3*b^6 + 4096*A*a^6*c^3 + 48*(174*B*a^6*b -
 133*A*a^5*b^2)*c^2 - 24*(142*B*a^5*b^3 - 93*A*a^4*b^4)*c)*x^6 - 16*(162*B*
```

a^5*b^4 - 99*A*a^4*b^5 - 48*(826*B*a^7 + 41*A*a^6*b)*c^2 - 8*(162*B*a^6*b^2 - 107*A*a^5*b^3)*c)*x^5 + 128*(18*B*a^6*b^3 - 11*A*a^5*b^4 + 3840*A*a^7*c^2 + 12*(614*B*a^7*b + 7*A*a^6*b^2)*c)*x^4 + 256*(1458*B*a^7*b^2 + 5*A*a^6*b^3 + 12*(238*B*a^8 + 251*A*a^7*b)*c)*x^3 + 1024*(594*B*a^8*b + 309*A*a^7*b^2 + 608*A*a^8*c)*x^2 + 14336*(18*B*a^9 + 37*A*a^8*b)*x)*sqrt(c*x^2 + b*x + a))/(a^7*x^9)]

giac [B] time = 0.58, size = 4427, normalized size = 11.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] -5/32768*(18*B*a*b^8 - 11*A*b^9 - 224*B*a^2*b^6*c + 144*A*a*b^7*c + 960*B*a^3*b^4*c^2 - 672*A*a^2*b^5*c^2 - 1536*B*a^4*b^2*c^3 + 1280*A*a^3*b^3*c^3 + 512*B*a^5*c^4 - 768*A*a^4*b*c^4)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^6) + 1/2064384*(5670*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a*b^8 - 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*b^9 - 70560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a^2*b^6*c + 45360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*a*b^7*c + 302400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a^3*b^4*c^2 - 211680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*a^2*b^5*c^2 - 483840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a^4*b^2*c^3 + 403200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*a^3*b^3*c^3 + 161280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a^5*c^4 - 241920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*a^4*b*c^4 - 49140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^2*b^8 + 30030*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a*b^9 + 611520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^3*b^6*c - 393120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^2*b^7*c - 2620800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^4*b^4*c^2 + 1834560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^3*b^5*c^2 + 4193280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^5*b^2*c^3 - 3494400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^4*b^3*c^3 + 4107264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^6*c^4 + 2096640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^5*b*c^4 + 28901376*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^14*B*a^6*b*c^(7/2) + 8257536*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^14*A*a^6*c^(9/2) + 188244*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^3*b^8 - 115038*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^2*b^9 - 2342592*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^4*b^6*c + 1505952*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b^7*c + 10039680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^5*b^4*c^2 - 7027776*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^4*b^5*c^2 + 54125568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^6*b^2*c^3 + 13386240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^5*b^3*c^3 + 5354496*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^7*c^4 + 41513472*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^6*b*c^4 + 100466688*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^6*b^3*c^(5/2) + 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^7*b*c^(7/2) + 136249344*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*A*a^6*b^2*c^(7/2) + 13762560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*A*a^7*c^(9/2) - 417636*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^4*b^8 + 255222*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*b^9 + 5197248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^5*b^6*c - 3341088*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^4*b^7*c + 69148800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^6*b^4*c^2 + 15591744*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^5*b^5*c^2 + 71027712*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^7*b^2*c^3 + 192665088*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^6*b^3*c^3 + 9354240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^8*c^4 + 109831680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^7*b*c^4 + 53673984*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^6*b^5*c^(3/2) + 37158912*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^7*b^3*c^(5/2) + 235339776*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^6*b^4*c^(5/2) + 61931520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^8*b*c^(7/2) + 247726080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^7*b^2*c^(7/2) + 41287680*(sqrt(c)*x - sqr
```

t(c*x^2 + b*x + a))^10*A*a^8*c^(9/2) + 589824*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^5*b^8 - 360448*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^9 + 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^6*b^6*c + 4718592*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^5*b^7*c + 41287680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^7*b^4*c^2 + 144506880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^6*b^5*c^2 + 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^8*b^2*c^3 + 405995520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^7*b^3*c^3 + 165150720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^8*b*c^4 + 4128768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b^7*sqrt(c) - 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^7*b^5*c^(3/2) + 78446592*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*b^6*c^(3/2) + 24772608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^8*b^3*c^(5/2) + 322043904*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^7*b^4*c^(5/2) - 53673984*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^9*b*c^(7/2) + 383975424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^8*b^2*c^(7/2) + 24772608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^9*c^(9/2) - 172188*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^6*b^8 + 334602*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*b^9 - 5197248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^7*b^6*c + 19266336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^6*b^7*c - 48504960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^8*b^4*c^2 + 194975424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^7*b^5*c^2 - 54512640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^9*b^2*c^3 + 389491200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^8*b^3*c^3 - 9354240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^10*c^4 + 137894400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^9*b*c^4 - 4128768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^7*b^7*sqrt(c) + 4128768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^6*b^8*sqrt(c) - 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^8*b^5*c^(3/2) + 55050240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^7*b^6*c^(3/2) - 112852992*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^9*b^3*c^(5/2) + 280756224*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^8*b^4*c^(5/2) - 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^10*b*c^(7/2) + 198180864*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^9*b^2*c^(7/2) + 24772608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^10*c^(9/2) - 188244*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^7*b^8 + 115038*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*b^9 - 10043712*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^8*b^6*c + 10880352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^7*b^7*c - 51327360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^9*b^4*c^2 + 93731904*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^8*b^5*c^2 - 70640640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^10*b^2*c^3 + 193052160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^9*b^3*c^3 - 5354496*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^11*c^4 + 57576960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^10*b*c^4 - 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^9*b^5*c^(3/2) + 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^8*b^6*c^(3/2) - 37158912*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^10*b^3*c^(5/2) + 74317824*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^9*b^4*c^(5/2) - 33619968*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^11*b*c^(7/2) + 83165184*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^10*b^2*c^(7/2) + 3538944*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^11*c^(9/2) + 49140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^8*b^8 - 30030*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*b^9 - 611520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*b^6*c + 393120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^8*b^7*c - 18023040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^10*b^4*c^2 + 18809280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^9*b^5*c^2 - 20708352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^11*b^2*c^3 + 37900800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^10*b^3*c^3 - 4107264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^12*c^4 + 14418432*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^11*b*c^4 - 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^11*b^3*c^(5/2) + 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^10*b^4*c^(5/2) - 2949120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^12*b*c^(7/2) + 7077888*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^11*b^2*c^(7/2) + 1179648*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^12*c^(9/2) - 5670*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^8 + 3465*(sqrt(c)*x - sqrt(c*x^

```
2 + b*x + a))*A*a^8*b^9 + 70560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^10*
b^6*c - 45360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b^7*c - 302400*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*B*a^11*b^4*c^2 + 211680*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*A*a^10*b^5*c^2 - 3644928*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*B*a^12*b^2*c^3 + 3725568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^11*b^3*
c^3 - 161280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^13*c^4 + 241920*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*A*a^12*b*c^4 - 589824*B*a^13*b*c^(7/2) + 5898
24*A*a^12*b^2*c^(7/2) - 131072*A*a^13*c^(9/2))/(((sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^2 - a)^9*a^6)
```

maple [B] time = 0.16, size = 2677, normalized size = 7.14

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x)
```

```
[Out] 3/8192*B/a^7*b^6/x^2*(c*x^2+b*x+a)^(7/2)+1/128*B*c^3/a^4/x^2*(c*x^2+b*x+a)^
(7/2)+5/256*B*c^4/a^4*b*(c*x^2+b*x+a)^(3/2)*x-45/16384*B/a^6*b^7*(c*x^2+b*x
+a)^(1/2)*x*c+5/256*B*c^4/a^3*b*(c*x^2+b*x+a)^(1/2)*x+13/768*B/a^5*b^3*c/x^
3*(c*x^2+b*x+a)^(7/2)+5/256*B*c^4/a^5*b*(c*x^2+b*x+a)^(5/2)*x-145/3072*B/a^
6*b^3*c^3*(c*x^2+b*x+a)^(5/2)*x-55/1024*B/a^4*b^3*c^3*(c*x^2+b*x+a)^(1/2)*x
-55/6144*B/a^6*b^4*c/x^2*(c*x^2+b*x+a)^(7/2)-155/3072*B/a^5*b^3*c^3*(c*x^2+
b*x+a)^(3/2)*x+145/3072*B/a^6*b^3*c^2/x*(c*x^2+b*x+a)^(7/2)+95/4096*B/a^5*b
^5*c^2*(c*x^2+b*x+a)^(1/2)*x-5/256*B*c^3/a^5*b/x*(c*x^2+b*x+a)^(7/2)+55/983
04*A/a^8*b^8*c*(c*x^2+b*x+a)^(3/2)*x+119/24576*A/a^8*b^6*c/x*(c*x^2+b*x+a)^
(7/2)-3/256*A/a^5*b*c^3/x^2*(c*x^2+b*x+a)^(7/2)-1/128*A/a^4*b*c^2/x^4*(c*x^
2+b*x+a)^(7/2)-1/32*A/a^3*b*c/x^6*(c*x^2+b*x+a)^(7/2)+3/256*A/a^5*b^2*c^2/x
^3*(c*x^2+b*x+a)^(7/2)-15/512*A/a^4*b^2*c^4*(c*x^2+b*x+a)^(1/2)*x+15/512*A/
a^6*b^2*c^3/x*(c*x^2+b*x+a)^(7/2)-15/512*A/a^6*b^2*c^4*(c*x^2+b*x+a)^(5/2)*
x-15/512*A/a^5*b^2*c^4*(c*x^2+b*x+a)^(3/2)*x+55/32768*A/a^7*b^8*(c*x^2+b*x+
a)^(1/2)*x*c-5/512*A/a^6*b^4*c/x^3*(c*x^2+b*x+a)^(7/2)+85/2048*A/a^5*b^4*c^
3*(c*x^2+b*x+a)^(1/2)*x-65/2048*A/a^7*b^4*c^2/x*(c*x^2+b*x+a)^(7/2)+65/2048
*A/a^7*b^4*c^3*(c*x^2+b*x+a)^(5/2)*x+75/2048*A/a^6*b^4*c^3*(c*x^2+b*x+a)^(3
/2)*x+23/4096*A/a^7*b^5*c/x^2*(c*x^2+b*x+a)^(7/2)-125/8192*A/a^6*b^6*c^2*(c
*x^2+b*x+a)^(1/2)*x+1/64*A/a^4*b^2*c/x^5*(c*x^2+b*x+a)^(7/2)+5/1024*A/a^6*b
^3*c^2/x^2*(c*x^2+b*x+a)^(7/2)+1/768*A/a^5*b^3*c/x^4*(c*x^2+b*x+a)^(7/2)-11
9/24576*A/a^8*b^6*c^2*(c*x^2+b*x+a)^(5/2)*x-235/24576*A/a^7*b^6*c^2*(c*x^2+
b*x+a)^(3/2)*x+11/32768*A/a^9*b^8*c*(c*x^2+b*x+a)^(5/2)*x-1/128*B*c^2/a^4*b
/x^3*(c*x^2+b*x+a)^(7/2)-31/4096*B/a^7*b^5*c/x*(c*x^2+b*x+a)^(7/2)-15/16384
*B/a^7*b^7*c*(c*x^2+b*x+a)^(3/2)*x+185/12288*B/a^6*b^5*c^2*(c*x^2+b*x+a)^(3
/2)*x-9/16384*B/a^8*b^7*c*(c*x^2+b*x+a)^(5/2)*x+31/4096*B/a^7*b^5*c^2*(c*x^
2+b*x+a)^(5/2)*x-7/512*B/a^5*b^2*c^2/x^2*(c*x^2+b*x+a)^(7/2)-1/128*B/a^4*b^
2*c/x^4*(c*x^2+b*x+a)^(7/2)-1/96*B*c/a^3*b/x^5*(c*x^2+b*x+a)^(7/2)-15/16384
*B/a^7*b^8*(c*x^2+b*x+a)^(3/2)-9/16384*B/a^8*b^8*(c*x^2+b*x+a)^(5/2)-45/163
84*B/a^6*b^8*(c*x^2+b*x+a)^(1/2)-5/384*B*c^4/a^3*(c*x^2+b*x+a)^(3/2)-1/128*
B*c^4/a^4*(c*x^2+b*x+a)^(5/2)-5/128*B*c^4/a^2*(c*x^2+b*x+a)^(1/2)-1/8*B/a/x
^8*(c*x^2+b*x+a)^(7/2)+45/32768*B/a^(11/2)*b^8*ln((b*x+2*a+2*(c*x^2+b*x+a)^
(1/2)*a^(1/2))/x)+5/128*B*c^4/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)+55/98304*A/a^8*b^9*(c*x^2+b*x+a)^(3/2)+11/32768*A/a^9*b^9*(c*x^2+b
*x+a)^(5/2)+55/32768*A/a^7*b^9*(c*x^2+b*x+a)^(1/2)-55/65536*A/a^(13/2)*b^9*
ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-11/224*A/a^3*b^2/x^7*(c*x^2+b
*x+a)^(7/2)-145/3072*A/a^5*b^3*c^3*(c*x^2+b*x+a)^(3/2)-35/1024*A/a^6*b^3*c^
3*(c*x^2+b*x+a)^(5/2)-115/1024*A/a^4*b^3*c^3*(c*x^2+b*x+a)^(1/2)-227/49152*
A/a^8*b^7*c*(c*x^2+b*x+a)^(5/2)-11/32768*A/a^9*b^8/x*(c*x^2+b*x+a)^(7/2)+11
/2048*A/a^6*b^5/x^4*(c*x^2+b*x+a)^(7/2)+145/4096*A/a^6*b^5*c^2*(c*x^2+b*x+a
)^(3/2)+107/4096*A/a^7*b^5*c^2*(c*x^2+b*x+a)^(5/2)+295/4096*A/a^5*b^5*c^2*(
c*x^2+b*x+a)^(1/2)-11/768*A/a^5*b^4/x^5*(c*x^2+b*x+a)^(7/2)+11/384*A/a^4*b^
3/x^6*(c*x^2+b*x+a)^(7/2)-11/12288*A/a^7*b^6/x^3*(c*x^2+b*x+a)^(7/2)-305/16
384*A/a^6*b^7*c*(c*x^2+b*x+a)^(1/2)-415/49152*A/a^7*b^7*c*(c*x^2+b*x+a)^(3/
```

```
2)-11/49152*A/a^8*b^7/x^2*(c*x^2+b*x+a)^(7/2)+2/63*A*c/a^2/x^7*(c*x^2+b*x+a
)^(7/2)+25/256*A/a^(7/2)*b^3*c^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))
/x)+45/4096*A/a^(11/2)*b^7*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
105/2048*A/a^(9/2)*b^5*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-15
/256*A/a^(5/2)*b*c^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+9/112*B/
a^2*b/x^7*(c*x^2+b*x+a)^(7/2)+25/512*B/a^4*b^2*c^3*(c*x^2+b*x+a)^(3/2)+17/5
12*B/a^5*b^2*c^3*(c*x^2+b*x+a)^(5/2)+1/192*B*c^2/a^3/x^4*(c*x^2+b*x+a)^(7/2
)+1/48*B*c/a^2/x^6*(c*x^2+b*x+a)^(7/2)-15/128*B/a^(5/2)*b^2*c^3*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-35/2048*B/a^(9/2)*b^6*c*ln((b*x+2*a+2*(c
*x^2+b*x+a)^(1/2)*a^(1/2))/x)+75/1024*B/a^(7/2)*b^4*c^2*ln((b*x+2*a+2*(c*x^
2+b*x+a)^(1/2)*a^(1/2))/x)+65/512*B/a^3*b^2*c^3*(c*x^2+b*x+a)^(1/2)+59/8192
*B/a^7*b^6*c*(c*x^2+b*x+a)^(5/2)+9/16384*B/a^8*b^7/x*(c*x^2+b*x+a)^(7/2)-9/
1024*B/a^5*b^4/x^4*(c*x^2+b*x+a)^(7/2)-305/6144*B/a^5*b^4*c^2*(c*x^2+b*x+a)
^(3/2)-235/6144*B/a^6*b^4*c^2*(c*x^2+b*x+a)^(5/2)-205/2048*B/a^4*b^4*c^2*(c
*x^2+b*x+a)^(1/2)+3/128*B/a^4*b^3/x^5*(c*x^2+b*x+a)^(7/2)-3/64*B/a^3*b^2/x^
6*(c*x^2+b*x+a)^(7/2)+3/2048*B/a^6*b^5/x^3*(c*x^2+b*x+a)^(7/2)+235/8192*B/a
^5*b^6*c*(c*x^2+b*x+a)^(1/2)+325/24576*B/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)+5/25
6*A/a^4*b*c^4*(c*x^2+b*x+a)^(3/2)+3/256*A/a^5*b*c^4*(c*x^2+b*x+a)^(5/2)+15/
256*A/a^3*b*c^4*(c*x^2+b*x+a)^(1/2)+11/144*A/a^2*b/x^8*(c*x^2+b*x+a)^(7/2)-
1/9*A*(c*x^2+b*x+a)^(7/2)/a/x^9
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**10,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**10, x)
```

3.875 $\int \frac{x^4(A+Bx)}{\sqrt{a+bx+cx^2}} dx$

Optimal. Leaf size=281

$$\frac{\sqrt{a+bx+cx^2}\left(1024a^2Bc^2-2cx\left(360aAc^2-644abBc-350Ab^2c+315b^3B\right)+2200aAbc^2-2940ab^2Bc-1050A\right.}{1920c^5}$$

Rubi [A] time = 0.42, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(1024a^2Bc^2-2cx\left(360aAc^2-644abBc-350Ab^2c+315b^3B\right)+2200aAbc^2-2940ab^2Bc-1050Ab^3c+945b^4B\right)}{1920c^5}-\frac{\left(-96a^2Ac^3+240a^2bBc^2+240aAb^2c^2-280ab^3Bc-70Ab^4c+63b^5B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{11/2}}+\frac{x^2\sqrt{a+bx+cx^2}\left(-64aBc-70Abc+63b^2B\right)}{240c^3}-\frac{x^3\sqrt{a+bx+cx^2}\,(9bB-10Ac)}{40c^2}+\frac{Bx^4\sqrt{a+bx+cx^2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((63*b^2*B - 70*A*b*c - 64*a*B*c)*x^2*Sqrt[a + b*x + c*x^2])/(240*c^3) - ((
9*b*B - 10*A*c)*x^3*Sqrt[a + b*x + c*x^2])/(40*c^2) + (B*x^4*Sqrt[a + b*x +
 c*x^2])/(5*c) + ((945*b^4*B - 1050*A*b^3*c - 2940*a*b^2*B*c + 2200*a*A*b*c
^2 + 1024*a^2*B*c^2 - 2*c*(315*b^3*B - 350*A*b^2*c - 644*a*b*B*c + 360*a*A*
c^2)*x)*Sqrt[a + b*x + c*x^2])/(1920*c^5) - ((63*b^5*B - 70*A*b^4*c - 280*a
*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*ArcTanh[(b + 2
*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = \frac{Bx^4\sqrt{a+bx+cx^2}}{5c} + \frac{\int \frac{x^3\left(-4aB-\frac{1}{2}(9bB-10Ac)x\right)}{\sqrt{a+bx+cx^2}}dx}{5c}$$

$$= -\frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + \frac{Bx^4\sqrt{a+bx+cx^2}}{5c} + \frac{\int \frac{x^2\left(\frac{3}{2}a(9bB-10Ac)+\frac{1}{4}(63b^2B-70A\ldots}{\sqrt{a+bx+cx^2}}}{20c^2}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + \frac{Bx^4\ldots}{}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + \frac{Bx^4\ldots}{}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + \frac{Bx^4\ldots}{}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + \frac{Bx^4\ldots}{}$$

Mathematica [A] time = 0.39, size = 225, normalized size = 0.80

$$\frac{\sqrt{a+x(b+cx)}\left(16c^2\left(64a^2B-acx(45A+32Bx)+6c^2x^3(5A+4Bx)\right)+28b^2c(cx(25A+18Bx)-105aB)+8bc^2\left(a(275A+161Bx)-2cx^2(35A+27Bx)\right)-210b^3c(5A+3Bx)+945b^4B\right)}{1920c^5}+\frac{\left(96a^2Ac^3-240a^2bBc^2-240aAb^2c^2+280ab^3Bc+70Ab^4c-63b^5B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{256c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(945*b^4*B - 210*b^3*c*(5*A + 3*B*x) + 28*b^2*c*(-10
5*a*B + c*x*(25*A + 18*B*x)) + 16*c^2*(64*a^2*B + 6*c^2*x^3*(5*A + 4*B*x) -
 a*c*x*(45*A + 32*B*x)) + 8*b*c^2*(-2*c*x^2*(35*A + 27*B*x) + a*(275*A + 16
1*B*x))))/(1920*c^5) + ((-63*b^5*B + 70*A*b^4*c + 280*a*b^3*B*c - 240*a*A*b
^2*c^2 - 240*a^2*b*B*c^2 + 96*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqr
t[a + x*(b + c*x)])])/(256*c^(11/2))
```

IntegrateAlgebraic [A] time = 0.92, size = 244, normalized size = 0.87

$$\frac{\sqrt{a+bx+cx^2}\left(1024a^2Bc^2+2200aAbc^2-720aAc^3x-2940ab^2Bc+1288abBc^2x-512aBc^3x^2-1050Ab^3c+700Ab^2c^2x-560Abc^3x^2+480Ac^4x^3+945b^4B-630b^3Bcx+504b^2Bc^2x^2-432bBc^3x^3+384Bc^4x^4\right)}{1920c^5}+\frac{\left(-96a^2Ac^3+240a^2bBc^2+240aAb^2c^2-280ab^3Bc-70Ab^4c+63b^5B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{256c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(945*b^4*B - 1050*A*b^3*c - 2940*a*b^2*B*c + 2200*a*
A*b*c^2 + 1024*a^2*B*c^2 - 630*b^3*B*c*x + 700*A*b^2*c^2*x + 1288*a*b*B*c^2
*x - 720*a*A*c^3*x + 504*b^2*B*c^2*x^2 - 560*A*b*c^3*x^2 - 512*a*B*c^3*x^2
- 432*b*B*c^3*x^3 + 480*A*c^4*x^3 + 384*B*c^4*x^4))/(1920*c^5) + ((63*b^5*B
 - 70*A*b^4*c - 280*a*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*
A*c^3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(256*c^(11/2))
```

fricas [A] time = 0.52, size = 519, normalized size = 1.85

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(63*B*b^5 - 96*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2)*c^2 - 70*(4
*B*a*b^3 + A*b^4)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2
+ b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(384*B*c^5*x^4 + 945*B*b^4*c +
8*(128*B*a^2 + 275*A*a*b)*c^3 - 48*(9*B*b*c^4 - 10*A*c^5)*x^3 - 210*(14*B*a
*b^2 + 5*A*b^3)*c^2 + 8*(63*B*b^2*c^3 - 2*(32*B*a + 35*A*b)*c^4)*x^2 - 2*(3
15*B*b^3*c^2 + 360*A*a*c^4 - 14*(46*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c*x^2 +
b*x + a))/c^6, 1/3840*(15*(63*B*b^5 - 96*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2
)*c^2 - 70*(4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)
*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(384*B*c^5*x^4 + 945*B*b
^4*c + 8*(128*B*a^2 + 275*A*a*b)*c^3 - 48*(9*B*b*c^4 - 10*A*c^5)*x^3 - 210*
(14*B*a*b^2 + 5*A*b^3)*c^2 + 8*(63*B*b^2*c^3 - 2*(32*B*a + 35*A*b)*c^4)*x^2
 - 2*(315*B*b^3*c^2 + 360*A*a*c^4 - 14*(46*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c
*x^2 + b*x + a))/c^6]
```

giac [**A**] time = 0.26, size = 249, normalized size = 0.89

$$\frac{1}{1920}\sqrt{cx^2+bx+a}\left(2\left(4\left(6\left(\frac{8Bx}{c}-\frac{9Bbc^3-10Ac^4}{c^5}\right)x+\frac{63Bb^2c^2-64Bac^3-70Abc^3}{c^5}\right)x-\frac{315Bb^3c-644Babc^2-350Ab^2c^2+360Aac^3}{c^5}\right)x+\frac{945Bb^4-2940Bab^2c-1050Ab^3c+1024Ba^2c^2+2200Aabc^2}{c^5}\right)+\frac{\left(63Bb^5-280Bab^3c-70Ab^4c+240Ba^2bc^2+240Aab^2c^2-96Aa^2c^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{256c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x + a)*(2*(4*(6*(8*B*x/c - (9*B*b*c^3 - 10*A*c^4)/c^5
)*x + (63*B*b^2*c^2 - 64*B*a*c^3 - 70*A*b*c^3)/c^5)*x - (315*B*b^3*c - 644*
B*a*b*c^2 - 350*A*b^2*c^2 + 360*A*a*c^3)/c^5)*x + (945*B*b^4 - 2940*B*a*b^2
*c - 1050*A*b^3*c + 1024*B*a^2*c^2 + 2200*A*a*b*c^2)/c^5) + 1/256*(63*B*b^5
 - 280*B*a*b^3*c - 70*A*b^4*c + 240*B*a^2*b*c^2 + 240*A*a*b^2*c^2 - 96*A*a^
2*c^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2
)
```

maple [**B**] time = 0.07, size = 531, normalized size = 1.89

$$\frac{\sqrt{cx^2+bx+a}\,Bx^4}{5c}+\frac{\sqrt{cx^2+bx+a}\,Ax^3}{4c}-\frac{9\sqrt{cx^2+bx+a}\,Bbx^3}{40c^2}-\frac{7\sqrt{cx^2+bx+a}\,Abx^2}{24c^2}-\frac{4\sqrt{cx^2+bx+a}\,Bax^2}{15c^2}+\frac{21\sqrt{cx^2+bx+a}\,Bb^2x^2}{80c^3}+\frac{3Aa^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{5}{2}}}-\frac{15Aab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{7}{2}}}+\frac{35Ab^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{128c^{\frac{9}{2}}}-\frac{15Ba^2b\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{7}{2}}}+\frac{35Bab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{32c^{\frac{9}{2}}}-\frac{63Bb^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{256c^{\frac{11}{2}}}-\frac{3\sqrt{cx^2+bx+a}\,Aax}{8c^2}+\frac{35\sqrt{cx^2+bx+a}\,Ab^2x}{96c^3}+\frac{161\sqrt{cx^2+bx+a}\,Babx}{240c^3}-\frac{21\sqrt{cx^2+bx+a}\,Bb^3x}{64c^4}+\frac{55\sqrt{cx^2+bx+a}\,Aab}{48c^3}-\frac{35\sqrt{cx^2+bx+a}\,Ab^3}{64c^4}+\frac{8\sqrt{cx^2+bx+a}\,Ba^2}{15c^3}-\frac{49\sqrt{cx^2+bx+a}\,Bab^2}{32c^4}+\frac{63\sqrt{cx^2+bx+a}\,Bb^4}{128c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/5*B*x^4*(c*x^2+b*x+a)^(1/2)/c-9/40*B*b/c^2*x^3*(c*x^2+b*x+a)^(1/2)+21/80*
B*b^2/c^3*x^2*(c*x^2+b*x+a)^(1/2)-21/64*B*b^3/c^4*x*(c*x^2+b*x+a)^(1/2)+63/
128*B*b^4/c^5*(c*x^2+b*x+a)^(1/2)-63/256*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))+35/32*B*b^3/c^(9/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))-49/32*B*b^2/c^4*a*(c*x^2+b*x+a)^(1/2)+161/240*B*b/c^3*a*x*(
c*x^2+b*x+a)^(1/2)-15/16*B*b/c^(7/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))-4/15*B*a/c^2*x^2*(c*x^2+b*x+a)^(1/2)+8/15*B*a^2/c^3*(c*x^2+b*x+a)
^(1/2)+1/4*A*x^3/c*(c*x^2+b*x+a)^(1/2)-7/24*A*b/c^2*x^2*(c*x^2+b*x+a)^(1/2)
+35/96*A*b^2/c^3*x*(c*x^2+b*x+a)^(1/2)-35/64*A*b^3/c^4*(c*x^2+b*x+a)^(1/2)+
35/128*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/16*A*b^
2/c^(7/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+55/48*A*b/c^3*a*(c*
x^2+b*x+a)^(1/2)-3/8*A*a/c^2*x*(c*x^2+b*x+a)^(1/2)+3/8*A*a^2/c^(5/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,(A+B\,x)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
[Out] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4\,(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
[Out] Integral(x**4*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.876 $\int \frac{x^3(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=206

$$\frac{\left(48a^2Bc^2+96aAbc^2-120ab^2Bc-40Ab^3c+35b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{9/2}}-\sqrt{a+bx+cx^2}\left(-2cx\left(-36aBc-4\right.\right.$$

Rubi [A] time = 0.24, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {832, 779, 621, 206}

$$\frac{\left(48a^2Bc^2+96aAbc^2-120ab^2Bc-40Ab^3c+35b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{9/2}}-\frac{\sqrt{a+bx+cx^2}\left(-2cx\left(-36aBc-40Abc+35b^2B\right)+128aAc^2-220abBc-120Ab^2c+105b^3B\right)}{192c^4}-\frac{x^2\sqrt{a+bx+cx^2}\,(7bB-8Ac)}{24c^2}+\frac{Bx^3\sqrt{a+bx+cx^2}}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((7*b*B - 8*A*c)*x^2*Sqrt[a + b*x + c*x^2])/(24*c^2) + (B*x^3*Sqrt[a + b*x
 + c*x^2])/(4*c) - ((105*b^3*B - 120*A*b^2*c - 220*a*b*B*c + 128*a*A*c^2 -
2*c*(35*b^2*B - 40*A*b*c - 36*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(192*c^4) +
((35*b^4*B - 40*A*b^3*c - 120*a*b^2*B*c + 96*a*A*b*c^2 + 48*a^2*B*c^2)*ArcT
anh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(128*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{x^2\left(-3aB-\frac{1}{2}(7bB-8Ac)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{x\left(a(7bB-8Ac)+\frac{1}{4}\left(35b^2B-40Abc-36\right.\right.}{\sqrt{a+bx+cx^2}}}{12c^2}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} - \frac{\left(105b^3B-120Ab^2c-220abB\right.}{}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} - \frac{\left(105b^3B-120Ab^2c-220abB\right.}{}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} - \frac{\left(105b^3B-120Ab^2c-220abB\right.}{}$$

Mathematica [A] time = 0.27, size = 169, normalized size = 0.82

$$\frac{\left(48a^2Bc^2+96aAbc^2-120ab^2Bc-40Ab^3c+35b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{128c^{9/2}}+\frac{\sqrt{a+x(b+cx)}\left(4bc(55aB-2cx(10A+7Bx))+8c^2\left(-16aA-9aBx+8Acx^2+6Bcx^3\right)+10b^2c(12A+7Bx)-105b^3B\right)}{192c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-105*b^3*B + 10*b^2*c*(12*A + 7*B*x) + 8*c^2*(-16*a
*A - 9*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + 4*b*c*(55*a*B - 2*c*x*(10*A + 7*B*x
))))/(192*c^4) + ((35*b^4*B - 40*A*b^3*c - 120*a*b^2*B*c + 96*a*A*b*c^2 + 4
8*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(128*c
^(9/2))
```

IntegrateAlgebraic [A] time = 0.68, size = 183, normalized size = 0.89

$$\frac{\left(-48a^2Bc^2-96aAbc^2+120ab^2Bc+40Ab^3c-35b^4B\right)\log\left(-2c^{9/2}\sqrt{a+bx+cx^2}+bc^4+2c^5x\right)}{128c^{9/2}}+\frac{\sqrt{a+bx+cx^2}\left(-128aAc^2+220abBc-72aBc^2x+120Ab^2c-80Abc^2x+64Ac^3x^2-105b^3B+70b^2Bcx-56bBc^2x^2+48Bc^3x^3\right)}{192c^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-105*b^3*B + 120*A*b^2*c + 220*a*b*B*c - 128*a*A*c^
2 + 70*b^2*B*c*x - 80*A*b*c^2*x - 72*a*B*c^2*x - 56*b*B*c^2*x^2 + 64*A*c^3*
x^2 + 48*B*c^3*x^3))/(192*c^4) + ((-35*b^4*B + 40*A*b^3*c + 120*a*b^2*B*c -
 96*a*A*b*c^2 - 48*a^2*B*c^2)*Log[b*c^4 + 2*c^5*x - 2*c^(9/2)*Sqrt[a + b*x
+ c*x^2]])/(128*c^(9/2))
```

fricas [A] time = 0.52, size = 395, normalized size = 1.92

$$\left[\frac{3\left(35\,Bb^4+48\left(Ba^2+2\,Aab\right)c^2-40\left(3\,Bab^2+Ab^3\right)c\right)\sqrt{c}\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)+4\left(48\,Bc^4x^3-105\,Bb^3c-128\,Aac^3+20\left(11\,Bab+6\,Ab^2\right)c^2-8\left(7\,Bbc^3-8\,Ac^4\right)x^2+2\left(35\,Bb^2c^2-4\left(9\,Ba+10\,Ab\right)c^3\right)x\right)\sqrt{cx^2+bx+a}}{768\,c^5},\ -\frac{3\left(35\,Bb^4+48\left(Ba^2+2\,Aab\right)c^2-40\left(3\,Bab^2+Ab^3\right)c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(48\,Bc^4x^3-105\,Bb^3c-128\,Aac^3+20\left(11\,Bab+6\,Ab^2\right)c^2-8\left(7\,Bbc^3-8\,Ac^4\right)x^2+2\left(35\,Bb^2c^2-4\left(9\,Ba+10\,Ab\right)c^3\right)x\right)\sqrt{cx^2+bx+a}}{384\,c^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/768*(3*(35*B*b^4 + 48*(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*
sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b
)*sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 - 105*B*b^3*c - 128*A*a*c^3 + 20*(11*B
*a*b + 6*A*b^2)*c^2 - 8*(7*B*b*c^3 - 8*A*c^4)*x^2 + 2*(35*B*b^2*c^2 - 4*(9*
B*a + 10*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/384*(3*(35*B*b^4 + 48*
```

```
(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(
c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(48*B*c^
4*x^3 - 105*B*b^3*c - 128*A*a*c^3 + 20*(11*B*a*b + 6*A*b^2)*c^2 - 8*(7*B*b*
c^3 - 8*A*c^4)*x^2 + 2*(35*B*b^2*c^2 - 4*(9*B*a + 10*A*b)*c^3)*x)*sqrt(c*x^
2 + b*x + a))/c^5]
```

giac [A] time = 0.27, size = 183, normalized size = 0.89

$$\frac{1}{192}\sqrt{cx^2+bx+a}\left(2\left(4\left(\frac{6\,Bx}{c}-\frac{7\,Bbc^2-8\,Ac^3}{c^4}\right)x+\frac{35\,Bb^2c-36\,Bac^2-40\,Abc^2}{c^4}\right)x-\frac{105\,Bb^3-220\,Babc-120\,Ab^2c+128\,Aac^2}{c^4}\right)-\frac{\left(35\,Bb^4-120\,Bab^2c-40\,Ab^3c+48\,Ba^2c^2+96\,Aabc^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{128\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*x/c - (7*B*b*c^2 - 8*A*c^3)/c^4)*x +
 (35*B*b^2*c - 36*B*a*c^2 - 40*A*b*c^2)/c^4)*x - (105*B*b^3 - 220*B*a*b*c -
 120*A*b^2*c + 128*A*a*c^2)/c^4) - 1/128*(35*B*b^4 - 120*B*a*b^2*c - 40*A*b
^3*c + 48*B*a^2*c^2 + 96*A*a*b*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 379, normalized size = 1.84

$$\frac{\sqrt{cx^2+bx+a}\,Bx^3}{4c}+\frac{\sqrt{cx^2+bx+a}\,Ax^2}{3c}-\frac{7\sqrt{cx^2+bx+a}\,Bbx^2}{24c^2}+\frac{3Aab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{5}{2}}}-\frac{5Ab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{7}{2}}}+\frac{3Ba^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{5}{2}}}-\frac{15Bab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{7}{2}}}+\frac{35Bb^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{128c^{\frac{9}{2}}}-\frac{5\sqrt{cx^2+bx+a}\,Abx}{12c^2}-\frac{3\sqrt{cx^2+bx+a}\,Bax}{8c^2}+\frac{35\sqrt{cx^2+bx+a}\,Bb^2x}{96c^3}-\frac{2\sqrt{cx^2+bx+a}\,Aa}{3c^2}+\frac{5\sqrt{cx^2+bx+a}\,Ab^2}{8c^3}+\frac{55\sqrt{cx^2+bx+a}\,Bab}{48c^3}-\frac{35\sqrt{cx^2+bx+a}\,Bb^3}{64c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/4*B*x^3*(c*x^2+b*x+a)^(1/2)/c-7/24*B*b/c^2*x^2*(c*x^2+b*x+a)^(1/2)+35/96*
B*b^2/c^3*x*(c*x^2+b*x+a)^(1/2)-35/64*B*b^3/c^4*(c*x^2+b*x+a)^(1/2)+35/128*
B*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/16*B*b^2/c^(7/
2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+55/48*B*b/c^3*a*(c*x^2+b*x
+a)^(1/2)-3/8*B*a/c^2*x*(c*x^2+b*x+a)^(1/2)+3/8*B*a^2/c^(5/2)*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/3*A*x^2/c*(c*x^2+b*x+a)^(1/2)-5/12*A*b/c^2
*x*(c*x^2+b*x+a)^(1/2)+5/8*A*b^2/c^3*(c*x^2+b*x+a)^(1/2)-5/16*A*b^3/c^(7/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/4*A*b/c^(5/2)*a*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/3*A*a/c^2*(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 (A + Bx)}{\sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.877 $\int \frac{x^2(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=143

$$\frac{\sqrt{a+bx+cx^2}\left(-16aBc-2cx(5bB-6Ac)-18Abc+15b^2B\right)}{24c^3}-\frac{\left(8aAc^2-12abBc-6Ab^2c+5b^3B\right)\tanh^{-1}\left(\frac{b-}{2\sqrt{c}\sqrt{a}}\right.}{16c^{7/2}}$$

Rubi [A] time = 0.12, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-16aBc-2cx(5bB-6Ac)-18Abc+15b^2B\right)}{24c^3}-\frac{\left(8aAc^2-12abBc-6Ab^2c+5b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16c^{7/2}}+\frac{Bx^2\sqrt{a+bx+cx^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*x^2*Sqrt[a + b*x + c*x^2])/(3*c) + ((15*b^2*B - 18*A*b*c - 16*a*B*c - 2*
c*(5*b*B - 6*A*c)*x)*Sqrt[a + b*x + c*x^2])/(24*c^3) - ((5*b^3*B - 6*A*b^2*
c - 12*a*b*B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c
*x^2])])/(16*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\int \frac{x\left(-2aB-\frac{1}{2}(5bB-6Ac)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(15b^2B-18Abc-16aBc-2c(5bB-6Ac)x\right)\sqrt{a+bx+cx^2}}{24c^3} - \cdots$$

$$= \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(15b^2B-18Abc-16aBc-2c(5bB-6Ac)x\right)\sqrt{a+bx+cx^2}}{24c^3} - \cdots$$

$$= \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(15b^2B-18Abc-16aBc-2c(5bB-6Ac)x\right)\sqrt{a+bx+cx^2}}{24c^3} - \cdots$$

Mathematica [A] time = 0.15, size = 126, normalized size = 0.88

$$\frac{2\sqrt{c}\sqrt{a+x(b+cx)}\left(4c(cx(3A+2Bx)-4aB)-2bc(9A+5Bx)+15b^2B\right)-3\left(8aAc^2-12abBc-6Ab^2c+5b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{48c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(15*b^2*B - 2*b*c*(9*A + 5*B*x) + 4*c*(-4*
a*B + c*x*(3*A + 2*B*x))) - 3*(5*b^3*B - 6*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2
)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(48*c^(7/2))
```

IntegrateAlgebraic [A] time = 0.52, size = 125, normalized size = 0.87

$$\frac{\sqrt{a+bx+cx^2}\left(-16aBc-18Abc+12Ac^2x+15b^2B-10bBcx+8Bc^2x^2\right)}{24c^3}+\frac{\left(8aAc^2-12abBc-6Ab^2c+5b^3B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{16c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(15*b^2*B - 18*A*b*c - 16*a*B*c - 10*b*B*c*x + 12*A*
c^2*x + 8*B*c^2*x^2))/(24*c^3) + ((5*b^3*B - 6*A*b^2*c - 12*a*b*B*c + 8*a*A
*c^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(16*c^(7/2))
```

fricas [A] time = 0.46, size = 295, normalized size = 2.06

$$\left[\frac{3\left(5Bb^3+8Aac^2-6\left(2Bab+Ab^2\right)c\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4\left(8Bc^3x^2+15Bb^2c-2(8Ba+9Ab)c^2-2\left(5Bbc^2-6Ac^3\right)x\right)\sqrt{cx^2+bx+a}}{96c^4}, \frac{3\left(5Bb^3+8Aac^2-6\left(2Bab+Ab^2\right)c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+2\left(8Bc^3x^2+15Bb^2c-2(8Ba+9Ab)c^2-2\left(5Bbc^2-6Ac^3\right)x\right)\sqrt{cx^2+bx+a}}{48c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt(c)*log(-8*c^2*x
^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) +
 4*(8*B*c^3*x^2 + 15*B*b^2*c - 2*(8*B*a + 9*A*b)*c^2 - 2*(5*B*b*c^2 - 6*A*c
^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/48*(3*(5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*
b + A*b^2)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c
)/(c^2*x^2 + b*c*x + a*c)) + 2*(8*B*c^3*x^2 + 15*B*b^2*c - 2*(8*B*a + 9*A*b
)*c^2 - 2*(5*B*b*c^2 - 6*A*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.25, size = 128, normalized size = 0.90

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(\frac{4Bx}{c}-\frac{5Bbc-6Ac^2}{c^3}\right)x+\frac{15Bb^2-16Bac-18Abc}{c^3}\right)+\frac{\left(5Bb^3-12Babc-6Ab^2c+8Aac^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{16c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*x/c - (5*B*b*c - 6*A*c^2)/c^3)*x + (15*B
*b^2 - 16*B*a*c - 18*A*b*c)/c^3) + 1/16*(5*B*b^3 - 12*B*a*b*c - 6*A*b^2*c +
 8*A*a*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^
(7/2)
```

maple [B] time = 0.06, size = 254, normalized size = 1.78

$$\frac{\sqrt{c\,x^2+bx+a}\;B\,x^2}{3c}-\frac{Aa\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{5}{2}}}+\frac{3Bab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{5}{2}}}-\frac{5B\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{7}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\;Ax}{2c}-\frac{5\sqrt{c\,x^2+bx+a}\;Bbx}{12c^2}-\frac{3\sqrt{c\,x^2+bx+a}\;Ab}{4c^2}-\frac{2\sqrt{c\,x^2+bx+a}\;Ba}{3c^2}+\frac{5\sqrt{c\,x^2+bx+a}\;B\,b^2}{8c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*B*x^2*(c*x^2+b*x+a)^(1/2)/c-5/12*B*b/c^2*x*(c*x^2+b*x+a)^(1/2)+5/8*B*b^
2/c^3*(c*x^2+b*x+a)^(1/2)-5/16*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))+3/4*B*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
-2/3*B*a/c^2*(c*x^2+b*x+a)^(1/2)+1/2*A*x/c*(c*x^2+b*x+a)^(1/2)-3/4*A*b/c^2*
(c*x^2+b*x+a)^(1/2)+3/8*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))-1/2*A*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (A + Bx)}{\sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.878 $\int \frac{x(A+Bx)}{\sqrt{a+bx+cx^2}} \, dx$

Optimal. Leaf size=92

$$\frac{\left(-4aBc-4Abc+3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

Rubi [A] time = 0.04, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {779, 621, 206}

$$\frac{\left(-4aBc-4Abc+3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((3*b*B - 4*A*c - 2*B*c*x)*Sqrt[a + b*x + c*x^2])/(4*c^2) + ((3*b^2*B - 4*
A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(8
*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{x(A+Bx)}{\sqrt{a+bx+cx^2}} \, dx = -\frac{(3bB-4Ac-2Bcx)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(3b^2B-4Abc-4aBc\right)\int \frac{1}{\sqrt{a+bx+cx^2}} \, dx}{8c^2}$$

$$= -\frac{(3bB-4Ac-2Bcx)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(3b^2B-4Abc-4aBc\right)\text{Subst}\left(\int \frac{1}{4c-x^2} \, dx, x, \ldots}{4c^2}$$

$$= -\frac{(3bB-4Ac-2Bcx)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(3b^2B-4Abc-4aBc\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{5/2}}$$

Mathematica [A]   time = 0.12, size = 90, normalized size = 0.98

$$\frac{\sqrt{a+x(b+cx)}\,(4Ac-3bB+2Bcx)}{4c^2}-\frac{\left(4aBc+4Abc-3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)}{8c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((-3*b*B + 4*A*c + 2*B*c*x)*Sqrt[a + x*(b + c*x)])/(4*c^2) - ((-3*b^2*B + 4
*A*b*c + 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(
8*c^(5/2))
```

IntegrateAlgebraic [A]   time = 0.44, size = 96, normalized size = 1.04

$$\frac{\left(4aBc+4Abc-3b^2B\right)\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{8c^{5/2}}+\frac{\sqrt{a+bx+cx^2}\,(4Ac-3bB+2Bcx)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((-3*b*B + 4*A*c + 2*B*c*x)*Sqrt[a + b*x + c*x^2])/(4*c^2) + ((-3*b^2*B + 4
*A*b*c + 4*a*B*c)*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]])/(
8*c^(5/2))
```

fricas [A]   time = 0.47, size = 213, normalized size = 2.32

$$\left[-\frac{\left(3\,Bb^2-4\,(Ba+Ab)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)-4\left(2\,Bc^2x-3\,Bbc+4\,Ac^2\right)\sqrt{cx^2+bx+a}}{16\,c^3},-\frac{\left(3\,Bb^2-4\,(Ba+Ab)c\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(2\,Bc^2x-3\,Bbc+4\,Ac^2\right)\sqrt{cx^2+bx+a}}{8\,c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/16*((3*B*b^2 - 4*(B*a + A*b)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
+ 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2*B*c^2*x - 3*B
*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^3, -1/8*((3*B*b^2 - 4*(B*a + A*b)*
c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2
+ b*c*x + a*c)) - 2*(2*B*c^2*x - 3*B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/
c^3]
```

giac [A]   time = 0.24, size = 90, normalized size = 0.98

$$\frac{1}{4}\,\sqrt{cx^2+bx+a}\left(\frac{2\,Bx}{c}-\frac{3\,Bb-4\,Ac}{c^2}\right)-\frac{\left(3\,Bb^2-4\,Bac-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x + a)*(2*B*x/c - (3*B*b - 4*A*c)/c^2) - 1/8*(3*B*b^2 -
4*B*a*c - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) -
 b))/c^(5/2)
```

maple [A]   time = 0.05, size = 155, normalized size = 1.68

$$-\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}-\frac{Ba\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\;Bx}{2c}+\frac{\sqrt{c\,x^2+bx+a}\;A}{c}-\frac{3\sqrt{c\,x^2+bx+a}\;Bb}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/2*B*x/c*(c*x^2+b*x+a)^(1/2)-3/4*B*b/c^2*(c*x^2+b*x+a)^(1/2)+3/8*B*b^2/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/2*B*a/c^(3/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+A/c*(c*x^2+b*x+a)^(1/2)-1/2*A*b/c^(3/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left (A+B\,x\right)}{\sqrt {c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x \left(A + B x\right)}{\sqrt{a + b x + c x^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.879 $\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=67

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {640, 621, 206}

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{2c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\operatorname{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 66, normalized size = 0.99

$$\frac{(2Ac-bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{3/2}}+\frac{B\sqrt{a+x(b+cx)}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + x*(b + c*x)])/c + ((-(b*B) + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt
[c]*Sqrt[a + x*(b + c*x)])])/(2*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.36, size = 69, normalized size = 1.03

$$\frac{(bB-2Ac)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{2c^{3/2}}+\frac{B\sqrt{a+bx+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + b*x + c*x^2])/c + ((b*B - 2*A*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*
Sqrt[a + b*x + c*x^2]])/(2*c^(3/2))
```

fricas [A] time = 0.45, size = 162, normalized size = 2.42

$$\left[\frac{4\sqrt{cx^2+bx+a}\,Bc-(Bb-2\,Ac)\sqrt{c}\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)}{4\,c^2},\frac{2\,\sqrt{cx^2+bx+a}\,Bc+(Bb-2\,Ac)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{-c}}{2\,(c^2x^2+bcx+ac)}\right)}{2\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(4*sqrt(c*x^2 + b*x + a)*B*c - (B*b - 2*A*c)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/c^2,
1/2*(2*sqrt(c*x^2 + b*x + a)*B*c + (B*b - 2*A*c)*sqrt(-c)*arctan(1/2*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)))/c^2]
```

giac [A] time = 0.24, size = 62, normalized size = 0.93

$$\frac{\sqrt{cx^2+bx+a}\,B}{c}+\frac{(Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.06, size = 81, normalized size = 1.21

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] B*(c*x^2+b*x+a)^(1/2)/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.56, size = 80, normalized size = 1.19

$$\frac{B\sqrt{c\,x^2+b\,x+a}}{c}+\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (B*(a + b*x + c*x^2)^(1/2))/c + (A*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x
^2)^(1/2)))/c^(1/2) - (B*b*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2
)))/(2*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.880 $\int \frac{A+Bx}{x\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=77

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{\sqrt{a}}$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {843, 621, 206, 724}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/Sqrt[a]) + (B*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\sqrt{a+bx+cx^2}}\,dx &= A\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx + B\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx \\ &= -\left((2A)\,\text{Subst}\left(\int \frac{1}{4a-x^2}\,dx, x, \frac{2a+bx}{\sqrt{a+bx+cx^2}}\right)\right) + (2B)\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b}{\sqrt{a+}}\right. \\ &= -\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{\sqrt{a}} + \frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 0.97

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}} - \frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/Sqrt[a]) + (B*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c]
```

IntegrateAlgebraic [A] time = 0.31, size = 80, normalized size = 1.04

$$\frac{2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{B\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2} + b + 2cx\right)}{\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])/Sqrt[a]
- (B*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/Sqrt[c]
```

fricas [A] time = 0.58, size = 468, normalized size = 6.08

$$\left[\frac{Ba\sqrt{c}\log\left(-8c^2x^2 - 8bcx - b^2 - 4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c} - 4ac\right) + A\sqrt{a}c\log\left(-\frac{8abx+(b^2+4ac)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)}{2ac}, -\frac{2Ba\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2(c^2x^2+bcx+ac)}\right) - A\sqrt{a}c\log\left(-\frac{8abx+(b^2+4ac)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)}{2ac}, \frac{2A\sqrt{-a}c\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2(acx^2+abx+a^2)}\right) + Ba\sqrt{c}\log\left(-8c^2x^2 - 8bcx - b^2 - 4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c} - 4ac\right)}{2ac}, \frac{A\sqrt{-a}c\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2(acx^2+abx+a^2)}\right) - Ba\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2(c^2x^2+bcx+ac)}\right)}{ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(c) - 4*a*c) + A*sqrt(a)*c*log(-(8*a*b*x + (b^2 + 4*a*c)*x^
2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2))/(a*c), -1/2*
(2*B*a*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*
x^2 + b*c*x + a*c)) - A*sqrt(a)*c*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2))/(a*c), 1/2*(2*A*sqrt(
-a)*c*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*
x + a^2)) + B*a*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/(a*c), (A*sqrt(-a)*c*arctan(1/2*sqrt(c*
x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - B*a*sqrt(-c)
*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a
*c)))/(a*c)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Value
```

maple [A] time = 0.05, size = 67, normalized size = 0.87

$$-\frac{A\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] B*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-A/a^(1/2)*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.47, size = 66, normalized size = 0.86

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}-\frac{A\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}{x}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(1/2) - (A*log(b/2
 + a/x + (a^(1/2)*(a + b*x + c*x^2)^(1/2))/x))/a^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x*sqrt(a + b*x + c*x**2)), x)
```

3.881 $\int \frac{A+Bx}{x^2\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=72

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+bx+cx^2}}{ax}$$

Rubi [A] time = 0.04, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {806, 724, 206}

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+bx+cx^2}}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + b*x + c*x^2])/(a*x)) + ((A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*
Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2*a^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\sqrt{a+bx+cx^2}}\,dx &= -\frac{A\sqrt{a+bx+cx^2}}{ax}-\frac{(Ab-2aB)\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+bx+cx^2}}{ax}+\frac{(Ab-2aB)\,\text{Subst}\left(\int \frac{1}{4a-x^2}\,dx, x, \frac{2a+bx}{\sqrt{a+bx+cx^2}}\right)}{a}\\
&= -\frac{A\sqrt{a+bx+cx^2}}{ax}+\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 70, normalized size = 0.97

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+x(b+cx)}}{ax}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + x*(b + c*x)])/(a*x)) + ((A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*
Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(2*a^(3/2))
```

IntegrateAlgebraic [A] time = 0.36, size = 70, normalized size = 0.97

$$\frac{(2aB-Ab)\tanh^{-1}\left(\frac{\sqrt{c}x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{A\sqrt{a+bx+cx^2}}{ax}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + b*x + c*x^2])/(a*x)) + ((-(A*b) + 2*a*B)*ArcTanh[(Sqrt[c]*x -
 Sqrt[a + b*x + c*x^2])/Sqrt[a]])/a^(3/2)
```

fricas [A] time = 0.53, size = 177, normalized size = 2.46

$$\left[-\frac{(2Ba-Ab)\sqrt{a}x\log\left(-\frac{8abx+(b^2+4ac)x^2+4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)+4\sqrt{cx^2+bx+a}Aa}{4a^2x}, \frac{(2Ba-Ab)\sqrt{-a}x\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2(acx^2+abx+a^2)}\right)-2\sqrt{cx^2+bx+a}Aa}{2a^2x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((2*B*a - A*b)*sqrt(a)*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c
*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*sqrt(c*x^2 + b*x + a)
*A*a)/(a^2*x), 1/2*((2*B*a - A*b)*sqrt(-a)*x*arctan(1/2*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*sqrt(c*x^2 + b*x + a)*
A*a)/(a^2*x)]
```

giac [A] time = 0.23, size = 110, normalized size = 1.53

$$\frac{(2Ba-Ab)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a}+\frac{\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)Ab+2Aa\sqrt{c}}{\left(\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)^2-a\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] (2*B*a - A*b)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-
a)*a) + ((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b + 2*A*a*sqrt(c))/(((sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2 - a)*a)
```

maple [A] time = 0.08, size = 94, normalized size = 1.31

$$\frac{Ab\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{B\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\sqrt{a}}{x}\right)}{\sqrt{a}}-\frac{\sqrt{cx^2+bx+a}\,A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -A*(c*x^2+b*x+a)^(1/2)/a/x+1/2*A*b/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2
)*a^(1/2))/x)-B/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.46, size = 87, normalized size = 1.21

$$\frac{A\,b\,\mathrm{atanh}\left(\frac{a+\frac{b\,x}{2}}{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}\right)}{2\,a^{3/2}}-\frac{A\,\sqrt{c\,x^2+b\,x+a}}{a\,x}-\frac{B\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}{x}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] (A*b*atanh((a + (b*x)/2)/(a^(1/2)*(a + b*x + c*x^2)^(1/2))))/(2*a^(3/2)) -
(A*(a + b*x + c*x^2)^(1/2))/(a*x) - (B*log(b/2 + a/x + (a^(1/2)*(a + b*x +
c*x^2)^(1/2))/x))/a^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*sqrt(a + b*x + c*x**2)), x)
```

3.882 $\int \frac{A+Bx}{x^3\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=116

$$-\frac{\left(-4aAc-4abB+3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{5/2}}+\frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x}-\frac{A\sqrt{a+bx+cx^2}}{2ax^2}$$

Rubi [A] time = 0.09, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {834, 806, 724, 206}

$$-\frac{\left(-4aAc-4abB+3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{5/2}}+\frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x}-\frac{A\sqrt{a+bx+cx^2}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(2*a*x^2) + ((3*A*b - 4*a*B)*Sqrt[a + b*x + c*x^
2])/(4*a^2*x) - ((3*A*b^2 - 4*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[
a]*Sqrt[a + b*x + c*x^2])])/(8*a^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} - \frac{\int \frac{\frac{1}{2}(3Ab-4aB)+Acx}{x^2\sqrt{a+bx+cx^2}}dx}{2a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} + \frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x} + \frac{\left(3Ab^2-4abB-4aAc\right)\int \frac{1}{x\sqrt{a+bx+c\ldots}}}{8a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} + \frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x} - \frac{\left(3Ab^2-4abB-4aAc\right)\text{Subst}\left(\int \frac{\ldots}{4\ldots}\right.}{4a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} + \frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x} - \frac{\left(3Ab^2-4abB-4aAc\right)\tanh^{-1}\left(\frac{\ldots}{2\sqrt{\ldots}}\right.}{8a^{5/2}}$$

Mathematica [**A**] time = 0.13, size = 95, normalized size = 0.82

$$\frac{\left(4aAc+4abB-3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{8a^{5/2}} + \frac{\sqrt{a+x(b+cx)}\,(3Abx-2a(A+2Bx))}{4a^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((3*A*b*x - 2*a*(A + 2*B*x))*Sqrt[a + x*(b + c*x)])/(4*a^2*x^2) + ((-3*A*b^
2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)]
)])/(8*a^(5/2))
```

IntegrateAlgebraic [**A**] time = 0.59, size = 131, normalized size = 1.13

$$\frac{3Ab^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{4a^{5/2}} + \frac{(Ac+bB)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}} + \frac{\sqrt{a+bx+cx^2}\,(-2aA-4aBx+3Abx)}{4a^2x^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((-2*a*A + 3*A*b*x - 4*a*B*x)*Sqrt[a + b*x + c*x^2])/(4*a^2*x^2) + ((b*B +
A*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/a^(3/2) + (3*
A*b^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])/(4*a^(5
/2))
```

fricas [**A**] time = 0.62, size = 235, normalized size = 2.03

$$\left[\frac{\left(4\,Bab-3\,Ab^2+4\,Aac\right)\sqrt{a}\,x^2\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2+4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)-4\left(2\,Aa^2+\left(4\,Ba^2-3\,Aab\right)x\right)\sqrt{cx^2+bx+a}}{16\,a^3x^2}, -\frac{\left(4\,Bab-3\,Ab^2+4\,Aac\right)\sqrt{-a}\,x^2\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{-a}}{2\left(acx^2+abx+a^2\right)}\right)+2\left(2\,Aa^2+\left(4\,Ba^2-3\,Aab\right)x\right)\sqrt{cx^2+bx+a}}{8\,a^3x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*((4*B*a*b - 3*A*b^2 + 4*A*a*c)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a
*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(2*
A*a^2 + (4*B*a^2 - 3*A*a*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^2), -1/8*((4*B
*a*b - 3*A*b^2 + 4*A*a*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*
x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(2*A*a^2 + (4*B*a^2 - 3*A*a*
b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^2)]
```

giac [**B**] time = 0.29, size = 303, normalized size = 2.61

$$-\frac{\left(4\,Bab-3\,Ab^2+4\,Aac\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a^2} + \frac{4\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^3Bab-3\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^3Ab^2+4\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^3Aac+8\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2Ba^2\sqrt{c}-4\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Ba^2b+5\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Aab^2+4\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Aa^2c-8\,Ba^3\sqrt{c}+8\,Aa^2b\sqrt{c}}{4\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2-a\right)^2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*(4*B*a*b - 3*A*b^2 + 4*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3
*B*a*b - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^3*A*a*c + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2
*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b + 5*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2
*c - 8*B*a^3*sqrt(c) + 8*A*a^2*b*sqrt(c))/(((sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2 - a)^2*a^2)
```

maple [A] time = 0.06, size = 176, normalized size = 1.52

$$\frac{Ac\ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{3A b^2\ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}+\frac{Bb\ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}+\frac{3\sqrt{c x^2+bx+a}\,Ab}{4a^2x}-\frac{\sqrt{c x^2+bx+a}\,B}{ax}-\frac{\sqrt{c x^2+bx+a}\,A}{2a x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/2*A*(c*x^2+b*x+a)^(1/2)/a/x^2+3/4*A/a^2*b/x*(c*x^2+b*x+a)^(1/2)-3/8*A/a^
(5/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/2*A*c/a^(3/2)*ln(
(b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a/x*(c*x^2+b*x+a)^(1/2)+1/2*B*
b/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^3\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*sqrt(a + b*x + c*x**2)), x)
```

3.883 $\int \frac{A+Bx}{x^4\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=167

$$-\frac{\sqrt{a+bx+cx^2}\left(-16aAc-18abB+15Ab^2\right)}{24a^3x}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}+\frac{\left(8a^2Bc-12aAbc-6ab^2B+5Ab^3\right)\text{t}}{16a^{7/2}}$$

Rubi [A] time = 0.16, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {834, 806, 724, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-16aAc-18abB+15Ab^2\right)}{24a^3x}+\frac{\left(8a^2Bc-12aAbc-6ab^2B+5Ab^3\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{7/2}}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}-\frac{A\sqrt{a+bx+cx^2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(3*a*x^3) + ((5*A*b - 6*a*B)*Sqrt[a + b*x + c*x^
2])/(12*a^2*x^2) - ((15*A*b^2 - 18*a*b*B - 16*a*A*c)*Sqrt[a + b*x + c*x^2])
/(24*a^3*x) + ((5*A*b^3 - 6*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*ArcTanh[(2*a
+ b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(16*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^4\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{3ax^3} - \frac{\int \frac{\frac{1}{2}(5Ab-6aB)+2Acx}{x^3\sqrt{a+bx+cx^2}}\,dx}{3a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3} + \frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2} + \frac{\int \frac{\frac{1}{4}\left(15Ab^2-18abB-16aAc\right)+\frac{1}{2}(5Ab-6aB}{x^2\sqrt{a+bx+cx^2}}}{6a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3} + \frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2} - \frac{\left(15Ab^2-18abB-16aAc\right)\sqrt{a+}}{24a^3x}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3} + \frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2} - \frac{\left(15Ab^2-18abB-16aAc\right)\sqrt{a+}}{24a^3x}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3} + \frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2} - \frac{\left(15Ab^2-18abB-16aAc\right)\sqrt{a+}}{24a^3x}$$

Mathematica [A] time = 0.14, size = 132, normalized size = 0.79

$$\frac{\left(8a^2Bc-12aAbc-6ab^2B+5Ab^3\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{16a^{7/2}} - \frac{\sqrt{a+x(b+cx)}\left(4a^2(2A+3Bx)-2ax(5Ab+8Acx+9bBx)+15Ab^2x^2\right)}{24a^3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -1/24*(Sqrt[a + x*(b + c*x)]*(15*A*b^2*x^2 + 4*a^2*(2*A + 3*B*x) - 2*a*x*(5
*A*b + 9*b*B*x + 8*A*c*x)))/(a^3*x^3) + ((5*A*b^3 - 6*a*b^2*B - 12*a*A*b*c
+ 8*a^2*B*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(16*a^
(7/2))
```

IntegrateAlgebraic [A] time = 0.85, size = 174, normalized size = 1.04

$$-\frac{3\left(2Abc+b^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{4a^{5/2}} + \frac{\left(-8a^2Bc-5Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{c}x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{8a^{7/2}} + \frac{\sqrt{a+bx+cx^2}\left(-8a^2A-12a^2Bx+10aAbx+16aAcx^2+18abBx^2-15Ab^2x^2\right)}{24a^3x^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-8*a^2*A + 10*a*A*b*x - 12*a^2*B*x - 15*A*b^2*x^2 +
 18*a*b*B*x^2 + 16*a*A*c*x^2))/(24*a^3*x^3) + ((-5*A*b^3 - 8*a^2*B*c)*ArcTa
nh[(Sqrt[c]*x - Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(8*a^(7/2)) - (3*(b^2*B +
2*A*b*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(4*a^(5/2
))
```

fricas [A] time = 0.73, size = 321, normalized size = 1.92

$$\left[\frac{3\left(6Bab^2-5Ab^3-4\left(2Ba^2-3Aab\right)c\right)\sqrt{a}x^3\log\left(-\frac{8abx+\left(b^2+4ac\right)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)-4\left(8Aa^3-\left(18Ba^2b-15Aab^2+16Aa^2c\right)x^2+2\left(6Ba^3-5Aa^2b\right)x\right)\sqrt{cx^2+bx+a}}{96a^4x^3}, \frac{3\left(6Bab^2-5Ab^3-4\left(2Ba^2-3Aab\right)c\right)\sqrt{-a}x^3\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2\left(acx^2+abx+a^2\right)}\right)-2\left(8Aa^3-\left(18Ba^2b-15Aab^2+16Aa^2c\right)x^2+2\left(6Ba^3-5Aa^2b\right)x\right)\sqrt{cx^2+bx+a}}{48a^4x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*sqrt(a)*x^3*log(-(
8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) +
 8*a^2)/x^2) - 4*(8*A*a^3 - (18*B*a^2*b - 15*A*a*b^2 + 16*A*a^2*c)*x^2 + 2*
(6*B*a^3 - 5*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^3), 1/48*(3*(6*B*a*b
^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*sqrt(-a)*x^3*arctan(1/2*sqrt(c*x^2
+ b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(8*A*a^3 - (18
```

```
*B*a^2*b - 15*A*a*b^2 + 16*A*a^2*c)*x^2 + 2*(6*B*a^3 - 5*A*a^2*b)*x)*sqrt(c
*x^2 + b*x + a))/(a^4*x^3)]
```

giac [B]   time = 0.24, size = 511, normalized size = 3.06

$$\frac{\left(6 Bab^2 - 5 Ab^3 - 8 Ba^2c + 12 Aabc\right) \arctan\left(-\frac{\sqrt{c}x - \sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{8\sqrt{-a}\,a^3} - \frac{18\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^5 Bab^2 - 15\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^5 Ab^3 - 24\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^5 Ba^2c + 36\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^5 Aabc - 48\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^3 Ba^2b^2 + 40\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^3 Aab^3 - 96\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^3 Aa^2bc - 48\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^2 Ba^3b\sqrt{c} - 96\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^2 Aa^3c^{\frac{3}{2}} + 30\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right) Ba^3b^2 - 33\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right) Aa^2b^3 + 24\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right) Ba^4c - 36\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right) Aa^3bc + 48 Ba^4b\sqrt{c} - 48 Aa^3b^2\sqrt{c} + 32 Aa^4c^{\frac{3}{2}}}{24\left(\left(\sqrt{c}x - \sqrt{cx^2+bx+a}\right)^2 - a\right)^3 a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*(6*B*a*b^2 - 5*A*b^3 - 8*B*a^2*c + 12*A*a*b*c)*arctan(-(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^3) - 1/24*(18*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*B*a*b^2 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^3
 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c + 36*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*A*a*b*c - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^
2*b^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3 - 96*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*A*a^2*b*c - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*B*a^3*b*sqrt(c) - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^3*c^(3/2)
 + 30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2 - 33*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*A*a^2*b^3 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*
c - 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c + 48*B*a^4*b*sqrt(c) -
 48*A*a^3*b^2*sqrt(c) + 32*A*a^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2 - a)^3*a^3)
```

maple [A]   time = 0.07, size = 283, normalized size = 1.69

$$-\frac{3Abc\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{4a^{\frac{5}{2}}} + \frac{5Ab^3\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{7}{2}}} + \frac{Bc\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}} - \frac{3Bb^2\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}} + \frac{2\sqrt{cx^2+bx+a}\,Ac}{3a^2x} - \frac{5\sqrt{cx^2+bx+a}\,Ab^2}{8a^3x} + \frac{3\sqrt{cx^2+bx+a}\,Bb}{4a^2x} + \frac{5\sqrt{cx^2+bx+a}\,Ab}{12a^2x^2} - \frac{\sqrt{cx^2+bx+a}\,B}{2ax^2} - \frac{\sqrt{cx^2+bx+a}\,A}{3ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/3*A*(c*x^2+b*x+a)^(1/2)/a/x^3+5/12*A/a^2*b/x^2*(c*x^2+b*x+a)^(1/2)-5/8*A
/a^3*b^2/x*(c*x^2+b*x+a)^(1/2)+5/16*A/a^(7/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)-3/4*A/a^(5/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+2/3*A*c/a^2/x*(c*x^2+b*x+a)^(1/2)-1/2*B/a/x^2*(c*x^2+b*x+a)^(1/2)
+3/4*B/a^2*b/x*(c*x^2+b*x+a)^(1/2)-3/8*B/a^(5/2)*b^2*ln((b*x+2*a+2*(c*x^2+b
*x+a)^(1/2)*a^(1/2))/x)+1/2*B*c/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a
^(1/2))/x)
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^4\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^4\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**4*sqrt(a + b*x + c*x**2)), x)
```

3.884 $\int \frac{A+Bx}{x^5\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=231

$$-\frac{\sqrt{a+bx+cx^2}\left(-36aAc-40abB+35Ab^2\right)}{96a^3x^2}+\frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3}+\frac{\left(8abB\left(5b^2-12ac\right)-A\left(48a^2c^2-12\right.\right.}{12}$$

Rubi [A] time = 0.28, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {834, 806, 724, 206}

$$\frac{\left(8abB\left(5b^2-12ac\right)-A\left(48a^2c^2-120ab^2c+35b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{9/2}}+\frac{\sqrt{a+bx+cx^2}\left(128a^2Bc-220aAbc-120ab^2B+105Ab^3\right)}{192a^4x}-\frac{\sqrt{a+bx+cx^2}\left(-36aAc-40abB+35Ab^2\right)}{96a^3x^2}+\frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3}-\frac{A\sqrt{a+bx+cx^2}}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(4*a*x^4) + ((7*A*b - 8*a*B)*Sqrt[a + b*x + c*x^
2])/(24*a^2*x^3) - ((35*A*b^2 - 40*a*b*B - 36*a*A*c)*Sqrt[a + b*x + c*x^2])
/(96*a^3*x^2) + ((105*A*b^3 - 120*a*b^2*B - 220*a*A*b*c + 128*a^2*B*c)*Sqrt
[a + b*x + c*x^2])/(192*a^4*x) + ((8*a*b*B*(5*b^2 - 12*a*c) - A*(35*b^4 - 1
20*a*b^2*c + 48*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x
^2])])/(128*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^5\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} - \frac{\int \frac{\frac{1}{2}(7Ab-8aB)+3Acx}{x^4\sqrt{a+bx+cx^2}}\,dx}{4a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} + \frac{\int \frac{\frac{1}{4}\left(35Ab^2-40abB-36aAc\right)+(7Ab-8aB)\ldots}{x^3\sqrt{a+bx+cx^2}}\ldots}{12a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a\ldots}}{96a^3x^2}\ldots$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a\ldots}}{96a^3x^2}\ldots$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a\ldots}}{96a^3x^2}\ldots$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a\ldots}}{96a^3x^2}\ldots$$

Mathematica [A] time = 0.23, size = 176, normalized size = 0.76

$$\frac{\sqrt{a+x(b+cx)}\left(-16a^3(3A+4Bx)+8a^2x(A(7b+9cx)+2Bx(5b+8cx))-10abx^2(7Ab+22Acx+12bBx)+105Ab^3x^3\right)}{192a^4x^4}-\frac{\left(A\left(48a^2c^2-120ab^2c+35b^4\right)+8abB\left(12ac-5b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{128a^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(105*A*b^3*x^3 - 16*a^3*(3*A + 4*B*x) - 10*a*b*x^2*(
7*A*b + 12*b*B*x + 22*A*c*x) + 8*a^2*x*(2*B*x*(5*b + 8*c*x) + A*(7*b + 9*c*
x))))/(192*a^4*x^4) - ((8*a*b*B*(-5*b^2 + 12*a*c) + A*(35*b^4 - 120*a*b^2*c
 + 48*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(12
8*a^(9/2))
```

IntegrateAlgebraic [A] time = 1.24, size = 229, normalized size = 0.99

$$\frac{35Ab^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{64a^{9/2}}+\frac{\left(-6aAc^2-12abBc+15Ab^2c+5b^3B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{8a^{7/2}}+\frac{\sqrt{a+bx+cx^2}\left(-48a^3A-64a^3Bx+56a^2Abx+72a^2Acx^2+80a^2bBx^2+128a^2Bcx^3-70aAb^2x^2-220aAbcx^3-120ab^2Bx^3+105Ab^3x^3\right)}{192a^4x^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^5*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-48*a^3*A + 56*a^2*A*b*x - 64*a^3*B*x - 70*a*A*b^2*
x^2 + 80*a^2*b*B*x^2 + 72*a^2*A*c*x^2 + 105*A*b^3*x^3 - 120*a*b^2*B*x^3 - 2
20*a*A*b*c*x^3 + 128*a^2*B*c*x^3))/(192*a^4*x^4) + ((5*b^3*B + 15*A*b^2*c -
 12*a*b*B*c - 6*a*A*c^2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqr
t[a]])/(8*a^(7/2)) + (35*A*b^4*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x +
 c*x^2]/Sqrt[a]])/(64*a^(9/2))
```

fricas [A] time = 1.00, size = 425, normalized size = 1.84

$$\left[-\frac{3\left(40Bab^3-35Ab^4-48Aa^2c^2-24\left(4Ba^2b-5Aab^2\right)c\right)\sqrt{a}x^4\log\left(-\frac{8abx+\left(b^2+4ac\right)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)+4\left(48Aa^4+\left(120Ba^2b^2-105Aab^3-4\left(32Ba^3-55Aa^2b\right)c\right)x^3-2\left(40Ba^3b-35Aa^2b^2+36Aa^3c\right)x^2+8\left(8Ba^4-7Aa^3b\right)x\right)\sqrt{cx^2+bx+a}}{768a^5x^4}, -\frac{3\left(40Bab^3-35Ab^4-48Aa^2c^2-24\left(4Ba^2b-5Aab^2\right)c\right)\sqrt{-a}x^4\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2\left(acx^2+abx+a^2\right)}\right)+2\left(48Aa^4+\left(120Ba^2b^2-105Aab^3-4\left(32Ba^3-55Aa^2b\right)c\right)x^3-2\left(40Ba^3b-35Aa^2b^2+36Aa^3c\right)x^2+8\left(8Ba^4-7Aa^3b\right)x\right)\sqrt{cx^2+bx+a}}{384a^5x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(40*B*a*b^3 - 35*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*b - 5*A*a*b^
2)*c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(48*A*a^4 + (120*B*a^2*b^2 - 105*A
*a*b^3 - 4*(32*B*a^3 - 55*A*a^2*b)*c)*x^3 - 2*(40*B*a^3*b - 35*A*a^2*b^2 +
36*A*a^3*c)*x^2 + 8*(8*B*a^4 - 7*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^
4), -1/384*(3*(40*B*a*b^3 - 35*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*b - 5*A*a
*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)
/(a*c*x^2 + a*b*x + a^2)) + 2*(48*A*a^4 + (120*B*a^2*b^2 - 105*A*a*b^3 - 4*
(32*B*a^3 - 55*A*a^2*b)*c)*x^3 - 2*(40*B*a^3*b - 35*A*a^2*b^2 + 36*A*a^3*c)
*x^2 + 8*(8*B*a^4 - 7*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^4)]
```

giac [B] time = 0.30, size = 884, normalized size = 3.83

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/64*(40*B*a*b^3 - 35*A*b^4 - 96*B*a^2*b*c + 120*A*a*b^2*c - 48*A*a^2*c^2)
*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/1
92*(120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 - 105*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^7*A*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*
a^2*b*c + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^2*c - 144*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*c^2 - 440*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^5*B*a^2*b^3 + 385*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b^4 + 1
056*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^3*b*c - 1320*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^5*A*a^2*b^2*c + 528*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^3*c^2 + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^4*c^(3/2) + 58
4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 - 511*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*A*a^2*b^4 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*
a^4*b*c + 1752*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^2*c + 528*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 384*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2*B*a^4*b^2*sqrt(c) - 1024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
*B*a^5*c^(3/2) + 2048*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c^(3/2)
 - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 + 279*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*A*a^3*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a
^5*b*c + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c - 144*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*A*a^5*c^2 - 384*B*a^5*b^2*sqrt(c) + 384*A*a^4*b
^3*sqrt(c) + 256*B*a^6*c^(3/2) - 512*A*a^5*b*c^(3/2))/(((sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2 - a)^4*a^4)
```

maple [B] time = 0.06, size = 417, normalized size = 1.81

$$-\frac{3 A c^2 \ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{8 a^{\frac{5}{2}}}+\frac{15 A b^2 c \ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{16 a^{\frac{7}{2}}}-\frac{35 A b^4 \ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{128 a^{\frac{9}{2}}}-\frac{3 B b c \ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{4 a^{\frac{5}{2}}}+\frac{5 B b^3 \ln\left(\frac{bx+2a+2\sqrt{c x^2+bx+a}\,\sqrt{a}}{x}\right)}{16 a^{\frac{7}{2}}}-\frac{55\sqrt{c x^2+bx+a}\,A b c}{48 a^3 x}+\frac{35\sqrt{c x^2+bx+a}\,A b^3}{64 a^4 x}+\frac{2\sqrt{c x^2+bx+a}\,B c}{3 a^2 x}-\frac{5\sqrt{c x^2+bx+a}\,B b^2}{8 a^3 x}+\frac{3\sqrt{c x^2+bx+a}\,A c}{8 a^2 x^2}-\frac{35\sqrt{c x^2+bx+a}\,A b^2}{96 a^3 x^2}+\frac{5\sqrt{c x^2+bx+a}\,B b}{12 a^2 x^2}+\frac{7\sqrt{c x^2+bx+a}\,A b}{24 a^2 x^3}-\frac{\sqrt{c x^2+bx+a}\,B}{3 a x^3}-\frac{\sqrt{c x^2+bx+a}\,A}{4 a x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/4*A*(c*x^2+b*x+a)^(1/2)/a/x^4+7/24*A/a^2*b/x^3*(c*x^2+b*x+a)^(1/2)-35/96
*A/a^3*b^2/x^2*(c*x^2+b*x+a)^(1/2)+35/64*A/a^4*b^3/x*(c*x^2+b*x+a)^(1/2)-35
/128*A/a^(9/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15/16*A/a^
(7/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-55/48*A/a^3*b*c/x
*(c*x^2+b*x+a)^(1/2)+3/8*A*c/a^2/x^2*(c*x^2+b*x+a)^(1/2)-3/8*A*c^2/a^(5/2)*
ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/3*B/a/x^3*(c*x^2+b*x+a)^(1/
2)+5/12*B/a^2*b/x^2*(c*x^2+b*x+a)^(1/2)-5/8*B/a^3*b^2/x*(c*x^2+b*x+a)^(1/2)
+5/16*B/a^(7/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-3/4*B/a^(
5/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+2/3*B*c/a^2/x*(c*x^2
+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^5\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^5*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^5\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**5*sqrt(a + b*x + c*x**2)), x)
```

3.885 $\int \frac{A+Bx}{x^6\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=306

$$-\frac{\sqrt{a+bx+cx^2}\left(-64aAc-70abB+63Ab^2\right)}{240a^3x^3}+\frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4}-\frac{\left(2aB\left(48a^2c^2-120ab^2c+35b^4\right)-\ldots\right.}{}$$

Rubi [A] time = 0.40, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(50abB\left(21b^2-44ac\right)-A\left(1024a^2c^2-2940ab^2c+945b^4\right)\right)}{1920a^5x}-\frac{\left(2aB\left(48a^2c^2-120ab^2c+35b^4\right)-A\left(240a^2bc^2-280ab^3c+63b^5\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{11/2}}+\frac{\sqrt{a+bx+cx^2}\left(360a^2Bc-644aAbc-350ab^2B+315Ab^3\right)}{960a^4x^2}-\frac{\sqrt{a+bx+cx^2}\left(-64aAc-70abB+63Ab^2\right)}{240a^3x^3}+\frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4}-\frac{A\sqrt{a+bx+cx^2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^6*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(5*a*x^5) + ((9*A*b - 10*a*B)*Sqrt[a + b*x + c*x
^2])/(40*a^2*x^4) - ((63*A*b^2 - 70*a*b*B - 64*a*A*c)*Sqrt[a + b*x + c*x^2]
)/(240*a^3*x^3) + ((315*A*b^3 - 350*a*b^2*B - 644*a*A*b*c + 360*a^2*B*c)*Sq
rt[a + b*x + c*x^2])/(960*a^4*x^2) + ((50*a*b*B*(21*b^2 - 44*a*c) - A*(945*
b^4 - 2940*a*b^2*c + 1024*a^2*c^2))*Sqrt[a + b*x + c*x^2])/(1920*a^5*x) - (
(2*a*B*(35*b^4 - 120*a*b^2*c + 48*a^2*c^2) - A*(63*b^5 - 280*a*b^3*c + 240*
a^2*b*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(256*a^
(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
```

```
IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^6\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} - \frac{\int \frac{\frac{1}{2}(9Ab-10aB)+4Acx}{x^5\sqrt{a+bx+cx^2}}\,dx}{5a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} + \frac{\int \frac{\frac{1}{4}\left(63Ab^2-70abB-64aAc\right)+\frac{3}{2}(9Ab-1\ldots}{x^4\sqrt{a+bx+cx^2}}}{20a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a\ldots}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a\ldots}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a\ldots}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a\ldots}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a\ldots}}{240a^3x^3}$$

Mathematica [A] time = 0.30, size = 233, normalized size = 0.76

$$\frac{\left(A\left(240a^2bc^2-280ab^3c+63b^5\right)-2aB\left(48a^2c^2-120ab^2c+35b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{256a^{11/2}} - \frac{\sqrt{a+x(b+cx)}\left(96a^4(4A+5Bx)-16a^3x(A(27b+32cx)+5Bx(7b+9cx))+4a^2x^2\left(2A\left(63b^2+161bcx+128c^2x^2\right)+25bBx(7b+22cx)\right)-210ab^2x^3(3Ab+14Acx+5bBx)+945Ab^4x^4\right)}{1920a^5x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^6*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -1/1920*(Sqrt[a + x*(b + c*x)]*(945*A*b^4*x^4 + 96*a^4*(4*A + 5*B*x) - 210*
a*b^2*x^3*(3*A*b + 5*b*B*x + 14*A*c*x) - 16*a^3*x*(5*B*x*(7*b + 9*c*x) + A*
(27*b + 32*c*x)) + 4*a^2*x^2*(25*b*B*x*(7*b + 22*c*x) + 2*A*(63*b^2 + 161*b
*c*x + 128*c^2*x^2))))/(a^5*x^5) + ((-2*a*B*(35*b^4 - 120*a*b^2*c + 48*a^2*
c^2) + A*(63*b^5 - 280*a*b^3*c + 240*a^2*b*c^2))*ArcTanh[(2*a + b*x)/(2*Sqr
t[a]*Sqrt[a + x*(b + c*x)])])/(256*a^(11/2))
```

IntegrateAlgebraic [A] time = 1.82, size = 300, normalized size = 0.98

$$\frac{5\left(24aAbc^2+24ab^2Bc-28Ab^3c-7b^4B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{64a^{9/2}} + \frac{3\left(32a^3Bc^2-21Ab^5\right)\tanh^{-1}\left(\frac{\sqrt{c}x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{128a^{11/2}} + \frac{\sqrt{a+bx+cx^2}\left(-384a^4A-480a^4Bx+432a^3Abx+512a^3Acx^2+560a^3bBx^2+720a^3Bcx^3-504a^2Ab^2x^2-1288a^2Abcx^3-1024a^2Ac^2x^4-700a^2b^2Bx^3-2200a^2bBcx^4+630aAb^3x^3+2940aAb^2cx^4+1050ab^3Bx^4-945Ab^4x^4\right)}{1920a^5x^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^6*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-384*a^4*A + 432*a^3*A*b*x - 480*a^4*B*x - 504*a^2*
A*b^2*x^2 + 560*a^3*b*B*x^2 + 512*a^3*A*c*x^2 + 630*a*A*b^3*x^3 - 700*a^2*b
^2*B*x^3 - 1288*a^2*A*b*c*x^3 + 720*a^3*B*c*x^3 - 945*A*b^4*x^4 + 1050*a*b^
3*B*x^4 + 2940*a*A*b^2*c*x^4 - 2200*a^2*b*B*c*x^4 - 1024*a^2*A*c^2*x^4))/(1
920*a^5*x^5) + (3*(-21*A*b^5 + 32*a^3*B*c^2)*ArcTanh[(Sqrt[c]*x - Sqrt[a +
b*x + c*x^2])/Sqrt[a]])/(128*a^(11/2)) + (5*(-7*b^4*B - 28*A*b^3*c + 24*a*b
^2*B*c + 24*a*A*b*c^2)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[
a]])/(64*a^(9/2))
```

fricas [A] time = 1.94, size = 557, normalized size = 1.82

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(70*B*a*b^4 - 63*A*b^5 + 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 40*(6*
B*a^2*b^2 - 7*A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4
*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(384*A*a^5 - (
1050*B*a^2*b^3 - 945*A*a*b^4 - 1024*A*a^3*c^2 - 20*(110*B*a^3*b - 147*A*a^2
*b^2)*c)*x^4 + 2*(350*B*a^3*b^2 - 315*A*a^2*b^3 - 4*(90*B*a^4 - 161*A*a^3*b
)*c)*x^3 - 8*(70*B*a^4*b - 63*A*a^3*b^2 + 64*A*a^4*c)*x^2 + 48*(10*B*a^5 -
9*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^5), 1/3840*(15*(70*B*a*b^4 - 63
*A*b^5 + 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - 7*A*a*b^3)*c)*sqr
t(-a)*x^5*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 +
a*b*x + a^2)) - 2*(384*A*a^5 - (1050*B*a^2*b^3 - 945*A*a*b^4 - 1024*A*a^3*c
^2 - 20*(110*B*a^3*b - 147*A*a^2*b^2)*c)*x^4 + 2*(350*B*a^3*b^2 - 315*A*a^2
*b^3 - 4*(90*B*a^4 - 161*A*a^3*b)*c)*x^3 - 8*(70*B*a^4*b - 63*A*a^3*b^2 + 6
4*A*a^4*c)*x^2 + 48*(10*B*a^5 - 9*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x
^5)]
```

giac [B] time = 0.27, size = 1266, normalized size = 4.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/128*(70*B*a*b^4 - 63*A*b^5 - 240*B*a^2*b^2*c + 280*A*a*b^3*c + 96*B*a^3*c
^2 - 240*A*a^2*b*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))
/(sqrt(-a)*a^5) - 1/1920*(1050*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^
4 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*b^5 - 3600*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^9*B*a^2*b^2*c + 4200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^9*A*a*b^3*c + 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 - 3600
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b*c^2 - 4900*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*B*a^2*b^4 + 4410*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7
*A*a*b^5 + 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^2*c - 19600*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c - 6720*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^7*B*a^4*c^2 + 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7
*A*a^3*b*c^2 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^3*b^4 - 8064*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^5 - 30720*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*B*a^4*b^2*c + 35840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
5*A*a^3*b^3*c - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b*c^2 - 2
0480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2) - 20480*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*c^(5/2) - 7900*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^3*B*a^4*b^4 + 7110*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*
b^5 + 13920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c - 31600*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^3*c + 6720*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*B*a^6*c^2 - 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^
5*b*c^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^5*b^3*sqrt(c) + 25
600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) - 38400*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^2*A*a^5*b^2*c^(3/2) + 10240*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^2*A*a^6*c^(5/2) + 2790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*
B*a^5*b^4 - 2895*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^5 + 3600*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^2*c - 4200*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*A*a^5*b^3*c - 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*c^2
 + 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b*c^2 + 3840*B*a^6*b^3*sq
rt(c) - 3840*A*a^5*b^4*sqrt(c) - 5120*B*a^7*b*c^(3/2) + 7680*A*a^6*b^2*c^(3
```

```
/2) - 2048*A*a^7*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^5*a^
5)
```

maple [B] time = 0.07, size = 578, normalized size = 1.89

$$\frac{15Abc^{2}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{7}{2}}}-\frac{35Ab^{3}c\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{32a^{\frac{9}{2}}}+\frac{63Ab^{5}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{256a^{\frac{11}{2}}}-\frac{3Bc^{2}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}+\frac{15Bb^{2}c\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{7}{2}}}-\frac{35Bb^{4}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{9}{2}}}-\frac{8\sqrt{cx^{2}+bx+a}\,Ac^{2}}{15a^{3}x}+\frac{49\sqrt{cx^{2}+bx+a}\,Ab^{2}c}{32a^{4}x}-\frac{63\sqrt{cx^{2}+bx+a}\,Ab^{4}}{128a^{5}x}-\frac{55\sqrt{cx^{2}+bx+a}\,Bbc}{48a^{3}x}+\frac{35\sqrt{cx^{2}+bx+a}\,Bb^{3}}{64a^{4}x}-\frac{161\sqrt{cx^{2}+bx+a}\,Abc}{240a^{3}x^{2}}+\frac{21\sqrt{cx^{2}+bx+a}\,Ab^{3}}{64a^{4}x^{2}}+\frac{3\sqrt{cx^{2}+bx+a}\,Bc}{8a^{2}x^{2}}-\frac{35\sqrt{cx^{2}+bx+a}\,Bb^{2}}{96a^{3}x^{2}}+\frac{4\sqrt{cx^{2}+bx+a}\,Ac}{15a^{2}x^{3}}-\frac{21\sqrt{cx^{2}+bx+a}\,Ab^{2}}{80a^{3}x^{3}}+\frac{7\sqrt{cx^{2}+bx+a}\,Bb}{24a^{2}x^{3}}+\frac{9\sqrt{cx^{2}+bx+a}\,Ab}{40a^{2}x^{4}}-\frac{\sqrt{cx^{2}+bx+a}\,B}{4ax^{4}}-\frac{\sqrt{cx^{2}+bx+a}\,A}{5ax^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/5*A*(c*x^2+b*x+a)^(1/2)/a/x^5+9/40*A/a^2*b/x^4*(c*x^2+b*x+a)^(1/2)-21/80
*A/a^3*b^2/x^3*(c*x^2+b*x+a)^(1/2)+21/64*A/a^4*b^3/x^2*(c*x^2+b*x+a)^(1/2)-
63/128*A/a^5*b^4/x*(c*x^2+b*x+a)^(1/2)+63/256*A/a^(11/2)*b^5*ln((b*x+2*a+2*
(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-35/32*A/a^(9/2)*b^3*c*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)+49/32*A/a^4*b^2*c/x*(c*x^2+b*x+a)^(1/2)-161/240*A/
a^3*b*c/x^2*(c*x^2+b*x+a)^(1/2)+15/16*A/a^(7/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)+4/15*A*c/a^2/x^3*(c*x^2+b*x+a)^(1/2)-8/15*A*c^2/a^
3/x*(c*x^2+b*x+a)^(1/2)-1/4*B/a/x^4*(c*x^2+b*x+a)^(1/2)+7/24*B/a^2*b/x^3*(c
*x^2+b*x+a)^(1/2)-35/96*B/a^3*b^2/x^2*(c*x^2+b*x+a)^(1/2)+35/64*B/a^4*b^3/x
*(c*x^2+b*x+a)^(1/2)-35/128*B/a^(9/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)
*a^(1/2))/x)+15/16*B/a^(7/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2
))/x)-55/48*B/a^3*b*c/x*(c*x^2+b*x+a)^(1/2)+3/8*B*c/a^2/x^2*(c*x^2+b*x+a)^(
1/2)-3/8*B*c^2/a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^6\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^6*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^6*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{6}\sqrt{a+bx+cx^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**6/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**6*sqrt(a + b*x + c*x**2)), x)
```

3.886 $\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}} dx$

Optimal. Leaf size=280

$$\frac{\sqrt{a+bx+cx^2}\left(256a^2Bc^2-2cx\left(72aAc^2-116abBc-30Ab^2c+35b^3B\right)+312aAbc^2-460ab^2Bc-90Ab^3c+105\right.}{24c^4\left(b^2-4ac\right)}$$

Rubi [A] time = 0.27, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {818, 832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(256a^2Bc^2-2cx\left(72aAc^2-116abBc-30Ab^2c+35b^3B\right)+312aAbc^2-460ab^2Bc-90Ab^3c+105b^4B\right)}{24c^4\left(b^2-4ac\right)}+\frac{x^2\sqrt{a+bx+cx^2}\left(-16aBc-6Abc+7b^2B\right)}{3c^2\left(b^2-4ac\right)}-\frac{\left(24aAc^2-60abBc-30Ab^2c+35b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16c^{9/2}}-\frac{2x^3\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*x^3*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*S
qrt[a + b*x + c*x^2]) + ((7*b^2*B - 6*A*b*c - 16*a*B*c)*x^2*Sqrt[a + b*x +
c*x^2])/(3*c^2*(b^2 - 4*a*c)) + ((105*b^4*B - 90*A*b^3*c - 460*a*b^2*B*c +
312*a*A*b*c^2 + 256*a^2*B*c^2 - 2*c*(35*b^3*B - 30*A*b^2*c - 116*a*b*B*c +
72*a*A*c^2)*x)*Sqrt[a + b*x + c*x^2])/(24*c^4*(b^2 - 4*a*c)) - ((35*b^3*B -
 30*A*b^2*c - 60*a*b*B*c + 24*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[
a + b*x + c*x^2])])/(16*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
```

```
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{2\int \frac{x^2\left(3a(bB-2Ac)+\frac{1}{2}\left(7b^2B-6Abc-16aBc\right)x\right)}{\sqrt{a+bx+cx^2}}}{c\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

Mathematica [A] time = 0.43, size = 300, normalized size = 1.07

$$\frac{2\sqrt{c}\left(-256a^3Bc^2+4a^2c\left(-2bc(39A+61Bx)+4c^2x(9A-8Bx)+115b^2B\right)+a\left(10b^3c(9A+53Bx)+4b^2c^2x(43Bx-93A)-8bc^3x^2(15A+7Bx)+16c^4x^3(3A+2Bx)-105b^4B\right)+b^2x\left(5b^2c(18A-7Bx)+2bc^2x(15A+7Bx)-4c^3x^2(3A+2Bx)-105b^3B\right)\right)+3\left(b^2-4ac\right)\sqrt{a+x(b+cx)}\left(24aAc^2-60abBc-30Ab^2c+35b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{48c^{9/2}\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[c]*(-256*a^3*B*c^2 + b^2*x*(-105*b^3*B + 5*b^2*c*(18*A - 7*B*x) - 4
*c^3*x^2*(3*A + 2*B*x) + 2*b*c^2*x*(15*A + 7*B*x)) + a*(-105*b^4*B + 16*c^4
*x^3*(3*A + 2*B*x) - 8*b*c^3*x^2*(15*A + 7*B*x) + 4*b^2*c^2*x*(-93*A + 43*B
*x) + 10*b^3*c*(9*A + 53*B*x)) + 4*a^2*c*(115*b^2*B + 4*c^2*x*(9*A - 8*B*x)
 - 2*b*c*(39*A + 61*B*x))) + 3*(b^2 - 4*a*c)*(35*b^3*B - 30*A*b^2*c - 60*a*
b*B*c + 24*a*A*c^2)*Sqrt[a + x*(b + c*x)]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + x*(b + c*x)])])/(48*c^(9/2)*(-b^2 + 4*a*c)*Sqrt[a + x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 1.35, size = 324, normalized size = 1.16

$$\frac{-256a^3Bc^2-312a^2Abc^2+144a^2Ac^3x+460a^2b^2Bc-488a^2bBc^2x-128a^2Bc^3x^2+90aAb^3c-372aAb^2c^2x-120aAbc^3x^2+48aAc^4x^3-105ab^4B+530ab^3Bcx+172ab^2Bc^2x^2-56abBc^3x^3+32aBc^4x^4+90Ab^4cx+30Ab^3c^2x^2-12Ab^2c^3x^3-105b^5Bx-35b^4Bcx^2+14b^3Bc^2x^3-8b^2Bc^3x^4}{24c^4\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}+\frac{\left(24aAc^2-60abBc-30Ab^2c+35b^3B\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{16c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-105*a*b^4*B + 90*a*A*b^3*c + 460*a^2*b^2*B*c - 312*a^2*A*b*c^2 - 256*a^3*
B*c^2 - 105*b^5*B*x + 90*A*b^4*c*x + 530*a*b^3*B*c*x - 372*a*A*b^2*c^2*x -
488*a^2*b*B*c^2*x + 144*a^2*A*c^3*x - 35*b^4*B*c*x^2 + 30*A*b^3*c^2*x^2 + 1
72*a*b^2*B*c^2*x^2 - 120*a*A*b*c^3*x^2 - 128*a^2*B*c^3*x^2 + 14*b^3*B*c^2*x
^3 - 12*A*b^2*c^3*x^3 - 56*a*b*B*c^3*x^3 + 48*a*A*c^4*x^3 - 8*b^2*B*c^3*x^4
 + 32*a*B*c^4*x^4)/(24*c^4*(-b^2 + 4*a*c)*Sqrt[a + b*x + c*x^2]) + ((35*b^3
*B - 30*A*b^2*c - 60*a*b*B*c + 24*a*A*c^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a
 + b*x + c*x^2]])/(16*c^(9/2))
```

fricas [A] time = 0.81, size = 1035, normalized size = 3.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(35*B*a*b^5 - 96*A*a^3*c^3 + 48*(5*B*a^3*b + 3*A*a^2*b^2)*c^2 + (3
5*B*b^5*c - 96*A*a^2*c^4 + 48*(5*B*a^2*b + 3*A*a*b^2)*c^3 - 10*(20*B*a*b^3
+ 3*A*b^4)*c^2)*x^2 - 10*(20*B*a^2*b^3 + 3*A*a*b^4)*c + (35*B*b^6 - 96*A*a^
2*b*c^3 + 48*(5*B*a^2*b^2 + 3*A*a*b^3)*c^2 - 10*(20*B*a*b^4 + 3*A*b^5)*c)*x
)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) + 4*(105*B*a*b^4*c + 8*(B*b^2*c^4 - 4*B*a*c^5)*x^4 + 8
*(32*B*a^3 + 39*A*a^2*b)*c^3 - 2*(7*B*b^3*c^3 + 24*A*a*c^5 - 2*(14*B*a*b +
3*A*b^2)*c^4)*x^3 - 10*(46*B*a^2*b^2 + 9*A*a*b^3)*c^2 + (35*B*b^4*c^2 + 8*(
16*B*a^2 + 15*A*a*b)*c^4 - 2*(86*B*a*b^2 + 15*A*b^3)*c^3)*x^2 + (105*B*b^5*
c - 144*A*a^2*c^4 + 4*(122*B*a^2*b + 93*A*a*b^2)*c^3 - 10*(53*B*a*b^3 + 9*A
*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^5 - 4*a^2*c^6 + (b^2*c^6 - 4*
a*c^7)*x^2 + (b^3*c^5 - 4*a*b*c^6)*x), 1/48*(3*(35*B*a*b^5 - 96*A*a^3*c^3 +
 48*(5*B*a^3*b + 3*A*a^2*b^2)*c^2 + (35*B*b^5*c - 96*A*a^2*c^4 + 48*(5*B*a^
2*b + 3*A*a*b^2)*c^3 - 10*(20*B*a*b^3 + 3*A*b^4)*c^2)*x^2 - 10*(20*B*a^2*b^
3 + 3*A*a*b^4)*c + (35*B*b^6 - 96*A*a^2*b*c^3 + 48*(5*B*a^2*b^2 + 3*A*a*b^3
)*c^2 - 10*(20*B*a*b^4 + 3*A*b^5)*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(105*B*a*b^4*c + 8
*(B*b^2*c^4 - 4*B*a*c^5)*x^4 + 8*(32*B*a^3 + 39*A*a^2*b)*c^3 - 2*(7*B*b^3*c
^3 + 24*A*a*c^5 - 2*(14*B*a*b + 3*A*b^2)*c^4)*x^3 - 10*(46*B*a^2*b^2 + 9*A*
a*b^3)*c^2 + (35*B*b^4*c^2 + 8*(16*B*a^2 + 15*A*a*b)*c^4 - 2*(86*B*a*b^2 +
15*A*b^3)*c^3)*x^2 + (105*B*b^5*c - 144*A*a^2*c^4 + 4*(122*B*a^2*b + 93*A*a
*b^2)*c^3 - 10*(53*B*a*b^3 + 9*A*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2
*c^5 - 4*a^2*c^6 + (b^2*c^6 - 4*a*c^7)*x^2 + (b^3*c^5 - 4*a*b*c^6)*x)]
```

giac [A] time = 0.31, size = 367, normalized size = 1.31

$$\frac{\left(\left(2\left(\frac{4\left(Bb^2c^3-4\,Bac^4\right)x}{b^2c^4-4\,ac^5}-\frac{7\,Bb^3c^2-28\,Babc^3-6\,Ab^2c^3+24\,Aac^4}{b^2c^4-4\,ac^5}\right)x+\frac{35\,Bb^4c-172\,Bab^2c^2-30\,Ab^3c^2+128\,Ba^2c^3+120\,Aabc^3}{b^2c^4-4\,ac^5}\right)x+\frac{105\,Bb^5-530\,Bab^3c-90\,Ab^4c+488\,Ba^2bc^2+372\,Aab^2c^2-144\,Aa^2c^3}{b^2c^4-4\,ac^5}\right)x+\frac{105\,Bab^4-460\,Ba^2b^2c-90\,Aab^3c+256\,Ba^3c^2+312\,Aa^2bc^2}{b^2c^4-4\,ac^5}}{24\,\sqrt{cx^2+bx+a}}+\frac{\left(35\,Bb^3-60\,Babc-30\,Ab^2c+24\,Aac^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{16\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/24*(((2*(4*(B*b^2*c^3 - 4*B*a*c^4)*x/(b^2*c^4 - 4*a*c^5) - (7*B*b^3*c^2 -
 28*B*a*b*c^3 - 6*A*b^2*c^3 + 24*A*a*c^4)/(b^2*c^4 - 4*a*c^5))*x + (35*B*b^
4*c - 172*B*a*b^2*c^2 - 30*A*b^3*c^2 + 128*B*a^2*c^3 + 120*A*a*b*c^3)/(b^2*
c^4 - 4*a*c^5))*x + (105*B*b^5 - 530*B*a*b^3*c - 90*A*b^4*c + 488*B*a^2*b*c
^2 + 372*A*a*b^2*c^2 - 144*A*a^2*c^3)/(b^2*c^4 - 4*a*c^5))*x + (105*B*a*b^4
 - 460*B*a^2*b^2*c - 90*A*a*b^3*c + 256*B*a^3*c^2 + 312*A*a^2*b*c^2)/(b^2*c
^4 - 4*a*c^5))/sqrt(c*x^2 + b*x + a) + 1/16*(35*B*b^3 - 60*B*a*b*c - 30*A*b
^2*c + 24*A*a*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) -
 b))/c^(9/2)
```

maple [B] time = 0.07, size = 800, normalized size = 2.86

$$\frac{Bx^4}{3\sqrt{cx^2+bx+a}\,c}-\frac{13Aab^2x}{2\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}+\frac{15Ab^4x}{8\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}+\frac{Ax^3}{2\sqrt{cx^2+bx+a}\,c}-\frac{16Ba^2bx}{3\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}+\frac{115Bab^3x}{12\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}-\frac{35Bb^5x}{16\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^4}-\frac{7Bbx^3}{12\sqrt{cx^2+bx+a}\,c^2}-\frac{13Aab^3}{4\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}+\frac{15Ab^5}{16\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^4}-\frac{5Abx^2}{4\sqrt{cx^2+bx+a}\,c^2}-\frac{8Ba^2b^2}{3\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}+\frac{115Bab^4}{24\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^4}-\frac{4Bax^2}{3\sqrt{cx^2+bx+a}\,c^2}-\frac{35Bb^6}{32\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^5}+\frac{35Bb^2x^2}{24\sqrt{cx^2+bx+a}\,c^3}+\frac{3Aax}{2\sqrt{cx^2+bx+a}\,c^2}-\frac{15Ab^2x}{8\sqrt{cx^2+bx+a}\,c^3}-\frac{15Babx}{4\sqrt{cx^2+bx+a}\,c^3}+\frac{35Bb^3x}{16\sqrt{cx^2+bx+a}\,c^4}-\frac{3Aa\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{5}{2}}}+\frac{15Ab^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{7}{2}}}+\frac{15Bab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{7}{2}}}-\frac{35Bb^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{9}{2}}}-\frac{13Aab}{4\sqrt{cx^2+bx+a}\,c^3}+\frac{15Ab^3}{16\sqrt{cx^2+bx+a}\,c^4}-\frac{8Ba^2}{3\sqrt{cx^2+bx+a}\,c^3}+\frac{115Bab^2}{24\sqrt{cx^2+bx+a}\,c^4}-\frac{35Bb^4}{32\sqrt{cx^2+bx+a}\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 15/16*A*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-13/4*A*b/c^3*a/(c*x^2+b*x+a
)^(1/2)+3/2*A*a/c^2*x/(c*x^2+b*x+a)^(1/2)-7/12*B*b/c^2*x^3/(c*x^2+b*x+a)^(1
/2)-4/3*B*a/c^2*x^2/(c*x^2+b*x+a)^(1/2)+35/24*B*b^2/c^3*x^2/(c*x^2+b*x+a)^(
1/2)+35/16*B*b^3/c^4*x/(c*x^2+b*x+a)^(1/2)-35/32*B*b^6/c^5/(4*a*c-b^2)/(c*x
^2+b*x+a)^(1/2)+15/8*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-16/3*B*a^2
/c^2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+115/12*B*b^3/c^3*a/(4*a*c-b^2)/(c*
x^2+b*x+a)^(1/2)*x-13/2*A*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+1/2*A
*x^3/c/(c*x^2+b*x+a)^(1/2)+15/16*A*b^3/c^4/(c*x^2+b*x+a)^(1/2)+15/8*A*b^2/c
^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/3*B*x^4/c/(c*x^2+b*x+a
)^(1/2)-35/32*B*b^4/c^5/(c*x^2+b*x+a)^(1/2)-35/16*B*b^3/c^(9/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-8/3*B*a^2/c^3/(c*x^2+b*x+a)^(1/2)-3/2*A*a/
c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/4*A*b/c^2*x^2/(c*x^2+
b*x+a)^(1/2)-15/8*A*b^2/c^3*x/(c*x^2+b*x+a)^(1/2)+115/24*B*b^2/c^4*a/(c*x^2
+b*x+a)^(1/2)+15/4*B*b/c^(7/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)-13/4*A*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-35/16*B*b^5/c^4/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*x+115/24*B*b^4/c^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2
)-15/4*B*b/c^3*a*x/(c*x^2+b*x+a)^(1/2)-8/3*B*a^2/c^3*b^2/(4*a*c-b^2)/(c*x^2
+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(A + B x\right)}{\left(a + b x + c x^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.887 $\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=197

$$\frac{3\left(-4aBc-4Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{7/2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{\sqrt{a+bx+cx^2}}{}$$

Rubi [A] time = 0.14, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 779, 621, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-2cx\left(-12aBc-4Abc+5b^2B\right)+32aAc^2-52abBc-12Ab^2c+15b^3B\right)}{4c^3\left(b^2-4ac\right)}+\frac{3\left(-4aBc-4Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{7/2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*x^2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*S
qrt[a + b*x + c*x^2]) - ((15*b^3*B - 12*A*b^2*c - 52*a*b*B*c + 32*a*A*c^2 -
 2*c*(5*b^2*B - 4*A*b*c - 12*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(4*c^3*(b^2 -
 4*a*c)) + (3*(5*b^2*B - 4*A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*
Sqrt[a + b*x + c*x^2])])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
```

```
0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{2\int \frac{x\left(2a(bB-2Ac)+\frac{1}{2}\left(5b^2B-4Abc-12aBc\right)x\right)}{\sqrt{a+bx+cx^2}}}{c\left(b^2-4ac\right)}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{\left(15b^3B-12Ab^2c-52abBc+32aAc\right.}{4}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{\left(15b^3B-12Ab^2c-52abBc+32aAc\right.}{4}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{\left(15b^3B-12Ab^2c-52abBc+32aAc\right.}{4}$$

Mathematica [A] time = 0.28, size = 221, normalized size = 1.12

$$\frac{2\sqrt{c}\left(4a^2c(8Ac-13bB+6Bcx)+a\left(-2b^2c(6A+31Bx)-20bc^2x(Bx-2A)+8c^3x^2(2A+Bx)+15b^3B\right)+b^2x\left(b(5Bcx-12Ac)-2c^2x(2A+Bx)+15b^2B\right)\right)-3\left(b^2-4ac\right)\sqrt{a+x(b+cx)}\left(-4aBc-4Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{8c^{7/2}\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[c]*(4*a^2*c*(-13*b*B + 8*A*c + 6*B*c*x) + a*(15*b^3*B - 20*b*c^2*x*
(-2*A + B*x) + 8*c^3*x^2*(2*A + B*x) - 2*b^2*c*(6*A + 31*B*x)) + b^2*x*(15*
b^2*B - 2*c^2*x*(2*A + B*x) + b*(-12*A*c + 5*B*c*x))) - 3*(b^2 - 4*a*c)*(5*
b^2*B - 4*A*b*c - 4*a*B*c)*Sqrt[a + x*(b + c*x)]*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + x*(b + c*x)])])/(8*c^(7/2)*(-b^2 + 4*a*c)*Sqrt[a + x*(b + c*x
)])
```

IntegrateAlgebraic [A] time = 0.97, size = 235, normalized size = 1.19

$$\frac{32a^2Ac^2-52a^2bBc+24a^2Bc^2x-12aAb^2c+40aAbc^2x+16aAc^3x^2+15ab^3B-62ab^2Bcx-20abBc^2x^2+8aBc^3x^3-12Ab^3cx-4Ab^2c^2x^2+15b^4Bx+5b^3Bcx^2-2b^2Bc^2x^3}{4c^3\left(4ac-b^2\right)\sqrt{a+bx+cx^2}} - \frac{3\left(-4aBc-4Abc+5b^2B\right)\log\left(-2c^{7/2}\sqrt{a+bx+cx^2}+bc^3+2c^4x\right)}{8c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (15*a*b^3*B - 12*a*A*b^2*c - 52*a^2*b*B*c + 32*a^2*A*c^2 + 15*b^4*B*x - 12*
A*b^3*c*x - 62*a*b^2*B*c*x + 40*a*A*b*c^2*x + 24*a^2*B*c^2*x + 5*b^3*B*c*x^
2 - 4*A*b^2*c^2*x^2 - 20*a*b*B*c^2*x^2 + 16*a*A*c^3*x^2 - 2*b^2*B*c^2*x^3 +
 8*a*B*c^3*x^3)/(4*c^3*(-b^2 + 4*a*c)*Sqrt[a + b*x + c*x^2]) - (3*(5*b^2*B
- 4*A*b*c - 4*a*B*c)*Log[b*c^3 + 2*c^4*x - 2*c^(7/2)*Sqrt[a + b*x + c*x^2]]
)/(8*c^(7/2))
```

fricas [B] time = 0.71, size = 793, normalized size = 4.03

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

[Out] [-1/16*(3*(5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)*c^2 + (5*B*b^4*c + 16*(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*x^2 - 4*(6*B*a^2*b^2 + A*a*b^3)*c + (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^4)*c)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(15*B*a*b^3*c + 32*A*a^2*c^3 - 2*(B*b^2*c^3 - 4*B*a*c^4)*x^3 - 4*(13*B*a^2*b + 3*A*a*b^2)*c^2 + (5*B*b^3*c^2 + 16*A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*x^2 + (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*b)*c^3 - 2*(31*B*a*b^2 + 6*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^4 - 4*a^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x), -1/8*(3*(5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)*c^2 + (5*B*b^4*c + 16*(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*x^2 - 4*(6*B*a^2*b^2 + A*a*b^3)*c + (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^4)*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(15*B*a*b^3*c + 32*A*a^2*c^3 - 2*(B*b^2*c^3 - 4*B*a*c^4)*x^3 - 4*(13*B*a^2*b + 3*A*a*b^2)*c^2 + (5*B*b^3*c^2 + 16*A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*x^2 + (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*b)*c^3 - 2*(31*B*a*b^2 + 6*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^4 - 4*a^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x)]

giac [A] time = 0.25, size = 268, normalized size = 1.36

$$\frac{\left(\left(\frac{2\left(Bb^2c^2-4\,Bac^3\right)x}{b^2c^3-4\,ac^4}-\frac{5\,Bb^3c-20\,Babc^2-4\,Ab^2c^2+16\,Aac^3}{b^2c^3-4\,ac^4}\right)x-\frac{15\,Bb^4-62\,Bab^2c-12\,Ab^3c+24\,Ba^2c^2+40\,Aabc^2}{b^2c^3-4\,ac^4}\right)x-\frac{15\,Bab^3-52\,Ba^2bc-12\,Aab^2c+32\,Aa^2c^2}{b^2c^3-4\,ac^4}}{4\sqrt{cx^2+bx+a}}-\frac{3\left(5\,Bb^2-4\,Bac-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")

[Out] 1/4*(((2*(B*b^2*c^2 - 4*B*a*c^3)*x/(b^2*c^3 - 4*a*c^4) - (5*B*b^3*c - 20*B*a*b*c^2 - 4*A*b^2*c^2 + 16*A*a*c^3)/(b^2*c^3 - 4*a*c^4))*x - (15*B*b^4 - 62*B*a*b^2*c - 12*A*b^3*c + 24*B*a^2*c^2 + 40*A*a*b*c^2)/(b^2*c^3 - 4*a*c^4))*x - (15*B*a*b^3 - 52*B*a^2*b*c - 12*A*a*b^2*c + 32*A*a^2*c^2)/(b^2*c^3 - 4*a*c^4))/sqrt(c*x^2 + b*x + a) - 3/8*(5*B*b^2 - 4*B*a*c - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)

maple [B] time = 0.06, size = 576, normalized size = 2.92

$$\frac{4Aabx}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}-\frac{3Ab^3x}{2\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}-\frac{13Bab^2x}{2\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}+\frac{15Bb^4x}{8\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}+\frac{Bx^3}{2\sqrt{cx^2+bx+a}\,c}+\frac{2Aab^2}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}-\frac{3Ab^4}{4\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}+\frac{Ax^2}{\sqrt{cx^2+bx+a}\,c}-\frac{13Bab^3}{4\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^3}+\frac{15Bb^5}{16\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^4}-\frac{5Bbx^2}{4\sqrt{cx^2+bx+a}\,c^2}+\frac{3Abx}{2\sqrt{cx^2+bx+a}\,c^2}+\frac{3Bax}{2\sqrt{cx^2+bx+a}\,c^2}-\frac{15Bb^2x}{8\sqrt{cx^2+bx+a}\,c^3}-\frac{3Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{5}{2}}}-\frac{3Ba\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{5}{2}}}+\frac{15Bb^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{7}{2}}}+\frac{2Aa}{\sqrt{cx^2+bx+a}\,c^2}-\frac{3Ab^2}{4\sqrt{cx^2+bx+a}\,c^3}-\frac{13Bab}{4\sqrt{cx^2+bx+a}\,c^3}+\frac{15Bb^3}{16\sqrt{cx^2+bx+a}\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)

[Out] 1/2*B*x^3/c/(c*x^2+b*x+a)^(1/2)-5/4*B*b/c^2*x^2/(c*x^2+b*x+a)^(1/2)-15/8*B*b^2/c^3*x/(c*x^2+b*x+a)^(1/2)+15/16*B*b^3/c^4/(c*x^2+b*x+a)^(1/2)+15/8*B*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+15/16*B*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+15/8*B*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-13/4*B*b/c^3*a/(c*x^2+b*x+a)^(1/2)-13/2*B*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-13/4*B*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+3/2*B*a/c^2*x/(c*x^2+b*x+a)^(1/2)-3/2*B*a/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+A*x^2/c/(c*x^2+b*x+a)^(1/2)+3/2*A*b/c^2*x/(c*x^2+b*x+a)^(1/2)-3/4*A*b^2/c^3/(c*x^2+b*x+a)^(1/2)-3/2*A*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-3/4*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*A*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+2*A*a/c^2/(c*x^2+b*x+a)^(1/2)+4*A*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+2*A*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}\left(A+Bx\right)}{\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.888 $\int \frac{x^2(A+Bx)}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=153

$$\frac{\sqrt{a+bx+cx^2}\left(-8aBc-2Abc+3b^2B\right)}{c^2\left(b^2-4ac\right)}-\frac{2x\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{5/2}}$$

Rubi [A] time = 0.14, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 640, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-8aBc-2Abc+3b^2B\right)}{c^2\left(b^2-4ac\right)}-\frac{2x\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*x*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*Sqr
t[a + b*x + c*x^2]) + ((3*b^2*B - 2*A*b*c - 8*a*B*c)*Sqrt[a + b*x + c*x^2])
/(c^2*(b^2 - 4*a*c)) - ((3*b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt
[a + b*x + c*x^2])])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2\int\frac{a(bB-2Ac)+\frac{1}{2}\left(3b^2B-2Abc-8aBc\right)x}{\sqrt{a+bx+cx^2}}\,dx}{c\left(b^2-4ac\right)}\\
&= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{\left(3b^2B-2Abc-8aBc\right)\sqrt{a+bx+cx^2}}{c^2\left(b^2-4ac\right)}\\
&= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{\left(3b^2B-2Abc-8aBc\right)\sqrt{a+bx+cx^2}}{c^2\left(b^2-4ac\right)}\\
&= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{\left(3b^2B-2Abc-8aBc\right)\sqrt{a+bx+cx^2}}{c^2\left(b^2-4ac\right)}
\end{aligned}
$$

Mathematica [A] time = 0.23, size = 148, normalized size = 0.97

$$
\frac{\frac{2\sqrt{c}\left(8a^2Bc+a\left(2bc(A+5Bx)+4c^2x(Bx-A)-3b^2B\right)-b^2x(-2Ac+3bB+Bcx)\right)}{\sqrt{a+x(b+cx)}}+\left(b^2-4ac\right)(3bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{5/2}\left(4ac-b^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(8*a^2*B*c - b^2*x*(3*b*B - 2*A*c + B*c*x) + a*(-3*b^2*B + 4*c^
2*x*(-A + B*x) + 2*b*c*(A + 5*B*x))))/Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)
*(3*b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(2
*c^(5/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 0.71, size = 148, normalized size = 0.97

$$
\frac{8a^2Bc+2aAbc-4aAc^2x-3ab^2B+10abBcx+4aBc^2x^2+2Ab^2cx-3b^3Bx-b^2Bcx^2}{c^2\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}+\frac{(3bB-2Ac)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{2c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-3*a*b^2*B + 2*a*A*b*c + 8*a^2*B*c - 3*b^3*B*x + 2*A*b^2*c*x + 10*a*b*B*c*
x - 4*a*A*c^2*x - b^2*B*c*x^2 + 4*a*B*c^2*x^2)/(c^2*(-b^2 + 4*a*c)*Sqrt[a +
 b*x + c*x^2]) + ((3*b*B - 2*A*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x +
c*x^2]])/(2*c^(5/2))
```

fricas [B] time = 0.64, size = 603, normalized size = 3.94

$$
\left[-\frac{\left(3Bab^3+8Aa^2c^2+\left(3Bb^3c+8Aac^3-2\left(6Bab+Ab^2\right)c^2\right)x^2-2\left(6Ba^2b+Aab^2\right)c+\left(3Bb^4+8Aabc^2-2\left(6Bab^2+Ab^3\right)c\right)x\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)-4\left(3Bab^2c-2\left(4Ba^2+Aab\right)c^2+\left(Bb^2c^2-4Bac^3\right)x^2+\left(3Bb^3c+4Aac^3-2\left(5Bab+Ab^2\right)c^2\right)x\right)\sqrt{cx^2+bx+a}}{4\left(ab^2c^3-4a^2c^4+\left(b^2c^4-4ac^5\right)x^2+\left(b^3c^3-4abc^4\right)x\right)}, \frac{\left(3Bab^3+8Aa^2c^2+\left(3Bb^3c+8Aac^3-2\left(6Bab+Ab^2\right)c^2\right)x^2-2\left(6Ba^2b+Aab^2\right)c+\left(3Bb^4+8Aabc^2-2\left(6Bab^2+Ab^3\right)c\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+2\left(3Bab^2c-2\left(4Ba^2+Aab\right)c^2+\left(Bb^2c^2-4Bac^3\right)x^2+\left(3Bb^3c+4Aac^3-2\left(5Bab+Ab^2\right)c^2\right)x\right)\sqrt{cx^2+bx+a}}{2\left(ab^2c^3-4a^2c^4+\left(b^2c^4-4ac^5\right)x^2+\left(b^3c^3-4abc^4\right)x\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((3*B*a*b^3 + 8*A*a^2*c^2 + (3*B*b^3*c + 8*A*a*c^3 - 2*(6*B*a*b + A*b
^2)*c^2)*x^2 - 2*(6*B*a^2*b + A*a*b^2)*c + (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*
a*b^2 + A*b^3)*c)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2
+ b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(3*B*a*b^2*c - 2*(4*B*a^2 + A*a
*b)*c^2 + (B*b^2*c^2 - 4*B*a*c^3)*x^2 + (3*B*b^3*c + 4*A*a*c^3 - 2*(5*B*a*b
```

```
 + A*b^2)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4
- 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x), 1/2*((3*B*a*b^3 + 8*A*a^2*c^2 +
(3*B*b^3*c + 8*A*a*c^3 - 2*(6*B*a*b + A*b^2)*c^2)*x^2 - 2*(6*B*a^2*b + A*a*
b^2)*c + (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*a*b^2 + A*b^3)*c)*x)*sqrt(-c)*arct
an(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c))
+ 2*(3*B*a*b^2*c - 2*(4*B*a^2 + A*a*b)*c^2 + (B*b^2*c^2 - 4*B*a*c^3)*x^2 +
(3*B*b^3*c + 4*A*a*c^3 - 2*(5*B*a*b + A*b^2)*c^2)*x)*sqrt(c*x^2 + b*x + a))
/(a*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x
)]
```

giac [A] time = 0.26, size = 177, normalized size = 1.16

$$\frac{\left(\frac{(Bb^2c-4\,Bac^2)x}{b^2c^2-4\,ac^3}+\frac{3\,Bb^3-10\,Babc-2\,Ab^2c+4\,Aac^2}{b^2c^2-4\,ac^3}\right)x+\frac{3\,Bab^2-8\,Ba^2c-2\,Aabc}{b^2c^2-4\,ac^3}}{\sqrt{cx^2+bx+a}}+\frac{(3\,Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] (((B*b^2*c - 4*B*a*c^2)*x/(b^2*c^2 - 4*a*c^3) + (3*B*b^3 - 10*B*a*b*c - 2*A
*b^2*c + 4*A*a*c^2)/(b^2*c^2 - 4*a*c^3))*x + (3*B*a*b^2 - 8*B*a^2*c - 2*A*a
*b*c)/(b^2*c^2 - 4*a*c^3))/sqrt(c*x^2 + b*x + a) + 1/2*(3*B*b - 2*A*c)*log(
abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 382, normalized size = 2.50

$$\frac{Ab^2x}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c}+\frac{4Babx}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c}-\frac{3Bb^3x}{2(4ac-b^2)\sqrt{cx^2+bx+a}\,c^2}+\frac{Ab^3}{2(4ac-b^2)\sqrt{cx^2+bx+a}\,c^2}+\frac{2Bab^2}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c^2}-\frac{3Bb^4}{4(4ac-b^2)\sqrt{cx^2+bx+a}\,c^3}+\frac{Bx^2}{\sqrt{cx^2+bx+a}\,c}-\frac{Ax}{\sqrt{cx^2+bx+a}\,c}+\frac{3Bbx}{2\sqrt{cx^2+bx+a}\,c^2}+\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{3Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{5}{2}}}+\frac{Ab}{2\sqrt{cx^2+bx+a}\,c^2}+\frac{2Ba}{\sqrt{cx^2+bx+a}\,c^2}-\frac{3Bb^2}{4\sqrt{cx^2+bx+a}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] B*x^2/c/(c*x^2+b*x+a)^(1/2)+3/2*B*b/c^2*x/(c*x^2+b*x+a)^(1/2)-3/4*B*b^2/c^3
/(c*x^2+b*x+a)^(1/2)-3/2*B*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-3/4*B*
b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*B*b/c^(5/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))+2*B*a/c^2/(c*x^2+b*x+a)^(1/2)+4*B*a/c*b/(4*a*c-b^2
)/(c*x^2+b*x+a)^(1/2)*x+2*B*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-A*x/c
/(c*x^2+b*x+a)^(1/2)+1/2*A*b/c^2/(c*x^2+b*x+a)^(1/2)+A*b^2/c/(4*a*c-b^2)/(c
*x^2+b*x+a)^(1/2)*x+1/2*A*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+A/c^(3/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
[Out] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (A + Bx)}{\left(a + bx + cx^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
[Out] Integral(x**2*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.889 $\int \frac{x(A+Bx)}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.04, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {777, 621, 206}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*Sqrt[
a + b*x + c*x^2]) + (B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2]
)])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{B\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{c}$$

$$= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{(2B)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{c}$$

$$= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

Mathematica [A] time = 0.28, size = 102, normalized size = 1.06

$$\frac{\frac{2\sqrt{c}(-2ac(A+Bx)+abB+bx(bB-Ac))}{\sqrt{a+x(b+cx)}}-B\left(b^2-4ac\right)\log\left(2\sqrt{c}\sqrt{a+x(b+cx)}+b+2cx\right)}{c^{3/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(a*b*B + b*(b*B - A*c)*x - 2*a*c*(A + B*x)))/Sqrt[a + x*(b + c*
x)] - B*(b^2 - 4*a*c)*Log[b + 2*c*x + 2*Sqrt[c]*Sqrt[a + x*(b + c*x)]])/(c^
(3/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 0.51, size = 101, normalized size = 1.05

$$-\frac{2\left(2aAc-abB+2aBcx+Abcx+b^2(-B)x\right)}{c\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}-\frac{B\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(-(a*b*B) + 2*a*A*c - b^2*B*x + A*b*c*x + 2*a*B*c*x))/(c*(-b^2 + 4*a*c)
*Sqrt[a + b*x + c*x^2]) - (B*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[a + b*x + c
*x^2]])/c^(3/2)
```

fricas [B] time = 0.59, size = 405, normalized size = 4.22

$$\left[\frac{\left(Bab^2-4Ba^2c+\left(Bb^2c-4Bac^2\right)x^2+\left(Bb^3-4Babc\right)x\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)-4\left(Babc-2Aac^2+\left(Bb^2c-(2Ba+Ab)c^2\right)x\right)\sqrt{cx^2+bx+a}}{2\left(ab^2c^2-4a^2c^3+\left(b^2c^3-4ac^4\right)x^2+\left(b^3c^2-4abc^3\right)x\right)}, -\frac{\left(Bab^2-4Ba^2c+\left(Bb^2c-4Bac^2\right)x^2+\left(Bb^3-4Babc\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+2\left(Babc-2Aac^2+\left(Bb^2c-(2Ba+Ab)c^2\right)x\right)\sqrt{cx^2+bx+a}}{ab^2c^2-4a^2c^3+\left(b^2c^3-4ac^4\right)x^2+\left(b^3c^2-4abc^3\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*a*b^2 - 4*B*a^2*c + (B*b^2*c - 4*B*a*c^2)*x^2 + (B*b^3 - 4*B*a*b*c
)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(c) - 4*a*c) - 4*(B*a*b*c - 2*A*a*c^2 + (B*b^2*c - (2*B*a + A*b)
*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4
)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x), -((B*a*b^2 - 4*B*a^2*c + (B*b^2*c - 4*B*a
*c^2)*x^2 + (B*b^3 - 4*B*a*b*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(B*a*b*c - 2*A*a*c^2 +
(B*b^2*c - (2*B*a + A*b)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*
c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)]
```

giac [A] time = 0.25, size = 110, normalized size = 1.15

$$-\frac{2\left(\frac{\left(Bb^2-2\,Bac-Abc\right)x}{b^2c-4\,ac^2}+\frac{Bab-2\,Aac}{b^2c-4\,ac^2}\right)}{\sqrt{cx^2+bx+a}}-\frac{B\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*((B*b^2 - 2*B*a*c - A*b*c)*x/(b^2*c - 4*a*c^2) + (B*a*b - 2*A*a*c)/(b^2*
c - 4*a*c^2))/sqrt(c*x^2 + b*x + a) - B*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [B] time = 0.05, size = 216, normalized size = 2.25

$$-\frac{2Abx}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}+\frac{Bb^2x}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}-\frac{Ab^2}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}+\frac{Bb^3}{2\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}-\frac{Bx}{\sqrt{cx^2+bx+a}\,c}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{A}{\sqrt{cx^2+bx+a}\,c}+\frac{Bb}{2\sqrt{cx^2+bx+a}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -B*x/c/(c*x^2+b*x+a)^(1/2)+1/2*B*b/c^2/(c*x^2+b*x+a)^(1/2)+B*b^2/c/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*x+1/2*B*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+B/c
^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-A/c/(c*x^2+b*x+a)^(1/2)-
2*A*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-A*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.64, size = 111, normalized size = 1.16

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{c^{3/2}}-\frac{A\,\left(4\,a+2\,b\,x\right)}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}+\frac{B\,\left(\frac{a\,b}{2}-x\,\left(a\,c-\frac{b^2}{2}\right)\right)}{c\,\left(a\,c-\frac{b^2}{4}\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(3/2) - (A*(4*a +
2*b*x))/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2)) + (B*((a*b)/2 - x*(a*c - b^
2/2)))/(c*(a*c - b^2/4)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(A+Bx\right)}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.890 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{3/2}} dx$

Optimal. Leaf size=45

$$-\frac{2(-2aB - x(bB - 2Ac) + Ab)}{\left(b^2 - 4ac\right)\sqrt{a + bx + cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {636}

$$-\frac{2(-2aB - x(bB - 2Ac) + Ab)}{\left(b^2 - 4ac\right)\sqrt{a + bx + cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A + Bx}{\left(a + bx + cx^2\right)^{3/2}} dx = -\frac{2(Ab - 2aB - (bB - 2Ac)x)}{\left(b^2 - 4ac\right)\sqrt{a + bx + cx^2}}$$

Mathematica [A] time = 0.16, size = 44, normalized size = 0.98

$$\frac{2B(2a + bx) - 2A(b + 2cx)}{\left(b^2 - 4ac\right)\sqrt{a + x(b + cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*B*(2*a + b*x) - 2*A*(b + 2*c*x))/((b^2 - 4*a*c)*Sqrt[a + x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.39, size = 44, normalized size = 0.98

$$-\frac{2(-2aB + Ab + 2Acx - bBx)}{\left(b^2 - 4ac\right)\sqrt{a + bx + cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - b*B*x + 2*A*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

fricas [A] time = 0.53, size = 74, normalized size = 1.64

$$\frac{2\sqrt{cx^2 + bx + a}\,(2\,Ba - Ab + (Bb - 2\,Ac)x)}{ab^2 - 4\,a^2c + \left(b^2c - 4\,ac^2\right)x^2 + \left(b^3 - 4\,abc\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)*(2*B*a - A*b + (B*b - 2*A*c)*x)/(a*b^2 - 4*a^2*c +
(b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)
```

giac [A] time = 0.24, size = 55, normalized size = 1.22

$$\frac{2\left(\frac{(Bb-2\,Ac)x}{b^2-4\,ac}+\frac{2\,Ba-Ab}{b^2-4\,ac}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b - 2*A*c)*x/(b^2 - 4*a*c) + (2*B*a - A*b)/(b^2 - 4*a*c))/sqrt(c*x^2
+ b*x + a)
```

maple [A] time = 0.05, size = 45, normalized size = 1.00

$$\frac{4Acx-2Bbx+2Ab-4Ba}{\sqrt{c\,x^2+bx+a}\,\left(4ac-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/(c*x^2+b*x+a)^(1/2)*(2*A*c*x-B*b*x+A*b-2*B*a)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.39, size = 44, normalized size = 0.98

$$\frac{2\,A\,b-4\,B\,a+4\,A\,c\,x-2\,B\,b\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*A*b - 4*B*a + 4*A*c*x - 2*B*b*x)/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.891 $\int \frac{A+Bx}{x(a+bx+cx^2)^{3/2}} \, dx$

Optimal. Leaf size=96

$$\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{3/2}}$$

Rubi [A] time = 0.06, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 12, 724, 206}

$$\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*Sqrt[a +
 b*x + c*x^2]) - (A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])
/a^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{2\int -\frac{A\left(b^2-4ac\right)}{2x\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{A\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx}{a}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{(2A)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx, x, \frac{2a+bx}{\sqrt{a+bx+cx^2}}\right)}{a}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{3/2}}$$

Mathematica [**A**] time = 0.12, size = 104, normalized size = 1.08

$$\frac{\frac{2\sqrt{a}\left(aB(b+2cx)-A\left(-2ac+b^2+bcx\right)\right)}{\sqrt{a+x(b+cx)}} + A\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{a^{3/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((2*Sqrt[a]*(a*B*(b + 2*c*x) - A*(b^2 - 2*a*c + b*c*x)))/Sqrt[a + x*(b + c*
x)] + A*(b^2 - 4*a*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])
])/(a^(3/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [**A**] time = 0.53, size = 103, normalized size = 1.07

$$\frac{2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}} - \frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{a^{3/2}} + \frac{2\left(2aAc+abB+2aBcx-Ab^2-Abcx\right)}{a\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(A*b^2) + a*b*B + 2*a*A*c - A*b*c*x + 2*a*B*c*x))/(a*(-b^2 + 4*a*c)*Sq
rt[a + b*x + c*x^2]) + (2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*
x^2]/Sqrt[a]])/a^(3/2)
```

fricas [**B**] time = 0.66, size = 412, normalized size = 4.29

$$\left[\frac{\left(Aab^2-4Aa^2c+\left(Ab^2c-4Aac^2\right)x^2+\left(Ab^3-4Aabc\right)x\right)\sqrt{a}\log\left(-\frac{8abx+\left(b^2+4ac\right)x^2-4\sqrt{cx^2+bx+a}(bx+2a)\sqrt{a}+8a^2}{x^2}\right)-4\left(Ba^2b-Aab^2+2Aa^2c+\left(2Ba^2-Aab\right)cx\right)\sqrt{cx^2+bx+a}}{2\left(a^3b^2-4a^4c+\left(a^2b^2c-4a^3c^2\right)x^2+\left(a^2b^3-4a^3bc\right)x\right)}, \frac{\left(Aab^2-4Aa^2c+\left(Ab^2c-4Aac^2\right)x^2+\left(Ab^3-4Aabc\right)x\right)\sqrt{-a}\arctan\left(\frac{\sqrt{cx^2+bx+a}(bx+2a)\sqrt{-a}}{2\left(acx^2+abx+a^2\right)}\right)-2\left(Ba^2b-Aab^2+2Aa^2c+\left(2Ba^2-Aab\right)cx\right)\sqrt{cx^2+bx+a}}{a^3b^2-4a^4c+\left(a^2b^2c-4a^3c^2\right)x^2+\left(a^2b^3-4a^3bc\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*a*b^2 - 4*A*a^2*c + (A*b^2*c - 4*A*a*c^2)*x^2 + (A*b^3 - 4*A*a*b*c
)*x)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b
*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(B*a^2*b - A*a*b^2 + 2*A*a^2*c + (2*B*a
^2 - A*a*b)*c*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^2 - 4*a^4*c + (a^2*b^2*c - 4
*a^3*c^2)*x^2 + (a^2*b^3 - 4*a^3*b*c)*x), ((A*a*b^2 - 4*A*a^2*c + (A*b^2*c
- 4*A*a*c^2)*x^2 + (A*b^3 - 4*A*a*b*c)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 +
```

```
b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(B*a^2*b - A*a*b
^2 + 2*A*a^2*c + (2*B*a^2 - A*a*b)*c*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^2 - 4
*a^4*c + (a^2*b^2*c - 4*a^3*c^2)*x^2 + (a^2*b^3 - 4*a^3*b*c)*x)]
```

giac [A] time = 0.27, size = 125, normalized size = 1.30

$$-\frac{2\left(\frac{(2\,Ba^2c-Aabc)x}{a^2b^2-4\,a^3c}+\frac{Ba^2b-Aab^2+2\,Aa^2c}{a^2b^2-4\,a^3c}\right)}{\sqrt{cx^2+bx+a}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*((2*B*a^2*c - A*a*b*c)*x/(a^2*b^2 - 4*a^3*c) + (B*a^2*b - A*a*b^2 + 2*A*
a^2*c)/(a^2*b^2 - 4*a^3*c))/sqrt(c*x^2 + b*x + a) + 2*A*arctan(-(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a)
```

maple [A] time = 0.05, size = 153, normalized size = 1.59

$$-\frac{2Abcx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}-\frac{A\,b^2}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}+\frac{2\,(2cx+b)\,B}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}}-\frac{A\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{a^{\frac{3}{2}}}+\frac{A}{\sqrt{c\,x^2+bx+a}\;a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*B*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+A/a/(c*x^2+b*x+a)^(1/2)-2*A*b
/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x-A*b^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1
/2)-A/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x \left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(a + b*x + c*x**2)**(3/2)), x)
```

3.892 $\int \frac{A+Bx}{x^2(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=158

$$\frac{(3Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{5/2}}-\frac{\sqrt{a+bx+cx^2}\left(-8aAc-2abB+3Ab^2\right)}{a^2x\left(b^2-4ac\right)}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{ax\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 806, 724, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-8aAc-2abB+3Ab^2\right)}{a^2x\left(b^2-4ac\right)}+\frac{(3Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{5/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{ax\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*x*Sqrt[a
 + b*x + c*x^2]) - ((3*A*b^2 - 2*a*b*B - 8*a*A*c)*Sqrt[a + b*x + c*x^2])/(a
^2*(b^2 - 4*a*c)*x) + ((3*A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[
a + b*x + c*x^2])])/(2*a^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
```

```
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(-3Ab^2+2abB+8aAc\right)-(Ab-2aB)cx}{x^2\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{\left(3Ab^2-2abB-8aAc\right)\sqrt{a+bx+cx^2}}{a^2\left(b^2-4ac\right)x} - \cdots$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{\left(3Ab^2-2abB-8aAc\right)\sqrt{a+bx+cx^2}}{a^2\left(b^2-4ac\right)x} + \cdots$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{\left(3Ab^2-2abB-8aAc\right)\sqrt{a+bx+cx^2}}{a^2\left(b^2-4ac\right)x} + \cdots$$

Mathematica [A] time = 0.18, size = 150, normalized size = 0.95

$$\frac{\frac{2\sqrt{a}\left(-4a^2c(A-Bx)+aA\left(b^2-10bcx-8c^2x^2\right)-2abBx(b+cx)+3Ab^2x(b+cx)\right)}{x\sqrt{a+x(b+cx)}}-\left(b^2-4ac\right)(3Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2a^{5/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((2*Sqrt[a]*(-4*a^2*c*(A - B*x) + 3*A*b^2*x*(b + c*x) - 2*a*b*B*x*(b + c*x)
 + a*A*(b^2 - 10*b*c*x - 8*c^2*x^2)))/(x*Sqrt[a + x*(b + c*x)]) - (3*A*b -
2*a*B)*(b^2 - 4*a*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]
)/(2*a^(5/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 0.77, size = 153, normalized size = 0.97

$$\frac{(2aB-3Ab)\tanh^{-1}\left(\frac{\sqrt{c}x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{-4a^2Ac+4a^2Bcx+aAb^2-10aAbcx-8aAc^2x^2-2ab^2Bx-2abBcx^2+3Ab^3x+3Ab^2cx^2}{a^2x\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (a*A*b^2 - 4*a^2*A*c + 3*A*b^3*x - 2*a*b^2*B*x - 10*a*A*b*c*x + 4*a^2*B*c*x
 + 3*A*b^2*c*x^2 - 2*a*b*B*c*x^2 - 8*a*A*c^2*x^2)/(a^2*(-b^2 + 4*a*c)*x*Sqr
t[a + b*x + c*x^2]) + ((-3*A*b + 2*a*B)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x +
 c*x^2])/Sqrt[a]])/a^(5/2)
```

fricas [B] time = 0.86, size = 657, normalized size = 4.16

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(((4*(2*B*a^2 - 3*A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*x^3 - (2*B*a*b
^3 - 3*A*b^4 - 4*(2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 - 3*A*a*b^3
- 4*(2*B*a^3 - 3*A*a^2*b)*c)*x)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 +
 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(A*a^2*b^2 -
 4*A*a^3*c - (8*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 -
 3*A*a*b^3 - 2*(2*B*a^3 - 5*A*a^2*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^3*b^2
*c - 4*a^4*c^2)*x^3 + (a^3*b^3 - 4*a^4*b*c)*x^2 + (a^4*b^2 - 4*a^5*c)*x), -
1/2*(((4*(2*B*a^2 - 3*A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*x^3 - (2*B*a*b^
3 - 3*A*b^4 - 4*(2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 - 3*A*a*b^3 -
 4*(2*B*a^3 - 3*A*a^2*b)*c)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b
*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(A*a^2*b^2 - 4*A*a^3*c - (8
*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 - 3*A*a*b^3 - 2*
(2*B*a^3 - 5*A*a^2*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^3*b^2*c - 4*a^4*c^2)
*x^3 + (a^3*b^3 - 4*a^4*b*c)*x^2 + (a^4*b^2 - 4*a^5*c)*x)]
```

giac [A] time = 0.27, size = 220, normalized size = 1.39

$$\frac{2\left(\frac{\left(Ba^3bc-Aa^2b^2c+2\,Aa^3c^2\right)x}{a^4b^2-4\,a^5c}+\frac{Ba^3b^2-Aa^2b^3-2\,Ba^4c+3\,Aa^3bc}{a^4b^2-4\,a^5c}\right)}{\sqrt{cx^2+bx+a}}+\frac{(2\,Ba-3\,Ab)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Ab+2\,Aa\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2-a\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*a^3*b*c - A*a^2*b^2*c + 2*A*a^3*c^2)*x/(a^4*b^2 - 4*a^5*c) + (B*a^3*b
^2 - A*a^2*b^3 - 2*B*a^4*c + 3*A*a^3*b*c)/(a^4*b^2 - 4*a^5*c))/sqrt(c*x^2 +
 b*x + a) + (2*B*a - 3*A*b)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqr
t(-a))/(sqrt(-a)*a^2) + ((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b + 2*A*a*sq
rt(c))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)*a^2)
```

maple [B] time = 0.06, size = 330, normalized size = 2.09

$$-\frac{8Ac^2x}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}+\frac{3Ab^2cx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a^2}-\frac{2Bbcx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}-\frac{4Abc}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}+\frac{3Ab^3}{2\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a^2}-\frac{Bb^2}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}+\frac{3Ab\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\;\sqrt{a}}{x}\right)}{2a^{\frac{5}{2}}}-\frac{B\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\;\sqrt{a}}{x}\right)}{a^{\frac{3}{2}}}-\frac{3Ab}{2\sqrt{c\,x^2+bx+a}\;a^2}+\frac{B}{\sqrt{c\,x^2+bx+a}\;a}-\frac{A}{\sqrt{c\,x^2+bx+a}\;ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -A/a/x/(c*x^2+b*x+a)^(1/2)-3/2*A/a^2*b/(c*x^2+b*x+a)^(1/2)+3*A/a^2*b^2/(4*a
*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+3/2*A/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/
2)+3/2*A/a^(5/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-8*A*c^2/a/
(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-4*A*c/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*b
+B/a/(c*x^2+b*x+a)^(1/2)-2*B*b/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x-B*b^2/
a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-B/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/
2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^2 \left(a + bx + cx^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*(a + b*x + c*x**2)**(3/2)), x)
```

3.893 $\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=231

$$-\frac{3\left(-4aAc-4abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{7/2}}-\frac{\sqrt{a+bx+cx^2}\left(4aB\left(3b^2-8ac\right)-A\left(15b^3-52abc\right)\right)}{4a^3x\left(b^2-4ac\right)}-\cdots$$

Rubi [A] time = 0.20, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 834, 806, 724, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-12aAc-4abB+5Ab^2\right)}{2a^2x^2\left(b^2-4ac\right)}-\frac{\sqrt{a+bx+cx^2}\left(4aB\left(3b^2-8ac\right)-A\left(15b^3-52abc\right)\right)}{4a^3x\left(b^2-4ac\right)}-\frac{3\left(-4aAc-4abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{7/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{ax^2\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*x^2*Sqrt
[a + b*x + c*x^2]) - ((5*A*b^2 - 4*a*b*B - 12*a*A*c)*Sqrt[a + b*x + c*x^2])
/(2*a^2*(b^2 - 4*a*c)*x^2) - ((4*a*B*(3*b^2 - 8*a*c) - A*(15*b^3 - 52*a*b*c
))*Sqrt[a + b*x + c*x^2])/(4*a^3*(b^2 - 4*a*c)*x) - (3*(5*A*b^2 - 4*a*b*B -
 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(8*a^(7/2
))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
```

```
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(-5Ab^2+4abB+12aAc\right)-2(Ab-2aB)cx}{x^3\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2} +$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2} -$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2} -$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2} -$$

Mathematica [A] time = 0.29, size = 214, normalized size = 0.93

$$\frac{3\left(b^2-4ac\right)\left(-4aAc-4abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)-\frac{2\sqrt{a}\left(8a^3c(A+2Bx)+a^2\left(4Bx\left(-b^2+10bcx+8c^2x^2\right)-2A\left(b^2+10bcx-12c^2x^2\right)\right)-abx\left(A\left(-5b^2+62bcx+52c^2x^2\right)+12bBx(b+cx)\right)+15Ab^3x^2(b+cx)\right)}{x^2\sqrt{a+x(b+cx)}}}{8a^{7/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((-2*Sqrt[a]*(8*a^3*c*(A + 2*B*x) + 15*A*b^3*x^2*(b + c*x) + a^2*(-2*A*(b^2
 + 10*b*c*x - 12*c^2*x^2) + 4*B*x*(-b^2 + 10*b*c*x + 8*c^2*x^2)) - a*b*x*(1
2*b*B*x*(b + c*x) + A*(-5*b^2 + 62*b*c*x + 52*c^2*x^2))))/(x^2*Sqrt[a + x*(
b + c*x)]) + 3*(b^2 - 4*a*c)*(5*A*b^2 - 4*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b
*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(8*a^(7/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 1.25, size = 278, normalized size = 1.20

$$\frac{15Ab^2\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{4a^{7/2}}+\frac{3(Ac+bB)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{a^{5/2}}+\frac{-8a^3Ac-16a^3Bcx+2a^2Ab^2+20a^2Abcx-24a^2Ac^2x^2+4a^2b^2Bx-40a^2bBcx^2-32a^2Bc^2x^3-5aAb^3x+62aAb^2cx^2+52aAbc^2x^3+12ab^3Bx^2+12ab^2Bcx^3-15Ab^4x^2-15Ab^3cx^3}{4a^3x^2\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*a^2*A*b^2 - 8*a^3*A*c - 5*a*A*b^3*x + 4*a^2*b^2*B*x + 20*a^2*A*b*c*x - 1
6*a^3*B*c*x - 15*A*b^4*x^2 + 12*a*b^3*B*x^2 + 62*a*A*b^2*c*x^2 - 40*a^2*b*B
*c*x^2 - 24*a^2*A*c^2*x^2 - 15*A*b^3*c*x^3 + 12*a*b^2*B*c*x^3 + 52*a*A*b*c^
2*x^3 - 32*a^2*B*c^2*x^3)/(4*a^3*(-b^2 + 4*a*c)*x^2*Sqrt[a + b*x + c*x^2])
+ (3*(b*B + A*c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/a
^(5/2) + (15*A*b^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt
[a]])/(4*a^(7/2))
```

fricas [**B**] time = 1.12, size = 869, normalized size = 3.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*((16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2 - (4*B*a*b^3 - 5*A
*b^4)*c)*x^4 - (4*B*a*b^4 - 5*A*b^5 - 16*A*a^2*b*c^2 - 8*(2*B*a^2*b^2 - 3*A
*a*b^3)*c)*x^3 - (4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3
*A*a^2*b^2)*c)*x^2)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^
2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(2*A*a^3*b^2 - 8*A*a^4*c
 - (4*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*B*a^2*b^2 - 5*A*a*b^3)*c)*x^3 + (12
*B*a^2*b^3 - 15*A*a*b^4 - 24*A*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2*b^2)*c)*x
^2 + (4*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 - 5*A*a^3*b)*c)*x)*sqrt(c*x^2
+ b*x + a))/((a^4*b^2*c - 4*a^5*c^2)*x^4 + (a^4*b^3 - 4*a^5*b*c)*x^3 + (a^5
*b^2 - 4*a^6*c)*x^2), 1/8*(3*((16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2
 - (4*B*a*b^3 - 5*A*b^4)*c)*x^4 - (4*B*a*b^4 - 5*A*b^5 - 16*A*a^2*b*c^2 - 8
*(2*B*a^2*b^2 - 3*A*a*b^3)*c)*x^3 - (4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2
 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*x^2)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(2*A*a^3*b^2 - 8*A*
a^4*c - (4*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*B*a^2*b^2 - 5*A*a*b^3)*c)*x^3
+ (12*B*a^2*b^3 - 15*A*a*b^4 - 24*A*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2*b^2)
*c)*x^2 + (4*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 - 5*A*a^3*b)*c)*x)*sqrt(c
*x^2 + b*x + a))/((a^4*b^2*c - 4*a^5*c^2)*x^4 + (a^4*b^3 - 4*a^5*b*c)*x^3 +
 (a^5*b^2 - 4*a^6*c)*x^2)]
```

giac [**B**] time = 0.26, size = 467, normalized size = 2.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*((B*a^4*b^2*c - A*a^3*b^3*c - 2*B*a^5*c^2 + 3*A*a^4*b*c^2)*x/(a^6*b^2 -
4*a^7*c) + (B*a^4*b^3 - A*a^3*b^4 - 3*B*a^5*b*c + 4*A*a^4*b^2*c - 2*A*a^5*c
^2)/(a^6*b^2 - 4*a^7*c))/sqrt(c*x^2 + b*x + a) - 3/4*(4*B*a*b - 5*A*b^2 + 4
*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^3
) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b - 7*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c
 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(c) - 8*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^2*A*a*b*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*B*a^2*b + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^2 + 4*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*sqrt(c) + 16*A*a^2*b*sqrt(c))/(((
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2*a^3)
```

maple [**B**] time = 0.07, size = 506, normalized size = 2.19

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/2*A/a/x^2/(c*x^2+b*x+a)^(1/2)+5/4*A/a^2*b/x/(c*x^2+b*x+a)^(1/2)+15/8*A/a
^3*b^2/(c*x^2+b*x+a)^(1/2)-15/4*A/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c
*x-15/8*A/a^3*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-15/8*A/a^(7/2)*b^2*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+13*A/a^2*b*c^2/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)*x+13/2*A/a^2*b^2*c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*A*c/a^2/
(c*x^2+b*x+a)^(1/2)+3/2*A*c/a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/
2))/x)-B/a/x/(c*x^2+b*x+a)^(1/2)-3/2*B/a^2*b/(c*x^2+b*x+a)^(1/2)+3*B/a^2*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+3/2*B/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+
a)^(1/2)+3/2*B/a^(5/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-8*B*
c^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-4*B*c/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)*b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^3\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + B x}{x^{3} \left(a + b x + c x^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*(a + b*x + c*x**2)**(3/2)), x)
```

3.894 $\int \frac{A+Bx}{x^4(a+bx+cx^2)^{3/2}} \, dx$

Optimal. Leaf size=317

$$-\frac{\left(6aB\left(5b^2-4ac\right)-A\left(35b^3-60abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{9/2}}-\frac{\sqrt{a+bx+cx^2}\left(6aB\left(5b^2-12ac\right)-A\left(35b^3\right.\right.}{12a^3x^2\left(b^2-4ac\right)}$$

Rubi [A] time = 0.39, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(6abB\left(15b^2-52ac\right)-A\left(256a^2c^2-460ab^2c+105b^4\right)\right)}{24a^4x\left(b^2-4ac\right)}-\frac{\sqrt{a+bx+cx^2}\left(-16aAc-6abB+7Ab^2\right)}{3a^2x^3\left(b^2-4ac\right)}-\frac{\sqrt{a+bx+cx^2}\left(6aB\left(5b^2-12ac\right)-A\left(35b^3-116abc\right)\right)}{12a^3x^2\left(b^2-4ac\right)}-\frac{\left(6aB\left(5b^2-4ac\right)-A\left(35b^3-60abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{9/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{ax^3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*x^3*Sqrt
[a + b*x + c*x^2]) - ((7*A*b^2 - 6*a*b*B - 16*a*A*c)*Sqrt[a + b*x + c*x^2])
/(3*a^2*(b^2 - 4*a*c)*x^3) - ((6*a*B*(5*b^2 - 12*a*c) - A*(35*b^3 - 116*a*b
*c))*Sqrt[a + b*x + c*x^2])/(12*a^3*(b^2 - 4*a*c)*x^2) + ((6*a*b*B*(15*b^2
- 52*a*c) - A*(105*b^4 - 460*a*b^2*c + 256*a^2*c^2))*Sqrt[a + b*x + c*x^2])
/(24*a^4*(b^2 - 4*a*c)*x) - ((6*a*B*(5*b^2 - 4*a*c) - A*(35*b^3 - 60*a*b*c)
)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(16*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
```

```
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^4\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(-7Ab^2+6abB+16aAc\right)-3(Ab-2aB)cx}{x^4\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}} - \frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3} +$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}} - \frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3} +$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}} - \frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3} +$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}} - \frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3} +$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}} - \frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3} +$$

Mathematica [A] time = 0.43, size = 294, normalized size = 0.93

$$\frac{\frac{2\sqrt{a}\left(-16a^4c(2A+3Bx)+4a^3\left(2A\left(b^2+7bcx+16c^2x^2\right)+3Bx\left(b^2+10bcx-12c^2x^2\right)\right)+2a^2x\left(A\left(-7b^3-86b^2cx+244bc^2x^2+128c^3x^3\right)+3bBx\left(-5b^2+62bcx+52c^2x^2\right)\right)-5ab^2x^2\left(A\left(-7b^2+106bcx+92c^2x^2\right)+18bBx(b+cx)\right)+105Ab^4x^3(b+cx)\right)}{x^3\sqrt{a+x(b+cx)}}-3\left(b^2-4ac\right)\left(5A\left(7b^3-12abc\right)+6aB\left(4ac-5b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{48a^{9/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((2*Sqrt[a]*(-16*a^4*c*(2*A + 3*B*x) + 105*A*b^4*x^3*(b + c*x) + 4*a^3*(3*B
*x*(b^2 + 10*b*c*x - 12*c^2*x^2) + 2*A*(b^2 + 7*b*c*x + 16*c^2*x^2)) - 5*a*
b^2*x^2*(18*b*B*x*(b + c*x) + A*(-7*b^2 + 106*b*c*x + 92*c^2*x^2)) + 2*a^2*
x*(3*b*B*x*(-5*b^2 + 62*b*c*x + 52*c^2*x^2) + A*(-7*b^3 - 86*b^2*c*x + 244*
b*c^2*x^2 + 128*c^3*x^3))))/(x^3*Sqrt[a + x*(b + c*x)]) - 3*(b^2 - 4*a*c)*(
6*a*B*(-5*b^2 + 4*a*c) + 5*A*(7*b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqr
t[a]*Sqrt[a + x*(b + c*x)])])/(48*a^(9/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 2.11, size = 380, normalized size = 1.20

$$-\frac{15\left(2Abc+b^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{4a^{7/2}}+\frac{\left(-24a^2Bc-35Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{c}x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{8a^{9/2}}+\frac{-32a^4Ac-48a^4Bcx+8a^3Ab^2+56a^3Abcx+128a^3Ac^2x^2+12a^3b^2Bx+120a^3bBcx^2-144a^3Bc^2x^3-14a^2Ab^3x-172a^2Ab^2cx^2+488a^2Abc^2x^3+256a^2Ac^3x^4-30a^2b^3Bx^2+372a^2b^2Bcx^3+312a^2bBc^2x^4+35aAb^4x^2-530aAb^3cx^3-460aAb^2c^2x^4-90ab^4Bx^3-90ab^3Bcx^4+105Ab^5x^3+105Ab^4cx^4}{24a^4x^3\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (8*a^3*A*b^2 - 32*a^4*A*c - 14*a^2*A*b^3*x + 12*a^3*b^2*B*x + 56*a^3*A*b*c*
x - 48*a^4*B*c*x + 35*a*A*b^4*x^2 - 30*a^2*b^3*B*x^2 - 172*a^2*A*b^2*c*x^2
+ 120*a^3*b*B*c*x^2 + 128*a^3*A*c^2*x^2 + 105*A*b^5*x^3 - 90*a*b^4*B*x^3 -
530*a*A*b^3*c*x^3 + 372*a^2*b^2*B*c*x^3 + 488*a^2*A*b*c^2*x^3 - 144*a^3*B*c
^2*x^3 + 105*A*b^4*c*x^4 - 90*a*b^3*B*c*x^4 - 460*a*A*b^2*c^2*x^4 + 312*a^2
*b*B*c^2*x^4 + 256*a^2*A*c^3*x^4)/(24*a^4*(-b^2 + 4*a*c)*x^3*Sqrt[a + b*x +
 c*x^2]) + ((-35*A*b^3 - 24*a^2*B*c)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x + c*
x^2])/Sqrt[a]])/(8*a^(9/2)) - (15*(b^2*B + 2*A*b*c)*ArcTanh[(-(Sqrt[c]*x) +
 Sqrt[a + b*x + c*x^2])/Sqrt[a]])/(4*a^(7/2))
```

fricas [A] time = 2.06, size = 1093, normalized size = 3.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*((48*(2*B*a^3 - 5*A*a^2*b)*c^3 - 8*(18*B*a^2*b^2 - 25*A*a*b^3)*c^2
 + 5*(6*B*a*b^4 - 7*A*b^5)*c)*x^5 + (30*B*a*b^5 - 35*A*b^6 + 48*(2*B*a^3*b
- 5*A*a^2*b^2)*c^2 - 8*(18*B*a^2*b^3 - 25*A*a*b^4)*c)*x^4 + (30*B*a^2*b^4 -
 35*A*a*b^5 + 48*(2*B*a^4 - 5*A*a^3*b)*c^2 - 8*(18*B*a^3*b^2 - 25*A*a^2*b^3
)*c)*x^3)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(8*A*a^4*b^2 - 32*A*a^5*c + (256*A
*a^3*c^3 + 4*(78*B*a^3*b - 115*A*a^2*b^2)*c^2 - 15*(6*B*a^2*b^3 - 7*A*a*b^4
)*c)*x^4 - (90*B*a^2*b^4 - 105*A*a*b^5 + 8*(18*B*a^4 - 61*A*a^3*b)*c^2 - 2*
(186*B*a^3*b^2 - 265*A*a^2*b^3)*c)*x^3 - (30*B*a^3*b^3 - 35*A*a^2*b^4 - 128
*A*a^4*c^2 - 4*(30*B*a^4*b - 43*A*a^3*b^2)*c)*x^2 + 2*(6*B*a^4*b^2 - 7*A*a^
3*b^3 - 4*(6*B*a^5 - 7*A*a^4*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^2*c -
4*a^6*c^2)*x^5 + (a^5*b^3 - 4*a^6*b*c)*x^4 + (a^6*b^2 - 4*a^7*c)*x^3), 1/48
*(3*((48*(2*B*a^3 - 5*A*a^2*b)*c^3 - 8*(18*B*a^2*b^2 - 25*A*a*b^3)*c^2 + 5*
(6*B*a*b^4 - 7*A*b^5)*c)*x^5 + (30*B*a*b^5 - 35*A*b^6 + 48*(2*B*a^3*b - 5*A
*a^2*b^2)*c^2 - 8*(18*B*a^2*b^3 - 25*A*a*b^4)*c)*x^4 + (30*B*a^2*b^4 - 35*A
*a*b^5 + 48*(2*B*a^4 - 5*A*a^3*b)*c^2 - 8*(18*B*a^3*b^2 - 25*A*a^2*b^3)*c)*
x^3)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^
2 + a*b*x + a^2)) - 2*(8*A*a^4*b^2 - 32*A*a^5*c + (256*A*a^3*c^3 + 4*(78*B*
a^3*b - 115*A*a^2*b^2)*c^2 - 15*(6*B*a^2*b^3 - 7*A*a*b^4)*c)*x^4 - (90*B*a^
2*b^4 - 105*A*a*b^5 + 8*(18*B*a^4 - 61*A*a^3*b)*c^2 - 2*(186*B*a^3*b^2 - 26
5*A*a^2*b^3)*c)*x^3 - (30*B*a^3*b^3 - 35*A*a^2*b^4 - 128*A*a^4*c^2 - 4*(30*
B*a^4*b - 43*A*a^3*b^2)*c)*x^2 + 2*(6*B*a^4*b^2 - 7*A*a^3*b^3 - 4*(6*B*a^5
- 7*A*a^4*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^2*c - 4*a^6*c^2)*x^5 + (a
^5*b^3 - 4*a^6*b*c)*x^4 + (a^6*b^2 - 4*a^7*c)*x^3)]
```

giac [B] time = 0.28, size = 798, normalized size = 2.52

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*a^5*b^3*c - A*a^4*b^4*c - 3*B*a^6*b*c^2 + 4*A*a^5*b^2*c^2 - 2*A*a^6*c
^3)*x/(a^8*b^2 - 4*a^9*c) + (B*a^5*b^4 - A*a^4*b^5 - 4*B*a^6*b^2*c + 5*A*a^
5*b^3*c + 2*B*a^7*c^2 - 5*A*a^6*b*c^2)/(a^8*b^2 - 4*a^9*c))/sqrt(c*x^2 + b*
x + a) + 1/8*(30*B*a*b^2 - 35*A*b^3 - 24*B*a^2*c + 60*A*a*b*c)*arctan(-(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) - 1/24*(42*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^5*B*a*b^2 - 57*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^5*A*b^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c + 84*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b*c + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x
```

```
+ a))^4*B*a^2*b*sqrt(c) - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a*b^2*
sqrt(c) + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*c^(3/2) - 96*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b^2 + 136*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^3*A*a*b^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^2*b*c -
 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c) + 144*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^2*A*a^2*b^2*sqrt(c) - 192*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^2*A*a^3*c^(3/2) + 54*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3
*b^2 - 87*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^3 + 24*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*B*a^4*c - 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^
3*b*c + 96*B*a^4*b*sqrt(c) - 144*A*a^3*b^2*sqrt(c) + 80*A*a^4*c^(3/2))/(((s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^3*a^4)
```

maple [B] time = 0.07, size = 708, normalized size = 2.23

$$\frac{32 A c^3 x}{3 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^2}-\frac{115 A b^2 c^2 x}{6 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^3}+\frac{35 A b^4 c x}{8 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^4}+\frac{13 B b c^2 x}{(4ac-b^2) \sqrt{c x^2+b x+a}\, a^2}-\frac{15 B b^3 c x}{4 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^3}+\frac{16 A b c^2}{3 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^2}-\frac{115 A b^3 c}{12 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^3}+\frac{35 A b^5}{16 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^4}+\frac{13 B b^2 c}{2 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^2}-\frac{15 B b^4}{8 (4ac-b^2) \sqrt{c x^2+b x+a}\, a^3}-\frac{15 A b c \ln\left(\frac{b x+2a+2\sqrt{c x^2+b x+a}\,\sqrt{a}}{x}\right)}{4 a^{\frac{7}{2}}}+\frac{35 A b^3 \ln\left(\frac{b x+2a+2\sqrt{c x^2+b x+a}\,\sqrt{a}}{x}\right)}{16 a^{\frac{9}{2}}}+\frac{3 B c \ln\left(\frac{b x+2a+2\sqrt{c x^2+b x+a}\,\sqrt{a}}{x}\right)}{2 a^{\frac{5}{2}}}-\frac{15 B b^2 \ln\left(\frac{b x+2a+2\sqrt{c x^2+b x+a}\,\sqrt{a}}{x}\right)}{8 a^{\frac{7}{2}}}+\frac{15 A b c}{4 \sqrt{c x^2+b x+a}\, a^3}-\frac{35 A b^3}{16 \sqrt{c x^2+b x+a}\, a^4}-\frac{3 B c}{2 \sqrt{c x^2+b x+a}\, a^2}+\frac{15 B b^2}{8 \sqrt{c x^2+b x+a}\, a^3}+\frac{4 A c}{3 \sqrt{c x^2+b x+a}\, a^2 x}-\frac{35 A b^2}{24 \sqrt{c x^2+b x+a}\, a^3 x}+\frac{5 B b}{4 \sqrt{c x^2+b x+a}\, a^2 x}+\frac{7 A b}{12 \sqrt{c x^2+b x+a}\, a^2 x^2}-\frac{B}{2 \sqrt{c x^2+b x+a}\, a x^2}-\frac{A}{3 \sqrt{c x^2+b x+a}\, a x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/3*A/a/x^3/(c*x^2+b*x+a)^(1/2)+7/12*A/a^2*b/x^2/(c*x^2+b*x+a)^(1/2)-35/24
*A/a^3*b^2/x/(c*x^2+b*x+a)^(1/2)-35/16*A/a^4*b^3/(c*x^2+b*x+a)^(1/2)+35/8*A
/a^4*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+35/16*A/a^4*b^5/(4*a*c-b^2)/(c
*x^2+b*x+a)^(1/2)+35/16*A/a^(9/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)-115/6*A/a^3*b^2*c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-115/12*A/a^3
*b^3*c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+15/4*A/a^3*b*c/(c*x^2+b*x+a)^(1/2)-1
5/4*A/a^(7/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+4/3*A*c/a^2
/x/(c*x^2+b*x+a)^(1/2)+32/3*A*c^3/a^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+16/
3*A*c^2/a^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*b-1/2*B/a/x^2/(c*x^2+b*x+a)^(1/
2)+5/4*B/a^2*b/x/(c*x^2+b*x+a)^(1/2)+15/8*B/a^3*b^2/(c*x^2+b*x+a)^(1/2)-15/
4*B/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x-15/8*B/a^3*b^4/(4*a*c-b^2)/
(c*x^2+b*x+a)^(1/2)-15/8*B/a^(7/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+13*B/a^2*b*c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+13/2*B/a^2*b^2*c
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*B*c/a^2/(c*x^2+b*x+a)^(1/2)+3/2*B*c/a^
(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^4\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.895 $\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=285

$$-\frac{2x\left(x\left(32a^2Bc^2+16aAbc^2-32ab^2Bc-2Ab^3c+5b^4B\right)+a\left(24aAc^2-28abBc-2Ab^2c+5b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{\sqrt{a+bx+c}}{}$$

Rubi [A] time = 0.27, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 640, 621, 206}

$$-\frac{2x\left(x\left(32a^2Bc^2+16aAbc^2-32ab^2Bc-2Ab^3c+5b^4B\right)+a\left(24aAc^2-28abBc-2Ab^2c+5b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{\sqrt{a+bx+cx^2}\left(128a^2Bc^2+40aAbc^2-100ab^2Bc-6Ab^3c+15b^4B\right)}{3c^3\left(b^2-4ac\right)^2}-\frac{2x^3\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{(5bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^3*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(3*c*(b^2 - 4*a*c)
*(a + b*x + c*x^2)^(3/2)) - (2*x*(a*(5*b^3*B - 2*A*b^2*c - 28*a*b*B*c + 24*
a*A*c^2) + (5*b^4*B - 2*A*b^3*c - 32*a*b^2*B*c + 16*a*A*b*c^2 + 32*a^2*B*c^
2)*x))/(3*c^2*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2]) + ((15*b^4*B - 6*A*b^3
*c - 100*a*b^2*B*c + 40*a*A*b*c^2 + 128*a^2*B*c^2)*Sqrt[a + b*x + c*x^2])/(
3*c^3*(b^2 - 4*a*c)^2) - ((5*b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + b*x + c*x^2])])/(2*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
```

```
0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\int \frac{x^2\left(3a(bB-2Ac)+\frac{1}{2}\left(5b^2B-2Abc-16aBc\right)x\right)}{\left(a+bx+cx^2\right)^{3/2}}}{3c\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2x\left(a\left(5b^3B-2Ab^2c-28abBc+24a\right.\right.}{3c^2}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2x\left(a\left(5b^3B-2Ab^2c-28abBc+24a\right.\right.}{3c^2}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2x\left(a\left(5b^3B-2Ab^2c-28abBc+24a\right.\right.}{3c^2}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2x\left(a\left(5b^3B-2Ab^2c-28abBc+24a\right.\right.}{3c^2}$$

Mathematica [A] time = 0.79, size = 414, normalized size = 1.45

$$\frac{2\left(\frac{x^5\left(A\left(16a^2c^2-28ab^2c-20abc^2x+7b^4+7b^3cx\right)+2aB\left(16abc+12ac^2x-5b^3-5b^2cx\right)\right)}{a\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}+\frac{3a^2\left(b^2-4ac\right)^2(5bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}\sqrt{a+x(b+cx)}\left(128a^4Bc^2-4a^3c\left(-2bc(5A+7Bx)+4c^2x(3A+4Bx)+25b^2B\right)+a^2\left(-2b^3c(3A+5Bx)+4b^2c^2x(A+2Bx)+16bc^3x^2(A+Bx)+16c^4x^3(2A+3Bx)+15b^4B\right)-4abc^3x^3(4Ab+10Acx+5bBx)+14Ab^3c^3x^4\right)}{4ac^{7/2}\left(4ac-b^2\right)}+\frac{x^5\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{(a+x(b+cx))^{3/2}}\right)}{3a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*((x^5*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))^
(3/2) + (x^5*(2*a*B*(-5*b^3 + 16*a*b*c - 5*b^2*c*x + 12*a*c^2*x) + A*(7*b^4
 - 28*a*b^2*c + 16*a^2*c^2 + 7*b^3*c*x - 20*a*b*c^2*x)))/(a*(-b^2 + 4*a*c)*
Sqrt[a + x*(b + c*x)]) + (-2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(128*a^4*B*c^2 +
 14*A*b^3*c^3*x^4 - 4*a*b*c^3*x^3*(4*A*b + 5*b*B*x + 10*A*c*x) + a^2*(15*b^
4*B + 16*b*c^3*x^2*(A + B*x) + 4*b^2*c^2*x*(A + 2*B*x) + 16*c^4*x^3*(2*A +
3*B*x) - 2*b^3*c*(3*A + 5*B*x)) - 4*a^3*c*(25*b^2*B + 4*c^2*x*(3*A + 4*B*x)
 - 2*b*c*(5*A + 7*B*x))) + 3*a^2*(b^2 - 4*a*c)^2*(5*b*B - 2*A*c)*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*a*c^(7/2)*(-b^2 + 4*a*c)))
)/(3*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 2.35, size = 371, normalized size = 1.30

$$\frac{128a^4Bc^2+40a^3Abc^2-48a^3Ac^3x-100a^3b^2Bc+312a^3bBc^2x+192a^3Bc^3x^2-6a^2Ab^3c+84a^2Ab^2c^2x-64a^2Ac^4x^3+15a^2b^4B-210a^2b^3Bcx+48a^2b^2Bc^2x^2+256a^2bBc^3x^3+48a^2Bc^4x^4-12aAb^4cx+36aAb^3c^2x^2+56aAb^2c^3x^3+30ab^5Bx-90ab^4Bcx^2-148ab^3Bc^2x^3-24ab^2Bc^3x^4-6Ab^5cx^2-8Ab^4c^2x^3+15b^6Bx^2+20b^5Bcx^3+3b^4Bc^2x^4}{3c^3\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^{3/2}}+\frac{(5bB-2Ac)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (15*a^2*b^4*B - 6*a^2*A*b^3*c - 100*a^3*b^2*B*c + 40*a^3*A*b*c^2 + 128*a^4*
B*c^2 + 30*a*b^5*B*x - 12*a*A*b^4*c*x - 210*a^2*b^3*B*c*x + 84*a^2*A*b^2*c^
2*x + 312*a^3*b*B*c^2*x - 48*a^3*A*c^3*x + 15*b^6*B*x^2 - 6*A*b^5*c*x^2 - 9
0*a*b^4*B*c*x^2 + 36*a*A*b^3*c^2*x^2 + 48*a^2*b^2*B*c^2*x^2 + 192*a^3*B*c^3
*x^2 + 20*b^5*B*c*x^3 - 8*A*b^4*c^2*x^3 - 148*a*b^3*B*c^2*x^3 + 56*a*A*b^2*
c^3*x^3 + 256*a^2*b*B*c^3*x^3 - 64*a^2*A*c^4*x^3 + 3*b^4*B*c^2*x^4 - 24*a*b
```

```
^2*B*c^3*x^4 + 48*a^2*B*c^4*x^4)/(3*c^3*(-b^2 + 4*a*c)^2*(a + b*x + c*x^2)^
(3/2)) + ((5*b*B - 2*A*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])
/(2*c^(7/2))
```

fricas [B]   time = 1.48, size = 1601, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(3*(5*B*a^2*b^5 - 32*A*a^4*c^3 + (5*B*b^5*c^2 - 32*A*a^2*c^5 + 16*(5
*B*a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A*b^4)*c^3)*x^4 + 2*(5*B*b^6*c -
32*A*a^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B*a*b^4 + A*b^5)*c^
2)*x^3 + 16*(5*B*a^4*b + A*a^3*b^2)*c^2 + (5*B*b^7 + 12*A*a*b^4*c^2 + 160*B
*a^3*b*c^3 - 64*A*a^3*c^4 - 2*(15*B*a*b^5 + A*b^6)*c)*x^2 - 2*(20*B*a^3*b^3
 + A*a^2*b^4)*c + 2*(5*B*a*b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b
^3)*c^2 - 2*(20*B*a^2*b^4 + A*a*b^5)*c)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x
 - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(15*B*a^2
*b^4*c + 3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*x^4 + 8*(16*B*a^4 + 5
*A*a^3*b)*c^3 + 4*(5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(32*B*a^2*b + 7*A*a*b^2)*
c^4 - (37*B*a*b^3 + 2*A*b^4)*c^3)*x^3 - 2*(50*B*a^3*b^2 + 3*A*a^2*b^3)*c^2
+ 3*(5*B*b^6*c + 64*B*a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A*a*b^3)*c^3 - 2*(15*B*a
*b^4 + A*b^5)*c^2)*x^2 + 6*(5*B*a*b^5*c - 8*A*a^3*c^4 + 2*(26*B*a^3*b + 7*A
*a^2*b^2)*c^3 - (35*B*a^2*b^3 + 2*A*a*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(
a^2*b^4*c^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6 + (b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*
c^8)*x^4 + 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*x^3 + (b^6*c^4 - 6*a*b^
4*c^5 + 32*a^3*c^7)*x^2 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*x),
1/6*(3*(5*B*a^2*b^5 - 32*A*a^4*c^3 + (5*B*b^5*c^2 - 32*A*a^2*c^5 + 16*(5*B*
a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A*b^4)*c^3)*x^4 + 2*(5*B*b^6*c - 32*
A*a^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B*a*b^4 + A*b^5)*c^2)*
x^3 + 16*(5*B*a^4*b + A*a^3*b^2)*c^2 + (5*B*b^7 + 12*A*a*b^4*c^2 + 160*B*a^
3*b*c^3 - 64*A*a^3*c^4 - 2*(15*B*a*b^5 + A*b^6)*c)*x^2 - 2*(20*B*a^3*b^3 +
A*a^2*b^4)*c + 2*(5*B*a*b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b^3)
*c^2 - 2*(20*B*a^2*b^4 + A*a*b^5)*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(15*B*a^2*b^4*c +
3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*x^4 + 8*(16*B*a^4 + 5*A*a^3*b)
*c^3 + 4*(5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(32*B*a^2*b + 7*A*a*b^2)*c^4 - (37
*B*a*b^3 + 2*A*b^4)*c^3)*x^3 - 2*(50*B*a^3*b^2 + 3*A*a^2*b^3)*c^2 + 3*(5*B*
b^6*c + 64*B*a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A*a*b^3)*c^3 - 2*(15*B*a*b^4 + A*
b^5)*c^2)*x^2 + 6*(5*B*a*b^5*c - 8*A*a^3*c^4 + 2*(26*B*a^3*b + 7*A*a^2*b^2)
*c^3 - (35*B*a^2*b^3 + 2*A*a*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c
^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6 + (b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*x^4
+ 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*x^3 + (b^6*c^4 - 6*a*b^4*c^5 + 3
2*a^3*c^7)*x^2 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*x)]
```

giac [A]   time = 0.29, size = 458, normalized size = 1.61

$$\frac{\left(\left(\left(\frac{3\left(Bb^4c^2-8\,Bab^2c^3+16\,Ba^2c^4\right)x}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}+\frac{4\left(5\,Bb^5c-37\,Bab^3c^2-2\,Ab^4c^2+64\,Ba^2bc^3+14\,Aab^2c^3-16\,Aa^2c^4\right)}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}\right)x+\frac{3\left(5\,Bb^6-30\,Bab^4c-2\,Ab^5c+16\,Ba^2b^2c^2+12\,Aab^3c^2+64\,Ba^3c^3\right)}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}\right)x+\frac{6\left(5\,Bab^5-35\,Ba^2b^3c-2\,Aab^4c+52\,Ba^3bc^2+14\,Aa^2b^2c^2-8\,Aa^3c^3\right)}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}\right)x+\frac{15\,Ba^2b^4-100\,Ba^3b^2c-6\,Aa^2b^3c+128\,Ba^4c^2+40\,Aa^3bc^2}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{(5\,Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((((3*(B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*x/(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5) + 4*(5*B*b^5*c - 37*B*a*b^3*c^2 - 2*A*b^4*c^2 + 64*B*a^2*b
*c^3 + 14*A*a*b^2*c^3 - 16*A*a^2*c^4)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))
*x + 3*(5*B*b^6 - 30*B*a*b^4*c - 2*A*b^5*c + 16*B*a^2*b^2*c^2 + 12*A*a*b^3*
c^2 + 64*B*a^3*c^3)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*x + 6*(5*B*a*b^5
- 35*B*a^2*b^3*c - 2*A*a*b^4*c + 52*B*a^3*b*c^2 + 14*A*a^2*b^2*c^2 - 8*A*a^
3*c^3)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*x + (15*B*a^2*b^4 - 100*B*a^3*
```

```
b^2*c - 6*A*a^2*b^3*c + 128*B*a^4*c^2 + 40*A*a^3*b*c^2)/(b^4*c^3 - 8*a*b^2*
c^4 + 16*a^2*c^5))/(c*x^2 + b*x + a)^(3/2) + 1/2*(5*B*b - 2*A*c)*log(abs(-2
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 1262, normalized size = 4.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 4*B*a^2/c^2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-38/3*B*b^3/c^2*a/(4*a*c-b^2
)^2/(c*x^2+b*x+a)^(1/2)*x+1/2*A*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x
+4*A*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+32*B*a^2/c*b/(4*a*c-b^2)^2
/(c*x^2+b*x+a)^(1/2)*x-19/12*B*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-
5/4*B*b^4/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+A/c^(5/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))+B*x^4/c/(c*x^2+b*x+a)^(3/2)-1/3*A*x^3/c/(c*x^2+b*x
+a)^(3/2)-1/48*A*b^3/c^4/(c*x^2+b*x+a)^(3/2)-A/c^2*x/(c*x^2+b*x+a)^(1/2)+1/
2*A/c^3*b/(c*x^2+b*x+a)^(1/2)-1/3*A*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)*x-1/24*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+5/6*B*b^5/c^3/(4*a*c-
b^2)^2/(c*x^2+b*x+a)^(1/2)*x+B*a/c^3*b*x/(c*x^2+b*x+a)^(3/2)+2*B*a^2/c^3*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-5/2*B*b^3/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)*x-19/24*B*b^4/c^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-19/3*B*b^4/c^3*a/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/4*A*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^
(3/2)+2*A*b^3/c^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+A/c^2*b^2/(4*a*c-b^2)
/(c*x^2+b*x+a)^(1/2)*x+5/6*B*b/c^2*x^3/(c*x^2+b*x+a)^(3/2)+8/3*B*a^2/c^3/(c
*x^2+b*x+a)^(3/2)+5/96*B*b^4/c^5/(c*x^2+b*x+a)^(3/2)-5/4*B*b^2/c^4/(c*x^2+b
*x+a)^(1/2)-5/2*B*b/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+16*
B*a^2/c^2*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+5/48*B*b^5/c^4/(4*a*c-b^2)/
(c*x^2+b*x+a)^(3/2)*x-5/4*B*b^2/c^3*x^2/(c*x^2+b*x+a)^(3/2)+4*B*a/c^2*x^2/(
c*x^2+b*x+a)^(3/2)-5/16*B*b^3/c^4*x/(c*x^2+b*x+a)^(3/2)+5/96*B*b^6/c^5/(4*a
*c-b^2)/(c*x^2+b*x+a)^(3/2)+5/12*B*b^6/c^4/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2
)-B*b^2/c^4*a/(c*x^2+b*x+a)^(3/2)+5/2*B*b/c^3*x/(c*x^2+b*x+a)^(1/2)+1/3*A*b
/c^3*a/(c*x^2+b*x+a)^(3/2)+1/8*A*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)-1/48*A*b^5/c
^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-1/6*A*b^5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a
)^(1/2)+1/2*A/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+1/2*A*b/c^2*x^2/(c*x^
2+b*x+a)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4 \, (A + B\,x)}{\left(c\,x^2 + b\,x + a\right)^{5/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
[Out] Timed out
```

3.896 $\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=189

$$-\frac{2\left(x\left(24a^2Bc^2+8aAbc^2-22ab^2Bc+3b^4B\right)+a\left(16aAc^2-20abBc+3b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+\right.}{3c\left(b^2-4ac\right)\left(a+bx+\right.}$$

Rubi [A] time = 0.13, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 777, 621, 206}

$$-\frac{2\left(x\left(24a^2Bc^2+8aAbc^2-22ab^2Bc+3b^4B\right)+a\left(16aAc^2-20abBc+3b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(3*c*(b^2 - 4*a*c)
*(a + b*x + c*x^2)^(3/2)) - (2*(a*(3*b^3*B - 20*a*b*B*c + 16*a*A*c^2) + (3*
b^4*B - 22*a*b^2*B*c + 8*a*A*b*c^2 + 24*a^2*B*c^2)*x))/(3*c^2*(b^2 - 4*a*c)
^2*Sqrt[a + b*x + c*x^2]) + (B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x
+ c*x^2])])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
```

```
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) || !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\int \frac{x\left(2a(bB-2Ac)+\frac{3}{2}B\left(b^2-4ac\right)x\right)}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3c\left(b^2-4ac\right)}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(a\left(3b^3B-20abBc+16aAc^2\right)+\left(3b^4\right.\right.}{3c^2\left(b^2-4ac\right)^2}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(a\left(3b^3B-20abBc+16aAc^2\right)+\left(3b^4\right.\right.}{3c^2\left(b^2-4ac\right)^2}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(a\left(3b^3B-20abBc+16aAc^2\right)+\left(3b^4\right.\right.}{3c^2\left(b^2-4ac\right)^2}$$

Mathematica [A] time = 0.39, size = 201, normalized size = 1.06

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{c^{5/2}}-\frac{2\left(4a^3c(4Ac-5bB+6Bcx)+a^2\left(24Abc^2x+8c^3x^2(3A+4Bx)+3b^3B-42b^2Bcx\right)+2abx\left(bc^2x(3A-14Bx)+6Ac^3x^2+3b^3B-9b^2Bcx\right)+b^3x^2\left(-Ac^2x+3b^2B+4bBcx\right)\right)}{3c^2\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(4*a^3*c*(-5*b*B + 4*A*c + 6*B*c*x) + b^3*x^2*(3*b^2*B + 4*b*B*c*x - A*
c^2*x) + 2*a*b*x*(3*b^3*B - 9*b^2*B*c*x + 6*A*c^3*x^2 + b*c^2*x*(3*A - 14*B
*x)) + a^2*(3*b^3*B - 42*b^2*B*c*x + 24*A*b*c^2*x + 8*c^3*x^2*(3*A + 4*B*x)
)))/(3*c^2*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2)) + (B*ArcTanh[(b + 2*c*x
)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/c^(5/2)
```

IntegrateAlgebraic [A] time = 1.73, size = 246, normalized size = 1.30

$$-\frac{2\left(16a^3Ac^2-20a^3bBc+24a^3Bc^2x+24a^2Abc^2x+24a^2Ac^3x^2+3a^2b^3B-42a^2b^2Bcx+32a^2Bc^3x^3+6aAb^2c^2x^2+12aAbc^3x^3+6ab^4Bx-18ab^3Bcx^2-28ab^2Bc^2x^3-Ab^3c^2x^3+3b^5Bx^2+4b^4Bcx^3\right)}{3c^2\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{B\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(3*a^2*b^3*B - 20*a^3*b*B*c + 16*a^3*A*c^2 + 6*a*b^4*B*x - 42*a^2*b^2*B
*c*x + 24*a^2*A*b*c^2*x + 24*a^3*B*c^2*x + 3*b^5*B*x^2 - 18*a*b^3*B*c*x^2 +
 6*a*A*b^2*c^2*x^2 + 24*a^2*A*c^3*x^2 + 4*b^4*B*c*x^3 - A*b^3*c^2*x^3 - 28*
a*b^2*B*c^2*x^3 + 12*a*A*b*c^3*x^3 + 32*a^2*B*c^3*x^3))/(3*c^2*(-b^2 + 4*a*
c)^2*(a + b*x + c*x^2)^(3/2)) - (B*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a +
 b*x + c*x^2]])/c^(5/2)
```

fricas [B] time = 1.49, size = 1061, normalized size = 5.61

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")

[Out] [1/6*(3*(B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2 + (B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*x^4 + 2*(B*b^5*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*x^3 + (B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b*c^2)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(3*B*a^2*b^3*c - 20*B*a^3*b*c^2 + 16*A*a^3*c^3 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c^4 - (28*B*a*b^2 + A*b^3)*c^3)*x^3 + 3*(B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3 + 8*A*a^2*c^4)*x^2 + 6*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x), -1/3*(3*(B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2 + (B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*x^4 + 2*(B*b^5*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*x^3 + (B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b*c^2)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(3*B*a^2*b^3*c - 20*B*a^3*b*c^2 + 16*A*a^3*c^3 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c^4 - (28*B*a*b^2 + A*b^3)*c^3)*x^3 + 3*(B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3 + 8*A*a^2*c^4)*x^2 + 6*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x)]

giac [A] time = 0.28, size = 314, normalized size = 1.66

$$-\frac{2\left(\left(\left(\frac{\left(4\,Bb^4c-28\,Bab^2c^2-Ab^3c^2+32\,Ba^2c^3+12\,Aabc^3\right)x}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}+\frac{3\left(Bb^5-6\,Bab^3c+2\,Aab^2c^2+8\,Aa^2c^3\right)}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}\right)x+\frac{6\left(Bab^4-7\,Ba^2b^2c+4\,Ba^3c^2+4\,Aa^2bc^2\right)}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}\right)x+\frac{3\,Ba^2b^3-20\,Ba^3bc+16\,Aa^3c^2}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{B\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")

[Out] -2/3*((((4*B*b^4*c - 28*B*a*b^2*c^2 - A*b^3*c^2 + 32*B*a^2*c^3 + 12*A*a*b*c^3)*x/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4) + 3*(B*b^5 - 6*B*a*b^3*c + 2*A*a*b^2*c^2 + 8*A*a^2*c^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x + 6*(B*a*b^4 - 7*B*a^2*b^2*c + 4*B*a^3*c^2 + 4*A*a^2*b*c^2)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x + (3*B*a^2*b^3 - 20*B*a^3*b*c + 16*A*a^3*c^2)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))/(c*x^2 + b*x + a)^(3/2) - B*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)

maple [B] time = 0.06, size = 860, normalized size = 4.55

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)

[Out] 1/2*B/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-1/4*A*b/c^2*x/(c*x^2+b*x+a)^(3/2)-4*A*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+2/3*A*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+4*B*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-A*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+1/2*B*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+1/2*B/c^3*b/(c*x^2+b*x+a)^(1/2)-1/3*B*x^3/c/(c*x^2+b*x+a)^(3/2)-1/48*B*b^3/c^4/(c*x^2+b*x+a)^(3/2)-B/c^2*x/(c*x^2+b*x+a)^(1/2)-A*x^2/c/(c*x^2+b*x+a)^(3/2)-2/3*A*a/c^2/(c*x^2+b*x+a)^(3/2)+1/24*A*b^2/c^3/(c*x^2+b*x+a)^(3/2)+B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/12*A*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+B/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+1/4*B*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+2*B*b^3/c^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/8*B*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)+1/2*B*b/c^

```
2*x^2/(c*x^2+b*x+a)^(3/2)+1/24*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+1/
3*A*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-1/2*A*b^2/c^2*a/(4*a*c-b^2)/(
c*x^2+b*x+a)^(3/2)-8*A*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-1/24*B*b^4/c
^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-1/3*B*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x
+a)^(1/2)*x-1/48*B*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-1/6*B*b^5/c^3/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/3*B*b/c^3*a/(c*x^2+b*x+a)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.897 $\int \frac{x^2(A+Bx)}{(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=94

$$\frac{8(2a+bx)(Ab-2aB)}{3(b^2-4ac)^2\sqrt{a+bx+cx^2}}-\frac{2x^2(-2aB-x(bB-2Ac)+Ab)}{3(b^2-4ac)(a+bx+cx^2)^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {804, 636}

$$\frac{8(2a+bx)(Ab-2aB)}{3(b^2-4ac)^2\sqrt{a+bx+cx^2}}-\frac{2x^2(-2aB-x(bB-2Ac)+Ab)}{3(b^2-4ac)(a+bx+cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)
^(3/2)) + (8*(A*b - 2*a*B)*(2*a + b*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c
*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{(a+bx+cx^2)^{5/2}}\,dx &= -\frac{2x^2(Ab-2aB-(bB-2Ac)x)}{3(b^2-4ac)(a+bx+cx^2)^{3/2}}+\frac{(4(Ab-2aB))\int \frac{x}{(a+bx+cx^2)^{3/2}}\,dx}{3(b^2-4ac)}\\ &= -\frac{2x^2(Ab-2aB-(bB-2Ac)x)}{3(b^2-4ac)(a+bx+cx^2)^{3/2}}+\frac{8(Ab-2aB)(2a+bx)}{3(b^2-4ac)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.25, size = 110, normalized size = 1.17

$$\frac{2\left(-16a^3B+8a^2(Ab-3Bx(b+cx))+2ax\left(A\left(6b^2+6bcx+4c^2x^2\right)-3bBx(b+2cx)\right)+b^2x^2(3Ab+2Acx+bBx)\right)}{3(b^2-4ac)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(-16*a^3*B + b^2*x^2*(3*A*b + b*B*x + 2*A*c*x) + 8*a^2*(A*b - 3*B*x*(b +
 c*x)) + 2*a*x*(-3*b*B*x*(b + 2*c*x) + A*(6*b^2 + 6*b*c*x + 4*c^2*x^2))))/(
3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.18, size = 134, normalized size = 1.43

$$-\frac{2\left(16a^3B-8a^2Ab+24a^2bBx+24a^2Bcx^2-12aAb^2x-12aAbcx^2-8aAc^2x^3+6ab^2Bx^2+12abBcx^3-3Ab^3x^2-2Ab^2cx^3-b^3Bx^3\right)}{3\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(-8*a^2*A*b + 16*a^3*B - 12*a*A*b^2*x + 24*a^2*b*B*x - 3*A*b^3*x^2 + 6*
a*b^2*B*x^2 - 12*a*A*b*c*x^2 + 24*a^2*B*c*x^2 - b^3*B*x^3 - 2*A*b^2*c*x^3 +
 12*a*b*B*c*x^3 - 8*a*A*c^2*x^3))/(3*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2
))
```

fricas [B] time = 1.16, size = 248, normalized size = 2.64

$$-\frac{2\left(16\,Ba^3-8\,Aa^2b-\left(Bb^3+8\,Aac^2-2\left(6\,Bab-Ab^2\right)c\right)x^3+3\left(2\,Bab^2-Ab^3+4\left(2\,Ba^2-Aab\right)c\right)x^2+12\left(2\,Ba^2b-Aab^2\right)x\right)\sqrt{cx^2+bx+a}}{3\left(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)x^4+2\left(b^5c-8\,ab^3c^2+16\,a^2bc^3\right)x^3+\left(b^6-6\,ab^4c+32\,a^3c^3\right)x^2+2\left(ab^5-8\,a^2b^3c+16\,a^3bc^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(16*B*a^3 - 8*A*a^2*b - (B*b^3 + 8*A*a*c^2 - 2*(6*B*a*b - A*b^2)*c)*x^
3 + 3*(2*B*a*b^2 - A*b^3 + 4*(2*B*a^2 - A*a*b)*c)*x^2 + 12*(2*B*a^2*b - A*a
*b^2)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c
^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)
*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3
*b*c^2)*x)
```

giac [B] time = 0.26, size = 195, normalized size = 2.07

$$\frac{2\left(\left(\left(\frac{\left(Bb^3-12\,Babc+2\,Ab^2c+8\,Aac^2\right)x}{b^4-8\,ab^2c+16\,a^2c^2}-\frac{3\left(2\,Bab^2-Ab^3+8\,Ba^2c-4\,Aabc\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x-\frac{12\left(2\,Ba^2b-Aab^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x-\frac{8\left(2\,Ba^3-Aa^2b\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((B*b^3 - 12*B*a*b*c + 2*A*b^2*c + 8*A*a*c^2)*x/(b^4 - 8*a*b^2*c + 16
*a^2*c^2) - 3*(2*B*a*b^2 - A*b^3 + 8*B*a^2*c - 4*A*a*b*c)/(b^4 - 8*a*b^2*c
+ 16*a^2*c^2))*x - 12*(2*B*a^2*b - A*a*b^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))
*x - 8*(2*B*a^3 - A*a^2*b)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a
)^(3/2)
```

maple [A] time = 0.06, size = 141, normalized size = 1.50

$$\frac{\frac{16}{3}Aa\,c^2x^3+\frac{4}{3}A\,b^2c\,x^3-8Babc\,x^3+\frac{2}{3}B\,b^3x^3+8Aabc\,x^2+2A\,b^3x^2-16B\,a^2c\,x^2-4Ba\,b^2x^2+8Aa\,b^2x-16B\,a^2bx+\frac{16}{3}A\,a^2b-\frac{32}{3}B\,a^3}{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8a\,b^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(8*A*a*c^2*x^3+2*A*b^2*c*x^3-12*B*a*b*c*x^3+B*b^3*x
^3+12*A*a*b*c*x^2+3*A*b^3*x^2-24*B*a^2*c*x^2-6*B*a*b^2*x^2+12*A*a*b^2*x-24*
B*a^2*b*x+8*A*a^2*b-16*B*a^3)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 1.73, size = 131, normalized size = 1.39

$$\frac{2\left(-16\,B\,a^3-24\,B\,a^2\,b\,x+8\,A\,a^2\,b-24\,B\,a^2\,c\,x^2-6\,B\,a\,b^2\,x^2+12\,A\,a\,b^2\,x-12\,B\,a\,b\,c\,x^3+12\,A\,a\,b\,c\,x^2+8\,A\,a\,c^2\,x^3+B\,b^3\,x^3+3\,A\,b^3\,x^2+2\,A\,b^2\,c\,x^3\right)}{3\left(4\,a\,c-b^2\right)^2\left(c\,x^2+b\,x+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(3*A*b^3*x^2 - 16*B*a^3 + B*b^3*x^3 + 8*A*a^2*b + 12*A*a*b^2*x - 24*B*a^
2*b*x - 6*B*a*b^2*x^2 + 8*A*a*c^2*x^3 - 24*B*a^2*c*x^2 + 2*A*b^2*c*x^3 + 12
*A*a*b*c*x^2 - 12*B*a*b*c*x^3))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.898 $\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=114

$$\frac{2(b+2cx)\left(4aBc-4Abc+b^2B\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {777, 613}

$$\frac{2(b+2cx)\left(4aBc-4Abc+b^2B\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(3*c*(b^2 - 4*a*c)*(a
+ b*x + c*x^2)^(3/2)) + (2*(b^2*B - 4*A*b*c + 4*a*B*c)*(b + 2*c*x))/(3*c*(b
^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{\left(b^2B-4Abc+4aBc\right)\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3c\left(b^2-4ac\right)}\\ &= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\left(b^2B-4Abc+4aBc\right)(b+2cx)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.17, size = 114, normalized size = 1.00

$$\frac{2\left(8a^2(bB-Ac)-2aAb(b+6cx)+4aBx\left(3b^2+3bcx+2c^2x^2\right)+bx\left(bBx(3b+2cx)-A\left(3b^2+12bcx+8c^2x^2\right)\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(8*a^2*(b*B - A*c) - 2*a*A*b*(b + 6*c*x) + 4*a*B*x*(3*b^2 + 3*b*c*x + 2*
c^2*x^2) + b*x*(b*B*x*(3*b + 2*c*x) - A*(3*b^2 + 12*b*c*x + 8*c^2*x^2))))/(
3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.99, size = 130, normalized size = 1.14

$$-\frac{2\left(8a^2Ac-8a^2bB+2aAb^2+12aAbcx-12ab^2Bx-12abBcx^2-8aBc^2x^3+3Ab^3x+12Ab^2cx^2+8Abc^2x^3-3b^3Bx^2-2b^2Bcx^3\right)}{3\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(2*a*A*b^2 - 8*a^2*b*B + 8*a^2*A*c + 3*A*b^3*x - 12*a*b^2*B*x + 12*a*A*
b*c*x - 3*b^3*B*x^2 + 12*A*b^2*c*x^2 - 12*a*b*B*c*x^2 - 2*b^2*B*c*x^3 + 8*A
*b*c^2*x^3 - 8*a*B*c^2*x^3))/(3*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 1.20, size = 244, normalized size = 2.14

$$\frac{2\left(8\,Ba^2b-2\,Aab^2-8\,Aa^2c+2\left(Bb^2c+4\,(Ba-Ab)c^2\right)x^3+3\left(Bb^3+4\left(Bab-Ab^2\right)c\right)x^2+3\left(4\,Bab^2-Ab^3-4\,Aabc\right)x\right)\sqrt{cx^2+bx+a}}{3\left(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)x^4+2\left(b^5c-8\,ab^3c^2+16\,a^2bc^3\right)x^3+\left(b^6-6\,ab^4c+32\,a^3c^3\right)x^2+2\left(ab^5-8\,a^2b^3c+16\,a^3bc^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(8*B*a^2*b - 2*A*a*b^2 - 8*A*a^2*c + 2*(B*b^2*c + 4*(B*a - A*b)*c^2)*x^
3 + 3*(B*b^3 + 4*(B*a*b - A*b^2)*c)*x^2 + 3*(4*B*a*b^2 - A*b^3 - 4*A*a*b*c)
*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 -
8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3
+ (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^
2)*x)
```

giac [A] time = 0.25, size = 196, normalized size = 1.72

$$\frac{2\left(\left(\left(\frac{2\left(Bb^2c+4\,Bac^2-4\,Abc^2\right)x}{b^4-8\,ab^2c+16\,a^2c^2}+\frac{3\left(Bb^3+4\,Babc-4\,Ab^2c\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{3\left(4\,Bab^2-Ab^3-4\,Aabc\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{2\left(4\,Ba^2b-Aab^2-4\,Aa^2c\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(((2*(B*b^2*c + 4*B*a*c^2 - 4*A*b*c^2)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2)
 + 3*(B*b^3 + 4*B*a*b*c - 4*A*b^2*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*
(4*B*a*b^2 - A*b^3 - 4*A*a*b*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 2*(4*B*
a^2*b - A*a*b^2 - 4*A*a^2*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x +
 a)^(3/2)
```

maple [A] time = 0.05, size = 138, normalized size = 1.21

$$-\frac{2\left(8Abc^2x^3-8Bac^2x^3-2Bb^2cx^3+12Ab^2cx^2-12Babcx^2-3Bb^3x^2+12Aabcx+3Ab^3x-12Bab^2x+8Aa^2c+2Aab^2-8Ba^2b\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8ab^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)*(8*A*b*c^2*x^3-8*B*a*c^2*x^3-2*B*b^2*c*x^3+12*A*b^
2*c*x^2-12*B*a*b*c*x^2-3*B*b^3*x^2+12*A*a*b*c*x+3*A*b^3*x-12*B*a*b^2*x+8*A*
a^2*c+2*A*a*b^2-8*B*a^2*b)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.57, size = 128, normalized size = 1.12

$$\frac{2\left(8Ba^2b-8Aa^2c+12Bab^2x-2Aab^2+12Babcx^2-12Aabcx+8Bac^2x^3+3Bb^3x^2-3Ab^3x+2Bb^2cx^3-12Ab^2cx^2-8Abc^2x^3\right)}{3\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(3*B*b^3*x^2 - 2*A*a*b^2 - 8*A*a^2*c + 8*B*a^2*b - 3*A*b^3*x + 12*B*a*b^
2*x - 12*A*b^2*c*x^2 - 8*A*b*c^2*x^3 + 8*B*a*c^2*x^3 + 2*B*b^2*c*x^3 - 12*A
*a*b*c*x + 12*B*a*b*c*x^2))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.899 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=90

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) - (8*(b*B - 2*A*c)*(b + 2*c*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2
])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3\left(b^2-4ac\right)}\\ &= -\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.10, size = 99, normalized size = 1.10

$$-\frac{2\left(B\left(8a^2c+2ab(b+6cx)+bx\left(3b^2+12bcx+8c^2x^2\right)\right)+A(b+2cx)\left(-4c\left(3a+2cx^2\right)+b^2-8bcx\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*(b + 2*c*x)*(b^2 - 8*b*c*x - 4*c*(3*a + 2*c*x^2)) + B*(8*a^2*c + 2*a
*b*(b + 6*c*x) + b*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2))))/(3*(b^2 - 4*a*c)^2*(
a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.88, size = 123, normalized size = 1.37

$$-\frac{2\left(8a^2Bc-12aAbc-24aAc^2x+2ab^2B+12abBcx+Ab^3-6Ab^2cx-24Abc^2x^2-16Ac^3x^3+3b^3Bx+12b^2Bcx^2+8bBc^2x^3\right)}{3\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b^3 + 2*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c + 3*b^3*B*x - 6*A*b^2*c*x +
 12*a*b*B*c*x - 24*a*A*c^2*x + 12*b^2*B*c*x^2 - 24*A*b*c^2*x^2 + 8*b*B*c^2*
x^3 - 16*A*c^3*x^3))/(3*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 1.14, size = 245, normalized size = 2.72

$$-\frac{2\left(2\,Bab^2+Ab^3+8\left(Bbc^2-2\,Ac^3\right)x^3+12\left(Bb^2c-2\,Abc^2\right)x^2+4\left(2\,Ba^2-3\,Aab\right)c+3\left(Bb^3-8\,Aac^2+2\left(2\,Bab-Ab^2\right)c\right)x\right)\sqrt{cx^2+bx+a}}{3\left(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)x^4+2\left(b^5c-8\,ab^3c^2+16\,a^2bc^3\right)x^3+\left(b^6-6\,ab^4c+32\,a^3c^3\right)x^2+2\left(ab^5-8\,a^2b^3c+16\,a^3bc^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*B*a*b^2 + A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c
^2)*x^2 + 4*(2*B*a^2 - 3*A*a*b)*c + 3*(B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b
^2)*c)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*
c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3
)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^
3*b*c^2)*x)
```

giac [B] time = 0.31, size = 193, normalized size = 2.14

$$-\frac{2\left(\left(4\left(\frac{2\left(Bbc^2-2\,Ac^3\right)x}{b^4-8\,ab^2c+16\,a^2c^2}+\frac{3\left(Bb^2c-2\,Abc^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{3\left(Bb^3+4\,Babc-2\,Ab^2c-8\,Aac^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{2\,Bab^2+Ab^3+8\,Ba^2c-12\,Aabc}{b^4-8\,ab^2c+16\,a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*(2*(B*b*c^2 - 2*A*c^3)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(B*b^2
*c - 2*A*b*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3 + 4*B*a*b*c -
2*A*b^2*c - 8*A*a*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (2*B*a*b^2 + A*b
^3 + 8*B*a^2*c - 12*A*a*b*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x +
 a)^(3/2)
```

maple [A] time = 0.06, size = 132, normalized size = 1.47

$$\frac{\frac{32}{3}A\,c^3x^3-\frac{16}{3}Bb\,c^2x^3+16Ab\,c^2x^2-8B\,b^2c\,x^2+16Aa\,c^2x+4A\,b^2cx-8Babcx-2B\,b^3x+8Aabc-\frac{2}{3}A\,b^3-\frac{16}{3}B\,a^2c-\frac{4}{3}Ba\,b^2}{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8a\,b^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(16*A*c^3*x^3-8*B*b*c^2*x^3+24*A*b*c^2*x^2-12*B*b^2
*c*x^2+24*A*a*c^2*x+6*A*b^2*c*x-12*B*a*b*c*x-3*B*b^3*x+12*A*a*b*c-A*b^3-8*B
*a^2*c-2*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.52, size = 121, normalized size = 1.34

$$-\frac{2\left(8Ba^2c+2Bab^2+12Babcx-12Aabc-24Aac^2x+3Bb^3x+Ab^3+12Bb^2cx^2-6Ab^2cx+8Bbc^2x^3-24Abc^2x^2-16Ac^3x^3\right)}{3\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 2*B*a*b^2 + 8*B*a^2*c + 3*B*b^3*x - 24*A*a*c^2*
x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B*b^2*c*x^2 + 8*B*b*c^2*x^3 - 12*A*a*
b*c + 12*B*a*b*c*x))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.900 $\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=184

$$-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{5/2}}+\frac{2\left(cx\left(16a^2Bc-20aAbc+3Ab^3\right)+A\left(24a^2c^2-22ab^2c+3b^4\right)+8a^2bBc\right)}{3a^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2\left(cx(Ab\cdots\right.}{3a\left(\cdots\right.}$$

Rubi [A] time = 0.13, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 12, 724, 206}

$$\frac{2\left(cx\left(16a^2Bc-20aAbc+3Ab^3\right)+A\left(24a^2c^2-22ab^2c+3b^4\right)+8a^2bBc\right)}{3a^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{5/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(3*a*(b^2 - 4*a*c)*(a + b
*x + c*x^2)^(3/2)) + (2*(8*a^2*b*B*c + A*(3*b^4 - 22*a*b^2*c + 24*a^2*c^2)
+ c*(3*A*b^3 - 20*a*A*b*c + 16*a^2*B*c)*x))/(3*a^2*(b^2 - 4*a*c)^2*Sqrt[a +
 b*x + c*x^2]) - (A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])
/a^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{-\frac{3}{2}A\left(b^2-4ac\right)-2(Ab-2aB)cx}{x\left(a+bx+cx^2\right)^{3/2}}\,dx}{3a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a}}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a}}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a}}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a}}$$

Mathematica [A] time = 0.13, size = 179, normalized size = 0.97

$$-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{a^{5/2}} + \frac{A\left(48a^2c^2-44ab^2c-40abc^2x+6b^4+6b^3cx\right)+16a^2Bc(b+2cx)}{3a^2\left(b^2-4ac\right)^2\sqrt{a+x(b+cx)}} + \frac{2aB(b+2cx)-2A\left(-2ac+b^2+bcx\right)}{3a\left(4ac-b^2\right)(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*a*B*(b + 2*c*x) - 2*A*(b^2 - 2*a*c + b*c*x))/(3*a*(-b^2 + 4*a*c)*(a + x*
(b + c*x))^(3/2)) + (16*a^2*B*c*(b + 2*c*x) + A*(6*b^4 - 44*a*b^2*c + 48*a^
2*c^2 + 6*b^3*c*x - 40*a*b*c^2*x))/(3*a^2*(b^2 - 4*a*c)^2*Sqrt[a + x*(b + c
*x)]) - (A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/a^(5/2)
```

IntegrateAlgebraic [A] time = 1.47, size = 241, normalized size = 1.31

$$\frac{2A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{a^{5/2}} + \frac{2\left(32a^3Ac^2+12a^3bBc+24a^3Bc^2x-28a^2Ab^2c+24a^2Ac^3x^2-a^2b^3B+6a^2b^2Bcx+24a^2bBc^2x^2+16a^2Bc^3x^3+4aAb^4-18aAb^3cx-42aAb^2c^2x^2-20aAbc^3x^3+3Ab^5x+6Ab^4cx^2+3Ab^3c^2x^3\right)}{3a^2\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(4*a*A*b^4 - a^2*b^3*B - 28*a^2*A*b^2*c + 12*a^3*b*B*c + 32*a^3*A*c^2 +
3*A*b^5*x - 18*a*A*b^3*c*x + 6*a^2*b^2*B*c*x + 24*a^3*B*c^2*x + 6*A*b^4*c*x
^2 - 42*a*A*b^2*c^2*x^2 + 24*a^2*b*B*c^2*x^2 + 24*a^2*A*c^3*x^2 + 3*A*b^3*c
^2*x^3 - 20*a*A*b*c^3*x^3 + 16*a^2*B*c^3*x^3))/(3*a^2*(-b^2 + 4*a*c)^2*(a +
 b*x + c*x^2)^(3/2)) + (2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*
x^2]/Sqrt[a]])/a^(5/2)
```

fricas [B] time = 2.37, size = 1077, normalized size = 5.85

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(A*a^2*b^4 - 8*A*a^3*b^2*c + 16*A*a^4*c^2 + (A*b^4*c^2 - 8*A*a*b^2*
c^3 + 16*A*a^2*c^4)*x^4 + 2*(A*b^5*c - 8*A*a*b^3*c^2 + 16*A*a^2*b*c^3)*x^3
+ (A*b^6 - 6*A*a*b^4*c + 32*A*a^3*c^3)*x^2 + 2*(A*a*b^5 - 8*A*a^2*b^3*c + 1
6*A*a^3*b*c^2)*x)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2
+ b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(B*a^3*b^3 - 4*A*a^2*b^4 -
 32*A*a^4*c^2 - (3*A*a*b^3*c^2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*x^3 - 6*(A*a*
b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*b^2)*c^2)*x^2 - 4*(3*B*a^4*b - 7
*A*a^3*b^2)*c - 3*(A*a*b^5 + 8*B*a^4*c^2 + 2*(B*a^3*b^2 - 3*A*a^2*b^3)*c)*x
)*sqrt(c*x^2 + b*x + a))/(a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2 + (a^3*b^4*c^2
 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^4 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*
b*c^3)*x^3 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^2 + 2*(a^4*b^5 - 8*a^5*
b^3*c + 16*a^6*b*c^2)*x), 1/3*(3*(A*a^2*b^4 - 8*A*a^3*b^2*c + 16*A*a^4*c^2
+ (A*b^4*c^2 - 8*A*a*b^2*c^3 + 16*A*a^2*c^4)*x^4 + 2*(A*b^5*c - 8*A*a*b^3*c
^2 + 16*A*a^2*b*c^3)*x^3 + (A*b^6 - 6*A*a*b^4*c + 32*A*a^3*c^3)*x^2 + 2*(A*
a*b^5 - 8*A*a^2*b^3*c + 16*A*a^3*b*c^2)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 +
 b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(B*a^3*b^3 - 4*
A*a^2*b^4 - 32*A*a^4*c^2 - (3*A*a*b^3*c^2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*x^
3 - 6*(A*a*b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*b^2)*c^2)*x^2 - 4*(3*
B*a^4*b - 7*A*a^3*b^2)*c - 3*(A*a*b^5 + 8*B*a^4*c^2 + 2*(B*a^3*b^2 - 3*A*a^
2*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/(a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2 + (
a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^4 + 2*(a^3*b^5*c - 8*a^4*b^3*c^
2 + 16*a^5*b*c^3)*x^3 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^2 + 2*(a^4*b
^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x)]
```

giac [A] time = 0.25, size = 333, normalized size = 1.81

$$\frac{2\left(\left(\left(\frac{\left(3\,Aa^5b^3c^2+16\,Ba^7c^3-20\,Aa^6bc^3\right)x}{a^7b^4-8\,a^8b^2c+16\,a^9c^2}+\frac{6\left(Aa^5b^4c+4\,Ba^7bc^2-7\,Aa^6b^2c^2+4\,Aa^7c^3\right)}{a^7b^4-8\,a^8b^2c+16\,a^9c^2}\right)x+\frac{3\left(Aa^5b^5+2\,Ba^7b^2c-6\,Aa^6b^3c+8\,Ba^8c^2\right)}{a^7b^4-8\,a^8b^2c+16\,a^9c^2}\right)x-\frac{Ba^7b^3-4\,Aa^6b^4-12\,Ba^8bc+28\,Aa^7b^2c-32\,Aa^8c^2}{a^7b^4-8\,a^8b^2c+16\,a^9c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((3*A*a^5*b^3*c^2 + 16*B*a^7*c^3 - 20*A*a^6*b*c^3)*x/(a^7*b^4 - 8*a^8
*b^2*c + 16*a^9*c^2) + 6*(A*a^5*b^4*c + 4*B*a^7*b*c^2 - 7*A*a^6*b^2*c^2 + 4
*A*a^7*c^3)/(a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2))*x + 3*(A*a^5*b^5 + 2*B*a^
7*b^2*c - 6*A*a^6*b^3*c + 8*B*a^8*c^2)/(a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2)
)*x - (B*a^7*b^3 - 4*A*a^6*b^4 - 12*B*a^8*b*c + 28*A*a^7*b^2*c - 32*A*a^8*c
^2)/(a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2))/(c*x^2 + b*x + a)^(3/2) + 2*A*arc
tan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2)
```

maple [B] time = 0.05, size = 390, normalized size = 2.12

$$-\frac{16Abc^2x}{3\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}\,a}+\frac{32Bc^2x}{3\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}-\frac{8Ab^2c}{3\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}\,a}-\frac{2Abcx}{3\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}a}+\frac{16Bbc}{3\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}+\frac{4Bcx}{3\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{Ab^2}{3\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}a}-\frac{2Abcx}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,a^2}+\frac{2Bb}{3\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{Ab^2}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,a^2}+\frac{A}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}a}-\frac{A\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{a^{\frac{5}{2}}}+\frac{A}{\sqrt{cx^2+bx+a}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 4/3*B/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+2/3*B/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)*b+32/3*B*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+16/3*B*c/(4*a*c-b^2)^
2/(c*x^2+b*x+a)^(1/2)*b+1/3*A/a/(c*x^2+b*x+a)^(3/2)-2/3*A/a*b/(4*a*c-b^2)/(
c*x^2+b*x+a)^(3/2)*c*x-1/3*A/a*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-16/3*A/a
*b*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-8/3*A/a*b^2*c/(4*a*c-b^2)^2/(c*x
^2+b*x+a)^(1/2)+A/a^2/(c*x^2+b*x+a)^(1/2)-2*A/a^2*b/(4*a*c-b^2)/(c*x^2+b*x+
a)^(1/2)*c*x-A/a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-A/a^(5/2)*ln((b*x+2*
a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.901 $\int \frac{A+Bx}{x^2(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=288

$$\frac{(5Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{7/2}}-\frac{2\left(-A\left(32a^2c^2-32ab^2c+5b^4\right)-cx\left(24a^2Bc-28aAbc-2ab^2B+5Ab^3\right)+\right.}{3a^2x\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.31, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(2abB\left(3b^2-20ac\right)-A\left(128a^2c^2-100ab^2c+15b^4\right)\right)}{3a^3x\left(b^2-4ac\right)^2}-\frac{2\left(-cx\left(24a^2Bc-28aAbc-2ab^2B+5Ab^3\right)-A\left(32a^2c^2-32ab^2c+5b^4\right)+2abB\left(b^2-8ac\right)\right)}{3a^2x\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{(5Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{7/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{3ax\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(3*a*(b^2 - 4*a*c)*x*(a +
 b*x + c*x^2)^(3/2)) - (2*(2*a*b*B*(b^2 - 8*a*c) - A*(5*b^4 - 32*a*b^2*c +
32*a^2*c^2) - c*(5*A*b^3 - 2*a*b^2*B - 28*a*A*b*c + 24*a^2*B*c)*x))/(3*a^2*
(b^2 - 4*a*c)^2*x*Sqrt[a + b*x + c*x^2]) + ((2*a*b*B*(3*b^2 - 20*a*c) - A*(
15*b^4 - 100*a*b^2*c + 128*a^2*c^2))*Sqrt[a + b*x + c*x^2])/(3*a^3*(b^2 - 4
*a*c)^2*x) + ((5*A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x +
 c*x^2])])/(2*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
```

```
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(-5Ab^2+2abB+16aAc\right)-3(Ab-2aB)cx}{x^2\left(a+bx+cx^2\right)^{3/2}}\,dx}{3a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

Mathematica [A] time = 0.43, size = 285, normalized size = 0.99

$$\frac{2\left(\frac{3\left(b^2-4ac\right)(5Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{4a^{5/2}}-\frac{\sqrt{a+x(b+cx)}\left(A\left(128a^2c^2-100ab^2c+15b^4\right)+2abB\left(20ac-3b^2\right)\right)}{2a^2x\left(b^2-4ac\right)}+\frac{A\left(-32a^2c^2+32ab^2c+28abc^2x-5b^4-5b^3cx\right)+2aB\left(-8abc-12ac^2x+b^3+b^2cx\right)}{ax\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}+\frac{A\left(-2ac+b^2+bcx\right)-aB(b+2cx)}{x(a+x(b+cx))^{3/2}}\right)}{3a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(-1/2*((2*a*b*B*(-3*b^2 + 20*a*c) + A*(15*b^4 - 100*a*b^2*c + 128*a^2*c^
2))*Sqrt[a + x*(b + c*x)])/(a^2*(b^2 - 4*a*c)*x) + (-(a*B*(b + 2*c*x)) + A*
(b^2 - 2*a*c + b*c*x))/(x*(a + x*(b + c*x))^(3/2)) + (2*a*B*(b^3 - 8*a*b*c
+ b^2*c*x - 12*a*c^2*x) + A*(-5*b^4 + 32*a*b^2*c - 32*a^2*c^2 - 5*b^3*c*x +
 28*a*b*c^2*x))/(a*(-b^2 + 4*a*c)*x*Sqrt[a + x*(b + c*x)]) + (3*(5*A*b - 2*
a*B)*(b^2 - 4*a*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/
(4*a^(5/2))))/(3*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 2.20, size = 380, normalized size = 1.32

$$\frac{(2aB-5Ab)\tanh^{-1}\left(\frac{\sqrt{c}\,x-\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{-48a^4Ac^2+64a^4Bc^2x+24a^3Ab^2c-256a^3Abc^2x-192a^3Ac^3x^2-56a^3b^2Bcx+48a^3Bc^3x^3-3a^2Ab^4+148a^2Ab^3cx-48a^2Ab^2c^2x^2-312a^2Abc^3x^3-128a^2Ac^4x^4+8a^2b^4Bx-36a^2b^3Bcx^2-84a^2b^2Bc^2x^3-40a^2bBc^3x^4-20aAb^5x+90aAb^4cx^2+210aAb^3c^2x^3+100aAb^2c^3x^4+6ab^5Bx^2+12ab^4Bcx^3+6ab^3Bc^2x^4-15Ab^6x^2-30Ab^5cx^3-15Ab^4c^2x^4}{3a^3x\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-3*a^2*A*b^4 + 24*a^3*A*b^2*c - 48*a^4*A*c^2 - 20*a*A*b^5*x + 8*a^2*b^4*B*
x + 148*a^2*A*b^3*c*x - 56*a^3*b^2*B*c*x - 256*a^3*A*b*c^2*x + 64*a^4*B*c^2
*x - 15*A*b^6*x^2 + 6*a*b^5*B*x^2 + 90*a*A*b^4*c*x^2 - 36*a^2*b^3*B*c*x^2 -
 48*a^2*A*b^2*c^2*x^2 - 192*a^3*A*c^3*x^2 - 30*A*b^5*c*x^3 + 12*a*b^4*B*c*x
```

```
^3 + 210*a*A*b^3*c^2*x^3 - 84*a^2*b^2*B*c^2*x^3 - 312*a^2*A*b*c^3*x^3 + 48*
a^3*B*c^3*x^3 - 15*A*b^4*c^2*x^4 + 6*a*b^3*B*c^2*x^4 + 100*a*A*b^2*c^3*x^4
- 40*a^2*b*B*c^3*x^4 - 128*a^2*A*c^4*x^4)/(3*a^3*(-b^2 + 4*a*c)^2*x*(a + b*
x + c*x^2)^(3/2)) + ((-5*A*b + 2*a*B)*ArcTanh[(Sqrt[c]*x - Sqrt[a + b*x + c
*x^2])/Sqrt[a]])/a^(7/2)
```

fricas [B] time = 3.32, size = 1655, normalized size = 5.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(3*((16*(2*B*a^3 - 5*A*a^2*b)*c^4 - 8*(2*B*a^2*b^2 - 5*A*a*b^3)*c^3
+ (2*B*a*b^4 - 5*A*b^5)*c^2)*x^5 + 2*(16*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 8*
(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*b^5 - 5*A*b^6)*c)*x^4 + (2*B*a*b^6 -
 5*A*b^7 + 32*(2*B*a^4 - 5*A*a^3*b)*c^3 - 6*(2*B*a^2*b^4 - 5*A*a*b^5)*c)*x^
3 + 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b - 5*A*a^3*b^2)*c^2 - 8*(2*B*
a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 + (2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 -
5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*x)*sqrt(a)*log(-(8*a*b*x
+ (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/
x^2) + 4*(3*A*a^3*b^4 - 24*A*a^4*b^2*c + 48*A*a^5*c^2 + (128*A*a^3*c^4 + 20
*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2)*x^4 - 6*(
4*(2*B*a^4 - 13*A*a^3*b)*c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 + (2*B*a^2
*b^4 - 5*A*a*b^5)*c)*x^3 - 3*(2*B*a^2*b^5 - 5*A*a*b^6 - 16*A*a^3*b^2*c^2 -
64*A*a^4*c^3 - 6*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 - 4*(2*B*a^3*b^4 - 5*A*
a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2 - 37*A*a^3*b^3)*c)*x)*
sqrt(c*x^2 + b*x + a))/((a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*c^4)*x^5 + 2*
(a^4*b^5*c - 8*a^5*b^3*c^2 + 16*a^6*b*c^3)*x^4 + (a^4*b^6 - 6*a^5*b^4*c + 3
2*a^7*c^3)*x^3 + 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*x^2 + (a^6*b^4 -
8*a^7*b^2*c + 16*a^8*c^2)*x), 1/6*(3*((16*(2*B*a^3 - 5*A*a^2*b)*c^4 - 8*(2*
B*a^2*b^2 - 5*A*a*b^3)*c^3 + (2*B*a*b^4 - 5*A*b^5)*c^2)*x^5 + 2*(16*(2*B*a^
3*b - 5*A*a^2*b^2)*c^3 - 8*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*b^5 - 5*A
*b^6)*c)*x^4 + (2*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 - 5*A*a^3*b)*c^3 - 6*(2*B
*a^2*b^4 - 5*A*a*b^5)*c)*x^3 + 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b -
 5*A*a^3*b^2)*c^2 - 8*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 + (2*B*a^3*b^4 - 5
*A*a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c
)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^
2 + a*b*x + a^2)) - 2*(3*A*a^3*b^4 - 24*A*a^4*b^2*c + 48*A*a^5*c^2 + (128*A
*a^3*c^4 + 20*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*a^2*b^3 - 5*A*a*b^4)*c
^2)*x^4 - 6*(4*(2*B*a^4 - 13*A*a^3*b)*c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*c
^2 + (2*B*a^2*b^4 - 5*A*a*b^5)*c)*x^3 - 3*(2*B*a^2*b^5 - 5*A*a*b^6 - 16*A*a
^3*b^2*c^2 - 64*A*a^4*c^3 - 6*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 - 4*(2*B*a
^3*b^4 - 5*A*a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2 - 37*A*a^
3*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*
c^4)*x^5 + 2*(a^4*b^5*c - 8*a^5*b^3*c^2 + 16*a^6*b*c^3)*x^4 + (a^4*b^6 - 6*
a^5*b^4*c + 32*a^7*c^3)*x^3 + 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*x^2
+ (a^6*b^4 - 8*a^7*b^2*c + 16*a^8*c^2)*x)]
```

giac [A] time = 0.27, size = 483, normalized size = 1.68

$$\frac{2\left(\left(\left(\frac{\left(3 Ba^{9}b^{3}c^{2}-6 Aa^{8}b^{4}c^{2}-20 Ba^{10}bc^{3}+38 Aa^{9}b^{2}c^{3}-40 Aa^{10}c^{4}\right)x}{a^{11}b^{4}-8 a^{12}b^{2}c+16 a^{13}c^{2}}+\frac{3\left(2 Ba^{9}b^{4}c-4 Aa^{8}b^{5}c-14 Ba^{10}b^{2}c^{2}+27 Aa^{9}b^{3}c^{2}+8 Ba^{11}c^{3}-36 Aa^{10}bc^{3}\right)}{a^{11}b^{4}-8 a^{12}b^{2}c+16 a^{13}c^{2}}\right)x+\frac{3\left(Ba^{9}b^{5}-2 Aa^{8}b^{6}-6 Ba^{10}b^{3}c+12 Aa^{9}b^{4}c-8 Aa^{10}b^{2}c^{2}-16 Aa^{11}c^{3}\right)}{a^{11}b^{4}-8 a^{12}b^{2}c+16 a^{13}c^{2}}\right)x+\frac{4 Ba^{10}b^{4}-7 Aa^{9}b^{5}-28 Ba^{11}b^{2}c+50 Aa^{10}b^{3}c+32 Ba^{12}c^{2}-80 Aa^{11}bc^{2}}{a^{11}b^{4}-8 a^{12}b^{2}c+16 a^{13}c^{2}}\right)}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}+\frac{(2 Ba-5 Ab)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^{3}}+\frac{\left(\sqrt{c}x-\sqrt{cx^{2}+bx+a}\right)Ab+2 Aa\sqrt{c}}{\left(\left(\sqrt{c}x-\sqrt{cx^{2}+bx+a}\right)^{2}-a\right)a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((3*B*a^9*b^3*c^2 - 6*A*a^8*b^4*c^2 - 20*B*a^10*b*c^3 + 38*A*a^9*b^2*
c^3 - 40*A*a^10*c^4)*x/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2) + 3*(2*B*a^9
*b^4*c - 4*A*a^8*b^5*c - 14*B*a^10*b^2*c^2 + 27*A*a^9*b^3*c^2 + 8*B*a^11*c^
3 - 36*A*a^10*b*c^3)/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2))*x + 3*(B*a^9*
```

```
b^5 - 2*A*a^8*b^6 - 6*B*a^10*b^3*c + 12*A*a^9*b^4*c - 8*A*a^10*b^2*c^2 - 16
*A*a^11*c^3)/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2))*x + (4*B*a^10*b^4 - 7
*A*a^9*b^5 - 28*B*a^11*b^2*c + 50*A*a^10*b^3*c + 32*B*a^12*c^2 - 80*A*a^11*
b*c^2)/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2))/(c*x^2 + b*x + a)^(3/2) + (
2*B*a - 5*A*b)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(
-a)*a^3) + ((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b + 2*A*a*sqrt(c))/(((sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)*a^3)
```

maple [**B**] time = 0.07, size = 709, normalized size = 2.46

$$-\frac{128 A c^3 x}{3 \left(4 a c-b^2\right)^2 \sqrt{c x^2+b x+a}\, a}+\frac{40 A b^2 c^2 x}{3 \left(4 a c-b^2\right)^2 \sqrt{c x^2+b x+a}\, a^2}-\frac{16 B b c^2 x}{3 \left(4 a c-b^2\right)^2 \sqrt{c x^2+b x+a}\, a}-\frac{64 A b c^2}{3 \left(4 a c-b^2\right)^2 \sqrt{c x^2+b x+a}\, a}-\frac{16 A c^2 x}{3 \left(4 a c-b^2\right) \left(c x^2+b x+a\right)^{\frac{3}{2}} a}+\frac{20 A b^3 c}{3 \left(4 a c-b^2\right)^2 \sqrt{c x^2+b x+a}\, a^2}+\frac{5 A b^2 c x}{3 \left(4 a c-b^2\right) \left(c x^2+b x+a\right)^{\frac{3}{2}} a^2}-\frac{8 B b^2 c}{3 \left(4 a c-b^2\right)^2 \sqrt{c x^2+b x+a}\, a}-\frac{2 B b c x}{3 \left(4 a c-b^2\right) \left(c x^2+b x+a\right)^{\frac{3}{2}} a}-\frac{8 A b c}{3 \left(4 a c-b^2\right) \left(c x^2+b x+a\right)^{\frac{3}{2}} a}+\frac{5 A b^3}{6 \left(4 a c-b^2\right) \left(c x^2+b x+a\right)^{\frac{3}{2}} a^2}+\frac{5 A b^2 c x}{\left(4 a c-b^2\right) \sqrt{c x^2+b x+a}\, a^3}-\frac{B b^2}{3 \left(4 a c-b^2\right) \left(c x^2+b x+a\right)^{\frac{3}{2}} a}-\frac{2 B b c x}{\left(4 a c-b^2\right) \sqrt{c x^2+b x+a}\, a^2}+\frac{5 A b^3}{2 \left(4 a c-b^2\right) \sqrt{c x^2+b x+a}\, a^3}-\frac{B b^2}{\left(4 a c-b^2\right) \sqrt{c x^2+b x+a}\, a^2}-\frac{5 A b}{6 \left(c x^2+b x+a\right)^{\frac{3}{2}} a^2}+\frac{B}{3 \left(c x^2+b x+a\right)^{\frac{3}{2}} a}+\frac{5 A b \ln\left(\frac{b x+2 a+2 \sqrt{c x^2+b x+a}\, \sqrt{a}}{x}\right)}{2 a^{\frac{7}{2}}}-\frac{B \ln\left(\frac{b x+2 a+2 \sqrt{c x^2+b x+a}\, \sqrt{a}}{x}\right)}{a^{\frac{5}{2}}}-\frac{A}{\left(c x^2+b x+a\right)^{\frac{3}{2}} a x}-\frac{5 A b}{2 \sqrt{c x^2+b x+a}\, a^3}+\frac{B}{\sqrt{c x^2+b x+a}\, a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -A/a/x/(c*x^2+b*x+a)^(3/2)-5/6*A/a^2*b/(c*x^2+b*x+a)^(3/2)+5/3*A/a^2*b^2/(4
*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+5/6*A/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)+40/3*A/a^2*b^2*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+20/3*A/a^2*b^3*
c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-5/2*A/a^3*b/(c*x^2+b*x+a)^(1/2)+5*A/a^3
*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+5/2*A/a^3*b^3/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)+5/2*A/a^(7/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1
6/3*A*c^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-8/3*A*c/a/(4*a*c-b^2)/(c*x^2+
b*x+a)^(3/2)*b-128/3*A*c^3/a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-64/3*A*c^2
/a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b+1/3*B/a/(c*x^2+b*x+a)^(3/2)-2/3*B/a*
b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x-1/3*B/a*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)
^(3/2)-16/3*B/a*b*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-8/3*B/a*b^2*c/(4*
a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+B/a^2/(c*x^2+b*x+a)^(1/2)-2*B/a^2*b/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*c*x-B/a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-B/a^(
5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^2\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.902 $\int \frac{A+Bx}{x^3(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=381

$$-\frac{5\left(-4aAc-4abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{9/2}}-\frac{2\left(-A\left(40a^2c^2-42ab^2c+7b^4\right)-cx\left(32a^2Bc-36aAbc-4a\right.\right.}{3a^2x^2\left(b^2-4ac\right)^2\sqrt{a+bx+c}}$$

Rubi [A] time = 0.46, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(4abB\left(5b^2-28ac\right)-A\left(240a^2c^2-216ab^2c+35b^4\right)\right)}{6a^3x^2\left(b^2-4ac\right)^2}-\frac{\sqrt{a+bx+cx^2}\left(4aB\left(128a^2c^2-100ab^2c+15b^4\right)-A\left(1296a^2bc^2-760ab^3c+105b^5\right)\right)}{12a^4x\left(b^2-4ac\right)^2}-\frac{2\left(-cx\left(32a^2Bc-36aAbc-4ab^2B+7Ab^3\right)-A\left(40a^2c^2-42ab^2c+7b^4\right)+4abB\left(b^2-6ac\right)\right)}{3a^2x^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{5\left(-4aAc-4abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{9/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{3ax^2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(3*a*(b^2 - 4*a*c)*x^2*(a
 + b*x + c*x^2)^(3/2)) - (2*(4*a*b*B*(b^2 - 6*a*c) - A*(7*b^4 - 42*a*b^2*c
+ 40*a^2*c^2) - c*(7*A*b^3 - 4*a*b^2*B - 36*a*A*b*c + 32*a^2*B*c)*x))/(3*a^
2*(b^2 - 4*a*c)^2*x^2*Sqrt[a + b*x + c*x^2]) + ((4*a*b*B*(5*b^2 - 28*a*c) -
 A*(35*b^4 - 216*a*b^2*c + 240*a^2*c^2))*Sqrt[a + b*x + c*x^2])/(6*a^3*(b^2
 - 4*a*c)^2*x^2) - ((4*a*B*(15*b^4 - 100*a*b^2*c + 128*a^2*c^2) - A*(105*b^
5 - 760*a*b^3*c + 1296*a^2*b*c^2))*Sqrt[a + b*x + c*x^2])/(12*a^4*(b^2 - 4*
a*c)^2*x) - (5*(7*A*b^2 - 4*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]
*Sqrt[a + b*x + c*x^2])])/(8*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
```

```
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(-7Ab^2+4abB+20aAc\right)-4(Ab-2aB)cx}{x^3\left(a+bx+cx^2\right)^{3/2}}\,dx}{3a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}} - \frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+\right.\right.}{3a^2\left(b^2-\right.}$$

Mathematica [A] time = 0.73, size = 343, normalized size = 0.90

$$\frac{-\frac{8\left(A\left(40a^2c^2-42ab^2c-36abc^2x+7b^4+7b^3cx\right)+4aB\left(6abc+8ac^2x-b^3-b^2cx\right)\right)}{a\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}+\frac{2\sqrt{a}\sqrt{a+x(b+cx)}\left(32a^3c(15Ac+7bB+16Bcx)-8a^2b\left(54Abc+162Ac^2x+5b^2B+50bBcx\right)+10ab^3(7Ab+76Acx+6bBx)-105Ab^5x\right)+15x^2\left(b^2-4ac\right)^2\left(-4aAc-4abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2a^{7/2}\left(4ac-b^2\right)}+\frac{8A\left(-2ac+b^2+bcx\right)-8aB(b+2cx)}{(a+x(b+cx))^{3/2}}}{12ax^2\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] ((-8*a*B*(b + 2*c*x) + 8*A*(b^2 - 2*a*c + b*c*x))/(a + x*(b + c*x))^(3/2) -
 (8*(4*a*B*(-b^3 + 6*a*b*c - b^2*c*x + 8*a*c^2*x) + A*(7*b^4 - 42*a*b^2*c +
 40*a^2*c^2 + 7*b^3*c*x - 36*a*b*c^2*x)))/(a*(-b^2 + 4*a*c)*Sqrt[a + x*(b +
 c*x)]) + (2*Sqrt[a]*Sqrt[a + x*(b + c*x)]*(-105*A*b^5*x + 10*a*b^3*(7*A*b
+ 6*b*B*x + 76*A*c*x) + 32*a^3*c*(7*b*B + 15*A*c + 16*B*c*x) - 8*a^2*b*(5*b
```

^2*B + 54*A*b*c + 50*b*B*c*x + 162*A*c^2*x)) + 15*(b^2 - 4*a*c)^2*(7*A*b^2
- 4*a*b*B - 4*a*A*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x
)])])/(2*a^(7/2)*(-b^2 + 4*a*c)))/(12*a*(b^2 - 4*a*c)*x^2)

IntegrateAlgebraic [A] time = 3.65, size = 574, normalized size = 1.51

$$\frac{35Ab^2\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}-\frac{\sqrt{a+bx+cx^2}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{5(Ac+bB)\tanh^{-1}\left(\frac{\sqrt{a+bx+cx^2}-\sqrt{c}x}{\sqrt{a}}\right)}{a^{7/2}}+\frac{-96a^5Ac^2-192a^5Bc^2x+48a^4Ab^2c+336a^4Abc^2x-640a^4Ac^3x^2+96a^4b^2Bcx-1024a^4bBc^2x^2-768a^4Bc^3x^3-6a^3Ab^4-168a^3Ab^3cx+2352a^3Ab^2c^2x^2+1344a^3Abc^3x^3-480a^3Ac^4x^4-12a^3b^4Bx+592a^3b^3Bcx^2-192a^3b^2Bc^2x^3-1248a^3bBc^3x^4-512a^3Bc^4x^5+21a^2Ab^5x-1116a^2Ab^4cx^2+696a^2Ab^3c^2x^3+3024a^2Ab^2c^3x^4+1296a^2Abc^4x^5-80a^2b^5Bx^2+360a^2b^4Bcx^3+840a^2b^3Bc^2x^4+400a^2b^2Bc^3x^5+140aAb^6x^2-690aAb^5cx^3-1590aAb^4c^2x^4-760aAb^3c^3x^5-60ab^6Bx^3-120ab^5Bcx^4-60ab^4Bc^2x^5+105Ab^7x^3+210Ab^6cx^4+105Ab^5c^2x^5}{12a^4x^2\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-6*a^3*A*b^4 + 48*a^4*A*b^2*c - 96*a^5*A*c^2 + 21*a^2*A*b^5*x - 12*a^3*b^4
*B*x - 168*a^3*A*b^3*c*x + 96*a^4*b^2*B*c*x + 336*a^4*A*b*c^2*x - 192*a^5*B
*c^2*x + 140*a*A*b^6*x^2 - 80*a^2*b^5*B*x^2 - 1116*a^2*A*b^4*c*x^2 + 592*a^
3*b^3*B*c*x^2 + 2352*a^3*A*b^2*c^2*x^2 - 1024*a^4*b*B*c^2*x^2 - 640*a^4*A*c
^3*x^2 + 105*A*b^7*x^3 - 60*a*b^6*B*x^3 - 690*a*A*b^5*c*x^3 + 360*a^2*b^4*B
*c*x^3 + 696*a^2*A*b^3*c^2*x^3 - 192*a^3*b^2*B*c^2*x^3 + 1344*a^3*A*b*c^3*x
^3 - 768*a^4*B*c^3*x^3 + 210*A*b^6*c*x^4 - 120*a*b^5*B*c*x^4 - 1590*a*A*b^4
*c^2*x^4 + 840*a^2*b^3*B*c^2*x^4 + 3024*a^2*A*b^2*c^3*x^4 - 1248*a^3*b*B*c^
3*x^4 - 480*a^3*A*c^4*x^4 + 105*A*b^5*c^2*x^5 - 60*a*b^4*B*c^2*x^5 - 760*a*
A*b^3*c^3*x^5 + 400*a^2*b^2*B*c^3*x^5 + 1296*a^2*A*b*c^4*x^5 - 512*a^3*B*c^
4*x^5)/(12*a^4*(-b^2 + 4*a*c)^2*x^2*(a + b*x + c*x^2)^(3/2)) + (5*(b*B + A*
c)*ArcTanh[(-(Sqrt[c]*x) + Sqrt[a + b*x + c*x^2])/Sqrt[a]])/a^(7/2) + (35*A
*b^2*ArcTanh[(Sqrt[c]*x)/Sqrt[a] - Sqrt[a + b*x + c*x^2]/Sqrt[a]])/(4*a^(9/
2))
```

fricas [B] time = 8.99, size = 2057, normalized size = 5.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/48*(15*((64*A*a^3*c^5 + 16*(4*B*a^3*b - 9*A*a^2*b^2)*c^4 - 4*(8*B*a^2*b^
3 - 15*A*a*b^4)*c^3 + (4*B*a*b^5 - 7*A*b^6)*c^2)*x^6 + 2*(64*A*a^3*b*c^4 +
16*(4*B*a^3*b^2 - 9*A*a^2*b^3)*c^3 - 4*(8*B*a^2*b^4 - 15*A*a*b^5)*c^2 + (4*
B*a*b^6 - 7*A*b^7)*c)*x^5 + (4*B*a*b^7 - 7*A*b^8 - 24*A*a^2*b^4*c^2 + 128*A
*a^4*c^4 + 32*(4*B*a^4*b - 7*A*a^3*b^2)*c^3 - 2*(12*B*a^2*b^5 - 23*A*a*b^6)
*c)*x^4 + 2*(4*B*a^2*b^6 - 7*A*a*b^7 + 64*A*a^4*b*c^3 + 16*(4*B*a^4*b^2 - 9
*A*a^3*b^3)*c^2 - 4*(8*B*a^3*b^4 - 15*A*a^2*b^5)*c)*x^3 + (4*B*a^3*b^5 - 7*
A*a^2*b^6 + 64*A*a^5*c^3 + 16*(4*B*a^5*b - 9*A*a^4*b^2)*c^2 - 4*(8*B*a^4*b^
3 - 15*A*a^3*b^4)*c)*x^2)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(6*A*a^4*b^4 - 48*
A*a^5*b^2*c + 96*A*a^6*c^2 + (16*(32*B*a^4 - 81*A*a^3*b)*c^4 - 40*(10*B*a^3
*b^2 - 19*A*a^2*b^3)*c^3 + 15*(4*B*a^2*b^4 - 7*A*a*b^5)*c^2)*x^5 + 6*(80*A*
a^4*c^4 + 8*(26*B*a^4*b - 63*A*a^3*b^2)*c^3 - 5*(28*B*a^3*b^3 - 53*A*a^2*b^
4)*c^2 + 5*(4*B*a^2*b^5 - 7*A*a*b^6)*c)*x^4 + 3*(20*B*a^2*b^6 - 35*A*a*b^7
+ 64*(4*B*a^5 - 7*A*a^4*b)*c^3 + 8*(8*B*a^4*b^2 - 29*A*a^3*b^3)*c^2 - 10*(1
2*B*a^3*b^4 - 23*A*a^2*b^5)*c)*x^3 + 4*(20*B*a^3*b^5 - 35*A*a^2*b^6 + 160*A
*a^5*c^3 + 4*(64*B*a^5*b - 147*A*a^4*b^2)*c^2 - (148*B*a^4*b^3 - 279*A*a^3*
b^4)*c)*x^2 + 3*(4*B*a^4*b^4 - 7*A*a^3*b^5 + 16*(4*B*a^6 - 7*A*a^5*b)*c^2 -
 8*(4*B*a^5*b^2 - 7*A*a^4*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^4*c^2 -
 8*a^6*b^2*c^3 + 16*a^7*c^4)*x^6 + 2*(a^5*b^5*c - 8*a^6*b^3*c^2 + 16*a^7*b*
c^3)*x^5 + (a^5*b^6 - 6*a^6*b^4*c + 32*a^8*c^3)*x^4 + 2*(a^6*b^5 - 8*a^7*b^
3*c + 16*a^8*b*c^2)*x^3 + (a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2)*x^2), -1/24*
(15*((64*A*a^3*c^5 + 16*(4*B*a^3*b - 9*A*a^2*b^2)*c^4 - 4*(8*B*a^2*b^3 - 15
*A*a*b^4)*c^3 + (4*B*a*b^5 - 7*A*b^6)*c^2)*x^6 + 2*(64*A*a^3*b*c^4 + 16*(4*
B*a^3*b^2 - 9*A*a^2*b^3)*c^3 - 4*(8*B*a^2*b^4 - 15*A*a*b^5)*c^2 + (4*B*a*b^
6 - 7*A*b^7)*c)*x^5 + (4*B*a*b^7 - 7*A*b^8 - 24*A*a^2*b^4*c^2 + 128*A*a^4*c
^4 + 32*(4*B*a^4*b - 7*A*a^3*b^2)*c^3 - 2*(12*B*a^2*b^5 - 23*A*a*b^6)*c)*x^
```

```
4 + 2*(4*B*a^2*b^6 - 7*A*a*b^7 + 64*A*a^4*b*c^3 + 16*(4*B*a^4*b^2 - 9*A*a^3
*b^3)*c^2 - 4*(8*B*a^3*b^4 - 15*A*a^2*b^5)*c)*x^3 + (4*B*a^3*b^5 - 7*A*a^2*
b^6 + 64*A*a^5*c^3 + 16*(4*B*a^5*b - 9*A*a^4*b^2)*c^2 - 4*(8*B*a^4*b^3 - 15
*A*a^3*b^4)*c)*x^2)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(6*A*a^4*b^4 - 48*A*a^5*b^2*c + 96*A*a
^6*c^2 + (16*(32*B*a^4 - 81*A*a^3*b)*c^4 - 40*(10*B*a^3*b^2 - 19*A*a^2*b^3)
*c^3 + 15*(4*B*a^2*b^4 - 7*A*a*b^5)*c^2)*x^5 + 6*(80*A*a^4*c^4 + 8*(26*B*a^
4*b - 63*A*a^3*b^2)*c^3 - 5*(28*B*a^3*b^3 - 53*A*a^2*b^4)*c^2 + 5*(4*B*a^2*
b^5 - 7*A*a*b^6)*c)*x^4 + 3*(20*B*a^2*b^6 - 35*A*a*b^7 + 64*(4*B*a^5 - 7*A*
a^4*b)*c^3 + 8*(8*B*a^4*b^2 - 29*A*a^3*b^3)*c^2 - 10*(12*B*a^3*b^4 - 23*A*a
^2*b^5)*c)*x^3 + 4*(20*B*a^3*b^5 - 35*A*a^2*b^6 + 160*A*a^5*c^3 + 4*(64*B*a
^5*b - 147*A*a^4*b^2)*c^2 - (148*B*a^4*b^3 - 279*A*a^3*b^4)*c)*x^2 + 3*(4*B
*a^4*b^4 - 7*A*a^3*b^5 + 16*(4*B*a^6 - 7*A*a^5*b)*c^2 - 8*(4*B*a^5*b^2 - 7*
A*a^4*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^4*c^2 - 8*a^6*b^2*c^3 + 16*
a^7*c^4)*x^6 + 2*(a^5*b^5*c - 8*a^6*b^3*c^2 + 16*a^7*b*c^3)*x^5 + (a^5*b^6
- 6*a^6*b^4*c + 32*a^8*c^3)*x^4 + 2*(a^6*b^5 - 8*a^7*b^3*c + 16*a^8*b*c^2)*
x^3 + (a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2)*x^2)]
```

giac [B] time = 0.28, size = 765, normalized size = 2.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((((6*B*a^12*b^4*c^2 - 9*A*a^11*b^5*c^2 - 38*B*a^13*b^2*c^3 + 62*A*a^1
2*b^3*c^3 + 40*B*a^14*c^4 - 96*A*a^13*b*c^4)*x/(a^15*b^4 - 8*a^16*b^2*c + 1
6*a^17*c^2) + 3*(4*B*a^12*b^5*c - 6*A*a^11*b^6*c - 27*B*a^13*b^3*c^2 + 44*A
*a^12*b^4*c^2 + 36*B*a^14*b*c^3 - 80*A*a^13*b^2*c^3 + 16*A*a^14*c^4)/(a^15*
b^4 - 8*a^16*b^2*c + 16*a^17*c^2))*x + 3*(2*B*a^12*b^6 - 3*A*a^11*b^7 - 12*
B*a^13*b^4*c + 20*A*a^12*b^5*c + 8*B*a^14*b^2*c^2 - 25*A*a^13*b^3*c^2 + 16*
B*a^15*c^3 - 20*A*a^14*b*c^3)/(a^15*b^4 - 8*a^16*b^2*c + 16*a^17*c^2))*x +
(7*B*a^13*b^5 - 10*A*a^12*b^6 - 50*B*a^14*b^3*c + 78*A*a^13*b^4*c + 80*B*a^
15*b*c^2 - 162*A*a^14*b^2*c^2 + 56*A*a^15*c^3)/(a^15*b^4 - 8*a^16*b^2*c + 1
6*a^17*c^2))/(c*x^2 + b*x + a)^(3/2) - 5/4*(4*B*a*b - 7*A*b^2 + 4*A*a*c)*ar
ctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/4*(4
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b - 11*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c + 8*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(c) - 16*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*A*a*b*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2
*b + 13*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*sqrt(c) + 24*A*a^2*b*sqrt(c))/(((sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^2 - a)^2*a^4)
```

maple [B] time = 0.08, size = 1051, normalized size = 2.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -35/8*A/a^(9/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/6*A*c/a
^2/(c*x^2+b*x+a)^(3/2)-5/2*A*c/a^3/(c*x^2+b*x+a)^(1/2)+5/2*A*c/a^(7/2)*ln((
b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/2*B/a^(7/2)*b*ln((b*x+2*a+2*(c*
x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a/x/(c*x^2+b*x+a)^(3/2)-5/6*B/a^2*b/(c*x^2+b
*x+a)^(3/2)-5/2*B/a^3*b/(c*x^2+b*x+a)^(1/2)-1/2*A/a/x^2/(c*x^2+b*x+a)^(3/2)
+35/24*A/a^3*b^2/(c*x^2+b*x+a)^(3/2)+35/8*A/a^4*b^2/(c*x^2+b*x+a)^(1/2)+5/2
*B/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-70/3*A/a^3*b^3*c^2/(4*a*c-b^2)^2
/(c*x^2+b*x+a)^(1/2)*x-35/4*A/a^4*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+1
```

```
1*A/a^2*b*c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+5/3*B/a^2*b^2/(4*a*c-b^2)/(
c*x^2+b*x+a)^(3/2)*c*x+40/3*B/a^2*b^2*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)
*x+5*B/a^3*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+5*A*c^2/a^3*b/(4*a*c-b^2
)/(c*x^2+b*x+a)^(1/2)*x+88*A/a^2*b*c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-
35/12*A/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x-35/24*A/a^3*b^4/(4*a*c-
b^2)/(c*x^2+b*x+a)^(3/2)-35/8*A/a^4*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+7/4
*A/a^2*b/x/(c*x^2+b*x+a)^(3/2)+5/6*B/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2
)-35/3*A/a^3*b^4*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+11/2*A/a^2*b^2*c/(4*a*
c-b^2)/(c*x^2+b*x+a)^(3/2)+20/3*B/a^2*b^3*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)-16/3*B*c^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+5/2*A*c/a^3*b^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)+44*A/a^2*b^2*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-8
/3*B*c/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b-128/3*B*c^3/a/(4*a*c-b^2)^2/(c*x
^2+b*x+a)^(1/2)*x-64/3*B*c^2/a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^3\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.903 $\int \frac{d+ex}{(a+bx+cx^2)^{7/2}}\,dx$

Optimal. Leaf size=135

$$-\frac{128c(b+2cx)(2cd-be)}{15(b^2-4ac)^3\sqrt{a+bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15(b^2-4ac)^2(a+bx+cx^2)^{3/2}}-\frac{2(-2ae+x(2cd-be)+bd)}{5(b^2-4ac)(a+bx+cx^2)^{5/2}}$$

Rubi [A] time = 0.04, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {638, 614, 613}

$$-\frac{128c(b+2cx)(2cd-be)}{15(b^2-4ac)^3\sqrt{a+bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15(b^2-4ac)^2(a+bx+cx^2)^{3/2}}-\frac{2(-2ae+x(2cd-be)+bd)}{5(b^2-4ac)(a+bx+cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/(5*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) + (16*(2*c*d - b*e)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^
(3/2)) - (128*c*(2*c*d - b*e)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x
 + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{d+ex}{(a+bx+cx^2)^{7/2}}\,dx=-\frac{2(bd-2ae+(2cd-be)x)}{5(b^2-4ac)(a+bx+cx^2)^{5/2}}-\frac{(8(2cd-be))\int \frac{1}{(a+bx+cx^2)^{5/2}}\,dx}{5(b^2-4ac)}$$

$$=-\frac{2(bd-2ae+(2cd-be)x)}{5(b^2-4ac)(a+bx+cx^2)^{5/2}}+\frac{16(2cd-be)(b+2cx)}{15(b^2-4ac)^2(a+bx+cx^2)^{3/2}}+\frac{(64c(2cd-be))}{15(b^2}$$

$$=-\frac{2(bd-2ae+(2cd-be)x)}{5(b^2-4ac)(a+bx+cx^2)^{5/2}}+\frac{16(2cd-be)(b+2cx)}{15(b^2-4ac)^2(a+bx+cx^2)^{3/2}}-\frac{128c(2cd-}{15(b^2-4ac)^3}$$

Mathematica [A] time = 0.24, size = 119, normalized size = 0.88

$$\frac{2\left(3\left(b^2-4ac\right)^2(2ae-bd+bex-2cdx)-8\left(b^2-4ac\right)(b+2cx)(a+x(b+cx))(be-2cd)+64c(b+2cx)(a+x(b+cx))^2(be-2cd)\right)}{15\left(b^2-4ac\right)^3(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(3*(b^2 - 4*a*c)^2*(-(b*d) + 2*a*e - 2*c*d*x + b*e*x) - 8*(b^2 - 4*a*c)*
(-2*c*d + b*e)*(b + 2*c*x)*(a + x*(b + c*x)) + 64*c*(-2*c*d + b*e)*(b + 2*c
*x)*(a + x*(b + c*x))^2))/(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [A] time = 2.18, size = 267, normalized size = 1.98

$$-\frac{2\left(-96a^3c^2e-48a^2b^2ce+240a^2bc^2d-240a^2bc^2ex+480a^2c^3dx+2ab^4e-40ab^3cd-120ab^3cex+240ab^2c^2dx-480ab^2c^2ex^2+960abc^3dx^2-320abc^3ex^3+640ac^4dx^3+3b^5d+5b^5ex-10b^4cdx-40b^4cex^2+80b^3c^2dx^2-240b^3c^2ex^3+480b^2c^3dx^3-320b^2c^3ex^4+640bc^4dx^4-128bc^4ex^5+256c^5dx^5\right)}{15\left(b^2-4ac\right)^3\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(3*b^5*d - 40*a*b^3*c*d + 240*a^2*b*c^2*d + 2*a*b^4*e - 48*a^2*b^2*c*e
- 96*a^3*c^2*e - 10*b^4*c*d*x + 240*a*b^2*c^2*d*x + 480*a^2*c^3*d*x + 5*b^5
*e*x - 120*a*b^3*c*e*x - 240*a^2*b*c^2*e*x + 80*b^3*c^2*d*x^2 + 960*a*b*c^3
*d*x^2 - 40*b^4*c*e*x^2 - 480*a*b^2*c^2*e*x^2 + 480*b^2*c^3*d*x^3 + 640*a*c
^4*d*x^3 - 240*b^3*c^2*e*x^3 - 320*a*b*c^3*e*x^3 + 640*b*c^4*d*x^4 - 320*b^
2*c^3*e*x^4 + 256*c^5*d*x^5 - 128*b*c^4*e*x^5))/(15*(b^2 - 4*a*c)^3*(a + b*
x + c*x^2)^(5/2))
```

fricas [B] time = 5.31, size = 550, normalized size = 4.07

$$-\frac{2\left(128\left(2c^5d-bc^4e\right)x^5+320\left(2bc^4d-b^2c^3e\right)x^4+80\left(2\left(3b^2c^3+4ac^4\right)d-\left(3b^3c^2+4abc^3\right)e\right)x^3+40\left(2\left(b^3c^2+12abc^3\right)d-\left(b^4c+12ab^2c^2\right)e\right)x^2+\left(3b^5-40ab^3c+240a^2bc^2\right)d+2\left(ab^4-24a^2b^2c-48a^3c^2\right)e-5\left(2\left(b^4c-24ab^2c^2-48a^2c^3\right)d-\left(b^5-24ab^3c-48a^2bc^2\right)e\right)x\right)\sqrt{cx^2+bx+a}}{15\left(a^3b^6-12a^4b^4c+48a^5b^2c^2-64a^6c^3+\left(b^6c^3-12ab^4c^4+48a^2b^2c^5-64a^3c^6\right)x^6+3\left(b^7c^2-12ab^5c^3+48a^2b^3c^4-64a^3bc^5\right)x^5+3\left(b^8c-11ab^6c^2+36a^2b^4c^3-16a^3b^2c^4-64a^4c^5\right)x^4+\left(b^9-6ab^7c-24a^2b^5c^2+224a^3b^3c^3-384a^4bc^4\right)x^3+3\left(ab^8-11a^2b^6c+36a^3b^4c^2-16a^4b^2c^3-64a^5c^4\right)x^2+3\left(a^2b^7-12a^3b^5c+48a^4b^3c^2-64a^5bc^3\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(128*(2*c^5*d - b*c^4*e)*x^5 + 320*(2*b*c^4*d - b^2*c^3*e)*x^4 + 80*(
2*(3*b^2*c^3 + 4*a*c^4)*d - (3*b^3*c^2 + 4*a*b*c^3)*e)*x^3 + 40*(2*(b^3*c^2
 + 12*a*b*c^3)*d - (b^4*c + 12*a*b^2*c^2)*e)*x^2 + (3*b^5 - 40*a*b^3*c + 24
0*a^2*b*c^2)*d + 2*(a*b^4 - 24*a^2*b^2*c - 48*a^3*c^2)*e - 5*(2*(b^4*c - 24
*a*b^2*c^2 - 48*a^2*c^3)*d - (b^5 - 24*a*b^3*c - 48*a^2*b*c^2)*e)*x)*sqrt(c
*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3 + (b^
6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*c^2 - 12*a
*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b^6*c^2 + 3
6*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7*c - 24*a^
2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*a^2*b^6*c
+ 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7 - 12*a^3*b
^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [B] time = 0.28, size = 448, normalized size = 3.32

$$-\frac{2\left(\left(8\left(2\left(4\left(\frac{2\left(2c^5d-bc^4e\right)x}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}+\frac{5\left(2bc^4d-b^2c^3e\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{5\left(6b^2c^3d+8ac^4d-3b^3c^2e-4abc^3e\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{5\left(2b^3c^2d+24abc^3d-b^4ce-12ab^2c^2e\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x-\frac{5\left(2b^4cd-48ab^2c^2d-96a^2c^3d-b^5e+24ab^3ce+48a^2bc^2e\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{3b^5d-40ab^3cd+240a^2bc^2d+2ab^4e-48a^2b^2ce-96a^3c^2e}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)}{15\left(cx^2+bx+a\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*((8*(2*(4*(2*(2*c^5*d - b*c^4*e)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
 - 64*a^3*c^3) + 5*(2*b*c^4*d - b^2*c^3*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c
^2 - 64*a^3*c^3))*x + 5*(6*b^2*c^3*d + 8*a*c^4*d - 3*b^3*c^2*e - 4*a*b*c^3*
```

```
e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(2*b^3*c^2*d + 2
4*a*b*c^3*d - b^4*c*e - 12*a*b^2*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
- 64*a^3*c^3))*x - 5*(2*b^4*c*d - 48*a*b^2*c^2*d - 96*a^2*c^3*d - b^5*e + 2
4*a*b^3*c*e + 48*a^2*b*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c
^3))*x + (3*b^5*d - 40*a*b^3*c*d + 240*a^2*b*c^2*d + 2*a*b^4*e - 48*a^2*b^2
*c*e - 96*a^3*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x
^2 + b*x + a)^(5/2)
```

maple [**B**] time = 0.06, size = 288, normalized size = 2.13

$$-\frac{2\left(128b\,c^{4}e\,x^{5}-256c^{5}d\,x^{5}+320b^{2}c^{3}e\,x^{4}-640b\,c^{4}d\,x^{4}+320ab\,c^{3}e\,x^{3}-640a\,c^{4}d\,x^{3}+240b^{3}c^{2}e\,x^{3}-480b^{2}c^{3}d\,x^{3}+480a\,b^{2}c^{2}e\,x^{2}-960ab\,c^{3}d\,x^{2}+40b^{4}ce\,x^{2}-80b^{3}c^{2}d\,x^{2}+240a^{2}b\,c^{2}ex-480a^{2}c^{3}dx+120a\,b^{3}cex-240a\,b^{2}c^{2}dx-5b^{5}ex+10b^{4}cdx+96a^{3}c^{2}e+48a^{2}b^{2}ce-240a^{2}b\,c^{2}d-2a\,b^{4}e+40a\,b^{3}cd-3b^{5}d\right)}{15\left(c\,x^{2}+bx+a\right)^{\frac{5}{2}}\left(64a^{3}c^{3}-48a^{2}b^{2}c^{2}+12a\,b^{4}c-b^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] -2/15/(c*x^2+b*x+a)^(5/2)*(128*b*c^4*e*x^5-256*c^5*d*x^5+320*b^2*c^3*e*x^4-
640*b*c^4*d*x^4+320*a*b*c^3*e*x^3-640*a*c^4*d*x^3+240*b^3*c^2*e*x^3-480*b^2
*c^3*d*x^3+480*a*b^2*c^2*e*x^2-960*a*b*c^3*d*x^2+40*b^4*c*e*x^2-80*b^3*c^2*
d*x^2+240*a^2*b*c^2*e*x-480*a^2*c^3*d*x+120*a*b^3*c*e*x-240*a*b^2*c^2*d*x-5
*b^5*e*x+10*b^4*c*d*x+96*a^3*c^2*e+48*a^2*b^2*c*e-240*a^2*b*c^2*d-2*a*b^4*e
+40*a*b^3*c*d-3*b^5*d)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 1.95, size = 395, normalized size = 2.93

$$\frac{x\left(\frac{4c^{2}d}{5\left(4ac^{2}-b^{2}c\right)}-\frac{2bce}{5\left(4ac^{2}-b^{2}c\right)}\right)-\frac{4ace}{5\left(4ac^{2}-b^{2}c\right)}+\frac{2bcd}{5\left(4ac^{2}-b^{2}c\right)}}{\left(cx^{2}+bx+a\right)^{5/2}}-\frac{x\left(\frac{2c^{2}(20be-32cd)}{15\left(4ac^{2}-b^{2}c\right)\left(4ac-b^{2}\right)}-\frac{8bc^{2}e}{15\left(4ac^{2}-b^{2}c\right)\left(4ac-b^{2}\right)}\right)+\frac{bc(20be-32cd)}{15\left(4ac^{2}-b^{2}c\right)\left(4ac-b^{2}\right)}-\frac{16ac^{2}e}{15\left(4ac^{2}-b^{2}c\right)\left(4ac-b^{2}\right)}}{\left(cx^{2}+bx+a\right)^{3/2}}+\frac{\frac{bc\left(256c^{2}d-128bce\right)}{15\left(4ac^{2}-b^{2}c\right)\left(4ac-b^{2}\right)^{2}}+\frac{2c^{2}x\left(256c^{2}d-128bce\right)}{15\left(4ac^{2}-b^{2}c\right)\left(4ac-b^{2}\right)^{2}}}{\sqrt{cx^{2}+bx+a}}-\frac{4e}{\left(60ac-15b^{2}\right)\left(cx^{2}+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] (x*((4*c^2*d)/(5*(4*a*c^2 - b^2*c)) - (2*b*c*e)/(5*(4*a*c^2 - b^2*c))) - (4
*a*c*e)/(5*(4*a*c^2 - b^2*c)) + (2*b*c*d)/(5*(4*a*c^2 - b^2*c)))/(a + b*x +
 c*x^2)^(5/2) - (x*((2*c^2*(20*b*e - 32*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c
- b^2)) - (8*b*c^2*e)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*c*(20*b*e
- 32*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*a*c^2*e)/(15*(4*a*c^2
 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + ((b*c*(256*c^2*d - 128*
b*c*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (2*c^2*x*(256*c^2*d - 128*
b*c*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a + b*x + c*x^2)^(1/2) - (
4*e)/((60*a*c - 15*b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.904 $\int \frac{d+ex}{\left(a+bx+cx^2\right)^{9/2}} dx$

Optimal. Leaf size=181

$$\frac{1024c^2(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^4\sqrt{a+bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^3\left(a+bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}}-\frac{2(-2ae+x(2\ldots}{7\left(b^2-4ac\right)\left(a\ldots\right.}$$

Rubi [A] time = 0.06, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {638, 614, 613}

$$\frac{1024c^2(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^4\sqrt{a+bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^3\left(a+bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}}-\frac{2(-2ae+x(2cd-be)+bd)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/(7*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(7/
2)) + (24*(2*c*d - b*e)*(b + 2*c*x))/(35*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^
(5/2)) - (128*c*(2*c*d - b*e)*(b + 2*c*x))/(35*(b^2 - 4*a*c)^3*(a + b*x + c
*x^2)^(3/2)) + (1024*c^2*(2*c*d - b*e)*(b + 2*c*x))/(35*(b^2 - 4*a*c)^4*Sqr
t[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{d+ex}{\left(a+bx+cx^2\right)^{9/2}}\,dx = -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} - \frac{(12(2cd-be))\int \frac{1}{\left(a+bx+cx^2\right)^{7/2}}\,dx}{7\left(b^2-4ac\right)}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}} + \frac{(192c(2cd-be}{35\left(b\right.}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}} - \frac{128c(2cd-}{35\left(b^2-4ac\right)^3}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}} - \frac{128c(2cd-}{35\left(b^2-4ac\right)^3}$$

Mathematica [A] time = 0.19, size = 159, normalized size = 0.88

$$\frac{2\left(5\left(b^2-4ac\right)^3(2ae-bd+bex-2cdx)-12\left(b^2-4ac\right)^2(b+2cx)(a+x(b+cx))(be-2cd)+64c\left(b^2-4ac\right)(b+2cx)(a+x(b+cx))^2(be-2cd)-512c^2(b+2cx)(a+x(b+cx))^3(be-2cd)\right)}{35\left(b^2-4ac\right)^4(a+x(b+cx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (2*(5*(b^2 - 4*a*c)^3*(-(b*d) + 2*a*e - 2*c*d*x + b*e*x) - 12*(b^2 - 4*a*c)
^2*(-2*c*d + b*e)*(b + 2*c*x)*(a + x*(b + c*x)) + 64*c*(b^2 - 4*a*c)*(-2*c*
d + b*e)*(b + 2*c*x)*(a + x*(b + c*x))^2 - 512*c^2*(-2*c*d + b*e)*(b + 2*c*
x)*(a + x*(b + c*x))^3))/(35*(b^2 - 4*a*c)^4*(a + x*(b + c*x))^(7/2))
```

IntegrateAlgebraic [B] time = 4.35, size = 470, normalized size = 2.60

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*(5*b^7*d - 84*a*b^5*c*d + 560*a^2*b^3*c^2*d - 2240*a^3*b*c^3*d + 2*a*b^
6*e - 40*a^2*b^4*c*e + 480*a^3*b^2*c^2*e + 640*a^4*c^3*e - 14*b^6*c*d*x + 2
80*a*b^4*c^2*d*x - 3360*a^2*b^2*c^3*d*x - 4480*a^3*c^4*d*x + 7*b^7*e*x - 14
0*a*b^5*c*e*x + 1680*a^2*b^3*c^2*e*x + 2240*a^3*b*c^3*e*x + 56*b^5*c^2*d*x^
2 - 2240*a*b^3*c^3*d*x^2 - 13440*a^2*b*c^4*d*x^2 - 28*b^6*c*e*x^2 + 1120*a*
b^4*c^2*e*x^2 + 6720*a^2*b^2*c^3*e*x^2 - 560*b^4*c^3*d*x^3 - 13440*a*b^2*c^
4*d*x^3 - 8960*a^2*c^5*d*x^3 + 280*b^5*c^2*e*x^3 + 6720*a*b^3*c^3*e*x^3 + 4
480*a^2*b*c^4*e*x^3 - 4480*b^3*c^4*d*x^4 - 17920*a*b*c^5*d*x^4 + 2240*b^4*c
^3*e*x^4 + 8960*a*b^2*c^4*e*x^4 - 8960*b^2*c^5*d*x^5 - 7168*a*c^6*d*x^5 + 4
480*b^3*c^4*e*x^5 + 3584*a*b*c^5*e*x^5 - 7168*b*c^6*d*x^6 + 3584*b^2*c^5*e*
x^6 - 2048*c^7*d*x^7 + 1024*b*c^6*e*x^7))/(35*(b^2 - 4*a*c)^4*(a + b*x + c*
x^2)^(7/2))
```

fricas [B] time = 26.44, size = 941, normalized size = 5.20

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(9/2),x, algorithm="fricas")
```

[Out] 2/35*(1024*(2*c^7*d - b*c^6*e)*x^7 + 3584*(2*b*c^6*d - b^2*c^5*e)*x^6 + 896 *(2*(5*b^2*c^5 + 4*a*c^6)*d - (5*b^3*c^4 + 4*a*b*c^5)*e)*x^5 + 2240*(2*(b^3 *c^4 + 4*a*b*c^5)*d - (b^4*c^3 + 4*a*b^2*c^4)*e)*x^4 + 280*(2*(b^4*c^3 + 24 *a*b^2*c^4 + 16*a^2*c^5)*d - (b^5*c^2 + 24*a*b^3*c^3 + 16*a^2*b*c^4)*e)*x^3 - 28*(2*(b^5*c^2 - 40*a*b^3*c^3 - 240*a^2*b*c^4)*d - (b^6*c - 40*a*b^4*c^2 - 240*a^2*b^2*c^3)*e)*x^2 - (5*b^7 - 84*a*b^5*c + 560*a^2*b^3*c^2 - 2240*a ^3*b*c^3)*d - 2*(a*b^6 - 20*a^2*b^4*c + 240*a^3*b^2*c^2 + 320*a^4*c^3)*e + 7*(2*(b^6*c - 20*a*b^4*c^2 + 240*a^2*b^2*c^3 + 320*a^3*c^4)*d - (b^7 - 20*a *b^5*c + 240*a^2*b^3*c^2 + 320*a^3*b*c^3)*e)*x)*sqrt(c*x^2 + b*x + a)/(a^4* b^8 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3 + 256*a^8*c^4 + (b^8* c^4 - 16*a*b^6*c^5 + 96*a^2*b^4*c^6 - 256*a^3*b^2*c^7 + 256*a^4*c^8)*x^8 + 4*(b^9*c^3 - 16*a*b^7*c^4 + 96*a^2*b^5*c^5 - 256*a^3*b^3*c^6 + 256*a^4*b*c^ 7)*x^7 + 2*(3*b^10*c^2 - 46*a*b^8*c^3 + 256*a^2*b^6*c^4 - 576*a^3*b^4*c^5 + 256*a^4*b^2*c^6 + 512*a^5*c^7)*x^6 + 4*(b^11*c - 13*a*b^9*c^2 + 48*a^2*b^7 *c^3 + 32*a^3*b^5*c^4 - 512*a^4*b^3*c^5 + 768*a^5*b*c^6)*x^5 + (b^12 - 4*a* b^10*c - 90*a^2*b^8*c^2 + 800*a^3*b^6*c^3 - 2240*a^4*b^4*c^4 + 1536*a^5*b^2 *c^5 + 1536*a^6*c^6)*x^4 + 4*(a*b^11 - 13*a^2*b^9*c + 48*a^3*b^7*c^2 + 32*a ^4*b^5*c^3 - 512*a^5*b^3*c^4 + 768*a^6*b*c^5)*x^3 + 2*(3*a^2*b^10 - 46*a^3* b^8*c + 256*a^4*b^6*c^2 - 576*a^5*b^4*c^3 + 256*a^6*b^2*c^4 + 512*a^7*c^5)* x^2 + 4*(a^3*b^9 - 16*a^4*b^7*c + 96*a^5*b^5*c^2 - 256*a^6*b^3*c^3 + 256*a^ 7*b*c^4)*x)

giac [B] time = 0.32, size = 788, normalized size = 4.35

$$\frac{2\left(\left(4\left(2\left(8\left(2\left(4\left(\frac{2\left(2c^{7}d-bc^{6}e\right)x}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}+\frac{7\left(2bc^{6}d-b^{2}c^{5}e\right)}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)x+\frac{7\left(10b^{2}c^{5}d+8ac^{6}d-5b^{3}c^{4}e-4abc^{5}e\right)}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)x+\frac{35\left(2b^{3}c^{4}d+8abc^{5}d-b^{4}c^{3}e-4ab^{2}c^{4}e\right)}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)x+\frac{35\left(2b^{4}c^{3}d+48ab^{2}c^{4}d+32a^{2}c^{5}d-b^{5}c^{2}e-24ab^{3}c^{3}e-16a^{2}bc^{4}e\right)}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)x-\frac{7\left(2b^{5}c^{2}d-80ab^{3}c^{3}d-480a^{2}bc^{4}d-b^{6}ce+40ab^{4}c^{2}e+240a^{2}b^{2}c^{3}e\right)}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)x+\frac{7\left(2b^{6}cd-40ab^{4}c^{2}d+480a^{2}b^{2}c^{3}d+640a^{3}c^{4}d-b^{7}e+20ab^{5}ce-240a^{2}b^{3}c^{2}e-320a^{3}bc^{3}e\right)}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)x-\frac{5b^{7}d-84ab^{5}cd+560a^{2}b^{3}c^{2}d-2240a^{3}bc^{3}d+2ab^{6}e-40a^{2}b^{4}ce+480a^{3}b^{2}c^{2}e+640a^{4}c^{3}e}{b^{8}-16ab^{6}c+96a^{2}b^{4}c^{2}-256a^{3}b^{2}c^{3}+256a^{4}c^{4}}\right)}{35\left(cx^{2}+bx+a\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)/(c*x^2+b*x+a)^(9/2),x, algorithm="giac")

[Out] 2/35*((4*(2*(8*(2*(4*(2*(2*c^7*d - b*c^6*e)*x/(b^8 - 16*a*b^6*c + 96*a^2*b^ 4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4) + 7*(2*b*c^6*d - b^2*c^5*e)/(b^8 - 1 6*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x + 7*(10*b^2* c^5*d + 8*a*c^6*d - 5*b^3*c^4*e - 4*a*b*c^5*e)/(b^8 - 16*a*b^6*c + 96*a^2*b ^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x + 35*(2*b^3*c^4*d + 8*a*b*c^5*d - b^4*c^3*e - 4*a*b^2*c^4*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b ^2*c^3 + 256*a^4*c^4))*x + 35*(2*b^4*c^3*d + 48*a*b^2*c^4*d + 32*a^2*c^5*d - b^5*c^2*e - 24*a*b^3*c^3*e - 16*a^2*b*c^4*e)/(b^8 - 16*a*b^6*c + 96*a^2*b ^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x - 7*(2*b^5*c^2*d - 80*a*b^3*c^3* d - 480*a^2*b*c^4*d - b^6*c*e + 40*a*b^4*c^2*e + 240*a^2*b^2*c^3*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x + 7*(2*b^6* c*d - 40*a*b^4*c^2*d + 480*a^2*b^2*c^3*d + 640*a^3*c^4*d - b^7*e + 20*a*b^5 *c*e - 240*a^2*b^3*c^2*e - 320*a^3*b*c^3*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4* c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x - (5*b^7*d - 84*a*b^5*c*d + 560*a^2 *b^3*c^2*d - 2240*a^3*b*c^3*d + 2*a*b^6*e - 40*a^2*b^4*c*e + 480*a^3*b^2*c^ 2*e + 640*a^4*c^3*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))/(c*x^2 + b*x + a)^(7/2)

maple [B] time = 0.06, size = 500, normalized size = 2.76

$$-\frac{2\left(1024bc^{6}ex^{7}-2048c^{7}dx^{7}+3584b^{2}c^{5}ex^{6}-7168bc^{6}dx^{6}+3584abc^{5}ex^{5}-7168ac^{6}dx^{5}+4480b^{3}c^{4}ex^{5}-8960b^{2}c^{5}dx^{5}+8960ab^{2}c^{4}ex^{4}-17920abc^{5}dx^{4}+2240b^{4}c^{3}ex^{4}-4480b^{3}c^{4}dx^{4}+4480a^{2}bc^{4}ex^{3}-8960a^{2}c^{5}dx^{3}+6720ab^{3}c^{3}ex^{3}-13440ab^{2}c^{4}dx^{3}+280b^{5}c^{2}ex^{3}-560b^{4}c^{3}dx^{3}+6720a^{2}b^{2}c^{3}ex^{2}-13440a^{2}bc^{4}dx^{2}+1120ab^{4}c^{2}ex^{2}-2240ab^{3}c^{3}dx^{2}-28b^{6}cex^{2}+56b^{5}c^{2}dx^{2}+2240a^{3}bc^{3}ex-4480a^{3}c^{4}dx+1680a^{2}b^{3}c^{2}ex-3360a^{2}b^{2}c^{3}dx-140ab^{5}cex+280ab^{4}c^{2}dx+7b^{7}ex-14b^{6}cdx+640a^{4}c^{3}e+480a^{3}b^{2}c^{2}e-2240a^{3}bc^{3}d-40a^{2}b^{4}ce+560a^{2}b^{3}c^{2}d+2ab^{6}e-84ab^{5}cd+5b^{7}d\right)}{35\left(cx^{2}+bx+a\right)^{\frac{7}{2}}\left(256a^{4}c^{4}-256a^{3}b^{2}c^{3}+96a^{2}b^{4}c^{2}-16ab^{6}c+b^{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e*x+d)/(c*x^2+b*x+a)^(9/2),x)

[Out] -2/35/(c*x^2+b*x+a)^(7/2)*(1024*b*c^6*e*x^7-2048*c^7*d*x^7+3584*b^2*c^5*e*x ^6-7168*b*c^6*d*x^6+3584*a*b*c^5*e*x^5-7168*a*c^6*d*x^5+4480*b^3*c^4*e*x^5- 8960*b^2*c^5*d*x^5+8960*a*b^2*c^4*e*x^4-17920*a*b*c^5*d*x^4+2240*b^4*c^3*e* x^4-4480*b^3*c^4*d*x^4+4480*a^2*b*c^4*e*x^3-8960*a^2*c^5*d*x^3+6720*a*b^3*c ^3*e*x^3-13440*a*b^2*c^4*d*x^3+280*b^5*c^2*e*x^3-560*b^4*c^3*d*x^3+6720*a^2

```
*b^2*c^3*e*x^2-13440*a^2*b*c^4*d*x^2+1120*a*b^4*c^2*e*x^2-2240*a*b^3*c^3*d*
x^2-28*b^6*c*e*x^2+56*b^5*c^2*d*x^2+2240*a^3*b*c^3*e*x-4480*a^3*c^4*d*x+168
0*a^2*b^3*c^2*e*x-3360*a^2*b^2*c^3*d*x-140*a*b^5*c*e*x+280*a*b^4*c^2*d*x+7*
b^7*e*x-14*b^6*c*d*x+640*a^4*c^3*e+480*a^3*b^2*c^2*e-2240*a^3*b*c^3*d-40*a^
2*b^4*c*e+560*a^2*b^3*c^2*d+2*a*b^6*e-84*a*b^5*c*d+5*b^7*d)/(256*a^4*c^4-25
6*a^3*b^2*c^3+96*a^2*b^4*c^2-16*a*b^6*c+b^8)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.47, size = 599, normalized size = 3.31

$$\frac{x\left(\frac{2c^2\left(768c^2d-368bce\right)}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}-\frac{32bc^3e}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}\right)+\frac{bc\left(768c^2d-368bce\right)}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}-\frac{64ac^3e}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}}{\left(cx^2+bx+a\right)^{3/2}}+\frac{x\left(\frac{4c^2d}{7\left(4ac^2-b^2c\right)}-\frac{2bce}{7\left(4ac^2-b^2c\right)}\right)-\frac{4ace}{7\left(4ac^2-b^2c\right)}+\frac{2bcd}{7\left(4ac^2-b^2c\right)}}{\left(cx^2+bx+a\right)^{7/2}}-\frac{x\left(\frac{2c^2\left(28be-48cd\right)}{35\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}-\frac{8bc^2e}{35\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}\right)+\frac{bc\left(28be-48cd\right)}{35\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}-\frac{16ac^2e}{35\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}}{\left(cx^2+bx+a\right)^{5/2}}+\frac{\frac{2c^2x\left(2048c^3d-1024bc^2e\right)}{35\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^3}+\frac{bc\left(2048c^3d-1024bc^2e\right)}{35\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^3}}{\sqrt{cx^2+bx+a}}-\frac{4e}{\left(140ac-35b^2\right)\left(cx^2+bx+a\right)^{5/2}}+\frac{16ce}{105\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2)^(9/2),x)
```

```
[Out] (x*((2*c^2*(768*c^2*d - 368*b*c*e))/(105*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2)
 - (32*b*c^3*e)/(105*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2)) + (b*c*(768*c^2*d
- 368*b*c*e))/(105*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) - (64*a*c^3*e)/(105*(
4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a + b*x + c*x^2)^(3/2) + (x*((4*c^2*d)/
(7*(4*a*c^2 - b^2*c)) - (2*b*c*e)/(7*(4*a*c^2 - b^2*c))) - (4*a*c*e)/(7*(4*
a*c^2 - b^2*c)) + (2*b*c*d)/(7*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(7/2)
- (x*((2*c^2*(28*b*e - 48*c*d))/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b
*c^2*e)/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*c*(28*b*e - 48*c*d))/(35
*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*a*c^2*e)/(35*(4*a*c^2 - b^2*c)*(4*a
*c - b^2)))/(a + b*x + c*x^2)^(5/2) + ((2*c^2*x*(2048*c^3*d - 1024*b*c^2*e)
)/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^3) + (b*c*(2048*c^3*d - 1024*b*c^2*e)
)/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^3))/(a + b*x + c*x^2)^(1/2) - (4*e)/(
(140*a*c - 35*b^2)*(a + b*x + c*x^2)^(5/2)) + (16*c*e)/(105*(4*a*c - b^2)^2
*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a)**(9/2),x)
```

```
[Out] Timed out
```

3.905 $\int \frac{1-x}{x\sqrt{1+3x+x^2}}\,dx$

Optimal. Leaf size=19

$$-2\tanh^{-1}\left(\frac{x+1}{\sqrt{x^2+3x+1}}\right)$$

Rubi [A] time = 0.01, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {838, 206}

$$-2\tanh^{-1}\left(\frac{x+1}{\sqrt{x^2+3x+1}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(1 - x)/(x*Sqrt[1 + 3*x + x^2]),x]
```

```
[Out] -2*ArcTanh[(1 + x)/Sqrt[1 + 3*x + x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 838

```
Int[((f_) + (g_.)*(x_))/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_
.)*(x_)^2]), x_Symbol] :> Dist[(4*f*(a - d))/(b*d - a*e), Subst[Int[1/(4*(a
 - d) - x^2), x], x, (2*(a - d) + (b - e)*x)/Sqrt[a + b*x + c*x^2]], x] /;
FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[4*c*(a - d) - (b - e)^2, 0] && EqQ[e
*f*(b - e) - 2*g*(b*d - a*e), 0] && NeQ[b*d - a*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1-x}{x\sqrt{1+3x+x^2}}\,dx &= -\left(4\,\text{Subst}\left(\int \frac{1}{4-x^2}\,dx, x, \frac{2+2x}{\sqrt{1+3x+x^2}}\right)\right)\\ &= -2\tanh^{-1}\left(\frac{1+x}{\sqrt{1+3x+x^2}}\right)\end{aligned}$$

Mathematica [B] time = 0.01, size = 49, normalized size = 2.58

$$-\tanh^{-1}\left(\frac{2x+3}{2\sqrt{x^2+3x+1}}\right)-\tanh^{-1}\left(\frac{3x+2}{2\sqrt{x^2+3x+1}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - x)/(x*Sqrt[1 + 3*x + x^2]),x]
```

```
[Out] -ArcTanh[(3 + 2*x)/(2*Sqrt[1 + 3*x + x^2])] - ArcTanh[(2 + 3*x)/(2*Sqrt[1 +
 3*x + x^2])]
```

IntegrateAlgebraic [B] time = 0.16, size = 40, normalized size = 2.11

$$\log\left(2\sqrt{x^2+3x+1}-2x-3\right)+2\tanh^{-1}\left(x-\sqrt{x^2+3x+1}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(1 - x)/(x*Sqrt[1 + 3*x + x^2]),x]
[Out] 2*ArcTanh[x - Sqrt[1 + 3*x + x^2]] + Log[-3 - 2*x + 2*Sqrt[1 + 3*x + x^2]]
```

fricas [B] time = 0.42, size = 47, normalized size = 2.47

$$\log\left(4x^2-\sqrt{x^2+3x+1}\,(4x+5)+11x+5\right)-\log\left(-x+\sqrt{x^2+3x+1}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x^2+3*x+1)^(1/2),x, algorithm="fricas")
[Out] log(4*x^2 - sqrt(x^2 + 3*x + 1)*(4*x + 5) + 11*x + 5) - log(-x + sqrt(x^2 + 3*x + 1) + 1)
```

giac [B] time = 0.20, size = 56, normalized size = 2.95

$$-\log\left(\left|-x+\sqrt{x^2+3x+1}+1\right|\right)+\log\left(\left|-x+\sqrt{x^2+3x+1}-1\right|\right)+\log\left(\left|-2x+2\sqrt{x^2+3x+1}-3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x^2+3*x+1)^(1/2),x, algorithm="giac")
[Out] -log(abs(-x + sqrt(x^2 + 3*x + 1) + 1)) + log(abs(-x + sqrt(x^2 + 3*x + 1) - 1)) + log(abs(-2*x + 2*sqrt(x^2 + 3*x + 1) - 3))
```

maple [B] time = 0.06, size = 38, normalized size = 2.00

$$-\operatorname{arctanh}\left(\frac{3x+2}{2\sqrt{x^2+3x+1}}\right)-\ln\left(x+\frac{3}{2}+\sqrt{x^2+3x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-x+1)/x/(x^2+3*x+1)^(1/2),x)
[Out] -ln(x+3/2+(x^2+3*x+1)^(1/2))-arctanh(1/2*(3*x+2)/(x^2+3*x+1)^(1/2))
```

maxima [B] time = 0.71, size = 48, normalized size = 2.53

$$-\log\left(2x+2\sqrt{x^2+3x+1}+3\right)-\log\left(\frac{2\sqrt{x^2+3x+1}}{|x|}+\frac{2}{|x|}+3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x^2+3*x+1)^(1/2),x, algorithm="maxima")
[Out] -log(2*x + 2*sqrt(x^2 + 3*x + 1) + 3) - log(2*sqrt(x^2 + 3*x + 1)/abs(x) + 2/abs(x) + 3)
```

mupad [B] time = 1.83, size = 41, normalized size = 2.16

$$-\ln\left(\frac{3x+2\sqrt{x^2+3x+1}+2}{x}\right)-\ln\left(x+\sqrt{x^2+3x+1}+\frac{3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 1)/(x*(3*x + x^2 + 1)^(1/2)),x)
[Out] - log((3*x + 2*(3*x + x^2 + 1)^(1/2) + 2)/x) - log(x + (3*x + x^2 + 1)^(1/2) + 3/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{1}{x\sqrt{x^2+3x+1}}\right)dx-\int\frac{1}{\sqrt{x^2+3x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x**2+3*x+1)**(1/2),x)
```

```
[Out] -Integral(-1/(x*sqrt(x**2 + 3*x + 1)), x) - Integral(1/sqrt(x**2 + 3*x + 1)
, x)
```

3.906 $\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{11}x^{11/2}(aB+Ab)+\frac{2}{9}aAx^{9/2}+\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{15}Bcx^{15/2}$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{11}x^{11/2}(aB+Ab)+\frac{2}{9}aAx^{9/2}+\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(9/2))/9 + (2*(A*b + a*B)*x^(11/2))/11 + (2*(b*B + A*c)*x^(13/2))/
13 + (2*B*c*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^{7/2}+(Ab+aB)x^{9/2}+(bB+Ac)x^{11/2}+Bcx^{13/2}\right)dx\\&=\frac{2}{9}aAx^{9/2}+\frac{2}{11}(Ab+aB)x^{11/2}+\frac{2}{13}(bB+Ac)x^{13/2}+\frac{2}{15}Bcx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 47, normalized size = 0.85

$$\frac{2x^{9/2}\left(65a(11A+9Bx)+45Ax(13b+11cx)+33Bx^2(15b+13cx)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(9/2)*(65*a*(11*A + 9*B*x) + 45*A*x*(13*b + 11*c*x) + 33*B*x^2*(15*b +
 13*c*x)))/6435
```

IntegrateAlgebraic [A] time = 0.03, size = 59, normalized size = 1.07

$$\frac{2\left(715aAx^{9/2}+585aBx^{11/2}+585Abx^{11/2}+495Acx^{13/2}+495bBx^{13/2}+429Bcx^{15/2}\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(715*a*A*x^(9/2) + 585*A*b*x^(11/2) + 585*a*B*x^(11/2) + 495*b*B*x^(13/2
) + 495*A*c*x^(13/2) + 429*B*c*x^(15/2)))/6435
```

fricas [A] time = 0.42, size = 44, normalized size = 0.80

$$\frac{2}{6435}\left(429\,Bcx^{7}+495\,(Bb+Ac)x^{6}+715\,Aax^{4}+585\,(Ba+Ab)x^{5}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c*x^7 + 495*(B*b + A*c)*x^6 + 715*A*a*x^4 + 585*(B*a + A*b)*x
^5)*sqrt(x)
```

giac [A] time = 0.15, size = 43, normalized size = 0.78

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{13}\,Bbx^{\frac{13}{2}}+\frac{2}{13}\,Acx^{\frac{13}{2}}+\frac{2}{11}\,Bax^{\frac{11}{2}}+\frac{2}{11}\,Abx^{\frac{11}{2}}+\frac{2}{9}\,Aax^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*B*b*x^(13/2) + 2/13*A*c*x^(13/2) + 2/11*B*a*x^(11/
2) + 2/11*A*b*x^(11/2) + 2/9*A*a*x^(9/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.76

$$\frac{2\left(429Bc\,x^{3}+495Ac\,x^{2}+495Bb\,x^{2}+585Abx+585Bax+715Aa\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*c*x^3+495*A*c*x^2+495*B*b*x^2+585*A*b*x+585*B*a*x+715
*A*a)
```

maxima [A] time = 0.60, size = 39, normalized size = 0.71

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{13}\,(Bb+Ac)x^{\frac{13}{2}}+\frac{2}{9}\,Aax^{\frac{9}{2}}+\frac{2}{11}\,(Ba+Ab)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*(B*b + A*c)*x^(13/2) + 2/9*A*a*x^(9/2) + 2/11*(B*a
 + A*b)*x^(11/2)
```

mupad [B] time = 1.26, size = 41, normalized size = 0.75

$$x^{11/2}\left(\frac{2\,A\,b}{11}+\frac{2\,B\,a}{11}\right)+x^{13/2}\left(\frac{2\,A\,c}{13}+\frac{2\,B\,b}{13}\right)+\frac{2\,A\,a\,x^{9/2}}{9}+\frac{2\,B\,c\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(11/2)*((2*A*b)/11 + (2*B*a)/11) + x^(13/2)*((2*A*c)/13 + (2*B*b)/13) + (
2*A*a*x^(9/2))/9 + (2*B*c*x^(15/2))/15
```

sympy [A] time = 8.08, size = 70, normalized size = 1.27

$$\frac{2Aax^{\frac{9}{2}}}{9}+\frac{2Abx^{\frac{11}{2}}}{11}+\frac{2Acx^{\frac{13}{2}}}{13}+\frac{2Bax^{\frac{11}{2}}}{11}+\frac{2Bbx^{\frac{13}{2}}}{13}+\frac{2Bcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] 2*A*a*x**(9/2)/9 + 2*A*b*x**(11/2)/11 + 2*A*c*x**(13/2)/13 + 2*B*a*x**(11/2
)/11 + 2*B*b*x**(13/2)/13 + 2*B*c*x**(15/2)/15
```

3.907 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{9}x^{9/2}(aB+Ab)+\frac{2}{7}aAx^{7/2}+\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{13}Bcx^{13/2}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{9}x^{9/2}(aB+Ab)+\frac{2}{7}aAx^{7/2}+\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(7/2))/7 + (2*(A*b + a*B)*x^(9/2))/9 + (2*(b*B + A*c)*x^(11/2))/11
 + (2*B*c*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^{5/2}+(Ab+aB)x^{7/2}+(bB+Ac)x^{9/2}+Bcx^{11/2}\right)\,dx\\&=\frac{2}{7}aAx^{7/2}+\frac{2}{9}(Ab+aB)x^{9/2}+\frac{2}{11}(bB+Ac)x^{11/2}+\frac{2}{13}Bcx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 48, normalized size = 0.87

$$\frac{2x^{7/2}(143a(9A+7Bx)+7x(13A(11b+9cx)+9Bx(13b+11cx)))}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(7/2)*(143*a*(9*A + 7*B*x) + 7*x*(13*A*(11*b + 9*c*x) + 9*B*x*(13*b +
11*c*x))))/9009
```

IntegrateAlgebraic [A] time = 0.03, size = 59, normalized size = 1.07

$$\frac{2\left(1287aAx^{7/2}+1001aBx^{9/2}+1001Abx^{9/2}+819Acx^{11/2}+819bBx^{11/2}+693Bcx^{13/2}\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(1287*a*A*x^(7/2) + 1001*A*b*x^(9/2) + 1001*a*B*x^(9/2) + 819*b*B*x^(11/
2) + 819*A*c*x^(11/2) + 693*B*c*x^(13/2)))/9009
```

fricas [A] time = 0.41, size = 44, normalized size = 0.80

$$\frac{2}{9009}\left(693\,Bcx^{6}+819\,(Bb+Ac)x^{5}+1287\,Aax^{3}+1001\,(Ba+Ab)x^{4}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c*x^6 + 819*(B*b + A*c)*x^5 + 1287*A*a*x^3 + 1001*(B*a + A*b)
*x^4)*sqrt(x)
```

giac [A] time = 0.19, size = 43, normalized size = 0.78

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,Bbx^{\frac{11}{2}}+\frac{2}{11}\,Acx^{\frac{11}{2}}+\frac{2}{9}\,Bax^{\frac{9}{2}}+\frac{2}{9}\,Abx^{\frac{9}{2}}+\frac{2}{7}\,Aax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*B*b*x^(11/2) + 2/11*A*c*x^(11/2) + 2/9*B*a*x^(9/2)
 + 2/9*A*b*x^(9/2) + 2/7*A*a*x^(7/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.76

$$\frac{2\left(693Bc\,x^{3}+819Ac\,x^{2}+819Bb\,x^{2}+1001Abx+1001Bax+1287Aa\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*c*x^3+819*A*c*x^2+819*B*b*x^2+1001*A*b*x+1001*B*a*x+1
287*A*a)
```

maxima [A] time = 0.57, size = 39, normalized size = 0.71

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,(Bb+Ac)x^{\frac{11}{2}}+\frac{2}{7}\,Aax^{\frac{7}{2}}+\frac{2}{9}\,(Ba+Ab)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*(B*b + A*c)*x^(11/2) + 2/7*A*a*x^(7/2) + 2/9*(B*a
+ A*b)*x^(9/2)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.75

$$x^{9/2}\left(\frac{2\,A\,b}{9}+\frac{2\,B\,a}{9}\right)+x^{11/2}\left(\frac{2\,A\,c}{11}+\frac{2\,B\,b}{11}\right)+\frac{2\,A\,a\,x^{7/2}}{7}+\frac{2\,B\,c\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(9/2)*((2*A*b)/9 + (2*B*a)/9) + x^(11/2)*((2*A*c)/11 + (2*B*b)/11) + (2*A
*a*x^(7/2))/7 + (2*B*c*x^(13/2))/13
```

sympy [A] time = 3.97, size = 70, normalized size = 1.27

$$\frac{2Aax^{\frac{7}{2}}}{7}+\frac{2Abx^{\frac{9}{2}}}{9}+\frac{2Acx^{\frac{11}{2}}}{11}+\frac{2Bax^{\frac{9}{2}}}{9}+\frac{2Bbx^{\frac{11}{2}}}{11}+\frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] 2*A*a*x**(7/2)/7 + 2*A*b*x**(9/2)/9 + 2*A*c*x**(11/2)/11 + 2*B*a*x**(9/2)/9
 + 2*B*b*x**(11/2)/11 + 2*B*c*x**(13/2)/13
```

3.908 $\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{7}x^{7/2}(aB+Ab)+\frac{2}{5}aAx^{5/2}+\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{11}Bcx^{11/2}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{7}x^{7/2}(aB+Ab)+\frac{2}{5}aAx^{5/2}+\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(5/2))/5 + (2*(A*b + a*B)*x^(7/2))/7 + (2*(b*B + A*c)*x^(9/2))/9 +
 (2*B*c*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)\,dx &= \int\left(aAx^{3/2}+(Ab+aB)x^{5/2}+(bB+Ac)x^{7/2}+Bcx^{9/2}\right)dx\\ &= \frac{2}{5}aAx^{5/2}+\frac{2}{7}(Ab+aB)x^{7/2}+\frac{2}{9}(bB+Ac)x^{9/2}+\frac{2}{11}Bcx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 48, normalized size = 0.87

$$\frac{2x^{5/2}(99a(7A+5Bx)+5x(11A(9b+7cx)+7Bx(11b+9cx)))}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(5/2)*(99*a*(7*A + 5*B*x) + 5*x*(11*A*(9*b + 7*c*x) + 7*B*x*(11*b + 9*
c*x))))/3465
```

IntegrateAlgebraic [A] time = 0.03, size = 59, normalized size = 1.07

$$\frac{2\left(693aAx^{5/2}+495aBx^{7/2}+495Abx^{7/2}+385Acx^{9/2}+385bBx^{9/2}+315Bcx^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(693*a*A*x^(5/2) + 495*A*b*x^(7/2) + 495*a*B*x^(7/2) + 385*b*B*x^(9/2) +
 385*A*c*x^(9/2) + 315*B*c*x^(11/2)))/3465
```

fricas [A] time = 0.42, size = 44, normalized size = 0.80

$$\frac{2}{3465}\left(315\,Bcx^5+385\,(Bb+Ac)x^4+693\,Aax^2+495\,(Ba+Ab)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*x^5 + 385*(B*b + A*c)*x^4 + 693*A*a*x^2 + 495*(B*a + A*b)*x
^3)*sqrt(x)
```

giac [A] time = 0.15, size = 43, normalized size = 0.78

$$\frac{2}{11}\,Bcx^{\frac{11}{2}}+\frac{2}{9}\,Bbx^{\frac{9}{2}}+\frac{2}{9}\,Acx^{\frac{9}{2}}+\frac{2}{7}\,Bax^{\frac{7}{2}}+\frac{2}{7}\,Abx^{\frac{7}{2}}+\frac{2}{5}\,Aax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*B*b*x^(9/2) + 2/9*A*c*x^(9/2) + 2/7*B*a*x^(7/2) + 2
/7*A*b*x^(7/2) + 2/5*A*a*x^(5/2)
```

maple [A] time = 0.06, size = 42, normalized size = 0.76

$$\frac{2\left(315Bc\,x^3+385Ac\,x^2+385Bb\,x^2+495Abx+495Bax+693Aa\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*c*x^3+385*A*c*x^2+385*B*b*x^2+495*A*b*x+495*B*a*x+693
*A*a)
```

maxima [A] time = 0.48, size = 39, normalized size = 0.71

$$\frac{2}{11}\,Bcx^{\frac{11}{2}}+\frac{2}{9}\,(Bb+Ac)x^{\frac{9}{2}}+\frac{2}{5}\,Aax^{\frac{5}{2}}+\frac{2}{7}\,(Ba+Ab)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*(B*b + A*c)*x^(9/2) + 2/5*A*a*x^(5/2) + 2/7*(B*a +
A*b)*x^(7/2)
```

mupad [B] time = 0.04, size = 41, normalized size = 0.75

$$x^{7/2}\left(\frac{2\,A\,b}{7}+\frac{2\,B\,a}{7}\right)+x^{9/2}\left(\frac{2\,A\,c}{9}+\frac{2\,B\,b}{9}\right)+\frac{2\,A\,a\,x^{5/2}}{5}+\frac{2\,B\,c\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(7/2)*((2*A*b)/7 + (2*B*a)/7) + x^(9/2)*((2*A*c)/9 + (2*B*b)/9) + (2*A*a*
x^(5/2))/5 + (2*B*c*x^(11/2))/11
```

sympy [A] time = 1.75, size = 70, normalized size = 1.27

$$\frac{2Aax^{\frac{5}{2}}}{5}+\frac{2Abx^{\frac{7}{2}}}{7}+\frac{2Acx^{\frac{9}{2}}}{9}+\frac{2Bax^{\frac{7}{2}}}{7}+\frac{2Bbx^{\frac{9}{2}}}{9}+\frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] 2*A*a*x**(5/2)/5 + 2*A*b*x**(7/2)/7 + 2*A*c*x**(9/2)/9 + 2*B*a*x**(7/2)/7 +
 2*B*b*x**(9/2)/9 + 2*B*c*x**(11/2)/11
```

3.909 $\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{5}x^{5/2}(aB+Ab)+\frac{2}{3}aAx^{3/2}+\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{9}Bcx^{9/2}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{5}x^{5/2}(aB+Ab)+\frac{2}{3}aAx^{3/2}+\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(3/2))/3 + (2*(A*b + a*B)*x^(5/2))/5 + (2*(b*B + A*c)*x^(7/2))/7 +
 (2*B*c*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)dx &= \int \left(aA\sqrt{x}+(Ab+aB)x^{3/2}+(bB+Ac)x^{5/2}+Bcx^{7/2}\right)dx\\ &= \frac{2}{3}aAx^{3/2}+\frac{2}{5}(Ab+aB)x^{5/2}+\frac{2}{7}(bB+Ac)x^{7/2}+\frac{2}{9}Bcx^{9/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 47, normalized size = 0.85

$$\frac{2}{315}x^{3/2}(21a(5A+3Bx)+x(9A(7b+5cx)+5Bx(9b+7cx)))$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(3/2)*(21*a*(5*A + 3*B*x) + x*(9*A*(7*b + 5*c*x) + 5*B*x*(9*b + 7*c*x)
)))/315
```

IntegrateAlgebraic [A] time = 0.03, size = 59, normalized size = 1.07

$$\frac{2}{315}\left(105aAx^{3/2}+63aBx^{5/2}+63Abx^{5/2}+45Acx^{7/2}+45bBx^{7/2}+35Bcx^{9/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(105*a*A*x^(3/2) + 63*A*b*x^(5/2) + 63*a*B*x^(5/2) + 45*b*B*x^(7/2) + 45
*A*c*x^(7/2) + 35*B*c*x^(9/2)))/315
```

fricas [A] time = 0.41, size = 42, normalized size = 0.76

$$\frac{2}{315}\left(35\,Bcx^4 + 45\,(Bb + Ac)x^3 + 105\,Aax + 63\,(Ba + Ab)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*x^4 + 45*(B*b + A*c)*x^3 + 105*A*a*x + 63*(B*a + A*b)*x^2)*sq
rt(x)
```

giac [A] time = 0.22, size = 43, normalized size = 0.78

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{7}\,Bbx^{\frac{7}{2}} + \frac{2}{7}\,Acx^{\frac{7}{2}} + \frac{2}{5}\,Bax^{\frac{5}{2}} + \frac{2}{5}\,Abx^{\frac{5}{2}} + \frac{2}{3}\,Aax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*B*b*x^(7/2) + 2/7*A*c*x^(7/2) + 2/5*B*a*x^(5/2) + 2/5
*A*b*x^(5/2) + 2/3*A*a*x^(3/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.76

$$\frac{2\left(35Bc\,x^3 + 45Ac\,x^2 + 45Bb\,x^2 + 63Abx + 63Bax + 105Aa\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*c*x^3+45*A*c*x^2+45*B*b*x^2+63*A*b*x+63*B*a*x+105*A*a)
```

maxima [A] time = 0.50, size = 39, normalized size = 0.71

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{7}\,(Bb + Ac)x^{\frac{7}{2}} + \frac{2}{3}\,Aax^{\frac{3}{2}} + \frac{2}{5}\,(Ba + Ab)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*(B*b + A*c)*x^(7/2) + 2/3*A*a*x^(3/2) + 2/5*(B*a + A*
b)*x^(5/2)
```

mupad [B] time = 0.04, size = 41, normalized size = 0.75

$$x^{5/2}\left(\frac{2\,A\,b}{5} + \frac{2\,B\,a}{5}\right) + x^{7/2}\left(\frac{2\,A\,c}{7} + \frac{2\,B\,b}{7}\right) + \frac{2\,A\,a\,x^{3/2}}{3} + \frac{2\,B\,c\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(5/2)*((2*A*b)/5 + (2*B*a)/5) + x^(7/2)*((2*A*c)/7 + (2*B*b)/7) + (2*A*a*
x^(3/2))/3 + (2*B*c*x^(9/2))/9
```

sympy [A] time = 2.79, size = 53, normalized size = 0.96

$$\frac{2Aax^{\frac{3}{2}}}{3} + \frac{2Bcx^{\frac{9}{2}}}{9} + \frac{2x^{\frac{7}{2}}\,(Ac + Bb)}{7} + \frac{2x^{\frac{5}{2}}\,(Ab + Ba)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)*x**(1/2),x)
```

```
[Out] 2*A*a*x**(3/2)/3 + 2*B*c*x**(9/2)/9 + 2*x**(7/2)*(A*c + B*b)/7 + 2*x**(5/2)
*(A*b + B*a)/5
```

3.910 $\int \frac{(A+Bx)(a+bx+cx^2)}{\sqrt{x}}\,dx$

Optimal. Leaf size=53

$$\frac{2}{3}x^{3/2}(aB+Ab)+2aA\sqrt{x}+\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{7}Bcx^{7/2}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{3}x^{3/2}(aB+Ab)+2aA\sqrt{x}+\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] 2*a*A*Sqrt[x] + (2*(A*b + a*B)*x^(3/2))/3 + (2*(b*B + A*c)*x^(5/2))/5 + (2*
B*c*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{\sqrt{x}}\,dx &= \int \left(\frac{aA}{\sqrt{x}}+(Ab+aB)\sqrt{x}+(bB+Ac)x^{3/2}+Bcx^{5/2}\right)dx\\ &= 2aA\sqrt{x}+\frac{2}{3}(Ab+aB)x^{3/2}+\frac{2}{5}(bB+Ac)x^{5/2}+\frac{2}{7}Bcx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 46, normalized size = 0.87

$$\frac{2}{105}\sqrt{x}\,(35a(3A+Bx)+x(7A(5b+3cx)+3Bx(7b+5cx)))$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(35*a*(3*A + B*x) + x*(7*A*(5*b + 3*c*x) + 3*B*x*(7*b + 5*c*x)))
)/105
```

IntegrateAlgebraic [A] time = 0.03, size = 59, normalized size = 1.11

$$\frac{2}{105}\left(105aA\sqrt{x}+35aBx^{3/2}+35Abx^{3/2}+21Acx^{5/2}+21bBx^{5/2}+15Bcx^{7/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*(105*a*A*Sqrt[x] + 35*A*b*x^(3/2) + 35*a*B*x^(3/2) + 21*b*B*x^(5/2) + 21
*A*c*x^(5/2) + 15*B*c*x^(7/2)))/105
```

fricas [A] time = 0.42, size = 39, normalized size = 0.74

$$\frac{2}{105}\left(15\,Bcx^{3}+21\,(Bb+Ac)x^{2}+105\,Aa+35\,(Ba+Ab)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*x^3 + 21*(B*b + A*c)*x^2 + 105*A*a + 35*(B*a + A*b)*x)*sqrt(x
)
```

giac [A] time = 0.16, size = 43, normalized size = 0.81

$$\frac{2}{7}\,Bcx^{\frac{7}{2}}+\frac{2}{5}\,Bbx^{\frac{5}{2}}+\frac{2}{5}\,Acx^{\frac{5}{2}}+\frac{2}{3}\,Bax^{\frac{3}{2}}+\frac{2}{3}\,Abx^{\frac{3}{2}}+2\,Aa\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/5*B*b*x^(5/2) + 2/5*A*c*x^(5/2) + 2/3*B*a*x^(3/2) + 2/3
*A*b*x^(3/2) + 2*A*a*sqrt(x)
```

maple [A] time = 0.05, size = 42, normalized size = 0.79

$$\frac{2\left(15Bc\,x^{3}+21Ac\,x^{2}+21Bb\,x^{2}+35Abx+35Bax+105Aa\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x)
```

```
[Out] 2/105*x^(1/2)*(15*B*c*x^3+21*A*c*x^2+21*B*b*x^2+35*A*b*x+35*B*a*x+105*A*a)
```

maxima [A] time = 0.50, size = 39, normalized size = 0.74

$$\frac{2}{7}\,Bcx^{\frac{7}{2}}+\frac{2}{5}\,(Bb+Ac)x^{\frac{5}{2}}+2\,Aa\sqrt{x}+\frac{2}{3}\,(Ba+Ab)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/5*(B*b + A*c)*x^(5/2) + 2*A*a*sqrt(x) + 2/3*(B*a + A*b)
*x^(3/2)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.77

$$x^{3/2}\,\left(\frac{2\,A\,b}{3}+\frac{2\,B\,a}{3}\right)+x^{5/2}\,\left(\frac{2\,A\,c}{5}+\frac{2\,B\,b}{5}\right)+2\,A\,a\,\sqrt{x}+\frac{2\,B\,c\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*A*b)/3 + (2*B*a)/3) + x^(5/2)*((2*A*c)/5 + (2*B*b)/5) + 2*A*a*x
^(1/2) + (2*B*c*x^(7/2))/7
```

sympy [A] time = 0.47, size = 68, normalized size = 1.28

$$2Aa\sqrt{x}+\frac{2Abx^{\frac{3}{2}}}{3}+\frac{2Acx^{\frac{5}{2}}}{5}+\frac{2Bax^{\frac{3}{2}}}{3}+\frac{2Bbx^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(1/2),x)
```

```
[Out] 2*A*a*sqrt(x) + 2*A*b*x**(3/2)/3 + 2*A*c*x**(5/2)/5 + 2*B*a*x**(3/2)/3 + 2*
B*b*x**(5/2)/5 + 2*B*c*x**(7/2)/7
```

3.911 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^{3/2}}\,dx$

Optimal. Leaf size=51

$$2\sqrt{x}\,(aB+Ab)-\frac{2aA}{\sqrt{x}}+\frac{2}{3}x^{3/2}(Ac+bB)+\frac{2}{5}Bcx^{5/2}$$

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$2\sqrt{x}\,(aB+Ab)-\frac{2aA}{\sqrt{x}}+\frac{2}{3}x^{3/2}(Ac+bB)+\frac{2}{5}Bcx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x]
```

```
[Out] (-2*a*A)/Sqrt[x] + 2*(A*b + a*B)*Sqrt[x] + (2*(b*B + A*c)*x^(3/2))/3 + (2*B
*c*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{3/2}}\,dx &= \int \left(\frac{aA}{x^{3/2}}+\frac{Ab+aB}{\sqrt{x}}+(bB+Ac)\sqrt{x}+Bcx^{3/2}\right)dx\\ &= -\frac{2aA}{\sqrt{x}}+2(Ab+aB)\sqrt{x}+\frac{2}{3}(bB+Ac)x^{3/2}+\frac{2}{5}Bcx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 44, normalized size = 0.86

$$\frac{2x(5A(3b+cx)+Bx(5b+3cx))-30a(A-Bx)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x]
```

```
[Out] (-30*a*(A - B*x) + 2*x*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)))/(15*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.03, size = 45, normalized size = 0.88

$$\frac{2\left(-15aA+15aBx+15Abx+5Acx^2+5bBx^2+3Bcx^3\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x]
```

```
[Out] (2*(-15*a*A + 15*A*b*x + 15*a*B*x + 5*b*B*x^2 + 5*A*c*x^2 + 3*B*c*x^3))/(15
*Sqrt[x])
```

fricas [A] time = 0.41, size = 39, normalized size = 0.76

$$\frac{2\left(3\,Bcx^{3}+5\,(Bb+Ac)x^{2}-15\,Aa+15\,(Ba+Ab)x\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*x^3 + 5*(B*b + A*c)*x^2 - 15*A*a + 15*(B*a + A*b)*x)/sqrt(x)
```

giac [A] time = 0.15, size = 43, normalized size = 0.84

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,Bbx^{\frac{3}{2}}+\frac{2}{3}\,Acx^{\frac{3}{2}}+2\,Ba\sqrt{x}+2\,Ab\sqrt{x}-\frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*B*b*x^(3/2) + 2/3*A*c*x^(3/2) + 2*B*a*sqrt(x) + 2*A*b
*sqrt(x) - 2*A*a/sqrt(x)
```

maple [A] time = 0.06, size = 42, normalized size = 0.82

$$-\frac{2\left(-3Bc\,x^{3}-5Ac\,x^{2}-5Bb\,x^{2}-15Abx-15Bax+15Aa\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x)
```

```
[Out] -2/15*(-3*B*c*x^3-5*A*c*x^2-5*B*b*x^2-15*A*b*x-15*B*a*x+15*A*a)/x^(1/2)
```

maxima [A] time = 0.56, size = 39, normalized size = 0.76

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,(Bb+Ac)x^{\frac{3}{2}}-\frac{2\,Aa}{\sqrt{x}}+2\,(Ba+Ab)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*(B*b + A*c)*x^(3/2) - 2*A*a/sqrt(x) + 2*(B*a + A*b)*s
qrt(x)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.80

$$\sqrt{x}\,\left(2\,A\,b+2\,B\,a\right)+x^{3/2}\,\left(\frac{2\,A\,c}{3}+\frac{2\,B\,b}{3}\right)-\frac{2\,A\,a}{\sqrt{x}}+\frac{2\,B\,c\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*A*b + 2*B*a) + x^(3/2)*((2*A*c)/3 + (2*B*b)/3) - (2*A*a)/x^(1/2)
 + (2*B*c*x^(5/2))/5
```

sympy [A] time = 0.64, size = 65, normalized size = 1.27

$$-\frac{2Aa}{\sqrt{x}}+2Ab\sqrt{x}+\frac{2Acx^{\frac{3}{2}}}{3}+2Ba\sqrt{x}+\frac{2Bbx^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(3/2),x)
```

```
[Out] -2*A*a/sqrt(x) + 2*A*b*sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*a*sqrt(x) + 2*B*b*x
**(3/2)/3 + 2*B*c*x**(5/2)/5
```

3.912 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{5/2}} \, dx$

Optimal. Leaf size=51

$$-\frac{2(aB+Ab)}{\sqrt{x}}-\frac{2aA}{3x^{3/2}}+2\sqrt{x}\,(Ac+bB)+\frac{2}{3}Bcx^{3/2}$$

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{2(aB+Ab)}{\sqrt{x}}-\frac{2aA}{3x^{3/2}}+2\sqrt{x}\,(Ac+bB)+\frac{2}{3}Bcx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (-2*a*A)/(3*x^(3/2)) - (2*(A*b + a*B))/Sqrt[x] + 2*(b*B + A*c)*Sqrt[x] + (2
*B*c*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{5/2}}\,dx&=\int\left(\frac{aA}{x^{5/2}}+\frac{Ab+aB}{x^{3/2}}+\frac{bB+Ac}{\sqrt{x}}+Bc\sqrt{x}\right)dx\\&=-\frac{2aA}{3x^{3/2}}-\frac{2(Ab+aB)}{\sqrt{x}}+2(bB+Ac)\sqrt{x}+\frac{2}{3}Bcx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 42, normalized size = 0.82

$$\frac{2x(Bx(3b+cx)-3A(b-cx))-2a(A+3Bx)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (-2*a*(A + 3*B*x) + 2*x*(-3*A*(b - c*x) + B*x*(3*b + c*x)))/(3*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 44, normalized size = 0.86

$$\frac{2\left(-aA-3aBx-3Abx+3Acx^2+3bBx^2+Bcx^3\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (2*(-(a*A) - 3*A*b*x - 3*a*B*x + 3*b*B*x^2 + 3*A*c*x^2 + B*c*x^3))/(3*x^(3/
2))
```

fricas [A] time = 0.42, size = 38, normalized size = 0.75

$$\frac{2\left(Bcx^3+3\,(Bb+Ac)x^2-Aa-3\,(Ba+Ab)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*x^3 + 3*(B*b + A*c)*x^2 - A*a - 3*(B*a + A*b)*x)/x^(3/2)
```

giac [A] time = 0.15, size = 41, normalized size = 0.80

$$\frac{2}{3}\,Bcx^{\frac{3}{2}}+2\,Bb\sqrt{x}+2\,Ac\sqrt{x}-\frac{2\,(3\,Bax+3\,Abx+Aa)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*B*b*sqrt(x) + 2*A*c*sqrt(x) - 2/3*(3*B*a*x + 3*A*b*x +
A*a)/x^(3/2)
```

maple [A] time = 0.06, size = 41, normalized size = 0.80

$$-\frac{2\left(-Bc\,x^3-3Ac\,x^2-3Bb\,x^2+3Abx+3Bax+Aa\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x)
```

```
[Out] -2/3*(-B*c*x^3-3*A*c*x^2-3*B*b*x^2+3*A*b*x+3*B*a*x+A*a)/x^(3/2)
```

maxima [A] time = 0.66, size = 39, normalized size = 0.76

$$\frac{2}{3}\,Bcx^{\frac{3}{2}}+2\,(Bb+Ac)\sqrt{x}-\frac{2\,(Aa+3\,(Ba+Ab)x)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*(B*b + A*c)*sqrt(x) - 2/3*(A*a + 3*(B*a + A*b)*x)/x^(3/
2)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.80

$$-\frac{2\,A\,a+6\,A\,b\,x+6\,B\,a\,x-6\,A\,c\,x^2-6\,B\,b\,x^2-2\,B\,c\,x^3}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x)
```

```
[Out] -(2*A*a + 6*A*b*x + 6*B*a*x - 6*A*c*x^2 - 6*B*b*x^2 - 2*B*c*x^3)/(3*x^(3/2)
)
```

sympy [A] time = 0.81, size = 63, normalized size = 1.24

$$-\frac{2Aa}{3x^{\frac{3}{2}}}-\frac{2Ab}{\sqrt{x}}+2Ac\sqrt{x}-\frac{2Ba}{\sqrt{x}}+2Bb\sqrt{x}+\frac{2Bcx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(5/2),x)
```

```
[Out] -2*A*a/(3*x**(3/2)) - 2*A*b/sqrt(x) + 2*A*c*sqrt(x) - 2*B*a/sqrt(x) + 2*B*b
*sqrt(x) + 2*B*c*x**(3/2)/3
```

3.913 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^{7/2}}\,dx$

Optimal. Leaf size=51

$$-\frac{2(aB+Ab)}{3x^{3/2}}-\frac{2aA}{5x^{5/2}}-\frac{2(Ac+bB)}{\sqrt{x}}+2Bc\sqrt{x}$$

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{2(aB+Ab)}{3x^{3/2}}-\frac{2aA}{5x^{5/2}}-\frac{2(Ac+bB)}{\sqrt{x}}+2Bc\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*a*A)/(5*x^(5/2)) - (2*(A*b + a*B))/(3*x^(3/2)) - (2*(b*B + A*c))/Sqrt[x
] + 2*B*c*Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{7/2}}\,dx &= \int \left(\frac{aA}{x^{7/2}}+\frac{Ab+aB}{x^{5/2}}+\frac{bB+Ac}{x^{3/2}}+\frac{Bc}{\sqrt{x}}\right)dx\\ &= -\frac{2aA}{5x^{5/2}}-\frac{2(Ab+aB)}{3x^{3/2}}-\frac{2(bB+Ac)}{\sqrt{x}}+2Bc\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.04, size = 42, normalized size = 0.82

$$-\frac{2(a(3A+5Bx)+5x(A(b+3cx)+3Bx(b-cx)))}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*(a*(3*A + 5*B*x) + 5*x*(3*B*x*(b - c*x) + A*(b + 3*c*x))))/(15*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 45, normalized size = 0.88

$$\frac{2\left(-3aA-5aBx-5Abx-15Acx^2-15bBx^2+15Bcx^3\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (2*(-3*a*A - 5*A*b*x - 5*a*B*x - 15*b*B*x^2 - 15*A*c*x^2 + 15*B*c*x^3))/(15
*x^(5/2))
```

fricas [A] time = 0.41, size = 39, normalized size = 0.76

$$\frac{2\left(15\,Bcx^{3}-15\,(Bb+Ac)x^{2}-3\,Aa-5\,(Ba+Ab)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x, algorithm="fricas")
[Out] 2/15*(15*B*c*x^3 - 15*(B*b + A*c)*x^2 - 3*A*a - 5*(B*a + A*b)*x)/x^(5/2)
```

giac [A] time = 0.17, size = 42, normalized size = 0.82

$$2\,Bc\sqrt{x}-\frac{2\left(15\,Bbx^{2}+15\,Acx^{2}+5\,Bax+5\,Abx+3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x, algorithm="giac")
[Out] 2*B*c*sqrt(x) - 2/15*(15*B*b*x^2 + 15*A*c*x^2 + 5*B*a*x + 5*A*b*x + 3*A*a)/
x^(5/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.82

$$-\frac{2\left(-15Bc\,x^{3}+15Ac\,x^{2}+15Bb\,x^{2}+5Abx+5Bax+3Aa\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x)
[Out] -2/15*(-15*B*c*x^3+15*A*c*x^2+15*B*b*x^2+5*A*b*x+5*B*a*x+3*A*a)/x^(5/2)
```

maxima [A] time = 0.69, size = 40, normalized size = 0.78

$$2\,Bc\sqrt{x}-\frac{2\left(15\,(Bb+Ac)x^{2}+3\,Aa+5\,(Ba+Ab)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x, algorithm="maxima")
[Out] 2*B*c*sqrt(x) - 2/15*(15*(B*b + A*c)*x^2 + 3*A*a + 5*(B*a + A*b)*x)/x^(5/2)
```

mupad [B] time = 1.30, size = 42, normalized size = 0.82

$$2\,B\,c\,\sqrt{x}-\frac{(2\,A\,c+2\,B\,b)\,x^{2}+\left(\frac{2\,A\,b}{3}+\frac{2\,B\,a}{3}\right)\,x+\frac{2\,A\,a}{5}}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x)
[Out] 2*B*c*x^(1/2) - ((2*A*a)/5 + x*((2*A*b)/3 + (2*B*a)/3) + x^2*(2*A*c + 2*B*b
))/x^(5/2)
```

sympy [A] time = 1.43, size = 65, normalized size = 1.27

$$-\frac{2Aa}{5x^{\frac{5}{2}}}-\frac{2Ab}{3x^{\frac{3}{2}}}-\frac{2Ac}{\sqrt{x}}-\frac{2Ba}{3x^{\frac{3}{2}}}-\frac{2Bb}{\sqrt{x}}+2Bc\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(7/2),x)
```

```
[Out] -2*A*a/(5*x**(5/2)) - 2*A*b/(3*x**(3/2)) - 2*A*c/sqrt(x) - 2*B*a/(3*x**(3/2
)) - 2*B*b/sqrt(x) + 2*B*c*sqrt(x)
```

3.914 $\int \frac{(A+Bx)(a+bx+cx^2)}{x^{9/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{2(aB+Ab)}{5x^{5/2}}-\frac{2aA}{7x^{7/2}}-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

Rubi [A] time = 0.03, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{2(aB+Ab)}{5x^{5/2}}-\frac{2aA}{7x^{7/2}}-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*a*A)/(7*x^(7/2)) - (2*(A*b + a*B))/(5*x^(5/2)) - (2*(b*B + A*c))/(3*x^(
3/2)) - (2*B*c)/Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{9/2}}\,dx &= \int \left(\frac{aA}{x^{9/2}}+\frac{Ab+aB}{x^{7/2}}+\frac{bB+Ac}{x^{5/2}}+\frac{Bc}{x^{3/2}}\right)dx\\ &= -\frac{2aA}{7x^{7/2}}-\frac{2(Ab+aB)}{5x^{5/2}}-\frac{2(bB+Ac)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 45, normalized size = 0.85

$$-\frac{2(3a(5A+7Bx)+7x(A(3b+5cx)+5Bx(b+3cx)))}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(3*a*(5*A + 7*B*x) + 7*x*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x))))/(105*x
^(7/2))
```

IntegrateAlgebraic [A] time = 0.04, size = 45, normalized size = 0.85

$$-\frac{2\left(15aA+21aBx+21Abx+35Acx^2+35bBx^2+105Bcx^3\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(15*a*A + 21*A*b*x + 21*a*B*x + 35*b*B*x^2 + 35*A*c*x^2 + 105*B*c*x^3))
/(105*x^(7/2))
```

fricas [A] time = 0.42, size = 39, normalized size = 0.74

$$-\frac{2\left(105\,Bcx^{3}+35\,(Bb+Ac)x^{2}+15\,Aa+21\,(Ba+Ab)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*(B*b + A*c)*x^2 + 15*A*a + 21*(B*a + A*b)*x)/x^(7/
2)
```

giac [A] time = 0.15, size = 41, normalized size = 0.77

$$-\frac{2\left(105\,Bcx^{3}+35\,Bbx^{2}+35\,Acx^{2}+21\,Bax+21\,Abx+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*B*b*x^2 + 35*A*c*x^2 + 21*B*a*x + 21*A*b*x + 15*A*
a)/x^(7/2)
```

maple [A] time = 0.06, size = 42, normalized size = 0.79

$$-\frac{2\left(105Bc\,x^{3}+35Ac\,x^{2}+35Bb\,x^{2}+21Abx+21Bax+15Aa\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x)
```

```
[Out] -2/105*(105*B*c*x^3+35*A*c*x^2+35*B*b*x^2+21*A*b*x+21*B*a*x+15*A*a)/x^(7/2)
```

maxima [A] time = 0.52, size = 39, normalized size = 0.74

$$-\frac{2\left(105\,Bcx^{3}+35\,(Bb+Ac)x^{2}+15\,Aa+21\,(Ba+Ab)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*(B*b + A*c)*x^2 + 15*A*a + 21*(B*a + A*b)*x)/x^(7/
2)
```

mupad [B] time = 0.04, size = 41, normalized size = 0.77

$$-\frac{2\,B\,c\,x^{3}+\left(\frac{2\,A\,c}{3}+\frac{2\,B\,b}{3}\right)\,x^{2}+\left(\frac{2\,A\,b}{5}+\frac{2\,B\,a}{5}\right)\,x+\frac{2\,A\,a}{7}}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x)
```

```
[Out] -((2*A*a)/7 + x*((2*A*b)/5 + (2*B*a)/5) + x^2*((2*A*c)/3 + (2*B*b)/3) + 2*B
*c*x^3)/x^(7/2)
```

sympy [A] time = 3.09, size = 70, normalized size = 1.32

$$-\frac{2Aa}{7x^{\frac{7}{2}}}-\frac{2Ab}{5x^{\frac{5}{2}}}-\frac{2Ac}{3x^{\frac{3}{2}}}-\frac{2Ba}{5x^{\frac{5}{2}}}-\frac{2Bb}{3x^{\frac{3}{2}}}-\frac{2Bc}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(9/2),x)
```

```
[Out] -2*A*a/(7*x**(7/2)) - 2*A*b/(5*x**(5/2)) - 2*A*c/(3*x**(3/2)) - 2*B*a/(5*x*
*(5/2)) - 2*B*b/(3*x**(3/2)) - 2*B*c/sqrt(x)
```

3.915 $\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{15}x^{15/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{13}x^{13/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{17}cx^{17/2}(Ac+2bB$$

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{15}x^{15/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{13}x^{13/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(9/2))/9 + (2*a*(2*A*b + a*B)*x^(11/2))/11 + (2*(2*a*b*B + A*(b^
2 + 2*a*c))*x^(13/2))/13 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(15/2))/15 + (2
*c*(2*b*B + A*c)*x^(17/2))/17 + (2*B*c^2*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ax^{7/2}+a(2Ab+aB)x^{9/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{11/2}+\left(b^2B+2A\right.\right.\\ &= \frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a(2Ab+aB)x^{11/2}+\frac{2}{13}\left(2abB+A\left(b^2+2ac\right)\right)x^{13/2}+\frac{2}{15}\left(b^2\right.\end{aligned}$$

Mathematica [A] time = 0.10, size = 102, normalized size = 0.90

$$\frac{2x^{9/2}\left(20995a^2(11A+9Bx)+1938ax(15A(13b+11cx)+11Bx(15b+13cx))+33x^2\left(19A\left(255b^2+442bcx+195c^2x^2\right)+13Bx\left(323b^2+570bcx+255c^2x^2\right)\right)\right)}{2078505}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(9/2)*(20995*a^2*(11*A + 9*B*x) + 1938*a*x*(15*A*(13*b + 11*c*x) + 11*
B*x*(15*b + 13*c*x)) + 33*x^2*(19*A*(255*b^2 + 442*b*c*x + 195*c^2*x^2) + 1
3*B*x*(323*b^2 + 570*b*c*x + 255*c^2*x^2))))/2078505
```

IntegrateAlgebraic [A] time = 0.06, size = 131, normalized size = 1.16

$$\frac{2\left(230945a^2Ax^{9/2}+188955a^2Bx^{11/2}+377910aAbx^{11/2}+319770aAcx^{13/2}+319770abBx^{13/2}+277134aBcx^{15/2}+159885Ab^2x^{13/2}+277134Abcx^{15/2}+122265Ac^2x^{17/2}+138567b^2Bx^{15/2}+244530bBcx^{17/2}+109395Bc^2x^{19/2}\right)}{2078505}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(230945*a^2*A*x^(9/2) + 377910*a*A*b*x^(11/2) + 188955*a^2*B*x^(11/2) +
159885*A*b^2*x^(13/2) + 319770*a*b*B*x^(13/2) + 319770*a*A*c*x^(13/2) + 138
567*b^2*B*x^(15/2) + 277134*A*b*c*x^(15/2) + 277134*a*B*c*x^(15/2) + 244530
*b*B*c*x^(17/2) + 122265*A*c^2*x^(17/2) + 109395*B*c^2*x^(19/2)))/2078505
```

fricas [A] time = 0.42, size = 98, normalized size = 0.87

$$\frac{2}{2078505}\left(109395\,Bc^2x^9 + 122265\left(2\,Bbc + Ac^2\right)x^8 + 138567\left(Bb^2 + 2\,(Ba + Ab)c\right)x^7 + 230945\,Aa^2x^4 + 159885\left(2\,Bab + Ab^2 + 2\,Aac\right)x^6 + 188955\left(Ba^2 + 2\,Aab\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*c^2*x^9 + 122265*(2*B*b*c + A*c^2)*x^8 + 138567*(B*b^2
+ 2*(B*a + A*b)*c)*x^7 + 230945*A*a^2*x^4 + 159885*(2*B*a*b + A*b^2 + 2*A*a
*c)*x^6 + 188955*(B*a^2 + 2*A*a*b)*x^5)*sqrt(x)
```

giac [A] time = 0.15, size = 103, normalized size = 0.91

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}} + \frac{4}{17}\,Bbcx^{\frac{17}{2}} + \frac{2}{17}\,Ac^2x^{\frac{17}{2}} + \frac{2}{15}\,Bb^2x^{\frac{15}{2}} + \frac{4}{15}\,Bacx^{\frac{15}{2}} + \frac{4}{15}\,Abcx^{\frac{15}{2}} + \frac{4}{13}\,Babx^{\frac{13}{2}} + \frac{2}{13}\,Ab^2x^{\frac{13}{2}} + \frac{4}{13}\,Aacx^{\frac{13}{2}} + \frac{2}{11}\,Ba^2x^{\frac{11}{2}} + \frac{4}{11}\,Aabx^{\frac{11}{2}} + \frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 4/17*B*b*c*x^(17/2) + 2/17*A*c^2*x^(17/2) + 2/15*B*b^
2*x^(15/2) + 4/15*B*a*c*x^(15/2) + 4/15*A*b*c*x^(15/2) + 4/13*B*a*b*x^(13/2
) + 2/13*A*b^2*x^(13/2) + 4/13*A*a*c*x^(13/2) + 2/11*B*a^2*x^(11/2) + 4/11*
A*a*b*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

maple [A] time = 0.06, size = 102, normalized size = 0.90

$$\frac{2\left(109395B\,c^2x^5 + 122265A\,c^2x^4 + 244530x^4bBc + 277134x^3Abc + 277134Bac\,x^3 + 138567B\,b^2x^3 + 319770Aac\,x^2 + 159885A\,b^2x^2 + 319770Bab\,x^2 + 377910Aabx + 188955B\,a^2x + 230945A\,a^2\right)x^{\frac{9}{2}}}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/2078505*x^(9/2)*(109395*B*c^2*x^5+122265*A*c^2*x^4+244530*B*b*c*x^4+27713
4*A*b*c*x^3+277134*B*a*c*x^3+138567*B*b^2*x^3+319770*A*a*c*x^2+159885*A*b^2
*x^2+319770*B*a*b*x^2+377910*A*a*b*x+188955*B*a^2*x+230945*A*a^2)
```

maxima [A] time = 0.52, size = 93, normalized size = 0.82

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}} + \frac{2}{17}\left(2\,Bbc + Ac^2\right)x^{\frac{17}{2}} + \frac{2}{15}\left(Bb^2 + 2\,(Ba + Ab)c\right)x^{\frac{15}{2}} + \frac{2}{9}\,Aa^2x^{\frac{9}{2}} + \frac{2}{13}\left(2\,Bab + Ab^2 + 2\,Aac\right)x^{\frac{13}{2}} + \frac{2}{11}\left(Ba^2 + 2\,Aab\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/17*(2*B*b*c + A*c^2)*x^(17/2) + 2/15*(B*b^2 + 2*(B*
a + A*b)*c)*x^(15/2) + 2/9*A*a^2*x^(9/2) + 2/13*(2*B*a*b + A*b^2 + 2*A*a*c)
*x^(13/2) + 2/11*(B*a^2 + 2*A*a*b)*x^(11/2)
```

mupad [B] time = 1.28, size = 93, normalized size = 0.82

$$x^{11/2}\left(\frac{2\,B\,a^2}{11}+\frac{4\,A\,b\,a}{11}\right)+x^{17/2}\left(\frac{2\,A\,c^2}{17}+\frac{4\,B\,b\,c}{17}\right)+x^{13/2}\left(\frac{2\,A\,b^2}{13}+\frac{4\,B\,a\,b}{13}+\frac{4\,A\,a\,c}{13}\right)+x^{15/2}\left(\frac{2\,B\,b^2}{15}+\frac{4\,A\,c\,b}{15}+\frac{4\,B\,a\,c}{15}\right)+\frac{2\,A\,a^2\,x^{9/2}}{9}+\frac{2\,B\,c^2\,x^{19/2}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(11/2)*((2*B*a^2)/11 + (4*A*a*b)/11) + x^(17/2)*((2*A*c^2)/17 + (4*B*b*c)
/17) + x^(13/2)*((2*A*b^2)/13 + (4*A*a*c)/13 + (4*B*a*b)/13) + x^(15/2)*((2
*B*b^2)/15 + (4*A*b*c)/15 + (4*B*a*c)/15) + (2*A*a^2*x^(9/2))/9 + (2*B*c^2*
x^(19/2))/19
```

sympy [A] time = 16.11, size = 162, normalized size = 1.43

$$\frac{2Aa^2x^{\frac{9}{2}}}{9} + \frac{4Aabx^{\frac{11}{2}}}{11} + \frac{4Aacx^{\frac{13}{2}}}{13} + \frac{2Ab^2x^{\frac{13}{2}}}{13} + \frac{4Abcx^{\frac{15}{2}}}{15} + \frac{2Ac^2x^{\frac{17}{2}}}{17} + \frac{2Ba^2x^{\frac{11}{2}}}{11} + \frac{4Babx^{\frac{13}{2}}}{13} + \frac{4Bacx^{\frac{15}{2}}}{15} + \frac{2Bb^2x^{\frac{15}{2}}}{15} + \frac{4Bbcx^{\frac{17}{2}}}{17} + \frac{2Bc^2x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] 2*A*a**2*x**(9/2)/9 + 4*A*a*b*x**(11/2)/11 + 4*A*a*c*x**(13/2)/13 + 2*A*b**
2*x**(13/2)/13 + 4*A*b*c*x**(15/2)/15 + 2*A*c**2*x**(17/2)/17 + 2*B*a**2*x*
*(11/2)/11 + 4*B*a*b*x**(13/2)/13 + 4*B*a*c*x**(15/2)/15 + 2*B*b**2*x**(15/
2)/15 + 4*B*b*c*x**(17/2)/17 + 2*B*c**2*x**(19/2)/19
```

3.916 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{13}x^{13/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{11}x^{11/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{15}cx^{15/2}(Ac+2bB$$

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{13}x^{13/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{11}x^{11/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{17}Bc^2x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(7/2))/7 + (2*a*(2*A*b + a*B)*x^(9/2))/9 + (2*(2*a*b*B + A*(b^2
+ 2*a*c))*x^(11/2))/11 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(13/2))/13 + (2*c
*(2*b*B + A*c)*x^(15/2))/15 + (2*B*c^2*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ax^{5/2}+a(2Ab+aB)x^{7/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{9/2}+\left(b^2B+2\right.\right.\\ &= \frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a(2Ab+aB)x^{9/2}+\frac{2}{11}\left(2abB+A\left(b^2+2ac\right)\right)x^{11/2}+\frac{2}{13}\left(b\right.\end{aligned}$$

Mathematica [A] time = 0.10, size = 102, normalized size = 0.90

$$\frac{2x^{7/2}\left(12155a^2(9A+7Bx)+1190ax(13A(11b+9cx)+9Bx(13b+11cx))+21x^2\left(17A\left(195b^2+330bcx+143c^2x^2\right)+11Bx\left(255b^2+442bcx+195c^2x^2\right)\right)\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(7/2)*(12155*a^2*(9*A + 7*B*x) + 1190*a*x*(13*A*(11*b + 9*c*x) + 9*B*x
*(13*b + 11*c*x)) + 21*x^2*(17*A*(195*b^2 + 330*b*c*x + 143*c^2*x^2) + 11*B
*x*(255*b^2 + 442*b*c*x + 195*c^2*x^2))))/765765
```

IntegrateAlgebraic [A] time = 0.06, size = 131, normalized size = 1.16

$$\frac{2\left(109395a^2Ax^{7/2}+85085a^2Bx^{9/2}+170170aAbx^{9/2}+139230aAcx^{11/2}+139230abBx^{11/2}+117810aBcx^{13/2}+69615Ab^2x^{11/2}+117810Abcx^{13/2}+51051Ac^2x^{15/2}+58905b^2Bx^{13/2}+102102bBcx^{15/2}+45045Bc^2x^{17/2}\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(109395*a^2*A*x^(7/2) + 170170*a*A*b*x^(9/2) + 85085*a^2*B*x^(9/2) + 696
15*A*b^2*x^(11/2) + 139230*a*b*B*x^(11/2) + 139230*a*A*c*x^(11/2) + 58905*b
^2*B*x^(13/2) + 117810*A*b*c*x^(13/2) + 117810*a*B*c*x^(13/2) + 102102*b*B*
c*x^(15/2) + 51051*A*c^2*x^(15/2) + 45045*B*c^2*x^(17/2)))/765765
```

fricas [A] time = 0.41, size = 98, normalized size = 0.87

$$\frac{2}{765765}\left(45045\,Bc^2x^8+51051\left(2\,Bbc+Ac^2\right)x^7+58905\left(Bb^2+2\,(Ba+Ab)c\right)x^6+109395\,Aa^2x^3+69615\left(2\,Bab+Ab^2+2\,Aac\right)x^5+85085\left(Ba^2+2\,Aab\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^2*x^8 + 51051*(2*B*b*c + A*c^2)*x^7 + 58905*(B*b^2 + 2*
(B*a + A*b)*c)*x^6 + 109395*A*a^2*x^3 + 69615*(2*B*a*b + A*b^2 + 2*A*a*c)*x
^5 + 85085*(B*a^2 + 2*A*a*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.91

$$\frac{2}{17}\,Bc^2x^{\frac{17}{2}}+\frac{4}{15}\,Bbcx^{\frac{15}{2}}+\frac{2}{15}\,Ac^2x^{\frac{15}{2}}+\frac{2}{13}\,Bb^2x^{\frac{13}{2}}+\frac{4}{13}\,Bacx^{\frac{13}{2}}+\frac{4}{13}\,Abcx^{\frac{13}{2}}+\frac{4}{11}\,Babx^{\frac{11}{2}}+\frac{2}{11}\,Ab^2x^{\frac{11}{2}}+\frac{4}{11}\,Aacx^{\frac{11}{2}}+\frac{2}{9}\,Ba^2x^{\frac{9}{2}}+\frac{4}{9}\,Aabx^{\frac{9}{2}}+\frac{2}{7}\,Aa^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 4/15*B*b*c*x^(15/2) + 2/15*A*c^2*x^(15/2) + 2/13*B*b^
2*x^(13/2) + 4/13*B*a*c*x^(13/2) + 4/13*A*b*c*x^(13/2) + 4/11*B*a*b*x^(11/2
) + 2/11*A*b^2*x^(11/2) + 4/11*A*a*c*x^(11/2) + 2/9*B*a^2*x^(9/2) + 4/9*A*a
*b*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.90

$$\frac{2\left(45045B\,c^2x^5+51051A\,c^2x^4+102102x^4bBc+117810x^3Abc+117810Bac\,x^3+58905B\,b^2x^3+139230Aac\,x^2+69615A\,b^2x^2+139230Bab\,x^2+170170Aabx+85085B\,a^2x+109395A\,a^2\right)x^{\frac{7}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/765765*x^(7/2)*(45045*B*c^2*x^5+51051*A*c^2*x^4+102102*B*b*c*x^4+117810*A
*b*c*x^3+117810*B*a*c*x^3+58905*B*b^2*x^3+139230*A*a*c*x^2+69615*A*b^2*x^2+
139230*B*a*b*x^2+170170*A*a*b*x+85085*B*a^2*x+109395*A*a^2)
```

maxima [A] time = 0.46, size = 93, normalized size = 0.82

$$\frac{2}{17}\,Bc^2x^{\frac{17}{2}}+\frac{2}{15}\left(2\,Bbc+Ac^2\right)x^{\frac{15}{2}}+\frac{2}{13}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{13}{2}}+\frac{2}{7}\,Aa^2x^{\frac{7}{2}}+\frac{2}{11}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Ba^2+2\,Aab\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/15*(2*B*b*c + A*c^2)*x^(15/2) + 2/13*(B*b^2 + 2*(B*
a + A*b)*c)*x^(13/2) + 2/7*A*a^2*x^(7/2) + 2/11*(2*B*a*b + A*b^2 + 2*A*a*c)
*x^(11/2) + 2/9*(B*a^2 + 2*A*a*b)*x^(9/2)
```

mupad [B] time = 0.03, size = 93, normalized size = 0.82

$$x^{9/2}\left(\frac{2\,B\,a^2}{9}+\frac{4\,A\,b\,a}{9}\right)+x^{15/2}\left(\frac{2\,A\,c^2}{15}+\frac{4\,B\,b\,c}{15}\right)+x^{11/2}\left(\frac{2\,A\,b^2}{11}+\frac{4\,B\,a\,b}{11}+\frac{4\,A\,a\,c}{11}\right)+x^{13/2}\left(\frac{2\,B\,b^2}{13}+\frac{4\,A\,c\,b}{13}+\frac{4\,B\,a\,c}{13}\right)+\frac{2\,A\,a^2\,x^{7/2}}{7}+\frac{2\,B\,c^2\,x^{17/2}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(9/2)*((2*B*a^2)/9 + (4*A*a*b)/9) + x^(15/2)*((2*A*c^2)/15 + (4*B*b*c)/15
) + x^(11/2)*((2*A*b^2)/11 + (4*A*a*c)/11 + (4*B*a*b)/11) + x^(13/2)*((2*B*
b^2)/13 + (4*A*b*c)/13 + (4*B*a*c)/13) + (2*A*a^2*x^(7/2))/7 + (2*B*c^2*x^(
17/2))/17
```

sympy [A] time = 9.00, size = 162, normalized size = 1.43

$$\frac{2Aa^2x^{\frac{7}{2}}}{7}+\frac{4Aabx^{\frac{9}{2}}}{9}+\frac{4Aacx^{\frac{11}{2}}}{11}+\frac{2Ab^2x^{\frac{11}{2}}}{11}+\frac{4Abcx^{\frac{13}{2}}}{13}+\frac{2Ac^2x^{\frac{15}{2}}}{15}+\frac{2Ba^2x^{\frac{9}{2}}}{9}+\frac{4Babx^{\frac{11}{2}}}{11}+\frac{4Bacx^{\frac{13}{2}}}{13}+\frac{2Bb^2x^{\frac{13}{2}}}{13}+\frac{4Bbcx^{\frac{15}{2}}}{15}+\frac{2Bc^2x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] 2*A*a**2*x**(7/2)/7 + 4*A*a*b*x**(9/2)/9 + 4*A*a*c*x**(11/2)/11 + 2*A*b**2*
x**(11/2)/11 + 4*A*b*c*x**(13/2)/13 + 2*A*c**2*x**(15/2)/15 + 2*B*a**2*x**(
9/2)/9 + 4*B*a*b*x**(11/2)/11 + 4*B*a*c*x**(13/2)/13 + 2*B*b**2*x**(13/2)/1
3 + 4*B*b*c*x**(15/2)/15 + 2*B*c**2*x**(17/2)/17
```

3.917 $\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{11}x^{11/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{9}x^{9/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{13}cx^{13/2}(Ac+2bB)+\frac{2}{15}$$

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{11}x^{11/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{9}x^{9/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{13}cx^{13/2}(Ac+2bB)+\frac{2}{15}Bc^2x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(5/2))/5 + (2*a*(2*A*b + a*B)*x^(7/2))/7 + (2*(2*a*b*B + A*(b^2
+ 2*a*c))*x^(9/2))/9 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(11/2))/11 + (2*c*(
2*b*B + A*c)*x^(13/2))/13 + (2*B*c^2*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int\left(a^2Ax^{3/2}+a(2Ab+aB)x^{5/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{7/2}+\left(b^2B+2Ab\right.\right.\\ &= \frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a(2Ab+aB)x^{7/2}+\frac{2}{9}\left(2abB+A\left(b^2+2ac\right)\right)x^{9/2}+\frac{2}{11}\left(b^2B+\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 102, normalized size = 0.90

$$\frac{2x^{5/2}\left(1287a^2(7A+5Bx)+130ax(11A(9b+7cx)+7Bx(11b+9cx))+7x^2\left(5A\left(143b^2+234bcx+99c^2x^2\right)+3Bx\left(195b^2+330bcx+143c^2x^2\right)\right)\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(5/2)*(1287*a^2*(7*A + 5*B*x) + 130*a*x*(11*A*(9*b + 7*c*x) + 7*B*x*(1
1*b + 9*c*x)) + 7*x^2*(5*A*(143*b^2 + 234*b*c*x + 99*c^2*x^2) + 3*B*x*(195*
b^2 + 330*b*c*x + 143*c^2*x^2))))/45045
```

IntegrateAlgebraic [A] time = 0.06, size = 131, normalized size = 1.16

$$\frac{2\left(9009a^2Ax^{5/2}+6435a^2Bx^{7/2}+12870aAbx^{7/2}+10010aAcx^{9/2}+10010abBx^{9/2}+8190aBcx^{11/2}+5005Ab^2x^{9/2}+8190Abcx^{11/2}+3465Ac^2x^{13/2}+4095b^2Bx^{11/2}+6930bBcx^{13/2}+3003Bc^2x^{15/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(9009*a^2*A*x^(5/2) + 12870*a*A*b*x^(7/2) + 6435*a^2*B*x^(7/2) + 5005*A*
b^2*x^(9/2) + 10010*a*b*B*x^(9/2) + 10010*a*A*c*x^(9/2) + 4095*b^2*B*x^(11/
```

```
2) + 8190*A*b*c*x^(11/2) + 8190*a*B*c*x^(11/2) + 6930*b*B*c*x^(13/2) + 3465
*A*c^2*x^(13/2) + 3003*B*c^2*x^(15/2)))/45045
```

fricas [A] time = 0.41, size = 98, normalized size = 0.87

$$\frac{2}{45045}\left(3003\,Bc^2x^7 + 3465\left(2\,Bbc + Ac^2\right)x^6 + 4095\left(Bb^2 + 2\,(Ba + Ab)c\right)x^5 + 9009\,Aa^2x^2 + 5005\left(2\,Bab + Ab^2 + 2\,Aac\right)x^4 + 6435\left(Ba^2 + 2\,Aab\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^2*x^7 + 3465*(2*B*b*c + A*c^2)*x^6 + 4095*(B*b^2 + 2*(B*a
 + A*b)*c)*x^5 + 9009*A*a^2*x^2 + 5005*(2*B*a*b + A*b^2 + 2*A*a*c)*x^4 + 64
35*(B*a^2 + 2*A*a*b)*x^3)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.91

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}} + \frac{4}{13}\,Bbcx^{\frac{13}{2}} + \frac{2}{13}\,Ac^2x^{\frac{13}{2}} + \frac{2}{11}\,Bb^2x^{\frac{11}{2}} + \frac{4}{11}\,Bacx^{\frac{11}{2}} + \frac{4}{11}\,Abcx^{\frac{11}{2}} + \frac{4}{9}\,Babx^{\frac{9}{2}} + \frac{2}{9}\,Ab^2x^{\frac{9}{2}} + \frac{4}{9}\,Aacx^{\frac{9}{2}} + \frac{2}{7}\,Ba^2x^{\frac{7}{2}} + \frac{4}{7}\,Aabx^{\frac{7}{2}} + \frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 4/13*B*b*c*x^(13/2) + 2/13*A*c^2*x^(13/2) + 2/11*B*b^
2*x^(11/2) + 4/11*B*a*c*x^(11/2) + 4/11*A*b*c*x^(11/2) + 4/9*B*a*b*x^(9/2)
+ 2/9*A*b^2*x^(9/2) + 4/9*A*a*c*x^(9/2) + 2/7*B*a^2*x^(7/2) + 4/7*A*a*b*x^(
7/2) + 2/5*A*a^2*x^(5/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.90

$$\frac{2\left(3003B\,c^2x^5 + 3465A\,c^2x^4 + 6930x^4bBc + 8190x^3Abc + 8190Bac\,x^3 + 4095B\,b^2x^3 + 10010Aac\,x^2 + 5005A\,b^2x^2 + 10010Bab\,x^2 + 12870Aabx + 6435B\,a^2x + 9009A\,a^2\right)x^{\frac{5}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/45045*x^(5/2)*(3003*B*c^2*x^5+3465*A*c^2*x^4+6930*B*b*c*x^4+8190*A*b*c*x^
3+8190*B*a*c*x^3+4095*B*b^2*x^3+10010*A*a*c*x^2+5005*A*b^2*x^2+10010*B*a*b*
x^2+12870*A*a*b*x+6435*B*a^2*x+9009*A*a^2)
```

maxima [A] time = 0.53, size = 93, normalized size = 0.82

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}} + \frac{2}{13}\left(2\,Bbc + Ac^2\right)x^{\frac{13}{2}} + \frac{2}{11}\left(Bb^2 + 2\,(Ba + Ab)c\right)x^{\frac{11}{2}} + \frac{2}{5}\,Aa^2x^{\frac{5}{2}} + \frac{2}{9}\left(2\,Bab + Ab^2 + 2\,Aac\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Ba^2 + 2\,Aab\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/13*(2*B*b*c + A*c^2)*x^(13/2) + 2/11*(B*b^2 + 2*(B*
a + A*b)*c)*x^(11/2) + 2/5*A*a^2*x^(5/2) + 2/9*(2*B*a*b + A*b^2 + 2*A*a*c)*
x^(9/2) + 2/7*(B*a^2 + 2*A*a*b)*x^(7/2)
```

mupad [B] time = 0.03, size = 93, normalized size = 0.82

$$x^{7/2}\left(\frac{2\,B\,a^2}{7} + \frac{4\,A\,b\,a}{7}\right) + x^{13/2}\left(\frac{2\,A\,c^2}{13} + \frac{4\,B\,b\,c}{13}\right) + x^{9/2}\left(\frac{2\,A\,b^2}{9} + \frac{4\,B\,a\,b}{9} + \frac{4\,A\,a\,c}{9}\right) + x^{11/2}\left(\frac{2\,B\,b^2}{11} + \frac{4\,A\,c\,b}{11} + \frac{4\,B\,a\,c}{11}\right) + \frac{2\,A\,a^2\,x^{5/2}}{5} + \frac{2\,B\,c^2\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(7/2)*((2*B*a^2)/7 + (4*A*a*b)/7) + x^(13/2)*((2*A*c^2)/13 + (4*B*b*c)/13
) + x^(9/2)*((2*A*b^2)/9 + (4*A*a*c)/9 + (4*B*a*b)/9) + x^(11/2)*((2*B*b^2)
```

```
/11 + (4*A*b*c)/11 + (4*B*a*c)/11) + (2*A*a^2*x^(5/2))/5 + (2*B*c^2*x^(15/2
))/15
```

sympy [A] time = 5.77, size = 162, normalized size = 1.43

$$\frac{2Aa^2x^{\frac{5}{2}}}{5}+\frac{4Aabx^{\frac{7}{2}}}{7}+\frac{4Aacx^{\frac{9}{2}}}{9}+\frac{2Ab^2x^{\frac{9}{2}}}{9}+\frac{4Abcx^{\frac{11}{2}}}{11}+\frac{2Ac^2x^{\frac{13}{2}}}{13}+\frac{2Ba^2x^{\frac{7}{2}}}{7}+\frac{4Babx^{\frac{9}{2}}}{9}+\frac{4Bacx^{\frac{11}{2}}}{11}+\frac{2Bb^2x^{\frac{11}{2}}}{11}+\frac{4Bbcx^{\frac{13}{2}}}{13}+\frac{2Bc^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] 2*A*a**2*x**(5/2)/5 + 4*A*a*b*x**(7/2)/7 + 4*A*a*c*x**(9/2)/9 + 2*A*b**2*x*
*(9/2)/9 + 4*A*b*c*x**(11/2)/11 + 2*A*c**2*x**(13/2)/13 + 2*B*a**2*x**(7/2)
/7 + 4*B*a*b*x**(9/2)/9 + 4*B*a*c*x**(11/2)/11 + 2*B*b**2*x**(11/2)/11 + 4*
B*b*c*x**(13/2)/13 + 2*B*c**2*x**(15/2)/15
```

3.918 $\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{9}x^{9/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{7}x^{7/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{1}$$

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{9}x^{9/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{7}x^{7/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{13}Bc^2x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(3/2))/3 + (2*a*(2*A*b + a*B)*x^(5/2))/5 + (2*(2*a*b*B + A*(b^2
+ 2*a*c))*x^(7/2))/7 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(9/2))/9 + (2*c*(2*
b*B + A*c)*x^(11/2))/11 + (2*B*c^2*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2A\sqrt{x}+a(2Ab+aB)x^{3/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{5/2}+\left(b^2B+2\right.\right.\\ &= \frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a(2Ab+aB)x^{5/2}+\frac{2}{7}\left(2abB+A\left(b^2+2ac\right)\right)x^{7/2}+\frac{2}{9}\left(b^2B\right.\end{aligned}$$

Mathematica [A] time = 0.09, size = 102, normalized size = 0.90

$$\frac{2x^{3/2}\left(3003a^2(5A+3Bx)+286ax(9A(7b+5cx)+5Bx(9b+7cx))+5x^2\left(13A\left(99b^2+154bcx+63c^2x^2\right)+7Bx\left(143b^2+234bcx+99c^2x^2\right)\right)\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(3/2)*(3003*a^2*(5*A + 3*B*x) + 286*a*x*(9*A*(7*b + 5*c*x) + 5*B*x*(9*
b + 7*c*x)) + 5*x^2*(13*A*(99*b^2 + 154*b*c*x + 63*c^2*x^2) + 7*B*x*(143*b^
2 + 234*b*c*x + 99*c^2*x^2))))/45045
```

IntegrateAlgebraic [A] time = 0.06, size = 131, normalized size = 1.16

$$\frac{2\left(15015a^2Ax^{3/2}+9009a^2Bx^{5/2}+18018aAbx^{5/2}+12870aAcx^{7/2}+12870abBx^{7/2}+10010aBcx^{9/2}+6435Ab^2x^{7/2}+10010Abcx^{9/2}+4095Ac^2x^{11/2}+5005b^2Bx^{9/2}+8190bBcx^{11/2}+3465Bc^2x^{13/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(15015*a^2*A*x^(3/2) + 18018*a*A*b*x^(5/2) + 9009*a^2*B*x^(5/2) + 6435*A
*b^2*x^(7/2) + 12870*a*b*B*x^(7/2) + 12870*a*A*c*x^(7/2) + 5005*b^2*B*x^(9/
```

```
2) + 10010*A*b*c*x^(9/2) + 10010*a*B*c*x^(9/2) + 8190*b*B*c*x^(11/2) + 4095
*A*c^2*x^(11/2) + 3465*B*c^2*x^(13/2)))/45045
```

fricas [A] time = 0.42, size = 96, normalized size = 0.85

$$\frac{2}{45045}\left(3465\,Bc^2x^6+4095\left(2\,Bbc+Ac^2\right)x^5+5005\left(Bb^2+2\,(Ba+Ab)c\right)x^4+15015\,Aa^2x+6435\left(2\,Bab+Ab^2+2\,Aac\right)x^3+9009\left(Ba^2+2\,Aab\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*x^6 + 4095*(2*B*b*c + A*c^2)*x^5 + 5005*(B*b^2 + 2*(B*a
 + A*b)*c)*x^4 + 15015*A*a^2*x + 6435*(2*B*a*b + A*b^2 + 2*A*a*c)*x^3 + 900
9*(B*a^2 + 2*A*a*b)*x^2)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.91

$$\frac{2}{13}\,Bc^2x^{\frac{13}{2}}+\frac{4}{11}\,Bbcx^{\frac{11}{2}}+\frac{2}{11}\,Ac^2x^{\frac{11}{2}}+\frac{2}{9}\,Bb^2x^{\frac{9}{2}}+\frac{4}{9}\,Bacx^{\frac{9}{2}}+\frac{4}{9}\,Abcx^{\frac{9}{2}}+\frac{4}{7}\,Babx^{\frac{7}{2}}+\frac{2}{7}\,Ab^2x^{\frac{7}{2}}+\frac{4}{7}\,Aacx^{\frac{7}{2}}+\frac{2}{5}\,Ba^2x^{\frac{5}{2}}+\frac{4}{5}\,Aabx^{\frac{5}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 4/11*B*b*c*x^(11/2) + 2/11*A*c^2*x^(11/2) + 2/9*B*b^2
*x^(9/2) + 4/9*B*a*c*x^(9/2) + 4/9*A*b*c*x^(9/2) + 4/7*B*a*b*x^(7/2) + 2/7*
A*b^2*x^(7/2) + 4/7*A*a*c*x^(7/2) + 2/5*B*a^2*x^(5/2) + 4/5*A*a*b*x^(5/2) +
 2/3*A*a^2*x^(3/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.90

$$\frac{2\left(3465B\,c^2x^5+4095A\,c^2x^4+8190x^4bBc+10010x^3Abc+10010Bac\,x^3+5005B\,b^2x^3+12870Aac\,x^2+6435A\,b^2x^2+12870Bab\,x^2+18018Aabx+9009B\,a^2x+15015A\,a^2\right)x^{\frac{3}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3465*B*c^2*x^5+4095*A*c^2*x^4+8190*B*b*c*x^4+10010*A*b*c*x
^3+10010*B*a*c*x^3+5005*B*b^2*x^3+12870*A*a*c*x^2+6435*A*b^2*x^2+12870*B*a*
b*x^2+18018*A*a*b*x+9009*B*a^2*x+15015*A*a^2)
```

maxima [A] time = 0.50, size = 93, normalized size = 0.82

$$\frac{2}{13}\,Bc^2x^{\frac{13}{2}}+\frac{2}{11}\left(2\,Bbc+Ac^2\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{9}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}+\frac{2}{7}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Ba^2+2\,Aab\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/11*(2*B*b*c + A*c^2)*x^(11/2) + 2/9*(B*b^2 + 2*(B*a
 + A*b)*c)*x^(9/2) + 2/3*A*a^2*x^(3/2) + 2/7*(2*B*a*b + A*b^2 + 2*A*a*c)*x^
(7/2) + 2/5*(B*a^2 + 2*A*a*b)*x^(5/2)
```

mupad [B] time = 0.04, size = 93, normalized size = 0.82

$$x^{5/2}\left(\frac{2\,B\,a^2}{5}+\frac{4\,A\,b\,a}{5}\right)+x^{11/2}\left(\frac{2\,A\,c^2}{11}+\frac{4\,B\,b\,c}{11}\right)+x^{7/2}\left(\frac{2\,A\,b^2}{7}+\frac{4\,B\,a\,b}{7}+\frac{4\,A\,a\,c}{7}\right)+x^{9/2}\left(\frac{2\,B\,b^2}{9}+\frac{4\,A\,c\,b}{9}+\frac{4\,B\,a\,c}{9}\right)+\frac{2\,A\,a^2\,x^{3/2}}{3}+\frac{2\,B\,c^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(5/2)*((2*B*a^2)/5 + (4*A*a*b)/5) + x^(11/2)*((2*A*c^2)/11 + (4*B*b*c)/11
) + x^(7/2)*((2*A*b^2)/7 + (4*A*a*c)/7 + (4*B*a*b)/7) + x^(9/2)*((2*B*b^2)/
```

```
9 + (4*A*b*c)/9 + (4*B*a*c)/9) + (2*A*a^2*x^(3/2))/3 + (2*B*c^2*x^(13/2))/1
3
```

sympy [A] time = 5.60, size = 121, normalized size = 1.07

$$\frac{2Aa^2x^{\frac{3}{2}}}{3}+\frac{2Bc^2x^{\frac{13}{2}}}{13}+\frac{2x^{\frac{11}{2}}\left(Ac^2+2Bbc\right)}{11}+\frac{2x^{\frac{9}{2}}\left(2Abc+2Bac+Bb^2\right)}{9}+\frac{2x^{\frac{7}{2}}\left(2Aac+Ab^2+2Bab\right)}{7}+\frac{2x^{\frac{5}{2}}\left(2Aab+Ba^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2*x**(1/2),x)
```

```
[Out] 2*A*a**2*x**(3/2)/3 + 2*B*c**2*x**(13/2)/13 + 2*x**(11/2)*(A*c**2 + 2*B*b*c
)/11 + 2*x**(9/2)*(2*A*b*c + 2*B*a*c + B*b**2)/9 + 2*x**(7/2)*(2*A*a*c + A*
b**2 + 2*B*a*b)/7 + 2*x**(5/2)*(2*A*a*b + B*a**2)/5
```

3.919 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=111

$$2a^2A\sqrt{x}+\frac{2}{7}x^{7/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{5}x^{5/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{9}cx^{9/2}(Ac+2bB)+\frac{2}{11}Bc^2$$

Rubi [A] time = 0.06, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$2a^2A\sqrt{x}+\frac{2}{7}x^{7/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{5}x^{5/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{9}cx^{9/2}(Ac+2bB)+\frac{2}{11}Bc^2x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] 2*a^2*A*Sqrt[x] + (2*a*(2*A*b + a*B)*x^(3/2))/3 + (2*(2*a*b*B + A*(b^2 + 2*
a*c))*x^(5/2))/5 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(7/2))/7 + (2*c*(2*b*B
+ A*c)*x^(9/2))/9 + (2*B*c^2*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{\sqrt{x}}\,dx &= \int \left(\frac{a^2A}{\sqrt{x}}+a(2Ab+aB)\sqrt{x}+\left(2abB+A\left(b^2+2ac\right)\right)x^{3/2}+\left(b^2B+2Abc+2aB\right.\right.\\ &= 2a^2A\sqrt{x}+\frac{2}{3}a(2Ab+aB)x^{3/2}+\frac{2}{5}\left(2abB+A\left(b^2+2ac\right)\right)x^{5/2}+\frac{2}{7}\left(b^2B+2Abc\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 100, normalized size = 0.90

$$\frac{2\sqrt{x}\left(1155a^2(3A+Bx)+66ax(7A(5b+3cx)+3Bx(7b+5cx))+x^2\left(11A\left(63b^2+90bcx+35c^2x^2\right)+5Bx\left(99b^2+154bcx+63c^2x^2\right)\right)\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(1155*a^2*(3*A + B*x) + 66*a*x*(7*A*(5*b + 3*c*x) + 3*B*x*(7*b +
 5*c*x)) + x^2*(11*A*(63*b^2 + 90*b*c*x + 35*c^2*x^2) + 5*B*x*(99*b^2 + 154
*b*c*x + 63*c^2*x^2))))/3465
```

IntegrateAlgebraic [A] time = 0.06, size = 131, normalized size = 1.18

$$\frac{2\left(3465a^2A\sqrt{x}+1155a^2Bx^{3/2}+2310aAbx^{3/2}+1386aAcx^{5/2}+1386abBx^{5/2}+990aBcx^{7/2}+693Ab^2x^{5/2}+990Abcx^{7/2}+385Ac^2x^{9/2}+495b^2Bx^{7/2}+770bBcx^{9/2}+315Bc^2x^{11/2}\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*(3465*a^2*A*Sqrt[x] + 2310*a*A*b*x^(3/2) + 1155*a^2*B*x^(3/2) + 693*A*b^
2*x^(5/2) + 1386*a*b*B*x^(5/2) + 1386*a*A*c*x^(5/2) + 495*b^2*B*x^(7/2) + 9
90*A*b*c*x^(7/2) + 990*a*B*c*x^(7/2) + 770*b*B*c*x^(9/2) + 385*A*c^2*x^(9/2
) + 315*B*c^2*x^(11/2)))/3465
```

fricas [A] time = 0.41, size = 93, normalized size = 0.84

$$\frac{2}{3465}\left(315\,Bc^2x^5 + 385\left(2\,Bbc + Ac^2\right)x^4 + 495\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 3465\,Aa^2 + 693\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 1155\left(Ba^2 + 2\,Aab\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*x^5 + 385*(2*B*b*c + A*c^2)*x^4 + 495*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 3465*A*a^2 + 693*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 1155*(B*a^2
 + 2*A*a*b)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.93

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}} + \frac{4}{9}\,Bbcx^{\frac{9}{2}} + \frac{2}{9}\,Ac^2x^{\frac{9}{2}} + \frac{2}{7}\,Bb^2x^{\frac{7}{2}} + \frac{4}{7}\,Bacx^{\frac{7}{2}} + \frac{4}{7}\,Abcx^{\frac{7}{2}} + \frac{4}{5}\,Babx^{\frac{5}{2}} + \frac{2}{5}\,Ab^2x^{\frac{5}{2}} + \frac{4}{5}\,Aacx^{\frac{5}{2}} + \frac{2}{3}\,Ba^2x^{\frac{3}{2}} + \frac{4}{3}\,Aabx^{\frac{3}{2}} + 2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 4/9*B*b*c*x^(9/2) + 2/9*A*c^2*x^(9/2) + 2/7*B*b^2*x^(
7/2) + 4/7*B*a*c*x^(7/2) + 4/7*A*b*c*x^(7/2) + 4/5*B*a*b*x^(5/2) + 2/5*A*b^
2*x^(5/2) + 4/5*A*a*c*x^(5/2) + 2/3*B*a^2*x^(3/2) + 4/3*A*a*b*x^(3/2) + 2*A
*a^2*sqrt(x)
```

maple [A] time = 0.05, size = 102, normalized size = 0.92

$$\frac{2\left(315B\,c^2x^5 + 385A\,c^2x^4 + 770x^4bBc + 990x^3Abc + 990Bac\,x^3 + 495B\,b^2x^3 + 1386Aac\,x^2 + 693A\,b^2x^2 + 1386Bab\,x^2 + 2310Aabx + 1155B\,a^2x + 3465A\,a^2\right)\sqrt{x}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(1/2)*(315*B*c^2*x^5+385*A*c^2*x^4+770*B*b*c*x^4+990*A*b*c*x^3+990
*B*a*c*x^3+495*B*b^2*x^3+1386*A*a*c*x^2+693*A*b^2*x^2+1386*B*a*b*x^2+2310*A
*a*b*x+1155*B*a^2*x+3465*A*a^2)
```

maxima [A] time = 0.53, size = 93, normalized size = 0.84

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}} + \frac{2}{9}\left(2\,Bbc + Ac^2\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Bb^2 + 2\,(Ba + Ab)c\right)x^{\frac{7}{2}} + 2\,Aa^2\sqrt{x} + \frac{2}{5}\left(2\,Bab + Ab^2 + 2\,Aac\right)x^{\frac{5}{2}} + \frac{2}{3}\left(Ba^2 + 2\,Aab\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/9*(2*B*b*c + A*c^2)*x^(9/2) + 2/7*(B*b^2 + 2*(B*a +
 A*b)*c)*x^(7/2) + 2*A*a^2*sqrt(x) + 2/5*(2*B*a*b + A*b^2 + 2*A*a*c)*x^(5/2
) + 2/3*(B*a^2 + 2*A*a*b)*x^(3/2)
```

mupad [B] time = 0.03, size = 93, normalized size = 0.84

$$x^{3/2}\left(\frac{2\,B\,a^2}{3} + \frac{4\,A\,b\,a}{3}\right) + x^{9/2}\left(\frac{2\,A\,c^2}{9} + \frac{4\,B\,b\,c}{9}\right) + x^{5/2}\left(\frac{2\,A\,b^2}{5} + \frac{4\,B\,a\,b}{5} + \frac{4\,A\,a\,c}{5}\right) + x^{7/2}\left(\frac{2\,B\,b^2}{7} + \frac{4\,A\,c\,b}{7} + \frac{4\,B\,a\,c}{7}\right) + 2\,A\,a^2\sqrt{x} + \frac{2\,B\,c^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^2)/3 + (4*A*a*b)/3) + x^(9/2)*((2*A*c^2)/9 + (4*B*b*c)/9) +
 x^(5/2)*((2*A*b^2)/5 + (4*A*a*c)/5 + (4*B*a*b)/5) + x^(7/2)*((2*B*b^2)/7 +
 (4*A*b*c)/7 + (4*B*a*c)/7) + 2*A*a^2*x^(1/2) + (2*B*c^2*x^(11/2))/11
```

sympy [A] time = 2.05, size = 160, normalized size = 1.44

$$2Aa^2\sqrt{x} + \frac{4Aabx^{\frac{3}{2}}}{3} + \frac{4Aacx^{\frac{5}{2}}}{5} + \frac{2Ab^2x^{\frac{5}{2}}}{5} + \frac{4Abcx^{\frac{7}{2}}}{7} + \frac{2Ac^2x^{\frac{9}{2}}}{9} + \frac{2Ba^2x^{\frac{3}{2}}}{3} + \frac{4Babx^{\frac{5}{2}}}{5} + \frac{4Bacx^{\frac{7}{2}}}{7} + \frac{2Bb^2x^{\frac{7}{2}}}{7} + \frac{4Bbcx^{\frac{9}{2}}}{9} + \frac{2Bc^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(1/2),x)
```

```
[Out] 2*A*a**2*sqrt(x) + 4*A*a*b*x**(3/2)/3 + 4*A*a*c*x**(5/2)/5 + 2*A*b**2*x**(5
/2)/5 + 4*A*b*c*x**(7/2)/7 + 2*A*c**2*x**(9/2)/9 + 2*B*a**2*x**(3/2)/3 + 4*
B*a*b*x**(5/2)/5 + 4*B*a*c*x**(7/2)/7 + 2*B*b**2*x**(7/2)/7 + 4*B*b*c*x**(9
/2)/9 + 2*B*c**2*x**(11/2)/11
```

3.920 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{x^{3/2}} dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{5}x^{5/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{3}x^{3/2}\left(A\left(2ac+b^2\right)+2abB\right)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{9}Bc^2$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{5}x^{5/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{3}x^{3/2}\left(A\left(2ac+b^2\right)+2abB\right)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{9}Bc^2x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-2*a^2*A)/Sqrt[x] + 2*a*(2*A*b + a*B)*Sqrt[x] + (2*(2*a*b*B + A*(b^2 + 2*a
*c))*x^(3/2))/3 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(5/2))/5 + (2*c*(2*b*B +
 A*c)*x^(7/2))/7 + (2*B*c^2*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{3/2}}\,dx &= \int \left(\frac{a^2A}{x^{3/2}}+\frac{a(2Ab+aB)}{\sqrt{x}}+\left(2abB+A\left(b^2+2ac\right)\right)\sqrt{x}+\left(b^2B+2Abc+2aE\right.\right.\\ &= -\frac{2a^2A}{\sqrt{x}}+2a(2Ab+aB)\sqrt{x}+\frac{2}{3}\left(2abB+A\left(b^2+2ac\right)\right)x^{3/2}+\frac{2}{5}\left(b^2B+2Ab\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 97, normalized size = 0.89

$$\frac{-630a^2(A-Bx)+84ax(5A(3b+cx)+Bx(5b+3cx))+2x^2\left(3A\left(35b^2+42bcx+15c^2x^2\right)+Bx\left(63b^2+90bcx+35c^2x^2\right)\right)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-630*a^2*(A - B*x) + 84*a*x*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)) + 2*x^2*
(3*A*(35*b^2 + 42*b*c*x + 15*c^2*x^2) + B*x*(63*b^2 + 90*b*c*x + 35*c^2*x^2
)))/(315*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.09, size = 105, normalized size = 0.96

$$\frac{2\left(-315a^2A+315a^2Bx+630aAbx+210aAcx^2+210abBx^2+126aBcx^3+105Ab^2x^2+126Abcx^3+45Ac^2x^4+63b^2Bx^3+90bBcx^4+35Bc^2x^5\right)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (2*(-315*a^2*A + 630*a*A*b*x + 315*a^2*B*x + 105*A*b^2*x^2 + 210*a*b*B*x^2
+ 210*a*A*c*x^2 + 63*b^2*B*x^3 + 126*A*b*c*x^3 + 126*a*B*c*x^3 + 90*b*B*c*x
^4 + 45*A*c^2*x^4 + 35*B*c^2*x^5))/(315*Sqrt[x])
```

fricas [A] time = 0.44, size = 93, normalized size = 0.85

$$\frac{2\left(35\,Bc^2x^5+45\left(2\,Bbc+Ac^2\right)x^4+63\left(Bb^2+2\,(Ba+Ab)c\right)x^3-315\,Aa^2+105\left(2\,Bab+Ab^2+2\,Aac\right)x^2+315\left(Ba^2+2\,Aab\right)x\right)}{315\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*x^5 + 45*(2*B*b*c + A*c^2)*x^4 + 63*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 - 315*A*a^2 + 105*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 315*(B*a^2 + 2*A
*a*b)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.94

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}}+\frac{4}{7}\,Bbcx^{\frac{7}{2}}+\frac{2}{7}\,Ac^2x^{\frac{7}{2}}+\frac{2}{5}\,Bb^2x^{\frac{5}{2}}+\frac{4}{5}\,Bacx^{\frac{5}{2}}+\frac{4}{5}\,Abcx^{\frac{5}{2}}+\frac{4}{3}\,Babx^{\frac{3}{2}}+\frac{2}{3}\,Ab^2x^{\frac{3}{2}}+\frac{4}{3}\,Aacx^{\frac{3}{2}}+2\,Ba^2\sqrt{x}+4\,Aab\sqrt{x}-\frac{2\,Aa^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 4/7*B*b*c*x^(7/2) + 2/7*A*c^2*x^(7/2) + 2/5*B*b^2*x^(5/
2) + 4/5*B*a*c*x^(5/2) + 4/5*A*b*c*x^(5/2) + 4/3*B*a*b*x^(3/2) + 2/3*A*b^2*
x^(3/2) + 4/3*A*a*c*x^(3/2) + 2*B*a^2*sqrt(x) + 4*A*a*b*sqrt(x) - 2*A*a^2/s
qrt(x)
```

maple [A] time = 0.05, size = 102, normalized size = 0.94

$$-\frac{2\left(-35B\,c^2x^5-45A\,c^2x^4-90x^4bBc-126x^3Abc-126Bac\,x^3-63B\,b^2x^3-210Aac\,x^2-105A\,b^2x^2-210Bab\,x^2-630Aabx-315B\,a^2x+315A\,a^2\right)}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x)
```

```
[Out] -2/315*(-35*B*c^2*x^5-45*A*c^2*x^4-90*B*b*c*x^4-126*A*b*c*x^3-126*B*a*c*x^3
-63*B*b^2*x^3-210*A*a*c*x^2-105*A*b^2*x^2-210*B*a*b*x^2-630*A*a*b*x-315*B*a
^2*x+315*A*a^2)/x^(1/2)
```

maxima [A] time = 0.56, size = 93, normalized size = 0.85

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}}+\frac{2}{7}\left(2\,Bbc+Ac^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{5}{2}}-\frac{2\,Aa^2}{\sqrt{x}}+\frac{2}{3}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{3}{2}}+2\left(Ba^2+2\,Aab\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 2/7*(2*B*b*c + A*c^2)*x^(7/2) + 2/5*(B*b^2 + 2*(B*a + A
*b)*c)*x^(5/2) - 2*A*a^2/sqrt(x) + 2/3*(2*B*a*b + A*b^2 + 2*A*a*c)*x^(3/2)
+ 2*(B*a^2 + 2*A*a*b)*sqrt(x)
```

mupad [B] time = 0.04, size = 93, normalized size = 0.85

$$\sqrt{x}\,\left(2\,B\,a^2+4\,A\,b\,a\right)+x^{7/2}\,\left(\frac{2\,A\,c^2}{7}+\frac{4\,B\,b\,c}{7}\right)+x^{3/2}\,\left(\frac{2\,A\,b^2}{3}+\frac{4\,B\,a\,b}{3}+\frac{4\,A\,a\,c}{3}\right)+x^{5/2}\,\left(\frac{2\,B\,b^2}{5}+\frac{4\,A\,c\,b}{5}+\frac{4\,B\,a\,c}{5}\right)-\frac{2\,A\,a^2}{\sqrt{x}}+\frac{2\,B\,c^2\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^2 + 4*A*a*b) + x^(7/2)*((2*A*c^2)/7 + (4*B*b*c)/7) + x^(3/2)
*((2*A*b^2)/3 + (4*A*a*c)/3 + (4*B*a*b)/3) + x^(5/2)*((2*B*b^2)/5 + (4*A*b*
c)/5 + (4*B*a*c)/5) - (2*A*a^2)/x^(1/2) + (2*B*c^2*x^(9/2))/9
```

sympy [A] time = 2.30, size = 156, normalized size = 1.43

$$-\frac{2Aa^2}{\sqrt{x}} + 4Aab\sqrt{x} + \frac{4Aacx^{\frac{3}{2}}}{3} + \frac{2Ab^2x^{\frac{3}{2}}}{3} + \frac{4Abcx^{\frac{5}{2}}}{5} + \frac{2Ac^2x^{\frac{7}{2}}}{7} + 2Ba^2\sqrt{x} + \frac{4Babx^{\frac{3}{2}}}{3} + \frac{4Bacx^{\frac{5}{2}}}{5} + \frac{2Bb^2x^{\frac{5}{2}}}{5} + \frac{4Bbcx^{\frac{7}{2}}}{7} + \frac{2Bc^2x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(3/2),x)
```

```
[Out] -2*A*a**2/sqrt(x) + 4*A*a*b*sqrt(x) + 4*A*a*c*x**(3/2)/3 + 2*A*b**2*x**(3/2
)/3 + 4*A*b*c*x**(5/2)/5 + 2*A*c**2*x**(7/2)/7 + 2*B*a**2*sqrt(x) + 4*B*a*b
*x**(3/2)/3 + 4*B*a*c*x**(5/2)/5 + 2*B*b**2*x**(5/2)/5 + 4*B*b*c*x**(7/2)/7
 + 2*B*c**2*x**(9/2)/9
```

3.921 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{3x^{3/2}}+\frac{2}{3}x^{3/2}\left(2aBc+2Abc+b^2B\right)+2\sqrt{x}\left(A\left(2ac+b^2\right)+2abB\right)-\frac{2a(aB+2Ab)}{\sqrt{x}}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{7}Bc^2x^{7/2}$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{3x^{3/2}}+\frac{2}{3}x^{3/2}\left(2aBc+2Abc+b^2B\right)+2\sqrt{x}\left(A\left(2ac+b^2\right)+2abB\right)-\frac{2a(aB+2Ab)}{\sqrt{x}}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{7}Bc^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (-2*a^2*A)/(3*x^(3/2)) - (2*a*(2*A*b + a*B))/Sqrt[x] + 2*(2*a*b*B + A*(b^2
+ 2*a*c))*Sqrt[x] + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(3/2))/3 + (2*c*(2*b*B
 + A*c)*x^(5/2))/5 + (2*B*c^2*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{5/2}}\,dx=\int\left(\frac{a^2A}{x^{5/2}}+\frac{a(2Ab+aB)}{x^{3/2}}+\frac{2abB+A\left(b^2+2ac\right)}{\sqrt{x}}+\left(b^2B+2Abc+2aBc\right)\sqrt{x}+\right.$$
$$=-\frac{2a^2A}{3x^{3/2}}-\frac{2a(2Ab+aB)}{\sqrt{x}}+2\left(2abB+A\left(b^2+2ac\right)\right)\sqrt{x}+\frac{2}{3}\left(b^2B+2Abc+2a\right.$$

Mathematica [A] time = 0.12, size = 94, normalized size = 0.86

$$\frac{2\left(-35a^2(A+3Bx)+70ax(Bx(3b+cx)-3A(b-cx))+x^2\left(7A\left(15b^2+10bcx+3c^2x^2\right)+Bx\left(35b^2+42bcx+15c^2x^2\right)\right)\right)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*(-35*a^2*(A + 3*B*x) + 70*a*x*(-3*A*(b - c*x) + B*x*(3*b + c*x)) + x^2*(
7*A*(15*b^2 + 10*b*c*x + 3*c^2*x^2) + B*x*(35*b^2 + 42*b*c*x + 15*c^2*x^2))
))/(105*x^(3/2))
```

IntegrateAlgebraic [A] time = 0.11, size = 105, normalized size = 0.96

$$\frac{2\left(-35a^2A-105a^2Bx-210aAbx+210aAcx^2+210abBx^2+70aBcx^3+105Ab^2x^2+70Abcx^3+21Ac^2x^4+35b^2Bx^3+42bBcx^4+15Bc^2x^5\right)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*(-35*a^2*A - 210*a*A*b*x - 105*a^2*B*x + 105*A*b^2*x^2 + 210*a*b*B*x^2 +
 210*a*A*c*x^2 + 35*b^2*B*x^3 + 70*A*b*c*x^3 + 70*a*B*c*x^3 + 42*b*B*c*x^4
+ 21*A*c^2*x^4 + 15*B*c^2*x^5))/(105*x^(3/2))
```

fricas [A] time = 0.42, size = 93, normalized size = 0.85

$$\frac{2\left(15\,Bc^{2}x^{5}+21\left(2\,Bbc+Ac^{2}\right)x^{4}+35\left(Bb^{2}+2\,(Ba+Ab)c\right)x^{3}-35\,Aa^{2}+105\left(2\,Bab+Ab^{2}+2\,Aac\right)x^{2}-105\left(Ba^{2}+2\,Aab\right)x\right)}{105\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*x^5 + 21*(2*B*b*c + A*c^2)*x^4 + 35*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 - 35*A*a^2 + 105*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 105*(B*a^2 + 2*A*
a*b)*x)/x^(3/2)
```

giac [A] time = 0.17, size = 101, normalized size = 0.93

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{4}{5}\,Bbcx^{\frac{5}{2}}+\frac{2}{5}\,Ac^{2}x^{\frac{5}{2}}+\frac{2}{3}\,Bb^{2}x^{\frac{3}{2}}+\frac{4}{3}\,Bacx^{\frac{3}{2}}+\frac{4}{3}\,Abcx^{\frac{3}{2}}+4\,Bab\sqrt{x}+2\,Ab^{2}\sqrt{x}+4\,Aac\sqrt{x}-\frac{2\left(3\,Ba^{2}x+6\,Aabx+Aa^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 4/5*B*b*c*x^(5/2) + 2/5*A*c^2*x^(5/2) + 2/3*B*b^2*x^(3/
2) + 4/3*B*a*c*x^(3/2) + 4/3*A*b*c*x^(3/2) + 4*B*a*b*sqrt(x) + 2*A*b^2*sqrt
(x) + 4*A*a*c*sqrt(x) - 2/3*(3*B*a^2*x + 6*A*a*b*x + A*a^2)/x^(3/2)
```

maple [A] time = 0.06, size = 102, normalized size = 0.94

$$-\frac{2\left(-15B\,c^{2}x^{5}-21A\,c^{2}x^{4}-42x^{4}bBc-70x^{3}Abc-70Bac\,x^{3}-35B\,b^{2}x^{3}-210Aac\,x^{2}-105A\,b^{2}x^{2}-210Bab\,x^{2}+210Aabx+105B\,a^{2}x+35A\,a^{2}\right)}{105x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x)
```

```
[Out] -2/105*(-15*B*c^2*x^5-21*A*c^2*x^4-42*B*b*c*x^4-70*A*b*c*x^3-70*B*a*c*x^3-3
5*B*b^2*x^3-210*A*a*c*x^2-105*A*b^2*x^2-210*B*a*b*x^2+210*A*a*b*x+105*B*a^2
*x+35*A*a^2)/x^(3/2)
```

maxima [A] time = 0.57, size = 93, normalized size = 0.85

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{2}{5}\left(2\,Bbc+Ac^{2}\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Bb^{2}+2\,(Ba+Ab)c\right)x^{\frac{3}{2}}+2\left(2\,Bab+Ab^{2}+2\,Aac\right)\sqrt{x}-\frac{2\left(Aa^{2}+3\left(Ba^{2}+2\,Aab\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2/5*(2*B*b*c + A*c^2)*x^(5/2) + 2/3*(B*b^2 + 2*(B*a + A
*b)*c)*x^(3/2) + 2*(2*B*a*b + A*b^2 + 2*A*a*c)*sqrt(x) - 2/3*(A*a^2 + 3*(B*
a^2 + 2*A*a*b)*x)/x^(3/2)
```

mupad [B] time = 0.04, size = 94, normalized size = 0.86

$$x^{5/2}\left(\frac{2\,A\,c^2}{5}+\frac{4\,B\,b\,c}{5}\right)+\sqrt{x}\,\left(2\,A\,b^2+4\,B\,a\,b+4\,A\,a\,c\right)+x^{3/2}\left(\frac{2\,B\,b^2}{3}+\frac{4\,A\,c\,b}{3}+\frac{4\,B\,a\,c}{3}\right)-\frac{\frac{2\,A\,a^2}{3}+x\,\left(2\,B\,a^2+4\,A\,b\,a\right)}{x^{3/2}}+\frac{2\,B\,c^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x)
```

```
[Out] x^(5/2)*((2*A*c^2)/5 + (4*B*b*c)/5) + x^(1/2)*(2*A*b^2 + 4*A*a*c + 4*B*a*b)
 + x^(3/2)*((2*B*b^2)/3 + (4*A*b*c)/3 + (4*B*a*c)/3) - ((2*A*a^2)/3 + x*(2*
B*a^2 + 4*A*a*b))/x^(3/2) + (2*B*c^2*x^(7/2))/7
```

sympy [A] time = 2.89, size = 153, normalized size = 1.40

$$-\frac{2Aa^2}{3x^{\frac{3}{2}}} - \frac{4Aab}{\sqrt{x}} + 4Aac\sqrt{x} + 2Ab^2\sqrt{x} + \frac{4Abcx^{\frac{3}{2}}}{3} + \frac{2Ac^2x^{\frac{5}{2}}}{5} - \frac{2Ba^2}{\sqrt{x}} + 4Bab\sqrt{x} + \frac{4Bacx^{\frac{3}{2}}}{3} + \frac{2Bb^2x^{\frac{3}{2}}}{3} + \frac{4Bbcx^{\frac{5}{2}}}{5} + \frac{2Bc^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(5/2),x)
```

```
[Out] -2*A*a**2/(3*x**(3/2)) - 4*A*a*b/sqrt(x) + 4*A*a*c*sqrt(x) + 2*A*b**2*sqrt(
x) + 4*A*b*c*x**(3/2)/3 + 2*A*c**2*x**(5/2)/5 - 2*B*a**2/sqrt(x) + 4*B*a*b*
sqrt(x) + 4*B*a*c*x**(3/2)/3 + 2*B*b**2*x**(3/2)/3 + 4*B*b*c*x**(5/2)/5 + 2
*B*c**2*x**(7/2)/7
```

3.922 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{5x^{5/2}}+2\sqrt{x}\left(2aBc+2Abc+b^2B\right)-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{3x^{3/2}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+\frac{2}{5}Bc^2x^{5/2}$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{5x^{5/2}}+2\sqrt{x}\left(2aBc+2Abc+b^2B\right)-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{3x^{3/2}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+\frac{2}{5}Bc^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^2*A)/(5*x^(5/2)) - (2*a*(2*A*b + a*B))/(3*x^(3/2)) - (2*(2*a*b*B + A*
(b^2 + 2*a*c)))/Sqrt[x] + 2*(b^2*B + 2*A*b*c + 2*a*B*c)*Sqrt[x] + (2*c*(2*b
*B + A*c)*x^(3/2))/3 + (2*B*c^2*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{7/2}}\,dx &= \int \left(\frac{a^2A}{x^{7/2}}+\frac{a(2Ab+aB)}{x^{5/2}}+\frac{2abB+A\left(b^2+2ac\right)}{x^{3/2}}+\frac{b^2B+2Abc+2aBc}{\sqrt{x}}+c(\right.\\ &= -\frac{2a^2A}{5x^{5/2}}-\frac{2a(2Ab+aB)}{3x^{3/2}}-\frac{2\left(2abB+A\left(b^2+2ac\right)\right)}{\sqrt{x}}+2\left(b^2B+2Abc+2aB\right.\end{aligned}$$

Mathematica [A] time = 0.11, size = 95, normalized size = 0.87

$$\frac{-2a^2(3A+5Bx)-20ax(A(b+3cx)+3Bx(b-cx))+2x^2\left(5A\left(-3b^2+6bcx+c^2x^2\right)+Bx\left(15b^2+10bcx+3c^2x^2\right)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^2*(3*A + 5*B*x) - 20*a*x*(3*B*x*(b - c*x) + A*(b + 3*c*x)) + 2*x^2*(5
*A*(-3*b^2 + 6*b*c*x + c^2*x^2) + B*x*(15*b^2 + 10*b*c*x + 3*c^2*x^2)))/(15
*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.09, size = 105, normalized size = 0.96

$$\frac{2\left(-3a^2A-5a^2Bx-10aAbx-30aAcx^2-30abBx^2+30aBcx^3-15Ab^2x^2+30Abcx^3+5Ac^2x^4+15b^2Bx^3+10bBcx^4+3Bc^2x^5\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (2*(-3*a^2*A - 10*a*A*b*x - 5*a^2*B*x - 15*A*b^2*x^2 - 30*a*b*B*x^2 - 30*a*
A*c*x^2 + 15*b^2*B*x^3 + 30*A*b*c*x^3 + 30*a*B*c*x^3 + 10*b*B*c*x^4 + 5*A*c
^2*x^4 + 3*B*c^2*x^5))/(15*x^(5/2))
```

fricas [A] time = 0.43, size = 93, normalized size = 0.85

$$\frac{2\left(3\,Bc^2x^5+5\left(2\,Bbc+Ac^2\right)x^4+15\left(Bb^2+2\,(Ba+Ab)c\right)x^3-3\,Aa^2-15\left(2\,Bab+Ab^2+2\,Aac\right)x^2-5\left(Ba^2+2\,Aab\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^5 + 5*(2*B*b*c + A*c^2)*x^4 + 15*(B*b^2 + 2*(B*a + A*b)*c)*
x^3 - 3*A*a^2 - 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 5*(B*a^2 + 2*A*a*b)*x)
/x^(5/2)
```

giac [A] time = 0.20, size = 102, normalized size = 0.94

$$\frac{2}{5}\,Bc^2x^{\frac{5}{2}}+\frac{4}{3}\,Bbcx^{\frac{3}{2}}+\frac{2}{3}\,Ac^2x^{\frac{3}{2}}+2\,Bb^2\sqrt{x}+4\,Bac\sqrt{x}+4\,Abc\sqrt{x}-\frac{2\left(30\,Babx^2+15\,Ab^2x^2+30\,Aacx^2+5\,Ba^2x+10\,Aabx+3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 4/3*B*b*c*x^(3/2) + 2/3*A*c^2*x^(3/2) + 2*B*b^2*sqrt(x)
 + 4*B*a*c*sqrt(x) + 4*A*b*c*sqrt(x) - 2/15*(30*B*a*b*x^2 + 15*A*b^2*x^2 +
30*A*a*c*x^2 + 5*B*a^2*x + 10*A*a*b*x + 3*A*a^2)/x^(5/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.94

$$-\frac{2\left(-3B\,c^2x^5-5A\,c^2x^4-10x^4bBc-30x^3Abc-30Bac\,x^3-15B\,b^2x^3+30Aac\,x^2+15A\,b^2x^2+30Bab\,x^2+10Aabx+5B\,a^2x+3A\,a^2\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x)
```

```
[Out] -2/15*(-3*B*c^2*x^5-5*A*c^2*x^4-10*B*b*c*x^4-30*A*b*c*x^3-30*B*a*c*x^3-15*B
*b^2*x^3+30*A*a*c*x^2+15*A*b^2*x^2+30*B*a*b*x^2+10*A*a*b*x+5*B*a^2*x+3*A*a^
2)/x^(5/2)
```

maxima [A] time = 0.62, size = 94, normalized size = 0.86

$$\frac{2}{5}\,Bc^2x^{\frac{5}{2}}+\frac{2}{3}\left(2\,Bbc+Ac^2\right)x^{\frac{3}{2}}+2\left(Bb^2+2\,(Ba+Ab)c\right)\sqrt{x}-\frac{2\left(3\,Aa^2+15\left(2\,Bab+Ab^2+2\,Aac\right)x^2+5\left(Ba^2+2\,Aab\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 2/3*(2*B*b*c + A*c^2)*x^(3/2) + 2*(B*b^2 + 2*(B*a + A*b
)*c)*sqrt(x) - 2/15*(3*A*a^2 + 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 5*(B*a^
2 + 2*A*a*b)*x)/x^(5/2)
```

mupad [B] time = 0.06, size = 94, normalized size = 0.86

$$x^{3/2}\left(\frac{2\,A\,c^2}{3}+\frac{4\,B\,b\,c}{3}\right)-\frac{\frac{2\,A\,a^2}{5}+x^2\,\left(2\,A\,b^2+4\,B\,a\,b+4\,A\,a\,c\right)+x\,\left(\frac{2\,B\,a^2}{3}+\frac{4\,A\,b\,a}{3}\right)}{x^{5/2}}+\sqrt{x}\,\left(2\,B\,b^2+4\,A\,c\,b+4\,B\,a\,c\right)+\frac{2\,B\,c^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x)
```

```
[Out] x^(3/2)*((2*A*c^2)/3 + (4*B*b*c)/3) - ((2*A*a^2)/5 + x^2*(2*A*b^2 + 4*A*a*c
 + 4*B*a*b) + x*((2*B*a^2)/3 + (4*A*a*b)/3))/x^(5/2) + x^(1/2)*(2*B*b^2 + 4
*A*b*c + 4*B*a*c) + (2*B*c^2*x^(5/2))/5
```

sympy [A] time = 3.94, size = 151, normalized size = 1.39

$$-\frac{2Aa^2}{5x^{\frac{5}{2}}}-\frac{4Aab}{3x^{\frac{3}{2}}}-\frac{4Aac}{\sqrt{x}}-\frac{2Ab^2}{\sqrt{x}}+4Abc\sqrt{x}+\frac{2Ac^2x^{\frac{3}{2}}}{3}-\frac{2Ba^2}{3x^{\frac{3}{2}}}-\frac{4Bab}{\sqrt{x}}+4Bac\sqrt{x}+2Bb^2\sqrt{x}+\frac{4Bbcx^{\frac{3}{2}}}{3}+\frac{2Bc^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(7/2),x)
```

```
[Out] -2*A*a**2/(5*x**(5/2)) - 4*A*a*b/(3*x**(3/2)) - 4*A*a*c/sqrt(x) - 2*A*b**2/
sqrt(x) + 4*A*b*c*sqrt(x) + 2*A*c**2*x**(3/2)/3 - 2*B*a**2/(3*x**(3/2)) - 4
*B*a*b/sqrt(x) + 4*B*a*c*sqrt(x) + 2*B*b**2*sqrt(x) + 4*B*b*c*x**(3/2)/3 +
2*B*c**2*x**(5/2)/5
```

3.923 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{9/2}} \, dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{3x^{3/2}}-\frac{2\left(2aBc+2Abc+b^2B\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{5x^{5/2}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{3x^{3/2}}-\frac{2\left(2aBc+2Abc+b^2B\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{5x^{5/2}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*a^2*A)/(7*x^(7/2)) - (2*a*(2*A*b + a*B))/(5*x^(5/2)) - (2*(2*a*b*B + A*
(b^2 + 2*a*c)))/(3*x^(3/2)) - (2*(b^2*B + 2*A*b*c + 2*a*B*c))/Sqrt[x] + 2*c
*(2*b*B + A*c)*Sqrt[x] + (2*B*c^2*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{9/2}} \, dx = \int \left(\frac{a^2A}{x^{9/2}}+\frac{a(2Ab+aB)}{x^{7/2}}+\frac{2abB+A\left(b^2+2ac\right)}{x^{5/2}}+\frac{b^2B+2Abc+2aBc}{x^{3/2}}+\frac{c(2b\ldots$$

$$= -\frac{2a^2A}{7x^{7/2}}-\frac{2a(2Ab+aB)}{5x^{5/2}}-\frac{2\left(2abB+A\left(b^2+2ac\right)\right)}{3x^{3/2}}-\frac{2\left(b^2B+2Abc+2aBc\right)}{\sqrt{x}}$$

Mathematica [A] time = 0.08, size = 95, normalized size = 0.87

$$-\frac{2\left(3a^2(5A+7Bx)+14ax(A(3b+5cx)+5Bx(b+3cx))+35x^2\left(A\left(b^2+6bcx-3c^2x^2\right)-Bx\left(-3b^2+6bcx+c^2x^2\right)\right)\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*(3*a^2*(5*A + 7*B*x) + 14*a*x*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x)) + 3
5*x^2*(A*(b^2 + 6*b*c*x - 3*c^2*x^2) - B*x*(-3*b^2 + 6*b*c*x + c^2*x^2))))/
(105*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.09, size = 105, normalized size = 0.96

$$\frac{2\left(-15a^2A-21a^2Bx-42aAbx-70aAcx^2-70abBx^2-210aBcx^3-35Ab^2x^2-210Abcx^3+105Ac^2x^4-105b^2Bx^3+210bBcx^4+35Bc^2x^5\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (2*(-15*a^2*A - 42*a*A*b*x - 21*a^2*B*x - 35*A*b^2*x^2 - 70*a*b*B*x^2 - 70*
a*A*c*x^2 - 105*b^2*B*x^3 - 210*A*b*c*x^3 - 210*a*B*c*x^3 + 210*b*B*c*x^4 +
 105*A*c^2*x^4 + 35*B*c^2*x^5))/(105*x^(7/2))
```

fricas [A] time = 0.41, size = 93, normalized size = 0.85

$$\frac{2\left(35\,Bc^{2}x^{5}+105\left(2\,Bbc+Ac^{2}\right)x^{4}-105\left(Bb^{2}+2\,(Ba+Ab)c\right)x^{3}-15\,Aa^{2}-35\left(2\,Bab+Ab^{2}+2\,Aac\right)x^{2}-21\left(Ba^{2}+2\,Aab\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*c^2*x^5 + 105*(2*B*b*c + A*c^2)*x^4 - 105*(B*b^2 + 2*(B*a + A*b
)*c)*x^3 - 15*A*a^2 - 35*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 21*(B*a^2 + 2*A*
a*b)*x)/x^(7/2)
```

giac [A] time = 0.16, size = 102, normalized size = 0.94

$$\frac{2}{3}\,Bc^{2}x^{\frac{3}{2}}+4\,Bbc\sqrt{x}+2\,Ac^{2}\sqrt{x}-\frac{2\left(105\,Bb^{2}x^{3}+210\,Bacx^{3}+210\,Abcx^{3}+70\,Babx^{2}+35\,Ab^{2}x^{2}+70\,Aacx^{2}+21\,Ba^{2}x+42\,Aabx+15\,Aa^{2}\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 4*B*b*c*sqrt(x) + 2*A*c^2*sqrt(x) - 2/105*(105*B*b^2*x^
3 + 210*B*a*c*x^3 + 210*A*b*c*x^3 + 70*B*a*b*x^2 + 35*A*b^2*x^2 + 70*A*a*c*
x^2 + 21*B*a^2*x + 42*A*a*b*x + 15*A*a^2)/x^(7/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.94

$$-\frac{2\left(-35B\,c^{2}x^{5}-105A\,c^{2}x^{4}-210x^{4}bBc+210x^{3}Abc+210Bac\,x^{3}+105B\,b^{2}x^{3}+70Aac\,x^{2}+35A\,b^{2}x^{2}+70Bab\,x^{2}+42Aabx+21B\,a^{2}x+15A\,a^{2}\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x)
```

```
[Out] -2/105*(-35*B*c^2*x^5-105*A*c^2*x^4-210*B*b*c*x^4+210*A*b*c*x^3+210*B*a*c*x
^3+105*B*b^2*x^3+70*A*a*c*x^2+35*A*b^2*x^2+70*B*a*b*x^2+42*A*a*b*x+21*B*a^2
*x+15*A*a^2)/x^(7/2)
```

maxima [A] time = 0.48, size = 94, normalized size = 0.86

$$\frac{2}{3}\,Bc^{2}x^{\frac{3}{2}}+2\left(2\,Bbc+Ac^{2}\right)\sqrt{x}-\frac{2\left(105\left(Bb^{2}+2\,(Ba+Ab)c\right)x^{3}+15\,Aa^{2}+35\left(2\,Bab+Ab^{2}+2\,Aac\right)x^{2}+21\left(Ba^{2}+2\,Aab\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*(2*B*b*c + A*c^2)*sqrt(x) - 2/105*(105*(B*b^2 + 2*(B*
a + A*b)*c)*x^3 + 15*A*a^2 + 35*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 21*(B*a^2
 + 2*A*a*b)*x)/x^(7/2)
```

mupad [B] time = 1.28, size = 94, normalized size = 0.86

$$\sqrt{x}\,\left(2\,A\,c^2+4\,B\,b\,c\right)-\frac{\frac{2\,A\,a^2}{7}+x^2\,\left(\frac{2\,A\,b^2}{3}+\frac{4\,B\,a\,b}{3}+\frac{4\,A\,a\,c}{3}\right)+x^3\,\left(2\,B\,b^2+4\,A\,c\,b+4\,B\,a\,c\right)+x\,\left(\frac{2\,B\,a^2}{5}+\frac{4\,A\,b\,a}{5}\right)}{x^{7/2}}+\frac{2\,B\,c^2\,x^{3/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*A*c^2 + 4*B*b*c) - ((2*A*a^2)/7 + x^2*((2*A*b^2)/3 + (4*A*a*c)/3
 + (4*B*a*b)/3) + x^3*(2*B*b^2 + 4*A*b*c + 4*B*a*c) + x*((2*B*a^2)/5 + (4*A
*a*b)/5))/x^(7/2) + (2*B*c^2*x^(3/2))/3
```

sympy [A] time = 5.88, size = 153, normalized size = 1.40

$$-\frac{2Aa^2}{7x^{\frac{7}{2}}}-\frac{4Aab}{5x^{\frac{5}{2}}}-\frac{4Aac}{3x^{\frac{3}{2}}}-\frac{2Ab^2}{3x^{\frac{3}{2}}}-\frac{4Abc}{\sqrt{x}}+2Ac^2\sqrt{x}-\frac{2Ba^2}{5x^{\frac{5}{2}}}-\frac{4Bab}{3x^{\frac{3}{2}}}-\frac{4Bac}{\sqrt{x}}-\frac{2Bb^2}{\sqrt{x}}+4Bbc\sqrt{x}+\frac{2Bc^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(9/2),x)
```

```
[Out] -2*A*a**2/(7*x**(7/2)) - 4*A*a*b/(5*x**(5/2)) - 4*A*a*c/(3*x**(3/2)) - 2*A*
b**2/(3*x**(3/2)) - 4*A*b*c/sqrt(x) + 2*A*c**2*sqrt(x) - 2*B*a**2/(5*x**(5/
2)) - 4*B*a*b/(3*x**(3/2)) - 4*B*a*c/sqrt(x) - 2*B*b**2/sqrt(x) + 4*B*b*c*s
qrt(x) + 2*B*c**2*x**(3/2)/3
```

3.924 $\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^2x^{11/2}(aB+3Ab)+\frac{6}{19}cx^{19/2}\left(aBc+Abc+b^2B\right)+\frac{6}{13}ax^{13/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{17}x^{17/2}\left(3aAc^2+\right.$$

Rubi [A] time = 0.12, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{11}a^2x^{11/2}(aB+3Ab)+\frac{2}{9}a^3Ax^{9/2}+\frac{2}{17}x^{17/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{19}cx^{19/2}\left(aBc+Abc+b^2B\right)+\frac{2}{15}x^{15/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{6}{13}ax^{13/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(9/2))/9 + (2*a^2*(3*A*b + a*B)*x^(11/2))/11 + (6*a*(a*b*B + A*(
b^2 + a*c))*x^(13/2))/13 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(15
/2))/15 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(17/2))/17 + (6*
c*(b^2*B + A*b*c + a*B*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21
+ (2*B*c^3*x^(23/2))/23
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3Ax^{7/2}+a^2(3Ab+aB)x^{9/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{11/2}+\left(3aB\left(\right.\right.\right.\\ &= \frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^2(3Ab+aB)x^{11/2}+\frac{6}{13}a\left(abB+A\left(b^2+ac\right)\right)x^{13/2}+\frac{2}{15}\end{aligned}$$

Mathematica [A] time = 0.20, size = 178, normalized size = 0.98

$$\frac{2x^{9/2}\left(3380195a^3(11A+9Bx)+468027a^2x(15A(13b+11cx)+11Bx(15b+13cx))+15939ax^2\left(19A\left(255b^2+442bcx+195c^2x^2\right)+13Bx\left(323b^2+570bcx+255c^2x^2\right)\right)+429x^3\left(23A\left(2261b^3+5985b^2cx+5355bc^2x^2+1615c^3x^3\right)+15Bx\left(3059b^3+8211b^2cx+7429bc^2x^2+2261c^3x^3\right)\right)\right)}{334639305}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(9/2)*(3380195*a^3*(11*A + 9*B*x) + 468027*a^2*x*(15*A*(13*b + 11*c*x)
 + 11*B*x*(15*b + 13*c*x)) + 15939*a*x^2*(19*A*(255*b^2 + 442*b*c*x + 195*c
^2*x^2) + 13*B*x*(323*b^2 + 570*b*c*x + 255*c^2*x^2)) + 429*x^3*(23*A*(2261
*b^3 + 5985*b^2*c*x + 5355*b*c^2*x^2 + 1615*c^3*x^3) + 15*B*x*(3059*b^3 + 8
211*b^2*c*x + 7429*b*c^2*x^2 + 2261*c^3*x^3))))/334639305
```

IntegrateAlgebraic [A] time = 0.12, size = 237, normalized size = 1.30

$$\frac{2\left(37182145a^3Ax^{9/2}+30421755a^3Bx^{11/2}+91265265a^2Abx^{11/2}+77224455a^2Acx^{13/2}+77224455a^2bBx^{13/2}+66927861a^2Bcx^{15/2}+77224455aAb^2x^{13/2}+133855722aAbcx^{15/2}+59053995aAc^2x^{17/2}+66927861ab^2Bx^{15/2}+118107990abBcx^{17/2}+52837785aBc^2x^{19/2}+22309287Ab^3x^{15/2}+59053995Ab^2cx^{17/2}+52837785Abc^2x^{19/2}+15935205Ac^3x^{21/2}+19684665b^3Bx^{17/2}+52837785b^2Bcx^{19/2}+47805615bBc^2x^{21/2}+14549535Bc^3x^{23/2}\right)}{334639305}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(37182145*a^3*A*x^(9/2) + 91265265*a^2*A*b*x^(11/2) + 30421755*a^3*B*x^(
11/2) + 77224455*a*A*b^2*x^(13/2) + 77224455*a^2*b*B*x^(13/2) + 77224455*a^
2*A*c*x^(13/2) + 22309287*A*b^3*x^(15/2) + 66927861*a*b^2*B*x^(15/2) + 1338
55722*a*A*b*c*x^(15/2) + 66927861*a^2*B*c*x^(15/2) + 19684665*b^3*B*x^(17/2
) + 59053995*A*b^2*c*x^(17/2) + 118107990*a*b*B*c*x^(17/2) + 59053995*a*A*c
^2*x^(17/2) + 52837785*b^2*B*c*x^(19/2) + 52837785*A*b*c^2*x^(19/2) + 52837
785*a*B*c^2*x^(19/2) + 47805615*b*B*c^2*x^(21/2) + 15935205*A*c^3*x^(21/2)
+ 14549535*B*c^3*x^(23/2)))/334639305
```

fricas [A] time = 0.42, size = 171, normalized size = 0.94

$$\frac{2}{334639305}\left(14549535\,Bc^{3}x^{11}+15935205\left(3\,Bbc^{2}+Ac^{3}\right)x^{10}+52837785\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{9}+19684665\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{8}+37182145\,Aa^{3}x^{4}+22309287\left(3\,Bab^{2}+Ab^{3}+3\left(Ba^{2}+2\,Aab\right)c\right)x^{7}+77224455\left(Ba^{2}b+Aab^{2}+Aa^{2}c\right)x^{6}+30421755\left(Ba^{3}+3\,Aa^{2}b\right)x^{5}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/334639305*(14549535*B*c^3*x^11 + 15935205*(3*B*b*c^2 + A*c^3)*x^10 + 5283
7785*(B*b^2*c + (B*a + A*b)*c^2)*x^9 + 19684665*(B*b^3 + 3*A*a*c^2 + 3*(2*B
*a*b + A*b^2)*c)*x^8 + 37182145*A*a^3*x^4 + 22309287*(3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*x^7 + 77224455*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^6 + 30
421755*(B*a^3 + 3*A*a^2*b)*x^5)*sqrt(x)
```

giac [A] time = 0.23, size = 193, normalized size = 1.06

$$\frac{2}{23}\,Bc^{3}x^{\frac{23}{2}}+\frac{2}{7}\,Bbc^{2}x^{\frac{21}{2}}+\frac{2}{21}\,Ac^{3}x^{\frac{21}{2}}+\frac{6}{19}\,Bb^{2}cx^{\frac{19}{2}}+\frac{6}{19}\,Bac^{2}x^{\frac{19}{2}}+\frac{6}{19}\,Abc^{2}x^{\frac{19}{2}}+\frac{2}{17}\,Bb^{3}x^{\frac{17}{2}}+\frac{12}{17}\,Babcx^{\frac{17}{2}}+\frac{6}{17}\,Ab^{2}cx^{\frac{17}{2}}+\frac{6}{17}\,Aac^{2}x^{\frac{17}{2}}+\frac{2}{5}\,Bab^{2}x^{\frac{15}{2}}+\frac{2}{15}\,Ab^{3}x^{\frac{15}{2}}+\frac{2}{5}\,Ba^{2}cx^{\frac{15}{2}}+\frac{4}{5}\,Aabcx^{\frac{15}{2}}+\frac{6}{13}\,Ba^{2}bx^{\frac{13}{2}}+\frac{6}{13}\,Aab^{2}x^{\frac{13}{2}}+\frac{6}{13}\,Aa^{2}cx^{\frac{13}{2}}+\frac{2}{11}\,Ba^{3}x^{\frac{11}{2}}+\frac{6}{11}\,Aa^{2}bx^{\frac{11}{2}}+\frac{2}{9}\,Aa^{3}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/7*B*b*c^2*x^(21/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*b
^2*c*x^(19/2) + 6/19*B*a*c^2*x^(19/2) + 6/19*A*b*c^2*x^(19/2) + 2/17*B*b^3*
x^(17/2) + 12/17*B*a*b*c*x^(17/2) + 6/17*A*b^2*c*x^(17/2) + 6/17*A*a*c^2*x^
(17/2) + 2/5*B*a*b^2*x^(15/2) + 2/15*A*b^3*x^(15/2) + 2/5*B*a^2*c*x^(15/2)
+ 4/5*A*a*b*c*x^(15/2) + 6/13*B*a^2*b*x^(13/2) + 6/13*A*a*b^2*x^(13/2) + 6/
13*A*a^2*c*x^(13/2) + 2/11*B*a^3*x^(11/2) + 6/11*A*a^2*b*x^(11/2) + 2/9*A*a
^3*x^(9/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$\frac{2\left(14549535B\,c^{3}x^{7}+15935205A\,c^{3}x^{6}+47805615x^{6}Bb\,c^{2}+52837785x^{5}Ab\,c^{2}+52837785Ba\,c^{2}x^{5}+52837785x^{5}B\,b^{2}c+59053995Aa\,c^{2}x^{4}+59053995x^{4}A\,b^{2}c+118107990x^{4}abBc+19684665x^{4}b^{3}B+133855722x^{3}Aabc+22309287A\,b^{3}x^{3}+66927861B\,a^{2}c\,x^{3}+66927861x^{3}Ba\,b^{2}+77224455A\,a^{2}c\,x^{2}+77224455x^{2}Aa\,b^{2}+77224455B\,a^{2}b\,x^{2}+91265265xA\,a^{2}b+30421755B\,a^{3}x+37182145A\,a^{3}\right)x^{\frac{9}{2}}}{334639305}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/334639305*x^(9/2)*(14549535*B*c^3*x^7+15935205*A*c^3*x^6+47805615*B*b*c^2
*x^6+52837785*A*b*c^2*x^5+52837785*B*a*c^2*x^5+52837785*B*b^2*c*x^5+5905399
5*A*a*c^2*x^4+59053995*A*b^2*c*x^4+118107990*B*a*b*c*x^4+19684665*B*b^3*x^4
+133855722*A*a*b*c*x^3+22309287*A*b^3*x^3+66927861*B*a^2*c*x^3+66927861*B*a
*b^2*x^3+77224455*A*a^2*c*x^2+77224455*A*a*b^2*x^2+77224455*B*a^2*b*x^2+912
65265*A*a^2*b*x+30421755*B*a^3*x+37182145*A*a^3)
```

maxima [A] time = 0.56, size = 166, normalized size = 0.91

$$\frac{2}{23}\,Bc^{3}x^{\frac{23}{2}}+\frac{2}{21}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{21}{2}}+\frac{6}{19}\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{\frac{19}{2}}+\frac{2}{17}\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{\frac{17}{2}}+\frac{2}{9}\,Aa^{3}x^{\frac{9}{2}}+\frac{2}{15}\left(3\,Bab^{2}+Ab^{3}+3\left(Ba^{2}+2\,Aab\right)c\right)x^{\frac{15}{2}}+\frac{6}{13}\left(Ba^{2}b+Aab^{2}+Aa^{2}c\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Ba^{3}+3\,Aa^{2}b\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/21*(3*B*b*c^2 + A*c^3)*x^(21/2) + 6/19*(B*b^2*c + (
B*a + A*b)*c^2)*x^(19/2) + 2/17*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
```

```
*x^(17/2) + 2/9*A*a^3*x^(9/2) + 2/15*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*x^(15/2) + 6/13*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(13/2) + 2/11*(B*a^3
+ 3*A*a^2*b)*x^(11/2)
```

mupad [B] time = 0.07, size = 169, normalized size = 0.93

$$x^{15/2}\left(\frac{2Bca^2}{5}+\frac{2Bab^2}{5}+\frac{4Acab}{5}+\frac{2Ab^3}{15}\right)+x^{17/2}\left(\frac{2Bb^3}{17}+\frac{6Ab^2c}{17}+\frac{12Babc}{17}+\frac{6Aac^2}{17}\right)+x^{11/2}\left(\frac{2Ba^3}{11}+\frac{6Aba^2}{11}\right)+x^{21/2}\left(\frac{2Ac^3}{21}+\frac{2Bbc^2}{7}\right)+x^{13/2}\left(\frac{6Ba^2b}{13}+\frac{6Aca^2}{13}+\frac{6Aab^2}{13}\right)+x^{19/2}\left(\frac{6Bb^2c}{19}+\frac{6Abc^2}{19}+\frac{6Bac^2}{19}\right)+\frac{2Aa^3x^{9/2}}{9}+\frac{2Bc^3x^{23/2}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(15/2)*((2*A*b^3)/15 + (2*B*a*b^2)/5 + (2*B*a^2*c)/5 + (4*A*a*b*c)/5) + x
^(17/2)*((2*B*b^3)/17 + (6*A*a*c^2)/17 + (6*A*b^2*c)/17 + (12*B*a*b*c)/17)
+ x^(11/2)*((2*B*a^3)/11 + (6*A*a^2*b)/11) + x^(21/2)*((2*A*c^3)/21 + (2*B*
b*c^2)/7) + x^(13/2)*((6*A*a*b^2)/13 + (6*A*a^2*c)/13 + (6*B*a^2*b)/13) + x
^(19/2)*((6*A*b*c^2)/19 + (6*B*a*c^2)/19 + (6*B*b^2*c)/19) + (2*A*a^3*x^(9/
2))/9 + (2*B*c^3*x^(23/2))/23
```

sympy [A] time = 36.59, size = 294, normalized size = 1.62

$$\frac{2Aa^3x^{\frac{9}{2}}}{9}+\frac{6Aa^2bx^{\frac{11}{2}}}{11}+\frac{6Aa^2cx^{\frac{13}{2}}}{13}+\frac{6Aab^2x^{\frac{13}{2}}}{13}+\frac{4Aabcx^{\frac{15}{2}}}{5}+\frac{6Aac^2x^{\frac{17}{2}}}{17}+\frac{2Ab^3x^{\frac{15}{2}}}{15}+\frac{6Ab^2cx^{\frac{17}{2}}}{17}+\frac{6Abc^2x^{\frac{19}{2}}}{19}+\frac{2Ac^3x^{\frac{21}{2}}}{21}+\frac{2Ba^3x^{\frac{11}{2}}}{11}+\frac{6Ba^2bx^{\frac{13}{2}}}{13}+\frac{2Ba^2cx^{\frac{15}{2}}}{5}+\frac{2Bab^2x^{\frac{15}{2}}}{5}+\frac{12Babcx^{\frac{17}{2}}}{17}+\frac{6Bac^2x^{\frac{19}{2}}}{19}+\frac{2Bb^3x^{\frac{17}{2}}}{17}+\frac{6Bb^2cx^{\frac{19}{2}}}{19}+\frac{2Bbc^2x^{\frac{21}{2}}}{7}+\frac{2Bc^3x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] 2*A*a**3*x**(9/2)/9 + 6*A*a**2*b*x**(11/2)/11 + 6*A*a**2*c*x**(13/2)/13 + 6
*A*a*b**2*x**(13/2)/13 + 4*A*a*b*c*x**(15/2)/5 + 6*A*a*c**2*x**(17/2)/17 +
2*A*b**3*x**(15/2)/15 + 6*A*b**2*c*x**(17/2)/17 + 6*A*b*c**2*x**(19/2)/19 +
 2*A*c**3*x**(21/2)/21 + 2*B*a**3*x**(11/2)/11 + 6*B*a**2*b*x**(13/2)/13 +
2*B*a**2*c*x**(15/2)/5 + 2*B*a*b**2*x**(15/2)/5 + 12*B*a*b*c*x**(17/2)/17 +
 6*B*a*c**2*x**(19/2)/19 + 2*B*b**3*x**(17/2)/17 + 6*B*b**2*c*x**(19/2)/19
+ 2*B*b*c**2*x**(21/2)/7 + 2*B*c**3*x**(23/2)/23
```

3.925 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^2x^{9/2}(aB+3Ab)+\frac{6}{17}cx^{17/2}\left(aBc+Abc+b^2B\right)+\frac{6}{11}ax^{11/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{15}x^{15/2}\left(3aAc^2+6ab\right.$$

Rubi [A] time = 0.12, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{9}a^2x^{9/2}(aB+3Ab)+\frac{2}{7}a^3Ax^{7/2}+\frac{2}{15}x^{15/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{17}cx^{17/2}\left(aBc+Abc+b^2B\right)+\frac{2}{13}x^{13/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{6}{11}ax^{11/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{2}{21}Bc^3x^{21/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(7/2))/7 + (2*a^2*(3*A*b + a*B)*x^(9/2))/9 + (6*a*(a*b*B + A*(b^
2 + a*c))*x^(11/2))/11 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(13/2
))/13 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(15/2))/15 + (6*c*
(b^2*B + A*b*c + a*B*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 +
(2*B*c^3*x^(21/2))/21
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx=\int\left(a^3Ax^{5/2}+a^2(3Ab+aB)x^{7/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{9/2}+\left(3aB\left(b^2+\right.\right.\right.$$
$$=\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^2(3Ab+aB)x^{9/2}+\frac{6}{11}a\left(abB+A\left(b^2+ac\right)\right)x^{11/2}+\frac{2}{13}\left(3aB\right.$$

Mathematica [A] time = 0.23, size = 178, normalized size = 0.98

$$\frac{2x^{7/2}\left(230945a^3(9A+7Bx)+33915a^2x(13A(11b+9cx)+9Bx(13b+11cx))+1197ax^2\left(17A\left(195b^2+330bcx+143c^2x^2\right)+11Bx\left(255b^2+442bcx+195c^2x^2\right)\right)+33x^3\left(21A\left(1615b^3+4199b^2cx+3705bc^2x^2+1105c^3x^3\right)+13Bx\left(2261b^3+5985b^2cx+5355bc^2x^2+1615c^3x^3\right)\right)\right)}{14549535}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(7/2)*(230945*a^3*(9*A + 7*B*x) + 33915*a^2*x*(13*A*(11*b + 9*c*x) + 9
*B*x*(13*b + 11*c*x)) + 1197*a*x^2*(17*A*(195*b^2 + 330*b*c*x + 143*c^2*x^2
) + 11*B*x*(255*b^2 + 442*b*c*x + 195*c^2*x^2)) + 33*x^3*(21*A*(1615*b^3 +
4199*b^2*c*x + 3705*b*c^2*x^2 + 1105*c^3*x^3) + 13*B*x*(2261*b^3 + 5985*b^2
*c*x + 5355*b*c^2*x^2 + 1615*c^3*x^3))))/14549535
```

IntegrateAlgebraic [A] time = 0.12, size = 237, normalized size = 1.30

$$\frac{2\left(2078505a^3Ax^{7/2}+1616615a^3Bx^{9/2}+4849845a^2Abx^{9/2}+3968055a^2Acx^{11/2}+3968055a^2bBx^{11/2}+3357585a^2Bcx^{13/2}+3968055aAb^2x^{11/2}+6715170aAbcx^{13/2}+2909907aAc^2x^{15/2}+3357585ab^2Bx^{13/2}+5819814abBcx^{15/2}+2567565aBc^2x^{17/2}+1119195Ab^3x^{13/2}+2909907Ab^2cx^{15/2}+2567565Abc^2x^{17/2}+765765Ac^3x^{19/2}+969969b^3Bx^{15/2}+2567565b^2Bcx^{17/2}+2297295bBc^2x^{19/2}+692835Bc^3x^{21/2}\right)}{14549535}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

[Out] (2*(2078505*a^3*A*x^(7/2) + 4849845*a^2*A*b*x^(9/2) + 1616615*a^3*B*x^(9/2) + 3968055*a*A*b^2*x^(11/2) + 3968055*a^2*b*B*x^(11/2) + 3968055*a^2*A*c*x^(11/2) + 1119195*A*b^3*x^(13/2) + 3357585*a*b^2*B*x^(13/2) + 6715170*a*A*b*c*x^(13/2) + 3357585*a^2*B*c*x^(13/2) + 969969*b^3*B*x^(15/2) + 2909907*A*b^2*c*x^(15/2) + 5819814*a*b*B*c*x^(15/2) + 2909907*a*A*c^2*x^(15/2) + 2567565*b^2*B*c*x^(17/2) + 2567565*A*b*c^2*x^(17/2) + 2567565*a*B*c^2*x^(17/2) + 2297295*b*B*c^2*x^(19/2) + 765765*A*c^3*x^(19/2) + 692835*B*c^3*x^(21/2)))/14549535

fricas [A] time = 0.42, size = 171, normalized size = 0.94

$$\frac{2}{14549535}\left(692835\,Bc^3x^{10}+765765\left(3\,Bbc^2+Ac^3\right)x^9+2567565\left(Bb^2c+(Ba+Ab)c^2\right)x^8+969969\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^7+2078505\,Aa^3x^3+1119195\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^6+3968055\left(Ba^2b+Aab^2+Aa^2c\right)x^5+1616615\left(Ba^3+3\,Aa^2b\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")

[Out] 2/14549535*(692835*B*c^3*x^10 + 765765*(3*B*b*c^2 + A*c^3)*x^9 + 2567565*(B*b^2*c + (B*a + A*b)*c^2)*x^8 + 969969*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^7 + 2078505*A*a^3*x^3 + 1119195*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^6 + 3968055*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^5 + 1616615*(B*a^3 + 3*A*a^2*b)*x^4)*sqrt(x)

giac [A] time = 0.20, size = 193, normalized size = 1.06

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}}+\frac{6}{19}\,Bbc^2x^{\frac{19}{2}}+\frac{2}{19}\,Ac^3x^{\frac{19}{2}}+\frac{6}{17}\,Bb^2cx^{\frac{17}{2}}+\frac{6}{17}\,Bac^2x^{\frac{17}{2}}+\frac{6}{17}\,Abc^2x^{\frac{17}{2}}+\frac{2}{15}\,Bb^3x^{\frac{15}{2}}+\frac{4}{5}\,Babcx^{\frac{15}{2}}+\frac{2}{5}\,Ab^2cx^{\frac{15}{2}}+\frac{2}{5}\,Aac^2x^{\frac{15}{2}}+\frac{6}{13}\,Bab^2x^{\frac{13}{2}}+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}+\frac{6}{13}\,Ba^2cx^{\frac{13}{2}}+\frac{12}{13}\,Aabcx^{\frac{13}{2}}+\frac{6}{11}\,Ba^2bx^{\frac{11}{2}}+\frac{6}{11}\,Aab^2x^{\frac{11}{2}}+\frac{6}{11}\,Aa^2cx^{\frac{11}{2}}+\frac{2}{9}\,Ba^3x^{\frac{9}{2}}+\frac{2}{3}\,Aa^2bx^{\frac{9}{2}}+\frac{2}{7}\,Aa^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")

[Out] 2/21*B*c^3*x^(21/2) + 6/19*B*b*c^2*x^(19/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*b^2*c*x^(17/2) + 6/17*B*a*c^2*x^(17/2) + 6/17*A*b*c^2*x^(17/2) + 2/15*B*b^3*x^(15/2) + 4/5*B*a*b*c*x^(15/2) + 2/5*A*b^2*c*x^(15/2) + 2/5*A*a*c^2*x^(15/2) + 6/13*B*a*b^2*x^(13/2) + 2/13*A*b^3*x^(13/2) + 6/13*B*a^2*c*x^(13/2) + 12/13*A*a*b*c*x^(13/2) + 6/11*B*a^2*b*x^(11/2) + 6/11*A*a*b^2*x^(11/2) + 6/11*A*a^2*c*x^(11/2) + 2/9*B*a^3*x^(9/2) + 2/3*A*a^2*b*x^(9/2) + 2/7*A*a^3*x^(7/2)

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$\frac{2\left(692835B\,c^3x^7+765765A\,c^3x^6+2297295x^6Bb\,c^2+2567565x^5Ab\,c^2+2567565Ba\,c^2x^5+2567565x^5B\,b^2c+2909907Aa\,c^2x^4+2909907x^4A\,b^2c+5819814x^4abBc+969969x^4b^3B+6715170x^3Aabc+1119195A\,b^3x^3+3357585B\,a^2c\,x^3+3357585x^3Ba\,b^2+3968055A\,a^2c\,x^2+3968055x^2Aa\,b^2+3968055B\,a^2b\,x^2+4849845xA\,a^2b+1616615B\,a^3x+2078505A\,a^3\right)x^{\frac{7}{2}}}{14549535}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x)

[Out] 2/14549535*x^(7/2)*(692835*B*c^3*x^7+765765*A*c^3*x^6+2297295*B*b*c^2*x^6+2567565*A*b*c^2*x^5+2567565*B*a*c^2*x^5+2567565*B*b^2*c*x^5+2909907*A*a*c^2*x^4+2909907*A*b^2*c*x^4+5819814*B*a*b*c*x^4+969969*B*b^3*x^4+6715170*A*a*b*c*x^3+1119195*A*b^3*x^3+3357585*B*a^2*c*x^3+3357585*B*a*b^2*x^3+3968055*A*a^2*c*x^2+3968055*A*a*b^2*x^2+3968055*B*a^2*b*x^2+4849845*A*a^2*b*x+1616615*B*a^3*x+2078505*A*a^3)

maxima [A] time = 0.68, size = 166, normalized size = 0.91

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}}+\frac{2}{19}\left(3\,Bbc^2+Ac^3\right)x^{\frac{19}{2}}+\frac{6}{17}\left(Bb^2c+(Ba+Ab)c^2\right)x^{\frac{17}{2}}+\frac{2}{15}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^{\frac{15}{2}}+\frac{2}{7}\,Aa^3x^{\frac{7}{2}}+\frac{2}{13}\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^{\frac{13}{2}}+\frac{6}{11}\left(Ba^2b+Aab^2+Aa^2c\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Ba^3+3\,Aa^2b\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")

[Out] 2/21*B*c^3*x^(21/2) + 2/19*(3*B*b*c^2 + A*c^3)*x^(19/2) + 6/17*(B*b^2*c + (B*a + A*b)*c^2)*x^(17/2) + 2/15*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)

```
*x^(15/2) + 2/7*A*a^3*x^(7/2) + 2/13*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*x^(13/2) + 6/11*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(11/2) + 2/9*(B*a^3 +
 3*A*a^2*b)*x^(9/2)
```

mupad [B] time = 1.27, size = 169, normalized size = 0.93

$$x^{13/2}\left(\frac{6\,B\,c\,a^2}{13}+\frac{6\,B\,a\,b^2}{13}+\frac{12\,A\,c\,a\,b}{13}+\frac{2\,A\,b^3}{13}\right)+x^{15/2}\left(\frac{2\,B\,b^3}{15}+\frac{2\,A\,b^2\,c}{5}+\frac{4\,B\,a\,b\,c}{5}+\frac{2\,A\,a\,c^2}{5}\right)+x^{9/2}\left(\frac{2\,B\,a^3}{9}+\frac{2\,A\,b\,a^2}{3}\right)+x^{19/2}\left(\frac{2\,A\,c^3}{19}+\frac{6\,B\,b\,c^2}{19}\right)+x^{11/2}\left(\frac{6\,B\,a^2\,b}{11}+\frac{6\,A\,c\,a^2}{11}+\frac{6\,A\,a\,b^2}{11}\right)+x^{17/2}\left(\frac{6\,B\,b^2\,c}{17}+\frac{6\,A\,b\,c^2}{17}+\frac{6\,B\,a\,c^2}{17}\right)+\frac{2\,A\,a^3\,x^{7/2}}{7}+\frac{2\,B\,c^3\,x^{21/2}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(13/2)*((2*A*b^3)/13 + (6*B*a*b^2)/13 + (6*B*a^2*c)/13 + (12*A*a*b*c)/13)
 + x^(15/2)*((2*B*b^3)/15 + (2*A*a*c^2)/5 + (2*A*b^2*c)/5 + (4*B*a*b*c)/5)
+ x^(9/2)*((2*B*a^3)/9 + (2*A*a^2*b)/3) + x^(19/2)*((2*A*c^3)/19 + (6*B*b*c
^2)/19) + x^(11/2)*((6*A*a*b^2)/11 + (6*A*a^2*c)/11 + (6*B*a^2*b)/11) + x^(
17/2)*((6*A*b*c^2)/17 + (6*B*a*c^2)/17 + (6*B*b^2*c)/17) + (2*A*a^3*x^(7/2)
)/7 + (2*B*c^3*x^(21/2))/21
```

sympy [A] time = 17.20, size = 294, normalized size = 1.62

$$\frac{2Aa^3x^{\frac{7}{2}}}{7}+\frac{2Aa^2bx^{\frac{9}{2}}}{3}+\frac{6Aa^2cx^{\frac{11}{2}}}{11}+\frac{6Aab^2x^{\frac{11}{2}}}{11}+\frac{12Aabcx^{\frac{13}{2}}}{13}+\frac{2Aac^2x^{\frac{15}{2}}}{5}+\frac{2Ab^3x^{\frac{13}{2}}}{13}+\frac{2Ab^2cx^{\frac{15}{2}}}{5}+\frac{6Abc^2x^{\frac{17}{2}}}{17}+\frac{2Ac^3x^{\frac{19}{2}}}{19}+\frac{2Ba^3x^{\frac{9}{2}}}{9}+\frac{6Ba^2bx^{\frac{11}{2}}}{11}+\frac{6Ba^2cx^{\frac{13}{2}}}{13}+\frac{6Bab^2x^{\frac{13}{2}}}{13}+\frac{4Babcx^{\frac{15}{2}}}{5}+\frac{6Bac^2x^{\frac{17}{2}}}{17}+\frac{2Bb^3x^{\frac{15}{2}}}{15}+\frac{6Bb^2cx^{\frac{17}{2}}}{17}+\frac{6Bbc^2x^{\frac{19}{2}}}{19}+\frac{2Bc^3x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] 2*A*a**3*x**(7/2)/7 + 2*A*a**2*b*x**(9/2)/3 + 6*A*a**2*c*x**(11/2)/11 + 6*A
*a*b**2*x**(11/2)/11 + 12*A*a*b*c*x**(13/2)/13 + 2*A*a*c**2*x**(15/2)/5 + 2
*A*b**3*x**(13/2)/13 + 2*A*b**2*c*x**(15/2)/5 + 6*A*b*c**2*x**(17/2)/17 + 2
*A*c**3*x**(19/2)/19 + 2*B*a**3*x**(9/2)/9 + 6*B*a**2*b*x**(11/2)/11 + 6*B*
a**2*c*x**(13/2)/13 + 6*B*a*b**2*x**(13/2)/13 + 4*B*a*b*c*x**(15/2)/5 + 6*B
*a*c**2*x**(17/2)/17 + 2*B*b**3*x**(15/2)/15 + 6*B*b**2*c*x**(17/2)/17 + 6*
B*b*c**2*x**(19/2)/19 + 2*B*c**3*x**(21/2)/21
```

3.926 $\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^2x^{7/2}(aB+3Ab)+\frac{2}{5}cx^{15/2}\left(aBc+Abc+b^2B\right)+\frac{2}{3}ax^{9/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{13}x^{13/2}\left(3aAc^2+6ab$$

Rubi [A] time = 0.11, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{7}a^2x^{7/2}(aB+3Ab)+\frac{2}{5}a^3Ax^{5/2}+\frac{2}{13}x^{13/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{2}{5}cx^{15/2}\left(aBc+Abc+b^2B\right)+\frac{2}{11}x^{11/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{2}{3}ax^{9/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{17}c^2x^{17/2}(Ac+3bB)+\frac{2}{19}Bc^3x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(5/2))/5 + (2*a^2*(3*A*b + a*B)*x^(7/2))/7 + (2*a*(a*b*B + A*(b^
2 + a*c))*x^(9/2))/3 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(11/2))
/11 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(13/2))/13 + (2*c*(b
^2*B + A*b*c + a*B*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(17/2))/17 + (2*
B*c^3*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int\left(a^3Ax^{3/2}+a^2(3Ab+aB)x^{5/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{7/2}+\left(3aB\left(b\right.\right.\right.\\ &= \frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^2(3Ab+aB)x^{7/2}+\frac{2}{3}a\left(abB+A\left(b^2+ac\right)\right)x^{9/2}+\frac{2}{11}\left(3aB\right.\end{aligned}$$

Mathematica [A] time = 0.19, size = 178, normalized size = 0.98

$$\frac{2x^{5/2}\left(138567a^3(7A+5Bx)+20995a^2x(11A(9b+7cx)+7Bx(11b+9cx))+2261ax^2\left(5A\left(143b^2+234bcx+99c^2x^2\right)+3Bx\left(195b^2+330bcx+143c^2x^2\right)\right)+21x^3\left(19A\left(1105b^3+2805b^2cx+2431bc^2x^2+715c^3x^3\right)+11Bx\left(1615b^3+4199b^2cx+3705bc^2x^2+1105c^3x^3\right)\right)\right)}{4849845}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(5/2)*(138567*a^3*(7*A + 5*B*x) + 20995*a^2*x*(11*A*(9*b + 7*c*x) + 7*
B*x*(11*b + 9*c*x)) + 2261*a*x^2*(5*A*(143*b^2 + 234*b*c*x + 99*c^2*x^2) +
3*B*x*(195*b^2 + 330*b*c*x + 143*c^2*x^2)) + 21*x^3*(19*A*(1105*b^3 + 2805*
b^2*c*x + 2431*b*c^2*x^2 + 715*c^3*x^3) + 11*B*x*(1615*b^3 + 4199*b^2*c*x +
 3705*b*c^2*x^2 + 1105*c^3*x^3))))/4849845
```

IntegrateAlgebraic [A] time = 0.10, size = 237, normalized size = 1.30

$$\frac{2\left(969969a^3Ax^{5/2}+692835a^3Bx^{7/2}+2078505a^2Abx^{7/2}+1616615a^2Acx^{9/2}+1616615a^2bBx^{9/2}+1322685a^2Bcx^{11/2}+1616615aAb^2x^{9/2}+2645370aAbcx^{11/2}+1119195aAc^2x^{13/2}+1322685ab^2Bx^{11/2}+2238390abBcx^{13/2}+969969aBc^2x^{15/2}+440895Ab^3x^{11/2}+1119195Ab^2cx^{13/2}+969969Abc^2x^{15/2}+285285Ac^3x^{17/2}+373065b^3Bx^{13/2}+969969b^2Bcx^{15/2}+855855bBc^2x^{17/2}+255255Bc^3x^{19/2}\right)}{4849845}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(969969*a^3*A*x^(5/2) + 2078505*a^2*A*b*x^(7/2) + 692835*a^3*B*x^(7/2) +
 1616615*a*A*b^2*x^(9/2) + 1616615*a^2*b*B*x^(9/2) + 1616615*a^2*A*c*x^(9/2
) + 440895*A*b^3*x^(11/2) + 1322685*a*b^2*B*x^(11/2) + 2645370*a*A*b*c*x^(1
1/2) + 1322685*a^2*B*c*x^(11/2) + 373065*b^3*B*x^(13/2) + 1119195*A*b^2*c*x
^(13/2) + 2238390*a*b*B*c*x^(13/2) + 1119195*a*A*c^2*x^(13/2) + 969969*b^2*
B*c*x^(15/2) + 969969*A*b*c^2*x^(15/2) + 969969*a*B*c^2*x^(15/2) + 855855*b
*B*c^2*x^(17/2) + 285285*A*c^3*x^(17/2) + 255255*B*c^3*x^(19/2)))/4849845
```

fricas [A] time = 0.44, size = 171, normalized size = 0.94

$$\frac{2}{4849845}\left(255255\,Bc^3x^9+285285\left(3\,Bbc^2+Ac^3\right)x^8+969969\left(Bb^2c+(Ba+Ab)c^2\right)x^7+373065\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^6+969969\,Aa^3x^2+440895\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^5+1616615\left(Ba^2b+Aab^2+Aa^2c\right)x^4+692835\left(Ba^3+3\,Aa^2b\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(255255*B*c^3*x^9 + 285285*(3*B*b*c^2 + A*c^3)*x^8 + 969969*(B*b^
2*c + (B*a + A*b)*c^2)*x^7 + 373065*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*x^6 + 969969*A*a^3*x^2 + 440895*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*x^5 + 1616615*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^4 + 692835*(B*a^3 + 3*A
*a^2*b)*x^3)*sqrt(x)
```

giac [A] time = 0.18, size = 193, normalized size = 1.06

$$\frac{2}{19}\,Bc^3x^{\frac{19}{2}}+\frac{6}{17}\,Bbc^2x^{\frac{17}{2}}+\frac{2}{17}\,Ac^3x^{\frac{17}{2}}+\frac{2}{5}\,Bb^2cx^{\frac{15}{2}}+\frac{2}{5}\,Bac^2x^{\frac{15}{2}}+\frac{2}{5}\,Abc^2x^{\frac{15}{2}}+\frac{2}{13}\,Bb^3x^{\frac{13}{2}}+\frac{12}{13}\,Babcx^{\frac{13}{2}}+\frac{6}{13}\,Ab^2cx^{\frac{13}{2}}+\frac{6}{13}\,Aac^2x^{\frac{13}{2}}+\frac{6}{11}\,Bab^2x^{\frac{11}{2}}+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}+\frac{6}{11}\,Ba^2cx^{\frac{11}{2}}+\frac{12}{11}\,Aabcx^{\frac{11}{2}}+\frac{2}{3}\,Ba^2bx^{\frac{9}{2}}+\frac{2}{3}\,Aab^2x^{\frac{9}{2}}+\frac{2}{3}\,Aa^2cx^{\frac{9}{2}}+\frac{2}{7}\,Ba^3x^{\frac{7}{2}}+\frac{6}{7}\,Aa^2bx^{\frac{7}{2}}+\frac{2}{5}\,Aa^3x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 6/17*B*b*c^2*x^(17/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*b
^2*c*x^(15/2) + 2/5*B*a*c^2*x^(15/2) + 2/5*A*b*c^2*x^(15/2) + 2/13*B*b^3*x^
(13/2) + 12/13*B*a*b*c*x^(13/2) + 6/13*A*b^2*c*x^(13/2) + 6/13*A*a*c^2*x^(1
3/2) + 6/11*B*a*b^2*x^(11/2) + 2/11*A*b^3*x^(11/2) + 6/11*B*a^2*c*x^(11/2)
+ 12/11*A*a*b*c*x^(11/2) + 2/3*B*a^2*b*x^(9/2) + 2/3*A*a*b^2*x^(9/2) + 2/3*
A*a^2*c*x^(9/2) + 2/7*B*a^3*x^(7/2) + 6/7*A*a^2*b*x^(7/2) + 2/5*A*a^3*x^(5/
2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$\frac{2\left(255255B\,c^3x^7+285285A\,c^3x^6+855855x^6Bb\,c^2+969969x^5Ab\,c^2+969969Ba\,c^2x^5+969969x^5B\,b^2c+1119195Aa\,c^2x^4+1119195x^4A\,b^2c+2238390x^4abBc+373065x^4b^3B+2645370x^3Aabc+440895A\,b^3x^3+1322685B\,a^2c\,x^3+1322685x^3Ba\,b^2+1616615A\,a^2c\,x^2+1616615x^2Aa\,b^2+1616615B\,a^2b\,x^2+2078505xA\,a^2b+692835B\,a^3x+969969A\,a^3\right)x^{\frac{5}{2}}}{4849845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/4849845*x^(5/2)*(255255*B*c^3*x^7+285285*A*c^3*x^6+855855*B*b*c^2*x^6+969
969*A*b*c^2*x^5+969969*B*a*c^2*x^5+969969*B*b^2*c*x^5+1119195*A*a*c^2*x^4+1
119195*A*b^2*c*x^4+2238390*B*a*b*c*x^4+373065*B*b^3*x^4+2645370*A*a*b*c*x^3
+440895*A*b^3*x^3+1322685*B*a^2*c*x^3+1322685*B*a*b^2*x^3+1616615*A*a^2*c*x
^2+1616615*A*a*b^2*x^2+1616615*B*a^2*b*x^2+2078505*A*a^2*b*x+692835*B*a^3*x
+969969*A*a^3)
```

maxima [A] time = 0.66, size = 166, normalized size = 0.91

$$\frac{2}{19}\,Bc^3x^{\frac{19}{2}}+\frac{2}{17}\left(3\,Bbc^2+Ac^3\right)x^{\frac{17}{2}}+\frac{2}{5}\left(Bb^2c+(Ba+Ab)c^2\right)x^{\frac{15}{2}}+\frac{2}{13}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^{\frac{13}{2}}+\frac{2}{5}\,Aa^3x^{\frac{5}{2}}+\frac{2}{11}\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^{\frac{11}{2}}+\frac{2}{3}\left(Ba^2b+Aab^2+Aa^2c\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Ba^3+3\,Aa^2b\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/17*(3*B*b*c^2 + A*c^3)*x^(17/2) + 2/5*(B*b^2*c + (B
*a + A*b)*c^2)*x^(15/2) + 2/13*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
```

```
x^(13/2) + 2/5*A*a^3*x^(5/2) + 2/11*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b
)*c)*x^(11/2) + 2/3*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(9/2) + 2/7*(B*a^3 + 3*
A*a^2*b)*x^(7/2)
```

mupad [B] time = 0.05, size = 169, normalized size = 0.93

$$x^{11/2}\left(\frac{6\,B\,c\,a^2}{11}+\frac{6\,B\,a\,b^2}{11}+\frac{12\,A\,c\,a\,b}{11}+\frac{2\,A\,b^3}{11}\right)+x^{13/2}\left(\frac{2\,B\,b^3}{13}+\frac{6\,A\,b^2\,c}{13}+\frac{12\,B\,a\,b\,c}{13}+\frac{6\,A\,a\,c^2}{13}\right)+x^{7/2}\left(\frac{2\,B\,a^3}{7}+\frac{6\,A\,b\,a^2}{7}\right)+x^{17/2}\left(\frac{2\,A\,c^3}{17}+\frac{6\,B\,b\,c^2}{17}\right)+x^{9/2}\left(\frac{2\,B\,a^2\,b}{3}+\frac{2\,A\,c\,a^2}{3}+\frac{2\,A\,a\,b^2}{3}\right)+x^{15/2}\left(\frac{2\,B\,b^2\,c}{5}+\frac{2\,A\,b\,c^2}{5}+\frac{2\,B\,a\,c^2}{5}\right)+\frac{2\,A\,a^3\,x^{5/2}}{5}+\frac{2\,B\,c^3\,x^{19/2}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(11/2)*((2*A*b^3)/11 + (6*B*a*b^2)/11 + (6*B*a^2*c)/11 + (12*A*a*b*c)/11)
 + x^(13/2)*((2*B*b^3)/13 + (6*A*a*c^2)/13 + (6*A*b^2*c)/13 + (12*B*a*b*c)/
13) + x^(7/2)*((2*B*a^3)/7 + (6*A*a^2*b)/7) + x^(17/2)*((2*A*c^3)/17 + (6*B
*b*c^2)/17) + x^(9/2)*((2*A*a*b^2)/3 + (2*A*a^2*c)/3 + (2*B*a^2*b)/3) + x^(
15/2)*((2*A*b*c^2)/5 + (2*B*a*c^2)/5 + (2*B*b^2*c)/5) + (2*A*a^3*x^(5/2))/5
 + (2*B*c^3*x^(19/2))/19
```

sympy [A] time = 9.59, size = 294, normalized size = 1.62

$$\frac{2Aa^3x^{\frac{5}{2}}}{5}+\frac{6Aa^2bx^{\frac{7}{2}}}{7}+\frac{2Aa^2cx^{\frac{9}{2}}}{3}+\frac{2Aab^2x^{\frac{9}{2}}}{3}+\frac{12Aabcx^{\frac{11}{2}}}{11}+\frac{6Aac^2x^{\frac{13}{2}}}{13}+\frac{2Ab^3x^{\frac{11}{2}}}{11}+\frac{6Ab^2cx^{\frac{13}{2}}}{13}+\frac{2Abc^2x^{\frac{15}{2}}}{5}+\frac{2Ac^3x^{\frac{17}{2}}}{17}+\frac{2Ba^3x^{\frac{7}{2}}}{7}+\frac{2Ba^2bx^{\frac{9}{2}}}{3}+\frac{6Ba^2cx^{\frac{11}{2}}}{11}+\frac{6Bab^2x^{\frac{11}{2}}}{11}+\frac{12Babcx^{\frac{13}{2}}}{13}+\frac{2Bac^2x^{\frac{15}{2}}}{5}+\frac{2Bb^3x^{\frac{13}{2}}}{13}+\frac{2Bb^2cx^{\frac{15}{2}}}{5}+\frac{6Bbc^2x^{\frac{17}{2}}}{17}+\frac{2Bc^3x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] 2*A*a**3*x**(5/2)/5 + 6*A*a**2*b*x**(7/2)/7 + 2*A*a**2*c*x**(9/2)/3 + 2*A*a
*b**2*x**(9/2)/3 + 12*A*a*b*c*x**(11/2)/11 + 6*A*a*c**2*x**(13/2)/13 + 2*A*
b**3*x**(11/2)/11 + 6*A*b**2*c*x**(13/2)/13 + 2*A*b*c**2*x**(15/2)/5 + 2*A*
c**3*x**(17/2)/17 + 2*B*a**3*x**(7/2)/7 + 2*B*a**2*b*x**(9/2)/3 + 6*B*a**2*
c*x**(11/2)/11 + 6*B*a*b**2*x**(11/2)/11 + 12*B*a*b*c*x**(13/2)/13 + 2*B*a*
c**2*x**(15/2)/5 + 2*B*b**3*x**(13/2)/13 + 2*B*b**2*c*x**(15/2)/5 + 6*B*b*c
**2*x**(17/2)/17 + 2*B*c**3*x**(19/2)/19
```

3.927 $\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^2x^{5/2}(aB+3Ab)+\frac{6}{13}cx^{13/2}\left(aBc+Abc+b^2B\right)+\frac{6}{7}ax^{7/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{11}x^{11/2}\left(3aAc^2+6abBc\right.$$

Rubi [A] time = 0.11, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{5}a^2x^{5/2}(aB+3Ab)+\frac{2}{3}a^3Ax^{3/2}+\frac{2}{11}x^{11/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{13}cx^{13/2}\left(aBc+Abc+b^2B\right)+\frac{2}{9}x^{9/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{6}{7}ax^{7/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{15}c^2x^{15/2}(Ac+3bB)+\frac{2}{17}Bc^3x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(3/2))/3 + (2*a^2*(3*A*b + a*B)*x^(5/2))/5 + (6*a*(a*b*B + A*(b^
2 + a*c))*x^(7/2))/7 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(9/2))/
9 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(11/2))/11 + (6*c*(b^2
*B + A*b*c + a*B*c)*x^(13/2))/13 + (2*c^2*(3*b*B + A*c)*x^(15/2))/15 + (2*B
*c^3*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3A\sqrt{x}+a^2(3Ab+aB)x^{3/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{5/2}+\left(3aB\left(b^2+\right.\right.\right.\\ &= \frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^2(3Ab+aB)x^{5/2}+\frac{6}{7}a\left(abB+A\left(b^2+ac\right)\right)x^{7/2}+\frac{2}{9}\left(3aB\left(b^2\right.\right.\end{aligned}$$

Mathematica [A] time = 0.20, size = 178, normalized size = 0.98

$$\frac{2x^{3/2}\left(51051a^3(5A+3Bx)+7293a^2x(9A(7b+5cx)+5Bx(9b+7cx))+255ax^2\left(13A\left(99b^2+154bcx+63c^2x^2\right)+7Bx\left(143b^2+234bcx+99c^2x^2\right)\right)+7x^3\left(17A\left(715b^3+1755b^2cx+1485bc^2x^2+429c^3x^3\right)+9Bx\left(1105b^3+2805b^2cx+2431bc^2x^2+715c^3x^3\right)\right)\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(3/2)*(51051*a^3*(5*A + 3*B*x) + 7293*a^2*x*(9*A*(7*b + 5*c*x) + 5*B*x
*(9*b + 7*c*x)) + 255*a*x^2*(13*A*(99*b^2 + 154*b*c*x + 63*c^2*x^2) + 7*B*x
*(143*b^2 + 234*b*c*x + 99*c^2*x^2)) + 7*x^3*(17*A*(715*b^3 + 1755*b^2*c*x
+ 1485*b*c^2*x^2 + 429*c^3*x^3) + 9*B*x*(1105*b^3 + 2805*b^2*c*x + 2431*b*c
^2*x^2 + 715*c^3*x^3))))/765765
```

IntegrateAlgebraic [A] time = 0.12, size = 237, normalized size = 1.30

$$\frac{2\left(255255a^3Ax^{3/2}+153153a^3Bx^{5/2}+459459a^2Abx^{5/2}+328185a^2Acx^{7/2}+328185a^2bBx^{7/2}+255255a^2Bcx^{9/2}+328185aAb^2x^{7/2}+510510aAbcx^{9/2}+208845aAc^2x^{11/2}+255255ab^2Bx^{9/2}+417690abBcx^{11/2}+176715aBc^2x^{13/2}+85085Ab^3x^{9/2}+208845Ab^2cx^{11/2}+176715Abc^2x^{13/2}+51051Ac^3x^{15/2}+69615b^3Bx^{11/2}+176715b^2Bcx^{13/2}+153153bBc^2x^{15/2}+45045Bc^3x^{17/2}\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(255255*a^3*A*x^(3/2) + 459459*a^2*A*b*x^(5/2) + 153153*a^3*B*x^(5/2) +
328185*a*A*b^2*x^(7/2) + 328185*a^2*b*B*x^(7/2) + 328185*a^2*A*c*x^(7/2) +
85085*A*b^3*x^(9/2) + 255255*a*b^2*B*x^(9/2) + 510510*a*A*b*c*x^(9/2) + 255
255*a^2*B*c*x^(9/2) + 69615*b^3*B*x^(11/2) + 208845*A*b^2*c*x^(11/2) + 4176
90*a*b*B*c*x^(11/2) + 208845*a*A*c^2*x^(11/2) + 176715*b^2*B*c*x^(13/2) + 1
76715*A*b*c^2*x^(13/2) + 176715*a*B*c^2*x^(13/2) + 153153*b*B*c^2*x^(15/2)
+ 51051*A*c^3*x^(15/2) + 45045*B*c^3*x^(17/2)))/765765
```

fricas [A]   time = 0.43, size = 169, normalized size = 0.93

$$\frac{2}{765765}\left(45045\,Bc^{3}x^{8} + 51051\,\left(3\,Bbc^{2} + Ac^{3}\right)x^{7} + 176715\,\left(Bb^{2}c + (Ba + Ab)c^{2}\right)x^{6} + 69615\,\left(Bb^{3} + 3\,Aac^{2} + 3\,\left(2\,Bab + Ab^{2}\right)c\right)x^{5} + 255255\,Aa^{3}x + 85085\,\left(3\,Bab^{2} + Ab^{3} + 3\,\left(Ba^{2} + 2\,Aab\right)c\right)x^{4} + 328185\,\left(Ba^{2}b + Aab^{2} + Aa^{2}c\right)x^{3} + 153153\,\left(Ba^{3} + 3\,Aa^{2}b\right)x^{2}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^3*x^8 + 51051*(3*B*b*c^2 + A*c^3)*x^7 + 176715*(B*b^2*c
 + (B*a + A*b)*c^2)*x^6 + 69615*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*x^5 + 255255*A*a^3*x + 85085*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x
^4 + 328185*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^3 + 153153*(B*a^3 + 3*A*a^2*b)*
x^2)*sqrt(x)
```

giac [A]   time = 0.16, size = 193, normalized size = 1.06

$$\frac{2}{17}\,Bc^{3}x^{\frac{17}{2}} + \frac{2}{5}\,Bbc^{2}x^{\frac{15}{2}} + \frac{2}{15}\,Ac^{3}x^{\frac{15}{2}} + \frac{6}{13}\,Bb^{2}cx^{\frac{13}{2}} + \frac{6}{13}\,Bac^{2}x^{\frac{13}{2}} + \frac{6}{13}\,Abc^{2}x^{\frac{13}{2}} + \frac{2}{11}\,Bb^{3}x^{\frac{11}{2}} + \frac{12}{11}\,Babcx^{\frac{11}{2}} + \frac{6}{11}\,Ab^{2}cx^{\frac{11}{2}} + \frac{6}{11}\,Aac^{2}x^{\frac{11}{2}} + \frac{2}{3}\,Bab^{2}x^{\frac{9}{2}} + \frac{2}{9}\,Ab^{3}x^{\frac{9}{2}} + \frac{2}{3}\,Ba^{2}cx^{\frac{9}{2}} + \frac{4}{3}\,Aabcx^{\frac{9}{2}} + \frac{6}{7}\,Ba^{2}bx^{\frac{7}{2}} + \frac{6}{7}\,Aab^{2}x^{\frac{7}{2}} + \frac{6}{7}\,Aa^{2}cx^{\frac{7}{2}} + \frac{2}{5}\,Ba^{3}x^{\frac{5}{2}} + \frac{6}{5}\,Aa^{2}bx^{\frac{5}{2}} + \frac{2}{3}\,Aa^{3}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/5*B*b*c^2*x^(15/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*b
^2*c*x^(13/2) + 6/13*B*a*c^2*x^(13/2) + 6/13*A*b*c^2*x^(13/2) + 2/11*B*b^3*
x^(11/2) + 12/11*B*a*b*c*x^(11/2) + 6/11*A*b^2*c*x^(11/2) + 6/11*A*a*c^2*x^
(11/2) + 2/3*B*a*b^2*x^(9/2) + 2/9*A*b^3*x^(9/2) + 2/3*B*a^2*c*x^(9/2) + 4/
3*A*a*b*c*x^(9/2) + 6/7*B*a^2*b*x^(7/2) + 6/7*A*a*b^2*x^(7/2) + 6/7*A*a^2*c
*x^(7/2) + 2/5*B*a^3*x^(5/2) + 6/5*A*a^2*b*x^(5/2) + 2/3*A*a^3*x^(3/2)
```

maple [A]   time = 0.05, size = 192, normalized size = 1.05

$$\frac{2\left(45045 B\,c^{3} x^{7}+51051 A\,c^{3} x^{6}+153153 x^{6} B b\,c^{2}+176715 x^{5} A b\,c^{2}+176715 B a\,c^{2} x^{5}+176715 x^{5} B\,b^{2} c+208845 A a\,c^{2} x^{4}+208845 x^{4} A\,b^{2} c+417690 x^{4} a b B c+69615 x^{4} b^{3} B+510510 x^{3} A a b c+85085 A\,b^{3} x^{3}+255255 B\,a^{2} c\,x^{3}+255255 x^{3} B a\,b^{2}+328185 A\,a^{2} c\,x^{2}+328185 x^{2} A a\,b^{2}+328185 B\,a^{2} b\,x^{2}+459459 x A\,a^{2} b+153153 B\,a^{3} x+255255 A\,a^{3}\right) x^{\frac{3}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x)
```

```
[Out] 2/765765*x^(3/2)*(45045*B*c^3*x^7+51051*A*c^3*x^6+153153*B*b*c^2*x^6+176715
*A*b*c^2*x^5+176715*B*a*c^2*x^5+176715*B*b^2*c*x^5+208845*A*a*c^2*x^4+20884
5*A*b^2*c*x^4+417690*B*a*b*c*x^4+69615*B*b^3*x^4+510510*A*a*b*c*x^3+85085*A
*b^3*x^3+255255*B*a^2*c*x^3+255255*B*a*b^2*x^3+328185*A*a^2*c*x^2+328185*A*
a*b^2*x^2+328185*B*a^2*b*x^2+459459*A*a^2*b*x+153153*B*a^3*x+255255*A*a^3)
```

maxima [A]   time = 0.53, size = 166, normalized size = 0.91

$$\frac{2}{17}\,Bc^{3}x^{\frac{17}{2}} + \frac{2}{15}\,\left(3\,Bbc^{2} + Ac^{3}\right)x^{\frac{15}{2}} + \frac{6}{13}\,\left(Bb^{2}c + (Ba + Ab)c^{2}\right)x^{\frac{13}{2}} + \frac{2}{11}\,\left(Bb^{3} + 3\,Aac^{2} + 3\,\left(2\,Bab + Ab^{2}\right)c\right)x^{\frac{11}{2}} + \frac{2}{3}\,Aa^{3}x^{\frac{3}{2}} + \frac{2}{9}\,\left(3\,Bab^{2} + Ab^{3} + 3\,\left(Ba^{2} + 2\,Aab\right)c\right)x^{\frac{9}{2}} + \frac{6}{7}\,\left(Ba^{2}b + Aab^{2} + Aa^{2}c\right)x^{\frac{7}{2}} + \frac{2}{5}\,\left(Ba^{3} + 3\,Aa^{2}b\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/15*(3*B*b*c^2 + A*c^3)*x^(15/2) + 6/13*(B*b^2*c + (
B*a + A*b)*c^2)*x^(13/2) + 2/11*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*x^(11/2) + 2/3*A*a^3*x^(3/2) + 2/9*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b
```

```
)*c)*x^(9/2) + 6/7*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(7/2) + 2/5*(B*a^3 + 3*A
*a^2*b)*x^(5/2)
```

mupad [B] time = 0.05, size = 169, normalized size = 0.93

$$x^{9/2}\left(\frac{2\,B\,c\,a^2}{3}+\frac{2\,B\,a\,b^2}{3}+\frac{4\,A\,c\,a\,b}{3}+\frac{2\,A\,b^3}{9}\right)+x^{11/2}\left(\frac{2\,B\,b^3}{11}+\frac{6\,A\,b^2\,c}{11}+\frac{12\,B\,a\,b\,c}{11}+\frac{6\,A\,a\,c^2}{11}\right)+x^{5/2}\left(\frac{2\,B\,a^3}{5}+\frac{6\,A\,b\,a^2}{5}\right)+x^{15/2}\left(\frac{2\,A\,c^3}{15}+\frac{2\,B\,b\,c^2}{5}\right)+x^{7/2}\left(\frac{6\,B\,a^2\,b}{7}+\frac{6\,A\,c\,a^2}{7}+\frac{6\,A\,a\,b^2}{7}\right)+x^{13/2}\left(\frac{6\,B\,b^2\,c}{13}+\frac{6\,A\,b\,c^2}{13}+\frac{6\,B\,a\,c^2}{13}\right)+\frac{2\,A\,a^3\,x^{3/2}}{3}+\frac{2\,B\,c^3\,x^{17/2}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(9/2)*((2*A*b^3)/9 + (2*B*a*b^2)/3 + (2*B*a^2*c)/3 + (4*A*a*b*c)/3) + x^(
11/2)*((2*B*b^3)/11 + (6*A*a*c^2)/11 + (6*A*b^2*c)/11 + (12*B*a*b*c)/11) +
x^(5/2)*((2*B*a^3)/5 + (6*A*a^2*b)/5) + x^(15/2)*((2*A*c^3)/15 + (2*B*b*c^2
)/5) + x^(7/2)*((6*A*a*b^2)/7 + (6*A*a^2*c)/7 + (6*B*a^2*b)/7) + x^(13/2)*(
(6*A*b*c^2)/13 + (6*B*a*c^2)/13 + (6*B*b^2*c)/13) + (2*A*a^3*x^(3/2))/3 + (
2*B*c^3*x^(17/2))/17
```

sympy [A] time = 9.17, size = 216, normalized size = 1.19

$$\frac{2Aa^3x^{\frac{3}{2}}}{3}+\frac{2Bc^3x^{\frac{17}{2}}}{17}+\frac{2x^{\frac{15}{2}}\left(Ac^3+3Bbc^2\right)}{15}+\frac{2x^{\frac{13}{2}}\left(3Abc^2+3Bac^2+3Bb^2c\right)}{13}+\frac{2x^{\frac{11}{2}}\left(3Aac^2+3Ab^2c+6Babc+Bb^3\right)}{11}+\frac{2x^{\frac{9}{2}}\left(6Aabc+Ab^3+3Ba^2c+3Bab^2\right)}{9}+\frac{2x^{\frac{7}{2}}\left(3Aa^2c+3Aab^2+3Ba^2b\right)}{7}+\frac{2x^{\frac{5}{2}}\left(3Aa^2b+Ba^3\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3*x**(1/2),x)
```

```
[Out] 2*A*a**3*x**(3/2)/3 + 2*B*c**3*x**(17/2)/17 + 2*x**(15/2)*(A*c**3 + 3*B*b*c
**2)/15 + 2*x**(13/2)*(3*A*b*c**2 + 3*B*a*c**2 + 3*B*b**2*c)/13 + 2*x**(11/
2)*(3*A*a*c**2 + 3*A*b**2*c + 6*B*a*b*c + B*b**3)/11 + 2*x**(9/2)*(6*A*a*b*
c + A*b**3 + 3*B*a**2*c + 3*B*a*b**2)/9 + 2*x**(7/2)*(3*A*a**2*c + 3*A*a*b*
*2 + 3*B*a**2*b)/7 + 2*x**(5/2)*(3*A*a**2*b + B*a**3)/5
```

3.928 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=180

$$2a^3A\sqrt{x}+\frac{2}{3}a^2x^{3/2}(aB+3Ab)+\frac{6}{11}cx^{11/2}\left(aBc+Abc+b^2B\right)+\frac{6}{5}ax^{5/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{9}x^{9/2}\left(3aAc^2+6abBc\right.$$

Rubi [A] time = 0.11, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{3}a^2x^{3/2}(aB+3Ab)+2a^3A\sqrt{x}+\frac{2}{9}x^{9/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{11}cx^{11/2}\left(aBc+Abc+b^2B\right)+\frac{2}{7}x^{7/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{6}{5}ax^{5/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{13}c^2x^{13/2}(Ac+3bB)+\frac{2}{15}Bc^3x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] 2*a^3*A*Sqrt[x] + (2*a^2*(3*A*b + a*B)*x^(3/2))/3 + (6*a*(a*b*B + A*(b^2 +
a*c))*x^(5/2))/5 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(7/2))/7 +
(2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(9/2))/9 + (6*c*(b^2*B + A
*b*c + a*B*c)*x^(11/2))/11 + (2*c^2*(3*b*B + A*c)*x^(13/2))/13 + (2*B*c^3*x
^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{\sqrt{x}}\,dx &= \int \left(\frac{a^3A}{\sqrt{x}}+a^2(3Ab+aB)\sqrt{x}+3a\left(abB+A\left(b^2+ac\right)\right)x^{3/2}+\left(3aB\left(b^2+ac\right)\right.\right.\\ &= 2a^3A\sqrt{x}+\frac{2}{3}a^2(3Ab+aB)x^{3/2}+\frac{6}{5}a\left(abB+A\left(b^2+ac\right)\right)x^{5/2}+\frac{2}{7}\left(3aB\left(b^2\right.\right.\end{aligned}$$

Mathematica [A] time = 0.20, size = 176, normalized size = 0.98

$$\frac{2\sqrt{x}\left(15015a^3(3A+Bx)+1287a^2x(7A(5b+3cx)+3Bx(7b+5cx))+39ax^2\left(11A\left(63b^2+90bcx+35c^2x^2\right)+5Bx\left(99b^2+154bcx+63c^2x^2\right)\right)+x^3\left(15A\left(429b^3+1001b^2cx+819bc^2x^2+231c^3x^3\right)+7Bx\left(715b^3+1755b^2cx+1485bc^2x^2+429c^3x^3\right)\right)\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(15015*a^3*(3*A + B*x) + 1287*a^2*x*(7*A*(5*b + 3*c*x) + 3*B*x*(
7*b + 5*c*x)) + 39*a*x^2*(11*A*(63*b^2 + 90*b*c*x + 35*c^2*x^2) + 5*B*x*(99
*b^2 + 154*b*c*x + 63*c^2*x^2)) + x^3*(15*A*(429*b^3 + 1001*b^2*c*x + 819*b
*c^2*x^2 + 231*c^3*x^3) + 7*B*x*(715*b^3 + 1755*b^2*c*x + 1485*b*c^2*x^2 +
429*c^3*x^3))))/45045
```

IntegrateAlgebraic [A] time = 0.13, size = 237, normalized size = 1.32

$$\frac{2\left(45045a^3A\sqrt{x}+15015a^3Bx^{3/2}+45045a^2Abx^{3/2}+27027a^2Acx^{5/2}+27027a^2bBx^{5/2}+19305a^2Bcx^{7/2}+27027aAb^2x^{5/2}+38610aAbcx^{7/2}+15015aAc^2x^{9/2}+19305ab^2Bx^{7/2}+30030abBcx^{9/2}+12285aBc^2x^{11/2}+6435Ab^3x^{7/2}+15015Ab^2cx^{9/2}+12285Abc^2x^{11/2}+3465Ac^3x^{13/2}+5005b^3Bx^{9/2}+12285b^2Bcx^{11/2}+10395bBc^2x^{13/2}+3003Bc^3x^{15/2}\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(45045*a^3*A*Sqrt[x] + 45045*a^2*A*b*x^(3/2) + 15015*a^3*B*x^(3/2) + 270
27*a*A*b^2*x^(5/2) + 27027*a^2*b*B*x^(5/2) + 27027*a^2*A*c*x^(5/2) + 6435*A
*b^3*x^(7/2) + 19305*a*b^2*B*x^(7/2) + 38610*a*A*b*c*x^(7/2) + 19305*a^2*B*
c*x^(7/2) + 5005*b^3*B*x^(9/2) + 15015*A*b^2*c*x^(9/2) + 30030*a*b*B*c*x^(9
/2) + 15015*a*A*c^2*x^(9/2) + 12285*b^2*B*c*x^(11/2) + 12285*A*b*c^2*x^(11/
2) + 12285*a*B*c^2*x^(11/2) + 10395*b*B*c^2*x^(13/2) + 3465*A*c^3*x^(13/2)
+ 3003*B*c^3*x^(15/2)))/45045
```

fricas [A] time = 0.44, size = 166, normalized size = 0.92

$$\frac{2}{45045} \left(3003 Bc^3x^7 + 3465 \left(3 Bbc^2 + Ac^3\right)x^6 + 12285 \left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 5005 \left(Bb^3 + 3 Aac^2 + 3 \left(2 Bab + Ab^2\right)c\right)x^4 + 45045 Aa^3 + 6435 \left(3 Bab^2 + Ab^3 + 3 \left(Ba^2 + 2 Aab\right)c\right)x^3 + 27027 \left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 15015 \left(Ba^3 + 3 Aa^2b\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^3*x^7 + 3465*(3*B*b*c^2 + A*c^3)*x^6 + 12285*(B*b^2*c + (
B*a + A*b)*c^2)*x^5 + 5005*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4
+ 45045*A*a^3 + 6435*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 2702
7*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 15015*(B*a^3 + 3*A*a^2*b)*x)*sqrt(x)
```

giac [A] time = 0.17, size = 193, normalized size = 1.07

$$\frac{2}{15} Bc^3x^{\frac{15}{2}} + \frac{6}{13} Bbc^2x^{\frac{13}{2}} + \frac{2}{13} Ac^3x^{\frac{13}{2}} + \frac{6}{11} Bb^2cx^{\frac{11}{2}} + \frac{6}{11} Bac^2x^{\frac{11}{2}} + \frac{6}{11} Abc^2x^{\frac{11}{2}} + \frac{2}{9} Bb^3x^{\frac{9}{2}} + \frac{4}{3} Babcx^{\frac{9}{2}} + \frac{2}{3} Ab^2cx^{\frac{9}{2}} + \frac{2}{3} Aac^2x^{\frac{9}{2}} + \frac{6}{7} Bab^2x^{\frac{7}{2}} + \frac{2}{7} Ab^3x^{\frac{7}{2}} + \frac{6}{7} Ba^2cx^{\frac{7}{2}} + \frac{12}{7} Aabcx^{\frac{7}{2}} + \frac{6}{5} Ba^2bx^{\frac{5}{2}} + \frac{6}{5} Aab^2x^{\frac{5}{2}} + \frac{6}{5} Aa^2cx^{\frac{5}{2}} + \frac{2}{3} Ba^3x^{\frac{3}{2}} + 2 Aa^2bx^{\frac{3}{2}} + 2 Aa^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 6/13*B*b*c^2*x^(13/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*
b^2*c*x^(11/2) + 6/11*B*a*c^2*x^(11/2) + 6/11*A*b*c^2*x^(11/2) + 2/9*B*b^3*
x^(9/2) + 4/3*B*a*b*c*x^(9/2) + 2/3*A*b^2*c*x^(9/2) + 2/3*A*a*c^2*x^(9/2) +
 6/7*B*a*b^2*x^(7/2) + 2/7*A*b^3*x^(7/2) + 6/7*B*a^2*c*x^(7/2) + 12/7*A*a*b
*c*x^(7/2) + 6/5*B*a^2*b*x^(5/2) + 6/5*A*a*b^2*x^(5/2) + 6/5*A*a^2*c*x^(5/2
) + 2/3*B*a^3*x^(3/2) + 2*A*a^2*b*x^(3/2) + 2*A*a^3*sqrt(x)
```

maple [A] time = 0.05, size = 192, normalized size = 1.07

$$\frac{2 \left(3003B c^3x^7 + 3465A c^3x^6 + 10395x^6Bb c^2 + 12285x^5Ab c^2 + 12285Ba c^2x^5 + 12285x^5B b^2c + 15015Aa c^2x^4 + 15015x^4A b^2c + 30030x^4abBc + 5005x^4b^3B + 38610x^3Aabc + 6435A b^3x^3 + 19305B a^2c x^3 + 19305x^3Ba b^2 + 27027A a^2c x^2 + 27027x^2Aa b^2 + 27027B a^2b x^2 + 45045xA a^2b + 15015B a^3x + 45045A a^3\right) \sqrt{x}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x)
```

```
[Out] 2/45045*x^(1/2)*(3003*B*c^3*x^7+3465*A*c^3*x^6+10395*B*b*c^2*x^6+12285*A*b*
c^2*x^5+12285*B*a*c^2*x^5+12285*B*b^2*c*x^5+15015*A*a*c^2*x^4+15015*A*b^2*c
*x^4+30030*B*a*b*c*x^4+5005*B*b^3*x^4+38610*A*a*b*c*x^3+6435*A*b^3*x^3+1930
5*B*a^2*c*x^3+19305*B*a*b^2*x^3+27027*A*a^2*c*x^2+27027*A*a*b^2*x^2+27027*B
*a^2*b*x^2+45045*A*a^2*b*x+15015*B*a^3*x+45045*A*a^3)
```

maxima [A] time = 0.56, size = 166, normalized size = 0.92

$$\frac{2}{15} Bc^3x^{\frac{15}{2}} + \frac{2}{13} \left(3 Bbc^2 + Ac^3\right)x^{\frac{13}{2}} + \frac{6}{11} \left(Bb^2c + (Ba + Ab)c^2\right)x^{\frac{11}{2}} + \frac{2}{9} \left(Bb^3 + 3 Aac^2 + 3 \left(2 Bab + Ab^2\right)c\right)x^{\frac{9}{2}} + 2 Aa^3\sqrt{x} + \frac{2}{7} \left(3 Bab^2 + Ab^3 + 3 \left(Ba^2 + 2 Aab\right)c\right)x^{\frac{7}{2}} + \frac{6}{5} \left(Ba^2b + Aab^2 + Aa^2c\right)x^{\frac{5}{2}} + \frac{2}{3} \left(Ba^3 + 3 Aa^2b\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/13*(3*B*b*c^2 + A*c^3)*x^(13/2) + 6/11*(B*b^2*c + (
B*a + A*b)*c^2)*x^(11/2) + 2/9*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
x^(9/2) + 2*A*a^3*sqrt(x) + 2/7*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)
```

```
*x^(7/2) + 6/5*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(5/2) + 2/3*(B*a^3 + 3*A*a^2
*b)*x^(3/2)
```

mupad [B] time = 0.05, size = 169, normalized size = 0.94

$$x^{7/2}\left(\frac{6\,B\,c\,a^2}{7}+\frac{6\,B\,a\,b^2}{7}+\frac{12\,A\,c\,a\,b}{7}+\frac{2\,A\,b^3}{7}\right)+x^{9/2}\left(\frac{2\,B\,b^3}{9}+\frac{2\,A\,b^2\,c}{3}+\frac{4\,B\,a\,b\,c}{3}+\frac{2\,A\,a\,c^2}{3}\right)+x^{3/2}\left(\frac{2\,B\,a^3}{3}+2\,A\,b\,a^2\right)+x^{13/2}\left(\frac{2\,A\,c^3}{13}+\frac{6\,B\,b\,c^2}{13}\right)+x^{5/2}\left(\frac{6\,B\,a^2\,b}{5}+\frac{6\,A\,c\,a^2}{5}+\frac{6\,A\,a\,b^2}{5}\right)+x^{11/2}\left(\frac{6\,B\,b^2\,c}{11}+\frac{6\,A\,b\,c^2}{11}+\frac{6\,B\,a\,c^2}{11}\right)+2\,A\,a^3\,\sqrt{x}+\frac{2\,B\,c^3\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(1/2),x)
```

```
[Out] x^(7/2)*((2*A*b^3)/7 + (6*B*a*b^2)/7 + (6*B*a^2*c)/7 + (12*A*a*b*c)/7) + x^
(9/2)*((2*B*b^3)/9 + (2*A*a*c^2)/3 + (2*A*b^2*c)/3 + (4*B*a*b*c)/3) + x^(3/
2)*((2*B*a^3)/3 + 2*A*a^2*b) + x^(13/2)*((2*A*c^3)/13 + (6*B*b*c^2)/13) + x
^(5/2)*((6*A*a*b^2)/5 + (6*A*a^2*c)/5 + (6*B*a^2*b)/5) + x^(11/2)*((6*A*b*c
^2)/11 + (6*B*a*c^2)/11 + (6*B*b^2*c)/11) + 2*A*a^3*x^(1/2) + (2*B*c^3*x^(1
5/2))/15
```

sympy [A] time = 5.90, size = 291, normalized size = 1.62

$$2Aa^3\sqrt{x}+2Aa^2bx^{\frac{3}{2}}+\frac{6Aa^2cx^{\frac{5}{2}}}{5}+\frac{6Aab^2x^{\frac{5}{2}}}{5}+\frac{12Aabcx^{\frac{7}{2}}}{7}+\frac{2Aac^2x^{\frac{9}{2}}}{3}+\frac{2Ab^3x^{\frac{7}{2}}}{7}+\frac{2Ab^2cx^{\frac{9}{2}}}{3}+\frac{6Abc^2x^{\frac{11}{2}}}{11}+\frac{2Ac^3x^{\frac{13}{2}}}{13}+\frac{2Ba^3x^{\frac{3}{2}}}{3}+\frac{6Ba^2bx^{\frac{5}{2}}}{5}+\frac{6Ba^2cx^{\frac{7}{2}}}{7}+\frac{6Bab^2x^{\frac{7}{2}}}{7}+\frac{4Babcx^{\frac{9}{2}}}{3}+\frac{6Bac^2x^{\frac{11}{2}}}{11}+\frac{2Bb^3x^{\frac{9}{2}}}{9}+\frac{6Bb^2cx^{\frac{11}{2}}}{11}+\frac{6Bbc^2x^{\frac{13}{2}}}{13}+\frac{2Bc^3x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(1/2),x)
```

```
[Out] 2*A*a**3*sqrt(x) + 2*A*a**2*b*x**(3/2) + 6*A*a**2*c*x**(5/2)/5 + 6*A*a*b**2
*x**(5/2)/5 + 12*A*a*b*c*x**(7/2)/7 + 2*A*a*c**2*x**(9/2)/3 + 2*A*b**3*x**(
7/2)/7 + 2*A*b**2*c*x**(9/2)/3 + 6*A*b*c**2*x**(11/2)/11 + 2*A*c**3*x**(13/
2)/13 + 2*B*a**3*x**(3/2)/3 + 6*B*a**2*b*x**(5/2)/5 + 6*B*a**2*c*x**(7/2)/7
 + 6*B*a*b**2*x**(7/2)/7 + 4*B*a*b*c*x**(9/2)/3 + 6*B*a*c**2*x**(11/2)/11 +
 2*B*b**3*x**(9/2)/9 + 6*B*b**2*c*x**(11/2)/11 + 6*B*b*c**2*x**(13/2)/13 +
2*B*c**3*x**(15/2)/15
```

3.929 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=176

$$-\frac{2a^3A}{\sqrt{x}}+2a^2\sqrt{x}\,(aB+3Ab)+\frac{2}{3}cx^{9/2}\left(aBc+Abc+b^2B\right)+2ax^{3/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{7}x^{7/2}\left(3aAc^2+6abBc+3Ab\right.$$

Rubi [A] time = 0.12, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$2a^2\sqrt{x}\,(aB+3Ab)-\frac{2a^3A}{\sqrt{x}}+\frac{2}{7}x^{7/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{2}{3}cx^{9/2}\left(aBc+Abc+b^2B\right)+\frac{2}{5}x^{5/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+2ax^{3/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{11}c^2x^{11/2}(Ac+3bB)+\frac{2}{13}Bc^3x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (-2*a^3*A)/Sqrt[x] + 2*a^2*(3*A*b + a*B)*Sqrt[x] + 2*a*(a*b*B + A*(b^2 + a*
c))*x^(3/2) + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(5/2))/5 + (2*(b
^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(7/2))/7 + (2*c*(b^2*B + A*b*c
+ a*B*c)*x^(9/2))/3 + (2*c^2*(3*b*B + A*c)*x^(11/2))/11 + (2*B*c^3*x^(13/2)
)/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{3/2}}\,dx &= \int \left(\frac{a^3A}{x^{3/2}}+\frac{a^2(3Ab+aB)}{\sqrt{x}}+3a\left(abB+A\left(b^2+ac\right)\right)\sqrt{x}+\left(3aB\left(b^2+ac\right)+A\left(\right.\right.\right.\\ &= -\frac{2a^3A}{\sqrt{x}}+2a^2(3Ab+aB)\sqrt{x}+2a\left(abB+A\left(b^2+ac\right)\right)x^{3/2}+\frac{2}{5}\left(3aB\left(b^2+ac\right)\right.\end{aligned}$$

Mathematica [A] time = 0.19, size = 173, normalized size = 0.98

$$\frac{-30030a^3(A-Bx)+6006a^2x(5A(3b+cx)+Bx(5b+3cx))+286ax^2\left(3A\left(35b^2+42bcx+15c^2x^2\right)+Bx\left(63b^2+90bcx+35c^2x^2\right)\right)+2x^3\left(13A\left(231b^3+495b^2cx+385bc^2x^2+105c^3x^3\right)+5Bx\left(429b^3+1001b^2cx+819bc^2x^2+231c^3x^3\right)\right)}{15015\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (-30030*a^3*(A - B*x) + 6006*a^2*x*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)) +
286*a*x^2*(3*A*(35*b^2 + 42*b*c*x + 15*c^2*x^2) + B*x*(63*b^2 + 90*b*c*x +
35*c^2*x^2)) + 2*x^3*(13*A*(231*b^3 + 495*b^2*c*x + 385*b*c^2*x^2 + 105*c^3
*x^3) + 5*B*x*(429*b^3 + 1001*b^2*c*x + 819*b*c^2*x^2 + 231*c^3*x^3)))/(150
15*Sqrt[x])
```

IntegrateAlgebraic [A] time = 0.16, size = 195, normalized size = 1.11

$$\frac{2\left(-15015a^3A+15015a^3Bx+45045a^2Abx+15015a^2Acx^2+15015a^2bBx^2+9009a^2Bcx^3+15015aAb^2x^2+18018aAbcx^3+6435aAc^2x^4+9009ab^2Bx^3+12870abBcx^4+5005aBc^2x^5+3003Ab^3x^3+6435Ab^2cx^4+5005Abc^2x^5+1365Ac^3x^6+2145b^3Bx^4+5005b^2Bcx^5+4095bBc^2x^6+1155Bc^3x^7\right)}{15015\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(-15015*a^3*A + 45045*a^2*A*b*x + 15015*a^3*B*x + 15015*a*A*b^2*x^2 + 15
015*a^2*b*B*x^2 + 15015*a^2*A*c*x^2 + 3003*A*b^3*x^3 + 9009*a*b^2*B*x^3 + 1
8018*a*A*b*c*x^3 + 9009*a^2*B*c*x^3 + 2145*b^3*B*x^4 + 6435*A*b^2*c*x^4 + 1
2870*a*b*B*c*x^4 + 6435*a*A*c^2*x^4 + 5005*b^2*B*c*x^5 + 5005*A*b*c^2*x^5 +
 5005*a*B*c^2*x^5 + 4095*b*B*c^2*x^6 + 1365*A*c^3*x^6 + 1155*B*c^3*x^7))/(1
5015*Sqrt[x])
```

fricas [A] time = 0.43, size = 166, normalized size = 0.94

$$\frac{2\left(1155\,Bc^{3}x^{7}+1365\left(3\,Bbc^{2}+Ac^{3}\right)x^{6}+5005\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{5}+2145\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{4}-15015\,Aa^{3}+3003\left(3\,Bab^{2}+Ab^{3}+3\left(Ba^{2}+2\,Aab\right)c\right)x^{3}+15015\left(Ba^{2}b+Aab^{2}+Aa^{2}c\right)x^{2}+15015\left(Ba^{3}+3\,Aa^{2}b\right)x\right)}{15015\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*x^7 + 1365*(3*B*b*c^2 + A*c^3)*x^6 + 5005*(B*b^2*c + (B
*a + A*b)*c^2)*x^5 + 2145*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 -
 15015*A*a^3 + 3003*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 15015
*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 15015*(B*a^3 + 3*A*a^2*b)*x)/sqrt(x)
```

giac [A] time = 0.17, size = 193, normalized size = 1.10

$$\frac{2}{13}\,Bc^{3}x^{\frac{13}{2}}+\frac{6}{11}\,Bbc^{2}x^{\frac{11}{2}}+\frac{2}{11}\,Ac^{3}x^{\frac{11}{2}}+\frac{2}{3}\,Bb^{2}cx^{\frac{9}{2}}+\frac{2}{3}\,Bac^{2}x^{\frac{9}{2}}+\frac{2}{3}\,Abc^{2}x^{\frac{9}{2}}+\frac{2}{7}\,Bb^{3}x^{\frac{7}{2}}+\frac{12}{7}\,Babcx^{\frac{7}{2}}+\frac{6}{7}\,Ab^{2}cx^{\frac{7}{2}}+\frac{6}{7}\,Aac^{2}x^{\frac{7}{2}}+\frac{6}{5}\,Bab^{2}x^{\frac{5}{2}}+\frac{2}{5}\,Ab^{3}x^{\frac{5}{2}}+\frac{6}{5}\,Ba^{2}cx^{\frac{5}{2}}+\frac{12}{5}\,Aabcx^{\frac{5}{2}}+2\,Ba^{2}bx^{\frac{3}{2}}+2\,Aab^{2}x^{\frac{3}{2}}+2\,Aa^{2}cx^{\frac{3}{2}}+2\,Ba^{3}\sqrt{x}+6\,Aa^{2}b\sqrt{x}-\frac{2\,Aa^{3}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 6/11*B*b*c^2*x^(11/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*b
^2*c*x^(9/2) + 2/3*B*a*c^2*x^(9/2) + 2/3*A*b*c^2*x^(9/2) + 2/7*B*b^3*x^(7/2
) + 12/7*B*a*b*c*x^(7/2) + 6/7*A*b^2*c*x^(7/2) + 6/7*A*a*c^2*x^(7/2) + 6/5*
B*a*b^2*x^(5/2) + 2/5*A*b^3*x^(5/2) + 6/5*B*a^2*c*x^(5/2) + 12/5*A*a*b*c*x^
(5/2) + 2*B*a^2*b*x^(3/2) + 2*A*a*b^2*x^(3/2) + 2*A*a^2*c*x^(3/2) + 2*B*a^3
*sqrt(x) + 6*A*a^2*b*sqrt(x) - 2*A*a^3/sqrt(x)
```

maple [A] time = 0.05, size = 192, normalized size = 1.09

$$-\frac{2\left(-1155B\,c^{3}x^{7}-1365A\,c^{3}x^{6}-4095x^{6}Bb\,c^{2}-5005x^{5}Ab\,c^{2}-5005Ba\,c^{2}x^{5}-5005x^{5}B\,b^{2}c-6435Aa\,c^{2}x^{4}-6435x^{4}A\,b^{2}c-12870x^{4}abBc-2145x^{4}b^{3}B-18018x^{3}Aabc-3003A\,b^{3}x^{3}-9009B\,a^{2}c\,x^{3}-9009x^{3}Ba\,b^{2}-15015A\,a^{2}c\,x^{2}-15015x^{2}Aa\,b^{2}-15015B\,a^{2}b\,x^{2}-45045xA\,a^{2}b-15015B\,a^{3}x+15015A\,a^{3}\right)}{15015\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x)
```

```
[Out] -2/15015*(-1155*B*c^3*x^7-1365*A*c^3*x^6-4095*B*b*c^2*x^6-5005*A*b*c^2*x^5-
5005*B*a*c^2*x^5-5005*B*b^2*c*x^5-6435*A*a*c^2*x^4-6435*A*b^2*c*x^4-12870*B
*a*b*c*x^4-2145*B*b^3*x^4-18018*A*a*b*c*x^3-3003*A*b^3*x^3-9009*B*a^2*c*x^3
-9009*B*a*b^2*x^3-15015*A*a^2*c*x^2-15015*A*a*b^2*x^2-15015*B*a^2*b*x^2-450
45*A*a^2*b*x-15015*B*a^3*x+15015*A*a^3)/x^(1/2)
```

maxima [A] time = 0.59, size = 166, normalized size = 0.94

$$\frac{2}{13}\,Bc^{3}x^{\frac{13}{2}}+\frac{2}{11}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{11}{2}}+\frac{2}{3}\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{\frac{7}{2}}-\frac{2\,Aa^{3}}{\sqrt{x}}+\frac{2}{5}\left(3\,Bab^{2}+Ab^{3}+3\left(Ba^{2}+2\,Aab\right)c\right)x^{\frac{5}{2}}+2\left(Ba^{2}b+Aab^{2}+Aa^{2}c\right)x^{\frac{3}{2}}+2\left(Ba^{3}+3\,Aa^{2}b\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/11*(3*B*b*c^2 + A*c^3)*x^(11/2) + 2/3*(B*b^2*c + (B
*a + A*b)*c^2)*x^(9/2) + 2/7*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^
(7/2) - 2*A*a^3/sqrt(x) + 2/5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x
^(5/2) + 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(3/2) + 2*(B*a^3 + 3*A*a^2*b)*sq
rt(x)
```

mupad [**B**] time = 0.06, size = 169, normalized size = 0.96

$$x^{5/2}\left(\frac{6\,B\,c\,a^2}{5}+\frac{6\,B\,a\,b^2}{5}+\frac{12\,A\,c\,a\,b}{5}+\frac{2\,A\,b^3}{5}\right)+x^{7/2}\left(\frac{2\,B\,b^3}{7}+\frac{6\,A\,b^2\,c}{7}+\frac{12\,B\,a\,b\,c}{7}+\frac{6\,A\,a\,c^2}{7}\right)+\sqrt{x}\,\left(2\,B\,a^3+6\,A\,b\,a^2\right)+x^{11/2}\left(\frac{2\,A\,c^3}{11}+\frac{6\,B\,b\,c^2}{11}\right)+x^{3/2}\,\left(2\,B\,a^2\,b+2\,A\,c\,a^2+2\,A\,a\,b^2\right)+x^{9/2}\left(\frac{2\,B\,b^2\,c}{3}+\frac{2\,A\,b\,c^2}{3}+\frac{2\,B\,a\,c^2}{3}\right)-\frac{2\,A\,a^3}{\sqrt{x}}+\frac{2\,B\,c^3\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x)
```

```
[Out] x^(5/2)*((2*A*b^3)/5 + (6*B*a*b^2)/5 + (6*B*a^2*c)/5 + (12*A*a*b*c)/5) + x^
(7/2)*((2*B*b^3)/7 + (6*A*a*c^2)/7 + (6*A*b^2*c)/7 + (12*B*a*b*c)/7) + x^(1
/2)*(2*B*a^3 + 6*A*a^2*b) + x^(11/2)*((2*A*c^3)/11 + (6*B*b*c^2)/11) + x^(3
/2)*(2*A*a*b^2 + 2*A*a^2*c + 2*B*a^2*b) + x^(9/2)*((2*A*b*c^2)/3 + (2*B*a*c
^2)/3 + (2*B*b^2*c)/3) - (2*A*a^3)/x^(1/2) + (2*B*c^3*x^(13/2))/13
```

sympy [**A**] time = 5.81, size = 284, normalized size = 1.61

$$-\frac{2Aa^3}{\sqrt{x}}+6Aa^2b\sqrt{x}+2Aa^2cx^{\frac{3}{2}}+2Aab^2x^{\frac{3}{2}}+\frac{12Aabcx^{\frac{5}{2}}}{5}+\frac{6Aac^2x^{\frac{7}{2}}}{7}+\frac{2Ab^3x^{\frac{5}{2}}}{5}+\frac{6Ab^2cx^{\frac{7}{2}}}{7}+\frac{2Abc^2x^{\frac{9}{2}}}{3}+\frac{2Ac^3x^{\frac{11}{2}}}{11}+2Ba^3\sqrt{x}+2Ba^2bx^{\frac{3}{2}}+\frac{6Ba^2cx^{\frac{5}{2}}}{5}+\frac{6Bab^2x^{\frac{5}{2}}}{5}+\frac{12Babcx^{\frac{7}{2}}}{7}+\frac{2Bac^2x^{\frac{9}{2}}}{3}+\frac{2Bb^3x^{\frac{7}{2}}}{7}+\frac{2Bb^2cx^{\frac{9}{2}}}{3}+\frac{6Bbc^2x^{\frac{11}{2}}}{11}+\frac{2Bc^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(3/2),x)
```

```
[Out] -2*A*a**3/sqrt(x) + 6*A*a**2*b*sqrt(x) + 2*A*a**2*c*x**(3/2) + 2*A*a*b**2*x
**(3/2) + 12*A*a*b*c*x**(5/2)/5 + 6*A*a*c**2*x**(7/2)/7 + 2*A*b**3*x**(5/2)
/5 + 6*A*b**2*c*x**(7/2)/7 + 2*A*b*c**2*x**(9/2)/3 + 2*A*c**3*x**(11/2)/11
+ 2*B*a**3*sqrt(x) + 2*B*a**2*b*x**(3/2) + 6*B*a**2*c*x**(5/2)/5 + 6*B*a*b*
*2*x**(5/2)/5 + 12*B*a*b*c*x**(7/2)/7 + 2*B*a*c**2*x**(9/2)/3 + 2*B*b**3*x*
*(7/2)/7 + 2*B*b**2*c*x**(9/2)/3 + 6*B*b*c**2*x**(11/2)/11 + 2*B*c**3*x**(1
3/2)/13
```

3.930 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{2a^3A}{3x^{3/2}}-\frac{2a^2(aB+3Ab)}{\sqrt{x}}+\frac{6}{7}cx^{7/2}\left(aBc+Abc+b^2B\right)+6a\sqrt{x}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{5}x^{5/2}\left(3aAc^2+6abBc+3A\right.$$

Rubi [A] time = 0.11, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{\sqrt{x}}-\frac{2a^3A}{3x^{3/2}}+\frac{2}{5}x^{5/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{7}cx^{7/2}\left(aBc+Abc+b^2B\right)+\frac{2}{3}x^{3/2}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+6a\sqrt{x}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{9}c^2x^{9/2}(Ac+3bB)+\frac{2}{11}Bc^3x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (-2*a^3*A)/(3*x^(3/2)) - (2*a^2*(3*A*b + a*B))/Sqrt[x] + 6*a*(a*b*B + A*(b^
2 + a*c))*Sqrt[x] + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(3/2))/3 +
 (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(5/2))/5 + (6*c*(b^2*B +
A*b*c + a*B*c)*x^(7/2))/7 + (2*c^2*(3*b*B + A*c)*x^(9/2))/9 + (2*B*c^3*x^(1
1/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{5/2}}\,dx &= \int \left(\frac{a^3A}{x^{5/2}}+\frac{a^2(3Ab+aB)}{x^{3/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{\sqrt{x}}+\left(3aB\left(b^2+ac\right)+A\left(\right.\right.\right.\\ &= -\frac{2a^3A}{3x^{3/2}}-\frac{2a^2(3Ab+aB)}{\sqrt{x}}+6a\left(abB+A\left(b^2+ac\right)\right)\sqrt{x}+\frac{2}{3}\left(3aB\left(b^2+ac\right)\right.\end{aligned}$$

Mathematica [A] time = 0.16, size = 170, normalized size = 0.96

$$\frac{2\left(-1155a^3(A+3Bx)+3465a^2x(Bx(3b+cx)-3A(b-cx))+99ax^2\left(7A\left(15b^2+10bcx+3c^2x^2\right)+Bx\left(35b^2+42bcx+15c^2x^2\right)\right)+x^3\left(11A\left(105b^3+189b^2cx+135bc^2x^2+35c^3x^3\right)+3Bx\left(231b^3+495b^2cx+385bc^2x^2+105c^3x^3\right)\right)\right)}{3465x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-1155*a^3*(A + 3*B*x) + 3465*a^2*x*(-3*A*(b - c*x) + B*x*(3*b + c*x)) +
 99*a*x^2*(7*A*(15*b^2 + 10*b*c*x + 3*c^2*x^2) + B*x*(35*b^2 + 42*b*c*x + 1
5*c^2*x^2)) + x^3*(11*A*(105*b^3 + 189*b^2*c*x + 135*b*c^2*x^2 + 35*c^3*x^3
) + 3*B*x*(231*b^3 + 495*b^2*c*x + 385*b*c^2*x^2 + 105*c^3*x^3))))/(3465*x^
(3/2))
```

IntegrateAlgebraic [A] time = 0.19, size = 195, normalized size = 1.10

$$\frac{2\left(-1155a^3A-3465a^3Bx-10395a^2Abx+10395a^2Acx^2+10395a^2bBx^2+3465a^2Bcx^3+10395aAb^2x^2+6930aAbcx^3+2079aAc^2x^4+3465ab^2Bx^3+4158abBcx^4+1485aBc^2x^5+1155Ab^3x^3+2079Ab^2cx^4+1485Abc^2x^5+385Ac^3x^6+693b^3Bx^4+1485b^2Bcx^5+1155bBc^2x^6+315Bc^3x^7\right)}{3465x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-1155*a^3*A - 10395*a^2*A*b*x - 3465*a^3*B*x + 10395*a*A*b^2*x^2 + 1039
5*a^2*b*B*x^2 + 10395*a^2*A*c*x^2 + 1155*A*b^3*x^3 + 3465*a*b^2*B*x^3 + 693
0*a*A*b*c*x^3 + 3465*a^2*B*c*x^3 + 693*b^3*B*x^4 + 2079*A*b^2*c*x^4 + 4158*
a*b*B*c*x^4 + 2079*a*A*c^2*x^4 + 1485*b^2*B*c*x^5 + 1485*A*b*c^2*x^5 + 1485
*a*B*c^2*x^5 + 1155*b*B*c^2*x^6 + 385*A*c^3*x^6 + 315*B*c^3*x^7))/(3465*x^(
3/2))
```

fricas [A] time = 0.43, size = 166, normalized size = 0.93

$$\frac{2\left(315\,Bc^3x^7 + 385\left(3\,Bbc^2 + Ac^3\right)x^6 + 1485\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 693\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 - 1155\,Aa^3 + 1155\left(3\,Bab^2 + Ab^3 + 3\left(Ba^2 + 2\,Aab\right)c\right)x^3 + 10395\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 - 3465\left(Ba^3 + 3\,Aa^2b\right)x\right)}{3465\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*x^7 + 385*(3*B*b*c^2 + A*c^3)*x^6 + 1485*(B*b^2*c + (B*a
+ A*b)*c^2)*x^5 + 693*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 115
5*A*a^3 + 1155*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 10395*(B*a
^2*b + A*a*b^2 + A*a^2*c)*x^2 - 3465*(B*a^3 + 3*A*a^2*b)*x)/x^(3/2)
```

giac [A] time = 0.18, size = 191, normalized size = 1.07

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}} + \frac{2}{3}\,Bbc^2x^{\frac{9}{2}} + \frac{2}{9}\,Ac^3x^{\frac{9}{2}} + \frac{6}{7}\,Bb^2cx^{\frac{7}{2}} + \frac{6}{7}\,Bac^2x^{\frac{7}{2}} + \frac{6}{7}\,Abc^2x^{\frac{7}{2}} + \frac{2}{5}\,Bb^3x^{\frac{5}{2}} + \frac{12}{5}\,Babcx^{\frac{5}{2}} + \frac{6}{5}\,Ab^2cx^{\frac{5}{2}} + \frac{6}{5}\,Aac^2x^{\frac{5}{2}} + 2\,Bab^2x^{\frac{3}{2}} + \frac{2}{3}\,Ab^3x^{\frac{3}{2}} + 2\,Ba^2cx^{\frac{3}{2}} + 4\,Aabcx^{\frac{3}{2}} + 6\,Ba^2b\sqrt{x} + 6\,Aab^2\sqrt{x} + 6\,Aa^2c\sqrt{x} - \frac{2\left(3\,Ba^3x + 9\,Aa^2bx + Aa^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/3*B*b*c^2*x^(9/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*b^2*c
*x^(7/2) + 6/7*B*a*c^2*x^(7/2) + 6/7*A*b*c^2*x^(7/2) + 2/5*B*b^3*x^(5/2) +
12/5*B*a*b*c*x^(5/2) + 6/5*A*b^2*c*x^(5/2) + 6/5*A*a*c^2*x^(5/2) + 2*B*a*b^
2*x^(3/2) + 2/3*A*b^3*x^(3/2) + 2*B*a^2*c*x^(3/2) + 4*A*a*b*c*x^(3/2) + 6*B
*a^2*b*sqrt(x) + 6*A*a*b^2*sqrt(x) + 6*A*a^2*c*sqrt(x) - 2/3*(3*B*a^3*x + 9
*A*a^2*b*x + A*a^3)/x^(3/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.08

$$-\frac{2\left(-315B\,c^3x^7 - 385A\,c^3x^6 - 1155x^6Bb\,c^2 - 1485x^5Ab\,c^2 - 1485Ba\,c^2x^5 - 1485x^5B\,b^2c - 2079Aa\,c^2x^4 - 2079x^4A\,b^2c - 4158x^4abBc - 693x^4b^3B - 6930x^3Aabc - 1155A\,b^3x^3 - 3465B\,a^2c\,x^3 - 3465x^3Ba\,b^2 - 10395A\,a^2c\,x^2 - 10395x^2Aa\,b^2 - 10395B\,a^2b\,x^2 + 10395xA\,a^2b + 3465B\,a^3x + 1155A\,a^3\right)}{3465x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x)
```

```
[Out] -2/3465*(-315*B*c^3*x^7-385*A*c^3*x^6-1155*B*b*c^2*x^6-1485*A*b*c^2*x^5-148
5*B*a*c^2*x^5-1485*B*b^2*c*x^5-2079*A*a*c^2*x^4-2079*A*b^2*c*x^4-4158*B*a*b
*c*x^4-693*B*b^3*x^4-6930*A*a*b*c*x^3-1155*A*b^3*x^3-3465*B*a^2*c*x^3-3465*
B*a*b^2*x^3-10395*A*a^2*c*x^2-10395*A*a*b^2*x^2-10395*B*a^2*b*x^2+10395*A*a
^2*b*x+3465*B*a^3*x+1155*A*a^3)/x^(3/2)
```

maxima [A] time = 0.57, size = 166, normalized size = 0.93

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}} + \frac{2}{9}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{9}{2}} + \frac{6}{7}\left(Bb^2c + (Ba + Ab)c^2\right)x^{\frac{7}{2}} + \frac{2}{5}\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^{\frac{5}{2}} + \frac{2}{3}\left(3\,Bab^2 + Ab^3 + 3\left(Ba^2 + 2\,Aab\right)c\right)x^{\frac{3}{2}} + 6\left(Ba^2b + Aab^2 + Aa^2c\right)\sqrt{x} - \frac{2\left(Aa^3 + 3\left(Ba^3 + 3\,Aa^2b\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/9*(3*B*b*c^2 + A*c^3)*x^(9/2) + 6/7*(B*b^2*c + (B*a
 + A*b)*c^2)*x^(7/2) + 2/5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^(5
/2) + 2/3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^(3/2) + 6*(B*a^2*b
+ A*a*b^2 + A*a^2*c)*sqrt(x) - 2/3*(A*a^3 + 3*(B*a^3 + 3*A*a^2*b)*x)/x^(3/2
)
```

mupad [B] time = 0.05, size = 170, normalized size = 0.96

$$x^{3/2}\left(2\,B\,c\,a^2+2\,B\,a\,b^2+4\,A\,c\,a\,b+\frac{2\,A\,b^3}{3}\right)+x^{5/2}\left(\frac{2\,B\,b^3}{5}+\frac{6\,A\,b^2\,c}{5}+\frac{12\,B\,a\,b\,c}{5}+\frac{6\,A\,a\,c^2}{5}\right)-\frac{x\,\left(2\,B\,a^3+6\,A\,b\,a^2\right)+\frac{2\,A\,a^3}{3}}{x^{3/2}}+x^{9/2}\left(\frac{2\,A\,c^3}{9}+\frac{2\,B\,b\,c^2}{3}\right)+\sqrt{x}\,\left(6\,B\,a^2\,b+6\,A\,c\,a^2+6\,A\,a\,b^2\right)+x^{7/2}\left(\frac{6\,B\,b^2\,c}{7}+\frac{6\,A\,b\,c^2}{7}+\frac{6\,B\,a\,c^2}{7}\right)+\frac{2\,B\,c^3\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x)
```

```
[Out] x^(3/2)*((2*A*b^3)/3 + 2*B*a*b^2 + 2*B*a^2*c + 4*A*a*b*c) + x^(5/2)*((2*B*b
^3)/5 + (6*A*a*c^2)/5 + (6*A*b^2*c)/5 + (12*B*a*b*c)/5) - (x*(2*B*a^3 + 6*A
*a^2*b) + (2*A*a^3)/3)/x^(3/2) + x^(9/2)*((2*A*c^3)/9 + (2*B*b*c^2)/3) + x^
(1/2)*(6*A*a*b^2 + 6*A*a^2*c + 6*B*a^2*b) + x^(7/2)*((6*A*b*c^2)/7 + (6*B*a
*c^2)/7 + (6*B*b^2*c)/7) + (2*B*c^3*x^(11/2))/11
```

sympy [A] time = 7.05, size = 280, normalized size = 1.57

$$-\frac{2Aa^3}{3x^{\frac{3}{2}}}-\frac{6Aa^2b}{\sqrt{x}}+6Aa^2c\sqrt{x}+6Aab^2\sqrt{x}+4Aabcx^{\frac{3}{2}}+\frac{6Aac^2x^{\frac{5}{2}}}{5}+\frac{2Ab^3x^{\frac{3}{2}}}{3}+\frac{6Ab^2cx^{\frac{5}{2}}}{5}+\frac{6Abc^2x^{\frac{7}{2}}}{7}+\frac{2Ac^3x^{\frac{9}{2}}}{9}-\frac{2Ba^3}{\sqrt{x}}+6Ba^2b\sqrt{x}+2Ba^2cx^{\frac{3}{2}}+2Bab^2x^{\frac{3}{2}}+\frac{12Babcx^{\frac{5}{2}}}{5}+\frac{6Bac^2x^{\frac{7}{2}}}{7}+\frac{2Bb^3x^{\frac{5}{2}}}{5}+\frac{6Bb^2cx^{\frac{7}{2}}}{7}+\frac{2Bbc^2x^{\frac{9}{2}}}{3}+\frac{2Bc^3x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(5/2),x)
```

```
[Out] -2*A*a**3/(3*x**(3/2)) - 6*A*a**2*b/sqrt(x) + 6*A*a**2*c*sqrt(x) + 6*A*a*b*
*2*sqrt(x) + 4*A*a*b*c*x**(3/2) + 6*A*a*c**2*x**(5/2)/5 + 2*A*b**3*x**(3/2)
/3 + 6*A*b**2*c*x**(5/2)/5 + 6*A*b*c**2*x**(7/2)/7 + 2*A*c**3*x**(9/2)/9 -
2*B*a**3/sqrt(x) + 6*B*a**2*b*sqrt(x) + 2*B*a**2*c*x**(3/2) + 2*B*a*b**2*x*
*(3/2) + 12*B*a*b*c*x**(5/2)/5 + 6*B*a*c**2*x**(7/2)/7 + 2*B*b**3*x**(5/2)/
5 + 6*B*b**2*c*x**(7/2)/7 + 2*B*b*c**2*x**(9/2)/3 + 2*B*c**3*x**(11/2)/11
```

3.931 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{2a^3A}{5x^{5/2}}-\frac{2a^2(aB+3Ab)}{3x^{3/2}}+\frac{6}{5}cx^{5/2}\left(aBc+Abc+b^2B\right)-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{\sqrt{x}}+\frac{2}{3}x^{3/2}\left(3aAc^2+6abBc+3Ab^2c+b\right.$$

Rubi [A] time = 0.12, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{3x^{3/2}}-\frac{2a^3A}{5x^{5/2}}+\frac{2}{3}x^{3/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{5}cx^{5/2}\left(aBc+Abc+b^2B\right)+2\sqrt{x}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{\sqrt{x}}+\frac{2}{7}c^2x^{7/2}(Ac+3bB)+\frac{2}{9}Bc^3x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (-2*a^3*A)/(5*x^(5/2)) - (2*a^2*(3*A*b + a*B))/(3*x^(3/2)) - (6*a*(a*b*B +
A*(b^2 + a*c)))/Sqrt[x] + 2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*Sqrt[x]
 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(3/2))/3 + (6*c*(b^2*B
+ A*b*c + a*B*c)*x^(5/2))/5 + (2*c^2*(3*b*B + A*c)*x^(7/2))/7 + (2*B*c^3*x^
(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{7/2}}\,dx &= \int \left(\frac{a^3A}{x^{7/2}}+\frac{a^2(3Ab+aB)}{x^{5/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^{3/2}}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{\sqrt{x}}\right.\\ &= -\frac{2a^3A}{5x^{5/2}}-\frac{2a^2(3Ab+aB)}{3x^{3/2}}-\frac{6a\left(abB+A\left(b^2+ac\right)\right)}{\sqrt{x}}+2\left(3aB\left(b^2+ac\right)+A\left(b^3\right.\right.\end{aligned}$$

Mathematica [A] time = 0.18, size = 169, normalized size = 0.95

$$\frac{2\left(-21a^3(3A+5Bx)-315a^2x(A(b+3cx)+3Bx(b-cx))+63ax^2\left(5A\left(-3b^2+6bcx+c^2x^2\right)+Bx\left(15b^2+10bcx+3c^2x^2\right)\right)+x^3\left(9A\left(35b^3+35b^2cx+21bc^2x^2+5c^3x^3\right)+Bx\left(105b^3+189b^2cx+135bc^2x^2+35c^3x^3\right)\right)\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(-21*a^3*(3*A + 5*B*x) - 315*a^2*x*(3*B*x*(b - c*x) + A*(b + 3*c*x)) + 6
3*a*x^2*(5*A*(-3*b^2 + 6*b*c*x + c^2*x^2) + B*x*(15*b^2 + 10*b*c*x + 3*c^2*
x^2)) + x^3*(9*A*(35*b^3 + 35*b^2*c*x + 21*b*c^2*x^2 + 5*c^3*x^3) + B*x*(10
5*b^3 + 189*b^2*c*x + 135*b*c^2*x^2 + 35*c^3*x^3))))/(315*x^(5/2))
```

IntegrateAlgebraic [A] time = 0.15, size = 195, normalized size = 1.10

$$\frac{2\left(-63a^3A-105a^3Bx-315a^2Abx-945a^2Acx^2-945a^2bBx^2+945a^2Bcx^3-945aAb^2x^2+1890aAbcx^3+315aAc^2x^4+945ab^2Bx^3+630abBcx^4+189aBc^2x^5+315Ab^3x^3+315Ab^2cx^4+189Abc^2x^5+45Ac^3x^6+105b^3Bx^4+189b^2Bcx^5+135bBc^2x^6+35Bc^3x^7\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(-63*a^3*A - 315*a^2*A*b*x - 105*a^3*B*x - 945*a*A*b^2*x^2 - 945*a^2*b*B
*x^2 - 945*a^2*A*c*x^2 + 315*A*b^3*x^3 + 945*a*b^2*B*x^3 + 1890*a*A*b*c*x^3
 + 945*a^2*B*c*x^3 + 105*b^3*B*x^4 + 315*A*b^2*c*x^4 + 630*a*b*B*c*x^4 + 31
5*a*A*c^2*x^4 + 189*b^2*B*c*x^5 + 189*A*b*c^2*x^5 + 189*a*B*c^2*x^5 + 135*b
*B*c^2*x^6 + 45*A*c^3*x^6 + 35*B*c^3*x^7))/(315*x^(5/2))
```

fricas [A] time = 0.41, size = 166, normalized size = 0.93

$$\frac{2\left(35\,Bc^3x^7+45\left(3\,Bbc^2+Ac^3\right)x^6+189\left(Bb^2c+(Ba+Ab)c^2\right)x^5+105\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4-63\,Aa^3+315\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^3-945\left(Ba^2b+Aab^2+Aa^2c\right)x^2-105\left(Ba^3+3\,Aa^2b\right)x\right)}{315\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*x^7 + 45*(3*B*b*c^2 + A*c^3)*x^6 + 189*(B*b^2*c + (B*a + A*
b)*c^2)*x^5 + 105*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 63*A*a^
3 + 315*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 945*(B*a^2*b + A*
a*b^2 + A*a^2*c)*x^2 - 105*(B*a^3 + 3*A*a^2*b)*x)/x^(5/2)
```

giac [A] time = 0.20, size = 192, normalized size = 1.08

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}}+\frac{6}{7}\,Bbc^2x^{\frac{7}{2}}+\frac{2}{7}\,Ac^3x^{\frac{7}{2}}+\frac{6}{5}\,Bb^2cx^{\frac{5}{2}}+\frac{6}{5}\,Bac^2x^{\frac{5}{2}}+\frac{6}{5}\,Abc^2x^{\frac{5}{2}}+\frac{2}{3}\,Bb^3x^{\frac{3}{2}}+4\,Babcx^{\frac{3}{2}}+2\,Ab^2cx^{\frac{3}{2}}+2\,Aac^2x^{\frac{3}{2}}+6\,Bab^2\sqrt{x}+2\,Ab^3\sqrt{x}+6\,Ba^2c\sqrt{x}+12\,Aabc\sqrt{x}-\frac{2\left(45\,Ba^2bx^2+45\,Aab^2x^2+45\,Aa^2cx^2+5\,Ba^3x+15\,Aa^2bx+3\,Aa^3\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 6/7*B*b*c^2*x^(7/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*b^2*c*x
^(5/2) + 6/5*B*a*c^2*x^(5/2) + 6/5*A*b*c^2*x^(5/2) + 2/3*B*b^3*x^(3/2) + 4*
B*a*b*c*x^(3/2) + 2*A*b^2*c*x^(3/2) + 2*A*a*c^2*x^(3/2) + 6*B*a*b^2*sqrt(x)
 + 2*A*b^3*sqrt(x) + 6*B*a^2*c*sqrt(x) + 12*A*a*b*c*sqrt(x) - 2/15*(45*B*a^
2*b*x^2 + 45*A*a*b^2*x^2 + 45*A*a^2*c*x^2 + 5*B*a^3*x + 15*A*a^2*b*x + 3*A*
a^3)/x^(5/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.08

$$-\frac{2\left(-35B\,c^3x^7-45A\,c^3x^6-135x^6Bb\,c^2-189x^5Ab\,c^2-189Ba\,c^2x^5-189x^5B\,b^2c-315Aa\,c^2x^4-315x^4A\,b^2c-630x^4abBc-105x^4b^3B-1890x^3Aabc-315A\,b^3x^3-945B\,a^2c\,x^3-945x^3Ba\,b^2+945A\,a^2c\,x^2+945x^2Aa\,b^2+945B\,a^2b\,x^2+315xA\,a^2b+105B\,a^3x+63A\,a^3\right)}{315x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x)
```

```
[Out] -2/315*(-35*B*c^3*x^7-45*A*c^3*x^6-135*B*b*c^2*x^6-189*A*b*c^2*x^5-189*B*a*
c^2*x^5-189*B*b^2*c*x^5-315*A*a*c^2*x^4-315*A*b^2*c*x^4-630*B*a*b*c*x^4-105
*B*b^3*x^4-1890*A*a*b*c*x^3-315*A*b^3*x^3-945*B*a^2*c*x^3-945*B*a*b^2*x^3+9
45*A*a^2*c*x^2+945*A*a*b^2*x^2+945*B*a^2*b*x^2+315*A*a^2*b*x+105*B*a^3*x+63
*A*a^3)/x^(5/2)
```

maxima [A] time = 0.50, size = 167, normalized size = 0.94

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}}+\frac{2}{7}\left(3\,Bbc^2+Ac^3\right)x^{\frac{7}{2}}+\frac{6}{5}\left(Bb^2c+(Ba+Ab)c^2\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^{\frac{3}{2}}+2\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)\sqrt{x}-\frac{2\left(3\,Aa^3+45\left(Ba^2b+Aab^2+Aa^2c\right)x^2+5\left(Ba^3+3\,Aa^2b\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2/7*(3*B*b*c^2 + A*c^3)*x^(7/2) + 6/5*(B*b^2*c + (B*a +
 A*b)*c^2)*x^(5/2) + 2/3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^(3/2
) + 2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*sqrt(x) - 2/15*(3*A*a^3 +
 45*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^(5/2)
```

mupad [B] time = 0.05, size = 170, normalized size = 0.96

$$\sqrt{x}\,\left(6\,B\,c\,a^2+6\,B\,a\,b^2+12\,A\,c\,a\,b+2\,A\,b^3\right)-\frac{x\,\left(\frac{2\,B\,a^3}{3}+2\,A\,b\,a^2\right)+\frac{2\,A\,a^3}{5}+x^2\,\left(6\,B\,a^2\,b+6\,A\,c\,a^2+6\,A\,a\,b^2\right)}{x^{5/2}}+x^{3/2}\,\left(\frac{2\,B\,b^3}{3}+2\,A\,b^2\,c+4\,B\,a\,b\,c+2\,A\,a\,c^2\right)+x^{7/2}\,\left(\frac{2\,A\,c^3}{7}+\frac{6\,B\,b\,c^2}{7}\right)+x^{5/2}\,\left(\frac{6\,B\,b^2\,c}{5}+\frac{6\,A\,b\,c^2}{5}+\frac{6\,B\,a\,c^2}{5}\right)+\frac{2\,B\,c^3\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x)
```

```
[Out] x^(1/2)*(2*A*b^3 + 6*B*a*b^2 + 6*B*a^2*c + 12*A*a*b*c) - (x*((2*B*a^3)/3 +
2*A*a^2*b) + (2*A*a^3)/5 + x^2*(6*A*a*b^2 + 6*A*a^2*c + 6*B*a^2*b))/x^(5/2)
 + x^(3/2)*((2*B*b^3)/3 + 2*A*a*c^2 + 2*A*b^2*c + 4*B*a*b*c) + x^(7/2)*((2*
A*c^3)/7 + (6*B*b*c^2)/7) + x^(5/2)*((6*A*b*c^2)/5 + (6*B*a*c^2)/5 + (6*B*b
^2*c)/5) + (2*B*c^3*x^(9/2))/9
```

sympy [A] time = 10.67, size = 275, normalized size = 1.54

$$-\frac{2Aa^3}{5x^{\frac{5}{2}}}-\frac{2Aa^2b}{x^{\frac{3}{2}}}-\frac{6Aa^2c}{\sqrt{x}}-\frac{6Aab^2}{\sqrt{x}}+12Aabc\sqrt{x}+2Aac^2x^{\frac{3}{2}}+2Ab^3\sqrt{x}+2Ab^2cx^{\frac{3}{2}}+\frac{6Abc^2x^{\frac{5}{2}}}{5}+\frac{2Ac^3x^{\frac{7}{2}}}{7}-\frac{2Ba^3}{3x^{\frac{3}{2}}}-\frac{6Ba^2b}{\sqrt{x}}+6Ba^2c\sqrt{x}+6Bab^2\sqrt{x}+4Babcx^{\frac{3}{2}}+\frac{6Bac^2x^{\frac{5}{2}}}{5}+\frac{2Bb^3x^{\frac{3}{2}}}{3}+\frac{6Bb^2cx^{\frac{5}{2}}}{5}+\frac{6Bbc^2x^{\frac{7}{2}}}{7}+\frac{2Bc^3x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(7/2),x)
```

```
[Out] -2*A*a**3/(5*x**(5/2)) - 2*A*a**2*b/x**(3/2) - 6*A*a**2*c/sqrt(x) - 6*A*a*b
**2/sqrt(x) + 12*A*a*b*c*sqrt(x) + 2*A*a*c**2*x**(3/2) + 2*A*b**3*sqrt(x) +
 2*A*b**2*c*x**(3/2) + 6*A*b*c**2*x**(5/2)/5 + 2*A*c**3*x**(7/2)/7 - 2*B*a*
*3/(3*x**(3/2)) - 6*B*a**2*b/sqrt(x) + 6*B*a**2*c*sqrt(x) + 6*B*a*b**2*sqrt
(x) + 4*B*a*b*c*x**(3/2) + 6*B*a*c**2*x**(5/2)/5 + 2*B*b**3*x**(3/2)/3 + 6*
B*b**2*c*x**(5/2)/5 + 6*B*b*c**2*x**(7/2)/7 + 2*B*c**3*x**(9/2)/9
```

3.932 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{9/2}} dx$

Optimal. Leaf size=174

$$-\frac{2a^3A}{7x^{7/2}}-\frac{2a^2(aB+3Ab)}{5x^{5/2}}+2cx^{3/2}\left(aBc+Abc+b^2B\right)-\frac{2a\left(A\left(ac+b^2\right)+abB\right)}{x^{3/2}}+2\sqrt{x}\left(3aAc^2+6abBc+3Ab^2c+\right.$$

Rubi [A] time = 0.12, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{5x^{5/2}}-\frac{2a^3A}{7x^{7/2}}+2\sqrt{x}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+2cx^{3/2}\left(aBc+Abc+b^2B\right)-\frac{2a\left(A\left(ac+b^2\right)+abB\right)}{x^{3/2}}-\frac{2\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)}{\sqrt{x}}+\frac{2}{5}c^2x^{5/2}(Ac+3bB)+\frac{2}{7}Bc^3x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*a^3*A)/(7*x^(7/2)) - (2*a^2*(3*A*b + a*B))/(5*x^(5/2)) - (2*a*(a*b*B +
A*(b^2 + a*c)))/x^(3/2) - (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c)))/Sqrt[
x] + 2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*Sqrt[x] + 2*c*(b^2*B + A
*b*c + a*B*c)*x^(3/2) + (2*c^2*(3*b*B + A*c)*x^(5/2))/5 + (2*B*c^3*x^(7/2))
/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{9/2}} dx = \int \left(\frac{a^3A}{x^{9/2}}+\frac{a^2(3Ab+aB)}{x^{7/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^{5/2}}+\frac{3aB\left(b^2+ac\right)+A\left(b\right.}{x^{3/2}}\right.$$
$$= -\frac{2a^3A}{7x^{7/2}}-\frac{2a^2(3Ab+aB)}{5x^{5/2}}-\frac{2a\left(abB+A\left(b^2+ac\right)\right)}{x^{3/2}}-\frac{2\left(3aB\left(b^2+ac\right)+A\right.}{\sqrt{x}}$$

Mathematica [A] time = 0.19, size = 168, normalized size = 0.97

$$\frac{2\left(-\left(a^3(5A+7Bx)\right)-7a^2x(A(3b+5cx)+5Bx(b+3cx))-35ax^2\left(A\left(b^2+6bcx-3c^2x^2\right)-Bx\left(-3b^2+6bcx+c^2x^2\right)\right)+x^3\left(7A\left(-5b^3+15b^2cx+5bc^2x^2+c^3x^3\right)+Bx\left(35b^3+35b^2cx+21bc^2x^2+5c^3x^3\right)\right)\right)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(-(a^3*(5*A + 7*B*x)) - 7*a^2*x*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x)) -
35*a*x^2*(A*(b^2 + 6*b*c*x - 3*c^2*x^2) - B*x*(-3*b^2 + 6*b*c*x + c^2*x^2))
 + x^3*(7*A*(-5*b^3 + 15*b^2*c*x + 5*b*c^2*x^2 + c^3*x^3) + B*x*(35*b^3 + 3
5*b^2*c*x + 21*b*c^2*x^2 + 5*c^3*x^3))))/(35*x^(7/2))
```

IntegrateAlgebraic [A] time = 0.16, size = 195, normalized size = 1.12

$$\frac{2\left(-5a^3A-7a^3Bx-21a^2Abx-35a^2Acx^2-35a^2bBx^2-105a^2Bcx^3-35aAb^2x^2-210aAbcx^3+105aAc^2x^4-105ab^2Bx^3+210abBcx^4+35aBc^2x^5-35Ab^3x^3+105Ab^2cx^4+35Abc^2x^5+7Ac^3x^6+35b^3Bx^4+35b^2Bcx^5+21bBc^2x^6+5Bc^3x^7\right)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(-5*a^3*A - 21*a^2*A*b*x - 7*a^3*B*x - 35*a*A*b^2*x^2 - 35*a^2*b*B*x^2 -
 35*a^2*A*c*x^2 - 35*A*b^3*x^3 - 105*a*b^2*B*x^3 - 210*a*A*b*c*x^3 - 105*a^
2*B*c*x^3 + 35*b^3*B*x^4 + 105*A*b^2*c*x^4 + 210*a*b*B*c*x^4 + 105*a*A*c^2*
x^4 + 35*b^2*B*c*x^5 + 35*A*b*c^2*x^5 + 35*a*B*c^2*x^5 + 21*b*B*c^2*x^6 + 7
*A*c^3*x^6 + 5*B*c^3*x^7))/(35*x^(7/2))
```

fricas [A] time = 0.43, size = 166, normalized size = 0.95

$$\frac{2\left(5 Bc^3x^7 + 7\left(3 Bbc^2 + Ac^3\right)x^6 + 35\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 35\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)x^4 - 5 Aa^3 - 35\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 - 35\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 - 7\left(Ba^3 + 3 Aa^2b\right)x\right)}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^7 + 7*(3*B*b*c^2 + A*c^3)*x^6 + 35*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 35*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 5*A*a^3 - 35
*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 35*(B*a^2*b + A*a*b^2 +
A*a^2*c)*x^2 - 7*(B*a^3 + 3*A*a^2*b)*x)/x^(7/2)
```

giac [A] time = 0.17, size = 192, normalized size = 1.10

$$\frac{2}{7} Bc^3x^{\frac{7}{2}} + \frac{6}{5} Bbc^2x^{\frac{5}{2}} + \frac{2}{5} Ac^3x^{\frac{5}{2}} + 2 Bb^2cx^{\frac{3}{2}} + 2 Bac^2x^{\frac{3}{2}} + 2 Abc^2x^{\frac{3}{2}} + 2 Bb^3\sqrt{x} + 12 Babc\sqrt{x} + 6 Ab^2c\sqrt{x} + 6 Aac^2\sqrt{x} - \frac{2\left(105 Bab^2x^3 + 35 Ab^3x^3 + 105 Ba^2cx^3 + 210 Aabcx^3 + 35 Ba^2bx^2 + 35 Aab^2x^2 + 35 Aa^2cx^2 + 7 Ba^3x + 21 Aa^2bx + 5 Aa^3\right)}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 6/5*B*b*c^2*x^(5/2) + 2/5*A*c^3*x^(5/2) + 2*B*b^2*c*x^(
3/2) + 2*B*a*c^2*x^(3/2) + 2*A*b*c^2*x^(3/2) + 2*B*b^3*sqrt(x) + 12*B*a*b*c
*sqrt(x) + 6*A*b^2*c*sqrt(x) + 6*A*a*c^2*sqrt(x) - 2/35*(105*B*a*b^2*x^3 +
35*A*b^3*x^3 + 105*B*a^2*c*x^3 + 210*A*a*b*c*x^3 + 35*B*a^2*b*x^2 + 35*A*a*
b^2*x^2 + 35*A*a^2*c*x^2 + 7*B*a^3*x + 21*A*a^2*b*x + 5*A*a^3)/x^(7/2)
```

maple [A] time = 0.06, size = 192, normalized size = 1.10

$$-\frac{2\left(-5B c^3x^7 - 7A c^3x^6 - 21x^6Bb c^2 - 35x^5Ab c^2 - 35Ba c^2x^5 - 35x^5B b^2c - 105Aa c^2x^4 - 105x^4A b^2c - 210x^4abBc - 35x^4b^3B + 210x^3Aabc + 35A b^3x^3 + 105B a^2c x^3 + 105x^3Ba b^2 + 35A a^2c x^2 + 35x^2Aa b^2 + 35B a^2b x^2 + 21xA a^2b + 7B a^3x + 5A a^3\right)}{35x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x)
```

```
[Out] -2/35*(-5*B*c^3*x^7-7*A*c^3*x^6-21*B*b*c^2*x^6-35*A*b*c^2*x^5-35*B*a*c^2*x^
5-35*B*b^2*c*x^5-105*A*a*c^2*x^4-105*A*b^2*c*x^4-210*B*a*b*c*x^4-35*B*b^3*x
^4+210*A*a*b*c*x^3+35*A*b^3*x^3+105*B*a^2*c*x^3+105*B*a*b^2*x^3+35*A*a^2*c*
x^2+35*A*a*b^2*x^2+35*B*a^2*b*x^2+21*A*a^2*b*x+7*B*a^3*x+5*A*a^3)/x^(7/2)
```

maxima [A] time = 0.52, size = 167, normalized size = 0.96

$$\frac{2}{7} Bc^3x^{\frac{7}{2}} + \frac{2}{5}\left(3 Bbc^2 + Ac^3\right)x^{\frac{5}{2}} + 2\left(Bb^2c + (Ba + Ab)c^2\right)x^{\frac{3}{2}} + 2\left(Bb^3 + 3 Aac^2 + 3\left(2 Bab + Ab^2\right)c\right)\sqrt{x} - \frac{2\left(5 Aa^3 + 35\left(3 Bab^2 + Ab^3 + 3\left(Ba^2 + 2 Aab\right)c\right)x^3 + 35\left(Ba^2b + Aab^2 + Aa^2c\right)x^2 + 7\left(Ba^3 + 3 Aa^2b\right)x\right)}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 2/5*(3*B*b*c^2 + A*c^3)*x^(5/2) + 2*(B*b^2*c + (B*a + A
*b)*c^2)*x^(3/2) + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*sqrt(x) -
2/35*(5*A*a^3 + 35*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 35*(B*
a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 7*(B*a^3 + 3*A*a^2*b)*x)/x^(7/2)
```

mupad [B] time = 0.06, size = 170, normalized size = 0.98

$$\sqrt{x}\,\left(2\,B\,b^3 + 6\,A\,b^2\,c + 12\,B\,a\,b\,c + 6\,A\,a\,c^2\right) - \frac{x^3\,\left(6\,B\,c\,a^2 + 6\,B\,a\,b^2 + 12\,A\,c\,a\,b + 2\,A\,b^3\right) + x\,\left(\frac{2\,B\,a^3}{5} + \frac{6\,A\,b\,a^2}{5}\right) + \frac{2\,A\,a^3}{7} + x^2\,\left(2\,B\,a^2\,b + 2\,A\,c\,a^2 + 2\,A\,a\,b^2\right)}{x^{7/2}} + x^{5/2}\,\left(\frac{2\,A\,c^3}{5} + \frac{6\,B\,b\,c^2}{5}\right) + x^{3/2}\,\left(2\,B\,b^2\,c + 2\,A\,b\,c^2 + 2\,B\,a\,c^2\right) + \frac{2\,B\,c^3\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*B*b^3 + 6*A*a*c^2 + 6*A*b^2*c + 12*B*a*b*c) - (x^3*(2*A*b^3 + 6*
B*a*b^2 + 6*B*a^2*c + 12*A*a*b*c) + x*((2*B*a^3)/5 + (6*A*a^2*b)/5) + (2*A*
a^3)/7 + x^2*(2*A*a*b^2 + 2*A*a^2*c + 2*B*a^2*b))/x^(7/2) + x^(5/2)*((2*A*c
^3)/5 + (6*B*b*c^2)/5) + x^(3/2)*(2*A*b*c^2 + 2*B*a*c^2 + 2*B*b^2*c) + (2*B
*c^3*x^(7/2))/7
```

sympy [A] time = 12.90, size = 270, normalized size = 1.55

$$-\frac{2Aa^3}{7x^{\frac{7}{2}}} - \frac{6Aa^2b}{5x^{\frac{5}{2}}} - \frac{2Aa^2c}{x^{\frac{3}{2}}} - \frac{2Aab^2}{x^{\frac{3}{2}}} - \frac{12Aabc}{\sqrt{x}} + 6Aac^2\sqrt{x} - \frac{2Ab^3}{\sqrt{x}} + 6Ab^2c\sqrt{x} + 2Abc^2x^{\frac{3}{2}} + \frac{2Ac^3x^{\frac{5}{2}}}{5} - \frac{2Ba^3}{5x^{\frac{5}{2}}} - \frac{2Ba^2b}{x^{\frac{3}{2}}} - \frac{6Ba^2c}{\sqrt{x}} - \frac{6Bab^2}{\sqrt{x}} + 12Babc\sqrt{x} + 2Bac^2x^{\frac{3}{2}} + 2Bb^3\sqrt{x} + 2Bb^2cx^{\frac{3}{2}} + \frac{6Bbc^2x^{\frac{5}{2}}}{5} + \frac{2Bc^3x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(9/2),x)
```

```
[Out] -2*A*a**3/(7*x**(7/2)) - 6*A*a**2*b/(5*x**(5/2)) - 2*A*a**2*c/x**(3/2) - 2*
A*a*b**2/x**(3/2) - 12*A*a*b*c/sqrt(x) + 6*A*a*c**2*sqrt(x) - 2*A*b**3/sqrt
(x) + 6*A*b**2*c*sqrt(x) + 2*A*b*c**2*x**(3/2) + 2*A*c**3*x**(5/2)/5 - 2*B*
a**3/(5*x**(5/2)) - 2*B*a**2*b/x**(3/2) - 6*B*a**2*c/sqrt(x) - 6*B*a*b**2/s
qrt(x) + 12*B*a*b*c*sqrt(x) + 2*B*a*c**2*x**(3/2) + 2*B*b**3*sqrt(x) + 2*B*
b**2*c*x**(3/2) + 6*B*b*c**2*x**(5/2)/5 + 2*B*c**3*x**(7/2)/7
```

3.933 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{2a^3A}{9x^{9/2}}-\frac{2a^2(aB+3Ab)}{7x^{7/2}}-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{5x^{5/2}}+6c\sqrt{x}\left(aBc+Abc+b^2B\right)-\frac{2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)}{\sqrt{x}}$$

Rubi [A] time = 0.11, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{7x^{7/2}}-\frac{2a^3A}{9x^{9/2}}-\frac{2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)}{\sqrt{x}}-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{5x^{5/2}}-\frac{2\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)}{3x^{3/2}}+6c\sqrt{x}\left(aBc+Abc+b^2B\right)+\frac{2}{3}c^2x^{3/2}(Ac+3bB)+\frac{2}{5}Bc^3x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*a^3*A)/(9*x^(9/2)) - (2*a^2*(3*A*b + a*B))/(7*x^(7/2)) - (6*a*(a*b*B +
A*(b^2 + a*c)))/(5*x^(5/2)) - (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c)))/(
3*x^(3/2)) - (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2))/Sqrt[x] + 6*c*
(b^2*B + A*b*c + a*B*c)*Sqrt[x] + (2*c^2*(3*b*B + A*c)*x^(3/2))/3 + (2*B*c^
3*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11/2}}\,dx=\int \left(\frac{a^3A}{x^{11/2}}+\frac{a^2(3Ab+aB)}{x^{9/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^{7/2}}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x^{5/2}}\right.$$

$$=-\frac{2a^3A}{9x^{9/2}}-\frac{2a^2(3Ab+aB)}{7x^{7/2}}-\frac{6a\left(abB+A\left(b^2+ac\right)\right)}{5x^{5/2}}-\frac{2\left(3aB\left(b^2+ac\right)+A\left(b^3\right.\right.}{3x^{3/2}}$$

Mathematica [A] time = 0.20, size = 172, normalized size = 0.97

$$-\frac{2\left(5a^3(7A+9Bx)+9a^2x(3A(5b+7cx)+7Bx(3b+5cx))+63ax^2\left(A\left(3b^2+10bcx+15c^2x^2\right)+5Bx\left(b^2+6bcx-3c^2x^2\right)\right)+21x^3\left(5A\left(b^3+9b^2cx-9bc^2x^2-c^3x^3\right)-3Bx\left(-5b^3+15b^2cx+5bc^2x^2+c^3x^3\right)\right)\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*(5*a^3*(7*A + 9*B*x) + 9*a^2*x*(7*B*x*(3*b + 5*c*x) + 3*A*(5*b + 7*c*x)
) + 63*a*x^2*(5*B*x*(b^2 + 6*b*c*x - 3*c^2*x^2) + A*(3*b^2 + 10*b*c*x + 15*
c^2*x^2)) + 21*x^3*(5*A*(b^3 + 9*b^2*c*x - 9*b*c^2*x^2 - c^3*x^3) - 3*B*x*(
-5*b^3 + 15*b^2*c*x + 5*b*c^2*x^2 + c^3*x^3))))/(315*x^(9/2))
```

IntegrateAlgebraic [A] time = 0.15, size = 195, normalized size = 1.10

$$\frac{2\left(-35a^3A-45a^3Bx-135a^2Abx-189a^2Acx^2-189a^2bBx^2-315a^2Bcx^3-189aAb^2x^2-630aAbcx^3-945aAc^2x^4-315ab^2Bx^3-1890abBcx^4+945aBc^2x^5-105Ab^3x^3-945Ab^2cx^4+945Abc^2x^5+105Ac^3x^6-315b^3Bx^4+945b^2Bcx^5+315bBc^2x^6+63Bc^3x^7\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (2*(-35*a^3*A - 135*a^2*A*b*x - 45*a^3*B*x - 189*a*A*b^2*x^2 - 189*a^2*b*B*
x^2 - 189*a^2*A*c*x^2 - 105*A*b^3*x^3 - 315*a*b^2*B*x^3 - 630*a*A*b*c*x^3 -
 315*a^2*B*c*x^3 - 315*b^3*B*x^4 - 945*A*b^2*c*x^4 - 1890*a*b*B*c*x^4 - 945
*a*A*c^2*x^4 + 945*b^2*B*c*x^5 + 945*A*b*c^2*x^5 + 945*a*B*c^2*x^5 + 315*b*
B*c^2*x^6 + 105*A*c^3*x^6 + 63*B*c^3*x^7))/(315*x^(9/2))
```

fricas [A]   time = 0.43, size = 166, normalized size = 0.93

$$\frac{2\left(63\,Bc^3x^7+105\left(3\,Bbc^2+Ac^3\right)x^6+945\left(Bb^2c+(Ba+Ab)c^2\right)x^5-315\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4-35\,Aa^3-105\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^3-189\left(Ba^2b+Aab^2+Aa^2c\right)x^2-45\left(Ba^3+3\,Aa^2b\right)x\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*c^3*x^7 + 105*(3*B*b*c^2 + A*c^3)*x^6 + 945*(B*b^2*c + (B*a + A
*b)*c^2)*x^5 - 315*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 35*A*a
^3 - 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 189*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 - 45*(B*a^3 + 3*A*a^2*b)*x)/x^(9/2)
```

giac [A]   time = 0.17, size = 192, normalized size = 1.08

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}}+2\,Bbc^2x^{\frac{3}{2}}+\frac{2}{3}\,Ac^3x^{\frac{3}{2}}+6\,Bb^2c\sqrt{x}+6\,Bac^2\sqrt{x}+6\,Abc^2\sqrt{x}-\frac{2\left(315\,Bb^3x^4+1890\,Babcx^4+945\,Ab^2cx^4+945\,Aac^2x^4+315\,Bab^2x^3+105\,Ab^3x^3+315\,Ba^2cx^3+630\,Aabcx^3+189\,Ba^2bx^2+189\,Aab^2x^2+189\,Aa^2cx^2+45\,Ba^3x+135\,Aa^2bx+35\,Aa^3\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2*B*b*c^2*x^(3/2) + 2/3*A*c^3*x^(3/2) + 6*B*b^2*c*sqrt(
x) + 6*B*a*c^2*sqrt(x) + 6*A*b*c^2*sqrt(x) - 2/315*(315*B*b^3*x^4 + 1890*B*
a*b*c*x^4 + 945*A*b^2*c*x^4 + 945*A*a*c^2*x^4 + 315*B*a*b^2*x^3 + 105*A*b^3
*x^3 + 315*B*a^2*c*x^3 + 630*A*a*b*c*x^3 + 189*B*a^2*b*x^2 + 189*A*a*b^2*x^
2 + 189*A*a^2*c*x^2 + 45*B*a^3*x + 135*A*a^2*b*x + 35*A*a^3)/x^(9/2)
```

maple [A]   time = 0.06, size = 192, normalized size = 1.08

$$-\frac{2\left(-63B\,c^3x^7-105A\,c^3x^6-315x^6Bb\,c^2-945x^5Ab\,c^2-945Ba\,c^2x^5-945x^5B\,b^2c+945Aa\,c^2x^4+945x^4A\,b^2c+1890x^4abBc+315x^4b^3B+630x^3Aabc+105A\,b^3x^3+315B\,a^2c\,x^3+315x^3Ba\,b^2+189A\,a^2c\,x^2+189x^2Aa\,b^2+189B\,a^2b\,x^2+135xA\,a^2b+45B\,a^3x+35A\,a^3\right)}{315x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x)
```

```
[Out] -2/315*(-63*B*c^3*x^7-105*A*c^3*x^6-315*B*b*c^2*x^6-945*A*b*c^2*x^5-945*B*a
*c^2*x^5-945*B*b^2*c*x^5+945*A*a*c^2*x^4+945*A*b^2*c*x^4+1890*B*a*b*c*x^4+3
15*B*b^3*x^4+630*A*a*b*c*x^3+105*A*b^3*x^3+315*B*a^2*c*x^3+315*B*a*b^2*x^3+
189*A*a^2*c*x^2+189*A*a*b^2*x^2+189*B*a^2*b*x^2+135*A*a^2*b*x+45*B*a^3*x+35
*A*a^3)/x^(9/2)
```

maxima [A]   time = 0.53, size = 167, normalized size = 0.94

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}}+\frac{2}{3}\left(3\,Bbc^2+Ac^3\right)x^{\frac{3}{2}}+6\left(Bb^2c+(Ba+Ab)c^2\right)\sqrt{x}-\frac{2\left(315\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4+35\,Aa^3+105\left(3\,Bab^2+Ab^3+3\left(Ba^2+2\,Aab\right)c\right)x^3+189\left(Ba^2b+Aab^2+Aa^2c\right)x^2+45\left(Ba^3+3\,Aa^2b\right)x\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*(3*B*b*c^2 + A*c^3)*x^(3/2) + 6*(B*b^2*c + (B*a + A
*b)*c^2)*sqrt(x) - 2/315*(315*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x
^4 + 35*A*a^3 + 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 189*(
B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 45*(B*a^3 + 3*A*a^2*b)*x)/x^(9/2)
```

mupad [B]   time = 0.08, size = 170, normalized size = 0.96

$$x^{3/2}\left(\frac{2\,A\,c^3}{3}+2\,B\,b\,c^2\right)-\frac{x^3\left(2\,B\,c\,a^2+2\,B\,a\,b^2+4\,A\,c\,a\,b+\frac{2\,A\,b^3}{3}\right)+x^4\left(2\,B\,b^3+6\,A\,b^2\,c+12\,B\,a\,b\,c+6\,A\,a\,c^2\right)+x\left(\frac{2\,B\,a^3}{7}+\frac{6\,A\,b\,a^2}{7}\right)+\frac{2\,A\,a^3}{9}+x^2\left(\frac{6\,B\,a^2\,b}{5}+\frac{6\,A\,c\,a^2}{5}+\frac{6\,A\,a\,b^2}{5}\right)}{x^{9/2}}+\sqrt{x}\left(6\,B\,b^2\,c+6\,A\,b\,c^2+6\,B\,a\,c^2\right)+\frac{2\,B\,c^3\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x)
```

```
[Out] x^(3/2)*((2*A*c^3)/3 + 2*B*b*c^2) - (x^3*((2*A*b^3)/3 + 2*B*a*b^2 + 2*B*a^2
*c + 4*A*a*b*c) + x^4*(2*B*b^3 + 6*A*a*c^2 + 6*A*b^2*c + 12*B*a*b*c) + x*((
2*B*a^3)/7 + (6*A*a^2*b)/7) + (2*A*a^3)/9 + x^2*((6*A*a*b^2)/5 + (6*A*a^2*c
)/5 + (6*B*a^2*b)/5))/x^(9/2) + x^(1/2)*(6*A*b*c^2 + 6*B*a*c^2 + 6*B*b^2*c)
 + (2*B*c^3*x^(5/2))/5
```

sympy [**A**] time = 15.38, size = 275, normalized size = 1.54

$$-\frac{2Aa^3}{9x^{\frac{9}{2}}}-\frac{6Aa^2b}{7x^{\frac{7}{2}}}-\frac{6Aa^2c}{5x^{\frac{5}{2}}}-\frac{6Aab^2}{5x^{\frac{5}{2}}}-\frac{4Aabc}{x^{\frac{3}{2}}}-\frac{6Aac^2}{\sqrt{x}}-\frac{2Ab^3}{3x^{\frac{3}{2}}}-\frac{6Ab^2c}{\sqrt{x}}+6Abc^2\sqrt{x}+\frac{2Ac^3x^{\frac{3}{2}}}{3}-\frac{2Ba^3}{7x^{\frac{7}{2}}}-\frac{6Ba^2b}{5x^{\frac{5}{2}}}-\frac{2Ba^2c}{x^{\frac{3}{2}}}-\frac{2Bab^2}{x^{\frac{3}{2}}}-\frac{12Babc}{\sqrt{x}}+6Bac^2\sqrt{x}-\frac{2Bb^3}{\sqrt{x}}+6Bb^2c\sqrt{x}+2Bbc^2x^{\frac{3}{2}}+\frac{2Bc^3x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(11/2),x)
```

```
[Out] -2*A*a**3/(9*x**(9/2)) - 6*A*a**2*b/(7*x**(7/2)) - 6*A*a**2*c/(5*x**(5/2))
- 6*A*a*b**2/(5*x**(5/2)) - 4*A*a*b*c/x**(3/2) - 6*A*a*c**2/sqrt(x) - 2*A*b
**3/(3*x**(3/2)) - 6*A*b**2*c/sqrt(x) + 6*A*b*c**2*sqrt(x) + 2*A*c**3*x**(3
/2)/3 - 2*B*a**3/(7*x**(7/2)) - 6*B*a**2*b/(5*x**(5/2)) - 2*B*a**2*c/x**(3/
2) - 2*B*a*b**2/x**(3/2) - 12*B*a*b*c/sqrt(x) + 6*B*a*c**2*sqrt(x) - 2*B*b*
*3/sqrt(x) + 6*B*b**2*c*sqrt(x) + 2*B*b*c**2*x**(3/2) + 2*B*c**3*x**(5/2)/5
```

3.934 $\int \frac{x^{5/2}(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=347

$$-\frac{\sqrt{2}\left(-\frac{2a^2Bc^2+3aAbc^2-4ab^2Bc-Ab^3c+b^4B}{\sqrt{b^2-4ac}}+aAc^2-2abBc-Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{7/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{2a^2Bc^2+3aAbc^2-4a\ldots}{\sqrt{b^2-\ldots}}\right.}{}$$

Rubi [A] time = 4.54, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {824, 826, 1166, 205}

$$-\frac{\sqrt{2}\left(-\frac{2a^2Bc^2+3aAbc^2-4ab^2Bc-Ab^3c+b^4B}{\sqrt{b^2-4ac}}+aAc^2-2abBc-Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{7/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{2a^2Bc^2+3aAbc^2-4ab^2Bc-Ab^3c+b^4B}{\sqrt{b^2-4ac}}+aAc^2-2abBc-Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{7/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2\sqrt{x}\left(-aBc-Abc+b^2B\right)}{c^3}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2Bx^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*(b^2*B - A*b*c - a*B*c)*Sqrt[x])/c^3 - (2*(b*B - A*c)*x^(3/2))/(3*c^2) +
 (2*B*x^(5/2))/(5*c) - (Sqrt[2]*(b^3*B - A*b^2*c - 2*a*b*B*c + a*A*c^2 - (b
^4*B - A*b^3*c - 4*a*b^2*B*c + 3*a*A*b*c^2 + 2*a^2*B*c^2)/Sqrt[b^2 - 4*a*c]
)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(7/2)*S
qrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*(b^3*B - A*b^2*c - 2*a*b*B*c + a*A*c
^2 + (b^4*B - A*b^3*c - 4*a*b^2*B*c + 3*a*A*b*c^2 + 2*a^2*B*c^2)/Sqrt[b^2 -
 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^
(7/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{a+bx+cx^2}\,dx = \frac{2Bx^{5/2}}{5c} + \frac{\int \frac{x^{3/2}(-aB-(bB-Ac)x)}{a+bx+cx^2}\,dx}{c}$$

$$= -\frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} + \frac{\int \frac{\sqrt{x}\left(a(bB-Ac)+\left(b^2B-Abc-aBc\right)x\right)}{a+bx+cx^2}\,dx}{c^2}$$

$$= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} + \frac{\int \frac{-a\left(b^2B-Abc-aBc\right)-\left(b^3B-Ab^2c-2abBc+aA\right.}{\sqrt{x}\left(a+bx+cx^2\right)}}{c^3}$$

$$= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} + \frac{2\,\mathrm{Subst}\left(\int \frac{-a\left(b^2B-Abc-aBc\right)+\left(-b^3B+Ab\right.}{a+bx^2+cx^4}\right.}{c^3}$$

$$= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{\left(b^3B-Ab^2c-2abBc+aAc^2-\frac{b^4B-}{}\right.}{}$$

$$= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{\sqrt{2}\left(b^3B-Ab^2c-2abBc+aAc^2-\right.}{c^{7/2}}$$

Mathematica [A] time = 0.88, size = 480, normalized size = 1.38

$$\frac{\sqrt{2}B\left(\frac{\left(\frac{2a^2c^2-4ab^2c+b^4}{\sqrt{b^2-4ac}}+2abc-b^3\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-\frac{2a^2c^2-4ab^2c+b^4}{\sqrt{b^2-4ac}}+2abc-b^3\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{7/2}}+\frac{\sqrt{2}A\left(\frac{3abc-b^3}{\sqrt{b^2-4ac}}-ac+b^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}A\left(\frac{b^3-3abc}{\sqrt{b^2-4ac}}-ac+b^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2B\sqrt{x}\left(b^2-ac\right)}{c^3}-\frac{2Ab\sqrt{x}}{c^2}+\frac{2Ax^{3/2}}{3c}-\frac{2bBx^{3/2}}{3c^2}+\frac{2Bx^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-2*A*b*Sqrt[x])/c^2 + (2*B*(b^2 - a*c)*Sqrt[x])/c^3 - (2*b*B*x^(3/2))/(3*c
^2) + (2*A*x^(3/2))/(3*c) + (2*B*x^(5/2))/(5*c) + (Sqrt[2]*A*(b^2 - a*c + (
-b^3 + 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
- Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*A*(
b^2 - a*c + (b^3 - 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]]) +
(Sqrt[2]*B*(((-b^3 + 2*a*b*c + (b^4 - 4*a*b^2*c + 2*a^2*c^2)/Sqrt[b^2 - 4*a
*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b
- Sqrt[b^2 - 4*a*c]] + ((-b^3 + 2*a*b*c - (b^4 - 4*a*b^2*c + 2*a^2*c^2)/Sqr
t[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]
]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/c^(7/2)
```

IntegrateAlgebraic [A] time = 1.10, size = 510, normalized size = 1.47

$$\frac{\left(2\sqrt{2}a^2Bc^2-\sqrt{2}aAc^2\sqrt{b^2-4ac}+\sqrt{2}Ab^2c\sqrt{b^2-4ac}+3\sqrt{2}aAbc^2-4\sqrt{2}ab^2Bc+2\sqrt{2}abBc\sqrt{b^2-4ac}-\sqrt{2}b^3B\sqrt{b^2-4ac}-\sqrt{2}Ab^3c+\sqrt{2}b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{7/2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-2\sqrt{2}a^2Bc^2-\sqrt{2}aAc^2\sqrt{b^2-4ac}+\sqrt{2}Ab^2c\sqrt{b^2-4ac}-3\sqrt{2}aAbc^2+4\sqrt{2}ab^2Bc+2\sqrt{2}abBc\sqrt{b^2-4ac}-\sqrt{2}b^3B\sqrt{b^2-4ac}+\sqrt{2}Ab^3c-\sqrt{2}b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{7/2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2\sqrt{x}\left(-15aBc-15Abc+5Ac^2x+15b^2B-5bBcx+3Bc^2x^2\right)}{15c^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(15*b^2*B - 15*A*b*c - 15*a*B*c - 5*b*B*c*x + 5*A*c^2*x + 3*B*c^
2*x^2))/(15*c^3) + ((Sqrt[2]*b^4*B - Sqrt[2]*A*b^3*c - 4*Sqrt[2]*a*b^2*B*c
+ 3*Sqrt[2]*a*A*b*c^2 + 2*Sqrt[2]*a^2*B*c^2 - Sqrt[2]*b^3*B*Sqrt[b^2 - 4*a*
c] + Sqrt[2]*A*b^2*c*Sqrt[b^2 - 4*a*c] + 2*Sqrt[2]*a*b*B*c*Sqrt[b^2 - 4*a*c
] - Sqrt[2]*a*A*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqr
t[b - Sqrt[b^2 - 4*a*c]]])/(c^(7/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4
*a*c]]) + ((-(Sqrt[2]*b^4*B) + Sqrt[2]*A*b^3*c + 4*Sqrt[2]*a*b^2*B*c - 3*Sq
```

```
rt[2]*a*A*b*c^2 - 2*Sqrt[2]*a^2*B*c^2 - Sqrt[2]*b^3*B*Sqrt[b^2 - 4*a*c] + S
qrt[2]*A*b^2*c*Sqrt[b^2 - 4*a*c] + 2*Sqrt[2]*a*b*B*c*Sqrt[b^2 - 4*a*c] - Sq
rt[2]*a*A*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b +
Sqrt[b^2 - 4*a*c]]])/(c^(7/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]
)
```

fricas [B] time = 8.66, size = 7707, normalized size = 22.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/30*(15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^
2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^
4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c + (b^2*c^7 - 4*a*c^8)*sqrt((
B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^
7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*
A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4
 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^
5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6
 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8
 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c
)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8))*log(sqrt(2)*(B^3*b^10 + 4*(A
^2*B*a^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 + 28*A*B^2*a^4*b + 41*A^2*B*a^3*b^2
+ 13*A^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2 + 87*A*B^2*a^3*b^3 + 58*A^2*B*a^2*b
^4 + 7*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4 + 80*A*B^2*a^2*b^5 + 24*A^2*B*a*b^6
 + A^3*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A*B^2*a*b^7 + 3*A^2*B*b^8)*c^2 - (10
*B^3*a*b^8 + 3*A*B^2*b^9)*c - (B*b^5*c^7 - 8*A*a^2*c^10 + 6*(2*B*a^2*b + A*
a*b^2)*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2
*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b +
 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5
*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b
^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^
3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^
2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b
^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))*sqrt(
-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 +
 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*
a*b^5 + 2*A*B*b^6)*c + (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2
*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^
5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^
4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^
4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 +
28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A
^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*
B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/
(b^2*c^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 - A*B^3*a^2*b^7 + A^4*a^4*c^5 - (7*A^
3*B*a^4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^6 + 5*A*B^3*a^5*b - 9*A^2*B^2*a^4*b
^2 - 11*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3 + (6*B^4*a^5*b^2 + 2*A*B^3*a^4*b^3
 - 12*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)*c^2 - (5*B^4*a^4*b^4 - 3*A*B^3*a^3
*b^5 - 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) - 15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*
A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c
^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b
^6)*c + (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 +
 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^
2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*
A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 +
(46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7
+ A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 +
```

2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 -
2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*
c^8))*log(-sqrt(2)*(B^3*b^10 + 4*(A^2*B*a^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 +
28*A*B^2*a^4*b + 41*A^2*B*a^3*b^2 + 13*A^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2
+ 87*A*B^2*a^3*b^3 + 58*A^2*B*a^2*b^4 + 7*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4
+ 80*A*B^2*a^2*b^5 + 24*A^2*B*a*b^6 + A^3*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A
*B^2*a*b^7 + 3*A^2*B*b^8)*c^2 - (10*B^3*a*b^8 + 3*A*B^2*b^9)*c - (B*b^5*c^7
- 8*A*a^2*c^10 + 6*(2*B*a^2*b + A*a*b^2)*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sq
rt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2
)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 +
11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3
*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^
3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3
*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2
*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^1
1)*c)/(b^2*c^14 - 4*a*c^15)))*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^
4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12
*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c + (b^2*c^7 - 4*a*c^
8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^
3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*
b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^
2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B
^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^
4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^
4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^
3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 -
A*B^3*a^2*b^7 + A^4*a^4*c^5 - (7*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^
6 + 5*A*B^3*a^5*b - 9*A^2*B^2*a^4*b^2 - 11*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3
+ (6*B^4*a^5*b^2 + 2*A*B^3*a^4*b^3 - 12*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)
*c^2 - (5*B^4*a^4*b^4 - 3*A*B^3*a^3*b^5 - 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) +
15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*
b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^
2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c - (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^
12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B
^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^
2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*
A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 13
2*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*
A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*
A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2
*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8))*log(sqrt(2)*(B^3*b^10 + 4*(A^2*B*a
^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 + 28*A*B^2*a^4*b + 41*A^2*B*a^3*b^2 + 13*A
^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2 + 87*A*B^2*a^3*b^3 + 58*A^2*B*a^2*b^4 + 7
*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4 + 80*A*B^2*a^2*b^5 + 24*A^2*B*a*b^6 + A^3
*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A*B^2*a*b^7 + 3*A^2*B*b^8)*c^2 - (10*B^3*a
*b^8 + 3*A*B^2*b^9)*c + (B*b^5*c^7 - 8*A*a^2*c^10 + 6*(2*B*a^2*b + A*a*b^2)
*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a
^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^
2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 +
44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^
5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*
b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^
8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c
^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))*sqrt(-(B^2*
b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2
*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5
+ 2*A*B*b^6)*c - (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*
B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b +
54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*

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b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^
6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3
*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2
*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^
10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c
^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 - A*B^3*a^2*b^7 + A^4*a^4*c^5 - (7*A^3*B*a^
4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^6 + 5*A*B^3*a^5*b - 9*A^2*B^2*a^4*b^2 - 1
1*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3 + (6*B^4*a^5*b^2 + 2*A*B^3*a^4*b^3 - 12*
A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)*c^2 - (5*B^4*a^4*b^4 - 3*A*B^3*a^3*b^5 -
 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) - 15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*A*B*a^
3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (
14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c
- (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3
*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*
b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*
a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^
4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*
b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*
B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*
B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8))*
log(-sqrt(2)*(B^3*b^10 + 4*(A^2*B*a^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 + 28*A*
B^2*a^4*b + 41*A^2*B*a^3*b^2 + 13*A^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2 + 87*A
*B^2*a^3*b^3 + 58*A^2*B*a^2*b^4 + 7*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4 + 80*A
*B^2*a^2*b^5 + 24*A^2*B*a*b^6 + A^3*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A*B^2*a
*b^7 + 3*A^2*B*b^8)*c^2 - (10*B^3*a*b^8 + 3*A*B^2*b^9)*c + (B*b^5*c^7 - 8*A
*a^2*c^10 + 6*(2*B*a^2*b + A*a*b^2)*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sqrt((B^
4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7
+ (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^
4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 +
 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5
+ 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 +
 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 +
 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/
(b^2*c^14 - 4*a*c^15)))*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7
*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a
*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c - (b^2*c^7 - 4*a*c^8)*sqr
t((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)
*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 +
11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*
b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3
*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*
b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*
b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11
)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 - A*B^3*
a^2*b^7 + A^4*a^4*c^5 - (7*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^6 + 5*
A*B^3*a^5*b - 9*A^2*B^2*a^4*b^2 - 11*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3 + (6*
B^4*a^5*b^2 + 2*A*B^3*a^4*b^3 - 12*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)*c^2 -
 (5*B^4*a^4*b^4 - 3*A*B^3*a^3*b^5 - 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) + 4*(3*B
*c^2*x^2 + 15*B*b^2 - 15*(B*a + A*b)*c - 5*(B*b*c - A*c^2)*x)*sqrt(x))/c^3
```

giac [B] time = 1.36, size = 5319, normalized size = 15.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*((2*b^6*c^3 - 18*a*b^4*c^4 + 48*a^2*b^2*c^5 - 32*a^3*c^6 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 9*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a
```

```
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^4 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a*b^2*c^4 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*c^5 - 2*(b^2 - 4*a*c)*b^4*c^3 + 10*(b^2 - 4*a*c)*a*b^2*c^4
 - 8*(b^2 - 4*a*c)*a^2*c^5)*A*c^2 - (2*b^7*c^2 - 20*a*b^5*c^3 + 64*a^2*b^3*c
^4 - 64*a^3*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^7 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5
*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c - 32
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 12
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 32*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 16*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 6*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 8*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5
*c^2 + 12*(b^2 - 4*a*c)*a*b^3*c^3 - 16*(b^2 - 4*a*c)*a^2*b*c^4)*B*c^2 + 2*(
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 - 8*sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b^4*c^4 + 2*a*b^5*c^4 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*
c^5 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 - 16*a^2*b^3*c^5 - 4*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^6 + 32*a^3*b*c^6 - 2*(b^2 - 4*a*c)*a*b^3*c^4
 + 8*(b^2 - 4*a*c)*a^2*b*c^5)*A*abs(c) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a*b^6*c^2 - 9*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^3
 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 + 2*a*b^6*c^3 + 24*sq
rt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^4 + 10*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
*b^4*c^4 - 18*a^2*b^4*c^4 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*
c^5 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 - 5*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + 48*a^3*b^2*c^5 + 4*sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^3*c^6 - 32*a^4*c^6 - 2*(b^2 - 4*a*c)*a*b^4*c^3 +
 10*(b^2 - 4*a*c)*a^2*b^2*c^4 - 8*(b^2 - 4*a*c)*a^3*c^5)*B*abs(c) - (2*b^6*
c^5 - 14*a*b^4*c^6 + 24*a^2*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*b^6*c^3 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a*b^4*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*b^5*c^4 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*b^2*c^5 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^4*c^5 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^2*c^6 - 2*(b^2 - 4*a*c)*b^4*c^5 + 6*(b^2 - 4*a*c)*a*b^2*c^6)*A + (2*b^7*c
^4 - 16*a*b^5*c^5 + 36*a^2*b^3*c^6 - 16*a^3*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^3 - 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*b^5*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^3*b*c^5 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*b^2*c^5 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^5 - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^2*b*c^6 - 2*(b^2 - 4*a*c)*b^5*c^4 + 8*(b^2 - 4*a*c)*a*b^3*c^5 - 4*(b
^2 - 4*a*c)*a^2*b*c^6)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c^5 + sqrt(b^2
*c^10 - 4*a*c^11))/c^6))/((a*b^4*c^5 - 8*a^2*b^2*c^6 - 2*a*b^3*c^6 + 16*a^3
*c^7 + 8*a^2*b*c^7 + a*b^2*c^7 - 4*a^2*c^8)*c^2) - 1/4*((2*b^6*c^3 - 18*a*b
^4*c^4 + 48*a^2*b^2*c^5 - 32*a^3*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
```

sqrt(b^2 - 4*a*c)*c)*b^6*c + 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^5 - 2*(b^2 - 4*a*c)*b^4*c^3 + 10*(b^2 - 4*a*c)*a*b^2*c^4 - 8*(b^2 - 4*a*c)*a^2*c^5)*A*c^2 - (2*b^7*c^2 - 20*a*b^5*c^3 + 64*a^2*b^3*c^4 - 64*a^3*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5*c^2 + 12*(b^2 - 4*a*c)*a*b^3*c^3 - 16*(b^2 - 4*a*c)*a^2*b*c^4)*B*c^2 - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 - 2*a*b^5*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 + 16*a^2*b^3*c^5 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^6 - 32*a^3*b*c^6 + 2*(b^2 - 4*a*c)*a*b^3*c^4 - 8*(b^2 - 4*a*c)*a^2*b*c^5)*A*abs(c) + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^2 - 9*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^3 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 - 2*a*b^6*c^3 + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^4 + 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 + 18*a^2*b^4*c^4 - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^5 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 - 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 - 48*a^3*b^2*c^5 + 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^6 + 32*a^4*c^6 + 2*(b^2 - 4*a*c)*a*b^4*c^3 - 10*(b^2 - 4*a*c)*a^2*b^2*c^4 + 8*(b^2 - 4*a*c)*a^3*c^5)*B*abs(c) - (2*b^6*c^5 - 14*a*b^4*c^6 + 24*a^2*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c^3 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^4 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^5 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^6 - 2*(b^2 - 4*a*c)*b^4*c^5 + 6*(b^2 - 4*a*c)*a*b^2*c^6)*A + (2*b^7*c^4 - 16*a*b^5*c^5 + 36*a^2*b^3*c^6 - 16*a^3*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c^3 - 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^6 - 2*(b^2 - 4*a*c)*b^5*c^4 + 8*(b^2 - 4*a*c)*a*b^3*c^5 - 4*(b^2 - 4*a*c)*a^2*b*c^6)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c^5 - sqrt(b^2*c^10 - 4*a*c^11))/c^6))/((a*b^4*c^5 - 8*a^2*b^2*c^6 - 2*a*b^3*c^6 + 16*a^3*c^7 + 8*a^2*b*c^7 + a*b

```
^2*c^7 - 4*a^2*c^8)*c^2) + 2/15*(3*B*c^4*x^(5/2) - 5*B*b*c^3*x^(3/2) + 5*A*
c^4*x^(3/2) + 15*B*b^2*c^2*sqrt(x) - 15*B*a*c^3*sqrt(x) - 15*A*b*c^3*sqrt(x
))/c^5
```

maple [B] time = 0.15, size = 1141, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] 2/5*B/c*x^(5/2)+2/3*A/c*x^(3/2)-2/3/c^2*B*x^(3/2)*b-2/c^2*A*b*x^(1/2)-2*B*a
/c^2*x^(1/2)+2/c^3*b^2*B*x^(1/2)-1/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*A*a+1/c^2*2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2))*A*b^2-3/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))
*a*A*b+1/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*A*b^3+2/c^2*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2))*a*b*B-1/c^3*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*b^3*B-2/c/(-4*a*c+b
^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*a^2*B+4/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/(
(b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2))*a*b^2*B-1/c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*b
^4*B+1/c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-1/c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*
A*b^2-3/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arct
anh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+1/c^2/(-4*a*
c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-2/c^2*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*a*b*B+1/c^3*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B-2/c/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*B+4/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)
*c*x^(1/2))*a*b^2*B-1/c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^
4*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(3\,Bcx^{\frac{5}{2}}-5\,(Bb-Ac)x^{\frac{3}{2}}\right)}{15\,c^2}-\int\frac{\left(Abc-\left(b^2-ac\right)B\right)x^{\frac{3}{2}}-(Bab-Aac)\sqrt{x}}{c^3x^2+bc^2x+ac^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/15*(3*B*c*x^(5/2) - 5*(B*b - A*c)*x^(3/2))/c^2 - integrate(((A*b*c - (b^2
 - a*c)*B)*x^(3/2) - (B*a*b - A*a*c)*sqrt(x))/(c^3*x^2 + b*c^2*x + a*c^2),
x)
```

mupad [B] time = 3.19, size = 14120, normalized size = 40.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x)

[Out] x^(3/2)*((2*A)/(3*c) - (2*B*b)/(3*c^2)) - x^(1/2)*((b*((2*A)/c - (2*B*b)/c^2))/c + (2*B*a)/c^2) + atan(((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) - (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*1i - (((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14

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*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6
*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*
(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^
4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*
A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*
a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3
 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^
2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c -
b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*
(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*1
i)/((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2
*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2
+ B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2
*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3
 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5
+ 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^
2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3
*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-
(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a
^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8))
)^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) -
 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) +
42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1
/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*
c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B
^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1
/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3
*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(
2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) - (8*x^(1/2)*(B^2*b^8 - 2*A^
2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 +
 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3
- 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^
9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a
^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63
*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*
a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 2
0*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(
1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b
^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2
- 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)
^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7
 - 8*a*b^2*c^8)))^(1/2) - (16*(A^3*a^4*c^3 + B^3*a^4*b^3 - A^3*a^3*b^2*c^2
- 2*B^3*a^5*b*c - A*B^2*a^3*b^4 + A*B^2*a^5*c^2 + A*B^2*a^4*b^2*c + 2*A^2*B
*a^3*b^3*c - 3*A^2*B*a^4*b*c^2))/c^5 + (((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*
A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1/2)*(b^3*c^7 - 4
*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A
*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B
^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2)
- B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c -
9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a
*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2)
+ 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2
*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(1
6*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 +
 B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*
a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3
```

+ A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/
2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 +
28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2
*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*
A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(
4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^
2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))
^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4
- 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3
- 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2
+ 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)
^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c
- b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 1
1*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B
^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b
^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c
- b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) +
8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)
^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)))*(-(B^2*b^9 + A
^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^
3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*
a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c -
b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2
*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
- 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3
)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A
*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2
) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*
a*b^2*c^8)))^(1/2)*2i + atan(((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c
^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)
*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c
+ 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^
5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3
c^3(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b
^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c -
b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-
(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*
a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c
- b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9
+ b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(
-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4
c^2(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A
*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a
^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3
+ 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2
c^3(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b
^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(
-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) -
(8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b
^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*
a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*
a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2
) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2)
+ 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)
^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b
^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^
2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 +

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5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)
^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*
b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2)
)/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*1i - (((8*(4*B*a^3*c^6 -
A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1
/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)
^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 1
1*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B
^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b
^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c
- b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) -
 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)
^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9
 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^
2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*
B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a
*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20
*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1
/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^
2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 +
 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^
(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7
- 8*a*b^2*c^8)))^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2
+ 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16
*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 1
4*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^
6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4
*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b
^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16
*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2
*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^
3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b
^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c -
 b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3
*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*
1i)/((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^
2*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2
 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^
2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^
3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(
1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5
 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a
^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) +
3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(
-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*
a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)
))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) +
 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(
1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7
*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*
c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*
B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(
1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^
3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/
(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) - (8*x^(1/2)*(B^2*b^8 - 2*A
^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4
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+ 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3
- 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b
^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*
a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 6
3*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4
*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 -
20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^
(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c -
b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2
+ 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3
)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^
7 - 8*a*b^2*c^8)))^(1/2) - (16*(A^3*a^4*c^3 + B^3*a^4*b^3 - A^3*a^3*b^2*c^2
- 2*B^3*a^5*b*c - A*B^2*a^3*b^4 + A*B^2*a^5*c^2 + A*B^2*a^4*b^2*c + 2*A^2*
B*a^3*b^3*c - 3*A^2*B*a^4*b*c^2))/c^5 + (((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4
*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1/2)*(b^3*c^7 -
4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*
A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*
B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2)
+ B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c -
9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*
(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*
a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2)
+ 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^
2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(
16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2
- B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2
*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3
- A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5
+ 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^
2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3
*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-
(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a
^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8))
)^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4
- 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^
3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2
+ 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2
)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 -
11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*
B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*
b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c
- b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2)
- 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2
)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)))*(-(B^2*b^9 +
A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b
^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2
*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c
- b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^
2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
- 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^
3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*
A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/
2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8
*a*b^2*c^8)))^(1/2)*2i + (2*B*x^(5/2))/(5*c)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.935 $\int \frac{x^{3/2}(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=275

$$\frac{\sqrt{2}\left(-\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+\right.}{c^{5/2}\sqrt{\sqrt{b^2-4ac}+}}$$

Rubi [A] time = 1.48, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {824, 826, 1166, 205}

$$\frac{\sqrt{2}\left(-\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2\sqrt{x}(bB-Ac)}{c^2}+\frac{2Bx^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/c^2 + (2*B*x^(3/2))/(3*c) + (Sqrt[2]*(b^2*B - A*b*
c - a*B*c - (b^3*B - A*b^2*c - 3*a*b*B*c + 2*a*A*c^2)/Sqrt[b^2 - 4*a*c])*Ar
cTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[
b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*(b^2*B - A*b*c - a*B*c + (b^3*B - A*b^2*
c - 3*a*b*B*c + 2*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{a+bx+cx^2}\,dx = \frac{2Bx^{3/2}}{3c} + \frac{\int \frac{\sqrt{x}(-aB-(bB-Ac)x)}{a+bx+cx^2}\,dx}{c}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{\int \frac{a(bB-Ac)+\left(b^2B-Abc-aBc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{c^2}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{2\,\text{Subst}\left(\int \frac{a(bB-Ac)+\left(b^2B-Abc-aBc\right)x^2}{a+bx^2+cx^4}\,dx, x, \sqrt{x}\right)}{c^2}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{\left(b^2B-Abc-aBc-\frac{b^3B-Ab^2c-3abBc+2aAc^2}{\sqrt{b^2-4ac}}\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}-\frac{1}{2}\sqrt{b^2-4a}\cdots}\right.}{c^2}$$

$$= -\frac{2(bB-Ac)\sqrt{x}}{c^2} + \frac{2Bx^{3/2}}{3c} + \frac{\sqrt{2}\left(b^2B-Abc-aBc-\frac{b^3B-Ab^2c-3abBc+2aAc^2}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{\cdots}}{\sqrt{b-\sqrt{b^2-4\cdots}}}\right.}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

Mathematica [A] time = 0.64, size = 413, normalized size = 1.50

$$\frac{\frac{3\sqrt{2}Ac\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}-b\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{3\sqrt{2}Ac\left(\frac{2ac-b^2}{\sqrt{b^2-4ac}}-b\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}+3\sqrt{2}B\left(\frac{\left(\frac{3abc-b^3}{\sqrt{b^2-4ac}}-ac+b^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{b^3-3abc}{\sqrt{b^2-4ac}}-ac+b^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)+6Ac^{3/2}\sqrt{x}-6bB\sqrt{c}\sqrt{x}+2Bc^{3/2}x^{3/2}}{3c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-6*b*B*Sqrt[c]*Sqrt[x] + 6*A*c^(3/2)*Sqrt[x] + 2*B*c^(3/2)*x^(3/2) + (3*Sq
rt[2]*A*c*(-b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sq
rt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + (3*Sqrt[
2]*A*c*(-b + (-b^2 + 2*a*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]] + 3*Sqrt[2]*
B*(((b^2 - a*c + (-b^3 + 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c
]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((b^
2 - a*c + (b^3 - 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x
])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(3*c^(5/2))
```

IntegrateAlgebraic [A] time = 1.03, size = 405, normalized size = 1.47

$$\frac{\left(-\sqrt{2}Abc\sqrt{b^2-4ac}-2\sqrt{2}aAc^2+\sqrt{2}b^2B\sqrt{b^2-4ac}-\sqrt{2}aBc\sqrt{b^2-4ac}+3\sqrt{2}abBc+\sqrt{2}Ab^2c-\sqrt{2}b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{5/2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-\sqrt{2}Abc\sqrt{b^2-4ac}+2\sqrt{2}aAc^2+\sqrt{2}b^2B\sqrt{b^2-4ac}-\sqrt{2}aBc\sqrt{b^2-4ac}-3\sqrt{2}abBc-\sqrt{2}Ab^2c+\sqrt{2}b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{5/2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2\left(3Ac\sqrt{x}-3bB\sqrt{x}+Bcx^{3/2}\right)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*(-3*b*B*Sqrt[x] + 3*A*c*Sqrt[x] + B*c*x^(3/2)))/(3*c^2) + ((-(Sqrt[2]*b^
3*B) + Sqrt[2]*A*b^2*c + 3*Sqrt[2]*a*b*B*c - 2*Sqrt[2]*a*A*c^2 + Sqrt[2]*b^
2*B*Sqrt[b^2 - 4*a*c] - Sqrt[2]*A*b*c*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*B*c*Sqr
t[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]
]])/(c^(5/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((Sqrt[2]*b^3
*B - Sqrt[2]*A*b^2*c - 3*Sqrt[2]*a*b*B*c + 2*Sqrt[2]*a*A*c^2 + Sqrt[2]*b^2*
B*Sqrt[b^2 - 4*a*c] - Sqrt[2]*A*b*c*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*B*c*Sqrt[
b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]]
)/(c^(5/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 3.21, size = 5148, normalized size = 18.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*sqrt(2)*c^2*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^
2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c + (b^2*c^5 -
 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^
4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b
^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4
+ 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2
- 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c
^6))*log(sqrt(2)*(B^3*b^7 - 4*A^3*a^2*c^5 + (4*A*B^2*a^3 + 20*A^2*B*a^2*b +
 5*A^3*a*b^2)*c^4 - (4*B^3*a^3*b + 29*A*B^2*a^2*b^2 + 17*A^2*B*a*b^3 + A^3*
b^4)*c^3 + (13*B^3*a^2*b^3 + 19*A*B^2*a*b^4 + 3*A^2*B*b^5)*c^2 - (7*B^3*a*b
^5 + 3*A*B^2*b^6)*c - (B*b^4*c^5 + 4*(2*B*a^2 + A*a*b)*c^7 - (6*B*a*b^2 + A
*b^3)*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A
^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*
b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4
 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2
 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))*sqrt(-(B^2*b^5
- (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 -
 (5*B^2*a*b^3 + 2*A*B*b^4)*c + (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*
c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*
a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b
^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b
^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)
/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6)) - 4*(B^4*a^2*b^4 - A*B^3*a*b^
5 - A^4*a^2*c^4 + (5*A^3*B*a^2*b + A^4*a*b^2)*c^3 + (B^4*a^4 + 3*A*B^3*a^3*
b - 6*A^2*B^2*a^2*b^2 - 3*A^3*B*a*b^3)*c^2 - (3*B^4*a^3*b^2 - A*B^3*a^2*b^3
 - 3*A^2*B^2*a*b^4)*c)*sqrt(x)) - 3*sqrt(2)*c^2*sqrt(-(B^2*b^5 - (4*A*B*a^2
 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^
3 + 2*A*B*b^4)*c + (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2
*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A
^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^
3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^
3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 -
 4*a*c^11)))/(b^2*c^5 - 4*a*c^6))*log(-sqrt(2)*(B^3*b^7 - 4*A^3*a^2*c^5 + (
4*A*B^2*a^3 + 20*A^2*B*a^2*b + 5*A^3*a*b^2)*c^4 - (4*B^3*a^3*b + 29*A*B^2*a
^2*b^2 + 17*A^2*B*a*b^3 + A^3*b^4)*c^3 + (13*B^3*a^2*b^3 + 19*A*B^2*a*b^4 +
 3*A^2*B*b^5)*c^2 - (7*B^3*a*b^5 + 3*A*B^2*b^6)*c - (B*b^4*c^5 + 4*(2*B*a^2
 + A*a*b)*c^7 - (6*B*a*b^2 + A*b^3)*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A
^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24
*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*
B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*
B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10
 - 4*a*c^11)))*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b
+ 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c + (b^2*c^5 - 4*a
*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*
b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 +
 A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*
A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*
(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6))
 - 4*(B^4*a^2*b^4 - A*B^3*a*b^5 - A^4*a^2*c^4 + (5*A^3*B*a^2*b + A^4*a*b^2)
*c^3 + (B^4*a^4 + 3*A*B^3*a^3*b - 6*A^2*B^2*a^2*b^2 - 3*A^3*B*a*b^3)*c^2 -
(3*B^4*a^3*b^2 - A*B^3*a^2*b^3 - 3*A^2*B^2*a*b^4)*c)*sqrt(x)) + 3*sqrt(2)*c
^2*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^
2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c - (b^2*c^5 - 4*a*c^6)*sqrt((
B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (
B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^
4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c
```

```
^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6
 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6))*log(sqrt(2)
*(B^3*b^7 - 4*A^3*a^2*c^5 + (4*A*B^2*a^3 + 20*A^2*B*a^2*b + 5*A^3*a*b^2)*c^
4 - (4*B^3*a^3*b + 29*A*B^2*a^2*b^2 + 17*A^2*B*a*b^3 + A^3*b^4)*c^3 + (13*B
^3*a^2*b^3 + 19*A*B^2*a*b^4 + 3*A^2*B*b^5)*c^2 - (7*B^3*a*b^5 + 3*A*B^2*b^6
)*c + (B*b^4*c^5 + 4*(2*B*a^2 + A*a*b)*c^7 - (6*B*a*b^2 + A*b^3)*c^6)*sqrt(
(B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 +
(B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c
^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*
c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^
6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3
*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 +
2*A*B*b^4)*c - (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2
*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B
^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^
2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*
b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a
*c^11)))/(b^2*c^5 - 4*a*c^6)) - 4*(B^4*a^2*b^4 - A*B^3*a*b^5 - A^4*a^2*c^4
+ (5*A^3*B*a^2*b + A^4*a*b^2)*c^3 + (B^4*a^4 + 3*A*B^3*a^3*b - 6*A^2*B^2*a^
2*b^2 - 3*A^3*B*a*b^3)*c^2 - (3*B^4*a^3*b^2 - A*B^3*a^2*b^3 - 3*A^2*B^2*a*b
^4)*c)*sqrt(x)) - 3*sqrt(2)*c^2*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^
3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c
 - (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3
*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 +
 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A
^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*
B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^
2*c^5 - 4*a*c^6))*log(-sqrt(2)*(B^3*b^7 - 4*A^3*a^2*c^5 + (4*A*B^2*a^3 + 20
*A^2*B*a^2*b + 5*A^3*a*b^2)*c^4 - (4*B^3*a^3*b + 29*A*B^2*a^2*b^2 + 17*A^2*
B*a*b^3 + A^3*b^4)*c^3 + (13*B^3*a^2*b^3 + 19*A*B^2*a*b^4 + 3*A^2*B*b^5)*c^
2 - (7*B^3*a*b^5 + 3*A*B^2*b^6)*c + (B*b^4*c^5 + 4*(2*B*a^2 + A*a*b)*c^7 -
(6*B*a*b^2 + A*b^3)*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A
^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2
 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12
*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^
2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))*s
qrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 +
A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c - (b^2*c^5 - 4*a*c^6)*sqrt((B^4*
b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*
a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 -
2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 +
 (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2
*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6)) - 4*(B^4*a^2*b^
4 - A*B^3*a*b^5 - A^4*a^2*c^4 + (5*A^3*B*a^2*b + A^4*a*b^2)*c^3 + (B^4*a^4
+ 3*A*B^3*a^3*b - 6*A^2*B^2*a^2*b^2 - 3*A^3*B*a*b^3)*c^2 - (3*B^4*a^3*b^2 -
 A*B^3*a^2*b^3 - 3*A^2*B^2*a*b^4)*c)*sqrt(x)) + 4*(B*c*x - 3*B*b + 3*A*c)*s
qrt(x))/c^2
```

giac [B] time = 1.38, size = 4399, normalized size = 16.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/4*((2*b^5*c^3 - 16*a*b^3*c^4 + 32*a^2*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
```

^2 - 4*a*c)*c)*a*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 2*(b^2 - 4*a*c)*b^3*c^3 + 8*(b^2 - 4*a*c)*a*b*c^4)*A*c^2 - (2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*(b^2 - 4*a*c)*a*b^2*c^3 - 8*(b^2 - 4*a*c)*a^2*c^4)*B*c^2 + 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 2*a*b^4*c^4 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - 16*a^2*b^2*c^5 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^6 + 32*a^3*c^6 - 2*(b^2 - 4*a*c)*a*b^2*c^4 + 8*(b^2 - 4*a*c)*a^2*c^5)*A*abs(c) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 16*a^2*b^3*c^4 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 + 32*a^3*b*c^5 - 2*(b^2 - 4*a*c)*a*b^3*c^3 + 8*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(c) - (2*b^5*c^5 - 12*a*b^3*c^6 + 16*a^2*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^5 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^6 - 2*(b^2 - 4*a*c)*b^3*c^5 + 4*(b^2 - 4*a*c)*a*b*c^6)*A + (2*b^6*c^4 - 14*a*b^4*c^5 + 24*a^2*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^2 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^3 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^4 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - 2*(b^2 - 4*a*c)*b^4*c^4 + 6*(b^2 - 4*a*c)*a*b^2*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c^3 + sqrt(b^2*c^6 - 4*a*c^7))/c^4))/((a*b^4*c^4 - 8*a^2*b^2*c^5 - 2*a*b^3*c^5 + 16*a^3*c^6 + 8*a^2*b*c^6 + a*b^2*c^6 - 4*a^2*c^7)*c^2) + 1/4*((2*b^5*c^3 - 16*a*b^3*c^4 + 32*a^2*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 2*(b^2 - 4*a*c)*b^3*c^3 + 8*(b^2 - 4*a*c)*a*b*c^4)*A*c^2 - (2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)

```
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*
(b^2 - 4*a*c)*a*b^2*c^3 - 8*(b^2 - 4*a*c)*a^2*c^4)*B*c^2 - 2*(sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^2*c^4 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 2
*a*b^4*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a*b^2*c^5 + 16*a^2*b^2*c^5 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*c^6 - 32*a^3*c^6 + 2*(b^2 - 4*a*c)*a*b^2*c^4 - 8*(b^2 - 4*a*c)*a^
2*c^5)*A*abs(c) + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^3*b*c^4 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^
2*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 16*a^2*b^3*c^4
- 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 - 32*a^3*b*c^5 + 2*(b
^2 - 4*a*c)*a*b^3*c^3 - 8*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(c) - (2*b^5*c^5 -
12*a*b^3*c^6 + 16*a^2*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^5*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*b^4*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^2*b*c^5 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b
^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^5
+ 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^6 - 2*(
b^2 - 4*a*c)*b^3*c^5 + 4*(b^2 - 4*a*c)*a*b*c^6)*A + (2*b^6*c^4 - 14*a*b^4*c
^5 + 24*a^2*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*b^6*c^2 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a*b^4*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5
*c^3 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^4 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^
4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^4 + 3*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - 2*(b^2
 - 4*a*c)*b^4*c^4 + 6*(b^2 - 4*a*c)*a*b^2*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x
)/sqrt((b*c^3 - sqrt(b^2*c^6 - 4*a*c^7))/c^4))/((a*b^4*c^4 - 8*a^2*b^2*c^5
- 2*a*b^3*c^5 + 16*a^3*c^6 + 8*a^2*b*c^6 + a*b^2*c^6 - 4*a^2*c^7)*c^2) + 2/
3*(B*c^2*x^(3/2) - 3*B*b*c*sqrt(x) + 3*A*c^2*sqrt(x))/c^3
```

maple [B] time = 0.10, size = 855, normalized size = 3.11

$$\frac{2\sqrt{2}\,Aa\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{2\sqrt{2}\,Aa\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,Ab^2\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,Ab^2\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{3\sqrt{2}\,Bab\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{3\sqrt{2}\,Bab\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c}+\frac{\sqrt{2}\,Bb^3\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c^2}+\frac{\sqrt{2}\,Bb^3\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c^2}+\frac{\sqrt{2}\,Ab\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,Ab\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c}+\frac{\sqrt{2}\,Ba\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,Ba\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,Bb^2\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c^2}+\frac{\sqrt{2}\,Bb^2\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c^2}+\frac{2Bx^{\frac{3}{2}}}{3c}+\frac{2A\sqrt{x}}{c}-\frac{2Bb\sqrt{x}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] 2/3*B/c*x^(3/2)+2*A/c*x^(1/2)-2/c^2*B*x^(1/2)*b-1/c*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*A*b+2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(
2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-1/c/(-4*a*c+b^2)^(1
/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-1/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B+1/c^2*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*b^2*B-3/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2
))*a*b*B+1/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B+1/c*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*A*b+2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1
```

```
/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*
A*a-1/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan
h(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+1/c*2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a*B-1/c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B-3/c/(-4*a*c+b
^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B+1/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*b^3*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,Bx^{\frac{3}{2}}}{3\,c}+\int -\frac{Ba\sqrt{x}+(Bb-Ac)x^{\frac{3}{2}}}{c^{2}x^{2}+bcx+ac}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/3*B*x^(3/2)/c + integrate(-(B*a*sqrt(x) + (B*b - A*c)*x^(3/2))/(c^2*x^2 +
 b*c*x + a*c), x)
```

mupad [B] time = 2.64, size = 10204, normalized size = 37.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^(1/2)*((2*A)/c - (2*B*b)/c^2) - atan(((((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B
*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 - (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*
b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2
*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2
*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B
*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 +
2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/
2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*
b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c
^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4
 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c
^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*
c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16
*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) - (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2
*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^
2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-
(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 2
5*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 1
2*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 3
6*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c
^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3
)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2)*1i - (((8*(4*A*a^2
*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^
5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) -
 B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*
A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*
B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2)
```

+ 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*
(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/
c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^
6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*
c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*
c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*
a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c -
b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (8*x^(1/2
)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*
B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A
*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(
1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1
/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c
- 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2)
- 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b
c^2(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1
/2)*1i)/((((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^
3 - (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^
4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c
- b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-
(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^
(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 -
8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2
)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*
a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)
^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b
^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*
A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^
6)))^(1/2) - (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*
c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 1
0*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^
4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2
*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a
^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(
4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2
c(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2
)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c
^5 - 8*a*b^2*c^6)))^(1/2) + (((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 -
4*B*a^2*b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^
5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2
- A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 +
A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3
+ 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*
(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a
^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^
2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2
c^2(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A
*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3
*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a
*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c -
b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b
^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b
^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c -

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4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A
^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^
3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^
3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*
c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^
2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b
^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*
(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (16*(B^3*a^4*c - B^3*a^3*b^2
 + A*B^2*a^2*b^3 + A^2*B*a^3*c^2 + A^3*a^2*b*c^2 - 2*A^2*B*a^2*b^2*c))/c^3)
)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c
 + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*
(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3
 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3
 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b
^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^
2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2)*2i - atan(((((
8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 - (8*x^(1/
2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^
3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*
b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(
1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2
)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*
B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)
))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) +
 B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*
A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*
B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2)
 + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*
(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) -
 (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*
b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*
c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c -
 b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c -
b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B
^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)
^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) +
 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2
*c^6)))^(1/2)*1i - (((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*
b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 + B
^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^
2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*
A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^
3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*
a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c
- b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 +
b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^
4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c
 - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-
(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^
(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 -
8*a*b^2*c^6)))^(1/2) + (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 -
2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b
^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^
2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A
```

```
^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2
*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3
*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4
*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c
^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2)*1i)/((((8*(4*A*a^2*c^5 - A*a*b^2*c^4 +
B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 - (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2
*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^
2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^
2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*
B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 -
 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1
/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2
*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*
c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)
^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^
4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*
c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3
*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(1
6*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) - (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^
2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B
^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(
-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c +
25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 +
12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 -
36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*
c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^
3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (((8*(4*A*a^2*c
^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^5
 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B
^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^
2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^
2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) +
 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-
(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^
3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*
c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2
*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^
3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^
3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*
b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b
^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (8*x^(1/2)*
(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^
2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B
*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2
) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c -
 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) -
20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c
^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2
) + (16*(B^3*a^4*c - B^3*a^3*b^2 + A*B^2*a^2*b^3 + A^2*B*a^3*c^2 + A^3*a^2*
b*c^2 - 2*A^2*B*a^2*b^2*c))/c^3))*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a
*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*
c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 -
 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c -
```

```
b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*
a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/
2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a
*b^2*c^6)))^(1/2)*2i + (2*B*x^(3/2))/(3*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.936 $\int \frac{\sqrt{x}(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=221

$$-\frac{\sqrt{2}\left(-\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2B\sqrt{x}}{c}$$

Rubi [A] time = 0.81, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {824, 826, 1166, 205}

$$-\frac{\sqrt{2}\left(-\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2B\sqrt{x}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (Sqrt[2]*(b*B - A*c - (b^2*B - A*b*c - 2*a*B*c)/Sqrt[b^2
- 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c
^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*(b*B - A*c + (b^2*B - A*b*c
- 2*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqr
t[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{a+bx+cx^2}\,dx = \frac{2B\sqrt{x}}{c} + \frac{\int \frac{-aB-(bB-Ac)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{c}$$
$$= \frac{2B\sqrt{x}}{c} + \frac{2\,\text{Subst}\left(\int \frac{-aB+(-bB+Ac)x^2}{a+bx^2+cx^4}\,dx, x, \sqrt{x}\right)}{c}$$
$$= \frac{2B\sqrt{x}}{c} - \frac{\left(bB-Ac+\frac{b^2B-Abc-2aBc}{\sqrt{b^2-4ac}}\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}+\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx, x, \sqrt{x}\right)}{c} + \frac{\left(-bB+Ac+\right.}{}$$
$$= \frac{2B\sqrt{x}}{c} - \frac{\sqrt{2}\left(bB-Ac-\frac{b^2B-Abc-2aBc}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}} - \frac{\sqrt{2}\left(bB-Ac+\frac{b^2B-Abc-2a}{\sqrt{b^2-4ac}}\right.}{c^{3/2}\sqrt{b+\sqrt{}}}$$

Mathematica [A] time = 0.22, size = 264, normalized size = 1.19

$$-\frac{\sqrt{2}\left(-Ac\sqrt{b^2-4ac}+bB\sqrt{b^2-4ac}+2aBc+Abc+b^2(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}} - \frac{\sqrt{2}\left(-Ac\sqrt{b^2-4ac}+bB\sqrt{b^2-4ac}-2aBc-Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}} + \frac{2B\sqrt{x}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (Sqrt[2]*(-(b^2*B) + A*b*c + 2*a*B*c + b*B*Sqrt[b^2 - 4*a
*c] - A*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt
[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) -
(Sqrt[2]*(b^2*B - A*b*c - 2*a*B*c + b*B*Sqrt[b^2 - 4*a*c] - A*c*Sqrt[b^2 -
4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(
3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

IntegrateAlgebraic [A] time = 0.57, size = 302, normalized size = 1.37

$$\frac{\left(\sqrt{2}Ac\sqrt{b^2-4ac}-\sqrt{2}bB\sqrt{b^2-4ac}-2\sqrt{2}aBc-\sqrt{2}Abc+\sqrt{2}b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}} + \frac{\left(\sqrt{2}Ac\sqrt{b^2-4ac}-\sqrt{2}bB\sqrt{b^2-4ac}+2\sqrt{2}aBc+\sqrt{2}Abc-\sqrt{2}b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}} + \frac{2B\sqrt{x}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c + ((Sqrt[2]*b^2*B - Sqrt[2]*A*b*c - 2*Sqrt[2]*a*B*c - Sqrt[
2]*b*B*Sqrt[b^2 - 4*a*c] + Sqrt[2]*A*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*S
qrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sq
rt[b - Sqrt[b^2 - 4*a*c]]) + ((-(Sqrt[2]*b^2*B) + Sqrt[2]*A*b*c + 2*Sqrt[2]
*a*B*c - Sqrt[2]*b*B*Sqrt[b^2 - 4*a*c] + Sqrt[2]*A*c*Sqrt[b^2 - 4*a*c])*Arc
Tan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b
^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 0.96, size = 2642, normalized size = 11.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*
b^2)*c + (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3
*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*
```

```
A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(sqrt(2)*(B^3*b
^4 - 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b
^2 + 2*A*B^2*b^3)*c - (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqr
t((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a
*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7
)))*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c + (b
^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 +
 (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*
c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 -
3*A^3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x))
 - sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^
2)*c + (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B
*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*
B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-sqrt(2)*(B^3*b^
4 - 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b^
2 + 2*A*B^2*b^3)*c - (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqrt
((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*
b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)
))*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c + (b^
2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 +
(B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c
)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 - 3
*A^3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x))
+ sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2
)*c - (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*
b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B
^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(sqrt(2)*(B^3*b^4
- 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b^2
+ 2*A*B^2*b^3)*c + (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqrt((
B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b
+ 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))
*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c - (b^2*
c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B
^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/
(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 - 3*A
^3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x)) -
sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*
c - (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)
*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3
*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-sqrt(2)*(B^3*b^4 -
 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b^2 +
 2*A*B^2*b^3)*c + (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqrt((B
^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b +
 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))*
sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c - (b^2*c
^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^
4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(
b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 - 3*A^
3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x)) + 4
*B*sqrt(x))/c
```

giac [B] time = 1.18, size = 3186, normalized size = 14.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c + 1/4*((2*b^4*c^3 - 16*a*b^2*c^4 + 32*a^2*c^5 - sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c + 8*sqrt(2)*sqrt(b^2 - 4
```

```
*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*b^2*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a*c^4 - 2*(b^2 - 4*a*c)*b^2*c^3 + 8*(b^2 - 4*a*c)*a*c^4)*A*c^
2 - (2*b^5*c^2 - 16*a*b^3*c^3 + 32*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*b^4*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^2*b*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^3*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b
*c^3 - 2*(b^2 - 4*a*c)*b^3*c^2 + 8*(b^2 - 4*a*c)*a*b*c^3)*B*c^2 - 2*(sqrt(2
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^2*c^3 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*
c^3 + 2*a*b^4*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a*b^2*c^4 - 16*a^2*b^2*c^4 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*c^5 + 32*a^3*c^5 - 2*(b^2 - 4*a*c)*a*b^2*c^3 + 8*(b^2 - 4*
a*c)*a^2*c^4)*B*abs(c) - (2*b^4*c^5 - 8*a*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*b^2*c^5 - 2*(b^2 - 4*a*c)*b^2*c^5)*A + (2*b^5*c^4 - 12*
a*b^3*c^5 + 16*a^2*b*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*b^5*c^2 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*b^3*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^4*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2
*b*c^4 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*
c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^4 + 2
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^5 - 2*(b^2
 - 4*a*c)*b^3*c^4 + 4*(b^2 - 4*a*c)*a*b*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x)/
sqrt((b*c + sqrt(b^2*c^2 - 4*a*c^3))/c^2))/((a*b^4*c^3 - 8*a^2*b^2*c^4 - 2*
a*b^3*c^4 + 16*a^3*c^5 + 8*a^2*b*c^5 + a*b^2*c^5 - 4*a^2*c^6)*c^2) - 1/4*((
2*b^4*c^3 - 16*a*b^2*c^4 + 32*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*b^4*c + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^3*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^2*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2
*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^4 -
2*(b^2 - 4*a*c)*b^2*c^3 + 8*(b^2 - 4*a*c)*a*c^4)*A*c^2 - (2*b^5*c^2 - 16*a*
b^3*c^3 + 32*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*b^5 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c
- 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 -
8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 4*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)
*b^3*c^2 + 8*(b^2 - 4*a*c)*a*b*c^3)*B*c^2 + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c
^3 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 2*a*b^4*c^3 + 16
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2
*c^4 + 16*a^2*b^2*c^4 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^5 -
 32*a^3*c^5 + 2*(b^2 - 4*a*c)*a*b^2*c^3 - 8*(b^2 - 4*a*c)*a^2*c^4)*B*abs(c)
 - (2*b^4*c^5 - 8*a*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
```

```
a*c)*c)*a*b^2*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*b^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^
2*c^5 - 2*(b^2 - 4*a*c)*b^2*c^5)*A + (2*b^5*c^4 - 12*a*b^3*c^5 + 16*a^2*b*c
^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 6*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + 2*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 - 8*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 4*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^5 - 2*(b^2 - 4*a*c)*b^3*c^4 + 4*
(b^2 - 4*a*c)*a*b*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c - sqrt(b^2*c
^2 - 4*a*c^3))/c^2))/((a*b^4*c^3 - 8*a^2*b^2*c^4 - 2*a*b^3*c^4 + 16*a^3*c^5
 + 8*a^2*b*c^5 + a*b^2*c^5 - 4*a^2*c^6)*c^2)
```

maple [B] time = 0.08, size = 581, normalized size = 2.63

$$\frac{\sqrt{2}\,Ab\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Ab\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{2\sqrt{2}\,Ba\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{2\sqrt{2}\,Ba\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,Bb^2\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,Bb^2\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,A\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Bb\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,c}-\frac{\sqrt{2}\,Bb\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,c}+\frac{2B\sqrt{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x)
```

```
[Out] 2*B/c*x^(1/2)+2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+1/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)
*c*x^(1/2))*A*b-1/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+2/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*a*B-1/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2
*B-2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+1/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*A*b+1/c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+2/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*a*B-1/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*b^2*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{x}}{cx^2 + bx + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(x)/(c*x^2 + b*x + a), x)
```

mupad [B] time = 2.42, size = 6401, normalized size = 28.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + b*x + c*x^2),x)
```

```
[Out] (2*B*x^(1/2))/c - atan(((((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c - (8*x^(1/2)*(b
^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(
1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*
A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2
```

*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i - (((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c - (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (16*(A^3*a*c^2 - B^3*a^2*b + A*B^2*a*b^2 + A*B^2*a^2*c - 2*A^2*B*a*b*c))/c))*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(

4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16
*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(
1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2
c^2)/(2(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*2i - atan(((((8*(4*B*
a^2*c^3 - B*a*b^2*c^2))/c - (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A
^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*
a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)
^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/
2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^
2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 -
 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*
B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3
 - 8*a*b^2*c^4)))^(1/2) - (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 +
 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^
5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c -
 B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c -
 b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))
)^(1/2)*1i - (((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*
a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*
b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3
 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*
A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c
^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c -
 b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^
2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) +
12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(
2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^
2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B
*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) +
 B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*
b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2
 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 +
b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c - (
8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*
a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2)
+ 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)
/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c
^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4
*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2
) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (8*
x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c
 - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16
*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(
1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2
c^2)/(2(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((8*(4*B*a^2*c^3 -
 B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^
2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2
*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*
a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2)
 + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-
(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*
c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*
b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(
4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^

```
2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^
2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b
^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2
) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*
(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^
(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) -
 (16*(A^3*a*c^2 - B^3*a^2*b + A*B^2*a*b^2 + A*B^2*a^2*c - 2*A^2*B*a*b*c))/c
))*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-
(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B
^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*
c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8
*a*b^2*c^4)))^(1/2)*2i
```

sympy [B] time = 22.13, size = 14158, normalized size = 64.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((-I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) +
 I*A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*B*sqrt(b)
*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) - I*B*sqrt(b)*log(I*s
qrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) + 2*B*sqrt(x)/c, Eq(a, 0)), (-
8*I*A*sqrt(b)*c**2*sqrt(x)*sqrt(1/c)/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqr
t(b)*c**3*x*sqrt(1/c)) + 2*sqrt(2)*A*b*c*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2
 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) -
2*sqrt(2)*A*b*c*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*
c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) + 4*sqrt(2)*A*c**2*x*log(-sq
rt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*s
qrt(b)*c**3*x*sqrt(1/c)) - 4*sqrt(2)*A*c**2*x*log(sqrt(2)*I*sqrt(b)*sqrt(1/
c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)
) + 12*I*B*b**(3/2)*c*sqrt(x)*sqrt(1/c)/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*
sqrt(b)*c**3*x*sqrt(1/c)) + 16*I*B*sqrt(b)*c**2*x**(3/2)*sqrt(1/c)/(4*I*b**
(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) - 3*sqrt(2)*B*b**2*log
(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8
*I*sqrt(b)*c**3*x*sqrt(1/c)) + 3*sqrt(2)*B*b**2*log(sqrt(2)*I*sqrt(b)*sqrt(
1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/
c)) - 6*sqrt(2)*B*b*c*x*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*
b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) + 6*sqrt(2)*B*b*c*x
*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c)
+ 8*I*sqrt(b)*c**3*x*sqrt(1/c)), Eq(a, b**2/(4*c))), (I*A*sqrt(a)*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(b**2*sqrt(1/b)) - I*A*sqrt(a)*log(I*sqrt(a)*sqr
t(1/b) + sqrt(x))/(b**2*sqrt(1/b)) + 2*A*sqrt(x)/b - I*B*a**(3/2)*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(b**3*sqrt(1/b)) + I*B*a**(3/2)*log(I*sqrt(a)*sq
rt(1/b) + sqrt(x))/(b**3*sqrt(1/b)) - 2*B*a*sqrt(x)/b**2 + 2*B*x**(3/2)/(3*
b), Eq(c, 0)), (2*sqrt(2)*A*a**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*lo
g(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**
2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2
)*A*a**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(
-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a
*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*
```

```
c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2)*A*a**2*c**3*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-
b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - s
qrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2
*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c)) - 2*sqrt(2)*A*a**2*c**3*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*s
qrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*
b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2
)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(
2)*A*a*b**2*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-
4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*a*b**2*c**2*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c
 - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c
**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)) - 4*sqrt(2)*A*a*b**2*c**2*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c
**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) +
4*sqrt(2)*A*a*b**2*c**2*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sq
rt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3
*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*
a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*a*b*c**2*sqr
t(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-
4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*a*b*c**2*sqrt(-4*a*
c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a
```

```
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c +
 b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2)*A*a*b*c**2*sqrt(-4*a*c + b
**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - s
qrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c +
b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b
**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)
/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2)*A*a*b*c**2*sqrt(-4*a*c + b**2)*
sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b
/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)
/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c
**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) +
 b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b**4*c*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c
**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) -
sqrt(2)*A*b**4*c*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*s
qrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-
4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b**3*c*sqrt(-4*a*c
+ b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c
 + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b
**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
+ b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*b**3*c*sqrt(-4*a*c + b**2)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c*
*2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) +
b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*a**2*b*c**2*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a*
*2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a
*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c +
b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
```

```
) - sqrt(2)*B*a**2*b*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) +
sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(
-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c*
*3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 5*sqrt(2)*B*a**2*b*c
**2*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)
*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b*
*4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c)) + 5*sqrt(2)*B*a**2*b*c**2*sqrt(-b/c + sqrt(-
4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2
)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4
*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c)) + 8*B*a**2*c**3*sqrt(x)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b
/c + sqrt(-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c
 + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b
**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
+ b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**
2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*s
qrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4
*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
 + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b
/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2)*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*
c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
 sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*
sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*
sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**
3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + s
qrt(-4*a*c + b**2)/c)) - sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-
b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - s
qrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2
*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c)) + sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
 + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4
```

```
*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c -
sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(
-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c)) + 5*sqrt(2)*B*a*b**3*c*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sq
rt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/
c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c*
*3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 5*sqrt(2)*B*
a*b**3*c*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c
 - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c +
b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
 + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*
sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 10*B*a*b**2*c**2*sqrt(x)*sqrt(-b/c -
sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**
2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 3*sqrt(2
)*B*a*b**2*c*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqr
t(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c
 - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**
3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3
*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c -
 sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 3*sqrt(2)*B*a
*b**2*c*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x)
+ sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*
c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqr
t(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 6*B*a*b*c**2*sqrt(
x)*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(
-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**
2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b
**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
 sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b**5*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*
sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a
*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**
2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sq
rt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt
(2)*B*b**5*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)
```

```
/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*
a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c
+ b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*B*b**4*c*sqrt(x)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt(-b/
c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c*
*3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b*
*4*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqr
t(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/
c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*
sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + s
qrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*b**4*sqrt(-4*
a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c
 + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)
/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*B*b**3*c*sqrt(x)*sqrt(-4*a*c + b
**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/
(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c
 + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a
*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c)), True))
```

3.937 $\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=180

$$\frac{\sqrt{2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{\sqrt{b^2-4ac}+b}}$$

Rubi [A] time = 0.29, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {826, 1166, 205}

$$\frac{\sqrt{2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[2]*(B - (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) +
(Sqrt[2]*(B + (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{A+Bx^2}{a+bx^2+cx^4}\,dx, x, \sqrt{x}\right)$$
$$= \left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}-\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx, x, \sqrt{x}\right)+\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\text{Su}$$
$$= \frac{\sqrt{2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b+\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b+\sqrt{b^2-4ac}}}$$

Mathematica [A] time = 0.28, size = 181, normalized size = 1.01

$$\frac{\sqrt{2}\left(\frac{\left(B\sqrt{b^2-4ac}+2Ac-bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(B\sqrt{b^2-4ac}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[2]*(((-(b*B) + 2*A*c + B*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*S
qrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((b*B -
 2*A*c + B*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqr
t[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[c]*Sqrt[b^2 - 4*a*c])
```

IntegrateAlgebraic [A] time = 0.42, size = 202, normalized size = 1.12

$$\frac{\sqrt{2}\left(B\sqrt{b^2-4ac}+2Ac-bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(B\sqrt{b^2-4ac}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[2]*(-(b*B) + 2*A*c + B*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqr
t[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqr
t[b^2 - 4*a*c]]) + (Sqrt[2]*(b*B - 2*A*c + B*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqr
t[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[c]*Sqrt[b^2 - 4*a
*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 0.68, size = 1577, normalized size = 8.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c + (a*b^2*c - 4*a^2*c^2)*sq
rt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c
 - 4*a^2*c^2))*log(sqrt(2)*(A*B^2*a*b^2 + 4*A^3*a*c^2 - (4*A*B^2*a^2 + A^3*
b^2)*c + (4*(2*B*a^3 - A*a^2*b)*c^2 - (2*B*a^2*b^2 - A*a*b^3)*c)*sqrt((B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))*sqrt(-(B^2*a*b -
 (4*A*B*a - A^2*b)*c + (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c
```

```
+ A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^2)) - 4*(B^4*a^2
- A*B^3*a*b + A^3*B*b*c - A^4*c^2)*sqrt(x)) - 1/2*sqrt(2)*sqrt(-(B^2*a*b -
(4*A*B*a - A^2*b)*c + (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c +
 A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^2))*log(-sqrt(2)*(
A*B^2*a*b^2 + 4*A^3*a*c^2 - (4*A*B^2*a^2 + A^3*b^2)*c + (4*(2*B*a^3 - A*a^2
*b)*c^2 - (2*B*a^2*b^2 - A*a*b^3)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^
2)/(a^2*b^2*c^2 - 4*a^3*c^3)))*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c + (a*b^
2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*
a^3*c^3)))/(a*b^2*c - 4*a^2*c^2)) - 4*(B^4*a^2 - A*B^3*a*b + A^3*B*b*c - A^
4*c^2)*sqrt(x)) + 1/2*sqrt(2)*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c - (a*b^2
*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a
^3*c^3)))/(a*b^2*c - 4*a^2*c^2))*log(sqrt(2)*(A*B^2*a*b^2 + 4*A^3*a*c^2 - (
4*A*B^2*a^2 + A^3*b^2)*c - (4*(2*B*a^3 - A*a^2*b)*c^2 - (2*B*a^2*b^2 - A*a*
b^3)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3))
)*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c - (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^
2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c
^2)) - 4*(B^4*a^2 - A*B^3*a*b + A^3*B*b*c - A^4*c^2)*sqrt(x)) - 1/2*sqrt(2)
*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c - (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2
 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^
2))*log(-sqrt(2)*(A*B^2*a*b^2 + 4*A^3*a*c^2 - (4*A*B^2*a^2 + A^3*b^2)*c - (
4*(2*B*a^3 - A*a^2*b)*c^2 - (2*B*a^2*b^2 - A*a*b^3)*c)*sqrt((B^4*a^2 - 2*A^
2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))*sqrt(-(B^2*a*b - (4*A*B*a
- A^2*b)*c - (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)
/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^2)) - 4*(B^4*a^2 - A*B^3*a*
b + A^3*B*b*c - A^4*c^2)*sqrt(x))
```

giac [B] time = 0.95, size = 1404, normalized size = 7.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 - 8*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a*b^2*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*
c - 2*b^4*c + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 + 8*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*b^2*c^2 + 16*a*b^2*c^2 + 2*b^3*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*c^3 - 32*a^2*c^3 - 8*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*b*c^2 + 2*(b^2 - 4*a*c)*b^2*c - 8*(b^2 - 4*a*c)*a*c^2 - 2*(b^2 - 4*a*c)
*b*c^2)*A - 2*(2*a*b^2*c^2 - 8*a^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b + sqr
t(b^2 - 4*a*c))/c))/((a*b^4 - 8*a^2*b^2*c - 2*a*b^3*c + 16*a^3*c^2 + 8*a^2*
b*c^2 + a*b^2*c^2 - 4*a^2*c^3)*abs(c)) + 1/2*((sqrt(2)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*b^4 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c - 2*sqr
t(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c + 2*b^4*c + 16*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^2*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 - 16*a*b^2*c^2 -
2*b^3*c^2 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 + 32*a^2*c^3 +
8*a*b*c^3 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3 -
 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c - 2*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c + sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b^2*c
+ 8*(b^2 - 4*a*c)*a*c^2 + 2*(b^2 - 4*a*c)*b*c^2)*A + 2*(2*a*b^2*c^2 - 8*a^2
```

```
*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*B)
*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b - sqrt(b^2 - 4*a*c))/c))/((a*b^4 - 8*a^
2*b^2*c - 2*a*b^3*c + 16*a^3*c^2 + 8*a^2*b*c^2 + a*b^2*c^2 - 4*a^2*c^3)*abs
(c))
```

maple [B] time = 0.11, size = 337, normalized size = 1.87

$$-\frac{2\sqrt{2}\,Ac\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}-\frac{2\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Bb\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Bb\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,B\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x)
```

```
[Out] -2*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*B+1/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B-2*c/(-4*a*c+b^2)^(1/2)
*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*A-2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+1/(-4*a*c+b^2)
^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,A\sqrt{x}}{a}-\int\frac{Acx^{\frac{3}{2}}-(Ba-Ab)\sqrt{x}}{acx^2+abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2*A*sqrt(x)/a - integrate((A*c*x^(3/2) - (B*a - A*b)*sqrt(x))/(a*c*x^2 + a*
b*x + a^2), x)
```

mupad [B] time = 2.18, size = 4141, normalized size = 23.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + b*x + c*x^2)),x)
```

```
[Out] - atan((((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*
(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c -
 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*
(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^
2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 -
 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))
^(1/2) - 8*A*b^2*c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8
*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) +
 A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^
2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c
)))^(1/2)*1i + ((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c -
 A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^
2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x
^(1/2)*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/
2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*
```

b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b
^4*c)))^(1/2) + 8*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*
c^2 + 8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^
(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2
*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 +
a*b^4*c)))^(1/2)*1i)/(((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*
b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4
*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(
1/2)*(x^(1/2)*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)
^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4
*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^
2 + a*b^4*c)))^(1/2) - 8*A*b^2*c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16
*B^2*a*c^2 + 8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b
^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2
- 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2
*c^2 + a*b^4*c)))^(1/2) - ((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) +
A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2
- 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)
))^(1/2)*(x^(1/2)*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c -
b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2
- 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^
2*c^2 + a*b^4*c)))^(1/2) + 8*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3
- 16*B^2*a*c^2 + 8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c
- b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*
c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2
*b^2*c^2 + a*b^4*c)))^(1/2) + 16*A^2*B*c^2 + 16*B^3*a*c - 16*A*B^2*b*c))*(-
(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c -
b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^
2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*2i - atan((((-(B^2*a
*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3
)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(
2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*(8*b^3*c^2 - 32*a
*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(
-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c -
4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2) - 8*A*b^2*
c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8*B^2*b^2*c - 16*A
*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*
c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c
- 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*1i + ((
-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(4*a*c -
b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b
^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*(8*b^3*c^2
- 32*a*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c +
A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2
*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2) + 8
*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8*B^2*b^2*c
- 16*A*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c
+ A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*
a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*
1i)/(((-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*
A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*(8*
b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b
^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*
B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1
/2) - 8*A*b^2*c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8*B^
2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^
2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 -
4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))

```
^(1/2) - ((-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c
*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c
- 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)
*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A
^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2
- 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c))
)^(1/2) + 8*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 +
8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2)
+ A^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c
^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*
c)))^(1/2) + 16*A^2*B*c^2 + 16*B^3*a*c - 16*A*B^2*b*c))*(-(B^2*a*b^3 - B^2*
a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 1
6*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c
^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*2i
```

sympy [B] time = 24.86, size = 4663, normalized size = 25.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)/x**(1/2),x)
```

```
[Out] Piecewise((-2*A/(b*sqrt(x)) + I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(
3/2)*sqrt(1/c)) - I*A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqrt(1/c
)) - I*B*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*B*lo
g(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)), Eq(a, 0)), (8*I*A*s
qrt(b)*c**2*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2
*x*sqrt(1/c)) + 2*sqrt(2)*A*b*c*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x
))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) - 2*sqrt(2)*A
*b*c*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c)
 + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) + 4*sqrt(2)*A*c**2*x*log(-sqrt(2)*I*sqrt(
b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*s
qrt(1/c)) - 4*sqrt(2)*A*c**2*x*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))
/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) - 4*I*B*b**(3/2
)*c*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(
1/c)) + sqrt(2)*B*b**2*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b
**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) - sqrt(2)*B*b**2*log(s
qrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**
(3/2)*c**2*x*sqrt(1/c)) + 2*sqrt(2)*B*b*c*x*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c
)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) -
 2*sqrt(2)*B*b*c*x*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/
2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)), Eq(a, b**2/(4*c))), (-I*A*
log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(sqrt(a)*b*sqrt(1/b)) + I*A*log(I*sqrt(
a)*sqrt(1/b) + sqrt(x))/(sqrt(a)*b*sqrt(1/b)) + I*B*sqrt(a)*log(-I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(b**2*sqrt(1/b)) - I*B*sqrt(a)*log(I*sqrt(a)*sqrt(1/b)
 + sqrt(x))/(b**2*sqrt(1/b)) + 2*B*sqrt(x)/b, Eq(c, 0)), (-sqrt(2)*A*b*c*sq
rt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b*c*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b*c*sqrt(-b/c + sqrt(-
4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2
)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
```

```
t(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*b*c*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a*c
**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
 b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
 sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*
c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*c*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c +
b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*c*sqrt(-4*a*c + b*
*2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-
b/c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*c*sqrt(-
4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)
/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2
)*B*a*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c -
sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2)*B*a*
c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2)*B*a*c*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c
+ b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2)*B*a*c*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b**2*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/
2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
 + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*b**2*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a
*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
 - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2
)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b*sqrt(-4*a*c + b**2)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
```

```
a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*b*sqrt(-4*a*c + b**2)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c
+ b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)), True))
```

3.938 $\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)} dx$

Optimal. Leaf size=199

$$-\frac{\sqrt{2}\sqrt{c}\left(\frac{Ab-2aB}{\sqrt{b^2-4ac}}+A\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2A}{a\sqrt{x}}$$

Rubi [A] time = 0.55, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{\sqrt{2}\sqrt{c}\left(\frac{Ab-2aB}{\sqrt{b^2-4ac}}+A\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2A}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(a*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(A + (A*b - 2*a*B)/Sqrt[b^2 - 4*a*c])
*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a*Sqrt[b -
 Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*Sqrt[c]*(A - (A*b - 2*a*B)/Sqrt[b^2 - 4*a*c
])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a*Sqrt[b
 + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx &= -\frac{2A}{a\sqrt{x}}+\frac{\int \frac{-Ab+aB-Acx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{a} \\
&= -\frac{2A}{a\sqrt{x}}+\frac{2\,\mathrm{Subst}\left(\int \frac{-Ab+aB-Acx^2}{a+bx^2+cx^4}\,dx,x,\sqrt{x}\right)}{a} \\
&= -\frac{2A}{a\sqrt{x}}-\frac{\left(c\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\right)\mathrm{Subst}\left(\int \frac{1}{\frac{b}{2}+\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx,x,\sqrt{x}\right)}{a}-\frac{\left(c\left(A+\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\right)\cdots}{\cdots} \\
&= -\frac{2A}{a\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(A+\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\cdots\right)}{a\sqrt{b+\sqrt{b^2-4ac}}}
\end{aligned}
$$

Mathematica [A] time = 0.21, size = 216, normalized size = 1.09

$$
\frac{2\left(-\frac{\sqrt{c}\left(A\left(\sqrt{b^2-4ac}+b\right)-2aB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{c}\left(A\left(\sqrt{b^2-4ac}-b\right)+2aB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{A}{\sqrt{x}}\right)}{a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(-(A/Sqrt[x]) - (Sqrt[c]*(-2*a*B + A*(b + Sqrt[b^2 - 4*a*c]))*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[b^2 - 4*
a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[c]*(2*a*B + A*(-b + Sqrt[b^2 - 4*
a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt
[2]*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])))/a
```

IntegrateAlgebraic [A] time = 0.58, size = 221, normalized size = 1.11

$$
-\frac{\sqrt{2}\sqrt{c}\left(A\sqrt{b^2-4ac}-2aB+Ab\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A\sqrt{b^2-4ac}+2aB+A(-b)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2A}{a\sqrt{x}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(a*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(A*b - 2*a*B + A*Sqrt[b^2 - 4*a*c])*A
rcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a*Sqrt[b^2 -
 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*Sqrt[c]*(-(A*b) + 2*a*B + A
*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*
a*c]]])/(a*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 0.94, size = 2925, normalized size = 14.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*a*x*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*
A^2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*
```

```
a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*
a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c))*log(sqrt(2
)*(B^3*a^3*b^2 - 3*A*B^2*a^2*b^3 + 3*A^2*B*a*b^4 - A^3*b^5 + 4*(A^2*B*a^3 -
 A^3*a^2*b)*c^2 - (4*B^3*a^4 - 12*A*B^2*a^3*b + 13*A^2*B*a^2*b^2 - 5*A^3*a*
b^3)*c - (B*a^4*b^3 - A*a^3*b^4 - 8*A*a^5*c^2 - 2*(2*B*a^5*b - 3*A*a^4*b^2)
*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4
*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^
2 - 4*a^7*c)))*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^
2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^
2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^
2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c)) + 4*(A^4*a*c
^3 + (A^3*B*a*b - A^4*b^2)*c^2 - (B^4*a^3 - 3*A*B^3*a^2*b + 3*A^2*B^2*a*b^2
 - A^3*B*b^3)*c)*sqrt(x)) - sqrt(2)*a*x*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^
2*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A
*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*
(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2
 - 4*a^4*c))*log(-sqrt(2)*(B^3*a^3*b^2 - 3*A*B^2*a^2*b^3 + 3*A^2*B*a*b^4 -
A^3*b^5 + 4*(A^2*B*a^3 - A^3*a^2*b)*c^2 - (4*B^3*a^4 - 12*A*B^2*a^3*b + 13*
A^2*B*a^2*b^2 - 5*A^3*a*b^3)*c - (B*a^4*b^3 - A*a^3*b^4 - 8*A*a^5*c^2 - 2*(
2*B*a^5*b - 3*A*a^4*b^2)*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b
^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b
 + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2
*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*
B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(
A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2
- 4*a^4*c)) + 4*(A^4*a*c^3 + (A^3*B*a*b - A^4*b^2)*c^2 - (B^4*a^3 - 3*A*B^3
*a^2*b + 3*A^2*B^2*a*b^2 - A^3*B*b^3)*c)*sqrt(x)) + sqrt(2)*a*x*sqrt(-(B^2*
a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c - (a^3*b^2 - 4*a^
4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^
4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b
^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c))*log(sqrt(2)*(B^3*a^3*b^2 - 3*A*B^2*a^2
*b^3 + 3*A^2*B*a*b^4 - A^3*b^5 + 4*(A^2*B*a^3 - A^3*a^2*b)*c^2 - (4*B^3*a^4
 - 12*A*B^2*a^3*b + 13*A^2*B*a^2*b^2 - 5*A^3*a*b^3)*c + (B*a^4*b^3 - A*a^3*
b^4 - 8*A*a^5*c^2 - 2*(2*B*a^5*b - 3*A*a^4*b^2)*c)*sqrt((B^4*a^4 - 4*A*B^3*
a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*
B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))*sqrt(-(B^2*a^
2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c - (a^3*b^2 - 4*a^4*
c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*
b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2
 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c)) + 4*(A^4*a*c^3 + (A^3*B*a*b - A^4*b^2)*c
^2 - (B^4*a^3 - 3*A*B^3*a^2*b + 3*A^2*B^2*a*b^2 - A^3*B*b^3)*c)*sqrt(x)) -
sqrt(2)*a*x*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a
*b)*c - (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b
^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b
 + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c))*log(-sqrt(2)*(B
^3*a^3*b^2 - 3*A*B^2*a^2*b^3 + 3*A^2*B*a*b^4 - A^3*b^5 + 4*(A^2*B*a^3 - A^3
*a^2*b)*c^2 - (4*B^3*a^4 - 12*A*B^2*a^3*b + 13*A^2*B*a^2*b^2 - 5*A^3*a*b^3)
*c + (B*a^4*b^3 - A*a^3*b^4 - 8*A*a^5*c^2 - 2*(2*B*a^5*b - 3*A*a^4*b^2)*c)*
sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4
 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 -
4*a^7*c)))*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a*
b)*c - (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^
2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b
+ A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c)) + 4*(A^4*a*c^3 +
 (A^3*B*a*b - A^4*b^2)*c^2 - (B^4*a^3 - 3*A*B^3*a^2*b + 3*A^2*B^2*a*b^2 - A
^3*B*b^3)*c)*sqrt(x)) - 4*A*sqrt(x))/(a*x)
```

giac [B] time = 1.23, size = 2809, normalized size = 14.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -2*A/(a*sqrt(x)) - 1/4*((2*b^4*c^2 - 16*a*b^2*c^3 + 32*a^2*c^4 - sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 + 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*b^2*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 8*(b^2 - 4*a*c)*a*c^3)*A*a^2 +
 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 - 8*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*
b^4*c - 2*a*b^5*c + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 +
8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 16*a^2*b^3*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*b*c^3 - 32*a^3*b*c^3 + 2*(b^2 - 4*a*c)*a*b^3*c - 8*(b^
2 - 4*a*c)*a^2*b*c^2)*A*abs(a) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^2*b^4 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c - 2*sqrt(2)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*a^2*b^4*c + 16*sqrt(2)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^3*b*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 16*a^3
*b^2*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 - 32*a^4*c^3 +
 2*(b^2 - 4*a*c)*a^2*b^2*c - 8*(b^2 - 4*a*c)*a^3*c^2)*B*abs(a) + (2*a^2*b^4
*c^2 - 8*a^3*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^4 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^3*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b^3*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^2 - 2*(b^2 - 4*a*c)*a^2*b^2*c^2)*A - 2*(2*a^3*b^3*c^2 - 8*a^4*b*c^3 - sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3 + 4*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c + 2*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c - sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 2*(b^2 - 4*a*c)*a^3*b*
c^2)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b + sqrt(a^2*b^2 - 4*a^3*c))/(a*
c)))/((a^3*b^4 - 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2 + 8*a^4*b*c^2 + a^3
*b^2*c^2 - 4*a^4*c^3)*abs(a)*abs(c)) + 1/4*((2*b^4*c^2 - 16*a*b^2*c^3 + 32*
a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4 + 8
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c - 16*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 8*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 8*(b^2 - 4
*a*c)*a*c^3)*A*a^2 - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5 - 8*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b^4*c + 2*a*b^5*c + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a^3*b*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 +
 sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 16*a^2*b^3*c^2 - 4*sqr
t(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 32*a^3*b*c^3 - 2*(b^2 - 4*
a*c)*a*b^3*c + 8*(b^2 - 4*a*c)*a^2*b*c^2)*A*abs(a) + 2*(sqrt(2)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^2*b^4 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^
3*b^2*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*a^2*b^4*c
 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^2 + 8*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a^2*b^2*c^2 - 16*a^3*b^2*c^2 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^
3*c^3 + 32*a^4*c^3 - 2*(b^2 - 4*a*c)*a^2*b^2*c + 8*(b^2 - 4*a*c)*a^3*c^2)*B
*abs(a) + (2*a^2*b^4*c^2 - 8*a^3*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
```

```
t(b^2 - 4*a*c)*c)*a^2*b^3*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^2*c^2 - 2*(b^2 - 4*a*c)*a^2*b^2*c^2)*A - 2*(2*a^3*b^3*c^
2 - 8*a^4*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a^3*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*
b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c
 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 2*
(b^2 - 4*a*c)*a^3*b*c^2)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b - sqrt(a^2
*b^2 - 4*a^3*c))/(a*c)))/((a^3*b^4 - 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2
 + 8*a^4*b*c^2 + a^3*b^2*c^2 - 4*a^4*c^3)*abs(a)*abs(c))
```

maple [B] time = 0.12, size = 362, normalized size = 1.82

$$\frac{\sqrt{2}\,Abc\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,a}+\frac{\sqrt{2}\,Abc\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,a}-\frac{2\sqrt{2}\,Bc\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}-\frac{2\sqrt{2}\,Bc\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Ac\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\,a}-\frac{\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\,a}-\frac{2A}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x)
```

```
[Out] -c/a*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1
/2))*A*b-2*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+c/a*2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*c*x^(1/2))*A+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-2*
c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1
/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-2*A/a/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{Aa}{\sqrt{x}}-(Ba-Ab)\sqrt{x}\right)}{a^2}+\int -\frac{(Bac-Abc)x^{\frac{3}{2}}+\left(Bab-\left(b^2-ac\right)A\right)\sqrt{x}}{a^2cx^2+a^2bx+a^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2*(A*a/sqrt(x) - (B*a - A*b)*sqrt(x))/a^2 + integrate(-((B*a*c - A*b*c)*x^
(3/2) + (B*a*b - (b^2 - a*c)*A)*sqrt(x))/(a^2*c*x^2 + a^2*b*x + a^3), x)
```

mupad [B] time = 2.50, size = 6367, normalized size = 31.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x)
```

```
[Out] - atan((((-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*
a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c
 - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*
A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c
^2 - 8*a^4*b^2*c)))^(1/2)*(x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^
5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*
c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c -
 b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c))
)^(1/2) - 32*B*a^6*c^3 + 32*A*a^5*b*c^3 - 8*A*a^4*b^3*c^2 + 8*B*a^5*b^2*c^2
) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a
^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^
```

2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3
*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 -
2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5
*c^2 - 8*a^4*b^2*c)))^(1/2)*1i + ((-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a
*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*
B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*
c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*
c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(32*B*a^6*c^3 + x^(1/2)*
(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a
^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c +
12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/
(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*A*a^5*b*c^3 + 8*A*a^4*
b^3*c^2 - 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A
^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4
*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*
A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*
b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^
2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*1i)/(((-(A^2*b^5 + B^2
*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1
/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2
)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3
)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)
(x^(1/2)(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2
*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4
- 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2
*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a
^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*B*a^6*c^3 +
32*A*a^5*b*c^3 - 8*A*a^4*b^3*c^2 + 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c
^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B
^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b
^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)
^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/
2) - ((-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2
*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c -
A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B
*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2
- 8*a^4*b^2*c)))^(1/2)*(32*B*a^6*c^3 + x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^
2)*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-
(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2
*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*
b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8
*a^4*b^2*c)))^(1/2) - 32*A*a^5*b*c^3 + 8*A*a^4*b^3*c^2 - 8*B*a^5*b^2*c^2) +
x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*
b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a
^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c
- A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A
*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^
2 - 8*a^4*b^2*c)))^(1/2) + 16*A^3*a^3*c^4 + 16*A*B^2*a^4*c^3 - 16*A^2*B*a^3
*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*
a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c
- A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*
A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c
^2 - 8*a^4*b^2*c)))^(1/2)*2i - atan((((-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-
(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 1
6*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^
3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*
b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(x^(1/2)*(32*a^6*b*c

^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*
A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2
*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4
 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*B*a^6*c^3 + 32*A*a^5*b*c^3 - 8*A*
a^4*b^3*c^2 + 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 -
 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*
(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 -
 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*
a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^
2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*1i + ((-(A^2*b^5 +
 B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3
)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c -
 b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^
2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(
1/2)*(32*B*a^6*c^3 + x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^
2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(
1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^
2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^
3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2
) - 32*A*a^5*b*c^3 + 8*A*a^4*b^3*c^2 - 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a
^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5
 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c
 - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c -
b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))
^(1/2)*1i)/(((-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) -
B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b
^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2
+ 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a
^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^
2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c -
 b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(
4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a
*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2
*c)))^(1/2) - 32*B*a^6*c^3 + 32*A*a^5*b*c^3 - 8*A*a^4*b^3*c^2 + 8*B*a^5*b^2
c^2) + x^(1/2)(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A
*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2)
- B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a
*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^
2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16
*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - ((-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*
a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A
*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b
*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2
c)/(2(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(32*B*a^6*c^3 + x^(1/2)
*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c
 - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*
a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c
+ 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)
/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*A*a^5*b*c^3 + 8*A*a^4
*b^3*c^2 - 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*
A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(
4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16
*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3
*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b
^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) + 16*A^3*a^3*c^4 + 16
*A*B^2*a^4*c^3 - 16*A^2*B*a^3*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-
(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 1

```
6*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^
3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*
b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*2i - (2*A)/(a*x^(1/2
))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.939 $\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=284

$$-\frac{\sqrt{2}\sqrt{c}\left(aB\left(\sqrt{b^2-4ac}+b\right)-A\left(b\sqrt{b^2-4ac}-2ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\sqrt{c}\left(aB\left(b-\sqrt{b^2-4ac}\right.\right.}{a^2}$$

Rubi [A] time = 0.81, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{\sqrt{2}\sqrt{c}\left(aB\left(\sqrt{b^2-4ac}+b\right)-A\left(b\sqrt{b^2-4ac}-2ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\sqrt{c}\left(aB\left(b-\sqrt{b^2-4ac}\right)-A\left(-b\sqrt{b^2-4ac}-2ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2(Ab-aB)}{a^2\sqrt{x}}-\frac{2A}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(3*a*x^(3/2)) + (2*(A*b - a*B))/(a^2*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(a*
B*(b + Sqrt[b^2 - 4*a*c]) - A*(b^2 - 2*a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(
Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^2*Sqrt[b^2 - 4*a*
c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*Sqrt[c]*(a*B*(b - Sqrt[b^2 - 4*a
*c]) - A*(b^2 - 2*a*c - b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a^2*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2
- 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx = -\frac{2A}{3ax^{3/2}} + \frac{\int \frac{-Ab+aB-Acx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{3ax^{3/2}} + \frac{2(Ab-aB)}{a^2\sqrt{x}} + \frac{\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{3ax^{3/2}} + \frac{2(Ab-aB)}{a^2\sqrt{x}} + \frac{2\,\mathrm{Subst}\left(\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx^2}{a+bx^2+cx^4}\,dx, x, \sqrt{x}\right)}{a^2}$$

$$= -\frac{2A}{3ax^{3/2}} + \frac{2(Ab-aB)}{a^2\sqrt{x}} + \frac{\left(c\left(Ab-aB-\frac{Ab^2-abB-2aAc}{\sqrt{b^2-4ac}}\right)\right)\mathrm{Subst}\left(\int \frac{1}{\frac{b}{2}+\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx, x\right.}{a^2}$$

$$= -\frac{2A}{3ax^{3/2}} + \frac{2(Ab-aB)}{a^2\sqrt{x}} - \frac{\sqrt{2}\sqrt{c}\left(aB\left(b+\sqrt{b^2-4ac}\right)-A\left(b^2-2ac+b\sqrt{b^2-4ac}\right)\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}$$

Mathematica [A] time = 0.58, size = 258, normalized size = 0.91

$$\frac{\frac{3\sqrt{2}\sqrt{c}\left(\frac{\left(A\left(b\sqrt{b^2-4ac}-2ac+b^2\right)-aB\left(\sqrt{b^2-4ac}+b\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(b\sqrt{b^2-4ac}+2ac-b^2\right)+aB\left(b-\sqrt{b^2-4ac}\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}}+\frac{6(Ab-aB)}{\sqrt{x}}-\frac{2aA}{x^{3/2}}}{3a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a*A)/x^(3/2) + (6*(A*b - a*B))/Sqrt[x] + (3*Sqrt[2]*Sqrt[c]*(((-(a*B*(
b + Sqrt[b^2 - 4*a*c])) + A*(b^2 - 2*a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*
a*c]] + ((a*B*(b - Sqrt[b^2 - 4*a*c]) + A*(-b^2 + 2*a*c + b*Sqrt[b^2 - 4*a*
c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b
+ Sqrt[b^2 - 4*a*c]]))/Sqrt[b^2 - 4*a*c])/(3*a^2)
```

IntegrateAlgebraic [A] time = 0.90, size = 361, normalized size = 1.27

$$\frac{\left(\sqrt{2}Ab\sqrt{c}\sqrt{b^2-4ac}-2\sqrt{2}aAc^{3/2}-\sqrt{2}aB\sqrt{c}\sqrt{b^2-4ac}-\sqrt{2}abB\sqrt{c}+\sqrt{2}Ab^2\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\sqrt{2}Ab\sqrt{c}\sqrt{b^2-4ac}+2\sqrt{2}aAc^{3/2}-\sqrt{2}aB\sqrt{c}\sqrt{b^2-4ac}+\sqrt{2}abB\sqrt{c}-\sqrt{2}Ab^2\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2(aA+3aBx-3Abx)}{3a^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*(a*A - 3*A*b*x + 3*a*B*x))/(3*a^2*x^(3/2)) + ((Sqrt[2]*A*b^2*Sqrt[c] -
Sqrt[2]*a*b*B*Sqrt[c] - 2*Sqrt[2]*a*A*c^(3/2) + Sqrt[2]*A*b*Sqrt[c]*Sqrt[b^
2 - 4*a*c] - Sqrt[2]*a*B*Sqrt[c]*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]
*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^2*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqr
t[b^2 - 4*a*c]]) + ((-(Sqrt[2]*A*b^2*Sqrt[c]) + Sqrt[2]*a*b*B*Sqrt[c] + 2*S
qrt[2]*a*A*c^(3/2) + Sqrt[2]*A*b*Sqrt[c]*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*B*Sq
rt[c]*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2
 - 4*a*c]]])/(a^2*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 1.38, size = 5453, normalized size = 19.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*sqrt(2)*a^2*x^2*sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*
a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c + (a
^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 -
 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3
*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*
B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2
*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(
a^5*b^2 - 4*a^6*c))*log(sqrt(2)*(B^3*a^3*b^5 - 3*A*B^2*a^2*b^6 + 3*A^2*B*a*
b^7 - A^3*b^8 - 4*A^3*a^4*c^4 + (4*A*B^2*a^5 - 20*A^2*B*a^4*b + 17*A^3*a^3*
b^2)*c^3 + (4*B^3*a^5*b - 25*A*B^2*a^4*b^2 + 41*A^2*B*a^3*b^3 - 20*A^3*a^2*
b^4)*c^2 - (5*B^3*a^4*b^3 - 18*A*B^2*a^3*b^4 + 21*A^2*B*a^2*b^5 - 8*A^3*a*b
^6)*c - (B*a^6*b^4 - A*a^5*b^5 + 4*(2*B*a^8 - 3*A*a^7*b)*c^2 - (6*B*a^7*b^2
 - 7*A*a^6*b^3)*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6
- 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b +
3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3
*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^
2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))*
sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2
- (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c + (a^5*b^2 - 4*a^6*c)*sqrt(
(B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^
8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^
4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*
b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B
*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c)) + 4
*(A^4*a^2*c^5 + 3*(A^3*B*a^2*b - A^4*a*b^2)*c^4 - (B^4*a^4 - 5*A*B^3*a^3*b
+ 6*A^2*B^2*a^2*b^2 - A^3*B*a*b^3 - A^4*b^4)*c^3 + (B^4*a^3*b^2 - 3*A*B^3*a
^2*b^3 + 3*A^2*B^2*a*b^4 - A^3*B*b^5)*c^2)*sqrt(x)) - 3*sqrt(2)*a^2*x^2*sqr
t(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 - (
3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c + (a^5*b^2 - 4*a^6*c)*sqrt((B^
4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 +
 A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a
^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4
)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^
2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c))*log(-s
qrt(2)*(B^3*a^3*b^5 - 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b^7 - A^3*b^8 - 4*A^3*a^4
*c^4 + (4*A*B^2*a^5 - 20*A^2*B*a^4*b + 17*A^3*a^3*b^2)*c^3 + (4*B^3*a^5*b -
 25*A*B^2*a^4*b^2 + 41*A^2*B*a^3*b^3 - 20*A^3*a^2*b^4)*c^2 - (5*B^3*a^4*b^3
 - 18*A*B^2*a^3*b^4 + 21*A^2*B*a^2*b^5 - 8*A^3*a*b^6)*c - (B*a^6*b^4 - A*a^
5*b^5 + 4*(2*B*a^8 - 3*A*a^7*b)*c^2 - (6*B*a^7*b^2 - 7*A*a^6*b^3)*c)*sqrt((
B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8
 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4
*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b
^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*
a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))*sqrt(-(B^2*a^2*b^3 - 2*A*
B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^
2*b^2 + 5*A^2*a*b^3)*c + (a^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^
3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*
B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 2
4*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2
 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c
)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c)) + 4*(A^4*a^2*c^5 + 3*(A^3*B*
a^2*b - A^4*a*b^2)*c^4 - (B^4*a^4 - 5*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - A^3
*B*a*b^3 - A^4*b^4)*c^3 + (B^4*a^3*b^2 - 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4
- A^3*B*b^5)*c^2)*sqrt(x)) + 3*sqrt(2)*a^2*x^2*sqrt(-(B^2*a^2*b^3 - 2*A*B*a
```

```
*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b
^2 + 5*A^2*a*b^3)*c - (a^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b
^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2
*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A
^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 -
6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(
a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c))*log(sqrt(2)*(B^3*a^3*b^5 - 3*A*
B^2*a^2*b^6 + 3*A^2*B*a*b^7 - A^3*b^8 - 4*A^3*a^4*c^4 + (4*A*B^2*a^5 - 20*A
^2*B*a^4*b + 17*A^3*a^3*b^2)*c^3 + (4*B^3*a^5*b - 25*A*B^2*a^4*b^2 + 41*A^2
*B*a^3*b^3 - 20*A^3*a^2*b^4)*c^2 - (5*B^3*a^4*b^3 - 18*A*B^2*a^3*b^4 + 21*A
^2*B*a^2*b^5 - 8*A^3*a*b^6)*c + (B*a^6*b^4 - A*a^5*b^5 + 4*(2*B*a^8 - 3*A*a
^7*b)*c^2 - (6*B*a^7*b^2 - 7*A*a^6*b^3)*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*
b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^
2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*
A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 -
 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/
(a^10*b^2 - 4*a^11*c)))*sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B
*a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c - (
a^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6
- 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b +
3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3
*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^
2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/
(a^5*b^2 - 4*a^6*c)) + 4*(A^4*a^2*c^5 + 3*(A^3*B*a^2*b - A^4*a*b^2)*c^4 - (
B^4*a^4 - 5*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - A^3*B*a*b^3 - A^4*b^4)*c^3 +
(B^4*a^3*b^2 - 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4 - A^3*B*b^5)*c^2)*sqrt(x))
 - 3*sqrt(2)*a^2*x^2*sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^
3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c - (a^5
*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4
*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A
^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*
a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B
^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^
5*b^2 - 4*a^6*c))*log(-sqrt(2)*(B^3*a^3*b^5 - 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b
^7 - A^3*b^8 - 4*A^3*a^4*c^4 + (4*A*B^2*a^5 - 20*A^2*B*a^4*b + 17*A^3*a^3*b
^2)*c^3 + (4*B^3*a^5*b - 25*A*B^2*a^4*b^2 + 41*A^2*B*a^3*b^3 - 20*A^3*a^2*b
^4)*c^2 - (5*B^3*a^4*b^3 - 18*A*B^2*a^3*b^4 + 21*A^2*B*a^2*b^5 - 8*A^3*a*b^
6)*c + (B*a^6*b^4 - A*a^5*b^5 + 4*(2*B*a^8 - 3*A*a^7*b)*c^2 - (6*B*a^7*b^2
- 7*A*a^6*b^3)*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 -
 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3
*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*
B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2
*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))*s
qrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 -
 (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c - (a^5*b^2 - 4*a^6*c)*sqrt((
B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8
 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4
*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b
^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*
a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c)) + 4*
(A^4*a^2*c^5 + 3*(A^3*B*a^2*b - A^4*a*b^2)*c^4 - (B^4*a^4 - 5*A*B^3*a^3*b +
 6*A^2*B^2*a^2*b^2 - A^3*B*a*b^3 - A^4*b^4)*c^3 + (B^4*a^3*b^2 - 3*A*B^3*a^
2*b^3 + 3*A^2*B^2*a*b^4 - A^3*B*b^5)*c^2)*sqrt(x)) - 4*(A*a + 3*(B*a - A*b)
*x)*sqrt(x))/(a^2*x^2)
```

giac [B] time = 1.29, size = 2874, normalized size = 10.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x, algorithm="giac")

[Out] 1/2*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 - 9*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 2*b^6*c + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 18*a*b^4*c^2 + 2*b^5*c^2 - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 48*a^2*b^2*c^3 - 14*a*b^3*c^3 + 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 + 32*a^3*c^4 + 24*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^3 + 2*(b^2 - 4*a*c)*b^4*c - 10*(b^2 - 4*a*c)*a*b^2*c^2 - 2*(b^2 - 4*a*c)*b^3*c^2 + 8*(b^2 - 4*a*c)*a^2*c^3 + 6*(b^2 - 4*a*c)*a*b*c^3)*A - (sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*a*b^5*c + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 16*a^2*b^3*c^2 + 2*a*b^4*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 32*a^3*b*c^3 - 12*a^2*b^2*c^3 + 16*a^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^3 + 2*(b^2 - 4*a*c)*a*b^3*c - 8*(b^2 - 4*a*c)*a^2*b*c^2 - 2*(b^2 - 4*a*c)*a*b^2*c^2 + 4*(b^2 - 4*a*c)*a^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^2*b + sqrt(a^4*b^2 - 4*a^5*c))/(a^2*c)))/((a^3*b^4 - 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2 + 8*a^4*b*c^2 + a^3*b^2*c^2 - 4*a^4*c^3)*abs(c)) + 1/2*((sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 - 9*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 2*b^6*c + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 18*a*b^4*c^2 + 2*b^5*c^2 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 + 48*a^2*b^2*c^3 - 14*a*b^3*c^3 + 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 32*a^3*c^4 + 24*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)*b^4*c + 10*(b^2 - 4*a*c)*a*b^2*c^2 - 2*(b^2 - 4*a*c)*b^3*c^2 - 8*(b^2 - 4*a*c)*a^2*c^3 + 6*(b^2 - 4*a*c)*a*b*c^3)*A - (sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*a*b^5*c + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 16*a^2*b^3*c^2 + 2*a*b^4*c^2 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 32*a^3*b*c^3 - 12*a^2*b^2*c^3 + 16*a^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a

```
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*c^3 - 2*(b^2 - 4*a*c)*a*b^3*c + 8*(b^2 - 4*a*c)*a^2*b
*c^2 - 2*(b^2 - 4*a*c)*a*b^2*c^2 + 4*(b^2 - 4*a*c)*a^2*c^3)*B)*arctan(2*sqr
t(1/2)*sqrt(x)/sqrt((a^2*b - sqrt(a^4*b^2 - 4*a^5*c))/(a^2*c)))/((a^3*b^4 -
 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2 + 8*a^4*b*c^2 + a^3*b^2*c^2 - 4*a^4
*c^3)*abs(c)) - 2/3*(3*B*a*x - 3*A*b*x + A*a)/(a^2*x^(3/2))
```

maple [B] time = 0.12, size = 630, normalized size = 2.22

$$\frac{2\sqrt{2}\,A c^{2} \operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}\,a}+\frac{2\sqrt{2}\,A c^{2} \arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}\,a}-\frac{\sqrt{2}\,A b^{2} c \operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}\,a^{2}}-\frac{\sqrt{2}\,A b^{2} c \arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}\,a^{2}}+\frac{\sqrt{2}\,B b c \operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}\,a}+\frac{\sqrt{2}\,B b c \arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}\,a}-\frac{\sqrt{2}\,A b c \operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}\,a^{2}}+\frac{\sqrt{2}\,A b c \arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}\,a^{2}}+\frac{\sqrt{2}\,B c \operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}\,a}-\frac{\sqrt{2}\,B c \arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}\,a}+\frac{2Ab}{a^{2}\sqrt{x}}-\frac{2B}{a\sqrt{x}}-\frac{2A}{3a\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x)
```

```
[Out] c/a^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+2*c^2/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)
*c*x^(1/2))*A-c/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-c/a*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*B+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B
*b-c/a^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+2*c^2/a/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*A-c/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*A*b^2+c/a*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*c*x^(1/2))*B*b-2/3*A/a/x^(3/2)+2/a^2/x^(1/2)*A*b-2*B/a/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{Aa^{2}}{x^{\frac{3}{2}}}+3\left(Bab-\left(b^{2}-ac\right)A\right)\sqrt{x}+\frac{3\left(Ba^{2}-Aab\right)}{\sqrt{x}}\right)}{3\,a^{3}}+\int\frac{\left(Babc-\left(b^{2}c-ac^{2}\right)A\right)x^{\frac{3}{2}}-\left(\left(b^{3}-2\,abc\right)A-\left(ab^{2}-a^{2}c\right)B\right)\sqrt{x}}{a^{3}cx^{2}+a^{3}bx+a^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2/3*(A*a^2/x^(3/2) + 3*(B*a*b - (b^2 - a*c)*A)*sqrt(x) + 3*(B*a^2 - A*a*b)
/sqrt(x))/a^3 + integrate(((B*a*b*c - (b^2*c - a*c^2)*A)*x^(3/2) - ((b^3 -
2*a*b*c)*A - (a*b^2 - a^2*c)*B)*sqrt(x))/(a^3*c*x^2 + a^3*b*x + a^4), x)
```

mupad [B] time = 3.35, size = 10133, normalized size = 35.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan(((x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 32*A^
2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c^4)
+ (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6
 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*
(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^
3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2)
```

```
 - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^
3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^
2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10*c^4
 - x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 + A^2*
b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B
*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*
b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b
^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A
*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7
*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*a^9*
b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b
^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^
2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2
*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*
c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c -
b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4
*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2
*c)))^(1/2)*1i + (x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*
c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*
a^8*b*c^4) - (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B
^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A
^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^
2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) -
 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-
(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32
*A*a^10*c^4 + x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2
*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2
+ A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/
2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c +
12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2
- 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(
1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b
^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2
- 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(
-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-
(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*
c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2
 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^
2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2
- 8*a^6*b^2*c)))^(1/2)*1i)/((x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A
^2*a^6*b^4*c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^
3 + 48*A*B*a^8*b*c^4) + (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^
3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3
)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b
^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-
(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B
*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c))
)^(1/2)*(32*A*a^10*c^4 - x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^
7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a
^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c -
b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a
^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a
^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2)
)/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a
```

^8*b^4*c^2 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5
+ A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2
*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) +
16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^
2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A
^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 +
16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) - (x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c
^4 + 8*A^2*a^6*b^4*c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^
7*b^3*c^3 + 48*A*B*a^8*b*c^4) - (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c
 - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9
*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*
a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*
c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c
 + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6
*b^2*c)))^(1/2)*(32*A*a^10*c^4 + x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(
-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 +
25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 -
 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) -
36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(
-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^
3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3
 + 8*A*a^8*b^4*c^2 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*
a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c
^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c
 + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c
^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3
)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^
5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 16*B^3*a^8*c^4 + 16*A^2*B*a^7*c
^5 - 16*A^3*a^6*b*c^5 - 32*A*B^2*a^7*b*c^4 + 16*A^2*B*a^6*b^2*c^4))*(-(A^2*
b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2
*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2
*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B
*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*
c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/
2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*2i + atan(((x^(1/2)*(16
*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 32*A^2*a^7*b^2*c^4 + 8*
B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c^4) + (-(A^2*b^7 + B^2
*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*
c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)
^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*
c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*
c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^
3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a
^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10*c^4 - x^(1/2)*(32*a^1
1*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)
^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a
*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*
(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^
2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A
*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c
)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*a^9*b^2*c^3 - 8*B*a^9*
b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A
*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*

a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*
a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^
3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*
A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*
a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*1i + (
x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 32*A^2*a^7*b
^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c^4) - (-(A^
2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A
^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*
c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B
^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A
*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*
a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(
1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10*c^4 + x^(1
/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^
3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 +
 B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-
(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*
b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 -
8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*a^9*b^2*c^3
 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*
c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*
a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)
^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^
2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(
1/2)*1i)/((x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 3
2*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c
^4) + (-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a
*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*
b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*
b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(
1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*
a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c
- b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10
c^4 - x^(1/2)(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 -
A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a
^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16
*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*
a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2
*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) +
16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16
*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*
a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c
 - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9
*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*
a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*
c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c
 - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6
*b^2*c)))^(1/2) - (x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4
*c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B
*a^8*b*c^4) - (-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) -
 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) -
B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*
A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b

```
^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2)
+ 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(
-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(3
2*A*a^10*c^4 + x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^
2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2
 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c +
 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2
 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*
b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2
 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(
-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4
*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^
2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c
*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a
^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2
 - 8*a^6*b^2*c)))^(1/2) + 16*B^3*a^8*c^4 + 16*A^2*B*a^7*c^5 - 16*A^3*a^6*b*
c^5 - 32*A*B^2*a^7*b*c^4 + 16*A^2*B*a^6*b^2*c^4))*(-(A^2*b^7 + B^2*a^2*b^5
- A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2
*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) +
16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^
2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A
^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 +
16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*2i - ((2*A)/(3*a) - (2*x*(A*b - B*a))/a^2
)/x^(3/2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.940 $\int \frac{A+Bx}{x^{7/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=307

$$-\frac{2\left(-aAc-abB+Ab^2\right)}{a^3\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(-\frac{aB\left(b^2-2ac\right)-A\left(b^3-3abc\right)}{\sqrt{b^2-4ac}}-aAc-abB+Ab^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^3\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(\frac{aB\left(\right.}{}\right.}{}$$

Rubi [A] time = 1.96, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{2\left(-aAc-abB+Ab^2\right)}{a^3\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(-\frac{aB\left(b^2-2ac\right)-A\left(b^3-3abc\right)}{\sqrt{b^2-4ac}}-aAc-abB+Ab^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^3\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(\frac{aB\left(b^2-2ac\right)-A\left(b^3-3abc\right)}{\sqrt{b^2-4ac}}-aAc-abB+Ab^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a^3\sqrt{\sqrt{b^2-4ac}+b}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2A}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(5*a*x^(5/2)) + (2*(A*b - a*B))/(3*a^2*x^(3/2)) - (2*(A*b^2 - a*b*B
 - a*A*c))/(a^3*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(A*b^2 - a*b*B - a*A*c - (a*B*(b
^2 - 2*a*c) - A*(b^3 - 3*a*b*c))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]
*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^3*Sqrt[b - Sqrt[b^2 - 4*a*c]]) -
 (Sqrt[2]*Sqrt[c]*(A*b^2 - a*b*B - a*A*c + (a*B*(b^2 - 2*a*c) - A*(b^3 - 3*
a*b*c))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b
^2 - 4*a*c]]])/(a^3*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a+bx+cx^2\right)}\,dx = -\frac{2A}{5ax^{5/2}}+\frac{\int \frac{-Ab+aB-Acx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}+\frac{\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}+\frac{\int \frac{aB\left(b^2-ac\right)-A\left(b^3-2abc\right)-c\left(Ab^2-abB-aAc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)}}{a^3}$$

$$= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}+\frac{2\,\mathrm{Subst}\left(\int \frac{aB\left(b^2-ac\right)-A\left(b^3-2abc\right)-c\left(Ab^2\right.}{a+bx^2+cx^4}\right.}{a^3}$$

$$= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}-\frac{\left(c\left(Ab^2-abB-aAc-\frac{aB\left(b^2-2ac\right)-A\left(\right.}{\sqrt{b^2-4a}}\right.\right.}{}$$

$$= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(Ab^2-abB-aAc-\frac{aB\left(b^2-2a\right.}{}\right.}{a^3\sqrt{b-\sqrt{b}}}$$

Mathematica [A] time = 0.79, size = 337, normalized size = 1.10

$$\frac{-\frac{6a^2A}{x^{5/2}}+\frac{30\left(aAc+abB-Ab^2\right)}{\sqrt{x}}-\frac{15\sqrt{2}\sqrt{c}\left(-\frac{\left(aB\left(b\sqrt{b^2-4ac}-2ac+b^2\right)-A\left(b^2\sqrt{b^2-4ac}-ac\sqrt{b^2-4ac}-3abc+b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\left(A\left(-b^2\sqrt{b^2-4ac}+ac\sqrt{b^2-4ac}-3abc+b^3\right)+aB\left(b\sqrt{b^2-4ac}+2ac-b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}}+\frac{10a(Ab-aB)}{x^{3/2}}}{15a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x]
```

```
[Out] ((-6*a^2*A)/x^(5/2) + (10*a*(A*b - a*B))/x^(3/2) + (30*(-(A*b^2) + a*b*B +
a*A*c))/Sqrt[x] - (15*Sqrt[2]*Sqrt[c]*(-(((a*B*(b^2 - 2*a*c + b*Sqrt[b^2 -
4*a*c]) - A*(b^3 - 3*a*b*c + b^2*Sqrt[b^2 - 4*a*c] - a*c*Sqrt[b^2 - 4*a*c])
)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - S
qrt[b^2 - 4*a*c]]) - ((a*B*(-b^2 + 2*a*c + b*Sqrt[b^2 - 4*a*c]) + A*(b^3 -
3*a*b*c - b^2*Sqrt[b^2 - 4*a*c] + a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*S
qrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))
/Sqrt[b^2 - 4*a*c])/(15*a^3)
```

IntegrateAlgebraic [A] time = 1.11, size = 486, normalized size = 1.58

$$-\frac{2\left(3a^2A+5a^2Bx-5aAbx-15aAcx^2-15abBx^2+15Ab^2x^2\right)}{15a^3x^{5/2}}+\frac{\left(-2\sqrt{2}a^2Bc^{3/2}+\sqrt{2}aAc^{3/2}\sqrt{b^2-4ac}-\sqrt{2}Ab^2\sqrt{c}\sqrt{b^2-4ac}+3\sqrt{2}aAbc^{3/2}+\sqrt{2}ab^2B\sqrt{c}+\sqrt{2}abB\sqrt{c}\sqrt{b^2-4ac}-\sqrt{2}Ab^3\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^3\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(2\sqrt{2}a^2Bc^{3/2}+\sqrt{2}aAc^{3/2}\sqrt{b^2-4ac}-\sqrt{2}Ab^2\sqrt{c}\sqrt{b^2-4ac}-3\sqrt{2}aAbc^{3/2}-\sqrt{2}ab^2B\sqrt{c}+\sqrt{2}abB\sqrt{c}\sqrt{b^2-4ac}+\sqrt{2}Ab^3\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a^3\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*(3*a^2*A - 5*a*A*b*x + 5*a^2*B*x + 15*A*b^2*x^2 - 15*a*b*B*x^2 - 15*a*A
*c*x^2))/(15*a^3*x^(5/2)) + ((-(Sqrt[2]*A*b^3*Sqrt[c]) + Sqrt[2]*a*b^2*B*Sq
rt[c] + 3*Sqrt[2]*a*A*b*c^(3/2) - 2*Sqrt[2]*a^2*B*c^(3/2) - Sqrt[2]*A*b^2*S
qrt[c]*Sqrt[b^2 - 4*a*c] + Sqrt[2]*a*b*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] + Sqrt[2
]*a*A*c^(3/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b -
Sqrt[b^2 - 4*a*c]]])/(a^3*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) +
((Sqrt[2]*A*b^3*Sqrt[c] - Sqrt[2]*a*b^2*B*Sqrt[c] - 3*Sqrt[2]*a*A*b*c^(3/2)
```

```
 + 2*Sqrt[2]*a^2*B*c^(3/2) - Sqrt[2]*A*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c] + Sqrt
[2]*a*b*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] + Sqrt[2]*a*A*c^(3/2)*Sqrt[b^2 - 4*a*c]
)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a^3*Sqrt[
b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 3.42, size = 7971, normalized size = 25.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/30*(15*sqrt(2)*a^3*x^3*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*
B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*
c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c
)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11
 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)
*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 +
46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*
b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a
^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*
(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 +
 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c))*log(sqrt(2)*
(B^3*a^3*b^8 - 3*A*B^2*a^2*b^9 + 3*A^2*B*a*b^10 - A^3*b^11 - 4*(A^2*B*a^6 -
 2*A^3*a^5*b)*c^5 + (4*B^3*a^7 - 32*A*B^2*a^6*b + 77*A^2*B*a^5*b^2 - 54*A^3
*a^4*b^3)*c^4 - (17*B^3*a^6*b^2 - 92*A*B^2*a^5*b^3 + 151*A^2*B*a^4*b^4 - 77
*A^3*a^3*b^5)*c^3 + (20*B^3*a^5*b^4 - 81*A*B^2*a^4*b^5 + 105*A^2*B*a^3*b^6
- 44*A^3*a^2*b^7)*c^2 - (8*B^3*a^4*b^6 - 27*A*B^2*a^3*b^7 + 30*A^2*B*a^2*b^
8 - 11*A^3*a*b^9)*c - (B*a^8*b^5 - A*a^7*b^6 + 8*A*a^10*c^3 + 6*(2*B*a^10*b
 - 3*A*a^9*b^2)*c^2 - (7*B*a^9*b^3 - 8*A*a^8*b^4)*c)*sqrt((B^4*a^4*b^8 - 4*
A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^
6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B
^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*
(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 +
 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4
*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^
3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*
b^2 - 4*a^15*c)))*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 -
 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (
5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c)*sqrt(
(B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*
b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 +
(B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*
a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 8
0*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5
+ 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*
a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*
a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c)) + 4*(A^4*a^3*c^7 +
(5*A^3*B*a^3*b - 6*A^4*a^2*b^2)*c^6 - (B^4*a^5 - 7*A*B^3*a^4*b + 9*A^2*B^2*
a^3*b^2 + 2*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^5 + (3*B^4*a^4*b^2 - 11*A*B^3*a^
3*b^3 + 12*A^2*B^2*a^2*b^4 - 3*A^3*B*a*b^5 - A^4*b^6)*c^4 - (B^4*a^3*b^4 -
3*A*B^3*a^2*b^5 + 3*A^2*B^2*a*b^6 - A^3*B*b^7)*c^3)*sqrt(x)) - 15*sqrt(2)*a
^3*x^3*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*
b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b
^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^
8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*
a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 -
12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^
4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4
*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B
```

```
^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 1
4*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/
(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c))*log(-sqrt(2)*(B^3*a^3*b^8 - 3*
A*B^2*a^2*b^9 + 3*A^2*B*a*b^10 - A^3*b^11 - 4*(A^2*B*a^6 - 2*A^3*a^5*b)*c^5
 + (4*B^3*a^7 - 32*A*B^2*a^6*b + 77*A^2*B*a^5*b^2 - 54*A^3*a^4*b^3)*c^4 - (
17*B^3*a^6*b^2 - 92*A*B^2*a^5*b^3 + 151*A^2*B*a^4*b^4 - 77*A^3*a^3*b^5)*c^3
 + (20*B^3*a^5*b^4 - 81*A*B^2*a^4*b^5 + 105*A^2*B*a^3*b^6 - 44*A^3*a^2*b^7)
*c^2 - (8*B^3*a^4*b^6 - 27*A*B^2*a^3*b^7 + 30*A^2*B*a^2*b^8 - 11*A^3*a*b^9)
*c - (B*a^8*b^5 - A*a^7*b^6 + 8*A*a^10*c^3 + 6*(2*B*a^10*b - 3*A*a^9*b^2)*c
^2 - (7*B*a^9*b^3 - 8*A*a^8*b^4)*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6
*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^
7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2
*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 -
26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*
c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*
a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^
2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))
*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3
 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 1
2*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*
A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^
6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B
^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*
(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 +
 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4
*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^
3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*
b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c)) + 4*(A^4*a^3*c^7 + (5*A^3*B*a^3*b -
6*A^4*a^2*b^2)*c^6 - (B^4*a^5 - 7*A*B^3*a^4*b + 9*A^2*B^2*a^3*b^2 + 2*A^3*B
*a^2*b^3 - 5*A^4*a*b^4)*c^5 + (3*B^4*a^4*b^2 - 11*A*B^3*a^3*b^3 + 12*A^2*B^
2*a^2*b^4 - 3*A^3*B*a*b^5 - A^4*b^6)*c^4 - (B^4*a^3*b^4 - 3*A*B^3*a^2*b^5 +
 3*A^2*B^2*a*b^6 - A^3*B*b^7)*c^3)*sqrt(x)) + 15*sqrt(2)*a^3*x^3*sqrt(-(B^2
*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a
^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b
^4 + 7*A^2*a*b^5)*c - (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b
^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*
B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b +
54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*
b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3
*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*
A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 +
 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^1
5*c)))/(a^7*b^2 - 4*a^8*c))*log(sqrt(2)*(B^3*a^3*b^8 - 3*A*B^2*a^2*b^9 + 3*
A^2*B*a*b^10 - A^3*b^11 - 4*(A^2*B*a^6 - 2*A^3*a^5*b)*c^5 + (4*B^3*a^7 - 32
*A*B^2*a^6*b + 77*A^2*B*a^5*b^2 - 54*A^3*a^4*b^3)*c^4 - (17*B^3*a^6*b^2 - 9
2*A*B^2*a^5*b^3 + 151*A^2*B*a^4*b^4 - 77*A^3*a^3*b^5)*c^3 + (20*B^3*a^5*b^4
 - 81*A*B^2*a^4*b^5 + 105*A^2*B*a^3*b^6 - 44*A^3*a^2*b^7)*c^2 - (8*B^3*a^4*
b^6 - 27*A*B^2*a^3*b^7 + 30*A^2*B*a^2*b^8 - 11*A^3*a*b^9)*c + (B*a^8*b^5 -
A*a^7*b^6 + 8*A*a^10*c^3 + 6*(2*B*a^10*b - 3*A*a^9*b^2)*c^2 - (7*B*a^9*b^3
- 8*A*a^8*b^4)*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10
- 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b
+ 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*
A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 +
 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*
b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a
^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18
*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))*sqrt(-(B^2*a^2*b^
5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b -
18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*
```

```
A^2*a*b^5)*c - (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*
A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7
 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*
B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 2
6*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c
^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a
^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2
*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/
(a^7*b^2 - 4*a^8*c)) + 4*(A^4*a^3*c^7 + (5*A^3*B*a^3*b - 6*A^4*a^2*b^2)*c^6
 - (B^4*a^5 - 7*A*B^3*a^4*b + 9*A^2*B^2*a^3*b^2 + 2*A^3*B*a^2*b^3 - 5*A^4*a
*b^4)*c^5 + (3*B^4*a^4*b^2 - 11*A*B^3*a^3*b^3 + 12*A^2*B^2*a^2*b^4 - 3*A^3*
B*a*b^5 - A^4*b^6)*c^4 - (B^4*a^3*b^4 - 3*A*B^3*a^2*b^5 + 3*A^2*B^2*a*b^6 -
 A^3*B*b^7)*c^3)*sqrt(x)) - 15*sqrt(2)*a^3*x^3*sqrt(-(B^2*a^2*b^5 - 2*A*B*a
*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*
b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*
c - (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2
*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*
a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2
 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6
*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^
4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37
*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^
8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 -
4*a^8*c))*log(-sqrt(2)*(B^3*a^3*b^8 - 3*A*B^2*a^2*b^9 + 3*A^2*B*a*b^10 - A^
3*b^11 - 4*(A^2*B*a^6 - 2*A^3*a^5*b)*c^5 + (4*B^3*a^7 - 32*A*B^2*a^6*b + 77
*A^2*B*a^5*b^2 - 54*A^3*a^4*b^3)*c^4 - (17*B^3*a^6*b^2 - 92*A*B^2*a^5*b^3 +
 151*A^2*B*a^4*b^4 - 77*A^3*a^3*b^5)*c^3 + (20*B^3*a^5*b^4 - 81*A*B^2*a^4*b
^5 + 105*A^2*B*a^3*b^6 - 44*A^3*a^2*b^7)*c^2 - (8*B^3*a^4*b^6 - 27*A*B^2*a^
3*b^7 + 30*A^2*B*a^2*b^8 - 11*A^3*a*b^9)*c + (B*a^8*b^5 - A*a^7*b^6 + 8*A*a
^10*c^3 + 6*(2*B*a^10*b - 3*A*a^9*b^2)*c^2 - (7*B*a^9*b^3 - 8*A*a^8*b^4)*c)
*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11
+ A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*
c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 4
6*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b
^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^
5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(
3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 +
5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 +
 A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 +
14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c - (a
^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10
- 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b
+ 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*
A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 +
 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*
b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a
^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18
*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*
c)) + 4*(A^4*a^3*c^7 + (5*A^3*B*a^3*b - 6*A^4*a^2*b^2)*c^6 - (B^4*a^5 - 7*A
*B^3*a^4*b + 9*A^2*B^2*a^3*b^2 + 2*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^5 + (3*B^
4*a^4*b^2 - 11*A*B^3*a^3*b^3 + 12*A^2*B^2*a^2*b^4 - 3*A^3*B*a*b^5 - A^4*b^6
)*c^4 - (B^4*a^3*b^4 - 3*A*B^3*a^2*b^5 + 3*A^2*B^2*a*b^6 - A^3*B*b^7)*c^3)*
sqrt(x)) - 4*(3*A*a^2 - 15*(B*a*b - A*b^2 + A*a*c)*x^2 + 5*(B*a^2 - A*a*b)*
x)*sqrt(x))/(a^3*x^3)
```

giac [B] time = 2.15, size = 5013, normalized size = 16.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x, algorithm="giac")

[Out] -1/4*((2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*(b^2 - 4*a*c)*a*b^2*c^3 - 8*(
b^2 - 4*a*c)*a^2*c^4)*A*a^2 - (2*a*b^5*c^2 - 16*a^2*b^3*c^3 + 32*a^3*b*c^4
- sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 + 8*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 16*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 8*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4*a*c)*a*b^3*c^2
+ 8*(b^2 - 4*a*c)*a^2*b*c^3)*B*a^2 + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a*b^7 - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*a*b^7*c + 32*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + 20
*a^2*b^5*c^2 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 16*sq
rt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 64*a^3*b^3*c^3 + 8*sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*a^4*b*c^4 + 2*(b^2 - 4*a*c)*a*b^5*c - 12*(b
^2 - 4*a*c)*a^2*b^3*c^2 + 16*(b^2 - 4*a*c)*a^3*b*c^3)*A*abs(a) - 2*(sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6 - 9*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^3*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c -
 2*a^2*b^6*c + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 + 10*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 18*a^3*b^4*c^2 - 16*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^5*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b
*c^3 - 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 48*a^4*b^2*c
^3 + 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^4 + 32*a^5*c^4 + 2*(b^
2 - 4*a*c)*a^2*b^4*c - 10*(b^2 - 4*a*c)*a^3*b^2*c^2 + 8*(b^2 - 4*a*c)*a^4*c
^3)*B*abs(a) + (2*a^2*b^6*c^2 - 14*a^3*b^4*c^3 + 24*a^4*b^2*c^4 - sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6 + 7*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c + 2*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 12*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - 6*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 3*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 2*(b^2 - 4*a*c)*a^2*b^4*c^2
 + 6*(b^2 - 4*a*c)*a^3*b^2*c^3)*A - (2*a^3*b^5*c^2 - 12*a^4*b^3*c^3 + 16*a^
5*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5
 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c +
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c - 8*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^2 - 4*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 2*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 2*(b^2 - 4*a*
c)*a^3*b^3*c^2 + 4*(b^2 - 4*a*c)*a^4*b*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/s
qrt((a^3*b + sqrt(a^6*b^2 - 4*a^7*c))/(a^3*c)))/((a^5*b^4 - 8*a^6*b^2*c - 2
*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2 + a^5*b^2*c^2 - 4*a^6*c^3)*abs(a)*abs
(c)) + 1/4*((2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(
```

```
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*(b^2 - 4*a*c)*a*b^2*c^3
 - 8*(b^2 - 4*a*c)*a^2*c^4)*A*a^2 - (2*a*b^5*c^2 - 16*a^2*b^3*c^3 + 32*a^3*
b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5 + 8
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 16*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 8*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 4*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4*a*c)*a*b^
3*c^2 + 8*(b^2 - 4*a*c)*a^2*b*c^3)*B*a^2 - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a*b^7 - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c + 2*a*b^7*c + 32*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^
2 - 20*a^2*b^5*c^2 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 -
 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 + 64*a^3*b^3*c^3 + 8*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 - 64*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a*b^5*c +
 12*(b^2 - 4*a*c)*a^2*b^3*c^2 - 16*(b^2 - 4*a*c)*a^3*b*c^3)*A*abs(a) + 2*(s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6 - 9*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^3*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b
^5*c + 2*a^2*b^6*c + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2
 + 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 - 18*a^3*b^4*c^2 - 16*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^5*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a^4*b*c^3 - 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 + 48*a^4
*b^2*c^3 + 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^4 - 32*a^5*c^4 -
 2*(b^2 - 4*a*c)*a^2*b^4*c + 10*(b^2 - 4*a*c)*a^3*b^2*c^2 - 8*(b^2 - 4*a*c)
*a^4*c^3)*B*abs(a) + (2*a^2*b^6*c^2 - 14*a^3*b^4*c^3 + 24*a^4*b^2*c^4 - sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6 + 7*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c + 2*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 12*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - 6*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 3*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 2*(b^2 - 4*a*c)*a^2*b
^4*c^2 + 6*(b^2 - 4*a*c)*a^3*b^2*c^3)*A - (2*a^3*b^5*c^2 - 12*a^4*b^3*c^3 +
 16*a^5*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^3*b^5 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^
3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c
 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^2 -
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 2*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 2*(b^2
 - 4*a*c)*a^3*b^3*c^2 + 4*(b^2 - 4*a*c)*a^4*b*c^3)*B)*arctan(2*sqrt(1/2)*sqr
t(x)/sqrt((a^3*b - sqrt(a^6*b^2 - 4*a^7*c))/(a^3*c)))/((a^5*b^4 - 8*a^6*b^2
*c - 2*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2 + a^5*b^2*c^2 - 4*a^6*c^3)*abs(
a)*abs(c)) + 2/15*(15*B*a*b*x^2 - 15*A*b^2*x^2 + 15*A*a*c*x^2 - 5*B*a^2*x +
 5*A*a*b*x - 3*A*a^2)/(a^3*x^(5/2))
```

maple [B] time = 0.10, size = 913, normalized size = 2.97

$$-\frac{3\sqrt{2}\, A b\, c^{2} \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}-\frac{3\sqrt{2}\, A b\, c^{2} \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}+\frac{\sqrt{2}\, A\, b^{3} c \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{3}}+\frac{\sqrt{2}\, A\, b^{3} c \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{3}}+\frac{2\sqrt{2}\, B\, c^{2} \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a}+\frac{2\sqrt{2}\, B\, c^{2} \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a}-\frac{\sqrt{2}\, B\, b^{2} c \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}-\frac{\sqrt{2}\, B\, b^{2} c \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{-4 a c+b^{2}}\, \sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}-\frac{\sqrt{2}\, A\, c^{2} \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}+\frac{\sqrt{2}\, A\, c^{2} \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}+\frac{\sqrt{2}\, A\, b^{2} c \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{3}}-\frac{\sqrt{2}\, A\, b^{2} c \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{3}}-\frac{\sqrt{2}\, B b c \operatorname{arctanh}\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{\left(-b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}+\frac{\sqrt{2}\, B b c \arctan\left(\frac{\sqrt{2}\, c \sqrt{x}}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}}\right)}{\sqrt{\left(b+\sqrt{-4 a c+b^{2}}\right) c}\, a^{2}}+\frac{2 A c}{a^{2} \sqrt{x}}-\frac{2 A\, b^{2}}{a^{3} \sqrt{x}}+\frac{2 B b}{a^{2} \sqrt{x}}+\frac{2 A b}{3 a^{2} x^{\frac{3}{2}}}-\frac{2 B}{3 a\, x^{\frac{3}{2}}}-\frac{2 A}{5 a\, x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x)
```

```
[Out] c^2/a^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-c/a^3*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-3*c
^2/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+c/a^3/(-4*a*c+b^2)^(
1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+c/a^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b+2*c^
2/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1
/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-c/a^2/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*B*b^2-c^2/a^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+c/a^3*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-3*c^2/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*c*x^(1/2))*A*b+c/a^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*
b^3-c/a^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b+2*c^2/a/(-4*a*c+b^2)^(1/2)*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*B-c/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^
(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*B*b^2-2/5*A/a/x^(5/2)+2/3/a^2/x^(3/2)*A*b-2/3*B/a/x^(3/2)+2*A/a^2*c/x^(1/
2)-2/a^3/x^(1/2)*A*b^2+2/a^2/x^(1/2)*B*b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{3 A a^{3}}{x^{\frac{5}{2}}}+15\left(\left(b^{3}-2 a b c\right) A-\left(a b^{2}-a^{2} c\right) B\right) \sqrt{x}-\frac{15\left(B a^{2} b-\left(a b^{2}-a^{2} c\right) A\right)}{\sqrt{x}}+\frac{5\left(B a^{3}-A a^{2} b\right)}{x^{\frac{3}{2}}}\right)}{15\, a^{4}}-\int -\frac{\left(\left(b^{3} c-2 a b c^{2}\right) A-\left(a b^{2} c-a^{2} c^{2}\right) B\right) x^{\frac{3}{2}}+\left(\left(b^{4}-3 a b^{2} c+a^{2} c^{2}\right) A-\left(a b^{3}-2 a^{2} b c\right) B\right) \sqrt{x}}{a^{4} c x^{2}+a^{4} b x+a^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2/15*(3*A*a^3/x^(5/2) + 15*((b^3 - 2*a*b*c)*A - (a*b^2 - a^2*c)*B)*sqrt(x)
 - 15*(B*a^2*b - (a*b^2 - a^2*c)*A)/sqrt(x) + 5*(B*a^3 - A*a^2*b)/x^(3/2))/
a^4 - integrate(-(((b^3*c - 2*a*b*c^2)*A - (a*b^2*c - a^2*c^2)*B)*x^(3/2) +
 ((b^4 - 3*a*b^2*c + a^2*c^2)*A - (a*b^3 - 2*a^2*b*c)*B)*sqrt(x))/(a^4*c*x^
2 + a^4*b*x + a^5), x)
```

mupad [B] time = 4.15, size = 13983, normalized size = 45.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan(((x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*
A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b
^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (
-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 +
42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c
```

```
^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*
b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b
^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4
*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b
^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c -
 b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16
*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(
-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 +
42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c
^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*
b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b
^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4
*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b
^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c -
 b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16
*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 32*B*a^15*c^4 + 64*A*a^14*b*c^4 + 8*A*a^1
2*b^5*c^2 - 48*A*a^13*b^3*c^3 - 8*B*a^13*b^4*c^2 + 40*B*a^14*b^2*c^3))*(-(A
^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*
A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2)
 + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*
(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c
^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)
^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*
c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*
(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^
2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^
9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i + (x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c
^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*
a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*
c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a
^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25
*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 -
11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*
A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*
b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c
 - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c
+ 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2
)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(32*B*a^15*c^4
+ x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b
^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3
*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^
2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 1
6*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^
2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c
^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^
3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 2
0*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^
2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)
 - 64*A*a^14*b*c^4 - 8*A*a^12*b^5*c^2 + 48*A*a^13*b^3*c^3 + 8*B*a^13*b^4*c^
2 - 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^
3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*
c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^
2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*
A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2
*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2
*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c -
b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8
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*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3
)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i)/((x^(1/2)*(16*
A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 -
72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^1
0*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2
*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2
- 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(
-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^
3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b
^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A
*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2
) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^
3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*
A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^
2*c)))^(1/2)*(x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2
*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2
- 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(
-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^
3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b
^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A
*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2
) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^
3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*
A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^
2*c)))^(1/2) - 32*B*a^15*c^4 + 64*A*a^14*b*c^4 + 8*A*a^12*b^5*c^2 - 48*A*a^
13*b^3*c^3 - 8*B*a^13*b^4*c^2 + 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^
7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 6
3*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4
*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^
(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*
c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*
a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) -
 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^
(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B
*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c
)))^(1/2) - (x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3
 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*
a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^
5) + (-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*
b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)
^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2
*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^
2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a
*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*
c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A
*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4
*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^
4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(32*B*a^15*c^4 + x^(1/2)*(32*a^16*b*c
^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3
*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a
^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2
*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^
2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^
3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*
B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(
1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 64*A*a^14*b*c^4 - 8
*A*a^12*b^5*c^2 + 48*A*a^13*b^3*c^3 + 8*B*a^13*b^4*c^2 - 40*B*a^14*b^2*c^3)
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)*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) + 16*A^3*a^10*c^7 - 16*A^3*a^9*b^2*c^6 + 16*A*B^2*a^11*c^6 + 16*B^3*a^11*b*c^5 - 32*A*B^2*a^10*b^2*c^5 + 16*A^2*B*a^9*b^3*c^5))*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*2i + atan(((x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 32*B*a^15*c^4 + 64*A*a^14*b*c^4 + 8*A*a^12*b^5*c^2 - 48*A*a^13*b^3*c^3 - 8*B*a^13*b^4*c^2 + 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i + (x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3

)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a
^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*
a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*
(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B
*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a
*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4
 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(32*B*a^15*c^4 + x^(1/2)*(32*a^16*b*c^3
 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1
/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(
-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4
*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a
*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*
b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3
 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^
3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*
a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/
2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 64*A*a^14*b*c^4 - 8*A
*a^12*b^5*c^2 + 48*A*a^13*b^3*c^3 + 8*B*a^13*b^4*c^2 - 40*B*a^14*b^2*c^3))*
(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 +
 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*
c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4
*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c -
b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(
4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*
b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c
- b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 1
6*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i)/((x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^
13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*
B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*
b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c
- b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A
^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
+ 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^
4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3
- 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*
a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^
6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(x^(1/2)*(3
2*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c
- b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A
^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
+ 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^
4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3
- 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*
a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^
6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 32*B*a^15
*c^4 + 64*A*a^14*b*c^4 + 8*A*a^12*b^5*c^2 - 48*A*a^13*b^3*c^3 - 8*B*a^13*b^
4*c^2 + 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b
^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*
a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 2
5*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 -
 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6
*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4
*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*

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c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c
 - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^
2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - (x^(1/2)*(16
*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 -
 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^
10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^
2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2
 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*
(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)
^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*
b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*
A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/
2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)
^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6
*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b
^2*c)))^(1/2)*(32*B*a^15*c^4 + x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(
A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42
*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2
) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2
*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*
c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2
)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a
*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5
*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b
^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a
^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 64*A*a^14*b*c^4 - 8*A*a^12*b^5*c^2 + 48*A*a
^13*b^3*c^3 + 8*B*a^13*b^4*c^2 - 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b
^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 -
63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)
^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5
*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B
*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2)
+ 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)
^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*
B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*
c)))^(1/2) + 16*A^3*a^10*c^7 - 16*A^3*a^9*b^2*c^6 + 16*A*B^2*a^11*c^6 + 16*
B^3*a^11*b*c^5 - 32*A*B^2*a^10*b^2*c^5 + 16*A^2*B*a^9*b^3*c^5))*(-(A^2*b^9
+ B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2
*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*
a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*
c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*
B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/
2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2
)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*
c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(
1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 -
 8*a^8*b^2*c)))^(1/2)*2i + ((2*x^2*(A*a*c - A*b^2 + B*a*b))/a^3 - (2*A)/(5*
a) + (2*x*(A*b - B*a))/(3*a^2))/x^(5/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.941 $\int \frac{A+Bx}{x^{9/2}(a+bx+cx^2)}\,dx$

Optimal. Leaf size=381

$$-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}-\frac{2\left(-aAc-abB+Ab^2\right)}{3a^3x^{3/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{\sqrt{2}\sqrt{c}\left(\frac{abB\left(b^2-3ac\right)-A\left(2a^2c^2-4ab^2c+b^4\right)}{\sqrt{b^2-4ac}}-A\right.}{a^4\sqrt{b}}$$

Rubi [A] time = 1.67, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{\sqrt{2}\sqrt{c}\left(\frac{abB\left(b^2-3ac\right)-A\left(2a^2c^2-4ab^2c+b^4\right)}{\sqrt{b^2-4ac}}-A\left(b^3-2abc\right)+aB\left(b^2-ac\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^4\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(-\frac{abB\left(b^2-3ac\right)-A\left(2a^2c^2-4ab^2c+b^4\right)}{\sqrt{b^2-4ac}}-A\left(b^3-2abc\right)+aB\left(b^2-ac\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a^4\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2\left(-aAc-abB+Ab^2\right)}{3a^3x^{3/2}}-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{2A}{7ax^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(7*a*x^(7/2)) + (2*(A*b - a*B))/(5*a^2*x^(5/2)) - (2*(A*b^2 - a*b*B
- a*A*c))/(3*a^3*x^(3/2)) - (2*(a*B*(b^2 - a*c) - A*(b^3 - 2*a*b*c)))/(a^4*
Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(a*B*(b^2 - a*c) - A*(b^3 - 2*a*b*c) + (a*b*B*(
b^2 - 3*a*c) - A*(b^4 - 4*a*b^2*c + 2*a^2*c^2))/Sqrt[b^2 - 4*a*c])*ArcTan[(
Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^4*Sqrt[b - Sqrt[b
^2 - 4*a*c]]) - (Sqrt[2]*Sqrt[c]*(a*B*(b^2 - a*c) - A*(b^3 - 2*a*b*c) - (a*
b*B*(b^2 - 3*a*c) - A*(b^4 - 4*a*b^2*c + 2*a^2*c^2))/Sqrt[b^2 - 4*a*c])*Arc
Tan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a^4*Sqrt[b + S
qrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\left(a+bx+cx^2\right)}\,dx = -\frac{2A}{7ax^{7/2}} + \frac{\int \frac{-Ab+aB-Acx}{x^{7/2}\left(a+bx+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{7ax^{7/2}} + \frac{2(Ab-aB)}{5a^2x^{5/2}} + \frac{\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{7ax^{7/2}} + \frac{2(Ab-aB)}{5a^2x^{5/2}} - \frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}} + \frac{\int \frac{aB\left(b^2-ac\right)-A\left(b^3-2abc\right)-c\left(Ab^2-abB-a\right.}{x^{3/2}\left(a+bx+cx^2\right)}}{a^3}$$

$$= -\frac{2A}{7ax^{7/2}} + \frac{2(Ab-aB)}{5a^2x^{5/2}} - \frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}} - \frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

$$= -\frac{2A}{7ax^{7/2}} + \frac{2(Ab-aB)}{5a^2x^{5/2}} - \frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}} - \frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

$$= -\frac{2A}{7ax^{7/2}} + \frac{2(Ab-aB)}{5a^2x^{5/2}} - \frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}} - \frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

$$= -\frac{2A}{7ax^{7/2}} + \frac{2(Ab-aB)}{5a^2x^{5/2}} - \frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}} - \frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

Mathematica [A] time = 1.07, size = 430, normalized size = 1.13

$$\frac{-\frac{30a^3A}{x^{7/2}} + \frac{105\sqrt{2}\sqrt{c}\left(\frac{\left(A\left(2a^2c^2-4ab^2c-2abc\sqrt{b^2-4ac}+b^3\sqrt{b^2-4ac}+b^4\right)+aB\left(-b^2\sqrt{b^2-4ac}+ac\sqrt{b^2-4ac}+3abc-b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}} + \frac{\left(A\left(-2a^2c^2+4ab^2c-2abc\sqrt{b^2-4ac}+b^3\sqrt{b^2-4ac}-b^4\right)+aB\left(-b^2\sqrt{b^2-4ac}+ac\sqrt{b^2-4ac}-3abc+b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}} + \frac{42a^2(Ab-aB)}{x^{5/2}} + \frac{70a\left(aAc+abB-Ab^2\right)}{x^{3/2}} + \frac{210\left(A\left(b^3-2abc\right)+aB\left(ac-b^2\right)\right)}{\sqrt{x}}}{105a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x]
```

```
[Out] ((-30*a^3*A)/x^(7/2) + (42*a^2*(A*b - a*B))/x^(5/2) + (70*a*(-(A*b^2) + a*b
*B + a*A*c))/x^(3/2) + (210*(a*B*(-b^2 + a*c) + A*(b^3 - 2*a*b*c)))/Sqrt[x]
 + (105*Sqrt[2]*Sqrt[c]*(((a*B*(-b^3 + 3*a*b*c - b^2*Sqrt[b^2 - 4*a*c] + a*
c*Sqrt[b^2 - 4*a*c]) + A*(b^4 - 4*a*b^2*c + 2*a^2*c^2 + b^3*Sqrt[b^2 - 4*a*
c] - 2*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b -
Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((a*B*(b^3 - 3*a*b*c - b
^2*Sqrt[b^2 - 4*a*c] + a*c*Sqrt[b^2 - 4*a*c]) + A*(-b^4 + 4*a*b^2*c - 2*a^2
*c^2 + b^3*Sqrt[b^2 - 4*a*c] - 2*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*
Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]])
)/Sqrt[b^2 - 4*a*c])/(105*a^4)
```

IntegrateAlgebraic [A] time = 1.59, size = 631, normalized size = 1.66

$$\frac{\left(2\sqrt{2}a^2Ac^{5/2}+\sqrt{2}a^2Bc^{3/2}\sqrt{b^2-4ac}+3\sqrt{2}a^2bBc^{3/2}-4\sqrt{2}aAb^2c^{3/2}-2\sqrt{2}aAbc^{3/2}\sqrt{b^2-4ac}+\sqrt{2}Ab^3\sqrt{c}\sqrt{b^2-4ac}-\sqrt{2}ab^3B\sqrt{c}-\sqrt{2}ab^2B\sqrt{c}\sqrt{b^2-4ac}+\sqrt{2}Ab^4\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^4\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}} + \frac{\left(-2\sqrt{2}a^2Ac^{5/2}+\sqrt{2}a^2Bc^{3/2}\sqrt{b^2-4ac}-3\sqrt{2}a^2bBc^{3/2}+4\sqrt{2}aAb^2c^{3/2}-2\sqrt{2}aAbc^{3/2}\sqrt{b^2-4ac}+\sqrt{2}Ab^3\sqrt{c}\sqrt{b^2-4ac}+\sqrt{2}ab^3B\sqrt{c}-\sqrt{2}ab^2B\sqrt{c}\sqrt{b^2-4ac}-\sqrt{2}Ab^4\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a^4\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}} - \frac{2\left(15a^3A+21a^3Bx-21a^2Abx-35a^2Acx^2-35a^2bBx^2-105a^2Bcx^3+35aAb^2x^2+210aAbcx^3+105ab^2Bx^3-105Ab^3x^3\right)}{105a^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*(15*a^3*A - 21*a^2*A*b*x + 21*a^3*B*x + 35*a*A*b^2*x^2 - 35*a^2*b*B*x^2
 - 35*a^2*A*c*x^2 - 105*A*b^3*x^3 + 105*a*b^2*B*x^3 + 210*a*A*b*c*x^3 - 105
```

```
*a^2*B*c*x^3))/(105*a^4*x^(7/2)) + ((Sqrt[2]*A*b^4*Sqrt[c] - Sqrt[2]*a*b^3*
B*Sqrt[c] - 4*Sqrt[2]*a*A*b^2*c^(3/2) + 3*Sqrt[2]*a^2*b*B*c^(3/2) + 2*Sqrt[
2]*a^2*A*c^(5/2) + Sqrt[2]*A*b^3*Sqrt[c]*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*b^2*
B*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 2*Sqrt[2]*a*A*b*c^(3/2)*Sqrt[b^2 - 4*a*c] + S
qrt[2]*a^2*B*c^(3/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sq
rt[b - Sqrt[b^2 - 4*a*c]]])/(a^4*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*
c]]) + ((-(Sqrt[2]*A*b^4*Sqrt[c]) + Sqrt[2]*a*b^3*B*Sqrt[c] + 4*Sqrt[2]*a*A
*b^2*c^(3/2) - 3*Sqrt[2]*a^2*b*B*c^(3/2) - 2*Sqrt[2]*a^2*A*c^(5/2) + Sqrt[2
]*A*b^3*Sqrt[c]*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*b^2*B*Sqrt[c]*Sqrt[b^2 - 4*a*
c] - 2*Sqrt[2]*a*A*b*c^(3/2)*Sqrt[b^2 - 4*a*c] + Sqrt[2]*a^2*B*c^(3/2)*Sqrt
[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]
])/(a^4*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 5.38, size = 10514, normalized size = 27.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/210*(105*sqrt(2)*a^4*x^4*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*
A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3
)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3
*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4
*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 +
 A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*
a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^
6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 33
2*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^
5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*
B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 +
 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*
a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 -
22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)
*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c))*log(sqrt(2)*(B^3*a^3*b^11
 - 3*A*B^2*a^2*b^12 + 3*A^2*B*a*b^13 - A^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*
a^8 - 40*A^2*B*a^7*b + 53*A^3*a^6*b^2)*c^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b
^2 + 270*A^2*B*a^6*b^3 - 197*A^3*a^5*b^4)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2
*a^6*b^4 + 545*A^2*B*a^5*b^5 - 294*A^3*a^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336
*A*B^2*a^5*b^6 + 468*A^2*B*a^4*b^7 - 210*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7
 - 162*A*B^2*a^4*b^8 + 195*A^2*B*a^3*b^9 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a
^4*b^9 - 36*A*B^2*a^3*b^10 + 39*A^2*B*a^2*b^11 - 14*A^3*a*b^12)*c - (B*a^10
*b^6 - A*a^9*b^7 - 4*(2*B*a^13 - 5*A*a^12*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^
11*b^3)*c^2 - (8*B*a^11*b^4 - 9*A*a^10*b^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3
*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 -
2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3
*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*
(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5
 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2
*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 1
82*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^
10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*
A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^
11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 -
 4*a^19*c)))*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^
2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^
2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*
a^2*b^6 + 9*A^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^
3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 -
 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^
```

3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2
*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^
5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^
2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 -
182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b
^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268
*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b
^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2
- 4*a^19*c)))/(a^9*b^2 - 4*a^10*c)) + 4*(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*
A^4*a^3*b^2)*c^8 - (B^4*a^6 - 9*A*B^3*a^5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B
*a^3*b^3 - 15*A^4*a^2*b^4)*c^7 + (6*B^4*a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2
*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5 - 7*A^4*a*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B
^3*a^3*b^5 + 18*A^2*B^2*a^2*b^6 - 5*A^3*B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b
^6 - 3*A*B^3*a^2*b^7 + 3*A^2*B^2*a*b^8 - A^3*B*b^9)*c^4)*sqrt(x)) - 105*sqr
t(2)*a^4*x^4*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^
2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^
2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*
a^2*b^6 + 9*A^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^
3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 -
2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^
3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2
*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^
5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^
2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 -
182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b
^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268
*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b
^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2
- 4*a^19*c)))/(a^9*b^2 - 4*a^10*c))*log(-sqrt(2)*(B^3*a^3*b^11 - 3*A*B^2*a^
2*b^12 + 3*A^2*B*a*b^13 - A^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*a^8 - 40*A^2*
B*a^7*b + 53*A^3*a^6*b^2)*c^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b^2 + 270*A^2*
B*a^6*b^3 - 197*A^3*a^5*b^4)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2*a^6*b^4 + 54
5*A^2*B*a^5*b^5 - 294*A^3*a^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336*A*B^2*a^5*b^
6 + 468*A^2*B*a^4*b^7 - 210*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7 - 162*A*B^2*
a^4*b^8 + 195*A^2*B*a^3*b^9 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a^4*b^9 - 36*A
*B^2*a^3*b^10 + 39*A^2*B*a^2*b^11 - 14*A^3*a*b^12)*c - (B*a^10*b^6 - A*a^9*
b^7 - 4*(2*B*a^13 - 5*A*a^12*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^11*b^3)*c^2 -
(8*B*a^11*b^4 - 9*A*a^10*b^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6
*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^
9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A
^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^
2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^
5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 95
6*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*
b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37
*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^1
1 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B
^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))*
sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4
- (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 4
0*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A
^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 +
6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a
^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*
A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b
^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a
^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 9
56*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6
*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (3

7*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c)) + 4*(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*A^4*a^3*b^2)*c^8 - (B^4*a^6 - 9*A*B^3*a^5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B*a^3*b^3 - 15*A^4*a^2*b^4)*c^7 + (6*B^4*a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5 - 7*A^4*a*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B^3*a^3*b^5 + 18*A^2*B^2*a^2*b^6 - 5*A^3*B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b^6 - 3*A*B^3*a^2*b^7 + 3*A^2*B^2*a*b^8 - A^3*B*b^9)*c^4)*sqrt(x)) + 105*sqrt(2)*a^4*x^4*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c - (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c))*log(sqrt(2)*(B^3*a^3*b^11 - 3*A*B^2*a^2*b^12 + 3*A^2*B*a*b^13 - A^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*a^8 - 40*A^2*B*a^7*b + 53*A^3*a^6*b^2)*c^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b^2 + 270*A^2*B*a^6*b^3 - 197*A^3*a^5*b^4)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2*a^6*b^4 + 545*A^2*B*a^5*b^5 - 294*A^3*a^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336*A*B^2*a^5*b^6 + 468*A^2*B*a^4*b^7 - 210*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7 - 162*A*B^2*a^4*b^8 + 195*A^2*B*a^3*b^9 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a^4*b^9 - 36*A*B^2*a^3*b^10 + 39*A^2*B*a^2*b^11 - 14*A^3*a*b^12)*c + (B*a^10*b^6 - A*a^9*b^7 - 4*(2*B*a^13 - 5*A*a^12*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^11*b^3)*c^2 - (8*B*a^11*b^4 - 9*A*a^10*b^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c - (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c)) + 4*(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*A^4*a^3*b^2)*c^8 - (B^4*a^6 - 9*A*B^3*a^5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B*a^3*b^3 - 15*A^4*a^2*b^4)*

c^7 + (6*B^4*a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*
b^5 - 7*A^4*a*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B^3*a^3*b^5 + 18*A^2*B^2*a^2
*b^6 - 5*A^3*B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b^6 - 3*A*B^3*a^2*b^7 + 3*A^
2*B^2*a*b^8 - A^3*B*b^9)*c^4)*sqrt(x)) - 105*sqrt(2)*a^4*x^4*sqrt(-(B^2*a^2
*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b
 - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4
+ 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c -
(a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*
b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a
^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^
2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*
a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 +
(46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b
^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2
*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8
- 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^
2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 -
 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*
a^10*c))*log(-sqrt(2)*(B^3*a^3*b^11 - 3*A*B^2*a^2*b^12 + 3*A^2*B*a*b^13 - A
^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*a^8 - 40*A^2*B*a^7*b + 53*A^3*a^6*b^2)*c
^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b^2 + 270*A^2*B*a^6*b^3 - 197*A^3*a^5*b^4
)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2*a^6*b^4 + 545*A^2*B*a^5*b^5 - 294*A^3*a
^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336*A*B^2*a^5*b^6 + 468*A^2*B*a^4*b^7 - 210
*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7 - 162*A*B^2*a^4*b^8 + 195*A^2*B*a^3*b^9
 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a^4*b^9 - 36*A*B^2*a^3*b^10 + 39*A^2*B*a^
2*b^11 - 14*A^3*a*b^12)*c + (B*a^10*b^6 - A*a^9*b^7 - 4*(2*B*a^13 - 5*A*a^1
2*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^11*b^3)*c^2 - (8*B*a^11*b^4 - 9*A*a^10*b
^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B
*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*
a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*
a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*
A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^
4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a
^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 -
 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^
5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 -
2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*
b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))*sqrt(-(B^2*a^2*b^7 - 2*A*B*
a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4
*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*
b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c - (a^9*b^2 - 4*
a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*
B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4
*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B
*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240
*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b
^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*
a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8
- 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a
^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 -
 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2
*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c)) + 4*
(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*A^4*a^3*b^2)*c^8 - (B^4*a^6 - 9*A*B^3*a^
5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B*a^3*b^3 - 15*A^4*a^2*b^4)*c^7 + (6*B^4*
a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5 - 7*A^4*a
*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B^3*a^3*b^5 + 18*A^2*B^2*a^2*b^6 - 5*A^3*
B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b^6 - 3*A*B^3*a^2*b^7 + 3*A^2*B^2*a*b^8 -
 A^3*B*b^9)*c^4)*sqrt(x)) - 4*(15*A*a^3 + 105*(B*a*b^2 - A*b^3 - (B*a^2 - 2
*A*a*b)*c)*x^3 - 35*(B*a^2*b - A*a*b^2 + A*a^2*c)*x^2 + 21*(B*a^3 - A*a^2*b

```
)*x)*sqrt(x))/(a^4*x^4)
```

giac [B] time = 1.86, size = 4086, normalized size = 10.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8 - 11*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7
*c - 2*b^8*c + 41*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 14*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*b^6*c^2 + 22*a*b^6*c^2 + 2*b^7*c^2 - 56*sqrt(2)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 26*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^2*b^3*c^3 - 7*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 82*
a^2*b^4*c^3 - 18*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4
*c^4 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 13*sqrt(2)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + 112*a^3*b^2*c^4 + 50*a^2*b^3*c^4
 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^5 - 32*a^4*c^5 - 40*a^3*
b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 + 9*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c - 25*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 10*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 20*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 10*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 2*(b^2 - 4*a*c)*b^6*c - 14*(b^2
- 4*a*c)*a*b^4*c^2 - 2*(b^2 - 4*a*c)*b^5*c^2 + 26*(b^2 - 4*a*c)*a^2*b^2*c^3
 + 10*(b^2 - 4*a*c)*a*b^3*c^3 - 8*(b^2 - 4*a*c)*a^3*c^4 - 10*(b^2 - 4*a*c)*
a^2*b*c^4)*A - (sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7 - 10*sqrt(2)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*b^6*c - 2*a*b^7*c + 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + 20*a^2*b^5*c^2 + 2*a*b^6*c
^2 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 16*sqrt(2)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^2*b^3*c^3 - 64*a^3*b^3*c^3 - 16*a^2*b^4*c^3 + 8*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*a^4*b*c^4 + 36*a^3*b^2*c^4 - 16*a^4*
c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6 + 8*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c + 2*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 18*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 - 8*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 8*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 2*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 2*(b^2 - 4*a*c)*a*b^5*c - 12*(b
^2 - 4*a*c)*a^2*b^3*c^2 - 2*(b^2 - 4*a*c)*a*b^4*c^2 + 16*(b^2 - 4*a*c)*a^3*
b*c^3 + 8*(b^2 - 4*a*c)*a^2*b^2*c^3 - 4*(b^2 - 4*a*c)*a^3*c^4)*B)*arctan(2*
sqrt(1/2)*sqrt(x)/sqrt((a^4*b + sqrt(a^8*b^2 - 4*a^9*c))/(a^4*c)))/((a^5*b^
4 - 8*a^6*b^2*c - 2*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2 + a^5*b^2*c^2 - 4*
a^6*c^3)*abs(c)) + 1/2*((sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8 - 11*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*b^7*c + 2*b^8*c + 41*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^4*c^2 + 14*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt
(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^2 - 22*a*b^6*c^2 - 2*b^7*c^2 - 56
```

```
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 26*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 7*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a*b^4*c^3 + 82*a^2*b^4*c^3 + 18*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^4*c^4 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c
^4 + 13*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 112*a^3*b^2*c
^4 - 50*a^2*b^3*c^4 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 3
2*a^4*c^5 + 40*a^3*b*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*b^7 - 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a*b^5*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*
c + 25*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^
2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2
+ sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 20*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 10*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 5*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + 5*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*
c)*b^6*c + 14*(b^2 - 4*a*c)*a*b^4*c^2 + 2*(b^2 - 4*a*c)*b^5*c^2 - 26*(b^2 -
 4*a*c)*a^2*b^2*c^3 - 10*(b^2 - 4*a*c)*a*b^3*c^3 + 8*(b^2 - 4*a*c)*a^3*c^4
+ 10*(b^2 - 4*a*c)*a^2*b*c^4)*A - (sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b^7 - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c + 2*a*b^7*c + 32*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 20*a^2*
b^5*c^2 - 2*a*b^6*c^2 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^
3 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 + 64*a^3*b^3*c^3 + 16*a^2*b^4*c^3 +
 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 - 64*a^4*b*c^4 - 36*a^
3*b^2*c^4 + 16*a^4*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^6 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a^2*b^4*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^5*c + 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^
2*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3
*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2
- 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^3 - 4*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 4*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 2*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 - 2*(b^2 - 4*a
*c)*a*b^5*c + 12*(b^2 - 4*a*c)*a^2*b^3*c^2 + 2*(b^2 - 4*a*c)*a*b^4*c^2 - 16
*(b^2 - 4*a*c)*a^3*b*c^3 - 8*(b^2 - 4*a*c)*a^2*b^2*c^3 + 4*(b^2 - 4*a*c)*a^
3*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^4*b - sqrt(a^8*b^2 - 4*a^9*c))
/(a^4*c)))/((a^5*b^4 - 8*a^6*b^2*c - 2*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2
 + a^5*b^2*c^2 - 4*a^6*c^3)*abs(c)) - 2/105*(105*B*a*b^2*x^3 - 105*A*b^3*x^
3 - 105*B*a^2*c*x^3 + 210*A*a*b*c*x^3 - 35*B*a^2*b*x^2 + 35*A*a*b^2*x^2 - 3
5*A*a^2*c*x^2 + 21*B*a^3*x - 21*A*a^2*b*x + 15*A*a^3)/(a^4*x^(7/2))
```

maple [B] time = 0.10, size = 1210, normalized size = 3.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x)
```

```
[Out] -3/a^2*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+1/a^3*c/(-4*a
*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3+4/a^3*c^2/(-4*a*c+b^2)^(1/2
)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^
(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-1/a^4*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*A*b^4-3/a^2*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2)
```

```
)*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+1
/a^3*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3+4/a^3*c^2/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-1/a^4*c/(-4*a*c+b^2)^(1/2)*2^(
1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*A*b^4-2/a^2*c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*c*x^(1/2))*A+1/a^3*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^
(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+2/3*A/a^2*c/x^(3/2
)-2/7*A/a/x^(7/2)-2/5*B/a/x^(5/2)+1/a^2*c^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-1/a^
2*c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+2*B/a^2*c/x^(1/2)-2/3/a^3/x^(3/2)*A*b^2
+2/3/a^2/x^(3/2)*B*b+2/a^4/x^(1/2)*A*b^3-2/a^3/x^(1/2)*B*b^2+1/a^4*c*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*A*b^3-2/a^2*c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/
2))*A-1/a^3*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+2/a^3*c^2*2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*A*b-1/a^4*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/
2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-2/a^3*c^2*2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*c*x^(1/2))*A*b+2/5/a^2/x^(5/2)*A*b-4/a^3/x^(1/2)*A*b*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{15\,Aa^4}{x^{\frac{7}{2}}} - 105\left(\left(b^4 - 3\,ab^2c + a^2c^2\right)A - \left(ab^3 - 2\,a^2bc\right)B\right)\sqrt{x} - \frac{105\left(\left(ab^3-2\,a^2bc\right)A-\left(a^2b^2-a^3c\right)B\right)}{\sqrt{x}} - \frac{35\left(Ba^3b-\left(a^2b^2-a^3c\right)A\right)}{x^{\frac{3}{2}}} + \frac{21\left(Ba^4-Aa^3b\right)}{x^{\frac{5}{2}}}\right)}{105\,a^5} - \int \frac{\left(\left(b^4c - 3\,ab^2c^2 + a^2c^3\right)A - \left(ab^3c - 2\,a^2bc^2\right)B\right)x^{\frac{3}{2}} + \left(\left(b^5 - 4\,ab^3c + 3\,a^2bc^2\right)A - \left(ab^4 - 3\,a^2b^2c + a^3c^2\right)B\right)\sqrt{x}}{a^5cx^2 + a^5bx + a^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2/105*(15*A*a^4/x^(7/2) - 105*((b^4 - 3*a*b^2*c + a^2*c^2)*A - (a*b^3 - 2*
a^2*b*c)*B)*sqrt(x) - 105*((a*b^3 - 2*a^2*b*c)*A - (a^2*b^2 - a^3*c)*B)/sqr
t(x) - 35*(B*a^3*b - (a^2*b^2 - a^3*c)*A)/x^(3/2) + 21*(B*a^4 - A*a^3*b)/x^
(5/2))/a^5 - integrate((((b^4*c - 3*a*b^2*c^2 + a^2*c^3)*A - (a*b^3*c - 2*a
^2*b*c^2)*B)*x^(3/2) + ((b^5 - 4*a*b^3*c + 3*a^2*b*c^2)*A - (a*b^4 - 3*a^2*
b^2*c + a^3*c^2)*B)*sqrt(x))/(a^5*c*x^2 + a^5*b*x + a^6), x)
```

mupad [B] time = 5.15, size = 17910, normalized size = 47.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x)
```

```
[Out] ((2*x^3*(A*b^3 - B*a*b^2 + B*a^2*c - 2*A*a*b*c))/a^4 - (2*A)/(7*a) + (2*x^2
*(A*a*c - A*b^2 + B*a*b))/(3*a^3) + (2*x*(A*b - B*a))/(5*a^2))/x^(7/2) + at
an((((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a
*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^
2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) +
 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(
1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*
c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2
*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3
)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 -
 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3
)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*
a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/
```

2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 + x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*1i - ((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^

3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A
^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*
b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 +
 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*
b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A
^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-
(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*
b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*
B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a
^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3
*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10
4*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6
c(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*
A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-
(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*
a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^
2*c)))^(1/2)*1i)/(((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(
1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^
4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b
^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a
*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 1
1*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^
(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B
*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b
^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c
 - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4
 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 + x^(1/2)*(32*a^21*b*
c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3
)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2
*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c
 - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5
 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^
3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*
(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*
A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^
2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*
a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*
b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*
c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18
*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3
 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^
2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^
7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*
(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10
 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4
c^4(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B
^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 2
8*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*
b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/
2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^
2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b
^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) -
20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*

a^10*b^2*c)))^(1/2) + ((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 16*B^3*a^15*c^7 + 16*A^3*a^12*b^3*c^7 - 16*B^3*a^14*b^2*c^6 + 16*A^2*B*a^14*c^8 - 32*A^3*a^13*b*c^8 - 48*A*B^2*a^14*b*c^7 + 32*A*B^2*a^13*b^3*c^6 - 16*A^2*B*a^12*b^4*c^6 + 16*A^2*B*a^13*b^2*c^7))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*2i + atan((((-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c -

b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 + x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*1i - ((-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3

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+ B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c -
36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2
*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6
*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a
^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) +
 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^
(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*
B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3
)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^
4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^
5*c^2 - 48*B*a^18*b^3*c^3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8
*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^
15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5
 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*
A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*
b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2
)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c
 - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*
B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1
/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*
a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a
^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*
a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8
*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c -
 b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 +
 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*1i)/(((-(A^2*b^11 + B^2*a^2*b^9 - A^2*
b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*
a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) -
B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*
c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*
c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4
*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2)
 - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A
*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/
2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)
^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) -
8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^
2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c
^5 + x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A
^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A
^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2)
 - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b
^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b
^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*
b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1
/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 19
2*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^
(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b
^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2)
 - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^
19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*
a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*
c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128
*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*
b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5
 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A
```

^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + ((-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 16*B^3*a^15*c^7 + 16*A^3*a^12*b^3*c^7 - 16*B^3*a^14*b^2*c^6 + 16*A^2*B*a^14*c^8 - 32*A^3*a^13*b*c^8 - 48*A*B^2*a^14*b*c^7 + 32*A*B^2*a^13*b^3*c^6 - 16*A^2*B*a^12*b^4*c^6 + 16*A^2*B*a^13*b^2*c^7))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c -

```
b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4
*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 -
 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3
)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(
-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A
*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(
-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2
*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a
*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b
^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.942 $\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=411

$$-\frac{\left(-\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,c^{5/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\left(\frac{20a^2Bc^2+8aAbc^2-19ab^2B}{\sqrt{b^2-4ac}}\right.}{}$$

Rubi [A] time = 4.17, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {818, 824, 826, 1166, 205}

$$-\frac{\left(-\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,c^{5/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\left(\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\,c^{5/2}\left(b^2-4ac\right)\sqrt{\sqrt{b^2-4ac}+b}}+\frac{\sqrt{x}\left(-10aBc-Abc+3b^2B\right)}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((3*b^2*B - A*b*c - 10*a*B*c)*Sqrt[x])/(c^2*(b^2 - 4*a*c)) - (x^(3/2)*(a*(b
*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*(a + b*x + c*x
^2)) - ((3*b^3*B - A*b^2*c - 13*a*b*B*c + 6*a*A*c^2 - (3*b^4*B - A*b^3*c -
19*a*b^2*B*c + 8*a*A*b*c^2 + 20*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[
2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*c^(5/2)*(b^2 - 4
*a*c)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - ((3*b^3*B - A*b^2*c - 13*a*b*B*c + 6*a
*A*c^2 + (3*b^4*B - A*b^3*c - 19*a*b^2*B*c + 8*a*A*b*c^2 + 20*a^2*B*c^2)/Sq
rt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c
]]])/(Sqrt[2]*c^(5/2)*(b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{\sqrt{x}\left(\frac{3}{2}a(bB-2Ac)+\frac{1}{2}\left(3b^2B-Abc-10aBc\right)x\right)}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{-\frac{1}{2}a\left(3b^2\right.}{}}{}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2\,\mathrm{Subst}\left(\right.}{}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\left(3b^3B-\right.}{}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\left(3b^3B-\right.}{}$$

Mathematica [A] time = 1.40, size = 413, normalized size = 1.00

$$\frac{\frac{a\left(-\frac{\sqrt{2}\left(\frac{-20a^2Bc^2-8aAbc^2+19ab^2Bc+Ab^3c-3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}-2\sqrt{c}\sqrt{x}\left(10aBc+Abc-3b^2B\right)+2c^{3/2}x^{3/2}(2Ac-bB)\right)}{2c^{5/2}}+\frac{x^{7/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)}+x^{5/2}(2aB-Ab)}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(A*b) + 2*a*B)*x^(5/2) + (x^(7/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c +
 b*c*x)))/(a + x*(b + c*x)) + (a*(-2*Sqrt[c]*(-3*b^2*B + A*b*c + 10*a*B*c)*
Sqrt[x] + 2*c^(3/2)*(-(b*B) + 2*A*c)*x^(3/2) - (Sqrt[2]*(3*b^3*B - A*b^2*c
- 13*a*b*B*c + 6*a*A*c^2 + (-3*b^4*B + A*b^3*c + 19*a*b^2*B*c - 8*a*A*b*c^2
 - 20*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
 - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] - (Sqrt[2]*(3*b^3*B - A
*b^2*c - 13*a*b*B*c + 6*a*A*c^2 + (3*b^4*B - A*b^3*c - 19*a*b^2*B*c + 8*a*A
*b*c^2 + 20*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/
Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(2*c^(5/2)))/(a
*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 3.46, size = 568, normalized size = 1.38

$$\frac{\sqrt{x}\left(10a^2Bc+aAbc-2aAc^2x-3ab^2B+11abBcx+8aBc^2x^2+Ab^2cx-3b^3Bx-2b^2Bcx^2\right)}{c^2\left(4ac-b^2\right)\left(a+bx+cx^2\right)}+\frac{\left(20\sqrt{2}\,a^2Bc^2-6\sqrt{2}\,aAc^2\sqrt{b^2-4ac}+\sqrt{2}\,Ab^2c\sqrt{b^2-4ac}+8\sqrt{2}\,aAbc^2-19\sqrt{2}\,ab^2Bc+13\sqrt{2}\,abBc\sqrt{b^2-4ac}-3\sqrt{2}\,b^3B\sqrt{b^2-4ac}-\sqrt{2}\,Ab^3c+3\sqrt{2}\,b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{2c^{5/2}\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-20\sqrt{2}\,a^2Bc^2-6\sqrt{2}\,aAc^2\sqrt{b^2-4ac}+\sqrt{2}\,Ab^2c\sqrt{b^2-4ac}-8\sqrt{2}\,aAbc^2+19\sqrt{2}\,ab^2Bc+13\sqrt{2}\,abBc\sqrt{b^2-4ac}-3\sqrt{2}\,b^3B\sqrt{b^2-4ac}+\sqrt{2}\,Ab^3c-3\sqrt{2}\,b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{2c^{5/2}\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(-3*a*b^2*B + a*A*b*c + 10*a^2*B*c - 3*b^3*B*x + A*b^2*c*x + 11*a*
b*B*c*x - 2*a*A*c^2*x - 2*b^2*B*c*x^2 + 8*a*B*c^2*x^2))/(c^2*(-b^2 + 4*a*c)
*(a + b*x + c*x^2)) + ((3*Sqrt[2]*b^4*B - Sqrt[2]*A*b^3*c - 19*Sqrt[2]*a*b^
2*B*c + 8*Sqrt[2]*a*A*b*c^2 + 20*Sqrt[2]*a^2*B*c^2 - 3*Sqrt[2]*b^3*B*Sqrt[b
^2 - 4*a*c] + Sqrt[2]*A*b^2*c*Sqrt[b^2 - 4*a*c] + 13*Sqrt[2]*a*b*B*c*Sqrt[b
^2 - 4*a*c] - 6*Sqrt[2]*a*A*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*
Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(2*c^(5/2)*(b^2 - 4*a*c)^(3/2)*Sqrt[
b - Sqrt[b^2 - 4*a*c]]) + ((-3*Sqrt[2]*b^4*B + Sqrt[2]*A*b^3*c + 19*Sqrt[2]
*a*b^2*B*c - 8*Sqrt[2]*a*A*b*c^2 - 20*Sqrt[2]*a^2*B*c^2 - 3*Sqrt[2]*b^3*B*S
qrt[b^2 - 4*a*c] + Sqrt[2]*A*b^2*c*Sqrt[b^2 - 4*a*c] + 13*Sqrt[2]*a*b*B*c*S
qrt[b^2 - 4*a*c] - 6*Sqrt[2]*a*A*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqr
t[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(2*c^(5/2)*(b^2 - 4*a*c)^(3/2)*
Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 8.89, size = 7251, normalized size = 17.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2
 - 4*a*b*c^3)*x)*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28
*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*
b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c
^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(2
5*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3
*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4
*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(1
13*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2
*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))
/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8))*log(sqrt(1/2)*(27*
B^3*b^10 + 144*(10*A^2*B*a^4 + A^3*a^3*b)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*
a^4*b + 252*A^2*B*a^3*b^2 + 11*A^3*a^2*b^3)*c^5 + (11360*B^3*a^4*b^2 + 7608
*A*B^2*a^3*b^3 + 882*A^2*B*a^2*b^4 + 17*A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4
+ 2841*A*B^2*a^2*b^5 + 153*A^2*B*a*b^6 + A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6
+ 51*A*B^2*a*b^7 + A^2*B*b^8)*c^2 - 27*(17*B^3*a*b^8 + A*B^2*b^9)*c - (3*B*
b^9*c^5 - 768*A*a^4*c^10 + 128*(8*B*a^4*b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3
*b^3 + A*a^2*b^4)*c^8 + 24*(14*B*a^2*b^5 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b
^8)*c^6)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*
a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2
*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*
b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3
*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10
- 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4
*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*
c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*
A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((8
1*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^
2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B
*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^
2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B
^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11
```

+ 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)) + 2*(189*B^4*a^2*b^6 - 135*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*a^3*b + A^4*a^2*b^2)*c^4 - (2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*a^3*b^2 - 647*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A*B^3*a^3*b^3 - 186*A^2*B^2*a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^4 - 49*A*B^3*a^2*b^5 - 5*A^2*B^2*a*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8))*log(-sqrt(1/2)*(27*B^3*b^10 + 144*(10*A^2*B*a^4 + A^3*a^3*b)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*a^4*b + 252*A^2*B*a^3*b^2 + 11*A^3*a^2*b^3)*c^5 + (11360*B^3*a^4*b^2 + 7608*A*B^2*a^3*b^3 + 882*A^2*B*a^2*b^4 + 17*A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4 + 2841*A*B^2*a^2*b^5 + 153*A^2*B*a*b^6 + A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6 + 51*A*B^2*a*b^7 + A^2*B*b^8)*c^2 - 27*(17*B^3*a*b^8 + A*B^2*b^9)*c - (3*B*b^9*c^5 - 768*A*a^4*c^10 + 128*(8*B*a^4*b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3*b^3 + A*a^2*b^4)*c^8 + 24*(14*B*a^2*b^5 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b^8)*c^6)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)) + 2*(189*B^4*a^2*b^6 - 135*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*a^3*b + A^4*a^2*b^2)*c^4 - (2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*a^3*b^2 - 647*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A*B^3*a^3*b^3 - 186*A^2*B^2*a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^4 - 49*A*B^3*a^2*b^5 - 5*A^2*B^2*a*b^6)*c)*sqrt(x)) + sqrt(1/2)*(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c - (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8))*log(sqrt(1/2)*(27*B^3*b^10 + 144*(10*A^2*B*a^4 + A^3*a^3*b)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*a^4*b + 252*A^2*B*a^3*b^2 + 11*A^3*a^2*b^3)*c^5 + (11360*B^3*a^4*b^2 + 7608*A*B^2*a^3*b^3 + 882*A^2*B*a^2*b^4 + 17*A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4 + 2841*A*B^2*a^2*b^5 + 153*A^2*B*a*b^6 + A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6 + 51*A*B^2*a*b^7 + A^2*B*b^

8)*c^2 - 27*(17*B^3*a*b^8 + A*B^2*b^9)*c + (3*B*b^9*c^5 - 768*A*a^4*c^10 +
128*(8*B*a^4*b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3*b^3 + A*a^2*b^4)*c^8 + 24*
(14*B*a^2*b^5 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b^8)*c^6)*sqrt((81*B^4*b^8 +
81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (6
25*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^
4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2
*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2
- 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^
2*c^12 - 64*a^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 -
15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80
*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c - (b^6*c^5 - 12*
a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6
- 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 220
0*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(
425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3
+ 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*
b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*
c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)) + 2*(189*B^
4*a^2*b^6 - 135*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*a^3*b + A^4*a^
2*b^2)*c^4 - (2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*a^3*b^2 - 647*
A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A*B^3*a^3*b^3 -
186*A^2*B^2*a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^4 - 49*A*B^3*a
^2*b^5 - 5*A^2*B^2*a*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2*c^2 - 4*a^2*c^3 +
(b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)*sqrt(-(9*B^2*b^7 + 60*(4
*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*
c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*
A*B*b^6)*c - (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((8
1*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^
2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B
*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^
2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B
^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11
+ 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7
- 64*a^3*c^8))*log(-sqrt(1/2)*(27*B^3*b^10 + 144*(10*A^2*B*a^4 + A^3*a^3*b
)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*a^4*b + 252*A^2*B*a^3*b^2 + 11*A^3*a^2*b
^3)*c^5 + (11360*B^3*a^4*b^2 + 7608*A*B^2*a^3*b^3 + 882*A^2*B*a^2*b^4 + 17*
A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4 + 2841*A*B^2*a^2*b^5 + 153*A^2*B*a*b^6 +
A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6 + 51*A*B^2*a*b^7 + A^2*B*b^8)*c^2 - 27*(
17*B^3*a*b^8 + A*B^2*b^9)*c + (3*B*b^9*c^5 - 768*A*a^4*c^10 + 128*(8*B*a^4*
b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3*b^3 + A*a^2*b^4)*c^8 + 24*(14*B*a^2*b^5
+ A*a*b^6)*c^7 - (52*B*a*b^7 + A*b^8)*c^6)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c
^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 +
2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 -
6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c
^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4
*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a
^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a
^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 +
A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c - (b^6*c^5 - 12*a*b^4*c^6 + 4
8*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*
B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b
+ 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b
^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4
*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3
*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*
c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)) + 2*(189*B^4*a^2*b^6 - 1
35*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*a^3*b + A^4*a^2*b^2)*c^4 -
(2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*a^3*b^2 - 647*A^3*B*a^2*b^3
- 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A*B^3*a^3*b^3 - 186*A^2*B^2*

```
a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^4 - 49*A*B^3*a^2*b^5 - 5*A^
2*B^2*a*b^6)*c)*sqrt(x)) - 2*(3*B*a*b^2 + 2*(B*b^2*c - 4*B*a*c^2)*x^2 - (10
*B*a^2 + A*a*b)*c + (3*B*b^3 + 2*A*a*c^2 - (11*B*a*b + A*b^2)*c)*x)*sqrt(x)
)/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*
x)
```

giac [B] time = 2.13, size = 5691, normalized size = 13.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 + (B*b^3*x^(3/2) - 3*B*a*b*c*x^(3/2) - A*b^2*c*x^(3/2) + 2*
A*a*c^2*x^(3/2) + B*a*b^2*sqrt(x) - 2*B*a^2*c*sqrt(x) - A*a*b*c*sqrt(x))/((
b^2*c^2 - 4*a*c^3)*(c*x^2 + b*x + a)) + 1/8*((2*b^4*c^3 - 20*a*b^2*c^4 + 48
*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c
+ 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 +
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 24*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 12*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^3 + 6*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^4 - 2*(b^2 - 4*a*c)*b^2*c^3 + 1
2*(b^2 - 4*a*c)*a*c^4)*(b^2*c^2 - 4*a*c^3)^2*A - (6*b^5*c^2 - 50*a*b^3*c^3
+ 104*a^2*b*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^5 + 25*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3
*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c - 52
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 26*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - 3*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 13*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 6*(b^2 - 4*a*c)
*b^3*c^2 + 26*(b^2 - 4*a*c)*a*b*c^3)*(b^2*c^2 - 4*a*c^3)^2*B + 2*(sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^2*b^3*c^5 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5
 + 2*a*b^5*c^5 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 + 8*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b^3*c^6 - 16*a^2*b^3*c^6 - 4*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^2*b*c^7 + 32*a^3*b*c^7 - 2*(b^2 - 4*a*c)*a*b^3*c^5 + 8*(b^2
 - 4*a*c)*a^2*b*c^6)*A*abs(-b^2*c^2 + 4*a*c^3) - 2*(3*sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a*b^6*c^3 - 34*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^2*b^4*c^4 - 6*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 + 6*a*b^6*
c^4 + 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 44*sqrt(2)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 + 3*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a*b^4*c^5 - 68*a^2*b^4*c^5 - 160*sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^4*c^6 - 80*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 -
 22*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + 256*a^3*b^2*c^6 +
 40*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^7 - 320*a^4*c^7 - 6*(b^2
- 4*a*c)*a*b^4*c^4 + 44*(b^2 - 4*a*c)*a^2*b^2*c^5 - 80*(b^2 - 4*a*c)*a^3*c^
6)*B*abs(-b^2*c^2 + 4*a*c^3) - (2*b^8*c^7 - 32*a*b^6*c^8 + 160*a^2*b^4*c^9
- 256*a^3*b^2*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*b^8*c^5 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b^6*c^6 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7
*c^6 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4
*c^7 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c
^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^7 + 12
8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 + 6
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 1
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^8 - 32*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^9 - 2*(
b^2 - 4*a*c)*b^6*c^7 + 24*(b^2 - 4*a*c)*a*b^4*c^8 - 64*(b^2 - 4*a*c)*a^2*b^
```

2*c^9)*A + (6*b^9*c^6 - 86*a*b^7*c^7 + 440*a^2*b^5*c^8 - 928*a^3*b^3*c^9 + 640*a^4*b*c^10 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^9*c^4 + 43*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a* b^7*c^5 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8*c ^5 - 220*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5* c^6 - 62*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^ 6 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^6 + 4 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^7 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^7 + 31*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^7 - 3 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^8 - 16 0*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 - 9 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 8 0*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^9 - 6*(b^2 - 4*a*c)*b^7*c^6 + 62*(b^2 - 4*a*c)*a*b^5*c^7 - 192*(b^2 - 4*a*c)*a^2*b ^3*c^8 + 160*(b^2 - 4*a*c)*a^3*b*c^9)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b ^3*c^2 - 4*a*b*c^3 + sqrt((b^3*c^2 - 4*a*b*c^3)^2 - 4*(a*b^2*c^2 - 4*a^2*c^ 3)*(b^2*c^3 - 4*a*c^4)))/(b^2*c^3 - 4*a*c^4)))/((a*b^6*c^5 - 12*a^2*b^4*c^6 - 2*a*b^5*c^6 + 48*a^3*b^2*c^7 + 16*a^2*b^3*c^7 + a*b^4*c^7 - 64*a^4*c^8 - 32*a^3*b*c^8 - 8*a^2*b^2*c^8 + 16*a^3*c^9)*abs(-b^2*c^2 + 4*a*c^3)*abs(c)) - 1/8*((2*b^4*c^3 - 20*a*b^2*c^4 + 48*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)* sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b *c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq rt(b^2 - 4*a*c)*c)*a^2*c^3 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b ^2 - 4*a*c)*c)*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4* a*c)*c)*b^2*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)* c)*a*c^4 - 2*(b^2 - 4*a*c)*b^2*c^3 + 12*(b^2 - 4*a*c)*a*c^4)*(b^2*c^2 - 4*a *c^3)^2*A - (6*b^5*c^2 - 50*a*b^3*c^3 + 104*a^2*b*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 25*sqrt(2)*sqrt(b^2 - 4*a*c) *sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt (b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c - 52*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 26*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s qrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt (b^2 - 4*a*c)*c)*b^3*c^2 + 13*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 6*(b^2 - 4*a*c)*b^3*c^2 + 26*(b^2 - 4*a*c)*a*b*c^3)* (b^2*c^2 - 4*a*c^3)^2*B - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5* c^4 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 - 2*sqrt(2)*sqr t(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 - 2*a*b^5*c^5 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^6 + 16*a^2* b^3*c^6 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^7 - 32*a^3*b*c^ 7 + 2*(b^2 - 4*a*c)*a*b^3*c^5 - 8*(b^2 - 4*a*c)*a^2*b*c^6)*A*abs(-b^2*c^2 + 4*a*c^3) + 2*(3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^3 - 34*sqr t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^4 - 6*sqrt(2)*sqrt(b*c + sqr t(b^2 - 4*a*c)*c)*a*b^5*c^4 - 6*a*b^6*c^4 + 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 44*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b ^3*c^5 + 3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 + 68*a^2*b^4*c ^5 - 160*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^6 - 80*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 - 22*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a *c)*c)*a^2*b^2*c^6 - 256*a^3*b^2*c^6 + 40*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a *c)*c)*a^3*c^7 + 320*a^4*c^7 + 6*(b^2 - 4*a*c)*a*b^4*c^4 - 44*(b^2 - 4*a*c) *a^2*b^2*c^5 + 80*(b^2 - 4*a*c)*a^3*c^6)*B*abs(-b^2*c^2 + 4*a*c^3) - (2*b^8 *c^7 - 32*a*b^6*c^8 + 160*a^2*b^4*c^9 - 256*a^3*b^2*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8*c^5 + 16*sqrt(2)*sqrt(b^2 - 4 *a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^6 + 2*sqrt(2)*sqrt(b^2 - 4*a* c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^6 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*s qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^7 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*s qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b

```
*c + sqrt(b^2 - 4*a*c)*c)*b^6*c^7 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^4*c^8 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^9 - 2*(b^2 - 4*a*c)*b^6*c^7 + 24*(b^2 - 4*a*
c)*a*b^4*c^8 - 64*(b^2 - 4*a*c)*a^2*b^2*c^9)*A + (6*b^9*c^6 - 86*a*b^7*c^7
+ 440*a^2*b^5*c^8 - 928*a^3*b^3*c^9 + 640*a^4*b*c^10 - 3*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^9*c^4 + 43*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7*c^5 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8*c^5 - 220*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^6 - 62*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^6 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^6 + 464*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^7 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^7 + 31*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^7 - 320*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^8 - 160*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 - 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b*c^9 - 6*(b^2 - 4*a*c)*b^7*c^6 + 62*(b^2 - 4*a*
c)*a*b^5*c^7 - 192*(b^2 - 4*a*c)*a^2*b^3*c^8 + 160*(b^2 - 4*a*c)*a^3*b*c^9)
*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^3*c^2 - 4*a*b*c^3 - sqrt((b^3*c^2 -
4*a*b*c^3)^2 - 4*(a*b^2*c^2 - 4*a^2*c^3)*(b^2*c^3 - 4*a*c^4)))/(b^2*c^3 - 4
*a*c^4)))/((a*b^6*c^5 - 12*a^2*b^4*c^6 - 2*a*b^5*c^6 + 48*a^3*b^2*c^7 + 16*
a^2*b^3*c^7 + a*b^4*c^7 - 64*a^4*c^8 - 32*a^3*b*c^8 - 8*a^2*b^2*c^8 + 16*a^
3*c^9)*abs(-b^2*c^2 + 4*a*c^3)*abs(c))
```

maple [B] time = 0.10, size = 1537, normalized size = 3.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*B/c^2*x^(1/2)+3/2/c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1
/2))*b^4*B-1/2/c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*A*b^3+13/2/c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh
(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B-1/2/c/(4*a*c-b^
2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+4/(4*a*c-b^2)/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+4/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b-13/2/c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2
))*a*b*B+3/2/c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*b^4*B+3/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(3/2)*a*b*B+1/c/(c*x^2+b*x+a)*a/(4*a
*c-b^2)*x^(1/2)*A*b+1/2/c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-3/2
/c^2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/
((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B-1/2/c/(4*a*c-b^2)*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*A*b^2+3/2/c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B
+2/c/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*x^(1/2)*B-1/c^2/(c*x^2+b*x+a)/(4*a*c-b^2
)*x^(3/2)*b^3*B-3/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a+3/(4*a*c-b^2)
```

```
*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*c*x^(1/2))*A*a+1/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(3/2)*A*b^2-1
9/2/c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1
/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B-19
/2/c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B-2/(c*x
^2+b*x+a)/(4*a*c-b^2)*x^(3/2)*A*a+10/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a^2*B+10/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
c*x^(1/2))*a^2*B-1/c^2/(c*x^2+b*x+a)*a/(4*a*c-b^2)*x^(1/2)*b^2*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(Abc-\left(b^2-2\,ac\right)B\right)x^{\frac{5}{2}}-(Bab-2\,Aac)x^{\frac{3}{2}}}{ab^2c-4\,a^2c^2+\left(b^2c^2-4\,ac^3\right)x^2+\left(b^3c-4\,abc^2\right)x}+\int-\frac{\left(Abc-\left(3\,b^2-10\,ac\right)B\right)x^{\frac{3}{2}}-3\,(Bab-2\,Aac)\sqrt{x}}{2\left(ab^2c-4\,a^2c^2+\left(b^2c^2-4\,ac^3\right)x^2+\left(b^3c-4\,abc^2\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] ((A*b*c - (b^2 - 2*a*c)*B)*x^(5/2) - (B*a*b - 2*A*a*c)*x^(3/2))/(a*b^2*c -
4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x) + integrate(-1
/2*((A*b*c - (3*b^2 - 10*a*c)*B)*x^(3/2) - 3*(B*a*b - 2*A*a*c)*sqrt(x))/(a*
b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x), x)
```

mupad [B] time = 5.14, size = 16631, normalized size = 40.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*B*x^(1/2))/c^2 - atan(((((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c
^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*
c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a
*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2
) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A
^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^
3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B
*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2
*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^
3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 -
51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*
(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(409
6*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8
+ 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 -
 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((
9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12
*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 20
77*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*
B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9
*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^
2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b
^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) -
152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*
(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 24
0*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^
(1/2) - (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*
```

c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*
b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B
*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*
B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c
 - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077
*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^
2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*
a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c
^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*
a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4
*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 15
2*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-
(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*
a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1
/2)*1i - (((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c
^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*
b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2
*b^2*c^5) + (2*x^(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2
- 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 -
3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240
*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(
1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^
2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c -
 b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*
b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-
(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9
)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12
*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^
9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 +
192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*
c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*
b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^
2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 +
 A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(
1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a
^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 154
8*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*
B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^
2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9
)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1
280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (2*x^(1/2
)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c
 + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2
*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*
A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c
- b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^
7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2
+ 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A
^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/
2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5
*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*
A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*
a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2
- 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^
(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 128
0*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*1i)/((((2560*
B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5
*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*
a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^

(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) + (2*x^(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a* b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*(216*A^3*a^4*c^4 - 63*B^3*a^3*b^5 + 5*A^3*a^2*b^4*c^2 - 66*A^3*a^3*b^2*c^3 + 45*A*B^2*a^2*b^6 + 600*A*B^2*a^5*c^3 + 573*B^3*a^4*b^3*c - 1300*B^3*a^5*b*c^2 - 402*A*B^2*a^3*b^4*c - 30*A^2*B*a^2*b^5*c - 924*A^2*B*a^4*b*c^3 + 762*A*B^2*a^4*b^2*c^2 + 339*A^2*B*a^3*b^3*c^2))/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5)))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*2i - ((x^(3/2)*(B*b^3 + 2*A*a*c^2 - A*b^2*c - 3*B*a*b*c))/(4*a*c - b^2) - (x^(1/2)*(2*B*a^2*c - B*a*b^2 + A*a*b*c))/(4*a*c - b^2))/(a*c^2 + c^3*x^2 + b*c^2*x) - atan(((((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^(1/2)*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(

1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a
^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 154
8*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*
B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^
2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9
)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1
280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*x^(1/2
)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c
 + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2
*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*
A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b
^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b
^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2
 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 +
A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1
/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^
5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548
*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B
*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2
 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)
^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 12
80*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*1i - (((2560
*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^
5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B
*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) + (2*x
^(1/2)*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) -
6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^
3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^
4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a
^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27
*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2)
+ 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400
*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9
)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*
B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^1
0*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^
2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7
))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B
^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504
*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*
a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A
*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A
^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*
c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6
 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*
c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4
096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^
8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (2*x^(1/2)*(9*B^2*b^8 -
 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*
b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*
A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4)
)/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^
2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*
A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a
^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-
(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*
B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^
2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c

^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*1i)/((((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^(1/2)*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) + (2*x^(1/2)*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1

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/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*
a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48
*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*
b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4
*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5
*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^
2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c -
 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/
2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22
400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2
)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44
*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*
b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5
*b^2*c^10)))^(1/2) + (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 +
 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 -
 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3
*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b
^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
- 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*
b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*
c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2
*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c -
27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2
) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 224
00*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)
^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*
A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b
^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*
b^2*c^10)))^(1/2) - (2*(216*A^3*a^4*c^4 - 63*B^3*a^3*b^5 + 5*A^3*a^2*b^4*c^
2 - 66*A^3*a^3*b^2*c^3 + 45*A*B^2*a^2*b^6 + 600*A*B^2*a^5*c^3 + 573*B^3*a^4
*b^3*c - 1300*B^3*a^5*b*c^2 - 402*A*B^2*a^3*b^4*c - 30*A^2*B*a^2*b^5*c - 92
4*A^2*B*a^4*b*c^3 + 762*A*B^2*a^4*b^2*c^2 + 339*A^2*B*a^3*b^3*c^2))/(64*a^3
*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5)))*(-(9*B^2*b^13 + A^2*b^11*
c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c
^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 1
0656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*
b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2)
- 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*
c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B
*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5
*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6
*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/
2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a
^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.943 $\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=321

$$-\frac{\sqrt{x}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(-\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}-6aBc+Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4a}}}\right.}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}$$

Rubi [A] time = 1.43, antiderivative size = 321, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 826, 1166, 205}

$$\frac{\left(-\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}-6aBc+Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}-6aBc+Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)\sqrt{\sqrt{b^2-4ac}+b}}-\frac{\sqrt{x}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[x]*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c
)*(a + b*x + c*x^2))) + ((b^2*B + A*b*c - 6*a*B*c - (b^3*B + A*b^2*c - 8*a*
b*B*c + 4*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt
[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)*Sqrt[b - Sqrt[b^2
- 4*a*c]]) + ((b^2*B + A*b*c - 6*a*B*c + (b^3*B + A*b^2*c - 8*a*b*B*c + 4*a
*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b
^2 - 4*a*c]]])/(Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{\frac{1}{2}a(bB-2Ac)+\frac{1}{2}\left(b^2B+Abc-6aBc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{c\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}a(bB-2Ac)+\frac{1}{2}\left(b^2B+Abc-6aBc\right)x^2}{a+bx^2+cx^4}\,d\right.}{c\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(b^2B+Abc-6aBc-\frac{b^3B+Ab^2c-8abBc+4aAc}{\sqrt{b^2-4ac}}\right.}{2c\left(b^2-\right.}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(b^2B+Abc-6aBc-\frac{b^3B+Ab^2c-8abBc+4aAc}{\sqrt{b^2-4ac}}\right.}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b}}}$$

Mathematica [A] time = 1.08, size = 339, normalized size = 1.06

$$\frac{\frac{x^{5/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)}+\frac{a\left(-\frac{\sqrt{2}\left(\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}+6aBc-Abc+b^2(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(-\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}+6aBc-Abc+b^2(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}+2\sqrt{c}\sqrt{x}(2Ac-bB)\right)}{2c^{3/2}}+x^{3/2}(2aB-Ab)}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(A*b) + 2*a*B)*x^(3/2) + (x^(5/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c +
 b*c*x)))/(a + x*(b + c*x)) + (a*(2*Sqrt[c]*(-(b*B) + 2*A*c)*Sqrt[x] - (Sqr
t[2]*(-(b^2*B) - A*b*c + 6*a*B*c + (b^3*B + A*b^2*c - 8*a*b*B*c + 4*a*A*c^2
)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4
*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] - (Sqrt[2]*(-(b^2*B) - A*b*c + 6*a*B*c
 - (b^3*B + A*b^2*c - 8*a*b*B*c + 4*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqr
t[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a
*c]]))/(2*c^(3/2)))/(a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 2.34, size = 372, normalized size = 1.16

$$-\frac{\sqrt{x}\left(2aAc-abB+2aBcx+Abcx+b^2(-B)x\right)}{c\left(4ac-b^2\right)\left(a+bx+cx^2\right)}+\frac{\left(Abc\sqrt{b^2-4ac}-4aAc^2+b^2B\sqrt{b^2-4ac}-6aBc\sqrt{b^2-4ac}+8abBc-Ab^2c+b^3(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(Abc\sqrt{b^2-4ac}+4aAc^2+b^2B\sqrt{b^2-4ac}-6aBc\sqrt{b^2-4ac}-8abBc+Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[x]*(-(a*b*B) + 2*a*A*c - b^2*B*x + A*b*c*x + 2*a*B*c*x))/(c*(-b^2 +
 4*a*c)*(a + b*x + c*x^2))) + ((-(b^3*B) - A*b^2*c + 8*a*b*B*c - 4*a*A*c^2
+ b^2*B*Sqrt[b^2 - 4*a*c] + A*b*c*Sqrt[b^2 - 4*a*c] - 6*a*B*c*Sqrt[b^2 - 4*
a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[
```

```
2]*c^(3/2)*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b^3*B + A*b
^2*c - 8*a*b*B*c + 4*a*A*c^2 + b^2*B*Sqrt[b^2 - 4*a*c] + A*b*c*Sqrt[b^2 - 4
*a*c] - 6*a*B*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
+ Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)^(3/2)*Sqrt[b + Sqrt[b
^2 - 4*a*c]])
```

fricas [B] time = 2.84, size = 4653, normalized size = 14.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4
*a*b*c^2)*x)*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b
- 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c + (b^6*c^3 - 1
2*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A
^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c
^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*
c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))
*log(sqrt(1/2)*(B^3*b^7 - 17*B^3*a*b^5*c - 32*A^3*a^2*c^5 + 16*(18*A*B^2*a^
3 - 3*A^2*B*a^2*b + A^3*a*b^2)*c^4 - 2*(72*B^3*a^3*b + 72*A*B^2*a^2*b^2 - 1
2*A^2*B*a*b^3 + A^3*b^4)*c^3 + (88*B^3*a^2*b^3 + 18*A*B^2*a*b^4 - 3*A^2*B*b
^5)*c^2 - (B*b^8*c^3 + 256*(3*B*a^4 - A*a^3*b)*c^7 - 64*(10*B*a^3*b^2 - 3*A
*a^2*b^3)*c^6 + 48*(4*B*a^2*b^4 - A*a*b^5)*c^5 - 4*(6*B*a*b^6 - A*b^7)*c^4)
*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2
- 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6
*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt(-(B^2*b^5 - 12*(4
*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15
*B^2*a*b^3 - 2*A*B*b^4)*c + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a
^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B
^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*
c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a
*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) - 2*(5*B^4*a*b^4 - 3*A*B^3*b^5 - 4
*A^4*a*c^4 + (20*A^3*B*a*b - 3*A^4*b^2)*c^3 + 3*(108*B^4*a^3 - 108*A*B^3*a^
2*b + 28*A^2*B^2*a*b^2 - 3*A^3*B*b^3)*c^2 - (81*B^4*a^2*b^2 - 65*A*B^3*a*b^
3 + 9*A^2*B^2*b^4)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2*c - 4*a^2*c^2 + (b^2*c^2
- 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x)*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^
2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 -
2*A*B*b^4)*c + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt(
(B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A
*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 -
 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48
*a^2*b^2*c^5 - 64*a^3*c^6))*log(-sqrt(1/2)*(B^3*b^7 - 17*B^3*a*b^5*c - 32*A
^3*a^2*c^5 + 16*(18*A*B^2*a^3 - 3*A^2*B*a^2*b + A^3*a*b^2)*c^4 - 2*(72*B^3*
a^3*b + 72*A*B^2*a^2*b^2 - 12*A^2*B*a*b^3 + A^3*b^4)*c^3 + (88*B^3*a^2*b^3
+ 18*A*B^2*a*b^4 - 3*A^2*B*b^5)*c^2 - (B*b^8*c^3 + 256*(3*B*a^4 - A*a^3*b)*
c^7 - 64*(10*B*a^3*b^2 - 3*A*a^2*b^3)*c^6 + 48*(4*B*a^2*b^4 - A*a*b^5)*c^5
- 4*(6*B*a*b^6 - A*b^7)*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A
^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*
a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c
^9)))*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*
B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c + (b^6*c^3 - 12*a*b^4
*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*
a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*
(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 6
4*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) - 2*(5
*B^4*a*b^4 - 3*A*B^3*b^5 - 4*A^4*a*c^4 + (20*A^3*B*a*b - 3*A^4*b^2)*c^3 + 3
*(108*B^4*a^3 - 108*A*B^3*a^2*b + 28*A^2*B^2*a*b^2 - 3*A^3*B*b^3)*c^2 - (81
*B^4*a^2*b^2 - 65*A*B^3*a*b^3 + 9*A^2*B^2*b^4)*c)*sqrt(x)) + sqrt(1/2)*(a*b
```

```
^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x)*sqrt(-(
B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2
*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2
*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b
)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2
- 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/
(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*log(sqrt(1/2)*(B^3*
b^7 - 17*B^3*a*b^5*c - 32*A^3*a^2*c^5 + 16*(18*A*B^2*a^3 - 3*A^2*B*a^2*b +
A^3*a*b^2)*c^4 - 2*(72*B^3*a^3*b + 72*A*B^2*a^2*b^2 - 12*A^2*B*a*b^3 + A^3*
b^4)*c^3 + (88*B^3*a^2*b^3 + 18*A*B^2*a*b^4 - 3*A^2*B*b^5)*c^2 + (B*b^8*c^3
 + 256*(3*B*a^4 - A*a^3*b)*c^7 - 64*(10*B*a^3*b^2 - 3*A*a^2*b^3)*c^6 + 48*(
4*B*a^2*b^4 - A*a*b^5)*c^5 - 4*(6*B*a*b^6 - A*b^7)*c^4)*sqrt((B^4*b^4 + A^4
*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A
^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7
+ 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*
c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b
^4)*c - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^
4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*
b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b
^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^
2*c^5 - 64*a^3*c^6)) - 2*(5*B^4*a*b^4 - 3*A*B^3*b^5 - 4*A^4*a*c^4 + (20*A^3
*B*a*b - 3*A^4*b^2)*c^3 + 3*(108*B^4*a^3 - 108*A*B^3*a^2*b + 28*A^2*B^2*a*b
^2 - 3*A^3*B*b^3)*c^2 - (81*B^4*a^2*b^2 - 65*A*B^3*a*b^3 + 9*A^2*B^2*b^4)*c
)*sqrt(x)) - sqrt(1/2)*(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^
3*c - 4*a*b*c^2)*x)*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2
*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c - (b^6*
c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 -
 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2
*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a
^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^
3*c^6))*log(-sqrt(1/2)*(B^3*b^7 - 17*B^3*a*b^5*c - 32*A^3*a^2*c^5 + 16*(18*
A*B^2*a^3 - 3*A^2*B*a^2*b + A^3*a*b^2)*c^4 - 2*(72*B^3*a^3*b + 72*A*B^2*a^2
*b^2 - 12*A^2*B*a*b^3 + A^3*b^4)*c^3 + (88*B^3*a^2*b^3 + 18*A*B^2*a*b^4 - 3
*A^2*B*b^5)*c^2 + (B*b^8*c^3 + 256*(3*B*a^4 - A*a^3*b)*c^7 - 64*(10*B*a^3*b
^2 - 3*A*a^2*b^3)*c^6 + 48*(4*B*a^2*b^4 - A*a*b^5)*c^5 - 4*(6*B*a*b^6 - A*b
^7)*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*
B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)
*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt(-(B^2*b^5
 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c
^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^
5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 +
 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B
^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^
3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) - 2*(5*B^4*a*b^4 - 3*A*B^3
*b^5 - 4*A^4*a*c^4 + (20*A^3*B*a*b - 3*A^4*b^2)*c^3 + 3*(108*B^4*a^3 - 108*
A*B^3*a^2*b + 28*A^2*B^2*a*b^2 - 3*A^3*B*b^3)*c^2 - (81*B^4*a^2*b^2 - 65*A*
B^3*a*b^3 + 9*A^2*B^2*b^4)*c)*sqrt(x)) + 2*(B*a*b - 2*A*a*c + (B*b^2 - (2*B
*a + A*b)*c)*x)*sqrt(x))/(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (
b^3*c - 4*a*b*c^2)*x)
```

giac [B] time = 1.83, size = 4544, normalized size = 14.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(B*b^2*x^(3/2) - 2*B*a*c*x^(3/2) - A*b*c*x^(3/2) + B*a*b*sqrt(x) - 2*A*a*c
*sqrt(x))/((b^2*c - 4*a*c^2)*(c*x^2 + b*x + a)) + 1/8*((2*b^3*c^3 - 8*a*b*c
^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c + 4*sq
```

rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 + 2*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c^2 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b*c^3 - 2*(b^2 - 4*a*c)*b*c^3)*
(b^2*c - 4*a*c^2)^2*A + (2*b^4*c^2 - 20*a*b^2*c^3 + 48*a^2*c^4 - sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 + 10*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*b^2*c^2 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 12*(b^2 - 4*a*c)*a*c^3)*(b^2
*c - 4*a*c^2)^2*B - 4*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 -
8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 2*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 2*a*b^4*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*
c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 + 16*a^2*b^2*c^5 -
4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^6 - 32*a^3*c^6 + 2*(b^2 - 4
*a*c)*a*b^2*c^4 - 8*(b^2 - 4*a*c)*a^2*c^5)*A*abs(b^2*c - 4*a*c^2) + 2*(sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^
4*c^3 - 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4
+ 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 16*a^2*b^3*c^4 - 4*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^5 - 32*a^3*b*c^5 + 2*(b^2 - 4*a*c)*a*b^3*c^3 - 8
*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(b^2*c - 4*a*c^2) - (2*b^7*c^5 - 8*a*b^5*c^6
- 32*a^2*b^3*c^7 + 128*a^3*b*c^8 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*b^7*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a*b^5*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*b^6*c^4 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*b^5*c^5 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^3*b*c^6 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b^2*c^6 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b*c^7 - 2*(b^2 - 4*a*c)*b^5*c^5 + 32*(b^2 - 4*a*c)*a^2*b*c^7)*A - (2*b^8*
c^4 - 32*a*b^6*c^5 + 160*a^2*b^4*c^6 - 256*a^3*b^2*c^7 - sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^3 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^4 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*b^6*c^4 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 - 2*(b^2 - 4*a*c)*b^6*c^4 + 24*(b^2 - 4*a*c)
*a*b^4*c^5 - 64*(b^2 - 4*a*c)*a^2*b^2*c^6)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sq
rt((b^3*c - 4*a*b*c^2 + sqrt((b^3*c - 4*a*b*c^2)^2 - 4*(a*b^2*c - 4*a^2*c^2
)*(b^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/((a*b^6*c^3 - 12*a^2*b^4*c^4
- 2*a*b^5*c^4 + 48*a^3*b^2*c^5 + 16*a^2*b^3*c^5 + a*b^4*c^5 - 64*a^4*c^6 -
32*a^3*b*c^6 - 8*a^2*b^2*c^6 + 16*a^3*c^7)*abs(b^2*c - 4*a*c^2)*abs(c)) - 1
/8*((2*b^3*c^3 - 8*a*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*b^3*c + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*b*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^3 -
2*(b^2 - 4*a*c)*b*c^3)*(b^2*c - 4*a*c^2)^2*A + (2*b^4*c^2 - 20*a*b^2*c^3 +
48*a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4
+ 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c - 24*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 12*sqrt(2)*s

```
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 6*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 12*(
b^2 - 4*a*c)*a*c^3)*(b^2*c - 4*a*c^2)^2*B + 4*(sqrt(2)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a*b^4*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c
^4 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 2*a*b^4*c^4 + 16
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^5 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2
*c^5 - 16*a^2*b^2*c^5 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^6 +
 32*a^3*c^6 - 2*(b^2 - 4*a*c)*a*b^2*c^4 + 8*(b^2 - 4*a*c)*a^2*c^5)*A*abs(b^
2*c - 4*a*c^2) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^3*b*c^4 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 16*a^2*b^3*c^4 -
 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 + 32*a^3*b*c^5 - 2*(b^
2 - 4*a*c)*a*b^3*c^3 + 8*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(b^2*c - 4*a*c^2) -
(2*b^7*c^5 - 8*a*b^5*c^6 - 32*a^2*b^3*c^7 + 128*a^3*b*c^8 - sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^3 + 4*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^4 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^5 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b*c^7 - 2*(b^2 - 4*a*c)*b^5*c^5 + 32*(b^2 - 4*a*c
)*a^2*b*c^7)*A - (2*b^8*c^4 - 32*a*b^6*c^5 + 160*a^2*b^4*c^6 - 256*a^3*b^2*
c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8*c^2 + 1
6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^3 + 2*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^3 - 80*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^4 - 24*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 - sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^4 + 128*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 64*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 + 12*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 - 32*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 - 2*(b^2 - 4*a*c)*b^
6*c^4 + 24*(b^2 - 4*a*c)*a*b^4*c^5 - 64*(b^2 - 4*a*c)*a^2*b^2*c^6)*B)*arcta
n(2*sqrt(1/2)*sqrt(x)/sqrt((b^3*c - 4*a*b*c^2 - sqrt((b^3*c - 4*a*b*c^2)^2
- 4*(a*b^2*c - 4*a^2*c^2)*(b^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/((a*b
^6*c^3 - 12*a^2*b^4*c^4 - 2*a*b^5*c^4 + 48*a^3*b^2*c^5 + 16*a^2*b^3*c^5 + a
*b^4*c^5 - 64*a^4*c^6 - 32*a^3*b*c^6 - 8*a^2*b^2*c^6 + 16*a^3*c^7)*abs(b^2*
c - 4*a*c^2)*abs(c))
```

maple [B] time = 0.10, size = 1059, normalized size = 3.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*(-1/2*(A*b*c+2*B*a*c-B*b^2)/c/(4*a*c-b^2)*x^(3/2)-1/2*a*(2*A*c-B*b)/(4*a*
c-b^2)/c*x^(1/2))/(c*x^2+b*x+a)-1/2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*
b-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-1/2/(4*a*
c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+3/(4*a*c-b^2)*2^(1
/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*a*B-1/2/(4*a*c-b^2)/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
```

```
c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+4
/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B-1/2/(4*a*c-b
^2)/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^
(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B+1/2/(4*a*c-b^2)*2^(
1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*A*b-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*c*x^(1/2))*A*a-1/2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b^2-3/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arct
anh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B+1/2/(4*a*c-b^2
)/c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+4/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1
/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*a*b*B-1/2/(4*a*c-b^2)/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/
((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*b^3*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(Bb-2\,Ac)x^{\frac{5}{2}}+(2\,Ba-Ab)x^{\frac{3}{2}}}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x}-\int\frac{(Bb-2\,Ac)x^{\frac{3}{2}}+3\,(2\,Ba-Ab)\sqrt{x}}{2\left(ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] ((B*b - 2*A*c)*x^(5/2) + (2*B*a - A*b)*x^(3/2))/(a*b^2 - 4*a^2*c + (b^2*c -
 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x) - integrate(1/2*((B*b - 2*A*c)*x^(3/2) +
 3*(2*B*a - A*b)*sqrt(x))/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 -
 4*a*b*c)*x), x)
```

mupad [B] time = 6.47, size = 12408, normalized size = 38.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] - ((x^(1/2)*(2*A*a*c - B*a*b))/(c*(4*a*c - b^2)) + (x^(3/2)*(A*b*c - B*b^2
+ 2*B*a*c))/(c*(4*a*c - b^2)))/(a + b*x + c*x^2) - atan(((((512*A*a^4*c^6 -
 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A
*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 -
12*a*b^4*c^2 + 48*a^2*b^2*c^3) - (2*x^(1/2)*(-(B^2*b^11 + A^2*b^9*c^2 + A^2
*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^
10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 150
4*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*
c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b
*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2
*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^
12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*
c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 +
 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^
9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2)
 + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^
7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27
*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 384
0*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*
b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a
^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 38
```

40*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i - (((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i)/((((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) - (2*x^(1/2)*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 15

36*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)
/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b
^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6
 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*
b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b
*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*
c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^1
0*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504
*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c
 - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*
c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*
A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^1
2*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c
^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*(3*A*B^2*a*b^5 - 216*B^3*a^4*c^2 - 5*B^
3*a^2*b^4 - 24*A^2*B*a^3*c^3 + 3*A^3*a*b^3*c^2 + 4*A^3*a^2*b*c^3 + 66*B^3*a
^3*b^2*c - 51*A*B^2*a^2*b^3*c + 204*A*B^2*a^3*b*c^2 - 42*A^2*B*a^2*b^2*c^2
+ 6*A^2*B*a*b^4*c))/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) +
(((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a
^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6
*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*(-(B^2*b^11 +
 A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9
)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2
*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c
^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^
6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A
*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*
(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c
^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4
 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-
(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a
*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^
5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 307
2*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A
^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c
^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b
^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 128
0*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)*(
B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B
^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*
B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2
 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*
A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2
 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*
a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2
*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c
^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^
9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^
4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2
*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c
 - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^
2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c -
9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5
 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B
*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c
^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7
- 6144*a^5*b^2*c^8)))^(1/2)*2i - atan(((((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4
*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*
B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*
a^2*b^2*c^3) - (2*x^(1/2)*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2

```
- B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b
^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 -
 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*
a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*
b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c -
 b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*
c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*
c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/
(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^
2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96
*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3
*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2
*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 19
2*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*
(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 -
24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 614
4*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2
- 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^
2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*
a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B
^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A
^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*
b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^
(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*
A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2)
 + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*
b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1
i - (((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96
*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/
(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*((A^2*c^2
*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2
)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*
B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^
5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b
*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 153
6*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/
(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^
6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*
c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))
*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4
*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*
c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3
072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768
*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4
*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a
*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1
280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)
*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74
*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*
A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^
2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2
*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^
2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2
*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^
2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*
c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c
^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a
^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i)/((((512*A*a^4*c^6 - 8*A*a*b^6*c^
3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5
```

- 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) - (2*x^(1/2)*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*(3*A*B^2*a*b^5 - 216*B^3*a^4*c^2 - 5*B^3*a^2*b^4 - 24*A^2*B*a^3*c^3 + 3*A^3*a*b^3*c^2 + 4*A^3*a^2*b*c^3 + 66*B^3*a^3*b^2*c - 51*A*B^2*a^2*b^3*c + 204*A*B^2*a^3*b*c^2 - 42*A^2*B*a^2*b^2*c^2 + 6*A^2*B*a*b^4*c))/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c -

```
 b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c
^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)
^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 +
 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8))
)^(1/2)))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2
*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2
*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^
3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1
/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*
B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) +
 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^
8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.944 $\int \frac{\sqrt{x}(A+Bx)}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=276

$$-\frac{\sqrt{x}(-2aB-x(bB-2Ac)+Ab)}{(b^2-4ac)(a+bx+cx^2)}+\frac{\left(-\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\,(b^2-4ac)\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+\cdots\right.}{\sqrt{2}\sqrt{c}\,(b^2-4ac\cdots}$$

Rubi [A] time = 0.96, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {820, 826, 1166, 205}

$$-\frac{\sqrt{x}(-2aB-x(bB-2Ac)+Ab)}{(b^2-4ac)(a+bx+cx^2)}+\frac{\left(-\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\,(b^2-4ac)\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{c}\,(b^2-4ac)\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[x]*(A*b - 2*a*B - (b*B - 2*A*c)*x))/((b^2 - 4*a*c)*(a + b*x + c*x^2
))) + ((b*B - 2*A*c - (b^2*B - 4*A*b*c + 4*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*(
b^2 - 4*a*c)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b*B - 2*A*c + (b^2*B - 4*A*b*
c + 4*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + S
qrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*
c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\int \frac{\frac{1}{2}(-Ab+2aB)-\frac{1}{2}(bB-2Ac)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{-b^2+4ac}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}(-Ab+2aB)+\frac{1}{2}(-bB+2Ac)x^2}{a+bx^2+cx^4}\,dx, x, \sqrt{x}\right)}{b^2-4ac}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(bB-2Ac-\frac{b^2B-4Abc+4aBc}{\sqrt{b^2-4ac}}\right)\mathrm{Subst}\left(\int \frac{1}{\frac{b}{2}-\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,d\ldots\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(bB-2Ac-\frac{b^2B-4Abc+4aBc}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}} + \frac{(b\ldots}{\ldots}$$

Mathematica [A] time = 0.68, size = 295, normalized size = 1.07

$$\frac{\frac{x^{3/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)} + \frac{a\left(\frac{\left(-2Ac\sqrt{b^2-4ac}+bB\sqrt{b^2-4ac}+4aBc-4Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}} - \frac{\left(\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}+2Ac-bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}} + \sqrt{x}\,(2aB-Ab)}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(A*b) + 2*a*B)*Sqrt[x] + (x^(3/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c +
 b*c*x)))/(a + x*(b + c*x)) + (a*(-(((-(b*B) + 2*A*c + (b^2*B - 4*A*b*c + 4
*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b
^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b^2*B - 4*A*b*c + 4*a*B*c +
 b*B*Sqrt[b^2 - 4*a*c] - 2*A*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*S
qrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2
- 4*a*c]])))/(Sqrt[2]*Sqrt[c]))/(a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 1.75, size = 344, normalized size = 1.25

$$\frac{\sqrt{x}\,(2aB-Ab-2Acx+bBx)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(-2\sqrt{2}Ac\sqrt{b^2-4ac}+\sqrt{2}bB\sqrt{b^2-4ac}-4\sqrt{2}aBc+4\sqrt{2}Abc-\sqrt{2}b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{2\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}} + \frac{\left(-2\sqrt{2}Ac\sqrt{b^2-4ac}+\sqrt{2}bB\sqrt{b^2-4ac}+4\sqrt{2}aBc-4\sqrt{2}Abc+\sqrt{2}b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{2\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(-(A*b) + 2*a*B + b*B*x - 2*A*c*x))/((b^2 - 4*a*c)*(a + b*x + c*x^
2)) + ((-(Sqrt[2]*b^2*B) + 4*Sqrt[2]*A*b*c - 4*Sqrt[2]*a*B*c + Sqrt[2]*b*B*
Sqrt[b^2 - 4*a*c] - 2*Sqrt[2]*A*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c
]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(2*Sqrt[c]*(b^2 - 4*a*c)^(3/2)*Sqr
t[b - Sqrt[b^2 - 4*a*c]]) + ((Sqrt[2]*b^2*B - 4*Sqrt[2]*A*b*c + 4*Sqrt[2]*a
*B*c + Sqrt[2]*b*B*Sqrt[b^2 - 4*a*c] - 2*Sqrt[2]*A*c*Sqrt[b^2 - 4*a*c])*Arc
Tan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(2*Sqrt[c]*(b^2
 - 4*a*c)^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 1.60, size = 3462, normalized size = 12.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*
x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*B^2*a^2*b - 12*A*
B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*
c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3
 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^
3 - 64*a^4*c^4))*log(sqrt(1/2)*(2*B^3*a^2*b^4 - A*B^2*a*b^5 - 16*(2*A^2*B*a
^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*b + 2*A^2*B*a^2*b^2 - A^3*
a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 + 2*A^2*B*a*b^4 - A^3*b^5)*c
 + (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*a^5*b + A*a^4*b^2)*c^4 - 8
*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A*a*b^8)*c)*sqrt((B^4*a^2 -
 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 -
64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*B^2*a^
2*b - 12*A*B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^
3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*
a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^2 + 48
*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 - A*B^3*a*b^3 - 4*A^4*a*c^3
+ 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12*A*B^3*a^2*b + A^3*B*b^3)*
c)*sqrt(x)) - sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4
*a*b*c)*x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*B^2*a^2*b
 - 12*A*B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^3 -
 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3
*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^2 + 48*a^
3*b^2*c^3 - 64*a^4*c^4))*log(-sqrt(1/2)*(2*B^3*a^2*b^4 - A*B^2*a*b^5 - 16*(
2*A^2*B*a^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*b + 2*A^2*B*a^2*b
^2 - A^3*a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 + 2*A^2*B*a*b^4 - A
^3*b^5)*c + (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*a^5*b + A*a^4*b^2
)*c^4 - 8*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A*a*b^8)*c)*sqrt((
B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b
^2*c^4 - 64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (
12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a
^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*
c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4
*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 - A*B^3*a*b^3 - 4*A
^4*a*c^3 + 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12*A*B^3*a^2*b + A^
3*B*b^3)*c)*sqrt(x)) + sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 +
 (b^3 - 4*a*b*c)*x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*
B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*
b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2
 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^
2 + 48*a^3*b^2*c^3 - 64*a^4*c^4))*log(sqrt(1/2)*(2*B^3*a^2*b^4 - A*B^2*a*b^
5 - 16*(2*A^2*B*a^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*b + 2*A^2
*B*a^2*b^2 - A^3*a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 + 2*A^2*B*a
*b^4 - A^3*b^5)*c - (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*a^5*b + A
*a^4*b^2)*c^4 - 8*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A*a*b^8)*c
)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 +
48*a^4*b^2*c^4 - 64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)
*c^2 + (12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a^2*b^4*c^
2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(
a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12
*a^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 - A*B^3*a*b
^3 - 4*A^4*a*c^3 + 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12*A*B^3*a^
2*b + A^3*B*b^3)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^
2)*x^2 + (b^3 - 4*a*b*c)*x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^
```

```
2 + (12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a^2*b^4*c^2 +
 48*a^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2
*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^
2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4))*log(-sqrt(1/2)*(2*B^3*a^2*b^4 - A
*B^2*a*b^5 - 16*(2*A^2*B*a^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*
b + 2*A^2*B*a^2*b^2 - A^3*a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 +
2*A^2*B*a*b^4 - A^3*b^5)*c - (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*
a^5*b + A*a^4*b^2)*c^4 - 8*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A
*a*b^8)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b
^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3
*A^2*a*b)*c^2 + (12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a
^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A
^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b
^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 -
A*B^3*a*b^3 - 4*A^4*a*c^3 + 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12
*A*B^3*a^2*b + A^3*B*b^3)*c)*sqrt(x)) - 2*(2*B*a - A*b + (B*b - 2*A*c)*x)*s
qrt(x))/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)
```

giac [B] time = 1.60, size = 3781, normalized size = 13.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (B*b*x^(3/2) - 2*A*c*x^(3/2) + 2*B*a*sqrt(x) - A*b*sqrt(x))/((c*x^2 + b*x +
 a)*(b^2 - 4*a*c)) - 1/8*(2*(2*b^2*c^3 - 8*a*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*c^3 - 2*(b^2 - 4*a*c)*c^3)*(b^2 - 4*a*c)^2*A - (2*b^3*c^2 - 8*a*
b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3 + 4*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*c^2)*(b^
2 - 4*a*c)^2*B - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 8*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*b^4*c^2 - 2*b^5*c^2 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^2*b*c^3 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 + sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 16*a*b^3*c^3 - 4*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 32*a^2*b*c^4 + 2*(b^2 - 4*a*c)*b^3*c^2
 - 8*(b^2 - 4*a*c)*a*b*c^3)*A*abs(b^2 - 4*a*c) + 4*(sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a*b^4*c - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^
2*c^2 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*a*b^4*c^2 +
 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*
b^2*c^3 + 16*a^2*b^2*c^3 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^
4 - 32*a^3*c^4 + 2*(b^2 - 4*a*c)*a*b^2*c^2 - 8*(b^2 - 4*a*c)*a^2*c^3)*B*abs
(b^2 - 4*a*c) - 4*(2*b^6*c^3 - 16*a*b^4*c^4 + 32*a^2*b^2*c^5 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c + 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^3 + 8*(b^2 - 4*a*c)*
a*b^2*c^4)*A + (2*b^7*c^2 - 8*a*b^5*c^3 - 32*a^2*b^3*c^4 + 128*a^3*b*c^5 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 + 4*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c + 16*sqrt(2)*sqrt(b^2 - 4
```

```
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5*c^2 + 32*(b^2
- 4*a*c)*a^2*b*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^3 - 4*a*b*c + sqr
t((b^3 - 4*a*b*c)^2 - 4*(a*b^2 - 4*a^2*c)*(b^2*c - 4*a*c^2)))/(b^2*c - 4*a*
c^2)))/((a*b^6*c - 12*a^2*b^4*c^2 - 2*a*b^5*c^2 + 48*a^3*b^2*c^3 + 16*a^2*b
^3*c^3 + a*b^4*c^3 - 64*a^4*c^4 - 32*a^3*b*c^4 - 8*a^2*b^2*c^4 + 16*a^3*c^5
)*abs(b^2 - 4*a*c)*abs(c)) + 1/8*(2*(2*b^2*c^3 - 8*a*c^4 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c + 4*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*c^3 - 2*(b^2 - 4*a*c)*c^3)*(b^2 - 4*a*c)^2*A - (2*b^3*c^
2 - 8*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b
^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*
c^2)*(b^2 - 4*a*c)^2*B + 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c -
 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 2*b^5*c^2 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a^2*b*c^3 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3
 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^3 - 16*a*b^3*c^3 - 4*sqrt(
2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^4 + 32*a^2*b*c^4 - 2*(b^2 - 4*a*c)
*b^3*c^2 + 8*(b^2 - 4*a*c)*a*b*c^3)*A*abs(b^2 - 4*a*c) - 4*(sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^2*c^2 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*a*b
^4*c^2 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a*b^2*c^3 - 16*a^2*b^2*c^3 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*c^4 + 32*a^3*c^4 - 2*(b^2 - 4*a*c)*a*b^2*c^2 + 8*(b^2 - 4*a*c)*a^2*c^
3)*B*abs(b^2 - 4*a*c) - 4*(2*b^6*c^3 - 16*a*b^4*c^4 + 32*a^2*b^2*c^5 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 8*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 16*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^3 + 8*(b^2 -
 4*a*c)*a*b^2*c^4)*A + (2*b^7*c^2 - 8*a*b^5*c^3 - 32*a^2*b^3*c^4 + 128*a^3*
b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7 + 4*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 16*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 64*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 32*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5*c^2 +
32*(b^2 - 4*a*c)*a^2*b*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^3 - 4*a*b
*c - sqrt((b^3 - 4*a*b*c)^2 - 4*(a*b^2 - 4*a^2*c)*(b^2*c - 4*a*c^2)))/(b^2*
c - 4*a*c^2)))/((a*b^6*c - 12*a^2*b^4*c^2 - 2*a*b^5*c^2 + 48*a^3*b^2*c^3 +
16*a^2*b^3*c^3 + a*b^4*c^3 - 64*a^4*c^4 - 32*a^3*b*c^4 - 8*a^2*b^2*c^4 + 16
*a^3*c^5)*abs(b^2 - 4*a*c)*abs(c))
```

maple [B] time = 0.09, size = 755, normalized size = 2.74

$$\frac{2\sqrt{2}\,Abc\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\left(4ac-b^2\right)\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{2\sqrt{2}\,Abc\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\left(4ac-b^2\right)\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{2\sqrt{2}\,Bac\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\left(4ac-b^2\right)\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}-\frac{2\sqrt{2}\,Bac\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\left(4ac-b^2\right)\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,B\,b^2\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{2\left(4ac-b^2\right)\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,B\,b^2\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{2\left(4ac-b^2\right)\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,Ac\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\left(4ac-b^2\right)\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\left(4ac-b^2\right)\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Bb\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{2\left(4ac-b^2\right)\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,Bb\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{2\left(4ac-b^2\right)\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{\frac{2(2Ac-bB)x^{\frac{3}{2}}}{8ac-2b^2}+\frac{2(Ab-2Ba)\sqrt{x}}{8ac-2b^2}}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*(1/2*(2*A*c-B*b)/(4*a*c-b^2)*x^(3/2)+1/2*(A*b-2*B*a)/(4*a*c-b^2)*x^(1/2))
/(c*x^2+b*x+a)+1/(4*a*c-b^2)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+2/(4*a*c-b^2)*c/(
-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/(
(b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-1/2/(4*a*c-b^2)*2^(1/2)/((b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*c*x^(1/2))*b*B-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*a*B-1/2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B-1/(
4*a*c-b^2)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/
2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+1/2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/
2))*b*B-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B-
1/2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{(2\,Bac - Abc)x^{\frac{5}{2}} + \left(Bab - \left(b^2 - 2\,ac\right)A\right)x^{\frac{3}{2}}}{a^2b^2 - 4\,a^3c + \left(ab^2c - 4\,a^2c^2\right)x^2 + \left(ab^3 - 4\,a^2bc\right)x} + \int \frac{(2\,Bac - Abc)x^{\frac{3}{2}} + \left(3\,Bab - \left(b^2 + 2\,ac\right)A\right)\sqrt{x}}{2\left(a^2b^2 - 4\,a^3c + \left(ab^2c - 4\,a^2c^2\right)x^2 + \left(ab^3 - 4\,a^2bc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -((2*B*a*c - A*b*c)*x^(5/2) + (B*a*b - (b^2 - 2*a*c)*A)*x^(3/2))/(a^2*b^2 -
 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x) + integrate(1
/2*((2*B*a*c - A*b*c)*x^(3/2) + (3*B*a*b - (b^2 + 2*a*c)*A)*sqrt(x))/(a^2*b
^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x), x)
```

mupad [B] time = 5.60, size = 9434, normalized size = 34.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((x^(1/2)*(A*b - 2*B*a))/(4*a*c - b^2) + (x^(3/2)*(2*A*c - B*b))/(4*a*c - b
^2))/(a + b*x + c*x^2) - atan(((((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*
c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^
3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) - (
2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c
*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B
^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5
 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a
*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6
*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 -
 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b
^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-
(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*
a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 -
768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^
8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^
4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) - (2*x^(1/2)*(B
^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2
*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b
```

```
^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^
(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512
*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4
 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7
*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*
c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*1i - (((4*A*b^7*c^2 + 512*B*a^4*
c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4
+ 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2
- 12*a*b^4*c) + (2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) +
A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a
^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 -
768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b
^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c
^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(
1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 1
6*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2
*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*
b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768
*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*
c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3
- 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2
) + (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 -
6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b
^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-
(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*
a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 -
768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^
8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^
4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*1i)/((2*(8*A^3*
a*c^4 + 6*A^3*b^2*c^3 + A*B^2*b^4*c - 3*B^3*a*b^3*c + 8*A*B^2*a^2*c^3 - 5*A
^2*B*b^3*c^2 - 4*B^3*a^2*b*c^2 + 18*A*B^2*a*b^2*c^2 - 28*A^2*B*a*b*c^3))/(b
^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) + (((4*A*b^7*c^2 + 512*B*a^4
*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4
 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2
 - 12*a*b^4*c) - (2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) +
 A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*
a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 -
 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*
b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*
c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^
(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 +
16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^
2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3
*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 76
8*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4
*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3
 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/
2) - (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 -
 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*
b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(
-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2
*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 -
 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b
^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c
^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) + (((4*A*b^7*c
^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192
*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 +
48*a^2*b^2*c^2 - 12*a*b^4*c) + (2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b
^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*
```

c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024
*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
- 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
+ 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
+ a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3
*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)
^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3
 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*
B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 3
84*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 2
40*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a
*b^12*c)))^(1/2) + (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8
*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*
a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b
^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^
3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A
^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^
3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 -
1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2))
)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*
c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b
^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B
^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/
(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3
840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*2i - atan(((((4*A*b^
7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 +
192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3
 + 48*a^2*b^2*c^2 - 12*a*b^4*c) - (2*x^(1/2)*(-(B^2*a*b^9 + B^2*a*(-(4*a*c
- b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b
^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1
024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c
^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c
^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c
^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*
b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b
^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*
c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024
*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
- 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
+ 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
+ a*b^12*c)))^(1/2) - (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3
+ 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 +
16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^
2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3
*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 76
8*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4
*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3
 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/
2)*1i - (((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 -
 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/
(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) + (2*x^(1/2)*(-(B^2*a*b^9
+ B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/
2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^
2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 +
128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^
7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5
 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3
*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B
^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2)

- 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a
^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128
*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 -
 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 -
6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) + (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4
+ 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*
a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b
^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*
c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024
*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
- 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
+ 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
+ a*b^12*c)))^(1/2)*1i)/((2*(8*A^3*a*c^4 + 6*A^3*b^2*c^3 + A*B^2*b^4*c - 3*
B^3*a*b^3*c + 8*A*B^2*a^2*c^3 - 5*A^2*B*b^3*c^2 - 4*B^3*a^2*b*c^2 + 18*A*B^
2*a*b^2*c^2 - 28*A^2*B*a*b*c^3))/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*
b^4*c) + (((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5
- 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)
/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) - (2*x^(1/2)*(-(B^2*a*b^9
 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1
/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B
^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 +
 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c
^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^
5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^
3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 +
B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2)
 - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*
a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 12
8*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7
- 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 -
 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) - (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4
 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B
*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c -
b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5
*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 102
4*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
 + a*b^12*c)))^(1/2) + (((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 25
6*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*
B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) + (2*x^(1/2
)*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*
c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b
^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B
^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/
(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3
840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^
5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(
-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c -
 b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*
c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*
a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*
(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840
*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) + (2*x^(1/2)*(B^2*b^4*c
 - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b
^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2
a(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) -
96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4
*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A

```
*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 2
4*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 61
44*a^6*b^2*c^6 + a*b^12*c)))^(1/2)))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9
)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 +
 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*
a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384
*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240
*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b
^12*c)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.945 $\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=304

$$\frac{\sqrt{x}\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(A\left(b\sqrt{b^2-4ac}-12ac+b^2\right)+2aB\left(2b-\sqrt{b^2-4ac}\right)\right)\tan^{-1}\left(\right.}{\sqrt{2}\,a\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

Rubi [A] time = 0.83, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 826, 1166, 205}

$$\frac{\sqrt{x}\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(A\left(b\sqrt{b^2-4ac}-12ac+b^2\right)+2aB\left(2b-\sqrt{b^2-4ac}\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,a\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{c}\left(-\frac{-12aAc+4abB+Ab^2}{\sqrt{b^2-4ac}}-2aB+Ab\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\,a\left(b^2-4ac\right)\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] (Sqrt[x]*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*(a
 + b*x + c*x^2)) + (Sqrt[c]*(2*a*B*(2*b - Sqrt[b^2 - 4*a*c]) + A*(b^2 - 12*
a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[
b^2 - 4*a*c]]])/(Sqrt[2]*a*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]])
 + (Sqrt[c]*(A*b - 2*a*B - (A*b^2 + 4*a*b*B - 12*a*A*c)/Sqrt[b^2 - 4*a*c])*
ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a*(
b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
```

```
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx = \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-Ab^2-abB+6aAc\right)-\frac{1}{2}(Ab-2aB)cx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}\left(-Ab^2-abB+6aAc\right)-\frac{1}{2}(Ab-2aB)cx^2}{a+bx^2+cx^4}\right.}{a\left(b^2-4ac\right)}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(c\left(Ab-2aB-\frac{Ab^2+4abB-12aAc}{\sqrt{b^2-4ac}}\right)\right)\mathrm{Subst}\left(\right.}{2a\left(b^2-4ac\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\sqrt{c}\left(2aB\left(2b-\sqrt{b^2-4ac}\right)+A\left(b^2-12\right.\right.}{\sqrt{2}\,a\left(b^2-4ac\right)^{3/2}}$$

Mathematica [A] time = 0.63, size = 285, normalized size = 0.94

$$\frac{\frac{\sqrt{x}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)}+\frac{\sqrt{c}\left(\frac{\left(A\left(b\sqrt{b^2-4ac}-12ac+b^2\right)-2aB\left(\sqrt{b^2-4ac}-2b\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(b\sqrt{b^2-4ac}+12ac-b^2\right)-2aB\left(\sqrt{b^2-4ac}+2b\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{b^2-4ac}}}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((Sqrt[x]*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
 + (Sqrt[c]*(((-2*a*B*(-2*b + Sqrt[b^2 - 4*a*c]) + A*(b^2 - 12*a*c + b*Sqrt
[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]
]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((-2*a*B*(2*b + Sqrt[b^2 - 4*a*c]) + A*(-
b^2 + 12*a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[
b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*Sqrt[b^2 -
4*a*c]))/(a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 1.56, size = 403, normalized size = 1.33

$$\frac{\left(\sqrt{2}Ab\sqrt{c}\sqrt{b^2-4ac}-12\sqrt{2}aAc^{3/2}-2\sqrt{2}aB\sqrt{c}\sqrt{b^2-4ac}+4\sqrt{2}abB\sqrt{c}+\sqrt{2}Ab^2\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{2a\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\sqrt{2}Ab\sqrt{c}\sqrt{b^2-4ac}+12\sqrt{2}aAc^{3/2}-2\sqrt{2}aB\sqrt{c}\sqrt{b^2-4ac}-4\sqrt{2}abB\sqrt{c}-\sqrt{2}Ab^2\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{2a\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{\sqrt{x}\left(2aAc+abB+2aBcx-Ab^2-Abcx\right)}{a\left(4ac-b^2\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] (Sqrt[x]*(-(A*b^2) + a*b*B + 2*a*A*c - A*b*c*x + 2*a*B*c*x))/(a*(-b^2 + 4*a
*c)*(a + b*x + c*x^2)) + ((Sqrt[2]*A*b^2*Sqrt[c] + 4*Sqrt[2]*a*b*B*Sqrt[c]
- 12*Sqrt[2]*a*A*c^(3/2) + Sqrt[2]*A*b*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 2*Sqrt[2
]*a*B*Sqrt[c]*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b -
Sqrt[b^2 - 4*a*c]]])/(2*a*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]])
+ ((-(Sqrt[2]*A*b^2*Sqrt[c]) - 4*Sqrt[2]*a*b*B*Sqrt[c] + 12*Sqrt[2]*a*A*c^(
```

```
3/2) + Sqrt[2]*A*b*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 2*Sqrt[2]*a*B*Sqrt[c]*Sqrt[b
^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])
/(2*a*(b^2 - 4*a*c)^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 3.79, size = 4884, normalized size = 16.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(1/2)*(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*
a^2*b*c)*x)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*
A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c + (a^3*b^6
 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*
b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*
B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^
2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3
))*log(sqrt(1/2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b^7 + A^3*b^8 +
 864*A^3*a^4*c^4 - 48*(2*A*B^2*a^5 + 7*A^2*B*a^4*b + 14*A^3*a^3*b^2)*c^3 +
2*(8*B^3*a^5*b + 48*A*B^2*a^4*b^2 + 108*A^2*B*a^3*b^3 + 95*A^3*a^2*b^4)*c^2
 - (8*B^3*a^4*b^3 + 30*A*B^2*a^3*b^4 + 45*A^2*B*a^2*b^5 + 23*A^3*a*b^6)*c -
 (B*a^4*b^8 + A*a^3*b^9 + 144*A*a^5*b^5*c^2 - 256*(B*a^8 - 2*A*a^7*b)*c^4 +
 64*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B*a^5*b^6 + 5*A*a^4*b^7)*c)*sqrt
((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 8
1*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 -
12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*
b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a
^2*b^2 - 5*A^2*a*b^3)*c + (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6
*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A
^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(
a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b
^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)) + 2*(324*A^4*a^2*c^4 - 81*(4*A^3*B*a^2
*b + A^4*a*b^2)*c^3 - (4*B^4*a^4 - 20*A*B^3*a^3*b - 84*A^2*B^2*a^2*b^2 - 65
*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b^2 + 3*A*B^3*a^2*b^3 + 3*A^2*B^
2*a*b^4 + A^3*B*b^5)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^2 - 4*a^3*c + (a*b^2*c
- 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4
+ A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b
^2 - 5*A^2*a*b^3)*c + (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3
)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b
^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*
b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c
 + 48*a^5*b^2*c^2 - 64*a^6*c^3))*log(-sqrt(1/2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*
b^6 + 3*A^2*B*a*b^7 + A^3*b^8 + 864*A^3*a^4*c^4 - 48*(2*A*B^2*a^5 + 7*A^2*B
*a^4*b + 14*A^3*a^3*b^2)*c^3 + 2*(8*B^3*a^5*b + 48*A*B^2*a^4*b^2 + 108*A^2*
B*a^3*b^3 + 95*A^3*a^2*b^4)*c^2 - (8*B^3*a^4*b^3 + 30*A*B^2*a^3*b^4 + 45*A^
2*B*a^2*b^5 + 23*A^3*a*b^6)*c - (B*a^4*b^8 + A*a^3*b^9 + 144*A*a^5*b^5*c^2
- 256*(B*a^8 - 2*A*a^7*b)*c^4 + 64*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B
*a^5*b^6 + 5*A*a^4*b^7)*c)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^
2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^
2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3))
)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)
*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c + (a^3*b^6 - 12*a^4*
b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*
B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 +
2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64
*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)) + 2*(32
4*A^4*a^2*c^4 - 81*(4*A^3*B*a^2*b + A^4*a*b^2)*c^3 - (4*B^4*a^4 - 20*A*B^3*
a^3*b - 84*A^2*B^2*a^2*b^2 - 65*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b
^2 + 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4 + A^3*B*b^5)*c)*sqrt(x)) + sqrt(1/2)
```

```
*(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x)*sq
rt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2
 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c - (a^3*b^6 - 12*a^4*b^4*
c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*
a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^
3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9
*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3))*log(sqrt(1/
2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b^7 + A^3*b^8 + 864*A^3*a^4*c
^4 - 48*(2*A*B^2*a^5 + 7*A^2*B*a^4*b + 14*A^3*a^3*b^2)*c^3 + 2*(8*B^3*a^5*b
 + 48*A*B^2*a^4*b^2 + 108*A^2*B*a^3*b^3 + 95*A^3*a^2*b^4)*c^2 - (8*B^3*a^4*
b^3 + 30*A*B^2*a^3*b^4 + 45*A^2*B*a^2*b^5 + 23*A^3*a*b^6)*c + (B*a^4*b^8 +
A*a^3*b^9 + 144*A*a^5*b^5*c^2 - 256*(B*a^8 - 2*A*a^7*b)*c^4 + 64*(2*B*a^7*b
^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B*a^5*b^6 + 5*A*a^4*b^7)*c)*sqrt((B^4*a^4 + 4*
A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2
- 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c +
 48*a^8*b^2*c^2 - 64*a^9*c^3)))*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5
- 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2
*a*b^3)*c - (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^
4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^
4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a
^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*
b^2*c^2 - 64*a^6*c^3)) + 2*(324*A^4*a^2*c^4 - 81*(4*A^3*B*a^2*b + A^4*a*b^2
)*c^3 - (4*B^4*a^4 - 20*A*B^3*a^3*b - 84*A^2*B^2*a^2*b^2 - 65*A^3*B*a*b^3 -
 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b^2 + 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4 + A^3*
B*b^5)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x
^2 + (a*b^3 - 4*a^2*b*c)*x)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12
*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b
^3)*c - (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^
4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^
2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b
^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*
c^2 - 64*a^6*c^3))*log(-sqrt(1/2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*b^6 + 3*A^2*B*
a*b^7 + A^3*b^8 + 864*A^3*a^4*c^4 - 48*(2*A*B^2*a^5 + 7*A^2*B*a^4*b + 14*A^
3*a^3*b^2)*c^3 + 2*(8*B^3*a^5*b + 48*A*B^2*a^4*b^2 + 108*A^2*B*a^3*b^3 + 95
*A^3*a^2*b^4)*c^2 - (8*B^3*a^4*b^3 + 30*A*B^2*a^3*b^4 + 45*A^2*B*a^2*b^5 +
23*A^3*a*b^6)*c + (B*a^4*b^8 + A*a^3*b^9 + 144*A*a^5*b^5*c^2 - 256*(B*a^8 -
 2*A*a^7*b)*c^4 + 64*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B*a^5*b^6 + 5*A
*a^4*b^7)*c)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*
b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^
2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))*sqrt(-(B^2*a
^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^
2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c - (a^3*b^6 - 12*a^4*b^4*c + 48*a^5
*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 +
4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b
+ A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a
^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)) + 2*(324*A^4*a^2*c^4
- 81*(4*A^3*B*a^2*b + A^4*a*b^2)*c^3 - (4*B^4*a^4 - 20*A*B^3*a^3*b - 84*A^2
*B^2*a^2*b^2 - 65*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b^2 + 3*A*B^3*a
^2*b^3 + 3*A^2*B^2*a*b^4 + A^3*B*b^5)*c)*sqrt(x)) - 2*(B*a*b - A*b^2 + 2*A*
a*c + (2*B*a - A*b)*c*x)*sqrt(x))/(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2
)*x^2 + (a*b^3 - 4*a^2*b*c)*x)
```

giac [B] time = 1.81, size = 4434, normalized size = 14.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] -(2*B*a*c*x^(3/2) - A*b*c*x^(3/2) + B*a*b*sqrt(x) - A*b^2*sqrt(x) + 2*A*a*c
```

*sqrt(x))/((a*b^2 - 4*a^2*c)*(c*x^2 + b*x + a)) - 1/8*((2*b^3*c^2 - 8*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*c^2)*(a*b^2 - 4*a^2*c)^2*A - 2*(2*a*b^2*c^2 - 8*a^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*(a*b^2 - 4*a^2*c)^2*B - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6 - 14*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*a*b^6*c + 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + 20*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 28*a^2*b^4*c^2 - 96*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^3 - 48*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 128*a^3*b^2*c^3 + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 192*a^4*c^4 + 2*(b^2 - 4*a*c)*a*b^4*c - 20*(b^2 - 4*a*c)*a^2*b^2*c^2 + 48*(b^2 - 4*a*c)*a^3*c^3)*A*abs(a*b^2 - 4*a^2*c) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c - 2*a^2*b^5*c + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + 16*a^3*b^3*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 32*a^4*b*c^3 + 2*(b^2 - 4*a*c)*a^2*b^3*c - 8*(b^2 - 4*a*c)*a^3*b*c^2)*B*abs(a*b^2 - 4*a^2*c) + (2*a^2*b^7*c^2 - 40*a^3*b^5*c^3 + 224*a^4*b^3*c^4 - 384*a^5*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c - 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^3 - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a^2*b^5*c^2 + 32*(b^2 - 4*a*c)*a^3*b^3*c^3 - 96*(b^2 - 4*a*c)*a^4*b*c^4)*A + 4*(2*a^3*b^6*c^2 - 16*a^4*b^4*c^3 + 32*a^5*b^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 2*(b^2 - 4*a*c)*a^3*b^4*c^2 + 8*(b^2 - 4*a*c)*a^4*b^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^3 - 4*a^2*b*c + sqrt((a*b^3 - 4*a^2*b*c)^2 - 4*(a^2*b^2 - 4*a^3*c)*(a*b^2*c - 4*a^2*c^2)))/(a*b^2*c - 4*a^2*c^2)))/((a^3*b^6 - 12*a^4*b^4*c - 2*a^3*b^5*c + 48*a^5*b^2*c^2 + 16*a^4*b^3*c^2 + a^3*b^4*c^2 - 64*a^6*c^3 - 32*a^5*b*c^3 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*abs(a*b^2 - 4*a^2*c)*abs(c)) - 1/8*((2*b^3*c^2 - 8*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*c^2)*(a*b^2 - 4*a^2*c)^2*A - 2*(2*a*b^2*c^2 - 8*a^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c

```
)*c)*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*(a*b^2 - 4*a^2*c)^2*B - 2*(sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6 - 14*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a^2*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*a*b^6
*c + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + 20*sqrt(2)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a*b^4*c^2 - 28*a^2*b^4*c^2 - 96*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^4*c^3 - 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 10*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 128*a^3*b^2*c^3 + 24*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 - 192*a^4*c^4 - 2*(b^2 - 4*a
*c)*a*b^4*c + 20*(b^2 - 4*a*c)*a^2*b^2*c^2 - 48*(b^2 - 4*a*c)*a^3*c^3)*A*ab
s(a*b^2 - 4*a^2*c) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5 - 8
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c - 2*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^4*c + 2*a^2*b^5*c + 16*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^4*b*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2
*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 16*a^3*b^3*c^2
 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 32*a^4*b*c^3 - 2*(
b^2 - 4*a*c)*a^2*b^3*c + 8*(b^2 - 4*a*c)*a^3*b*c^2)*B*abs(a*b^2 - 4*a^2*c)
+ (2*a^2*b^7*c^2 - 40*a^3*b^5*c^3 + 224*a^4*b^3*c^4 - 384*a^5*b*c^5 - sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7 + 20*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c + 2*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c - 112*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - 32*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 + 192*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 + 96*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 + 16*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^3 - 48*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a^2*b^
5*c^2 + 32*(b^2 - 4*a*c)*a^3*b^3*c^3 - 96*(b^2 - 4*a*c)*a^4*b*c^4)*A + 4*(2
*a^3*b^6*c^2 - 16*a^4*b^4*c^3 + 32*a^5*b^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^3*b^4*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 2*(b^2 - 4*a*c)*a^3*b^4*c^2 + 8*(b^2 - 4*a*c
)*a^4*b^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^3 - 4*a^2*b*c - sqrt
((a*b^3 - 4*a^2*b*c)^2 - 4*(a^2*b^2 - 4*a^3*c)*(a*b^2*c - 4*a^2*c^2)))/(a*b
^2*c - 4*a^2*c^2)))/((a^3*b^6 - 12*a^4*b^4*c - 2*a^3*b^5*c + 48*a^5*b^2*c^2
 + 16*a^4*b^3*c^2 + a^3*b^4*c^2 - 64*a^6*c^3 - 32*a^5*b*c^3 - 8*a^4*b^2*c^3
 + 16*a^5*c^4)*abs(a*b^2 - 4*a^2*c)*abs(c))
```

maple [B] time = 0.37, size = 1796, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x)
```

```
[Out] 1/2/(4*a*c-b^2)*(-4*a*c+b^2)^(1/2)/a*x^(1/2)/(x+1/2/c*(-4*a*c+b^2)^(1/2)+1/
2*b/c)*A-1/2/(4*a*c-b^2)/a*x^(1/2)/(x+1/2/c*(-4*a*c+b^2)^(1/2)+1/2*b/c)*A*b
+1/(4*a*c-b^2)*x^(1/2)/(x+1/2/c*(-4*a*c+b^2)^(1/2)+1/2*b/c)*B-24*c^3/(4*a*c
-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-16*c^2/
(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2
+3/2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/a/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/
2))*A*b^4-2*c^2/(4*a*c-b^2)/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
```

```
)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-3/2*
c/(4*a*c-b^2)/a/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arct
an(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+4*c^2/(4*a*c-b
^2)*a/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+3*c/(4*a*c-b^2)/(4*a*c+3*b^2
)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^
(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+8*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*a/(4*
a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+6*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/
(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3-1/2/(4*a*c-b^2)*(-4*a*c+b^2)^(
1/2)/a*x^(1/2)/(x+1/2*b/c-1/2/c*(-4*a*c+b^2)^(1/2))*A-1/2/(4*a*c-b^2)/a*x^(
1/2)/(x+1/2*b/c-1/2/c*(-4*a*c+b^2)^(1/2))*A*b+1/(4*a*c-b^2)*x^(1/2)/(x+1/2*
b/c-1/2/c*(-4*a*c+b^2)^(1/2))*B-24*c^3/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*
c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-16*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1
/2)/(4*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+3/2*c/(4*a*c-b^2)/(-4*a
*c+b^2)^(1/2)/a/(4*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4+2*c^2/(4*a*
c-b^2)/(4*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1
/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+3/2*c/(4*a*c-b^2)/a/(4
*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-4*c^2/(4*a*c-b^2)*a/(4*a*c+3*
b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-3*c/(4*a*c-b^2)/(4*a*c+3*b^2)*2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*B*b^2+8*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*a/(4*a*c+3*b^2
)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+6*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*c
+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(Babc + \left(b^2c - 6\,ac^2\right)A\right)x^{\frac{5}{2}} + 2\left(ab^2 - 4\,a^2c\right)A\sqrt{x} + \left(\left(b^3 - 5\,abc\right)A + \left(ab^2 - 2\,a^2c\right)B\right)x^{\frac{3}{2}}}{a^3b^2 - 4\,a^4c + \left(a^2b^2c - 4\,a^3c^2\right)x^2 + \left(a^2b^3 - 4\,a^3bc\right)x} - \int \frac{\left(Babc + \left(b^2c - 6\,ac^2\right)A\right)x^{\frac{3}{2}} + \left(\left(b^3 - 7\,abc\right)A + \left(ab^2 + 2\,a^2c\right)B\right)\sqrt{x}}{2\left(a^3b^2 - 4\,a^4c + \left(a^2b^2c - 4\,a^3c^2\right)x^2 + \left(a^2b^3 - 4\,a^3bc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] ((B*a*b*c + (b^2*c - 6*a*c^2)*A)*x^(5/2) + 2*(a*b^2 - 4*a^2*c)*A*sqrt(x) +
((b^3 - 5*a*b*c)*A + (a*b^2 - 2*a^2*c)*B)*x^(3/2))/(a^3*b^2 - 4*a^4*c + (a^
2*b^2*c - 4*a^3*c^2)*x^2 + (a^2*b^3 - 4*a^3*b*c)*x) - integrate(1/2*((B*a*b
*c + (b^2*c - 6*a*c^2)*A)*x^(3/2) + ((b^3 - 7*a*b*c)*A + (a*b^2 + 2*a^2*c)*
B)*sqrt(x))/(a^3*b^2 - 4*a^4*c + (a^2*b^2*c - 4*a^3*c^2)*x^2 + (a^2*b^3 - 4
*a^3*b*c)*x), x)
```

mupad [B] time = 6.00, size = 12364, normalized size = 40.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] atan(((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^
3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5
*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2
*c^2) - (2*x^(1/2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(
1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^
2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*
```

```
B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c -
b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^
2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^
9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c +
240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))
^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/
(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(
-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 +
 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2
*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*
A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 +
 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a
*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6
 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 -
6144*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^
2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*
B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b
^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) +
2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^
3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^
2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B
^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2
*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12
+ 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*
a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*1i - (((1536*A*a^5*c^6 + 4*A*a*b^8*
c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b
^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 -
 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*(-(A^2*b^11 + B^2
*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1
/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*
a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 -
 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 -
 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a
^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3
*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 +
 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^
2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c)
)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-
(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*
b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 +
 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3
840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b
^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B
*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 -
 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/
2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*
A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2
 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2
) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 -
 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2
*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2
)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 -
 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^
(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240
*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1
/2)*1i)/((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6
*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*
b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*
b^2*c^2) - (2*x^(1/2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9
```

)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7
*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 5
12*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c
 - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6
*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^
2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c
 + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5
)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4
))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^
2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^1
0 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*
B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c -
 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^
4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*
B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*
c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4
 - 6144*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8
*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40
*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^
2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2)
 + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4
*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27
*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 76
8*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*
b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^
12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 38
40*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) + (((1536*A*a^5*c^6 + 4*A*a*b^8*
c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b
^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 -
 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*(-(A^2*b^11 + B^2
*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1
/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*
a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 -
 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 -
 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a
^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3
*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 +
 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^
2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c)
)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-
(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*
b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 +
 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3
840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b
^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B
*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 -
 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/
2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*
A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2
 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2
) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 -
 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2
*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2
)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 -
 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^
(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240
*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1
/2) + (2*(5*A^3*b^3*c^4 + 8*B^3*a^3*c^4 + 6*B^3*a^2*b^2*c^3 - 36*A^3*a*b*c^
5 + 72*A^2*B*a^2*c^5 - 3*A^2*B*b^4*c^3 + 3*A*B^2*a*b^3*c^3 - 60*A*B^2*a^2*b

*c^4 + 18*A^2*B*a*b^2*c^4))/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b
^2*c^2)))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^
2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*
A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b
^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(
1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A
*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2)
- 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b
^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*2i
+ atan(((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6
*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*
b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*
b^2*c^2) - (2*x^(1/2)*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^
2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*
c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 51
2*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c
- b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*
c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2
)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c
+ 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)
))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4)
)/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2)
- B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10
- 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^
2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9
*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4
- 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*
a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^
6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 -
6144*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B
^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A
*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b
^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) -
2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^
3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^
2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B
^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2
*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12
+ 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*
a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*1i - (((1536*A*a^5*c^6 + 4*A*a*b^8*
c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b
^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 -
64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*((A^2*b^2*(-(4*a*
c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/
2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a
^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 +
27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 +
768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^
5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*
b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 +
3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2
+ 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))
*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4
*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^
5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3
072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 384
0*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4
*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a
^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1

280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/2)
*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^
2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 -
8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 +
B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 15
04*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^
5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9
)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 12
8*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/
2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^
5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)
*1i)/((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^
3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5
*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2
*c^2) - (2*x^(1/2)*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b
^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2
+ 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B
^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b
^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2
+ 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9
)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 2
40*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^
(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(
a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B
^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 2
88*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a
^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^
2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 1
92*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b
*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 -
24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 61
44*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*
a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*
a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)
^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A
*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c
^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a
*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*
a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^
4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4
096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7
*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) + (((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 -
256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5
+ 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^
5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*((A^2*b^2*(-(4*a*c - b^
2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2
*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3
*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2
*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^
2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*
c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 +
4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a
^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*
a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2
b^2(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c -
b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3
- 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*
B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*
a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 +

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 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8
*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^
6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/2)*(72*A
^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^
2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*
b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a
^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2
*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*
c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2
) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*
a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 3
6*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*
c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) + (2*
(5*A^3*b^3*c^4 + 8*B^3*a^3*c^4 + 6*B^3*a^2*b^2*c^3 - 36*A^3*a*b*c^5 + 72*A^
2*B*a^2*c^5 - 3*A^2*B*b^4*c^3 + 3*A*B^2*a*b^3*c^3 - 60*A*B^2*a^2*b*c^4 + 18
*A^2*B*a*b^2*c^4))/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2)))
*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4
*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^
5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3
072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 384
0*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4
*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a
^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1
280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*2i + ((x^(1/
2)*(2*A*a*c - A*b^2 + B*a*b))/(a*(4*a*c - b^2)) - (c*x^(3/2)*(A*b - 2*B*a))
/(a*(4*a*c - b^2)))/(a + b*x + c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**2/x**(1/2),x)
```

```
[Out] Timed out
```

3.946 $\int \frac{A+Bx}{x^{3/2}(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=406

$$-\frac{-10aAc-abB+3Ab^2}{a^2\sqrt{x}\left(b^2-4ac\right)}+\frac{\sqrt{c}\left(aB\left(b\sqrt{b^2-4ac}-12ac+b^2\right)-A\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16abc+3\right.\right.}{\sqrt{2}\,a^2\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

Rubi [A] time = 0.98, antiderivative size = 406, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 828, 826, 1166, 205}

$$-\frac{-10aAc-abB+3Ab^2}{a^2\sqrt{x}\left(b^2-4ac\right)}+\frac{\sqrt{c}\left(aB\left(b\sqrt{b^2-4ac}-12ac+b^2\right)-A\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16abc+3b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,a^2\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{c}\left(aB\left(-b\sqrt{b^2-4ac}-12ac+b^2\right)-A\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}-16abc+3b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\,a^2\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{cx(Ab-2aB)-2aAc-abB+Ab^2}{a\sqrt{x}\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((3*A*b^2 - a*b*B - 10*a*A*c)/(a^2*(b^2 - 4*a*c)*Sqrt[x])) + (A*b^2 - a*b*
B - 2*a*A*c + (A*b - 2*a*B)*c*x)/(a*(b^2 - 4*a*c)*Sqrt[x]*(a + b*x + c*x^2)
) + (Sqrt[c]*(a*B*(b^2 - 12*a*c + b*Sqrt[b^2 - 4*a*c]) - A*(3*b^3 - 16*a*b*
c + 3*b^2*Sqrt[b^2 - 4*a*c] - 10*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sq
rt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^2*(b^2 - 4*a*c)^(3/
2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[c]*(a*B*(b^2 - 12*a*c - b*Sqrt[b^2
- 4*a*c]) - A*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*Sqrt[b^2
 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/
(Sqrt[2]*a^2*(b^2 - 4*a*c)^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^2}\,dx = \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-3Ab^2+abB+10aAc\right)-\frac{3}{2}(Ab-2aB)cx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-aB\left(b^2-6ac\right)+A\left(3b^3 \ldots\right.\right.}{\sqrt{\ldots}}}{a^2 \ldots}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{1}{2}\left(-aB\left(b^2- \ldots\right.\right.\right.}{\ldots}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)} + \frac{\left(c\left(aB\left(b^2-12ac+ \ldots\right.\right.\right.}{\ldots}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)} + \frac{\sqrt{c}\left(aB\left(b^2-12ac+ \ldots\right.\right.}{\ldots}$$

Mathematica [A] time = 1.00, size = 367, normalized size = 0.90

$$\frac{\frac{10aAc+abB-3Ab^2}{a\sqrt{x}}+\frac{A\left(-2ac+b^2+bcx\right)-aB(b+2cx)}{\sqrt{x}\,(a+x(b+cx))}+\frac{\sqrt{c}\left(\frac{\left(A\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}+16abc-3b^3\right)+aB\left(b\sqrt{b^2-4ac}-12ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}-16abc+3b^3\right)+aB\left(b\sqrt{b^2-4ac}+12ac-b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\,a\sqrt{b^2-4ac}}}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-3*A*b^2 + a*b*B + 10*a*A*c)/(a*Sqrt[x]) + (-(a*B*(b + 2*c*x)) + A*(b^2 -
 2*a*c + b*c*x))/(Sqrt[x]*(a + x*(b + c*x))) + (Sqrt[c]*(((a*B*(b^2 - 12*a*
c + b*Sqrt[b^2 - 4*a*c]) + A*(-3*b^3 + 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] +
 10*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[
b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((a*B*(-b^2 + 12*a*c + b*Sqrt
[b^2 - 4*a*c]) + A*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*Sqr
t[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c
```

```
]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*a*Sqrt[b^2 - 4*a*c]))/(a*(b^2 -
 4*a*c))
```

IntegrateAlgebraic [A] time = 2.93, size = 483, normalized size = 1.19

$$-\frac{\left(12a^2Bc^{3/2}-10aAc^{3/2}\sqrt{b^2-4ac}+3Ab^2\sqrt{c}\sqrt{b^2-4ac}-16aAbc^{3/2}-ab^2B\sqrt{c}-abB\sqrt{c}\sqrt{b^2-4ac}+3Ab^3\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}a^2\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\left(-12a^2Bc^{3/2}-10aAc^{3/2}\sqrt{b^2-4ac}+3Ab^2\sqrt{c}\sqrt{b^2-4ac}+16aAbc^{3/2}+ab^2B\sqrt{c}-abB\sqrt{c}\sqrt{b^2-4ac}-3Ab^3\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}a^2\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{-8a^2Ac+2a^2Bcx+2aAb^2-11aAbcx-10aAc^2x^2-ab^2Bx-abBcx^2+3Ab^3x+3Ab^2cx^2}{a^2\sqrt{x}\left(4ac-b^2\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] (2*a*A*b^2 - 8*a^2*A*c + 3*A*b^3*x - a*b^2*B*x - 11*a*A*b*c*x + 2*a^2*B*c*x
 + 3*A*b^2*c*x^2 - a*b*B*c*x^2 - 10*a*A*c^2*x^2)/(a^2*(-b^2 + 4*a*c)*Sqrt[x
]*(a + b*x + c*x^2)) - ((3*A*b^3*Sqrt[c] - a*b^2*B*Sqrt[c] - 16*a*A*b*c^(3/
2) + 12*a^2*B*c^(3/2) + 3*A*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c] - a*b*B*Sqrt[c]*S
qrt[b^2 - 4*a*c] - 10*a*A*c^(3/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c
]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^2*(b^2 - 4*a*c)^(3/2)*S
qrt[b - Sqrt[b^2 - 4*a*c]]) - ((-3*A*b^3*Sqrt[c] + a*b^2*B*Sqrt[c] + 16*a*A
*b*c^(3/2) - 12*a^2*B*c^(3/2) + 3*A*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c] - a*b*B*S
qrt[c]*Sqrt[b^2 - 4*a*c] - 10*a*A*c^(3/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2
]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^2*(b^2 - 4*a*c)
^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 13.29, size = 7597, normalized size = 18.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*((a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 +
(a^3*b^2 - 4*a^4*c)*x)*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4
*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2
*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6
- 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*
a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c
^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a
^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*
a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 -
702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b
^2*c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c
^3))*log(sqrt(1/2)*(B^3*a^3*b^8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*a*b^10 - 27*A^
3*b^11 - 400*(6*A^2*B*a^6 - 13*A^3*a^5*b)*c^5 + 8*(108*B^3*a^7 - 762*A*B^2*
a^6*b + 1956*A^2*B*a^5*b^2 - 1801*A^3*a^4*b^3)*c^4 - (672*B^3*a^6*b^2 - 496
8*A*B^2*a^5*b^3 + 12414*A^2*B*a^4*b^4 - 10549*A^3*a^3*b^5)*c^3 + 5*(38*B^3*
a^5*b^4 - 297*A*B^2*a^4*b^5 + 771*A^2*B*a^3*b^6 - 666*A^3*a^2*b^7)*c^2 - (2
3*B^3*a^4*b^6 - 192*A*B^2*a^3*b^7 + 531*A^2*B*a^2*b^8 - 486*A^3*a*b^9)*c -
(B*a^6*b^9 - 3*A*a^5*b^10 + 1280*A*a^10*c^5 + 128*(4*B*a^10*b - 17*A*a^9*b^
2)*c^4 - 448*(B*a^9*b^3 - 3*A*a^8*b^4)*c^3 + 8*(18*B*a^8*b^5 - 49*A*a^7*b^6
)*c^2 - 5*(4*B*a^7*b^7 - 11*A*a^6*b^8)*c)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*
b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 -
 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 -
 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*
b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*
A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c
^2 - 64*a^13*c^3)))*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*
B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^
3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6 - 1
2*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3
*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4
- 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6
```

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- 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2
*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702
*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*
c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)
) + 2*(2500*A^4*a^3*c^6 + 625*(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)*c^5 - 3*(108*
B^4*a^5 - 756*A*B^3*a^4*b + 1672*A^2*B^2*a^3*b^2 - 909*A^3*B*a^2*b^3 - 657*
A^4*a*b^4)*c^4 + (81*B^4*a^4*b^2 - 647*A*B^3*a^3*b^3 + 1674*A^2*B^2*a^2*b^4
 - 1323*A^3*B*a*b^5 - 189*A^4*b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A*B^3*a^2*b^5 +
 27*A^2*B^2*a*b^6 - 27*A^3*B*b^7)*c^2)*sqrt(x)) - sqrt(1/2)*((a^2*b^2*c - 4
*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 + (a^3*b^2 - 4*a^4*c)*x)*sqrt(-(B
^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5
*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 -
16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2
 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 -
108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3
*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*
B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2
 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b
^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^
6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3))*log(-sqrt(1/2)*(B^3*a^3*b^
8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*a*b^10 - 27*A^3*b^11 - 400*(6*A^2*B*a^6 - 13
*A^3*a^5*b)*c^5 + 8*(108*B^3*a^7 - 762*A*B^2*a^6*b + 1956*A^2*B*a^5*b^2 - 1
801*A^3*a^4*b^3)*c^4 - (672*B^3*a^6*b^2 - 4968*A*B^2*a^5*b^3 + 12414*A^2*B*
a^4*b^4 - 10549*A^3*a^3*b^5)*c^3 + 5*(38*B^3*a^5*b^4 - 297*A*B^2*a^4*b^5 +
771*A^2*B*a^3*b^6 - 666*A^3*a^2*b^7)*c^2 - (23*B^3*a^4*b^6 - 192*A*B^2*a^3*
b^7 + 531*A^2*B*a^2*b^8 - 486*A^3*a*b^9)*c - (B*a^6*b^9 - 3*A*a^5*b^10 + 12
80*A*a^10*c^5 + 128*(4*B*a^10*b - 17*A*a^9*b^2)*c^4 - 448*(B*a^9*b^3 - 3*A*
a^8*b^4)*c^3 + 8*(18*B*a^8*b^5 - 49*A*a^7*b^6)*c^2 - 5*(4*B*a^7*b^7 - 11*A*
a^6*b^8)*c)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108
*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*
a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2
*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 -
98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)
*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))*sqrt(-(B^2
*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(
12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16
*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 -
 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 10
8*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B
*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^
2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 -
 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6
)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^6
- 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)) + 2*(2500*A^4*a^3*c^6 + 625*
(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)*c^5 - 3*(108*B^4*a^5 - 756*A*B^3*a^4*b + 16
72*A^2*B^2*a^3*b^2 - 909*A^3*B*a^2*b^3 - 657*A^4*a*b^4)*c^4 + (81*B^4*a^4*b
^2 - 647*A*B^3*a^3*b^3 + 1674*A^2*B^2*a^2*b^4 - 1323*A^3*B*a*b^5 - 189*A^4*
b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A*B^3*a^2*b^5 + 27*A^2*B^2*a*b^6 - 27*A^3*B*b
^7)*c^2)*sqrt(x)) + sqrt(1/2)*((a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a
^3*b*c)*x^2 + (a^3*b^2 - 4*a^4*c)*x)*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A
^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^
2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)
*c - (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b
^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 +
 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3
 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b
^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*
B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4
*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*
```

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c^2 - 64*a^8*c^3))*log(sqrt(1/2)*(B^3*a^3*b^8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*
a*b^10 - 27*A^3*b^11 - 400*(6*A^2*B*a^6 - 13*A^3*a^5*b)*c^5 + 8*(108*B^3*a^
7 - 762*A*B^2*a^6*b + 1956*A^2*B*a^5*b^2 - 1801*A^3*a^4*b^3)*c^4 - (672*B^3
*a^6*b^2 - 4968*A*B^2*a^5*b^3 + 12414*A^2*B*a^4*b^4 - 10549*A^3*a^3*b^5)*c^
3 + 5*(38*B^3*a^5*b^4 - 297*A*B^2*a^4*b^5 + 771*A^2*B*a^3*b^6 - 666*A^3*a^2
*b^7)*c^2 - (23*B^3*a^4*b^6 - 192*A*B^2*a^3*b^7 + 531*A^2*B*a^2*b^8 - 486*A
^3*a*b^9)*c + (B*a^6*b^9 - 3*A*a^5*b^10 + 1280*A*a^10*c^5 + 128*(4*B*a^10*b
 - 17*A*a^9*b^2)*c^4 - 448*(B*a^9*b^3 - 3*A*a^8*b^4)*c^3 + 8*(18*B*a^8*b^5
- 49*A*a^7*b^6)*c^2 - 5*(4*B*a^7*b^7 - 11*A*a^6*b^8)*c)*sqrt((B^4*a^4*b^4 -
 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625
*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3
*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 +
 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*
a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c +
 48*a^12*b^2*c^2 - 64*a^13*c^3)))*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*
b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 +
 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c
- (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4
- 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 62
5*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 +
3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3
+ 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2
*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c
+ 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2
 - 64*a^8*c^3)) + 2*(2500*A^4*a^3*c^6 + 625*(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)
*c^5 - 3*(108*B^4*a^5 - 756*A*B^3*a^4*b + 1672*A^2*B^2*a^3*b^2 - 909*A^3*B*
a^2*b^3 - 657*A^4*a*b^4)*c^4 + (81*B^4*a^4*b^2 - 647*A*B^3*a^3*b^3 + 1674*A
^2*B^2*a^2*b^4 - 1323*A^3*B*a*b^5 - 189*A^4*b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A
*B^3*a^2*b^5 + 27*A^2*B^2*a*b^6 - 27*A^3*B*b^7)*c^2)*sqrt(x)) - sqrt(1/2)*(
(a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 + (a^3*b^2 - 4*a^4*
c)*x)*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*
a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*
B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c - (a^5*b^6 - 12*a^6*b^4*c +
48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*
B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^
2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^
5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*
(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5
 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*
c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3))*log(-sqrt(1/
2)*(B^3*a^3*b^8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*a*b^10 - 27*A^3*b^11 - 400*(6*
A^2*B*a^6 - 13*A^3*a^5*b)*c^5 + 8*(108*B^3*a^7 - 762*A*B^2*a^6*b + 1956*A^2
*B*a^5*b^2 - 1801*A^3*a^4*b^3)*c^4 - (672*B^3*a^6*b^2 - 4968*A*B^2*a^5*b^3
+ 12414*A^2*B*a^4*b^4 - 10549*A^3*a^3*b^5)*c^3 + 5*(38*B^3*a^5*b^4 - 297*A*
B^2*a^4*b^5 + 771*A^2*B*a^3*b^6 - 666*A^3*a^2*b^7)*c^2 - (23*B^3*a^4*b^6 -
192*A*B^2*a^3*b^7 + 531*A^2*B*a^2*b^8 - 486*A^3*a*b^9)*c + (B*a^6*b^9 - 3*A
*a^5*b^10 + 1280*A*a^10*c^5 + 128*(4*B*a^10*b - 17*A*a^9*b^2)*c^4 - 448*(B*
a^9*b^3 - 3*A*a^8*b^4)*c^3 + 8*(18*B*a^8*b^5 - 49*A*a^7*b^6)*c^2 - 5*(4*B*a
^7*b^7 - 11*A*a^6*b^8)*c)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2
*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a
^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b
 + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*
B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 +
459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3
)))*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^
3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^
2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c - (a^5*b^6 - 12*a^6*b^4*c + 48
*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^
2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*
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a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*
b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9
*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 +
 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^
3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)) + 2*(2500*A^4*
a^3*c^6 + 625*(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)*c^5 - 3*(108*B^4*a^5 - 756*A*
B^3*a^4*b + 1672*A^2*B^2*a^3*b^2 - 909*A^3*B*a^2*b^3 - 657*A^4*a*b^4)*c^4 +
 (81*B^4*a^4*b^2 - 647*A*B^3*a^3*b^3 + 1674*A^2*B^2*a^2*b^4 - 1323*A^3*B*a*
b^5 - 189*A^4*b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A*B^3*a^2*b^5 + 27*A^2*B^2*a*b^
6 - 27*A^3*B*b^7)*c^2)*sqrt(x)) + 2*(2*A*a*b^2 - 8*A*a^2*c - (10*A*a*c^2 +
(B*a*b - 3*A*b^2)*c)*x^2 - (B*a*b^2 - 3*A*b^3 - (2*B*a^2 - 11*A*a*b)*c)*x)*
sqrt(x))/((a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 + (a^3*b^
2 - 4*a^4*c)*x)
```

giac [B] time = 2.21, size = 5405, normalized size = 13.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (B*a*b*c*x^2 - 3*A*b^2*c*x^2 + 10*A*a*c^2*x^2 + B*a*b^2*x - 3*A*b^3*x - 2*B
*a^2*c*x + 11*A*a*b*c*x - 2*A*a*b^2 + 8*A*a^2*c)/((a^2*b^2 - 4*a^3*c)*(c*x^
(5/2) + b*x^(3/2) + a*sqrt(x))) - 1/8*((6*b^4*c^2 - 44*a*b^2*c^3 + 80*a^2*c
^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 + 22*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 6*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c - 40*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 20*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^3 - 6*(b^2 - 4*a*c)*b^2*c^2 + 20*(b^2
- 4*a*c)*a*c^3)*(a^2*b^2 - 4*a^3*c)^2*A - (2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a^2*
b^2 - 4*a^3*c)^2*B + 2*(3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7 -
 37*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 6*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c - 6*a^2*b^7*c + 152*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^4*b^3*c^2 + 50*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^3*b^4*c^2 + 3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 + 74*a^
3*b^5*c^2 - 208*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 - 104*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 25*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^3*b^3*c^3 - 304*a^4*b^3*c^3 + 52*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^4*b*c^4 + 416*a^5*b*c^4 + 6*(b^2 - 4*a*c)*a^2*b^5*c -
50*(b^2 - 4*a*c)*a^3*b^3*c^2 + 104*(b^2 - 4*a*c)*a^4*b*c^3)*A*abs(a^2*b^2 -
 4*a^3*c) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6 - 14*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^3*b^5*c - 2*a^3*b^6*c + 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^5*b^2*c^2 + 20*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2
+ sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 + 28*a^4*b^4*c^2 - 96
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*c^3 - 48*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^5*b*c^3 - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^4*b^2*c^3 - 128*a^5*b^2*c^3 + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^5*c^4 + 192*a^6*c^4 + 2*(b^2 - 4*a*c)*a^3*b^4*c - 20*(b^2 - 4*a*c)*a^4*b^2
*c^2 + 48*(b^2 - 4*a*c)*a^5*c^3)*B*abs(a^2*b^2 - 4*a^3*c) + (6*a^4*b^8*c^2
- 80*a^5*b^6*c^3 + 352*a^6*b^4*c^4 - 512*a^7*b^2*c^5 - 3*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*
```

```
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^4 - 6*(b^2 - 4*a*c)*a^4*b^6*c^2
+ 56*(b^2 - 4*a*c)*a^5*b^4*c^3 - 128*(b^2 - 4*a*c)*a^6*b^2*c^4)*A - (2*a^5*
b^7*c^2 - 40*a^6*b^5*c^3 + 224*a^7*b^3*c^4 - 384*a^8*b*c^5 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7 + 20*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c - 112*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 + 192*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^3 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b*c^4 - 2*(b^2 - 4*a*c)*a^5*b^5*c^2 + 3
2*(b^2 - 4*a*c)*a^6*b^3*c^3 - 96*(b^2 - 4*a*c)*a^7*b*c^4)*B)*arctan(2*sqrt(
1/2)*sqrt(x)/sqrt((a^2*b^3 - 4*a^3*b*c + sqrt((a^2*b^3 - 4*a^3*b*c)^2 - 4*(
a^3*b^2 - 4*a^4*c)*(a^2*b^2*c - 4*a^3*c^2)))/(a^2*b^2*c - 4*a^3*c^2)))/((a^
5*b^6 - 12*a^6*b^4*c - 2*a^5*b^5*c + 48*a^7*b^2*c^2 + 16*a^6*b^3*c^2 + a^5*
b^4*c^2 - 64*a^8*c^3 - 32*a^7*b*c^3 - 8*a^6*b^2*c^3 + 16*a^7*c^4)*abs(a^2*b
^2 - 4*a^3*c)*abs(c)) + 1/8*((6*b^4*c^2 - 44*a*b^2*c^3 + 80*a^2*c^4 - 3*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4 + 22*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 6*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c - 40*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a*c^3 - 6*(b^2 - 4*a*c)*b^2*c^2 + 20*(b^2 - 4*a*c)*a
*c^3)*(a^2*b^2 - 4*a^3*c)^2*A - (2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a^2*b^2 - 4*a^
3*c)^2*B - 2*(3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7 - 37*sqrt(2
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 6*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^6*c + 6*a^2*b^7*c + 152*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a^4*b^3*c^2 + 50*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^
2 + 3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 - 74*a^3*b^5*c^2
- 208*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 - 104*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 25*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^3*b^3*c^3 + 304*a^4*b^3*c^3 + 52*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^4*b*c^4 - 416*a^5*b*c^4 - 6*(b^2 - 4*a*c)*a^2*b^5*c + 50*(b^2 -
4*a*c)*a^3*b^3*c^2 - 104*(b^2 - 4*a*c)*a^4*b*c^3)*A*abs(a^2*b^2 - 4*a^3*c)
+ 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6 - 14*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^3*b^5*c + 2*a^3*b^6*c + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*
b^2*c^2 + 20*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 + sqrt(2)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 - 28*a^4*b^4*c^2 - 96*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*c^3 - 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^5*b*c^3 - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3
 + 128*a^5*b^2*c^3 + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*c^4 - 1
92*a^6*c^4 - 2*(b^2 - 4*a*c)*a^3*b^4*c + 20*(b^2 - 4*a*c)*a^4*b^2*c^2 - 48*
(b^2 - 4*a*c)*a^5*c^3)*B*abs(a^2*b^2 - 4*a^3*c) + (6*a^4*b^8*c^2 - 80*a^5*b
^6*c^3 + 352*a^6*b^4*c^4 - 512*a^7*b^2*c^5 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
```

```
*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^4 - 6*(b^2 - 4*a*c)*a^4*b^6*c^2 + 56*(b^2
- 4*a*c)*a^5*b^4*c^3 - 128*(b^2 - 4*a*c)*a^6*b^2*c^4)*A - (2*a^5*b^7*c^2 -
40*a^6*b^5*c^3 + 224*a^7*b^3*c^4 - 384*a^8*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^7 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c - 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^8*b*c^3 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b*c^4 - 2*(b^2 - 4*a*c)*a^5*b^5*c^2 + 32*(b^2 - 4
*a*c)*a^6*b^3*c^3 - 96*(b^2 - 4*a*c)*a^7*b*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(
x)/sqrt((a^2*b^3 - 4*a^3*b*c - sqrt((a^2*b^3 - 4*a^3*b*c)^2 - 4*(a^3*b^2 -
4*a^4*c)*(a^2*b^2*c - 4*a^3*c^2)))/(a^2*b^2*c - 4*a^3*c^2)))/((a^5*b^6 - 12
*a^6*b^4*c - 2*a^5*b^5*c + 48*a^7*b^2*c^2 + 16*a^6*b^3*c^2 + a^5*b^4*c^2 -
64*a^8*c^3 - 32*a^7*b*c^3 - 8*a^6*b^2*c^3 + 16*a^7*c^4)*abs(a^2*b^2 - 4*a^3
*c)*abs(c))
```

maple [B] time = 0.10, size = 1273, normalized size = 3.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -2/a/(c*x^2+b*x+a)*c^2/(4*a*c-b^2)*x^(3/2)*A+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b
^2)*x^(3/2)*A*b^2-1/a/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x^(3/2)*B*b-3/a/(c*x^2+b*
x+a)/(4*a*c-b^2)*x^(1/2)*A*b*c+1/a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*A*b^
3+2/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*B*c-1/a/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(
1/2)*B*b^2-5/a*c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+3/2/a^2*c/(4*a*c-
b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*A*b-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*A*b^3-1/2/a*c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-
6*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+1/2/a*c/(4*
a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan
(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+5/a*c^2/(4*a*c-b
^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-3/2/a^2*c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b^2+8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*A*b-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1
/2))*A*b^3+1/2/a*c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
```

```
ctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-6*c^2/(4*a*c
-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+1/2/a*c/(4*a*c-b^2)/
(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-2*A/a^2/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(\left(3\,b^{3}c-13\,abc^{2}\right)A-\left(ab^{2}c-6\,a^{2}c^{2}\right)B\right)x^{\frac{5}{2}}+\left(\left(3\,b^{4}-10\,ab^{2}c-10\,a^{2}c^{2}\right)A-\left(ab^{3}-5\,a^{2}bc\right)B\right)x^{\frac{3}{2}}+\frac{2\left(a^{2}b^{2}-4\,a^{3}c\right)A}{\sqrt{x}}+2\left(3\left(ab^{3}-4\,a^{2}bc\right)A-\left(a^{2}b^{2}-4\,a^{3}c\right)B\right)\sqrt{x}}{a^{4}b^{2}-4\,a^{5}c+\left(a^{3}b^{2}c-4\,a^{4}c^{2}\right)x^{2}+\left(a^{3}b^{3}-4\,a^{4}bc\right)x}+\int\frac{\left(\left(3\,b^{3}c-13\,abc^{2}\right)A-\left(ab^{2}c-6\,a^{2}c^{2}\right)B\right)x^{\frac{3}{2}}+\left(\left(3\,b^{4}-16\,ab^{2}c+10\,a^{2}c^{2}\right)A-\left(ab^{3}-7\,a^{2}bc\right)B\right)\sqrt{x}}{2\left(a^{4}b^{2}-4\,a^{5}c+\left(a^{3}b^{2}c-4\,a^{4}c^{2}\right)x^{2}+\left(a^{3}b^{3}-4\,a^{4}bc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -(((3*b^3*c - 13*a*b*c^2)*A - (a*b^2*c - 6*a^2*c^2)*B)*x^(5/2) + ((3*b^4 -
10*a*b^2*c - 10*a^2*c^2)*A - (a*b^3 - 5*a^2*b*c)*B)*x^(3/2) + 2*(a^2*b^2 -
4*a^3*c)*A/sqrt(x) + 2*(3*(a*b^3 - 4*a^2*b*c)*A - (a^2*b^2 - 4*a^3*c)*B)*sq
rt(x))/(a^4*b^2 - 4*a^5*c + (a^3*b^2*c - 4*a^4*c^2)*x^2 + (a^3*b^3 - 4*a^4*
b*c)*x) + integrate(1/2*(((3*b^3*c - 13*a*b*c^2)*A - (a*b^2*c - 6*a^2*c^2)*
B)*x^(3/2) + ((3*b^4 - 16*a*b^2*c + 10*a^2*c^2)*A - (a*b^3 - 7*a^2*b*c)*B)*
sqrt(x))/(a^4*b^2 - 4*a^5*c + (a^3*b^2*c - 4*a^4*c^2)*x^2 + (a^3*b^3 - 4*a^
4*b*c)*x), x)
```

mupad [B] time = 6.70, size = 17623, normalized size = 43.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] - ((2*A)/a - (x*(3*A*b^3 - B*a*b^2 + 2*B*a^2*c - 11*A*a*b*c))/(a^2*(4*a*c -
 b^2)) + (c*x^2*(10*A*a*c - 3*A*b^2 + B*a*b))/(a^2*(4*a*c - b^2)))/(a*x^(1/
2) + b*x^(3/2) + c*x^(5/2)) - atan(((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2
*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c
^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^
8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B
^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8
*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b
^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(
-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a
^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2
*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*
a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c
^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a
^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 80
64*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2
*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) +
152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12
+ 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840
*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*
b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9
*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^
5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9
)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4
 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*
b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*
B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^
6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c
- b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1
/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*
a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c
```

^8 + 8*a^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b
^7*c^5 + 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 5324
8*A*a^14*b*c^8 + 12*A*a^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c
^4 - 16000*A*a^11*b^7*c^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4
*B*a^9*b^12*c^2 + 104*B*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b
^6*c^5 - 20480*B*a^13*b^4*c^6 + 34816*B*a^14*b^2*c^7))*(-(9*A^2*b^13 + B^2*
a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2
*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^
3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^
2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3
*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*
a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 154
8*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*
B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*
a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9
)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1
280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*1i + (x^(1/
2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*
a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^1
0*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^
4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 -
12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*
B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*
b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2
077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800
*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-
(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*
B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^
6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^
(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4
 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*
a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a
c - b^2)^9)^(1/2))/(8(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*
b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*
(24576*B*a^15*c^8 + x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a
*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^
7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4
*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b
^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 -
213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*
c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*
B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^
2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A
*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 409
6*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*
b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 -
192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5
*c^6 - 49152*a^15*b^3*c^7) - 53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A
*a^9*b^11*c^3 - 2960*A*a^10*b^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b
^5*c^6 + 78848*A*a^13*b^3*c^7 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 11
20*B*a^11*b^8*c^4 - 6400*B*a^12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^
14*b^2*c^7))*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1
/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A
^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^
(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B
^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*
c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3
c(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 -
 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c -

b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*1i)/((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 53248*A*a^14*b*c^8 + 12*A*a^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c^4 - 16000*A*a^11*b^7*c^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4*B*a^9*b^12*c^2 + 104*B*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b^6*c^5 - 20480*B*a^13*b^4*c^6 + 34816*B*a^14*b^2*c^7))*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2) - (x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*

c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a
^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548
*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B
*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a
*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)
^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 12
80*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(24576*B*a^1
5*c^8 + x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)
^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 3024
0*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^
9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 150
4*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^
11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*
a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^
3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c
 - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*
c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 -
 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 61
44*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^1
1*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 49152
*a^15*b^3*c^7) - 53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A*a^9*b^11*c^
3 - 2960*A*a^10*b^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b^5*c^6 + 788
48*A*a^13*b^3*c^7 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 1120*B*a^11*b^
8*c^4 - 6400*B*a^12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^14*b^2*c^7))
*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*
a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c
^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*
a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c
^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^
2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c
 - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a
^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2
) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*
b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c
 + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5
)))^(1/2) + 32000*A^3*a^10*c^9 + 126*A^3*a^6*b^8*c^5 - 2028*A^3*a^7*b^6*c^6
 + 12176*A^3*a^8*b^4*c^7 - 32320*A^3*a^9*b^2*c^8 - 10*B^3*a^8*b^7*c^4 + 152
*B^3*a^9*b^5*c^5 - 736*B^3*a^10*b^3*c^6 + 11520*A*B^2*a^11*c^8 + 1152*B^3*a
^11*b*c^7 - 21120*A^2*B*a^10*b*c^8 + 60*A*B^2*a^7*b^8*c^4 - 948*A*B^2*a^8*b
^6*c^5 + 5424*A*B^2*a^9*b^4*c^6 - 13248*A*B^2*a^10*b^2*c^7 - 90*A^2*B*a^6*b
^9*c^4 + 1434*A^2*B*a^7*b^7*c^5 - 8472*A^2*B*a^8*b^5*c^6 + 21984*A^2*B*a^9*
b^3*c^7))*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*
a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/
2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*
a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c +
 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*
(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22
400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2
)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44
*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^
6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^1
0*b^2*c^5)))^(1/2)*2i - atan(((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*
c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 1
7920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*
B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^1
1*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c
^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7
 + 29696*A*B*a^12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b

^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(x^(1/2)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 53248*A*a^14*b*c^8 + 12*A*a^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c^4 - 16000*A*a^11*b^7*c^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4*B*a^9*b^12*c^2 + 104*B*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b^6*c^5 - 20480*B*a^13*b^4*c^6 + 34816*B*a^14*b^2*c^7))*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*1i + (x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(24576*B*a^15*c^8 + x^(1/2)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)

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^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 15
04*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b
^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2
*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c
^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*
c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10
*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6
- 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6
144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^
11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 4915
2*a^15*b^3*c^7) - 53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A*a^9*b^11*c
^3 - 2960*A*a^10*b^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b^5*c^6 + 78
848*A*a^13*b^3*c^7 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 1120*B*a^11*b
^8*c^4 - 6400*B*a^12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^14*b^2*c^7)
)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*
a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c
^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*
a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c
^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^
2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c
- b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a
^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2
) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*
b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c
+ 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5
)))^(1/2)*1i)/((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^
6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^
6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^
3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 870
4*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a
^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^
12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^1
3 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2
*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1
/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2
*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c
- 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c
*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 2
2400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^
2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 4
4*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a
^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^
10*b^2*c^5)))^(1/2)*(x^(1/2)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2
*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^
7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4
*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b
^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 +
213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*
c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*
B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^
2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A
*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 409
6*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*
b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 -
192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5
*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 53248*A*a^14*b*c^8 + 12*A*a
^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c^4 - 16000*A*a^11*b^7*c
^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4*B*a^9*b^12*c^2 + 104*B
*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b^6*c^5 - 20480*B*a^13*b
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^4*c^6 + 34816*B*a^14*b^2*c^7))*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*
a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3
*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^
4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6
 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7
*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064
*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a
*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 15
2*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 +
4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a
^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2) - (x^(1/2)*(25600*A^2*a^12*c^9 - 92
16*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8
*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*
b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 -
3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A
*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*
a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*
A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^
2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288
*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*
a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*
B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2
 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 5
1*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/
2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*
b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 +
 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(24576*B*a^15*c^8 + x^(1/2)*
((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*
b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4
 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^
2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3
 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*
a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c -
b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5
*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2)
- 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*
c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c +
240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5))
)^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12
*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) -
53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A*a^9*b^11*c^3 - 2960*A*a^10*b
^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b^5*c^6 + 78848*A*a^13*b^3*c^7
 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 1120*B*a^11*b^8*c^4 - 6400*B*a^
12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^14*b^2*c^7))*((9*A^2*b^4*(-(4
*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*
a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5
*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c -
 b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*
b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B
^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) +
1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720
*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-
(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2
)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2
- 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2) + 32000*
A^3*a^10*c^9 + 126*A^3*a^6*b^8*c^5 - 2028*A^3*a^7*b^6*c^6 + 12176*A^3*a^8*b
^4*c^7 - 32320*A^3*a^9*b^2*c^8 - 10*B^3*a^8*b^7*c^4 + 152*B^3*a^9*b^5*c^5 -
```

```
 736*B^3*a^10*b^3*c^6 + 11520*A*B^2*a^11*c^8 + 1152*B^3*a^11*b*c^7 - 21120*
A^2*B*a^10*b*c^8 + 60*A*B^2*a^7*b^8*c^4 - 948*A*B^2*a^8*b^6*c^5 + 5424*A*B^
2*a^9*b^4*c^6 - 13248*A*B^2*a^10*b^2*c^7 - 90*A^2*B*a^6*b^9*c^4 + 1434*A^2*
B*a^7*b^7*c^5 - 8472*A^2*B*a^8*b^5*c^6 + 21984*A^2*B*a^9*b^3*c^7))*((9*A^2*
b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2
077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800
*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-
(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*
B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^
6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^
(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4
 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*
a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a
*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*
b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*
2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.947 $\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=521

$$-\frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\sqrt{x}\left(b^2-4ac\right)}-\frac{-14aAc-3abB+5Ab^2}{3a^2x^{3/2}\left(b^2-4ac\right)}-\frac{\sqrt{c}\left(aB\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16a\right.\right.}{}$$

Rubi [A] time = 1.56, antiderivative size = 521, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 828, 826, 1166, 205}

$$-\frac{\sqrt{c}\left(aB\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16abc+3b^3\right)-A\left(28a^2c^2+5b^3\sqrt{b^2-4ac}-29ab^2c-19abc\sqrt{b^2-4ac}+5b^4\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}a^3\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{c}\left(aB\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}-16abc+3b^3\right)-A\left(28a^2c^2-5b^3\sqrt{b^2-4ac}-29ab^2c+19abc\sqrt{b^2-4ac}+5b^4\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}a^3\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{-14aAc-3abB+5Ab^2}{3a^2x^{3/2}\left(b^2-4ac\right)}-\frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\sqrt{x}\left(b^2-4ac\right)}+\frac{cx(Ab-2aB)-2aAc-abB+Ab^2}{ax^{3/2}\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -(5*A*b^2 - 3*a*b*B - 14*a*A*c)/(3*a^2*(b^2 - 4*a*c)*x^(3/2)) - (a*B*(3*b^2
 - 10*a*c) - A*(5*b^3 - 19*a*b*c))/(a^3*(b^2 - 4*a*c)*Sqrt[x]) + (A*b^2 - a
*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x)/(a*(b^2 - 4*a*c)*x^(3/2)*(a + b*x + c*x
^2)) - (Sqrt[c]*(a*B*(3*b^3 - 16*a*b*c + 3*b^2*Sqrt[b^2 - 4*a*c] - 10*a*c*S
qrt[b^2 - 4*a*c]) - A*(5*b^4 - 29*a*b^2*c + 28*a^2*c^2 + 5*b^3*Sqrt[b^2 - 4
*a*c] - 19*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[
b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^3*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2
 - 4*a*c]]) + (Sqrt[c]*(a*B*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 1
0*a*c*Sqrt[b^2 - 4*a*c]) - A*(5*b^4 - 29*a*b^2*c + 28*a^2*c^2 - 5*b^3*Sqrt[
b^2 - 4*a*c] + 19*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x]
)/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^3*(b^2 - 4*a*c)^(3/2)*Sqrt[b + S
qrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)^2}\,dx = \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)x^{3/2}\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-5Ab^2+3abB+14aAc\right)-\frac{5}{2}(Ab-2aB)cx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)x^{3/2}\left(a+bx+cx^2\right)} - \int \frac{\frac{1}{2}\left(-aB\left(3b^2-10ac\right)+A\right.}{}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc}{a\left(b^2-4ac\right)x^{3/2}\left(\right.}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc}{a\left(b^2-4ac\right)x^{3/2}\left(\right.}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc}{a\left(b^2-4ac\right)x^{3/2}\left(\right.}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2aAc}{a\left(b^2-4ac\right)x^{3/2}\left(\right.}$$

Mathematica [A] time = 1.83, size = 473, normalized size = 0.91

$$\frac{\frac{\frac{3\sqrt{c}\left(\frac{\left(A\left(28a^2c^2-29ab^2c-19abc\sqrt{b^2-4ac}+5b^3\sqrt{b^2-4ac}+5b^4\right)+aB\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}+16abc-3b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(-28a^2c^2+29ab^2c-19abc\sqrt{b^2-4ac}+5b^3\sqrt{b^2-4ac}-5b^4\right)+aB\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}-16abc+3b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{b^2-4ac}}+\frac{3\left(A\left(5b^3-19abc\right)+aB\left(10ac-3b^2\right)\right)}{\sqrt{x}}}{a^2}+\frac{14aAc+3abB-5Ab^2}{ax^{3/2}}+\frac{3A\left(-2ac+b^2+bcx\right)-3aB(b+2cx)}{x^{3/2}(a+x(b+cx))}}{3a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-5*A*b^2 + 3*a*b*B + 14*a*A*c)/(a*x^(3/2)) + (-3*a*B*(b + 2*c*x) + 3*A*(b
^2 - 2*a*c + b*c*x))/(x^(3/2)*(a + x*(b + c*x))) + ((3*(a*B*(-3*b^2 + 10*a*
c) + A*(5*b^3 - 19*a*b*c)))/Sqrt[x] + (3*Sqrt[c]*(((a*B*(-3*b^3 + 16*a*b*c
```

```
- 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*Sqrt[b^2 - 4*a*c]) + A*(5*b^4 - 29*a*b^2
*c + 28*a^2*c^2 + 5*b^3*Sqrt[b^2 - 4*a*c] - 19*a*b*c*Sqrt[b^2 - 4*a*c]))*Ar
cTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[
b^2 - 4*a*c]] + ((a*B*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*
Sqrt[b^2 - 4*a*c]) + A*(-5*b^4 + 29*a*b^2*c - 28*a^2*c^2 + 5*b^3*Sqrt[b^2 -
 4*a*c] - 19*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqr
t[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*Sqrt[b^2
- 4*a*c]))/a^2)/(3*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 4.80, size = 726, normalized size = 1.39

$$\frac{\left(28\sqrt{2}a^2Ac^{5/2}+10\sqrt{2}a^2Bc^{3/2}\sqrt{b^2-4ac}+16\sqrt{2}a^2bBc^{3/2}-29\sqrt{2}aAb^2c^{3/2}-19\sqrt{2}aAbc^{3/2}\sqrt{b^2-4ac}+5\sqrt{2}Ab^3\sqrt{c}\sqrt{b^2-4ac}-3\sqrt{2}ab^3B\sqrt{c}-3\sqrt{2}ab^2B\sqrt{c}\sqrt{b^2-4ac}+5\sqrt{2}Ab^4\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{2a^3\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-28\sqrt{2}a^2Ac^{5/2}+10\sqrt{2}a^2Bc^{3/2}\sqrt{b^2-4ac}-16\sqrt{2}a^2bBc^{3/2}+29\sqrt{2}aAb^2c^{3/2}-19\sqrt{2}aAbc^{3/2}\sqrt{b^2-4ac}+5\sqrt{2}Ab^3\sqrt{c}\sqrt{b^2-4ac}+3\sqrt{2}ab^3B\sqrt{c}-3\sqrt{2}ab^2B\sqrt{c}\sqrt{b^2-4ac}-5\sqrt{2}Ab^4\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{2a^3\left(b^2-4ac\right)^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{-8a^3Ac-24a^3Bcx+2a^2Ab^2+40a^2Abcx-14a^2Ac^2x^2+6a^2b^2Bx-33a^2bBcx^2-30a^2Bc^2x^3-10aAb^3x+62aAb^2cx^2+57aAbc^2x^3+9ab^3Bx^2+9ab^2Bcx^3-15Ab^4x^2-15Ab^3cx^3}{3a^3x^{3/2}\left(4ac-b^2\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] (2*a^2*A*b^2 - 8*a^3*A*c - 10*a*A*b^3*x + 6*a^2*b^2*B*x + 40*a^2*A*b*c*x -
24*a^3*B*c*x - 15*A*b^4*x^2 + 9*a*b^3*B*x^2 + 62*a*A*b^2*c*x^2 - 33*a^2*b*B
*c*x^2 - 14*a^2*A*c^2*x^2 - 15*A*b^3*c*x^3 + 9*a*b^2*B*c*x^3 + 57*a*A*b*c^2
*x^3 - 30*a^2*B*c^2*x^3)/(3*a^3*(-b^2 + 4*a*c)*x^(3/2)*(a + b*x + c*x^2)) +
 ((5*Sqrt[2]*A*b^4*Sqrt[c] - 3*Sqrt[2]*a*b^3*B*Sqrt[c] - 29*Sqrt[2]*a*A*b^2
*c^(3/2) + 16*Sqrt[2]*a^2*b*B*c^(3/2) + 28*Sqrt[2]*a^2*A*c^(5/2) + 5*Sqrt[2
]*A*b^3*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 3*Sqrt[2]*a*b^2*B*Sqrt[c]*Sqrt[b^2 - 4*
a*c] - 19*Sqrt[2]*a*A*b*c^(3/2)*Sqrt[b^2 - 4*a*c] + 10*Sqrt[2]*a^2*B*c^(3/2
)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4
*a*c]]])/(2*a^3*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((-5*Sqr
t[2]*A*b^4*Sqrt[c] + 3*Sqrt[2]*a*b^3*B*Sqrt[c] + 29*Sqrt[2]*a*A*b^2*c^(3/2)
 - 16*Sqrt[2]*a^2*b*B*c^(3/2) - 28*Sqrt[2]*a^2*A*c^(5/2) + 5*Sqrt[2]*A*b^3*
Sqrt[c]*Sqrt[b^2 - 4*a*c] - 3*Sqrt[2]*a*b^2*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 1
9*Sqrt[2]*a*A*b*c^(3/2)*Sqrt[b^2 - 4*a*c] + 10*Sqrt[2]*a^2*B*c^(3/2)*Sqrt[b
^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])
/(2*a^3*(b^2 - 4*a*c)^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 29.20, size = 10203, normalized size = 19.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*sqrt(1/2)*((a^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3
+ (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9
 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 +
23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5
)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c + (a^7*b^6 - 1
2*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^
3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401
*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5
+ (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^
5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3
+ 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*
(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*
B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^
7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b
^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4
*c + 48*a^9*b^2*c^2 - 64*a^10*c^3))*log(sqrt(1/2)*(27*B^3*a^3*b^11 - 135*A*
B^2*a^2*b^12 + 225*A^2*B*a*b^13 - 125*A^3*b^14 + 10976*A^3*a^7*c^7 - 112*(5
0*A*B^2*a^8 - 463*A^2*B*a^7*b + 709*A^3*a^6*b^2)*c^6 - 2*(2600*B^3*a^8*b -
31256*A*B^2*a^7*b^2 + 96044*A^2*B*a^6*b^3 - 86495*A^3*a^5*b^4)*c^5 + (14408
*B^3*a^7*b^3 - 101006*A*B^2*a^6*b^4 + 224705*A^2*B*a^5*b^5 - 160932*A^3*a^4
```

```
*b^6)*c^4 - 7*(1507*B^3*a^6*b^5 - 8820*A*B^2*a^5*b^6 + 16991*A^2*B*a^4*b^7
 - 10797*A^3*a^3*b^8)*c^3 + (3330*B^3*a^5*b^7 - 17889*A*B^2*a^4*b^8 + 31929*
A^2*B*a^3*b^9 - 18940*A^3*a^2*b^10)*c^2 - (486*B^3*a^4*b^9 - 2493*A*B^2*a^3
*b^10 + 4260*A^2*B*a^2*b^11 - 2425*A^3*a*b^12)*c - (3*B*a^8*b^10 - 5*A*a^7*
b^11 - 256*(5*B*a^13 - 13*A*a^12*b)*c^5 + 64*(34*B*a^12*b^2 - 73*A*a^11*b^3
)*c^4 - 112*(12*B*a^11*b^4 - 23*A*a^10*b^5)*c^3 + 28*(14*B*a^10*b^6 - 25*A*
a^9*b^7)*c^2 - (55*B*a^9*b^8 - 94*A*a^8*b^9)*c)*sqrt((81*B^4*a^4*b^8 - 540*
A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 +
2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*
c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*
B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*
b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3
 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*
A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^
4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^
14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))*sqrt(-(9*B^2*a^2*
b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(
4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 21
0*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 +
 45*A^2*a*b^7)*c + (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*
sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3
*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*
B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^
2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4
*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^
5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 225
08*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*
B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^
9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^
17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)) + 2*(960
4*A^4*a^4*c^8 + 7203*(4*A^3*B*a^4*b - 7*A^4*a^3*b^2)*c^7 - (2500*B^4*a^6 -
22500*A*B^3*a^5*b + 43524*A^2*B^2*a^4*b^2 + 4343*A^3*B*a^3*b^3 - 43410*A^4*
a^2*b^4)*c^6 + (5625*B^4*a^5*b^2 - 31137*A*B^3*a^4*b^3 + 52821*A^2*B^2*a^3*
b^4 - 20190*A^3*B*a^2*b^5 - 12325*A^4*a*b^6)*c^5 - 3*(657*B^4*a^4*b^4 - 335
1*A*B^3*a^3*b^5 + 5560*A^2*B^2*a^2*b^6 - 2775*A^3*B*a*b^7 - 375*A^4*b^8)*c^
4 + 7*(27*B^4*a^3*b^6 - 135*A*B^3*a^2*b^7 + 225*A^2*B^2*a*b^8 - 125*A^3*B*b
^9)*c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4
*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^
8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*
A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 1
98*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c
 + (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*
b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A
^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4
*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 1
09544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*
A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3
*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^
6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 318
6*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^
10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^
6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3))*log(-sqrt(1/2)*(27*B^3*a^
3*b^11 - 135*A*B^2*a^2*b^12 + 225*A^2*B*a*b^13 - 125*A^3*b^14 + 10976*A^3*a
^7*c^7 - 112*(50*A*B^2*a^8 - 463*A^2*B*a^7*b + 709*A^3*a^6*b^2)*c^6 - 2*(26
00*B^3*a^8*b - 31256*A*B^2*a^7*b^2 + 96044*A^2*B*a^6*b^3 - 86495*A^3*a^5*b^
4)*c^5 + (14408*B^3*a^7*b^3 - 101006*A*B^2*a^6*b^4 + 224705*A^2*B*a^5*b^5 -
 160932*A^3*a^4*b^6)*c^4 - 7*(1507*B^3*a^6*b^5 - 8820*A*B^2*a^5*b^6 + 16991
*A^2*B*a^4*b^7 - 10797*A^3*a^3*b^8)*c^3 + (3330*B^3*a^5*b^7 - 17889*A*B^2*a
^4*b^8 + 31929*A^2*B*a^3*b^9 - 18940*A^3*a^2*b^10)*c^2 - (486*B^3*a^4*b^9 -
```

2493*A*B^2*a^3*b^10 + 4260*A^2*B*a^2*b^11 - 2425*A^3*a*b^12)*c - (3*B*a^8*b^10 - 5*A*a^7*b^11 - 256*(5*B*a^13 - 13*A*a^12*b)*c^5 + 64*(34*B*a^12*b^2 - 73*A*a^11*b^3)*c^4 - 112*(12*B*a^11*b^4 - 23*A*a^10*b^5)*c^3 + 28*(14*B*a^10*b^6 - 25*A*a^9*b^7)*c^2 - (55*B*a^9*b^8 - 94*A*a^8*b^9)*c)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c + (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)) + 2*(9604*A^4*a^4*c^8 + 7203*(4*A^3*B*a^4*b - 7*A^4*a^3*b^2)*c^7 - (2500*B^4*a^6 - 22500*A*B^3*a^5*b + 43524*A^2*B^2*a^4*b^2 + 4343*A^3*B*a^3*b^3 - 43410*A^4*a^2*b^4)*c^6 + (5625*B^4*a^5*b^2 - 31137*A*B^3*a^4*b^3 + 52821*A^2*B^2*a^3*b^4 - 20190*A^3*B*a^2*b^5 - 12325*A^4*a*b^6)*c^5 - 3*(657*B^4*a^4*b^4 - 3351*A*B^3*a^3*b^5 + 5560*A^2*B^2*a^2*b^6 - 2775*A^3*B*a*b^7 - 375*A^4*b^8)*c^4 + 7*(27*B^4*a^3*b^6 - 135*A*B^3*a^2*b^7 + 225*A^2*B^2*a*b^8 - 125*A^3*B*b^9)*c^3)*sqrt(x)) + 3*sqrt(1/2)*((a^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3))*log(sqrt(1/2)*(27*B^3*a^3*b^11 - 135*A*B^2*a^2*b^12 + 225*A^2*B*a*b^13 - 125*A^3*b^14 + 10976*A^3*a^7*c^7 - 112*(50*A*B^2*a^8 - 463*A^2*B*a^7*b + 709*A^3*a^6*b^2)*c^6 - 2*(2600*B^3*a^8*b - 31256*A*B^2*a^7*b^2 + 96044*A^2*B*a^6*b^3 - 86495*A^3*a^5*b^4)*c^5 + (14408*B^3*a^7*b^3 - 101006*A*B^2*a^6*b^4 + 224705*A^2*B*a^5*b^5 - 160932*A^3*a^4*b^6)*c^4 - 7*(1507*B^3*a^6*b^5 - 8820*A*B^2*a^5*b^6 + 16991*A^2*B*a^4*b^7 - 10797*A^3*a^3*b^8)*c^3 + (3330*B^3*a^5*b^7 - 17889*A*B^2*a^4*b^8 + 31929*A^2*B*a^3*b^9 - 18940*A^3*a^2*b^10)*c^2 - (486*B^3*a^4*b^9 - 2493*A*B^2*a^3*b^10 + 4260*A^2*B*a^2*b^11 - 2425*A^3*a*b^12)*c + (3*B*a^8*b^10 - 5*A*a^7*b^11 - 256*(5*B*a^13 - 13*A*a^12*b)*c^5 + 64*(34*B*a^12*b^2 - 73*A*a^11*b^3)*c^4 - 112*(12*B*a^11*b^4 - 23*A*a^10*b^5)*c^

3 + 28*(14*B*a^10*b^6 - 25*A*a^9*b^7)*c^2 - (55*B*a^9*b^8 - 94*A*a^8*b^9)*c
)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A
^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^
3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*
A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B
^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*
b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 2
2508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(45
9*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*
b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*
a^17*c^3)))*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a
^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)
c^3 + 7(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B
^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 12*a^8*b^4*c + 4
8*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 135
0*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 -
98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8
- 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A
^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2
*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b
^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 131
75*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^
2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^
4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2
*c^2 - 64*a^10*c^3)) + 2*(9604*A^4*a^4*c^8 + 7203*(4*A^3*B*a^4*b - 7*A^4*a^
3*b^2)*c^7 - (2500*B^4*a^6 - 22500*A*B^3*a^5*b + 43524*A^2*B^2*a^4*b^2 + 43
43*A^3*B*a^3*b^3 - 43410*A^4*a^2*b^4)*c^6 + (5625*B^4*a^5*b^2 - 31137*A*B^3
*a^4*b^3 + 52821*A^2*B^2*a^3*b^4 - 20190*A^3*B*a^2*b^5 - 12325*A^4*a*b^6)*c
^5 - 3*(657*B^4*a^4*b^4 - 3351*A*B^3*a^3*b^5 + 5560*A^2*B^2*a^2*b^6 - 2775*
A^3*B*a*b^7 - 375*A^4*b^8)*c^4 + 7*(27*B^4*a^3*b^6 - 135*A*B^3*a^2*b^7 + 22
5*A^2*B^2*a*b^8 - 125*A^3*B*b^9)*c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^2*c -
4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(
-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)
c^4 - 105(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*
a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A
*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 6
4*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^1
0 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^
7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*
b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 -
2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*
A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a
^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c
^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*
A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2
*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^
3))*log(-sqrt(1/2)*(27*B^3*a^3*b^11 - 135*A*B^2*a^2*b^12 + 225*A^2*B*a*b^13
- 125*A^3*b^14 + 10976*A^3*a^7*c^7 - 112*(50*A*B^2*a^8 - 463*A^2*B*a^7*b +
709*A^3*a^6*b^2)*c^6 - 2*(2600*B^3*a^8*b - 31256*A*B^2*a^7*b^2 + 96044*A^2
*B*a^6*b^3 - 86495*A^3*a^5*b^4)*c^5 + (14408*B^3*a^7*b^3 - 101006*A*B^2*a^6
*b^4 + 224705*A^2*B*a^5*b^5 - 160932*A^3*a^4*b^6)*c^4 - 7*(1507*B^3*a^6*b^5
- 8820*A*B^2*a^5*b^6 + 16991*A^2*B*a^4*b^7 - 10797*A^3*a^3*b^8)*c^3 + (333
0*B^3*a^5*b^7 - 17889*A*B^2*a^4*b^8 + 31929*A^2*B*a^3*b^9 - 18940*A^3*a^2*b
^10)*c^2 - (486*B^3*a^4*b^9 - 2493*A*B^2*a^3*b^10 + 4260*A^2*B*a^2*b^11 - 2
425*A^3*a*b^12)*c + (3*B*a^8*b^10 - 5*A*a^7*b^11 - 256*(5*B*a^13 - 13*A*a^1
2*b)*c^5 + 64*(34*B*a^12*b^2 - 73*A*a^11*b^3)*c^4 - 112*(12*B*a^11*b^4 - 23
*A*a^10*b^5)*c^3 + 28*(14*B*a^10*b^6 - 25*A*a^9*b^7)*c^2 - (55*B*a^9*b^8 -
94*A*a^8*b^9)*c)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^
2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B

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^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3
*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*
c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 7
7424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*
B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b
^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 -
9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^1
6*b^2*c^2 - 64*a^17*c^3)))*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9
 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 +
23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5
)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 1
2*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^
3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401
*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5
+ (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^
5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3
+ 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*
(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*
B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^
7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b
^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4
*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)) + 2*(9604*A^4*a^4*c^8 + 7203*(4*A^3*B*a
^4*b - 7*A^4*a^3*b^2)*c^7 - (2500*B^4*a^6 - 22500*A*B^3*a^5*b + 43524*A^2*B
^2*a^4*b^2 + 4343*A^3*B*a^3*b^3 - 43410*A^4*a^2*b^4)*c^6 + (5625*B^4*a^5*b^
2 - 31137*A*B^3*a^4*b^3 + 52821*A^2*B^2*a^3*b^4 - 20190*A^3*B*a^2*b^5 - 123
25*A^4*a*b^6)*c^5 - 3*(657*B^4*a^4*b^4 - 3351*A*B^3*a^3*b^5 + 5560*A^2*B^2*
a^2*b^6 - 2775*A^3*B*a*b^7 - 375*A^4*b^8)*c^4 + 7*(27*B^4*a^3*b^6 - 135*A*B
^3*a^2*b^7 + 225*A^2*B^2*a*b^8 - 125*A^3*B*b^9)*c^3)*sqrt(x)) + 2*(2*A*a^2*
b^2 - 8*A*a^3*c - 3*((10*B*a^2 - 19*A*a*b)*c^2 - (3*B*a*b^2 - 5*A*b^3)*c)*x
^3 + (9*B*a*b^3 - 15*A*b^4 - 14*A*a^2*c^2 - (33*B*a^2*b - 62*A*a*b^2)*c)*x^
2 + 2*(3*B*a^2*b^2 - 5*A*a*b^3 - 4*(3*B*a^3 - 5*A*a^2*b)*c)*x)*sqrt(x))/((a
^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)
*x^2)
```

giac [B] time = 2.56, size = 6335, normalized size = 12.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(B*a*b^2*c*x^(3/2) - A*b^3*c*x^(3/2) - 2*B*a^2*c^2*x^(3/2) + 3*A*a*b*c^2*x
^(3/2) + B*a*b^3*sqrt(x) - A*b^4*sqrt(x) - 3*B*a^2*b*c*sqrt(x) + 4*A*a*b^2*
c*sqrt(x) - 2*A*a^2*c^2*sqrt(x))/((a^3*b^2 - 4*a^4*c)*(c*x^2 + b*x + a)) +
1/8*((10*b^5*c^2 - 78*a*b^3*c^3 + 152*a^2*b*c^4 - 5*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 39*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*b^4*c - 76*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*b*c^2 - 38*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a*b^2*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*b^3*c^2 + 19*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b*c^3 - 10*(b^2 - 4*a*c)*b^3*c^2 + 38*(b^2 - 4*a*c)*a*b*c^3)*(a^3
*b^2 - 4*a^4*c)^2*A - (6*a*b^4*c^2 - 44*a^2*b^2*c^3 + 80*a^3*c^4 - 3*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4 + 22*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 6*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 40*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 6*(b^2 - 4*a*c)*a*b^2*c^2 + 20*(b^2
```

- 4*a*c)*a^2*c^3)*(a^3*b^2 - 4*a^4*c)^2*B + 2*(5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^8 - 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c - 10*a^3*b^8*c + 286*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 + 88*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^2 + 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^2 + 128*a^4*b^6*c^2 - 496*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 - 220*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^3 - 44*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^3 - 572*a^5*b^4*c^3 + 224*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*c^4 + 112*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b*c^4 + 110*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^4 + 992*a^6*b^2*c^4 - 56*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*c^5 - 448*a^7*c^5 + 10*(b^2 - 4*a*c)*a^3*b^6*c - 88*(b^2 - 4*a*c)*a^4*b^4*c^2 + 220*(b^2 - 4*a*c)*a^5*b^2*c^3 - 112*(b^2 - 4*a*c)*a^6*c^4)*A*abs(a^3*b^2 - 4*a^4*c) - 2*(3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7 - 37*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c - 6*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c - 6*a^4*b^7*c + 152*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^2 + 50*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 + 3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^2 + 74*a^5*b^5*c^2 - 208*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b*c^3 - 104*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 - 25*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^3 - 304*a^6*b^3*c^3 + 52*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b*c^4 + 416*a^7*b*c^4 + 6*(b^2 - 4*a*c)*a^4*b^5*c - 50*(b^2 - 4*a*c)*a^5*b^3*c^2 + 104*(b^2 - 4*a*c)*a^6*b*c^3)*B*abs(a^3*b^2 - 4*a^4*c) + (10*a^6*b^9*c^2 - 138*a^7*b^7*c^3 + 680*a^8*b^5*c^4 - 1376*a^9*b^3*c^5 + 896*a^10*b*c^6 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^9 + 69*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^7*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^8*c - 340*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^5*c^2 - 98*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^6*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^7*c^2 + 688*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^3*c^3 + 288*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^4*c^3 + 49*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^5*c^3 - 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^2*c^4 - 144*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^3*c^4 + 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b*c^5 - 10*(b^2 - 4*a*c)*a^6*b^7*c^2 + 98*(b^2 - 4*a*c)*a^7*b^5*c^3 - 288*(b^2 - 4*a*c)*a^8*b^3*c^4 + 224*(b^2 - 4*a*c)*a^9*b*c^5)*A - (6*a^7*b^8*c^2 - 80*a^8*b^6*c^3 + 352*a^9*b^4*c^4 - 512*a^10*b^2*c^5 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^2*c^4 - 6*(b^2 - 4*a*c)*a^7*b^6*c^2 + 56*(b^2 - 4*a*c)*a^8*b^4*c^3 - 128*(b^2 - 4*a*c)*a^9*b^2*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^3 - 4*a^4*b*c + sqrt((a^3*b^3 - 4*a^4*b*c)^2 - 4*(a^4*b^2 - 4*a^5*c)*(a^3*b^2*c - 4*a^4*c^2)))/(a^3*b^2*c - 4*a^4*c^2)))/((a^7*b^6 - 12*a^8*b^4*c - 2*a^7*b^5*c + 48*a^9*b^2*c^2 + 16*a^8*b^3*c^2 + a^7*b^4*c^2 - 64*a^10*c^3 - 32*a^9*b*c^3 - 8*a^8*b^2*c^3 + 16*a^9*c^4)*abs(a^3*b^2 - 4*a^4*c)*abs(c)) - 1/8*((10*b^5*c^2 - 78*a*b^3*c^3 + 152*a^2*b*c^4 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 39*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c

)*b^4*c - 76*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*
b*c^2 - 38*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*
c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 +
19*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 10*
(b^2 - 4*a*c)*b^3*c^2 + 38*(b^2 - 4*a*c)*a*b*c^3)*(a^3*b^2 - 4*a^4*c)^2*A -
(6*a*b^4*c^2 - 44*a^2*b^2*c^3 + 80*a^3*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^3*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^2*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*c^3 - 6*(b^2 - 4*a*c)*a*b^2*c^2 + 20*(b^2 - 4*a*c)*a^2*c^3)*(a
^3*b^2 - 4*a^4*c)^2*B - 2*(5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^
8 - 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c - 10*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c + 10*a^3*b^8*c + 286*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 + 88*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^4*b^5*c^2 + 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^2 -
128*a^4*b^6*c^2 - 496*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 -
220*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^3 - 44*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^3 + 572*a^5*b^4*c^3 + 224*sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*c^4 + 112*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a^6*b*c^4 + 110*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^4
- 992*a^6*b^2*c^4 - 56*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*c^5 + 44
8*a^7*c^5 - 10*(b^2 - 4*a*c)*a^3*b^6*c + 88*(b^2 - 4*a*c)*a^4*b^4*c^2 - 220
*(b^2 - 4*a*c)*a^5*b^2*c^3 + 112*(b^2 - 4*a*c)*a^6*c^4)*A*abs(a^3*b^2 - 4*a
^4*c) + 2*(3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^7 - 37*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c - 6*sqrt(2)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^4*b^6*c + 6*a^4*b^7*c + 152*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^6*b^3*c^2 + 50*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 +
3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^2 - 74*a^5*b^5*c^2 - 2
08*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b*c^3 - 104*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 - 25*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^5*b^3*c^3 + 304*a^6*b^3*c^3 + 52*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^6*b*c^4 - 416*a^7*b*c^4 - 6*(b^2 - 4*a*c)*a^4*b^5*c + 50*(b^2 - 4*a
*c)*a^5*b^3*c^2 - 104*(b^2 - 4*a*c)*a^6*b*c^3)*B*abs(a^3*b^2 - 4*a^4*c) + (
10*a^6*b^9*c^2 - 138*a^7*b^7*c^3 + 680*a^8*b^5*c^4 - 1376*a^9*b^3*c^5 + 896
*a^10*b*c^6 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^6*b^9 + 69*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b
^7*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^8
*c - 340*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^5*
c^2 - 98*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^6*
c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^7*c
^2 + 688*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^3*
c^3 + 288*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^4
*c^3 + 49*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^5
*c^3 - 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b
*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^
2*c^4 - 144*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b
^3*c^4 + 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*
b*c^5 - 10*(b^2 - 4*a*c)*a^6*b^7*c^2 + 98*(b^2 - 4*a*c)*a^7*b^5*c^3 - 288*(
b^2 - 4*a*c)*a^8*b^3*c^4 + 224*(b^2 - 4*a*c)*a^9*b*c^5)*A - (6*a^7*b^8*c^2
- 80*a^8*b^6*c^3 + 352*a^9*b^4*c^4 - 512*a^10*b^2*c^5 - 3*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)

```
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^2*c^4 - 6*(b^2 - 4*a*c)*a^7*b^6*c^
2 + 56*(b^2 - 4*a*c)*a^8*b^4*c^3 - 128*(b^2 - 4*a*c)*a^9*b^2*c^4)*B)*arctan
(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^3 - 4*a^4*b*c - sqrt((a^3*b^3 - 4*a^4*b*c)
^2 - 4*(a^4*b^2 - 4*a^5*c)*(a^3*b^2*c - 4*a^4*c^2)))/(a^3*b^2*c - 4*a^4*c^2
)))/((a^7*b^6 - 12*a^8*b^4*c - 2*a^7*b^5*c + 48*a^9*b^2*c^2 + 16*a^8*b^3*c^
2 + a^7*b^4*c^2 - 64*a^10*c^3 - 32*a^9*b*c^3 - 8*a^8*b^2*c^3 + 16*a^9*c^4)*
abs(a^3*b^2 - 4*a^4*c)*abs(c)) - 2/3*(3*B*a*x - 6*A*b*x + A*a)/(a^3*x^(3/2)
)
```

maple [B] time = 0.18, size = 1679, normalized size = 3.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+4/a^3/x
^(1/2)*A*b+1/a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*B*b^3-1/a^3/(c*x^2+b*x+a
)/(4*a*c-b^2)*x^(1/2)*A*b^4+14/a*c^3/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*A+3/2/a^2*c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-19
/2/a^2*c^2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^
(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+14/a*c^3/(4*a*c-b^2)
/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/
2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-2/a/(c*x^2+b*x+a)*c^2/(4*
a*c-b^2)*x^(3/2)*B-3/2/a^2*c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-
5/2/a^3*c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+5/2/a^3*c/(4*a*c-b^2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+19/2/a^2*c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b-2*B/a^2/x^(1/2)-2/3*A/a^2/x^(3/2)-2/a/(c*x^2+b*x+a)/(4*a*c-b^2
)*x^(1/2)*A*c^2-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*B*b^3-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*B*b^3-29/2/a^2*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*A*b^2+8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*b*B-29/2/a^2*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*A*b^2+5/2/a^3*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*A*b^4+5/2/a^3*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2
))*A*b^4-3/a/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*b*B*c-1/a^3/(c*x^2+b*x+a)*c/
(4*a*c-b^2)*x^(3/2)*A*b^3-5/a*c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+5/
a*c^2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+3/a^2/(c*x^2+b*x+a)*c^2/(4*
a*c-b^2)*x^(3/2)*A*b+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x^(3/2)*B*b^2+4/a^2/
(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*A*b^2*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{3\left(\left(5b^4c - 24ab^2c^2 + 14a^2c^3\right)A - \left(3ab^3c - 13a^2bc^2\right)B\right)x^{\frac{5}{2}} + 3\left(\left(5b^5 - 19ab^3c - 5a^2bc^2\right)A - \left(3ab^4 - 10a^2b^2c - 10a^3c^2\right)B\right)x^{\frac{3}{2}} + 2\left(\left(15ab^4 - 67a^2b^2c + 28a^3c^2\right)A - 9\left(a^2b^3 - 4a^3bc\right)B\right)\sqrt{x} - \frac{2\left(a^3b^2-4a^4c\right)A}{x^{\frac{3}{2}}} + \frac{2\left(5\left(a^2b^3-4a^3bc\right)A-3\left(a^3b^2-4a^4c\right)B\right)}{\sqrt{x}}}{3\left(a^5b^2 - 4a^6c + \left(a^4b^2c - 4a^5c^2\right)x^2 + \left(a^4b^3 - 4a^5bc\right)x\right)} + \int -\frac{\left(\left(5b^4c - 24ab^2c^2 + 14a^2c^3\right)A - \left(3ab^3c - 13a^2bc^2\right)B\right)x^{\frac{3}{2}} + \left(\left(5b^5 - 29ab^3c + 33a^2bc^2\right)A - \left(3ab^4 - 16a^2b^2c + 10a^3c^2\right)B\right)\sqrt{x}}{2\left(a^5b^2 - 4a^6c + \left(a^4b^2c - 4a^5c^2\right)x^2 + \left(a^4b^3 - 4a^5bc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/3*(3*((5*b^4*c - 24*a*b^2*c^2 + 14*a^2*c^3)*A - (3*a*b^3*c - 13*a^2*b*c^2
)*B)*x^(5/2) + 3*((5*b^5 - 19*a*b^3*c - 5*a^2*b*c^2)*A - (3*a*b^4 - 10*a^2*
b^2*c - 10*a^3*c^2)*B)*x^(3/2) + 2*((15*a*b^4 - 67*a^2*b^2*c + 28*a^3*c^2)*
A - 9*(a^2*b^3 - 4*a^3*b*c)*B)*sqrt(x) - 2*(a^3*b^2 - 4*a^4*c)*A/x^(3/2) +
2*(5*(a^2*b^3 - 4*a^3*b*c)*A - 3*(a^3*b^2 - 4*a^4*c)*B)/sqrt(x))/(a^5*b^2 -
 4*a^6*c + (a^4*b^2*c - 4*a^5*c^2)*x^2 + (a^4*b^3 - 4*a^5*b*c)*x) + integra
te(-1/2*(((5*b^4*c - 24*a*b^2*c^2 + 14*a^2*c^3)*A - (3*a*b^3*c - 13*a^2*b*c
^2)*B)*x^(3/2) + ((5*b^5 - 29*a*b^3*c + 33*a^2*b*c^2)*A - (3*a*b^4 - 16*a^2
*b^2*c + 10*a^3*c^2)*B)*sqrt(x))/(a^5*b^2 - 4*a^6*c + (a^4*b^2*c - 4*a^5*c^
2)*x^2 + (a^4*b^3 - 4*a^5*b*c)*x), x)
```

mupad [B] time = 6.80, size = 21585, normalized size = 41.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] - ((2*A)/(3*a) - (2*x*(5*A*b - 3*B*a))/(3*a^2) + (x^2*(15*A*b^4 + 14*A*a^2*
c^2 - 9*B*a*b^3 - 62*A*a*b^2*c + 33*B*a^2*b*c))/(3*a^3*(4*a*c - b^2)) + (c*
x^3*(5*A*b^3 - 3*B*a*b^2 + 10*B*a^2*c - 19*A*a*b*c))/(a^3*(4*a*c - b^2)))/(
a*x^(3/2) + b*x^(5/2) + c*x^(7/2)) - atan((((-(25*A^2*b^15 + 9*B^2*a^2*b^13
 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*
c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c
^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B
^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*
b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-
(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a
^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 1
19616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 1
65*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^
9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184
*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)
^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2
)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 3
0*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a
^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c
^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077
*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^
2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7
 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*
a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^1
0*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4
*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) +
51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)
^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) +
186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 -
24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6
144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^
11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 4915
2*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A*a^12*b^14*c^
```

2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*b^8*c^5 + 960 00*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*c^8 - 12*B*a^ 13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 16000*B*a^16*b^7* c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^1 6*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^ 7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^ 3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9)) *(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30 *A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^ 4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^ 3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077* B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2 *a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a ^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10 *c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4* c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 5 1*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^ (1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1 86*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 2 4*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 61 44*a^12*b^2*c^5)))^(1/2)*1i + ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6 *(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A ^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A ^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(- (4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 302 40*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2) ^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 21 3*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5 *b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4* c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30 *A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3* c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8 *(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^ 6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b ^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9* c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a* b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 2 46*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132 *A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280 *A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^ 2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724* A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b *c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2* c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920 *a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^ 7) + 57344*A*a^19*c^9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^1 3*b^12*c^3 - 5176*A*a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6 *c^6 + 179200*A*a^17*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 -

292*B*a^14*b^11*c^3 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6 - 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*1i)/(((-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) + 57344*A*a^19*c^9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^13*b^12*c^3 - 5176*A*a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6*c^6 + 179200*A*a^17*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 - 292*B*a^14*b^11*c^3 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6 - 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^

9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) - ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A*a^12*b^14*c^2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*b^8*c^5 + 96000*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*c^8 - 12*B*a^13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 16000*B*a^16*b^7*c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a

^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) + 32000*B^3*a^15*c^9 - 450*A^3*a^9*b^9*c^6 + 7270*A^3*a^10*b^7*c^7 - 44008*A^3*a^11*b^5*c^8 + 118304*A^3*a^12*b^3*c^9 + 126*B^3*a^11*b^8*c^5 - 2028*B^3*a^12*b^6*c^6 + 12176*B^3*a^13*b^4*c^7 - 32320*B^3*a^14*b^2*c^8 + 62720*A^2*B*a^14*c^10 - 119168*A^3*a^13*b*c^10 - 110720*A*B^2*a^14*b*c^9 - 420*A*B^2*a^10*b^9*c^5 + 6794*A*B^2*a^11*b^7*c^6 - 41112*A*B^2*a^12*b^5*c^7 + 110304*A*B^2*a^13*b^3*c^8 + 350*A^2*B*a^9*b^10*c^5 - 5420*A^2*B*a^10*b^8*c^6 + 30412*A^2*B*a^11*b^6*c^7 - 68816*A^2*B*a^12*b^4*c^8 + 30272*A^2*B*a^13*b^2*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*2i - atan((((-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 1

0656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A*a^12*b^14*c^2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*b^8*c^5 + 96000*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*c^8 - 12*B*a^13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 16000*B*a^16*b^7*c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*1i + ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a

^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 1
19616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 1
65*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^
9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184
*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)
^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*
a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 1024
0*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) + 57344*A*a^19*c^
9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^13*b^12*c^3 - 5176*A*
a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6*c^6 + 179200*A*a^17
*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 - 292*B*a^14*b^11*c^3
 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6 - 7884
8*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*
A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012
*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233
984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*
B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*
B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*
B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*
A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13
+ 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c
^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^
5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^
2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b
^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^
7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-
(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 11
9616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 16
5*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9
)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*
A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^
9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*1i)/(((-
(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*
B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b
^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(
-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2
*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^
7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 6
15*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*
b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^
2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5
 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B
^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/
2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*
A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a
^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*
a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6
*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A
^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A
^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-
(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 302
40*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)
^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 21
3*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2
)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5

*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) + 57344*A*a^19*c^9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^13*b^12*c^3 - 5176*A*a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6*c^6 + 179200*A*a^17*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 - 292*B*a^14*b^11*c^3 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6 - 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) - ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*

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a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2
)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 409
6*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^1
1*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2
- 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b
^5*c^6 - 49152*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A
*a^12*b^14*c^2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*
b^8*c^5 + 96000*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*
c^8 - 12*B*a^13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 1600
0*B*a^16*b^7*c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(
50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a
^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^
2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2
*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*
a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^1
0*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^
13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B
*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^
9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 +
116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 -
49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^
(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^
4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840
*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c
+ 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278
*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600
*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)
^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a
*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)
^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096
*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11
*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) + 32000*B^3*a^15*c^9 - 450*A^3*a^9*b^
9*c^6 + 7270*A^3*a^10*b^7*c^7 - 44008*A^3*a^11*b^5*c^8 + 118304*A^3*a^12*b^
3*c^9 + 126*B^3*a^11*b^8*c^5 - 2028*B^3*a^12*b^6*c^6 + 12176*B^3*a^13*b^4*c
^7 - 32320*B^3*a^14*b^2*c^8 + 62720*A^2*B*a^14*c^10 - 119168*A^3*a^13*b*c^1
0 - 110720*A*B^2*a^14*b*c^9 - 420*A*B^2*a^10*b^9*c^5 + 6794*A*B^2*a^11*b^7*
c^6 - 41112*A*B^2*a^12*b^5*c^7 + 110304*A*B^2*a^13*b^3*c^8 + 350*A^2*B*a^9*
b^10*c^5 - 5420*A^2*B*a^10*b^8*c^6 + 30412*A^2*B*a^11*b^6*c^7 - 68816*A^2*B
*a^12*b^4*c^8 + 30272*A^2*B*a^13*b^2*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13
+ 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c
^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^
5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^
2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b
^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^
7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-
(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 11
9616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 16
5*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9
)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*
A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^
9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.948 $\int \frac{x^{7/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=528

$$-\frac{\sqrt{x}\left(x\left(28a^2Bc^2+8aAbc^2-25ab^2Bc+Ab^3c+3b^4B\right)+a\left(20aAc^2-24abBc+Ab^2c+3b^3B\right)\right)}{4c^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\left(-\frac{-40a^2Ac^3+\cdots}{}\right.}{}$$

Rubi [A] time = 9.32, antiderivative size = 528, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 826, 1166, 205}

$$-\frac{\sqrt{x}\left(x\left(28a^2Bc^2+8aAbc^2-25ab^2Bc+Ab^3c+3b^4B\right)+a\left(20aAc^2-24abBc+Ab^2c+3b^3B\right)\right)}{4c^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\left(-\frac{-40a^2Ac^3+132a^2bBc^2-18aAb^2c^2-33ab^3Bc+Ab^4c+3b^5B}{\sqrt{b^2-4ac}}+84a^2Bc^2-16aAbc^2-27ab^2Bc+Ab^3c+3b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}c^{5/2}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{-40a^2Ac^3+132a^2bBc^2-18aAb^2c^2-33ab^3Bc+Ab^4c+3b^5B}{\sqrt{b^2-4ac}}+84a^2Bc^2-16aAbc^2-27ab^2Bc+Ab^3c+3b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}c^{5/2}\left(b^2-4ac\right)^2\sqrt{\sqrt{b^2-4ac}+b}}-\frac{x^{5/2}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(x^(5/2)*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(2*c*(b^2 - 4*a*
c)*(a + b*x + c*x^2)^2) - (Sqrt[x]*(a*(3*b^3*B + A*b^2*c - 24*a*b*B*c + 20*
a*A*c^2) + (3*b^4*B + A*b^3*c - 25*a*b^2*B*c + 8*a*A*b*c^2 + 28*a^2*B*c^2)*
x))/(4*c^2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) + ((3*b^4*B + A*b^3*c - 27*a*
b^2*B*c - 16*a*A*b*c^2 + 84*a^2*B*c^2 - (3*b^5*B + A*b^4*c - 33*a*b^3*B*c -
 18*a*A*b^2*c^2 + 132*a^2*b*B*c^2 - 40*a^2*A*c^3)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(5/2)
*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((3*b^4*B + A*b^3*c - 27*a*
b^2*B*c - 16*a*A*b*c^2 + 84*a^2*B*c^2 + (3*b^5*B + A*b^4*c - 33*a*b^3*B*c -
 18*a*A*b^2*c^2 + 132*a^2*b*B*c^2 - 40*a^2*A*c^3)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(5/2)
*(b^2 - 4*a*c)^2*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
```

```
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\int \frac{x^{3/2}\left(\frac{5}{2}a(bB-2Ac)+\frac{1}{2}\left(3b^2B+Abc-14aBc\right)x\right)}{\left(a+bx+cx^2\right)^2}\,dx}{2c\left(b^2-4ac\right)}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(3b^3B+Ab^2c-24abBc+20aAc^2\right.\right.}{4c^2\left(b^2-\right.}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(3b^3B+Ab^2c-24abBc+20aAc^2\right.\right.}{4c^2\left(b^2-\right.}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(3b^3B+Ab^2c-24abBc+20aAc^2\right.\right.}{4c^2\left(b^2-\right.}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(3b^3B+Ab^2c-24abBc+20aAc^2\right.\right.}{4c^2\left(b^2-\right.}$$

Mathematica [A] time = 2.58, size = 745, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(9/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 + (x^(9/2)*(3*a*B*(-3*b^3 + 8*a*b*c - 3*b^2*c*x + 4*a*c^2*x) + A*(5*b^4
- 15*a*b^2*c + 4*a^2*c^2 + 5*b^3*c*x - 8*a*b*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(
a + x*(b + c*x))) + ((-2*a^2*(3*b^3*B + A*b^2*c - 24*a*b*B*c + 20*a*A*c^2)*
Sqrt[x])/c^2 + (2*a^2*(b^2*B + 12*A*b*c - 28*a*B*c)*x^(3/2))/c + 2*a*(-7*A*
b^2 + 12*a*b*B + 4*a*A*c)*x^(5/2) + 2*(3*a*B*(-3*b^2 + 4*a*c) + A*(5*b^3 -
8*a*b*c))*x^(7/2) + (Sqrt[2]*a^2*(-3*b^5*B + b^3*c*(33*a*B + A*Sqrt[b^2 - 4
*a*c]) - 4*a*b*c^2*(33*a*B + 4*A*Sqrt[b^2 - 4*a*c]) + 9*a*b^2*c*(2*A*c - 3*
B*Sqrt[b^2 - 4*a*c]) + b^4*(-(A*c) + 3*B*Sqrt[b^2 - 4*a*c]) + 4*a^2*c^2*(10
*A*c + 21*B*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - S
qrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]])
 + (Sqrt[2]*a^2*(3*b^5*B + 4*a*b*c^2*(33*a*B - 4*A*Sqrt[b^2 - 4*a*c]) + b^4
*(A*c + 3*B*Sqrt[b^2 - 4*a*c]) - 9*a*b^2*c*(2*A*c + 3*B*Sqrt[b^2 - 4*a*c])
+ 4*a^2*c^2*(-10*A*c + 21*B*Sqrt[b^2 - 4*a*c]) + b^3*(-33*a*B*c + A*c*Sqrt[
```

```
b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]
])/(c^(5/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(4*a*(b^2 - 4*a
*c)))/(2*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 11.05, size = 804, normalized size = 1.52

$$-\frac{\sqrt{x}\left(3Bx^2b^5+5Bcx^3b^4+Acx^2b^4+6aBxb^4-Ac^2x^3b^3-20aBcx^2b^3+3a^2Bb^3+2aAcxb^3-37aBc^2x^3b^2+5aAc^2x^2b^2+a^2Acb^2-49a^2Bcxb^2+16aAc^3x^3b-4a^2Bc^2x^2b-24a^3Bcb+28a^2Ac^2xb+44a^2Bc^3x^3+20a^3Ac^2+36a^2Ac^3x^2+28a^3Bc^2x\right)}{4c^2\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^2}+\frac{\left(-3\sqrt{2}Bb^5-\sqrt{2}Acb^4+3\sqrt{2}B\sqrt{b^2-4ac}\,b^4+33\sqrt{2}aBcb^3+\sqrt{2}Ac\sqrt{b^2-4ac}\,b^3+18\sqrt{2}aAc^2b^2-27\sqrt{2}aBc\sqrt{b^2-4ac}\,b^2-132\sqrt{2}a^2Bc^2b-16\sqrt{2}aAc^2\sqrt{b^2-4ac}\,b+40\sqrt{2}a^2Ac^3+84\sqrt{2}a^2Bc^2\sqrt{b^2-4ac}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{8c^{5/2}\left(b^2-4ac\right)^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(3\sqrt{2}Bb^5+\sqrt{2}Acb^4+3\sqrt{2}B\sqrt{b^2-4ac}\,b^4-33\sqrt{2}aBcb^3+\sqrt{2}Ac\sqrt{b^2-4ac}\,b^3-18\sqrt{2}aAc^2b^2-27\sqrt{2}aBc\sqrt{b^2-4ac}\,b^2+132\sqrt{2}a^2Bc^2b-16\sqrt{2}aAc^2\sqrt{b^2-4ac}\,b-40\sqrt{2}a^2Ac^3+84\sqrt{2}a^2Bc^2\sqrt{b^2-4ac}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b+\sqrt{b^2-4ac}}}\right)}{8c^{5/2}\left(b^2-4ac\right)^{5/2}\sqrt{b+\sqrt{b^2-4ac}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(Sqrt[x]*(3*a^2*b^3*B + a^2*A*b^2*c - 24*a^3*b*B*c + 20*a^3*A*c^2 + 6*
a*b^4*B*x + 2*a*A*b^3*c*x - 49*a^2*b^2*B*c*x + 28*a^2*A*b*c^2*x + 28*a^3*B*
c^2*x + 3*b^5*B*x^2 + A*b^4*c*x^2 - 20*a*b^3*B*c*x^2 + 5*a*A*b^2*c^2*x^2 -
4*a^2*b*B*c^2*x^2 + 36*a^2*A*c^3*x^2 + 5*b^4*B*c*x^3 - A*b^3*c^2*x^3 - 37*a
*b^2*B*c^2*x^3 + 16*a*A*b*c^3*x^3 + 44*a^2*B*c^3*x^3))/(c^2*(-b^2 + 4*a*c)^
2*(a + b*x + c*x^2)^2) + ((-3*Sqrt[2]*b^5*B - Sqrt[2]*A*b^4*c + 33*Sqrt[2]*
a*b^3*B*c + 18*Sqrt[2]*a*A*b^2*c^2 - 132*Sqrt[2]*a^2*b*B*c^2 + 40*Sqrt[2]*a
^2*A*c^3 + 3*Sqrt[2]*b^4*B*Sqrt[b^2 - 4*a*c] + Sqrt[2]*A*b^3*c*Sqrt[b^2 - 4
*a*c] - 27*Sqrt[2]*a*b^2*B*c*Sqrt[b^2 - 4*a*c] - 16*Sqrt[2]*a*A*b*c^2*Sqrt[
b^2 - 4*a*c] + 84*Sqrt[2]*a^2*B*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt
[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(8*c^(5/2)*(b^2 - 4*a*c)^(5/2)*S
qrt[b - Sqrt[b^2 - 4*a*c]]) + ((3*Sqrt[2]*b^5*B + Sqrt[2]*A*b^4*c - 33*Sqrt
[2]*a*b^3*B*c - 18*Sqrt[2]*a*A*b^2*c^2 + 132*Sqrt[2]*a^2*b*B*c^2 - 40*Sqrt[
2]*a^2*A*c^3 + 3*Sqrt[2]*b^4*B*Sqrt[b^2 - 4*a*c] + Sqrt[2]*A*b^3*c*Sqrt[b^2
 - 4*a*c] - 27*Sqrt[2]*a*b^2*B*c*Sqrt[b^2 - 4*a*c] - 16*Sqrt[2]*a*A*b*c^2*S
qrt[b^2 - 4*a*c] + 84*Sqrt[2]*a^2*B*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*
Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(8*c^(5/2)*(b^2 - 4*a*c)^(5/
2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 21.84, size = 9631, normalized size = 18.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(1/2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b
^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (
b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16
*a^3*b*c^4)*x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(5
4*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*
A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)
*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c + (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*
b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*
b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*
c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3
*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A
^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2
*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^
8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5
*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 128
0*a^4*b^2*c^9 - 1024*a^5*c^10))*log(1/2*sqrt(1/2)*(27*B^3*b^13 + 32000*A^3*
a^5*c^8 - 640*(882*A*B^2*a^6 - 156*A^2*B*a^5*b + 37*A^3*a^4*b^2)*c^7 + 64*(
10584*B^3*a^6*b + 5562*A*B^2*a^5*b^2 - 1083*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)
*c^6 - 8*(93096*B^3*a^5*b^3 + 3816*A*B^2*a^4*b^4 - 1746*A^2*B*a^3*b^5 + 49*
A^3*a^2*b^6)*c^5 + (337392*B^3*a^4*b^5 - 24120*A*B^2*a^3*b^6 - 84*A^2*B*a^2
*b^7 - 17*A^3*a*b^8)*c^4 - (81324*B^3*a^3*b^7 - 6993*A*B^2*a^2*b^8 + 195*A^
2*B*a*b^9 - A^3*b^10)*c^3 + 9*(1239*B^3*a^2*b^9 - 79*A*B^2*a*b^10 + A^2*B*b
^11)*c^2 - 27*(31*B^3*a*b^11 - A*B^2*b^12)*c - (3*B*b^14*c^5 - 4096*(42*B*a
```

^7 - 13*A*a^6*b)*c^12 + 6144*(40*B*a^6*b^2 - 11*A*a^5*b^3)*c^11 - 768*(194*
B*a^5*b^4 - 45*A*a^4*b^5)*c^10 + 1280*(39*B*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 24
0*(42*B*a^3*b^8 - 5*A*a^2*b^9)*c^8 + 24*(52*B*a^2*b^10 - 3*A*a*b^11)*c^7 -
(90*B*a*b^12 - A*b^13)*c^6)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^
2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^
3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553
*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 +
27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b
^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^
3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))*sqrt(-(9*B^2*b^9 - 1680*(
4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b
^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2
*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c +
(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2
*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*
a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*
b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a
^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(65
7*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2
*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*
c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*
a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)) - (1701*
B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a^4*c^6 + 15000*(6*A^3*B*a^4*b -
A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 1037232*A*B^3*a^5*b + 287712*A^2*B^
2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a^2*b^4)*c^4 - (1555848*B^4*a^5*b
^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2*a^3*b^4 - 11277*A^3*B*a^2*b^5 +
35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 - 26973*A*B^3*a^3*b^5 + 3066*A^2*
B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(1341*B^4*a^3*b^6 - 819*A*B^3*a^2*b^
7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3
+ 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*
b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*
(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*
B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*
c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2
*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c + (b^1
0*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9
- 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3
- 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b +
17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b
^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^
4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B
^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13
+ 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*
b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10))*log(-1/2*sqr
t(1/2)*(27*B^3*b^13 + 32000*A^3*a^5*c^8 - 640*(882*A*B^2*a^6 - 156*A^2*B*a^
5*b + 37*A^3*a^4*b^2)*c^7 + 64*(10584*B^3*a^6*b + 5562*A*B^2*a^5*b^2 - 1083
*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)*c^6 - 8*(93096*B^3*a^5*b^3 + 3816*A*B^2*a^
4*b^4 - 1746*A^2*B*a^3*b^5 + 49*A^3*a^2*b^6)*c^5 + (337392*B^3*a^4*b^5 - 24
120*A*B^2*a^3*b^6 - 84*A^2*B*a^2*b^7 - 17*A^3*a*b^8)*c^4 - (81324*B^3*a^3*b
^7 - 6993*A*B^2*a^2*b^8 + 195*A^2*B*a*b^9 - A^3*b^10)*c^3 + 9*(1239*B^3*a^2
*b^9 - 79*A*B^2*a*b^10 + A^2*B*b^11)*c^2 - 27*(31*B^3*a*b^11 - A*B^2*b^12)*
c - (3*B*b^14*c^5 - 4096*(42*B*a^7 - 13*A*a^6*b)*c^12 + 6144*(40*B*a^6*b^2
- 11*A*a^5*b^3)*c^11 - 768*(194*B*a^5*b^4 - 45*A*a^4*b^5)*c^10 + 1280*(39*B
*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 240*(42*B*a^3*b^8 - 5*A*a^2*b^9)*c^8 + 24*(52
*B*a^2*b^10 - 3*A*a*b^11)*c^7 - (90*B*a*b^12 - A*b^13)*c^6)*sqrt((81*B^4*b^
8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^
5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B
*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2
*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A

```
^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*
c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c
^15)))*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^
4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*
b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3
*(63*B^2*a*b^7 - 2*A*B*b^8)*c + (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7
- 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 62
5*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (1
94481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3
 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a
*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2
*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 +
 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))
/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^
2*c^9 - 1024*a^5*c^10)) - (1701*B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a
^4*c^6 + 15000*(6*A^3*B*a^4*b - A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 103
7232*A*B^3*a^5*b + 287712*A^2*B^2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a
^2*b^4)*c^4 - (1555848*B^4*a^5*b^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2
*a^3*b^4 - 11277*A^3*B*a^2*b^5 + 35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 -
 26973*A*B^3*a^3*b^5 + 3066*A^2*B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(134
1*B^4*a^3*b^6 - 819*A*B^3*a^2*b^7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) + sqrt(1/
2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*
a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*
a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*
x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b
- 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4
+ A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63
*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 64
0*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^
4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (19448
1*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A
^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4
 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6
)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160
*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^
10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^
9 - 1024*a^5*c^10))*log(1/2*sqrt(1/2)*(27*B^3*b^13 + 32000*A^3*a^5*c^8 - 64
0*(882*A*B^2*a^6 - 156*A^2*B*a^5*b + 37*A^3*a^4*b^2)*c^7 + 64*(10584*B^3*a^
6*b + 5562*A*B^2*a^5*b^2 - 1083*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)*c^6 - 8*(93
096*B^3*a^5*b^3 + 3816*A*B^2*a^4*b^4 - 1746*A^2*B*a^3*b^5 + 49*A^3*a^2*b^6)
*c^5 + (337392*B^3*a^4*b^5 - 24120*A*B^2*a^3*b^6 - 84*A^2*B*a^2*b^7 - 17*A^
3*a*b^8)*c^4 - (81324*B^3*a^3*b^7 - 6993*A*B^2*a^2*b^8 + 195*A^2*B*a*b^9 -
A^3*b^10)*c^3 + 9*(1239*B^3*a^2*b^9 - 79*A*B^2*a*b^10 + A^2*B*b^11)*c^2 - 2
7*(31*B^3*a*b^11 - A*B^2*b^12)*c + (3*B*b^14*c^5 - 4096*(42*B*a^7 - 13*A*a^
6*b)*c^12 + 6144*(40*B*a^6*b^2 - 11*A*a^5*b^3)*c^11 - 768*(194*B*a^5*b^4 -
45*A*a^4*b^5)*c^10 + 1280*(39*B*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 240*(42*B*a^3*
b^8 - 5*A*a^2*b^9)*c^8 + 24*(52*B*a^2*b^10 - 3*A*a*b^11)*c^7 - (90*B*a*b^12
 - A*b^13)*c^6)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 -
108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17
496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2
 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*
a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3
*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 +
 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 -
A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35
*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 1
68*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 -
20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*
a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^
```

3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)) - (1701*B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a^4*c^6 + 15000*(6*A^3*B*a^4*b - A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 1037232*A*B^3*a^5*b + 287712*A^2*B^2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a^2*b^4)*c^4 - (1555848*B^4*a^5*b^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2*a^3*b^4 - 11277*A^3*B*a^2*b^5 + 35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 - 26973*A*B^3*a^3*b^5 + 3066*A^2*B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(1341*B^4*a^3*b^6 - 819*A*B^3*a^2*b^7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10))*log(-1/2*sqrt(1/2)*(27*B^3*b^13 + 32000*A^3*a^5*c^8 - 640*(882*A*B^2*a^6 - 156*A^2*B*a^5*b + 37*A^3*a^4*b^2)*c^7 + 64*(10584*B^3*a^6*b + 5562*A*B^2*a^5*b^2 - 1083*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)*c^6 - 8*(93096*B^3*a^5*b^3 + 3816*A*B^2*a^4*b^4 - 1746*A^2*B*a^3*b^5 + 49*A^3*a^2*b^6)*c^5 + (337392*B^3*a^4*b^5 - 24120*A*B^2*a^3*b^6 - 84*A^2*B*a^2*b^7 - 17*A^3*a*b^8)*c^4 - (81324*B^3*a^3*b^7 - 6993*A*B^2*a^2*b^8 + 195*A^2*B*a*b^9 - A^3*b^10)*c^3 + 9*(1239*B^3*a^2*b^9 - 79*A*B^2*a*b^10 + A^2*B*b^11)*c^2 - 27*(31*B^3*a*b^11 - A*B^2*b^12)*c + (3*B*b^14*c^5 - 4096*(42*B*a^7 - 13*A*a^6*b)*c^12 + 6144*(40*B*a^6*b^2 - 11*A*a^5*b^3)*c^11 - 768*(194*B*a^5*b^4 - 45*A*a^4*b^5)*c^10 + 1280*(39*B*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 240*(42*B*a^3*b^8 - 5*A*a^2*b^9)*c^8 + 24*(52*B*a^2*b^10 - 3*A*a*b^11)*c^7 - (90*B*a*b^12 - A*b^13)*c^6)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)) - (1701*B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a^4*c^6 + 150

```
00*(6*A^3*B*a^4*b - A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 1037232*A*B^3*a
^5*b + 287712*A^2*B^2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a^2*b^4)*c^4
- (1555848*B^4*a^5*b^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2*a^3*b^4 - 1
1277*A^3*B*a^2*b^5 + 35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 - 26973*A*B^3
*a^3*b^5 + 3066*A^2*B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(1341*B^4*a^3*b^
6 - 819*A*B^3*a^2*b^7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) - 2*(3*B*a^2*b^3 + 20
*A*a^3*c^2 + (5*B*b^4*c + 4*(11*B*a^2 + 4*A*a*b)*c^3 - (37*B*a*b^2 + A*b^3)
*c^2)*x^3 + (3*B*b^5 + 36*A*a^2*c^3 - (4*B*a^2*b - 5*A*a*b^2)*c^2 - (20*B*a
*b^3 - A*b^4)*c)*x^2 - (24*B*a^3*b - A*a^2*b^2)*c + (6*B*a*b^4 + 28*(B*a^3
+ A*a^2*b)*c^2 - (49*B*a^2*b^2 - 2*A*a*b^3)*c)*x)*sqrt(x))/(a^2*b^4*c^2 - 8
*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b
^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*
c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)
```

giac [B] time = 2.41, size = 3997, normalized size = 7.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/16*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c + 12*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*b^5*c^2 - 2*b^6*c^2 - 144*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^3 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 - 24*a*b^4*c^3 - 2*b^5*c^3 + 320*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 160*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^2*b*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^
4 + 288*a^2*b^2*c^4 + 112*a*b^3*c^4 - 80*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*c^5 - 640*a^3*c^5 - 416*a^2*b*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*b^4*c^2 + 208*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*b*c^3 + 104*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^2*c^3 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*b^3*c^3 - 52*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a*b*c^4 + 2*(b^2 - 4*a*c)*b^4*c^2 + 32*(b^2 - 4*a*c)*a*b^2*c^3 + 2*(
b^2 - 4*a*c)*b^3*c^3 - 160*(b^2 - 4*a*c)*a^2*c^4 - 104*(b^2 - 4*a*c)*a*b*c^
4)*A + 3*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 - 16*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*b^6*c - 2*b^7*c + 80*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 +
 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 32*a*b^5*c^2 - 2*b^6*c^2 - 128*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^2*c^3 - 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 -
 160*a^2*b^3*c^3 + 28*a*b^4*c^3 + 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*a^2*b*c^4 + 256*a^3*b*c^4 - 192*a^2*b^2*c^4 + 448*a^3*c^5 + sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 - 14*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^3*c^3 - 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^2*b*c^3 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*b^2*c^3 + 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a^2*c^4 + 2*(b^2 - 4*a*c)*b^5*c - 24*(b^2 - 4*a*c)*a*b^3*c^2 + 2
*(b^2 - 4*a*c)*b^4*c^2 + 64*(b^2 - 4*a*c)*a^2*b*c^3 - 20*(b^2 - 4*a*c)*a*b^
2*c^3 + 112*(b^2 - 4*a*c)*a^2*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5*
c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4 + sqrt((b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c
```

```
^4)^2 - 4*(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*(b^4*c^3 - 8*a*b^2*c^4 +
 16*a^2*c^5)))/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)))/((b^8*c^2 - 16*a*b^6*
c^3 - 2*b^7*c^3 + 96*a^2*b^4*c^4 + 24*a*b^5*c^4 + b^6*c^4 - 256*a^3*b^2*c^5
 - 96*a^2*b^3*c^5 - 12*a*b^4*c^5 + 256*a^4*c^6 + 128*a^3*b*c^6 + 48*a^2*b^2
*c^6 - 64*a^3*c^7)*abs(c)) + 1/16*((sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*b^6*c + 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - 2*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 2*b^6*c^2 - 144*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a*b^3*c^3 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 24*a*b^4*
c^3 + 2*b^5*c^3 + 320*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 160
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 16*sqrt(2)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 288*a^2*b^2*c^4 - 112*a*b^3*c^4 - 80*sqrt(
2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^5 + 640*a^3*c^5 + 416*a^2*b*c^5 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 56*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 208*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 104*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 52*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 - 32*
(b^2 - 4*a*c)*a*b^2*c^3 - 2*(b^2 - 4*a*c)*b^3*c^3 + 160*(b^2 - 4*a*c)*a^2*c
^4 + 104*(b^2 - 4*a*c)*a*b*c^4)*A + 3*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*b^7 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*sqrt(2)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 2*b^7*c + 80*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^2*b^3*c^2 + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 32*a*b^5*c^2 +
2*b^6*c^2 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 64*sqrt
(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 12*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b^3*c^3 + 160*a^2*b^3*c^3 - 28*a*b^4*c^3 + 32*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 256*a^3*b*c^4 + 192*a^2*b^2*c^4
 - 448*a^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b
^6 + 14*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c +
 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 96*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 20*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 224*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 112*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 10*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 56*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^5*c + 2
4*(b^2 - 4*a*c)*a*b^3*c^2 - 2*(b^2 - 4*a*c)*b^4*c^2 - 64*(b^2 - 4*a*c)*a^2*
b*c^3 + 20*(b^2 - 4*a*c)*a*b^2*c^3 - 112*(b^2 - 4*a*c)*a^2*c^4)*B)*arctan(2
*sqrt(1/2)*sqrt(x)/sqrt((b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4 - sqrt((b^5*c
^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)^2 - 4*(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*
c^4)*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)))/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2
*c^5)))/((b^8*c^2 - 16*a*b^6*c^3 - 2*b^7*c^3 + 96*a^2*b^4*c^4 + 24*a*b^5*c^
4 + b^6*c^4 - 256*a^3*b^2*c^5 - 96*a^2*b^3*c^5 - 12*a*b^4*c^5 + 256*a^4*c^6
 + 128*a^3*b*c^6 + 48*a^2*b^2*c^6 - 64*a^3*c^7)*abs(c)) - 1/4*(5*B*b^4*c*x^
(7/2) - 37*B*a*b^2*c^2*x^(7/2) - A*b^3*c^2*x^(7/2) + 44*B*a^2*c^3*x^(7/2) +
 16*A*a*b*c^3*x^(7/2) + 3*B*b^5*x^(5/2) - 20*B*a*b^3*c*x^(5/2) + A*b^4*c*x^
(5/2) - 4*B*a^2*b*c^2*x^(5/2) + 5*A*a*b^2*c^2*x^(5/2) + 36*A*a^2*c^3*x^(5/2
) + 6*B*a*b^4*x^(3/2) - 49*B*a^2*b^2*c*x^(3/2) + 2*A*a*b^3*c*x^(3/2) + 28*B
*a^3*c^2*x^(3/2) + 28*A*a^2*b*c^2*x^(3/2) + 3*B*a^2*b^3*sqrt(x) - 24*B*a^3*
b*c*sqrt(x) + A*a^2*b^2*c*sqrt(x) + 20*A*a^3*c^2*sqrt(x))/((b^4*c^2 - 8*a*b
^2*c^3 + 16*a^2*c^4)*(c*x^2 + b*x + a)^2)
```

maple [B] time = 0.13, size = 2061, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(-1/8*(16*A*a*b*c^2-A*b^3*c+44*B*a^2*c^2-37*B*a*b^2*c+5*B*b^4)/(16*a^2*c^
2-8*a*b^2*c+b^4)/c*x^(7/2)-1/8*(36*A*a^2*c^3+5*A*a*b^2*c^2+A*b^4*c-4*B*a^2*
b*c^2-20*B*a*b^3*c+3*B*b^5)/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)-1/8*a/c^
2*(28*A*a*b*c^2+2*A*b^3*c+28*B*a^2*c^2-49*B*a*b^2*c+6*B*b^4)/(16*a^2*c^2-8*
a*b^2*c+b^4)*x^(3/2)-1/8*a^2*(20*A*a*c^2+A*b^2*c-24*B*a*b*c+3*B*b^3)/c^2/(1
6*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*x^2+b*x+a)^2-2/(16*a^2*c^2-8*a*b^2*c+b
^4)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+1/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*A*b^3-5*c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*a^2*A-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(
1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a*b^2+1/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*
a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4+21/2/(16*a^2*c^2-8*a*b^2*c+b^
4)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*B-27/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a*b^2*B+3/8/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
c*x^(1/2))*b^4*B+33/2/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*B*a^2*b-33/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1
/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*B*a*b^3+3/8/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4
*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^5+2/(16*a^2*c^2-8*a*b^2*c+b^4)
*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b-1/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*A*b^3-5*c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2
)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*A-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a*b^2+1/8/c/(16*a^2*c^2-8*a*b^2*c+
b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2
^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4-21/2/(16*a^2*c^2-
8*a*b^2*c+b^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*B+27/8/c/(16*a^2*c^2-8*a*b^2
*c+b^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B-3/8/c^2/(16*a^2*c^2-8*a*b^2*c+b
^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^4*B+33/2/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a
*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*a^2*b-33/8/c/(16*a^2*c^2-8*a*b^
2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*a*b^3+3/8/c^2/(16
*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^
5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(\left(b^2c^2 + 20\,ac^3\right)A + 3\left(b^3c - 8\,abc^2\right)B\right)x^{\frac{9}{2}} + \left(3\left(b^3c + 8\,abc^2\right)A + \left(b^4 - 11\,ab^2c - 44\,a^2c^2\right)B\right)x^{\frac{7}{2}} + \left(\left(17\,ab^2c + 4\,a^2c^2\right)A + 2\left(ab^3 - 22\,a^2bc\right)B\right)x^{\frac{5}{2}} + \left(12\,Aa^2bc + \left(a^2b^2 - 28\,a^3c\right)B\right)x^{\frac{3}{2}}}{4\left(a^2b^4c - 8\,a^3b^2c^2 + 16\,a^4c^3 + \left(b^4c^3 - 8\,ab^2c^4 + 16\,a^2c^5\right)x^4 + 2\left(b^5c^2 - 8\,ab^3c^3 + 16\,a^2bc^4\right)x^3 + \left(b^6c - 6\,ab^4c^2 + 32\,a^3c^4\right)x^2 + 2\left(ab^5c - 8\,a^2b^3c^2 + 16\,a^3bc^3\right)x\right)} - \int \frac{\left(\left(b^2c + 20\,ac^2\right)A + 3\left(b^3 - 8\,abc\right)B\right)x^{\frac{3}{2}} + 3\left(12\,Aabc + \left(ab^2 - 28\,a^2c\right)B\right)\sqrt{x}}{8\left(ab^4c - 8\,a^2b^2c^2 + 16\,a^3c^3 + \left(b^4c^2 - 8\,ab^2c^3 + 16\,a^2c^4\right)x^2 + \left(b^5c - 8\,ab^3c^2 + 16\,a^2bc^3\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(((b^2*c^2 + 20*a*c^3)*A + 3*(b^3*c - 8*a*b*c^2)*B)*x^(9/2) + (3*(b^3*c
 + 8*a*b*c^2)*A + (b^4 - 11*a*b^2*c - 44*a^2*c^2)*B)*x^(7/2) + ((17*a*b^2*c
 + 4*a^2*c^2)*A + 2*(a*b^3 - 22*a^2*b*c)*B)*x^(5/2) + (12*A*a^2*b*c + (a^2*
b^2 - 28*a^3*c)*B)*x^(3/2))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*
c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c
^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c
^2 + 16*a^3*b*c^3)*x) - integrate(1/8*(((b^2*c + 20*a*c^2)*A + 3*(b^3 - 8*a
*b*c)*B)*x^(3/2) + 3*(12*A*a*b*c + (a*b^2 - 28*a^2*c)*B)*sqrt(x))/(a*b^4*c
- 8*a^2*b^2*c^2 + 16*a^3*c^3 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^2 + (
b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x), x)
```

mupad [B] time = 5.96, size = 22943, normalized size = 43.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] - ((x^(5/2)*(3*B*b^5 + 36*A*a^2*c^3 + A*b^4*c - 20*B*a*b^3*c + 5*A*a*b^2*c^
2 - 4*B*a^2*b*c^2))/(4*c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(7/2)*(5*B*
b^4 + 44*B*a^2*c^2 - A*b^3*c + 16*A*a*b*c^2 - 37*B*a*b^2*c))/(4*c*(b^4 + 16
*a^2*c^2 - 8*a*b^2*c)) + (x^(3/2)*(28*B*a^3*c^2 + 6*B*a*b^4 + 2*A*a*b^3*c +
 28*A*a^2*b*c^2 - 49*B*a^2*b^2*c))/(4*c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) +
 (a^2*x^(1/2)*(3*B*b^3 + 20*A*a*c^2 + A*b^2*c - 24*B*a*b*c))/(4*c^2*(b^4 +
16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*
b*c*x^3) - atan(((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3
 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 73728
0*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3
*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3
*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280
*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*B^2*b^
19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 11
40*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 4377
6*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921
*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851
776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 +
27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*
a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c
 - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2
)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^
3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*
B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*
a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a
*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048
576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14
*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 19
66080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(
64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960
*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4
 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2
*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 101
60*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 68096
0*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580
*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 962
8416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8
+ A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^1
5)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 17
20320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^
2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a
^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A
```

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*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^1
5)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108
*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5
- 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9
 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949
120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 8
00*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^
2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c
^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*
a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))
/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^
6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6
*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^
4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^
7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4
*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^
2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^
(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 -
369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^
3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^
3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*
c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b
^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*
A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(
1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7
 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a
^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2
*c^14)))^(1/2)*1i - (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*
c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 73
7280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*
a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*
b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1
280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2
*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c +
 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 4
3776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6
921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2
851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7
 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B
^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^1
7*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c -
b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B
*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032
*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B
^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(
4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1
048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b
^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 -
 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2
)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40
960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*
c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*
B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 -
10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 68
0960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77
580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 +
9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c
^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2
)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 -
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1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880
*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*
B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 129024
0*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2
)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) -
108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c
^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*
c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2
949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10
+ 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2
*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^
4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A
*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^
5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2
c^6)))(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2)
+ 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2
*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2
*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*
a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424
*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^1
5)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10
 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a
c^3(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14
*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b
^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^
8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 +
 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15
)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*
c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 86016
0*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*
b^2*c^14)))^(1/2)*1i)/((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^
13*c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 -
 737280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440
*B*a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a
^6*b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5
- 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*
B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*
c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6
+ 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9
+ 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4
- 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*
c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 44
1*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*
b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c
 - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*
A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860
032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 9
9*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*
(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128
*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^
3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^1
1 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(
1/2)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 -
 40960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b
^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 +
 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4
 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 -
 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 -
 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5

+ 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4

- 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10 + 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (35*A^3*a^2*b^7*c^2 - 592704*B^3*a^7*c^4 - 567*B^3*a^3*b^8 - 1176*A^3*a^3*b^5*c^3 + 9456*A^3*a^4*b^3*c^4 - 89532*B^3*a^5*b^4*c^2 + 353808*B^3*a^6*b^2*c^3 + 315*A*B^2*a^2*b^9 - 33600*A^2*B*a^6*c^5 + 6400*A^3*a^5*b*c^5 + 10935*B^3*a^4*b^6*c - 6552*A*B^2*a^3*b^7*c + 560448*A*B^2*a^6*b*c^4 + 210*A^2*B*a^2*b^8*c + 61524*A*B^2*a^4*b^5*c^2 - 280800*A*B^2*a^5*b^3*c^3 - 5649*A^2*B*a^3*b^6*c^2 + 42516*A^2*B*a^4*b^4*c^3 - 126192*A^2*B*a^5*b^2*c^4)/(32*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8))))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 196

6080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*2i
 - atan(((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 + 15728
64*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*A*a^5*
b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b^9*c^5
 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c^8)/(6
4*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6
*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*B^2*b^19 + A^2
*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a
^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^
5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2
*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*
a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040
*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*
(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^
2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1
/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c
^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^
6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*
(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2
)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10
*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 5
3760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^
7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64*b^11*
c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a^3*b^5
*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^
2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(
4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a
^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^
6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3
*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2
*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^
2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2)
 + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^
2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*
c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*
c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b
^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b
c^2(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b
^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 25804
8*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*
b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 800*A^2*a
^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4*c^
4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 + 213
12*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b^5*
c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(256
*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(
9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^1
8*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^
6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^
9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^
4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^
5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) -
441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*
a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a
*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 5928
0*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 28
60032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 +
 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*

c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(1
28*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*
a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c
^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))
^(1/2)*1i - (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 + 15
72864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*A*a
^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b^9*
c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c^8)
/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*
b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2*b^19 +
A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^
2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2
*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*
a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B
^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095
040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c
^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55
*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)
^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^1
2*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6
*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2
c(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c -
b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a
^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8
+ 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080
*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64*b^
11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a^3*
b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96
*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*
(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^
2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2
*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*
a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*
B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2
*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1
/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320
*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9
*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^
10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^
7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1
/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*
a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*
a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 25
8048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a
^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10 + 800*A^
2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4
*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 +
21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b
^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(
256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*
(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*
b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9
*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3
*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11
*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7
*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2)
 - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B
^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(
4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 5

9280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*1i)/((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1

/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 36
9*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*
(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3
- 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^
6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2
*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*
B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/
2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 -
7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6
*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c
^14)))^(1/2) + (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 +
1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*
A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b
^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c
^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a
^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2*b^19
+ A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140
*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*
A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B
^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 285177
6*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27
095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^
2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c -
55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^
15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*
b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*
a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*
b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c
- b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(104857
6*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c
^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966
080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64
*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a
^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 +
96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b
^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160
*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*
A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B
^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 96284
16*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 -
A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)
^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720
320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*
a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4
*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B
*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)
^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A
*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 -
40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 -
258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 294912
0*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10 + 800
*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*
b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3
+ 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^
2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(
8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)
))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*
b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*

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b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b
^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*
a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1
/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 36
9*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*
(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3
- 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^
6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2
*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*
B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/
2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 -
 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6
*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c
^14)))^(1/2) + (35*A^3*a^2*b^7*c^2 - 592704*B^3*a^7*c^4 - 567*B^3*a^3*b^8 -
 1176*A^3*a^3*b^5*c^3 + 9456*A^3*a^4*b^3*c^4 - 89532*B^3*a^5*b^4*c^2 + 3538
08*B^3*a^6*b^2*c^3 + 315*A*B^2*a^2*b^9 - 33600*A^2*B*a^6*c^5 + 6400*A^3*a^5
*b*c^5 + 10935*B^3*a^4*b^6*c - 6552*A*B^2*a^3*b^7*c + 560448*A*B^2*a^6*b*c^
4 + 210*A^2*B*a^2*b^8*c + 61524*A*B^2*a^4*b^5*c^2 - 280800*A*B^2*a^5*b^3*c^
3 - 5649*A^2*B*a^3*b^6*c^2 + 42516*A^2*B*a^4*b^4*c^3 - 126192*A^2*B*a^5*b^2
*c^4)/(32*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280
*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8))))*(-(9*B^2*b^19 + A^2*
b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^
2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5
*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*
b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a
^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*
B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(
-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2
*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/
2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^
4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6
*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(
-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)
^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*
c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53
760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7
*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.949 $\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=459

$$\frac{\left(-\frac{-40a^2Bc^2+36aAbc^2-18ab^2Bc+3Ab^3c+b^4B}{\sqrt{b^2-4ac}}+12aAc^2-16abBc+3Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}c^{3/2}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{-40a^2Bc^2+36aAbc^2-1\ldots}{\sqrt{b^2-\ldots}}\right.}{}$$

Rubi [A] time = 4.69, antiderivative size = 459, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {818, 820, 826, 1166, 205}

$$\frac{\left(-\frac{-40a^2Bc^2+36aAbc^2-18ab^2Bc+3Ab^3c+b^4B}{\sqrt{b^2-4ac}}+12aAc^2-16abBc+3Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}c^{3/2}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{-40a^2Bc^2+36aAbc^2-18ab^2Bc+3Ab^3c+b^4B}{\sqrt{b^2-4ac}}+12aAc^2-16abBc+3Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}c^{3/2}\left(b^2-4ac\right)^2\sqrt{\sqrt{b^2-4ac}+b}}-\frac{\sqrt{x}\left(a\left(20aBc-12Abc+b^2B\right)-x\left(12aAc^2-16abBc+3Ab^2c+b^3B\right)\right)}{4c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}-\frac{x^{3/2}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(x^(3/2)*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(2*c*(b^2 - 4*a*
c)*(a + b*x + c*x^2)^2) - (Sqrt[x]*(a*(b^2*B - 12*A*b*c + 20*a*B*c) - (b^3*
B + 3*A*b^2*c - 16*a*b*B*c + 12*a*A*c^2)*x))/(4*c*(b^2 - 4*a*c)^2*(a + b*x
+ c*x^2)) + ((b^3*B + 3*A*b^2*c - 16*a*b*B*c + 12*a*A*c^2 - (b^4*B + 3*A*b^
3*c - 18*a*b^2*B*c + 36*a*A*b*c^2 - 40*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(3/2)
*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b^3*B + 3*A*b^2*c - 16*a*
b*B*c + 12*a*A*c^2 + (b^4*B + 3*A*b^3*c - 18*a*b^2*B*c + 36*a*A*b*c^2 - 40*
a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqr
t[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)^2*Sqrt[b + Sqrt[b^2 - 4*
a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
```

```
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\int \frac{\sqrt{x}\left(\frac{3}{2}a(bB-2Ac)+\frac{1}{2}\left(b^2B+3Abc-10aBc\right)x\right)}{\left(a+bx+cx^2\right)^2}\,dx}{2c\left(b^2-4ac\right)}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(b^2B-12Abc+20aBc\right)-\left(b^3B\right.\right.}{4c\left(b^2-4ac\right)^2\left(a\right.}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(b^2B-12Abc+20aBc\right)-\left(b^3B\right.\right.}{4c\left(b^2-4ac\right)^2\left(a\right.}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(b^2B-12Abc+20aBc\right)-\left(b^3B\right.\right.}{4c\left(b^2-4ac\right)^2\left(a\right.}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\left(a\left(b^2B-12Abc+20aBc\right)-\left(b^3B\right.\right.}{4c\left(b^2-4ac\right)^2\left(a\right.}$$

Mathematica [A] time = 2.15, size = 589, normalized size = 1.28

$$\frac{\frac{x^{7/2}\left(A\left(-4a^2c^2-5ab^2c+3b^4+3b^3cx\right)+aB\left(16abc+4ac^2x-7b^3-7b^2cx\right)\right)}{2a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{-\frac{2a^2\sqrt{x}\left(20aBc-12Abc+b^2B\right)}{c}+\frac{\sqrt{2}a^2\left(\frac{40a^2Bc^2-36aAbc^2+18ab^2Bc-3Ab^3c+b^4(-B)}{\sqrt{b^2-4ac}}+12aAc^2-16abBc+3Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}a^2\left(4ac^2\left(3A\sqrt{b^2-4ac}-10aB\right)+3b^2c\left(A\sqrt{b^2-4ac}-6aB\right)+4abc\left(9Ac-4B\sqrt{b^2-4ac}\right)+b^3\left(B\sqrt{b^2-4ac}+3Ac\right)+b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}-2ax^{3/2}\left(4aAc-12abB+5Ab^2\right)+2aBx^{5/2}\left(4ac-7b^2\right)+6Ab^3x^{5/2}}{4a\left(b^2-4ac\right)}}{2a\left(b^2-4ac\right)}+\frac{x^{7/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{(a+x(b+cx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(7/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 + (x^(7/2)*(A*(3*b^4 - 5*a*b^2*c - 4*a^2*c^2 + 3*b^3*c*x) + a*B*(-7*b^3
+ 16*a*b*c - 7*b^2*c*x + 4*a*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(a + x*(b + c*x))
) + ((-2*a^2*(b^2*B - 12*A*b*c + 20*a*B*c)*Sqrt[x])/c - 2*a*(5*A*b^2 - 12*a
```

```
*b*B + 4*a*A*c)*x^(3/2) + 6*A*b^3*x^(5/2) + 2*a*B*(-7*b^2 + 4*a*c)*x^(5/2)
+ (Sqrt[2]*a^2*(b^3*B + 3*A*b^2*c - 16*a*b*B*c + 12*a*A*c^2 + (-(b^4*B) - 3
*A*b^3*c + 18*a*b^2*B*c - 36*a*A*b*c^2 + 40*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*A
rcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt
[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*a^2*(b^4*B + 3*b^2*c*(-6*a*B + A*Sqrt[b
^2 - 4*a*c]) + 4*a*c^2*(-10*a*B + 3*A*Sqrt[b^2 - 4*a*c]) + 4*a*b*c*(9*A*c -
 4*B*Sqrt[b^2 - 4*a*c]) + b^3*(3*A*c + B*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2
]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]
*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(4*a*(b^2 - 4*a*c)))/(2*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 8.74, size = 578, normalized size = 1.26

$$\frac{\left(40a^2Bc^2+12aAc^2\sqrt{b^2-4ac}+3Ab^2c\sqrt{b^2-4ac}-36aAbc^2+18ab^2Bc-16abBc\sqrt{b^2-4ac}+b^3B\sqrt{b^2-4ac}-3Ab^3c+b^4(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}c^{3/2}\left(b^2-4ac\right)^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-40a^2Bc^2+12aAc^2\sqrt{b^2-4ac}+3Ab^2c\sqrt{b^2-4ac}+36aAbc^2-18ab^2Bc-16abBc\sqrt{b^2-4ac}+b^3B\sqrt{b^2-4ac}+3Ab^3c+b^4B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}c^{3/2}\left(b^2-4ac\right)^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{\sqrt{x}\left(-20a^3Bc+12a^2Abc-4a^2Ac^2x-a^2b^2B-28a^2bBcx-36a^2Bc^2x^2+19aAb^2cx+16aAbc^2x^2+12aAc^3x^3-2ab^3Bx-5ab^2Bcx^2-16abBc^2x^3+5Ab^3cx^2+3Ab^2c^2x^3+b^4(-B)x^2+b^3Bcx^3\right)}{4c\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(-(a^2*b^2*B) + 12*a^2*A*b*c - 20*a^3*B*c - 2*a*b^3*B*x + 19*a*A*b
^2*c*x - 28*a^2*b*B*c*x - 4*a^2*A*c^2*x - b^4*B*x^2 + 5*A*b^3*c*x^2 - 5*a*b
^2*B*c*x^2 + 16*a*A*b*c^2*x^2 - 36*a^2*B*c^2*x^2 + b^3*B*c*x^3 + 3*A*b^2*c^
2*x^3 - 16*a*b*B*c^2*x^3 + 12*a*A*c^3*x^3))/(4*c*(-b^2 + 4*a*c)^2*(a + b*x
+ c*x^2)^2) + ((-(b^4*B) - 3*A*b^3*c + 18*a*b^2*B*c - 36*a*A*b*c^2 + 40*a^2
*B*c^2 + b^3*B*Sqrt[b^2 - 4*a*c] + 3*A*b^2*c*Sqrt[b^2 - 4*a*c] - 16*a*b*B*c
*Sqrt[b^2 - 4*a*c] + 12*a*A*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*
Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)^(5/
2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b^4*B + 3*A*b^3*c - 18*a*b^2*B*c + 36*a
*A*b*c^2 - 40*a^2*B*c^2 + b^3*B*Sqrt[b^2 - 4*a*c] + 3*A*b^2*c*Sqrt[b^2 - 4*
a*c] - 16*a*b*B*c*Sqrt[b^2 - 4*a*c] + 12*a*A*c^2*Sqrt[b^2 - 4*a*c])*ArcTan[
(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(3/2)*
(b^2 - 4*a*c)^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 7.25, size = 7056, normalized size = 15.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/8*(sqrt(1/2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^
2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b
^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*
b*c^3)*x)*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*
a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4
 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4
 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqr
t((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2
- 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(
b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*
c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^
3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8))*log(1/2*sqrt(1/2)*(B^3*b^10 -
 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 + 64*(500*B^3*a^5 - 420*A*B^2*a^4*b +
 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^5 - 16*(1480*B^3*a^4*b^2 - 1284*A*B^
2*a^3*b^3 + 324*A^2*B*a^2*b^4 - 81*A^3*a*b^5)*c^4 + 4*(1424*B^3*a^3*b^4 - 1
332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 27*A^3*b^7)*c^3 - (392*B^3*a^2*b^6 -
492*A*B^2*a*b^7 + 63*A^2*B*b^8)*c^2 - (17*B^3*a*b^8 + 6*A*B^2*b^9)*c - (B*b
^13*c^3 - 24576*A*a^6*c^10 + 4096*(13*B*a^6*b + 3*A*a^5*b^2)*c^9 - 1536*(44
*B*a^5*b^3 - 5*A*a^4*b^4)*c^8 + 3840*(9*B*a^4*b^5 - 2*A*a^3*b^6)*c^7 - 160*
(56*B*a^3*b^7 - 15*A*a^2*b^8)*c^6 + 48*(25*B*a^2*b^9 - 7*A*a*b^10)*c^5 - 18
*(4*B*a*b^11 - A*b^12)*c^4)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a -
 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(2
```

5*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))*sqrt(-(B^2*b^7 - 240 *(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2 *a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a* b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b ^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b ^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160* a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10* c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*B^3*b^7 - 1296*A^4*a^2*c^5 + 648*(14 *A^3*B*a^2*b - 5*A^4*a*b^2)*c^4 + (10000*B^4*a^4 - 30000*A*B^3*a^3*b + 9936 *A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 405*A^4*b^4)*c^3 + 3*(5000*B^4*a^3*b^ 2 - 3864*A*B^3*a^2*b^3 + 1080*A^2*B^2*a*b^4 - 135*A^3*B*b^5)*c^2 - 3*(497*B ^4*a^2*b^4 - 315*A*B^3*a*b^5 + 45*A^2*B^2*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a^2 *b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)* x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x)*sqrt(-(B^2 *b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b ^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4* c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54 *A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8* c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4 *b^2*c^7 - 1024*a^5*c^8))*log(-1/2*sqrt(1/2)*(B^3*b^10 - 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 + 64*(500*B^3*a^5 - 420*A*B^2*a^4*b + 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^5 - 16*(1480*B^3*a^4*b^2 - 1284*A*B^2*a^3*b^3 + 324*A^2 *B*a^2*b^4 - 81*A^3*a*b^5)*c^4 + 4*(1424*B^3*a^3*b^4 - 1332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 27*A^3*b^7)*c^3 - (392*B^3*a^2*b^6 - 492*A*B^2*a*b^7 + 6 3*A^2*B*b^8)*c^2 - (17*B^3*a*b^8 + 6*A*B^2*b^9)*c - (B*b^13*c^3 - 24576*A*a ^6*c^10 + 4096*(13*B*a^6*b + 3*A*a^5*b^2)*c^9 - 1536*(44*B*a^5*b^3 - 5*A*a^ 4*b^4)*c^8 + 3840*(9*B*a^4*b^5 - 2*A*a^3*b^6)*c^7 - 160*(56*B*a^3*b^7 - 15* A*a^2*b^8)*c^6 + 48*(25*B*a^2*b^9 - 7*A*a*b^10)*c^5 - 18*(4*B*a*b^11 - A*b^ 12)*c^4)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B ^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1 280*a^4*b^2*c^10 - 1024*a^5*c^11)))*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2 *a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280* B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b ^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^ 3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4 *a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a ^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*B^3*b^7 - 1296*A^4*a^2*c^5 + 648*(14*A^3*B*a^2*b - 5*A^ 4*a*b^2)*c^4 + (10000*B^4*a^4 - 30000*A*B^3*a^3*b + 9936*A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 405*A^4*b^4)*c^3 + 3*(5000*B^4*a^3*b^2 - 3864*A*B^3*a^2* b^3 + 1080*A^2*B^2*a*b^4 - 135*A^3*B*b^5)*c^2 - 3*(497*B^4*a^2*b^4 - 315*A* B^3*a*b^5 + 45*A^2*B^2*b^6)*c)*sqrt(x)) + sqrt(1/2)*(a^2*b^4*c - 8*a^3*b^2* c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x)*sqrt(-(B^2*b^7 - 240*(4*A*B*a ^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c ^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A *B*b^6)*c - (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^

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2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 -
 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c
^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*
a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5
*c^8))*log(1/2*sqrt(1/2)*(B^3*b^10 - 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 +
 64*(500*B^3*a^5 - 420*A*B^2*a^4*b + 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^
5 - 16*(1480*B^3*a^4*b^2 - 1284*A*B^2*a^3*b^3 + 324*A^2*B*a^2*b^4 - 81*A^3*
a*b^5)*c^4 + 4*(1424*B^3*a^3*b^4 - 1332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 2
7*A^3*b^7)*c^3 - (392*B^3*a^2*b^6 - 492*A*B^2*a*b^7 + 63*A^2*B*b^8)*c^2 - (
17*B^3*a*b^8 + 6*A*B^2*b^9)*c + (B*b^13*c^3 - 24576*A*a^6*c^10 + 4096*(13*B
*a^6*b + 3*A*a^5*b^2)*c^9 - 1536*(44*B*a^5*b^3 - 5*A*a^4*b^4)*c^8 + 3840*(9
*B*a^4*b^5 - 2*A*a^3*b^6)*c^7 - 160*(56*B*a^3*b^7 - 15*A*a^2*b^8)*c^6 + 48*
(25*B*a^2*b^9 - 7*A*a*b^10)*c^5 - 18*(4*B*a*b^11 - A*b^12)*c^4)*sqrt((B^4*b
^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*
B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6
 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1
024*a^5*c^11)))*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(1
4*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B
*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c - (b^10*c^3 - 20*a*b
^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^
8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^
4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3
)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^
4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 -
640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*
B^3*b^7 - 1296*A^4*a^2*c^5 + 648*(14*A^3*B*a^2*b - 5*A^4*a*b^2)*c^4 + (1000
0*B^4*a^4 - 30000*A*B^3*a^3*b + 9936*A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 4
05*A^4*b^4)*c^3 + 3*(5000*B^4*a^3*b^2 - 3864*A*B^3*a^2*b^3 + 1080*A^2*B^2*a
*b^4 - 135*A^3*B*b^5)*c^2 - 3*(497*B^4*a^2*b^4 - 315*A*B^3*a*b^5 + 45*A^2*B
^2*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (
b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2
*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b
^3*c^2 + 16*a^3*b*c^3)*x)*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^
4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^
3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c - (b^10*c^
3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1
024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3
 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6
*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9
 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*
b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8))*log(-1/2*sqrt
(1/2)*(B^3*b^10 - 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 + 64*(500*B^3*a^5 -
420*A*B^2*a^4*b + 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^5 - 16*(1480*B^3*a^
4*b^2 - 1284*A*B^2*a^3*b^3 + 324*A^2*B*a^2*b^4 - 81*A^3*a*b^5)*c^4 + 4*(142
4*B^3*a^3*b^4 - 1332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 27*A^3*b^7)*c^3 - (3
92*B^3*a^2*b^6 - 492*A*B^2*a*b^7 + 63*A^2*B*b^8)*c^2 - (17*B^3*a*b^8 + 6*A*
B^2*b^9)*c + (B*b^13*c^3 - 24576*A*a^6*c^10 + 4096*(13*B*a^6*b + 3*A*a^5*b^
2)*c^9 - 1536*(44*B*a^5*b^3 - 5*A*a^4*b^4)*c^8 + 3840*(9*B*a^4*b^5 - 2*A*a^
3*b^6)*c^7 - 160*(56*B*a^3*b^7 - 15*A*a^2*b^8)*c^6 + 48*(25*B*a^2*b^9 - 7*A
*a*b^10)*c^5 - 18*(4*B*a*b^11 - A*b^12)*c^4)*sqrt((B^4*b^4 + 81*A^4*c^4 - 1
8*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^
2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 1
60*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))*sqr
t(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*
B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)
*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c - (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^
6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 +
81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a
*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20
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*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a
^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1
280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*B^3*b^7 - 1296*A^4*
a^2*c^5 + 648*(14*A^3*B*a^2*b - 5*A^4*a*b^2)*c^4 + (10000*B^4*a^4 - 30000*A
*B^3*a^3*b + 9936*A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 405*A^4*b^4)*c^3 + 3
*(5000*B^4*a^3*b^2 - 3864*A*B^3*a^2*b^3 + 1080*A^2*B^2*a*b^4 - 135*A^3*B*b^
5)*c^2 - 3*(497*B^4*a^2*b^4 - 315*A*B^3*a*b^5 + 45*A^2*B^2*b^6)*c)*sqrt(x))
 + 2*(B*a^2*b^2 - (B*b^3*c + 12*A*a*c^3 - (16*B*a*b - 3*A*b^2)*c^2)*x^3 + (
B*b^4 + 4*(9*B*a^2 - 4*A*a*b)*c^2 + 5*(B*a*b^2 - A*b^3)*c)*x^2 + 4*(5*B*a^3
 - 3*A*a^2*b)*c + (2*B*a*b^3 + 4*A*a^2*c^2 + (28*B*a^2*b - 19*A*a*b^2)*c)*x
)*sqrt(x))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4
 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c
- 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3
)*x)
```

giac [B] time = 3.36, size = 7586, normalized size = 16.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/32*(3*(2*b^4*c^3 - 32*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*b^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c^
3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^4 - 2*(
b^2 - 4*a*c)*b^2*c^3 - 8*(b^2 - 4*a*c)*a*c^4)*(b^4*c - 8*a*b^2*c^2 + 16*a^2
*c^3)^2*A + (2*b^5*c^2 - 40*a*b^3*c^3 + 128*a^2*b*c^4 - sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^4*c - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)*b^3*c^2 + 32*(b^2 - 4*a*c)*a*b*c^3)*(b^4
*c - 8*a*b^2*c^2 + 16*a^2*c^3)^2*B - 24*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a*b^7*c^3 - 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^4 -
2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^4 - 2*a*b^7*c^4 + 48*sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 16*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^2*b^4*c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b
^5*c^5 + 24*a^2*b^5*c^5 - 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*
c^6 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^6 - 8*sqrt(2)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^6 - 96*a^3*b^3*c^6 + 16*sqrt(2)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^7 + 128*a^4*b*c^7 + 2*(b^2 - 4*a*c)*a*
b^5*c^4 - 16*(b^2 - 4*a*c)*a^2*b^3*c^5 + 32*(b^2 - 4*a*c)*a^3*b*c^6)*A*abs(
b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3) + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b^8*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^3 - 2*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7*c^3 - 2*a*b^8*c^3 - 192*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^4 - 24*sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^2*b^5*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6
*c^4 - 16*a^2*b^6*c^4 + 896*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2
*c^5 + 288*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 12*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^5 + 384*a^3*b^4*c^5 - 1280*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*c^6 - 640*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^4*b*c^6 - 144*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b
^2*c^6 - 1792*a^4*b^2*c^6 + 320*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4
*c^7 + 2560*a^5*c^7 + 2*(b^2 - 4*a*c)*a*b^6*c^3 + 24*(b^2 - 4*a*c)*a^2*b^4*
c^4 - 288*(b^2 - 4*a*c)*a^3*b^2*c^5 + 640*(b^2 - 4*a*c)*a^4*c^6)*B*abs(b^4*
```

c - 8*a*b^2*c^2 + 16*a^2*c^3) - 3*(2*b^12*c^5 - 8*a*b^10*c^6 - 192*a^2*b^8*
c^7 + 1792*a^3*b^6*c^8 - 5632*a^4*b^4*c^9 + 6144*a^5*b^2*c^10 - sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^12*c^3 + 4*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 + 2*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 96*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^10*c^5 - 896*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 192*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 + 2816*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7 + 1024*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^7 + 96*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^7 - 3072*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^8 - 1536*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^8 - 512*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^8 + 768*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^9 - 2*(b^2 - 4*a*c)*b
^10*c^5 + 192*(b^2 - 4*a*c)*a^2*b^6*c^7 - 1024*(b^2 - 4*a*c)*a^3*b^4*c^8 +
1536*(b^2 - 4*a*c)*a^4*b^2*c^9)*A - (2*b^13*c^4 - 68*a*b^11*c^5 + 688*a^2*b
^9*c^6 - 2688*a^3*b^7*c^7 + 2048*a^4*b^5*c^8 + 11264*a^5*b^3*c^9 - 20480*a^
6*b*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^13*c
^2 + 34*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^11*c^
3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^12*c^3 -
344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^9*c^4 -
60*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 1344*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c^5 + 448*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 + 30*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^9*c^5 - 1024*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^6 - 896
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 22
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 - 5
632*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^7 -
1536*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7
+ 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^
7 + 10240*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b*c
^8 + 5120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2
*c^8 + 768*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^
3*c^8 - 2560*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*
b*c^9 - 2*(b^2 - 4*a*c)*b^11*c^4 + 60*(b^2 - 4*a*c)*a*b^9*c^5 - 448*(b^2 -
4*a*c)*a^2*b^7*c^6 + 896*(b^2 - 4*a*c)*a^3*b^5*c^7 + 1536*(b^2 - 4*a*c)*a^4
*b^3*c^8 - 5120*(b^2 - 4*a*c)*a^5*b*c^9)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt
((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3 + sqrt((b^5*c - 8*a*b^3*c^2 + 16*a^2*b
c^3)^2 - 4(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*(b^4*c^2 - 8*a*b^2*c^3 +
16*a^2*c^4)))/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)))/((a*b^10*c^3 - 20*a^2
*b^8*c^4 - 2*a*b^9*c^4 + 160*a^3*b^6*c^5 + 32*a^2*b^7*c^5 + a*b^8*c^5 - 640
*a^4*b^4*c^6 - 192*a^3*b^5*c^6 - 16*a^2*b^6*c^6 + 1280*a^5*b^2*c^7 + 512*a^
4*b^3*c^7 + 96*a^3*b^4*c^7 - 1024*a^6*c^8 - 512*a^5*b*c^8 - 256*a^4*b^2*c^8
+ 256*a^5*c^9)*abs(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*abs(c)) - 1/32*(3*(2*
b^4*c^3 - 32*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b
^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c
^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^3 - 4*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^4 - 2*(b^2 - 4*a*c
)*b^2*c^3 - 8*(b^2 - 4*a*c)*a*c^4)*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)^2*A +
(2*b^5*c^2 - 40*a*b^3*c^3 + 128*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*b^4*c - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4

*a*c)*c)*a^2*b*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)*b^3*c^2 + 32*(b^2 - 4*a*c)*a*b*c^3)*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)^2*B + 24*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7*c^3 - 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^4 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^4 + 2*a*b^7*c^4 + 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^5 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^5 - 24*a^2*b^5*c^5 - 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^6 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^6 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^6 + 96*a^3*b^3*c^6 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^7 - 128*a^4*b*c^7 - 2*(b^2 - 4*a*c)*a*b^5*c^4 + 16*(b^2 - 4*a*c)*a^2*b^3*c^5 - 32*(b^2 - 4*a*c)*a^3*b*c^6)*A*abs(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^8*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^3 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7*c^3 + 2*a*b^8*c^3 - 192*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^4 - 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^4 + 16*a^2*b^6*c^4 + 896*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^5 + 288*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^5 - 384*a^3*b^4*c^5 - 1280*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*c^6 - 640*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^6 - 144*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^6 + 1792*a^4*b^2*c^6 + 320*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^7 - 2560*a^5*c^7 - 2*(b^2 - 4*a*c)*a*b^6*c^3 - 24*(b^2 - 4*a*c)*a^2*b^4*c^4 + 288*(b^2 - 4*a*c)*a^3*b^2*c^5 - 640*(b^2 - 4*a*c)*a^4*c^6)*B*abs(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3) - 3*(2*b^12*c^5 - 8*a*b^10*c^6 - 192*a^2*b^8*c^7 + 1792*a^3*b^6*c^8 - 5632*a^4*b^4*c^9 + 6144*a^5*b^2*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^12*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^10*c^5 - 896*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 + 2816*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7 + 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^7 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^7 - 3072*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^8 - 1536*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^8 - 512*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^8 + 768*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^9 - 2*(b^2 - 4*a*c)*b^10*c^5 + 192*(b^2 - 4*a*c)*a^2*b^6*c^7 - 1024*(b^2 - 4*a*c)*a^3*b^4*c^8 + 1536*(b^2 - 4*a*c)*a^4*b^2*c^9)*A - (2*b^13*c^4 - 68*a*b^11*c^5 + 688*a^2*b^9*c^6 - 2688*a^3*b^7*c^7 + 2048*a^4*b^5*c^8 + 11264*a^5*b^3*c^9 - 20480*a^6*b*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^13*c^2 + 34*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^11*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^12*c^3 - 344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^9*c^4 - 60*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 1344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c^5 + 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 + 30*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^9*c^5 - 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^6 - 896*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 - 5632*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^7 - 1536*sqrt(

```
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7 + 448*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^7 + 10240*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b*c^8 + 5120*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^8 + 768*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^8 - 256
0*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^9 - 2*(
b^2 - 4*a*c)*b^11*c^4 + 60*(b^2 - 4*a*c)*a*b^9*c^5 - 448*(b^2 - 4*a*c)*a^2*
b^7*c^6 + 896*(b^2 - 4*a*c)*a^3*b^5*c^7 + 1536*(b^2 - 4*a*c)*a^4*b^3*c^8 -
5120*(b^2 - 4*a*c)*a^5*b*c^9)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5*c - 8
*a*b^3*c^2 + 16*a^2*b*c^3 - sqrt((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)^2 - 4
*(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4
)))/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)))/((a*b^10*c^3 - 20*a^2*b^8*c^4 -
2*a*b^9*c^4 + 160*a^3*b^6*c^5 + 32*a^2*b^7*c^5 + a*b^8*c^5 - 640*a^4*b^4*c^
6 - 192*a^3*b^5*c^6 - 16*a^2*b^6*c^6 + 1280*a^5*b^2*c^7 + 512*a^4*b^3*c^7 +
 96*a^3*b^4*c^7 - 1024*a^6*c^8 - 512*a^5*b*c^8 - 256*a^4*b^2*c^8 + 256*a^5*
c^9)*abs(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*abs(c)) + 1/4*(B*b^3*c*x^(7/2) -
 16*B*a*b*c^2*x^(7/2) + 3*A*b^2*c^2*x^(7/2) + 12*A*a*c^3*x^(7/2) - B*b^4*x^
(5/2) - 5*B*a*b^2*c*x^(5/2) + 5*A*b^3*c*x^(5/2) - 36*B*a^2*c^2*x^(5/2) + 16
*A*a*b*c^2*x^(5/2) - 2*B*a*b^3*x^(3/2) - 28*B*a^2*b*c*x^(3/2) + 19*A*a*b^2*
c*x^(3/2) - 4*A*a^2*c^2*x^(3/2) - B*a^2*b^2*sqrt(x) - 20*B*a^3*c*sqrt(x) +
12*A*a^2*b*c*sqrt(x))/((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*(c*x^2 + b*x + a)
^2)
```

maple [B] time = 0.18, size = 1669, normalized size = 3.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(1/8*(12*A*a*c^2+3*A*b^2*c-16*B*a*b*c+B*b^3)/(16*a^2*c^2-8*a*b^2*c+b^4)*x
^(7/2)+1/8*(16*A*a*b*c^2+5*A*b^3*c-36*B*a^2*c^2-5*B*a*b^2*c-B*b^4)/c/(16*a^
2*c^2-8*a*b^2*c+b^4)*x^(5/2)-1/8*a/c*(4*A*a*c^2-19*A*b^2*c+28*B*a*b*c+2*B*b
^3)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)+1/8*a^2*(12*A*b*c-20*B*a*c-B*b^2)/c/
(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*x^2+b*x+a)^2+3/2/(16*a^2*c^2-8*a*b^2
*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*A*b^2+9/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/
2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^
2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-2/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*a*b*B+1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c*2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*b^3*B-5/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*c*x^(1/2))*a^2*B-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*a*b^2*B+1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c/(-4*a*c+b^2)^(
1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^4*B-3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*A*a-3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*A*b^2+9/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*a*A*b+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2
)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^
```

```
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+2/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a*b*B-1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*b^3*B-5/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/(
(-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*a^2*B-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B+1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c/(-4*a*
c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^4*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(12\,Abc^{2}-\left(b^{2}c+20\,ac^{2}\right)B\right)x^{\frac{9}{2}}+3\left(\left(7\,b^{2}c-4\,ac^{2}\right)A-\left(b^{3}+8\,abc\right)B\right)x^{\frac{7}{2}}+\left(\left(7\,b^{3}+8\,abc\right)A-\left(17\,ab^{2}+4\,a^{2}c\right)B\right)x^{\frac{5}{2}}-\left(12\,Ba^{2}b-\left(5\,ab^{2}+4\,a^{2}c\right)A\right)x^{\frac{3}{2}}}{4\left(a^{2}b^{4}-8\,a^{3}b^{2}c+16\,a^{4}c^{2}+\left(b^{4}c^{2}-8\,ab^{2}c^{3}+16\,a^{2}c^{4}\right)x^{4}+2\left(b^{5}c-8\,ab^{3}c^{2}+16\,a^{2}bc^{3}\right)x^{3}+\left(b^{6}-6\,ab^{4}c+32\,a^{3}c^{3}\right)x^{2}+2\left(ab^{5}-8\,a^{2}b^{3}c+16\,a^{3}bc^{2}\right)x\right)}+\int\frac{\left(12\,Abc-\left(b^{2}+20\,ac\right)B\right)x^{\frac{3}{2}}-3\left(12\,Bab-\left(5\,b^{2}+4\,ac\right)A\right)\sqrt{x}}{8\left(ab^{4}-8\,a^{2}b^{2}c+16\,a^{3}c^{2}+\left(b^{4}c-8\,ab^{2}c^{2}+16\,a^{2}c^{3}\right)x^{2}+\left(b^{5}-8\,ab^{3}c+16\,a^{2}bc^{2}\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/4*((12*A*b*c^2 - (b^2*c + 20*a*c^2)*B)*x^(9/2) + 3*((7*b^2*c - 4*a*c^2)*
A - (b^3 + 8*a*b*c)*B)*x^(7/2) + ((7*b^3 + 8*a*b*c)*A - (17*a*b^2 + 4*a^2*c
)*B)*x^(5/2) - (12*B*a^2*b - (5*a*b^2 + 4*a^2*c)*A)*x^(3/2))/(a^2*b^4 - 8*a
^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c
 - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2
*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x) + integrate(1/8*((12*A*b*c - (b^2
+ 20*a*c)*B)*x^(3/2) - 3*(12*B*a*b - (5*b^2 + 4*a*c)*A)*sqrt(x))/(a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2 + (b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*x^2 + (b^5 - 8
*a*b^3*c + 16*a^2*b*c^2)*x), x)
```

mupad [B] time = 4.98, size = 19073, normalized size = 41.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] atan(((((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a
*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c
^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 73
7280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24
*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*
a^5*b^2*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c
- b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*
A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^
2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*
a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a
^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c
 - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a
^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^1
0*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b
^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180
*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a
^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8
+ 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 262144
0*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 1
0240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*
a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 +
9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b
^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^
5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8
```

+ 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) - (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*1i - (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14

*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966
080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) + (
x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*
B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 -
36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^
2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4
*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c
- b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040
*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A
^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2
*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*
a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*
c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*
a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^
10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*
b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 18
0*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*
a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8
+ 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 26214
40*a^9*b^2*c^12)))^(1/2)*1i)/((1728*A^3*a^4*c^5 - 35*B^3*a^2*b^7 + 1620*A^3
*a^2*b^4*c^3 + 4752*A^3*a^3*b^2*c^4 - 9456*B^3*a^4*b^3*c^2 + 15*A*B^2*a*b^8
+ 4800*A*B^2*a^5*c^4 + 135*A^3*a*b^6*c^2 + 1176*B^3*a^3*b^5*c - 6400*B^3*a
^5*b*c^3 - 705*A*B^2*a^2*b^6*c - 15552*A^2*B*a^4*b*c^4 + 6084*A*B^2*a^3*b^4
*c^2 + 26256*A*B^2*a^4*b^2*c^3 - 1260*A^2*B*a^2*b^5*c^2 - 13248*A^2*B*a^3*b
^3*c^3 + 90*A^2*B*a*b^7*c)/(32*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240
*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (
((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c
^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 98
3040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*
a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10
*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2
c^6)) - (x^(1/2)(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^
15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2
*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b
^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^1
1*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*
c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B
^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^
9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 -
241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7
+ 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*
b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16
*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 86016
0*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b
^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^
2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5
- 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b
^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)
^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103
680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*
B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B
^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*
A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*
A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2
*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^
5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-
(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^2
0*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^
12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 +

2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) - (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) + (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) + (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5 *c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*2i - ((x^(5/2)*(B*b^4 + 36*B*a^2*c^2 - 5*A*b^3*c - 16*A*a*b*c^2 + 5*B*a*b^2*c))/(4*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^(7/2)*(B*b^3 + 12*A*a*c^2 + 3*A*b^2*c - 16*B*a*b*c))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(3/2)*(4*A*a^2*c^2 + 2*B*a*b^3 - 19*A*a*b^2*c + 28*B*a^2*b*c))/(4*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (a^2*x^(1/2)*(B*b^2 - 12*A*b*c + 20*B*a*c))/(4*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) + atan(((((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 73728

0*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) - (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*1i - (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) + (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 -

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16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15
*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680
*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2
*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*
a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B
*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2
*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^
12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b
^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*
a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c
^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*
c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 294
9120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*1i)/((1728*A^3*a^4*c^5 -
35*B^3*a^2*b^7 + 1620*A^3*a^2*b^4*c^3 + 4752*A^3*a^3*b^2*c^4 - 9456*B^3*a^4
*b^3*c^2 + 15*A*B^2*a*b^8 + 4800*A*B^2*a^5*c^4 + 135*A^3*a*b^6*c^2 + 1176*B
^3*a^3*b^5*c - 6400*B^3*a^5*b*c^3 - 705*A*B^2*a^2*b^6*c - 15552*A^2*B*a^4*b
*c^4 + 6084*A*B^2*a^3*b^4*c^2 + 26256*A*B^2*a^4*b^2*c^3 - 1260*A^2*B*a^2*b^
5*c^2 - 13248*A^2*B*a^3*b^3*c^3 + 90*A^2*B*a*b^7*c)/(32*(b^12*c + 4096*a^6*
c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5
 - 6144*a^5*b^2*c^6)) + (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*
a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 -
491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*
B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c +
 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a
^4*b^4*c^5 - 6144*a^5*b^2*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9
*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*
A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4
*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^1
3*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*
c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9
 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*
c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 +
 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 -
 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^
2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*
a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 25
8048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8
*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 6
5536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7)
)/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4
)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^
2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37
440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 55296
0*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*
B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*
B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*
c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^
2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^
4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a
^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128
*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^
3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9
- 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/
2) - (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4
+ 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2
*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*
b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a
^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-
```

(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c
- 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 -
9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 101
60*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 68096
0*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a
*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 73728
0*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*
a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*
B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2
) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4
+ 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^
10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 -
2621440*a^9*b^2*c^12))^(1/2) + (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 -
786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b
^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4
- 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*
(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4
+ 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^1
5*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(
1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 10368
0*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^
2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2
*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*
B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^
2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b
^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*
b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4
*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*
c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12
*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 29
49120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^
9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4
*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^
3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(
1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11
*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^
7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3
+ 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 +
1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*
c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1
720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 2419
20*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737
280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*
c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5
- 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6
*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^
12)))^(1/2) + (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2
*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^
2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 -
66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c
^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A
^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*
B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b
^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*
c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^
5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 -
55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^
3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 2
4000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1

```
781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)
^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*
b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 2580
48*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b
^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*
A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*
b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13
*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c
^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9
- 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c
^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 +
24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 -
1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2
)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a
*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258
048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*
b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x+a)**3,x)
[Out] Timed out
```

3.950 $\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^3} dx$

Optimal. Leaf size=414

$$-\frac{\sqrt{x}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\sqrt{x}\left(3cx\left(4aBc-4Abc+b^2B\right)+4aAc^2+4abBc-7Ab^2c+2b^3B\right.}{4c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Rubi [A] time = 2.04, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {818, 822, 826, 1166, 205}

$$\frac{\sqrt{x}\left(3cx\left(4aBc-4Abc+b^2B\right)+4aAc^2+4abBc-7Ab^2c+2b^3B\right)}{4c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{3\left(-\frac{-8aAc^2+12abBc-6Ab^2c+b^3B}{\sqrt{b^2-4ac}}+4aBc-4Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\frac{3\left(\frac{-8aAc^2+12abBc-6Ab^2c+b^3B}{\sqrt{b^2-4ac}}+4aBc-4Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^2\sqrt{\sqrt{b^2-4ac}+b}}-\frac{\sqrt{x}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(2*c*(b^2 - 4*a*
c)*(a + b*x + c*x^2)^2) + (Sqrt[x]*(2*b^3*B - 7*A*b^2*c + 4*a*b*B*c + 4*a*A
*c^2 + 3*c*(b^2*B - 4*A*b*c + 4*a*B*c)*x))/(4*c*(b^2 - 4*a*c)^2*(a + b*x +
c*x^2)) + (3*(b^2*B - 4*A*b*c + 4*a*B*c - (b^3*B - 6*A*b^2*c + 12*a*b*B*c -
 8*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sq
rt[b^2 - 4*a*c]]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4
*a*c]]) + (3*(b^2*B - 4*A*b*c + 4*a*B*c + (b^3*B - 6*A*b^2*c + 12*a*b*B*c -
 8*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sq
rt[b^2 - 4*a*c]]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)^2*Sqrt[b + Sqrt[b^2 - 4
*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
```

```
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\int \frac{\frac{1}{2}a(bB-2Ac)-\frac{1}{2}\left(b^2B-5Abc+6aBc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx}{2c\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\sqrt{x}\left(2b^3B-7Ab^2c+4abBc+4aAc^2\right.}{4c\left(b^2-4ac\right)^2\left(a+\right.}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\sqrt{x}\left(2b^3B-7Ab^2c+4abBc+4aAc^2\right.}{4c\left(b^2-4ac\right)^2\left(a+\right.}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\sqrt{x}\left(2b^3B-7Ab^2c+4abBc+4aAc^2\right.}{4c\left(b^2-4ac\right)^2\left(a+\right.}$$

$$= -\frac{\sqrt{x}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\sqrt{x}\left(2b^3B-7Ab^2c+4abBc+4aAc^2\right.}{4c\left(b^2-4ac\right)^2\left(a+\right.}$$

Mathematica [A] time = 1.66, size = 558, normalized size = 1.35

$$\frac{\frac{\frac{9a^2\left(b^2\left(B\sqrt{b^2-4ac}+6Ac\right)-4bc\left(A\sqrt{b^2-4ac}+3aB\right)+4ac\left(B\sqrt{b^2-4ac}+2Ac\right)+b^3(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{9a^2\left(b^2\left(B\sqrt{b^2-4ac}-6Ac\right)+4bc\left(3aB-A\sqrt{b^2-4ac}\right)+4ac\left(B\sqrt{b^2-4ac}-2Ac\right)+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}+36a^2bB\sqrt{x}+3Ax^{3/2}\left(8abc+b^3\right)-9aA\sqrt{x}\left(4ac+b^2\right)-3aBx^{3/2}\left(4ac+5b^2\right)}{6a\left(b^2-4ac\right)}+\frac{x^{5/2}\left(A\left(-12a^2c^2+5ab^2c+8abc^2x+b^4+b^3cx\right)+aB\left(8abc-4ac^2x-5b^3-5b^2cx\right)\right)}{2a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{x^{5/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{(a+x(b+cx))^2}}{2a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(5/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 + (x^(5/2)*(a*B*(-5*b^3 + 8*a*b*c - 5*b^2*c*x - 4*a*c^2*x) + A*(b^4 + 5*
```

```
a*b^2*c - 12*a^2*c^2 + b^3*c*x + 8*a*b*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(a + x*
(b + c*x))) + (36*a^2*b*B*Sqrt[x] - 9*a*A*(b^2 + 4*a*c)*Sqrt[x] - 3*a*B*(5*
b^2 + 4*a*c)*x^(3/2) + 3*A*(b^3 + 8*a*b*c)*x^(3/2) + (9*a^2*(-(b^3*B) - 4*b
*c*(3*a*B + A*Sqrt[b^2 - 4*a*c]) + 4*a*c*(2*A*c + B*Sqrt[b^2 - 4*a*c]) + b^
2*(6*A*c + B*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b -
Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 -
 4*a*c]]) + (9*a^2*(b^3*B + 4*b*c*(3*a*B - A*Sqrt[b^2 - 4*a*c]) + b^2*(-6*A
*c + B*Sqrt[b^2 - 4*a*c]) + 4*a*c*(-2*A*c + B*Sqrt[b^2 - 4*a*c]))*ArcTan[(S
qrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*Sqrt
[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(6*a*(b^2 - 4*a*c)))/(2*a*(b^2
- 4*a*c))
```

IntegrateAlgebraic [A] time = 9.96, size = 529, normalized size = 1.28

$$\frac{\sqrt{x}\left(-12a^2Ac+12a^2bB-4a^2Bcx-3aAb^2-16aAbcx+4aAc^2x^2+19ab^2Bx+16abBcx^2+12aBc^2x^3-5Ab^3x-19Ab^2cx^2-12Abc^2x^3+5b^3Bx^2+3b^2Bcx^3\right)}{4\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^2}+\frac{3\left(-4\sqrt{2}Abc\sqrt{b^2-4ac}+8\sqrt{2}aAc^2+\sqrt{2}b^2B\sqrt{b^2-4ac}+4\sqrt{2}aBc\sqrt{b^2-4ac}-12\sqrt{2}abBc+6\sqrt{2}Ab^2c-\sqrt{2}b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{8\sqrt{c}\left(b^2-4ac\right)^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{3\left(-4\sqrt{2}Abc\sqrt{b^2-4ac}-8\sqrt{2}aAc^2+\sqrt{2}b^2B\sqrt{b^2-4ac}+4\sqrt{2}aBc\sqrt{b^2-4ac}+12\sqrt{2}abBc-6\sqrt{2}Ab^2c+\sqrt{2}b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{8\sqrt{c}\left(b^2-4ac\right)^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(-3*a*A*b^2 + 12*a^2*b*B - 12*a^2*A*c - 5*A*b^3*x + 19*a*b^2*B*x -
 16*a*A*b*c*x - 4*a^2*B*c*x + 5*b^3*B*x^2 - 19*A*b^2*c*x^2 + 16*a*b*B*c*x^2
 + 4*a*A*c^2*x^2 + 3*b^2*B*c*x^3 - 12*A*b*c^2*x^3 + 12*a*B*c^2*x^3))/(4*(b^
2 - 4*a*c)^2*(a + b*x + c*x^2)^2) + (3*(-(Sqrt[2]*b^3*B) + 6*Sqrt[2]*A*b^2*
c - 12*Sqrt[2]*a*b*B*c + 8*Sqrt[2]*a*A*c^2 + Sqrt[2]*b^2*B*Sqrt[b^2 - 4*a*c
] - 4*Sqrt[2]*A*b*c*Sqrt[b^2 - 4*a*c] + 4*Sqrt[2]*a*B*c*Sqrt[b^2 - 4*a*c])*
ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(8*Sqrt[c]*(
b^2 - 4*a*c)^(5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (3*(Sqrt[2]*b^3*B - 6*Sqr
t[2]*A*b^2*c + 12*Sqrt[2]*a*b*B*c - 8*Sqrt[2]*a*A*c^2 + Sqrt[2]*b^2*B*Sqrt[
b^2 - 4*a*c] - 4*Sqrt[2]*A*b*c*Sqrt[b^2 - 4*a*c] + 4*Sqrt[2]*a*B*c*Sqrt[b^2
 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(
8*Sqrt[c]*(b^2 - 4*a*c)^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 4.78, size = 5646, normalized size = 13.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/8*(3*sqrt(1/2)*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*
c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 -
 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)*sq
rt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B
*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c + (
a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^
2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^
2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 -
 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4
*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6))*log(27/2*sqrt(1/2)*(4*B^3*a^2*b^7
- A*B^2*a*b^8 - 256*A^3*a^4*c^5 + 128*(2*A*B^2*a^5 + 2*A^2*B*a^4*b + A^3*a^
3*b^2)*c^4 - 64*(4*B^3*a^5*b + 2*A*B^2*a^4*b^2 + 3*A^2*B*a^3*b^3)*c^3 + 8*(
24*B^3*a^4*b^3 + 6*A^2*B*a^2*b^5 - A^3*a*b^6)*c^2 - (48*B^3*a^3*b^5 - 8*A*B
^2*a^2*b^6 + 4*A^2*B*a*b^7 - A^3*b^8)*c - (4096*(2*B*a^8 - 3*A*a^7*b)*c^7 -
 2048*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^6 - 1280*(2*B*a^6*b^4 + 5*A*a^5*b^5)*c^
5 + 1280*(2*B*a^5*b^6 + A*a^4*b^7)*c^4 - 80*(10*B*a^4*b^8 + A*a^3*b^9)*c^3
+ 8*(14*B*a^3*b^10 - A*a^2*b^11)*c^2 - (6*B*a^2*b^12 - A*a*b^13)*c)*sqrt((B
^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*
b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))*sqrt(-(B^2*a
*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 +
 A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c + (a*b^10*c -
```

20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 10
24*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3
*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*
c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 128
0*a^5*b^2*c^5 - 1024*a^6*c^6)) - 27*(5*B^4*a^2*b^4 - A*B^3*a*b^5 - 16*A^4*a
^2*c^4 + 40*(2*A^3*B*a^2*b - A^4*a*b^2)*c^3 + (16*B^4*a^4 - 80*A*B^3*a^3*b
+ 40*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 + (40*B^4*a^3*b^2 - 40*A*B^3*a^2*b^3 + A^
3*B*b^5)*c)*sqrt(x)) - 3*sqrt(1/2)*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b
^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*
c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16
*a^3*b*c^2)*x)*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*
B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4
+ A^2*b^5)*c + (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*
c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*
c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1
280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*
c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6))*log(-27/2*sqrt(1/
2)*(4*B^3*a^2*b^7 - A*B^2*a*b^8 - 256*A^3*a^4*c^5 + 128*(2*A*B^2*a^5 + 2*A^
2*B*a^4*b + A^3*a^3*b^2)*c^4 - 64*(4*B^3*a^5*b + 2*A*B^2*a^4*b^2 + 3*A^2*B*
a^3*b^3)*c^3 + 8*(24*B^3*a^4*b^3 + 6*A^2*B*a^2*b^5 - A^3*a*b^6)*c^2 - (48*B
^3*a^3*b^5 - 8*A*B^2*a^2*b^6 + 4*A^2*B*a*b^7 - A^3*b^8)*c - (4096*(2*B*a^8
- 3*A*a^7*b)*c^7 - 2048*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^6 - 1280*(2*B*a^6*b^4
+ 5*A*a^5*b^5)*c^5 + 1280*(2*B*a^5*b^6 + A*a^4*b^7)*c^4 - 80*(10*B*a^4*b^8
+ A*a^3*b^9)*c^3 + 8*(14*B*a^3*b^10 - A*a^2*b^11)*c^2 - (6*B*a^2*b^12 - A*
a*b^13)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*
b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c
^7)))*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b
- 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^
5)*c + (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 128
0*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2
*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b
^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640
*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)) - 27*(5*B^4*a^2*b^4 - A*B^
3*a*b^5 - 16*A^4*a^2*c^4 + 40*(2*A^3*B*a^2*b - A^4*a*b^2)*c^3 + (16*B^4*a^4
- 80*A*B^3*a^3*b + 40*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 + (40*B^4*a^3*b^2 - 40*
A*B^3*a^2*b^3 + A^3*B*b^5)*c)*sqrt(x)) + 3*sqrt(1/2)*(a^2*b^4 - 8*a^3*b^2*c
+ 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b
^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5
- 8*a^2*b^3*c + 16*a^3*b*c^2)*x)*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a
^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*
b^3 - 20*A*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*
c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*
A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 6
40*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*
c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6))
*log(27/2*sqrt(1/2)*(4*B^3*a^2*b^7 - A*B^2*a*b^8 - 256*A^3*a^4*c^5 + 128*(2
*A*B^2*a^5 + 2*A^2*B*a^4*b + A^3*a^3*b^2)*c^4 - 64*(4*B^3*a^5*b + 2*A*B^2*a
^4*b^2 + 3*A^2*B*a^3*b^3)*c^3 + 8*(24*B^3*a^4*b^3 + 6*A^2*B*a^2*b^5 - A^3*a
*b^6)*c^2 - (48*B^3*a^3*b^5 - 8*A*B^2*a^2*b^6 + 4*A^2*B*a*b^7 - A^3*b^8)*c
+ (4096*(2*B*a^8 - 3*A*a^7*b)*c^7 - 2048*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^6 -
1280*(2*B*a^6*b^4 + 5*A*a^5*b^5)*c^5 + 1280*(2*B*a^5*b^6 + A*a^4*b^7)*c^4 -
80*(10*B*a^4*b^8 + A*a^3*b^9)*c^3 + 8*(14*B*a^3*b^10 - A*a^2*b^11)*c^2 - (
6*B*a^2*b^12 - A*a*b^13)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b
^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2
*c^6 - 1024*a^7*c^7)))*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3
+ 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A
*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*
a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*
c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4

```
*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*
a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)) - 27*(5*B
^4*a^2*b^4 - A*B^3*a*b^5 - 16*A^4*a^2*c^4 + 40*(2*A^3*B*a^2*b - A^4*a*b^2)*
c^3 + (16*B^4*a^4 - 80*A*B^3*a^3*b + 40*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 + (40*
B^4*a^3*b^2 - 40*A*B^3*a^2*b^3 + A^3*B*b^5)*c)*sqrt(x)) - 3*sqrt(1/2)*(a^2*
b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 +
 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3
)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)*sqrt(-(B^2*a*b^5 - 16*(4*
A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c
^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c
^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*s
qrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 16
0*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^1
0*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5
 - 1024*a^6*c^6))*log(-27/2*sqrt(1/2)*(4*B^3*a^2*b^7 - A*B^2*a*b^8 - 256*A^
3*a^4*c^5 + 128*(2*A*B^2*a^5 + 2*A^2*B*a^4*b + A^3*a^3*b^2)*c^4 - 64*(4*B^3
*a^5*b + 2*A*B^2*a^4*b^2 + 3*A^2*B*a^3*b^3)*c^3 + 8*(24*B^3*a^4*b^3 + 6*A^2
*B*a^2*b^5 - A^3*a*b^6)*c^2 - (48*B^3*a^3*b^5 - 8*A*B^2*a^2*b^6 + 4*A^2*B*a
*b^7 - A^3*b^8)*c + (4096*(2*B*a^8 - 3*A*a^7*b)*c^7 - 2048*(2*B*a^7*b^2 - 7
*A*a^6*b^3)*c^6 - 1280*(2*B*a^6*b^4 + 5*A*a^5*b^5)*c^5 + 1280*(2*B*a^5*b^6
+ A*a^4*b^7)*c^4 - 80*(10*B*a^4*b^8 + A*a^3*b^9)*c^3 + 8*(14*B*a^3*b^10 - A
*a^2*b^11)*c^2 - (6*B*a^2*b^12 - A*a*b^13)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c
 + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*
c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 -
 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*
B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c^2 + 160*
a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6
*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*
a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a
^6*c^6)) - 27*(5*B^4*a^2*b^4 - A*B^3*a*b^5 - 16*A^4*a^2*c^4 + 40*(2*A^3*B*a
^2*b - A^4*a*b^2)*c^3 + (16*B^4*a^4 - 80*A*B^3*a^3*b + 40*A^3*B*a*b^3 - 5*A
^4*b^4)*c^2 + (40*B^4*a^3*b^2 - 40*A*B^3*a^2*b^3 + A^3*B*b^5)*c)*sqrt(x)) -
 2*(12*B*a^2*b - 3*A*a*b^2 - 12*A*a^2*c + 3*(B*b^2*c + 4*(B*a - A*b)*c^2)*x
^3 + (5*B*b^3 + 4*A*a*c^2 + (16*B*a*b - 19*A*b^2)*c)*x^2 + (19*B*a*b^2 - 5*
A*b^3 - 4*(B*a^2 + 4*A*a*b)*c)*x)*sqrt(x))/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*
c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 1
6*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^
3*c + 16*a^3*b*c^2)*x)
```

giac [B] time = 2.33, size = 3170, normalized size = 7.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 3/16*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 - 4*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5
*c - 2*b^6*c - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 8*a*b^4*c^2 + 2*b^5*c^2 + 64
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 32*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 32*a^2*b^2*c^3 + 16*a*b^3*c^3 - 16*sqrt(2)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 128*a^3*c^4 - 96*a^2*b*c^4 - sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 - 8*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c + 48*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 + 24*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
```

sqrt(b^2 - 4*a*c)*c)*a*b*c^3 + 2*(b^2 - 4*a*c)*b^4*c - 2*(b^2 - 4*a*c)*b^3
c^2 - 32(b^2 - 4*a*c)*a^2*c^3 - 24*(b^2 - 4*a*c)*a*b*c^3)*A - 2*(2*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^2*b^3*c - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 4
*a*b^5*c + 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 16*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 2*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a*b^3*c^2 + 32*a^2*b^3*c^2 + 6*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 64*a^3*b*c^3 - 16*a^2*b^2*c^3 - 32*a^3
*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4 +
8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 6*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 16*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^2 + 8*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 3*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - 4*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^3 + 4*(b^2 - 4*a*c)*a*b^3*c
 - 16*(b^2 - 4*a*c)*a^2*b*c^2 - 6*(b^2 - 4*a*c)*a*b^2*c^2 - 8*(b^2 - 4*a*c)
*a^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5 - 8*a*b^3*c + 16*a^2*b*c^
2 + sqrt((b^5 - 8*a*b^3*c + 16*a^2*b*c^2)^2 - 4*(a*b^4 - 8*a^2*b^2*c + 16*a
^3*c^2)*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)))/(b^4*c - 8*a*b^2*c^2 + 16*a^2*
c^3)))/((a*b^8 - 16*a^2*b^6*c - 2*a*b^7*c + 96*a^3*b^4*c^2 + 24*a^2*b^5*c^2
 + a*b^6*c^2 - 256*a^4*b^2*c^3 - 96*a^3*b^3*c^3 - 12*a^2*b^4*c^3 + 256*a^5*
c^4 + 128*a^4*b*c^4 + 48*a^3*b^2*c^4 - 64*a^4*c^5)*abs(c)) + 3/16*((sqrt(2)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 2*b^6*c -
 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 8*a*b^4*c^2 - 2*b^5*c^2 + 64*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^2*b*c^3 - 32*a^2*b^2*c^3 - 16*a*b^3*c^3 - 16*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^2*c^4 + 128*a^3*c^4 + 96*a^2*b*c^4 + sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*b^4*c - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a*b^2*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*b^3*c^2 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)*b^4*c + 2*(b^2 - 4*a*c)*b^3*c^2 + 32*(b^2
 - 4*a*c)*a^2*c^3 + 24*(b^2 - 4*a*c)*a*b*c^3)*A - 2*(2*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^5 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*
b^3*c - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 4*a*b^5*c + 32*
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 16*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a*b^3*c^2 - 32*a^2*b^3*c^2 - 6*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^2*b*c^3 + 64*a^3*b*c^3 + 16*a^2*b^2*c^3 + 32*a^3*c^4 + 3*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4 - 8*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c - 6*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 16*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 4*(b^2 - 4*a*c)*a*b^3*c + 16*(b^2 - 4
*a*c)*a^2*b*c^2 + 6*(b^2 - 4*a*c)*a*b^2*c^2 + 8*(b^2 - 4*a*c)*a^2*c^3)*B)*a
rctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5 - 8*a*b^3*c + 16*a^2*b*c^2 - sqrt((b^5
 - 8*a*b^3*c + 16*a^2*b*c^2)^2 - 4*(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*(b^4*c
 - 8*a*b^2*c^2 + 16*a^2*c^3)))/(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)))/((a*b^8
 - 16*a^2*b^6*c - 2*a*b^7*c + 96*a^3*b^4*c^2 + 24*a^2*b^5*c^2 + a*b^6*c^2 -
 256*a^4*b^2*c^3 - 96*a^3*b^3*c^3 - 12*a^2*b^4*c^3 + 256*a^5*c^4 + 128*a^4*
b*c^4 + 48*a^3*b^2*c^4 - 64*a^4*c^5)*abs(c)) + 1/4*(3*B*b^2*c*x^(7/2) + 12*
B*a*c^2*x^(7/2) - 12*A*b*c^2*x^(7/2) + 5*B*b^3*x^(5/2) + 16*B*a*b*c*x^(5/2)
 - 19*A*b^2*c*x^(5/2) + 4*A*a*c^2*x^(5/2) + 19*B*a*b^2*x^(3/2) - 5*A*b^3*x^

```
(3/2) - 4*B*a^2*c*x^(3/2) - 16*A*a*b*c*x^(3/2) + 12*B*a^2*b*sqrt(x) - 3*A*a
*b^2*sqrt(x) - 12*A*a^2*c*sqrt(x))/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*(c*x^2 +
 b*x + a)^2)
```

maple [B] time = 0.11, size = 1312, normalized size = 3.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(-3/8*c*(4*A*b*c-4*B*a*c-B*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)+1/8*(4
*A*a*c^2-19*A*b^2*c+16*B*a*b*c+5*B*b^3)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)-
1/8*(16*A*a*b*c+5*A*b^3+4*B*a^2*c-19*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^
(3/2)-3/8*a*(4*A*a*c+A*b^2-4*B*a*b)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*
x^2+b*x+a)^2-3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-
3/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*A*a-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*A*b^2+3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B
+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+9/2/(16*a^2*
c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B+3/8/
(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*
B+3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-3/(16*a^
2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a
-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*A*b^2-3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*
B-3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+9/2/(16*
a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b
*B+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*b^3*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{3\left(4\,Babc^{2}-\left(b^{2}c^{2}+4\,ac^{3}\right)A\right)x^{\frac{9}{2}}-3\left(2\left(b^{3}c+2\,abc^{2}\right)A-\left(7\,ab^{2}c-4\,a^{2}c^{2}\right)B\right)x^{\frac{7}{2}}-\left(\left(3\,b^{4}-ab^{2}c+28\,a^{2}c^{2}\right)A-\left(7\,ab^{3}+8\,a^{2}bc\right)B\right)x^{\frac{5}{2}}-\left(\left(ab^{3}+8\,a^{2}bc\right)A-\left(5\,a^{2}b^{2}+4\,a^{3}c\right)B\right)x^{\frac{3}{2}}}{4\left(a^{3}b^{4}-8\,a^{4}b^{2}c+16\,a^{5}c^{2}+\left(ab^{4}c^{2}-8\,a^{2}b^{2}c^{3}+16\,a^{3}c^{4}\right)x^{4}+2\left(ab^{5}c-8\,a^{2}b^{3}c^{2}+16\,a^{3}bc^{3}\right)x^{3}+\left(ab^{6}-6\,a^{2}b^{4}c+32\,a^{4}c^{3}\right)x^{2}+2\left(a^{2}b^{5}-8\,a^{3}b^{3}c+16\,a^{4}bc^{2}\right)x\right)}-\int -\frac{3\left(\left(4\,Babc-\left(b^{2}c+4\,ac^{2}\right)A\right)x^{\frac{3}{2}}-\left(\left(b^{3}+8\,abc\right)A-\left(5\,ab^{2}+4\,a^{2}c\right)B\right)\sqrt{x}\right)}{8\left(a^{2}b^{4}-8\,a^{3}b^{2}c+16\,a^{4}c^{2}+\left(ab^{4}c-8\,a^{2}b^{2}c^{2}+16\,a^{3}c^{3}\right)x^{2}+\left(ab^{5}-8\,a^{2}b^{3}c+16\,a^{3}bc^{2}\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(3*(4*B*a*b*c^2 - (b^2*c^2 + 4*a*c^3)*A)*x^(9/2) - 3*(2*(b^3*c + 2*a*b
*c^2)*A - (7*a*b^2*c - 4*a^2*c^2)*B)*x^(7/2) - ((3*b^4 - a*b^2*c + 28*a^2*c
^2)*A - (7*a*b^3 + 8*a^2*b*c)*B)*x^(5/2) - ((a*b^3 + 8*a^2*b*c)*A - (5*a^2*
b^2 + 4*a^3*c)*B)*x^(3/2))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2
 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*
c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*
c + 16*a^4*b*c^2)*x) - integrate(-3/8*((4*B*a*b*c - (b^2*c + 4*a*c^2)*A)*x^
(3/2) - ((b^3 + 8*a*b*c)*A - (5*a*b^2 + 4*a^2*c)*B)*sqrt(x))/(a^2*b^4 - 8*a
```

```
^3*b^2*c + 16*a^4*c^2 + (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*x^2 + (a*b^5
 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x), x)
```

mupad [B] time = 4.71, size = 16720, normalized size = 40.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] atan(((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*
b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 -
262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*
a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8
*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c
)) - (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15
*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*
b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*
c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 -
 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*
a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7
+ 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 6656
0*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B
*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 -
7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b
^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10
+ a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240
*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^
4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2
*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 10
24*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^
2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^
7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 2
0*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*
b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b
^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11
- 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c
^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 29491
20*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) - (x^(1/2)*(9*B^
2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2
*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B
*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 2
56*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)
^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^
3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 6
1440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*
B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*
a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 819
20*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a
^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7
*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 72
0*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c
^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 26214
40*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i - (((3*(262144*A*a^6*c^8 - 64*A*b^1
2*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*
a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c
^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(6
4*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*
c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*
```

(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) -
560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*
A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a
^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b
^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B
^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^1
0*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*
c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 4
0*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5
- 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*
a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280
*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 8192
0*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 -
16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15
*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*
b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*
c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 -
1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*
a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7
+ 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 6656
0*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B
*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 -
7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b
^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10
+ a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4
*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b
^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^
8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^
2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c -
b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^
4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11
*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5
+ 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2
*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2
- 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 14
3360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048
576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53
760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b
^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i
)/((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^1
1*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262
144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4
*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^
2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c))
- (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c
- A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9
*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7
- 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 10
24*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b
^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 2
40*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A
*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*
b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 768
0*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*
c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a
*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^
2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 +
96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*
(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) -

560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) - (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^1

5)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*
c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 +
 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 6144
0*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b
*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*
A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A
*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^
11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^
5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8
 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (3*(57
6*B^3*a^4*c^4 - 180*A^3*b^5*c^3 + 540*B^3*a^2*b^4*c^2 + 1584*B^3*a^3*b^2*c^
3 - 9*A*B^2*b^7*c + 45*B^3*a*b^6*c + 576*A^2*B*a^3*c^5 + 81*A^2*B*b^6*c^2 -
 1440*A^3*a*b^3*c^4 - 576*A^3*a^2*b*c^5 - 576*A*B^2*a*b^5*c^2 - 3456*A*B^2*
a^3*b*c^4 + 1980*A^2*B*a*b^4*c^3 - 3600*A*B^2*a^2*b^3*c^3 + 4464*A^2*B*a^2*
b^2*c^4))/(32*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3
840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c))))*(-(9*(B^2*a*b^15 + B^2
a(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 10
24*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^
2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^
7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 2
0*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*
b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b
^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11
 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c
^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 29491
20*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*2i - ((x^(3/2)*(
5*A*b^3 - 19*B*a*b^2 + 4*B*a^2*c + 16*A*a*b*c))/(4*(b^4 + 16*a^2*c^2 - 8*a*
b^2*c)) - (x^(5/2)*(5*B*b^3 + 4*A*a*c^2 - 19*A*b^2*c + 16*B*a*b*c))/(4*(b^4
 + 16*a^2*c^2 - 8*a*b^2*c)) + (3*a*x^(1/2)*(A*b^2 + 4*A*a*c - 4*B*a*b))/(4*
(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (3*c*x^(7/2)*(B*b^2 - 4*A*b*c + 4*B*a*c))
/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2
*a*b*x + 2*b*c*x^3) + atan(((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A
*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 +
81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a
^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096
*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5
*b^2*c^5 - 24*a*b^10*c)) - (x^(1/2)*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2
)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^
11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^
6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 1
1520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536
*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c
 - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*
A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*
B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2
 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b
^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 -
2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 6
5536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6)
)/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*
(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(
4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 1152
0*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*
a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*
b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8
1920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*
b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*
c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(1

28*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*
c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 19660
80*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^
(1/2) - (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2
*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B
^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^
4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2
a(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 10
24*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^
2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^
7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 2
0*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*
b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b
^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11
- 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c
^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 29491
20*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i - (((3*(26214
4*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144
*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*
c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327
680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b
^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(
9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a
*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A
^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3
*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5
*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8192
0*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^1
2*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5
 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*
(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4
 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*
a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/
2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40
960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^
2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2
)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^
11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^
6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 1
1520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536
*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c
- 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*
A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*
B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2
 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b
^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 -
2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2
*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B
*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*
A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 -
16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15
*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*
b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*
c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 -
 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*
a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7
+ 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 6656
0*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B

*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i)/((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) - (x^(1/2)*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) - (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2

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- 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143
360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(10485
76*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 537
60*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^
6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64
*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^
3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 25
6*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^
(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3
 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61
440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B
^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a
^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 8192
0*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^
4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*
b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720
*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^
6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 262144
0*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c
^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c
^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^
2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b
^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A
^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^
4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 -
560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*
B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13
*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*
A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*
a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^1
4*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a
^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7
 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^
20*c)))^(1/2) + (3*(576*B^3*a^4*c^4 - 180*A^3*b^5*c^3 + 540*B^3*a^2*b^4*c^2
 + 1584*B^3*a^3*b^2*c^3 - 9*A*B^2*b^7*c + 45*B^3*a*b^6*c + 576*A^2*B*a^3*c^
5 + 81*A^2*B*b^6*c^2 - 1440*A^3*a*b^3*c^4 - 576*A^3*a^2*b*c^5 - 576*A*B^2*a
*b^5*c^2 - 3456*A*B^2*a^3*b*c^4 + 1980*A^2*B*a*b^4*c^3 - 3600*A*B^2*a^2*b^3
*c^3 + 4464*A^2*B*a^2*b^2*c^4))/(32*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2
 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c))))*
(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(
4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 1152
0*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*
a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*
b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8
1920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*
b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*
c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(1
28*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*
c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 19660
80*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^
(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.951 $\int \frac{\sqrt{x}(A+Bx)}{(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=426

$$-\frac{\sqrt{x}(-2aB-x(bB-2Ac)+Ab)}{2(b^2-4ac)(a+bx+cx^2)^2}-\frac{\sqrt{x}\left(-A\left(8abc+b^3\right)+cx\left(12abB-A\left(20ac+b^2\right)\right)+aB\left(7b^2-4ac\right)\right)}{4a(b^2-4ac)^2(a+bx+cx^2)}+\frac{\sqrt{c}\left(A\right.}{}$$

Rubi [A] time = 1.25, antiderivative size = 426, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {820, 822, 826, 1166, 205}

$$-\frac{\sqrt{x}(-2aB-x(bB-2Ac)+Ab)}{2(b^2-4ac)(a+bx+cx^2)^2}-\frac{\sqrt{x}\left(cx\left(12abB-A\left(20ac+b^2\right)\right)-A\left(8abc+b^3\right)+aB\left(7b^2-4ac\right)\right)}{4a(b^2-4ac)^2(a+bx+cx^2)}+\frac{\sqrt{c}\left(A\left(b^2\sqrt{b^2-4ac}+20ac\sqrt{b^2-4ac}-52abc+b^3\right)+6aB\left(-2b\sqrt{b^2-4ac}+4ac+3b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}a(b^2-4ac)^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{c}\left(\frac{A(b^3-52abc)+6aB(4ac+3b^2)}{\sqrt{b^2-4ac}}-A\left(20ac+b^2\right)+12abB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}a(b^2-4ac)^2\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(2*(b^2 - 4*a*c)*(a + b*x + c*x^
2)^2) - (Sqrt[x]*(a*B*(7*b^2 - 4*a*c) - A*(b^3 + 8*a*b*c) + c*(12*a*b*B - A
*(b^2 + 20*a*c))*x))/(4*a*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) + (Sqrt[c]*(6*
a*B*(3*b^2 + 4*a*c - 2*b*Sqrt[b^2 - 4*a*c]) + A*(b^3 - 52*a*b*c + b^2*Sqrt[
b^2 - 4*a*c] + 20*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/
Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a*(b^2 - 4*a*c)^(5/2)*Sqrt[b - Sqr
t[b^2 - 4*a*c]]) - (Sqrt[c]*(12*a*b*B - A*(b^2 + 20*a*c) + (6*a*B*(3*b^2 +
4*a*c) + A*(b^3 - 52*a*b*c))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqr
t[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a*(b^2 - 4*a*c)^2*Sqrt[b + S
qrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{x}(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}(-Ab+2aB)-\frac{5}{2}(bB-2Ac)x}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-\ldots\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{\sqrt{x}(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-\ldots\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{\sqrt{x}(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-\ldots\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{\sqrt{x}(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-\ldots\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Mathematica [A] time = 1.44, size = 510, normalized size = 1.20

$$\frac{-\frac{x^{3/2}\left(A\left(20a^2c^2-15ab^2c-16abc^2x+b^4+b^3cx\right)+3aB\left(4ac^2x+b^3+b^2cx\right)\right)}{2a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{x^{3/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{(a+x(b+cx))^2}+\frac{-2A\sqrt{x}\left(b^3-16abc\right)+\frac{\sqrt{2}a\sqrt{c}\left(A\left(b^2\sqrt{b^2-4ac}+20ac\sqrt{b^2-4ac}-52abc+b^3\right)+6aB\left(-2b\sqrt{b^2-4ac}+4ac+3b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}a\sqrt{c}\left(A\left(b^2\sqrt{b^2-4ac}+20ac\sqrt{b^2-4ac}+52abc-b^3\right)-6aB\left(2b\sqrt{b^2-4ac}+4ac+3b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}-6aB\sqrt{x}\left(4ac+b^2\right)}{4a\left(b^2-4ac\right)}}{2a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(3/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 - (x^(3/2)*(3*a*B*(b^3 + b^2*c*x + 4*a*c^2*x) + A*(b^4 - 15*a*b^2*c + 20
*a^2*c^2 + b^3*c*x - 16*a*b*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(a + x*(b + c*x)))
 + (-6*a*B*(b^2 + 4*a*c)*Sqrt[x] - 2*A*(b^3 - 16*a*b*c)*Sqrt[x] + (Sqrt[2]*
a*Sqrt[c]*(6*a*B*(3*b^2 + 4*a*c - 2*b*Sqrt[b^2 - 4*a*c]) + A*(b^3 - 52*a*b*
c + b^2*Sqrt[b^2 - 4*a*c] + 20*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt
```

```
[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt
[b^2 - 4*a*c]]) + (Sqrt[2]*a*Sqrt[c]*(-6*a*B*(3*b^2 + 4*a*c + 2*b*Sqrt[b^2
- 4*a*c]) + A*(-b^3 + 52*a*b*c + b^2*Sqrt[b^2 - 4*a*c] + 20*a*c*Sqrt[b^2 -
4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sq
rt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(4*a*(b^2 - 4*a*c)))/(2*a*(b^
2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 6.68, size = 625, normalized size = 1.47

$$\frac{\left(24\sqrt{2}a^2Bc^{3/2}+20\sqrt{2}aAc^{3/2}\sqrt{b^2-4ac}+\sqrt{2}Ab^2\sqrt{c}\sqrt{b^2-4ac}-52\sqrt{2}aAbc^{3/2}+18\sqrt{2}ab^2B\sqrt{c}-12\sqrt{2}abB\sqrt{c}\sqrt{b^2-4ac}+\sqrt{2}Ab^3\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{8a\left(b^2-4ac\right)^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-24\sqrt{2}a^2Bc^{3/2}+20\sqrt{2}aAc^{3/2}\sqrt{b^2-4ac}+\sqrt{2}Ab^2\sqrt{c}\sqrt{b^2-4ac}+52\sqrt{2}aAbc^{3/2}-18\sqrt{2}ab^2B\sqrt{c}-12\sqrt{2}abB\sqrt{c}\sqrt{b^2-4ac}-\sqrt{2}Ab^3\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{8a\left(b^2-4ac\right)^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{\sqrt{x}\left(12a^3Bc-16a^2Abc-36a^2Ac^2x+3a^2b^2B+16a^2bBcx-4a^2Bc^2x^2+aAb^3-5aAb^2cx-28aAbc^2x^2-20aAc^3x^3+5ab^3Bx+19ab^2Bcx^2+12abBc^2x^3-Ab^4x-2Ab^3cx^2-Ab^2c^2x^3\right)}{4a\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(Sqrt[x]*(a*A*b^3 + 3*a^2*b^2*B - 16*a^2*A*b*c + 12*a^3*B*c - A*b^4*x
+ 5*a*b^3*B*x - 5*a*A*b^2*c*x + 16*a^2*b*B*c*x - 36*a^2*A*c^2*x - 2*A*b^3*c
*x^2 + 19*a*b^2*B*c*x^2 - 28*a*A*b*c^2*x^2 - 4*a^2*B*c^2*x^2 - A*b^2*c^2*x^
3 + 12*a*b*B*c^2*x^3 - 20*a*A*c^3*x^3))/(a*(-b^2 + 4*a*c)^2*(a + b*x + c*x^
2)^2) + ((Sqrt[2]*A*b^3*Sqrt[c] + 18*Sqrt[2]*a*b^2*B*Sqrt[c] - 52*Sqrt[2]*a
*A*b*c^(3/2) + 24*Sqrt[2]*a^2*B*c^(3/2) + Sqrt[2]*A*b^2*Sqrt[c]*Sqrt[b^2 -
4*a*c] - 12*Sqrt[2]*a*b*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] + 20*Sqrt[2]*a*A*c^(3/2
)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4
*a*c]]])/(8*a*(b^2 - 4*a*c)^(5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((-(Sqrt[2
]*A*b^3*Sqrt[c]) - 18*Sqrt[2]*a*b^2*B*Sqrt[c] + 52*Sqrt[2]*a*A*b*c^(3/2) -
24*Sqrt[2]*a^2*B*c^(3/2) + Sqrt[2]*A*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 12*Sqr
t[2]*a*b*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] + 20*Sqrt[2]*a*A*c^(3/2)*Sqrt[b^2 - 4*
a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(8*a*(
b^2 - 4*a*c)^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 9.40, size = 7267, normalized size = 17.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2
*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (
a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b
*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*
A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5
*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8
*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*s
qrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A
^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c
)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*
b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640
*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5))*log(1/2*sqrt(1/2)*(27*B^3*
a^3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b^10 + A^3*b^11 + 6400*(3*A^2*B*a^6
- 4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 72*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 -
341*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*
a^4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6
+ 47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^
2*b^8 + 53*A^3*a*b^9)*c - (3*B*a^4*b^13 + A*a^3*b^14 + 40960*A*a^10*c^7 - 4
096*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 1536*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 -
6400*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3
- 240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)
*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 +
 A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)
*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^1
```

0*b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b - A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) - sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5))*log(-1/2*sqrt(1/2)*(27*B^3*a^3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b^10 + A^3*b^11 + 6400*(3*A^2*B*a^6 - 4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 72*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 - 341*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*a^4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6 + 47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^2*b^8 + 53*A^3*a*b^9)*c - (3*B*a^4*b^13 + A*a^3*b^14 + 40960*A*a^10*c^7 - 4096*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 1536*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 - 6400*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3 - 240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b - A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) + sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c - (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4

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*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/
(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^
2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a
^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5))*log(1/2*sqrt(1/2)*(27*B^3*a^
3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b^10 + A^3*b^11 + 6400*(3*A^2*B*a^6 -
4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 72*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 - 34
1*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*a^
4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6 +
47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^2*
b^8 + 53*A^3*a*b^9)*c + (3*B*a^4*b^13 + A*a^3*b^14 + 40960*A*a^10*c^7 - 409
6*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 1536*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 - 64
00*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3 -
240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)*s
qrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A
^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c
)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*
b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 2
40*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^
2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c - (a^3
*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4
 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 +
12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^
2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^
4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160
*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000
*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b - A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3
024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4
)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*
A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^
2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) - sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 1
6*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a
^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2
*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b
^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*
B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2
*a*b^5)*c - (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 +
1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^
2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*
a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*
c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20
*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^
8*c^5))*log(-1/2*sqrt(1/2)*(27*B^3*a^3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b
^10 + A^3*b^11 + 6400*(3*A^2*B*a^6 - 4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 7
2*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 - 341*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b
^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*a^4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108
*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6 + 47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6
 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^2*b^8 + 53*A^3*a*b^9)*c + (3*B*a^4*b^13
+ A*a^3*b^14 + 40960*A*a^10*c^7 - 4096*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 153
6*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 - 6400*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160
*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3 - 240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2
*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54
*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B
^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b
^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^
2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*
(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 1
2*A*B*a^2*b^4 - 7*A^2*a*b^5)*c - (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2
 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 10
8*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2
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*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7
*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*
c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*
a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b -
A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2
 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3
*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*
B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) -
 2*(3*B*a^2*b^2 + A*a*b^3 - (20*A*a*c^3 - (12*B*a*b - A*b^2)*c^2)*x^3 - (4*
(B*a^2 + 7*A*a*b)*c^2 - (19*B*a*b^2 - 2*A*b^3)*c)*x^2 + 4*(3*B*a^3 - 4*A*a^
2*b)*c + (5*B*a*b^3 - A*b^4 - 36*A*a^2*c^2 + (16*B*a^2*b - 5*A*a*b^2)*c)*x)
*sqrt(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3
+ 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6
 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)
*x)
```

giac [B] time = 3.20, size = 7277, normalized size = 17.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/32*((2*b^4*c^2 + 32*a*b^2*c^3 - 160*a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*b^3*c + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^2*c^2 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*b^2*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c
^3 - 2*(b^2 - 4*a*c)*b^2*c^2 - 40*(b^2 - 4*a*c)*a*c^3)*(a*b^4 - 8*a^2*b^2*c
 + 16*a^3*c^2)^2*A - 12*(2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a*b^4 - 8*a^2*b^2*c +
16*a^3*c^2)^2*B + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^9 - 28*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c - 2*sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^8*c - 2*a*b^9*c + 240*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^3*b^5*c^2 + 48*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^2
 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7*c^2 + 56*a^2*b^7*c^2 - 832
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 288*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^5*c^3 - 480*a^3*b^5*c^3 + 1024*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^5*b*c^4 + 512*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4
 + 144*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^4 + 1664*a^4*b^3*c
^4 - 256*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^5 - 2048*a^5*b*c^5
 + 2*(b^2 - 4*a*c)*a*b^7*c - 48*(b^2 - 4*a*c)*a^2*b^5*c^2 + 288*(b^2 - 4*a*
c)*a^3*b^3*c^3 - 512*(b^2 - 4*a*c)*a^4*b*c^4)*A*abs(a*b^4 - 8*a^2*b^2*c + 1
6*a^3*c^2) + 6*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^8 - 8*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^2*b^7*c - 2*a^2*b^8*c + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^3*b^5*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^2 + 16
*a^3*b^6*c^2 + 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^3 + 32
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 4*sqrt(2)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 256*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^6*c^4 - 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^4 - 16*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4 - 256*a^5*b^2*c^4 + 64*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*c^5 + 512*a^6*c^5 + 2*(b^2 - 4*a
*c)*a^2*b^6*c - 8*(b^2 - 4*a*c)*a^3*b^4*c^2 - 32*(b^2 - 4*a*c)*a^4*b^2*c^3
```

+ 128*(b^2 - 4*a*c)*a^5*c^4)*B*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2) + (2*a^2*b^12*c^2 - 136*a^3*b^10*c^3 + 1856*a^4*b^8*c^4 - 10496*a^5*b^6*c^5 + 27136*a^6*b^4*c^6 - 26624*a^7*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^12 + 68*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^11*c - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 - 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^10*c^2 + 5248*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 1344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^8*c^3 - 13568*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 - 5120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 672*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^4 + 13312*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^5 + 2560*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^5 - 3328*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^6 - 2*(b^2 - 4*a*c)*a^2*b^10*c^2 + 128*(b^2 - 4*a*c)*a^3*b^8*c^3 - 1344*(b^2 - 4*a*c)*a^4*b^6*c^4 + 5120*(b^2 - 4*a*c)*a^5*b^4*c^5 - 6656*(b^2 - 4*a*c)*a^6*b^2*c^6)*A + 6*(6*a^3*b^11*c^2 - 88*a^4*b^9*c^3 + 448*a^5*b^7*c^4 - 768*a^6*b^5*c^5 - 512*a^7*b^3*c^6 + 2048*a^8*b*c^7 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^11 + 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^9*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 + 384*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^4 - 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 512*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b*c^6 - 6*(b^2 - 4*a*c)*a^3*b^9*c^2 + 64*(b^2 - 4*a*c)*a^4*b^7*c^3 - 192*(b^2 - 4*a*c)*a^5*b^5*c^4 + 512*(b^2 - 4*a*c)*a^7*b*c^6)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2 + sqrt((a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)^2 - 4*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)))/(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)))/((a^3*b^10 - 20*a^4*b^8*c - 2*a^3*b^9*c + 160*a^5*b^6*c^2 + 32*a^4*b^7*c^2 + a^3*b^8*c^2 - 640*a^6*b^4*c^3 - 192*a^5*b^5*c^3 - 16*a^4*b^6*c^3 + 1280*a^7*b^2*c^4 + 512*a^6*b^3*c^4 + 96*a^5*b^4*c^4 - 1024*a^8*c^5 - 512*a^7*b*c^5 - 256*a^6*b^2*c^5 + 256*a^7*c^6)*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*abs(c)) - 1/32*((2*b^4*c^2 + 32*a*b^2*c^3 - 160*a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 - 40*(b^2 - 4*a*c)*a*c^3)*(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)^2*A - 12*(2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)^2*B - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^

9 - 28*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^8*c + 2*a*b^9*c + 240*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^2 + 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7*c^2 - 56*a^2*b^7*c^2 - 832*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 288*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^3 + 480*a^3*b^5*c^3 + 1024*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^4 + 512*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4 + 144*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^4 - 1664*a^4*b^3*c^4 - 256*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^5 + 2048*a^5*b*c^5 - 2*(b^2 - 4*a*c)*a*b^7*c + 48*(b^2 - 4*a*c)*a^2*b^5*c^2 - 288*(b^2 - 4*a*c)*a^3*b^3*c^3 + 512*(b^2 - 4*a*c)*a^4*b*c^4)*A*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2) - 6*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^8 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c + 2*a^2*b^8*c + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^2 - 16*a^3*b^6*c^2 + 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^3 + 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 256*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*c^4 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^4 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4 + 256*a^5*b^2*c^4 + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*c^5 - 512*a^6*c^5 - 2*(b^2 - 4*a*c)*a^2*b^6*c + 8*(b^2 - 4*a*c)*a^3*b^4*c^2 + 32*(b^2 - 4*a*c)*a^4*b^2*c^3 - 128*(b^2 - 4*a*c)*a^5*c^4)*B*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2) + (2*a^2*b^12*c^2 - 136*a^3*b^10*c^3 + 1856*a^4*b^8*c^4 - 10496*a^5*b^6*c^5 + 27136*a^6*b^4*c^6 - 26624*a^7*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^12 + 68*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^11*c - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 - 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^10*c^2 + 5248*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 1344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^8*c^3 - 13568*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 - 5120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 672*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^4 + 13312*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^5 + 2560*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^5 - 3328*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^6 - 2*(b^2 - 4*a*c)*a^2*b^10*c^2 + 128*(b^2 - 4*a*c)*a^3*b^8*c^3 - 1344*(b^2 - 4*a*c)*a^4*b^6*c^4 + 5120*(b^2 - 4*a*c)*a^5*b^4*c^5 - 6656*(b^2 - 4*a*c)*a^6*b^2*c^6)*A + 6*(6*a^3*b^11*c^2 - 88*a^4*b^9*c^3 + 448*a^5*b^7*c^4 - 768*a^6*b^5*c^5 - 512*a^7*b^3*c^6 + 2048*a^8*b*c^7 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^11 + 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^9*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 + 384*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^4 - 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 512*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2

```
 - 4*a*c)*c)*a^7*b*c^6 - 6*(b^2 - 4*a*c)*a^3*b^9*c^2 + 64*(b^2 - 4*a*c)*a^4
*b^7*c^3 - 192*(b^2 - 4*a*c)*a^5*b^5*c^4 + 512*(b^2 - 4*a*c)*a^7*b*c^6)*B)*
arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2 - sqrt(
(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)^2 - 4*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*
c^2)*(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)))/(a*b^4*c - 8*a^2*b^2*c^2 + 16
*a^3*c^3)))/((a^3*b^10 - 20*a^4*b^8*c - 2*a^3*b^9*c + 160*a^5*b^6*c^2 + 32*
a^4*b^7*c^2 + a^3*b^8*c^2 - 640*a^6*b^4*c^3 - 192*a^5*b^5*c^3 - 16*a^4*b^6*
c^3 + 1280*a^7*b^2*c^4 + 512*a^6*b^3*c^4 + 96*a^5*b^4*c^4 - 1024*a^8*c^5 -
512*a^7*b*c^5 - 256*a^6*b^2*c^5 + 256*a^7*c^6)*abs(a*b^4 - 8*a^2*b^2*c + 16
*a^3*c^2)*abs(c)) - 1/4*(12*B*a*b*c^2*x^(7/2) - A*b^2*c^2*x^(7/2) - 20*A*a*
c^3*x^(7/2) + 19*B*a*b^2*c*x^(5/2) - 2*A*b^3*c*x^(5/2) - 4*B*a^2*c^2*x^(5/2
) - 28*A*a*b*c^2*x^(5/2) + 5*B*a*b^3*x^(3/2) - A*b^4*x^(3/2) + 16*B*a^2*b*c
*x^(3/2) - 5*A*a*b^2*c*x^(3/2) - 36*A*a^2*c^2*x^(3/2) + 3*B*a^2*b^2*sqrt(x)
 + A*a*b^3*sqrt(x) + 12*B*a^3*c*sqrt(x) - 16*A*a^2*b*c*sqrt(x))/((a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2)*(c*x^2 + b*x + a)^2)
```

maple [B] time = 0.11, size = 1364, normalized size = 3.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(1/8*c^2*(20*A*a*c+A*b^2-12*B*a*b)/a/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)+1
/8/a*c*(28*A*a*b*c+2*A*b^3+4*B*a^2*c-19*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
*x^(5/2)+1/8*(36*A*a^2*c^2+5*A*a*b^2*c+A*b^4-16*B*a^2*b*c-5*B*a*b^3)/a/(16*
a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)+1/8*(16*A*a*b*c-A*b^3-12*B*a^2*c-3*B*a*b^2)/
(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*x^2+b*x+a)^2+5/2/(16*a^2*c^2-8*a*b^2
*c+b^4)*c^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+1/8/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*A*b^2+13/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b
^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-1/8/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(
-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/(
(b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-3/2/(16*a^2*c^2-8*a*b^2*c+
b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-3*a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*
a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)*c/
(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/
((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-5/2/(16*a^2*c^2-8*a*b^2*c
+b^4)*c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-1/8/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+13/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a
*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-1/8/a/(16*a^2*c^2-8*a*b^2*c+b
^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+3/2/(16*a^2*c^2-
8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/
((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-3*a/(16*a^2*c^2-8*a*b^2*c+
b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-9/4/(16*a^2*c^2-8
*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(\left(b^{3}c^{2}-16\,abc^{3}\right)A+3\left(ab^{2}c^{2}+4\,a^{2}c^{3}\right)B\right)x^{\frac{9}{2}}+\left(\left(2\,b^{4}c-31\,ab^{2}c^{2}+20\,a^{2}c^{3}\right)A+6\left(ab^{3}c+2\,a^{2}bc^{2}\right)B\right)x^{\frac{7}{2}}+\left(\left(b^{5}-12\,ab^{3}c-4\,a^{2}bc^{2}\right)A+\left(3\,ab^{4}-a^{2}b^{2}c+28\,a^{3}c^{2}\right)B\right)x^{\frac{5}{2}}+\left(3\left(ab^{4}-9\,a^{2}b^{2}c+12\,a^{3}c^{2}\right)A+\left(a^{2}b^{3}+8\,a^{3}bc\right)B\right)x^{\frac{3}{2}}}{4\left(a^{4}b^{4}-8\,a^{5}b^{2}c+16\,a^{6}c^{2}+\left(a^{2}b^{4}c^{2}-8\,a^{3}b^{2}c^{3}+16\,a^{4}c^{4}\right)x^{4}+2\left(a^{2}b^{5}c-8\,a^{3}b^{3}c^{2}+16\,a^{4}bc^{3}\right)x^{3}+\left(a^{2}b^{6}-6\,a^{3}b^{4}c+32\,a^{5}c^{3}\right)x^{2}+2\left(a^{3}b^{5}-8\,a^{4}b^{3}c+16\,a^{5}bc^{2}\right)x\right)}+\int-\frac{\left(\left(b^{3}c-16\,abc^{2}\right)A+3\left(ab^{2}c+4\,a^{2}c^{2}\right)B\right)x^{\frac{3}{2}}+\left(\left(b^{4}-17\,ab^{2}c-20\,a^{2}c^{2}\right)A+3\left(ab^{3}+8\,a^{2}bc\right)B\right)\sqrt{x}}{8\left(a^{3}b^{4}-8\,a^{4}b^{2}c+16\,a^{5}c^{2}+\left(a^{2}b^{4}c-8\,a^{3}b^{2}c^{2}+16\,a^{4}c^{3}\right)x^{2}+\left(a^{2}b^{5}-8\,a^{3}b^{3}c+16\,a^{4}bc^{2}\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(((b^3*c^2 - 16*a*b*c^3)*A + 3*(a*b^2*c^2 + 4*a^2*c^3)*B)*x^(9/2) + ((2
*b^4*c - 31*a*b^2*c^2 + 20*a^2*c^3)*A + 6*(a*b^3*c + 2*a^2*b*c^2)*B)*x^(7/2
) + ((b^5 - 12*a*b^3*c - 4*a^2*b*c^2)*A + (3*a*b^4 - a^2*b^2*c + 28*a^3*c^2
)*B)*x^(5/2) + (3*(a*b^4 - 9*a^2*b^2*c + 12*a^3*c^2)*A + (a^2*b^3 + 8*a^3*b
*c)*B)*x^(3/2))/(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 - 8*a^3*
b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*c^3)*x^
3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^3*c + 1
6*a^5*b*c^2)*x) + integrate(-1/8*(((b^3*c - 16*a*b*c^2)*A + 3*(a*b^2*c + 4*
a^2*c^2)*B)*x^(3/2) + ((b^4 - 17*a*b^2*c - 20*a^2*c^2)*A + 3*(a*b^3 + 8*a^2
*b*c)*B)*sqrt(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a^2*b^4*c - 8*a^3*
b^2*c^2 + 16*a^4*c^3)*x^2 + (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x), x)
```

mupad [B] time = 5.05, size = 19024, normalized size = 44.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((x^(3/2)*(A*b^4 + 36*A*a^2*c^2 - 5*B*a*b^3 + 5*A*a*b^2*c - 16*B*a^2*b*c))/
(4*a*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^(1/2)*(A*b^3 + 3*B*a*b^2 + 12*B*a
^2*c - 16*A*a*b*c))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(5/2)*(4*B*a^2*
c^2 + 2*A*b^3*c + 28*A*a*b*c^2 - 19*B*a*b^2*c))/(4*a*(b^4 + 16*a^2*c^2 - 8*
a*b^2*c)) + (c*x^(7/2)*(20*A*a*c^2 + A*b^2*c - 12*B*a*b*c))/(4*a*(b^4 + 16*
a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c
*x^3) + atan(((((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A*a^7*b*c^8 -
 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c^5 + 737280*
A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3072*B*a^3*b^1
0*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/
(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b
^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) - (x^(1/2)*(-(A^2*b^17 + 9*B
^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)
^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3
+ 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 +
1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 1
03680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983
040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) -
1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B
*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*
B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*
b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*
a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^
7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^
7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 -
 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5
 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^
4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c
- b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 114
0*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776
*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*
B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^
2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15
*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2
*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b
^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7
*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 1
80*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720
*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^
5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621
```

```
440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B
^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c
^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^
3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a
^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1
/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^1
3*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*
c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*
c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5
 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a
*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c -
 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241
920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 73
7280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^
14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2
 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^
9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*
c^9)))^(1/2)*1i - (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A*a^7*b*c
^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c^5 + 737
280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3072*B*a^3
*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a^7*b^2*c
^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a
^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (x^(1/2)*(-(A^2*b^17 +
 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c -
b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*
c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^
6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3
 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 +
 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2
) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240
*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 99225
6*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*
B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048
576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 5376
0*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^
6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536*a^7*b*c
^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960*a^5*b^5
*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^
4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*
a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 +
 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 4
3776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5
040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 921
6*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*
b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180
*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a
^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B
*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2)
 - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c +
 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^1
0*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 -
2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 2
88*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b
^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*
B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 2
56*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15
)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2
*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*
b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b
```

^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5
*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A
^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13
*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 -
 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6
+ 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^
2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16
*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 86016
0*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*
b^2*c^9)))^(1/2)*1i)/((35*A^3*b^6*c^4 - 8000*A^3*a^3*c^7 - 12720*A^3*a^2*b^
2*c^6 + 540*B^3*a^2*b^5*c^3 + 4320*B^3*a^3*b^3*c^4 - 2880*A*B^2*a^4*c^6 - 1
5*A^2*B*b^7*c^3 + 84*A^3*a*b^4*c^5 + 1728*B^3*a^4*b*c^5 + 135*A*B^2*a*b^6*c
^3 - 360*A^2*B*a*b^5*c^4 + 26880*A^2*B*a^3*b*c^6 - 5580*A*B^2*a^2*b^4*c^4 -
 20592*A*B^2*a^3*b^2*c^5 + 15696*A^2*B*a^2*b^3*c^5)/(32*(a^2*b^12 + 4096*a^
8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c
^4 - 6144*a^7*b^2*c^5)) + (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A
*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c
^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 30
72*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a
^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2
 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) - (x^(1/2)*(-(A^
2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(
4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a
^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^
6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5
*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b
^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^
15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c
^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4
 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^
7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^2
0 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^
3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080
*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536
*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960
*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c
 + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b
^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*
a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9
*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3
*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c
^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 5
5*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c
^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 240
00*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 178
1760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^1
5)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*
b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048
*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^
4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3
*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B
^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3
- 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4
*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c -
 b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140
*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*
A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B
^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2
*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*

c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*
a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^
10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*
b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 18
0*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*
a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5
 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 26214
40*a^12*b^2*c^9)))^(1/2) + (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*
A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*
c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3
072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*
a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2
 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (x^(1/2)*(-(A
^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-
(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*
a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a
^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^
5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*
b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)
^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*
c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^
4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c
^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^
20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c
^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 196608
0*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(6553
6*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 4096
0*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*
c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*
b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B
*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^
9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^
3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*
c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 -
55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*
c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24
000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 17
81760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^
15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4
*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 25804
8*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b
^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^
3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*
B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3
 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^
4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c
- b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 114
0*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776
*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*
B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^
2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15
*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2
*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b
^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7
*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 1
80*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720
*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^
5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621
440*a^12*b^2*c^9)))^(1/2))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c

- b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 11
40*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 4377
6*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040
*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B
^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^1
5*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^
2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*
b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^
7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) -
180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 72
0*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c
^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 262
1440*a^12*b^2*c^9)))^(1/2)*2i + atan(((((64*A*a*b^13*c^2 - 786432*B*a^8*c^8
+ 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800
*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b
^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6
+ 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*
a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) - (x
^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9
*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 -
10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 6
80960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 3
7440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 5529
60*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4
*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280
*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B
*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*
B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(
128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680
*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c
^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^
(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7
*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 -
16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*
b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880
*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680
*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B
^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B
*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320
*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^
12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b
^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*
a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^
10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*
c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 294
9120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A^2*b^6*c^3 -
800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4
*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*
B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c
+ 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^
2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a
*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*
c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*
c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^
4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55
*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^
8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 2400
0*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781

760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*1i - (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (x^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*1i)/((35*A^3*b^6*c^4 - 8000*A^3*a^3*c^7 - 12720*A^3*a^2*b^2*c^6 + 540*B^3*a^2*b^5*c^3 + 4320*B^3*a^3*b^3*c^4 - 2880*A*B^2*a^4*c^6 - 15*A^2*B*b^7*c^3 + 84*A^3*a*b^4*c^5 + 1728*B^3*a^4*b*c^5 + 135*A*B^2*a*b^6*c^3 - 360*A^2*B*a*b^5*c^4 + 26880*A^2*B*a^3*b*c^6 -

5580*A*B^2*a^2*b^4*c^4 - 20592*A*B^2*a^3*b^2*c^5 + 15696*A^2*B*a^2*b^3*c^5)
/(32*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*
b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (((64*A*a*b^13*c^2 - 7864
32*B*a^8*c^8 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*
c^4 - 204800*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 +
192*B*a^2*b^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*
a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b
^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^
2*c^5)) - (x^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^1
5)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^
2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5
*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*
b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^
5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*
A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^1
3*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3
- 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6
+ 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a
^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^1
6*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 8601
60*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12
*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 1
0240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 25
6*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17
+ 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c -
b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11
*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c
^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^
3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6
+ 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/
2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 24
0*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 9922
56*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A
*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 104
8576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 537
60*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b
^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A
^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234
*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^
3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 1
6*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b
^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*
A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*
A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^
2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*
a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*
A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^1
2*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^
6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a
*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^1
0 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c
^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949
120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (((64*A*a*b^13*c^2 - 786
432*B*a^8*c^8 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9
*c^4 - 204800*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7
+ 192*B*a^2*b^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B
*a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*
b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b

^2*c^5)) + (x^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*2i

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.952 $\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=468

$$\frac{\sqrt{x}\left(A\left(28a^2c^2-25ab^2c+3b^4\right)+cx\left(3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)+abB\left(8ac+b^2\right)\right)}{4a^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(\frac{3A\left(56a^2c^2-10ab^2c+\cdots\right.}{\sqrt{b^2-\cdots}}\right.}{\cdots}$$

Rubi [A] time = 1.66, antiderivative size = 468, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {822, 826, 1166, 205}

$$\frac{\sqrt{x}\left(A\left(28a^2c^2-25ab^2c+3b^4\right)+cx\left(3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)+abB\left(8ac+b^2\right)\right)}{4a^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(\frac{3A\left(56a^2c^2-10ab^2c+b^4\right)+abB\left(b^2-52ac\right)}{\sqrt{b^2-4ac}}+3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}a^2\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{c}\left(-\frac{3A\left(56a^2c^2-10ab^2c+b^4\right)+abB\left(b^2-52ac\right)}{\sqrt{b^2-4ac}}+3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}a^2\left(b^2-4ac\right)^2\sqrt{\sqrt{b^2-4ac}+b}}+\frac{\sqrt{x}\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] (Sqrt[x]*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(2*a*(b^2 - 4*a*c)*
(a + b*x + c*x^2)^2) + (Sqrt[x]*(a*b*B*(b^2 + 8*a*c) + A*(3*b^4 - 25*a*b^2*
c + 28*a^2*c^2) + c*(a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b*c))*x))/(4*a^2*(
b^2 - 4*a*c)^2*(a + b*x + c*x^2)) + (Sqrt[c]*(a*B*(b^2 + 20*a*c) + 3*A*(b^3
 - 8*a*b*c) + (a*b*B*(b^2 - 52*a*c) + 3*A*(b^4 - 10*a*b^2*c + 56*a^2*c^2))/
Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a
*c]]])/(4*Sqrt[2]*a^2*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[
c]*(a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b*c) - (a*b*B*(b^2 - 52*a*c) + 3*A*
(b^4 - 10*a*b^2*c + 56*a^2*c^2))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]
*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^2*(b^2 - 4*a*c)^2*Sqrt
[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^3}\,dx = \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(-3Ab^2-abB+14aAc\right)-\frac{5}{2}(Ab-2aB)cx}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx}{2a\left(b^2-4ac\right)}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab\right.\right.}{4a^2\left(b^2\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab\right.\right.}{4a^2\left(b^2\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab\right.\right.}{4a^2\left(b^2\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab\right.\right.}{4a^2\left(b^2\right.}$$

Mathematica [A] time = 1.69, size = 440, normalized size = 0.94

$$\frac{-\frac{2\sqrt{x}\left(A\left(28a^2c^2-25ab^2c-24abc^2x+3b^4+3b^3cx\right)+aB\left(8abc+20ac^2x+b^3+b^2cx\right)\right)}{a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{\sqrt{2}\sqrt{c}\left(\frac{\left(\frac{3A\left(56a^2c^2-10ab^2c+b^4\right)+abB\left(b^2-52ac\right)}{\sqrt{b^2-4ac}}+3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-\frac{3A\left(56a^2c^2-10ab^2c+b^4\right)+abB\left(b^2-52ac\right)}{\sqrt{b^2-4ac}}+3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a\left(b^2-4ac\right)}+\frac{4\sqrt{x}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{(a+x(b+cx))^2}}{8a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((4*Sqrt[x]*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x
))^2 - (2*Sqrt[x]*(a*B*(b^3 + 8*a*b*c + b^2*c*x + 20*a*c^2*x) + A*(3*b^4 -
25*a*b^2*c + 28*a^2*c^2 + 3*b^3*c*x - 24*a*b*c^2*x)))/(a*(-b^2 + 4*a*c)*(a
+ x*(b + c*x))) + (Sqrt[2]*Sqrt[c]*(((a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b
*c) + (a*b*B*(b^2 - 52*a*c) + 3*A*(b^4 - 10*a*b^2*c + 56*a^2*c^2))/Sqrt[b^2
 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/S
qrt[b - Sqrt[b^2 - 4*a*c]] + ((a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b*c) - (
a*b*B*(b^2 - 52*a*c) + 3*A*(b^4 - 10*a*b^2*c + 56*a^2*c^2))/Sqrt[b^2 - 4*a*
c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b +
 Sqrt[b^2 - 4*a*c]]))/(a*(b^2 - 4*a*c)))/(8*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 3.89, size = 699, normalized size = 1.49

$$\frac{\left(168a^2Ac^{5/2}+20a^2Bc^{3/2}\sqrt{b^2-4ac}-52a^2bBc^{3/2}-30aAb^2c^{3/2}-24aAbc^{3/2}\sqrt{b^2-4ac}+3Ab^3\sqrt{c}\sqrt{b^2-4ac}+ab^3B\sqrt{c}+ab^2B\sqrt{c}\sqrt{b^2-4ac}+3Ab^4\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}a^2\left(b^2-4ac\right)^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-168a^2Ac^{5/2}+20a^2Bc^{3/2}\sqrt{b^2-4ac}+52a^2bBc^{3/2}+30aAb^2c^{3/2}-24aAbc^{3/2}\sqrt{b^2-4ac}+3Ab^3\sqrt{c}\sqrt{b^2-4ac}-ab^3B\sqrt{c}+ab^2B\sqrt{c}\sqrt{b^2-4ac}-3Ab^4\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{4\sqrt{2}a^2\left(b^2-4ac\right)^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}+\frac{\sqrt{x}\left(44a^3Ac^2+16a^3bBc+36a^3Bc^2x-37a^2Ab^2c-4a^2Abc^2x+28a^2Ac^3x^2-a^2b^3B+5a^2b^2Bcx+28a^2bBc^2x^2+20a^2Bc^3x^3+5aAb^4-20aAb^3cx-49aAb^2c^2x^2-24aAbc^3x^3+ab^4Bx+2ab^3Bcx^2+ab^2Bc^2x^3+3Ab^5x+6Ab^4cx^2+3Ab^3c^2x^3\right)}{4a^2\left(4ac-b^2\right)^2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] (Sqrt[x]*(5*a*A*b^4 - a^2*b^3*B - 37*a^2*A*b^2*c + 16*a^3*b*B*c + 44*a^3*A*
c^2 + 3*A*b^5*x + a*b^4*B*x - 20*a*A*b^3*c*x + 5*a^2*b^2*B*c*x - 4*a^2*A*b*
c^2*x + 36*a^3*B*c^2*x + 6*A*b^4*c*x^2 + 2*a*b^3*B*c*x^2 - 49*a*A*b^2*c^2*x
^2 + 28*a^2*b*B*c^2*x^2 + 28*a^2*A*c^3*x^2 + 3*A*b^3*c^2*x^3 + a*b^2*B*c^2*
x^3 - 24*a*A*b*c^3*x^3 + 20*a^2*B*c^3*x^3))/(4*a^2*(-b^2 + 4*a*c)^2*(a + b*
x + c*x^2)^2) + ((3*A*b^4*Sqrt[c] + a*b^3*B*Sqrt[c] - 30*a*A*b^2*c^(3/2) -
52*a^2*b*B*c^(3/2) + 168*a^2*A*c^(5/2) + 3*A*b^3*Sqrt[c]*Sqrt[b^2 - 4*a*c]
+ a*b^2*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 24*a*A*b*c^(3/2)*Sqrt[b^2 - 4*a*c] +
20*a^2*B*c^(3/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
 - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^2*(b^2 - 4*a*c)^(5/2)*Sqrt[b - Sqrt[b^
2 - 4*a*c]]) + ((-3*A*b^4*Sqrt[c] - a*b^3*B*Sqrt[c] + 30*a*A*b^2*c^(3/2) +
52*a^2*b*B*c^(3/2) - 168*a^2*A*c^(5/2) + 3*A*b^3*Sqrt[c]*Sqrt[b^2 - 4*a*c]
+ a*b^2*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 24*a*A*b*c^(3/2)*Sqrt[b^2 - 4*a*c] +
20*a^2*B*c^(3/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
 + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^2*(b^2 - 4*a*c)^(5/2)*Sqrt[b + Sqrt[b^
2 - 4*a*c]])
```

fricas [B] time = 23.77, size = 9907, normalized size = 21.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] -1/8*(sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 - 8*a^3*
b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*c^3)*x^
3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^3*c + 1
6*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680*(4*A*B*
a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a^3*b^3)*
c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 - 7*(5*B^2
*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 20*a^6*b^8*c + 16
0*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)*sqrt((B
^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A
^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^
4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 +
26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^
3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a
^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*
b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640
*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(1/2*sqrt(1/2)*(B^3*a^
3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 - 2370816*A^3*a^7
*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b^2)*c^6 - 64*(4
00*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26865*A^3*a^5*b^4
)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^2*B*a^5*b^5 + 6
7797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*b^6 + 16884*A^2
*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 6591*A*B^2*a^4*b^8
 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a^4*b^9 + 414*A*
B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c - (B*a^6*b^14 + 3*A*
a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a^12*b^2 - 99*A*
a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 1280*(5*B*a^10*b^
6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^3 + 24*(20*B*a^
8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13)*c)*sqrt((B^4*
a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A^4*
b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^4*a
^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 + 266
76*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^3*a
^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a^10
*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*b^2
*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680
```

*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a
^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 -
7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 20*a^6*b^
8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)
*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^
7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b
 + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^
4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 +
258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^
6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 12
80*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c
^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) + (3111696*A^4*a^
4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B^4*a^6 - 90000*
A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3 - 339309*A^4*a
^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79488*A^2*B^2*a^3
*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B^4*a^4*b^4 + 53
7*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 + 81*A^4*b^8)*c^3
 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*b^8 + 27*A^3*B*b^9)*c^2
)*sqrt(x)) - sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 -
 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*
c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^
3*c + 16*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680*
(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a^
3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 - 7
*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 20*a^6*b^8
*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)*
sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7
 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b
+ 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4
*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 2
58*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6
)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 128
0*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^
2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(-1/2*sqrt(1/2)
*(B^3*a^3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 - 2370816
*A^3*a^7*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b^2)*c^6
 - 64*(400*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26865*A^3
*a^5*b^4)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^2*B*a^5
*b^5 + 67797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*b^6 + 1
6884*A^2*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 6591*A*B^2
*a^4*b^8 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a^4*b^9
+ 414*A*B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c - (B*a^6*b^1
4 + 3*A*a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a^12*b^2
 - 99*A*a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 1280*(5*B
*a^10*b^6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^3 + 24*
(20*B*a^8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13)*c)*sq
rt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 +
 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b +
99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b
^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258
*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*
c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*
a^14*b^2*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^
9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 -
 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5
)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 2
0*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a
^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^
3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3

*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^
2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^
5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*
A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*
c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a
^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) + (311169
6*A^4*a^4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B^4*a^6
- 90000*A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3 - 3393
09*A^4*a^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79488*A^2
*B^2*a^3*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B^4*a^4*
b^4 + 537*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 + 81*A^4*
b^8)*c^3 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*b^8 + 27*A^3*B*
b^9)*c^2)*sqrt(x)) + sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b
^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 1
6*a^4*b*c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 -
8*a^4*b^3*c + 16*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9
 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 -
9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)
c^2 - 7(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b^10 - 20
*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^
10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3
*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*
B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2
*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5
*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A
^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c
^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^
7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(1/2*sq
rt(1/2)*(B^3*a^3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 -
2370816*A^3*a^7*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b
^2)*c^6 - 64*(400*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26
865*A^3*a^5*b^4)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^
2*B*a^5*b^5 + 67797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*
b^6 + 16884*A^2*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 659
1*A*B^2*a^4*b^8 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a
^4*b^9 + 414*A*B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c + (B*
a^6*b^14 + 3*A*a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a
^12*b^2 - 99*A*a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 12
80*(5*B*a^10*b^6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^
3 + 24*(20*B*a^8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13
)*c)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*
a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a
^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^
2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^
2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*
a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3
+ 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9
*A^2*b^9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^
4*b^2 - 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*
a^2*b^5)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b
^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 -
 1024*a^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 +
 108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 +
108*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 1
7496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25
*B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5
 + 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^
13*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c
+ 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) +

(3111696*A^4*a^4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B^4*a^6 - 90000*A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3 - 339309*A^4*a^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79488*A^2*B^2*a^3*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B^4*a^4*b^4 + 537*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 + 81*A^4*b^8)*c^3 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*b^8 + 27*A^3*B*b^9)*c^2)*sqrt(x)) - sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(-1/2*sqrt(1/2)*(B^3*a^3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 - 2370816*A^3*a^7*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b^2)*c^6 - 64*(400*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26865*A^3*a^5*b^4)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^2*B*a^5*b^5 + 67797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*b^6 + 16884*A^2*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 6591*A*B^2*a^4*b^8 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a^4*b^9 + 414*A*B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c + (B*a^6*b^14 + 3*A*a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a^12*b^2 - 99*A*a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 1280*(5*B*a^10*b^6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^3 + 24*(20*B*a^8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13)*c)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) + (3111696*A^4*a^4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B^4*a^6 - 90000*A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3 - 339309*A^4*a^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79488*A^2*B^2*a^3*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B^4*a^4*b^4 + 537*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 + 81*A^4*b^8)*c^3 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*

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b^8 + 27*A^3*B*b^9)*c^2)*sqrt(x)) + 2*(B*a^2*b^3 - 5*A*a*b^4 - 44*A*a^3*c^2
 - (4*(5*B*a^2 - 6*A*a*b)*c^3 + (B*a*b^2 + 3*A*b^3)*c^2)*x^3 - (28*A*a^2*c^
3 + 7*(4*B*a^2*b - 7*A*a*b^2)*c^2 + 2*(B*a*b^3 + 3*A*b^4)*c)*x^2 - (16*B*a^
3*b - 37*A*a^2*b^2)*c - (B*a*b^4 + 3*A*b^5 + 4*(9*B*a^3 - A*a^2*b)*c^2 + 5*
(B*a^2*b^2 - 4*A*a*b^3)*c)*x)*sqrt(x))/(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2
+ (a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3
*c^2 + 16*a^4*b*c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^
3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)*x)
```

giac [B] time = 2.46, size = 4621, normalized size = 9.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*(3*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8 - 17*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
b^7*c - 2*b^8*c + 116*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 +
 26*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^6*c^2 + 34*a*b^6*c^2 + 2*b^7*c^2 - 368*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 128*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^2*b^3*c^3 - 13*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^
3 - 232*a^2*b^4*c^3 - 30*a*b^5*c^3 + 448*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^4*c^4 + 224*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + 736*a^3*b^2*c^4 + 176
*a^2*b^3*c^4 - 112*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^5 - 896*a^
4*c^5 - 352*a^3*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*b^7 + 15*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c
- 88*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2
- 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 176*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 88*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 11*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 44*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 2*(b^2 - 4*a
*c)*b^6*c - 26*(b^2 - 4*a*c)*a*b^4*c^2 - 2*(b^2 - 4*a*c)*b^5*c^2 + 128*(b^2
 - 4*a*c)*a^2*b^2*c^3 + 22*(b^2 - 4*a*c)*a*b^3*c^3 - 224*(b^2 - 4*a*c)*a^3*
c^4 - 88*(b^2 - 4*a*c)*a^2*b*c^4)*A + (sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b^7 - 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*a*b^7*c + 144*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 40*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + 48
*a^2*b^5*c^2 + 2*a*b^6*c^2 - 256*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
4*b*c^3 - 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 20*sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 288*a^3*b^3*c^3 - 44*a^2*
b^4*c^3 + 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 512*a^4*b*
c^4 + 64*a^3*b^2*c^4 + 320*a^4*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^6 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^2*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*b^5*c - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^3*b^2*c^2 - 36*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b^4*c^2 - 160*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^4*c^3 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^3*b*c^3 + 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2
*b^2*c^3 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3
*c^4 + 2*(b^2 - 4*a*c)*a*b^5*c - 40*(b^2 - 4*a*c)*a^2*b^3*c^2 - 2*(b^2 - 4*
a*c)*a*b^4*c^2 + 128*(b^2 - 4*a*c)*a^3*b*c^3 + 36*(b^2 - 4*a*c)*a^2*b^2*c^3
```

+ 80*(b^2 - 4*a*c)*a^3*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2 + sqrt((a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)^2 - 4*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)))/((a^3*b^8 - 16*a^4*b^6*c - 2*a^3*b^7*c + 96*a^5*b^4*c^2 + 24*a^4*b^5*c^2 + a^3*b^6*c^2 - 256*a^6*b^2*c^3 - 96*a^5*b^3*c^3 - 12*a^4*b^4*c^3 + 256*a^7*c^4 + 128*a^6*b*c^4 + 48*a^5*b^2*c^4 - 64*a^6*c^5)*abs(c)) + 1/16*(3*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8 - 17*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c + 2*b^8*c + 116*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 26*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^2 - 34*a*b^6*c^2 - 2*b^7*c^2 - 368*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 13*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 232*a^2*b^4*c^3 + 30*a*b^5*c^3 + 448*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^4 + 224*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 736*a^3*b^2*c^4 - 176*a^2*b^3*c^4 - 112*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 896*a^4*c^5 + 352*a^3*b*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7 - 15*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 88*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 88*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 11*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^6*c + 26*(b^2 - 4*a*c)*a*b^4*c^2 + 2*(b^2 - 4*a*c)*b^5*c^2 - 128*(b^2 - 4*a*c)*a^2*b^2*c^3 - 22*(b^2 - 4*a*c)*a*b^3*c^3 + 224*(b^2 - 4*a*c)*a^3*c^4 + 88*(b^2 - 4*a*c)*a^2*b*c^4)*A + (sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7 - 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c + 2*a*b^7*c + 144*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 40*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 48*a^2*b^5*c^2 - 2*a*b^6*c^2 - 256*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 20*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 + 288*a^3*b^3*c^3 + 44*a^2*b^4*c^3 + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 - 512*a^4*b*c^4 - 64*a^3*b^2*c^4 - 320*a^4*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6 - 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + 36*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 160*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^3 + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 - 2*(b^2 - 4*a*c)*a*b^5*c + 40*(b^2 - 4*a*c)*a^2*b^3*c^2 + 2*(b^2 - 4*a*c)*a*b^4*c^2 - 128*(b^2 - 4*a*c)*a^3*b*c^3 - 36*(b^2 - 4*a*c)*a^2*b^2*c^3 - 80*(b^2 - 4*a*c)*a^3*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2 - sqrt((a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)^2 - 4*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)))/((a^3*b^8 - 16*a^4*b^6*c - 2*a^3*b^7*c + 96*a^5*b^4*c^2 + 24*a^4*b^5*c^2 + a^3*b^6*c^2 - 256*a^6*b^2*c^3 - 96*a^5*b^3*c^3 - 12*a^4*b^4*c^3 + 256*a^7*c^4 + 128*a^6*b*c^4 + 48*a^5*b^2*c^4 - 64*a^6*c^5)*abs(c)) + 1/4*(B*a*b^2*c^2*x^(7/2) + 3*A*b^3*c^2*x^(7/2) + 20*B*a^2*c^3*x^(7/2) - 24*A*a*b*c^3*x^(7/2) + 2*B*a*b^3*c*x^(5/2) + 6*A*b^4*c*x^(5/2) + 28*B*a^2*b*c^2

```
*x^(5/2) - 49*A*a*b^2*c^2*x^(5/2) + 28*A*a^2*c^3*x^(5/2) + B*a*b^4*x^(3/2)
+ 3*A*b^5*x^(3/2) + 5*B*a^2*b^2*c*x^(3/2) - 20*A*a*b^3*c*x^(3/2) + 36*B*a^3
*c^2*x^(3/2) - 4*A*a^2*b*c^2*x^(3/2) - B*a^2*b^3*sqrt(x) + 5*A*a*b^4*sqrt(x
) + 16*B*a^3*b*c*sqrt(x) - 37*A*a^2*b^2*c*sqrt(x) + 44*A*a^3*c^2*sqrt(x))/(
(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*(c*x^2 + b*x + a)^2)
```

maple [B] time = 0.84, size = 11936, normalized size = 25.50

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(3\left(b^4c^2-9ab^2c^3+28a^2c^4\right)A+\left(ab^3c^2-16a^2bc^3\right)B\right)x^{\frac{9}{2}}+\left(3\left(2b^5c-17ab^3c^2+48a^2bc^3\right)A+\left(2ab^4c-31a^2b^2c^2+20a^3c^3\right)B\right)x^{\frac{7}{2}}+\left(\left(3b^6-15ab^4c-19a^2b^2c^2+196a^3c^3\right)A+\left(ab^5-12a^2b^3c-4a^3bc^2\right)B\right)x^{\frac{5}{2}}+8\left(a^2b^4-8a^3b^2c+16a^4c^2\right)A\sqrt{x}+\left(\left(9ab^5-74a^2b^3c+164a^3bc^2\right)A+3\left(a^2b^4-9a^3b^2c+12a^4c^2\right)B\right)x^{\frac{3}{2}}}{4\left(a^5b^4-8a^6b^2c+16a^7c^2+\left(a^3b^4c^2-8a^4b^2c^3+16a^5c^4\right)x^4+2\left(a^3b^5c-8a^4b^3c^2+16a^5bc^3\right)x^3+\left(a^3b^6-6a^4b^4c+32a^6c^3\right)x^2+2\left(a^4b^5-8a^5b^3c+16a^6bc^2\right)x\right)}-\int\frac{\left(3\left(b^4c-9ab^2c^2+28a^2c^3\right)A+\left(ab^3c-16a^2bc^2\right)B\right)x^{\frac{3}{2}}+\left(3\left(b^5-10ab^3c+36a^2bc^2\right)A+\left(ab^4-17a^2b^2c-20a^3c^2\right)B\right)\sqrt{x}}{8\left(a^4b^4-8a^5b^2c+16a^6c^2+\left(a^3b^4c-8a^4b^2c^2+16a^5c^3\right)x^2+\left(a^3b^5-8a^4b^3c+16a^5bc^2\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*((3*(b^4*c^2 - 9*a*b^2*c^3 + 28*a^2*c^4)*A + (a*b^3*c^2 - 16*a^2*b*c^3)
*B)*x^(9/2) + (3*(2*b^5*c - 17*a*b^3*c^2 + 48*a^2*b*c^3)*A + (2*a*b^4*c - 3
1*a^2*b^2*c^2 + 20*a^3*c^3)*B)*x^(7/2) + ((3*b^6 - 15*a*b^4*c - 19*a^2*b^2*
c^2 + 196*a^3*c^3)*A + (a*b^5 - 12*a^2*b^3*c - 4*a^3*b*c^2)*B)*x^(5/2) + 8*
(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*A*sqrt(x) + ((9*a*b^5 - 74*a^2*b^3*c +
 164*a^3*b*c^2)*A + 3*(a^2*b^4 - 9*a^3*b^2*c + 12*a^4*c^2)*B)*x^(3/2))/(a^5
*b^4 - 8*a^6*b^2*c + 16*a^7*c^2 + (a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4
)*x^4 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^3 + (a^3*b^6 - 6*a^4
*b^4*c + 32*a^6*c^3)*x^2 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x) - in
tegrate(1/8*((3*(b^4*c - 9*a*b^2*c^2 + 28*a^2*c^3)*A + (a*b^3*c - 16*a^2*b*
c^2)*B)*x^(3/2) + (3*(b^5 - 10*a*b^3*c + 36*a^2*b*c^2)*A + (a*b^4 - 17*a^2*
b^2*c - 20*a^3*c^2)*B)*sqrt(x))/(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^3*
b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)*x^2 + (a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b
*c^2)*x), x)
```

mupad [B] time = 5.81, size = 22946, normalized size = 49.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + b*x + c*x^2)^3),x)
```

```
[Out] ((x^(3/2)*(3*A*b^5 + 36*B*a^3*c^2 + B*a*b^4 - 20*A*a*b^3*c - 4*A*a^2*b*c^2
+ 5*B*a^2*b^2*c))/(4*a^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(1/2)*(5*A*b^
4 + 44*A*a^2*c^2 - B*a*b^3 - 37*A*a*b^2*c + 16*B*a^2*b*c))/(4*a*(b^4 + 16*a
^2*c^2 - 8*a*b^2*c)) + (x^(5/2)*(28*A*a^2*c^3 + 6*A*b^4*c + 2*B*a*b^3*c - 4
9*A*a*b^2*c^2 + 28*B*a^2*b*c^2))/(4*a^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (
c*x^(7/2)*(20*B*a^2*c^2 + 3*A*b^3*c - 24*A*a*b*c^2 + B*a*b^2*c))/(4*a^2*(b^
4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x
+ 2*b*c*x^3) + atan(((((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2
*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c
^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8
+ 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*
a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 +
 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*
a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 +
9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2
- 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^
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5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*1i - (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c

^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a
^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2
*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*
a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040
*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*
(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3
+ 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 +
1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 1548288
0*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c
*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3
+ 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*
c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-
(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a
^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 104
8576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 537
60*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12
*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*
b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*
b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96
*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*
(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^
2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 962841
6*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 4
41*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^
(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*
c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*
c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55
*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)
^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^
10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^
8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*
a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*
a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 25
8048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a
^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 +
9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*
c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2
*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 -
6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4
*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c
- b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^
13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^
6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a
^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) +
1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43
776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 68
81280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3
*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) +
5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 -
1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^
7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*
A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*
(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18
*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^1
0*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*
c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*1i)/((((1048576*B*a^9*b*c^8 - 5505024*A
*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4
- 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 86

50752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120 *a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (567*A^3*b^7*c^5 + 8000*B^3*a^5*c^7 + 67824*A^3*a^2*b^3*c^7 - 35*B^3*a^2*b^6*c^4 - 84*B^3*a^3*b^4*c^5 + 12720*B^3*a^4*b^2*c^6 + 141120*A^2*B*a^4*c^8 - 315*A^2*B*b^8*c^4 - 10368*A^3*a*b^5*c^6 - 169344*A^3*a^3*b*c^8 - 210*A*B^2*a*b^7*c^4 - 116160*A*B^2*a^4*b*c^7 + 6237*A^2*B*a*b^6*c^5 + 1764*A*B^2*a^2*b^5*c^5 + 4608*A*B^2*a^3*b^3*c^6 - 42372*A^2*B*a^2*b^4*c^6 + 96048*A^2*B*a^3*b^2*c^7)/(32*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4

+ 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*2i + atan(((((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17 *c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*1i - (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3))) *(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15

)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*1i)/((((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/

2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (567*A^3*b^7*c^5 + 8000*B^3*a^5*c^7 + 67824*A^3*a^2*b^3*c^7 - 35*B^3*a^2*b^6*c^4 - 84*B^3*a^3*b^4*c^5 + 12720*B^3*a^4*b^2*c^6 + 141120*A^2*B*a^4*c^8 - 315*A^2*B*b^8*c^4 - 10368*A^3*a*b^5*c^6 - 169344*A^3*a^3*b*c^8 - 210*A*B^2*a*b^7*c^4 - 116160*A*B^2*a^4*b*c^7 + 6237*A^2*B*a*b^6*c^5 + 1764*A*B^2*a^2*b^5*c^5 + 4608*A*B^2*a^3*b^3*c^6 - 42372*A^2*B*a^2*b^4*c^6 + 96048*A^2*B*a^3*b^2*c^7)/(32*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 -

1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^1

```
5)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16
*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 8601
60*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^1
4*b^2*c^9)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**3/x**(1/2),x)
```

```
[Out] Timed out
```

3.953 $\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=664

$$-\frac{-A\left(36a^2c^2-35ab^2c+5b^4\right)+cx\left(aB\left(b^2-28ac\right)-A\left(5b^3-32abc\right)\right)+abB\left(b^2-16ac\right)}{4a^2\sqrt{x}\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{3\left(abB\left(b^2-8ac\right)-\right.}{4a^3}$$

Rubi [A] time = 1.71, antiderivative size = 664, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 828, 826, 1166, 205}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x]
```

```
[Out] (3*(a*b*B*(b^2 - 8*a*c) - A*(5*b^4 - 37*a*b^2*c + 60*a^2*c^2)))/(4*a^3*(b^2
 - 4*a*c)^2*Sqrt[x]) + (A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x)/(2*a*(
b^2 - 4*a*c)*Sqrt[x]*(a + b*x + c*x^2)^2) - (a*b*B*(b^2 - 16*a*c) - A*(5*b^
4 - 35*a*b^2*c + 36*a^2*c^2) + c*(a*B*(b^2 - 28*a*c) - A*(5*b^3 - 32*a*b*c)
)*x)/(4*a^2*(b^2 - 4*a*c)^2*Sqrt[x]*(a + b*x + c*x^2)) + (3*Sqrt[c]*(a*B*(b
^4 - 10*a*b^2*c + 56*a^2*c^2 + b^3*Sqrt[b^2 - 4*a*c] - 8*a*b*c*Sqrt[b^2 - 4
*a*c]) - A*(5*b^5 - 47*a*b^3*c + 124*a^2*b*c^2 + 5*b^4*Sqrt[b^2 - 4*a*c] -
37*a*b^2*c*Sqrt[b^2 - 4*a*c] + 60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[
2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^3*(b^2 - 4*a
*c)^(5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (3*Sqrt[c]*(a*B*(b^4 - 10*a*b^2*c
+ 56*a^2*c^2 - b^3*Sqrt[b^2 - 4*a*c] + 8*a*b*c*Sqrt[b^2 - 4*a*c]) - A*(5*b^
5 - 47*a*b^3*c + 124*a^2*b*c^2 - 5*b^4*Sqrt[b^2 - 4*a*c] + 37*a*b^2*c*Sqrt[
b^2 - 4*a*c] - 60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^3*(b^2 - 4*a*c)^(5/2)*Sqrt[b
 + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^3}\,dx = \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{2a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(-5Ab^2+abB+18aAc\right)-\frac{7}{2}(Ab-2aB)cx}{x^{3/2}\left(a+bx+cx^2\right)^2}\,dx}{2a\left(b^2-4ac\right)}$$

$$= \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{2a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)^2} - \frac{abB\left(b^2-16ac\right)-A\left(5b^4-35ab^2c+36a^2c^2\right)}{4a^2\left(b^2-4ac\right)^2\sqrt{x}}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)}{2a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)}{2a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)}{2a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)}{2a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}$$

Mathematica [A] time = 2.31, size = 628, normalized size = 0.95

$$\frac{\frac{A\left(-36a^2c^2+35ab^2c+32abc^2x-5b^4-5b^3cx\right)+aB\left(-16abc-28ac^2x+b^3+b^2cx\right)}{a\sqrt{x}\left(4ac-b^2\right)(a+x(b+cx))}+\frac{\frac{3\left(A\left(-60a^2c^2+37ab^2c-5b^4\right)+abB\left(b^2-8ac\right)\right)}{\sqrt{x}}+\frac{3\sqrt{c}\left(-\frac{\left(A\left(60a^2c^2\sqrt{b^2-4ac}+124a^2bc^2-47ab^3c-37ab^2c\sqrt{b^2-4ac}+5b^4\sqrt{b^2-4ac}+5b^5\right)-aB\left(56a^2c^2-10ab^2c-8abc\sqrt{b^2-4ac}+b^3\sqrt{b^2-4ac}+b^4\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\left(A\left(60a^2c^2\sqrt{b^2-4ac}-124a^2bc^2+47ab^3c-37ab^2c\sqrt{b^2-4ac}+5b^4\sqrt{b^2-4ac}-5b^5\right)+aB\left(56a^2c^2-10ab^2c+8abc\sqrt{b^2-4ac}-b^3\sqrt{b^2-4ac}+b^4\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{b^2-4ac}}}{a^2\left(b^2-4ac\right)}+\frac{2\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{\sqrt{x}(a+x(b+cx))^2}}{4a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((2*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(Sqrt[x]*(a + x*(b + c*
x))^2) + (a*B*(b^3 - 16*a*b*c + b^2*c*x - 28*a*c^2*x) + A*(-5*b^4 + 35*a*b^
2*c - 36*a^2*c^2 - 5*b^3*c*x + 32*a*b*c^2*x))/(a*(-b^2 + 4*a*c)*Sqrt[x]*(a
+ x*(b + c*x))) + ((3*(a*b*B*(b^2 - 8*a*c) + A*(-5*b^4 + 37*a*b^2*c - 60*a^
2*c^2)))/Sqrt[x] + (3*Sqrt[c]*(-(((-(a*B*(b^4 - 10*a*b^2*c + 56*a^2*c^2 + b
^3*Sqrt[b^2 - 4*a*c] - 8*a*b*c*Sqrt[b^2 - 4*a*c])) + A*(5*b^5 - 47*a*b^3*c
+ 124*a^2*b*c^2 + 5*b^4*Sqrt[b^2 - 4*a*c] - 37*a*b^2*c*Sqrt[b^2 - 4*a*c] +
60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sq
rt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]]) - ((a*B*(b^4 - 10*a*b^2*c +
 56*a^2*c^2 - b^3*Sqrt[b^2 - 4*a*c] + 8*a*b*c*Sqrt[b^2 - 4*a*c]) + A*(-5*b^
5 + 47*a*b^3*c - 124*a^2*b*c^2 + 5*b^4*Sqrt[b^2 - 4*a*c] - 37*a*b^2*c*Sqrt[
b^2 - 4*a*c] + 60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*Sq
rt[b^2 - 4*a*c]))/(a^2*(b^2 - 4*a*c)))/(4*a*(b^2 - 4*a*c))
```

IntegrateAlgebraic [A] time = 15.14, size = 986, normalized size = 1.48

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x]
```

```
[Out] (-8*a^2*A*b^4 + 64*a^3*A*b^2*c - 128*a^4*A*c^2 - 25*a*A*b^5*x + 5*a^2*b^4*B
*x + 194*a^2*A*b^3*c*x - 37*a^3*b^2*B*c*x - 364*a^3*A*b*c^2*x + 44*a^4*B*c^
2*x - 15*A*b^6*x^2 + 3*a*b^5*B*x^2 + 91*a*A*b^4*c*x^2 - 20*a^2*b^3*B*c*x^2
- 25*a^2*A*b^2*c^2*x^2 - 4*a^3*b*B*c^2*x^2 - 324*a^3*A*c^3*x^2 - 30*A*b^5*c
*x^3 + 6*a*b^4*B*c*x^3 + 227*a*A*b^3*c^2*x^3 - 49*a^2*b^2*B*c^2*x^3 - 392*a
^2*A*b*c^3*x^3 + 28*a^3*B*c^3*x^3 - 15*A*b^4*c^2*x^4 + 3*a*b^3*B*c^2*x^4 +
111*a*A*b^2*c^3*x^4 - 24*a^2*b*B*c^3*x^4 - 180*a^2*A*c^4*x^4)/(4*a^3*(-b^2
+ 4*a*c)^2*Sqrt[x]*(a + b*x + c*x^2)^2) - (3*(5*Sqrt[2]*A*b^5*Sqrt[c] - Sqr
t[2]*a*b^4*B*Sqrt[c] - 47*Sqrt[2]*a*A*b^3*c^(3/2) + 10*Sqrt[2]*a^2*b^2*B*c^
(3/2) + 124*Sqrt[2]*a^2*A*b*c^(5/2) - 56*Sqrt[2]*a^3*B*c^(5/2) + 5*Sqrt[2]*
A*b^4*Sqrt[c]*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*b^3*B*Sqrt[c]*Sqrt[b^2 - 4*a*c]
 - 37*Sqrt[2]*a*A*b^2*c^(3/2)*Sqrt[b^2 - 4*a*c] + 8*Sqrt[2]*a^2*b*B*c^(3/2)
*Sqrt[b^2 - 4*a*c] + 60*Sqrt[2]*a^2*A*c^(5/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(8*a^3*(b^2 - 4*a*c)^(
5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (3*(-5*Sqrt[2]*A*b^5*Sqrt[c] + Sqrt[2]*
a*b^4*B*Sqrt[c] + 47*Sqrt[2]*a*A*b^3*c^(3/2) - 10*Sqrt[2]*a^2*b^2*B*c^(3/2)
 - 124*Sqrt[2]*a^2*A*b*c^(5/2) + 56*Sqrt[2]*a^3*B*c^(5/2) + 5*Sqrt[2]*A*b^4
*Sqrt[c]*Sqrt[b^2 - 4*a*c] - Sqrt[2]*a*b^3*B*Sqrt[c]*Sqrt[b^2 - 4*a*c] - 37
*Sqrt[2]*a*A*b^2*c^(3/2)*Sqrt[b^2 - 4*a*c] + 8*Sqrt[2]*a^2*b*B*c^(3/2)*Sqrt
[b^2 - 4*a*c] + 60*Sqrt[2]*a^2*A*c^(5/2)*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]
*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(8*a^3*(b^2 - 4*a*c)^(5/2)*
Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 71.08, size = 12534, normalized size = 18.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^5 + 2*(a^3*b
^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*
c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x^2 + (a^5*b^4 - 8*a^6*
b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10 + 25*A^2*b^11 + 1
680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 16*A*B*a^5*b^2 + 33
*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 + 143*A^2*a^3*b^5)*
c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*b^7)*c^2 - 3*(7*B^
2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10 - 20*a^8*b^8*c +
```

```
160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5)*sqr
t((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11
 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b
 + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^
2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7
*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 +
175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2
*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5
*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125
*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^
4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 - 20*a^8*b^8*c + 160
*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5))*log(2
7/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a^2*b^15 + 75*A^2*B*a*b^16 - 125*A^3
*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*b)*c^8 - 64*(1372*B^3*a^10 - 15204*
A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 88823*A^3*a^7*b^3)*c^7 + 16*(7112*B^3*a
^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^2*B*a^7*b^4 - 446671*A^3*a^6*b^5)*c
^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2*a^7*b^5 + 811446*A^2*B*a^6*b^6 - 1
115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^7*b^6 - 87308*A*B^2*a^6*b^7 + 37747
1*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^4 - 3*(1295*B^3*a^6*b^8 - 17704*A*B
^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 120911*A^3*a^3*b^11)*c^3 + (464*B^3*a^5
*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*B*a^3*b^12 - 49360*A^3*a^2*b^13)*c^
2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^13 + 2310*A^2*B*a^2*b^14 - 3775*A^3*
a*b^15)*c - (B*a^8*b^15 - 5*A*a^7*b^16 - 122880*A*a^15*c^8 - 4096*(11*B*a^1
5*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^14*b^3 - 223*A*a^13*b^4)*c^6 - 256*
(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 + 480*(32*B*a^12*b^7 - 143*A*a^11*b^8
)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b^10)*c^3 + 2*(212*B*a^10*b^11 - 100
3*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152*A*a^8*b^14)*c)*sqrt((B^4*a^4*b^8 -
 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12
+ 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b
^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 5770
16*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^
3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b
^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 2
7980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3
*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/
(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^1
8*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10 + 25*A^2*b^
11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 16*A*B*a^5*b^
2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 + 143*A^2*a^3
*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*b^7)*c^2 - 3
*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10 - 20*a^8*b^
8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^
5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*
a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B
*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*
A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B
^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*
b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 92
28*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B
^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9
+ 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a
^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 - 20*a^8*b^8*c
 + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5))
 + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^3*B*a^5*b - 7*A^4*a^4*b^2)*c^8 - (3
8416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439376*A^2*B^2*a^5*b^2 - 1018856*A^3*B
*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (19208*B^4*a^6*b^2 - 239896*A*B^3*a^5
*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*A^3*B*a^3*b^5 - 571030*A^4*a^2*b^6)
*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a^4*b^5 + 251349*A^2*B^2*a^3*b^6 - 3
44630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c^5 + 3*(149*B^4*a^4*b^6 - 2161*A*B^
```

3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 16225*A^3*B*a*b^9 - 1375*A^4*b^10)*c^4
- 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 75*A^2*B^2*a*b^10 - 125*A^3*B*b^11)*
c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^5
+ 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*b^6 - 6*a^4*b^4*
c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x^2 + (a^5*b
^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10 + 25*A
^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 16*A*B*a
^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 + 143*A^
2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*b^7)*c^
2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10 - 20*a
^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^
12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A
^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*
A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 21
8886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(
539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B
*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5
+ 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*
(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2
*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 -
640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 - 20*a^8*
b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*
c^5))*log(-27/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a^2*b^15 + 75*A^2*B*a*b^
16 - 125*A^3*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*b)*c^8 - 64*(1372*B^3*a
^10 - 15204*A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 88823*A^3*a^7*b^3)*c^7 + 16
*(7112*B^3*a^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^2*B*a^7*b^4 - 446671*A^
3*a^6*b^5)*c^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2*a^7*b^5 + 811446*A^2*B
*a^6*b^6 - 1115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^7*b^6 - 87308*A*B^2*a^6
*b^7 + 377471*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^4 - 3*(1295*B^3*a^6*b^8
- 17704*A*B^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 120911*A^3*a^3*b^11)*c^3 +
(464*B^3*a^5*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*B*a^3*b^12 - 49360*A^3*
a^2*b^13)*c^2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^13 + 2310*A^2*B*a^2*b^14
- 3775*A^3*a*b^15)*c - (B*a^8*b^15 - 5*A*a^7*b^16 - 122880*A*a^15*c^8 - 40
96*(11*B*a^15*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^14*b^3 - 223*A*a^13*b^4
)*c^6 - 256*(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 + 480*(32*B*a^12*b^7 - 14
3*A*a^11*b^8)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b^10)*c^3 + 2*(212*B*a^1
0*b^11 - 1003*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152*A*a^8*b^14)*c)*sqrt((B
^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 6
25*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 6
94*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^
6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2
- 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 1756
55*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2
*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6
- 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4
*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^
3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10
+ 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 1
6*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 +
143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*
b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10
- 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 -
1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10
- 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7
- 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7
*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^
4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 16801
6*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*
a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c

^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^
3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6
*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 -
20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 102
4*a^12*c^5)) + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^3*B*a^5*b - 7*A^4*a^4*b
^2)*c^8 - (38416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439376*A^2*B^2*a^5*b^2 - 1
018856*A^3*B*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (19208*B^4*a^6*b^2 - 2398
96*A*B^3*a^5*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*A^3*B*a^3*b^5 - 571030*
A^4*a^2*b^6)*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a^4*b^5 + 251349*A^2*B^2
*a^3*b^6 - 344630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c^5 + 3*(149*B^4*a^4*b^6
 - 2161*A*B^3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 16225*A^3*B*a*b^9 - 1375*A^
4*b^10)*c^4 - 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 75*A^2*B^2*a*b^10 - 125*
A^3*B*b^11)*c^3)*sqrt(x)) + 3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*
a^5*c^4)*x^5 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*b^6
 - 6*a^4*b^4*c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*
x^2 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9 - 10*A*B*a
*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*
b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*
b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2
*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c - (a^7
*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c
^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*
b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^
2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^
3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^
4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 -
168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A
*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b
^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 50
50*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^1
6*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^
10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4
 - 1024*a^12*c^5))*log(27/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a^2*b^15 + 75
*A^2*B*a*b^16 - 125*A^3*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*b)*c^8 - 64*
(1372*B^3*a^10 - 15204*A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 88823*A^3*a^7*b^
3)*c^7 + 16*(7112*B^3*a^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^2*B*a^7*b^4
 - 446671*A^3*a^6*b^5)*c^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2*a^7*b^5 + 8
11446*A^2*B*a^6*b^6 - 1115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^7*b^6 - 8730
8*A*B^2*a^6*b^7 + 377471*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^4 - 3*(1295*
B^3*a^6*b^8 - 17704*A*B^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 120911*A^3*a^3*b
^11)*c^3 + (464*B^3*a^5*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*B*a^3*b^12 -
 49360*A^3*a^2*b^13)*c^2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^13 + 2310*A^2
*B*a^2*b^14 - 3775*A^3*a*b^15)*c + (B*a^8*b^15 - 5*A*a^7*b^16 - 122880*A*a^
15*c^8 - 4096*(11*B*a^15*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^14*b^3 - 223
*A*a^13*b^4)*c^6 - 256*(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 + 480*(32*B*a^
12*b^7 - 143*A*a^11*b^8)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b^10)*c^3 + 2
*(212*B*a^10*b^11 - 1003*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152*A*a^8*b^14)
*c)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B
*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*
B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886
*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*
B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4
*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9
228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*
B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9
 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*
a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*a^2*b^9 - 10
*A*B*a*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^
2*a^6*b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*

B*a^4*b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 12
98*A^2*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c
 - (a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11
*b^2*c^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^
2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*
A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 3743
6*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*
a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*
b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 -
1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4
*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^
8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 1
60*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(
a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^
2*c^4 - 1024*a^12*c^5)) + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^3*B*a^5*b -
7*A^4*a^4*b^2)*c^8 - (38416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439376*A^2*B^2*
a^5*b^2 - 1018856*A^3*B*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (19208*B^4*a^6
*b^2 - 239896*A*B^3*a^5*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*A^3*B*a^3*b^
5 - 571030*A^4*a^2*b^6)*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a^4*b^5 + 251
349*A^2*B^2*a^3*b^6 - 344630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c^5 + 3*(149*
B^4*a^4*b^6 - 2161*A*B^3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 16225*A^3*B*a*b^
9 - 1375*A^4*b^10)*c^4 - 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 75*A^2*B^2*a*
b^10 - 125*A^3*B*b^11)*c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^
2*c^3 + 16*a^5*c^4)*x^5 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4
 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*
a^6*b*c^2)*x^2 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9
 - 10*A*B*a*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*
(2*B^2*a^6*b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 -
68*A*B*a^4*b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6
 + 1298*A^2*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^
9)*c - (a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280
*a^11*b^2*c^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A
^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450
*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 -
 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886
*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2
*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b
^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 3157
5*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a
^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*
c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5
)))/(a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^
11*b^2*c^4 - 1024*a^12*c^5))*log(-27/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a
^2*b^15 + 75*A^2*B*a*b^16 - 125*A^3*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*
b)*c^8 - 64*(1372*B^3*a^10 - 15204*A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 8882
3*A^3*a^7*b^3)*c^7 + 16*(7112*B^3*a^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^
2*B*a^7*b^4 - 446671*A^3*a^6*b^5)*c^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2
*a^7*b^5 + 811446*A^2*B*a^6*b^6 - 1115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^
7*b^6 - 87308*A*B^2*a^6*b^7 + 377471*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^
4 - 3*(1295*B^3*a^6*b^8 - 17704*A*B^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 1209
11*A^3*a^3*b^11)*c^3 + (464*B^3*a^5*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*
B*a^3*b^12 - 49360*A^3*a^2*b^13)*c^2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^1
3 + 2310*A^2*B*a^2*b^14 - 3775*A^3*a*b^15)*c + (B*a^8*b^15 - 5*A*a^7*b^16 -
 122880*A*a^15*c^8 - 4096*(11*B*a^15*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^
14*b^3 - 223*A*a^13*b^4)*c^6 - 256*(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 +
480*(32*B*a^12*b^7 - 143*A*a^11*b^8)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b
^10)*c^3 + 2*(212*B*a^10*b^11 - 1003*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152
*A*a^8*b^14)*c)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10
 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^

```
7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^
7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c
^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 1680
16*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3
*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*
c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A
^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^
6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*
a^2*b^9 - 10*A*B*a*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5
 + 840*(2*B^2*a^6*b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5
*b^3 - 68*A*B*a^4*b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*
a^3*b^6 + 1298*A^2*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A
^2*a*b^9)*c - (a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3
 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9
+ 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^
6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^
4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 +
 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*
A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^
4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7
 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^
2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^
15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a
^19*c^5)))/(a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 +
1280*a^11*b^2*c^4 - 1024*a^12*c^5)) + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^
3*B*a^5*b - 7*A^4*a^4*b^2)*c^8 - (38416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439
376*A^2*B^2*a^5*b^2 - 1018856*A^3*B*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (1
9208*B^4*a^6*b^2 - 239896*A*B^3*a^5*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*
A^3*B*a^3*b^5 - 571030*A^4*a^2*b^6)*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a
^4*b^5 + 251349*A^2*B^2*a^3*b^6 - 344630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c
^5 + 3*(149*B^4*a^4*b^6 - 2161*A*B^3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 1622
5*A^3*B*a*b^9 - 1375*A^4*b^10)*c^4 - 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 7
5*A^2*B^2*a*b^10 - 125*A^3*B*b^11)*c^3)*sqrt(x)) - 2*(8*A*a^2*b^4 - 64*A*a^
3*b^2*c + 128*A*a^4*c^2 + 3*(60*A*a^2*c^4 + (8*B*a^2*b - 37*A*a*b^2)*c^3 -
(B*a*b^3 - 5*A*b^4)*c^2)*x^4 - (28*(B*a^3 - 14*A*a^2*b)*c^3 - (49*B*a^2*b^2
 - 227*A*a*b^3)*c^2 + 6*(B*a*b^4 - 5*A*b^5)*c)*x^3 - (3*B*a*b^5 - 15*A*b^6
- 324*A*a^3*c^3 - (4*B*a^3*b + 25*A*a^2*b^2)*c^2 - (20*B*a^2*b^3 - 91*A*a*b
^4)*c)*x^2 - (5*B*a^2*b^4 - 25*A*a*b^5 + 4*(11*B*a^4 - 91*A*a^3*b)*c^2 - (3
7*B*a^3*b^2 - 194*A*a^2*b^3)*c)*x)*sqrt(x))/((a^3*b^4*c^2 - 8*a^4*b^2*c^3 +
 16*a^5*c^4)*x^5 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*
b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c
^2)*x^2 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)
```

giac [B] time = 3.36, size = 9534, normalized size = 14.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -3/32*((10*b^6*c^2 - 114*a*b^4*c^3 + 416*a^2*b^2*c^4 - 480*a^3*c^5 - 5*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 + 57*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 10*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 208*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 74*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 240*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 37*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 60*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
```

+ sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 10*(b^2 - 4*a*c)*b^4*c^2 + 74*(b^2 - 4*a*
c)*a*b^2*c^3 - 120*(b^2 - 4*a*c)*a^2*c^4)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c
^2)^2*A - (2*a*b^5*c^2 - 24*a^2*b^3*c^3 + 64*a^3*b*c^4 - sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 + 12*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4*a*c)*a*b^3*c^2 + 16*(b^2 - 4*a*c)
*a^2*b*c^3)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)^2*B + 2*(5*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^3*b^11 - 102*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^4*b^9*c - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c - 10
*a^3*b^11*c + 836*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 + 164
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 + 5*sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 + 204*a^4*b^9*c^2 - 3440*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 1016*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^5*b^6*c^3 - 82*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^
3 - 1672*a^5*b^7*c^3 + 7104*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^3
*c^4 + 2816*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 + 508*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 + 6880*a^6*b^5*c^4 - 5888*sq
rt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 2944*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 - 1408*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^6*b^3*c^5 - 14208*a^7*b^3*c^5 + 1472*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^7*b*c^6 + 11776*a^8*b*c^6 + 10*(b^2 - 4*a*c)*a^3*b^9*c - 164*(b^2
- 4*a*c)*a^4*b^7*c^2 + 1016*(b^2 - 4*a*c)*a^5*b^5*c^3 - 2816*(b^2 - 4*a*c)
*a^6*b^3*c^4 + 2944*(b^2 - 4*a*c)*a^7*b*c^5)*A*abs(a^3*b^4 - 8*a^4*b^2*c +
16*a^5*c^2) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^10 - 21*sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^8*c - 2*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^4*b^9*c - 2*a^4*b^10*c + 184*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^6*b^6*c^2 + 34*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7
*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 + 42*a^5*b^8*c^2
- 832*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^4*c^3 - 232*sqrt(2)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 17*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^5*b^6*c^3 - 368*a^6*b^6*c^3 + 1920*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^8*b^2*c^4 + 736*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7
*b^3*c^4 + 116*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 + 1664*a
^7*b^4*c^4 - 1792*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*c^5 - 896*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 368*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^7*b^2*c^5 - 3840*a^8*b^2*c^5 + 448*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^8*c^6 + 3584*a^9*c^6 + 2*(b^2 - 4*a*c)*a^4*b^8*c - 34
*(b^2 - 4*a*c)*a^5*b^6*c^2 + 232*(b^2 - 4*a*c)*a^6*b^4*c^3 - 736*(b^2 - 4*a
*c)*a^7*b^2*c^4 + 896*(b^2 - 4*a*c)*a^8*c^5)*B*abs(a^3*b^4 - 8*a^4*b^2*c +
16*a^5*c^2) + (10*a^6*b^14*c^2 - 254*a^7*b^12*c^3 + 2712*a^8*b^10*c^4 - 155
52*a^9*b^8*c^5 + 50432*a^10*b^6*c^6 - 87552*a^11*b^4*c^7 + 63488*a^12*b^2*c
^8 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^14 +
127*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^12*c +
10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^13*c -
1356*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^10*c^2
- 214*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^11*c
^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^12*c
^2 + 7776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^8
*c^3 + 1856*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b
^9*c^3 + 107*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*
b^10*c^3 - 25216*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^10*b^6*c^4 - 8128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^9*b^7*c^4 - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^8*b^8*c^4 + 43776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^11*b^4*c^5 + 17920*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -

4*a*c)*c)*a^10*b^5*c^5 + 4064*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^6*c^5 - 31744*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 15872*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 - 8960*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^4*c^6 + 7936*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^2*c^7 - 10*(b^2 - 4*a*c)*a^6*b^12*c^2 + 214*(b^2 - 4*a*c)*a^7*b^10*c^3 - 1856*(b^2 - 4*a*c)*a^8*b^8*c^4 + 8128*(b^2 - 4*a*c)*a^9*b^6*c^5 - 17920*(b^2 - 4*a*c)*a^10*b^4*c^6 + 15872*(b^2 - 4*a*c)*a^11*b^2*c^7)*A - (2*a^7*b^13*c^2 - 52*a^8*b^11*c^3 + 624*a^9*b^9*c^4 - 4224*a^10*b^7*c^5 + 16384*a^11*b^5*c^6 - 33792*a^12*b^3*c^7 + 28672*a^13*b*c^8 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^13 + 26*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^11*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^12*c - 312*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^9*c^2 - 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^10*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^11*c^2 + 2112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^7*c^3 + 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^8*c^3 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^9*c^3 - 8192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^5*c^4 - 2432*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^6*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^7*c^4 + 16896*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^12*b^3*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^4*c^5 + 1216*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^5*c^5 - 14336*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^13*b*c^6 - 7168*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 3328*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 + 3584*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^12*b*c^7 - 2*(b^2 - 4*a*c)*a^7*b^11*c^2 + 44*(b^2 - 4*a*c)*a^8*b^9*c^3 - 448*(b^2 - 4*a*c)*a^9*b^7*c^4 + 2432*(b^2 - 4*a*c)*a^10*b^5*c^5 - 6656*(b^2 - 4*a*c)*a^11*b^3*c^6 + 7168*(b^2 - 4*a*c)*a^12*b*c^7)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2 + sqrt((a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)^2 - 4*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)))/(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)))/((a^7*b^10 - 20*a^8*b^8*c - 2*a^7*b^9*c + 160*a^9*b^6*c^2 + 32*a^8*b^7*c^2 + a^7*b^8*c^2 - 640*a^10*b^4*c^3 - 192*a^9*b^5*c^3 - 16*a^8*b^6*c^3 + 1280*a^11*b^2*c^4 + 512*a^10*b^3*c^4 + 96*a^9*b^4*c^4 - 1024*a^12*c^5 - 512*a^11*b*c^5 - 256*a^10*b^2*c^5 + 256*a^11*c^6)*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*abs(c)) + 3/32*((10*b^6*c^2 - 114*a*b^4*c^3 + 416*a^2*b^2*c^4 - 480*a^3*c^5 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 + 57*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 208*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 74*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 240*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 37*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 60*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 10*(b^2 - 4*a*c)*b^4*c^2 + 74*(b^2 - 4*a*c)*a*b^2*c^3 - 120*(b^2 - 4*a*c)*a^2*c^4)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)^2*A - (2*a*b^5*c^2 - 24*a^2*b^3*c^3 + 64*a^3*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4 *a*c)*a*b^3*c^2 + 16*(b^2 - 4*a*c)*a^2*b*c^3)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)^2*B - 2*(5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^11 - 102*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^9*c - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c + 10*a^3*b^11*c + 836*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 + 164*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 + 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 - 204*a^4*b^9*c^2 - 3440*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 1016*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 - 82*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 1672*a^5*b^7*c^3 + 7104*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^4 + 2816*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 + 508*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 6880*a^6*b^5*c^4 - 5888*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 2944*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 - 1408*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^5 + 14208*a^7*b^3*c^5 + 1472*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b*c^6 - 11776*a^8*b*c^6 - 10*(b^2 - 4*a*c)*a^3*b^9*c + 164*(b^2 - 4*a*c)*a^4*b^7*c^2 - 1016*(b^2 - 4*a*c)*a^5*b^5*c^3 + 2816*(b^2 - 4*a*c)*a^6*b^3*c^4 - 2944*(b^2 - 4*a*c)*a^7*b*c^5)*A*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2) + 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^10 - 21*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^8*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^9*c + 2*a^4*b^10*c + 184*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^6*c^2 + 34*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 - 42*a^5*b^8*c^2 - 832*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^4*c^3 - 232*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 17*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 368*a^6*b^6*c^3 + 1920*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^2*c^4 + 736*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^4 + 116*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 - 1664*a^7*b^4*c^4 - 1792*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*c^5 - 896*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 368*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 3840*a^8*b^2*c^5 + 448*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*c^6 - 3584*a^9*c^6 - 2*(b^2 - 4*a*c)*a^4*b^8*c + 34*(b^2 - 4*a*c)*a^5*b^6*c^2 - 232*(b^2 - 4*a*c)*a^6*b^4*c^3 + 736*(b^2 - 4*a*c)*a^7*b^2*c^4 - 896*(b^2 - 4*a*c)*a^8*c^5)*B*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2) + (10*a^6*b^14*c^2 - 254*a^7*b^12*c^3 + 2712*a^8*b^10*c^4 - 15552*a^9*b^8*c^5 + 50432*a^10*b^6*c^6 - 87552*a^11*b^4*c^7 + 63488*a^12*b^2*c^8 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^14 + 127*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^12*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^13*c - 1356*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^10*c^2 - 214*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^11*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^12*c^2 + 7776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^8*c^3 + 1856*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^9*c^3 + 107*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^10*c^3 - 25216*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^6*c^4 - 8128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^7*c^4 - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^8*c^4 + 43776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^4*c^5 + 17920*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^5*c^5 + 4064*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^6*c^5 - 31744*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 15872*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 - 8960*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^4*c^6 + 7936*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^2*c^7 - 10*(b^2 - 4*a*c)*a^6*b^12*c^2 + 214*(b^2 - 4*a*c)*a^7*b^10*c^3 - 1856*(b^2 - 4*a*c)*a^8*b^8*c^4 + 8128*(b^2 - 4*a*c)*a^9*b^6*c^5 - 17920*(b^2 - 4*a*c)*a^10*b^4*c^6 + 15872*(b^2 - 4*a*c)*a^11*b^2*c^7)*A - (2*a^7*b^13*c^2 - 52*a^8*b^11*c^3 + 624*a^9*b^9*c^4 - 4224*a^10*b^7*c^5 + 16384*a^11*b^5*c^6 -

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33792*a^12*b^3*c^7 + 28672*a^13*b*c^8 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^7*b^13 + 26*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^8*b^11*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^7*b^12*c - 312*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^9*b^9*c^2 - 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^8*b^10*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^7*b^11*c^2 + 2112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^10*b^7*c^3 + 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^9*b^8*c^3 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^8*b^9*c^3 - 8192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^11*b^5*c^4 - 2432*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^6*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^7*c^4 + 16896*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b^3*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^4*c^5 + 1216*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^5*c^5 - 14336*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^13*b*c^6 - 7168*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 3328*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 + 3584*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b*c^7 - 2*(b^2 - 4*a*c
)*a^7*b^11*c^2 + 44*(b^2 - 4*a*c)*a^8*b^9*c^3 - 448*(b^2 - 4*a*c)*a^9*b^7*c
^4 + 2432*(b^2 - 4*a*c)*a^10*b^5*c^5 - 6656*(b^2 - 4*a*c)*a^11*b^3*c^6 + 71
68*(b^2 - 4*a*c)*a^12*b*c^7)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^5 -
8*a^4*b^3*c + 16*a^5*b*c^2 - sqrt((a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)^2
- 4*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^
5*c^3)))/(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)))/((a^7*b^10 - 20*a^8*b^8
*c - 2*a^7*b^9*c + 160*a^9*b^6*c^2 + 32*a^8*b^7*c^2 + a^7*b^8*c^2 - 640*a^1
0*b^4*c^3 - 192*a^9*b^5*c^3 - 16*a^8*b^6*c^3 + 1280*a^11*b^2*c^4 + 512*a^10
*b^3*c^4 + 96*a^9*b^4*c^4 - 1024*a^12*c^5 - 512*a^11*b*c^5 - 256*a^10*b^2*c
^5 + 256*a^11*c^6)*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*abs(c)) + 1/4*(3
*B*a*b^3*c^2*x^(7/2) - 7*A*b^4*c^2*x^(7/2) - 24*B*a^2*b*c^3*x^(7/2) + 47*A*
a*b^2*c^3*x^(7/2) - 52*A*a^2*c^4*x^(7/2) + 6*B*a*b^4*c*x^(5/2) - 14*A*b^5*c
*x^(5/2) - 49*B*a^2*b^2*c^2*x^(5/2) + 99*A*a*b^3*c^2*x^(5/2) + 28*B*a^3*c^3
*x^(5/2) - 136*A*a^2*b*c^3*x^(5/2) + 3*B*a*b^5*x^(3/2) - 7*A*b^6*x^(3/2) -
20*B*a^2*b^3*c*x^(3/2) + 43*A*a*b^4*c*x^(3/2) - 4*B*a^3*b*c^2*x^(3/2) - 25*
A*a^2*b^2*c^2*x^(3/2) - 68*A*a^3*c^3*x^(3/2) + 5*B*a^2*b^4*sqrt(x) - 9*A*a*
b^5*sqrt(x) - 37*B*a^3*b^2*c*sqrt(x) + 66*A*a^2*b^3*c*sqrt(x) + 44*B*a^4*c^
2*sqrt(x) - 108*A*a^3*b*c^2*sqrt(x))/((a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*
(c*x^2 + b*x + a)^2) - 2*A/(a^3*sqrt(x))
```

maple [B] time = 0.12, size = 2918, normalized size = 4.39

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -3/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*B*b^4+93/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*c*x^(1/2))*A*b-141/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c
+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+15/4/a/(16*a^2*c^2-8*a*b^2*c+
b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-3/8/a^2/(16*a
^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^
4+93/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
```

```
x^(1/2))*A*b-141/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^
(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*c*x^(1/2))*A*b^3+15/4/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+15/8/a^3/(16*a^2*c^2-8*a*b^2*c+b^
4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^5+15/8/a^3/(16*a^2*c^2
-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1
/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^5+5/4/
a/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*B*b^4-13/a/(c*x^2+b*x+
a)^2*c^4/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*A-7/4/a^3/(c*x^2+b*x+a)^2/(16*a
^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*A*b^6+3/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^
(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*c*x^(1/2))*B*b^3+111/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*A*b^2+3/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*c*x^(1/2))*b*B-3/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*B*b^3-15/8/a^3/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*A*b^4-3/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B-111
/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+3/4
/a^2/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*B*b^5-9/4/a^2/(c*x^
2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*A*b^5+11*a/(c*x^2+b*x+a)^2/(1
6*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*B*c^2-1/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^
2*c+b^4)*x^(3/2)*B*b*c^2-37/4/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^
(1/2)*B*b^2*c-27/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*A*b*c^2
+15/8/a^3/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4-2*
A/a^3/x^(1/2)+7/(c*x^2+b*x+a)^2*c^3/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*B-17
/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*A*c^3+99/4/a^2/(c*x^2+b
*x+a)^2*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*A*b^3-49/4/a/(c*x^2+b*x+a)^2
*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*B*b^2+3/2/a^2/(c*x^2+b*x+a)^2*c/(16
*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*B*b^4-21/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4
*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+3/4/a^2/(c*x^2+b*x+a)^2*c^2/(16*
a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*B*b^3-34/a/(c*x^2+b*x+a)^2*c^3/(16*a^2*c^2-8
*a*b^2*c+b^4)*x^(5/2)*A*b-21/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4*a*c+b^2)^(1
/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-25/4/a/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^
2*c+b^4)*x^(3/2)*A*b^2*c^2+43/4/a^2/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b
^4)*x^(3/2)*A*b^4*c-5/a/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*
B*b^3*c+45/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3*2^(1/2)/((-b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A
-45/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-7/2/a^3/(
c*x^2+b*x+a)^2*c/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*A*b^5-7/4/a^3/(c*x^2+b*
x+a)^2*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*A*b^4+33/2/a/(c*x^2+b*x+a)^2/
(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*A*b^3*c+47/4/a^2/(c*x^2+b*x+a)^2*c^3/(16
*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*A*b^2-6/a/(c*x^2+b*x+a)^2*c^3/(16*a^2*c^2-8
*a*b^2*c+b^4)*x^(7/2)*b*B
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [B] time = 8.04, size = 29137, normalized size = 43.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x)
```

```
[Out] - atan(((x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28
800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c
^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 111718563
84*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^1
6*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^1
2 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^1
2*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 10174
4640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*
b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14
344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^1
9*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856
*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^
9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 899
92986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^
21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 +
17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4
 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b
^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*
c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769
*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864
*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010
560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A
*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^1
7*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2
) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^
4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b
^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b
^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^
2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(
1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^
2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 86016
0*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16
*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-
(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A
^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 199
05600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8
 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B
^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*
b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^
8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4
*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c +
 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 69
4*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620
*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 92
67456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8
 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) -
11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^1
5)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2)
```

- 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) - 22548578304*B*a^24*c^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b^23*c^2 + 681984*A*a^13*b^21*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a^15*b^17*c^5 - 1351876608*A*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 31048335360*A*a^18*b^11*c^8 + 89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^20*b^7*c^10 + 246826401792*A*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 + 3072*B*a^13*b^22*c^2 - 138240*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 35536896*B*a^16*b^16*c^5 + 297271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^12*c^7 + 7398752256*B*a^19*b^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 47714402304*B*a^21*b^6*c^10 - 67847061504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*1i + (x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*

a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*
c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*
c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*
b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*
B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2
c(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404
*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3
*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*
a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 -
258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120
*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 +
B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794
*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 61
26640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^
7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(
-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*
a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*
a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B
^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^
11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c -
1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7
402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2
791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^
7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*
(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10
*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3
c(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2))
)/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7
680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^1
3*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*
c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^
21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^
15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240
*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94
489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^13 - 74088185856*A*a^23*b*c
^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14*b^19
*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 7662993408*
A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 - 89917489152*A*a^19*b^9*c^9
+ 182401892352*A*a^20*b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 20052128563
2*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 2850816
*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^6 + 1
750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B*a^20
*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 - 5798
2058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(
4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^
2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 1990
5600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8
- 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^
2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b
^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8
*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*
c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c +
18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694
*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*
A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 926
7456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8
+ 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 1
1*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15
)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2)

- 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*1i)/((x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584

*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118
111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) - 22548578304*B*a^24*c
^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b^23*c^2 + 681984*A*a^13*b^2
1*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a^15*b^17*c^5 - 1351876608*A
*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 31048335360*A*a^18*b^11*c^8 +
89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^20*b^7*c^10 + 246826401792*A
*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 + 3072*B*a^13*b^22*c^2 - 1382
40*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 35536896*B*a^16*b^16*c^5 + 2
97271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^12*c^7 + 7398752256*B*a^19*b
^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 47714402304*B*a^21*b^6*c^10 - 678470
61504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B
^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*
A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 612
6640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7
+ 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-
(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a
^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a
^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^
2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^1
1*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c -
1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 74
02*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 27
91360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7
- 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(
-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*
A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*
c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))
/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 76
80*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13
*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c
^9)))^(1/2) - (x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^1
3 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*
b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 111
71856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A
^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b
^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B
^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 -
101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2
*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^1
1 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^
11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925
433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a
^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11
- 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*
A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b
^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^
13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2
*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^
2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2)
+ 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 -
316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7
+ 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 688
1280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a
^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15
)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b
^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B
*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A
^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)
^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*

A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^13 - 74088185856*A*a^23*b*c^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14*b^19*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 7662993408*A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 - 89917489152*A*a^19*b^9*c^9 + 182401892352*A*a^20*b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 200521285632*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 2850816*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^6 + 1750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B*a^20*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 - 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2) + 47775744000*A^3*a^17*c^14 + 712800*A^3*a^9*b^16*c^6 - 23142240*A^3*a^10*b^14*c^7 + 328157568*A^3*a^11*b^12*c^8 - 2652784128*A^3*a^12*b^10*c^9 + 13361338368*A^3*a^13*b^8*c^10 - 4289797324

8*A^3*a^14*b^6*c^11 + 85645099008*A^3*a^15*b^4*c^12 - 97090928640*A^3*a^16*b^2*c^13 - 18144*B^3*a^11*b^15*c^5 + 622080*B^3*a^12*b^13*c^6 - 9220608*B^3*a^13*b^11*c^7 + 76640256*B^3*a^14*b^9*c^8 - 384638976*B^3*a^15*b^7*c^9 + 1160773632*B^3*a^16*b^5*c^10 - 1942880256*B^3*a^17*b^3*c^11 + 10404495360*A*B^2*a^18*c^13 + 1387266048*B^3*a^18*b*c^12 - 26966753280*A^2*B*a^17*b*c^13 + 181440*A*B^2*a^10*b^16*c^5 - 6083424*A*B^2*a^11*b^14*c^6 + 88656768*A*B^2*a^12*b^12*c^7 - 731026944*A*B^2*a^13*b^10*c^8 + 3713071104*A*B^2*a^14*b^8*c^9 - 11822505984*A*B^2*a^15*b^6*c^10 + 22839459840*A*B^2*a^16*b^4*c^11 - 24132059136*A*B^2*a^17*b^2*c^12 - 453600*A^2*B*a^9*b^17*c^5 + 14722560*A^2*B*a^10*b^15*c^6 - 208303488*A^2*B*a^11*b^13*c^7 + 1675717632*A^2*B*a^12*b^11*c^8 - 8368883712*A^2*B*a^13*b^9*c^9 + 26512883712*A^2*B*a^14*b^7*c^10 - 51887112192*A^2*B*a^15*b^5*c^11 + 57139789824*A^2*B*a^16*b^3*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*2i - atan(((x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2* c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) - 22548578304*B*a^24*c^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b^23*c^2 + 681984*A*a^13*b^21*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a^15*b^17*c^5 - 1351876608*A*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 31048335360*A*a^18*b^11*c^8 + 89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^20*b^7*c^10 + 246826401792*A*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 + 3072*B*a^13*b^22*c^2 - 138240*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 35536896*B*a^16*b^16*c^5 + 297271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^12*c^7 + 7398752256*B*a^19*b^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 47714402304*B*a^21*b^6*c^10 - 67847061504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*1i + (x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3

+ 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^13 - 74088185856*A*a^23*b*c^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14*b^19*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 7662993408*A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 -

89917489152*A*a^19*b^9*c^9 + 182401892352*A*a^20*b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 200521285632*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 2850816*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^6 + 1750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B*a^20*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 - 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*1i)/((x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^

2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 -
188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c
^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8
*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(
1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*
B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 106982
4*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49
*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*
b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*
c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2
 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*
c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9
*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^
(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c
- b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^1
5)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1
048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 +
53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*
a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(343597
38368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^1
7*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*
a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 8858
3700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c
^12) - 22548578304*B*a^24*c^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b
^23*c^2 + 681984*A*a^13*b^21*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a
^15*b^17*c^5 - 1351876608*A*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 31
048335360*A*a^18*b^11*c^8 + 89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^2
0*b^7*c^10 + 246826401792*A*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 +
3072*B*a^13*b^22*c^2 - 138240*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 3
5536896*B*a^16*b^16*c^5 + 297271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^1
2*c^7 + 7398752256*B*a^19*b^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 477144023
04*B*a^21*b^6*c^10 - 67847061504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c
^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/
2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 129
9860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6
 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b
^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c -
 b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*
a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B
^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^
15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*
c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(
4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 5
75120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6
 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*
b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^
2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*
(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^1
8*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*
a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b
^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2) - (x^(1/2)*(33973862400*A^2*a^20*c^1
4 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^
20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763
584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^1
5*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^1
1 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*
B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 1
2496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^1

6*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^13 - 74088185856*A*a^23*b*c^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14*b^19*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 7662993408*A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 - 89917489152*A*a^19*b^9*c^9 + 182401892352*A*a^20*b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 200521285632*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 2850816*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^6 + 1750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B*a^20*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 - 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^

6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 1880
95*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 +
19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5
*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2)
- B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*
a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^
2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2
*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19
*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9
- 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 8
0620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5
- 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4
*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2
) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^
2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(
1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 10485
76*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 5376
0*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14
*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2) + 477757440
00*A^3*a^17*c^14 + 712800*A^3*a^9*b^16*c^6 - 23142240*A^3*a^10*b^14*c^7 + 3
28157568*A^3*a^11*b^12*c^8 - 2652784128*A^3*a^12*b^10*c^9 + 13361338368*A^3
*a^13*b^8*c^10 - 42897973248*A^3*a^14*b^6*c^11 + 85645099008*A^3*a^15*b^4*c
^12 - 97090928640*A^3*a^16*b^2*c^13 - 18144*B^3*a^11*b^15*c^5 + 622080*B^3*
a^12*b^13*c^6 - 9220608*B^3*a^13*b^11*c^7 + 76640256*B^3*a^14*b^9*c^8 - 384
638976*B^3*a^15*b^7*c^9 + 1160773632*B^3*a^16*b^5*c^10 - 1942880256*B^3*a^1
7*b^3*c^11 + 10404495360*A*B^2*a^18*c^13 + 1387266048*B^3*a^18*b*c^12 - 269
66753280*A^2*B*a^17*b*c^13 + 181440*A*B^2*a^10*b^16*c^5 - 6083424*A*B^2*a^1
1*b^14*c^6 + 88656768*A*B^2*a^12*b^12*c^7 - 731026944*A*B^2*a^13*b^10*c^8 +
3713071104*A*B^2*a^14*b^8*c^9 - 11822505984*A*B^2*a^15*b^6*c^10 + 22839459
840*A*B^2*a^16*b^4*c^11 - 24132059136*A*B^2*a^17*b^2*c^12 - 453600*A^2*B*a^
9*b^17*c^5 + 14722560*A^2*B*a^10*b^15*c^6 - 208303488*A^2*B*a^11*b^13*c^7 +
1675717632*A^2*B*a^12*b^11*c^8 - 8368883712*A^2*B*a^13*b^9*c^9 + 265128837
12*A^2*B*a^14*b^7*c^10 - 51887112192*A^2*B*a^15*b^5*c^11 + 57139789824*A^2*
B*a^16*b^3*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c -
b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^
15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2
*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 520396
80*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^
4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3
+ 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6
- 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4
*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520
*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2
*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*
b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B
*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 223641
60*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^
3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2)
+ 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*
B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10
- 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c
^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 29
49120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*2i - ((2*A)/a - (x^3*(28
*B*a^3*c^3 - 30*A*b^5*c + 6*B*a*b^4*c + 227*A*a*b^3*c^2 - 392*A*a^2*b*c^3 -
49*B*a^2*b^2*c^2))/(4*a^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x*(25*A*b^5 -
44*B*a^3*c^2 - 5*B*a*b^4 - 194*A*a*b^3*c + 364*A*a^2*b*c^2 + 37*B*a^2*b^2*
c))/(4*a^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^2*(15*A*b^6 + 324*A*a^3*c^3
- 3*B*a*b^5 - 91*A*a*b^4*c + 20*B*a^2*b^3*c + 4*B*a^3*b*c^2 + 25*A*a^2*b^2
*c^2))/(4*a^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (3*c*x^4*(60*A*a^2*c^3 + 5*

```
A*b^4*c - B*a*b^3*c - 37*A*a*b^2*c^2 + 8*B*a^2*b*c^2))/(4*a^3*(b^4 + 16*a^2
*c^2 - 8*a*b^2*c)))/(x^(5/2)*(2*a*c + b^2) + a^2*x^(1/2) + c^2*x^(9/2) + 2*
a*b*x^(3/2) + 2*b*c*x^(7/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.954 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=240

$$\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{a^2(ex)^{m+2}(aB+3Ab)}{e^2(m+2)}+\frac{3c(ex)^{m+6}\left(aBc+Abc+b^2B\right)}{e^6(m+6)}+\frac{3a(ex)^{m+3}\left(A\left(ac+b^2\right)+abB\right)}{e^3(m+3)}+\frac{(ex)^{m+5}\left(3a\right.}{}$$

Rubi [A] time = 0.19, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{a^2(ex)^{m+2}(aB+3Ab)}{e^2(m+2)}+\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+5}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)}{e^5(m+5)}+\frac{3a(ex)^{m+3}\left(A\left(ac+b^2\right)+abB\right)}{e^3(m+3)}+\frac{(ex)^{m+4}\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)}{e^4(m+4)}+\frac{3c(ex)^{m+6}\left(aBc+Abc+b^2B\right)}{e^6(m+6)}+\frac{c^2(ex)^{m+7}(Ac+3bB)}{e^7(m+7)}+\frac{Bc^3(ex)^{m+8}}{e^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^2*(3*A*b + a*B)*(e*x)^(2 + m))/(e^2*
(2 + m)) + (3*a*(a*b*B + A*(b^2 + a*c))*(e*x)^(3 + m))/(e^3*(3 + m)) + ((3*
a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*(e*x)^(4 + m))/(e^4*(4 + m)) + ((b^3*B
 + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*(e*x)^(5 + m))/(e^5*(5 + m)) + (3*c*(
b^2*B + A*b*c + a*B*c)*(e*x)^(6 + m))/(e^6*(6 + m)) + (c^2*(3*b*B + A*c)*(e
*x)^(7 + m))/(e^7*(7 + m)) + (B*c^3*(e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3A(ex)^m+\frac{a^2(3Ab+aB)(ex)^{1+m}}{e}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)(ex)^{2+m}}{e^2}+\right.\\ &= \frac{a^3A(ex)^{1+m}}{e(1+m)}+\frac{a^2(3Ab+aB)(ex)^{2+m}}{e^2(2+m)}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)(ex)^{3+m}}{e^3(3+m)}+\end{aligned}$$

Mathematica [B] time = 1.42, size = 672, normalized size = 2.80

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] ((e*x)^m*(x*(3*b*B + A*c*(8 + m) + B*c*(7 + m)*x)*(a + x*(b + c*x))^3 + (3*
(-(x*(a*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 + m)) + 2*b*(b^2*B*(4 + m) - 2*a*
B*c*(7 + m) - A*b*c*(8 + m)) + c*(5 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) -
 A*b*c*(8 + m))*x)*(a + x*(b + c*x))^2) + (2*x*((-2*a^2*c*(4 + m)*(2*a*c*(6
 + m)*(b*B*(1 + m) - 2*A*c*(8 + m)) - b*(1 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7
 + m) - A*b*c*(8 + m))))/(1 + m) + a*b*(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*
(8 + m)) - (b^2*(3 + m) - 2*a*c*(5 + m))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) -
 A*b*c*(8 + m))) - (a*b*c*(4 + m)*(2*a*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 +
m)) - b*(1 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m)))*x)/(2 +
```

```
m) + ((b^2*(2 + m) - 2*a*c*(3 + m))*(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8
+ m)) - (b^2*(3 + m) - 2*a*c*(5 + m))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*
b*c*(8 + m)))*x)/(2 + m) + (-(a*c*(4 + m)*(2*a*c*(6 + m)*(b*B*(1 + m) - 2*A
*c*(8 + m)) - b*(1 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m))))
 + b*(-(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 + m))) + (b^2*(3 + m) - 2*a*c
*(5 + m))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m))) + c*(3 + m)*(-
(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 + m))) + (b^2*(3 + m) - 2*a*c*(5 + m
))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m)))*x)*(a + x*(b + c*x)))
)/(c*(3 + m)*(4 + m))))/(c*(5 + m)*(6 + m))))/(c*(7 + m)*(8 + m))
```

IntegrateAlgebraic [F] time = 0.88, size = 0, normalized size = 0.00

$$\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.46, size = 1350, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] ((B*c^3*m^7 + 28*B*c^3*m^6 + 322*B*c^3*m^5 + 1960*B*c^3*m^4 + 6769*B*c^3*m^
3 + 13132*B*c^3*m^2 + 13068*B*c^3*m + 5040*B*c^3)*x^8 + ((3*B*b*c^2 + A*c^3
)*m^7 + 29*(3*B*b*c^2 + A*c^3)*m^6 + 343*(3*B*b*c^2 + A*c^3)*m^5 + 2135*(3*
B*b*c^2 + A*c^3)*m^4 + 17280*B*b*c^2 + 5760*A*c^3 + 7504*(3*B*b*c^2 + A*c^3
)*m^3 + 14756*(3*B*b*c^2 + A*c^3)*m^2 + 14832*(3*B*b*c^2 + A*c^3)*m)*x^7 +
3*((B*b^2*c + (B*a + A*b)*c^2)*m^7 + 30*(B*b^2*c + (B*a + A*b)*c^2)*m^6 + 3
66*(B*b^2*c + (B*a + A*b)*c^2)*m^5 + 2340*(B*b^2*c + (B*a + A*b)*c^2)*m^4 +
 6720*B*b^2*c + 8409*(B*b^2*c + (B*a + A*b)*c^2)*m^3 + 6720*(B*a + A*b)*c^2
 + 16830*(B*b^2*c + (B*a + A*b)*c^2)*m^2 + 17144*(B*b^2*c + (B*a + A*b)*c^2
)*m)*x^6 + ((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^7 + 31*(B*b^3 + 3
*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^6 + 391*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*m^5 + 2581*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^4 + 8
064*B*b^3 + 24192*A*a*c^2 + 9544*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*m^3 + 19564*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^2 + 24192*(2*B*
a*b + A*b^2)*c + 20304*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m)*x^5 +
 ((3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^7 + 32*(3*B*a*b^2 + A*b^3 +
 3*(B*a^2 + 2*A*a*b)*c)*m^6 + 418*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*
c)*m^5 + 2864*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^4 + 30240*B*a*b
^2 + 10080*A*b^3 + 10993*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^3 +
23312*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^2 + 30240*(B*a^2 + 2*A*
a*b)*c + 24876*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m)*x^4 + 3*((B*a
^2*b + A*a*b^2 + A*a^2*c)*m^7 + 33*(B*a^2*b + A*a*b^2 + A*a^2*c)*m^6 + 447*
(B*a^2*b + A*a*b^2 + A*a^2*c)*m^5 + 3195*(B*a^2*b + A*a*b^2 + A*a^2*c)*m^4
+ 13440*B*a^2*b + 13440*A*a*b^2 + 13440*A*a^2*c + 12864*(B*a^2*b + A*a*b^2
+ A*a^2*c)*m^3 + 28692*(B*a^2*b + A*a*b^2 + A*a^2*c)*m^2 + 32048*(B*a^2*b +
 A*a*b^2 + A*a^2*c)*m)*x^3 + ((B*a^3 + 3*A*a^2*b)*m^7 + 34*(B*a^3 + 3*A*a^2
*b)*m^6 + 478*(B*a^3 + 3*A*a^2*b)*m^5 + 3580*(B*a^3 + 3*A*a^2*b)*m^4 + 2016
0*B*a^3 + 60480*A*a^2*b + 15289*(B*a^3 + 3*A*a^2*b)*m^3 + 36706*(B*a^3 + 3*
A*a^2*b)*m^2 + 44712*(B*a^3 + 3*A*a^2*b)*m)*x^2 + (A*a^3*m^7 + 35*A*a^3*m^6
 + 511*A*a^3*m^5 + 4025*A*a^3*m^4 + 18424*A*a^3*m^3 + 48860*A*a^3*m^2 + 692
64*A*a^3*m + 40320*A*a^3)*x)*(e*x)^m/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 2
2449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

giac [B] time = 0.34, size = 2736, normalized size = 11.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (B*c^3*m^7*x^8*x^m*e^m + 3*B*b*c^2*m^7*x^7*x^m*e^m + A*c^3*m^7*x^7*x^m*e^m
+ 28*B*c^3*m^6*x^8*x^m*e^m + 3*B*b^2*c*m^7*x^6*x^m*e^m + 3*B*a*c^2*m^7*x^6*
x^m*e^m + 3*A*b*c^2*m^7*x^6*x^m*e^m + 87*B*b*c^2*m^6*x^7*x^m*e^m + 29*A*c^3
*m^6*x^7*x^m*e^m + 322*B*c^3*m^5*x^8*x^m*e^m + B*b^3*m^7*x^5*x^m*e^m + 6*B*
a*b*c*m^7*x^5*x^m*e^m + 3*A*b^2*c*m^7*x^5*x^m*e^m + 3*A*a*c^2*m^7*x^5*x^m*e
^m + 90*B*b^2*c*m^6*x^6*x^m*e^m + 90*B*a*c^2*m^6*x^6*x^m*e^m + 90*A*b*c^2*m
^6*x^6*x^m*e^m + 1029*B*b*c^2*m^5*x^7*x^m*e^m + 343*A*c^3*m^5*x^7*x^m*e^m +
 1960*B*c^3*m^4*x^8*x^m*e^m + 3*B*a*b^2*m^7*x^4*x^m*e^m + A*b^3*m^7*x^4*x^m
*e^m + 3*B*a^2*c*m^7*x^4*x^m*e^m + 6*A*a*b*c*m^7*x^4*x^m*e^m + 31*B*b^3*m^6
*x^5*x^m*e^m + 186*B*a*b*c*m^6*x^5*x^m*e^m + 93*A*b^2*c*m^6*x^5*x^m*e^m + 9
3*A*a*c^2*m^6*x^5*x^m*e^m + 1098*B*b^2*c*m^5*x^6*x^m*e^m + 1098*B*a*c^2*m^5
*x^6*x^m*e^m + 1098*A*b*c^2*m^5*x^6*x^m*e^m + 6405*B*b*c^2*m^4*x^7*x^m*e^m
+ 2135*A*c^3*m^4*x^7*x^m*e^m + 6769*B*c^3*m^3*x^8*x^m*e^m + 3*B*a^2*b*m^7*x
^3*x^m*e^m + 3*A*a*b^2*m^7*x^3*x^m*e^m + 3*A*a^2*c*m^7*x^3*x^m*e^m + 96*B*a
*b^2*m^6*x^4*x^m*e^m + 32*A*b^3*m^6*x^4*x^m*e^m + 96*B*a^2*c*m^6*x^4*x^m*e^
m + 192*A*a*b*c*m^6*x^4*x^m*e^m + 391*B*b^3*m^5*x^5*x^m*e^m + 2346*B*a*b*c*
m^5*x^5*x^m*e^m + 1173*A*b^2*c*m^5*x^5*x^m*e^m + 1173*A*a*c^2*m^5*x^5*x^m*e
^m + 7020*B*b^2*c*m^4*x^6*x^m*e^m + 7020*B*a*c^2*m^4*x^6*x^m*e^m + 7020*A*b
*c^2*m^4*x^6*x^m*e^m + 22512*B*b*c^2*m^3*x^7*x^m*e^m + 7504*A*c^3*m^3*x^7*x
^m*e^m + 13132*B*c^3*m^2*x^8*x^m*e^m + B*a^3*m^7*x^2*x^m*e^m + 3*A*a^2*b*m^
7*x^2*x^m*e^m + 99*B*a^2*b*m^6*x^3*x^m*e^m + 99*A*a*b^2*m^6*x^3*x^m*e^m + 9
9*A*a^2*c*m^6*x^3*x^m*e^m + 1254*B*a*b^2*m^5*x^4*x^m*e^m + 418*A*b^3*m^5*x^
4*x^m*e^m + 1254*B*a^2*c*m^5*x^4*x^m*e^m + 2508*A*a*b*c*m^5*x^4*x^m*e^m + 2
581*B*b^3*m^4*x^5*x^m*e^m + 15486*B*a*b*c*m^4*x^5*x^m*e^m + 7743*A*b^2*c*m^
4*x^5*x^m*e^m + 7743*A*a*c^2*m^4*x^5*x^m*e^m + 25227*B*b^2*c*m^3*x^6*x^m*e^
m + 25227*B*a*c^2*m^3*x^6*x^m*e^m + 25227*A*b*c^2*m^3*x^6*x^m*e^m + 44268*B
*b*c^2*m^2*x^7*x^m*e^m + 14756*A*c^3*m^2*x^7*x^m*e^m + 13068*B*c^3*m*x^8*x^
m*e^m + A*a^3*m^7*x*x^m*e^m + 34*B*a^3*m^6*x^2*x^m*e^m + 102*A*a^2*b*m^6*x^
2*x^m*e^m + 1341*B*a^2*b*m^5*x^3*x^m*e^m + 1341*A*a*b^2*m^5*x^3*x^m*e^m + 1
341*A*a^2*c*m^5*x^3*x^m*e^m + 8592*B*a*b^2*m^4*x^4*x^m*e^m + 2864*A*b^3*m^4
*x^4*x^m*e^m + 8592*B*a^2*c*m^4*x^4*x^m*e^m + 17184*A*a*b*c*m^4*x^4*x^m*e^m
 + 9544*B*b^3*m^3*x^5*x^m*e^m + 57264*B*a*b*c*m^3*x^5*x^m*e^m + 28632*A*b^2
*c*m^3*x^5*x^m*e^m + 28632*A*a*c^2*m^3*x^5*x^m*e^m + 50490*B*b^2*c*m^2*x^6*
x^m*e^m + 50490*B*a*c^2*m^2*x^6*x^m*e^m + 50490*A*b*c^2*m^2*x^6*x^m*e^m + 4
4496*B*b*c^2*m*x^7*x^m*e^m + 14832*A*c^3*m*x^7*x^m*e^m + 5040*B*c^3*x^8*x^m
*e^m + 35*A*a^3*m^6*x*x^m*e^m + 478*B*a^3*m^5*x^2*x^m*e^m + 1434*A*a^2*b*m^
5*x^2*x^m*e^m + 9585*B*a^2*b*m^4*x^3*x^m*e^m + 9585*A*a*b^2*m^4*x^3*x^m*e^m
 + 9585*A*a^2*c*m^4*x^3*x^m*e^m + 32979*B*a*b^2*m^3*x^4*x^m*e^m + 10993*A*b
^3*m^3*x^4*x^m*e^m + 32979*B*a^2*c*m^3*x^4*x^m*e^m + 65958*A*a*b*c*m^3*x^4*
x^m*e^m + 19564*B*b^3*m^2*x^5*x^m*e^m + 117384*B*a*b*c*m^2*x^5*x^m*e^m + 58
692*A*b^2*c*m^2*x^5*x^m*e^m + 58692*A*a*c^2*m^2*x^5*x^m*e^m + 51432*B*b^2*c
*m*x^6*x^m*e^m + 51432*B*a*c^2*m*x^6*x^m*e^m + 51432*A*b*c^2*m*x^6*x^m*e^m
+ 17280*B*b*c^2*x^7*x^m*e^m + 5760*A*c^3*x^7*x^m*e^m + 511*A*a^3*m^5*x*x^m*
e^m + 3580*B*a^3*m^4*x^2*x^m*e^m + 10740*A*a^2*b*m^4*x^2*x^m*e^m + 38592*B*
a^2*b*m^3*x^3*x^m*e^m + 38592*A*a*b^2*m^3*x^3*x^m*e^m + 38592*A*a^2*c*m^3*x
^3*x^m*e^m + 69936*B*a*b^2*m^2*x^4*x^m*e^m + 23312*A*b^3*m^2*x^4*x^m*e^m +
69936*B*a^2*c*m^2*x^4*x^m*e^m + 139872*A*a*b*c*m^2*x^4*x^m*e^m + 20304*B*b^
3*m*x^5*x^m*e^m + 121824*B*a*b*c*m*x^5*x^m*e^m + 60912*A*b^2*c*m*x^5*x^m*e^
m + 60912*A*a*c^2*m*x^5*x^m*e^m + 20160*B*b^2*c*x^6*x^m*e^m + 20160*B*a*c^2
*x^6*x^m*e^m + 20160*A*b*c^2*x^6*x^m*e^m + 4025*A*a^3*m^4*x*x^m*e^m + 15289
*B*a^3*m^3*x^2*x^m*e^m + 45867*A*a^2*b*m^3*x^2*x^m*e^m + 86076*B*a^2*b*m^2*
x^3*x^m*e^m + 86076*A*a*b^2*m^2*x^3*x^m*e^m + 86076*A*a^2*c*m^2*x^3*x^m*e^m
 + 74628*B*a*b^2*m*x^4*x^m*e^m + 24876*A*b^3*m*x^4*x^m*e^m + 74628*B*a^2*c*
m*x^4*x^m*e^m + 149256*A*a*b*c*m*x^4*x^m*e^m + 8064*B*b^3*x^5*x^m*e^m + 483
```

```
84*B*a*b*c*x^5*x^m*e^m + 24192*A*b^2*c*x^5*x^m*e^m + 24192*A*a*c^2*x^5*x^m*
e^m + 18424*A*a^3*m^3*x*x^m*e^m + 36706*B*a^3*m^2*x^2*x^m*e^m + 110118*A*a^
2*b*m^2*x^2*x^m*e^m + 96144*B*a^2*b*m*x^3*x^m*e^m + 96144*A*a*b^2*m*x^3*x^m
*e^m + 96144*A*a^2*c*m*x^3*x^m*e^m + 30240*B*a*b^2*x^4*x^m*e^m + 10080*A*b^
3*x^4*x^m*e^m + 30240*B*a^2*c*x^4*x^m*e^m + 60480*A*a*b*c*x^4*x^m*e^m + 488
60*A*a^3*m^2*x*x^m*e^m + 44712*B*a^3*m*x^2*x^m*e^m + 134136*A*a^2*b*m*x^2*x
^m*e^m + 40320*B*a^2*b*x^3*x^m*e^m + 40320*A*a*b^2*x^3*x^m*e^m + 40320*A*a^
2*c*x^3*x^m*e^m + 69264*A*a^3*m*x*x^m*e^m + 20160*B*a^3*x^2*x^m*e^m + 60480
*A*a^2*b*x^2*x^m*e^m + 40320*A*a^3*x*x^m*e^m)/(m^8 + 36*m^7 + 546*m^6 + 453
6*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

maple [B] time = 0.05, size = 1903, normalized size = 7.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] x*(B*c^3*m^7*x^7+A*c^3*m^7*x^6+3*B*b*c^2*m^7*x^6+28*B*c^3*m^6*x^7+3*A*b*c^2
*m^7*x^5+29*A*c^3*m^6*x^6+3*B*a*c^2*m^7*x^5+3*B*b^2*c*m^7*x^5+87*B*b*c^2*m^
6*x^6+322*B*c^3*m^5*x^7+3*A*a*c^2*m^7*x^4+3*A*b^2*c*m^7*x^4+90*A*b*c^2*m^6*
x^5+343*A*c^3*m^5*x^6+6*B*a*b*c*m^7*x^4+90*B*a*c^2*m^6*x^5+B*b^3*m^7*x^4+90
*B*b^2*c*m^6*x^5+1029*B*b*c^2*m^5*x^6+1960*B*c^3*m^4*x^7+6*A*a*b*c*m^7*x^3+
93*A*a*c^2*m^6*x^4+A*b^3*m^7*x^3+93*A*b^2*c*m^6*x^4+1098*A*b*c^2*m^5*x^5+21
35*A*c^3*m^4*x^6+3*B*a^2*c*m^7*x^3+3*B*a*b^2*m^7*x^3+186*B*a*b*c*m^6*x^4+10
98*B*a*c^2*m^5*x^5+31*B*b^3*m^6*x^4+1098*B*b^2*c*m^5*x^5+6405*B*b*c^2*m^4*x
^6+6769*B*c^3*m^3*x^7+3*A*a^2*c*m^7*x^2+3*A*a*b^2*m^7*x^2+192*A*a*b*c*m^6*x
^3+1173*A*a*c^2*m^5*x^4+32*A*b^3*m^6*x^3+1173*A*b^2*c*m^5*x^4+7020*A*b*c^2*
m^4*x^5+7504*A*c^3*m^3*x^6+3*B*a^2*b*m^7*x^2+96*B*a^2*c*m^6*x^3+96*B*a*b^2*
m^6*x^3+2346*B*a*b*c*m^5*x^4+7020*B*a*c^2*m^4*x^5+391*B*b^3*m^5*x^4+7020*B*
b^2*c*m^4*x^5+22512*B*b*c^2*m^3*x^6+13132*B*c^3*m^2*x^7+3*A*a^2*b*m^7*x+99*
A*a^2*c*m^6*x^2+99*A*a*b^2*m^6*x^2+2508*A*a*b*c*m^5*x^3+7743*A*a*c^2*m^4*x^
4+418*A*b^3*m^5*x^3+7743*A*b^2*c*m^4*x^4+25227*A*b*c^2*m^3*x^5+14756*A*c^3*
m^2*x^6+B*a^3*m^7*x+99*B*a^2*b*m^6*x^2+1254*B*a^2*c*m^5*x^3+1254*B*a*b^2*m^
5*x^3+15486*B*a*b*c*m^4*x^4+25227*B*a*c^2*m^3*x^5+2581*B*b^3*m^4*x^4+25227*
B*b^2*c*m^3*x^5+44268*B*b*c^2*m^2*x^6+13068*B*c^3*m*x^7+A*a^3*m^7+102*A*a^2
*b*m^6*x+1341*A*a^2*c*m^5*x^2+1341*A*a*b^2*m^5*x^2+17184*A*a*b*c*m^4*x^3+28
632*A*a*c^2*m^3*x^4+2864*A*b^3*m^4*x^3+28632*A*b^2*c*m^3*x^4+50490*A*b*c^2*
m^2*x^5+14832*A*c^3*m*x^6+34*B*a^3*m^6*x+1341*B*a^2*b*m^5*x^2+8592*B*a^2*c*
m^4*x^3+8592*B*a*b^2*m^4*x^3+57264*B*a*b*c*m^3*x^4+50490*B*a*c^2*m^2*x^5+95
44*B*b^3*m^3*x^4+50490*B*b^2*c*m^2*x^5+44496*B*b*c^2*m*x^6+5040*B*c^3*x^7+3
5*A*a^3*m^6+1434*A*a^2*b*m^5*x+9585*A*a^2*c*m^4*x^2+9585*A*a*b^2*m^4*x^2+65
958*A*a*b*c*m^3*x^3+58692*A*a*c^2*m^2*x^4+10993*A*b^3*m^3*x^3+58692*A*b^2*c
*m^2*x^4+51432*A*b*c^2*m*x^5+5760*A*c^3*x^6+478*B*a^3*m^5*x+9585*B*a^2*b*m^
4*x^2+32979*B*a^2*c*m^3*x^3+32979*B*a*b^2*m^3*x^3+117384*B*a*b*c*m^2*x^4+51
432*B*a*c^2*m*x^5+19564*B*b^3*m^2*x^4+51432*B*b^2*c*m*x^5+17280*B*b*c^2*x^6
+511*A*a^3*m^5+10740*A*a^2*b*m^4*x+38592*A*a^2*c*m^3*x^2+38592*A*a*b^2*m^3*
x^2+139872*A*a*b*c*m^2*x^3+60912*A*a*c^2*m*x^4+23312*A*b^3*m^2*x^3+60912*A*
b^2*c*m*x^4+20160*A*b*c^2*x^5+3580*B*a^3*m^4*x+38592*B*a^2*b*m^3*x^2+69936*
B*a^2*c*m^2*x^3+69936*B*a*b^2*m^2*x^3+121824*B*a*b*c*m*x^4+20160*B*a*c^2*x^
5+20304*B*b^3*m*x^4+20160*B*b^2*c*x^5+4025*A*a^3*m^4+45867*A*a^2*b*m^3*x+86
076*A*a^2*c*m^2*x^2+86076*A*a*b^2*m^2*x^2+149256*A*a*b*c*m*x^3+24192*A*a*c^
2*x^4+24876*A*b^3*m*x^3+24192*A*b^2*c*x^4+15289*B*a^3*m^3*x+86076*B*a^2*b*m
^2*x^2+74628*B*a^2*c*m*x^3+74628*B*a*b^2*m*x^3+48384*B*a*b*c*x^4+8064*B*b^3
*x^4+18424*A*a^3*m^3+110118*A*a^2*b*m^2*x+96144*A*a^2*c*m*x^2+96144*A*a*b^2
*m*x^2+60480*A*a*b*c*x^3+10080*A*b^3*x^3+36706*B*a^3*m^2*x+96144*B*a^2*b*m*
x^2+30240*B*a^2*c*x^3+30240*B*a*b^2*x^3+48860*A*a^3*m^2+134136*A*a^2*b*m*x+
40320*A*a^2*c*x^2+40320*A*a*b^2*x^2+44712*B*a^3*m*x+40320*B*a^2*b*x^2+69264
*A*a^3*m+60480*A*a^2*b*x+20160*B*a^3*x+40320*A*a^3)*(e*x)^m/(m+8)/(m+7)/(m+
6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 1.01, size = 408, normalized size = 1.70

$$\frac{Bc^3e^mx^8x^m}{m+8}+\frac{3\,Bbc^2e^mx^7x^m}{m+7}+\frac{Ac^3e^mx^7x^m}{m+7}+\frac{3\,Bb^2ce^mx^6x^m}{m+6}+\frac{3\,Bac^2e^mx^6x^m}{m+6}+\frac{3\,Abc^2e^mx^6x^m}{m+6}+\frac{Bb^3e^mx^5x^m}{m+5}+\frac{6\,Babce^mx^5x^m}{m+5}+\frac{3\,Ab^2ce^mx^5x^m}{m+5}+\frac{3\,Aac^2e^mx^5x^m}{m+5}+\frac{3\,Bab^2e^mx^4x^m}{m+4}+\frac{Ab^3e^mx^4x^m}{m+4}+\frac{3\,Ba^2ce^mx^4x^m}{m+4}+\frac{6\,Aabce^mx^4x^m}{m+4}+\frac{3\,Ba^2be^mx^3x^m}{m+3}+\frac{3\,Aab^2e^mx^3x^m}{m+3}+\frac{3\,Aa^2ce^mx^3x^m}{m+3}+\frac{Ba^3e^mx^2x^m}{m+2}+\frac{3\,Aa^2be^mx^2x^m}{m+2}+\frac{(ex)^{m+1}Aa^3}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] B*c^3*e^m*x^8*x^m/(m + 8) + 3*B*b*c^2*e^m*x^7*x^m/(m + 7) + A*c^3*e^m*x^7*x
^m/(m + 7) + 3*B*b^2*c*e^m*x^6*x^m/(m + 6) + 3*B*a*c^2*e^m*x^6*x^m/(m + 6)
+ 3*A*b*c^2*e^m*x^6*x^m/(m + 6) + B*b^3*e^m*x^5*x^m/(m + 5) + 6*B*a*b*c*e^m
*x^5*x^m/(m + 5) + 3*A*b^2*c*e^m*x^5*x^m/(m + 5) + 3*A*a*c^2*e^m*x^5*x^m/(m
 + 5) + 3*B*a*b^2*e^m*x^4*x^m/(m + 4) + A*b^3*e^m*x^4*x^m/(m + 4) + 3*B*a^2
*c*e^m*x^4*x^m/(m + 4) + 6*A*a*b*c*e^m*x^4*x^m/(m + 4) + 3*B*a^2*b*e^m*x^3*
x^m/(m + 3) + 3*A*a*b^2*e^m*x^3*x^m/(m + 3) + 3*A*a^2*c*e^m*x^3*x^m/(m + 3)
 + B*a^3*e^m*x^2*x^m/(m + 2) + 3*A*a^2*b*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1
)*A*a^3/(e*(m + 1))
```

mupad [B] time = 2.03, size = 769, normalized size = 3.20

$$\frac{x^4(ex)^m\left(3Bca^2+3Bab^2+6Acab+Ab^3\right)\left(m^7+32m^6+418m^5+2864m^4+10993m^3+23312m^2+24876m+10080\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{x^5(ex)^m\left(Bb^3+3Ab^2c+6Babc+3Aac^2\right)\left(m^7+31m^6+391m^5+2581m^4+9544m^3+19564m^2+20304m+8064\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{Aa^3x(ex)^m\left(m^7+35m^6+511m^5+4025m^4+18424m^3+48860m^2+69264m+40320\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{3ax^3(ex)^m\left(Ab^2+Bab+Aac\right)\left(m^7+33m^6+447m^5+3195m^4+12864m^3+28692m^2+32048m+13440\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{3cx^6(ex)^m\left(Bb^2+Acb+Bac\right)\left(m^7+30m^6+366m^5+2340m^4+8409m^3+16830m^2+17144m+6720\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{Bc^3x^8(ex)^m\left(m^7+28m^6+322m^5+1960m^4+6769m^3+13132m^2+13068m+5040\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{a^2x^2(ex)^m\left(3Ab+Ba\right)\left(m^7+34m^6+478m^5+3580m^4+15289m^3+36706m^2+44712m+20160\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}+\frac{c^2x^7(ex)^m\left(Ac+3Bb\right)\left(m^7+29m^6+343m^5+2135m^4+7504m^3+14756m^2+14832m+5760\right)}{m^8+36m^7+546m^6+4536m^5+22449m^4+67284m^3+118124m^2+109584m+40320}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] (x^4*(e*x)^m*(A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)*(24876*m + 23312*m
^2 + 10993*m^3 + 2864*m^4 + 418*m^5 + 32*m^6 + m^7 + 10080))/(109584*m + 11
8124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 4032
0) + (x^5*(e*x)^m*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)*(20304*m + 19
564*m^2 + 9544*m^3 + 2581*m^4 + 391*m^5 + 31*m^6 + m^7 + 8064))/(109584*m +
 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 4
0320) + (A*a^3*x*(e*x)^m*(69264*m + 48860*m^2 + 18424*m^3 + 4025*m^4 + 511*
m^5 + 35*m^6 + m^7 + 40320))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*a*x^3*(e*x)^m*(A*b^2 + A
*a*c + B*a*b)*(32048*m + 28692*m^2 + 12864*m^3 + 3195*m^4 + 447*m^5 + 33*m^
6 + m^7 + 13440))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*c*x^6*(e*x)^m*(B*b^2 + A*b*c + B*a*
c)*(17144*m + 16830*m^2 + 8409*m^3 + 2340*m^4 + 366*m^5 + 30*m^6 + m^7 + 67
20))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 +
36*m^7 + m^8 + 40320) + (B*c^3*x^8*(e*x)^m*(13068*m + 13132*m^2 + 6769*m^3
+ 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284
*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (a^2*x^2*(e
*x)^m*(3*A*b + B*a)*(44712*m + 36706*m^2 + 15289*m^3 + 3580*m^4 + 478*m^5 +
 34*m^6 + m^7 + 20160))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 45
36*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (c^2*x^7*(e*x)^m*(A*c + 3*B*b)*(
14832*m + 14756*m^2 + 7504*m^3 + 2135*m^4 + 343*m^5 + 29*m^6 + m^7 + 5760))
/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m
^7 + m^8 + 40320)
```

sympy [A] time = 5.52, size = 11388, normalized size = 47.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] Piecewise(((-A*a**3/(7*x**7) - A*a**2*b/(2*x**6) - 3*A*a**2*c/(5*x**5) - 3*
A*a*b**2/(5*x**5) - 3*A*a*b*c/(2*x**4) - A*a*c**2/x**3 - A*b**3/(4*x**4) -
A*b**2*c/x**3 - 3*A*b*c**2/(2*x**2) - A*c**3/x - B*a**3/(6*x**6) - 3*B*a**2
*b/(5*x**5) - 3*B*a**2*c/(4*x**4) - 3*B*a*b**2/(4*x**4) - 2*B*a*b*c/x**3 -
3*B*a*c**2/(2*x**2) - B*b**3/(3*x**3) - 3*B*b**2*c/(2*x**2) - 3*B*b*c**2/x
```

```
+ B*c**3*log(x))/e**8, Eq(m, -8)), ((-A*a**3/(6*x**6) - 3*A*a**2*b/(5*x**5)
 - 3*A*a**2*c/(4*x**4) - 3*A*a*b**2/(4*x**4) - 2*A*a*b*c/x**3 - 3*A*a*c**2/
(2*x**2) - A*b**3/(3*x**3) - 3*A*b**2*c/(2*x**2) - 3*A*b*c**2/x + A*c**3*lo
g(x) - B*a**3/(5*x**5) - 3*B*a**2*b/(4*x**4) - B*a**2*c/x**3 - B*a*b**2/x**
3 - 3*B*a*b*c/x**2 - 3*B*a*c**2/x - B*b**3/(2*x**2) - 3*B*b**2*c/x + 3*B*b*
c**2*log(x) + B*c**3*x)/e**7, Eq(m, -7)), ((-A*a**3/(5*x**5) - 3*A*a**2*b/(
4*x**4) - A*a**2*c/x**3 - A*a*b**2/x**3 - 3*A*a*b*c/x**2 - 3*A*a*c**2/x - A
*b**3/(2*x**2) - 3*A*b**2*c/x + 3*A*b*c**2*log(x) + A*c**3*x - B*a**3/(4*x*
*4) - B*a**2*b/x**3 - 3*B*a**2*c/(2*x**2) - 3*B*a*b**2/(2*x**2) - 6*B*a*b*c
/x + 3*B*a*c**2*log(x) - B*b**3/x + 3*B*b**2*c*log(x) + 3*B*b*c**2*x + B*c*
*3*x**2/2)/e**6, Eq(m, -6)), ((-A*a**3/(4*x**4) - A*a**2*b/x**3 - 3*A*a**2*
c/(2*x**2) - 3*A*a*b**2/(2*x**2) - 6*A*a*b*c/x + 3*A*a*c**2*log(x) - A*b**3
/x + 3*A*b**2*c*log(x) + 3*A*b*c**2*x + A*c**3*x**2/2 - B*a**3/(3*x**3) - 3
*B*a**2*b/(2*x**2) - 3*B*a**2*c/x - 3*B*a*b**2/x + 6*B*a*b*c*log(x) + 3*B*a
*c**2*x + B*b**3*log(x) + 3*B*b**2*c*x + 3*B*b*c**2*x**2/2 + B*c**3*x**3/3)
/e**5, Eq(m, -5)), ((-A*a**3/(3*x**3) - 3*A*a**2*b/(2*x**2) - 3*A*a**2*c/x
- 3*A*a*b**2/x + 6*A*a*b*c*log(x) + 3*A*a*c**2*x + A*b**3*log(x) + 3*A*b**2
*c*x + 3*A*b*c**2*x**2/2 + A*c**3*x**3/3 - B*a**3/(2*x**2) - 3*B*a**2*b/x +
 3*B*a**2*c*log(x) + 3*B*a*b**2*log(x) + 6*B*a*b*c*x + 3*B*a*c**2*x**2/2 +
B*b**3*x + 3*B*b**2*c*x**2/2 + B*b*c**2*x**3 + B*c**3*x**4/4)/e**4, Eq(m, -
4)), ((-A*a**3/(2*x**2) - 3*A*a**2*b/x + 3*A*a**2*c*log(x) + 3*A*a*b**2*log
(x) + 6*A*a*b*c*x + 3*A*a*c**2*x**2/2 + A*b**3*x + 3*A*b**2*c*x**2/2 + A*b*
c**2*x**3 + A*c**3*x**4/4 - B*a**3/x + 3*B*a**2*b*log(x) + 3*B*a**2*c*x + 3
*B*a*b**2*x + 3*B*a*b*c*x**2 + B*a*c**2*x**3 + B*b**3*x**2/2 + B*b**2*c*x**
3 + 3*B*b*c**2*x**4/4 + B*c**3*x**5/5)/e**3, Eq(m, -3)), ((-A*a**3/x + 3*A*
a**2*b*log(x) + 3*A*a**2*c*x + 3*A*a*b**2*x + 3*A*a*b*c*x**2 + A*a*c**2*x**
3 + A*b**3*x**2/2 + A*b**2*c*x**3 + 3*A*b*c**2*x**4/4 + A*c**3*x**5/5 + B*a
**3*log(x) + 3*B*a**2*b*x + 3*B*a**2*c*x**2/2 + 3*B*a*b**2*x**2/2 + 2*B*a*b
*c*x**3 + 3*B*a*c**2*x**4/4 + B*b**3*x**3/3 + 3*B*b**2*c*x**4/4 + 3*B*b*c**
2*x**5/5 + B*c**3*x**6/6)/e**2, Eq(m, -2)), ((A*a**3*log(x) + 3*A*a**2*b*x
+ 3*A*a**2*c*x**2/2 + 3*A*a*b**2*x**2/2 + 2*A*a*b*c*x**3 + 3*A*a*c**2*x**4/
4 + A*b**3*x**3/3 + 3*A*b**2*c*x**4/4 + 3*A*b*c**2*x**5/5 + A*c**3*x**6/6 +
 B*a**3*x + 3*B*a**2*b*x**2/2 + B*a**2*c*x**3 + B*a*b**2*x**3 + 3*B*a*b*c*x
**4/2 + 3*B*a*c**2*x**5/5 + B*b**3*x**4/4 + 3*B*b**2*c*x**5/5 + B*b*c**2*x*
*6/2 + B*c**3*x**7/7)/e, Eq(m, -1)), (A*a**3*e**m*m**7*x*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 35*A*a**3*e**m*m**6*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 511*A*a**
3*e**m*m**5*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 4025*A*a**3*e**m*m**4*x*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 18424*A*a**3*e**m*m**3*x*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + 48860*A*a**3*e**m*m**2*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 69264*A*a**3*
e**m*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**3*e**m*x*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 3*A*a**2*b*e**m*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 10
2*A*a**2*b*e**m*m**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1434*A*a**2*b*e**m
*m**5*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 10740*A*a**2*b*e**m*m**4*x**2*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 45867*A*a**2*b*e**m*m**3*x**2*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 110118*A*a**2*b*e**m*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
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134136*A*a**2*b*e**m*m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 60480*A*a**2*b*e**m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a**2*c*e**m*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 99*A*a**2*c*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1341*A*a**2*c*e**m*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*A*a**2*c*e**m*m**4*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38592*A*a**2*c*e**m*m**3*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 86076*A*a**2*c*e**m*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 96144*A*a**2*c*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**2*c*e**m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a*b**2*e**m*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 99*A*a*b**2*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1341*A*a*b**2*e**m*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*A*a*b**2*e**m*m**4*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38592*A*a*b**2*e**m*m**3*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 86076*A*a*b**2*e**m*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 96144*A*a*b**2*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a*b**2*e**m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6*A*a*b*c*e**m*m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 192*A*a*b*c*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2508*A*a*b*c*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 17184*A*a*b*c*e**m*m**4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 65958*A*a*b*c*e**m*m**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 139872*A*a*b*c*e**m*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 149256*A*a*b*c*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 60480*A*a*b*c*e**m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a*c**2*e**m*m**7*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 93*A*a*c**2*e**m*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1173*A*a*c**2*e**m*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7743*A*a*c**2*e**m*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28632*A*a*c**2*e**m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 58692*A*a*c**2*e**m*m**2*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 60912*A*a*c**2*e**m*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 24192*A*a*

c**2*e**m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + A*b**3*e**m*m**7*x**4*x**m/(m
8 + 36*m7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**
2 + 109584*m + 40320) + 32*A*b**3*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 418*A*b**3*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2864*A*b**3*e
m*m4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 10993*A*b**3*e**m*m**3*x**4*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 23312*A*b**3*e**m*m**2*x**4*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 24876*A*b**3*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 10080*
A*b**3*e**m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*b**2*c*e**m*m**7*x**5*x
m/(m8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 93*A*b**2*c*e**m*m**6*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 1173*A*b**2*c*e**m*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 +
4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 77
43*A*b**2*c*e**m*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22
449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28632*A*b**2*c*e*
*m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 58692*A*b**2*c*e**m*m**2*x**5*x
m/(m8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 60912*A*b**2*c*e**m*m*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 24192*A*b**2*c*e**m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*b*
c**2*e**m*m**7*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 90*A*b*c**2*e**m*m**6*x*
*6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 1098*A*b*c**2*e**m*m**5*x**6*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1
09584*m + 40320) + 7020*A*b*c**2*e**m*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 25227*A*b*c**2*e**m*m**3*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 50490*A*b*
c**2*e**m*m**2*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 51432*A*b*c**2*e**m*m*x*
*6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 20160*A*b*c**2*e**m*x**6*x**m/(m**8 + 36*
m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10958
4*m + 40320) + A*c**3*e**m*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 29*A*c*
*3*e**m*m**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 343*A*c**3*e**m*m**5*x**7*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 2135*A*c**3*e**m*m**4*x**7*x**m/(m**8 + 36*m
7 + 546*m6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 7504*A*c**3*e**m*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 +
4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 147
56*A*c**3*e**m*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14832*A*c**3*e**m*m
*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 5760*A*c**3*e**m*x**7*x**m/(m**8 + 36*
m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10958
4*m + 40320) + B*a**3*e**m*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536

*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 34*B*a*
*3*e**m*m**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 478*B*a**3*e**m*m**5*x**2*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 3580*B*a**3*e**m*m**4*x**2*x**m/(m**8 + 36*m
7 + 546*m6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 15289*B*a**3*e**m*m**3*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 36
706*B*a**3*e**m*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 44712*B*a**3*e**m*
m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 20160*B*a**3*e**m*x**2*x**m/(m**8 + 3
6*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 3*B*a**2*b*e**m*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9
9*B*a**2*b*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1341*B*a**2*b*e**m
*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*B*a**2*b*e**m*m**4*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*
m**2 + 109584*m + 40320) + 38592*B*a**2*b*e**m*m**3*x**3*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 86076*B*a**2*b*e**m*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9
6144*B*a**2*b*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*B*a**2*b*e**
m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 3*B*a**2*c*e**m*m**7*x**4*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
109584*m + 40320) + 96*B*a**2*c*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m
6 + 4536*m5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
 + 1254*B*a**2*c*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 8592*B*a**2*
c*e**m*m**4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 32979*B*a**2*c*e**m*m**3*x*
*4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 69936*B*a**2*c*e**m*m**2*x**4*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
109584*m + 40320) + 74628*B*a**2*c*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m
6 + 4536*m5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
 + 30240*B*a**2*c*e**m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*B*a*b**2*e**m*
m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 96*B*a*b**2*e**m*m**6*x**4*x**m/(m
8 + 36*m7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**
2 + 109584*m + 40320) + 1254*B*a*b**2*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 8592*B*a*b**2*e**m*m**4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 32979*
B*a*b**2*e**m*m**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449
*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 69936*B*a*b**2*e**m*
m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 74628*B*a*b**2*e**m*m*x**4*x**m/(m
8 + 36*m7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**
2 + 109584*m + 40320) + 30240*B*a*b**2*e**m*x**4*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 6*B*a*b*c*e**m*m**7*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 186*B*a*b*c*e*
*m*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672

84*m**3 + 118124*m**2 + 109584*m + 40320) + 2346*B*a*b*c*e**m*m**5*x**5*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 15486*B*a*b*c*e**m*m**4*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 57264*B*a*b*c*e**m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 11
7384*B*a*b*c*e**m*m**2*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 121824*B*a*b*c*e
m*m*x5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 48384*B*a*b*c*e**m*x**5*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 3*B*a*c**2*e**m*m**7*x**6*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 90*B*a*c**2*e**m*m**6*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1098*B*a*c**2
*e**m*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7020*B*a*c**2*e**m*m**4*x**6
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 25227*B*a*c**2*e**m*m**3*x**6*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10
9584*m + 40320) + 50490*B*a*c**2*e**m*m**2*x**6*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 51432*B*a*c**2*e**m*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 20160*B*a*c**
2*e**m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6728
4*m**3 + 118124*m**2 + 109584*m + 40320) + B*b**3*e**m*m**7*x**5*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 31*B*b**3*e**m*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m*
*6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
+ 391*B*b**3*e**m*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2581*B*b**3*e**m
*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 9544*B*b**3*e**m*m**3*x**5*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 19564*B*b**3*e**m*m**2*x**5*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 20304*B*b**3*e**m*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 8064*B*b**
3*e**m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6728
4*m**3 + 118124*m**2 + 109584*m + 40320) + 3*B*b**2*c*e**m*m**7*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 90*B*b**2*c*e**m*m**6*x**6*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 1098*B*b**2*c*e**m*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7020*B*
b**2*c*e**m*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m
4 + 67284*m3 + 118124*m**2 + 109584*m + 40320) + 25227*B*b**2*c*e**m*m*
*3*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 50490*B*b**2*c*e**m*m**2*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 51432*B*b**2*c*e**m*m*x**6*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 20160*B*b**2*c*e**m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*B*b*c**2*
e**m*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 87*B*b*c**2*e**m*m**6*x**7*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 1029*B*b*c**2*e**m*m**5*x**7*x**m/(m**8 + 36*m
7 + 546*m6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584

```
*m + 40320) + 6405*B*b*c**2*e**m*m**4*x**7*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2
2512*B*b*c**2*e**m*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 44268*B*b*c**2*
e**m*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 44496*B*b*c**2*e**m*m*x**7*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 17280*B*b*c**2*e**m*x**7*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + B*c**3*e**m*m**7*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28*B*c**3*e*
*m*m**6*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 322*B*c**3*e**m*m**5*x**8*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m
**2 + 109584*m + 40320) + 1960*B*c**3*e**m*m**4*x**8*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 6769*B*c**3*e**m*m**3*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13132*B*
c**3*e**m*m**2*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13068*B*c**3*e**m*m*x**8
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 5040*B*c**3*e**m*x**8*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320), True))
```

3.955 $\int (ex)^m (A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=155

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+4}\left(2aBc+2Abc+b^2B\right)}{e^4(m+4)}+\frac{(ex)^{m+3}\left(A\left(2ac+b^2\right)+2abB\right)}{e^3(m+3)}+\frac{a(ex)^{m+2}(aB+2Ab)}{e^2(m+2)}+\frac{c(ex)^{m+5}(}{e^5(m}$$

Rubi [A] time = 0.10, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+3}\left(A\left(2ac+b^2\right)+2abB\right)}{e^3(m+3)}+\frac{(ex)^{m+4}\left(2aBc+2Abc+b^2B\right)}{e^4(m+4)}+\frac{a(ex)^{m+2}(aB+2Ab)}{e^2(m+2)}+\frac{c(ex)^{m+5}(Ac+2bB)}{e^5(m+5)}+\frac{Bc^2(ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*(e*x)^(1 + m))/(e*(1 + m)) + (a*(2*A*b + a*B)*(e*x)^(2 + m))/(e^2*(2
 + m)) + ((2*a*b*B + A*(b^2 + 2*a*c))*(e*x)^(3 + m))/(e^3*(3 + m)) + ((b^2*
B + 2*A*b*c + 2*a*B*c)*(e*x)^(4 + m))/(e^4*(4 + m)) + (c*(2*b*B + A*c)*(e*x
)^(5 + m))/(e^5*(5 + m)) + (B*c^2*(e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (ex)^m (A+Bx)\left(a+bx+cx^2\right)^2\,dx=\int \left(a^2A(ex)^m+\frac{a(2Ab+aB)(ex)^{1+m}}{e}+\frac{\left(2abB+A\left(b^2+2ac\right)\right)(ex)^{2+m}}{e^2}\right.$$

$$=\frac{a^2A(ex)^{1+m}}{e(1+m)}+\frac{a(2Ab+aB)(ex)^{2+m}}{e^2(2+m)}+\frac{\left(2abB+A\left(b^2+2ac\right)\right)(ex)^{3+m}}{e^3(3+m)}$$

Mathematica [A] time = 0.48, size = 289, normalized size = 1.86

$$\frac{(ex)^m\left(\frac{2x\left(-\frac{2a^2c(m+4)(bB(m+1)-2Ac(m+6))}{m+1}+\frac{x\left(b^2(m+2)-2ac(m+3)\right)\left(-2aBc(m+5)-Abc(m+6)+b^2B(m+3)\right)}{m+2}-(a+x(b+cx))\left(c(m+3)x\left(-2aBc(m+5)-Abc(m+6)+b^2B(m+3)\right)+b\left(-2aBc(m+5)-Abc(m+6)+b^2B(m+3)\right)+ac(m+4)(bB(m+1)-2Ac(m+6))\right)+ab\left(-2aBc(m+5)-Abc(m+6)+b^2B(m+3)\right)-\frac{abc(m+4)x(bB(m+1)-2Ac(m+6))}{m+2}\right)}{c(m+3)(m+4)}+x(a+x(b+cx))^2(Ac(m+6)+2bB+Bc(m+5)x)\right)}{c(m+5)(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] ((e*x)^m*(x*(2*b*B + A*c*(6 + m) + B*c*(5 + m)*x)*(a + x*(b + c*x))^2 + (2*
x*((-2*a^2*c*(4 + m)*(b*B*(1 + m) - 2*A*c*(6 + m)))/(1 + m) + a*b*(b^2*B*(3
 + m) - 2*a*B*c*(5 + m) - A*b*c*(6 + m)) - (a*b*c*(4 + m)*(b*B*(1 + m) - 2*
A*c*(6 + m))*x)/(2 + m) + ((b^2*(2 + m) - 2*a*c*(3 + m))*(b^2*B*(3 + m) - 2
*a*B*c*(5 + m) - A*b*c*(6 + m))*x)/(2 + m) - (a*c*(4 + m)*(b*B*(1 + m) - 2*
A*c*(6 + m)) + b*(b^2*B*(3 + m) - 2*a*B*c*(5 + m) - A*b*c*(6 + m)) + c*(3 +
 m)*(b^2*B*(3 + m) - 2*a*B*c*(5 + m) - A*b*c*(6 + m))*x)*(a + x*(b + c*x)))
)/(c*(3 + m)*(4 + m))))/(c*(5 + m)*(6 + m))
```

IntegrateAlgebraic [F] time = 0.19, size = 0, normalized size = 0.00

$$\int (ex)^m (A+Bx)\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.44, size = 573, normalized size = 3.70

$$\frac{\left(\left(Bc^2m^5+15\,Bc^2m^4+85\,Bc^2m^3+225\,Bc^2m^2+274\,Bc^2m+120\,Bc^2\right)x^6+\left(\left(2\,Bbc+Ac^2\right)m^5+16\,\left(2\,Bbc+Ac^2\right)m^4+95\,\left(2\,Bbc+Ac^2\right)m^3+288\,Bbc+144\,Ac^2+260\,\left(2\,Bbc+Ac^2\right)m^2+324\,\left(2\,Bbc+Ac^2\right)m\right)x^5+\left(\left(Bb^2+2\,(Ba+Ab)c\right)m^5+17\,\left(Bb^2+2\,(Ba+Ab)c\right)m^4+107\,\left(Bb^2+2\,(Ba+Ab)c\right)m^3+180\,Bb^2+307\,\left(Bb^2+2\,(Ba+Ab)c\right)m^2+360\,(Ba+Ab)c+396\,\left(Bb^2+2\,(Ba+Ab)c\right)m\right)x^4+\left(\left(2\,Bab+Ab^2+2\,Aac\right)m^5+18\,\left(2\,Bab+Ab^2+2\,Aac\right)m^4+121\,\left(2\,Bab+Ab^2+2\,Aac\right)m^3+480\,Bab+240\,Ab^2+480\,Aac+372\,\left(2\,Bab+Ab^2+2\,Aac\right)m^2+508\,\left(2\,Bab+Ab^2+2\,Aac\right)m\right)x^3+\left(\left(Ba^2+2\,Aab\right)m^5+19\,\left(Ba^2+2\,Aab\right)m^4+137\,\left(Ba^2+2\,Aab\right)m^3+360\,Ba^2+720\,Aab+461\,\left(Ba^2+2\,Aab\right)m^2+702\,\left(Ba^2+2\,Aab\right)m\right)x^2+\left(Aa^2m^5+20\,Aa^2m^4+155\,Aa^2m^3+580\,Aa^2m^2+1044\,Aa^2m+720\,Aa^2\right)x\right)(ex)^m}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^5 + 15*B*c^2*m^4 + 85*B*c^2*m^3 + 225*B*c^2*m^2 + 274*B*c^2*m + 1
20*B*c^2)*x^6 + ((2*B*b*c + A*c^2)*m^5 + 16*(2*B*b*c + A*c^2)*m^4 + 95*(2*B
*b*c + A*c^2)*m^3 + 288*B*b*c + 144*A*c^2 + 260*(2*B*b*c + A*c^2)*m^2 + 324
*(2*B*b*c + A*c^2)*m)*x^5 + ((B*b^2 + 2*(B*a + A*b)*c)*m^5 + 17*(B*b^2 + 2*
(B*a + A*b)*c)*m^4 + 107*(B*b^2 + 2*(B*a + A*b)*c)*m^3 + 180*B*b^2 + 307*(B
*b^2 + 2*(B*a + A*b)*c)*m^2 + 360*(B*a + A*b)*c + 396*(B*b^2 + 2*(B*a + A*b
)*c)*m)*x^4 + ((2*B*a*b + A*b^2 + 2*A*a*c)*m^5 + 18*(2*B*a*b + A*b^2 + 2*A*
a*c)*m^4 + 121*(2*B*a*b + A*b^2 + 2*A*a*c)*m^3 + 480*B*a*b + 240*A*b^2 + 48
0*A*a*c + 372*(2*B*a*b + A*b^2 + 2*A*a*c)*m^2 + 508*(2*B*a*b + A*b^2 + 2*A*
a*c)*m)*x^3 + ((B*a^2 + 2*A*a*b)*m^5 + 19*(B*a^2 + 2*A*a*b)*m^4 + 137*(B*a^
2 + 2*A*a*b)*m^3 + 360*B*a^2 + 720*A*a*b + 461*(B*a^2 + 2*A*a*b)*m^2 + 702*
(B*a^2 + 2*A*a*b)*m)*x^2 + (A*a^2*m^5 + 20*A*a^2*m^4 + 155*A*a^2*m^3 + 580*
A*a^2*m^2 + 1044*A*a^2*m + 720*A*a^2)*x)*(e*x)^m/(m^6 + 21*m^5 + 175*m^4 +
735*m^3 + 1624*m^2 + 1764*m + 720)
```

giac [B] time = 0.25, size = 1142, normalized size = 7.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (B*c^2*m^5*x^6*x^m*e^m + 2*B*b*c*m^5*x^5*x^m*e^m + A*c^2*m^5*x^5*x^m*e^m +
15*B*c^2*m^4*x^6*x^m*e^m + B*b^2*m^5*x^4*x^m*e^m + 2*B*a*c*m^5*x^4*x^m*e^m
+ 2*A*b*c*m^5*x^4*x^m*e^m + 32*B*b*c*m^4*x^5*x^m*e^m + 16*A*c^2*m^4*x^5*x^m
*e^m + 85*B*c^2*m^3*x^6*x^m*e^m + 2*B*a*b*m^5*x^3*x^m*e^m + A*b^2*m^5*x^3*x
^m*e^m + 2*A*a*c*m^5*x^3*x^m*e^m + 17*B*b^2*m^4*x^4*x^m*e^m + 34*B*a*c*m^4*
x^4*x^m*e^m + 34*A*b*c*m^4*x^4*x^m*e^m + 190*B*b*c*m^3*x^5*x^m*e^m + 95*A*c
^2*m^3*x^5*x^m*e^m + 225*B*c^2*m^2*x^6*x^m*e^m + B*a^2*m^5*x^2*x^m*e^m + 2*
A*a*b*m^5*x^2*x^m*e^m + 36*B*a*b*m^4*x^3*x^m*e^m + 18*A*b^2*m^4*x^3*x^m*e^m
 + 36*A*a*c*m^4*x^3*x^m*e^m + 107*B*b^2*m^3*x^4*x^m*e^m + 214*B*a*c*m^3*x^4
*x^m*e^m + 214*A*b*c*m^3*x^4*x^m*e^m + 520*B*b*c*m^2*x^5*x^m*e^m + 260*A*c^
2*m^2*x^5*x^m*e^m + 274*B*c^2*m*x^6*x^m*e^m + A*a^2*m^5*x*x^m*e^m + 19*B*a^
2*m^4*x^2*x^m*e^m + 38*A*a*b*m^4*x^2*x^m*e^m + 242*B*a*b*m^3*x^3*x^m*e^m +
121*A*b^2*m^3*x^3*x^m*e^m + 242*A*a*c*m^3*x^3*x^m*e^m + 307*B*b^2*m^2*x^4*x
^m*e^m + 614*B*a*c*m^2*x^4*x^m*e^m + 614*A*b*c*m^2*x^4*x^m*e^m + 648*B*b*c*
m*x^5*x^m*e^m + 324*A*c^2*m*x^5*x^m*e^m + 120*B*c^2*x^6*x^m*e^m + 20*A*a^2*
m^4*x*x^m*e^m + 137*B*a^2*m^3*x^2*x^m*e^m + 274*A*a*b*m^3*x^2*x^m*e^m + 744
*B*a*b*m^2*x^3*x^m*e^m + 372*A*b^2*m^2*x^3*x^m*e^m + 744*A*a*c*m^2*x^3*x^m*
e^m + 396*B*b^2*m*x^4*x^m*e^m + 792*B*a*c*m*x^4*x^m*e^m + 792*A*b*c*m*x^4*x
^m*e^m + 288*B*b*c*x^5*x^m*e^m + 144*A*c^2*x^5*x^m*e^m + 155*A*a^2*m^3*x*x^
m*e^m + 461*B*a^2*m^2*x^2*x^m*e^m + 922*A*a*b*m^2*x^2*x^m*e^m + 1016*B*a*b*
m*x^3*x^m*e^m + 508*A*b^2*m*x^3*x^m*e^m + 1016*A*a*c*m*x^3*x^m*e^m + 180*B*
b^2*x^4*x^m*e^m + 360*B*a*c*x^4*x^m*e^m + 360*A*b*c*x^4*x^m*e^m + 580*A*a^2
*m^2*x*x^m*e^m + 702*B*a^2*m*x^2*x^m*e^m + 1404*A*a*b*m*x^2*x^m*e^m + 480*B
*a*b*x^3*x^m*e^m + 240*A*b^2*x^3*x^m*e^m + 480*A*a*c*x^3*x^m*e^m + 1044*A*a
```

```
^2*m*x*x^m*e^m + 360*B*a^2*x^2*x^m*e^m + 720*A*a*b*x^2*x^m*e^m + 720*A*a^2*
x*x^m*e^m)/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)
```

maple [B] time = 0.05, size = 759, normalized size = 4.90

$$\frac{\left(Bc^2m^5x^5+Ac^2m^5x^4+2Bbcm^5x^4+15Bc^2m^4x^5+2Abcm^5x^3+16Ac^2m^4x^4+2Bacm^5x^3+Bb^2m^5x^3+32Bbcm^4x^4+85Bc^2m^3x^5+2Aacm^5x^2+Ab^2m^5x^2+34Abcm^4x^3+95Ac^2m^3x^4+2Babm^5x^2+34Bacm^4x^3+17Bb^2m^4x^3+190Bbcm^3x^4+225Bc^2m^2x^5+2Aabm^5x+36Aacm^4x^2+18Ab^2m^4x^2+214Abcm^3x^3+260Ac^2m^2x^4+Ba^2m^5x+36Babm^4x^2+214Bacm^3x^3+107Bb^2m^3x^3+520Bbcm^2x^4+274Bc^2mx^5+Aa^2m^5+38Aabm^4x+242Aacm^3x^2+121Ab^2m^3x^2+614Abcm^2x^3+324Ac^2mx^4+19Ba^2m^4x+242Babm^3x^2+614Bacm^2x^3+307Bb^2m^2x^3+648Bbcmx^4+120Bc^2x^5+20Aa^2m^4+274Aabm^3x+744Aacm^2x^2+372Ab^2m^2x^2+792Abcmx^3+144Ac^2x^4+137Ba^2m^3x+744Babm^2x^2+792Bacmx^3+396Bb^2mx^3+288Bbcx^4+155Aa^2m^3+922Aabm^2x+1016Aacmx^2+508Ab^2mx^2+360Abcx^3+461Ba^2m^2x+1016Babmx^2+360Bacx^3+180Bb^2x^3+580Aa^2m^2+1404Aabmx+480Aacx^2+240Ab^2x^2+702Ba^2mx+480Babx^2+1044Aa^2m+720Aabx+360Ba^2x+720Aa^2\right)x\,(ex)^m}{(m+6)(m+5)(m+4)(m+3)(m+2)(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] x*(B*c^2*m^5*x^5+A*c^2*m^5*x^4+2*B*b*c*m^5*x^4+15*B*c^2*m^4*x^5+2*A*b*c*m^5
*x^3+16*A*c^2*m^4*x^4+2*B*a*c*m^5*x^3+B*b^2*m^5*x^3+32*B*b*c*m^4*x^4+85*B*c
^2*m^3*x^5+2*A*a*c*m^5*x^2+A*b^2*m^5*x^2+34*A*b*c*m^4*x^3+95*A*c^2*m^3*x^4+
2*B*a*b*m^5*x^2+34*B*a*c*m^4*x^3+17*B*b^2*m^4*x^3+190*B*b*c*m^3*x^4+225*B*c
^2*m^2*x^5+2*A*a*b*m^5*x+36*A*a*c*m^4*x^2+18*A*b^2*m^4*x^2+214*A*b*c*m^3*x^
3+260*A*c^2*m^2*x^4+B*a^2*m^5*x+36*B*a*b*m^4*x^2+214*B*a*c*m^3*x^3+107*B*b^
2*m^3*x^3+520*B*b*c*m^2*x^4+274*B*c^2*m*x^5+A*a^2*m^5+38*A*a*b*m^4*x+242*A*
a*c*m^3*x^2+121*A*b^2*m^3*x^2+614*A*b*c*m^2*x^3+324*A*c^2*m*x^4+19*B*a^2*m^
4*x+242*B*a*b*m^3*x^2+614*B*a*c*m^2*x^3+307*B*b^2*m^2*x^3+648*B*b*c*m*x^4+1
20*B*c^2*x^5+20*A*a^2*m^4+274*A*a*b*m^3*x+744*A*a*c*m^2*x^2+372*A*b^2*m^2*x
^2+792*A*b*c*m*x^3+144*A*c^2*x^4+137*B*a^2*m^3*x+744*B*a*b*m^2*x^2+792*B*a*
c*m*x^3+396*B*b^2*m*x^3+288*B*b*c*x^4+155*A*a^2*m^3+922*A*a*b*m^2*x+1016*A*
a*c*m*x^2+508*A*b^2*m*x^2+360*A*b*c*x^3+461*B*a^2*m^2*x+1016*B*a*b*m*x^2+36
0*B*a*c*x^3+180*B*b^2*x^3+580*A*a^2*m^2+1404*A*a*b*m*x+480*A*a*c*x^2+240*A*
b^2*x^2+702*B*a^2*m*x+480*B*a*b*x^2+1044*A*a^2*m+720*A*a*b*x+360*B*a^2*x+72
0*A*a^2)*(e*x)^m/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.79, size = 230, normalized size = 1.48

$$\frac{Bc^2e^mx^6x^m}{m+6}+\frac{2\,Bbce^mx^5x^m}{m+5}+\frac{Ac^2e^mx^5x^m}{m+5}+\frac{Bb^2e^mx^4x^m}{m+4}+\frac{2\,Bace^mx^4x^m}{m+4}+\frac{2\,Abce^mx^4x^m}{m+4}+\frac{2\,Babe^mx^3x^m}{m+3}+\frac{Ab^2e^mx^3x^m}{m+3}+\frac{2\,Aace^mx^3x^m}{m+3}+\frac{Ba^2e^mx^2x^m}{m+2}+\frac{2\,Aabe^mx^2x^m}{m+2}+\frac{(ex)^{m+1}Aa^2}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] B*c^2*e^m*x^6*x^m/(m + 6) + 2*B*b*c*e^m*x^5*x^m/(m + 5) + A*c^2*e^m*x^5*x^m
/(m + 5) + B*b^2*e^m*x^4*x^m/(m + 4) + 2*B*a*c*e^m*x^4*x^m/(m + 4) + 2*A*b*
c*e^m*x^4*x^m/(m + 4) + 2*B*a*b*e^m*x^3*x^m/(m + 3) + A*b^2*e^m*x^3*x^m/(m
+ 3) + 2*A*a*c*e^m*x^3*x^m/(m + 3) + B*a^2*e^m*x^2*x^m/(m + 2) + 2*A*a*b*e^
m*x^2*x^m/(m + 2) + (e*x)^(m + 1)*A*a^2/(e*(m + 1))
```

mupad [B] time = 1.66, size = 405, normalized size = 2.61

$$(e\,x)^m\,\left(\frac{x^3\,\left(A\,b^2+2\,B\,a\,b+2\,A\,a\,c\right)\,\left(m^5+18\,m^4+121\,m^3+372\,m^2+508\,m+240\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{x^4\,\left(B\,b^2+2\,A\,c\,b+2\,B\,a\,c\right)\,\left(m^5+17\,m^4+107\,m^3+307\,m^2+396\,m+180\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{A\,a^2\,x\,\left(m^5+20\,m^4+155\,m^3+580\,m^2+1044\,m+720\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{a\,x^2\,\left(2\,A\,b+B\,a\right)\,\left(m^5+19\,m^4+137\,m^3+461\,m^2+702\,m+360\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{c\,x^5\,\left(A\,c+2\,B\,b\right)\,\left(m^5+16\,m^4+95\,m^3+260\,m^2+324\,m+144\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{B\,c^2\,x^6\,\left(m^5+15\,m^4+85\,m^3+225\,m^2+274\,m+120\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] (e*x)^m*((x^3*(A*b^2 + 2*A*a*c + 2*B*a*b)*(508*m + 372*m^2 + 121*m^3 + 18*m
^4 + m^5 + 240))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 72
0) + (x^4*(B*b^2 + 2*A*b*c + 2*B*a*c)*(396*m + 307*m^2 + 107*m^3 + 17*m^4 +
 m^5 + 180))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) +
 (A*a^2*x*(1044*m + 580*m^2 + 155*m^3 + 20*m^4 + m^5 + 720))/(1764*m + 1624
*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (a*x^2*(2*A*b + B*a)*(702*
m + 461*m^2 + 137*m^3 + 19*m^4 + m^5 + 360))/(1764*m + 1624*m^2 + 735*m^3 +
 175*m^4 + 21*m^5 + m^6 + 720) + (c*x^5*(A*c + 2*B*b)*(324*m + 260*m^2 + 95
*m^3 + 16*m^4 + m^5 + 144))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5
 + m^6 + 720) + (B*c^2*x^6*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))
/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [A] time = 2.63, size = 4150, normalized size = 26.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] Piecewise(((-A*a**2/(5*x**5) - A*a*b/(2*x**4) - 2*A*a*c/(3*x**3) - A*b**2/(
3*x**3) - A*b*c/x**2 - A*c**2/x - B*a**2/(4*x**4) - 2*B*a*b/(3*x**3) - B*a*
c/x**2 - B*b**2/(2*x**2) - 2*B*b*c/x + B*c**2*log(x))/e**6, Eq(m, -6)), ((-
A*a**2/(4*x**4) - 2*A*a*b/(3*x**3) - A*a*c/x**2 - A*b**2/(2*x**2) - 2*A*b*c
/x + A*c**2*log(x) - B*a**2/(3*x**3) - B*a*b/x**2 - 2*B*a*c/x - B*b**2/x +
2*B*b*c*log(x) + B*c**2*x)/e**5, Eq(m, -5)), ((-A*a**2/(3*x**3) - A*a*b/x**
2 - 2*A*a*c/x - A*b**2/x + 2*A*b*c*log(x) + A*c**2*x - B*a**2/(2*x**2) - 2*
B*a*b/x + 2*B*a*c*log(x) + B*b**2*log(x) + 2*B*b*c*x + B*c**2*x**2/2)/e**4,
 Eq(m, -4)), ((-A*a**2/(2*x**2) - 2*A*a*b/x + 2*A*a*c*log(x) + A*b**2*log(x
) + 2*A*b*c*x + A*c**2*x**2/2 - B*a**2/x + 2*B*a*b*log(x) + 2*B*a*c*x + B*b
**2*x + B*b*c*x**2 + B*c**2*x**3/3)/e**3, Eq(m, -3)), ((-A*a**2/x + 2*A*a*b
*log(x) + 2*A*a*c*x + A*b**2*x + A*b*c*x**2 + A*c**2*x**3/3 + B*a**2*log(x)
 + 2*B*a*b*x + B*a*c*x**2 + B*b**2*x**2/2 + 2*B*b*c*x**3/3 + B*c**2*x**4/4)
/e**2, Eq(m, -2)), ((A*a**2*log(x) + 2*A*a*b*x + A*a*c*x**2 + A*b**2*x**2/2
 + 2*A*b*c*x**3/3 + A*c**2*x**4/4 + B*a**2*x + B*a*b*x**2 + 2*B*a*c*x**3/3
+ B*b**2*x**3/3 + B*b*c*x**4/2 + B*c**2*x**5/5)/e, Eq(m, -1)), (A*a**2*e**m
*m**5*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 7
20) + 20*A*a**2*e**m*m**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 16
24*m**2 + 1764*m + 720) + 155*A*a**2*e**m*m**3*x*x**m/(m**6 + 21*m**5 + 175
*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 580*A*a**2*e**m*m**2*x*x**m/
(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1044*A*
a**2*e**m*m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764
*m + 720) + 720*A*a**2*e**m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
1624*m**2 + 1764*m + 720) + 2*A*a*b*e**m*m**5*x**2*x**m/(m**6 + 21*m**5 + 1
75*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 38*A*a*b*e**m*m**4*x**2*x*
*m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 274*
A*a*b*e**m*m**3*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2
 + 1764*m + 720) + 922*A*a*b*e**m*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4
 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1404*A*a*b*e**m*m*x**2*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 720*A*a*b*e*
*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 7
20) + 2*A*a*c*e**m*m**5*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 36*A*a*c*e**m*m**4*x**3*x**m/(m**6 + 21*m**5 + 1
75*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 242*A*a*c*e**m*m**3*x**3*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 744
*A*a*c*e**m*m**2*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 1016*A*a*c*e**m*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4
+ 735*m**3 + 1624*m**2 + 1764*m + 720) + 480*A*a*c*e**m*x**3*x**m/(m**6 + 2
1*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + A*b**2*e**m*m**5
*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720
) + 18*A*b**2*e**m*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 121*A*b**2*e**m*m**3*x**3*x**m/(m**6 + 21*m**5 +
 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 372*A*b**2*e**m*m**2*x**
3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
508*A*b**2*e**m*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m*
*2 + 1764*m + 720) + 240*A*b**2*e**m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 +
 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*A*b*c*e**m*m**5*x**4*x**m/(m**6 +
 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 34*A*b*c*e**m*
m**4*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + 214*A*b*c*e**m*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
 + 1624*m**2 + 1764*m + 720) + 614*A*b*c*e**m*m**2*x**4*x**m/(m**6 + 21*m**
5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 792*A*b*c*e**m*m*x**4
*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 3
60*A*b*c*e**m*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
```

```
 1764*m + 720) + A*c**2*e**m*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 73
5*m**3 + 1624*m**2 + 1764*m + 720) + 16*A*c**2*e**m*m**4*x**5*x**m/(m**6 +
21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 95*A*c**2*e**m*
m**3*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + 260*A*c**2*e**m*m**2*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**
3 + 1624*m**2 + 1764*m + 720) + 324*A*c**2*e**m*m*x**5*x**m/(m**6 + 21*m**5
 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 144*A*c**2*e**m*x**5*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + B*a
**2*e**m*m**5*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
 1764*m + 720) + 19*B*a**2*e**m*m**4*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 +
 735*m**3 + 1624*m**2 + 1764*m + 720) + 137*B*a**2*e**m*m**3*x**2*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 461*B*a**2*
e**m*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 176
4*m + 720) + 702*B*a**2*e**m*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m
**3 + 1624*m**2 + 1764*m + 720) + 360*B*a**2*e**m*x**2*x**m/(m**6 + 21*m**5
 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*B*a*b*e**m*m**5*x**3
*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 3
6*B*a*b*e**m*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m*
*2 + 1764*m + 720) + 242*B*a*b*e**m*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*m*
*4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 744*B*a*b*e**m*m**2*x**3*x**m/(
m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1016*B*a
*b*e**m*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 176
4*m + 720) + 480*B*a*b*e**m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
 + 1624*m**2 + 1764*m + 720) + 2*B*a*c*e**m*m**5*x**4*x**m/(m**6 + 21*m**5
 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 34*B*a*c*e**m*m**4*x**4
*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2
14*B*a*c*e**m*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m
**2 + 1764*m + 720) + 614*B*a*c*e**m*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 792*B*a*c*e**m*m*x**4*x**m/(m*
*6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 360*B*a*c*
e**m*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + B*b**2*e**m*m**5*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
1624*m**2 + 1764*m + 720) + 17*B*b**2*e**m*m**4*x**4*x**m/(m**6 + 21*m**5 +
 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 107*B*b**2*e**m*m**3*x**
4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
307*B*b**2*e**m*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624
*m**2 + 1764*m + 720) + 396*B*b**2*e**m*m*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 180*B*b**2*e**m*x**4*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*B*b*c*e**
m*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
 + 720) + 32*B*b*c*e**m*m**4*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**
3 + 1624*m**2 + 1764*m + 720) + 190*B*b*c*e**m*m**3*x**5*x**m/(m**6 + 21*m*
*5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 520*B*b*c*e**m*m**2*
x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
 + 648*B*b*c*e**m*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*
m**2 + 1764*m + 720) + 288*B*b*c*e**m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4
+ 735*m**3 + 1624*m**2 + 1764*m + 720) + B*c**2*e**m*m**5*x**6*x**m/(m**6 +
 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 15*B*c**2*e**m
*m**4*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
+ 720) + 85*B*c**2*e**m*m**3*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**
3 + 1624*m**2 + 1764*m + 720) + 225*B*c**2*e**m*m**2*x**6*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 274*B*c**2*e**m*m*x
**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
+ 120*B*c**2*e**m*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m*
*2 + 1764*m + 720), True))
```

3.956 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=83

$$\frac{(ex)^{m+2}(aB+Ab)}{e^2(m+2)}+\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+3}(Ac+bB)}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

Rubi [A] time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{(ex)^{m+2}(aB+Ab)}{e^2(m+2)}+\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+3}(Ac+bB)}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*(e*x)^(1 + m))/(e*(1 + m)) + ((A*b + a*B)*(e*x)^(2 + m))/(e^2*(2 + m))
 + ((b*B + A*c)*(e*x)^(3 + m))/(e^3*(3 + m)) + (B*c*(e*x)^(4 + m))/(e^4*(4
+ m))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int \left(aA(ex)^m+\frac{(Ab+aB)(ex)^{1+m}}{e}+\frac{(bB+Ac)(ex)^{2+m}}{e^2}+\frac{Bc(ex)^{3+m}}{e^3}\right)\,dx\\&=\frac{aA(ex)^{1+m}}{e(1+m)}+\frac{(Ab+aB)(ex)^{2+m}}{e^2(2+m)}+\frac{(bB+Ac)(ex)^{3+m}}{e^3(3+m)}+\frac{Bc(ex)^{4+m}}{e^4(4+m)}\end{aligned}$$

Mathematica [A] time = 0.11, size = 91, normalized size = 1.10

$$\frac{x(ex)^m\left(a\left(m^2+7m+12\right)(A(m+2)+B(m+1)x)+(m+1)x(A(m+4)(b(m+3)+c(m+2)x)+B(m+2)x(b(m+4)+c(m+3)x))\right)}{(m+1)(m+2)(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (x*(e*x)^m*(a*(12 + 7*m + m^2)*(A*(2 + m) + B*(1 + m)*x) + (1 + m)*x*(A*(4
+ m)*(b*(3 + m) + c*(2 + m)*x) + B*(2 + m)*x*(b*(4 + m) + c*(3 + m)*x))))/(
(1 + m)*(2 + m)*(3 + m)*(4 + m))
```

IntegrateAlgebraic [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(e*x)^m*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(e*x)^m*(A + B*x)*(a + b*x + c*x^2), x]
```

fricas [B] time = 0.42, size = 171, normalized size = 2.06

$$\frac{\left(\left(Bcm^{3} + 6\,Bcm^{2} + 11\,Bcm + 6\,Bc\right)x^{4} + \left((Bb + Ac)m^{3} + 7\,(Bb + Ac)m^{2} + 8\,Bb + 8\,Ac + 14\,(Bb + Ac)m\right)x^{3} + \left((Ba + Ab)m^{3} + 8\,(Ba + Ab)m^{2} + 12\,Ba + 12\,Ab + 19\,(Ba + Ab)m\right)x^{2} + \left(Aam^{3} + 9\,Aam^{2} + 26\,Aam + 24\,Aa\right)x\right)(ex)^{m}}{m^{4} + 10\,m^{3} + 35\,m^{2} + 50\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] ((B*c*m^3 + 6*B*c*m^2 + 11*B*c*m + 6*B*c)*x^4 + ((B*b + A*c)*m^3 + 7*(B*b +
 A*c)*m^2 + 8*B*b + 8*A*c + 14*(B*b + A*c)*m)*x^3 + ((B*a + A*b)*m^3 + 8*(B
*a + A*b)*m^2 + 12*B*a + 12*A*b + 19*(B*a + A*b)*m)*x^2 + (A*a*m^3 + 9*A*a*
m^2 + 26*A*a*m + 24*A*a)*x)*(e*x)^m/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

giac [B] time = 0.17, size = 338, normalized size = 4.07

$$\frac{Bcm^{3}x^{4}x^{m}e^{m} + Bbm^{3}x^{3}x^{m}e^{m} + Acm^{3}x^{3}x^{m}e^{m} + 6\,Bcm^{2}x^{4}x^{m}e^{m} + Bam^{3}x^{2}x^{m}e^{m} + Abm^{3}x^{2}x^{m}e^{m} + 7\,Bbm^{2}x^{3}x^{m}e^{m} + 7\,Acm^{2}x^{3}x^{m}e^{m} + 11\,Bcmx^{4}x^{m}e^{m} + Aam^{3}xx^{m}e^{m} + 8\,Bam^{2}x^{2}x^{m}e^{m} + 8\,Abm^{2}x^{2}x^{m}e^{m} + 14\,Bbmx^{3}x^{m}e^{m} + 14\,Acmx^{3}x^{m}e^{m} + 6\,Bcx^{4}x^{m}e^{m} + 9\,Aam^{2}xx^{m}e^{m} + 19\,Bamx^{2}x^{m}e^{m} + 19\,Abmx^{2}x^{m}e^{m} + 8\,Bbx^{3}x^{m}e^{m} + 8\,Acx^{3}x^{m}e^{m} + 26\,Aamxx^{m}e^{m} + 12\,Bax^{2}x^{m}e^{m} + 12\,Abx^{2}x^{m}e^{m} + 24\,Aaxx^{m}e^{m}}{m^{4} + 10\,m^{3} + 35\,m^{2} + 50\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] (B*c*m^3*x^4*x^m*e^m + B*b*m^3*x^3*x^m*e^m + A*c*m^3*x^3*x^m*e^m + 6*B*c*m^
2*x^4*x^m*e^m + B*a*m^3*x^2*x^m*e^m + A*b*m^3*x^2*x^m*e^m + 7*B*b*m^2*x^3*x
^m*e^m + 7*A*c*m^2*x^3*x^m*e^m + 11*B*c*m*x^4*x^m*e^m + A*a*m^3*x*x^m*e^m +
 8*B*a*m^2*x^2*x^m*e^m + 8*A*b*m^2*x^2*x^m*e^m + 14*B*b*m*x^3*x^m*e^m + 14*
A*c*m*x^3*x^m*e^m + 6*B*c*x^4*x^m*e^m + 9*A*a*m^2*x*x^m*e^m + 19*B*a*m*x^2*
x^m*e^m + 19*A*b*m*x^2*x^m*e^m + 8*B*b*x^3*x^m*e^m + 8*A*c*x^3*x^m*e^m + 26
*A*a*m*x*x^m*e^m + 12*B*a*x^2*x^m*e^m + 12*A*b*x^2*x^m*e^m + 24*A*a*x*x^m*e
^m)/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

maple [B] time = 0.04, size = 205, normalized size = 2.47

$$\frac{\left(Bc\,m^{3}x^{3} + Ac\,m^{3}x^{2} + Bb\,m^{3}x^{2} + 6Bc\,m^{2}x^{3} + Ab\,m^{3}x + 7Ac\,m^{2}x^{2} + Ba\,m^{3}x + 7Bb\,m^{2}x^{2} + 11Bcm\,x^{3} + Aa\,m^{3} + 8Ab\,m^{2}x + 14Acm\,x^{2} + 8Ba\,m^{2}x + 14Bbm\,x^{2} + 6Bc\,x^{3} + 9Aa\,m^{2} + 19Abmx + 8Ac\,x^{2} + 19Bamx + 8Bb\,x^{2} + 26Aam + 12Abx + 12Bax + 24Aa\right)x\,(ex)^{m}}{(m+4)\,(m+3)\,(m+2)\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] x*(B*c*m^3*x^3+A*c*m^3*x^2+B*b*m^3*x^2+6*B*c*m^2*x^3+A*b*m^3*x+7*A*c*m^2*x^
2+B*a*m^3*x+7*B*b*m^2*x^2+11*B*c*m*x^3+A*a*m^3+8*A*b*m^2*x+14*A*c*m*x^2+8*B
*a*m^2*x+14*B*b*m*x^2+6*B*c*x^3+9*A*a*m^2+19*A*b*m*x+8*A*c*x^2+19*B*a*m*x+8
*B*b*x^2+26*A*a*m+12*A*b*x+12*B*a*x+24*A*a)*(e*x)^m/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.69, size = 104, normalized size = 1.25

$$\frac{Bce^{m}x^{4}x^{m}}{m+4} + \frac{Bbe^{m}x^{3}x^{m}}{m+3} + \frac{Ace^{m}x^{3}x^{m}}{m+3} + \frac{Bae^{m}x^{2}x^{m}}{m+2} + \frac{Abe^{m}x^{2}x^{m}}{m+2} + \frac{(ex)^{m+1}\,Aa}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] B*c*e^m*x^4*x^m/(m + 4) + B*b*e^m*x^3*x^m/(m + 3) + A*c*e^m*x^3*x^m/(m + 3)
 + B*a*e^m*x^2*x^m/(m + 2) + A*b*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1)*A*a/(e
*(m + 1))
```

mupad [B] time = 1.44, size = 171, normalized size = 2.06

$$(e\,x)^{m}\left(\frac{x^{2}\,\left(A\,b+B\,a\right)\,\left(m^{3}+8\,m^{2}+19\,m+12\right)}{m^{4}+10\,m^{3}+35\,m^{2}+50\,m+24}+\frac{x^{3}\,\left(A\,c+B\,b\right)\,\left(m^{3}+7\,m^{2}+14\,m+8\right)}{m^{4}+10\,m^{3}+35\,m^{2}+50\,m+24}+\frac{A\,a\,x\,\left(m^{3}+9\,m^{2}+26\,m+24\right)}{m^{4}+10\,m^{3}+35\,m^{2}+50\,m+24}+\frac{B\,c\,x^{4}\,\left(m^{3}+6\,m^{2}+11\,m+6\right)}{m^{4}+10\,m^{3}+35\,m^{2}+50\,m+24}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] (e*x)^m*((x^2*(A*b + B*a)*(19*m + 8*m^2 + m^3 + 12))/(50*m + 35*m^2 + 10*m^
3 + m^4 + 24) + (x^3*(A*c + B*b)*(14*m + 7*m^2 + m^3 + 8))/(50*m + 35*m^2 +
 10*m^3 + m^4 + 24) + (A*a*x*(26*m + 9*m^2 + m^3 + 24))/(50*m + 35*m^2 + 10
*m^3 + m^4 + 24) + (B*c*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m
^3 + m^4 + 24))
```

sympy [A] time = 1.02, size = 1022, normalized size = 12.31

$$\begin{cases} \frac{- \frac{Aa}{3x^3} - \frac{Ab}{2x^2} - \frac{Ac}{x} - \frac{Ba}{2x^2} - \frac{Bb}{x} + Bc\log(x)}{e^4} & \text{for } m = -4 \\ \frac{- \frac{Aa}{2x^2} - \frac{Ab}{x} + Ac\log(x) - \frac{Ba}{x} + Bb\log(x) + Bcx}{e^3} & \text{for } m = -3 \\ \frac{- \frac{Aa}{x} + Ab\log(x) + Acx + Ba\log(x) + Bbx + \frac{Bcx^2}{2}}{e^2} & \text{for } m = -2 \\ \frac{Aa\log(x) + Abx + \frac{Acx^2}{2} + Bax + \frac{Bbx^2}{2} + \frac{Bcx^3}{3}}{e} & \text{for } m = -1 \\ \frac{Aae^m m^3 x x^m}{m^4+10m^3+35m^2+50m+24} + \frac{9Aae^m m^2 x x^m}{m^4+10m^3+35m^2+50m+24} + \frac{26Aae^m m x x^m}{m^4+10m^3+35m^2+50m+24} + \frac{24Aae^m x x^m}{m^4+10m^3+35m^2+50m+24} + \frac{Abe^m m^3 x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{8Abe^m m^2 x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{19Abe^m m x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{12Abe^m x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{Ace^m m^3 x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{7Ace^m m^2 x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{14Ace^m m x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{8Ace^m x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{Bae^m m^3 x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{8Bae^m m^2 x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{19Bae^m m x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{12Bae^m x^2 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{Bbe^m m^3 x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{7Bbe^m m^2 x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{14Bbe^m m x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{8Bbe^m x^3 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{Bce^m m^3 x^4 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{6Bce^m m^2 x^4 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{11Bce^m m x^4 x^m}{m^4+10m^3+35m^2+50m+24} + \frac{6Bce^m x^4 x^m}{m^4+10m^3+35m^2+50m+24} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise(((-A*a/(3*x**3) - A*b/(2*x**2) - A*c/x - B*a/(2*x**2) - B*b/x + B
*c*log(x))/e**4, Eq(m, -4)), ((-A*a/(2*x**2) - A*b/x + A*c*log(x) - B*a/x +
 B*b*log(x) + B*c*x)/e**3, Eq(m, -3)), ((-A*a/x + A*b*log(x) + A*c*x + B*a*
log(x) + B*b*x + B*c*x**2/2)/e**2, Eq(m, -2)), ((A*a*log(x) + A*b*x + A*c*x
**2/2 + B*a*x + B*b*x**2/2 + B*c*x**3/3)/e, Eq(m, -1)), (A*a*e**m*m**3*x*x*
*m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 9*A*a*e**m*m**2*x*x**m/(m**4 +
10*m**3 + 35*m**2 + 50*m + 24) + 26*A*a*e**m*m*x*x**m/(m**4 + 10*m**3 + 35*
m**2 + 50*m + 24) + 24*A*a*e**m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 2
4) + A*b*e**m*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 8*A*b
*e**m*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 19*A*b*e**m*m
*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 12*A*b*e**m*x**2*x**m/(
m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + A*c*e**m*m**3*x**3*x**m/(m**4 + 10*
m**3 + 35*m**2 + 50*m + 24) + 7*A*c*e**m*m**2*x**3*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24) + 14*A*c*e**m*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 5
0*m + 24) + 8*A*c*e**m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B
*a*e**m*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 8*B*a*e**m*
m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 19*B*a*e**m*m*x**2*
x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 12*B*a*e**m*x**2*x**m/(m**4 +
 10*m**3 + 35*m**2 + 50*m + 24) + B*b*e**m*m**3*x**3*x**m/(m**4 + 10*m**3 +
 35*m**2 + 50*m + 24) + 7*B*b*e**m*m**2*x**3*x**m/(m**4 + 10*m**3 + 35*m**2
 + 50*m + 24) + 14*B*b*e**m*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
24) + 8*B*b*e**m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B*c*e**
m*m**3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*m**2*x
**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*B*c*e**m*m*x**4*x**m/(
m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*x**4*x**m/(m**4 + 10*m**
3 + 35*m**2 + 50*m + 24), True))
```

3.957 $\int (A+Bx)(d+ex)^m \left(bx+cx^2\right) dx$

Optimal. Leaf size=136

$$-\frac{d(Bd-Ae)(cd-be)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}(Bd(3cd-2be)-Ae(2cd-be))}{e^4(m+2)}-\frac{(d+ex)^{m+3}(-Ace-bBe+3Bc$$

Rubi [A] time = 0.10, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{d(Bd-Ae)(cd-be)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}(Bd(3cd-2be)-Ae(2cd-be))}{e^4(m+2)}-\frac{(d+ex)^{m+3}(-Ace-bBe+3Bcd)}{e^4(m+3)}+\frac{Bc(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(b*x + c*x^2),x]
```

```
[Out] -((d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((B*d*(3*c
*d - 2*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))/(e^4*(2 + m)) - ((3*B*c
*d - b*B*e - A*c*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (B*c*(d + e*x)^(4 +
m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(bx+cx^2\right) dx = \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^m}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d}{e^3}\right.$$
$$= -\frac{d(Bd-Ae)(cd-be)(d+ex)^{1+m}}{e^4(1+m)}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+}{e^4(2+m)}$$

Mathematica [A] time = 0.12, size = 118, normalized size = 0.87

$$\frac{(d+ex)^{m+1}\left(-\frac{(d+ex)^2(-Ace-bBe+3Bcd)}{m+3}+\frac{(d+ex)(Ae(be-2cd)+Bd(3cd-2be))}{m+2}-\frac{d(Bd-Ae)(cd-be)}{m+1}+\frac{Bc(d+ex)^3}{m+4}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((d*(B*d - A*e)*(c*d - b*e))/(1 + m)) + ((B*d*(3*c*d -
 2*b*e) + A*e*(-2*c*d + b*e))*(d + e*x))/(2 + m) - ((3*B*c*d - b*B*e - A*c*
e)*(d + e*x)^2)/(3 + m) + (B*c*(d + e*x)^3)/(4 + m)))/e^4
```

IntegrateAlgebraic [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(bx+cx^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(b*x + c*x^2),x]
```

[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(b*x + c*x^2), x]

fricas [B] time = 0.43, size = 427, normalized size = 3.14

$$-\frac{\left(Abd^{2}e^{2}m^{2}+6\,Bcd^{4}+12\,Abd^{2}e^{2}-8\,(Bb+Ac)d^{3}e-\left(Bce^{4}m^{3}+6\,Bce^{4}m^{2}+11\,Bce^{4}m+6\,Bce^{4}\right)x^{4}-\left(8\,(Bb+Ac)e^{4}+\left(Bcde^{3}+(Bb+Ac)e^{4}\right)m^{3}+\left(3\,Bcde^{3}+7\,(Bb+Ac)e^{4}\right)m^{2}+2\left(Bcde^{3}+7\,(Bb+Ac)e^{4}\right)m\right)x^{3}-\left(12\,Abe^{4}+\left(Abe^{4}+(Bb+Ac)de^{3}\right)m^{3}-\left(3\,Bcd^{2}e^{2}-8\,Abe^{4}-5\,(Bb+Ac)de^{3}\right)m^{2}-\left(3\,Bcd^{2}e^{2}-19\,Abe^{4}-4\,(Bb+Ac)de^{3}\right)m\right)x^{2}+\left(7\,Abd^{2}e^{2}-2\,(Bb+Ac)d^{3}e\right)m-\left(Abde^{3}m^{3}+\left(7\,Abde^{3}-2\,(Bb+Ac)d^{2}e^{2}\right)m^{2}+2\left(3\,Bcd^{3}e+6\,Abde^{3}-4\,(Bb+Ac)d^{2}e^{2}\right)m\right)x\right)(ex+d)^{m}}{e^{4}m^{4}+10\,e^{4}m^{3}+35\,e^{4}m^{2}+50\,e^{4}m+24\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x, algorithm="fricas")

[Out] -(A*b*d^2*e^2*m^2 + 6*B*c*d^4 + 12*A*b*d^2*e^2 - 8*(B*b + A*c)*d^3*e - (B*c*e^4*m^3 + 6*B*c*e^4*m^2 + 11*B*c*e^4*m + 6*B*c*e^4)*x^4 - (8*(B*b + A*c)*e^4 + (B*c*d*e^3 + (B*b + A*c)*e^4)*m^3 + (3*B*c*d*e^3 + 7*(B*b + A*c)*e^4)*m^2 + 2*(B*c*d*e^3 + 7*(B*b + A*c)*e^4)*m)*x^3 - (12*A*b*e^4 + (A*b*e^4 + (B*b + A*c)*d*e^3)*m^3 - (3*B*c*d^2*e^2 - 8*A*b*e^4 - 5*(B*b + A*c)*d*e^3)*m^2 - (3*B*c*d^2*e^2 - 19*A*b*e^4 - 4*(B*b + A*c)*d*e^3)*m)*x^2 + (7*A*b*d^2*e^2 - 2*(B*b + A*c)*d^3*e)*m - (A*b*d*e^3*m^3 + (7*A*b*d*e^3 - 2*(B*b + A*c)*d^2*e^2)*m^2 + 2*(3*B*c*d^3*e + 6*A*b*d*e^3 - 4*(B*b + A*c)*d^2*e^2)*m)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)

giac [B] time = 0.18, size = 847, normalized size = 6.23

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x, algorithm="giac")

[Out] ((x*e + d)^m*B*c*m^3*x^4*e^4 + (x*e + d)^m*B*c*d*m^3*x^3*e^3 + (x*e + d)^m*B*b*m^3*x^3*e^4 + (x*e + d)^m*A*c*m^3*x^3*e^4 + 6*(x*e + d)^m*B*c*m^2*x^4*e^4 + (x*e + d)^m*B*b*d*m^3*x^2*e^3 + (x*e + d)^m*A*c*d*m^3*x^2*e^3 + 3*(x*e + d)^m*B*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*c*d^2*m^2*x^2*e^2 + (x*e + d)^m*A*b*m^3*x^2*e^4 + 7*(x*e + d)^m*B*b*m^2*x^3*e^4 + 7*(x*e + d)^m*A*c*m^2*x^3*e^4 + 11*(x*e + d)^m*B*c*m*x^4*e^4 + (x*e + d)^m*A*b*d*m^3*x*e^3 + 5*(x*e + d)^m*B*b*d*m^2*x^2*e^3 + 5*(x*e + d)^m*A*c*d*m^2*x^2*e^3 + 2*(x*e + d)^m*B*c*d*m*x^3*e^3 - 2*(x*e + d)^m*B*b*d^2*m^2*x*e^2 - 2*(x*e + d)^m*A*c*d^2*m^2*x*e^2 - 3*(x*e + d)^m*B*c*d^2*m*x^2*e^2 + 6*(x*e + d)^m*B*c*d^3*m*x*e + 8*(x*e + d)^m*A*b*m^2*x^2*e^4 + 14*(x*e + d)^m*B*b*m*x^3*e^4 + 14*(x*e + d)^m*A*c*m*x^3*e^4 + 6*(x*e + d)^m*B*c*x^4*e^4 + 7*(x*e + d)^m*A*b*d*m^2*x*e^3 + 4*(x*e + d)^m*B*b*d*m*x^2*e^3 + 4*(x*e + d)^m*A*c*d*m*x^2*e^3 - (x*e + d)^m*A*b*d^2*m^2*e^2 - 8*(x*e + d)^m*B*b*d^2*m*x*e^2 - 8*(x*e + d)^m*A*c*d^2*m*x*e^2 + 2*(x*e + d)^m*B*b*d^3*m*e + 2*(x*e + d)^m*A*c*d^3*m*e - 6*(x*e + d)^m*B*c*d^4 + 19*(x*e + d)^m*A*b*m*x^2*e^4 + 8*(x*e + d)^m*B*b*x^3*e^4 + 8*(x*e + d)^m*A*c*x^3*e^4 + 12*(x*e + d)^m*A*b*d*m*x*e^3 - 7*(x*e + d)^m*A*b*d^2*m*e^2 + 8*(x*e + d)^m*B*b*d^3*e + 8*(x*e + d)^m*A*c*d^3*e + 12*(x*e + d)^m*A*b*x^2*e^4 - 12*(x*e + d)^m*A*b*d^2*e^2)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)

maple [B] time = 0.05, size = 402, normalized size = 2.96

$$-\frac{\left(-Bce^{3}m^{3}x^{3}-Ace^{3}m^{3}x^{2}-Bbe^{3}m^{3}x^{2}-6Bce^{3}m^{2}x^{3}-Abe^{3}m^{3}x-7Ace^{3}m^{2}x^{2}-7Bbe^{3}m^{2}x^{2}+3Bcde^{2}m^{2}x^{2}-11Bce^{3}mx^{3}-8Abe^{3}m^{2}x+2Acde^{2}m^{2}x-14Ace^{3}mx^{2}+2Bbde^{2}m^{2}x-14Bbe^{3}mx^{2}+9Bcde^{2}mx^{2}-6Bcx^{3}e^{3}+Abde^{2}m^{2}-19Abe^{3}mx+10Acde^{2}mx-8Ace^{3}x^{2}+10Bbde^{2}mx-8Bbe^{3}x^{2}-6Bcd^{2}emx+6Bcde^{2}x^{2}+7Abde^{2}m-12Abe^{3}x-2Acd^{2}em+8Acde^{2}x-2Bbd^{2}em+8Bbde^{2}x-6Bcd^{2}ex+12Abde^{2}-8Acd^{2}e-8Bbd^{2}e+6Bcd^{3}\right)(ex+d)^{m+1}}{\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x)

[Out] -(e*x+d)^(m+1)*(-B*c*e^3*m^3*x^3-A*c*e^3*m^3*x^2-B*b*e^3*m^3*x^2-6*B*c*e^3*m^2*x^3-A*b*e^3*m^3*x-7*A*c*e^3*m^2*x^2-7*B*b*e^3*m^2*x^2+3*B*c*d*e^2*m^2*x^2-11*B*c*e^3*m*x^3-8*A*b*e^3*m^2*x+2*A*c*d*e^2*m^2*x-14*A*c*e^3*m*x^2+2*B*b*d*e^2*m^2*x-14*B*b*e^3*m*x^2+9*B*c*d*e^2*m*x^2-6*B*c*e^3*x^3+A*b*d*e^2*m^2-19*A*b*e^3*m*x+10*A*c*d*e^2*m*x-8*A*c*e^3*x^2+10*B*b*d*e^2*m*x-8*B*b*e^3*x^2-6*B*c*d^2*e*m*x+6*B*c*d*e^2*x^2+7*A*b*d*e^2*m-12*A*b*e^3*x-2*A*c*d^2*e*

```
m+8*A*c*d*e^2*x-2*B*b*d^2*e*m+8*B*b*d*e^2*x-6*B*c*d^2*e*x+12*A*b*d*e^2-8*A*
c*d^2*e-8*B*b*d^2*e+6*B*c*d^3)/e^4/(m^4+10*m^3+35*m^2+50*m+24)
```

maxima [B] time = 0.76, size = 288, normalized size = 2.12

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m Ab}{\left(m^2+3m+2\right)e^2}+\frac{\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m Bb}{\left(m^3+6m^2+11m+6\right)e^3}+\frac{\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m Ac}{\left(m^3+6m^2+11m+6\right)e^3}+\frac{\left(\left(m^3+6m^2+11m+6\right)e^4x^4+\left(m^3+3m^2+2m\right)de^3x^3-3\left(m^2+m\right)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m Bc}{\left(m^4+10m^3+35m^2+50m+24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*b/((m^2 + 3*m + 2)*e^2) + (
(m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x +
 d)^m*B*b/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2
+ m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*c/((m^3 + 6*m^2 + 11*m
+ 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x
^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*c/((m^4 +
 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 1.64, size = 400, normalized size = 2.94

$$\frac{x^2\,(m+1)\,(d+e\,x)^m\,\left(12\,A\,b\,e^2+7\,A\,b\,e^2\,m-3\,B\,c\,d^2\,m+A\,b\,e^2\,m^2+4\,A\,c\,d\,e\,m+4\,B\,b\,d\,e\,m+A\,c\,d\,e\,m^2+B\,b\,d\,e\,m^2\right)}{e^2\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}-\frac{d^2\,(d+e\,x)^m\,\left(12\,A\,b\,e^2+6\,B\,c\,d^2+7\,A\,b\,e^2\,m+A\,b\,e^2\,m^2-8\,A\,c\,d\,e-8\,B\,b\,d\,e-2\,A\,c\,d\,e\,m-2\,B\,b\,d\,e\,m\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{x^3\,(d+e\,x)^m\,\left(m^2+3\,m+2\right)\,(4\,A\,c\,e+4\,B\,b\,e+A\,c\,e\,m+B\,b\,e\,m+B\,c\,d\,m)}{e\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{B\,c\,x^4\,(d+e\,x)^m\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{d\,m\,x\,(d+e\,x)^m\,\left(12\,A\,b\,e^2+6\,B\,c\,d^2+7\,A\,b\,e^2\,m+A\,b\,e^2\,m^2-8\,A\,c\,d\,e-8\,B\,b\,d\,e-2\,A\,c\,d\,e\,m-2\,B\,b\,d\,e\,m\right)}{e^3\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] (x^2*(m + 1)*(d + e*x)^m*(12*A*b*e^2 + 7*A*b*e^2*m - 3*B*c*d^2*m + A*b*e^2*
m^2 + 4*A*c*d*e*m + 4*B*b*d*e*m + A*c*d*e*m^2 + B*b*d*e*m^2))/(e^2*(50*m +
35*m^2 + 10*m^3 + m^4 + 24)) - (d^2*(d + e*x)^m*(12*A*b*e^2 + 6*B*c*d^2 + 7
*A*b*e^2*m + A*b*e^2*m^2 - 8*A*c*d*e - 8*B*b*d*e - 2*A*c*d*e*m - 2*B*b*d*e*
m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^3*(d + e*x)^m*(3*m + m^2
 + 2)*(4*A*c*e + 4*B*b*e + A*c*e*m + B*b*e*m + B*c*d*m))/(e*(50*m + 35*m^2
+ 10*m^3 + m^4 + 24)) + (B*c*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*
m + 35*m^2 + 10*m^3 + m^4 + 24) + (d*m*x*(d + e*x)^m*(12*A*b*e^2 + 6*B*c*d^
2 + 7*A*b*e^2*m + A*b*e^2*m^2 - 8*A*c*d*e - 8*B*b*d*e - 2*A*c*d*e*m - 2*B*b
*d*e*m))/(e^3*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.75, size = 4537, normalized size = 33.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x),x)
```

```
[Out] Piecewise((d**m*(A*b*x**2/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4), Eq(e,
0)), (-A*b*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x
**3) - 3*A*b*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7
*x**3) - 2*A*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e*
*7*x**3) - 6*A*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
6*e**7*x**3) - 6*A*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x*
*2 + 6*e**7*x**3) - 2*B*b*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*
x**2 + 6*e**7*x**3) - 6*B*b*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e
**6*x**2 + 6*e**7*x**3) - 6*B*b*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 1
8*d*e**6*x**2 + 6*e**7*x**3) + 6*B*c*d**3*log(d/e + x)/(6*d**3*e**4 + 18*d*
*2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*B*c*d**3/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d**2*e*x*log(d/e + x)/(
6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 27*B*c*d**2*
e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*
d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6
*e**7*x**3) + 18*B*c*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*
x**2 + 6*e**7*x**3) + 6*B*c*e**3*x**3*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e
```

```
**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-A*b*d*e**2/(2*d**2*e**
4 + 4*d*e**5*x + 2*e**6*x**2) - 2*A*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 2*A*c*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x
**2) + 3*A*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2
*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2*x/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*c*e**3*x**2*log(d/e + x)/(2*d
**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*B*b*d**2*e*log(d/e + x)/(2*d**2*e*
*4 + 4*d*e**5*x + 2*e**6*x**2) + 3*B*b*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2
*e**6*x**2) + 4*B*b*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**
6*x**2) + 4*B*b*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*B*b*e
**3*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*B*c*d**3
*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*B*c*d**3/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x*log(d/e + x)/(2*d**2*e*
*4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) - 6*B*c*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x +
 2*e**6*x**2) + 2*B*c*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2), E
q(m, -3)), (2*A*b*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*b*d*e**2/
(2*d*e**4 + 2*e**5*x) + 2*A*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4
*A*c*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e/(2*d*e**4 + 2
*e**5*x) - 4*A*c*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*c*e**3*x
**2/(2*d*e**4 + 2*e**5*x) - 4*B*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x)
 - 4*B*b*d**2*e/(2*d*e**4 + 2*e**5*x) - 4*B*b*d*e**2*x*log(d/e + x)/(2*d*e*
*4 + 2*e**5*x) + 2*B*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3*log(d/e
 + x)/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**2
*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*B*c*d*e**2*x**2/(2*d*e**4 + 2*e
**5*x) + B*c*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (-A*b*d*log(d/e +
 x)/e**2 + A*b*x/e + A*c*d**2*log(d/e + x)/e**3 - A*c*d*x/e**2 + A*c*x**2/(
2*e) + B*b*d**2*log(d/e + x)/e**3 - B*b*d*x/e**2 + B*b*x**2/(2*e) - B*c*d**
3*log(d/e + x)/e**4 + B*c*d**2*x/e**3 - B*c*d*x**2/(2*e**2) + B*c*x**3/(3*e
), Eq(m, -1)), (-A*b*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*A*b*d**2*e**2*m*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*A*b*d**2*e
**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + A*b*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + 7*A*b*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*A*b*d*e**3*m*x*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
 A*b*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) + 8*A*b*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 19*A*b*e**4*m*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*
A*b*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 2*A*c*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*A*c*d**3*e*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*A*c*d**2*e**2*m**2*
x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e*
*4) - 8*A*c*d**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + A*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4
+ 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 5*A*c*d*e**3*m**2*x*
*2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 4*A*c*d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4
*m**2 + 50*e**4*m + 24*e**4) + A*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*A*c*e**4*m**2*x**3*
(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4
) + 14*A*c*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 8*A*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*b*d**3*e*m*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*b*d**
3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
```

```
e**4) - 2*B*b*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*
e**4*m**2 + 50*e**4*m + 24*e**4) - 8*B*b*d**2*e**2*m*x*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*b*d*e**3*m**3*
x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) + 5*B*b*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35
*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*B*b*d*e**3*m*x**2*(d + e*x)**m/(e**4*
m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*b*e**4*m**3*x
**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + 7*B*b*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e*
*4*m**2 + 50*e**4*m + 24*e**4) + 14*B*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*b*e**4*x**3*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) -
 6*B*c*d**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) + 6*B*c*d**3*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d**2*e**2*m**2*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d*
*2*e**2*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + B*c*d*e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*B*c*d*e**3*m**2*x**3*(d + e*x
)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*
c*d*e**3*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + B*c*e**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*e**4*m**2*x**4*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*B*c*
e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) + 6*B*c*e**4*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35
*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.958 $\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right) \, dx$

Optimal. Leaf size=118

$$-\frac{(d+ex)^7(-Ace-bBe+3Bcd)}{7e^4}+\frac{(d+ex)^6(Bd(3cd-2be)-Ae(2cd-be))}{6e^4}-\frac{d(d+ex)^5(Bd-Ae)(cd-be)}{5e^4}+\frac{Bc(d+}{8e}$$

Rubi [A] time = 0.18, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{(d+ex)^7(-Ace-bBe+3Bcd)}{7e^4}+\frac{(d+ex)^6(Bd(3cd-2be)-Ae(2cd-be))}{6e^4}-\frac{d(d+ex)^5(Bd-Ae)(cd-be)}{5e^4}+\frac{Bc(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(b*x + c*x^2),x]
```

```
[Out] -(d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^5)/(5*e^4) + ((B*d*(3*c*d - 2*b*e) -
A*e*(2*c*d - b*e))*(d + e*x)^6)/(6*e^4) - ((3*B*c*d - b*B*e - A*c*e)*(d + e
*x)^7)/(7*e^4) + (B*c*(d + e*x)^8)/(8*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right) \, dx = \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^4}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+e}{e^3}\right.$$
$$= -\frac{d(Bd-Ae)(cd-be)(d+ex)^5}{5e^4}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+ex)^6}{6e^4}$$

Mathematica [A] time = 0.06, size = 177, normalized size = 1.50

$$\frac{1}{3}d^3x^3(4Abe+Acd+bBd)+\frac{1}{4}d^2x^4(2Ae(3be+2cd)+Bd(4be+cd))+\frac{1}{7}e^3x^7(Ace+bBe+4Bcd)+\frac{1}{6}e^2x^6(Ae(be+4cd)+2Bd(2be+3cd))+\frac{2}{5}dex^5(Ae(2be+3cd)+Bd(3be+2cd))+\frac{1}{2}Abd^4x^2+\frac{1}{8}Bce^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(b*x + c*x^2),x]
```

```
[Out] (A*b*d^4*x^2)/2 + (d^3*(b*B*d + A*c*d + 4*A*b*e)*x^3)/3 + (d^2*(2*A*e*(2*c*
d + 3*b*e) + B*d*(c*d + 4*b*e))*x^4)/4 + (2*d*e*(A*e*(3*c*d + 2*b*e) + B*d*
(2*c*d + 3*b*e))*x^5)/5 + (e^2*(A*e*(4*c*d + b*e) + 2*B*d*(3*c*d + 2*b*e))*
x^6)/6 + (e^3*(4*B*c*d + b*B*e + A*c*e)*x^7)/7 + (B*c*e^4*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right) \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 218, normalized size = 1.85

$$\frac{1}{8}x^8e^4cB+\frac{4}{7}x^7e^3dcB+\frac{1}{7}x^7e^4bB+\frac{1}{7}x^7e^4cA+x^6e^2d^2cB+\frac{2}{3}x^6e^3dbB+\frac{2}{3}x^6e^3dcA+\frac{1}{6}x^6e^4bA+\frac{4}{5}x^5ed^3cB+\frac{6}{5}x^5e^2d^2bB+\frac{6}{5}x^5e^2d^2cA+\frac{4}{5}x^5e^3dbA+\frac{1}{4}x^4d^4cB+x^4ed^3bB+x^4ed^3cA+\frac{3}{2}x^4e^2d^2bA+\frac{1}{3}x^3d^4bB+\frac{1}{3}x^3d^4cA+\frac{4}{3}x^3ed^3bA+\frac{1}{2}x^2d^4bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c*B + 4/7*x^7*e^3*d*c*B + 1/7*x^7*e^4*b*B + 1/7*x^7*e^4*c*A + x
^6*e^2*d^2*c*B + 2/3*x^6*e^3*d*b*B + 2/3*x^6*e^3*d*c*A + 1/6*x^6*e^4*b*A +
4/5*x^5*e*d^3*c*B + 6/5*x^5*e^2*d^2*b*B + 6/5*x^5*e^2*d^2*c*A + 4/5*x^5*e^3
*d*b*A + 1/4*x^4*d^4*c*B + x^4*e*d^3*b*B + x^4*e*d^3*c*A + 3/2*x^4*e^2*d^2*
b*A + 1/3*x^3*d^4*b*B + 1/3*x^3*d^4*c*A + 4/3*x^3*e*d^3*b*A + 1/2*x^2*d^4*b
*A
```

giac [A] time = 0.17, size = 210, normalized size = 1.78

$$\frac{1}{8}Bcx^8e^4+\frac{4}{7}Bcdx^7e^3+Bcd^2x^6e^2+\frac{4}{5}Bcd^3x^5e+\frac{1}{4}Bcd^4x^4+\frac{1}{7}Bbx^7e^4+\frac{1}{7}Acx^7e^4+\frac{2}{3}Bbdx^6e^3+\frac{2}{3}Acdx^6e^3+\frac{6}{5}Bbd^2x^5e^2+\frac{6}{5}Acd^2x^5e^2+Bbd^3x^4e+Acd^3x^4e+\frac{1}{3}Bbd^4x^3+\frac{1}{3}Acd^4x^3+\frac{1}{6}Abx^6e^4+\frac{4}{5}Abdx^5e^3+\frac{3}{2}Abd^2x^4e^2+\frac{4}{3}Abd^3x^3e+\frac{1}{2}Abd^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8*e^4 + 4/7*B*c*d*x^7*e^3 + B*c*d^2*x^6*e^2 + 4/5*B*c*d^3*x^5*e +
 1/4*B*c*d^4*x^4 + 1/7*B*b*x^7*e^4 + 1/7*A*c*x^7*e^4 + 2/3*B*b*d*x^6*e^3 +
2/3*A*c*d*x^6*e^3 + 6/5*B*b*d^2*x^5*e^2 + 6/5*A*c*d^2*x^5*e^2 + B*b*d^3*x^4
*e + A*c*d^3*x^4*e + 1/3*B*b*d^4*x^3 + 1/3*A*c*d^4*x^3 + 1/6*A*b*x^6*e^4 +
4/5*A*b*d*x^5*e^3 + 3/2*A*b*d^2*x^4*e^2 + 4/3*A*b*d^3*x^3*e + 1/2*A*b*d^4*x
^2
```

maple [A] time = 0.04, size = 200, normalized size = 1.69

$$\frac{Bce^4x^8}{8}+\frac{Abd^4x^2}{2}+\frac{\left(Bbe^4+\left(Ae^4+4Bde^3\right)c\right)x^7}{7}+\frac{\left(\left(Ae^4+4Bde^3\right)b+\left(4Ade^3+6Bd^2e^2\right)c\right)x^6}{6}+\frac{\left(\left(4Ade^3+6Bd^2e^2\right)b+\left(6Ad^2e^2+4Bd^3e\right)c\right)x^5}{5}+\frac{\left(\left(6Ad^2e^2+4Bd^3e\right)b+\left(4Ad^3e+Bd^4\right)c\right)x^4}{4}+\frac{\left(Acd^4+\left(4Ad^3e+Bd^4\right)b\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x)
```

```
[Out] 1/8*B*e^4*c*x^8+1/7*((A*e^4+4*B*d*e^3)*c+B*e^4*b)*x^7+1/6*((4*A*d*e^3+6*B*d
^2*e^2)*c+(A*e^4+4*B*d*e^3)*b)*x^6+1/5*((6*A*d^2*e^2+4*B*d^3*e)*c+(4*A*d*e^
3+6*B*d^2*e^2)*b)*x^5+1/4*((4*A*d^3*e+B*d^4)*c+(6*A*d^2*e^2+4*B*d^3*e)*b)*x
^4+1/3*(A*d^4*c+(4*A*d^3*e+B*d^4)*b)*x^3+1/2*A*d^4*b*x^2
```

maxima [A] time = 0.48, size = 178, normalized size = 1.51

$$\frac{1}{8}Bce^4x^8+\frac{1}{2}Abd^4x^2+\frac{1}{7}\left(4Bcde^3+(Bb+Ac)e^4\right)x^7+\frac{1}{6}\left(6Bcd^2e^2+Abe^4+4(Bb+Ac)de^3\right)x^6+\frac{2}{5}\left(2Bcd^3e+2Abde^3+3(Bb+Ac)d^2e^2\right)x^5+\frac{1}{4}\left(Bcd^4+6Abd^2e^2+4(Bb+Ac)d^3e\right)x^4+\frac{1}{3}\left(4Abd^3e+(Bb+Ac)d^4\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/8*B*c*e^4*x^8 + 1/2*A*b*d^4*x^2 + 1/7*(4*B*c*d*e^3 + (B*b + A*c)*e^4)*x^7
 + 1/6*(6*B*c*d^2*e^2 + A*b*e^4 + 4*(B*b + A*c)*d*e^3)*x^6 + 2/5*(2*B*c*d^3
*e + 2*A*b*d*e^3 + 3*(B*b + A*c)*d^2*e^2)*x^5 + 1/4*(B*c*d^4 + 6*A*b*d^2*e^
2 + 4*(B*b + A*c)*d^3*e)*x^4 + 1/3*(4*A*b*d^3*e + (B*b + A*c)*d^4)*x^3
```

mupad [B] time = 0.10, size = 182, normalized size = 1.54

$$x^4\left(\frac{Bcd^4}{4}+Acd^3e+Bbd^3e+\frac{3Abd^2e^2}{2}\right)+x^6\left(\frac{Abe^4}{6}+\frac{2Acde^3}{3}+\frac{2Bbde^3}{3}+Bcd^2e^2\right)+x^3\left(\frac{Acd^4}{3}+\frac{Bbd^4}{3}+\frac{4Abd^3e}{3}\right)+x^7\left(\frac{Ace^4}{7}+\frac{Bbe^4}{7}+\frac{4Bcde^3}{7}\right)+\frac{2dex^5\left(2Abe^2+2Bcd^2+3Acde+3Bbde\right)}{5}+\frac{Abd^4x^2}{2}+\frac{Bce^4x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^4*((B*c*d^4)/4 + A*c*d^3*e + B*b*d^3*e + (3*A*b*d^2*e^2)/2) + x^6*((A*b*e
^4)/6 + (2*A*c*d*e^3)/3 + (2*B*b*d*e^3)/3 + B*c*d^2*e^2) + x^3*((A*c*d^4)/3
 + (B*b*d^4)/3 + (4*A*b*d^3*e)/3) + x^7*((A*c*e^4)/7 + (B*b*e^4)/7 + (4*B*c
*d*e^3)/7) + (2*d*e*x^5*(2*A*b*e^2 + 2*B*c*d^2 + 3*A*c*d*e + 3*B*b*d*e))/5
+ (A*b*d^4*x^2)/2 + (B*c*e^4*x^8)/8
```

sympy [B] time = 0.10, size = 230, normalized size = 1.95

$$\frac{Abd^4x^2}{2} + \frac{Bce^4x^8}{8} + x^7\left(\frac{Ace^4}{7} + \frac{Bbe^4}{7} + \frac{4Bcde^3}{7}\right) + x^6\left(\frac{Abe^4}{6} + \frac{2Acde^3}{3} + \frac{2Bbde^3}{3} + Bcd^2e^2\right) + x^5\left(\frac{4Abde^3}{5} + \frac{6Acd^2e^2}{5} + \frac{6Bbd^2e^2}{5} + \frac{4Bcd^3e}{5}\right) + x^4\left(\frac{3Abd^2e^2}{2} + Acd^3e + Bbd^3e + \frac{Bcd^4}{4}\right) + x^3\left(\frac{4Abd^3e}{3} + \frac{Acd^4}{3} + \frac{Bbd^4}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x),x)
```

```
[Out] A*b*d**4*x**2/2 + B*c*e**4*x**8/8 + x**7*(A*c*e**4/7 + B*b*e**4/7 + 4*B*c*d
*e**3/7) + x**6*(A*b*e**4/6 + 2*A*c*d*e**3/3 + 2*B*b*d*e**3/3 + B*c*d**2*e*
*2) + x**5*(4*A*b*d*e**3/5 + 6*A*c*d**2*e**2/5 + 6*B*b*d**2*e**2/5 + 4*B*c*
d**3*e/5) + x**4*(3*A*b*d**2*e**2/2 + A*c*d**3*e + B*b*d**3*e + B*c*d**4/4)
 + x**3*(4*A*b*d**3*e/3 + A*c*d**4/3 + B*b*d**4/3)
```

3.959 $\int (A+Bx)(d+ex)^3 \left(bx+cx^2\right) \, dx$

Optimal. Leaf size=118

$$-\frac{(d+ex)^6(-Ace-bBe+3Bcd)}{6e^4}+\frac{(d+ex)^5(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{d(d+ex)^4(Bd-Ae)(cd-be)}{4e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

Rubi [A] time = 0.14, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{(d+ex)^6(-Ace-bBe+3Bcd)}{6e^4}+\frac{(d+ex)^5(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{d(d+ex)^4(Bd-Ae)(cd-be)}{4e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(b*x + c*x^2),x]
```

```
[Out] -(d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^4)/(4*e^4) + ((B*d*(3*c*d - 2*b*e) -
A*e*(2*c*d - b*e))*(d + e*x)^5)/(5*e^4) - ((3*B*c*d - b*B*e - A*c*e)*(d + e
*x)^6)/(6*e^4) + (B*c*(d + e*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^3}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+ex)^4}{e^3}+\ldots\right)dx\\ &= -\frac{d(Bd-Ae)(cd-be)(d+ex)^4}{4e^4}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+ex)^5}{5e^4}+\ldots\end{aligned}$$

Mathematica [A] time = 0.04, size = 135, normalized size = 1.14

$$\frac{1}{3}d^2x^3(3Abe+Acd+bBd)+\frac{1}{6}e^2x^6(Ace+bBe+3Bcd)+\frac{1}{5}ex^5(Ae(be+3cd)+3Bd(be+cd))+\frac{1}{4}dx^4(3Ae(be+cd)+Bd(3be+cd))+\frac{1}{2}Abd^3x^2+\frac{1}{7}Bce^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(b*x + c*x^2),x]
```

```
[Out] (A*b*d^3*x^2)/2 + (d^2*(b*B*d + A*c*d + 3*A*b*e)*x^3)/3 + (d*(3*A*e*(c*d +
b*e) + B*d*(c*d + 3*b*e))*x^4)/4 + (e*(3*B*d*(c*d + b*e) + A*e*(3*c*d + b*e
))*x^5)/5 + (e^2*(3*B*c*d + b*B*e + A*c*e)*x^6)/6 + (B*c*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 168, normalized size = 1.42

$$\frac{1}{7}x^7e^3cB+\frac{1}{2}x^6e^2dcB+\frac{1}{6}x^6e^3bB+\frac{1}{6}x^6e^3cA+\frac{3}{5}x^5ed^2cB+\frac{3}{5}x^5e^2dbB+\frac{3}{5}x^5e^2dcA+\frac{1}{5}x^5e^3bA+\frac{1}{4}x^4d^3cB+\frac{3}{4}x^4ed^2bB+\frac{3}{4}x^4ed^2cA+\frac{3}{4}x^4e^2dbA+\frac{1}{3}x^3d^3bB+\frac{1}{3}x^3d^3cA+x^3ed^2bA+\frac{1}{2}x^2d^3bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c*B + 1/2*x^6*e^2*d*c*B + 1/6*x^6*e^3*b*B + 1/6*x^6*e^3*c*A + 3
/5*x^5*e*d^2*c*B + 3/5*x^5*e^2*d*b*B + 3/5*x^5*e^2*d*c*A + 1/5*x^5*e^3*b*A
+ 1/4*x^4*d^3*c*B + 3/4*x^4*e*d^2*b*B + 3/4*x^4*e*d^2*c*A + 3/4*x^4*e^2*d*b
*A + 1/3*x^3*d^3*b*B + 1/3*x^3*d^3*c*A + x^3*e*d^2*b*A + 1/2*x^2*d^3*b*A
```

giac [A] time = 0.16, size = 164, normalized size = 1.39

$$\frac{1}{7}Bcx^7e^3+\frac{1}{2}Bcdx^6e^2+\frac{3}{5}Bcd^2x^5e+\frac{1}{4}Bcd^3x^4+\frac{1}{6}Bbx^6e^3+\frac{1}{6}Acx^6e^3+\frac{3}{5}Bbdx^5e^2+\frac{3}{5}Acdx^5e^2+\frac{3}{4}Bbd^2x^4e+\frac{3}{4}Acd^2x^4e+\frac{1}{3}Bbd^3x^3+\frac{1}{3}Acd^3x^3+\frac{1}{5}Abx^5e^3+\frac{3}{4}Abdx^4e^2+Abd^2x^3e+\frac{1}{2}Abd^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7*e^3 + 1/2*B*c*d*x^6*e^2 + 3/5*B*c*d^2*x^5*e + 1/4*B*c*d^3*x^4 +
 1/6*B*b*x^6*e^3 + 1/6*A*c*x^6*e^3 + 3/5*B*b*d*x^5*e^2 + 3/5*A*c*d*x^5*e^2
+ 3/4*B*b*d^2*x^4*e + 3/4*A*c*d^2*x^4*e + 1/3*B*b*d^3*x^3 + 1/3*A*c*d^3*x^3
 + 1/5*A*b*x^5*e^3 + 3/4*A*b*d*x^4*e^2 + A*b*d^2*x^3*e + 1/2*A*b*d^3*x^2
```

maple [A] time = 0.05, size = 152, normalized size = 1.29

$$\frac{Bc\,e^3x^7}{7}+\frac{Ab\,d^3x^2}{2}+\frac{\left(Bb\,e^3+\left(A\,e^3+3Bd\,e^2\right)c\right)x^6}{6}+\frac{\left(\left(A\,e^3+3Bd\,e^2\right)b+\left(3Ad\,e^2+3B\,d^2e\right)c\right)x^5}{5}+\frac{\left(\left(3Ad\,e^2+3B\,d^2e\right)b+\left(3A\,d^2e+B\,d^3\right)c\right)x^4}{4}+\frac{\left(Ac\,d^3+\left(3A\,d^2e+B\,d^3\right)b\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x)
```

```
[Out] 1/7*B*e^3*c*x^7+1/6*((A*e^3+3*B*d*e^2)*c+B*e^3*b)*x^6+1/5*((3*A*d*e^2+3*B*d
^2*e)*c+(A*e^3+3*B*d*e^2)*b)*x^5+1/4*((3*A*d^2*e+B*d^3)*c+(3*A*d*e^2+3*B*d^
2*e)*b)*x^4+1/3*(A*d^3*c+(3*A*d^2*e+B*d^3)*b)*x^3+1/2*A*d^3*b*x^2
```

maxima [A] time = 0.61, size = 137, normalized size = 1.16

$$\frac{1}{7}Bce^3x^7+\frac{1}{2}Abd^3x^2+\frac{1}{6}\left(3\,Bcde^2+(Bb+Ac)e^3\right)x^6+\frac{1}{5}\left(3\,Bcd^2e+Abe^3+3\,(Bb+Ac)de^2\right)x^5+\frac{1}{4}\left(Bcd^3+3\,Abde^2+3\,(Bb+Ac)d^2e\right)x^4+\frac{1}{3}\left(3\,Abd^2e+(Bb+Ac)d^3\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*e^3*x^7 + 1/2*A*b*d^3*x^2 + 1/6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^6
 + 1/5*(3*B*c*d^2*e + A*b*e^3 + 3*(B*b + A*c)*d*e^2)*x^5 + 1/4*(B*c*d^3 + 3
*A*b*d*e^2 + 3*(B*b + A*c)*d^2*e)*x^4 + 1/3*(3*A*b*d^2*e + (B*b + A*c)*d^3)
*x^3
```

mupad [B] time = 1.37, size = 146, normalized size = 1.24

$$x^3\left(\frac{A\,c\,d^3}{3}+\frac{B\,b\,d^3}{3}+A\,b\,d^2\,e\right)+x^6\left(\frac{A\,c\,e^3}{6}+\frac{B\,b\,e^3}{6}+\frac{B\,c\,d\,e^2}{2}\right)+x^4\left(\frac{B\,c\,d^3}{4}+\frac{3\,A\,b\,d\,e^2}{4}+\frac{3\,A\,c\,d^2\,e}{4}+\frac{3\,B\,b\,d^2\,e}{4}\right)+x^5\left(\frac{A\,b\,e^3}{5}+\frac{3\,A\,c\,d\,e^2}{5}+\frac{3\,B\,b\,d\,e^2}{5}+\frac{3\,B\,c\,d^2\,e}{5}\right)+\frac{A\,b\,d^3\,x^2}{2}+\frac{B\,c\,e^3\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^3*((A*c*d^3)/3 + (B*b*d^3)/3 + A*b*d^2*e) + x^6*((A*c*e^3)/6 + (B*b*e^3)/
6 + (B*c*d*e^2)/2) + x^4*((B*c*d^3)/4 + (3*A*b*d*e^2)/4 + (3*A*c*d^2*e)/4 +
 (3*B*b*d^2*e)/4) + x^5*((A*b*e^3)/5 + (3*A*c*d*e^2)/5 + (3*B*b*d*e^2)/5 +
(3*B*c*d^2*e)/5) + (A*b*d^3*x^2)/2 + (B*c*e^3*x^7)/7
```

sympy [A] time = 0.09, size = 177, normalized size = 1.50

$$\frac{Abd^3x^2}{2}+\frac{Bce^3x^7}{7}+x^6\left(\frac{Ace^3}{6}+\frac{Bbe^3}{6}+\frac{Bcde^2}{2}\right)+x^5\left(\frac{Abe^3}{5}+\frac{3Acde^2}{5}+\frac{3Bbde^2}{5}+\frac{3Bcd^2e}{5}\right)+x^4\left(\frac{3Abde^2}{4}+\frac{3Acd^2e}{4}+\frac{3Bbd^2e}{4}+\frac{Bcd^3}{4}\right)+x^3\left(Abd^2e+\frac{Acd^3}{3}+\frac{Bbd^3}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x),x)
```

```
[Out] A*b*d**3*x**2/2 + B*c*e**3*x**7/7 + x**6*(A*c*e**3/6 + B*b*e**3/6 + B*c*d*e
**2/2) + x**5*(A*b*e**3/5 + 3*A*c*d*e**2/5 + 3*B*b*d*e**2/5 + 3*B*c*d**2*e/
5) + x**4*(3*A*b*d*e**2/4 + 3*A*c*d**2*e/4 + 3*B*b*d**2*e/4 + B*c*d**3/4) +
 x**3*(A*b*d**2*e + A*c*d**3/3 + B*b*d**3/3)
```

3.960 $\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right) dx$

Optimal. Leaf size=99

$$\frac{1}{5}ex^5(Ace+bBe+2Bcd)+\frac{1}{4}x^4(Ae(be+2cd)+Bd(2be+cd))+\frac{1}{3}dx^3(2Abe+Acd+bBd)+\frac{1}{2}Abd^2x^2+\frac{1}{6}Bce^2x^6$$

Rubi [A] time = 0.10, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{1}{5}ex^5(Ace+bBe+2Bcd)+\frac{1}{4}x^4(Ae(be+2cd)+Bd(2be+cd))+\frac{1}{3}dx^3(2Abe+Acd+bBd)+\frac{1}{2}Abd^2x^2+\frac{1}{6}Bce^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2),x]
```

```
[Out] (A*b*d^2*x^2)/2 + (d*(b*B*d + A*c*d + 2*A*b*e)*x^3)/3 + ((A*e*(2*c*d + b*e)
 + B*d*(c*d + 2*b*e))*x^4)/4 + (e*(2*B*c*d + b*B*e + A*c*e)*x^5)/5 + (B*c*e
^2*x^6)/6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)dx &= \int \left(Abd^2x+d(bBd+Acd+2Abe)x^2+(Ae(2cd+be)+Bd(cd+2be))x^3+\right.\\ &= \frac{1}{2}Abd^2x^2+\frac{1}{3}d(bBd+Acd+2Abe)x^3+\frac{1}{4}(Ae(2cd+be)+Bd(cd+2be))x^4\end{aligned}$$

Mathematica [A] time = 0.04, size = 91, normalized size = 0.92

$$\frac{1}{60}x^2\left(12ex^3(Ace+bBe+2Bcd)+15x^2(Ae(be+2cd)+Bd(2be+cd))+20dx(2Abe+Acd+bBd)+30Abd^2+10Bce^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2),x]
```

```
[Out] (x^2*(30*A*b*d^2 + 20*d*(b*B*d + A*c*d + 2*A*b*e)*x + 15*(A*e*(2*c*d + b*e)
 + B*d*(c*d + 2*b*e))*x^2 + 12*e*(2*B*c*d + b*B*e + A*c*e)*x^3 + 10*B*c*e^2
*x^4))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2), x]
```

fricas [A] time = 0.36, size = 117, normalized size = 1.18

$$\frac{1}{6}x^6e^2cB + \frac{2}{5}x^5edcB + \frac{1}{5}x^5e^2bB + \frac{1}{5}x^5e^2cA + \frac{1}{4}x^4d^2cB + \frac{1}{2}x^4edbB + \frac{1}{2}x^4edcA + \frac{1}{4}x^4e^2bA + \frac{1}{3}x^3d^2bB + \frac{1}{3}x^3d^2cA + \frac{2}{3}x^3edbA + \frac{1}{2}x^2d^2bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c*B + 2/5*x^5*e*d*c*B + 1/5*x^5*e^2*b*B + 1/5*x^5*e^2*c*A + 1/4
*x^4*d^2*c*B + 1/2*x^4*e*d*b*B + 1/2*x^4*e*d*c*A + 1/4*x^4*e^2*b*A + 1/3*x^
3*d^2*b*B + 1/3*x^3*d^2*c*A + 2/3*x^3*e*d*b*A + 1/2*x^2*d^2*b*A
```

giac [A] time = 0.16, size = 117, normalized size = 1.18

$$\frac{1}{6}Bcx^6e^2 + \frac{2}{5}Bcdx^5e + \frac{1}{4}Bcd^2x^4 + \frac{1}{5}Bbx^5e^2 + \frac{1}{5}Acx^5e^2 + \frac{1}{2}Bbdx^4e + \frac{1}{2}Acdx^4e + \frac{1}{3}Bbd^2x^3 + \frac{1}{3}Acd^2x^3 + \frac{1}{4}Abx^4e^2 + \frac{2}{3}Abdx^3e + \frac{1}{2}Abd^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6*e^2 + 2/5*B*c*d*x^5*e + 1/4*B*c*d^2*x^4 + 1/5*B*b*x^5*e^2 + 1/5
*A*c*x^5*e^2 + 1/2*B*b*d*x^4*e + 1/2*A*c*d*x^4*e + 1/3*B*b*d^2*x^3 + 1/3*A*
c*d^2*x^3 + 1/4*A*b*x^4*e^2 + 2/3*A*b*d*x^3*e + 1/2*A*b*d^2*x^2
```

maple [A] time = 0.05, size = 104, normalized size = 1.05

$$\frac{Bce^2x^6}{6} + \frac{Abd^2x^2}{2} + \frac{\left(Bbe^2 + \left(Ae^2 + 2Bde\right)c\right)x^5}{5} + \frac{\left(\left(Ae^2 + 2Bde\right)b + \left(2Ade + Bd^2\right)c\right)x^4}{4} + \frac{\left(Acd^2 + \left(2Ade + Bd^2\right)b\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x)
```

```
[Out] 1/6*B*c*e^2*x^6+1/5*((A*e^2+2*B*d*e)*c+B*e^2*b)*x^5+1/4*((2*A*d*e+B*d^2)*c+
(A*e^2+2*B*d*e)*b)*x^4+1/3*(A*c*d^2+(2*A*d*e+B*d^2)*b)*x^3+1/2*A*b*d^2*x^2
```

maxima [A] time = 0.52, size = 96, normalized size = 0.97

$$\frac{1}{6}Bce^2x^6 + \frac{1}{2}Abd^2x^2 + \frac{1}{5}\left(2Bcde + (Bb + Ac)e^2\right)x^5 + \frac{1}{4}\left(Bcd^2 + Abe^2 + 2(Bb + Ac)de\right)x^4 + \frac{1}{3}\left(2Abde + (Bb + Ac)d^2\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*e^2*x^6 + 1/2*A*b*d^2*x^2 + 1/5*(2*B*c*d*e + (B*b + A*c)*e^2)*x^5 +
 1/4*(B*c*d^2 + A*b*e^2 + 2*(B*b + A*c)*d*e)*x^4 + 1/3*(2*A*b*d*e + (B*b +
A*c)*d^2)*x^3
```

mupad [B] time = 0.05, size = 102, normalized size = 1.03

$$x^4\left(\frac{Abe^2}{4} + \frac{Bcd^2}{4} + \frac{Acde}{2} + \frac{Bbde}{2}\right) + x^3\left(\frac{Acd^2}{3} + \frac{Bbd^2}{3} + \frac{2Abde}{3}\right) + x^5\left(\frac{Ace^2}{5} + \frac{Bbe^2}{5} + \frac{2Bcde}{5}\right) + \frac{Abd^2x^2}{2} + \frac{Bce^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^4*((A*b*e^2)/4 + (B*c*d^2)/4 + (A*c*d*e)/2 + (B*b*d*e)/2) + x^3*((A*c*d^2
)/3 + (B*b*d^2)/3 + (2*A*b*d*e)/3) + x^5*((A*c*e^2)/5 + (B*b*e^2)/5 + (2*B*
c*d*e)/5) + (A*b*d^2*x^2)/2 + (B*c*e^2*x^6)/6
```

sympy [A] time = 0.08, size = 121, normalized size = 1.22

$$\frac{Abd^2x^2}{2} + \frac{Bce^2x^6}{6} + x^5\left(\frac{Ace^2}{5} + \frac{Bbe^2}{5} + \frac{2Bcde}{5}\right) + x^4\left(\frac{Abe^2}{4} + \frac{Acde}{2} + \frac{Bbde}{2} + \frac{Bcd^2}{4}\right) + x^3\left(\frac{2Abde}{3} + \frac{Acd^2}{3} + \frac{Bbd^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x),x)
```

```
[Out] A*b*d**2*x**2/2 + B*c*e**2*x**6/6 + x**5*(A*c*e**2/5 + B*b*e**2/5 + 2*B*c*d
*e/5) + x**4*(A*b*e**2/4 + A*c*d*e/2 + B*b*d*e/2 + B*c*d**2/4) + x**3*(2*A*
b*d*e/3 + A*c*d**2/3 + B*b*d**2/3)
```

3.961 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=61

$$\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{3}x^3(Abe+Acd+bBd)+\frac{1}{2}Abdx^2+\frac{1}{5}Bcex^5$$

Rubi [A] time = 0.06, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {771}

$$\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{3}x^3(Abe+Acd+bBd)+\frac{1}{2}Abdx^2+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*d*x^2)/2 + ((b*B*d + A*c*d + A*b*e)*x^3)/3 + ((B*c*d + b*B*e + A*c*e)*
x^4)/4 + (B*c*e*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(bx+cx^2\right)\,dx &= \int \left(Abdx+(bBd+Acd+Abe)x^2+(Bcd+bBe+Ace)x^3+Bcex^4\right)\,dx\\ &= \frac{1}{2}Abdx^2+\frac{1}{3}(bBd+Acd+Abe)x^3+\frac{1}{4}(Bcd+bBe+Ace)x^4+\frac{1}{5}Bcex^5\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.90

$$\frac{1}{60}x^2\left(15x^2(Ace+bBe+Bcd)+20x(Abe+Acd+bBd)+30Abd+12Bcex^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2),x]
```

```
[Out] (x^2*(30*A*b*d + 20*(b*B*d + A*c*d + A*b*e)*x + 15*(B*c*d + b*B*e + A*c*e)*
x^2 + 12*B*c*e*x^3))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2), x]
```

fricas [A] time = 0.36, size = 65, normalized size = 1.07

$$\frac{1}{5}x^5ecB+\frac{1}{4}x^4dcB+\frac{1}{4}x^4ebB+\frac{1}{4}x^4ecA+\frac{1}{3}x^3dbB+\frac{1}{3}x^3dcA+\frac{1}{3}x^3ebA+\frac{1}{2}x^2dbA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c*B + 1/4*x^4*d*c*B + 1/4*x^4*e*b*B + 1/4*x^4*e*c*A + 1/3*x^3*d*b
*B + 1/3*x^3*d*c*A + 1/3*x^3*e*b*A + 1/2*x^2*d*b*A
```

giac [A] time = 0.15, size = 69, normalized size = 1.13

$$\frac{1}{5}\,Bcx^5e + \frac{1}{4}\,Bcdx^4 + \frac{1}{4}\,Bbx^4e + \frac{1}{4}\,Acx^4e + \frac{1}{3}\,Bbdx^3 + \frac{1}{3}\,Acdx^3 + \frac{1}{3}\,Abx^3e + \frac{1}{2}\,Abdx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5*e + 1/4*B*c*d*x^4 + 1/4*B*b*x^4*e + 1/4*A*c*x^4*e + 1/3*B*b*d*x
^3 + 1/3*A*c*d*x^3 + 1/3*A*b*x^3*e + 1/2*A*b*d*x^2
```

maple [A] time = 0.04, size = 56, normalized size = 0.92

$$\frac{Bce\,x^5}{5} + \frac{Abd\,x^2}{2} + \frac{(Bbe + (Ae + Bd)\,c)\,x^4}{4} + \frac{(Acd + (Ae + Bd)\,b)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x),x)
```

```
[Out] 1/5*B*c*e*x^5+1/4*(c*(A*e+B*d)+b*B*e)*x^4+1/3*(A*c*d+b*(A*e+B*d))*x^3+1/2*A
*b*d*x^2
```

maxima [A] time = 0.56, size = 55, normalized size = 0.90

$$\frac{1}{5}\,Bcex^5 + \frac{1}{2}\,Abdx^2 + \frac{1}{4}\,(Bcd + (Bb + Ac)e)x^4 + \frac{1}{3}\,(Abe + (Bb + Ac)d)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*e*x^5 + 1/2*A*b*d*x^2 + 1/4*(B*c*d + (B*b + A*c)*e)*x^4 + 1/3*(A*b*
e + (B*b + A*c)*d)*x^3
```

mupad [B] time = 1.35, size = 57, normalized size = 0.93

$$\frac{B\,c\,e\,x^5}{5} + \left(\frac{A\,c\,e}{4} + \frac{B\,b\,e}{4} + \frac{B\,c\,d}{4}\right)\,x^4 + \left(\frac{A\,b\,e}{3} + \frac{A\,c\,d}{3} + \frac{B\,b\,d}{3}\right)\,x^3 + \frac{A\,b\,d\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((A*b*e)/3 + (A*c*d)/3 + (B*b*d)/3) + x^4*((A*c*e)/4 + (B*b*e)/4 + (B*c
*d)/4) + (A*b*d*x^2)/2 + (B*c*e*x^5)/5
```

sympy [A] time = 0.07, size = 66, normalized size = 1.08

$$\frac{Abdx^2}{2} + \frac{Bcex^5}{5} + x^4\left(\frac{Ace}{4} + \frac{Bbe}{4} + \frac{Bcd}{4}\right) + x^3\left(\frac{Abe}{3} + \frac{Acd}{3} + \frac{Bbd}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x),x)
```

```
[Out] A*b*d*x**2/2 + B*c*e*x**5/5 + x**4*(A*c*e/4 + B*b*e/4 + B*c*d/4) + x**3*(A*
b*e/3 + A*c*d/3 + B*b*d/3)
```

3.962 $\int (A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {631}

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= \frac{1}{2}Abx^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.00, size = 29, normalized size = 0.88

$$\frac{1}{12}x^2(A(6b+4cx)+Bx(4b+3cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (x^2*(B*x*(4*b + 3*c*x) + A*(6*b + 4*c*x)))/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2), x]
```

fricas [A] time = 0.36, size = 29, normalized size = 0.88

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{4}\,Bcx^4 + \frac{1}{3}\,Bbx^3 + \frac{1}{3}\,Acx^3 + \frac{1}{2}\,Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*A*b*x^2
```

maple [A] time = 0.04, size = 28, normalized size = 0.85

$$\frac{Bc\,x^4}{4} + \frac{Ab\,x^2}{2} + \frac{(Ac + bB)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/4*B*c*x^4+1/2*A*b*x^2+1/3*(A*c+B*b)*x^3
```

maxima [A] time = 0.58, size = 27, normalized size = 0.82

$$\frac{1}{4}\,Bcx^4 + \frac{1}{2}\,Abx^2 + \frac{1}{3}\,(Bb + Ac)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/2*A*b*x^2 + 1/3*(B*b + A*c)*x^3
```

mupad [B] time = 1.34, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^4}{4} + \left(\frac{A\,c}{3} + \frac{B\,b}{3}\right)\,x^3 + \frac{A\,b\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^3*((A*c)/3 + (B*b)/3) + (A*b*x^2)/2 + (B*c*x^4)/4
```

sympy [A] time = 0.07, size = 29, normalized size = 0.88

$$\frac{Abx^2}{2} + \frac{Bcx^4}{4} + x^3\left(\frac{Ac}{3} + \frac{Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**2/2 + B*c*x**4/4 + x**3*(A*c/3 + B*b/3)
```

3.963 $\int \frac{(A+Bx)(bx+cx^2)}{d+ex}\,dx$

Optimal. Leaf size=87

$$-\frac{d(Bd-Ae)(cd-be)\log(d+ex)}{e^4}+\frac{x(Bd-Ae)(cd-be)}{e^3}-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{Bcx^3}{3e}$$

Rubi [A] time = 0.10, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{x(Bd-Ae)(cd-be)}{e^3}-\frac{d(Bd-Ae)(cd-be)\log(d+ex)}{e^4}+\frac{Bcx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((B*d - A*e)*(c*d - b*e)*x)/e^3 - ((B*c*d - b*B*e - A*c*e)*x^2)/(2*e^2) + (
B*c*x^3)/(3*e) - (d*(B*d - A*e)*(c*d - b*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{(-Bd+Ae)(-cd+be)}{e^3}+\frac{(-Bcd+bBe+Ace)x}{e^2}+\frac{Bcx^2}{e}-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)}\right)dx\\ &= \frac{(Bd-Ae)(cd-be)x}{e^3}-\frac{(Bcd-bBe-Ace)x^2}{2e^2}+\frac{Bcx^3}{3e}-\frac{d(Bd-Ae)(cd-be)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 88, normalized size = 1.01

$$\frac{ex\left(3Ae(2be-2cd+cex)+3bBe(ex-2d)+Bc\left(6d^2-3dex+2e^2x^2\right)\right)-6d(Bd-Ae)(cd-be)\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(3*b*B*e*(-2*d + e*x) + 3*A*e*(-2*c*d + 2*b*e + c*e*x) + B*c*(6*d^2 -
3*d*e*x + 2*e^2*x^2)) - 6*d*(B*d - A*e)*(c*d - b*e)*Log[d + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x), x]
```

fricas [A] time = 0.40, size = 106, normalized size = 1.22

$$\frac{2\,Bce^{3}x^{3} - 3\,\left(Bcde^{2} - (Bb + Ac)e^{3}\right)x^{2} + 6\,\left(Bcd^{2}e + Abe^{3} - (Bb + Ac)de^{2}\right)x - 6\,\left(Bcd^{3} + Abde^{2} - (Bb + Ac)d^{2}e\right)\log\left(ex + d\right)}{6\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c*e^3*x^3 - 3*(B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e + A
*b*e^3 - (B*b + A*c)*d*e^2)*x - 6*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)
*log(e*x + d))/e^4
```

giac [A] time = 0.16, size = 117, normalized size = 1.34

$$-\left(Bcd^{3} - Bbd^{2}e - Acd^{2}e + Abde^{2}\right)e^{(-4)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,Bcx^{3}e^{2} - 3\,Bcdx^{2}e + 6\,Bcd^{2}x + 3\,Bbx^{2}e^{2} + 3\,Acx^{2}e^{2} - 6\,Bbdxe - 6\,Acdxe + 6\,Abxe^{2}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c*d^3 - B*b*d^2*e - A*c*d^2*e + A*b*d*e^2)*e^(-4)*log(abs(x*e + d)) + 1
/6*(2*B*c*x^3*e^2 - 3*B*c*d*x^2*e + 6*B*c*d^2*x + 3*B*b*x^2*e^2 + 3*A*c*x^2
*e^2 - 6*B*b*d*x*e - 6*A*c*d*x*e + 6*A*b*x*e^2)*e^(-3)
```

maple [A] time = 0.04, size = 138, normalized size = 1.59

$$\frac{Bc\,x^{3}}{3e} + \frac{Ac\,x^{2}}{2e} + \frac{Bb\,x^{2}}{2e} - \frac{Bcd\,x^{2}}{2e^{2}} - \frac{Abd\ln\left(ex + d\right)}{e^{2}} + \frac{Abx}{e} + \frac{Ac\,d^{2}\ln\left(ex + d\right)}{e^{3}} - \frac{Acdx}{e^{2}} + \frac{Bb\,d^{2}\ln\left(ex + d\right)}{e^{3}} - \frac{Bbdx}{e^{2}} - \frac{Bc\,d^{3}\ln\left(ex + d\right)}{e^{4}} + \frac{Bc\,d^{2}x}{e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d),x)
```

```
[Out] 1/3*B*c*x^3/e+1/2/e*A*x^2*c+1/2/e*B*x^2*b-1/2/e^2*B*x^2*c*d+1/e*A*x*b-1/e^2
*A*x*c*d-1/e^2*B*x*b*d+1/e^3*B*x*c*d^2-d/e^2*ln(e*x+d)*A*b+d^2/e^3*ln(e*x+d
)*A*c+d^2/e^3*ln(e*x+d)*B*b-d^3/e^4*ln(e*x+d)*B*c
```

maxima [A] time = 0.54, size = 105, normalized size = 1.21

$$\frac{2\,Bce^{2}x^{3} - 3\,\left(Bcde - (Bb + Ac)e^{2}\right)x^{2} + 6\,\left(Bcd^{2} + Abe^{2} - (Bb + Ac)de\right)x}{6\,e^{3}} - \frac{\left(Bcd^{3} + Abde^{2} - (Bb + Ac)d^{2}e\right)\log\left(ex + d\right)}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*B*c*e^2*x^3 - 3*(B*c*d*e - (B*b + A*c)*e^2)*x^2 + 6*(B*c*d^2 + A*b*e
^2 - (B*b + A*c)*d*e)*x)/e^3 - (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*lo
g(e*x + d)/e^4
```

mupad [B] time = 0.08, size = 113, normalized size = 1.30

$$x^{2}\left(\frac{A\,c + B\,b}{2\,e} - \frac{B\,c\,d}{2\,e^{2}}\right) - x\left(\frac{d\left(\frac{A\,c+B\,b}{e} - \frac{B\,c\,d}{e^{2}}\right)}{e} - \frac{A\,b}{e}\right) - \frac{\ln\left(d + e\,x\right)\left(B\,c\,d^{3} + A\,b\,d\,e^{2} - A\,c\,d^{2}\,e - B\,b\,d^{2}\,e\right)}{e^{4}} + \frac{B\,c\,x^{3}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x),x)
```

```
[Out] x^2*((A*c + B*b)/(2*e) - (B*c*d)/(2*e^2)) - x*((d*((A*c + B*b)/e - (B*c*d)/
e^2))/e - (A*b)/e) - (log(d + e*x)*(B*c*d^3 + A*b*d*e^2 - A*c*d^2*e - B*b*d
^2*e))/e^4 + (B*c*x^3)/(3*e)
```

sympy [A] time = 0.34, size = 95, normalized size = 1.09

$$\frac{Bcx^3}{3e}+\frac{d(-Ae+Bd)(be-cd)\log(d+ex)}{e^4}+x^2\left(\frac{Ac}{2e}+\frac{Bb}{2e}-\frac{Bcd}{2e^2}\right)+x\left(\frac{Ab}{e}-\frac{Acd}{e^2}-\frac{Bbd}{e^2}+\frac{Bcd^2}{e^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d),x)
```

```
[Out] B*c*x**3/(3*e) + d*(-A*e + B*d)*(b*e - c*d)*log(d + e*x)/e**4 + x**2*(A*c/(
2*e) + B*b/(2*e) - B*c*d/(2*e**2)) + x*(A*b/e - A*c*d/e**2 - B*b*d/e**2 + B
*c*d**2/e**3)
```

3.964 $\int \frac{(A+Bx)(bx+cx^2)}{(d+ex)^2} dx$

Optimal. Leaf size=99

$$\frac{d(Bd-Ae)(cd-be)}{e^4(d+ex)}+\frac{\log(d+ex)(Bd(3cd-2be)-Ae(2cd-be))}{e^4}-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{Bcx^2}{2e^2}$$

Rubi [A] time = 0.11, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{d(Bd-Ae)(cd-be)}{e^4(d+ex)}+\frac{\log(d+ex)(Bd(3cd-2be)-Ae(2cd-be))}{e^4}+\frac{Bcx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -(((2*B*c*d - b*B*e - A*c*e)*x)/e^3) + (B*c*x^2)/(2*e^2) + (d*(B*d - A*e)*(
c*d - b*e))/(e^4*(d + e*x)) + ((B*d*(3*c*d - 2*b*e) - A*e*(2*c*d - b*e))*Lo
g[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(bx+cx^2)}{(d+ex)^2} dx = \int \left(\frac{-2Bcd+bBe+Ace}{e^3}+\frac{Bcx}{e^2}-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^2}+\frac{Bd(3cd-2be)-Ae(2cd-\right.$$
$$= -\frac{(2Bcd-bBe-Ace)x}{e^3}+\frac{Bcx^2}{2e^2}+\frac{d(Bd-Ae)(cd-be)}{e^4(d+ex)}+\frac{(Bd(3cd-2be)-Ae(2cd-}{e^4}$$

Mathematica [A] time = 0.08, size = 93, normalized size = 0.94

$$\frac{2ex(Ace+bBe-2Bcd)+\frac{2d(Bd-Ae)(cd-be)}{d+ex}+2\log(d+ex)(Ae(be-2cd)+Bd(3cd-2be))+Bce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*e*(-2*B*c*d + b*B*e + A*c*e)*x + B*c*e^2*x^2 + (2*d*(B*d - A*e)*(c*d - b
*e))/(d + e*x) + 2*(B*d*(3*c*d - 2*b*e) + A*e*(-2*c*d + b*e))*Log[d + e*x])
/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(bx+cx^2)}{(d+ex)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^2, x]
```

fricas [A] time = 0.39, size = 170, normalized size = 1.72

$$\frac{Bce^3x^3 + 2\,Bcd^3 + 2\,Abde^2 - 2\,(Bb + Ac)d^2e - \left(3\,Bcde^2 - 2\,(Bb + Ac)e^3\right)x^2 - 2\left(2\,Bcd^2e - (Bb + Ac)de^2\right)x + 2\left(3\,Bcd^3 + Abde^2 - 2\,(Bb + Ac)d^2e + \left(3\,Bcd^2e + Abe^3 - 2\,(Bb + Ac)de^2\right)x\right)\log\left(ex + d\right)}{2\left(e^5x + de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*e^3*x^3 + 2*B*c*d^3 + 2*A*b*d*e^2 - 2*(B*b + A*c)*d^2*e - (3*B*c*d
*e^2 - 2*(B*b + A*c)*e^3)*x^2 - 2*(2*B*c*d^2*e - (B*b + A*c)*d*e^2)*x + 2*(
3*B*c*d^3 + A*b*d*e^2 - 2*(B*b + A*c)*d^2*e + (3*B*c*d^2*e + A*b*e^3 - 2*(B
*b + A*c)*d*e^2)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [A] time = 0.16, size = 167, normalized size = 1.69

$$\frac{1}{2}\left(Bc - \frac{2\left(3\,Bcde - Bbe^2 - Ace^2\right)e^{(-1)}}{xe + d}\right)(xe + d)^2e^{(-4)} - \left(3\,Bcd^2 - 2\,Bbde - 2\,Acde + Abe^2\right)e^{(-4)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{Bcd^3e^2}{xe + d} - \frac{Bbd^2e^3}{xe + d} - \frac{Acd^2e^3}{xe + d} + \frac{Abde^4}{xe + d}\right)e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*c - 2*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*
e^(-4) - (3*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e + A*b*e^2)*e^(-4)*log(abs(x*e +
 d)*e^(-1)/(x*e + d)^2) + (B*c*d^3*e^2/(x*e + d) - B*b*d^2*e^3/(x*e + d) -
A*c*d^2*e^3/(x*e + d) + A*b*d*e^4/(x*e + d))*e^(-6)
```

maple [A] time = 0.06, size = 155, normalized size = 1.57

$$\frac{Bc\,x^2}{2e^2} + \frac{Abd}{(ex + d)\,e^2} + \frac{Ab\ln\left(ex + d\right)}{e^2} - \frac{Ac\,d^2}{(ex + d)\,e^3} - \frac{2Acd\ln\left(ex + d\right)}{e^3} + \frac{Acx}{e^2} - \frac{Bb\,d^2}{(ex + d)\,e^3} - \frac{2Bbd\ln\left(ex + d\right)}{e^3} + \frac{Bbx}{e^2} + \frac{Bc\,d^3}{(ex + d)\,e^4} + \frac{3Bc\,d^2\ln\left(ex + d\right)}{e^4} - \frac{2Bcdx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*c*x^2/e^2+1/e^2*A*c*x+1/e^2*B*b*x-2/e^3*B*c*d*x+d/e^2/(e*x+d)*A*b-d^2
/e^3/(e*x+d)*A*c-d^2/e^3/(e*x+d)*B*b+d^3/e^4/(e*x+d)*B*c+1/e^2*ln(e*x+d)*A*
b-2/e^3*ln(e*x+d)*A*c*d-2/e^3*ln(e*x+d)*B*b*d+3/e^4*ln(e*x+d)*B*c*d^2
```

maxima [A] time = 0.61, size = 109, normalized size = 1.10

$$\frac{Bcd^3 + Abde^2 - (Bb + Ac)d^2e}{e^5x + de^4} + \frac{Bcex^2 - 2\,(2\,Bcd - (Bb + Ac)e)x}{2\,e^3} + \frac{\left(3\,Bcd^2 + Abe^2 - 2\,(Bb + Ac)de\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)/(e^5*x + d*e^4) + 1/2*(B*c*e*x^2
- 2*(2*B*c*d - (B*b + A*c)*e)*x)/e^3 + (3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)
*d*e)*log(e*x + d)/e^4
```

mupad [B] time = 1.39, size = 116, normalized size = 1.17

$$x\left(\frac{A\,c+B\,b}{e^2}-\frac{2\,B\,c\,d}{e^3}\right)+\frac{\ln\left(d+e\,x\right)\,\left(A\,b\,e^2+3\,B\,c\,d^2-2\,A\,c\,d\,e-2\,B\,b\,d\,e\right)}{e^4}+\frac{B\,c\,d^3+A\,b\,d\,e^2-A\,c\,d^2\,e-B\,b\,d^2\,e}{e\,\left(x\,e^4+d\,e^3\right)}+\frac{B\,c\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*c + B*b)/e^2 - (2*B*c*d)/e^3) + (log(d + e*x)*(A*b*e^2 + 3*B*c*d^2 -
2*A*c*d*e - 2*B*b*d*e))/e^4 + (B*c*d^3 + A*b*d*e^2 - A*c*d^2*e - B*b*d^2*e)
/(e*(d*e^3 + e^4*x)) + (B*c*x^2)/(2*e^2)
```

sympy [A] time = 0.66, size = 121, normalized size = 1.22

$$\frac{Bcx^2}{2e^2} + x\left(\frac{Ac}{e^2} + \frac{Bb}{e^2} - \frac{2Bcd}{e^3}\right) + \frac{Abde^2 - Acd^2e - Bbd^2e + Bcd^3}{de^4 + e^5x} - \frac{\left(-Abe^2 + 2Acde + 2Bbde - 3Bcd^2\right)\log\left(d + ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**2,x)
```

```
[Out] B*c*x**2/(2*e**2) + x*(A*c/e**2 + B*b/e**2 - 2*B*c*d/e**3) + (A*b*d*e**2 -
A*c*d**2*e - B*b*d**2*e + B*c*d**3)/(d*e**4 + e**5*x) - (-A*b*e**2 + 2*A*c*
d*e + 2*B*b*d*e - 3*B*c*d**2)*log(d + e*x)/e**4
```

3.965 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^3} dx$

Optimal. Leaf size=104

$$\frac{d(Bd-Ae)(cd-be)}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^4(d+ex)}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Rubi [A] time = 0.11, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{d(Bd-Ae)(cd-be)}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^4(d+ex)}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + (d*(B*d - A*e)*(c*d - b*e))/(2*e^4*(d + e*x)^2) - (B*d*(3*c*d
 - 2*b*e) - A*e*(2*c*d - b*e))/(e^4*(d + e*x)) - ((3*B*c*d - b*B*e - A*c*e)
*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{Bc}{e^3}-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^3}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^2}+\frac{-3Bcd+bBe+}{e^3(d+ex)}\right. \\ &= \frac{Bcx}{e^3}+\frac{d(Bd-Ae)(cd-be)}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^4(d+ex)}-\frac{(3Bcd-bBe-Ac}{e^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 96, normalized size = 0.92

$$\frac{\frac{-2Abe^2+4Acde+4bBde-6Bcd^2}{d+ex}+\frac{d(Bd-Ae)(cd-be)}{(d+ex)^2}+2\log(d+ex)(Ace+bBe-3Bcd)+2Bcex}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*B*c*e*x + (d*(B*d - A*e)*(c*d - b*e))/(d + e*x)^2 + (-6*B*c*d^2 + 4*b*B*
d*e + 4*A*c*d*e - 2*A*b*e^2)/(d + e*x) + 2*(-3*B*c*d + b*B*e + A*c*e)*Log[d
 + e*x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^3, x]
```

fricas [A] time = 0.40, size = 186, normalized size = 1.79

$$\frac{2\,Bce^{3}x^{3} + 4\,Bcde^{2}x^{2} - 5\,Bcd^{3} - Abde^{2} + 3\,(Bb + Ac)d^{2}e - 2\left(2\,Bcd^{2}e + Abe^{3} - 2\,(Bb + Ac)de^{2}\right)x - 2\left(3\,Bcd^{3} - (Bb + Ac)d^{2}e + \left(3\,Bcde^{2} - (Bb + Ac)e^{3}\right)x^{2} + 2\left(3\,Bcd^{2}e - (Bb + Ac)de^{2}\right)x\right)\log\left(ex + d\right)}{2\left(e^{6}x^{2} + 2\,de^{5}x + d^{2}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*e^3*x^3 + 4*B*c*d*e^2*x^2 - 5*B*c*d^3 - A*b*d*e^2 + 3*(B*b + A*c
)*d^2*e - 2*(2*B*c*d^2*e + A*b*e^3 - 2*(B*b + A*c)*d*e^2)*x - 2*(3*B*c*d^3
- (B*b + A*c)*d^2*e + (3*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 2*(3*B*c*d^2*e
- (B*b + A*c)*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.16, size = 113, normalized size = 1.09

$$Bcxe^{(-3)} - (3\,Bcd - Bbe - Ace)e^{(-4)}\log\left(|xe + d|\right) - \frac{\left(5\,Bcd^{3} - 3\,Bbd^{2}e - 3\,Acd^{2}e + Abde^{2} + 2\left(3\,Bcd^{2}e - 2\,Bbde^{2} - 2\,Acde^{2} + Abe^{3}\right)x\right)e^{(-4)}}{2\,(xe + d)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*c*x*e^(-3) - (3*B*c*d - B*b*e - A*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*
B*c*d^3 - 3*B*b*d^2*e - 3*A*c*d^2*e + A*b*d*e^2 + 2*(3*B*c*d^2*e - 2*B*b*d*
e^2 - 2*A*c*d*e^2 + A*b*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [A] time = 0.06, size = 174, normalized size = 1.67

$$\frac{Abd}{2\,(ex+d)^{2}e^{2}} - \frac{Ac\,d^{2}}{2\,(ex+d)^{2}e^{3}} - \frac{Bb\,d^{2}}{2\,(ex+d)^{2}e^{3}} + \frac{Bc\,d^{3}}{2\,(ex+d)^{2}e^{4}} - \frac{Ab}{(ex+d)\,e^{2}} + \frac{2Acd}{(ex+d)\,e^{3}} + \frac{Ac\ln\left(ex+d\right)}{e^{3}} + \frac{2Bbd}{(ex+d)\,e^{3}} + \frac{Bb\ln\left(ex+d\right)}{e^{3}} - \frac{3Bc\,d^{2}}{(ex+d)\,e^{4}} - \frac{3Bcd\ln\left(ex+d\right)}{e^{4}} + \frac{Bcx}{e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x)
```

```
[Out] B*c*x/e^3-1/e^2/(e*x+d)*A*b+2/e^3/(e*x+d)*A*c*d+2/e^3/(e*x+d)*B*b*d-3/e^4/(
e*x+d)*B*c*d^2+1/2*d/e^2/(e*x+d)^2*A*b-1/2*d^2/e^3/(e*x+d)^2*A*c-1/2*d^2/e^
3/(e*x+d)^2*B*b+1/2*d^3/e^4/(e*x+d)^2*B*c+1/e^3*ln(e*x+d)*A*c+1/e^3*ln(e*x+
d)*B*b-3/e^4*ln(e*x+d)*B*c*d
```

maxima [A] time = 0.49, size = 120, normalized size = 1.15

$$-\frac{5\,Bcd^{3} + Abde^{2} - 3\,(Bb + Ac)d^{2}e + 2\left(3\,Bcd^{2}e + Abe^{3} - 2\,(Bb + Ac)de^{2}\right)x}{2\left(e^{6}x^{2} + 2\,de^{5}x + d^{2}e^{4}\right)} + \frac{Bcx}{e^{3}} - \frac{(3\,Bcd - (Bb + Ac)e)\log\left(ex + d\right)}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*B*c*d^3 + A*b*d*e^2 - 3*(B*b + A*c)*d^2*e + 2*(3*B*c*d^2*e + A*b*e^
3 - 2*(B*b + A*c)*d*e^2)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) + B*c*x/e^3 - (
3*B*c*d - (B*b + A*c)*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.11, size = 123, normalized size = 1.18

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^4}-\frac{x\,\left(A\,b\,e^2+3\,B\,c\,d^2-2\,A\,c\,d\,e-2\,B\,b\,d\,e\right)+\frac{5\,B\,c\,d^3+A\,b\,d\,e^2-3\,A\,c\,d^2\,e-3\,B\,b\,d^2\,e}{2\,e}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}+\frac{B\,c\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^3,x)
```

[Out] (log(d + e*x)*(A*c*e + B*b*e - 3*B*c*d))/e^4 - (x*(A*b*e^2 + 3*B*c*d^2 - 2*A*c*d*e - 2*B*b*d*e) + (5*B*c*d^3 + A*b*d*e^2 - 3*A*c*d^2*e - 3*B*b*d^2*e)/(2*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (B*c*x)/e^3

sympy [A] time = 1.49, size = 138, normalized size = 1.33

$$\frac{Bcx}{e^3} + \frac{-Abde^2 + 3Acd^2e + 3Bbd^2e - 5Bcd^3 + x\left(-2Abe^3 + 4Acde^2 + 4Bbde^2 - 6Bcd^2e\right)}{2d^2e^4 + 4de^5x + 2e^6x^2} + \frac{(Ace + Bbe - 3Bcd)\log(d + ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**3,x)

[Out] B*c*x/e**3 + (-A*b*d*e**2 + 3*A*c*d**2*e + 3*B*b*d**2*e - 5*B*c*d**3 + x*(-2*A*b*e**3 + 4*A*c*d*e**2 + 4*B*b*d*e**2 - 6*B*c*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + (A*c*e + B*b*e - 3*B*c*d)*log(d + e*x)/e**4

3.966 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=111

$$\frac{d(Bd-Ae)(cd-be)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{Bc\log(d+ex)}{e^4}$$

Rubi [A] time = 0.11, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{d(Bd-Ae)(cd-be)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{Bc\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e))/(3*e^4*(d + e*x)^3) - (B*d*(3*c*d - 2*b*e) - A*
e*(2*c*d - b*e))/(2*e^4*(d + e*x)^2) + (3*B*c*d - b*B*e - A*c*e)/(e^4*(d +
e*x)) + (B*c*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^4}\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^4}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^3}+\frac{-3Bcd+bBe+Ace}{e^3(d+ex)^2}+\right.\\ &= \frac{d(Bd-Ae)(cd-be)}{3e^4(d+ex)^3}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{3Bcd-bBe-Ace}{e^4(d+ex)}+\frac{Bc\log}{e}\end{aligned}$$

Mathematica [A] time = 0.05, size = 112, normalized size = 1.01

$$\frac{-Ae\left(be(d+3ex)+2c\left(d^2+3dex+3e^2x^2\right)\right)+B\left(cd\left(11d^2+27dex+18e^2x^2\right)-2be\left(d^2+3dex+3e^2x^2\right)\right)+6Bc(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (-(A*e*(b*e*(d + 3*e*x) + 2*c*(d^2 + 3*d*e*x + 3*e^2*x^2))) + B*(-2*b*e*(d^
2 + 3*d*e*x + 3*e^2*x^2) + c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 6*B*c*(d
 + e*x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^4, x]
```

fricas [A] time = 0.40, size = 168, normalized size = 1.51

$$\frac{11\,Bcd^3 - Abde^2 - 2\,(Bb + Ac)d^2e + 6\left(3\,Bcde^2 - (Bb + Ac)e^3\right)x^2 + 3\left(9\,Bcd^2e - Abe^3 - 2\,(Bb + Ac)de^2\right)x + 6\left(Bce^3x^3 + 3\,Bcde^2x^2 + 3\,Bcd^2ex + Bcd^3\right)\log(ex + d)}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*c*d^3 - A*b*d*e^2 - 2*(B*b + A*c)*d^2*e + 6*(3*B*c*d*e^2 - (B*b +
 A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - A*b*e^3 - 2*(B*b + A*c)*d*e^2)*x + 6*(B*c
*e^3*x^3 + 3*B*c*d*e^2*x^2 + 3*B*c*d^2*e*x + B*c*d^3)*log(e*x + d))/(e^7*x^
3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.15, size = 119, normalized size = 1.07

$$Bce^{(-4)}\log(|xe + d|) + \frac{\left(6\left(3\,Bcde - Bbe^2 - Ace^2\right)x^2 + 3\left(9\,Bcd^2 - 2\,Bbde - 2\,Acde - Abe^2\right)x + \left(11\,Bcd^3 - 2\,Bbd^2e - 2\,Acd^2e - Abde^2\right)e^{(-1)}\right)e^{(-3)}}{6\,(xe + d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*x^2 +
 3*(9*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e - A*b*e^2)*x + (11*B*c*d^3 - 2*B*b*d^
2*e - 2*A*c*d^2*e - A*b*d*e^2)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [A] time = 0.05, size = 182, normalized size = 1.64

$$\frac{Abd}{3\,(ex+d)^3e^2} - \frac{Acd^2}{3\,(ex+d)^3e^3} - \frac{Bbd^2}{3\,(ex+d)^3e^3} + \frac{Bcd^3}{3\,(ex+d)^3e^4} - \frac{Ab}{2\,(ex+d)^2e^2} + \frac{Acd}{(ex+d)^2e^3} + \frac{Bbd}{(ex+d)^2e^3} - \frac{3Bcd^2}{2\,(ex+d)^2e^4} - \frac{Ac}{(ex+d)e^3} - \frac{Bb}{(ex+d)e^3} + \frac{3Bcd}{(ex+d)e^4} + \frac{Bc\ln(ex+d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x)
```

```
[Out] -1/e^3/(e*x+d)*A*c-1/e^3/(e*x+d)*B*b+3/e^4/(e*x+d)*B*c*d-1/2/e^2/(e*x+d)^2*
A*b+1/e^3/(e*x+d)^2*A*c*d+1/e^3/(e*x+d)^2*B*d*b-3/2/e^4/(e*x+d)^2*B*c*d^2+1
/3*d/e^2/(e*x+d)^3*A*b-1/3*d^2/e^3/(e*x+d)^3*A*c-1/3*d^2/e^3/(e*x+d)^3*B*b+
1/3*d^3/e^4/(e*x+d)^3*B*c+B*c*ln(e*x+d)/e^4
```

maxima [A] time = 0.55, size = 137, normalized size = 1.23

$$\frac{11\,Bcd^3 - Abde^2 - 2\,(Bb + Ac)d^2e + 6\left(3\,Bcde^2 - (Bb + Ac)e^3\right)x^2 + 3\left(9\,Bcd^2e - Abe^3 - 2\,(Bb + Ac)de^2\right)x}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)} + \frac{Bc\log(ex + d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*c*d^3 - A*b*d*e^2 - 2*(B*b + A*c)*d^2*e + 6*(3*B*c*d*e^2 - (B*b +
 A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - A*b*e^3 - 2*(B*b + A*c)*d*e^2)*x)/(e^7*x^
3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*c*log(e*x + d)/e^4
```

mupad [B] time = 1.41, size = 134, normalized size = 1.21

$$\frac{B\,c\,\ln(d+e\,x)}{e^4} - \frac{\frac{A\,b\,d\,e^2-11\,B\,c\,d^3+2\,A\,c\,d^2\,e+2\,B\,b\,d^2\,e}{6\,e^4} + \frac{x\left(A\,b\,e^2-9\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{2\,e^3} + \frac{x^2\,(A\,c\,e+B\,b\,e-3\,B\,c\,d)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] (B*c*log(d + e*x))/e^4 - ((A*b*d*e^2 - 11*B*c*d^3 + 2*A*c*d^2*e + 2*B*b*d^2
*e)/(6*e^4) + (x*(A*b*e^2 - 9*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(2*e^3) + (
x^2*(A*c*e + B*b*e - 3*B*c*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*
x)
```

sympy [A] time = 3.20, size = 158, normalized size = 1.42

$$\frac{Bc\log{(d+ex)}}{e^4}+\frac{-Abde^2-2Acd^2e-2Bbd^2e+11Bcd^3+x^2\left(-6Ace^3-6Bbe^3+18Bcde^2\right)+x\left(-3Abe^3-6Acde^2-6Bbde^2+27Bcd^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**4,x)
```

```
[Out] B*c*log(d + e*x)/e**4 + (-A*b*d*e**2 - 2*A*c*d**2*e - 2*B*b*d**2*e + 11*B*c
*d**3 + x**2*(-6*A*c*e**3 - 6*B*b*e**3 + 18*B*c*d*e**2) + x*(-3*A*b*e**3 -
6*A*c*d*e**2 - 6*B*b*d*e**2 + 27*B*c*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x
 + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.967 $\int \frac{(A+Bx)(bx+cx^2)}{(d+ex)^5} dx$

Optimal. Leaf size=116

$$\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{d(Bd-Ae)(cd-be)}{4e^4(d+ex)^4}-\frac{Bc}{e^4(d+ex)}$$

Rubi [A] time = 0.10, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{d(Bd-Ae)(cd-be)}{4e^4(d+ex)^4}-\frac{Bc}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e))/(4*e^4*(d + e*x)^4) - (B*d*(3*c*d - 2*b*e) - A*
e*(2*c*d - b*e))/(3*e^4*(d + e*x)^3) + (3*B*c*d - b*B*e - A*c*e)/(2*e^4*(d
+ e*x)^2) - (B*c)/(e^4*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^5}\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^5}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^4}+\frac{-3Bcd+bBe+Ac\ldots}{e^3(d+ex)^3}\right.\\ &= \frac{d(Bd-Ae)(cd-be)}{4e^4(d+ex)^4}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{3Bcd-bBe-Ace}{2e^4(d+ex)^2}-\frac{\ldots}{e^4(d\ldots}\end{aligned}$$

Mathematica [A] time = 0.04, size = 101, normalized size = 0.87

$$-\frac{Ae\left(be(d+4ex)+c\left(d^2+4dex+6e^2x^2\right)\right)+B\left(be\left(d^2+4dex+6e^2x^2\right)+3c\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(b*e*(d + 4*e*x) + c*(d^2 + 4*d*e*x + 6*e^2*x^2)) + B*(b*e*(d^2
+ 4*d*e*x + 6*e^2*x^2) + 3*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)))/
(e^4*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^5, x]
```

fricas [A] time = 0.39, size = 140, normalized size = 1.21

$$-\frac{12\,Bce^{3}x^{3}+3\,Bcd^{3}+Abde^{2}+(Bb+Ac)d^{2}e+6\left(3\,Bcde^{2}+(Bb+Ac)e^{3}\right)x^{2}+4\left(3\,Bcd^{2}e+Abe^{3}+(Bb+Ac)de^{2}\right)x}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*b*d*e^2 + (B*b + A*c)*d^2*e + 6*(3*B*
c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + A*b*e^3 + (B*b + A*c)*d*e
^2)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.23, size = 177, normalized size = 1.53

$$-\frac{1}{12}\left(\frac{12\,Bce^{(-1)}}{xe+d}-\frac{18\,Bcde^{(-1)}}{(xe+d)^{2}}+\frac{12\,Bcd^{2}e^{(-1)}}{(xe+d)^{3}}-\frac{3\,Bcd^{3}e^{(-1)}}{(xe+d)^{4}}+\frac{6\,Bb}{(xe+d)^{2}}+\frac{6\,Ac}{(xe+d)^{2}}-\frac{8\,Bbd}{(xe+d)^{3}}-\frac{8\,Acd}{(xe+d)^{3}}+\frac{3\,Bbd^{2}}{(xe+d)^{4}}+\frac{3\,Acd^{2}}{(xe+d)^{4}}+\frac{4\,Abe}{(xe+d)^{3}}-\frac{3\,Abde}{(xe+d)^{4}}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*e^(-1)/(x*e + d) - 18*B*c*d*e^(-1)/(x*e + d)^2 + 12*B*c*d^2*e
^(-1)/(x*e + d)^3 - 3*B*c*d^3*e^(-1)/(x*e + d)^4 + 6*B*b/(x*e + d)^2 + 6*A*
c/(x*e + d)^2 - 8*B*b*d/(x*e + d)^3 - 8*A*c*d/(x*e + d)^3 + 3*B*b*d^2/(x*e
+ d)^4 + 3*A*c*d^2/(x*e + d)^4 + 4*A*b*e/(x*e + d)^3 - 3*A*b*d*e/(x*e + d)^
4)*e^(-3)
```

maple [A] time = 0.05, size = 118, normalized size = 1.02

$$-\frac{Bc}{(ex+d)\,e^{4}}+\frac{\left(Ab\,e^{2}-Acde-Bdbe+Bc\,d^{2}\right)d}{4\,(ex+d)^{4}\,e^{4}}-\frac{Ace+Bbe-3Bcd}{2\,(ex+d)^{2}\,e^{4}}-\frac{Ab\,e^{2}-2Acde-2Bdbe+3Bc\,d^{2}}{3\,(ex+d)^{3}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x)
```

```
[Out] -B*c/e^4/(e*x+d)+1/4*d*(A*b*e^2-A*c*d*e-B*b*d*e+B*c*d^2)/e^4/(e*x+d)^4-1/2*
(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^2-1/3*(A*b*e^2-2*A*c*d*e-2*B*b*d*e+3*B*c*
d^2)/e^4/(e*x+d)^3
```

maxima [A] time = 0.59, size = 140, normalized size = 1.21

$$-\frac{12\,Bce^{3}x^{3}+3\,Bcd^{3}+Abde^{2}+(Bb+Ac)d^{2}e+6\left(3\,Bcde^{2}+(Bb+Ac)e^{3}\right)x^{2}+4\left(3\,Bcd^{2}e+Abe^{3}+(Bb+Ac)de^{2}\right)x}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*b*d*e^2 + (B*b + A*c)*d^2*e + 6*(3*B*
c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + A*b*e^3 + (B*b + A*c)*d*e
^2)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.07, size = 134, normalized size = 1.16

$$-\frac{\frac{d\left(A\,b\,e^{2}+3\,B\,c\,d^{2}+A\,c\,d\,e+B\,b\,d\,e\right)}{12\,e^{4}}+\frac{x\left(A\,b\,e^{2}+3\,B\,c\,d^{2}+A\,c\,d\,e+B\,b\,d\,e\right)}{3\,e^{3}}+\frac{x^{2}\,(A\,c\,e+B\,b\,e+3\,B\,c\,d)}{2\,e^{2}}+\frac{B\,c\,x^{3}}{e}}{d^{4}+4\,d^{3}\,e\,x+6\,d^{2}\,e^{2}\,x^{2}+4\,d\,e^{3}\,x^{3}+e^{4}\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] -((d*(A*b*e^2 + 3*B*c*d^2 + A*c*d*e + B*b*d*e))/(12*e^4) + (x*(A*b*e^2 + 3*
B*c*d^2 + A*c*d*e + B*b*d*e))/(3*e^3) + (x^2*(A*c*e + B*b*e + 3*B*c*d))/(2*
e^2) + (B*c*x^3)/e)/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*
x)
```

sympy [A] time = 6.11, size = 168, normalized size = 1.45

$$\frac{-Abde^2 - Acd^2e - Bbd^2e - 3Bcd^3 - 12Bce^3x^3 + x^2\left(-6Ace^3 - 6Bbe^3 - 18Bcde^2\right) + x\left(-4Abe^3 - 4Acde^2 - 4Bbde^2 - 12Bcd^2e\right)}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**5,x)
```

```
[Out] (-A*b*d*e**2 - A*c*d**2*e - B*b*d**2*e - 3*B*c*d**3 - 12*B*c*e**3*x**3 + x*
*2*(-6*A*c*e**3 - 6*B*b*e**3 - 18*B*c*d*e**2) + x*(-4*A*b*e**3 - 4*A*c*d*e*
*2 - 4*B*b*d*e**2 - 12*B*c*d**2*e))/(12*d**4*e**4 + 48*d**3*e**5*x + 72*d**
2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.968 $\int \frac{(A+Bx)(bx+cx^2)}{(d+ex)^6}\,dx$

Optimal. Leaf size=118

$$\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{d(Bd-Ae)(cd-be)}{5e^4(d+ex)^5}-\frac{Bc}{2e^4(d+ex)^2}$$

Rubi [A] time = 0.10, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{d(Bd-Ae)(cd-be)}{5e^4(d+ex)^5}-\frac{Bc}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e))/(5*e^4*(d + e*x)^5) - (B*d*(3*c*d - 2*b*e) - A*
e*(2*c*d - b*e))/(4*e^4*(d + e*x)^4) + (3*B*c*d - b*B*e - A*c*e)/(3*e^4*(d
+ e*x)^3) - (B*c)/(2*e^4*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^6}\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^6}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^5}+\frac{-3Bcd+bBe+Ace}{e^3(d+ex)^4}+\right.\\ &= \frac{d(Bd-Ae)(cd-be)}{5e^4(d+ex)^5}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{3Bcd-bBe-Ace}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+\end{aligned}$$

Mathematica [A] time = 0.05, size = 104, normalized size = 0.88

$$-\frac{Ae\left(3be(d+5ex)+2c\left(d^2+5dex+10e^2x^2\right)\right)+B\left(2be\left(d^2+5dex+10e^2x^2\right)+3c\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(A*e*(3*b*e*(d + 5*e*x) + 2*c*(d^2 + 5*d*e*x + 10*e^2*x^2)) + B*(2*b*
e*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e
^3*x^3)))/(e^4*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^6, x]
```

fricas [A] time = 0.39, size = 156, normalized size = 1.32

$$-\frac{30\,Bce^3x^3+3\,Bcd^3+3\,Abde^2+2\,(Bb+Ac)d^2e+10\left(3\,Bcde^2+2\,(Bb+Ac)e^3\right)x^2+5\left(3\,Bcd^2e+3\,Abe^3+2\,(Bb+Ac)de^2\right)x}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*b*d*e^2 + 2*(B*b + A*c)*d^2*e + 10*
(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e + 3*A*b*e^3 + 2*(B*b
 + A*c)*d*e^2)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2
+ 5*d^4*e^5*x + d^5*e^4)
```

giac [A] time = 0.15, size = 115, normalized size = 0.97

$$-\frac{\left(30\,Bcx^3e^3+30\,Bcdx^2e^2+15\,Bcd^2xe+3\,Bcd^3+20\,Bbx^2e^3+20\,Acx^2e^3+10\,Bbdxe^2+10\,Acdxe^2+2\,Bbd^2e+2\,Acd^2e+15\,Abxe^3+3\,Abde^2\right)e^{(-4)}}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3*e^3 + 30*B*c*d*x^2*e^2 + 15*B*c*d^2*x*e + 3*B*c*d^3 + 20*
B*b*x^2*e^3 + 20*A*c*x^2*e^3 + 10*B*b*d*x*e^2 + 10*A*c*d*x*e^2 + 2*B*b*d^2*
e + 2*A*c*d^2*e + 15*A*b*x*e^3 + 3*A*b*d*e^2)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.06, size = 118, normalized size = 1.00

$$-\frac{Bc}{2\,(ex+d)^2\,e^4}+\frac{\left(Ab\,e^2-Acde-Bdbe+Bc\,d^2\right)d}{5\,(ex+d)^5\,e^4}-\frac{Ab\,e^2-2Acde-2Bdbe+3Bc\,d^2}{4\,(ex+d)^4\,e^4}-\frac{Ace+Bbe-3Bcd}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x)
```

```
[Out] -1/4*(A*b*e^2-2*A*c*d*e-2*B*b*d*e+3*B*c*d^2)/e^4/(e*x+d)^4+1/5*d*(A*b*e^2-A
*c*d*e-B*b*d*e+B*c*d^2)/e^4/(e*x+d)^5-1/2*B*c/e^4/(e*x+d)^2-1/3*(A*c*e+B*b*
e-3*B*c*d)/e^4/(e*x+d)^3
```

maxima [A] time = 0.62, size = 156, normalized size = 1.32

$$-\frac{30\,Bce^3x^3+3\,Bcd^3+3\,Abde^2+2\,(Bb+Ac)d^2e+10\left(3\,Bcde^2+2\,(Bb+Ac)e^3\right)x^2+5\left(3\,Bcd^2e+3\,Abe^3+2\,(Bb+Ac)de^2\right)x}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*b*d*e^2 + 2*(B*b + A*c)*d^2*e + 10*
(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e + 3*A*b*e^3 + 2*(B*b
 + A*c)*d*e^2)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2
+ 5*d^4*e^5*x + d^5*e^4)
```

mupad [B] time = 0.08, size = 154, normalized size = 1.31

$$-\frac{\frac{d\left(3\,A\,b\,e^2+3\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{60\,e^4}+\frac{x\left(3\,A\,b\,e^2+3\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{12\,e^3}+\frac{x^2\,\left(2\,A\,c\,e+2\,B\,b\,e+3\,B\,c\,d\right)}{6\,e^2}+\frac{B\,c\,x^3}{2\,e}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] -((d*(3*A*b*e^2 + 3*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(60*e^4) + (x*(3*A*b*
e^2 + 3*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(12*e^3) + (x^2*(2*A*c*e + 2*B*b*
e + 3*B*c*d))/(6*e^2) + (B*c*x^3)/(2*e))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*
d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [A] time = 10.37, size = 185, normalized size = 1.57

$$\frac{-3Abde^2 - 2Acd^2e - 2Bbd^2e - 3Bcd^3 - 30Bce^3x^3 + x^2\left(-20Ace^3 - 20Bbe^3 - 30Bcde^2\right) + x\left(-15Abe^3 - 10Acde^2 - 10Bbde^2 - 15Bcd^2e\right)}{60d^5e^4 + 300d^4e^5x + 600d^3e^6x^2 + 600d^2e^7x^3 + 300de^8x^4 + 60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**6,x)
```

```
[Out] (-3*A*b*d*e**2 - 2*A*c*d**2*e - 2*B*b*d**2*e - 3*B*c*d**3 - 30*B*c*e**3*x**
3 + x**2*(-20*A*c*e**3 - 20*B*b*e**3 - 30*B*c*d*e**2) + x*(-15*A*b*e**3 - 1
0*A*c*d*e**2 - 10*B*b*d*e**2 - 15*B*c*d**2*e))/(60*d**5*e**4 + 300*d**4*e**
5*x + 600*d**3*e**6*x**2 + 600*d**2*e**7*x**3 + 300*d*e**8*x**4 + 60*e**9*x
**5)
```

3.969 $\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=282

$$\frac{(d+ex)^{m+3}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6(m+3)}-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(b^2\right.\right.}{e^6(m+4)}$$

Rubi [A] time = 0.23, antiderivative size = 282, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{(d+ex)^{m+3}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6(m+3)}-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{e^6(m+4)}-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{m+1}}{e^6(m+1)}+\frac{d(cd-be)(d+ex)^{m+2}(Bd(5cd-3be)-2Ae(2cd-be))}{e^6(m+2)}-\frac{c(d+ex)^{m+5}(-Ace-2bBe+5Bcd)}{e^6(m+5)}+\frac{Bc^2(d+ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^2,x]
```

```
[Out] -((d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(1 + m))/(e^6*(1 + m))) + (d*(c*
d - b*e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))/(e^
6*(2 + m)) + ((A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12
*b*c*d*e + 3*b^2*e^2))*(d + e*x)^(3 + m))/(e^6*(3 + m)) - ((2*A*c*e*(2*c*d
- b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(4 + m))/(e^6*(4 +
 m)) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (B
*c^2*(d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^2 \, dx &= \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^m}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2A}{e^5}\right.\\ &= -\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{1+m}}{e^6(1+m)}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(}{e^6(2+m)}\end{aligned}$$

Mathematica [A] time = 0.44, size = 309, normalized size = 1.10

$$\frac{(d+ex)^{m+1}\left(Ae\left(\frac{(d+ex)^2\left(b^2e^2-6bcde+6c^2d^2\right)}{m+3}+\frac{d^2(cd-be)^2}{m+1}-\frac{2c(d+ex)^3(2cd-be)}{m+4}-\frac{2d(d+ex)(cd-be)(2cd-be)}{m+2}+\frac{c^2(d+ex)^4}{m+5}\right)+B\left(\frac{(d+ex)^3\left(b^2e^2-8bcde+10c^2d^2\right)}{m+4}-\frac{d(d+ex)^2\left(3b^2e^2-12bcde+10c^2d^2\right)}{m+3}-\frac{d^3(cd-be)^2}{m+1}+\frac{d^2(d+ex)(5cd-3be)(cd-be)}{m+2}-\frac{c(d+ex)^4(5cd-2be)}{m+5}+\frac{c^2(d+ex)^5}{m+6}\right)\right)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(A*e*((d^2*(c*d - b*e)^2)/(1 + m) - (2*d*(c*d - b*e)*(2*
c*d - b*e)*(d + e*x))/(2 + m) + ((6*c^2*d^2 - 6*b*c*d*e + b^2*e^2)*(d + e*x
)^2)/(3 + m) - (2*c*(2*c*d - b*e)*(d + e*x)^3)/(4 + m) + (c^2*(d + e*x)^4)/
(5 + m)) + B*(-((d^3*(c*d - b*e)^2)/(1 + m)) + (d^2*(5*c*d - 3*b*e)*(c*d -
b*e)*(d + e*x))/(2 + m) - (d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2)*(d + e*x
)^2)/(3 + m) + ((10*c^2*d^2 - 8*b*c*d*e + b^2*e^2)*(d + e*x)^3)/(4 + m) - (
c*(5*c*d - 2*b*e)*(d + e*x)^4)/(5 + m) + (c^2*(d + e*x)^5)/(6 + m))))/e^6
```

IntegrateAlgebraic [F] time = 0.14, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^2 dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^2, x]
```

fricas [B] time = 0.46, size = 1417, normalized size = 5.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (2*A*b^2*d^3*e^3*m^3 - 120*B*c^2*d^6 + 240*A*b^2*d^3*e^3 + 144*(2*B*b*c + A
*c^2)*d^5*e - 180*(B*b^2 + 2*A*b*c)*d^4*e^2 + (B*c^2*e^6*m^5 + 15*B*c^2*e^6
*m^4 + 85*B*c^2*e^6*m^3 + 225*B*c^2*e^6*m^2 + 274*B*c^2*e^6*m + 120*B*c^2*e
^6)*x^6 + (144*(2*B*b*c + A*c^2)*e^6 + (B*c^2*d*e^5 + (2*B*b*c + A*c^2)*e^6
)*m^5 + 2*(5*B*c^2*d*e^5 + 8*(2*B*b*c + A*c^2)*e^6)*m^4 + 5*(7*B*c^2*d*e^5
+ 19*(2*B*b*c + A*c^2)*e^6)*m^3 + 10*(5*B*c^2*d*e^5 + 26*(2*B*b*c + A*c^2)*
e^6)*m^2 + 12*(2*B*c^2*d*e^5 + 27*(2*B*b*c + A*c^2)*e^6)*m)*x^5 + (180*(B*b
^2 + 2*A*b*c)*e^6 + ((2*B*b*c + A*c^2)*d*e^5 + (B*b^2 + 2*A*b*c)*e^6)*m^5 -
 (5*B*c^2*d^2*e^4 - 12*(2*B*b*c + A*c^2)*d*e^5 - 17*(B*b^2 + 2*A*b*c)*e^6)*
m^4 - (30*B*c^2*d^2*e^4 - 47*(2*B*b*c + A*c^2)*d*e^5 - 107*(B*b^2 + 2*A*b*c
)*e^6)*m^3 - (55*B*c^2*d^2*e^4 - 72*(2*B*b*c + A*c^2)*d*e^5 - 307*(B*b^2 +
2*A*b*c)*e^6)*m^2 - 6*(5*B*c^2*d^2*e^4 - 6*(2*B*b*c + A*c^2)*d*e^5 - 66*(B*
b^2 + 2*A*b*c)*e^6)*m)*x^4 + (240*A*b^2*e^6 + (A*b^2*e^6 + (B*b^2 + 2*A*b*c
)*d*e^5)*m^5 + 2*(9*A*b^2*e^6 - 2*(2*B*b*c + A*c^2)*d^2*e^4 + 7*(B*b^2 + 2*
A*b*c)*d*e^5)*m^4 + (20*B*c^2*d^3*e^3 + 121*A*b^2*e^6 - 36*(2*B*b*c + A*c^2
)*d^2*e^4 + 65*(B*b^2 + 2*A*b*c)*d*e^5)*m^3 + 4*(15*B*c^2*d^3*e^3 + 93*A*b^
2*e^6 - 20*(2*B*b*c + A*c^2)*d^2*e^4 + 28*(B*b^2 + 2*A*b*c)*d*e^5)*m^2 + 4*
(10*B*c^2*d^3*e^3 + 127*A*b^2*e^6 - 12*(2*B*b*c + A*c^2)*d^2*e^4 + 15*(B*b^
2 + 2*A*b*c)*d*e^5)*m)*x^3 + 6*(5*A*b^2*d^3*e^3 - (B*b^2 + 2*A*b*c)*d^4*e^2
)*m^2 + (A*b^2*d*e^5*m^5 + (16*A*b^2*d*e^5 - 3*(B*b^2 + 2*A*b*c)*d^2*e^4)*m
^4 + (89*A*b^2*d*e^5 + 12*(2*B*b*c + A*c^2)*d^3*e^3 - 36*(B*b^2 + 2*A*b*c)*
d^2*e^4)*m^3 - (60*B*c^2*d^4*e^2 - 194*A*b^2*d*e^5 - 84*(2*B*b*c + A*c^2)*d
^3*e^3 + 123*(B*b^2 + 2*A*b*c)*d^2*e^4)*m^2 - 6*(10*B*c^2*d^4*e^2 - 20*A*b^
2*d*e^5 - 12*(2*B*b*c + A*c^2)*d^3*e^3 + 15*(B*b^2 + 2*A*b*c)*d^2*e^4)*m)*x
^2 + 2*(74*A*b^2*d^3*e^3 + 12*(2*B*b*c + A*c^2)*d^5*e - 33*(B*b^2 + 2*A*b*c
)*d^4*e^2)*m - 2*(A*b^2*d^2*e^4*m^4 + 3*(5*A*b^2*d^2*e^4 - (B*b^2 + 2*A*b*c
)*d^3*e^3)*m^3 + (74*A*b^2*d^2*e^4 + 12*(2*B*b*c + A*c^2)*d^4*e^2 - 33*(B*b
^2 + 2*A*b*c)*d^3*e^3)*m^2 - 6*(10*B*c^2*d^5*e - 20*A*b^2*d^2*e^4 - 12*(2*B
*b*c + A*c^2)*d^4*e^2 + 15*(B*b^2 + 2*A*b*c)*d^3*e^3)*m)*x)*(e*x + d)^m/(e^
6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m
+ 720*e^6)
```

giac [B] time = 0.27, size = 2827, normalized size = 10.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^2*m^5*x^6*e^6 + (x*e + d)^m*B*c^2*d*m^5*x^5*e^5 + 2*(x*e +
 d)^m*B*b*c*m^5*x^5*e^6 + (x*e + d)^m*A*c^2*m^5*x^5*e^6 + 15*(x*e + d)^m*B*
c^2*m^4*x^6*e^6 + 2*(x*e + d)^m*B*b*c*d*m^5*x^4*e^5 + (x*e + d)^m*A*c^2*d*m
^5*x^4*e^5 + 10*(x*e + d)^m*B*c^2*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*c^2*d^2*m
^4*x^4*e^4 + (x*e + d)^m*B*b^2*m^5*x^4*e^6 + 2*(x*e + d)^m*A*b*c*m^5*x^4*e^
```

```
6 + 32*(x*e + d)^m*B*b*c*m^4*x^5*e^6 + 16*(x*e + d)^m*A*c^2*m^4*x^5*e^6 + 8
5*(x*e + d)^m*B*c^2*m^3*x^6*e^6 + (x*e + d)^m*B*b^2*d*m^5*x^3*e^5 + 2*(x*e
+ d)^m*A*b*c*d*m^5*x^3*e^5 + 24*(x*e + d)^m*B*b*c*d*m^4*x^4*e^5 + 12*(x*e +
 d)^m*A*c^2*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*c^2*d*m^3*x^5*e^5 - 8*(x*e + d
)^m*B*b*c*d^2*m^4*x^3*e^4 - 4*(x*e + d)^m*A*c^2*d^2*m^4*x^3*e^4 - 30*(x*e +
 d)^m*B*c^2*d^2*m^3*x^4*e^4 + 20*(x*e + d)^m*B*c^2*d^3*m^3*x^3*e^3 + (x*e +
 d)^m*A*b^2*m^5*x^3*e^6 + 17*(x*e + d)^m*B*b^2*m^4*x^4*e^6 + 34*(x*e + d)^m
*A*b*c*m^4*x^4*e^6 + 190*(x*e + d)^m*B*b*c*m^3*x^5*e^6 + 95*(x*e + d)^m*A*c
^2*m^3*x^5*e^6 + 225*(x*e + d)^m*B*c^2*m^2*x^6*e^6 + (x*e + d)^m*A*b^2*d*m^
5*x^2*e^5 + 14*(x*e + d)^m*B*b^2*d*m^4*x^3*e^5 + 28*(x*e + d)^m*A*b*c*d*m^4
*x^3*e^5 + 94*(x*e + d)^m*B*b*c*d*m^3*x^4*e^5 + 47*(x*e + d)^m*A*c^2*d*m^3*
x^4*e^5 + 50*(x*e + d)^m*B*c^2*d*m^2*x^5*e^5 - 3*(x*e + d)^m*B*b^2*d^2*m^4*
x^2*e^4 - 6*(x*e + d)^m*A*b*c*d^2*m^4*x^2*e^4 - 72*(x*e + d)^m*B*b*c*d^2*m^
3*x^3*e^4 - 36*(x*e + d)^m*A*c^2*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*B*c^2*d^2
*m^2*x^4*e^4 + 24*(x*e + d)^m*B*b*c*d^3*m^3*x^2*e^3 + 12*(x*e + d)^m*A*c^2*
d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*B*c^2*d^3*m^2*x^3*e^3 - 60*(x*e + d)^m*B*c
^2*d^4*m^2*x^2*e^2 + 18*(x*e + d)^m*A*b^2*m^4*x^3*e^6 + 107*(x*e + d)^m*B*b
^2*m^3*x^4*e^6 + 214*(x*e + d)^m*A*b*c*m^3*x^4*e^6 + 520*(x*e + d)^m*B*b*c*
m^2*x^5*e^6 + 260*(x*e + d)^m*A*c^2*m^2*x^5*e^6 + 274*(x*e + d)^m*B*c^2*m*x
^6*e^6 + 16*(x*e + d)^m*A*b^2*d*m^4*x^2*e^5 + 65*(x*e + d)^m*B*b^2*d*m^3*x^
3*e^5 + 130*(x*e + d)^m*A*b*c*d*m^3*x^3*e^5 + 144*(x*e + d)^m*B*b*c*d*m^2*x
^4*e^5 + 72*(x*e + d)^m*A*c^2*d*m^2*x^4*e^5 + 24*(x*e + d)^m*B*c^2*d*m*x^5*
e^5 - 2*(x*e + d)^m*A*b^2*d^2*m^4*x*e^4 - 36*(x*e + d)^m*B*b^2*d^2*m^3*x^2*
e^4 - 72*(x*e + d)^m*A*b*c*d^2*m^3*x^2*e^4 - 160*(x*e + d)^m*B*b*c*d^2*m^2*
x^3*e^4 - 80*(x*e + d)^m*A*c^2*d^2*m^2*x^3*e^4 - 30*(x*e + d)^m*B*c^2*d^2*m
*x^4*e^4 + 6*(x*e + d)^m*B*b^2*d^3*m^3*x*e^3 + 12*(x*e + d)^m*A*b*c*d^3*m^3
*x*e^3 + 168*(x*e + d)^m*B*b*c*d^3*m^2*x^2*e^3 + 84*(x*e + d)^m*A*c^2*d^3*m
^2*x^2*e^3 + 40*(x*e + d)^m*B*c^2*d^3*m*x^3*e^3 - 48*(x*e + d)^m*B*b*c*d^4*
m^2*x*e^2 - 24*(x*e + d)^m*A*c^2*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*c^2*d^4*m
*x^2*e^2 + 120*(x*e + d)^m*B*c^2*d^5*m*x*e + 121*(x*e + d)^m*A*b^2*m^3*x^3*
e^6 + 307*(x*e + d)^m*B*b^2*m^2*x^4*e^6 + 614*(x*e + d)^m*A*b*c*m^2*x^4*e^6
 + 648*(x*e + d)^m*B*b*c*m*x^5*e^6 + 324*(x*e + d)^m*A*c^2*m*x^5*e^6 + 120*
(x*e + d)^m*B*c^2*x^6*e^6 + 89*(x*e + d)^m*A*b^2*d*m^3*x^2*e^5 + 112*(x*e +
 d)^m*B*b^2*d*m^2*x^3*e^5 + 224*(x*e + d)^m*A*b*c*d*m^2*x^3*e^5 + 72*(x*e +
 d)^m*B*b*c*d*m*x^4*e^5 + 36*(x*e + d)^m*A*c^2*d*m*x^4*e^5 - 30*(x*e + d)^m
*A*b^2*d^2*m^3*x*e^4 - 123*(x*e + d)^m*B*b^2*d^2*m^2*x^2*e^4 - 246*(x*e + d
)^m*A*b*c*d^2*m^2*x^2*e^4 - 96*(x*e + d)^m*B*b*c*d^2*m*x^3*e^4 - 48*(x*e +
d)^m*A*c^2*d^2*m*x^3*e^4 + 2*(x*e + d)^m*A*b^2*d^3*m^3*e^3 + 66*(x*e + d)^m
*B*b^2*d^3*m^2*x*e^3 + 132*(x*e + d)^m*A*b*c*d^3*m^2*x*e^3 + 144*(x*e + d)^
m*B*b*c*d^3*m*x^2*e^3 + 72*(x*e + d)^m*A*c^2*d^3*m*x^2*e^3 - 6*(x*e + d)^m*
B*b^2*d^4*m^2*e^2 - 12*(x*e + d)^m*A*b*c*d^4*m^2*e^2 - 288*(x*e + d)^m*B*b*
c*d^4*m*x*e^2 - 144*(x*e + d)^m*A*c^2*d^4*m*x*e^2 + 48*(x*e + d)^m*B*b*c*d^
5*m*e + 24*(x*e + d)^m*A*c^2*d^5*m*e - 120*(x*e + d)^m*B*c^2*d^6 + 372*(x*e
 + d)^m*A*b^2*m^2*x^3*e^6 + 396*(x*e + d)^m*B*b^2*m*x^4*e^6 + 792*(x*e + d)
^m*A*b*c*m*x^4*e^6 + 288*(x*e + d)^m*B*b*c*x^5*e^6 + 144*(x*e + d)^m*A*c^2*
x^5*e^6 + 194*(x*e + d)^m*A*b^2*d*m^2*x^2*e^5 + 60*(x*e + d)^m*B*b^2*d*m*x^
3*e^5 + 120*(x*e + d)^m*A*b*c*d*m*x^3*e^5 - 148*(x*e + d)^m*A*b^2*d^2*m^2*x
*e^4 - 90*(x*e + d)^m*B*b^2*d^2*m*x^2*e^4 - 180*(x*e + d)^m*A*b*c*d^2*m*x^2
*e^4 + 30*(x*e + d)^m*A*b^2*d^3*m^2*e^3 + 180*(x*e + d)^m*B*b^2*d^3*m*x*e^3
 + 360*(x*e + d)^m*A*b*c*d^3*m*x*e^3 - 66*(x*e + d)^m*B*b^2*d^4*m*e^2 - 132
*(x*e + d)^m*A*b*c*d^4*m*e^2 + 288*(x*e + d)^m*B*b*c*d^5*e + 144*(x*e + d)^
m*A*c^2*d^5*e + 508*(x*e + d)^m*A*b^2*m*x^3*e^6 + 180*(x*e + d)^m*B*b^2*x^4
*e^6 + 360*(x*e + d)^m*A*b*c*x^4*e^6 + 120*(x*e + d)^m*A*b^2*d*m*x^2*e^5 -
240*(x*e + d)^m*A*b^2*d^2*m*x*e^4 + 148*(x*e + d)^m*A*b^2*d^3*m*e^3 - 180*(
x*e + d)^m*B*b^2*d^4*e^2 - 360*(x*e + d)^m*A*b*c*d^4*e^2 + 240*(x*e + d)^m*
A*b^2*x^3*e^6 + 240*(x*e + d)^m*A*b^2*d^3*e^3)/(m^6*e^6 + 21*m^5*e^6 + 175*
m^4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1616, normalized size = 5.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(B*c^2*e^5*m^5*x^5+A*c^2*e^5*m^5*x^4+2*B*b*c*e^5*m^5*x^4+15*B
*c^2*e^5*m^4*x^5+2*A*b*c*e^5*m^5*x^3+16*A*c^2*e^5*m^4*x^4+B*b^2*e^5*m^5*x^3
+32*B*b*c*e^5*m^4*x^4-5*B*c^2*d*e^4*m^4*x^4+85*B*c^2*e^5*m^3*x^5+A*b^2*e^5*
m^5*x^2+34*A*b*c*e^5*m^4*x^3-4*A*c^2*d*e^4*m^4*x^3+95*A*c^2*e^5*m^3*x^4+17*
B*b^2*e^5*m^4*x^3-8*B*b*c*d*e^4*m^4*x^3+190*B*b*c*e^5*m^3*x^4-50*B*c^2*d*e^
4*m^3*x^4+225*B*c^2*e^5*m^2*x^5+18*A*b^2*e^5*m^4*x^2-6*A*b*c*d*e^4*m^4*x^2+
214*A*b*c*e^5*m^3*x^3-48*A*c^2*d*e^4*m^3*x^3+260*A*c^2*e^5*m^2*x^4-3*B*b^2*
d*e^4*m^4*x^2+107*B*b^2*e^5*m^3*x^3-96*B*b*c*d*e^4*m^3*x^3+520*B*b*c*e^5*m^
2*x^4+20*B*c^2*d^2*e^3*m^3*x^3-175*B*c^2*d*e^4*m^2*x^4+274*B*c^2*e^5*m*x^5-
2*A*b^2*d*e^4*m^4*x+121*A*b^2*e^5*m^3*x^2-84*A*b*c*d*e^4*m^3*x^2+614*A*b*c*
e^5*m^2*x^3+12*A*c^2*d^2*e^3*m^3*x^2-188*A*c^2*d*e^4*m^2*x^3+324*A*c^2*e^5*
m*x^4-42*B*b^2*d*e^4*m^3*x^2+307*B*b^2*e^5*m^2*x^3+24*B*b*c*d^2*e^3*m^3*x^2
-376*B*b*c*d*e^4*m^2*x^3+648*B*b*c*e^5*m*x^4+120*B*c^2*d^2*e^3*m^2*x^3-250*
B*c^2*d*e^4*m*x^4+120*B*c^2*e^5*x^5-32*A*b^2*d*e^4*m^3*x+372*A*b^2*e^5*m^2*
x^2+12*A*b*c*d^2*e^3*m^3*x-390*A*b*c*d*e^4*m^2*x^2+792*A*b*c*e^5*m*x^3+108*
A*c^2*d^2*e^3*m^2*x^2-288*A*c^2*d*e^4*m*x^3+144*A*c^2*e^5*x^4+6*B*b^2*d^2*e
^3*m^3*x-195*B*b^2*d*e^4*m^2*x^2+396*B*b^2*e^5*m*x^3+216*B*b*c*d^2*e^3*m^2*
x^2-576*B*b*c*d*e^4*m*x^3+288*B*b*c*e^5*x^4-60*B*c^2*d^3*e^2*m^2*x^2+220*B*
c^2*d^2*e^3*m*x^3-120*B*c^2*d*e^4*x^4+2*A*b^2*d^2*e^3*m^3-178*A*b^2*d*e^4*m
^2*x+508*A*b^2*e^5*m*x^2+144*A*b*c*d^2*e^3*m^2*x-672*A*b*c*d*e^4*m*x^2+360*
A*b*c*e^5*x^3-24*A*c^2*d^3*e^2*m^2*x+240*A*c^2*d^2*e^3*m*x^2-144*A*c^2*d*e^
4*x^3+72*B*b^2*d^2*e^3*m^2*x-336*B*b^2*d*e^4*m*x^2+180*B*b^2*e^5*x^3-48*B*b
*c*d^3*e^2*m^2*x+480*B*b*c*d^2*e^3*m*x^2-288*B*b*c*d*e^4*x^3-180*B*c^2*d^3*
e^2*m*x^2+120*B*c^2*d^2*e^3*x^3+30*A*b^2*d^2*e^3*m^2-388*A*b^2*d*e^4*m*x+24
0*A*b^2*e^5*x^2-12*A*b*c*d^3*e^2*m^2+492*A*b*c*d^2*e^3*m*x-360*A*b*c*d*e^4*
x^2-168*A*c^2*d^3*e^2*m*x+144*A*c^2*d^2*e^3*x^2-6*B*b^2*d^3*e^2*m^2+246*B*b
^2*d^2*e^3*m*x-180*B*b^2*d*e^4*x^2-336*B*b*c*d^3*e^2*m*x+288*B*b*c*d^2*e^3*
x^2+120*B*c^2*d^4*e*m*x-120*B*c^2*d^3*e^2*x^2+148*A*b^2*d^2*e^3*m-240*A*b^2
*d*e^4*x-132*A*b*c*d^3*e^2*m+360*A*b*c*d^2*e^3*x+24*A*c^2*d^4*e*m-144*A*c^2
*d^3*e^2*x-66*B*b^2*d^3*e^2*m+180*B*b^2*d^2*e^3*x+48*B*b*c*d^4*e*m-288*B*b*
c*d^3*e^2*x+120*B*c^2*d^4*e*x+240*A*b^2*d^2*e^3-360*A*b*c*d^3*e^2+144*A*c^2
*d^4*e-180*B*b^2*d^3*e^2+288*B*b*c*d^4*e-120*B*c^2*d^5)/e^6/(m^6+21*m^5+175
*m^4+735*m^3+1624*m^2+1764*m+720)
```

maxima [**B**] time = 0.76, size = 755, normalized size = 2.68

$$\frac{\left((m^2+3m+2)e^3x^3+(m^2+m)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m Ab^2}{(m^3+6m^2+11m+6)e^3}+\frac{\left((m^3+6m^2+11m+6)e^4x^4+(m^3+3m^2+2m)de^3x^3-3(m^2+m)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m Bb^2}{(m^4+10m^3+35m^2+50m+24)e^4}+\frac{2\left((m^3+6m^2+11m+6)e^4x^4+(m^3+3m^2+2m)de^3x^3-3(m^2+m)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m Abc}{(m^4+10m^3+35m^2+50m+24)e^4}+\frac{2\left((m^4+10m^3+35m^2+50m+24)e^5x^5+(m^4+6m^3+11m^2+6m)de^4x^4-4(m^3+3m^2+2m)d^2e^3x^3+12(m^2+m)d^3e^2x^2-24d^4emx+24d^5\right)(ex+d)^m Bbc}{(m^5+15m^4+85m^3+225m^2+274m+120)e^5}+\frac{\left((m^4+10m^3+35m^2+50m+24)e^5x^5+(m^4+6m^3+11m^2+6m)de^4x^4-4(m^3+3m^2+2m)d^2e^3x^3+12(m^2+m)d^3e^2x^2-24d^4emx+24d^5\right)(ex+d)^m Ac^2}{(m^5+15m^4+85m^3+225m^2+274m+120)e^5}+\frac{\left((m^5+15m^4+85m^3+225m^2+274m+120)e^6x^6+(m^5+10m^4+35m^3+50m^2+24m)de^5x^5-5(m^4+6m^3+11m^2+6m)d^2e^4x^4+20(m^3+3m^2+2m)d^3e^3x^3-60(m^2+m)d^4e^2x^2+120d^5emx-120d^6\right)(ex+d)^m Bc^2}{(m^6+21m^5+175m^4+735m^3+1624m^2+1764m+720)e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x
+ d)^m*A*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4
*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*
x - 6*d^4)*(e*x + d)^m*B*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 2*
((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2
+ m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b*c/((m^4 + 10*m^3 +
35*m^2 + 50*m + 24)*e^4) + 2*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 +
 (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3
 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*B*b*c/((m^
5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^4 + 10*m^3 + 35*m^2
 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3
*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)
*(e*x + d)^m*A*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) +
((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 +
```

```
35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*
x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d
^5*e*m*x - 120*d^6)*(e*x + d)^m*B*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 +
1624*m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 2.10, size = 1176, normalized size = 4.17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(144*A*c^2*d^5*e - 120*B*c^2*d^6 + 240*A*b^2*d^3*e^3 - 180*B*b
^2*d^4*e^2 + 148*A*b^2*d^3*e^3*m - 66*B*b^2*d^4*e^2*m + 288*B*b*c*d^5*e + 3
0*A*b^2*d^3*e^3*m^2 + 2*A*b^2*d^3*e^3*m^3 - 6*B*b^2*d^4*e^2*m^2 - 360*A*b*c
*d^4*e^2 + 24*A*c^2*d^5*e*m - 132*A*b*c*d^4*e^2*m - 12*A*b*c*d^4*e^2*m^2 +
48*B*b*c*d^5*e*m))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m
^6 + 720)) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(120*A*b^2*e^3 + 74*A*b^2*e^3
*m + 20*B*c^2*d^3*m + 15*A*b^2*e^3*m^2 + A*b^2*e^3*m^3 - 4*A*c^2*d^2*e*m^2
+ 11*B*b^2*d*e^2*m^2 + B*b^2*d*e^2*m^3 - 24*A*c^2*d^2*e*m + 30*B*b^2*d*e^2*
m + 22*A*b*c*d*e^2*m^2 + 2*A*b*c*d*e^2*m^3 - 8*B*b*c*d^2*e*m^2 + 60*A*b*c*d
*e^2*m - 48*B*b*c*d^2*e*m))/(e^3*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 2
1*m^5 + m^6 + 720)) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(30*B*b^2*e
^2 + 60*A*b*c*e^2 + 11*B*b^2*e^2*m - 5*B*c^2*d^2*m + B*b^2*e^2*m^2 + 22*A*b
*c*e^2*m + 6*A*c^2*d*e*m + 2*A*b*c*e^2*m^2 + A*c^2*d*e*m^2 + 12*B*b*c*d*e*m
 + 2*B*b*c*d*e*m^2))/(e^2*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 +
 m^6 + 720)) + (B*c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 +
m^5 + 120))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) +
(c*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(6*A*c*e + 12*B*b*e
+ A*c*e*m + 2*B*b*e*m + B*c*d*m))/(e*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4
 + 21*m^5 + m^6 + 720)) - (2*d^2*m*x*(d + e*x)^m*(120*A*b^2*e^3 - 60*B*c^2*
d^3 + 72*A*c^2*d^2*e - 90*B*b^2*d*e^2 + 74*A*b^2*e^3*m + 15*A*b^2*e^3*m^2 +
 A*b^2*e^3*m^3 - 3*B*b^2*d*e^2*m^2 - 180*A*b*c*d*e^2 + 144*B*b*c*d^2*e + 12
*A*c^2*d^2*e*m - 33*B*b^2*d*e^2*m - 6*A*b*c*d*e^2*m^2 - 66*A*b*c*d*e^2*m +
24*B*b*c*d^2*e*m))/(e^5*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m
^6 + 720)) + (d*m*x^2*(m + 1)*(d + e*x)^m*(120*A*b^2*e^3 - 60*B*c^2*d^3 + 7
2*A*c^2*d^2*e - 90*B*b^2*d*e^2 + 74*A*b^2*e^3*m + 15*A*b^2*e^3*m^2 + A*b^2*
e^3*m^3 - 3*B*b^2*d*e^2*m^2 - 180*A*b*c*d*e^2 + 144*B*b*c*d^2*e + 12*A*c^2*
d^2*e*m - 33*B*b^2*d*e^2*m - 6*A*b*c*d*e^2*m^2 - 66*A*b*c*d*e^2*m + 24*B*b*
c*d^2*e*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 72
0))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.970 $\int (A+Bx)(d+ex)^3 \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=228

$$\frac{1}{7}ex^7\left(Ace(2be+3cd)+B\left(b^2e^2+6bcde+3c^2d^2\right)\right)+\frac{1}{6}x^6\left(Ae\left(b^2e^2+6bcde+3c^2d^2\right)+Bd\left(3b^2e^2+6bcde+c^2d^2\right)\right)$$

Rubi [A] time = 0.25, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{7}ex^7\left(Ace(2be+3cd)+B\left(b^2e^2+6bcde+3c^2d^2\right)\right)+\frac{1}{6}x^6\left(Ae\left(b^2e^2+6bcde+3c^2d^2\right)+Bd\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{5}dx^5\left(3b^2e(Ae+Bd)+2bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^3x^3+\frac{1}{4}bd^2x^4(3Abe+2Acd+bBd)+\frac{1}{8}ce^2x^8(Ace+2bBe+3Bcd)+\frac{1}{9}Bc^2e^3x^9$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^3*x^3)/3 + (b*d^2*(b*B*d + 2*A*c*d + 3*A*b*e)*x^4)/4 + (d*(A*c^2*d
^2 + 3*b^2*e*(B*d + A*e) + 2*b*c*d*(B*d + 3*A*e))*x^5)/5 + ((A*e*(3*c^2*d^2
 + 6*b*c*d*e + b^2*e^2) + B*d*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^6)/6 + (
e*(A*c*e*(3*c*d + 2*b*e) + B*(3*c^2*d^2 + 6*b*c*d*e + b^2*e^2))*x^7)/7 + (c
*e^2*(3*B*c*d + 2*b*B*e + A*c*e)*x^8)/8 + (B*c^2*e^3*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)^2\,dx = \int \left(Ab^2d^3x^2+bd^2(bBd+2Acd+3Abe)x^3+d\left(Ac^2d^2+3b^2e(Bd+Ae)+\right.\right.$$
$$=\frac{1}{3}Ab^2d^3x^3+\frac{1}{4}bd^2(bBd+2Acd+3Abe)x^4+\frac{1}{5}d\left(Ac^2d^2+3b^2e(Bd+Ae)\right.$$

Mathematica [A] time = 0.08, size = 228, normalized size = 1.00

$$\frac{1}{7}ex^7\left(Ace(2be+3cd)+B\left(b^2e^2+6bcde+3c^2d^2\right)\right)+\frac{1}{6}x^6\left(Ae\left(b^2e^2+6bcde+3c^2d^2\right)+Bd\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{5}dx^5\left(3b^2e(Ae+Bd)+2bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^3x^3+\frac{1}{4}bd^2x^4(3Abe+2Acd+bBd)+\frac{1}{8}ce^2x^8(Ace+2bBe+3Bcd)+\frac{1}{9}Bc^2e^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^3*x^3)/3 + (b*d^2*(b*B*d + 2*A*c*d + 3*A*b*e)*x^4)/4 + (d*(A*c^2*d
^2 + 3*b^2*e*(B*d + A*e) + 2*b*c*d*(B*d + 3*A*e))*x^5)/5 + ((A*e*(3*c^2*d^2
 + 6*b*c*d*e + b^2*e^2) + B*d*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^6)/6 + (
e*(A*c*e*(3*c*d + 2*b*e) + B*(3*c^2*d^2 + 6*b*c*d*e + b^2*e^2))*x^7)/7 + (c
*e^2*(3*B*c*d + 2*b*B*e + A*c*e)*x^8)/8 + (B*c^2*e^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 291, normalized size = 1.28

$$\frac{1}{9}x^9e^3c^2B+\frac{3}{8}x^8e^2dc^2B+\frac{1}{4}x^8e^3cbB+\frac{1}{8}x^8e^3c^2A+\frac{3}{7}x^7ed^2c^2B+\frac{6}{7}x^7e^2dcbB+\frac{1}{7}x^7e^3b^2B+\frac{3}{7}x^7e^2dc^2A+\frac{2}{7}x^7e^3cbA+\frac{1}{6}x^6d^3c^2B+x^6ed^2cbB+\frac{1}{2}x^6e^2db^2B+\frac{1}{2}x^6ed^2c^2A+x^6e^2dcbA+\frac{1}{6}x^6e^3b^2A+\frac{2}{5}x^5d^3cbB+\frac{3}{5}x^5ed^2b^2B+\frac{1}{5}x^5d^3c^2A+\frac{6}{5}x^5ed^2cbA+\frac{3}{5}x^5e^2db^2A+\frac{1}{4}x^4d^3b^2B+\frac{1}{2}x^4d^3cbA+\frac{3}{4}x^4ed^2b^2A+\frac{1}{3}x^3d^3b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*c^2*B + 3/8*x^8*e^2*d*c^2*B + 1/4*x^8*e^3*c*b*B + 1/8*x^8*e^3*c
^2*A + 3/7*x^7*e*d^2*c^2*B + 6/7*x^7*e^2*d*c*b*B + 1/7*x^7*e^3*b^2*B + 3/7*
x^7*e^2*d*c^2*A + 2/7*x^7*e^3*c*b*A + 1/6*x^6*d^3*c^2*B + x^6*e*d^2*c*b*B +
 1/2*x^6*e^2*d*b^2*B + 1/2*x^6*e*d^2*c^2*A + x^6*e^2*d*c*b*A + 1/6*x^6*e^3*
b^2*A + 2/5*x^5*d^3*c*b*B + 3/5*x^5*e*d^2*b^2*B + 1/5*x^5*d^3*c^2*A + 6/5*x
^5*e*d^2*c*b*A + 3/5*x^5*e^2*d*b^2*A + 1/4*x^4*d^3*b^2*B + 1/2*x^4*d^3*c*b*
A + 3/4*x^4*e*d^2*b^2*A + 1/3*x^3*d^3*b^2*A
```

giac [A] time = 0.16, size = 285, normalized size = 1.25

$$\frac{1}{9}Bc^2x^9e^3+\frac{3}{8}Bc^2dx^8e^2+\frac{3}{7}Bc^2d^2x^7e+\frac{1}{6}Bc^2d^3x^6+\frac{1}{4}Bbcx^8e^3+\frac{1}{8}Ac^2x^8e^3+\frac{6}{7}Bbcdx^7e^2+\frac{3}{7}Ac^2dx^7e^2+Bbcd^2x^6e+\frac{1}{2}Ac^2d^2x^6e+\frac{2}{5}Bbcd^3x^5+\frac{1}{5}Ac^2d^3x^5+\frac{1}{7}Bb^2x^7e^3+\frac{2}{7}Abcx^7e^3+\frac{1}{2}Bb^2dx^6e^2+Abcdx^6e^2+\frac{3}{5}Bb^2d^2x^5e+\frac{6}{5}Abcd^2x^5e+\frac{1}{4}Bb^2d^3x^4+\frac{1}{2}Abcd^3x^4+\frac{1}{6}Ab^2x^6e^3+\frac{3}{5}Ab^2dx^5e^2+\frac{3}{4}Ab^2d^2x^4e+\frac{1}{3}Ab^2d^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9*e^3 + 3/8*B*c^2*d*x^8*e^2 + 3/7*B*c^2*d^2*x^7*e + 1/6*B*c^2*d
^3*x^6 + 1/4*B*b*c*x^8*e^3 + 1/8*A*c^2*x^8*e^3 + 6/7*B*b*c*d*x^7*e^2 + 3/7*
A*c^2*d*x^7*e^2 + B*b*c*d^2*x^6*e + 1/2*A*c^2*d^2*x^6*e + 2/5*B*b*c*d^3*x^5
 + 1/5*A*c^2*d^3*x^5 + 1/7*B*b^2*x^7*e^3 + 2/7*A*b*c*x^7*e^3 + 1/2*B*b^2*d*
x^6*e^2 + A*b*c*d*x^6*e^2 + 3/5*B*b^2*d^2*x^5*e + 6/5*A*b*c*d^2*x^5*e + 1/4
*B*b^2*d^3*x^4 + 1/2*A*b*c*d^3*x^4 + 1/6*A*b^2*x^6*e^3 + 3/5*A*b^2*d*x^5*e^
2 + 3/4*A*b^2*d^2*x^4*e + 1/3*A*b^2*d^3*x^3
```

maple [A] time = 0.04, size = 247, normalized size = 1.08

$$\frac{Bc^2e^3x^9}{9}+\frac{Ab^2d^3x^3}{3}+\frac{\left(2Bbce^3+\left(Ae^3+3Bde^2\right)c^2\right)x^8}{8}+\frac{\left(Bb^2e^3+2\left(Ae^3+3Bde^2\right)bc+\left(3Ade^2+3Bd^2e\right)c^2\right)x^7}{7}+\frac{\left(\left(Ae^3+3Bde^2\right)b^2+2\left(3Ade^2+3Bd^2e\right)bc+\left(3Ad^2e+Bd^3\right)c^2\right)x^6}{6}+\frac{\left(Ac^2d^3+\left(3Ade^2+3Bd^2e\right)b^2+2\left(3Ad^2e+Bd^3\right)bc\right)x^5}{5}+\frac{\left(2Abcd^3+\left(3Ad^2e+Bd^3\right)b^2\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x)
```

```
[Out] 1/9*B*c^2*e^3*x^9+1/8*((A*e^3+3*B*d*e^2)*c^2+2*B*e^3*b*c)*x^8+1/7*((3*A*d*e
^2+3*B*d^2*e)*c^2+2*(A*e^3+3*B*d*e^2)*b*c+B*e^3*b^2)*x^7+1/6*((3*A*d^2*e+B*
d^3)*c^2+2*(3*A*d*e^2+3*B*d^2*e)*b*c+(A*e^3+3*B*d*e^2)*b^2)*x^6+1/5*(A*d^3*
c^2+2*(3*A*d^2*e+B*d^3)*b*c+(3*A*d*e^2+3*B*d^2*e)*b^2)*x^5+1/4*(2*A*d^3*b*c
+(3*A*d^2*e+B*d^3)*b^2)*x^4+1/3*A*b^2*d^3*x^3
```

maxima [A] time = 0.58, size = 239, normalized size = 1.05

$$\frac{1}{9}Bc^2e^3x^9+\frac{1}{3}Ab^2d^3x^3+\frac{1}{8}\left(3Bc^2de^2+\left(2Bbc+Ac^2\right)e^3\right)x^8+\frac{1}{7}\left(3Bc^2d^2e+3\left(2Bbc+Ac^2\right)de^2+\left(Bb^2+2Abc\right)e^3\right)x^7+\frac{1}{6}\left(Bc^2d^3+Ab^2e^3+3\left(2Bbc+Ac^2\right)d^2e+3\left(Bb^2+2Abc\right)de^2\right)x^6+\frac{1}{5}\left(3Ab^2de^2+\left(2Bbc+Ac^2\right)d^3+3\left(Bb^2+2Abc\right)d^2e\right)x^5+\frac{1}{4}\left(3Ab^2d^2e+\left(Bb^2+2Abc\right)d^3\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*e^3*x^9 + 1/3*A*b^2*d^3*x^3 + 1/8*(3*B*c^2*d*e^2 + (2*B*b*c + A*c
^2)*e^3)*x^8 + 1/7*(3*B*c^2*d^2*e + 3*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2 + 2*
A*b*c)*e^3)*x^7 + 1/6*(B*c^2*d^3 + A*b^2*e^3 + 3*(2*B*b*c + A*c^2)*d^2*e +
3*(B*b^2 + 2*A*b*c)*d*e^2)*x^6 + 1/5*(3*A*b^2*d*e^2 + (2*B*b*c + A*c^2)*d^3
 + 3*(B*b^2 + 2*A*b*c)*d^2*e)*x^5 + 1/4*(3*A*b^2*d^2*e + (B*b^2 + 2*A*b*c)*
d^3)*x^4
```

mupad [B] time = 0.11, size = 234, normalized size = 1.03

$$x^6\left(\frac{B b^2 d e^2}{2}+\frac{A b^2 e^3}{6}+B b c d^2 e+A b c d e^2+\frac{B c^2 d^3}{6}+\frac{A c^2 d^2 e}{2}\right)+x^5\left(\frac{3 B b^2 d^2 e}{5}+\frac{3 A b^2 d e^2}{5}+\frac{2 B b c d^3}{5}+\frac{6 A b c d^2 e}{5}+\frac{A c^2 d^3}{5}\right)+x^7\left(\frac{B b^2 e^3}{7}+\frac{6 B b c d e^2}{7}+\frac{2 A b c e^3}{7}+\frac{3 B c^2 d^2 e}{7}+\frac{3 A c^2 d e^2}{7}\right)+\frac{b d^2 x^4 (3 A b e+2 A c d+B b d)}{4}+\frac{c e^2 x^8 (A c e+2 B b e+3 B c d)}{8}+\frac{A b^2 d^3 x^3}{3}+\frac{B c^2 e^3 x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^6*((A*b^2*e^3)/6 + (B*c^2*d^3)/6 + (A*c^2*d^2*e)/2 + (B*b^2*d*e^2)/2 + A*
b*c*d*e^2 + B*b*c*d^2*e) + x^5*((A*c^2*d^3)/5 + (2*B*b*c*d^3)/5 + (3*A*b^2*
d*e^2)/5 + (3*B*b^2*d^2*e)/5 + (6*A*b*c*d^2*e)/5) + x^7*((B*b^2*e^3)/7 + (2
*A*b*c*e^3)/7 + (3*A*c^2*d*e^2)/7 + (3*B*c^2*d^2*e)/7 + (6*B*b*c*d*e^2)/7)
+ (b*d^2*x^4*(3*A*b*e + 2*A*c*d + B*b*d))/4 + (c*e^2*x^8*(A*c*e + 2*B*b*e +
 3*B*c*d))/8 + (A*b^2*d^3*x^3)/3 + (B*c^2*e^3*x^9)/9
```

sympy [A] time = 0.11, size = 301, normalized size = 1.32

$$\frac{Ab^2d^3x^3}{3}+\frac{Bc^2e^3x^9}{9}+x^8\left(\frac{Ac^2e^3}{8}+\frac{Bbce^3}{4}+\frac{3Bc^2de^2}{8}\right)+x^7\left(\frac{2Abce^3}{7}+\frac{3Ac^2de^2}{7}+\frac{Bb^2e^3}{7}+\frac{6Bbcde^2}{7}+\frac{3Bc^2d^2e}{7}\right)+x^6\left(\frac{Ab^2e^3}{6}+Abcde^2+\frac{Ac^2d^2e}{2}+\frac{Bb^2de^2}{2}+Bbcd^2e+\frac{Bc^2d^3}{6}\right)+x^5\left(\frac{3Ab^2de^2}{5}+\frac{6Abcd^2e}{5}+\frac{Ac^2d^3}{5}+\frac{3Bb^2d^2e}{5}+\frac{2Bbcd^3}{5}\right)+x^4\left(\frac{3Ab^2d^2e}{4}+\frac{Abcd^3}{2}+\frac{Bb^2d^3}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*d**3*x**3/3 + B*c**2*e**3*x**9/9 + x**8*(A*c**2*e**3/8 + B*b*c*e**3/
4 + 3*B*c**2*d*e**2/8) + x**7*(2*A*b*c*e**3/7 + 3*A*c**2*d*e**2/7 + B*b**2*
e**3/7 + 6*B*b*c*d*e**2/7 + 3*B*c**2*d**2*e/7) + x**6*(A*b**2*e**3/6 + A*b*
c*d*e**2 + A*c**2*d**2*e/2 + B*b**2*d*e**2/2 + B*b*c*d**2*e + B*c**2*d**3/6
) + x**5*(3*A*b**2*d*e**2/5 + 6*A*b*c*d**2*e/5 + A*c**2*d**3/5 + 3*B*b**2*d
**2*e/5 + 2*B*b*c*d**3/5) + x**4*(3*A*b**2*d**2*e/4 + A*b*c*d**3/2 + B*b**2
*d**3/4)
```

3.971 $\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=162

$$\frac{1}{6}x^6 \left(2Ace(be+cd)+B\left(b^2e^2+4bcde+c^2d^2\right)\right)+\frac{1}{5}x^5 \left(b^2e(Ae+2Bd)+2bcd(2Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^2x^3+$$

Rubi [A] time = 0.22, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{6}x^6 \left(2Ace(be+cd)+B\left(b^2e^2+4bcde+c^2d^2\right)\right)+\frac{1}{5}x^5 \left(b^2e(Ae+2Bd)+2bcd(2Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^2x^3+\frac{1}{7}cex^7(Ace+2B(be+cd))+\frac{1}{4}bdx^4(2Abe+2Acd+bBd)+\frac{1}{8}Bc^2e^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^2*x^3)/3 + (b*d*(b*B*d + 2*A*c*d + 2*A*b*e)*x^4)/4 + ((A*c^2*d^2 +
 b^2*e*(2*B*d + A*e) + 2*b*c*d*(B*d + 2*A*e))*x^5)/5 + ((2*A*c*e*(c*d + b*e
) + B*(c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^6)/6 + (c*e*(A*c*e + 2*B*(c*d + b*
e))*x^7)/7 + (B*c^2*e^2*x^8)/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^2 \, dx &= \int \left(Ab^2d^2x^2+bd(bBd+2Acd+2Abe)x^3+\left(Ac^2d^2+b^2e(2Bd+Ae)+\right.\right.\\ &= \frac{1}{3}Ab^2d^2x^3+\frac{1}{4}bd(bBd+2Acd+2Abe)x^4+\frac{1}{5}\left(Ac^2d^2+b^2e(2Bd+Ae)\right.\end{aligned}$$

Mathematica [A] time = 0.05, size = 162, normalized size = 1.00

$$\frac{1}{6}x^6 \left(2Ace(be+cd)+B\left(b^2e^2+4bcde+c^2d^2\right)\right)+\frac{1}{5}x^5 \left(b^2e(Ae+2Bd)+2bcd(2Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^2x^3+\frac{1}{7}cex^7(Ace+2B(be+cd))+\frac{1}{4}bdx^4(2Abe+2Acd+bBd)+\frac{1}{8}Bc^2e^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^2*x^3)/3 + (b*d*(b*B*d + 2*A*c*d + 2*A*b*e)*x^4)/4 + ((A*c^2*d^2 +
 b^2*e*(2*B*d + A*e) + 2*b*c*d*(B*d + 2*A*e))*x^5)/5 + ((2*A*c*e*(c*d + b*e
) + B*(c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^6)/6 + (c*e*(A*c*e + 2*B*(c*d + b*
e))*x^7)/7 + (B*c^2*e^2*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 205, normalized size = 1.27

$$\frac{1}{8}x^8e^2c^2B+\frac{2}{7}x^7edc^2B+\frac{2}{7}x^7e^2cbB+\frac{1}{7}x^7e^2c^2A+\frac{1}{6}x^6d^2c^2B+\frac{2}{3}x^6edcbB+\frac{1}{6}x^6e^2b^2B+\frac{1}{3}x^6edc^2A+\frac{1}{3}x^6e^2cbA+\frac{2}{5}x^5d^2cbB+\frac{2}{5}x^5edb^2B+\frac{1}{5}x^5d^2c^2A+\frac{4}{5}x^5edcbA+\frac{1}{5}x^5e^2b^2A+\frac{1}{4}x^4d^2b^2B+\frac{1}{2}x^4d^2cbA+\frac{1}{2}x^4edb^2A+\frac{1}{3}x^3d^2b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*c^2*B + 2/7*x^7*e*d*c^2*B + 2/7*x^7*e^2*c*b*B + 1/7*x^7*e^2*c^2
*A + 1/6*x^6*d^2*c^2*B + 2/3*x^6*e*d*c*b*B + 1/6*x^6*e^2*b^2*B + 1/3*x^6*e*
d*c^2*A + 1/3*x^6*e^2*c*b*A + 2/5*x^5*d^2*c*b*B + 2/5*x^5*e*d*b^2*B + 1/5*x
^5*d^2*c^2*A + 4/5*x^5*e*d*c*b*A + 1/5*x^5*e^2*b^2*A + 1/4*x^4*d^2*b^2*B +
1/2*x^4*d^2*c*b*A + 1/2*x^4*e*d*b^2*A + 1/3*x^3*d^2*b^2*A
```

giac [A] time = 0.15, size = 205, normalized size = 1.27

$$\frac{1}{8}Bc^2x^8e^2+\frac{2}{7}Bc^2dx^7e+\frac{1}{6}Bc^2d^2x^6+\frac{2}{7}Bbcx^7e^2+\frac{1}{7}Ac^2x^7e^2+\frac{2}{3}Bbcdx^6e+\frac{1}{3}Ac^2dx^6e+\frac{2}{5}Bbcd^2x^5+\frac{1}{5}Ac^2d^2x^5+\frac{1}{6}Bb^2x^6e^2+\frac{1}{3}Abcx^6e^2+\frac{2}{5}Bb^2dx^5e+\frac{4}{5}Abcdx^5e+\frac{1}{4}Bb^2d^2x^4+\frac{1}{2}Abcd^2x^4+\frac{1}{5}Ab^2x^5e^2+\frac{1}{2}Ab^2dx^4e+\frac{1}{3}Ab^2d^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8*e^2 + 2/7*B*c^2*d*x^7*e + 1/6*B*c^2*d^2*x^6 + 2/7*B*b*c*x^7*e
^2 + 1/7*A*c^2*x^7*e^2 + 2/3*B*b*c*d*x^6*e + 1/3*A*c^2*d*x^6*e + 2/5*B*b*c*
d^2*x^5 + 1/5*A*c^2*d^2*x^5 + 1/6*B*b^2*x^6*e^2 + 1/3*A*b*c*x^6*e^2 + 2/5*B
*b^2*d*x^5*e + 4/5*A*b*c*d*x^5*e + 1/4*B*b^2*d^2*x^4 + 1/2*A*b*c*d^2*x^4 +
1/5*A*b^2*x^5*e^2 + 1/2*A*b^2*d*x^4*e + 1/3*A*b^2*d^2*x^3
```

maple [A] time = 0.04, size = 172, normalized size = 1.06

$$\frac{B\,c^2e^2x^8}{8}+\frac{A\,b^2d^2x^3}{3}+\frac{\left(2Bbc\,e^2+\left(A\,e^2+2Bde\right)c^2\right)x^7}{7}+\frac{\left(B\,b^2e^2+2\left(A\,e^2+2Bde\right)bc+\left(2Ade+B\,d^2\right)c^2\right)x^6}{6}+\frac{\left(A\,c^2d^2+\left(A\,e^2+2Bde\right)b^2+2\left(2Ade+B\,d^2\right)bc\right)x^5}{5}+\frac{\left(2Abc\,d^2+\left(2Ade+B\,d^2\right)b^2\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x)
```

```
[Out] 1/8*B*c^2*e^2*x^8+1/7*((A*e^2+2*B*d*e)*c^2+2*B*e^2*b*c)*x^7+1/6*((2*A*d*e+B
*d^2)*c^2+2*(A*e^2+2*B*d*e)*b*c+B*e^2*b^2)*x^6+1/5*(A*c^2*d^2+2*(2*A*d*e+B*
d^2)*b*c+(A*e^2+2*B*d*e)*b^2)*x^5+1/4*(2*A*d^2*b*c+(2*A*d*e+B*d^2)*b^2)*x^4
+1/3*A*b^2*d^2*x^3
```

maxima [A] time = 0.64, size = 171, normalized size = 1.06

$$\frac{1}{8}\,Bc^2e^2x^8+\frac{1}{3}\,Ab^2d^2x^3+\frac{1}{7}\,\left(2\,Bc^2de+\left(2\,Bbc+Ac^2\right)e^2\right)x^7+\frac{1}{6}\,\left(Bc^2d^2+2\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)x^6+\frac{1}{5}\,\left(Ab^2e^2+\left(2\,Bbc+Ac^2\right)d^2+2\left(Bb^2+2\,Abc\right)de\right)x^5+\frac{1}{4}\,\left(2\,Ab^2de+\left(Bb^2+2\,Abc\right)d^2\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*e^2*x^8 + 1/3*A*b^2*d^2*x^3 + 1/7*(2*B*c^2*d*e + (2*B*b*c + A*c^2
)*e^2)*x^7 + 1/6*(B*c^2*d^2 + 2*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*c)*e
^2)*x^6 + 1/5*(A*b^2*e^2 + (2*B*b*c + A*c^2)*d^2 + 2*(B*b^2 + 2*A*b*c)*d*e)
*x^5 + 1/4*(2*A*b^2*d*e + (B*b^2 + 2*A*b*c)*d^2)*x^4
```

mupad [B] time = 0.06, size = 161, normalized size = 0.99

$$x^5\,\left(\frac{2\,B\,b^2\,d\,e}{5}+\frac{A\,b^2\,e^2}{5}+\frac{2\,B\,b\,c\,d^2}{5}+\frac{4\,A\,b\,c\,d\,e}{5}+\frac{A\,c^2\,d^2}{5}\right)+x^6\,\left(\frac{B\,b^2\,e^2}{6}+\frac{2\,B\,b\,c\,d\,e}{3}+\frac{A\,b\,c\,e^2}{3}+\frac{B\,c^2\,d^2}{6}+\frac{A\,c^2\,d\,e}{3}\right)+\frac{b\,d\,x^4\,\left(2\,A\,b\,e+2\,A\,c\,d+B\,b\,d\right)}{4}+\frac{c\,e\,x^7\,\left(A\,c\,e+2\,B\,b\,e+2\,B\,c\,d\right)}{7}+\frac{A\,b^2\,d^2\,x^3}{3}+\frac{B\,c^2\,e^2\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^5*((A*b^2*e^2)/5 + (A*c^2*d^2)/5 + (2*B*b*c*d^2)/5 + (2*B*b^2*d*e)/5 + (4
*A*b*c*d*e)/5) + x^6*((B*b^2*e^2)/6 + (B*c^2*d^2)/6 + (A*b*c*e^2)/3 + (A*c^
```

```
2*d*e)/3 + (2*B*b*c*d*e)/3) + (b*d*x^4*(2*A*b*e + 2*A*c*d + B*b*d))/4 + (c*
e*x^7*(A*c*e + 2*B*b*e + 2*B*c*d))/7 + (A*b^2*d^2*x^3)/3 + (B*c^2*e^2*x^8)/
8
```

sympy [A] time = 0.10, size = 212, normalized size = 1.31

$$\frac{Ab^2d^2x^3}{3} + \frac{Bc^2e^2x^8}{8} + x^7\left(\frac{Ac^2e^2}{7} + \frac{2Bbce^2}{7} + \frac{2Bc^2de}{7}\right) + x^6\left(\frac{Abce^2}{3} + \frac{Ac^2de}{3} + \frac{Bb^2e^2}{6} + \frac{2Bbcde}{3} + \frac{Bc^2d^2}{6}\right) + x^5\left(\frac{Ab^2e^2}{5} + \frac{4Abcde}{5} + \frac{Ac^2d^2}{5} + \frac{2Bb^2de}{5} + \frac{2Bbcd^2}{5}\right) + x^4\left(\frac{Ab^2de}{2} + \frac{Abcd^2}{2} + \frac{Bb^2d^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*d**2*x**3/3 + B*c**2*e**2*x**8/8 + x**7*(A*c**2*e**2/7 + 2*B*b*c*e**
2/7 + 2*B*c**2*d*e/7) + x**6*(A*b*c*e**2/3 + A*c**2*d*e/3 + B*b**2*e**2/6 +
 2*B*b*c*d*e/3 + B*c**2*d**2/6) + x**5*(A*b**2*e**2/5 + 4*A*b*c*d*e/5 + A*c
**2*d**2/5 + 2*B*b**2*d*e/5 + 2*B*b*c*d**2/5) + x**4*(A*b**2*d*e/2 + A*b*c*
d**2/2 + B*b**2*d**2/4)
```

3.972 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=100

$$\frac{1}{5}x^5\left(2bc(Ae+Bd)+Ac^2d+b^2Be\right)+\frac{1}{3}Ab^2dx^3+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{4}bx^4(Abe+2Acd+bBd)+\frac{1}{7}Bc^2ex^7$$

Rubi [A] time = 0.11, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{1}{5}x^5\left(2bc(Ae+Bd)+Ac^2d+b^2Be\right)+\frac{1}{3}Ab^2dx^3+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{4}bx^4(Abe+2Acd+bBd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d*x^3)/3 + (b*(b*B*d + 2*A*c*d + A*b*e)*x^4)/4 + ((A*c^2*d + b^2*B*e
 + 2*b*c*(B*d + A*e))*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B*c^2
*e*x^7)/7
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(bx+cx^2\right)^2\,dx &= \int \left(Ab^2dx^2+b(bBd+2Acd+Abe)x^3+\left(Ac^2d+b^2Be+2bc(Bd+Ae)\right)x^4\right.\\ &= \frac{1}{3}Ab^2dx^3+\frac{1}{4}b(bBd+2Acd+Abe)x^4+\frac{1}{5}\left(Ac^2d+b^2Be+2bc(Bd+Ae)\right)x\end{aligned}$$

Mathematica [A] time = 0.03, size = 101, normalized size = 1.01

$$\frac{1}{5}x^5\left(2Abce+Ac^2d+b^2Be+2bBcd\right)+\frac{1}{3}Ab^2dx^3+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{4}bx^4(Abe+2Acd+bBd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d*x^3)/3 + (b*(b*B*d + 2*A*c*d + A*b*e)*x^4)/4 + ((2*b*B*c*d + A*c^2
*d + b^2*B*e + 2*A*b*c*e)*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B
*c^2*e*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 117, normalized size = 1.17

$$\frac{1}{7}x^7ec^2B+\frac{1}{6}x^6dc^2B+\frac{1}{3}x^6ecbB+\frac{1}{6}x^6ec^2A+\frac{2}{5}x^5dcbB+\frac{1}{5}x^5eb^2B+\frac{1}{5}x^5dc^2A+\frac{2}{5}x^5ecbA+\frac{1}{4}x^4db^2B+\frac{1}{2}x^4dcbA+\frac{1}{4}x^4eb^2A+\frac{1}{3}x^3db^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*c^2*B + 1/6*x^6*d*c^2*B + 1/3*x^6*e*c*b*B + 1/6*x^6*e*c^2*A + 2/5
*x^5*d*c*b*B + 1/5*x^5*e*b^2*B + 1/5*x^5*d*c^2*A + 2/5*x^5*e*c*b*A + 1/4*x^
4*d*b^2*B + 1/2*x^4*d*c*b*A + 1/4*x^4*e*b^2*A + 1/3*x^3*d*b^2*A
```

giac [A] time = 0.15, size = 123, normalized size = 1.23

$$\frac{1}{7}Bc^2x^7e+\frac{1}{6}Bc^2dx^6+\frac{1}{3}Bbcx^6e+\frac{1}{6}Ac^2x^6e+\frac{2}{5}Bbcdx^5+\frac{1}{5}Ac^2dx^5+\frac{1}{5}Bb^2x^5e+\frac{2}{5}Abcx^5e+\frac{1}{4}Bb^2dx^4+\frac{1}{2}Abcdx^4+\frac{1}{4}Ab^2x^4e+\frac{1}{3}Ab^2dx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7*e + 1/6*B*c^2*d*x^6 + 1/3*B*b*c*x^6*e + 1/6*A*c^2*x^6*e + 2/5
*B*b*c*d*x^5 + 1/5*A*c^2*d*x^5 + 1/5*B*b^2*x^5*e + 2/5*A*b*c*x^5*e + 1/4*B*
b^2*d*x^4 + 1/2*A*b*c*d*x^4 + 1/4*A*b^2*x^4*e + 1/3*A*b^2*d*x^3
```

maple [A] time = 0.04, size = 97, normalized size = 0.97

$$\frac{B\,c^2e\,x^7}{7}+\frac{A\,b^2d\,x^3}{3}+\frac{\left(2Bbce+(Ae+Bd)\,c^2\right)x^6}{6}+\frac{\left(A\,c^2d+B\,b^2e+2\,(Ae+Bd)\,bc\right)x^5}{5}+\frac{\left(2Abcd+(Ae+Bd)\,b^2\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/7*B*c^2*e*x^7+1/6*((A*e+B*d)*c^2+2*B*e*b*c)*x^6+1/5*(A*c^2*d+b^2*B*e+2*b*
c*(A*e+B*d))*x^5+1/4*(2*A*b*c*d+b^2*(A*e+B*d))*x^4+1/3*A*b^2*d*x^3
```

maxima [A] time = 0.49, size = 103, normalized size = 1.03

$$\frac{1}{7}Bc^2ex^7+\frac{1}{3}Ab^2dx^3+\frac{1}{6}\left(Bc^2d+\left(2\,Bbc+Ac^2\right)e\right)x^6+\frac{1}{5}\left(\left(2\,Bbc+Ac^2\right)d+\left(Bb^2+2\,Abc\right)e\right)x^5+\frac{1}{4}\left(Ab^2e+\left(Bb^2+2\,Abc\right)d\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*e*x^7 + 1/3*A*b^2*d*x^3 + 1/6*(B*c^2*d + (2*B*b*c + A*c^2)*e)*x^6
 + 1/5*((2*B*b*c + A*c^2)*d + (B*b^2 + 2*A*b*c)*e)*x^5 + 1/4*(A*b^2*e + (B*
b^2 + 2*A*b*c)*d)*x^4
```

mupad [B] time = 0.05, size = 102, normalized size = 1.02

$$x^5\left(\frac{A\,c^2\,d}{5}+\frac{B\,b^2\,e}{5}+\frac{2\,A\,b\,c\,e}{5}+\frac{2\,B\,b\,c\,d}{5}\right)+x^4\left(\frac{A\,b^2\,e}{4}+\frac{B\,b^2\,d}{4}+\frac{A\,b\,c\,d}{2}\right)+x^6\left(\frac{A\,c^2\,e}{6}+\frac{B\,c^2\,d}{6}+\frac{B\,b\,c\,e}{3}\right)+\frac{A\,b^2\,d\,x^3}{3}+\frac{B\,c^2\,e\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x),x)
```

```
[Out] x^5*((A*c^2*d)/5 + (B*b^2*e)/5 + (2*A*b*c*e)/5 + (2*B*b*c*d)/5) + x^4*((A*b
^2*e)/4 + (B*b^2*d)/4 + (A*b*c*d)/2) + x^6*((A*c^2*e)/6 + (B*c^2*d)/6 + (B*
b*c*e)/3) + (A*b^2*d*x^3)/3 + (B*c^2*e*x^7)/7
```

sympy [A] time = 0.09, size = 121, normalized size = 1.21

$$\frac{Ab^2dx^3}{3}+\frac{Bc^2ex^7}{7}+x^6\left(\frac{Ac^2e}{6}+\frac{Bbce}{3}+\frac{Bc^2d}{6}\right)+x^5\left(\frac{2Abce}{5}+\frac{Ac^2d}{5}+\frac{Bb^2e}{5}+\frac{2Bbcd}{5}\right)+x^4\left(\frac{Ab^2e}{4}+\frac{Abcd}{2}+\frac{Bb^2d}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*d*x**3/3 + B*c**2*e*x**7/7 + x**6*(A*c**2*e/6 + B*b*c*e/3 + B*c**2*d
/6) + x**5*(2*A*b*c*e/5 + A*c**2*d/5 + B*b**2*e/5 + 2*B*b*c*d/5) + x**4*(A*
b**2*e/4 + A*b*c*d/2 + B*b**2*d/4)
```

3.973 $\int (A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*
x^6)/6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^2\,dx &= \int \left(Ab^2x^2+b(bB+2Ac)x^3+c(2bB+Ac)x^4+Bc^2x^5\right)dx\\ &= \frac{1}{3}Ab^2x^3+\frac{1}{4}b(bB+2Ac)x^4+\frac{1}{5}c(2bB+Ac)x^5+\frac{1}{6}Bc^2x^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.89

$$\frac{1}{60}x^3\left(20Ab^2+12cx^2(Ac+2bB)+15bx(2Ac+bB)+10Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (x^3*(20*A*b^2 + 15*b*(b*B + 2*A*c)*x + 12*c*(2*b*B + A*c)*x^2 + 10*B*c^2*x
^3))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 53, normalized size = 0.96

$$\frac{1}{6}x^6c^2B+\frac{2}{5}x^5cbB+\frac{1}{5}x^5c^2A+\frac{1}{4}x^4b^2B+\frac{1}{2}x^4cbA+\frac{1}{3}x^3b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*b
*A + 1/3*x^3*b^2*A
```

giac [A] time = 0.16, size = 53, normalized size = 0.96

$$\frac{1}{6}\,Bc^2x^6 + \frac{2}{5}\,Bbcx^5 + \frac{1}{5}\,Ac^2x^5 + \frac{1}{4}\,Bb^2x^4 + \frac{1}{2}\,Abcx^4 + \frac{1}{3}\,Ab^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*A*b*c*x
^4 + 1/3*A*b^2*x^3
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^6}{6} + \frac{A\,b^2x^3}{3} + \frac{\left(A\,c^2 + 2bBc\right)x^5}{5} + \frac{\left(2Abc + b^2B\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+B*b^2)*x^4+1/3*A*b^2*x^3
```

maxima [A] time = 0.47, size = 51, normalized size = 0.93

$$\frac{1}{6}\,Bc^2x^6 + \frac{1}{3}\,Ab^2x^3 + \frac{1}{5}\,\left(2\,Bbc + Ac^2\right)x^5 + \frac{1}{4}\,\left(Bb^2 + 2\,Abc\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/3*A*b^2*x^3 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*
A*b*c)*x^4
```

mupad [B] time = 1.34, size = 51, normalized size = 0.93

$$x^4\,\left(\frac{B\,b^2}{4} + \frac{A\,c\,b}{2}\right) + x^5\,\left(\frac{A\,c^2}{5} + \frac{2\,B\,b\,c}{5}\right) + \frac{A\,b^2\,x^3}{3} + \frac{B\,c^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^4*((B*b^2)/4 + (A*b*c)/2) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + (A*b^2*x^3)/3
 + (B*c^2*x^6)/6
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^3}{3} + \frac{Bc^2x^6}{6} + x^5\left(\frac{Ac^2}{5} + \frac{2Bbc}{5}\right) + x^4\left(\frac{Abc}{2} + \frac{Bb^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**3/3 + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2
 + B*b**2/4)
```

3.974 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=161

$$-\frac{d^2(Bd-Ae)(cd-be)^2\log(d+ex)}{e^6}+\frac{dx(Bd-Ae)(cd-be)^2}{e^5}-\frac{x^2(Bd-Ae)(cd-be)^2}{2e^4}-\frac{x^3\left(Ace(cd-2be)-B(cd\right.}{3e^3}$$

Rubi [A] time = 0.23, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{d^2(Bd-Ae)(cd-be)^2\log(d+ex)}{e^6}-\frac{cx^4(-Ace-2bBe+Bcd)}{4e^2}-\frac{x^3\left(Ace(cd-2be)-B(cd-be)^2\right)}{3e^3}-\frac{x^2(Bd-Ae)(cd-be)^2}{2e^4}+\frac{dx(Bd-Ae)(cd-be)^2}{e^5}+\frac{Bc^2x^5}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e)^2*x)/e^5 - ((B*d - A*e)*(c*d - b*e)^2*x^2)/(2*e^
4) - ((A*c*e*(c*d - 2*b*e) - B*(c*d - b*e)^2)*x^3)/(3*e^3) - (c*(B*c*d - 2*
b*B*e - A*c*e)*x^4)/(4*e^2) + (B*c^2*x^5)/(5*e) - (d^2*(B*d - A*e)*(c*d - b
*e)^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{d+ex}\,dx=\int \left(\frac{d(Bd-Ae)(cd-be)^2}{e^5}+\frac{(-Bd+Ae)(-cd+be)^2x}{e^4}+\frac{\left(-Ace(cd-2be)+B(cd\right.}{e^3}\right.$$
$$=\frac{d(Bd-Ae)(cd-be)^2x}{e^5}-\frac{(Bd-Ae)(cd-be)^2x^2}{2e^4}-\frac{\left(Ace(cd-2be)-B(cd-be)^2\right)}{3e^3}$$

Mathematica [A] time = 0.14, size = 156, normalized size = 0.97

$$\frac{-60d^2(Bd-Ae)(cd-be)^2\log(d+ex)+15ce^4x^4(Ace+2bBe-Bcd)+20e^3x^3\left(Ace(2be-cd)+B(cd-be)^2\right)+30e^2x^2(Ae-Bd)(cd-be)^2+60dex(Bd-Ae)(cd-be)^2+12Bc^2e^5x^5}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (60*d*e*(B*d - A*e)*(c*d - b*e)^2*x + 30*e^2*(-(B*d) + A*e)*(c*d - b*e)^2*x
^2 + 20*e^3*(B*(c*d - b*e)^2 + A*c*e*(-(c*d) + 2*b*e))*x^3 + 15*c*e^4*(-(B*
c*d) + 2*b*B*e + A*c*e)*x^4 + 12*B*c^2*e^5*x^5 - 60*d^2*(B*d - A*e)*(c*d -
b*e)^2*Log[d + e*x])/(60*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x), x]
```

fricas [A] time = 0.41, size = 283, normalized size = 1.76

$$\frac{12\,Bc^2e^5x^5-15\,\left(Bc^2de^4-\left(2\,Bbc+Ac^2\right)e^5\right)x^4+20\,\left(Bc^2d^2e^3-\left(2\,Bbc+Ac^2\right)de^4+\left(Bb^2+2\,Abc\right)e^5\right)x^3-30\,\left(Bc^2d^3e^2-Ab^2e^5-\left(2\,Bbc+Ac^2\right)d^2e^3+\left(Bb^2+2\,Abc\right)de^4\right)x^2+60\,\left(Bc^2d^4e-Ab^2de^4-\left(2\,Bbc+Ac^2\right)d^3e^2+\left(Bb^2+2\,Abc\right)d^2e^3\right)x-60\,\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2\right)\log\left(ex+d\right)}{60\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*c^2*e^5*x^5 - 15*(B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 20*
(B*c^2*d^2*e^3 - (2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A*b*c)*e^5)*x^3 - 30*
(B*c^2*d^3*e^2 - A*b^2*e^5 - (2*B*b*c + A*c^2)*d^2*e^3 + (B*b^2 + 2*A*b*c)*
d*e^4)*x^2 + 60*(B*c^2*d^4*e - A*b^2*d*e^4 - (2*B*b*c + A*c^2)*d^3*e^2 + (B
*b^2 + 2*A*b*c)*d^2*e^3)*x - 60*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c
^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*log(e*x + d))/e^6
```

giac [B] time = 0.16, size = 322, normalized size = 2.00

$$-\left(Bc^2d^5-2\,Bbcd^4e-Ac^2d^4e+Bb^2d^3e^2+2\,Abcd^3e^2-Ab^2d^2e^3\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{60}\left(12\,Bc^2x^5e^4-15\,Bc^2dx^4e^3+20\,Bc^2d^2x^3e^2-30\,Bc^2d^3x^2e+60\,Bc^2d^4x+30\,Bbcx^4e^4+15\,Ac^2x^4e^4-40\,Bbcdx^3e^3-20\,Ac^2dx^3e^3+60\,Bbcd^2x^2e^2+30\,Ac^2d^2x^2e^2-120\,Bbcd^3xe-60\,Ac^2d^3xe+20\,Bb^2x^3e^4+40\,Abcx^3e^4-30\,Bb^2dx^2e^3-60\,Abcdx^2e^3+60\,Bb^2d^2xe^2+120\,Abcd^2xe^2+30\,Ab^2x^2e^4-60\,Ab^2dxe^3\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^2*d^5 - 2*B*b*c*d^4*e - A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*A*b*c*d^3*e^2
 - A*b^2*d^2*e^3)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*B*c^2*x^5*e^4 - 15*B*
c^2*d*x^4*e^3 + 20*B*c^2*d^2*x^3*e^2 - 30*B*c^2*d^3*x^2*e + 60*B*c^2*d^4*x
+ 30*B*b*c*x^4*e^4 + 15*A*c^2*x^4*e^4 - 40*B*b*c*d*x^3*e^3 - 20*A*c^2*d*x^3
*e^3 + 60*B*b*c*d^2*x^2*e^2 + 30*A*c^2*d^2*x^2*e^2 - 120*B*b*c*d^3*x*e - 60
*A*c^2*d^3*x*e + 20*B*b^2*x^3*e^4 + 40*A*b*c*x^3*e^4 - 30*B*b^2*d*x^2*e^3 -
 60*A*b*c*d*x^2*e^3 + 60*B*b^2*d^2*x*e^2 + 120*A*b*c*d^2*x*e^2 + 30*A*b^2*x
^2*e^4 - 60*A*b^2*d*x*e^3)*e^(-5)
```

maple [B] time = 0.05, size = 369, normalized size = 2.29

$$\frac{Bc^2x^5}{5e}+\frac{Ac^2x^4}{4e}+\frac{Bbcx^4}{2e}-\frac{Bc^2dx^4}{4e^2}+\frac{2Abcx^3}{3e}-\frac{Ac^2dx^3}{3e^2}+\frac{Bb^2x^3}{3e}-\frac{2Bbcdx^3}{3e^2}+\frac{Bc^2d^2x^3}{3e^3}+\frac{Ab^2x^2}{2e}-\frac{Abcdx^2}{e^2}+\frac{Ac^2d^2x^2}{2e^3}-\frac{Bb^2dx^2}{2e^2}+\frac{Bbcd^2x^2}{e^3}-\frac{Bc^2d^3x^2}{2e^4}+\frac{Ab^2d^2\ln\left(ex+d\right)}{e^3}-\frac{Ab^2dx}{e^2}-\frac{2Abcd^3\ln\left(ex+d\right)}{e^4}+\frac{2Abcd^2x}{e^3}+\frac{Ac^2d^4\ln\left(ex+d\right)}{e^5}-\frac{Ac^2d^3x}{e^4}-\frac{Bb^2d^3\ln\left(ex+d\right)}{e^4}+\frac{Bb^2d^2x}{e^3}+\frac{2Bbcd^4\ln\left(ex+d\right)}{e^5}-\frac{2Bbcd^3x}{e^4}-\frac{Bc^2d^5\ln\left(ex+d\right)}{e^6}+\frac{Bc^2d^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x)
```

```
[Out] 1/e^3*B*x*b^2*d^2-1/e^2*A*x*b^2*d-1/e^4*A*x*c^2*d^3+1/3/e^3*B*x^3*c^2*d^2+1
/2/e^3*A*x^2*c^2*d^2-1/2/e^2*B*x^2*b^2*d-1/2/e^4*B*x^2*c^2*d^3+2/3/e*A*x^3*
b*c-1/3/e^2*A*x^3*c^2*d-1/4/e^2*B*x^4*c^2*d+1/2/e*B*x^4*b*c+2/e^3*A*x*b*c*d
^2-1/e^2*A*x^2*b*c*d+1/e^3*B*x^2*b*c*d^2-2/e^4*B*x*b*c*d^3-2/3/e^2*B*x^3*b*
c*d-2*d^3/e^4*ln(e*x+d)*A*b*c+2*d^4/e^5*ln(e*x+d)*B*b*c+1/3/e*B*x^3*b^2+1/2
/e*A*x^2*b^2+1/4/e*A*x^4*c^2+d^4/e^5*ln(e*x+d)*A*c^2+1/e^5*B*x*c^2*d^4+d^2/
e^3*ln(e*x+d)*A*b^2-d^3/e^4*ln(e*x+d)*B*b^2-d^5/e^6*ln(e*x+d)*B*c^2+1/5*B*c
^2*x^5/e
```

maxima [A] time = 0.54, size = 282, normalized size = 1.75

$$\frac{12\,Bc^2e^4x^5-15\,\left(Bc^2de^3-\left(2\,Bbc+Ac^2\right)e^4\right)x^4+20\,\left(Bc^2d^2e^2-\left(2\,Bbc+Ac^2\right)de^3+\left(Bb^2+2\,Abc\right)e^4\right)x^3-30\,\left(Bc^2d^3e-Ab^2e^4-\left(2\,Bbc+Ac^2\right)d^2e^2+\left(Bb^2+2\,Abc\right)de^3\right)x^2+60\,\left(Bc^2d^4-Ab^2de^3-\left(2\,Bbc+Ac^2\right)d^3e+\left(Bb^2+2\,Abc\right)d^2e^2\right)x}{60\,e^5}-\frac{\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2\right)\log\left(ex+d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*c^2*e^4*x^5 - 15*(B*c^2*d*e^3 - (2*B*b*c + A*c^2)*e^4)*x^4 + 20*
(B*c^2*d^2*e^2 - (2*B*b*c + A*c^2)*d*e^3 + (B*b^2 + 2*A*b*c)*e^4)*x^3 - 30*
(B*c^2*d^3*e - A*b^2*e^4 - (2*B*b*c + A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*
```

```
e^3)*x^2 + 60*(B*c^2*d^4 - A*b^2*d*e^3 - (2*B*b*c + A*c^2)*d^3*e + (B*b^2 +
 2*A*b*c)*d^2*e^2)*x)/e^5 - (B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*
d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.37, size = 308, normalized size = 1.91

$$x^4\left(\frac{A\,c^2+2\,B\,b\,c}{4\,e}-\frac{B\,c^2\,d}{4\,e^2}\right)+x^3\left(\frac{B\,b^2+2\,A\,c\,b}{3\,e}-\frac{d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e}-\frac{B\,c^2\,d}{e^2}\right)}{3\,e}\right)+x^2\left(\frac{A\,b^2}{2\,e}-\frac{d\,\left(\frac{B\,b^2+2\,A\,c\,b}{e}-\frac{d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e}-\frac{B\,c^2\,d}{e^2}\right)}{e}\right)}{2\,e}\right)-\frac{\ln\left(d+e\,x\right)\,\left(B\,b^2\,d^3\,e^2-A\,b^2\,d^2\,e^3-2\,B\,b\,c\,d^4\,e+2\,A\,b\,c\,d^3\,e^2+B\,c^2\,d^5-A\,c^2\,d^4\,e\right)}{e^6}-\frac{d\,x\,\left(\frac{A\,b^2}{e}-\frac{d\,\left(\frac{B\,b^2+2\,A\,c\,b}{e}-\frac{d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e}-\frac{B\,c^2\,d}{e^2}\right)}{e}\right)}{e}\right)}{e}+\frac{B\,c^2\,x^5}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x),x)
```

```
[Out] x^4*((A*c^2 + 2*B*b*c)/(4*e) - (B*c^2*d)/(4*e^2)) + x^3*((B*b^2 + 2*A*b*c)/
(3*e) - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/(3*e)) + x^2*((A*b^2)/(2*
e) - (d*((B*b^2 + 2*A*b*c)/e - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/e)
)/(2*e)) - (log(d + e*x)*(B*c^2*d^5 - A*c^2*d^4*e - A*b^2*d^2*e^3 + B*b^2*d
^3*e^2 - 2*B*b*c*d^4*e + 2*A*b*c*d^3*e^2))/e^6 - (d*x*((A*b^2)/e - (d*((B*b
^2 + 2*A*b*c)/e - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/e))/e))/e + (B*
c^2*x^5)/(5*e)
```

sympy [A] time = 0.62, size = 280, normalized size = 1.74

$$\frac{Bc^2x^5}{5e}-\frac{d^2\left(-Ae+Bd\right)\left(be-cd\right)^2\log\left(d+ex\right)}{e^6}+x^4\left(\frac{Ac^2}{4e}+\frac{Bbc}{2e}-\frac{Bc^2d}{4e^2}\right)+x^3\left(\frac{2Abc}{3e}-\frac{Ac^2d}{3e^2}+\frac{Bb^2}{3e}-\frac{2Bbcd}{3e^2}+\frac{Bc^2d^2}{3e^3}\right)+x^2\left(\frac{Ab^2}{2e}-\frac{Abcd}{e^2}+\frac{Ac^2d^2}{2e^3}-\frac{Bb^2d}{2e^2}+\frac{Bbcd^2}{e^3}-\frac{Bc^2d^3}{2e^4}\right)+x\left(-\frac{Ab^2d}{e^2}+\frac{2Abcd^2}{e^3}-\frac{Ac^2d^3}{e^4}+\frac{Bb^2d^2}{e^3}-\frac{2Bbcd^3}{e^4}+\frac{Bc^2d^4}{e^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d),x)
```

```
[Out] B*c**2*x**5/(5*e) - d**2*(-A*e + B*d)*(b*e - c*d)**2*log(d + e*x)/e**6 + x*
*4*(A*c**2/(4*e) + B*b*c/(2*e) - B*c**2*d/(4*e**2)) + x**3*(2*A*b*c/(3*e) -
 A*c**2*d/(3*e**2) + B*b**2/(3*e) - 2*B*b*c*d/(3*e**2) + B*c**2*d**2/(3*e**
3)) + x**2*(A*b**2/(2*e) - A*b*c*d/e**2 + A*c**2*d**2/(2*e**3) - B*b**2*d/(
2*e**2) + B*b*c*d**2/e**3 - B*c**2*d**3/(2*e**4)) + x*(-A*b**2*d/e**2 + 2*A
*b*c*d**2/e**3 - A*c**2*d**3/e**4 + B*b**2*d**2/e**3 - 2*B*b*c*d**3/e**4 +
B*c**2*d**4/e**5)
```

3.975 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^2} dx$

Optimal. Leaf size=194

$$\frac{d^2(Bd-Ae)(cd-be)^2}{e^6(d+ex)}+\frac{d(cd-be)\log(d+ex)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6}-\frac{x(cd-be)(2Bd(2cd-be)-Ae(3c$$

Rubi [A] time = 0.28, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{d^2(Bd-Ae)(cd-be)^2}{e^6(d+ex)}-\frac{cx^3(-Ace-2bBe+2Bcd)}{3e^3}+\frac{x^2(cd-be)(-2Ace-bBe+3Bcd)}{2e^4}-\frac{x(cd-be)(2Bd(2cd-be)-Ae(3cd-be))}{e^5}+\frac{d(cd-be)\log(d+ex)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6}+\frac{Bc^2x^4}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -(((c*d - b*e)*(2*B*d*(2*c*d - b*e) - A*e*(3*c*d - b*e))*x)/e^5) + ((c*d -
b*e)*(3*B*c*d - b*B*e - 2*A*c*e)*x^2)/(2*e^4) - (c*(2*B*c*d - 2*b*B*e - A*c
*e)*x^3)/(3*e^3) + (B*c^2*x^4)/(4*e^2) + (d^2*(B*d - A*e)*(c*d - b*e)^2)/(e
^6*(d + e*x)) + (d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*
Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^2} dx = \int \left(\frac{(cd-be)(-2Bd(2cd-be)+Ae(3cd-be))}{e^5}+\frac{(-cd+be)(-3Bcd+bBe+2Ace)x}{e^4}\right.$$

$$=-\frac{(cd-be)(2Bd(2cd-be)-Ae(3cd-be))x}{e^5}+\frac{(cd-be)(3Bcd-bBe-2Ace)x^2}{2e^4}-\frac{c(}{}$$

Mathematica [A] time = 0.08, size = 184, normalized size = 0.95

$$\frac{\frac{12d^2(Bd-Ae)(cd-be)^2}{d+ex}+4ce^3x^3(Ace+2bBe-2Bcd)+6e^2x^2(be-cd)(2Ace+bBe-3Bcd)+12ex(be-cd)(Ae(be-3cd)+2Bd(2cd-be))+12d(cd-be)\log(d+ex)(2Ae(be-2cd)+Bd(5cd-3be))+3Bc^2e^4x^4}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*e*(-(c*d) + b*e)*(2*B*d*(2*c*d - b*e) + A*e*(-3*c*d + b*e))*x + 6*e^2*(
-(c*d) + b*e)*(-3*B*c*d + b*B*e + 2*A*c*e)*x^2 + 4*c*e^3*(-2*B*c*d + 2*b*B*
e + A*c*e)*x^3 + 3*B*c^2*e^4*x^4 + (12*d^2*(B*d - A*e)*(c*d - b*e)^2)/(d +
e*x) + 12*d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) + 2*A*e*(-2*c*d + b*e))*Log[d
+ e*x])/(12*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^2, x]
```

fricas [B] time = 0.41, size = 420, normalized size = 2.16

$$\frac{3 \, B c^{2} e^{5} x^{5} + 12 \, B c^{2} d^{5} - 12 \, A b^{2} d^{2} e^{3} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{4} e + 12 \, {\left(B b^{2} + 2 \, A b c\right)} d^{3} e^{2} - {\left(5 \, B c^{2} d e^{4} - 4 \, {\left(2 \, B b c + A c^{2}\right)} e^{5}\right)} x^{4} + 2 \, {\left(5 \, B c^{2} d^{2} e^{3} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d e^{4} + 3 \, {\left(B b^{2} + 2 \, A b c\right)} e^{5}\right)} x^{3} - 6 \, {\left(5 \, B c^{2} d^{3} e^{2} - 2 \, A b^{2} e^{5} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d^{2} e^{3} + 3 \, {\left(B b^{2} + 2 \, A b c\right)} d e^{4}\right)} x^{2} - 12 \, {\left(4 \, B c^{2} d^{4} e - A b^{2} d e^{4} - 3 \, {\left(2 \, B b c + A c^{2}\right)} d^{3} e^{2} + 2 \, {\left(B b^{2} + 2 \, A b c\right)} d^{2} e^{3}\right)} x + 12 \, {\left(5 \, B c^{2} d^{5} - 2 \, A b^{2} d^{2} e^{3} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d^{4} e + 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{3} e^{2} + {\left(5 \, B c^{2} d^{4} e - 2 \, A b^{2} d e^{4} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d^{3} e^{2} + 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{2} e^{3}\right)} x\right)} \log\left(e x + d\right)}{12 \, {\left(e^{7} x + d e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*e^5*x^5 + 12*B*c^2*d^5 - 12*A*b^2*d^2*e^3 - 12*(2*B*b*c + A*c
^2)*d^4*e + 12*(B*b^2 + 2*A*b*c)*d^3*e^2 - (5*B*c^2*d*e^4 - 4*(2*B*b*c + A*
c^2)*e^5)*x^4 + 2*(5*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 +
 2*A*b*c)*e^5)*x^3 - 6*(5*B*c^2*d^3*e^2 - 2*A*b^2*e^5 - 4*(2*B*b*c + A*c^2)
*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 - 12*(4*B*c^2*d^4*e - A*b^2*d*e^4
 - 3*(2*B*b*c + A*c^2)*d^3*e^2 + 2*(B*b^2 + 2*A*b*c)*d^2*e^3)*x + 12*(5*B*c
^2*d^5 - 2*A*b^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*
d^3*e^2 + (5*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*
(B*b^2 + 2*A*b*c)*d^2*e^3)*x)*log(e*x + d))/(e^7*x + d*e^6)
```

giac [B] time = 0.17, size = 380, normalized size = 1.96

$$\frac{1}{12} \, {\left(3 \, B c^{2} - \frac{4 \, {\left(5 \, B c^{2} d e - 2 \, B b c e^{2} - A c^{2} e^{2}\right)} e^{\left(-1\right)}}{x e + d} + \frac{6 \, {\left(10 \, B c^{2} d^{2} e^{2} - 8 \, B b c d e^{3} - 4 \, A c^{2} d e^{3} + B b^{2} e^{4} + 2 \, A b c e^{4}\right)} e^{\left(-2\right)}}{{\left(x e + d\right)}^{2}} - \frac{12 \, {\left(10 \, B c^{2} d^{3} e^{3} - 12 \, B b c d^{2} e^{4} - 6 \, A c^{2} d^{2} e^{4} + 3 \, B b^{2} d e^{5} + 6 \, A b c d e^{5} - A b^{2} e^{6}\right)} e^{\left(-3\right)}}{{\left(x e + d\right)}^{3}}\right)} {\left(x e + d\right)}^{4} e^{\left(-6\right)} - {\left(5 \, B c^{2} d^{4} - 8 \, B b c d^{3} e - 4 \, A c^{2} d^{3} e + 3 \, B b^{2} d^{2} e^{2} + 6 \, A b c d^{2} e^{2} - 2 \, A b^{2} d e^{3}\right)} e^{\left(-6\right)} \log\left(\frac{{\left| x e + d \right|} e^{\left(-1\right)}}{{\left(x e + d\right)}^{2}}\right) + {\left(\frac{B c^{2} d^{5} e^{4}}{x e + d} - \frac{2 \, B b c d^{4} e^{5}}{x e + d} - \frac{A c^{2} d^{4} e^{5}}{x e + d} + \frac{B b^{2} d^{3} e^{6}}{x e + d} + \frac{2 \, A b c d^{3} e^{6}}{x e + d} - \frac{A b^{2} d^{2} e^{7}}{x e + d}\right)} e^{\left(-10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*c^2 - 4*(5*B*c^2*d*e - 2*B*b*c*e^2 - A*c^2*e^2)*e^(-1)/(x*e + d)
+ 6*(10*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 + B*b^2*e^4 + 2*A*b*c
*e^4)*e^(-2)/(x*e + d)^2 - 12*(10*B*c^2*d^3*e^3 - 12*B*b*c*d^2*e^4 - 6*A*c^
2*d^2*e^4 + 3*B*b^2*d*e^5 + 6*A*b*c*d*e^5 - A*b^2*e^6)*e^(-3)/(x*e + d)^3)*
(x*e + d)^4*e^(-6) - (5*B*c^2*d^4 - 8*B*b*c*d^3*e - 4*A*c^2*d^3*e + 3*B*b^2
*d^2*e^2 + 6*A*b*c*d^2*e^2 - 2*A*b^2*d*e^3)*e^(-6)*log(abs(x*e + d)*e^(-1)/
(x*e + d)^2) + (B*c^2*d^5*e^4/(x*e + d) - 2*B*b*c*d^4*e^5/(x*e + d) - A*c^2
*d^4*e^5/(x*e + d) + B*b^2*d^3*e^6/(x*e + d) + 2*A*b*c*d^3*e^6/(x*e + d) -
A*b^2*d^2*e^7/(x*e + d))*e^(-10)
```

maple [B] time = 0.05, size = 394, normalized size = 2.03

$$\frac{B c^{2} x^{4}}{4 e^{2}}+\frac{A c^{2} x^{3}}{3 e^{2}}+\frac{2 B b c \,x^{3}}{3 e^{2}}-\frac{2 B \,c^{2} d \,x^{3}}{3 e^{3}}+\frac{A b c \,x^{2}}{e^{2}}-\frac{A \,c^{2} d \,x^{2}}{e^{3}}+\frac{B \,b^{2} x^{2}}{2 e^{2}}-\frac{2 B b c d \,x^{2}}{e^{3}}+\frac{3 B \,c^{2} d^{2} x^{2}}{2 e^{4}}-\frac{A \,b^{2} d^{2}}{\left(e x +d \right) e^{3}}-\frac{2 A \,b^{2} d \ln \left(e x +d \right)}{e^{3}}+\frac{A \,b^{2} x}{e^{2}}+\frac{2 A b c \,d^{3}}{\left(e x +d \right) e^{4}}+\frac{6 A b c \,d^{2} \ln \left(e x +d \right)}{e^{4}}-\frac{4 A b c d x}{e^{3}}-\frac{A \,c^{2} d^{4}}{\left(e x +d \right) e^{5}}-\frac{4 A \,c^{2} d^{3} \ln \left(e x +d \right)}{e^{5}}+\frac{3 A \,c^{2} d^{2} x}{e^{4}}+\frac{B \,b^{2} d^{3}}{\left(e x +d \right) e^{4}}+\frac{3 B \,b^{2} d^{2} \ln \left(e x +d \right)}{e^{4}}-\frac{2 B \,b^{2} d x}{e^{3}}-\frac{2 B b c \,d^{4}}{\left(e x +d \right) e^{5}}-\frac{8 B b c \,d^{3} \ln \left(e x +d \right)}{e^{5}}+\frac{6 B b c \,d^{2} x}{e^{4}}+\frac{B \,c^{2} d^{5}}{\left(e x +d \right) e^{6}}+\frac{5 B \,c^{2} d^{4} \ln \left(e x +d \right)}{e^{6}}-\frac{4 B \,c^{2} d^{3} x}{e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x)
```

```
[Out] -8*d^3/e^5*ln(e*x+d)*B*b*c+6*d^2/e^4*ln(e*x+d)*A*b*c+2*d^3/e^4/(e*x+d)*A*b*
c-2*d^4/e^5/(e*x+d)*B*b*c-2/e^3*B*x^2*b*c*d-4/e^3*A*b*c*d*x+6/e^4*B*b*c*d^2
*x+1/3/e^2*A*x^3*c^2+1/e^2*A*b^2*x+3/2/e^4*B*x^2*c^2*d^2+3/e^4*A*c^2*d^2*x+
2/3/e^2*B*x^3*b*c-2/3/e^3*B*x^3*c^2*d-2*d/e^3*ln(e*x+d)*A*b^2-4*d^3/e^5*ln(
e*x+d)*A*c^2+3*d^2/e^4*ln(e*x+d)*B*b^2+5*d^4/e^6*ln(e*x+d)*B*c^2-2/e^3*B*b^
2*d*x-4/e^5*B*c^2*d^3*x+d^5/e^6/(e*x+d)*B*c^2-d^2/e^3/(e*x+d)*A*b^2+d^3/e^4
/(e*x+d)*B*b^2+1/e^2*A*x^2*b*c-1/e^3*A*x^2*c^2*d-d^4/e^5/(e*x+d)*A*c^2+1/4*
B*c^2*x^4/e^2+1/2*b^2*B*x^2/e^2
```

maxima [A] time = 0.53, size = 291, normalized size = 1.50

$$\frac{B c^{2} d^{5} - A b^{2} d^{2} e^{3} - {\left(2 \, B b c + A c^{2}\right)} d^{4} e + {\left(B b^{2} + 2 \, A b c\right)} d^{3} e^{2}}{e^{7} x + d e^{6}} + \frac{3 \, B c^{2} e^{3} x^{4} - 4 \, {\left(2 \, B c^{2} d e^{2} - {\left(2 \, B b c + A c^{2}\right)} e^{3}\right)} x^{3} + 6 \, {\left(3 \, B c^{2} d^{2} e - 2 \, {\left(2 \, B b c + A c^{2}\right)} d e^{2} + {\left(B b^{2} + 2 \, A b c\right)} e^{3}\right)} x^{2} - 12 \, {\left(4 \, B c^{2} d^{3} - A b^{2} e^{3} - 3 \, {\left(2 \, B b c + A c^{2}\right)} d^{2} e + 2 \, {\left(B b^{2} + 2 \, A b c\right)} d e^{2}\right)} x}{12 \, e^{5}} + \frac{{\left(5 \, B c^{2} d^{4} - 2 \, A b^{2} d e^{3} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d^{3} e + 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{2} e^{2}\right)} \log\left(e x + d\right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^
3*e^2)/(e^7*x + d*e^6) + 1/12*(3*B*c^2*e^3*x^4 - 4*(2*B*c^2*d*e^2 - (2*B*b*
c + A*c^2)*e^3)*x^3 + 6*(3*B*c^2*d^2*e - 2*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2
 + 2*A*b*c)*e^3)*x^2 - 12*(4*B*c^2*d^3 - A*b^2*e^3 - 3*(2*B*b*c + A*c^2)*d^
2*e + 2*(B*b^2 + 2*A*b*c)*d*e^2)*x)/e^5 + (5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*
(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^2*e^2)*log(e*x + d)/e^6
```

mupad [**B**] time = 1.43, size = 371, normalized size = 1.91

$$x\left(\frac{A\,b^2}{e^2}-\frac{d^2\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e^2}+\frac{2\,d\left(\frac{2\,d\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e}-\frac{B\,b^2+2\,A\,c\,b}{e^2}+\frac{B\,c^2\,d^2}{e^4}\right)}{e}\right)+x^3\left(\frac{A\,c^2+2\,B\,b\,c}{3\,e^2}-\frac{2\,B\,c^2\,d}{3\,e^3}\right)-x^2\left(\frac{d\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e}-\frac{B\,b^2+2\,A\,c\,b}{2\,e^2}+\frac{B\,c^2\,d^2}{2\,e^4}\right)+\frac{B\,b^2\,d^3\,e^2-A\,b^2\,d^2\,e^3-2\,B\,b\,c\,d^4\,e+2\,A\,b\,c\,d^3\,e^2+B\,c^2\,d^5-A\,c^2\,d^4\,e}{e\,\left(x\,e^6+d\,e^5\right)}+\frac{\ln\left(d+e\,x\right)\,\left(3\,B\,b^2\,d^2\,e^2-2\,A\,b^2\,d\,e^3-8\,B\,b\,c\,d^3\,e+6\,A\,b\,c\,d^2\,e^2+5\,B\,c^2\,d^4-4\,A\,c^2\,d^3\,e\right)}{e^6}+\frac{B\,c^2\,x^4}{4\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*b^2)/e^2 - (d^2*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e^2 + (2*d
*((2*d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e - (B*b^2 + 2*A*b*c)/e^2
 + (B*c^2*d^2)/e^4))/e) + x^3*((A*c^2 + 2*B*b*c)/(3*e^2) - (2*B*c^2*d)/(3*e
^3)) - x^2*((d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e - (B*b^2 + 2*A*
b*c)/(2*e^2) + (B*c^2*d^2)/(2*e^4)) + (B*c^2*d^5 - A*c^2*d^4*e - A*b^2*d^2*
e^3 + B*b^2*d^3*e^2 - 2*B*b*c*d^4*e + 2*A*b*c*d^3*e^2)/(e*(d*e^5 + e^6*x))
+ (log(d + e*x)*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*A*c^2*d^3*e + 3*B*b^2*d^2*
e^2 - 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2))/e^6 + (B*c^2*x^4)/(4*e^2)
```

sympy [**A**] time = 1.39, size = 316, normalized size = 1.63

$$\frac{Bc^2x^4}{4e^2}+\frac{d\left(be-cd\right)\left(-2Abe^2+4Acde+3Bbde-5Bcd^2\right)\log\left(d+ex\right)}{e^6}+x^3\left(\frac{Ac^2}{3e^2}+\frac{2Bbc}{3e^2}-\frac{2Bc^2d}{3e^3}\right)+x^2\left(\frac{Abc}{e^2}-\frac{Ac^2d}{e^3}+\frac{Bb^2}{2e^2}-\frac{2Bbcd}{e^3}+\frac{3Bc^2d^2}{2e^4}\right)+x\left(\frac{Ab^2}{e^2}-\frac{4Abcd}{e^3}+\frac{3Ac^2d^2}{e^4}-\frac{2Bb^2d}{e^3}+\frac{6Bbcd^2}{e^4}-\frac{4Bc^2d^3}{e^5}\right)+\frac{-Ab^2d^2e^3+2Abcd^3e^2-Ac^2d^4e+Bb^2d^3e^2-2Bbcd^4e+Bc^2d^5}{de^6+e^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**2,x)
```

```
[Out] B*c**2*x**4/(4*e**2) + d*(b*e - c*d)*(-2*A*b*e**2 + 4*A*c*d*e + 3*B*b*d*e -
 5*B*c*d**2)*log(d + e*x)/e**6 + x**3*(A*c**2/(3*e**2) + 2*B*b*c/(3*e**2) -
 2*B*c**2*d/(3*e**3)) + x**2*(A*b*c/e**2 - A*c**2*d/e**3 + B*b**2/(2*e**2)
- 2*B*b*c*d/e**3 + 3*B*c**2*d**2/(2*e**4)) + x*(A*b**2/e**2 - 4*A*b*c*d/e**
3 + 3*A*c**2*d**2/e**4 - 2*B*b**2*d/e**3 + 6*B*b*c*d**2/e**4 - 4*B*c**2*d**
3/e**5) + (-A*b**2*d**2*e**3 + 2*A*b*c*d**3*e**2 - A*c**2*d**4*e + B*b**2*d
**3*e**2 - 2*B*b*c*d**4*e + B*c**2*d**5)/(d*e**6 + e**7*x)
```

3.976 $\int \frac{(A+Bx)(bx+cx^2)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=232

$$\frac{\log(d+ex)\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6}-\frac{x\left(Ace(3cd-2be)-B\left(b^2e^2-6bcde\right.\right.}{e^5}$$

Rubi [A] time = 0.32, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{x\left(Ace(3cd-2be)-B\left(b^2e^2-6bcde+6c^2d^2\right)\right)}{e^5}+\frac{\log(d+ex)\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6}+\frac{d^2(Bd-Ae)(cd-be)^2}{2e^6(d+ex)^2}-\frac{cx^2(-Ace-2bBe+3Bcd)}{2e^4}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6(d+ex)}+\frac{Bc^2x^3}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] -(((A*c*e*(3*c*d - 2*b*e) - B*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*x)/e^5) -
(c*(3*B*c*d - 2*b*B*e - A*c*e)*x^2)/(2*e^4) + (B*c^2*x^3)/(3*e^3) + (d^2*(B
*d - A*e)*(c*d - b*e)^2)/(2*e^6*(d + e*x)^2) - (d*(c*d - b*e)*(B*d*(5*c*d -
 3*b*e) - 2*A*e*(2*c*d - b*e)))/(e^6*(d + e*x)) + ((A*e*(6*c^2*d^2 - 6*b*c*
d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))*Log[d + e*x])/e
^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^3}\,dx=\int\left(\frac{-Ace(3cd-2be)+B\left(6c^2d^2-6bcde+b^2e^2\right)}{e^5}+\frac{c(-3Bcd+2bBe+Ace)x}{e^4}+\right.$$

$$=-\frac{\left(Ace(3cd-2be)-B\left(6c^2d^2-6bcde+b^2e^2\right)\right)x}{e^5}-\frac{c(3Bcd-2bBe-Ace)x^2}{2e^4}+\frac{B}{}$$

Mathematica [A] time = 0.16, size = 219, normalized size = 0.94

$$\frac{6ex\left(Ace(2be-3cd)+B\left(b^2e^2-6bcde+6c^2d^2\right)\right)+6\log(d+ex)\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)+Bd\left(-3b^2e^2+12bcde-10c^2d^2\right)\right)+\frac{3d^2(Bd-Ae)(cd-be)^2}{(d+ex)^2}+3ce^2x^2(Ace+2bBe-3Bcd)-\frac{6d(cd-be)(2Ae(be-2cd)+Bd(5cd-3be))}{d+ex}+2Bc^2e^3x^3}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*e*(A*c*e*(-3*c*d + 2*b*e) + B*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*x + 3*c
*e^2*(-3*B*c*d + 2*b*B*e + A*c*e)*x^2 + 2*B*c^2*e^3*x^3 + (3*d^2*(B*d - A*e
)*(c*d - b*e)^2)/(d + e*x)^2 - (6*d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) + 2*A*
e*(-2*c*d + b*e)))/(d + e*x) + 6*(B*d*(-10*c^2*d^2 + 12*b*c*d*e - 3*b^2*e^2
) + A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*Log[d + e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^3, x]
```

fricas [B] time = 0.41, size = 483, normalized size = 2.08

$$\frac{2 Bc^{2}e^{5}x^{5} - 27 Bc^{2}d^{5} + 9 Ab^{2}d^{2}e^{3} + 21 \left(2 Bbc + Ac^{2}\right)d^{4}e - 15 \left(Bb^{2} + 2 Abc\right)d^{3}e^{2} - \left(5 Bc^{2}de^{4} - 3 \left(2 Bbc + Ac^{2}\right)e^{5}\right)x^{4} + 2 \left(10 Bc^{2}d^{2}e^{3} - 6 \left(2 Bbc + Ac^{2}\right)de^{4} + 3 \left(Bb^{2} + 2 Abc\right)e^{5}\right)x^{3} + 3 \left(21 Bc^{2}d^{3}e^{2} - 11 \left(2 Bbc + Ac^{2}\right)d^{2}e^{3} + 4 \left(Bb^{2} + 2 Abc\right)de^{4}\right)x^{2} + 6 \left(Bc^{2}d^{4}e + 2 Ab^{2}de^{4} + \left(2 Bbc + Ac^{2}\right)d^{3}e^{2} - 2 \left(Bb^{2} + 2 Abc\right)d^{2}e^{3}\right)x - 6 \left(10 Bc^{2}d^{5} - Ab^{2}d^{2}e^{3} - 6 \left(2 Bbc + Ac^{2}\right)d^{4}e + 3 \left(Bb^{2} + 2 Abc\right)d^{3}e^{2} + \left(10 Bc^{2}d^{3}e^{2} - Ab^{2}e^{5} - 6 \left(2 Bbc + Ac^{2}\right)d^{2}e^{3} + 3 \left(Bb^{2} + 2 Abc\right)de^{4}\right)x^{2} + 2 \left(10 Bc^{2}d^{4}e - Ab^{2}de^{4} - 6 \left(2 Bbc + Ac^{2}\right)d^{3}e^{2} + 3 \left(Bb^{2} + 2 Abc\right)d^{2}e^{3}\right)x\right) \log\left(ex + d\right)}{6 \left(e^{8}x^{2} + 2 de^{7}x + d^{2}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*e^5*x^5 - 27*B*c^2*d^5 + 9*A*b^2*d^2*e^3 + 21*(2*B*b*c + A*c^2
)*d^4*e - 15*(B*b^2 + 2*A*b*c)*d^3*e^2 - (5*B*c^2*d*e^4 - 3*(2*B*b*c + A*c^
2)*e^5)*x^4 + 2*(10*B*c^2*d^2*e^3 - 6*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 +
2*A*b*c)*e^5)*x^3 + 3*(21*B*c^2*d^3*e^2 - 11*(2*B*b*c + A*c^2)*d^2*e^3 + 4*
(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 6*(B*c^2*d^4*e + 2*A*b^2*d*e^4 + (2*B*b*c +
A*c^2)*d^3*e^2 - 2*(B*b^2 + 2*A*b*c)*d^2*e^3)*x - 6*(10*B*c^2*d^5 - A*b^2*d
^2*e^3 - 6*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + (10*B*c^
2*d^3*e^2 - A*b^2*e^5 - 6*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d
*e^4)*x^2 + 2*(10*B*c^2*d^4*e - A*b^2*d*e^4 - 6*(2*B*b*c + A*c^2)*d^3*e^2 +
 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7*x + d^2*e
^6)
```

giac [A] time = 0.16, size = 307, normalized size = 1.32

$$-\left(10 Bc^{2}d^{3} - 12 Bbcd^{2}e - 6 Ac^{2}d^{2}e + 3 Bb^{2}de^{2} + 6 Abcde^{2} - Ab^{2}e^{3}\right)e^{(-6)} \log\left(|xe + d|\right) + \frac{1}{6} \left(2 Bc^{2}x^{3}e^{6} - 9 Bc^{2}dx^{2}e^{5} + 36 Bc^{2}d^{2}xe^{4} + 6 Bbcx^{2}e^{6} + 3 Ac^{2}x^{2}e^{6} - 36 Bbcdxe^{5} - 18 Ac^{2}dxe^{5} + 6 Bb^{2}xe^{6} + 12 Abcxe^{6}\right)e^{(-9)} - \frac{\left(9 Bc^{2}d^{5} - 14 Bbcd^{4}e - 7 Ac^{2}d^{4}e + 5 Bb^{2}d^{3}e^{2} + 10 Abcd^{3}e^{2} - 3 Ab^{2}d^{2}e^{3} + 2 \left(5 Bc^{2}d^{4}e - 8 Bbcd^{3}e^{2} - 4 Ac^{2}d^{3}e^{2} + 3 Bb^{2}d^{2}e^{3} + 6 Abcd^{2}e^{3} - 2 Ab^{2}de^{4}\right)x\right)e^{(-6)}}{2 \left(xe + d\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -(10*B*c^2*d^3 - 12*B*b*c*d^2*e - 6*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d
*e^2 - A*b^2*e^3)*e^(-6)*log(abs(x*e + d)) + 1/6*(2*B*c^2*x^3*e^6 - 9*B*c^2
*d*x^2*e^5 + 36*B*c^2*d^2*x*e^4 + 6*B*b*c*x^2*e^6 + 3*A*c^2*x^2*e^6 - 36*B*
b*c*d*x*e^5 - 18*A*c^2*d*x*e^5 + 6*B*b^2*x*e^6 + 12*A*b*c*x*e^6)*e^(-9) - 1
/2*(9*B*c^2*d^5 - 14*B*b*c*d^4*e - 7*A*c^2*d^4*e + 5*B*b^2*d^3*e^2 + 10*A*b
*c*d^3*e^2 - 3*A*b^2*d^2*e^3 + 2*(5*B*c^2*d^4*e - 8*B*b*c*d^3*e^2 - 4*A*c^2
*d^3*e^2 + 3*B*b^2*d^2*e^3 + 6*A*b*c*d^2*e^3 - 2*A*b^2*d*e^4)*x)*e^(-6)/(x*
e + d)^2
```

maple [A] time = 0.06, size = 420, normalized size = 1.81

$$\frac{B c^{2} x^{3}}{3 e^{3}}-\frac{A b^{2} d^{2}}{2 \left(e x +d \right)^{2} e^{3}}+\frac{A b c \,d^{3}}{\left(e x +d \right)^{2} e^{4}}-\frac{A c^{2} d^{4}}{2 \left(e x +d \right)^{2} e^{5}}+\frac{A c^{2} x^{2}}{2 e^{3}}+\frac{B b^{2} d^{3}}{2 \left(e x +d \right)^{2} e^{4}}-\frac{B b c \,d^{4}}{\left(e x +d \right)^{2} e^{5}}+\frac{B b c \,x^{2}}{e^{3}}+\frac{B c^{2} d^{5}}{2 \left(e x +d \right)^{2} e^{6}}-\frac{3 B c^{2} d \,x^{2}}{2 e^{4}}+\frac{2 A b^{2} d}{\left(e x +d \right) e^{3}}+\frac{A b^{2} \ln \left(e x +d \right)}{e^{3}}-\frac{6 A b c \,d^{2}}{\left(e x +d \right) e^{4}}-\frac{6 A b c d \ln \left(e x +d \right)}{e^{4}}+\frac{2 A b c x}{e^{3}}+\frac{4 A \,c^{2} d^{3}}{\left(e x +d \right) e^{5}}+\frac{6 A \,c^{2} d^{2} \ln \left(e x +d \right)}{e^{5}}-\frac{3 A \,c^{2} d x}{e^{4}}-\frac{3 B \,b^{2} d^{2}}{\left(e x +d \right) e^{4}}-\frac{3 B \,b^{2} d \ln \left(e x +d \right)}{e^{4}}+\frac{B \,b^{2} x}{e^{3}}+\frac{8 B b c \,d^{3}}{\left(e x +d \right) e^{5}}+\frac{12 B b c \,d^{2} \ln \left(e x +d \right)}{e^{5}}-\frac{6 B b c d x}{e^{4}}-\frac{5 B \,c^{2} d^{4}}{\left(e x +d \right) e^{6}}-\frac{10 B \,c^{2} d^{3} \ln \left(e x +d \right)}{e^{6}}+\frac{6 B \,c^{2} d^{2} x}{e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x)
```

```
[Out] -6/e^4*ln(e*x+d)*A*b*c*d+12/e^5*ln(e*x+d)*B*b*c*d^2+d^3/e^4/(e*x+d)^2*A*b*c
-d^4/e^5/(e*x+d)^2*B*b*c-6*d^2/e^4/(e*x+d)*A*b*c+8*d^3/e^5/(e*x+d)*B*b*c-6/
e^4*B*b*c*d*x+1/e^3*ln(e*x+d)*A*b^2+1/2/e^3*A*x^2*c^2+2*d/e^3/(e*x+d)*A*b^2
+4*d^3/e^5/(e*x+d)*A*c^2-3*d^2/e^4/(e*x+d)*B*b^2-5*d^4/e^6/(e*x+d)*B*c^2-1/
2*d^2/e^3/(e*x+d)^2*A*b^2-1/2*d^4/e^5/(e*x+d)^2*A*c^2+1/2*d^3/e^4/(e*x+d)^2
*B*b^2+1/2*d^5/e^6/(e*x+d)^2*B*c^2+1/e^3*B*x^2*b*c-3/2/e^4*B*x^2*c^2*d-10/e
^6*ln(e*x+d)*B*c^2*d^3+2/e^3*A*b*c*x-3/e^4*A*c^2*d*x+6/e^5*B*c^2*d^2*x+6/e^
5*ln(e*x+d)*A*c^2*d^2-3/e^4*ln(e*x+d)*B*b^2*d+b^2*B*x/e^3+1/3*B*c^2*x^3/e^3
```

maxima [A] time = 0.62, size = 302, normalized size = 1.30

$$-\frac{9 Bc^{2}d^{5} - 3 Ab^{2}d^{2}e^{3} - 7 \left(2 Bbc + Ac^{2}\right)d^{4}e + 5 \left(Bb^{2} + 2 Abc\right)d^{3}e^{2} + 2 \left(5 Bc^{2}d^{4}e - 2 Ab^{2}de^{4} - 4 \left(2 Bbc + Ac^{2}\right)d^{3}e^{2} + 3 \left(Bb^{2} + 2 Abc\right)d^{2}e^{3}\right)x}{2 \left(e^{8}x^{2} + 2 de^{7}x + d^{2}e^{6}\right)} + \frac{2 Bc^{2}e^{2}x^{3} - 3 \left(3 Bc^{2}de - \left(2 Bbc + Ac^{2}\right)e^{2}\right)x^{2} + 6 \left(6 Bc^{2}d^{2} - 3 \left(2 Bbc + Ac^{2}\right)de + \left(Bb^{2} + 2 Abc\right)e^{2}\right)x}{6 e^{5}} - \frac{\left(10 Bc^{2}d^{3} - Ab^{2}e^{3} - 6 \left(2 Bbc + Ac^{2}\right)d^{2}e + 3 \left(Bb^{2} + 2 Abc\right)de^{2}\right) \log\left(ex + d\right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*c^2*d^5 - 3*A*b^2*d^2*e^3 - 7*(2*B*b*c + A*c^2)*d^4*e + 5*(B*b^2
+ 2*A*b*c)*d^3*e^2 + 2*(5*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 4*(2*B*b*c + A*c^2)
*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
+ 1/6*(2*B*c^2*e^2*x^3 - 3*(3*B*c^2*d*e - (2*B*b*c + A*c^2)*e^2)*x^2 + 6*(6
*B*c^2*d^2 - 3*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*c)*e^2)*x)/e^5 - (10*
B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e
^2)*log(e*x + d)/e^6
```

mupad [B]   time = 0.14, size = 334, normalized size = 1.44

$$x^2\left(\frac{A\,c^2+2\,B\,b\,c}{2\,e^3}-\frac{3\,B\,c^2\,d}{2\,e^4}\right)-x\left(\frac{3\,d\left(\frac{A\,c^2+2\,B\,b\,c}{e^3}-\frac{3\,B\,c^2\,d}{e^4}\right)}{e}-\frac{B\,b^2+2\,A\,c\,b}{e^3}+\frac{3\,B\,c^2\,d^2}{e^5}\right)-\frac{\frac{5\,B\,b^2\,d^3\,e^2-3\,A\,b^2\,d^2\,e^3-14\,B\,b\,c\,d^4\,e+10\,A\,b\,c\,d^3\,e^2+9\,B\,c^2\,d^5-7\,A\,c^2\,d^4\,e}{2\,e}+x\left(3\,B\,b^2\,d^2\,e^2-2\,A\,b^2\,d\,e^3-8\,B\,b\,c\,d^3\,e+6\,A\,b\,c\,d^2\,e^2+5\,B\,c^2\,d^4-4\,A\,c^2\,d^3\,e\right)}{d^2\,e^5+2\,d\,e^6\,x+e^7\,x^2}+\frac{\ln\left(d+e\,x\right)\left(-3\,B\,b^2\,d\,e^2+A\,b^2\,e^3+12\,B\,b\,c\,d^2\,e-6\,A\,b\,c\,d\,e^2-10\,B\,c^2\,d^3+6\,A\,c^2\,d^2\,e\right)}{e^6}+\frac{B\,c^2\,x^3}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x^2*((A*c^2 + 2*B*b*c)/(2*e^3) - (3*B*c^2*d)/(2*e^4)) - x*((3*d*((A*c^2 + 2
*B*b*c)/e^3 - (3*B*c^2*d)/e^4))/e - (B*b^2 + 2*A*b*c)/e^3 + (3*B*c^2*d^2)/e
^5) - ((9*B*c^2*d^5 - 7*A*c^2*d^4*e - 3*A*b^2*d^2*e^3 + 5*B*b^2*d^3*e^2 - 1
4*B*b*c*d^4*e + 10*A*b*c*d^3*e^2)/(2*e) + x*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 -
4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 - 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2))/(d^2*e^
5 + e^7*x^2 + 2*d*e^6*x) + (log(d + e*x)*(A*b^2*e^3 - 10*B*c^2*d^3 + 6*A*c^
2*d^2*e - 3*B*b^2*d*e^2 - 6*A*b*c*d*e^2 + 12*B*b*c*d^2*e))/e^6 + (B*c^2*x^3
)/(3*e^3)
```

sympy [A]   time = 4.07, size = 362, normalized size = 1.56

$$\frac{Bc^2x^3}{3e^3}+x^2\left(\frac{Ac^2}{2e^3}+\frac{Bbc}{e^3}-\frac{3Bc^2d}{2e^4}\right)+x\left(\frac{2Abc}{e^3}-\frac{3Ac^2d}{e^4}+\frac{Bb^2}{e^3}-\frac{6Bbcd}{e^4}+\frac{6Bc^2d^2}{e^5}\right)+\frac{3Ab^2d^2e^3-10Abcd^3e^2+7Ac^2d^4e-5Bb^2d^3e^2+14Bbcd^4e-9Bc^2d^5+x\left(4Ab^2de^4-12Abcd^2e^3+8Ac^2d^3e^2-6Bb^2d^2e^3+16Bbcd^3e^2-10Bc^2d^4e\right)}{2d^2e^6+4de^7x+2e^8x^2}-\frac{\left(-Ab^2e^3+6Abcde^2-6Ac^2d^2e+3Bb^2de^2-12Bbcd^2e+10Bc^2d^3\right)\log\left(d+ex\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**3,x)
```

```
[Out] B*c**2*x**3/(3*e**3) + x**2*(A*c**2/(2*e**3) + B*b*c/e**3 - 3*B*c**2*d/(2*e
**4)) + x*(2*A*b*c/e**3 - 3*A*c**2*d/e**4 + B*b**2/e**3 - 6*B*b*c*d/e**4 +
6*B*c**2*d**2/e**5) + (3*A*b**2*d**2*e**3 - 10*A*b*c*d**3*e**2 + 7*A*c**2*d
**4*e - 5*B*b**2*d**3*e**2 + 14*B*b*c*d**4*e - 9*B*c**2*d**5 + x*(4*A*b**2*
d*e**4 - 12*A*b*c*d**2*e**3 + 8*A*c**2*d**3*e**2 - 6*B*b**2*d**2*e**3 + 16*
B*b*c*d**3*e**2 - 10*B*c**2*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**
2) - (-A*b**2*e**3 + 6*A*b*c*d*e**2 - 6*A*c**2*d**2*e + 3*B*b**2*d*e**2 - 1
2*B*b*c*d**2*e + 10*B*c**2*d**3)*log(d + e*x)/e**6
```

3.977 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^4} \, dx$

Optimal. Leaf size=238

$$-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10\right.\right.}{e^6}$$

Rubi [A] time = 0.30, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{e^6}+\frac{d^2(Bd-Ae)(cd-be)^2}{3e^6(d+ex)^3}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{2e^6(d+ex)^2}-\frac{cx(-Ace-2bBe+4Bcd)}{e^5}+\frac{Bc^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c*(4*B*c*d - 2*b*B*e - A*c*e)*x)/e^5) + (B*c^2*x^2)/(2*e^4) + (d^2*(B*d
- A*e)*(c*d - b*e)^2)/(3*e^6*(d + e*x)^3) - (d*(c*d - b*e)*(B*d*(5*c*d - 3*
b*e) - 2*A*e*(2*c*d - b*e)))/(2*e^6*(d + e*x)^2) - (A*e*(6*c^2*d^2 - 6*b*c*
d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(e^6*(d + e*x))
 - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*Log[d +
e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^4} \, dx = \int \left(\frac{c(-4Bcd+2bBe+Ace)}{e^5}+\frac{Bc^2x}{e^4}-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^4}+\frac{d(cd-be)(Bd(5cd}{e^5(}\right.$$

$$=-\frac{c(4Bcd-2bBe-Ace)x}{e^5}+\frac{Bc^2x^2}{2e^4}+\frac{d^2(Bd-Ae)(cd-be)^2}{3e^6(d+ex)^3}-\frac{d(cd-be)(Bd(5cd-}{2e^6(d}$$

Mathematica [A] time = 0.16, size = 220, normalized size = 0.92

$$\frac{-\frac{6\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)+Bd\left(-3b^2e^2+12bcde-10c^2d^2\right)\right)}{d+ex}+6\log(d+ex)\left(2Ace(be-2cd)+B\left(b^2e^2-8bcde+10c^2d^2\right)\right)+\frac{2d^2(Bd-Ae)(cd-be)^2}{(d+ex)^3}-\frac{3d(cd-be)(2Ae(be-2cd)+Bd(5cd-3be))}{(d+ex)^2}+6cex(Ace+2bBe-4Bcd)+3Bc^2e^2x^2}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (6*c*e*(-4*B*c*d + 2*b*B*e + A*c*e)*x + 3*B*c^2*e^2*x^2 + (2*d^2*(B*d - A*e
)*(c*d - b*e)^2)/(d + e*x)^3 - (3*d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) + 2*A*
e*(-2*c*d + b*e)))/(d + e*x)^2 - (6*(B*d*(-10*c^2*d^2 + 12*b*c*d*e - 3*b^2*
e^2) + A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2)))/(d + e*x) + 6*(2*A*c*e*(-2*c
*d + b*e) + B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*Log[d + e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^4} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^4, x]
```

fricas [B] time = 0.39, size = 505, normalized size = 2.12

$$\frac{3 Bc^2e^5x^5 + 47 Bc^2d^5 - 2 Ab^2d^2e^3 - 26 (2 Bbc + Ac^2)d^4e + 11 (Bb^2 + 2 Abc)d^3e^2 - 3 (5 Bc^2de^4 - 2 (2 Bbc + Ac^2)e^5)x^4 - 9 (7 Bc^2d^2e^3 - 2 (2 Bbc + Ac^2)de^4)x^3 - 3 (3 Bc^2d^3e^2 + 2 Ab^2e^5 + 6 (2 Bbc + Ac^2)d^2e^3 - 6 (Bb^2 + 2 Abc)de^4)x^2 + 3 (27 Bc^2d^4e - 2 Ab^2de^4 - 18 (2 Bbc + Ac^2)d^3e^2 + 9 (Bb^2 + 2 Abc)d^2e^3)x + 6 (10 Bc^2d^5 - 4 (2 Bbc + Ac^2)d^4e + (Bb^2 + 2 Abc)d^3e^2 + (10 Bc^2d^2e^3 - 4 (2 Bbc + Ac^2)de^4 + (Bb^2 + 2 Abc)e^5)x^3 + 3 (10 Bc^2d^3e^2 - 4 (2 Bbc + Ac^2)d^2e^3 + (Bb^2 + 2 Abc)de^4)x^2 + 3 (10 Bc^2d^4e - 4 (2 Bbc + Ac^2)d^3e^2 + (Bb^2 + 2 Abc)d^2e^3)x)\log (ex + d)}{6 (e^9x^3 + 3 de^8x^2 + 3 d^2e^7x + d^3e^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*e^5*x^5 + 47*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 26*(2*B*b*c + A*c^2
)*d^4*e + 11*(B*b^2 + 2*A*b*c)*d^3*e^2 - 3*(5*B*c^2*d*e^4 - 2*(2*B*b*c + A*
c^2)*e^5)*x^4 - 9*(7*B*c^2*d^2*e^3 - 2*(2*B*b*c + A*c^2)*d*e^4)*x^3 - 3*(3*
B*c^2*d^3*e^2 + 2*A*b^2*e^5 + 6*(2*B*b*c + A*c^2)*d^2*e^3 - 6*(B*b^2 + 2*A*
b*c)*d*e^4)*x^2 + 3*(27*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 18*(2*B*b*c + A*c^2)*
d^3*e^2 + 9*(B*b^2 + 2*A*b*c)*d^2*e^3)*x + 6*(10*B*c^2*d^5 - 4*(2*B*b*c + A
*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 + (10*B*c^2*d^2*e^3 - 4*(2*B*b*c +
A*c^2)*d*e^4 + (B*b^2 + 2*A*b*c)*e^5)*x^3 + 3*(10*B*c^2*d^3*e^2 - 4*(2*B*b*
c + A*c^2)*d^2*e^3 + (B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 3*(10*B*c^2*d^4*e - 4*(
2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*A*b*c)*d^2*e^3)*x)*log(e*x + d))/(e^9
*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.16, size = 299, normalized size = 1.26

$$(10 Bc^2d^2 - 8 Bbcde - 4 Ac^2de + Bb^2e^2 + 2 Abce^2)e^{(-6)} \log (|xe + d|) + \frac{1}{2} (Bc^2x^2e^4 - 8 Bc^2dxe^3 + 4 Bbcxe^4 + 2 Ac^2xe^4)e^{(-8)} + \frac{(47 Bc^2d^5 - 52 Bbcd^4e - 26 Ac^2d^4e + 11 Bb^2d^3e^2 + 22 Abcd^3e^2 - 2 Ab^2d^2e^3 + 6 (10 Bc^2d^3e^2 - 12 Bbcd^2e^3 - 6 Ac^2d^2e^3 + 3 Bb^2de^4 + 6 Abcde^4 - Ab^2e^5)x^2 + 3 (35 Bc^2d^4e - 40 Bbcd^3e^2 - 20 Ac^2d^3e^2 + 9 Bb^2d^2e^3 + 18 Abcd^2e^3 - 2 Ab^2de^4)x)e^{(-6)}}{6 (xe + d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (10*B*c^2*d^2 - 8*B*b*c*d*e - 4*A*c^2*d*e + B*b^2*e^2 + 2*A*b*c*e^2)*e^(-6)
*log(abs(x*e + d)) + 1/2*(B*c^2*x^2*e^4 - 8*B*c^2*d*x*e^3 + 4*B*b*c*x*e^4 +
 2*A*c^2*x*e^4)*e^(-8) + 1/6*(47*B*c^2*d^5 - 52*B*b*c*d^4*e - 26*A*c^2*d^4*
e + 11*B*b^2*d^3*e^2 + 22*A*b*c*d^3*e^2 - 2*A*b^2*d^2*e^3 + 6*(10*B*c^2*d^3
*e^2 - 12*B*b*c*d^2*e^3 - 6*A*c^2*d^2*e^3 + 3*B*b^2*d*e^4 + 6*A*b*c*d*e^4 -
 A*b^2*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 40*B*b*c*d^3*e^2 - 20*A*c^2*d^3*e^2 +
 9*B*b^2*d^2*e^3 + 18*A*b*c*d^2*e^3 - 2*A*b^2*d*e^4)*x)*e^(-6)/(x*e + d)^3
```

maple [A] time = 0.07, size = 446, normalized size = 1.87

$$-\frac{A b^2d^2}{3 (ex + d)^3 e^3} + \frac{2Abc d^3}{3 (ex + d)^3 e^4} - \frac{A c^2d^4}{3 (ex + d)^3 e^5} + \frac{B b^2d^3}{3 (ex + d)^3 e^4} - \frac{2Bbc d^4}{3 (ex + d)^3 e^5} + \frac{B c^2d^5}{3 (ex + d)^3 e^6} + \frac{A b^2d}{(ex + d)^2 e^3} - \frac{3Abc d^2}{(ex + d)^2 e^4} + \frac{2A c^2d^3}{(ex + d)^2 e^5} - \frac{3B b^2d^2}{2 (ex + d)^2 e^4} + \frac{4Bbc d^3}{(ex + d)^2 e^5} - \frac{5B c^2d^4}{2 (ex + d)^2 e^6} + \frac{B c^2x^2}{2e^4} - \frac{A b^2}{(ex + d) e^3} + \frac{6Abcd}{(ex + d) e^4} + \frac{2Abc \ln (ex + d)}{e^4} - \frac{6A c^2d^2}{(ex + d) e^5} - \frac{4A c^2d \ln (ex + d)}{e^5} + \frac{A c^2x}{e^4} + \frac{3B b^2d}{(ex + d) e^4} + \frac{B b^2 \ln (ex + d)}{e^4} - \frac{12Bbc d^2}{(ex + d) e^5} - \frac{8Bbcd \ln (ex + d)}{e^5} + \frac{2Bbcx}{e^4} + \frac{10B c^2d^3}{(ex + d) e^6} + \frac{10B c^2d^2 \ln (ex + d)}{e^6} - \frac{4B c^2dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x)
```

```
[Out] c^2/e^4*A*x-1/e^3/(e*x+d)*A*b^2-12/e^5/(e*x+d)*B*b*c*d^2-8/e^5*ln(e*x+d)*B*
b*c*d-2/3*d^4/e^5/(e*x+d)^3*B*b*c+2/3*d^3/e^4/(e*x+d)^3*A*b*c+4*d^3/e^5/(e*
x+d)^2*B*b*c-3*d^2/e^4/(e*x+d)^2*A*b*c+6/e^4/(e*x+d)*A*b*c*d-1/3*d^2/e^3/(e
*x+d)^3*A*b^2-1/3*d^4/e^5/(e*x+d)^3*A*c^2-5/2*d^4/e^6/(e*x+d)^2*B*c^2+2/e^4
*ln(e*x+d)*A*b*c-4/e^5*ln(e*x+d)*A*c^2*d+10/e^6*ln(e*x+d)*B*c^2*d^2-4*c^2/e
^5*B*d*x-6/e^5/(e*x+d)*A*c^2*d^2+3/e^4/(e*x+d)*B*b^2*d+10/e^6/(e*x+d)*B*c^2
*d^3+d/e^3/(e*x+d)^2*A*b^2+2*d^3/e^5/(e*x+d)^2*A*c^2-3/2*d^2/e^4/(e*x+d)^2*
B*b^2+1/3*d^3/e^4/(e*x+d)^3*B*b^2+1/3*d^5/e^6/(e*x+d)^3*B*c^2+2*c/e^4*B*b*x
+1/2*B*c^2*x^2/e^4+b^2*B*ln(e*x+d)/e^4
```

maxima [A] time = 0.54, size = 311, normalized size = 1.31

$$\frac{47 Bc^2d^5 - 2 Ab^2d^2e^3 - 26 (2 Bbc + Ac^2)d^4e + 11 (Bb^2 + 2 Abc)d^3e^2 + 6 (10 Bc^2d^3e^2 - Ab^2e^5 - 6 (2 Bbc + Ac^2)d^2e^3 + 3 (Bb^2 + 2 Abc)de^4)x^2 + 3 (35 Bc^2d^4e - 2 Ab^2de^4 - 20 (2 Bbc + Ac^2)d^3e^2 + 9 (Bb^2 + 2 Abc)d^2e^3)x}{6 (e^9x^3 + 3 de^8x^2 + 3 d^2e^7x + d^3e^6)} + \frac{Bc^2ex^2 - 2 (4 Bc^2d - (2 Bbc + Ac^2)e)x}{2 e^5} + \frac{(10 Bc^2d^2 - 4 (2 Bbc + Ac^2)de + (Bb^2 + 2 Abc)e^2) \log (ex + d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 26*(2*B*b*c + A*c^2)*d^4*e + 11*(B*b^
2 + 2*A*b*c)*d^3*e^2 + 6*(10*B*c^2*d^3*e^2 - A*b^2*e^5 - 6*(2*B*b*c + A*c^2
)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 3*(35*B*c^2*d^4*e - 2*A*b^2*d*
e^4 - 20*(2*B*b*c + A*c^2)*d^3*e^2 + 9*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^9*x
^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6) + 1/2*(B*c^2*e*x^2 - 2*(4*B*c^2*d
 - (2*B*b*c + A*c^2)*e)*x)/e^5 + (10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e +
(B*b^2 + 2*A*b*c)*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 0.14, size = 328, normalized size = 1.38

$$x\left(\frac{A\,c^2+2\,B\,b\,c}{e^4}-\frac{4\,B\,c^2\,d}{e^5}\right)+\frac{\frac{11\,B\,b^2\,d^3\,e^2-2\,A\,b^2\,d^2\,e^3-52\,B\,b\,c\,d^4\,e+22\,A\,b\,c\,d^3\,e^2+47\,B\,c^2\,d^5-26\,A\,c^2\,d^4\,e}{6\,e}-x^2\,\left(-3\,B\,b^2\,d\,e^3+A\,b^2\,e^4+12\,B\,b\,c\,d^2\,e^2-6\,A\,b\,c\,d\,e^3-10\,B\,c^2\,d^3\,e+6\,A\,c^2\,d^2\,e^2\right)+x\,\left(\frac{9\,B\,b^2\,d^2\,e^2}{2}-A\,b^2\,d\,e^3-20\,B\,b\,c\,d^3\,e+9\,A\,b\,c\,d^2\,e^2+\frac{35\,B\,c^2\,d^4}{2}-10\,A\,c^2\,d^3\,e\right)}{d^3\,e^5+3\,d^2\,e^6\,x+3\,d\,e^7\,x^2+e^8\,x^3}+\frac{\ln\left(d+e\,x\right)\,\left(B\,b^2\,e^2-8\,B\,b\,c\,d\,e+2\,A\,b\,c\,e^2+10\,B\,c^2\,d^2-4\,A\,c^2\,d\,e\right)}{e^6}+\frac{B\,c^2\,x^2}{2\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] x*((A*c^2 + 2*B*b*c)/e^4 - (4*B*c^2*d)/e^5) + ((47*B*c^2*d^5 - 26*A*c^2*d^4
*e - 2*A*b^2*d^2*e^3 + 11*B*b^2*d^3*e^2 - 52*B*b*c*d^4*e + 22*A*b*c*d^3*e^2
)/(6*e) - x^2*(A*b^2*e^4 - 3*B*b^2*d*e^3 - 10*B*c^2*d^3*e + 6*A*c^2*d^2*e^2
 - 6*A*b*c*d*e^3 + 12*B*b*c*d^2*e^2) + x*((35*B*c^2*d^4)/2 - A*b^2*d*e^3 -
10*A*c^2*d^3*e + (9*B*b^2*d^2*e^2)/2 - 20*B*b*c*d^3*e + 9*A*b*c*d^2*e^2))/(
d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (log(d + e*x)*(B*b^2*e^2 +
 10*B*c^2*d^2 + 2*A*b*c*e^2 - 4*A*c^2*d*e - 8*B*b*c*d*e))/e^6 + (B*c^2*x^2)
/(2*e^4)
```

sympy [A] time = 11.73, size = 374, normalized size = 1.57

$$\frac{Bc^2x^2}{2e^4}+x\left(\frac{Ac^2}{e^4}+\frac{2Bbc}{e^4}-\frac{4Bc^2d}{e^5}\right)+\frac{-2Ab^2d^2e^3+22Abcd^3e^2-26Ac^2d^4e+11Bb^2d^3e^2-52Bbcd^4e+47Bc^2d^5+x^2\left(-6Ab^2e^5+36Abcde^4-36Ac^2d^2e^3+18Bb^2de^4-72Bbcd^2e^3+60Bc^2d^3e^2\right)+x\left(-6Ab^2de^4+54Abcd^2e^3-60Ac^2d^3e^2+27Bb^2d^2e^3-120Bbcd^3e^2+105Bc^2d^4e\right)}{6d^3e^6+18d^2e^7x+18de^8x^2+6e^9x^3}+\frac{\left(2Abce^2-4Ac^2de+Bb^2e^2-8Bbcde+10Bc^2d^2\right)\log\left(d+ex\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**4,x)
```

```
[Out] B*c**2*x**2/(2*e**4) + x*(A*c**2/e**4 + 2*B*b*c/e**4 - 4*B*c**2*d/e**5) + (
-2*A*b**2*d**2*e**3 + 22*A*b*c*d**3*e**2 - 26*A*c**2*d**4*e + 11*B*b**2*d**
3*e**2 - 52*B*b*c*d**4*e + 47*B*c**2*d**5 + x**2*(-6*A*b**2*e**5 + 36*A*b*c
*d*e**4 - 36*A*c**2*d**2*e**3 + 18*B*b**2*d*e**4 - 72*B*b*c*d**2*e**3 + 60*
B*c**2*d**3*e**2) + x*(-6*A*b**2*d*e**4 + 54*A*b*c*d**2*e**3 - 60*A*c**2*d*
*3*e**2 + 27*B*b**2*d**2*e**3 - 120*B*b*c*d**3*e**2 + 105*B*c**2*d**4*e))/(
6*d**3*e**6 + 18*d**2*e**7*x + 18*d*e**8*x**2 + 6*e**9*x**3) + (2*A*b*c*e**
2 - 4*A*c**2*d*e + B*b**2*e**2 - 8*B*b*c*d*e + 10*B*c**2*d**2)*log(d + e*x)
/e**6
```

3.978 $\int \frac{(A+Bx)(bx+cx^2)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=240

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{2e^6(d+ex)^2}+\frac{d^2(B$$

Rubi [A] time = 0.28, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{2e^6(d+ex)^2}+\frac{d^2(Bd-Ae)(cd-be)^2}{4e^6(d+ex)^4}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6(d+ex)^3}-\frac{c\log(d+ex)(-Ace-2bBe+5Bcd)}{e^6}+\frac{Bc^2x}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (B*c^2*x)/e^5 + (d^2*(B*d - A*e)*(c*d - b*e)^2)/(4*e^6*(d + e*x)^4) - (d*(c
*d - b*e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(3*e^6*(d + e*x)^3)
- (A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))/(2*e^6*(d + e*x)^2) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8
*b*c*d*e + b^2*e^2))/(e^6*(d + e*x)) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*Log[d
 + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^5}\,dx=\int \left(\frac{Bc^2}{e^5}-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^4}\right.$$

$$=\frac{Bc^2x}{e^5}+\frac{d^2(Bd-Ae)(cd-be)^2}{4e^6(d+ex)^4}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6(d+ex)^3}-$$

Mathematica [A] time = 0.14, size = 275, normalized size = 1.15

$$-\frac{Ae\left(b^2e^2\left(d^2+4dex+6e^2x^2\right)+6bce\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)+c^2(-d)\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)+12c(d+ex)^4\log(d+ex)(-Ace-2bBe+5Bcd)+B\left(3b^2e^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)-2bcde\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)+c^2\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)\right)}{12e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(b^2*e^2*(d^2 + 4*d*e*x + 6*e^2*x^2) + 6*b*c*e*(d^3 + 4*d^2*e*x
+ 6*d*e^2*x^2 + 4*e^3*x^3) - c^2*d*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 4
8*e^3*x^3)) + B*(3*b^2*e^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - 2*
b*c*d*e*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) + c^2*(77*d^5 +
248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5)
) + 12*c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^4*Log[d + e*x])/(e^6*(d + e*
x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^5, x]
```

fricas [B] time = 0.41, size = 475, normalized size = 1.98

$$\frac{12\,Bc^{2}e^{5}x^{5} + 48\,Bc^{2}de^{4}x^{4} - 77\,Bc^{2}d^{5} - Ab^{2}d^{2}e^{3} + 25\left(2\,Bbc + Ac^{2}\right)d^{4}e - 3\left(Bb^{2} + 2\,Abc\right)d^{3}e^{2} - 12\left(4\,Bc^{2}d^{2}e^{3} - 4\left(2\,Bbc + Ac^{2}\right)de^{4} + \left(Bb^{2} + 2\,Abc\right)e^{5}\right)x^{3} - 6\left(42\,Bc^{2}d^{3}e^{2} + Ab^{2}e^{5} - 18\left(2\,Bbc + Ac^{2}\right)d^{2}e^{3} + 3\left(Bb^{2} + 2\,Abc\right)de^{4}\right)x^{2} - 4\left(62\,Bc^{2}d^{4}e + Ab^{2}de^{4} - 22\left(2\,Bbc + Ac^{2}\right)d^{3}e^{2} + 3\left(Bb^{2} + 2\,Abc\right)d^{2}e^{3}\right)x - 12\left(5\,Bc^{2}d^{5} - \left(2\,Bbc + Ac^{2}\right)d^{4}e + \left(5\,Bc^{2}de^{4} - \left(2\,Bbc + Ac^{2}\right)e^{5}\right)x^{4} + 4\left(5\,Bc^{2}d^{2}e^{3} - \left(2\,Bbc + Ac^{2}\right)de^{4}\right)x^{3} + 6\left(5\,Bc^{2}d^{3}e^{2} - \left(2\,Bbc + Ac^{2}\right)d^{2}e^{3}\right)x^{2} + 4\left(5\,Bc^{2}d^{4}e - \left(2\,Bbc + Ac^{2}\right)d^{3}e^{2}\right)x\right)\log\left(ex + d\right)}{12\left(e^{10}x^{4} + 4\,de^{9}x^{3} + 6\,d^{2}e^{8}x^{2} + 4\,d^{3}e^{7}x + d^{4}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*e^5*x^5 + 48*B*c^2*d*e^4*x^4 - 77*B*c^2*d^5 - A*b^2*d^2*e^3
+ 25*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2 + 2*A*b*c)*d^3*e^2 - 12*(4*B*c^2*d^
2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A*b*c)*e^5)*x^3 - 6*(42*B*c^
2*d^3*e^2 + A*b^2*e^5 - 18*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*
d*e^4)*x^2 - 4*(62*B*c^2*d^4*e + A*b^2*d*e^4 - 22*(2*B*b*c + A*c^2)*d^3*e^2
 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x - 12*(5*B*c^2*d^5 - (2*B*b*c + A*c^2)*d^4
*e + (5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 4*(5*B*c^2*d^2*e^3 - (2*
B*b*c + A*c^2)*d*e^4)*x^3 + 6*(5*B*c^2*d^3*e^2 - (2*B*b*c + A*c^2)*d^2*e^3)
*x^2 + 4*(5*B*c^2*d^4*e - (2*B*b*c + A*c^2)*d^3*e^2)*x)*log(e*x + d))/(e^10
*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.18, size = 474, normalized size = 1.98

$$(xe + d)Bc^{2}e^{(-6)} + \left(5\,Bc^{2}d - 2\,Bbce - Ac^{2}e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^{2}}\right) - \frac{1}{12}\left(\frac{120\,Bc^{2}d^{2}e^{22}}{xe + d} - \frac{60\,Bc^{2}d^{3}e^{22}}{(xe + d)^{2}} + \frac{20\,Bc^{2}d^{4}e^{22}}{(xe + d)^{3}} - \frac{3\,Bc^{2}d^{5}e^{22}}{(xe + d)^{4}} - \frac{96\,Bbcde^{23}}{xe + d} - \frac{48\,Ac^{2}de^{23}}{xe + d} + \frac{72\,Bbcd^{2}e^{23}}{(xe + d)^{2}} + \frac{36\,Ac^{2}d^{2}e^{23}}{(xe + d)^{2}} - \frac{32\,Bbcd^{3}e^{23}}{(xe + d)^{3}} - \frac{16\,Ac^{2}d^{3}e^{23}}{(xe + d)^{3}} + \frac{6\,Bbcd^{4}e^{23}}{(xe + d)^{4}} + \frac{3\,Ac^{2}d^{4}e^{23}}{(xe + d)^{4}} + \frac{12\,Bb^{2}e^{24}}{xe + d} + \frac{24\,Abce^{24}}{xe + d} - \frac{18\,Bb^{2}de^{24}}{(xe + d)^{2}} - \frac{36\,Abcde^{24}}{(xe + d)^{2}} + \frac{12\,Bb^{2}d^{2}e^{24}}{(xe + d)^{3}} + \frac{24\,Abcd^{2}e^{24}}{(xe + d)^{3}} - \frac{3\,Bb^{2}d^{3}e^{24}}{(xe + d)^{4}} - \frac{6\,Abcd^{3}e^{24}}{(xe + d)^{4}} + \frac{6\,Ab^{2}e^{25}}{(xe + d)^{2}} - \frac{8\,Ab^{2}de^{25}}{(xe + d)^{3}} + \frac{3\,Ab^{2}d^{2}e^{25}}{(xe + d)^{4}}\right)e^{(-28)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*c^2*e^(-6) + (5*B*c^2*d - 2*B*b*c*e - A*c^2*e)*e^(-6)*log(abs(x
*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(120*B*c^2*d^2*e^22/(x*e + d) - 60*B*c^2
*d^3*e^22/(x*e + d)^2 + 20*B*c^2*d^4*e^22/(x*e + d)^3 - 3*B*c^2*d^5*e^22/(x
*e + d)^4 - 96*B*b*c*d*e^23/(x*e + d) - 48*A*c^2*d*e^23/(x*e + d) + 72*B*b*
c*d^2*e^23/(x*e + d)^2 + 36*A*c^2*d^2*e^23/(x*e + d)^2 - 32*B*b*c*d^3*e^23/
(x*e + d)^3 - 16*A*c^2*d^3*e^23/(x*e + d)^3 + 6*B*b*c*d^4*e^23/(x*e + d)^4
+ 3*A*c^2*d^4*e^23/(x*e + d)^4 + 12*B*b^2*e^24/(x*e + d) + 24*A*b*c*e^24/(x
*e + d) - 18*B*b^2*d*e^24/(x*e + d)^2 - 36*A*b*c*d*e^24/(x*e + d)^2 + 12*B*
b^2*d^2*e^24/(x*e + d)^3 + 24*A*b*c*d^2*e^24/(x*e + d)^3 - 3*B*b^2*d^3*e^24
/(x*e + d)^4 - 6*A*b*c*d^3*e^24/(x*e + d)^4 + 6*A*b^2*e^25/(x*e + d)^2 - 8*
A*b^2*d*e^25/(x*e + d)^3 + 3*A*b^2*d^2*e^25/(x*e + d)^4)*e^(-28)
```

maple [A] time = 0.06, size = 465, normalized size = 1.94

$$-\frac{A\,b^{2}d^{2}}{4\left(ex + d\right)^{4}e^{3}} + \frac{Abc\,d^{3}}{2\left(ex + d\right)^{4}e^{4}} - \frac{A\,c^{2}d^{4}}{4\left(ex + d\right)^{4}e^{5}} + \frac{B\,b^{2}d^{3}}{4\left(ex + d\right)^{4}e^{4}} - \frac{Bbc\,d^{4}}{2\left(ex + d\right)^{4}e^{5}} + \frac{B\,c^{2}d^{5}}{4\left(ex + d\right)^{4}e^{6}} + \frac{2A\,b^{2}d}{3\left(ex + d\right)^{3}e^{3}} - \frac{2Abc\,d^{2}}{\left(ex + d\right)^{3}e^{4}} + \frac{4A\,c^{2}d^{3}}{3\left(ex + d\right)^{3}e^{5}} - \frac{B\,b^{2}d^{2}}{\left(ex + d\right)^{3}e^{4}} + \frac{8Bbc\,d^{3}}{3\left(ex + d\right)^{3}e^{5}} - \frac{5B\,c^{2}d^{4}}{3\left(ex + d\right)^{3}e^{6}} - \frac{A\,b^{2}}{2\left(ex + d\right)^{2}e^{3}} + \frac{3Abcd}{\left(ex + d\right)^{2}e^{4}} - \frac{3A\,c^{2}d^{2}}{\left(ex + d\right)^{2}e^{5}} + \frac{3B\,b^{2}d}{2\left(ex + d\right)^{2}e^{4}} - \frac{6Bbc\,d^{2}}{\left(ex + d\right)^{2}e^{5}} + \frac{5B\,c^{2}d^{3}}{\left(ex + d\right)^{2}e^{6}} - \frac{2Abc}{\left(ex + d\right)e^{4}} + \frac{4A\,c^{2}d}{\left(ex + d\right)e^{5}} + \frac{A\,c^{2}\ln\left(ex + d\right)}{e^{5}} - \frac{B\,b^{2}}{\left(ex + d\right)e^{4}} + \frac{8Bbcd}{\left(ex + d\right)e^{5}} + \frac{2Bbc\ln\left(ex + d\right)}{e^{5}} - \frac{10B\,c^{2}d^{2}}{\left(ex + d\right)e^{6}} - \frac{5B\,c^{2}d\ln\left(ex + d\right)}{e^{6}} + \frac{B\,c^{2}x}{e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x)
```

```
[Out] -1/e^4/(e*x+d)*B*b^2+c^2/e^5*ln(e*x+d)*A-1/2/e^3/(e*x+d)^2*A*b^2+2*c/e^5*ln
(e*x+d)*B*b-5*c^2/e^6*ln(e*x+d)*B*d-d^2/e^4/(e*x+d)^3*B*b^2-5/3*d^4/e^6/(e*
x+d)^3*B*c^2-2/e^4/(e*x+d)*A*b*c+4/e^5/(e*x+d)*A*c^2*d-1/2*d^4/e^5/(e*x+d)^
4*B*b*c+8/e^5/(e*x+d)*B*b*c*d+1/2*d^3/e^4/(e*x+d)^4*A*b*c+3/e^4/(e*x+d)^2*A
```

```
*b*c*d-6/e^5/(e*x+d)^2*B*b*c*d^2+8/3*d^3/e^5/(e*x+d)^3*B*b*c-2*d^2/e^4/(e*x
+d)^3*A*b*c+5/e^6/(e*x+d)^2*B*c^2*d^3+2/3*d/e^3/(e*x+d)^3*A*b^2+4/3*d^3/e^5
/(e*x+d)^3*A*c^2-10/e^6/(e*x+d)*B*c^2*d^2+1/4*d^3/e^4/(e*x+d)^4*B*b^2+1/4*d
^5/e^6/(e*x+d)^4*B*c^2-3/e^5/(e*x+d)^2*A*c^2*d^2+3/2/e^4/(e*x+d)^2*B*b^2*d-
1/4*d^2/e^3/(e*x+d)^4*A*b^2-1/4*d^4/e^5/(e*x+d)^4*A*c^2+B*c^2*x/e^5
```

maxima [A] time = 0.58, size = 321, normalized size = 1.34

$$-\frac{77\,Bc^2d^5 + Ab^2d^2e^3 - 25\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,Abc\right)d^3e^2 + 12\left(10\,Bc^2d^2e^3 - 4\left(2\,Bbc + Ac^2\right)de^4 + \left(Bb^2 + 2\,Abc\right)e^5\right)x^3 + 6\left(50\,Bc^2d^3e^2 + Ab^2e^5 - 18\left(2\,Bbc + Ac^2\right)d^2e^3 + 3\left(Bb^2 + 2\,Abc\right)de^4\right)x^2 + 4\left(65\,Bc^2d^4e + Ab^2de^4 - 22\left(2\,Bbc + Ac^2\right)d^3e^2 + 3\left(Bb^2 + 2\,Abc\right)d^2e^3\right)x}{12\left(e^{10}x^4 + 4\,de^9x^3 + 6\,d^2e^8x^2 + 4\,d^3e^7x + d^4e^6\right)} + \frac{Bc^2x}{e^5} - \frac{\left(5\,Bc^2d - \left(2\,Bbc + Ac^2\right)e\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(77*B*c^2*d^5 + A*b^2*d^2*e^3 - 25*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2
 + 2*A*b*c)*d^3*e^2 + 12*(10*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B
*b^2 + 2*A*b*c)*e^5)*x^3 + 6*(50*B*c^2*d^3*e^2 + A*b^2*e^5 - 18*(2*B*b*c +
A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 4*(65*B*c^2*d^4*e + A*b^2
*d*e^4 - 22*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^
10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6) + B*c^2*x/e^5
 - (5*B*c^2*d - (2*B*b*c + A*c^2)*e)*log(e*x + d)/e^6
```

mupad [B] time = 1.47, size = 338, normalized size = 1.41

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^2\,e-5\,B\,c^2\,d+2\,B\,b\,c\,e\right)}{e^6}-\frac{x^2\,\left(\frac{3\,B\,b^2\,d\,e^3}{2}+\frac{A\,b^2\,e^4}{2}-18\,B\,b\,c\,d^2\,e^2+3\,A\,b\,c\,d\,e^3+25\,B\,c^2\,d^3\,e-9\,A\,c^2\,d^2\,e^2\right)+\frac{3\,B\,b^2\,d^3\,e^2+A\,b^2\,d^2\,e^3-50\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2+77\,B\,c^2\,d^5-25\,A\,c^2\,d^4\,e}{12\,e}+x\,\left(B\,b^2\,d^2\,e^2+\frac{A\,b^2\,d\,e^3}{3}-\frac{44\,B\,b\,c\,d^3\,e}{3}+2\,A\,b\,c\,d^2\,e^2+\frac{65\,B\,c^2\,d^4}{3}-\frac{22\,A\,c^2\,d^3\,e}{3}\right)+x^3\,\left(B\,b^2\,e^4-8\,B\,b\,c\,d\,e^3+2\,A\,b\,c\,e^4+10\,B\,c^2\,d^2\,e^2-4\,A\,c^2\,d\,e^3\right)}{d^4\,e^5+4\,d^3\,e^6\,x+6\,d^2\,e^7\,x^2+4\,d\,e^8\,x^3+e^9\,x^4}+\frac{B\,c^2\,x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*c^2*e - 5*B*c^2*d + 2*B*b*c*e))/e^6 - (x^2*((A*b^2*e^4)/2
+ (3*B*b^2*d*e^3)/2 + 25*B*c^2*d^3*e - 9*A*c^2*d^2*e^2 + 3*A*b*c*d*e^3 - 18
*B*b*c*d^2*e^2) + (77*B*c^2*d^5 - 25*A*c^2*d^4*e + A*b^2*d^2*e^3 + 3*B*b^2*
d^3*e^2 - 50*B*b*c*d^4*e + 6*A*b*c*d^3*e^2)/(12*e) + x*((65*B*c^2*d^4)/3 +
(A*b^2*d*e^3)/3 - (22*A*c^2*d^3*e)/3 + B*b^2*d^2*e^2 - (44*B*b*c*d^3*e)/3 +
 2*A*b*c*d^2*e^2) + x^3*(B*b^2*e^4 + 2*A*b*c*e^4 - 4*A*c^2*d*e^3 + 10*B*c^2
*d^2*e^2 - 8*B*b*c*d*e^3))/(d^4*e^5 + e^9*x^4 + 4*d^3*e^6*x + 4*d*e^8*x^3 +
 6*d^2*e^7*x^2) + (B*c^2*x)/e^5
```

sympy [A] time = 32.26, size = 381, normalized size = 1.59

$$\frac{Bc^2x}{e^5} + \frac{c\left(Ace + 2Bbe - 5Bcd\right)\log\left(d + ex\right)}{e^6} + \frac{-Ab^2d^2e^3 - 6Abcd^3e^2 + 25Ac^2d^4e - 3Bb^2d^3e^2 + 50Bbcd^4e - 77Bc^2d^5 + x^3\left(-24Abce^5 + 48Ac^2de^4 - 12Bb^2e^5 + 96Bbcde^4 - 120Bc^2d^2e^3\right) + x^2\left(-6Ab^2e^5 - 36Abcde^4 + 108Ac^2d^2e^3 - 18Bb^2de^4 + 216Bbcd^2e^3 - 300Bc^2d^3e^2\right) + x\left(-4Ab^2de^4 - 24Abcd^2e^3 + 88Ac^2d^3e^2 - 12Bb^2d^2e^3 + 176Bbcd^3e^2 - 260Bc^2d^4e\right)}{12d^4e^6 + 48d^3e^7x + 72d^2e^8x^2 + 48de^9x^3 + 12e^{10}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**5,x)
```

```
[Out] B*c**2*x/e**5 + c*(A*c*e + 2*B*b*e - 5*B*c*d)*log(d + e*x)/e**6 + (-A*b**2*
d**2*e**3 - 6*A*b*c*d**3*e**2 + 25*A*c**2*d**4*e - 3*B*b**2*d**3*e**2 + 50*
B*b*c*d**4*e - 77*B*c**2*d**5 + x**3*(-24*A*b*c*e**5 + 48*A*c**2*d*e**4 - 1
2*B*b**2*e**5 + 96*B*b*c*d*e**4 - 120*B*c**2*d**2*e**3) + x**2*(-6*A*b**2*e
**5 - 36*A*b*c*d*e**4 + 108*A*c**2*d**2*e**3 - 18*B*b**2*d*e**4 + 216*B*b*c
*d**2*e**3 - 300*B*c**2*d**3*e**2) + x*(-4*A*b**2*d*e**4 - 24*A*b*c*d**2*e*
*3 + 88*A*c**2*d**3*e**2 - 12*B*b**2*d**2*e**3 + 176*B*b*c*d**3*e**2 - 260*
B*c**2*d**4*e))/(12*d**4*e**6 + 48*d**3*e**7*x + 72*d**2*e**8*x**2 + 48*d*e
**9*x**3 + 12*e**10*x**4)
```

3.979 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^6}\,dx$

Optimal. Leaf size=248

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{d^2(Bd-}{5e}$$

Rubi [A] time = 0.24, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{d^2(Bd-Ae)(cd-be)^2}{5e^6(d+ex)^5}+\frac{c(-Ace-2bBe+5Bcd)}{e^6(d+ex)}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{4e^6(d+ex)^4}+\frac{Bc^2\log(d+ex)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^2)/(5*e^6*(d + e*x)^5) - (d*(c*d - b*e)*(B*d*(
5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(4*e^6*(d + e*x)^4) - (A*e*(6*c^2*d^
2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(3*e^
6*(d + e*x)^3) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e
^2))/(2*e^6*(d + e*x)^2) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(e^6*(d + e*x))
+ (B*c^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^6}\,dx &= \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^6}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^5}+\frac{Ae\left(6c\right.}{}\right.\\ &= \frac{d^2(Bd-Ae)(cd-be)^2}{5e^6(d+ex)^5}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{4e^6(d+ex)^4}-\frac{Ae\left(6c^2d^2-\right.}{}\end{aligned}$$

Mathematica [A] time = 0.12, size = 269, normalized size = 1.08

$$\frac{-2Ae\left(b^2e^2\left(d^2+5dex+10e^2x^2\right)+3bce\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+6c^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+B\left(-3b^2e^2\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)-24bce\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)+c^2d\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)\right)+60Bc^2(d+ex)^5\log(d+ex)}{60e^6(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-2*A*e*(b^2*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*b*c*e*(d^3 + 5*d^2*e*x +
10*d*e^2*x^2 + 10*e^3*x^3) + 6*c^2*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d
*e^3*x^3 + 5*e^4*x^4)) + B*(-3*b^2*e^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10
*e^3*x^3) - 24*b*c*e*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e
^4*x^4) + c^2*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 +
 300*e^4*x^4)) + 60*B*c^2*(d + e*x)^5*Log[d + e*x])/(60*e^6*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^6, x]
```

fricas [A] time = 0.41, size = 407, normalized size = 1.64

$$\frac{137 \, B c^{2} d^{5} - 2 \, A b^{2} d^{2} e^{3} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{4} e - 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{3} e^{2} + 60 \, {\left(5 \, B c^{2} d e^{4} - {\left(2 \, B b c + A c^{2}\right)} e^{5}\right)} x^{4} + 30 \, {\left(30 \, B c^{2} d^{2} e^{3} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d e^{4} - {\left(B b^{2} + 2 \, A b c\right)} e^{5}\right)} x^{3} + 10 \, {\left(110 \, B c^{2} d^{3} e^{2} - 2 \, A b^{2} e^{5} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{2} e^{3} - 3 \, {\left(B b^{2} + 2 \, A b c\right)} d e^{4}\right)} x^{2} + 5 \, {\left(125 \, B c^{2} d^{4} e - 2 \, A b^{2} d e^{4} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{3} e^{2} - 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{2} e^{3}\right)} x + 60 \, {\left(B c^{2} e^{5} x^{5} + 5 \, B c^{2} d e^{4} x^{4} + 10 \, B c^{2} d^{2} e^{3} x^{3} + 10 \, B c^{2} d^{3} e^{2} x^{2} + 5 \, B c^{2} d^{4} e x + B c^{2} d^{5}\right)} \log\left(e x + d\right)}{60 \, {\left(e^{11} x^{5} + 5 \, d e^{10} x^{4} + 10 \, d^{2} e^{9} x^{3} + 10 \, d^{3} e^{8} x^{2} + 5 \, d^{4} e^{7} x + d^{5} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b
^2 + 2*A*b*c)*d^3*e^2 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30
*(30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*A*b*c)*e^5)*x^3
 + 10*(110*B*c^2*d^3*e^2 - 2*A*b^2*e^5 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(
B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 5*(125*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 12*(2*B*
b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x + 60*(B*c^2*e^5*x^5 +
 5*B*c^2*d*e^4*x^4 + 10*B*c^2*d^2*e^3*x^3 + 10*B*c^2*d^3*e^2*x^2 + 5*B*c^2*
d^4*e*x + B*c^2*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^
3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [A] time = 0.16, size = 301, normalized size = 1.21

$$B c^{2} e^{\left(-6\right)} \log\left({\left| x e + d \right|}\right) + \frac{{\left(60 \, {\left(5 \, B c^{2} d e^{3} - 2 \, B b c e^{4} - A c^{2} e^{4}\right)} x^{4} + 30 \, {\left(30 \, B c^{2} d^{2} e^{2} - 8 \, B b c d e^{3} - 4 \, A c^{2} d e^{3} - B b^{2} e^{4} - 2 \, A b c e^{4}\right)} x^{3} + 10 \, {\left(110 \, B c^{2} d^{3} e - 24 \, B b c d^{2} e^{2} - 12 \, A c^{2} d^{2} e^{2} - 3 \, B b^{2} d e^{3} - 6 \, A b c d e^{3} - 2 \, A b^{2} e^{4}\right)} x^{2} + 5 \, {\left(125 \, B c^{2} d^{4} - 24 \, B b c d^{3} e - 12 \, A c^{2} d^{3} e - 3 \, B b^{2} d^{2} e^{2} - 6 \, A b c d^{2} e^{2} - 2 \, A b^{2} d e^{3}\right)} x + {\left(137 \, B c^{2} d^{5} - 24 \, B b c d^{4} e - 12 \, A c^{2} d^{4} e - 3 \, B b^{2} d^{3} e^{2} - 6 \, A b c d^{3} e^{2} - 2 \, A b^{2} d^{2} e^{3}\right)} e^{\left(-1\right)}\right)} e^{\left(-5\right)}}{60 \, {\left(x e + d\right)}^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*c^2*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*c^2*d*e^3 - 2*B*b*c*e^4 - A*
c^2*e^4)*x^4 + 30*(30*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 - B*b^2
*e^4 - 2*A*b*c*e^4)*x^3 + 10*(110*B*c^2*d^3*e - 24*B*b*c*d^2*e^2 - 12*A*c^2
*d^2*e^2 - 3*B*b^2*d*e^3 - 6*A*b*c*d*e^3 - 2*A*b^2*e^4)*x^2 + 5*(125*B*c^2*
d^4 - 24*B*b*c*d^3*e - 12*A*c^2*d^3*e - 3*B*b^2*d^2*e^2 - 6*A*b*c*d^2*e^2 -
 2*A*b^2*d*e^3)*x + (137*B*c^2*d^5 - 24*B*b*c*d^4*e - 12*A*c^2*d^4*e - 3*B*
b^2*d^3*e^2 - 6*A*b*c*d^3*e^2 - 2*A*b^2*d^2*e^3)*e^(-1))*e^(-5)/(x*e + d)^5
```

maple [A] time = 0.06, size = 472, normalized size = 1.90

$$-\frac{A b^{2} d^{2}}{5 \left(e x +d \right)^{5} e^{3}}+\frac{2 A b c \,d^{3}}{5 \left(e x +d \right)^{5} e^{4}}-\frac{A \,c^{2} d^{4}}{5 \left(e x +d \right)^{5} e^{5}}+\frac{B \,b^{2} d^{3}}{5 \left(e x +d \right)^{5} e^{4}}-\frac{2 B b c \,d^{4}}{5 \left(e x +d \right)^{5} e^{5}}+\frac{B \,c^{2} d^{5}}{5 \left(e x +d \right)^{5} e^{6}}+\frac{A \,b^{2} d}{2 \left(e x +d \right)^{4} e^{3}}-\frac{3 A b c \,d^{2}}{2 \left(e x +d \right)^{4} e^{4}}+\frac{A \,c^{2} d^{3}}{\left(e x +d \right)^{4} e^{5}}-\frac{3 B \,b^{2} d^{2}}{4 \left(e x +d \right)^{4} e^{4}}+\frac{2 B b c \,d^{3}}{\left(e x +d \right)^{4} e^{5}}-\frac{5 B \,c^{2} d^{4}}{4 \left(e x +d \right)^{4} e^{6}}-\frac{A \,b^{2}}{3 \left(e x +d \right)^{3} e^{3}}+\frac{2 A b c d}{\left(e x +d \right)^{3} e^{4}}-\frac{2 A \,c^{2} d^{2}}{\left(e x +d \right)^{3} e^{5}}+\frac{B \,b^{2} d}{\left(e x +d \right)^{3} e^{4}}-\frac{4 B b c \,d^{2}}{\left(e x +d \right)^{3} e^{5}}+\frac{10 B \,c^{2} d^{3}}{3 \left(e x +d \right)^{3} e^{6}}-\frac{A b c}{\left(e x +d \right)^{2} e^{4}}+\frac{2 A \,c^{2} d}{\left(e x +d \right)^{2} e^{5}}-\frac{B \,b^{2}}{2 \left(e x +d \right)^{2} e^{4}}+\frac{4 B b c d}{\left(e x +d \right)^{2} e^{5}}-\frac{5 B \,c^{2} d^{2}}{\left(e x +d \right)^{2} e^{6}}-\frac{A \,c^{2}}{\left(e x +d \right) e^{5}}-\frac{2 B b c}{\left(e x +d \right) e^{5}}+\frac{5 B \,c^{2} d}{\left(e x +d \right) e^{6}}+\frac{B \,c^{2} \ln \left(e x +d \right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x)
```

```
[Out] -1/3/e^3/(e*x+d)^3*A*b^2-c^2/e^5/(e*x+d)*A-2/5*d^4/e^5/(e*x+d)^5*B*b*c+2*d^
3/e^5/(e*x+d)^4*B*b*c-3/2*d^2/e^4/(e*x+d)^4*A*b*c-4/e^5/(e*x+d)^3*B*d^2*b*c
+2/e^4/(e*x+d)^3*A*b*c*d+4/e^5/(e*x+d)^2*B*d*b*c+2/5*d^3/e^4/(e*x+d)^5*A*b*
c-1/5*d^4/e^5/(e*x+d)^5*A*c^2+1/5*d^3/e^4/(e*x+d)^5*B*b^2-5/4*d^4/e^6/(e*x+
d)^4*B*c^2-1/5*d^2/e^3/(e*x+d)^5*A*b^2+d^3/e^5/(e*x+d)^4*A*c^2-3/4*d^2/e^4/
(e*x+d)^4*B*b^2+5*c^2/e^6/(e*x+d)*B*d+1/2*d/e^3/(e*x+d)^4*A*b^2+1/5*d^5/e^6
/(e*x+d)^5*B*c^2+10/3/e^6/(e*x+d)^3*B*c^2*d^3-1/e^4/(e*x+d)^2*A*b*c+2/e^5/(
e*x+d)^2*A*c^2*d-5/e^6/(e*x+d)^2*B*d^2*c^2-2*c/e^5/(e*x+d)*B*b-2/e^5/(e*x+d
)^3*A*c^2*d^2+1/e^4/(e*x+d)^3*B*d*b^2+B*c^2*ln(e*x+d)/e^6-1/2*b^2*B/e^4/(e*
x+d)^2
```

maxima [A] time = 0.67, size = 340, normalized size = 1.37

$$\frac{137 \, B c^{2} d^{5} - 2 \, A b^{2} d^{2} e^{3} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{4} e - 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{3} e^{2} + 60 \, {\left(5 \, B c^{2} d e^{4} - {\left(2 \, B b c + A c^{2}\right)} e^{5}\right)} x^{4} + 30 \, {\left(30 \, B c^{2} d^{2} e^{3} - 4 \, {\left(2 \, B b c + A c^{2}\right)} d e^{4} - {\left(B b^{2} + 2 \, A b c\right)} e^{5}\right)} x^{3} + 10 \, {\left(110 \, B c^{2} d^{3} e^{2} - 2 \, A b^{2} e^{5} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{2} e^{3} - 3 \, {\left(B b^{2} + 2 \, A b c\right)} d e^{4}\right)} x^{2} + 5 \, {\left(125 \, B c^{2} d^{4} e - 2 \, A b^{2} d e^{4} - 12 \, {\left(2 \, B b c + A c^{2}\right)} d^{3} e^{2} - 3 \, {\left(B b^{2} + 2 \, A b c\right)} d^{2} e^{3}\right)} x}{60 \, {\left(e^{11} x^{5} + 5 \, d e^{10} x^{4} + 10 \, d^{2} e^{9} x^{3} + 10 \, d^{3} e^{8} x^{2} + 5 \, d^{4} e^{7} x + d^{5} e^{6}\right)}} + \frac{B c^{2} \log\left(e x + d\right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b
^2 + 2*A*b*c)*d^3*e^2 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30
*(30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*A*b*c)*e^5)*x^3
 + 10*(110*B*c^2*d^3*e^2 - 2*A*b^2*e^5 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(
B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 5*(125*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 12*(2*B*
b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^11*x^5 + 5*d*e^10
*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6) + B*c^2*log
(e*x + d)/e^6
```

mupad [B] time = 1.46, size = 343, normalized size = 1.38

$$\frac{B\,c^2\,\ln\left(d+e\,x\right)}{e^6}-\frac{\frac{3\,B\,b^2\,d^3\,e^2+2\,A\,b^2\,d^2\,e^3+24\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2-137\,B\,c^2\,d^5+12\,A\,c^2\,d^4\,e}{60\,e^6}+\frac{x^3\,\left(B\,b^2\,e^2+8\,B\,b\,c\,d\,e+2\,A\,b\,c\,e^2-30\,B\,c^2\,d^2+4\,A\,c^2\,d\,e\right)}{2\,e^3}+\frac{x\,\left(3\,B\,b^2\,d^2\,e^2+2\,A\,b^2\,d\,e^3+24\,B\,b\,c\,d^3\,e+6\,A\,b\,c\,d^2\,e^2-125\,B\,c^2\,d^4+12\,A\,c^2\,d^3\,e\right)}{12\,e^5}+\frac{x^2\,\left(3\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e+6\,A\,b\,c\,d\,e^2-110\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{6\,e^4}+\frac{c\,x^4\,\left(A\,c\,e+2\,B\,b\,e-5\,B\,c\,d\right)}{e^2}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] (B*c^2*log(d + e*x))/e^6 - ((12*A*c^2*d^4*e - 137*B*c^2*d^5 + 2*A*b^2*d^2*e
^3 + 3*B*b^2*d^3*e^2 + 24*B*b*c*d^4*e + 6*A*b*c*d^3*e^2)/(60*e^6) + (x^3*(B
*b^2*e^2 - 30*B*c^2*d^2 + 2*A*b*c*e^2 + 4*A*c^2*d*e + 8*B*b*c*d*e))/(2*e^3)
 + (x*(2*A*b^2*d*e^3 - 125*B*c^2*d^4 + 12*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 2
4*B*b*c*d^3*e + 6*A*b*c*d^2*e^2))/(12*e^5) + (x^2*(2*A*b^2*e^3 - 110*B*c^2*
d^3 + 12*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(6*
e^4) + (c*x^4*(A*c*e + 2*B*b*e - 5*B*c*d))/e^2)/(d^5 + e^5*x^5 + 5*d*e^4*x^
4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [A] time = 94.46, size = 405, normalized size = 1.63

$$\frac{Bc^{2}\log{\left(d+ex \right)}}{e^{6}}+\frac{-2Ab^{2}d^{2}e^{3}-6Abcd^{3}e^{2}-12Ac^{2}d^{4}e-3Bb^{2}d^{3}e^{2}-24Bbcd^{4}e+137Bc^{2}d^{5}+x^{4}\left(-60Ac^{2}e^{5}-120Bbce^{5}+300Bc^{2}de^{4}\right)+x^{3}\left(-60Abce^{5}-120Ac^{2}de^{4}-30Bb^{2}e^{5}-240Bbcde^{4}+900Bc^{2}d^{2}e^{3}\right)+x^{2}\left(-20Ab^{2}e^{5}-60Abcde^{4}-120Ac^{2}d^{2}e^{3}-30Bb^{2}de^{4}-240Bbcd^{2}e^{3}+1100Bc^{2}d^{3}e^{2}\right)+x\left(-10Ab^{2}de^{4}-30Abcd^{2}e^{3}-60Ac^{2}d^{3}e^{2}-15Bb^{2}d^{2}e^{3}-120Bbcd^{3}e^{2}+625Bc^{2}d^{4}e\right)}{60d^{5}e^{6}+300d^{4}e^{7}x+600d^{3}e^{8}x^{2}+600d^{2}e^{9}x^{3}+300de^{10}x^{4}+60e^{11}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**6,x)
```

```
[Out] B*c**2*log(d + e*x)/e**6 + (-2*A*b**2*d**2*e**3 - 6*A*b*c*d**3*e**2 - 12*A*
c**2*d**4*e - 3*B*b**2*d**3*e**2 - 24*B*b*c*d**4*e + 137*B*c**2*d**5 + x**4
*(-60*A*c**2*e**5 - 120*B*b*c*e**5 + 300*B*c**2*d*e**4) + x**3*(-60*A*b*c*e
**5 - 120*A*c**2*d*e**4 - 30*B*b**2*e**5 - 240*B*b*c*d*e**4 + 900*B*c**2*d*
*2*e**3) + x**2*(-20*A*b**2*e**5 - 60*A*b*c*d*e**4 - 120*A*c**2*d**2*e**3 -
 30*B*b**2*d*e**4 - 240*B*b*c*d**2*e**3 + 1100*B*c**2*d**3*e**2) + x*(-10*A
*b**2*d*e**4 - 30*A*b*c*d**2*e**3 - 60*A*c**2*d**3*e**2 - 15*B*b**2*d**2*e*
*3 - 120*B*b*c*d**3*e**2 + 625*B*c**2*d**4*e))/(60*d**5*e**6 + 300*d**4*e**
7*x + 600*d**3*e**8*x**2 + 600*d**2*e**9*x**3 + 300*d*e**10*x**4 + 60*e**11
*x**5)
```

3.980 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^7}\,dx$

Optimal. Leaf size=253

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{3e^6(d+ex)^3}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{4e^6(d+ex)^4}+\frac{d^2(B$$

Rubi [A] time = 0.23, antiderivative size = 253, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{3e^6(d+ex)^3}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{4e^6(d+ex)^4}+\frac{d^2(Bd-Ae)(cd-be)^2}{6e^6(d+ex)^6}+\frac{c(-Ace-2bBe+5Bcd)}{2e^6(d+ex)^2}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{5e^6(d+ex)^5}-\frac{Bc^2}{e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^2)/(6*e^6*(d + e*x)^6) - (d*(c*d - b*e)*(B*d*(
5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(5*e^6*(d + e*x)^5) - (A*e*(6*c^2*d^
2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(4*e^
6*(d + e*x)^4) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e
^2))/(3*e^6*(d + e*x)^3) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(2*e^6*(d + e*x)
^2) - (B*c^2)/(e^6*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^7}\,dx = \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^7}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^6}+\frac{Ae}{\ldots}\right.$$
$$=\frac{d^2(Bd-Ae)(cd-be)^2}{6e^6(d+ex)^6}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{5e^6(d+ex)^5}-\frac{Ae\left(6c^2d^2\right.}{\ldots}$$

Mathematica [A] time = 0.11, size = 257, normalized size = 1.02

$$-\frac{Ae\left(b^2e^2\left(d^2+6dex+15e^2x^2\right)+2bce\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+2c^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)+B\left(b^2e^2\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+4bce\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)+10c^2\left(d^5+6d^4ex+15d^3e^2x^2+20d^2e^3x^3+15de^4x^4+6e^5x^5\right)\right)}{60e^6(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(b^2*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + 2*b*c*e*(d^3 + 6*d^2*e*x
 + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*c^2*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 2
0*d*e^3*x^3 + 15*e^4*x^4)) + B*(b^2*e^2*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 2
0*e^3*x^3) + 4*b*c*e*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*
e^4*x^4) + 10*c^2*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d
*e^4*x^4 + 6*e^5*x^5)))/(e^6*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^7, x]
```

fricas [**A**] time = 0.40, size = 340, normalized size = 1.34

$$-\frac{60\,Bc^{2}e^{5}x^{5}+10\,Bc^{2}d^{5}+Ab^{2}d^{2}e^{3}+2\left(2\,Bbc+Ac^{2}\right)d^{4}e+\left(Bb^{2}+2\,Abc\right)d^{3}e^{2}+30\left(5\,Bc^{2}de^{4}+\left(2\,Bbc+Ac^{2}\right)e^{5}\right)x^{4}+20\left(10\,Bc^{2}d^{2}e^{3}+2\left(2\,Bbc+Ac^{2}\right)de^{4}+\left(Bb^{2}+2\,Abc\right)e^{5}\right)x^{3}+15\left(10\,Bc^{2}d^{3}e^{2}+Ab^{2}e^{5}+2\left(2\,Bbc+Ac^{2}\right)d^{2}e^{3}+\left(Bb^{2}+2\,Abc\right)de^{4}\right)x^{2}+6\left(10\,Bc^{2}d^{4}e+Ab^{2}de^{4}+2\left(2\,Bbc+Ac^{2}\right)d^{3}e^{2}+\left(Bb^{2}+2\,Abc\right)d^{2}e^{3}\right)x}{60\left(e^{12}x^{6}+6\,de^{11}x^{5}+15\,d^{2}e^{10}x^{4}+20\,d^{3}e^{9}x^{3}+15\,d^{4}e^{8}x^{2}+6\,d^{5}e^{7}x+d^{6}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + A*b^2*d^2*e^3 + 2*(2*B*b*c + A*c^2
)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)
*e^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A
*b*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + A*b^2*e^5 + 2*(2*B*b*c + A*c^2)*d^2
*e^3 + (B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 6*(10*B*c^2*d^4*e + A*b^2*d*e^4 + 2*(
2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^12*x^6 + 6*d*e^
11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x +
d^6*e^6)
```

giac [**A**] time = 0.18, size = 318, normalized size = 1.26

$$-\frac{\left(60\,Bc^{2}x^{5}e^{5}+150\,Bc^{2}dx^{4}e^{4}+200\,Bc^{2}d^{2}x^{3}e^{3}+150\,Bc^{2}d^{3}x^{2}e^{2}+60\,Bc^{2}d^{4}xe+10\,Bc^{2}d^{5}+60\,Bbcx^{4}e^{5}+30\,Ac^{2}x^{4}e^{5}+80\,Bbcdx^{3}e^{4}+40\,Ac^{2}dx^{3}e^{4}+60\,Bbcd^{2}x^{2}e^{3}+30\,Ac^{2}d^{2}x^{2}e^{3}+24\,Bbcd^{3}xe^{2}+12\,Ac^{2}d^{3}xe^{2}+4\,Bbcd^{4}e+2\,Ac^{2}d^{4}e+20\,Bb^{2}x^{3}e^{5}+40\,Abcx^{3}e^{5}+15\,Bb^{2}dx^{2}e^{4}+30\,Abcdx^{2}e^{4}+6\,Bb^{2}d^{2}xe^{3}+12\,Abcd^{2}xe^{3}+Bb^{2}d^{3}e^{2}+2\,Abcd^{3}e^{2}+15\,Ab^{2}x^{2}e^{5}+6\,Ab^{2}dxe^{4}+Ab^{2}d^{2}e^{3}\right)e^{(-6)}}{60\,(xe+d)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(60*B*c^2*x^5*e^5 + 150*B*c^2*d*x^4*e^4 + 200*B*c^2*d^2*x^3*e^3 + 150
*B*c^2*d^3*x^2*e^2 + 60*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 60*B*b*c*x^4*e^5 + 3
0*A*c^2*x^4*e^5 + 80*B*b*c*d*x^3*e^4 + 40*A*c^2*d*x^3*e^4 + 60*B*b*c*d^2*x^
2*e^3 + 30*A*c^2*d^2*x^2*e^3 + 24*B*b*c*d^3*x*e^2 + 12*A*c^2*d^3*x*e^2 + 4*
B*b*c*d^4*e + 2*A*c^2*d^4*e + 20*B*b^2*x^3*e^5 + 40*A*b*c*x^3*e^5 + 15*B*b^
2*d*x^2*e^4 + 30*A*b*c*d*x^2*e^4 + 6*B*b^2*d^2*x*e^3 + 12*A*b*c*d^2*x*e^3 +
 B*b^2*d^3*e^2 + 2*A*b*c*d^3*e^2 + 15*A*b^2*x^2*e^5 + 6*A*b^2*d*x*e^4 + A*b
^2*d^2*e^3)*e^(-6)/(x*e + d)^6
```

maple [**A**] time = 0.05, size = 307, normalized size = 1.21

$$-\frac{Bc^{2}}{(ex+d)\,e^{6}}-\frac{\left(Ab^{2}e^{3}-2Abcd\,e^{2}+Ac^{2}d^{2}e-Bd\,b^{2}e^{2}+2Bd^{2}bce-Bc^{2}d^{3}\right)d^{2}}{6\,(ex+d)^{6}\,e^{6}}-\frac{(Ace+2Bbe-5Bcd)\,c}{2\,(ex+d)^{2}\,e^{6}}+\frac{\left(2Ab^{2}e^{3}-6Abcd\,e^{2}+4Ac^{2}d^{2}e-3Bd\,b^{2}e^{2}+8Bd^{2}bce-5Bc^{2}d^{3}\right)d}{5\,(ex+d)^{5}\,e^{6}}-\frac{Ab^{2}e^{3}-6Abcd\,e^{2}+6Ac^{2}d^{2}e-3Bd\,b^{2}e^{2}+12Bd^{2}bce-10Bc^{2}d^{3}}{4\,(ex+d)^{4}\,e^{6}}-\frac{2Abc\,e^{2}-4Ac^{2}de+Bb^{2}e^{2}-8Bdbce+10Bd^{2}c^{2}}{3\,(ex+d)^{3}\,e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x)
```

```
[Out] -B*c^2/e^6/(e*x+d)-1/4*(A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e-3*B*b^2*d*e^2
+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^6/(e*x+d)^4+1/5*d*(2*A*b^2*e^3-6*A*b*c*d*e^
2+4*A*c^2*d^2*e-3*B*b^2*d*e^2+8*B*b*c*d^2*e-5*B*c^2*d^3)/e^6/(e*x+d)^5-1/6*
d^2*(A*b^2*e^3-2*A*b*c*d*e^2+A*c^2*d^2*e-B*b^2*d*e^2+2*B*b*c*d^2*e-B*c^2*d^
3)/e^6/(e*x+d)^6-1/2*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^2-1/3*(2*A*b*c*e
^2-4*A*c^2*d*e+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^3
```

maxima [**A**] time = 0.64, size = 340, normalized size = 1.34

$$-\frac{60\,Bc^{2}e^{5}x^{5}+10\,Bc^{2}d^{5}+Ab^{2}d^{2}e^{3}+2\left(2\,Bbc+Ac^{2}\right)d^{4}e+\left(Bb^{2}+2\,Abc\right)d^{3}e^{2}+30\left(5\,Bc^{2}de^{4}+\left(2\,Bbc+Ac^{2}\right)e^{5}\right)x^{4}+20\left(10\,Bc^{2}d^{2}e^{3}+2\left(2\,Bbc+Ac^{2}\right)de^{4}+\left(Bb^{2}+2\,Abc\right)e^{5}\right)x^{3}+15\left(10\,Bc^{2}d^{3}e^{2}+Ab^{2}e^{5}+2\left(2\,Bbc+Ac^{2}\right)d^{2}e^{3}+\left(Bb^{2}+2\,Abc\right)de^{4}\right)x^{2}+6\left(10\,Bc^{2}d^{4}e+Ab^{2}de^{4}+2\left(2\,Bbc+Ac^{2}\right)d^{3}e^{2}+\left(Bb^{2}+2\,Abc\right)d^{2}e^{3}\right)x}{60\left(e^{12}x^{6}+6\,de^{11}x^{5}+15\,d^{2}e^{10}x^{4}+20\,d^{3}e^{9}x^{3}+15\,d^{4}e^{8}x^{2}+6\,d^{5}e^{7}x+d^{6}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + A*b^2*d^2*e^3 + 2*(2*B*b*c + A*c^2
)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)
*e^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A
*b*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + A*b^2*e^5 + 2*(2*B*b*c + A*c^2)*d^2
*e^3 + (B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 6*(10*B*c^2*d^4*e + A*b^2*d*e^4 + 2*(
2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^12*x^6 + 6*d*e^
11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x +
d^6*e^6)
```

mupad [B] time = 0.13, size = 337, normalized size = 1.33

$$-\frac{\frac{x^3\left(B\,b^2\,e^2+4\,B\,b\,c\,d\,e+2\,A\,b\,c\,e^2+10\,B\,c^2\,d^2+2\,A\,c^2\,d\,e\right)}{3\,e^3}+\frac{d^2\left(B\,b^2\,d\,e^2+A\,b^2\,e^3+4\,B\,b\,c\,d^2\,e+2\,A\,b\,c\,d\,e^2+10\,B\,c^2\,d^3+2\,A\,c^2\,d^2\,e\right)}{60\,e^6}+\frac{x^2\left(B\,b^2\,d\,e^2+A\,b^2\,e^3+4\,B\,b\,c\,d^2\,e+2\,A\,b\,c\,d\,e^2+10\,B\,c^2\,d^3+2\,A\,c^2\,d^2\,e\right)}{4\,e^4}+\frac{d\,x\left(B\,b^2\,d\,e^2+A\,b^2\,e^3+4\,B\,b\,c\,d^2\,e+2\,A\,b\,c\,d\,e^2+10\,B\,c^2\,d^3+2\,A\,c^2\,d^2\,e\right)}{10\,e^5}+\frac{c\,x^4\,\left(A\,c\,e+2\,B\,b\,e+5\,B\,c\,d\right)}{2\,e^2}+\frac{B\,c^2\,x^5}{e}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -((x^3*(B*b^2*e^2 + 10*B*c^2*d^2 + 2*A*b*c*e^2 + 2*A*c^2*d*e + 4*B*b*c*d*e)
)/(3*e^3) + (d^2*(A*b^2*e^3 + 10*B*c^2*d^3 + 2*A*c^2*d^2*e + B*b^2*d*e^2 +
2*A*b*c*d*e^2 + 4*B*b*c*d^2*e))/(60*e^6) + (x^2*(A*b^2*e^3 + 10*B*c^2*d^3 +
 2*A*c^2*d^2*e + B*b^2*d*e^2 + 2*A*b*c*d*e^2 + 4*B*b*c*d^2*e))/(4*e^4) + (d
*x*(A*b^2*e^3 + 10*B*c^2*d^3 + 2*A*c^2*d^2*e + B*b^2*d*e^2 + 2*A*b*c*d*e^2
+ 4*B*b*c*d^2*e))/(10*e^5) + (c*x^4*(A*c*e + 2*B*b*e + 5*B*c*d))/(2*e^2) +
(B*c^2*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x
^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.981 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^8} \, dx$

Optimal. Leaf size=255

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{4e^6(d+ex)^4}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{d^2(Bd-}{7e}$$

Rubi [A] time = 0.22, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{4e^6(d+ex)^4}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{d^2(Bd-Ae)(cd-be)^2}{7e^6(d+ex)^7}+\frac{c(-Ace-2bBe+5Bcd)}{3e^6(d+ex)^3}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{6e^6(d+ex)^6}-\frac{Bc^2}{2e^6(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^2)/(7*e^6*(d + e*x)^7) - (d*(c*d - b*e)*(B*d*(
5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(6*e^6*(d + e*x)^6) - (A*e*(6*c^2*d^
2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(5*e^
6*(d + e*x)^5) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e
^2))/(4*e^6*(d + e*x)^4) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(3*e^6*(d + e*x)
^3) - (B*c^2)/(2*e^6*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^8} \, dx = \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^8}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^7}+\frac{Ae\left(6c\right.}{}\right.$$

$$=\frac{d^2(Bd-Ae)(cd-be)^2}{7e^6(d+ex)^7}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{6e^6(d+ex)^6}-\frac{Ae\left(6c^2d^2-\right.}{}$$

Mathematica [A] time = 0.11, size = 260, normalized size = 1.02

$$-\frac{2Ae\left(2b^2e^2\left(d^2+7dex+21e^2x^2\right)+3bce\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+2c^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+B\left(3b^2e^2\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+8bce\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)+10c^2\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)\right)}{420e^6(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/420*(2*A*e*(2*b^2*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*b*c*e*(d^3 + 7*d^
2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 2*c^2*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^
2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + B*(3*b^2*e^2*(d^3 + 7*d^2*e*x + 21*d*e^2*
x^2 + 35*e^3*x^3) + 8*b*c*e*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^
3 + 35*e^4*x^4) + 10*c^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3
 + 35*d*e^4*x^4 + 21*e^5*x^5)))/(e^6*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^8} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^8, x]
```

fricas [A] time = 0.38, size = 359, normalized size = 1.41

$$-\frac{210\,Bc^{2}e^{5}x^{5}+10\,Bc^{2}d^{5}+4\,Ab^{2}d^{2}e^{3}+4\left(2\,Bbc+Ac^{2}\right)d^{4}e+3\left(Bb^{2}+2\,Abc\right)d^{3}e^{2}+70\left(5\,Bc^{2}de^{4}+2\left(2\,Bbc+Ac^{2}\right)e^{5}\right)x^{4}+35\left(10\,Bc^{2}d^{2}e^{3}+4\left(2\,Bbc+Ac^{2}\right)de^{4}+3\left(Bb^{2}+2\,Abc\right)e^{5}\right)x^{3}+21\left(10\,Bc^{2}d^{3}e^{2}+4\,Ab^{2}e^{5}+4\left(2\,Bbc+Ac^{2}\right)d^{2}e^{3}+3\left(Bb^{2}+2\,Abc\right)de^{4}\right)x^{2}+7\left(10\,Bc^{2}d^{4}e+4\,Ab^{2}de^{4}+4\left(2\,Bbc+Ac^{2}\right)d^{3}e^{2}+3\left(Bb^{2}+2\,Abc\right)d^{2}e^{3}\right)x}{420\left(e^{13}x^{7}+7\,de^{12}x^{6}+21\,d^{2}e^{11}x^{5}+35\,d^{3}e^{10}x^{4}+35\,d^{4}e^{9}x^{3}+21\,d^{5}e^{8}x^{2}+7\,d^{6}e^{7}x+d^{7}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 4*A*b^2*d^2*e^3 + 4*(2*B*b*c + A
*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c
+ A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B
*b^2 + 2*A*b*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*A*b^2*e^5 + 4*(2*B*b*c
+ A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 7*(10*B*c^2*d^4*e + 4*A
*b^2*d*e^4 + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/
(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d^4*e^9*x
^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [A] time = 0.16, size = 320, normalized size = 1.25

$$-\frac{\left(210\,Bc^{2}x^{5}e^{5}+350\,Bc^{2}dx^{4}e^{4}+350\,Bc^{2}d^{2}x^{3}e^{3}+210\,Bc^{2}d^{3}x^{2}e^{2}+70\,Bc^{2}d^{4}xe+10\,Bc^{2}d^{5}+280\,Bbcx^{4}e^{5}+140\,Ac^{2}x^{4}e^{5}+280\,Bbcdx^{3}e^{4}+140\,Ac^{2}dx^{3}e^{4}+168\,Bbcd^{2}x^{2}e^{3}+84\,Ac^{2}d^{2}x^{2}e^{3}+56\,Bbcd^{3}xe^{2}+28\,Ac^{2}d^{3}xe^{2}+8\,Bbcd^{4}e+4\,Ac^{2}d^{4}e+105\,Bb^{2}x^{3}e^{5}+210\,Abcx^{3}e^{5}+63\,Bb^{2}dx^{2}e^{4}+126\,Abcdx^{2}e^{4}+21\,Bb^{2}d^{2}xe^{3}+42\,Abcd^{2}xe^{3}+3\,Bb^{2}d^{3}e^{2}+6\,Abcd^{3}e^{2}+84\,Ab^{2}x^{2}e^{5}+28\,Ab^{2}dxe^{4}+4\,Ab^{2}d^{2}e^{3}\right)e^{(-6)}}{420\,(xe+d)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/420*(210*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 350*B*c^2*d^2*x^3*e^3 + 2
10*B*c^2*d^3*x^2*e^2 + 70*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 280*B*b*c*x^4*e^5
+ 140*A*c^2*x^4*e^5 + 280*B*b*c*d*x^3*e^4 + 140*A*c^2*d*x^3*e^4 + 168*B*b*c
*d^2*x^2*e^3 + 84*A*c^2*d^2*x^2*e^3 + 56*B*b*c*d^3*x*e^2 + 28*A*c^2*d^3*x*e
^2 + 8*B*b*c*d^4*e + 4*A*c^2*d^4*e + 105*B*b^2*x^3*e^5 + 210*A*b*c*x^3*e^5
+ 63*B*b^2*d*x^2*e^4 + 126*A*b*c*d*x^2*e^4 + 21*B*b^2*d^2*x*e^3 + 42*A*b*c*
d^2*x*e^3 + 3*B*b^2*d^3*e^2 + 6*A*b*c*d^3*e^2 + 84*A*b^2*x^2*e^5 + 28*A*b^2
*d*x*e^4 + 4*A*b^2*d^2*e^3)*e^(-6)/(x*e + d)^7
```

maple [A] time = 0.05, size = 307, normalized size = 1.20

$$-\frac{B\,c^{2}}{2\,(ex+d)^{2}\,e^{6}}-\frac{\left(A\,b^{2}e^{3}-2Abcd\,e^{2}+A\,c^{2}d^{2}e-Bd\,b^{2}e^{2}+2B\,d^{2}bce-B\,c^{2}d^{3}\right)d^{2}}{7\,(ex+d)^{7}\,e^{6}}-\frac{(Ace+2Bbe-5Bcd)\,c}{3\,(ex+d)^{3}\,e^{6}}+\frac{\left(2A\,b^{2}e^{3}-6Abcd\,e^{2}+4A\,c^{2}d^{2}e-3Bd\,b^{2}e^{2}+8B\,d^{2}bce-5B\,c^{2}d^{3}\right)d}{6\,(ex+d)^{6}\,e^{6}}-\frac{2Abc\,e^{2}-4A\,c^{2}de+B\,b^{2}e^{2}-8Bdbce+10B\,d^{2}c^{2}}{4\,(ex+d)^{4}\,e^{6}}-\frac{A\,b^{2}e^{3}-6Abcd\,e^{2}+6A\,c^{2}d^{2}e-3Bd\,b^{2}e^{2}+12B\,d^{2}bce-10B\,c^{2}d^{3}}{5\,(ex+d)^{5}\,e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x)
```

```
[Out] -1/4*(2*A*b*c*e^2-4*A*c^2*d*e+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+
d)^4-1/5*(A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e-3*B*b^2*d*e^2+12*B*b*c*d^2*
e-10*B*c^2*d^3)/e^6/(e*x+d)^5+1/6*d*(2*A*b^2*e^3-6*A*b*c*d*e^2+4*A*c^2*d^2*
e-3*B*b^2*d*e^2+8*B*b*c*d^2*e-5*B*c^2*d^3)/e^6/(e*x+d)^6-1/2*B*c^2/e^6/(e*x
+d)^2-1/7*d^2*(A*b^2*e^3-2*A*b*c*d*e^2+A*c^2*d^2*e-B*b^2*d*e^2+2*B*b*c*d^2*
e-B*c^2*d^3)/e^6/(e*x+d)^7-1/3*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^3
```

maxima [A] time = 0.70, size = 359, normalized size = 1.41

$$-\frac{210\,Bc^{2}e^{5}x^{5}+10\,Bc^{2}d^{5}+4\,Ab^{2}d^{2}e^{3}+4\left(2\,Bbc+Ac^{2}\right)d^{4}e+3\left(Bb^{2}+2\,Abc\right)d^{3}e^{2}+70\left(5\,Bc^{2}de^{4}+2\left(2\,Bbc+Ac^{2}\right)e^{5}\right)x^{4}+35\left(10\,Bc^{2}d^{2}e^{3}+4\left(2\,Bbc+Ac^{2}\right)de^{4}+3\left(Bb^{2}+2\,Abc\right)e^{5}\right)x^{3}+21\left(10\,Bc^{2}d^{3}e^{2}+4\,Ab^{2}e^{5}+4\left(2\,Bbc+Ac^{2}\right)d^{2}e^{3}+3\left(Bb^{2}+2\,Abc\right)de^{4}\right)x^{2}+7\left(10\,Bc^{2}d^{4}e+4\,Ab^{2}de^{4}+4\left(2\,Bbc+Ac^{2}\right)d^{3}e^{2}+3\left(Bb^{2}+2\,Abc\right)d^{2}e^{3}\right)x}{420\left(e^{13}x^{7}+7\,de^{12}x^{6}+21\,d^{2}e^{11}x^{5}+35\,d^{3}e^{10}x^{4}+35\,d^{4}e^{9}x^{3}+21\,d^{5}e^{8}x^{2}+7\,d^{6}e^{7}x+d^{7}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 4*A*b^2*d^2*e^3 + 4*(2*B*b*c + A
*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c
+ A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B
*b^2 + 2*A*b*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*A*b^2*e^5 + 4*(2*B*b*c
+ A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 7*(10*B*c^2*d^4*e + 4*A
*b^2*d*e^4 + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/
(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d^4*e^9*x
^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [B] time = 0.12, size = 357, normalized size = 1.40

$$-\frac{\frac{x^3\left(3Bb^2e^2+8Bbcde+6Abce^2+10Bc^2d^2+4Ac^2de\right)}{12e^3}+\frac{d^2\left(3Bb^2de^2+4Ab^2e^3+8Bbcd^2e+6Abcde^2+10Bc^2d^3+4Ac^2d^2e\right)}{420e^6}+\frac{x^2\left(3Bb^2de^2+4Ab^2e^3+8Bbcd^2e+6Abcde^2+10Bc^2d^3+4Ac^2d^2e\right)}{20e^4}+\frac{dx\left(3Bb^2de^2+4Ab^2e^3+8Bbcd^2e+6Abcde^2+10Bc^2d^3+4Ac^2d^2e\right)}{60e^5}+\frac{cx^4\left(2Ace+4Bbe+5Bcd\right)}{6e^2}+\frac{Bc^2x^5}{2e}}{d^7+7d^6ex+21d^5e^2x^2+35d^4e^3x^3+35d^3e^4x^4+21d^2e^5x^5+7de^6x^6+e^7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] -((x^3*(3*B*b^2*e^2 + 10*B*c^2*d^2 + 6*A*b*c*e^2 + 4*A*c^2*d*e + 8*B*b*c*d*
e))/(12*e^3) + (d^2*(4*A*b^2*e^3 + 10*B*c^2*d^3 + 4*A*c^2*d^2*e + 3*B*b^2*d
*e^2 + 6*A*b*c*d*e^2 + 8*B*b*c*d^2*e))/(420*e^6) + (x^2*(4*A*b^2*e^3 + 10*B
*c^2*d^3 + 4*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 8*B*b*c*d^2*e))/
(20*e^4) + (d*x*(4*A*b^2*e^3 + 10*B*c^2*d^3 + 4*A*c^2*d^2*e + 3*B*b^2*d*e^2
 + 6*A*b*c*d*e^2 + 8*B*b*c*d^2*e))/(60*e^5) + (c*x^4*(2*A*c*e + 4*B*b*e + 5
*B*c*d))/(6*e^2) + (B*c^2*x^5)/(2*e))/(d^7 + e^7*x^7 + 7*d*e^6*x^6 + 21*d^5
*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.982 $\int (A + Bx)(d + ex)^m \left(bx + cx^2\right)^3 \, dx$

Optimal. Leaf size=484

$$\frac{3d(cd - be)(d + ex)^{m+3}\left(Ae\left(b^2e^2 - 5bcde + 5c^2d^2\right) - Bd\left(2b^2e^2 - 8bcde + 7c^2d^2\right)\right)}{e^8(m+3)} - \frac{3c(d + ex)^{m+6}\left(Ace(2cd - b\right.}{e^8(}$$

Rubi [A] time = 0.41, antiderivative size = 484, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^3,x]
```

```
[Out] -((d^3*(B*d - A*e)*(c*d - b*e)^3*(d + e*x)^(1 + m))/(e^8*(1 + m))) + (d^2*(
c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))
/(e^8*(2 + m)) + (3*d*(c*d - b*e)*(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2) -
B*d*(7*c^2*d^2 - 8*b*c*d*e + 2*b^2*e^2))*(d + e*x)^(3 + m))/(e^8*(3 + m)) +
 ((B*d*(35*c^3*d^3 - 60*b*c^2*d^2*e + 30*b^2*c*d*e^2 - 4*b^3*e^3) - A*e*(20
*c^3*d^3 - 30*b*c^2*d^2*e + 12*b^2*c*d*e^2 - b^3*e^3))*(d + e*x)^(4 + m))/(
e^8*(4 + m)) + ((3*A*c*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2) - B*(35*c^3*d^3
- 45*b*c^2*d^2*e + 15*b^2*c*d*e^2 - b^3*e^3))*(d + e*x)^(5 + m))/(e^8*(5 +
m)) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*(d +
 e*x)^(6 + m))/(e^8*(6 + m)) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d + e*x)^(
7 + m))/(e^8*(7 + m)) + (B*c^3*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A + Bx)(d + ex)^m \left(bx + cx^2\right)^3 \, dx = \int \left(-\frac{d^3(Bd - Ae)(cd - be)^3(d + ex)^m}{e^7} + \frac{d^2(cd - be)^2(Bd(7cd - 4be) - 3}{e^7}\right.$$

$$= -\frac{d^3(Bd - Ae)(cd - be)^3(d + ex)^{1+m}}{e^8(1+m)} + \frac{d^2(cd - be)^2(Bd(7cd - 4be) - 3A}{e^8(2+m}$$

Mathematica [A] time = 0.98, size = 525, normalized size = 1.08

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(A*e*((d^3*(c*d - b*e)^3)/(1 + m) - (3*d^2*(c*d - b*e)^2
*(2*c*d - b*e)*(d + e*x))/(2 + m) + (3*d*(c*d - b*e)*(5*c^2*d^2 - 5*b*c*d*e
 + b^2*e^2)*(d + e*x)^2)/(3 + m) - ((2*c*d - b*e)*(10*c^2*d^2 - 10*b*c*d*e
+ b^2*e^2)*(d + e*x)^3)/(4 + m) + (3*c*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2)*(d
 + e*x)^4)/(5 + m) - (3*c^2*(2*c*d - b*e)*(d + e*x)^5)/(6 + m) + (c^3*(d +
```

```
e*x)^6)/(7 + m)) + B*(-((d^4*(c*d - b*e)^3)/(1 + m)) + (d^3*(7*c*d - 4*b*e)
*(c*d - b*e)^2*(d + e*x))/(2 + m) - (3*d^2*(c*d - b*e)*(7*c^2*d^2 - 8*b*c*d
*e + 2*b^2*e^2)*(d + e*x)^2)/(3 + m) + (d*(35*c^3*d^3 - 60*b*c^2*d^2*e + 30
*b^2*c*d*e^2 - 4*b^3*e^3)*(d + e*x)^3)/(4 + m) - ((35*c^3*d^3 - 45*b*c^2*d^
2*e + 15*b^2*c*d*e^2 - b^3*e^3)*(d + e*x)^4)/(5 + m) + (3*c*(7*c^2*d^2 - 6*
b*c*d*e + b^2*e^2)*(d + e*x)^5)/(6 + m) - (c^2*(7*c*d - 3*b*e)*(d + e*x)^6)
/(7 + m) + (c^3*(d + e*x)^7)/(8 + m))))/e^8
```

IntegrateAlgebraic [F] time = 0.66, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.49, size = 3254, normalized size = 6.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -(6*A*b^3*d^4*e^4*m^4 + 5040*B*c^3*d^8 + 10080*A*b^3*d^4*e^4 - 5760*(3*B*b*
c^2 + A*c^3)*d^7*e + 20160*(B*b^2*c + A*b*c^2)*d^6*e^2 - 8064*(B*b^3 + 3*A*
b^2*c)*d^5*e^3 - (B*c^3*e^8*m^7 + 28*B*c^3*e^8*m^6 + 322*B*c^3*e^8*m^5 + 19
60*B*c^3*e^8*m^4 + 6769*B*c^3*e^8*m^3 + 13132*B*c^3*e^8*m^2 + 13068*B*c^3*e
^8*m + 5040*B*c^3*e^8)*x^8 - (5760*(3*B*b*c^2 + A*c^3)*e^8 + (B*c^3*d*e^7 +
 (3*B*b*c^2 + A*c^3)*e^8)*m^7 + (21*B*c^3*d*e^7 + 29*(3*B*b*c^2 + A*c^3)*e^
8)*m^6 + 7*(25*B*c^3*d*e^7 + 49*(3*B*b*c^2 + A*c^3)*e^8)*m^5 + 35*(21*B*c^3
*d*e^7 + 61*(3*B*b*c^2 + A*c^3)*e^8)*m^4 + 56*(29*B*c^3*d*e^7 + 134*(3*B*b*
c^2 + A*c^3)*e^8)*m^3 + 28*(63*B*c^3*d*e^7 + 527*(3*B*b*c^2 + A*c^3)*e^8)*m
^2 + 144*(5*B*c^3*d*e^7 + 103*(3*B*b*c^2 + A*c^3)*e^8)*m)*x^7 - (20160*(B*b
^2*c + A*b*c^2)*e^8 + ((3*B*b*c^2 + A*c^3)*d*e^7 + 3*(B*b^2*c + A*b*c^2)*e^
8)*m^7 - (7*B*c^3*d^2*e^6 - 23*(3*B*b*c^2 + A*c^3)*d*e^7 - 90*(B*b^2*c + A*
b*c^2)*e^8)*m^6 - (105*B*c^3*d^2*e^6 - 205*(3*B*b*c^2 + A*c^3)*d*e^7 - 1098
*(B*b^2*c + A*b*c^2)*e^8)*m^5 - 5*(119*B*c^3*d^2*e^6 - 181*(3*B*b*c^2 + A*c
^3)*d*e^7 - 1404*(B*b^2*c + A*b*c^2)*e^8)*m^4 - (1575*B*c^3*d^2*e^6 - 2074*
(3*B*b*c^2 + A*c^3)*d*e^7 - 25227*(B*b^2*c + A*b*c^2)*e^8)*m^3 - 2*(959*B*c
^3*d^2*e^6 - 1156*(3*B*b*c^2 + A*c^3)*d*e^7 - 25245*(B*b^2*c + A*b*c^2)*e^8
)*m^2 - 24*(35*B*c^3*d^2*e^6 - 40*(3*B*b*c^2 + A*c^3)*d*e^7 - 2143*(B*b^2*c
 + A*b*c^2)*e^8)*m)*x^6 - (8064*(B*b^3 + 3*A*b^2*c)*e^8 + (3*(B*b^2*c + A*b
*c^2)*d*e^7 + (B*b^3 + 3*A*b^2*c)*e^8)*m^7 - (6*(3*B*b*c^2 + A*c^3)*d^2*e^6
 - 75*(B*b^2*c + A*b*c^2)*d*e^7 - 31*(B*b^3 + 3*A*b^2*c)*e^8)*m^6 + (42*B*c
^3*d^3*e^5 - 108*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 723*(B*b^2*c + A*b*c^2)*d*e^
7 + 391*(B*b^3 + 3*A*b^2*c)*e^8)*m^5 + (420*B*c^3*d^3*e^5 - 690*(3*B*b*c^2
+ A*c^3)*d^2*e^6 + 3405*(B*b^2*c + A*b*c^2)*d*e^7 + 2581*(B*b^3 + 3*A*b^2*c
)*e^8)*m^4 + 2*(735*B*c^3*d^3*e^5 - 990*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 4101*
(B*b^2*c + A*b*c^2)*d*e^7 + 4772*(B*b^3 + 3*A*b^2*c)*e^8)*m^3 + 4*(525*B*c^
3*d^3*e^5 - 636*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 2370*(B*b^2*c + A*b*c^2)*d*e^
7 + 4891*(B*b^3 + 3*A*b^2*c)*e^8)*m^2 + 144*(7*B*c^3*d^3*e^5 - 8*(3*B*b*c^2
 + A*c^3)*d^2*e^6 + 28*(B*b^2*c + A*b*c^2)*d*e^7 + 141*(B*b^3 + 3*A*b^2*c)*
e^8)*m)*x^5 - (10080*A*b^3*e^8 + (A*b^3*e^8 + (B*b^3 + 3*A*b^2*c)*d*e^7)*m^
7 + (32*A*b^3*e^8 - 15*(B*b^2*c + A*b*c^2)*d^2*e^6 + 27*(B*b^3 + 3*A*b^2*c)
*d*e^7)*m^6 + (418*A*b^3*e^8 + 30*(3*B*b*c^2 + A*c^3)*d^3*e^5 - 315*(B*b^2*
c + A*b*c^2)*d^2*e^6 + 283*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^5 - (210*B*c^3*d^4*
e^4 - 2864*A*b^3*e^8 - 420*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 2355*(B*b^2*c + A*
b*c^2)*d^2*e^6 - 1449*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^4 - (1260*B*c^3*d^4*e^4
- 10993*A*b^3*e^8 - 1770*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 7605*(B*b^2*c + A*b*
```

```
c^2)*d^2*e^6 - 3748*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^3 - 2*(1155*B*c^3*d^4*e^4
- 11656*A*b^3*e^8 - 1410*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 5295*(B*b^2*c + A*b*
c^2)*d^2*e^6 - 2286*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^2 - 36*(35*B*c^3*d^4*e^4 -
 691*A*b^3*e^8 - 40*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 140*(B*b^2*c + A*b*c^2)*d
^2*e^6 - 56*(B*b^3 + 3*A*b^2*c)*d*e^7)*m)*x^4 + 12*(13*A*b^3*d^4*e^4 - 2*(B
*b^3 + 3*A*b^2*c)*d^5*e^3)*m^3 - (A*b^3*d*e^7*m^7 + (29*A*b^3*d*e^7 - 4*(B*
b^3 + 3*A*b^2*c)*d^2*e^6)*m^6 + (331*A*b^3*d*e^7 + 60*(B*b^2*c + A*b*c^2)*d
^3*e^5 - 96*(B*b^3 + 3*A*b^2*c)*d^2*e^6)*m^5 + (1871*A*b^3*d*e^7 - 120*(3*B
*b*c^2 + A*c^3)*d^4*e^4 + 1080*(B*b^2*c + A*b*c^2)*d^3*e^5 - 844*(B*b^3 + 3
*A*b^2*c)*d^2*e^6)*m^4 + 4*(210*B*c^3*d^5*e^3 + 1345*A*b^3*d*e^7 - 330*(3*B
*b*c^2 + A*c^3)*d^4*e^4 + 1545*(B*b^2*c + A*b*c^2)*d^3*e^5 - 816*(B*b^3 + 3
*A*b^2*c)*d^2*e^6)*m^3 + 4*(630*B*c^3*d^5*e^3 + 1793*A*b^3*d*e^7 - 780*(3*B
*b*c^2 + A*c^3)*d^4*e^4 + 2970*(B*b^2*c + A*b*c^2)*d^3*e^5 - 1300*(B*b^3 +
3*A*b^2*c)*d^2*e^6)*m^2 + 48*(35*B*c^3*d^5*e^3 + 70*A*b^3*d*e^7 - 40*(3*B*b
*c^2 + A*c^3)*d^4*e^4 + 140*(B*b^2*c + A*b*c^2)*d^3*e^5 - 56*(B*b^3 + 3*A*b
^2*c)*d^2*e^6)*m)*x^3 + 6*(251*A*b^3*d^4*e^4 + 60*(B*b^2*c + A*b*c^2)*d^6*e
^2 - 84*(B*b^3 + 3*A*b^2*c)*d^5*e^3)*m^2 + 3*(A*b^3*d^2*e^6*m^6 + (27*A*b^3
*d^2*e^6 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^5 + (277*A*b^3*d^2*e^6 + 60*(B*
b^2*c + A*b*c^2)*d^4*e^4 - 88*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^4 + (1317*A*b^
3*d^2*e^6 - 120*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 960*(B*b^2*c + A*b*c^2)*d^4*e
^4 - 668*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^3 + 2*(420*B*c^3*d^6*e^2 + 1373*A*b
^3*d^2*e^6 - 540*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 2130*(B*b^2*c + A*b*c^2)*d^4
*e^4 - 964*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^2 + 24*(35*B*c^3*d^6*e^2 + 70*A*b
^3*d^2*e^6 - 40*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 140*(B*b^2*c + A*b*c^2)*d^4*e
^4 - 56*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m)*x^2 + 12*(533*A*b^3*d^4*e^4 - 60*(3
*B*b*c^2 + A*c^3)*d^7*e + 450*(B*b^2*c + A*b*c^2)*d^6*e^2 - 292*(B*b^3 + 3*
A*b^2*c)*d^5*e^3)*m - 6*(A*b^3*d^3*e^5*m^5 + 2*(13*A*b^3*d^3*e^5 - 2*(B*b^3
 + 3*A*b^2*c)*d^4*e^4)*m^4 + (251*A*b^3*d^3*e^5 + 60*(B*b^2*c + A*b*c^2)*d^
5*e^3 - 84*(B*b^3 + 3*A*b^2*c)*d^4*e^4)*m^3 + 2*(533*A*b^3*d^3*e^5 - 60*(3*
B*b*c^2 + A*c^3)*d^6*e^2 + 450*(B*b^2*c + A*b*c^2)*d^5*e^3 - 292*(B*b^3 + 3
*A*b^2*c)*d^4*e^4)*m^2 + 24*(35*B*c^3*d^7*e + 70*A*b^3*d^3*e^5 - 40*(3*B*b*
c^2 + A*c^3)*d^6*e^2 + 140*(B*b^2*c + A*b*c^2)*d^5*e^3 - 56*(B*b^3 + 3*A*b^
2*c)*d^4*e^4)*m)*x)*(e*x + d)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*
e^8*m^5 + 22449*e^8*m^4 + 67284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 4
0320*e^8)
```

giac [B] time = 0.39, size = 6663, normalized size = 13.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^3*m^7*x^8*e^8 + (x*e + d)^m*B*c^3*d*m^7*x^7*e^7 + 3*(x*e +
 d)^m*B*b*c^2*m^7*x^7*e^8 + (x*e + d)^m*A*c^3*m^7*x^7*e^8 + 28*(x*e + d)^m*
B*c^3*m^6*x^8*e^8 + 3*(x*e + d)^m*B*b*c^2*d*m^7*x^6*e^7 + (x*e + d)^m*A*c^3
*d*m^7*x^6*e^7 + 21*(x*e + d)^m*B*c^3*d*m^6*x^7*e^7 - 7*(x*e + d)^m*B*c^3*d
^2*m^6*x^6*e^6 + 3*(x*e + d)^m*B*b^2*c*m^7*x^6*e^8 + 3*(x*e + d)^m*A*b*c^2*
m^7*x^6*e^8 + 87*(x*e + d)^m*B*b*c^2*m^6*x^7*e^8 + 29*(x*e + d)^m*A*c^3*m^6
*x^7*e^8 + 322*(x*e + d)^m*B*c^3*m^5*x^8*e^8 + 3*(x*e + d)^m*B*b^2*c*d*m^7*
x^5*e^7 + 3*(x*e + d)^m*A*b*c^2*d*m^7*x^5*e^7 + 69*(x*e + d)^m*B*b*c^2*d*m^
6*x^6*e^7 + 23*(x*e + d)^m*A*c^3*d*m^6*x^6*e^7 + 175*(x*e + d)^m*B*c^3*d*m^
5*x^7*e^7 - 18*(x*e + d)^m*B*b*c^2*d^2*m^6*x^5*e^6 - 6*(x*e + d)^m*A*c^3*d^
2*m^6*x^5*e^6 - 105*(x*e + d)^m*B*c^3*d^2*m^5*x^6*e^6 + 42*(x*e + d)^m*B*c^
3*d^3*m^5*x^5*e^5 + (x*e + d)^m*B*b^3*m^7*x^5*e^8 + 3*(x*e + d)^m*A*b^2*c*m
^7*x^5*e^8 + 90*(x*e + d)^m*B*b^2*c*m^6*x^6*e^8 + 90*(x*e + d)^m*A*b*c^2*m^
6*x^6*e^8 + 1029*(x*e + d)^m*B*b*c^2*m^5*x^7*e^8 + 343*(x*e + d)^m*A*c^3*m^
5*x^7*e^8 + 1960*(x*e + d)^m*B*c^3*m^4*x^8*e^8 + (x*e + d)^m*B*b^3*d*m^7*x^
4*e^7 + 3*(x*e + d)^m*A*b^2*c*d*m^7*x^4*e^7 + 75*(x*e + d)^m*B*b^2*c*d*m^6*
x^5*e^7 + 75*(x*e + d)^m*A*b*c^2*d*m^6*x^5*e^7 + 615*(x*e + d)^m*B*b*c^2*d*
```

m^5*x^6*e^7 + 205*(x*e + d)^m*A*c^3*d*m^5*x^6*e^7 + 735*(x*e + d)^m*B*c^3*d
*m^4*x^7*e^7 - 15*(x*e + d)^m*B*b^2*c*d^2*m^6*x^4*e^6 - 15*(x*e + d)^m*A*b*
c^2*d^2*m^6*x^4*e^6 - 324*(x*e + d)^m*B*b*c^2*d^2*m^5*x^5*e^6 - 108*(x*e +
d)^m*A*c^3*d^2*m^5*x^5*e^6 - 595*(x*e + d)^m*B*c^3*d^2*m^4*x^6*e^6 + 90*(x*
e + d)^m*B*b*c^2*d^3*m^5*x^4*e^5 + 30*(x*e + d)^m*A*c^3*d^3*m^5*x^4*e^5 + 4
20*(x*e + d)^m*B*c^3*d^3*m^4*x^5*e^5 - 210*(x*e + d)^m*B*c^3*d^4*m^4*x^4*e^
4 + (x*e + d)^m*A*b^3*m^7*x^4*e^8 + 31*(x*e + d)^m*B*b^3*m^6*x^5*e^8 + 93*(
x*e + d)^m*A*b^2*c*m^6*x^5*e^8 + 1098*(x*e + d)^m*B*b^2*c*m^5*x^6*e^8 + 109
8*(x*e + d)^m*A*b*c^2*m^5*x^6*e^8 + 6405*(x*e + d)^m*B*b*c^2*m^4*x^7*e^8 +
2135*(x*e + d)^m*A*c^3*m^4*x^7*e^8 + 6769*(x*e + d)^m*B*c^3*m^3*x^8*e^8 + (
x*e + d)^m*A*b^3*d*m^7*x^3*e^7 + 27*(x*e + d)^m*B*b^3*d*m^6*x^4*e^7 + 81*(x
*e + d)^m*A*b^2*c*d*m^6*x^4*e^7 + 723*(x*e + d)^m*B*b^2*c*d*m^5*x^5*e^7 + 7
23*(x*e + d)^m*A*b*c^2*d*m^5*x^5*e^7 + 2715*(x*e + d)^m*B*b*c^2*d*m^4*x^6*e
^7 + 905*(x*e + d)^m*A*c^3*d*m^4*x^6*e^7 + 1624*(x*e + d)^m*B*c^3*d*m^3*x^7
e^7 - 4(x*e + d)^m*B*b^3*d^2*m^6*x^3*e^6 - 12*(x*e + d)^m*A*b^2*c*d^2*m^6
*x^3*e^6 - 315*(x*e + d)^m*B*b^2*c*d^2*m^5*x^4*e^6 - 315*(x*e + d)^m*A*b*c^
2*d^2*m^5*x^4*e^6 - 2070*(x*e + d)^m*B*b*c^2*d^2*m^4*x^5*e^6 - 690*(x*e + d
)^m*A*c^3*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*B*c^3*d^2*m^3*x^6*e^6 + 60*(x*
e + d)^m*B*b^2*c*d^3*m^5*x^3*e^5 + 60*(x*e + d)^m*A*b*c^2*d^3*m^5*x^3*e^5 +
 1260*(x*e + d)^m*B*b*c^2*d^3*m^4*x^4*e^5 + 420*(x*e + d)^m*A*c^3*d^3*m^4*x
^4*e^5 + 1470*(x*e + d)^m*B*c^3*d^3*m^3*x^5*e^5 - 360*(x*e + d)^m*B*b*c^2*d
^4*m^4*x^3*e^4 - 120*(x*e + d)^m*A*c^3*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*B
*c^3*d^4*m^3*x^4*e^4 + 840*(x*e + d)^m*B*c^3*d^5*m^3*x^3*e^3 + 32*(x*e + d)
^m*A*b^3*m^6*x^4*e^8 + 391*(x*e + d)^m*B*b^3*m^5*x^5*e^8 + 1173*(x*e + d)^m
*A*b^2*c*m^5*x^5*e^8 + 7020*(x*e + d)^m*B*b^2*c*m^4*x^6*e^8 + 7020*(x*e + d
)^m*A*b*c^2*m^4*x^6*e^8 + 22512*(x*e + d)^m*B*b*c^2*m^3*x^7*e^8 + 7504*(x*e
 + d)^m*A*c^3*m^3*x^7*e^8 + 13132*(x*e + d)^m*B*c^3*m^2*x^8*e^8 + 29*(x*e +
 d)^m*A*b^3*d*m^6*x^3*e^7 + 283*(x*e + d)^m*B*b^3*d*m^5*x^4*e^7 + 849*(x*e
+ d)^m*A*b^2*c*d*m^5*x^4*e^7 + 3405*(x*e + d)^m*B*b^2*c*d*m^4*x^5*e^7 + 340
5*(x*e + d)^m*A*b*c^2*d*m^4*x^5*e^7 + 6222*(x*e + d)^m*B*b*c^2*d*m^3*x^6*e^
7 + 2074*(x*e + d)^m*A*c^3*d*m^3*x^6*e^7 + 1764*(x*e + d)^m*B*c^3*d*m^2*x^7
e^7 - 3(x*e + d)^m*A*b^3*d^2*m^6*x^2*e^6 - 96*(x*e + d)^m*B*b^3*d^2*m^5*x
^3*e^6 - 288*(x*e + d)^m*A*b^2*c*d^2*m^5*x^3*e^6 - 2355*(x*e + d)^m*B*b^2*c
*d^2*m^4*x^4*e^6 - 2355*(x*e + d)^m*A*b*c^2*d^2*m^4*x^4*e^6 - 5940*(x*e + d
)^m*B*b*c^2*d^2*m^3*x^5*e^6 - 1980*(x*e + d)^m*A*c^3*d^2*m^3*x^5*e^6 - 1918
*(x*e + d)^m*B*c^3*d^2*m^2*x^6*e^6 + 12*(x*e + d)^m*B*b^3*d^3*m^5*x^2*e^5 +
 36*(x*e + d)^m*A*b^2*c*d^3*m^5*x^2*e^5 + 1080*(x*e + d)^m*B*b^2*c*d^3*m^4*
x^3*e^5 + 1080*(x*e + d)^m*A*b*c^2*d^3*m^4*x^3*e^5 + 5310*(x*e + d)^m*B*b*c
^2*d^3*m^3*x^4*e^5 + 1770*(x*e + d)^m*A*c^3*d^3*m^3*x^4*e^5 + 2100*(x*e + d
)^m*B*c^3*d^3*m^2*x^5*e^5 - 180*(x*e + d)^m*B*b^2*c*d^4*m^4*x^2*e^4 - 180*(
x*e + d)^m*A*b*c^2*d^4*m^4*x^2*e^4 - 3960*(x*e + d)^m*B*b*c^2*d^4*m^3*x^3*e
^4 - 1320*(x*e + d)^m*A*c^3*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*B*c^3*d^4*m^
2*x^4*e^4 + 1080*(x*e + d)^m*B*b*c^2*d^5*m^3*x^2*e^3 + 360*(x*e + d)^m*A*c^
3*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*B*c^3*d^5*m^2*x^3*e^3 - 2520*(x*e + d)
^m*B*c^3*d^6*m^2*x^2*e^2 + 418*(x*e + d)^m*A*b^3*m^5*x^4*e^8 + 2581*(x*e +
d)^m*B*b^3*m^4*x^5*e^8 + 7743*(x*e + d)^m*A*b^2*c*m^4*x^5*e^8 + 25227*(x*e
+ d)^m*B*b^2*c*m^3*x^6*e^8 + 25227*(x*e + d)^m*A*b*c^2*m^3*x^6*e^8 + 44268*
(x*e + d)^m*B*b*c^2*m^2*x^7*e^8 + 14756*(x*e + d)^m*A*c^3*m^2*x^7*e^8 + 130
68*(x*e + d)^m*B*c^3*m*x^8*e^8 + 331*(x*e + d)^m*A*b^3*d*m^5*x^3*e^7 + 1449
*(x*e + d)^m*B*b^3*d*m^4*x^4*e^7 + 4347*(x*e + d)^m*A*b^2*c*d*m^4*x^4*e^7 +
 8202*(x*e + d)^m*B*b^2*c*d*m^3*x^5*e^7 + 8202*(x*e + d)^m*A*b*c^2*d*m^3*x^
5*e^7 + 6936*(x*e + d)^m*B*b*c^2*d*m^2*x^6*e^7 + 2312*(x*e + d)^m*A*c^3*d*m
^2*x^6*e^7 + 720*(x*e + d)^m*B*c^3*d*m*x^7*e^7 - 81*(x*e + d)^m*A*b^3*d^2*m
^5*x^2*e^6 - 844*(x*e + d)^m*B*b^3*d^2*m^4*x^3*e^6 - 2532*(x*e + d)^m*A*b^2
*c*d^2*m^4*x^3*e^6 - 7605*(x*e + d)^m*B*b^2*c*d^2*m^3*x^4*e^6 - 7605*(x*e +
 d)^m*A*b*c^2*d^2*m^3*x^4*e^6 - 7632*(x*e + d)^m*B*b*c^2*d^2*m^2*x^5*e^6 -
2544*(x*e + d)^m*A*c^3*d^2*m^2*x^5*e^6 - 840*(x*e + d)^m*B*c^3*d^2*m*x^6*e^
6 + 6*(x*e + d)^m*A*b^3*d^3*m^5*x*e^5 + 264*(x*e + d)^m*B*b^3*d^3*m^4*x^2*e
^5 + 792*(x*e + d)^m*A*b^2*c*d^3*m^4*x^2*e^5 + 6180*(x*e + d)^m*B*b^2*c*d^3

*m^3*x^3*e^5 + 6180*(x*e + d)^m*A*b*c^2*d^3*m^3*x^3*e^5 + 8460*(x*e + d)^m*B*b*c^2*d^3*m^2*x^4*e^5 + 2820*(x*e + d)^m*A*c^3*d^3*m^2*x^4*e^5 + 1008*(x*e + d)^m*B*c^3*d^3*m*x^5*e^5 - 24*(x*e + d)^m*B*b^3*d^4*m^4*x*e^4 - 72*(x*e + d)^m*A*b^2*c*d^4*m^4*x*e^4 - 2880*(x*e + d)^m*B*b^2*c*d^4*m^3*x^2*e^4 - 2880*(x*e + d)^m*A*b*c^2*d^4*m^3*x^2*e^4 - 9360*(x*e + d)^m*B*b*c^2*d^4*m^2*x^3*e^4 - 3120*(x*e + d)^m*A*c^3*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m*x^4*e^4 + 360*(x*e + d)^m*B*b^2*c*d^5*m^3*x*e^3 + 360*(x*e + d)^m*A*b*c^2*d^5*m^3*x*e^3 + 9720*(x*e + d)^m*B*b*c^2*d^5*m^2*x^2*e^3 + 3240*(x*e + d)^m*A*c^3*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*B*c^3*d^5*m*x^3*e^3 - 2160*(x*e + d)^m*B*b*c^2*d^6*m^2*x*e^2 - 720*(x*e + d)^m*A*c^3*d^6*m^2*x*e^2 - 2520*(x*e + d)^m*B*c^3*d^6*m*x^2*e^2 + 5040*(x*e + d)^m*B*c^3*d^7*m*x*e + 2864*(x*e + d)^m*A*b^3*m^4*x^4*e^8 + 9544*(x*e + d)^m*B*b^3*m^3*x^5*e^8 + 28632*(x*e + d)^m*A*b^2*c*m^3*x^5*e^8 + 50490*(x*e + d)^m*B*b^2*c*m^2*x^6*e^8 + 50490*(x*e + d)^m*A*b*c^2*m^2*x^6*e^8 + 44496*(x*e + d)^m*B*b*c^2*m*x^7*e^8 + 14832*(x*e + d)^m*A*c^3*m*x^7*e^8 + 5040*(x*e + d)^m*B*c^3*x^8*e^8 + 1871*(x*e + d)^m*A*b^3*d*m^4*x^3*e^7 + 3748*(x*e + d)^m*B*b^3*d*m^3*x^4*e^7 + 11244*(x*e + d)^m*A*b^2*c*d*m^3*x^4*e^7 + 9480*(x*e + d)^m*B*b^2*c*d*m^2*x^5*e^7 + 9480*(x*e + d)^m*A*b*c^2*d*m^2*x^5*e^7 + 2880*(x*e + d)^m*B*b*c^2*d*m*x^6*e^7 + 960*(x*e + d)^m*A*c^3*d*m*x^6*e^7 - 831*(x*e + d)^m*A*b^3*d^2*m^4*x^2*e^6 - 3264*(x*e + d)^m*B*b^3*d^2*m^3*x^3*e^6 - 9792*(x*e + d)^m*A*b^2*c*d^2*m^3*x^3*e^6 - 10590*(x*e + d)^m*B*b^2*c*d^2*m^2*x^4*e^6 - 10590*(x*e + d)^m*A*b*c^2*d^2*m^2*x^4*e^6 - 3456*(x*e + d)^m*B*b*c^2*d^2*m*x^5*e^6 - 1152*(x*e + d)^m*A*c^3*d^2*m*x^5*e^6 + 156*(x*e + d)^m*A*b^3*d^3*m^4*x*e^5 + 2004*(x*e + d)^m*B*b^3*d^3*m^3*x^2*e^5 + 6012*(x*e + d)^m*A*b^2*c*d^3*m^3*x^2*e^5 + 11880*(x*e + d)^m*B*b^2*c*d^3*m^2*x^3*e^5 + 11880*(x*e + d)^m*A*b*c^2*d^3*m^2*x^3*e^5 + 4320*(x*e + d)^m*B*b*c^2*d^3*m*x^4*e^5 + 1440*(x*e + d)^m*A*c^3*d^3*m*x^4*e^5 - 6*(x*e + d)^m*A*b^3*d^4*m^4*e^4 - 504*(x*e + d)^m*B*b^3*d^4*m^3*x*e^4 - 1512*(x*e + d)^m*A*b^2*c*d^4*m^3*x*e^4 - 12780*(x*e + d)^m*B*b^2*c*d^4*m^2*x^2*e^4 - 12780*(x*e + d)^m*A*b*c^2*d^4*m^2*x^2*e^4 - 5760*(x*e + d)^m*B*b*c^2*d^4*m*x^3*e^4 - 1920*(x*e + d)^m*A*c^3*d^4*m*x^3*e^4 + 24*(x*e + d)^m*B*b^3*d^5*m^3*e^3 + 72*(x*e + d)^m*A*b^2*c*d^5*m^3*e^3 + 5400*(x*e + d)^m*B*b^2*c*d^5*m^2*x*e^3 + 5400*(x*e + d)^m*A*b*c^2*d^5*m^2*x*e^3 + 8640*(x*e + d)^m*B*b*c^2*d^5*m*x^2*e^3 + 2880*(x*e + d)^m*A*c^3*d^5*m*x^2*e^3 - 360*(x*e + d)^m*B*b^2*c*d^6*m^2*e^2 - 360*(x*e + d)^m*A*b*c^2*d^6*m^2*e^2 - 17280*(x*e + d)^m*B*b*c^2*d^6*m*x*e^2 - 5760*(x*e + d)^m*A*c^3*d^6*m*x*e^2 + 2160*(x*e + d)^m*B*b*c^2*d^7*m*e + 720*(x*e + d)^m*A*c^3*d^7*m*e - 5040*(x*e + d)^m*B*c^3*d^8 + 10993*(x*e + d)^m*A*b^3*m^3*x^4*e^8 + 19564*(x*e + d)^m*B*b^3*m^2*x^5*e^8 + 58692*(x*e + d)^m*A*b^2*c*m^2*x^5*e^8 + 51432*(x*e + d)^m*B*b^2*c*m*x^6*e^8 + 51432*(x*e + d)^m*A*b*c^2*m*x^6*e^8 + 17280*(x*e + d)^m*B*b*c^2*x^7*e^8 + 5760*(x*e + d)^m*A*c^3*x^7*e^8 + 5380*(x*e + d)^m*A*b^3*d*m^3*x^3*e^7 + 4572*(x*e + d)^m*B*b^3*d*m^2*x^4*e^7 + 13716*(x*e + d)^m*A*b^2*c*d*m^2*x^4*e^7 + 4032*(x*e + d)^m*B*b^2*c*d*m*x^5*e^7 + 4032*(x*e + d)^m*A*b*c^2*d*m*x^5*e^7 - 3951*(x*e + d)^m*A*b^3*d^2*m^3*x^2*e^6 - 5200*(x*e + d)^m*B*b^3*d^2*m^2*x^3*e^6 - 15600*(x*e + d)^m*A*b^2*c*d^2*m^2*x^3*e^6 - 5040*(x*e + d)^m*B*b^2*c*d^2*m*x^4*e^6 - 5040*(x*e + d)^m*A*b*c^2*d^2*m*x^4*e^6 + 1506*(x*e + d)^m*A*b^3*d^3*m^3*x*e^5 + 5784*(x*e + d)^m*B*b^3*d^3*m^2*x^2*e^5 + 17352*(x*e + d)^m*A*b^2*c*d^3*m^2*x^2*e^5 + 6720*(x*e + d)^m*B*b^2*c*d^3*m*x^3*e^5 + 6720*(x*e + d)^m*A*b*c^2*d^3*m*x^3*e^5 - 156*(x*e + d)^m*A*b^3*d^4*m^3*e^4 - 3504*(x*e + d)^m*B*b^3*d^4*m^2*x*e^4 - 10512*(x*e + d)^m*A*b^2*c*d^4*m^2*x*e^4 - 10080*(x*e + d)^m*B*b^2*c*d^4*m*x^2*e^4 - 10080*(x*e + d)^m*A*b*c^2*d^4*m*x^2*e^4 + 504*(x*e + d)^m*B*b^3*d^5*m^2*e^3 + 1512*(x*e + d)^m*A*b^2*c*d^5*m^2*e^3 + 20160*(x*e + d)^m*B*b^2*c*d^5*m*x*e^3 + 20160*(x*e + d)^m*A*b*c^2*d^5*m*x*e^3 - 5400*(x*e + d)^m*B*b^2*c*d^6*m*e^2 - 5400*(x*e + d)^m*A*b*c^2*d^6*m*e^2 + 17280*(x*e + d)^m*B*b*c^2*d^7*e + 5760*(x*e + d)^m*A*c^3*d^7*e + 23312*(x*e + d)^m*A*b^3*m^2*x^4*e^8 + 20304*(x*e + d)^m*B*b^3*m*x^5*e^8 + 60912*(x*e + d)^m*A*b^2*c*m*x^5*e^8 + 20160*(x*e + d)^m*B*b^2*c*x^6*e^8 + 20160*(x*e + d)^m*A*b*c^2*x^6*e^8 + 7172*(x*e + d)^m*A*b^3*d*m^2*x^3*e^7 + 2016*(x*e + d)^m*B*b^3*d*m*x^4*e^7 + 6048*(x*e + d)^m*A*b^2*c*d*m*x^4*e^7 - 8238*(x*e +

```
d)^m*A*b^3*d^2*m^2*x^2*e^6 - 2688*(x*e + d)^m*B*b^3*d^2*m*x^3*e^6 - 8064*(x
*e + d)^m*A*b^2*c*d^2*m*x^3*e^6 + 6396*(x*e + d)^m*A*b^3*d^3*m^2*x*e^5 + 40
32*(x*e + d)^m*B*b^3*d^3*m*x^2*e^5 + 12096*(x*e + d)^m*A*b^2*c*d^3*m*x^2*e^
5 - 1506*(x*e + d)^m*A*b^3*d^4*m^2*e^4 - 8064*(x*e + d)^m*B*b^3*d^4*m*x*e^4
 - 24192*(x*e + d)^m*A*b^2*c*d^4*m*x*e^4 + 3504*(x*e + d)^m*B*b^3*d^5*m*e^3
 + 10512*(x*e + d)^m*A*b^2*c*d^5*m*e^3 - 20160*(x*e + d)^m*B*b^2*c*d^6*e^2
- 20160*(x*e + d)^m*A*b*c^2*d^6*e^2 + 24876*(x*e + d)^m*A*b^3*m*x^4*e^8 + 8
064*(x*e + d)^m*B*b^3*x^5*e^8 + 24192*(x*e + d)^m*A*b^2*c*x^5*e^8 + 3360*(x
*e + d)^m*A*b^3*d*m*x^3*e^7 - 5040*(x*e + d)^m*A*b^3*d^2*m*x^2*e^6 + 10080*
(x*e + d)^m*A*b^3*d^3*m*x*e^5 - 6396*(x*e + d)^m*A*b^3*d^4*m*e^4 + 8064*(x*
e + d)^m*B*b^3*d^5*e^3 + 24192*(x*e + d)^m*A*b^2*c*d^5*e^3 + 10080*(x*e + d
)^m*A*b^3*x^4*e^8 - 10080*(x*e + d)^m*A*b^3*d^4*e^4)/(m^8*e^8 + 36*m^7*e^8
+ 546*m^6*e^8 + 4536*m^5*e^8 + 22449*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e
^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.07, size = 4138, normalized size = 8.55

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x)
```

```
[Out] -(e*x+d)^(m+1)*(-B*c^3*e^7*m^7*x^7-A*c^3*e^7*m^7*x^6-3*B*b*c^2*e^7*m^7*x^6-
28*B*c^3*e^7*m^6*x^7-3*A*b*c^2*e^7*m^7*x^5-29*A*c^3*e^7*m^6*x^6-3*B*b^2*c*e
^7*m^7*x^5-87*B*b*c^2*e^7*m^6*x^6+7*B*c^3*d*e^6*m^6*x^6-322*B*c^3*e^7*m^5*x
^7-3*A*b^2*c*e^7*m^7*x^4-90*A*b*c^2*e^7*m^6*x^5+6*A*c^3*d*e^6*m^6*x^5-343*A
*c^3*e^7*m^5*x^6-B*b^3*e^7*m^7*x^4-90*B*b^2*c*e^7*m^6*x^5+18*B*b*c^2*d*e^6*
m^6*x^5-1029*B*b*c^2*e^7*m^5*x^6+147*B*c^3*d*e^6*m^5*x^6-1960*B*c^3*e^7*m^4
*x^7-A*b^3*e^7*m^7*x^3-93*A*b^2*c*e^7*m^6*x^4+15*A*b*c^2*d*e^6*m^6*x^4-1098
*A*b*c^2*e^7*m^5*x^5+138*A*c^3*d*e^6*m^5*x^5-2135*A*c^3*e^7*m^4*x^6-31*B*b^
3*e^7*m^6*x^4+15*B*b^2*c*d*e^6*m^6*x^4-1098*B*b^2*c*e^7*m^5*x^5+414*B*b*c^2
*d*e^6*m^5*x^5-6405*B*b*c^2*e^7*m^4*x^6-42*B*c^3*d^2*e^5*m^5*x^5+1225*B*c^3
*d*e^6*m^4*x^6-6769*B*c^3*e^7*m^3*x^7-32*A*b^3*e^7*m^6*x^3+12*A*b^2*c*d*e^6
*m^6*x^3-1173*A*b^2*c*e^7*m^5*x^4+375*A*b*c^2*d*e^6*m^5*x^4-7020*A*b*c^2*e^
7*m^4*x^5-30*A*c^3*d^2*e^5*m^5*x^4+1230*A*c^3*d*e^6*m^4*x^5-7504*A*c^3*e^7*
m^3*x^6+4*B*b^3*d*e^6*m^6*x^3-391*B*b^3*e^7*m^5*x^4+375*B*b^2*c*d*e^6*m^5*x
^4-7020*B*b^2*c*e^7*m^4*x^5-90*B*b*c^2*d^2*e^5*m^5*x^4+3690*B*b*c^2*d*e^6*m
^4*x^5-22512*B*b*c^2*e^7*m^3*x^6-630*B*c^3*d^2*e^5*m^4*x^5+5145*B*c^3*d*e^6
*m^3*x^6-13132*B*c^3*e^7*m^2*x^7+3*A*b^3*d*e^6*m^6*x^2-418*A*b^3*e^7*m^5*x^
3+324*A*b^2*c*d*e^6*m^5*x^3-7743*A*b^2*c*e^7*m^4*x^4-60*A*b*c^2*d^2*e^5*m^5
*x^3+3615*A*b*c^2*d*e^6*m^4*x^4-25227*A*b*c^2*e^7*m^3*x^5-540*A*c^3*d^2*e^5
*m^4*x^4+5430*A*c^3*d*e^6*m^3*x^5-14756*A*c^3*e^7*m^2*x^6+108*B*b^3*d*e^6*m
^5*x^3-2581*B*b^3*e^7*m^4*x^4-60*B*b^2*c*d^2*e^5*m^5*x^3+3615*B*b^2*c*d*e^6
*m^4*x^4-25227*B*b^2*c*e^7*m^3*x^5-1620*B*b*c^2*d^2*e^5*m^4*x^4+16290*B*b*c
^2*d*e^6*m^3*x^5-44268*B*b*c^2*e^7*m^2*x^6+210*B*c^3*d^3*e^4*m^4*x^4-3570*B
*c^3*d^2*e^5*m^3*x^5+11368*B*c^3*d*e^6*m^2*x^6-13068*B*c^3*e^7*m*x^7+87*A*b
^3*d*e^6*m^5*x^2-2864*A*b^3*e^7*m^4*x^3-36*A*b^2*c*d^2*e^5*m^5*x^2+3396*A*b
^2*c*d*e^6*m^4*x^3-28632*A*b^2*c*e^7*m^3*x^4-1260*A*b*c^2*d^2*e^5*m^4*x^3+1
7025*A*b*c^2*d*e^6*m^3*x^4-50490*A*b*c^2*e^7*m^2*x^5+120*A*c^3*d^3*e^4*m^4*
x^3-3450*A*c^3*d^2*e^5*m^3*x^4+12444*A*c^3*d*e^6*m^2*x^5-14832*A*c^3*e^7*m*
x^6-12*B*b^3*d^2*e^5*m^5*x^2+1132*B*b^3*d*e^6*m^4*x^3-9544*B*b^3*e^7*m^3*x^
4-1260*B*b^2*c*d^2*e^5*m^4*x^3+17025*B*b^2*c*d*e^6*m^3*x^4-50490*B*b^2*c*e^
7*m^2*x^5+360*B*b*c^2*d^3*e^4*m^4*x^3-10350*B*b*c^2*d^2*e^5*m^3*x^4+37332*B
*b*c^2*d*e^6*m^2*x^5-44496*B*b*c^2*e^7*m*x^6+2100*B*c^3*d^3*e^4*m^3*x^4-945
0*B*c^3*d^2*e^5*m^2*x^5+12348*B*c^3*d*e^6*m*x^6-5040*B*c^3*e^7*x^7-6*A*b^3*
d^2*e^5*m^5*x+993*A*b^3*d*e^6*m^4*x^2-10993*A*b^3*e^7*m^3*x^3-864*A*b^2*c*d
^2*e^5*m^4*x^2+17388*A*b^2*c*d*e^6*m^3*x^3-58692*A*b^2*c*e^7*m^2*x^4+180*A*
b*c^2*d^3*e^4*m^4*x^2-9420*A*b*c^2*d^2*e^5*m^3*x^3+41010*A*b*c^2*d*e^6*m^2*
x^4-51432*A*b*c^2*e^7*m*x^5+1680*A*c^3*d^3*e^4*m^3*x^3-9900*A*c^3*d^2*e^5*m
^2*x^4+13872*A*c^3*d*e^6*m*x^5-5760*A*c^3*e^7*x^6-288*B*b^3*d^2*e^5*m^4*x^2
```

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+5796*B*b^3*d*e^6*m^3*x^3-19564*B*b^3*e^7*m^2*x^4+180*B*b^2*c*d^3*e^4*m^4*x
^2-9420*B*b^2*c*d^2*e^5*m^3*x^3+41010*B*b^2*c*d*e^6*m^2*x^4-51432*B*b^2*c*e
^7*m*x^5+5040*B*b*c^2*d^3*e^4*m^3*x^3-29700*B*b*c^2*d^2*e^5*m^2*x^4+41616*B
*b*c^2*d*e^6*m*x^5-17280*B*b*c^2*e^7*x^6-840*B*c^3*d^4*e^3*m^3*x^3+7350*B*c
^3*d^3*e^4*m^2*x^4-11508*B*c^3*d^2*e^5*m*x^5+5040*B*c^3*d*e^6*x^6-162*A*b^3
*d^2*e^5*m^4*x+5613*A*b^3*d*e^6*m^3*x^2-23312*A*b^3*e^7*m^2*x^3+72*A*b^2*c*
d^3*e^4*m^4*x-7596*A*b^2*c*d^2*e^5*m^3*x^2+44976*A*b^2*c*d*e^6*m^2*x^3-6091
2*A*b^2*c*e^7*m*x^4+3240*A*b*c^2*d^3*e^4*m^3*x^2-30420*A*b*c^2*d^2*e^5*m^2*
x^3+47400*A*b*c^2*d*e^6*m*x^4-20160*A*b*c^2*e^7*x^5-360*A*c^3*d^4*e^3*m^3*x
^2+7080*A*c^3*d^3*e^4*m^2*x^3-12720*A*c^3*d^2*e^5*m*x^4+5760*A*c^3*d*e^6*x^
5+24*B*b^3*d^3*e^4*m^4*x-2532*B*b^3*d^2*e^5*m^3*x^2+14992*B*b^3*d*e^6*m^2*x
^3-20304*B*b^3*e^7*m*x^4+3240*B*b^2*c*d^3*e^4*m^3*x^2-30420*B*b^2*c*d^2*e^5
*m^2*x^3+47400*B*b^2*c*d*e^6*m*x^4-20160*B*b^2*c*e^7*x^5-1080*B*b*c^2*d^4*e
^3*m^3*x^2+21240*B*b*c^2*d^3*e^4*m^2*x^3-38160*B*b*c^2*d^2*e^5*m*x^4+17280*
B*b*c^2*d*e^6*x^5-5040*B*c^3*d^4*e^3*m^2*x^3+10500*B*c^3*d^3*e^4*m*x^4-5040
*B*c^3*d^2*e^5*x^5+6*A*b^3*d^3*e^4*m^4-1662*A*b^3*d^2*e^5*m^3*x+16140*A*b^3
*d*e^6*m^2*x^2-24876*A*b^3*e^7*m*x^3+1584*A*b^2*c*d^3*e^4*m^3*x-29376*A*b^2
*c*d^2*e^5*m^2*x^2+54864*A*b^2*c*d*e^6*m*x^3-24192*A*b^2*c*e^7*x^4-360*A*b*
c^2*d^4*e^3*m^3*x+18540*A*b*c^2*d^3*e^4*m^2*x^2-42360*A*b*c^2*d^2*e^5*m*x^3
+20160*A*b*c^2*d*e^6*x^4-3960*A*c^3*d^4*e^3*m^2*x^2+11280*A*c^3*d^3*e^4*m*x
^3-5760*A*c^3*d^2*e^5*x^4+528*B*b^3*d^3*e^4*m^3*x-9792*B*b^3*d^2*e^5*m^2*x^
2+18288*B*b^3*d*e^6*m*x^3-8064*B*b^3*e^7*x^4-360*B*b^2*c*d^4*e^3*m^3*x+1854
0*B*b^2*c*d^3*e^4*m^2*x^2-42360*B*b^2*c*d^2*e^5*m*x^3+20160*B*b^2*c*d*e^6*x
^4-11880*B*b*c^2*d^4*e^3*m^2*x^2+33840*B*b*c^2*d^3*e^4*m*x^3-17280*B*b*c^2*
d^2*e^5*x^4+2520*B*c^3*d^5*e^2*m^2*x^2-9240*B*c^3*d^4*e^3*m*x^3+5040*B*c^3*
d^3*e^4*x^4+156*A*b^3*d^3*e^4*m^3-7902*A*b^3*d^2*e^5*m^2*x+21516*A*b^3*d*e^
6*m*x^2-10080*A*b^3*e^7*x^3-72*A*b^2*c*d^4*e^3*m^3+12024*A*b^2*c*d^3*e^4*m^
2*x-46800*A*b^2*c*d^2*e^5*m*x^2+24192*A*b^2*c*d*e^6*x^3-5760*A*b*c^2*d^4*e^
3*m^2*x+35640*A*b*c^2*d^3*e^4*m*x^2-20160*A*b*c^2*d^2*e^5*x^3+720*A*c^3*d^5
*e^2*m^2*x-9360*A*c^3*d^4*e^3*m*x^2+5760*A*c^3*d^3*e^4*x^3-24*B*b^3*d^4*e^3
*m^3+4008*B*b^3*d^3*e^4*m^2*x-15600*B*b^3*d^2*e^5*m*x^2+8064*B*b^3*d*e^6*x^
3-5760*B*b^2*c*d^4*e^3*m^2*x+35640*B*b^2*c*d^3*e^4*m*x^2-20160*B*b^2*c*d^2*
e^5*x^3+2160*B*b*c^2*d^5*e^2*m^2*x-28080*B*b*c^2*d^4*e^3*m*x^2+17280*B*b*c^
2*d^3*e^4*x^3+7560*B*c^3*d^5*e^2*m*x^2-5040*B*c^3*d^4*e^3*x^3+1506*A*b^3*d^
3*e^4*m^2-16476*A*b^3*d^2*e^5*m*x+10080*A*b^3*d*e^6*x^2-1512*A*b^2*c*d^4*e^
3*m^2+34704*A*b^2*c*d^3*e^4*m*x-24192*A*b^2*c*d^2*e^5*x^2+360*A*b*c^2*d^5*e
^2*m^2-25560*A*b*c^2*d^4*e^3*m*x+20160*A*b*c^2*d^3*e^4*x^2+6480*A*c^3*d^5*e
^2*m*x-5760*A*c^3*d^4*e^3*x^2-504*B*b^3*d^4*e^3*m^2+11568*B*b^3*d^3*e^4*m*x
-8064*B*b^3*d^2*e^5*x^2+360*B*b^2*c*d^5*e^2*m^2-25560*B*b^2*c*d^4*e^3*m*x+2
0160*B*b^2*c*d^3*e^4*x^2+19440*B*b*c^2*d^5*e^2*m*x-17280*B*b*c^2*d^4*e^3*x^
2-5040*B*c^3*d^6*e*m*x+5040*B*c^3*d^5*e^2*x^2+6396*A*b^3*d^3*e^4*m-10080*A*
b^3*d^2*e^5*x-10512*A*b^2*c*d^4*e^3*m+24192*A*b^2*c*d^3*e^4*x+5400*A*b*c^2*
d^5*e^2*m-20160*A*b*c^2*d^4*e^3*x-720*A*c^3*d^6*e*m+5760*A*c^3*d^5*e^2*x-35
04*B*b^3*d^4*e^3*m+8064*B*b^3*d^3*e^4*x+5400*B*b^2*c*d^5*e^2*m-20160*B*b^2*
c*d^4*e^3*x-2160*B*b*c^2*d^6*e*m+17280*B*b*c^2*d^5*e^2*x-5040*B*c^3*d^6*e*x
+10080*A*b^3*d^3*e^4-24192*A*b^2*c*d^4*e^3+20160*A*b*c^2*d^5*e^2-5760*A*c^3
*d^6*e-8064*B*b^3*d^4*e^3+20160*B*b^2*c*d^5*e^2-17280*B*b*c^2*d^6*e+5040*B*
c^3*d^7)/e^8/(m^8+36*m^7+546*m^6+4536*m^5+22449*m^4+67284*m^3+118124*m^2+10
9584*m+40320)
```

maxima [B] time = 0.98, size = 1527, normalized size = 3.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2
+ m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b^3/((m^4 + 10*m^3 +
35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (
```

```
m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 +
 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*B*b^3/((m^5
+ 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*((m^4 + 10*m^3 + 35*m^2
 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3
*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)
*(e*x + d)^m*A*b^2*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5)
+ 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^
4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*
e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 1
20*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*b^2*c/((m^6 + 21*m^5 + 175*m^4 + 735*
m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 +
 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 -
 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^
3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*A*b
*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 3
*((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m
^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m
^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*
d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x
^2 - 720*d^6*e*m*x + 720*d^7)*(e*x + d)^m*B*b*c^2/((m^7 + 28*m^6 + 322*m^5
+ 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^6 + 21*m^5 +
 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*
m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*
m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120
*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*
x + 720*d^7)*(e*x + d)^m*A*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m
^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4
 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5
 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*
m^4 + 225*m^3 + 274*m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 +
50*m^2 + 24*m)*d^3*e^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 +
 840*(m^3 + 3*m^2 + 2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^
7*e*m*x - 5040*d^8)*(e*x + d)^m*B*c^3/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 +
 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 2.88, size = 2500, normalized size = 5.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] (B*c^3*x^8*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5
 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4
536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) - ((d + e*x)^m*(5040*B*c^3*d^8 -
5760*A*c^3*d^7*e + 10080*A*b^3*d^4*e^4 - 8064*B*b^3*d^5*e^3 + 20160*A*b*c^2
*d^6*e^2 - 24192*A*b^2*c*d^5*e^3 + 20160*B*b^2*c*d^6*e^2 + 6396*A*b^3*d^4*e
^4*m - 3504*B*b^3*d^5*e^3*m + 1506*A*b^3*d^4*e^4*m^2 + 156*A*b^3*d^4*e^4*m^
3 + 6*A*b^3*d^4*e^4*m^4 - 504*B*b^3*d^5*e^3*m^2 - 24*B*b^3*d^5*e^3*m^3 - 17
280*B*b*c^2*d^7*e - 720*A*c^3*d^7*e*m + 360*A*b*c^2*d^6*e^2*m^2 - 1512*A*b^
2*c*d^5*e^3*m^2 - 72*A*b^2*c*d^5*e^3*m^3 + 360*B*b^2*c*d^6*e^2*m^2 - 2160*B
*b*c^2*d^7*e*m + 5400*A*b*c^2*d^6*e^2*m - 10512*A*b^2*c*d^5*e^3*m + 5400*B*
b^2*c*d^6*e^2*m))/(e^8*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 453
6*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^5*(d + e*x)^m*(50*m + 35*m^2
+ 10*m^3 + m^4 + 24)*(336*B*b^3*e^3 + 1008*A*b^2*c*e^3 + 146*B*b^3*e^3*m +
42*B*c^3*d^3*m + 21*B*b^3*e^3*m^2 + B*b^3*e^3*m^3 + 63*A*b^2*c*e^3*m^2 + 3*
A*b^2*c*e^3*m^3 - 6*A*c^3*d^2*e*m^2 + 438*A*b^2*c*e^3*m - 48*A*c^3*d^2*e*m
+ 168*A*b*c^2*d*e^2*m - 144*B*b*c^2*d^2*e*m + 168*B*b^2*c*d*e^2*m + 45*A*b*
c^2*d*e^2*m^2 + 3*A*b*c^2*d*e^2*m^3 - 18*B*b*c^2*d^2*e*m^2 + 45*B*b^2*c*d*e
^2*m^2 + 3*B*b^2*c*d*e^2*m^3))/(e^3*(109584*m + 118124*m^2 + 67284*m^3 + 22
```

```
449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^4*(d + e*x)^m*(1
1*m + 6*m^2 + m^3 + 6)*(1680*A*b^3*e^4 + 1066*A*b^3*e^4*m - 210*B*c^3*d^4*m
 + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 30*A*c^3*d^3*e*m^
2 + 146*B*b^3*d*e^3*m^2 + 21*B*b^3*d*e^3*m^3 + B*b^3*d*e^3*m^4 + 240*A*c^3*
d^3*e*m + 336*B*b^3*d*e^3*m - 225*A*b*c^2*d^2*e^2*m^2 - 15*A*b*c^2*d^2*e^2*
m^3 - 225*B*b^2*c*d^2*e^2*m^2 - 15*B*b^2*c*d^2*e^2*m^3 + 1008*A*b^2*c*d*e^3
*m + 720*B*b*c^2*d^3*e*m - 840*A*b*c^2*d^2*e^2*m + 438*A*b^2*c*d*e^3*m^2 +
63*A*b^2*c*d*e^3*m^3 + 3*A*b^2*c*d*e^3*m^4 - 840*B*b^2*c*d^2*e^2*m + 90*B*b
*c^2*d^3*e*m^2))/(e^4*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536
*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (6*d^3*m*x*(d + e*x)^m*(1680*A*b^
3*e^4 + 840*B*c^3*d^4 - 960*A*c^3*d^3*e - 1344*B*b^3*d*e^3 + 1066*A*b^3*e^4
*m + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 3360*A*b*c^2*d^
2*e^2 + 3360*B*b^2*c*d^2*e^2 - 84*B*b^3*d*e^3*m^2 - 4*B*b^3*d*e^3*m^3 - 403
2*A*b^2*c*d*e^3 - 2880*B*b*c^2*d^3*e - 120*A*c^3*d^3*e*m - 584*B*b^3*d*e^3*
m + 60*A*b*c^2*d^2*e^2*m^2 + 60*B*b^2*c*d^2*e^2*m^2 - 1752*A*b^2*c*d*e^3*m
- 360*B*b*c^2*d^3*e*m + 900*A*b*c^2*d^2*e^2*m - 252*A*b^2*c*d*e^3*m^2 - 12*
A*b^2*c*d*e^3*m^3 + 900*B*b^2*c*d^2*e^2*m))/(e^7*(109584*m + 118124*m^2 + 6
7284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c^2*x
^7*(d + e*x)^m*(8*A*c*e + 24*B*b*e + A*c*e*m + 3*B*b*e*m + B*c*d*m)*(1764*m
 + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/(e*(109584*m + 11812
4*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320))
 + (c*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(168*
B*b^2*e^2 + 168*A*b*c*e^2 + 45*B*b^2*e^2*m - 7*B*c^2*d^2*m + 3*B*b^2*e^2*m^
2 + 45*A*b*c*e^2*m + 8*A*c^2*d*e*m + 3*A*b*c*e^2*m^2 + A*c^2*d*e*m^2 + 24*B
*b*c*d*e*m + 3*B*b*c*d*e*m^2))/(e^2*(109584*m + 118124*m^2 + 67284*m^3 + 22
449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (d*m*x^3*(d + e*x)^
m*(3*m + m^2 + 2)*(1680*A*b^3*e^4 + 840*B*c^3*d^4 - 960*A*c^3*d^3*e - 1344*
B*b^3*d*e^3 + 1066*A*b^3*e^4*m + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b
^3*e^4*m^4 + 3360*A*b*c^2*d^2*e^2 + 3360*B*b^2*c*d^2*e^2 - 84*B*b^3*d*e^3*m
^2 - 4*B*b^3*d*e^3*m^3 - 4032*A*b^2*c*d*e^3 - 2880*B*b*c^2*d^3*e - 120*A*c^
3*d^3*e*m - 584*B*b^3*d*e^3*m + 60*A*b*c^2*d^2*e^2*m^2 + 60*B*b^2*c*d^2*e^2
*m^2 - 1752*A*b^2*c*d*e^3*m - 360*B*b*c^2*d^3*e*m + 900*A*b*c^2*d^2*e^2*m -
 252*A*b^2*c*d*e^3*m^2 - 12*A*b^2*c*d*e^3*m^3 + 900*B*b^2*c*d^2*e^2*m))/(e^
5*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*
m^7 + m^8 + 40320)) - (3*d^2*m*x^2*(m + 1)*(d + e*x)^m*(1680*A*b^3*e^4 + 84
0*B*c^3*d^4 - 960*A*c^3*d^3*e - 1344*B*b^3*d*e^3 + 1066*A*b^3*e^4*m + 251*A
*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 3360*A*b*c^2*d^2*e^2 + 33
60*B*b^2*c*d^2*e^2 - 84*B*b^3*d*e^3*m^2 - 4*B*b^3*d*e^3*m^3 - 4032*A*b^2*c*
d*e^3 - 2880*B*b*c^2*d^3*e - 120*A*c^3*d^3*e*m - 584*B*b^3*d*e^3*m + 60*A*b
*c^2*d^2*e^2*m^2 + 60*B*b^2*c*d^2*e^2*m^2 - 1752*A*b^2*c*d*e^3*m - 360*B*b*
c^2*d^3*e*m + 900*A*b*c^2*d^2*e^2*m - 252*A*b^2*c*d*e^3*m^2 - 12*A*b^2*c*d*
e^3*m^3 + 900*B*b^2*c*d^2*e^2*m))/(e^6*(109584*m + 118124*m^2 + 67284*m^3 +
 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x)**3,x)
[Out] Timed out
```

3.983 $\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=412

$$\frac{1}{4}Ab^3d^4x^4+\frac{1}{10}ce^2x^{10}\left(Ace(3be+4cd)+3B\left(b^2e^2+4bcde+2c^2d^2\right)\right)+\frac{1}{6}bd^2x^6\left(2b^2e(3Ae+2Bd)+3bcd(4Ae+Bd\right.$$

Rubi [A] time = 0.51, antiderivative size = 412, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{10}ce^2x^{10}\left(Ace(3be+4cd)+3B\left(b^2e^2+4bcde+2c^2d^2\right)\right)+\frac{1}{9}ex^9\left(3Ace\left(b^2e^2+4bcde+2c^2d^2\right)+B\left(12b^2cde^2+b^3e^3+18bc^2d^2e+4c^3d^3\right)\right)+\frac{1}{8}x^8\left(Ae\left(12b^2cde^2+b^3e^3+18bc^2d^2e+4c^3d^3\right)+Bd\left(18b^2cde^2+4b^3e^3+12bc^2d^2e+c^3d^3\right)\right)+\frac{1}{7}dx^7\left(6b^2cde(3Ae+2Bd)+2b^3e^2(2Ae+3Bd)+3bc^2d^2(4Ae+Bd)+Ac^3d^3\right)+\frac{1}{6}bd^2x^6\left(2b^2e(3Ae+2Bd)+3bcd(4Ae+Bd)+3Ac^2d^2\right)+\frac{1}{5}b^2d^3x^5(4Abe+3Acd+bBd)+\frac{1}{4}Ab^3d^4x^4+\frac{1}{11}c^2e^3x^{11}(Ace+3bBe+4Bcd)+\frac{1}{12}Bc^3e^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^4*x^4)/4 + (b^2*d^3*(b*B*d + 3*A*c*d + 4*A*b*e)*x^5)/5 + (b*d^2*(3
*A*c^2*d^2 + 2*b^2*e*(2*B*d + 3*A*e) + 3*b*c*d*(B*d + 4*A*e))*x^6)/6 + (d*(
A*c^3*d^3 + 2*b^3*e^2*(3*B*d + 2*A*e) + 6*b^2*c*d*e*(2*B*d + 3*A*e) + 3*b*c
^2*d^2*(B*d + 4*A*e))*x^7)/7 + ((A*e*(4*c^3*d^3 + 18*b*c^2*d^2*e + 12*b^2*c
*d*e^2 + b^3*e^3) + B*d*(c^3*d^3 + 12*b*c^2*d^2*e + 18*b^2*c*d*e^2 + 4*b^3*
e^3))*x^8)/8 + (e*(3*A*c*e*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2) + B*(4*c^3*d^3
 + 18*b*c^2*d^2*e + 12*b^2*c*d*e^2 + b^3*e^3))*x^9)/9 + (c*e^2*(A*c*e*(4*c*
d + 3*b*e) + 3*B*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^10)/10 + (c^2*e^3*(4*
B*c*d + 3*b*B*e + A*c*e)*x^11)/11 + (B*c^3*e^4*x^12)/12
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4\left(bx+cx^2\right)^3\,dx=\int \left(Ab^3d^4x^3+b^2d^3(bBd+3Acd+4Abe)x^4+bd^2\left(3Ac^2d^2+2b^2e(2Bd+3\right.\right.$$
$$=\frac{1}{4}Ab^3d^4x^4+\frac{1}{5}b^2d^3(bBd+3Acd+4Abe)x^5+\frac{1}{6}bd^2\left(3Ac^2d^2+2b^2e(2Bd+\right.$$

Mathematica [A] time = 0.16, size = 412, normalized size = 1.00

$$\frac{1}{4}Ab^3d^4x^4+\frac{1}{10}ce^2x^{10}\left(Ace(3be+4cd)+3B\left(b^2e^2+4bcde+2c^2d^2\right)\right)+\frac{1}{6}bd^2x^6\left(2b^2e(3Ae+2Bd)+3bcd(4Ae+Bd)+3Ac^2d^2\right)+\frac{1}{5}b^2d^3x^5(4Abe+3Acd+bBd)+\frac{1}{7}dx^7\left(2b^3e^2(2Ae+3Bd)+6b^2cde(3Ae+2Bd)+3bc^2d^2(4Ae+Bd)+Ac^3d^3\right)+\frac{1}{9}ex^9\left(3Ace\left(b^2e^2+4bcde+2c^2d^2\right)+B\left(b^3e^3+12b^2cde^2+18bc^2d^2e+4c^3d^3\right)\right)+\frac{1}{8}x^8\left(Ae\left(b^3e^3+12b^2cde^2+18bc^2d^2e+4c^3d^3\right)+Bd\left(4b^3e^3+18b^2cde^2+12bc^2d^2e+c^3d^3\right)\right)+\frac{1}{11}c^2e^3x^{11}(Ace+3bBe+4Bcd)+\frac{1}{12}Bc^3e^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^4*x^4)/4 + (b^2*d^3*(b*B*d + 3*A*c*d + 4*A*b*e)*x^5)/5 + (b*d^2*(3
*A*c^2*d^2 + 2*b^2*e*(2*B*d + 3*A*e) + 3*b*c*d*(B*d + 4*A*e))*x^6)/6 + (d*(
A*c^3*d^3 + 2*b^3*e^2*(3*B*d + 2*A*e) + 6*b^2*c*d*e*(2*B*d + 3*A*e) + 3*b*c
^2*d^2*(B*d + 4*A*e))*x^7)/7 + ((A*e*(4*c^3*d^3 + 18*b*c^2*d^2*e + 12*b^2*c
*d*e^2 + b^3*e^3) + B*d*(c^3*d^3 + 12*b*c^2*d^2*e + 18*b^2*c*d*e^2 + 4*b^3*
e^3))*x^8)/8 + (e*(3*A*c*e*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2) + B*(4*c^3*d^3
 + 18*b*c^2*d^2*e + 12*b^2*c*d*e^2 + b^3*e^3))*x^9)/9 + (c*e^2*(A*c*e*(4*c*
d + 3*b*e) + 3*B*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^10)/10 + (c^2*e^3*(4*
B*c*d + 3*b*B*e + A*c*e)*x^11)/11 + (B*c^3*e^4*x^12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^4 \left(bx + cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.37, size = 540, normalized size = 1.31

$$\frac{1}{12}x^{12}e^4c^3B + \frac{4}{11}x^{11}e^3dc^3B + \frac{3}{11}x^{11}e^4c^2bB + \frac{1}{11}x^{11}e^4c^3A + \frac{3}{5}x^{10}e^2d^2c^3B + \frac{6}{5}x^{10}e^3dc^2bB + \frac{3}{10}x^{10}e^4cb^2B + \frac{2}{5}x^{10}e^3dc^3A + \frac{3}{10}x^{10}e^4c^2bA + \frac{4}{9}x^9ed^3c^3B + 2x^9e^2d^2c^2bB + \frac{4}{3}x^9e^3dcb^2B + \frac{1}{9}x^9e^4b^3B + \frac{2}{3}x^9e^2d^2c^3A + \frac{4}{3}x^9e^3dc^2bA + \frac{1}{3}x^9e^4cb^2A + \frac{1}{8}x^8d^4c^3B + \frac{3}{2}x^8ed^3c^2bB + \frac{9}{4}x^8e^2d^2cb^2B + \frac{1}{2}x^8e^3db^3B + \frac{1}{2}x^8ed^3c^3A + \frac{9}{4}x^8e^2d^2c^2bA + \frac{3}{2}x^8e^3dcb^2A + \frac{1}{8}x^8e^4b^3A + \frac{3}{7}x^7d^4c^2bB + \frac{12}{7}x^7ed^3cb^2B + \frac{6}{7}x^7e^2d^2b^3B + \frac{1}{7}x^7d^4c^3A + \frac{12}{7}x^7ed^3c^2bA + \frac{18}{7}x^7e^2d^2cb^2A + \frac{4}{7}x^7e^3db^3A + \frac{1}{2}x^6d^4cb^2B + \frac{2}{3}x^6ed^3b^3B + \frac{1}{2}x^6d^4c^2bA + 2x^6ed^3cb^2A + x^6e^2d^2b^3A + \frac{1}{5}x^5d^4b^3B + \frac{3}{5}x^5d^4cb^2A + \frac{4}{5}x^5ed^3b^3A + \frac{1}{4}x^4d^4b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*c^3*B + 4/11*x^11*e^3*d*c^3*B + 3/11*x^11*e^4*c^2*b*B + 1/11*
x^11*e^4*c^3*A + 3/5*x^10*e^2*d^2*c^3*B + 6/5*x^10*e^3*d*c^2*b*B + 3/10*x^1
0*e^4*c*b^2*B + 2/5*x^10*e^3*d*c^3*A + 3/10*x^10*e^4*c^2*b*A + 4/9*x^9*e*d^
3*c^3*B + 2*x^9*e^2*d^2*c^2*b*B + 4/3*x^9*e^3*d*c*b^2*B + 1/9*x^9*e^4*b^3*B
 + 2/3*x^9*e^2*d^2*c^3*A + 4/3*x^9*e^3*d*c^2*b*A + 1/3*x^9*e^4*c*b^2*A + 1/
8*x^8*d^4*c^3*B + 3/2*x^8*e*d^3*c^2*b*B + 9/4*x^8*e^2*d^2*c*b^2*B + 1/2*x^8
*e^3*d*b^3*B + 1/2*x^8*e*d^3*c^3*A + 9/4*x^8*e^2*d^2*c^2*b*A + 3/2*x^8*e^3*
d*c*b^2*A + 1/8*x^8*e^4*b^3*A + 3/7*x^7*d^4*c^2*b*B + 12/7*x^7*e*d^3*c*b^2*
B + 6/7*x^7*e^2*d^2*b^3*B + 1/7*x^7*d^4*c^3*A + 12/7*x^7*e*d^3*c^2*b*A + 18
/7*x^7*e^2*d^2*c*b^2*A + 4/7*x^7*e^3*d*b^3*A + 1/2*x^6*d^4*c*b^2*B + 2/3*x^
6*e*d^3*b^3*B + 1/2*x^6*d^4*c^2*b*A + 2*x^6*e*d^3*c*b^2*A + x^6*e^2*d^2*b^3
*A + 1/5*x^5*d^4*b^3*B + 3/5*x^5*d^4*c*b^2*A + 4/5*x^5*e*d^3*b^3*A + 1/4*x^
4*d^4*b^3*A
```

giac [A] time = 0.16, size = 524, normalized size = 1.27

$$\frac{1}{12}Bc^3x^{12}e^4 + \frac{4}{11}Bc^3dx^{11}e^3 + \frac{3}{5}Bc^3d^2x^{10}e^2 + \frac{4}{9}Bc^3d^3x^9e + \frac{1}{8}Bc^3d^4x^8 + \frac{3}{11}Bbc^2x^{11}e^4 + \frac{1}{11}Ac^3x^{11}e^4 + \frac{6}{5}Bbc^2dx^{10}e^3 + \frac{2}{5}Ac^3dx^{10}e^3 + 2Bbc^2d^2x^9e^2 + \frac{2}{3}Ac^3d^2x^9e^2 + \frac{3}{2}Bbc^2d^3x^8e + \frac{1}{2}Ac^3d^3x^8e + \frac{3}{7}Bbc^2d^4x^7 + \frac{1}{7}Ac^3d^4x^7 + \frac{3}{10}Bb^2cx^{10}e^4 + \frac{3}{10}Abc^2x^{10}e^4 + \frac{4}{3}Bb^2cdx^9e^3 + \frac{4}{3}Abc^2dx^9e^3 + \frac{9}{4}Bb^2cd^2x^8e^2 + \frac{9}{4}Abc^2d^2x^8e^2 + \frac{12}{7}Bb^2cd^3x^7e + \frac{12}{7}Abc^2d^3x^7e + \frac{1}{2}Bb^2cd^4x^6 + \frac{1}{2}Abc^2d^4x^6 + \frac{1}{9}Bb^3x^9e^4 + \frac{1}{3}Ab^2cx^9e^4 + \frac{1}{2}Bb^3dx^8e^3 + \frac{3}{2}Ab^2cdx^8e^3 + \frac{6}{7}Bb^3d^2x^7e^2 + \frac{18}{7}Ab^2cd^2x^7e^2 + \frac{2}{3}Bb^3d^3x^6e + 2Ab^2cd^3x^6e + \frac{1}{5}Bb^3d^4x^5 + \frac{3}{5}Ab^2cd^4x^5 + \frac{1}{8}Ab^3x^8e^4 + \frac{4}{7}Ab^3dx^7e^3 + Ab^3d^2x^6e^2 + \frac{4}{5}Ab^3d^3x^5e + \frac{1}{4}Ab^3d^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12*e^4 + 4/11*B*c^3*d*x^11*e^3 + 3/5*B*c^3*d^2*x^10*e^2 + 4/9*
B*c^3*d^3*x^9*e + 1/8*B*c^3*d^4*x^8 + 3/11*B*b*c^2*x^11*e^4 + 1/11*A*c^3*x^
11*e^4 + 6/5*B*b*c^2*d*x^10*e^3 + 2/5*A*c^3*d*x^10*e^3 + 2*B*b*c^2*d^2*x^9*
e^2 + 2/3*A*c^3*d^2*x^9*e^2 + 3/2*B*b*c^2*d^3*x^8*e + 1/2*A*c^3*d^3*x^8*e +
 3/7*B*b*c^2*d^4*x^7 + 1/7*A*c^3*d^4*x^7 + 3/10*B*b^2*c*x^10*e^4 + 3/10*A*b
*c^2*x^10*e^4 + 4/3*B*b^2*c*d*x^9*e^3 + 4/3*A*b*c^2*d*x^9*e^3 + 9/4*B*b^2*c
*d^2*x^8*e^2 + 9/4*A*b*c^2*d^2*x^8*e^2 + 12/7*B*b^2*c*d^3*x^7*e + 12/7*A*b*
c^2*d^3*x^7*e + 1/2*B*b^2*c*d^4*x^6 + 1/2*A*b*c^2*d^4*x^6 + 1/9*B*b^3*x^9*e
^4 + 1/3*A*b^2*c*x^9*e^4 + 1/2*B*b^3*d*x^8*e^3 + 3/2*A*b^2*c*d*x^8*e^3 + 6/
7*B*b^3*d^2*x^7*e^2 + 18/7*A*b^2*c*d^2*x^7*e^2 + 2/3*B*b^3*d^3*x^6*e + 2*A*
b^2*c*d^3*x^6*e + 1/5*B*b^3*d^4*x^5 + 3/5*A*b^2*c*d^4*x^5 + 1/8*A*b^3*x^8*e
^4 + 4/7*A*b^3*d*x^7*e^3 + A*b^3*d^2*x^6*e^2 + 4/5*A*b^3*d^3*x^5*e + 1/4*A*
b^3*d^4*x^4
```

maple [A] time = 0.04, size = 444, normalized size = 1.08

$$\frac{Bc^3e^4x^{12}}{12} + \frac{Ab^3d^4x^4}{4} + \frac{\left(3Bbc^2e^4 + \left(Ae^4 + 4Bde^3\right)c^3\right)x^{11}}{11} + \frac{\left(3Bb^2ce^4 + 3\left(Ae^4 + 4Bde^3\right)bc^2 + \left(4Ade^3 + 6Bd^2e^2\right)c^3\right)x^{10}}{10} + \frac{\left(Bb^3e^4 + 3\left(Ae^4 + 4Bde^3\right)b^2c + 3\left(4Ade^3 + 6Bd^2e^2\right)bc^2 + \left(6Ad^2e^2 + 4Bd^3e\right)c^3\right)x^9}{9} + \frac{\left(\left(Ae^4 + 4Bde^3\right)b^3 + 3\left(4Ade^3 + 6Bd^2e^2\right)b^2c + 3\left(6Ad^2e^2 + 4Bd^3e\right)bc^2 + \left(4Ad^3e + Bd^4\right)c^3\right)x^8}{8} + \frac{\left(Ac^3d^4 + \left(4Ade^3 + 6Bd^2e^2\right)b^3 + 3\left(6Ad^2e^2 + 4Bd^3e\right)b^2c + 3\left(4Ad^3e + Bd^4\right)bc^2\right)x^7}{7} + \frac{\left(3Abc^2d^4 + \left(6Ad^2e^2 + 4Bd^3e\right)b^3 + 3\left(4Ad^3e + Bd^4\right)b^2c\right)x^6}{6} + \frac{\left(3Ab^2cd^4 + \left(4Ad^3e + Bd^4\right)b^3\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x)
```

```
[Out] 1/12*B*c^3*e^4*x^12+1/11*((A*e^4+4*B*d*e^3)*c^3+3*B*e^4*b*c^2)*x^11+1/10*((
4*A*d*e^3+6*B*d^2*e^2)*c^3+3*(A*e^4+4*B*d*e^3)*b*c^2+3*B*e^4*b^2*c)*x^10+1/
9*((6*A*d^2*e^2+4*B*d^3*e)*c^3+3*(4*A*d*e^3+6*B*d^2*e^2)*b*c^2+3*(A*e^4+4*B
*d*e^3)*b^2*c+B*e^4*b^3)*x^9+1/8*((4*A*d^3*e+B*d^4)*c^3+3*(6*A*d^2*e^2+4*B*
d^3*e)*b*c^2+3*(4*A*d*e^3+6*B*d^2*e^2)*b^2*c+(A*e^4+4*B*d*e^3)*b^3)*x^8+1/7
*(A*d^4*c^3+3*(4*A*d^3*e+B*d^4)*b*c^2+3*(6*A*d^2*e^2+4*B*d^3*e)*b^2*c+(4*A*
d*e^3+6*B*d^2*e^2)*b^3)*x^7+1/6*(3*A*d^4*b*c^2+3*(4*A*d^3*e+B*d^4)*b^2*c+(6
*A*d^2*e^2+4*B*d^3*e)*b^3)*x^6+1/5*(3*A*d^4*b^2*c+(4*A*d^3*e+B*d^4)*b^3)*x^
5+1/4*A*b^3*d^4*x^4
```

maxima [A] time = 0.51, size = 428, normalized size = 1.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*e^4*x^12 + 1/4*A*b^3*d^4*x^4 + 1/11*(4*B*c^3*d*e^3 + (3*B*b*c^2
+ A*c^3)*e^4)*x^11 + 1/10*(6*B*c^3*d^2*e^2 + 4*(3*B*b*c^2 + A*c^3)*d*e^3 +
3*(B*b^2*c + A*b*c^2)*e^4)*x^10 + 1/9*(4*B*c^3*d^3*e + 6*(3*B*b*c^2 + A*c^3
)*d^2*e^2 + 12*(B*b^2*c + A*b*c^2)*d*e^3 + (B*b^3 + 3*A*b^2*c)*e^4)*x^9 + 1
/8*(B*c^3*d^4 + A*b^3*e^4 + 4*(3*B*b*c^2 + A*c^3)*d^3*e + 18*(B*b^2*c + A*b
*c^2)*d^2*e^2 + 4*(B*b^3 + 3*A*b^2*c)*d*e^3)*x^8 + 1/7*(4*A*b^3*d*e^3 + (3*
B*b*c^2 + A*c^3)*d^4 + 12*(B*b^2*c + A*b*c^2)*d^3*e + 6*(B*b^3 + 3*A*b^2*c)
*d^2*e^2)*x^7 + 1/6*(6*A*b^3*d^2*e^2 + 3*(B*b^2*c + A*b*c^2)*d^4 + 4*(B*b^3
 + 3*A*b^2*c)*d^3*e)*x^6 + 1/5*(4*A*b^3*d^3*e + (B*b^3 + 3*A*b^2*c)*d^4)*x^
5
```

mupad [B] time = 0.16, size = 445, normalized size = 1.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^6*((A*b*c^2*d^4)/2 + (B*b^2*c*d^4)/2 + (2*B*b^3*d^3*e)/3 + A*b^3*d^2*e^2
+ 2*A*b^2*c*d^3*e) + x^10*((3*A*b*c^2*e^4)/10 + (3*B*b^2*c*e^4)/10 + (2*A*c
^3*d*e^3)/5 + (3*B*c^3*d^2*e^2)/5 + (6*B*b*c^2*d*e^3)/5) + x^8*((A*b^3*e^4)
/8 + (B*c^3*d^4)/8 + (A*c^3*d^3*e)/2 + (B*b^3*d*e^3)/2 + (9*A*b*c^2*d^2*e^2
)/4 + (9*B*b^2*c*d^2*e^2)/4 + (3*A*b^2*c*d*e^3)/2 + (3*B*b*c^2*d^3*e)/2) +
x^7*((A*c^3*d^4)/7 + (3*B*b*c^2*d^4)/7 + (4*A*b^3*d*e^3)/7 + (6*B*b^3*d^2*e
^2)/7 + (18*A*b^2*c*d^2*e^2)/7 + (12*A*b*c^2*d^3*e)/7 + (12*B*b^2*c*d^3*e)/
7) + x^9*((B*b^3*e^4)/9 + (A*b^2*c*e^4)/3 + (4*B*c^3*d^3*e)/9 + (2*A*c^3*d^
2*e^2)/3 + 2*B*b*c^2*d^2*e^2 + (4*A*b*c^2*d*e^3)/3 + (4*B*b^2*c*d*e^3)/3) +
 (b^2*d^3*x^5*(4*A*b*e + 3*A*c*d + B*b*d))/5 + (c^2*e^3*x^11*(A*c*e + 3*B*b
*e + 4*B*c*d))/11 + (A*b^3*d^4*x^4)/4 + (B*c^3*e^4*x^12)/12
```

sympy [A] time = 0.15, size = 564, normalized size = 1.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d**4*x**4/4 + B*c**3*e**4*x**12/12 + x**11*(A*c**3*e**4/11 + 3*B*b*c
**2*e**4/11 + 4*B*c**3*d*e**3/11) + x**10*(3*A*b*c**2*e**4/10 + 2*A*c**3*d*
e**3/5 + 3*B*b**2*c*e**4/10 + 6*B*b*c**2*d*e**3/5 + 3*B*c**3*d**2*e**2/5) +
 x**9*(A*b**2*c*e**4/3 + 4*A*b*c**2*d*e**3/3 + 2*A*c**3*d**2*e**2/3 + B*b**
3*e**4/9 + 4*B*b**2*c*d*e**3/3 + 2*B*b*c**2*d**2*e**2 + 4*B*c**3*d**3*e/9)
```

```
+ x**8*(A*b**3*e**4/8 + 3*A*b**2*c*d*e**3/2 + 9*A*b*c**2*d**2*e**2/4 + A*c*
*3*d**3*e/2 + B*b**3*d*e**3/2 + 9*B*b**2*c*d**2*e**2/4 + 3*B*b*c**2*d**3*e/
2 + B*c**3*d**4/8) + x**7*(4*A*b**3*d*e**3/7 + 18*A*b**2*c*d**2*e**2/7 + 12
*A*b*c**2*d**3*e/7 + A*c**3*d**4/7 + 6*B*b**3*d**2*e**2/7 + 12*B*b**2*c*d**
3*e/7 + 3*B*b*c**2*d**4/7) + x**6*(A*b**3*d**2*e**2 + 2*A*b**2*c*d**3*e + A
*b*c**2*d**4/2 + 2*B*b**3*d**3*e/3 + B*b**2*c*d**4/2) + x**5*(4*A*b**3*d**3
*e/5 + 3*A*b**2*c*d**4/5 + B*b**3*d**4/5)
```

3.984 $\int (A+Bx)(d+ex)^3 \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=305

$$\frac{1}{4}Ab^3d^3x^4+\frac{1}{3}cex^9\left(Ace(be+cd)+B\left(b^2e^2+3bcde+c^2d^2\right)\right)+\frac{1}{2}bdx^6\left(b^2e(Ae+Bd)+bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{5}$$

Rubi [A] time = 0.48, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{3}cex^9\left(Ace(be+cd)+B\left(b^2e^2+3bcde+c^2d^2\right)\right)+\frac{1}{8}x^8\left(3Ace\left(b^2e^2+3bcde+c^2d^2\right)+B\left(9b^2cde^2+b^3e^3+9bc^2d^2e+c^3d^3\right)\right)+\frac{1}{7}x^7\left(9b^2cde(Ae+Bd)+b^3e^2(Ae+3Bd)+3bc^2d^2(3Ae+Bd)+Ac^3d^3\right)+\frac{1}{2}bdx^6\left(b^2e(Ae+Bd)+bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{5}b^2d^2x^5(3Abe+3Acd+bBd)+\frac{1}{4}Ab^3d^3x^4+\frac{1}{10}c^2e^2x^{10}(Ace+3B(be+cd))+\frac{1}{11}Bc^3e^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^3*x^4)/4 + (b^2*d^2*(b*B*d + 3*A*c*d + 3*A*b*e)*x^5)/5 + (b*d*(A*c
^2*d^2 + b^2*e*(B*d + A*e) + b*c*d*(B*d + 3*A*e))*x^6)/2 + ((A*c^3*d^3 + 9*
b^2*c*d*e*(B*d + A*e) + b^3*e^2*(3*B*d + A*e) + 3*b*c^2*d^2*(B*d + 3*A*e))*
x^7)/7 + ((3*A*c*e*(c^2*d^2 + 3*b*c*d*e + b^2*e^2) + B*(c^3*d^3 + 9*b*c^2*d
^2*e + 9*b^2*c*d*e^2 + b^3*e^3))*x^8)/8 + (c*e*(A*c*e*(c*d + b*e) + B*(c^2*
d^2 + 3*b*c*d*e + b^2*e^2))*x^9)/3 + (c^2*e^2*(A*c*e + 3*B*(c*d + b*e))*x^1
0)/10 + (B*c^3*e^3*x^11)/11
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3d^3x^3+b^2d^2(bBd+3Acd+3Abe)x^4+3bd\left(Ac^2d^2+b^2e(Bd+Ae)\right.\right.\\ &= \frac{1}{4}Ab^3d^3x^4+\frac{1}{5}b^2d^2(bBd+3Acd+3Abe)x^5+\frac{1}{2}bd\left(Ac^2d^2+b^2e(Bd+Ae)\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 305, normalized size = 1.00

$$\frac{1}{4}Ab^3d^3x^4+\frac{1}{3}cex^9\left(Ace(be+cd)+B\left(b^2e^2+3bcde+c^2d^2\right)\right)+\frac{1}{2}bdx^6\left(b^2e(Ae+Bd)+bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{5}b^2d^2x^5(3Abe+3Acd+bBd)+\frac{1}{7}x^7\left(b^3e^2(Ae+3Bd)+9b^2cde(Ae+Bd)+3bc^2d^2(3Ae+Bd)+Ac^3d^3\right)+\frac{1}{8}x^8\left(3Ace\left(b^2e^2+3bcde+c^2d^2\right)+B\left(b^3e^3+9b^2cde^2+9bc^2d^2e+c^3d^3\right)\right)+\frac{1}{10}c^2e^2x^{10}(Ace+3B(be+cd))+\frac{1}{11}Bc^3e^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^3*x^4)/4 + (b^2*d^2*(b*B*d + 3*A*c*d + 3*A*b*e)*x^5)/5 + (b*d*(A*c
^2*d^2 + b^2*e*(B*d + A*e) + b*c*d*(B*d + 3*A*e))*x^6)/2 + ((A*c^3*d^3 + 9*
b^2*c*d*e*(B*d + A*e) + b^3*e^2*(3*B*d + A*e) + 3*b*c^2*d^2*(B*d + 3*A*e))*
x^7)/7 + ((3*A*c*e*(c^2*d^2 + 3*b*c*d*e + b^2*e^2) + B*(c^3*d^3 + 9*b*c^2*d
^2*e + 9*b^2*c*d*e^2 + b^3*e^3))*x^8)/8 + (c*e*(A*c*e*(c*d + b*e) + B*(c^2*
d^2 + 3*b*c*d*e + b^2*e^2))*x^9)/3 + (c^2*e^2*(A*c*e + 3*B*(c*d + b*e))*x^1
0)/10 + (B*c^3*e^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.38, size = 416, normalized size = 1.36

$$\frac{1}{11} x^{11} e^{3} c^{3} B + \frac{3}{10} x^{10} e^{2} d c^{3} B + \frac{3}{10} x^{10} e^{3} c^{2} b B + \frac{1}{10} x^{10} e^{3} c^{3} A + \frac{1}{3} x^{9} e d^{2} c^{3} B + x^{9} e^{2} d c^{2} b B + \frac{1}{3} x^{9} e^{3} c b^{2} B + \frac{1}{3} x^{9} e^{2} d c^{3} A + \frac{1}{3} x^{9} e^{3} c^{2} b A + \frac{1}{8} x^{8} d^{3} c^{3} B + \frac{9}{8} x^{8} e d^{2} c^{2} b B + \frac{9}{8} x^{8} e^{2} d c b^{2} B + \frac{1}{8} x^{8} e^{3} b^{3} B + \frac{3}{8} x^{8} e d^{2} c^{3} A + \frac{9}{8} x^{8} e^{2} d c^{2} b A + \frac{3}{8} x^{8} e^{3} c b^{2} A + \frac{3}{7} x^{7} d^{3} c^{2} b B + \frac{9}{7} x^{7} e d^{2} c b^{2} B + \frac{3}{7} x^{7} e^{2} d b^{3} B + \frac{1}{7} x^{7} d^{3} c^{3} A + \frac{9}{7} x^{7} e d^{2} c^{2} b A + \frac{9}{7} x^{7} e^{2} d c b^{2} A + \frac{1}{7} x^{7} e^{3} b^{3} A + \frac{1}{2} x^{6} d^{3} c b^{2} B + \frac{1}{2} x^{6} e d^{2} b^{3} B + \frac{1}{2} x^{6} d^{3} c^{2} b A + \frac{3}{2} x^{6} e d^{2} c b^{2} A + \frac{1}{2} x^{6} e^{2} d b^{3} A + \frac{1}{5} x^{5} d^{3} b^{3} B + \frac{3}{5} x^{5} d^{3} c b^{2} A + \frac{3}{5} x^{5} e d^{2} b^{3} A + \frac{1}{4} x^{4} d^{3} b^{3} A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*c^3*B + 3/10*x^10*e^2*d*c^3*B + 3/10*x^10*e^3*c^2*b*B + 1/10*
x^10*e^3*c^3*A + 1/3*x^9*e*d^2*c^3*B + x^9*e^2*d*c^2*b*B + 1/3*x^9*e^3*c*b^
2*B + 1/3*x^9*e^2*d*c^3*A + 1/3*x^9*e^3*c^2*b*A + 1/8*x^8*d^3*c^3*B + 9/8*x
^8*e*d^2*c^2*b*B + 9/8*x^8*e^2*d*c*b^2*B + 1/8*x^8*e^3*b^3*B + 3/8*x^8*e*d^
2*c^3*A + 9/8*x^8*e^2*d*c^2*b*A + 3/8*x^8*e^3*c*b^2*A + 3/7*x^7*d^3*c^2*b*B
 + 9/7*x^7*e*d^2*c*b^2*B + 3/7*x^7*e^2*d*b^3*B + 1/7*x^7*d^3*c^3*A + 9/7*x^
7*e*d^2*c^2*b*A + 9/7*x^7*e^2*d*c*b^2*A + 1/7*x^7*e^3*b^3*A + 1/2*x^6*d^3*c
*b^2*B + 1/2*x^6*e*d^2*b^3*B + 1/2*x^6*d^3*c^2*b*A + 3/2*x^6*e*d^2*c*b^2*A
+ 1/2*x^6*e^2*d*b^3*A + 1/5*x^5*d^3*b^3*B + 3/5*x^5*d^3*c*b^2*A + 3/5*x^5*e
*d^2*b^3*A + 1/4*x^4*d^3*b^3*A
```

giac [A] time = 0.20, size = 408, normalized size = 1.34

$$\frac{1}{11} B c^{3} x^{11} e^{3} + \frac{3}{10} B c^{3} d x^{10} e^{2} + \frac{1}{3} B c^{3} d^{2} x^{9} e + \frac{1}{8} B c^{3} d^{3} x^{8} + \frac{3}{10} B b c^{2} x^{10} e^{3} + \frac{1}{10} A c^{3} x^{10} e^{3} + B b c^{2} d x^{9} e^{2} + \frac{1}{3} A c^{3} d x^{9} e^{2} + \frac{9}{8} B b c^{2} d^{2} x^{8} e + \frac{3}{8} A c^{3} d^{2} x^{8} e + \frac{3}{7} B b c^{2} d^{3} x^{7} + \frac{1}{7} A c^{3} d^{3} x^{7} + \frac{1}{3} B b^{2} c x^{9} e^{3} + \frac{1}{3} A b c^{2} x^{9} e^{3} + \frac{9}{8} B b^{2} c d x^{8} e^{2} + \frac{9}{8} A b c^{2} d x^{8} e^{2} + \frac{9}{7} B b^{2} c d^{2} x^{7} e + \frac{9}{7} A b c^{2} d^{2} x^{7} e + \frac{1}{2} B b^{2} c d^{3} x^{6} + \frac{1}{2} A b c^{2} d^{3} x^{6} + \frac{1}{8} B b^{3} x^{8} e^{3} + \frac{3}{8} A b^{2} c x^{8} e^{3} + \frac{3}{7} B b^{3} d x^{7} e^{2} + \frac{9}{7} A b^{2} c d x^{7} e^{2} + \frac{1}{2} B b^{3} d^{2} x^{6} e + \frac{3}{2} A b^{2} c d^{2} x^{6} e + \frac{1}{5} B b^{3} d^{3} x^{5} + \frac{3}{5} A b^{2} c d^{3} x^{5} + \frac{1}{7} A b^{3} x^{7} e^{3} + \frac{1}{2} A b^{3} d x^{6} e^{2} + \frac{3}{5} A b^{3} d^{2} x^{5} e + \frac{1}{4} A b^{3} d^{3} x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11*e^3 + 3/10*B*c^3*d*x^10*e^2 + 1/3*B*c^3*d^2*x^9*e + 1/8*B*c
^3*d^3*x^8 + 3/10*B*b*c^2*x^10*e^3 + 1/10*A*c^3*x^10*e^3 + B*b*c^2*d*x^9*e^
2 + 1/3*A*c^3*d*x^9*e^2 + 9/8*B*b*c^2*d^2*x^8*e + 3/8*A*c^3*d^2*x^8*e + 3/7
*B*b*c^2*d^3*x^7 + 1/7*A*c^3*d^3*x^7 + 1/3*B*b^2*c*x^9*e^3 + 1/3*A*b*c^2*x^
9*e^3 + 9/8*B*b^2*c*d*x^8*e^2 + 9/8*A*b*c^2*d*x^8*e^2 + 9/7*B*b^2*c*d^2*x^7
*e + 9/7*A*b*c^2*d^2*x^7*e + 1/2*B*b^2*c*d^3*x^6 + 1/2*A*b*c^2*d^3*x^6 + 1/
8*B*b^3*x^8*e^3 + 3/8*A*b^2*c*x^8*e^3 + 3/7*B*b^3*d*x^7*e^2 + 9/7*A*b^2*c*d
*x^7*e^2 + 1/2*B*b^3*d^2*x^6*e + 3/2*A*b^2*c*d^2*x^6*e + 1/5*B*b^3*d^3*x^5
+ 3/5*A*b^2*c*d^3*x^5 + 1/7*A*b^3*x^7*e^3 + 1/2*A*b^3*d*x^6*e^2 + 3/5*A*b^3
*d^2*x^5*e + 1/4*A*b^3*d^3*x^4
```

maple [A] time = 0.04, size = 342, normalized size = 1.12

$$\frac{B c^{3} e^{3} x^{11}}{11} + \frac{A b^{3} d^{3} x^{4}}{4} + \frac{\left(3 B b c^{2} e^{3} + \left(A e^{3} + 3 B d e^{2}\right) c^{3}\right) x^{10}}{10} + \frac{\left(3 B b^{2} c e^{3} + 3 \left(A e^{3} + 3 B d e^{2}\right) b c^{2} + \left(3 A d e^{2} + 3 B d^{2} e\right) c^{3}\right) x^{9}}{9} + \frac{\left(B b^{3} e^{3} + 3 \left(A e^{3} + 3 B d e^{2}\right) b^{2} c + 3 \left(3 A d e^{2} + 3 B d^{2} e\right) b c^{2} + \left(3 A d^{2} e + B d^{3}\right) c^{3}\right) x^{8}}{8} + \frac{\left(A c^{3} d^{3} + \left(A e^{3} + 3 B d e^{2}\right) b^{3} + 3 \left(3 A d e^{2} + 3 B d^{2} e\right) b^{2} c + 3 \left(3 A d^{2} e + B d^{3}\right) b c^{2}\right) x^{7}}{7} + \frac{\left(3 A b c^{2} d^{3} + \left(3 A d e^{2} + 3 B d^{2} e\right) b^{3} + 3 \left(3 A d^{2} e + B d^{3}\right) b^{2} c\right) x^{6}}{6} + \frac{\left(3 A b^{2} c d^{3} + \left(3 A d^{2} e + B d^{3}\right) b^{3}\right) x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x)
```

```
[Out] 1/11*B*c^3*e^3*x^11+1/10*((A*e^3+3*B*d*e^2)*c^3+3*B*e^3*b*c^2)*x^10+1/9*((3
*A*d*e^2+3*B*d^2*e)*c^3+3*(A*e^3+3*B*d*e^2)*b*c^2+3*B*e^3*b^2*c)*x^9+1/8*((
3*A*d^2*e+B*d^3)*c^3+3*(3*A*d*e^2+3*B*d^2*e)*b*c^2+3*(A*e^3+3*B*d*e^2)*b^2*
c+B*e^3*b^3)*x^8+1/7*(A*c^3*d^3+3*(3*A*d^2*e+B*d^3)*b*c^2+3*(3*A*d*e^2+3*B*
d^2*e)*b^2*c+(A*e^3+3*B*d*e^2)*b^3)*x^7+1/6*(3*A*d^3*b*c^2+3*(3*A*d^2*e+B*d
^3)*b^2*c+(3*A*d*e^2+3*B*d^2*e)*b^3)*x^6+1/5*(3*A*d^3*b^2*c+(3*A*d^2*e+B*d^
3)*b^3)*x^5+1/4*A*b^3*d^3*x^4
```

maxima [A] time = 0.59, size = 329, normalized size = 1.08

$$\frac{1}{11} B c^{3} e^{3} x^{11} + \frac{1}{4} A b^{3} d^{3} x^{4} + \frac{1}{10} \left(3 B c^{3} d e^{2} + \left(3 B b c^{2} + A c^{3}\right) e^{3}\right) x^{10} + \frac{1}{3} \left(B c^{3} d^{2} e + \left(3 B b c^{2} + A c^{3}\right) d e^{2} + \left(B b^{2} c + A b c^{2}\right) e^{3}\right) x^{9} + \frac{1}{8} \left(B c^{3} d^{3} + 3 \left(3 B b c^{2} + A c^{3}\right) d^{2} e + 9 \left(B b^{2} c + A b c^{2}\right) d e^{2} + \left(B b^{3} + 3 A b^{2} c\right) e^{3}\right) x^{8} + \frac{1}{7} \left(A b^{3} e^{3} + \left(3 B b c^{2} + A c^{3}\right) d^{3} + 9 \left(B b^{2} c + A b c^{2}\right) d^{2} e + 3 \left(B b^{3} + 3 A b^{2} c\right) d e^{2}\right) x^{7} + \frac{1}{2} \left(A b^{3} d e^{2} + \left(B b^{2} c + A b c^{2}\right) d^{3} + \left(B b^{3} + 3 A b^{2} c\right) d^{2} e\right) x^{6} + \frac{1}{5} \left(3 A b^{3} d^{2} e + \left(B b^{3} + 3 A b^{2} c\right) d^{3}\right) x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*e^3*x^11 + 1/4*A*b^3*d^3*x^4 + 1/10*(3*B*c^3*d*e^2 + (3*B*b*c^2
+ A*c^3)*e^3)*x^10 + 1/3*(B*c^3*d^2*e + (3*B*b*c^2 + A*c^3)*d*e^2 + (B*b^2*
c + A*b*c^2)*e^3)*x^9 + 1/8*(B*c^3*d^3 + 3*(3*B*b*c^2 + A*c^3)*d^2*e + 9*(B
*b^2*c + A*b*c^2)*d*e^2 + (B*b^3 + 3*A*b^2*c)*e^3)*x^8 + 1/7*(A*b^3*e^3 + (
3*B*b*c^2 + A*c^3)*d^3 + 9*(B*b^2*c + A*b*c^2)*d^2*e + 3*(B*b^3 + 3*A*b^2*c
)*d*e^2)*x^7 + 1/2*(A*b^3*d*e^2 + (B*b^2*c + A*b*c^2)*d^3 + (B*b^3 + 3*A*b^
2*c)*d^2*e)*x^6 + 1/5*(3*A*b^3*d^2*e + (B*b^3 + 3*A*b^2*c)*d^3)*x^5
```

mupad [B] time = 1.42, size = 340, normalized size = 1.11

$$x^6\left(\frac{Bb^3d^2e}{2}+\frac{Ab^3de^2}{2}+\frac{Bb^2cd^3}{2}+\frac{3Ab^2cd^2e}{2}+\frac{Abc^2d^3}{2}\right)+x^9\left(\frac{Bb^2ce^3}{3}+Bbc^2de^2+\frac{Abc^2e^3}{3}+\frac{Bc^3d^2e}{3}+\frac{Ac^3de^2}{3}\right)+x^7\left(\frac{3Bb^3de^2}{7}+\frac{Ab^3e^3}{7}+\frac{9Bb^2cd^2e}{7}+\frac{9Ab^2cde^2}{7}+\frac{3Bbc^2d^3}{7}+\frac{9Abc^2d^2e}{7}+\frac{Ac^3d^3}{7}\right)+x^8\left(\frac{Bb^3e^3}{8}+\frac{9Bb^2cde^2}{8}+\frac{3Ab^2ce^3}{8}+\frac{9Bbc^2d^2e}{8}+\frac{9Abc^2de^2}{8}+\frac{Bc^3d^3}{8}+\frac{3Ac^3d^2e}{8}\right)+\frac{b^2d^2x^5\,(3Abe+3Acd+Bbd)}{5}+\frac{c^2e^2x^{10}\,(Ace+3Bbe+3Bcd)}{10}+\frac{Ab^3d^3x^4}{4}+\frac{Bc^3e^3x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^6*((A*b*c^2*d^3)/2 + (B*b^2*c*d^3)/2 + (A*b^3*d*e^2)/2 + (B*b^3*d^2*e)/2
+ (3*A*b^2*c*d^2*e)/2) + x^9*((A*b*c^2*e^3)/3 + (B*b^2*c*e^3)/3 + (A*c^3*d*
e^2)/3 + (B*c^3*d^2*e)/3 + B*b*c^2*d*e^2) + x^7*((A*b^3*e^3)/7 + (A*c^3*d^3
)/7 + (3*B*b*c^2*d^3)/7 + (3*B*b^3*d*e^2)/7 + (9*A*b*c^2*d^2*e)/7 + (9*A*b^
2*c*d*e^2)/7 + (9*B*b^2*c*d^2*e)/7) + x^8*((B*b^3*e^3)/8 + (B*c^3*d^3)/8 +
(3*A*b^2*c*e^3)/8 + (3*A*c^3*d^2*e)/8 + (9*A*b*c^2*d*e^2)/8 + (9*B*b*c^2*d^
2*e)/8 + (9*B*b^2*c*d*e^2)/8) + (b^2*d^2*x^5*(3*A*b*e + 3*A*c*d + B*b*d))/5
 + (c^2*e^2*x^10*(A*c*e + 3*B*b*e + 3*B*c*d))/10 + (A*b^3*d^3*x^4)/4 + (B*c
^3*e^3*x^11)/11
```

sympy [A] time = 0.13, size = 430, normalized size = 1.41

$$\frac{Ab^3d^3x^4}{4}+\frac{Bc^3e^3x^{11}}{11}+x^{10}\left(\frac{Ac^3e^3}{10}+\frac{3Bbc^2e^3}{10}+\frac{3Bc^3de^2}{10}\right)+x^9\left(\frac{Abc^2e^3}{3}+\frac{Ac^3de^2}{3}+\frac{Bb^2ce^3}{3}+Bbc^2de^2+\frac{Bc^3d^2e}{3}\right)+x^8\left(\frac{3Ab^2ce^3}{8}+\frac{9Abc^2de^2}{8}+\frac{3Ac^3d^2e}{8}+\frac{Bb^3e^3}{8}+\frac{9Bb^2cde^2}{8}+\frac{9Bbc^2d^2e}{8}+\frac{Bc^3d^3}{8}\right)+x^7\left(\frac{Ab^3e^3}{7}+\frac{9Ab^2cde^2}{7}+\frac{9Abc^2d^2e}{7}+\frac{Ac^3d^3}{7}+\frac{3Bb^3de^2}{7}+\frac{9Bb^2cd^2e}{7}+\frac{3Bbc^2d^3}{7}\right)+x^6\left(\frac{Ab^3de^2}{2}+\frac{3Ab^2cd^2e}{2}+\frac{Abc^2d^3}{2}+\frac{Bb^3d^2e}{2}+\frac{Bb^2cd^3}{2}\right)+x^5\left(\frac{3Ab^3d^2e}{5}+\frac{3Ab^2cd^3}{5}+\frac{Bb^3d^3}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d**3*x**4/4 + B*c**3*e**3*x**11/11 + x**10*(A*c**3*e**3/10 + 3*B*b*c
**2*e**3/10 + 3*B*c**3*d*e**2/10) + x**9*(A*b*c**2*e**3/3 + A*c**3*d*e**2/3
 + B*b**2*c*e**3/3 + B*b*c**2*d*e**2 + B*c**3*d**2*e/3) + x**8*(3*A*b**2*c*
e**3/8 + 9*A*b*c**2*d*e**2/8 + 3*A*c**3*d**2*e/8 + B*b**3*e**3/8 + 9*B*b**2
*c*d*e**2/8 + 9*B*b*c**2*d**2*e/8 + B*c**3*d**3/8) + x**7*(A*b**3*e**3/7 +
9*A*b**2*c*d*e**2/7 + 9*A*b*c**2*d**2*e/7 + A*c**3*d**3/7 + 3*B*b**3*d*e**2
/7 + 9*B*b**2*c*d**2*e/7 + 3*B*b*c**2*d**3/7) + x**6*(A*b**3*d*e**2/2 + 3*A
*b**2*c*d**2*e/2 + A*b*c**2*d**3/2 + B*b**3*d**2*e/2 + B*b**2*c*d**3/2) + x
**5*(3*A*b**3*d**2*e/5 + 3*A*b**2*c*d**3/5 + B*b**3*d**3/5)
```

3.985 $\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=225

$$\frac{1}{4}Ab^3d^2x^4+\frac{1}{8}cx^8\left(Ace(3be+2cd)+B\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{6}bx^6\left(b^2e(Ae+2Bd)+3bcd(2Ae+Bd)+3A\right.$$

Rubi [A] time = 0.30, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{8}cx^8\left(Ace(3be+2cd)+B\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{7}x^7\left(3b^2ce(Ae+2Bd)+3bc^2d(2Ae+Bd)+Ac^3d^2+b^3Be^2\right)+\frac{1}{6}bx^6\left(b^2e(Ae+2Bd)+3bcd(2Ae+Bd)+3Ac^2d^2\right)+\frac{1}{5}b^2dx^5(2Abe+3Acd+bBd)+\frac{1}{4}Ab^3d^2x^4+\frac{1}{9}c^2ex^9(Ace+3bBe+2Bcd)+\frac{1}{10}Bc^3e^2x^{10}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^2*x^4)/4 + (b^2*d*(b*B*d + 3*A*c*d + 2*A*b*e)*x^5)/5 + (b*(3*A*c^2
*d^2 + b^2*e*(2*B*d + A*e) + 3*b*c*d*(B*d + 2*A*e))*x^6)/6 + ((A*c^3*d^2 +
b^3*B*e^2 + 3*b^2*c*e*(2*B*d + A*e) + 3*b*c^2*d*(B*d + 2*A*e))*x^7)/7 + (c*
(A*c*e*(2*c*d + 3*b*e) + B*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^8)/8 + (c^2
*e*(2*B*c*d + 3*b*B*e + A*c*e)*x^9)/9 + (B*c^3*e^2*x^10)/10
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3d^2x^3+b^2d(bBd+3Acd+2Abe)x^4+b\left(3Ac^2d^2+b^2e(2Bd+A\right.\right.\\ &= \frac{1}{4}Ab^3d^2x^4+\frac{1}{5}b^2d(bBd+3Acd+2Abe)x^5+\frac{1}{6}b\left(3Ac^2d^2+b^2e(2Bd+\right.\end{aligned}$$

Mathematica [A] time = 0.08, size = 225, normalized size = 1.00

$$\frac{1}{4}Ab^3d^2x^4+\frac{1}{8}cx^8\left(Ace(3be+2cd)+B\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{6}bx^6\left(b^2e(Ae+2Bd)+3bcd(2Ae+Bd)+3Ac^2d^2\right)+\frac{1}{5}b^2dx^5(2Abe+3Acd+bBd)+\frac{1}{7}x^7\left(3b^2ce(Ae+2Bd)+3bc^2d(2Ae+Bd)+Ac^3d^2+b^3Be^2\right)+\frac{1}{9}c^2ex^9(Ace+3bBe+2Bcd)+\frac{1}{10}Bc^3e^2x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^2*x^4)/4 + (b^2*d*(b*B*d + 3*A*c*d + 2*A*b*e)*x^5)/5 + (b*(3*A*c^2
*d^2 + b^2*e*(2*B*d + A*e) + 3*b*c*d*(B*d + 2*A*e))*x^6)/6 + ((A*c^3*d^2 +
b^3*B*e^2 + 3*b^2*c*e*(2*B*d + A*e) + 3*b*c^2*d*(B*d + 2*A*e))*x^7)/7 + (c*
(A*c*e*(2*c*d + 3*b*e) + B*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^8)/8 + (c^2
*e*(2*B*c*d + 3*b*B*e + A*c*e)*x^9)/9 + (B*c^3*e^2*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.40, size = 292, normalized size = 1.30

$$\frac{1}{10} x^{10} e^{2} c^{3} B + \frac{2}{9} x^{9} e d c^{3} B + \frac{1}{3} x^{9} e^{2} c^{2} b B + \frac{1}{9} x^{9} e^{2} c^{3} A + \frac{1}{8} x^{8} d^{2} c^{3} B + \frac{3}{4} x^{8} e d c^{2} b B + \frac{3}{8} x^{8} e^{2} c b^{2} B + \frac{1}{4} x^{8} e d c^{3} A + \frac{3}{8} x^{8} e^{2} c^{2} b A + \frac{3}{7} x^{7} d^{2} c^{2} b B + \frac{6}{7} x^{7} e d c b^{2} B + \frac{1}{7} x^{7} e^{2} b^{3} B + \frac{1}{7} x^{7} d^{2} c^{3} A + \frac{6}{7} x^{7} e d c^{2} b A + \frac{3}{7} x^{7} e^{2} c b^{2} A + \frac{1}{2} x^{6} d^{2} c b^{2} B + \frac{1}{3} x^{6} e d b^{3} B + \frac{1}{2} x^{6} d^{2} c^{2} b A + x^{6} e d c b^{2} A + \frac{1}{6} x^{6} e^{2} b^{3} A + \frac{1}{5} x^{5} d^{2} b^{3} B + \frac{3}{5} x^{5} d^{2} c b^{2} A + \frac{2}{5} x^{5} e d b^{3} A + \frac{1}{4} x^{4} d^{2} b^{3} A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*c^3*B + 2/9*x^9*e*d*c^3*B + 1/3*x^9*e^2*c^2*b*B + 1/9*x^9*e^2
*c^3*A + 1/8*x^8*d^2*c^3*B + 3/4*x^8*e*d*c^2*b*B + 3/8*x^8*e^2*c*b^2*B + 1/
4*x^8*e*d*c^3*A + 3/8*x^8*e^2*c^2*b*A + 3/7*x^7*d^2*c^2*b*B + 6/7*x^7*e*d*c
*b^2*B + 1/7*x^7*e^2*b^3*B + 1/7*x^7*d^2*c^3*A + 6/7*x^7*e*d*c^2*b*A + 3/7*
x^7*e^2*c*b^2*A + 1/2*x^6*d^2*c*b^2*B + 1/3*x^6*e*d*b^3*B + 1/2*x^6*d^2*c^2
*b*A + x^6*e*d*c*b^2*A + 1/6*x^6*e^2*b^3*A + 1/5*x^5*d^2*b^3*B + 3/5*x^5*d^
2*c*b^2*A + 2/5*x^5*e*d*b^3*A + 1/4*x^4*d^2*b^3*A
```

giac [A] time = 0.18, size = 292, normalized size = 1.30

$$\frac{1}{10} Bc^{3}x^{10}e^{2} + \frac{2}{9} Bc^{3}dx^{9}e + \frac{1}{8} Bc^{3}d^{2}x^{8} + \frac{1}{3} Bbc^{2}x^{9}e^{2} + \frac{1}{9} Ac^{3}x^{9}e^{2} + \frac{3}{4} Bbc^{2}dx^{8}e + \frac{1}{4} Ac^{3}dx^{8}e + \frac{3}{7} Bbc^{2}d^{2}x^{7} + \frac{1}{7} Ac^{3}d^{2}x^{7} + \frac{3}{8} Bb^{2}cx^{8}e^{2} + \frac{3}{8} Abc^{2}x^{8}e^{2} + \frac{6}{7} Bb^{2}cdx^{7}e + \frac{6}{7} Abc^{2}dx^{7}e + \frac{1}{2} Bb^{2}cd^{2}x^{6} + \frac{1}{2} Abc^{2}d^{2}x^{6} + \frac{1}{7} Bb^{3}x^{7}e^{2} + \frac{3}{7} Ab^{2}cx^{7}e^{2} + \frac{1}{3} Bb^{3}dx^{6}e + Ab^{2}cdx^{6}e + \frac{1}{5} Bb^{3}d^{2}x^{5} + \frac{3}{5} Ab^{2}cd^{2}x^{5} + \frac{1}{6} Ab^{3}x^{6}e^{2} + \frac{2}{5} Ab^{3}dx^{5}e + \frac{1}{4} Ab^{3}d^{2}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10*e^2 + 2/9*B*c^3*d*x^9*e + 1/8*B*c^3*d^2*x^8 + 1/3*B*b*c^2*x
^9*e^2 + 1/9*A*c^3*x^9*e^2 + 3/4*B*b*c^2*d*x^8*e + 1/4*A*c^3*d*x^8*e + 3/7*
B*b*c^2*d^2*x^7 + 1/7*A*c^3*d^2*x^7 + 3/8*B*b^2*c*x^8*e^2 + 3/8*A*b*c^2*x^8
*e^2 + 6/7*B*b^2*c*d*x^7*e + 6/7*A*b*c^2*d*x^7*e + 1/2*B*b^2*c*d^2*x^6 + 1/
2*A*b*c^2*d^2*x^6 + 1/7*B*b^3*x^7*e^2 + 3/7*A*b^2*c*x^7*e^2 + 1/3*B*b^3*d*x
^6*e + A*b^2*c*d*x^6*e + 1/5*B*b^3*d^2*x^5 + 3/5*A*b^2*c*d^2*x^5 + 1/6*A*b^
3*x^6*e^2 + 2/5*A*b^3*d*x^5*e + 1/4*A*b^3*d^2*x^4
```

maple [A] time = 0.04, size = 240, normalized size = 1.07

$$\frac{B c^{3}e^{2}x^{10}}{10} + \frac{A b^{3}d^{2}x^{4}}{4} + \frac{\left(3Bb c^{2}e^{2} + \left(A e^{2} + 2Bde\right) c^{3}\right) x^{9}}{9} + \frac{\left(3B b^{2}c e^{2} + 3\left(A e^{2} + 2Bde\right) b c^{2} + \left(2Ade + B d^{2}\right) c^{3}\right) x^{8}}{8} + \frac{\left(A c^{3}d^{2} + B b^{3}e^{2} + 3\left(A e^{2} + 2Bde\right) b^{2}c + 3\left(2Ade + B d^{2}\right) b c^{2}\right) x^{7}}{7} + \frac{\left(3Ab c^{2}d^{2} + \left(A e^{2} + 2Bde\right) b^{3} + 3\left(2Ade + B d^{2}\right) b^{2}c\right) x^{6}}{6} + \frac{\left(3A b^{2}c d^{2} + \left(2Ade + B d^{2}\right) b^{3}\right) x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x)
```

```
[Out] 1/10*B*c^3*e^2*x^10+1/9*((A*e^2+2*B*d*e)*c^3+3*B*e^2*b*c^2)*x^9+1/8*((2*A*d
*e+B*d^2)*c^3+3*(A*e^2+2*B*d*e)*b*c^2+3*B*e^2*b^2*c)*x^8+1/7*(A*c^3*d^2+3*(
2*A*d*e+B*d^2)*b*c^2+3*(A*e^2+2*B*d*e)*b^2*c+b^3*B*e^2)*x^7+1/6*(3*A*d^2*b*
c^2+3*(2*A*d*e+B*d^2)*b^2*c+(A*e^2+2*B*d*e)*b^3)*x^6+1/5*(3*A*d^2*b^2*c+(2*
A*d*e+B*d^2)*b^3)*x^5+1/4*A*b^3*d^2*x^4
```

maxima [A] time = 0.47, size = 242, normalized size = 1.08

$$\frac{1}{10} Bc^{3}e^{2}x^{10} + \frac{1}{4} Ab^{3}d^{2}x^{4} + \frac{1}{9} \left(2 Bc^{3}de + \left(3 Bbc^{2} + Ac^{3}\right)e^{2}\right)x^{9} + \frac{1}{8} \left(Bc^{3}d^{2} + 2 \left(3 Bbc^{2} + Ac^{3}\right)de + 3 \left(Bb^{2}c + Abc^{2}\right)e^{2}\right)x^{8} + \frac{1}{7} \left(\left(3 Bbc^{2} + Ac^{3}\right)d^{2} + 6 \left(Bb^{2}c + Abc^{2}\right)de + \left(Bb^{3} + 3 Ab^{2}c\right)e^{2}\right)x^{7} + \frac{1}{6} \left(Ab^{3}e^{2} + 3 \left(Bb^{2}c + Abc^{2}\right)d^{2} + 2 \left(Bb^{3} + 3 Ab^{2}c\right)de\right)x^{6} + \frac{1}{5} \left(2 Ab^{3}de + \left(Bb^{3} + 3 Ab^{2}c\right)d^{2}\right)x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*e^2*x^10 + 1/4*A*b^3*d^2*x^4 + 1/9*(2*B*c^3*d*e + (3*B*b*c^2 + A
*c^3)*e^2)*x^9 + 1/8*(B*c^3*d^2 + 2*(3*B*b*c^2 + A*c^3)*d*e + 3*(B*b^2*c +
A*b*c^2)*e^2)*x^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^2 + 6*(B*b^2*c + A*b*c^2)*d*
e + (B*b^3 + 3*A*b^2*c)*e^2)*x^7 + 1/6*(A*b^3*e^2 + 3*(B*b^2*c + A*b*c^2)*d
^2 + 2*(B*b^3 + 3*A*b^2*c)*d*e)*x^6 + 1/5*(2*A*b^3*d*e + (B*b^3 + 3*A*b^2*c
)*d^2)*x^5
```

mupad [B] time = 0.09, size = 235, normalized size = 1.04

$$x^7\left(\frac{B\,b^3\,e^2}{7}+\frac{6\,B\,b^2\,c\,d\,e}{7}+\frac{3\,A\,b^2\,c\,e^2}{7}+\frac{3\,B\,b\,c^2\,d^2}{7}+\frac{6\,A\,b\,c^2\,d\,e}{7}+\frac{A\,c^3\,d^2}{7}\right)+x^6\left(\frac{B\,b^3\,d\,e}{3}+\frac{A\,b^3\,e^2}{6}+\frac{B\,b^2\,c\,d^2}{2}+A\,b^2\,c\,d\,e+\frac{A\,b\,c^2\,d^2}{2}\right)+x^8\left(\frac{3\,B\,b^2\,c\,e^2}{8}+\frac{3\,B\,b\,c^2\,d\,e}{4}+\frac{3\,A\,b\,c^2\,e^2}{8}+\frac{B\,c^3\,d^2}{8}+\frac{A\,c^3\,d\,e}{4}\right)+\frac{b^2\,d\,x^5\,\left(2\,A\,b\,e+3\,A\,c\,d+B\,b\,d\right)}{5}+\frac{c^2\,e\,x^9\,\left(A\,c\,e+3\,B\,b\,e+2\,B\,c\,d\right)}{9}+\frac{A\,b^3\,d^2\,x^4}{4}+\frac{B\,c^3\,e^2\,x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^7*((A*c^3*d^2)/7 + (B*b^3*e^2)/7 + (3*A*b^2*c*e^2)/7 + (3*B*b*c^2*d^2)/7
+ (6*A*b*c^2*d*e)/7 + (6*B*b^2*c*d*e)/7) + x^6*((A*b^3*e^2)/6 + (B*b^3*d*e)
/3 + (A*b*c^2*d^2)/2 + (B*b^2*c*d^2)/2 + A*b^2*c*d*e) + x^8*((B*c^3*d^2)/8
+ (A*c^3*d*e)/4 + (3*A*b*c^2*e^2)/8 + (3*B*b^2*c*e^2)/8 + (3*B*b*c^2*d*e)/4
) + (b^2*d*x^5*(2*A*b*e + 3*A*c*d + B*b*d))/5 + (c^2*e*x^9*(A*c*e + 3*B*b*e
 + 2*B*c*d))/9 + (A*b^3*d^2*x^4)/4 + (B*c^3*e^2*x^10)/10
```

sympy [A] time = 0.11, size = 303, normalized size = 1.35

$$\frac{Ab^3d^2x^4}{4}+\frac{Bc^3e^2x^{10}}{10}+x^9\left(\frac{Ac^3e^2}{9}+\frac{Bbc^2e^2}{3}+\frac{2Bc^3de}{9}\right)+x^8\left(\frac{3Abc^2e^2}{8}+\frac{Ac^3de}{4}+\frac{3Bb^2ce^2}{8}+\frac{3Bbc^2de}{4}+\frac{Bc^3d^2}{8}\right)+x^7\left(\frac{3Ab^2ce^2}{7}+\frac{6Abc^2de}{7}+\frac{Ac^3d^2}{7}+\frac{Bb^3e^2}{7}+\frac{6Bb^2cde}{7}+\frac{3Bbc^2d^2}{7}\right)+x^6\left(\frac{Ab^3e^2}{6}+Ab^2cde+\frac{Abc^2d^2}{2}+\frac{Bb^3de}{3}+\frac{Bb^2cd^2}{2}\right)+x^5\left(\frac{2Ab^3de}{5}+\frac{3Ab^2cd^2}{5}+\frac{Bb^3d^2}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d**2*x**4/4 + B*c**3*e**2*x**10/10 + x**9*(A*c**3*e**2/9 + B*b*c**2*
e**2/3 + 2*B*c**3*d*e/9) + x**8*(3*A*b*c**2*e**2/8 + A*c**3*d*e/4 + 3*B*b**
2*c*e**2/8 + 3*B*b*c**2*d*e/4 + B*c**3*d**2/8) + x**7*(3*A*b**2*c*e**2/7 +
6*A*b*c**2*d*e/7 + A*c**3*d**2/7 + B*b**3*e**2/7 + 6*B*b**2*c*d*e/7 + 3*B*b
*c**2*d**2/7) + x**6*(A*b**3*e**2/6 + A*b**2*c*d*e + A*b*c**2*d**2/2 + B*b*
*3*d*e/3 + B*b**2*c*d**2/2) + x**5*(2*A*b**3*d*e/5 + 3*A*b**2*c*d**2/5 + B*
b**3*d**2/5)
```

3.986 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=139

$$\frac{1}{4}Ab^3dx^4+\frac{1}{7}cx^7\left(3bc(Ae+Bd)+Ac^2d+3b^2Be\right)+\frac{1}{6}bx^6\left(3bc(Ae+Bd)+3Ac^2d+b^2Be\right)+\frac{1}{5}b^2x^5(Abe+3Acd+bBd$$

Rubi [A] time = 0.16, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{1}{7}cx^7\left(3bc(Ae+Bd)+Ac^2d+3b^2Be\right)+\frac{1}{6}bx^6\left(3bc(Ae+Bd)+3Ac^2d+b^2Be\right)+\frac{1}{5}b^2x^5(Abe+3Acd+bBd)+\frac{1}{4}Ab^3dx^4+\frac{1}{8}c^2x^8(Ace+3bBe+Bcd)+\frac{1}{9}Bc^3ex^9$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d*x^4)/4 + (b^2*(b*B*d + 3*A*c*d + A*b*e)*x^5)/5 + (b*(3*A*c^2*d + b
^2*B*e + 3*b*c*(B*d + A*e))*x^6)/6 + (c*(A*c^2*d + 3*b^2*B*e + 3*b*c*(B*d +
 A*e))*x^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^3\,dx=\int \left(Ab^3dx^3+b^2(bBd+3Acd+Abe)x^4+b\left(3Ac^2d+b^2Be+3bc(Bd+Ae)\right)\right.$$
$$=\frac{1}{4}Ab^3dx^4+\frac{1}{5}b^2(bBd+3Acd+Abe)x^5+\frac{1}{6}b\left(3Ac^2d+b^2Be+3bc(Bd+Ae\right.$$

Mathematica [A] time = 0.04, size = 141, normalized size = 1.01

$$\frac{1}{4}Ab^3dx^4+\frac{1}{7}cx^7\left(3Abce+Ac^2d+3b^2Be+3bBcd\right)+\frac{1}{6}bx^6\left(3Abce+3Ac^2d+b^2Be+3bBcd\right)+\frac{1}{5}b^2x^5(Abe+3Acd+bBd)+\frac{1}{8}c^2x^8(Ace+3bBe+Bcd)+\frac{1}{9}Bc^3ex^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d*x^4)/4 + (b^2*(b*B*d + 3*A*c*d + A*b*e)*x^5)/5 + (b*(3*b*B*c*d + 3
*A*c^2*d + b^2*B*e + 3*A*b*c*e)*x^6)/6 + (c*(3*b*B*c*d + A*c^2*d + 3*b^2*B*
e + 3*A*b*c*e)*x^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^
9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.39, size = 169, normalized size = 1.22

$$\frac{1}{9}x^9ec^3B+\frac{1}{8}x^8dc^3B+\frac{3}{8}x^8ec^2bB+\frac{1}{8}x^8ec^3A+\frac{3}{7}x^7dc^2bB+\frac{3}{7}x^7ecb^2B+\frac{1}{7}x^7dc^3A+\frac{3}{7}x^7ec^2bA+\frac{1}{2}x^6dcb^2B+\frac{1}{6}x^6eb^3B+\frac{1}{2}x^6dc^2bA+\frac{1}{2}x^6ecb^2A+\frac{1}{5}x^5db^3B+\frac{3}{5}x^5dcb^2A+\frac{1}{5}x^5eb^3A+\frac{1}{4}x^4db^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*c^3*B + 1/8*x^8*d*c^3*B + 3/8*x^8*e*c^2*b*B + 1/8*x^8*e*c^3*A + 3
/7*x^7*d*c^2*b*B + 3/7*x^7*e*c*b^2*B + 1/7*x^7*d*c^3*A + 3/7*x^7*e*c^2*b*A
+ 1/2*x^6*d*c*b^2*B + 1/6*x^6*e*b^3*B + 1/2*x^6*d*c^2*b*A + 1/2*x^6*e*c*b^2
*A + 1/5*x^5*d*b^3*B + 3/5*x^5*d*c*b^2*A + 1/5*x^5*e*b^3*A + 1/4*x^4*d*b^3*
A
```

giac [A] time = 0.19, size = 177, normalized size = 1.27

$$\frac{1}{9}Bc^3x^9e+\frac{1}{8}Bc^3dx^8+\frac{3}{8}Bbc^2x^8e+\frac{1}{8}Ac^3x^8e+\frac{3}{7}Bbc^2dx^7+\frac{1}{7}Ac^3dx^7+\frac{3}{7}Bb^2cx^7e+\frac{3}{7}Abc^2x^7e+\frac{1}{2}Bb^2cdx^6+\frac{1}{2}Abc^2dx^6+\frac{1}{6}Bb^3x^6e+\frac{1}{2}Ab^2cx^6e+\frac{1}{5}Bb^3dx^5+\frac{3}{5}Ab^2cdx^5+\frac{1}{5}Ab^3x^5e+\frac{1}{4}Ab^3dx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9*e + 1/8*B*c^3*d*x^8 + 3/8*B*b*c^2*x^8*e + 1/8*A*c^3*x^8*e + 3
/7*B*b*c^2*d*x^7 + 1/7*A*c^3*d*x^7 + 3/7*B*b^2*c*x^7*e + 3/7*A*b*c^2*x^7*e
+ 1/2*B*b^2*c*d*x^6 + 1/2*A*b*c^2*d*x^6 + 1/6*B*b^3*x^6*e + 1/2*A*b^2*c*x^6
*e + 1/5*B*b^3*d*x^5 + 3/5*A*b^2*c*d*x^5 + 1/5*A*b^3*x^5*e + 1/4*A*b^3*d*x^
4
```

maple [A] time = 0.04, size = 138, normalized size = 0.99

$$\frac{Bc^3ex^9}{9}+\frac{Ab^3dx^4}{4}+\frac{\left(3Bbc^2e+(Ae+Bd)c^3\right)x^8}{8}+\frac{\left(Ac^3d+3Bb^2ce+3(Ae+Bd)bc^2\right)x^7}{7}+\frac{\left(3Abc^2d+Bb^3e+3(Ae+Bd)b^2c\right)x^6}{6}+\frac{\left(3Ab^2cd+(Ae+Bd)b^3\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/9*B*c^3*e*x^9+1/8*((A*e+B*d)*c^3+3*B*e*b*c^2)*x^8+1/7*(A*d*c^3+3*(A*e+B*d
)*b*c^2+3*B*e*b^2*c)*x^7+1/6*(3*A*d*b*c^2+3*b^2*c*(A*e+B*d)+b^3*B*e)*x^6+1/
5*(3*A*d*b^2*c+b^3*(A*e+B*d))*x^5+1/4*A*b^3*d*x^4
```

maxima [A] time = 0.53, size = 149, normalized size = 1.07

$$\frac{1}{9}Bc^3ex^9+\frac{1}{4}Ab^3dx^4+\frac{1}{8}\left(Bc^3d+\left(3Bbc^2+Ac^3\right)e\right)x^8+\frac{1}{7}\left(\left(3Bbc^2+Ac^3\right)d+3\left(Bb^2c+Abc^2\right)e\right)x^7+\frac{1}{6}\left(3\left(Bb^2c+Abc^2\right)d+\left(Bb^3+3Ab^2c\right)e\right)x^6+\frac{1}{5}\left(Ab^3e+\left(Bb^3+3Ab^2c\right)d\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*e*x^9 + 1/4*A*b^3*d*x^4 + 1/8*(B*c^3*d + (3*B*b*c^2 + A*c^3)*e)*x
^8 + 1/7*((3*B*b*c^2 + A*c^3)*d + 3*(B*b^2*c + A*b*c^2)*e)*x^7 + 1/6*(3*(B*
b^2*c + A*b*c^2)*d + (B*b^3 + 3*A*b^2*c)*e)*x^6 + 1/5*(A*b^3*e + (B*b^3 + 3
*A*b^2*c)*d)*x^5
```

mupad [B] time = 1.37, size = 147, normalized size = 1.06

$$x^5\left(\frac{Ab^3e}{5}+\frac{Bb^3d}{5}+\frac{3Ab^2cd}{5}\right)+x^8\left(\frac{Ac^3e}{8}+\frac{Bc^3d}{8}+\frac{3Bbc^2e}{8}\right)+x^6\left(\frac{Bb^3e}{6}+\frac{Abc^2d}{2}+\frac{Ab^2ce}{2}+\frac{Bb^2cd}{2}\right)+x^7\left(\frac{Ac^3d}{7}+\frac{3Abc^2e}{7}+\frac{3Bbc^2d}{7}+\frac{3Bb^2ce}{7}\right)+\frac{Ab^3dx^4}{4}+\frac{Bc^3ex^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x),x)
```

```
[Out] x^5*((A*b^3*e)/5 + (B*b^3*d)/5 + (3*A*b^2*c*d)/5) + x^8*((A*c^3*e)/8 + (B*c
^3*d)/8 + (3*B*b*c^2*e)/8) + x^6*((B*b^3*e)/6 + (A*b*c^2*d)/2 + (A*b^2*c*e)
```

```
/2 + (B*b^2*c*d)/2) + x^7*((A*c^3*d)/7 + (3*A*b*c^2*e)/7 + (3*B*b*c^2*d)/7
+ (3*B*b^2*c*e)/7) + (A*b^3*d*x^4)/4 + (B*c^3*e*x^9)/9
```

sympy [A] time = 0.09, size = 177, normalized size = 1.27

$$\frac{Ab^3dx^4}{4}+\frac{Bc^3ex^9}{9}+x^8\left(\frac{Ac^3e}{8}+\frac{3Bbc^2e}{8}+\frac{Bc^3d}{8}\right)+x^7\left(\frac{3Abc^2e}{7}+\frac{Ac^3d}{7}+\frac{3Bb^2ce}{7}+\frac{3Bbc^2d}{7}\right)+x^6\left(\frac{Ab^2ce}{2}+\frac{Abc^2d}{2}+\frac{Bb^3e}{6}+\frac{Bb^2cd}{2}\right)+x^5\left(\frac{Ab^3e}{5}+\frac{3Ab^2cd}{5}+\frac{Bb^3d}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d*x**4/4 + B*c**3*e*x**9/9 + x**8*(A*c**3*e/8 + 3*B*b*c**2*e/8 + B*c
**3*d/8) + x**7*(3*A*b*c**2*e/7 + A*c**3*d/7 + 3*B*b**2*c*e/7 + 3*B*b*c**2*
d/7) + x**6*(A*b**2*c*e/2 + A*b*c**2*d/2 + B*b**3*e/6 + B*b**2*c*d/2) + x**
5*(A*b**3*e/5 + 3*A*b**2*c*d/5 + B*b**3*d/5)
```

3.987 $\int (A+Bx) \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=75

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{4}Ab^3x^4+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3x^3+b^2(bB+3Ac)x^4+3bc(bB+Ac)x^5+c^2(3bB+Ac)x^6+Bc^3x^7\right)dx\\ &= \frac{1}{4}Ab^3x^4+\frac{1}{5}b^2(bB+3Ac)x^5+\frac{1}{2}bc(bB+Ac)x^6+\frac{1}{7}c^2(3bB+Ac)x^7+\frac{1}{8}Bc^3x^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^3, x]
```

fricas [A] time = 0.37, size = 77, normalized size = 1.03

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{3}{5}x^5cb^2A+\frac{1}{4}x^4b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*b*A + 1/5*x^5*b^3*B + 3/5*x^5*c*b^2*A + 1/4*x^4*b^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8 + \frac{3}{7}Bbc^2x^7 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bb^2cx^6 + \frac{1}{2}Abc^2x^6 + \frac{1}{5}Bb^3x^5 + \frac{3}{5}Ab^2cx^5 + \frac{1}{4}Ab^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*A*b
*c^2*x^6 + 1/5*B*b^3*x^5 + 3/5*A*b^2*c*x^5 + 1/4*A*b^3*x^4
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^8}{8} + \frac{A\,b^3x^4}{4} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^7}{7} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^6}{6} + \frac{\left(3A\,b^2c + b^3B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+3*B*b^2*c)*x^6+1/5*(
3*A*b^2*c+B*b^3)*x^5+1/4*A*b^3*x^4
```

maxima [A] time = 0.55, size = 73, normalized size = 0.97

$$\frac{1}{8}Bc^3x^8 + \frac{1}{4}Ab^3x^4 + \frac{1}{7}\left(3\,Bbc^2 + Ac^3\right)x^7 + \frac{1}{2}\left(Bb^2c + Abc^2\right)x^6 + \frac{1}{5}\left(Bb^3 + 3\,Ab^2c\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/4*A*b^3*x^4 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c
+ A*b*c^2)*x^6 + 1/5*(B*b^3 + 3*A*b^2*c)*x^5
```

mupad [B] time = 0.04, size = 69, normalized size = 0.92

$$x^5\left(\frac{B\,b^3}{5} + \frac{3\,A\,c\,b^2}{5}\right) + x^7\left(\frac{A\,c^3}{7} + \frac{3\,B\,b\,c^2}{7}\right) + \frac{A\,b^3\,x^4}{4} + \frac{B\,c^3\,x^8}{8} + \frac{b\,c\,x^6\,\left(A\,c + B\,b\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^5*((B*b^3)/5 + (3*A*b^2*c)/5) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + (A*b^3*
x^4)/4 + (B*c^3*x^8)/8 + (b*c*x^6*(A*c + B*b))/2
```

sympy [A] time = 0.08, size = 80, normalized size = 1.07

$$\frac{Ab^3x^4}{4} + \frac{Bc^3x^8}{8} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^6\left(\frac{Abc^2}{2} + \frac{Bb^2c}{2}\right) + x^5\left(\frac{3Ab^2c}{5} + \frac{Bb^3}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**4/4 + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*
c**2/2 + B*b**2*c/2) + x**5*(3*A*b**2*c/5 + B*b**3/5)
```

3.988 $\int \frac{(A+Bx)(bx+cx^2)^3}{d+ex}\,dx$

Optimal. Leaf size=257

$$-\frac{x^4\left(B(cd-be)^3-Ace\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{4e^4}-\frac{cx^5\left(Ace(cd-3be)-B\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{5e^3}-\frac{c^2x^6(-Ace-$$

Rubi [A] time = 0.45, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{cx^5\left(Ace(cd-3be)-B\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{5e^3}-\frac{x^4\left(B(cd-be)^3-Ace\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{4e^4}-\frac{c^2x^6(-Ace-3bBe+Bcd)}{6e^2}+\frac{d^2x(Bd-Ae)(cd-be)^3}{e^7}-\frac{d^3(Bd-Ae)(cd-be)^3\log(d+ex)}{e^8}+\frac{x^3(Bd-Ae)(cd-be)^3}{3e^5}-\frac{dx^2(Bd-Ae)(cd-be)^3}{2e^6}+\frac{Bc^3x^7}{7e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^3*x)/e^7 - (d*(B*d - A*e)*(c*d - b*e)^3*x^2)/(
2*e^6) + ((B*d - A*e)*(c*d - b*e)^3*x^3)/(3*e^5) - ((B*(c*d - b*e)^3 - A*c*
e*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^4)/(4*e^4) - (c*(A*c*e*(c*d - 3*b*e)
 - B*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^5)/(5*e^3) - (c^2*(B*c*d - 3*b*B*
e - A*c*e)*x^6)/(6*e^2) + (B*c^3*x^7)/(7*e) - (d^3*(B*d - A*e)*(c*d - b*e)^
3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{d+ex}\,dx=\int \left(\frac{d^2(Bd-Ae)(cd-be)^3}{e^7}-\frac{d(Bd-Ae)(cd-be)^3x}{e^6}+\frac{(-Bd+Ae)(-cd+be)^3x^2}{e^5}\right.$$

$$=\frac{d^2(Bd-Ae)(cd-be)^3x}{e^7}-\frac{d(Bd-Ae)(cd-be)^3x^2}{2e^6}+\frac{(Bd-Ae)(cd-be)^3x^3}{3e^5}-\frac{(B}{}$$

Mathematica [A] time = 0.10, size = 248, normalized size = 0.96

$$\frac{84ce^5x^5\left(Ace(3be-cd)+B\left(3b^2e^2-3bcde+c^2d^2\right)\right)+105e^4x^4\left(Ace\left(3b^2e^2-3bcde+c^2d^2\right)-B(cd-be)^3\right)+70c^2e^6x^6(Ace+3bBe-Bcd)-420d^3(Bd-Ae)(cd-be)^3\log(d+ex)+420d^2ex(Bd-Ae)(cd-be)^3+140e^3x^3(Ae-Bd)(be-cd)^3-210de^2x^2(Bd-Ae)(cd-be)^3+60Bc^3e^7x^7}{420e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (420*d^2*e*(B*d - A*e)*(c*d - b*e)^3*x - 210*d*e^2*(B*d - A*e)*(c*d - b*e)^
3*x^2 + 140*e^3*(-(B*d) + A*e)*(-(c*d) + b*e)^3*x^3 + 105*e^4*(-(B*(c*d - b
*e)^3) + A*c*e*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^4 + 84*c*e^5*(A*c*e*(-(
c*d) + 3*b*e) + B*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^5 + 70*c^2*e^6*(-(B*
c*d) + 3*b*B*e + A*c*e)*x^6 + 60*B*c^3*e^7*x^7 - 420*d^3*(B*d - A*e)*(c*d -
 b*e)^3*Log[d + e*x])/(420*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x), x]
```

fricas [B] time = 0.43, size = 531, normalized size = 2.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*B*c^3*e^7*x^7 - 70*(B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 +
84*(B*c^3*d^2*e^5 - (3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + A*b*c^2)*e^7)*
x^5 - 105*(B*c^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^2*e^5 + 3*(B*b^2*c + A*b*c
^2)*d*e^6 - (B*b^3 + 3*A*b^2*c)*e^7)*x^4 + 140*(B*c^3*d^4*e^3 + A*b^3*e^7 -
 (3*B*b*c^2 + A*c^3)*d^3*e^4 + 3*(B*b^2*c + A*b*c^2)*d^2*e^5 - (B*b^3 + 3*A
*b^2*c)*d*e^6)*x^3 - 210*(B*c^3*d^5*e^2 + A*b^3*d*e^6 - (3*B*b*c^2 + A*c^3)
*d^4*e^3 + 3*(B*b^2*c + A*b*c^2)*d^3*e^4 - (B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2
 + 420*(B*c^3*d^6*e + A*b^3*d^2*e^5 - (3*B*b*c^2 + A*c^3)*d^5*e^2 + 3*(B*b^
2*c + A*b*c^2)*d^4*e^3 - (B*b^3 + 3*A*b^2*c)*d^3*e^4)*x - 420*(B*c^3*d^7 +
A*b^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + A*b*c^2)*d^5*e^2 -
 (B*b^3 + 3*A*b^2*c)*d^4*e^3)*log(e*x + d))/e^8
```

giac [B] time = 0.18, size = 629, normalized size = 2.45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^3*d^7 - 3*B*b*c^2*d^6*e - A*c^3*d^6*e + 3*B*b^2*c*d^5*e^2 + 3*A*b*c^2
*d^5*e^2 - B*b^3*d^4*e^3 - 3*A*b^2*c*d^4*e^3 + A*b^3*d^3*e^4)*e^(-8)*log(ab
s(x*e + d)) + 1/420*(60*B*c^3*x^7*e^6 - 70*B*c^3*d*x^6*e^5 + 84*B*c^3*d^2*x
^5*e^4 - 105*B*c^3*d^3*x^4*e^3 + 140*B*c^3*d^4*x^3*e^2 - 210*B*c^3*d^5*x^2*
e + 420*B*c^3*d^6*x + 210*B*b*c^2*x^6*e^6 + 70*A*c^3*x^6*e^6 - 252*B*b*c^2*
d*x^5*e^5 - 84*A*c^3*d*x^5*e^5 + 315*B*b*c^2*d^2*x^4*e^4 + 105*A*c^3*d^2*x^
4*e^4 - 420*B*b*c^2*d^3*x^3*e^3 - 140*A*c^3*d^3*x^3*e^3 + 630*B*b*c^2*d^4*x
^2*e^2 + 210*A*c^3*d^4*x^2*e^2 - 1260*B*b*c^2*d^5*x*e - 420*A*c^3*d^5*x*e +
 252*B*b^2*c*x^5*e^6 + 252*A*b*c^2*x^5*e^6 - 315*B*b^2*c*d*x^4*e^5 - 315*A*
b*c^2*d*x^4*e^5 + 420*B*b^2*c*d^2*x^3*e^4 + 420*A*b*c^2*d^2*x^3*e^4 - 630*B
*b^2*c*d^3*x^2*e^3 - 630*A*b*c^2*d^3*x^2*e^3 + 1260*B*b^2*c*d^4*x*e^2 + 126
0*A*b*c^2*d^4*x*e^2 + 105*B*b^3*x^4*e^6 + 315*A*b^2*c*x^4*e^6 - 140*B*b^3*d
*x^3*e^5 - 420*A*b^2*c*d*x^3*e^5 + 210*B*b^3*d^2*x^2*e^4 + 630*A*b^2*c*d^2*
x^2*e^4 - 420*B*b^3*d^3*x*e^3 - 1260*A*b^2*c*d^3*x*e^3 + 140*A*b^3*x^3*e^6
- 210*A*b^3*d*x^2*e^5 + 420*A*b^3*d^2*x*e^4)*e^(-7)
```

maple [B] time = 0.06, size = 708, normalized size = 2.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x)
```

```
[Out] 3*d^4/e^5*ln(e*x+d)*A*b^2*c+1/4/e*B*x^4*b^3+1/6/e*A*x^6*c^3+1/3/e*A*x^3*b^3
-1/6/e^2*B*x^6*c^3*d+3/5/e*A*x^5*b*c^2-1/3/e^2*B*x^3*b^3*d-1/3/e^4*A*x^3*c^
3*d^3+1/5/e^3*B*x^5*c^3*d^2+3/4/e*A*x^4*b^2*c-1/4/e^4*B*x^4*c^3*d^3-1/5/e^2
*A*x^5*c^3*d+3/5/e*B*x^5*b^2*c-1/e^6*A*x*c^3*d^5+1/4/e^3*A*x^4*c^3*d^2+1/2/
e*B*x^6*b*c^2-1/e^4*B*x*b^3*d^3+1/e^3*A*x*b^3*d^2-1/2/e^6*B*x^2*c^3*d^5+1/e
```

```
^7*B*x*c^3*d^6+1/3/e^5*B*x^3*c^3*d^4+1/2/e^5*A*x^2*c^3*d^4-d^3/e^4*ln(e*x+d
)*A*b^3+d^6/e^7*ln(e*x+d)*A*c^3+d^4/e^5*ln(e*x+d)*B*b^3-d^7/e^8*ln(e*x+d)*B
*c^3+1/2/e^3*B*x^2*b^3*d^2-1/2/e^2*A*x^2*b^3*d+1/e^3*B*x^3*b^2*c*d^2-3*d^5/
e^6*ln(e*x+d)*A*b*c^2-3*d^5/e^6*ln(e*x+d)*B*b^2*c+3*d^6/e^7*ln(e*x+d)*B*b*c
^2-3/e^4*A*x*b^2*c*d^3+3/e^5*A*x*b*c^2*d^4-3/4/e^2*A*x^4*b*c^2*d-3/4/e^2*B*
x^4*b^2*c*d-3/5/e^2*B*x^5*b*c^2*d-3/e^6*B*x*b*c^2*d^5+3/e^5*B*x*b^2*c*d^4-1
/e^4*B*x^3*b*c^2*d^3-1/e^2*A*x^3*b^2*c*d+3/4/e^3*B*x^4*b*c^2*d^2-3/2/e^4*A*
x^2*b*c^2*d^3+3/2/e^3*A*x^2*b^2*c*d^2+3/2/e^5*B*x^2*b*c^2*d^4-3/2/e^4*B*x^2
*b^2*c*d^3+1/e^3*A*x^3*b*c^2*d^2+1/7*B*c^3*x^7/e
```

maxima [B] time = 0.55, size = 530, normalized size = 2.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*B*c^3*e^6*x^7 - 70*(B*c^3*d*e^5 - (3*B*b*c^2 + A*c^3)*e^6)*x^6 +
84*(B*c^3*d^2*e^4 - (3*B*b*c^2 + A*c^3)*d*e^5 + 3*(B*b^2*c + A*b*c^2)*e^6)*
x^5 - 105*(B*c^3*d^3*e^3 - (3*B*b*c^2 + A*c^3)*d^2*e^4 + 3*(B*b^2*c + A*b*c
^2)*d*e^5 - (B*b^3 + 3*A*b^2*c)*e^6)*x^4 + 140*(B*c^3*d^4*e^2 + A*b^3*e^6 -
 (3*B*b*c^2 + A*c^3)*d^3*e^3 + 3*(B*b^2*c + A*b*c^2)*d^2*e^4 - (B*b^3 + 3*A
*b^2*c)*d*e^5)*x^3 - 210*(B*c^3*d^5*e + A*b^3*d*e^5 - (3*B*b*c^2 + A*c^3)*d
^4*e^2 + 3*(B*b^2*c + A*b*c^2)*d^3*e^3 - (B*b^3 + 3*A*b^2*c)*d^2*e^4)*x^2 +
 420*(B*c^3*d^6 + A*b^3*d^2*e^4 - (3*B*b*c^2 + A*c^3)*d^5*e + 3*(B*b^2*c +
A*b*c^2)*d^4*e^2 - (B*b^3 + 3*A*b^2*c)*d^3*e^3)*x)/e^7 - (B*c^3*d^7 + A*b^3
*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + A*b*c^2)*d^5*e^2 - (B*b
^3 + 3*A*b^2*c)*d^4*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 1.39, size = 560, normalized size = 2.18

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x),x)
```

```
[Out] x^4*((B*b^3 + 3*A*b^2*c)/(4*e) + (d*((d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/
e^2))/e - (3*b*c*(A*c + B*b))/e))/(4*e)) - x^5*((d*((A*c^3 + 3*B*b*c^2)/e -
 (B*c^3*d)/e^2))/(5*e) - (3*b*c*(A*c + B*b))/(5*e)) + x^3*((A*b^3)/(3*e) -
(d*((B*b^3 + 3*A*b^2*c)/e + (d*((d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))
/e - (3*b*c*(A*c + B*b))/e))/e))/(3*e)) + x^6*((A*c^3 + 3*B*b*c^2)/(6*e) -
(B*c^3*d)/(6*e^2)) - (log(d + e*x)*(B*c^3*d^7 - A*c^3*d^6*e + A*b^3*d^3*e^4
 - B*b^3*d^4*e^3 + 3*A*b*c^2*d^5*e^2 - 3*A*b^2*c*d^4*e^3 + 3*B*b^2*c*d^5*e^
2 - 3*B*b*c^2*d^6*e))/e^8 - (d*x^2*((A*b^3)/e - (d*((B*b^3 + 3*A*b^2*c)/e +
 (d*((d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e - (3*b*c*(A*c + B*b))/e)
)/e))/e))/(2*e) + (d^2*x*((A*b^3)/e - (d*((B*b^3 + 3*A*b^2*c)/e + (d*((d*((
A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e - (3*b*c*(A*c + B*b))/e))/e))/e))/
e^2 + (B*c^3*x^7)/(7*e)
```

sympy [B] time = 1.01, size = 578, normalized size = 2.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d),x)
```

```
[Out] B*c**3*x**7/(7*e) + d**3*(-A*e + B*d)*(b*e - c*d)**3*log(d + e*x)/e**8 + x*
*6*(A*c**3/(6*e) + B*b*c**2/(2*e) - B*c**3*d/(6*e**2)) + x**5*(3*A*b*c**2/(
5*e) - A*c**3*d/(5*e**2) + 3*B*b**2*c/(5*e) - 3*B*b*c**2*d/(5*e**2) + B*c**
3*d**2/(5*e**3)) + x**4*(3*A*b**2*c/(4*e) - 3*A*b*c**2*d/(4*e**2) + A*c**3*
d**2/(4*e**3) + B*b**3/(4*e) - 3*B*b**2*c*d/(4*e**2) + 3*B*b*c**2*d**2/(4*e
**3) - B*c**3*d**3/(4*e**4)) + x**3*(A*b**3/(3*e) - A*b**2*c*d/e**2 + A*b*c
**2*d**2/e**3 - A*c**3*d**3/(3*e**4) - B*b**3*d/(3*e**2) + B*b**2*c*d**2/e*
*3 - B*b*c**2*d**3/e**4 + B*c**3*d**4/(3*e**5)) + x**2*(-A*b**3*d/(2*e**2)
+ 3*A*b**2*c*d**2/(2*e**3) - 3*A*b*c**2*d**3/(2*e**4) + A*c**3*d**4/(2*e**5
) + B*b**3*d**2/(2*e**3) - 3*B*b**2*c*d**3/(2*e**4) + 3*B*b*c**2*d**4/(2*e*
*5) - B*c**3*d**5/(2*e**6)) + x*(A*b**3*d**2/e**3 - 3*A*b**2*c*d**3/e**4 +
3*A*b*c**2*d**4/e**5 - A*c**3*d**5/e**6 - B*b**3*d**3/e**4 + 3*B*b**2*c*d**
4/e**5 - 3*B*b*c**2*d**5/e**6 + B*c**3*d**6/e**7)
```

3.989 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^2} dx$

Optimal. Leaf size=287

$$-\frac{c^2x^5(-Ace-3bBe+2Bcd)}{5e^3}+\frac{d^3(Bd-Ae)(cd-be)^3}{e^8(d+ex)}+\frac{d^2(cd-be)^2\log(d+ex)(Bd(7cd-4be)-3Ae(2cd-be)}{e^8}$$

Rubi [A] time = 0.55, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{c^2x^5(-Ace-3bBe+2Bcd)}{5e^3}+\frac{d^3(Bd-Ae)(cd-be)^3}{e^8(d+ex)}+\frac{d^2(cd-be)^2\log(d+ex)(Bd(7cd-4be)-3Ae(2cd-be))}{e^8}-\frac{cx^4\left(Ace(2cd-3be)-3B(cd-be)^2\right)}{4e^4}-\frac{x^3(cd-be)^2(-3Ace-bBe+4Bcd)}{3e^5}+\frac{x^2(cd-be)^2(Bd(5cd-2be)-Ae(4cd-be))}{2e^6}+\frac{dx(cd-be)^2(Ae(5cd-2be)-3Bd(2cd-be))}{e^7}+\frac{Bc^3x^6}{6e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (d*(c*d - b*e)^2*(A*e*(5*c*d - 2*b*e) - 3*B*d*(2*c*d - b*e))*x)/e^7 + ((c*d
 - b*e)^2*(B*d*(5*c*d - 2*b*e) - A*e*(4*c*d - b*e))*x^2)/(2*e^6) - ((c*d -
b*e)^2*(4*B*c*d - b*B*e - 3*A*c*e)*x^3)/(3*e^5) - (c*(A*c*e*(2*c*d - 3*b*e)
 - 3*B*(c*d - b*e)^2)*x^4)/(4*e^4) - (c^2*(2*B*c*d - 3*b*B*e - A*c*e)*x^5)/
(5*e^3) + (B*c^3*x^6)/(6*e^2) + (d^3*(B*d - A*e)*(c*d - b*e)^3)/(e^8*(d + e
*x)) + (d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2*c*d - b*e))*Log[d
 + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^2}\,dx = \int \left(\frac{d(cd-be)^2(Ae(5cd-2be)-3Bd(2cd-be))}{e^7}+\frac{(cd-be)^2(Bd(5cd-2be)-A}{e^6}\right.$$

$$= \frac{d(cd-be)^2(Ae(5cd-2be)-3Bd(2cd-be))x}{e^7}+\frac{(cd-be)^2(Bd(5cd-2be)-Ae(4}{2e^6}$$

Mathematica [A] time = 0.12, size = 274, normalized size = 0.95

$$\frac{12c^2e^5x^5(Ace+3bBe-2Bcd)+\frac{60d^3(Bd-Ae)(cd-be)^3}{d+ex}+60d^2(cd-be)^2\log(d+ex)(3Ae(be-2cd)+Bd(7cd-4be))-15ce^4x^4\left(Ace(2cd-3be)-3B(cd-be)^2\right)+20e^3x^3(cd-be)^2(3Ace+bBe-4Bcd)+30e^2x^2(cd-be)^2(Ae(be-4cd)+Bd(5cd-2be))-60dex(cd-be)^2(Ae(2be-5cd)+3Bd(2cd-be))+10Bc^3e^6x^6}{60e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (-60*d*e*(c*d - b*e)^2*(3*B*d*(2*c*d - b*e) + A*e*(-5*c*d + 2*b*e))*x + 30*
e^2*(c*d - b*e)^2*(B*d*(5*c*d - 2*b*e) + A*e*(-4*c*d + b*e))*x^2 + 20*e^3*(
c*d - b*e)^2*(-4*B*c*d + b*B*e + 3*A*c*e)*x^3 - 15*c*e^4*(A*c*e*(2*c*d - 3*
b*e) - 3*B*(c*d - b*e)^2)*x^4 + 12*c^2*e^5*(-2*B*c*d + 3*b*B*e + A*c*e)*x^5
 + 10*B*c^3*e^6*x^6 + (60*d^3*(B*d - A*e)*(c*d - b*e)^3)/(d + e*x) + 60*d^2
*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) + 3*A*e*(-2*c*d + b*e))*Log[d + e*x])/(
60*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^2, x]
```

fricas [B] time = 0.42, size = 722, normalized size = 2.52

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*e^7*x^7 + 60*B*c^3*d^7 + 60*A*b^3*d^3*e^4 - 60*(3*B*b*c^2 +
A*c^3)*d^6*e + 180*(B*b^2*c + A*b*c^2)*d^5*e^2 - 60*(B*b^3 + 3*A*b^2*c)*d^4
*e^3 - 2*(7*B*c^3*d*e^6 - 6*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B*c^3*d^2*e
^5 - 6*(3*B*b*c^2 + A*c^3)*d*e^6 + 15*(B*b^2*c + A*b*c^2)*e^7)*x^5 - 5*(7*B
*c^3*d^3*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*c + A*b*c^2)*d*e^6
 - 4*(B*b^3 + 3*A*b^2*c)*e^7)*x^4 + 10*(7*B*c^3*d^4*e^3 + 3*A*b^3*e^7 - 6*(
3*B*b*c^2 + A*c^3)*d^3*e^4 + 15*(B*b^2*c + A*b*c^2)*d^2*e^5 - 4*(B*b^3 + 3*
A*b^2*c)*d*e^6)*x^3 - 30*(7*B*c^3*d^5*e^2 + 3*A*b^3*d*e^6 - 6*(3*B*b*c^2 +
A*c^3)*d^4*e^3 + 15*(B*b^2*c + A*b*c^2)*d^3*e^4 - 4*(B*b^3 + 3*A*b^2*c)*d^2
*e^5)*x^2 - 60*(6*B*c^3*d^6*e + 2*A*b^3*d^2*e^5 - 5*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 12*(B*b^2*c + A*b*c^2)*d^4*e^3 - 3*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x +
60*(7*B*c^3*d^7 + 3*A*b^3*d^3*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^6*e + 15*(B*b^2
*c + A*b*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + (7*B*c^3*d^6*e + 3*
A*b^3*d^2*e^5 - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + A*b*c^2)*d^4*
e^3 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x)*log(e*x + d))/(e^9*x + d*e^8)
```

giac [B] time = 0.20, size = 673, normalized size = 2.34

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*B*c^3 - 12*(7*B*c^3*d*e - 3*B*b*c^2*e^2 - A*c^3*e^2)*e^(-1)/(x*e +
 d) + 45*(7*B*c^3*d^2*e^2 - 6*B*b*c^2*d*e^3 - 2*A*c^3*d*e^3 + B*b^2*c*e^4 +
 A*b*c^2*e^4)*e^(-2)/(x*e + d)^2 - 20*(35*B*c^3*d^3*e^3 - 45*B*b*c^2*d^2*e^
4 - 15*A*c^3*d^2*e^4 + 15*B*b^2*c*d*e^5 + 15*A*b*c^2*d*e^5 - B*b^3*e^6 - 3*
A*b^2*c*e^6)*e^(-3)/(x*e + d)^3 + 30*(35*B*c^3*d^4*e^4 - 60*B*b*c^2*d^3*e^5
 - 20*A*c^3*d^3*e^5 + 30*B*b^2*c*d^2*e^6 + 30*A*b*c^2*d^2*e^6 - 4*B*b^3*d*e
^7 - 12*A*b^2*c*d*e^7 + A*b^3*e^8)*e^(-4)/(x*e + d)^4 - 180*(7*B*c^3*d^5*e^
5 - 15*B*b*c^2*d^4*e^6 - 5*A*c^3*d^4*e^6 + 10*B*b^2*c*d^3*e^7 + 10*A*b*c^2*
d^3*e^7 - 2*B*b^3*d^2*e^8 - 6*A*b^2*c*d^2*e^8 + A*b^3*d*e^9)*e^(-5)/(x*e +
d)^5)*(x*e + d)^6*e^(-8) - (7*B*c^3*d^6 - 18*B*b*c^2*d^5*e - 6*A*c^3*d^5*e
+ 15*B*b^2*c*d^4*e^2 + 15*A*b*c^2*d^4*e^2 - 4*B*b^3*d^3*e^3 - 12*A*b^2*c*d^
3*e^3 + 3*A*b^3*d^2*e^4)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*c
^3*d^7*e^6/(x*e + d) - 3*B*b*c^2*d^6*e^7/(x*e + d) - A*c^3*d^6*e^7/(x*e + d
) + 3*B*b^2*c*d^5*e^8/(x*e + d) + 3*A*b*c^2*d^5*e^8/(x*e + d) - B*b^3*d^4*e
^9/(x*e + d) - 3*A*b^2*c*d^4*e^9/(x*e + d) + A*b^3*d^3*e^10/(x*e + d))*e^(-
14)
```

maple [B] time = 0.07, size = 742, normalized size = 2.59

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x)
```

```
[Out] -3*d^6/e^7/(e*x+d)*B*b*c^2-3/2/e^3*B*x^4*b*c^2*d-2/e^3*A*x^3*b*c^2*d-2/e^3*
B*x^3*b^2*c*d+3/e^4*B*x^3*b*c^2*d^2-12*d^3/e^5*ln(e*x+d)*A*b^2*c+3*d^5/e^6/
(e*x+d)*A*b*c^2+3*d^5/e^6/(e*x+d)*B*b^2*c-6/e^7*B*c^3*d^5*x+1/2/e^2*A*x^2*b
^3+1/3/e^2*B*x^3*b^3+1/5/e^2*A*x^5*c^3+1/e^4*A*x^3*c^3*d^2-2/e^3*A*b^3*d*x+
3/5/e^2*B*x^5*b*c^2-2/5/e^3*B*x^5*c^3*d+d^3/e^4/(e*x+d)*A*b^3-d^6/e^7/(e*x+
d)*A*c^3-d^4/e^5/(e*x+d)*B*b^3+d^7/e^8/(e*x+d)*B*c^3+3*d^2/e^4*ln(e*x+d)*A*
b^3-1/e^3*B*x^2*b^3*d+5/2/e^6*B*x^2*c^3*d^4+9/2/e^4*B*x^2*b^2*c*d^2-3*d^4/e
^5/(e*x+d)*A*b^2*c+15*d^4/e^6*ln(e*x+d)*A*b*c^2+15*d^4/e^6*ln(e*x+d)*B*b^2*
c-18*d^5/e^7*ln(e*x+d)*B*b*c^2-6*d^5/e^7*ln(e*x+d)*A*c^3-4*d^3/e^5*ln(e*x+d
)*B*b^3+7*d^6/e^8*ln(e*x+d)*B*c^3-2/e^5*A*x^2*c^3*d^3-12/e^5*A*b*c^2*d^3*x-
12/e^5*B*b^2*c*d^3*x+15/e^6*B*b*c^2*d^4*x-6/e^5*B*x^2*b*c^2*d^3+9/e^4*A*b^2
*c*d^2*x-3/e^3*A*x^2*b^2*c*d+9/2/e^4*A*x^2*b*c^2*d^2+3/4/e^2*B*x^4*b^2*c+3/
4/e^4*B*x^4*c^3*d^2-1/2/e^3*A*x^4*c^3*d+3/4/e^2*A*x^4*b*c^2+5/e^6*A*c^3*d^4
*x+3/e^4*B*b^3*d^2*x-4/3/e^5*B*x^3*c^3*d^3+1/e^2*A*x^3*b^2*c+1/6*B*c^3*x^6/
e^2
```

maxima [A] time = 0.53, size = 541, normalized size = 1.89

$$\frac{Bc^3d^7 + Ab^3d^3e^4 - \left(3Bbc^2 + Ac^3\right)d^6e + 3\left(Bb^2c + Abc^2\right)d^5e^2 - \left(Bb^3 + 3Ab^2c\right)d^4e^3}{e^9x + de^8} + \frac{10Bc^3e^5x^6 - 12\left(2Bc^3de^4 - \left(3Bbc^2 + Ac^3\right)e^5\right)x^5 + 15\left(3Bc^3d^2e^3 - 2\left(3Bbc^2 + Ac^3\right)de^4 + 3\left(Bb^2c + Abc^2\right)e^5\right)x^4 - 20\left(4Bc^3d^3e^2 - 3\left(3Bbc^2 + Ac^3\right)d^2e^3 + 6\left(Bb^2c + Abc^2\right)de^4 - \left(Bb^3 + 3Ab^2c\right)e^5\right)x^3 + 30\left(5Bc^3d^4e + Ab^3e^5 - 4\left(3Bbc^2 + Ac^3\right)d^3e^2 + 9\left(Bb^2c + Abc^2\right)d^2e^3 - 2\left(Bb^3 + 3Ab^2c\right)de^4\right)x^2 - 60\left(6Bc^3d^5 + 2Ab^3de^4 - 5\left(3Bbc^2 + Ac^3\right)d^4e + 12\left(Bb^2c + Abc^2\right)d^3e^2 - 3\left(Bb^3 + 3Ab^2c\right)d^2e^3\right)x}{60e^7} + \frac{\left(7Bc^3d^6 + 3Ab^3d^2e^4 - 6\left(3Bbc^2 + Ac^3\right)d^5e + 15\left(Bb^2c + Abc^2\right)d^4e^2 - 4\left(Bb^3 + 3Ab^2c\right)d^3e^3\right)\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^3*d^7 + A*b^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + A*b*c
^2)*d^5*e^2 - (B*b^3 + 3*A*b^2*c)*d^4*e^3)/(e^9*x + d*e^8) + 1/60*(10*B*c^3
*e^5*x^6 - 12*(2*B*c^3*d*e^4 - (3*B*b*c^2 + A*c^3)*e^5)*x^5 + 15*(3*B*c^3*d
^2*e^3 - 2*(3*B*b*c^2 + A*c^3)*d*e^4 + 3*(B*b^2*c + A*b*c^2)*e^5)*x^4 - 20*
(4*B*c^3*d^3*e^2 - 3*(3*B*b*c^2 + A*c^3)*d^2*e^3 + 6*(B*b^2*c + A*b*c^2)*d*
e^4 - (B*b^3 + 3*A*b^2*c)*e^5)*x^3 + 30*(5*B*c^3*d^4*e + A*b^3*e^5 - 4*(3*B
*b*c^2 + A*c^3)*d^3*e^2 + 9*(B*b^2*c + A*b*c^2)*d^2*e^3 - 2*(B*b^3 + 3*A*b^
2*c)*d*e^4)*x^2 - 60*(6*B*c^3*d^5 + 2*A*b^3*d*e^4 - 5*(3*B*b*c^2 + A*c^3)*d
^4*e + 12*(B*b^2*c + A*b*c^2)*d^3*e^2 - 3*(B*b^3 + 3*A*b^2*c)*d^2*e^3)*x)/e
^7 + (7*B*c^3*d^6 + 3*A*b^3*d^2*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^5*e + 15*(B*b
^2*c + A*b*c^2)*d^4*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 1.44, size = 997, normalized size = 3.47

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x^3*((B*b^3 + 3*A*b^2*c)/(3*e^2) + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2
*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*d^2)/e^4))/(3*e) - (d^
2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/(3*e^2)) + x^2*((A*b^3)/(2*e
^2) - (d*((B*b^3 + 3*A*b^2*c)/e^2 + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (
2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*(
(A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2))/e + (d^2*((2*d*((A*c^3 +
3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*d^2
)/e^4))/(2*e^2)) + x^5*((A*c^3 + 3*B*b*c^2)/(5*e^2) - (2*B*c^3*d)/(5*e^3))
- x*((2*d*((A*b^3)/e^2 - (2*d*((B*b^3 + 3*A*b^2*c)/e^2 + (2*d*((2*d*((A*c^3
 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*
d^2)/e^4))/e - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2))/e +
(d^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B
```

```
*b))/e^2 + (B*c^3*d^2)/e^4))/e^2))/e + (d^2*((B*b^3 + 3*A*b^2*c)/e^2 + (2*d
*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))
/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^
3))/e^2))/e^2) - x^4*((d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/(2*e)
 - (3*b*c*(A*c + B*b))/(4*e^2) + (B*c^3*d^2)/(4*e^4)) + (log(d + e*x)*(7*B*
c^3*d^6 - 6*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b^3*d^3*e^3 + 15*A*b*c^2*d^
4*e^2 - 12*A*b^2*c*d^3*e^3 + 15*B*b^2*c*d^4*e^2 - 18*B*b*c^2*d^5*e))/e^8 +
(B*c^3*d^7 - A*c^3*d^6*e + A*b^3*d^3*e^4 - B*b^3*d^4*e^3 + 3*A*b*c^2*d^5*e^
2 - 3*A*b^2*c*d^4*e^3 + 3*B*b^2*c*d^5*e^2 - 3*B*b*c^2*d^6*e)/(e*(d*e^7 + e^
8*x)) + (B*c^3*x^6)/(6*e^2)
```

sympy [B] time = 2.29, size = 619, normalized size = 2.16

$$\frac{Bc^3x^6}{6e^2} - \frac{d^2(be-cd)^2(-3Abe^2+6Acde+4Bbde-7Bcd^2)\log(d+ex)}{e^8} + x^5\left(\frac{Ac^3}{5e^2}+\frac{3Bbc^2}{5e^2}-\frac{2Bc^3d}{5e^3}\right) + x^4\left(\frac{3Abc^2}{4e^2}-\frac{Ac^3d}{2e^3}+\frac{3Bb^2c}{4e^2}-\frac{3Bbc^2d}{2e^3}+\frac{3Bc^3d^2}{4e^4}\right) + x^3\left(\frac{Ab^2c}{e^2}-\frac{2Abc^2d}{e^3}+\frac{Ac^3d^2}{e^4}+\frac{Bb^3}{3e^2}-\frac{2Bb^2cd}{e^3}+\frac{3Bbc^2d^2}{e^4}-\frac{4Bc^3d^3}{3e^5}\right) + x^2\left(\frac{Ab^3}{2e^2}-\frac{3Ab^2cd}{e^3}+\frac{9Abc^2d^2}{2e^4}-\frac{2Ac^3d^3}{e^5}-\frac{Bb^3d}{e^3}+\frac{9Bb^2cd^2}{2e^4}-\frac{6Bbc^2d^3}{e^5}+\frac{5Bc^3d^4}{2e^6}\right) + x\left(-\frac{2Ab^3d}{e^3}+\frac{9Ab^2cd^2}{e^4}-\frac{12Abc^2d^3}{e^5}+\frac{5Ac^3d^4}{e^6}+\frac{3Bb^3d^2}{e^4}-\frac{12Bb^2cd^3}{e^5}+\frac{15Bbc^2d^4}{e^6}-\frac{6Bc^3d^5}{e^7}\right) + \frac{Ab^3d^3e^4-3Ab^2cd^4e^3+3Abc^2d^5e^2-Ac^3d^6e-Bb^3d^4e^3+3Bb^2cd^5e^2-3Bbc^2d^6e+Bc^3d^7}{de^8+e^9x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d)**2,x)
```

```
[Out] B*c**3*x**6/(6*e**2) - d**2*(b*e - c*d)**2*(-3*A*b*e**2 + 6*A*c*d*e + 4*B*b
*d*e - 7*B*c*d**2)*log(d + e*x)/e**8 + x**5*(A*c**3/(5*e**2) + 3*B*b*c**2/(
5*e**2) - 2*B*c**3*d/(5*e**3)) + x**4*(3*A*b*c**2/(4*e**2) - A*c**3*d/(2*e*
*3) + 3*B*b**2*c/(4*e**2) - 3*B*b*c**2*d/(2*e**3) + 3*B*c**3*d**2/(4*e**4))
 + x**3*(A*b**2*c/e**2 - 2*A*b*c**2*d/e**3 + A*c**3*d**2/e**4 + B*b**3/(3*e
**2) - 2*B*b**2*c*d/e**3 + 3*B*b*c**2*d**2/e**4 - 4*B*c**3*d**3/(3*e**5)) +
 x**2*(A*b**3/(2*e**2) - 3*A*b**2*c*d/e**3 + 9*A*b*c**2*d**2/(2*e**4) - 2*A
*c**3*d**3/e**5 - B*b**3*d/e**3 + 9*B*b**2*c*d**2/(2*e**4) - 6*B*b*c**2*d**
3/e**5 + 5*B*c**3*d**4/(2*e**6)) + x*(-2*A*b**3*d/e**3 + 9*A*b**2*c*d**2/e*
*4 - 12*A*b*c**2*d**3/e**5 + 5*A*c**3*d**4/e**6 + 3*B*b**3*d**2/e**4 - 12*B
*b**2*c*d**3/e**5 + 15*B*b*c**2*d**4/e**6 - 6*B*c**3*d**5/e**7) + (A*b**3*d
**3*e**4 - 3*A*b**2*c*d**4*e**3 + 3*A*b*c**2*d**5*e**2 - A*c**3*d**6*e - B*
b**3*d**4*e**3 + 3*B*b**2*c*d**5*e**2 - 3*B*b*c**2*d**6*e + B*c**3*d**7)/(d
*e**8 + e**9*x)
```

3.990 $\int \frac{(A+Bx)(bx+cx^2)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=359

$$\frac{3d(cd-be)\log(d+ex)\left(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\right)}{e^8}-\frac{x(cd-be)\left(Ae\left(b^2e^2-8bcd\right.\right.}{}$$

Rubi [A] time = 0.58, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{x^2(cd-be)\left(3Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{2e^6}-\frac{x(cd-be)\left(Ae\left(b^2e^2-8bcde+10c^2d^2\right)-3Bd\left(b^2e^2-5bcde+5c^2d^2\right)\right)}{e^7}+\frac{3d(cd-be)\log(d+ex)\left(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\right)}{e^8}-\frac{c^2x^4(-Ace-3bBe+3Bcd)}{4e^4}-\frac{d^2(cd-be)^2(Bd(7cd-4be)-3Ae(2cd-be))}{e^8(d+ex)}+\frac{d^3(Bd-Ae)(cd-be)^3}{2e^8(d+ex)^2}+\frac{cx^3(cd-be)(-Ace-bBe+2Bcd)}{e^5}+\frac{Bc^3x^5}{5e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] -(((c*d - b*e)*(A*e*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - 3*B*d*(5*c^2*d^2 -
 5*b*c*d*e + b^2*e^2))*x)/e^7) + ((c*d - b*e)*(3*A*c*e*(2*c*d - b*e) - B*(1
0*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*x^2)/(2*e^6) + (c*(c*d - b*e)*(2*B*c*d -
b*B*e - A*c*e)*x^3)/e^5 - (c^2*(3*B*c*d - 3*b*B*e - A*c*e)*x^4)/(4*e^4) + (
B*c^3*x^5)/(5*e^3) + (d^3*(B*d - A*e)*(c*d - b*e)^3)/(2*e^8*(d + e*x)^2) -
(d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2*c*d - b*e)))/(e^8*(d + e
*x)) + (3*d*(c*d - b*e)*(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2) - B*d*(7*c^2
*d^2 - 8*b*c*d*e + 2*b^2*e^2))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^3}\,dx &= \int \left(\frac{(cd-be)\left(-Ae\left(10c^2d^2-8bcde+b^2e^2\right)+3Bd\left(5c^2d^2-5bcde+b^2e^2\right)\right)}{e^7}+\frac{(cd}{}\right.\\ &= -\frac{(cd-be)\left(Ae\left(10c^2d^2-8bcde+b^2e^2\right)-3Bd\left(5c^2d^2-5bcde+b^2e^2\right)\right)x}{e^7}+\frac{(cd-}{}\end{aligned}$$

Mathematica [A] time = 0.15, size = 342, normalized size = 0.95

$$\frac{10e^2x^2(be-cd)\left(3Ace(be-2cd)+B\left(b^2e^2-8bcde+10c^2d^2\right)\right)+20ex(be-cd)\left(Ae\left(b^2e^2-8bcde+10c^2d^2\right)-3Bd\left(b^2e^2-5bcde+5c^2d^2\right)\right)-60d(cd-be)\log(d+ex)\left(Bd\left(2b^2e^2-8bcde+7c^2d^2\right)-Ae\left(b^2e^2-5bcde+5c^2d^2\right)\right)+5c^2e^4x^4(Ace+3bBe-3Bcd)+\frac{10d^3(Bd-Ae)(cd-be)^3}{(d+ex)^2}-\frac{20d^2(cd-be)^2(3Ae(be-2cd)+Bd(7cd-4be))}{d+ex}-20ce^3x^3(cd-be)(Ace+bBe-2Bcd)+4Bc^3e^5x^5}{20e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (20*e*(-(c*d) + b*e)*(A*e*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - 3*B*d*(5*c^2
*d^2 - 5*b*c*d*e + b^2*e^2))*x + 10*e^2*(-(c*d) + b*e)*(3*A*c*e*(-2*c*d + b
*e) + B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*x^2 - 20*c*e^3*(c*d - b*e)*(-2*
B*c*d + b*B*e + A*c*e)*x^3 + 5*c^2*e^4*(-3*B*c*d + 3*b*B*e + A*c*e)*x^4 + 4
*B*c^3*e^5*x^5 + (10*d^3*(B*d - A*e)*(c*d - b*e)^3)/(d + e*x)^2 - (20*d^2*(
c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) + 3*A*e*(-2*c*d + b*e)))/(d + e*x) - 60*d
```

```
*(c*d - b*e)*(-(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2)) + B*d*(7*c^2*d^2 - 8
*b*c*d*e + 2*b^2*e^2))*Log[d + e*x])/(20*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^3, x]
```

fricas [B] time = 0.43, size = 819, normalized size = 2.28

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*e^7*x^7 - 130*B*c^3*d^7 - 50*A*b^3*d^3*e^4 + 110*(3*B*b*c^2 +
 A*c^3)*d^6*e - 270*(B*b^2*c + A*b*c^2)*d^5*e^2 + 70*(B*b^3 + 3*A*b^2*c)*d^
4*e^3 - (7*B*c^3*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 2*(7*B*c^3*d^2*e^
5 - 5*(3*B*b*c^2 + A*c^3)*d*e^6 + 10*(B*b^2*c + A*b*c^2)*e^7)*x^5 - 5*(7*B*
c^3*d^3*e^4 - 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 10*(B*b^2*c + A*b*c^2)*d*e^6
- 2*(B*b^3 + 3*A*b^2*c)*e^7)*x^4 + 20*(7*B*c^3*d^4*e^3 + A*b^3*e^7 - 5*(3*B
*b*c^2 + A*c^3)*d^3*e^4 + 10*(B*b^2*c + A*b*c^2)*d^2*e^5 - 2*(B*b^3 + 3*A*b
^2*c)*d*e^6)*x^3 + 10*(50*B*c^3*d^5*e^2 + 4*A*b^3*d*e^6 - 34*(3*B*b*c^2 + A
*c^3)*d^4*e^3 + 63*(B*b^2*c + A*b*c^2)*d^3*e^4 - 11*(B*b^3 + 3*A*b^2*c)*d^2
*e^5)*x^2 + 20*(8*B*c^3*d^6*e - 2*A*b^3*d^2*e^5 - 4*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 3*(B*b^2*c + A*b*c^2)*d^4*e^3 + (B*b^3 + 3*A*b^2*c)*d^3*e^4)*x - 60*
(7*B*c^3*d^7 + A*b^3*d^3*e^4 - 5*(3*B*b*c^2 + A*c^3)*d^6*e + 10*(B*b^2*c +
A*b*c^2)*d^5*e^2 - 2*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + (7*B*c^3*d^5*e^2 + A*b^3
*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 10*(B*b^2*c + A*b*c^2)*d^3*e^4 - 2
*(B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2 + 2*(7*B*c^3*d^6*e + A*b^3*d^2*e^5 - 5*(3
*B*b*c^2 + A*c^3)*d^5*e^2 + 10*(B*b^2*c + A*b*c^2)*d^4*e^3 - 2*(B*b^3 + 3*A
*b^2*c)*d^3*e^4)*x)*log(e*x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.19, size = 599, normalized size = 1.67

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(7*B*c^3*d^5 - 15*B*b*c^2*d^4*e - 5*A*c^3*d^4*e + 10*B*b^2*c*d^3*e^2 + 1
0*A*b*c^2*d^3*e^2 - 2*B*b^3*d^2*e^3 - 6*A*b^2*c*d^2*e^3 + A*b^3*d*e^4)*e^(-
8)*log(abs(x*e + d)) + 1/20*(4*B*c^3*x^5*e^12 - 15*B*c^3*d*x^4*e^11 + 40*B*
c^3*d^2*x^3*e^10 - 100*B*c^3*d^3*x^2*e^9 + 300*B*c^3*d^4*x*e^8 + 15*B*b*c^2
*x^4*e^12 + 5*A*c^3*x^4*e^12 - 60*B*b*c^2*d*x^3*e^11 - 20*A*c^3*d*x^3*e^11
+ 180*B*b*c^2*d^2*x^2*e^10 + 60*A*c^3*d^2*x^2*e^10 - 600*B*b*c^2*d^3*x*e^9
- 200*A*c^3*d^3*x*e^9 + 20*B*b^2*c*x^3*e^12 + 20*A*b*c^2*x^3*e^12 - 90*B*b^
2*c*d*x^2*e^11 - 90*A*b*c^2*d*x^2*e^11 + 360*B*b^2*c*d^2*x*e^10 + 360*A*b*c
^2*d^2*x*e^10 + 10*B*b^3*x^2*e^12 + 30*A*b^2*c*x^2*e^12 - 60*B*b^3*d*x*e^11
 - 180*A*b^2*c*d*x*e^11 + 20*A*b^3*x*e^12)*e^(-15) - 1/2*(13*B*c^3*d^7 - 33
*B*b*c^2*d^6*e - 11*A*c^3*d^6*e + 27*B*b^2*c*d^5*e^2 + 27*A*b*c^2*d^5*e^2 -
 7*B*b^3*d^4*e^3 - 21*A*b^2*c*d^4*e^3 + 5*A*b^3*d^3*e^4 + 2*(7*B*c^3*d^6*e
- 18*B*b*c^2*d^5*e^2 - 6*A*c^3*d^5*e^2 + 15*B*b^2*c*d^4*e^3 + 15*A*b*c^2*d^
```

```
4*e^3 - 4*B*b^3*d^3*e^4 - 12*A*b^2*c*d^3*e^4 + 3*A*b^3*d^2*e^5)*x)*e^(-8)/(
x*e + d)^2
```

maple [B] time = 0.10, size = 775, normalized size = 2.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x)
```

```
[Out] -30*d^3/e^6*ln(e*x+d)*B*b^2*c+45*d^4/e^7*ln(e*x+d)*B*b*c^2-3/e^4*B*x^3*b*c^
2*d-7*d^6/e^8/(e*x+d)*B*c^3+3/e^5*A*x^2*c^3*d^2-5/e^6*B*x^2*c^3*d^3-10/e^6*
A*c^3*d^3*x-3/e^4*B*b^3*d*x+15/e^7*B*c^3*d^4*x-3*d^2/e^4/(e*x+d)*A*b^3+6*d^
5/e^7/(e*x+d)*A*c^3+4*d^3/e^5/(e*x+d)*B*b^3+1/4/e^3*A*x^4*c^3+1/2/e^3*B*x^2
*b^3+1/e^3*A*b^3*x+6*d^2/e^5*ln(e*x+d)*B*b^3-21*d^5/e^8*ln(e*x+d)*B*c^3-1/e
^4*A*x^3*c^3*d+1/e^3*B*x^3*b^2*c+2/e^5*B*x^3*c^3*d^2+3/2/e^3*A*x^2*b^2*c-9/
2/e^4*A*x^2*b*c^2*d-9/2/e^4*B*x^2*b^2*c*d+9/e^5*B*x^2*b*c^2*d^2-9/e^4*A*b^2
*c*d*x+18/e^5*A*b*c^2*d^2*x+18/e^5*B*b^2*c*d^2*x-30/e^6*B*b*c^2*d^3*x+12*d^
3/e^5/(e*x+d)*A*b^2*c-15*d^4/e^6/(e*x+d)*A*b*c^2-15*d^4/e^6/(e*x+d)*B*b^2*c
+18*d^5/e^7/(e*x+d)*B*b*c^2-3/2*d^4/e^5/(e*x+d)^2*A*b^2*c+3/2*d^5/e^6/(e*x+
d)^2*A*b*c^2+3/2*d^5/e^6/(e*x+d)^2*B*b^2*c-3/2*d^6/e^7/(e*x+d)^2*B*b*c^2+18
*d^2/e^5*ln(e*x+d)*A*b^2*c-30*d^3/e^6*ln(e*x+d)*A*b*c^2-3*d/e^4*ln(e*x+d)*A
*b^3+15*d^4/e^7*ln(e*x+d)*A*c^3-1/2*d^4/e^5/(e*x+d)^2*B*b^3+1/2*d^7/e^8/(e*
x+d)^2*B*c^3+3/4/e^3*B*x^4*b*c^2-3/4/e^4*B*x^4*c^3*d+1/e^3*A*x^3*b*c^2+1/2*
d^3/e^4/(e*x+d)^2*A*b^3-1/2*d^6/e^7/(e*x+d)^2*A*c^3+1/5*B*c^3*x^5/e^3
```

maxima [A] time = 0.67, size = 550, normalized size = 1.53

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*B*c^3*d^7 + 5*A*b^3*d^3*e^4 - 11*(3*B*b*c^2 + A*c^3)*d^6*e + 27*(B
*b^2*c + A*b*c^2)*d^5*e^2 - 7*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + 2*(7*B*c^3*d^6*
e + 3*A*b^3*d^2*e^5 - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + A*b*c^2
)*d^4*e^3 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x)/(e^10*x^2 + 2*d*e^9*x + d^2*e
^8) + 1/20*(4*B*c^3*e^4*x^5 - 5*(3*B*c^3*d*e^3 - (3*B*b*c^2 + A*c^3)*e^4)*x
^4 + 20*(2*B*c^3*d^2*e^2 - (3*B*b*c^2 + A*c^3)*d*e^3 + (B*b^2*c + A*b*c^2)*
e^4)*x^3 - 10*(10*B*c^3*d^3*e - 6*(3*B*b*c^2 + A*c^3)*d^2*e^2 + 9*(B*b^2*c
+ A*b*c^2)*d*e^3 - (B*b^3 + 3*A*b^2*c)*e^4)*x^2 + 20*(15*B*c^3*d^4 + A*b^3*
e^4 - 10*(3*B*b*c^2 + A*c^3)*d^3*e + 18*(B*b^2*c + A*b*c^2)*d^2*e^2 - 3*(B*
b^3 + 3*A*b^2*c)*d*e^3)*x)/e^7 - 3*(7*B*c^3*d^5 + A*b^3*d*e^4 - 5*(3*B*b*c^
2 + A*c^3)*d^4*e + 10*(B*b^2*c + A*b*c^2)*d^3*e^2 - 2*(B*b^3 + 3*A*b^2*c)*d
^2*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 0.19, size = 828, normalized size = 2.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x*((A*b^3)/e^3 - (3*d*((B*b^3 + 3*A*b^2*c)/e^3 + (3*d*((3*d*((A*c^3 + 3*B*b
*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*b*c*(A*c + B*b))/e^3 + (3*B*c^3*d^2)/e
^5))/e - (3*d^2*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^2 - (B*c^3*d
^3)/e^6))/e - (d^3*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^3 + (3*d^
2*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*b*c*(A*c + B*b)
)/e^3 + (3*B*c^3*d^2)/e^5))/e^2) + x^4*((A*c^3 + 3*B*b*c^2)/(4*e^3) - (3*B*
```

```
c^3*d)/(4*e^4)) - (x*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b
^3*d^3*e^3 + 15*A*b*c^2*d^4*e^2 - 12*A*b^2*c*d^3*e^3 + 15*B*b^2*c*d^4*e^2 -
 18*B*b*c^2*d^5*e) + (13*B*c^3*d^7 - 11*A*c^3*d^6*e + 5*A*b^3*d^3*e^4 - 7*B
*b^3*d^4*e^3 + 27*A*b*c^2*d^5*e^2 - 21*A*b^2*c*d^4*e^3 + 27*B*b^2*c*d^5*e^2
 - 33*B*b*c^2*d^6*e)/(2*e))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) + x^2*((B*b^3 +
 3*A*b^2*c)/(2*e^3) + (3*d*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4
))/e - (3*b*c*(A*c + B*b))/e^3 + (3*B*c^3*d^2)/e^5))/(2*e) - (3*d^2*((A*c^3
 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/(2*e^2) - (B*c^3*d^3)/(2*e^6)) - x^3*
((d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (b*c*(A*c + B*b))/e^3
+ (B*c^3*d^2)/e^5) - (log(d + e*x)*(21*B*c^3*d^5 + 3*A*b^3*d*e^4 - 15*A*c^3
*d^4*e - 6*B*b^3*d^2*e^3 + 30*A*b*c^2*d^3*e^2 - 18*A*b^2*c*d^2*e^3 + 30*B*b
^2*c*d^3*e^2 - 45*B*b*c^2*d^4*e))/e^8 + (B*c^3*x^5)/(5*e^3)
```

sympy [A] time = 7.27, size = 660, normalized size = 1.84

$$\frac{Bc^3x^5}{5e^3} + \frac{3d\,(be-cd)\left(-Ab^2e^3+5Abcde^2-5Ac^2d^2e+2Bb^2de^2-8Bbcd^2e+7Bc^2d^3\right)\log(d+ex)}{e^8} + x^4\left(\frac{Ac^3}{4e^3}+\frac{3Bbc^2}{4e^3}-\frac{3Bc^3d}{4e^4}\right) + x^3\left(\frac{Abc^2}{e^3}-\frac{Ac^3d}{e^4}+\frac{Bb^2c}{e^3}-\frac{3Bbc^2d}{e^4}+\frac{2Bc^3d^2}{e^5}\right) + x^2\left(\frac{3Ab^2c}{2e^3}-\frac{9Abc^2d}{2e^4}+\frac{3Ac^3d^2}{e^5}+\frac{Bb^3}{2e^3}-\frac{9Bb^2cd}{2e^4}+\frac{9Bbc^2d^2}{e^5}-\frac{5Bc^3d^3}{e^6}\right) + x\left(\frac{Ab^3}{e^3}-\frac{9Ab^2cd}{e^4}+\frac{18Abc^2d^2}{e^5}-\frac{10Ac^3d^3}{e^6}-\frac{3Bb^3d}{e^4}+\frac{18Bb^2cd^2}{e^5}-\frac{30Bbc^2d^3}{e^6}+\frac{15Bc^3d^4}{e^7}\right) + \frac{-5Ab^3d^3e^4+21Ab^2cd^4e^3-27Abc^2d^5e^2+11Ac^3d^6e+7Bb^3d^4e^3-27Bb^2cd^5e^2+33Bbc^2d^6e-13Bc^3d^7+x\left(-6Ab^3d^2e^5+24Ab^2cd^3e^4-30Abc^2d^4e^3+12Ac^3d^5e^2+8Bb^3d^3e^4-30Bb^2cd^4e^3+36Bbc^2d^5e^2-14Bc^3d^6e\right)}{2d^2e^8+4de^9x+2e^{10}x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d)**3,x)
```

```
[Out] B*c**3*x**5/(5*e**3) + 3*d*(b*e - c*d)*(-A*b**2*e**3 + 5*A*b*c*d*e**2 - 5*A
*c**2*d**2*e + 2*B*b**2*d*e**2 - 8*B*b*c*d**2*e + 7*B*c**2*d**3)*log(d + e*
x)/e**8 + x**4*(A*c**3/(4*e**3) + 3*B*b*c**2/(4*e**3) - 3*B*c**3*d/(4*e**4)
) + x**3*(A*b*c**2/e**3 - A*c**3*d/e**4 + B*b**2*c/e**3 - 3*B*b*c**2*d/e**4
 + 2*B*c**3*d**2/e**5) + x**2*(3*A*b**2*c/(2*e**3) - 9*A*b*c**2*d/(2*e**4)
+ 3*A*c**3*d**2/e**5 + B*b**3/(2*e**3) - 9*B*b**2*c*d/(2*e**4) + 9*B*b*c**2
*d**2/e**5 - 5*B*c**3*d**3/e**6) + x*(A*b**3/e**3 - 9*A*b**2*c*d/e**4 + 18*
A*b*c**2*d**2/e**5 - 10*A*c**3*d**3/e**6 - 3*B*b**3*d/e**4 + 18*B*b**2*c*d*
*2/e**5 - 30*B*b*c**2*d**3/e**6 + 15*B*c**3*d**4/e**7) + (-5*A*b**3*d**3*e*
*4 + 21*A*b**2*c*d**4*e**3 - 27*A*b*c**2*d**5*e**2 + 11*A*c**3*d**6*e + 7*B
*b**3*d**4*e**3 - 27*B*b**2*c*d**5*e**2 + 33*B*b*c**2*d**6*e - 13*B*c**3*d*
*7 + x*(-6*A*b**3*d**2*e**5 + 24*A*b**2*c*d**3*e**4 - 30*A*b*c**2*d**4*e**3
 + 12*A*c**3*d**5*e**2 + 8*B*b**3*d**3*e**4 - 30*B*b**2*c*d**4*e**3 + 36*B*
b*c**2*d**5*e**2 - 14*B*c**3*d**6*e))/(2*d**2*e**8 + 4*d*e**9*x + 2*e**10*x
**2)
```

3.991 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=422

$$-\frac{3d(cd-be)\left(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\right)}{e^8(d+ex)}-\frac{cx^2\left(Ace(4cd-3be)-B\left(3b^2e^2-12b\right.\right.}{2e^6}$$

Rubi [A] time = 0.64, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{cx^2\left(Ace(4cd-3be)-B\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{2e^6}+\frac{x\left(Ace\left(3b^2e^2-12bcde+10c^2d^2\right)-B\left(12b^2cde^2-b^3e^3-30bc^2d^2e+20c^3d^3\right)\right)}{e^7}-\frac{3d(cd-be)\left(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\right)}{e^8(d+ex)}+\frac{\log(d+ex)\left(Bd\left(30b^2cde^2-4b^3e^3-60bc^2d^2e+35c^3d^3\right)-Ae\left(12b^2cde^2-b^3e^3-30bc^2d^2e+20c^3d^3\right)\right)}{e^8}-\frac{c^2x^3(-Ace-3bBe+4Bcd)}{3e^5}-\frac{d^2(cd-be)^2(Bd(7cd-4be)-3Ae(2cd-be))}{2e^8(d+ex)^2}+\frac{d^3(Bd-Ae)(cd-be)^3}{3e^8(d+ex)^3}+\frac{Bc^3x^4}{4e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] ((A*c*e*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2) - B*(20*c^3*d^3 - 30*b*c^2*d^
2*e + 12*b^2*c*d*e^2 - b^3*e^3))*x)/e^7 - (c*(A*c*e*(4*c*d - 3*b*e) - B*(10
*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))*x^2)/(2*e^6) - (c^2*(4*B*c*d - 3*b*B*e
- A*c*e)*x^3)/(3*e^5) + (B*c^3*x^4)/(4*e^4) + (d^3*(B*d - A*e)*(c*d - b*e)^
3)/(3*e^8*(d + e*x)^3) - (d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2
*c*d - b*e)))/(2*e^8*(d + e*x)^2) - (3*d*(c*d - b*e)*(A*e*(5*c^2*d^2 - 5*b*
c*d*e + b^2*e^2) - B*d*(7*c^2*d^2 - 8*b*c*d*e + 2*b^2*e^2)))/(e^8*(d + e*x)
) + ((B*d*(35*c^3*d^3 - 60*b*c^2*d^2*e + 30*b^2*c*d*e^2 - 4*b^3*e^3) - A*e*
(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*b^2*c*d*e^2 - b^3*e^3))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^4}\,dx=\int \left(\frac{Ace\left(10c^2d^2-12bcde+3b^2e^2\right)-B\left(20c^3d^3-30bc^2d^2e+12b^2cde^2-b^3e^3\right)}{e^7}+\right.$$
$$=\frac{\left(Ace\left(10c^2d^2-12bcde+3b^2e^2\right)-B\left(20c^3d^3-30bc^2d^2e+12b^2cde^2-b^3e^3\right)\right)x}{e^7}-$$

Mathematica [A] time = 0.16, size = 400, normalized size = 0.95

$$\frac{-6ce^2x^2\left(Ace(4cd-3be)+B\left(-3b^2e^2+12bcde-10c^2d^2\right)\right)+\frac{36d(cd-be)\left(Bd\left(2b^2e^2-8bcde+7c^2d^2\right)-Ae\left(b^2e^2-5bcde+5c^2d^2\right)\right)}{d+ex}+12ex\left(Ace\left(3b^2e^2-12bcde+10c^2d^2\right)+B\left(b^3e^3-12b^2cde^2+30bc^2d^2e-20c^3d^3\right)\right)+12\log(d+ex)\left(Ae\left(b^3e^3-12b^2cde^2+30bc^2d^2e-20c^3d^3\right)+Bd\left(-4b^3e^3+30b^2cde^2-60bc^2d^2e+35c^3d^3\right)\right)+4c^2e^3x^3(Ace+3bBe-4Bcd)+\frac{4d^3(Bd-Ae)(cd-be)^3}{(d+ex)^3}-\frac{6d^2(cd-be)^2(3Ae(be-2cd)+Bd(7cd-4be))}{(d+ex)^2}+3Bc^3e^4x^4}{12e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (12*e*(A*c*e*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2) + B*(-20*c^3*d^3 + 30*b*
c^2*d^2*e - 12*b^2*c*d*e^2 + b^3*e^3))*x - 6*c*e^2*(A*c*e*(4*c*d - 3*b*e) +
 B*(-10*c^2*d^2 + 12*b*c*d*e - 3*b^2*e^2))*x^2 + 4*c^2*e^3*(-4*B*c*d + 3*b*
B*e + A*c*e)*x^3 + 3*B*c^3*e^4*x^4 + (4*d^3*(B*d - A*e)*(c*d - b*e)^3)/(d +
 e*x)^3 - (6*d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) + 3*A*e*(-2*c*d + b*e))
)/(d + e*x)^2 + (36*d*(c*d - b*e)*(-(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2))
```

```
 + B*d*(7*c^2*d^2 - 8*b*c*d*e + 2*b^2*e^2)))/(d + e*x) + 12*(B*d*(35*c^3*d^
3 - 60*b*c^2*d^2*e + 30*b^2*c*d*e^2 - 4*b^3*e^3) + A*e*(-20*c^3*d^3 + 30*b*
c^2*d^2*e - 12*b^2*c*d*e^2 + b^3*e^3))*Log[d + e*x])/(12*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^4, x]
```

fricas [B] time = 0.41, size = 910, normalized size = 2.16

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*e^7*x^7 + 214*B*c^3*d^7 + 22*A*b^3*d^3*e^4 - 148*(3*B*b*c^2 +
 A*c^3)*d^6*e + 282*(B*b^2*c + A*b*c^2)*d^5*e^2 - 52*(B*b^3 + 3*A*b^2*c)*d^
4*e^3 - (7*B*c^3*d*e^6 - 4*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B*c^3*d^2*e^
5 - 4*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + A*b*c^2)*e^7)*x^5 - 3*(35*B*
c^3*d^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 30*(B*b^2*c + A*b*c^2)*d*e^6
 - 4*(B*b^3 + 3*A*b^2*c)*e^7)*x^4 - 2*(278*B*c^3*d^4*e^3 - 146*(3*B*b*c^2 +
 A*c^3)*d^3*e^4 + 189*(B*b^2*c + A*b*c^2)*d^2*e^5 - 18*(B*b^3 + 3*A*b^2*c)*
d*e^6)*x^3 - 6*(68*B*c^3*d^5*e^2 - 6*A*b^3*d*e^6 - 26*(3*B*b*c^2 + A*c^3)*d
^4*e^3 + 9*(B*b^2*c + A*b*c^2)*d^3*e^4 + 6*(B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2
 + 6*(37*B*c^3*d^6*e + 9*A*b^3*d^2*e^5 - 34*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 8
1*(B*b^2*c + A*b*c^2)*d^4*e^3 - 18*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x + 12*(35*
B*c^3*d^7 + A*b^3*d^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^6*e + 30*(B*b^2*c + A*
b*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + (35*B*c^3*d^4*e^3 + A*b^3*
e^7 - 20*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + A*b*c^2)*d^2*e^5 - 4*(
B*b^3 + 3*A*b^2*c)*d*e^6)*x^3 + 3*(35*B*c^3*d^5*e^2 + A*b^3*d*e^6 - 20*(3*B
*b*c^2 + A*c^3)*d^4*e^3 + 30*(B*b^2*c + A*b*c^2)*d^3*e^4 - 4*(B*b^3 + 3*A*b
^2*c)*d^2*e^5)*x^2 + 3*(35*B*c^3*d^6*e + A*b^3*d^2*e^5 - 20*(3*B*b*c^2 + A*
c^3)*d^5*e^2 + 30*(B*b^2*c + A*b*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e
^4)*x)*log(e*x + d))/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [A] time = 0.16, size = 581, normalized size = 1.38

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (35*B*c^3*d^4 - 60*B*b*c^2*d^3*e - 20*A*c^3*d^3*e + 30*B*b^2*c*d^2*e^2 + 30
*A*b*c^2*d^2*e^2 - 4*B*b^3*d*e^3 - 12*A*b^2*c*d*e^3 + A*b^3*e^4)*e^(-8)*log
(abs(x*e + d)) + 1/12*(3*B*c^3*x^4*e^12 - 16*B*c^3*d*x^3*e^11 + 60*B*c^3*d^
2*x^2*e^10 - 240*B*c^3*d^3*x*e^9 + 12*B*b*c^2*x^3*e^12 + 4*A*c^3*x^3*e^12 -
 72*B*b*c^2*d*x^2*e^11 - 24*A*c^3*d*x^2*e^11 + 360*B*b*c^2*d^2*x*e^10 + 120
*A*c^3*d^2*x*e^10 + 18*B*b^2*c*x^2*e^12 + 18*A*b*c^2*x^2*e^12 - 144*B*b^2*c
*d*x*e^11 - 144*A*b*c^2*d*x*e^11 + 12*B*b^3*x*e^12 + 36*A*b^2*c*x*e^12)*e^(
-16) + 1/6*(107*B*c^3*d^7 - 222*B*b*c^2*d^6*e - 74*A*c^3*d^6*e + 141*B*b^2*
c*d^5*e^2 + 141*A*b*c^2*d^5*e^2 - 26*B*b^3*d^4*e^3 - 78*A*b^2*c*d^4*e^3 + 1
1*A*b^3*d^3*e^4 + 18*(7*B*c^3*d^5*e^2 - 15*B*b*c^2*d^4*e^3 - 5*A*c^3*d^4*e^
3 + 10*B*b^2*c*d^3*e^4 + 10*A*b*c^2*d^3*e^4 - 2*B*b^3*d^2*e^5 - 6*A*b^2*c*d
```

```
^2*e^5 + A*b^3*d*e^6)*x^2 + 3*(77*B*c^3*d^6*e - 162*B*b*c^2*d^5*e^2 - 54*A*
c^3*d^5*e^2 + 105*B*b^2*c*d^4*e^3 + 105*A*b*c^2*d^4*e^3 - 20*B*b^3*d^3*e^4
- 60*A*b^2*c*d^3*e^4 + 9*A*b^3*d^2*e^5)*x)*e^(-8)/(x*e + d)^3
```

maple [A] time = 0.07, size = 807, normalized size = 1.91

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x)
```

```
[Out] 1/e^4*B*x^3*b*c^2-4/3/e^5*B*x^3*c^3*d+1/3/e^4*A*x^3*c^3+1/e^4*B*b^3*x+1/e^4
*ln(e*x+d)*A*b^3-6/e^5*B*x^2*b*c^2*d-12/e^5*A*b*c^2*d*x-12/e^5*B*b^2*c*d*x+
30/e^6*B*b*c^2*d^2*x-18*d^2/e^5/(e*x+d)*A*b^2*c+30*d^3/e^6/(e*x+d)*A*b*c^2+
30*d^3/e^6/(e*x+d)*B*b^2*c-45*d^4/e^7/(e*x+d)*B*b*c^2+6*d^3/e^5/(e*x+d)^2*A
*b^2*c-15/2*d^4/e^6/(e*x+d)^2*A*b*c^2-15/2*d^4/e^6/(e*x+d)^2*B*b^2*c+9*d^5/
e^7/(e*x+d)^2*B*b*c^2-d^4/e^5/(e*x+d)^3*A*b^2*c+d^5/e^6/(e*x+d)^3*A*b*c^2+d
^5/e^6/(e*x+d)^3*B*b^2*c-d^6/e^7/(e*x+d)^3*B*b*c^2-12/e^5*ln(e*x+d)*A*b^2*c
*d+30/e^6*ln(e*x+d)*A*b*c^2*d^2+30/e^6*ln(e*x+d)*B*b^2*c*d^2+1/3*d^3/e^4/(e
*x+d)^3*A*b^3-60/e^7*ln(e*x+d)*B*b*c^2*d^3+5/e^6*B*x^2*c^3*d^2+3/e^4*A*b^2*
c*x+10/e^6*A*c^3*d^2*x-20/e^7*B*c^3*d^3*x+3*d/e^4/(e*x+d)*A*b^3-15*d^4/e^7/
(e*x+d)*A*c^3-6*d^2/e^5/(e*x+d)*B*b^3+21*d^5/e^8/(e*x+d)*B*c^3-3/2*d^2/e^4/
(e*x+d)^2*A*b^3+3*d^5/e^7/(e*x+d)^2*A*c^3+3/2/e^4*A*x^2*b*c^2-2/e^5*A*x^2*c
^3*d+3/2/e^4*B*x^2*b^2*c+2*d^3/e^5/(e*x+d)^2*B*b^3-7/2*d^6/e^8/(e*x+d)^2*B*
c^3-1/3*d^6/e^7/(e*x+d)^3*A*c^3-1/3*d^4/e^5/(e*x+d)^3*B*b^3+1/3*d^7/e^8/(e*
x+d)^3*B*c^3-20/e^7*ln(e*x+d)*A*c^3*d^3-4/e^5*ln(e*x+d)*B*b^3*d+35/e^8*ln(e
*x+d)*B*c^3*d^4+1/4*B*c^3*x^4/e^4
```

maxima [A] time = 0.57, size = 561, normalized size = 1.33

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*B*c^3*d^7 + 11*A*b^3*d^3*e^4 - 74*(3*B*b*c^2 + A*c^3)*d^6*e + 141*
(B*b^2*c + A*b*c^2)*d^5*e^2 - 26*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + 18*(7*B*c^3*
d^5*e^2 + A*b^3*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 10*(B*b^2*c + A*b*c
^2)*d^3*e^4 - 2*(B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2 + 3*(77*B*c^3*d^6*e + 9*A*
b^3*d^2*e^5 - 54*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 105*(B*b^2*c + A*b*c^2)*d^4*
e^3 - 20*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e
^9*x + d^3*e^8) + 1/12*(3*B*c^3*e^3*x^4 - 4*(4*B*c^3*d*e^2 - (3*B*b*c^2 + A
*c^3)*e^3)*x^3 + 6*(10*B*c^3*d^2*e - 4*(3*B*b*c^2 + A*c^3)*d*e^2 + 3*(B*b^2
*c + A*b*c^2)*e^3)*x^2 - 12*(20*B*c^3*d^3 - 10*(3*B*b*c^2 + A*c^3)*d^2*e +
12*(B*b^2*c + A*b*c^2)*d*e^2 - (B*b^3 + 3*A*b^2*c)*e^3)*x)/e^7 + (35*B*c^3*
d^4 + A*b^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^3*e + 30*(B*b^2*c + A*b*c^2)*d^2
*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 0.20, size = 676, normalized size = 1.60

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] (x*((77*B*c^3*d^6)/2 - 27*A*c^3*d^5*e + (9*A*b^3*d^2*e^4)/2 - 10*B*b^3*d^3*
e^3 + (105*A*b*c^2*d^4*e^2)/2 - 30*A*b^2*c*d^3*e^3 + (105*B*b^2*c*d^4*e^2)/
2 - 81*B*b*c^2*d^5*e) + x^2*(3*A*b^3*d*e^5 + 21*B*c^3*d^5*e - 15*A*c^3*d^4*
e^2 - 6*B*b^3*d^2*e^4 + 30*A*b*c^2*d^3*e^3 - 18*A*b^2*c*d^2*e^4 - 45*B*b*c^
```

```
2*d^4*e^2 + 30*B*b^2*c*d^3*e^3) + (107*B*c^3*d^7 - 74*A*c^3*d^6*e + 11*A*b^
3*d^3*e^4 - 26*B*b^3*d^4*e^3 + 141*A*b*c^2*d^5*e^2 - 78*A*b^2*c*d^4*e^3 + 1
41*B*b^2*c*d^5*e^2 - 222*B*b*c^2*d^6*e)/(6*e))/(d^3*e^7 + e^10*x^3 + 3*d^2*
e^8*x + 3*d*e^9*x^2) + x*((B*b^3 + 3*A*b^2*c)/e^4 + (4*d*((4*d*((A*c^3 + 3*
B*b*c^2)/e^4 - (4*B*c^3*d)/e^5))/e - (3*b*c*(A*c + B*b))/e^4 + (6*B*c^3*d^2
)/e^6))/e - (6*d^2*((A*c^3 + 3*B*b*c^2)/e^4 - (4*B*c^3*d)/e^5))/e^2 - (4*B*
c^3*d^3)/e^7) + x^3*((A*c^3 + 3*B*b*c^2)/(3*e^4) - (4*B*c^3*d)/(3*e^5)) - x
^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^4 - (4*B*c^3*d)/e^5))/e - (3*b*c*(A*c + B*b
))/(2*e^4) + (3*B*c^3*d^2)/e^6) + (log(d + e*x)*(A*b^3*e^4 + 35*B*c^3*d^4 -
 20*A*c^3*d^3*e - 4*B*b^3*d*e^3 + 30*A*b*c^2*d^2*e^2 + 30*B*b^2*c*d^2*e^2 -
 12*A*b^2*c*d*e^3 - 60*B*b*c^2*d^3*e))/e^8 + (B*c^3*x^4)/(4*e^4)
```

sympy [A] time = 23.06, size = 700, normalized size = 1.66

$$\frac{Bc^3x^4}{4e^4}+x^3\left(\frac{Ac^3}{3e^4}+\frac{Bbc^2}{e^4}-\frac{4Bc^3d}{3e^5}\right)+x^2\left(\frac{3Abc^2}{2e^4}-\frac{2Ac^3d}{e^5}+\frac{3Bb^2c}{2e^4}-\frac{6Bbc^2d}{e^5}+\frac{5Bc^3d^2}{e^6}\right)+x\left(\frac{3Ab^2c}{e^4}-\frac{12Abc^2d}{e^5}+\frac{10Ac^3d^2}{e^6}+\frac{Bb^3}{e^4}-\frac{12Bb^2cd}{e^5}+\frac{30Bbc^2d^2}{e^6}-\frac{20Bc^3d^3}{e^7}\right)+\frac{11Ab^3d^3e^4-78Ab^2cd^4e^3+141Abc^2d^5e^2-74Ac^3d^6e-26Bb^3d^4e^3+141Bb^2cd^5e^2-222Bbc^2d^6e+107Bc^3d^7+x^2\left(18Ab^3de^6-108Ab^2cd^2e^5+180Abc^2d^3e^4-90Ac^3d^4e^3-36Bb^3d^2e^5+180Bb^2cd^3e^4-270Bbc^2d^4e^3+126Bc^3d^5e^2\right)+x\left(27Ab^3d^2e^5-180Ab^2cd^3e^4+315Abc^2d^4e^3-162Ac^3d^5e^2-60Bb^3d^3e^4+315Bb^2cd^4e^3-486Bbc^2d^5e^2+231Bc^3d^6e\right)}{6d^3e^8+18d^2e^9x+18de^{10}x^2+6e^{11}x^3}-\frac{\left(-Ab^3e^4+12Ab^2cde^3-30Abc^2d^2e^2+20Ac^3d^3e+4Bb^3de^3-30Bb^2cd^2e^2+60Bbc^2d^3e-35Bc^3d^4\right)\log(d+ex)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d)**4,x)
```

```
[Out] B*c**3*x**4/(4*e**4) + x**3*(A*c**3/(3*e**4) + B*b*c**2/e**4 - 4*B*c**3*d/(
3*e**5)) + x**2*(3*A*b*c**2/(2*e**4) - 2*A*c**3*d/e**5 + 3*B*b**2*c/(2*e**4
) - 6*B*b*c**2*d/e**5 + 5*B*c**3*d**2/e**6) + x*(3*A*b**2*c/e**4 - 12*A*b*c
**2*d/e**5 + 10*A*c**3*d**2/e**6 + B*b**3/e**4 - 12*B*b**2*c*d/e**5 + 30*B*
b*c**2*d**2/e**6 - 20*B*c**3*d**3/e**7) + (11*A*b**3*d**3*e**4 - 78*A*b**2*
c*d**4*e**3 + 141*A*b*c**2*d**5*e**2 - 74*A*c**3*d**6*e - 26*B*b**3*d**4*e*
*3 + 141*B*b**2*c*d**5*e**2 - 222*B*b*c**2*d**6*e + 107*B*c**3*d**7 + x**2*
(18*A*b**3*d*e**6 - 108*A*b**2*c*d**2*e**5 + 180*A*b*c**2*d**3*e**4 - 90*A*
c**3*d**4*e**3 - 36*B*b**3*d**2*e**5 + 180*B*b**2*c*d**3*e**4 - 270*B*b*c**
2*d**4*e**3 + 126*B*c**3*d**5*e**2) + x*(27*A*b**3*d**2*e**5 - 180*A*b**2*c
*d**3*e**4 + 315*A*b*c**2*d**4*e**3 - 162*A*c**3*d**5*e**2 - 60*B*b**3*d**3
*e**4 + 315*B*b**2*c*d**4*e**3 - 486*B*b*c**2*d**5*e**2 + 231*B*c**3*d**6*e
))/(6*d**3*e**8 + 18*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3) - (-A*b*
*3*e**4 + 12*A*b**2*c*d*e**3 - 30*A*b*c**2*d**2*e**2 + 20*A*c**3*d**3*e + 4
*B*b**3*d*e**3 - 30*B*b**2*c*d**2*e**2 + 60*B*b*c**2*d**3*e - 35*B*c**3*d**
4)*log(d + e*x)/e**8
```

3.992 $\int \frac{(A+Bx)(d+ex)^4}{bx+cx^2} dx$

Optimal. Leaf size=207

$$\frac{e^2x^2\left(Ace(4cd-be)+B\left(b^2e^2-4bcde+6c^2d^2\right)\right)}{2c^3}+\frac{ex\left(Ace\left(b^2e^2-4bcde+6c^2d^2\right)+B\left(-b^3e^3+4b^2cde^2-6bc^2\right.\right.}{c^4}$$

Rubi [A] time = 0.26, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{e^2x^2\left(Ace(4cd-be)+B\left(b^2e^2-4bcde+6c^2d^2\right)\right)}{2c^3}+\frac{ex\left(Ace\left(b^2e^2-4bcde+6c^2d^2\right)+B\left(4b^2cde^2-b^3e^3-6bc^2d^2e+4c^3d^3\right)\right)}{c^4}+\frac{e^3x^3(Ace-bBe+4Bcd)}{3c^2}+\frac{(bB-Ac)(cd-be)^4\log(b+cx)}{bc^5}+\frac{Ad^4\log(x)}{b}+\frac{Be^4x^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x]
```

```
[Out] (e*(A*c*e*(6*c^2*d^2 - 4*b*c*d*e + b^2*e^2) + B*(4*c^3*d^3 - 6*b*c^2*d^2*e
+ 4*b^2*c*d*e^2 - b^3*e^3))*x)/c^4 + (e^2*(A*c*e*(4*c*d - b*e) + B*(6*c^2*d
^2 - 4*b*c*d*e + b^2*e^2))*x^2)/(2*c^3) + (e^3*(4*B*c*d - b*B*e + A*c*e)*x^
3)/(3*c^2) + (B*e^4*x^4)/(4*c) + (A*d^4*Log[x])/b + ((b*B - A*c)*(c*d - b*e
)^4*Log[b + c*x])/(b*c^5)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{bx+cx^2}\,dx = \int \left(\frac{e\left(Ace\left(6c^2d^2-4bcde+b^2e^2\right)+B\left(4c^3d^3-6bc^2d^2e+4b^2cde^2-b^3e^3\right)\right)}{c^4}+\frac{Ad^4}{bx}\right.$$
$$= \frac{e\left(Ace\left(6c^2d^2-4bcde+b^2e^2\right)+B\left(4c^3d^3-6bc^2d^2e+4b^2cde^2-b^3e^3\right)\right)x}{c^4}+\frac{e^2\left(Ace\right.}{}$$

Mathematica [A] time = 0.13, size = 187, normalized size = 0.90

$$\frac{ex\left(2Ace\left(6b^2e^2-3bce(8d+ex)+2c^2\left(18d^2+6dex+e^2x^2\right)\right)+B\left(-12b^3e^3+6b^2ce^2(8d+ex)-4bc^2e\left(18d^2+6dex+e^2x^2\right)+c^3\left(48d^3+36d^2ex+16de^2x^2+3e^3x^3\right)\right)\right)}{12c^4}+\frac{(bB-Ac)(cd-be)^4\log(b+cx)}{bc^5}+\frac{Ad^4\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x]
```

```
[Out] (e*x*(2*A*c*e*(6*b^2*e^2 - 3*b*c*e*(8*d + e*x) + 2*c^2*(18*d^2 + 6*d*e*x +
e^2*x^2)) + B*(-12*b^3*e^3 + 6*b^2*c*e^2*(8*d + e*x) - 4*b*c^2*e*(18*d^2 +
6*d*e*x + e^2*x^2) + c^3*(48*d^3 + 36*d^2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3)))
)/(12*c^4) + (A*d^4*Log[x])/b + ((b*B - A*c)*(c*d - b*e)^4*Log[b + c*x])/(b
*c^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2), x]
```

fricas [A] time = 0.42, size = 331, normalized size = 1.60

$$\frac{3 Bbc^4e^4x^4 + 12 Ac^5d^4 \log(x) + 4 \left(4 Bbc^4de^3 - \left(Bb^2c^3 - Abc^4\right)e^4\right)x^3 + 6 \left(6 Bbc^4d^2e^2 - 4 \left(Bb^2c^3 - Abc^4\right)de^3 + \left(Bb^3c^2 - Ab^2c^3\right)e^4\right)x^2 + 12 \left(4 Bbc^4d^3e - 6 \left(Bb^2c^3 - Abc^4\right)d^2e^2 + 4 \left(Bb^3c^2 - Ab^2c^3\right)de^3 - \left(Bb^4c - Ab^3c^2\right)e^4\right)x + 12 \left(\left(Bbc^4 - Ac^5\right)d^4 - 4 \left(Bb^2c^3 - Abc^4\right)d^3e + 6 \left(Bb^3c^2 - Ab^2c^3\right)d^2e^2 - 4 \left(Bb^4c - Ab^3c^2\right)de^3 + \left(Bb^5 - Ab^4c\right)e^4\right) \log(cx + b)}{12 bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b*c^4*e^4*x^4 + 12*A*c^5*d^4*log(x) + 4*(4*B*b*c^4*d*e^3 - (B*b^2
*c^3 - A*b*c^4)*e^4)*x^3 + 6*(6*B*b*c^4*d^2*e^2 - 4*(B*b^2*c^3 - A*b*c^4)*d
*e^3 + (B*b^3*c^2 - A*b^2*c^3)*e^4)*x^2 + 12*(4*B*b*c^4*d^3*e - 6*(B*b^2*c^
3 - A*b*c^4)*d^2*e^2 + 4*(B*b^3*c^2 - A*b^2*c^3)*d*e^3 - (B*b^4*c - A*b^3*c
^2)*e^4)*x + 12*((B*b*c^4 - A*c^5)*d^4 - 4*(B*b^2*c^3 - A*b*c^4)*d^3*e + 6*
(B*b^3*c^2 - A*b^2*c^3)*d^2*e^2 - 4*(B*b^4*c - A*b^3*c^2)*d*e^3 + (B*b^5 -
A*b^4*c)*e^4)*log(c*x + b))/(b*c^5)
```

giac [A] time = 0.16, size = 330, normalized size = 1.59

$$\frac{Ad^4 \log(|x|)}{b} + \frac{3 Bc^3x^4e^4 + 16 Bc^3dx^3e^3 + 36 Bc^3d^2x^2e^2 + 48 Bc^3d^3xe - 4 Bbc^2x^3e^4 + 4 Ac^3x^3e^4 - 24 Bbc^2dx^2e^3 + 24 Ac^3dx^2e^3 - 72 Bbc^2d^2xe^2 + 72 Ac^3d^2xe^2 + 6 Bb^2cx^2e^4 - 6 Abc^2x^2e^4 + 48 Bb^2cdxe^3 - 48 Abc^2dxe^3 - 12 Bb^3xe^4 + 12 Ab^2cxe^4}{12 c^4} + \frac{\left(Bbc^4d^4 - Ac^5d^4 - 4 Bb^2c^3d^3e + 4 Abc^4d^3e + 6 Bb^3c^2d^2e^2 - 6 Ab^2c^3d^2e^2 - 4 Bb^4cde^3 + 4 Ab^3c^2de^3 + Bb^5e^4 - Ab^4ce^4\right) \log(|cx + b|)}{bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*d^4*log(abs(x))/b + 1/12*(3*B*c^3*x^4*e^4 + 16*B*c^3*d*x^3*e^3 + 36*B*c^3
*d^2*x^2*e^2 + 48*B*c^3*d^3*x*e - 4*B*b*c^2*x^3*e^4 + 4*A*c^3*x^3*e^4 - 24*
B*b*c^2*d*x^2*e^3 + 24*A*c^3*d*x^2*e^3 - 72*B*b*c^2*d^2*x*e^2 + 72*A*c^3*d^
2*x*e^2 + 6*B*b^2*c*x^2*e^4 - 6*A*b*c^2*x^2*e^4 + 48*B*b^2*c*d*x*e^3 - 48*A
*b*c^2*d*x*e^3 - 12*B*b^3*x*e^4 + 12*A*b^2*c*x*e^4)/c^4 + (B*b*c^4*d^4 - A*
c^5*d^4 - 4*B*b^2*c^3*d^3*e + 4*A*b*c^4*d^3*e + 6*B*b^3*c^2*d^2*e^2 - 6*A*b
^2*c^3*d^2*e^2 - 4*B*b^4*c*d*e^3 + 4*A*b^3*c^2*d*e^3 + B*b^5*e^4 - A*b^4*c*
e^4)*log(abs(c*x + b))/(b*c^5)
```

maple [A] time = 0.05, size = 396, normalized size = 1.91

$$\frac{B e^4x^4}{4c} + \frac{A e^4x^3}{3c} - \frac{Bb e^4x^3}{3c^2} + \frac{4Bd e^3x^3}{3c} - \frac{Ab e^4x^2}{2c^2} + \frac{2Ad e^3x^2}{c} + \frac{B b^2e^4x^2}{2c^3} - \frac{2Bbd e^3x^2}{c^2} + \frac{3B d^2e^2x^2}{c} - \frac{A b^3e^4 \ln(cx + b)}{c^4} + \frac{4A b^2d e^3 \ln(cx + b)}{c^3} + \frac{A b^2e^4x}{c^3} - \frac{6Ab d^2e^2 \ln(cx + b)}{c^2} - \frac{4Abd e^3x}{c^2} + \frac{A d^4 \ln(x)}{b} - \frac{A d^4 \ln(cx + b)}{b} + \frac{4A d^3e \ln(cx + b)}{c} + \frac{6A d^2e^2x}{c} + \frac{B b^4e^4 \ln(cx + b)}{c^5} - \frac{4B b^3d e^3 \ln(cx + b)}{c^4} - \frac{B b^3e^4x}{c^4} + \frac{6B b^2d^2e^2 \ln(cx + b)}{c^3} + \frac{4B b^2d e^3x}{c^3} - \frac{4Bb d^3e \ln(cx + b)}{c^2} - \frac{6Bb d^2e^2x}{c^2} + \frac{B d^4 \ln(cx + b)}{c} + \frac{4B d^3ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x)
```

```
[Out] 1/3*e^4/c*A*x^3+1/c*ln(c*x+b)*B*d^4-1/b*ln(c*x+b)*A*d^4-1/3*e^4/c^2*B*x^3*b
+4/3*e^3/c*B*x^3*d-b^3/c^4*ln(c*x+b)*A*e^4+6*e^2/c*A*d^2*x-e^4/c^4*B*b^3*x+
4*e/c*B*d^3*x+b^4/c^5*ln(c*x+b)*B*e^4-4*e^3/c^2*A*b*d*x+4*e^3/c^3*B*b^2*d*x
-6*e^2/c^2*B*b*d^2*x-2*e^3/c^2*B*x^2*b*d+4*b^2/c^3*ln(c*x+b)*A*d*e^3+e^4/c^
3*A*b^2*x+6*b^2/c^3*ln(c*x+b)*B*d^2*e^2-4*b/c^2*ln(c*x+b)*B*d^3*e+4/c*ln(c*
x+b)*A*d^3*e-1/2*e^4/c^2*A*x^2*b+2*e^3/c*A*x^2*d+1/2*e^4/c^3*B*x^2*b^2+3*e^
2/c*B*x^2*d^2-6*b/c^2*ln(c*x+b)*A*d^2*e^2-4*b^3/c^4*ln(c*x+b)*B*d*e^3+A*d^4
*ln(x)/b+1/4*B*e^4*x^4/c
```

maxima [A] time = 0.50, size = 309, normalized size = 1.49

$$\frac{Ad^4 \log(x)}{b} + \frac{3 Bc^3e^4x^4 + 4 \left(4 Bc^3de^3 - \left(Bbc^2 - Ac^3\right)e^4\right)x^3 + 6 \left(6 Bc^3d^2e^2 - 4 \left(Bbc^2 - Ac^3\right)de^3 + \left(Bb^2c - Abc^2\right)e^4\right)x^2 + 12 \left(4 Bc^3d^3e - 6 \left(Bbc^2 - Ac^3\right)d^2e^2 + 4 \left(Bb^2c - Abc^2\right)de^3 - \left(Bb^3 - Ab^2c\right)e^4\right)x}{12 c^4} + \frac{\left(\left(Bbc^4 - Ac^5\right)d^4 - 4 \left(Bb^2c^3 - Abc^4\right)d^3e + 6 \left(Bb^3c^2 - Ab^2c^3\right)d^2e^2 - 4 \left(Bb^4c - Ab^3c^2\right)de^3 + \left(Bb^5 - Ab^4c\right)e^4\right) \log(cx + b)}{bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*d^4*log(x)/b + 1/12*(3*B*c^3*e^4*x^4 + 4*(4*B*c^3*d*e^3 - (B*b*c^2 - A*c^
3)*e^4)*x^3 + 6*(6*B*c^3*d^2*e^2 - 4*(B*b*c^2 - A*c^3)*d*e^3 + (B*b^2*c - A
```

```
*b*c^2)*e^4)*x^2 + 12*(4*B*c^3*d^3*e - 6*(B*b*c^2 - A*c^3)*d^2*e^2 + 4*(B*b
^2*c - A*b*c^2)*d*e^3 - (B*b^3 - A*b^2*c)*e^4)*x)/c^4 + ((B*b*c^4 - A*c^5)*
d^4 - 4*(B*b^2*c^3 - A*b*c^4)*d^3*e + 6*(B*b^3*c^2 - A*b^2*c^3)*d^2*e^2 - 4
*(B*b^4*c - A*b^3*c^2)*d*e^3 + (B*b^5 - A*b^4*c)*e^4)*log(c*x + b)/(b*c^5)
```

mupad [B] time = 1.67, size = 322, normalized size = 1.56

$$x\left(\frac{b\left(\frac{b\left(\frac{Ae^4+4Bde^3}{c}-\frac{Bbe^4}{c^2}\right)}{c}-\frac{2de^2(2Ae+3Bd)}{c}\right)}{c}+\frac{2d^2e\,(3Ae+2Bd)}{c}\right)-x^2\left(\frac{b\left(\frac{Ae^4+4Bde^3}{c}-\frac{Bbe^4}{c^2}\right)}{2c}-\frac{de^2\,(2Ae+3Bd)}{c}\right)+x^3\left(\frac{Ae^4+4Bde^3}{3c}-\frac{Bbe^4}{3c^2}\right)-\ln(b+cx)\left(\frac{Ad^4}{b}-\frac{c^4\left(Bbd^4+4Abed^3\right)-c\left(Ab^4e^4+4Bdb^4e^3\right)-c^3\left(4Bb^2d^3e+6Ab^2d^2e^2\right)+c^2\left(6Bb^3d^2e^2+4Ab^3de^3\right)+Bb^5e^4}{bc^5}\right)+\frac{Ad^4\ln(x)}{b}+\frac{Be^4x^4}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x)
```

```
[Out] x*((b*((b*((A*e^4 + 4*B*d*e^3)/c - (B*b*e^4)/c^2))/c - (2*d*e^2*(2*A*e + 3*
B*d))/c))/c + (2*d^2*e*(3*A*e + 2*B*d))/c) - x^2*((b*((A*e^4 + 4*B*d*e^3)/c
 - (B*b*e^4)/c^2))/(2*c) - (d*e^2*(2*A*e + 3*B*d))/c) + x^3*((A*e^4 + 4*B*d
*e^3)/(3*c) - (B*b*e^4)/(3*c^2)) - log(b + c*x)*((A*d^4)/b - (c^4*(B*b*d^4
+ 4*A*b*d^3*e) - c*(A*b^4*e^4 + 4*B*b^4*d*e^3) - c^3*(4*B*b^2*d^3*e + 6*A*b
^2*d^2*e^2) + c^2*(4*A*b^3*d*e^3 + 6*B*b^3*d^2*e^2) + B*b^5*e^4)/(b*c^5)) +
 (A*d^4*log(x))/b + (B*e^4*x^4)/(4*c)
```

sympy [A] time = 7.18, size = 396, normalized size = 1.91

$$\frac{Ad^4\log(x)}{b}+\frac{Be^4x^4}{4c}+x^3\left(\frac{Ae^4}{3c}-\frac{Bbe^4}{3c^2}+\frac{4Bde^3}{3c}\right)+x^2\left(-\frac{Abe^4}{2c^2}+\frac{2Ade^3}{c}+\frac{Bb^2e^4}{2c^3}-\frac{2Bbde^3}{c^2}+\frac{3Bd^2e^2}{c}\right)+x\left(\frac{Ab^2e^4}{c^3}-\frac{4Abde^3}{c^2}+\frac{6Ad^2e^2}{c}-\frac{Bb^3e^4}{c^4}+\frac{4Bb^2de^3}{c^3}-\frac{6Bbd^2e^2}{c^2}+\frac{4Bd^3e}{c}\right)+\frac{(-Ac+Bb)(be-cd)^4\log\left(x+\frac{-Abc^4d^4+\frac{b(-Ac+Bb)(be-cd)^4}{c}}{-Ab^4ce^4+4Ab^3c^2de^3-6Ab^2c^3d^2e^2+4Abc^4d^3e-2Ac^5d^4+Bb^5e^4-4Bb^4cde^3+6Bb^3c^2d^2e^2-4Bb^2c^3d^3e+Bbc^4d^4}\right)}{bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x),x)
```

```
[Out] A*d**4*log(x)/b + B*e**4*x**4/(4*c) + x**3*(A*e**4/(3*c) - B*b*e**4/(3*c**2
) + 4*B*d*e**3/(3*c)) + x**2*(-A*b*e**4/(2*c**2) + 2*A*d*e**3/c + B*b**2*e*
*4/(2*c**3) - 2*B*b*d*e**3/c**2 + 3*B*d**2*e**2/c) + x*(A*b**2*e**4/c**3 -
4*A*b*d*e**3/c**2 + 6*A*d**2*e**2/c - B*b**3*e**4/c**4 + 4*B*b**2*d*e**3/c*
*3 - 6*B*b*d**2*e**2/c**2 + 4*B*d**3*e/c) + (-A*c + B*b)*(b*e - c*d)**4*log
(x + (-A*b*c**4*d**4 + b*(-A*c + B*b)*(b*e - c*d)**4/c)/(-A*b**4*c*e**4 + 4
*A*b**3*c**2*d*e**3 - 6*A*b**2*c**3*d**2*e**2 + 4*A*b*c**4*d**3*e - 2*A*c**
5*d**4 + B*b**5*e**4 - 4*B*b**4*c*d*e**3 + 6*B*b**3*c**2*d**2*e**2 - 4*B*b*
*2*c**3*d**3*e + B*b*c**4*d**4))/(b*c**5)
```

3.993 $\int \frac{(A+Bx)(d+ex)^3}{bx+cx^2} dx$

Optimal. Leaf size=128

$$\frac{ex\left(Ace(3cd-be)+B\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{c^3}+\frac{(bB-Ac)(cd-be)^3\log(b+cx)}{bc^4}+\frac{e^2x^2(Ace-bBe+3Bcd)}{2c^2}+\frac{Ad^3 l}{b}$$

Rubi [A] time = 0.16, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{ex\left(Ace(3cd-be)+B\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{c^3}+\frac{e^2x^2(Ace-bBe+3Bcd)}{2c^2}+\frac{(bB-Ac)(cd-be)^3\log(b+cx)}{bc^4}+\frac{Ad^3\log(x)}{b}+\frac{Be^3x^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x]
```

```
[Out] (e*(A*c*e*(3*c*d - b*e) + B*(3*c^2*d^2 - 3*b*c*d*e + b^2*e^2))*x)/c^3 + (e^
2*(3*B*c*d - b*B*e + A*c*e)*x^2)/(2*c^2) + (B*e^3*x^3)/(3*c) + (A*d^3*Log[x
])/b + ((b*B - A*c)*(c*d - b*e)^3*Log[b + c*x])/(b*c^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{bx+cx^2}dx=\int \left(\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2-3bcde+b^2e^2\right)\right)}{c^3}+\frac{Ad^3}{bx}+\frac{e^2(3Bcd-bBe+Ace)x}{c^2}+\right.$$
$$=\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2-3bcde+b^2e^2\right)\right)x}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2}+\frac{Be^3x^3}{3c}+$$

Mathematica [A] time = 0.08, size = 118, normalized size = 0.92

$$\frac{bcex\left(3Ace(-2be+6cd+cex)+B\left(6b^2e^2-3bce(6d+ex)+c^2\left(18d^2+9dex+2e^2x^2\right)\right)\right)-6(bB-Ac)(be-cd)^3\log(b+cx)+6Ac^4d^3\log(x)}{6bc^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x]
```

```
[Out] (b*c*e*x*(3*A*c*e*(6*c*d - 2*b*e + c*e*x) + B*(6*b^2*e^2 - 3*b*c*e*(6*d + e
*x) + c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2))) + 6*A*c^4*d^3*Log[x] - 6*(b*B -
A*c)*(-(c*d) + b*e)^3*Log[b + c*x])/(6*b*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{bx+cx^2}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2), x]
```

fricas [A] time = 0.41, size = 216, normalized size = 1.69

$$\frac{2 Bbc^3e^3x^3 + 6 Ac^4d^3 \log(x) + 3 \left(3 Bbc^3de^2 - \left(Bb^2c^2 - Abc^3\right)e^3\right)x^2 + 6 \left(3 Bbc^3d^2e - 3 \left(Bb^2c^2 - Abc^3\right)de^2 + \left(Bb^3c - Ab^2c^2\right)e^3\right)x + 6 \left(\left(Bbc^3 - Ac^4\right)d^3 - 3 \left(Bb^2c^2 - Abc^3\right)d^2e + 3 \left(Bb^3c - Ab^2c^2\right)de^2 - \left(Bb^4 - Ab^3c\right)e^3\right) \log(cx + b)}{6 bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b*c^3*e^3*x^3 + 6*A*c^4*d^3*log(x) + 3*(3*B*b*c^3*d*e^2 - (B*b^2*c
^2 - A*b*c^3)*e^3)*x^2 + 6*(3*B*b*c^3*d^2*e - 3*(B*b^2*c^2 - A*b*c^3)*d*e^2
 + (B*b^3*c - A*b^2*c^2)*e^3)*x + 6*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 -
 A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*lo
g(c*x + b))/(b*c^4)
```

giac [A] time = 0.15, size = 207, normalized size = 1.62

$$\frac{Ad^3 \log(|x|)}{b} + \frac{2 Bc^2x^3e^3 + 9 Bc^2dx^2e^2 + 18 Bc^2d^2xe - 3 Bbcx^2e^3 + 3 Ac^2x^2e^3 - 18 Bbcdxe^2 + 18 Ac^2dxe^2 + 6 Bb^2xe^3 - 6 Abcxe^3}{6 c^3} + \frac{\left(Bbc^3d^3 - Ac^4d^3 - 3 Bb^2c^2d^2e + 3 Abc^3d^2e + 3 Bb^3cde^2 - 3 Ab^2c^2de^2 - Bb^4e^3 + Ab^3ce^3\right) \log(|cx + b|)}{bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*d^3*log(abs(x))/b + 1/6*(2*B*c^2*x^3*e^3 + 9*B*c^2*d*x^2*e^2 + 18*B*c^2*d
^2*x*e - 3*B*b*c*x^2*e^3 + 3*A*c^2*x^2*e^3 - 18*B*b*c*d*x*e^2 + 18*A*c^2*d*
x*e^2 + 6*B*b^2*x*e^3 - 6*A*b*c*x*e^3)/c^3 + (B*b*c^3*d^3 - A*c^4*d^3 - 3*B
*b^2*c^2*d^2*e + 3*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2 - 3*A*b^2*c^2*d*e^2 - B*
b^4*e^3 + A*b^3*c*e^3)*log(abs(c*x + b))/(b*c^4)
```

maple [B] time = 0.06, size = 252, normalized size = 1.97

$$\frac{B e^3x^3}{3c} + \frac{A e^3x^2}{2c} - \frac{Bb e^3x^2}{2c^2} + \frac{3Bd e^2x^2}{2c} + \frac{A b^2e^3 \ln(cx+b)}{c^3} - \frac{3Abd e^2 \ln(cx+b)}{c^2} - \frac{Ab e^3x}{c^2} + \frac{A d^3 \ln(x)}{b} - \frac{A d^3 \ln(cx+b)}{b} + \frac{3A d^2e \ln(cx+b)}{c} + \frac{3Ad e^2x}{c} - \frac{B b^3e^3 \ln(cx+b)}{c^4} + \frac{3B b^2d e^2 \ln(cx+b)}{c^3} + \frac{B b^2e^3x}{c^3} - \frac{3Bb d^2e \ln(cx+b)}{c^2} - \frac{3Bbd e^2x}{c^2} + \frac{B d^3 \ln(cx+b)}{c} + \frac{3B d^2ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x)
```

```
[Out] 1/3*B*e^3*x^3/c+1/2*e^3/c*A*x^2-1/2*e^3/c^2*B*x^2*b+3/2*e^2/c*B*x^2*d-e^3/c
^2*A*b*x+3*e^2/c*A*d*x+e^3/c^3*B*b^2*x-3*e^2/c^2*B*b*d*x+3*e/c*B*d^2*x+1/c^
3*b^2*ln(c*x+b)*A*e^3-3/c^2*b*ln(c*x+b)*A*d*e^2+3/c*ln(c*x+b)*A*d^2*e-1/b*l
n(c*x+b)*A*d^3-1/c^4*b^3*ln(c*x+b)*B*e^3+3/c^3*b^2*ln(c*x+b)*B*d*e^2-3/c^2*
b*ln(c*x+b)*B*d^2*e+1/c*ln(c*x+b)*B*d^3+A*d^3*ln(x)/b
```

maxima [A] time = 0.61, size = 200, normalized size = 1.56

$$\frac{Ad^3 \log(x)}{b} + \frac{2 Bc^2e^3x^3 + 3 \left(3 Bc^2de^2 - \left(Bbc - Ac^2\right)e^3\right)x^2 + 6 \left(3 Bc^2d^2e - 3 \left(Bbc - Ac^2\right)de^2 + \left(Bb^2 - Abc\right)e^3\right)x}{6 c^3} + \frac{\left(\left(Bbc^3 - Ac^4\right)d^3 - 3 \left(Bb^2c^2 - Abc^3\right)d^2e + 3 \left(Bb^3c - Ab^2c^2\right)de^2 - \left(Bb^4 - Ab^3c\right)e^3\right) \log(cx + b)}{bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*d^3*log(x)/b + 1/6*(2*B*c^2*e^3*x^3 + 3*(3*B*c^2*d*e^2 - (B*b*c - A*c^2)*
e^3)*x^2 + 6*(3*B*c^2*d^2*e - 3*(B*b*c - A*c^2)*d*e^2 + (B*b^2 - A*b*c)*e^3
)*x)/c^3 + ((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)*d^2*e + 3*(B*b^
3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*log(c*x + b)/(b*c^4)
```

mupad [B] time = 1.58, size = 208, normalized size = 1.62

$$x^2 \left(\frac{A e^3 + 3 B d e^2}{2 c} - \frac{B b e^3}{2 c^2}\right) - x \left(\frac{b \left(\frac{A e^3+3 B d e^2}{c} - \frac{B b e^3}{c^2}\right)}{c} - \frac{3 d e (A e + B d)}{c}\right) - \ln(b + c x) \left(\frac{A d^3}{b} - \frac{c^3 \left(B b d^3 + 3 A b e d^2\right) - c^2 \left(3 B b^2 d^2 e + 3 A b^2 d e^2\right) + c \left(A b^3 e^3 + 3 B d b^3 e^2\right) - B b^4 e^3}{b c^4}\right) + \frac{A d^3 \ln(x)}{b} + \frac{B e^3 x^3}{3 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x)
```

```
[Out] x^2*((A*e^3 + 3*B*d*e^2)/(2*c) - (B*b*e^3)/(2*c^2)) - x*((b*((A*e^3 + 3*B*d
*e^2)/c - (B*b*e^3)/c^2))/c - (3*d*e*(A*e + B*d))/c) - log(b + c*x)*((A*d^3
)/b - (c^3*(B*b*d^3 + 3*A*b*d^2*e) - c^2*(3*A*b^2*d*e^2 + 3*B*b^2*d^2*e) +
c*(A*b^3*e^3 + 3*B*b^3*d*e^2) - B*b^4*e^3)/(b*c^4)) + (A*d^3*log(x))/b + (B
*e^3*x^3)/(3*c)
```

sympy [B] time = 4.59, size = 264, normalized size = 2.06

$$\frac{Ad^3\log(x)}{b} + \frac{Be^3x^3}{3c} + x^2\left(\frac{Ae^3}{2c} - \frac{Bbe^3}{2c^2} + \frac{3Bde^2}{2c}\right) + x\left(-\frac{Abe^3}{c^2} + \frac{3Ade^2}{c} + \frac{Bb^2e^3}{c^3} - \frac{3Bbde^2}{c^2} + \frac{3Bd^2e}{c}\right) - \frac{(-Ac+Bb)(be-cd)^3\log\left(x + \frac{Abc^3d^3 + \frac{b(-Ac+Bb)(be-cd)^3}{c}}{-Ab^3ce^3+3Ab^2c^2de^2-3Abc^3d^2e+2Ac^4d^3+Bb^4e^3-3Bb^3cde^2+3Bb^2c^2d^2e-Bbc^3d^3}\right)}{bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x),x)
```

```
[Out] A*d**3*log(x)/b + B*e**3*x**3/(3*c) + x**2*(A*e**3/(2*c) - B*b*e**3/(2*c**2
) + 3*B*d*e**2/(2*c)) + x*(-A*b*e**3/c**2 + 3*A*d*e**2/c + B*b**2*e**3/c**3
 - 3*B*b*d*e**2/c**2 + 3*B*d**2*e/c) - (-A*c + B*b)*(b*e - c*d)**3*log(x +
(A*b*c**3*d**3 + b*(-A*c + B*b)*(b*e - c*d)**3/c)/(-A*b**3*c*e**3 + 3*A*b**
2*c**2*d*e**2 - 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + B*b**4*e**3 - 3*B*b**3*
c*d*e**2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3))/(b*c**4)
```

3.994 $\int \frac{(A+Bx)(d+ex)^2}{bx+cx^2} dx$

Optimal. Leaf size=77

$$\frac{(bB-Ac)(cd-be)^2\log(b+cx)}{bc^3}+\frac{ex(Ace-bBe+2Bcd)}{c^2}+\frac{Ad^2\log(x)}{b}+\frac{Be^2x^2}{2c}$$

Rubi [A] time = 0.09, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{ex(Ace-bBe+2Bcd)}{c^2}+\frac{(bB-Ac)(cd-be)^2\log(b+cx)}{bc^3}+\frac{Ad^2\log(x)}{b}+\frac{Be^2x^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x]
```

```
[Out] (e*(2*B*c*d - b*B*e + A*c*e)*x)/c^2 + (B*e^2*x^2)/(2*c) + (A*d^2*Log[x])/b
+ ((b*B - A*c)*(c*d - b*e)^2*Log[b + c*x])/(b*c^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{bx+cx^2}dx &= \int \left(\frac{e(2Bcd-bBe+Ace)}{c^2}+\frac{Ad^2}{bx}+\frac{Be^2x}{c}+\frac{(bB-Ac)(-cd+be)^2}{bc^2(b+cx)}\right)dx\\ &= \frac{e(2Bcd-bBe+Ace)x}{c^2}+\frac{Be^2x^2}{2c}+\frac{Ad^2\log(x)}{b}+\frac{(bB-Ac)(cd-be)^2\log(b+cx)}{bc^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.96

$$\frac{bcex(2Ace+B(-2be+4cd+cex))+2(bB-Ac)(cd-be)^2\log(b+cx)+2Ac^3d^2\log(x)}{2bc^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x]
```

```
[Out] (b*c*e*x*(2*A*c*e + B*(4*c*d - 2*b*e + c*e*x)) + 2*A*c^3*d^2*Log[x] + 2*(b*
B - A*c)*(c*d - b*e)^2*Log[b + c*x])/(2*b*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{bx+cx^2}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2), x]
```

fricas [A] time = 0.42, size = 125, normalized size = 1.62

$$\frac{Bbc^2e^2x^2 + 2\,Ac^3d^2\log(x) + 2\left(2\,Bbc^2de - \left(Bb^2c - Abc^2\right)e^2\right)x + 2\left(\left(Bbc^2 - Ac^3\right)d^2 - 2\left(Bb^2c - Abc^2\right)de + \left(Bb^3 - Ab^2c\right)e^2\right)\log(cx + b)}{2\,bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b*c^2*e^2*x^2 + 2*A*c^3*d^2*log(x) + 2*(2*B*b*c^2*d*e - (B*b^2*c - A
*b*c^2)*e^2)*x + 2*((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*
b^3 - A*b^2*c)*e^2)*log(c*x + b))/(b*c^3)
```

giac [A] time = 0.15, size = 117, normalized size = 1.52

$$\frac{Ad^2\log(|x|)}{b} + \frac{Bcx^2e^2 + 4\,Bcdxe - 2\,Bbxe^2 + 2\,Acxe^2}{2\,c^2} + \frac{\left(Bbc^2d^2 - Ac^3d^2 - 2\,Bb^2cde + 2\,Abc^2de + Bb^3e^2 - Ab^2ce^2\right)\log(|cx + b|)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*d^2*log(abs(x))/b + 1/2*(B*c*x^2*e^2 + 4*B*c*d*x*e - 2*B*b*x*e^2 + 2*A*c*
x*e^2)/c^2 + (B*b*c^2*d^2 - A*c^3*d^2 - 2*B*b^2*c*d*e + 2*A*b*c^2*d*e + B*b
^3*e^2 - A*b^2*c*e^2)*log(abs(c*x + b))/(b*c^3)
```

maple [A] time = 0.05, size = 144, normalized size = 1.87

$$\frac{Be^2x^2}{2c} - \frac{Abe^2\ln(cx+b)}{c^2} + \frac{Ad^2\ln(x)}{b} - \frac{Ad^2\ln(cx+b)}{b} + \frac{2Ade\ln(cx+b)}{c} + \frac{Ae^2x}{c} + \frac{Bb^2e^2\ln(cx+b)}{c^3} - \frac{2Bbde\ln(cx+b)}{c^2} - \frac{Bbe^2x}{c^2} + \frac{Bd^2\ln(cx+b)}{c} + \frac{2Bdex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x)
```

```
[Out] 1/2*B*e^2*x^2/c+1/c*e^2*A*x-1/c^2*e^2*B*b*x+2/c*e*B*d*x-b/c^2*ln(c*x+b)*A*e
^2+2/c*ln(c*x+b)*A*d*e-1/b*ln(c*x+b)*A*d^2+b^2/c^3*ln(c*x+b)*B*e^2-2*b/c^2*
ln(c*x+b)*B*d*e+1/c*ln(c*x+b)*B*d^2+A*d^2*ln(x)/b
```

maxima [A] time = 0.59, size = 115, normalized size = 1.49

$$\frac{Ad^2\log(x)}{b} + \frac{Bce^2x^2 + 2\left(2\,Bcde - (Bb - Ac)e^2\right)x}{2\,c^2} + \frac{\left(\left(Bbc^2 - Ac^3\right)d^2 - 2\left(Bb^2c - Abc^2\right)de + \left(Bb^3 - Ab^2c\right)e^2\right)\log(cx + b)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*d^2*log(x)/b + 1/2*(B*c*e^2*x^2 + 2*(2*B*c*d*e - (B*b - A*c)*e^2)*x)/c^2
+ ((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^
2)*log(c*x + b)/(b*c^3)
```

mupad [B] time = 0.19, size = 122, normalized size = 1.58

$$x\left(\frac{A\,e^2 + 2\,B\,d\,e}{c} - \frac{B\,b\,e^2}{c^2}\right) - \ln(b + c\,x)\left(\frac{A\,d^2}{b} - \frac{c^2\,\left(B\,b\,d^2 + 2\,A\,b\,e\,d\right) - c\,\left(A\,b^2\,e^2 + 2\,B\,d\,b^2\,e\right) + B\,b^3\,e^2}{b\,c^3}\right) + \frac{A\,d^2\,\ln(x)}{b} + \frac{B\,e^2\,x^2}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x)
```

```
[Out] x*((A*e^2 + 2*B*d*e)/c - (B*b*e^2)/c^2) - log(b + c*x)*((A*d^2)/b - (c^2*(B
*b*d^2 + 2*A*b*d*e) - c*(A*b^2*e^2 + 2*B*b^2*d*e) + B*b^3*e^2)/(b*c^3)) + (
A*d^2*log(x))/b + (B*e^2*x^2)/(2*c)
```

sympy [B] time = 2.80, size = 163, normalized size = 2.12

$$\frac{Ad^2\log(x)}{b}+\frac{Be^2x^2}{2c}+x\left(\frac{Ae^2}{c}-\frac{Bbe^2}{c^2}+\frac{2Bde}{c}\right)+\frac{(-Ac+Bb)\,(be-cd)^2\log\left(x+\frac{-Abc^2d^2+\frac{b(-Ac+Bb)(be-cd)^2}{c}}{-Ab^2ce^2+2Abc^2de-2Ac^3d^2+Bb^3e^2-2Bb^2cde+Bbc^2d^2}\right)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x),x)
```

```
[Out] A*d**2*log(x)/b + B*e**2*x**2/(2*c) + x*(A*e**2/c - B*b*e**2/c**2 + 2*B*d*e
/c) + (-A*c + B*b)*(b*e - c*d)**2*log(x + (-A*b*c**2*d**2 + b*(-A*c + B*b)*
(b*e - c*d)**2/c)/(-A*b**2*c*e**2 + 2*A*b*c**2*d*e - 2*A*c**3*d**2 + B*b**3
*e**2 - 2*B*b**2*c*d*e + B*b*c**2*d**2))/(b*c**3)
```

3.995 $\int \frac{(A+Bx)(d+ex)}{bx+cx^2} dx$

Optimal. Leaf size=45

$$\frac{(bB-Ac)(cd-be)\log(b+cx)}{bc^2}+\frac{Ad\log(x)}{b}+\frac{Bex}{c}$$

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)\log(b+cx)}{bc^2}+\frac{Ad\log(x)}{b}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (B*e*x)/c + (A*d*Log[x])/b + ((b*B - A*c)*(c*d - b*e)*Log[b + c*x])/(b*c^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{bx+cx^2}\,dx &= \int \left(\frac{Be}{c}+\frac{Ad}{bx}-\frac{(bB-Ac)(-cd+be)}{bc(b+cx)}\right)dx\\ &= \frac{Bex}{c}+\frac{Ad\log(x)}{b}+\frac{(bB-Ac)(cd-be)\log(b+cx)}{bc^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 46, normalized size = 1.02

$$\frac{-(bB-Ac)(be-cd)\log(b+cx)+Ac^2d\log(x)+bBcex}{bc^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (b*B*c*e*x + A*c^2*d*Log[x] - (b*B - A*c)*(-(c*d) + b*e)*Log[b + c*x])/(b*c
^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2), x]
```

fricas [A] time = 0.42, size = 57, normalized size = 1.27

$$\frac{Bbcex+Ac^2d\log(x)+\left(\left(Bbc-Ac^2\right)d-\left(Bb^2-Abc\right)e\right)\log\left(cx+b\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (B*b*c*e*x + A*c^2*d*log(x) + ((B*b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*log(c
*x + b))/(b*c^2)
```

giac [A] time = 0.15, size = 59, normalized size = 1.31

$$\frac{Bxe}{c} + \frac{Ad\log\left(|x|\right)}{b} + \frac{\left(Bbcd - Ac^2d - Bb^2e + Abce\right)\log\left(|cx+b|\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] B*x*e/c + A*d*log(abs(x))/b + (B*b*c*d - A*c^2*d - B*b^2*e + A*b*c*e)*log(a
bs(c*x + b))/(b*c^2)
```

maple [A] time = 0.05, size = 68, normalized size = 1.51

$$\frac{Ad\ln(x)}{b} - \frac{Ad\ln\left(cx+b\right)}{b} + \frac{Ae\ln\left(cx+b\right)}{c} - \frac{Bbe\ln\left(cx+b\right)}{c^2} + \frac{Bd\ln\left(cx+b\right)}{c} + \frac{Bex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] B*e*x/c+1/c*ln(c*x+b)*A*e-1/b*ln(c*x+b)*A*d-1/c^2*b*ln(c*x+b)*B*e+1/c*ln(c*
x+b)*B*d+A*d*ln(x)/b
```

maxima [A] time = 0.50, size = 57, normalized size = 1.27

$$\frac{Bex}{c} + \frac{Ad\log(x)}{b} + \frac{\left(\left(Bbc - Ac^2\right)d - \left(Bb^2 - Abc\right)e\right)\log\left(cx+b\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] B*e*x/c + A*d*log(x)/b + ((B*b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*log(c*x +
b)/(b*c^2)
```

mupad [B] time = 0.18, size = 58, normalized size = 1.29

$$\frac{B\,e\,x}{c} - \ln\left(b+c\,x\right)\left(\frac{A\,d}{b} - \frac{c\,\left(A\,b\,e + B\,b\,d\right) - B\,b^2\,e}{b\,c^2}\right) + \frac{A\,d\,\ln(x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] (B*e*x)/c - log(b + c*x)*((A*d)/b - (c*(A*b*e + B*b*d) - B*b^2*e)/(b*c^2))
+ (A*d*log(x))/b
```

sympy [B] time = 1.36, size = 88, normalized size = 1.96

$$\frac{Ad\log\left(x\right)}{b} + \frac{Bex}{c} - \frac{\left(-Ac+Bb\right)\left(be-cd\right)\log\left(x + \frac{Abcd + \frac{b(-Ac+Bb)(be-cd)}{c}}{-Abce+2Ac^2d+Bb^2e-Bbcd}\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] A*d*log(x)/b + B*e*x/c - (-A*c + B*b)*(b*e - c*d)*log(x + (A*b*c*d + b*(-A*
c + B*b)*(b*e - c*d)/c)/(-A*b*c*e + 2*A*c**2*d + B*b**2*e - B*b*c*d))/(b*c*
*2)
```

3.996 $\int \frac{A+Bx}{bx+cx^2}\,dx$

Optimal. Leaf size=29

$$\frac{(bB-Ac)\log(b+cx)}{bc}+\frac{A\log(x)}{b}$$

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{(bB-Ac)\log(b+cx)}{bc}+\frac{A\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2),x]
[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x])/(b*c)
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{bx+cx^2}\,dx &= \int \left(\frac{A}{bx}+\frac{bB-Ac}{b(b+cx)}\right)dx\\ &= \frac{A\log(x)}{b}+\frac{(bB-Ac)\log(b+cx)}{bc}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 1.00

$$\frac{(bB-Ac)\log(b+cx)}{bc}+\frac{A\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2),x]
[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x])/(b*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2), x]
```

fricas [A] time = 0.40, size = 28, normalized size = 0.97

$$\frac{Ac\log(x)+(Bb-Ac)\log(cx+b)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (A*c*log(x) + (B*b - A*c)*log(c*x + b))/(b*c)
```

giac [A] time = 0.18, size = 31, normalized size = 1.07

$$\frac{A\log\left(|x|\right)}{b} + \frac{(Bb - Ac)\log\left(|cx + b|\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*log(abs(x))/b + (B*b - A*c)*log(abs(c*x + b))/(b*c)
```

maple [A] time = 0.05, size = 32, normalized size = 1.10

$$\frac{A\ln(x)}{b} - \frac{A\ln(cx+b)}{b} + \frac{B\ln(cx+b)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x),x)
```

```
[Out] -1/b*ln(c*x+b)*A+1/c*ln(c*x+b)*B+A/b*ln(x)
```

maxima [A] time = 0.47, size = 29, normalized size = 1.00

$$\frac{A\log(x)}{b} + \frac{(Bb - Ac)\log(cx+b)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*log(x)/b + (B*b - A*c)*log(c*x + b)/(b*c)
```

mupad [B] time = 1.40, size = 28, normalized size = 0.97

$$\frac{A\ \ln(x)}{b} - \ln(b + c\,x)\left(\frac{A}{b} - \frac{B}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2),x)
```

```
[Out] (A*log(x))/b - log(b + c*x)*(A/b - B/c)
```

sympy [A] time = 0.41, size = 41, normalized size = 1.41

$$\frac{A\log(x)}{b} + \frac{(-Ac + Bb)\log\left(x + \frac{-Ab + \frac{b(-Ac+Bb)}{c}}{-2Ac+Bb}\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x),x)
```

```
[Out] A*log(x)/b + (-A*c + B*b)*log(x + (-A*b + b*(-A*c + B*b)/c)/(-2*A*c + B*b))
/(b*c)
```

3.997 $\int \frac{A+Bx}{(d+ex)(bx+cx^2)}\,dx$

Optimal. Leaf size=68

$$\frac{(bB-Ac)\log(b+cx)}{b(cd-be)}-\frac{(Bd-Ae)\log(d+ex)}{d(cd-be)}+\frac{A\log(x)}{bd}$$

Rubi [A] time = 0.07, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)\log(b+cx)}{b(cd-be)}-\frac{(Bd-Ae)\log(d+ex)}{d(cd-be)}+\frac{A\log(x)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)),x]
```

```
[Out] (A*Log[x])/(b*d) + ((b*B - A*c)*Log[b + c*x])/(b*(c*d - b*e)) - ((B*d - A*e
)*Log[d + e*x])/(d*(c*d - b*e))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)}\,dx &= \int \left(\frac{A}{bdx}-\frac{c(bB-Ac)}{b(-cd+be)(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)}\right)dx\\ &= \frac{A\log(x)}{bd}+\frac{(bB-Ac)\log(b+cx)}{b(cd-be)}-\frac{(Bd-Ae)\log(d+ex)}{d(cd-be)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.93

$$\frac{\log(b+cx)(Acd-bBd)+b(Bd-Ae)\log(d+ex)+A\log(x)(be-cd)}{bd(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)),x]
```

```
[Out] (A*(-(c*d) + b*e)*Log[x] + (-(b*B*d) + A*c*d)*Log[b + c*x] + b*(B*d - A*e)*
Log[d + e*x])/(b*d*(-(c*d) + b*e))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)), x]
```

fricas [A] time = 1.54, size = 65, normalized size = 0.96

$$\frac{(Bb - Ac)d \log (cx + b) - (Bbd - Abe) \log (ex + d) + (Acd - Abe) \log(x)}{bcd^2 - b^2de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] ((B*b - A*c)*d*log(c*x + b) - (B*b*d - A*b*e)*log(e*x + d) + (A*c*d - A*b*e
)*log(x))/(b*c*d^2 - b^2*d*e)
```

giac [A] time = 0.16, size = 85, normalized size = 1.25

$$\frac{\left(Bbc - Ac^2\right) \log (|cx + b|)}{bc^2d - b^2ce} - \frac{\left(Bde - Ae^2\right) \log (|xe + d|)}{cd^2e - bde^2} + \frac{A \log (|x|)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*b*c - A*c^2)*log(abs(c*x + b))/(b*c^2*d - b^2*c*e) - (B*d*e - A*e^2)*log
(abs(x*e + d))/(c*d^2*e - b*d*e^2) + A*log(abs(x))/(b*d)
```

maple [A] time = 0.06, size = 94, normalized size = 1.38

$$\frac{Ac \ln (cx + b)}{(be - cd) b} - \frac{Ae \ln (ex + d)}{(be - cd) d} - \frac{B \ln (cx + b)}{be - cd} + \frac{B \ln (ex + d)}{be - cd} + \frac{A \ln(x)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/(b*e-c*d)/b*ln(c*x+b)*A*c-1/(b*e-c*d)*ln(c*x+b)*B-1/(b*e-c*d)/d*ln(e*x+d)
*A*e+1/(b*e-c*d)*ln(e*x+d)*B+A*ln(x)/b/d
```

maxima [A] time = 0.53, size = 68, normalized size = 1.00

$$\frac{(Bb - Ac) \log (cx + b)}{bcd - b^2e} - \frac{(Bd - Ae) \log (ex + d)}{cd^2 - bde} + \frac{A \log(x)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b - A*c)*log(c*x + b)/(b*c*d - b^2*e) - (B*d - A*e)*log(e*x + d)/(c*d^2
- b*d*e) + A*log(x)/(b*d)
```

mupad [B] time = 1.67, size = 67, normalized size = 0.99

$$\frac{\ln (d + e\,x)\,\left(A\,e - B\,d\right)}{c\,d^2 - b\,d\,e} + \frac{\ln (b + c\,x)\,\left(A\,c - B\,b\right)}{b^2\,e - b\,c\,d} + \frac{A\,\ln(x)}{b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)),x)
```

```
[Out] (log(d + e*x)*(A*e - B*d))/(c*d^2 - b*d*e) + (log(b + c*x)*(A*c - B*b))/(b^
2*e - b*c*d) + (A*log(x))/(b*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.998 $\int \frac{A+Bx}{(d+ex)^2(bx+cx^2)}\,dx$

Optimal. Leaf size=110

$$-\frac{\log(d+ex)\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2}+\frac{Bd-Ae}{d(d+ex)(cd-be)}+\frac{c(bB-Ac)\log(b+cx)}{b(cd-be)^2}+\frac{A\log(x)}{bd^2}$$

Rubi [A] time = 0.13, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{\log(d+ex)\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2}+\frac{Bd-Ae}{d(d+ex)(cd-be)}+\frac{c(bB-Ac)\log(b+cx)}{b(cd-be)^2}+\frac{A\log(x)}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(d*(c*d - b*e)*(d + e*x)) + (A*Log[x])/(b*d^2) + (c*(b*B - A*c)
*Log[b + c*x])/(b*(c*d - b*e)^2) - ((B*c*d^2 - A*e*(2*c*d - b*e))*Log[d + e
*x])/(d^2*(c*d - b*e)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)}\,dx&=\int \left(\frac{A}{bd^2x}+\frac{c^2(bB-Ac)}{b(-cd+be)^2(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)^2}+\frac{e\left(-Bcd^2+Ae(2cd-be)\right)}{d^2(cd-be)^2(d+ex)}\right)dx\\&=\frac{Bd-Ae}{d(cd-be)(d+ex)}+\frac{A\log(x)}{bd^2}+\frac{c(bB-Ac)\log(b+cx)}{b(cd-be)^2}-\frac{\left(Bcd^2-Ae(2cd-be)\right)\log(d+ex)}{d^2(cd-be)^2}\end{aligned}$$

Mathematica [A] time = 0.14, size = 106, normalized size = 0.96

$$\frac{\frac{cd^2(d+ex)(bB-Ac)\log(b+cx)-b(d+ex)\log(d+ex)\left(Ae(be-2cd)+Bcd^2\right)+bd(Bd-Ae)(cd-be)}{(d+ex)(cd-be)^2}+A\log(x)}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)),x]
```

```
[Out] (A*Log[x] + (b*d*(B*d - A*e)*(c*d - b*e) + c*(b*B - A*c)*d^2*(d + e*x)*Log[
b + c*x] - b*(B*c*d^2 + A*e*(-2*c*d + b*e))*(d + e*x)*Log[d + e*x])/((c*d -
 b*e)^2*(d + e*x)))/(b*d^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)), x]
```

fricas [B] time = 10.35, size = 260, normalized size = 2.36

$$\frac{Bbcd^3 + Ab^2de^2 - \left(Bb^2 + Abc\right)d^2e + \left(\left(Bbc - Ac^2\right)d^2ex + \left(Bbc - Ac^2\right)d^3\right)\log\left(cx+b\right) - \left(Bbcd^3 - 2\,Abcd^2e + Ab^2de^2 + \left(Bbcd^2e - 2\,Abcde^2 + Ab^2e^3\right)x\right)\log\left(ex+d\right) + \left(Ac^2d^3 - 2\,Abcd^2e + Ab^2de^2 + \left(Ac^2d^2e - 2\,Abcde^2 + Ab^2e^3\right)x\right)\log\left(x\right)}{bc^2d^5 - 2\,b^2cd^4e + b^3d^3e^2 + \left(bc^2d^4e - 2\,b^2cd^3e^2 + b^3d^2e^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (B*b*c*d^3 + A*b^2*d*e^2 - (B*b^2 + A*b*c)*d^2*e + ((B*b*c - A*c^2)*d^2*e*x
 + (B*b*c - A*c^2)*d^3)*log(c*x + b) - (B*b*c*d^3 - 2*A*b*c*d^2*e + A*b^2*d
*e^2 + (B*b*c*d^2*e - 2*A*b*c*d*e^2 + A*b^2*e^3)*x)*log(e*x + d) + (A*c^2*d
^3 - 2*A*b*c*d^2*e + A*b^2*d*e^2 + (A*c^2*d^2*e - 2*A*b*c*d*e^2 + A*b^2*e^3
)*x)*log(x))/(b*c^2*d^5 - 2*b^2*c*d^4*e + b^3*d^3*e^2 + (b*c^2*d^4*e - 2*b^
2*c*d^3*e^2 + b^3*d^2*e^3)*x)
```

giac [B] time = 0.24, size = 323, normalized size = 2.94

$$-\frac{\left(Bbcd^2e^2 - 2\,Ac^2d^2e^2 + 2\,Abcde^3 - Ab^2e^4\right)e^{(-2)}\log\left(\frac{\left|2\,cde - \frac{2\,cd^2e}{xe+d} - be^2 + \frac{2\,bde^2}{xe+d} - |b|e^2\right|}{\left|2\,cde - \frac{2\,cd^2e}{xe+d} - be^2 + \frac{2\,bde^2}{xe+d} + |b|e^2\right|}\right)}{2\left(c^2d^4 - 2\,bcd^3e + b^2d^2e^2\right)|b|} + \frac{\left(Bcd^2 - 2\,Acde + Abe^2\right)\log\left(\left|c - \frac{2\,cd}{xe+d} + \frac{cd^2}{(xe+d)^2} + \frac{be}{xe+d} - \frac{bde}{(xe+d)^2}\right|\right)}{2\left(c^2d^4 - 2\,bcd^3e + b^2d^2e^2\right)} + \frac{\frac{Bde^2}{xe+d} - \frac{Ae^3}{xe+d}}{cd^2e^2 - bde^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -1/2*(B*b*c*d^2*e^2 - 2*A*c^2*d^2*e^2 + 2*A*b*c*d*e^3 - A*b^2*e^4)*e^(-2)*l
og(abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) - abs(b)
*e^2)/abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) + abs
(b)*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*abs(b)) + 1/2*(B*c*d^2 - 2
*A*c*d*e + A*b*e^2)*log(abs(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(
x*e + d) - b*d*e/(x*e + d)^2))/(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2) + (B*d
*e^2/(x*e + d) - A*e^3/(x*e + d))/(c*d^2*e^2 - b*d*e^3)
```

maple [A] time = 0.06, size = 169, normalized size = 1.54

$$-\frac{Ab\,e^2\ln\left(ex+d\right)}{\left(be-cd\right)^2d^2} - \frac{A\,c^2\ln\left(cx+b\right)}{\left(be-cd\right)^2b} + \frac{2Ace\ln\left(ex+d\right)}{\left(be-cd\right)^2d} + \frac{Bc\ln\left(cx+b\right)}{\left(be-cd\right)^2} - \frac{Bc\ln\left(ex+d\right)}{\left(be-cd\right)^2} + \frac{Ae}{\left(be-cd\right)\left(ex+d\right)d} - \frac{B}{\left(be-cd\right)\left(ex+d\right)} + \frac{A\ln\left(x\right)}{b\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x)
```

```
[Out] -c^2/(b*e-c*d)^2/b*ln(c*x+b)*A+c/(b*e-c*d)^2*ln(c*x+b)*B-1/(b*e-c*d)^2/d^2*
ln(e*x+d)*A*b*e^2+2/(b*e-c*d)^2/d*ln(e*x+d)*A*c*e-1/(b*e-c*d)^2*ln(e*x+d)*B
*c+1/(b*e-c*d)/d/(e*x+d)*A*e-1/(b*e-c*d)/(e*x+d)*B+A*ln(x)/b/d^2
```

maxima [A] time = 0.63, size = 150, normalized size = 1.36

$$\frac{\left(Bbc - Ac^2\right)\log\left(cx+b\right)}{bc^2d^2 - 2\,b^2cde + b^3e^2} - \frac{\left(Bcd^2 - 2\,Acde + Abe^2\right)\log\left(ex+d\right)}{c^2d^4 - 2\,bcd^3e + b^2d^2e^2} + \frac{Bd - Ae}{cd^3 - bd^2e + \left(cd^2e - bde^2\right)x} + \frac{A\log(x)}{bd^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b*c - A*c^2)*log(c*x + b)/(b*c^2*d^2 - 2*b^2*c*d*e + b^3*e^2) - (B*c*d^2
 - 2*A*c*d*e + A*b*e^2)*log(e*x + d)/(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)
+ (B*d - A*e)/(c*d^3 - b*d^2*e + (c*d^2*e - b*d*e^2)*x) + A*log(x)/(b*d^2)
```

mupad [B] time = 1.81, size = 141, normalized size = 1.28

$$\frac{A\ln(x)}{b\,d^2}-\frac{\ln(d+e\,x)\,\left(c\,\left(B\,d^2-2\,A\,d\,e\right)+A\,b\,e^2\right)}{b^2\,d^2\,e^2-2\,b\,c\,d^3\,e+c^2\,d^4}-\frac{\ln(b+c\,x)\,\left(A\,c^2-B\,b\,c\right)}{b^3\,e^2-2\,b^2\,c\,d\,e+b\,c^2\,d^2}+\frac{A\,e-B\,d}{d\,\left(b\,e-c\,d\right)\,\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^2),x)
```

```
[Out] (A*log(x))/(b*d^2) - (log(d + e*x)*(c*(B*d^2 - 2*A*d*e) + A*b*e^2))/(c^2*d^
4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (log(b + c*x)*(A*c^2 - B*b*c))/(b^3*e^2 +
b*c^2*d^2 - 2*b^2*c*d*e) + (A*e - B*d)/(d*(b*e - c*d)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.999 $\int \frac{A+Bx}{(d+ex)^3(bx+cx^2)} dx$

Optimal. Leaf size=171

$$-\frac{\log(d+ex)\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3(cd-be)^3}+\frac{c^2(bB-Ac)\log(b+cx)}{b(cd-be)^3}+\frac{Bcd^2-Ae(2cd-be)}{d^2(d+ex)(cd-be)^2}+\frac{Bd -}{2d(d+ex}$$

Rubi [A] time = 0.23, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{\log(d+ex)\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3(cd-be)^3}+\frac{c^2(bB-Ac)\log(b+cx)}{b(cd-be)^3}+\frac{Bcd^2-Ae(2cd-be)}{d^2(d+ex)(cd-be)^2}+\frac{Bd-Ae}{2d(d+ex)^2(cd-be)}+\frac{A\log(x)}{bd^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*d*(c*d - b*e)*(d + e*x)^2) + (B*c*d^2 - A*e*(2*c*d - b*e))/(
d^2*(c*d - b*e)^2*(d + e*x)) + (A*Log[x])/(b*d^3) + (c^2*(b*B - A*c)*Log[b
+ c*x])/(b*(c*d - b*e)^3) - ((B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e + b^2*
e^2))*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)}dx = \int \left(\frac{A}{bd^3x}-\frac{c^3(bB-Ac)}{b(-cd+be)^3(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)^3}+\frac{e\left(-Bcd^2+Ae(2cd-be\right.}{d^2(cd-be)^2(d+ex)^2}\right.$$
$$= \frac{Bd-Ae}{2d(cd-be)(d+ex)^2}+\frac{Bcd^2-Ae(2cd-be)}{d^2(cd-be)^2(d+ex)}+\frac{A\log(x)}{bd^3}+\frac{c^2(bB-Ac)\log(b+c}{b(cd-be)^3}$$

Mathematica [A] time = 0.20, size = 169, normalized size = 0.99

$$-\frac{\log(d+ex)\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3(cd-be)^3}+\frac{c^2(Ac-bB)\log(b+cx)}{b(be-cd)^3}+\frac{Ae(be-2cd)+Bcd^2}{d^2(d+ex)(cd-be)^2}+\frac{Bd-Ae}{2d(d+ex)^2(cd-be)}+\frac{A\log(x)}{bd^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*d*(c*d - b*e)*(d + e*x)^2) + (B*c*d^2 + A*e*(-2*c*d + b*e))/
(d^2*(c*d - b*e)^2*(d + e*x)) + (A*Log[x])/(b*d^3) + (c^2*(-(b*B) + A*c)*Lo
g[b + c*x])/(b*(-(c*d) + b*e)^3) - ((B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e
 + b^2*e^2))*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)), x]
```

fricas [B] time = 37.44, size = 644, normalized size = 3.77

$$\frac{3\,Bbc^{2}d^{5} - 3\,Ab^{3}d^{2}e^{3} - \left(4\,Bb^{2}c + 5\,Abc^{2}\right)d^{4}e + \left(Bb^{3} + 8\,Ab^{2}c\right)d^{3}e^{2} + 2\left(Bbc^{2}d^{4}e + 3\,Ab^{2}cd^{2}e^{3} - Ab^{3}de^{4} - \left(Bb^{2}c + 2\,Abc^{2}\right)d^{3}e^{2}\right)x + 2\left(\left(Bbc^{2} - Ac^{3}\right)d^{3}e^{2}x^{2} + 2\left(Bbc^{2} - Ac^{3}\right)d^{4}ex + \left(Bbc^{2} - Ac^{3}\right)d^{5}\right)\log\left(cx + b\right) - 2\left(Bbc^{2}d^{5} - 3\,Abc^{2}d^{4}e + 3\,Ab^{2}cd^{3}e^{2} - Ab^{3}d^{2}e^{3} + \left(Bbc^{2}d^{3}e^{2} - 3\,Abc^{2}d^{2}e^{3} + 3\,Ab^{2}cde^{4} - Ab^{3}e^{5}\right)x^{2} + 2\left(Bbc^{2}d^{4}e - 3\,Abc^{2}d^{3}e^{2} + 3\,Ab^{2}cd^{2}e^{3} - Ab^{3}de^{4}\right)x\right)\log\left(ex + d\right) + 2\left(Ac^{3}d^{5} - 3\,Abc^{2}d^{4}e + 3\,Ab^{2}cd^{3}e^{2} - Ab^{3}d^{2}e^{3} + \left(Ac^{3}d^{3}e^{2} - 3\,Abc^{2}d^{2}e^{3} + 3\,Ab^{2}cde^{4} - Ab^{3}e^{5}\right)x^{2} + 2\left(Ac^{3}d^{4}e - 3\,Abc^{2}d^{3}e^{2} + 3\,Ab^{2}cd^{2}e^{3} - Ab^{3}de^{4}\right)x\right)\log\left(x\right)}{2\left(bc^{3}d^{8} - 3\,b^{2}c^{2}d^{7}e + 3\,b^{3}cd^{6}e^{2} - b^{4}d^{5}e^{3} + \left(bc^{3}d^{6}e^{2} - 3\,b^{2}c^{2}d^{5}e^{3} + 3\,b^{3}cd^{4}e^{4} - b^{4}d^{3}e^{5}\right)x^{2} + 2\left(bc^{3}d^{7}e - 3\,b^{2}c^{2}d^{6}e^{2} + 3\,b^{3}cd^{5}e^{3} - b^{4}d^{4}e^{4}\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/2*(3*B*b*c^2*d^5 - 3*A*b^3*d^2*e^3 - (4*B*b^2*c + 5*A*b*c^2)*d^4*e + (B*b
^3 + 8*A*b^2*c)*d^3*e^2 + 2*(B*b*c^2*d^4*e + 3*A*b^2*c*d^2*e^3 - A*b^3*d*e^
4 - (B*b^2*c + 2*A*b*c^2)*d^3*e^2)*x + 2*((B*b*c^2 - A*c^3)*d^3*e^2*x^2 + 2
*(B*b*c^2 - A*c^3)*d^4*e*x + (B*b*c^2 - A*c^3)*d^5)*log(c*x + b) - 2*(B*b*c
^2*d^5 - 3*A*b*c^2*d^4*e + 3*A*b^2*c*d^3*e^2 - A*b^3*d^2*e^3 + (B*b*c^2*d^3
*e^2 - 3*A*b*c^2*d^2*e^3 + 3*A*b^2*c*d*e^4 - A*b^3*e^5)*x^2 + 2*(B*b*c^2*d^
4*e - 3*A*b*c^2*d^3*e^2 + 3*A*b^2*c*d^2*e^3 - A*b^3*d*e^4)*x)*log(e*x + d)
+ 2*(A*c^3*d^5 - 3*A*b*c^2*d^4*e + 3*A*b^2*c*d^3*e^2 - A*b^3*d^2*e^3 + (A*c
^3*d^3*e^2 - 3*A*b*c^2*d^2*e^3 + 3*A*b^2*c*d*e^4 - A*b^3*e^5)*x^2 + 2*(A*c^
3*d^4*e - 3*A*b*c^2*d^3*e^2 + 3*A*b^2*c*d^2*e^3 - A*b^3*d*e^4)*x)*log(x))/(
b*c^3*d^8 - 3*b^2*c^2*d^7*e + 3*b^3*c*d^6*e^2 - b^4*d^5*e^3 + (b*c^3*d^6*e^
2 - 3*b^2*c^2*d^5*e^3 + 3*b^3*c*d^4*e^4 - b^4*d^3*e^5)*x^2 + 2*(b*c^3*d^7*e
 - 3*b^2*c^2*d^6*e^2 + 3*b^3*c*d^5*e^3 - b^4*d^4*e^4)*x)
```

giac [A] time = 0.16, size = 308, normalized size = 1.80

$$\frac{\left(Bbc^{3} - Ac^{4}\right)\log\left(\left|cx + b\right|\right)}{bc^{4}d^{3} - 3\,b^{2}c^{3}d^{2}e + 3\,b^{3}c^{2}de^{2} - b^{4}ce^{3}} - \frac{\left(Bc^{2}d^{3}e - 3\,Ac^{2}d^{2}e^{2} + 3\,Abcde^{3} - Ab^{2}e^{4}\right)\log\left(\left|xe + d\right|\right)}{c^{3}d^{6}e - 3\,bc^{2}d^{5}e^{2} + 3\,b^{2}cd^{4}e^{3} - b^{3}d^{3}e^{4}} + \frac{A\log\left(\left|x\right|\right)}{bd^{3}} + \frac{3\,Bc^{2}d^{5} - 4\,Bbcd^{4}e - 5\,Ac^{2}d^{4}e + Bb^{2}d^{3}e^{2} + 8\,Abcd^{3}e^{2} - 3\,Ab^{2}d^{2}e^{3} + 2\left(Bc^{2}d^{4}e - Bbcd^{3}e^{2} - 2\,Ac^{2}d^{3}e^{2} + 3\,Abcd^{2}e^{3} - Ab^{2}de^{4}\right)x}{2\left(cd - be\right)^{3}\left(xe + d\right)^{2}d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*b*c^3 - A*c^4)*log(abs(c*x + b))/(b*c^4*d^3 - 3*b^2*c^3*d^2*e + 3*b^3*c^
2*d*e^2 - b^4*c*e^3) - (B*c^2*d^3*e - 3*A*c^2*d^2*e^2 + 3*A*b*c*d*e^3 - A*b
^2*e^4)*log(abs(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 -
b^3*d^3*e^4) + A*log(abs(x))/(b*d^3) + 1/2*(3*B*c^2*d^5 - 4*B*b*c*d^4*e - 5
*A*c^2*d^4*e + B*b^2*d^3*e^2 + 8*A*b*c*d^3*e^2 - 3*A*b^2*d^2*e^3 + 2*(B*c^2
*d^4*e - B*b*c*d^3*e^2 - 2*A*c^2*d^3*e^2 + 3*A*b*c*d^2*e^3 - A*b^2*d*e^4)*x
)/((c*d - b*e)^3*(x*e + d)^2*d^3)
```

maple [A] time = 0.05, size = 275, normalized size = 1.61

$$-\frac{A\,b^{2}e^{3}\ln\left(ex+d\right)}{\left(be-cd\right)^{3}d^{3}} + \frac{3Abc\,e^{2}\ln\left(ex+d\right)}{\left(be-cd\right)^{3}d^{2}} + \frac{A\,c^{3}\ln\left(cx+b\right)}{\left(be-cd\right)^{3}b} - \frac{3A\,c^{2}e\ln\left(ex+d\right)}{\left(be-cd\right)^{3}d} - \frac{B\,c^{2}\ln\left(cx+b\right)}{\left(be-cd\right)^{3}} + \frac{B\,c^{2}\ln\left(ex+d\right)}{\left(be-cd\right)^{3}} + \frac{Ab\,e^{2}}{\left(be-cd\right)^{2}\left(ex+d\right)d^{2}} - \frac{2Ace}{\left(be-cd\right)^{2}\left(ex+d\right)d} + \frac{Bc}{\left(be-cd\right)^{2}\left(ex+d\right)} + \frac{Ae}{2\left(be-cd\right)\left(ex+d\right)^{2}d} - \frac{B}{2\left(be-cd\right)\left(ex+d\right)^{2}} + \frac{A\ln\left(x\right)}{b\,d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x)
```

```
[Out] c^3/(b*e-c*d)^3/b*ln(c*x+b)*A-c^2/(b*e-c*d)^3*ln(c*x+b)*B+1/(b*e-c*d)^2/d^2
/(e*x+d)*A*b*e^2-2/(b*e-c*d)^2/d/(e*x+d)*A*c*e+1/(b*e-c*d)^2/(e*x+d)*B*c-1/
(b*e-c*d)^3/d^3*ln(e*x+d)*A*b^2*e^3+3/(b*e-c*d)^3/d^2*ln(e*x+d)*A*b*c*e^2-3
/(b*e-c*d)^3/d*ln(e*x+d)*A*c^2*e+1/(b*e-c*d)^3*ln(e*x+d)*B*c^2+1/2/(b*e-c*d
)/d/(e*x+d)^2*A*e-1/2/(b*e-c*d)/(e*x+d)^2*B+A*ln(x)/b/d^3
```

maxima [A] time = 0.71, size = 312, normalized size = 1.82

$$\frac{\left(Bbc^{2} - Ac^{3}\right)\log\left(cx + b\right)}{bc^{3}d^{3} - 3\,b^{2}c^{2}d^{2}e + 3\,b^{3}cde^{2} - b^{4}e^{3}} - \frac{\left(Bc^{2}d^{3} - 3\,Ac^{2}d^{2}e + 3\,Abcde^{2} - Ab^{2}e^{3}\right)\log\left(ex + d\right)}{c^{3}d^{6} - 3\,bc^{2}d^{5}e + 3\,b^{2}cd^{4}e^{2} - b^{3}d^{3}e^{3}} + \frac{3\,Bcd^{3} + 3\,Abde^{2} - \left(Bb + 5\,Ac\right)d^{2}e + 2\left(Bcd^{2}e - 2\,Acde^{2} + Abe^{3}\right)x}{2\left(c^{2}d^{6} - 2\,bcd^{5}e + b^{2}d^{4}e^{2} + \left(c^{2}d^{4}e^{2} - 2\,bcd^{3}e^{3} + b^{2}d^{2}e^{4}\right)x^{2} + 2\left(c^{2}d^{5}e - 2\,bcd^{4}e^{2} + b^{2}d^{3}e^{3}\right)x\right)} + \frac{A\log\left(x\right)}{bd^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b*c^2 - A*c^3)*log(c*x + b)/(b*c^3*d^3 - 3*b^2*c^2*d^2*e + 3*b^3*c*d*e^2
 - b^4*e^3) - (B*c^2*d^3 - 3*A*c^2*d^2*e + 3*A*b*c*d*e^2 - A*b^2*e^3)*log(e
*x + d)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3) + 1/2*(3*
B*c*d^3 + 3*A*b*d*e^2 - (B*b + 5*A*c)*d^2*e + 2*(B*c*d^2*e - 2*A*c*d*e^2 +
A*b*e^3)*x)/(c^2*d^6 - 2*b*c*d^5*e + b^2*d^4*e^2 + (c^2*d^4*e^2 - 2*b*c*d^3
*e^3 + b^2*d^2*e^4)*x^2 + 2*(c^2*d^5*e - 2*b*c*d^4*e^2 + b^2*d^3*e^3)*x) +
A*log(x)/(b*d^3)
```

mupad [B] time = 1.96, size = 284, normalized size = 1.66

$$\frac{\frac{3\,A\,b\,e^2+3\,B\,c\,d^2-5\,A\,c\,d\,e-B\,b\,d\,e}{2\,d\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}+\frac{x\,\left(B\,c\,d^2\,e-2\,A\,c\,d\,e^2+A\,b\,e^3\right)}{d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}}{d^2+2\,d\,e\,x+e^2\,x^2}-\frac{\ln\left(d+e\,x\right)\,\left(c^2\,\left(B\,d^3-3\,A\,d^2\,e\right)-A\,b^2\,e^3+3\,A\,b\,c\,d\,e^2\right)}{-b^3\,d^3\,e^3+3\,b^2\,c\,d^4\,e^2-3\,b\,c^2\,d^5\,e+c^3\,d^6}+\frac{\ln\left(b+c\,x\right)\,\left(A\,c^3-B\,b\,c^2\right)}{b^4\,e^3-3\,b^3\,c\,d\,e^2+3\,b^2\,c^2\,d^2\,e-b\,c^3\,d^3}+\frac{A\,\ln(x)}{b\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^3),x)
```

```
[Out] ((3*A*b*e^2 + 3*B*c*d^2 - 5*A*c*d*e - B*b*d*e)/(2*d*(b^2*e^2 + c^2*d^2 - 2*
b*c*d*e)) + (x*(A*b*e^3 - 2*A*c*d*e^2 + B*c*d^2*e))/(d^2*(b^2*e^2 + c^2*d^2
 - 2*b*c*d*e)))/(d^2 + e^2*x^2 + 2*d*e*x) - (log(d + e*x)*(c^2*(B*d^3 - 3*A
*d^2*e) - A*b^2*e^3 + 3*A*b*c*d*e^2))/(c^3*d^6 - b^3*d^3*e^3 + 3*b^2*c*d^4*
e^2 - 3*b*c^2*d^5*e) + (log(b + c*x)*(A*c^3 - B*b*c^2))/(b^4*e^3 - b*c^3*d^
3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + (A*log(x))/(b*d^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1000 $\int \frac{A+Bx}{(d+ex)^4(bx+cx^2)}\,dx$

Optimal. Leaf size=245

$$\frac{Bc^2d^3 - Ae\left(b^2e^2 - 3bcde + 3c^2d^2\right)}{d^3(d+ex)(cd-be)^3} - \frac{\log(d+ex)\left(Bc^3d^4 - Ae\left(-b^3e^3 + 4b^2cde^2 - 6bc^2d^2e + 4c^3d^3\right)\right)}{d^4(cd-be)^4} + \frac{c^3(bB-Ac)}{b(cd-}$$

Rubi [A] time = 0.30, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{Bc^2d^3 - Ae\left(b^2e^2 - 3bcde + 3c^2d^2\right)}{d^3(d+ex)(cd-be)^3} - \frac{\log(d+ex)\left(Bc^3d^4 - Ae\left(4b^2cde^2 - b^3e^3 - 6bc^2d^2e + 4c^3d^3\right)\right)}{d^4(cd-be)^4} + \frac{c^3(bB-Ac)\log(b+cx)}{b(cd-be)^4} + \frac{Bcd^2 - Ae(2cd-be)}{2d^2(d+ex)^2(cd-be)^2} + \frac{Bd-Ae}{3d(d+ex)^3(cd-be)} + \frac{A\log(x)}{bd^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(3*d*(c*d - b*e)*(d + e*x)^3) + (B*c*d^2 - A*e*(2*c*d - b*e))/(
2*d^2*(c*d - b*e)^2*(d + e*x)^2) + (B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e
+ b^2*e^2))/(d^3*(c*d - b*e)^3*(d + e*x)) + (A*Log[x])/(b*d^4) + (c^3*(b*B
- A*c)*Log[b + c*x])/(b*(c*d - b*e)^4) - ((B*c^3*d^4 - A*e*(4*c^3*d^3 - 6*b
*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3))*Log[d + e*x])/(d^4*(c*d - b*e)^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^4\left(bx+cx^2\right)}\,dx &= \int \left(\frac{A}{bd^4x} + \frac{c^4(bB-Ac)}{b(-cd+be)^4(b+cx)} - \frac{e(Bd-Ae)}{d(cd-be)(d+ex)^4} + \frac{e\left(-Bcd^2+Ae(2cd-be)\right)}{d^2(cd-be)^2(d+ex)^3}\right.\\ &= \frac{Bd-Ae}{3d(cd-be)(d+ex)^3} + \frac{Bcd^2-Ae(2cd-be)}{2d^2(cd-be)^2(d+ex)^2} + \frac{Bc^2d^3-Ae\left(3c^2d^2-3bcde+b^2e^2\right)}{d^3(cd-be)^3(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.34, size = 241, normalized size = 0.98

$$\frac{Bc^2d^3 - Ae\left(b^2e^2 - 3bcde + 3c^2d^2\right)}{d^3(d+ex)(cd-be)^3} - \frac{\log(d+ex)\left(Ae\left(b^3e^3 - 4b^2cde^2 + 6bc^2d^2e - 4c^3d^3\right) + Bc^3d^4\right)}{d^4(cd-be)^4} + \frac{c^3(bB-Ac)\log(b+cx)}{b(cd-be)^4} + \frac{Ae(be-2cd)+Bcd^2}{2d^2(d+ex)^2(cd-be)^2} + \frac{Bd-Ae}{3d(d+ex)^3(cd-be)} + \frac{A\log(x)}{bd^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(3*d*(c*d - b*e)*(d + e*x)^3) + (B*c*d^2 + A*e*(-2*c*d + b*e))/
(2*d^2*(c*d - b*e)^2*(d + e*x)^2) + (B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e
 + b^2*e^2))/(d^3*(c*d - b*e)^3*(d + e*x)) + (A*Log[x])/(b*d^4) + (c^3*(b*B
 - A*c)*Log[b + c*x])/(b*(c*d - b*e)^4) - ((B*c^3*d^4 + A*e*(-4*c^3*d^3 + 6
*b*c^2*d^2*e - 4*b^2*c*d*e^2 + b^3*e^3))*Log[d + e*x])/(d^4*(c*d - b*e)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^4\left(bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^4*(b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^4*(b*x + c*x^2)), x]
```

fricas [B] time = 127.91, size = 1133, normalized size = 4.62

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*b*c^3*d^7 + 11*A*b^4*d^3*e^4 - 2*(9*B*b^2*c^2 + 13*A*b*c^3)*d^6*e
 + 3*(3*B*b^3*c + 19*A*b^2*c^2)*d^5*e^2 - 2*(B*b^4 + 21*A*b^3*c)*d^4*e^3 +
6*(B*b*c^3*d^5*e^2 + 6*A*b^2*c^2*d^3*e^4 - 4*A*b^3*c*d^2*e^5 + A*b^4*d*e^6
- (B*b^2*c^2 + 3*A*b*c^3)*d^4*e^3)*x^2 + 3*(5*B*b*c^3*d^6*e - 20*A*b^3*c*d^
3*e^4 + 5*A*b^4*d^2*e^5 - 2*(3*B*b^2*c^2 + 7*A*b*c^3)*d^5*e^2 + (B*b^3*c +
29*A*b^2*c^2)*d^4*e^3)*x + 6*((B*b*c^3 - A*c^4)*d^4*e^3*x^3 + 3*(B*b*c^3 -
A*c^4)*d^5*e^2*x^2 + 3*(B*b*c^3 - A*c^4)*d^6*e*x + (B*b*c^3 - A*c^4)*d^7)*l
og(c*x + b) - 6*(B*b*c^3*d^7 - 4*A*b*c^3*d^6*e + 6*A*b^2*c^2*d^5*e^2 - 4*A*
b^3*c*d^4*e^3 + A*b^4*d^3*e^4 + (B*b*c^3*d^4*e^3 - 4*A*b*c^3*d^3*e^4 + 6*A*
b^2*c^2*d^2*e^5 - 4*A*b^3*c*d*e^6 + A*b^4*e^7)*x^3 + 3*(B*b*c^3*d^5*e^2 - 4
*A*b*c^3*d^4*e^3 + 6*A*b^2*c^2*d^3*e^4 - 4*A*b^3*c*d^2*e^5 + A*b^4*d*e^6)*x
^2 + 3*(B*b*c^3*d^6*e - 4*A*b*c^3*d^5*e^2 + 6*A*b^2*c^2*d^4*e^3 - 4*A*b^3*c
*d^3*e^4 + A*b^4*d^2*e^5)*x)*log(e*x + d) + 6*(A*c^4*d^7 - 4*A*b*c^3*d^6*e
+ 6*A*b^2*c^2*d^5*e^2 - 4*A*b^3*c*d^4*e^3 + A*b^4*d^3*e^4 + (A*c^4*d^4*e^3
- 4*A*b*c^3*d^3*e^4 + 6*A*b^2*c^2*d^2*e^5 - 4*A*b^3*c*d*e^6 + A*b^4*e^7)*x^
3 + 3*(A*c^4*d^5*e^2 - 4*A*b*c^3*d^4*e^3 + 6*A*b^2*c^2*d^3*e^4 - 4*A*b^3*c*
d^2*e^5 + A*b^4*d*e^6)*x^2 + 3*(A*c^4*d^6*e - 4*A*b*c^3*d^5*e^2 + 6*A*b^2*c
^2*d^4*e^3 - 4*A*b^3*c*d^3*e^4 + A*b^4*d^2*e^5)*x)*log(x))/(b*c^4*d^11 - 4*
b^2*c^3*d^10*e + 6*b^3*c^2*d^9*e^2 - 4*b^4*c*d^8*e^3 + b^5*d^7*e^4 + (b*c^4
*d^8*e^3 - 4*b^2*c^3*d^7*e^4 + 6*b^3*c^2*d^6*e^5 - 4*b^4*c*d^5*e^6 + b^5*d^
4*e^7)*x^3 + 3*(b*c^4*d^9*e^2 - 4*b^2*c^3*d^8*e^3 + 6*b^3*c^2*d^7*e^4 - 4*b
^4*c*d^6*e^5 + b^5*d^5*e^6)*x^2 + 3*(b*c^4*d^10*e - 4*b^2*c^3*d^9*e^2 + 6*b
^3*c^2*d^8*e^3 - 4*b^4*c*d^7*e^4 + b^5*d^6*e^5)*x)
```

giac [A] time = 0.17, size = 475, normalized size = 1.94

$$\frac{\left(Bbc^4 - Ac^5\right)\log\left(|cx+b|\right)}{bc^5d^4 - 4\,b^2c^4d^3e + 6\,b^3c^3d^2e^2 - 4\,b^4c^2de^3 + b^5ce^4} - \frac{\left(Bc^3d^4e - 4\,Ac^3d^3e^2 + 6\,Abc^2d^2e^3 - 4\,Ab^2cde^4 + Ab^3e^5\right)\log\left(|xe+d|\right)}{c^4d^8e - 4\,bc^3d^7e^2 + 6\,b^2c^2d^6e^3 - 4\,b^3cd^5e^4 + b^4d^4e^5} + \frac{A\log\left(|x|\right)}{bd^4} + \frac{11\,Bc^3d^7 - 18\,Bbc^2d^6e - 26\,Ac^3d^6e + 9\,Bb^2cd^5e^2 + 57\,Abc^2d^5e^2 - 2\,Bb^3d^4e^3 - 42\,Ab^2cd^4e^3 + 11\,Ab^3d^3e^4 + 6\left(Bc^3d^5e^2 - Bbc^2d^4e^3 - 3\,Ac^3d^4e^3 + 6\,Abc^2d^3e^4 - 4\,Ab^2cd^2e^5 + Ab^3de^6\right)x^2 + 3\left(5\,Bc^3d^6e - 6\,Bbc^2d^5e^2 - 14\,Ac^3d^5e^2 + Bb^2cd^4e^3 + 29\,Abc^2d^4e^3 - 20\,Ab^2cd^3e^4 + 5\,Ab^3d^2e^5\right)x}{6\,(cd-be)^4(xe+d)^3d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*b*c^4 - A*c^5)*log(abs(c*x + b))/(b*c^5*d^4 - 4*b^2*c^4*d^3*e + 6*b^3*c^
3*d^2*e^2 - 4*b^4*c^2*d*e^3 + b^5*c*e^4) - (B*c^3*d^4*e - 4*A*c^3*d^3*e^2 +
 6*A*b*c^2*d^2*e^3 - 4*A*b^2*c*d*e^4 + A*b^3*e^5)*log(abs(x*e + d))/(c^4*d^
8*e - 4*b*c^3*d^7*e^2 + 6*b^2*c^2*d^6*e^3 - 4*b^3*c*d^5*e^4 + b^4*d^4*e^5)
+ A*log(abs(x))/(b*d^4) + 1/6*(11*B*c^3*d^7 - 18*B*b*c^2*d^6*e - 26*A*c^3*d
^6*e + 9*B*b^2*c*d^5*e^2 + 57*A*b*c^2*d^5*e^2 - 2*B*b^3*d^4*e^3 - 42*A*b^2*
c*d^4*e^3 + 11*A*b^3*d^3*e^4 + 6*(B*c^3*d^5*e^2 - B*b*c^2*d^4*e^3 - 3*A*c^3
*d^4*e^3 + 6*A*b*c^2*d^3*e^4 - 4*A*b^2*c*d^2*e^5 + A*b^3*d*e^6)*x^2 + 3*(5*
B*c^3*d^6*e - 6*B*b*c^2*d^5*e^2 - 14*A*c^3*d^5*e^2 + B*b^2*c*d^4*e^3 + 29*A
*b*c^2*d^4*e^3 - 20*A*b^2*c*d^3*e^4 + 5*A*b^3*d^2*e^5)*x)/((c*d - b*e)^4*(x
*e + d)^3*d^4)
```

maple [A] time = 0.08, size = 415, normalized size = 1.69

$$-\frac{A\,b^3e^4\ln(ex+d)}{(be-cd)^4\,d^4} + \frac{4A\,b^2c\,e^3\ln(ex+d)}{(be-cd)^4\,d^3} - \frac{6Ab\,c^2e^2\ln(ex+d)}{(be-cd)^4\,d^2} - \frac{A\,c^4\ln(cx+b)}{(be-cd)^4\,b} + \frac{4A\,c^3e\ln(ex+d)}{(be-cd)^4\,d} + \frac{B\,c^3\ln(cx+b)}{(be-cd)^4} - \frac{B\,c^3\ln(ex+d)}{(be-cd)^4} + \frac{A\,b^2e^3}{(be-cd)^3(ex+d)\,d^3} - \frac{3Abc\,e^2}{(be-cd)^3(ex+d)\,d^2} + \frac{3A\,c^2e}{(be-cd)^3(ex+d)\,d} - \frac{B\,c^2}{(be-cd)^3(ex+d)} + \frac{Ab\,e^2}{2\,(be-cd)^2(ex+d)^2\,d^2} - \frac{Ace}{(be-cd)^2(ex+d)^2\,d} + \frac{Bc}{2\,(be-cd)^2(ex+d)^2} + \frac{Ae}{3\,(be-cd)(ex+d)^3\,d} - \frac{B}{3\,(be-cd)(ex+d)^3} + \frac{A\ln(x)}{b\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x)
```

```
[Out] -c^4/(b*e-c*d)^4/b*ln(c*x+b)*A+c^3/(b*e-c*d)^4*ln(c*x+b)*B+1/2/(b*e-c*d)^2/
d^2/(e*x+d)^2*A*b*e^2-1/(b*e-c*d)^2/d/(e*x+d)^2*A*c*e+1/2/(b*e-c*d)^2/(e*x+
d)^2*B*c+1/(b*e-c*d)^3/d^3/(e*x+d)*A*b^2*e^3-3/(b*e-c*d)^3/d^2/(e*x+d)*A*b*
c*e^2+3/(b*e-c*d)^3/d/(e*x+d)*A*c^2*e-1/(b*e-c*d)^3/(e*x+d)*B*c^2-1/(b*e-c*
d)^4/d^4*ln(e*x+d)*A*b^3*e^4+4/(b*e-c*d)^4/d^3*ln(e*x+d)*A*b^2*c*e^3-6/(b*e
-c*d)^4/d^2*ln(e*x+d)*A*b*c^2*e^2+4/(b*e-c*d)^4/d*ln(e*x+d)*A*c^3*e-1/(b*e-
c*d)^4*ln(e*x+d)*B*c^3+1/3/(b*e-c*d)/d/(e*x+d)^3*A*e-1/3/(b*e-c*d)/(e*x+d)^
3*B+A*ln(x)/b/d^4
```

maxima [B] time = 0.78, size = 553, normalized size = 2.26

$$\frac{\left(Bbc^3 - Ac^4\right)\log\left(cx+b\right)}{bc^4d^4 - 4\,b^2c^3d^3e + 6\,b^3c^2d^2e^2 - 4\,b^4cde^3 + b^5e^4} - \frac{\left(Bc^3d^4 - 4\,Ac^3d^3e + 6\,Abc^2d^2e^2 - 4\,Ab^2cde^3 + Ab^3e^4\right)\log\left(ex+d\right)}{c^4d^8 - 4\,bc^3d^7e + 6\,b^2c^2d^6e^2 - 4\,b^3cd^5e^3 + b^4d^4e^4} + \frac{11\,Bc^2d^5 - 11\,Ab^2d^2e^3 - \left(7\,Bbc + 26\,Ac^2\right)d^4e + \left(2\,Bb^2 + 31\,Abc\right)d^3e^2 + 6\left(Bc^2d^3e^2 - 3\,Ac^2d^2e^3 + 3\,Abcde^4 - Ab^2e^5\right)x^2 + 3\left(5\,Bc^2d^4e + 15\,Abcd^2e^3 - 5\,Ab^2de^4 - \left(Bbc + 14\,Ac^2\right)d^3e^2\right)x}{6\left(c^3d^9 - 3\,bc^2d^8e + 3\,b^2cd^7e^2 - b^3d^6e^3 + \left(c^3d^6e^3 - 3\,bc^2d^5e^4 + 3\,b^2cd^4e^5 - b^3d^3e^6\right)x^3 + 3\left(c^3d^7e^2 - 3\,bc^2d^6e^3 + 3\,b^2cd^5e^4 - b^3d^4e^5\right)x^2 + 3\left(c^3d^8e - 3\,bc^2d^7e^2 + 3\,b^2cd^6e^3 - b^3d^5e^4\right)x\right)} + \frac{A\log(x)}{bd^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b*c^3 - A*c^4)*log(c*x + b)/(b*c^4*d^4 - 4*b^2*c^3*d^3*e + 6*b^3*c^2*d^2
*e^2 - 4*b^4*c*d*e^3 + b^5*e^4) - (B*c^3*d^4 - 4*A*c^3*d^3*e + 6*A*b*c^2*d^
2*e^2 - 4*A*b^2*c*d*e^3 + A*b^3*e^4)*log(e*x + d)/(c^4*d^8 - 4*b*c^3*d^7*e
+ 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4) + 1/6*(11*B*c^2*d^5 -
11*A*b^2*d^2*e^3 - (7*B*b*c + 26*A*c^2)*d^4*e + (2*B*b^2 + 31*A*b*c)*d^3*e^
2 + 6*(B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 + 3*A*b*c*d*e^4 - A*b^2*e^5)*x^2 + 3
*(5*B*c^2*d^4*e + 15*A*b*c*d^2*e^3 - 5*A*b^2*d*e^4 - (B*b*c + 14*A*c^2)*d^3
*e^2)*x)/(c^3*d^9 - 3*b*c^2*d^8*e + 3*b^2*c*d^7*e^2 - b^3*d^6*e^3 + (c^3*d^
6*e^3 - 3*b*c^2*d^5*e^4 + 3*b^2*c*d^4*e^5 - b^3*d^3*e^6)*x^3 + 3*(c^3*d^7*e
^2 - 3*b*c^2*d^6*e^3 + 3*b^2*c*d^5*e^4 - b^3*d^4*e^5)*x^2 + 3*(c^3*d^8*e -
3*b*c^2*d^7*e^2 + 3*b^2*c*d^6*e^3 - b^3*d^5*e^4)*x) + A*log(x)/(b*d^4)
```

mupad [B] time = 2.25, size = 471, normalized size = 1.92

$$\frac{\frac{-2\,B\,b^2\,d\,e^2+11\,A\,b^2\,e^3+7\,B\,b\,c\,d^2\,e-31\,A\,b\,c\,d\,e^2-11\,B\,c^2\,d^3+26\,A\,c^2\,d^2\,e}{6\,d\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}+\frac{x^2\,\left(A\,b^2\,e^5-3\,A\,b\,c\,d\,e^4-B\,c^2\,d^3\,e^2+3\,A\,c^2\,d^2\,e^3\right)}{d^3\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}+\frac{x\,\left(5\,A\,b^2\,e^4+B\,b\,c\,d^2\,e^2-15\,A\,b\,c\,d\,e^3-5\,B\,c^2\,d^3\,e+14\,A\,c^2\,d^2\,e^2\right)}{2\,d^2\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}-\frac{\ln\left(b+c\,x\right)\,\left(A\,c^4-B\,b\,c^3\right)}{b^5\,e^4-4\,b^4\,c\,d\,e^3+6\,b^3\,c^2\,d^2\,e^2-4\,b^2\,c^3\,d^3\,e+b\,c^4\,d^4}+\frac{A\,\ln(x)}{b\,d^4}-\frac{\ln\left(d+e\,x\right)\,\left(A\,b^3\,e^4-4\,A\,b^2\,c\,d\,e^3+6\,A\,b\,c^2\,d^2\,e^2+B\,c^3\,d^4-4\,A\,c^3\,d^3\,e\right)}{d^4\,{\left(b\,e-c\,d\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^4),x)
```

```
[Out] ((11*A*b^2*e^3 - 11*B*c^2*d^3 + 26*A*c^2*d^2*e - 2*B*b^2*d*e^2 - 31*A*b*c*d
*e^2 + 7*B*b*c*d^2*e)/(6*d*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e
^2)) + (x^2*(A*b^2*e^5 + 3*A*c^2*d^2*e^3 - B*c^2*d^3*e^2 - 3*A*b*c*d*e^4))/
(d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (x*(5*A*b^2*e^4
 - 5*B*c^2*d^3*e + 14*A*c^2*d^2*e^2 - 15*A*b*c*d*e^3 + B*b*c*d^2*e^2))/(2*d
^2*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)))/(d^3 + e^3*x^3 + 3
*d*e^2*x^2 + 3*d^2*e*x) - (log(b + c*x)*(A*c^4 - B*b*c^3))/(b^5*e^4 + b*c^4
*d^4 - 4*b^2*c^3*d^3*e + 6*b^3*c^2*d^2*e^2 - 4*b^4*c*d*e^3) + (A*log(x))/(b
*d^4) - (log(d + e*x)*(A*b^3*e^4 + B*c^3*d^4 - 4*A*c^3*d^3*e + 6*A*b*c^2*d^
2*e^2 - 4*A*b^2*c*d*e^3))/(d^4*(b*e - c*d)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1001 $\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=156

$$\frac{d^3\log(x)(4Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}-\frac{Ad^4}{b^2x}+\frac{(cd-be)^3\log(b+cx)\left(-bc(Bd-2Ae)+2Ac^2d-\right.}{b^3c^4}$$

Rubi [A] time = 0.23, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}+\frac{(cd-be)^3\log(b+cx)\left(-bc(Bd-2Ae)+2Ac^2d-3b^2Be\right)}{b^3c^4}+\frac{d^3\log(x)(4Abe-2Acd+bBd)}{b^3}-\frac{Ad^4}{b^2x}+\frac{e^3x(Ace-2bBe+4Bcd)}{c^3}+\frac{Be^4x^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^4)/(b^2*x)) + (e^3*(4*B*c*d - 2*b*B*e + A*c*e)*x)/c^3 + (B*e^4*x^2)/
(2*c^2) + ((b*B - A*c)*(c*d - b*e)^4)/(b^2*c^4*(b + c*x)) + (d^3*(b*B*d - 2
*A*c*d + 4*A*b*e)*Log[x])/b^3 + ((c*d - b*e)^3*(2*A*c^2*d - 3*b^2*B*e - b*c
*(B*d - 2*A*e))*Log[b + c*x])/(b^3*c^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^2}\,dx=\int \left(\frac{e^3(4Bcd-2bBe+Ace)}{c^3}+\frac{Ad^4}{b^2x^2}+\frac{d^3(bBd-2Acd+4Abe)}{b^3x}+\frac{Be^4x}{c^2}-\frac{(bB-Ac)}{b^2c^3(}\right.$$
$$=-\frac{Ad^4}{b^2x}+\frac{e^3(4Bcd-2bBe+Ace)x}{c^3}+\frac{Be^4x^2}{2c^2}+\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}+\frac{d^3(bBd-2Ac}{}$$

Mathematica [A] time = 0.09, size = 155, normalized size = 0.99

$$\frac{d^3\log(x)(4Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}-\frac{Ad^4}{b^2x}+\frac{(be-cd)^3\log(b+cx)\left(bc(Bd-2Ae)-2Ac^2d+3b^2Be\right)}{b^3c^4}+\frac{e^3x(Ace-2bBe+4Bcd)}{c^3}+\frac{Be^4x^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^4)/(b^2*x)) + (e^3*(4*B*c*d - 2*b*B*e + A*c*e)*x)/c^3 + (B*e^4*x^2)/
(2*c^2) + ((b*B - A*c)*(c*d - b*e)^4)/(b^2*c^4*(b + c*x)) + (d^3*(b*B*d - 2
*A*c*d + 4*A*b*e)*Log[x])/b^3 + ((-(c*d) + b*e)^3*(-2*A*c^2*d + 3*b^2*B*e +
 b*c*(B*d - 2*A*e))*Log[b + c*x])/(b^3*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2, x]
```

fricas [B] time = 0.45, size = 517, normalized size = 3.31

$$\frac{Bb^3c^3e^4x^4 - 2\,Ab^2c^4d^4 + \left(8\,Bb^3c^3de^3 - \left(3\,Bb^4c^2 - 2\,Ab^3c^3\right)e^4\right)x^3 + 2\left(4\,Bb^4c^2de^3 - \left(2\,Bb^5c - Ab^4c^2\right)e^4\right)x^2 + 2\left(\left(Bb^2c^4 - 2\,Abc^5\right)d^4 - 4\left(Bb^3c^3 - Ab^2c^4\right)d^3e + 6\left(Bb^4c^2 - Ab^3c^3\right)d^2e^2 - 4\left(Bb^5c - Ab^4c^2\right)de^3 + \left(Bb^6 - Ab^5c\right)e^4\right)x - 2\left(\left(4\,Abc^5d^3e - 6\,Bb^3c^3d^2e^2 + \left(Bbc^5 - 2\,Ac^6\right)d^4 + 4\left(2\,Bb^4c^2 - Ab^3c^3\right)de^3 - \left(3\,Bb^5c - 2\,Ab^4c^2\right)e^4\right)x^2 + \left(4\,Ab^2c^4d^3e - 6\,Bb^4c^2d^2e^2 + \left(Bb^2c^4 - 2\,Abc^5\right)d^4 + 4\left(2\,Bb^5c - Ab^4c^2\right)de^3 - \left(3\,Bb^6 - 2\,Ab^5c\right)e^4\right)x\right)\log\left(cx + b\right) + 2\left(\left(4\,Abc^5d^3e + \left(Bbc^5 - 2\,Ac^6\right)d^4\right)x^2 + \left(4\,Ab^2c^4d^3e + \left(Bb^2c^4 - 2\,Abc^5\right)d^4\right)x\right)\log\left(x\right)}{2\left(b^3c^5x^2 + b^4c^4x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*c^3*e^4*x^4 - 2*A*b^2*c^4*d^4 + (8*B*b^3*c^3*d*e^3 - (3*B*b^4*c^
2 - 2*A*b^3*c^3)*e^4)*x^3 + 2*(4*B*b^4*c^2*d*e^3 - (2*B*b^5*c - A*b^4*c^2)*
e^4)*x^2 + 2*((B*b^2*c^4 - 2*A*b*c^5)*d^4 - 4*(B*b^3*c^3 - A*b^2*c^4)*d^3*e
 + 6*(B*b^4*c^2 - A*b^3*c^3)*d^2*e^2 - 4*(B*b^5*c - A*b^4*c^2)*d*e^3 + (B*b
^6 - A*b^5*c)*e^4)*x - 2*((4*A*b*c^5*d^3*e - 6*B*b^3*c^3*d^2*e^2 + (B*b*c^5
 - 2*A*c^6)*d^4 + 4*(2*B*b^4*c^2 - A*b^3*c^3)*d*e^3 - (3*B*b^5*c - 2*A*b^4*
c^2)*e^4)*x^2 + (4*A*b^2*c^4*d^3*e - 6*B*b^4*c^2*d^2*e^2 + (B*b^2*c^4 - 2*A
*b*c^5)*d^4 + 4*(2*B*b^5*c - A*b^4*c^2)*d*e^3 - (3*B*b^6 - 2*A*b^5*c)*e^4)*
x)*log(c*x + b) + 2*((4*A*b*c^5*d^3*e + (B*b*c^5 - 2*A*c^6)*d^4)*x^2 + (4*A
*b^2*c^4*d^3*e + (B*b^2*c^4 - 2*A*b*c^5)*d^4)*x)*log(x))/(b^3*c^5*x^2 + b^4
*c^4*x)
```

giac [B] time = 0.16, size = 315, normalized size = 2.02

$$\frac{\left(Bbd^4 - 2\,Acd^4 + 4\,Abd^3e\right)\log\left(|x|\right)}{b^3} + \frac{Bc^2x^2e^4 + 8\,Bc^2dxe^3 - 4\,Bbcxe^4 + 2\,Ac^2xe^4}{2\,c^4} - \frac{\left(Bbc^4d^4 - 2\,Ac^5d^4 + 4\,Abc^4d^3e - 6\,Bb^3c^2d^2e^2 + 8\,Bb^4cde^3 - 4\,Ab^3c^2de^3 - 3\,Bb^5e^4 + 2\,Ab^4ce^4\right)\log\left(|cx + b|\right)}{b^3c^4} - \frac{Abc^4d^4 - \left(Bbc^4d^4 - 2\,Ac^5d^4 - 4\,Bb^2c^3d^3e + 4\,Abc^4d^3e + 6\,Bb^3c^2d^2e^2 - 6\,Ab^2c^3d^2e^2 - 4\,Bb^4cde^3 + 4\,Ab^3c^2de^3 + Bb^5e^4 - Ab^4ce^4\right)x}{(cx + b)b^2c^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b*d^4 - 2*A*c*d^4 + 4*A*b*d^3*e)*log(abs(x))/b^3 + 1/2*(B*c^2*x^2*e^4 +
8*B*c^2*d*x*e^3 - 4*B*b*c*x*e^4 + 2*A*c^2*x*e^4)/c^4 - (B*b*c^4*d^4 - 2*A*c
^5*d^4 + 4*A*b*c^4*d^3*e - 6*B*b^3*c^2*d^2*e^2 + 8*B*b^4*c*d*e^3 - 4*A*b^3*
c^2*d*e^3 - 3*B*b^5*e^4 + 2*A*b^4*c*e^4)*log(abs(c*x + b))/(b^3*c^4) - (A*b
*c^4*d^4 - (B*b*c^4*d^4 - 2*A*c^5*d^4 - 4*B*b^2*c^3*d^3*e + 4*A*b*c^4*d^3*e
 + 6*B*b^3*c^2*d^2*e^2 - 6*A*b^2*c^3*d^2*e^2 - 4*B*b^4*c*d*e^3 + 4*A*b^3*c^
2*d*e^3 + B*b^5*e^4 - A*b^4*c*e^4)*x)/((c*x + b)*b^2*c^4*x)
```

maple [B] time = 0.06, size = 403, normalized size = 2.58

$$\frac{B\,e^4x^2}{2c^2} - \frac{A\,b^2e^4}{(cx+b)\,c^3} + \frac{4Abd\,e^3}{(cx+b)\,c^2} - \frac{2Ab\,e^4\ln(cx+b)}{c^3} + \frac{4A\,d^3e}{(cx+b)\,b} - \frac{Ac\,d^4}{(cx+b)\,b^2} + \frac{4A\,d^3e\ln(x)}{b^2} - \frac{4A\,d^3e\ln(cx+b)}{b^2} - \frac{2Ac\,d^4\ln(x)}{b^3} + \frac{2Ac\,d^4\ln(cx+b)}{b^3} - \frac{6A\,d^2e^2}{(cx+b)\,c} + \frac{4Ad\,e^3\ln(cx+b)}{c^2} + \frac{A\,e^4x}{c^2} + \frac{B\,b^3e^4}{(cx+b)\,c^4} - \frac{4B\,b^2d\,e^3}{(cx+b)\,c^3} + \frac{3B\,b^2e^4\ln(cx+b)}{c^4} + \frac{6Bb\,d^2e^2}{(cx+b)\,c^2} - \frac{8Bbd\,e^3\ln(cx+b)}{c^3} - \frac{2Bb\,e^4x}{c^3} + \frac{B\,d^4}{(cx+b)\,b} + \frac{B\,d^4\ln(x)}{b^2} - \frac{B\,d^4\ln(cx+b)}{b^2} - \frac{4B\,d^3e}{(cx+b)\,c} + \frac{6B\,d^2e^2\ln(cx+b)}{c^2} + \frac{4Bd\,e^3x}{c^2} - \frac{A\,d^4}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x)
```

```
[Out] d^4/b^2*ln(x)*B+e^4/c^2*A*x-1/b^2*ln(c*x+b)*B*d^4+1/b/(c*x+b)*B*d^4-8/c^3*b
*ln(c*x+b)*B*d*e^3+4/c^2*b/(c*x+b)*A*d*e^3-4/c^3*b^2/(c*x+b)*B*d*e^3+6/c^2*
b/(c*x+b)*B*d^2*e^2+4/b/(c*x+b)*A*d^3*e-4/c/(c*x+b)*B*d^3*e+6/c^2*ln(c*x+b)
*B*d^2*e^2-1/c^3*b^2/(c*x+b)*A*e^4-c/b^2/(c*x+b)*A*d^4+1/c^4*b^3/(c*x+b)*B*
e^4+4*d^3/b^2*ln(x)*A*e-2*d^4/b^3*ln(x)*A*c-2*e^4/c^3*B*b*x+4*e^3/c^2*B*d*x
-4/b^2*ln(c*x+b)*A*d^3*e+2*c/b^3*ln(c*x+b)*A*d^4+3/c^4*b^2*ln(c*x+b)*B*e^4+
4/c^2*ln(c*x+b)*A*d*e^3-6/c/(c*x+b)*A*d^2*e^2-2/c^3*b*ln(c*x+b)*A*e^4-A*d^4
/b^2/x+1/2*B*e^4*x^2/c^2
```

maxima [B] time = 0.50, size = 310, normalized size = 1.99

$$-\frac{Abc^4d^4 - \left(\left(Bbc^4 - 2\,Ac^5\right)d^4 - 4\left(Bb^2c^3 - Abc^4\right)d^3e + 6\left(Bb^3c^2 - Ab^2c^3\right)d^2e^2 - 4\left(Bb^4c - Ab^3c^2\right)de^3 + \left(Bb^5 - Ab^4c\right)e^4\right)x}{b^2c^5x^2 + b^3c^4x} + \frac{\left(4\,Abd^3e + (Bb - 2\,Ac)d^4\right)\log(x)}{b^3} + \frac{Bce^4x^2 + 2\left(4\,Bcde^3 - (2\,Bb - Ac)e^4\right)x}{2\,c^3} - \frac{\left(4\,Abc^4d^3e - 6\,Bb^3c^2d^2e^2 + \left(Bbc^4 - 2\,Ac^5\right)d^4 + 4\left(2\,Bb^4c - Ab^3c^2\right)de^3 - \left(3\,Bb^5 - 2\,Ab^4c\right)e^4\right)\log\left(cx + b\right)}{b^3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b*c^4*d^4 - ((B*b*c^4 - 2*A*c^5)*d^4 - 4*(B*b^2*c^3 - A*b*c^4)*d^3*e +
6*(B*b^3*c^2 - A*b^2*c^3)*d^2*e^2 - 4*(B*b^4*c - A*b^3*c^2)*d*e^3 + (B*b^5
- A*b^4*c)*e^4)*x)/(b^2*c^5*x^2 + b^3*c^4*x) + (4*A*b*d^3*e + (B*b - 2*A*c)
*d^4)*log(x)/b^3 + 1/2*(B*c*e^4*x^2 + 2*(4*B*c*d*e^3 - (2*B*b - A*c)*e^4)*x
)/c^3 - (4*A*b*c^4*d^3*e - 6*B*b^3*c^2*d^2*e^2 + (B*b*c^4 - 2*A*c^5)*d^4 +
4*(2*B*b^4*c - A*b^3*c^2)*d*e^3 - (3*B*b^5 - 2*A*b^4*c)*e^4)*log(c*x + b)/(
b^3*c^4)
```

mupad [B] time = 1.74, size = 331, normalized size = 2.12

$$\ln(b+cx)\left(\frac{c^2\left(6Bb^3d^2e^2+4Ab^3de^3\right)-c\left(2Ab^4e^4+8Bdb^4e^3\right)+3Bb^5e^4}{b^3c^4}-\frac{Bbd^4+4Abed^3}{b^3}+\frac{2Acd^4}{b^3}\right)-\frac{\frac{Ac^3d^4}{b}+\frac{x\left(-Bb^5e^4+4Bb^4cde^3+Ab^4ce^4-6Bb^3c^2d^2e^2-4Ab^3c^2de^3+4Bb^2c^3d^3e+6Ab^2c^3d^2e^2-Bbc^4d^4-4Abc^4d^3e+2Ac^5d^4\right)}{b^2c}}{c^4x^2+bc^3x}+x\left(\frac{Ae^4+4Bde^3}{c^2}-\frac{2Bbe^4}{c^3}\right)+\frac{\ln(x)\left(b\left(Bd^4+4Aed^3\right)-2Acd^4\right)}{b^3}+\frac{Be^4x^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x)
```

```
[Out] log(b + c*x)*((c^2*(4*A*b^3*d*e^3 + 6*B*b^3*d^2*e^2) - c*(2*A*b^4*e^4 + 8*B
*b^4*d*e^3) + 3*B*b^5*e^4)/(b^3*c^4) - (B*b*d^4 + 4*A*b*d^3*e)/b^3 + (2*A*c
*d^4)/b^3) - ((A*c^3*d^4)/b + (x*(2*A*c^5*d^4 - B*b^5*e^4 + A*b^4*c*e^4 - B
*b*c^4*d^4 - 4*A*b^3*c^2*d*e^3 + 4*B*b^2*c^3*d^3*e + 6*A*b^2*c^3*d^2*e^2 -
6*B*b^3*c^2*d^2*e^2 - 4*A*b*c^4*d^3*e + 4*B*b^4*c*d*e^3))/(b^2*c))/(c^4*x^2
 + b*c^3*x) + x*((A*e^4 + 4*B*d*e^3)/c^2 - (2*B*b*e^4)/c^3) + (log(x)*(b*(B
*d^4 + 4*A*d^3*e) - 2*A*c*d^4))/b^3 + (B*e^4*x^2)/(2*c^2)
```

sympy [B] time = 15.98, size = 644, normalized size = 4.13

$$\frac{Be^4x^2}{2c^2}+x\left(\frac{Ae^4}{c^2}-\frac{2Bbe^4}{c^3}+\frac{4Bde^3}{c^2}\right)+\frac{-Abc^4d^4+x\left(-Ab^4ce^4+4Ab^3c^2de^3-6Ab^2c^3d^2e^2+4Abc^4d^3e-2Ac^5d^4+Bb^5e^4-4Bb^4cde^3+6Bb^3c^2d^2e^2-4Bb^2c^3d^3e+Bbc^4d^4\right)}{b^3c^4x+b^2c^5x^2}+\frac{d^3(4Abe-2Acd+Bbd)\log\left(x+\frac{-4Ab^2c^3d^3e+2Abc^4d^4-Bb^2c^3d^4+bc^3d^3(4Abe-2Acd+Bbd)}{-2Ab^4ce^4+4Ab^3c^2de^3-8Abc^4d^3e+4Ac^5d^4+3Bb^5e^4-8Bb^4cde^3+6Bb^3c^2d^2e^2-2Bbc^4d^4}\right)}{b^3}+\frac{(be-cd)^3\left(-2Abce-2Ac^2d+3Bb^2e+Bbcd\right)\log\left(x+\frac{-4Ab^2c^3d^3e+2Abc^4d^4-Bb^2c^3d^4+\frac{b(be-cd)^3\left(-2Abce-2Ac^2d+3Bb^2e+Bbcd\right)}{c}}{-2Ab^4ce^4+4Ab^3c^2de^3-8Abc^4d^3e+4Ac^5d^4+3Bb^5e^4-8Bb^4cde^3+6Bb^3c^2d^2e^2-2Bbc^4d^4}\right)}{b^3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x)**2,x)
```

```
[Out] B*e**4*x**2/(2*c**2) + x*(A*e**4/c**2 - 2*B*b*e**4/c**3 + 4*B*d*e**3/c**2)
+ (-A*b*c**4*d**4 + x*(-A*b**4*c*e**4 + 4*A*b**3*c**2*d*e**3 - 6*A*b**2*c**
3*d**2*e**2 + 4*A*b*c**4*d**3*e - 2*A*c**5*d**4 + B*b**5*e**4 - 4*B*b**4*c*
d*e**3 + 6*B*b**3*c**2*d**2*e**2 - 4*B*b**2*c**3*d**3*e + B*b*c**4*d**4))/(
b**3*c**4*x + b**2*c**5*x**2) + d**3*(4*A*b*e - 2*A*c*d + B*b*d)*log(x + (-
4*A*b**2*c**3*d**3*e + 2*A*b*c**4*d**4 - B*b**2*c**3*d**4 + b*c**3*d**3*(4*
A*b*e - 2*A*c*d + B*b*d))/(-2*A*b**4*c*e**4 + 4*A*b**3*c**2*d*e**3 - 8*A*b*
c**4*d**3*e + 4*A*c**5*d**4 + 3*B*b**5*e**4 - 8*B*b**4*c*d*e**3 + 6*B*b**3*
c**2*d**2*e**2 - 2*B*b*c**4*d**4))/b**3 + (b*e - c*d)**3*(-2*A*b*c*e - 2*A*
c**2*d + 3*B*b**2*e + B*b*c*d)*log(x + (-4*A*b**2*c**3*d**3*e + 2*A*b*c**4*
d**4 - B*b**2*c**3*d**4 + b*(b*e - c*d)**3*(-2*A*b*c*e - 2*A*c**2*d + 3*B*b
**2*e + B*b*c*d)/c)/(-2*A*b**4*c*e**4 + 4*A*b**3*c**2*d*e**3 - 8*A*b*c**4*d
**3*e + 4*A*c**5*d**4 + 3*B*b**5*e**4 - 8*B*b**4*c*d*e**3 + 6*B*b**3*c**2*d
**2*e**2 - 2*B*b*c**4*d**4))/(b**3*c**4)
```

3.1002 $\int \frac{(A+Bx)(d+ex)^3}{(bx+cx^2)^2} dx$

Optimal. Leaf size=128

$$\frac{d^2\log(x)(3Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^3}{b^2c^3(b+cx)}-\frac{Ad^3}{b^2x}+\frac{(cd-be)^2\log(b+cx)\left(-bc(Bd-Ae)+2Ac^2d-2b^2\right.}{b^3c^3}$$

Rubi [A] time = 0.16, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)^3}{b^2c^3(b+cx)}+\frac{(cd-be)^2\log(b+cx)\left(-bc(Bd-Ae)+2Ac^2d-2b^2Be\right)}{b^3c^3}+\frac{d^2\log(x)(3Abe-2Acd+bBd)}{b^3}-\frac{Ad^3}{b^2x}+\frac{Be^3x}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^3)/(b^2*x)) + (B*e^3*x)/c^2 + ((b*B - A*c)*(c*d - b*e)^3)/(b^2*c^3*(
b + c*x)) + (d^2*(b*B*d - 2*A*c*d + 3*A*b*e)*Log[x])/b^3 + ((c*d - b*e)^2*(
2*A*c^2*d - 2*b^2*B*e - b*c*(B*d - A*e))*Log[b + c*x])/(b^3*c^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{(bx+cx^2)^2}dx = \int \left(\frac{Be^3}{c^2}+\frac{Ad^3}{b^2x^2}+\frac{d^2(bBd-2Acd+3Abe)}{b^3x}+\frac{(bB-Ac)(-cd+be)^3}{b^2c^2(b+cx)^2}+\frac{(cd-be)^2\left(2Ac\right.}{}\right.$$
$$= -\frac{Ad^3}{b^2x}+\frac{Be^3x}{c^2}+\frac{(bB-Ac)(cd-be)^3}{b^2c^3(b+cx)}+\frac{d^2(bBd-2Acd+3Abe)\log(x)}{b^3}+\frac{(cd-be)^2(}{}$$

Mathematica [A] time = 0.07, size = 128, normalized size = 1.00

$$\frac{d^2\log(x)(3Abe-2Acd+bBd)}{b^3}-\frac{(bB-Ac)(be-cd)^3}{b^2c^3(b+cx)}-\frac{Ad^3}{b^2x}+\frac{(cd-be)^2\log(b+cx)\left(Abce+2Ac^2d-2b^2Be-bBcd\right)}{b^3c^3}+\frac{Be^3x}{c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^3)/(b^2*x)) + (B*e^3*x)/c^2 - ((b*B - A*c)*(-(c*d) + b*e)^3)/(b^2*c^
3*(b + c*x)) + (d^2*(b*B*d - 2*A*c*d + 3*A*b*e)*Log[x])/b^3 + ((c*d - b*e)^
2*(-(b*B*c*d) + 2*A*c^2*d - 2*b^2*B*e + A*b*c*e)*Log[b + c*x])/(b^3*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{(bx+cx^2)^2}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2, x]
```

fricas [**B**] time = 0.44, size = 362, normalized size = 2.83

$$\frac{Bb^3c^2e^3x^3 + Bb^4ce^3x^2 - Ab^2c^3d^3 + \left(\left(Bb^2c^3 - 2\,Abc^4\right)d^3 - 3\left(Bb^3c^2 - Ab^2c^3\right)d^2e + 3\left(Bb^4c - Ab^3c^2\right)de^2 - \left(Bb^5 - Ab^4c\right)e^3\right)x - \left(\left(3\,Abc^4d^2e - 3\,Bb^3c^2de^2 + \left(Bbc^4 - 2\,Ac^5\right)d^3 + \left(2\,Bb^4c - Ab^3c^2\right)e^3\right)x^2 + \left(3\,Ab^2c^3d^2e - 3\,Bb^4cde^2 + \left(Bb^2c^3 - 2\,Abc^4\right)d^3 + \left(2\,Bb^5 - Ab^4c\right)e^3\right)x\right)\log\left(cx + b\right) + \left(\left(3\,Abc^4d^2e + \left(Bbc^4 - 2\,Ac^5\right)d^3\right)x^2 + \left(3\,Ab^2c^3d^2e + \left(Bb^2c^3 - 2\,Abc^4\right)d^3\right)x\right)\log\left(x\right)}{b^3c^4x^2 + b^4c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (B*b^3*c^2*e^3*x^3 + B*b^4*c*e^3*x^2 - A*b^2*c^3*d^3 + ((B*b^2*c^3 - 2*A*b*
c^4)*d^3 - 3*(B*b^3*c^2 - A*b^2*c^3)*d^2*e + 3*(B*b^4*c - A*b^3*c^2)*d*e^2
- (B*b^5 - A*b^4*c)*e^3)*x - ((3*A*b*c^4*d^2*e - 3*B*b^3*c^2*d*e^2 + (B*b*c
^4 - 2*A*c^5)*d^3 + (2*B*b^4*c - A*b^3*c^2)*e^3)*x^2 + (3*A*b^2*c^3*d^2*e -
 3*B*b^4*c*d*e^2 + (B*b^2*c^3 - 2*A*b*c^4)*d^3 + (2*B*b^5 - A*b^4*c)*e^3)*x
)*log(c*x + b) + ((3*A*b*c^4*d^2*e + (B*b*c^4 - 2*A*c^5)*d^3)*x^2 + (3*A*b^
2*c^3*d^2*e + (B*b^2*c^3 - 2*A*b*c^4)*d^3)*x)*log(x))/(b^3*c^4*x^2 + b^4*c^
3*x)
```

giac [**A**] time = 0.19, size = 229, normalized size = 1.79

$$\frac{Bxe^3}{c^2} + \frac{\left(Bbd^3 - 2\,Acd^3 + 3\,Abd^2e\right)\log\left(|x|\right)}{b^3} - \frac{\left(Bbc^3d^3 - 2\,Ac^4d^3 + 3\,Abc^3d^2e - 3\,Bb^3cde^2 + 2\,Bb^4e^3 - Ab^3ce^3\right)\log\left(|cx + b|\right)}{b^3c^3} - \frac{Abc^2d^3 - \frac{\left(Bbc^3d^3 - 2\,Ac^4d^3 - 3\,Bb^2c^2d^2e + 3\,Abc^3d^2e + 3\,Bb^3cde^2 - 3\,Ab^2c^2de^2 - Bb^4e^3 + Ab^3ce^3\right)x}{c}}{(cx + b)b^2c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] B*x*e^3/c^2 + (B*b*d^3 - 2*A*c*d^3 + 3*A*b*d^2*e)*log(abs(x))/b^3 - (B*b*c^
3*d^3 - 2*A*c^4*d^3 + 3*A*b*c^3*d^2*e - 3*B*b^3*c*d*e^2 + 2*B*b^4*e^3 - A*b
^3*c*e^3)*log(abs(c*x + b))/(b^3*c^3) - (A*b*c^2*d^3 - (B*b*c^3*d^3 - 2*A*c
^4*d^3 - 3*B*b^2*c^2*d^2*e + 3*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2 - 3*A*b^2*c^
2*d*e^2 - B*b^4*e^3 + A*b^3*c*e^3)*x/c)/((c*x + b)*b^2*c^2*x)
```

maple [**B**] time = 0.06, size = 286, normalized size = 2.23

$$\frac{Ab\,e^3}{(cx + b)\,c^2} + \frac{3A\,d^2e}{(cx + b)\,b} - \frac{Ac\,d^3}{(cx + b)\,b^2} + \frac{3A\,d^2e\ln(x)}{b^2} - \frac{3A\,d^2e\ln(cx + b)}{b^2} - \frac{2Ac\,d^3\ln(x)}{b^3} + \frac{2Ac\,d^3\ln(cx + b)}{b^3} - \frac{3Ad\,e^2}{(cx + b)\,c} + \frac{A\,e^3\ln(cx + b)}{c^2} - \frac{B\,b^2e^3}{(cx + b)\,c^3} + \frac{3Bbd\,e^2}{(cx + b)\,c^2} - \frac{2Bb\,e^3\ln(cx + b)}{c^3} + \frac{B\,d^3}{(cx + b)\,b} + \frac{B\,d^3\ln(x)}{b^2} - \frac{B\,d^3\ln(cx + b)}{b^2} - \frac{3B\,d^2e}{(cx + b)\,c} + \frac{3Bd\,e^2\ln(cx + b)}{c^2} + \frac{B\,e^3x}{c^2} - \frac{A\,d^3}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x)
```

```
[Out] B*e^3*x/c^2+1/c^2*ln(c*x+b)*A*e^3-3/b^2*ln(c*x+b)*A*d^2*e+2*c/b^3*ln(c*x+b)
*A*d^3-2/c^3*b*ln(c*x+b)*B*e^3+3/c^2*ln(c*x+b)*B*d*e^2-1/b^2*ln(c*x+b)*B*d^
3+b/c^2/(c*x+b)*A*e^3-3/c/(c*x+b)*A*d*e^2+3/b/(c*x+b)*A*d^2*e-1/b^2*c/(c*x+
b)*A*d^3-b^2/c^3/(c*x+b)*B*e^3+3*b/c^2/(c*x+b)*B*d*e^2-3/c/(c*x+b)*B*d^2*e+
1/b/(c*x+b)*B*d^3-A*d^3/b^2/x+3*d^2/b^2*ln(x)*A*e-2*d^3/b^3*ln(x)*A*c+d^3/b
^2*ln(x)*B
```

maxima [**A**] time = 0.51, size = 225, normalized size = 1.76

$$\frac{Be^3x}{c^2} - \frac{Abc^3d^3 - \left(\left(Bbc^3 - 2\,Ac^4\right)d^3 - 3\left(Bb^2c^2 - Abc^3\right)d^2e + 3\left(Bb^3c - Ab^2c^2\right)de^2 - \left(Bb^4 - Ab^3c\right)e^3\right)x}{b^2c^4x^2 + b^3c^3x} + \frac{\left(3\,Abd^2e + (Bb - 2\,Ac)d^3\right)\log(x)}{b^3} - \frac{\left(3\,Abc^3d^2e - 3\,Bb^3cde^2 + \left(Bbc^3 - 2\,Ac^4\right)d^3 + \left(2\,Bb^4 - Ab^3c\right)e^3\right)\log\left(cx + b\right)}{b^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] B*e^3*x/c^2 - (A*b*c^3*d^3 - ((B*b*c^3 - 2*A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*
c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*x)/(b^2
*c^4*x^2 + b^3*c^3*x) + (3*A*b*d^2*e + (B*b - 2*A*c)*d^3)*log(x)/b^3 - (3*A
*b*c^3*d^2*e - 3*B*b^3*c*d*e^2 + (B*b*c^3 - 2*A*c^4)*d^3 + (2*B*b^4 - A*b^3
*c)*e^3)*log(c*x + b)/(b^3*c^3)
```

mupad [B]   time = 1.59, size = 212, normalized size = 1.66

$$\frac{\ln(x)\left(b\left(B\,d^3+3\,A\,e\,d^2\right)-2\,A\,c\,d^3\right)}{b^3}-\frac{\frac{x\left(B\,b^4\,e^3-3\,B\,b^3\,c\,d\,e^2-A\,b^3\,c\,e^3+3\,B\,b^2\,c^2\,d^2\,e+3\,A\,b^2\,c^2\,d\,e^2-B\,b\,c^3\,d^3-3\,A\,b\,c^3\,d^2\,e+2\,A\,c^4\,d^3\right)}{b^2\,c}+\frac{A\,c^2\,d^3}{b}}{c^3\,x^2+b\,c^2\,x}+\frac{B\,e^3\,x}{c^2}+\frac{\ln\left(b+c\,x\right)\,\left(b\,e-c\,d\right)^2\,\left(2\,A\,c^2\,d-2\,B\,b^2\,e+A\,b\,c\,e-B\,b\,c\,d\right)}{b^3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x)
```

```
[Out] (log(x)*(b*(B*d^3 + 3*A*d^2*e) - 2*A*c*d^3))/b^3 - ((x*(2*A*c^4*d^3 + B*b^4
*e^3 - A*b^3*c*e^3 - B*b*c^3*d^3 + 3*A*b^2*c^2*d*e^2 + 3*B*b^2*c^2*d^2*e -
3*A*b*c^3*d^2*e - 3*B*b^3*c*d*e^2))/(b^2*c) + (A*c^2*d^3)/b)/(c^3*x^2 + b*c
^2*x) + (B*e^3*x)/c^2 + (log(b + c*x)*(b*e - c*d)^2*(2*A*c^2*d - 2*B*b^2*e
+ A*b*c*e - B*b*c*d))/(b^3*c^3)
```

sympy [B]   time = 9.38, size = 502, normalized size = 3.92

$$\frac{Be^3x}{c^2}+\frac{-Abc^3d^3+x\left(Ab^3ce^3-3Ab^2c^2de^2+3Abc^3d^2e-2Ac^4d^3-Bb^4e^3+3Bb^3cde^2-3Bb^2c^2d^2e+Bbc^3d^3\right)}{b^3c^3x+b^2c^4x^2}+\frac{d^2\left(3Abe-2Acd+Bbd\right)\log\left(x+\frac{3Ab^2c^2d^2e-2Abc^3d^3+Bb^2c^2d^3-bc^2d^2(3Abe-2Acd+Bbd)}{-Ab^3ce^3+6Abc^3d^2e-4Ac^4d^3+2Bb^4e^3-3Bb^3cde^2+2Bbc^3d^3}\right)}{b^3}-\frac{(be-cd)^2\left(-Abce-2Ac^2d+2Bb^2e+Bbcd\right)\log\left(x+\frac{3Ab^2c^2d^2e-2Abc^3d^3+Bb^2c^2d^3+\frac{b(be-cd)^2\left(-Abce-2Ac^2d+2Bb^2e+Bbcd\right)}{c}}{-Ab^3ce^3+6Abc^3d^2e-4Ac^4d^3+2Bb^4e^3-3Bb^3cde^2+2Bbc^3d^3}\right)}{b^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**2,x)
```

```
[Out] B*e**3*x/c**2 + (-A*b*c**3*d**3 + x*(A*b**3*c*e**3 - 3*A*b**2*c**2*d*e**2 +
 3*A*b*c**3*d**2*e - 2*A*c**4*d**3 - B*b**4*e**3 + 3*B*b**3*c*d*e**2 - 3*B*
b**2*c**2*d**2*e + B*b*c**3*d**3))/(b**3*c**3*x + b**2*c**4*x**2) + d**2*(3
*A*b*e - 2*A*c*d + B*b*d)*log(x + (3*A*b**2*c**2*d**2*e - 2*A*b*c**3*d**3 +
 B*b**2*c**2*d**3 - b*c**2*d**2*(3*A*b*e - 2*A*c*d + B*b*d))/(-A*b**3*c*e**
3 + 6*A*b*c**3*d**2*e - 4*A*c**4*d**3 + 2*B*b**4*e**3 - 3*B*b**3*c*d*e**2 +
 2*B*b*c**3*d**3))/b**3 - (b*e - c*d)**2*(-A*b*c*e - 2*A*c**2*d + 2*B*b**2*
e + B*b*c*d)*log(x + (3*A*b**2*c**2*d**2*e - 2*A*b*c**3*d**3 + B*b**2*c**2*
d**3 + b*(b*e - c*d)**2*(-A*b*c*e - 2*A*c**2*d + 2*B*b**2*e + B*b*c*d)/c)/(
-A*b**3*c*e**3 + 6*A*b*c**3*d**2*e - 4*A*c**4*d**3 + 2*B*b**4*e**3 - 3*B*b*
*3*c*d*e**2 + 2*B*b*c**3*d**3))/(b**3*c**3)
```

3.1003 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=108

$$\frac{d\log(x)(2Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^2}{b^2c^2(b+cx)}-\frac{Ad^2}{b^2x}-\frac{(cd-be)\log(b+cx)\left(-2Ac^2d+b^2Be+bBcd\right)}{b^3c^2}$$

Rubi [A] time = 0.12, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)^2}{b^2c^2(b+cx)}-\frac{(cd-be)\log(b+cx)\left(-2Ac^2d+b^2Be+bBcd\right)}{b^3c^2}+\frac{d\log(x)(2Abe-2Acd+bBd)}{b^3}-\frac{Ad^2}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^2)/(b^2*x)) + ((b*B - A*c)*(c*d - b*e)^2)/(b^2*c^2*(b + c*x)) + (d*(
b*B*d - 2*A*c*d + 2*A*b*e)*Log[x])/b^3 - ((c*d - b*e)*(b*B*c*d - 2*A*c^2*d
+ b^2*B*e)*Log[b + c*x])/(b^3*c^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^2}\,dx=\int \left(\frac{Ad^2}{b^2x^2}+\frac{d(bBd-2Acd+2Abe)}{b^3x}-\frac{(bB-Ac)(-cd+be)^2}{b^2c(b+cx)^2}+\frac{(-cd+be)\left(bBcd-2\right.}{b^3c(b+c}\right.$$

$$=-\frac{Ad^2}{b^2x}+\frac{(bB-Ac)(cd-be)^2}{b^2c^2(b+cx)}+\frac{d(bBd-2Acd+2Abe)\log(x)}{b^3}-\frac{(cd-be)\left(bBcd-\right.}{}$$

Mathematica [A] time = 0.11, size = 101, normalized size = 0.94

$$\frac{\frac{(be-cd)\log(b+cx)\left(-2Ac^2d+b^2Be+bBcd\right)}{c^2}+\frac{b(bB-Ac)(cd-be)^2}{c^2(b+cx)}+d\log(x)(2Abe-2Acd+bBd)-\frac{Abd^2}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x]
```

```
[Out] (-((A*b*d^2)/x) + (b*(b*B - A*c)*(c*d - b*e)^2)/(c^2*(b + c*x)) + d*(b*B*d
- 2*A*c*d + 2*A*b*e)*Log[x] + ((-(c*d) + b*e)*(b*B*c*d - 2*A*c^2*d + b^2*B*
e)*Log[b + c*x])/c^2)/b^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2, x]
```

fricas [B] time = 0.42, size = 258, normalized size = 2.39

$$-\frac{Ab^2c^2d^2 - \left(\left(Bb^2c^2 - 2\,Abc^3\right)d^2 - 2\left(Bb^3c - Ab^2c^2\right)de + \left(Bb^4 - Ab^3c\right)e^2\right)x + \left(\left(2\,Abc^3de - Bb^3ce^2 + \left(Bbc^3 - 2\,Ac^4\right)d^2\right)x^2 + \left(2\,Ab^2c^2de - Bb^4e^2 + \left(Bb^2c^2 - 2\,Abc^3\right)d^2\right)x\right)\log\left(cx + b\right) - \left(\left(2\,Abc^3de + \left(Bbc^3 - 2\,Ac^4\right)d^2\right)x^2 + \left(2\,Ab^2c^2de + \left(Bb^2c^2 - 2\,Abc^3\right)d^2\right)x\right)\log(x)}{b^3c^3x^2 + b^4c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c^2*d^2 - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*(B*b^3*c - A*b^2*c^2)*d*
e + (B*b^4 - A*b^3*c)*e^2)*x + ((2*A*b*c^3*d*e - B*b^3*c*e^2 + (B*b*c^3 - 2
*A*c^4)*d^2)*x^2 + (2*A*b^2*c^2*d*e - B*b^4*e^2 + (B*b^2*c^2 - 2*A*b*c^3)*d
^2)*x)*log(c*x + b) - ((2*A*b*c^3*d*e + (B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (2*A
*b^2*c^2*d*e + (B*b^2*c^2 - 2*A*b*c^3)*d^2)*x)*log(x))/(b^3*c^3*x^2 + b^4*c
^2*x)
```

giac [A] time = 0.15, size = 167, normalized size = 1.55

$$\frac{\left(Bbd^2 - 2\,Acd^2 + 2\,Abde\right)\log\left(|x|\right)}{b^3} - \frac{\left(Bbc^2d^2 - 2\,Ac^3d^2 + 2\,Abc^2de - Bb^3e^2\right)\log\left(|cx + b|\right)}{b^3c^2} - \frac{Abc^2d^2 - \left(Bbc^2d^2 - 2\,Ac^3d^2 - 2\,Bb^2cde + 2\,Abc^2de + Bb^3e^2 - Ab^2ce^2\right)x}{(cx + b)b^2c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b*d^2 - 2*A*c*d^2 + 2*A*b*d*e)*log(abs(x))/b^3 - (B*b*c^2*d^2 - 2*A*c^3*
d^2 + 2*A*b*c^2*d*e - B*b^3*e^2)*log(abs(c*x + b))/(b^3*c^2) - (A*b*c^2*d^2
 - (B*b*c^2*d^2 - 2*A*c^3*d^2 - 2*B*b^2*c*d*e + 2*A*b*c^2*d*e + B*b^3*e^2 -
 A*b^2*c*e^2)*x)/((c*x + b)*b^2*c^2*x)
```

maple [A] time = 0.05, size = 199, normalized size = 1.84

$$\frac{2Ade}{(cx+b)\,b} - \frac{Ac\,d^2}{(cx+b)\,b^2} + \frac{2Ade\ln(x)}{b^2} - \frac{2Ade\ln(cx+b)}{b^2} - \frac{2Ac\,d^2\ln(x)}{b^3} + \frac{2Ac\,d^2\ln(cx+b)}{b^3} - \frac{A\,e^2}{(cx+b)\,c} + \frac{Bb\,e^2}{(cx+b)\,c^2} + \frac{B\,d^2}{(cx+b)\,b} + \frac{B\,d^2\ln(x)}{b^2} - \frac{B\,d^2\ln(cx+b)}{b^2} - \frac{2Bde}{(cx+b)\,c} + \frac{B\,e^2\ln(cx+b)}{c^2} - \frac{A\,d^2}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x)
```

```
[Out] -2/b^2*ln(c*x+b)*A*d*e+2/b^3*c*ln(c*x+b)*A*d^2+1/c^2*ln(c*x+b)*B*e^2-1/b^2*
ln(c*x+b)*B*d^2-1/c/(c*x+b)*A*e^2+2/b/(c*x+b)*A*d*e-c/b^2/(c*x+b)*A*d^2+1/c
^2*b/(c*x+b)*B*e^2-2/c/(c*x+b)*B*d*e+1/b/(c*x+b)*B*d^2-A*d^2/b^2/x+2*d/b^2*
ln(x)*A*e-2*d^2/b^3*ln(x)*A*c+d^2/b^2*ln(x)*B
```

maxima [A] time = 0.47, size = 165, normalized size = 1.53

$$-\frac{Abc^2d^2 - \left(\left(Bbc^2 - 2\,Ac^3\right)d^2 - 2\left(Bb^2c - Abc^2\right)de + \left(Bb^3 - Ab^2c\right)e^2\right)x}{b^2c^3x^2 + b^3c^2x} + \frac{\left(2\,Abde + (Bb - 2\,Ac)d^2\right)\log(x)}{b^3} - \frac{\left(2\,Abc^2de - Bb^3e^2 + \left(Bbc^2 - 2\,Ac^3\right)d^2\right)\log\left(cx + b\right)}{b^3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b*c^2*d^2 - ((B*b*c^2 - 2*A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b
^3 - A*b^2*c)*e^2)*x)/(b^2*c^3*x^2 + b^3*c^2*x) + (2*A*b*d*e + (B*b - 2*A*c
)*d^2)*log(x)/b^3 - (2*A*b*c^2*d*e - B*b^3*e^2 + (B*b*c^2 - 2*A*c^3)*d^2)*l
og(c*x + b)/(b^3*c^2)
```

mupad [B] time = 0.27, size = 154, normalized size = 1.43

$$\frac{\ln(x)\,\left(b\,\left(B\,d^2 + 2\,A\,e\,d\right) - 2\,A\,c\,d^2\right)}{b^3} - \frac{\frac{A\,d^2}{b} + \frac{x\,\left(-B\,b^3\,e^2+2\,B\,b^2\,c\,d\,e+A\,b^2\,c\,e^2-B\,b\,c^2\,d^2-2\,A\,b\,c^2\,d\,e+2\,A\,c^3\,d^2\right)}{b^2\,c^2}}{c\,x^2 + b\,x} + \frac{\ln\left(b + c\,x\right)\,\left(b\,e - c\,d\right)\,\left(B\,e\,b^2 + B\,d\,b\,c - 2\,A\,d\,c^2\right)}{b^3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x)
```

```
[Out] (log(x)*(b*(B*d^2 + 2*A*d*e) - 2*A*c*d^2))/b^3 - ((A*d^2)/b + (x*(2*A*c^3*d
^2 - B*b^3*e^2 + A*b^2*c*e^2 - B*b*c^2*d^2 - 2*A*b*c^2*d*e + 2*B*b^2*c*d*e)
)/(b^2*c^2))/(b*x + c*x^2) + (log(b + c*x)*(b*e - c*d)*(B*b^2*e - 2*A*c^2*d
 + B*b*c*d))/(b^3*c^2)
```

sympy [B] time = 3.86, size = 367, normalized size = 3.40

$$\frac{-Abc^2d^2 + x\left(-Ab^2ce^2 + 2Abc^2de - 2Ac^3d^2 + Bb^3e^2 - 2Bb^2cde + Bbc^2d^2\right)}{b^3c^2x + b^2c^3x^2} + \frac{d\left(2Abe - 2Acd + Bbd\right)\log\left(x + \frac{-2Ab^2cde + 2Abc^2d^2 - Bb^2cd^2 + bcd(2Abe - 2Acd + Bbd)}{-4Abc^2de + 4Ac^3d^2 + Bb^3e^2 - 2Bbc^2d^2}\right)}{b^3} + \frac{(be - cd)\left(-2Ac^2d + Bb^2e + Bbcd\right)\log\left(x + \frac{-2Ab^2cde + 2Abc^2d^2 - Bb^2cd^2 + \frac{b(be - cd)\left(-2Ac^2d + Bb^2e + Bbcd\right)}{c}}{-4Abc^2de + 4Ac^3d^2 + Bb^3e^2 - 2Bbc^2d^2}\right)}{b^3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**2,x)
```

```
[Out] (-A*b*c**2*d**2 + x*(-A*b**2*c*e**2 + 2*A*b*c**2*d*e - 2*A*c**3*d**2 + B*b*
*3*e**2 - 2*B*b**2*c*d*e + B*b*c**2*d**2))/(b**3*c**2*x + b**2*c**3*x**2) +
 d*(2*A*b*e - 2*A*c*d + B*b*d)*log(x + (-2*A*b**2*c*d*e + 2*A*b*c**2*d**2 -
 B*b**2*c*d**2 + b*c*d*(2*A*b*e - 2*A*c*d + B*b*d))/(-4*A*b*c**2*d*e + 4*A*
c**3*d**2 + B*b**3*e**2 - 2*B*b*c**2*d**2))/b**3 + (b*e - c*d)*(-2*A*c**2*d
 + B*b**2*e + B*b*c*d)*log(x + (-2*A*b**2*c*d*e + 2*A*b*c**2*d**2 - B*b**2*
c*d**2 + b*(b*e - c*d)*(-2*A*c**2*d + B*b**2*e + B*b*c*d)/c)/(-4*A*b*c**2*d
*e + 4*A*c**3*d**2 + B*b**3*e**2 - 2*B*b*c**2*d**2))/(b**3*c**2)
```

3.1004 $\int \frac{(A+Bx)(d+ex)}{(bx+cx^2)^2}\,dx$

Optimal. Leaf size=86

$$\frac{\log(x)(Abe-2Acd+bBd)}{b^3}-\frac{\log(b+cx)(Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)}{b^2c(b+cx)}-\frac{Ad}{b^2x}$$

Rubi [A] time = 0.08, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)}{b^2c(b+cx)}+\frac{\log(x)(Abe-2Acd+bBd)}{b^3}-\frac{\log(b+cx)(Abe-2Acd+bBd)}{b^3}-\frac{Ad}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d)/(b^2*x)) + ((b*B - A*c)*(c*d - b*e))/(b^2*c*(b + c*x)) + ((b*B*d - 2*A*c*d + A*b*e)*Log[x])/b^3 - ((b*B*d - 2*A*c*d + A*b*e)*Log[b + c*x])/b^3
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{(bx+cx^2)^2}\,dx &= \int \left(\frac{Ad}{b^2x^2}+\frac{bBd-2Acd+Abe}{b^3x}+\frac{(bB-Ac)(-cd+be)}{b^2(b+cx)^2}-\frac{c(bBd-2Acd+Abe)}{b^3(b+cx)}\right)dx\\ &= -\frac{Ad}{b^2x}+\frac{(bB-Ac)(cd-be)}{b^2c(b+cx)}+\frac{(bBd-2Acd+Abe)\log(x)}{b^3}-\frac{(bBd-2Acd+Abe)\log(b}{b^3}\end{aligned}$$

Mathematica [A] time = 0.10, size = 80, normalized size = 0.93

$$-\frac{\frac{b(bB-Ac)(be-cd)}{c(b+cx)}-\log(x)(Abe-2Acd+bBd)+\log(b+cx)(Abe-2Acd+bBd)+\frac{Abd}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((A*b*d)/x + (b*(b*B - A*c)*(-(c*d) + b*e))/(c*(b + c*x)) - (b*B*d - 2*A*c*d + A*b*e)*Log[x] + (b*B*d - 2*A*c*d + A*b*e)*Log[b + c*x])/b^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{(bx+cx^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2)^2, x]
```

fricas [B] time = 0.43, size = 184, normalized size = 2.14

$$-\frac{Ab^2cd - \left(\left(Bb^2c - 2\,Abc^2\right)d - \left(Bb^3 - Ab^2c\right)e\right)x + \left(\left(Abc^2e + \left(Bbc^2 - 2\,Ac^3\right)d\right)x^2 + \left(Ab^2ce + \left(Bb^2c - 2\,Abc^2\right)d\right)x\right)\log\left(cx + b\right) - \left(\left(Abc^2e + \left(Bbc^2 - 2\,Ac^3\right)d\right)x^2 + \left(Ab^2ce + \left(Bb^2c - 2\,Abc^2\right)d\right)x\right)\log(x)}{b^3c^2x^2 + b^4cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c*d - ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x + ((A*b*c^2
*e + (B*b*c^2 - 2*A*c^3)*d)*x^2 + (A*b^2*c*e + (B*b^2*c - 2*A*b*c^2)*d)*x)*
log(c*x + b) - ((A*b*c^2*e + (B*b*c^2 - 2*A*c^3)*d)*x^2 + (A*b^2*c*e + (B*b
^2*c - 2*A*b*c^2)*d)*x)*log(x))/(b^3*c^2*x^2 + b^4*c*x)
```

giac [A] time = 0.16, size = 112, normalized size = 1.30

$$\frac{(Bbd - 2\,Acd + Abe)\log\left(|x|\right)}{b^3} - \frac{\left(Bbcd - 2\,Ac^2d + Abce\right)\log\left(|cx + b|\right)}{b^3c} + \frac{Bbcdx - 2\,Ac^2dx - Bb^2xe + Abcxe - Abcd}{\left(cx^2 + bx\right)b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b*d - 2*A*c*d + A*b*e)*log(abs(x))/b^3 - (B*b*c*d - 2*A*c^2*d + A*b*c*e)
*log(abs(c*x + b))/(b^3*c) + (B*b*c*d*x - 2*A*c^2*d*x - B*b^2*x*e + A*b*c*x
*e - A*b*c*d)/((c*x^2 + b*x)*b^2*c)
```

maple [A] time = 0.06, size = 133, normalized size = 1.55

$$\frac{Ae}{(cx+b)\,b} - \frac{Acd}{(cx+b)\,b^2} + \frac{Ae\ln(x)}{b^2} - \frac{Ae\ln(cx+b)}{b^2} - \frac{2Acd\ln(x)}{b^3} + \frac{2Acd\ln(cx+b)}{b^3} + \frac{Bd}{(cx+b)\,b} + \frac{Bd\ln(x)}{b^2} - \frac{Bd\ln(cx+b)}{b^2} - \frac{Be}{(cx+b)\,c} - \frac{Ad}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/b/(c*x+b)*A*e-1/b^2*c/(c*x+b)*A*d-1/c/(c*x+b)*B*e+1/b/(c*x+b)*B*d-1/b^2*l
n(c*x+b)*A*e+2/b^3*ln(c*x+b)*A*c*d-1/b^2*ln(c*x+b)*B*d+1/b^2*ln(x)*A*e-2/b^
3*ln(x)*A*c*d+1/b^2*ln(x)*B*d-A*d/b^2/x
```

maxima [A] time = 0.47, size = 106, normalized size = 1.23

$$-\frac{Abcd - \left(\left(Bbc - 2\,Ac^2\right)d - \left(Bb^2 - Abc\right)e\right)x}{b^2c^2x^2 + b^3cx} - \frac{(Abe + (Bb - 2\,Ac)d)\log\left(cx + b\right)}{b^3} + \frac{(Abe + (Bb - 2\,Ac)d)\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b*c*d - ((B*b*c - 2*A*c^2)*d - (B*b^2 - A*b*c)*e)*x)/(b^2*c^2*x^2 + b^3
*c*x) - (A*b*e + (B*b - 2*A*c)*d)*log(c*x + b)/b^3 + (A*b*e + (B*b - 2*A*c)
*d)*log(x)/b^3
```

mupad [B] time = 1.44, size = 117, normalized size = 1.36

$$-\frac{\frac{A\,d}{b} + \frac{x\,\left(2\,A\,c^2\,d+B\,b^2\,e-A\,b\,c\,e-B\,b\,c\,d\right)}{b^2\,c}}{c\,x^2 + b\,x} - \frac{2\,\mathrm{atanh}\left(\frac{\left(b\,\left(A\,e+B\,d\right)-2\,A\,c\,d\right)\,\left(b+2\,c\,x\right)}{b\,\left(A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}\right)\,\left(b\,\left(A\,e + B\,d\right) - 2\,A\,c\,d\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] - ((A*d)/b + (x*(2*A*c^2*d + B*b^2*e - A*b*c*e - B*b*c*d))/(b^2*c))/(b*x +
c*x^2) - (2*atanh(((b*(A*e + B*d) - 2*A*c*d)*(b + 2*c*x))/(b*(A*b*e - 2*A*c
*d + B*b*d)))*(b*(A*e + B*d) - 2*A*c*d))/b^3
```

sympy [B] time = 1.22, size = 233, normalized size = 2.71

$$\frac{-Abcd + x\left(Abce - 2Ac^2d - Bb^2e + Bbcd\right)}{b^3cx + b^2c^2x^2} + \frac{(Abe - 2Acd + Bbd)\log\left(x + \frac{Ab^2e-2Abcd+Bb^2d-b(Abe-2Acd+Bbd)}{2Abce-4Ac^2d+2Bbcd}\right)}{b^3} - \frac{(Abe - 2Acd + Bbd)\log\left(x + \frac{Ab^2e-2Abcd+Bb^2d+b(Abe-2Acd+Bbd)}{2Abce-4Ac^2d+2Bbcd}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-A*b*c*d + x*(A*b*c*e - 2*A*c**2*d - B*b**2*e + B*b*c*d))/(b**3*c*x + b**2
*c**2*x**2) + (A*b*e - 2*A*c*d + B*b*d)*log(x + (A*b**2*e - 2*A*b*c*d + B*b
**2*d - b*(A*b*e - 2*A*c*d + B*b*d))/(2*A*b*c*e - 4*A*c**2*d + 2*B*b*c*d))/
b**3 - (A*b*e - 2*A*c*d + B*b*d)*log(x + (A*b**2*e - 2*A*b*c*d + B*b**2*d +
 b*(A*b*e - 2*A*c*d + B*b*d))/(2*A*b*c*e - 4*A*c**2*d + 2*B*b*c*d))/b**3
```

3.1005 $\int \frac{A+Bx}{(bx+cx^2)^2}\,dx$

Optimal. Leaf size=62

$$\frac{\log(x)(bB-2Ac)}{b^3}-\frac{(bB-2Ac)\log(b+cx)}{b^3}+\frac{bB-Ac}{b^2(b+cx)}-\frac{A}{b^2x}$$

Rubi [A] time = 0.05, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{bB-Ac}{b^2(b+cx)}+\frac{\log(x)(bB-2Ac)}{b^3}-\frac{(bB-2Ac)\log(b+cx)}{b^3}-\frac{A}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^2,x]
```

```
[Out] -(A/(b^2*x)) + (b*B - A*c)/(b^2*(b + c*x)) + ((b*B - 2*A*c)*Log[x])/b^3 - (
(b*B - 2*A*c)*Log[b + c*x])/b^3
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(bx+cx^2)^2}\,dx &= \int \left(\frac{A}{b^2x^2}+\frac{bB-2Ac}{b^3x}-\frac{c(bB-Ac)}{b^2(b+cx)^2}-\frac{c(bB-2Ac)}{b^3(b+cx)}\right)dx\\ &= -\frac{A}{b^2x}+\frac{bB-Ac}{b^2(b+cx)}+\frac{(bB-2Ac)\log(x)}{b^3}-\frac{(bB-2Ac)\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 56, normalized size = 0.90

$$\frac{\frac{b(bB-Ac)}{b+cx}+\log(x)(bB-2Ac)+(2Ac-bB)\log(b+cx)-\frac{Ab}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^2,x]
```

```
[Out] (-((A*b)/x) + (b*(b*B - A*c))/(b + c*x) + (b*B - 2*A*c)*Log[x] + (-(b*B) +
2*A*c)*Log[b + c*x])/b^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(bx+cx^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^2, x]
```

fricas [A] time = 0.40, size = 107, normalized size = 1.73

$$-\frac{Ab^2 - \left(Bb^2 - 2\,Abc\right)x + \left(\left(Bbc - 2\,Ac^2\right)x^2 + \left(Bb^2 - 2\,Abc\right)x\right)\log\left(cx + b\right) - \left(\left(Bbc - 2\,Ac^2\right)x^2 + \left(Bb^2 - 2\,Abc\right)x\right)\log\left(x\right)}{b^3cx^2 + b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2 - (B*b^2 - 2*A*b*c)*x + ((B*b*c - 2*A*c^2)*x^2 + (B*b^2 - 2*A*b*c)*
x)*log(c*x + b) - ((B*b*c - 2*A*c^2)*x^2 + (B*b^2 - 2*A*b*c)*x)*log(x))/(b^
3*c*x^2 + b^4*x)
```

giac [A] time = 0.16, size = 71, normalized size = 1.15

$$\frac{(Bb - 2\,Ac)\log\left(|x|\right)}{b^3} + \frac{Bbx - 2\,Acx - Ab}{\left(cx^2 + bx\right)b^2} - \frac{\left(Bbc - 2\,Ac^2\right)\log\left(|cx + b|\right)}{b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b - 2*A*c)*log(abs(x))/b^3 + (B*b*x - 2*A*c*x - A*b)/((c*x^2 + b*x)*b^2)
 - (B*b*c - 2*A*c^2)*log(abs(c*x + b))/(b^3*c)
```

maple [A] time = 0.06, size = 78, normalized size = 1.26

$$-\frac{Ac}{(cx + b)\,b^2} - \frac{2Ac\ln(x)}{b^3} + \frac{2Ac\ln\left(cx + b\right)}{b^3} + \frac{B}{(cx + b)\,b} + \frac{B\ln(x)}{b^2} - \frac{B\ln\left(cx + b\right)}{b^2} - \frac{A}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2/b^3*ln(c*x+b)*A*c-1/b^2*ln(c*x+b)*B-1/b^2/(c*x+b)*A*c+1/b/(c*x+b)*B-A/b^2
/x-2/b^3*ln(x)*A*c+1/b^2*ln(x)*B
```

maxima [A] time = 0.64, size = 67, normalized size = 1.08

$$-\frac{Ab - (Bb - 2\,Ac)x}{b^2cx^2 + b^3x} - \frac{(Bb - 2\,Ac)\log\left(cx + b\right)}{b^3} + \frac{(Bb - 2\,Ac)\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b - (B*b - 2*A*c)*x)/(b^2*c*x^2 + b^3*x) - (B*b - 2*A*c)*log(c*x + b)/b
^3 + (B*b - 2*A*c)*log(x)/b^3
```

mupad [B] time = 1.42, size = 58, normalized size = 0.94

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b} + 1\right)\,(2\,A\,c - B\,b)}{b^3} - \frac{\frac{A}{b} + \frac{x\,(2\,A\,c - B\,b)}{b^2}}{c\,x^2 + b\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^2,x)
```

```
[Out] (2*atanh((2*c*x)/b + 1)*(2*A*c - B*b))/b^3 - (A/b + (x*(2*A*c - B*b))/b^2)/
(b*x + c*x^2)
```

sympy [B] time = 0.47, size = 128, normalized size = 2.06

$$\frac{-Ab+x\left(-2Ac+Bb\right)}{b^3x+b^2cx^2}+\frac{\left(-2Ac+Bb\right)\log\left(x+\frac{-2Abc+Bb^2-b(-2Ac+Bb)}{-4Ac^2+2Bbc}\right)}{b^3}-\frac{\left(-2Ac+Bb\right)\log\left(x+\frac{-2Abc+Bb^2+b(-2Ac+Bb)}{-4Ac^2+2Bbc}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] (-A*b + x*(-2*A*c + B*b))/(b**3*x + b**2*c*x**2) + (-2*A*c + B*b)*log(x + (
-2*A*b*c + B*b**2 - b*(-2*A*c + B*b))/(-4*A*c**2 + 2*B*b*c))/b**3 - (-2*A*c
 + B*b)*log(x + (-2*A*b*c + B*b**2 + b*(-2*A*c + B*b))/(-4*A*c**2 + 2*B*b*c
))/b**3
```

3.1006 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=147

$$\frac{\log(x)(-Abe-2Acd+bBd)}{b^3d^2}+\frac{c(bB-Ac)}{b^2(b+cx)(cd-be)}-\frac{A}{b^2dx}+\frac{c\log(b+cx)\left(-bc(3Ae+Bd)+2Ac^2d+2b^2Be\right)}{b^3(cd-be)^2}-\frac{e^2(B\ldots}{}$$

Rubi [A] time = 0.20, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{c\log(b+cx)\left(-bc(3Ae+Bd)+2Ac^2d+2b^2Be\right)}{b^3(cd-be)^2}+\frac{\log(x)(-Abe-2Acd+bBd)}{b^3d^2}+\frac{c(bB-Ac)}{b^2(b+cx)(cd-be)}-\frac{A}{b^2dx}-\frac{e^2(Bd-Ae)\log(d+ex)}{d^2(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d*x)) + (c*(b*B - A*c))/(b^2*(c*d - b*e)*(b + c*x)) + ((b*B*d - 2*
A*c*d - A*b*e)*Log[x])/(b^3*d^2) + (c*(2*A*c^2*d + 2*b^2*B*e - b*c*(B*d + 3
*A*e))*Log[b + c*x])/(b^3*(c*d - b*e)^2) - (e^2*(B*d - A*e)*Log[d + e*x])/(
d^2*(c*d - b*e)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^2}\,dx=\int \left(\frac{A}{b^2dx^2}+\frac{bBd-2Acd-Abe}{b^3d^2x}+\frac{c^2(bB-Ac)}{b^2(-cd+be)(b+cx)^2}+\frac{c^2\left(2Ac^2d+2b^2Be-bc(\ldots\right.}{b^3(cd-be)^2(b+\ldots}\right.$$

$$=-\frac{A}{b^2dx}+\frac{c(bB-Ac)}{b^2(cd-be)(b+cx)}+\frac{(bBd-2Acd-Abe)\log(x)}{b^3d^2}+\frac{c\left(2Ac^2d+2b^2Be-bc\ldots\right.}{b^3(c\ldots}$$

Mathematica [A] time = 0.16, size = 146, normalized size = 0.99

$$\frac{\log(x)(-Abe-2Acd+bBd)}{b^3d^2}+\frac{c(Ac-bB)}{b^2(b+cx)(be-cd)}-\frac{A}{b^2dx}+\frac{c\log(b+cx)\left(-bc(3Ae+Bd)+2Ac^2d+2b^2Be\right)}{b^3(cd-be)^2}+\frac{e^2(Ae-Bd)\log(d+ex)}{d^2(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d*x)) + (c*(-(b*B) + A*c))/(b^2*(-(c*d) + b*e)*(b + c*x)) + ((b*B*
d - 2*A*c*d - A*b*e)*Log[x])/(b^3*d^2) + (c*(2*A*c^2*d + 2*b^2*B*e - b*c*(B
*d + 3*A*e))*Log[b + c*x])/(b^3*(c*d - b*e)^2) + (e^2*(-(B*d) + A*e)*Log[d
+ e*x])/(d^2*(c*d - b*e)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)^2), x]
```

fricas [B] time = 34.69, size = 450, normalized size = 3.06

$$-\frac{Ab^2c^2d^3 - 2\,Ab^3cd^2e + Ab^4de^2 + \left(Ab^3cde^2 - \left(Bb^2c^2 - 2\,Abc^3\right)d^3 + \left(Bb^3c - 3\,Ab^2c^2\right)d^2e\right)x + \left(\left(\left(Bbc^3 - 2\,Ac^4\right)d^3 - \left(2\,Bb^2c^2 - 3\,Abc^3\right)d^2e\right)x^2 + \left(\left(Bb^2c^2 - 2\,Abc^3\right)d^3 - \left(2\,Bb^3c - 3\,Ab^2c^2\right)d^2e\right)x\right)\log\left(cx+b\right) + \left(\left(Bb^3cde^2 - Ab^3ce^3\right)x^2 + \left(Bb^4de^2 - Ab^4e^3\right)x\right)\log\left(ex+d\right) - \left(\left(Bb^3cde^2 - Ab^3ce^3 + \left(Bbc^3 - 2\,Ac^4\right)d^3 - \left(2\,Bb^2c^2 - 3\,Abc^3\right)d^2e\right)x^2 + \left(Bb^4de^2 - Ab^4e^3 + \left(Bb^2c^2 - 2\,Abc^3\right)d^3 - \left(2\,Bb^3c - 3\,Ab^2c^2\right)d^2e\right)x\right)\log\left(x\right)}{\left(b^3c^3d^4 - 2\,b^4c^2d^3e + b^5cd^2e^2\right)x^2 + \left(b^4c^2d^4 - 2\,b^5cd^3e + b^6d^2e^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c^2*d^3 - 2*A*b^3*c*d^2*e + A*b^4*d*e^2 + (A*b^3*c*d*e^2 - (B*b^2*c
^2 - 2*A*b*c^3)*d^3 + (B*b^3*c - 3*A*b^2*c^2)*d^2*e)*x + (((B*b*c^3 - 2*A*c
^4)*d^3 - (2*B*b^2*c^2 - 3*A*b*c^3)*d^2*e)*x^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d
^3 - (2*B*b^3*c - 3*A*b^2*c^2)*d^2*e)*x)*log(c*x + b) + ((B*b^3*c*d*e^2 - A
*b^3*c*e^3)*x^2 + (B*b^4*d*e^2 - A*b^4*e^3)*x)*log(e*x + d) - ((B*b^3*c*d*e
^2 - A*b^3*c*e^3 + (B*b*c^3 - 2*A*c^4)*d^3 - (2*B*b^2*c^2 - 3*A*b*c^3)*d^2*
e)*x^2 + (B*b^4*d*e^2 - A*b^4*e^3 + (B*b^2*c^2 - 2*A*b*c^3)*d^3 - (2*B*b^3*
c - 3*A*b^2*c^2)*d^2*e)*x)*log(x))/((b^3*c^3*d^4 - 2*b^4*c^2*d^3*e + b^5*c*
d^2*e^2)*x^2 + (b^4*c^2*d^4 - 2*b^5*c*d^3*e + b^6*d^2*e^2)*x)
```

giac [A] time = 0.16, size = 268, normalized size = 1.82

$$-\frac{\left(Bbc^3d - 2\,Ac^4d - 2\,Bb^2c^2e + 3\,Abc^3e\right)\log\left(\left|cx+b\right|\right)}{b^3c^3d^2 - 2\,b^4c^2de + b^5ce^2} - \frac{\left(Bde^3 - Ae^4\right)\log\left(\left|xe+d\right|\right)}{c^2d^4e - 2\,bcd^3e^2 + b^2d^2e^3} + \frac{\left(Bbd - 2\,Acd - Abe\right)\log\left(\left|x\right|\right)}{b^3d^2} - \frac{Abc^2d^3 - 2\,Ab^2cd^2e + Ab^3de^2 - \left(Bbc^2d^3 - 2\,Ac^3d^3 - Bb^2cd^2e + 3\,Abc^2d^2e - Ab^2cde^2\right)x}{\left(cd-be\right)^2\left(cx+b\right)b^2d^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(B*b*c^3*d - 2*A*c^4*d - 2*B*b^2*c^2*e + 3*A*b*c^3*e)*log(abs(c*x + b))/(b
^3*c^3*d^2 - 2*b^4*c^2*d*e + b^5*c*e^2) - (B*d*e^3 - A*e^4)*log(abs(x*e + d
))/(c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3) + (B*b*d - 2*A*c*d - A*b*e)*lo
g(abs(x))/(b^3*d^2) - (A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A*b^3*d*e^2 - (B*b*c
^2*d^3 - 2*A*c^3*d^3 - B*b^2*c*d^2*e + 3*A*b*c^2*d^2*e - A*b^2*c*d*e^2)*x)/
((c*d - b*e)^2*(c*x + b)*b^2*d^2*x)
```

maple [A] time = 0.06, size = 248, normalized size = 1.69

$$-\frac{3A\,c^2e\ln\left(cx+b\right)}{\left(be-cd\right)^2b^2} + \frac{2A\,c^3d\ln\left(cx+b\right)}{\left(be-cd\right)^2b^3} + \frac{A\,e^3\ln\left(ex+d\right)}{\left(be-cd\right)^2d^2} + \frac{2Bce\ln\left(cx+b\right)}{\left(be-cd\right)^2b} - \frac{B\,c^2d\ln\left(cx+b\right)}{\left(be-cd\right)^2b^2} - \frac{B\,e^2\ln\left(ex+d\right)}{\left(be-cd\right)^2d} + \frac{A\,c^2}{\left(be-cd\right)\left(cx+b\right)b^2} - \frac{Bc}{\left(be-cd\right)\left(cx+b\right)b} - \frac{Ae\ln\left(x\right)}{b^2d^2} - \frac{2Ac\ln\left(x\right)}{b^3d} + \frac{B\ln\left(x\right)}{b^2d} - \frac{A}{b^2dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] -3*c^2/(b*e-c*d)^2/b^2*ln(c*x+b)*A*e+2*c^3/(b*e-c*d)^2/b^3*ln(c*x+b)*A*d+2*
c/(b*e-c*d)^2/b*ln(c*x+b)*B*e-c^2/(b*e-c*d)^2/b^2*ln(c*x+b)*B*d+c^2/(b*e-c*
d)/b^2/(c*x+b)*A-c/(b*e-c*d)/b/(c*x+b)*B+e^3/(b*e-c*d)^2/d^2*ln(e*x+d)*A-e^
2/(b*e-c*d)^2/d*ln(e*x+d)*B-A/b^2/d/x-1/b^2/d^2*ln(x)*A*e-2/b^3/d*ln(x)*A*c
+1/b^2/d*ln(x)*B
```

maxima [A] time = 0.71, size = 227, normalized size = 1.54

$$-\frac{\left(\left(Bbc^2 - 2\,Ac^3\right)d - \left(2\,Bb^2c - 3\,Abc^2\right)e\right)\log\left(cx+b\right)}{b^3c^2d^2 - 2\,b^4cde + b^5e^2} - \frac{\left(Bde^2 - Ae^3\right)\log\left(ex+d\right)}{c^2d^4 - 2\,bcd^3e + b^2d^2e^2} - \frac{Abcd - Ab^2e - \left(Abce + \left(Bbc - 2\,Ac^2\right)d\right)x}{\left(b^2c^2d^2 - b^3cde\right)x^2 + \left(b^3cd^2 - b^4de\right)x} - \frac{\left(Abe - \left(Bb - 2\,Ac\right)d\right)\log\left(x\right)}{b^3d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -((B*b*c^2 - 2*A*c^3)*d - (2*B*b^2*c - 3*A*b*c^2)*e)*log(c*x + b)/(b^3*c^2*
d^2 - 2*b^4*c*d*e + b^5*e^2) - (B*d*e^2 - A*e^3)*log(e*x + d)/(c^2*d^4 - 2*
```

```
b*c*d^3*e + b^2*d^2*e^2) - (A*b*c*d - A*b^2*e - (A*b*c*e + (B*b*c - 2*A*c^2
)*d)*x)/((b^2*c^2*d^2 - b^3*c*d*e)*x^2 + (b^3*c*d^2 - b^4*d*e)*x) - (A*b*e
- (B*b - 2*A*c)*d)*log(x)/(b^3*d^2)
```

mupad [B] time = 2.04, size = 201, normalized size = 1.37

$$\frac{\ln(b+cx)\left(d\left(2Ac^3-Bbc^2\right)-3Abc^2e+2Bb^2ce\right)}{b^5e^2-2b^4cde+b^3c^2d^2}-\frac{\frac{A}{bd}+\frac{x\left(Abce-2Ac^2d+Bbcd\right)}{b^2d(be-cd)}}{cx^2+bx}+\frac{\ln(d+ex)\left(Ae^3-Bde^2\right)}{b^2d^2e^2-2bcd^3e+c^2d^4}-\frac{\ln(x)\left(b\left(Ae-Bd\right)+2Acd\right)}{b^3d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)),x)
```

```
[Out] (log(b + c*x)*(d*(2*A*c^3 - B*b*c^2) - 3*A*b*c^2*e + 2*B*b^2*c*e))/(b^5*e^2
 + b^3*c^2*d^2 - 2*b^4*c*d*e) - (A/(b*d) + (x*(A*b*c*e - 2*A*c^2*d + B*b*c*
d))/(b^2*d*(b*e - c*d)))/(b*x + c*x^2) + (log(d + e*x)*(A*e^3 - B*d*e^2))/(
c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (log(x)*(b*(A*e - B*d) + 2*A*c*d))/(
b^3*d^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1007 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=201

$$\frac{\log(x)(-2Abe-2Acd+bBd)}{b^3d^3}+\frac{c^2(bB-Ac)}{b^2(b+cx)(cd-be)^2}-\frac{A}{b^2d^2x}+\frac{c^2\log(b+cx)\left(-bc(4Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^3(cd-be)^3}$$

Rubi [A] time = 0.33, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{c^2(bB-Ac)}{b^2(b+cx)(cd-be)^2}+\frac{c^2\log(b+cx)\left(-bc(4Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^3(cd-be)^3}+\frac{\log(x)(-2Abe-2Acd+bBd)}{b^3d^3}-\frac{A}{b^2d^2x}+\frac{e^2(Bd-Ae)}{d^2(d+ex)(cd-be)^2}+\frac{e^2\log(d+ex)(2Ae(2cd-be)-Bd(3cd-be))}{d^3(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^2*x)) + (c^2*(b*B - A*c))/(b^2*(c*d - b*e)^2*(b + c*x)) + (e^2*(
B*d - A*e))/(d^2*(c*d - b*e)^2*(d + e*x)) + ((b*B*d - 2*A*c*d - 2*A*b*e)*Lo
g[x])/(b^3*d^3) + (c^2*(2*A*c^2*d + 3*b^2*B*e - b*c*(B*d + 4*A*e))*Log[b +
c*x])/(b^3*(c*d - b*e)^3) + (e^2*(2*A*e*(2*c*d - b*e) - B*d*(3*c*d - b*e))*
Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^2}\,dx=\int \left(\frac{A}{b^2d^2x^2}+\frac{bBd-2Acd-2Abe}{b^3d^3x}-\frac{c^3(bB-Ac)}{b^2(-cd+be)^2(b+cx)^2}+\frac{c^3\left(2Ac^2d+3b^2B\right.}{b^3(cd-b\right.}$$

$$=-\frac{A}{b^2d^2x}+\frac{c^2(bB-Ac)}{b^2(cd-be)^2(b+cx)}+\frac{e^2(Bd-Ae)}{d^2(cd-be)^2(d+ex)}+\frac{(bBd-2Acd-2Abe)\,l}{b^3d^3}$$

Mathematica [A] time = 0.32, size = 201, normalized size = 1.00

$$\frac{\log(x)(-2Abe-2Acd+bBd)}{b^3d^3}+\frac{c^2(bB-Ac)}{b^2(b+cx)(cd-be)^2}-\frac{A}{b^2d^2x}-\frac{c^2\log(b+cx)\left(-bc(4Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^3(be-cd)^3}-\frac{e^2\log(d+ex)(2Ae(be-2cd)+Bd(3cd-be))}{d^3(cd-be)^3}+\frac{e^2(Bd-Ae)}{d^2(d+ex)(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^2*x)) + (c^2*(b*B - A*c))/(b^2*(c*d - b*e)^2*(b + c*x)) + (e^2*(
B*d - A*e))/(d^2*(c*d - b*e)^2*(d + e*x)) + ((b*B*d - 2*A*c*d - 2*A*b*e)*Lo
g[x])/(b^3*d^3) - (c^2*(2*A*c^2*d + 3*b^2*B*e - b*c*(B*d + 4*A*e))*Log[b +
c*x])/(b^3*(-(c*d) + b*e)^3) - (e^2*(B*d*(3*c*d - b*e) + 2*A*e*(-2*c*d + b*
e))*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^2), x]
```

fricas [B] time = 134.90, size = 1034, normalized size = 5.14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c^3*d^5 - 3*A*b^3*c^2*d^4*e + 3*A*b^4*c*d^3*e^2 - A*b^5*d^2*e^3 - (
4*A*b^2*c^3*d^3*e^2 + 2*A*b^4*c*d*e^4 + (B*b^2*c^3 - 2*A*b*c^4)*d^4*e - (B*
b^4*c + 4*A*b^3*c^2)*d^2*e^3)*x^2 - (B*b^4*c*d^3*e^2 + 2*A*b^5*d*e^4 + (B*b
^2*c^3 - 2*A*b*c^4)*d^5 - (B*b^3*c^2 - 3*A*b^2*c^3)*d^4*e - (B*b^5 + 3*A*b^
4*c)*d^2*e^3)*x + (((B*b*c^4 - 2*A*c^5)*d^4*e - (3*B*b^2*c^3 - 4*A*b*c^4)*d
^3*e^2)*x^3 + ((B*b*c^4 - 2*A*c^5)*d^5 - 2*(B*b^2*c^3 - A*b*c^4)*d^4*e - (3
*B*b^3*c^2 - 4*A*b^2*c^3)*d^3*e^2)*x^2 + ((B*b^2*c^3 - 2*A*b*c^4)*d^5 - (3*
B*b^3*c^2 - 4*A*b^2*c^3)*d^4*e)*x)*log(c*x + b) + ((3*B*b^3*c^2*d^2*e^3 + 2
*A*b^4*c*e^5 - (B*b^4*c + 4*A*b^3*c^2)*d*e^4)*x^3 + (3*B*b^3*c^2*d^3*e^2 +
2*A*b^5*e^5 + 2*(B*b^4*c - 2*A*b^3*c^2)*d^2*e^3 - (B*b^5 + 2*A*b^4*c)*d*e^4
)*x^2 + (3*B*b^4*c*d^3*e^2 + 2*A*b^5*d*e^4 - (B*b^5 + 4*A*b^4*c)*d^2*e^3)*x
)*log(e*x + d) - ((3*B*b^3*c^2*d^2*e^3 + 2*A*b^4*c*e^5 + (B*b*c^4 - 2*A*c^5
)*d^4*e - (3*B*b^2*c^3 - 4*A*b*c^4)*d^3*e^2 - (B*b^4*c + 4*A*b^3*c^2)*d*e^4
)*x^3 + (4*A*b^2*c^3*d^3*e^2 + 2*A*b^5*e^5 + (B*b*c^4 - 2*A*c^5)*d^5 - 2*(B
*b^2*c^3 - A*b*c^4)*d^4*e + 2*(B*b^4*c - 2*A*b^3*c^2)*d^2*e^3 - (B*b^5 + 2*
A*b^4*c)*d*e^4)*x^2 + (3*B*b^4*c*d^3*e^2 + 2*A*b^5*d*e^4 + (B*b^2*c^3 - 2*A
*b*c^4)*d^5 - (3*B*b^3*c^2 - 4*A*b^2*c^3)*d^4*e - (B*b^5 + 4*A*b^4*c)*d^2*e
^3)*x)*log(x))/((b^3*c^4*d^6*e - 3*b^4*c^3*d^5*e^2 + 3*b^5*c^2*d^4*e^3 - b^
6*c*d^3*e^4)*x^3 + (b^3*c^4*d^7 - 2*b^4*c^3*d^6*e + 2*b^6*c*d^4*e^3 - b^7*d
^3*e^4)*x^2 + (b^4*c^3*d^7 - 3*b^5*c^2*d^6*e + 3*b^6*c*d^5*e^2 - b^7*d^4*e^
3)*x)
```

giac [B] time = 0.28, size = 670, normalized size = 3.33

$$\frac{\left(2\,Bbc^{3}d^{4}e^{2}-4\,Ac^{4}d^{4}e^{2}-6\,Bb^{2}c^{2}d^{3}e^{3}+8\,Abc^{3}d^{3}e^{3}+3\,Bb^{3}cd^{2}e^{4}-Bb^{4}de^{5}-4\,Ab^{3}cde^{5}+2\,Ab^{4}e^{6}\right)e^{(-2)}\log\left(\frac{\left|2\,cde-\frac{2\,cd^{2}e}{xe+d}-be^{2}+\frac{2\,bde^{2}}{xe+d}-|b|e^{2}\right|}{\left|2\,cde-\frac{2\,cd^{2}e}{xe+d}-be^{2}+\frac{2\,bde^{2}}{xe+d}+|b|e^{2}\right|}\right)}{2\left(b^{2}c^{3}d^{6}-3\,b^{3}c^{2}d^{5}e+3\,b^{4}cd^{4}e^{2}-b^{5}d^{3}e^{3}\right)|b|}+\frac{\left(3\,Bcd^{2}e^{2}-Bbde^{3}-4\,Acde^{3}+2\,Abe^{4}\right)\log\left(\left|c-\frac{2\,cd}{xe+d}+\frac{cd^{2}}{(xe+d)^{2}}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^{2}}\right|\right)}{2\left(c^{3}d^{6}-3\,bc^{2}d^{5}e+3\,b^{2}cd^{4}e^{2}-b^{3}d^{3}e^{3}\right)}+\frac{\frac{Bde^{6}}{xe+d}-\frac{Ae^{7}}{xe+d}}{c^{2}d^{4}e^{4}-2\,bcd^{3}e^{5}+b^{2}d^{2}e^{6}}+\frac{\frac{Bbc^{3}d^{3}e-2\,Ac^{4}d^{3}e+3\,Abc^{3}d^{2}e^{2}-3\,Ab^{2}c^{2}de^{3}+Ab^{3}ce^{4}}{cd^{2}-bde}-\frac{\left(Bbc^{3}d^{4}e^{2}-2\,Ac^{4}d^{4}e^{2}+4\,Abc^{3}d^{3}e^{3}-6\,Ab^{2}c^{2}d^{2}e^{4}+4\,Ab^{3}cde^{5}-Ab^{4}e^{6}\right)e^{(-1)}}{\left(cd^{2}-bde\right)(xe+d)}}{(cd-be)^{2}b^{2}\left(c-\frac{2\,cd}{xe+d}+\frac{cd^{2}}{(xe+d)^{2}}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^{2}}\right)d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*B*b*c^3*d^4*e^2 - 4*A*c^4*d^4*e^2 - 6*B*b^2*c^2*d^3*e^3 + 8*A*b*c^3*
d^3*e^3 + 3*B*b^3*c*d^2*e^4 - B*b^4*d*e^5 - 4*A*b^3*c*d*e^5 + 2*A*b^4*e^6)*
e^(-2)*log(abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d)
- abs(b)*e^2)/abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e +
d) + abs(b)*e^2))/((b^2*c^3*d^6 - 3*b^3*c^2*d^5*e + 3*b^4*c*d^4*e^2 - b^5*d
^3*e^3)*abs(b)) + 1/2*(3*B*c*d^2*e^2 - B*b*d*e^3 - 4*A*c*d*e^3 + 2*A*b*e^4)
*log(abs(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x
*e + d)^2))/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3) + (B*
d*e^6/(x*e + d) - A*e^7/(x*e + d))/(c^2*d^4*e^4 - 2*b*c*d^3*e^5 + b^2*d^2*e
^6) + ((B*b*c^3*d^3*e - 2*A*c^4*d^3*e + 3*A*b*c^3*d^2*e^2 - 3*A*b^2*c^2*d*e
^3 + A*b^3*c*e^4)/(c*d^2 - b*d*e) - (B*b*c^3*d^4*e^2 - 2*A*c^4*d^4*e^2 + 4*
A*b*c^3*d^3*e^3 - 6*A*b^2*c^2*d^2*e^4 + 4*A*b^3*c*d*e^5 - A*b^4*e^6)*e^(-1)
/((c*d^2 - b*d*e)*(x*e + d)))/((c*d - b*e)^2*b^2*(c - 2*c*d/(x*e + d) + c*d
^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2)*d^2)
```

maple [A] time = 0.08, size = 357, normalized size = 1.78

$$\frac{2Abe^{4}\ln(ex+d)}{(be-cd)^{3}d^{3}}+\frac{4Ac^{3}e\ln(cx+b)}{(be-cd)^{3}b^{2}}-\frac{2Ac^{4}d\ln(cx+b)}{(be-cd)^{3}b^{3}}-\frac{4Ace^{3}\ln(ex+d)}{(be-cd)^{3}d^{2}}-\frac{Bbe^{3}\ln(ex+d)}{(be-cd)^{3}d^{2}}-\frac{3Bc^{2}e\ln(cx+b)}{(be-cd)^{3}b}+\frac{Bc^{3}d\ln(cx+b)}{(be-cd)^{3}b^{2}}+\frac{3Bce^{2}\ln(ex+d)}{(be-cd)^{3}d}-\frac{Ac^{3}}{(be-cd)^{2}(cx+b)b^{2}}-\frac{Ae^{3}}{(be-cd)^{2}(ex+d)d^{2}}+\frac{Bc^{2}}{(be-cd)^{2}(cx+b)b}+\frac{Be^{2}}{(be-cd)^{2}(ex+d)d}-\frac{2Ae\ln(x)}{b^{2}d^{3}}-\frac{2Ac\ln(x)}{b^{3}d^{2}}+\frac{B\ln(x)}{b^{2}d^{2}}-\frac{A}{b^{2}d^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x)
```

```
[Out] 4*c^3/(b*e-c*d)^3/b^2*ln(c*x+b)*A*e-2*c^4/(b*e-c*d)^3/b^3*ln(c*x+b)*A*d-3*c
^2/(b*e-c*d)^3/b*ln(c*x+b)*B*e+c^3/(b*e-c*d)^3/b^2*ln(c*x+b)*B*d-c^3/(b*e-c
*d)^2/b^2/(c*x+b)*A+c^2/(b*e-c*d)^2/b/(c*x+b)*B+2*e^4/(b*e-c*d)^3/d^3*ln(e*
x+d)*A*b-4*e^3/(b*e-c*d)^3/d^2*ln(e*x+d)*A*c-e^3/(b*e-c*d)^3/d^2*ln(e*x+d)*
B*b+3*e^2/(b*e-c*d)^3/d*ln(e*x+d)*B*c-e^3/(b*e-c*d)^2/d^2/(e*x+d)*A+e^2/(b*
e-c*d)^2/d/(e*x+d)*B-A/b^2/d^2/x-2/b^2/d^3*ln(x)*A*e-2/b^3/d^2*ln(x)*A*c+1/
b^2/d^2*ln(x)*B
```

maxima [**B**] time = 0.71, size = 467, normalized size = 2.32

$$-\frac{\left(\left(Bbc^3-2\,Ac^4\right)d-\left(3\,Bb^2c^2-4\,Abc^3\right)e\right)\log\left(cx+b\right)}{b^3c^3d^3-3\,b^4c^2d^2e+3\,b^5cde^2-b^6e^3}-\frac{\left(3\,Bcd^2e^2+2\,Abe^4-(Bb+4\,Ac)de^3\right)\log\left(ex+d\right)}{c^3d^6-3\,bc^2d^5e+3\,b^2cd^4e^2-b^3d^3e^3}-\frac{Abc^2d^3-2\,Ab^2cd^2e+Ab^3de^2+\left(2\,Ab^2ce^3-\left(Bbc^2-2\,Ac^3\right)d^2e-\left(Bb^2c+2\,Abc^2\right)de^2\right)x^2-\left(Abc^2d^2e-2\,Ab^3e^3+\left(Bbc^2-2\,Ac^3\right)d^3+\left(Bb^3+Ab^2c\right)de^2\right)x}{\left(b^2c^3d^4e-2\,b^3c^2d^3e^2+b^4cd^2e^3\right)x^3+\left(b^2c^3d^5-b^3c^2d^4e-b^4cd^3e^2+b^5d^2e^3\right)x^2+\left(b^3c^2d^5-2\,b^4cd^4e+b^5d^3e^2\right)x}-\frac{(2\,Abe-(Bb-2\,Ac)d)\log(x)}{b^3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -((B*b*c^3 - 2*A*c^4)*d - (3*B*b^2*c^2 - 4*A*b*c^3)*e)*log(c*x + b)/(b^3*c^
3*d^3 - 3*b^4*c^2*d^2*e + 3*b^5*c*d*e^2 - b^6*e^3) - (3*B*c*d^2*e^2 + 2*A*b
*e^4 - (B*b + 4*A*c)*d*e^3)*log(e*x + d)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c
*d^4*e^2 - b^3*d^3*e^3) - (A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A*b^3*d*e^2 + (2
*A*b^2*c*e^3 - (B*b*c^2 - 2*A*c^3)*d^2*e - (B*b^2*c + 2*A*b*c^2)*d*e^2)*x^2
 - (A*b*c^2*d^2*e - 2*A*b^3*e^3 + (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^3 + A*b^2*
c)*d*e^2)*x)/((b^2*c^3*d^4*e - 2*b^3*c^2*d^3*e^2 + b^4*c*d^2*e^3)*x^3 + (b^
2*c^3*d^5 - b^3*c^2*d^4*e - b^4*c*d^3*e^2 + b^5*d^2*e^3)*x^2 + (b^3*c^2*d^5
 - 2*b^4*c*d^4*e + b^5*d^3*e^2)*x) - (2*A*b*e - (B*b - 2*A*c)*d)*log(x)/(b^
3*d^3)
```

mupad [**B**] time = 2.41, size = 410, normalized size = 2.04

$$\frac{\frac{x\,\left(B\,b^3\,d\,e^2-2\,A\,b^3\,e^3+A\,b^2\,c\,d\,e^2+B\,b\,c^2\,d^3+A\,b\,c^2\,d^2\,e-2\,A\,c^3\,d^3\right)}{b^2\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}-\frac{A}{b\,d}+\frac{x^2\,\left(B\,b^2\,c\,d\,e^2-2\,A\,b^2\,c\,e^3+B\,b\,c^2\,d^2\,e+2\,A\,b\,c^2\,d\,e^2-2\,A\,c^3\,d^2\,e\right)}{b^2\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}}{c\,e\,x^3+\left(b\,e+c\,d\right)\,x^2+b\,d\,x}-\frac{\ln\left(b+c\,x\right)\,\left(e\,\left(3\,B\,b^2\,c^2-4\,A\,b\,c^3\right)+d\,\left(2\,A\,c^4-B\,b\,c^3\right)\right)}{b^6\,e^3-3\,b^5\,c\,d\,e^2+3\,b^4\,c^2\,d^2\,e-b^3\,c^3\,d^3}-\frac{\ln\left(d+e\,x\right)\,\left(c\,\left(3\,B\,d^2\,e^2-4\,A\,d\,e^3\right)+b\,\left(2\,A\,e^4-B\,d\,e^3\right)\right)}{-b^3\,d^3\,e^3+3\,b^2\,c\,d^4\,e^2-3\,b\,c^2\,d^5\,e+c^3\,d^6}-\frac{\ln(x)\,\left(d\,\left(2\,A\,c-B\,b\right)+2\,A\,b\,e\right)}{b^3\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^2),x)
```

```
[Out] ((x*(B*b*c^2*d^3 - 2*A*c^3*d^3 - 2*A*b^3*e^3 + B*b^3*d*e^2 + A*b*c^2*d^2*e
+ A*b^2*c*d*e^2))/(b^2*d^2*(b^2*e^2 + c^2*d^2 - 2*b*c*d*e)) - A/(b*d) + (x^
2*(2*A*b*c^2*d*e^2 - 2*A*c^3*d^2*e - 2*A*b^2*c*e^3 + B*b*c^2*d^2*e + B*b^2*
c*d*e^2))/(b^2*d^2*(b^2*e^2 + c^2*d^2 - 2*b*c*d*e)))/(x^2*(b*e + c*d) + b*d
*x + c*e*x^3) - (log(b + c*x)*(e*(3*B*b^2*c^2 - 4*A*b*c^3) + d*(2*A*c^4 - B
*b*c^3)))/(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2) - (log(
d + e*x)*(c*(3*B*d^2*e^2 - 4*A*d*e^3) + b*(2*A*e^4 - B*d*e^3)))/(c^3*d^6 -
b^3*d^3*e^3 + 3*b^2*c*d^4*e^2 - 3*b*c^2*d^5*e) - (log(x)*(d*(2*A*c - B*b) +
 2*A*b*e))/(b^3*d^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1008 $\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=283

$$\frac{\log(x)(-3Abe-2Acd+bBd)}{b^3d^4}+\frac{c^3(bB-Ac)}{b^2(b+cx)(cd-be)^3}-\frac{e^2\log(d+ex)\left(Bd\left(b^2e^2-4bcde+6c^2d^2\right)-Ae\left(3b^2e^2-10b\right.\right.}{d^4(cd-be)^4}$$

Rubi [A] time = 0.46, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{e^2\log(d+ex)\left(Bd\left(b^2e^2-4bcde+6c^2d^2\right)-Ae\left(3b^2e^2-10bcde+10c^2d^2\right)\right)}{d^4(cd-be)^4}+\frac{c^3(bB-Ac)}{b^2(b+cx)(cd-be)^3}+\frac{c^3\log(b+cx)\left(-bc(5Ae+Bd)+2Ac^2d+4b^2Be\right)}{b^3(cd-be)^4}+\frac{\log(x)(-3Abe-2Acd+bBd)}{b^3d^4}-\frac{A}{b^2d^3x}-\frac{e^2(2Ae(2cd-be)-Bd(3cd-be))}{d^3(d+ex)(cd-be)^3}+\frac{e^2(Bd-Ae)}{2d^2(d+ex)^2(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^3*x)) + (c^3*(b*B - A*c))/(b^2*(c*d - b*e)^3*(b + c*x)) + (e^2*(
B*d - A*e))/(2*d^2*(c*d - b*e)^2*(d + e*x)^2) - (e^2*(2*A*e*(2*c*d - b*e) -
 B*d*(3*c*d - b*e)))/(d^3*(c*d - b*e)^3*(d + e*x)) + ((b*B*d - 2*A*c*d - 3*
A*b*e)*Log[x])/(b^3*d^4) + (c^3*(2*A*c^2*d + 4*b^2*B*e - b*c*(B*d + 5*A*e))
*Log[b + c*x])/(b^3*(c*d - b*e)^4) - (e^2*(B*d*(6*c^2*d^2 - 4*b*c*d*e + b^2
*e^2) - A*e*(10*c^2*d^2 - 10*b*c*d*e + 3*b^2*e^2))*Log[d + e*x])/(d^4*(c*d
- b*e)^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^2}\,dx&=\int\left(\frac{A}{b^2d^3x^2}+\frac{bBd-2Acd-3Abe}{b^3d^4x}+\frac{c^4(bB-Ac)}{b^2(-cd+be)^3(b+cx)^2}+\frac{c^4\left(2Ac^2d+4b^2Be\right.}{b^3(cd-be)^4}\right.\\&=-\frac{A}{b^2d^3x}+\frac{c^3(bB-Ac)}{b^2(cd-be)^3(b+cx)}+\frac{e^2(Bd-Ae)}{2d^2(cd-be)^2(d+ex)^2}-\frac{e^2(2Ae(2cd-be)-Bd(3}{d^3(cd-be)^3(d+e}\end{aligned}$$

Mathematica [A] time = 0.49, size = 279, normalized size = 0.99

$$\frac{\log(x)(-3Abe-2Acd+bBd)}{b^3d^4}+\frac{c^3(Ac-bB)}{b^2(b+cx)(be-cd)^3}+\frac{e^2\log(d+ex)\left(Ae\left(3b^2e^2-10bcde+10c^2d^2\right)-Bd\left(b^2e^2-4bcde+6c^2d^2\right)\right)}{d^4(cd-be)^4}-\frac{A}{b^2d^3x}+\frac{c^3\log(b+cx)\left(-bc(5Ae+Bd)+2Ac^2d+4b^2Be\right)}{b^3(cd-be)^4}+\frac{e^2(2Ae(be-2cd)+Bd(3cd-be))}{d^3(d+ex)(cd-be)^3}+\frac{e^2(Bd-Ae)}{2d^2(d+ex)^2(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^3*x)) + (c^3*(-(b*B) + A*c))/(b^2*(-(c*d) + b*e)^3*(b + c*x)) +
(e^2*(B*d - A*e))/(2*d^2*(c*d - b*e)^2*(d + e*x)^2) + (e^2*(B*d*(3*c*d - b*
e) + 2*A*e*(-2*c*d + b*e)))/(d^3*(c*d - b*e)^3*(d + e*x)) + ((b*B*d - 2*A*c
*d - 3*A*b*e)*Log[x])/(b^3*d^4) + (c^3*(2*A*c^2*d + 4*b^2*B*e - b*c*(B*d +
5*A*e))*Log[b + c*x])/(b^3*(c*d - b*e)^4) + (e^2*(-(B*d*(6*c^2*d^2 - 4*b*c*
d*e + b^2*e^2)) + A*e*(10*c^2*d^2 - 10*b*c*d*e + 3*b^2*e^2))*Log[d + e*x])/
(d^4*(c*d - b*e)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^3 \left(bx + cx^2\right)^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^2), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.20, size = 745, normalized size = 2.63

$$-\frac{(Bbc^5d - 2Ac^6d - 4Bb^2c^4e + 5Abc^5e)\log\left(|cx + b|\right)}{b^3c^5d^4 - 4b^4c^4d^3e + 6b^5c^3d^2e^2 - 4b^6c^2de^3 + b^7ce^4} - \frac{(6Bc^2d^3e^3 - 4Bbcd^2e^4 - 10Ac^2d^2e^4 + Bb^2de^5 + 10Abcde^5 - 3Ab^2e^6)\log\left(|xe + d|\right)}{c^4d^8e - 4bc^3d^7e^2 + 6b^2c^2d^6e^3 - 4b^3cd^5e^4 + b^4d^4e^5} + \frac{(Bbd - 2Acd - 3Abe)\log\left(|x|\right)}{b^3d^4} - \frac{2Abc^4d^7 - 8Ab^2c^3d^6e + 12Ab^3c^2d^5e^2 - 8Ab^4cd^4e^3 + 2Ab^5d^3e^4 - 2(Bbc^4d^5e^2 - 2Ac^5d^5e^2 + 2Bb^2c^3d^4e^3 + 5Abc^4d^4e^3 - 4Bb^3c^2d^3e^4 - 10Ab^2c^3d^3e^4 + Bb^4cd^2e^5 + 10Ab^3c^2d^2e^5 - 3Ab^4cde^6)x^3 - (4Bbc^4d^6e - 8Ac^5d^6e + 3Bb^2c^3d^5e^2 + 18Abc^4d^5e^2 - 4Bb^3c^2d^4e^3 - 25Ab^2c^3d^4e^3 - 5Bb^4cd^3e^4 + 10Ab^3c^2d^3e^4 + 2Bb^5d^2e^5 + 11Ab^4cd^2e^5 - 6Ab^5de^6)x^2 - (2Bbc^4d^7 - 4Ac^5d^7 - 2Bb^2c^3d^6e + 6Abc^4d^6e + 7Bb^3c^2d^5e^2 + 4Ab^2c^3d^5e^2 - 10Bb^4cd^4e^3 - 25Ab^3c^2d^4e^3 + 3Bb^5d^3e^4 + 28Ab^4cd^3e^4 - 9Ab^5d^2e^5)x}{2(cd - be)^4(cx + b)(xe + d)^2b^2d^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(B*b*c^5*d - 2*A*c^6*d - 4*B*b^2*c^4*e + 5*A*b*c^5*e)*log(abs(c*x + b))/(b
^3*c^5*d^4 - 4*b^4*c^4*d^3*e + 6*b^5*c^3*d^2*e^2 - 4*b^6*c^2*d*e^3 + b^7*c*
e^4) - (6*B*c^2*d^3*e^3 - 4*B*b*c*d^2*e^4 - 10*A*c^2*d^2*e^4 + B*b^2*d*e^5
+ 10*A*b*c*d*e^5 - 3*A*b^2*e^6)*log(abs(x*e + d))/(c^4*d^8*e - 4*b*c^3*d^7*
e^2 + 6*b^2*c^2*d^6*e^3 - 4*b^3*c*d^5*e^4 + b^4*d^4*e^5) + (B*b*d - 2*A*c*d
 - 3*A*b*e)*log(abs(x))/(b^3*d^4) - 1/2*(2*A*b*c^4*d^7 - 8*A*b^2*c^3*d^6*e
+ 12*A*b^3*c^2*d^5*e^2 - 8*A*b^4*c*d^4*e^3 + 2*A*b^5*d^3*e^4 - 2*(B*b*c^4*d
^5*e^2 - 2*A*c^5*d^5*e^2 + 2*B*b^2*c^3*d^4*e^3 + 5*A*b*c^4*d^4*e^3 - 4*B*b^
3*c^2*d^3*e^4 - 10*A*b^2*c^3*d^3*e^4 + B*b^4*c*d^2*e^5 + 10*A*b^3*c^2*d^2*e
^5 - 3*A*b^4*c*d*e^6)*x^3 - (4*B*b*c^4*d^6*e - 8*A*c^5*d^6*e + 3*B*b^2*c^3*
d^5*e^2 + 18*A*b*c^4*d^5*e^2 - 4*B*b^3*c^2*d^4*e^3 - 25*A*b^2*c^3*d^4*e^3 -
 5*B*b^4*c*d^3*e^4 + 10*A*b^3*c^2*d^3*e^4 + 2*B*b^5*d^2*e^5 + 11*A*b^4*c*d^
2*e^5 - 6*A*b^5*d*e^6)*x^2 - (2*B*b*c^4*d^7 - 4*A*c^5*d^7 - 2*B*b^2*c^3*d^6
*e + 6*A*b*c^4*d^6*e + 7*B*b^3*c^2*d^5*e^2 + 4*A*b^2*c^3*d^5*e^2 - 10*B*b^4
*c*d^4*e^3 - 25*A*b^3*c^2*d^4*e^3 + 3*B*b^5*d^3*e^4 + 28*A*b^4*c*d^3*e^4 -
9*A*b^5*d^2*e^5)*x)/((c*d - b*e)^4*(c*x + b)*(x*e + d)^2*b^2*d^4*x)
```

maple [A] time = 0.10, size = 528, normalized size = 1.87

$$\frac{3Ab^2e^5\ln(ex+d)}{(be-cd)^4d^4} - \frac{10Abce^4\ln(ex+d)}{(be-cd)^4d^3} - \frac{5Ac^4e\ln(cx+b)}{(be-cd)^4b^2} + \frac{2Ac^5d\ln(cx+b)}{(be-cd)^4b^3} + \frac{10Ac^2e^3\ln(ex+d)}{(be-cd)^4d^2} - \frac{Bb^2e^4\ln(ex+d)}{(be-cd)^4d^3} + \frac{4Bbce^3\ln(ex+d)}{(be-cd)^4d^2} + \frac{4Bc^3e\ln(cx+b)}{(be-cd)^4b} - \frac{Bc^4d\ln(cx+b)}{(be-cd)^4b^2} - \frac{6Bc^2e^2\ln(ex+d)}{(be-cd)^4d} - \frac{2Abe^4}{(be-cd)^3(ex+d)d^3} + \frac{Ac^4}{(be-cd)^3(cx+b)b^2} + \frac{4Ace^3}{(be-cd)^3(ex+d)d^2} + \frac{Bbe^3}{(be-cd)^3(ex+d)d^2} - \frac{Bc^3}{(be-cd)^3(cx+b)b} - \frac{3Bce^2}{(be-cd)^3(ex+d)d} - \frac{Ae^3}{2(be-cd)^2(ex+d)^2d^2} + \frac{Be^2}{2(be-cd)^2(ex+d)^2d} - \frac{3Ae\ln(x)}{b^2d^4} - \frac{2Ac\ln(x)}{b^3d^3} + \frac{B\ln(x)}{b^2d^3} - \frac{A}{b^2d^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x)
```

```
[Out] -5*c^4/(b*e-c*d)^4/b^2*ln(c*x+b)*A*e+2*c^5/(b*e-c*d)^4/b^3*ln(c*x+b)*A*d+4*
c^3/(b*e-c*d)^4/b*ln(c*x+b)*B*e-c^4/(b*e-c*d)^4/b^2*ln(c*x+b)*B*d+c^4/(b*e-
c*d)^3/b^2/(c*x+b)*A-c^3/(b*e-c*d)^3/b/(c*x+b)*B-2*e^4/(b*e-c*d)^3/d^3/(e*x
+d)*A*b+4*e^3/(b*e-c*d)^3/d^2/(e*x+d)*A*c+e^3/(b*e-c*d)^3/d^2/(e*x+d)*B*b-3
*e^2/(b*e-c*d)^3/d/(e*x+d)*B*c+3*e^5/(b*e-c*d)^4/d^4*ln(e*x+d)*A*b^2-10*e^4
/(b*e-c*d)^4/d^3*ln(e*x+d)*A*b*c+10*e^3/(b*e-c*d)^4/d^2*ln(e*x+d)*A*c^2-e^4
/(b*e-c*d)^4/d^3*ln(e*x+d)*B*b^2+4*e^3/(b*e-c*d)^4/d^2*ln(e*x+d)*B*b*c-6*e^
2/(b*e-c*d)^4/d*ln(e*x+d)*B*c^2-1/2*e^3/(b*e-c*d)^2/d^2/(e*x+d)^2*A+1/2*e^2
```

```
/(b*e-c*d)^2/d/(e*x+d)^2*B-A/b^2/d^3/x-3/b^2/d^4*ln(x)*A*e-2/b^3/d^3*ln(x)*
A*c+1/b^2/d^3*ln(x)*B
```

maxima [B] time = 1.11, size = 813, normalized size = 2.87

$$-\frac{\left(\left(Bbc^4-2\,Ac^5\right)d-\left(4\,Bb^2c^3-5\,Abc^4\right)e\right)\log\left(cx+b\right)}{b^3c^4d^4-4\,b^4c^3d^3e+6\,b^5c^2d^2e^2-4\,b^6cde^3+b^7e^4}-\frac{\left(6\,Bc^2d^3e^2-3\,Ab^2e^5-2\left(2\,Bbc+5\,Ac^2\right)d^2e^3+\left(Bb^2+10\,Abc\right)de^4\right)\log\left(ex+d\right)}{c^4d^8-4\,bc^3d^7e+6\,b^2c^2d^6e^2-4\,b^3cd^5e^3+b^4d^4e^4}-\frac{2\,Abc^3d^5-6\,Ab^2c^2d^4e+6\,Ab^3cd^3e^2-2\,Ab^4d^2e^3-2\left(3\,Ab^3ce^5+\left(Bbc^3-2\,Ac^4\right)d^3e^2+3\left(Bb^2c^2+Abc^3\right)d^2e^3-\left(Bb^3c+7\,Ab^2c^2\right)de^4\right)x^3-\left(6\,Ab^4e^5+4\left(Bbc^3-2\,Ac^4\right)d^4e+\left(7\,Bb^2c^2+10\,Abc^3\right)d^3e^2+3\left(Bb^3c-5\,Ab^2c^2\right)d^2e^3-\left(2\,Bb^4+5\,Ab^3c\right)de^4\right)x^2-\left(2\,Abc^3d^4e+9\,Ab^4de^4+2\left(Bbc^3-2\,Ac^4\right)d^5+\left(7\,Bb^3c+6\,Ab^2c^2\right)d^3e^2-\left(3\,Bb^4+19\,Ab^3c\right)d^2e^3\right)x}{2\left(\left(b^2c^4d^6e^2-3\,b^3c^3d^5e^3+3\,b^4c^2d^4e^4-b^5cd^3e^5\right)x^4+\left(2\,b^2c^4d^7e-5\,b^3c^3d^6e^2+3\,b^4c^2d^5e^3+b^5cd^4e^4-b^6d^3e^5\right)x^3+\left(b^2c^4d^8-b^3c^3d^7e-3\,b^4c^2d^6e^2+5\,b^5cd^5e^3-2\,b^6d^4e^4\right)x^2+\left(b^3c^3d^8-3\,b^4c^2d^7e+3\,b^5cd^6e^2-b^6d^5e^3\right)x\right)}-\frac{\left(3\,Abe-\left(Bb-2\,Ac\right)d\right)\log\left(x\right)}{b^3d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -((B*b*c^4 - 2*A*c^5)*d - (4*B*b^2*c^3 - 5*A*b*c^4)*e)*log(c*x + b)/(b^3*c^
4*d^4 - 4*b^4*c^3*d^3*e + 6*b^5*c^2*d^2*e^2 - 4*b^6*c*d*e^3 + b^7*e^4) - (6
*B*c^2*d^3*e^2 - 3*A*b^2*e^5 - 2*(2*B*b*c + 5*A*c^2)*d^2*e^3 + (B*b^2 + 10*
A*b*c)*d*e^4)*log(e*x + d)/(c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4
*b^3*c*d^5*e^3 + b^4*d^4*e^4) - 1/2*(2*A*b*c^3*d^5 - 6*A*b^2*c^2*d^4*e + 6*
A*b^3*c*d^3*e^2 - 2*A*b^4*d^2*e^3 - 2*(3*A*b^3*c*e^5 + (B*b*c^3 - 2*A*c^4)*
d^3*e^2 + 3*(B*b^2*c^2 + A*b*c^3)*d^2*e^3 - (B*b^3*c + 7*A*b^2*c^2)*d*e^4)*
x^3 - (6*A*b^4*e^5 + 4*(B*b*c^3 - 2*A*c^4)*d^4*e + (7*B*b^2*c^2 + 10*A*b*c^
3)*d^3*e^2 + 3*(B*b^3*c - 5*A*b^2*c^2)*d^2*e^3 - (2*B*b^4 + 5*A*b^3*c)*d*e^
4)*x^2 - (2*A*b*c^3*d^4*e + 9*A*b^4*d*e^4 + 2*(B*b*c^3 - 2*A*c^4)*d^5 + (7*
B*b^3*c + 6*A*b^2*c^2)*d^3*e^2 - (3*B*b^4 + 19*A*b^3*c)*d^2*e^3)*x)/((b^2*c
^4*d^6*e^2 - 3*b^3*c^3*d^5*e^3 + 3*b^4*c^2*d^4*e^4 - b^5*c*d^3*e^5)*x^4 + (
2*b^2*c^4*d^7*e - 5*b^3*c^3*d^6*e^2 + 3*b^4*c^2*d^5*e^3 + b^5*c*d^4*e^4 - b
^6*d^3*e^5)*x^3 + (b^2*c^4*d^8 - b^3*c^3*d^7*e - 3*b^4*c^2*d^6*e^2 + 5*b^5*
c*d^5*e^3 - 2*b^6*d^4*e^4)*x^2 + (b^3*c^3*d^8 - 3*b^4*c^2*d^7*e + 3*b^5*c*d
^6*e^2 - b^6*d^5*e^3)*x) - (3*A*b*e - (B*b - 2*A*c)*d)*log(x)/(b^3*d^4)
```

mupad [B] time = 2.94, size = 726, normalized size = 2.57

$$\frac{\ln\left(d+e\,x\right)\,\left(\left(3\,A\,e^5-B\,d\,e^4\right)\,b^2+\left(4\,B\,d^2\,e^3-10\,A\,d\,e^4\right)\,b\,c+\left(10\,A\,d^2\,e^3-6\,B\,d^3\,e^2\right)\,c^2\right)}{b^4\,d^4\,e^4-4\,b^3\,c\,d^5\,e^3+6\,b^2\,c^2\,d^6\,e^2-4\,b\,c^3\,d^7\,e+c^4\,d^8}-\frac{\frac{A}{b\,d}+\frac{x^2\,\left(-2\,B\,b^4\,d\,e^4+6\,A\,b^4\,e^5+3\,B\,b^3\,c\,d^2\,e^3-5\,A\,b^3\,c\,d\,e^4+7\,B\,b^2\,c^2\,d^3\,e^2-15\,A\,b^2\,c^2\,d^2\,e^3+4\,B\,b\,c^3\,d^4\,e+10\,A\,b\,c^3\,d^3\,e^2-8\,A\,c^4\,d^4\,e\right)}{2\,b^2\,d^3\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}+\frac{x\,\left(-3\,B\,b^4\,d\,e^3+9\,A\,b^4\,e^4+7\,B\,b^3\,c\,d^2\,e^2-19\,A\,b^3\,c\,d\,e^3+6\,A\,b^2\,c^2\,d^2\,e^2+2\,B\,b\,c^3\,d^4+2\,A\,b\,c^3\,d^3\,e-4\,A\,c^4\,d^4\right)}{2\,b^2\,d^2\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}+\frac{c\,e^2\,x^3\,\left(-B\,b^3\,d\,e^2+3\,A\,b^3\,e^3+3\,B\,b^2\,c\,d^2\,e-7\,A\,b^2\,c\,d\,e^2+B\,b\,c^2\,d^3+3\,A\,b\,c^2\,d^2\,e-2\,A\,c^3\,d^3\right)}{b^2\,d^3\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}}{x^2\,\left(c\,d^2+2\,b\,e\,d\right)+x^3\,\left(b\,e^2+2\,c\,d\,e\right)+c\,e^2\,x^4+b\,d^2\,x}+\frac{\ln\left(b+c\,x\right)\,\left(e\,\left(4\,B\,b^2\,c^3-5\,A\,b\,c^4\right)+d\,\left(2\,A\,c^5-B\,b\,c^4\right)\right)}{b^7\,e^4-4\,b^6\,c\,d\,e^3+6\,b^5\,c^2\,d^2\,e^2-4\,b^4\,c^3\,d^3\,e+b^3\,c^4\,d^4}-\frac{\ln\left(x\right)\,\left(d\,\left(2\,A\,c-B\,b\right)+3\,A\,b\,e\right)}{b^3\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^3),x)
```

```
[Out] (log(d + e*x)*(b^2*(3*A*e^5 - B*d*e^4) + c^2*(10*A*d^2*e^3 - 6*B*d^3*e^2) +
 b*c*(4*B*d^2*e^3 - 10*A*d*e^4)))/(c^4*d^8 + b^4*d^4*e^4 - 4*b^3*c*d^5*e^3
+ 6*b^2*c^2*d^6*e^2 - 4*b*c^3*d^7*e) - (A/(b*d) + (x^2*(6*A*b^4*e^5 - 8*A*c
^4*d^4*e - 2*B*b^4*d*e^4 + 10*A*b*c^3*d^3*e^2 + 3*B*b^3*c*d^2*e^3 - 15*A*b^
2*c^2*d^2*e^3 + 7*B*b^2*c^2*d^3*e^2 - 5*A*b^3*c*d*e^4 + 4*B*b*c^3*d^4*e))/(
2*b^2*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (x*(9*A*b^
4*e^4 - 4*A*c^4*d^4 + 2*B*b*c^3*d^4 - 3*B*b^4*d*e^3 + 7*B*b^3*c*d^2*e^2 + 6
*A*b^2*c^2*d^2*e^2 + 2*A*b*c^3*d^3*e - 19*A*b^3*c*d*e^3))/(2*b^2*d^2*(b^3*e
^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (c*e^2*x^3*(3*A*b^3*e^3 -
2*A*c^3*d^3 + B*b*c^2*d^3 - B*b^3*d*e^2 + 3*A*b*c^2*d^2*e - 7*A*b^2*c*d*e^2
 + 3*B*b^2*c*d^2*e))/(b^2*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*
d*e^2)))/(x^2*(c*d^2 + 2*b*d*e) + x^3*(b*e^2 + 2*c*d*e) + c*e^2*x^4 + b*d^2
*x) + (log(b + c*x)*(e*(4*B*b^2*c^3 - 5*A*b*c^4) + d*(2*A*c^5 - B*b*c^4)))/
(b^7*e^4 + b^3*c^4*d^4 - 4*b^4*c^3*d^3*e + 6*b^5*c^2*d^2*e^2 - 4*b^6*c*d*e^
3) - (log(x)*(d*(2*A*c - B*b) + 3*A*b*e))/(b^3*d^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1009 $\int \frac{(A+Bx)(d+ex)^5}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=257

$$-\frac{d^4(5Abe-3Acd+bBd)}{b^4x}-\frac{(bB-Ac)(cd-be)^5}{2b^3c^4(b+cx)^2}-\frac{Ad^5}{2b^3x^2}+\frac{d^3\log(x)\left(5b^2e(2Ae+Bd)-3bcd(5Ae+Bd)+6Ac^2\right.}{b^5}$$

Rubi [A] time = 0.43, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{(cd-be)^3\log(b+cx)\left(-b^2ce(4Bd-Ae)-3bc^2d(Bd-Ae)+6Ac^3d^2-3b^3Be^2\right)}{b^5c^4}+\frac{d^3\log(x)\left(5b^2e(2Ae+Bd)-3bcd(5Ae+Bd)+6Ac^2d^2\right)}{b^5}-\frac{(cd-be)^4\left(-2Abce-3Ac^2d+3b^2Be+2bBcd\right)}{b^4c^4(b+cx)}-\frac{(bB-Ac)(cd-be)^5}{2b^3c^4(b+cx)^2}-\frac{d^4(5Abe-3Acd+bBd)}{b^4x}-\frac{Ad^5}{2b^3x^2}+\frac{Be^5x}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^5)/(2*b^3*x^2) - (d^4*(b*B*d - 3*A*c*d + 5*A*b*e))/(b^4*x) + (B*e^5*x
)/c^3 - ((b*B - A*c)*(c*d - b*e)^5)/(2*b^3*c^4*(b + c*x)^2) - ((c*d - b*e)^
4*(2*b*B*c*d - 3*A*c^2*d + 3*b^2*B*e - 2*A*b*c*e))/(b^4*c^4*(b + c*x)) + (d
^3*(6*A*c^2*d^2 + 5*b^2*e*(B*d + 2*A*e) - 3*b*c*d*(B*d + 5*A*e))*Log[x])/b^
5 - ((c*d - b*e)^3*(6*A*c^3*d^2 - 3*b^3*B*e^2 - 3*b*c^2*d*(B*d - A*e) - b^2
*c*e*(4*B*d - A*e))*Log[b + c*x])/(b^5*c^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^5}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{Be^5}{c^3}+\frac{Ad^5}{b^3x^3}+\frac{d^4(bBd-3Acd+5Abe)}{b^4x^2}+\frac{d^3\left(6Ac^2d^2+5b^2e(Bd+2Ae)-3bcd\right.}{b^5x}\right.\\ &= -\frac{Ad^5}{2b^3x^2}-\frac{d^4(bBd-3Acd+5Abe)}{b^4x}+\frac{Be^5x}{c^3}-\frac{(bB-Ac)(cd-be)^5}{2b^3c^4(b+cx)^2}-\frac{(cd-be)^4\left(2bI\right.}{}\end{aligned}$$

Mathematica [A] time = 0.13, size = 254, normalized size = 0.99

$$-\frac{d^4(5Abe-3Acd+bBd)}{b^4x}+\frac{(bB-Ac)(be-cd)^5}{2b^3c^4(b+cx)^2}-\frac{Ad^5}{2b^3x^2}+\frac{d^3\log(x)\left(5b^2e(2Ae+Bd)-3bcd(5Ae+Bd)+6Ac^2d^2\right)}{b^5}+\frac{(cd-be)^4\left(2Abce+3Ac^2d-3b^2Be-2bBcd\right)}{b^4c^4(b+cx)}-\frac{(cd-be)^3\log(b+cx)\left(b^2ce(Ae-4Bd)+3bc^2d(Ae-Bd)+6Ac^3d^2-3b^3Be^2\right)}{b^5c^4}+\frac{Be^5x}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*(A*d^5)/(b^3*x^2) - (d^4*(b*B*d - 3*A*c*d + 5*A*b*e))/(b^4*x) + (B*e^5
*x)/c^3 + ((b*B - A*c)*(-(c*d) + b*e)^5)/(2*b^3*c^4*(b + c*x)^2) + ((c*d -
b*e)^4*(-2*b*B*c*d + 3*A*c^2*d - 3*b^2*B*e + 2*A*b*c*e))/(b^4*c^4*(b + c*x)
) + (d^3*(6*A*c^2*d^2 + 5*b^2*e*(B*d + 2*A*e) - 3*b*c*d*(B*d + 5*A*e))*Log[
x])/b^5 - ((c*d - b*e)^3*(6*A*c^3*d^2 - 3*b^3*B*e^2 + b^2*c*e*(-4*B*d + A*e
) + 3*b*c^2*d*(-(B*d) + A*e))*Log[b + c*x])/(b^5*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^5}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.52, size = 889, normalized size = 3.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b^5*c^3*e^5*x^5 + 4*B*b^6*c^2*e^5*x^4 - A*b^4*c^4*d^5 + 2*(10*A*b^
3*c^5*d^3*e^2 - 10*B*b^5*c^3*d^2*e^3 - 3*(B*b^2*c^6 - 2*A*b*c^7)*d^5 + 5*(B
*b^3*c^5 - 3*A*b^2*c^6)*d^4*e + 5*(2*B*b^6*c^2 - A*b^5*c^3)*d*e^4 - 2*(B*b^
7*c - A*b^6*c^2)*e^5)*x^3 - (9*(B*b^3*c^5 - 2*A*b^2*c^6)*d^5 - 15*(B*b^4*c^
4 - 3*A*b^3*c^5)*d^4*e + 10*(B*b^5*c^3 - 3*A*b^4*c^4)*d^3*e^2 + 10*(B*b^6*c
^2 + A*b^5*c^3)*d^2*e^3 - 5*(3*B*b^7*c - A*b^6*c^2)*d*e^4 + (5*B*b^8 - 3*A*
b^7*c)*e^5)*x^2 - 2*(5*A*b^4*c^4*d^4*e + (B*b^4*c^4 - 2*A*b^3*c^5)*d^5)*x -
 2*((10*A*b^2*c^6*d^3*e^2 - 5*B*b^5*c^3*d*e^4 - 3*(B*b*c^7 - 2*A*c^8)*d^5 +
 5*(B*b^2*c^6 - 3*A*b*c^7)*d^4*e + (3*B*b^6*c^2 - A*b^5*c^3)*e^5)*x^4 + 2*(
10*A*b^3*c^5*d^3*e^2 - 5*B*b^6*c^2*d*e^4 - 3*(B*b^2*c^6 - 2*A*b*c^7)*d^5 +
5*(B*b^3*c^5 - 3*A*b^2*c^6)*d^4*e + (3*B*b^7*c - A*b^6*c^2)*e^5)*x^3 + (10*
A*b^4*c^4*d^3*e^2 - 5*B*b^7*c*d*e^4 - 3*(B*b^3*c^5 - 2*A*b^2*c^6)*d^5 + 5*(
B*b^4*c^4 - 3*A*b^3*c^5)*d^4*e + (3*B*b^8 - A*b^7*c)*e^5)*x^2)*log(c*x + b)
 + 2*((10*A*b^2*c^6*d^3*e^2 - 3*(B*b*c^7 - 2*A*c^8)*d^5 + 5*(B*b^2*c^6 - 3*
A*b*c^7)*d^4*e)*x^4 + 2*(10*A*b^3*c^5*d^3*e^2 - 3*(B*b^2*c^6 - 2*A*b*c^7)*d
^5 + 5*(B*b^3*c^5 - 3*A*b^2*c^6)*d^4*e)*x^3 + (10*A*b^4*c^4*d^3*e^2 - 3*(B*
b^3*c^5 - 2*A*b^2*c^6)*d^5 + 5*(B*b^4*c^4 - 3*A*b^3*c^5)*d^4*e)*x^2)*log(x)
)/(b^5*c^6*x^4 + 2*b^6*c^5*x^3 + b^7*c^4*x^2)
```

giac [B] time = 0.16, size = 511, normalized size = 1.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] B*x*e^5/c^3 - (3*B*b*c*d^5 - 6*A*c^2*d^5 - 5*B*b^2*d^4*e + 15*A*b*c*d^4*e -
 10*A*b^2*d^3*e^2)*log(abs(x))/b^5 + (3*B*b*c^5*d^5 - 6*A*c^6*d^5 - 5*B*b^2
*c^4*d^4*e + 15*A*b*c^5*d^4*e - 10*A*b^2*c^4*d^3*e^2 + 5*B*b^5*c*d*e^4 - 3*
B*b^6*e^5 + A*b^5*c*e^5)*log(abs(c*x + b))/(b^5*c^4) - 1/2*(A*b^3*c^4*d^5 +
 2*(3*B*b*c^6*d^5 - 6*A*c^7*d^5 - 5*B*b^2*c^5*d^4*e + 15*A*b*c^6*d^4*e - 10
*A*b^2*c^5*d^3*e^2 + 10*B*b^4*c^3*d^2*e^3 - 10*B*b^5*c^2*d*e^4 + 5*A*b^4*c^
3*d*e^4 + 3*B*b^6*c*e^5 - 2*A*b^5*c^2*e^5)*x^3 + (9*B*b^2*c^5*d^5 - 18*A*b*
c^6*d^5 - 15*B*b^3*c^4*d^4*e + 45*A*b^2*c^5*d^4*e + 10*B*b^4*c^3*d^3*e^2 -
30*A*b^3*c^4*d^3*e^2 + 10*B*b^5*c^2*d^2*e^3 + 10*A*b^4*c^3*d^2*e^3 - 15*B*b
^6*c*d*e^4 + 5*A*b^5*c^2*d*e^4 + 5*B*b^7*e^5 - 3*A*b^6*c*e^5)*x^2 + 2*(B*b^
3*c^4*d^5 - 2*A*b^2*c^5*d^5 + 5*A*b^3*c^4*d^4*e)*x)/((c*x + b)^2*b^4*c^4*x^
2)
```

maple [B] time = 0.07, size = 661, normalized size = 2.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x)
```

[Out] 15*c/b^4*ln(c*x+b)*A*d^4*e-15*d^4/b^4*ln(x)*A*e*c+5/c^2*b/(c*x+b)^2*B*d^2*e^3+5/2/c^2*b/(c*x+b)^2*A*d*e^4-5/2*c/b^2/(c*x+b)^2*A*d^4*e-5/2/c^3*b^2/(c*x+b)^2*B*d*e^4-10*c/b^3/(c*x+b)*A*d^4*e+10/c^3*b/(c*x+b)*B*d*e^4-d^5/b^3/x*B+1/c^3*ln(c*x+b)*A*e^5-2*c/b^3/(c*x+b)*B*d^5-1/2/c^3*b^2/(c*x+b)^2*A*e^5+1/2*c^2/b^3/(c*x+b)^2*A*d^5+1/2/c^4*b^3/(c*x+b)^2*B*e^5-1/2*c/b^2/(c*x+b)^2*B*d^5-10/b^3*ln(c*x+b)*A*d^3*e^2-5*d^4/b^3/x*A*e+3*d^5/b^4/x*A*c-5/c^2/(c*x+b)*A*d*e^4-10/c^2/(c*x+b)*B*d^2*e^3-5/c/(c*x+b)^2*B*d^3*e^2+5/2/b/(c*x+b)^2*B*d^4*e+5/b^2/(c*x+b)*B*d^4*e-5/c/(c*x+b)^2*A*d^2*e^3+5/b/(c*x+b)^2*A*d^3*e^2+10/b^2/(c*x+b)*A*d^3*e^2+10*d^3/b^3*ln(x)*A*e^2+6*d^5/b^5*ln(x)*A*c^2+5*d^4/b^3*ln(x)*B*e-3*d^5/b^4*ln(x)*B*c-6*c^2/b^5*ln(c*x+b)*A*d^5-3/c^4*b*ln(c*x+b)*B*e^5+5/c^3*ln(c*x+b)*B*d*e^4-5/b^3*ln(c*x+b)*B*d^4*e+3*c/b^4*ln(c*x+b)*B*d^5+2/c^3*b/(c*x+b)*A*e^5+3*c^2/b^4/(c*x+b)*A*d^5-3/c^4*b^2/(c*x+b)*B*e^5-1/2*A*d^5/b^3/x^2+B*e^5*x/c^3

maxima [B] time = 0.80, size = 513, normalized size = 2.00

$$\frac{Be^5x}{c^3} - \frac{Ab^3c^4d^5 - 2\left(10\,Ab^2c^5d^3e^2 - 10\,Bb^4c^3d^2e^3 - 3\left(Bbc^6 - 2\,Ac^7\right)d^5 + 5\left(Bb^2c^5 - 3\,Abc^6\right)d^4e + 5\left(2\,Bb^5c^2 - Ab^4c^3\right)de^4 - \left(3\,Bb^6c - 2\,Ab^5c^2\right)e^5\right)x^3 + \left(9\left(Bb^2c^5 - 2\,Abc^6\right)d^5 - 15\left(Bb^3c^4 - 3\,Ab^2c^5\right)d^4e + 10\left(Bb^4c^3 - 3\,Ab^3c^4\right)d^3e^2 + 10\left(Bb^5c^2 + Ab^4c^3\right)d^2e^3 - 5\left(3\,Bb^6c - Ab^5c^2\right)de^4 + \left(5\,Bb^7 - 3\,Ab^6c\right)e^5\right)x^2 + 2\left(5\,Ab^3c^4d^4e + \left(Bb^3c^4 - 2\,Ab^2c^5\right)d^5\right)x}{2\left(b^4c^6x^4 + 2\,b^5c^5x^3 + b^6c^4x^2\right)} + \frac{\left(10\,Ab^2d^3e^2 - 3\left(Bbc - 2\,Ac^2\right)d^5 + 5\left(Bb^2 - 3\,Abc\right)d^4e\right)\log\left(x\right)}{b^5} - \frac{\left(10\,Ab^2c^4d^3e^2 - 5\,Bb^5cde^4 - 3\left(Bbc^5 - 2\,Ac^6\right)d^5 + 5\left(Bb^2c^4 - 3\,Abc^5\right)d^4e + \left(3\,Bb^6 - Ab^5c\right)e^5\right)\log\left(cx + b\right)}{b^5c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x, algorithm="maxima")

[Out] B*e^5*x/c^3 - 1/2*(A*b^3*c^4*d^5 - 2*(10*A*b^2*c^5*d^3*e^2 - 10*B*b^4*c^3*d^2*e^3 - 3*(B*b*c^6 - 2*A*c^7)*d^5 + 5*(B*b^2*c^5 - 3*A*b*c^6)*d^4*e + 5*(2*B*b^5*c^2 - A*b^4*c^3)*d*e^4 - (3*B*b^6*c - 2*A*b^5*c^2)*e^5)*x^3 + (9*(B*b^2*c^5 - 2*A*b*c^6)*d^5 - 15*(B*b^3*c^4 - 3*A*b^2*c^5)*d^4*e + 10*(B*b^4*c^3 - 3*A*b^3*c^4)*d^3*e^2 + 10*(B*b^5*c^2 + A*b^4*c^3)*d^2*e^3 - 5*(3*B*b^6*c - A*b^5*c^2)*d*e^4 + (5*B*b^7 - 3*A*b^6*c)*e^5)*x^2 + 2*(5*A*b^3*c^4*d^4*e + (B*b^3*c^4 - 2*A*b^2*c^5)*d^5)*x)/(b^4*c^6*x^4 + 2*b^5*c^5*x^3 + b^6*c^4*x^2) + (10*A*b^2*d^3*e^2 - 3*(B*b*c - 2*A*c^2)*d^5 + 5*(B*b^2 - 3*A*b*c)*d^4*e)*log(x)/b^5 - (10*A*b^2*c^4*d^3*e^2 - 5*B*b^5*c*d*e^4 - 3*(B*b*c^5 - 2*A*c^6)*d^5 + 5*(B*b^2*c^4 - 3*A*b*c^5)*d^4*e + (3*B*b^6 - A*b^5*c)*e^5)*log(c*x + b)/(b^5*c^4)

mupad [B] time = 1.83, size = 498, normalized size = 1.94

$$\frac{\ln\left(x\right)\left(b^2\left(5\,B\,d^4\,e + 10\,A\,d^3\,e^2\right) - b\left(3\,B\,c\,d^5 + 15\,A\,c\,e\,d^4\right) + 6\,A\,c^2\,d^5\right)}{b^5} - \frac{\frac{x^2\left(5\,B\,b^6\,e^5 - 15\,B\,b^5\,c\,d\,e^4 - 3\,A\,b^5\,c\,e^5 + 10\,B\,b^4\,c^2\,d^2\,e^3 + 5\,A\,b^4\,c^2\,d\,e^4 + 10\,B\,b^3\,c^3\,d^3\,e^2 + 10\,A\,b^3\,c^3\,d^2\,e^3 - 15\,B\,b^2\,c^4\,d^4\,e - 30\,A\,b^2\,c^4\,d^3\,e^2 + 9\,B\,b\,c^5\,d^5 + 45\,A\,b\,c^5\,d^4\,e - 18\,A\,c^6\,d^5\right)}{2\,b^3\,c} - \frac{x^3\left(-3\,B\,b^6\,e^5 + 10\,B\,b^5\,c\,d\,e^4 + 2\,A\,b^5\,c\,e^5 - 10\,B\,b^4\,c^2\,d^2\,e^3 - 5\,A\,b^4\,c^2\,d\,e^4 + 5\,B\,b^2\,c^4\,d^4\,e + 10\,A\,b^2\,c^4\,d^3\,e^2 - 3\,B\,b\,c^5\,d^5 - 15\,A\,b\,c^5\,d^4\,e + 6\,A\,c^6\,d^5\right)}{b^4} + \frac{A\,c^3\,d^5}{2\,b} + \frac{c^3\,d^4\,x\left(5\,A\,b\,e - 2\,A\,c\,d + B\,b\,d\right)}{b^2}}{b^2\,c^3\,x^2 + 2\,b\,c^4\,x^3 + c^5\,x^4} + \frac{B\,e^5\,x}{c^3} + \frac{\ln\left(b + c\,x\right)\left(b\,e - c\,d\right)^3\left(-3\,B\,b^3\,e^2 - 4\,B\,b^2\,c\,d\,e + A\,b^2\,c\,e^2 - 3\,B\,b\,c^2\,d^2 + 3\,A\,b\,c^2\,d\,e + 6\,A\,c^3\,d^2\right)}{b^5\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x)

[Out] (log(x)*(b^2*(10*A*d^3*e^2 + 5*B*d^4*e) - b*(3*B*c*d^5 + 15*A*c*d^4*e) + 6*A*c^2*d^5))/b^5 - ((x^2*(5*B*b^6*e^5 - 18*A*c^6*d^5 - 3*A*b^5*c*e^5 + 9*B*b*c^5*d^5 + 5*A*b^4*c^2*d*e^4 - 15*B*b^2*c^4*d^4*e - 30*A*b^2*c^4*d^3*e^2 + 10*A*b^3*c^3*d^2*e^3 + 10*B*b^3*c^3*d^3*e^2 + 10*B*b^4*c^2*d^2*e^3 + 45*A*b*c^5*d^4*e - 15*B*b^5*c*d*e^4))/(2*b^3*c) - (x^3*(6*A*c^6*d^5 - 3*B*b^6*e^5 + 2*A*b^5*c*e^5 - 3*B*b*c^5*d^5 - 5*A*b^4*c^2*d*e^4 + 5*B*b^2*c^4*d^4*e + 10*A*b^2*c^4*d^3*e^2 - 10*B*b^4*c^2*d^2*e^3 - 15*A*b*c^5*d^4*e + 10*B*b^5*c*d*e^4))/b^4 + (A*c^3*d^5)/(2*b) + (c^3*d^4*x*(5*A*b*e - 2*A*c*d + B*b*d))/b^2)/(c^5*x^4 + 2*b*c^4*x^3 + b^2*c^3*x^2) + (B*e^5*x)/c^3 + (log(b + c*x)*(b*e - c*d)^3*(6*A*c^3*d^2 - 3*B*b^3*e^2 + A*b^2*c*e^2 - 3*B*b*c^2*d^2 + 3*A*b*c^2*d*e - 4*B*b^2*c*d*e))/(b^5*c^4)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+b*x)**3,x)

[Out] Timed out

3.1010 $\int \frac{(A+Bx)(d+ex)^4}{(bx+cx^2)^3} dx$

Optimal. Leaf size=235

$$-\frac{d^3(4Abe-3Acd+bBd)}{b^4x}-\frac{(bB-Ac)(cd-be)^4}{2b^3c^3(b+cx)^2}-\frac{Ad^4}{2b^3x^2}+\frac{d^2\log(x)\left(2b^2e(3Ae+2Bd)-3bcd(4Ae+Bd)+6Ac^2d^2\right.}{b^5}$$

Rubi [A] time = 0.33, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(cd-be)^2\log(b+cx)\left(-6Ac^3d^2+2b^2Bcde+b^3Be^2+3bBc^2d^2\right)}{b^5c^3}+\frac{d^2\log(x)\left(2b^2e(3Ae+2Bd)-3bcd(4Ae+Bd)+6Ac^2d^2\right)}{b^5}-\frac{(cd-be)^3\left(-Abce-3Ac^2d+2b^2Be+2bBcd\right)}{b^4c^3(b+cx)}-\frac{(bB-Ac)(cd-be)^4}{2b^3c^3(b+cx)^2}-\frac{d^3(4Abe-3Acd+bBd)}{b^4x}-\frac{Ad^4}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^4)/(2*b^3*x^2) - (d^3*(b*B*d - 3*A*c*d + 4*A*b*e))/(b^4*x) - ((b*B -
A*c)*(c*d - b*e)^4)/(2*b^3*c^3*(b + c*x)^2) - ((c*d - b*e)^3*(2*b*B*c*d - 3
*A*c^2*d + 2*b^2*B*e - A*b*c*e))/(b^4*c^3*(b + c*x)) + (d^2*(6*A*c^2*d^2 +
2*b^2*e*(2*B*d + 3*A*e) - 3*b*c*d*(B*d + 4*A*e))*Log[x])/b^5 + ((c*d - b*e)
^2*(3*b*B*c^2*d^2 - 6*A*c^3*d^2 + 2*b^2*B*c*d*e + b^3*B*e^2)*Log[b + c*x])/
(b^5*c^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^3}\,dx=\int \left(\frac{Ad^4}{b^3x^3}+\frac{d^3(bBd-3Acd+4Abe)}{b^4x^2}+\frac{d^2\left(6Ac^2d^2+2b^2e(2Bd+3Ae)-3bcd(Bd+4\right.}{b^5x}\right.$$

$$=-\frac{Ad^4}{2b^3x^2}-\frac{d^3(bBd-3Acd+4Abe)}{b^4x}-\frac{(bB-Ac)(cd-be)^4}{2b^3c^3(b+cx)^2}-\frac{(cd-be)^3\left(2bBcd-3Ac^2\right.}{b^4c^3(b+c}$$

Mathematica [A] time = 0.16, size = 228, normalized size = 0.97

$$-\frac{\frac{b^2(bB-Ac)(cd-be)^4}{c^3(b+cx)^2}-2d^2\log(x)\left(2b^2e(3Ae+2Bd)-3bcd(4Ae+Bd)+6Ac^2d^2\right)-\frac{2b(be-cd)^3\left(bc(2Bd-Ae)-3Ac^2d+2b^2Be\right)}{c^3(b+cx)}+\frac{Ab^2d^4}{x^2}-\frac{2(cd-be)^2\log(b+cx)\left(-6Ac^3d^2+b^3Be^2+2b^2Bcde+3bBc^2d^2\right)}{c^3}+\frac{2bd^3(4Abe-3Acd+bBd)}{x}}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((A*b^2*d^4)/x^2 + (2*b*d^3*(b*B*d - 3*A*c*d + 4*A*b*e))/x + (b^2*(b*B
 - A*c)*(c*d - b*e)^4)/(c^3*(b + c*x)^2) - (2*b*(-(c*d) + b*e)^3*(-3*A*c^2*
d + 2*b^2*B*e + b*c*(2*B*d - A*e)))/(c^3*(b + c*x)) - 2*d^2*(6*A*c^2*d^2 +
2*b^2*e*(2*B*d + 3*A*e) - 3*b*c*d*(B*d + 4*A*e))*Log[x] - (2*(c*d - b*e)^2*
(3*b*B*c^2*d^2 - 6*A*c^3*d^2 + 2*b^2*B*c*d*e + b^3*B*e^2)*Log[b + c*x])/c^3
)/b^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.46, size = 736, normalized size = 3.13

$$-\frac{Ab^4c^3d^4 - 2\left(6Ab^3c^4d^2e^2 - 4Bb^5c^2de^3 - 3\left(Bb^2c^5 - 2Abc^6\right)d^4 + 4\left(Bb^3c^4 - 3Ab^2c^5\right)d^3e + \left(2Bb^6c - Ab^5c^2\right)e^4\right)x^3 + \left(9\left(Bb^3c^4 - 2Ab^2c^5\right)d^4 - 12\left(Bb^4c^3 - 3Ab^3c^4\right)d^3e + 6\left(Bb^5c^2 - 3Ab^4c^3\right)d^2e^2 + 4\left(Bb^6c + Ab^5c^2\right)de^3 - \left(3Bb^7 - Ab^6c\right)e^4\right)x^2 + 2\left(4Ab^4c^3d^3e + \left(Bb^4c^3 - 2Ab^3c^4\right)d^4\right)x + 2\left(\left(6Ab^2c^5d^2e^2 - Bb^5c^2e^4 - 3\left(Bbc^6 - 2Ac^7\right)d^4 + 4\left(Bb^2c^5 - 3Abc^6\right)d^3e\right)x^4 + 2\left(6Ab^3c^4d^2e^2 - Bb^6ce^4 - 3\left(Bb^2c^5 - 2Abc^6\right)d^4 + 4\left(Bb^3c^4 - 3Ab^2c^5\right)d^3e\right)x^3 + \left(6Ab^4c^3d^2e^2 - Bb^7e^4 - 3\left(Bb^3c^4 - 2Ab^2c^5\right)d^4 + 4\left(Bb^4c^3 - 3Ab^3c^4\right)d^3e\right)x^2\right)\log\left(cx+b\right) - 2\left(\left(6Ab^2c^5d^2e^2 - 3\left(Bbc^6 - 2Ac^7\right)d^4 + 4\left(Bb^2c^5 - 3Abc^6\right)d^3e\right)x^4 + 2\left(6Ab^3c^4d^2e^2 - 3\left(Bb^2c^5 - 2Abc^6\right)d^4 + 4\left(Bb^3c^4 - 3Ab^2c^5\right)d^3e\right)x^3 + \left(6Ab^4c^3d^2e^2 - 3\left(Bb^3c^4 - 2Ab^2c^5\right)d^4 + 4\left(Bb^4c^3 - 3Ab^3c^4\right)d^3e\right)x^2\right)\log\left(x\right)}{2\left(b^5c^5x^4 + 2b^6c^4x^3 + b^7c^3x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*c^3*d^4 - 2*(6*A*b^3*c^4*d^2*e^2 - 4*B*b^5*c^2*d*e^3 - 3*(B*b^2
*c^5 - 2*A*b*c^6)*d^4 + 4*(B*b^3*c^4 - 3*A*b^2*c^5)*d^3*e + (2*B*b^6*c - A*
b^5*c^2)*e^4)*x^3 + (9*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - 12*(B*b^4*c^3 - 3*A*
b^3*c^4)*d^3*e + 6*(B*b^5*c^2 - 3*A*b^4*c^3)*d^2*e^2 + 4*(B*b^6*c + A*b^5*c
^2)*d*e^3 - (3*B*b^7 - A*b^6*c)*e^4)*x^2 + 2*(4*A*b^4*c^3*d^3*e + (B*b^4*c^
3 - 2*A*b^3*c^4)*d^4)*x + 2*((6*A*b^2*c^5*d^2*e^2 - B*b^5*c^2*e^4 - 3*(B*b*
c^6 - 2*A*c^7)*d^4 + 4*(B*b^2*c^5 - 3*A*b*c^6)*d^3*e)*x^4 + 2*(6*A*b^3*c^4*
d^2*e^2 - B*b^6*c*e^4 - 3*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 4*(B*b^3*c^4 - 3*A*
b^2*c^5)*d^3*e)*x^3 + (6*A*b^4*c^3*d^2*e^2 - B*b^7*e^4 - 3*(B*b^3*c^4 - 2*A
*b^2*c^5)*d^4 + 4*(B*b^4*c^3 - 3*A*b^3*c^4)*d^3*e)*x^2)*log(c*x + b) - 2*((
6*A*b^2*c^5*d^2*e^2 - 3*(B*b*c^6 - 2*A*c^7)*d^4 + 4*(B*b^2*c^5 - 3*A*b*c^6)
*d^3*e)*x^4 + 2*(6*A*b^3*c^4*d^2*e^2 - 3*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 4*(B
*b^3*c^4 - 3*A*b^2*c^5)*d^3*e)*x^3 + (6*A*b^4*c^3*d^2*e^2 - 3*(B*b^3*c^4 -
2*A*b^2*c^5)*d^4 + 4*(B*b^4*c^3 - 3*A*b^3*c^4)*d^3*e)*x^2)*log(x))/(b^5*c^5
*x^4 + 2*b^6*c^4*x^3 + b^7*c^3*x^2)
```

giac [A] time = 0.16, size = 428, normalized size = 1.82

$$-\frac{\left(3Bbcd^4 - 6Ac^2d^4 - 4Bb^2d^3e + 12Abcd^3e - 6Ab^2d^2e^2\right)\log\left(|x|\right)}{b^5} + \frac{\left(3Bbc^4d^4 - 6Ac^5d^4 - 4Bb^2c^3d^3e + 12Abc^4d^3e - 6Ab^2c^3d^2e^2 + Bb^5e^4\right)\log\left(|cx+b|\right)}{b^5c^3} - \frac{Ab^3c^3d^4 + 2\left(3Bbc^5d^4 - 6Ac^6d^4 - 4Bb^2c^4d^3e + 12Abc^5d^3e - 6Ab^2c^4d^2e^2 + 4Bb^4c^2de^3 - 2Bb^5ce^4 + Ab^4c^2e^4\right)x^3 + \left(9Bb^2c^4d^4 - 18Abc^5d^4 - 12Bb^3c^3d^3e + 36Ab^2c^4d^3e + 6Bb^4c^2d^2e^2 - 18Ab^3c^3d^2e^2 + 4Bb^5cde^3 + 4Ab^4c^2de^3 - 3Bb^6e^4 + Ab^5ce^4\right)x^2 + 2\left(Bb^3c^3d^4 - 2Ab^2c^4d^4 + 4Ab^3c^3d^3e\right)x}{2\left(cx+b\right)^2b^4c^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*B*b*c*d^4 - 6*A*c^2*d^4 - 4*B*b^2*d^3*e + 12*A*b*c*d^3*e - 6*A*b^2*d^2*
e^2)*log(abs(x))/b^5 + (3*B*b*c^4*d^4 - 6*A*c^5*d^4 - 4*B*b^2*c^3*d^3*e + 1
2*A*b*c^4*d^3*e - 6*A*b^2*c^3*d^2*e^2 + B*b^5*e^4)*log(abs(c*x + b))/(b^5*c
^3) - 1/2*(A*b^3*c^3*d^4 + 2*(3*B*b*c^5*d^4 - 6*A*c^6*d^4 - 4*B*b^2*c^4*d^3
*e + 12*A*b*c^5*d^3*e - 6*A*b^2*c^4*d^2*e^2 + 4*B*b^4*c^2*d*e^3 - 2*B*b^5*c
*e^4 + A*b^4*c^2*e^4)*x^3 + (9*B*b^2*c^4*d^4 - 18*A*b*c^5*d^4 - 12*B*b^3*c^
3*d^3*e + 36*A*b^2*c^4*d^3*e + 6*B*b^4*c^2*d^2*e^2 - 18*A*b^3*c^3*d^2*e^2 +
 4*B*b^5*c*d*e^3 + 4*A*b^4*c^2*d*e^3 - 3*B*b^6*e^4 + A*b^5*c*e^4)*x^2 + 2*(
B*b^3*c^3*d^4 - 2*A*b^2*c^4*d^4 + 4*A*b^3*c^3*d^3*e)*x)/((c*x + b)^2*b^4*c^
3*x^2)
```

maple [B] time = 0.06, size = 536, normalized size = 2.28

$$\frac{Abe^4}{2(cx+b)^2c^2} + \frac{3Ad^2e^2}{(cx+b)^2b} - \frac{2Acd^3e}{(cx+b)^2b^2} + \frac{Ac^2d^4}{2(cx+b)^2b^3} - \frac{2Ade^3}{(cx+b)^2c} - \frac{Bb^2e^4}{2(cx+b)^2c^3} + \frac{2Bbde^3}{(cx+b)^2c^2} + \frac{2Bd^3e}{(cx+b)^2b} - \frac{Bcd^4}{2(cx+b)^2b^2} - \frac{3Bd^2e^2}{(cx+b)^2c} + \frac{6Ad^2e^2}{(cx+b)b^2} - \frac{8Acd^3e}{(cx+b)b^3} + \frac{6Ad^2e^2\ln(x)}{b^3} - \frac{6Ad^2e^2\ln(cx+b)}{b^3} + \frac{3Ac^2d^4}{(cx+b)b^4} - \frac{12Acd^3e\ln(x)}{b^4} + \frac{12Acd^3e\ln(cx+b)}{b^4} + \frac{6Ac^2d^4\ln(x)}{b^5} - \frac{6Ac^2d^4\ln(cx+b)}{b^5} - \frac{Ae^4}{(cx+b)c^2} + \frac{2Bbe^4}{(cx+b)c^3} + \frac{4Bd^3e}{(cx+b)b^2} - \frac{2Bcd^4}{(cx+b)b^3} + \frac{4Bd^3e\ln(x)}{b^3} - \frac{4Bd^3e\ln(cx+b)}{b^3} - \frac{3Bcd^4\ln(x)}{b^4} + \frac{3Bcd^4\ln(cx+b)}{b^4} - \frac{4Bde^3}{(cx+b)c^2} + \frac{Be^4\ln(cx+b)}{c^3} - \frac{4Ad^3e}{b^3x} + \frac{3Acd^4}{b^4x} - \frac{Bd^4}{b^3x} - \frac{Ad^4}{2b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x)
```

[Out] -8*c/b^3/(c*x+b)*A*d^3*e+2*b/c^2/(c*x+b)^2*B*d*e^3-12*d^3/b^4*ln(x)*A*e*c+1
2/b^4*c*ln(c*x+b)*A*d^3*e-2/b^2*c/(c*x+b)^2*A*d^3*e-2/c/(c*x+b)^2*A*d*e^3+3
/b/(c*x+b)^2*A*d^2*e^2+1/c^3*ln(c*x+b)*B*e^4-d^4/b^3/x*B-1/c^2/(c*x+b)*A*e^
4-3/c/(c*x+b)^2*B*d^2*e^2+2/b/(c*x+b)^2*B*d^3*e+6/b^2/(c*x+b)*A*d^2*e^2-4/c
^2/(c*x+b)*B*d*e^3+4/b^2/(c*x+b)*B*d^3*e-6/b^3*ln(c*x+b)*A*d^2*e^2-6/b^5*c^
2*ln(c*x+b)*A*d^4+6*d^2/b^3*ln(x)*A*e^2+6*d^4/b^5*ln(x)*A*c^2+4*d^3/b^3*ln(
x)*B*e-3*d^4/b^4*ln(x)*B*c-4*d^3/b^3/x*A*e+3*d^4/b^4/x*A*c-4/b^3*ln(c*x+b)*
B*d^3*e+3/b^4*c*ln(c*x+b)*B*d^4+1/2*b/c^2/(c*x+b)^2*A*e^4+1/2/b^3*c^2/(c*x+
b)^2*A*d^4-1/2*b^2/c^3/(c*x+b)^2*B*e^4-1/2/b^2*c/(c*x+b)^2*B*d^4+3*c^2/b^4/
(c*x+b)*A*d^4+2/c^3*b/(c*x+b)*B*e^4-2*c/b^3/(c*x+b)*B*d^4-1/2*A*d^4/b^3/x^2

maxima [A] time = 0.60, size = 430, normalized size = 1.83

$$-\frac{Ab^3c^3d^4 - 2\left(6Ab^2c^4d^2e^2 - 4Bb^4c^2de^3 - 3\left(Bbc^5 - 2Ac^6\right)d^4 + 4\left(Bb^2c^4 - 3Abc^5\right)d^3e + \left(2Bb^5c - Ab^4c^2\right)e^4\right)x^3 + \left(9\left(Bb^2c^4 - 2Abc^5\right)d^4 - 12\left(Bb^3c^3 - 3Ab^2c^4\right)d^3e + 6\left(Bb^4c^2 - 3Ab^3c^3\right)d^2e^2 + 4\left(Bb^5c + Ab^4c^2\right)de^3 - \left(3Bb^6 - Ab^5c\right)e^4\right)x^2 + 2\left(4Ab^3c^3d^3e + \left(Bb^3c^3 - 2Ab^2c^4\right)d^4\right)x}{2\left(b^4c^5x^4 + 2b^5c^4x^3 + b^6c^3x^2\right)} + \frac{\left(6Ab^2d^2e^2 - 3\left(Bbc - 2Ac^2\right)d^4 + 4\left(Bb^2 - 3Abc\right)d^3e\right)\log\left(x\right)}{b^5} - \frac{\left(6Ab^2c^3d^2e^2 - Bb^5e^4 - 3\left(Bbc^4 - 2Ac^5\right)d^4 + 4\left(Bb^2c^3 - 3Abc^4\right)d^3e\right)\log\left(cx + b\right)}{b^5c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x, algorithm="maxima")

[Out] -1/2*(A*b^3*c^3*d^4 - 2*(6*A*b^2*c^4*d^2*e^2 - 4*B*b^4*c^2*d*e^3 - 3*(B*b*c
^5 - 2*A*c^6)*d^4 + 4*(B*b^2*c^4 - 3*A*b*c^5)*d^3*e + (2*B*b^5*c - A*b^4*c^
2)*e^4)*x^3 + (9*(B*b^2*c^4 - 2*A*b*c^5)*d^4 - 12*(B*b^3*c^3 - 3*A*b^2*c^4)
*d^3*e + 6*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e^2 + 4*(B*b^5*c + A*b^4*c^2)*d*e^
3 - (3*B*b^6 - A*b^5*c)*e^4)*x^2 + 2*(4*A*b^3*c^3*d^3*e + (B*b^3*c^3 - 2*A*
b^2*c^4)*d^4)*x)/(b^4*c^5*x^4 + 2*b^5*c^4*x^3 + b^6*c^3*x^2) + (6*A*b^2*d^2
e^2 - 3(B*b*c - 2*A*c^2)*d^4 + 4*(B*b^2 - 3*A*b*c)*d^3*e)*log(x)/b^5 - (6
*A*b^2*c^3*d^2*e^2 - B*b^5*e^4 - 3*(B*b*c^4 - 2*A*c^5)*d^4 + 4*(B*b^2*c^3 -
 3*A*b*c^4)*d^3*e)*log(c*x + b)/(b^5*c^3)

mupad [B] time = 1.80, size = 403, normalized size = 1.71

$$\frac{\ln(x)\,\left(b^2\,\left(4\,B\,d^3\,e+6\,A\,d^2\,e^2\right)-b\,\left(3\,B\,c\,d^4+12\,A\,c\,e\,d^3\right)+6\,A\,c^2\,d^4\right)}{b^5}-\frac{\frac{A\,d^4}{2\,b}+\frac{x^2\,\left(-3\,B\,b^5\,e^4+4\,B\,b^4\,c\,d\,e^3+A\,b^4\,c\,e^4+6\,B\,b^3\,c^2\,d^2\,e^2+4\,A\,b^3\,c^2\,d\,e^3-12\,B\,b^2\,c^3\,d^3\,e-18\,A\,b^2\,c^3\,d^2\,e^2+9\,B\,b\,c^4\,d^4+36\,A\,b\,c^4\,d^3\,e-18\,A\,c^5\,d^4\right)}{2\,b^3\,c^3}-\frac{x^3\,\left(2\,B\,b^5\,e^4-4\,B\,b^4\,c\,d\,e^3-A\,b^4\,c\,e^4+4\,B\,b^2\,c^3\,d^3\,e+6\,A\,b^2\,c^3\,d^2\,e^2-3\,B\,b\,c^4\,d^4-12\,A\,b\,c^4\,d^3\,e+6\,A\,c^5\,d^4\right)}{b^4\,c^2}+\frac{d^3\,x\,\left(4\,A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}{b^2}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}+\frac{\ln\left(b+c\,x\right)\,{\left(b\,e-c\,d\right)}^2\,\left(B\,b^3\,e^2+2\,B\,b^2\,c\,d\,e+3\,B\,b\,c^2\,d^2-6\,A\,c^3\,d^2\right)}{b^5\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x)

[Out] (log(x)*(b^2*(6*A*d^2*e^2 + 4*B*d^3*e) - b*(3*B*c*d^4 + 12*A*c*d^3*e) + 6*A
*c^2*d^4))/b^5 - ((A*d^4)/(2*b) + (x^2*(A*b^4*c*e^4 - 3*B*b^5*e^4 - 18*A*c^
5*d^4 + 9*B*b*c^4*d^4 + 4*A*b^3*c^2*d*e^3 - 12*B*b^2*c^3*d^3*e - 18*A*b^2*c
^3*d^2*e^2 + 6*B*b^3*c^2*d^2*e^2 + 36*A*b*c^4*d^3*e + 4*B*b^4*c*d*e^3))/(2*
b^3*c^3) - (x^3*(6*A*c^5*d^4 + 2*B*b^5*e^4 - A*b^4*c*e^4 - 3*B*b*c^4*d^4 +
4*B*b^2*c^3*d^3*e + 6*A*b^2*c^3*d^2*e^2 - 12*A*b*c^4*d^3*e - 4*B*b^4*c*d*e^
3))/(b^4*c^2) + (d^3*x*(4*A*b*e - 2*A*c*d + B*b*d))/b^2)/(b^2*x^2 + c^2*x^4
 + 2*b*c*x^3) + (log(b + c*x)*(b*e - c*d)^2*(B*b^3*e^2 - 6*A*c^3*d^2 + 3*B*
b*c^2*d^2 + 2*B*b^2*c*d*e))/(b^5*c^3)

sympy [B] time = 77.98, size = 881, normalized size = 3.75

$$\frac{- A b^{3} c^{3} d^{4} + x^{3} \left(- 2 A b^{4} c^{2} e^{4} + 12 A b^{2} c^{4} d^{2} e^{2} - 24 A b c^{5} d^{3} e + 12 A c^{6} d^{4} + 4 B b^{5} c e^{4} - 8 B b^{4} c^{2} d e^{3} + 8 B b^{2} c^{4} d^{3} e - 6 B b c^{5} d^{4}\right) + x^{2} \left(- A b^{5} c e^{4} - 4 A b^{4} c^{2} d e^{3} + 18 A b^{3} c^{3} d^{2} e^{2} - 36 A b^{2} c^{4} d^{3} e + 18 A b c^{5} d^{4} + 3 B b^{6} e^{4} - 4 B b^{5} c d e^{3} - 6 B b^{4} c^{2} d^{2} e^{2} + 12 B b^{3} c^{3} d^{3} e - 9 B b^{2} c^{4} d^{4}\right) + x \left(- 8 A b^{3} c^{3} d^{3} e + 4 A b^{2} c^{4} d^{4} - 2 B b^{3} c^{3} d^{4}\right)}{2 b^{6} c^{3} x^{2} + 4 b^{5} c^{4} x^{3} + 2 b^{4} c^{5} x^{4}} + \frac{d^{2} \left(6 A b^{2} e^{2} - 12 A b c d e + 6 A c^{2} d^{2} + 4 B b^{2} d e - 3 B b c d^{2}\right) \log{\left(x + \frac{- 6 A b^{3} c^{2} d^{2} e^{2} + 12 A b^{2} c^{3} d^{3} e - 6 A b c^{4} d^{4} - 4 B b^{3} c^{2} d^{3} e + 3 B b^{2} c^{3} d^{4} + b c^{2} d^{2} \left(6 A b^{2} e^{2} - 12 A b c d e + 6 A c^{2} d^{2} + 4 B b^{2} d e - 3 B b c d^{2}\right)}{- 12 A b^{2} c^{3} d^{2} e^{2} + 24 A b c^{4} d^{3} e - 12 A c^{5} d^{4} + B b^{5} e^{4} - 8 B b^{2} c^{3} d^{3} e + 6 B b c^{4} d^{4}} \right)}}{b^{5}} + \frac{\left(b e - c d\right)^{2} \left(- 6 A c^{3} d^{2} + B b^{3} e^{2} + 2 B b^{2} c d e + 3 B b c^{2} d^{2}\right) \log{\left(x + \frac{- 6 A b^{3} c^{2} d^{2} e^{2} + 12 A b^{2} c^{3} d^{3} e - 6 A b c^{4} d^{4} - 4 B b^{3} c^{2} d^{3} e + 3 B b^{2} c^{3} d^{4} + \frac{b \left(b e - c d\right)^{2} \left(- 6 A c^{3} d^{2} + B b^{3} e^{2} + 2 B b^{2} c d e + 3 B b c^{2} d^{2}\right)}{c}}{- 12 A b^{2} c^{3} d^{2} e^{2} + 24 A b c^{4} d^{3} e - 12 A c^{5} d^{4} + B b^{5} e^{4} - 8 B b^{2} c^{3} d^{3} e + 6 B b c^{4} d^{4}} \right)}}{b^{5} c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x)**3,x)

[Out] (-A*b**3*c**3*d**4 + x**3*(-2*A*b**4*c**2*e**4 + 12*A*b**2*c**4*d**2*e**2 -
 24*A*b*c**5*d**3*e + 12*A*c**6*d**4 + 4*B*b**5*c*e**4 - 8*B*b**4*c**2*d*e*
*3 + 8*B*b**2*c**4*d**3*e - 6*B*b*c**5*d**4) + x**2*(-A*b**5*c*e**4 - 4*A*b
4*c2*d*e**3 + 18*A*b**3*c**3*d**2*e**2 - 36*A*b**2*c**4*d**3*e + 18*A*b
*c**5*d**4 + 3*B*b**6*e**4 - 4*B*b**5*c*d*e**3 - 6*B*b**4*c**2*d**2*e**2 +
12*B*b**3*c**3*d**3*e - 9*B*b**2*c**4*d**4) + x*(-8*A*b**3*c**3*d**3*e + 4*
A*b**2*c**4*d**4 - 2*B*b**3*c**3*d**4))/(2*b**6*c**3*x**2 + 4*b**5*c**4*x**

```
3 + 2*b**4*c**5*x**4) + d**2*(6*A*b**2*e**2 - 12*A*b*c*d*e + 6*A*c**2*d**2
+ 4*B*b**2*d*e - 3*B*b*c*d**2)*log(x + (-6*A*b**3*c**2*d**2*e**2 + 12*A*b**
2*c**3*d**3*e - 6*A*b*c**4*d**4 - 4*B*b**3*c**2*d**3*e + 3*B*b**2*c**3*d**4
 + b*c**2*d**2*(6*A*b**2*e**2 - 12*A*b*c*d*e + 6*A*c**2*d**2 + 4*B*b**2*d*e
 - 3*B*b*c*d**2))/(-12*A*b**2*c**3*d**2*e**2 + 24*A*b*c**4*d**3*e - 12*A*c*
*5*d**4 + B*b**5*e**4 - 8*B*b**2*c**3*d**3*e + 6*B*b*c**4*d**4))/b**5 + (b*
e - c*d)**2*(-6*A*c**3*d**2 + B*b**3*e**2 + 2*B*b**2*c*d*e + 3*B*b*c**2*d**
2)*log(x + (-6*A*b**3*c**2*d**2*e**2 + 12*A*b**2*c**3*d**3*e - 6*A*b*c**4*d
**4 - 4*B*b**3*c**2*d**3*e + 3*B*b**2*c**3*d**4 + b*(b*e - c*d)**2*(-6*A*c*
*3*d**2 + B*b**3*e**2 + 2*B*b**2*c*d*e + 3*B*b*c**2*d**2)/c)/(-12*A*b**2*c*
*3*d**2*e**2 + 24*A*b*c**4*d**3*e - 12*A*c**5*d**4 + B*b**5*e**4 - 8*B*b**2
*c**3*d**3*e + 6*B*b*c**4*d**4))/(b**5*c**3)
```

3.1011 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=185

$$-\frac{3d\log(x)(cd-be)(Abe-2Acd+bBd)}{b^5}+\frac{3d(cd-be)\log(b+cx)(Abe-2Acd+bBd)}{b^5}-\frac{d^2(3Abe-3Acd+bBd)}{b^4x}-$$

Rubi [A] time = 0.25, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{(cd-be)^2\left(-3Ac^2d+b^2Be+2bBcd\right)}{b^4c^2(b+cx)}-\frac{(bB-Ac)(cd-be)^3}{2b^3c^2(b+cx)^2}-\frac{d^2(3Abe-3Acd+bBd)}{b^4x}-\frac{3d\log(x)(cd-be)(Abe-2Acd+bBd)}{b^5}+\frac{3d(cd-be)\log(b+cx)(Abe-2Acd+bBd)}{b^5}-\frac{Ad^3}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^3)/(2*b^3*x^2) - (d^2*(b*B*d - 3*A*c*d + 3*A*b*e))/(b^4*x) - ((b*B -
A*c)*(c*d - b*e)^3)/(2*b^3*c^2*(b + c*x)^2) - ((c*d - b*e)^2*(2*b*B*c*d - 3
*A*c^2*d + b^2*B*e))/(b^4*c^2*(b + c*x)) - (3*d*(c*d - b*e)*(b*B*d - 2*A*c*
d + A*b*e)*Log[x])/b^5 + (3*d*(c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e)*Log[b +
 c*x])/b^5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{Ad^3}{b^3x^3}+\frac{d^2(bBd-3Acd+3Abe)}{b^4x^2}+\frac{3d(-cd+be)(bBd-2Acd+Abe)}{b^5x}-\frac{(bB-Ac)}{b^3c(b}\right.\\ &= -\frac{Ad^3}{2b^3x^2}-\frac{d^2(bBd-3Acd+3Abe)}{b^4x}-\frac{(bB-Ac)(cd-be)^3}{2b^3c^2(b+cx)^2}-\frac{(cd-be)^2\left(2bBcd-3Ac^2\right.}{b^4c^2(b+cx)}\end{aligned}$$

Mathematica [A] time = 0.12, size = 177, normalized size = 0.96

$$-\frac{\frac{2b(cd-be)^2\left(-3Ac^2d+b^2Be+2bBcd\right)}{c^2(b+cx)}-\frac{b^2(bB-Ac)(be-cd)^3}{c^2(b+cx)^2}+\frac{Ab^2d^3}{x^2}+\frac{2bd^2(3Abe-3Acd+bBd)}{x}-6d\log(x)(be-cd)(Abe-2Acd+bBd)+6d(be-cd)\log(b+cx)(Abe-2Acd+bBd)}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((A*b^2*d^3)/x^2 + (2*b*d^2*(b*B*d - 3*A*c*d + 3*A*b*e))/x - (b^2*(b*B
 - A*c)*(-(c*d) + b*e)^3)/(c^2*(b + c*x)^2) + (2*b*(c*d - b*e)^2*(2*b*B*c*d
 - 3*A*c^2*d + b^2*B*e))/(c^2*(b + c*x)) - 6*d*(-(c*d) + b*e)*(b*B*d - 2*A*
c*d + A*b*e)*Log[x] + 6*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e)*Log[b +
c*x])/b^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x]

[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3, x]

fricas [B] time = 0.46, size = 627, normalized size = 3.39

$$-\frac{Ab^4c^2d^3 - 2\left(3\,Ab^3c^3de^2 - Bb^5ce^3 - 3\left(Bb^2c^4 - 2\,Abc^5\right)d^3 + 3\left(Bb^3c^3 - 3\,Ab^2c^4\right)d^2e\right)x^3 + \left(9\left(Bb^3c^3 - 2\,Ab^2c^4\right)d^3 - 9\left(Bb^4c^2 - 3\,Ab^3c^3\right)d^2e + 3\left(Bb^5c - 3\,Ab^4c^2\right)de^2 + \left(Bb^6 + Ab^5c\right)e^3\right)x^2 + 2\left(3\,Ab^4c^2d^2e + \left(Bb^4c^2 - 2\,Ab^3c^3\right)d^3\right)x + 6\left(\left(Ab^2c^4de^2 - \left(Bbc^5 - 2\,Ac^6\right)d^3 + \left(Bb^2c^4 - 3\,Abc^5\right)d^2e\right)x^4 + 2\left(Ab^3c^3de^2 - \left(Bb^2c^4 - 2\,Abc^5\right)d^3 + \left(Bb^3c^3 - 3\,Ab^2c^4\right)d^2e\right)x^3 + \left(Ab^4c^2de^2 - \left(Bb^3c^3 - 2\,Ab^2c^4\right)d^3 + \left(Bb^4c^2 - 3\,Ab^3c^3\right)d^2e\right)x^2\right)\log\left(cx + b\right) - 6\left(\left(Ab^2c^4de^2 - \left(Bbc^5 - 2\,Ac^6\right)d^3 + \left(Bb^2c^4 - 3\,Abc^5\right)d^2e\right)x^4 + 2\left(Ab^3c^3de^2 - \left(Bb^2c^4 - 2\,Abc^5\right)d^3 + \left(Bb^3c^3 - 3\,Ab^2c^4\right)d^2e\right)x^3 + \left(Ab^4c^2de^2 - \left(Bb^3c^3 - 2\,Ab^2c^4\right)d^3 + \left(Bb^4c^2 - 3\,Ab^3c^3\right)d^2e\right)x^2\right)\log\left(x\right)}{2\left(b^5c^4x^4 + 2\,b^6c^3x^3 + b^7c^2x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x, algorithm="fricas")

[Out] -1/2*(A*b^4*c^2*d^3 - 2*(3*A*b^3*c^3*d*e^2 - B*b^5*c*e^3 - 3*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 3*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (9*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 9*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e + 3*(B*b^5*c - 3*A*b^4*c^2)*d*e^2 + (B*b^6 + A*b^5*c)*e^3)*x^2 + 2*(3*A*b^4*c^2*d^2*e + (B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x + 6*((A*b^2*c^4*d*e^2 - (B*b*c^5 - 2*A*c^6)*d^3 + (B*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(A*b^3*c^3*d*e^2 - (B*b^2*c^4 - 2*A*b*c^5)*d^3 + (B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (A*b^4*c^2*d*e^2 - (B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + (B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e)*x^2)*log(c*x + b) - 6*((A*b^2*c^4*d*e^2 - (B*b*c^5 - 2*A*c^6)*d^3 + (B*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(A*b^3*c^3*d*e^2 - (B*b^2*c^4 - 2*A*b*c^5)*d^3 + (B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (A*b^4*c^2*d*e^2 - (B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + (B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e)*x^2)*log(x))/(b^5*c^4*x^4 + 2*b^6*c^3*x^3 + b^7*c^2*x^2)

giac [B] time = 0.18, size = 391, normalized size = 2.11

$$-\frac{3\left(Bbcd^3 - 2\,Ac^2d^3 - Bb^2d^2e + 3\,Abcd^2e - Ab^2de^2\right)\log\left(|x|\right)}{b^5} + \frac{3\left(Bbc^2d^3 - 2\,Ac^3d^3 - Bb^2cd^2e + 3\,Abc^2d^2e - Ab^2cde^2\right)\log\left(|cx + b|\right)}{b^5c} - \frac{6\,Bbc^4d^3x^3 - 12\,Ac^5d^3x^3 - 6\,Bb^2c^3d^2x^3e + 18\,Abc^4d^2x^3e + 9\,Bb^2c^3d^3x^2 - 18\,Abc^4d^3x^2 - 6\,Ab^2c^3dx^3e^2 - 9\,Bb^3c^2d^2x^2e + 27\,Ab^2c^3d^2x^2e + 2\,Bb^3c^2d^3x - 4\,Ab^2c^3d^3x + 2\,Bb^4cx^3e^3 + 3\,Bb^4cdx^2e^2 - 9\,Ab^3c^2dx^2e^2 + 6\,Ab^3c^2d^2xe + Ab^3c^2d^3 + Bb^5x^2e^3 + Ab^4cx^2e^3}{2\left(cx^2 + bx\right)^2 b^4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x, algorithm="giac")

[Out] -3*(B*b*c*d^3 - 2*A*c^2*d^3 - B*b^2*d^2*e + 3*A*b*c*d^2*e - A*b^2*d*e^2)*log(abs(x))/b^5 + 3*(B*b*c^2*d^3 - 2*A*c^3*d^3 - B*b^2*c*d^2*e + 3*A*b*c^2*d^2*e - A*b^2*c*d*e^2)*log(abs(c*x + b))/(b^5*c) - 1/2*(6*B*b*c^4*d^3*x^3 - 12*A*c^5*d^3*x^3 - 6*B*b^2*c^3*d^2*x^3*e + 18*A*b*c^4*d^2*x^3*e + 9*B*b^2*c^3*d^3*x^2 - 18*A*b*c^4*d^3*x^2 - 6*A*b^2*c^3*d*x^3*e^2 - 9*B*b^3*c^2*d^2*x^2*e + 27*A*b^2*c^3*d^2*x^2*e + 2*B*b^3*c^2*d^3*x - 4*A*b^2*c^3*d^3*x + 2*B*b^4*c*x^3*e^3 + 3*B*b^4*c*d*x^2*e^2 - 9*A*b^3*c^2*d*x^2*e^2 + 6*A*b^3*c^2*d^2*x*e + A*b^3*c^2*d^3 + B*b^5*x^2*e^3 + A*b^4*c*x^2*e^3)/((c*x^2 + b*x)^2*b^4*c^2)

maple [B] time = 0.06, size = 440, normalized size = 2.38

$$\frac{3Ad\,e^2}{2\left(cx+b\right)^2 b} - \frac{3Ac\,d^2e}{2\left(cx+b\right)^2 b^2} + \frac{A\,c^2d^3}{2\left(cx+b\right)^2 b^3} - \frac{A\,e^3}{2\left(cx+b\right)^2 c} + \frac{Bb\,e^3}{2\left(cx+b\right)^2 c^2} + \frac{3B\,d^2e}{2\left(cx+b\right)^2 b} - \frac{Bc\,d^3}{2\left(cx+b\right)^2 b^2} - \frac{3Bd\,e^2}{2\left(cx+b\right)^2 c} + \frac{3Ad\,e^2}{\left(cx+b\right) b^2} - \frac{6Ac\,d^2e}{\left(cx+b\right) b^3} + \frac{3Ad\,e^2\ln\left(x\right)}{b^3} - \frac{3Ad\,e^2\ln\left(cx+b\right)}{b^3} + \frac{3A\,c^2d^3}{\left(cx+b\right) b^4} - \frac{9Ac\,d^2e\ln\left(x\right)}{b^4} + \frac{9Ac\,d^2e\ln\left(cx+b\right)}{b^4} + \frac{6A\,c^2d^3\ln\left(x\right)}{b^5} - \frac{6A\,c^2d^3\ln\left(cx+b\right)}{b^5} + \frac{3B\,d^2e}{\left(cx+b\right) b^2} - \frac{2Bc\,d^3}{\left(cx+b\right) b^3} + \frac{3B\,d^2e\ln\left(x\right)}{b^3} - \frac{3B\,d^2e\ln\left(cx+b\right)}{b^3} - \frac{3Bc\,d^3\ln\left(x\right)}{b^4} + \frac{3Bc\,d^3\ln\left(cx+b\right)}{b^4} - \frac{B\,e^3}{\left(cx+b\right) c^2} - \frac{3A\,d^2e}{b^3x} + \frac{3Ac\,d^3}{b^4x} - \frac{B\,d^3}{b^3x} - \frac{A\,d^3}{2b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x)

[Out] -9*d^2/b^4*ln(x)*A*e*c-3/2*c/b^2/(c*x+b)^2*A*d^2*e-6/b^3*c/(c*x+b)*A*d^2*e+9*d^2/b^4*ln(c*x+b)*A*e*c-1/c^2/(c*x+b)*B*e^3-1/2/c/(c*x+b)^2*A*e^3-d^3/b^3/x*B+3/2/b/(c*x+b)^2*A*d*e^2+3/b^2/(c*x+b)*B*d^2*e+3/b^4*c^2/(c*x+b)*A*d^3-2/b^3*c/(c*x+b)*B*d^3+1/2*c^2/b^3/(c*x+b)^2*A*d^3+1/2/c^2*b/(c*x+b)^2*B*e^3+3*d/b^3*ln(x)*A*e^2+6*d^3/b^5*ln(x)*A*c^2+3*d^2/b^3*ln(x)*B*e-3*d^3/b^4*ln(x)*B*c-1/2*c/b^2/(c*x+b)^2*B*d^3+3/b^2/(c*x+b)*A*d*e^2-3*d^2/b^3*ln(c*x+b)*B*e-3/2/c/(c*x+b)^2*B*d*e^2+3/2/b/(c*x+b)^2*B*d^2*e+3*d^3/b^4*ln(c*x+b)*B*c-3*d^2/b^3/x*A*e+3*d^3/b^4/x*A*c-6*d^3/b^5*ln(c*x+b)*A*c^2-3*d/b^3*ln(c*x+b)*A*e^2-1/2*A*d^3/b^3/x^2

maxima [A] time = 0.55, size = 347, normalized size = 1.88

$$-\frac{Ab^3c^2d^3 - 2\left(3\,Ab^2c^3de^2 - Bb^4ce^3 - 3\left(Bbc^4 - 2\,Ac^5\right)d^3 + 3\left(Bb^2c^3 - 3\,Abc^4\right)d^2e\right)x^3 + \left(9\left(Bb^2c^3 - 2\,Abc^4\right)d^3 - 9\left(Bb^3c^2 - 3\,Ab^2c^3\right)d^2e + 3\left(Bb^4c - 3\,Ab^3c^2\right)de^2 + \left(Bb^5 + Ab^4c\right)e^3\right)x^2 + 2\left(3\,Ab^3c^2d^2e + \left(Bb^3c^2 - 2\,Ab^2c^3\right)d^3\right)x}{2\left(b^4c^4x^4 + 2\,b^5c^3x^3 + b^6c^2x^2\right)} - \frac{3\left(Ab^2de^2 - \left(Bbc - 2\,Ac^2\right)d^3 + \left(Bb^2 - 3\,Abc\right)d^2e\right)\log\left(cx + b\right)}{b^5} + \frac{3\left(Ab^2de^2 - \left(Bbc - 2\,Ac^2\right)d^3 + \left(Bb^2 - 3\,Abc\right)d^2e\right)\log\left(x\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*c^2*d^3 - 2*(3*A*b^2*c^3*d*e^2 - B*b^4*c*e^3 - 3*(B*b*c^4 - 2*A
*c^5)*d^3 + 3*(B*b^2*c^3 - 3*A*b*c^4)*d^2*e)*x^3 + (9*(B*b^2*c^3 - 2*A*b*c^
4)*d^3 - 9*(B*b^3*c^2 - 3*A*b^2*c^3)*d^2*e + 3*(B*b^4*c - 3*A*b^3*c^2)*d*e^
2 + (B*b^5 + A*b^4*c)*e^3)*x^2 + 2*(3*A*b^3*c^2*d^2*e + (B*b^3*c^2 - 2*A*b^
2*c^3)*d^3)*x)/(b^4*c^4*x^4 + 2*b^5*c^3*x^3 + b^6*c^2*x^2) - 3*(A*b^2*d*e^2
 - (B*b*c - 2*A*c^2)*d^3 + (B*b^2 - 3*A*b*c)*d^2*e)*log(c*x + b)/b^5 + 3*(A
*b^2*d*e^2 - (B*b*c - 2*A*c^2)*d^3 + (B*b^2 - 3*A*b*c)*d^2*e)*log(x)/b^5
```

mupad [B] time = 1.62, size = 345, normalized size = 1.86

$$-\frac{\frac{A\,d^3}{2\,b}-\frac{x^3\,\left(-B\,b^4\,e^3+3\,B\,b^2\,c^2\,d^2\,e+3\,A\,b^2\,c^2\,d\,e^2-3\,B\,b\,c^3\,d^3-9\,A\,b\,c^3\,d^2\,e+6\,A\,c^4\,d^3\right)}{b^4\,c}+\frac{x^2\,\left(B\,b^4\,e^3+3\,B\,b^3\,c\,d\,e^2+A\,b^3\,c\,e^3-9\,B\,b^2\,c^2\,d^2\,e-9\,A\,b^2\,c^2\,d\,e^2+9\,B\,b\,c^3\,d^3+27\,A\,b\,c^3\,d^2\,e-18\,A\,c^4\,d^3\right)}{2\,b^3\,c^2}+\frac{d^2\,x\,\left(3\,A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}{b^2}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}-\frac{6\,d\,\mathrm{atanh}\left(\frac{3\,d\,\left(b\,e-c\,d\right)\,\left(b+2\,c\,x\right)\,\left(A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}{b\,\left(3\,B\,b^2\,d^2\,e+3\,A\,b^2\,d\,e^2-3\,B\,b\,c\,d^3-9\,A\,b\,c\,d^2\,e+6\,A\,c^2\,d^3\right)}\right)\,\left(b\,e-c\,d\right)\,\left(A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x)
```

```
[Out] - ((A*d^3)/(2*b) - (x^3*(6*A*c^4*d^3 - B*b^4*e^3 - 3*B*b*c^3*d^3 + 3*A*b^2*
c^2*d*e^2 + 3*B*b^2*c^2*d^2*e - 9*A*b*c^3*d^2*e))/(b^4*c) + (x^2*(B*b^4*e^3
 - 18*A*c^4*d^3 + A*b^3*c*e^3 + 9*B*b*c^3*d^3 - 9*A*b^2*c^2*d*e^2 - 9*B*b^2
*c^2*d^2*e + 27*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2))/(2*b^3*c^2) + (d^2*x*(3*A
*b*e - 2*A*c*d + B*b*d))/b^2)/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (6*d*atanh(
(3*d*(b*e - c*d)*(b + 2*c*x)*(A*b*e - 2*A*c*d + B*b*d))/(b*(6*A*c^2*d^3 - 3
*B*b*c*d^3 + 3*A*b^2*d*e^2 + 3*B*b^2*d^2*e - 9*A*b*c*d^2*e)))*(b*e - c*d)*(
A*b*e - 2*A*c*d + B*b*d))/b^5
```

sympy [B] time = 28.93, size = 653, normalized size = 3.53

$$\frac{-Ab^3c^2d^3 + x^3\left(6Ab^2c^3de^2 - 18Abc^4d^2e + 12Ac^5d^3 - 2Bb^4ce^3 + 6Bb^2c^3d^2e - 6Bbc^4d^3\right) + x^2\left(-Ab^4ce^3 + 9Ab^3c^2de^2 - 27Ab^2c^3d^2e + 18Abc^4d^3 - Bb^5e^3 - 3Bb^4cde^2 + 9Bb^3c^2d^2e - 9Bb^2c^3d^3\right) + x\left(-6Ab^3c^2d^2e + 4Ab^2c^3d^3 - 2Bb^3c^2d^3\right)}{2b^6c^2x^2 + 4b^5c^3x^3 + 2b^4c^4x^4} + \frac{3d\left(be - cd\right)\left(Abe - 2Acd + Bbd\right)\log\left(x + \frac{3Ab^3de^2 - 9Ab^2cd^2e + 6Abc^2d^3 + 3Bb^3d^2e - 3Bb^2cd^3 - 3bd\left(be - cd\right)\left(Abe - 2Acd + Bbd\right)}{6Ab^2cde^2 - 18Abc^2d^2e + 12Ac^3d^3 + 6Bb^2cd^2e - 6Bbc^2d^3}\right)}{b^5} - \frac{3d\left(be - cd\right)\left(Abe - 2Acd + Bbd\right)\log\left(x + \frac{3Ab^3de^2 - 9Ab^2cd^2e + 6Abc^2d^3 + 3Bb^3d^2e - 3Bb^2cd^3 + 3bd\left(be - cd\right)\left(Abe - 2Acd + Bbd\right)}{6Ab^2cde^2 - 18Abc^2d^2e + 12Ac^3d^3 + 6Bb^2cd^2e - 6Bbc^2d^3}\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*c**2*d**3 + x**3*(6*A*b**2*c**3*d*e**2 - 18*A*b*c**4*d**2*e + 12*A
*c**5*d**3 - 2*B*b**4*c*e**3 + 6*B*b**2*c**3*d**2*e - 6*B*b*c**4*d**3) + x*
*2*(-A*b**4*c*e**3 + 9*A*b**3*c**2*d*e**2 - 27*A*b**2*c**3*d**2*e + 18*A*b*
c**4*d**3 - B*b**5*e**3 - 3*B*b**4*c*d*e**2 + 9*B*b**3*c**2*d**2*e - 9*B*b*
*2*c**3*d**3) + x*(-6*A*b**3*c**2*d**2*e + 4*A*b**2*c**3*d**3 - 2*B*b**3*c*
*2*d**3))/(2*b**6*c**2*x**2 + 4*b**5*c**3*x**3 + 2*b**4*c**4*x**4) + 3*d*(b
*e - c*d)*(A*b*e - 2*A*c*d + B*b*d)*log(x + (3*A*b**3*d*e**2 - 9*A*b**2*c*d
**2*e + 6*A*b*c**2*d**3 + 3*B*b**3*d**2*e - 3*B*b**2*c*d**3 - 3*b*d*(b*e -
c*d)*(A*b*e - 2*A*c*d + B*b*d))/(6*A*b**2*c*d*e**2 - 18*A*b*c**2*d**2*e + 1
2*A*c**3*d**3 + 6*B*b**2*c*d**2*e - 6*B*b*c**2*d**3))/b**5 - 3*d*(b*e - c*d
)*(A*b*e - 2*A*c*d + B*b*d)*log(x + (3*A*b**3*d*e**2 - 9*A*b**2*c*d**2*e +
6*A*b*c**2*d**3 + 3*B*b**3*d**2*e - 3*B*b**2*c*d**3 + 3*b*d*(b*e - c*d)*(A*
b*e - 2*A*c*d + B*b*d))/(6*A*b**2*c*d*e**2 - 18*A*b*c**2*d**2*e + 12*A*c**3
*d**3 + 6*B*b**2*c*d**2*e - 6*B*b*c**2*d**3))/b**5
```

3.1012 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=198

$$-\frac{d(2Abe-3Acd+bBd)}{b^4x}-\frac{(cd-be)(Abe-3Acd+2bBd)}{b^4(b+cx)}-\frac{(bB-Ac)(cd-be)^2}{2b^3c(b+cx)^2}-\frac{Ad^2}{2b^3x^2}+\frac{\log(x)\left(b^2e(Ae+2Bd\right.}{}$$

Rubi [A] time = 0.24, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{\log(x)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{b^5}-\frac{\log(b+cx)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{b^5}-\frac{d(2Abe-3Acd+bBd)}{b^4x}-\frac{(cd-be)(Abe-3Acd+2bBd)}{b^4(b+cx)}-\frac{(bB-Ac)(cd-be)^2}{2b^3c(b+cx)^2}-\frac{Ad^2}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^2)/(2*b^3*x^2) - (d*(b*B*d - 3*A*c*d + 2*A*b*e))/(b^4*x) - ((b*B - A*
c)*(c*d - b*e)^2)/(2*b^3*c*(b + c*x)^2) - ((c*d - b*e)*(2*b*B*d - 3*A*c*d +
 A*b*e))/(b^4*(b + c*x)) + ((6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B
*d + 2*A*e))*Log[x])/b^5 - ((6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B
*d + 2*A*e))*Log[b + c*x])/b^5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^3} dx = \int \left(\frac{Ad^2}{b^3x^3}+\frac{d(bBd-3Acd+2Abe)}{b^4x^2}+\frac{6Ac^2d^2+b^2e(2Bd+Ae)-3bcd(Bd+2Ae)}{b^5x}\right.$$

$$=-\frac{Ad^2}{2b^3x^2}-\frac{d(bBd-3Acd+2Abe)}{b^4x}-\frac{(bB-Ac)(cd-be)^2}{2b^3c(b+cx)^2}-\frac{(cd-be)(2bBd-3Acd}{b^4(b+cx)}$$

Mathematica [A] time = 0.27, size = 190, normalized size = 0.96

$$-\frac{-2\log(x)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right)+2\log(b+cx)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right)+\frac{b^2(bB-Ac)(cd-be)^2}{c(b+cx)^2}+\frac{Ab^2d^2}{x^2}+\frac{2bd(2Abe-3Acd+bBd)}{x}-\frac{2b(be-cd)(Abe-3Acd+2bBd)}{b+cx}}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((A*b^2*d^2)/x^2 + (2*b*d*(b*B*d - 3*A*c*d + 2*A*b*e))/x + (b^2*(b*B -
 A*c)*(c*d - b*e)^2)/(c*(b + c*x)^2) - (2*b*(-(c*d) + b*e)*(2*b*B*d - 3*A*c
*d + A*b*e))/(b + c*x) - 2*(6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B*
d + 2*A*e))*Log[x] + 2*(6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B*d +
2*A*e))*Log[b + c*x])/b^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.42, size = 558, normalized size = 2.82

$$-\frac{Ab^{4}cd^{2} - 2\left(Ab^{3}c^{2}e^{2} - 3\left(Bb^{2}c^{3} - 2\,Abc^{4}\right)d^{2} + 2\left(Bb^{3}c^{2} - 3\,Ab^{2}c^{3}\right)de\right)x^{3} + \left(9\left(Bb^{3}c^{2} - 2\,Ab^{2}c^{3}\right)d^{2} - 6\left(Bb^{4}c - 3\,Ab^{3}c^{2}\right)de + \left(Bb^{5} - 3\,Ab^{4}c\right)e^{2}\right)x^{2} + 2\left(2\,Ab^{4}cde + \left(Bb^{4}c - 2\,Ab^{3}c^{2}\right)d^{2}\right)x + 2\left(\left(Ab^{2}c^{3}e^{2} - 3\left(Bbc^{4} - 2\,Ac^{5}\right)d^{2} + 2\left(Bb^{2}c^{3} - 3\,Abc^{4}\right)de\right)x^{4} + 2\left(Ab^{3}c^{2}e^{2} - 3\left(Bb^{2}c^{3} - 2\,Abc^{4}\right)d^{2} + 2\left(Bb^{3}c^{2} - 3\,Ab^{2}c^{3}\right)de\right)x^{3} + \left(Ab^{4}ce^{2} - 3\left(Bb^{3}c^{2} - 2\,Ab^{2}c^{3}\right)d^{2} + 2\left(Bb^{4}c - 3\,Ab^{3}c^{2}\right)de\right)x^{2}\right)\log\left(cx + b\right) - 2\left(\left(Ab^{2}c^{3}e^{2} - 3\left(Bbc^{4} - 2\,Ac^{5}\right)d^{2} + 2\left(Bb^{2}c^{3} - 3\,Abc^{4}\right)de\right)x^{4} + 2\left(Ab^{3}c^{2}e^{2} - 3\left(Bb^{2}c^{3} - 2\,Abc^{4}\right)d^{2} + 2\left(Bb^{3}c^{2} - 3\,Ab^{2}c^{3}\right)de\right)x^{3} + \left(Ab^{4}ce^{2} - 3\left(Bb^{3}c^{2} - 2\,Ab^{2}c^{3}\right)d^{2} + 2\left(Bb^{4}c - 3\,Ab^{3}c^{2}\right)de\right)x^{2}\right)\log\left(x\right)}{2\left(b^{5}c^{3}x^{4} + 2\,b^{6}c^{2}x^{3} + b^{7}cx^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*c*d^2 - 2*(A*b^3*c^2*e^2 - 3*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 2*(B
*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (9*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 - 6*(B*
b^4*c - 3*A*b^3*c^2)*d*e + (B*b^5 - 3*A*b^4*c)*e^2)*x^2 + 2*(2*A*b^4*c*d*e
+ (B*b^4*c - 2*A*b^3*c^2)*d^2)*x + 2*((A*b^2*c^3*e^2 - 3*(B*b*c^4 - 2*A*c^5
)*d^2 + 2*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(A*b^3*c^2*e^2 - 3*(B*b^2*c^
3 - 2*A*b*c^4)*d^2 + 2*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (A*b^4*c*e^2 -
3*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 2*(B*b^4*c - 3*A*b^3*c^2)*d*e)*x^2)*log(c
*x + b) - 2*((A*b^2*c^3*e^2 - 3*(B*b*c^4 - 2*A*c^5)*d^2 + 2*(B*b^2*c^3 - 3*
A*b*c^4)*d*e)*x^4 + 2*(A*b^3*c^2*e^2 - 3*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 2*(B
*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (A*b^4*c*e^2 - 3*(B*b^3*c^2 - 2*A*b^2*c^
3)*d^2 + 2*(B*b^4*c - 3*A*b^3*c^2)*d*e)*x^2)*log(x))/(b^5*c^3*x^4 + 2*b^6*c
^2*x^3 + b^7*c*x^2)
```

giac [A] time = 0.19, size = 324, normalized size = 1.64

$$-\frac{\left(3\,Bbcd^{2} - 6\,Ac^{2}d^{2} - 2\,Bb^{2}de + 6\,Abcde - Ab^{2}e^{2}\right)\log\left({\left| x \right|}\right)}{b^{5}} + \frac{\left(3\,Bbc^{2}d^{2} - 6\,Ac^{3}d^{2} - 2\,Bb^{2}cde + 6\,Abc^{2}de - Ab^{2}ce^{2}\right)\log\left({\left| cx + b \right|}\right)}{b^{5}c} - \frac{6\,Bbc^{3}d^{2}x^{3} - 12\,Ac^{4}d^{2}x^{3} - 4\,Bb^{2}c^{2}dx^{3}e + 12\,Abc^{3}dx^{3}e + 9\,Bb^{2}c^{2}d^{2}x^{2} - 18\,Abc^{3}d^{2}x^{2} - 2\,Ab^{2}c^{2}x^{3}e^{2} - 6\,Bb^{3}cdx^{2}e + 18\,Ab^{2}c^{2}dx^{2}e + 2\,Bb^{3}cd^{2}x - 4\,Ab^{2}c^{2}d^{2}x + Bb^{4}x^{2}e^{2} - 3\,Ab^{3}cx^{2}e^{2} + 4\,Ab^{3}cdxe + Ab^{3}cd^{2}}{2\left(cx^{2} + bx\right)^{2}b^{4}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*B*b*c*d^2 - 6*A*c^2*d^2 - 2*B*b^2*d*e + 6*A*b*c*d*e - A*b^2*e^2)*log(ab
s(x))/b^5 + (3*B*b*c^2*d^2 - 6*A*c^3*d^2 - 2*B*b^2*c*d*e + 6*A*b*c^2*d*e -
A*b^2*c*e^2)*log(abs(c*x + b))/(b^5*c) - 1/2*(6*B*b*c^3*d^2*x^3 - 12*A*c^4*
d^2*x^3 - 4*B*b^2*c^2*d*x^3*e + 12*A*b*c^3*d*x^3*e + 9*B*b^2*c^2*d^2*x^2 -
18*A*b*c^3*d^2*x^2 - 2*A*b^2*c^2*x^3*e^2 - 6*B*b^3*c*d*x^2*e + 18*A*b^2*c^2
*d*x^2*e + 2*B*b^3*c*d^2*x - 4*A*b^2*c^2*d^2*x + B*b^4*x^2*e^2 - 3*A*b^3*c*
x^2*e^2 + 4*A*b^3*c*d*x*e + A*b^3*c*d^2)/((c*x^2 + b*x)^2*b^4*c)
```

maple [A] time = 0.06, size = 365, normalized size = 1.84

$$\frac{A e^{2}}{2 \left(c x +b \right)^{2} b}-\frac{A c d e}{\left(c x +b \right)^{2} b^{2}}+\frac{A \,c^{2} d^{2}}{2 \left(c x +b \right)^{2} b^{3}}+\frac{B d e}{\left(c x +b \right)^{2} b}-\frac{B c \,d^{2}}{2 \left(c x +b \right)^{2} b^{2}}-\frac{B \,e^{2}}{2 \left(c x +b \right)^{2} c}+\frac{A \,e^{2}}{\left(c x +b \right) b^{2}}-\frac{4 A c d e}{\left(c x +b \right) b^{3}}+\frac{A \,e^{2} \ln \left(x \right)}{b^{3}}-\frac{A \,e^{2} \ln \left(c x +b \right)}{b^{3}}+\frac{3 A \,c^{2} d^{2}}{\left(c x +b \right) b^{4}}-\frac{6 A c d e \ln \left(x \right)}{b^{4}}+\frac{6 A c d e \ln \left(c x +b \right)}{b^{4}}+\frac{6 A \,c^{2} d^{2} \ln \left(x \right)}{b^{5}}-\frac{6 A \,c^{2} d^{2} \ln \left(c x +b \right)}{b^{5}}+\frac{2 B d e}{\left(c x +b \right) b^{2}}-\frac{2 B c \,d^{2}}{\left(c x +b \right) b^{3}}+\frac{2 B d e \ln \left(x \right)}{b^{3}}-\frac{2 B d e \ln \left(c x +b \right)}{b^{3}}-\frac{3 B c \,d^{2} \ln \left(x \right)}{b^{4}}+\frac{3 B c \,d^{2} \ln \left(c x +b \right)}{b^{4}}-\frac{2 A d e}{b^{3} x}+\frac{3 A c \,d^{2}}{b^{4} x}-\frac{B \,d^{2}}{b^{3} x}-\frac{A \,d^{2}}{2 b^{3} x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x)
```

```
[Out] 1/b^2/(c*x+b)*A*e^2+1/2/b/(c*x+b)^2*A*e^2-1/2/c/(c*x+b)^2*B*e^2-d^2/b^3/x*B
+1/b^3*ln(x)*A*e^2-1/b^3*ln(c*x+b)*A*e^2+6/b^4*ln(c*x+b)*A*d*e*c-1/b^2*c/(c
*x+b)^2*A*d*e-4/b^3/(c*x+b)*A*d*e*c-6/b^4*ln(x)*A*d*e*c-6/b^5*ln(c*x+b)*A*c
^2*d^2+1/b/(c*x+b)^2*B*d*e-3/b^4*ln(x)*B*d^2*c+1/2/b^3*c^2/(c*x+b)^2*A*d^2-
1/2/b^2*c/(c*x+b)^2*B*d^2+2/b^2/(c*x+b)*B*d*e-2/b^3/(c*x+b)*B*d^2*c+3/b^4/(
c*x+b)*A*c^2*d^2-2*d/b^3/x*A*e+3*d^2/b^4/x*A*c+6/b^5*ln(x)*A*c^2*d^2+2/b^3*
ln(x)*B*d*e-2/b^3*ln(c*x+b)*B*d*e+3/b^4*ln(c*x+b)*B*d^2*c-1/2*A*d^2/b^3/x^2
```

maxima [A] time = 0.59, size = 293, normalized size = 1.48

$$-\frac{Ab^{3}cd^{2} - 2\left(Ab^{2}c^{2}e^{2} - 3\left(Bbc^{3} - 2\,Ac^{4}\right)d^{2} + 2\left(Bb^{2}c^{2} - 3\,Abc^{3}\right)de\right)x^{3} + \left(9\left(Bb^{2}c^{2} - 2\,Abc^{3}\right)d^{2} - 6\left(Bb^{3}c - 3\,Ab^{2}c^{2}\right)de + \left(Bb^{4} - 3\,Ab^{3}c\right)e^{2}\right)x^{2} + 2\left(2\,Ab^{3}cde + \left(Bb^{3}c - 2\,Ab^{2}c^{2}\right)d^{2}\right)x}{2\left(b^{4}c^{3}x^{4} + 2\,b^{5}c^{2}x^{3} + b^{6}cx^{2}\right)} - \frac{\left(Ab^{2}e^{2} - 3\left(Bbc - 2\,Ac^{2}\right)d^{2} + 2\left(Bb^{2} - 3\,Abc\right)de\right)\log\left(cx + b\right)}{b^{5}} + \frac{\left(Ab^{2}e^{2} - 3\left(Bbc - 2\,Ac^{2}\right)d^{2} + 2\left(Bb^{2} - 3\,Abc\right)de\right)\log\left(x\right)}{b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*c*d^2 - 2*(A*b^2*c^2*e^2 - 3*(B*b*c^3 - 2*A*c^4)*d^2 + 2*(B*b^2
*c^2 - 3*A*b*c^3)*d*e)*x^3 + (9*(B*b^2*c^2 - 2*A*b*c^3)*d^2 - 6*(B*b^3*c -
3*A*b^2*c^2)*d*e + (B*b^4 - 3*A*b^3*c)*e^2)*x^2 + 2*(2*A*b^3*c*d*e + (B*b^3
*c - 2*A*b^2*c^2)*d^2)*x)/(b^4*c^3*x^4 + 2*b^5*c^2*x^3 + b^6*c*x^2) - (A*b^
2*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 + 2*(B*b^2 - 3*A*b*c)*d*e)*log(c*x + b)/b^5
 + (A*b^2*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 + 2*(B*b^2 - 3*A*b*c)*d*e)*log(x)/b
^5
```

mupad [**B**] time = 0.26, size = 319, normalized size = 1.61

$$-\frac{\frac{A\,d^2}{2\,b}-\frac{c\,x^3\,\left(2\,B\,b^2\,d\,e+A\,b^2\,e^2-3\,B\,b\,c\,d^2-6\,A\,b\,c\,d\,e+6\,A\,c^2\,d^2\right)}{b^4}+\frac{d\,x\,\left(2\,A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}{b^2}-\frac{x^2\,\left(-B\,b^3\,e^2+6\,B\,b^2\,c\,d\,e+3\,A\,b^2\,c\,e^2-9\,B\,b\,c^2\,d^2-18\,A\,b\,c^2\,d\,e+18\,A\,c^3\,d^2\right)}{2\,b^3\,c}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}-\frac{2\,\mathrm{atanh}\left(\frac{\left(b+2\,c\,x\right)\,\left(b^2\,\left(A\,e^2+2\,B\,d\,e\right)-b\,\left(3\,B\,c\,d^2+6\,A\,c\,e\,d\right)+6\,A\,c^2\,d^2\right)}{b\,\left(2\,B\,b^2\,d\,e+A\,b^2\,e^2-3\,B\,b\,c\,d^2-6\,A\,b\,c\,d\,e+6\,A\,c^2\,d^2\right)}\right)\,\left(b^2\,\left(A\,e^2+2\,B\,d\,e\right)-b\,\left(3\,B\,c\,d^2+6\,A\,c\,e\,d\right)+6\,A\,c^2\,d^2\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x)
```

```
[Out] - ((A*d^2)/(2*b) - (c*x^3*(A*b^2*e^2 + 6*A*c^2*d^2 - 3*B*b*c*d^2 + 2*B*b^2*
d*e - 6*A*b*c*d*e))/b^4 + (d*x*(2*A*b*e - 2*A*c*d + B*b*d))/b^2 - (x^2*(18*
A*c^3*d^2 - B*b^3*e^2 + 3*A*b^2*c*e^2 - 9*B*b*c^2*d^2 - 18*A*b*c^2*d*e + 6*
B*b^2*c*d*e))/(2*b^3*c))/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (2*atanh(((b + 2
*c*x)*(b^2*(A*e^2 + 2*B*d*e) - b*(3*B*c*d^2 + 6*A*c*d*e) + 6*A*c^2*d^2))/(b
*(A*b^2*e^2 + 6*A*c^2*d^2 - 3*B*b*c*d^2 + 2*B*b^2*d*e - 6*A*b*c*d*e)))*(b^2
*(A*e^2 + 2*B*d*e) - b*(3*B*c*d^2 + 6*A*c*d*e) + 6*A*c^2*d^2))/b^5
```

sympy [**B**] time = 10.67, size = 660, normalized size = 3.33

$$\frac{-Ab^3cd^2+x^3\left(2Ab^2c^2e^2-12Abc^3de+12Ac^4d^2+4Bb^2c^2de-6Bbc^3d^2\right)+x^2\left(3Ab^3ce^2-18Ab^2c^2de+18Abc^3d^2-Bb^4e^2+6Bb^3cde-9Bb^2c^2d^2\right)+x\left(-4Ab^3cde+4Ab^2c^2d^2-2Bb^3cd^2\right)}{2b^6cx^2+4b^5c^2x^3+2b^4c^3x^4}+\frac{\left(Ab^2e^2-6Abcde+6Ac^2d^2+2Bb^2de-3Bbcd^2\right)\log\left(x+\frac{Ab^3e^2-6Ab^2cde+6Abc^2d^2+2Bb^3de-3Bb^2cd^2-b\left(Ab^2e^2-6Abcde+6Ac^2d^2+2Bb^2de-3Bbcd^2\right)}{2Ab^2ce^2-12Abc^2de+12Ac^3d^2+4Bb^2cde-6Bbc^2d^2}\right)}{b^5}-\frac{\left(Ab^2e^2-6Abcde+6Ac^2d^2+2Bb^2de-3Bbcd^2\right)\log\left(x+\frac{Ab^3e^2-6Ab^2cde+6Abc^2d^2+2Bb^3de-3Bb^2cd^2+b\left(Ab^2e^2-6Abcde+6Ac^2d^2+2Bb^2de-3Bbcd^2\right)}{2Ab^2ce^2-12Abc^2de+12Ac^3d^2+4Bb^2cde-6Bbc^2d^2}\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*c*d**2 + x**3*(2*A*b**2*c**2*e**2 - 12*A*b*c**3*d*e + 12*A*c**4*d*
*2 + 4*B*b**2*c**2*d*e - 6*B*b*c**3*d**2) + x**2*(3*A*b**3*c*e**2 - 18*A*b*
*2*c**2*d*e + 18*A*b*c**3*d**2 - B*b**4*e**2 + 6*B*b**3*c*d*e - 9*B*b**2*c*
*2*d**2) + x*(-4*A*b**3*c*d*e + 4*A*b**2*c**2*d**2 - 2*B*b**3*c*d**2))/(2*b
**6*c*x**2 + 4*b**5*c**2*x**3 + 2*b**4*c**3*x**4) + (A*b**2*e**2 - 6*A*b*c*
d*e + 6*A*c**2*d**2 + 2*B*b**2*d*e - 3*B*b*c*d**2)*log(x + (A*b**3*e**2 - 6
*A*b**2*c*d*e + 6*A*b*c**2*d**2 + 2*B*b**3*d*e - 3*B*b**2*c*d**2 - b*(A*b**
2*e**2 - 6*A*b*c*d*e + 6*A*c**2*d**2 + 2*B*b**2*d*e - 3*B*b*c*d**2))/(2*A*b
**2*c*e**2 - 12*A*b*c**2*d*e + 12*A*c**3*d**2 + 4*B*b**2*c*d*e - 6*B*b*c**2
*d**2))/b**5 - (A*b**2*e**2 - 6*A*b*c*d*e + 6*A*c**2*d**2 + 2*B*b**2*d*e -
3*B*b*c*d**2)*log(x + (A*b**3*e**2 - 6*A*b**2*c*d*e + 6*A*b*c**2*d**2 + 2*B
*b**3*d*e - 3*B*b**2*c*d**2 + b*(A*b**2*e**2 - 6*A*b*c*d*e + 6*A*c**2*d**2
+ 2*B*b**2*d*e - 3*B*b*c*d**2))/(2*A*b**2*c*e**2 - 12*A*b*c**2*d*e + 12*A*c
**3*d**2 + 4*B*b**2*c*d*e - 6*B*b*c**2*d**2))/b**5
```

3.1013 $\int \frac{(A+Bx)(d+ex)}{(bx+cx^2)^3}\,dx$

Optimal. Leaf size=168

$$-\frac{Abe-3Acd+bBd}{b^4x}-\frac{(bB-Ac)(cd-be)}{2b^3(b+cx)^2}-\frac{Ad}{2b^3x^2}+\frac{\log(x)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)}{b^5}-\frac{\log(b+cx)\left(-3bc(A\right.}{}$$

Rubi [A] time = 0.21, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$\frac{-2bc(Ae+Bd)+3Ac^2d+b^2Be}{b^4(b+cx)}+\frac{\log(x)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)}{b^5}-\frac{\log(b+cx)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)}{b^5}-\frac{Abe-3Acd+bBd}{b^4x}-\frac{(bB-Ac)(cd-be)}{2b^3(b+cx)^2}-\frac{Ad}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d)/(2*b^3*x^2) - (b*B*d - 3*A*c*d + A*b*e)/(b^4*x) - ((b*B - A*c)*(c*d
- b*e))/(2*b^3*(b + c*x)^2) + (3*A*c^2*d + b^2*B*e - 2*b*c*(B*d + A*e))/(b^
4*(b + c*x)) + ((6*A*c^2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[x])/b^5 - ((6
*A*c^2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[b + c*x])/b^5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{(bx+cx^2)^3}\,dx = \int \left(\frac{Ad}{b^3x^3}+\frac{bBd-3Acd+Abe}{b^4x^2}+\frac{6Ac^2d+b^2Be-3bc(Bd+Ae)}{b^5x}-\frac{c(bB-Ac)(-cd+b}{b^3(b+cx)^3}\right.$$
$$=-\frac{Ad}{2b^3x^2}-\frac{bBd-3Acd+Abe}{b^4x}-\frac{(bB-Ac)(cd-be)}{2b^3(b+cx)^2}+\frac{3Ac^2d+b^2Be-2bc(Bd+Ae)}{b^4(b+cx)}+$$

Mathematica [A] time = 0.14, size = 162, normalized size = 0.96

$$\frac{\frac{2b\left(-2bc(Ae+Bd)+3Ac^2d+b^2Be\right)}{b+cx}+2\log(x)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)-2\log(b+cx)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)+\frac{b^2(bB-Ac)(be-cd)}{(b+cx)^2}-\frac{Ab^2d}{x^2}-\frac{2b(Abe-3Acd+bBd)}{x}}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (-((A*b^2*d)/x^2) - (2*b*(b*B*d - 3*A*c*d + A*b*e))/x + (b^2*(b*B - A*c)*(-
(c*d) + b*e))/(b + c*x)^2 + (2*b*(3*A*c^2*d + b^2*B*e - 2*b*c*(B*d + A*e)))
/(b + c*x) + 2*(6*A*c^2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[x] - 2*(6*A*c^
2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[b + c*x])/(2*b^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{(bx+cx^2)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.42, size = 410, normalized size = 2.44

$$-\frac{Ab^4d + 2\left(3\left(Bb^2c^2 - 2\,Abc^3\right)d - \left(Bb^3c - 3\,Ab^2c^2\right)e\right)x^3 + 3\left(3\left(Bb^3c - 2\,Ab^2c^2\right)d - \left(Bb^4 - 3\,Ab^3c\right)e\right)x^2 + 2\left(Ab^4e + \left(Bb^4 - 2\,Ab^3c\right)d\right)x - 2\left(\left(3\left(Bbc^3 - 2\,Ac^4\right)d - \left(Bb^2c^2 - 3\,Abc^3\right)e\right)x^4 + 2\left(3\left(Bb^2c^2 - 2\,Abc^3\right)d - \left(Bb^3c - 3\,Ab^2c^2\right)e\right)x^3 + \left(3\left(Bb^3c - 2\,Ab^2c^2\right)d - \left(Bb^4 - 3\,Ab^3c\right)e\right)x^2\right)\log\left(cx + b\right) + 2\left(\left(3\left(Bbc^3 - 2\,Ac^4\right)d - \left(Bb^2c^2 - 3\,Abc^3\right)e\right)x^4 + 2\left(3\left(Bb^2c^2 - 2\,Abc^3\right)d - \left(Bb^3c - 3\,Ab^2c^2\right)e\right)x^3 + \left(3\left(Bb^3c - 2\,Ab^2c^2\right)d - \left(Bb^4 - 3\,Ab^3c\right)e\right)x^2\right)\log(x)}{2\left(b^5c^2x^4 + 2\,b^6cx^3 + b^7x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*d + 2*(3*(B*b^2*c^2 - 2*A*b*c^3)*d - (B*b^3*c - 3*A*b^2*c^2)*e)
*x^3 + 3*(3*(B*b^3*c - 2*A*b^2*c^2)*d - (B*b^4 - 3*A*b^3*c)*e)*x^2 + 2*(A*b
^4*e + (B*b^4 - 2*A*b^3*c)*d)*x - 2*((3*(B*b*c^3 - 2*A*c^4)*d - (B*b^2*c^2
- 3*A*b*c^3)*e)*x^4 + 2*(3*(B*b^2*c^2 - 2*A*b*c^3)*d - (B*b^3*c - 3*A*b^2*c
^2)*e)*x^3 + (3*(B*b^3*c - 2*A*b^2*c^2)*d - (B*b^4 - 3*A*b^3*c)*e)*x^2)*log
(c*x + b) + 2*((3*(B*b*c^3 - 2*A*c^4)*d - (B*b^2*c^2 - 3*A*b*c^3)*e)*x^4 +
2*(3*(B*b^2*c^2 - 2*A*b*c^3)*d - (B*b^3*c - 3*A*b^2*c^2)*e)*x^3 + (3*(B*b^3
*c - 2*A*b^2*c^2)*d - (B*b^4 - 3*A*b^3*c)*e)*x^2)*log(x))/(b^5*c^2*x^4 + 2*
b^6*c*x^3 + b^7*x^2)
```

giac [A] time = 0.16, size = 225, normalized size = 1.34

$$-\frac{\left(3\,Bbcd - 6\,Ac^2d - Bb^2e + 3\,Abce\right)\log\left(|x|\right)}{b^5} + \frac{\left(3\,Bbc^2d - 6\,Ac^3d - Bb^2ce + 3\,Abc^2e\right)\log\left(|cx + b|\right)}{b^5c} - \frac{6\,Bbc^2dx^3 - 12\,Ac^3dx^3 - 2\,Bb^2cx^3e + 6\,Abc^2x^3e + 9\,Bb^2cdx^2 - 18\,Abc^2dx^2 - 3\,Bb^3x^2e + 9\,Ab^2cx^2e + 2\,Bb^3dx - 4\,Ab^2cdx + 2\,Ab^3xe + Ab^3d}{2\left(cx^2 + bx\right)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*B*b*c*d - 6*A*c^2*d - B*b^2*e + 3*A*b*c*e)*log(abs(x))/b^5 + (3*B*b*c^2
*d - 6*A*c^3*d - B*b^2*c*e + 3*A*b*c^2*e)*log(abs(c*x + b))/(b^5*c) - 1/2*(
6*B*b*c^2*d*x^3 - 12*A*c^3*d*x^3 - 2*B*b^2*c*x^3*e + 6*A*b*c^2*x^3*e + 9*B*
b^2*c*d*x^2 - 18*A*b*c^2*d*x^2 - 3*B*b^3*x^2*e + 9*A*b^2*c*x^2*e + 2*B*b^3*
d*x - 4*A*b^2*c*d*x + 2*A*b^3*x*e + A*b^3*d)/((c*x^2 + b*x)^2*b^4)
```

maple [A] time = 0.06, size = 261, normalized size = 1.55

$$-\frac{Ace}{2\left(cx + b\right)^2b^2} + \frac{Ac^2d}{2\left(cx + b\right)^2b^3} + \frac{Be}{2\left(cx + b\right)^2b} - \frac{Bcd}{2\left(cx + b\right)^2b^2} - \frac{2Ace}{\left(cx + b\right)b^3} + \frac{3Ac^2d}{\left(cx + b\right)b^4} - \frac{3Ace\ln(x)}{b^4} + \frac{3Ace\ln\left(cx + b\right)}{b^4} + \frac{6Ac^2d\ln(x)}{b^5} - \frac{6Ac^2d\ln\left(cx + b\right)}{b^5} + \frac{Be}{\left(cx + b\right)b^2} - \frac{2Bcd}{\left(cx + b\right)b^3} + \frac{Be\ln(x)}{b^3} - \frac{Be\ln\left(cx + b\right)}{b^3} - \frac{3Bcd\ln(x)}{b^4} + \frac{3Bcd\ln\left(cx + b\right)}{b^4} - \frac{Ae}{b^3x} + \frac{3Acd}{b^4x} - \frac{Bd}{b^3x} - \frac{Ad}{2b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -2/b^3/(c*x+b)*A*e*c+3/b^4/(c*x+b)*A*c^2*d+1/b^2/(c*x+b)*B*e-2/b^3/(c*x+b)*
B*d*c+3/b^4*ln(c*x+b)*A*e*c-6/b^5*ln(c*x+b)*A*c^2*d-1/b^3*ln(c*x+b)*B*e+3/b
^4*ln(c*x+b)*B*d*c-1/2/b^2/(c*x+b)^2*A*e*c+1/2/b^3/(c*x+b)^2*A*c^2*d+1/2/b/
(c*x+b)^2*B*e-1/2/b^2/(c*x+b)^2*B*d*c-1/b^3/x*A*e+3/b^4/x*A*c*d-1/b^3/x*B*d
-3/b^4*ln(x)*A*e*c+6/b^5*ln(x)*A*c^2*d+1/b^3*ln(x)*B*e-3/b^4*ln(x)*B*d*c-1/
2*A*d/b^3/x^2
```

maxima [A] time = 0.50, size = 217, normalized size = 1.29

$$-\frac{Ab^3d + 2\left(3\left(Bbc^2 - 2\,Ac^3\right)d - \left(Bb^2c - 3\,Abc^2\right)e\right)x^3 + 3\left(3\left(Bb^2c - 2\,Abc^2\right)d - \left(Bb^3 - 3\,Ab^2c\right)e\right)x^2 + 2\left(Ab^3e + \left(Bb^3 - 2\,Ab^2c\right)d\right)x}{2\left(b^4c^2x^4 + 2\,b^5cx^3 + b^6x^2\right)} + \frac{\left(3\left(Bbc - 2\,Ac^2\right)d - \left(Bb^2 - 3\,Abc\right)e\right)\log\left(cx + b\right)}{b^5} - \frac{\left(3\left(Bbc - 2\,Ac^2\right)d - \left(Bb^2 - 3\,Abc\right)e\right)\log(x)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*d + 2*(3*(B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - 3*A*b*c^2)*e)*x^3 +
 3*(3*(B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - 3*A*b^2*c)*e)*x^2 + 2*(A*b^3*e + (
```

```
B*b^3 - 2*A*b^2*c)*d)*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2) + (3*(B*b*c
- 2*A*c^2)*d - (B*b^2 - 3*A*b*c)*e)*log(c*x + b)/b^5 - (3*(B*b*c - 2*A*c^2)
*d - (B*b^2 - 3*A*b*c)*e)*log(x)/b^5
```

mupad [B] time = 1.53, size = 223, normalized size = 1.33

$$-\frac{\frac{x\,\left(A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}{b^2}-\frac{3\,x^2\,\left(6\,A\,c^2\,d+B\,b^2\,e-3\,A\,b\,c\,e-3\,B\,b\,c\,d\right)}{2\,b^3}+\frac{A\,d}{2\,b}-\frac{c\,x^3\,\left(6\,A\,c^2\,d+B\,b^2\,e-3\,A\,b\,c\,e-3\,B\,b\,c\,d\right)}{b^4}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}-\frac{2\,\mathrm{atanh}\left(\frac{\left(b+2\,c\,x\right)\,\left(6\,A\,c^2\,d-b\,\left(3\,A\,c\,e+3\,B\,c\,d\right)+B\,b^2\,e\right)}{b\,\left(6\,A\,c^2\,d+B\,b^2\,e-3\,A\,b\,c\,e-3\,B\,b\,c\,d\right)}\right)\,\left(6\,A\,c^2\,d-b\,\left(3\,A\,c\,e+3\,B\,c\,d\right)+B\,b^2\,e\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] - ((x*(A*b*e - 2*A*c*d + B*b*d))/b^2 - (3*x^2*(6*A*c^2*d + B*b^2*e - 3*A*b*
c*e - 3*B*b*c*d))/(2*b^3) + (A*d)/(2*b) - (c*x^3*(6*A*c^2*d + B*b^2*e - 3*A
*b*c*e - 3*B*b*c*d))/b^4)/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (2*atanh(((b +
2*c*x)*(6*A*c^2*d - b*(3*A*c*e + 3*B*c*d) + B*b^2*e))/(b*(6*A*c^2*d + B*b^2
*e - 3*A*b*c*e - 3*B*b*c*d)))*(6*A*c^2*d - b*(3*A*c*e + 3*B*c*d) + B*b^2*e)
)/b^5
```

sympy [B] time = 2.87, size = 449, normalized size = 2.67

$$\frac{-Ab^3d+x^3\left(-6Abc^2e+12Ac^3d+2Bb^2ce-6Bbc^2d\right)+x^2\left(-9Ab^2ce+18Abc^2d+3Bb^3e-9Bb^2cd\right)+x\left(-2Ab^3e+4Ab^2cd-2Bb^3d\right)}{2b^6x^2+4b^5cx^3+2b^4c^2x^4}+\frac{\left(-3Abce+6Ac^2d+Bb^2e-3Bbcd\right)\log\left(x+\frac{-3Ab^2ce+6Abc^2d+Bb^3e-3Bb^2cd-b\left(-3Abce+6Ac^2d+Bb^2e-3Bbcd\right)}{-6Abc^2e+12Ac^3d+2Bb^2ce-6Bbc^2d}\right)}{b^5}-\frac{\left(-3Abce+6Ac^2d+Bb^2e-3Bbcd\right)\log\left(x+\frac{-3Ab^2ce+6Abc^2d+Bb^3e-3Bb^2cd+b\left(-3Abce+6Ac^2d+Bb^2e-3Bbcd\right)}{-6Abc^2e+12Ac^3d+2Bb^2ce-6Bbc^2d}\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*d + x**3*(-6*A*b*c**2*e + 12*A*c**3*d + 2*B*b**2*c*e - 6*B*b*c**2*
d) + x**2*(-9*A*b**2*c*e + 18*A*b*c**2*d + 3*B*b**3*e - 9*B*b**2*c*d) + x*(
-2*A*b**3*e + 4*A*b**2*c*d - 2*B*b**3*d))/(2*b**6*x**2 + 4*b**5*c*x**3 + 2*
b**4*c**2*x**4) + (-3*A*b*c*e + 6*A*c**2*d + B*b**2*e - 3*B*b*c*d)*log(x +
(-3*A*b**2*c*e + 6*A*b*c**2*d + B*b**3*e - 3*B*b**2*c*d - b*(-3*A*b*c*e + 6
*A*c**2*d + B*b**2*e - 3*B*b*c*d))/(-6*A*b*c**2*e + 12*A*c**3*d + 2*B*b**2*
c*e - 6*B*b*c**2*d))/b**5 - (-3*A*b*c*e + 6*A*c**2*d + B*b**2*e - 3*B*b*c*d
)*log(x + (-3*A*b**2*c*e + 6*A*b*c**2*d + B*b**3*e - 3*B*b**2*c*d + b*(-3*A
*b*c*e + 6*A*c**2*d + B*b**2*e - 3*B*b*c*d))/(-6*A*b*c**2*e + 12*A*c**3*d +
 2*B*b**2*c*e - 6*B*b*c**2*d))/b**5
```

3.1014 $\int \frac{A+Bx}{(bx+cx^2)^3} dx$

Optimal. Leaf size=109

$$-\frac{3c\log(x)(bB-2Ac)}{b^5}+\frac{3c(bB-2Ac)\log(b+cx)}{b^5}-\frac{bB-3Ac}{b^4x}-\frac{c(2bB-3Ac)}{b^4(b+cx)}-\frac{c(bB-Ac)}{2b^3(b+cx)^2}-\frac{A}{2b^3x^2}$$

Rubi [A] time = 0.10, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$-\frac{bB-3Ac}{b^4x}-\frac{c(2bB-3Ac)}{b^4(b+cx)}-\frac{c(bB-Ac)}{2b^3(b+cx)^2}-\frac{3c\log(x)(bB-2Ac)}{b^5}+\frac{3c(bB-2Ac)\log(b+cx)}{b^5}-\frac{A}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^3,x]

[Out] -A/(2*b^3*x^2) - (b*B - 3*A*c)/(b^4*x) - (c*(b*B - A*c))/(2*b^3*(b + c*x)^2
) - (c*(2*b*B - 3*A*c))/(b^4*(b + c*x)) - (3*c*(b*B - 2*A*c)*Log[x])/b^5 +
(3*c*(b*B - 2*A*c)*Log[b + c*x])/b^5
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(bx+cx^2)^3}\,dx &= \int \left(\frac{A}{b^3x^3}+\frac{bB-3Ac}{b^4x^2}-\frac{3c(bB-2Ac)}{b^5x}+\frac{c^2(bB-Ac)}{b^3(b+cx)^3}+\frac{c^2(2bB-3Ac)}{b^4(b+cx)^2}+\frac{3c^2(bB-2Ac)}{b^5(b+cx)}\right)dx\\ &= -\frac{A}{2b^3x^2}-\frac{bB-3Ac}{b^4x}-\frac{c(bB-Ac)}{2b^3(b+cx)^2}-\frac{c(2bB-3Ac)}{b^4(b+cx)}-\frac{3c(bB-2Ac)\log(x)}{b^5}+\frac{3c(bB-2A}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 106, normalized size = 0.97

$$\frac{-\frac{b\left(A\left(b^3-4b^2cx-18bc^2x^2-12c^3x^3\right)+bBx\left(2b^2+9bcx+6c^2x^2\right)\right)}{x^2(b+cx)^2}+6c\log(x)(2Ac-bB)+6c(bB-2Ac)\log(b+cx)}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^3,x]

[Out] (-((b*(b*B*x*(2*b^2 + 9*b*c*x + 6*c^2*x^2) + A*(b^3 - 4*b^2*c*x - 18*b*c^2*
x^2 - 12*c^3*x^3)))/(x^2*(b + c*x)^2)) + 6*c*(-(b*B) + 2*A*c)*Log[x] + 6*c*
(b*B - 2*A*c)*Log[b + c*x])/(2*b^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(bx+cx^2)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^3, x]
```

fricas [B] time = 0.42, size = 225, normalized size = 2.06

$$-\frac{Ab^4 + 6\left(Bb^2c^2 - 2\,Abc^3\right)x^3 + 9\left(Bb^3c - 2\,Ab^2c^2\right)x^2 + 2\left(Bb^4 - 2\,Ab^3c\right)x - 6\left(\left(Bbc^3 - 2\,Ac^4\right)x^4 + 2\left(Bb^2c^2 - 2\,Abc^3\right)x^3 + \left(Bb^3c - 2\,Ab^2c^2\right)x^2\right)\log\left(cx + b\right) + 6\left(\left(Bbc^3 - 2\,Ac^4\right)x^4 + 2\left(Bb^2c^2 - 2\,Abc^3\right)x^3 + \left(Bb^3c - 2\,Ab^2c^2\right)x^2\right)\log\left(x\right)}{2\left(b^5c^2x^4 + 2\,b^6cx^3 + b^7x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4 + 6*(B*b^2*c^2 - 2*A*b*c^3)*x^3 + 9*(B*b^3*c - 2*A*b^2*c^2)*x^2
 + 2*(B*b^4 - 2*A*b^3*c)*x - 6*((B*b*c^3 - 2*A*c^4)*x^4 + 2*(B*b^2*c^2 - 2*
A*b*c^3)*x^3 + (B*b^3*c - 2*A*b^2*c^2)*x^2)*log(c*x + b) + 6*((B*b*c^3 - 2*
A*c^4)*x^4 + 2*(B*b^2*c^2 - 2*A*b*c^3)*x^3 + (B*b^3*c - 2*A*b^2*c^2)*x^2)*l
og(x))/(b^5*c^2*x^4 + 2*b^6*c*x^3 + b^7*x^2)
```

giac [A] time = 0.15, size = 124, normalized size = 1.14

$$-\frac{3\left(Bbc - 2\,Ac^2\right)\log\left(|x|\right)}{b^5} + \frac{3\left(Bbc^2 - 2\,Ac^3\right)\log\left(|cx + b|\right)}{b^5c} - \frac{6\,Bbc^2x^3 - 12\,Ac^3x^3 + 9\,Bb^2cx^2 - 18\,Abc^2x^2 + 2\,Bb^3x - 4\,Ab^2cx + Ab^3}{2\left(cx^2 + bx\right)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -3*(B*b*c - 2*A*c^2)*log(abs(x))/b^5 + 3*(B*b*c^2 - 2*A*c^3)*log(abs(c*x +
b))/(b^5*c) - 1/2*(6*B*b*c^2*x^3 - 12*A*c^3*x^3 + 9*B*b^2*c*x^2 - 18*A*b*c^
2*x^2 + 2*B*b^3*x - 4*A*b^2*c*x + A*b^3)/((c*x^2 + b*x)^2*b^4)
```

maple [A] time = 0.05, size = 138, normalized size = 1.27

$$\frac{A\,c^2}{2\,(cx+b)^2\,b^3} - \frac{Bc}{2\,(cx+b)^2\,b^2} + \frac{3A\,c^2}{(cx+b)\,b^4} + \frac{6A\,c^2\ln(x)}{b^5} - \frac{6A\,c^2\ln(cx+b)}{b^5} - \frac{2Bc}{(cx+b)\,b^3} - \frac{3Bc\ln(x)}{b^4} + \frac{3Bc\ln(cx+b)}{b^4} + \frac{3Ac}{b^4x} - \frac{B}{b^3x} - \frac{A}{2b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] -6*c^2/b^5*ln(c*x+b)*A+3*c/b^4*ln(c*x+b)*B+3*c^2/b^4/(c*x+b)*A-2*c/b^3/(c*x
+b)*B+1/2*c^2/b^3/(c*x+b)^2*A-1/2*c/b^2/(c*x+b)^2*B-1/2*A/b^3/x^2+3/b^4/x*A
*c-1/b^3/x*B+6*c^2/b^5*ln(x)*A-3*c/b^4*ln(x)*B
```

maxima [A] time = 0.51, size = 131, normalized size = 1.20

$$-\frac{Ab^3 + 6\left(Bbc^2 - 2\,Ac^3\right)x^3 + 9\left(Bb^2c - 2\,Abc^2\right)x^2 + 2\left(Bb^3 - 2\,Ab^2c\right)x}{2\left(b^4c^2x^4 + 2\,b^5cx^3 + b^6x^2\right)} + \frac{3\left(Bbc - 2\,Ac^2\right)\log\left(cx + b\right)}{b^5} - \frac{3\left(Bbc - 2\,Ac^2\right)\log(x)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3 + 6*(B*b*c^2 - 2*A*c^3)*x^3 + 9*(B*b^2*c - 2*A*b*c^2)*x^2 + 2*(
B*b^3 - 2*A*b^2*c)*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2) + 3*(B*b*c - 2*
A*c^2)*log(c*x + b)/b^5 - 3*(B*b*c - 2*A*c^2)*log(x)/b^5
```

mupad [B] time = 0.11, size = 136, normalized size = 1.25

$$\frac{\frac{x\,(2\,A\,c-B\,b)}{b^2} - \frac{A}{2\,b} + \frac{3\,c^2\,x^3\,(2\,A\,c-B\,b)}{b^4} + \frac{9\,c\,x^2\,(2\,A\,c-B\,b)}{2\,b^3}}{b^2\,x^2 + 2\,b\,c\,x^3 + c^2\,x^4} - \frac{6\,c\,\mathrm{atanh}\left(\frac{3\,c\,(2\,A\,c-B\,b)\,(b+2\,c\,x)}{b\,\left(6\,A\,c^2-3\,B\,b\,c\right)}\right)\,(2\,A\,c - B\,b)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^3,x)
```

```
[Out] ((x*(2*A*c - B*b))/b^2 - A/(2*b) + (3*c^2*x^3*(2*A*c - B*b))/b^4 + (9*c*x^2
*(2*A*c - B*b))/(2*b^3))/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (6*c*atanh((3*c*
(2*A*c - B*b)*(b + 2*c*x))/(b*(6*A*c^2 - 3*B*b*c)))*(2*A*c - B*b))/b^5
```

sympy [B] time = 0.72, size = 219, normalized size = 2.01

$$\frac{-Ab^3 + x^3\left(12Ac^3 - 6Bbc^2\right) + x^2\left(18Abc^2 - 9Bb^2c\right) + x\left(4Ab^2c - 2Bb^3\right)}{2b^6x^2 + 4b^5cx^3 + 2b^4c^2x^4} - \frac{3c\left(-2Ac + Bb\right)\log\left(x + \frac{-6Abc^2+3Bb^2c-3bc(-2Ac+Bb)}{-12Ac^3+6Bbc^2}\right)}{b^5} + \frac{3c\left(-2Ac + Bb\right)\log\left(x + \frac{-6Abc^2+3Bb^2c+3bc(-2Ac+Bb)}{-12Ac^3+6Bbc^2}\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3 + x**3*(12*A*c**3 - 6*B*b*c**2) + x**2*(18*A*b*c**2 - 9*B*b**2*c)
+ x*(4*A*b**2*c - 2*B*b**3))/(2*b**6*x**2 + 4*b**5*c*x**3 + 2*b**4*c**2*x**
4) - 3*c*(-2*A*c + B*b)*log(x + (-6*A*b*c**2 + 3*B*b**2*c - 3*b*c*(-2*A*c +
 B*b))/(-12*A*c**3 + 6*B*b*c**2))/b**5 + 3*c*(-2*A*c + B*b)*log(x + (-6*A*b
*c**2 + 3*B*b**2*c + 3*b*c*(-2*A*c + B*b))/(-12*A*c**3 + 6*B*b*c**2))/b**5
```

3.1015 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=279

$$-\frac{-Abe-3Acd+bBd}{b^4d^2x}-\frac{c^2(bB-Ac)}{2b^3(b+cx)^2(cd-be)}-\frac{A}{2b^3dx^2}+\frac{\log(x)\left(b^2(-e)(Bd-Ae)-3bcd(Bd-Ae)+6Ac^2d^2\right)}{b^5d^3}+\frac{c^2}{}$$

Rubi [A] time = 0.50, antiderivative size = 279, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{c^2\log(b+cx)\left(2b^2ce(5Ae+4Bd)-3bc^2d(5Ae+Bd)+6Ac^3d^2-6b^3Be^2\right)}{b^5(cd-be)^3}+\frac{\log(x)\left(b^2(-e)(Bd-Ae)-3bcd(Bd-Ae)+6Ac^2d^2\right)}{b^5d^3}+\frac{c^2\left(-2bc(2Ae+Bd)+3Ac^2d+3b^2Be\right)}{b^4(b+cx)(cd-be)^2}-\frac{c^2(bB-Ac)}{2b^3(b+cx)^2(cd-be)}-\frac{-Abe-3Acd+bBd}{b^4d^2x}-\frac{A}{2b^3dx^2}-\frac{e^4(Bd-Ae)\log(d+ex)}{d^3(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^3),x]
```

```
[Out] -A/(2*b^3*d*x^2) - (b*B*d - 3*A*c*d - A*b*e)/(b^4*d^2*x) - (c^2*(b*B - A*c)
)/(2*b^3*(c*d - b*e)*(b + c*x)^2) + (c^2*(3*A*c^2*d + 3*b^2*B*e - 2*b*c*(B*
d + 2*A*e)))/(b^4*(c*d - b*e)^2*(b + c*x)) + ((6*A*c^2*d^2 - 3*b*c*d*(B*d -
 A*e) - b^2*e*(B*d - A*e))*Log[x])/(b^5*d^3) - (c^2*(6*A*c^3*d^2 - 6*b^3*B*
e^2 - 3*b*c^2*d*(B*d + 5*A*e) + 2*b^2*c*e*(4*B*d + 5*A*e))*Log[b + c*x])/(b
^5*(c*d - b*e)^3) - (e^4*(B*d - A*e)*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^3}\,dx = \int \left(\frac{A}{b^3dx^3}+\frac{bBd-3Acd-Abe}{b^4d^2x^2}+\frac{6Ac^2d^2-3bcd(Bd-Ae)-b^2e(Bd-Ae)}{b^5d^3x}-\frac{c}{b^3(-c}\right.$$
$$=-\frac{A}{2b^3dx^2}-\frac{bBd-3Acd-Abe}{b^4d^2x}-\frac{c^2(bB-Ac)}{2b^3(cd-be)(b+cx)^2}+\frac{c^2\left(3Ac^2d+3b^2Be-2bc(\right.}{b^4(cd-be)^2(b+c}$$

Mathematica [A] time = 1.05, size = 276, normalized size = 0.99

$$\frac{Abe+3Acd-bBd}{b^4d^2x}+\frac{c^2(bB-Ac)}{2b^3(b+cx)^2(be-cd)}-\frac{A}{2b^3dx^2}-\frac{\log(x)\left(b^2e(Bd-Ae)+3bcd(Bd-Ae)-6Ac^2d^2\right)}{b^5d^3}+\frac{c^2\left(-2bc(2Ae+Bd)+3Ac^2d+3b^2Be\right)}{b^4(b+cx)(cd-be)^2}+\frac{c^2\log(b+cx)\left(2b^2ce(5Ae+4Bd)-3bc^2d(5Ae+Bd)+6Ac^3d^2-6b^3Be^2\right)}{b^5(be-cd)^3}+\frac{e^4(Ae-Bd)\log(d+ex)}{d^3(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^3),x]
```

```
[Out] -1/2*A/(b^3*d*x^2) + (-(b*B*d) + 3*A*c*d + A*b*e)/(b^4*d^2*x) + (c^2*(b*B -
 A*c))/(2*b^3*(-(c*d) + b*e)*(b + c*x)^2) + (c^2*(3*A*c^2*d + 3*b^2*B*e - 2
*b*c*(B*d + 2*A*e)))/(b^4*(c*d - b*e)^2*(b + c*x)) - ((-6*A*c^2*d^2 + 3*b*c
*d*(B*d - A*e) + b^2*e*(B*d - A*e))*Log[x])/(b^5*d^3) + (c^2*(6*A*c^3*d^2 -
 6*b^3*B*e^2 - 3*b*c^2*d*(B*d + 5*A*e) + 2*b^2*c*e*(4*B*d + 5*A*e))*Log[b +
 c*x])/(b^5*(-(c*d) + b*e)^3) + (e^4*(-(B*d) + A*e)*Log[d + e*x])/(d^3*(c*d
 - b*e)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)^3),x]
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)^3), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
[Out] Timed out
```

giac [B] time = 0.24, size = 649, normalized size = 2.33

$$\frac{\left(3Bbc^5d^2-6Ac^6d^2-8Bb^2c^4de+15Abc^5de+6Bb^3c^3e^2-10Ab^2c^4e^2\right)\log\left(|cx+b|\right)}{b^5c^4d^3-3b^6c^3d^2e+3b^7c^2de^2-b^8ce^3}-\frac{\left(Bde^5-Ae^6\right)\log\left(|xe+d|\right)}{c^3d^6e-3bc^2d^5e^2+3b^2cd^4e^3-b^3d^3e^4}-\frac{\left(3Bbcd^2-6Ac^2d^2+Bb^2de-3Abcde-Ab^2e^2\right)\log\left(|x|\right)}{b^5d^3}-\frac{Ab^3c^3d^5-3Ab^4c^2d^4e+3Ab^5cd^3e^2-Ab^6d^2e^3+2\left(3Bbc^5d^5-6Ac^6d^5-8Bb^2c^4d^4e+15Abc^5d^4e+6Bb^3c^3d^3e^2-10Ab^2c^4d^3e^2-Bb^4c^2d^2e^3+Ab^4c^2de^4\right)x^3+\left(9Bb^2c^4d^5-18Abc^5d^5-24Bb^3c^3d^4e+45Ab^2c^4d^4e+19Bb^4c^2d^3e^2-30Ab^3c^3d^3e^2-4Bb^5cd^2e^3-Ab^4c^2d^2e^3+4Ab^5cde^4\right)x^2+2\left(Bb^3c^3d^5-2Ab^2c^4d^5-3Bb^4c^2d^4e+5Ab^3c^3d^4e+3Bb^5cd^3e^2-3Ab^4c^2d^3e^2-Bb^6d^2e^3-Ab^5cd^2e^3+Ab^6de^4\right)x}{2(cd-be)^3(cx+b)^2b^4d^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
[Out] (3*B*b*c^5*d^2 - 6*A*c^6*d^2 - 8*B*b^2*c^4*d*e + 15*A*b*c^5*d*e + 6*B*b^3*c
^3*e^2 - 10*A*b^2*c^4*e^2)*log(abs(c*x + b))/(b^5*c^4*d^3 - 3*b^6*c^3*d^2*e
 + 3*b^7*c^2*d*e^2 - b^8*c*e^3) - (B*d*e^5 - A*e^6)*log(abs(x*e + d))/(c^3*
d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 - b^3*d^3*e^4) - (3*B*b*c*d^2 - 6
*A*c^2*d^2 + B*b^2*d*e - 3*A*b*c*d*e - A*b^2*e^2)*log(abs(x))/(b^5*d^3) - 1
/2*(A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e + 3*A*b^5*c*d^3*e^2 - A*b^6*d^2*e^3 +
 2*(3*B*b*c^5*d^5 - 6*A*c^6*d^5 - 8*B*b^2*c^4*d^4*e + 15*A*b*c^5*d^4*e + 6*
B*b^3*c^3*d^3*e^2 - 10*A*b^2*c^4*d^3*e^2 - B*b^4*c^2*d^2*e^3 + A*b^4*c^2*d*
e^4)*x^3 + (9*B*b^2*c^4*d^5 - 18*A*b*c^5*d^5 - 24*B*b^3*c^3*d^4*e + 45*A*b^
2*c^4*d^4*e + 19*B*b^4*c^2*d^3*e^2 - 30*A*b^3*c^3*d^3*e^2 - 4*B*b^5*c*d^2*e
^3 - A*b^4*c^2*d^2*e^3 + 4*A*b^5*c*d*e^4)*x^2 + 2*(B*b^3*c^3*d^5 - 2*A*b^2*
c^4*d^5 - 3*B*b^4*c^2*d^4*e + 5*A*b^3*c^3*d^4*e + 3*B*b^5*c*d^3*e^2 - 3*A*b
^4*c^2*d^3*e^2 - B*b^6*d^2*e^3 - A*b^5*c*d^2*e^3 + A*b^6*d*e^4)*x)/((c*d -
b*e)^3*(c*x + b)^2*b^4*d^3*x^2)
```

maple [A] time = 0.07, size = 490, normalized size = 1.76

$$\frac{10Ac^3e^2\ln(cx+b)}{(be-cd)^3b^3}-\frac{15Ac^4de\ln(cx+b)}{(be-cd)^3b^4}+\frac{6Ac^5d^2\ln(cx+b)}{(be-cd)^3b^5}-\frac{Ae^5\ln(ex+d)}{(be-cd)^3d^3}-\frac{6Bc^2e^2\ln(cx+b)}{(be-cd)^3b^2}+\frac{8Bc^3de\ln(cx+b)}{(be-cd)^3b^3}-\frac{3Bc^4d^2\ln(cx+b)}{(be-cd)^3b^4}+\frac{Be^4\ln(ex+d)}{(be-cd)^3d^2}-\frac{4Ac^3e}{(be-cd)^2(cx+b)b^3}+\frac{3Ac^4d}{(be-cd)^2(cx+b)b^4}+\frac{3Bc^2e}{(be-cd)^2(cx+b)b^2}-\frac{2Bc^3d}{(be-cd)^2(cx+b)b^3}-\frac{Ac^3}{2(be-cd)(cx+b)^2b^3}+\frac{Bc^2}{2(be-cd)(cx+b)^2b^2}+\frac{Ae^2\ln(x)}{b^3d^3}+\frac{3Ace\ln(x)}{b^4d^2}+\frac{6Ac^2\ln(x)}{b^5d}-\frac{Be\ln(x)}{b^3d^2}-\frac{3Bc\ln(x)}{b^4d}+\frac{Ae}{b^3d^2x}+\frac{3Ac}{b^4dx}-\frac{B}{b^3dx}-\frac{A}{2b^3dx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x)
[Out] -4*c^3/(b*e-c*d)^2/b^3/(c*x+b)*A*e+3*c^4/(b*e-c*d)^2/b^4/(c*x+b)*A*d+3*c^2/
(b*e-c*d)^2/b^2/(c*x+b)*B*e-2*c^3/(b*e-c*d)^2/b^3/(c*x+b)*B*d+10*c^3/(b*e-c
*d)^3/b^3*ln(c*x+b)*A*e^2-15*c^4/(b*e-c*d)^3/b^4*ln(c*x+b)*A*d*e+6*c^5/(b*e
-c*d)^3/b^5*ln(c*x+b)*A*d^2-6*c^2/(b*e-c*d)^3/b^2*ln(c*x+b)*B*e^2+8*c^3/(b*
e-c*d)^3/b^3*ln(c*x+b)*B*d*e-3*c^4/(b*e-c*d)^3/b^4*ln(c*x+b)*B*d^2-1/2*c^3/
(b*e-c*d)/b^3/(c*x+b)^2*A+1/2*c^2/(b*e-c*d)/b^2/(c*x+b)^2*B-e^5/(b*e-c*d)^3
/d^3*ln(e*x+d)*A+e^4/(b*e-c*d)^3/d^2*ln(e*x+d)*B-1/2*A/b^3/d/x^2+1/b^3/d^2/
x*A*e+3/b^4/d/x*A*c-1/b^3/d/x*B+1/b^3/d^3*ln(x)*A*e^2+3/b^4/d^2*ln(x)*A*e*c
+6/b^5/d*ln(x)*A*c^2-1/b^3/d^2*ln(x)*B*e-3/b^4/d*ln(x)*B*c
```

maxima [B] time = 0.71, size = 612, normalized size = 2.19

$$\frac{\left(3\left(Bbc^4-2Ac^5\right)d^2-\left(8Bb^2c^3-15Abc^4\right)de+2\left(3Bb^3c^2-5Ab^2c^3\right)e^2\right)\log\left(cx+b\right)}{b^5c^3d^3-3b^6c^2d^2e+3b^7cde^2-b^8e^3}-\frac{\left(Bde^4-Ae^5\right)\log\left(ex+d\right)}{c^3d^6-3bc^2d^5e+3b^2cd^4e^2-b^3d^3e^3}-\frac{Ab^3c^2d^3-2Ab^4cd^2e+Ab^5de^2-2\left(Ab^3c^2e^3-3\left(Bbc^4-2Ac^5\right)d^3+\left(5Bb^2c^3-9Abc^4\right)d^2e-\left(Bb^3c^2-Ab^2c^3\right)de^2\right)x^3-\left(4Ab^4ce^3-9\left(Bb^2c^3-2Abc^4\right)d^3+3\left(5Bb^3c^2-9Ab^2c^3\right)d^2e-\left(4Bb^4c-3Ab^3c^2\right)de^2\right)x^2+2\left(Bb^5de^2-Ab^5e^3+\left(Bb^3c^2-2Ab^2c^3\right)d^3-\left(2Bb^4c-3Ab^3c^2\right)d^2e\right)x}{2\left(\left(b^4c^4d^4-2b^5c^3d^3e+b^6c^2d^2e^2\right)x^4+2\left(b^5c^3d^4-2b^6c^2d^3e+b^7cd^2e^2\right)x^3+\left(b^6c^2d^4-2b^7cd^3e+b^8d^2e^2\right)x^2\right)}+\frac{\left(Ab^2e^2-3\left(Bbc-2Ac^2\right)d^2-\left(Bb^2-3Abc\right)de\right)\log\left(x\right)}{b^5d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] (3*(B*b*c^4 - 2*A*c^5)*d^2 - (8*B*b^2*c^3 - 15*A*b*c^4)*d*e + 2*(3*B*b^3*c^
2 - 5*A*b^2*c^3)*e^2)*log(c*x + b)/(b^5*c^3*d^3 - 3*b^6*c^2*d^2*e + 3*b^7*c
*d*e^2 - b^8*e^3) - (B*d*e^4 - A*e^5)*log(e*x + d)/(c^3*d^6 - 3*b*c^2*d^5*e
 + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3) - 1/2*(A*b^3*c^2*d^3 - 2*A*b^4*c*d^2*e +
A*b^5*d*e^2 - 2*(A*b^3*c^2*e^3 - 3*(B*b*c^4 - 2*A*c^5)*d^3 + (5*B*b^2*c^3 -
 9*A*b*c^4)*d^2*e - (B*b^3*c^2 - A*b^2*c^3)*d*e^2)*x^3 - (4*A*b^4*c*e^3 - 9
*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 3*(5*B*b^3*c^2 - 9*A*b^2*c^3)*d^2*e - (4*B*b
^4*c - 3*A*b^3*c^2)*d*e^2)*x^2 + 2*(B*b^5*d*e^2 - A*b^5*e^3 + (B*b^3*c^2 -
2*A*b^2*c^3)*d^3 - (2*B*b^4*c - 3*A*b^3*c^2)*d^2*e)*x)/((b^4*c^4*d^4 - 2*b^
5*c^3*d^3*e + b^6*c^2*d^2*e^2)*x^4 + 2*(b^5*c^3*d^4 - 2*b^6*c^2*d^3*e + b^7
*c*d^2*e^2)*x^3 + (b^6*c^2*d^4 - 2*b^7*c*d^3*e + b^8*d^2*e^2)*x^2) + (A*b^2
*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 - (B*b^2 - 3*A*b*c)*d*e)*log(x)/(b^5*d^3)
```

mupad [B] time = 2.61, size = 512, normalized size = 1.84

$$\frac{\frac{x\,\left(A\,b\,e+2\,A\,c\,d-B\,b\,d\right)}{b^2\,d^2}-\frac{A}{2\,b\,d}+\frac{x^3\,\left(-B\,b^3\,c^2\,d\,e^2+A\,b^3\,c^2\,e^3+5\,B\,b^2\,c^3\,d^2\,e+A\,b^2\,c^3\,d\,e^2-3\,B\,b\,c^4\,d^3-9\,A\,b\,c^4\,d^2\,e+6\,A\,c^5\,d^3\right)}{b^4\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}+\frac{x^2\,\left(-4\,B\,b^3\,c\,d\,e^2+4\,A\,b^3\,c\,e^3+15\,B\,b^2\,c^2\,d^2\,e+3\,A\,b^2\,c^2\,d\,e^2-9\,B\,b\,c^3\,d^3-27\,A\,b\,c^3\,d^2\,e+18\,A\,c^4\,d^3\right)}{2\,b^3\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}+\frac{\ln\left(d+e\,x\right)\,\left(A\,e^5-B\,d\,e^4\right)}{-b^3\,d^3\,e^3+3\,b^2\,c\,d^4\,e^2-3\,b\,c^2\,d^5\,e+c^3\,d^6}+\frac{\ln\left(b+c\,x\right)\,\left(d^2\,\left(6\,A\,c^5-3\,B\,b\,c^4\right)-d\,\left(15\,A\,b\,c^4\,e-8\,B\,b^2\,c^3\,e\right)+10\,A\,b^2\,c^3\,e^2-6\,B\,b^3\,c^2\,e^2\right)}{b^8\,e^3-3\,b^7\,c\,d\,e^2+3\,b^6\,c^2\,d^2\,e-b^5\,c^3\,d^3}+\frac{\ln\left(x\right)\,\left(d^2\,\left(6\,A\,c^2-3\,B\,b\,c\right)-d\,\left(B\,b^2\,e-3\,A\,b\,c\,e\right)+A\,b^2\,e^2\right)}{b^5\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)),x)
```

```
[Out] ((x*(A*b*e + 2*A*c*d - B*b*d))/(b^2*d^2) - A/(2*b*d) + (x^3*(6*A*c^5*d^3 -
3*B*b*c^4*d^3 + A*b^3*c^2*e^3 + A*b^2*c^3*d*e^2 + 5*B*b^2*c^3*d^2*e - B*b^3
*c^2*d*e^2 - 9*A*b*c^4*d^2*e))/(b^4*d^2*(b^2*e^2 + c^2*d^2 - 2*b*c*d*e)) +
(x^2*(18*A*c^4*d^3 + 4*A*b^3*c*e^3 - 9*B*b*c^3*d^3 + 3*A*b^2*c^2*d*e^2 + 15
*B*b^2*c^2*d^2*e - 27*A*b*c^3*d^2*e - 4*B*b^3*c*d*e^2))/(2*b^3*d^2*(b^2*e^2
 + c^2*d^2 - 2*b*c*d*e)))/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) + (log(d + e*x)*(
A*e^5 - B*d*e^4))/(c^3*d^6 - b^3*d^3*e^3 + 3*b^2*c*d^4*e^2 - 3*b*c^2*d^5*e)
 + (log(b + c*x)*(d^2*(6*A*c^5 - 3*B*b*c^4) - d*(15*A*b*c^4*e - 8*B*b^2*c^3
*e) + 10*A*b^2*c^3*e^2 - 6*B*b^3*c^2*e^2))/(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c
^2*d^2*e - 3*b^7*c*d*e^2) + (log(x)*(d^2*(6*A*c^2 - 3*B*b*c) - d*(B*b^2*e -
 3*A*b*c*e) + A*b^2*e^2))/(b^5*d^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1016 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=331

$$-\frac{-2Abe-3Acd+bBd}{b^4d^3x}-\frac{c^3(bB-Ac)}{2b^3(b+cx)^2(cd-be)^2}-\frac{A}{2b^3d^2x^2}+\frac{\log(x)\left(b^2(-e)(2Bd-3Ae)-3bcd(Bd-2Ae)+6A\right.}{b^5d^4}$$

Rubi [A] time = 0.67, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{c^3\log(b+cx)\left(5b^2ce(3Ae+2Bd)-3bc^2d(6Ae+Bd)+6Ac^3d^2-10b^3Be^2\right)}{b^5(cd-be)^4}+\frac{\log(x)\left(b^2(-e)(2Bd-3Ae)-3bcd(Bd-2Ae)+6Ac^2d^2\right)}{b^5d^4}-\frac{c^3\left(5Abce-3Ac^2d-4b^2Be+2bBcd\right)}{b^4(b+cx)(cd-be)^3}-\frac{c^3(bB-Ac)}{2b^3(b+cx)^2(cd-be)^2}-\frac{-2Abe-3Acd+bBd}{b^4d^3x}-\frac{A}{2b^3d^2x^2}+\frac{e^4(Bd-Ae)}{d^3(d+ex)(cd-be)^3}-\frac{e^4\log(d+ex)(Bd(5cd-2be)-3Ae(2cd-be))}{d^4(cd-be)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^3),x]
```

```
[Out] -A/(2*b^3*d^2*x^2) - (b*B*d - 3*A*c*d - 2*A*b*e)/(b^4*d^3*x) - (c^3*(b*B -
A*c))/(2*b^3*(c*d - b*e)^2*(b + c*x)^2) - (c^3*(2*b*B*c*d - 3*A*c^2*d - 4*b
^2*B*e + 5*A*b*c*e))/(b^4*(c*d - b*e)^3*(b + c*x)) + (e^4*(B*d - A*e))/(d^3
*(c*d - b*e)^3*(d + e*x)) + ((6*A*c^2*d^2 - b^2*e*(2*B*d - 3*A*e) - 3*b*c*d
*(B*d - 2*A*e))*Log[x])/(b^5*d^4) - (c^3*(6*A*c^3*d^2 - 10*b^3*B*e^2 + 5*b^
2*c*e*(2*B*d + 3*A*e) - 3*b*c^2*d*(B*d + 6*A*e))*Log[b + c*x])/(b^5*(c*d -
b*e)^4) - (e^4*(B*d*(5*c*d - 2*b*e) - 3*A*e*(2*c*d - b*e))*Log[d + e*x])/(d
^4*(c*d - b*e)^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^3}\,dx=\int \left(\frac{A}{b^3d^2x^3}+\frac{bBd-3Acd-2Abe}{b^4d^3x^2}+\frac{6Ac^2d^2-b^2e(2Bd-3Ae)-3bcd(Bd-2A}{b^5d^4x}\right.$$

$$=-\frac{A}{2b^3d^2x^2}-\frac{bBd-3Acd-2Abe}{b^4d^3x}-\frac{c^3(bB-Ac)}{2b^3(cd-be)^2(b+cx)^2}-\frac{c^3\left(2bBcd-3Ac^2d\right.}{b^4(cd-be}$$

Mathematica [A] time = 0.55, size = 328, normalized size = 0.99

$$\frac{2Abe+3Acd-bBd}{b^4d^3x}+\frac{c^3(Ac-bB)}{2b^3(b+cx)^2(cd-be)^2}-\frac{A}{2b^3d^2x^2}-\frac{\log(x)\left(b^2e(2Bd-3Ae)+3bcd(Bd-2Ae)-6Ac^2d^2\right)}{b^5d^4}+\frac{c^3\left(bc(5Ae+2Bd)-3Ac^2d-4b^2Be\right)}{b^4(b+cx)(be-cd)^3}+\frac{c^3\log(b+cx)\left(-5b^2ce(3Ae+2Bd)+3bc^2d(6Ae+Bd)-6Ac^3d^2+10b^3Be^2\right)}{b^5(cd-be)^4}-\frac{e^4\log(d+ex)(3Ae(be-2cd)+Bd(5cd-2be))}{d^4(cd-be)^4}+\frac{e^4(Bd-Ae)}{d^3(d+ex)(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^3),x]
```

```
[Out] -1/2*A/(b^3*d^2*x^2) + (-(b*B*d) + 3*A*c*d + 2*A*b*e)/(b^4*d^3*x) + (c^3*(-
(b*B) + A*c))/(2*b^3*(c*d - b*e)^2*(b + c*x)^2) + (c^3*(-3*A*c^2*d - 4*b^2*
B*e + b*c*(2*B*d + 5*A*e)))/(b^4*(-(c*d) + b*e)^3*(b + c*x)) + (e^4*(B*d -
A*e))/(d^3*(c*d - b*e)^3*(d + e*x)) - ((-6*A*c^2*d^2 + b^2*e*(2*B*d - 3*A*e
) + 3*b*c*d*(B*d - 2*A*e))*Log[x])/(b^5*d^4) + (c^3*(-6*A*c^3*d^2 + 10*b^3*
B*e^2 - 5*b^2*c*e*(2*B*d + 3*A*e) + 3*b*c^2*d*(B*d + 6*A*e))*Log[b + c*x])/
```

```
(b^5*(c*d - b*e)^4) - (e^4*(B*d*(5*c*d - 2*b*e) + 3*A*e*(-2*c*d + b*e))*Log
[d + e*x])/(d^4*(c*d - b*e)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^2 \left(bx + cx^2\right)^3} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^3), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.37, size = 1292, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/2*(6*B*b*c^5*d^6*e^2 - 12*A*c^6*d^6*e^2 - 20*B*b^2*c^4*d^5*e^3 + 36*A*b*
c^5*d^5*e^3 + 20*B*b^3*c^3*d^4*e^4 - 30*A*b^2*c^4*d^4*e^4 - 5*B*b^5*c*d^2*e
^6 + 2*B*b^6*d*e^7 + 6*A*b^5*c*d*e^7 - 3*A*b^6*e^8)*e^(-2)*log(abs(2*c*d*e
- 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) - abs(b)*e^2)/abs(2*c*d
*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) + abs(b)*e^2))/((b^4
*c^4*d^8 - 4*b^5*c^3*d^7*e + 6*b^6*c^2*d^6*e^2 - 4*b^7*c*d^5*e^3 + b^8*d^4*
e^4)*abs(b)) + 1/2*(5*B*c*d^2*e^4 - 2*B*b*d*e^5 - 6*A*c*d*e^5 + 3*A*b*e^6)*
log(abs(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*
e + d)^2))/(c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 +
 b^4*d^4*e^4) + (B*d*e^10/(x*e + d) - A*e^11/(x*e + d))/(c^3*d^6*e^6 - 3*b*
c^2*d^5*e^7 + 3*b^2*c*d^4*e^8 - b^3*d^3*e^9) - 1/2*(6*B*b*c^6*d^5*e - 12*A*
c^7*d^5*e - 17*B*b^2*c^5*d^4*e^2 + 30*A*b*c^6*d^4*e^2 + 12*B*b^3*c^4*d^3*e^
3 - 16*A*b^2*c^5*d^3*e^3 - 8*B*b^4*c^3*d^2*e^4 - 6*A*b^3*c^4*d^2*e^4 + 2*B*
b^5*c^2*d*e^5 + 14*A*b^4*c^3*d*e^5 - 5*A*b^5*c^2*e^6 - 2*(9*B*b*c^6*d^6*e^2
 - 18*A*c^7*d^6*e^2 - 30*B*b^2*c^5*d^5*e^3 + 54*A*b*c^6*d^5*e^3 + 31*B*b^3*
c^4*d^4*e^4 - 47*A*b^2*c^5*d^4*e^4 - 24*B*b^4*c^3*d^3*e^5 + 4*A*b^3*c^4*d^3
*e^5 + 11*B*b^5*c^2*d^2*e^6 + 29*A*b^4*c^3*d^2*e^6 - 2*B*b^6*c*d*e^7 - 22*A
*b^5*c^2*d*e^7 + 5*A*b^6*c*e^8)*e^(-1)/(x*e + d) + (18*B*b*c^6*d^7*e^3 - 36
*A*c^7*d^7*e^3 - 69*B*b^2*c^5*d^6*e^4 + 126*A*b*c^6*d^6*e^4 + 90*B*b^3*c^4*
d^5*e^5 - 144*A*b^2*c^5*d^5*e^5 - 80*B*b^4*c^3*d^4*e^6 + 45*A*b^3*c^4*d^4*e
^6 + 50*B*b^5*c^2*d^3*e^7 + 70*A*b^4*c^3*d^3*e^7 - 16*B*b^6*c*d^2*e^8 - 87*
A*b^5*c^2*d^2*e^8 + 2*B*b^7*d*e^9 + 36*A*b^6*c*d*e^9 - 5*A*b^7*e^10)*e^(-2)
/(x*e + d)^2 - 2*(3*B*b*c^6*d^8*e^4 - 6*A*c^7*d^8*e^4 - 13*B*b^2*c^5*d^7*e^
5 + 24*A*b*c^6*d^7*e^5 + 20*B*b^3*c^4*d^6*e^6 - 33*A*b^2*c^5*d^6*e^6 - 20*B
*b^4*c^3*d^5*e^7 + 15*A*b^3*c^4*d^5*e^7 + 15*B*b^5*c^2*d^4*e^8 + 15*A*b^4*c
^3*d^4*e^8 - 6*B*b^6*c*d^3*e^9 - 27*A*b^5*c^2*d^3*e^9 + B*b^7*d^2*e^10 + 15
*A*b^6*c*d^2*e^10 - 3*A*b^7*d*e^11)*e^(-3)/(x*e + d)^3)/((c*d - b*e)^4*b^4*
(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^
2)^2*d^4)
```

maple [A] time = 0.08, size = 598, normalized size = 1.81

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x)
```

```
[Out] -1/b^3/d^2/x*B-10*c^4/(b*e-c*d)^4/b^3*ln(c*x+b)*B*d*e+18*c^5/(b*e-c*d)^4/b^
4*ln(c*x+b)*A*d*e-2/d^3/b^3*ln(x)*B*e-3/d^2/b^4*ln(x)*B*c+1/2*c^4/(b*e-c*d)
^2/b^3/(c*x+b)^2*A-1/2*c^3/(b*e-c*d)^2/b^2/(c*x+b)^2*B+e^5/(b*e-c*d)^3/d^3/
(e*x+d)*A-e^4/(b*e-c*d)^3/d^2/(e*x+d)*B+2/b^3/d^3/x*A*e+3/b^4/d^2/x*A*c+2*c
^4/(b*e-c*d)^3/b^3/(c*x+b)*B*d+6/d^3/b^4*ln(x)*A*e*c-3*e^6/(b*e-c*d)^4/d^4*
ln(e*x+d)*A*b+6*e^5/(b*e-c*d)^4/d^3*ln(e*x+d)*A*c+2*e^5/(b*e-c*d)^4/d^3*ln(
e*x+d)*B*b-5*e^4/(b*e-c*d)^4/d^2*ln(e*x+d)*B*c-6*c^6/(b*e-c*d)^4/b^5*ln(c*x
+b)*A*d^2+10*c^3/(b*e-c*d)^4/b^2*ln(c*x+b)*B*e^2+3*c^5/(b*e-c*d)^4/b^4*ln(c
*x+b)*B*d^2+5*c^4/(b*e-c*d)^3/b^3/(c*x+b)*A*e-3*c^5/(b*e-c*d)^3/b^4/(c*x+b)
*A*d-15*c^4/(b*e-c*d)^4/b^3*ln(c*x+b)*A*e^2-4*c^3/(b*e-c*d)^3/b^2/(c*x+b)*B
*e+3/d^4/b^3*ln(x)*A*e^2+6/d^2/b^5*ln(x)*A*c^2-1/2*A/b^3/d^2/x^2
```

maxima [B] time = 0.91, size = 1043, normalized size = 3.15

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] (3*(B*b*c^5 - 2*A*c^6)*d^2 - 2*(5*B*b^2*c^4 - 9*A*b*c^5)*d*e + 5*(2*B*b^3*c
^3 - 3*A*b^2*c^4)*e^2)*log(c*x + b)/(b^5*c^4*d^4 - 4*b^6*c^3*d^3*e + 6*b^7*
c^2*d^2*e^2 - 4*b^8*c*d*e^3 + b^9*e^4) - (5*B*c*d^2*e^4 + 3*A*b*e^6 - 2*(B*
b + 3*A*c)*d*e^5)*log(e*x + d)/(c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2
 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4) - 1/2*(A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e
+ 3*A*b^5*c*d^3*e^2 - A*b^6*d^2*e^3 + 2*(3*A*b^4*c^2*e^5 + 3*(B*b*c^5 - 2*A
*c^6)*d^4*e - (7*B*b^2*c^4 - 12*A*b*c^5)*d^3*e^2 + 3*(B*b^3*c^3 - A*b^2*c^4
)*d^2*e^3 - (2*B*b^4*c^2 + 3*A*b^3*c^3)*d*e^4)*x^4 + (12*A*b^5*c*e^5 + 6*(B
*b*c^5 - 2*A*c^6)*d^5 - (5*B*b^2*c^4 - 6*A*b*c^5)*d^4*e - 15*(B*b^3*c^3 - 2
*A*b^2*c^4)*d^3*e^2 + 5*(2*B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e^3 - (8*B*b^5*c +
9*A*b^4*c^2)*d*e^4)*x^3 - (4*B*b^6*d*e^4 - 6*A*b^6*e^5 - 9*(B*b^2*c^4 - 2*A
*b*c^5)*d^5 + (19*B*b^3*c^3 - 32*A*b^2*c^4)*d^4*e - (6*B*b^4*c^2 - A*b^3*c^
3)*d^3*e^2 - (2*B*b^5*c - 13*A*b^4*c^2)*d^2*e^3)*x^2 + (3*A*b^6*d*e^4 + 2*(
B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 3*(2*B*b^4*c^2 - 3*A*b^3*c^3)*d^4*e + 3*(2*B
*b^5*c - A*b^4*c^2)*d^3*e^2 - (2*B*b^6 + 5*A*b^5*c)*d^2*e^3)*x)/((b^4*c^5*d
^6*e - 3*b^5*c^4*d^5*e^2 + 3*b^6*c^3*d^4*e^3 - b^7*c^2*d^3*e^4)*x^5 + (b^4*
c^5*d^7 - b^5*c^4*d^6*e - 3*b^6*c^3*d^5*e^2 + 5*b^7*c^2*d^4*e^3 - 2*b^8*c*d
^3*e^4)*x^4 + (2*b^5*c^4*d^7 - 5*b^6*c^3*d^6*e + 3*b^7*c^2*d^5*e^2 + b^8*c*
d^4*e^3 - b^9*d^3*e^4)*x^3 + (b^6*c^3*d^7 - 3*b^7*c^2*d^6*e + 3*b^8*c*d^5*e
^2 - b^9*d^4*e^3)*x^2) + (3*A*b^2*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 - 2*(B*b^2
- 3*A*b*c)*d*e)*log(x)/(b^5*d^4)
```

mupad [B] time = 3.26, size = 879, normalized size = 2.66

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^2),x)
```

```
[Out] (log(x)*(b^2*(3*A*e^2 - 2*B*d*e) - b*(3*B*c*d^2 - 6*A*c*d*e) + 6*A*c^2*d^2)
)/(b^5*d^4) - (log(b + c*x)*(d^2*(6*A*c^6 - 3*B*b*c^5) - d*(18*A*b*c^5*e -
10*B*b^2*c^4*e) + 15*A*b^2*c^4*e^2 - 10*B*b^3*c^3*e^2))/(b^9*e^4 + b^5*c^4*
d^4 - 4*b^6*c^3*d^3*e + 6*b^7*c^2*d^2*e^2 - 4*b^8*c*d*e^3) - (log(d + e*x)*
```

```
(c*(5*B*d^2*e^4 - 6*A*d*e^5) + b*(3*A*e^6 - 2*B*d*e^5)))/(c^4*d^8 + b^4*d^4
*e^4 - 4*b^3*c*d^5*e^3 + 6*b^2*c^2*d^6*e^2 - 4*b*c^3*d^7*e) - (A/(2*b*d) -
(x*(3*A*b*e + 4*A*c*d - 2*B*b*d))/(2*b^2*d^2) + (x^3*(12*A*c^6*d^5 - 12*A*b
^5*c*e^5 - 6*B*b*c^5*d^5 + 9*A*b^4*c^2*d*e^4 + 5*B*b^2*c^4*d^4*e - 30*A*b^2
*c^4*d^3*e^2 + 15*A*b^3*c^3*d^2*e^3 + 15*B*b^3*c^3*d^3*e^2 - 10*B*b^4*c^2*d
^2*e^3 - 6*A*b*c^5*d^4*e + 8*B*b^5*c*d*e^4))/(2*b^4*d^3*(b^3*e^3 - c^3*d^3
+ 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) - (x^2*(6*A*b^5*e^5 - 18*A*c^5*d^5 + 9*B*
b*c^4*d^5 - 4*B*b^5*d*e^4 - 19*B*b^2*c^3*d^4*e + 2*B*b^4*c*d^2*e^3 - A*b^2*
c^3*d^3*e^2 - 13*A*b^3*c^2*d^2*e^3 + 6*B*b^3*c^2*d^3*e^2 + 32*A*b*c^4*d^4*e
))/(2*b^3*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (c^2*e
*x^4*(6*A*c^4*d^4 - 3*A*b^4*e^4 - 3*B*b*c^3*d^4 + 2*B*b^4*d*e^3 + 7*B*b^2*c
^2*d^3*e - 3*B*b^3*c*d^2*e^2 + 3*A*b^2*c^2*d^2*e^2 - 12*A*b*c^3*d^3*e + 3*A
*b^3*c*d*e^3))/(b^4*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)
))/(x^3*(b^2*e + 2*b*c*d) + x^4*(c^2*d + 2*b*c*e) + b^2*d*x^2 + c^2*e*x^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1017 $\int (A+Bx)(d+ex)^3\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=404

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex\left(28Ace(2cd-be)+B\left(21b^2e^2-36bcde+8c^2d^2\right)\right)+4Ace\left(35b^2e^2-150bcde+192c^2d^2\right)+\right.}{960c^4}$$

Rubi [A] time = 0.55, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {832, 779, 612, 620, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex\left(28Ace(2cd-be)+B\left(21b^2e^2-36bcde+8c^2d^2\right)\right)+4Ace\left(35b^2e^2-150bcde+192c^2d^2\right)+B\left(420b^2cde^2-105b^3e^3-456bc^2d^2e+64c^3d^3\right)\right)}{960c^4}+\frac{(b+2cx)\sqrt{bx+cx^2}\left(120b^2c^2de(Ae+Bd)-28b^3ce^2(Ae+3Bd)-64bc^3d^2(3Ae+Bd)+128Ac^4d^3+21b^4Be^3\right)}{512c^5}-\frac{b^2\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(120b^2c^2de(Ae+Bd)-28b^3ce^2(Ae+3Bd)-64bc^3d^2(3Ae+Bd)+128Ac^4d^3+21b^4Be^3\right)}{512c^{11/2}}+\frac{\left(bx+cx^2\right)^{3/2}(d+ex)^2(4Ace-3bBe+2Bcd)}{20c^2}+\frac{B\left(bx+cx^2\right)^{3/2}(d+ex)^3}{6c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*Sqrt[b*x + c*x^2],x]
```

```
[Out] ((128*A*c^4*d^3 + 21*b^4*B*e^3 + 120*b^2*c^2*d*e*(B*d + A*e) - 28*b^3*c*e^2
*(3*B*d + A*e) - 64*b*c^3*d^2*(B*d + 3*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])
/(512*c^5) + ((2*B*c*d - 3*b*B*e + 4*A*c*e)*(d + e*x)^2*(b*x + c*x^2)^(3/2)
)/(20*c^2) + (B*(d + e*x)^3*(b*x + c*x^2)^(3/2))/(6*c) + ((4*A*c*e*(192*c^2
*d^2 - 150*b*c*d*e + 35*b^2*e^2) + B*(64*c^3*d^3 - 456*b*c^2*d^2*e + 420*b^
2*c*d*e^2 - 105*b^3*e^3) + 6*c*e*(28*A*c*e*(2*c*d - b*e) + B*(8*c^2*d^2 - 3
6*b*c*d*e + 21*b^2*e^2))*x)*(b*x + c*x^2)^(3/2))/(960*c^4) - (b^2*(128*A*c^
4*d^3 + 21*b^4*B*e^3 + 120*b^2*c^2*d*e*(B*d + A*e) - 28*b^3*c*e^2*(3*B*d +
A*e) - 64*b*c^3*d^2*(B*d + 3*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/
(512*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
```

```
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\sqrt{bx+cx^2}\,dx = \frac{B(d+ex)^3\left(bx+cx^2\right)^{3/2}}{6c} + \frac{\int (d+ex)^2\left(-\frac{3}{2}(bB-4Ac)d+\frac{3}{2}(2Bcd-3bBe+4\cdots\right.}{6c}$$

$$= \frac{(2Bcd-3bBe+4Ace)(d+ex)^2\left(bx+cx^2\right)^{3/2}}{20c^2} + \frac{B(d+ex)^3\left(bx+cx^2\right)^{3/2}}{6c} + \cdots$$

$$= \frac{(2Bcd-3bBe+4Ace)(d+ex)^2\left(bx+cx^2\right)^{3/2}}{20c^2} + \frac{B(d+ex)^3\left(bx+cx^2\right)^{3/2}}{6c} + \cdots$$

$$= \frac{\left(128Ac^4d^3+21b^4Be^3+120b^2c^2de(Bd+Ae)-28b^3ce^2(3Bd+Ae)-64bc^3d\cdots\right.}{512c^5}$$

$$= \frac{\left(128Ac^4d^3+21b^4Be^3+120b^2c^2de(Bd+Ae)-28b^3ce^2(3Bd+Ae)-64bc^3d\cdots\right.}{512c^5}$$

$$= \frac{\left(128Ac^4d^3+21b^4Be^3+120b^2c^2de(Bd+Ae)-28b^3ce^2(3Bd+Ae)-64bc^3d\cdots\right.}{512c^5}$$

Mathematica [A] time = 1.08, size = 422, normalized size = 1.04

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-210b^4ce^2(2Ae+6Bd+Bex)+8b^3c^2e\left(5Ae(45d+7ex)+3B\left(75d^2+35dex+7e^2x^2\right)\right)-16b^2c^3\left(Ae\left(180d^2+75dex+14e^2x^2\right)+B\left(60d^3+75d^2ex+42de^2x^2+9e^3x^3\right)\right)+64bc^4\left(3A\left(10d^3+10d^2ex+5de^2x^2+e^3x^3\right)+Bx\left(10d^3+15d^2ex+9de^2x^2+2e^3x^3\right)\right)+128c^5x\left(3A\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+Bx\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)\right)+315b^5Be^3\right)-\frac{15b^{3/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-28b^3ce^2(Ae+3Bd)+120b^2c^2de(Ae+Bd)-64bc^3d^2(3Ae+Bd)+128Ac^4d^3+21b^4Be^3\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{7680c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(315*b^5*B*e^3 - 210*b^4*c*e^2*(6*B*d + 2*A*e +
 B*e*x) + 8*b^3*c^2*e*(5*A*e*(45*d + 7*e*x) + 3*B*(75*d^2 + 35*d*e*x + 7*e^
2*x^2)) + 64*b*c^4*(3*A*(10*d^3 + 10*d^2*e*x + 5*d*e^2*x^2 + e^3*x^3) + B*x
*(10*d^3 + 15*d^2*e*x + 9*d*e^2*x^2 + 2*e^3*x^3)) - 16*b^2*c^3*(A*e*(180*d^
2 + 75*d*e*x + 14*e^2*x^2) + B*(60*d^3 + 75*d^2*e*x + 42*d*e^2*x^2 + 9*e^3*
x^3)) + 128*c^5*x*(3*A*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B
*x*(20*d^3 + 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3))) - (15*b^(3/2)*(128*A
*c^4*d^3 + 21*b^4*B*e^3 + 120*b^2*c^2*d*e*(B*d + A*e) - 28*b^3*c*e^2*(3*B*d
 + A*e) - 64*b*c^3*d^2*(B*d + 3*A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(
Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(11/2))
```

IntegrateAlgebraic [A] time = 2.14, size = 559, normalized size = 1.38

$$\frac{\sqrt{bx+cx^2}\left(-420Ab^4ce^3+1800Ab^3c^2de^2+280Ab^3c^2e^3x-2880Ab^2c^3d^2e-1200Ab^2c^3de^2x-224Ab^2c^3e^3x^2+1920Abc^4d^3+1920Abc^4d^2ex+960Abc^4de^2x^2+192Abc^4e^3x^3+3840Ac^5d^3x+7680Ac^5d^2ex^2+5760Ac^5de^2x^3+1536Ac^5e^3x^4+315b^5Be^3-1260b^4Bcde^2-210b^4Bce^3x+1800b^3Bc^2d^2e+840b^3Bc^2de^2x+168b^3Bc^2e^3x^2-960b^2Bc^3d^3-1200b^2Bc^3d^2ex-672b^2Bc^3de^2x^2-144b^2Bc^3e^3x^3+640bBc^4d^3x+960bBc^4d^2ex^2+576bBc^4de^2x^3+128bBc^4e^3x^4+2560Bc^5d^3x^2+5760Bc^5d^2ex^3+4608Bc^5de^2x^4+1280Bc^5e^3x^5\right)}{7680c^5}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(-28Ab^5ce^3+120Ab^4c^2de^2-192Ab^3c^3d^2e+128Ab^2c^4d^3+21b^6Be^3-84b^5Bcde^2+120b^4Bc^2d^2e-64b^3Bc^3d^3\right)}{1024c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-960*b^2*B*c^3*d^3 + 1920*A*b*c^4*d^3 + 1800*b^3*B*c^2*
d^2*e - 2880*A*b^2*c^3*d^2*e - 1260*b^4*B*c*d*e^2 + 1800*A*b^3*c^2*d*e^2 +
315*b^5*B*e^3 - 420*A*b^4*c*e^3 + 640*b*B*c^4*d^3*x + 3840*A*c^5*d^3*x - 12
00*b^2*B*c^3*d^2*e*x + 1920*A*b*c^4*d^2*e*x + 840*b^3*B*c^2*d*e^2*x - 1200*
A*b^2*c^3*d*e^2*x - 210*b^4*B*c*e^3*x + 280*A*b^3*c^2*e^3*x + 2560*B*c^5*d^
```

```
3*x^2 + 960*b*B*c^4*d^2*e*x^2 + 7680*A*c^5*d^2*e*x^2 - 672*b^2*B*c^3*d*e^2*
x^2 + 960*A*b*c^4*d*e^2*x^2 + 168*b^3*B*c^2*e^3*x^2 - 224*A*b^2*c^3*e^3*x^2
 + 5760*B*c^5*d^2*e*x^3 + 576*b*B*c^4*d*e^2*x^3 + 5760*A*c^5*d*e^2*x^3 - 14
4*b^2*B*c^3*e^3*x^3 + 192*A*b*c^4*e^3*x^3 + 4608*B*c^5*d*e^2*x^4 + 128*b*B*
c^4*e^3*x^4 + 1536*A*c^5*e^3*x^4 + 1280*B*c^5*e^3*x^5))/(7680*c^5) + ((-64*
b^3*B*c^3*d^3 + 128*A*b^2*c^4*d^3 + 120*b^4*B*c^2*d^2*e - 192*A*b^3*c^3*d^2
*e - 84*b^5*B*c*d*e^2 + 120*A*b^4*c^2*d*e^2 + 21*b^6*B*e^3 - 28*A*b^5*c*e^3
)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(1024*c^(11/2))
```

fricas [A] time = 0.49, size = 1022, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/15360*(15*(64*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 24*(5*B*b^4*c^2 - 8*A*b^3*
c^3)*d^2*e + 12*(7*B*b^5*c - 10*A*b^4*c^2)*d*e^2 - 7*(3*B*b^6 - 4*A*b^5*c)*
e^3)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(1280*B*c^6*e
^3*x^5 + 128*(36*B*c^6*d*e^2 + (B*b*c^5 + 12*A*c^6)*e^3)*x^4 - 960*(B*b^2*c
^4 - 2*A*b*c^5)*d^3 + 360*(5*B*b^3*c^3 - 8*A*b^2*c^4)*d^2*e - 180*(7*B*b^4*
c^2 - 10*A*b^3*c^3)*d*e^2 + 105*(3*B*b^5*c - 4*A*b^4*c^2)*e^3 + 48*(120*B*c
^6*d^2*e + 12*(B*b*c^5 + 10*A*c^6)*d*e^2 - (3*B*b^2*c^4 - 4*A*b*c^5)*e^3)*x
^3 + 8*(320*B*c^6*d^3 + 120*(B*b*c^5 + 8*A*c^6)*d^2*e - 12*(7*B*b^2*c^4 - 1
0*A*b*c^5)*d*e^2 + 7*(3*B*b^3*c^3 - 4*A*b^2*c^4)*e^3)*x^2 + 10*(64*(B*b*c^5
 + 6*A*c^6)*d^3 - 24*(5*B*b^2*c^4 - 8*A*b*c^5)*d^2*e + 12*(7*B*b^3*c^3 - 10
*A*b^2*c^4)*d*e^2 - 7*(3*B*b^4*c^2 - 4*A*b^3*c^3)*e^3)*x)*sqrt(c*x^2 + b*x)
)/c^6, -1/7680*(15*(64*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 24*(5*B*b^4*c^2 - 8*
A*b^3*c^3)*d^2*e + 12*(7*B*b^5*c - 10*A*b^4*c^2)*d*e^2 - 7*(3*B*b^6 - 4*A*b
^5*c)*e^3)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (1280*B*c^6*
e^3*x^5 + 128*(36*B*c^6*d*e^2 + (B*b*c^5 + 12*A*c^6)*e^3)*x^4 - 960*(B*b^2*
c^4 - 2*A*b*c^5)*d^3 + 360*(5*B*b^3*c^3 - 8*A*b^2*c^4)*d^2*e - 180*(7*B*b^4
*c^2 - 10*A*b^3*c^3)*d*e^2 + 105*(3*B*b^5*c - 4*A*b^4*c^2)*e^3 + 48*(120*B*
c^6*d^2*e + 12*(B*b*c^5 + 10*A*c^6)*d*e^2 - (3*B*b^2*c^4 - 4*A*b*c^5)*e^3)*
x^3 + 8*(320*B*c^6*d^3 + 120*(B*b*c^5 + 8*A*c^6)*d^2*e - 12*(7*B*b^2*c^4 -
10*A*b*c^5)*d*e^2 + 7*(3*B*b^3*c^3 - 4*A*b^2*c^4)*e^3)*x^2 + 10*(64*(B*b*c^
5 + 6*A*c^6)*d^3 - 24*(5*B*b^2*c^4 - 8*A*b*c^5)*d^2*e + 12*(7*B*b^3*c^3 - 1
0*A*b^2*c^4)*d*e^2 - 7*(3*B*b^4*c^2 - 4*A*b^3*c^3)*e^3)*x)*sqrt(c*x^2 + b*x
))/c^6]
```

giac [A] time = 0.23, size = 521, normalized size = 1.29

$$\frac{1}{7680} \sqrt{cx^2+bx} \left(2 \left(4 \left(2 \left(8 \left(10 Bxe^3 + \frac{36 Bc^5de^2 + Bbc^4e^3 + 12 Ac^5e^3}{c^5}\right)x + \frac{3 \left(120 Bc^5d^2e + 12 Bbc^4de^2 + 120 Ac^5de^2 - 3 Bb^2c^3e^3 + 4 Abc^4e^3\right)}{c^5}\right)x + \frac{320 Bc^5d^3 + 120 Bbc^4d^2e + 960 Ac^5d^2e - 84 Bb^2c^3de^2 + 120 Abc^4de^2 + 21 Bb^3c^2e^3 - 28 Ab^2c^3e^3}{c^5}\right)x + \frac{5 \left(64 Bbc^4d^3 + 384 Ac^5d^3 - 120 Bb^2c^3d^2e + 192 Abc^4d^2e + 84 Bb^3c^2de^2 - 120 Ab^2c^3de^2 - 21 Bb^4ce^3 + 28 Ab^3c^2e^3\right)}{c^5}\right)x - \frac{15 \left(64 Bb^2c^3d^3 - 128 Abc^4d^3 - 120 Bb^3c^2d^2e + 192 Ab^2c^3d^2e + 84 Bb^4cde^2 - 120 Ab^3c^2de^2 - 21 Bb^5e^3 + 28 Ab^4ce^3\right)}{c^5}\right) - \frac{\left(64 Bb^3c^3d^3 - 128 Ab^2c^4d^3 - 120 Bb^4c^2d^2e + 192 Ab^3c^3d^2e + 84 Bb^5cde^2 - 120 Ab^4c^2de^2 - 21 Bb^6e^3 + 28 Ab^5ce^3\right) \log\left(\left|-2 \left(\sqrt{c}x - \sqrt{cx^2+bx}\right)\sqrt{c} - b\right|\right)}{1024 c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*x*e^3 + (36*B*c^5*d*e^2 + B*b*c^
4*e^3 + 12*A*c^5*e^3)/c^5)*x + 3*(120*B*c^5*d^2*e + 12*B*b*c^4*d*e^2 + 120*
A*c^5*d*e^2 - 3*B*b^2*c^3*e^3 + 4*A*b*c^4*e^3)/c^5)*x + (320*B*c^5*d^3 + 12
0*B*b*c^4*d^2*e + 960*A*c^5*d^2*e - 84*B*b^2*c^3*d*e^2 + 120*A*b*c^4*d*e^2
+ 21*B*b^3*c^2*e^3 - 28*A*b^2*c^3*e^3)/c^5)*x + 5*(64*B*b*c^4*d^3 + 384*A*c
^5*d^3 - 120*B*b^2*c^3*d^2*e + 192*A*b*c^4*d^2*e + 84*B*b^3*c^2*d*e^2 - 120
*A*b^2*c^3*d*e^2 - 21*B*b^4*c*e^3 + 28*A*b^3*c^2*e^3)/c^5)*x - 15*(64*B*b^2
*c^3*d^3 - 128*A*b*c^4*d^3 - 120*B*b^3*c^2*d^2*e + 192*A*b^2*c^3*d^2*e + 84
*B*b^4*c*d*e^2 - 120*A*b^3*c^2*d*e^2 - 21*B*b^5*e^3 + 28*A*b^4*c*e^3)/c^5)
- 1/1024*(64*B*b^3*c^3*d^3 - 128*A*b^2*c^4*d^3 - 120*B*b^4*c^2*d^2*e + 192*
A*b^3*c^3*d^2*e + 84*B*b^5*c*d*e^2 - 120*A*b^4*c^2*d*e^2 - 21*B*b^6*e^3 + 2
8*A*b^5*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(
11/2)
```

maple [B] time = 0.06, size = 1027, normalized size = 2.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 15/32*b^2/c^2*x*(c*x^2+b*x)^(1/2)*A*d*e^2-21/40*b/c^2*x*(c*x^2+b*x)^(3/2)*B
*d*e^2-21/64*b^3/c^3*x*(c*x^2+b*x)^(1/2)*B*d*e^2+15/32*b^2/c^2*x*(c*x^2+b*x
)^(1/2)*B*d^2*e-3/4*b/c*x*(c*x^2+b*x)^(1/2)*A*d^2*e+21/160*B*e^3*b^2/c^3*x*
(c*x^2+b*x)^(3/2)+3/5*x^2*(c*x^2+b*x)^(3/2)/c*B*d*e^2+21/256*B*e^3*b^4/c^4*
x*(c*x^2+b*x)^(1/2)-3/20*B*e^3*b/c^2*x^2*(c*x^2+b*x)^(3/2)-7/40*b/c^2*x*(c*
x^2+b*x)^(3/2)*A*e^3+7/16*b^2/c^3*(c*x^2+b*x)^(3/2)*B*d*e^2-7/64*b^3/c^3*x*
(c*x^2+b*x)^(1/2)*A*e^3+3/4*x*(c*x^2+b*x)^(3/2)/c*B*d^2*e+21/256*b^5/c^(9/2
)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e^2-21/128*b^4/c^4*(c*x^2+b
*x)^(1/2)*B*d*e^2-5/8*b/c^2*(c*x^2+b*x)^(3/2)*A*d*e^2-5/8*b/c^2*(c*x^2+b*x)
^(3/2)*B*d^2*e+15/64*b^3/c^3*(c*x^2+b*x)^(1/2)*A*d*e^2+15/64*b^3/c^3*(c*x^2
+b*x)^(1/2)*B*d^2*e-15/128*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))*A*d*e^2-15/128*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*
B*d^2*e+3/4*x*(c*x^2+b*x)^(3/2)/c*A*d*e^2-3/8*b^2/c^2*(c*x^2+b*x)^(1/2)*A*d
^2*e+3/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d^2*e-1/4
*b/c*x*(c*x^2+b*x)^(1/2)*B*d^3-1/8*b^2/c^2*(c*x^2+b*x)^(1/2)*B*d^3+1/2*A*d^
3*x*(c*x^2+b*x)^(1/2)+1/3*(c*x^2+b*x)^(3/2)/c*B*d^3+1/16*b^3/c^(5/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^3+(c*x^2+b*x)^(3/2)/c*A*d^2*e+7/256
*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^3+1/6*B*e^3*x^3*
(c*x^2+b*x)^(3/2)/c-7/64*B*e^3*b^3/c^4*(c*x^2+b*x)^(3/2)+21/512*B*e^3*b^5/c
^5*(c*x^2+b*x)^(1/2)-21/1024*B*e^3*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x)^(1/2))+7/48*b^2/c^3*(c*x^2+b*x)^(3/2)*A*e^3+1/4*A*d^3/c*(c*x^2+b*x)
^(1/2)*b-7/128*b^4/c^4*(c*x^2+b*x)^(1/2)*A*e^3-1/8*A*d^3*b^2/c^(3/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*x^2*(c*x^2+b*x)^(3/2)/c*A*e^3
```

maxima [A] time = 0.76, size = 760, normalized size = 1.88

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(3/2)*B*e^3*x^3/c - 3/20*(c*x^2 + b*x)^(3/2)*B*b*e^3*x^2/
c^2 + 1/2*sqrt(c*x^2 + b*x)*A*d^3*x + 21/256*sqrt(c*x^2 + b*x)*B*b^4*e^3*x/
c^4 + 21/160*(c*x^2 + b*x)^(3/2)*B*b^2*e^3*x/c^3 - 1/8*A*b^2*d^3*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 21/1024*B*b^6*e^3*log(2*c*x +
b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 1/4*sqrt(c*x^2 + b*x)*A*b*d^3/c
 + 21/512*sqrt(c*x^2 + b*x)*B*b^5*e^3/c^5 - 7/64*(c*x^2 + b*x)^(3/2)*B*b^3*
e^3/c^4 + 1/5*(3*B*d*e^2 + A*e^3)*(c*x^2 + b*x)^(3/2)*x^2/c - 7/64*(3*B*d*e
^2 + A*e^3)*sqrt(c*x^2 + b*x)*b^3*x/c^3 - 7/40*(3*B*d*e^2 + A*e^3)*(c*x^2 +
 b*x)^(3/2)*b*x/c^2 + 15/32*(B*d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*b^2*x/c^2
 + 3/4*(B*d^2*e + A*d*e^2)*(c*x^2 + b*x)^(3/2)*x/c - 1/4*(B*d^3 + 3*A*d^2*e
)*sqrt(c*x^2 + b*x)*b*x/c + 7/256*(3*B*d*e^2 + A*e^3)*b^5*log(2*c*x + b + 2
*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) - 15/128*(B*d^2*e + A*d*e^2)*b^4*log(2*
c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 1/16*(B*d^3 + 3*A*d^2*e)*b
^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 7/128*(3*B*d*e^2
+ A*e^3)*sqrt(c*x^2 + b*x)*b^4/c^4 + 7/48*(3*B*d*e^2 + A*e^3)*(c*x^2 + b*x)
^(3/2)*b^2/c^3 + 15/64*(B*d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*b^3/c^3 - 5/8*
(B*d^2*e + A*d*e^2)*(c*x^2 + b*x)^(3/2)*b/c^2 - 1/8*(B*d^3 + 3*A*d^2*e)*sqr
t(c*x^2 + b*x)*b^2/c^2 + 1/3*(B*d^3 + 3*A*d^2*e)*(c*x^2 + b*x)^(3/2)/c
```

mupad [B] time = 3.84, size = 827, normalized size = 2.05

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] A*d^3*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) - (7*A*b*e^3*((x*(b*x + c*x^2)^(3
/2))/(4*c) - (5*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(
16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2))
)/(8*c)))/(10*c) + (A*e^3*x^2*(b*x + c*x^2)^(3/2))/(5*c) + (B*e^3*x^3*(b*x
+ c*x^2)^(3/2))/(6*c) - (A*b^2*d^3*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^
(1/2)))/(8*c^(3/2)) + (B*b^3*d^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^
(1/2)))/(16*c^(5/2)) + (B*d^3*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*
c*x))/(24*c^2) + (3*B*b*e^3*((7*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b
^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x +
 c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) - (x
^2*(b*x + c*x^2)^(3/2))/(5*c)))/(4*c) + (3*A*b^3*d^2*e*log((b + 2*c*x)/c^(1
/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (A*d^2*e*(b*x + c*x^2)^(1/2)*(
8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(8*c^2) + (3*A*d*e^2*x*(b*x + c*x^2)^(3/2))/(
4*c) + (3*B*d^2*e*x*(b*x + c*x^2)^(3/2))/(4*c) - (15*A*b*d*e^2*((b^3*log((b
 + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(
1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c) - (15*B*b*d^2*e*((b^3*
log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*
x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c) - (21*B*b*d*e^2*
((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*
x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 +
 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) + (3*B*d*e^2*x^2*(b*x + c*x^2)^(3/2))/
(5*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x (b + cx)} \, (A + Bx) (d + ex)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*(d + e*x)**3, x)
```

3.1018 $\int (A+Bx)(d+ex)^2\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=267

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(10Ace-7bBe+4Bcd)+10Ace(16cd-5be)+B\left(35b^2e^2-100bcde+32c^2d^2\right)\right)}{240c^3}-\frac{b^2\tanh^{-1}\left(-\right.}{\sqrt{}}$$

Rubi [A] time = 0.27, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {832, 779, 612, 620, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(10Ace-7bBe+4Bcd)+10Ace(16cd-5be)+B\left(35b^2e^2-100bcde+32c^2d^2\right)\right)}{240c^3}+\frac{(b+2cx)\sqrt{bx+cx^2}\left(10b^2ce(Ae+2Bd)-16bc^2d(2Ae+Bd)+32Ac^3d^2-7b^3Be^2\right)}{128c^4}-\frac{b^2\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(10b^2ce(Ae+2Bd)-16bc^2d(2Ae+Bd)+32Ac^3d^2-7b^3Be^2\right)}{128c^{9/2}}+\frac{B\left(bx+cx^2\right)^{3/2}(d+ex)^2}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*Sqrt[b*x + c*x^2],x]
```

```
[Out] ((32*A*c^3*d^2 - 7*b^3*B*e^2 + 10*b^2*c*e*(2*B*d + A*e) - 16*b*c^2*d*(B*d +
 2*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^4) + (B*(d + e*x)^2*(b*x + c
*x^2)^(3/2))/(5*c) + ((10*A*c*e*(16*c*d - 5*b*e) + B*(32*c^2*d^2 - 100*b*c*
d*e + 35*b^2*e^2) + 6*c*e*(4*B*c*d - 7*b*B*e + 10*A*c*e)*x)*(b*x + c*x^2)^(
3/2))/(240*c^3) - (b^2*(32*A*c^3*d^2 - 7*b^3*B*e^2 + 10*b^2*c*e*(2*B*d + A*
e) - 16*b*c^2*d*(B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128
*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\sqrt{bx+cx^2}\,dx = \frac{B(d+ex)^2\left(bx+cx^2\right)^{3/2}}{5c} + \frac{\int (d+ex)\left(-\frac{1}{2}(3bB-10Ac)d+\frac{1}{2}(4Bcd-7bB}{5c}$$

$$= \frac{B(d+ex)^2\left(bx+cx^2\right)^{3/2}}{5c} + \frac{\left(10Ace(16cd-5be)+B\left(32c^2d^2-100bcde+\right.\right.}{}$$

$$= \frac{\left(32Ac^3d^2-7b^3Be^2+10b^2ce(2Bd+Ae)-16bc^2d(Bd+2Ae)\right)(b+2cx)\sqrt{}}{128c^4}$$

$$= \frac{\left(32Ac^3d^2-7b^3Be^2+10b^2ce(2Bd+Ae)-16bc^2d(Bd+2Ae)\right)(b+2cx)\sqrt{}}{128c^4}$$

$$= \frac{\left(32Ac^3d^2-7b^3Be^2+10b^2ce(2Bd+Ae)-16bc^2d(Bd+2Ae)\right)(b+2cx)\sqrt{}}{128c^4}$$

Mathematica [A]   time = 0.58, size = 293, normalized size = 1.10

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{3/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-10b^2ce(Ae+2Bd)+16bc^2d(2Ae+Bd)-32Ac^3d^2+7b^3Be^2\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(10b^3ce(15Ae+30Bd+7Bex)-4b^2c^2\left(5Ae(24d+5ex)+2B\left(30d^2+25dex+7e^2x^2\right)\right)+16bc^3\left(5A\left(6d^2+4dex+e^2x^2\right)+Bx\left(10d^2+10dex+3e^2x^2\right)\right)+32c^4x\left(5A\left(6d^2+8dex+3e^2x^2\right)+2Bx\left(10d^2+15dex+6e^2x^2\right)\right)-105b^4Be^2\right)\right)}{1920c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^4*B*e^2 + 10*b^3*c*e*(30*B*d + 15*A*e +
 7*B*e*x) + 16*b*c^3*(5*A*(6*d^2 + 4*d*e*x + e^2*x^2) + B*x*(10*d^2 + 10*d*
e*x + 3*e^2*x^2)) + 32*c^4*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2*B*x*(10
*d^2 + 15*d*e*x + 6*e^2*x^2)) - 4*b^2*c^2*(5*A*e*(24*d + 5*e*x) + 2*B*(30*d
^2 + 25*d*e*x + 7*e^2*x^2))) + (15*b^(3/2)*(-32*A*c^3*d^2 + 7*b^3*B*e^2 - 1
0*b^2*c*e*(2*B*d + A*e) + 16*b*c^2*d*(B*d + 2*A*e))*ArcSinh[(Sqrt[c]*Sqrt[x
])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(1920*c^(9/2))
```

IntegrateAlgebraic [A]   time = 1.42, size = 361, normalized size = 1.35

$$\frac{\sqrt{bx+cx^2}\left(150Ab^3ce^2-480Ab^2c^2de-100Ab^2c^2e^2x+480Abc^3d^2+320Abc^3dex+80Abc^3e^2x^2+960Ac^4d^2x+1280Ac^4dex^2+480Ac^4e^2x^3-105b^4Be^2+300b^3Bcde+70b^3Bce^2x-240b^2Bc^2d^2-200b^2Bc^2dex-56b^2Bc^2e^2x^2+160bBc^3d^2x+160bBc^3dex^2+48bBc^3e^2x^3+640Bc^4d^2x^2+960Bc^4dex^3+384Bc^4e^2x^4\right)}{1920c^4}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(10Ab^4ce^2-32Ab^3c^2de+32Ab^2c^3d^2-7b^5Be^2+20b^4Bcde-16b^3Bc^2d^2\right)}{256c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-240*b^2*B*c^2*d^2 + 480*A*b*c^3*d^2 + 300*b^3*B*c*d*e
- 480*A*b^2*c^2*d*e - 105*b^4*B*e^2 + 150*A*b^3*c*e^2 + 160*b*B*c^3*d^2*x +
 960*A*c^4*d^2*x - 200*b^2*B*c^2*d*e*x + 320*A*b*c^3*d*e*x + 70*b^3*B*c*e^2
*x - 100*A*b^2*c^2*e^2*x + 640*B*c^4*d^2*x^2 + 160*b*B*c^3*d*e*x^2 + 1280*A
*c^4*d*e*x^2 - 56*b^2*B*c^2*e^2*x^2 + 80*A*b*c^3*e^2*x^2 + 960*B*c^4*d*e*x^
3 + 48*b*B*c^3*e^2*x^3 + 480*A*c^4*e^2*x^3 + 384*B*c^4*e^2*x^4))/(1920*c^4)
 + ((-16*b^3*B*c^2*d^2 + 32*A*b^2*c^3*d^2 + 20*b^4*B*c*d*e - 32*A*b^3*c^2*d
*e - 7*b^5*B*e^2 + 10*A*b^4*c*e^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x
^2]])/(256*c^(9/2))
```

fricas [A]   time = 0.47, size = 684, normalized size = 2.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 - 4*(5*B*b^4*c - 8*A*b^3*c^2
)*d*e + (7*B*b^5 - 10*A*b^4*c)*e^2)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
b*x)*sqrt(c)) - 2*(384*B*c^5*e^2*x^4 + 48*(20*B*c^5*d*e + (B*b*c^4 + 10*A*c
^5)*e^2)*x^3 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 60*(5*B*b^3*c^2 - 8*A*b^2*
c^3)*d*e - 15*(7*B*b^4*c - 10*A*b^3*c^2)*e^2 + 8*(80*B*c^5*d^2 + 20*(B*b*c^
4 + 8*A*c^5)*d*e - (7*B*b^2*c^3 - 10*A*b*c^4)*e^2)*x^2 + 10*(16*(B*b*c^4 +
6*A*c^5)*d^2 - 4*(5*B*b^2*c^3 - 8*A*b*c^4)*d*e + (7*B*b^3*c^2 - 10*A*b^2*c^
3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^5, -1/1920*(15*(16*(B*b^3*c^2 - 2*A*b^2*c^3
)*d^2 - 4*(5*B*b^4*c - 8*A*b^3*c^2)*d*e + (7*B*b^5 - 10*A*b^4*c)*e^2)*sqrt(
-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (384*B*c^5*e^2*x^4 + 48*(20*
B*c^5*d*e + (B*b*c^4 + 10*A*c^5)*e^2)*x^3 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^2
 + 60*(5*B*b^3*c^2 - 8*A*b^2*c^3)*d*e - 15*(7*B*b^4*c - 10*A*b^3*c^2)*e^2 +
 8*(80*B*c^5*d^2 + 20*(B*b*c^4 + 8*A*c^5)*d*e - (7*B*b^2*c^3 - 10*A*b*c^4)*
e^2)*x^2 + 10*(16*(B*b*c^4 + 6*A*c^5)*d^2 - 4*(5*B*b^2*c^3 - 8*A*b*c^4)*d*e
 + (7*B*b^3*c^2 - 10*A*b^2*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.22, size = 349, normalized size = 1.31

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(8Bxe^2+\frac{20Bc^4de+Bbc^3e^2+10Ac^4e^2}{c^4}\right)x+\frac{80Bc^4d^2+20Bbc^3de+160Ac^4de-7Bb^2c^2e^2+10Abc^3e^2}{c^4}\right)x+\frac{5\left(16Bbc^3d^2+96Ac^4d^2-20Bb^2c^2de+32Abc^3de+7Bb^3ce^2-10Ab^2c^2e^2\right)}{c^4}\right)x-\frac{15\left(16Bb^2c^2d^2-32Abc^3d^2-20Bb^3cde+32Ab^2c^2de+7Bb^4e^2-10Ab^3ce^2\right)}{c^4}\right)-\frac{\left(16Bb^3c^2d^2-32Ab^2c^3d^2-20Bb^4cde+32Ab^3c^2de+7Bb^5e^2-10Ab^4ce^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{256c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*x*e^2 + (20*B*c^4*d*e + B*b*c^3*e^2
+ 10*A*c^4*e^2)/c^4)*x + (80*B*c^4*d^2 + 20*B*b*c^3*d*e + 160*A*c^4*d*e - 7
*B*b^2*c^2*e^2 + 10*A*b*c^3*e^2)/c^4)*x + 5*(16*B*b*c^3*d^2 + 96*A*c^4*d^2
- 20*B*b^2*c^2*d*e + 32*A*b*c^3*d*e + 7*B*b^3*c*e^2 - 10*A*b^2*c^2*e^2)/c^4
)*x - 15*(16*B*b^2*c^2*d^2 - 32*A*b*c^3*d^2 - 20*B*b^3*c*d*e + 32*A*b^2*c^2
*d*e + 7*B*b^4*e^2 - 10*A*b^3*c*e^2)/c^4) - 1/256*(16*B*b^3*c^2*d^2 - 32*A*
b^2*c^3*d^2 - 20*B*b^4*c*d*e + 32*A*b^3*c^2*d*e + 7*B*b^5*e^2 - 10*A*b^4*c*
e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.06, size = 671, normalized size = 2.51

$$-\frac{5Ab^4e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{Ab^3de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{Ab^2d^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{3}{2}}}+\frac{7Bb^5e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{9}{2}}}-\frac{5Bb^4de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{64c^{\frac{7}{2}}}+\frac{Bb^3d^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{5}{2}}}+\frac{5\sqrt{cx^2+bx}\,Ab^2e^2x}{32c^2}-\frac{\sqrt{cx^2+bx}\,Abdex}{2c}+\frac{\sqrt{cx^2+bx}\,Ad^2x}{2}-\frac{7\sqrt{cx^2+bx}\,Bb^3e^2x}{64c^3}+\frac{5\sqrt{cx^2+bx}\,Bb^2dex}{16c^2}-\frac{\sqrt{cx^2+bx}\,Bbd^2x}{4c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Be^2x^2}{5c}+\frac{5\sqrt{cx^2+bx}\,Ab^3e^2}{64c^3}-\frac{\sqrt{cx^2+bx}\,Ab^2de}{4c^2}+\frac{\sqrt{cx^2+bx}\,Abd^2}{4c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ae^2x}{4c}-\frac{7\sqrt{cx^2+bx}\,Bb^4e^2}{128c^4}+\frac{5\sqrt{cx^2+bx}\,Bb^3de}{32c^3}-\frac{\sqrt{cx^2+bx}\,Bb^2d^2}{8c^2}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bbe^2x}{40c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bdex}{2c}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Abe^2}{24c^2}+\frac{2\left(cx^2+bx\right)^{\frac{3}{2}}Ade}{3c}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2e^2}{48c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bbde}{12c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bd^2}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x)
```

```
[Out] -5/24*b/c^2*(c*x^2+b*x)^(3/2)*A*e^2+5/64*b^3/c^3*(c*x^2+b*x)^(1/2)*A*e^2-5/
128*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^2+7/256*B*e^2
*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+7/48*B*e^2*b^2/c^3*(
c*x^2+b*x)^(3/2)-7/128*B*e^2*b^4/c^4*(c*x^2+b*x)^(1/2)+1/5*B*e^2*x^2*(c*x^2
+b*x)^(3/2)/c-7/40*B*e^2*b/c^2*x*(c*x^2+b*x)^(3/2)-7/64*B*e^2*b^3/c^3*x*(c*
x^2+b*x)^(1/2)+5/16*b^2/c^2*x*(c*x^2+b*x)^(1/2)*B*d*e-1/2*b/c*x*(c*x^2+b*x)
^(1/2)*A*d*e-5/12*b/c^2*(c*x^2+b*x)^(3/2)*B*d*e+5/32*b^2/c^2*x*(c*x^2+b*x)^
(1/2)*A*e^2+5/32*b^3/c^3*(c*x^2+b*x)^(1/2)*B*d*e+1/2*x*(c*x^2+b*x)^(3/2)/c*
B*d*e-5/64*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e+1/8*
b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e-1/4*b^2/c^2*(c*
x^2+b*x)^(1/2)*A*d*e-1/4*b/c*x*(c*x^2+b*x)^(1/2)*B*d^2+1/4*x*(c*x^2+b*x)^(3
/2)/c*A*e^2+1/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^
2-1/8*b^2/c^2*(c*x^2+b*x)^(1/2)*B*d^2+2/3*(c*x^2+b*x)^(3/2)/c*A*d*e+1/4*A*d
^2/c*(c*x^2+b*x)^(1/2)*b-1/8*A*d^2*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))+1/3*(c*x^2+b*x)^(3/2)/c*B*d^2+1/2*A*d^2*x*(c*x^2+b*x)^(1/2)
```

maxima [B] time = 0.61, size = 512, normalized size = 1.92

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Be^2x^2}{5c}+\frac{1}{2}\sqrt{cx^2+bx}\,Ad^2x-\frac{7\sqrt{cx^2+bx}\,Bb^3e^2x}{64c^3}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bbe^2x}{40c^2}-\frac{Ab^2d^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{3}{2}}}+\frac{7Bb^5e^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256c^{\frac{9}{2}}}+\frac{\sqrt{cx^2+bx}\,Abd^2}{4c}-\frac{7\sqrt{cx^2+bx}\,Bb^4e^2}{128c^4}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2e^2}{48c^3}+\frac{5\left(2Bde+Ae^2\right)\sqrt{cx^2+bx}\,b^2x}{32c^2}+\frac{\left(2Bde+Ae^2\right)\left(cx^2+bx\right)^{\frac{3}{2}}x}{4c}-\frac{\left(Bd^2+2Ade\right)\sqrt{cx^2+bx}\,bx}{4c}-\frac{5\left(2Bde+Ae^2\right)b^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{7}{2}}}+\frac{\left(Bd^2+2Ade\right)b^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{5}{2}}}+\frac{5\left(2Bde+Ae^2\right)\sqrt{cx^2+bx}\,b^3}{64c^3}-\frac{5\left(2Bde+Ae^2\right)\left(cx^2+bx\right)^{\frac{3}{2}}b}{24c^2}-\frac{\left(Bd^2+2Ade\right)\sqrt{cx^2+bx}\,b^2}{8c^2}+\frac{\left(Bd^2+2Ade\right)\left(cx^2+bx\right)^{\frac{3}{2}}}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*(c*x^2 + b*x)^(3/2)*B*e^2*x^2/c + 1/2*sqrt(c*x^2 + b*x)*A*d^2*x - 7/64*
sqrt(c*x^2 + b*x)*B*b^3*e^2*x/c^3 - 7/40*(c*x^2 + b*x)^(3/2)*B*b*e^2*x/c^2
- 1/8*A*b^2*d^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + 7/25
6*B*b^5*e^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) + 1/4*sqrt
(c*x^2 + b*x)*A*b*d^2/c - 7/128*sqrt(c*x^2 + b*x)*B*b^4*e^2/c^4 + 7/48*(c*x
^2 + b*x)^(3/2)*B*b^2*e^2/c^3 + 5/32*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b^
2*x/c^2 + 1/4*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*x/c - 1/4*(B*d^2 + 2*A*
d*e)*sqrt(c*x^2 + b*x)*b*x/c - 5/128*(2*B*d*e + A*e^2)*b^4*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 1/16*(B*d^2 + 2*A*d*e)*b^3*log(2*c*x
 + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 5/64*(2*B*d*e + A*e^2)*sqrt(c
*x^2 + b*x)*b^3/c^3 - 5/24*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b/c^2 - 1/
8*(B*d^2 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^2/c^2 + 1/3*(B*d^2 + 2*A*d*e)*(c*x^
2 + b*x)^(3/2)/c
```

mupad [B] time = 3.03, size = 537, normalized size = 2.01

$$A\,d^2\sqrt{c\,x^2+b\,x}\left(\frac{x}{2}+\frac{b}{4\,c}\right)+\frac{A\,e^2\,x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{4\,c}-\frac{5\,A\,b\,e^2\left(\frac{b^3\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}-\frac{7\,B\,b\,e^2\left(\frac{x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{4\,c}-\frac{5\,b\left(\frac{b^3\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}\right)}{10\,c}+\frac{B\,e^2\,x^2\,{\left(c\,x^2+b\,x\right)}^{3/2}}{5\,c}-\frac{A\,b^2\,d^2\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}+\frac{B\,b^3\,d^2\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{B\,d^2\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}+\frac{B\,d\,e\,x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{2\,c}-\frac{5\,B\,b\,d\,e\left(\frac{b^3\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{4\,c}+\frac{A\,b^3\,d\,e\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{8\,c^{5/2}}+\frac{A\,d\,e\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{12\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] A*d^2*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) + (A*e^2*x*(b*x + c*x^2)^(3/2))/(
4*c) - (5*A*b*e^2*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(
16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2))
)/(8*c) - (7*B*b*e^2*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((b + 2
*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)
*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) + (B*e^2*x^2*(b*x
 + c*x^2)^(3/2))/(5*c) - (A*b^2*d^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)
^(1/2)))/(8*c^(3/2)) + (B*b^3*d^2*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)
^(1/2)))/(16*c^(5/2)) + (B*d^2*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b
*c*x))/(24*c^2) + (B*d*e*x*(b*x + c*x^2)^(3/2))/(2*c) - (5*B*b*d*e*((b^3*lo
g((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^
2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(4*c) + (A*b^3*d*e*log((
b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(8*c^(5/2)) + (A*d*e*(b*x + c*
x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(12*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)\left(d+ex\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*(d + e*x)**2, x)
```

3.1019 $\int (A+Bx)(d+ex)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=154

$$-\frac{b^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(-8bc(Ae+Bd)+16Ac^2d+5b^2Be\right)}{64c^{7/2}}+\frac{(b+2cx)\sqrt{bx+cx^2}\,\left(-8bc(Ae+Bd)+16Ac^2d+5b^2\right.}{64c^3}$$

Rubi [A] time = 0.14, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {779, 612, 620, 206}

$$\frac{(b+2cx)\sqrt{bx+cx^2}\,\left(-8bc(Ae+Bd)+16Ac^2d+5b^2Be\right)}{64c^3}-\frac{b^2\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(-8bc(Ae+Bd)+16Ac^2d+5b^2Be\right)}{64c^{7/2}}-\frac{\left(bx+cx^2\right)^{3/2}(-8c(Ae+Bd)+5bBe-6Bcex)}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] ((16*A*c^2*d + 5*b^2*B*e - 8*b*c*(B*d + A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2]
)/(64*c^3) - ((5*b*B*e - 8*c*(B*d + A*e) - 6*B*c*e*x)*(b*x + c*x^2)^(3/2))/
(24*c^2) - (b^2*(16*A*c^2*d + 5*b^2*B*e - 8*b*c*(B*d + A*e))*ArcTanh[(Sqrt[
c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)(d+ex)\sqrt{bx+cx^2}\,dx = -\frac{(5bBe-8c(Bd+Ae)-6Bcex)\left(bx+cx^2\right)^{3/2}}{24c^2} + \frac{\left(\frac{5}{2}b^2Be+4c(2Acd-b(Bc\right.}{8c}$$

$$= \frac{\left(16Ac^2d+5b^2Be-8bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bBe-8c(Bd+}{}$$

$$= \frac{\left(16Ac^2d+5b^2Be-8bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bBe-8c(Bd}{}$$

$$= \frac{\left(16Ac^2d+5b^2Be-8bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bBe-8c(Bd+}{}$$

Mathematica [A] time = 0.43, size = 177, normalized size = 1.15

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-2b^2c(12Ae+12Bd+5Bex)+8bc^2(2A(3d+ex)+Bx(2d+ex))+16c^3x(A(6d+4ex)+Bx(4d+3ex))+15b^3Be\right)-\frac{3b^{3/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-8bc(Ae+Bd)+16Ac^2d+5b^2Be\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{192c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^3*B*e - 2*b^2*c*(12*B*d + 12*A*e + 5*B*e*
x) + 8*b*c^2*(B*x*(2*d + e*x) + 2*A*(3*d + e*x)) + 16*c^3*x*(B*x*(4*d + 3*e
*x) + A*(6*d + 4*e*x))) - (3*b^(3/2)*(16*A*c^2*d + 5*b^2*B*e - 8*b*c*(B*d +
 A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(1
92*c^(7/2))
```

IntegrateAlgebraic [A] time = 0.76, size = 199, normalized size = 1.29

$$\frac{\sqrt{bx+cx^2}\left(-24Ab^2ce+48Abc^2d+16Abc^2ex+96Ac^3dx+64Ac^3ex^2+15b^3Be-24b^2Bcd-10b^2Bcex+16bBc^2dx+8bBc^2ex^2+64Bc^3dx^2+48Bc^3ex^3\right)}{192c^3}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(-8Ab^3ce+16Ab^2c^2d+5b^4Be-8b^3Bcd\right)}{128c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-24*b^2*B*c*d + 48*A*b*c^2*d + 15*b^3*B*e - 24*A*b^2*c*
e + 16*b*B*c^2*d*x + 96*A*c^3*d*x - 10*b^2*B*c*e*x + 16*A*b*c^2*e*x + 64*B*
c^3*d*x^2 + 8*b*B*c^2*e*x^2 + 64*A*c^3*e*x^2 + 48*B*c^3*e*x^3))/(192*c^3) +
 ((-8*b^3*B*c*d + 16*A*b^2*c^2*d + 5*b^4*B*e - 8*A*b^3*c*e)*Log[b + 2*c*x -
 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(128*c^(7/2))
```

fricas [A] time = 0.44, size = 408, normalized size = 2.65

$$\left[\frac{3\left(8\left(Bb^3c-2Ab^2c^2\right)d-\left(5Bb^4-8Ab^3c\right)e\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(48Bc^4ex^3+8\left(8Bc^4d+\left(Bbc^3+8Ac^4\right)e\right)x^2-24\left(Bb^2c^2-2Abc^3\right)d+3\left(5Bb^3c-8Ab^2c^2\right)e+2\left(8\left(Bbc^3+6Ac^4\right)d-\left(5Bb^2c^2-8Abc^3\right)e\right)x\right)\sqrt{cx^2+bx}}{384c^4}, -\frac{3\left(8\left(Bb^3c-2Ab^2c^2\right)d-\left(5Bb^4-8Ab^3c\right)e\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(48Bc^4ex^3+8\left(8Bc^4d+\left(Bbc^3+8Ac^4\right)e\right)x^2-24\left(Bb^2c^2-2Abc^3\right)d+3\left(5Bb^3c-8Ab^2c^2\right)e+2\left(8\left(Bbc^3+6Ac^4\right)d-\left(5Bb^2c^2-8Abc^3\right)e\right)x\right)\sqrt{cx^2+bx}}{192c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/384*(3*(8*(B*b^3*c - 2*A*b^2*c^2)*d - (5*B*b^4 - 8*A*b^3*c)*e)*sqrt(c)*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(48*B*c^4*e*x^3 + 8*(8*B*c^
4*d + (B*b*c^3 + 8*A*c^4)*e)*x^2 - 24*(B*b^2*c^2 - 2*A*b*c^3)*d + 3*(5*B*b^
3*c - 8*A*b^2*c^2)*e + 2*(8*(B*b*c^3 + 6*A*c^4)*d - (5*B*b^2*c^2 - 8*A*b*c^
3)*e)*x)*sqrt(c*x^2 + b*x))/c^4, -1/192*(3*(8*(B*b^3*c - 2*A*b^2*c^2)*d - (
5*B*b^4 - 8*A*b^3*c)*e)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) -
 (48*B*c^4*e*x^3 + 8*(8*B*c^4*d + (B*b*c^3 + 8*A*c^4)*e)*x^2 - 24*(B*b^2*c^
2 - 2*A*b*c^3)*d + 3*(5*B*b^3*c - 8*A*b^2*c^2)*e + 2*(8*(B*b*c^3 + 6*A*c^4)
*d - (5*B*b^2*c^2 - 8*A*b*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.23, size = 205, normalized size = 1.33

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6Bxe+\frac{8Bc^3d+Bbc^2e+8Ac^3e}{c^3}\right)x+\frac{8Bbc^2d+48Ac^3d-5Bb^2ce+8Abc^2e}{c^3}\right)x-\frac{3\left(8Bb^2cd-16Abc^2d-5Bb^3e+8Ab^2ce\right)}{c^3}\right)-\frac{\left(8Bb^3cd-16Ab^2c^2d-5Bb^4e+8Ab^3ce\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{128c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x*e + (8*B*c^3*d + B*b*c^2*e + 8*A*c^3*e
)/c^3)*x + (8*B*b*c^2*d + 48*A*c^3*d - 5*B*b^2*c*e + 8*A*b*c^2*e)/c^3)*x -
3*(8*B*b^2*c*d - 16*A*b*c^2*d - 5*B*b^3*e + 8*A*b^2*c*e)/c^3) - 1/128*(8*B*
b^3*c*d - 16*A*b^2*c^2*d - 5*B*b^4*e + 8*A*b^3*c*e)*log(abs(-2*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 372, normalized size = 2.42

$$\frac{Ab^3e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{5}{2}}}-\frac{Ab^2d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{3}{2}}}-\frac{5Bb^4e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{Bb^3d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{5}{2}}}-\frac{\sqrt{cx^2+bx}\,Abex}{4c}+\frac{\sqrt{cx^2+bx}\,Adx}{2}+\frac{5\sqrt{cx^2+bx}\,Bb^2ex}{32c^2}-\frac{\sqrt{cx^2+bx}\,Bbdx}{4c}-\frac{\sqrt{cx^2+bx}\,Ab^2e}{8c^2}+\frac{\sqrt{cx^2+bx}\,Abd}{4c}+\frac{5\sqrt{cx^2+bx}\,Bb^3e}{64c^3}-\frac{\sqrt{cx^2+bx}\,Bb^2d}{8c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bex}{4c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ae}{3c}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bbe}{24c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bd}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*e*x*(c*x^2+b*x)^(3/2)/c-5/24*B*e*b/c^2*(c*x^2+b*x)^(3/2)+5/32*B*e*b^2
/c^2*x*(c*x^2+b*x)^(1/2)+5/64*B*e*b^3/c^3*(c*x^2+b*x)^(1/2)-5/128*B*e*b^4/c
^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*(c*x^2+b*x)^(3/2)/c*A*
e+1/3*(c*x^2+b*x)^(3/2)/c*B*d-1/4*b/c*x*(c*x^2+b*x)^(1/2)*A*e-1/4*b/c*x*(c*
x^2+b*x)^(1/2)*B*d-1/8*b^2/c^2*(c*x^2+b*x)^(1/2)*A*e-1/8*b^2/c^2*(c*x^2+b*x
)^(1/2)*B*d+1/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e+
1/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d+1/2*A*d*x*(c
*x^2+b*x)^(1/2)+1/4*A*d/c*(c*x^2+b*x)^(1/2)*b-1/8*A*d*b^2/c^(3/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.54, size = 295, normalized size = 1.92

$$\frac{1}{2}\sqrt{cx^2+bx}\,Adx+\frac{5\sqrt{cx^2+bx}\,Bb^2ex}{32c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bex}{4c}-\frac{Ab^2d\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{3}{2}}}-\frac{5Bb^4e\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{7}{2}}}+\frac{\sqrt{cx^2+bx}\,Abd}{4c}+\frac{5\sqrt{cx^2+bx}\,Bb^3e}{64c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bbe}{24c^2}-\frac{\sqrt{cx^2+bx}\,(Bd+Ae)bx}{4c}+\frac{(Bd+Ae)b^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{5}{2}}}-\frac{\sqrt{cx^2+bx}\,(Bd+Ae)b^2}{8c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bd+Ae)}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*A*d*x + 5/32*sqrt(c*x^2 + b*x)*B*b^2*e*x/c^2 + 1/4*(c
*x^2 + b*x)^(3/2)*B*e*x/c - 1/8*A*b^2*d*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c))/c^(3/2) - 5/128*B*b^4*e*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(
c))/c^(7/2) + 1/4*sqrt(c*x^2 + b*x)*A*b*d/c + 5/64*sqrt(c*x^2 + b*x)*B*b^3*
e/c^3 - 5/24*(c*x^2 + b*x)^(3/2)*B*b*e/c^2 - 1/4*sqrt(c*x^2 + b*x)*(B*d + A
*e)*b*x/c + 1/16*(B*d + A*e)*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c
))/c^(5/2) - 1/8*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^2/c^2 + 1/3*(c*x^2 + b*x)^
(3/2)*(B*d + A*e)/c
```

mupad [B] time = 2.44, size = 299, normalized size = 1.94

$$A\,d\,\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{5\,B\,b\,e\,\left(\frac{b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}-\frac{A\,b^2\,d\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}+\frac{A\,b^3\,e\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{B\,b^3\,d\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{A\,e\,\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}+\frac{B\,d\,\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}+\frac{B\,e\,x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] A*d*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) - (5*B*b*e*((b^3*log((b + 2*c*x)/c^
(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*
x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c) - (A*b^2*d*log((b/2 + c*x)/c^(1/2)
 + (b*x + c*x^2)^(1/2)))/(8*c^(3/2)) + (A*b^3*e*log((b + 2*c*x)/c^(1/2) + 2
*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (B*b^3*d*log((b + 2*c*x)/c^(1/2) + 2*
```

```
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (A*e*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 -
3*b^2 + 2*b*c*x))/(24*c^2) + (B*d*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 +
2*b*c*x))/(24*c^2) + (B*e*x*(b*x + c*x^2)^(3/2))/(4*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x(b+cx)}\,(A+Bx)\,(d+ex)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*(d + e*x), x)
```

3.1020 $\int (A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=97

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

Rubi [A] time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(8*c^2) + (B*(b*x + c*x^2)^(
3/2))/(3*c) + (b^2*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8
*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\sqrt{bx+cx^2}\,dx = \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{(-bB+2Ac)\int \sqrt{bx+cx^2}\,dx}{2c}$$
$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2(bB-2Ac)\right)\int \frac{1}{\sqrt{bx+cx^2}}\,d}{16c^2}$$
$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2(bB-2Ac)\right)\operatorname{Subst}\left(\int \frac{}{1-}\right.}{8c^2}$$
$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+c}}\right.}{8c^{5/2}}$$

Mathematica [A] time = 0.18, size = 108, normalized size = 1.11

$$\frac{\sqrt{x(b+cx)}\left(\frac{3b^{3/2}(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}} + \sqrt{c}\left(2bc(3A+Bx)+4c^2x(3A+2Bx)-3b^2B\right)\right)}{24c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-3*b^2*B + 2*b*c*(3*A + B*x) + 4*c^2*x*(3*A +
2*B*x)) + (3*b^(3/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqr
t[x]*Sqrt[1 + (c*x)/b])))/(24*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.00, size = 105, normalized size = 1.08

$$\frac{\sqrt{bx+cx^2}\left(6Abc+12Ac^2x-3b^2B+2bBcx+8Bc^2x^2\right)}{24c^2} + \frac{\left(2Ab^2c-b^3B\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{16c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-3*b^2*B + 6*A*b*c + 2*b*B*c*x + 12*A*c^2*x + 8*B*c^2*x
^2))/(24*c^2) + ((-(b^3*B) + 2*A*b^2*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x
+ c*x^2]])/(16*c^(5/2))
```

fricas [A] time = 0.45, size = 204, normalized size = 2.10

$$\left[-\frac{3\left(Bb^3-2Ab^2c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(8Bc^3x^2-3Bb^2c+6Abc^2+2\left(Bbc^2+6Ac^3\right)x\right)\sqrt{cx^2+bx}}{48c^3},\ -\frac{3\left(Bb^3-2Ab^2c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(8Bc^3x^2-3Bb^2c+6Abc^2+2\left(Bbc^2+6Ac^3\right)x\right)\sqrt{cx^2+bx}}{24c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*b^3 - 2*A*b^2*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*b*c^2 + 6*A*c^3)*x)
*sqrt(c*x^2 + b*x))/c^3, -1/24*(3*(B*b^3 - 2*A*b^2*c)*sqrt(-c)*arctan(sqrt(
c*x^2 + b*x)*sqrt(-c)/(c*x)) - (8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*
b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.27, size = 102, normalized size = 1.05

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(4Bx+\frac{Bbc+6Ac^2}{c^2}\right)x-\frac{3\left(Bb^2-2Abc\right)}{c^2}\right)-\frac{\left(Bb^3-2Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{16c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x + (B*b*c + 6*A*c^2)/c^2)*x - 3*(B*b^2 - 2*
A*b*c)/c^2) - 1/16*(B*b^3 - 2*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 157, normalized size = 1.62

$$-\frac{A b^2 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{8c^{\frac{3}{2}}}+\frac{B b^3 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{16c^{\frac{5}{2}}}+\frac{\sqrt{c x^2+bx}\, Ax}{2}-\frac{\sqrt{c x^2+bx}\, Bbx}{4c}+\frac{\sqrt{c x^2+bx}\, Ab}{4c}-\frac{\sqrt{c x^2+bx}\, B b^2}{8c^2}+\frac{\left(c x^2+bx\right)^{\frac{3}{2}} B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*(c*x^2+b*x)^(3/2)*B/c-1/4*B*b/c*x*(c*x^2+b*x)^(1/2)-1/8*B*b^2/c^2*(c*x^
2+b*x)^(1/2)+1/16*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1
/2*A*x*(c*x^2+b*x)^(1/2)+1/4*A/c*(c*x^2+b*x)^(1/2)*b-1/8*A*b^2/c^(3/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.56, size = 154, normalized size = 1.59

$$\frac{1}{2}\sqrt{cx^2+bx}\, Ax-\frac{\sqrt{cx^2+bx}\, Bbx}{4c}+\frac{Bb^3 \log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{5}{2}}}-\frac{Ab^2 \log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{3}{2}}}-\frac{\sqrt{cx^2+bx}\, Bb^2}{8c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}} B}{3c}+\frac{\sqrt{cx^2+bx}\, Ab}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*A*x - 1/4*sqrt(c*x^2 + b*x)*B*b*x/c + 1/16*B*b^3*log(
2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 1/8*A*b^2*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 1/8*sqrt(c*x^2 + b*x)*B*b^2/c^2 +
1/3*(c*x^2 + b*x)^(3/2)*B/c + 1/4*sqrt(c*x^2 + b*x)*A*b/c
```

mupad [B] time = 1.69, size = 127, normalized size = 1.31

$$A\sqrt{c x^2+b x}\left(\frac{x}{2}+\frac{b}{4 c}\right)+\frac{B b^3 \ln\left(\frac{b+2 c x}{\sqrt{c}}+2\sqrt{c x^2+b x}\right)}{16 c^{5/2}}+\frac{B\sqrt{c x^2+b x}\left(-3 b^2+2 b c x+8 c^2 x^2\right)}{24 c^2}-\frac{A b^2 \ln\left(\frac{\frac{b}{2}+c x}{\sqrt{c}}+\sqrt{c x^2+b x}\right)}{8 c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] A*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) + (B*b^3*log((b + 2*c*x)/c^(1/2) + 2*
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (B*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*
b^2 + 2*b*c*x))/(24*c^2) - (A*b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(
1/2)))/(8*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x), x)
```

3.1021 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{d+ex}\,dx$

Optimal. Leaf size=200

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(-b^2e^2-4bcde+8c^2d^2\right)\right)}{4c^{3/2}e^3}-\frac{\sqrt{d}\,(Bd-Ae)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{x(2cd-be)}{2\sqrt{d}\,\sqrt{bx+cx^2}}\right.}{e^3}$$

Rubi [A] time = 0.28, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {814, 843, 620, 206, 724}

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(-b^2e^2-4bcde+8c^2d^2\right)\right)}{4c^{3/2}e^3}-\frac{\sqrt{bx+cx^2}\,(-4Ace-bBe+4Bcd-2Bcex)}{4ce^2}-\frac{\sqrt{d}\,(Bd-Ae)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x),x]
```

```
[Out] -((4*B*c*d - b*B*e - 4*A*c*e - 2*B*c*e*x)*Sqrt[b*x + c*x^2])/(4*c*e^2) - ((
4*A*c*e*(2*c*d - b*e) - B*(8*c^2*d^2 - 4*b*c*d*e - b^2*e^2))*ArcTanh[(Sqrt[
c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(3/2)*e^3) - (Sqrt[d]*(B*d - A*e)*Sqrt[c*d -
 b*e]*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x +
 c*x^2])])/e^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{d+ex}\,dx = -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2} - \frac{\int \frac{-\frac{1}{2}bd(4Bcd-bBe-4Ace)+\frac{1}{2}\left(4Ace(2cd-be)-B\left(8c^2 \right.\right.}{(d+ex)\sqrt{bx+cx^2}}}{4ce^2}$$

$$= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2} - \frac{(d(Bd-Ae)(cd-be))\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,d}{e^3}$$

$$= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2} + \frac{(2d(Bd-Ae)(cd-be))\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4}\right.}{e^3}$$

$$= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2} - \frac{\left(4Ace(2cd-be)-B\left(8c^2d^2-4bcde-b\right.\right.}{4c^{3/2}e^3}$$

Mathematica [A] time = 0.69, size = 208, normalized size = 1.04

$$\frac{\sqrt{x(b+cx)}\left(\frac{\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(4Ace(be-2cd)+B\left(-b^2e^2-4bcde+8c^2d^2\right)\right)}{\sqrt{b}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(e\sqrt{x}\,(4Ace+B(be-4cd+2cex))-\frac{8c\sqrt{d}\,(Bd-Ae)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{\sqrt{b+cx}}\right)\right)}{4c^{3/2}e^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(((4*A*c*e*(-2*c*d + b*e) + B*(8*c^2*d^2 - 4*b*c*d*e - b
^2*e^2))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) +
Sqrt[c]*(e*Sqrt[x]*(4*A*c*e + B*(-4*c*d + b*e + 2*c*e*x)) - (8*c*Sqrt[d]*(B
*d - A*e)*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b
 + c*x])])/Sqrt[b + c*x])))/(4*c^(3/2)*e^3*Sqrt[x])
```

IntegrateAlgebraic [A] time = 1.01, size = 214, normalized size = 1.07

$$\frac{\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)\left(-4Abce^2+8Ac^2de+b^2Be^2+4bBcde-8Bc^2d^2\right)}{8c^{3/2}e^3}-\frac{2\left(Bd^{3/2}-A\sqrt{d}\,e\right)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{e^3}+\frac{\sqrt{bx+cx^2}\,(4Ace+bBe-4Bcd+2Bcex)}{4ce^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x),x]
```

```
[Out] ((-4*B*c*d + b*B*e + 4*A*c*e + 2*B*c*e*x)*Sqrt[b*x + c*x^2])/(4*c*e^2) - (2
*Sqrt[c*d - b*e]*(B*d^(3/2) - A*Sqrt[d]*e)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x
 - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/e^3 + ((-8*B*c^2*d^2 +
4*b*B*c*d*e + 8*A*c^2*d*e + b^2*B*e^2 - 4*A*b*c*e^2)*Log[b*c + 2*c^2*x - 2*
c^(3/2)*Sqrt[b*x + c*x^2]])/(8*c^(3/2)*e^3)
```

fricas [A] time = 1.23, size = 800, normalized size = 4.00

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] [1/8*((8*B*c^2*d^2 - 4*(B*b*c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(
c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 8*(B*c^2*d - A*c^2*e)*sqr
t(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*
x^2 + b*x))/(e*x + d)) + 2*(2*B*c^2*e^2*x - 4*B*c^2*d*e + (B*b*c + 4*A*c^2)
*e^2)*sqrt(c*x^2 + b*x))/(c^2*e^3), -1/8*(16*(B*c^2*d - A*c^2*e)*sqrt(-c*d^
2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
- (8*B*c^2*d^2 - 4*(B*b*c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(c)*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(2*B*c^2*e^2*x - 4*B*c^2*d*
e + (B*b*c + 4*A*c^2)*e^2)*sqrt(c*x^2 + b*x))/(c^2*e^3), -1/4*((8*B*c^2*d^2
 - 4*(B*b*c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(-c)*arctan(sqrt(c*
x^2 + b*x)*sqrt(-c)/(c*x)) + 4*(B*c^2*d - A*c^2*e)*sqrt(c*d^2 - b*d*e)*log(
(b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)
) - (2*B*c^2*e^2*x - 4*B*c^2*d*e + (B*b*c + 4*A*c^2)*e^2)*sqrt(c*x^2 + b*x)
)/(c^2*e^3), -1/4*(8*(B*c^2*d - A*c^2*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(
-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (8*B*c^2*d^2 - 4*(B*b*
c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)
*sqrt(-c)/(c*x)) - (2*B*c^2*e^2*x - 4*B*c^2*d*e + (B*b*c + 4*A*c^2)*e^2)*sq
rt(c*x^2 + b*x))/(c^2*e^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 1069, normalized size = 5.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*B/e*(c*x^2+b*x)^(1/2)*x+1/4*B/e/c*(c*x^2+b*x)^(1/2)*b-1/8*B/e*b^2/c^(3/
2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/e*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-1/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)*B*d+1/2/e*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b*A-1/2/e
^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b*B*d-1/e^2*ln(((x+d/e)*c+1/2*(b*e-2*c*
d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^
(1/2)*d*A+1/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*d^2*B+1/e^2*d/(-(b*e-c*d)*
d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e
^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e
))*b*A-1/e^3*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*B-1/e^3*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((
-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A+1/e^4*d^3/
(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(
b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2))/(x+d/e))*c*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\left(A+Bx\right)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x), x)
```

3.1022 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=185

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)(-2Ace-bBe+4Bcd)}{\sqrt{c}\,e^3}+\frac{(Bd(4cd-3be)-Ae(2cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2\sqrt{d}\,e^3\sqrt{cd-be}}+\frac{\sqrt{bx}\cdots}{}$$

Rubi [A] time = 0.19, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {812, 843, 620, 206, 724}

$$\frac{\sqrt{bx+cx^2}\,(-Ae+2Bd+Bex)}{e^2(d+ex)}-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)(-2Ace-bBe+4Bcd)}{\sqrt{c}\,e^3}+\frac{(Bd(4cd-3be)-Ae(2cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2\sqrt{d}\,e^3\sqrt{cd-be}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] ((2*B*d - A*e + B*e*x)*Sqrt[b*x + c*x^2])/(e^2*(d + e*x)) - ((4*B*c*d - b*B
*e - 2*A*c*e)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(Sqrt[c]*e^3) + ((B*d
*(4*c*d - 3*b*e) - A*e*(2*c*d - b*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sq
rt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*Sqrt[d]*e^3*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
```

```
x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^2}\,dx = \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)} - \frac{\int \frac{b(2Bd-Ae)+(4Bcd-bBe-2Ace)x}{(d+ex)\sqrt{bx+cx^2}}\,dx}{2e^2}$$

$$= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)} - \frac{(4Bcd-bBe-2Ace)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2e^3} + \frac{(Bd(4cd-3be)}{}$$

$$= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)} - \frac{(4Bcd-bBe-2Ace)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{bx+cx^2}}\right)}{e^3}$$

$$= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)} - \frac{(4Bcd-bBe-2Ace)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e^3} + \frac{(Bd(4cd-}{}$$

Mathematica [A] time = 1.26, size = 252, normalized size = 1.36

$$\frac{\sqrt{x(b+cx)}\left(\frac{e\sqrt{x}\,(Bd(2be-2cd+cex)-Ae(be-cd+cex))+\frac{d(be-cd)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)(2Ace+bBe-4Bcd)}{\sqrt{b}\sqrt{c}\sqrt{\frac{cx}{b}+1}}-\frac{\sqrt{d}\sqrt{cd-be}\,(Ae(be-2cd)+Bd(4cd-3be))\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{\sqrt{b+cx}}}{e^3}-\frac{x^{3/2}(b+cx)(Bd-Ae)}{d+ex}\right)}{d\sqrt{x}\,(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(-(((B*d - A*e)*x^(3/2)*(b + c*x))/(d + e*x)) + (e*Sqrt[
x]*(-(A*e*(-(c*d) + b*e + c*e*x)) + B*d*(-2*c*d + 2*b*e + c*e*x)) + (d*(-(c
*d) + b*e)*(-4*B*c*d + b*B*e + 2*A*c*e)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]) - (Sqrt[d]*Sqrt[c*d - b*e]*(B*d*(4*c*d
 - 3*b*e) + A*e*(-2*c*d + b*e))*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*
Sqrt[b + c*x])])/Sqrt[b + c*x])/e^3))/(d*(-(c*d) + b*e)*Sqrt[x])
```

IntegrateAlgebraic [A] time = 1.41, size = 191, normalized size = 1.03

$$\frac{\left(Abe^2-2Acde-3bBde+4Bcd^2\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{d}\sqrt{cd-be}}\right)}{\sqrt{d}\,e^3\sqrt{cd-be}}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)(-2Ace-bBe+4Bcd)}{2\sqrt{c}\,e^3}+\frac{\sqrt{bx+cx^2}\,(-Ae+2Bd+Bex)}{e^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] ((2*B*d - A*e + B*e*x)*Sqrt[b*x + c*x^2])/(e^2*(d + e*x)) + ((4*B*c*d^2 - 3
*b*B*d*e - 2*A*c*d*e + A*b*e^2)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b
*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/(Sqrt[d]*e^3*Sqrt[c*d - b*e]) + ((
4*B*c*d - b*B*e - 2*A*c*e)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(2
*Sqrt[c]*e^3)
```

fricas [B] time = 0.85, size = 1513, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*((4*B*c^2*d^4 - (5*B*b*c + 2*A*c^2)*d^3*e + (B*b^2 + 2*A*b*c)*d^2*e^2
 + (4*B*c^2*d^3*e - (5*B*b*c + 2*A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*e^3)*
x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - (4*B*c^2*d^3 + A*
b*c*d*e^2 - (3*B*b*c + 2*A*c^2)*d^2*e + (4*B*c^2*d^2*e + A*b*c*e^3 - (3*B*b
*c + 2*A*c^2)*d*e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*
sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(2*B*c^2*d^3*e + A*b*
c*d*e^3 - (2*B*b*c + A*c^2)*d^2*e^2 + (B*c^2*d^2*e^2 - B*b*c*d*e^3)*x)*sqrt
(c*x^2 + b*x))/(c^2*d^3*e^3 - b*c*d^2*e^4 + (c^2*d^2*e^4 - b*c*d*e^5)*x), 1
/2*(2*(4*B*c^2*d^3 + A*b*c*d*e^2 - (3*B*b*c + 2*A*c^2)*d^2*e + (4*B*c^2*d^2
*e + A*b*c*e^3 - (3*B*b*c + 2*A*c^2)*d*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(
-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - (4*B*c^2*d^4 - (
5*B*b*c + 2*A*c^2)*d^3*e + (B*b^2 + 2*A*b*c)*d^2*e^2 + (4*B*c^2*d^3*e - (5*
B*b*c + 2*A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*e^3)*x)*sqrt(c)*log(2*c*x +
b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(2*B*c^2*d^3*e + A*b*c*d*e^3 - (2*B*b*
c + A*c^2)*d^2*e^2 + (B*c^2*d^2*e^2 - B*b*c*d*e^3)*x)*sqrt(c*x^2 + b*x))/(c
^2*d^3*e^3 - b*c*d^2*e^4 + (c^2*d^2*e^4 - b*c*d*e^5)*x), 1/2*(2*(4*B*c^2*d^
4 - (5*B*b*c + 2*A*c^2)*d^3*e + (B*b^2 + 2*A*b*c)*d^2*e^2 + (4*B*c^2*d^3*e
- (5*B*b*c + 2*A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*e^3)*x)*sqrt(-c)*arctan
(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (4*B*c^2*d^3 + A*b*c*d*e^2 - (3*B*b*c
+ 2*A*c^2)*d^2*e + (4*B*c^2*d^2*e + A*b*c*e^3 - (3*B*b*c + 2*A*c^2)*d*e^2)*
x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*s
qrt(c*x^2 + b*x))/(e*x + d)) + 2*(2*B*c^2*d^3*e + A*b*c*d*e^3 - (2*B*b*c +
A*c^2)*d^2*e^2 + (B*c^2*d^2*e^2 - B*b*c*d*e^3)*x)*sqrt(c*x^2 + b*x))/(c^2*d
^3*e^3 - b*c*d^2*e^4 + (c^2*d^2*e^4 - b*c*d*e^5)*x), ((4*B*c^2*d^3 + A*b*c*
d*e^2 - (3*B*b*c + 2*A*c^2)*d^2*e + (4*B*c^2*d^2*e + A*b*c*e^3 - (3*B*b*c +
 2*A*c^2)*d*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(
c*x^2 + b*x)/((c*d - b*e)*x)) + (4*B*c^2*d^4 - (5*B*b*c + 2*A*c^2)*d^3*e +
(B*b^2 + 2*A*b*c)*d^2*e^2 + (4*B*c^2*d^3*e - (5*B*b*c + 2*A*c^2)*d^2*e^2 +
(B*b^2 + 2*A*b*c)*d*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) + (2*B*c^2*d^3*e + A*b*c*d*e^3 - (2*B*b*c + A*c^2)*d^2*e^2 + (B*c^2*d^2*
e^2 - B*b*c*d*e^3)*x)*sqrt(c*x^2 + b*x))/(c^2*d^3*e^3 - b*c*d^2*e^4 + (c^2*
d^2*e^4 - b*c*d*e^5)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 2285, normalized size = 12.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x)
```

```
[Out] 1/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
3/2)*A-1/e/(b*e-c*d)/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(3/2)*B-1/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*b*A+1/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*b*B+1/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(1/2)*c*A-1/e^2/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2)*c*B*d+1/e/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2
)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*A-1/
e^2/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*B*d-1/e^2/(b*e-c*d)*d*ln((
(x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
```

```
d)*(x+d/e)/e)^(1/2))*c^(3/2)*A+1/e^3/(b*e-c*d)*d^2*ln(((x+d/e)*c+1/2*(b*e-2
*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))
*c^(3/2)*B-1/2/e/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*A+1/2/e^2/(b*e-c*d)/(-(b*e-c*
d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*
d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+
d/e))*b^2*B*d+3/2/e^2/(b*e-c*d)*d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A-3/2/e^3/(b*e-c*d)*d^
2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(
-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2))/(x+d/e))*b*c*B-1/e^3/(b*e-c*d)*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*A+1/e^4/(b*e-
c*d)*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e)^(1/2))/(x+d/e))*c^2*B-c/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A+1/e*c/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B+B/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)+1/2*B/e^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b-B/e^3*l
n(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*d+B/e^3*d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b-B/e^4*d^2/(-(b*e
-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*
d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/
(x+d/e))*c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x \left(b + cx\right)} \left(A + Bx\right)}{\left(d + ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**2,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**2, x)
```

3.1023 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^3} \, dx$

Optimal. Leaf size=235

$$-\frac{\left(Ab^2e^3+Bd\left(3b^2e^2-12bcde+8c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{3/2}e^3(cd-be)^{3/2}}+\frac{\sqrt{bx+cx^2}\left(d\left(Abe^2-Bd(4cd-3be)\right)-\right.}{4de^2(d+ex)^2}$$

Rubi [A] time = 0.32, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {810, 843, 620, 206, 724}

$$-\frac{\left(Ab^2e^3+Bd\left(3b^2e^2-12bcde+8c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{3/2}e^3(cd-be)^{3/2}}+\frac{\sqrt{bx+cx^2}\left(d\left(Abe^2-Bd(4cd-3be)\right)-ex(Bd(6cd-5be)-Ae(2cd-be))\right)}{4de^2(d+ex)^2(cd-be)}+\frac{2B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] ((d*(A*b*e^2 - B*d*(4*c*d - 3*b*e)) - e*(B*d*(6*c*d - 5*b*e) - A*e*(2*c*d -
 b*e))*x)*Sqrt[b*x + c*x^2])/(4*d*e^2*(c*d - b*e)*(d + e*x)^2) + (2*B*Sqrt[
c]*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/e^3 - ((A*b^2*e^3 + B*d*(8*c^2*d
^2 - 12*b*c*d*e + 3*b^2*e^2))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sq
rt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(8*d^(3/2)*e^3*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^3}\,dx = \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} - \int \frac{\frac{1}{2}b(A \cdots}{\cdots}$$

$$= \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} + \frac{(Bc)\int \cdots}{\cdots}$$

$$= \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} + \frac{(2Bc)\cdots}{\cdots}$$

$$= \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} + \frac{2B\sqrt{c}\cdots}{\cdots}$$

Mathematica [B] time = 3.65, size = 690, normalized size = 2.94

$$\frac{x\left(\frac{(d+ex)\left((d+ex)\left(b\sqrt{c}e\sqrt{x}\left(A\left(b^2e^2+4bcde-8c^2d^2\right)+3b^2Bde\right)\left(e(b+cx)\left(b\sqrt{c}\sqrt{x}\left(\frac{cx}{b}+1\right)^{3/2}+\sqrt{b}(b+cx)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)-2b\sqrt{c}\sqrt{d}\left(\frac{cx}{b}+1\right)^{3/2}\left(\sqrt{b}\sqrt{c}\sqrt{d}\sqrt{\frac{cx}{b}+1}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{b+cx}\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)\right)\right)-(Ae(2cd-be)+Bd(2cd-3be))\left(e^2(b+cx)^2\left(bcx(b+2cx)\sqrt{\frac{cx}{b}+1}-b^{5/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)-4bc^{3/2}d\sqrt{x}\left(e(b+cx)\left(b\sqrt{c}\sqrt{x}\left(\frac{cx}{b}+1\right)^{3/2}+\sqrt{b}(b+cx)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)-2b\sqrt{c}\sqrt{d}\left(\frac{cx}{b}+1\right)^{3/2}\left(\sqrt{b}\sqrt{c}\sqrt{d}\sqrt{\frac{cx}{b}+1}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{b+cx}\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)\right)\right)\right)\right)-2bce^3x^2(b+cx)^3\sqrt{\frac{cx}{b}+1}\,(Ae(be-2cd)+Bd(3be-2cd))\right)}{bcde^3\sqrt{\frac{cx}{b}+1}\,(cd-be)}-4x^2(b+cx)^3(Bd-Ae)\right)}{8d(x(b+cx))^{3/2}(d+ex)^2(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] (x*(-4*(B*d - A*e)*x^2*(b + c*x)^3 + ((d + e*x)*(-2*b*c*e^3*(A*e*(-2*c*d +
b*e) + B*d*(-2*c*d + 3*b*e))*x^2*(b + c*x)^3*Sqrt[1 + (c*x)/b] + (d + e*x)*
(b*Sqrt[c]*e*(3*b^2*B*d*e + A*(-8*c^2*d^2 + 4*b*c*d*e + b^2*e^2))*Sqrt[x]*(
e*(b + c*x)*(b*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2) + Sqrt[b]*(b + c*x)*ArcS
inh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]) - 2*b*Sqrt[c]*Sqrt[d]*(1 + (c*x)/b)^(3/2)*(
Sqrt[b]*Sqrt[c]*Sqrt[d]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]
] - Sqrt[c*d - b*e]*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d
]*Sqrt[b + c*x])])) - (B*d*(2*c*d - 3*b*e) + A*e*(2*c*d - b*e))*(e^2*(b + c
*x)^2*(b*c*x*(b + 2*c*x)*Sqrt[1 + (c*x)/b] - b^(5/2)*Sqrt[c]*Sqrt[x]*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]]) - 4*b*c^(3/2)*d*Sqrt[x]*(e*(b + c*x)*(b*Sqrt[
c]*Sqrt[x]*(1 + (c*x)/b)^(3/2) + Sqrt[b]*(b + c*x)*ArcSinh[(Sqrt[c]*Sqrt[x]
)/Sqrt[b]]) - 2*b*Sqrt[c]*Sqrt[d]*(1 + (c*x)/b)^(3/2)*(Sqrt[b]*Sqrt[c]*Sqrt
[d]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]] - Sqrt[c*d - b*e]*
Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])))
)))/(b*c*d*e^3*(c*d - b*e)*Sqrt[1 + (c*x)/b])))/(8*d*(-(c*d) + b*e)*(x*(b +
 c*x))^(3/2)*(d + e*x)^2)
```

IntegrateAlgebraic [A] time = 2.71, size = 250, normalized size = 1.06

$$\frac{\left(-Ab^2e^3-3b^2Bde^2+12bBcd^2e-8Bc^2d^3\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{4d^{3/2}e^3(cd-be)^{3/2}}-\frac{\sqrt{bx+cx^2}\left(-Abde^2+Abe^3x-2Acde^2x-3bBd^2e-5bBde^2x+4Bcd^3+6Bcd^2ex\right)}{4de^2(d+ex)^2(cd-be)}-\frac{B\sqrt{c}\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{e^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] -1/4*((4*B*c*d^3 - 3*b*B*d^2*e - A*b*d*e^2 + 6*B*c*d^2*e*x - 5*b*B*d*e^2*x
- 2*A*c*d*e^2*x + A*b*e^3*x)*Sqrt[b*x + c*x^2])/(d*e^2*(c*d - b*e)*(d + e*x
)^2) + ((-8*B*c^2*d^3 + 12*b*B*c*d^2*e - 3*b^2*B*d*e^2 - A*b^2*e^3)*ArcTanh
```

```
[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])]
)/(4*d^(3/2)*e^3*(c*d - b*e)^(3/2)) - (B*Sqrt[c]*Log[b + 2*c*x - 2*Sqrt[c]*
Sqrt[b*x + c*x^2]])/e^3
```

fricas [B] time = 1.95, size = 2234, normalized size = 9.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(8*(B*c^2*d^6 - 2*B*b*c*d^5*e + B*b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b
*c*d^3*e^3 + B*b^2*d^2*e^4)*x^2 + 2*(B*c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*
d^3*e^3)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - (8*B*c^2
*d^5 - 12*B*b*c*d^4*e + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2
- 12*B*b*c*d^2*e^3 + 3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12
*B*b*c*d^3*e^2 + 3*B*b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(c*d^2 - b*d*e)*log(
(b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)
) - 2*(4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d^2*e^4 + (3*B*b^2 - A*b*c)*
d^3*e^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B*b*c + 2*A*c^2)*d^3*e^3 + (
5*B*b^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^6*e^3 - 2*b*c*d^5*
e^4 + b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6 + b^2*d^2*e^7)*x^2 + 2*(c^
2*d^5*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x), -1/4*((8*B*c^2*d^5 - 12*B*b*c*
d^4*e + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2 - 12*B*b*c*d^2*e
^3 + 3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12*B*b*c*d^3*e^2 +
 3*B*b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2
 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 4*(B*c^2*d^6 - 2*B*b*c*d^5*e
 + B*b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b*c*d^3*e^3 + B*b^2*d^2*e^4)*x^2 +
2*(B*c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*d^3*e^3)*x)*sqrt(c)*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d
^2*e^4 + (3*B*b^2 - A*b*c)*d^3*e^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B
*b*c + 2*A*c^2)*d^3*e^3 + (5*B*b^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x)
)/(c^2*d^6*e^3 - 2*b*c*d^5*e^4 + b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6
 + b^2*d^2*e^7)*x^2 + 2*(c^2*d^5*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x), -1/
8*(16*(B*c^2*d^6 - 2*B*b*c*d^5*e + B*b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b*c
*d^3*e^3 + B*b^2*d^2*e^4)*x^2 + 2*(B*c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*d^
3*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B*c^2*d^5
- 12*B*b*c*d^4*e + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2 - 12*
B*b*c*d^2*e^3 + 3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12*B*b*
c*d^3*e^2 + 3*B*b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
+ (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2
*(4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d^2*e^4 + (3*B*b^2 - A*b*c)*d^3*e
^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B*b*c + 2*A*c^2)*d^3*e^3 + (5*B*b
^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^6*e^3 - 2*b*c*d^5*e^4 +
 b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6 + b^2*d^2*e^7)*x^2 + 2*(c^2*d^5
*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x), -1/4*((8*B*c^2*d^5 - 12*B*b*c*d^4*e
 + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2 - 12*B*b*c*d^2*e^3 +
3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12*B*b*c*d^3*e^2 + 3*B*
b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*
d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 8*(B*c^2*d^6 - 2*B*b*c*d^5*e + B*
b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b*c*d^3*e^3 + B*b^2*d^2*e^4)*x^2 + 2*(B*
c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*d^3*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2
+ b*x)*sqrt(-c)/(c*x)) + (4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d^2*e^4 +
 (3*B*b^2 - A*b*c)*d^3*e^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B*b*c + 2
*A*c^2)*d^3*e^3 + (5*B*b^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d
^6*e^3 - 2*b*c*d^5*e^4 + b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6 + b^2*d
^2*e^7)*x^2 + 2*(c^2*d^5*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x)]
```

giac [B] time = 0.40, size = 819, normalized size = 3.49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -B*sqrt(c)*e^(-3)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b)) -
 1/4*(8*B*c^2*d^3 - 12*B*b*c*d^2*e + 3*B*b^2*d*e^2 + A*b^2*e^3)*arctan(-((s
qrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c*d^2*
e^3 - b*d*e^4)*sqrt(-c*d^2 + b*d*e)) - 1/4*(16*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^3*B*c^(5/2)*d^3*e + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*c^3*d^4 - 20
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^2*d^3*e - 8*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^2*A*c^3*d^3*e + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^(5/2)*d^
4 - 20*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b*c^(3/2)*d^2*e^2 - 8*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*A*c^(5/2)*d^2*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*
x))*B*b^2*c^(3/2)*d^3*e - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c^(5/2)*d^3
*e + 6*B*b^2*c^2*d^4 - (sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c*d^2*e^2 -
5*B*b^3*c*d^3*e - 2*A*b^2*c^2*d^3*e + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^2*sqrt(c)*d*e^3 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^(3/2)*d*e^3
+ 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*sqrt(c)*d^2*e^2 + 4*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^2*c^(3/2)*d^2*e^2 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*A*b^2*c*d*e^3 + A*b^3*c*d^2*e^2 - (sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b
^2*sqrt(c)*e^4 + (sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*sqrt(c)*d*e^3)/((c^(
3/2)*d^2*e^3 - b*sqrt(c)*d*e^4)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^2)
```

maple [B] time = 0.07, size = 4316, normalized size = 18.37

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x)
```

```
[Out] -1/4/e*c^(1/2)/(b*e-c*d)/d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b*A-3/2*B/e^4/(b*e-c*d)
*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+
2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2))/(x+d/e))*c^2-1/2/e^4/(b*e-c*d)^2*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln
((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B-1/2/e^
2*c/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(1/2))/(x+d/e))*b*A+1/2/e^3*c^2/(b*e-c*d)*d/(-(b*e-c*d)*d/e^2)
^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1
/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+1
/4*e/(b*e-c*d)^2/d^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(3/2)*b*A+3/4/e^2/(b*e-c*d)^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2
)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*b*B*d+
5/8/e/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*A+3/4/(b*e-c*d)^2/d*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+1/2/(b*e-c*d)^2/d*c^2*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A+1/4/(b*e-c*d)^2/d*
ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*A+1/e^3/(b*e-c*d)^2*d^2/(-(b*e-c*d)*d/
e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2
)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))
*b*c^2*B-5/8/e^2/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B*d+2*B/e^3/(b*e-c*d)*d/(
-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b
*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1
```

```
/2))/(x+d/e))*b*c-1/4*e/(b*e-c*d)^2/d^2*c*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2)*x*b*A-1/e^2/(b*e-c*d)^2*d/(-(b*e-c*d)*d/e^2)^(1/2)
*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*A-1
/4/(b*e-c*d)^2/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(3/2)*b*B-1/2/(b*e-c*d)^2/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c
*d)*(x+d/e)/e)^(3/2)*c*A-1/8/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*A+1/2/e/(b*e-
c*d)/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*
A-1/4*e/(b*e-c*d)^2/d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*b^2*A+1/2/e^2/(b*e-c*d)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2)*c^2*B*d+1/2/e^2/(b*e-c*d)^2*d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)
/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(5
/2)*A-1/2/e^3/(b*e-c*d)^2*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(5/2)*B-1/2/e*c/(b
*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-3/4/e
/(b*e-c*d)^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*b*A-3/2*B/e^3/(b*e-c*d)*d*ln(
((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c
*d)*(x+d/e)/e)^(1/2))*c^(3/2)-1/2*B/e^2/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*
ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2+1/8/e/
(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-3/4/e/(b*e-c*d)^2*((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-1/2/e/(b*e-c*d)^2*c^2*((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B-1/4/e/(b*e-c*d)^2*ln(((x+d
/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2))*c^(1/2)*b^2*B-B/e/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b+5/4*B/e^2/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-
2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
)*c^(1/2)*b+B/e/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(3/2)+1/2/e/(b*e-c*d)^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*B-1/2/e^2/(b*e-c*d)/(x+d/e)^2*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*B-1/2/e/(b*e-c*d)^2*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*A-B/e*c/(b*e-c*d)/d*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x+1/2/e^3/(b*e-c*d)^2*
d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2
*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2))/(x+d/e))*c^3*A+1/4/(b*e-c*d)^2/d*c*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*B+1/2/e^2*c^(3/2)/(b*e-c*d)*ln(((x+d/e)*c+1
/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2))*A+1/4/(b*e-c*d)^2/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(1/2)*b^2*B+3/2*B/e^2/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^3,x)
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x(b+cx)}\,(A+Bx)}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**3,x)
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**3, x)
```

3.1024 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=200

$$\frac{b^2(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{8d^2(d+ex)^2(cd-be)^2}+\frac{\left(bx+\right.}{3d(d}$$

Rubi [A] time = 0.18, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {806, 720, 724, 206}

$$\frac{b^2(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{8d^2(d+ex)^2(cd-be)^2}+\frac{\left(bx+cx^2\right)^{3/2}(Bd-Ae)}{3d(d+ex)^3(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] -((b*B*d - 2*A*c*d + A*b*e)*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])/(8*d
^2*(c*d - b*e)^2*(d + e*x)^2) + ((B*d - A*e)*(b*x + c*x^2)^(3/2))/(3*d*(c*d
 - b*e)*(d + e*x)^3) + (b^2*(b*B*d - 2*A*c*d + A*b*e)*ArcTanh[(b*d + (2*c*d
 - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(16*d^(5/2)*(c*d
 - b*e)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^4}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} - \frac{(bBd-2Acd+Abe)\int \frac{\sqrt{bx+cx^2}}{(d+ex)^3}\,dx}{2d(cd-be)}$$

$$= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{8d^2(cd-be)^2(d+ex)^2} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} + \frac{(b^2}{}$$

$$= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{8d^2(cd-be)^2(d+ex)^2} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} - \frac{(b^2}{}$$

$$= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{8d^2(cd-be)^2(d+ex)^2} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} + \frac{b^2(}{}$$

Mathematica [A] time = 0.39, size = 199, normalized size = 1.00

$$\frac{\sqrt{x(b+cx)}\left(8x^{3/2}(b+cx)(Ae-Bd) - \frac{3(d+ex)(Abe-2Acd+bBd)\left(b^2(d+ex)^2\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}(-bd+bex-2cdx)\right)}{d^{3/2}\sqrt{b+cx}(cd-be)^{3/2}}\right)}{24d\sqrt{x}(d+ex)^3(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(8*(-(B*d) + A*e)*x^(3/2)*(b + c*x) - (3*(b*B*d - 2*A*c*
d + A*b*e)*(d + e*x)*(Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[x]*Sqrt[b + c*x]*(-(b*d)
 - 2*c*d*x + b*e*x) + b^2*(d + e*x)^2*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sq
rt[d]*Sqrt[b + c*x])]))/(d^(3/2)*(c*d - b*e)^(3/2)*Sqrt[b + c*x])))/(24*d*(
-(c*d) + b*e)*Sqrt[x]*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 180.10, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.45, size = 1216, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [1/48*(3*(A*b^3*d^3*e + (B*b^3 - 2*A*b^2*c)*d^4 + (A*b^3*e^4 + (B*b^3 - 2*A
*b^2*c)*d*e^3)*x^3 + 3*(A*b^3*d*e^3 + (B*b^3 - 2*A*b^2*c)*d^2*e^2)*x^2 + 3*
(A*b^3*d^2*e^2 + (B*b^3 - 2*A*b^2*c)*d^3*e)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) +
2*(3*A*b^3*d^3*e^2 - 3*(B*b^2*c - 2*A*b*c^2)*d^5 + 3*(B*b^3 - 3*A*b^2*c)*d^
4*e + (8*B*c^3*d^5 - 3*A*b^3*d*e^4 - 2*(11*B*b*c^2 - 2*A*c^3)*d^4*e + (17*B
*b^2*c - 8*A*b*c^2)*d^3*e^2 - (3*B*b^3 - 7*A*b^2*c)*d^2*e^3)*x^2 - 2*(4*A*b
^3*d^2*e^3 - (B*b*c^2 + 6*A*c^3)*d^5 + (5*B*b^2*c + 13*A*b*c^2)*d^4*e - (4*
B*b^3 + 11*A*b^2*c)*d^3*e^2)*x)*sqrt(c*x^2 + b*x))/(c^3*d^9 - 3*b*c^2*d^8*e
 + 3*b^2*c*d^7*e^2 - b^3*d^6*e^3 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 + 3*b^2*c
*d^4*e^5 - b^3*d^3*e^6)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 + 3*b^2*c*d^
5*e^4 - b^3*d^4*e^5)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 + 3*b^2*c*d^6*e^3
```

```
 - b^3*d^5*e^4)*x), 1/24*(3*(A*b^3*d^3*e + (B*b^3 - 2*A*b^2*c)*d^4 + (A*b^3
*e^4 + (B*b^3 - 2*A*b^2*c)*d*e^3)*x^3 + 3*(A*b^3*d*e^3 + (B*b^3 - 2*A*b^2*c
)*d^2*e^2)*x^2 + 3*(A*b^3*d^2*e^2 + (B*b^3 - 2*A*b^2*c)*d^3*e)*x)*sqrt(-c*d
^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
 + (3*A*b^3*d^3*e^2 - 3*(B*b^2*c - 2*A*b*c^2)*d^5 + 3*(B*b^3 - 3*A*b^2*c)*d
^4*e + (8*B*c^3*d^5 - 3*A*b^3*d*e^4 - 2*(11*B*b*c^2 - 2*A*c^3)*d^4*e + (17*
B*b^2*c - 8*A*b*c^2)*d^3*e^2 - (3*B*b^3 - 7*A*b^2*c)*d^2*e^3)*x^2 - 2*(4*A*
b^3*d^2*e^3 - (B*b*c^2 + 6*A*c^3)*d^5 + (5*B*b^2*c + 13*A*b*c^2)*d^4*e - (4
*B*b^3 + 11*A*b^2*c)*d^3*e^2)*x)*sqrt(c*x^2 + b*x))/(c^3*d^9 - 3*b*c^2*d^8*
e + 3*b^2*c*d^7*e^2 - b^3*d^6*e^3 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 + 3*b^2*
c*d^4*e^5 - b^3*d^3*e^6)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 + 3*b^2*c*d
^5*e^4 - b^3*d^4*e^5)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 + 3*b^2*c*d^6*e^
3 - b^3*d^5*e^4)*x)]
```

giac [B] time = 0.34, size = 1555, normalized size = 7.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 1/8*(B*b^3*d - 2*A*b^2*c*d + A*b^3*e)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*
x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*
e^2)*sqrt(-c*d^2 + b*d*e)) + 1/24*(96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c
^(7/2)*d^5*e + 64*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^4*d^6 + 48*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^5*B*c^3*d^4*e^2 - 16*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^3*B*b*c^3*d^5*e + 32*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^4*d^5*e + 96*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^(7/2)*d^6 - 144*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^4*B*b*c^(5/2)*d^4*e^2 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*
c^(7/2)*d^4*e^2 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^(5/2)*d^5*e
 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(7/2)*d^5*e + 48*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*B*b^2*c^3*d^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*
b*c^2*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^2*d^4*e^2 + 1
6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^3*d^4*e^2 - 84*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*B*b^3*c^2*d^5*e + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^
3*d^5*e + 8*B*b^3*c^(5/2)*d^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^
(5/2)*d^3*e^3 - 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^(3/2)*d^4*e^2 -
 36*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(5/2)*d^4*e^2 - 14*B*b^4*c^(3
/2)*d^5*e + 4*A*b^3*c^(5/2)*d^5*e + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*
b^2*c*d^2*e^4 + 58*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c*d^3*e^3 - 84*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^2*d^3*e^3 + 18*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*B*b^4*c*d^4*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c^2
*d^4*e^2 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*sqrt(c)*d^2*e^4 + 78*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(3/2)*d^2*e^4 + 24*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^2*B*b^4*sqrt(c)*d^3*e^3 - 6*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^2*A*b^3*c^(3/2)*d^3*e^3 + 3*B*b^5*sqrt(c)*d^4*e^2 - 4*A*b^4*c^(3/2)*d^4*
e^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*d*e^5 + 6*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^5*A*b^2*c*d*e^5 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*
d^2*e^4 + 74*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c*d^2*e^4 + 3*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*B*b^5*d^3*e^3 + 12*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^4*c*d^3*e^3 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*sqrt(c)*d*e^5
+ 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*sqrt(c)*d^2*e^4 + 3*A*b^5*sqrt
(c)*d^3*e^3 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*e^6 - 8*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^3*A*b^4*d*e^5 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^
5*d^2*e^4)/((c^2*d^4*e^3 - 2*b*c*d^3*e^4 + b^2*d^2*e^5)*((sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^3)
```

maple [B] time = 0.07, size = 6956, normalized size = 34.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\left(b + cx\right)}\left(A + Bx\right)}{\left(d + ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**4,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**4, x)
```

3.1025 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=310

$$-\frac{b^2\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{128d^{7/2}(cd-be)^{7/2}}+\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd}{6}$$

Rubi [A] time = 0.41, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {834, 806, 720, 724, 206}

$$\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)}{64d^3(d+ex)^2(cd-be)^3}-\frac{b^2\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{128d^{7/2}(cd-be)^{7/2}}-\frac{\left(bx+cx^2\right)^{3/2}(5Ae(2cd-be)-Bd(3be+2cd))}{24d^2(d+ex)^3(cd-be)^2}+\frac{\left(bx+cx^2\right)^{3/2}(Bd-Ae)}{4d(d+ex)^4(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] ((16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(3*B*d + 5*A*e))*(b*d + (2*c
*d - b*e)*x)*Sqrt[b*x + c*x^2])/(64*d^3*(c*d - b*e)^3*(d + e*x)^2) + ((B*d
- A*e)*(b*x + c*x^2)^(3/2))/(4*d*(c*d - b*e)*(d + e*x)^4) - ((5*A*e*(2*c*d
- b*e) - B*d*(2*c*d + 3*b*e))*(b*x + c*x^2)^(3/2))/(24*d^2*(c*d - b*e)^2*(d
 + e*x)^3) - (b^2*(16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(3*B*d + 5*
A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x +
 c*x^2])])/(128*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^5}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{4d(cd-be)(d+ex)^4} - \frac{\int \frac{\left(\frac{1}{2}(3bBd-8Acd+5Abe)-c(Bd-Ae)x\right)\sqrt{bx+cx^2}}{(d+ex)^4}\,dx}{4d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{4d(cd-be)(d+ex)^4} - \frac{(5Ae(2cd-be)-Bd(2cd+3be))\left(bx+cx^2\right)^{3/2}}{24d^2(cd-be)^2(d+ex)^3} + \frac{\left(16Ac^2d\right.}{}$$

$$= \frac{\left(16Ac^2d^2-8bcd(Bd+2Ae)+b^2e(3Bd+5Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{64d^3(cd-be)^3(d+ex)^2} + \frac{(Bd}{4d}$$

$$= \frac{\left(16Ac^2d^2-8bcd(Bd+2Ae)+b^2e(3Bd+5Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{64d^3(cd-be)^3(d+ex)^2} + \frac{(Bd}{4d}$$

$$= \frac{\left(16Ac^2d^2-8bcd(Bd+2Ae)+b^2e(3Bd+5Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{64d^3(cd-be)^3(d+ex)^2} + \frac{(Bd}{4d}$$

Mathematica [A] time = 0.75, size = 279, normalized size = 0.90

$$\frac{\sqrt{x(b+cx)}\left(\frac{3(d+ex)^2\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)\left(b^2(d+ex)^2\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}(-bd+bex-2cdx)\right)}{d^{5/2}\sqrt{b+cx}(cd-be)^{5/2}} - \frac{8x^{3/2}(b+cx)(d+ex)(5Ae(be-2cd)+Bd(3be+2cd))}{d(cd-be)} + 48x^{3/2}(b+cx)(Ae-Bd)\right)}{192d\sqrt{x}(d+ex)^4(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(48*(-(B*d) + A*e)*x^(3/2)*(b + c*x) - (8*(5*A*e*(-2*c*d
 + b*e) + B*d*(2*c*d + 3*b*e))*x^(3/2)*(b + c*x)*(d + e*x))/(d*(c*d - b*e))
 + (3*(16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(3*B*d + 5*A*e))*(d + e
*x)^2*(Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[x]*Sqrt[b + c*x]*(-(b*d) - 2*c*d*x + b*
e*x) + b^2*(d + e*x)^2*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b +
c*x])]))/(d^(5/2)*(c*d - b*e)^(5/2)*Sqrt[b + c*x])))/(192*d*(-(c*d) + b*e)*
Sqrt[x]*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 180.08, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.49, size = 2190, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(5*A*b^4*d^4*e^2 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^6 + (3*B*b^4 - 16
*A*b^3*c)*d^5*e + (5*A*b^4*e^6 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^2*e^4 + (3*B*b
^4 - 16*A*b^3*c)*d*e^5)*x^4 + 4*(5*A*b^4*d*e^5 - 8*(B*b^3*c - 2*A*b^2*c^2)*
d^3*e^3 + (3*B*b^4 - 16*A*b^3*c)*d^2*e^4)*x^3 + 6*(5*A*b^4*d^2*e^4 - 8*(B*b
^3*c - 2*A*b^2*c^2)*d^4*e^2 + (3*B*b^4 - 16*A*b^3*c)*d^3*e^3)*x^2 + 4*(5*A*
b^4*d^3*e^3 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^5*e + (3*B*b^4 - 16*A*b^3*c)*d^4*
e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d
*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(15*A*b^4*d^4*e^3 + 24*(B*b^2*c^2 - 2
*A*b*c^3)*d^7 - 3*(11*B*b^3*c - 32*A*b^2*c^2)*d^6*e + 9*(B*b^4 - 7*A*b^3*c)
*d^5*e^2 - (16*B*c^4*d^6*e + 15*A*b^4*d*e^6 - 8*(7*B*b*c^3 - 2*A*c^4)*d^5*e
^2 + 2*(29*B*b^2*c^2 - 20*A*b*c^3)*d^4*e^3 - (27*B*b^3*c - 62*A*b^2*c^2)*d^
3*e^4 + (9*B*b^4 - 53*A*b^3*c)*d^2*e^5)*x^3 - (64*B*c^4*d^7 + 55*A*b^4*d^2*
e^5 - 8*(29*B*b*c^3 - 8*A*c^4)*d^6*e + 4*(65*B*b^2*c^2 - 42*A*b*c^3)*d^5*e^
2 - (125*B*b^3*c - 244*A*b^2*c^2)*d^4*e^3 + 3*(11*B*b^4 - 65*A*b^3*c)*d^3*e
^4)*x^2 - (73*A*b^4*d^3*e^4 + 16*(B*b*c^3 + 6*A*c^4)*d^7 - 2*(55*B*b^2*c^2
+ 136*A*b*c^3)*d^6*e + (127*B*b^3*c + 374*A*b^2*c^2)*d^5*e^2 - (33*B*b^4 +
271*A*b^3*c)*d^4*e^3)*x)*sqrt(c*x^2 + b*x))/(c^4*d^12 - 4*b*c^3*d^11*e + 6*
b^2*c^2*d^10*e^2 - 4*b^3*c*d^9*e^3 + b^4*d^8*e^4 + (c^4*d^8*e^4 - 4*b*c^3*d
^7*e^5 + 6*b^2*c^2*d^6*e^6 - 4*b^3*c*d^5*e^7 + b^4*d^4*e^8)*x^4 + 4*(c^4*d^
9*e^3 - 4*b*c^3*d^8*e^4 + 6*b^2*c^2*d^7*e^5 - 4*b^3*c*d^6*e^6 + b^4*d^5*e^7
)*x^3 + 6*(c^4*d^10*e^2 - 4*b*c^3*d^9*e^3 + 6*b^2*c^2*d^8*e^4 - 4*b^3*c*d^7
*e^5 + b^4*d^6*e^6)*x^2 + 4*(c^4*d^11*e - 4*b*c^3*d^10*e^2 + 6*b^2*c^2*d^9*
e^3 - 4*b^3*c*d^8*e^4 + b^4*d^7*e^5)*x), -1/192*(3*(5*A*b^4*d^4*e^2 - 8*(B*
b^3*c - 2*A*b^2*c^2)*d^6 + (3*B*b^4 - 16*A*b^3*c)*d^5*e + (5*A*b^4*e^6 - 8*
(B*b^3*c - 2*A*b^2*c^2)*d^2*e^4 + (3*B*b^4 - 16*A*b^3*c)*d*e^5)*x^4 + 4*(5*
A*b^4*d*e^5 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^3*e^3 + (3*B*b^4 - 16*A*b^3*c)*d^
2*e^4)*x^3 + 6*(5*A*b^4*d^2*e^4 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^4*e^2 + (3*B*
b^4 - 16*A*b^3*c)*d^3*e^3)*x^2 + 4*(5*A*b^4*d^3*e^3 - 8*(B*b^3*c - 2*A*b^2*
c^2)*d^5*e + (3*B*b^4 - 16*A*b^3*c)*d^4*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan
(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (15*A*b^4*d^4*e
^3 + 24*(B*b^2*c^2 - 2*A*b*c^3)*d^7 - 3*(11*B*b^3*c - 32*A*b^2*c^2)*d^6*e +
 9*(B*b^4 - 7*A*b^3*c)*d^5*e^2 - (16*B*c^4*d^6*e + 15*A*b^4*d*e^6 - 8*(7*B*
b*c^3 - 2*A*c^4)*d^5*e^2 + 2*(29*B*b^2*c^2 - 20*A*b*c^3)*d^4*e^3 - (27*B*b^
3*c - 62*A*b^2*c^2)*d^3*e^4 + (9*B*b^4 - 53*A*b^3*c)*d^2*e^5)*x^3 - (64*B*c
^4*d^7 + 55*A*b^4*d^2*e^5 - 8*(29*B*b*c^3 - 8*A*c^4)*d^6*e + 4*(65*B*b^2*c^
2 - 42*A*b*c^3)*d^5*e^2 - (125*B*b^3*c - 244*A*b^2*c^2)*d^4*e^3 + 3*(11*B*b
^4 - 65*A*b^3*c)*d^3*e^4)*x^2 - (73*A*b^4*d^3*e^4 + 16*(B*b*c^3 + 6*A*c^4)*
d^7 - 2*(55*B*b^2*c^2 + 136*A*b*c^3)*d^6*e + (127*B*b^3*c + 374*A*b^2*c^2)*
d^5*e^2 - (33*B*b^4 + 271*A*b^3*c)*d^4*e^3)*x)*sqrt(c*x^2 + b*x))/(c^4*d^12
 - 4*b*c^3*d^11*e + 6*b^2*c^2*d^10*e^2 - 4*b^3*c*d^9*e^3 + b^4*d^8*e^4 + (c
^4*d^8*e^4 - 4*b*c^3*d^7*e^5 + 6*b^2*c^2*d^6*e^6 - 4*b^3*c*d^5*e^7 + b^4*d^
4*e^8)*x^4 + 4*(c^4*d^9*e^3 - 4*b*c^3*d^8*e^4 + 6*b^2*c^2*d^7*e^5 - 4*b^3*c
*d^6*e^6 + b^4*d^5*e^7)*x^3 + 6*(c^4*d^10*e^2 - 4*b*c^3*d^9*e^3 + 6*b^2*c^2
*d^8*e^4 - 4*b^3*c*d^7*e^5 + b^4*d^6*e^6)*x^2 + 4*(c^4*d^11*e - 4*b*c^3*d^1
0*e^2 + 6*b^2*c^2*d^9*e^3 - 4*b^3*c*d^8*e^4 + b^4*d^7*e^5)*x)]
```

giac [B] time = 1.37, size = 1720, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/384*(2*sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*
d*e/(x*e + d)^2)*(2*(4*((10*B*c^3*d^6*e^11*sgn(1/(x*e + d)) - 29*B*b*c^2*d^
```

```
5*e^12*sgn(1/(x*e + d)) - 2*A*c^3*d^5*e^12*sgn(1/(x*e + d)) + 28*B*b^2*c*d^
4*e^13*sgn(1/(x*e + d)) + 5*A*b*c^2*d^4*e^13*sgn(1/(x*e + d)) - 9*B*b^3*d^3
*e^14*sgn(1/(x*e + d)) - 4*A*b^2*c*d^3*e^14*sgn(1/(x*e + d)) + A*b^3*d^2*e^
15*sgn(1/(x*e + d)))/(c^3*d^6*e^14 - 3*b*c^2*d^5*e^15 + 3*b^2*c*d^4*e^16 -
b^3*d^3*e^17) - 6*(B*c^3*d^7*e^12*sgn(1/(x*e + d)) - 3*B*b*c^2*d^6*e^13*sgn
(1/(x*e + d)) - A*c^3*d^6*e^13*sgn(1/(x*e + d)) + 3*B*b^2*c*d^5*e^14*sgn(1/
(x*e + d)) + 3*A*b*c^2*d^5*e^14*sgn(1/(x*e + d)) - B*b^3*d^4*e^15*sgn(1/(x*
e + d)) - 3*A*b^2*c*d^4*e^15*sgn(1/(x*e + d)) + A*b^3*d^3*e^16*sgn(1/(x*e +
 d)))*e^(-1)/((c^3*d^6*e^14 - 3*b*c^2*d^5*e^15 + 3*b^2*c*d^4*e^16 - b^3*d^3
*e^17)*(x*e + d)))*e^(-1)/(x*e + d) - (8*B*c^3*d^5*e^10*sgn(1/(x*e + d)) -
24*B*b*c^2*d^4*e^11*sgn(1/(x*e + d)) + 8*A*c^3*d^4*e^11*sgn(1/(x*e + d)) +
19*B*b^2*c*d^3*e^12*sgn(1/(x*e + d)) - 16*A*b*c^2*d^3*e^12*sgn(1/(x*e + d))
 - 3*B*b^3*d^2*e^13*sgn(1/(x*e + d)) + 13*A*b^2*c*d^2*e^13*sgn(1/(x*e + d))
 - 5*A*b^3*d*e^14*sgn(1/(x*e + d)))/(c^3*d^6*e^14 - 3*b*c^2*d^5*e^15 + 3*b^
2*c*d^4*e^16 - b^3*d^3*e^17))*e^(-1)/(x*e + d) - (16*B*c^3*d^4*e^9*sgn(1/(x
*e + d)) - 40*B*b*c^2*d^3*e^10*sgn(1/(x*e + d)) + 16*A*c^3*d^3*e^10*sgn(1/(
x*e + d)) + 18*B*b^2*c*d^2*e^11*sgn(1/(x*e + d)) - 24*A*b*c^2*d^2*e^11*sgn(
1/(x*e + d)) - 9*B*b^3*d*e^12*sgn(1/(x*e + d)) + 38*A*b^2*c*d*e^12*sgn(1/(x
*e + d)) - 15*A*b^3*e^13*sgn(1/(x*e + d)))/(c^3*d^6*e^14 - 3*b*c^2*d^5*e^15
 + 3*b^2*c*d^4*e^16 - b^3*d^3*e^17)) + (32*sqrt(c*d^2 - b*d*e)*B*c^(7/2)*d^
4 - 80*sqrt(c*d^2 - b*d*e)*B*b*c^(5/2)*d^3*e + 32*sqrt(c*d^2 - b*d*e)*A*c^(
7/2)*d^3*e - 24*B*b^3*c*d^2*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)
*sqrt(c))) + 48*A*b^2*c^2*d^2*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*
e)*sqrt(c))) + 36*sqrt(c*d^2 - b*d*e)*B*b^2*c^(3/2)*d^2*e^2 - 48*sqrt(c*d^2
 - b*d*e)*A*b*c^(5/2)*d^2*e^2 + 9*B*b^4*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(
c*d^2 - b*d*e)*sqrt(c))) - 48*A*b^3*c*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(c*
d^2 - b*d*e)*sqrt(c))) - 18*sqrt(c*d^2 - b*d*e)*B*b^3*sqrt(c)*d*e^3 + 76*sq
rt(c*d^2 - b*d*e)*A*b^2*c^(3/2)*d*e^3 + 15*A*b^4*e^5*log(abs(2*c*d - b*e -
2*sqrt(c*d^2 - b*d*e)*sqrt(c))) - 30*sqrt(c*d^2 - b*d*e)*A*b^3*sqrt(c)*e^4)
*sgn(1/(x*e + d))/(sqrt(c*d^2 - b*d*e)*c^3*d^6*e^5 - 3*sqrt(c*d^2 - b*d*e)*
b*c^2*d^5*e^6 + 3*sqrt(c*d^2 - b*d*e)*b^2*c*d^4*e^7 - sqrt(c*d^2 - b*d*e)*b
^3*d^3*e^8) + 3*(8*B*b^3*c*d^2*sgn(1/(x*e + d)) - 16*A*b^2*c^2*d^2*sgn(1/(x
*e + d)) - 3*B*b^4*d*e*sgn(1/(x*e + d)) + 16*A*b^3*c*d*e*sgn(1/(x*e + d)) -
 5*A*b^4*e^2*sgn(1/(x*e + d)))*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*
(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e
+ d)^2) + sqrt(c*d^2*e^2 - b*d*e^3)*e^(-1)/(x*e + d))))/((c^3*d^6*e^2 - 3*b
*c^2*d^5*e^3 + 3*b^2*c*d^4*e^4 - b^3*d^3*e^5)*sqrt(c*d^2 - b*d*e)))*e^2
```

maple [**B**] time = 0.10, size = 10550, normalized size = 34.03

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^5,x)
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x(b+cx)}\,(A+Bx)}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**5,x)
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**5, x)
```

3.1026 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=449

$$\frac{\left(bx+cx^2\right)^{3/2}\left(Bd\left(-15b^2e^2+42bcde+8c^2d^2\right)-Ae\left(35b^2e^2-108bcde+108c^2d^2\right)\right)}{240d^3(d+ex)^3(cd-be)^3}-\frac{b^2\left(b^3\left(-e^2\right)(7Ae+3Bd)+6\cdots\right.}{\cdots}$$

Rubi [A] time = 0.78, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {834, 806, 720, 724, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(Bd\left(-15b^2e^2+42bcde+8c^2d^2\right)-Ae\left(35b^2e^2-108bcde+108c^2d^2\right)\right)}{240d^3(d+ex)^3(cd-be)^3}+\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(6b^2cde(5Ae+2Bd)+b^3\left(-e^2\right)(7Ae+3Bd)-16bc^2d^2(3Ae+Bd)+32Ac^3d^3\right)}{128d^4(d+ex)^2(cd-be)^4}-\frac{b^2\left(6b^2cde(5Ae+2Bd)+b^3\left(-e^2\right)(7Ae+3Bd)-16bc^2d^2(3Ae+Bd)+32Ac^3d^3\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{256d^{9/2}(cd-be)^{9/2}}-\frac{\left(bx+cx^2\right)^{3/2}(7Ae(2cd-be)-Bd(3be+4cd))}{40d^2(d+ex)^4(cd-be)^2}+\frac{\left(bx+cx^2\right)^{3/2}(Bd-Ae)}{5d(d+ex)^5(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] ((32*A*c^3*d^3 - 16*b*c^2*d^2*(B*d + 3*A*e) + 6*b^2*c*d*e*(2*B*d + 5*A*e) -
 b^3*e^2*(3*B*d + 7*A*e))*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])/(128*d
^4*(c*d - b*e)^4*(d + e*x)^2) + ((B*d - A*e)*(b*x + c*x^2)^(3/2))/(5*d*(c*d
 - b*e)*(d + e*x)^5) - ((7*A*e*(2*c*d - b*e) - B*d*(4*c*d + 3*b*e))*(b*x +
c*x^2)^(3/2))/(40*d^2*(c*d - b*e)^2*(d + e*x)^4) + ((B*d*(8*c^2*d^2 + 42*b*
c*d*e - 15*b^2*e^2) - A*e*(108*c^2*d^2 - 108*b*c*d*e + 35*b^2*e^2))*(b*x +
c*x^2)^(3/2))/(240*d^3*(c*d - b*e)^3*(d + e*x)^3) - (b^2*(32*A*c^3*d^3 - 16
*b*c^2*d^2*(B*d + 3*A*e) + 6*b^2*c*d*e*(2*B*d + 5*A*e) - b^3*e^2*(3*B*d + 7
*A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x
+ c*x^2])])/(256*d^(9/2)*(c*d - b*e)^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
```

```
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^6}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{5d(cd-be)(d+ex)^5} - \frac{\int \frac{\left(\frac{1}{2}(-10Acd+b(3Bd+7Ae))-2c(Bd-Ae)x\right)\sqrt{bx+cx^2}}{(d+ex)^5}\,dx}{5d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{5d(cd-be)(d+ex)^5} - \frac{(7Ae(2cd-be)-Bd(4cd+3be))\left(bx+cx^2\right)^{3/2}}{40d^2(cd-be)^2(d+ex)^4} + \frac{\int \left(\frac{1}{4}\right.}{}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{5d(cd-be)(d+ex)^5} - \frac{(7Ae(2cd-be)-Bd(4cd+3be))\left(bx+cx^2\right)^{3/2}}{40d^2(cd-be)^2(d+ex)^4} + \frac{\left(Bd\right.}{}$$

$$= \frac{\left(32Ac^3d^3-16bc^2d^2(Bd+3Ae)+6b^2cde(2Bd+5Ae)-b^3e^2(3Bd+7Ae)\right)(bd+}{128d^4(cd-be)^4(d+ex)^2}$$

$$= \frac{\left(32Ac^3d^3-16bc^2d^2(Bd+3Ae)+6b^2cde(2Bd+5Ae)-b^3e^2(3Bd+7Ae)\right)(bd+}{128d^4(cd-be)^4(d+ex)^2}$$

$$= \frac{\left(32Ac^3d^3-16bc^2d^2(Bd+3Ae)+6b^2cde(2Bd+5Ae)-b^3e^2(3Bd+7Ae)\right)(bd+}{128d^4(cd-be)^4(d+ex)^2}$$

Mathematica [A] time = 2.71, size = 387, normalized size = 0.86

$$-\frac{\sqrt{x(b+cx)}\left(\frac{8x^{3/2}(b+cx)(d+ex)^2\left(Ae\left(-35b^2e^2+108bcde-108c^2d^2\right)+Bd\left(-15b^2e^2+42bcde+8c^2d^2\right)\right)}{d^2(cd-be)^2}+\frac{15(d+ex)^3\left(b^3e^2(7Ae+3Bd)-6b^2cde(5Ae+2Bd)+16bc^2d^2(3Ae+Bd)-32Ac^3d^3\right)\left(b^2(d+ex)^2\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}(-bd+bex-2cdx)\right)}{d^{7/2}\sqrt{b+cx}(cd-be)^{7/2}}+\frac{48x^{3/2}(b+cx)(d+ex)(7Ae(be-2cd)+Bd(3be+4cd))}{d(cd-be)}+384x^{3/2}(b+cx)(Bd-Ae)\right)}{1920d\sqrt{x}(d+ex)^5(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] -1/1920*(Sqrt[x*(b + c*x)]*(384*(B*d - A*e)*x^(3/2)*(b + c*x) + (48*(7*A*e*
(-2*c*d + b*e) + B*d*(4*c*d + 3*b*e))*x^(3/2)*(b + c*x)*(d + e*x))/(d*(c*d
- b*e)) + (8*(A*e*(-108*c^2*d^2 + 108*b*c*d*e - 35*b^2*e^2) + B*d*(8*c^2*d^
2 + 42*b*c*d*e - 15*b^2*e^2))*x^(3/2)*(b + c*x)*(d + e*x)^2)/(d^2*(c*d - b*
e)^2) + (15*(-32*A*c^3*d^3 + 16*b*c^2*d^2*(B*d + 3*A*e) - 6*b^2*c*d*e*(2*B*
d + 5*A*e) + b^3*e^2*(3*B*d + 7*A*e))*(d + e*x)^3*(Sqrt[d]*Sqrt[c*d - b*e]*
Sqrt[x]*Sqrt[b + c*x]*(-(b*d) - 2*c*d*x + b*e*x) + b^2*(d + e*x)^2*ArcTanh[
(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]))/(d^(7/2)*(c*d - b*e)^(
7/2)*Sqrt[b + c*x])))/(d*(-(c*d) + b*e)*Sqrt[x]*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.54, size = 3454, normalized size = 7.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] [1/3840*(15*(7*A*b^5*d^5*e^3 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^8 - 12*(B*b^4
*c - 4*A*b^3*c^2)*d^7*e + 3*(B*b^5 - 10*A*b^4*c)*d^6*e^2 + (7*A*b^5*e^8 + 1
6*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3*e^5 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^2*e^6 +
3*(B*b^5 - 10*A*b^4*c)*d*e^7)*x^5 + 5*(7*A*b^5*d*e^7 + 16*(B*b^3*c^2 - 2*A*
b^2*c^3)*d^4*e^4 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^3*e^5 + 3*(B*b^5 - 10*A*b^4
*c)*d^2*e^6)*x^4 + 10*(7*A*b^5*d^2*e^6 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^5*e
^3 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^4*e^4 + 3*(B*b^5 - 10*A*b^4*c)*d^3*e^5)*x
^3 + 10*(7*A*b^5*d^3*e^5 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^6*e^2 - 12*(B*b^4
*c - 4*A*b^3*c^2)*d^5*e^3 + 3*(B*b^5 - 10*A*b^4*c)*d^4*e^4)*x^2 + 5*(7*A*b^
5*d^4*e^4 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^7*e - 12*(B*b^4*c - 4*A*b^3*c^2)
*d^6*e^2 + 3*(B*b^5 - 10*A*b^4*c)*d^5*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
+ (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2
*(105*A*b^5*d^5*e^4 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^9 + 60*(7*B*b^3*c^2 - 2
0*A*b^2*c^3)*d^8*e - 45*(5*B*b^4*c - 26*A*b^3*c^2)*d^7*e^2 + 15*(3*B*b^5 -
37*A*b^4*c)*d^6*e^3 + (64*B*c^5*d^7*e^2 - 105*A*b^5*d*e^8 - 16*(17*B*b*c^4
- 6*A*c^5)*d^6*e^3 + 32*(11*B*b^2*c^3 - 9*A*b*c^4)*d^5*e^4 - 2*(147*B*b^3*c
^2 - 334*A*b^2*c^3)*d^4*e^5 + (195*B*b^4*c - 856*A*b^3*c^2)*d^3*e^6 - 5*(9*
B*b^5 - 97*A*b^4*c)*d^2*e^7)*x^4 + 2*(160*B*c^5*d^8*e - 245*A*b^5*d^2*e^7 -
 24*(29*B*b*c^4 - 10*A*c^5)*d^7*e^2 + 12*(79*B*b^2*c^3 - 62*A*b*c^4)*d^6*e^
3 - (763*B*b^3*c^2 - 1622*A*b^2*c^3)*d^5*e^4 + 3*(152*B*b^4*c - 669*A*b^3*c
^2)*d^4*e^5 - 21*(5*B*b^5 - 54*A*b^4*c)*d^3*e^6)*x^3 + 2*(320*B*c^5*d^9 - 4
48*A*b^5*d^3*e^6 - 480*(3*B*b*c^4 - A*c^5)*d^8*e + 24*(88*B*b^2*c^3 - 65*A*
b*c^4)*d^7*e^2 - (1691*B*b^3*c^2 - 3178*A*b^2*c^3)*d^6*e^3 + 33*(27*B*b^4*c
 - 113*A*b^3*c^2)*d^5*e^4 - 3*(64*B*b^5 - 693*A*b^4*c)*d^4*e^5)*x^2 - 10*(7
9*A*b^5*d^4*e^5 - 16*(B*b*c^4 + 6*A*c^5)*d^9 + 28*(5*B*b^2*c^3 + 12*A*b*c^4
)*d^8*e - (211*B*b^3*c^2 + 642*A*b^2*c^3)*d^7*e^2 + (108*B*b^4*c + 697*A*b^
3*c^2)*d^6*e^3 - (21*B*b^5 + 374*A*b^4*c)*d^5*e^4)*x)*sqrt(c*x^2 + b*x))/(c
^5*d^15 - 5*b*c^4*d^14*e + 10*b^2*c^3*d^13*e^2 - 10*b^3*c^2*d^12*e^3 + 5*b^
4*c*d^11*e^4 - b^5*d^10*e^5 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 + 10*b^2*c^3*
d^8*e^7 - 10*b^3*c^2*d^7*e^8 + 5*b^4*c*d^6*e^9 - b^5*d^5*e^10)*x^5 + 5*(c^5
*d^11*e^4 - 5*b*c^4*d^10*e^5 + 10*b^2*c^3*d^9*e^6 - 10*b^3*c^2*d^8*e^7 + 5*
b^4*c*d^7*e^8 - b^5*d^6*e^9)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^11*e^4 + 10
*b^2*c^3*d^10*e^5 - 10*b^3*c^2*d^9*e^6 + 5*b^4*c*d^8*e^7 - b^5*d^7*e^8)*x^3
 + 10*(c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 + 10*b^2*c^3*d^11*e^4 - 10*b^3*c^2*d
^10*e^5 + 5*b^4*c*d^9*e^6 - b^5*d^8*e^7)*x^2 + 5*(c^5*d^14*e - 5*b*c^4*d^13
*e^2 + 10*b^2*c^3*d^12*e^3 - 10*b^3*c^2*d^11*e^4 + 5*b^4*c*d^10*e^5 - b^5*d
^9*e^6)*x), 1/1920*(15*(7*A*b^5*d^5*e^3 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^8
- 12*(B*b^4*c - 4*A*b^3*c^2)*d^7*e + 3*(B*b^5 - 10*A*b^4*c)*d^6*e^2 + (7*A*
b^5*e^8 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3*e^5 - 12*(B*b^4*c - 4*A*b^3*c^2)
*d^2*e^6 + 3*(B*b^5 - 10*A*b^4*c)*d*e^7)*x^5 + 5*(7*A*b^5*d*e^7 + 16*(B*b^3
*c^2 - 2*A*b^2*c^3)*d^4*e^4 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^3*e^5 + 3*(B*b^5
 - 10*A*b^4*c)*d^2*e^6)*x^4 + 10*(7*A*b^5*d^2*e^6 + 16*(B*b^3*c^2 - 2*A*b^2
*c^3)*d^5*e^3 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^4*e^4 + 3*(B*b^5 - 10*A*b^4*c)
*d^3*e^5)*x^3 + 10*(7*A*b^5*d^3*e^5 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^6*e^2
- 12*(B*b^4*c - 4*A*b^3*c^2)*d^5*e^3 + 3*(B*b^5 - 10*A*b^4*c)*d^4*e^4)*x^2
+ 5*(7*A*b^5*d^4*e^4 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^7*e - 12*(B*b^4*c - 4
*A*b^3*c^2)*d^6*e^2 + 3*(B*b^5 - 10*A*b^4*c)*d^5*e^3)*x)*sqrt(-c*d^2 + b*d*
e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (105*A
```

```
*b^5*d^5*e^4 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^9 + 60*(7*B*b^3*c^2 - 20*A*b^2
*c^3)*d^8*e - 45*(5*B*b^4*c - 26*A*b^3*c^2)*d^7*e^2 + 15*(3*B*b^5 - 37*A*b^
4*c)*d^6*e^3 + (64*B*c^5*d^7*e^2 - 105*A*b^5*d*e^8 - 16*(17*B*b*c^4 - 6*A*c
^5)*d^6*e^3 + 32*(11*B*b^2*c^3 - 9*A*b*c^4)*d^5*e^4 - 2*(147*B*b^3*c^2 - 33
4*A*b^2*c^3)*d^4*e^5 + (195*B*b^4*c - 856*A*b^3*c^2)*d^3*e^6 - 5*(9*B*b^5 -
 97*A*b^4*c)*d^2*e^7)*x^4 + 2*(160*B*c^5*d^8*e - 245*A*b^5*d^2*e^7 - 24*(29
*B*b*c^4 - 10*A*c^5)*d^7*e^2 + 12*(79*B*b^2*c^3 - 62*A*b*c^4)*d^6*e^3 - (76
3*B*b^3*c^2 - 1622*A*b^2*c^3)*d^5*e^4 + 3*(152*B*b^4*c - 669*A*b^3*c^2)*d^4
*e^5 - 21*(5*B*b^5 - 54*A*b^4*c)*d^3*e^6)*x^3 + 2*(320*B*c^5*d^9 - 448*A*b^
5*d^3*e^6 - 480*(3*B*b*c^4 - A*c^5)*d^8*e + 24*(88*B*b^2*c^3 - 65*A*b*c^4)*
d^7*e^2 - (1691*B*b^3*c^2 - 3178*A*b^2*c^3)*d^6*e^3 + 33*(27*B*b^4*c - 113*
A*b^3*c^2)*d^5*e^4 - 3*(64*B*b^5 - 693*A*b^4*c)*d^4*e^5)*x^2 - 10*(79*A*b^5
*d^4*e^5 - 16*(B*b*c^4 + 6*A*c^5)*d^9 + 28*(5*B*b^2*c^3 + 12*A*b*c^4)*d^8*e
 - (211*B*b^3*c^2 + 642*A*b^2*c^3)*d^7*e^2 + (108*B*b^4*c + 697*A*b^3*c^2)*
d^6*e^3 - (21*B*b^5 + 374*A*b^4*c)*d^5*e^4)*x)*sqrt(c*x^2 + b*x))/(c^5*d^15
 - 5*b*c^4*d^14*e + 10*b^2*c^3*d^13*e^2 - 10*b^3*c^2*d^12*e^3 + 5*b^4*c*d^1
1*e^4 - b^5*d^10*e^5 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 + 10*b^2*c^3*d^8*e^7
 - 10*b^3*c^2*d^7*e^8 + 5*b^4*c*d^6*e^9 - b^5*d^5*e^10)*x^5 + 5*(c^5*d^11*e
^4 - 5*b*c^4*d^10*e^5 + 10*b^2*c^3*d^9*e^6 - 10*b^3*c^2*d^8*e^7 + 5*b^4*c*d
^7*e^8 - b^5*d^6*e^9)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^11*e^4 + 10*b^2*c^
3*d^10*e^5 - 10*b^3*c^2*d^9*e^6 + 5*b^4*c*d^8*e^7 - b^5*d^7*e^8)*x^3 + 10*(
c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 + 10*b^2*c^3*d^11*e^4 - 10*b^3*c^2*d^10*e^5
 + 5*b^4*c*d^9*e^6 - b^5*d^8*e^7)*x^2 + 5*(c^5*d^14*e - 5*b*c^4*d^13*e^2 +
10*b^2*c^3*d^12*e^3 - 10*b^3*c^2*d^11*e^4 + 5*b^4*c*d^10*e^5 - b^5*d^9*e^6)
*x)]
```

giac [B] time = 0.54, size = 4102, normalized size = 9.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 1/128*(16*B*b^3*c^2*d^3 - 32*A*b^2*c^3*d^3 - 12*B*b^4*c*d^2*e + 48*A*b^3*c^
2*d^2*e + 3*B*b^5*d*e^2 - 30*A*b^4*c*d*e^2 + 7*A*b^5*e^3)*arctan(-((sqrt(c)
*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^4*d^8 - 4*
b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*sqrt(-c*d^
2 + b*d*e)) + 1/1920*(5120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^(13/2)*d^9
*e + 2048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^7*d^10 + 5120*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^7*B*c^6*d^8*e^2 + 3584*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5
*B*b*c^6*d^9*e + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^7*d^9*e + 5120*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b*c^(13/2)*d^10 - 8960*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^6*B*b*c^(11/2)*d^8*e^2 + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^6*A*c^(13/2)*d^8*e^2 - 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^(1
1/2)*d^9*e + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^(13/2)*d^9*e + 51
20*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^6*d^10 - 20480*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^7*B*b*c^5*d^7*e^3 - 24832*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*B*b^2*c^5*d^8*e^2 + 9216*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^6*d^8*e^
2 - 14080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^5*d^9*e + 7680*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^6*d^9*e + 2560*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^2*B*b^3*c^(11/2)*d^10 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2
*c^(9/2)*d^7*e^3 - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b*c^(11/2)*d^7
*e^3 - 12800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c^(9/2)*d^8*e^2 - 3840
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(11/2)*d^8*e^2 - 8000*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*B*b^4*c^(9/2)*d^9*e + 3840*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^2*A*b^3*c^(11/2)*d^9*e + 640*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*
c^5*d^10 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^4*d^6*e^4 + 1376
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^4*d^7*e^3 - 50048*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*A*b^2*c^5*d^7*e^3 + 3200*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^3*B*b^4*c^4*d^8*e^2 - 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^5*
```

d^8*e^2 - 2080*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*c^4*d^9*e + 960*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*A*b^4*c^5*d^9*e + 64*B*b^5*c^(9/2)*d^10 + 36320*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^3*c^(7/2)*d^6*e^4 + 70720*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^6*A*b^2*c^(9/2)*d^6*e^4 + 15520*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^4*B*b^4*c^(7/2)*d^7*e^3 - 17600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*
A*b^3*c^(9/2)*d^7*e^3 + 4720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5*c^(7/2
)*d^8*e^2 - 7200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c^(9/2)*d^8*e^2 -
208*B*b^6*c^(7/2)*d^9*e + 96*A*b^5*c^(9/2)*d^9*e - 28000*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^7*B*b^3*c^3*d^5*e^5 + 15040*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*A*b^2*c^4*d^5*e^5 + 2000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^3*d^6*e
^4 + 129280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*c^4*d^6*e^4 + 1280*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*c^3*d^7*e^3 + 14080*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^3*A*b^4*c^4*d^7*e^3 + 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b
^6*c^3*d^8*e^2 - 1920*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^5*c^4*d^8*e^2 - 2
160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^3*c^(5/2)*d^4*e^6 + 4320*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^8*A*b^2*c^(7/2)*d^4*e^6 - 39560*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^6*B*b^4*c^(5/2)*d^5*e^5 - 52000*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^6*A*b^3*c^(7/2)*d^5*e^5 - 14360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^5*c
^(5/2)*d^6*e^4 + 81920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^(7/2)*d^6*
e^4 - 3120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^6*c^(5/2)*d^7*e^3 + 13760*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(7/2)*d^7*e^3 + 144*B*b^7*c^(5/2)
*d^8*e^2 - 192*A*b^6*c^(7/2)*d^8*e^2 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
9*B*b^3*c^2*d^3*e^7 + 480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^2*c^3*d^3*e
^7 + 9640*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^4*c^2*d^4*e^6 - 20320*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^3*d^4*e^6 - 17284*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^5*B*b^5*c^2*d^5*e^5 - 120680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*
A*b^4*c^3*d^5*e^5 - 6920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^6*c^2*d^6*e^
4 + 14080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^5*c^3*d^6*e^4 - 1260*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^2*d^7*e^3 + 4280*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*A*b^6*c^3*d^7*e^3 + 1620*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^4*c^
(3/2)*d^3*e^7 - 6480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^3*c^(5/2)*d^3*e^
7 + 15090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^5*c^(3/2)*d^4*e^6 + 7260*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^4*c^(5/2)*d^4*e^6 + 330*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*B*b^6*c^(3/2)*d^5*e^5 - 85780*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^4*A*b^5*c^(5/2)*d^5*e^5 - 570*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7
*c^(3/2)*d^6*e^4 - 6340*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c^(5/2)*d^6
*e^4 - 150*B*b^8*c^(3/2)*d^7*e^3 + 476*A*b^7*c^(5/2)*d^7*e^3 + 180*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^9*B*b^4*c*d^2*e^8 - 720*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^9*A*b^3*c^2*d^2*e^8 - 570*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c*d^
3*e^7 + 10740*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^2*d^3*e^7 + 7878*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^6*c*d^4*e^6 + 47944*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^5*A*b^5*c^2*d^4*e^6 + 2370*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^7*c*d^5*e^5 - 25220*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^2*d^5*e^5
+ 270*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c*d^6*e^4 - 3080*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*A*b^7*c^2*d^6*e^4 - 405*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8
*B*b^5*sqrt(c)*d^2*e^8 + 4050*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c^(3/
2)*d^2*e^8 - 1470*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*sqrt(c)*d^3*e^7 +
 9310*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(3/2)*d^3*e^7 + 1920*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^4*B*b^7*sqrt(c)*d^4*e^6 + 35330*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*A*b^6*c^(3/2)*d^4*e^6 + 630*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*B*b^8*sqrt(c)*d^5*e^5 - 1750*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^7*c^
(3/2)*d^5*e^5 + 45*B*b^9*sqrt(c)*d^6*e^4 - 380*A*b^8*c^(3/2)*d^6*e^4 - 45*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^5*d*e^9 + 450*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^9*A*b^4*c*d*e^9 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*d^2*e
^8 - 1190*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^5*c*d^2*e^8 - 384*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^5*B*b^7*d^3*e^7 - 4658*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^5*A*b^6*c*d^3*e^7 + 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*d^4*e^6
+ 10510*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c*d^4*e^6 + 45*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*B*b^9*d^5*e^5 + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b

```
^8*c*d^5*e^5 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*sqrt(c)*d*e^9 -
3430*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^6*sqrt(c)*d^2*e^8 - 4480*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^4*A*b^7*sqrt(c)*d^3*e^7 + 1470*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^2*A*b^8*sqrt(c)*d^4*e^6 + 105*A*b^9*sqrt(c)*d^5*e^5 - 105*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^9*A*b^5*e^10 - 490*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^7*A*b^6*d*e^9 - 896*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^7*d^2*e^8 - 7
90*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^8*d^3*e^7 + 105*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*A*b^9*d^4*e^6)/((c^4*d^8*e^3 - 4*b*c^3*d^7*e^4 + 6*b^2*c^2*d^
6*e^5 - 4*b^3*c*d^5*e^6 + b^4*d^4*e^7)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e
 + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^5)
```

maple [B] time = 0.09, size = 15015, normalized size = 33.44

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x \left(b + c x\right)} \left(A + B x\right)}{\left(d + e x\right)^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**6,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**6, x)
```

3.1027 $\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^{3/2} dx$

Optimal. Leaf size=345

$$\frac{\left(bx+cx^2\right)^{5/2}\left(10cex(14Ace-9bBe+4Bcd)+14Ace(24cd-7be)+B\left(63b^2e^2-196bcde+48c^2d^2\right)\right)}{840c^3}-\frac{b^2(b+2cx)}{}$$

Rubi [A] time = 0.34, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {832, 779, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\left(14b^2ce(Ae+2Bd)-24bc^2d(2Ae+Bd)+48Ac^3d^2-9b^3Be^2\right)}{1024c^5}+\frac{\left(bx+cx^2\right)^{5/2}\left(10cex(14Ace-9bBe+4Bcd)+14Ace(24cd-7be)+B\left(63b^2e^2-196bcde+48c^2d^2\right)\right)}{840c^3}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}\left(14b^2ce(Ae+2Bd)-24bc^2d(2Ae+Bd)+48Ac^3d^2-9b^3Be^2\right)}{384c^4}+\frac{b^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(14b^2ce(Ae+2Bd)-24bc^2d(2Ae+Bd)+48Ac^3d^2-9b^3Be^2\right)}{1024c^{11/2}}+\frac{B\left(bx+cx^2\right)^{5/2}(d+ex)^2}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(3/2),x]
```

```
[Out] -(b^2*(48*A*c^3*d^2 - 9*b^3*B*e^2 + 14*b^2*c*e*(2*B*d + A*e) - 24*b*c^2*d*(
B*d + 2*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^5) + ((48*A*c^3*d^2 -
9*b^3*B*e^2 + 14*b^2*c*e*(2*B*d + A*e) - 24*b*c^2*d*(B*d + 2*A*e))*(b + 2*c
*x)*(b*x + c*x^2)^(3/2))/(384*c^4) + (B*(d + e*x)^2*(b*x + c*x^2)^(5/2))/(7
*c) + ((14*A*c*e*(24*c*d - 7*b*e) + B*(48*c^2*d^2 - 196*b*c*d*e + 63*b^2*e^
2) + 10*c*e*(4*B*c*d - 9*b*B*e + 14*A*c*e)*x)*(b*x + c*x^2)^(5/2))/(840*c^3
) + (b^4*(48*A*c^3*d^2 - 9*b^3*B*e^2 + 14*b^2*c*e*(2*B*d + A*e) - 24*b*c^2*
d*(B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
```

```
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^{3/2}\,dx = \frac{B(d+ex)^2\left(bx+cx^2\right)^{5/2}}{7c} + \frac{\int (d+ex)\left(-\frac{1}{2}(5bB-14Ac)d+\frac{1}{2}(4Bcd-9}{7c}$$

$$= \frac{B(d+ex)^2\left(bx+cx^2\right)^{5/2}}{7c} + \frac{\left(14Ace(24cd-7be)+B\left(48c^2d^2-196bcde\right.\right.}{}$$

$$= \frac{\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b+2c}{384c^4}$$

$$= -\frac{b^2\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b}{1024c^5}$$

$$= -\frac{b^2\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b}{1024c^5}$$

$$= -\frac{b^2\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b}{1024c^5}$$

Mathematica [A] time = 1.60, size = 415, normalized size = 1.20

$$\frac{\sqrt{x(b+cx)}\left(14Ac\left(\frac{5}{4}\left(7b^2e^2-24bcde+24c^2d^2\right)\left(3b^{9/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+bcx\sqrt{\frac{cx}{b}+1}\left(-3b^3+2b^2cx+24bc^2x^2+16c^3x^3\right)\right)+320bc^4ex^3(b+cx)^2\sqrt{\frac{cx}{b}+1}(d+ex)-224bc^3ex^3(b+cx)^2\sqrt{\frac{cx}{b}+1}(be-2cd)\right)+B\left(\frac{7}{4}\left(9b^2e^2-28bcde+24c^2d^2\right)\left(bcx\sqrt{\frac{cx}{b}+1}\left(15b^4-10b^3cx+8b^2c^2x^2+176bc^3x^3+128c^4x^4\right)-15b^{11/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)+3840bc^5ex^4(b+cx)^2\sqrt{\frac{cx}{b}+1}(d+ex)+320bc^4ex^4(b+cx)^2\sqrt{\frac{cx}{b}+1}(16cd-9be)\right)\right)}{26880bc^6x\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(14*A*c*(-224*b*c^3*e*(-2*c*d + b*e)*x^3*(b + c*x)^2*Sqr
t[1 + (c*x)/b] + 320*b*c^4*e*x^3*(b + c*x)^2*Sqrt[1 + (c*x)/b]*(d + e*x) +
(5*(24*c^2*d^2 - 24*b*c*d*e + 7*b^2*e^2)*(b*c*x*Sqrt[1 + (c*x)/b]*(-3*b^3 +
 2*b^2*c*x + 24*b*c^2*x^2 + 16*c^3*x^3) + 3*b^(9/2)*Sqrt[c]*Sqrt[x]*ArcSinh
[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/4) + B*(320*b*c^4*e*(16*c*d - 9*b*e)*x^4*(b +
 c*x)^2*Sqrt[1 + (c*x)/b] + 3840*b*c^5*e*x^4*(b + c*x)^2*Sqrt[1 + (c*x)/b]*
(d + e*x) + (7*(24*c^2*d^2 - 28*b*c*d*e + 9*b^2*e^2)*(b*c*x*Sqrt[1 + (c*x)/
b]*(15*b^4 - 10*b^3*c*x + 8*b^2*c^2*x^2 + 176*b*c^3*x^3 + 128*c^4*x^4) - 15
*b^(11/2)*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/4)))/(26880*
b*c^6*x*Sqrt[1 + (c*x)/b])
```

IntegrateAlgebraic [A] time = 2.26, size = 537, normalized size = 1.56

$$\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(-14Ab^6ce^2+48Ab^5c^2de-48Ab^4c^3d^2+9b^7Be^2-28b^6Bcde+24b^5Bc^2d^2\right)}{2048c^{11/2}}+\frac{\sqrt{bx+cx^2}\left(-1470Ab^5ce^2+5040Ab^4c^2de+980Ab^4c^2e^2x-5040Ab^3c^3d^2-3360Ab^3c^3dex-784Ab^3c^3e^2x^2+3360Ab^2c^4d^2x+2688Ab^2c^4dex^2+672Ab^2c^4e^2x^3+40320Abc^5d^2x^2+59136Abc^5dex^3+23296Abc^5e^2x^4+26880Ac^6d^2x^3+43008Ac^6dex^4+17920Ac^6e^2x^5+945b^6Be^2-2940b^5Bcde-630b^5Bce^2x+2520b^4Bc^2d^2+1960b^4Bc^2dex+504b^4Bc^2e^2x^2-1680b^3Bc^3d^2x-1568b^3Bc^3dex^2-432b^3Bc^3e^2x^3+1344b^2Bc^4d^2x^2+1344b^2Bc^4dex^3+384b^2Bc^4e^2x^4+29568bBc^5d^2x^3+46592bBc^5dex^4+19200bBc^5e^2x^5+21504Bc^6d^2x^4+35840Bc^6dex^5+15360Bc^6e^2x^6\right)}{107520c^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(2520*b^4*B*c^2*d^2 - 5040*A*b^3*c^3*d^2 - 2940*b^5*B*c*
d*e + 5040*A*b^4*c^2*d*e + 945*b^6*B*e^2 - 1470*A*b^5*c*e^2 - 1680*b^3*B*c^
3*d^2*x + 3360*A*b^2*c^4*d^2*x + 1960*b^4*B*c^2*d*e*x - 3360*A*b^3*c^3*d*e*
x - 630*b^5*B*c*e^2*x + 980*A*b^4*c^2*e^2*x + 1344*b^2*B*c^4*d^2*x^2 + 4032
0*A*b*c^5*d^2*x^2 - 1568*b^3*B*c^3*d*e*x^2 + 2688*A*b^2*c^4*d*e*x^2 + 504*b
^4*B*c^2*e^2*x^2 - 784*A*b^3*c^3*e^2*x^2 + 29568*b*B*c^5*d^2*x^3 + 26880*A*
```

```
c^6*d^2*x^3 + 1344*b^2*B*c^4*d*e*x^3 + 59136*A*b*c^5*d*e*x^3 - 432*b^3*B*c^
3*e^2*x^3 + 672*A*b^2*c^4*e^2*x^3 + 21504*B*c^6*d^2*x^4 + 46592*b*B*c^5*d*e
*x^4 + 43008*A*c^6*d*e*x^4 + 384*b^2*B*c^4*e^2*x^4 + 23296*A*b*c^5*e^2*x^4
+ 35840*B*c^6*d*e*x^5 + 19200*b*B*c^5*e^2*x^5 + 17920*A*c^6*e^2*x^5 + 15360
*B*c^6*e^2*x^6))/(107520*c^5) + ((24*b^5*B*c^2*d^2 - 48*A*b^4*c^3*d^2 - 28*
b^6*B*c*d*e + 48*A*b^5*c^2*d*e + 9*b^7*B*e^2 - 14*A*b^6*c*e^2)*Log[b + 2*c*
x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(2048*c^(11/2))
```

fricas [A] time = 0.46, size = 987, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/215040*(105*(24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^2 - 4*(7*B*b^6*c - 12*A*b^5
*c^2)*d*e + (9*B*b^7 - 14*A*b^6*c)*e^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^
2 + b*x)*sqrt(c)) - 2*(15360*B*c^7*e^2*x^6 + 1280*(28*B*c^7*d*e + (15*B*b*c
^6 + 14*A*c^7)*e^2)*x^5 + 128*(168*B*c^7*d^2 + 28*(13*B*b*c^6 + 12*A*c^7)*d
*e + (3*B*b^2*c^5 + 182*A*b*c^6)*e^2)*x^4 + 48*(56*(11*B*b*c^6 + 10*A*c^7)*
d^2 + 28*(B*b^2*c^5 + 44*A*b*c^6)*d*e - (9*B*b^3*c^4 - 14*A*b^2*c^5)*e^2)*x
^3 + 2520*(B*b^4*c^3 - 2*A*b^3*c^4)*d^2 - 420*(7*B*b^5*c^2 - 12*A*b^4*c^3)*
d*e + 105*(9*B*b^6*c - 14*A*b^5*c^2)*e^2 + 56*(24*(B*b^2*c^5 + 30*A*b*c^6)*
d^2 - 4*(7*B*b^3*c^4 - 12*A*b^2*c^5)*d*e + (9*B*b^4*c^3 - 14*A*b^3*c^4)*e^2
)*x^2 - 70*(24*(B*b^3*c^4 - 2*A*b^2*c^5)*d^2 - 4*(7*B*b^4*c^3 - 12*A*b^3*c^
4)*d*e + (9*B*b^5*c^2 - 14*A*b^4*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^6, 1/107
520*(105*(24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^2 - 4*(7*B*b^6*c - 12*A*b^5*c^2)*d
*e + (9*B*b^7 - 14*A*b^6*c)*e^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)
/(c*x)) + (15360*B*c^7*e^2*x^6 + 1280*(28*B*c^7*d*e + (15*B*b*c^6 + 14*A*c^
7)*e^2)*x^5 + 128*(168*B*c^7*d^2 + 28*(13*B*b*c^6 + 12*A*c^7)*d*e + (3*B*b^
2*c^5 + 182*A*b*c^6)*e^2)*x^4 + 48*(56*(11*B*b*c^6 + 10*A*c^7)*d^2 + 28*(B*
b^2*c^5 + 44*A*b*c^6)*d*e - (9*B*b^3*c^4 - 14*A*b^2*c^5)*e^2)*x^3 + 2520*(B
*b^4*c^3 - 2*A*b^3*c^4)*d^2 - 420*(7*B*b^5*c^2 - 12*A*b^4*c^3)*d*e + 105*(9
*B*b^6*c - 14*A*b^5*c^2)*e^2 + 56*(24*(B*b^2*c^5 + 30*A*b*c^6)*d^2 - 4*(7*B
*b^3*c^4 - 12*A*b^2*c^5)*d*e + (9*B*b^4*c^3 - 14*A*b^3*c^4)*e^2)*x^2 - 70*(
24*(B*b^3*c^4 - 2*A*b^2*c^5)*d^2 - 4*(7*B*b^4*c^3 - 12*A*b^3*c^4)*d*e + (9*
B*b^5*c^2 - 14*A*b^4*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.25, size = 518, normalized size = 1.50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*(12*B*c*x*e^2 + (28*B*c^7*d*e +
15*B*b*c^6*e^2 + 14*A*c^7*e^2)/c^6)*x + (168*B*c^7*d^2 + 364*B*b*c^6*d*e +
336*A*c^7*d*e + 3*B*b^2*c^5*e^2 + 182*A*b*c^6*e^2)/c^6)*x + 3*(616*B*b*c^6*
d^2 + 560*A*c^7*d^2 + 28*B*b^2*c^5*d*e + 1232*A*b*c^6*d*e - 9*B*b^3*c^4*e^2
 + 14*A*b^2*c^5*e^2)/c^6)*x + 7*(24*B*b^2*c^5*d^2 + 720*A*b*c^6*d^2 - 28*B*
b^3*c^4*d*e + 48*A*b^2*c^5*d*e + 9*B*b^4*c^3*e^2 - 14*A*b^3*c^4*e^2)/c^6)*x
 - 35*(24*B*b^3*c^4*d^2 - 48*A*b^2*c^5*d^2 - 28*B*b^4*c^3*d*e + 48*A*b^3*c^
4*d*e + 9*B*b^5*c^2*e^2 - 14*A*b^4*c^3*e^2)/c^6)*x + 105*(24*B*b^4*c^3*d^2
- 48*A*b^3*c^4*d^2 - 28*B*b^5*c^2*d*e + 48*A*b^4*c^3*d*e + 9*B*b^6*c*e^2 -
14*A*b^5*c^2*e^2)/c^6) + 1/2048*(24*B*b^5*c^2*d^2 - 48*A*b^4*c^3*d^2 - 28*B
*b^6*c*d*e + 48*A*b^5*c^2*d*e + 9*B*b^7*e^2 - 14*A*b^6*c*e^2)*log(abs(-2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 949, normalized size = 2.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x)
```

```
[Out] -3/128*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e-3/32*A*d
^2*b^2/c*(c*x^2+b*x)^(1/2)*x+7/512*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))*B*d*e+1/5*(c*x^2+b*x)^(5/2)/c*B*d^2+1/4*A*d^2*x*(c*x^2+b*x)^(
3/2)-9/2048*B*e^2*b^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+9/
1024*B*e^2*b^6/c^5*(c*x^2+b*x)^(1/2)-3/256*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))*B*d^2+7/1024*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))*A*e^2-7/60*b/c^2*(c*x^2+b*x)^(5/2)*A*e^2+7/192*b^3/c^3*(c*x^2
+b*x)^(3/2)*A*e^2-7/512*b^5/c^4*(c*x^2+b*x)^(1/2)*A*e^2+3/128*A*d^2*b^4/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+7/48*b^2/c^2*x*(c*x^2+b*x)^(
3/2)*B*d*e-7/128*b^4/c^3*(c*x^2+b*x)^(1/2)*x*B*d*e-1/4*b/c*x*(c*x^2+b*x)^(3
/2)*A*d*e+2/5*(c*x^2+b*x)^(5/2)/c*A*d*e+3/128*b^4/c^3*(c*x^2+b*x)^(1/2)*B*d
^2+1/7*B*e^2*x^2*(c*x^2+b*x)^(5/2)/c+3/32*b^3/c^2*(c*x^2+b*x)^(1/2)*x*A*d*e
-3/128*B*e^2*b^4/c^4*(c*x^2+b*x)^(3/2)+3/40*B*e^2*b^2/c^3*(c*x^2+b*x)^(5/2)
+1/8*A*d^2/c*(c*x^2+b*x)^(3/2)*b+1/6*x*(c*x^2+b*x)^(5/2)/c*A*e^2-1/16*b^2/c
^2*(c*x^2+b*x)^(3/2)*B*d^2-3/64*A*d^2*b^3/c^2*(c*x^2+b*x)^(1/2)+3/64*b^3/c^
2*(c*x^2+b*x)^(1/2)*x*B*d^2+3/64*b^4/c^3*(c*x^2+b*x)^(1/2)*A*d*e-3/64*B*e^2
*b^3/c^3*x*(c*x^2+b*x)^(3/2)-1/8*b/c*x*(c*x^2+b*x)^(3/2)*B*d^2-1/8*b^2/c^2*
(c*x^2+b*x)^(3/2)*A*d*e-7/256*b^5/c^4*(c*x^2+b*x)^(1/2)*B*d*e+7/96*b^3/c^3*
(c*x^2+b*x)^(3/2)*B*d*e+1/3*x*(c*x^2+b*x)^(5/2)/c*B*d*e-7/30*b/c^2*(c*x^2+b
*x)^(5/2)*B*d*e+7/96*b^2/c^2*x*(c*x^2+b*x)^(3/2)*A*e^2+9/512*B*e^2*b^5/c^4*
(c*x^2+b*x)^(1/2)*x-3/28*B*e^2*b/c^2*x*(c*x^2+b*x)^(5/2)-7/256*b^4/c^3*(c*x
^2+b*x)^(1/2)*x*A*e^2
```

<u>**maxima**</u> **[B]** time = 0.60, size = 728, normalized size = 2.11

$$\frac{(cx^2+bx)^{\frac{5}{2}}Be^2x^2}{7c}+\frac{1}{4}(cx^2+bx)^{\frac{3}{2}}Ad^2x-\frac{3\sqrt{cx^2+bx}\,Ab^2d^2x}{32c}+\frac{9\sqrt{cx^2+bx}\,Bb^5e^2x}{512c^4}-\frac{3(cx^2+bx)^{\frac{3}{2}}Bb^3e^2x}{64c^3}-\frac{3(cx^2+bx)^{\frac{5}{2}}Bbe^2x}{28c^2}+\frac{3Ab^4d^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{5}{2}}}-\frac{9Bb^7e^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2048c^{\frac{11}{2}}}-\frac{3\sqrt{cx^2+bx}\,Ab^3d^2}{64c^2}+\frac{(cx^2+bx)^{\frac{3}{2}}Abd^2}{8c}+\frac{9\sqrt{cx^2+bx}\,Bb^6e^2}{1024c^5}-\frac{3(cx^2+bx)^{\frac{3}{2}}Bb^4e^2}{128c^4}+\frac{3(cx^2+bx)^{\frac{5}{2}}Bb^2e^2}{40c^3}-\frac{7(2Bde+Ae^2)\sqrt{cx^2+bx}\,b^4x}{256c^3}+\frac{7(2Bde+Ae^2)(cx^2+bx)^{\frac{3}{2}}b^2x}{96c^2}+\frac{3(Bd^2+2Ade)\sqrt{cx^2+bx}\,b^3x}{64c^2}+\frac{(2Bde+Ae^2)(cx^2+bx)^{\frac{5}{2}}x}{6c}-\frac{(Bd^2+2Ade)(cx^2+bx)^{\frac{3}{2}}bx}{8c}+\frac{7(2Bde+Ae^2)b^6\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024c^{\frac{9}{2}}}-\frac{3(Bd^2+2Ade)b^5\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256c^{\frac{7}{2}}}-\frac{7(2Bde+Ae^2)\sqrt{cx^2+bx}\,b^5}{512c^4}+\frac{7(2Bde+Ae^2)(cx^2+bx)^{\frac{3}{2}}b^3}{192c^3}+\frac{3(Bd^2+2Ade)\sqrt{cx^2+bx}\,b^4}{128c^3}-\frac{7(2Bde+Ae^2)(cx^2+bx)^{\frac{5}{2}}b}{60c^2}-\frac{(Bd^2+2Ade)(cx^2+bx)^{\frac{3}{2}}b^2}{16c^2}+\frac{(Bd^2+2Ade)(cx^2+bx)^{\frac{5}{2}}}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + b*x)^(5/2)*B*e^2*x^2/c + 1/4*(c*x^2 + b*x)^(3/2)*A*d^2*x - 3/3
2*sqrt(c*x^2 + b*x)*A*b^2*d^2*x/c + 9/512*sqrt(c*x^2 + b*x)*B*b^5*e^2*x/c^4
 - 3/64*(c*x^2 + b*x)^(3/2)*B*b^3*e^2*x/c^3 - 3/28*(c*x^2 + b*x)^(5/2)*B*b*
e^2*x/c^2 + 3/128*A*b^4*d^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(5/2) - 9/2048*B*b^7*e^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11
/2) - 3/64*sqrt(c*x^2 + b*x)*A*b^3*d^2/c^2 + 1/8*(c*x^2 + b*x)^(3/2)*A*b*d^
2/c + 9/1024*sqrt(c*x^2 + b*x)*B*b^6*e^2/c^5 - 3/128*(c*x^2 + b*x)^(3/2)*B*
b^4*e^2/c^4 + 3/40*(c*x^2 + b*x)^(5/2)*B*b^2*e^2/c^3 - 7/256*(2*B*d*e + A*e
^2)*sqrt(c*x^2 + b*x)*b^4*x/c^3 + 7/96*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2
)*b^2*x/c^2 + 3/64*(B*d^2 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^3*x/c^2 + 1/6*(2*B
*d*e + A*e^2)*(c*x^2 + b*x)^(5/2)*x/c - 1/8*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)
^(3/2)*b*x/c + 7/1024*(2*B*d*e + A*e^2)*b^6*log(2*c*x + b + 2*sqrt(c*x^2 +
b*x)*sqrt(c))/c^(9/2) - 3/256*(B*d^2 + 2*A*d*e)*b^5*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c))/c^(7/2) - 7/512*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b
^5/c^4 + 7/192*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b^3/c^3 + 3/128*(B*d^2
 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^4/c^3 - 7/60*(2*B*d*e + A*e^2)*(c*x^2 + b*x
)^(5/2)*b/c^2 - 1/16*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(3/2)*b^2/c^2 + 1/5*(B
*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(5/2)/c
```

<u>**mupad**</u> **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,{\left(d+e\,x\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x (b + cx))^{\frac{3}{2}} (A + Bx) (d + ex)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**(3/2),x)
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)*(d + e*x)**2, x)
```

3.1028 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=209

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{512c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}\left(-12bc(Ae+Bd)+24A\right.}{192c^3}$$

Rubi [A] time = 0.19, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {779, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{512c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{192c^3}+\frac{b^4\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{512c^{9/2}}-\frac{\left(bx+cx^2\right)^{5/2}(-12c(Ae+Bd)+7bBe-10Bcex)}{60c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] -(b^2*(24*A*c^2*d + 7*b^2*B*e - 12*b*c*(B*d + A*e))*(b + 2*c*x)*Sqrt[b*x +
c*x^2])/(512*c^4) + ((24*A*c^2*d + 7*b^2*B*e - 12*b*c*(B*d + A*e))*(b + 2*c
*x)*(b*x + c*x^2)^(3/2))/(192*c^3) - ((7*b*B*e - 12*c*(B*d + A*e) - 10*B*c*
e*x)*(b*x + c*x^2)^(5/2))/(60*c^2) + (b^4*(24*A*c^2*d + 7*b^2*B*e - 12*b*c*
(B*d + A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{3/2}\,dx = -\frac{(7bBe-12c(Bd+Ae)-10Bcex)\left(bx+cx^2\right)^{5/2}}{60c^2} + \frac{\left(\frac{7}{2}b^2Be+6c(2Acd-b(\cdots\right.}{\cdots}$$
$$= \frac{\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3} - \frac{(7bBe-12c\cdots}{\cdots}$$
$$= -\frac{b^2\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{512c^4} + \frac{\left(24Ac^2d+\cdots\right.}{\cdots}$$
$$= -\frac{b^2\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{512c^4} + \frac{\left(24Ac^2d+\cdots\right.}{\cdots}$$
$$= -\frac{b^2\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{512c^4} + \frac{\left(24Ac^2d+\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.59, size = 245, normalized size = 1.17

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{7/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(10b^4c(18Ae+18Bd+7Bex)-8b^3c^2(15A(3d+ex)+Bx(15d+7ex))+48b^2c^3x(A(5d+2ex)+Bx(2d+ex))+64bc^4x^2(A(45d+33ex)+Bx(33d+26ex))+128c^5x^3(3A(5d+4ex)+2Bx(6d+5ex))-105b^5Be\right)\right)}{7680c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^5*B*e + 10*b^4*c*(18*B*d + 18*A*e + 7*B
*e*x) + 48*b^2*c^3*x*(B*x*(2*d + e*x) + A*(5*d + 2*e*x)) + 128*c^5*x^3*(3*A
*(5*d + 4*e*x) + 2*B*x*(6*d + 5*e*x)) - 8*b^3*c^2*(15*A*(3*d + e*x) + B*x*(
15*d + 7*e*x)) + 64*b*c^4*x^2*(B*x*(33*d + 26*e*x) + A*(45*d + 33*e*x))) +
(15*b^(7/2)*(24*A*c^2*d + 7*b^2*B*e - 12*b*c*(B*d + A*e))*ArcSinh[(Sqrt[c]*
Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(9/2))
```

IntegrateAlgebraic [A] time = 1.27, size = 303, normalized size = 1.45

$$\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(12Ab^5ce-24Ab^4c^2d-7b^6Be+12b^5Bcd\right)}{1024c^{9/2}}+\frac{\sqrt{bx+cx^2}\left(180Ab^4ce-360Ab^3c^2d-120Ab^3c^2ex+240Ab^2c^3dx+96Ab^2c^3ex^2+2880Abc^4dx^2+2112Abc^4ex^3+1920Ac^5dx^3+1536Ac^5ex^4-105b^5Be+180b^4Bcd+70b^4Bcex-120b^3Bc^2dx-56b^3Bc^2ex^2+96b^2Bc^3dx^2+48b^2Bc^3ex^3+2112bBc^4dx^3+1664bBc^4ex^4+1536Bc^5dx^4+1280Bc^5ex^5\right)}{7680c^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(180*b^4*B*c*d - 360*A*b^3*c^2*d - 105*b^5*B*e + 180*A*b
^4*c*e - 120*b^3*B*c^2*d*x + 240*A*b^2*c^3*d*x + 70*b^4*B*c*e*x - 120*A*b^3
*c^2*e*x + 96*b^2*B*c^3*d*x^2 + 2880*A*b*c^4*d*x^2 - 56*b^3*B*c^2*e*x^2 + 9
6*A*b^2*c^3*e*x^2 + 2112*b*B*c^4*d*x^3 + 1920*A*c^5*d*x^3 + 48*b^2*B*c^3*e*
x^3 + 2112*A*b*c^4*e*x^3 + 1536*B*c^5*d*x^4 + 1664*b*B*c^4*e*x^4 + 1536*A*c
^5*e*x^4 + 1280*B*c^5*e*x^5))/(7680*c^4) + ((12*b^5*B*c*d - 24*A*b^4*c^2*d
- 7*b^6*B*e + 12*A*b^5*c*e)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(
1024*c^(9/2))
```

fricas [A] time = 0.45, size = 603, normalized size = 2.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/15360*(15*(12*(B*b^5*c - 2*A*b^4*c^2)*d - (7*B*b^6 - 12*A*b^5*c)*e)*sqrt
(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(1280*B*c^6*e*x^5 + 12
8*(12*B*c^6*d + (13*B*b*c^5 + 12*A*c^6)*e)*x^4 + 48*(4*(11*B*b*c^5 + 10*A*c
```

```
^6)*d + (B*b^2*c^4 + 44*A*b*c^5)*e)*x^3 + 8*(12*(B*b^2*c^4 + 30*A*b*c^5)*d
- (7*B*b^3*c^3 - 12*A*b^2*c^4)*e)*x^2 + 180*(B*b^4*c^2 - 2*A*b^3*c^3)*d - 1
5*(7*B*b^5*c - 12*A*b^4*c^2)*e - 10*(12*(B*b^3*c^3 - 2*A*b^2*c^4)*d - (7*B*
b^4*c^2 - 12*A*b^3*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^5, 1/7680*(15*(12*(B*b^5
*c - 2*A*b^4*c^2)*d - (7*B*b^6 - 12*A*b^5*c)*e)*sqrt(-c)*arctan(sqrt(c*x^2
+ b*x)*sqrt(-c)/(c*x)) + (1280*B*c^6*e*x^5 + 128*(12*B*c^6*d + (13*B*b*c^5
+ 12*A*c^6)*e)*x^4 + 48*(4*(11*B*b*c^5 + 10*A*c^6)*d + (B*b^2*c^4 + 44*A*b*
c^5)*e)*x^3 + 8*(12*(B*b^2*c^4 + 30*A*b*c^5)*d - (7*B*b^3*c^3 - 12*A*b^2*c^
4)*e)*x^2 + 180*(B*b^4*c^2 - 2*A*b^3*c^3)*d - 15*(7*B*b^5*c - 12*A*b^4*c^2)
*e - 10*(12*(B*b^3*c^3 - 2*A*b^2*c^4)*d - (7*B*b^4*c^2 - 12*A*b^3*c^3)*e)*x
)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.24, size = 317, normalized size = 1.52

$$\frac{1}{7680}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\,Bcxe+\frac{12\,Bc^6d+13\,Bbc^5e+12\,Ac^6e}{c^5}\right)x+\frac{3\left(44\,Bbc^5d+40\,Ac^6d+Bb^2c^4e+44\,Abc^5e\right)}{c^5}\right)x+\frac{12\,Bb^2c^4d+360\,Abc^5d-7\,Bb^3c^3e+12\,Ab^2c^4e}{c^5}\right)x-\frac{5\left(12\,Bb^3c^3d-24\,Ab^2c^4d-7\,Bb^4c^2e+12\,Ab^3c^3e\right)}{c^5}\right)x+\frac{15\left(12\,Bb^4c^2d-24\,Ab^3c^3d-7\,Bb^5ce+12\,Ab^4c^2e\right)}{c^5}\right)+\frac{\left(12\,Bb^5cd-24\,Ab^4c^2d-7\,Bb^6e+12\,Ab^5ce\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{1024\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*c*x*e + (12*B*c^6*d + 13*B*b*c^5
*e + 12*A*c^6*e)/c^5)*x + 3*(44*B*b*c^5*d + 40*A*c^6*d + B*b^2*c^4*e + 44*A
*b*c^5*e)/c^5)*x + (12*B*b^2*c^4*d + 360*A*b*c^5*d - 7*B*b^3*c^3*e + 12*A*b
^2*c^4*e)/c^5)*x - 5*(12*B*b^3*c^3*d - 24*A*b^2*c^4*d - 7*B*b^4*c^2*e + 12*
A*b^3*c^3*e)/c^5)*x + 15*(12*B*b^4*c^2*d - 24*A*b^3*c^3*d - 7*B*b^5*c*e + 1
2*A*b^4*c^2*e)/c^5) + 1/1024*(12*B*b^5*c*d - 24*A*b^4*c^2*d - 7*B*b^6*e + 1
2*A*b^5*c*e)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/
2)
```

maple [B] time = 0.06, size = 544, normalized size = 2.60

$$-\frac{3Ab^5e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{7}{2}}}+\frac{3Ab^4d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{5}{2}}}+\frac{7Bb^6e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{1024c^{\frac{9}{2}}}-\frac{3Bb^5d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{7}{2}}}+\frac{3\sqrt{cx^2+bx}\,Ab^3ex}{64c^2}-\frac{3\sqrt{cx^2+bx}\,Ab^2dx}{32c}-\frac{7\sqrt{cx^2+bx}\,Bb^4ex}{256c^3}+\frac{3\sqrt{cx^2+bx}\,Bb^3dx}{64c^2}+\frac{3\sqrt{cx^2+bx}\,Ab^4e}{128c^3}-\frac{3\sqrt{cx^2+bx}\,Ab^3d}{64c^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Abex}{8c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Adx}{4}-\frac{7\sqrt{cx^2+bx}\,Bb^5e}{512c^4}+\frac{3\sqrt{cx^2+bx}\,Bb^4d}{128c^3}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2ex}{96c^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bbdx}{8c}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2e}{16c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Abd}{8c}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3e}{192c^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2d}{16c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bex}{6c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ae}{5c}-\frac{7\left(cx^2+bx\right)^{\frac{5}{2}}Bbe}{60c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bd}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/6*B*e*x*(c*x^2+b*x)^(5/2)/c-7/60*B*e*b/c^2*(c*x^2+b*x)^(5/2)+7/96*B*e*b^2
/c^2*x*(c*x^2+b*x)^(3/2)+7/192*B*e*b^3/c^3*(c*x^2+b*x)^(3/2)-7/256*B*e*b^4/
c^3*(c*x^2+b*x)^(1/2)*x-7/512*B*e*b^5/c^4*(c*x^2+b*x)^(1/2)+7/1024*B*e*b^6/
c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*(c*x^2+b*x)^(5/2)/c*A
*e+1/5*(c*x^2+b*x)^(5/2)/c*B*d-1/8*b/c*x*(c*x^2+b*x)^(3/2)*A*e-1/8*b/c*x*(c
*x^2+b*x)^(3/2)*B*d-1/16*b^2/c^2*(c*x^2+b*x)^(3/2)*A*e-1/16*b^2/c^2*(c*x^2+
b*x)^(3/2)*B*d+3/64*b^3/c^2*(c*x^2+b*x)^(1/2)*x*A*e+3/64*b^3/c^2*(c*x^2+b*x
)^(1/2)*x*B*d+3/128*b^4/c^3*(c*x^2+b*x)^(1/2)*A*e+3/128*b^4/c^3*(c*x^2+b*x)
^(1/2)*B*d-3/256*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e-
3/256*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d+1/4*A*d*x*(
c*x^2+b*x)^(3/2)+1/8*A*d/c*(c*x^2+b*x)^(3/2)*b-3/32*A*d*b^2/c*(c*x^2+b*x)^(
1/2)*x-3/64*A*d*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*A*d*b^4/c^(5/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.54, size = 434, normalized size = 2.08

$$\frac{1}{4}\left(cx^2+bx\right)^{\frac{3}{2}}Adx-\frac{3\sqrt{cx^2+bx}\,Ab^2dx}{32\,c}-\frac{7\sqrt{cx^2+bx}\,Bb^4ex}{256\,c^3}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2ex}{96\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bex}{6\,c}+\frac{3\,Ab^4d\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128\,c^{\frac{5}{2}}}+\frac{7\,Bb^6e\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024\,c^{\frac{9}{2}}}-\frac{3\sqrt{cx^2+bx}\,Ab^3d}{64\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Abd}{8\,c}-\frac{7\sqrt{cx^2+bx}\,Bb^5e}{512\,c^4}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3e}{192\,c^3}-\frac{7\left(cx^2+bx\right)^{\frac{5}{2}}Bbe}{60\,c^2}+\frac{3\sqrt{cx^2+bx}\,(Bd+Ae)b^3x}{64\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bd+Ae)bx}{8\,c}-\frac{3\,(Bd+Ae)b^5\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256\,c^{\frac{7}{2}}}+\frac{3\sqrt{cx^2+bx}\,(Bd+Ae)b^4}{128\,c^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bd+Ae)b^2}{16\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}(Bd+Ae)}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*A*d*x - 3/32*sqrt(c*x^2 + b*x)*A*b^2*d*x/c - 7/256*
sqrt(c*x^2 + b*x)*B*b^4*e*x/c^3 + 7/96*(c*x^2 + b*x)^(3/2)*B*b^2*e*x/c^2 +
1/6*(c*x^2 + b*x)^(5/2)*B*e*x/c + 3/128*A*b^4*d*log(2*c*x + b + 2*sqrt(c*x^
```

```
2 + b*x)*sqrt(c))/c^(5/2) + 7/1024*B*b^6*e*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c))/c^(9/2) - 3/64*sqrt(c*x^2 + b*x)*A*b^3*d/c^2 + 1/8*(c*x^2 + b*
x)^(3/2)*A*b*d/c - 7/512*sqrt(c*x^2 + b*x)*B*b^5*e/c^4 + 7/192*(c*x^2 + b*x
)^(3/2)*B*b^3*e/c^3 - 7/60*(c*x^2 + b*x)^(5/2)*B*b*e/c^2 + 3/64*sqrt(c*x^2
+ b*x)*(B*d + A*e)*b^3*x/c^2 - 1/8*(c*x^2 + b*x)^(3/2)*(B*d + A*e)*b*x/c -
3/256*(B*d + A*e)*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2)
+ 3/128*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^4/c^3 - 1/16*(c*x^2 + b*x)^(3/2)*(B
*d + A*e)*b^2/c^2 + 1/5*(c*x^2 + b*x)^(5/2)*(B*d + A*e)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c x^2 + b x\right)^{3/2} (A + B x) (d + e x) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x (b + cx))^{\frac{3}{2}} (A + Bx) (d + ex) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)*(d + e*x), x)
```

3.1029 $\int (A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=134

$$-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}+\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+B$$

Rubi [A] time = 0.05, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+\frac{B\left(bx+cx^2\right)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (3*b^2*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^3) - ((b*B - 2*A
*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(16*c^2) + (B*(b*x + c*x^2)^(5/2))/(5*
c) - (3*b^4*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(7
/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{B\left(bx+cx^2\right)^{5/2}}{5c} + \frac{(-bB+2Ac)\int \left(bx+cx^2\right)^{3/2}\,dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+cx^2\right)^{5/2}}{5c} + \frac{\left(3b^2(bB-2Ac)\right)\int \sqrt{bx+}}{32c^2}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\right.}{5}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\right.}{5}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\right.}{5}$$

Mathematica [**A**] time = 0.25, size = 146, normalized size = 1.09

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-10b^3c(3A+Bx)+4b^2c^2x(5A+2Bx)+16bc^3x^2(15A+11Bx)+32c^4x^3(5A+4Bx)+15b^4B\right)-\frac{15b^{7/2}(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{640c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^4*B - 10*b^3*c*(3*A + B*x) + 4*b^2*c^2*x*
(5*A + 2*B*x) + 32*c^4*x^3*(5*A + 4*B*x) + 16*b*c^3*x^2*(15*A + 11*B*x)) -
(15*b^(7/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt
[1 + (c*x)/b])))/(640*c^(7/2))
```

IntegrateAlgebraic [**A**] time = 0.00, size = 152, normalized size = 1.13

$$\frac{3\left(b^5B-2Ab^4c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{256c^{7/2}}+\frac{\sqrt{bx+cx^2}\left(-30Ab^3c+20Ab^2c^2x+240Abc^3x^2+160Ac^4x^3+15b^4B-10b^3Bcx+8b^2Bc^2x^2+176bBc^3x^3+128Bc^4x^4\right)}{640c^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(15*b^4*B - 30*A*b^3*c - 10*b^3*B*c*x + 20*A*b^2*c^2*x +
 8*b^2*B*c^2*x^2 + 240*A*b*c^3*x^2 + 176*b*B*c^3*x^3 + 160*A*c^4*x^3 + 128*
B*c^4*x^4))/(640*c^3) + (3*(b^5*B - 2*A*b^4*c)*Log[b + 2*c*x - 2*Sqrt[c]*Sq
rt[b*x + c*x^2]])/(256*c^(7/2))
```

fricas [**A**] time = 0.46, size = 297, normalized size = 2.22

$$\left[-\frac{15\left(Bb^5-2Ab^4c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(128Bc^5x^4+15Bb^4c-30Ab^3c^2+16\left(11Bbc^4+10Ac^5\right)x^3+8\left(Bb^2c^3+30Abc^4\right)x^2-10\left(Bb^3c^2-2Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{1280c^4}, \frac{15\left(Bb^5-2Ab^4c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(128Bc^5x^4+15Bb^4c-30Ab^3c^2+16\left(11Bbc^4+10Ac^5\right)x^3+8\left(Bb^2c^3+30Abc^4\right)x^2-10\left(Bb^3c^2-2Ab^2c^3\right)x\right)\sqrt{cx^2+bx}}{640c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(B*b^5 - 2*A*b^4*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b^3*c^2 + 16*(11*B*b*c^4
+ 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 - 10*(B*b^3*c^2 - 2*A*b^2*
c^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/640*(15*(B*b^5 - 2*A*b^4*c)*sqrt(-c)*arct
an(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b
^3*c^2 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 -
10*(B*b^3*c^2 - 2*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.22, size = 162, normalized size = 1.21

$$\frac{1}{640}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\,Bcx+\frac{11\,Bbc^4+10\,Ac^5}{c^4}\right)x+\frac{Bb^2c^3+30\,Abc^4}{c^4}\right)x-\frac{5\left(Bb^3c^2-2\,Ab^2c^3\right)}{c^4}\right)x+\frac{15\left(Bb^4c-2\,Ab^3c^2\right)}{c^4}\right)+\frac{3\left(Bb^5-2\,Ab^4c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{256\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/640*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*B*c*x + (11*B*b*c^4 + 10*A*c^5)/c^4)*x
+ (B*b^2*c^3 + 30*A*b*c^4)/c^4)*x - 5*(B*b^3*c^2 - 2*A*b^2*c^3)/c^4)*x + 15
*(B*b^4*c - 2*A*b^3*c^2)/c^4) + 3/256*(B*b^5 - 2*A*b^4*c)*log(abs(-2*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 239, normalized size = 1.78

$$\frac{3Ab^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{5}{2}}}-\frac{3Bb^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{256c^{\frac{7}{2}}}-\frac{3\sqrt{cx^2+bx}\,Ab^2x}{32c}+\frac{3\sqrt{cx^2+bx}\,Bb^3x}{64c^2}-\frac{3\sqrt{cx^2+bx}\,Ab^3}{64c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax}{4}+\frac{3\sqrt{cx^2+bx}\,Bb^4}{128c^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bbx}{8c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{8c}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2}{16c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/5*(c*x^2+b*x)^(5/2)*B/c-1/8*B*b/c*x*(c*x^2+b*x)^(3/2)-1/16*B*b^2/c^2*(c*x
^2+b*x)^(3/2)+3/64*B*b^3/c^2*(c*x^2+b*x)^(1/2)*x+3/128*B*b^4/c^3*(c*x^2+b*x
)^(1/2)-3/256*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/4*A
*x*(c*x^2+b*x)^(3/2)+1/8*A/c*(c*x^2+b*x)^(3/2)*b-3/32*A*b^2/c*(c*x^2+b*x)^(
1/2)*x-3/64*A*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*A*b^4/c^(5/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.55, size = 236, normalized size = 1.76

$$\frac{1}{4}\left(cx^2+bx\right)^{\frac{3}{2}}Ax+\frac{3\sqrt{cx^2+bx}\,Bb^3x}{64\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bbx}{8\,c}-\frac{3\sqrt{cx^2+bx}\,Ab^2x}{32\,c}-\frac{3\,Bb^5\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{256\,c^{\frac{7}{2}}}+\frac{3\,Ab^4\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128\,c^{\frac{5}{2}}}+\frac{3\sqrt{cx^2+bx}\,Bb^4}{128\,c^3}-\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2}{16\,c^2}-\frac{3\sqrt{cx^2+bx}\,Ab^3}{64\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}B}{5\,c}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ab}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*A*x + 3/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^2 - 1/8*(c*x
^2 + b*x)^(3/2)*B*b*x/c - 3/32*sqrt(c*x^2 + b*x)*A*b^2*x/c - 3/256*B*b^5*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 3/128*A*b^4*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 3/128*sqrt(c*x^2 + b*x)*B*b^4/
c^3 - 1/16*(c*x^2 + b*x)^(3/2)*B*b^2/c^2 - 3/64*sqrt(c*x^2 + b*x)*A*b^3/c^2
 + 1/5*(c*x^2 + b*x)^(5/2)*B/c + 1/8*(c*x^2 + b*x)^(3/2)*A*b/c
```

mupad [B] time = 1.85, size = 208, normalized size = 1.55

$$\frac{B\left(c\,x^2+b\,x\right)^{5/2}}{5\,c}+\frac{A\left(c\,x^2+b\,x\right)^{3/2}\left(\frac{b}{2}+c\,x\right)}{4\,c}-\frac{B\,b\left(\frac{x\left(c\,x^2+b\,x\right)^{3/2}}{4}+\frac{b\left(c\,x^2+b\,x\right)^{3/2}}{8\,c}-\frac{3\,b^2\left(\frac{\sqrt{c\,x^2+b\,x}\,\left(b+2\,c\,x\right)}{4\,c}-\frac{b^2\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}\right)}{16\,c}\right)}{2\,c}-\frac{3\,A\,b^2\left(\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{b^2\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}\right)}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] (B*(b*x + c*x^2)^(5/2))/(5*c) + (A*(b*x + c*x^2)^(3/2)*(b/2 + c*x))/(4*c) -
 (B*b*((x*(b*x + c*x^2)^(3/2))/4 + (b*(b*x + c*x^2)^(3/2))/(8*c) - (3*b^2*(
((b*x + c*x^2)^(1/2)*(b + 2*c*x))/(4*c) - (b^2*log((b/2 + c*x)/c^(1/2) + (b
*x + c*x^2)^(1/2)))/(8*c^(3/2))))/(16*c)))/(2*c) - (3*A*b^2*((b*x + c*x^2)^
(1/2)*(x/2 + b/(4*c)) - (b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2))
)/(8*c^(3/2))))/(16*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x(b+cx))^{\frac{3}{2}}(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.1030 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=392

$$\frac{\sqrt{bx+cx^2}\left(-2cex\left(8Ace(2cd-be)-B\left(-3b^2e^2-8bcde+16c^2d^2\right)\right)+8Ace\left(b^2e^2-10bcde+8c^2d^2\right)-B\left(3b^3e^3\right.\right.}{64c^2e^4}$$

Rubi [A] time = 0.59, antiderivative size = 392, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {814, 843, 620, 206, 724}

$$\frac{\sqrt{bx+cx^2}\left(-2cex\left(8Ace(2cd-be)-B\left(-3b^2e^2-8bcde+16c^2d^2\right)\right)+8Ace\left(b^2e^2-10bcde+8c^2d^2\right)-B\left(8b^2cde^2+3b^3e^3-80bc^2d^2e+64c^3d^3\right)\right)}{64c^2e^4}-\frac{\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(8Ace\left(6b^2cde^2+b^3e^3-24bc^2d^2e+16c^3d^3\right)-B\left(48b^2c^2d^2e^2+8b^3cde^3+3b^4e^4-192bc^3d^3e+128c^4d^4\right)\right)}{64c^{5/2}e^5}-\frac{d^{3/2}(Bd-Ae)(cd-be)^{3/2}\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{e^5}-\frac{\left(bx+cx^2\right)^{3/2}(-8Ace-3bBe+8Bcd-6Bcex)}{24ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] ((8*A*c*e*(8*c^2*d^2 - 10*b*c*d*e + b^2*e^2) - B*(64*c^3*d^3 - 80*b*c^2*d^2
*e + 8*b^2*c*d*e^2 + 3*b^3*e^3) - 2*c*e*(8*A*c*e*(2*c*d - b*e) - B*(16*c^2*
d^2 - 8*b*c*d*e - 3*b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(64*c^2*e^4) - ((8*B*c*
d - 3*b*B*e - 8*A*c*e - 6*B*c*e*x)*(b*x + c*x^2)^(3/2))/(24*c*e^2) - ((8*A*
c*e*(16*c^3*d^3 - 24*b*c^2*d^2*e + 6*b^2*c*d*e^2 + b^3*e^3) - B*(128*c^4*d^
4 - 192*b*c^3*d^3*e + 48*b^2*c^2*d^2*e^2 + 8*b^3*c*d*e^3 + 3*b^4*e^4))*ArcT
anh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(5/2)*e^5) - (d^(3/2)*(B*d - A*e)
*(c*d - b*e)^(3/2)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*
e]*Sqrt[b*x + c*x^2])])/e^5
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
```

```
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{d+ex}\,dx = -\frac{(8Bcd-3bBe-8Ace-6Bcex)\left(bx+cx^2\right)^{3/2}}{24ce^2} - \int \frac{\left(-\frac{1}{2}bd(8Bcd-3bBe-8Ace)+\frac{1}{2}\left(8Ace(2cd\right.\right.}{8}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

Mathematica [A] time = 1.41, size = 386, normalized size = 0.98

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(e\sqrt{x}\left(8Ace\left(3b^2e^2+2bce(7ex-15d)+4c^2\left(6d^2-3dex+2e^2x^2\right)\right)+B\left(-9b^3e^3+6b^2ce^2(ex-4d)+8bc^2e\left(30d^2-14dex+9e^2x^2\right)-16c^3\left(12d^3-6d^2ex+4de^2x^2-3e^3x^3\right)\right)\right)-\frac{384c^2d^{3/2}(Bd-Ae)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{\sqrt{b+cx}}\right)+\frac{3\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(B\left(3b^4e^4+8b^3cde^3+48b^2c^2d^2e^2-192bc^3d^3e+128c^4d^4\right)-8Ace\left(b^3e^3+6b^2cde^2-24bc^2d^2e+16c^3d^3\right)\right)}{\sqrt{b}\sqrt{\frac{cx}{b}+1}}\right)}{192c^{5/2}e^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((3*(-8*A*c*e*(16*c^3*d^3 - 24*b*c^2*d^2*e + 6*b^2*c*d*e
^2 + b^3*e^3) + B*(128*c^4*d^4 - 192*b*c^3*d^3*e + 48*b^2*c^2*d^2*e^2 + 8*b
^3*c*d*e^3 + 3*b^4*e^4))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[
1 + (c*x)/b]) + Sqrt[c]*(e*Sqrt[x]*(8*A*c*e*(3*b^2*e^2 + 2*b*c*e*(-15*d + 7
*e*x) + 4*c^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + B*(-9*b^3*e^3 + 6*b^2*c*e^2*
(-4*d + e*x) + 8*b*c^2*e*(30*d^2 - 14*d*e*x + 9*e^2*x^2) - 16*c^3*(12*d^3 -
 6*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3))) - (384*c^2*d^(3/2)*(B*d - A*e)*(c*d
 - b*e)^(3/2)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/S
qrt[b + c*x])))/(192*c^(5/2)*e^5*Sqrt[x])
```

IntegrateAlgebraic [A] time = 8.70, size = 487, normalized size = 1.24

$$\frac{\sqrt{bx+cx^2}\left(24Ab^2ce^3-240Abc^2de^2+112Abc^2e^3x+192Ac^3d^2e-96Ac^3de^2x+64Ac^3e^3x^2-9b^3Be^3-24b^2Bcde^2+6b^2Bce^3x+240bBc^2d^2e-112bBc^2de^2x+72bBc^2e^3x^2-192Bc^3d^3+96Bc^3d^2ex-64Bc^3de^2x^2+48Bc^3e^3x^3\right)}{192c^2e^4}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(8Ab^3ce^4+48Ab^2c^2de^3-192Abc^3d^2e^2+128Ac^4d^3e-3b^4Be^4-8b^3Bcde^3-48b^2Bc^2d^2e^2+192bBc^3d^3e-128Bc^4d^4\right)}{128c^{5/2}e^5}-\frac{2\left(Abd^{3/2}e^2\sqrt{cd-be}-Acd^{5/2}e\sqrt{cd-be}+Bcd^{7/2}\sqrt{cd-be}-bBd^{5/2}e\sqrt{cd-be}\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{e^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-192*B*c^3*d^3 + 240*b*B*c^2*d^2*e + 192*A*c^3*d^2*e -
24*b^2*B*c*d*e^2 - 240*A*b*c^2*d*e^2 - 9*b^3*B*e^3 + 24*A*b^2*c*e^3 + 96*B*
c^3*d^2*e*x - 112*b*B*c^2*d*e^2*x - 96*A*c^3*d*e^2*x + 6*b^2*B*c*e^3*x + 11
```

```
2*A*b*c^2*e^3*x - 64*B*c^3*d*e^2*x^2 + 72*b*B*c^2*e^3*x^2 + 64*A*c^3*e^3*x^
2 + 48*B*c^3*e^3*x^3))/(192*c^2*e^4) - (2*(B*c*d^(7/2)*Sqrt[c*d - b*e] - b*
B*d^(5/2)*e*Sqrt[c*d - b*e] - A*c*d^(5/2)*e*Sqrt[c*d - b*e] + A*b*d^(3/2)*e
^2*Sqrt[c*d - b*e])*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])
/(Sqrt[d]*Sqrt[c*d - b*e])])/e^5 + ((-128*B*c^4*d^4 + 192*b*B*c^3*d^3*e + 1
28*A*c^4*d^3*e - 48*b^2*B*c^2*d^2*e^2 - 192*A*b*c^3*d^2*e^2 - 8*b^3*B*c*d*e
^3 + 48*A*b^2*c^2*d*e^3 - 3*b^4*B*e^4 + 8*A*b^3*c*e^4)*Log[b + 2*c*x - 2*Sq
rt[c]*Sqrt[b*x + c*x^2]])/(128*c^(5/2)*e^5)
```

fricas [A] time = 32.56, size = 1695, normalized size = 4.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3*e + 48*(B*b^2*c^2
+ 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 + (3*B*b^4 - 8*A*b^3
*c)*e^4)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 384*(B*c^4*
d^3 + A*b*c^3*d*e^2 - (B*b*c^3 + A*c^4)*d^2*e)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) -
2*(48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d^2*e^2 -
24*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^4 - 8*(8*
B*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2 - 8*(7*B
*b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(c*x^2 + b
*x))/(c^3*e^5), -1/384*(768*(B*c^4*d^3 + A*b*c^3*d*e^2 - (B*b*c^3 + A*c^4)*
d^2*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/
((c*d - b*e)*x)) + 3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3*e + 48*(
B*b^2*c^2 + 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 + (3*B*b^4
 - 8*A*b^3*c)*e^4)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2
*(48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d^2*e^2 - 2
4*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^4 - 8*(8*B
*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2 - 8*(7*B*
b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(c*x^2 + b*
x))/(c^3*e^5), -1/192*(3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3*e +
48*(B*b^2*c^2 + 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 + (3*B
*b^4 - 8*A*b^3*c)*e^4)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) +
192*(B*c^4*d^3 + A*b*c^3*d*e^2 - (B*b*c^3 + A*c^4)*d^2*e)*sqrt(c*d^2 - b*d*
e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e
*x + d)) - (48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d
^2*e^2 - 24*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^
4 - 8*(8*B*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2
 - 8*(7*B*b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(
c*x^2 + b*x))/(c^3*e^5), -1/192*(384*(B*c^4*d^3 + A*b*c^3*d*e^2 - (B*b*c^3
+ A*c^4)*d^2*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^
2 + b*x)/((c*d - b*e)*x)) + 3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3
*e + 48*(B*b^2*c^2 + 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 +
 (3*B*b^4 - 8*A*b^3*c)*e^4)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) - (48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d^2*e^2
 - 24*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^4 - 8*
(8*B*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2 - 8*(
7*B*b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(c*x^2
+ b*x))/(c^3*e^5)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.05, size = 2334, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x)
```

```
[Out] -3/8/e^2*d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^2*A+1/2/e^3*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*d^2*B-1/e^5*d^4/(-(b*e-c*d)*d/
e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2
)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))
*c^2*A-1/2/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*
c*d*A-1/4/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b
*B*d+1/16/e^2/c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b^3*B*d-1/e^3*d^2/(-(b*e-c*d
)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d
/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d
/e))*b^2*A+3/8/e^3*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^2*B-1/8/e^2/c*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B*d+3/2/e^3*d^2*
ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*A+2/e^4*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln(
(-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A-2/e^5*d
^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*
(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2))/(x+d/e))*b*c*B+1/3/e*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(3/2)*A-1/3/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(3/2)*B*d+1/4*B/e*(c*x^2+b*x)^(3/2)*x-3/32*B/e*b^2/c*(c*x^2+b*x)^(1/2)*x-3/
2/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*B+3/128*B/e*b^4/c^(5/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/8*B/e/c*(c*x^2+b*x)^(3/2)*b+1/e^4*d^3
/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-
(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2))/(x+d/e))*b^2*B+1/e^6*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*B-3/64*B/e*b^3/c^2*(c*x^
2+b*x)^(1/2)+1/e^3*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*c*A-1/e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2)*c*B-1/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*A+1/4/e*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*A+1/e^5*d^4*ln(((x+d/e)*c+1/2*
(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2))*c^(3/2)*B-1/16/e/c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b^3*A+1/8/e/c*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*A-5/4/e^2*((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*d*A+5/4/e^3*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*d^2*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x), x)
```

3.1031 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=323

$$-\frac{\sqrt{bx+cx^2}\left(2cex(-6Ace-bBe+8Bcd)+6Ace(4cd-3be)-B\left(b^2e^2-28bcde+32c^2d^2\right)\right)}{8ce^4}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)(4$$

Rubi [A] time = 0.42, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {812, 814, 843, 620, 206, 724}

$$-\frac{\sqrt{bx+cx^2}\left(2cex(-6Ace-bBe+8Bcd)+6Ace(4cd-3be)-B\left(b^2e^2-28bcde+32c^2d^2\right)\right)}{8ce^4}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4bce(4Bd-3Ae)(2cd-be)-\left(-b^2e^2-4bcde+8c^2d^2\right)(-6Ace-bBe+8Bcd)\right)}{8c^{3/2}e^5}+\frac{\left(bx+cx^2\right)^{3/2}(-3Ae+4Bd+Bex)}{3e^2(d+ex)}+\frac{\sqrt{d}\sqrt{cd-be}\,(Bd(8cd-5be)-3Ae(2cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] -((6*A*c*e*(4*c*d - 3*b*e) - B*(32*c^2*d^2 - 28*b*c*d*e + b^2*e^2) + 2*c*e*
(8*B*c*d - b*B*e - 6*A*c*e)*x)*Sqrt[b*x + c*x^2])/(8*c*e^4) + ((4*B*d - 3*A
*e + B*e*x)*(b*x + c*x^2)^(3/2))/(3*e^2*(d + e*x)) + ((4*b*c*e*(4*B*d - 3*A
*e)*(2*c*d - b*e) - (8*B*c*d - b*B*e - 6*A*c*e)*(8*c^2*d^2 - 4*b*c*d*e - b^
2*e^2))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(3/2)*e^5) + (Sqrt[d]*
Sqrt[c*d - b*e]*(B*d*(8*c*d - 5*b*e) - 3*A*e*(2*c*d - b*e))*ArcTanh[(b*d +
(2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*e^5)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{(4Bd-3Ae+Bex)\left(bx+cx^2\right)^{3/2}}{3e^2(d+ex)} - \frac{\int \frac{(b(4Bd-3Ae)+(8Bcd-bBe-6Ace)x)\sqrt{bx+cx^2}}{d+ex}\,dx}{2e^2}$$

$$= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}$$

$$= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}$$

$$= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}$$

$$= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}$$

Mathematica [A] time = 1.64, size = 353, normalized size = 1.09

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(\frac{e\sqrt{x}\left(6Ace\left(be(9d+5ex)-2c\left(6d^2+3dex-e^2x^2\right)\right)+B\left(3b^2e^2(d+ex)+2bce\left(-42d^2-23dex+7e^2x^2\right)+8c^2\left(12d^3+6d^2ex-2de^2x^2+e^3x^3\right)\right)\right)}{d+ex}+\frac{24c\sqrt{d}\sqrt{cd-be}\,(3Ae(be-2cd)+Bd(8cd-5be))\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{\sqrt{b+cx}}\right)-\frac{3\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(B\left(b^3e^3+12b^2cde^2-72bc^2d^2e+64c^3d^3\right)-6Ace\left(b^2e^2-8bcde+8c^2d^2\right)\right)}{\sqrt{b}\sqrt{\frac{cx}{b}+1}}\right)}{24c^{3/2}e^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((-3*(-6*A*c*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) + B*(64
*c^3*d^3 - 72*b*c^2*d^2*e + 12*b^2*c*d*e^2 + b^3*e^3))*ArcSinh[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) + Sqrt[c]*((e*Sqrt[x]*(6*A*c*e*
(b*e*(9*d + 5*e*x) - 2*c*(6*d^2 + 3*d*e*x - e^2*x^2)) + B*(3*b^2*e^2*(d + e
*x) + 2*b*c*e*(-42*d^2 - 23*d*e*x + 7*e^2*x^2) + 8*c^2*(12*d^3 + 6*d^2*e*x
- 2*d*e^2*x^2 + e^3*x^3))))/(d + e*x) + (24*c*Sqrt[d]*Sqrt[c*d - b*e]*(B*d*
(8*c*d - 5*b*e) + 3*A*e*(-2*c*d + b*e))*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(
Sqrt[d]*Sqrt[b + c*x])])/Sqrt[b + c*x])))/(24*c^(3/2)*e^5*Sqrt[x])
```

IntegrateAlgebraic [A] time = 2.95, size = 437, normalized size = 1.35

$$\frac{\sqrt{bx+cx^2}\left(54Abcde^2+30Abce^3x-72Ac^2d^2e-36Ac^2de^2x+12Ac^2e^3x^2+3b^2Bde^2+3b^2Be^3x-84bBcd^2e-46bBcde^2x+14bBce^3x^2+96Bc^2d^3+48Bc^2d^2ex-16Bc^2de^2x^2+8Bc^2e^3x^3\right)}{24ce^4(d+ex)}+\frac{\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)\left(-6Ab^2ce^3+48Abc^2de^2-48Ac^3d^2e+b^3Be^3+12b^2Bcde^2-72bBc^2d^2e+64Bc^3d^3\right)}{16c^{3/2}e^5}+\frac{\left(-6Acd^{3/2}e\sqrt{cd-be}+3Ab\sqrt{d}\,e^2\sqrt{cd-be}+8Bcd^{5/2}\sqrt{cd-be}-5bBd^{3/2}e\sqrt{cd-be}\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{e^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(96*B*c^2*d^3 - 84*b*B*c*d^2*e - 72*A*c^2*d^2*e + 3*b^2*
B*d*e^2 + 54*A*b*c*d*e^2 + 48*B*c^2*d^2*e*x - 46*b*B*c*d*e^2*x - 36*A*c^2*d
*e^2*x + 3*b^2*B*e^3*x + 30*A*b*c*e^3*x - 16*B*c^2*d*e^2*x^2 + 14*b*B*c*e^3
*x^2 + 12*A*c^2*e^3*x^2 + 8*B*c^2*e^3*x^3))/(24*c*e^4*(d + e*x)) + ((8*B*c*
d^(5/2)*Sqrt[c*d - b*e] - 5*b*B*d^(3/2)*e*Sqrt[c*d - b*e] - 6*A*c*d^(3/2)*e
*Sqrt[c*d - b*e] + 3*A*b*Sqrt[d]*e^2*Sqrt[c*d - b*e])*ArcTanh[(Sqrt[c]*d +
Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/e^5 + ((64*B
*c^3*d^3 - 72*b*B*c^2*d^2*e - 48*A*c^3*d^2*e + 12*b^2*B*c*d*e^2 + 48*A*b*c^
2*d*e^2 + b^3*B*e^3 - 6*A*b^2*c*e^3)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[b*x
 + c*x^2]])/(16*c^(3/2)*e^5)
```

fricas [A] time = 3.86, size = 2017, normalized size = 6.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(64*B*c^3*d^4 - 24*(3*B*b*c^2 + 2*A*c^3)*d^3*e + 12*(B*b^2*c + 4*
A*b*c^2)*d^2*e^2 + (B*b^3 - 6*A*b^2*c)*d*e^3 + (64*B*c^3*d^3*e - 24*(3*B*b*
c^2 + 2*A*c^3)*d^2*e^2 + 12*(B*b^2*c + 4*A*b*c^2)*d*e^3 + (B*b^3 - 6*A*b^2*
c)*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 24*(8*B*c
^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A*c^3)*d^2*e + (8*B*c^3*d^2*e + 3
*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) -
2*(8*B*c^3*e^4*x^3 + 96*B*c^3*d^3*e - 12*(7*B*b*c^2 + 6*A*c^3)*d^2*e^2 + 3*
(B*b^2*c + 18*A*b*c^2)*d*e^3 - 2*(8*B*c^3*d*e^3 - (7*B*b*c^2 + 6*A*c^3)*e^4
)*x^2 + (48*B*c^3*d^2*e^2 - 2*(23*B*b*c^2 + 18*A*c^3)*d*e^3 + 3*(B*b^2*c +
10*A*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*e^6*x + c^2*d*e^5), 1/48*(48*(8
*B*c^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A*c^3)*d^2*e + (8*B*c^3*d^2*e
 + 3*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arc
tan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 3*(64*B*c^3*
d^4 - 24*(3*B*b*c^2 + 2*A*c^3)*d^3*e + 12*(B*b^2*c + 4*A*b*c^2)*d^2*e^2 + (
B*b^3 - 6*A*b^2*c)*d*e^3 + (64*B*c^3*d^3*e - 24*(3*B*b*c^2 + 2*A*c^3)*d^2*e
^2 + 12*(B*b^2*c + 4*A*b*c^2)*d*e^3 + (B*b^3 - 6*A*b^2*c)*e^4)*x)*sqrt(c)*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(8*B*c^3*e^4*x^3 + 96*B*c^3
*d^3*e - 12*(7*B*b*c^2 + 6*A*c^3)*d^2*e^2 + 3*(B*b^2*c + 18*A*b*c^2)*d*e^3
 - 2*(8*B*c^3*d*e^3 - (7*B*b*c^2 + 6*A*c^3)*e^4)*x^2 + (48*B*c^3*d^2*e^2 - 2
*(23*B*b*c^2 + 18*A*c^3)*d*e^3 + 3*(B*b^2*c + 10*A*b*c^2)*e^4)*x)*sqrt(c*x^
2 + b*x))/(c^2*e^6*x + c^2*d*e^5), 1/24*(3*(64*B*c^3*d^4 - 24*(3*B*b*c^2 +
2*A*c^3)*d^3*e + 12*(B*b^2*c + 4*A*b*c^2)*d^2*e^2 + (B*b^3 - 6*A*b^2*c)*d*e
^3 + (64*B*c^3*d^3*e - 24*(3*B*b*c^2 + 2*A*c^3)*d^2*e^2 + 12*(B*b^2*c + 4*A
*b*c^2)*d*e^3 + (B*b^3 - 6*A*b^2*c)*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + 12*(8*B*c^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A*c
^3)*d^2*e + (8*B*c^3*d^2*e + 3*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)*x
)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sq
rt(c*x^2 + b*x))/(e*x + d)) + (8*B*c^3*e^4*x^3 + 96*B*c^3*d^3*e - 12*(7*B*b
*c^2 + 6*A*c^3)*d^2*e^2 + 3*(B*b^2*c + 18*A*b*c^2)*d*e^3 - 2*(8*B*c^3*d*e^3
 - (7*B*b*c^2 + 6*A*c^3)*e^4)*x^2 + (48*B*c^3*d^2*e^2 - 2*(23*B*b*c^2 + 18*
A*c^3)*d*e^3 + 3*(B*b^2*c + 10*A*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*e^6
*x + c^2*d*e^5), 1/24*(24*(8*B*c^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A
*c^3)*d^2*e + (8*B*c^3*d^2*e + 3*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)
*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c
```

```
*d - b*e)*x)) + 3*(64*B*c^3*d^4 - 24*(3*B*b*c^2 + 2*A*c^3)*d^3*e + 12*(B*b^
2*c + 4*A*b*c^2)*d^2*e^2 + (B*b^3 - 6*A*b^2*c)*d*e^3 + (64*B*c^3*d^3*e - 24
*(3*B*b*c^2 + 2*A*c^3)*d^2*e^2 + 12*(B*b^2*c + 4*A*b*c^2)*d*e^3 + (B*b^3 -
6*A*b^2*c)*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B
*c^3*e^4*x^3 + 96*B*c^3*d^3*e - 12*(7*B*b*c^2 + 6*A*c^3)*d^2*e^2 + 3*(B*b^2
*c + 18*A*b*c^2)*d*e^3 - 2*(8*B*c^3*d*e^3 - (7*B*b*c^2 + 6*A*c^3)*e^4)*x^2
+ (48*B*c^3*d^2*e^2 - 2*(23*B*b*c^2 + 18*A*c^3)*d*e^3 + 3*(B*b^2*c + 10*A*b
*c^2)*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*e^6*x + c^2*d*e^5)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 4283, normalized size = 13.26

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x)
```

```
[Out] 1/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A
+1/4*B/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b+2*
B/e^5*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))*b*c-6/e^4/(b*e-c*d)*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c
*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c
^(3/2)*b*B-3/2/e^3/(b*e-c*d)*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-3/2/e^2/(b*e-c*d)*d*(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A+6/e^3/(b*e
-c*d)*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*b*A-1/e^2/(b*e-c*d)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*B*d+3/8/e/(b*e-c*d)*ln(((x+
d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/c^(1/2)*b^3*A-3/e^4/(b*e-c*d)*d^3*ln(((x+d/e)*c+1/2*(b*e-
2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
)*c^(5/2)*A+1/e*c/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(3/2)*x*B-c/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(3/2)*x*A+9/4/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2)*b^2*A-1/e/(b*e-c*d)/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*
e-2*c*d)*(x+d/e)/e)^(5/2)*B-1/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(3/2)*b*A+1/8*B/e^2/c*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2)*b^2-3/2/e^2/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*B*d-6/e^3/(b*e-c*d)*d^2/(-(b*e-c*d)*d/e^
2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^
(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b
^2*c*A+6/e^4/(b*e-c*d)*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B+15/2/e^4/(b*e-c*d)*d^3/(-
(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*
e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2))/(x+d/e))*b*c^2*A-15/2/e^5/(b*e-c*d)*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2
*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^
2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*B+1/3*B/e^
```

```
2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)-1/2*B/e^3*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*d-3/8*B/e^3*d*ln((
(x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^2+3/2*B/e^4*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d
)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(
1/2)*b+3/e^5/(b*e-c*d)*d^4*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(5/2)*B-9/4/e^2/(b*e-
c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B*d+3/e^
3/(b*e-c*d)*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c
^2*A-3/e^4/(b*e-c*d)*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2)*c^2*B+3/2/e^3/(b*e-c*d)*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(1/2)*x*c^2*B+21/4/e^3/(b*e-c*d)*d^2*((x+d/e)^2*c-(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-3/e^5/(b*e-c*d)*d^4/(-(b*e-c*d)*d/e^
2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^
(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c
^3*A+27/8/e^3/(b*e-c*d)*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*B+3/2/e/(b
*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*A-3
/8/e^2/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^3*B*d-27/8/e^2/(b*e-c*d
)*d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*A-21/4/e^2/(b*e-c*d)*d*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+3/2/e^2/(b*e-c*d)*d/(-
(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*
e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2))/(x+d/e))*b^3*A+3/e^6/(b*e-c*d)*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B-5/4*B/e^3*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*d-1/16*B/e^2/c^(3/2)
*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2))*b^3+B/e^4*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)*c-B/e^5*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)
+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)+1/e/(b*
e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*B+1/(b*e
-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(5/2)*A
-B/e^4*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2))/(x+d/e))*b^2-B/e^6*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**2, x)
```

3.1032 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=314

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)}{4\sqrt{c}\,e^5}+\frac{3\left(Ae\left(b^2e^2-8bcde+8c^2d^2\right)-Bd\left(5b^2e^2-\right.\right.}{8\sqrt{d}\,e^5}$$

Rubi [A] time = 0.43, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {812, 843, 620, 206, 724}

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)}{4\sqrt{c}e^5}+\frac{3\left(Ae\left(b^2e^2-8bcde+8c^2d^2\right)-Bd\left(5b^2e^2-20bcde+16c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8\sqrt{d}e^5\sqrt{cd-be}}+\frac{\left(bx+cx^2\right)^{3/2}(-Ae+2Bd+Bex)}{2e^2(d+ex)^2}-\frac{3\sqrt{bx+cx^2}(ex(-2Ace-bBe+4Bcd)-Ae(4cd-be)+4Bd(2cd-be))}{4e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (-3*(4*B*d*(2*c*d - b*e) - A*e*(4*c*d - b*e) + e*(4*B*c*d - b*B*e - 2*A*c*e
)*x)*Sqrt[b*x + c*x^2])/(4*e^4*(d + e*x)) + ((2*B*d - A*e + B*e*x)*(b*x + c
*x^2)^(3/2))/(2*e^2*(d + e*x)^2) - (3*(4*A*c*e*(2*c*d - b*e) - B*(16*c^2*d^
2 - 12*b*c*d*e + b^2*e^2))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*Sqrt[
c]*e^5) + (3*(A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*d*(16*c^2*d^2 - 20*
b*c*d*e + 5*b^2*e^2))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d -
 b*e]*Sqrt[b*x + c*x^2])]])/(8*Sqrt[d]*e^5*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx = \frac{(2Bd-Ae+Bex)\left(bx+cx^2\right)^{3/2}}{2e^2(d+ex)^2} - \frac{3\int \frac{(2b(2Bd-Ae)+2(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{(d+ex)^2}\,dx}{8e^2}$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + \frac{(2Ba}{}$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + \frac{(2Ba}{}$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + \frac{(2Ba}{}$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + \frac{(2Ba}{}$$

Mathematica [B] time = 6.12, size = 1358, normalized size = 4.32

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(3/2))/(2*d*(-(c*d) + b*e)*(d + e
*x)^2) + ((x*(b + c*x))^(3/2)*(((-3*c*d*(B*d - A*e) + (e*(5*b*B*d - 4*A*c*d
 - A*b*e))/2)*x^(5/2)*(b + c*x)^(5/2))/(d*(-(c*d) + b*e)*(d + e*x)) + (((8*
A*c^2*d^2 + 4*b*c*d*(5*B*d - 4*A*e) - 3*b^2*e*(5*B*d - A*e))*((2*b*x^(3/2)*
Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))
/2 + (3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[
b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (
d*((2*b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1
+ (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt
[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 +
(c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sq
rt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x
]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b +
 c*x])])/(Sqrt[d]*e)))/e))/e))/e))/4 + 2*c*(B*d*(6*c*d - 5*b*e) - A*e*(2*c*
d - b*e))*((2*b*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((5*(1/(2*(1 + (c*x)/
b)^2) + (1 + (c*x)/b)^(-1)))/8 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) -
 (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (
c*x)/b])))/(256*c^3*x^3*(1 + (c*x)/b)^2)))/(5*e) - (d*((2*b*x^(3/2)*Sqrt[b
+ c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (3
*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(S
qrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*b
*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)
/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqr
t[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b
)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sq
```

```
rt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*S
qrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2
*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]
)/(Sqrt[d]*e)))/e))/e))/e))/e))/(d*(-(c*d) + b*e))))/(2*d*(-(c*d) + b*e)*x^
(3/2)*(b + c*x)^(3/2))
```

IntegrateAlgebraic [A] time = 5.22, size = 348, normalized size = 1.11

$$-\frac{3\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(4Abce^2-8Ac^2de+b^2Be^2-12bBcde+16Bc^2d^2\right)}{8\sqrt{c}e^5}-\frac{3\left(-Ab^2e^3+8Abcde^2-8Ac^2d^2e+5b^2Bde^2-20bBcd^2e+16Bc^2d^3\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{4\sqrt{d}e^5\sqrt{cd-be}}+\frac{\sqrt{bx+cx^2}\left(-3Abde^2-5Abe^3x+12Acd^2e+18Acde^2x+4Ace^3x^2+12bBd^2e+19bBde^2x+5bBe^3x^2-24Bcd^3-36Bcd^2ex-8Bcde^2x^2+2Bce^3x^3\right)}{4e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-24*B*c*d^3 + 12*b*B*d^2*e + 12*A*c*d^2*e - 3*A*b*d*e^2
 - 36*B*c*d^2*e*x + 19*b*B*d*e^2*x + 18*A*c*d*e^2*x - 5*A*b*e^3*x - 8*B*c*d
*e^2*x^2 + 5*b*B*e^3*x^2 + 4*A*c*e^3*x^2 + 2*B*c*e^3*x^3))/(4*e^4*(d + e*x)
^2) - (3*(16*B*c^2*d^3 - 20*b*B*c*d^2*e - 8*A*c^2*d^2*e + 5*b^2*B*d*e^2 + 8
*A*b*c*d*e^2 - A*b^2*e^3)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c
*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/(4*Sqrt[d]*e^5*Sqrt[c*d - b*e]) - (3*(16
*B*c^2*d^2 - 12*b*B*c*d*e - 8*A*c^2*d*e + b^2*B*e^2 + 4*A*b*c*e^2)*Log[b +
2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(8*Sqrt[c]*e^5)
```

fricas [B] time = 1.85, size = 3342, normalized size = 10.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*(16*B*c^3*d^6 - 4*(7*B*b*c^2 + 2*A*c^3)*d^5*e + (13*B*b^2*c + 12*A*
b*c^2)*d^4*e^2 - (B*b^3 + 4*A*b^2*c)*d^3*e^3 + (16*B*c^3*d^4*e^2 - 4*(7*B*b
*c^2 + 2*A*c^3)*d^3*e^3 + (13*B*b^2*c + 12*A*b*c^2)*d^2*e^4 - (B*b^3 + 4*A*
b^2*c)*d*e^5)*x^2 + 2*(16*B*c^3*d^5*e - 4*(7*B*b*c^2 + 2*A*c^3)*d^4*e^2 + (
13*B*b^2*c + 12*A*b*c^2)*d^3*e^3 - (B*b^3 + 4*A*b^2*c)*d^2*e^4)*x)*sqrt(c)*
log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 3*(16*B*c^3*d^5 - A*b^2*c*d^
2*e^3 - 4*(5*B*b*c^2 + 2*A*c^3)*d^4*e + (5*B*b^2*c + 8*A*b*c^2)*d^3*e^2 + (
16*B*c^3*d^3*e^2 - A*b^2*c*e^5 - 4*(5*B*b*c^2 + 2*A*c^3)*d^2*e^3 + (5*B*b^2
*c + 8*A*b*c^2)*d*e^4)*x^2 + 2*(16*B*c^3*d^4*e - A*b^2*c*d*e^4 - 4*(5*B*b*c
^2 + 2*A*c^3)*d^3*e^2 + (5*B*b^2*c + 8*A*b*c^2)*d^2*e^3)*x)*sqrt(c*d^2 - b*
d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/
(e*x + d)) - 2*(24*B*c^3*d^5*e - 3*A*b^2*c*d^2*e^4 - 12*(3*B*b*c^2 + A*c^3)
*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3*e^3 - 2*(B*c^3*d^2*e^4 - B*b*c^2*d
*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c^2 + 4*A*c^3)*d^2*e^4 + (5*B*b^2*c
+ 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*e^2 - 5*A*b^2*c*d*e^5 - (55*B*b*c^2
 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*A*b*c^2)*d^2*e^4)*x)*sqrt(c*x^2 + b
*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d^2*e^7 - b*c*d*e^8)*x^2 + 2*(c^2*d^
3*e^6 - b*c*d^2*e^7)*x), -1/8*(6*(16*B*c^3*d^5 - A*b^2*c*d^2*e^3 - 4*(5*B*b
*c^2 + 2*A*c^3)*d^4*e + (5*B*b^2*c + 8*A*b*c^2)*d^3*e^2 + (16*B*c^3*d^3*e^2
 - A*b^2*c*e^5 - 4*(5*B*b*c^2 + 2*A*c^3)*d^2*e^3 + (5*B*b^2*c + 8*A*b*c^2)*
d*e^4)*x^2 + 2*(16*B*c^3*d^4*e - A*b^2*c*d*e^4 - 4*(5*B*b*c^2 + 2*A*c^3)*d^
3*e^2 + (5*B*b^2*c + 8*A*b*c^2)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sq
rt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 3*(16*B*c^3*d^6 - 4
*(7*B*b*c^2 + 2*A*c^3)*d^5*e + (13*B*b^2*c + 12*A*b*c^2)*d^4*e^2 - (B*b^3 +
 4*A*b^2*c)*d^3*e^3 + (16*B*c^3*d^4*e^2 - 4*(7*B*b*c^2 + 2*A*c^3)*d^3*e^3 +
 (13*B*b^2*c + 12*A*b*c^2)*d^2*e^4 - (B*b^3 + 4*A*b^2*c)*d*e^5)*x^2 + 2*(16
*B*c^3*d^5*e - 4*(7*B*b*c^2 + 2*A*c^3)*d^4*e^2 + (13*B*b^2*c + 12*A*b*c^2)*
d^3*e^3 - (B*b^3 + 4*A*b^2*c)*d^2*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c)) + 2*(24*B*c^3*d^5*e - 3*A*b^2*c*d^2*e^4 - 12*(3*B*b*c^2
 + A*c^3)*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3*e^3 - 2*(B*c^3*d^2*e^4 -
B*b*c^2*d*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c^2 + 4*A*c^3)*d^2*e^4 + (5
```

```
*B*b^2*c + 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*e^2 - 5*A*b^2*c*d*e^5 - (5
5*B*b*c^2 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*A*b*c^2)*d^2*e^4)*x)*sqrt(
c*x^2 + b*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d^2*e^7 - b*c*d*e^8)*x^2 +
2*(c^2*d^3*e^6 - b*c*d^2*e^7)*x), -1/8*(6*(16*B*c^3*d^6 - 4*(7*B*b*c^2 + 2*
A*c^3)*d^5*e + (13*B*b^2*c + 12*A*b*c^2)*d^4*e^2 - (B*b^3 + 4*A*b^2*c)*d^3*
e^3 + (16*B*c^3*d^4*e^2 - 4*(7*B*b*c^2 + 2*A*c^3)*d^3*e^3 + (13*B*b^2*c + 1
2*A*b*c^2)*d^2*e^4 - (B*b^3 + 4*A*b^2*c)*d*e^5)*x^2 + 2*(16*B*c^3*d^5*e - 4
*(7*B*b*c^2 + 2*A*c^3)*d^4*e^2 + (13*B*b^2*c + 12*A*b*c^2)*d^3*e^3 - (B*b^3
 + 4*A*b^2*c)*d^2*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x))
 - 3*(16*B*c^3*d^5 - A*b^2*c*d^2*e^3 - 4*(5*B*b*c^2 + 2*A*c^3)*d^4*e + (5*B
*b^2*c + 8*A*b*c^2)*d^3*e^2 + (16*B*c^3*d^3*e^2 - A*b^2*c*e^5 - 4*(5*B*b*c^
2 + 2*A*c^3)*d^2*e^3 + (5*B*b^2*c + 8*A*b*c^2)*d*e^4)*x^2 + 2*(16*B*c^3*d^4
*e - A*b^2*c*d*e^4 - 4*(5*B*b*c^2 + 2*A*c^3)*d^3*e^2 + (5*B*b^2*c + 8*A*b*c
^2)*d^2*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d
^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(24*B*c^3*d^5*e - 3*A*b^2*c*d
^2*e^4 - 12*(3*B*b*c^2 + A*c^3)*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3*e^3
 - 2*(B*c^3*d^2*e^4 - B*b*c^2*d*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c^2 +
 4*A*c^3)*d^2*e^4 + (5*B*b^2*c + 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*e^2
- 5*A*b^2*c*d*e^5 - (55*B*b*c^2 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*A*b*
c^2)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d^2*e
^7 - b*c*d*e^8)*x^2 + 2*(c^2*d^3*e^6 - b*c*d^2*e^7)*x), -1/4*(3*(16*B*c^3*d
^5 - A*b^2*c*d^2*e^3 - 4*(5*B*b*c^2 + 2*A*c^3)*d^4*e + (5*B*b^2*c + 8*A*b*c
^2)*d^3*e^2 + (16*B*c^3*d^3*e^2 - A*b^2*c*e^5 - 4*(5*B*b*c^2 + 2*A*c^3)*d^2
*e^3 + (5*B*b^2*c + 8*A*b*c^2)*d*e^4)*x^2 + 2*(16*B*c^3*d^4*e - A*b^2*c*d*e
^4 - 4*(5*B*b*c^2 + 2*A*c^3)*d^3*e^2 + (5*B*b^2*c + 8*A*b*c^2)*d^2*e^3)*x)*
sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d -
 b*e)*x)) + 3*(16*B*c^3*d^6 - 4*(7*B*b*c^2 + 2*A*c^3)*d^5*e + (13*B*b^2*c +
 12*A*b*c^2)*d^4*e^2 - (B*b^3 + 4*A*b^2*c)*d^3*e^3 + (16*B*c^3*d^4*e^2 - 4*
(7*B*b*c^2 + 2*A*c^3)*d^3*e^3 + (13*B*b^2*c + 12*A*b*c^2)*d^2*e^4 - (B*b^3
+ 4*A*b^2*c)*d*e^5)*x^2 + 2*(16*B*c^3*d^5*e - 4*(7*B*b*c^2 + 2*A*c^3)*d^4*e
^2 + (13*B*b^2*c + 12*A*b*c^2)*d^3*e^3 - (B*b^3 + 4*A*b^2*c)*d^2*e^4)*x)*sq
rt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (24*B*c^3*d^5*e - 3*A*b^2
*c*d^2*e^4 - 12*(3*B*b*c^2 + A*c^3)*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3
*e^3 - 2*(B*c^3*d^2*e^4 - B*b*c^2*d*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c
^2 + 4*A*c^3)*d^2*e^4 + (5*B*b^2*c + 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*
e^2 - 5*A*b^2*c*d*e^5 - (55*B*b*c^2 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*
A*b*c^2)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d
^2*e^7 - b*c*d*e^8)*x^2 + 2*(c^2*d^3*e^6 - b*c*d^2*e^7)*x)]
```

giac [B] time = 0.52, size = 936, normalized size = 2.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3/4*(16*B*c^2*d^3 - 20*B*b*c*d^2*e - 8*A*c^2*d^2*e + 5*B*b^2*d*e^2 + 8*A*b
*c*d*e^2 - A*b^2*e^3)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*
d)/sqrt(-c*d^2 + b*d*e))*e^(-5)/sqrt(-c*d^2 + b*d*e) - 3/8*(16*B*c^2*d^2 -
12*B*b*c*d*e - 8*A*c^2*d*e + B*b^2*e^2 + 4*A*b*c*e^2)*e^(-5)*log(abs(2*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 1/4*(2*B*c*x*e^(-3) - (
12*B*c^2*d*e^8 - 5*B*b*c*e^9 - 4*A*c^2*e^9)*e^(-12)/c)*sqrt(c*x^2 + b*x) -
1/4*(32*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^(5/2)*d^3*e + 56*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^2*B*c^3*d^4 - 44*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*
c^2*d^3*e - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c^3*d^3*e + 56*(sqrt(c)*
x - sqrt(c*x^2 + b*x))*B*b*c^(5/2)*d^4 - 36*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^3*B*b*c^(3/2)*d^2*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(5/2)*d^2
*e^2 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c^(3/2)*d^3*e - 40*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*A*b*c^(5/2)*d^3*e + 14*B*b^2*c^2*d^4 + 3*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*B*b^2*c*d^2*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x)
```

```
)^2*A*b*c^2*d^2*e^2 - 9*B*b^3*c*d^3*e - 10*A*b^2*c^2*d^3*e + 9*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^3*B*b^2*sqrt(c)*d*e^3 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^3*A*b*c^(3/2)*d*e^3 + 7*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*sqrt(c)*d
^2*e^2 + 28*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^(3/2)*d^2*e^2 + (sqrt(c
)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c*d*e^3 + 5*A*b^3*c*d^2*e^2 - 5*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*A*b^2*sqrt(c)*e^4 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x
))*A*b^3*sqrt(c)*d*e^3)*e^(-5)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^2*sqrt(c))
```

maple [B] time = 0.06, size = 7365, normalized size = 23.46

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**3, x)
```

3.1033 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^4} \, dx$

Optimal. Leaf size=426

$$-\frac{\sqrt{bx+cx^2}\left(Ae\left(-b^2e^2-6bcde+8c^2d^2\right)-2cex(Bd(8cd-7be)-Ae(2cd-be))-Bd\left(5b^2e^2-36bcde+32c^2d\right.\right.}{8de^4(d+ex)(cd-be)}$$

Rubi [A] time = 0.53, antiderivative size = 426, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {810, 812, 843, 620, 206, 724}

$$-\frac{\sqrt{bx+cx^2}\left(Ae\left(-b^2e^2-6bcde+8c^2d^2\right)-2cex(Bd(8cd-7be)-Ae(2cd-be))-Bd\left(5b^2e^2-36bcde+32c^2d^2\right)\right)}{8de^4(d+ex)(cd-be)}+\frac{\left(Bd\left(60b^2cde^2-5b^3e^3-120bc^2d^2e+64c^3d^3\right)-Ae\left(6b^2cde^2+b^3e^3-24bc^2d^2e+16c^3d^3\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16d^{3/2}e^5(cd-be)^{3/2}}-\frac{\left(bx+cx^2\right)^{3/2}(3ex(Bd(4cd-3be)-Ae(2cd-be))+d(Bd(8cd-5be)-Ae(be+2cd)))}{12de^2(d+ex)^3(cd-be)}-\frac{\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)(-2Ace-3bBe+8Bcd)}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] -((A*e*(8*c^2*d^2 - 6*b*c*d*e - b^2*e^2) - B*d*(32*c^2*d^2 - 36*b*c*d*e + 5
*b^2*e^2) - 2*c*e*(B*d*(8*c*d - 7*b*e) - A*e*(2*c*d - b*e))*x)*Sqrt[b*x + c
*x^2])/(8*d*e^4*(c*d - b*e)*(d + e*x)) - ((d*(B*d*(8*c*d - 5*b*e) - A*e*(2*
c*d + b*e)) + 3*e*(B*d*(4*c*d - 3*b*e) - A*e*(2*c*d - b*e))*x)*(b*x + c*x^2
)^(3/2))/(12*d*e^2*(c*d - b*e)*(d + e*x)^3) - (Sqrt[c]*(8*B*c*d - 3*b*B*e -
 2*A*c*e)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/e^5 + ((B*d*(64*c^3*d^3 -
 120*b*c^2*d^2*e + 60*b^2*c*d*e^2 - 5*b^3*e^3) - A*e*(16*c^3*d^3 - 24*b*c^2
*d^2*e + 6*b^2*c*d*e^2 + b^3*e^3))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[
d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(16*d^(3/2)*e^5*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
```

```
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx = -\frac{(d(Bd(8cd-5be)-Ae(2cd+be))+3e(Bd(4cd-3be)-Ae(2cd-be))x)\left(bx+cx\right.}{12de^2(cd-be)(d+ex)^3}$$

$$= -\frac{\left(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be\right.}{8de^4(cd-be)(d+ex)}$$

$$= -\frac{\left(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be\right.}{8de^4(cd-be)(d+ex)}$$

$$= -\frac{\left(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be\right.}{8de^4(cd-be)(d+ex)}$$

$$= -\frac{\left(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be\right.}{8de^4(cd-be)(d+ex)}$$

Mathematica [B] time = 6.19, size = 1533, normalized size = 3.60

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(3/2))/(3*d*(-(c*d) + b*e)*(d + e
*x)^3) + ((x*(b + c*x))^(3/2)*(((-2*c*d*(B*d - A*e) + (e*(5*b*B*d - 6*A*c*d
 + A*b*e))/2)*x^(5/2)*(b + c*x)^(5/2))/(2*d*(-(c*d) + b*e)*(d + e*x)^2) + (
(((-3*c*d*(B*d*(4*c*d - 5*b*e) + A*e*(2*c*d - b*e)))/2 + (e*(-5*b^2*B*d*e +
 A*(24*c^2*d^2 - 18*b*c*d*e - b^2*e^2)))/4)*x^(5/2)*(b + c*x)^(5/2))/(d*(-(
c*d) + b*e)*(d + e*x)) + (((-48*A*c^3*d^3 - 2*b^2*c*d*e*(70*B*d - 13*A*e) +
 24*b*c^2*d^2*(5*B*d + A*e) + 3*b^3*e^2*(5*B*d + A*e))*((2*b*x^(3/2)*Sqrt[b
 + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (
```

```
3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(
Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*
b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x
)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sq
rt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/
b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*S
qrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*
Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (
2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])
])/(Sqrt[d]*e)))/e))/e))/e))/8 - c*(A*e*(12*c^2*d^2 - 12*b*c*d*e - b^2*e^2)
 - B*d*(24*c^2*d^2 - 30*b*c*d*e + 5*b^2*e^2))*((2*b*x^(5/2)*Sqrt[b + c*x]*(
1 + (c*x)/b)^2*((5*(1/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 - (15*b^
3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sq
rt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^3*x^3*(1 + (c*x)/b)^2
)))/(5*e) - (d*((2*b*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x
)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2
*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*
((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[
c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*
c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSi
nh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e
- ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[
x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*
e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/(d*(-(c
*d) + b*e)))/(2*d*(-(c*d) + b*e))))/(3*d*(-(c*d) + b*e)*x^(3/2)*(b + c*x)^(
3/2))
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] $Aborted
```

fricas [B] time = 6.42, size = 5005, normalized size = 11.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [-1/48*(24*(8*B*c^3*d^8 - (19*B*b*c^2 + 2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A
*b*c^2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*c)*d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*
b*c^2 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2
*A*b^2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d^6*e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^
3 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4 - (3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2
+ 3*(8*B*c^3*d^7*e - (19*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*
c^2)*d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*d^4*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*
sqrt(c*x^2 + b*x)*sqrt(c)) - 3*(64*B*c^3*d^7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^
2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2*c + 2*A*b*c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^
2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3 - A*b^3*e^7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3
*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^2*e^5 - (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^
3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*d*e^6 - 8*(15*B*b*c^2 + 2*A*c^3)*d^4*e^3 +
12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e^4 - (5*B*b^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3
*(64*B*c^3*d^6*e - A*b^3*d^2*e^5 - 8*(15*B*b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5
*B*b^2*c + 2*A*b*c^2)*d^4*e^3 - (5*B*b^3 + 6*A*b^2*c)*d^3*e^4)*x)*sqrt(c*d^
2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 +
```

```
b*x))/(e*x + d)) - 2*(96*B*c^3*d^7*e - 3*A*b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2
*A*c^3)*d^6*e^2 + 3*(41*B*b^2*c + 14*A*b*c^2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c
)*d^4*e^4 + 24*(B*c^3*d^4*e^4 - 2*B*b*c^2*d^3*e^5 + B*b^2*c*d^2*e^6)*x^3 +
(176*B*c^3*d^5*e^3 + 3*A*b^3*d*e^7 - 2*(191*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (
239*B*b^2*c + 88*A*b*c^2)*d^3*e^5 - (33*B*b^3 + 47*A*b^2*c)*d^2*e^6)*x^2 +
2*(120*B*c^3*d^6*e^2 - 4*A*b^3*d^2*e^6 - (257*B*b*c^2 + 30*A*c^3)*d^5*e^3 +
 (157*B*b^2*c + 53*A*b*c^2)*d^4*e^4 - (20*B*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*s
qrt(c*x^2 + b*x))/(c^2*d^7*e^5 - 2*b*c*d^6*e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8
 - 2*b*c*d^3*e^9 + b^2*d^2*e^10)*x^3 + 3*(c^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2
*d^3*e^9)*x^2 + 3*(c^2*d^6*e^6 - 2*b*c*d^5*e^7 + b^2*d^4*e^8)*x), 1/24*(3*(
64*B*c^3*d^7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2
*c + 2*A*b*c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3
 - A*b^3*e^7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2
)*d^2*e^5 - (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*
d*e^6 - 8*(15*B*b*c^2 + 2*A*c^3)*d^4*e^3 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e
^4 - (5*B*b^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3*(64*B*c^3*d^6*e - A*b^3*d^2*e^5
 - 8*(15*B*b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^4*e^3 -
(5*B*b^3 + 6*A*b^2*c)*d^3*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2
+ b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 12*(8*B*c^3*d^8 - (19*B*b*c^2
 + 2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A*b*c^2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*
c)*d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*b*c^2 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2
*c + 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2*A*b^2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d
^6*e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^3 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4
 - (3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2 + 3*(8*B*c^3*d^7*e - (19*B*b*c^2 + 2*
A*c^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*
d^4*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (96*B*c^
3*d^7*e - 3*A*b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 3*(41*B*b^2
*c + 14*A*b*c^2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c)*d^4*e^4 + 24*(B*c^3*d^4*e^4
 - 2*B*b*c^2*d^3*e^5 + B*b^2*c*d^2*e^6)*x^3 + (176*B*c^3*d^5*e^3 + 3*A*b^3*
d*e^7 - 2*(191*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (239*B*b^2*c + 88*A*b*c^2)*d^3
*e^5 - (33*B*b^3 + 47*A*b^2*c)*d^2*e^6)*x^2 + 2*(120*B*c^3*d^6*e^2 - 4*A*b^
3*d^2*e^6 - (257*B*b*c^2 + 30*A*c^3)*d^5*e^3 + (157*B*b^2*c + 53*A*b*c^2)*d
^4*e^4 - (20*B*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^7*e^
5 - 2*b*c*d^6*e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8 - 2*b*c*d^3*e^9 + b^2*d^2*e^
10)*x^3 + 3*(c^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2*d^3*e^9)*x^2 + 3*(c^2*d^6*e^
6 - 2*b*c*d^5*e^7 + b^2*d^4*e^8)*x), 1/48*(48*(8*B*c^3*d^8 - (19*B*b*c^2 +
2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A*b*c^2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*c)*
d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*b*c^2 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2*c
+ 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2*A*b^2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d^6*
e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^3 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4 -
(3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2 + 3*(8*B*c^3*d^7*e - (19*B*b*c^2 + 2*A*c
^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*d^4
*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + 3*(64*B*c^3*d^
7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2*c + 2*A*b*
c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3 - A*b^3*e^
7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^2*e^5 -
 (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*d*e^6 - 8*(
15*B*b*c^2 + 2*A*c^3)*d^4*e^3 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e^4 - (5*B*b
^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3*(64*B*c^3*d^6*e - A*b^3*d^2*e^5 - 8*(15*B*
b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^4*e^3 - (5*B*b^3 +
6*A*b^2*c)*d^3*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*s
qrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(96*B*c^3*d^7*e - 3*A*
b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 3*(41*B*b^2*c + 14*A*b*c^
2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c)*d^4*e^4 + 24*(B*c^3*d^4*e^4 - 2*B*b*c^2*d
^3*e^5 + B*b^2*c*d^2*e^6)*x^3 + (176*B*c^3*d^5*e^3 + 3*A*b^3*d*e^7 - 2*(191
*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (239*B*b^2*c + 88*A*b*c^2)*d^3*e^5 - (33*B*b
^3 + 47*A*b^2*c)*d^2*e^6)*x^2 + 2*(120*B*c^3*d^6*e^2 - 4*A*b^3*d^2*e^6 - (2
57*B*b*c^2 + 30*A*c^3)*d^5*e^3 + (157*B*b^2*c + 53*A*b*c^2)*d^4*e^4 - (20*B
*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^7*e^5 - 2*b*c*d^6*
```

```
e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8 - 2*b*c*d^3*e^9 + b^2*d^2*e^10)*x^3 + 3*(c
^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2*d^3*e^9)*x^2 + 3*(c^2*d^6*e^6 - 2*b*c*d^5*
e^7 + b^2*d^4*e^8)*x), 1/24*(3*(64*B*c^3*d^7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^
2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2*c + 2*A*b*c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^
2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3 - A*b^3*e^7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3
*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^2*e^5 - (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^
3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*d*e^6 - 8*(15*B*b*c^2 + 2*A*c^3)*d^4*e^3 +
12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e^4 - (5*B*b^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3
*(64*B*c^3*d^6*e - A*b^3*d^2*e^5 - 8*(15*B*b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5
*B*b^2*c + 2*A*b*c^2)*d^4*e^3 - (5*B*b^3 + 6*A*b^2*c)*d^3*e^4)*x)*sqrt(-c*d
^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
 + 24*(8*B*c^3*d^8 - (19*B*b*c^2 + 2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A*b*c^
2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*c)*d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*b*c^2
 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2*A*b^
2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d^6*e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^3 + 2
*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4 - (3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2 + 3*(
8*B*c^3*d^7*e - (19*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*c^2)*
d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*d^4*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (96*B*c^3*d^7*e - 3*A*b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2
*A*c^3)*d^6*e^2 + 3*(41*B*b^2*c + 14*A*b*c^2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c
)*d^4*e^4 + 24*(B*c^3*d^4*e^4 - 2*B*b*c^2*d^3*e^5 + B*b^2*c*d^2*e^6)*x^3 +
(176*B*c^3*d^5*e^3 + 3*A*b^3*d*e^7 - 2*(191*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (
239*B*b^2*c + 88*A*b*c^2)*d^3*e^5 - (33*B*b^3 + 47*A*b^2*c)*d^2*e^6)*x^2 +
2*(120*B*c^3*d^6*e^2 - 4*A*b^3*d^2*e^6 - (257*B*b*c^2 + 30*A*c^3)*d^5*e^3 +
 (157*B*b^2*c + 53*A*b*c^2)*d^4*e^4 - (20*B*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*s
qrt(c*x^2 + b*x))/(c^2*d^7*e^5 - 2*b*c*d^6*e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8
 - 2*b*c*d^3*e^9 + b^2*d^2*e^10)*x^3 + 3*(c^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2
*d^3*e^9)*x^2 + 3*(c^2*d^6*e^6 - 2*b*c*d^5*e^7 + b^2*d^4*e^8)*x)]
```

giac [B] time = 0.67, size = 1788, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B*c*e^(-4) + 1/2*(8*B*c^2*d - 3*B*b*c*e - 2*A*c^2*e)*e^(-
5)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 1/8*(6
4*B*c^3*d^4 - 120*B*b*c^2*d^3*e - 16*A*c^3*d^3*e + 60*B*b^2*c*d^2*e^2 + 24*
A*b*c^2*d^2*e^2 - 5*B*b^3*d*e^3 - 6*A*b^2*c*d*e^3 - A*b^3*e^4)*arctan(-((sq
rt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c*d^2*e
^5 - b*d*e^6)*sqrt(-c*d^2 + b*d*e)) + 1/24*(960*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^4*B*c^4*d^5*e + 832*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^(9/2)*d^6 +
288*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^(7/2)*d^4*e^2 - 400*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*B*b*c^(7/2)*d^5*e - 352*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^3*A*c^(9/2)*d^5*e + 1248*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^4*d^6 -
1464*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b*c^3*d^4*e^2 - 432*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*A*c^4*d^4*e^2 - 1656*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
B*b^2*c^3*d^5*e - 528*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^4*d^5*e + 624
*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c^(7/2)*d^6 - 504*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^5*B*b*c^(5/2)*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5
*A*c^(7/2)*d^3*e^3 - 840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^(5/2)*d^
4*e^2 + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^(7/2)*d^4*e^2 - 876*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*B*b^3*c^(5/2)*d^5*e - 264*(sqrt(c)*x - sqrt(c*x
^2 + b*x))*A*b^2*c^(7/2)*d^5*e + 104*B*b^3*c^3*d^6 + 540*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^4*B*b^2*c^2*d^3*e^3 + 504*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A
*b*c^3*d^3*e^3 + 414*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^2*d^4*e^2 +
516*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^3*d^4*e^2 - 134*B*b^4*c^2*d^5
*e - 44*A*b^3*c^3*d^5*e + 252*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/
2)*d^2*e^4 + 216*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^(5/2)*d^2*e^4 + 47
```

```
8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^(3/2)*d^3*e^3 + 420*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^3*A*b^2*c^(5/2)*d^3*e^3 + 282*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*B*b^4*c^(3/2)*d^4*e^2 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c
^(5/2)*d^4*e^2 - 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c*d^2*e^4 - 54*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^2*d^2*e^4 + 24*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*B*b^4*c*d^3*e^3 + 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3
*c^2*d^3*e^3 + 33*B*b^5*c*d^4*e^2 + 44*A*b^4*c^2*d^4*e^2 - 33*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*B*b^3*sqrt(c)*d*e^5 - 78*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^5*A*b^2*c^(3/2)*d*e^5 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(
c)*d^2*e^4 - 106*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^(3/2)*d^2*e^4 -
15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*sqrt(c)*d^3*e^3 - 36*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^4*c^(3/2)*d^3*e^3 - 33*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^4*A*b^3*c*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c*d^2*e^4 -
 3*A*b^5*c*d^3*e^3 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*sqrt(c)*e^6
- 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*sqrt(c)*d*e^5 - 3*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^5*sqrt(c)*d^2*e^4)/((c^(3/2)*d^2*e^5 - b*sqrt(c)*d*e
^6)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*sqrt(c)*d + b*d)^3)
```

maple [B] time = 0.07, size = 11396, normalized size = 26.75

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**4, x)
```

3.1034 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=421

$$-\frac{\sqrt{bx+cx^2}\left(ex\left(3Ab^2e^3(2cd-be)+Bd\left(-5b^3e^3+98b^2cde^2-192bc^2d^2e+96c^3d^3\right)\right)+d\left(3Ab^3e^4+Bd\left(5b^3e^3\right.\right.\right.}{64d^2e^4(d+ex)^2(cd-be)^2}$$

Rubi [A] time = 0.54, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {810, 843, 620, 206, 724}

$$-\frac{\sqrt{bx+cx^2}\left(ex\left(3Ab^2e^3(2cd-be)+Bd\left(98b^2cde^2-5b^3e^3-192bc^2d^2e+96c^3d^3\right)\right)+d\left(3Ab^3e^4+Bd\left(40b^2cde^2+5b^3e^3-112bc^2d^2e+64c^3d^3\right)\right)\right)}{64d^2e^4(d+ex)^2(cd-be)^2}+\frac{\left(3Ab^4e^5-Bd\left(240b^2c^2d^2e^2-40b^3cde^3-5b^4e^4-320bc^3d^3e+128c^4d^4\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{128d^{5/2}e^5(cd-be)^{5/2}}+\frac{\left(bx+cx^2\right)^{3/2}\left(d\left(3Abe^2-Bd(8cd-5be)\right)-ex(Bd(14cd-11be)-3Ae(2cd-be))\right)}{24de^2(d+ex)^4(cd-be)}+\frac{2Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -((d*(3*A*b^3*e^4 + B*d*(64*c^3*d^3 - 112*b*c^2*d^2*e + 40*b^2*c*d*e^2 + 5*
b^3*e^3)) + e*(3*A*b^2*e^3*(2*c*d - b*e) + B*d*(96*c^3*d^3 - 192*b*c^2*d^2*
e + 98*b^2*c*d*e^2 - 5*b^3*e^3))*x)*Sqrt[b*x + c*x^2])/(64*d^2*e^4*(c*d - b
*e)^2*(d + e*x)^2) + ((d*(3*A*b*e^2 - B*d*(8*c*d - 5*b*e)) - e*(B*d*(14*c*d
 - 11*b*e) - 3*A*e*(2*c*d - b*e))*x)*(b*x + c*x^2)^(3/2))/(24*d*e^2*(c*d -
b*e)*(d + e*x)^4) + (2*B*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/e^
5 + ((3*A*b^4*e^5 - B*d*(128*c^4*d^4 - 320*b*c^3*d^3*e + 240*b^2*c^2*d^2*e^
2 - 40*b^3*c*d*e^3 - 5*b^4*e^4))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]
*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(128*d^(5/2)*e^5*(c*d - b*e)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
```

```
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^5}\,dx = \frac{\left(d\left(3Abe^2-Bd(8cd-5be)\right)-e(Bd(14cd-11be)-3Ae(2cd-be))x\right)\left(bx+cx^2\right)^{3/2}}{24de^2(cd-be)(d+ex)^4}$$

$$= -\frac{\left(d\left(3Ab^3e^4+Bd\left(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\right)\right)+e\left(3Ab^2e^3(2cd-b\right.}{64d^2e^4(cd-be)^2(d+}$$

$$= -\frac{\left(d\left(3Ab^3e^4+Bd\left(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\right)\right)+e\left(3Ab^2e^3(2cd-b\right.}{64d^2e^4(cd-be)^2(d+}$$

$$= -\frac{\left(d\left(3Ab^3e^4+Bd\left(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\right)\right)+e\left(3Ab^2e^3(2cd-b\right.}{64d^2e^4(cd-be)^2(d+}$$

$$= -\frac{\left(d\left(3Ab^3e^4+Bd\left(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\right)\right)+e\left(3Ab^2e^3(2cd-b\right.}{64d^2e^4(cd-be)^2(d+}$$

Mathematica [B] time = 6.21, size = 1984, normalized size = 4.71

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(3/2))/(4*d*(-(c*d) + b*e)*(d + e
*x)^4) + ((x*(b + c*x))^(3/2)*(((-(c*d*(B*d - A*e)) + (e*(5*b*B*d - 8*A*c*d
 + 3*A*b*e))/2)*x^(5/2)*(b + c*x)^(5/2))/(3*d*(-(c*d) + b*e)*(d + e*x)^3) +
 ((((e*(48*A*c^2*d^2 + b^2*e*(5*B*d + 3*A*e) - 4*b*c*d*(5*B*d + 9*A*e)))/4
- c*d*(B*d*(2*c*d - 5*b*e) + 3*A*e*(2*c*d - b*e)))*x^(5/2)*(b + c*x)^(5/2))
/(2*d*(-(c*d) + b*e)*(d + e*x)^2) + ((((e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d
+ 3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8
+ (3*c*d*(3*A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*(8*c^2*d^3 - 5*b^2*d*
e^2)))/4)*x^(5/2)*(b + c*x)^(5/2))/(d*(-(c*d) + b*e)*(d + e*x)) + ((-1/8*(c
*d*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d + 3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e)
 - 4*b^2*c*d*e*(25*B*d + 9*A*e))) + (b*e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d +
 3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8 -
 (5*b*((e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d + 3*A*e) + 24*b*c^2*d^2*(5*B*d +
 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8 + (3*c*d*(3*A*e*(8*c^2*d^2 - 8*b
*c*d*e + b^2*e^2) - B*(8*c^2*d^3 - 5*b^2*d*e^2)))/4))/2)*((2*b*x^(3/2)*Sqrt
[b + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 +
 (3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((
2*b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c
*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*
Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x
```

```
)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2
*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c
]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) -
 (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x
])])/(Sqrt[d]*e)))/e))/e))/e) - 4*c*((e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d +
3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8 +
(3*c*d*(3*A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*(8*c^2*d^3 - 5*b^2*d*e^
2)))/4)*((2*b*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((5*(1/(2*(1 + (c*x)/b)
^2) + (1 + (c*x)/b)^(-1)))/8 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (
2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*
x)/b])))/(256*c^3*x^3*(1 + (c*x)/b)^2)))/(5*e) - (d*((2*b*x^(3/2)*Sqrt[b +
c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (3*b
^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqr
t[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*b*S
qrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b
)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[
x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*
(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt
[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqr
t[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*S
qrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/
(Sqrt[d]*e)))/e))/e))/e))/e))/(d*(-(c*d) + b*e)))/(2*d*(-(c*d) + b*e)))/(3*
d*(-(c*d) + b*e))))/(4*d*(-(c*d) + b*e)*x^(3/2)*(b + c*x)^(3/2))
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] $Aborted
```

fricas [B] time = 21.41, size = 5781, normalized size = 13.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [1/384*(384*(B*c^4*d^10 - 3*B*b*c^3*d^9*e + 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d
^7*e^3 + (B*c^4*d^6*e^4 - 3*B*b*c^3*d^5*e^5 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c
*d^3*e^7)*x^4 + 4*(B*c^4*d^7*e^3 - 3*B*b*c^3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5
- B*b^3*c*d^4*e^6)*x^3 + 6*(B*c^4*d^8*e^2 - 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2
*d^6*e^4 - B*b^3*c*d^5*e^5)*x^2 + 4*(B*c^4*d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*
b^2*c^2*d^7*e^3 - B*b^3*c*d^6*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2
+ b*x)*sqrt(c)) - 3*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*
e^2 - 40*B*b^3*c*d^6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d
^5*e^4 - 320*B*b*c^3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 -
 5*B*b^4*d*e^8 - 3*A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*
e^4 + 240*B*b^2*c^2*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^
4*d*e^8)*x^3 + 6*(128*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d
^5*e^4 - 40*B*b^3*c*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(1
28*B*c^4*d^8*e - 320*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d
^5*e^4 - 5*B*b^4*d^4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) -
2*(192*B*c^4*d^9*e - 528*B*b*c^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^
3*c*d^6*e^4 - 9*A*b^4*d^4*e^6 - 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^
4*d^6*e^4 + 9*A*b^4*d*e^9 - 24*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^
2*c^2 + 20*A*b*c^3)*d^4*e^6 - (397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B
```

```
*b^4 - A*b^3*c)*d^2*e^8)*x^3 + (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 +
33*A*b^4*d^2*e^8 + 12*(169*B*b^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c -
204*A*b^2*c^2)*d^4*e^6 - (73*B*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4
*d^8*e^2 - 1856*B*b*c^3*d^7*e^3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7
 - 3*(125*B*b^3*c + 2*A*b^2*c^2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)
*x)*sqrt(c*x^2 + b*x))/(c^3*d^10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 -
b^3*d^7*e^8 + (c^3*d^6*e^9 - 3*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*
e^12)*x^4 + 4*(c^3*d^7*e^8 - 3*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e
^11)*x^3 + 6*(c^3*d^8*e^7 - 3*b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^1
0)*x^2 + 4*(c^3*d^9*e^6 - 3*b*c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*
x), -1/192*(3*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*e^2 -
40*B*b^3*c*d^6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d^5*e^4
 - 320*B*b*c^3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 - 5*B*b
^4*d*e^8 - 3*A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*e^4 +
240*B*b^2*c^2*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^4*d*e^
8)*x^3 + 6*(128*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d^5*e^4
 - 40*B*b^3*c*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(128*B*c
^4*d^8*e - 320*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d^5*e^4
 - 5*B*b^4*d^4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(
-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 192*(B*c^4*d^10 - 3*B*
b*c^3*d^9*e + 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d^7*e^3 + (B*c^4*d^6*e^4 - 3*B*
b*c^3*d^5*e^5 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c*d^3*e^7)*x^4 + 4*(B*c^4*d^7*e
^3 - 3*B*b*c^3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5 - B*b^3*c*d^4*e^6)*x^3 + 6*(B*
c^4*d^8*e^2 - 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2*d^6*e^4 - B*b^3*c*d^5*e^5)*x^
2 + 4*(B*c^4*d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*b^2*c^2*d^7*e^3 - B*b^3*c*d^6*
e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (192*B*c^4*d
^9*e - 528*B*b*c^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^3*c*d^6*e^4 -
9*A*b^4*d^4*e^6 - 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^4*d^6*e^4 + 9*
A*b^4*d*e^9 - 24*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^2*c^2 + 20*A*b
*c^3)*d^4*e^6 - (397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B*b^4 - A*b^3*c
)*d^2*e^8)*x^3 + (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 + 33*A*b^4*d^2*e
^8 + 12*(169*B*b^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c - 204*A*b^2*c^2)
*d^4*e^6 - (73*B*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4*d^8*e^2 - 185
6*B*b*c^3*d^7*e^3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7 - 3*(125*B*b^
3*c + 2*A*b^2*c^2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2
 + b*x))/(c^3*d^10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 - b^3*d^7*e^8 +
(c^3*d^6*e^9 - 3*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*e^12)*x^4 + 4*
(c^3*d^7*e^8 - 3*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e^11)*x^3 + 6*(
c^3*d^8*e^7 - 3*b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^10)*x^2 + 4*(c^
3*d^9*e^6 - 3*b*c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*x), -1/384*(76
8*(B*c^4*d^10 - 3*B*b*c^3*d^9*e + 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d^7*e^3 + (
B*c^4*d^6*e^4 - 3*B*b*c^3*d^5*e^5 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c*d^3*e^7)*
x^4 + 4*(B*c^4*d^7*e^3 - 3*B*b*c^3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5 - B*b^3*c*
d^4*e^6)*x^3 + 6*(B*c^4*d^8*e^2 - 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2*d^6*e^4 -
 B*b^3*c*d^5*e^5)*x^2 + 4*(B*c^4*d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*b^2*c^2*d^
7*e^3 - B*b^3*c*d^6*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) + 3*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*e^2 - 40*B*b^
3*c*d^6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d^5*e^4 - 320*
B*b*c^3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 - 5*B*b^4*d*e^
8 - 3*A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*e^4 + 240*B*b
^2*c^2*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^4*d*e^8)*x^3
 + 6*(128*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d^5*e^4 - 40*B
*b^3*c*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(128*B*c^4*d^8*
e - 320*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d^5*e^4 - 5*B*
b^4*d^4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b
*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(192*B*c^4*
d^9*e - 528*B*b*c^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^3*c*d^6*e^4 -
 9*A*b^4*d^4*e^6 - 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^4*d^6*e^4 + 9
*A*b^4*d*e^9 - 24*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^2*c^2 + 20*A*
```

```
b*c^3)*d^4*e^6 - (397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B*b^4 - A*b^3*
c)*d^2*e^8)*x^3 + (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 + 33*A*b^4*d^2*
e^8 + 12*(169*B*b^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c - 204*A*b^2*c^2
)*d^4*e^6 - (73*B*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4*d^8*e^2 - 18
56*B*b*c^3*d^7*e^3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7 - 3*(125*B*b
^3*c + 2*A*b^2*c^2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^
2 + b*x))/(c^3*d^10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 - b^3*d^7*e^8 +
 (c^3*d^6*e^9 - 3*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*e^12)*x^4 + 4
*(c^3*d^7*e^8 - 3*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e^11)*x^3 + 6*
(c^3*d^8*e^7 - 3*b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^10)*x^2 + 4*(c
^3*d^9*e^6 - 3*b*c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*x), -1/192*(3
*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*e^2 - 40*B*b^3*c*d^
6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d^5*e^4 - 320*B*b*c^
3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 - 5*B*b^4*d*e^8 - 3*
A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*e^4 + 240*B*b^2*c^2
*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^4*d*e^8)*x^3 + 6*(1
28*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d^5*e^4 - 40*B*b^3*c
*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(128*B*c^4*d^8*e - 32
0*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d^5*e^4 - 5*B*b^4*d^
4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*
e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 384*(B*c^4*d^10 - 3*B*b*c^3*d^9*e +
 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d^7*e^3 + (B*c^4*d^6*e^4 - 3*B*b*c^3*d^5*e^5
 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c*d^3*e^7)*x^4 + 4*(B*c^4*d^7*e^3 - 3*B*b*c^
3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5 - B*b^3*c*d^4*e^6)*x^3 + 6*(B*c^4*d^8*e^2 -
 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2*d^6*e^4 - B*b^3*c*d^5*e^5)*x^2 + 4*(B*c^4*
d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*b^2*c^2*d^7*e^3 - B*b^3*c*d^6*e^4)*x)*sqrt(
-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (192*B*c^4*d^9*e - 528*B*b*c
^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^3*c*d^6*e^4 - 9*A*b^4*d^4*e^6
- 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^4*d^6*e^4 + 9*A*b^4*d*e^9 - 24
*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 -
(397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B*b^4 - A*b^3*c)*d^2*e^8)*x^3 +
 (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 + 33*A*b^4*d^2*e^8 + 12*(169*B*b
^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c - 204*A*b^2*c^2)*d^4*e^6 - (73*B
*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4*d^8*e^2 - 1856*B*b*c^3*d^7*e^
3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7 - 3*(125*B*b^3*c + 2*A*b^2*c^
2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2 + b*x))/(c^3*d^
10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 - b^3*d^7*e^8 + (c^3*d^6*e^9 - 3
*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*e^12)*x^4 + 4*(c^3*d^7*e^8 - 3
*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e^11)*x^3 + 6*(c^3*d^8*e^7 - 3*
b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^10)*x^2 + 4*(c^3*d^9*e^6 - 3*b*
c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*x)]
```

giac [B] time = 1.19, size = 1255, normalized size = 2.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/192*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*
e/(x*e + d)^2)*(2*(4*((26*B*c^4*d^8*e^23*sgn(1/(x*e + d)) - 95*B*b*c^3*d^7*
e^24*sgn(1/(x*e + d)) - 18*A*c^4*d^7*e^24*sgn(1/(x*e + d)) + 129*B*b^2*c^2*
d^6*e^25*sgn(1/(x*e + d)) + 63*A*b*c^3*d^6*e^25*sgn(1/(x*e + d)) - 77*B*b^3
*c*d^5*e^26*sgn(1/(x*e + d)) - 81*A*b^2*c^2*d^5*e^26*sgn(1/(x*e + d)) + 17*
B*b^4*d^4*e^27*sgn(1/(x*e + d)) + 45*A*b^3*c*d^4*e^27*sgn(1/(x*e + d)) - 9*
A*b^4*d^3*e^28*sgn(1/(x*e + d)))/(c^3*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c
*d^4*e^30 - b^3*d^3*e^31) - 6*(B*c^4*d^9*e^24*sgn(1/(x*e + d)) - 4*B*b*c^3*
d^8*e^25*sgn(1/(x*e + d)) - A*c^4*d^8*e^25*sgn(1/(x*e + d)) + 6*B*b^2*c^2*d
^7*e^26*sgn(1/(x*e + d)) + 4*A*b*c^3*d^7*e^26*sgn(1/(x*e + d)) - 4*B*b^3*c*
d^6*e^27*sgn(1/(x*e + d)) - 6*A*b^2*c^2*d^6*e^27*sgn(1/(x*e + d)) + B*b^4*d
```

```
^5*e^28*sgn(1/(x*e + d)) + 4*A*b^3*c*d^5*e^28*sgn(1/(x*e + d)) - A*b^4*d^4*
e^29*sgn(1/(x*e + d)))*e^(-1)/((c^3*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c*d
^4*e^30 - b^3*d^3*e^31)*(x*e + d)))*e^(-1)/(x*e + d) - (184*B*c^4*d^7*e^22*
sgn(1/(x*e + d)) - 608*B*b*c^3*d^6*e^23*sgn(1/(x*e + d)) - 72*A*c^4*d^6*e^2
3*sgn(1/(x*e + d)) + 723*B*b^2*c^2*d^5*e^24*sgn(1/(x*e + d)) + 216*A*b*c^3*
d^5*e^24*sgn(1/(x*e + d)) - 358*B*b^3*c*d^4*e^25*sgn(1/(x*e + d)) - 219*A*b
^2*c^2*d^4*e^25*sgn(1/(x*e + d)) + 59*B*b^4*d^3*e^26*sgn(1/(x*e + d)) + 78*
A*b^3*c*d^3*e^26*sgn(1/(x*e + d)) - 3*A*b^4*d^2*e^27*sgn(1/(x*e + d)))/(c^3
*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c*d^4*e^30 - b^3*d^3*e^31))*e^(-1)/(x*
e + d) + (400*B*c^4*d^6*e^21*sgn(1/(x*e + d)) - 1176*B*b*c^3*d^5*e^22*sgn(1
/(x*e + d)) - 48*A*c^4*d^5*e^22*sgn(1/(x*e + d)) + 1158*B*b^2*c^2*d^4*e^23*
sgn(1/(x*e + d)) + 120*A*b*c^3*d^4*e^23*sgn(1/(x*e + d)) - 397*B*b^3*c*d^3*
e^24*sgn(1/(x*e + d)) - 78*A*b^2*c^2*d^3*e^24*sgn(1/(x*e + d)) + 15*B*b^4*d
^2*e^25*sgn(1/(x*e + d)) - 3*A*b^3*c*d^2*e^25*sgn(1/(x*e + d)) + 9*A*b^4*d*
e^26*sgn(1/(x*e + d)))/(c^3*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c*d^4*e^30
- b^3*d^3*e^31)) - (400*B*c^(7/2)*d^4 - 776*B*b*c^(5/2)*d^3*e - 48*A*c^(7/2
)*d^3*e + 382*B*b^2*c^(3/2)*d^2*e^2 + 72*A*b*c^(5/2)*d^2*e^2 - 15*B*b^3*sqr
t(c)*d*e^3 - 6*A*b^2*c^(3/2)*d*e^3 - 9*A*b^3*sqrt(c)*e^4)*sgn(1/(x*e + d))/
(c^2*d^4*e^7 - 2*b*c*d^3*e^8 + b^2*d^2*e^9))*e^2
```

maple [B] time = 0.08, size = 16396, normalized size = 38.95

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**5, x)
```

3.1035 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=269

$$-\frac{3b^4(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{256d^{7/2}(cd-be)^{7/2}}+\frac{3b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{128d^3(d+ex)^2(cd-be)^3}-$$

Rubi [A] time = 0.23, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {806, 720, 724, 206}

$$\frac{3b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{128d^3(d+ex)^2(cd-be)^3}-\frac{3b^4(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{256d^{7/2}(cd-be)^{7/2}}-\frac{\left(bx+cx^2\right)^{3/2}(x(2cd-be)+bd)(Abe-2Acd+bBd)}{16d^2(d+ex)^4(cd-be)^2}+\frac{\left(bx+cx^2\right)^{5/2}(Bd-Ae)}{5d(d+ex)^5(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] (3*b^2*(b*B*d - 2*A*c*d + A*b*e)*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])
/(128*d^3*(c*d - b*e)^3*(d + e*x)^2) - ((b*B*d - 2*A*c*d + A*b*e)*(b*d + (2
*c*d - b*e)*x)*(b*x + c*x^2)^(3/2))/(16*d^2*(c*d - b*e)^2*(d + e*x)^4) + ((
B*d - A*e)*(b*x + c*x^2)^(5/2))/(5*d*(c*d - b*e)*(d + e*x)^5) - (3*b^4*(b*B
*d - 2*A*c*d + A*b*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d -
 b*e]*Sqrt[b*x + c*x^2])])/(256*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^6}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{5d(cd-be)(d+ex)^5} - \frac{(bBd-2Acd+Abe)\int \frac{\left(bx+cx^2\right)^{3/2}}{(d+ex)^5}dx}{2d(cd-be)}$$

$$= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\left(bx+cx^2\right)^{3/2}}{16d^2(cd-be)^2(d+ex)^4} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{5d(cd-be)(d+ex)^5}$$

$$= \frac{3b^2(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{128d^3(cd-be)^3(d+ex)^2} - \frac{(bBd-2Acd+Abe)(bd+}{16d^2(cd-b}$$

$$= \frac{3b^2(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{128d^3(cd-be)^3(d+ex)^2} - \frac{(bBd-2Acd+Abe)(bd+}{16d^2(cd-b}$$

$$= \frac{3b^2(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{128d^3(cd-be)^3(d+ex)^2} - \frac{(bBd-2Acd+Abe)(bd+}{16d^2(cd-b}$$

Mathematica [A] time = 1.04, size = 268, normalized size = 1.00

$$\frac{(x(b+cx))^{3/2}\left(\frac{5(Abe-2Acd+bBd)\left(-\frac{3b^4\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{8d^{5/2}(cd-be)^{3/2}}-\frac{b^2\sqrt{x}\sqrt{b+cx}(5bd+3bex+2cdx)}{8d^2(d+ex)^2(cd-be)}-\frac{2x^{3/2}(b+cx)^{5/2}}{(d+ex)^4}+\frac{b\sqrt{x}(b+cx)^{5/2}}{(d+ex)^3(cd-be)}\right)}{8(b+cx)^{3/2}(be-cd)}+\frac{2x^{5/2}(b+cx)(Ae-Bd)}{(d+ex)^5}\right)}{10dx^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] ((x*(b + c*x))^(3/2)*((2*(-(B*d) + A*e)*x^(5/2)*(b + c*x))/(d + e*x)^5 + (5
*(b*B*d - 2*A*c*d + A*b*e)*((-2*x^(3/2)*(b + c*x)^(5/2))/(d + e*x)^4 + (b*S
qrt[x]*(b + c*x)^(5/2))/((c*d - b*e)*(d + e*x)^3) - (b^2*Sqrt[x]*Sqrt[b + c
*x]*(5*b*d + 2*c*d*x + 3*b*e*x))/(8*d^2*(c*d - b*e)*(d + e*x)^2) - (3*b^4*A
rcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(8*d^(5/2)*(c*d
- b*e)^(3/2))))/(8*(-(c*d) + b*e)*(b + c*x)^(3/2))))/(10*d*(-(c*d) + b*e)*x
^(3/2))
```

IntegrateAlgebraic [B] time = 14.03, size = 606, normalized size = 2.25

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] -1/640*(Sqrt[b*x + c*x^2]*(-15*b^4*B*d^5 + 30*A*b^3*c*d^5 - 15*A*b^4*d^4*e
+ 10*b^3*B*c*d^5*x - 20*A*b^2*c^2*d^5*x - 70*b^4*B*d^4*e*x + 150*A*b^3*c*d^
4*e*x - 70*A*b^4*d^3*e^2*x - 8*b^2*B*c^2*d^5*x^2 - 240*A*b*c^3*d^5*x^2 + 46
*b^3*B*c*d^4*e*x^2 + 668*A*b^2*c^2*d^4*e*x^2 - 128*b^4*B*d^3*e^2*x^2 - 466*
A*b^3*c*d^3*e^2*x^2 + 128*A*b^4*d^2*e^3*x^2 - 176*b*B*c^3*d^5*x^3 - 160*A*c
^4*d^5*x^3 + 512*b^2*B*c^2*d^4*e*x^3 + 336*A*b*c^3*d^4*e*x^3 - 466*b^3*B*c*
d^3*e^2*x^3 - 92*A*b^2*c^2*d^3*e^2*x^3 + 70*b^4*B*d^2*e^3*x^3 - 94*A*b^3*c*
d^2*e^3*x^3 + 70*A*b^4*d*e^4*x^3 - 128*B*c^4*d^5*x^4 + 336*b*B*c^3*d^4*e*x^
4 - 32*A*c^4*d^4*e*x^4 - 248*b^2*B*c^2*d^3*e^2*x^4 + 64*A*b*c^3*d^3*e^2*x^4
 + 10*b^3*B*c*d^2*e^3*x^4 - 12*A*b^2*c^2*d^2*e^3*x^4 + 15*b^4*B*d*e^4*x^4 -
 20*A*b^3*c*d*e^4*x^4 + 15*A*b^4*e^5*x^4))/(d^3*(c*d - b*e)^3*(d + e*x)^5)
+ (3*(-(b^5*B*d) + 2*A*b^4*c*d - A*b^5*e)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x
```

```
- e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/(128*d^(7/2)*(c*d - b*e)
^(7/2))
```

fricas [B] time = 0.48, size = 2338, normalized size = 8.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(A*b^5*d^5*e + (B*b^5 - 2*A*b^4*c)*d^6 + (A*b^5*e^6 + (B*b^5 -
 2*A*b^4*c)*d*e^5)*x^5 + 5*(A*b^5*d*e^5 + (B*b^5 - 2*A*b^4*c)*d^2*e^4)*x^4
+ 10*(A*b^5*d^2*e^4 + (B*b^5 - 2*A*b^4*c)*d^3*e^3)*x^3 + 10*(A*b^5*d^3*e^3
+ (B*b^5 - 2*A*b^4*c)*d^4*e^2)*x^2 + 5*(A*b^5*d^4*e^2 + (B*b^5 - 2*A*b^4*c)
*d^5*e)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 -
b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(15*A*b^5*d^5*e^2 - 15*(B*b^4*c -
2*A*b^3*c^2)*d^7 + 15*(B*b^5 - 3*A*b^4*c)*d^6*e - (128*B*c^5*d^7 + 15*A*b^5
*d*e^6 - 16*(29*B*b*c^4 - 2*A*c^5)*d^6*e + 8*(73*B*b^2*c^3 - 12*A*b*c^4)*d^
5*e^2 - 2*(129*B*b^3*c^2 - 38*A*b^2*c^3)*d^4*e^3 - (5*B*b^4*c - 8*A*b^3*c^2
)*d^3*e^4 + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^5)*x^4 - 2*(35*A*b^5*d^2*e^5 + 8*
(11*B*b*c^4 + 10*A*c^5)*d^7 - 8*(43*B*b^2*c^3 + 31*A*b*c^4)*d^6*e + (489*B*
b^3*c^2 + 214*A*b^2*c^3)*d^5*e^2 - (268*B*b^4*c - A*b^3*c^2)*d^4*e^3 + (35*
B*b^5 - 82*A*b^4*c)*d^3*e^4)*x^3 - 2*(64*A*b^5*d^3*e^4 + 4*(B*b^2*c^3 + 30*
A*b*c^4)*d^7 - (27*B*b^3*c^2 + 454*A*b^2*c^3)*d^6*e + 3*(29*B*b^4*c + 189*A
*b^3*c^2)*d^5*e^2 - (64*B*b^5 + 297*A*b^4*c)*d^4*e^3)*x^2 + 10*(7*A*b^5*d^4
*e^3 + (B*b^3*c^2 - 2*A*b^2*c^3)*d^7 - (8*B*b^4*c - 17*A*b^3*c^2)*d^6*e + (
7*B*b^5 - 22*A*b^4*c)*d^5*e^2)*x)*sqrt(c*x^2 + b*x))/(c^4*d^13 - 4*b*c^3*d^
12*e + 6*b^2*c^2*d^11*e^2 - 4*b^3*c*d^10*e^3 + b^4*d^9*e^4 + (c^4*d^8*e^5 -
 4*b*c^3*d^7*e^6 + 6*b^2*c^2*d^6*e^7 - 4*b^3*c*d^5*e^8 + b^4*d^4*e^9)*x^5 +
 5*(c^4*d^9*e^4 - 4*b*c^3*d^8*e^5 + 6*b^2*c^2*d^7*e^6 - 4*b^3*c*d^6*e^7 + b
^4*d^5*e^8)*x^4 + 10*(c^4*d^10*e^3 - 4*b*c^3*d^9*e^4 + 6*b^2*c^2*d^8*e^5 -
4*b^3*c*d^7*e^6 + b^4*d^6*e^7)*x^3 + 10*(c^4*d^11*e^2 - 4*b*c^3*d^10*e^3 +
6*b^2*c^2*d^9*e^4 - 4*b^3*c*d^8*e^5 + b^4*d^7*e^6)*x^2 + 5*(c^4*d^12*e - 4*
b*c^3*d^11*e^2 + 6*b^2*c^2*d^10*e^3 - 4*b^3*c*d^9*e^4 + b^4*d^8*e^5)*x), -1
/640*(15*(A*b^5*d^5*e + (B*b^5 - 2*A*b^4*c)*d^6 + (A*b^5*e^6 + (B*b^5 - 2*A
*b^4*c)*d*e^5)*x^5 + 5*(A*b^5*d*e^5 + (B*b^5 - 2*A*b^4*c)*d^2*e^4)*x^4 + 10
*(A*b^5*d^2*e^4 + (B*b^5 - 2*A*b^4*c)*d^3*e^3)*x^3 + 10*(A*b^5*d^3*e^3 + (B
*b^5 - 2*A*b^4*c)*d^4*e^2)*x^2 + 5*(A*b^5*d^4*e^2 + (B*b^5 - 2*A*b^4*c)*d^5
*e)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/
((c*d - b*e)*x)) + (15*A*b^5*d^5*e^2 - 15*(B*b^4*c - 2*A*b^3*c^2)*d^7 + 15*
(B*b^5 - 3*A*b^4*c)*d^6*e - (128*B*c^5*d^7 + 15*A*b^5*d*e^6 - 16*(29*B*b*c^
4 - 2*A*c^5)*d^6*e + 8*(73*B*b^2*c^3 - 12*A*b*c^4)*d^5*e^2 - 2*(129*B*b^3*c
^2 - 38*A*b^2*c^3)*d^4*e^3 - (5*B*b^4*c - 8*A*b^3*c^2)*d^3*e^4 + 5*(3*B*b^5
 - 7*A*b^4*c)*d^2*e^5)*x^4 - 2*(35*A*b^5*d^2*e^5 + 8*(11*B*b*c^4 + 10*A*c^5
)*d^7 - 8*(43*B*b^2*c^3 + 31*A*b*c^4)*d^6*e + (489*B*b^3*c^2 + 214*A*b^2*c^
3)*d^5*e^2 - (268*B*b^4*c - A*b^3*c^2)*d^4*e^3 + (35*B*b^5 - 82*A*b^4*c)*d^
3*e^4)*x^3 - 2*(64*A*b^5*d^3*e^4 + 4*(B*b^2*c^3 + 30*A*b*c^4)*d^7 - (27*B*b
^3*c^2 + 454*A*b^2*c^3)*d^6*e + 3*(29*B*b^4*c + 189*A*b^3*c^2)*d^5*e^2 - (6
4*B*b^5 + 297*A*b^4*c)*d^4*e^3)*x^2 + 10*(7*A*b^5*d^4*e^3 + (B*b^3*c^2 - 2*
A*b^2*c^3)*d^7 - (8*B*b^4*c - 17*A*b^3*c^2)*d^6*e + (7*B*b^5 - 22*A*b^4*c)*
d^5*e^2)*x)*sqrt(c*x^2 + b*x))/(c^4*d^13 - 4*b*c^3*d^12*e + 6*b^2*c^2*d^11*
e^2 - 4*b^3*c*d^10*e^3 + b^4*d^9*e^4 + (c^4*d^8*e^5 - 4*b*c^3*d^7*e^6 + 6*b
^2*c^2*d^6*e^7 - 4*b^3*c*d^5*e^8 + b^4*d^4*e^9)*x^5 + 5*(c^4*d^9*e^4 - 4*b*
c^3*d^8*e^5 + 6*b^2*c^2*d^7*e^6 - 4*b^3*c*d^6*e^7 + b^4*d^5*e^8)*x^4 + 10*(
c^4*d^10*e^3 - 4*b*c^3*d^9*e^4 + 6*b^2*c^2*d^8*e^5 - 4*b^3*c*d^7*e^6 + b^4*
d^6*e^7)*x^3 + 10*(c^4*d^11*e^2 - 4*b*c^3*d^10*e^3 + 6*b^2*c^2*d^9*e^4 - 4*
b^3*c*d^8*e^5 + b^4*d^7*e^6)*x^2 + 5*(c^4*d^12*e - 4*b*c^3*d^11*e^2 + 6*b^2
*c^2*d^10*e^3 - 4*b^3*c*d^9*e^4 + b^4*d^8*e^5)*x)]
```

giac [B] time = 0.70, size = 4214, normalized size = 15.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -3/128*(B*b^5*d - 2*A*b^4*c*d + A*b^5*e)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
 b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b
^2*c*d^4*e^2 - b^3*d^3*e^3)*sqrt(-c*d^2 + b*d*e)) + 1/640*(10240*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^6*B*c^(13/2)*d^9*e + 4096*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*B*c^7*d^10 + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*c^6*d^8*e^2 +
 9728*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b*c^6*d^9*e + 1024*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^5*A*c^7*d^9*e + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B
*b*c^(13/2)*d^10 + 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^(11/2)*d^7*e^
3 - 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b*c^(11/2)*d^8*e^2 + 2560*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^6*A*c^(13/2)*d^8*e^2 - 11520*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*B*b^2*c^(11/2)*d^9*e + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^4*A*b*c^(13/2)*d^9*e + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^6*
d^10 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^5*d^6*e^4 - 21760*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^7*B*b*c^5*d^7*e^3 + 2560*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^7*A*c^6*d^7*e^3 - 38144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^5*
d^8*e^2 + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^6*d^8*e^2 - 21760*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^5*d^9*e + 2560*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*A*b^2*c^6*d^9*e + 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^
3*c^(11/2)*d^10 - 12800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b*c^(9/2)*d^6*e
^4 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*c^(11/2)*d^6*e^4 - 19200*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^(9/2)*d^7*e^3 - 1280*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^6*A*b*c^(11/2)*d^7*e^3 - 19200*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^4*B*b^3*c^(9/2)*d^8*e^2 - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*
c^(11/2)*d^8*e^2 - 12800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4*c^(9/2)*d^
9*e + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^(11/2)*d^9*e + 1280*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*c^5*d^10 - 3840*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^9*B*b*c^4*d^5*e^5 + 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c
^4*d^6*e^4 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b*c^5*d^6*e^4 + 19200
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^4*d^7*e^3 - 7936*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^5*A*b^2*c^5*d^7*e^3 + 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^3*B*b^4*c^4*d^8*e^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^5*d^8
*e^2 - 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*c^4*d^9*e + 320*(sqrt(c)*
x - sqrt(c*x^2 + b*x))*A*b^4*c^5*d^9*e + 128*B*b^5*c^(9/2)*d^10 + 7680*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^8*B*b^2*c^(7/2)*d^5*e^5 - 3840*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^8*A*b*c^(9/2)*d^5*e^5 + 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^6*B*b^3*c^(7/2)*d^6*e^4 - 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c
^(9/2)*d^6*e^4 + 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c^(7/2)*d^7*
e^3 - 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*c^(9/2)*d^7*e^3 + 8240*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5*c^(7/2)*d^8*e^2 - 2400*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^2*A*b^4*c^(9/2)*d^8*e^2 - 336*B*b^6*c^(7/2)*d^9*e + 32*A
*b^5*c^(9/2)*d^9*e + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^2*c^3*d^4*e
^6 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^3*c^3*d^5*e^5 - 3840*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^7*A*b^2*c^4*d^5*e^5 + 12800*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b^4*c^3*d^6*e^4 - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b
^3*c^4*d^6*e^4 + 9120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*c^3*d^7*e^3 -
 1600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^4*d^7*e^3 + 2480*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))*B*b^6*c^3*d^8*e^2 - 640*(sqrt(c)*x - sqrt(c*x^2 + b*x
))*A*b^5*c^4*d^8*e^2 + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^3*c^(5/2)
*d^4*e^6 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^2*c^(7/2)*d^4*e^6 + 1
280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^(7/2)*d^5*e^5 + 80*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^4*B*b^5*c^(5/2)*d^6*e^4 + 2400*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^4*A*b^4*c^(7/2)*d^6*e^4 + 840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^6*c^(5/2)*d^7*e^3 + 160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(7/2)*
d^7*e^3 + 248*B*b^7*c^(5/2)*d^8*e^2 - 64*A*b^6*c^(7/2)*d^8*e^2 - 1280*(sqrt
```

```
(c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^2*d^3*e^7 - 1280*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^7*B*b^4*c^2*d^4*e^6 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b
^3*c^3*d^4*e^6 - 3548*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^5*c^2*d^5*e^5 +
 4280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^4*c^3*d^5*e^5 - 1600*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*B*b^6*c^2*d^6*e^4 + 2080*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^3*A*b^5*c^3*d^6*e^4 - 100*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^2*d
^7*e^3 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*c^3*d^7*e^3 - 2560*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^8*B*b^4*c^(3/2)*d^3*e^7 - 1280*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^8*A*b^3*c^(5/2)*d^3*e^7 - 3070*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^6*B*b^5*c^(3/2)*d^4*e^6 + 7420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^4*c
^(5/2)*d^4*e^6 - 2670*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c^(3/2)*d^5*e
^5 + 2860*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^(5/2)*d^5*e^5 - 650*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7*c^(3/2)*d^6*e^4 + 860*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^2*A*b^6*c^(5/2)*d^6*e^4 - 10*B*b^8*c^(3/2)*d^7*e^3 + 12*A*b
^7*c^(5/2)*d^7*e^3 - 2090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c*d^3*e^7
 - 4780*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^2*d^3*e^7 - 2114*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^5*B*b^6*c*d^4*e^6 + 1448*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^5*A*b^5*c^2*d^4*e^6 - 1070*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^7*c*
d^5*e^5 + 540*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^2*d^5*e^5 - 150*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c*d^6*e^4 + 200*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*A*b^7*c^2*d^6*e^4 + 135*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^5*sqr
t(c)*d^2*e^8 - 270*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c^(3/2)*d^2*e^8
- 790*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*sqrt(c)*d^3*e^7 - 5330*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(3/2)*d^3*e^7 - 640*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^4*B*b^7*sqrt(c)*d^4*e^6 - 1390*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^4*A*b^6*c^(3/2)*d^4*e^6 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^8*sqrt
(c)*d^5*e^5 - 230*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^7*c^(3/2)*d^5*e^5 -
 15*B*b^9*sqrt(c)*d^6*e^4 + 20*A*b^8*c^(3/2)*d^6*e^4 + 15*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^9*B*b^5*d*e^9 - 30*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^4*c
*d*e^9 + 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*d^2*e^8 + 330*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^7*A*b^5*c*d^2*e^8 - 128*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^5*B*b^7*d^3*e^7 - 2626*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^6*c*d^3*e^
7 - 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*d^4*e^6 - 930*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^3*A*b^7*c*d^4*e^6 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*
b^9*d^5*e^5 - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*c*d^5*e^5 + 135*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*sqrt(c)*d*e^9 + 490*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^6*A*b^6*sqrt(c)*d^2*e^8 - 640*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^4*A*b^7*sqrt(c)*d^3*e^7 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*sqrt
(c)*d^4*e^6 - 15*A*b^9*sqrt(c)*d^5*e^5 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^9*A*b^5*e^10 + 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^6*d*e^9 + 128*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^5*A*b^7*d^2*e^8 - 70*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^3*A*b^8*d^3*e^7 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*d^4*e^6)/(
(c^3*d^6*e^5 - 3*b*c^2*d^5*e^6 + 3*b^2*c*d^4*e^7 - b^3*d^3*e^8)*((sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b
*d)^5)
```

maple [B] time = 0.09, size = 22107, normalized size = 82.18

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maple [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{\left(d+e\,x\right)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^6, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{\left(d+ex\right)^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**6, x)
```

3.1036 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=402

$$-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)}{512d^4(d+ex)^2(cd-be)^4}+\frac{\left(bx+cx^2\right)^{3/2}(x(2cd-be)$$

Rubi [A] time = 0.58, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)}{512d^4(d+ex)^2(cd-be)^4}+\frac{\left(bx+cx^2\right)^{3/2}(x(2cd-be)+bd)\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)}{192d^3(d+ex)^4(cd-be)^3}+\frac{b^4\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{1024d^{9/2}(cd-be)^{9/2}}-\frac{\left(bx+cx^2\right)^{5/2}(7Ae(2cd-be)-Bd(5be+2cd))}{60d^2(d+ex)^5(cd-be)^2}+\frac{\left(bx+cx^2\right)^{5/2}(Bd-Ae)}{6d(d+ex)^6(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -(b^2*(24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d + 7*A*e))*(b*d
+ (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])/(512*d^4*(c*d - b*e)^4*(d + e*x)^2) +
 ((24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d + 7*A*e))*(b*d + (2
*c*d - b*e)*x)*(b*x + c*x^2)^(3/2))/(192*d^3*(c*d - b*e)^3*(d + e*x)^4) + (
(B*d - A*e)*(b*x + c*x^2)^(5/2))/(6*d*(c*d - b*e)*(d + e*x)^6) - ((7*A*e*(2
*c*d - b*e) - B*d*(2*c*d + 5*b*e))*(b*x + c*x^2)^(5/2))/(60*d^2*(c*d - b*e)
^2*(d + e*x)^5) + (b^4*(24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*
d + 7*A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt
[b*x + c*x^2])])/(1024*d^(9/2)*(c*d - b*e)^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
```

```
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^7}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{6d(cd-be)(d+ex)^6} - \frac{\int \frac{\left(\frac{1}{2}(-12Acd+b(5Bd+7Ae))-c(Bd-Ae)x\right)\left(bx+cx^2\right)^{3/2}}{(d+ex)^6}\,dx}{6d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{6d(cd-be)(d+ex)^6} - \frac{(7Ae(2cd-be)-Bd(2cd+5be))\left(bx+cx^2\right)^{5/2}}{60d^2(cd-be)^2(d+ex)^5} + \frac{(24A\cdots}{\cdots}$$

$$= \frac{\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\left(bx+cx^2\right)^{3/2}}{192d^3(cd-be)^3(d+ex)^4}$$

$$= -\frac{b^2\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{512d^4(cd-be)^4(d+ex)^2}$$

$$= -\frac{b^2\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{512d^4(cd-be)^4(d+ex)^2}$$

$$= -\frac{b^2\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{512d^4(cd-be)^4(d+ex)^2}$$

Mathematica [A] time = 1.33, size = 352, normalized size = 0.88

$$\frac{(x(b+cx))^{3/2}\left(\frac{\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)\left(-\frac{3b^4\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{8d^{5/2}(cd-be)^{3/2}}-\frac{b^2\sqrt{x}\sqrt{b+cx}(5bd+3bex+2cdx)}{8d^2(d+ex)^2(cd-be)}-\frac{2x^{3/2}(b+cx)^{5/2}}{(d+ex)^4}+\frac{b\sqrt{x}(b+cx)^{5/2}}{(d+ex)^3(cd-be)}\right)}{32d(b+cx)^{3/2}(cd-be)^2}-\frac{x^{5/2}(b+cx)(7Ae(be-2cd)+Bd(5be+2cd))}{10d(d+ex)^5(cd-be)}+\frac{x^{5/2}(b+cx)(Ae-Bd)}{(d+ex)^6}\right)}{6dx^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] ((x*(b + c*x))^(3/2)*(((-(B*d) + A*e)*x^(5/2)*(b + c*x))/(d + e*x)^6 - ((7*
A*e*(-2*c*d + b*e) + B*d*(2*c*d + 5*b*e))*x^(5/2)*(b + c*x))/(10*d*(c*d - b
*e)*(d + e*x)^5) + ((24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d +
 7*A*e))*((-2*x^(3/2)*(b + c*x)^(5/2))/(d + e*x)^4 + (b*Sqrt[x]*(b + c*x)^(
5/2))/((c*d - b*e)*(d + e*x)^3) - (b^2*Sqrt[x]*Sqrt[b + c*x]*(5*b*d + 2*c*d
*x + 3*b*e*x))/(8*d^2*(c*d - b*e)*(d + e*x)^2) - (3*b^4*ArcTanh[(Sqrt[c*d -
 b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(8*d^(5/2)*(c*d - b*e)^(3/2))))/(3
2*d*(c*d - b*e)^2*(b + c*x)^(3/2))))/(6*d*(-(c*d) + b*e)*x^(3/2))
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.52, size = 3734, normalized size = 9.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] [1/15360*(15*(7*A*b^6*d^6*e^2 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^8 + (5*B*b^6 -
 24*A*b^5*c)*d^7*e + (7*A*b^6*e^8 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^2*e^6 + (5
*B*b^6 - 24*A*b^5*c)*d*e^7)*x^6 + 6*(7*A*b^6*d*e^7 - 12*(B*b^5*c - 2*A*b^4*
c^2)*d^3*e^5 + (5*B*b^6 - 24*A*b^5*c)*d^2*e^6)*x^5 + 15*(7*A*b^6*d^2*e^6 -
12*(B*b^5*c - 2*A*b^4*c^2)*d^4*e^4 + (5*B*b^6 - 24*A*b^5*c)*d^3*e^5)*x^4 +
20*(7*A*b^6*d^3*e^5 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^5*e^3 + (5*B*b^6 - 24*A*
b^5*c)*d^4*e^4)*x^3 + 15*(7*A*b^6*d^4*e^4 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^6*
e^2 + (5*B*b^6 - 24*A*b^5*c)*d^5*e^3)*x^2 + 6*(7*A*b^6*d^5*e^3 - 12*(B*b^5*
c - 2*A*b^4*c^2)*d^7*e + (5*B*b^6 - 24*A*b^5*c)*d^6*e^2)*x)*sqrt(c*d^2 - b*
d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/
(e*x + d)) + 2*(105*A*b^6*d^6*e^3 + 180*(B*b^4*c^2 - 2*A*b^3*c^3)*d^9 - 15*
(17*B*b^5*c - 48*A*b^4*c^2)*d^8*e + 15*(5*B*b^6 - 31*A*b^5*c)*d^7*e^2 + (25
6*B*c^6*d^8*e - 105*A*b^6*d*e^8 - 64*(17*B*b*c^5 - 2*A*c^6)*d^7*e^2 + 16*(1
03*B*b^2*c^4 - 28*A*b*c^5)*d^6*e^3 - 32*(28*B*b^3*c^3 - 13*A*b^2*c^4)*d^5*e
^4 - 10*(5*B*b^4*c^2 - 8*A*b^3*c^3)*d^4*e^5 + (205*B*b^5*c - 466*A*b^4*c^2)
*d^3*e^6 - 5*(15*B*b^6 - 79*A*b^5*c)*d^2*e^7)*x^5 + (1536*B*c^6*d^9 - 595*A
*b^6*d^2*e^7 - 256*(26*B*b*c^5 - 3*A*c^6)*d^8*e + 64*(163*B*b^2*c^4 - 43*A*
b*c^5)*d^7*e^2 - 40*(155*B*b^3*c^3 - 68*A*b^2*c^4)*d^6*e^3 + 4*(37*B*b^4*c^
2 + 68*A*b^3*c^3)*d^5*e^4 + (1165*B*b^5*c - 2656*A*b^4*c^2)*d^4*e^5 - (425*
B*b^6 - 2243*A*b^5*c)*d^3*e^6)*x^4 - 6*(231*A*b^6*d^3*e^6 - 32*(11*B*b*c^5
+ 10*A*c^6)*d^9 + 8*(215*B*b^2*c^4 + 148*A*b*c^5)*d^8*e - 4*(817*B*b^3*c^3
+ 318*A*b^2*c^4)*d^7*e^2 + 2*(1387*B*b^4*c^2 + 18*A*b^3*c^3)*d^6*e^3 - (103
9*B*b^5*c - 1014*A*b^4*c^2)*d^5*e^4 + 3*(55*B*b^6 - 291*A*b^5*c)*d^4*e^5)*x
^3 - 2*(843*A*b^6*d^4*e^5 - 48*(B*b^2*c^4 + 30*A*b*c^5)*d^9 + 4*(101*B*b^3*
c^3 + 1704*A*b^2*c^4)*d^8*e - 4*(421*B*b^4*c^2 + 2879*A*b^3*c^3)*d^7*e^2 +
(1823*B*b^5*c + 9712*A*b^4*c^2)*d^6*e^3 - 5*(99*B*b^6 + 883*A*b^5*c)*d^5*e^
4)*x^2 + 5*(119*A*b^6*d^5*e^4 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^9 + 14*(17*B
*b^4*c^2 - 36*A*b^3*c^3)*d^8*e - (299*B*b^5*c - 878*A*b^4*c^2)*d^7*e^2 + (8
5*B*b^6 - 541*A*b^5*c)*d^6*e^3)*x)*sqrt(c*x^2 + b*x))/(c^5*d^16 - 5*b*c^4*d
^15*e + 10*b^2*c^3*d^14*e^2 - 10*b^3*c^2*d^13*e^3 + 5*b^4*c*d^12*e^4 - b^5*
d^11*e^5 + (c^5*d^10*e^6 - 5*b*c^4*d^9*e^7 + 10*b^2*c^3*d^8*e^8 - 10*b^3*c^
2*d^7*e^9 + 5*b^4*c*d^6*e^10 - b^5*d^5*e^11)*x^6 + 6*(c^5*d^11*e^5 - 5*b*c^
4*d^10*e^6 + 10*b^2*c^3*d^9*e^7 - 10*b^3*c^2*d^8*e^8 + 5*b^4*c*d^7*e^9 - b^
5*d^6*e^10)*x^5 + 15*(c^5*d^12*e^4 - 5*b*c^4*d^11*e^5 + 10*b^2*c^3*d^10*e^6
 - 10*b^3*c^2*d^9*e^7 + 5*b^4*c*d^8*e^8 - b^5*d^7*e^9)*x^4 + 20*(c^5*d^13*e
^3 - 5*b*c^4*d^12*e^4 + 10*b^2*c^3*d^11*e^5 - 10*b^3*c^2*d^10*e^6 + 5*b^4*c
*d^9*e^7 - b^5*d^8*e^8)*x^3 + 15*(c^5*d^14*e^2 - 5*b*c^4*d^13*e^3 + 10*b^2*
c^3*d^12*e^4 - 10*b^3*c^2*d^11*e^5 + 5*b^4*c*d^10*e^6 - b^5*d^9*e^7)*x^2 +
6*(c^5*d^15*e - 5*b*c^4*d^14*e^2 + 10*b^2*c^3*d^13*e^3 - 10*b^3*c^2*d^12*e^
4 + 5*b^4*c*d^11*e^5 - b^5*d^10*e^6)*x), 1/7680*(15*(7*A*b^6*d^6*e^2 - 12*(
B*b^5*c - 2*A*b^4*c^2)*d^8 + (5*B*b^6 - 24*A*b^5*c)*d^7*e + (7*A*b^6*e^8 -
12*(B*b^5*c - 2*A*b^4*c^2)*d^2*e^6 + (5*B*b^6 - 24*A*b^5*c)*d*e^7)*x^6 + 6*
(7*A*b^6*d*e^7 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^3*e^5 + (5*B*b^6 - 24*A*b^5*c
)*d^2*e^6)*x^5 + 15*(7*A*b^6*d^2*e^6 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^4*e^4 +
 (5*B*b^6 - 24*A*b^5*c)*d^3*e^5)*x^4 + 20*(7*A*b^6*d^3*e^5 - 12*(B*b^5*c -
2*A*b^4*c^2)*d^5*e^3 + (5*B*b^6 - 24*A*b^5*c)*d^4*e^4)*x^3 + 15*(7*A*b^6*d^
4*e^4 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^6*e^2 + (5*B*b^6 - 24*A*b^5*c)*d^5*e^3
)*x^2 + 6*(7*A*b^6*d^5*e^3 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^7*e + (5*B*b^6 -
```

```
24*A*b^5*c)*d^6*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*s
qrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (105*A*b^6*d^6*e^3 + 180*(B*b^4*c^2 - 2
*A*b^3*c^3)*d^9 - 15*(17*B*b^5*c - 48*A*b^4*c^2)*d^8*e + 15*(5*B*b^6 - 31*A
*b^5*c)*d^7*e^2 + (256*B*c^6*d^8*e - 105*A*b^6*d*e^8 - 64*(17*B*b*c^5 - 2*A
*c^6)*d^7*e^2 + 16*(103*B*b^2*c^4 - 28*A*b*c^5)*d^6*e^3 - 32*(28*B*b^3*c^3
- 13*A*b^2*c^4)*d^5*e^4 - 10*(5*B*b^4*c^2 - 8*A*b^3*c^3)*d^4*e^5 + (205*B*b
^5*c - 466*A*b^4*c^2)*d^3*e^6 - 5*(15*B*b^6 - 79*A*b^5*c)*d^2*e^7)*x^5 + (1
536*B*c^6*d^9 - 595*A*b^6*d^2*e^7 - 256*(26*B*b*c^5 - 3*A*c^6)*d^8*e + 64*(
163*B*b^2*c^4 - 43*A*b*c^5)*d^7*e^2 - 40*(155*B*b^3*c^3 - 68*A*b^2*c^4)*d^6
*e^3 + 4*(37*B*b^4*c^2 + 68*A*b^3*c^3)*d^5*e^4 + (1165*B*b^5*c - 2656*A*b^4
*c^2)*d^4*e^5 - (425*B*b^6 - 2243*A*b^5*c)*d^3*e^6)*x^4 - 6*(231*A*b^6*d^3*
e^6 - 32*(11*B*b*c^5 + 10*A*c^6)*d^9 + 8*(215*B*b^2*c^4 + 148*A*b*c^5)*d^8*
e - 4*(817*B*b^3*c^3 + 318*A*b^2*c^4)*d^7*e^2 + 2*(1387*B*b^4*c^2 + 18*A*b^
3*c^3)*d^6*e^3 - (1039*B*b^5*c - 1014*A*b^4*c^2)*d^5*e^4 + 3*(55*B*b^6 - 29
1*A*b^5*c)*d^4*e^5)*x^3 - 2*(843*A*b^6*d^4*e^5 - 48*(B*b^2*c^4 + 30*A*b*c^5
)*d^9 + 4*(101*B*b^3*c^3 + 1704*A*b^2*c^4)*d^8*e - 4*(421*B*b^4*c^2 + 2879*
A*b^3*c^3)*d^7*e^2 + (1823*B*b^5*c + 9712*A*b^4*c^2)*d^6*e^3 - 5*(99*B*b^6
+ 883*A*b^5*c)*d^5*e^4)*x^2 + 5*(119*A*b^6*d^5*e^4 - 24*(B*b^3*c^3 - 2*A*b^
2*c^4)*d^9 + 14*(17*B*b^4*c^2 - 36*A*b^3*c^3)*d^8*e - (299*B*b^5*c - 878*A*
b^4*c^2)*d^7*e^2 + (85*B*b^6 - 541*A*b^5*c)*d^6*e^3)*x)*sqrt(c*x^2 + b*x))/
(c^5*d^16 - 5*b*c^4*d^15*e + 10*b^2*c^3*d^14*e^2 - 10*b^3*c^2*d^13*e^3 + 5*
b^4*c*d^12*e^4 - b^5*d^11*e^5 + (c^5*d^10*e^6 - 5*b*c^4*d^9*e^7 + 10*b^2*c^
3*d^8*e^8 - 10*b^3*c^2*d^7*e^9 + 5*b^4*c*d^6*e^10 - b^5*d^5*e^11)*x^6 + 6*(
c^5*d^11*e^5 - 5*b*c^4*d^10*e^6 + 10*b^2*c^3*d^9*e^7 - 10*b^3*c^2*d^8*e^8 +
 5*b^4*c*d^7*e^9 - b^5*d^6*e^10)*x^5 + 15*(c^5*d^12*e^4 - 5*b*c^4*d^11*e^5
+ 10*b^2*c^3*d^10*e^6 - 10*b^3*c^2*d^9*e^7 + 5*b^4*c*d^8*e^8 - b^5*d^7*e^9)
*x^4 + 20*(c^5*d^13*e^3 - 5*b*c^4*d^12*e^4 + 10*b^2*c^3*d^11*e^5 - 10*b^3*c
^2*d^10*e^6 + 5*b^4*c*d^9*e^7 - b^5*d^8*e^8)*x^3 + 15*(c^5*d^14*e^2 - 5*b*c
^4*d^13*e^3 + 10*b^2*c^3*d^12*e^4 - 10*b^3*c^2*d^11*e^5 + 5*b^4*c*d^10*e^6
- b^5*d^9*e^7)*x^2 + 6*(c^5*d^15*e - 5*b*c^4*d^14*e^2 + 10*b^2*c^3*d^13*e^3
 - 10*b^3*c^2*d^12*e^4 + 5*b^4*c*d^11*e^5 - b^5*d^10*e^6)*x)]
```

giac [B] time = 0.81, size = 5748, normalized size = 14.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/512*(12*B*b^5*c*d^2 - 24*A*b^4*c^2*d^2 - 5*B*b^6*d*e + 24*A*b^5*c*d*e -
7*A*b^6*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-
c*d^2 + b*d*e))/((c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5
*e^3 + b^4*d^4*e^4)*sqrt(-c*d^2 + b*d*e)) + 1/7680*(49152*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^7*B*c^8*d^11*e + 16384*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c
^(17/2)*d^12 + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^(15/2)*d^10*e^2
+ 69632*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b*c^(15/2)*d^11*e + 8192*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^6*A*c^(17/2)*d^11*e + 49152*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b*c^8*d^12 + 40960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^7*d
^9*e^3 - 36864*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b*c^7*d^10*e^2 + 24576*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*c^8*d^10*e^2 - 36864*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^5*B*b^2*c^7*d^11*e + 24576*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A
*b*c^8*d^11*e + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^(15/2)*d^12
 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^(13/2)*d^8*e^4 - 138240*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^8*B*b*c^(13/2)*d^9*e^3 + 30720*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^8*A*c^(15/2)*d^9*e^3 - 254976*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^6*B*b^2*c^(13/2)*d^10*e^2 + 40960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b
*c^(15/2)*d^10*e^2 - 138240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c^(13/2
)*d^11*e + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(15/2)*d^11*e +
40960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^7*d^12 - 117760*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^9*B*b*c^6*d^8*e^4 + 20480*(sqrt(c)*x - sqrt(c*x^2 + b*
```

x))^9*A*c^7*d^8*e^4 - 211968*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^6*d^
9*e^3 - 211968*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^6*d^10*e^2 - 11776
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*c^6*d^11*e + 20480*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^3*A*b^3*c^7*d^11*e + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*B*b^4*c^(13/2)*d^12 - 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b*c^(1
1/2)*d^7*e^5 - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b*c^(13/2)*d^8*e^4
 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^3*c^(11/2)*d^9*e^3 - 101376*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^(13/2)*d^9*e^3 - 46080*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^4*A*b^3*c^(13/2)*d^10*e^2 - 48384*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^2*B*b^5*c^(11/2)*d^11*e + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^2*A*b^4*c^(13/2)*d^11*e + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*c^6*d
^12 + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^2*c^5*d^7*e^5 - 81920*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^9*A*b*c^6*d^7*e^5 + 276480*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^7*B*b^3*c^5*d^8*e^4 - 119808*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*A*b^2*c^6*d^8*e^4 + 276480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^5*d^9
e^3 - 119808(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*c^6*d^9*e^3 + 80640*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*c^5*d^10*e^2 - 43520*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^3*A*b^4*c^6*d^10*e^2 - 9984*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^6*c^5*d^11*e + 1536*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^5*c^6*d^11*e
 + 256*B*b^6*c^(11/2)*d^12 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^2*
c^(9/2)*d^6*e^6 + 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^3*c^(9/2)*d^
7*e^5 - 122880*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^2*c^(11/2)*d^7*e^5 + 2
30400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^4*c^(9/2)*d^8*e^4 - 55296*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^(11/2)*d^8*e^4 + 164160*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*B*b^5*c^(9/2)*d^9*e^3 - 51840*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^4*A*b^4*c^(11/2)*d^9*e^3 + 43968*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^6*c^(9/2)*d^10*e^2 - 18432*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(11
/2)*d^10*e^2 - 832*B*b^7*c^(9/2)*d^11*e + 128*A*b^6*c^(11/2)*d^11*e + 11264
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^4*d^6*e^6 + 122880*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^9*A*b^2*c^5*d^6*e^6 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^7*B*b^4*c^4*d^7*e^5 - 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^
5*d^7*e^5 + 34560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^5*c^4*d^8*e^4 + 414
72*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^4*c^5*d^8*e^4 + 36160*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^3*B*b^6*c^4*d^9*e^3 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^3*A*b^5*c^5*d^9*e^3 + 9792*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^4*d^
10*e^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*c^5*d^10*e^2 - 61440*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^3*c^(7/2)*d^5*e^7 + 337920*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^8*A*b^3*c^(9/2)*d^6*e^6 - 84192*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^6*B*b^5*c^(7/2)*d^7*e^5 + 100800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
6*A*b^4*c^(9/2)*d^7*e^5 - 38160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c^(
7/2)*d^8*e^4 + 60480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^(9/2)*d^8*e^
4 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7*c^(7/2)*d^9*e^3 + 3840*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c^(9/2)*d^9*e^3 + 816*B*b^8*c^(7/2)*d^10
*e^2 - 320*A*b^7*c^(9/2)*d^10*e^2 - 143360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
9*B*b^4*c^3*d^5*e^7 - 81920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^3*c^4*d^5
e^7 - 85536(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c^3*d^6*e^6 + 336960*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^4*d^6*e^6 - 82656*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^5*B*b^6*c^3*d^7*e^5 + 87360*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^5*A*b^5*c^4*d^7*e^5 - 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^7*c^3*d^
8*e^4 + 33920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^4*d^8*e^4 - 960*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c^3*d^9*e^3 + 1152*(sqrt(c)*x - sqrt(c*x
^2 + b*x))*A*b^7*c^4*d^9*e^3 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b
^4*c^(5/2)*d^4*e^8 - 117720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^5*c^(5/2)
*d^5*e^7 - 317520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c^(7/2)*d^5*e^7 -
 58936*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*c^(5/2)*d^6*e^6 + 95424*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(7/2)*d^6*e^6 - 34920*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*B*b^7*c^(5/2)*d^7*e^5 + 15120*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^4*A*b^6*c^(7/2)*d^7*e^5 - 8280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^
8*c^(5/2)*d^8*e^4 + 11136*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^7*c^(7/2)*d

^8*e^4 - 80*B*b^9*c^(5/2)*d^9*e^3 + 96*A*b^8*c^(7/2)*d^9*e^3 + 54960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^5*c^2*d^4*e^8 + 2720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^4*c^3*d^4*e^8 - 18408*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*c^2*d^5*e^7 - 419328*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^5*c^3*d^5*e^7 - 1128*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^7*c^2*d^6*e^6 - 71808*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^6*c^3*d^6*e^6 - 4680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*c^2*d^7*e^5 - 18080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c^3*d^7*e^5 - 1560*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^9*c^2*d^8*e^4 + 2112*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*c^3*d^8*e^4 + 1980*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^5*c^(3/2)*d^3*e^9 - 3960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^4*c^(5/2)*d^3*e^9 + 62070*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^6*c^(3/2)*d^4*e^8 + 99480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*c^(5/2)*d^4*e^8 + 29608*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^7*c^(3/2)*d^5*e^7 - 242840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^6*c^(5/2)*d^5*e^7 + 15420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^8*c^(3/2)*d^6*e^6 - 64440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^7*c^(5/2)*d^6*e^6 + 1740*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^9*c^(3/2)*d^7*e^5 - 12384*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*c^(5/2)*d^7*e^5 - 130*B*b^10*c^(3/2)*d^8*e^4 + 176*A*b^9*c^(5/2)*d^8*e^4 + 180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^5*c*d^2*e^10 - 360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A*b^4*c^2*d^2*e^10 - 2680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^6*c*d^3*e^9 + 15720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^5*c^2*d^3*e^9 + 32064*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^7*c*d^4*e^8 + 170520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^6*c^2*d^4*e^8 + 19944*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^8*c*d^5*e^7 - 47400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^7*c^2*d^5*e^7 + 7180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^9*c*d^6*e^6 - 16320*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^8*c^2*d^6*e^6 + 720*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^10*c*d^7*e^5 - 3120*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*c^2*d^7*e^5 - 825*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^6*sqrt(c)*d^2*e^10 + 3960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^5*c^(3/2)*d^2*e^10 - 3825*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^7*sqrt(c)*d^3*e^9 + 6390*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^6*c^(3/2)*d^3*e^9 + 8430*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^8*sqrt(c)*d^4*e^8 + 115328*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^7*c^(3/2)*d^4*e^8 + 4950*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^9*sqrt(c)*d^5*e^7 + 14460*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^8*c^(3/2)*d^5*e^7 + 1275*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^10*sqrt(c)*d^6*e^6 + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^9*c^(3/2)*d^6*e^6 + 75*B*b^11*sqrt(c)*d^7*e^5 - 290*A*b^10*c^(3/2)*d^7*e^5 - 75*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^6*d*e^11 + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A*b^5*c*d*e^11 - 425*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^7*d^2*e^10 - 3140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^6*c*d^2*e^10 - 990*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^8*d^3*e^9 - 13896*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^7*c*d^3*e^9 + 990*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^9*d^4*e^8 + 38784*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^8*c*d^4*e^8 + 425*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^10*d^5*e^7 + 9440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^9*c*d^5*e^7 + 75*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^11*d^6*e^6 + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^10*c*d^6*e^6 - 1155*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^6*sqrt(c)*d*e^11 - 5355*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^7*sqrt(c)*d^2*e^10 - 9702*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^8*sqrt(c)*d^3*e^9 + 6930*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^9*sqrt(c)*d^4*e^8 + 1785*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^10*sqrt(c)*d^5*e^7 + 105*A*b^11*sqrt(c)*d^6*e^6 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A*b^6*e^12 - 595*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^7*d*e^11 - 1386*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^8*d^2*e^10 - 1686*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^9*d^3*e^9 + 595*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^10*d^4*e^8 + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^11*d^5*e^7)/((c^4*d^8*e^5 - 4*b*c^3*d^7*e^6 + 6*b^2*c^2*d^6*e^7 - 4*b^3*c*d^5*e^8 + b^4*d^4*e^9)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^6)

maple [**B**] time = 0.10, size = 29243, normalized size = 72.74

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^7, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + cx\right)\right)^{\frac{3}{2}} \left(A + Bx\right)}{\left(d + ex\right)^{7}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**7, x)
```

3.1037 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=565

$$\frac{\left(bx+cx^2\right)^{5/2}\left(Bd\left(-35b^2e^2+90bcde+8c^2d^2\right)-3Ae\left(21b^2e^2-68bcde+68c^2d^2\right)\right)}{840d^3(d+ex)^5(cd-be)^3}-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd}{}$$

Rubi [A] time = 1.01, antiderivative size = 565, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {834, 806, 720, 724, 206}

$$-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(2b^2cde(21Ae+10Bd)+b^3\left(-e^2\right)(9Ae+5Bd)-24bc^2d^2(3Ae+Bd)+48Ac^3d^3\right)}{1024d^5(d+ex)^2(cd-be)^5}+\frac{\left(bx+cx^2\right)^{5/2}\left(Bd\left(-35b^2e^2+90bcde+8c^2d^2\right)-3Ae\left(21b^2e^2-68bcde+68c^2d^2\right)\right)}{840d^3(d+ex)^5(cd-be)^3}+\frac{\left(bx+cx^2\right)^{3/2}(x(2cd-be)+bd)\left(2b^2cde(21Ae+10Bd)+b^3\left(-e^2\right)(9Ae+5Bd)-24bc^2d^2(3Ae+Bd)+48Ac^3d^3\right)}{384d^4(d+ex)^4(cd-be)^4}+\frac{b^4\left(2b^2cde(21Ae+10Bd)+b^3\left(-e^2\right)(9Ae+5Bd)-24bc^2d^2(3Ae+Bd)+48Ac^3d^3\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2048d^{11/2}(cd-be)^{11/2}}-\frac{\left(bx+cx^2\right)^{5/2}(9Ae(2cd-be)-Bd(5be+4cd))}{84d^2(d+ex)^6(cd-be)^2}+\frac{\left(bx+cx^2\right)^{5/2}(Bd-Ae)}{7d(d+ex)^7(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -(b^2*(48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2*(5*B*d + 9*A*e)
+ 2*b^2*c*d*e*(10*B*d + 21*A*e))*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])
/(1024*d^5*(c*d - b*e)^5*(d + e*x)^2) + ((48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d
+ 3*A*e) - b^3*e^2*(5*B*d + 9*A*e) + 2*b^2*c*d*e*(10*B*d + 21*A*e))*(b*d +
(2*c*d - b*e)*x)*(b*x + c*x^2)^(3/2))/(384*d^4*(c*d - b*e)^4*(d + e*x)^4) +
 ((B*d - A*e)*(b*x + c*x^2)^(5/2))/(7*d*(c*d - b*e)*(d + e*x)^7) - ((9*A*e*
(2*c*d - b*e) - B*d*(4*c*d + 5*b*e))*(b*x + c*x^2)^(5/2))/(84*d^2*(c*d - b*
e)^2*(d + e*x)^6) + ((B*d*(8*c^2*d^2 + 90*b*c*d*e - 35*b^2*e^2) - 3*A*e*(68
*c^2*d^2 - 68*b*c*d*e + 21*b^2*e^2))*(b*x + c*x^2)^(5/2))/(840*d^3*(c*d - b
*e)^3*(d + e*x)^5) + (b^4*(48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d + 3*A*e) - b^3*
e^2*(5*B*d + 9*A*e) + 2*b^2*c*d*e*(10*B*d + 21*A*e))*ArcTanh[(b*d + (2*c*d
- b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2048*d^(11/2)*(c
*d - b*e)^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^8}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{7d(cd-be)(d+ex)^7} - \frac{\int \frac{\left(\frac{1}{2}(-14Acd+b(5Bd+9Ae))-2c(Bd-Ae)x\right)\left(bx+cx^2\right)^{3/2}}{(d+ex)^7}\,dx}{7d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{7d(cd-be)(d+ex)^7} - \frac{(9Ae(2cd-be)-Bd(4cd+5be))\left(bx+cx^2\right)^{5/2}}{84d^2(cd-be)^2(d+ex)^6} + \int$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{7d(cd-be)(d+ex)^7} - \frac{(9Ae(2cd-be)-Bd(4cd+5be))\left(bx+cx^2\right)^{5/2}}{84d^2(cd-be)^2(d+ex)^6} + \frac{(B}{}$$

$$= \frac{\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae)\right)(b}{384d^4(cd-be)^4(d+ex)^4}$$

$$= -\frac{b^2\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae}{1024d^5(cd-be)^5(d+ex)^2}$$

$$= -\frac{b^2\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae}{1024d^5(cd-be)^5(d+ex)^2}$$

$$= -\frac{b^2\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae}{1024d^5(cd-be)^5(d+ex)^2}$$

Mathematica [A] time = 3.51, size = 505, normalized size = 0.89

$$\frac{(x(b+cx))^{3/2}\left(-\frac{x^{5/2}(b+cx)\left(Bd\left(-35b^2e^2+90bcde+8c^2d^2\right)-3Ae\left(21b^2e^2-68bcde+68c^2d^2\right)\right)}{120d^2(d+ex)^5(cd-be)^2}-\frac{7\left(b^3\left(-e^2\right)(9Ae+5Bd)+2b^2cde(21Ae+10Bd)-24bc^2d^2(3Ae+Bd)+48Ac^3d^3\right)\left(16d^{5/2}x^{3/2}(b+cx)^{5/2}(cd-be)^{3/2}-b(d+ex)\left(8d^{5/2}\sqrt{x}(b+cx)^{5/2}\sqrt{cd-be}-b(d+ex)\left(2d^{3/2}\sqrt{x}(b+cx)^{3/2}\sqrt{cd-be}+3b(d+ex)\left(\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}+b(d+ex)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)\right)\right)\right)\right)}{3072d^{9/2}(b+cx)^{3/2}(d+ex)^4(cd-be)^{9/2}}-\frac{x^{5/2}(b+cx)(9Ae(be-2cd)+Bd(5be+4cd))}{12d(d+ex)^6(cd-be)}-\frac{x^{5/2}(b+cx)(Bd-Ae)}{(d+ex)^7}\right)}{7dx^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] ((x*(b + c*x))^(3/2)*(-(((B*d - A*e)*x^(5/2)*(b + c*x))/(d + e*x)^7) - ((9*
A*e*(-2*c*d + b*e) + B*d*(4*c*d + 5*b*e))*x^(5/2)*(b + c*x))/(12*d*(c*d - b
*e)*(d + e*x)^6) - ((B*d*(8*c^2*d^2 + 90*b*c*d*e - 35*b^2*e^2) - 3*A*e*(68*
c^2*d^2 - 68*b*c*d*e + 21*b^2*e^2))*x^(5/2)*(b + c*x))/(120*d^2*(c*d - b*e)
^2*(d + e*x)^5) - (7*(48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2*(
5*B*d + 9*A*e) + 2*b^2*c*d*e*(10*B*d + 21*A*e))*(16*d^(5/2)*(c*d - b*e)^(3/
2)*x^(3/2)*(b + c*x)^(5/2) - b*(d + e*x)*(8*d^(5/2)*Sqrt[c*d - b*e]*Sqrt[x]
```

```
*(b + c*x)^(5/2) - b*(d + e*x)*(2*d^(3/2)*Sqrt[c*d - b*e]*Sqrt[x]*(b + c*x)
^(3/2) + 3*b*(d + e*x)*(Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[x]*Sqrt[b + c*x] + b*(
d + e*x)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]))))/(3
072*d^(9/2)*(c*d - b*e)^(9/2)*(b + c*x)^(3/2)*(d + e*x)^4)))/(7*d*(-(c*d) +
 b*e)*x^(3/2))
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.57, size = 5398, normalized size = 9.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] [-1/215040*(105*(9*A*b^7*d^7*e^3 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^10 - 4*(5
*B*b^6*c - 18*A*b^5*c^2)*d^9*e + (5*B*b^7 - 42*A*b^6*c)*d^8*e^2 + (9*A*b^7*
e^10 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^3*e^7 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*
d^2*e^8 + (5*B*b^7 - 42*A*b^6*c)*d*e^9)*x^7 + 7*(9*A*b^7*d*e^9 + 24*(B*b^5*
c^2 - 2*A*b^4*c^3)*d^4*e^6 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^3*e^7 + (5*B*b^
7 - 42*A*b^6*c)*d^2*e^8)*x^6 + 21*(9*A*b^7*d^2*e^8 + 24*(B*b^5*c^2 - 2*A*b^
4*c^3)*d^5*e^5 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^4*e^6 + (5*B*b^7 - 42*A*b^6
*c)*d^3*e^7)*x^5 + 35*(9*A*b^7*d^3*e^7 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^6*e
^4 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^5*e^5 + (5*B*b^7 - 42*A*b^6*c)*d^4*e^6)
*x^4 + 35*(9*A*b^7*d^4*e^6 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^7*e^3 - 4*(5*B*
b^6*c - 18*A*b^5*c^2)*d^6*e^4 + (5*B*b^7 - 42*A*b^6*c)*d^5*e^5)*x^3 + 21*(9
*A*b^7*d^5*e^5 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^8*e^2 - 4*(5*B*b^6*c - 18*A
*b^5*c^2)*d^7*e^3 + (5*B*b^7 - 42*A*b^6*c)*d^6*e^4)*x^2 + 7*(9*A*b^7*d^6*e^
4 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^9*e - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^8*e
^2 + (5*B*b^7 - 42*A*b^6*c)*d^7*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c
*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(945*
A*b^7*d^7*e^4 - 2520*(B*b^4*c^3 - 2*A*b^3*c^4)*d^11 + 420*(11*B*b^5*c^2 - 3
0*A*b^4*c^3)*d^10*e - 105*(25*B*b^6*c - 114*A*b^5*c^2)*d^9*e^2 + 105*(5*B*b
^7 - 51*A*b^6*c)*d^8*e^3 - (1024*B*c^7*d^9*e^2 + 945*A*b^7*d*e^10 - 384*(13
*B*b*c^6 - 2*A*c^7)*d^8*e^3 + 384*(23*B*b^2*c^5 - 8*A*b*c^6)*d^7*e^4 - 96*(
59*B*b^3*c^4 - 34*A*b^2*c^5)*d^6*e^5 - 120*(5*B*b^4*c^3 - 8*A*b^3*c^4)*d^5*
e^6 + 6*(525*B*b^5*c^2 - 1174*A*b^4*c^3)*d^4*e^7 - 7*(325*B*b^6*c - 1272*A*
b^5*c^2)*d^3*e^8 + 525*(B*b^7 - 9*A*b^6*c)*d^2*e^9)*x^6 - 2*(3584*B*c^7*d^1
0*e + 3150*A*b^7*d^2*e^9 - 64*(277*B*b*c^6 - 42*A*c^7)*d^9*e^2 + 96*(335*B*
b^2*c^5 - 114*A*b*c^6)*d^8*e^3 - 48*(459*B*b^3*c^4 - 254*A*b^2*c^5)*d^7*e^4
 - 12*(57*B*b^4*c^3 - 212*A*b^3*c^4)*d^6*e^5 + 3*(3515*B*b^5*c^2 - 7878*A*b
^4*c^3)*d^5*e^6 - 5*(1519*B*b^6*c - 5955*A*b^5*c^2)*d^4*e^7 + 7*(250*B*b^7
- 2253*A*b^6*c)*d^3*e^8)*x^5 - (21504*B*c^7*d^11 + 17829*A*b^7*d^3*e^8 - 89
6*(121*B*b*c^6 - 18*A*c^7)*d^10*e + 192*(1059*B*b^2*c^5 - 350*A*b*c^6)*d^9*
e^2 - 48*(3161*B*b^3*c^4 - 1658*A*b^2*c^5)*d^8*e^3 + 24*(439*B*b^4*c^3 + 31
6*A*b^3*c^4)*d^7*e^4 + 48*(1207*B*b^5*c^2 - 2785*A*b^4*c^3)*d^6*e^5 - 33*(1
305*B*b^6*c - 5126*A*b^5*c^2)*d^5*e^6 + (9905*B*b^7 - 89403*A*b^6*c)*d^4*e^
7)*x^4 - 4*(6912*A*b^7*d^4*e^7 + 672*(11*B*b*c^6 + 10*A*c^7)*d^11 - 14448*(
3*B*b^2*c^5 + 2*A*b*c^6)*d^10*e + 4*(25775*B*b^3*c^4 + 9282*A*b^2*c^5)*d^9*
e^2 - 12*(9883*B*b^4*c^3 + 187*A*b^3*c^4)*d^8*e^3 + 3*(24291*B*b^5*c^2 - 16
846*A*b^4*c^3)*d^7*e^4 - (25265*B*b^6*c - 65643*A*b^5*c^2)*d^6*e^5 + 15*(25
6*B*b^7 - 2315*A*b^6*c)*d^5*e^6)*x^3 - 7*(3597*A*b^7*d^5*e^6 + 192*(B*b^2*c
^5 + 30*A*b*c^6)*d^11 - 176*(11*B*b^3*c^4 + 186*A*b^2*c^5)*d^10*e + 8*(1237
```

*B*b^4*c^3 + 8718*A*b^3*c^4)*d^9*e^2 - 6*(2357*B*b^5*c^2 + 13498*A*b^4*c^3)
*d^8*e^3 + 5*(1481*B*b^6*c + 11292*A*b^5*c^2)*d^7*e^4 - (1415*B*b^7 + 21837
*A*b^6*c)*d^6*e^5)*x^2 + 70*(90*A*b^7*d^6*e^5 + 24*(B*b^3*c^4 - 2*A*b^2*c^5
)*d^11 - 4*(71*B*b^4*c^3 - 150*A*b^3*c^4)*d^10*e + 3*(155*B*b^5*c^2 - 438*A
*b^4*c^3)*d^9*e^2 - 3*(85*B*b^6*c - 397*A*b^5*c^2)*d^8*e^3 + (50*B*b^7 - 51
9*A*b^6*c)*d^7*e^4)*x)*sqrt(c*x^2 + b*x))/(c^6*d^19 - 6*b*c^5*d^18*e + 15*b
^2*c^4*d^17*e^2 - 20*b^3*c^3*d^16*e^3 + 15*b^4*c^2*d^15*e^4 - 6*b^5*c*d^14*
e^5 + b^6*d^13*e^6 + (c^6*d^12*e^7 - 6*b*c^5*d^11*e^8 + 15*b^2*c^4*d^10*e^9
 - 20*b^3*c^3*d^9*e^10 + 15*b^4*c^2*d^8*e^11 - 6*b^5*c*d^7*e^12 + b^6*d^6*e
^13)*x^7 + 7*(c^6*d^13*e^6 - 6*b*c^5*d^12*e^7 + 15*b^2*c^4*d^11*e^8 - 20*b^
3*c^3*d^10*e^9 + 15*b^4*c^2*d^9*e^10 - 6*b^5*c*d^8*e^11 + b^6*d^7*e^12)*x^6
 + 21*(c^6*d^14*e^5 - 6*b*c^5*d^13*e^6 + 15*b^2*c^4*d^12*e^7 - 20*b^3*c^3*d
^11*e^8 + 15*b^4*c^2*d^10*e^9 - 6*b^5*c*d^9*e^10 + b^6*d^8*e^11)*x^5 + 35*(
c^6*d^15*e^4 - 6*b*c^5*d^14*e^5 + 15*b^2*c^4*d^13*e^6 - 20*b^3*c^3*d^12*e^7
 + 15*b^4*c^2*d^11*e^8 - 6*b^5*c*d^10*e^9 + b^6*d^9*e^10)*x^4 + 35*(c^6*d^1
6*e^3 - 6*b*c^5*d^15*e^4 + 15*b^2*c^4*d^14*e^5 - 20*b^3*c^3*d^13*e^6 + 15*b
^4*c^2*d^12*e^7 - 6*b^5*c*d^11*e^8 + b^6*d^10*e^9)*x^3 + 21*(c^6*d^17*e^2 -
 6*b*c^5*d^16*e^3 + 15*b^2*c^4*d^15*e^4 - 20*b^3*c^3*d^14*e^5 + 15*b^4*c^2*
d^13*e^6 - 6*b^5*c*d^12*e^7 + b^6*d^11*e^8)*x^2 + 7*(c^6*d^18*e - 6*b*c^5*d
^17*e^2 + 15*b^2*c^4*d^16*e^3 - 20*b^3*c^3*d^15*e^4 + 15*b^4*c^2*d^14*e^5 -
 6*b^5*c*d^13*e^6 + b^6*d^12*e^7)*x), -1/107520*(105*(9*A*b^7*d^7*e^3 + 24*
(B*b^5*c^2 - 2*A*b^4*c^3)*d^10 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^9*e + (5*B*
b^7 - 42*A*b^6*c)*d^8*e^2 + (9*A*b^7*e^10 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^
3*e^7 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^2*e^8 + (5*B*b^7 - 42*A*b^6*c)*d*e^9
)*x^7 + 7*(9*A*b^7*d*e^9 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^4*e^6 - 4*(5*B*b^
6*c - 18*A*b^5*c^2)*d^3*e^7 + (5*B*b^7 - 42*A*b^6*c)*d^2*e^8)*x^6 + 21*(9*A
*b^7*d^2*e^8 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^5*e^5 - 4*(5*B*b^6*c - 18*A*b
^5*c^2)*d^4*e^6 + (5*B*b^7 - 42*A*b^6*c)*d^3*e^7)*x^5 + 35*(9*A*b^7*d^3*e^7
 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^6*e^4 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^5*
e^5 + (5*B*b^7 - 42*A*b^6*c)*d^4*e^6)*x^4 + 35*(9*A*b^7*d^4*e^6 + 24*(B*b^5
*c^2 - 2*A*b^4*c^3)*d^7*e^3 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^6*e^4 + (5*B*b
^7 - 42*A*b^6*c)*d^5*e^5)*x^3 + 21*(9*A*b^7*d^5*e^5 + 24*(B*b^5*c^2 - 2*A*b
^4*c^3)*d^8*e^2 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^7*e^3 + (5*B*b^7 - 42*A*b^
6*c)*d^6*e^4)*x^2 + 7*(9*A*b^7*d^6*e^4 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^9*e
 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^8*e^2 + (5*B*b^7 - 42*A*b^6*c)*d^7*e^3)*x
)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d
 - b*e)*x)) + (945*A*b^7*d^7*e^4 - 2520*(B*b^4*c^3 - 2*A*b^3*c^4)*d^11 + 42
0*(11*B*b^5*c^2 - 30*A*b^4*c^3)*d^10*e - 105*(25*B*b^6*c - 114*A*b^5*c^2)*d
^9*e^2 + 105*(5*B*b^7 - 51*A*b^6*c)*d^8*e^3 - (1024*B*c^7*d^9*e^2 + 945*A*b
^7*d*e^10 - 384*(13*B*b*c^6 - 2*A*c^7)*d^8*e^3 + 384*(23*B*b^2*c^5 - 8*A*b*
c^6)*d^7*e^4 - 96*(59*B*b^3*c^4 - 34*A*b^2*c^5)*d^6*e^5 - 120*(5*B*b^4*c^3
 - 8*A*b^3*c^4)*d^5*e^6 + 6*(525*B*b^5*c^2 - 1174*A*b^4*c^3)*d^4*e^7 - 7*(32
5*B*b^6*c - 1272*A*b^5*c^2)*d^3*e^8 + 525*(B*b^7 - 9*A*b^6*c)*d^2*e^9)*x^6
 - 2*(3584*B*c^7*d^10*e + 3150*A*b^7*d^2*e^9 - 64*(277*B*b*c^6 - 42*A*c^7)*d
^9*e^2 + 96*(335*B*b^2*c^5 - 114*A*b*c^6)*d^8*e^3 - 48*(459*B*b^3*c^4 - 254
*A*b^2*c^5)*d^7*e^4 - 12*(57*B*b^4*c^3 - 212*A*b^3*c^4)*d^6*e^5 + 3*(3515*B
*b^5*c^2 - 7878*A*b^4*c^3)*d^5*e^6 - 5*(1519*B*b^6*c - 5955*A*b^5*c^2)*d^4*
e^7 + 7*(250*B*b^7 - 2253*A*b^6*c)*d^3*e^8)*x^5 - (21504*B*c^7*d^11 + 17829
*A*b^7*d^3*e^8 - 896*(121*B*b*c^6 - 18*A*c^7)*d^10*e + 192*(1059*B*b^2*c^5
 - 350*A*b*c^6)*d^9*e^2 - 48*(3161*B*b^3*c^4 - 1658*A*b^2*c^5)*d^8*e^3 + 24*
(439*B*b^4*c^3 + 316*A*b^3*c^4)*d^7*e^4 + 48*(1207*B*b^5*c^2 - 2785*A*b^4*c
^3)*d^6*e^5 - 33*(1305*B*b^6*c - 5126*A*b^5*c^2)*d^5*e^6 + (9905*B*b^7 - 89
403*A*b^6*c)*d^4*e^7)*x^4 - 4*(6912*A*b^7*d^4*e^7 + 672*(11*B*b*c^6 + 10*A*
c^7)*d^11 - 14448*(3*B*b^2*c^5 + 2*A*b*c^6)*d^10*e + 4*(25775*B*b^3*c^4 + 9
282*A*b^2*c^5)*d^9*e^2 - 12*(9883*B*b^4*c^3 + 187*A*b^3*c^4)*d^8*e^3 + 3*(2
4291*B*b^5*c^2 - 16846*A*b^4*c^3)*d^7*e^4 - (25265*B*b^6*c - 65643*A*b^5*c^
2)*d^6*e^5 + 15*(256*B*b^7 - 2315*A*b^6*c)*d^5*e^6)*x^3 - 7*(3597*A*b^7*d^5
e^6 + 192(B*b^2*c^5 + 30*A*b*c^6)*d^11 - 176*(11*B*b^3*c^4 + 186*A*b^2*c^
5)*d^10*e + 8*(1237*B*b^4*c^3 + 8718*A*b^3*c^4)*d^9*e^2 - 6*(2357*B*b^5*c^2

```
 + 13498*A*b^4*c^3)*d^8*e^3 + 5*(1481*B*b^6*c + 11292*A*b^5*c^2)*d^7*e^4 -
(1415*B*b^7 + 21837*A*b^6*c)*d^6*e^5)*x^2 + 70*(90*A*b^7*d^6*e^5 + 24*(B*b^
3*c^4 - 2*A*b^2*c^5)*d^11 - 4*(71*B*b^4*c^3 - 150*A*b^3*c^4)*d^10*e + 3*(15
5*B*b^5*c^2 - 438*A*b^4*c^3)*d^9*e^2 - 3*(85*B*b^6*c - 397*A*b^5*c^2)*d^8*e
^3 + (50*B*b^7 - 519*A*b^6*c)*d^7*e^4)*x)*sqrt(c*x^2 + b*x))/(c^6*d^19 - 6*
b*c^5*d^18*e + 15*b^2*c^4*d^17*e^2 - 20*b^3*c^3*d^16*e^3 + 15*b^4*c^2*d^15*
e^4 - 6*b^5*c*d^14*e^5 + b^6*d^13*e^6 + (c^6*d^12*e^7 - 6*b*c^5*d^11*e^8 +
15*b^2*c^4*d^10*e^9 - 20*b^3*c^3*d^9*e^10 + 15*b^4*c^2*d^8*e^11 - 6*b^5*c*d
^7*e^12 + b^6*d^6*e^13)*x^7 + 7*(c^6*d^13*e^6 - 6*b*c^5*d^12*e^7 + 15*b^2*c
^4*d^11*e^8 - 20*b^3*c^3*d^10*e^9 + 15*b^4*c^2*d^9*e^10 - 6*b^5*c*d^8*e^11
+ b^6*d^7*e^12)*x^6 + 21*(c^6*d^14*e^5 - 6*b*c^5*d^13*e^6 + 15*b^2*c^4*d^12
*e^7 - 20*b^3*c^3*d^11*e^8 + 15*b^4*c^2*d^10*e^9 - 6*b^5*c*d^9*e^10 + b^6*d
^8*e^11)*x^5 + 35*(c^6*d^15*e^4 - 6*b*c^5*d^14*e^5 + 15*b^2*c^4*d^13*e^6 -
20*b^3*c^3*d^12*e^7 + 15*b^4*c^2*d^11*e^8 - 6*b^5*c*d^10*e^9 + b^6*d^9*e^10
)*x^4 + 35*(c^6*d^16*e^3 - 6*b*c^5*d^15*e^4 + 15*b^2*c^4*d^14*e^5 - 20*b^3*
c^3*d^13*e^6 + 15*b^4*c^2*d^12*e^7 - 6*b^5*c*d^11*e^8 + b^6*d^10*e^9)*x^3 +
 21*(c^6*d^17*e^2 - 6*b*c^5*d^16*e^3 + 15*b^2*c^4*d^15*e^4 - 20*b^3*c^3*d^1
4*e^5 + 15*b^4*c^2*d^13*e^6 - 6*b^5*c*d^12*e^7 + b^6*d^11*e^8)*x^2 + 7*(c^6
*d^18*e - 6*b*c^5*d^17*e^2 + 15*b^2*c^4*d^16*e^3 - 20*b^3*c^3*d^15*e^4 + 15
*b^4*c^2*d^14*e^5 - 6*b^5*c*d^13*e^6 + b^6*d^12*e^7)*x)]
```

giac [B] time = 0.98, size = 7914, normalized size = 14.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/1024*(24*B*b^5*c^2*d^3 - 48*A*b^4*c^3*d^3 - 20*B*b^6*c*d^2*e + 72*A*b^5*
c^2*d^2*e + 5*B*b^7*d*e^2 - 42*A*b^6*c*d*e^2 + 9*A*b^7*e^3)*arctan(-((sqrt(
c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^5*d^10 -
 5*b*c^4*d^9*e + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 + 5*b^4*c*d^6*e^4
- b^5*d^5*e^5)*sqrt(-c*d^2 + b*d*e)) + 1/107520*(458752*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^8*B*c^(19/2)*d^13*e + 131072*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*B*c^10*d^14 + 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^9*d^12*e^2 + 86
8352*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b*c^9*d^13*e + 98304*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^7*A*c^10*d^13*e + 458752*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^6*B*b*c^(19/2)*d^14 + 573440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^(17/2)
*d^11*e^3 - 57344*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b*c^(17/2)*d^12*e^2 +
 344064*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*c^(19/2)*d^12*e^2 - 57344*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^(17/2)*d^13*e + 344064*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^6*A*b*c^(19/2)*d^13*e + 688128*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*B*b^2*c^9*d^14 + 286720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*c^8*d^1
0*e^4 - 1519616*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b*c^8*d^11*e^3 + 516096
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*c^9*d^11*e^3 - 2990080*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^7*B*b^2*c^8*d^12*e^2 + 737280*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^7*A*b*c^9*d^12*e^2 - 1519616*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^
8*d^13*e + 516096*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c^9*d^13*e + 5734
40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c^(17/2)*d^14 - 1792000*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^10*B*b*c^(15/2)*d^10*e^4 + 430080*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^10*A*c^(17/2)*d^10*e^4 - 3627008*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^8*B*b^2*c^(15/2)*d^11*e^3 + 258048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A
*b*c^(17/2)*d^11*e^3 - 3627008*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^3*c^(1
5/2)*d^12*e^2 + 258048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^(17/2)*d^1
2*e^2 - 1792000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c^(15/2)*d^13*e + 4
30080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*c^(17/2)*d^13*e + 286720*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*c^8*d^14 - 1433600*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^11*B*b*c^7*d^9*e^5 - 960512*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B
*b^2*c^7*d^10*e^4 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b*c^8*d^10*e
^4 + 55296*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^3*c^7*d^11*e^3 - 1683456*(
```

sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^2*c^8*d^11*e^3 - 960512*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^5*B*b^4*c^7*d^12*e^2 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*A*b^3*c^8*d^12*e^2 - 1025024*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5
*c^7*d^13*e + 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^8*d^13*e + 8
6016*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5*c^(15/2)*d^14 + 358400*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^10*B*b^2*c^(13/2)*d^9*e^5 - 2150400*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^10*A*b*c^(15/2)*d^9*e^5 + 4515840*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^8*B*b^3*c^(13/2)*d^10*e^4 - 2795520*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^8*A*b^2*c^(15/2)*d^10*e^4 + 4515840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b
^4*c^(13/2)*d^11*e^3 - 2795520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^(1
5/2)*d^11*e^3 + 1078784*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^5*c^(13/2)*d^
12*e^2 - 967680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^(15/2)*d^12*e^2 -
 326144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^6*c^(13/2)*d^13*e + 64512*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(15/2)*d^13*e + 14336*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*B*b^6*c^7*d^14 + 2867200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
11*B*b^2*c^6*d^8*e^6 + 3512320*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^6*
d^9*e^5 - 4300800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^2*c^7*d^9*e^5 + 580
6080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^4*c^6*d^10*e^4 - 2119680*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^7*d^10*e^4 + 4076800*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^5*B*b^5*c^6*d^11*e^3 - 1774080*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^5*A*b^4*c^7*d^11*e^3 + 1028608*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^6*c^6
*d^12*e^2 - 580608*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^5*c^7*d^12*e^2 - 5
5552*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^6*d^13*e + 10752*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^6*c^7*d^13*e + 1024*B*b^7*c^(13/2)*d^14 + 5017600*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^3*c^(11/2)*d^8*e^6 + 4300800*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^10*A*b^2*c^(13/2)*d^8*e^6 + 1720320*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^8*B*b^4*c^(11/2)*d^9*e^5 - 1935360*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^8*A*b^3*c^(13/2)*d^9*e^5 + 1975680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
6*B*b^5*c^(11/2)*d^10*e^4 + 564480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^4*
c^(13/2)*d^10*e^4 + 1511552*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c^(11/2
)*d^11*e^3 - 413952*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^(13/2)*d^11*e
^3 + 380800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7*c^(11/2)*d^12*e^2 - 188
160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c^(13/2)*d^12*e^2 - 3968*B*b^8*
c^(11/2)*d^13*e + 768*A*b^7*c^(13/2)*d^13*e - 2867200*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^11*B*b^3*c^5*d^7*e^7 + 1863680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
*B*b^4*c^5*d^8*e^6 + 13762560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^3*c^6*d
^8*e^6 - 2088576*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c^5*d^9*e^5 + 2327
808*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^6*d^9*e^5 - 815360*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^5*B*b^6*c^5*d^10*e^4 + 1881600*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^5*A*b^5*c^6*d^10*e^4 + 184576*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^7*c^5*d^11*e^3 + 75264*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^6*d^11*
e^3 + 68096*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c^5*d^12*e^2 - 32256*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*A*b^7*c^6*d^12*e^2 - 7884800*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^10*B*b^4*c^(9/2)*d^7*e^7 - 4300800*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^10*A*b^3*c^(11/2)*d^7*e^7 - 2283456*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8
*B*b^5*c^(9/2)*d^8*e^6 + 16695168*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c
^(11/2)*d^8*e^6 - 2968896*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*c^(9/2)*d
^9*e^5 + 3067008*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(11/2)*d^9*e^5 -
 1017856*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^7*c^(9/2)*d^10*e^4 + 1430016
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^6*c^(11/2)*d^10*e^4 - 33152*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*B*b^8*c^(9/2)*d^11*e^3 + 64512*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*A*b^7*c^(11/2)*d^11*e^3 + 4864*B*b^9*c^(9/2)*d^12*e^2 - 230
4*A*b^8*c^(11/2)*d^12*e^2 + 1433600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^
4*c^4*d^6*e^8 - 7790944*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^5*c^4*d^7*e^7
 - 18193728*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^4*c^5*d^7*e^7 - 2131136*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*c^4*d^8*e^6 + 7469952*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^7*A*b^5*c^5*d^8*e^6 - 1485344*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*B*b^7*c^4*d^9*e^5 + 716352*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^6*c
^5*d^9*e^5 - 459200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*c^4*d^10*e^4 +

618240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c^5*d^10*e^4 - 11200*(sqrt(c
)*x - sqrt(c*x^2 + b*x))*B*b^9*c^4*d^11*e^3 + 13440*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*A*b^8*c^5*d^11*e^3 + 5338480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*
b^5*c^(7/2)*d^6*e^8 + 1078560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^4*c^(9
/2)*d^6*e^8 - 2001328*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^6*c^(7/2)*d^7*e
^7 - 28144032*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*c^(9/2)*d^7*e^7 + 333
872*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^7*c^(7/2)*d^8*e^6 - 2198112*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^6*A*b^6*c^(9/2)*d^8*e^6 - 160720*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*B*b^8*c^(7/2)*d^9*e^5 - 971040*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^4*A*b^7*c^(9/2)*d^9*e^5 - 123200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^9*c^(7/2)*d^10*e^4 + 168000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*c^(9
/2)*d^10*e^4 - 800*B*b^10*c^(7/2)*d^11*e^3 + 960*A*b^9*c^(9/2)*d^11*e^3 - 1
06960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^5*c^3*d^5*e^9 - 359520*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^11*A*b^4*c^4*d^5*e^9 + 6953408*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^9*B*b^6*c^3*d^6*e^8 + 10063872*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^9*A*b^5*c^4*d^6*e^8 + 1909360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^7*c^3*
d^7*e^7 - 20156640*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^6*c^4*d^7*e^7 + 12
55408*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^8*c^3*d^8*e^6 - 3698688*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^5*A*b^7*c^4*d^8*e^6 + 192640*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^3*B*b^9*c^3*d^9*e^5 - 913920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A
*b^8*c^4*d^9*e^5 - 19600*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^10*c^3*d^10*e^
4 + 26880*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*c^4*d^10*e^4 + 32760*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^12*B*b^5*c^(5/2)*d^4*e^10 - 65520*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^12*A*b^4*c^(7/2)*d^4*e^10 - 1337000*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^10*B*b^6*c^(5/2)*d^5*e^9 + 808080*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^10*A*b^5*c^(7/2)*d^5*e^9 + 3935624*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^7
*c^(5/2)*d^6*e^8 + 19619376*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^6*c^(7/2)
*d^6*e^8 + 1520624*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^8*c^(5/2)*d^7*e^7
 - 5499984*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^7*c^(7/2)*d^7*e^7 + 673400*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^9*c^(5/2)*d^8*e^6 - 1233120*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^4*A*b^8*c^(7/2)*d^8*e^6 + 104440*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^2*B*b^10*c^(5/2)*d^9*e^5 - 351456*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*A*b^9*c^(7/2)*d^9*e^5 - 1400*B*b^11*c^(5/2)*d^10*e^4 + 1920*A*b^10*c^
(7/2)*d^10*e^4 + 2520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*B*b^5*c^2*d^3*e^11
 - 5040*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*A*b^4*c^3*d^3*e^11 - 133000*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^11*B*b^6*c^2*d^4*e^10 + 505680*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^11*A*b^5*c^3*d^4*e^10 - 2213764*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^9*B*b^7*c^2*d^5*e^9 - 1120056*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^6*
c^3*d^5*e^9 + 595552*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^8*c^2*d^6*e^8 +
16718928*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^7*c^3*d^6*e^8 + 229936*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^5*B*b^9*c^2*d^7*e^7 + 1320144*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^5*A*b^8*c^3*d^7*e^7 + 133000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
3*B*b^10*c^2*d^8*e^6 + 122304*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^9*c^3*d
^8*e^6 + 21980*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^11*c^2*d^9*e^5 - 66696*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^10*c^3*d^9*e^5 - 27300*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^12*B*b^6*c^(3/2)*d^3*e^11 + 98280*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^12*A*b^5*c^(5/2)*d^3*e^11 - 42350*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*
B*b^7*c^(3/2)*d^4*e^10 - 383460*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^6*c^
(5/2)*d^4*e^10 - 1534330*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^8*c^(3/2)*d^
5*e^9 - 5388180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^7*c^(5/2)*d^5*e^9 - 4
22380*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^9*c^(3/2)*d^6*e^8 + 7011480*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^8*c^(5/2)*d^6*e^8 - 141400*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^4*B*b^10*c^(3/2)*d^7*e^7 + 1334256*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^4*A*b^9*c^(5/2)*d^7*e^7 - 4550*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2
*B*b^11*c^(3/2)*d^8*e^6 + 183372*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^10*c
^(5/2)*d^8*e^6 + 1750*B*b^12*c^(3/2)*d^9*e^5 - 5124*A*b^11*c^(5/2)*d^9*e^5
 - 2100*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*B*b^6*c*d^2*e^12 + 7560*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^13*A*b^5*c^2*d^2*e^12 + 23450*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^11*B*b^7*c*d^3*e^11 - 264180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A

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*b^6*c^2*d^3*e^11 + 133070*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^8*c*d^4*e^
10 - 960960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^7*c^2*d^4*e^10 - 549660*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^9*c*d^5*e^9 - 5471640*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^7*A*b^8*c^2*d^5*e^9 - 243320*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^5*B*b^10*c*d^6*e^8 + 1126440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^9*c^2*
d^6*e^8 - 67550*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^11*c*d^7*e^7 + 317100
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^10*c^2*d^7*e^7 - 5250*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*B*b^12*c*d^8*e^6 + 45360*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^11*c^2*d^8*e^6 + 6825*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*B*b^7*sqrt(c)*
d^2*e^12 - 57330*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*A*b^6*c^(3/2)*d^2*e^12
+ 38500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^8*sqrt(c)*d^3*e^11 - 122430*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^7*c^(3/2)*d^3*e^11 + 89145*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^8*B*b^9*sqrt(c)*d^4*e^10 - 30240*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^8*A*b^8*c^(3/2)*d^4*e^10 - 107520*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^6*B*b^10*sqrt(c)*d^5*e^9 - 2566620*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*
b^9*c^(3/2)*d^5*e^9 - 49525*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^11*sqrt(c
)*d^6*e^8 - 195090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^10*c^(3/2)*d^6*e^8
 - 10500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^12*sqrt(c)*d^7*e^7 + 4410*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^11*c^(3/2)*d^7*e^7 - 525*B*b^13*sqrt(c)
*d^8*e^6 + 3780*A*b^12*c^(3/2)*d^8*e^6 + 525*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^13*B*b^7*d*e^13 - 4410*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*A*b^6*c*d*e^13
+ 3500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^8*d^2*e^12 + 38010*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^11*A*b^7*c*d^2*e^12 + 9905*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^9*B*b^9*d^3*e^11 + 227640*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^8*c*d
^3*e^11 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^10*d^4*e^10 + 429876*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^9*c*d^4*e^10 - 9905*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^5*B*b^11*d^5*e^9 - 641130*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*
A*b^10*c*d^5*e^9 - 3500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^12*d^6*e^8 -
117390*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^11*c*d^6*e^8 - 525*(sqrt(c)*x
- sqrt(c*x^2 + b*x))*B*b^13*d^7*e^7 - 8820*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^12*c*d^7*e^7 + 12285*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*A*b^7*sqrt(c)*d
*e^13 + 69300*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^8*sqrt(c)*d^2*e^12 + 1
60461*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^9*sqrt(c)*d^3*e^11 + 193536*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^10*sqrt(c)*d^4*e^10 - 89145*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^4*A*b^11*sqrt(c)*d^5*e^9 - 18900*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^2*A*b^12*sqrt(c)*d^6*e^8 - 945*A*b^13*sqrt(c)*d^7*e^7 + 945*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^13*A*b^7*e^14 + 6300*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^11*A*b^8*d*e^13 + 17829*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^9*d^2*e^
12 + 27648*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^10*d^3*e^11 + 25179*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^5*A*b^11*d^4*e^10 - 6300*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^3*A*b^12*d^5*e^9 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^13*d^6*e
^8)/((c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 + 10*b^2*c^3*d^8*e^7 - 10*b^3*c^2*d^7*
e^8 + 5*b^4*c*d^6*e^9 - b^5*d^5*e^10)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e
+ 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^7)
```

maple [B] time = 0.41, size = 37630, normalized size = 66.60

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x)
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{\left(d+e\,x\right)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^8, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1038 $\int (A + Bx)(d + ex)^2 \left(bx + cx^2\right)^{5/2} dx$

Optimal. Leaf size=423

$$\frac{\left(bx + cx^2\right)^{7/2} \left(14cex(18Ace - 11bBe + 4Bcd) + 18Ace(32cd - 9be) + B\left(99b^2e^2 - 324bcde + 64c^2d^2\right)\right)}{2016c^3} - \frac{5b^2(b +$$

Rubi [A] time = 0.43, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {832, 779, 612, 620, 206}

$$\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\left(18b^2ce(Ae+2Bd)-32bc^2d(2Ae+Bd)+64Ac^3d^2-11b^3Be^2\right)}{32768c^6} - \frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}\left(18b^2ce(Ae+2Bd)-32bc^2d(2Ae+Bd)+64Ac^3d^2-11b^3Be^2\right)}{12288c^5} + \frac{\left(bx+cx^2\right)^{7/2}\left(14cex(18Ace-11bBe+4Bcd)+18Ace(32cd-9be)+B\left(99b^2e^2-324bcde+64c^2d^2\right)\right)}{2016c^3} + \frac{(b+2cx)\left(bx+cx^2\right)^{5/2}\left(18b^2ce(Ae+2Bd)-32bc^2d(2Ae+Bd)+64Ac^3d^2-11b^3Be^2\right)}{768c^4} - \frac{5b^6\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(18b^2ce(Ae+2Bd)-32bc^2d(2Ae+Bd)+64Ac^3d^2-11b^3Be^2\right)}{32768c^{13/2}} + \frac{B\left(bx+cx^2\right)^{7/2}(d+ex)^2}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*b^4*(64*A*c^3*d^2 - 11*b^3*B*e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d
*(B*d + 2*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(32768*c^6) - (5*b^2*(64*A*c
^3*d^2 - 11*b^3*B*e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d*(B*d + 2*A*e)
)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(12288*c^5) + ((64*A*c^3*d^2 - 11*b^3*B*
e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d*(B*d + 2*A*e))*(b + 2*c*x)*(b*x
 + c*x^2)^(5/2))/(768*c^4) + (B*(d + e*x)^2*(b*x + c*x^2)^(7/2))/(9*c) + ((
18*A*c*e*(32*c*d - 9*b*e) + B*(64*c^2*d^2 - 324*b*c*d*e + 99*b^2*e^2) + 14*
c*e*(4*B*c*d - 11*b*B*e + 18*A*c*e)*x)*(b*x + c*x^2)^(7/2))/(2016*c^3) - (5
*b^6*(64*A*c^3*d^2 - 11*b^3*B*e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d*(
B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(32768*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^{5/2}\,dx = \frac{B(d+ex)^2\left(bx+cx^2\right)^{7/2}}{9c} + \frac{\int (d+ex)\left(-\frac{1}{2}(7bB-18Ac)d+\frac{1}{2}(4Bcd-11b\ldots}{9c}$$

$$= \frac{B(d+ex)^2\left(bx+cx^2\right)^{7/2}}{9c} + \frac{\left(18Ace(32cd-9be)+B\left(64c^2d^2-324bcde+\ldots\right.}{\ldots}$$

$$= \frac{\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2cx)\ldots}{768c^4}$$

$$= -\frac{5b^2\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+\ldots}{12288c^5}$$

$$= \frac{5b^4\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2\ldots}{32768c^6}$$

$$= \frac{5b^4\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2\ldots}{32768c^6}$$

$$= \frac{5b^4\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2\ldots}{32768c^6}$$

Mathematica [A] time = 1.45, size = 417, normalized size = 0.99

$$\frac{(x(b+cx))^{7/2}\left(\frac{1323A\left(9b^2e^2-32bcde+32c^2d^2\right)\left(\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(15b^5-10b^4cx+8b^3c^2x^2+432b^2c^3x^3+640bc^4x^4+256c^5x^5\right)-15b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)}{1024c^{9/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}+\frac{5103Ae(b+cx)^3(2cd-be)}{c}+7938Ae(b+cx)^3(d+ex)+\frac{189B\left(11b^2e^2-36bcde+32c^2d^2\right)\left(105b^{13/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-105b^6+70b^5cx-56b^4c^2x^2+48b^3c^3x^3+4736b^2c^4x^4+7424bc^5x^5+3072c^6x^6\right)\right)}{2048c^{11/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}+\frac{441Bex(b+cx)^3(20cd-11be)}{c}+7056Bex(b+cx)^3(d+ex)\right)}{63504c(b+cx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(7/2)*((5103*A*e*(2*c*d - b*e)*(b + c*x)^3)/c + (441*B*e*(20
*c*d - 11*b*e)*x*(b + c*x)^3)/c + 7938*A*e*(b + c*x)^3*(d + e*x) + 7056*B*e
*x*(b + c*x)^3*(d + e*x) + (1323*A*(32*c^2*d^2 - 32*b*c*d*e + 9*b^2*e^2)*(S
qrt[c]*Sqrt[x]*Sqrt[1 + (c*x)/b]*(15*b^5 - 10*b^4*c*x + 8*b^3*c^2*x^2 + 432
*b^2*c^3*x^3 + 640*b*c^4*x^4 + 256*c^5*x^5) - 15*b^(11/2)*ArcSinh[(Sqrt[c]*
Sqrt[x])/Sqrt[b]]))/(1024*c^(9/2)*x^(7/2)*Sqrt[1 + (c*x)/b]) + (189*B*(32*c
^2*d^2 - 36*b*c*d*e + 11*b^2*e^2)*(Sqrt[c]*Sqrt[x]*Sqrt[1 + (c*x)/b]*(-105*
b^6 + 70*b^5*c*x - 56*b^4*c^2*x^2 + 48*b^3*c^3*x^3 + 4736*b^2*c^4*x^4 + 742
4*b*c^5*x^5 + 3072*c^6*x^6) + 105*b^(13/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b
]]))/(2048*c^(11/2)*x^(7/2)*Sqrt[1 + (c*x)/b])))/(63504*c*(b + c*x)^3)
```

IntegrateAlgebraic [A] time = 3.28, size = 713, normalized size = 1.69

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-10080*b^6*B*c^2*d^2 + 20160*A*b^5*c^3*d^2 + 11340*b^7*
B*c*d*e - 20160*A*b^6*c^2*d*e - 3465*b^8*B*e^2 + 5670*A*b^7*c*e^2 + 6720*b^
```

```
5*B*c^3*d^2*x - 13440*A*b^4*c^4*d^2*x - 7560*b^6*B*c^2*d*e*x + 13440*A*b^5*
c^3*d*e*x + 2310*b^7*B*c*e^2*x - 3780*A*b^6*c^2*e^2*x - 5376*b^4*B*c^4*d^2*
x^2 + 10752*A*b^3*c^5*d^2*x^2 + 6048*b^5*B*c^3*d*e*x^2 - 10752*A*b^4*c^4*d*
e*x^2 - 1848*b^6*B*c^2*e^2*x^2 + 3024*A*b^5*c^3*e^2*x^2 + 4608*b^3*B*c^5*d^
2*x^3 + 580608*A*b^2*c^6*d^2*x^3 - 5184*b^4*B*c^4*d*e*x^3 + 9216*A*b^3*c^5*
d*e*x^3 + 1584*b^5*B*c^3*e^2*x^3 - 2592*A*b^4*c^4*e^2*x^3 + 454656*b^2*B*c^
6*d^2*x^4 + 860160*A*b*c^7*d^2*x^4 + 4608*b^3*B*c^5*d*e*x^4 + 909312*A*b^2*
c^6*d*e*x^4 - 1408*b^4*B*c^4*e^2*x^4 + 2304*A*b^3*c^5*e^2*x^4 + 712704*b*B*
c^7*d^2*x^5 + 344064*A*c^8*d^2*x^5 + 746496*b^2*B*c^6*d*e*x^5 + 1425408*A*b
*c^7*d*e*x^5 + 1280*b^3*B*c^5*e^2*x^5 + 373248*A*b^2*c^6*e^2*x^5 + 294912*B
*c^8*d^2*x^6 + 1216512*b*B*c^7*d*e*x^6 + 589824*A*c^8*d*e*x^6 + 316416*b^2*
B*c^6*e^2*x^6 + 608256*A*b*c^7*e^2*x^6 + 516096*B*c^8*d*e*x^7 + 530432*b*B*
c^7*e^2*x^7 + 258048*A*c^8*e^2*x^7 + 229376*B*c^8*e^2*x^8))/(2064384*c^6) -
 (5*(32*b^7*B*c^2*d^2 - 64*A*b^6*c^3*d^2 - 36*b^8*B*c*d*e + 64*A*b^7*c^2*d*
e + 11*b^9*B*e^2 - 18*A*b^8*c*e^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x
^2]])/(65536*c^(13/2))
```

fricas [**A**] time = 0.46, size = 1292, normalized size = 3.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/4128768*(315*(32*(B*b^7*c^2 - 2*A*b^6*c^3)*d^2 - 4*(9*B*b^8*c - 16*A*b^7
*c^2)*d*e + (11*B*b^9 - 18*A*b^8*c)*e^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x
^2 + b*x)*sqrt(c)) + 2*(229376*B*c^9*e^2*x^8 + 14336*(36*B*c^9*d*e + (37*B*
b*c^8 + 18*A*c^9)*e^2)*x^7 + 3072*(96*B*c^9*d^2 + 12*(33*B*b*c^8 + 16*A*c^9
)*d*e + (103*B*b^2*c^7 + 198*A*b*c^8)*e^2)*x^6 + 256*(96*(29*B*b*c^8 + 14*A
*c^9)*d^2 + 12*(243*B*b^2*c^7 + 464*A*b*c^8)*d*e + (5*B*b^3*c^6 + 1458*A*b^
2*c^7)*e^2)*x^5 + 128*(96*(37*B*b^2*c^7 + 70*A*b*c^8)*d^2 + 12*(3*B*b^3*c^6
 + 592*A*b^2*c^7)*d*e - (11*B*b^4*c^5 - 18*A*b^3*c^6)*e^2)*x^4 + 144*(32*(B
*b^3*c^6 + 126*A*b^2*c^7)*d^2 - 4*(9*B*b^4*c^5 - 16*A*b^3*c^6)*d*e + (11*B*
b^5*c^4 - 18*A*b^4*c^5)*e^2)*x^3 - 10080*(B*b^6*c^3 - 2*A*b^5*c^4)*d^2 + 12
60*(9*B*b^7*c^2 - 16*A*b^6*c^3)*d*e - 315*(11*B*b^8*c - 18*A*b^7*c^2)*e^2 -
 168*(32*(B*b^4*c^5 - 2*A*b^3*c^6)*d^2 - 4*(9*B*b^5*c^4 - 16*A*b^4*c^5)*d*e
 + (11*B*b^6*c^3 - 18*A*b^5*c^4)*e^2)*x^2 + 210*(32*(B*b^5*c^4 - 2*A*b^4*c^
5)*d^2 - 4*(9*B*b^6*c^3 - 16*A*b^5*c^4)*d*e + (11*B*b^7*c^2 - 18*A*b^6*c^3)
*e^2)*x)*sqrt(c*x^2 + b*x))/c^7, -1/2064384*(315*(32*(B*b^7*c^2 - 2*A*b^6*c
^3)*d^2 - 4*(9*B*b^8*c - 16*A*b^7*c^2)*d*e + (11*B*b^9 - 18*A*b^8*c)*e^2)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (229376*B*c^9*e^2*x^8 +
14336*(36*B*c^9*d*e + (37*B*b*c^8 + 18*A*c^9)*e^2)*x^7 + 3072*(96*B*c^9*d^2
 + 12*(33*B*b*c^8 + 16*A*c^9)*d*e + (103*B*b^2*c^7 + 198*A*b*c^8)*e^2)*x^6
+ 256*(96*(29*B*b*c^8 + 14*A*c^9)*d^2 + 12*(243*B*b^2*c^7 + 464*A*b*c^8)*d*
e + (5*B*b^3*c^6 + 1458*A*b^2*c^7)*e^2)*x^5 + 128*(96*(37*B*b^2*c^7 + 70*A*
b*c^8)*d^2 + 12*(3*B*b^3*c^6 + 592*A*b^2*c^7)*d*e - (11*B*b^4*c^5 - 18*A*b^
3*c^6)*e^2)*x^4 + 144*(32*(B*b^3*c^6 + 126*A*b^2*c^7)*d^2 - 4*(9*B*b^4*c^5
- 16*A*b^3*c^6)*d*e + (11*B*b^5*c^4 - 18*A*b^4*c^5)*e^2)*x^3 - 10080*(B*b^6
*c^3 - 2*A*b^5*c^4)*d^2 + 1260*(9*B*b^7*c^2 - 16*A*b^6*c^3)*d*e - 315*(11*B
*b^8*c - 18*A*b^7*c^2)*e^2 - 168*(32*(B*b^4*c^5 - 2*A*b^3*c^6)*d^2 - 4*(9*B
*b^5*c^4 - 16*A*b^4*c^5)*d*e + (11*B*b^6*c^3 - 18*A*b^5*c^4)*e^2)*x^2 + 210
*(32*(B*b^5*c^4 - 2*A*b^4*c^5)*d^2 - 4*(9*B*b^6*c^3 - 16*A*b^5*c^4)*d*e + (
11*B*b^7*c^2 - 18*A*b^6*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^7]
```

giac [**A**] time = 0.30, size = 681, normalized size = 1.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/2064384*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(4*(14*(16*B*c^2*x*e^2 + (36*B*c
^10*d*e + 37*B*b*c^9*e^2 + 18*A*c^10*e^2)/c^8)*x + 3*(96*B*c^10*d^2 + 396*B
*b*c^9*d*e + 192*A*c^10*d*e + 103*B*b^2*c^8*e^2 + 198*A*b*c^9*e^2)/c^8)*x +
 (2784*B*b*c^9*d^2 + 1344*A*c^10*d^2 + 2916*B*b^2*c^8*d*e + 5568*A*b*c^9*d*
e + 5*B*b^3*c^7*e^2 + 1458*A*b^2*c^8*e^2)/c^8)*x + (3552*B*b^2*c^8*d^2 + 67
20*A*b*c^9*d^2 + 36*B*b^3*c^7*d*e + 7104*A*b^2*c^8*d*e - 11*B*b^4*c^6*e^2 +
 18*A*b^3*c^7*e^2)/c^8)*x + 9*(32*B*b^3*c^7*d^2 + 4032*A*b^2*c^8*d^2 - 36*B
*b^4*c^6*d*e + 64*A*b^3*c^7*d*e + 11*B*b^5*c^5*e^2 - 18*A*b^4*c^6*e^2)/c^8)
*x - 21*(32*B*b^4*c^6*d^2 - 64*A*b^3*c^7*d^2 - 36*B*b^5*c^5*d*e + 64*A*b^4*
c^6*d*e + 11*B*b^6*c^4*e^2 - 18*A*b^5*c^5*e^2)/c^8)*x + 105*(32*B*b^5*c^5*d
^2 - 64*A*b^4*c^6*d^2 - 36*B*b^6*c^4*d*e + 64*A*b^5*c^5*d*e + 11*B*b^7*c^3*
e^2 - 18*A*b^6*c^4*e^2)/c^8)*x - 315*(32*B*b^6*c^4*d^2 - 64*A*b^5*c^5*d^2 -
 36*B*b^7*c^3*d*e + 64*A*b^6*c^4*d*e + 11*B*b^8*c^2*e^2 - 18*A*b^7*c^3*e^2)
/c^8) - 5/65536*(32*B*b^7*c^2*d^2 - 64*A*b^6*c^3*d^2 - 36*B*b^8*c*d*e + 64*
A*b^7*c^2*d*e + 11*B*b^9*e^2 - 18*A*b^8*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*sqrt(c) - b))/c^(13/2)
```

maple [B] time = 0.08, size = 1227, normalized size = 2.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x)
```

```
[Out] -45/16384*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e+45/8
192*b^6/c^4*(c*x^2+b*x)^(1/2)*x*A*e^2+45/8192*b^7/c^5*(c*x^2+b*x)^(1/2)*B*d
*e-15/1024*b^5/c^4*(c*x^2+b*x)^(3/2)*B*d*e+5/96*b^3/c^2*(c*x^2+b*x)^(3/2)*x
*A*d*e+3/32*b^2/c^2*x*(c*x^2+b*x)^(5/2)*B*d*e-9/56*b/c^2*(c*x^2+b*x)^(7/2)*
B*d*e+3/64*b^2/c^2*x*(c*x^2+b*x)^(5/2)*A*e^2+1/4*x*(c*x^2+b*x)^(7/2)/c*B*d*
e+1/6*A*d^2*x*(c*x^2+b*x)^(5/2)+1/7*(c*x^2+b*x)^(7/2)/c*B*d^2-1/12*b/c*x*(c
*x^2+b*x)^(5/2)*B*d^2-1/12*b^2/c^2*(c*x^2+b*x)^(5/2)*A*d*e+5/192*b^3/c^2*(c
*x^2+b*x)^(3/2)*x*B*d^2+5/192*b^4/c^3*(c*x^2+b*x)^(3/2)*A*d*e-5/512*b^5/c^3
*(c*x^2+b*x)^(1/2)*x*B*d^2-5/512*b^6/c^4*(c*x^2+b*x)^(1/2)*A*d*e+5/1024*b^7
/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e-5/96*A*d^2*b^2/c*(
c*x^2+b*x)^(3/2)*x+5/256*A*d^2*b^4/c^2*(c*x^2+b*x)^(1/2)*x+55/65536*B*e^2*b
^9/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+3/128*b^3/c^3*(c*x^2+
b*x)^(5/2)*A*e^2-15/2048*b^5/c^4*(c*x^2+b*x)^(3/2)*A*e^2+1/8*x*(c*x^2+b*x)^
(7/2)/c*A*e^2-9/112*b/c^2*(c*x^2+b*x)^(7/2)*A*e^2+5/2048*b^7/c^(9/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^2-11/384*B*e^2*b^3/c^3*x*(c*x^2+b*x
)^(5/2)+55/6144*B*e^2*b^5/c^4*(c*x^2+b*x)^(3/2)*x-55/16384*B*e^2*b^7/c^5*(c
*x^2+b*x)^(1/2)*x-11/144*B*e^2*b/c^2*x*(c*x^2+b*x)^(7/2)+55/12288*B*e^2*b^6
/c^5*(c*x^2+b*x)^(3/2)-55/32768*B*e^2*b^8/c^6*(c*x^2+b*x)^(1/2)+45/4096*b^6
/c^4*(c*x^2+b*x)^(1/2)*x*B*d*e-1/6*b/c*x*(c*x^2+b*x)^(5/2)*A*d*e-5/256*b^5/
c^3*(c*x^2+b*x)^(1/2)*x*A*d*e-15/512*b^4/c^3*(c*x^2+b*x)^(3/2)*x*B*d*e+3/64
*b^3/c^3*(c*x^2+b*x)^(5/2)*B*d*e+11/224*B*e^2*b^2/c^3*(c*x^2+b*x)^(7/2)-45/
32768*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^2-5/1024*A
*d^2*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-5/192*A*d^2*b^3/
c^2*(c*x^2+b*x)^(3/2)+1/9*B*e^2*x^2*(c*x^2+b*x)^(7/2)/c+45/16384*b^7/c^5*(c
*x^2+b*x)^(1/2)*A*e^2-15/1024*b^4/c^3*(c*x^2+b*x)^(3/2)*x*A*e^2-1/24*b^2/c^
2*(c*x^2+b*x)^(5/2)*B*d^2+5/384*b^4/c^3*(c*x^2+b*x)^(3/2)*B*d^2-5/1024*b^6/
c^4*(c*x^2+b*x)^(1/2)*B*d^2-11/768*B*e^2*b^4/c^4*(c*x^2+b*x)^(5/2)+2/7*(c*x
^2+b*x)^(7/2)/c*A*d*e+5/512*A*d^2*b^5/c^3*(c*x^2+b*x)^(1/2)+1/12*A*d^2/c*(c
*x^2+b*x)^(5/2)*b
```

maxima [B] time = 0.60, size = 944, normalized size = 2.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + b*x)^(7/2)*B*e^2*x^2/c + 1/6*(c*x^2 + b*x)^(5/2)*A*d^2*x + 5/2
56*sqrt(c*x^2 + b*x)*A*b^4*d^2*x/c^2 - 5/96*(c*x^2 + b*x)^(3/2)*A*b^2*d^2*x
/c - 55/16384*sqrt(c*x^2 + b*x)*B*b^7*e^2*x/c^5 + 55/6144*(c*x^2 + b*x)^(3/
2)*B*b^5*e^2*x/c^4 - 11/384*(c*x^2 + b*x)^(5/2)*B*b^3*e^2*x/c^3 - 11/144*(c
*x^2 + b*x)^(7/2)*B*b*e^2*x/c^2 - 5/1024*A*b^6*d^2*log(2*c*x + b + 2*sqrt(c
*x^2 + b*x)*sqrt(c))/c^(7/2) + 55/65536*B*b^9*e^2*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/c^(13/2) + 5/512*sqrt(c*x^2 + b*x)*A*b^5*d^2/c^3 - 5/19
2*(c*x^2 + b*x)^(3/2)*A*b^3*d^2/c^2 + 1/12*(c*x^2 + b*x)^(5/2)*A*b*d^2/c -
55/32768*sqrt(c*x^2 + b*x)*B*b^8*e^2/c^6 + 55/12288*(c*x^2 + b*x)^(3/2)*B*b
^6*e^2/c^5 - 11/768*(c*x^2 + b*x)^(5/2)*B*b^4*e^2/c^4 + 11/224*(c*x^2 + b*x
)^(7/2)*B*b^2*e^2/c^3 + 45/8192*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b^6*x/c
^4 - 15/1024*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b^4*x/c^3 - 5/512*(B*d^2
 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^5*x/c^3 + 3/64*(2*B*d*e + A*e^2)*(c*x^2 + b
*x)^(5/2)*b^2*x/c^2 + 5/192*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(3/2)*b^3*x/c^2
 + 1/8*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(7/2)*x/c - 1/12*(B*d^2 + 2*A*d*e)*(
c*x^2 + b*x)^(5/2)*b*x/c - 45/32768*(2*B*d*e + A*e^2)*b^8*log(2*c*x + b + 2
*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 5/2048*(B*d^2 + 2*A*d*e)*b^7*log(2*c
*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) + 45/16384*(2*B*d*e + A*e^2)*
sqrt(c*x^2 + b*x)*b^7/c^5 - 15/2048*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b
^5/c^4 - 5/1024*(B*d^2 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^6/c^4 + 3/128*(2*B*d*
e + A*e^2)*(c*x^2 + b*x)^(5/2)*b^3/c^3 + 5/384*(B*d^2 + 2*A*d*e)*(c*x^2 + b
*x)^(3/2)*b^4/c^3 - 9/112*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(7/2)*b/c^2 - 1/2
4*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(5/2)*b^2/c^2 + 1/7*(B*d^2 + 2*A*d*e)*(c*
x^2 + b*x)^(7/2)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,\left(d+e\,x\right)^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(x \left(b + cx\right)\right)^{\frac{5}{2}} \left(A + Bx\right) \left(d + ex\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)*(d + e*x)**2, x)
```

3.1039 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=264

$$-\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{6144c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{5/2}\left(-16bc(Ae+Bd)+32\right.}{384c^3}$$

Rubi [A] time = 0.25, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {779, 612, 620, 206}

$$\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{16384c^5}-\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{6144c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{5/2}\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{384c^3}-\frac{5b^6\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{16384c^{11/2}}-\frac{\left(bx+cx^2\right)^{7/2}(-16c(Ae+Bd)+9bBe-14Bcex)}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*b^4*(32*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))*(b + 2*c*x)*Sqrt[b*x +
 c*x^2])/(16384*c^5) - (5*b^2*(32*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))
*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(6144*c^4) + ((32*A*c^2*d + 9*b^2*B*e - 1
6*b*c*(B*d + A*e))*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(384*c^3) - ((9*b*B*e -
 16*c*(B*d + A*e) - 14*B*c*e*x)*(b*x + c*x^2)^(7/2))/(112*c^2) - (5*b^6*(32
*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c
*x^2]])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{5/2}\,dx = -\frac{(9bBe-16c(Bd+Ae)-14Bcex)\left(bx+cx^2\right)^{7/2}}{112c^2} + \frac{\left(\frac{9}{2}b^2Be+8c(2Acd-\right.}{}$$
$$= \frac{\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\left(bx+cx^2\right)^{5/2}}{384c^3} - \frac{(9bBe-1}{}$$
$$= -\frac{5b^2\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\left(bx+cx^2\right)^{3/2}}{6144c^4} + \frac{(32}{}$$
$$= \frac{5b^4\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{16384c^5} - \frac{5b^2(32}{}$$
$$= \frac{5b^4\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{16384c^5} - \frac{5b^2(32}{}$$
$$= \frac{5b^4\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{16384c^5} - \frac{5b^2(32}{}$$

Mathematica [A] time = 0.80, size = 315, normalized size = 1.19

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(945*b^7*B*e - 210*b^6*c*(8*B*d + 8*A*e + 3*B*e
*x) + 128*b^3*c^4*x^2*(3*B*x*(2*d + e*x) + 2*A*(7*d + 3*e*x)) + 2048*c^7*x^
5*(4*A*(7*d + 6*e*x) + 3*B*x*(8*d + 7*e*x)) + 56*b^5*c^2*(20*A*(3*d + e*x)
+ B*x*(20*d + 9*e*x)) - 16*b^4*c^3*x*(28*A*(5*d + 2*e*x) + B*x*(56*d + 27*e
*x)) + 1024*b*c^6*x^4*(4*A*(35*d + 29*e*x) + B*x*(116*d + 99*e*x)) + 256*b^
2*c^5*x^3*(B*x*(296*d + 243*e*x) + A*(378*d + 296*e*x))) - (105*b^(11/2)*(3
2*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[
b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(344064*c^(11/2))
```

IntegrateAlgebraic [A] time = 1.76, size = 407, normalized size = 1.54

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-1680*b^6*B*c*d + 3360*A*b^5*c^2*d + 945*b^7*B*e - 1680
*A*b^6*c*e + 1120*b^5*B*c^2*d*x - 2240*A*b^4*c^3*d*x - 630*b^6*B*c*e*x + 11
20*A*b^5*c^2*e*x - 896*b^4*B*c^3*d*x^2 + 1792*A*b^3*c^4*d*x^2 + 504*b^5*B*c
^2*e*x^2 - 896*A*b^4*c^3*e*x^2 + 768*b^3*B*c^4*d*x^3 + 96768*A*b^2*c^5*d*x^
3 - 432*b^4*B*c^3*e*x^3 + 768*A*b^3*c^4*e*x^3 + 75776*b^2*B*c^5*d*x^4 + 143
360*A*b*c^6*d*x^4 + 384*b^3*B*c^4*e*x^4 + 75776*A*b^2*c^5*e*x^4 + 118784*b*
B*c^6*d*x^5 + 57344*A*c^7*d*x^5 + 62208*b^2*B*c^5*e*x^5 + 118784*A*b*c^6*e*
x^5 + 49152*B*c^7*d*x^6 + 101376*b*B*c^6*e*x^6 + 49152*A*c^7*e*x^6 + 43008*
B*c^7*e*x^7))/(344064*c^5) + (5*(-16*b^7*B*c*d + 32*A*b^6*c^2*d + 9*b^8*B*e
 - 16*A*b^7*c*e)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(32768*c^(11
/2))
```

fricas [A] time = 0.45, size = 802, normalized size = 3.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/688128*(105*(16*(B*b^7*c - 2*A*b^6*c^2)*d - (9*B*b^8 - 16*A*b^7*c)*e)*sq
rt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(43008*B*c^8*e*x^7 +
 3072*(16*B*c^8*d + (33*B*b*c^7 + 16*A*c^8)*e)*x^6 + 256*(16*(29*B*b*c^7 +
14*A*c^8)*d + (243*B*b^2*c^6 + 464*A*b*c^7)*e)*x^5 + 128*(16*(37*B*b^2*c^6
+ 70*A*b*c^7)*d + (3*B*b^3*c^5 + 592*A*b^2*c^6)*e)*x^4 + 48*(16*(B*b^3*c^5
+ 126*A*b^2*c^6)*d - (9*B*b^4*c^4 - 16*A*b^3*c^5)*e)*x^3 - 56*(16*(B*b^4*c^
4 - 2*A*b^3*c^5)*d - (9*B*b^5*c^3 - 16*A*b^4*c^4)*e)*x^2 - 1680*(B*b^6*c^2
- 2*A*b^5*c^3)*d + 105*(9*B*b^7*c - 16*A*b^6*c^2)*e + 70*(16*(B*b^5*c^3 - 2
*A*b^4*c^4)*d - (9*B*b^6*c^2 - 16*A*b^5*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^6,
-1/344064*(105*(16*(B*b^7*c - 2*A*b^6*c^2)*d - (9*B*b^8 - 16*A*b^7*c)*e)*sq
rt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (43008*B*c^8*e*x^7 + 3072
*(16*B*c^8*d + (33*B*b*c^7 + 16*A*c^8)*e)*x^6 + 256*(16*(29*B*b*c^7 + 14*A*
c^8)*d + (243*B*b^2*c^6 + 464*A*b*c^7)*e)*x^5 + 128*(16*(37*B*b^2*c^6 + 70*
A*b*c^7)*d + (3*B*b^3*c^5 + 592*A*b^2*c^6)*e)*x^4 + 48*(16*(B*b^3*c^5 + 126
*A*b^2*c^6)*d - (9*B*b^4*c^4 - 16*A*b^3*c^5)*e)*x^3 - 56*(16*(B*b^4*c^4 - 2
*A*b^3*c^5)*d - (9*B*b^5*c^3 - 16*A*b^4*c^4)*e)*x^2 - 1680*(B*b^6*c^2 - 2*A
*b^5*c^3)*d + 105*(9*B*b^7*c - 16*A*b^6*c^2)*e + 70*(16*(B*b^5*c^3 - 2*A*b^
4*c^4)*d - (9*B*b^6*c^2 - 16*A*b^5*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.27, size = 425, normalized size = 1.61

$$\frac{1}{344064}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(12\left(14\,Bc^2xe+\frac{16\,Bc^9d+33\,Bbc^8e+16\,Ac^9e}{c^7}\right)x+\frac{464\,Bbc^8d+224\,Ac^9d+243\,Bb^2c^7e+464\,Abc^8e}{c^7}\right)x+\frac{592\,Bb^2c^7d+1120\,Abc^8d+3\,Bb^3c^6e+592\,Ab^2c^7e}{c^7}\right)x+\frac{3\left(16\,Bb^3c^6d+2016\,Ab^2c^7d-9\,Bb^4c^5e+16\,Ab^3c^6e\right)}{c^7}\right)x-\frac{7\left(16\,Bb^4c^5d-32\,Ab^3c^6d-9\,Bb^5c^4e+16\,Ab^4c^5e\right)}{c^7}\right)x+\frac{35\left(16\,Bb^5c^4d-32\,Ab^4c^5d-9\,Bb^6c^3e+16\,Ab^5c^4e\right)}{c^7}\right)x-\frac{105\left(16\,Bb^6c^3d-32\,Ab^5c^4d-9\,Bb^7c^2e+16\,Ab^6c^3e\right)}{c^7}\right)-\frac{5\left(16\,Bb^7cd-32\,Ab^6c^2d-9\,Bb^8e+16\,Ab^7ce\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{32768\,c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/344064*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*(14*B*c^2*x*e + (16*B*c^9*d +
 33*B*b*c^8*e + 16*A*c^9*e)/c^7)*x + (464*B*b*c^8*d + 224*A*c^9*d + 243*B*b
^2*c^7*e + 464*A*b*c^8*e)/c^7)*x + (592*B*b^2*c^7*d + 1120*A*b*c^8*d + 3*B*
b^3*c^6*e + 592*A*b^2*c^7*e)/c^7)*x + 3*(16*B*b^3*c^6*d + 2016*A*b^2*c^7*d
- 9*B*b^4*c^5*e + 16*A*b^3*c^6*e)/c^7)*x - 7*(16*B*b^4*c^5*d - 32*A*b^3*c^6
*d - 9*B*b^5*c^4*e + 16*A*b^4*c^5*e)/c^7)*x + 35*(16*B*b^5*c^4*d - 32*A*b^4
*c^5*d - 9*B*b^6*c^3*e + 16*A*b^5*c^4*e)/c^7)*x - 105*(16*B*b^6*c^3*d - 32*
A*b^5*c^4*d - 9*B*b^7*c^2*e + 16*A*b^6*c^3*e)/c^7) - 5/32768*(16*B*b^7*c*d
- 32*A*b^6*c^2*d - 9*B*b^8*e + 16*A*b^7*c*e)*log(abs(-2*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.05, size = 716, normalized size = 2.71

$$\frac{5Ab^7e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2048c^{\frac{9}{2}}}-\frac{5Ab^6d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{1024c^{\frac{7}{2}}}-\frac{45Bb^8e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{32768c^{\frac{11}{2}}}+\frac{5Bb^7d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2048c^{\frac{9}{2}}}-\frac{5\sqrt{cx^2+bx}\,Ab^5ex}{512c^3}+\frac{5\sqrt{cx^2+bx}\,Ab^4dx}{256c^2}+\frac{45\sqrt{cx^2+bx}\,Bb^6ex}{8192c^4}-\frac{5\sqrt{cx^2+bx}\,Bb^5dx}{512c^3}-\frac{5\sqrt{cx^2+bx}\,Ab^6e}{1024c^4}+\frac{5\sqrt{cx^2+bx}\,Ab^5d}{512c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3ex}{192c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2dx}{96c}+\frac{45\sqrt{cx^2+bx}\,Bb^7e}{16384c^5}-\frac{5\sqrt{cx^2+bx}\,Bb^6d}{1024c^4}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4ex}{1024c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3dx}{192c^2}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^4e}{384c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3d}{192c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Abex}{12c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Adx}{6}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^5e}{2048c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4d}{384c^3}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2ex}{64c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bbdx}{12c}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab^2e}{24c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Abd}{12c}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^3e}{128c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2d}{24c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}Bex}{8c}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}Ae}{7c}-\frac{9\left(cx^2+bx\right)^{\frac{7}{2}}Bbe}{112c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}Bd}{7c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] -15/2048*B*e*b^5/c^4*(c*x^2+b*x)^(3/2)+45/16384*B*e*b^7/c^5*(c*x^2+b*x)^(1/
2)+1/6*A*d*x*(c*x^2+b*x)^(5/2)+1/7*(c*x^2+b*x)^(7/2)/c*B*d+1/7*(c*x^2+b*x)^
(7/2)/c*A*e+45/8192*B*e*b^6/c^4*(c*x^2+b*x)^(1/2)*x+3/64*B*e*b^2/c^2*x*(c*x
^2+b*x)^(5/2)-15/1024*B*e*b^4/c^3*(c*x^2+b*x)^(3/2)*x-1/12*b/c*x*(c*x^2+b*x
)^(5/2)*B*d+5/192*b^3/c^2*(c*x^2+b*x)^(3/2)*x*A*e-1/12*b/c*x*(c*x^2+b*x)^(5
/2)*A*e-5/96*A*d*b^2/c*(c*x^2+b*x)^(3/2)*x+5/256*A*d*b^4/c^2*(c*x^2+b*x)^(1
/2)*x-5/512*b^5/c^3*(c*x^2+b*x)^(1/2)*x*A*e-5/512*b^5/c^3*(c*x^2+b*x)^(1/2)
*x*B*d+5/192*b^3/c^2*(c*x^2+b*x)^(3/2)*x*B*d+5/384*b^4/c^3*(c*x^2+b*x)^(3/2
)*A*e+5/384*b^4/c^3*(c*x^2+b*x)^(3/2)*B*d-1/24*b^2/c^2*(c*x^2+b*x)^(5/2)*A*
e-1/24*b^2/c^2*(c*x^2+b*x)^(5/2)*B*d-5/1024*b^6/c^4*(c*x^2+b*x)^(1/2)*A*e-5
/1024*b^6/c^4*(c*x^2+b*x)^(1/2)*B*d+5/2048*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))*A*e+1/12*A*d/c*(c*x^2+b*x)^(5/2)*b-5/192*A*d*b^3/c^2*
```

```
(c*x^2+b*x)^(3/2)+1/8*B*e*x*(c*x^2+b*x)^(7/2)/c-9/112*B*e*b/c^2*(c*x^2+b*x)
^(7/2)+3/128*B*e*b^3/c^3*(c*x^2+b*x)^(5/2)-5/1024*A*d*b^6/c^(7/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+5/2048*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x)^(1/2))*B*d-45/32768*B*e*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x)^(1/2))+5/512*A*d*b^5/c^3*(c*x^2+b*x)^(1/2)
```

maxima [**B**] time = 0.54, size = 573, normalized size = 2.17

$$\frac{1}{6}\left(cx^2+bx\right)^{\frac{5}{2}}Adx+\frac{5\sqrt{cx^2+bx}\,Ab^4dx}{256\,c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2dx}{96\,c}+\frac{45\sqrt{cx^2+bx}\,Bb^6ex}{8192\,c^4}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4ex}{1024\,c^3}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2ex}{64\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}Bex}{8\,c}-\frac{5\,Ab^6d\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024\,c^{\frac{7}{2}}}-\frac{45\,Bb^8e\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{32768\,c^{\frac{11}{2}}}+\frac{5\sqrt{cx^2+bx}\,Ab^5d}{512\,c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3d}{192\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Abd}{12\,c}+\frac{45\sqrt{cx^2+bx}\,Bb^7e}{16384\,c^5}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^5e}{2048\,c^4}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^3e}{128\,c^3}-\frac{9\left(cx^2+bx\right)^{\frac{7}{2}}Bbe}{112\,c^2}-\frac{5\sqrt{cx^2+bx}\,(Bd+Ae)b^5x}{512\,c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}(Bd+Ae)b^3x}{192\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}(Bd+Ae)bx}{12\,c}+\frac{5\,(Bd+Ae)b^7\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2048\,c^{\frac{9}{2}}}-\frac{5\sqrt{cx^2+bx}\,(Bd+Ae)b^6}{1024\,c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}(Bd+Ae)b^4}{384\,c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}(Bd+Ae)b^2}{24\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}(Bd+Ae)}{7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*A*d*x + 5/256*sqrt(c*x^2 + b*x)*A*b^4*d*x/c^2 - 5/9
6*(c*x^2 + b*x)^(3/2)*A*b^2*d*x/c + 45/8192*sqrt(c*x^2 + b*x)*B*b^6*e*x/c^4
 - 15/1024*(c*x^2 + b*x)^(3/2)*B*b^4*e*x/c^3 + 3/64*(c*x^2 + b*x)^(5/2)*B*b
^2*e*x/c^2 + 1/8*(c*x^2 + b*x)^(7/2)*B*e*x/c - 5/1024*A*b^6*d*log(2*c*x + b
 + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 45/32768*B*b^8*e*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 5/512*sqrt(c*x^2 + b*x)*A*b^5*d/c^3
 - 5/192*(c*x^2 + b*x)^(3/2)*A*b^3*d/c^2 + 1/12*(c*x^2 + b*x)^(5/2)*A*b*d/c
 + 45/16384*sqrt(c*x^2 + b*x)*B*b^7*e/c^5 - 15/2048*(c*x^2 + b*x)^(3/2)*B*b
^5*e/c^4 + 3/128*(c*x^2 + b*x)^(5/2)*B*b^3*e/c^3 - 9/112*(c*x^2 + b*x)^(7/2
)*B*b*e/c^2 - 5/512*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^5*x/c^3 + 5/192*(c*x^2
+ b*x)^(3/2)*(B*d + A*e)*b^3*x/c^2 - 1/12*(c*x^2 + b*x)^(5/2)*(B*d + A*e)*b
*x/c + 5/2048*(B*d + A*e)*b^7*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/
c^(9/2) - 5/1024*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^6/c^4 + 5/384*(c*x^2 + b*x
)^(3/2)*(B*d + A*e)*b^4/c^3 - 1/24*(c*x^2 + b*x)^(5/2)*(B*d + A*e)*b^2/c^2
+ 1/7*(c*x^2 + b*x)^(7/2)*(B*d + A*e)/c
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)\,\left(d+e\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right) \left(d + e x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)*(d + e*x), x)
```

3.1040 $\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=171

$$\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}-\frac{(b$$

Rubi [A] time = 0.07, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}+\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{(b+2cx)\left(bx+cx^2\right)^{5/2}(bB-2Ac)}{24c^2}+\frac{B\left(bx+cx^2\right)^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*b^4*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^4) + (5*b^2*(b
*B - 2*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(384*c^3) - ((b*B - 2*A*c)*(b
+ 2*c*x)*(b*x + c*x^2)^(5/2))/(24*c^2) + (B*(b*x + c*x^2)^(7/2))/(7*c) + (5
*b^6*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx &= \frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{(-bB+2Ac)\int\left(bx+cx^2\right)^{5/2}\,dx}{2c}\\
&= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{\left(5b^2(bB-2Ac)\right)\int\left(bx\right.}{48c^2}\\
&= \frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B}{}\\
&= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\\
&= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\\
&= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-
\end{aligned}
$$

Mathematica [A] time = 0.34, size = 171, normalized size = 1.00

$$
\frac{(x(b+cx))^{7/2}\left(\frac{49(bB-2Ac)\left(15b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(15b^5-10b^4cx+8b^3c^2x^2+432b^2c^3x^3+640bc^4x^4+256c^5x^5\right)\right)}{3072c^{7/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}+7B(b+cx)^3\right)}{49c(b+cx)^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(7/2)*(7*B*(b + c*x)^3 + (49*(b*B - 2*A*c)*(-(Sqrt[c]*Sqrt[x
]*Sqrt[1 + (c*x)/b]*(15*b^5 - 10*b^4*c*x + 8*b^3*c^2*x^2 + 432*b^2*c^3*x^3
+ 640*b*c^4*x^4 + 256*c^5*x^5)) + 15*b^(11/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqr
t[b]]))/(3072*c^(7/2)*x^(7/2)*Sqrt[1 + (c*x)/b])))/(49*c*(b + c*x)^3)
```

IntegrateAlgebraic [A] time = 0.00, size = 200, normalized size = 1.17

$$
\frac{\sqrt{bx+cx^2}\left(210Ab^5c-140Ab^4c^2x+112Ab^3c^3x^2+6048Ab^2c^4x^3+8960Abc^5x^4+3584Ac^6x^5-105b^6B+70b^5Bcx-56b^4Bc^2x^2+48b^3Bc^3x^3+4736b^2Bc^4x^4+7424bBc^5x^5+3072Bc^6x^6\right)}{21504c^4}-\frac{5\left(b^7B-2Ab^6c\right)\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)}{2048c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-105*b^6*B + 210*A*b^5*c + 70*b^5*B*c*x - 140*A*b^4*c^2
*x - 56*b^4*B*c^2*x^2 + 112*A*b^3*c^3*x^2 + 48*b^3*B*c^3*x^3 + 6048*A*b^2*c
^4*x^3 + 4736*b^2*B*c^4*x^4 + 8960*A*b*c^5*x^4 + 7424*b*B*c^5*x^5 + 3584*A*
c^6*x^5 + 3072*B*c^6*x^6))/(21504*c^4) - (5*(b^7*B - 2*A*b^6*c)*Log[b + 2*c
*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(2048*c^(9/2))
```

fricas [A] time = 0.43, size = 392, normalized size = 2.29

$$
\left[-\frac{105\left(Bb^7-2Ab^6c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(3072Bc^7x^6-105Bb^6c+210Ab^5c^2+256\left(29Bbc^6+14Ac^7\right)x^5+128\left(37Bb^2c^5+70Abc^6\right)x^4+48\left(Bb^3c^4+126Ab^2c^5\right)x^3-56\left(Bb^4c^3-2Ab^3c^4\right)x^2+70\left(Bb^5c^2-2Ab^4c^3\right)x\right)\sqrt{cx^2+bx}}{43008c^5},-\frac{105\left(Bb^7-2Ab^6c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(3072Bc^7x^6-105Bb^6c+210Ab^5c^2+256\left(29Bbc^6+14Ac^7\right)x^5+128\left(37Bb^2c^5+70Abc^6\right)x^4+48\left(Bb^3c^4+126Ab^2c^5\right)x^3-56\left(Bb^4c^3-2Ab^3c^4\right)x^2+70\left(Bb^5c^2-2Ab^4c^3\right)x\right)\sqrt{cx^2+bx}}{21504c^5}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/43008*(105*(B*b^7 - 2*A*b^6*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b
*x)*sqrt(c)) - 2*(3072*B*c^7*x^6 - 105*B*b^6*c + 210*A*b^5*c^2 + 256*(29*B*
b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4
 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 -
```

```
2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1/21504*(105*(B*b^7 - 2*A*b^6*c)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (3072*B*c^7*x^6 - 105*B*
b^6*c + 210*A*b^5*c^2 + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5
 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2
*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 - 2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A]   time = 0.26, size = 221, normalized size = 1.29

$$\frac{1}{21504}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(12\,Bc^2x+\frac{29\,Bbc^7+14\,Ac^8}{c^6}\right)x+\frac{37\,Bb^2c^6+70\,Abc^7}{c^6}\right)x+\frac{3\left(Bb^3c^5+126\,Ab^2c^6\right)}{c^6}\right)x-\frac{7\left(Bb^4c^4-2\,Ab^3c^5\right)}{c^6}\right)x+\frac{35\left(Bb^5c^3-2\,Ab^4c^4\right)}{c^6}\right)x-\frac{105\left(Bb^6c^2-2\,Ab^5c^3\right)}{c^6}\right)-\frac{5\left(Bb^7-2\,Ab^6c\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2048\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/21504*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*B*c^2*x + (29*B*b*c^7 + 14*A*c
^8)/c^6)*x + (37*B*b^2*c^6 + 70*A*b*c^7)/c^6)*x + 3*(B*b^3*c^5 + 126*A*b^2*
c^6)/c^6)*x - 7*(B*b^4*c^4 - 2*A*b^3*c^5)/c^6)*x + 35*(B*b^5*c^3 - 2*A*b^4*
c^4)/c^6)*x - 105*(B*b^6*c^2 - 2*A*b^5*c^3)/c^6) - 5/2048*(B*b^7 - 2*A*b^6*
c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B]   time = 0.05, size = 321, normalized size = 1.88

$$-\frac{5Ab^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{1024c^{\frac{7}{2}}}+\frac{5Bb^7\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2048c^{\frac{9}{2}}}+\frac{5\sqrt{cx^2+bx}\,Ab^4x}{256c^2}-\frac{5\sqrt{cx^2+bx}\,Bb^5x}{512c^3}+\frac{5\sqrt{cx^2+bx}\,Ab^5}{512c^3}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2x}{96c}-\frac{5\sqrt{cx^2+bx}\,Bb^6}{1024c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{192c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3}{192c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ax}{6}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4}{384c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{12c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab}{12c}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2}{24c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}B}{7c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/7*(c*x^2+b*x)^(7/2)*B/c-1/12*B*b/c*x*(c*x^2+b*x)^(5/2)-1/24*B*b^2/c^2*(c*
x^2+b*x)^(5/2)+5/192*B*b^3/c^2*(c*x^2+b*x)^(3/2)*x+5/384*B*b^4/c^3*(c*x^2+b
*x)^(3/2)-5/512*B*b^5/c^3*(c*x^2+b*x)^(1/2)*x-5/1024*B*b^6/c^4*(c*x^2+b*x)^
(1/2)+5/2048*B*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/6*A*
x*(c*x^2+b*x)^(5/2)+1/12*A/c*(c*x^2+b*x)^(5/2)*b-5/96*A*b^2/c*(c*x^2+b*x)^(
3/2)*x-5/192*A*b^3/c^2*(c*x^2+b*x)^(3/2)+5/256*A*b^4/c^2*(c*x^2+b*x)^(1/2)*
x+5/512*A*b^5/c^3*(c*x^2+b*x)^(1/2)-5/1024*A*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B]   time = 0.62, size = 318, normalized size = 1.86

$$\frac{1}{6}\left(cx^2+bx\right)^{\frac{5}{2}}Ax-\frac{5\sqrt{cx^2+bx}\,Bb^5x}{512\,c^3}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{192\,c^2}+\frac{5\sqrt{cx^2+bx}\,Ab^4x}{256\,c^2}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{12\,c}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2x}{96\,c}+\frac{5\,Bb^7\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2048\,c^{\frac{9}{2}}}-\frac{5\,Ab^6\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{1024\,c^{\frac{7}{2}}}-\frac{5\sqrt{cx^2+bx}\,Bb^6}{1024\,c^4}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4}{384\,c^3}+\frac{5\sqrt{cx^2+bx}\,Ab^5}{512\,c^3}-\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2}{24\,c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3}{192\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{7}{2}}B}{7\,c}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ab}{12\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*A*x - 5/512*sqrt(c*x^2 + b*x)*B*b^5*x/c^3 + 5/192*(
c*x^2 + b*x)^(3/2)*B*b^3*x/c^2 + 5/256*sqrt(c*x^2 + b*x)*A*b^4*x/c^2 - 1/12
*(c*x^2 + b*x)^(5/2)*B*b*x/c - 5/96*(c*x^2 + b*x)^(3/2)*A*b^2*x/c + 5/2048*
B*b^7*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) - 5/1024*A*b^6*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 5/1024*sqrt(c*x^2 + b
*x)*B*b^6/c^4 + 5/384*(c*x^2 + b*x)^(3/2)*B*b^4/c^3 + 5/512*sqrt(c*x^2 + b*
x)*A*b^5/c^3 - 1/24*(c*x^2 + b*x)^(5/2)*B*b^2/c^2 - 5/192*(c*x^2 + b*x)^(3/
2)*A*b^3/c^2 + 1/7*(c*x^2 + b*x)^(7/2)*B/c + 1/12*(c*x^2 + b*x)^(5/2)*A*b/c
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x(b+cx))^{\frac{5}{2}}(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.1041 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=703

$$\frac{\left(bx+cx^2\right)^{3/2}\left(-2cex\left(12Ace(2cd-be)-B\left(-5b^2e^2-12bcde+24c^2d^2\right)\right)+4Ace\left(3b^2e^2-22bcde+16c^2d^2\right)-B\left(5\right.\right.}{192c^2e^4}$$

Rubi [A] time = 1.12, antiderivative size = 703, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {814, 843, 620, 206, 724}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] ((3*(4*A*c*e*(128*c^4*d^4 - 288*b*c^3*d^3*e + 176*b^2*c^2*d^2*e^2 - 10*b^3*
c*d*e^3 - 3*b^4*e^4) - B*(512*c^5*d^5 - 1152*b*c^4*d^4*e + 704*b^2*c^3*d^3*
e^2 - 40*b^3*c^2*d^2*e^3 - 12*b^4*c*d*e^4 - 5*b^5*e^5)) - 2*c*e*(8*b*c*d*e*
(2*c*d - b*e)*(12*B*c*d - 5*b*B*e - 12*A*c*e) + (16*c^2*d^2 - 8*b*c*d*e - 3
*b^2*e^2)*(12*A*c*e*(2*c*d - b*e) - B*(24*c^2*d^2 - 12*b*c*d*e - 5*b^2*e^2)
))*x)*Sqrt[b*x + c*x^2])/(1536*c^3*e^6) + ((4*A*c*e*(16*c^2*d^2 - 22*b*c*d*
e + 3*b^2*e^2) - B*(64*c^3*d^3 - 88*b*c^2*d^2*e + 12*b^2*c*d*e^2 + 5*b^3*e^
3) - 2*c*e*(12*A*c*e*(2*c*d - b*e) - B*(24*c^2*d^2 - 12*b*c*d*e - 5*b^2*e^2
))*x)*(b*x + c*x^2)^(3/2))/(192*c^2*e^4) - ((12*B*c*d - 5*b*B*e - 12*A*c*e
- 10*B*c*e*x)*(b*x + c*x^2)^(5/2))/(60*c*e^2) - ((4*A*c*e*(256*c^5*d^5 - 64
0*b*c^4*d^4*e + 480*b^2*c^3*d^3*e^2 - 80*b^3*c^2*d^2*e^3 - 10*b^4*c*d*e^4 -
 3*b^5*e^5) - B*(1024*c^6*d^6 - 2560*b*c^5*d^5*e + 1920*b^2*c^4*d^4*e^2 - 3
20*b^3*c^3*d^3*e^3 - 40*b^4*c^2*d^2*e^4 - 12*b^5*c*d*e^5 - 5*b^6*e^6))*ArcT
anh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(7/2)*e^7) - (d^(5/2)*(B*d - A*e
)*(c*d - b*e)^(5/2)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b
*e]*Sqrt[b*x + c*x^2])])/e^7
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
```

```
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{d+ex}\,dx = -\frac{(12Bcd-5bBe-12Ace-10Bcex)\left(bx+cx^2\right)^{5/2}}{60ce^2} - \int \frac{\left(-\frac{1}{2}bd(12Bcd-5bBe-12Ace)+\frac{1}{2}\cdots\right.}{\cdots}$$

$$= \frac{\left(4Ace\left(16c^2d^2-22bcde+3b^2e^2\right)-B\left(64c^3d^3-88bc^2d^2e+12b^2cde^2+5b^3e^3\right)\cdots\right.}{192c^2e^4\cdots}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\cdots\right.\right.\right.}{\cdots}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\cdots\right.\right.\right.}{\cdots}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\cdots\right.\right.\right.}{\cdots}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\cdots\right.\right.\right.}{\cdots}$$

Mathematica [A] time = 2.47, size = 650, normalized size = 0.92

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((15*(4*A*c*e*(-256*c^5*d^5 + 640*b*c^4*d^4*e - 480*b^2*
c^3*d^3*e^2 + 80*b^3*c^2*d^2*e^3 + 10*b^4*c*d*e^4 + 3*b^5*e^5) + B*(1024*c^
6*d^6 - 2560*b*c^5*d^5*e + 1920*b^2*c^4*d^4*e^2 - 320*b^3*c^3*d^3*e^3 - 40*
b^4*c^2*d^2*e^4 - 12*b^5*c*d*e^5 - 5*b^6*e^6))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sq
rt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) + Sqrt[c]*(e*Sqrt[x]*(4*A*c*e*(-45*b^4*
e^4 + 30*b^3*c*e^3*(-5*d + e*x) + 4*b^2*c^2*e^2*(660*d^2 - 295*d*e*x + 186*
e^2*x^2) + 16*b*c^3*e*(-270*d^3 + 130*d^2*e*x - 85*d*e^2*x^2 + 63*e^3*x^3)
+ 32*c^4*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4)
) + B*(75*b^5*e^5 + 10*b^4*c*e^4*(18*d - 5*e*x) + 40*b^3*c^2*e^3*(15*d^2 -
3*d*e*x + e^2*x^2) + 16*b^2*c^3*e^2*(-660*d^3 + 295*d^2*e*x - 186*d*e^2*x^2
 + 135*e^3*x^3) + 64*b*c^4*e*(270*d^4 - 130*d^3*e*x + 85*d^2*e^2*x^2 - 63*d
*e^3*x^3 + 50*e^4*x^4) - 128*c^5*(60*d^5 - 30*d^4*e*x + 20*d^3*e^2*x^2 - 15
```

```
*d^2*e^3*x^3 + 12*d*e^4*x^4 - 10*e^5*x^5))) - (15360*c^3*d^(5/2)*(B*d - A*e
)*(c*d - b*e)^(5/2)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x
])])/Sqrt[b + c*x])))/(7680*c^(7/2)*e^7*Sqrt[x])
```

IntegrateAlgebraic [A] time = 11.42, size = 905, normalized size = 1.29

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-7680*B*c^5*d^5 + 17280*b*B*c^4*d^4*e + 7680*A*c^5*d^4*
e - 10560*b^2*B*c^3*d^3*e^2 - 17280*A*b*c^4*d^3*e^2 + 600*b^3*B*c^2*d^2*e^3
 + 10560*A*b^2*c^3*d^2*e^3 + 180*b^4*B*c*d*e^4 - 600*A*b^3*c^2*d*e^4 + 75*b
^5*B*e^5 - 180*A*b^4*c*e^5 + 3840*B*c^5*d^4*e*x - 8320*b*B*c^4*d^3*e^2*x -
3840*A*c^5*d^3*e^2*x + 4720*b^2*B*c^3*d^2*e^3*x + 8320*A*b*c^4*d^2*e^3*x -
120*b^3*B*c^2*d*e^4*x - 4720*A*b^2*c^3*d*e^4*x - 50*b^4*B*c*e^5*x + 120*A*b
^3*c^2*e^5*x - 2560*B*c^5*d^3*e^2*x^2 + 5440*b*B*c^4*d^2*e^3*x^2 + 2560*A*c
^5*d^2*e^3*x^2 - 2976*b^2*B*c^3*d*e^4*x^2 - 5440*A*b*c^4*d*e^4*x^2 + 40*b^3
*B*c^2*e^5*x^2 + 2976*A*b^2*c^3*e^5*x^2 + 1920*B*c^5*d^2*e^3*x^3 - 4032*b*B
*c^4*d*e^4*x^3 - 1920*A*c^5*d*e^4*x^3 + 2160*b^2*B*c^3*e^5*x^3 + 4032*A*b*c
^4*e^5*x^3 - 1536*B*c^5*d*e^4*x^4 + 3200*b*B*c^4*e^5*x^4 + 1536*A*c^5*e^5*x
^4 + 1280*B*c^5*e^5*x^5))/(7680*c^3*e^6) - (2*(B*c^2*d^(11/2)*Sqrt[c*d - b*
e] - 2*b*B*c*d^(9/2)*e*Sqrt[c*d - b*e] - A*c^2*d^(9/2)*e*Sqrt[c*d - b*e] +
b^2*B*d^(7/2)*e^2*Sqrt[c*d - b*e] + 2*A*b*c*d^(7/2)*e^2*Sqrt[c*d - b*e] - A
*b^2*d^(5/2)*e^3*Sqrt[c*d - b*e])*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt
[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/e^7 + ((-1024*B*c^6*d^6 + 2560*b
*B*c^5*d^5*e + 1024*A*c^6*d^5*e - 1920*b^2*B*c^4*d^4*e^2 - 2560*A*b*c^5*d^4
*e^2 + 320*b^3*B*c^3*d^3*e^3 + 1920*A*b^2*c^4*d^3*e^3 + 40*b^4*B*c^2*d^2*e^
4 - 320*A*b^3*c^3*d^2*e^4 + 12*b^5*B*c*d*e^5 - 40*A*b^4*c^2*d*e^5 + 5*b^6*B
*e^6 - 12*A*b^5*c*e^6)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(1024*
c^(7/2)*e^7)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 4097, normalized size = 5.83

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x)
```

```
[Out] 5/256*B/e*b^4/c^2*(c*x^2+b*x)^(1/2)*x-5/96*B/e*b^2/c*(c*x^2+b*x)^(3/2)*x-3/
e^5*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(1/2))/(x+d/e))*b^2*c*A+3/e^6*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B+3/64/e^2/c*
b^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B*d+3/4/e^3
*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*A-3/4/
e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*B+3
/e^6*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e)^(1/2))/(x+d/e))*b*c^2*A-3/e^7*d^6/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*B+3/128/e^2/
c^2*b^4*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B*d-3/256
/e^2/c^(5/2)*b^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*B*d+5/32/e^3*b^2*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*d^2*B-5/64/e^2/c*b^3*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*d*A+5/64/e^3/c*b^3*((x+d/e)
^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*d^2*B-1/4/e^2*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*c*d*A+5/16/e^3*d^2*ln(((x+
d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/c^(1/2)*b^3*A-9/4/e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+9/4/e^5*d^4*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-5/2/e^6*d^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)
/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3
/2)*b*B-1/e^5*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-5/16/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-
2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
)/c^(1/2)*b^3*B-5/1024*B/e*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))-3/128/e/c^2*b^4*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*A+3/256/e/c^(5/2)*b^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*A+1/8/e*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*b*A+1/e^5*d^4*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*A-1/e^6*d^5*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B-1/e^6*d^5*ln(((x+d/e)*c+1/2*
(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2))*c^(5/2)*A+1/6*B/e*(c*x^2+b*x)^(5/2)*x-1/5/e^2*((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(5/2)*B*d+1/e^7*d^6*ln(((x+d/e)*c+1/2*(b*e-2*
c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*
c^(5/2)*B-1/2/e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*x*c^2*A+1/12*B/e/c*(c*x^2+b*x)^(5/2)*b-5/192*B/e*b^3/c^2*(c*x^2+b*x)^(
3/2)+1/5/e*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(5/2)*A+1/4/
e^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*c*d^2*B+15/
8/e^5*d^4*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*B+5/2/e^5*d^4*ln(((x+d/e)*c+
1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2))*c^(3/2)*b*A-15/8/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2
)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*A-
1/e^7*d^6/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))*c^3*A+1/e^8*d^7/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B-1/8/e^2*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*b*B*d+1/2/e^5*d^4*((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B+5/512*B/e*b
^5/c^3*(c*x^2+b*x)^(1/2)+1/e^4*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-
```

```
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*A-5/32/e^2*b^2*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*d*A+11/8/e^3*d^2*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*A-11/8/e^4*d^3*((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B-11/24/e^2*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*d*A+11/24/e^3*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*d^2*B+1/16/e/c*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b^2*A+1/3/e^3*d^2*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A-1/3/e^4*d^3*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*B-1/16/e^2/c*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b^2*B*d+5/128/e^2*d/c^(
3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b^4*A-5/128/e^3*d^2/c^(3/2)*ln(((x+d/e)*c+1/2
*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2))*b^4*B-3/64/e/c*b^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2)*x*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{d + e x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x), x)
```

3.1042 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=574

$$-\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(-10Ace-bBe+12Bcd)+10Ace(8cd-7be)-B\left(3b^2e^2-92bcde+96c^2d^2\right)\right)}{48ce^4}-\sqrt{bx+cx^2}$$

Rubi [A] time = 0.93, antiderivative size = 574, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {812, 814, 843, 620, 206, 724}

$$-\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(-10Ace-bBe+12Bcd)+10Ace(8cd-7be)-B\left(3b^2e^2-92bcde+96c^2d^2\right)\right)}{48ce^4}-\frac{\sqrt{bx+cx^2}\left(-2cex\left(8bce(6Bd-5Ae)(2cd-be)-\left(-3b^2e^2-8bcde+16c^2d^2\right)(-10Ace-bBe+12Bcd)\right)+10Ace\left(48b^2cde^2-b^3e^3-112bc^2d^2e+64c^3d^3\right)-B\left(656b^2c^2d^2e^2-20b^3cde^3-3b^4e^4-1408bc^3d^3e+768c^4d^4\right)\right)}{128c^2e^6}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(10Ace\left(144b^2c^2d^2e^2-16b^3cde^3-b^4e^4-256bc^3d^3e+128c^4d^4\right)-B\left(1920b^2c^3d^3e^2-240b^3c^2d^2e^3-20b^4cde^4-3b^5e^5-3200bc^4d^4e+1536c^5d^5\right)\right)}{128c^{5/2}e^7}+\frac{d^{3/2}(cd-be)^{3/2}(Bd(12cd-7be)-5Ae(2cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2e^7}+\frac{\left(bx+cx^2\right)^{5/2}(-5Ae+6Bd+Bex)}{5e^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] -((10*A*c*e*(64*c^3*d^3 - 112*b*c^2*d^2*e + 48*b^2*c*d*e^2 - b^3*e^3) - B*(
768*c^4*d^4 - 1408*b*c^3*d^3*e + 656*b^2*c^2*d^2*e^2 - 20*b^3*c*d*e^3 - 3*b
^4*e^4) - 2*c*e*(8*b*c*e*(6*B*d - 5*A*e)*(2*c*d - b*e) - (12*B*c*d - b*B*e
- 10*A*c*e)*(16*c^2*d^2 - 8*b*c*d*e - 3*b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(12
8*c^2*e^6) - ((10*A*c*e*(8*c*d - 7*b*e) - B*(96*c^2*d^2 - 92*b*c*d*e + 3*b^
2*e^2) + 6*c*e*(12*B*c*d - b*B*e - 10*A*c*e)*x)*(b*x + c*x^2)^(3/2))/(48*c*
e^4) + ((6*B*d - 5*A*e + B*e*x)*(b*x + c*x^2)^(5/2))/(5*e^2*(d + e*x)) + ((
10*A*c*e*(128*c^4*d^4 - 256*b*c^3*d^3*e + 144*b^2*c^2*d^2*e^2 - 16*b^3*c*d*
e^3 - b^4*e^4) - B*(1536*c^5*d^5 - 3200*b*c^4*d^4*e + 1920*b^2*c^3*d^3*e^2
- 240*b^3*c^2*d^2*e^3 - 20*b^4*c*d*e^4 - 3*b^5*e^5))*ArcTanh[(Sqrt[c]*x)/Sq
rt[b*x + c*x^2]])/(128*c^(5/2)*e^7) + (d^(3/2)*(c*d - b*e)^(3/2)*(B*d*(12*c
*d - 7*b*e) - 5*A*e*(2*c*d - b*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[
d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
```

```
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{(6Bd-5Ae+Bex)\left(bx+cx^2\right)^{5/2}}{5e^2(d+ex)} - \frac{\int \frac{(b(6Bd-5Ae)+(12Bcd-bBe-10Ace)x)\left(bx+cx^2\right)^{3/2}}{d+ex}\,dx}{2e^2}$$

$$= -\frac{\left(10Ace(8cd-7be)-B\left(96c^2d^2-92bcde+3b^2e^2\right)+6ce(12Bcd-bBe-10Ace)x\right.}{48ce^4}$$

$$= -\frac{\left(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right)-B\left(768c^4d^4-1408bc^3d^3e+65\right.\right.}{}$$

$$= -\frac{\left(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right)-B\left(768c^4d^4-1408bc^3d^3e+65\right.\right.}{}$$

$$= -\frac{\left(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right)-B\left(768c^4d^4-1408bc^3d^3e+65\right.\right.}{}$$

$$= -\frac{\left(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right)-B\left(768c^4d^4-1408bc^3d^3e+65\right.\right.}{}$$

Mathematica [A] time = 3.20, size = 618, normalized size = 1.08

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((15*(-10*A*c*e*(-128*c^4*d^4 + 256*b*c^3*d^3*e - 144*b^
2*c^2*d^2*e^2 + 16*b^3*c*d*e^3 + b^4*e^4) + B*(-1536*c^5*d^5 + 3200*b*c^4*d
^4*e - 1920*b^2*c^3*d^3*e^2 + 240*b^3*c^2*d^2*e^3 + 20*b^4*c*d*e^4 + 3*b^5*
e^5))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) + Sqr
t[c]*((e*Sqrt[x]*(10*A*c*e*(15*b^3*e^3*(d + e*x) + 2*b^2*c*e^2*(-360*d^2 -
205*d*e*x + 59*e^2*x^2) + 8*b*c^2*e*(210*d^3 + 110*d^2*e*x - 35*d*e^2*x^2 +
 17*e^3*x^3) - 16*c^3*(60*d^4 + 30*d^3*e*x - 10*d^2*e^2*x^2 + 5*d*e^3*x^3 -
 3*e^4*x^4)) + B*(-45*b^4*e^4*(d + e*x) + 30*b^3*c*e^3*(-10*d^2 - 9*d*e*x +
 e^2*x^2) + 8*b^2*c^2*e^2*(1230*d^3 + 695*d^2*e*x - 202*d*e^2*x^2 + 93*e^3*
x^3) + 16*b*c^3*e*(-1320*d^4 - 690*d^3*e*x + 220*d^2*e^2*x^2 - 107*d*e^3*x^
3 + 63*e^4*x^4) + 192*c^4*(60*d^5 + 30*d^4*e*x - 10*d^3*e^2*x^2 + 5*d^2*e^3
*x^3 - 3*d*e^4*x^4 + 2*e^5*x^5))))/(d + e*x) + (1920*c^2*d^(3/2)*(c*d - b*e
)^(3/2)*(B*d*(12*c*d - 7*b*e) + 5*A*e*(-2*c*d + b*e))*ArcTanh[(Sqrt[c*d - b
*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/Sqrt[b + c*x])))/(1920*c^(5/2)*e^7*S
qrt[x])
```

IntegrateAlgebraic [A] time = 6.62, size = 852, normalized size = 1.48

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(11520*B*c^4*d^5 - 21120*b*B*c^3*d^4*e - 9600*A*c^4*d^4*
e + 9840*b^2*B*c^2*d^3*e^2 + 16800*A*b*c^3*d^3*e^2 - 300*b^3*B*c*d^2*e^3 -
7200*A*b^2*c^2*d^2*e^3 - 45*b^4*B*d*e^4 + 150*A*b^3*c*d*e^4 + 5760*B*c^4*d^
4*e*x - 11040*b*B*c^3*d^3*e^2*x - 4800*A*c^4*d^3*e^2*x + 5560*b^2*B*c^2*d^2
*e^3*x + 8800*A*b*c^3*d^2*e^3*x - 270*b^3*B*c*d*e^4*x - 4100*A*b^2*c^2*d*e^
4*x - 45*b^4*B*e^5*x + 150*A*b^3*c*e^5*x - 1920*B*c^4*d^3*e^2*x^2 + 3520*b*
B*c^3*d^2*e^3*x^2 + 1600*A*c^4*d^2*e^3*x^2 - 1616*b^2*B*c^2*d*e^4*x^2 - 280
0*A*b*c^3*d*e^4*x^2 + 30*b^3*B*c*e^5*x^2 + 1180*A*b^2*c^2*e^5*x^2 + 960*B*c
^4*d^2*e^3*x^3 - 1712*b*B*c^3*d*e^4*x^3 - 800*A*c^4*d*e^4*x^3 + 744*b^2*B*c
^2*e^5*x^3 + 1360*A*b*c^3*e^5*x^3 - 576*B*c^4*d*e^4*x^4 + 1008*b*B*c^3*e^5*
x^4 + 480*A*c^4*e^5*x^4 + 384*B*c^4*e^5*x^5))/(1920*c^2*e^6*(d + e*x)) + ((
12*B*c^2*d^(9/2)*Sqrt[c*d - b*e] - 19*b*B*c*d^(7/2)*e*Sqrt[c*d - b*e] - 10*
A*c^2*d^(7/2)*e*Sqrt[c*d - b*e] + 7*b^2*B*d^(5/2)*e^2*Sqrt[c*d - b*e] + 15*
A*b*c*d^(5/2)*e^2*Sqrt[c*d - b*e] - 5*A*b^2*d^(3/2)*e^3*Sqrt[c*d - b*e])*Ar
cTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b
*e])])/e^7 + ((1536*B*c^5*d^5 - 3200*b*B*c^4*d^4*e - 1280*A*c^5*d^4*e + 192
0*b^2*B*c^3*d^3*e^2 + 2560*A*b*c^4*d^3*e^2 - 240*b^3*B*c^2*d^2*e^3 - 1440*A
*b^2*c^3*d^2*e^3 - 20*b^4*B*c*d*e^4 + 160*A*b^3*c^2*d*e^4 - 3*b^5*B*e^5 + 1
0*A*b^4*c*e^5)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x + c*x^2]])/(256*c^(5/2)*e
^7)
```

fricas [A] time = 77.27, size = 3709, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [1/3840*(15*(1536*B*c^5*d^6 - 640*(5*B*b*c^4 + 2*A*c^5)*d^5*e + 640*(3*B*b^
2*c^3 + 4*A*b*c^4)*d^4*e^2 - 240*(B*b^3*c^2 + 6*A*b^2*c^3)*d^3*e^3 - 20*(B*
b^4*c - 8*A*b^3*c^2)*d^2*e^4 - (3*B*b^5 - 10*A*b^4*c)*d*e^5 + (1536*B*c^5*d
^5*e - 640*(5*B*b*c^4 + 2*A*c^5)*d^4*e^2 + 640*(3*B*b^2*c^3 + 4*A*b*c^4)*d^
3*e^3 - 240*(B*b^3*c^2 + 6*A*b^2*c^3)*d^2*e^4 - 20*(B*b^4*c - 8*A*b^3*c^2)*
d*e^5 - (3*B*b^5 - 10*A*b^4*c)*e^6)*x)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2
 + b*x)*sqrt(c)) - 1920*(12*B*c^5*d^5 - 5*A*b^2*c^3*d^2*e^3 - (19*B*b*c^4 +
 10*A*c^5)*d^4*e + (7*B*b^2*c^3 + 15*A*b*c^4)*d^3*e^2 + (12*B*c^5*d^4*e - 5
*A*b^2*c^3*d*e^4 - (19*B*b*c^4 + 10*A*c^5)*d^3*e^2 + (7*B*b^2*c^3 + 15*A*b*
```

c^4)*d^2*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*
d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(384*B*c^5*e^6*x^5 + 11520*B
*c^5*d^5*e - 1920*(11*B*b*c^4 + 5*A*c^5)*d^4*e^2 + 240*(41*B*b^2*c^3 + 70*A
*b*c^4)*d^3*e^3 - 300*(B*b^3*c^2 + 24*A*b^2*c^3)*d^2*e^4 - 15*(3*B*b^4*c -
10*A*b^3*c^2)*d*e^5 - 48*(12*B*c^5*d*e^5 - (21*B*b*c^4 + 10*A*c^5)*e^6)*x^4
+ 8*(120*B*c^5*d^2*e^4 - 2*(107*B*b*c^4 + 50*A*c^5)*d*e^5 + (93*B*b^2*c^3
+ 170*A*b*c^4)*e^6)*x^3 - 2*(960*B*c^5*d^3*e^3 - 160*(11*B*b*c^4 + 5*A*c^5)
*d^2*e^4 + 8*(101*B*b^2*c^3 + 175*A*b*c^4)*d*e^5 - 5*(3*B*b^3*c^2 + 118*A*b
^2*c^3)*e^6)*x^2 + 5*(1152*B*c^5*d^4*e^2 - 96*(23*B*b*c^4 + 10*A*c^5)*d^3*e
^3 + 8*(139*B*b^2*c^3 + 220*A*b*c^4)*d^2*e^4 - 2*(27*B*b^3*c^2 + 410*A*b^2*
c^3)*d*e^5 - 3*(3*B*b^4*c - 10*A*b^3*c^2)*e^6)*x)*sqrt(c*x^2 + b*x))/(c^3*e
^8*x + c^3*d*e^7), 1/3840*(3840*(12*B*c^5*d^5 - 5*A*b^2*c^3*d^2*e^3 - (19*B
*b*c^4 + 10*A*c^5)*d^4*e + (7*B*b^2*c^3 + 15*A*b*c^4)*d^3*e^2 + (12*B*c^5*d
^4*e - 5*A*b^2*c^3*d*e^4 - (19*B*b*c^4 + 10*A*c^5)*d^3*e^2 + (7*B*b^2*c^3 +
15*A*b*c^4)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*
sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(1536*B*c^5*d^6 - 640*(5*B*b*c^4 +
2*A*c^5)*d^5*e + 640*(3*B*b^2*c^3 + 4*A*b*c^4)*d^4*e^2 - 240*(B*b^3*c^2 + 6
*A*b^2*c^3)*d^3*e^3 - 20*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 - (3*B*b^5 - 10*A*
b^4*c)*d*e^5 + (1536*B*c^5*d^5*e - 640*(5*B*b*c^4 + 2*A*c^5)*d^4*e^2 + 640*
(3*B*b^2*c^3 + 4*A*b*c^4)*d^3*e^3 - 240*(B*b^3*c^2 + 6*A*b^2*c^3)*d^2*e^4 -
20*(B*b^4*c - 8*A*b^3*c^2)*d*e^5 - (3*B*b^5 - 10*A*b^4*c)*e^6)*x)*sqrt(c)*
log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(384*B*c^5*e^6*x^5 + 11520
*B*c^5*d^5*e - 1920*(11*B*b*c^4 + 5*A*c^5)*d^4*e^2 + 240*(41*B*b^2*c^3 + 70
*A*b*c^4)*d^3*e^3 - 300*(B*b^3*c^2 + 24*A*b^2*c^3)*d^2*e^4 - 15*(3*B*b^4*c
- 10*A*b^3*c^2)*d*e^5 - 48*(12*B*c^5*d*e^5 - (21*B*b*c^4 + 10*A*c^5)*e^6)*x
^4 + 8*(120*B*c^5*d^2*e^4 - 2*(107*B*b*c^4 + 50*A*c^5)*d*e^5 + (93*B*b^2*c^
3 + 170*A*b*c^4)*e^6)*x^3 - 2*(960*B*c^5*d^3*e^3 - 160*(11*B*b*c^4 + 5*A*c^
5)*d^2*e^4 + 8*(101*B*b^2*c^3 + 175*A*b*c^4)*d*e^5 - 5*(3*B*b^3*c^2 + 118*A
*b^2*c^3)*e^6)*x^2 + 5*(1152*B*c^5*d^4*e^2 - 96*(23*B*b*c^4 + 10*A*c^5)*d^3
e^3 + 8(139*B*b^2*c^3 + 220*A*b*c^4)*d^2*e^4 - 2*(27*B*b^3*c^2 + 410*A*b^
2*c^3)*d*e^5 - 3*(3*B*b^4*c - 10*A*b^3*c^2)*e^6)*x)*sqrt(c*x^2 + b*x))/(c^3
*e^8*x + c^3*d*e^7), 1/1920*(15*(1536*B*c^5*d^6 - 640*(5*B*b*c^4 + 2*A*c^5)
*d^5*e + 640*(3*B*b^2*c^3 + 4*A*b*c^4)*d^4*e^2 - 240*(B*b^3*c^2 + 6*A*b^2*c
^3)*d^3*e^3 - 20*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 - (3*B*b^5 - 10*A*b^4*c)*d
*e^5 + (1536*B*c^5*d^5*e - 640*(5*B*b*c^4 + 2*A*c^5)*d^4*e^2 + 640*(3*B*b^2
*c^3 + 4*A*b*c^4)*d^3*e^3 - 240*(B*b^3*c^2 + 6*A*b^2*c^3)*d^2*e^4 - 20*(B*b
^4*c - 8*A*b^3*c^2)*d*e^5 - (3*B*b^5 - 10*A*b^4*c)*e^6)*x)*sqrt(-c)*arctan(
sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - 960*(12*B*c^5*d^5 - 5*A*b^2*c^3*d^2*e^3
- (19*B*b*c^4 + 10*A*c^5)*d^4*e + (7*B*b^2*c^3 + 15*A*b*c^4)*d^3*e^2 + (12
*B*c^5*d^4*e - 5*A*b^2*c^3*d*e^4 - (19*B*b*c^4 + 10*A*c^5)*d^3*e^2 + (7*B*b
^2*c^3 + 15*A*b*c^4)*d^2*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*
e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + (384*B*c^5*e^6
*x^5 + 11520*B*c^5*d^5*e - 1920*(11*B*b*c^4 + 5*A*c^5)*d^4*e^2 + 240*(41*B*
b^2*c^3 + 70*A*b*c^4)*d^3*e^3 - 300*(B*b^3*c^2 + 24*A*b^2*c^3)*d^2*e^4 - 15
*(3*B*b^4*c - 10*A*b^3*c^2)*d*e^5 - 48*(12*B*c^5*d*e^5 - (21*B*b*c^4 + 10*A
*c^5)*e^6)*x^4 + 8*(120*B*c^5*d^2*e^4 - 2*(107*B*b*c^4 + 50*A*c^5)*d*e^5 +
(93*B*b^2*c^3 + 170*A*b*c^4)*e^6)*x^3 - 2*(960*B*c^5*d^3*e^3 - 160*(11*B*b*
c^4 + 5*A*c^5)*d^2*e^4 + 8*(101*B*b^2*c^3 + 175*A*b*c^4)*d*e^5 - 5*(3*B*b^3
*c^2 + 118*A*b^2*c^3)*e^6)*x^2 + 5*(1152*B*c^5*d^4*e^2 - 96*(23*B*b*c^4 + 1
0*A*c^5)*d^3*e^3 + 8*(139*B*b^2*c^3 + 220*A*b*c^4)*d^2*e^4 - 2*(27*B*b^3*c^
2 + 410*A*b^2*c^3)*d*e^5 - 3*(3*B*b^4*c - 10*A*b^3*c^2)*e^6)*x)*sqrt(c*x^2
+ b*x))/(c^3*e^8*x + c^3*d*e^7), 1/1920*(1920*(12*B*c^5*d^5 - 5*A*b^2*c^3*d
^2*e^3 - (19*B*b*c^4 + 10*A*c^5)*d^4*e + (7*B*b^2*c^3 + 15*A*b*c^4)*d^3*e^2
+ (12*B*c^5*d^4*e - 5*A*b^2*c^3*d*e^4 - (19*B*b*c^4 + 10*A*c^5)*d^3*e^2 +
(7*B*b^2*c^3 + 15*A*b*c^4)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c
*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(1536*B*c^5*d^6 - 640
*(5*B*b*c^4 + 2*A*c^5)*d^5*e + 640*(3*B*b^2*c^3 + 4*A*b*c^4)*d^4*e^2 - 240*
(B*b^3*c^2 + 6*A*b^2*c^3)*d^3*e^3 - 20*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 - (3
*B*b^5 - 10*A*b^4*c)*d*e^5 + (1536*B*c^5*d^5*e - 640*(5*B*b*c^4 + 2*A*c^5)*

```
d^4*e^2 + 640*(3*B*b^2*c^3 + 4*A*b*c^4)*d^3*e^3 - 240*(B*b^3*c^2 + 6*A*b^2*
c^3)*d^2*e^4 - 20*(B*b^4*c - 8*A*b^3*c^2)*d*e^5 - (3*B*b^5 - 10*A*b^4*c)*e^
6)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (384*B*c^5*e^6*x^
5 + 11520*B*c^5*d^5*e - 1920*(11*B*b*c^4 + 5*A*c^5)*d^4*e^2 + 240*(41*B*b^2
*c^3 + 70*A*b*c^4)*d^3*e^3 - 300*(B*b^3*c^2 + 24*A*b^2*c^3)*d^2*e^4 - 15*(3
*B*b^4*c - 10*A*b^3*c^2)*d*e^5 - 48*(12*B*c^5*d*e^5 - (21*B*b*c^4 + 10*A*c^
5)*e^6)*x^4 + 8*(120*B*c^5*d^2*e^4 - 2*(107*B*b*c^4 + 50*A*c^5)*d*e^5 + (93
*B*b^2*c^3 + 170*A*b*c^4)*e^6)*x^3 - 2*(960*B*c^5*d^3*e^3 - 160*(11*B*b*c^4
 + 5*A*c^5)*d^2*e^4 + 8*(101*B*b^2*c^3 + 175*A*b*c^4)*d*e^5 - 5*(3*B*b^3*c^
2 + 118*A*b^2*c^3)*e^6)*x^2 + 5*(1152*B*c^5*d^4*e^2 - 96*(23*B*b*c^4 + 10*A
*c^5)*d^3*e^3 + 8*(139*B*b^2*c^3 + 220*A*b*c^4)*d^2*e^4 - 2*(27*B*b^3*c^2 +
 410*A*b^2*c^3)*d*e^5 - 3*(3*B*b^4*c - 10*A*b^3*c^2)*e^6)*x)*sqrt(c*x^2 + b
*x))/(c^3*e^8*x + c^3*d*e^7)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.06, size = 7095, normalized size = 12.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{\left(d + e x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**2, x)
```

3.1043 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=508

$$\frac{5\sqrt{d}\,\sqrt{cd-be}\,\left(Ae\left(3b^2e^2-16bcde+16c^2d^2\right)-Bd\left(7b^2e^2-28bcde+24c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{8e^7}+5$$

Rubi [A] time = 0.75, antiderivative size = 508, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {812, 814, 843, 620, 206, 724}

$$\frac{5\sqrt{bx+cx^2}\left(-2cex\left(16Ace(2cd-be)-B\left(b^2e^2-32bcde+48c^2d^2\right)\right)+8Ace\left(5b^2e^2-20bcde+16c^2d^2\right)-B\left(88b^2cde^2-b^3e^3-272bc^2d^2e+192c^3d^3\right)\right)}{64ce^6}-\frac{5\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(8Ace\left(18b^2cde^2-b^3e^3-48bc^2d^2e+32c^3d^3\right)-B\left(288b^2c^2d^2e^2-24b^3cde^3-b^4e^4-640bc^3d^3e+384c^4d^4\right)\right)}{64c^{3/2}e^7}+\frac{5\sqrt{d}\,\sqrt{cd-be}\,\left(Ae\left(3b^2e^2-16bcde+16c^2d^2\right)-Bd\left(7b^2e^2-28bcde+24c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{8e^7}+\frac{\left(bx+cx^2\right)^{5/2}(-2Ae+3Bd+Bex)}{4e^2(d+ex)^2}-\frac{5\left(bx+cx^2\right)^{3/2}(ex(-4Ace-bBe+6Bcd)-2Ae(8cd-3be)+Bd(24cd-13be))}{24e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (5*(8*A*c*e*(16*c^2*d^2 - 20*b*c*d*e + 5*b^2*e^2) - B*(192*c^3*d^3 - 272*b*
c^2*d^2*e + 88*b^2*c*d*e^2 - b^3*e^3) - 2*c*e*(16*A*c*e*(2*c*d - b*e) - B*(
48*c^2*d^2 - 32*b*c*d*e + b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(64*c*e^6) - (5*(
B*d*(24*c*d - 13*b*e) - 2*A*e*(8*c*d - 3*b*e) + e*(6*B*c*d - b*B*e - 4*A*c*
e)*x)*(b*x + c*x^2)^(3/2))/(24*e^4*(d + e*x)) + ((3*B*d - 2*A*e + B*e*x)*(b
*x + c*x^2)^(5/2))/(4*e^2*(d + e*x)^2) - (5*(8*A*c*e*(32*c^3*d^3 - 48*b*c^2
*d^2*e + 18*b^2*c*d*e^2 - b^3*e^3) - B*(384*c^4*d^4 - 640*b*c^3*d^3*e + 288
*b^2*c^2*d^2*e^2 - 24*b^3*c*d*e^3 - b^4*e^4))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x
+ c*x^2]])/(64*c^(3/2)*e^7) + (5*Sqrt[d]*Sqrt[c*d - b*e]*(A*e*(16*c^2*d^2 -
 16*b*c*d*e + 3*b^2*e^2) - B*d*(24*c^2*d^2 - 28*b*c*d*e + 7*b^2*e^2))*ArcTa
nh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/
(8*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
```

```
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{(3Bd-2Ae+Bex)\left(bx+cx^2\right)^{5/2}}{4e^2(d+ex)^2} - \frac{5\int \frac{(2b(3Bd-2Ae)+2(6Bcd-bBe-4Ace)x)\left(bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx}{16e^2}$$

$$= -\frac{5(Bd(24cd-13be)-2Ae(8cd-3be)+e(6Bcd-bBe-4Ace)x)\left(bx+cx^2\right)^{3/2}}{24e^4(d+ex)} +$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e^3\right)\right)}{64ce^6}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e^3\right)\right)}{64ce^6}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e^3\right)\right)}{64ce^6}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e^3\right)\right)}{64ce^6}$$

Mathematica [B] time = 6.17, size = 2047, normalized size = 4.03

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(5/2))/(2*d*(-(c*d) + b*e)*(d + e
*x)^2) + ((x*(b + c*x))^(5/2)*(((-5*c*d*(B*d - A*e) + (e*(7*b*B*d - 4*A*c*d
```

```
 - 3*A*b*e))/2)*x^(7/2)*(b + c*x)^(7/2))/(d*(-(c*d) + b*e)*(d + e*x)) + (((
8*A*c^2*d^2 + 4*b*c*d*(14*B*d - 11*A*e) - 5*b^2*e*(7*B*d - 3*A*e))*((2*b^2*
x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1 +
(c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b
^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[
1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/2)*
Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*x)/
b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2*x^
2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)
^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/6
 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1 +
(c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/
(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d - b*e
)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]
*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2)
)))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]
*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*
d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/e
))/4 + 3*c*(B*d*(10*c*d - 7*b*e) - 3*A*e*(2*c*d - b*e))*((2*b^2*x^(7/2)*Sqr
t[b + c*x]*(1 + (c*x)/b)^3*((7*(3/(16*(1 + (c*x)/b)^3) + 1/(2*(1 + (c*x)/b)
^2) + (1 + (c*x)/b)^(-1)))/12 + (35*b^4*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) +
(16*c^3*x^3)/(15*b^3) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b
]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(2048*c^4*x^4*(1 + (c*x)/b)^3)))/(7*e) -
(d*((2*b^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) +
 5/(8*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^
2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sq
rt[b]*Sqrt[1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b
^2*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*
(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]
*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/
(256*c^2*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1
 + (c*x)/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)
/b)^(-1))/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sq
rt[x]*(1 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x
)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh
[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e -
((c*d - b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b))
 + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*
x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSi
nh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTa
nh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e)
)/e))/e))/e))/e))/(d*(-(c*d) + b*e))))/(2*d*(-(c*d) + b*e)*x^(5/2)*(b + c*x
)^(5/2))
```

IntegrateAlgebraic [B] time = 153.92, size = 9706, normalized size = 19.11

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
[Out] Result too large to show
```

fricas [B] time = 11.44, size = 4075, normalized size = 8.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x, algorithm="fricas")

[Out] [-1/384*(15*(384*B*c^4*d^6 - 128*(5*B*b*c^3 + 2*A*c^4)*d^5*e + 96*(3*B*b^2*
c^2 + 4*A*b*c^3)*d^4*e^2 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^3*e^3 - (B*b^4 - 8*
A*b^3*c)*d^2*e^4 + (384*B*c^4*d^4*e^2 - 128*(5*B*b*c^3 + 2*A*c^4)*d^3*e^3 +
 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^2*e^4 - 24*(B*b^3*c + 6*A*b^2*c^2)*d*e^5 -
(B*b^4 - 8*A*b^3*c)*e^6)*x^2 + 2*(384*B*c^4*d^5*e - 128*(5*B*b*c^3 + 2*A*c^
4)*d^4*e^2 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^3 - 24*(B*b^3*c + 6*A*b^2*c
^2)*d^2*e^4 - (B*b^4 - 8*A*b^3*c)*d*e^5)*x)*sqrt(c)*log(2*c*x + b - 2*sqrt(
c*x^2 + b*x)*sqrt(c)) - 240*(24*B*c^4*d^5 - 3*A*b^2*c^2*d^2*e^3 - 4*(7*B*b*
c^3 + 4*A*c^4)*d^4*e + (7*B*b^2*c^2 + 16*A*b*c^3)*d^3*e^2 + (24*B*c^4*d^3*e
^2 - 3*A*b^2*c^2*e^5 - 4*(7*B*b*c^3 + 4*A*c^4)*d^2*e^3 + (7*B*b^2*c^2 + 16*
A*b*c^3)*d*e^4)*x^2 + 2*(24*B*c^4*d^4*e - 3*A*b^2*c^2*d*e^4 - 4*(7*B*b*c^3
+ 4*A*c^4)*d^3*e^2 + (7*B*b^2*c^2 + 16*A*b*c^3)*d^2*e^3)*x)*sqrt(c*d^2 - b*
d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/
(e*x + d)) - 2*(48*B*c^4*e^6*x^5 - 2880*B*c^4*d^5*e + 240*(17*B*b*c^3 + 8*A
*c^4)*d^4*e^2 - 120*(11*B*b^2*c^2 + 20*A*b*c^3)*d^3*e^3 + 15*(B*b^3*c + 40*
A*b^2*c^2)*d^2*e^4 - 8*(12*B*c^4*d*e^5 - (17*B*b*c^3 + 8*A*c^4)*e^6)*x^4 +
2*(120*B*c^4*d^2*e^4 - 16*(11*B*b*c^3 + 5*A*c^4)*d*e^5 + (59*B*b^2*c^2 + 10
4*A*b*c^3)*e^6)*x^3 - (960*B*c^4*d^3*e^3 - 40*(37*B*b*c^3 + 16*A*c^4)*d^2*e
^4 + 4*(139*B*b^2*c^2 + 220*A*b*c^3)*d*e^5 - 3*(5*B*b^3*c + 88*A*b^2*c^2)*e
^6)*x^2 - 10*(432*B*c^4*d^4*e^2 - 48*(13*B*b*c^3 + 6*A*c^4)*d^3*e^3 + (209*
B*b^2*c^2 + 368*A*b*c^3)*d^2*e^4 - 3*(B*b^3*c + 32*A*b^2*c^2)*d*e^5)*x)*sqr
t(c*x^2 + b*x))/(c^2*e^9*x^2 + 2*c^2*d*e^8*x + c^2*d^2*e^7), -1/384*(480*(2
4*B*c^4*d^5 - 3*A*b^2*c^2*d^2*e^3 - 4*(7*B*b*c^3 + 4*A*c^4)*d^4*e + (7*B*b^
2*c^2 + 16*A*b*c^3)*d^3*e^2 + (24*B*c^4*d^3*e^2 - 3*A*b^2*c^2*e^5 - 4*(7*B*
b*c^3 + 4*A*c^4)*d^2*e^3 + (7*B*b^2*c^2 + 16*A*b*c^3)*d*e^4)*x^2 + 2*(24*B*
c^4*d^4*e - 3*A*b^2*c^2*d*e^4 - 4*(7*B*b*c^3 + 4*A*c^4)*d^3*e^2 + (7*B*b^2*
c^2 + 16*A*b*c^3)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*
d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(384*B*c^4*d^6 - 128*(5*B*b*c^
3 + 2*A*c^4)*d^5*e + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^4*e^2 - 24*(B*b^3*c + 6
*A*b^2*c^2)*d^3*e^3 - (B*b^4 - 8*A*b^3*c)*d^2*e^4 + (384*B*c^4*d^4*e^2 - 12
8*(5*B*b*c^3 + 2*A*c^4)*d^3*e^3 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^2*e^4 - 24
*(B*b^3*c + 6*A*b^2*c^2)*d*e^5 - (B*b^4 - 8*A*b^3*c)*e^6)*x^2 + 2*(384*B*c^
4*d^5*e - 128*(5*B*b*c^3 + 2*A*c^4)*d^4*e^2 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*
d^3*e^3 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^2*e^4 - (B*b^4 - 8*A*b^3*c)*d*e^5)*x
)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(48*B*c^4*e^6*x^
5 - 2880*B*c^4*d^5*e + 240*(17*B*b*c^3 + 8*A*c^4)*d^4*e^2 - 120*(11*B*b^2*c
^2 + 20*A*b*c^3)*d^3*e^3 + 15*(B*b^3*c + 40*A*b^2*c^2)*d^2*e^4 - 8*(12*B*c^
4*d*e^5 - (17*B*b*c^3 + 8*A*c^4)*e^6)*x^4 + 2*(120*B*c^4*d^2*e^4 - 16*(11*B
*b*c^3 + 5*A*c^4)*d*e^5 + (59*B*b^2*c^2 + 104*A*b*c^3)*e^6)*x^3 - (960*B*c^
4*d^3*e^3 - 40*(37*B*b*c^3 + 16*A*c^4)*d^2*e^4 + 4*(139*B*b^2*c^2 + 220*A*b
*c^3)*d*e^5 - 3*(5*B*b^3*c + 88*A*b^2*c^2)*e^6)*x^2 - 10*(432*B*c^4*d^4*e^2
 - 48*(13*B*b*c^3 + 6*A*c^4)*d^3*e^3 + (209*B*b^2*c^2 + 368*A*b*c^3)*d^2*e^
4 - 3*(B*b^3*c + 32*A*b^2*c^2)*d*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*e^9*x^2 +
2*c^2*d*e^8*x + c^2*d^2*e^7), -1/192*(15*(384*B*c^4*d^6 - 128*(5*B*b*c^3 +
2*A*c^4)*d^5*e + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^4*e^2 - 24*(B*b^3*c + 6*A*b
^2*c^2)*d^3*e^3 - (B*b^4 - 8*A*b^3*c)*d^2*e^4 + (384*B*c^4*d^4*e^2 - 128*(5
*B*b*c^3 + 2*A*c^4)*d^3*e^3 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^2*e^4 - 24*(B*
b^3*c + 6*A*b^2*c^2)*d*e^5 - (B*b^4 - 8*A*b^3*c)*e^6)*x^2 + 2*(384*B*c^4*d^
5*e - 128*(5*B*b*c^3 + 2*A*c^4)*d^4*e^2 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^3*
e^3 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^2*e^4 - (B*b^4 - 8*A*b^3*c)*d*e^5)*x)*sq
rt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - 120*(24*B*c^4*d^5 - 3*A*b
^2*c^2*d^2*e^3 - 4*(7*B*b*c^3 + 4*A*c^4)*d^4*e + (7*B*b^2*c^2 + 16*A*b*c^3)
*d^3*e^2 + (24*B*c^4*d^3*e^2 - 3*A*b^2*c^2*e^5 - 4*(7*B*b*c^3 + 4*A*c^4)*d^
2*e^3 + (7*B*b^2*c^2 + 16*A*b*c^3)*d*e^4)*x^2 + 2*(24*B*c^4*d^4*e - 3*A*b^2
*c^2*d*e^4 - 4*(7*B*b*c^3 + 4*A*c^4)*d^3*e^2 + (7*B*b^2*c^2 + 16*A*b*c^3)*d
^2*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 -
b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - (48*B*c^4*e^6*x^5 - 2880*B*c^4*d^5*e
 + 240*(17*B*b*c^3 + 8*A*c^4)*d^4*e^2 - 120*(11*B*b^2*c^2 + 20*A*b*c^3)*d^3
```

```
*e^3 + 15*(B*b^3*c + 40*A*b^2*c^2)*d^2*e^4 - 8*(12*B*c^4*d*e^5 - (17*B*b*c^
3 + 8*A*c^4)*e^6)*x^4 + 2*(120*B*c^4*d^2*e^4 - 16*(11*B*b*c^3 + 5*A*c^4)*d*
e^5 + (59*B*b^2*c^2 + 104*A*b*c^3)*e^6)*x^3 - (960*B*c^4*d^3*e^3 - 40*(37*B
*b*c^3 + 16*A*c^4)*d^2*e^4 + 4*(139*B*b^2*c^2 + 220*A*b*c^3)*d*e^5 - 3*(5*B
*b^3*c + 88*A*b^2*c^2)*e^6)*x^2 - 10*(432*B*c^4*d^4*e^2 - 48*(13*B*b*c^3 +
6*A*c^4)*d^3*e^3 + (209*B*b^2*c^2 + 368*A*b*c^3)*d^2*e^4 - 3*(B*b^3*c + 32*
A*b^2*c^2)*d*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*e^9*x^2 + 2*c^2*d*e^8*x + c^2*
d^2*e^7), -1/192*(240*(24*B*c^4*d^5 - 3*A*b^2*c^2*d^2*e^3 - 4*(7*B*b*c^3 +
4*A*c^4)*d^4*e + (7*B*b^2*c^2 + 16*A*b*c^3)*d^3*e^2 + (24*B*c^4*d^3*e^2 - 3
*A*b^2*c^2*e^5 - 4*(7*B*b*c^3 + 4*A*c^4)*d^2*e^3 + (7*B*b^2*c^2 + 16*A*b*c^
3)*d*e^4)*x^2 + 2*(24*B*c^4*d^4*e - 3*A*b^2*c^2*d*e^4 - 4*(7*B*b*c^3 + 4*A*
c^4)*d^3*e^2 + (7*B*b^2*c^2 + 16*A*b*c^3)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*
arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(384*B
*c^4*d^6 - 128*(5*B*b*c^3 + 2*A*c^4)*d^5*e + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d
^4*e^2 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^3*e^3 - (B*b^4 - 8*A*b^3*c)*d^2*e^4 +
 (384*B*c^4*d^4*e^2 - 128*(5*B*b*c^3 + 2*A*c^4)*d^3*e^3 + 96*(3*B*b^2*c^2 +
 4*A*b*c^3)*d^2*e^4 - 24*(B*b^3*c + 6*A*b^2*c^2)*d*e^5 - (B*b^4 - 8*A*b^3*c
)*e^6)*x^2 + 2*(384*B*c^4*d^5*e - 128*(5*B*b*c^3 + 2*A*c^4)*d^4*e^2 + 96*(3
*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^3 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^2*e^4 - (B*b
^4 - 8*A*b^3*c)*d*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x))
 - (48*B*c^4*e^6*x^5 - 2880*B*c^4*d^5*e + 240*(17*B*b*c^3 + 8*A*c^4)*d^4*e^
2 - 120*(11*B*b^2*c^2 + 20*A*b*c^3)*d^3*e^3 + 15*(B*b^3*c + 40*A*b^2*c^2)*d
^2*e^4 - 8*(12*B*c^4*d*e^5 - (17*B*b*c^3 + 8*A*c^4)*e^6)*x^4 + 2*(120*B*c^4
*d^2*e^4 - 16*(11*B*b*c^3 + 5*A*c^4)*d*e^5 + (59*B*b^2*c^2 + 104*A*b*c^3)*e
^6)*x^3 - (960*B*c^4*d^3*e^3 - 40*(37*B*b*c^3 + 16*A*c^4)*d^2*e^4 + 4*(139*
B*b^2*c^2 + 220*A*b*c^3)*d*e^5 - 3*(5*B*b^3*c + 88*A*b^2*c^2)*e^6)*x^2 - 10
*(432*B*c^4*d^4*e^2 - 48*(13*B*b*c^3 + 6*A*c^4)*d^3*e^3 + (209*B*b^2*c^2 +
368*A*b*c^3)*d^2*e^4 - 3*(B*b^3*c + 32*A*b^2*c^2)*d*e^5)*x)*sqrt(c*x^2 + b*
x))/(c^2*e^9*x^2 + 2*c^2*d*e^8*x + c^2*d^2*e^7)]
```

giac [B] time = 0.63, size = 1425, normalized size = 2.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -5/4*(24*B*c^3*d^5 - 52*B*b*c^2*d^4*e - 16*A*c^3*d^4*e + 35*B*b^2*c*d^3*e^2
 + 32*A*b*c^2*d^3*e^2 - 7*B*b^3*d^2*e^3 - 19*A*b^2*c*d^2*e^3 + 3*A*b^3*d*e^
4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*
d*e))*e^(-7)/sqrt(-c*d^2 + b*d*e) + 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*c^2*
x*e^(-3) - (24*B*c^5*d*e^21 - 17*B*b*c^4*e^22 - 8*A*c^5*e^22)*e^(-25)/c^3)*
x + (288*B*c^5*d^2*e^20 - 312*B*b*c^4*d*e^21 - 144*A*c^5*d*e^21 + 59*B*b^2*
c^3*e^22 + 104*A*b*c^4*e^22)*e^(-25)/c^3)*x - 3*(640*B*c^5*d^3*e^19 - 864*B
*b*c^4*d^2*e^20 - 384*A*c^5*d^2*e^20 + 264*B*b^2*c^3*d*e^21 + 432*A*b*c^4*d
*e^21 - 5*B*b^3*c^2*e^22 - 88*A*b^2*c^3*e^22)*e^(-25)/c^3) - 5/128*(384*B*c
^4*d^4 - 640*B*b*c^3*d^3*e - 256*A*c^4*d^3*e + 288*B*b^2*c^2*d^2*e^2 + 384*
A*b*c^3*d^2*e^2 - 24*B*b^3*c*d*e^3 - 144*A*b^2*c^2*d*e^3 - B*b^4*e^4 + 8*A*
b^3*c*e^4)*e^(-7)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/c
^(3/2) - 1/4*(48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^(7/2)*d^5*e + 88*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^2*B*c^4*d^6 - 156*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*B*b*c^3*d^5*e - 72*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c^4*d^5*e + 88
*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^(7/2)*d^6 - 100*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*B*b*c^(5/2)*d^4*e^2 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*
c^(7/2)*d^4*e^2 - 160*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c^(5/2)*d^5*e -
 72*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c^(7/2)*d^5*e + 22*B*b^2*c^3*d^6 +
75*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^2*d^4*e^2 + 120*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^2*A*b*c^3*d^4*e^2 - 35*B*b^3*c^2*d^5*e - 18*A*b^2*c^3*d^5
*e + 65*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^(3/2)*d^3*e^3 + 80*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^(5/2)*d^3*e^3 + 83*(sqrt(c)*x - sqrt(c*x^
```

```
2 + b*x))*B*b^3*c^(3/2)*d^4*e^2 + 124*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2
*c^(5/2)*d^4*e^2 - 7*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c*d^3*e^3 - 51
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^2*d^3*e^3 + 13*B*b^4*c*d^4*e^2 +
 27*A*b^3*c^2*d^4*e^2 - 13*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*sqrt(c)*
d^2*e^4 - 49*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2)*d^2*e^4 - 11*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*sqrt(c)*d^3*e^3 - 59*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*A*b^3*c^(3/2)*d^3*e^3 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
A*b^3*c*d^2*e^4 - 9*A*b^4*c*d^3*e^3 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A
*b^3*sqrt(c)*d*e^5 + 7*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c)*d^2*e^
4)*e^(-7)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*sqrt(c)*d + b*d)^2*sqrt(c))
```

maple [B] time = 0.07, size = 11558, normalized size = 22.75

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{\left(d + e x\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**3, x)
```

3.1044 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^4} dx$

Optimal. Leaf size=495

$$-\frac{5\sqrt{bx+cx^2}\left(ex\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)+Ae\left(b^2e^2-12bcde+16c^2d^2\right)-2Bd\left(3b^2e^2-\right.\right.}{8e^6(d+ex)}$$

Rubi [A] time = 0.66, antiderivative size = 495, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {812, 843, 620, 206, 724}

$$-\frac{5\sqrt{bx+cx^2}\left(ex\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)+Ae\left(b^2e^2-12bcde+16c^2d^2\right)-2Bd\left(3b^2e^2-16bcde+16c^2d^2\right)\right)}{8e^6(d+ex)}+\frac{5\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(2Ace\left(3b^2e^2-16bcde+16c^2d^2\right)-B\left(24b^2cde^2-b^3e^3-80bc^2d^2e+64c^3d^3\right)\right)}{8\sqrt{c}e^7}+\frac{5\left(Bd\left(56b^2cde^2-7b^3e^3-112bc^2d^2e+64c^3d^3\right)-Ae\left(18b^2cde^2-b^3e^3-48bc^2d^2e+32c^3d^3\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16\sqrt{d}e^7\sqrt{cd-be}}+\frac{\left(bx+cx^2\right)^{5/2}(-Ae+2Bd+Bex)}{3e^2(d+ex)^3}-\frac{5\left(bx+cx^2\right)^{3/2}(ex(-2Ace-bBe+4Bcd)-Ae(4cd-be)+4Bd(2cd-be))}{12e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (-5*(A*e*(16*c^2*d^2 - 12*b*c*d*e + b^2*e^2) - 2*B*d*(16*c^2*d^2 - 16*b*c*d
*e + 3*b^2*e^2) + e*(4*A*c*e*(2*c*d - b*e) - B*(16*c^2*d^2 - 12*b*c*d*e + b
^2*e^2))*x)*Sqrt[b*x + c*x^2])/(8*e^6*(d + e*x)) - (5*(4*B*d*(2*c*d - b*e)
- A*e*(4*c*d - b*e) + e*(4*B*c*d - b*B*e - 2*A*c*e)*x)*(b*x + c*x^2)^(3/2))
/(12*e^4*(d + e*x)^2) + ((2*B*d - A*e + B*e*x)*(b*x + c*x^2)^(5/2))/(3*e^2*
(d + e*x)^3) + (5*(2*A*c*e*(16*c^2*d^2 - 16*b*c*d*e + 3*b^2*e^2) - B*(64*c^
3*d^3 - 80*b*c^2*d^2*e + 24*b^2*c*d*e^2 - b^3*e^3))*ArcTanh[(Sqrt[c]*x)/Sqr
t[b*x + c*x^2]])/(8*Sqrt[c]*e^7) + (5*(B*d*(64*c^3*d^3 - 112*b*c^2*d^2*e +
56*b^2*c*d*e^2 - 7*b^3*e^3) - A*e*(32*c^3*d^3 - 48*b*c^2*d^2*e + 18*b^2*c*d
*e^2 - b^3*e^3))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]
*Sqrt[b*x + c*x^2])])/(16*Sqrt[d]*e^7*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
```

```
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx = \frac{(2Bd-Ae+Bex)\left(bx+cx^2\right)^{5/2}}{3e^2(d+ex)^3} - \frac{5\int \frac{(3b(2Bd-Ae)+3(4Bcd-bBe-2Ace)x)\left(bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx}{18e^2}$$

$$= -\frac{5(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\left(bx+cx^2\right)^{3/2}}{12e^4(d+ex)^2} + \frac{(2Bd$$

$$= -\frac{5\left(Ae\left(16c^2d^2-12bcde+b^2e^2\right)-2Bd\left(16c^2d^2-16bcde+3b^2e^2\right)+e\left(4Ace(2cd\right.\right.}{8e^6(d+ex)}$$

$$= -\frac{5\left(Ae\left(16c^2d^2-12bcde+b^2e^2\right)-2Bd\left(16c^2d^2-16bcde+3b^2e^2\right)+e\left(4Ace(2cd\right.\right.}{8e^6(d+ex)}$$

$$= -\frac{5\left(Ae\left(16c^2d^2-12bcde+b^2e^2\right)-2Bd\left(16c^2d^2-16bcde+3b^2e^2\right)+e\left(4Ace(2cd\right.\right.}{8e^6(d+ex)}$$

$$= -\frac{5\left(Ae\left(16c^2d^2-12bcde+b^2e^2\right)-2Bd\left(16c^2d^2-16bcde+3b^2e^2\right)+e\left(4Ace(2cd\right.\right.}{8e^6(d+ex)}$$

Mathematica [B] time = 6.26, size = 2233, normalized size = 4.51

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(5/2))/(3*d*(-(c*d) + b*e)*(d + e
*x)^3) + ((x*(b + c*x))^(5/2)*(((-4*c*d*(B*d - A*e) + (e*(7*b*B*d - 6*A*c*d
 - A*b*e))/2)*x^(7/2)*(b + c*x)^(7/2))/(2*d*(-(c*d) + b*e)*(d + e*x)^2) + (
(((e*(24*A*c^2*d^2 + 2*b*c*d*(14*B*d - 17*A*e) - 3*b^2*e*(7*B*d - A*e)))/4
- (5*c*d*(B*d*(8*c*d - 7*b*e) - A*e*(2*c*d - b*e)))/2)*x^(7/2)*(b + c*x)^(7
/2))/(d*(-(c*d) + b*e)*(d + e*x)) + ((-3*(16*A*c^3*d^3 + 2*b^2*c*d*e*(98*B*
d - 39*A*e) - 8*b*c^2*d^2*(21*B*d - 8*A*e) - 5*b^3*e^2*(7*B*d - A*e))*((2*b
^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1
 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(
3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sq
rt[1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/
2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*
x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]
*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2
*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)
/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)
)/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1
```

```
 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*(
(3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c
]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d -
b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt
[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3
/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt
[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt
[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e)
)/e))/8 - (3*c*(A*e*(44*c^2*d^2 - 44*b*c*d*e + 3*b^2*e^2) - B*d*(80*c^2*d^2
 - 98*b*c*d*e + 21*b^2*e^2))*((2*b^2*x^(7/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*
((7*(3/(16*(1 + (c*x)/b)^3) + 1/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/
12 + (35*b^4*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) + (16*c^3*x^3)/(15*b^3) - (2*
Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)
/b])))/(2048*c^4*x^4*(1 + (c*x)/b)^3)))/(7*e) - (d*((2*b^2*x^(5/2)*Sqrt[b +
 c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1 + (c*x)/b)^2) + (1
 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]
*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/
(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/2)*Sqrt[b + c*x]*(1
 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*x)/b)^2) + (1 + (c*
x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2*x^2*(1 + (c*x)/b)^
3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((15/(8*(1 +
(c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/6 + (5*Sqrt[b]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(7/2)))
)/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)
^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d - b*e)*((2*c*Sqrt[x]*
Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c
]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d -
b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b
]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x]
)/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/e))/2)/(d*(-(
c*d) + b*e)))/(2*d*(-(c*d) + b*e))))/(3*d*(-(c*d) + b*e)*x^(5/2)*(b + c*x)^
(5/2))
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] $Aborted
```

fricas [B] time = 5.20, size = 5934, normalized size = 11.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [-1/48*(15*(64*B*c^4*d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2
 + 8*A*b*c^3)*d^6*e^2 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*
b^3*c)*d^4*e^4 + (64*B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(
13*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (
B*b^4 + 6*A*b^3*c)*d*e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c
^4)*d^5*e^3 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2
*c^2)*d^3*e^5 + (B*b^4 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(
9*B*b*c^3 + 2*A*c^4)*d^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B
*b^3*c + 38*A*b^2*c^2)*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(c)*lo
```

g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 15*(64*B*c^4*d^7 + A*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^2)*d^3*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(480*B*c^4*d^7*e + 15*A*b^3*c*d^3*e^5 - 240*(4*B*b*c^3 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b*c^3)*d^5*e^3 - 15*(6*B*b^3*c + 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 - B*b*c^3*d*e^7)*x^5 - 2*(12*B*c^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 + (13*B*b^2*c^2 + 6*A*b*c^3)*d*e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^3 + 10*A*c^4)*d^3*e^5 + 19*(3*B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c + 18*A*b^2*c^2)*d*e^7)*x^3 + (880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45*B*b*c^3 + 11*A*c^4)*d^4*e^4 + 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186*B*b^3*c + 383*A*b^2*c^2)*d^2*e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d^2*e^6 - 4*(121*B*b*c^3 + 30*A*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)*d^4*e^4 - (47*B*b^3*c + 100*A*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^5*e^7 - b*c*d^4*e^8 + (c^2*d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 - b*c*d^2*e^10)*x^2 + 3*(c^2*d^4*e^8 - b*c*d^3*e^9)*x), 1/48*(30*(64*B*c^4*d^7 + A*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^2)*d^3*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 15*(64*B*c^4*d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^6*e^2 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*b^3*c)*d^4*e^4 + (64*B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (B*b^4 + 6*A*b^3*c)*d*e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c^4)*d^5*e^3 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2*c^2)*d^3*e^5 + (B*b^4 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(9*B*b*c^3 + 2*A*c^4)*d^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B*b^3*c + 38*A*b^2*c^2)*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(480*B*c^4*d^7*e + 15*A*b^3*c*d^3*e^5 - 240*(4*B*b*c^3 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b*c^3)*d^5*e^3 - 15*(6*B*b^3*c + 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 - B*b*c^3*d*e^7)*x^5 - 2*(12*B*c^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 + (13*B*b^2*c^2 + 6*A*b*c^3)*d*e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^3 + 10*A*c^4)*d^3*e^5 + 19*(3*B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c + 18*A*b^2*c^2)*d*e^7)*x^3 + (880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45*B*b*c^3 + 11*A*c^4)*d^4*e^4 + 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186*B*b^3*c + 383*A*b^2*c^2)*d^2*e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d^2*e^6 - 4*(121*B*b*c^3 + 30*A*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)*d^4*e^4 - (47*B*b^3*c + 100*A*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^5*e^7 - b*c*d^4*e^8 + (c^2*d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 - b*c*d^2*e^10)*x^2 + 3*(c^2*d^4*e^8 - b*c*d^3*e^9)*x), 1/48*(30*(64*B*c^4*d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^6*e^2 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*b^3*c)*d^4*e^4 + (64*B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (B*b^4 + 6*A*b^3*c)*d*e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c^4)*d^5*e^3 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2*c^2)*d^3*e^5 + (B*b^4

```
 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(9*B*b*c^3 + 2*A*c^4)*d
^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B*b^3*c + 38*A*b^2*c^2)
*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x
)*sqrt(-c)/(c*x)) - 15*(64*B*c^4*d^7 + A*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*
A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*
c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d
^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d
*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*
d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*
d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^
4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^
2)*d^3*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^
2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(480*B*c^4*d^7*e + 15*A*b^3*c*
d^3*e^5 - 240*(4*B*b*c^3 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b*c^3)*
d^5*e^3 - 15*(6*B*b^3*c + 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 - B*b*c^
3*d*e^7)*x^5 - 2*(12*B*c^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 + (13*B
*b^2*c^2 + 6*A*b*c^3)*d*e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^3 + 10
*A*c^4)*d^3*e^5 + 19*(3*B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c + 18*A
*b^2*c^2)*d*e^7)*x^3 + (880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45*B*b*c
^3 + 11*A*c^4)*d^4*e^4 + 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186*B*b^3
*c + 383*A*b^2*c^2)*d^2*e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d^2*e^6
 - 4*(121*B*b*c^3 + 30*A*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)*d^4*e
^4 - (47*B*b^3*c + 100*A*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^5*e
^7 - b*c*d^4*e^8 + (c^2*d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 - b*c*d
^2*e^10)*x^2 + 3*(c^2*d^4*e^8 - b*c*d^3*e^9)*x), 1/24*(15*(64*B*c^4*d^7 + A
*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^
3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3
*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2
*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*
c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^
3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3
*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)
*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^2)*d^3*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arct
an(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(64*B*c^4*
d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^6*e^2
 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*b^3*c)*d^4*e^4 + (64*
B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(13*B*b^2*c^2 + 8*A*b*
c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (B*b^4 + 6*A*b^3*c)*d*
e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c^4)*d^5*e^3 + 8*(13*B
*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2*c^2)*d^3*e^5 + (B*b^
4 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(9*B*b*c^3 + 2*A*c^4)*
d^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B*b^3*c + 38*A*b^2*c^2
)*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (480*B*c^4*d^7*e + 15*A*b^3*c*d^3*e^5 - 240*(4*B*b*c^3
 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b*c^3)*d^5*e^3 - 15*(6*B*b^3*c
+ 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 - B*b*c^3*d*e^7)*x^5 - 2*(12*B*c
^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 + (13*B*b^2*c^2 + 6*A*b*c^3)*d*
e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^3 + 10*A*c^4)*d^3*e^5 + 19*(3*
B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c + 18*A*b^2*c^2)*d*e^7)*x^3 + (
880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45*B*b*c^3 + 11*A*c^4)*d^4*e^4 +
 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186*B*b^3*c + 383*A*b^2*c^2)*d^2*
e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d^2*e^6 - 4*(121*B*b*c^3 + 30*A
*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)*d^4*e^4 - (47*B*b^3*c + 100*A
*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^5*e^7 - b*c*d^4*e^8 + (c^2*
d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 - b*c*d^2*e^10)*x^2 + 3*(c^2*d^
4*e^8 - b*c*d^3*e^9)*x)]
```

giac [B] time = 0.80, size = 1907, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 5/8*(64*B*c^3*d^4 - 112*B*b*c^2*d^3*e - 32*A*c^3*d^3*e + 56*B*b^2*c*d^2*e^2
 + 48*A*b*c^2*d^2*e^2 - 7*B*b^3*d*e^3 - 18*A*b^2*c*d*e^3 + A*b^3*e^4)*arcta
n(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))*e^
(-7)/sqrt(-c*d^2 + b*d*e) + 5/16*(64*B*c^3*d^3 - 80*B*b*c^2*d^2*e - 32*A*c^
3*d^2*e + 24*B*b^2*c*d*e^2 + 32*A*b*c^2*d*e^2 - B*b^3*e^3 - 6*A*b^2*c*e^3)*
e^(-7)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 1/
24*sqrt(c*x^2 + b*x)*(2*(4*B*c^2*x*e^(-4) - (24*B*c^4*d*e^17 - 13*B*b*c^3*e
^18 - 6*A*c^4*e^18)*e^(-22)/c^2)*x + 3*(80*B*c^4*d^2*e^16 - 72*B*b*c^3*d*e^
17 - 32*A*c^4*d*e^17 + 11*B*b^2*c^2*e^18 + 18*A*b*c^3*e^18)*e^(-22)/c^2) +
1/24*(2592*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c^4*d^5*e + 2368*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^3*B*c^(9/2)*d^6 + 720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*B*c^(7/2)*d^4*e^2 - 1168*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b*c^(7/2)*d^
5*e - 1504*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(9/2)*d^5*e + 3552*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^2*B*b*c^4*d^6 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^4*B*b*c^3*d^4*e^2 - 1680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^4*d^4*e^2
 - 4512*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^3*d^5*e - 2256*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*A*b*c^4*d^5*e + 1776*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^2*c^(7/2)*d^6 - 1200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b*c^(5/2)*d^
3*e^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^(7/2)*d^3*e^3 - 1920*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^(5/2)*d^4*e^2 + 400*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^3*A*b*c^(7/2)*d^4*e^2 - 2340*(sqrt(c)*x - sqrt(c*x^2 + b*x))
*B*b^3*c^(5/2)*d^5*e - 1128*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^(7/2)*d
^5*e + 296*B*b^3*c^3*d^6 + 1560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^2
*d^3*e^3 + 2160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^3*d^3*e^3 + 1314*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^2*d^4*e^2 + 2412*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*A*b^2*c^3*d^4*e^2 - 350*B*b^4*c^2*d^5*e - 188*A*b^3*c^3*d^5
*e + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/2)*d^2*e^4 + 720*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^(5/2)*d^2*e^4 + 1186*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*B*b^3*c^(3/2)*d^3*e^3 + 1308*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^3*A*b^2*c^(5/2)*d^3*e^3 + 786*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*c^(3/
2)*d^4*e^2 + 1272*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c^(5/2)*d^4*e^2 - 1
47*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c*d^2*e^4 - 666*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^4*A*b^2*c^2*d^2*e^4 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
B*b^4*c*d^3*e^3 - 462*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^2*d^3*e^3 +
 87*B*b^5*c*d^4*e^2 + 188*A*b^4*c^2*d^4*e^2 - 87*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^5*B*b^3*sqrt(c)*d*e^5 - 306*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c
^(3/2)*d*e^5 - 136*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(c)*d^2*e^4
- 574*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^(3/2)*d^2*e^4 - 57*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*B*b^5*sqrt(c)*d^3*e^3 - 324*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*A*b^4*c^(3/2)*d^3*e^3 + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3
*c*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c*d^2*e^4 - 33*A*b^5*
c*d^3*e^3 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*sqrt(c)*e^6 + 40*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*sqrt(c)*d*e^5 + 15*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*A*b^5*sqrt(c)*d^2*e^4)*e^(-7)/(((sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^3*sqrt(c))
```

maple [B] time = 0.09, size = 17133, normalized size = 34.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^4, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{\left(d+ex\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**4, x)
```

3.1045 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^5} \, dx$

Optimal. Leaf size=633

$$-\frac{5\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(3b^2e^2-20bcde+24c^2d^2\right)\right)}{4e^7}-\frac{5\left(bx+cx^2\right)^{3/2}\left(3ex\left(Ae\left(b^2e^2-8bcde\right.\right.\right.}{}$$

Rubi [A] time = 0.90, antiderivative size = 633, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {812, 810, 843, 620, 206, 724}

$$-\frac{5\left(bx+cx^2\right)^{3/2}\left(3ex\left(Ae\left(b^2e^2-8bcde+8c^2d^2\right)-Bd\left(9b^2e^2-32bcde+24c^2d^2\right)\right)+d\left(Ae\left(-b^2e^2-12bcde+16c^2d^2\right)-Bd\left(7b^2e^2-52bcde+48c^2d^2\right)\right)\right)}{96de^4(d+ex)^3(cd-be)}-\frac{5\sqrt{bx+cx^2}\left(-2cex\left(Ae\left(b^2e^2-16bcde+16c^2d^2\right)-Bd\left(17b^2e^2-64bcde+48c^2d^2\right)\right)-Ae\left(16b^2cde^2+b^3e^3-80bc^2d^2e+64c^3d^3\right)+Bd\left(120b^2cde^2-7b^3e^3-304bc^2d^2e+192c^3d^3\right)\right)}{64de^6(d+ex)(cd-be)}-\frac{5\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(3b^2e^2-20bcde+24c^2d^2\right)\right)}{4e^7}+\frac{5\left(Ae\left(144b^2c^2d^2e^2-16b^3cde^3-b^4e^4-256bc^3d^3e+128c^4d^4\right)-Bd\left(672b^2c^2d^2e^2-168b^3cde^3+7b^4e^4-896bc^3d^3e+384c^4d^4\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{128d^{3/2}e^7(cd-be)^{3/2}}+\frac{\left(bx+cx^2\right)^{5/2}(-Ae+3Bd+2Bex)}{4e^2(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] (-5*(B*d*(192*c^3*d^3 - 304*b*c^2*d^2*e + 120*b^2*c*d*e^2 - 7*b^3*e^3) - A*
e*(64*c^3*d^3 - 80*b*c^2*d^2*e + 16*b^2*c*d*e^2 + b^3*e^3) - 2*c*e*(A*e*(16
*c^2*d^2 - 16*b*c*d*e + b^2*e^2) - B*d*(48*c^2*d^2 - 64*b*c*d*e + 17*b^2*e^
2))*x)*Sqrt[b*x + c*x^2])/(64*d*e^6*(c*d - b*e)*(d + e*x)) - (5*(d*(A*e*(16
*c^2*d^2 - 12*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 52*b*c*d*e + 7*b^2*e^2
)) + 3*e*(A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*d*(24*c^2*d^2 - 32*b*c*
d*e + 9*b^2*e^2))*x)*(b*x + c*x^2)^(3/2))/(96*d*e^4*(c*d - b*e)*(d + e*x)^3
) + ((3*B*d - A*e + 2*B*e*x)*(b*x + c*x^2)^(5/2))/(4*e^2*(d + e*x)^4) - (5*
Sqrt[c]*(4*A*c*e*(2*c*d - b*e) - B*(24*c^2*d^2 - 20*b*c*d*e + 3*b^2*e^2))*A
rcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*e^7) + (5*(A*e*(128*c^4*d^4 - 256
*b*c^3*d^3*e + 144*b^2*c^2*d^2*e^2 - 16*b^3*c*d*e^3 - b^4*e^4) - B*d*(384*c
^4*d^4 - 896*b*c^3*d^3*e + 672*b^2*c^2*d^2*e^2 - 168*b^3*c*d*e^3 + 7*b^4*e^
4))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c
*x^2])])/(128*d^(3/2)*e^7*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
```

```
2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^5}\,dx = \frac{(3Bd-Ae+2Bex)\left(bx+cx^2\right)^{5/2}}{4e^2(d+ex)^4} - \frac{5\int \frac{(2b(3Bd-Ae)+4(3Bcd-bBe-Ace)x)\left(bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx}{16e^2}$$

$$= -\frac{5\left(d\left(Ae\left(16c^2d^2-12bcde-b^2e^2\right)-Bd\left(48c^2d^2-52bcde+7b^2e^2\right)\right)+3e\left(Ae\right.\right.}{96de^4(cd-be}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\left(64c^3d^3-80bc^2d^2e+\right.\right.}{}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\left(64c^3d^3-80bc^2d^2e+\right.\right.}{}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\left(64c^3d^3-80bc^2d^2e+\right.\right.}{}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\left(64c^3d^3-80bc^2d^2e+\right.\right.}{}$$

Mathematica [B] time = 6.29, size = 2680, normalized size = 4.23

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(5/2))/(4*d*(-(c*d) + b*e)*(d + e
*x)^4) + ((x*(b + c*x))^(5/2)*(((-3*c*d*(B*d - A*e) + (e*(7*b*B*d - 8*A*c*d
 + A*b*e))/2)*x^(7/2)*(b + c*x)^(7/2))/(3*d*(-(c*d) + b*e)*(d + e*x)^3) + (
((-2*c*d*(B*d*(6*c*d - 7*b*e) + A*e*(2*c*d - b*e)) + (e*(-7*b^2*B*d*e + A*(
48*c^2*d^2 - 40*b*c*d*e - b^2*e^2)))/4)*x^(7/2)*(b + c*x)^(7/2))/(2*d*(-(c*
d) + b*e)*(d + e*x)^2) + ((((e*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A
*e) + 3*b^3*e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e)))/8 + (5*c*d*
(A*e*(32*c^2*d^2 - 32*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 56*b*c*d*e + 7
*b^2*e^2)))/4)*x^(7/2)*(b + c*x)^(7/2))/(d*(-(c*d) + b*e)*(d + e*x)) + ((-1
/8*(c*d*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A*e) + 3*b^3*e^2*(7*B*d
+ A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e))) + (b*e*(-192*A*c^3*d^3 - 4*b^2*c*d
*e*(91*B*d - 17*A*e) + 3*b^3*e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A
*e)))/8 - (7*b*((e*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A*e) + 3*b^3*
e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e)))/8 + (5*c*d*(A*e*(32*c^2
*d^2 - 32*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 56*b*c*d*e + 7*b^2*e^2)))/
4))/2)*((2*b^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^
3) + 5/(8*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (
4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*(
(2*b^2*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5
/(6*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqr
t[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]
)))/(256*c^2*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x
]*(1 + (c*x)/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (
c*x)/b)^(-1))/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c
]*Sqrt[x]*(1 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 +
(c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*Arc
Sinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/
e - ((c*d - b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)
/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 +
 (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*A
rcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*A
rcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e)
)/e))/e))/e))/e) - 6*c*((e*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A*e)
+ 3*b^3*e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e)))/8 + (5*c*d*(A*e
*(32*c^2*d^2 - 32*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 56*b*c*d*e + 7*b^2
*e^2)))/4)*((2*b^2*x^(7/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((7*(3/(16*(1 + (c
*x)/b)^3) + 1/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/12 + (35*b^4*((2*c
*x)/b - (4*c^2*x^2)/(3*b^2) + (16*c^3*x^3)/(15*b^3) - (2*Sqrt[c]*Sqrt[x]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(2048*c^4*x
^4*(1 + (c*x)/b)^3)))/(7*e) - (d*((2*b^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b
)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/
2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(
Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(512*c^3*x^3*(1 +
(c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*
(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (
15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/
(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((
2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4
*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*S
qrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b
)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[
x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d - b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 +
 (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]
])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*S
qrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*
x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b
+ c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/e))/e))/(d*(-(c*d) + b*e)))/(2*d*(-
```

```
(c*d) + b*e)))/(3*d*(-(c*d) + b*e))))/(4*d*(-(c*d) + b*e)*x^(5/2)*(b + c*x)
^(5/2))
```

IntegrateAlgebraic [F] time = 180.05, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] $Aborted
```

fricas [B] time = 15.83, size = 8045, normalized size = 12.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [1/384*(240*(24*B*c^4*d^10 - 4*(17*B*b*c^3 + 2*A*c^4)*d^9*e + (67*B*b^2*c^2
 + 20*A*b*c^3)*d^8*e^2 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^7*e^3 + (3*B*b^4 +
4*A*b^3*c)*d^6*e^4 + (24*B*c^4*d^6*e^4 - 4*(17*B*b*c^3 + 2*A*c^4)*d^5*e^5 +
 (67*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^3*e^7
 + (3*B*b^4 + 4*A*b^3*c)*d^2*e^8)*x^4 + 4*(24*B*c^4*d^7*e^3 - 4*(17*B*b*c^3
 + 2*A*c^4)*d^6*e^4 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^5*e^5 - 2*(13*B*b^3*c +
 8*A*b^2*c^2)*d^4*e^6 + (3*B*b^4 + 4*A*b^3*c)*d^3*e^7)*x^3 + 6*(24*B*c^4*d^
8*e^2 - 4*(17*B*b*c^3 + 2*A*c^4)*d^7*e^3 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^6*
e^4 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^5*e^5 + (3*B*b^4 + 4*A*b^3*c)*d^4*e^6)
*x^2 + 4*(24*B*c^4*d^9*e - 4*(17*B*b*c^3 + 2*A*c^4)*d^8*e^2 + (67*B*b^2*c^2
 + 20*A*b*c^3)*d^7*e^3 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^6*e^4 + (3*B*b^4 +
4*A*b^3*c)*d^5*e^5)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
 - 15*(384*B*c^4*d^9 + A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e + 32*(
21*B*b^2*c^2 + 8*A*b*c^3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^3 +
(7*B*b^4 + 16*A*b^3*c)*d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(7*B*
b*c^3 + A*c^4)*d^4*e^5 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*B*b^
3*c + 6*A*b^2*c^2)*d^2*e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384*B*c
^4*d^6*e^3 + A*b^4*d*e^8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b^2*c
^2 + 8*A*b*c^3)*d^4*e^5 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b^4 +
 16*A*b^3*c)*d^2*e^7)*x^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*(7*B
*b*c^3 + A*c^4)*d^6*e^3 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7*B*b
^3*c + 6*A*b^2*c^2)*d^4*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(384*
B*c^4*d^8*e + A*b^4*d^3*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*B*b^
2*c^2 + 8*A*b*c^3)*d^6*e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*B*b^
4 + 16*A*b^3*c)*d^4*e^5)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x
+ 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(2880*B*c^4*d^9*e
 + 15*A*b^4*d^4*e^6 - 240*(31*B*b*c^3 + 4*A*c^4)*d^8*e^2 + 120*(53*B*b^2*c^
2 + 18*A*b*c^3)*d^7*e^3 - 15*(127*B*b^3*c + 96*A*b^2*c^2)*d^6*e^4 + 15*(7*B
*b^4 + 15*A*b^3*c)*d^5*e^5 - 96*(B*c^4*d^4*e^6 - 2*B*b*c^3*d^3*e^7 + B*b^2*
c^2*d^2*e^8)*x^5 + 48*(12*B*c^4*d^5*e^5 - (33*B*b*c^3 + 4*A*c^4)*d^4*e^6 +
2*(15*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^7 - (9*B*b^3*c + 4*A*b^2*c^2)*d^2*e^8)*x
^4 + (6000*B*c^4*d^6*e^4 - 15*A*b^4*d*e^9 - 8*(1981*B*b*c^3 + 250*A*c^4)*d^
5*e^5 + 2*(6995*B*b^2*c^2 + 2308*A*b*c^3)*d^4*e^6 - (4421*B*b^3*c + 3262*A*
b^2*c^2)*d^3*e^7 + (279*B*b^4 + 661*A*b^3*c)*d^2*e^8)*x^3 + (12480*B*c^4*d^
7*e^3 + 73*A*b^4*d^2*e^8 - 40*(815*B*b*c^3 + 104*A*c^4)*d^6*e^4 + 4*(7079*B
*b^2*c^2 + 2370*A*b*c^3)*d^5*e^5 - (8707*B*b^3*c + 6452*A*b^2*c^2)*d^4*e^6
+ (511*B*b^4 + 1059*A*b^3*c)*d^3*e^7)*x^2 + 5*(2016*B*c^4*d^8*e^2 + 11*A*b^
4*d^3*e^7 - 48*(109*B*b*c^3 + 14*A*c^4)*d^7*e^3 + 2*(2251*B*b^2*c^2 + 760*A
*b*c^3)*d^6*e^4 - (1363*B*b^3*c + 1022*A*b^2*c^2)*d^5*e^5 + (77*B*b^4 + 163
*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2 + b*x))/(c^2*d^8*e^7 - 2*b*c*d^7*e^8 + b^2
*d^6*e^9 + (c^2*d^4*e^11 - 2*b*c*d^3*e^12 + b^2*d^2*e^13)*x^4 + 4*(c^2*d^5*
```

```
e^10 - 2*b*c*d^4*e^11 + b^2*d^3*e^12)*x^3 + 6*(c^2*d^6*e^9 - 2*b*c*d^5*e^10
 + b^2*d^4*e^11)*x^2 + 4*(c^2*d^7*e^8 - 2*b*c*d^6*e^9 + b^2*d^5*e^10)*x), -
1/192*(15*(384*B*c^4*d^9 + A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e +
32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^
3 + (7*B*b^4 + 16*A*b^3*c)*d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(
7*B*b*c^3 + A*c^4)*d^4*e^5 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*
B*b^3*c + 6*A*b^2*c^2)*d^2*e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384
*B*c^4*d^6*e^3 + A*b^4*d*e^8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b
^2*c^2 + 8*A*b*c^3)*d^4*e^5 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b
^4 + 16*A*b^3*c)*d^2*e^7)*x^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*
(7*B*b*c^3 + A*c^4)*d^6*e^3 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7
*B*b^3*c + 6*A*b^2*c^2)*d^4*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(
384*B*c^4*d^8*e + A*b^4*d^3*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*
B*b^2*c^2 + 8*A*b*c^3)*d^6*e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*
B*b^4 + 16*A*b^3*c)*d^4*e^5)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 +
b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 120*(24*B*c^4*d^10 - 4*(17*B*b*
c^3 + 2*A*c^4)*d^9*e + (67*B*b^2*c^2 + 20*A*b*c^3)*d^8*e^2 - 2*(13*B*b^3*c
+ 8*A*b^2*c^2)*d^7*e^3 + (3*B*b^4 + 4*A*b^3*c)*d^6*e^4 + (24*B*c^4*d^6*e^4
- 4*(17*B*b*c^3 + 2*A*c^4)*d^5*e^5 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 -
2*(13*B*b^3*c + 8*A*b^2*c^2)*d^3*e^7 + (3*B*b^4 + 4*A*b^3*c)*d^2*e^8)*x^4 +
 4*(24*B*c^4*d^7*e^3 - 4*(17*B*b*c^3 + 2*A*c^4)*d^6*e^4 + (67*B*b^2*c^2 + 2
0*A*b*c^3)*d^5*e^5 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^4*e^6 + (3*B*b^4 + 4*A*
b^3*c)*d^3*e^7)*x^3 + 6*(24*B*c^4*d^8*e^2 - 4*(17*B*b*c^3 + 2*A*c^4)*d^7*e^
3 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^6*e^4 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^5*
e^5 + (3*B*b^4 + 4*A*b^3*c)*d^4*e^6)*x^2 + 4*(24*B*c^4*d^9*e - 4*(17*B*b*c^
3 + 2*A*c^4)*d^8*e^2 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^7*e^3 - 2*(13*B*b^3*c
+ 8*A*b^2*c^2)*d^6*e^4 + (3*B*b^4 + 4*A*b^3*c)*d^5*e^5)*x)*sqrt(c)*log(2*c*
x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (2880*B*c^4*d^9*e + 15*A*b^4*d^4*e^6
 - 240*(31*B*b*c^3 + 4*A*c^4)*d^8*e^2 + 120*(53*B*b^2*c^2 + 18*A*b*c^3)*d^7
*e^3 - 15*(127*B*b^3*c + 96*A*b^2*c^2)*d^6*e^4 + 15*(7*B*b^4 + 15*A*b^3*c)*
d^5*e^5 - 96*(B*c^4*d^4*e^6 - 2*B*b*c^3*d^3*e^7 + B*b^2*c^2*d^2*e^8)*x^5 +
48*(12*B*c^4*d^5*e^5 - (33*B*b*c^3 + 4*A*c^4)*d^4*e^6 + 2*(15*B*b^2*c^2 + 4
*A*b*c^3)*d^3*e^7 - (9*B*b^3*c + 4*A*b^2*c^2)*d^2*e^8)*x^4 + (6000*B*c^4*d^
6*e^4 - 15*A*b^4*d*e^9 - 8*(1981*B*b*c^3 + 250*A*c^4)*d^5*e^5 + 2*(6995*B*b
^2*c^2 + 2308*A*b*c^3)*d^4*e^6 - (4421*B*b^3*c + 3262*A*b^2*c^2)*d^3*e^7 +
(279*B*b^4 + 661*A*b^3*c)*d^2*e^8)*x^3 + (12480*B*c^4*d^7*e^3 + 73*A*b^4*d^
2*e^8 - 40*(815*B*b*c^3 + 104*A*c^4)*d^6*e^4 + 4*(7079*B*b^2*c^2 + 2370*A*b
*c^3)*d^5*e^5 - (8707*B*b^3*c + 6452*A*b^2*c^2)*d^4*e^6 + (511*B*b^4 + 1059
*A*b^3*c)*d^3*e^7)*x^2 + 5*(2016*B*c^4*d^8*e^2 + 11*A*b^4*d^3*e^7 - 48*(109
*B*b*c^3 + 14*A*c^4)*d^7*e^3 + 2*(2251*B*b^2*c^2 + 760*A*b*c^3)*d^6*e^4 - (
1363*B*b^3*c + 1022*A*b^2*c^2)*d^5*e^5 + (77*B*b^4 + 163*A*b^3*c)*d^4*e^6)*
x)*sqrt(c*x^2 + b*x))/(c^2*d^8*e^7 - 2*b*c*d^7*e^8 + b^2*d^6*e^9 + (c^2*d^4
*e^11 - 2*b*c*d^3*e^12 + b^2*d^2*e^13)*x^4 + 4*(c^2*d^5*e^10 - 2*b*c*d^4*e^
11 + b^2*d^3*e^12)*x^3 + 6*(c^2*d^6*e^9 - 2*b*c*d^5*e^10 + b^2*d^4*e^11)*x^
2 + 4*(c^2*d^7*e^8 - 2*b*c*d^6*e^9 + b^2*d^5*e^10)*x), -1/384*(480*(24*B*c^
4*d^10 - 4*(17*B*b*c^3 + 2*A*c^4)*d^9*e + (67*B*b^2*c^2 + 20*A*b*c^3)*d^8*e
^2 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^7*e^3 + (3*B*b^4 + 4*A*b^3*c)*d^6*e^4 +
 (24*B*c^4*d^6*e^4 - 4*(17*B*b*c^3 + 2*A*c^4)*d^5*e^5 + (67*B*b^2*c^2 + 20*
A*b*c^3)*d^4*e^6 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^3*e^7 + (3*B*b^4 + 4*A*b^
3*c)*d^2*e^8)*x^4 + 4*(24*B*c^4*d^7*e^3 - 4*(17*B*b*c^3 + 2*A*c^4)*d^6*e^4
+ (67*B*b^2*c^2 + 20*A*b*c^3)*d^5*e^5 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^4*e^
6 + (3*B*b^4 + 4*A*b^3*c)*d^3*e^7)*x^3 + 6*(24*B*c^4*d^8*e^2 - 4*(17*B*b*c^
3 + 2*A*c^4)*d^7*e^3 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^6*e^4 - 2*(13*B*b^3*c
+ 8*A*b^2*c^2)*d^5*e^5 + (3*B*b^4 + 4*A*b^3*c)*d^4*e^6)*x^2 + 4*(24*B*c^4*d
^9*e - 4*(17*B*b*c^3 + 2*A*c^4)*d^8*e^2 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^7*e
^3 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^6*e^4 + (3*B*b^4 + 4*A*b^3*c)*d^5*e^5)*
x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + 15*(384*B*c^4*d^9 +
A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e + 32*(21*B*b^2*c^2 + 8*A*b*c^
3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^3 + (7*B*b^4 + 16*A*b^3*c)*
```

```
d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(7*B*b*c^3 + A*c^4)*d^4*e^5
+ 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^2*
e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384*B*c^4*d^6*e^3 + A*b^4*d*e^
8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^5
 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b^4 + 16*A*b^3*c)*d^2*e^7)*x
^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*(7*B*b*c^3 + A*c^4)*d^6*e^3
 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^4
*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(384*B*c^4*d^8*e + A*b^4*d^3
*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^6*
e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*B*b^4 + 16*A*b^3*c)*d^4*e^5
)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)
*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(2880*B*c^4*d^9*e + 15*A*b^4*d^4*e^6 - 2
40*(31*B*b*c^3 + 4*A*c^4)*d^8*e^2 + 120*(53*B*b^2*c^2 + 18*A*b*c^3)*d^7*e^3
 - 15*(127*B*b^3*c + 96*A*b^2*c^2)*d^6*e^4 + 15*(7*B*b^4 + 15*A*b^3*c)*d^5*
e^5 - 96*(B*c^4*d^4*e^6 - 2*B*b*c^3*d^3*e^7 + B*b^2*c^2*d^2*e^8)*x^5 + 48*(
12*B*c^4*d^5*e^5 - (33*B*b*c^3 + 4*A*c^4)*d^4*e^6 + 2*(15*B*b^2*c^2 + 4*A*b
*c^3)*d^3*e^7 - (9*B*b^3*c + 4*A*b^2*c^2)*d^2*e^8)*x^4 + (6000*B*c^4*d^6*e^
4 - 15*A*b^4*d*e^9 - 8*(1981*B*b*c^3 + 250*A*c^4)*d^5*e^5 + 2*(6995*B*b^2*c
^2 + 2308*A*b*c^3)*d^4*e^6 - (4421*B*b^3*c + 3262*A*b^2*c^2)*d^3*e^7 + (279
*B*b^4 + 661*A*b^3*c)*d^2*e^8)*x^3 + (12480*B*c^4*d^7*e^3 + 73*A*b^4*d^2*e^
8 - 40*(815*B*b*c^3 + 104*A*c^4)*d^6*e^4 + 4*(7079*B*b^2*c^2 + 2370*A*b*c^3
)*d^5*e^5 - (8707*B*b^3*c + 6452*A*b^2*c^2)*d^4*e^6 + (511*B*b^4 + 1059*A*b
^3*c)*d^3*e^7)*x^2 + 5*(2016*B*c^4*d^8*e^2 + 11*A*b^4*d^3*e^7 - 48*(109*B*b
*c^3 + 14*A*c^4)*d^7*e^3 + 2*(2251*B*b^2*c^2 + 760*A*b*c^3)*d^6*e^4 - (1363
*B*b^3*c + 1022*A*b^2*c^2)*d^5*e^5 + (77*B*b^4 + 163*A*b^3*c)*d^4*e^6)*x)*s
qrt(c*x^2 + b*x))/(c^2*d^8*e^7 - 2*b*c*d^7*e^8 + b^2*d^6*e^9 + (c^2*d^4*e^1
1 - 2*b*c*d^3*e^12 + b^2*d^2*e^13)*x^4 + 4*(c^2*d^5*e^10 - 2*b*c*d^4*e^11 +
 b^2*d^3*e^12)*x^3 + 6*(c^2*d^6*e^9 - 2*b*c*d^5*e^10 + b^2*d^4*e^11)*x^2 +
4*(c^2*d^7*e^8 - 2*b*c*d^6*e^9 + b^2*d^5*e^10)*x), -1/192*(15*(384*B*c^4*d^
9 + A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e + 32*(21*B*b^2*c^2 + 8*A*
b*c^3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^3 + (7*B*b^4 + 16*A*b^3
*c)*d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(7*B*b*c^3 + A*c^4)*d^4*
e^5 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*
d^2*e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384*B*c^4*d^6*e^3 + A*b^4*
d*e^8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^4
*e^5 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b^4 + 16*A*b^3*c)*d^2*e^
7)*x^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*(7*B*b*c^3 + A*c^4)*d^6
*e^3 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7*B*b^3*c + 6*A*b^2*c^2)
*d^4*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(384*B*c^4*d^8*e + A*b^4
*d^3*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*
d^6*e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*B*b^4 + 16*A*b^3*c)*d^4
*e^5)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x
)/((c*d - b*e)*x)) + 240*(24*B*c^4*d^10 - 4*(17*B*b*c^3 + 2*A*c^4)*d^9*e +
(67*B*b^2*c^2 + 20*A*b*c^3)*d^8*e^2 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^7*e^3
+ (3*B*b^4 + 4*A*b^3*c)*d^6*e^4 + (24*B*c^4*d^6*e^4 - 4*(17*B*b*c^3 + 2*A*c
^4)*d^5*e^5 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 - 2*(13*B*b^3*c + 8*A*b^2
*c^2)*d^3*e^7 + (3*B*b^4 + 4*A*b^3*c)*d^2*e^8)*x^4 + 4*(24*B*c^4*d^7*e^3 -
4*(17*B*b*c^3 + 2*A*c^4)*d^6*e^4 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^5*e^5 - 2*
(13*B*b^3*c + 8*A*b^2*c^2)*d^4*e^6 + (3*B*b^4 + 4*A*b^3*c)*d^3*e^7)*x^3 + 6
*(24*B*c^4*d^8*e^2 - 4*(17*B*b*c^3 + 2*A*c^4)*d^7*e^3 + (67*B*b^2*c^2 + 20*
A*b*c^3)*d^6*e^4 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^5*e^5 + (3*B*b^4 + 4*A*b^
3*c)*d^4*e^6)*x^2 + 4*(24*B*c^4*d^9*e - 4*(17*B*b*c^3 + 2*A*c^4)*d^8*e^2 +
(67*B*b^2*c^2 + 20*A*b*c^3)*d^7*e^3 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^6*e^4
+ (3*B*b^4 + 4*A*b^3*c)*d^5*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(
-c)/(c*x)) + (2880*B*c^4*d^9*e + 15*A*b^4*d^4*e^6 - 240*(31*B*b*c^3 + 4*A*c
^4)*d^8*e^2 + 120*(53*B*b^2*c^2 + 18*A*b*c^3)*d^7*e^3 - 15*(127*B*b^3*c + 9
6*A*b^2*c^2)*d^6*e^4 + 15*(7*B*b^4 + 15*A*b^3*c)*d^5*e^5 - 96*(B*c^4*d^4*e^
6 - 2*B*b*c^3*d^3*e^7 + B*b^2*c^2*d^2*e^8)*x^5 + 48*(12*B*c^4*d^5*e^5 - (33
*B*b*c^3 + 4*A*c^4)*d^4*e^6 + 2*(15*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^7 - (9*B*b
```

```
^3*c + 4*A*b^2*c^2)*d^2*e^8)*x^4 + (6000*B*c^4*d^6*e^4 - 15*A*b^4*d*e^9 - 8
*(1981*B*b*c^3 + 250*A*c^4)*d^5*e^5 + 2*(6995*B*b^2*c^2 + 2308*A*b*c^3)*d^4
*e^6 - (4421*B*b^3*c + 3262*A*b^2*c^2)*d^3*e^7 + (279*B*b^4 + 661*A*b^3*c)*
d^2*e^8)*x^3 + (12480*B*c^4*d^7*e^3 + 73*A*b^4*d^2*e^8 - 40*(815*B*b*c^3 +
104*A*c^4)*d^6*e^4 + 4*(7079*B*b^2*c^2 + 2370*A*b*c^3)*d^5*e^5 - (8707*B*b^
3*c + 6452*A*b^2*c^2)*d^4*e^6 + (511*B*b^4 + 1059*A*b^3*c)*d^3*e^7)*x^2 + 5
*(2016*B*c^4*d^8*e^2 + 11*A*b^4*d^3*e^7 - 48*(109*B*b*c^3 + 14*A*c^4)*d^7*e
^3 + 2*(2251*B*b^2*c^2 + 760*A*b*c^3)*d^6*e^4 - (1363*B*b^3*c + 1022*A*b^2*
c^2)*d^5*e^5 + (77*B*b^4 + 163*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2 + b*x))/(c^2
*d^8*e^7 - 2*b*c*d^7*e^8 + b^2*d^6*e^9 + (c^2*d^4*e^11 - 2*b*c*d^3*e^12 + b
^2*d^2*e^13)*x^4 + 4*(c^2*d^5*e^10 - 2*b*c*d^4*e^11 + b^2*d^3*e^12)*x^3 + 6
*(c^2*d^6*e^9 - 2*b*c*d^5*e^10 + b^2*d^4*e^11)*x^2 + 4*(c^2*d^7*e^8 - 2*b*c
*d^6*e^9 + b^2*d^5*e^10)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.09, size = 23819, normalized size = 37.63

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x)
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^5,x)
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{\left(d + e x\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**5,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**5, x)
```

3.1046 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=305

$$\frac{\sqrt{bx+cx^2}\left(2cex\left(40Ace(2cd-be)+B\left(35b^2e^2-64bcde+24c^2d^2\right)\right)+8Ace\left(15b^2e^2-54bcde+64c^2d^2\right)+B\left(-10\right.\right.}{192c^4}$$

Rubi [A] time = 0.44, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {832, 779, 620, 206}

$$\frac{\sqrt{bx+cx^2}\left(2cex\left(40Ace(2cd-be)+B\left(35b^2e^2-64bcde+24c^2d^2\right)\right)+8Ace\left(15b^2e^2-54bcde+64c^2d^2\right)+B\left(360b^2cde^2-105b^3e^3-376bc^2d^2e+96c^3d^3\right)\right)}{192c^4}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(144b^2c^2de(Ae+Bd)-40b^3ce^2(Ae+3Bd)-64bc^3d^2(3Ae+Bd)+128Ac^4d^3+35b^4Be^3\right)}{64c^{9/2}}+\frac{\sqrt{bx+cx^2}(d+ex)^2(8Ace-7bBe+6Bcd)}{24c^2}+\frac{B\sqrt{bx+cx^2}(d+ex)^3}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/Sqrt[b*x + c*x^2],x]
```

```
[Out] ((6*B*c*d - 7*b*B*e + 8*A*c*e)*(d + e*x)^2*Sqrt[b*x + c*x^2])/(24*c^2) + (B
*(d + e*x)^3*Sqrt[b*x + c*x^2])/(4*c) + ((8*A*c*e*(64*c^2*d^2 - 54*b*c*d*e
+ 15*b^2*e^2) + B*(96*c^3*d^3 - 376*b*c^2*d^2*e + 360*b^2*c*d*e^2 - 105*b^3
*e^3) + 2*c*e*(40*A*c*e*(2*c*d - b*e) + B*(24*c^2*d^2 - 64*b*c*d*e + 35*b^2
*e^2))*x)*Sqrt[b*x + c*x^2])/(192*c^4) + ((128*A*c^4*d^3 + 35*b^4*B*e^3 + 1
44*b^2*c^2*d*e*(B*d + A*e) - 40*b^3*c*e^2*(3*B*d + A*e) - 64*b*c^3*d^2*(B*d
 + 3*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\sqrt{bx+cx^2}}\,dx = \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \frac{\int \frac{(d+ex)^2\left(-\frac{1}{2}(bB-8Ac)d+\frac{1}{2}(6Bcd-7bBe+8Ace)x\right)}{\sqrt{bx+cx^2}}dx}{4c}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \frac{\int \frac{(d+ex)\left(-\frac{1}{4}d(1 \cdots}{\cdots}}{\cdots}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \frac{\left(8Ace\left(64c^2 d \cdots\right.\right.}{\cdots}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \frac{\left(8Ace\left(64c^2 d \cdots\right.\right.}{\cdots}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \frac{\left(8Ace\left(64c^2 d \cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 0.79, size = 278, normalized size = 0.91

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(8Ace\left(15b^2e^2-2bce(27d+5ex)+4c^2\left(18d^2+9dex+2e^2x^2\right)\right)+B\left(-105b^3e^3+10b^2ce^2(36d+7ex)-8bc^2e\left(54d^2+30dex+7e^2x^2\right)+48c^3\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)\right)\right)+\frac{3\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-40b^3ce^2(Ae+3Bd)+144b^2c^2de(Ae+Bd)-64bc^3d^2(3Ae+Bd)+128Ac^4d^3+35b^4Be^3\right)}{\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{192c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(8*A*c*e*(15*b^2*e^2 - 2*b*c*e*(27*d + 5*e*x) +
 4*c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) + B*(-105*b^3*e^3 + 10*b^2*c*e^2*(36
*d + 7*e*x) - 8*b*c^2*e*(54*d^2 + 30*d*e*x + 7*e^2*x^2) + 48*c^3*(4*d^3 + 6
*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3))) + (3*(128*A*c^4*d^3 + 35*b^4*B*e^3 + 14
4*b^2*c^2*d*e*(B*d + A*e) - 40*b^3*c*e^2*(3*B*d + A*e) - 64*b*c^3*d^2*(B*d
+ 3*A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[x]*Sqrt[1 + (c*
x)/b])))/(192*c^(9/2))
```

IntegrateAlgebraic [A] time = 1.22, size = 322, normalized size = 1.06

$$\frac{\sqrt{bx+cx^2}\left(120Ab^2ce^3-432Abc^2de^2-80Abc^2e^3x+576Ac^3d^2e+288Ac^3de^2x+64Ac^3e^3x^2-105b^3Be^3+360b^2Bcde^2+70b^2Bce^3x-432bBc^2d^2e-240bBc^2de^2x-56bBc^2e^3x^2+192Bc^3d^3+288Bc^3d^2ex+192Bc^3de^2x^2+48Bc^3e^3x^3\right)}{192c^4}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(40Ab^3ce^3-144Ab^2c^2de^2+192Abc^3d^2e-128Ac^4d^3-35b^4Be^3+120b^3Bcde^2-144b^2Bc^2d^2e+64bBc^3d^3\right)}{128c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(192*B*c^3*d^3 - 432*b*B*c^2*d^2*e + 576*A*c^3*d^2*e + 3
60*b^2*B*c*d*e^2 - 432*A*b*c^2*d*e^2 - 105*b^3*B*e^3 + 120*A*b^2*c*e^3 + 28
8*B*c^3*d^2*e*x - 240*b*B*c^2*d*e^2*x + 288*A*c^3*d*e^2*x + 70*b^2*B*c*e^3*
x - 80*A*b*c^2*e^3*x + 192*B*c^3*d*e^2*x^2 - 56*b*B*c^2*e^3*x^2 + 64*A*c^3*
e^3*x^2 + 48*B*c^3*e^3*x^3))/(192*c^4) + ((64*b*B*c^3*d^3 - 128*A*c^4*d^3 -
 144*b^2*B*c^2*d^2*e + 192*A*b*c^3*d^2*e + 120*b^3*B*c*d*e^2 - 144*A*b^2*c^
2*d*e^2 - 35*b^4*B*e^3 + 40*A*b^3*c*e^3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[b*x
 + c*x^2]])/(128*c^(9/2))
```

fricas [A] time = 0.45, size = 621, normalized size = 2.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/384*(3*(64*(B*b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*A*b*c^3)*d^2*e
+ 24*(5*B*b^3*c - 6*A*b^2*c^2)*d*e^2 - 5*(7*B*b^4 - 8*A*b^3*c)*e^3)*sqrt(c)
```

```
*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(48*B*c^4*e^3*x^3 + 192*B
*c^4*d^3 - 144*(3*B*b*c^3 - 4*A*c^4)*d^2*e + 72*(5*B*b^2*c^2 - 6*A*b*c^3)*d
*e^2 - 15*(7*B*b^3*c - 8*A*b^2*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b*c^3 -
8*A*c^4)*e^3)*x^2 + 2*(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*e^2 + 5
*(7*B*b^2*c^2 - 8*A*b*c^3)*e^3)*x)*sqrt(c*x^2 + b*x))/c^5, 1/192*(3*(64*(B*
b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*A*b*c^3)*d^2*e + 24*(5*B*b^3*c -
 6*A*b^2*c^2)*d*e^2 - 5*(7*B*b^4 - 8*A*b^3*c)*e^3)*sqrt(-c)*arctan(sqrt(c*x
^2 + b*x)*sqrt(-c)/(c*x)) + (48*B*c^4*e^3*x^3 + 192*B*c^4*d^3 - 144*(3*B*b*
c^3 - 4*A*c^4)*d^2*e + 72*(5*B*b^2*c^2 - 6*A*b*c^3)*d*e^2 - 15*(7*B*b^3*c -
 8*A*b^2*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b*c^3 - 8*A*c^4)*e^3)*x^2 + 2*
(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*e^2 + 5*(7*B*b^2*c^2 - 8*A*b*
c^3)*e^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.33, size = 311, normalized size = 1.02

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(\frac{6\,Bxe^3}{c}+\frac{24\,Bc^3de^2-7\,Bbc^2e^3+8\,Ac^3e^3}{c^4}\right)x+\frac{144\,Bc^3d^2e-120\,Bbc^2de^2+144\,Ac^3de^2+35\,Bb^2ce^3-40\,Abc^2e^3}{c^4}\right)x+\frac{3\left(64\,Bc^3d^3-144\,Bbc^2d^2e+192\,Ac^3d^2e+120\,Bb^2cde^2-144\,Abc^2de^2-35\,Bb^3e^3+40\,Ab^2ce^3\right)}{c^4}\right)+\frac{\left(64\,Bbc^3d^3-128\,Ac^4d^3-144\,Bb^2c^2d^2e+192\,Abc^3d^2e+120\,Bb^3cde^2-144\,Ab^2c^2de^2-35\,Bb^4e^3+40\,Ab^3ce^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{128\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x*e^3/c + (24*B*c^3*d*e^2 - 7*B*b*c^2*e^
3 + 8*A*c^3*e^3)/c^4)*x + (144*B*c^3*d^2*e - 120*B*b*c^2*d*e^2 + 144*A*c^3*
d*e^2 + 35*B*b^2*c*e^3 - 40*A*b*c^2*e^3)/c^4)*x + 3*(64*B*c^3*d^3 - 144*B*b
*c^2*d^2*e + 192*A*c^3*d^2*e + 120*B*b^2*c*d*e^2 - 144*A*b*c^2*d*e^2 - 35*B
*b^3*e^3 + 40*A*b^2*c*e^3)/c^4) + 1/128*(64*B*b*c^3*d^3 - 128*A*c^4*d^3 - 1
44*B*b^2*c^2*d^2*e + 192*A*b*c^3*d^2*e + 120*B*b^3*c*d*e^2 - 144*A*b^2*c^2*
d*e^2 - 35*B*b^4*e^3 + 40*A*b^3*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.06, size = 646, normalized size = 2.12

$$\frac{\sqrt{cx^2+bx}\,Be^3x^3}{4c}+\frac{\sqrt{cx^2+bx}\,Ae^3x^2}{3c}-\frac{7\sqrt{cx^2+bx}\,Bbe^3x^2}{24c^2}+\frac{\sqrt{cx^2+bx}\,Bde^2x^2}{c}-\frac{5Ab^3e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{9Ab^2de^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{3Abd^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{Ad^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{\sqrt{c}}+\frac{35Bb^4e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{9}{2}}}-\frac{15Bb^3de^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{9Bb^2d^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{Bbd^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{3}{2}}}-\frac{5\sqrt{cx^2+bx}\,Abe^3x}{12c^2}+\frac{3\sqrt{cx^2+bx}\,Ade^2x}{2c}+\frac{35\sqrt{cx^2+bx}\,Bb^2e^3x}{96c^3}-\frac{5\sqrt{cx^2+bx}\,Bbde^2x}{4c^2}+\frac{3\sqrt{cx^2+bx}\,Bd^2ex}{2c}+\frac{5\sqrt{cx^2+bx}\,Ab^2e^3}{8c^3}-\frac{9\sqrt{cx^2+bx}\,Abde^2}{4c^2}+\frac{3\sqrt{cx^2+bx}\,Ad^2e}{c}-\frac{35\sqrt{cx^2+bx}\,Bb^3e^3}{64c^4}+\frac{15\sqrt{cx^2+bx}\,Bb^2de^2}{8c^3}-\frac{9\sqrt{cx^2+bx}\,Bbd^2e}{4c^2}+\frac{\sqrt{cx^2+bx}\,Bd^3}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*e^3*x^3/c*(c*x^2+b*x)^(1/2)-7/24*B*e^3*b/c^2*x^2*(c*x^2+b*x)^(1/2)+35
/96*B*e^3*b^2/c^3*x*(c*x^2+b*x)^(1/2)-35/64*B*e^3*b^3/c^4*(c*x^2+b*x)^(1/2)
+35/128*B*e^3*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*x^2
/c*(c*x^2+b*x)^(1/2)*A*e^3+x^2/c*(c*x^2+b*x)^(1/2)*B*d*e^2-5/12*b/c^2*x*(c*
x^2+b*x)^(1/2)*A*e^3-5/4*b/c^2*x*(c*x^2+b*x)^(1/2)*B*d*e^2+5/8*b^2/c^3*(c*x
^2+b*x)^(1/2)*A*e^3+15/8*b^2/c^3*(c*x^2+b*x)^(1/2)*B*d*e^2-5/16*b^3/c^(7/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^3-15/16*b^3/c^(7/2)*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e^2+3/2*x/c*(c*x^2+b*x)^(1/2)*A*d*e^2
+3/2*x/c*(c*x^2+b*x)^(1/2)*B*d^2*e-9/4*b/c^2*(c*x^2+b*x)^(1/2)*A*d*e^2-9/4*
b/c^2*(c*x^2+b*x)^(1/2)*B*d^2*e+9/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x)^(1/2))*A*d*e^2+9/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))*B*d^2*e+3/c*(c*x^2+b*x)^(1/2)*A*d^2*e+1/c*(c*x^2+b*x)^(1/2)*B*d^3-3/2
*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d^2*e-1/2*b/c^(3/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^3+A*d^3*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.59, size = 474, normalized size = 1.55

$$\frac{\sqrt{cx^2+bx}\,Be^3x^3}{4\,c}-\frac{7\,\sqrt{cx^2+bx}\,Bbe^3x^2}{24\,c^2}+\frac{35\,\sqrt{cx^2+bx}\,Bb^2e^3x}{96\,c^3}+\frac{Ad^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}+\frac{35\,Bb^4e^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{128\,c^{\frac{9}{2}}}-\frac{35\,\sqrt{cx^2+bx}\,Bb^3e^3}{64\,c^4}+\frac{\left(3\,Bde^2+Ae^3\right)\sqrt{cx^2+bx}\,x^2}{3\,c}-\frac{5\left(3\,Bde^2+Ae^3\right)\sqrt{cx^2+bx}\,bx}{12\,c^2}+\frac{3\left(Bd^2e+Ade^2\right)\sqrt{cx^2+bx}\,x}{2\,c}-\frac{5\left(3\,Bde^2+Ae^3\right)b^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,c^{\frac{7}{2}}}+\frac{9\left(Bd^2e+Ade^2\right)b^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{5}{2}}}-\frac{\left(Bd^3+3\,Ad^2e\right)b\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}+\frac{5\left(3\,Bde^2+Ae^3\right)\sqrt{cx^2+bx}\,b^2}{8\,c^3}-\frac{9\left(Bd^2e+Ade^2\right)\sqrt{cx^2+bx}\,b}{4\,c^2}+\frac{\left(Bd^3+3\,Ad^2e\right)\sqrt{cx^2+bx}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*B*e^3*x^3/c - 7/24*sqrt(c*x^2 + b*x)*B*b*e^3*x^2/c^2
+ 35/96*sqrt(c*x^2 + b*x)*B*b^2*e^3*x/c^3 + A*d^3*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/sqrt(c) + 35/128*B*b^4*e^3*log(2*c*x + b + 2*sqrt(c*x^2
 + b*x)*sqrt(c))/c^(9/2) - 35/64*sqrt(c*x^2 + b*x)*B*b^3*e^3/c^4 + 1/3*(3*B
*d*e^2 + A*e^3)*sqrt(c*x^2 + b*x)*x^2/c - 5/12*(3*B*d*e^2 + A*e^3)*sqrt(c*x
^2 + b*x)*b*x/c^2 + 3/2*(B*d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*x/c - 5/16*(3
*B*d*e^2 + A*e^3)*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2)
+ 9/8*(B*d^2*e + A*d*e^2)*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/
c^(5/2) - 1/2*(B*d^3 + 3*A*d^2*e)*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(3/2) + 5/8*(3*B*d*e^2 + A*e^3)*sqrt(c*x^2 + b*x)*b^2/c^3 - 9/4*(B*
d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*b/c^2 + (B*d^3 + 3*A*d^2*e)*sqrt(c*x^2 +
 b*x)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+e\,x)^3}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/sqrt(x*(b + c*x)), x)
```

3.1047 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=189

$$\frac{\sqrt{bx+cx^2}\left(2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)+B\left(15b^2e^2-36bcde+16c^2d^2\right)\right)}{24c^3}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(6\right.}{}$$

Rubi [A] time = 0.19, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {832, 779, 620, 206}

$$\frac{\sqrt{bx+cx^2}\left(2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)+B\left(15b^2e^2-36bcde+16c^2d^2\right)\right)}{24c^3}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(6b^2ce(Ae+2Bd)-8bc^2d(2Ae+Bd)+16Ac^3d^2-5b^3Be^2\right)}{8c^{7/2}}+\frac{B\sqrt{bx+cx^2}\,(d+ex)^2}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*(d + e*x)^2*Sqrt[b*x + c*x^2])/(3*c) + ((6*A*c*e*(8*c*d - 3*b*e) + B*(16
*c^2*d^2 - 36*b*c*d*e + 15*b^2*e^2) + 2*c*e*(4*B*c*d - 5*b*B*e + 6*A*c*e)*x
)*Sqrt[b*x + c*x^2])/(24*c^3) + ((16*A*c^3*d^2 - 5*b^3*B*e^2 + 6*b^2*c*e*(2
*B*d + A*e) - 8*b*c^2*d*(B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2
]])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\sqrt{bx+cx^2}}\,dx = \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c} + \frac{\int \frac{(d+ex)\left(-\frac{1}{2}(bB-6Ac)d+\frac{1}{2}(4Bcd-5bBe+6Ace)x\right)}{\sqrt{bx+cx^2}}dx}{3c}$$

$$= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c} + \frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2-36bcde+15b^2e^2\right)+2ce(4\ldots\right.}{24c^3}$$

$$= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c} + \frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2-36bcde+15b^2e^2\right)+2ce(4\ldots\right.}{24c^3}$$

$$= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c} + \frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2-36bcde+15b^2e^2\right)+2ce(4\ldots\right.}{24c^3}$$

Mathematica [A] time = 0.22, size = 190, normalized size = 1.01

$$\frac{\sqrt{c}\,x(b+cx)\left(6Ace(-3be+8cd+2cex)+B\left(15b^2e^2-2bce(18d+5ex)+8c^2\left(3d^2+3dex+e^2x^2\right)\right)\right)-3\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-6b^2ce(Ae+2Bd)+8bc^2d(2Ae+Bd)-16Ac^3d^2+5b^3Be^2\right)}{24c^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*x*(b + c*x)*(6*A*c*e*(8*c*d - 3*b*e + 2*c*e*x) + B*(15*b^2*e^2 - 2
*b*c*e*(18*d + 5*e*x) + 8*c^2*(3*d^2 + 3*d*e*x + e^2*x^2))) - 3*Sqrt[b]*(-1
6*A*c^3*d^2 + 5*b^3*B*e^2 - 6*b^2*c*e*(2*B*d + A*e) + 8*b*c^2*d*(B*d + 2*A*
e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(24*c^(7/
2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 1.22, size = 196, normalized size = 1.04

$$\frac{\sqrt{bx+cx^2}\left(-18Abce^2+48Ac^2de+12Ac^2e^2x+15b^2Be^2-36bBcde-10bBce^2x+24Bc^2d^2+24Bc^2dex+8Bc^2e^2x^2\right)}{24c^3}+\frac{\log\left(-2\sqrt{c}\sqrt{bx+cx^2}+b+2cx\right)\left(-6Ab^2ce^2+16Abc^2de-16Ac^3d^2+5b^3Be^2-12b^2Bcde+8bBc^2d^2\right)}{16c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(24*B*c^2*d^2 - 36*b*B*c*d*e + 48*A*c^2*d*e + 15*b^2*B*e
^2 - 18*A*b*c*e^2 + 24*B*c^2*d*e*x - 10*b*B*c*e^2*x + 12*A*c^2*e^2*x + 8*B*
c^2*e^2*x^2))/(24*c^3) + ((8*b*B*c^2*d^2 - 16*A*c^3*d^2 - 12*b^2*B*c*d*e +
16*A*b*c^2*d*e + 5*b^3*B*e^2 - 6*A*b^2*c*e^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqr
t[b*x + c*x^2]])/(16*c^(7/2))
```

fricas [A] time = 0.43, size = 391, normalized size = 2.07

$$\left[-\frac{3\left(8\left(Bbc^2-2Ac^3\right)d^2-4\left(3Bb^2c-4Abc^2\right)de+\left(5Bb^3-6Ab^2c\right)e^2\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(8Bc^3e^2x^2+24Bc^3d^2-12\left(3Bbc^2-4Ac^3\right)de+3\left(5Bb^2c-6Abc^2\right)e^2+2\left(12Bc^3de-\left(5Bbc^2-6Ac^3\right)e^2\right)x\right)\sqrt{cx^2+bx}}{48c^4},\ \frac{3\left(8\left(Bbc^2-2Ac^3\right)d^2-4\left(3Bb^2c-4Abc^2\right)de+\left(5Bb^3-6Ab^2c\right)e^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(8Bc^3e^2x^2+24Bc^3d^2-12\left(3Bbc^2-4Ac^3\right)de+3\left(5Bb^2c-6Abc^2\right)e^2+2\left(12Bc^3de-\left(5Bbc^2-6Ac^3\right)e^2\right)x\right)\sqrt{cx^2+bx}}{24c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(3*B*b^2*c - 4*A*b*c^2)*d*e + (5*B
*b^3 - 6*A*b^2*c)*e^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
 - 2*(8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*c^2 - 4*A*c^3)*d*e + 3*(5*
B*b^2*c - 6*A*b*c^2)*e^2 + 2*(12*B*c^3*d*e - (5*B*b*c^2 - 6*A*c^3)*e^2)*x)*
sqrt(c*x^2 + b*x))/c^4, 1/24*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(3*B*b^2*c -
 4*A*b*c^2)*d*e + (5*B*b^3 - 6*A*b^2*c)*e^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b
*x)*sqrt(-c)/(c*x)) + (8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*c^2 - 4*A
*c^3)*d*e + 3*(5*B*b^2*c - 6*A*b*c^2)*e^2 + 2*(12*B*c^3*d*e - (5*B*b*c^2 -
6*A*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.28, size = 196, normalized size = 1.04

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(\frac{4Bxe^2}{c}+\frac{12Bc^2de-5Bbce^2+6Ac^2e^2}{c^3}\right)x+\frac{3\left(8Bc^2d^2-12Bbcde+16Ac^2de+5Bb^2e^2-6Abce^2\right)}{c^3}\right)+\frac{\left(8Bbc^2d^2-16Ac^3d^2-12Bb^2cde+16Abc^2de+5Bb^3e^2-6Ab^2ce^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{16c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x*e^2/c + (12*B*c^2*d*e - 5*B*b*c*e^2 + 6*A*
c^2*e^2)/c^3)*x + 3*(8*B*c^2*d^2 - 12*B*b*c*d*e + 16*A*c^2*d*e + 5*B*b^2*e^
2 - 6*A*b*c*e^2)/c^3) + 1/16*(8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 12*B*b^2*c*d*e
 + 16*A*b*c^2*d*e + 5*B*b^3*e^2 - 6*A*b^2*c*e^2)*log(abs(-2*(sqrt(c)*x - sq
rt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 395, normalized size = 2.09

$$\frac{\sqrt{cx^2+bx}\,Be^2x^2}{3c}+\frac{3Ab^2e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{Abde\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{c^{\frac{3}{2}}}+\frac{Ad^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{\sqrt{c}}-\frac{5Bb^3e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{3Bb^2de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{4c^{\frac{5}{2}}}-\frac{Bbd^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+bx}\,Ae^2x}{2c}-\frac{5\sqrt{cx^2+bx}\,Bbe^2x}{12c^2}+\frac{\sqrt{cx^2+bx}\,Bdex}{c}-\frac{3\sqrt{cx^2+bx}\,Abe^2}{4c^2}+\frac{2\sqrt{cx^2+bx}\,Ade}{c}+\frac{5\sqrt{cx^2+bx}\,Bb^2e^2}{8c^3}-\frac{3\sqrt{cx^2+bx}\,Bbde}{2c^2}+\frac{\sqrt{cx^2+bx}\,Bd^2}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*B*e^2*x^2/c*(c*x^2+b*x)^(1/2)-5/12*B*e^2*b/c^2*x*(c*x^2+b*x)^(1/2)+5/8*
B*e^2*b^2/c^3*(c*x^2+b*x)^(1/2)-5/16*B*e^2*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))+1/2*x/c*(c*x^2+b*x)^(1/2)*A*e^2+x/c*(c*x^2+b*x)^(1/2)
*B*d*e-3/4*b/c^2*(c*x^2+b*x)^(1/2)*A*e^2-3/2*b/c^2*(c*x^2+b*x)^(1/2)*B*d*e+
3/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^2+3/4*b^2/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e+2/c*(c*x^2+b*x)^(1/2)*
A*d*e+1/c*(c*x^2+b*x)^(1/2)*B*d^2-b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))*A*d*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*
d^2+A*d^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.68, size = 299, normalized size = 1.58

$$\frac{\sqrt{cx^2+bx}\,Be^2x^2}{3c}-\frac{5\sqrt{cx^2+bx}\,Bbe^2x}{12c^2}+\frac{Ad^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{\sqrt{c}}-\frac{5Bb^3e^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16c^{\frac{7}{2}}}+\frac{5\sqrt{cx^2+bx}\,Bb^2e^2}{8c^3}+\frac{\left(2Bde+Ae^2\right)\sqrt{cx^2+bx}\,x}{2c}+\frac{3\left(2Bde+Ae^2\right)b^2\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{8c^{\frac{5}{2}}}-\frac{\left(Bd^2+2Ade\right)b\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2c^{\frac{3}{2}}}-\frac{3\left(2Bde+Ae^2\right)\sqrt{cx^2+bx}\,b}{4c^2}+\frac{\left(Bd^2+2Ade\right)\sqrt{cx^2+bx}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2 + b*x)*B*e^2*x^2/c - 5/12*sqrt(c*x^2 + b*x)*B*b*e^2*x/c^2 +
A*d^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) - 5/16*B*b^3*e^2
*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 5/8*sqrt(c*x^2 + b*
x)*B*b^2*e^2/c^3 + 1/2*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*x/c + 3/8*(2*B*d
*e + A*e^2)*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 1/2*
(B*d^2 + 2*A*d*e)*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) -
3/4*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b/c^2 + (B*d^2 + 2*A*d*e)*sqrt(c*x^
2 + b*x)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^2}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^2}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/sqrt(x*(b + c*x)), x)
```

3.1048 $\int \frac{(A+Bx)(d+ex)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=99

$$\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bcex)}{4c^2}$$

Rubi [A] time = 0.08, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {779, 620, 206}

$$\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bcex)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] -((3*b*B*e - 4*c*(B*d + A*e) - 2*B*c*e*x)*Sqrt[b*x + c*x^2])/(4*c^2) + ((8*
A*c^2*d + 3*b^2*B*e - 4*b*c*(B*d + A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x
^2]])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\sqrt{bx+cx^2}}\,dx &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{bx+cx^2}}{4c^2}+\frac{\left(\frac{3}{2}b^2Be+2c(2Acd-b(Bd+Ae))\right)\int \frac{1}{\sqrt{bx-}}}{4c^2}\\ &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{bx+cx^2}}{4c^2}+\frac{\left(\frac{3}{2}b^2Be+2c(2Acd-b(Bd+Ae))\right)\text{Subst}}{2c^2}\\ &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{bx+cx^2}}{4c^2}+\frac{\left(8Ac^2d+3b^2Be-4bc(Bd+Ae)\right)\tanh^{-1}}{4c^{5/2}}\end{aligned}$$

Mathematica [**A**] time = 0.33, size = 115, normalized size = 1.16

$$\frac{\sqrt{x(b+cx)}\left(\frac{\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\,(4Ace+B(-3be+4cd+2cex))\right)}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(4*A*c*e + B*(4*c*d - 3*b*e + 2*c*e*x)) + ((8*A
*c^2*d + 3*b^2*B*e - 4*b*c*(B*d + A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[x]*Sqrt[1 + (c*x)/b])))/(4*c^(5/2))
```

IntegrateAlgebraic [**A**] time = 0.54, size = 112, normalized size = 1.13

$$\frac{\log\left(-2c^{5/2}\sqrt{bx+cx^2}+bc^2+2c^3x\right)\left(4Abce-8Ac^2d-3b^2Be+4bBcd\right)}{8c^{5/2}}+\frac{\sqrt{bx+cx^2}\,(4Ace-3bBe+4Bcd+2Bcex)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] ((4*B*c*d - 3*b*B*e + 4*A*c*e + 2*B*c*e*x)*Sqrt[b*x + c*x^2])/(4*c^2) + ((4
*b*B*c*d - 8*A*c^2*d - 3*b^2*B*e + 4*A*b*c*e)*Log[b*c^2 + 2*c^3*x - 2*c^(5/
2)*Sqrt[b*x + c*x^2]])/(8*c^(5/2))
```

fricas [**A**] time = 0.43, size = 217, normalized size = 2.19

$$\left[\frac{\left(4\left(Bbc-2Ac^2\right)d-\left(3Bb^2-4Abc\right)e\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(2Bc^2ex+4Bc^2d-\left(3Bbc-4Ac^2\right)e\right)\sqrt{cx^2+bx}}{8c^3}, \frac{\left(4\left(Bbc-2Ac^2\right)d-\left(3Bb^2-4Abc\right)e\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+\left(2Bc^2ex+4Bc^2d-\left(3Bbc-4Ac^2\right)e\right)\sqrt{cx^2+bx}}{4c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/8*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 - 4*A*b*c)*e)*sqrt(c)*log(2*c*x + b
 - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(2*B*c^2*e*x + 4*B*c^2*d - (3*B*b*c - 4
*A*c^2)*e)*sqrt(c*x^2 + b*x))/c^3, 1/4*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 -
 4*A*b*c)*e)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (2*B*c^2*e
*x + 4*B*c^2*d - (3*B*b*c - 4*A*c^2)*e)*sqrt(c*x^2 + b*x))/c^3]
```

giac [**A**] time = 0.28, size = 110, normalized size = 1.11

$$\frac{1}{4}\sqrt{cx^2+bx}\left(\frac{2Bxe}{c}+\frac{4Bcd-3Bbe+4Ace}{c^2}\right)+\frac{\left(4Bbcd-8Ac^2d-3Bb^2e+4Abce\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x*e/c + (4*B*c*d - 3*B*b*e + 4*A*c*e)/c^2) + 1/8
*(4*B*b*c*d - 8*A*c^2*d - 3*B*b^2*e + 4*A*b*c*e)*log(abs(-2*(sqrt(c)*x - sq
rt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [**B**] time = 0.05, size = 202, normalized size = 2.04

$$-\frac{Abe\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{Ad\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{\sqrt{c}}+\frac{3Bb^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{Bbd\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+bx}\,Bex}{2c}+\frac{\sqrt{cx^2+bx}\,Ae}{c}-\frac{3\sqrt{cx^2+bx}\,Bbe}{4c^2}+\frac{\sqrt{cx^2+bx}\,Bd}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/2*B*e*x/c*(c*x^2+b*x)^(1/2)-3/4*B*e*b/c^2*(c*x^2+b*x)^(1/2)+3/8*B*e*b^2/c
^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/c*(c*x^2+b*x)^(1/2)*A*e+
1/c*(c*x^2+b*x)^(1/2)*B*d-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^
(1/2))*A*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d+A*d*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.70, size = 159, normalized size = 1.61

$$\frac{\sqrt{cx^2+bx}\,Bex}{2\,c}+\frac{Ad\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}+\frac{3\,Bb^2e\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{5}{2}}}-\frac{3\,\sqrt{cx^2+bx}\,Bbe}{4\,c^2}-\frac{(Bd+Ae)b\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+bx}\,(Bd+Ae)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*B*e*x/c + A*d*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/sqrt(c) + 3/8*B*b^2*e*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(5/2) - 3/4*sqrt(c*x^2 + b*x)*B*b*e/c^2 - 1/2*(B*d + A*e)*b*log(2*c*x + b +
 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + sqrt(c*x^2 + b*x)*(B*d + A*e)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{\sqrt{x(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/sqrt(x*(b + c*x)), x)
```

3.1049 $\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=55

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {640, 620, 206}

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x
^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx&=\frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2c}\\&=\frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\&=\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 80, normalized size = 1.45

$$\frac{B\sqrt{c}\,x(b+cx)-\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[c]*x*(b + c*x) - Sqrt[b]*(b*B - 2*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(c^(3/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.00, size = 67, normalized size = 1.22

$$\frac{(bB-2Ac)\log\left(-2c^{3/2}\sqrt{bx+cx^2}+bc+2c^2x\right)}{2c^{3/2}}+\frac{B\sqrt{bx+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[b*x + c*x^2])/c + ((b*B - 2*A*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt
[b*x + c*x^2]])/(2*c^(3/2))
```

fricas [A] time = 0.42, size = 115, normalized size = 2.09

$$\left[\frac{2\sqrt{cx^2+bx}\,Bc-(Bb-2\,Ac)\sqrt{c}\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2\,c^2},\frac{\sqrt{cx^2+bx}\,Bc+(Bb-2\,Ac)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)}{c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(c*x^2 + b*x)*B*c - (B*b - 2*A*c)*sqrt(c)*log(2*c*x + b + 2*sqr
t(c*x^2 + b*x)*sqrt(c)))/c^2, (sqrt(c*x^2 + b*x)*B*c + (B*b - 2*A*c)*sqrt(-
c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)))/c^2]
```

giac [A] time = 0.27, size = 60, normalized size = 1.09

$$\frac{\sqrt{cx^2+bx}\,B}{c}+\frac{(Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.05, size = 78, normalized size = 1.42

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx}\;B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] (c*x^2+b*x)^(1/2)*B/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1
/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.59, size = 75, normalized size = 1.36

$$-\frac{Bb\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}+\frac{A\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+bx}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + A*log(2*c*x
 + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + sqrt(c*x^2 + b*x)*B/c
```

mupad [B] time = 2.12, size = 77, normalized size = 1.40

$$\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{\sqrt{c}}+\frac{B\,\sqrt{c\,x^2+b\,x}}{c}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(1/2) + (B*(b*x + c*x^
2)^(1/2))/c - (B*b*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(2*c^(3/
2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(x*(b + c*x)), x)
```

3.1050 $\int \frac{A+Bx}{(d+ex)\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=113

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{\sqrt{d}\,e\sqrt{cd-be}}$$

Rubi [A] time = 0.08, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {843, 620, 206, 724}

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{\sqrt{d}\,e\sqrt{cd-be}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(Sqrt[c]*e) - ((B*d - A*e)*Arc
Tanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])]
)/(Sqrt[d]*e*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)\sqrt{bx+cx^2}}\,dx &= \frac{B\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{e} + \frac{(-Bd+Ae)\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,dx}{e} \\
&= \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{bx+cx^2}}\right)}{e} - \frac{(2(-Bd+Ae))\,\text{Subst}\left(\int \frac{1}{4cd^2-4bde-x^2}\,dx, x, \frac{-b}{\right.}}{e} \\
&= \frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e} - \frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd+(2cd-be)x}{2\sqrt{d}\,\sqrt{cd-be}\,\sqrt{bx+cx^2}}\right)}{\sqrt{d}\,e\sqrt{cd-be}}
\end{aligned}
$$

Mathematica [**A**] time = 0.17, size = 131, normalized size = 1.16

$$
\frac{2\sqrt{x}\left(\frac{\sqrt{b+cx}\,(Ae-Bd)\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)}{\sqrt{d}\,\sqrt{cd-be}} + \frac{\sqrt{b}\,B\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}}\right)}{e\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[x]*((Sqrt[b]*B*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/Sqrt[c] + ((-(B*d) + A*e)*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])
/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*Sqrt[c*d - b*e])))/(e*Sqrt[x*(b + c*x)]
)
```

IntegrateAlgebraic [**A**] time = 0.48, size = 124, normalized size = 1.10

$$
-\frac{2(Bd-Ae)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{d}\,\sqrt{cd-be}}\right)}{\sqrt{d}\,e\sqrt{cd-be}} - \frac{B\log\left(-2\sqrt{c}\,e\sqrt{bx+cx^2}+be+2cex\right)}{\sqrt{c}\,e}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sq
rt[d]*Sqrt[c*d - b*e])])/(Sqrt[d]*e*Sqrt[c*d - b*e]) - (B*Log[b*e + 2*c*e*x
 - 2*Sqrt[c]*e*Sqrt[b*x + c*x^2]])/(Sqrt[c]*e)
```

fricas [**A**] time = 0.49, size = 534, normalized size = 4.73

$$
\left[\frac{\left(Bcd^2-Bbde\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-(Bcd-Ace)\sqrt{cd^2-bde}\log\left(\frac{bd+(2cd-be)x+2\sqrt{cd^2-bde}\sqrt{cx^2+bx}}{ex+d}\right)}{c^2d^2e-bcde^2}, -\frac{2(Bcd-Ace)\sqrt{-cd^2+bde}\arctan\left(-\frac{\sqrt{-cd^2+bde}\sqrt{cx^2+bx}}{(cd-be)x}\right)-\left(Bcd^2-Bbde\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{c^2d^2e-bcde^2}, -\frac{2\left(Bcd^2-Bbde\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)+(Bcd-Ace)\sqrt{cd^2-bde}\log\left(\frac{bd+(2cd-be)x+2\sqrt{cd^2-bde}\sqrt{cx^2+bx}}{ex+d}\right)}{c^2d^2e-bcde^2}, -\frac{2\left((Bcd-Ace)\sqrt{-cd^2+bde}\arctan\left(-\frac{\sqrt{-cd^2+bde}\sqrt{cx^2+bx}}{(cd-be)x}\right)+\left(Bcd^2-Bbde\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)\right)}{c^2d^2e-bcde^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [((B*c*d^2 - B*b*d*e)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
- (B*c*d - A*c*e)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c
*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)))/(c^2*d^2*e - b*c*d*e^2), -(2*(
B*c*d - A*c*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2
 + b*x)/((c*d - b*e)*x)) - (B*c*d^2 - B*b*d*e)*sqrt(c)*log(2*c*x + b + 2*sq
rt(c*x^2 + b*x)*sqrt(c)))/(c^2*d^2*e - b*c*d*e^2), -(2*(B*c*d^2 - B*b*d*e)*
sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (B*c*d - A*c*e)*sqrt(c*
d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2
+ b*x))/(e*x + d)))/(c^2*d^2*e - b*c*d*e^2), -2*((B*c*d - A*c*e)*sqrt(-c*d^
2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
```

```
+ (B*c*d^2 - B*b*d*e)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)))/(c
^2*d^2*e - b*c*d*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [**B**] time = 0.05, size = 298, normalized size = 2.64

$$-\frac{A\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2 c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{\sqrt{-\frac{(be-cd)d}{e^2}}\;e}+\frac{Bd\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2 c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{\sqrt{-\frac{(be-cd)d}{e^2}}\;e^2}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)-1/e/(-(b*e-c*d)*d/e^2
)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(
1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+
1/e^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2))/(x+d/e))*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((c*d^2)/e^2
     -(b*d)/e))     /e^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\;\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x\left(b+cx\right)}\;\left(d+ex\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)), x)
```

3.1051 $\int \frac{A+Bx}{(d+ex)^2\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=128

$$\frac{\sqrt{bx+cx^2}\,(Bd-Ae)}{d(d+ex)(cd-be)}-\frac{(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{2d^{3/2}(cd-be)^{3/2}}$$

Rubi [A] time = 0.08, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {806, 724, 206}

$$\frac{\sqrt{bx+cx^2}\,(Bd-Ae)}{d(d+ex)(cd-be)}-\frac{(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{2d^{3/2}(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[b*x + c*x^2])/(d*(c*d - b*e)*(d + e*x)) - ((b*B*d - 2*A*c
*d + A*b*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt
[b*x + c*x^2]])])/(2*d^(3/2)*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^2\sqrt{bx+cx^2}}\,dx &= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)(d+ex)}-\frac{(bBd-2Acd+Abe)\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,dx}{2d(cd-be)}\\
&= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)(d+ex)}+\frac{(bBd-2Acd+Abe)\,\text{Subst}\left(\int \frac{1}{4cd^2-4bde-x^2}\,dx,x,\frac{-bd-(2cd-}{\sqrt{bx+cx^2}}\right.}{d(cd-be)}\\
&= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)(d+ex)}-\frac{(bBd-2Acd+Abe)\tanh^{-1}\left(\frac{bd+(2cd-be)x}{2\sqrt{d}\,\sqrt{cd-be}\,\sqrt{bx+cx^2}}\right)}{2d^{3/2}(cd-be)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 133, normalized size = 1.04

$$\frac{\sqrt{x}\left(\frac{\sqrt{d}\sqrt{x}(b+cx)(Ae-Bd)}{d+ex}+\frac{\sqrt{b+cx}\,(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{\sqrt{cd-be}}\right)}{d^{3/2}\sqrt{x(b+cx)}\,(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[x]*((Sqrt[d]*(-(B*d) + A*e)*Sqrt[x]*(b + c*x))/(d + e*x) + ((b*B*d -
2*A*c*d + A*b*e)*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*S
qrt[b + c*x])]))/Sqrt[c*d - b*e]))/(d^(3/2)*(-(c*d) + b*e)*Sqrt[x*(b + c*x)]
)
```

IntegrateAlgebraic [B] time = 2.95, size = 930, normalized size = 7.27

$$\frac{Bdb^3+Bexb^3+c^{5/2}\sqrt{cx^2+bx}\left(8Bdx^2+8Adx\right)+c^{3/2}\sqrt{cx^2+bx}\left(-8bBex^2-4Abex+4Abd\right)+c\left(8Bex^2b^2-Adb^2+4Bdxb^2+3Aexb^2\right)+c^3\left(-8Bdx^3-8Adx^2\right)+c^2\left(8bBex^3-4bBdx^2+4Abex^2-8Abdx\right)+\sqrt{c}\left(-3Bdb^2-Aeb^2-4Bexb^2\right)\sqrt{cx^2+bx}}{8d^2x^2(d+ex)c^{7/2}-8d^2x(d+ex)\sqrt{cx^2+bx}\,c^3+d(d+ex)\left(8bdx-8bex^2\right)c^{5/2}+d(d+ex)(8bex-4bd)\sqrt{cx^2+bx}\,c^2+d(d+ex)\left(b^2d-8b^2ex\right)c^{3/2}+4b^2de(d+ex)\sqrt{cx^2+bx}\,c-b^3de(d+ex)\sqrt{c}}+\frac{2bB\tan^{-1}\left(\frac{\sqrt{c}\,xe}{\sqrt{d}\sqrt{be-cd}}-\frac{\sqrt{cx^2+bx}\,e}{\sqrt{d}\sqrt{be-cd}}+\frac{\sqrt{c}\sqrt{d}}{\sqrt{be-cd}}\right)}{\sqrt{d}\,(cd-be)\sqrt{be-cd}}-\frac{2Bc\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c}\,xe}{\sqrt{d}\sqrt{be-cd}}-\frac{\sqrt{cx^2+bx}\,e}{\sqrt{d}\sqrt{be-cd}}+\frac{\sqrt{c}\sqrt{d}}{\sqrt{be-cd}}\right)}{e(cd-be)\sqrt{be-cd}}+\left(\frac{bB}{\sqrt{d}\,(cd-be)^{3/2}}+\frac{2Ac}{\sqrt{d}\,(cd-be)^{3/2}}\right)\tanh^{-1}\left(\frac{\sqrt{c}\,d+\sqrt{c}\,ex-e\sqrt{cx^2+bx}}{\sqrt{d}\sqrt{cd-be}}\right)-\frac{Abe\tanh^{-1}\left(\frac{\sqrt{c}\,xe}{\sqrt{d}\sqrt{cd-be}}-\frac{\sqrt{cx^2+bx}\,e}{\sqrt{d}\sqrt{cd-be}}+\frac{\sqrt{c}\sqrt{d}}{\sqrt{cd-be}}\right)}{d^{3/2}(cd-be)^{3/2}}-\frac{2Bc\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{c}\,xe}{\sqrt{d}\sqrt{cd-be}}-\frac{\sqrt{cx^2+bx}\,e}{\sqrt{d}\sqrt{cd-be}}+\frac{\sqrt{c}\sqrt{d}}{\sqrt{cd-be}}\right)}{e(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (b^3*B*d + b^3*B*e*x + Sqrt[c]*(-3*b^2*B*d - A*b^2*e - 4*b^2*B*e*x)*Sqrt[b*
x + c*x^2] + c^(5/2)*Sqrt[b*x + c*x^2]*(8*A*d*x + 8*B*d*x^2) + c^(3/2)*Sqrt
[b*x + c*x^2]*(4*A*b*d - 4*A*b*e*x - 8*b*B*e*x^2) + c*(-(A*b^2*d) + 4*b^2*B
*d*x + 3*A*b^2*e*x + 8*b^2*B*e*x^2) + c^3*(-8*A*d*x^2 - 8*B*d*x^3) + c^2*(-
8*A*b*d*x - 4*b*B*d*x^2 + 4*A*b*e*x^2 + 8*b*B*e*x^3))/(-(b^3*Sqrt[c]*d*e*(d
 + e*x)) + 8*c^(7/2)*d^2*x^2*(d + e*x) + c^(3/2)*d*(d + e*x)*(b^2*d - 8*b^2
*e*x) + 4*b^2*c*d*e*(d + e*x)*Sqrt[b*x + c*x^2] - 8*c^3*d^2*x*(d + e*x)*Sqr
t[b*x + c*x^2] + c^2*d*(d + e*x)*(-4*b*d + 8*b*e*x)*Sqrt[b*x + c*x^2] + c^(
5/2)*d*(d + e*x)*(8*b*d*x - 8*b*e*x^2)) + (2*b*B*ArcTan[(Sqrt[c]*Sqrt[d])/S
qrt[-(c*d) + b*e] + (Sqrt[c]*e*x)/(Sqrt[d]*Sqrt[-(c*d) + b*e]) - (e*Sqrt[b*
x + c*x^2])/(Sqrt[d]*Sqrt[-(c*d) + b*e])])/(Sqrt[d]*(c*d - b*e)*Sqrt[-(c*d)
 + b*e]) - (2*B*c*Sqrt[d]*ArcTan[(Sqrt[c]*Sqrt[d])/Sqrt[-(c*d) + b*e] + (Sq
rt[c]*e*x)/(Sqrt[d]*Sqrt[-(c*d) + b*e]) - (e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sq
rt[-(c*d) + b*e])])/(e*(c*d - b*e)*Sqrt[-(c*d) + b*e]) + ((b*B)/(Sqrt[d]*(c
*d - b*e)^(3/2)) + (2*A*c)/(Sqrt[d]*(c*d - b*e)^(3/2)))*ArcTanh[(Sqrt[c]*d
+ Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])] - (2*B*c*Sq
rt[d]*ArcTanh[(Sqrt[c]*Sqrt[d])/Sqrt[c*d - b*e] + (Sqrt[c]*e*x)/(Sqrt[d]*Sq
rt[c*d - b*e]) - (e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/(e*(c*d
- b*e)^(3/2)) - (A*b*e*ArcTanh[(Sqrt[c]*Sqrt[d])/Sqrt[c*d - b*e] + (Sqrt[c]
*e*x)/(Sqrt[d]*Sqrt[c*d - b*e]) - (e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d -
 b*e])])/(d^(3/2)*(c*d - b*e)^(3/2))
```

fricas [A] time = 0.44, size = 399, normalized size = 3.12

$$\left[-\frac{\left(Abde+(Bb-2Ac)d^2+\left(Abe^2+(Bb-2Ac)de\right)x\right)\sqrt{cd^2-bde}\log\left(\frac{bd+(2cd-be)x+2\sqrt{cd^2-bde}\sqrt{cx^2+bx}}{ex+d}\right)-2\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)\sqrt{cx^2+bx}}{2\left(c^2d^5-2bcd^4e+b^2d^3e^2+\left(c^2d^4e-2bcd^3e^2+b^2d^2e^3\right)x\right)},-\frac{\left(Abde+(Bb-2Ac)d^2+\left(Abe^2+(Bb-2Ac)de\right)x\right)\sqrt{-cd^2+bde}\arctan\left(-\frac{\sqrt{-cd^2+bde}\sqrt{cx^2+bx}}{(cd-be)x}\right)-\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)\sqrt{cx^2+bx}}{c^2d^5-2bcd^4e+b^2d^3e^2+\left(c^2d^4e-2bcd^3e^2+b^2d^2e^3\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((A*b*d*e + (B*b - 2*A*c)*d^2 + (A*b*e^2 + (B*b - 2*A*c)*d*e)*x)*sqrt
(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x
^2 + b*x))/(e*x + d)) - 2*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*sqrt(c*
x^2 + b*x))/(c^2*d^5 - 2*b*c*d^4*e + b^2*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e
^2 + b^2*d^2*e^3)*x), -((A*b*d*e + (B*b - 2*A*c)*d^2 + (A*b*e^2 + (B*b - 2*
A*c)*d*e)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 +
 b*x)/((c*d - b*e)*x)) - (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*sqrt(c*x
```

```
^2 + b*x))/(c^2*d^5 - 2*b*c*d^4*e + b^2*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^
2 + b^2*d^2*e^3)*x)]
```

giac [B] time = 1.10, size = 509, normalized size = 3.98

$$-\frac{1}{2}\left(\frac{\left(Bbde^{2}\log\left(\left|2cd-be-2\sqrt{cd^{2}-bde}\sqrt{c}\right|\right)-2Acde^{2}\log\left(\left|2cd-be-2\sqrt{cd^{2}-bde}\sqrt{c}\right|\right)+2\sqrt{cd^{2}-bde}B\sqrt{c}de+Abe^{3}\log\left(\left|2cd-be-2\sqrt{cd^{2}-bde}\sqrt{c}\right|\right)-2\sqrt{cd^{2}-bde}A\sqrt{c}e^{2}\right)\mathrm{sgn}\left(\frac{1}{xe+d}\right)}{\sqrt{cd^{2}-bde}\,cd^{2}-\sqrt{cd^{2}-bde}\,bde}-\frac{2\left(Bde\,\mathrm{sgn}\left(\frac{1}{xe+d}\right)-Ae^{2}\mathrm{sgn}\left(\frac{1}{xe+d}\right)\right)\sqrt{c-\frac{2cd}{xe+d}+\frac{cd^{2}}{(xe+d)^{2}}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^{2}}}}{cd^{2}\mathrm{sgn}\left(\frac{1}{xe+d}\right)^{2}-bde\,\mathrm{sgn}\left(\frac{1}{xe+d}\right)^{2}}-\frac{\left(Bbde^{3}-2Acde^{3}+Abe^{4}\right)\log\left(\left|2cd-be-2\sqrt{cd^{2}-bde}\left(\sqrt{c-\frac{2cd}{xe+d}+\frac{cd^{2}}{(xe+d)^{2}}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^{2}}}+\frac{\sqrt{cd^{2}e^{2}-bde^{3}}e^{(-1)}}{xe+d}\right)\right|\right)}{\left(cd^{2}e-bde^{2}\right)\sqrt{cd^{2}-bde}\,\mathrm{sgn}\left(\frac{1}{xe+d}\right)}\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*((B*b*d*e^2*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) - 2*
A*c*d*e^2*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) + 2*sqrt(c*
d^2 - b*d*e)*B*sqrt(c)*d*e + A*b*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b
*d*e)*sqrt(c))) - 2*sqrt(c*d^2 - b*d*e)*A*sqrt(c)*e^2)*sgn(1/(x*e + d))/(sq
rt(c*d^2 - b*d*e)*c*d^2 - sqrt(c*d^2 - b*d*e)*b*d*e) - 2*(B*d*e*sgn(1/(x*e
+ d)) - A*e^2*sgn(1/(x*e + d)))*sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^
2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2)/(c*d^2*sgn(1/(x*e + d))^2 - b*d*e*sg
n(1/(x*e + d))^2) - (B*b*d*e^3 - 2*A*c*d*e^3 + A*b*e^4)*log(abs(2*c*d - b*e
 - 2*sqrt(c*d^2 - b*d*e)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*
e/(x*e + d) - b*d*e/(x*e + d)^2) + sqrt(c*d^2*e^2 - b*d*e^3)*e^(-1)/(x*e +
d))))/((c*d^2*e - b*d*e^2)*sqrt(c*d^2 - b*d*e)*sgn(1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.06, size = 849, normalized size = 6.63

$$-\frac{Ab\ln\left(\frac{-\frac{2(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^{2}}}\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{2(be-cd)\sqrt{-\frac{(be-cd)d}{e^{2}}}\,d}+\frac{Ac\ln\left(\frac{-\frac{2(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^{2}}}\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{(be-cd)\sqrt{-\frac{(be-cd)d}{e^{2}}}\,e}+\frac{Bb\ln\left(\frac{-\frac{2(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^{2}}}\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{2(be-cd)\sqrt{-\frac{(be-cd)d}{e^{2}}}\,e}-\frac{Bcd\ln\left(\frac{-\frac{2(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^{2}}}\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{(be-cd)\sqrt{-\frac{(be-cd)d}{e^{2}}}\,e^{2}}+\frac{\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,A}{(be-cd)\left(x+\frac{d}{e}\right)d}-\frac{\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,B}{(be-cd)\left(x+\frac{d}{e}\right)e}-\frac{B\ln\left(\frac{-\frac{2(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^{2}}}\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{\sqrt{-\frac{(be-cd)d}{e^{2}}}\,e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*A-1/e/(b*e-c*d)/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*B-1/2/(b*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*A+1/2/e/(b*e-c*d)/(-(b*e-c*d
)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d
/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d
/e))*b*B+1/e/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A-1/e^2/(b*e-c*d)/(-(b*e-c*d)*d/e^2
)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(
1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*
B*d-B/e^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x\,(b + cx)}\,(d + ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**2), x)
```

3.1052 $\int \frac{A+Bx}{(d+ex)^3\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=216

$$\frac{\left(b^2e(3Ae+Bd)-4bcd(2Ae+Bd)+8Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(3Ae(2cd-be)-Bd(be}{4d^2(d+ex)(cd-be)^2}$$

Rubi [A] time = 0.26, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {834, 806, 724, 206}

$$\frac{\left(b^2e(3Ae+Bd)-4bcd(2Ae+Bd)+8Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(3Ae(2cd-be)-Bd(be+2cd))}{4d^2(d+ex)(cd-be)^2}+\frac{\sqrt{bx+cx^2}\,(Bd-Ae)}{2d(d+ex)^2(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[b*x + c*x^2])/(2*d*(c*d - b*e)*(d + e*x)^2) - ((3*A*e*(2*
c*d - b*e) - B*d*(2*c*d + b*e))*Sqrt[b*x + c*x^2])/(4*d^2*(c*d - b*e)^2*(d
+ e*x)) + ((8*A*c^2*d^2 - 4*b*c*d*(B*d + 2*A*e) + b^2*e*(B*d + 3*A*e))*ArcT
anh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])
/(8*d^(5/2)*(c*d - b*e)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\sqrt{bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{\int \frac{\frac{1}{2}(bBd-4Acd+3Abe)-c(Bd-Ae)x}{(d+ex)^2\sqrt{bx+cx^2}}dx}{2d(cd-be)}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{(3Ae(2cd-be)-Bd(2cd+be))\sqrt{bx+cx^2}}{4d^2(cd-be)^2(d+ex)} + \frac{(8Ac^2d^2-4bc\ldots}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{(3Ae(2cd-be)-Bd(2cd+be))\sqrt{bx+cx^2}}{4d^2(cd-be)^2(d+ex)} - \frac{(8Ac^2d^2-4bc\ldots}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{(3Ae(2cd-be)-Bd(2cd+be))\sqrt{bx+cx^2}}{4d^2(cd-be)^2(d+ex)} + \frac{(8Ac^2d^2-4bc\ldots}{}$$

Mathematica [A] time = 0.39, size = 217, normalized size = 1.00

$$\frac{\sqrt{x}\left(-\frac{\sqrt{b+cx}\left(b^2e(3Ae+Bd)-4bcd(2Ae+Bd)+8Ac^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{2d^{3/2}(cd-be)^{3/2}}-\frac{\sqrt{x}(b+cx)(3Ae(be-2cd)+Bd(be+2cd))}{2d(d+ex)(cd-be)}+\frac{\sqrt{x}(b+cx)(Ae-Bd)}{(d+ex)^2}\right)}{2d\sqrt{x(b+cx)}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[x]*(((-(B*d) + A*e)*Sqrt[x]*(b + c*x))/(d + e*x)^2 - ((3*A*e*(-2*c*d
+ b*e) + B*d*(2*c*d + b*e))*Sqrt[x]*(b + c*x))/(2*d*(c*d - b*e)*(d + e*x))
- ((8*A*c^2*d^2 - 4*b*c*d*(B*d + 2*A*e) + b^2*e*(B*d + 3*A*e))*Sqrt[b + c*x
]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(2*d^(3/2)*(c
*d - b*e)^(3/2))))/(2*d*(-(c*d) + b*e)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 2.03, size = 217, normalized size = 1.00

$$\frac{\left(3Ab^2e^2-8Abcde+8Ac^2d^2+b^2Bde-4bBcd^2\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{4d^{5/2}(cd-be)^{5/2}}+\frac{\sqrt{bx+cx^2}\left(5Abde^2+3Abe^3x-8Acd^2e-6Acde^2x-bBd^2e+bBde^2x+4Bcd^3+2Bcd^2ex\right)}{4d^2(d+ex)^2(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((4*B*c*d^3 - b*B*d^2*e - 8*A*c*d^2*e + 5*A*b*d*e^2 + 2*B*c*d^2*e*x + b*B*d
*e^2*x - 6*A*c*d*e^2*x + 3*A*b*e^3*x)*Sqrt[b*x + c*x^2])/(4*d^2*(c*d - b*e)
^2*(d + e*x)^2) + ((-4*b*B*c*d^2 + 8*A*c^2*d^2 + b^2*B*d*e - 8*A*b*c*d*e +
3*A*b^2*e^2)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[
d]*Sqrt[c*d - b*e])])/(4*d^(5/2)*(c*d - b*e)^(5/2))
```

fricas [B] time = 0.46, size = 954, normalized size = 4.42

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/8*((3*A*b^2*d^2*e^2 - 4*(B*b*c - 2*A*c^2)*d^4 + (B*b^2 - 8*A*b*c)*d^3*e
+ (3*A*b^2*e^4 - 4*(B*b*c - 2*A*c^2)*d^2*e^2 + (B*b^2 - 8*A*b*c)*d*e^3)*x^2
 + 2*(3*A*b^2*d*e^3 - 4*(B*b*c - 2*A*c^2)*d^3*e + (B*b^2 - 8*A*b*c)*d^2*e^2
)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)
*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(4*B*c^2*d^5 - 5*A*b^2*d^2*e^3 - (5*B*b*
```

```
c + 8*A*c^2)*d^4*e + (B*b^2 + 13*A*b*c)*d^3*e^2 + (2*B*c^2*d^4*e - 3*A*b^2*
d*e^4 - (B*b*c + 6*A*c^2)*d^3*e^2 - (B*b^2 - 9*A*b*c)*d^2*e^3)*x)*sqrt(c*x^
2 + b*x))/(c^3*d^8 - 3*b*c^2*d^7*e + 3*b^2*c*d^6*e^2 - b^3*d^5*e^3 + (c^3*d
^6*e^2 - 3*b*c^2*d^5*e^3 + 3*b^2*c*d^4*e^4 - b^3*d^3*e^5)*x^2 + 2*(c^3*d^7*
e - 3*b*c^2*d^6*e^2 + 3*b^2*c*d^5*e^3 - b^3*d^4*e^4)*x), 1/4*((3*A*b^2*d^2*
e^2 - 4*(B*b*c - 2*A*c^2)*d^4 + (B*b^2 - 8*A*b*c)*d^3*e + (3*A*b^2*e^4 - 4*
(B*b*c - 2*A*c^2)*d^2*e^2 + (B*b^2 - 8*A*b*c)*d*e^3)*x^2 + 2*(3*A*b^2*d*e^3
 - 4*(B*b*c - 2*A*c^2)*d^3*e + (B*b^2 - 8*A*b*c)*d^2*e^2)*x)*sqrt(-c*d^2 +
b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (4
*B*c^2*d^5 - 5*A*b^2*d^2*e^3 - (5*B*b*c + 8*A*c^2)*d^4*e + (B*b^2 + 13*A*b*
c)*d^3*e^2 + (2*B*c^2*d^4*e - 3*A*b^2*d*e^4 - (B*b*c + 6*A*c^2)*d^3*e^2 - (
B*b^2 - 9*A*b*c)*d^2*e^3)*x)*sqrt(c*x^2 + b*x))/(c^3*d^8 - 3*b*c^2*d^7*e +
3*b^2*c*d^6*e^2 - b^3*d^5*e^3 + (c^3*d^6*e^2 - 3*b*c^2*d^5*e^3 + 3*b^2*c*d^
4*e^4 - b^3*d^3*e^5)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2 + 3*b^2*c*d^5*e^3
 - b^3*d^4*e^4)*x)]
```

giac [B] time = 0.31, size = 769, normalized size = 3.56

$$-\frac{\left(4\,Bbcd^2-8\,Ac^2d^2-Bb^2de+8\,Abcde-3\,Ab^2e^2\right)\arctan\left(-\frac{\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)e+\sqrt{c}d}{\sqrt{-cd^2+bde}}\right)}{4\left(c^2d^4-2\,bcd^3e+b^2d^2e^2\right)\sqrt{-cd^2+bde}}+\frac{8\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bc^{\frac{5}{2}}d^4-4\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bbc^{\frac{3}{2}}d^3e-24\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ac^{\frac{5}{2}}d^3e+8\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Bbc^2d^4+4\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bbcd^2e^2-8\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ac^2d^2e^2-24\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Abc^2d^3e+2\,Bb^2c^{\frac{3}{2}}d^4+5\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Bb^2\sqrt{c}d^2e^2+24\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Abc^{\frac{3}{2}}d^2e^2+Bb^3\sqrt{c}d^3e-6\,Ab^2c^{\frac{3}{2}}d^3e-\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Bb^2de^3+8\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Abcde^3+\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Bb^3d^2e^2+20\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^2cd^2e^2-9\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2Ab^2\sqrt{c}de^3+3\,Ab^3\sqrt{c}d^2e^2-3\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^3Ab^2e^4-5\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)Ab^3de^3}{4\left(c^2d^4e-2\,bcd^3e^2+b^2d^2e^3\right)\left(\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)^2e+2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}d+bd\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*(4*B*b*c*d^2 - 8*A*c^2*d^2 - B*b^2*d*e + 8*A*b*c*d*e - 3*A*b^2*e^2)*ar
ctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))
/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*sqrt(-c*d^2 + b*d*e)) + 1/4*(8*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^2*B*c^(5/2)*d^4 - 4*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^2*B*b*c^(3/2)*d^3*e - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c^(5/2)*d
^3*e + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^2*d^4 + 4*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*B*b*c*d^2*e^2 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^2*d
^2*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c^2*d^3*e + 2*B*b^2*c^(3/2)
*d^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*sqrt(c)*d^2*e^2 + 24*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(3/2)*d^2*e^2 + B*b^3*sqrt(c)*d^3*e - 6*
A*b^2*c^(3/2)*d^3*e - (sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*d*e^3 + 8*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c*d*e^3 + (sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^3*d^2*e^2 + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c*d^2*e^2 - 9*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*sqrt(c)*d*e^3 + 3*A*b^3*sqrt(c)*d^2*e
^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*e^4 - 5*(sqrt(c)*x - sqrt(c*
x^2 + b*x))*A*b^3*d*e^3)/((c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3)*((sqrt(
c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d
 + b*d)^2)
```

maple [B] time = 0.06, size = 1821, normalized size = 8.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B/e/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)-1/2*B/e/(b*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b+3/2*B/e^2/(b*e-c*d)/(-(b*e-c*d)
*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/
e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/
e))*c+1/2/e/(b*e-c*d)/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2)*A-1/2/e^2/(b*e-c*d)/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+3/4*e/(b*e-c*d)^2/d^2/(x+d/e)*((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*A-3/4/(b*e-c*d)^2/d/(x+d/e)*
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*B-3/2/(b*e-c*d)
```

```
^2/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*A+
3/2/e/(b*e-c*d)^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2)*c*B-3/8*e/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*A+3/8/(b*e-c*d)^2/d/(
-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b
*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1
/2))/(x+d/e))*b^2*B+3/2/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A-3/2/e/(b*e-c*d)^
2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(
-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2))/(x+d/e))*b*c*B-3/2/e/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*A+3/2/e^2/(b*e-
c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))*c^2*B*d-1/2/e*c/(b*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*
ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^3),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x \left(b + cx\right)} \left(d + ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**3), x)
```

3.1053 $\int \frac{A+Bx}{(d+ex)^4\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=331

$$\frac{\sqrt{bx+cx^2}\left(Bd\left(-3b^2e^2+10bcde+8c^2d^2\right)-Ae\left(15b^2e^2-44bcde+44c^2d^2\right)\right)}{24d^3(d+ex)(cd-be)^3}+\frac{\left(b^3\left(-e^2\right)(5Ae+Bd)+2b^2cde(\right.}{}$$

Rubi [A] time = 0.50, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{bx+cx^2}\left(Bd\left(-3b^2e^2+10bcde+8c^2d^2\right)-Ae\left(15b^2e^2-44bcde+44c^2d^2\right)\right)}{24d^3(d+ex)(cd-be)^3}+\frac{\left(2b^2cde(9Ae+2Bd)+b^3\left(-e^2\right)(5Ae+Bd)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16d^{7/2}(cd-be)^{7/2}}-\frac{\sqrt{bx+cx^2}\,(5Ae(2cd-be)-Bd(be+4cd))}{12d^2(d+ex)^2(cd-be)^2}+\frac{\sqrt{bx+cx^2}\,(Bd-Ae)}{3d(d+ex)^3(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[b*x + c*x^2])/(3*d*(c*d - b*e)*(d + e*x)^3) - ((5*A*e*(2*
c*d - b*e) - B*d*(4*c*d + b*e))*Sqrt[b*x + c*x^2])/(12*d^2*(c*d - b*e)^2*(d
 + e*x)^2) + ((B*d*(8*c^2*d^2 + 10*b*c*d*e - 3*b^2*e^2) - A*e*(44*c^2*d^2 -
 44*b*c*d*e + 15*b^2*e^2))*Sqrt[b*x + c*x^2])/(24*d^3*(c*d - b*e)^3*(d + e*
x)) + ((16*A*c^3*d^3 - 8*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2*(B*d + 5*A*e) +
2*b^2*c*d*e*(2*B*d + 9*A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqr
t[c*d - b*e]*Sqrt[b*x + c*x^2])])/(16*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^4\sqrt{bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3} - \frac{\int \frac{\frac{1}{2}(bBd-6Acd+5Abe)-2c(Bd-Ae)x}{(d+ex)^3\sqrt{bx+cx^2}}\,dx}{3d(cd-be)}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3} - \frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2} + \frac{\int \frac{\frac{1}{4}(24Ac^2d^2+3b^2}{}}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3} - \frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2} + \frac{(Bd(8c^2d^2+1}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3} - \frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2} + \frac{(Bd(8c^2d^2+1}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3} - \frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2} + \frac{(Bd(8c^2d^2+1}{}$$

Mathematica [A] time = 1.72, size = 345, normalized size = 1.04

$$-\frac{\sqrt{x}\left(\frac{\sqrt{b+cx}(d+ex)\left(2d^{3/2}\sqrt{x}\sqrt{b+cx}(cd-be)^{3/2}(5Ae(be-2cd)+Bd(be+4cd))-(d+ex)\left(-\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}\left(Ae\left(-15b^2e^2+44bcde-44c^2d^2\right)+Bd\left(-3b^2e^2+10bcde+8c^2d^2\right)\right)-3(d+ex)\left(b^3\left(-e^2\right)(5Ae+Bd)+2b^2cde(9Ae+2Bd)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)\right)\right)}{d^{5/2}(cd-be)^{5/2}}+8\sqrt{x}(b+cx)(Bd-Ae)\right)}{24d\sqrt{x(b+cx)}(d+ex)^3(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -1/24*(Sqrt[x]*(8*(B*d - A*e)*Sqrt[x]*(b + c*x) + (Sqrt[b + c*x]*(d + e*x)*
(2*d^(3/2)*(c*d - b*e)^(3/2)*(5*A*e*(-2*c*d + b*e) + B*d*(4*c*d + b*e))*Sqr
t[x]*Sqrt[b + c*x] - (d + e*x)*(-(Sqrt[d]*Sqrt[c*d - b*e]*(A*e*(-44*c^2*d^2
 + 44*b*c*d*e - 15*b^2*e^2) + B*d*(8*c^2*d^2 + 10*b*c*d*e - 3*b^2*e^2))*Sqr
t[x]*Sqrt[b + c*x]) - 3*(16*A*c^3*d^3 - 8*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2
*(B*d + 5*A*e) + 2*b^2*c*d*e*(2*B*d + 9*A*e))*(d + e*x)*ArcTanh[(Sqrt[c*d -
 b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])))/(d^(5/2)*(c*d - b*e)^(5/2))))/(d
*(-(c*d) + b*e)*Sqrt[x*(b + c*x)]*(d + e*x)^3)
```

IntegrateAlgebraic [B] time = 166.05, size = 12551, normalized size = 37.92

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.49, size = 1781, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(5*A*b^3*d^3*e^3 + 8*(B*b*c^2 - 2*A*c^3)*d^6 - 4*(B*b^2*c - 6*A*b
*c^2)*d^5*e + (B*b^3 - 18*A*b^2*c)*d^4*e^2 + (5*A*b^3*e^6 + 8*(B*b*c^2 - 2*
A*c^3)*d^3*e^3 - 4*(B*b^2*c - 6*A*b*c^2)*d^2*e^4 + (B*b^3 - 18*A*b^2*c)*d*e
^5)*x^3 + 3*(5*A*b^3*d*e^5 + 8*(B*b*c^2 - 2*A*c^3)*d^4*e^2 - 4*(B*b^2*c - 6
*A*b*c^2)*d^3*e^3 + (B*b^3 - 18*A*b^2*c)*d^2*e^4)*x^2 + 3*(5*A*b^3*d^2*e^4
```

```
+ 8*(B*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c - 6*A*b*c^2)*d^4*e^2 + (B*b^3 -
18*A*b^2*c)*d^3*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*
sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(24*B*c^3*d^7 + 33*A*
b^3*d^3*e^4 - 36*(B*b*c^2 + 2*A*c^3)*d^6*e + 3*(5*B*b^2*c + 54*A*b*c^2)*d^5
*e^2 - 3*(B*b^3 + 41*A*b^2*c)*d^4*e^3 + (8*B*c^3*d^5*e^2 + 15*A*b^3*d*e^6 +
 2*(B*b*c^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c - 88*A*b*c^2)*d^3*e^4 + (3*B*
b^3 - 59*A*b^2*c)*d^2*e^5)*x^2 + 2*(12*B*c^3*d^6*e + 20*A*b^3*d^2*e^5 - (5*
B*b*c^2 + 54*A*c^3)*d^5*e^2 - (11*B*b^2*c - 113*A*b*c^2)*d^4*e^3 + (4*B*b^3
 - 79*A*b^2*c)*d^3*e^4)*x)*sqrt(c*x^2 + b*x))/(c^4*d^11 - 4*b*c^3*d^10*e +
6*b^2*c^2*d^9*e^2 - 4*b^3*c*d^8*e^3 + b^4*d^7*e^4 + (c^4*d^8*e^3 - 4*b*c^3*
d^7*e^4 + 6*b^2*c^2*d^6*e^5 - 4*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x^3 + 3*(c^4*d
^9*e^2 - 4*b*c^3*d^8*e^3 + 6*b^2*c^2*d^7*e^4 - 4*b^3*c*d^6*e^5 + b^4*d^5*e^
6)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 + 6*b^2*c^2*d^8*e^3 - 4*b^3*c*d^7*
e^4 + b^4*d^6*e^5)*x), -1/24*(3*(5*A*b^3*d^3*e^3 + 8*(B*b*c^2 - 2*A*c^3)*d^
6 - 4*(B*b^2*c - 6*A*b*c^2)*d^5*e + (B*b^3 - 18*A*b^2*c)*d^4*e^2 + (5*A*b^3
*e^6 + 8*(B*b*c^2 - 2*A*c^3)*d^3*e^3 - 4*(B*b^2*c - 6*A*b*c^2)*d^2*e^4 + (B
*b^3 - 18*A*b^2*c)*d*e^5)*x^3 + 3*(5*A*b^3*d*e^5 + 8*(B*b*c^2 - 2*A*c^3)*d^
4*e^2 - 4*(B*b^2*c - 6*A*b*c^2)*d^3*e^3 + (B*b^3 - 18*A*b^2*c)*d^2*e^4)*x^2
 + 3*(5*A*b^3*d^2*e^4 + 8*(B*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c - 6*A*b*c^
2)*d^4*e^2 + (B*b^3 - 18*A*b^2*c)*d^3*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-
sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - (24*B*c^3*d^7 + 3
3*A*b^3*d^3*e^4 - 36*(B*b*c^2 + 2*A*c^3)*d^6*e + 3*(5*B*b^2*c + 54*A*b*c^2)
*d^5*e^2 - 3*(B*b^3 + 41*A*b^2*c)*d^4*e^3 + (8*B*c^3*d^5*e^2 + 15*A*b^3*d*e
^6 + 2*(B*b*c^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c - 88*A*b*c^2)*d^3*e^4 + (
3*B*b^3 - 59*A*b^2*c)*d^2*e^5)*x^2 + 2*(12*B*c^3*d^6*e + 20*A*b^3*d^2*e^5 -
 (5*B*b*c^2 + 54*A*c^3)*d^5*e^2 - (11*B*b^2*c - 113*A*b*c^2)*d^4*e^3 + (4*B
*b^3 - 79*A*b^2*c)*d^3*e^4)*x)*sqrt(c*x^2 + b*x))/(c^4*d^11 - 4*b*c^3*d^10*
e + 6*b^2*c^2*d^9*e^2 - 4*b^3*c*d^8*e^3 + b^4*d^7*e^4 + (c^4*d^8*e^3 - 4*b*
c^3*d^7*e^4 + 6*b^2*c^2*d^6*e^5 - 4*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x^3 + 3*(c
^4*d^9*e^2 - 4*b*c^3*d^8*e^3 + 6*b^2*c^2*d^7*e^4 - 4*b^3*c*d^6*e^5 + b^4*d^
5*e^6)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 + 6*b^2*c^2*d^8*e^3 - 4*b^3*c*
d^7*e^4 + b^4*d^6*e^5)*x)]
```

giac [B] time = 0.39, size = 1667, normalized size = 5.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(8*B*b*c^2*d^3 - 16*A*c^3*d^3 - 4*B*b^2*c*d^2*e + 24*A*b*c^2*d^2*e + B
*b^3*d*e^2 - 18*A*b^2*c*d*e^2 + 5*A*b^3*e^3)*arctan(-((sqrt(c)*x - sqrt(c*x
^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^3*d^6 - 3*b*c^2*d^5*e +
 3*b^2*c*d^4*e^2 - b^3*d^3*e^3)*sqrt(-c*d^2 + b*d*e)) + 1/24*(64*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*B*c^4*d^6 - 16*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*
b*c^3*d^5*e - 352*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^4*d^5*e + 96*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^(7/2)*d^6 + 120*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^4*B*b*c^(5/2)*d^4*e^2 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^(7
/2)*d^4*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^(5/2)*d^5*e - 52
8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(7/2)*d^5*e + 48*(sqrt(c)*x - sqr
t(c*x^2 + b*x))*B*b^2*c^3*d^6 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b*c^
2*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^3*d^3*e^3 + 168*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^2*d^4*e^2 + 400*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^3*A*b*c^3*d^4*e^2 + 36*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*c^2*d
^5*e - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^3*d^5*e + 8*B*b^3*c^(5/2
)*d^6 - 60*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^(3/2)*d^3*e^3 + 360*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^(5/2)*d^3*e^3 + 54*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*B*b^3*c^(3/2)*d^4*e^2 + 756*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^2*A*b^2*c^(5/2)*d^4*e^2 + 10*B*b^4*c^(3/2)*d^5*e - 44*A*b^3*c^(5/2)*d^5*e
- 12*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c*d^2*e^4 + 72*(sqrt(c)*x - sq
```

```
rt(c*x^2 + b*x))^5*A*b*c^2*d^2*e^4 - 74*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^3*c*d^3*e^3 - 204*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^2*d^3*e^3 -
6*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*c*d^4*e^2 + 336*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*A*b^3*c^2*d^4*e^2 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3
*sqrt(c)*d^2*e^4 - 270*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(3/2)*d^2*
e^4 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4*sqrt(c)*d^3*e^3 - 498*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^(3/2)*d^3*e^3 - 3*B*b^5*sqrt(c)*d^4*e
^2 + 44*A*b^4*c^(3/2)*d^4*e^2 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*d
*e^5 - 54*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c*d*e^5 + 8*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*B*b^4*d^2*e^4 - 34*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A
*b^3*c*d^2*e^4 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*d^3*e^3 - 180*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*A*b^4*c*d^3*e^3 + 75*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^4*A*b^3*sqrt(c)*d*e^5 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*s
qrt(c)*d^2*e^4 - 15*A*b^5*sqrt(c)*d^3*e^3 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^5*A*b^3*e^6 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*d*e^5 + 33*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*A*b^5*d^2*e^4)/((c^3*d^6*e - 3*b*c^2*d^5*e^2 +
 3*b^2*c*d^4*e^3 - b^3*d^3*e^4)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^3)
```

maple [B] time = 0.13, size = 3242, normalized size = 9.79

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 9/4*B/e/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c+15/8*e/(b*e-c*d)^3/d^2/(-(b*e-c*d)
*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/
e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/
e))*b^2*c*A-5/2*e/(b*e-c*d)^3/d^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+5/2/(b*e-c*d)^3/d/(x+d/e)*((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*A+1/3/e^2/(b*e-c*d)/d/(x+d/e)^3
*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+5/2/e/(b*e-c*d
)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2
*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2))/(x+d/e))*c^3*A+5/6/e^2/(b*e-c*d)^2/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B-5/2/e/(b*e-c*d)^3/(x+d/e)*((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B+2/3*c/(b*e-c*d)^2/
d^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+5/1
2/(b*e-c*d)^2/d^2/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*b*A+1/2*B/e^2/(b*e-c*d)/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)+3/4*B/(b*e-c*d)^2/d^2/(x+d/e)*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b-3/8*B/(b*e-c*d)^2/d^2/(-(b*e-c
*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)
*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x
+d/e))*b^2-3*B/e^2/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2-1/3/e^3/(b*e-c*d)/(x+d/e)
^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-5/6/e/(b*e-c
*d)^2/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
*c*A+5/8*e^2/(b*e-c*d)^3/d^3/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2)*b^2*A+5/16*e/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*l
n((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-5/2/e
^2/(b*e-c*d)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B*d-13/6*B/e/(b*e-c*d)^2/d/(x+d/e)*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c-1/2*B/e^2*c/(b*e-c*d)
```

```
/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*
(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2))/(x+d/e))-15/4/(b*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*A-3/4/(b*e-c*d)^2
/d^2*c/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))*b*A-15/8/(b*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-
2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)
^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B-5/16*e^
2/(b*e-c*d)^3/d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*A+5/2/(b*e-c*d)^3/d/(x+d/e)*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-5/8*e/(b*e-c*d)^3/d^2
/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B+15
/4/e/(b*e-c*d)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*B-5/12/e/(b*e-c*d)^2/d/(x+d/e)^2*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*B+3/2/e/(b*e-c*d)^2
/d*c^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^4),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^4), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x \left(b + cx\right)} \left(d + ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**4), x)
```

3.1054 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=238

$$-\frac{2(d+ex)^2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{3e\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)+B\left(5b^2e^2-12bc\right.\right.}{4c^{7/2}}$$

Rubi [A] time = 0.22, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 779, 620, 206}

$$\frac{e\sqrt{bx+cx^2}\left(2cex\left(-4bc(Ae+Bd)+8Ac^2d+5b^2Be\right)+12b^2ce(Ae+3Bd)-8bc^2d(3Ae+2Bd)+32Ac^3d^2-15b^3Be^2\right)}{4b^2c^3}+\frac{3e\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)+B\left(5b^2e^2-12bcde+8c^2d^2\right)\right)}{4c^{7/2}}-\frac{2(d+ex)^2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2
*c*Sqrt[b*x + c*x^2]) + (e*(32*A*c^3*d^2 - 15*b^3*B*e^2 + 12*b^2*c*e*(3*B*d
 + A*e) - 8*b*c^2*d*(2*B*d + 3*A*e) + 2*c*e*(8*A*c^2*d + 5*b^2*B*e - 4*b*c*
(B*d + A*e))*x)*Sqrt[b*x + c*x^2])/(4*b^2*c^3) + (3*e*(4*A*c*e*(2*c*d - b*e
) + B*(8*c^2*d^2 - 12*b*c*d*e + 5*b^2*e^2))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x +
c*x^2]])/(4*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2\int \frac{(d+ex)\left(\frac{1}{2}b(bB+4Ac)de+\frac{1}{2}e(\cdots}{\sqrt{b\cdots}}}{b\cdots}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(32Ac^3d^2-15b^3Be^2+\cdots\right.}{\cdots}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(32Ac^3d^2-15b^3Be^2+\cdots\right.}{\cdots}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(32Ac^3d^2-15b^3Be^2+\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.23, size = 229, normalized size = 0.96

$$\frac{3b^{5/2}e\sqrt{x}\sqrt{\frac{cx}{b}+1}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(4Ace(2cd-be)+B\left(5b^2e^2-12bcde+8c^2d^2\right)\right)+\sqrt{c}\left(4Ac\left(3b^3e^3x+b^2ce^2x(ex-6d)-2bc^2d^2(d-3ex)-4c^3d^3x\right)+bBx\left(-15b^3e^3+b^2ce^2(36d-5ex)+2bc^2e\left(-12d^2+6dex+e^2x^2\right)+8c^3d^3\right)\right)}{4b^2c^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*(4*A*c*(-4*c^3*d^3*x + 3*b^3*e^3*x - 2*b*c^2*d^2*(d - 3*e*x) + b^2
*c*e^2*x*(-6*d + e*x)) + b*B*x*(8*c^3*d^3 - 15*b^3*e^3 + b^2*c*e^2*(36*d -
5*e*x) + 2*b*c^2*e*(-12*d^2 + 6*d*e*x + e^2*x^2))) + 3*b^(5/2)*e*(4*A*c*e*(
2*c*d - b*e) + B*(8*c^2*d^2 - 12*b*c*d*e + 5*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*
x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^2*c^(7/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.79, size = 287, normalized size = 1.21

$$\frac{\sqrt{bx+cx^2}\left(12Ab^3ce^3x-24Ab^2c^2de^2x+4Ab^2c^2e^3x^2-8Abc^3d^3+24Abc^3d^2ex-16Ac^4d^3x-15b^4Be^3x+36b^3Bcde^2x-5b^3Bce^3x^2-24b^2Bc^2d^2ex+12b^2Bc^2de^2x^2+2b^2Bc^2e^3x^3+8bBc^3d^3x\right)}{4b^2c^3x(b+cx)}-\frac{3\log\left(-2c^{7/2}\sqrt{bx+cx^2}+bc^3+2c^4x\right)\left(-4Abce^3+8Ac^2de^2+5b^2Be^3-12bBcde^2+8Bc^2d^2e\right)}{8c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-8*A*b*c^3*d^3 + 8*b*B*c^3*d^3*x - 16*A*c^4*d^3*x - 24*
b^2*B*c^2*d^2*e*x + 24*A*b*c^3*d^2*e*x + 36*b^3*B*c*d*e^2*x - 24*A*b^2*c^2*
d*e^2*x - 15*b^4*B*e^3*x + 12*A*b^3*c*e^3*x + 12*b^2*B*c^2*d*e^2*x^2 - 5*b^
3*B*c*e^3*x^2 + 4*A*b^2*c^2*e^3*x^2 + 2*b^2*B*c^2*e^3*x^3))/(4*b^2*c^3*x*(b
 + c*x)) - (3*(8*B*c^2*d^2*e - 12*b*B*c*d*e^2 + 8*A*c^2*d*e^2 + 5*b^2*B*e^3
 - 4*A*b*c*e^3)*Log[b*c^3 + 2*c^4*x - 2*c^(7/2)*Sqrt[b*x + c*x^2]])/(8*c^(7
/2))
```

fricas [A] time = 0.44, size = 694, normalized size = 2.92

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*(3*((8*B*b^2*c^3*d^2*e - 4*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2 + (5*B*b^
4*c - 4*A*b^3*c^2)*e^3)*x^2 + (8*B*b^3*c^2*d^2*e - 4*(3*B*b^4*c - 2*A*b^3*c
^2)*d*e^2 + (5*B*b^5 - 4*A*b^4*c)*e^3)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c)) + 2*(2*B*b^2*c^3*e^3*x^3 - 8*A*b*c^4*d^3 + (12*B*b^2*c^
3*d*e^2 - (5*B*b^3*c^2 - 4*A*b^2*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d^3
```

```
 - 24*(B*b^2*c^3 - A*b*c^4)*d^2*e + 12*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2 -
3*(5*B*b^4*c - 4*A*b^3*c^2)*e^3)*x)*sqrt(c*x^2 + b*x))/(b^2*c^5*x^2 + b^3*c
^4*x), -1/4*(3*((8*B*b^2*c^3*d^2*e - 4*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2 +
(5*B*b^4*c - 4*A*b^3*c^2)*e^3)*x^2 + (8*B*b^3*c^2*d^2*e - 4*(3*B*b^4*c - 2*
A*b^3*c^2)*d*e^2 + (5*B*b^5 - 4*A*b^4*c)*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2
 + b*x)*sqrt(-c)/(c*x)) - (2*B*b^2*c^3*e^3*x^3 - 8*A*b*c^4*d^3 + (12*B*b^2*
c^3*d*e^2 - (5*B*b^3*c^2 - 4*A*b^2*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d
^3 - 24*(B*b^2*c^3 - A*b*c^4)*d^2*e + 12*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2
- 3*(5*B*b^4*c - 4*A*b^3*c^2)*e^3)*x)*sqrt(c*x^2 + b*x))/(b^2*c^5*x^2 + b^3
*c^4*x)]
```

giac [A] time = 0.31, size = 251, normalized size = 1.05

$$-\frac{\frac{8\,Ad^3}{b} - \left(\left(\frac{2\,Bxe^3}{c} + \frac{12\,Bb^2c^2de^2-5\,Bb^3ce^3+4\,Ab^2c^2e^3}{b^2c^3}\right)x + \frac{8\,Bbc^3d^3-16\,Ac^4d^3-24\,Bb^2c^2d^2e+24\,Abc^3d^2e+36\,Bb^3cde^2-24\,Ab^2c^2de^2-15\,Bb^4e^3+12\,Ab^3ce^3}{b^2c^3}\right)x}{4\,\sqrt{cx^2+bx}} - \frac{3\left(8\,Bc^2d^2e - 12\,Bbcde^2 + 8\,Ac^2de^2 + 5\,Bb^2e^3 - 4\,Abce^3\right)\log\left(\left|-2\left(\sqrt{c}x - \sqrt{cx^2+bx}\right)\sqrt{c} - b\right|\right)}{8\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -1/4*(8*A*d^3/b - ((2*B*x*e^3/c + (12*B*b^2*c^2*d*e^2 - 5*B*b^3*c*e^3 + 4*A
*b^2*c^2*e^3)/(b^2*c^3))*x + (8*B*b*c^3*d^3 - 16*A*c^4*d^3 - 24*B*b^2*c^2*d
^2*e + 24*A*b*c^3*d^2*e + 36*B*b^3*c*d*e^2 - 24*A*b^2*c^2*d*e^2 - 15*B*b^4*
e^3 + 12*A*b^3*c*e^3)/(b^2*c^3))*x)/sqrt(c*x^2 + b*x) - 3/8*(8*B*c^2*d^2*e
- 12*B*b*c*d*e^2 + 8*A*c^2*d*e^2 + 5*B*b^2*e^3 - 4*A*b*c*e^3)*log(abs(-2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 450, normalized size = 1.89

$$\frac{B e^3x^3}{2\sqrt{c x^2+bx}\, c} + \frac{A e^3x^2}{\sqrt{c x^2+bx}\, c} - \frac{5Bb e^3x^2}{4\sqrt{c x^2+bx}\, c^2} + \frac{3Bd e^2x^2}{\sqrt{c x^2+bx}\, c} + \frac{3Ab e^3x}{\sqrt{c x^2+bx}\, c^2} + \frac{6A d^2ex}{\sqrt{c x^2+bx}\, b} - \frac{6Ad e^2x}{\sqrt{c x^2+bx}\, c} - \frac{15B b^2e^3x}{4\sqrt{c x^2+bx}\, c^3} + \frac{9Bbd e^2x}{\sqrt{c x^2+bx}\, c^2} + \frac{2B d^3x}{\sqrt{c x^2+bx}\, b} - \frac{6B d^2ex}{\sqrt{c x^2+bx}\, c} - \frac{3Ab e^3 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}} + \sqrt{c x^2+bx}\right)}{2c^{\frac{5}{2}}} + \frac{3Ad e^2 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}} + \sqrt{c x^2+bx}\right)}{c^{\frac{3}{2}}} + \frac{15B b^2e^3 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}} + \sqrt{c x^2+bx}\right)}{8c^{\frac{7}{2}}} - \frac{9Bbd e^2 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}} + \sqrt{c x^2+bx}\right)}{2c^{\frac{5}{2}}} + \frac{3B d^2e \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}} + \sqrt{c x^2+bx}\right)}{c^{\frac{3}{2}}} - \frac{2\,(2cx+b)\,A\,d^3}{\sqrt{c x^2+bx}\; b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/2*B*e^3*x^3/c/(c*x^2+b*x)^(1/2)-5/4*B*e^3*b/c^2*x^2/(c*x^2+b*x)^(1/2)-15/
4*B*e^3*b^2/c^3/(c*x^2+b*x)^(1/2)*x+15/8*B*e^3*b^2/c^(7/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x)^(1/2))+x^2/c/(c*x^2+b*x)^(1/2)*A*e^3+3*x^2/c/(c*x^2+b*x)
^(1/2)*B*d*e^2+3*b/c^2/(c*x^2+b*x)^(1/2)*x*A*e^3+9*b/c^2/(c*x^2+b*x)^(1/2)*
x*B*d*e^2-3/2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^3-9/2
*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e^2-6/c/(c*x^2+b*x
)^(1/2)*x*A*d*e^2-6/c/(c*x^2+b*x)^(1/2)*x*B*d^2*e+3/c^(3/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e^2+3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x)^(1/2))*B*d^2*e+6/b/(c*x^2+b*x)^(1/2)*x*A*d^2*e+2/b/(c*x^2+b*x)^(1/2)*x
*B*d^3-2*A*d^3*(2*c*x+b)/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.72, size = 367, normalized size = 1.54

$$\frac{Be^3x^3}{2\,\sqrt{cx^2+bx}\,c} - \frac{5\,Bbe^3x^2}{4\,\sqrt{cx^2+bx}\,c^2} + \frac{2\,Bd^3x}{\sqrt{cx^2+bx}\,b} - \frac{4\,Acd^3x}{\sqrt{cx^2+bx}\,b^2} + \frac{6\,Ad^2ex}{\sqrt{cx^2+bx}\,b} - \frac{15\,Bb^2e^3x}{4\,\sqrt{cx^2+bx}\,c^3} + \frac{15\,Bb^2e^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{7}{2}}} - \frac{2\,Ad^3}{\sqrt{cx^2+bx}\,b} + \frac{\left(3\,Bde^2+Ae^3\right)x^2}{\sqrt{cx^2+bx}\,c} + \frac{3\left(3\,Bde^2+Ae^3\right)bx}{\sqrt{cx^2+bx}\,c^2} - \frac{6\left(Bd^2e+Ade^2\right)x}{\sqrt{cx^2+bx}\,c} - \frac{3\left(3\,Bde^2+Ae^3\right)b\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{5}{2}}} + \frac{3\left(Bd^2e+Ade^2\right)\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*e^3*x^3/(sqrt(c*x^2 + b*x)*c) - 5/4*B*b*e^3*x^2/(sqrt(c*x^2 + b*x)*c^
2) + 2*B*d^3*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*d^3*x/(sqrt(c*x^2 + b*x)*b^2)
+ 6*A*d^2*e*x/(sqrt(c*x^2 + b*x)*b) - 15/4*B*b^2*e^3*x/(sqrt(c*x^2 + b*x)*c
^3) + 15/8*B*b^2*e^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) -
 2*A*d^3/(sqrt(c*x^2 + b*x)*b) + (3*B*d*e^2 + A*e^3)*x^2/(sqrt(c*x^2 + b*x)
*c) + 3*(3*B*d*e^2 + A*e^3)*b*x/(sqrt(c*x^2 + b*x)*c^2) - 6*(B*d^2*e + A*d*
e^2)*x/(sqrt(c*x^2 + b*x)*c) - 3/2*(3*B*d*e^2 + A*e^3)*b*log(2*c*x + b + 2*
sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 3*(B*d^2*e + A*d*e^2)*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^3}{\left(c\,x^2+b\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x)
[Out] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**(3/2),x)
[Out] Integral((A + B*x)*(d + e*x)**3/(x*(b + c*x))**(3/2), x)
```

3.1055 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{3/2}} dx$

Optimal. Leaf size=151

$$\frac{e\sqrt{bx+cx^2}\left(-2bc(Ae+Bd)+4Ac^2d+3b^2Be\right)}{b^2c^2}-\frac{2(d+ex)\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\tanh^{-1}}{}$$

Rubi **[A]** time = 0.15, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 640, 620, 206}

$$\frac{e\sqrt{bx+cx^2}\left(-2bc(Ae+Bd)+4Ac^2d+3b^2Be\right)}{b^2c^2}-\frac{2(d+ex)\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)(2Ace-3bBe+4Bcd)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c
*Sqrt[b*x + c*x^2]) + (e*(4*A*c^2*d + 3*b^2*B*e - 2*b*c*(B*d + A*e))*Sqrt[b
*x + c*x^2])/(b^2*c^2) + (e*(4*B*c*d - 3*b*B*e + 2*A*c*e)*ArcTanh[(Sqrt[c]*
x)/Sqrt[b*x + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2\int \frac{\frac{1}{2}b(bB+2Ac)de+\frac{1}{2}e\left(4Ac^2d+3\right.}{\sqrt{bx+cx^2}}}{b^2c}$$

$$= -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(4Ac^2d+3b^2Be-2bc(B\right.}{b^2c^2}$$

$$= -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(4Ac^2d+3b^2Be-2bc(B\right.}{b^2c^2}$$

$$= -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(4Ac^2d+3b^2Be-2bc(B\right.}{b^2c^2}$$

Mathematica [**A**] time = 0.20, size = 150, normalized size = 0.99

$$\frac{\sqrt{c}\left(bBx\left(3b^2e^2+bce(ex-4d)+2c^2d^2\right)-2Ac\left(b^2e^2x+bcd(d-2ex)+2c^2d^2x\right)\right)-b^{5/2}e\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)(-2Ace+3bBe-4Bcd)}{b^2c^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*(-2*A*c*(2*c^2*d^2*x + b^2*e^2*x + b*c*d*(d - 2*e*x)) + b*B*x*(2*c
^2*d^2 + 3*b^2*e^2 + b*c*e*(-4*d + e*x))) - b^(5/2)*e*(-4*B*c*d + 3*b*B*e -
 2*A*c*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^
2*c^(5/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [**A**] time = 0.55, size = 179, normalized size = 1.19

$$\frac{\sqrt{bx+cx^2}\left(-2Ab^2ce^2x-2Abc^2d^2+4Abc^2dex-4Ac^3d^2x+3b^3Be^2x-4b^2Bcdex+b^2Bce^2x^2+2bBc^2d^2x\right)}{b^2c^2x(b+cx)}+\frac{\log\left(-2c^{5/2}\sqrt{bx+cx^2}+bc^2+2c^3x\right)\left(-2Ace^2+3bBe^2-4Bcde\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-2*A*b*c^2*d^2 + 2*b*B*c^2*d^2*x - 4*A*c^3*d^2*x - 4*b^
2*B*c*d*e*x + 4*A*b*c^2*d*e*x + 3*b^3*B*e^2*x - 2*A*b^2*c*e^2*x + b^2*B*c*e
^2*x^2))/(b^2*c^2*x*(b + c*x)) + ((-4*B*c*d*e + 3*b*B*e^2 - 2*A*c*e^2)*Log[
b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[b*x + c*x^2]])/(2*c^(5/2))
```

fricas [**A**] time = 0.43, size = 446, normalized size = 2.95

$$\left[\frac{\left(\left(4Bb^2c^2de-\left(3Bb^3c-2Ab^2c^2\right)e^2\right)x^2+\left(4Bb^3cde-\left(3Bb^4-2Ab^3c\right)e^2\right)x\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(Bb^2c^2e^2x^2-2Abc^3d^2+\left(2\left(Bbc^3-2Ac^4\right)d^2-4\left(Bb^2c^2-Abc^3\right)de+\left(3Bb^3c-2Ab^2c^2\right)e^2\right)x\right)\sqrt{cx^2+bx}}{2\left(b^2c^4x^2+b^3c^3x\right)}, -\frac{\left(\left(4Bb^2c^2de-\left(3Bb^3c-2Ab^2c^2\right)e^2\right)x^2+\left(4Bb^3cde-\left(3Bb^4-2Ab^3c\right)e^2\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx}\sqrt{-c}}{cx}\right)-\left(Bb^2c^2e^2x^2-2Abc^3d^2+\left(2\left(Bbc^3-2Ac^4\right)d^2-4\left(Bb^2c^2-Abc^3\right)de+\left(3Bb^3c-2Ab^2c^2\right)e^2\right)x\right)\sqrt{cx^2+bx}}{b^2c^4x^2+b^3c^3x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(((4*B*b^2*c^2*d*e - (3*B*b^3*c - 2*A*b^2*c^2)*e^2)*x^2 + (4*B*b^3*c*d
*e - (3*B*b^4 - 2*A*b^3*c)*e^2)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c)) + 2*(B*b^2*c^2*e^2*x^2 - 2*A*b*c^3*d^2 + (2*(B*b*c^3 - 2*A*c^4
)*d^2 - 4*(B*b^2*c^2 - A*b*c^3)*d*e + (3*B*b^3*c - 2*A*b^2*c^2)*e^2)*x)*sqr
t(c*x^2 + b*x))/(b^2*c^4*x^2 + b^3*c^3*x), -(((4*B*b^2*c^2*d*e - (3*B*b^3*c
 - 2*A*b^2*c^2)*e^2)*x^2 + (4*B*b^3*c*d*e - (3*B*b^4 - 2*A*b^3*c)*e^2)*x)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (B*b^2*c^2*e^2*x^2 - 2*A
*b*c^3*d^2 + (2*(B*b*c^3 - 2*A*c^4)*d^2 - 4*(B*b^2*c^2 - A*b*c^3)*d*e + (3*
```

```
B*b^3*c - 2*A*b^2*c^2)*e^2)*x)*sqrt(c*x^2 + b*x))/(b^2*c^4*x^2 + b^3*c^3*x)
]
```

giac [A] time = 0.32, size = 155, normalized size = 1.03

$$-\frac{\frac{2\,Ad^2}{b} - \left(\frac{Bxe^2}{c} + \frac{2\,Bbc^2d^2 - 4\,Ac^3d^2 - 4\,Bb^2cde + 4\,Abc^2de + 3\,Bb^3e^2 - 2\,Ab^2ce^2}{b^2c^2}\right)x}{\sqrt{cx^2 + bx}} - \frac{\left(4\,Bcde - 3\,Bbe^2 + 2\,Ace^2\right)\log\left(\left|-2\left(\sqrt{c}x - \sqrt{cx^2 + bx}\right)\sqrt{c} - b\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -(2*A*d^2/b - (B*x*e^2/c + (2*B*b*c^2*d^2 - 4*A*c^3*d^2 - 4*B*b^2*c*d*e + 4
*A*b*c^2*d*e + 3*B*b^3*e^2 - 2*A*b^2*c*e^2)/(b^2*c^2))*x)/sqrt(c*x^2 + b*x)
 - 1/2*(4*B*c*d*e - 3*B*b*e^2 + 2*A*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x
^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.06, size = 252, normalized size = 1.67

$$\frac{B\,e^2x^2}{\sqrt{c\,x^2 + bx}\;c} + \frac{4Adex}{\sqrt{c\,x^2 + bx}\;b} - \frac{2A\,e^2x}{\sqrt{c\,x^2 + bx}\;c} + \frac{3Bb\,e^2x}{\sqrt{c\,x^2 + bx}\;c^2} + \frac{2B\,d^2x}{\sqrt{c\,x^2 + bx}\;b} - \frac{4Bdex}{\sqrt{c\,x^2 + bx}\;c} + \frac{A\,e^2\ln\left(\frac{cx + \frac{b}{2}}{\sqrt{c}} + \sqrt{c\,x^2 + bx}\right)}{c^{\frac{3}{2}}} - \frac{3Bb\,e^2\ln\left(\frac{cx + \frac{b}{2}}{\sqrt{c}} + \sqrt{c\,x^2 + bx}\right)}{2c^{\frac{5}{2}}} + \frac{2Bde\ln\left(\frac{cx + \frac{b}{2}}{\sqrt{c}} + \sqrt{c\,x^2 + bx}\right)}{c^{\frac{3}{2}}} - \frac{2\,(2cx + b)\,A\,d^2}{\sqrt{c\,x^2 + bx}\;b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x)
```

```
[Out] B*e^2*x^2/c/(c*x^2+b*x)^(1/2)+3*B*e^2*b/c^2/(c*x^2+b*x)^(1/2)*x-3/2*B*e^2*b
/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-2/c/(c*x^2+b*x)^(1/2)*x*
A*e^2-4/c/(c*x^2+b*x)^(1/2)*x*B*d*e+1/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))*A*e^2+2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*
e+4/b/(c*x^2+b*x)^(1/2)*x*A*d*e+2/b/(c*x^2+b*x)^(1/2)*x*B*d^2-2*A*d^2*(2*c*
x+b)/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.59, size = 227, normalized size = 1.50

$$\frac{Be^2x^2}{\sqrt{cx^2 + bx}\,c} + \frac{2\,Bd^2x}{\sqrt{cx^2 + bx}\,b} - \frac{4\,Acd^2x}{\sqrt{cx^2 + bx}\,b^2} + \frac{4\,Adex}{\sqrt{cx^2 + bx}\,b} + \frac{3\,Bbe^2x}{\sqrt{cx^2 + bx}\,c^2} - \frac{3\,Bbe^2\log\left(2\,cx + b + 2\,\sqrt{cx^2 + bx}\,\sqrt{c}\right)}{2\,c^{\frac{5}{2}}} - \frac{2\,Ad^2}{\sqrt{cx^2 + bx}\,b} - \frac{2\left(2\,Bde + Ae^2\right)x}{\sqrt{cx^2 + bx}\,c} + \frac{\left(2\,Bde + Ae^2\right)\log\left(2\,cx + b + 2\,\sqrt{cx^2 + bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] B*e^2*x^2/(sqrt(c*x^2 + b*x)*c) + 2*B*d^2*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*d
^2*x/(sqrt(c*x^2 + b*x)*b^2) + 4*A*d*e*x/(sqrt(c*x^2 + b*x)*b) + 3*B*b*e^2*
x/(sqrt(c*x^2 + b*x)*c^2) - 3/2*B*b*e^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c))/c^(5/2) - 2*A*d^2/(sqrt(c*x^2 + b*x)*b) - 2*(2*B*d*e + A*e^2)*x/(
sqrt(c*x^2 + b*x)*c) + (2*B*d*e + A*e^2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c))/c^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A + B\,x)\,\left(d + e\,x\right)^2}{\left(c\,x^2 + b\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,(d + ex)^2}{(x\,(b + cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/(x*(b + c*x))**(3/2), x)
```

3.1056 $\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2Be\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {777, 620, 206}

$$\frac{2Be\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c*Sqrt[b*x
+ c*x^2]) + (2*B*e*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{(Be)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{c}\\
&= -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{(2Be)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\
&= -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2Be\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 101, normalized size = 1.19

$$\frac{2b^{5/2}Be\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-2\sqrt{c}\,(Ac(bd-bex+2cdx)+bBx(be-cd))}{b^2c^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[c]*(b*B*(-(c*d) + b*e)*x + A*c*(b*d + 2*c*d*x - b*e*x)) + 2*b^(5/2
)*B*e*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^2*c^
(3/2)*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.44, size = 107, normalized size = 1.26

$$-\frac{2\sqrt{bx+cx^2}\,\left(Abcd-Abcex+2Ac^2dx+b^2Bex-bBcdx\right)}{b^2cx(b+cx)}-\frac{Be\log\left(-2c^{3/2}\sqrt{bx+cx^2}\,+bc+2c^2x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b*c*d - b*B*c*d*x + 2*A*c^2*d*x + b^2*B*e*x - A*b*c*e*x)*Sqrt[b*x +
c*x^2])/(b^2*c*x*(b + c*x)) - (B*e*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[b*x +
 c*x^2]])/c^(3/2)
```

fricas [A] time = 0.44, size = 254, normalized size = 2.99

$$\left[\frac{\left(Bb^2cex^2+Bb^3ex\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\left(Abc^2d-\left(\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c-Abc^2\right)e\right)x\right)\sqrt{cx^2+bx}}{b^2c^3x^2+b^3c^2x},\,-\frac{2\,\left(\left(Bb^2cex^2+Bb^3ex\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\left(Abc^2d-\left(\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c-Abc^2\right)e\right)x\right)\sqrt{cx^2+bx}\right)}{b^2c^3x^2+b^3c^2x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [((B*b^2*c*e*x^2 + B*b^3*e*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(A*b*c^2*d - ((B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - A*b*c^2)*e)*x)
*sqrt(c*x^2 + b*x))/(b^2*c^3*x^2 + b^3*c^2*x), -2*((B*b^2*c*e*x^2 + B*b^3*e
*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (A*b*c^2*d - ((B*b*
c^2 - 2*A*c^3)*d - (B*b^2*c - A*b*c^2)*e)*x)*sqrt(c*x^2 + b*x))/(b^2*c^3*x^
2 + b^3*c^2*x)]
```

giac [A] time = 0.30, size = 95, normalized size = 1.12

$$-\frac{Be\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}\,-b\right|\right)}{c^{\frac{3}{2}}}-\frac{2\left(\frac{Ad}{b}-\frac{\left(Bbcd-2\,Ac^2d-Bb^2e+Abce\right)x}{b^2c}\right)}{\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -B*e*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(3/2) - 2*(
A*d/b - (B*b*c*d - 2*A*c^2*d - B*b^2*e + A*b*c*e)*x/(b^2*c))/sqrt(c*x^2 + b
*x)
```

maple [A] time = 0.05, size = 113, normalized size = 1.33

$$\frac{2Aex}{\sqrt{c\,x^2+bx}\;b}+\frac{2Bdx}{\sqrt{c\,x^2+bx}\;b}-\frac{2Bex}{\sqrt{c\,x^2+bx}\;c}+\frac{Be\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{c^{\frac{3}{2}}}-\frac{2\,(2cx+b)\,Ad}{\sqrt{c\,x^2+bx}\;b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*B*e/c/(c*x^2+b*x)^(1/2)*x+B*e/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)
^(1/2))+2/b/(c*x^2+b*x)^(1/2)*x*A*e+2/b/(c*x^2+b*x)^(1/2)*x*B*d-2*A*d*(2*c*
x+b)/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.57, size = 125, normalized size = 1.47

$$\frac{2\,Bdx}{\sqrt{cx^2+bx}\,b}-\frac{4\,Acdx}{\sqrt{cx^2+bx}\,b^2}+\frac{2\,Aex}{\sqrt{cx^2+bx}\,b}-\frac{2\,Bex}{\sqrt{cx^2+bx}\,c}+\frac{Be\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}-\frac{2\,Ad}{\sqrt{cx^2+bx}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*B*d*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*d*x/(sqrt(c*x^2 + b*x)*b^2) + 2*A*e*x
/(sqrt(c*x^2 + b*x)*b) - 2*B*e*x/(sqrt(c*x^2 + b*x)*c) + B*e*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 2*A*d/(sqrt(c*x^2 + b*x)*b)
```

mupad [B] time = 2.27, size = 101, normalized size = 1.19

$$\frac{B\,e\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{c^{3/2}}-\frac{2\,A\,b\,d-2\,A\,b\,e\,x+4\,A\,c\,d\,x}{b^2\,\sqrt{c\,x^2+b\,x}}+\frac{2\,B\,d\,x}{b\,\sqrt{x\,\left(b+c\,x\right)}}-\frac{2\,B\,e\,x}{c\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*e*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(3/2) - (2*A*b*d - 2
*A*b*e*x + 4*A*c*d*x)/(b^2*(b*x + c*x^2)^(1/2)) + (2*B*d*x)/(b*(x*(b + c*x)
)^(1/2)) - (2*B*e*x)/(c*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(A+Bx)\,(d+ex)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/(x*(b + c*x))**(3/2), x)
```

3.1057 $\int \frac{A+Bx}{(bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=33

$$-\frac{2(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {636}

$$-\frac{2(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(b^2*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(bx+cx^2)^{3/2}}\,dx = -\frac{2(Ab-(bB-2Ac)x)}{b^2\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.91

$$\frac{2bBx-2A(b+2cx)}{b^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*b*B*x - 2*A*(b + 2*c*x))/(b^2*Sqrt[x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.00, size = 42, normalized size = 1.27

$$\frac{2\sqrt{bx+cx^2}\,(-Ab-2Acx+bBx)}{b^2x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(-(A*b) + b*B*x - 2*A*c*x)*Sqrt[b*x + c*x^2])/(b^2*x*(b + c*x))
```

fricas [A] time = 0.41, size = 44, normalized size = 1.33

$$-\frac{2\sqrt{cx^2+bx}\,(Ab-(Bb-2Ac)x)}{b^2cx^2+b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(c*x^2 + b*x)*(A*b - (B*b - 2*A*c)*x)/(b^2*c*x^2 + b^3*x)
```

giac [A] time = 0.28, size = 33, normalized size = 1.00

$$-\frac{2\left(\frac{A}{b}-\frac{(Bb-2\,Ac)x}{b^2}\right)}{\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(A/b - (B*b - 2*A*c)*x/b^2)/sqrt(c*x^2 + b*x)
```

maple [A] time = 0.05, size = 37, normalized size = 1.12

$$-\frac{2\,(cx+b)\,(2Acx-Bbx+Ab)\,x}{\left(c\,x^2+bx\right)^{\frac{3}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*(c*x+b)*x*(2*A*c*x-B*b*x+A*b)/b^2/(c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.60, size = 55, normalized size = 1.67

$$\frac{2\,Bx}{\sqrt{cx^2+bx}\,b}-\frac{4\,Acx}{\sqrt{cx^2+bx}\,b^2}-\frac{2\,A}{\sqrt{cx^2+bx}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*B*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*x/(sqrt(c*x^2 + b*x)*b^2) - 2*A/(sqrt(c
*x^2 + b*x)*b)
```

mupad [B] time = 1.65, size = 31, normalized size = 0.94

$$-\frac{2\,A\,b+4\,A\,c\,x-2\,B\,b\,x}{b^2\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] -(2*A*b + 4*A*c*x - 2*B*b*x)/(b^2*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{\left(x\,(b+cx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.1058 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=141

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(cd-be)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{d^{3/2}(cd-be)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 12, 724, 206}

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(cd-be)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{d^{3/2}(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*S
qrt[b*x + c*x^2]) - (e*(B*d - A*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[
d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(d^(3/2)*(c*d - b*e)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} - \frac{2\int \frac{b^2e(Bd-Ae)}{2(d+ex)\sqrt{bx+cx^2}}\,dx}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} - \frac{(e(Bd-Ae))\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,dx}{d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} + \frac{(2e(Bd-Ae))\,\text{Subst}\left(\int \frac{1}{4cd^2-4bde-x^2}\,d\right.}{d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} - \frac{e(Bd-Ae)\tanh^{-1}\left(\frac{bd+(2cd-be)x}{2\sqrt{d}\sqrt{cd-be}\sqrt{bx+cx^2}}\right.}{d^{3/2}(cd-be)^{3/2}}$$

Mathematica [**A**] time = 0.16, size = 144, normalized size = 1.02

$$\frac{2\left(\sqrt{d}\sqrt{cd-be}\left(A\left(b^2e-bcd+bcex-2c^2dx\right)+bBcdx\right)+b^2e\sqrt{x}\sqrt{b+cx}\,(Ae-Bd)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)\right)}{b^2d^{3/2}\sqrt{x(b+cx)}\,(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(Sqrt[d]*Sqrt[c*d - b*e]*(b*B*c*d*x + A*(-(b*c*d) + b^2*e - 2*c^2*d*x +
b*c*e*x)) + b^2*e*(-(B*d) + A*e)*Sqrt[x]*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d -
b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]))/(b^2*d^(3/2)*(c*d - b*e)^(3/2)*Sqr
t[x*(b + c*x)])
```

IntegrateAlgebraic [**A**] time = 0.62, size = 156, normalized size = 1.11

$$-\frac{2\sqrt{bx+cx^2}\,\left(Ab^2e-Abcd+Abcex-2Ac^2dx+bBcdx\right)}{b^2dx(b+cx)(be-cd)} - \frac{2\left(Bde-Ae^2\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{d}\sqrt{cd-be}}\right)}{d^{3/2}(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(-(A*b*c*d) + A*b^2*e + b*B*c*d*x - 2*A*c^2*d*x + A*b*c*e*x)*Sqrt[b*x +
 c*x^2])/(b^2*d*(-(c*d) + b*e)*x*(b + c*x)) - (2*(B*d*e - A*e^2)*ArcTanh[(S
qrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/(
d^(3/2)*(c*d - b*e)^(3/2))
```

fricas [**B**] time = 0.43, size = 543, normalized size = 3.85

$$\left[\frac{\sqrt{cd^2-bde}\left(\left(Bb^2cde-Ab^2ce^2\right)x^2+\left(Bb^3de-Ab^3e^2\right)x\right)\log\left(\frac{bd+(2\,cd-be)x-2\,\sqrt{cd^2-bde}\,\sqrt{cx^2+bx}}{ex+d}\right)-2\left(Abc^2d^3-2\,Ab^2cd^2e+Ab^3de^2+\left(Ab^2cde^2-\left(Bbc^2-2\,Ac^3\right)d^3+\left(Bb^2c-3\,Abc^2\right)d^2e\right)x\right)\sqrt{cx^2+bx}}{\left(b^2c^3d^4-2\,b^3c^2d^3e+b^4cd^2e^2\right)x^2+\left(b^3c^2d^4-2\,b^4cd^3e+b^5d^2e^2\right)x}, -\frac{2\left(\sqrt{-cd^2+bde}\left(\left(Bb^2cde-Ab^2ce^2\right)x^2+\left(Bb^3de-Ab^3e^2\right)x\right)\arctan\left(-\frac{\sqrt{-cd^2+bde}\,\sqrt{cx^2+bx}}{(cd-be)x}\right)+\left(Abc^2d^3-2\,Ab^2cd^2e+Ab^3de^2+\left(Ab^2cde^2-\left(Bbc^2-2\,Ac^3\right)d^3+\left(Bb^2c-3\,Abc^2\right)d^2e\right)x\right)\sqrt{cx^2+bx}\right)}{\left(b^2c^3d^4-2\,b^3c^2d^3e+b^4cd^2e^2\right)x^2+\left(b^3c^2d^4-2\,b^4cd^3e+b^5d^2e^2\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(c*d^2 - b*d*e)*((B*b^2*c*d*e - A*b^2*c*e^2)*x^2 + (B*b^3*d*e - A*b^3
*e^2)*x)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*
x))/(e*x + d)) - 2*(A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A*b^3*d*e^2 + (A*b^2*c*
d*e^2 - (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^2*c - 3*A*b*c^2)*d^2*e)*x)*sqrt(c*x^
2 + b*x))/((b^2*c^3*d^4 - 2*b^3*c^2*d^3*e + b^4*c*d^2*e^2)*x^2 + (b^3*c^2*d
^4 - 2*b^4*c*d^3*e + b^5*d^2*e^2)*x), -2*(sqrt(-c*d^2 + b*d*e)*((B*b^2*c*d*
e - A*b^2*c*e^2)*x^2 + (B*b^3*d*e - A*b^3*e^2)*x)*arctan(-sqrt(-c*d^2 + b*d
```

```
*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A
*b^3*d*e^2 + (A*b^2*c*d*e^2 - (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^2*c - 3*A*b*c^
2)*d^2*e)*x)*sqrt(c*x^2 + b*x))/((b^2*c^3*d^4 - 2*b^3*c^2*d^3*e + b^4*c*d^2
*e^2)*x^2 + (b^3*c^2*d^4 - 2*b^4*c*d^3*e + b^5*d^2*e^2)*x)]
```

giac [A] time = 0.28, size = 187, normalized size = 1.33

$$\frac{2\left(\frac{\left(Bbcd^2-2\,Ac^2d^2+Abcde\right)x}{b^2cd^3-b^3d^2e}-\frac{Abcd^2-Ab^2de}{b^2cd^3-b^3d^2e}\right)}{\sqrt{cx^2+bx}}+\frac{2\left(Bde-Ae^2\right)\arctan\left(\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)e+\sqrt{c}\,d}{\sqrt{-cd^2+bde}}\right)}{\left(cd^2-bde\right)\sqrt{-cd^2+bde}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c*d^2 - 2*A*c^2*d^2 + A*b*c*d*e)*x/(b^2*c*d^3 - b^3*d^2*e) - (A*b*c
*d^2 - A*b^2*d*e)/(b^2*c*d^3 - b^3*d^2*e))/sqrt(c*x^2 + b*x) + 2*(B*d*e - A
*e^2)*arctan(((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 +
b*d*e))/((c*d^2 - b*d*e)*sqrt(-c*d^2 + b*d*e))
```

maple [B] time = 0.06, size = 837, normalized size = 5.94

$$-\frac{2Acex}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,bd}+\frac{4Ac^2x}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,b^2}+\frac{Ae\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{(be-cd)\sqrt{-\frac{(be-cd)d}{e^2}}\,d}+\frac{2Bcx}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,b}-\frac{4Bc^2dx}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,b^2e}-\frac{B\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{(be-cd)\sqrt{-\frac{(be-cd)d}{e^2}}}+\frac{2Ac}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,b}-\frac{2Ae}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,d}-\frac{2Bcd}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,be}+\frac{2B}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}-\frac{2\,(2cx+b)\,B}{\sqrt{cx^2+bx}\,b^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*B/e*(2*c*x+b)/b^2/(c*x^2+b*x)^(1/2)-2*e/(b*e-c*d)/d/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+2/(b*e-c*d)/((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-2*e/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*A+2/(b*e-c*d)/b/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*B+4/(b*e-c*d)/b^2/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A-4/e/(b*e-c*d)/b^2/((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B*d+2/(b*e-c*d
)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*A-2/e/(b*e-
c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B*d+e/(b
*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))*A-1/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((c*d^2)/e^2
     -(b*d)/e))      /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(x(b + cx))^{\frac{3}{2}}(d + ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)), x)
```

3.1059 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=245

$$-\frac{e\sqrt{bx+cx^2}\,\left(b^2(-e)(Bd-3Ae)-2bcd(2Ae+Bd)+4Ac^2d^2\right)}{b^2d^2(d+ex)(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(d+ex)(cd-be)}+\frac{e(3}{}$$

Rubi [A] time = 0.31, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 806, 724, 206}

$$-\frac{e\sqrt{bx+cx^2}\,\left(b^2(-e)(Bd-3Ae)-2bcd(2Ae+Bd)+4Ac^2d^2\right)}{b^2d^2(d+ex)(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(d+ex)(cd-be)}+\frac{e(3Ae(2cd-be)-Bd(4cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2d^{5/2}(cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*(
d + e*x)*Sqrt[b*x + c*x^2]) - (e*(4*A*c^2*d^2 - b^2*e*(B*d - 3*A*e) - 2*b*c
*d*(B*d + 2*A*e))*Sqrt[b*x + c*x^2])/(b^2*d^2*(c*d - b*e)^2*(d + e*x)) + (e
*(3*A*e*(2*c*d - b*e) - B*d*(4*c*d - b*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/
(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*d^(5/2)*(c*d - b*e)^(5/2
))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
```

```
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}be(bBd+2Acd-3Abe)-ce(bBd-2Acd+Ab}{(d+ex)^2\sqrt{bx+cx^2}}}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{e\left(4Ac^2d^2-b^2e(Bd-3Ae)-2bcd(B\right.}{b^2d^2(cd-be)^2(d+}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{e\left(4Ac^2d^2-b^2e(Bd-3Ae)-2bcd(B\right.}{b^2d^2(cd-be)^2(d+}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{e\left(4Ac^2d^2-b^2e(Bd-3Ae)-2bcd(B\right.}{b^2d^2(cd-be)^2(d+}$$

Mathematica [A] time = 0.59, size = 226, normalized size = 0.92

$$\frac{x\left(\frac{cx(b+cx)\left(b^2e(Bd-3Ae)+2bcd(2Ae+Bd)-4Ac^2d^2\right)}{b^2d(be-cd)}+\frac{e\sqrt{x}(b+cx)^{3/2}(3Ae(be-2cd)+Bd(4cd-be))\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{d^{3/2}(cd-be)^{3/2}}+\frac{(b+cx)(-3Abe+2Acd+bBd)}{bd}+\frac{(b+cx)(Ae-Bd)}{d+ex}\right)}{d(x(b+cx))^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (x*(((b*B*d + 2*A*c*d - 3*A*b*e)*(b + c*x))/(b*d) + (c*(-4*A*c^2*d^2 + b^2*
e*(B*d - 3*A*e) + 2*b*c*d*(B*d + 2*A*e))*x*(b + c*x))/(b^2*d*(-(c*d) + b*e)
) + ((-(B*d) + A*e)*(b + c*x))/(d + e*x) + (e*(B*d*(4*c*d - b*e) + 3*A*e*(-
2*c*d + b*e))*Sqrt[x]*(b + c*x)^(3/2)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sq
rt[d]*Sqrt[b + c*x])])/(d^(3/2)*(c*d - b*e)^(3/2))))/(d*(-(c*d) + b*e)*(x*(
b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.51, size = 312, normalized size = 1.27

$$\frac{\sqrt{bx+cx^2}\left(-2Ab^3de^2-3Ab^3e^3x+4Ab^2cd^2e+2Ab^2cde^2x-3Ab^2ce^3x^2-2Abc^2d^3+2Abc^2d^2ex+4Abc^2de^2x^2-4Ac^3d^3x-4Ac^3d^2ex^2+b^3Bde^2x+b^2Bcde^2x^2+2bBc^2d^3x+2bBc^2d^2ex^2\right)}{b^2d^2x(b+cx)(d+ex)(be-cd)^2}+\frac{\left(-3Abe^3+6Acde^2+bBde^2-4Bcd^2e\right)\tanh^{-1}\left(\frac{-e\sqrt{bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{d}\sqrt{cd-be}}\right)}{d^{5/2}(cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-2*A*b*c^2*d^3 + 4*A*b^2*c*d^2*e - 2*A*b^3*d*e^2 + 2*b*
B*c^2*d^3*x - 4*A*c^3*d^3*x + 2*A*b*c^2*d^2*e*x + b^3*B*d*e^2*x + 2*A*b^2*c
*d*e^2*x - 3*A*b^3*e^3*x + 2*b*B*c^2*d^2*e*x^2 - 4*A*c^3*d^2*e*x^2 + b^2*B*
c*d*e^2*x^2 + 4*A*b*c^2*d*e^2*x^2 - 3*A*b^2*c*e^3*x^2))/(b^2*d^2*(-(c*d) +
b*e)^2*x*(b + c*x)*(d + e*x)) + ((-4*B*c*d^2*e + b*B*d*e^2 + 6*A*c*d*e^2 -
3*A*b*e^3)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]
*Sqrt[c*d - b*e])])/(d^(5/2)*(c*d - b*e)^(5/2))
```

fricas [B] time = 0.47, size = 1240, normalized size = 5.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(((4*B*b^2*c^2*d^2*e^2 + 3*A*b^3*c*e^4 - (B*b^3*c + 6*A*b^2*c^2)*d*e^3
)*x^3 + (4*B*b^2*c^2*d^3*e + 3*A*b^4*e^4 + 3*(B*b^3*c - 2*A*b^2*c^2)*d^2*e^
2 - (B*b^4 + 3*A*b^3*c)*d*e^3)*x^2 + (4*B*b^3*c*d^3*e + 3*A*b^4*d*e^3 - (B*
b^4 + 6*A*b^3*c)*d^2*e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x
 - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(2*A*b*c^3*d^5 -
 6*A*b^2*c^2*d^4*e + 6*A*b^3*c*d^3*e^2 - 2*A*b^4*d^2*e^3 - (3*A*b^3*c*d*e^4
 + 2*(B*b*c^3 - 2*A*c^4)*d^4*e - (B*b^2*c^2 - 8*A*b*c^3)*d^3*e^2 - (B*b^3*c
 + 7*A*b^2*c^2)*d^2*e^3)*x^2 - (B*b^3*c*d^3*e^2 + 3*A*b^4*d*e^4 + 2*(B*b*c^
3 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 - 3*A*b*c^3)*d^4*e - (B*b^4 + 5*A*b^3*c)*d^
2*e^3)*x)*sqrt(c*x^2 + b*x))/((b^2*c^4*d^6*e - 3*b^3*c^3*d^5*e^2 + 3*b^4*c^
2*d^4*e^3 - b^5*c*d^3*e^4)*x^3 + (b^2*c^4*d^7 - 2*b^3*c^3*d^6*e + 2*b^5*c*d
^4*e^3 - b^6*d^3*e^4)*x^2 + (b^3*c^3*d^7 - 3*b^4*c^2*d^6*e + 3*b^5*c*d^5*e^
2 - b^6*d^4*e^3)*x), -(((4*B*b^2*c^2*d^2*e^2 + 3*A*b^3*c*e^4 - (B*b^3*c + 6
*A*b^2*c^2)*d*e^3)*x^3 + (4*B*b^2*c^2*d^3*e + 3*A*b^4*e^4 + 3*(B*b^3*c - 2*
A*b^2*c^2)*d^2*e^2 - (B*b^4 + 3*A*b^3*c)*d*e^3)*x^2 + (4*B*b^3*c*d^3*e + 3*
A*b^4*d*e^3 - (B*b^4 + 6*A*b^3*c)*d^2*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-
sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (2*A*b*c^3*d^5 -
6*A*b^2*c^2*d^4*e + 6*A*b^3*c*d^3*e^2 - 2*A*b^4*d^2*e^3 - (3*A*b^3*c*d*e^4
+ 2*(B*b*c^3 - 2*A*c^4)*d^4*e - (B*b^2*c^2 - 8*A*b*c^3)*d^3*e^2 - (B*b^3*c
+ 7*A*b^2*c^2)*d^2*e^3)*x^2 - (B*b^3*c*d^3*e^2 + 3*A*b^4*d*e^4 + 2*(B*b*c^3
 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 - 3*A*b*c^3)*d^4*e - (B*b^4 + 5*A*b^3*c)*d^2
*e^3)*x)*sqrt(c*x^2 + b*x))/((b^2*c^4*d^6*e - 3*b^3*c^3*d^5*e^2 + 3*b^4*c^2
*d^4*e^3 - b^5*c*d^3*e^4)*x^3 + (b^2*c^4*d^7 - 2*b^3*c^3*d^6*e + 2*b^5*c*d^
4*e^3 - b^6*d^3*e^4)*x^2 + (b^3*c^3*d^7 - 3*b^4*c^2*d^6*e + 3*b^5*c*d^5*e^2
 - b^6*d^4*e^3)*x)]
```

giac [B] time = 1.62, size = 1181, normalized size = 4.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -1/2*((4*B*b^2*c*d^2*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c
))) + 4*sqrt(c*d^2 - b*d*e)*B*b*c^(3/2)*d^2*e^2 - 8*sqrt(c*d^2 - b*d*e)*A*c
^(5/2)*d^2*e^2 - B*b^3*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sq
rt(c))) - 6*A*b^2*c*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(
c))) + 2*sqrt(c*d^2 - b*d*e)*B*b^2*sqrt(c)*d*e^3 + 8*sqrt(c*d^2 - b*d*e)*A*
b*c^(3/2)*d*e^3 + 3*A*b^3*e^5*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*s
qrt(c))) - 6*sqrt(c*d^2 - b*d*e)*A*b^2*sqrt(c)*e^4)*sgn(1/(x*e + d))/(sqrt(
c*d^2 - b*d*e)*b^2*c^2*d^4 - 2*sqrt(c*d^2 - b*d*e)*b^3*c*d^3*e + sqrt(c*d^2
 - b*d*e)*b^4*d^2*e^2) + 2*(((2*B*b*c^2*d^3*e^8*sgn(1/(x*e + d)) - 4*A*c^3*
d^3*e^8*sgn(1/(x*e + d)) + 2*B*b^2*c*d^2*e^9*sgn(1/(x*e + d)) + 6*A*b*c^2*d
^2*e^9*sgn(1/(x*e + d)) - B*b^3*d*e^10*sgn(1/(x*e + d)) - 8*A*b^2*c*d*e^10*
sgn(1/(x*e + d)) + 3*A*b^3*e^11*sgn(1/(x*e + d)))/(b^2*c^2*d^4*e^5*sgn(1/(x
*e + d))^2 - 2*b^3*c*d^3*e^6*sgn(1/(x*e + d))^2 + b^4*d^2*e^7*sgn(1/(x*e +
d))^2) - (B*b^2*c*d^3*e^10*sgn(1/(x*e + d)) - B*b^3*d^2*e^11*sgn(1/(x*e + d
)) - A*b^2*c*d^2*e^11*sgn(1/(x*e + d)) + A*b^3*d*e^12*sgn(1/(x*e + d)))*e^(
-1)/((b^2*c^2*d^4*e^5*sgn(1/(x*e + d))^2 - 2*b^3*c*d^3*e^6*sgn(1/(x*e + d))
^2 + b^4*d^2*e^7*sgn(1/(x*e + d))^2)*(x*e + d)))*e^(-1)/(x*e + d) - (2*B*b*
c^2*d^2*e^7*sgn(1/(x*e + d)) - 4*A*c^3*d^2*e^7*sgn(1/(x*e + d)) + B*b^2*c*d
*e^8*sgn(1/(x*e + d)) + 4*A*b*c^2*d*e^8*sgn(1/(x*e + d)) - 3*A*b^2*c*e^9*sg
n(1/(x*e + d)))/(b^2*c^2*d^4*e^5*sgn(1/(x*e + d))^2 - 2*b^3*c*d^3*e^6*sgn(1
/(x*e + d))^2 + b^4*d^2*e^7*sgn(1/(x*e + d))^2))/sqrt(c - 2*c*d/(x*e + d) +
 c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2) - (4*B*c*d^2*e^4 -
B*b*d*e^5 - 6*A*c*d*e^5 + 3*A*b*e^6)*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b
*d*e)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e
/(x*e + d)^2) + sqrt(c*d^2*e^2 - b*d*e^3)*e^(-1)/(x*e + d))))/((c^2*d^4*e -
 2*b*c*d^3*e^2 + b^2*d^2*e^3)*sqrt(c*d^2 - b*d*e)*sgn(1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.06, size = 2069, normalized size = 8.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -1/e/(b*e-c*d)/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*B-6/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*c^2*A+3/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*B-3*e^2/(b*e-c*d)^2/d^2/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*A+3*e/(b*e-c*d)^2/d/
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*B+6/e/(b*e-c*
d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B*d+3/
2*e^2/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*A-3/2*e/(b*e-c*d)^2/d/(-(b*e-c*d)*d/
e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2
)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))
*b*B-8*c^2/(b*e-c*d)/d/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2)*x*A+12/e*c^2/(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2)*x*B-2*B/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2)*x*c+9*e/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*A-12/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B-2*B/(b*e-c*d)/d/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)-9/(b*e-c*d)^2/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B+12/e/(b*e-c*d)^2/b^2/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*B*d+12*e/(b*e-c*d)^2/d/
b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A+B/(b*e-
c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))+1/(b*e-c*d)/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2)*A-3*e/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln(
(-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A+6/e*c/(b*
e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-4*c/(b
*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-12/
(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x
*c^3*A-3*e^2/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*b*A+3*e/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2)*b*B
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(c\,x^2 + b\,x\right)}^{3/2}\,{\left(d + e\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x\left(b + cx\right)\right)^{\frac{3}{2}}\left(d + ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)**2), x)
```

3.1060 $\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=374

$$-\frac{e\sqrt{bx+cx^2}\left(b^2(-e)(Bd-5Ae)-4bcd(2Ae+Bd)+8Ac^2d^2\right)}{2b^2d^2(d+ex)^2(cd-be)^2}-\frac{3e\left(Bd\left(b^2e^2-4bcde+8c^2d^2\right)-Ae\left(5b^2e^2-16bc\right.\right.}{8d^{7/2}(cd-b}$$

Rubi [A] time = 0.59, antiderivative size = 374, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {822, 834, 806, 724, 206}

$$-\frac{e\sqrt{bx+cx^2}\left(-2b^2cde(5Bd-19Ae)+3b^3e^2(Bd-5Ae)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)}{4b^2d^3(d+ex)(cd-be)^3}-\frac{3e\left(Bd\left(b^2e^2-4bcde+8c^2d^2\right)-Ae\left(5b^2e^2-16bcde+16c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{7/2}(cd-be)^{7/2}}-\frac{e\sqrt{bx+cx^2}\left(b^2(-e)(Bd-5Ae)-4bcd(2Ae+Bd)+8Ac^2d^2\right)}{2b^2d^2(d+ex)^2(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}(d+ex)^2(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*(
d + e*x)^2*Sqrt[b*x + c*x^2]) - (e*(8*A*c^2*d^2 - b^2*e*(B*d - 5*A*e) - 4*b
*c*d*(B*d + 2*A*e))*Sqrt[b*x + c*x^2])/(2*b^2*d^2*(c*d - b*e)^2*(d + e*x)^2
) - (e*(16*A*c^3*d^3 - 2*b^2*c*d*e*(5*B*d - 19*A*e) + 3*b^3*e^2*(B*d - 5*A*
e) - 8*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[b*x + c*x^2])/(4*b^2*d^3*(c*d - b*e)^3
*(d + e*x)) - (3*e*(B*d*(8*c^2*d^2 - 4*b*c*d*e + b^2*e^2) - A*e*(16*c^2*d^2
 - 16*b*c*d*e + 5*b^2*e^2))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt
[c*d - b*e]*Sqrt[b*x + c*x^2])])/(8*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
```

```
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}be(bBd+4Acd-5Abe)-2ce(bBd-2Acd}{(d+ex)^3\sqrt{bx+cx^2}}}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc\right.}{2b^2d^2(cd-be)^2(}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc\right.}{2b^2d^2(cd-be)^2(}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc\right.}{2b^2d^2(cd-be)^2(}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc\right.}{2b^2d^2(cd-be)^2(}$$

Mathematica [A] time = 1.50, size = 377, normalized size = 1.01

$$\frac{2b^2d^{5/2}(Bd-Ae)(cd-be)^{5/2}+(d+ex)\left(b^2d^{3/2}(cd-be)^{3/2}(5Ae(be-2cd)+Bd(6cd-be))-(d+ex)\left(3b^2e\sqrt{x}\sqrt{b+cx}\left(Ae\left(-5b^2e^2+16bcde-16c^2d^2\right)+Bd\left(b^2e^2-4bcde+8c^2d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+b\sqrt{d}(cd-be)^{3/2}\left(3b^2e(5Ae-Bd)+4bcd(2Bd-7Ae)+8Ac^2d^2\right)+c\sqrt{d}\,x\sqrt{cd-be}\left(3b^3e^2(Bd-5Ae)+2b^2cde(19Ae-5Bd)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)\right)\right)}{4b^2d^{7/2}\sqrt{x(b+cx)}(d+ex)^2(cd-be)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*b^2*d^(5/2)*(B*d - A*e)*(c*d - b*e)^(5/2) + (d + e*x)*(b^2*d^(3/2)*(c*d
- b*e)^(3/2)*(B*d*(6*c*d - b*e) + 5*A*e*(-2*c*d + b*e)) - (d + e*x)*(b*Sqrt
[d]*(c*d - b*e)^(3/2)*(8*A*c^2*d^2 + 4*b*c*d*(2*B*d - 7*A*e) + 3*b^2*e*(-(B
*d) + 5*A*e)) + c*Sqrt[d]*Sqrt[c*d - b*e]*(16*A*c^3*d^3 + 3*b^3*e^2*(B*d -
5*A*e) - 8*b*c^2*d^2*(B*d + 3*A*e) + 2*b^2*c*d*e*(-5*B*d + 19*A*e))*x + 3*b
^2*e*(A*e*(-16*c^2*d^2 + 16*b*c*d*e - 5*b^2*e^2) + B*d*(8*c^2*d^2 - 4*b*c*d
*e + b^2*e^2))*Sqrt[x]*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqr
t[d]*Sqrt[b + c*x])])))/(4*b^2*d^(7/2)*(c*d - b*e)^(7/2)*Sqrt[x*(b + c*x)]*
(d + e*x)^2)
```

IntegrateAlgebraic [B] time = 58.96, size = 10583, normalized size = 28.30

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.53, size = 2282, normalized size = 6.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*((8*B*b^2*c^3*d^3*e^3 - 5*A*b^4*c*e^6 - 4*(B*b^3*c^2 + 4*A*b^2*c^3
)*d^2*e^4 + (B*b^4*c + 16*A*b^3*c^2)*d*e^5)*x^4 + (16*B*b^2*c^3*d^4*e^2 - 3
2*A*b^2*c^3*d^3*e^3 - 5*A*b^5*e^6 - 2*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 + (B*
b^5 + 6*A*b^4*c)*d*e^5)*x^3 + (8*B*b^2*c^3*d^5*e - 10*A*b^5*d*e^5 + 4*(3*B*
b^3*c^2 - 4*A*b^2*c^3)*d^4*e^2 - (7*B*b^4*c + 16*A*b^3*c^2)*d^3*e^3 + (2*B*
b^5 + 27*A*b^4*c)*d^2*e^4)*x^2 + (8*B*b^3*c^2*d^5*e - 5*A*b^5*d^2*e^4 - 4*(
B*b^4*c + 4*A*b^3*c^2)*d^4*e^2 + (B*b^5 + 16*A*b^4*c)*d^3*e^3)*x)*sqrt(c*d^
2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 +
b*x))/(e*x + d)) + 2*(8*A*b*c^4*d^7 - 32*A*b^2*c^3*d^6*e + 48*A*b^3*c^2*d^5
*e^2 - 32*A*b^4*c*d^4*e^3 + 8*A*b^5*d^3*e^4 + (15*A*b^4*c*d*e^6 - 8*(B*b*c^
4 - 2*A*c^5)*d^5*e^2 - 2*(B*b^2*c^3 + 20*A*b*c^4)*d^4*e^3 + (13*B*b^3*c^2 +
 62*A*b^2*c^3)*d^3*e^4 - (3*B*b^4*c + 53*A*b^3*c^2)*d^2*e^5)*x^3 + (15*A*b^
5*d*e^6 - 16*(B*b*c^4 - 2*A*c^5)*d^6*e + 4*(B*b^2*c^3 - 18*A*b*c^4)*d^5*e^2
 + (7*B*b^3*c^2 + 80*A*b^2*c^3)*d^4*e^3 + (8*B*b^4*c - 27*A*b^3*c^2)*d^3*e^
4 - (3*B*b^5 + 28*A*b^4*c)*d^2*e^5)*x^2 + (25*A*b^5*d^2*e^5 - 8*(B*b*c^4 -
2*A*c^5)*d^7 + 8*(B*b^2*c^3 - 3*A*b*c^4)*d^6*e - 4*(3*B*b^3*c^2 + 4*A*b^2*c
^3)*d^5*e^2 + (17*B*b^4*c + 80*A*b^3*c^2)*d^4*e^3 - (5*B*b^5 + 81*A*b^4*c)*
d^3*e^4)*x)*sqrt(c*x^2 + b*x))/((b^2*c^5*d^8*e^2 - 4*b^3*c^4*d^7*e^3 + 6*b^
4*c^3*d^6*e^4 - 4*b^5*c^2*d^5*e^5 + b^6*c*d^4*e^6)*x^4 + (2*b^2*c^5*d^9*e -
 7*b^3*c^4*d^8*e^2 + 8*b^4*c^3*d^7*e^3 - 2*b^5*c^2*d^6*e^4 - 2*b^6*c*d^5*e^
5 + b^7*d^4*e^6)*x^3 + (b^2*c^5*d^10 - 2*b^3*c^4*d^9*e - 2*b^4*c^3*d^8*e^2
+ 8*b^5*c^2*d^7*e^3 - 7*b^6*c*d^6*e^4 + 2*b^7*d^5*e^5)*x^2 + (b^3*c^4*d^10
- 4*b^4*c^3*d^9*e + 6*b^5*c^2*d^8*e^2 - 4*b^6*c*d^7*e^3 + b^7*d^6*e^4)*x),
-1/4*(3*((8*B*b^2*c^3*d^3*e^3 - 5*A*b^4*c*e^6 - 4*(B*b^3*c^2 + 4*A*b^2*c^3)
*d^2*e^4 + (B*b^4*c + 16*A*b^3*c^2)*d*e^5)*x^4 + (16*B*b^2*c^3*d^4*e^2 - 32
*A*b^2*c^3*d^3*e^3 - 5*A*b^5*e^6 - 2*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 + (B*b
^5 + 6*A*b^4*c)*d*e^5)*x^3 + (8*B*b^2*c^3*d^5*e - 10*A*b^5*d*e^5 + 4*(3*B*b
^3*c^2 - 4*A*b^2*c^3)*d^4*e^2 - (7*B*b^4*c + 16*A*b^3*c^2)*d^3*e^3 + (2*B*b
^5 + 27*A*b^4*c)*d^2*e^4)*x^2 + (8*B*b^3*c^2*d^5*e - 5*A*b^5*d^2*e^4 - 4*(B
*b^4*c + 4*A*b^3*c^2)*d^4*e^2 + (B*b^5 + 16*A*b^4*c)*d^3*e^3)*x)*sqrt(-c*d^
2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
+ (8*A*b*c^4*d^7 - 32*A*b^2*c^3*d^6*e + 48*A*b^3*c^2*d^5*e^2 - 32*A*b^4*c*d
^4*e^3 + 8*A*b^5*d^3*e^4 + (15*A*b^4*c*d*e^6 - 8*(B*b*c^4 - 2*A*c^5)*d^5*e^
2 - 2*(B*b^2*c^3 + 20*A*b*c^4)*d^4*e^3 + (13*B*b^3*c^2 + 62*A*b^2*c^3)*d^3*
e^4 - (3*B*b^4*c + 53*A*b^3*c^2)*d^2*e^5)*x^3 + (15*A*b^5*d*e^6 - 16*(B*b*c
^4 - 2*A*c^5)*d^6*e + 4*(B*b^2*c^3 - 18*A*b*c^4)*d^5*e^2 + (7*B*b^3*c^2 + 8
0*A*b^2*c^3)*d^4*e^3 + (8*B*b^4*c - 27*A*b^3*c^2)*d^3*e^4 - (3*B*b^5 + 28*A
*b^4*c)*d^2*e^5)*x^2 + (25*A*b^5*d^2*e^5 - 8*(B*b*c^4 - 2*A*c^5)*d^7 + 8*(B
*b^2*c^3 - 3*A*b*c^4)*d^6*e - 4*(3*B*b^3*c^2 + 4*A*b^2*c^3)*d^5*e^2 + (17*B
*b^4*c + 80*A*b^3*c^2)*d^4*e^3 - (5*B*b^5 + 81*A*b^4*c)*d^3*e^4)*x)*sqrt(c*
x^2 + b*x))/((b^2*c^5*d^8*e^2 - 4*b^3*c^4*d^7*e^3 + 6*b^4*c^3*d^6*e^4 - 4*b
^5*c^2*d^5*e^5 + b^6*c*d^4*e^6)*x^4 + (2*b^2*c^5*d^9*e - 7*b^3*c^4*d^8*e^2
+ 8*b^4*c^3*d^7*e^3 - 2*b^5*c^2*d^6*e^4 - 2*b^6*c*d^5*e^5 + b^7*d^4*e^6)*x^
3 + (b^2*c^5*d^10 - 2*b^3*c^4*d^9*e - 2*b^4*c^3*d^8*e^2 + 8*b^5*c^2*d^7*e^3
 - 7*b^6*c*d^6*e^4 + 2*b^7*d^5*e^5)*x^2 + (b^3*c^4*d^10 - 4*b^4*c^3*d^9*e +
 6*b^5*c^2*d^8*e^2 - 4*b^6*c*d^7*e^3 + b^7*d^6*e^4)*x)]
```

giac [B] time = 0.39, size = 1095, normalized size = 2.93

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c^3*d^6 - 2*A*c^4*d^6 + 3*A*b*c^3*d^5*e - 3*A*b^2*c^2*d^4*e^2 + A*b
^3*c*d^3*e^3)*x/(b^2*c^3*d^9 - 3*b^3*c^2*d^8*e + 3*b^4*c*d^7*e^2 - b^5*d^6*
e^3) - (A*b*c^3*d^6 - 3*A*b^2*c^2*d^5*e + 3*A*b^3*c*d^4*e^2 - A*b^4*d^3*e^3
)/(b^2*c^3*d^9 - 3*b^3*c^2*d^8*e + 3*b^4*c*d^7*e^2 - b^5*d^6*e^3))/sqrt(c*x
^2 + b*x) - 3/4*(8*B*c^2*d^3*e - 4*B*b*c*d^2*e^2 - 16*A*c^2*d^2*e^2 + B*b^2
*d*e^3 + 16*A*b*c*d*e^3 - 5*A*b^2*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b
*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2
*c*d^4*e^2 - b^3*d^3*e^3)*sqrt(-c*d^2 + b*d*e)) + 1/4*(40*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^2*B*c^(5/2)*d^4*e + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c
^2*d^3*e^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^2*d^4*e - 28*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*B*b*c^(3/2)*d^3*e^2 - 56*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^2*A*c^(5/2)*d^3*e^2 + 10*B*b^2*c^(3/2)*d^4*e - 12*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^3*B*b*c*d^2*e^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^2
*d^2*e^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c*d^3*e^2 - 56*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*A*b*c^2*d^3*e^2 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^2*B*b^2*sqrt(c)*d^2*e^3 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(3/2)
*d^2*e^3 - 3*B*b^3*sqrt(c)*d^3*e^2 - 14*A*b^2*c^(3/2)*d^3*e^2 + 3*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^3*B*b^2*d*e^4 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
*A*b*c*d*e^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*d^2*e^3 + 44*(sqrt(c
)*x - sqrt(c*x^2 + b*x))*A*b^2*c*d^2*e^3 - 13*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^2*A*b^2*sqrt(c)*d*e^4 + 7*A*b^3*sqrt(c)*d^2*e^3 - 7*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*A*b^2*e^5 - 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*d*e^4)/((
c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3)*((sqrt(c)*x - sqrt
(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^2)
```

maple [B] time = 0.07, size = 3735, normalized size = 9.99

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -15/2/(b*e-c*d)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*B+17*B/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c+30/(b*e-c*d)^3/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B-45*e/(b*e-c*d)^3/d/b/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*A-13*e/(b*e-c*d)^2
/d^2*c^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-15
/4*e^3/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*x*c*b*A-30/e/(b*e-c*d)^3/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)
*(x+d/e)/e)^(1/2)*x*c^4*B*d-15/2*e^2/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/
2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A+1
5/4*e^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*x*c*b*B+15/2*e/(b*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*B+B/e/(b*e-c*d)/d/(x
+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)-3*B*e/(b*e-
c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b-30*e
/(b*e-c*d)^3/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^
2*A-8*e/(b*e-c*d)^2/d^2*c/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
```

```
e)^(1/2)*A+1/2/e/(b*e-c*d)/d/(x+d/e)^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*A-15/4*e^3/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*A+15/4*e^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B+5/2/e/(b*e-c*d)^2/(x+d/
e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B-8*B/e*c^2/
(b*e-c*d)/d/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x
-5/4/(b*e-c*d)^2/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2)*b*B-5/2/(b*e-c*d)^2/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)*c*A+30/(b*e-c*d)^3/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^4*A+45/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*B+13/(b*e-c*d)^2/d*c^2/b/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-19*B/e/(b*e-c*d)^2/b/(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2-9/2*B/(b*e-c*d
)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2))/(x+d/e))*c-1/2/e^2/(b*e-c*d)/(x+d/e)^2/((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+15/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^3*A-45/2*e/(b*e-c*d)^3/d/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B+26/(b*e-c*d)^2/d*c^3/
b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-75/4*e/(b
*e-c*d)^3/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B
-3*B*e/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*x*c+25*B/(b*e-c*d)^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e)^(1/2)*x*c^2-38*B/e/(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*
e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3+3/2*B*e/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^
(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/
2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b-4*
B/e*c/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2)+5/4*e/(b*e-c*d)^2/d^2/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2)*b*A+75/4*e^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A-15/8*e^2/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^
2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^
(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b
^2*B+3/2*e*c/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+15/2*e/(b*e-c*d)^3/d/(-(b*e-c
*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)
*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x
+d/e))*c^2*A-15/e/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2)*c^3*B*d+15/8*e^3/(b*e-c*d)^3/d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln
((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*A+45/2*e
^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2
)*x*c^2*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{3/2}\,{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^3),x)
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x)**(3/2),x)
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)**3), x)
```

3.1061 $\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=341

$$-\frac{2(d+ex)^3\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{e\sqrt{bx+cx^2}\,\left(2b^3ce^2(3Ae+7Bd)+4b^2c^2de(Ae+2Bd)\right.}{3b^4c^3}$$

Rubi [A] time = 0.46, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 640, 620, 206}

$$-\frac{e\sqrt{bx+cx^2}\,\left(4b^2c^2de(Ae+2Bd)+2b^3ce^2(3Ae+7Bd)-16bc^3d^2(3Ae+Bd)+32Ac^4d^3-15b^4Be^3\right)}{3b^4c^3}-\frac{2(d+ex)\left(bcd^2\left(10Abce-8Ac^2d+b^2(-B)e+4bBcd\right)-x\left(4b^2c^2de(Ae+Bd)+2b^3ce^2(Ae+3Bd)-8bc^3d^2(3Ae+Bd)+16Ac^4d^3-5b^4Be^3\right)\right)}{3b^4c^2\sqrt{bx+cx^2}}-\frac{2(d+ex)^3\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{e^3\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)(2Ace-5bBe+8Bcd)}{c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^3*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3*b
^2*c*(b*x + c*x^2)^(3/2)) - (2*(d + e*x)*(b*c*d^2*(4*b*B*c*d - 8*A*c^2*d -
b^2*B*e + 10*A*b*c*e) - (16*A*c^4*d^3 - 5*b^4*B*e^3 + 4*b^2*c^2*d*e*(B*d +
A*e) + 2*b^3*c*e^2*(3*B*d + A*e) - 8*b*c^3*d^2*(B*d + 3*A*e))*x))/(3*b^4*c^
2*Sqrt[b*x + c*x^2]) - (e*(32*A*c^4*d^3 - 15*b^4*B*e^3 + 4*b^2*c^2*d*e*(2*B
*d + A*e) - 16*b*c^3*d^2*(B*d + 3*A*e) + 2*b^3*c*e^2*(7*B*d + 3*A*e))*Sqrt[
b*x + c*x^2])/(3*b^4*c^3) + (e^3*(8*B*c*d - 5*b*B*e + 2*A*c*e)*ArcTanh[(Sqr
t[c]*x)/Sqrt[b*x + c*x^2]])/c^(7/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
```

```
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\int \frac{(d+ex)^2\left(\frac{1}{2}d\left(4bBcd-8Ac^2d-\right.\right.}{}}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

Mathematica [A] time = 5.37, size = 237, normalized size = 0.70

$$\frac{x^{5/2}\left(\frac{e^3(b+cx)^{5/2}\log\left(\sqrt{c}\sqrt{b+cx}+c\sqrt{x}\right)(2Ace-5bBe+8Bcd)}{c^{7/2}}-\frac{(b+cx)\left(2x^2(b+cx)(cd-be)^3\left(bc(5Bd-4Ae)-8Ac^2d+7b^2Be\right)+2c^3d^3x(b+cx)^2(3b(4Ae+Bd)-8Acd)+2bx^2(bB-Ac)(cd-be)^4+2Abc^3d^4(b+cx)^2-3b^4Be^4x^2(b+cx)^2\right)}{3b^4c^3x^{3/2}}\right)}{(x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^(5/2)*(-1/3*((b + c*x)*(2*b*(b*B - A*c)*(c*d - b*e)^4*x^2 + 2*(c*d - b*e
)^3*(-8*A*c^2*d + 7*b^2*B*e + b*c*(5*B*d - 4*A*e))*x^2*(b + c*x) + 2*A*b*c^
3*d^4*(b + c*x)^2 + 2*c^3*d^3*(-8*A*c*d + 3*b*(B*d + 4*A*e))*x*(b + c*x)^2
- 3*b^4*B*e^4*x^2*(b + c*x)^2))/(b^4*c^3*x^(3/2)) + (e^3*(8*B*c*d - 5*b*B*e
 + 2*A*c*e)*(b + c*x)^(5/2)*Log[c*Sqrt[x] + Sqrt[c]*Sqrt[b + c*x]])/c^(7/2)
))/(x*(b + c*x))^(5/2)
```

IntegrateAlgebraic [A] time = 1.03, size = 435, normalized size = 1.28

$$\frac{\sqrt{bx+cx^2}\left(-6Ab^5ce^4x^2-8Ab^4c^2e^4x^3-2Ab^3c^3d^4-24Ab^3c^3d^3ex+36Ab^3c^3d^2e^2x^2+8Ab^3c^3de^3x^3+12Ab^2c^4d^4x-96Ab^2c^4d^3ex^2+24Ab^2c^4d^2e^2x^3+48Abc^5d^4x^2-64Abc^5d^3ex^3+32Ac^6d^4x^3+15b^6Be^4x^2-24b^5Bcde^3x^2+20b^5Bce^4x^3-32b^4Bc^2de^3x^3+3b^4Bc^2e^4x^4-6b^3Bc^3d^4x+24b^3Bc^3d^3ex^2+12b^3Bc^3d^2e^2x^3-24b^2Bc^4d^4x^2+16b^2Bc^4d^3ex^3-16bBc^5d^4x^3\right)}{3b^4c^3x^2(b+cx)^2}+\frac{\log\left(-2c^{7/2}\sqrt{bx+cx^2}+bc^3+2c^4x\right)\left(-2Ace^4+5bBe^4-8Bcde^3\right)}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(-2*A*b^3*c^3*d^4 - 6*b^3*B*c^3*d^4*x + 12*A*b^2*c^4*d^4
*x - 24*A*b^3*c^3*d^3*e*x - 24*b^2*B*c^4*d^4*x^2 + 48*A*b*c^5*d^4*x^2 + 24*
b^3*B*c^3*d^3*e*x^2 - 96*A*b^2*c^4*d^3*e*x^2 + 36*A*b^3*c^3*d^2*e^2*x^2 - 2
4*b^5*B*c*d*e^3*x^2 + 15*b^6*B*e^4*x^2 - 6*A*b^5*c*e^4*x^2 - 16*b*B*c^5*d^4
*x^3 + 32*A*c^6*d^4*x^3 + 16*b^2*B*c^4*d^3*e*x^3 - 64*A*b*c^5*d^3*e*x^3 + 1
2*b^3*B*c^3*d^2*e^2*x^3 + 24*A*b^2*c^4*d^2*e^2*x^3 - 32*b^4*B*c^2*d*e^3*x^3
 + 8*A*b^3*c^3*d*e^3*x^3 + 20*b^5*B*c*e^4*x^3 - 8*A*b^4*c^2*e^4*x^3 + 3*b^4
*B*c^2*e^4*x^4))/(3*b^4*c^3*x^2*(b + c*x)^2) + ((-8*B*c*d*e^3 + 5*b*B*e^4 -
 2*A*c*e^4)*Log[b*c^3 + 2*c^4*x - 2*c^(7/2)*Sqrt[b*x + c*x^2]])/(2*c^(7/2))
```

fricas [A] time = 0.46, size = 974, normalized size = 2.86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*((8*B*b^4*c^3*d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*x^4 + 2*(8*B
*b^5*c^2*d*e^3 - (5*B*b^6*c - 2*A*b^5*c^2)*e^4)*x^3 + (8*B*b^6*c*d*e^3 - (5
*B*b^7 - 2*A*b^6*c)*e^4)*x^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c)) + 2*(3*B*b^4*c^3*e^4*x^4 - 2*A*b^3*c^4*d^4 - 4*(4*(B*b*c^6 - 2*A*c^
7)*d^4 - 4*(B*b^2*c^5 - 4*A*b*c^6)*d^3*e - 3*(B*b^3*c^4 + 2*A*b^2*c^5)*d^2*
e^2 + 2*(4*B*b^4*c^3 - A*b^3*c^4)*d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*
x^3 + 3*(12*A*b^3*c^4*d^2*e^2 - 8*B*b^5*c^2*d*e^3 - 8*(B*b^2*c^5 - 2*A*b*c^
6)*d^4 + 8*(B*b^3*c^4 - 4*A*b^2*c^5)*d^3*e + (5*B*b^6*c - 2*A*b^5*c^2)*e^4)
*x^2 - 6*(4*A*b^3*c^4*d^3*e + (B*b^3*c^4 - 2*A*b^2*c^5)*d^4)*x)*sqrt(c*x^2
+ b*x))/(b^4*c^6*x^4 + 2*b^5*c^5*x^3 + b^6*c^4*x^2), -1/3*(3*((8*B*b^4*c^3*
d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*x^4 + 2*(8*B*b^5*c^2*d*e^3 - (5*B*
b^6*c - 2*A*b^5*c^2)*e^4)*x^3 + (8*B*b^6*c*d*e^3 - (5*B*b^7 - 2*A*b^6*c)*e^
4)*x^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (3*B*b^4*c^3*e^
4*x^4 - 2*A*b^3*c^4*d^4 - 4*(4*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(B*b^2*c^5 - 4*A
*b*c^6)*d^3*e - 3*(B*b^3*c^4 + 2*A*b^2*c^5)*d^2*e^2 + 2*(4*B*b^4*c^3 - A*b^
3*c^4)*d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*x^3 + 3*(12*A*b^3*c^4*d^2*e
^2 - 8*B*b^5*c^2*d*e^3 - 8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 8*(B*b^3*c^4 - 4*A
*b^2*c^5)*d^3*e + (5*B*b^6*c - 2*A*b^5*c^2)*e^4)*x^2 - 6*(4*A*b^3*c^4*d^3*e
 + (B*b^3*c^4 - 2*A*b^2*c^5)*d^4)*x)*sqrt(c*x^2 + b*x))/(b^4*c^6*x^4 + 2*b^
5*c^5*x^3 + b^6*c^4*x^2)]
```

giac [A] time = 0.30, size = 370, normalized size = 1.09

$$-\frac{\frac{2Ad^4}{b}-\left(\left(\left(\frac{3Bxe^4}{c}-\frac{4\left(4Bbc^5d^4-8Ac^6d^4-4Bb^2c^4d^3e+16Abc^5d^3e-3Bb^3c^3d^2e^2-6Ab^2c^4d^2e^2+8Bb^4c^2de^3-2Ab^3c^3de^3-5Bb^5ce^4+2Ab^4c^2e^4\right)}{b^4c^3}\right)x-\frac{3\left(8Bb^2c^4d^4-16Abc^5d^4-8Bb^3c^3d^3e+32Ab^2c^4d^3e-12Ab^3c^3d^2e^2+8Bb^5cde^3-5Bb^6e^4+2Ab^5ce^4\right)}{b^4c^3}\right)x-\frac{6\left(Bb^3c^3d^4-2Ab^2c^4d^4+4Ab^3c^3d^3e\right)}{b^4c^3}\right)x}{3\left(cx^2+bx\right)^{\frac{3}{2}}}-\frac{\left(8Bcde^3-5Bbe^4+2Ace^4\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(2*A*d^4/b - (((3*B*x*e^4/c - 4*(4*B*b*c^5*d^4 - 8*A*c^6*d^4 - 4*B*b^2
*c^4*d^3*e + 16*A*b*c^5*d^3*e - 3*B*b^3*c^3*d^2*e^2 - 6*A*b^2*c^4*d^2*e^2 +
 8*B*b^4*c^2*d*e^3 - 2*A*b^3*c^3*d*e^3 - 5*B*b^5*c*e^4 + 2*A*b^4*c^2*e^4)/(
b^4*c^3))*x - 3*(8*B*b^2*c^4*d^4 - 16*A*b*c^5*d^4 - 8*B*b^3*c^3*d^3*e + 32*
A*b^2*c^4*d^3*e - 12*A*b^3*c^3*d^2*e^2 + 8*B*b^5*c*d*e^3 - 5*B*b^6*e^4 + 2*
A*b^5*c*e^4)/(b^4*c^3))*x - 6*(B*b^3*c^3*d^4 - 2*A*b^2*c^4*d^4 + 4*A*b^3*c^
3*d^3*e)/(b^4*c^3))*x)/(c*x^2 + b*x)^(3/2) - 1/2*(8*B*c*d*e^3 - 5*B*b*e^4 +
 2*A*c*e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2
)
```

maple [B] time = 0.06, size = 1026, normalized size = 3.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -8/3/b^2/(c*x^2+b*x)^(1/2)*B*d^4-2/3*A*d^4/b/(c*x^2+b*x)^(3/2)+1/c^(5/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^4+5/6*B*e^4*b/c^2*x^3/(c*x^2+b*
x)^(3/2)-5/4*B*e^4*b^2/c^3*x^2/(c*x^2+b*x)^(3/2)-6*x^2/c/(c*x^2+b*x)^(3/2)*
B*d^2*e^2+8/3/b/(c*x^2+b*x)^(3/2)*x*A*d^3*e-16/3/b^3*c/(c*x^2+b*x)^(1/2)*x*
B*d^4+8/3/b/c/(c*x^2+b*x)^(1/2)*B*d^3*e-5/12*B*e^4*b^3/c^4/(c*x^2+b*x)^(3/2
)*x+35/6*B*e^4*b/c^3/(c*x^2+b*x)^(1/2)*x+8/3/b/c/(c*x^2+b*x)^(1/2)*x*A*d*e^
```

```
3+4/b/c/(c*x^2+b*x)^(1/2)*x*B*d^2*e^2-64/3/b^3*c/(c*x^2+b*x)^(1/2)*x*A*d^3*
e-4/3*b/c^2/(c*x^2+b*x)^(3/2)*x*A*d*e^3+2*b/c^2*x^2/(c*x^2+b*x)^(3/2)*B*d*e
^3+2/3*b^2/c^3/(c*x^2+b*x)^(3/2)*x*B*d*e^3-4/3*x^3/c/(c*x^2+b*x)^(3/2)*B*d*
e^3+1/2*b/c^2*x^2/(c*x^2+b*x)^(3/2)*A*e^4+1/6*b^2/c^3/(c*x^2+b*x)^(3/2)*x*A
*e^4-4/c/(c*x^2+b*x)^(3/2)*x*A*d^2*e^2-8/3/c/(c*x^2+b*x)^(3/2)*x*B*d^3*e-4/
3*A*d^4/b^2/(c*x^2+b*x)^(3/2)*c*x+32/3*A*d^4*c^2/b^4/(c*x^2+b*x)^(1/2)*x-2*
b/c^2/(c*x^2+b*x)^(3/2)*x*B*d^2*e^2+4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))*B*d*e^3-7/3/c^2/(c*x^2+b*x)^(1/2)*x*A*e^4+8/b^2/(c*x^2+b*x)^(1
/2)*x*A*d^2*e^2+16/3/b^2/(c*x^2+b*x)^(1/2)*x*B*d^3*e+4/b/c/(c*x^2+b*x)^(1/2
)*A*d^2*e^2-28/3/c^2/(c*x^2+b*x)^(1/2)*x*B*d*e^3-2/3*b/c^3/(c*x^2+b*x)^(1/2
)*B*d*e^3-4*x^2/c/(c*x^2+b*x)^(3/2)*A*d*e^3+16/3*A*d^4*c/b^3/(c*x^2+b*x)^(1
/2)+2/3/b/(c*x^2+b*x)^(3/2)*x*B*d^4-1/3*x^3/c/(c*x^2+b*x)^(3/2)*A*e^4+B*e^4
*x^4/c/(c*x^2+b*x)^(3/2)-1/6*b/c^3/(c*x^2+b*x)^(1/2)*A*e^4-32/3/b^2/(c*x^2+
b*x)^(1/2)*A*d^3*e+5/12*B*e^4*b^2/c^4/(c*x^2+b*x)^(1/2)-5/2*B*e^4*b/c^(7/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+4/3/c^2/(c*x^2+b*x)^(1/2)*A*d*e^
3+2/c^2/(c*x^2+b*x)^(1/2)*B*d^2*e^2
```

maxima [B] time = 0.65, size = 795, normalized size = 2.33

$$\frac{5 Bbe^4 x\left(\frac{3x^2}{(cx^2+bx)^{\frac{3}{2}}c}+\frac{bx}{(cx^2+bx)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)}{6c}+\frac{Be^4x^4}{(cx^2+bx)^{\frac{3}{2}}c}-\frac{4Acd^4x}{3(cx^2+bx)^{\frac{3}{2}}b^2}+\frac{32Ac^2d^4x}{3\sqrt{cx^2+bx}\,b^4}+\frac{10Bbe^4x}{3\sqrt{cx^2+bx}\,c^3}-\frac{5Bbe^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{2c^{\frac{7}{2}}}-\frac{1}{3}(4Bde^3+Ae^4)x\left(\frac{3x^2}{(cx^2+bx)^{\frac{3}{2}}c}+\frac{bx}{(cx^2+bx)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)-\frac{2Ad^4}{3(cx^2+bx)^{\frac{3}{2}}b}+\frac{16Acd^4}{3\sqrt{cx^2+bx}\,b^3}+\frac{5\sqrt{cx^2+bx}\,Be^4}{3c^3}-\frac{2(3Bd^2e^2+2Ade^3)x^2}{(cx^2+bx)^{\frac{3}{2}}c}+\frac{8(2Bd^3e+3Ad^2e^2)x}{3\sqrt{cx^2+bx}\,b^2}+\frac{2(Bd^4+4Ad^3e)x}{3(cx^2+bx)^{\frac{3}{2}}b}-\frac{4(4Bde^3+Ae^4)x}{3\sqrt{cx^2+bx}\,c^2}-\frac{2(3Bd^2e^2+2Ade^3)bx}{3(cx^2+bx)^{\frac{3}{2}}c^2}-\frac{4(2Bd^3e+3Ad^2e^2)x}{3(cx^2+bx)^{\frac{3}{2}}c}+\frac{4(3Bd^2e^2+2Ade^3)x}{3\sqrt{cx^2+bx}\,bc}-\frac{16(Bd^4+4Ad^3e)cx}{3\sqrt{cx^2+bx}\,b^3}+\frac{(4Bde^3+Ae^4)\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{c^{\frac{5}{2}}}-\frac{8(Bd^4+4Ad^3e)}{3\sqrt{cx^2+bx}\,b^2}+\frac{2(3Bd^2e^2+2Ade^3)}{3\sqrt{cx^2+bx}\,c^2}-\frac{2(4Bde^3+Ae^4)\sqrt{cx^2+bx}}{3bc^2}+\frac{4(2Bd^3e+3Ad^2e^2)}{3\sqrt{cx^2+bx}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 5/6*B*b*e^4*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2
) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2))/c + B*e^4*x^4/
((c*x^2 + b*x)^(3/2)*c) - 4/3*A*c*d^4*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*
c^2*d^4*x/(sqrt(c*x^2 + b*x)*b^4) + 10/3*B*b*e^4*x/(sqrt(c*x^2 + b*x)*c^3)
- 5/2*B*b*e^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 1/3*(4
*B*d*e^3 + A*e^4)*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/
2)*c^2) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) - 2/3*A*
d^4/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c*d^4/(sqrt(c*x^2 + b*x)*b^3) + 5/3*sq
rt(c*x^2 + b*x)*B*e^4/c^3 - 2*(3*B*d^2*e^2 + 2*A*d*e^3)*x^2/((c*x^2 + b*x)^
(3/2)*c) + 8/3*(2*B*d^3*e + 3*A*d^2*e^2)*x/(sqrt(c*x^2 + b*x)*b^2) + 2/3*(B
*d^4 + 4*A*d^3*e)*x/((c*x^2 + b*x)^(3/2)*b) - 4/3*(4*B*d*e^3 + A*e^4)*x/(sq
rt(c*x^2 + b*x)*c^2) - 2/3*(3*B*d^2*e^2 + 2*A*d*e^3)*b*x/((c*x^2 + b*x)^(3/
2)*c^2) - 4/3*(2*B*d^3*e + 3*A*d^2*e^2)*x/((c*x^2 + b*x)^(3/2)*c) + 4/3*(3*
B*d^2*e^2 + 2*A*d*e^3)*x/(sqrt(c*x^2 + b*x)*b*c) - 16/3*(B*d^4 + 4*A*d^3*e)
*c*x/(sqrt(c*x^2 + b*x)*b^3) + (4*B*d*e^3 + A*e^4)*log(2*c*x + b + 2*sqrt(c
*x^2 + b*x)*sqrt(c))/c^(5/2) - 8/3*(B*d^4 + 4*A*d^3*e)/(sqrt(c*x^2 + b*x)*b
^2) + 2/3*(3*B*d^2*e^2 + 2*A*d*e^3)/(sqrt(c*x^2 + b*x)*c^2) - 2/3*(4*B*d*e^
3 + A*e^4)*sqrt(c*x^2 + b*x)/(b*c^2) + 4/3*(2*B*d^3*e + 3*A*d^2*e^2)/(sqrt(
c*x^2 + b*x)*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+e\,x)^4}{\left(c\,x^2+b\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{(x(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x)**(5/2),x)
[Out] Integral((A + B*x)*(d + e*x)**4/(x*(b + c*x))**(5/2), x)
```

3.1062 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=220

$$-\frac{2(d+ex)^2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(bcd^2\left(-4bc(2Ae+Bd)+8Ac^2d+b^2Be\right)+x\left(2b^2\right.\right.}{}$$

Rubi [A] time = 0.20, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 777, 620, 206}

$$\frac{2\left(x\left(2b^2c^2de(4Ae+3Bd)-8bc^3d^2(3Ae+Bd)+16Ac^4d^3+2b^3Bcde^2-3b^4Be^3\right)+bcd^2\left(-4bc(2Ae+Bd)+8Ac^2d+b^2Be\right)\right)}{3b^4c^2\sqrt{bx+cx^2}}-\frac{2(d+ex)^2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2Be^3\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3*b
^2*c*(b*x + c*x^2)^(3/2)) + (2*(b*c*d^2*(8*A*c^2*d + b^2*B*e - 4*b*c*(B*d +
 2*A*e)) + (16*A*c^4*d^3 + 2*b^3*B*c*d*e^2 - 3*b^4*B*e^3 - 8*b*c^3*d^2*(B*d
 + 3*A*e) + 2*b^2*c^2*d*e*(3*B*d + 4*A*e))*x))/(3*b^4*c^2*Sqrt[b*x + c*x^2]
) + (2*B*e^3*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
```

```
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\int \frac{(d+ex)\left(-\frac{1}{2}d\left(8Ac^2d+b^2Be-4bc(\cdots\right.\right.}{\left(bx+cx^2\right)^{3/\cdots}}}{3b^2c}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\left(bcd^2\left(8Ac^2d+b^2Be-4b\cdots\right.\right.}{\cdots}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\left(bcd^2\left(8Ac^2d+b^2Be-4b\cdots\right.\right.}{\cdots}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\left(bcd^2\left(8Ac^2d+b^2Be-4b\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 5.48, size = 199, normalized size = 0.90

$$\frac{x^{5/2}\left(\frac{2Be^3(b+cx)^{5/2}\log\left(\sqrt{c}\sqrt{b+cx}+c\sqrt{x}\right)}{c^{5/2}}-\frac{2(b+cx)\left(x^2(b+cx)(cd-be)^2\left(bc(5Bd-Ae)-8Ac^2d+4b^2Be\right)+c^2d^2x(b+cx)^2(9Abe-8Acd+3bBd)+bx^2(bB-Ac)(cd-be)^3+Abc^2d^3(b+cx)^2\right)}{3b^4c^2x^{3/2}}\right)}{(x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^(5/2)*((-2*(b + c*x)*(b*(b*B - A*c)*(c*d - b*e)^3*x^2 + (c*d - b*e)^2*(-
8*A*c^2*d + 4*b^2*B*e + b*c*(5*B*d - A*e))*x^2*(b + c*x) + A*b*c^2*d^3*(b +
 c*x)^2 + c^2*d^2*(3*b*B*d - 8*A*c*d + 9*A*b*e)*x*(b + c*x)^2))/(3*b^4*c^2*
x^(3/2)) + (2*B*e^3*(b + c*x)^(5/2)*Log[c*Sqrt[x] + Sqrt[c]*Sqrt[b + c*x]])
/c^(5/2)))/(x*(b + c*x))^(5/2)
```

IntegrateAlgebraic [A] time = 0.96, size = 333, normalized size = 1.51

$$-\frac{2\sqrt{bx+cx^2}\left(Ab^3c^2d^3+9Ab^3c^2d^2ex-9Ab^3c^2de^2x^2-Ab^3c^2e^3x^3-6Ab^2c^3d^3x+36Ab^2c^3d^2ex^2-6Ab^2c^3de^2x^3-24Abc^4d^3x^2+24Abc^4d^2ex^3-16Ac^5d^3x^3+3b^5Be^3x^2+4b^4Bce^3x^3+3b^3Bc^2d^3x-9b^3Bc^2d^2ex^2-3b^3Bc^2de^2x^3+12b^2Bc^3d^3x^2-6b^2Bc^3d^2ex^3+8bBc^4d^3x^3\right)}{3b^4c^2x^2(b+cx)^2}-\frac{Be^3\log\left(-2c^{5/2}\sqrt{bx+cx^2}+bc^2+2c^3x\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(A*b^3*c^2*d^3 + 3*b^3*B*c^2*d^3*x - 6*A*b^2*c^3*d^3*
x + 9*A*b^3*c^2*d^2*e*x + 12*b^2*B*c^3*d^3*x^2 - 24*A*b*c^4*d^3*x^2 - 9*b^3
*B*c^2*d^2*e*x^2 + 36*A*b^2*c^3*d^2*e*x^2 - 9*A*b^3*c^2*d*e^2*x^2 + 3*b^5*B
*e^3*x^2 + 8*b*B*c^4*d^3*x^3 - 16*A*c^5*d^3*x^3 - 6*b^2*B*c^3*d^2*e*x^3 + 2
4*A*b*c^4*d^2*e*x^3 - 3*b^3*B*c^2*d*e^2*x^3 - 6*A*b^2*c^3*d*e^2*x^3 + 4*b^4
*B*c*e^3*x^3 - A*b^3*c^2*e^3*x^3))/(3*b^4*c^2*x^2*(b + c*x)^2) - (B*e^3*Log
[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[b*x + c*x^2]])/c^(5/2)
```

fricas [A] time = 0.43, size = 671, normalized size = 3.05

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(B*b^4*c^2*e^3*x^4 + 2*B*b^5*c*e^3*x^3 + B*b^6*e^3*x^2)*sqrt(c)*log
(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(A*b^3*c^3*d^3 + (8*(B*b*c^5
- 2*A*c^6)*d^3 - 6*(B*b^2*c^4 - 4*A*b*c^5)*d^2*e - 3*(B*b^3*c^3 + 2*A*b^2*c
^4)*d*e^2 + (4*B*b^4*c^2 - A*b^3*c^3)*e^3)*x^3 - 3*(3*A*b^3*c^3*d*e^2 - B*b
^5*c*e^3 - 4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 3*(B*b^3*c^3 - 4*A*b^2*c^4)*d^2*
e)*x^2 + 3*(3*A*b^3*c^3*d^2*e + (B*b^3*c^3 - 2*A*b^2*c^4)*d^3)*x)*sqrt(c*x^
2 + b*x))/(b^4*c^5*x^4 + 2*b^5*c^4*x^3 + b^6*c^3*x^2), -2/3*(3*(B*b^4*c^2*e
^3*x^4 + 2*B*b^5*c*e^3*x^3 + B*b^6*e^3*x^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (A*b^3*c^3*d^3 + (8*(B*b*c^5 - 2*A*c^6)*d^3 - 6*(B*b^2
*c^4 - 4*A*b*c^5)*d^2*e - 3*(B*b^3*c^3 + 2*A*b^2*c^4)*d*e^2 + (4*B*b^4*c^2
- A*b^3*c^3)*e^3)*x^3 - 3*(3*A*b^3*c^3*d*e^2 - B*b^5*c*e^3 - 4*(B*b^2*c^4 -
 2*A*b*c^5)*d^3 + 3*(B*b^3*c^3 - 4*A*b^2*c^4)*d^2*e)*x^2 + 3*(3*A*b^3*c^3*d
^2*e + (B*b^3*c^3 - 2*A*b^2*c^4)*d^3)*x)*sqrt(c*x^2 + b*x))/(b^4*c^5*x^4 +
2*b^5*c^4*x^3 + b^6*c^3*x^2)]
```

giac [A] time = 0.31, size = 289, normalized size = 1.31

$$-\frac{Be^3\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{c^{\frac{5}{2}}}-\frac{2\left(\frac{Ad^3}{b}+\left(x\left(\frac{\left(8Bbc^4d^3-16Ac^5d^3-6Bb^2c^3d^2e+24Abc^4d^2e-3Bb^3c^2de^2-6Ab^2c^3de^2+4Bb^4ce^3-Ab^3c^2e^3\right)x}{b^4c^2}+\frac{3\left(4Bb^2c^3d^3-8Abc^4d^3-3Bb^3c^2d^2e+12Ab^2c^3d^2e-3Ab^3c^2de^2+Bb^5e^3\right)}{b^4c^2}\right)+\frac{3\left(Bb^3c^2d^3-2Ab^2c^3d^3+3Ab^3c^2d^2e\right)}{b^4c^2}\right)x\right)}{3\left(cx^2+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -B*e^3*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2) - 2
/3*(A*d^3/b + (x*((8*B*b*c^4*d^3 - 16*A*c^5*d^3 - 6*B*b^2*c^3*d^2*e + 24*A*
b*c^4*d^2*e - 3*B*b^3*c^2*d*e^2 - 6*A*b^2*c^3*d*e^2 + 4*B*b^4*c*e^3 - A*b^3
*c^2*e^3)*x/(b^4*c^2) + 3*(4*B*b^2*c^3*d^3 - 8*A*b*c^4*d^3 - 3*B*b^3*c^2*d^
2*e + 12*A*b^2*c^3*d^2*e - 3*A*b^3*c^2*d*e^2 + B*b^5*e^3)/(b^4*c^2)) + 3*(B
*b^3*c^2*d^3 - 2*A*b^2*c^3*d^3 + 3*A*b^3*c^2*d^2*e)/(b^4*c^2))*x)/(c*x^2 +
b*x)^(3/2)
```

maple [B] time = 0.06, size = 680, normalized size = 3.09

$$-\frac{Be^3x^3}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{Ae^3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{Bbe^3x^2}{2\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{3Bde^2x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{Abe^3x}{3\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{2Ad^2ex}{\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{4Acd^3x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}-\frac{2Ade^2x}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{Bb^2e^3x}{6\left(cx^2+bx\right)^{\frac{3}{2}}c^3}-\frac{Bbde^2x}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{2Bd^3x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{2Bd^2ex}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{2Ae^3x}{3\sqrt{cx^2+bx}\,bc}-\frac{2Ad^3}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{4Ade^2x}{\sqrt{cx^2+bx}\,b^2}-\frac{16Acd^2ex}{\sqrt{cx^2+bx}\,b^3}+\frac{32Ac^2d^3x}{3\sqrt{cx^2+bx}\,b^4}+\frac{2Bde^2x}{\sqrt{cx^2+bx}\,bc}+\frac{4Bd^2ex}{\sqrt{cx^2+bx}\,b^2}-\frac{16Bcd^3x}{3\sqrt{cx^2+bx}\,b^3}-\frac{7Be^3x}{3\sqrt{cx^2+bx}\,c^2}+\frac{Be^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{c^{\frac{5}{2}}}+\frac{2Ade^2}{\sqrt{cx^2+bx}\,bc}-\frac{8Ad^2e}{\sqrt{cx^2+bx}\,b^2}+\frac{16Acd^3}{3\sqrt{cx^2+bx}\,b^3}+\frac{Ae^3}{3\sqrt{cx^2+bx}\,c^2}-\frac{Bbe^3}{6\sqrt{cx^2+bx}\,c^3}+\frac{2Bd^2e}{\sqrt{cx^2+bx}\,bc}-\frac{8Bd^3}{3\sqrt{cx^2+bx}\,b^2}+\frac{Bde^2}{\sqrt{cx^2+bx}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3/b/c/(c*x^2+b*x)^(1/2)*x*A*e^3-2/c/(c*x^2+b*x)^(3/2)*x*B*d^2*e-2/c/(c*x^
2+b*x)^(3/2)*x*A*d*e^2+4/b^2/(c*x^2+b*x)^(1/2)*x*A*d*e^2+2/b/c/(c*x^2+b*x)^
(1/2)*A*d*e^2+2/b/c/(c*x^2+b*x)^(1/2)*B*d^2*e+4/b^2/(c*x^2+b*x)^(1/2)*x*B*d
^2*e-b/c^2/(c*x^2+b*x)^(3/2)*x*B*d*e^2+2/b/c/(c*x^2+b*x)^(1/2)*x*B*d*e^2-16
/b^3*c/(c*x^2+b*x)^(1/2)*x*A*d^2*e-x^2/c/(c*x^2+b*x)^(3/2)*A*e^3+16/3*A*d^3
*c/b^3/(c*x^2+b*x)^(1/2)-1/3*B*e^3*x^3/c/(c*x^2+b*x)^(3/2)-2/3*A*d^3/b/(c*x
^2+b*x)^(3/2)-8/3/b^2/(c*x^2+b*x)^(1/2)*B*d^3+1/3/c^2/(c*x^2+b*x)^(1/2)*A*e
^3+B*e^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-1/6*B*e^3*b/c^3/
(c*x^2+b*x)^(1/2)-7/3*B*e^3/c^2/(c*x^2+b*x)^(1/2)*x+1/c^2/(c*x^2+b*x)^(1/2)
*B*d*e^2+2/3/b/(c*x^2+b*x)^(3/2)*x*B*d^3-8/b^2/(c*x^2+b*x)^(1/2)*A*d^2*e-3*
x^2/c/(c*x^2+b*x)^(3/2)*B*d*e^2-1/3*b/c^2/(c*x^2+b*x)^(3/2)*x*A*e^3+1/6*B*e
^3*b^2/c^3/(c*x^2+b*x)^(3/2)*x+1/2*B*e^3*b/c^2*x^2/(c*x^2+b*x)^(3/2)-16/3/b
^3*c/(c*x^2+b*x)^(1/2)*x*B*d^3+2/b/(c*x^2+b*x)^(3/2)*x*A*d^2*e-4/3*A*d^3/b^
2/(c*x^2+b*x)^(3/2)*c*x+32/3*A*d^3*c^2/b^4/(c*x^2+b*x)^(1/2)*x
```

maxima [B] time = 0.72, size = 550, normalized size = 2.50

$$-\frac{1}{3}Be^3x\left(\frac{3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)-\frac{4\,Acd^3x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2d^3x}{3\sqrt{cx^2+bx}\,b^4}-\frac{4\,Be^3x}{3\sqrt{cx^2+bx}\,c^2}+\frac{Be^3\log\left(2\,cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{c^{\frac{5}{2}}}-\frac{2\,Ad^3}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16\,Acd^3}{3\sqrt{cx^2+bx}\,b^3}-\frac{2\sqrt{cx^2+bx}\,Be^3}{3\,bc^2}-\frac{\left(3\,Bde^2+Ae^3\right)x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{4\left(Bd^2e+Ade^2\right)x}{\sqrt{cx^2+bx}\,b^2}+\frac{2\left(Bd^3+3\,Ad^2e\right)x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{\left(3\,Bde^2+Ae^3\right)bx}{3\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2\left(Bd^2e+Ade^2\right)x}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{2\left(3\,Bde^2+Ae^3\right)x}{3\sqrt{cx^2+bx}\,bc}-\frac{16\left(Bd^3+3\,Ad^2e\right)cx}{3\sqrt{cx^2+bx}\,b^3}-\frac{8\left(Bd^3+3\,Ad^2e\right)}{3\sqrt{cx^2+bx}\,b^2}+\frac{3\,Bde^2+Ae^3}{3\sqrt{cx^2+bx}\,c^2}+\frac{2\left(Bd^2e+Ade^2\right)}{\sqrt{cx^2+bx}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*e^3*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2)
 - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) - 4/3*A*c*d^3*x
/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*d^3*x/(sqrt(c*x^2 + b*x)*b^4) - 4/3
*B*e^3*x/(sqrt(c*x^2 + b*x)*c^2) + B*e^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c))/c^(5/2) - 2/3*A*d^3/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c*d^3/(sqrt
(c*x^2 + b*x)*b^3) - 2/3*sqrt(c*x^2 + b*x)*B*e^3/(b*c^2) - (3*B*d*e^2 + A*e
^3)*x^2/((c*x^2 + b*x)^(3/2)*c) + 4*(B*d^2*e + A*d*e^2)*x/(sqrt(c*x^2 + b*x
)*b^2) + 2/3*(B*d^3 + 3*A*d^2*e)*x/((c*x^2 + b*x)^(3/2)*b) - 1/3*(3*B*d*e^2
 + A*e^3)*b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2*(B*d^2*e + A*d*e^2)*x/((c*x^2 +
 b*x)^(3/2)*c) + 2/3*(3*B*d*e^2 + A*e^3)*x/(sqrt(c*x^2 + b*x)*b*c) - 16/3*(
B*d^3 + 3*A*d^2*e)*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*(B*d^3 + 3*A*d^2*e)/(s
qrt(c*x^2 + b*x)*b^2) + 1/3*(3*B*d*e^2 + A*e^3)/(sqrt(c*x^2 + b*x)*c^2) + 2
*(B*d^2*e + A*d*e^2)/(sqrt(c*x^2 + b*x)*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^3}{\left(c\,x^2+b\,x\right)^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,(d + ex)^{3}}{(x\,(b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/(x*(b + c*x))**(5/2), x)
```

3.1063 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{5/2}} dx$

Optimal. Leaf size=92

$$-\frac{8(x(2cd-be)+bd)(Abe-2Acd+bBd)}{3b^4\sqrt{bx+cx^2}}-\frac{2(d+ex)^2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {804, 636}

$$-\frac{2(d+ex)^2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(x(2cd-be)+bd)(Abe-2Acd+bBd)}{3b^4\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x)*(d + e*x)^2)/(3*b^2*(b*x + c*x^2)^(3/2)) - (8*(
b*B*d - 2*A*c*d + A*b*e)*(b*d + (2*c*d - b*e)*x))/(3*b^4*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-(bB-2Ac)x)(d+ex)^2}{3b^2\left(bx+cx^2\right)^{3/2}}+\frac{(4(bBd-2Acd+Abe))\int \frac{d+ex}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2}\\
&= -\frac{2(Ab-(bB-2Ac)x)(d+ex)^2}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(bBd-2Acd+Abe)(bd+(2cd-be)x)}{3b^4\sqrt{bx+cx^2}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 149, normalized size = 1.62

$$\frac{2\left(A\left(-\left(b^3\left(d^2+6dex-3e^2x^2\right)\right)+2b^2cx\left(3d^2-12dex+e^2x^2\right)+8bc^2dx^2(3d-2ex)+16c^3d^2x^3\right)+bBx\left(b^2\left(-3d^2+6dex+e^2x^2\right)+4bcdx(ex-3d)-8c^2d^2x^2\right)\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(A*(16*c^3*d^2*x^3 + 8*b*c^2*d*x^2*(3*d - 2*e*x) - b^3*(d^2 + 6*d*e*x -
3*e^2*x^2) + 2*b^2*c*x*(3*d^2 - 12*d*e*x + e^2*x^2)) + b*B*x*(-8*c^2*d^2*x^
2 + 4*b*c*d*x*(-3*d + e*x) + b^2*(-3*d^2 + 6*d*e*x + e^2*x^2))))/(3*b^4*(x*
(b + c*x))^(3/2))
```

IntegrateAlgebraic [B] time = 0.57, size = 204, normalized size = 2.22

$$\frac{2\sqrt{bx+cx^2}\left(-Ab^3d^2-6Ab^3dex+3Ab^3e^2x^2+6Ab^2cd^2x-24Ab^2cdex^2+2Ab^2ce^2x^3+24Abc^2d^2x^2-16Abc^2dex^3+16Ac^3d^2x^3-3b^3Bd^2x+6b^3Bdex^2+b^3Be^2x^3-12b^2Bcd^2x^2+4b^2Bcdex^3-8bBc^2d^2x^3\right)}{3b^4x^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-(A*b^3*d^2) - 3*b^3*B*d^2*x + 6*A*b^2*c*d^2*x - 6*A*
b^3*d*e*x - 12*b^2*B*c*d^2*x^2 + 24*A*b*c^2*d^2*x^2 + 6*b^3*B*d*e*x^2 - 24*
A*b^2*c*d*e*x^2 + 3*A*b^3*e^2*x^2 - 8*b*B*c^2*d^2*x^3 + 16*A*c^3*d^2*x^3 +
4*b^2*B*c*d*e*x^3 - 16*A*b*c^2*d*e*x^3 + b^3*B*e^2*x^3 + 2*A*b^2*c*e^2*x^3)
)/(3*b^4*x^2*(b + c*x)^2)
```

fricas [B] time = 0.43, size = 189, normalized size = 2.05

$$-\frac{2\left(Ab^3d^2+\left(8\left(Bbc^2-2Ac^3\right)d^2-4\left(Bb^2c-4Abc^2\right)de-\left(Bb^3+2Ab^2c\right)e^2\right)x^3-3\left(Ab^3e^2-4\left(Bb^2c-2Abc^2\right)d^2+2\left(Bb^3-4Ab^2c\right)de\right)x^2+3\left(2Ab^3de+\left(Bb^3-2Ab^2c\right)d^2\right)x\right)\sqrt{cx^2+bx}}{3\left(b^4c^2x^4+2b^5cx^3+b^6x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3*d^2 + (8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(B*b^2*c - 4*A*b*c^2)*d*e
- (B*b^3 + 2*A*b^2*c)*e^2)*x^3 - 3*(A*b^3*e^2 - 4*(B*b^2*c - 2*A*b*c^2)*d^2
 + 2*(B*b^3 - 4*A*b^2*c)*d*e)*x^2 + 3*(2*A*b^3*d*e + (B*b^3 - 2*A*b^2*c)*d^
2)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2)
```

giac [B] time = 0.29, size = 176, normalized size = 1.91

$$-\frac{2\left(\frac{Ad^2}{b}+\left(x\left(\frac{\left(8Bbc^2d^2-16Ac^3d^2-4Bb^2cde+16Abc^2de-Bb^3e^2-2Ab^2ce^2\right)x}{b^4}+\frac{3\left(4Bb^2cd^2-8Abc^2d^2-2Bb^3de+8Ab^2cde-Ab^3e^2\right)}{b^4}\right)+\frac{3\left(Bb^3d^2-2Ab^2cd^2+2Ab^3de\right)}{b^4}\right)x\right)}{3\left(cx^2+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(A*d^2/b + (x*((8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 4*B*b^2*c*d*e + 16*A*b*
c^2*d*e - B*b^3*e^2 - 2*A*b^2*c*e^2)*x/b^4 + 3*(4*B*b^2*c*d^2 - 8*A*b*c^2*d
^2 - 2*B*b^3*d*e + 8*A*b^2*c*d*e - A*b^3*e^2)/b^4) + 3*(B*b^3*d^2 - 2*A*b^2
*c*d^2 + 2*A*b^3*d*e)/b^4)*x)/(c*x^2 + b*x)^(3/2)
```

maple [B] time = 0.05, size = 197, normalized size = 2.14

$$-\frac{2(cx+b)\left(-2Ab^2ce^2x^3+16Abc^2dex^3-16Ac^3d^2x^3-Bb^3e^2x^3-4Bb^2cdex^3+8Bbc^2d^2x^3-3Ab^3e^2x^2+24Ab^2cdex^2-24Abc^2d^2x^2-6Bb^3dex^2+12Bb^2cd^2x^2+6Ab^3dex-6Ab^2cd^2x+3Bb^3d^2x+Ad^2b^3\right)x}{3\left(cx^2+bx\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(-2*A*b^2*c*e^2*x^3+16*A*b*c^2*d*e*x^3-16*A*c^3*d^2*x^3-B*b^
3*e^2*x^3-4*B*b^2*c*d*e*x^3+8*B*b*c^2*d^2*x^3-3*A*b^3*e^2*x^2+24*A*b^2*c*d*
e*x^2-24*A*b*c^2*d^2*x^2-6*B*b^3*d*e*x^2+12*B*b^2*c*d^2*x^2+6*A*b^3*d*e*x-6
*A*b^2*c*d^2*x+3*B*b^3*d^2*x+A*b^3*d^2)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.52, size = 347, normalized size = 3.77

$$-\frac{Be^2x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{4Acd^2x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32Ac^2d^2x}{3\sqrt{cx^2+bx}\,b^4}-\frac{Bbe^2x}{3\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{2Be^2x}{3\sqrt{cx^2+bx}\,bc}-\frac{2Ad^2}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16Acd^2}{3\sqrt{cx^2+bx}\,b^3}+\frac{Be^2}{3\sqrt{cx^2+bx}\,c^2}+\frac{4\left(2Bde+Ae^2\right)x}{3\sqrt{cx^2+bx}\,b^2}+\frac{2\left(Bd^2+2Ade\right)x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{2\left(2Bde+Ae^2\right)x}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{16\left(Bd^2+2Ade\right)cx}{3\sqrt{cx^2+bx}\,b^3}-\frac{8\left(Bd^2+2Ade\right)}{3\sqrt{cx^2+bx}\,b^2}+\frac{2\left(2Bde+Ae^2\right)}{3\sqrt{cx^2+bx}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -B*e^2*x^2/((c*x^2 + b*x)^(3/2)*c) - 4/3*A*c*d^2*x/((c*x^2 + b*x)^(3/2)*b^2
) + 32/3*A*c^2*d^2*x/(sqrt(c*x^2 + b*x)*b^4) - 1/3*B*b*e^2*x/((c*x^2 + b*x)
^(3/2)*c^2) + 2/3*B*e^2*x/(sqrt(c*x^2 + b*x)*b*c) - 2/3*A*d^2/((c*x^2 + b*x
)^(3/2)*b) + 16/3*A*c*d^2/(sqrt(c*x^2 + b*x)*b^3) + 1/3*B*e^2/(sqrt(c*x^2 +
 b*x)*c^2) + 4/3*(2*B*d*e + A*e^2)*x/(sqrt(c*x^2 + b*x)*b^2) + 2/3*(B*d^2 +
 2*A*d*e)*x/((c*x^2 + b*x)^(3/2)*b) - 2/3*(2*B*d*e + A*e^2)*x/((c*x^2 + b*x
)^(3/2)*c) - 16/3*(B*d^2 + 2*A*d*e)*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*(B*d^
2 + 2*A*d*e)/(sqrt(c*x^2 + b*x)*b^2) + 2/3*(2*B*d*e + A*e^2)/(sqrt(c*x^2 +
b*x)*b*c)
```

mupad [B] time = 1.91, size = 190, normalized size = 2.07

$$\frac{2\left(-3Bb^3d^2x-Ab^3d^2+6Bb^3dex^2-6Ab^3dex+Bb^3e^2x^3+3Ab^3e^2x^2-12Bb^2cd^2x^2+6Ab^2cd^2x+4Bb^2cdex^3-24Ab^2cdex^2+2Ab^2ce^2x^3-8Bbc^2d^2x^3+24Abc^2d^2x^2-16Abc^2dex^3+16Ac^3d^2x^3\right)}{3b^4\left(cx^2+bx\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(3*A*b^3*e^2*x^2 - 3*B*b^3*d^2*x - A*b^3*d^2 + 16*A*c^3*d^2*x^3 + B*b^3*
e^2*x^3 + 6*A*b^2*c*d^2*x + 6*B*b^3*d*e*x^2 + 24*A*b*c^2*d^2*x^2 - 12*B*b^2
*c*d^2*x^2 + 2*A*b^2*c*e^2*x^3 - 8*B*b*c^2*d^2*x^3 - 6*A*b^3*d*e*x - 24*A*b
^2*c*d*e*x^2 - 16*A*b*c^2*d*e*x^3 + 4*B*b^2*c*d*e*x^3))/(3*b^4*(b*x + c*x^2
)^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{(x(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/(x*(b + c*x))**(5/2), x)
```

3.1064 $\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=111

$$\frac{2(b+2cx)\left(-4bc(Ae+Bd)+8Ac^2d+b^2Be\right)}{3b^4c\sqrt{bx+cx^2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = {777, 613}

$$\frac{2(b+2cx)\left(-4bc(Ae+Bd)+8Ac^2d+b^2Be\right)}{3b^4c\sqrt{bx+cx^2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3*b^2*c*(b*x +
c*x^2)^(3/2)) + (2*(8*A*c^2*d + b^2*B*e - 4*b*c*(B*d + A*e))*(b + 2*c*x))/(
3*b^4*c*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{\left(8Ac^2d+b^2Be-4bc(Bd+Ae)\right)\int \frac{}{(bx\cdots}}{3b^2c}$$

$$= -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(8Ac^2d+b^2Be-4bc(Bd+Ae)\right)(b+\cdots}{3b^4c\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.05, size = 107, normalized size = 0.96

$$-\frac{2\left(A\left(b^3(d+3ex)-6b^2cx(d-2ex)+8bc^2x^2(ex-3d)-16c^3dx^3\right)+bBx\left(3b^2(d-ex)-2bcx(ex-6d)+8c^2dx^2\right)\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B*x*(8*c^2*d*x^2 + 3*b^2*(d - e*x) - 2*b*c*x*(-6*d + e*x)) + A*(-16*
c^3*d*x^3 - 6*b^2*c*x*(d - 2*e*x) + 8*b*c^2*x^2*(-3*d + e*x) + b^3*(d + 3*e
*x))))/(3*b^4*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.46, size = 149, normalized size = 1.34

$$\frac{2\sqrt{bx+cx^2}\left(-Ab^3d-3Ab^3ex+6Ab^2cdx-12Ab^2cex^2+24Abc^2dx^2-8Abc^2ex^3+16Ac^3dx^3-3b^3Bdx+3b^3Bex^2-12b^2Bcdx^2+2b^2Bcex^3-8bBc^2dx^3\right)}{3b^4x^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[b*x + c*x^2]*(-(A*b^3*d) - 3*b^3*B*d*x + 6*A*b^2*c*d*x - 3*A*b^3*e*
x - 12*b^2*B*c*d*x^2 + 24*A*b*c^2*d*x^2 + 3*b^3*B*e*x^2 - 12*A*b^2*c*e*x^2
- 8*b*B*c^2*d*x^3 + 16*A*c^3*d*x^3 + 2*b^2*B*c*e*x^3 - 8*A*b*c^2*e*x^3))/(3
*b^4*x^2*(b + c*x)^2)
```

fricas [A] time = 0.41, size = 152, normalized size = 1.37

$$-\frac{2\left(Ab^3d+2\left(4\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c-4\,Abc^2\right)e\right)x^3+3\left(4\left(Bb^2c-2\,Abc^2\right)d-\left(Bb^3-4\,Ab^2c\right)e\right)x^2+3\left(Ab^3e+\left(Bb^3-2\,Ab^2c\right)d\right)x\right)\sqrt{cx^2+bx}}{3\left(b^4c^2x^4+2\,b^5cx^3+b^6x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3*d + 2*(4*(B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - 4*A*b*c^2)*e)*x^3 +
 3*(4*(B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - 4*A*b^2*c)*e)*x^2 + 3*(A*b^3*e + (
B*b^3 - 2*A*b^2*c)*d)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6
*x^2)
```

giac [A] time = 0.30, size = 132, normalized size = 1.19

$$-\frac{2\left(\left(x\left(\frac{2\left(4\,Bbc^2d-8\,Ac^3d-Bb^2ce+4\,Abc^2e\right)x}{b^4}+\frac{3\left(4\,Bb^2cd-8\,Abc^2d-Bb^3e+4\,Ab^2ce\right)}{b^4}\right)+\frac{3\left(Bb^3d-2\,Ab^2cd+Ab^3e\right)}{b^4}\right)x+\frac{Ad}{b}\right)}{3\left(cx^2+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((x*(2*(4*B*b*c^2*d - 8*A*c^3*d - B*b^2*c*e + 4*A*b*c^2*e)*x/b^4 + 3*(
4*B*b^2*c*d - 8*A*b*c^2*d - B*b^3*e + 4*A*b^2*c*e)/b^4) + 3*(B*b^3*d - 2*A*
b^2*c*d + A*b^3*e)/b^4)*x + A*d/b)/(c*x^2 + b*x)^(3/2)
```

maple [A] time = 0.05, size = 141, normalized size = 1.27

$$-\frac{2\,(cx+b)\left(8Ab\,c^2e\,x^3-16A\,c^3d\,x^3-2B\,b^2ce\,x^3+8Bb\,c^2d\,x^3+12A\,b^2ce\,x^2-24Ab\,c^2d\,x^2-3B\,b^3e\,x^2+12B\,b^2cd\,x^2+3A\,b^3ex-6A\,b^2cdx+3B\,b^3dx+Ad\,b^3\right)x}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(8*A*b*c^2*e*x^3-16*A*c^3*d*x^3-2*B*b^2*c*e*x^3+8*B*b*c^2*d*
x^3+12*A*b^2*c*e*x^2-24*A*b*c^2*d*x^2-3*B*b^3*e*x^2+12*B*b^2*c*d*x^2+3*A*b^
3*e*x-6*A*b^2*c*d*x+3*B*b^3*d*x+A*b^3*d)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.54, size = 211, normalized size = 1.90

$$-\frac{4\,Acdx}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2dx}{3\sqrt{cx^2+bx}\,b^4}+\frac{4\,Bex}{3\sqrt{cx^2+bx}\,b^2}-\frac{2\,Bex}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{2\,Ad}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16\,Acd}{3\sqrt{cx^2+bx}\,b^3}+\frac{2\,Be}{3\sqrt{cx^2+bx}\,bc}+\frac{2\,(Bd+Ae)x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{16\,(Bd+Ae)cx}{3\sqrt{cx^2+bx}\,b^3}-\frac{8\,(Bd+Ae)}{3\sqrt{cx^2+bx}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/3*A*c*d*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*d*x/(sqrt(c*x^2 + b*x)*
b^4) + 4/3*B*e*x/(sqrt(c*x^2 + b*x)*b^2) - 2/3*B*e*x/((c*x^2 + b*x)^(3/2)*c
) - 2/3*A*d/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c*d/(sqrt(c*x^2 + b*x)*b^3) +
2/3*B*e/(sqrt(c*x^2 + b*x)*b*c) + 2/3*(B*d + A*e)*x/((c*x^2 + b*x)^(3/2)*b)
 - 16/3*(B*d + A*e)*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*(B*d + A*e)/(sqrt(c*x
^2 + b*x)*b^2)
```

mupad [B] time = 1.73, size = 134, normalized size = 1.21

$$-\frac{2\,\left(A\,b^3\,d+3\,A\,b^3\,e\,x+3\,B\,b^3\,d\,x-16\,A\,c^3\,d\,x^3-3\,B\,b^3\,e\,x^2-24\,A\,b\,c^2\,d\,x^2+12\,A\,b^2\,c\,e\,x^2+12\,B\,b^2\,c\,d\,x^2+8\,A\,b\,c^2\,e\,x^3+8\,B\,b\,c^2\,d\,x^3-2\,B\,b^2\,c\,e\,x^3-6\,A\,b^2\,c\,d\,x\right)}{3\,b^4\,{\left(c\,x^2+b\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3*d + 3*A*b^3*e*x + 3*B*b^3*d*x - 16*A*c^3*d*x^3 - 3*B*b^3*e*x^2 -
 24*A*b*c^2*d*x^2 + 12*A*b^2*c*e*x^2 + 12*B*b^2*c*d*x^2 + 8*A*b*c^2*e*x^3 +
 8*B*b*c^2*d*x^3 - 2*B*b^2*c*e*x^3 - 6*A*b^2*c*d*x))/(3*b^4*(b*x + c*x^2)^(
3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{(x(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/(x*(b + c*x))**(5/2), x)
```

3.1065 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=70

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(3*b^2*(b*x + c*x^2)^(3/2)) - (8*(b*B - 2*A*c)
*(b + 2*c*x))/(3*b^4*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}} \, dx &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac)) \int \frac{1}{\left(bx+cx^2\right)^{3/2}} \, dx}{3b^2} \\
&= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3b^4\sqrt{bx+cx^2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 72, normalized size = 1.03

$$-\frac{2\left(A\left(b^3-6b^2cx-24bc^2x^2-16c^3x^3\right)+bBx\left(3b^2+12bcx+8c^2x^2\right)\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2) + A*(b^3 - 6*b^2*c*x - 24*b*c^2*x
^2 - 16*c^3*x^3)))/(3*b^4*(x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.00, size = 90, normalized size = 1.29

$$-\frac{2\sqrt{bx+cx^2}\left(Ab^3-6Ab^2cx-24Abc^2x^2-16Ac^3x^3+3b^3Bx+12b^2Bcx^2+8bBc^2x^3\right)}{3b^4x^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(A*b^3 + 3*b^3*B*x - 6*A*b^2*c*x + 12*b^2*B*c*x^2 - 2
4*A*b*c^2*x^2 + 8*b*B*c^2*x^3 - 16*A*c^3*x^3))/(3*b^4*x^2*(b + c*x)^2)
```

fricas [A] time = 0.40, size = 101, normalized size = 1.44

$$-\frac{2\left(Ab^3+8\left(Bbc^2-2\,Ac^3\right)x^3+12\left(Bb^2c-2\,Abc^2\right)x^2+3\left(Bb^3-2\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{3\left(b^4c^2x^4+2\,b^5cx^3+b^6x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c^2)*x^2 + 3*
(B*b^3 - 2*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x
^2)
```

giac [A] time = 0.24, size = 82, normalized size = 1.17

$$-\frac{2\left(\left(4\,x\left(\frac{2\left(Bbc^2-2\,Ac^3\right)x}{b^4}+\frac{3\left(Bb^2c-2\,Abc^2\right)}{b^4}\right)+\frac{3\left(Bb^3-2\,Ab^2c\right)}{b^4}\right)x+\frac{A}{b}\right)}{3\left(cx^2+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*x*(2*(B*b*c^2 - 2*A*c^3)*x/b^4 + 3*(B*b^2*c - 2*A*b*c^2)/b^4) + 3*
(B*b^3 - 2*A*b^2*c)/b^4)*x + A/b)/(c*x^2 + b*x)^(3/2)
```

maple [A] time = 0.05, size = 83, normalized size = 1.19

$$-\frac{2\,(cx+b)\left(-16A\,c^3x^3+8Bb\,c^2x^3-24Ab\,c^2x^2+12B\,b^2c\,x^2-6A\,b^2cx+3B\,b^3x+A\,b^3\right)x}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(-16*A*c^3*x^3+8*B*b*c^2*x^3-24*A*b*c^2*x^2+12*B*b^2*c*x^2-6
*A*b^2*c*x+3*B*b^3*x+A*b^3)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.53, size = 130, normalized size = 1.86

$$\frac{2\,Bx}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{16\,Bcx}{3\,\sqrt{cx^2+bx}\,b^3}-\frac{4\,Acx}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2x}{3\,\sqrt{cx^2+bx}\,b^4}-\frac{8\,B}{3\,\sqrt{cx^2+bx}\,b^2}-\frac{2\,A}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16\,Ac}{3\,\sqrt{cx^2+bx}\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*x/((c*x^2 + b*x)^(3/2)*b) - 16/3*B*c*x/(sqrt(c*x^2 + b*x)*b^3) - 4/3*
A*c*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*x/(sqrt(c*x^2 + b*x)*b^4) - 8/
3*B/(sqrt(c*x^2 + b*x)*b^2) - 2/3*A/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c/(sqr
t(c*x^2 + b*x)*b^3)
```

mupad [B] time = 1.63, size = 76, normalized size = 1.09

$$-\frac{2\left(3\,B\,b^3\,x+A\,b^3+12\,B\,b^2\,c\,x^2-6\,A\,b^2\,c\,x+8\,B\,b\,c^2\,x^3-24\,A\,b\,c^2\,x^2-16\,A\,c^3\,x^3\right)}{3\,b^4\,{\left(c\,x^2+b\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 3*B*b^3*x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B
*b^2*c*x^2 + 8*B*b*c^2*x^3))/(3*b^4*(b*x + c*x^2)^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x \left(b + cx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.1066 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=287

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}(cd-be)}+\frac{2\left(b(cd-be)\left(3b^2e(Bd-Ae)-4bcd(Ae+Bd)+8Ac^2d^2\right)+cx\left(-3b^3\right.\right.}{3b^4d^2\sqrt{bx+c}}$$

Rubi [A] time = 0.35, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 12, 724, 206}

$$\frac{2\left(cx\left(2b^2cde(Ae+7Bd)-3b^3e^2(Bd-Ae)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)+b(cd-be)\left(3b^2e(Bd-Ae)-4bcd(Ae+Bd)+8Ac^2d^2\right)\right)}{3b^4d^2\sqrt{bx+cx^2}(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}(cd-be)}-\frac{e^3(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{d^{5/2}(cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(3*b^2*d*(c*d - b*e)
*(b*x + c*x^2)^(3/2)) + (2*(b*(c*d - b*e)*(8*A*c^2*d^2 + 3*b^2*e*(B*d - A*e
) - 4*b*c*d*(B*d + A*e)) + c*(16*A*c^3*d^3 - 3*b^3*e^2*(B*d - A*e) + 2*b^2*
c*d*e*(7*B*d + A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*x))/(3*b^4*d^2*(c*d - b*e)
^2*Sqrt[b*x + c*x^2]) - (e^3*(B*d - A*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2
*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(d^(5/2)*(c*d - b*e)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(8Ac^2d^2+3b^2e(Bd-Ae)-4bcd(Bd+Ae)\right.}{(d+ex)\left(bx+cx^2\right)^{3/}}}{3b^2d(cd-be}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

Mathematica [A] time = 0.77, size = 277, normalized size = 0.97

$$\frac{2\left(-\frac{3cx^2\left(3b^2e(Bd-Ae)-4bcd(Ae+Bd)+8Ac^2d^2\right)}{b^2d(be-cd)}+\frac{3x^{3/2}(b+cx)\left(3b^4e^3\sqrt{b+cx}\,(Ae-Bd)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+c\sqrt{d}\sqrt{x}\sqrt{cd-be}\left(3b^3e^2(Ae-Bd)+2b^2cde(Ae+7Bd)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)\right)}{b^3d^{3/2}(cd-be)^{5/2}}+9x\left(\frac{2Ac}{b}+\frac{Ae}{d}-B\right)-3A\right)}{9bd(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(-3*A + 9*(-B + (2*A*c)/b + (A*e)/d)*x - (3*c*(8*A*c^2*d^2 + 3*b^2*e*(B*
d - A*e) - 4*b*c*d*(B*d + A*e))*x^2)/(b^2*d*(-(c*d) + b*e)) + (3*x^(3/2)*(b
 + c*x)*(c*Sqrt[d]*Sqrt[c*d - b*e]*(16*A*c^3*d^3 + 3*b^3*e^2*(-(B*d) + A*e)
 + 2*b^2*c*d*e*(7*B*d + A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[x] + 3*b^4*e
^3*(-(B*d) + A*e)*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*
Sqrt[b + c*x])]))/(b^3*d^(3/2)*(c*d - b*e)^(5/2))))/(9*b*d*(x*(b + c*x))^(3
/2))
```

IntegrateAlgebraic [A] time = 1.81, size = 437, normalized size = 1.52

$$-\frac{2\sqrt{bx+cx^2}\left(Ab^3c^2d^3-2Ab^4cd^2e+Ab^5de^2+3b^3Bc^2d^3x-6Ab^2c^3d^3x-6b^4Bcd^2ex+9Ab^3c^2d^2ex+3b^5Bde^2x-3Ab^5e^3x+12b^2Bc^3d^3x^2-24Abc^4d^3x^2-21b^3Bc^2d^2ex^2+36Ab^2c^3d^2ex^2+6b^4Bcde^2x^2-3Ab^3c^2de^2x^2-6Ab^4ce^3x^2+8bBc^4d^3x^3-16Ac^5d^3x^3-14b^2Bc^3d^2ex^3+24Abc^4d^2ex^3+3b^3Bc^2de^2x^3-2Ab^2c^3de^2x^3-3Ab^3c^2e^3x^3\right)}{3b^4d^2x^2(b+cx)^2(be-cd)^2}-\frac{2\left(Bde^3-Ae^4\right)\tanh^{-1}\left(\frac{\sqrt{c}\,d+\sqrt{c}\,ex-e\sqrt{bx+cx^2}}{\sqrt{d}\sqrt{cd-be}}\right)}{d^{5/2}(cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*Sqrt[b*x + c*x^2]*(A*b^3*c^2*d^3 - 2*A*b^4*c*d^2*e + A*b^5*d*e^2 + 3*b^
3*B*c^2*d^3*x - 6*A*b^2*c^3*d^3*x - 6*b^4*B*c*d^2*e*x + 9*A*b^3*c^2*d^2*e*x
 + 3*b^5*B*d*e^2*x - 3*A*b^5*e^3*x + 12*b^2*B*c^3*d^3*x^2 - 24*A*b*c^4*d^3*
x^2 - 21*b^3*B*c^2*d^2*e*x^2 + 36*A*b^2*c^3*d^2*e*x^2 + 6*b^4*B*c*d*e^2*x^2
 - 3*A*b^3*c^2*d*e^2*x^2 - 6*A*b^4*c*e^3*x^2 + 8*b*B*c^4*d^3*x^3 - 16*A*c^5
*d^3*x^3 - 14*b^2*B*c^3*d^2*e*x^3 + 24*A*b*c^4*d^2*e*x^3 + 3*b^3*B*c^2*d*e^
2*x^3 - 2*A*b^2*c^3*d*e^2*x^3 - 3*A*b^3*c^2*e^3*x^3))/(3*b^4*d^2*(-(c*d) +
b*e)^2*x^2*(b + c*x)^2) - (2*(B*d*e^3 - A*e^4)*ArcTanh[(Sqrt[c]*d + Sqrt[c]
*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqrt[c*d - b*e])])/(d^(5/2)*(c*d - b*e
)^(5/2))
```

fricas [B] time = 0.46, size = 1390, normalized size = 4.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*((B*b^4*c^2*d*e^3 - A*b^4*c^2*e^4)*x^4 + 2*(B*b^5*c*d*e^3 - A*b^5*
c*e^4)*x^3 + (B*b^6*d*e^3 - A*b^6*e^4)*x^2)*sqrt(c*d^2 - b*d*e)*log((b*d +
(2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(
A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e + 3*A*b^5*c*d^3*e^2 - A*b^6*d^2*e^3 + (3*
A*b^4*c^2*d*e^4 + 8*(B*b*c^5 - 2*A*c^6)*d^5 - 2*(11*B*b^2*c^4 - 20*A*b*c^5)
*d^4*e + (17*B*b^3*c^3 - 26*A*b^2*c^4)*d^3*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*
d^2*e^3)*x^3 + 3*(2*A*b^5*c*d*e^4 + 4*(B*b^2*c^4 - 2*A*b*c^5)*d^5 - (11*B*b
^3*c^3 - 20*A*b^2*c^4)*d^4*e + (9*B*b^4*c^2 - 13*A*b^3*c^3)*d^3*e^2 - (2*B*
b^5*c + A*b^4*c^2)*d^2*e^3)*x^2 + 3*(A*b^6*d*e^4 + (B*b^3*c^3 - 2*A*b^2*c^4
)*d^5 - (3*B*b^4*c^2 - 5*A*b^3*c^3)*d^4*e + 3*(B*b^5*c - A*b^4*c^2)*d^3*e^2
 - (B*b^6 + A*b^5*c)*d^2*e^3)*x)*sqrt(c*x^2 + b*x))/((b^4*c^5*d^6 - 3*b^5*c
^4*d^5*e + 3*b^6*c^3*d^4*e^2 - b^7*c^2*d^3*e^3)*x^4 + 2*(b^5*c^4*d^6 - 3*b^
6*c^3*d^5*e + 3*b^7*c^2*d^4*e^2 - b^8*c*d^3*e^3)*x^3 + (b^6*c^3*d^6 - 3*b^7
*c^2*d^5*e + 3*b^8*c*d^4*e^2 - b^9*d^3*e^3)*x^2), -2/3*(3*((B*b^4*c^2*d*e^3
 - A*b^4*c^2*e^4)*x^4 + 2*(B*b^5*c*d*e^3 - A*b^5*c*e^4)*x^3 + (B*b^6*d*e^3
- A*b^6*e^4)*x^2)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*
x^2 + b*x)/((c*d - b*e)*x)) + (A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e + 3*A*b^5*
c*d^3*e^2 - A*b^6*d^2*e^3 + (3*A*b^4*c^2*d*e^4 + 8*(B*b*c^5 - 2*A*c^6)*d^5
- 2*(11*B*b^2*c^4 - 20*A*b*c^5)*d^4*e + (17*B*b^3*c^3 - 26*A*b^2*c^4)*d^3*e
^2 - (3*B*b^4*c^2 + A*b^3*c^3)*d^2*e^3)*x^3 + 3*(2*A*b^5*c*d*e^4 + 4*(B*b^2
*c^4 - 2*A*b*c^5)*d^5 - (11*B*b^3*c^3 - 20*A*b^2*c^4)*d^4*e + (9*B*b^4*c^2
- 13*A*b^3*c^3)*d^3*e^2 - (2*B*b^5*c + A*b^4*c^2)*d^2*e^3)*x^2 + 3*(A*b^6*d
*e^4 + (B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - (3*B*b^4*c^2 - 5*A*b^3*c^3)*d^4*e +
3*(B*b^5*c - A*b^4*c^2)*d^3*e^2 - (B*b^6 + A*b^5*c)*d^2*e^3)*x)*sqrt(c*x^2
+ b*x))/((b^4*c^5*d^6 - 3*b^5*c^4*d^5*e + 3*b^6*c^3*d^4*e^2 - b^7*c^2*d^3*e
^3)*x^4 + 2*(b^5*c^4*d^6 - 3*b^6*c^3*d^5*e + 3*b^7*c^2*d^4*e^2 - b^8*c*d^3*
e^3)*x^3 + (b^6*c^3*d^6 - 3*b^7*c^2*d^5*e + 3*b^8*c*d^4*e^2 - b^9*d^3*e^3)*
x^2)]
```

giac [B] time = 0.28, size = 853, normalized size = 2.97

$$\frac{2\left(Bde^{3}-Ae^{4}\right)\arctan\left(\frac{\left(\sqrt{c}x-\sqrt{cx^{2}+bx}\right)e+\sqrt{c}d}{\sqrt{-cd^{2}+bde}}\right)}{\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}\right)\sqrt{-cd^{2}+bde}}-\frac{2\left(\left(\left(\frac{\left(8\,Bbc^{6}d^{10}-16\,Ac^{7}d^{10}-30\,Bb^{2}c^{5}d^{9}e+56\,Abc^{6}d^{9}e+39\,Bb^{3}c^{4}d^{8}e^{2}-66\,Ab^{2}c^{5}d^{8}e^{2}-20\,Bb^{4}c^{3}d^{7}e^{3}+25\,Ab^{3}c^{4}d^{7}e^{3}+3\,Bb^{5}c^{2}d^{6}e^{4}+4\,Ab^{4}c^{3}d^{6}e^{4}-3\,Ab^{5}c^{2}d^{5}e^{5}\right)x}{b^{4}c^{4}d^{11}-4\,b^{5}c^{3}d^{10}e+6\,b^{6}c^{2}d^{9}e^{2}-4\,b^{7}cd^{8}e^{3}+b^{8}d^{7}e^{4}}+\frac{3\left(4\,Bb^{2}c^{5}d^{10}-8\,Abc^{6}d^{10}-15\,Bb^{3}c^{4}d^{9}e+28\,Ab^{2}c^{5}d^{9}e+20\,Bb^{4}c^{3}d^{8}e^{2}-33\,Ab^{3}c^{4}d^{8}e^{2}-11\,Bb^{5}c^{2}d^{7}e^{3}+12\,Ab^{4}c^{3}d^{7}e^{3}+2\,Bb^{6}cd^{6}e^{4}+3\,Ab^{5}c^{2}d^{6}e^{4}-2\,Ab^{6}cd^{5}e^{5}\right)}{b^{4}c^{4}d^{11}-4\,b^{5}c^{3}d^{10}e+6\,b^{6}c^{2}d^{9}e^{2}-4\,b^{7}cd^{8}e^{3}+b^{8}d^{7}e^{4}}\right)x+\frac{3\left(Bb^{3}c^{4}d^{10}-2\,Ab^{2}c^{5}d^{10}-4\,Bb^{4}c^{3}d^{9}e+7\,Ab^{3}c^{4}d^{9}e+6\,Bb^{5}c^{2}d^{8}e^{2}-8\,Ab^{4}c^{3}d^{8}e^{2}-4\,Bb^{6}cd^{7}e^{3}+2\,Ab^{5}c^{2}d^{7}e^{3}+Bb^{7}d^{6}e^{4}+2\,Ab^{6}cd^{6}e^{4}-Ab^{7}d^{5}e^{5}\right)}{b^{4}c^{4}d^{11}-4\,b^{5}c^{3}d^{10}e+6\,b^{6}c^{2}d^{9}e^{2}-4\,b^{7}cd^{8}e^{3}+b^{8}d^{7}e^{4}}\right)x+\frac{Ab^{3}c^{4}d^{10}-4\,Ab^{4}c^{3}d^{9}e+6\,Ab^{5}c^{2}d^{8}e^{2}-4\,Ab^{6}cd^{7}e^{3}+Ab^{7}d^{6}e^{4}}{b^{4}c^{4}d^{11}-4\,b^{5}c^{3}d^{10}e+6\,b^{6}c^{2}d^{9}e^{2}-4\,b^{7}cd^{8}e^{3}+b^{8}d^{7}e^{4}}\right)}{3\left(cx^{2}+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2*(B*d*e^3 - A*e^4)*arctan(((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/
sqrt(-c*d^2 + b*d*e))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*sqrt(-c*d^2 +
b*d*e)) - 2/3*((((8*B*b*c^6*d^10 - 16*A*c^7*d^10 - 30*B*b^2*c^5*d^9*e + 56*
A*b*c^6*d^9*e + 39*B*b^3*c^4*d^8*e^2 - 66*A*b^2*c^5*d^8*e^2 - 20*B*b^4*c^3*
d^7*e^3 + 25*A*b^3*c^4*d^7*e^3 + 3*B*b^5*c^2*d^6*e^4 + 4*A*b^4*c^3*d^6*e^4
- 3*A*b^5*c^2*d^5*e^5)*x/(b^4*c^4*d^11 - 4*b^5*c^3*d^10*e + 6*b^6*c^2*d^9*e
^2 - 4*b^7*c*d^8*e^3 + b^8*d^7*e^4) + 3*(4*B*b^2*c^5*d^10 - 8*A*b*c^6*d^10
- 15*B*b^3*c^4*d^9*e + 28*A*b^2*c^5*d^9*e + 20*B*b^4*c^3*d^8*e^2 - 33*A*b^3
*c^4*d^8*e^2 - 11*B*b^5*c^2*d^7*e^3 + 12*A*b^4*c^3*d^7*e^3 + 2*B*b^6*c*d^6*
e^4 + 3*A*b^5*c^2*d^6*e^4 - 2*A*b^6*c*d^5*e^5)/(b^4*c^4*d^11 - 4*b^5*c^3*d^
10*e + 6*b^6*c^2*d^9*e^2 - 4*b^7*c*d^8*e^3 + b^8*d^7*e^4))*x + 3*(B*b^3*c^4
*d^10 - 2*A*b^2*c^5*d^10 - 4*B*b^4*c^3*d^9*e + 7*A*b^3*c^4*d^9*e + 6*B*b^5*
c^2*d^8*e^2 - 8*A*b^4*c^3*d^8*e^2 - 4*B*b^6*c*d^7*e^3 + 2*A*b^5*c^2*d^7*e^3
 + B*b^7*d^6*e^4 + 2*A*b^6*c*d^6*e^4 - A*b^7*d^5*e^5)/(b^4*c^4*d^11 - 4*b^5
*c^3*d^10*e + 6*b^6*c^2*d^9*e^2 - 4*b^7*c*d^8*e^3 + b^8*d^7*e^4))*x + (A*b^
3*c^4*d^10 - 4*A*b^4*c^3*d^9*e + 6*A*b^5*c^2*d^8*e^2 - 4*A*b^6*c*d^7*e^3 +
A*b^7*d^6*e^4)/(b^4*c^4*d^11 - 4*b^5*c^3*d^10*e + 6*b^6*c^2*d^9*e^2 - 4*b^7
*c*d^8*e^3 + b^8*d^7*e^4))/(c*x^2 + b*x)^(3/2)
```

maple [B] time = 0.06, size = 2000, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 32/3/e/(b*e-c*d)*c^3/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2)*x*B*d+16/3*e/(b*e-c*d)/d*c^2/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2)*x*A-2*e^2/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+2*e^3/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+16/3*B/e*c/b^3/(c*x^2+b*x)^(1/2)+2/
3/(b*e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A
-2/3*B/e/b/(c*x^2+b*x)^(3/2)-8/3/(b*e-c*d)*c/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-e^3/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1
/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)
*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+e^2/
(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(1/2))/(x+d/e))*B+2*e/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B+32/3*B/e*c^2/b^4/(c*x^2+b*x)^(1/2)*x-4/
3*B/e/b^2/(c*x^2+b*x)^(3/2)*c*x-4/3/e/(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^2*x*B*d-4*e^2/(b*e-c*d)^2/d/b^2/((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A-2*e^2/(b*e-c*d)
^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*B+4*e/
(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x
*c^2*B-2*e^2/(b*e-c*d)^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*c*A-2/3/e/(b*e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(3/2)*c*B*d+2*e^3/(b*e-c*d)^2/d^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*A-2/3*e/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*A-2/3*e/(b*e-c*d)/d/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*A-16/3/(b*e-c*d)*c^2/b^3/((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B+2/3/(b*e-c*d)/b/(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*B-32/3/(b*e-c*
d)*c^3/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A+2/
3/(b*e-c*d)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*B+4/3
/(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^
2*x*A-16/3/(b*e-c*d)*c^2/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*A+16/3/e/(b*e-c*d)*c^2/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*B*d+8/3*e/(b*e-c*d)/d*c/b^2/((x+d/e)^2*c-(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((c*d^2)/e^2
     -(b*d)/e))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x\left(b + cx\right)\right)^{\frac{5}{2}}\left(d + ex\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(5/2)*(d + e*x)), x)
```

3.1067 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=449

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}(d+ex)(cd-be)}+\frac{2\left(b(cd-be)\left(b^2e(3Bd-5Ae)-2bcd(Ae+2Bd)+8Ac^2d^2\right)+cx\left(\right.\right.}{3b^4d^2\sqrt{bx+}}$$

Rubi [A] time = 0.72, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 806, 724, 206}

$$\frac{e\sqrt{bx+cx^2}\left(4b^2c^2d^2e(3Ae+10Bd)-2b^3cde^2(9Bd-10Ae)+3b^4e^3(3Bd-5Ae)-16bc^3d^3(4Ae+Bd)+32Ac^4d^4\right)}{3b^4d^3(d+ex)(cd-be)^3}+\frac{2\left(cx\left(2b^2cde(8Bd-Ae)+b^3\left(-e^2\right)(3Bd-5Ae)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)+b(cd-be)\left(b^2e(3Bd-5Ae)-2bcd(Ae+2Bd)+8Ac^2d^2\right)\right)}{3b^4d^2\sqrt{bx+cx^2}(d+ex)(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}(d+ex)(cd-be)}-\frac{e^3(Bd(8cd-3be)-5Ae(2cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{2d^{7/2}(cd-be)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(3*b^2*d*(c*d - b*e)
*(d + e*x)*(b*x + c*x^2)^(3/2)) + (2*(b*(c*d - b*e)*(8*A*c^2*d^2 + b^2*e*(3
*B*d - 5*A*e) - 2*b*c*d*(2*B*d + A*e)) + c*(16*A*c^3*d^3 - b^3*e^2*(3*B*d -
 5*A*e) + 2*b^2*c*d*e*(8*B*d - A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*x))/(3*b^4
*d^2*(c*d - b*e)^2*(d + e*x)*Sqrt[b*x + c*x^2]) + (e*(32*A*c^4*d^4 - 2*b^3*
c*d*e^2*(9*B*d - 10*A*e) + 3*b^4*e^3*(3*B*d - 5*A*e) + 4*b^2*c^2*d^2*e*(10*
B*d + 3*A*e) - 16*b*c^3*d^3*(B*d + 4*A*e))*Sqrt[b*x + c*x^2])/(3*b^4*d^3*(c
*d - b*e)^3*(d + e*x)) - (e^3*(B*d*(8*c*d - 3*b*e) - 5*A*e*(2*c*d - b*e))*A
rcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2]
)])/(2*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
```

```
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(8Ac^2d^2+b^2e(3Bd-5Ae)-2bcd(2Bd+Ae)\right)}{(d+ex)^2\left(bx+cx^2\right)^{3/2}}}{3b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+b^2e(3Bd-5\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+b^2e(3Bd-5\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+b^2e(3Bd-5\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+b^2e(3Bd-5\right.\right.}{}$$

Mathematica [A] time = 0.83, size = 557, normalized size = 1.24

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[d]*Sqrt[c*d - b*e]*(b*B*d*x*(-16*c^5*d^3*x^2*(d + e*x) + 3*b^5*e^3*(2
*d + 3*e*x) - 6*b^4*c*e^2*(3*d^2 + d*e*x - 3*e^2*x^2) + 8*b*c^4*d^2*x*(-3*d
^2 + 2*d*e*x + 5*e^2*x^2) + 3*b^3*c^2*e*(6*d^3 - 6*d^2*e*x - 10*d*e^2*x^2 +
 3*e^3*x^3) - 6*b^2*c^3*d*(d^3 - 9*d^2*e*x - 7*d*e^2*x^2 + 3*e^3*x^3)) + A*
(32*c^6*d^4*x^3*(d + e*x) + b^6*e^3*(2*d^2 - 10*d*e*x - 15*e^2*x^2) - 16*b*
c^5*d^3*x^2*(-3*d^2 + d*e*x + 4*e^2*x^2) + 12*b^2*c^4*d^2*x*(d^3 - 7*d^2*e*
x - 7*d*e^2*x^2 + e^3*x^3) - 6*b^5*c*e^2*(d^3 - 3*d^2*e*x + 5*e^3*x^3) - 2*
b^3*c^3*d*(d^4 + 13*d^3*e*x + 3*d^2*e^2*x^2 - 19*d*e^3*x^3 - 10*e^4*x^4) +
3*b^4*c^2*e*(2*d^4 + 2*d^3*e*x + 14*d^2*e^2*x^2 + 10*d*e^3*x^3 - 5*e^4*x^4)
)) + 3*b^4*e^3*(-5*A*e*(-2*c*d + b*e) + B*d*(-8*c*d + 3*b*e))*x^(3/2)*(b +
c*x)^(3/2)*(d + e*x)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*
x])])/(3*b^4*d^(7/2)*(c*d - b*e)^(7/2)*(x*(b + c*x))^(3/2)*(d + e*x))
```

IntegrateAlgebraic [A] time = 5.83, size = 796, normalized size = 1.77

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[b*x + c*x^2]*(2*A*b^3*c^3*d^5 - 6*A*b^4*c^2*d^4*e + 6*A*b^5*c*d^3*e^2
 - 2*A*b^6*d^2*e^3 + 6*b^3*B*c^3*d^5*x - 12*A*b^2*c^4*d^5*x - 18*b^4*B*c^2*
d^4*e*x + 26*A*b^3*c^3*d^4*e*x + 18*b^5*B*c*d^3*e^2*x - 6*A*b^4*c^2*d^3*e^2
*x - 6*b^6*B*d^2*e^3*x - 18*A*b^5*c*d^2*e^3*x + 10*A*b^6*d*e^4*x + 24*b^2*B
*c^4*d^5*x^2 - 48*A*b*c^5*d^5*x^2 - 54*b^3*B*c^3*d^4*e*x^2 + 84*A*b^2*c^4*d
^4*e*x^2 + 18*b^4*B*c^2*d^3*e^2*x^2 + 6*A*b^3*c^3*d^3*e^2*x^2 + 6*b^5*B*c*d
^2*e^3*x^2 - 42*A*b^4*c^2*d^2*e^3*x^2 - 9*b^6*B*d*e^4*x^2 + 15*A*b^6*e^5*x^
2 + 16*b*B*c^5*d^5*x^3 - 32*A*c^6*d^5*x^3 - 16*b^2*B*c^4*d^4*e*x^3 + 16*A*b
*c^5*d^4*e*x^3 - 42*b^3*B*c^3*d^3*e^2*x^3 + 84*A*b^2*c^4*d^3*e^2*x^3 + 30*b
^4*B*c^2*d^2*e^3*x^3 - 38*A*b^3*c^3*d^2*e^3*x^3 - 18*b^5*B*c*d*e^4*x^3 - 30
*A*b^4*c^2*d*e^4*x^3 + 30*A*b^5*c*e^5*x^3 + 16*b*B*c^5*d^4*e*x^4 - 32*A*c^6
*d^4*e*x^4 - 40*b^2*B*c^4*d^3*e^2*x^4 + 64*A*b*c^5*d^3*e^2*x^4 + 18*b^3*B*c
^3*d^2*e^3*x^4 - 12*A*b^2*c^4*d^2*e^3*x^4 - 9*b^4*B*c^2*d*e^4*x^4 - 20*A*b^
3*c^3*d*e^4*x^4 + 15*A*b^4*c^2*e^5*x^4))/(3*b^4*d^3*(-(c*d) + b*e)^3*x^2*(b
 + c*x)^2*(d + e*x)) + ((-8*B*c*d^2*e^3 + 3*b*B*d*e^4 + 10*A*c*d*e^4 - 5*A*
b*e^5)*ArcTanh[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[b*x + c*x^2])/(Sqrt[d]*Sqr
t[c*d - b*e])])/(d^(7/2)*(c*d - b*e)^(7/2))
```

fricas [B] time = 0.54, size = 2582, normalized size = 5.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((8*B*b^4*c^3*d^2*e^4 + 5*A*b^5*c^2*e^6 - (3*B*b^5*c^2 + 10*A*b^4*
c^3)*d*e^5)*x^5 + (8*B*b^4*c^3*d^3*e^3 + 10*A*b^6*c*e^6 + (13*B*b^5*c^2 - 1
0*A*b^4*c^3)*d^2*e^4 - 3*(2*B*b^6*c + 5*A*b^5*c^2)*d*e^5)*x^4 + (16*B*b^5*c
^2*d^3*e^3 - 3*B*b^7*d*e^5 + 5*A*b^7*e^6 + 2*(B*b^6*c - 10*A*b^5*c^2)*d^2*e
^4)*x^3 + (8*B*b^6*c*d^3*e^3 + 5*A*b^7*d*e^5 - (3*B*b^7 + 10*A*b^6*c)*d^2*e
^4)*x^2)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*
d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(2*A*b^3*c^4*d^7 - 8*A*b^4*c^3*d^6*e
 + 12*A*b^5*c^2*d^5*e^2 - 8*A*b^6*c*d^4*e^3 + 2*A*b^7*d^3*e^4 - (15*A*b^5*c
^2*d*e^6 - 16*(B*b*c^6 - 2*A*c^7)*d^6*e + 8*(7*B*b^2*c^5 - 12*A*b*c^6)*d^5*
e^2 - 2*(29*B*b^3*c^4 - 38*A*b^2*c^5)*d^4*e^3 + (27*B*b^4*c^3 + 8*A*b^3*c^4
)*d^3*e^4 - (9*B*b^5*c^2 + 35*A*b^4*c^3)*d^2*e^5)*x^4 - 2*(15*A*b^6*c*d*e^6
 - 8*(B*b*c^6 - 2*A*c^7)*d^7 + 8*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e + (13*B*b^
3*c^4 - 34*A*b^2*c^5)*d^5*e^2 - (36*B*b^4*c^3 - 61*A*b^3*c^4)*d^4*e^3 + 4*(
6*B*b^5*c^2 - A*b^4*c^3)*d^3*e^4 - 3*(3*B*b^6*c + 10*A*b^5*c^2)*d^2*e^5)*x^
3 - 3*(5*A*b^7*d*e^6 - 8*(B*b^2*c^5 - 2*A*b*c^6)*d^7 + 2*(13*B*b^3*c^4 - 22
*A*b^2*c^5)*d^6*e - 2*(12*B*b^4*c^3 - 13*A*b^3*c^4)*d^5*e^2 + 4*(B*b^5*c^2
+ 4*A*b^4*c^3)*d^4*e^3 + (5*B*b^6*c - 14*A*b^5*c^2)*d^3*e^4 - (3*B*b^7 + 5*
A*b^6*c)*d^2*e^5)*x^2 - 2*(5*A*b^7*d^2*e^5 - 3*(B*b^3*c^4 - 2*A*b^2*c^5)*d^
7 + (12*B*b^4*c^3 - 19*A*b^3*c^4)*d^6*e - 2*(9*B*b^5*c^2 - 8*A*b^4*c^3)*d^5
*e^2 + 6*(2*B*b^6*c + A*b^5*c^2)*d^4*e^3 - (3*B*b^7 + 14*A*b^6*c)*d^3*e^4)*
x)*sqrt(c*x^2 + b*x))/((b^4*c^6*d^8*e - 4*b^5*c^5*d^7*e^2 + 6*b^6*c^4*d^6*e
^3 - 4*b^7*c^3*d^5*e^4 + b^8*c^2*d^4*e^5)*x^5 + (b^4*c^6*d^9 - 2*b^5*c^5*d^
8*e - 2*b^6*c^4*d^7*e^2 + 8*b^7*c^3*d^6*e^3 - 7*b^8*c^2*d^5*e^4 + 2*b^9*c*d
^4*e^5)*x^4 + (2*b^5*c^5*d^9 - 7*b^6*c^4*d^8*e + 8*b^7*c^3*d^7*e^2 - 2*b^8*
c^2*d^6*e^3 - 2*b^9*c*d^5*e^4 + b^10*d^4*e^5)*x^3 + (b^6*c^4*d^9 - 4*b^7*c^
3*d^8*e + 6*b^8*c^2*d^7*e^2 - 4*b^9*c*d^6*e^3 + b^10*d^5*e^4)*x^2), -1/3*(3
*((8*B*b^4*c^3*d^2*e^4 + 5*A*b^5*c^2*e^6 - (3*B*b^5*c^2 + 10*A*b^4*c^3)*d*e
^5)*x^5 + (8*B*b^4*c^3*d^3*e^3 + 10*A*b^6*c*e^6 + (13*B*b^5*c^2 - 10*A*b^4*
c^3)*d^2*e^4 - 3*(2*B*b^6*c + 5*A*b^5*c^2)*d*e^5)*x^4 + (16*B*b^5*c^2*d^3*e
^3 - 3*B*b^7*d*e^5 + 5*A*b^7*e^6 + 2*(B*b^6*c - 10*A*b^5*c^2)*d^2*e^4)*x^3
+ (8*B*b^6*c*d^3*e^3 + 5*A*b^7*d*e^5 - (3*B*b^7 + 10*A*b^6*c)*d^2*e^4)*x^2)
*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d
- b*e)*x)) + (2*A*b^3*c^4*d^7 - 8*A*b^4*c^3*d^6*e + 12*A*b^5*c^2*d^5*e^2 -
8*A*b^6*c*d^4*e^3 + 2*A*b^7*d^3*e^4 - (15*A*b^5*c^2*d*e^6 - 16*(B*b*c^6 - 2
*A*c^7)*d^6*e + 8*(7*B*b^2*c^5 - 12*A*b*c^6)*d^5*e^2 - 2*(29*B*b^3*c^4 - 38
```

```
*A*b^2*c^5)*d^4*e^3 + (27*B*b^4*c^3 + 8*A*b^3*c^4)*d^3*e^4 - (9*B*b^5*c^2 +
 35*A*b^4*c^3)*d^2*e^5)*x^4 - 2*(15*A*b^6*c*d*e^6 - 8*(B*b*c^6 - 2*A*c^7)*d
^7 + 8*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e + (13*B*b^3*c^4 - 34*A*b^2*c^5)*d^5*
e^2 - (36*B*b^4*c^3 - 61*A*b^3*c^4)*d^4*e^3 + 4*(6*B*b^5*c^2 - A*b^4*c^3)*d
^3*e^4 - 3*(3*B*b^6*c + 10*A*b^5*c^2)*d^2*e^5)*x^3 - 3*(5*A*b^7*d*e^6 - 8*(
B*b^2*c^5 - 2*A*b*c^6)*d^7 + 2*(13*B*b^3*c^4 - 22*A*b^2*c^5)*d^6*e - 2*(12*
B*b^4*c^3 - 13*A*b^3*c^4)*d^5*e^2 + 4*(B*b^5*c^2 + 4*A*b^4*c^3)*d^4*e^3 + (
5*B*b^6*c - 14*A*b^5*c^2)*d^3*e^4 - (3*B*b^7 + 5*A*b^6*c)*d^2*e^5)*x^2 - 2*
(5*A*b^7*d^2*e^5 - 3*(B*b^3*c^4 - 2*A*b^2*c^5)*d^7 + (12*B*b^4*c^3 - 19*A*b
^3*c^4)*d^6*e - 2*(9*B*b^5*c^2 - 8*A*b^4*c^3)*d^5*e^2 + 6*(2*B*b^6*c + A*b^
5*c^2)*d^4*e^3 - (3*B*b^7 + 14*A*b^6*c)*d^3*e^4)*x)*sqrt(c*x^2 + b*x))/((b^
4*c^6*d^8*e - 4*b^5*c^5*d^7*e^2 + 6*b^6*c^4*d^6*e^3 - 4*b^7*c^3*d^5*e^4 + b
^8*c^2*d^4*e^5)*x^5 + (b^4*c^6*d^9 - 2*b^5*c^5*d^8*e - 2*b^6*c^4*d^7*e^2 +
8*b^7*c^3*d^6*e^3 - 7*b^8*c^2*d^5*e^4 + 2*b^9*c*d^4*e^5)*x^4 + (2*b^5*c^5*d
^9 - 7*b^6*c^4*d^8*e + 8*b^7*c^3*d^7*e^2 - 2*b^8*c^2*d^6*e^3 - 2*b^9*c*d^5*
e^4 + b^10*d^4*e^5)*x^3 + (b^6*c^4*d^9 - 4*b^7*c^3*d^8*e + 6*b^8*c^2*d^7*e^
2 - 4*b^9*c*d^6*e^3 + b^10*d^5*e^4)*x^2)]
```

giac [B] time = 2.30, size = 2413, normalized size = 5.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*((32*sqrt(c*d^2 - b*d*e)*B*b*c^4*d^4*e^2 - 64*sqrt(c*d^2 - b*d*e)*A*c^5
*d^4*e^2 - 80*sqrt(c*d^2 - b*d*e)*B*b^2*c^3*d^3*e^3 + 128*sqrt(c*d^2 - b*d*
e)*A*b*c^4*d^3*e^3 - 24*B*b^4*c^(3/2)*d^2*e^5*log(abs(2*c*d - b*e - 2*sqrt(
c*d^2 - b*d*e)*sqrt(c))) + 36*sqrt(c*d^2 - b*d*e)*B*b^3*c^2*d^2*e^4 - 24*sq
rt(c*d^2 - b*d*e)*A*b^2*c^3*d^2*e^4 + 9*B*b^5*sqrt(c)*d*e^6*log(abs(2*c*d -
 b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) + 30*A*b^4*c^(3/2)*d*e^6*log(abs(2*c
*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) - 18*sqrt(c*d^2 - b*d*e)*B*b^4*c
*d*e^5 - 40*sqrt(c*d^2 - b*d*e)*A*b^3*c^2*d*e^5 - 15*A*b^5*sqrt(c)*e^7*log(
abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) + 30*sqrt(c*d^2 - b*d*e)*
A*b^4*c*e^6)*sgn(1/(x*e + d))/(sqrt(c*d^2 - b*d*e)*b^4*c^(7/2)*d^6 - 3*sqrt
(c*d^2 - b*d*e)*b^5*c^(5/2)*d^5*e + 3*sqrt(c*d^2 - b*d*e)*b^6*c^(3/2)*d^4*e
^2 - sqrt(c*d^2 - b*d*e)*b^7*sqrt(c)*d^3*e^3) + 2*((((4*(4*B*b*c^5*d^7*e^16
*sgn(1/(x*e + d)) - 8*A*c^6*d^7*e^16*sgn(1/(x*e + d)) - 16*B*b^2*c^4*d^6*e^
17*sgn(1/(x*e + d)) + 28*A*b*c^5*d^6*e^17*sgn(1/(x*e + d)) + 21*B*b^3*c^3*d
^5*e^18*sgn(1/(x*e + d)) - 30*A*b^2*c^4*d^5*e^18*sgn(1/(x*e + d)) - 18*B*b^
4*c^2*d^4*e^19*sgn(1/(x*e + d)) + 5*A*b^3*c^3*d^4*e^19*sgn(1/(x*e + d)) + 1
2*B*b^5*c*d^3*e^20*sgn(1/(x*e + d)) + 18*A*b^4*c^2*d^3*e^20*sgn(1/(x*e + d)
) - 3*B*b^6*d^2*e^21*sgn(1/(x*e + d)) - 18*A*b^5*c*d^2*e^21*sgn(1/(x*e + d)
) + 5*A*b^6*d*e^22*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 -
 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^
2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2) + 3*(B*b^4*c^2*d^5*e^20*sgn(1/(x*e + d
)) - 2*B*b^5*c*d^4*e^21*sgn(1/(x*e + d)) - A*b^4*c^2*d^4*e^21*sgn(1/(x*e +
d)) + B*b^6*d^3*e^22*sgn(1/(x*e + d)) + 2*A*b^5*c*d^3*e^22*sgn(1/(x*e + d))
 - A*b^6*d^2*e^23*sgn(1/(x*e + d)))*e^(-1)/((b^4*c^3*d^6*e^11*sgn(1/(x*e +
d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e
 + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2)*(x*e + d)))*e^(-1)/(x*e + d) -
3*(16*B*b*c^5*d^6*e^15*sgn(1/(x*e + d)) - 32*A*c^6*d^6*e^15*sgn(1/(x*e + d)
) - 56*B*b^2*c^4*d^5*e^16*sgn(1/(x*e + d)) + 96*A*b*c^5*d^5*e^16*sgn(1/(x*e
 + d)) + 60*B*b^3*c^3*d^4*e^17*sgn(1/(x*e + d)) - 80*A*b^2*c^4*d^4*e^17*sgn
(1/(x*e + d)) - 42*B*b^4*c^2*d^3*e^18*sgn(1/(x*e + d)) + 20*B*b^5*c*d^2*e^1
9*sgn(1/(x*e + d)) + 46*A*b^4*c^2*d^2*e^19*sgn(1/(x*e + d)) - 3*B*b^6*d*e^2
0*sgn(1/(x*e + d)) - 30*A*b^5*c*d*e^20*sgn(1/(x*e + d)) + 5*A*b^6*e^21*sgn(
1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn
(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/
(x*e + d))^2))*e^(-1)/(x*e + d) + 6*(8*B*b*c^5*d^5*e^14*sgn(1/(x*e + d)) -
```

```
16*A*c^6*d^5*e^14*sgn(1/(x*e + d)) - 24*B*b^2*c^4*d^4*e^15*sgn(1/(x*e + d))
 + 40*A*b*c^5*d^4*e^15*sgn(1/(x*e + d)) + 19*B*b^3*c^3*d^3*e^16*sgn(1/(x*e
+ d)) - 22*A*b^2*c^4*d^3*e^16*sgn(1/(x*e + d)) - 11*B*b^4*c^2*d^2*e^17*sgn(
1/(x*e + d)) - 7*A*b^3*c^3*d^2*e^17*sgn(1/(x*e + d)) + 3*B*b^5*c*d*e^18*sgn
(1/(x*e + d)) + 15*A*b^4*c^2*d*e^18*sgn(1/(x*e + d)) - 5*A*b^5*c*e^19*sgn(1
/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(
1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(
x*e + d))^2))*e^(-1)/(x*e + d) - (16*B*b*c^5*d^4*e^13*sgn(1/(x*e + d)) - 32
*A*c^6*d^4*e^13*sgn(1/(x*e + d)) - 40*B*b^2*c^4*d^3*e^14*sgn(1/(x*e + d)) +
 64*A*b*c^5*d^3*e^14*sgn(1/(x*e + d)) + 18*B*b^3*c^3*d^2*e^15*sgn(1/(x*e +
d)) - 12*A*b^2*c^4*d^2*e^15*sgn(1/(x*e + d)) - 9*B*b^4*c^2*d*e^16*sgn(1/(x*
e + d)) - 20*A*b^3*c^3*d*e^16*sgn(1/(x*e + d)) + 15*A*b^4*c^2*e^17*sgn(1/(x
*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(
x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e
 + d))^2))/(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e
/(x*e + d)^2)^(3/2) + 3*(8*B*c*d^2*e^6 - 3*B*b*d*e^7 - 10*A*c*d*e^7 + 5*A*b
*e^8)*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*(sqrt(c - 2*c*d/(x*e + d)
 + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2) + sqrt(c*d^2*e^2
- b*d*e^3)*e^(-1)/(x*e + d))))/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*
e^3 - b^3*d^3*e^4)*sqrt(c*d^2 - b*d*e)*sgn(1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.07, size = 4295, normalized size = 9.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 20/3*e/(b*e-c*d)^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(3/2)*c^2*x*A-20*e^3/(b*e-c*d)^3/d^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*x*c^2*A+20*e^2/(b*e-c*d)^3/d/b/((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B+20*e^2/(b*e-c*d)^3/d/b^2/((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*A-160/3*e/(b*e-c*
d)^2/d*c^3/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*
A+2*B*e^2/(b*e-c*d)^2/d^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*x*c-160/3/e/(b*e-c*d)^2*c^4/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*
e-2*c*d)*(x+d/e)/e)^(1/2)*x*B*d+20/3/e/(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^3*x*B*d+40/3*e^2/(b*e-c*d)^2/d^2*c^
2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-52/3*e/
(b*e-c*d)^2/d*c^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*x*B-5/(b*e-c*d)^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(3/2)*c*B-2/3*B/(b*e-c*d)/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(3/2)-10/3/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(3/2)*c^2*A+1/(b*e-c*d)/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(3/2)*A+64/3*c^2/(b*e-c*d)/d/b^3/((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+160/3/(b*e-c*d)^2*c^3/b^3/((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B+160/3/(b*e-c*d)^2*c^4/b^4/
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-20/3/(b*e-c*d
)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^2*x*B-15*
e^3/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2)*c*A+15*e^2/(b*e-c*d)^3/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*c*B-5/3*e^2/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(3/2)*b*A-1/e/(b*e-c*d)/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*B+80/3/(b*e-c*d)^2*c^2/b^2/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+80/3/(b*e-c*d)^2*c^3/b^3/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+2*B*e^2/(b*e-c*d)^2/d^
2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)+5/3*e/(b*e-c*d)
^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*B+5*e/(b*e
-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A+5*e
^4/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2
```

```
)*b*A-5*e^3/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*b*B-10*e/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2)*c^2*B+10/3/e*c/(b*e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(3/2)*B-80/3/e*c^2/(b*e-c*d)/b^3/((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-20/3/(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^3*x*A-8/3*c/(b*e-c*d)/d/b/((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*A+8/3*B/(b*e-c*d)/d*c
/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)-B*e^2/(b*e-c
*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))+20/3*e^2/(b*e-c*d)^2/d^2*c/b/((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-5/2*e^4/(b*e-c*d)^3/d^3/(-(b*e-c*d)*
d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e
^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e
))*b*A+5/2*e^3/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*B-80/3/e/(b*e-c*d)^2*c^3/b^
3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B*d+20/3/e*c^2/
(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*B
+10*e^2/(b*e-c*d)^3/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*c^2*A-160/3/e*c^3/(b*e-c*d)/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*x*B+5*e^3/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln
((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A-5*e^2/(b
*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/(x+d/e))*c*B+128/3*c^3/(b*e-c*d)/d/b^4/((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-16/3*c^2/(b*e-c*d)/d/b^2/((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*A-20*e/(b*e-c*d)^3/b^
2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*B-26/3*e/
(b*e-c*d)^2/d*c/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
*B-80/3*e/(b*e-c*d)^2/d*c^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2)*A+10/3/e/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c
*d)*(x+d/e)/e)^(3/2)*c^2*B*d+16/3*B/(b*e-c*d)/d*c^2/b^3/((x+d/e)^2*c-(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x-2/3*B/(b*e-c*d)/d/b/((x+d/e)^2*c-(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x-5/3*e^2/(b*e-c*d)^2/d^2/((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*A+5/3*e/(b*e-c*d
)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*B+5*e^4
/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*
x*c*A-5*e^3/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*x*c*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{5/2}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1068 $\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{13/2}(-Ace-bBe+3Bcd)}{13e^4}+\frac{2(d+ex)^{11/2}(Bd(3cd-2be)-Ae(2cd-be))}{11e^4}-\frac{2d(d+ex)^{9/2}(Bd-Ae)(cd-b}{9e^4}$$

Rubi [A] time = 0.09, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{13/2}(-Ace-bBe+3Bcd)}{13e^4}+\frac{2(d+ex)^{11/2}(Bd(3cd-2be)-Ae(2cd-be))}{11e^4}-\frac{2d(d+ex)^{9/2}(Bd-Ae)(cd-be)}{9e^4}+\frac{2Bc(d+ex)^{15/2}}{15e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(9/2))/(9*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(11/2))/(11*e^4) - (2*(3*B*c*d - b*B*e
 - A*c*e)*(d + e*x)^(13/2))/(13*e^4) + (2*B*c*(d + e*x)^(15/2))/(15*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)\,dx=\int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^{7/2}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+}{e^3}\right.$$
$$=-\frac{2d(Bd-Ae)(cd-be)(d+ex)^{9/2}}{9e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+}{11e^4}$$

Mathematica [A] time = 0.14, size = 113, normalized size = 0.90

$$\frac{2(d+ex)^{9/2}\left(5Ae\left(13be(9ex-2d)+c\left(8d^2-36dex+99e^2x^2\right)\right)+B\left(5be\left(8d^2-36dex+99e^2x^2\right)+c\left(-16d^3+72d^2ex-198de^2x^2+429e^3x^3\right)\right)\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(5*A*e*(13*b*e*(-2*d + 9*e*x) + c*(8*d^2 - 36*d*e*x + 99
*e^2*x^2)) + B*(5*b*e*(8*d^2 - 36*d*e*x + 99*e^2*x^2) + c*(-16*d^3 + 72*d^2
*e*x - 198*d*e^2*x^2 + 429*e^3*x^3))))/(6435*e^4)
```

IntegrateAlgebraic [A] time = 0.09, size = 141, normalized size = 1.12

$$\frac{2(d+ex)^{9/2}\left(585Abe^2(d+ex)-715Abde^2+715Acd^2e-1170Acde(d+ex)+495Ace(d+ex)^2+715bBd^2e-1170bBde(d+ex)+495bBe(d+ex)^2-715Bcd^3+1755Bcd^2(d+ex)-1485Bcd(d+ex)^2+429Bc(d+ex)^3\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*B*c*d^3 + 715*b*B*d^2*e + 715*A*c*d^2*e - 715*A*b*
d*e^2 + 1755*B*c*d^2*(d + e*x) - 1170*b*B*d*e*(d + e*x) - 1170*A*c*d*e*(d +
```

```
e*x) + 585*A*b*e^2*(d + e*x) - 1485*B*c*d*(d + e*x)^2 + 495*b*B*e*(d + e*x
)^2 + 495*A*c*e*(d + e*x)^2 + 429*B*c*(d + e*x)^3))/(6435*e^4)
```

fricas [B] time = 0.41, size = 271, normalized size = 2.15

$$\frac{2\left(429\,Bce^7x^7 - 16\,Bcd^7 - 130\,Abd^5e^2 + 40\,(Bb + Ac)d^6e + 33\left(46\,Bcde^6 + 15\,(Bb + Ac)e^7\right)x^6 + 9\left(206\,Bcd^2e^5 + 65\,Abe^7 + 200\,(Bb + Ac)de^6\right)x^5 + 10\left(80\,Bcd^3e^4 + 221\,Abde^6 + 229\,(Bb + Ac)d^2e^5\right)x^4 + 5\left(Bcd^4e^3 + 598\,Abd^2e^5 + 212\,(Bb + Ac)d^3e^4\right)x^3 - 3\left(2\,Bcd^5e^2 - 520\,Abd^3e^4 - 5\,(Bb + Ac)d^4e^3\right)x^2 + \left(8\,Bcd^6e + 65\,Abd^4e^3 - 20\,(Bb + Ac)d^5e^2\right)x\right)\sqrt{ex + d}}{6435\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c*e^7*x^7 - 16*B*c*d^7 - 130*A*b*d^5*e^2 + 40*(B*b + A*c)*d^6
*e + 33*(46*B*c*d*e^6 + 15*(B*b + A*c)*e^7)*x^6 + 9*(206*B*c*d^2*e^5 + 65*A
*b*e^7 + 200*(B*b + A*c)*d*e^6)*x^5 + 10*(80*B*c*d^3*e^4 + 221*A*b*d*e^6 +
229*(B*b + A*c)*d^2*e^5)*x^4 + 5*(B*c*d^4*e^3 + 598*A*b*d^2*e^5 + 212*(B*b
+ A*c)*d^3*e^4)*x^3 - 3*(2*B*c*d^5*e^2 - 520*A*b*d^3*e^4 - 5*(B*b + A*c)*d^
4*e^3)*x^2 + (8*B*c*d^6*e + 65*A*b*d^4*e^3 - 20*(B*b + A*c)*d^5*e^2)*x)*sqr
t(e*x + d)/e^4
```

giac [B] time = 0.24, size = 1383, normalized size = 10.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^4*e^(-1) + 3003*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^4*e
^(-2) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*A*c*d^4*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*c*d^4*e^(-3) + 12012*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^3*e^(-1) + 51
48*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*b*d^3*e^(-2) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^
(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*d^3*e^(-2) + 5
72*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d^3*e^(-3) + 7722*(5*(
x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*
e + d)*d^3)*A*b*d^2*e^(-1) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*B*b*d^2*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*
(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c*
d^2*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*B*c*d^2*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*A*b*d*e^(-1) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*B*b*d*e^(-2) + 260*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c*d*e^(-2) + 60*(231*(x*e
+ d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*
e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 30
03*sqrt(x*e + d)*d^6)*B*c*d*e^(-3) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*e^(-1) + 15*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*B*b*e^(-2) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*
d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5
/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*c*e^(-2) + 7
*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d
```

^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d
)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*c*e^(-3
))*e^(-1)

maple [A] time = 0.05, size = 121, normalized size = 0.96

$$-\frac{2\left(ex+d\right)^{\frac{9}{2}}\left(-429Bc\,x^{3}e^{3}-495Ac\,e^{3}x^{2}-495Bb\,e^{3}x^{2}+198Bcd\,e^{2}x^{2}-585Ab\,e^{3}x+180Acd\,e^{2}x+180Bbd\,e^{2}x-72Bc\,d^{2}ex+130Abd\,e^{2}-40Ac\,d^{2}e-40Bb\,d^{2}e+16Bc\,d^{3}\right)}{6435e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x)
```

```
[Out] -2/6435*(e*x+d)^(9/2)*(-429*B*c*e^3*x^3-495*A*c*e^3*x^2-495*B*b*e^3*x^2+198
*B*c*d*e^2*x^2-585*A*b*e^3*x+180*A*c*d*e^2*x+180*B*b*d*e^2*x-72*B*c*d^2*e*x
+130*A*b*d*e^2-40*A*c*d^2*e-40*B*b*d^2*e+16*B*c*d^3)/e^4
```

maxima [A] time = 0.57, size = 112, normalized size = 0.89

$$\frac{2\left(429\left(ex+d\right)^{\frac{15}{2}}Bc-495\left(3\,Bcd-\left(Bb+Ac\right)e\right)\left(ex+d\right)^{\frac{13}{2}}+585\left(3\,Bcd^{2}+Abe^{2}-2\left(Bb+Ac\right)de\right)\left(ex+d\right)^{\frac{11}{2}}-715\left(Bcd^{3}+Abde^{2}-\left(Bb+Ac\right)d^{2}e\right)\left(ex+d\right)^{\frac{9}{2}}\right)}{6435\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*B*c - 495*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^
(13/2) + 585*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(11/2) - 7
15*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(9/2))/e^4
```

mupad [B] time = 0.10, size = 111, normalized size = 0.88

$$\frac{{\left(d+e\,x\right)}^{11/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{11\,e^4}+\frac{{\left(d+e\,x\right)}^{13/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{13\,e^4}+\frac{2\,B\,c\,{\left(d+e\,x\right)}^{15/2}}{15\,e^4}-\frac{2\,d\,\left(A\,e-B\,d\right)\,\left(b\,e-c\,d\right)\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(11*e^4)
 + ((d + e*x)^(13/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(13*e^4) + (2*B*c*(d +
e*x)^(15/2))/(15*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(9/2))/(9*e^
4)
```

sympy [A] time = 9.27, size = 683, normalized size = 5.42

$$\begin{cases} -\frac{4Abd^5\sqrt{d+ex}}{99e^2}+\frac{2Abd^4x\sqrt{d+ex}}{99e}+\frac{16Abd^3x^2\sqrt{d+ex}}{33}+\frac{92Abd^2ex^3\sqrt{d+ex}}{99}+\frac{68Abde^2x^4\sqrt{d+ex}}{99}+\frac{2Abe^3x^5\sqrt{d+ex}}{11}+\frac{16Acd^6\sqrt{d+ex}}{1287e^3}-\frac{8Acd^5x\sqrt{d+ex}}{1287e^2}+\frac{2Acd^4x^2\sqrt{d+ex}}{429e}+\frac{424Acd^3x^3\sqrt{d+ex}}{1287}+\frac{916Acd^2ex^4\sqrt{d+ex}}{1287}+\frac{80Acde^2x^5\sqrt{d+ex}}{143}+\frac{2Ace^3x^6\sqrt{d+ex}}{13}+\frac{16Bbd^6\sqrt{d+ex}}{1287e^3}-\frac{8Bbd^5x\sqrt{d+ex}}{1287e^2}+\frac{2Bbd^4x^2\sqrt{d+ex}}{429e}+\frac{424Bbd^3x^3\sqrt{d+ex}}{1287}+\frac{916Bbd^2ex^4\sqrt{d+ex}}{1287}+\frac{80Bbde^2x^5\sqrt{d+ex}}{143}+\frac{2Bbe^3x^6\sqrt{d+ex}}{13}-\frac{32Bcd^7\sqrt{d+ex}}{6435e^4}+\frac{16Bcd^6x\sqrt{d+ex}}{6435e^3}-\frac{4Bcd^5x^2\sqrt{d+ex}}{2145e^2}+\frac{2Bcd^4x^3\sqrt{d+ex}}{1287e}+\frac{320Bcd^3x^4\sqrt{d+ex}}{1287}+\frac{412Bcd^2ex^5\sqrt{d+ex}}{715}+\frac{92Bcde^2x^6\sqrt{d+ex}}{195}+\frac{2Bce^3x^7\sqrt{d+ex}}{15} & \text{for}\ e \neq 0 \\ d^{\frac{7}{2}}\left(\frac{Abx^2}{2}+\frac{Acx^3}{3}+\frac{Bbx^3}{3}+\frac{Bcx^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(c*x**2+b*x),x)
```

```
[Out] Piecewise((-4*A*b*d**5*sqrt(d + e*x)/(99*e**2) + 2*A*b*d**4*x*sqrt(d + e*x)
/(99*e) + 16*A*b*d**3*x**2*sqrt(d + e*x)/33 + 92*A*b*d**2*e*x**3*sqrt(d + e
*x)/99 + 68*A*b*d*e**2*x**4*sqrt(d + e*x)/99 + 2*A*b*e**3*x**5*sqrt(d + e*x
)/11 + 16*A*c*d**6*sqrt(d + e*x)/(1287*e**3) - 8*A*c*d**5*x*sqrt(d + e*x)/(
1287*e**2) + 2*A*c*d**4*x**2*sqrt(d + e*x)/(429*e) + 424*A*c*d**3*x**3*sqrt
(d + e*x)/1287 + 916*A*c*d**2*e*x**4*sqrt(d + e*x)/1287 + 80*A*c*d*e**2*x**
5*sqrt(d + e*x)/143 + 2*A*c*e**3*x**6*sqrt(d + e*x)/13 + 16*B*b*d**6*sqrt(d
 + e*x)/(1287*e**3) - 8*B*b*d**5*x*sqrt(d + e*x)/(1287*e**2) + 2*B*b*d**4*x
**2*sqrt(d + e*x)/(429*e) + 424*B*b*d**3*x**3*sqrt(d + e*x)/1287 + 916*B*b*
d**2*e*x**4*sqrt(d + e*x)/1287 + 80*B*b*d*e**2*x**5*sqrt(d + e*x)/143 + 2*B
*b*e**3*x**6*sqrt(d + e*x)/13 - 32*B*c*d**7*sqrt(d + e*x)/(6435*e**4) + 16*
B*c*d**6*x*sqrt(d + e*x)/(6435*e**3) - 4*B*c*d**5*x**2*sqrt(d + e*x)/(2145*
e**2) + 2*B*c*d**4*x**3*sqrt(d + e*x)/(1287*e) + 320*B*c*d**3*x**4*sqrt(d +
 e*x)/1287 + 412*B*c*d**2*e*x**5*sqrt(d + e*x)/715 + 92*B*c*d*e**2*x**6*sqr
t(d + e*x)/195 + 2*B*c*e**3*x**7*sqrt(d + e*x)/15, Ne(e, 0)), (d**(7/2)*(A*
b*x**2/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4), True))
```

3.1069 $\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{11/2}(-Ace-bBe+3Bcd)}{11e^4}+\frac{2(d+ex)^{9/2}(Bd(3cd-2be)-Ae(2cd-be))}{9e^4}-\frac{2d(d+ex)^{7/2}(Bd-Ae)(cd-}{7e^4}$$

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{11/2}(-Ace-bBe+3Bcd)}{11e^4}+\frac{2(d+ex)^{9/2}(Bd(3cd-2be)-Ae(2cd-be))}{9e^4}-\frac{2d(d+ex)^{7/2}(Bd-Ae)(cd-be)}{7e^4}+\frac{2Bc(d+ex)^{13/2}}{13e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(7/2))/(7*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(9/2))/(9*e^4) - (2*(3*B*c*d - b*B*e -
 A*c*e)*(d + e*x)^(11/2))/(11*e^4) + (2*B*c*(d + e*x)^(13/2))/(13*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)\,dx=\int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^{5/2}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(}{e^3}\right.$$

$$=-\frac{2d(Bd-Ae)(cd-be)(d+ex)^{7/2}}{7e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d}{9e^4}$$

Mathematica [A] time = 0.12, size = 113, normalized size = 0.90

$$\frac{2(d+ex)^{7/2}\left(13Ae\left(11be(7ex-2d)+c\left(8d^2-28dex+63e^2x^2\right)\right)+B\left(13be\left(8d^2-28dex+63e^2x^2\right)+c\left(-48d^3+168d^2ex-378de^2x^2+693e^3x^3\right)\right)\right)}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(13*A*e*(11*b*e*(-2*d + 7*e*x) + c*(8*d^2 - 28*d*e*x + 6
3*e^2*x^2)) + B*(13*b*e*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + c*(-48*d^3 + 168*
d^2*e*x - 378*d*e^2*x^2 + 693*e^3*x^3))))/(9009*e^4)
```

IntegrateAlgebraic [A] time = 0.09, size = 141, normalized size = 1.12

$$\frac{2(d+ex)^{7/2}\left(1001Abe^2(d+ex)-1287Abde^2+1287Acd^2e-2002Acde(d+ex)+819Ace(d+ex)^2+1287bBd^2e-2002bBde(d+ex)+819bBe(d+ex)^2-1287Bcd^3+3003Bcd^2(d+ex)-2457Bcd(d+ex)^2+693Bc(d+ex)^3\right)}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-1287*B*c*d^3 + 1287*b*B*d^2*e + 1287*A*c*d^2*e - 1287*
A*b*d*e^2 + 3003*B*c*d^2*(d + e*x) - 2002*b*B*d*e*(d + e*x) - 2002*A*c*d*e*
```

```
(d + e*x) + 1001*A*b*e^2*(d + e*x) - 2457*B*c*d*(d + e*x)^2 + 819*b*B*e*(d
+ e*x)^2 + 819*A*c*e*(d + e*x)^2 + 693*B*c*(d + e*x)^3))/(9009*e^4)
```

fricas [B] time = 0.40, size = 230, normalized size = 1.83

$$\frac{2\left(693\,Bce^6x^6-48\,Bcd^6-286\,Abd^4e^2+104\,(Bb+Ac)d^5e+63\left(27\,Bcde^5+13\,(Bb+Ac)e^6\right)x^5+7\left(159\,Bcd^2e^4+143\,Abe^6+299\,(Bb+Ac)de^5\right)x^4+\left(15\,Bcd^3e^3+2717\,Abde^5+1469\,(Bb+Ac)d^2e^4\right)x^3-3\left(6\,Bcd^4e^2-715\,Abd^2e^4-13\,(Bb+Ac)d^3e^3\right)x^2+\left(24\,Bcd^5e+143\,Abd^3e^3-52\,(Bb+Ac)d^4e^2\right)x\right)\sqrt{ex+d}}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c*e^6*x^6 - 48*B*c*d^6 - 286*A*b*d^4*e^2 + 104*(B*b + A*c)*d^
5*e + 63*(27*B*c*d*e^5 + 13*(B*b + A*c)*e^6)*x^5 + 7*(159*B*c*d^2*e^4 + 143
*A*b*e^6 + 299*(B*b + A*c)*d*e^5)*x^4 + (15*B*c*d^3*e^3 + 2717*A*b*d*e^5 +
1469*(B*b + A*c)*d^2*e^4)*x^3 - 3*(6*B*c*d^4*e^2 - 715*A*b*d^2*e^4 - 13*(B*
b + A*c)*d^3*e^3)*x^2 + (24*B*c*d^5*e + 143*A*b*d^3*e^3 - 52*(B*b + A*c)*d^
4*e^2)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.21, size = 999, normalized size = 7.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^3*e^(-1) + 3003*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^3*e
^(-2) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*A*c*d^3*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*c*d^3*e^(-3) + 9009*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^2*e^(-1) + 386
1*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*s
qrt(x*e + d)*d^3)*B*b*d^2*e^(-2) + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*d^2*e^(-2) + 42
9*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 4
20*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d^2*e^(-3) + 3861*(5*(x
*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
 + d)*d^3)*A*b*d*e^(-1) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*B*b*d*e^(-2) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c*d*e^(
-2) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*c*d*e^(-3) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*
A*b*e^(-1) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*B*b*e^(-2) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*
d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/
2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c*e^(-2) + 15*(231*(x*e + d)^(13/2) - 163
8*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3
+ 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*
d^6)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.05, size = 121, normalized size = 0.96

$$-\frac{2\,(ex+d)^{\frac{7}{2}}\left(-693Bc\,x^3e^3-819Ac\,e^3x^2-819Bb\,e^3x^2+378Bcd\,e^2x^2-1001Ab\,e^3x+364Acd\,e^2x+364Bbd\,e^2x-168Bc\,d^2ex+286Abd\,e^2-104Ac\,d^2e-104Bb\,d^2e+48Bc\,d^3\right)}{9009e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x)
```

```
[Out] -2/9009*(e*x+d)^(7/2)*(-693*B*c*e^3*x^3-819*A*c*e^3*x^2-819*B*b*e^3*x^2+378
*B*c*d*e^2*x^2-1001*A*b*e^3*x+364*A*c*d*e^2*x+364*B*b*d*e^2*x-168*B*c*d^2*e
*x+286*A*b*d*e^2-104*A*c*d^2*e-104*B*b*d^2*e+48*B*c*d^3)/e^4
```

maxima [A] time = 0.46, size = 112, normalized size = 0.89

$$\frac{2\left(693\,(ex+d)^{\frac{13}{2}}Bc-819\,(3\,Bcd-(Bb+Ac)e)(ex+d)^{\frac{11}{2}}+1001\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)(ex+d)^{\frac{9}{2}}-1287\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)(ex+d)^{\frac{7}{2}}\right)}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/9009*(693*(e*x + d)^(13/2)*B*c - 819*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^
(11/2) + 1001*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(9/2) - 1
287*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(7/2))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.88

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{9\,e^4}+\frac{(d+e\,x)^{11/2}\,(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d)}{11\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{13/2}}{13\,e^4}-\frac{2\,d\,(A\,e-B\,d)\,(b\,e-c\,d)\,(d+e\,x)^{7/2}}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(9*e^4) +
 ((d + e*x)^(11/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(11*e^4) + (2*B*c*(d + e*
x)^(13/2))/(13*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(7/2))/(7*e^4)
```

sympy [A] time = 4.64, size = 581, normalized size = 4.61

$$\begin{cases} -\frac{4Abd^4\sqrt{d+ex}}{63e^2}+\frac{2Abd^3x\sqrt{d+ex}}{63e}+\frac{10Abd^2x^2\sqrt{d+ex}}{21}+\frac{38Abdex^3\sqrt{d+ex}}{63}+\frac{2Abe^2x^4\sqrt{d+ex}}{9}+\frac{16Acd^5\sqrt{d+ex}}{693e^3}-\frac{8Acd^4x\sqrt{d+ex}}{693e^2}+\frac{2Acd^3x^2\sqrt{d+ex}}{231e}+\frac{226Acd^2x^3\sqrt{d+ex}}{693}+\frac{46Acdex^4\sqrt{d+ex}}{99}+\frac{2Ace^2x^5\sqrt{d+ex}}{11}+\frac{16Bbd^5\sqrt{d+ex}}{693e^3}-\frac{8Bbd^4x\sqrt{d+ex}}{693e^2}+\frac{2Bbd^3x^2\sqrt{d+ex}}{231e}+\frac{226Bbd^2x^3\sqrt{d+ex}}{693}+\frac{46Bbdex^4\sqrt{d+ex}}{99}+\frac{2Bbe^2x^5\sqrt{d+ex}}{11}-\frac{32Bcd^6\sqrt{d+ex}}{3003e^4}+\frac{16Bcd^5x\sqrt{d+ex}}{3003e^3}-\frac{4Bcd^4x^2\sqrt{d+ex}}{1001e^2}+\frac{10Bcd^3x^3\sqrt{d+ex}}{3003e}+\frac{106Bcd^2x^4\sqrt{d+ex}}{429}+\frac{54Bcdex^5\sqrt{d+ex}}{143}+\frac{2Bce^2x^6\sqrt{d+ex}}{13} & \text{for}\: e \neq 0 \\ d^{\frac{5}{2}}\left(\frac{Abx^2}{2}+\frac{Acx^3}{3}+\frac{Bbx^3}{3}+\frac{Bcx^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(c*x**2+b*x),x)
```

```
[Out] Piecewise((-4*A*b*d**4*sqrt(d + e*x)/(63*e**2) + 2*A*b*d**3*x*sqrt(d + e*x)
/(63*e) + 10*A*b*d**2*x**2*sqrt(d + e*x)/21 + 38*A*b*d*e*x**3*sqrt(d + e*x)
/63 + 2*A*b*e**2*x**4*sqrt(d + e*x)/9 + 16*A*c*d**5*sqrt(d + e*x)/(693*e**3
) - 8*A*c*d**4*x*sqrt(d + e*x)/(693*e**2) + 2*A*c*d**3*x**2*sqrt(d + e*x)/(
231*e) + 226*A*c*d**2*x**3*sqrt(d + e*x)/693 + 46*A*c*d*e*x**4*sqrt(d + e*x
)/99 + 2*A*c*e**2*x**5*sqrt(d + e*x)/11 + 16*B*b*d**5*sqrt(d + e*x)/(693*e*
*3) - 8*B*b*d**4*x*sqrt(d + e*x)/(693*e**2) + 2*B*b*d**3*x**2*sqrt(d + e*x)
/(231*e) + 226*B*b*d**2*x**3*sqrt(d + e*x)/693 + 46*B*b*d*e*x**4*sqrt(d + e
*x)/99 + 2*B*b*e**2*x**5*sqrt(d + e*x)/11 - 32*B*c*d**6*sqrt(d + e*x)/(3003
*e**4) + 16*B*c*d**5*x*sqrt(d + e*x)/(3003*e**3) - 4*B*c*d**4*x**2*sqrt(d +
 e*x)/(1001*e**2) + 10*B*c*d**3*x**3*sqrt(d + e*x)/(3003*e) + 106*B*c*d**2*
x**4*sqrt(d + e*x)/429 + 54*B*c*d*e*x**5*sqrt(d + e*x)/143 + 2*B*c*e**2*x**
6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(A*b*x**2/2 + A*c*x**3/3 + B*b*x**
3/3 + B*c*x**4/4), True))
```

3.1070 $\int (A+Bx)(d+ex)^{3/2} \left(bx+cx^2\right) \, dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{9/2}(-Ace-bBe+3Bcd)}{9e^4}+\frac{2(d+ex)^{7/2}(Bd(3cd-2be)-Ae(2cd-be))}{7e^4}-\frac{2d(d+ex)^{5/2}(Bd-Ae)(cd-be)}{5e^4}$$

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{2(d+ex)^{9/2}(-Ace-bBe+3Bcd)}{9e^4}+\frac{2(d+ex)^{7/2}(Bd(3cd-2be)-Ae(2cd-be))}{7e^4}-\frac{2d(d+ex)^{5/2}(Bd-Ae)(cd-be)}{5e^4}+\frac{2Bc(d+ex)^{11/2}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(5/2))/(5*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(7/2))/(7*e^4) - (2*(3*B*c*d - b*B*e -
 A*c*e)*(d + e*x)^(9/2))/(9*e^4) + (2*B*c*(d + e*x)^(11/2))/(11*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\left(bx+cx^2\right)\,dx = \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^{3/2}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+\right.$$

$$= -\frac{2d(Bd-Ae)(cd-be)(d+ex)^{5/2}}{5e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+}{7e^4}$$

Mathematica [A] time = 0.11, size = 114, normalized size = 0.90

$$\frac{2(d+ex)^{5/2}\left(11Ae\left(9be(5ex-2d)+c\left(8d^2-20dex+35e^2x^2\right)\right)+B\left(11be\left(8d^2-20dex+35e^2x^2\right)-3c\left(16d^3-40d^2ex+70de^2x^2-105e^3x^3\right)\right)\right)}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(11*A*e*(9*b*e*(-2*d + 5*e*x) + c*(8*d^2 - 20*d*e*x + 35
*e^2*x^2)) + B*(11*b*e*(8*d^2 - 20*d*e*x + 35*e^2*x^2) - 3*c*(16*d^3 - 40*d
^2*e*x + 70*d*e^2*x^2 - 105*e^3*x^3))))/(3465*e^4)
```

IntegrateAlgebraic [A] time = 0.09, size = 141, normalized size = 1.12

$$\frac{2(d+ex)^{5/2}\left(495Abe^2(d+ex)-693Abde^2+693Acd^2e-990Acde(d+ex)+385Ace(d+ex)^2+693bBd^2e-990bBde(d+ex)+385bBe(d+ex)^2-693Bcd^3+1485Bcd^2(d+ex)-1155Bcd(d+ex)^2+315Bc(d+ex)^3\right)}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-693*B*c*d^3 + 693*b*B*d^2*e + 693*A*c*d^2*e - 693*A*b*
d*e^2 + 1485*B*c*d^2*(d + e*x) - 990*b*B*d*e*(d + e*x) - 990*A*c*d*e*(d + e
```

```
*x) + 495*A*b*e^2*(d + e*x) - 1155*B*c*d*(d + e*x)^2 + 385*b*B*e*(d + e*x)^
2 + 385*A*c*e*(d + e*x)^2 + 315*B*c*(d + e*x)^3))/(3465*e^4)
```

fricas [A] time = 0.40, size = 190, normalized size = 1.51

$$\frac{2\left(315\,Bce^5x^5 - 48\,Bcd^5 - 198\,Abd^3e^2 + 88\,(Bb + Ac)d^4e + 35\left(12\,Bcde^4 + 11\,(Bb + Ac)e^5\right)x^4 + 5\left(3\,Bcd^2e^3 + 99\,Abe^5 + 110\,(Bb + Ac)de^4\right)x^3 - 3\left(6\,Bcd^3e^2 - 264\,Abde^4 - 11\,(Bb + Ac)d^2e^3\right)x^2 + \left(24\,Bcd^4e + 99\,Abd^2e^3 - 44\,(Bb + Ac)d^3e^2\right)x\right)\sqrt{ex + d}}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*e^5*x^5 - 48*B*c*d^5 - 198*A*b*d^3*e^2 + 88*(B*b + A*c)*d^4
*e + 35*(12*B*c*d*e^4 + 11*(B*b + A*c)*e^5)*x^4 + 5*(3*B*c*d^2*e^3 + 99*A*b
*e^5 + 110*(B*b + A*c)*d*e^4)*x^3 - 3*(6*B*c*d^3*e^2 - 264*A*b*d*e^4 - 11*(
B*b + A*c)*d^2*e^3)*x^2 + (24*B*c*d^4*e + 99*A*b*d^2*e^3 - 44*(B*b + A*c)*d
^3*e^2)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.19, size = 667, normalized size = 5.29

$$\frac{2}{3465}\left(1155\left((ex+d)^{\frac{3}{2}} - 3\sqrt{ex+d}\,d\right)Abd^2e^{(-1)} + 231\left(3(ex+d)^{\frac{5}{2}} - 10(ex+d)^{\frac{3}{2}}d + 15\sqrt{ex+d}\,d^2\right)Bbd^2e^{(-2)} + 231\left(3(ex+d)^{\frac{5}{2}} - 10(ex+d)^{\frac{3}{2}}d + 15\sqrt{ex+d}\,d^2\right)Acd^2e^{(-2)} + 99\left(5(ex+d)^{\frac{7}{2}} - 21(ex+d)^{\frac{5}{2}}d + 35(ex+d)^{\frac{3}{2}}d^2 - 35\sqrt{ex+d}\,d^3\right)Bcd^2e^{(-3)} + 462\left(3(ex+d)^{\frac{5}{2}} - 10(ex+d)^{\frac{3}{2}}d + 15\sqrt{ex+d}\,d^2\right)Abde^{(-1)} + 198\left(5(ex+d)^{\frac{7}{2}} - 21(ex+d)^{\frac{5}{2}}d + 35(ex+d)^{\frac{3}{2}}d^2 - 35\sqrt{ex+d}\,d^3\right)Bbde^{(-2)} + 198\left(5(ex+d)^{\frac{7}{2}} - 21(ex+d)^{\frac{5}{2}}d + 35(ex+d)^{\frac{3}{2}}d^2 - 35\sqrt{ex+d}\,d^3\right)Acde^{(-2)} + 22\left(35(ex+d)^{\frac{9}{2}} - 180(ex+d)^{\frac{7}{2}}d + 378(ex+d)^{\frac{5}{2}}d^2 - 420(ex+d)^{\frac{3}{2}}d^3 + 315\sqrt{ex+d}\,d^4\right)Bcde^{(-3)} + 99\left(5(ex+d)^{\frac{7}{2}} - 21(ex+d)^{\frac{5}{2}}d + 35(ex+d)^{\frac{3}{2}}d^2 - 35\sqrt{ex+d}\,d^3\right)Abe^{(-1)} + 11\left(35(ex+d)^{\frac{9}{2}} - 180(ex+d)^{\frac{7}{2}}d + 378(ex+d)^{\frac{5}{2}}d^2 - 420(ex+d)^{\frac{3}{2}}d^3 + 315\sqrt{ex+d}\,d^4\right)Bbe^{(-2)} + 11\left(35(ex+d)^{\frac{9}{2}} - 180(ex+d)^{\frac{7}{2}}d + 378(ex+d)^{\frac{5}{2}}d^2 - 420(ex+d)^{\frac{3}{2}}d^3 + 315\sqrt{ex+d}\,d^4\right)Ace^{(-2)} + 5\left(63(ex+d)^{\frac{11}{2}} - 385(ex+d)^{\frac{9}{2}}d + 990(ex+d)^{\frac{7}{2}}d^2 - 1386(ex+d)^{\frac{5}{2}}d^3 + 1155(ex+d)^{\frac{3}{2}}d^4 - 693\sqrt{ex+d}\,d^5\right)Bce^{(-3)}\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^2*e^(-1) + 231*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^2*e^(-
2) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
A*c*d^2*e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d
)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*c*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2)
 - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d*e^(-1) + 198*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*B*b*d*e^(-2) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*d*e^(-2) + 22*(35*(x*e + d)^
(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/
2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d*e^(-3) + 99*(5*(x*e + d)^(7/2) - 21*(
x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b*e^(-1
) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*e^(-2) + 11*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c*e^(-2) + 5*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.05, size = 121, normalized size = 0.96

$$-\frac{2\,(ex+d)^{\frac{5}{2}}\left(-315Bc\,x^3e^3 - 385Ac\,e^3x^2 - 385Bb\,e^3x^2 + 210Bcd\,e^2x^2 - 495Ab\,e^3x + 220Acd\,e^2x + 220Bbd\,e^2x - 120Bc\,d^2ex + 198Abd\,e^2 - 88Ac\,d^2e - 88Bb\,d^2e + 48Bc\,d^3\right)}{3465e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x)
```

```
[Out] -2/3465*(e*x+d)^(5/2)*(-315*B*c*e^3*x^3-385*A*c*e^3*x^2-385*B*b*e^3*x^2+210
*B*c*d*e^2*x^2-495*A*b*e^3*x+220*A*c*d*e^2*x+220*B*b*d*e^2*x-120*B*c*d^2*e*
x+198*A*b*d*e^2-88*A*c*d^2*e-88*B*b*d^2*e+48*B*c*d^3)/e^4
```

maxima [A] time = 0.49, size = 112, normalized size = 0.89

$$\frac{2\left(315\,(ex+d)^{\frac{11}{2}}Bc - 385\,(3\,Bcd - (Bb + Ac)e)(ex+d)^{\frac{9}{2}} + 495\left(3\,Bcd^2 + Abe^2 - 2\,(Bb + Ac)de\right)(ex+d)^{\frac{7}{2}} - 693\left(Bcd^3 + Abde^2 - (Bb + Ac)d^2e\right)(ex+d)^{\frac{5}{2}}\right)}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c - 385*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^
(9/2) + 495*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(7/2) - 693
*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.88

$$\frac{(d+ex)^{7/2}\left(2Abe^2+6Bcd^2-4Acde-4Bbde\right)}{7e^4}+\frac{(d+ex)^{9/2}\left(2Ace+2Bbe-6Bcd\right)}{9e^4}+\frac{2Bc(d+ex)^{11/2}}{11e^4}-\frac{2d\left(Ae-Bd\right)\left(be-cd\right)(d+ex)^{5/2}}{5e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(7*e^4) +
 ((d + e*x)^(9/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(9*e^4) + (2*B*c*(d + e*x)
^(11/2))/(11*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(5/2))/(5*e^4)
```

sympy [B] time = 17.82, size = 434, normalized size = 3.44

$$\frac{2Abd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{2Ab\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^2}+\frac{2Acd\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+\frac{2Ac\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^3}+\frac{2Bbd\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+\frac{2Bb\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^3}+\frac{2Bcd\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^4}+\frac{2Bc\left(\frac{d^4(d+ex)^{\frac{3}{2}}}{3}-\frac{4d^3(d+ex)^{\frac{5}{2}}}{5}+\frac{6d^2(d+ex)^{\frac{7}{2}}}{7}-\frac{4d(d+ex)^{\frac{9}{2}}}{9}+\frac{(d+ex)^{\frac{11}{2}}}{11}\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 2*A*b*(d**2*(d
+ e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*A*c
*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**3 + 2*A*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*B*b*d*(d**2*(d + e*x)**(3/2
)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 2*B*b*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**3 + 2*B*c*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)*
*(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*B*c*(d**4*
(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
- 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1071 $\int (A+Bx)\sqrt{d+ex}\,\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{7/2}(-Ace-bBe+3Bcd)}{7e^4}+\frac{2(d+ex)^{5/2}(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{2d(d+ex)^{3/2}(Bd-Ae)(cd-$$

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{7/2}(-Ace-bBe+3Bcd)}{7e^4}+\frac{2(d+ex)^{5/2}(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{2d(d+ex)^{3/2}(Bd-Ae)(cd-be)}{3e^4}+\frac{2Bc(d+ex)^{9/2}}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(3/2))/(3*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(5/2))/(5*e^4) - (2*(3*B*c*d - b*B*e -
 A*c*e)*(d + e*x)^(7/2))/(7*e^4) + (2*B*c*(d + e*x)^(9/2))/(9*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\left(bx+cx^2\right)\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)\sqrt{d+ex}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+\right.\\ &= -\frac{2d(Bd-Ae)(cd-be)(d+ex)^{3/2}}{3e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+\end{aligned}$$

Mathematica [A] time = 0.10, size = 113, normalized size = 0.90

$$\frac{2(d+ex)^{3/2}\left(3Ae\left(7be(3ex-2d)+c\left(8d^2-12dex+15e^2x^2\right)\right)+B\left(3be\left(8d^2-12dex+15e^2x^2\right)+c\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)\right)\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(3*A*e*(7*b*e*(-2*d + 3*e*x) + c*(8*d^2 - 12*d*e*x + 15*
e^2*x^2)) + B*(3*b*e*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + c*(-16*d^3 + 24*d^2*
e*x - 30*d*e^2*x^2 + 35*e^3*x^3))))/(315*e^4)
```

IntegrateAlgebraic [A] time = 0.08, size = 141, normalized size = 1.12

$$\frac{2(d+ex)^{3/2}\left(63Abe^2(d+ex)-105Abde^2+105Acd^2e-126Acde(d+ex)+45Ace(d+ex)^2+105bBd^2e-126bBde(d+ex)+45bBe(d+ex)^2-105Bcd^3+189Bcd^2(d+ex)-135Bcd(d+ex)^2+35Bc(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*B*c*d^3 + 105*b*B*d^2*e + 105*A*c*d^2*e - 105*A*b*
d*e^2 + 189*B*c*d^2*(d + e*x) - 126*b*B*d*e*(d + e*x) - 126*A*c*d*e*(d + e*
```

```
x) + 63*A*b*e^2*(d + e*x) - 135*B*c*d*(d + e*x)^2 + 45*b*B*e*(d + e*x)^2 +
45*A*c*e*(d + e*x)^2 + 35*B*c*(d + e*x)^3))/(315*e^4)
```

fricas [A] time = 0.40, size = 148, normalized size = 1.17

$$\frac{2\left(35\,Bce^4x^4 - 16\,Bcd^4 - 42\,Abd^2e^2 + 24\,(Bb + Ac)d^3e + 5\left(Bcde^3 + 9\,(Bb + Ac)e^4\right)x^3 - 3\left(2\,Bcd^2e^2 - 21\,Abe^4 - 3\,(Bb + Ac)de^3\right)x^2 + \left(8\,Bcd^3e + 21\,Abde^3 - 12\,(Bb + Ac)d^2e^2\right)x\right)\sqrt{ex + d}}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*e^4*x^4 - 16*B*c*d^4 - 42*A*b*d^2*e^2 + 24*(B*b + A*c)*d^3*e
+ 5*(B*c*d*e^3 + 9*(B*b + A*c)*e^4)*x^3 - 3*(2*B*c*d^2*e^2 - 21*A*b*e^4 - 3
*(B*b + A*c)*d*e^3)*x^2 + (8*B*c*d^3*e + 21*A*b*d*e^3 - 12*(B*b + A*c)*d^2*
e^2)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.17, size = 386, normalized size = 3.06

$$\frac{2}{315}\left(105\left((xe + d)^{\frac{3}{2}} - 3\sqrt{xe + d}\,d\right)Abde^{(-1)} + 21\left(3\,(xe + d)^{\frac{5}{2}} - 10\,(xe + d)^{\frac{3}{2}}d + 15\sqrt{xe + d}\,d^2\right)Bbde^{(-2)} + 21\left(3\,(xe + d)^{\frac{5}{2}} - 10\,(xe + d)^{\frac{3}{2}}d + 15\sqrt{xe + d}\,d^2\right)Acde^{(-2)} + 9\left(5\,(xe + d)^{\frac{7}{2}} - 21\,(xe + d)^{\frac{5}{2}}d + 35\,(xe + d)^{\frac{3}{2}}d^2 - 35\sqrt{xe + d}\,d^3\right)Bcde^{(-3)} + 21\left(3\,(xe + d)^{\frac{5}{2}} - 10\,(xe + d)^{\frac{3}{2}}d + 15\sqrt{xe + d}\,d^2\right)Abe^{(-1)} + 9\left(5\,(xe + d)^{\frac{7}{2}} - 21\,(xe + d)^{\frac{5}{2}}d + 35\,(xe + d)^{\frac{3}{2}}d^2 - 35\sqrt{xe + d}\,d^3\right)Bbe^{(-2)} + 9\left(5\,(xe + d)^{\frac{7}{2}} - 21\,(xe + d)^{\frac{5}{2}}d + 35\,(xe + d)^{\frac{3}{2}}d^2 - 35\sqrt{xe + d}\,d^3\right)Ace^{(-2)} + \left(35\,(xe + d)^{\frac{9}{2}} - 180\,(xe + d)^{\frac{7}{2}}d + 378\,(xe + d)^{\frac{5}{2}}d^2 - 420\,(xe + d)^{\frac{3}{2}}d^3 + 315\sqrt{xe + d}\,d^4\right)Bce^{(-3)}\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d*e^(-1) + 21*(3*(x*e
+ d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d*e^(-2) + 21
*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*d*e^
(-2) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*B*c*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*e^(-1) + 9*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b*e^(-2)
 + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 3
5*sqrt(x*e + d)*d^3)*A*c*e^(-2) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.04, size = 121, normalized size = 0.96

$$-\frac{2\,(ex + d)^{\frac{3}{2}}\left(-35Bc\,x^3e^3 - 45Ac\,e^3x^2 - 45Bb\,e^3x^2 + 30Bcd\,e^2x^2 - 63Ab\,e^3x + 36Acd\,e^2x + 36Bbd\,e^2x - 24Bc\,d^2ex + 42Abd\,e^2 - 24Ac\,d^2e - 24Bb\,d^2e + 16Bc\,d^3\right)}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x)
```

```
[Out] -2/315*(e*x+d)^(3/2)*(-35*B*c*e^3*x^3-45*A*c*e^3*x^2-45*B*b*e^3*x^2+30*B*c*
d*e^2*x^2-63*A*b*e^3*x+36*A*c*d*e^2*x+36*B*b*d*e^2*x-24*B*c*d^2*e*x+42*A*b*
d*e^2-24*A*c*d^2*e-24*B*b*d^2*e+16*B*c*d^3)/e^4
```

maxima [A] time = 0.51, size = 112, normalized size = 0.89

$$\frac{2\left(35\,(ex + d)^{\frac{9}{2}}Bc - 45\,(3\,Bcd - (Bb + Ac)e)(ex + d)^{\frac{7}{2}} + 63\left(3\,Bcd^2 + Abe^2 - 2\,(Bb + Ac)de\right)(ex + d)^{\frac{5}{2}} - 105\left(Bcd^3 + Abde^2 - (Bb + Ac)d^2e\right)(ex + d)^{\frac{3}{2}}\right)}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*B*c - 45*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^(7/2
) + 63*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(5/2) - 105*(B*c
*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.88

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{5\,e^4}+\frac{(d+e\,x)^{7/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{7\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{9/2}}{9\,e^4}-\frac{2\,d\,\left(A\,e-B\,d\right)\,\left(b\,e-c\,d\right)\,(d+e\,x)^{3/2}}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(5*e^4) +
 ((d + e*x)^(7/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(7*e^4) + (2*B*c*(d + e*x)
^(9/2))/(9*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 4.18, size = 146, normalized size = 1.16

$$\frac{2\left(\frac{Bc(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}(Ace+Bbe-3Bcd)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(Abe^2-2Acde-2Bbde+3Bcd^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(-Abde^2+Acd^2e+Bbd^2e-Bcd^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*(c*x**2+b*x),x)
```

```
[Out] 2*(B*c*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(A*c*e + B*b*e - 3*B*c*
d)/(7*e**3) + (d + e*x)**(5/2)*(A*b*e**2 - 2*A*c*d*e - 2*B*b*d*e + 3*B*c*d*
*2)/(5*e**3) + (d + e*x)**(3/2)*(-A*b*d*e**2 + A*c*d**2*e + B*b*d**2*e - B*
c*d**3)/(3*e**3))/e
```

3.1072 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=124

$$-\frac{2(d+ex)^{5/2}(-Ace-bBe+3Bcd)}{5e^4}+\frac{2(d+ex)^{3/2}(Bd(3cd-2be)-Ae(2cd-be))}{3e^4}-\frac{2d\sqrt{d+ex}\,(Bd-Ae)(cd-be)}{e^4}+\dots$$

Rubi [A] time = 0.08, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{5/2}(-Ace-bBe+3Bcd)}{5e^4}+\frac{2(d+ex)^{3/2}(Bd(3cd-2be)-Ae(2cd-be))}{3e^4}-\frac{2d\sqrt{d+ex}\,(Bd-Ae)(cd-be)}{e^4}+\frac{2Bc(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*Sqrt[d + e*x])/e^4 + (2*(B*d*(3*c*d - 2*b*e)
- A*e*(2*c*d - b*e))*(d + e*x)^(3/2))/(3*e^4) - (2*(3*B*c*d - b*B*e - A*c*e
)*(d + e*x)^(5/2))/(5*e^4) + (2*B*c*(d + e*x)^(7/2))/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{d+ex}}\,dx=\int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3\sqrt{d+ex}}+\frac{(Bd(3cd-2be)-Ae(2cd-be))\sqrt{d+ex}}{e^3}+\frac{(-3Bcd+b\dots}{}\right.$$

$$=-\frac{2d(Bd-Ae)(cd-be)\sqrt{d+ex}}{e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+ex)^{3/2}}{3e^4}-\frac{2(3\dots}{}$$

Mathematica [A] time = 0.09, size = 113, normalized size = 0.91

$$\frac{2\sqrt{d+ex}\left(7Ae\left(5be(ex-2d)+c\left(8d^2-4dex+3e^2x^2\right)\right)+B\left(7be\left(8d^2-4dex+3e^2x^2\right)-3c\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)\right)\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(7*A*e*(5*b*e*(-2*d + e*x) + c*(8*d^2 - 4*d*e*x + 3*e^2*x^
2)) + B*(7*b*e*(8*d^2 - 4*d*e*x + 3*e^2*x^2) - 3*c*(16*d^3 - 8*d^2*e*x + 6*
d*e^2*x^2 - 5*e^3*x^3))))/(105*e^4)
```

IntegrateAlgebraic [A] time = 0.08, size = 141, normalized size = 1.14

$$\frac{2\sqrt{d+ex}\left(35Abe^2(d+ex)-105Abde^2+105Acd^2e-70Acde(d+ex)+21Ace(d+ex)^2+105bBd^2e-70bBde(d+ex)+21bBe(d+ex)^2-105Bcd^3+105Bcd^2(d+ex)-63Bcd(d+ex)^2+15Bc(d+ex)^3\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-105*B*c*d^3 + 105*b*B*d^2*e + 105*A*c*d^2*e - 105*A*b*d*
e^2 + 105*B*c*d^2*(d + e*x) - 70*b*B*d*e*(d + e*x) - 70*A*c*d*e*(d + e*x) +
 35*A*b*e^2*(d + e*x) - 63*B*c*d*(d + e*x)^2 + 21*b*B*e*(d + e*x)^2 + 21*A*
c*e*(d + e*x)^2 + 15*B*c*(d + e*x)^3))/(105*e^4)
```

fricas [A] time = 0.40, size = 108, normalized size = 0.87

$$\frac{2\left(15\,Bce^3x^3-48\,Bcd^3-70\,Abde^2+56\,(Bb+Ac)d^2e-3\left(6\,Bcde^2-7\,(Bb+Ac)e^3\right)x^2+\left(24\,Bcd^2e+35\,Abe^3-28\,(Bb+Ac)de^2\right)x\right)\sqrt{ex+d}}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*e^3*x^3 - 48*B*c*d^3 - 70*A*b*d*e^2 + 56*(B*b + A*c)*d^2*e -
3*(6*B*c*d*e^2 - 7*(B*b + A*c)*e^3)*x^2 + (24*B*c*d^2*e + 35*A*b*e^3 - 28*(
B*b + A*c)*d*e^2)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.18, size = 167, normalized size = 1.35

$$\frac{2}{105}\left(35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Abe^{(-1)}+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Bbe^{(-2)}+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Ace^{(-2)}+3\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bce^{(-3)}\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*e^(-1) + 7*(3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*e^(-2) + 7*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*e^(-2) + 3*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.05, size = 121, normalized size = 0.98

$$-\frac{2\left(-15Bc\,x^3e^3-21Ac\,e^3x^2-21Bb\,e^3x^2+18Bcd\,e^2x^2-35Ab\,e^3x+28Acd\,e^2x+28Bbd\,e^2x-24Bc\,d^2ex+70Abd\,e^2-56Ac\,d^2e-56Bb\,d^2e+48Bc\,d^3\right)\sqrt{ex+d}}{105e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x)
```

```
[Out] -2/105*(-15*B*c*e^3*x^3-21*A*c*e^3*x^2-21*B*b*e^3*x^2+18*B*c*d*e^2*x^2-35*A
*b*e^3*x+28*A*c*d*e^2*x+28*B*b*d*e^2*x-24*B*c*d^2*e*x+70*A*b*d*e^2-56*A*c*d
^2*e-56*B*b*d^2*e+48*B*c*d^3)*(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.60, size = 112, normalized size = 0.90

$$\frac{2\left(15\,(ex+d)^{\frac{7}{2}}Bc-21\,(3\,Bcd-(Bb+Ac)e)(ex+d)^{\frac{5}{2}}+35\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)(ex+d)^{\frac{3}{2}}-105\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)\sqrt{ex+d}\right)}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(15*(e*x + d)^(7/2)*B*c - 21*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^(5/2
) + 35*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(3/2) - 105*(B*c
*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.90

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{3\,e^4}+\frac{(d+e\,x)^{5/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{5\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{7/2}}{7\,e^4}-\frac{2\,d\,\left(A\,e-B\,d\right)\,\left(b\,e-c\,d\right)\,\sqrt{d+e\,x}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(3*e^4) +
 ((d + e*x)^(5/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(5*e^4) + (2*B*c*(d + e*x)
^(7/2))/(7*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 47.60, size = 430, normalized size = 3.47

$$\begin{cases} \frac{-\frac{2Abd\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{2Ab\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{2Acd\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{2Ac\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Bbd\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{2Bb\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Bcd\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^3}-\frac{2Bc\left(\frac{d^4}{\sqrt{d+ex}}+4d^3\sqrt{d+ex}-2d^2(d+ex)^{\frac{3}{2}}+\frac{4d(d+ex)^{\frac{5}{2}}}{5}-\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}}{e} & \text{for } e \neq 0 \\ \frac{\frac{Abx^2}{2}+\frac{Bcx^4}{4}+\frac{x^3(Ac+Bb)}{3}}{\sqrt{d}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 2*A*b*(d**2/sqr
t(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 2*A*c*d*(d**2/sqrt
(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 2*A*c*(-d**3/sqr
t(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5
)/e**2 - 2*B*b*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)
/3)/e**2 - 2*B*b*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)*
*(3/2) - (d + e*x)**(5/2)/5)/e**2 - 2*B*c*d*(-d**3/sqrt(d + e*x) - 3*d**2*s
qrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 2*B*c*(d**4/
sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e
*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), ((A*b*x**2/2 + B*c*x
**4/4 + x**3*(A*c + B*b)/3)/sqrt(d), True))
```

3.1073 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=122

$$-\frac{2(d+ex)^{3/2}(-Ace-bBe+3Bcd)}{3e^4}+\frac{2\sqrt{d+ex}\,(Bd(3cd-2be)-Ae(2cd-be))}{e^4}+\frac{2d(Bd-Ae)(cd-be)}{e^4\sqrt{d+ex}}+\frac{2Bc(d-}{5e}$$

Rubi [A] time = 0.08, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{3/2}(-Ace-bBe+3Bcd)}{3e^4}+\frac{2\sqrt{d+ex}\,(Bd(3cd-2be)-Ae(2cd-be))}{e^4}+\frac{2d(Bd-Ae)(cd-be)}{e^4\sqrt{d+ex}}+\frac{2Bc(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*d*(B*d - A*e)*(c*d - b*e))/(e^4*Sqrt[d + e*x]) + (2*(B*d*(3*c*d - 2*b*e)
 - A*e*(2*c*d - b*e))*Sqrt[d + e*x])/e^4 - (2*(3*B*c*d - b*B*e - A*c*e)*(d
+ e*x)^(3/2))/(3*e^4) + (2*B*c*(d + e*x)^(5/2))/(5*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{3/2}}\,dx=\int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^{3/2}}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3\sqrt{d+ex}}+\frac{(-3Bcd+bBe+Ac}{e^3}\right.$$

$$=\frac{2d(Bd-Ae)(cd-be)}{e^4\sqrt{d+ex}}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))\sqrt{d+ex}}{e^4}-\frac{2(3Bcd-bB}{}$$

Mathematica [A] time = 0.05, size = 110, normalized size = 0.90

$$\frac{2\left(5Ae\left(3be(2d+ex)+c\left(-8d^2-4dex+e^2x^2\right)\right)+B\left(5be\left(-8d^2-4dex+e^2x^2\right)+3c\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*A*e*(3*b*e*(2*d + e*x) + c*(-8*d^2 - 4*d*e*x + e^2*x^2)) + B*(5*b*e*(
-8*d^2 - 4*d*e*x + e^2*x^2) + 3*c*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x
^3))))/(15*e^4*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.08, size = 141, normalized size = 1.16

$$\frac{2\left(15Abe^2(d+ex)+15Abde^2-15Acd^2e-30Acde(d+ex)+5Ace(d+ex)^2-15bBd^2e-30bBde(d+ex)+5bBe(d+ex)^2+15Bcd^3+45Bcd^2(d+ex)-15Bcd(d+ex)^2+3Bc(d+ex)^3\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(15*B*c*d^3 - 15*b*B*d^2*e - 15*A*c*d^2*e + 15*A*b*d*e^2 + 45*B*c*d^2*(d
 + e*x) - 30*b*B*d*e*(d + e*x) - 30*A*c*d*e*(d + e*x) + 15*A*b*e^2*(d + e*x
) - 15*B*c*d*(d + e*x)^2 + 5*b*B*e*(d + e*x)^2 + 5*A*c*e*(d + e*x)^2 + 3*B*
c*(d + e*x)^3))/(15*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.41, size = 118, normalized size = 0.97

$$\frac{2\left(3\,Bce^3x^3+48\,Bcd^3+30\,Abde^2-40\,(Bb+Ac)d^2e-\left(6\,Bcde^2-5\,(Bb+Ac)e^3\right)x^2+\left(24\,Bcd^2e+15\,Abe^3-20\,(Bb+Ac)de^2\right)x\right)\sqrt{ex+d}}{15\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*e^3*x^3 + 48*B*c*d^3 + 30*A*b*d*e^2 - 40*(B*b + A*c)*d^2*e - (6
*B*c*d*e^2 - 5*(B*b + A*c)*e^3)*x^2 + (24*B*c*d^2*e + 15*A*b*e^3 - 20*(B*b
+ A*c)*d*e^2)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.18, size = 167, normalized size = 1.37

$$\frac{2}{15}\left(3\,(xe+d)^{\frac{5}{2}}Bce^{16}-15\,(xe+d)^{\frac{3}{2}}Bcde^{16}+45\,\sqrt{xe+d}\,Bcd^2e^{16}+5\,(xe+d)^{\frac{3}{2}}Bbe^{17}+5\,(xe+d)^{\frac{3}{2}}Ace^{17}-30\,\sqrt{xe+d}\,Bbde^{17}-30\,\sqrt{xe+d}\,Acde^{17}+15\,\sqrt{xe+d}\,Abe^{18}\right)e^{(-20)}+\frac{2\left(Bcd^3-Bbd^2e-Acd^2e+Abde^2\right)e^{(-4)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c*e^16 - 15*(x*e + d)^(3/2)*B*c*d*e^16 + 45*sqrt(
x*e + d)*B*c*d^2*e^16 + 5*(x*e + d)^(3/2)*B*b*e^17 + 5*(x*e + d)^(3/2)*A*c*
e^17 - 30*sqrt(x*e + d)*B*b*d*e^17 - 30*sqrt(x*e + d)*A*c*d*e^17 + 15*sqrt(
x*e + d)*A*b*e^18)*e^(-20) + 2*(B*c*d^3 - B*b*d^2*e - A*c*d^2*e + A*b*d*e^2
)*e^(-4)/sqrt(x*e + d)
```

maple [A] time = 0.06, size = 121, normalized size = 0.99

$$\frac{\frac{2}{5}Bc\,x^3e^3+\frac{2}{3}Ac\,e^3x^2+\frac{2}{3}Bb\,e^3x^2-\frac{4}{5}Bcd\,e^2x^2+2Ab\,e^3x-\frac{8}{3}Acd\,e^2x-\frac{8}{3}Bbd\,e^2x+\frac{16}{5}Bc\,d^2ex+4Abd\,e^2-\frac{16}{3}Ac\,d^2e-\frac{16}{3}Bb\,d^2e+\frac{32}{5}Bc\,d^3}{\sqrt{ex+d}\;e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x)
```

```
[Out] 2/15*(3*B*c*e^3*x^3+5*A*c*e^3*x^2+5*B*b*e^3*x^2-6*B*c*d*e^2*x^2+15*A*b*e^3*
x-20*A*c*d*e^2*x-20*B*b*d*e^2*x+24*B*c*d^2*e*x+30*A*b*d*e^2-40*A*c*d^2*e-40
*B*b*d^2*e+48*B*c*d^3)/(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.57, size = 120, normalized size = 0.98

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc-5\,(3\,Bcd-(Bb+Ac)e)(ex+d)^{\frac{3}{2}}+15\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)\sqrt{ex+d}}{e^3}+\frac{15\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)}{\sqrt{ex+d}\,e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c - 5*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^(3/2)
+ 15*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*sqrt(e*x + d))/e^3 + 15*(B*c
*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 1.55, size = 124, normalized size = 1.02

$$\frac{\sqrt{d+e\,x}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{e^4}+\frac{{\left(d+e\,x\right)}^{3/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{3\,e^4}+\frac{2\,B\,c\,d^3+2\,A\,b\,d\,e^2-2\,A\,c\,d^2\,e-2\,B\,b\,d^2\,e}{e^4\,\sqrt{d+e\,x}}+\frac{2\,B\,c\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/e^4 + ((d
 + e*x)^(3/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(3*e^4) + (2*B*c*d^3 + 2*A*b*d
*e^2 - 2*A*c*d^2*e - 2*B*b*d^2*e)/(e^4*(d + e*x)^(1/2)) + (2*B*c*(d + e*x)^
(5/2))/(5*e^4)
```

sympy [A] time = 24.16, size = 126, normalized size = 1.03

$$\frac{2Bc(d+ex)^{\frac{5}{2}}}{5e^4}-\frac{2d(-Ae+Bd)(be-cd)}{e^4\sqrt{d+ex}}+\frac{(d+ex)^{\frac{3}{2}}(2Ace+2Bbe-6Bcd)}{3e^4}+\frac{\sqrt{d+ex}\left(2Abe^2-4Acde-4Bbde+6Bcd^2\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c*(d + e*x)**(5/2)/(5*e**4) - 2*d*(-A*e + B*d)*(b*e - c*d)/(e**4*sqrt(d
 + e*x)) + (d + e*x)**(3/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d)/(3*e**4) + sqrt(d
 + e*x)*(2*A*b*e**2 - 4*A*c*d*e - 4*B*b*d*e + 6*B*c*d**2)/e**4
```

3.1074 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=122

$$-\frac{2\sqrt{d+ex}\,(-Ace-bBe+3Bcd)}{e^4}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{e^4\sqrt{d+ex}}+\frac{2d(Bd-Ae)(cd-be)}{3e^4(d+ex)^{3/2}}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

Rubi [A] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2\sqrt{d+ex}\,(-Ace-bBe+3Bcd)}{e^4}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{e^4\sqrt{d+ex}}+\frac{2d(Bd-Ae)(cd-be)}{3e^4(d+ex)^{3/2}}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*d*(B*d - A*e)*(c*d - b*e))/(3*e^4*(d + e*x)^(3/2)) - (2*(B*d*(3*c*d - 2*
b*e) - A*e*(2*c*d - b*e)))/(e^4*Sqrt[d + e*x]) - (2*(3*B*c*d - b*B*e - A*c*
e)*Sqrt[d + e*x])/e^4 + (2*B*c*(d + e*x)^(3/2))/(3*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{5/2}}\,dx = \int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^{5/2}}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^{3/2}}+\frac{-3Bcd+bBe+Ace}{e^3\sqrt{d+ex}}+\right.$$

$$=\frac{2d(Bd-Ae)(cd-be)}{3e^4(d+ex)^{3/2}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{e^4\sqrt{d+ex}}-\frac{2(3Bcd-bBe-Ace)\sqrt{d}}{e^4}$$

Mathematica [A] time = 0.05, size = 110, normalized size = 0.90

$$\frac{2\left(Ae\left(c\left(8d^2+12dex+3e^2x^2\right)-be(2d+3ex)\right)+B\left(be\left(8d^2+12dex+3e^2x^2\right)+c\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)\right)\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(A*e*(-(b*e*(2*d + 3*e*x)) + c*(8*d^2 + 12*d*e*x + 3*e^2*x^2)) + B*(b*e*
(8*d^2 + 12*d*e*x + 3*e^2*x^2) + c*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^
3*x^3))))/(3*e^4*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.09, size = 138, normalized size = 1.13

$$\frac{2\left(-3Abe^2(d+ex)+Abde^2-Acd^2e+6Acde(d+ex)+3Ace(d+ex)^2-bBd^2e+6bBde(d+ex)+3bBe(d+ex)^2+Bcd^3-9Bcd^2(d+ex)-9Bcd(d+ex)^2+Bc(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*c*d^3 - b*B*d^2*e - A*c*d^2*e + A*b*d*e^2 - 9*B*c*d^2*(d + e*x) + 6*b
*B*d*e*(d + e*x) + 6*A*c*d*e*(d + e*x) - 3*A*b*e^2*(d + e*x) - 9*B*c*d*(d +
 e*x)^2 + 3*b*B*e*(d + e*x)^2 + 3*A*c*e*(d + e*x)^2 + B*c*(d + e*x)^3))/(3*
e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.41, size = 128, normalized size = 1.05

$$\frac{2\left(Bce^3x^3 - 16\,Bcd^3 - 2\,Abde^2 + 8\,(Bb + Ac)d^2e - 3\left(2\,Bcde^2 - (Bb + Ac)e^3\right)x^2 - 3\left(8\,Bcd^2e + Abe^3 - 4\,(Bb + Ac)de^2\right)x\right)\sqrt{ex + d}}{3\left(e^6x^2 + 2\,de^5x + d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*e^3*x^3 - 16*B*c*d^3 - 2*A*b*d*e^2 + 8*(B*b + A*c)*d^2*e - 3*(2*B*
c*d*e^2 - (B*b + A*c)*e^3)*x^2 - 3*(8*B*c*d^2*e + A*b*e^3 - 4*(B*b + A*c)*d
*e^2)*x)*sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.18, size = 156, normalized size = 1.28

$$\frac{2}{3}\left((xe + d)^{\frac{3}{2}}Bce^8 - 9\sqrt{xe + d}\,Bcde^8 + 3\sqrt{xe + d}\,Bbe^9 + 3\sqrt{xe + d}\,Ace^9\right)e^{(-12)} - \frac{2\left(9\,(xe + d)Bcd^2 - Bcd^3 - 6\,(xe + d)Bbde - 6\,(xe + d)Acde + Bbd^2e + Acd^2e + 3\,(xe + d)Abe^2 - Abde^2\right)e^{(-4)}}{3\,(xe + d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*c*e^8 - 9*sqrt(x*e + d)*B*c*d*e^8 + 3*sqrt(x*e + d)*
B*b*e^9 + 3*sqrt(x*e + d)*A*c*e^9)*e^(-12) - 2/3*(9*(x*e + d)*B*c*d^2 - B*c
*d^3 - 6*(x*e + d)*B*b*d*e - 6*(x*e + d)*A*c*d*e + B*b*d^2*e + A*c*d^2*e +
3*(x*e + d)*A*b*e^2 - A*b*d*e^2)*e^(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 121, normalized size = 0.99

$$-\frac{2\left(-Bc\,x^3e^3 - 3Ac\,e^3x^2 - 3Bb\,e^3x^2 + 6Bcd\,e^2x^2 + 3Ab\,e^3x - 12Acd\,e^2x - 12Bbd\,e^2x + 24Bc\,d^2ex + 2Abd\,e^2 - 8Ac\,d^2e - 8Bb\,d^2e + 16Bc\,d^3\right)}{3\,(ex + d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3*(-B*c*e^3*x^3-3*A*c*e^3*x^2-3*B*b*e^3*x^2+6*B*c*d*e^2*x^2+3*A*b*e^3*x-
12*A*c*d*e^2*x-12*B*b*d*e^2*x+24*B*c*d^2*e*x+2*A*b*d*e^2-8*A*c*d^2*e-8*B*b*
d^2*e+16*B*c*d^3)/(e*x+d)^(3/2)/e^4
```

maxima [A] time = 0.64, size = 116, normalized size = 0.95

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}}Bc-3\,(3\,Bcd-(Bb+Ac)e)\sqrt{ex+d}}{e^3} + \frac{Bcd^3+Abde^2-(Bb+Ac)d^2e-3\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(((e*x + d)^(3/2)*B*c - 3*(3*B*c*d - (B*b + A*c)*e)*sqrt(e*x + d))/e^3
+ (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e - 3*(3*B*c*d^2 + A*b*e^2 - 2*(B*
b + A*c)*d*e)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 0.09, size = 137, normalized size = 1.12

$$\frac{2\,B\,c\,{\left(d+e\,x\right)}^3+2\,B\,c\,d^3+2\,A\,b\,d\,e^2-2\,A\,c\,d^2\,e-2\,B\,b\,d^2\,e-6\,A\,b\,e^2\,\left(d+e\,x\right)+6\,A\,c\,e\,{\left(d+e\,x\right)}^2+6\,B\,b\,e\,{\left(d+e\,x\right)}^2-18\,B\,c\,d\,{\left(d+e\,x\right)}^2-18\,B\,c\,d^2\,\left(d+e\,x\right)+12\,A\,c\,d\,e\,\left(d+e\,x\right)+12\,B\,b\,d\,e\,\left(d+e\,x\right)}{3\,e^4\,{\left(d+e\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*B*c*(d + e*x)^3 + 2*B*c*d^3 + 2*A*b*d*e^2 - 2*A*c*d^2*e - 2*B*b*d^2*e -
6*A*b*e^2*(d + e*x) + 6*A*c*e*(d + e*x)^2 + 6*B*b*e*(d + e*x)^2 - 18*B*c*d*
(d + e*x)^2 - 18*B*c*d^2*(d + e*x) + 12*A*c*d*e*(d + e*x) + 12*B*b*d*e*(d +
 e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.56, size = 539, normalized size = 4.42

$$\begin{cases} - \frac{4Abde^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{6Abe^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{16Acd^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{24Acde^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{6Ace^3x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{16Bbd^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{24Bbde^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{6Bbe^3x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{32Bcd^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{48Bcd^2ex}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{12Bcde^2x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{2Bce^3x^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} & \text{for } e \neq 0 \\ \frac{\frac{Abx^2}{2} + \frac{Acx^3}{3} + \frac{Bbx^3}{3} + \frac{Bcx^4}{4}}{d^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-4*A*b*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
- 6*A*b*e**3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 16*A*c*d
**2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*A*c*d*e**2*x/(
3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 6*A*c*e**3*x**2/(3*d*e**
4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 16*B*b*d**2*e/(3*d*e**4*sqrt(d
+ e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*B*b*d*e**2*x/(3*d*e**4*sqrt(d + e*x)
+ 3*e**5*x*sqrt(d + e*x)) + 6*B*b*e**3*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**
5*x*sqrt(d + e*x)) - 32*B*c*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d
+ e*x)) - 48*B*c*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
 - 12*B*c*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 2
*B*c*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)), Ne(e, 0))
, ((A*b*x**2/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4)/d**(5/2), True))
```

3.1075 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=122

$$\frac{2(-Ace-bBe+3Bcd)}{e^4\sqrt{d+ex}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{3e^4(d+ex)^{3/2}}+\frac{2d(Bd-Ae)(cd-be)}{5e^4(d+ex)^{5/2}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

Rubi [A] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2(-Ace-bBe+3Bcd)}{e^4\sqrt{d+ex}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{3e^4(d+ex)^{3/2}}+\frac{2d(Bd-Ae)(cd-be)}{5e^4(d+ex)^{5/2}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*d*(B*d - A*e)*(c*d - b*e))/(5*e^4*(d + e*x)^(5/2)) - (2*(B*d*(3*c*d - 2*
b*e) - A*e*(2*c*d - b*e)))/(3*e^4*(d + e*x)^(3/2)) + (2*(3*B*c*d - b*B*e -
A*c*e))/(e^4*Sqrt[d + e*x]) + (2*B*c*Sqrt[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{7/2}}\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^{7/2}}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^{5/2}}+\frac{-3Bcd+bBe+Ac}{e^3(d+ex)^{3/2}}\right.\\ &= \frac{2d(Bd-Ae)(cd-be)}{5e^4(d+ex)^{5/2}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{3e^4(d+ex)^{3/2}}+\frac{2(3Bcd-bBe-Ace)}{e^4\sqrt{d+ex}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 111, normalized size = 0.91

$$-\frac{2\left(Ae\left(be(2d+5ex)+c\left(8d^2+20dex+15e^2x^2\right)\right)+B\left(be\left(8d^2+20dex+15e^2x^2\right)-3c\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)\right)\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(A*e*(b*e*(2*d + 5*e*x) + c*(8*d^2 + 20*d*e*x + 15*e^2*x^2)) + B*(b*e*(
8*d^2 + 20*d*e*x + 15*e^2*x^2) - 3*c*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 +
5*e^3*x^3))))/(15*e^4*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.10, size = 141, normalized size = 1.16

$$\frac{2\left(-5Abe^2(d+ex)+3Abde^2-3Acd^2e+10Acde(d+ex)-15Ace(d+ex)^2-3bBd^2e+10bBde(d+ex)-15bBe(d+ex)^2+3Bcd^3-15Bcd^2(d+ex)+45Bcd(d+ex)^2+15Bc(d+ex)^3\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*B*c*d^3 - 3*b*B*d^2*e - 3*A*c*d^2*e + 3*A*b*d*e^2 - 15*B*c*d^2*(d + e
*x) + 10*b*B*d*e*(d + e*x) + 10*A*c*d*e*(d + e*x) - 5*A*b*e^2*(d + e*x) + 4
5*B*c*d*(d + e*x)^2 - 15*b*B*e*(d + e*x)^2 - 15*A*c*e*(d + e*x)^2 + 15*B*c*
(d + e*x)^3))/(15*e^4*(d + e*x)^(5/2))
```

fricas [A] time = 0.41, size = 141, normalized size = 1.16

$$\frac{2\left(15\,Bce^3x^3+48\,Bcd^3-2\,Abde^2-8\,(Bb+Ac)d^2e+15\left(6\,Bcde^2-(Bb+Ac)e^3\right)x^2+5\left(24\,Bcd^2e-Abe^3-4\,(Bb+Ac)de^2\right)x\right)\sqrt{ex+d}}{15\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*c*e^3*x^3 + 48*B*c*d^3 - 2*A*b*d*e^2 - 8*(B*b + A*c)*d^2*e + 15*
(6*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 5*(24*B*c*d^2*e - A*b*e^3 - 4*(B*b +
A*c)*d*e^2)*x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4
)
```

giac [A] time = 0.19, size = 152, normalized size = 1.25

$$2\,\sqrt{xe+d}\,Bce^{(-4)}+\frac{2\left(45\,(xe+d)^2Bcd-15\,(xe+d)Bcd^2+3\,Bcd^3-15\,(xe+d)^2Bbe-15\,(xe+d)^2Ace+10\,(xe+d)Bbde+10\,(xe+d)Acde-3\,Bbd^2e-3\,Acd^2e-5\,(xe+d)Abe^2+3\,Abde^2\right)e^{(-4)}}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*c*e^(-4) + 2/15*(45*(x*e + d)^2*B*c*d - 15*(x*e + d)*B*c*
d^2 + 3*B*c*d^3 - 15*(x*e + d)^2*B*b*e - 15*(x*e + d)^2*A*c*e + 10*(x*e + d
)*B*b*d*e + 10*(x*e + d)*A*c*d*e - 3*B*b*d^2*e - 3*A*c*d^2*e - 5*(x*e + d)*
A*b*e^2 + 3*A*b*d*e^2)*e^(-4)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 121, normalized size = 0.99

$$-\frac{2\left(-15Bc\,x^3e^3+15Ac\,e^3x^2+15Bb\,e^3x^2-90Bcd\,e^2x^2+5Ab\,e^3x+20Acd\,e^2x+20Bbd\,e^2x-120Bc\,d^2ex+2Abd\,e^2+8Ac\,d^2e+8Bb\,d^2e-48Bc\,d^3\right)}{15\,(ex+d)^{\frac{5}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-15*B*c*e^3*x^3+15*A*c*e^3*x^2+15*B*b*e^3*x^2-90*B*c*d*e^2*x^2+5*A*b
*e^3*x+20*A*c*d*e^2*x+20*B*b*d*e^2*x-120*B*c*d^2*e*x+2*A*b*d*e^2+8*A*c*d^2*
e+8*B*b*d^2*e-48*B*c*d^3)/(e*x+d)^(5/2)/e^4
```

maxima [A] time = 0.58, size = 117, normalized size = 0.96

$$\frac{2\left(\frac{15\,\sqrt{ex+d}\,Bc}{e^3}+\frac{3\,Bcd^3+3\,Abde^2-3\,(Bb+Ac)d^2e+15\,(3\,Bcd-(Bb+Ac)e)(ex+d)^2-5\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)(ex+d)}{(ex+d)^{\frac{5}{2}}\,e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*(15*sqrt(e*x + d)*B*c/e^3 + (3*B*c*d^3 + 3*A*b*d*e^2 - 3*(B*b + A*c)*d
^2*e + 15*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^2 - 5*(3*B*c*d^2 + A*b*e^2 -
2*(B*b + A*c)*d*e)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 0.09, size = 120, normalized size = 0.98

$$-\frac{2\,\left(2\,A\,b\,d\,e^2-48\,B\,c\,d^3+8\,A\,c\,d^2\,e+8\,B\,b\,d^2\,e+5\,A\,b\,e^3\,x+15\,A\,c\,e^3\,x^2+15\,B\,b\,e^3\,x^2-15\,B\,c\,e^3\,x^3-90\,B\,c\,d\,e^2\,x^2+20\,A\,c\,d\,e^2\,x+20\,B\,b\,d\,e^2\,x-120\,B\,c\,d^2\,e\,x\right)}{15\,e^4\,{\left(d+e\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(2*A*b*d*e^2 - 48*B*c*d^3 + 8*A*c*d^2*e + 8*B*b*d^2*e + 5*A*b*e^3*x + 1
5*A*c*e^3*x^2 + 15*B*b*e^3*x^2 - 15*B*c*e^3*x^3 - 90*B*c*d*e^2*x^2 + 20*A*c
*d*e^2*x + 20*B*b*d*e^2*x - 120*B*c*d^2*e*x))/(15*e^4*(d + e*x)^(5/2))
```

sympy [A] time = 3.43, size = 784, normalized size = 6.43

$$\begin{cases} -\frac{4Abde^2}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{10Abe^3x}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{16Acd^2e}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{40Acde^2x}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{30Ace^3x^2}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{16Bbd^2e}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{40Bbde^2x}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{30Bbe^3x^2}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} + \frac{96Bcd^3}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} + \frac{240Bcd^2ex}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} + \frac{180Bcde^2x^2}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} + \frac{30Bce^3x^3}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} & \text{for } e \neq 0 \\ \frac{\frac{Abx^2}{2}+\frac{Acx^3}{3}+\frac{Bbx^3}{3}+\frac{Bcx^4}{4}}{d^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-4*A*b*d*e**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d +
 e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 10*A*b*e**3*x/(15*d**2*e**4*sqrt(d +
e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 16*A*c*d**
2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*
sqrt(d + e*x)) - 40*A*c*d*e**2*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*
sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 30*A*c*e**3*x**2/(15*d**2*e**
4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) -
 16*B*b*d**2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15
*e**6*x**2*sqrt(d + e*x)) - 40*B*b*d*e**2*x/(15*d**2*e**4*sqrt(d + e*x) + 3
0*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 30*B*b*e**3*x**2/(
15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(
d + e*x)) + 96*B*c*d**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d +
e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 240*B*c*d**2*e*x/(15*d**2*e**4*sqrt(d
+ e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 180*B*c*
d*e**2*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e*
*6*x**2*sqrt(d + e*x)) + 30*B*c*e**3*x**3/(15*d**2*e**4*sqrt(d + e*x) + 30*
d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*b*x**2
/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4)/d**(7/2), True))
```

3.1076 $\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{15/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{15e^6}+\frac{2(d+ex)^{13/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e\right.\right.}{13e^6}$$

Rubi [A] time = 0.21, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{15/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{15e^6}+\frac{2(d+ex)^{13/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{13e^6}-\frac{2d^2(d+ex)^{9/2}(Bd-Ae)(cd-be)^2}{9e^6}-\frac{2c(d+ex)^{17/2}(-Ace-2bBe+5Bcd)}{17e^6}+\frac{2d(d+ex)^{11/2}(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{11e^6}+\frac{2Bc^2(d+ex)^{19/2}}{19e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(9/2))/(9*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(11/2))/(11*e^6) +
 (2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e +
 3*b^2*e^2))*(d + e*x)^(13/2))/(13*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10
*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(15/2))/(15*e^6) - (2*c*(5*B*c*d
 - 2*b*B*e - A*c*e)*(d + e*x)^(17/2))/(17*e^6) + (2*B*c^2*(d + e*x)^(19/2))
/(19*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)^2\,dx=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{7/2}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae}{e^5}\right.$$

$$=-\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{9/2}}{9e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2}{11e^6}$$

Mathematica [A] time = 0.23, size = 273, normalized size = 1.02

$$\frac{2(d+ex)^{9/2}\left(19Ae\left(85b^2e^2\left(8d^2-36dex+99e^2x^2\right)+34bce\left(-16d^3+72d^2ex-198de^2x^2+429e^3x^3\right)+c^2\left(128d^4-576d^3ex+1584d^2e^2x^2-3432de^3x^3+6435e^4x^4\right)\right)+B\left(323b^2e^2\left(-16d^3+72d^2ex-198de^2x^2+429e^3x^3\right)+38bce\left(128d^4-576d^3ex+1584d^2e^2x^2-3432de^3x^3+6435e^4x^4\right)-5c^2\left(256d^5-1152d^4ex+3168d^3e^2x^2-6864d^2e^3x^3+12870de^4x^4-21879e^5x^5\right)\right)\right)}{2078505e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(19*A*e*(85*b^2*e^2*(8*d^2 - 36*d*e*x + 99*e^2*x^2) + 34
*b*c*e*(-16*d^3 + 72*d^2*e*x - 198*d*e^2*x^2 + 429*e^3*x^3) + c^2*(128*d^4
- 576*d^3*e*x + 1584*d^2*e^2*x^2 - 3432*d*e^3*x^3 + 6435*e^4*x^4)) + B*(323
*b^2*e^2*(-16*d^3 + 72*d^2*e*x - 198*d*e^2*x^2 + 429*e^3*x^3) + 38*b*c*e*(1
28*d^4 - 576*d^3*e*x + 1584*d^2*e^2*x^2 - 3432*d*e^3*x^3 + 6435*e^4*x^4) -
5*c^2*(256*d^5 - 1152*d^4*e*x + 3168*d^3*e^2*x^2 - 6864*d^2*e^3*x^3 + 12870
*d*e^4*x^4 - 21879*e^5*x^5))))/(2078505*e^6)
```

IntegrateAlgebraic [A] time = 0.19, size = 399, normalized size = 1.49

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-230945*B*c^2*d^5 + 461890*b*B*c*d^4*e + 230945*A*c^2*d
^4*e - 230945*b^2*B*d^3*e^2 - 461890*A*b*c*d^3*e^2 + 230945*A*b^2*d^2*e^3 +
 944775*B*c^2*d^4*(d + e*x) - 1511640*b*B*c*d^3*e*(d + e*x) - 755820*A*c^2*
d^3*e*(d + e*x) + 566865*b^2*B*d^2*e^2*(d + e*x) + 1133730*A*b*c*d^2*e^2*(d
 + e*x) - 377910*A*b^2*d*e^3*(d + e*x) - 1598850*B*c^2*d^3*(d + e*x)^2 + 19
18620*b*B*c*d^2*e*(d + e*x)^2 + 959310*A*c^2*d^2*e*(d + e*x)^2 - 479655*b^2
*B*d*e^2*(d + e*x)^2 - 959310*A*b*c*d*e^2*(d + e*x)^2 + 159885*A*b^2*e^3*(d
 + e*x)^2 + 1385670*B*c^2*d^2*(d + e*x)^3 - 1108536*b*B*c*d*e*(d + e*x)^3 -
 554268*A*c^2*d*e*(d + e*x)^3 + 138567*b^2*B*e^2*(d + e*x)^3 + 277134*A*b*c
*e^2*(d + e*x)^3 - 611325*B*c^2*d*(d + e*x)^4 + 244530*b*B*c*e*(d + e*x)^4
+ 122265*A*c^2*e*(d + e*x)^4 + 109395*B*c^2*(d + e*x)^5))/(2078505*e^6)
```

fricas [B] time = 0.42, size = 562, normalized size = 2.10

$$\frac{2\left(109395\,Bc^{2}e^{9}x^{9}-1280\,Bc^{2}d^{9}+12920\,Ab^{2}d^{6}e^{3}+2432\,(2\,Bbc+Ac^{2})d^{8}e-5168\,(Bb^{2}+2\,Abc)d^{7}e^{2}+6435\,(58\,Bc^{2}de^{8}+19\,(2\,Bbc+Ac^{2})e^{9})x^{8}+429\,(1010\,Bc^{2}d^{2}e^{7}+988\,(2\,Bbc+Ac^{2})de^{8}+323\,(Bb^{2}+2\,Abc)e^{9})x^{7}+33\,(5240\,Bc^{2}d^{3}e^{6}+4845\,Ab^{2}e^{9}+15238\,(2\,Bbc+Ac^{2})d^{2}e^{7}+14858\,(Bb^{2}+2\,Abc)de^{8})x^{6}+9\,(35\,Bc^{2}d^{4}e^{5}+64600\,Ab^{2}de^{8}+23028\,(2\,Bbc+Ac^{2})d^{3}e^{6}+66538\,(Bb^{2}+2\,Abc)d^{2}e^{7})x^{5}-5\,(70\,Bc^{2}d^{5}e^{4}-147934\,Ab^{2}d^{2}e^{7}-133\,(2\,Bbc+Ac^{2})d^{4}e^{5}-51680\,(Bb^{2}+2\,Abc)d^{3}e^{6})x^{4}+5\,(80\,Bc^{2}d^{6}e^{3}+68476\,Ab^{2}d^{3}e^{6}-152\,(2\,Bbc+Ac^{2})d^{5}e^{4}+323\,(Bb^{2}+2\,Abc)d^{4}e^{5})x^{3}-3\,(160\,Bc^{2}d^{7}e^{2}-1615\,Ab^{2}d^{4}e^{5}-304\,(2\,Bbc+Ac^{2})d^{6}e^{3}+646\,(Bb^{2}+2\,Abc)d^{5}e^{4})x^{2}+4\,(160\,Bc^{2}d^{8}e-1615\,Ab^{2}d^{5}e^{4}-304\,(2\,Bbc+Ac^{2})d^{7}e^{2}+646\,(Bb^{2}+2\,Abc)d^{6}e^{3})x\right)\sqrt{ex+d}}{2078505\,e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*c^2*e^9*x^9 - 1280*B*c^2*d^9 + 12920*A*b^2*d^6*e^3 + 24
32*(2*B*b*c + A*c^2)*d^8*e - 5168*(B*b^2 + 2*A*b*c)*d^7*e^2 + 6435*(58*B*c^
2*d*e^8 + 19*(2*B*b*c + A*c^2)*e^9)*x^8 + 429*(1010*B*c^2*d^2*e^7 + 988*(2*
B*b*c + A*c^2)*d*e^8 + 323*(B*b^2 + 2*A*b*c)*e^9)*x^7 + 33*(5240*B*c^2*d^3*
e^6 + 4845*A*b^2*e^9 + 15238*(2*B*b*c + A*c^2)*d^2*e^7 + 14858*(B*b^2 + 2*A
*b*c)*d*e^8)*x^6 + 9*(35*B*c^2*d^4*e^5 + 64600*A*b^2*d*e^8 + 23028*(2*B*b*c
 + A*c^2)*d^3*e^6 + 66538*(B*b^2 + 2*A*b*c)*d^2*e^7)*x^5 - 5*(70*B*c^2*d^5*
e^4 - 147934*A*b^2*d^2*e^7 - 133*(2*B*b*c + A*c^2)*d^4*e^5 - 51680*(B*b^2 +
 2*A*b*c)*d^3*e^6)*x^4 + 5*(80*B*c^2*d^6*e^3 + 68476*A*b^2*d^3*e^6 - 152*(2
*B*b*c + A*c^2)*d^5*e^4 + 323*(B*b^2 + 2*A*b*c)*d^4*e^5)*x^3 - 3*(160*B*c^2
*d^7*e^2 - 1615*A*b^2*d^4*e^5 - 304*(2*B*b*c + A*c^2)*d^6*e^3 + 646*(B*b^2
+ 2*A*b*c)*d^5*e^4)*x^2 + 4*(160*B*c^2*d^8*e - 1615*A*b^2*d^5*e^4 - 304*(2*
B*b*c + A*c^2)*d^7*e^2 + 646*(B*b^2 + 2*A*b*c)*d^6*e^3)*x)*sqrt(e*x + d)/e^
6
```

giac [B] time = 0.34, size = 2710, normalized size = 10.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/14549535*(969969*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
+ d)*d^2)*A*b^2*d^4*e^(-2) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)
*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^4*e^(-3) + 8314
02*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*A*b*c*d^4*e^(-3) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*B*b*c*d^4*e^(-4) + 46189*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*A*c^2*d^4*e^(-4) + 20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9
/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)
^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*d^4*e^(-5) + 1662804*(5*(x*e + d)
^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d
^3)*A*b^2*d^3*e^(-2) + 184756*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*B*b^2*d^3*e^(-3) + 369512*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*
```

b*c*d^3*e^(-3) + 167960*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*c*d^3*e^(-4) + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c^2*d^3*e^(-4) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*c^2*d^3*e^(-5) + 277134*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*d^2*e^(-2) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^2*d^2*e^(-3) + 251940*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*c*d^2*e^(-3) + 58140*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b*c*d^2*e^(-4) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*c^2*d^2*e^(-4) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*c^2*d^2*e^(-5) + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*d*e^(-2) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^2*d*e^(-3) + 38760*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b*c*d*e^(-3) + 18088*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b*c*d*e^(-4) + 9044*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*c^2*d*e^(-4) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*c^2*d*e^(-5) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^2*e^(-2) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^2*e^(-3) + 4522*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b*c*e^(-3) + 266*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b*c*e^(-4) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*c^2*e^(-4) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4

```
 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e
 + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*
c^2*e^(-5))*e^(-1)
```

maple [A] time = 0.07, size = 341, normalized size = 1.28

$$\frac{2 (ex+d)^{\frac{9}{2}} \left(109395B c^{2} x^{5} e^{5}+122265A c^{2} e^{5} x^{4}+244530Bbc e^{5} x^{4}-64350B c^{2} d e^{4} x^{4}+277134Abc e^{5} x^{3}-65208A c^{2} d e^{4} x^{3}+138567B b^{2} e^{5} x^{3}-130416Bbcd e^{4} x^{3}+34320B c^{2} d^{2} e^{3} x^{3}+159885A b^{2} e^{5} x^{2}-127908Abcd e^{4} x^{2}+30096A c^{2} d^{2} e^{3} x^{2}-63954B b^{2} d e^{4} x^{2}+60192Bbc d^{2} e^{3} x^{2}-15840B c^{2} d^{3} e^{2} x^{2}-58140A b^{2} d e^{4} x+46512Abc d^{2} e^{3} x-10944A c^{2} d^{3} e^{2} x+23256B b^{2} d^{2} e^{3} x-21888Bbc d^{3} e^{2} x+5760B c^{2} d^{4} e x+12920A b^{2} d^{2} e^{3}-10336Abc d^{3} e^{2}+2432A c^{2} d^{4} e-5168B b^{2} d^{3} e^{2}+4864Bbc d^{4} e-1280B c^{2} d^{5}\right)}{2078505e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/2078505*(e*x+d)^(9/2)*(109395*B*c^2*e^5*x^5+122265*A*c^2*e^5*x^4+244530*B
*b*c*e^5*x^4-64350*B*c^2*d*e^4*x^4+277134*A*b*c*e^5*x^3-65208*A*c^2*d*e^4*x
^3+138567*B*b^2*e^5*x^3-130416*B*b*c*d*e^4*x^3+34320*B*c^2*d^2*e^3*x^3+1598
85*A*b^2*e^5*x^2-127908*A*b*c*d*e^4*x^2+30096*A*c^2*d^2*e^3*x^2-63954*B*b^2
*d*e^4*x^2+60192*B*b*c*d^2*e^3*x^2-15840*B*c^2*d^3*e^2*x^2-58140*A*b^2*d*e^
4*x+46512*A*b*c*d^2*e^3*x-10944*A*c^2*d^3*e^2*x+23256*B*b^2*d^2*e^3*x-21888
*B*b*c*d^3*e^2*x+5760*B*c^2*d^4*e*x+12920*A*b^2*d^2*e^3-10336*A*b*c*d^3*e^2
+2432*A*c^2*d^4*e-5168*B*b^2*d^3*e^2+4864*B*b*c*d^4*e-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.49, size = 291, normalized size = 1.09

$$\frac{2 \left(109395 (ex+d)^{\frac{19}{2}} Bc^{2}-122265 \left(5 Bc^{2} d-\left(2 Bbc+Ac^{2}\right) e\right)(ex+d)^{\frac{17}{2}}+138567 \left(10 Bc^{2} d^{2}-4 \left(2 Bbc+Ac^{2}\right) de+\left(Bb^{2}+2 Abc\right) e^{2}\right)(ex+d)^{\frac{15}{2}}-159885 \left(10 Bc^{2} d^{3}-Ab^{2} e^{3}-6 \left(2 Bbc+Ac^{2}\right) d^{2} e+3 \left(Bb^{2}+2 Abc\right) de^{2}\right)(ex+d)^{\frac{13}{2}}+188955 \left(5 Bc^{2} d^{4}-2 Ab^{2} de^{3}-4 \left(2 Bbc+Ac^{2}\right) d^{3} e+3 \left(Bb^{2}+2 Abc\right) d^{2} e^{2}\right)(ex+d)^{\frac{11}{2}}-230945 \left(Bc^{2} d^{5}-Ab^{2} d^{2} e^{3}-\left(2 Bbc+Ac^{2}\right) d^{4} e+\left(Bb^{2}+2 Abc\right) d^{3} e^{2}\right)(ex+d)^{\frac{9}{2}}\right)}{2078505 e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/2078505*(109395*(e*x + d)^(19/2)*B*c^2 - 122265*(5*B*c^2*d - (2*B*b*c + A
*c^2)*e)*(e*x + d)^(17/2) + 138567*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e
+ (B*b^2 + 2*A*b*c)*e^2)*(e*x + d)^(15/2) - 159885*(10*B*c^2*d^3 - A*b^2*e^
3 - 6*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(13/2)
 + 188955*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b
^2 + 2*A*b*c)*d^2*e^2)*(e*x + d)^(11/2) - 230945*(B*c^2*d^5 - A*b^2*d^2*e^3
 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(9/2))/e^
6
```

mupad [B] time = 1.62, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{17/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{17\,e^6}+\frac{(d+e\,x)^{13/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{13\,e^6}+\frac{(d+e\,x)^{15/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{15\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{19/2}}{19\,e^6}-\frac{2\,d\,(b\,e-c\,d)\,(d+e\,x)^{11/2}\,\left(2\,A\,b\,e^2+5\,B\,c\,d^2-4\,A\,c\,d\,e-3\,B\,b\,d\,e\right)}{11\,e^6}+\frac{2\,d^2\,(A\,e-B\,d)\,(b\,e-c\,d)^2\,(d+e\,x)^{9/2}}{9\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(17/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(17*e^6) + ((d + e*
x)^(13/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12
*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(13*e^6) + ((d + e*x)^(15/2)*(2*B*b^2*e^2 +
 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(15*e^6) + (2*B*
c^2*(d + e*x)^(19/2))/(19*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(11/2)*(2*A*b*e
^2 + 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(11*e^6) + (2*d^2*(A*e - B*d)*(b*e
 - c*d)^2*(d + e*x)^(9/2))/(9*e^6)
```

sympy [A] time = 15.94, size = 1352, normalized size = 5.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((16*A*b**2*d**6*sqrt(d + e*x)/(1287*e**3) - 8*A*b**2*d**5*x*sqrt(
d + e*x)/(1287*e**2) + 2*A*b**2*d**4*x**2*sqrt(d + e*x)/(429*e) + 424*A*b**
```

```
2*d**3*x**3*sqrt(d + e*x)/1287 + 916*A*b**2*d**2*e*x**4*sqrt(d + e*x)/1287
+ 80*A*b**2*d*e**2*x**5*sqrt(d + e*x)/143 + 2*A*b**2*e**3*x**6*sqrt(d + e*x
)/13 - 64*A*b*c*d**7*sqrt(d + e*x)/(6435*e**4) + 32*A*b*c*d**6*x*sqrt(d + e
*x)/(6435*e**3) - 8*A*b*c*d**5*x**2*sqrt(d + e*x)/(2145*e**2) + 4*A*b*c*d**
4*x**3*sqrt(d + e*x)/(1287*e) + 640*A*b*c*d**3*x**4*sqrt(d + e*x)/1287 + 82
4*A*b*c*d**2*e*x**5*sqrt(d + e*x)/715 + 184*A*b*c*d*e**2*x**6*sqrt(d + e*x)
/195 + 4*A*b*c*e**3*x**7*sqrt(d + e*x)/15 + 256*A*c**2*d**8*sqrt(d + e*x)/(
109395*e**5) - 128*A*c**2*d**7*x*sqrt(d + e*x)/(109395*e**4) + 32*A*c**2*d*
*6*x**2*sqrt(d + e*x)/(36465*e**3) - 16*A*c**2*d**5*x**3*sqrt(d + e*x)/(218
79*e**2) + 14*A*c**2*d**4*x**4*sqrt(d + e*x)/(21879*e) + 2424*A*c**2*d**3*x
**5*sqrt(d + e*x)/12155 + 1604*A*c**2*d**2*e*x**6*sqrt(d + e*x)/3315 + 104*
A*c**2*d*e**2*x**7*sqrt(d + e*x)/255 + 2*A*c**2*e**3*x**8*sqrt(d + e*x)/17
- 32*B*b**2*d**7*sqrt(d + e*x)/(6435*e**4) + 16*B*b**2*d**6*x*sqrt(d + e*x)
/(6435*e**3) - 4*B*b**2*d**5*x**2*sqrt(d + e*x)/(2145*e**2) + 2*B*b**2*d**4
*x**3*sqrt(d + e*x)/(1287*e) + 320*B*b**2*d**3*x**4*sqrt(d + e*x)/1287 + 41
2*B*b**2*d**2*e*x**5*sqrt(d + e*x)/715 + 92*B*b**2*d*e**2*x**6*sqrt(d + e*x
)/195 + 2*B*b**2*e**3*x**7*sqrt(d + e*x)/15 + 512*B*b*c*d**8*sqrt(d + e*x)/
(109395*e**5) - 256*B*b*c*d**7*x*sqrt(d + e*x)/(109395*e**4) + 64*B*b*c*d**
6*x**2*sqrt(d + e*x)/(36465*e**3) - 32*B*b*c*d**5*x**3*sqrt(d + e*x)/(21879
*e**2) + 28*B*b*c*d**4*x**4*sqrt(d + e*x)/(21879*e) + 4848*B*b*c*d**3*x**5*
sqrt(d + e*x)/12155 + 3208*B*b*c*d**2*e*x**6*sqrt(d + e*x)/3315 + 208*B*b*c
*d*e**2*x**7*sqrt(d + e*x)/255 + 4*B*b*c*e**3*x**8*sqrt(d + e*x)/17 - 512*B
*c**2*d**9*sqrt(d + e*x)/(415701*e**6) + 256*B*c**2*d**8*x*sqrt(d + e*x)/(4
15701*e**5) - 64*B*c**2*d**7*x**2*sqrt(d + e*x)/(138567*e**4) + 160*B*c**2*
d**6*x**3*sqrt(d + e*x)/(415701*e**3) - 140*B*c**2*d**5*x**4*sqrt(d + e*x)/
(415701*e**2) + 14*B*c**2*d**4*x**5*sqrt(d + e*x)/(46189*e) + 2096*B*c**2*d
**3*x**6*sqrt(d + e*x)/12597 + 404*B*c**2*d**2*e*x**7*sqrt(d + e*x)/969 + 1
16*B*c**2*d*e**2*x**8*sqrt(d + e*x)/323 + 2*B*c**2*e**3*x**9*sqrt(d + e*x)/
19, Ne(e, 0)), (d**(7/2)*(A*b**2*x**3/3 + A*b*c*x**4/2 + A*c**2*x**5/5 + B*
b**2*x**4/4 + 2*B*b*c*x**5/5 + B*c**2*x**6/6), True))
```

3.1077 $\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{13/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{13e^6}+\frac{2(d+ex)^{11/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3\right.\right.}{11e^6}$$

Rubi [A] time = 0.15, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{2(d+ex)^{13/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{13e^6}+\frac{2(d+ex)^{11/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{11e^6}-\frac{2d^2(d+ex)^{7/2}(Bd-Ae)(cd-be)^2}{7e^6}-\frac{2c(d+ex)^{15/2}(-Ace-2bBe+5Bcd)}{15e^6}+\frac{2d(d+ex)^{9/2}(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{9e^6}+\frac{2Bc^2(d+ex)^{17/2}}{17e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(7/2))/(7*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(9/2))/(9*e^6) + (
2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))*(d + e*x)^(11/2))/(11*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c
^2*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(13/2))/(13*e^6) - (2*c*(5*B*c*d -
 2*b*B*e - A*c*e)*(d + e*x)^(15/2))/(15*e^6) + (2*B*c^2*(d + e*x)^(17/2))/(
17*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)^2\,dx=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{5/2}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2}{e^5}\right.$$

$$=-\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{7/2}}{7e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2A}{9e^6}$$

Mathematica [A] time = 0.20, size = 273, normalized size = 1.02

$$\frac{2(d+ex)^{7/2}\left(17Ae\left(65b^2e^2\left(8d^2-28dex+63e^2x^2\right)+30bce\left(-16d^3+56d^2ex-126de^2x^2+231e^3x^3\right)+c^2\left(128d^4-448d^3ex+1008d^2e^2x^2-1848de^3x^3+3003e^4x^4\right)\right)+B\left(255b^2e^2\left(-16d^3+56d^2ex-126de^2x^2+231e^3x^3\right)+34bce\left(128d^4-448d^3ex+1008d^2e^2x^2-1848de^3x^3+3003e^4x^4\right)-5c^2\left(256d^5-896d^4ex+2016d^3e^2x^2-3696d^2e^3x^3+6006de^4x^4-9009e^5x^5\right)\right)\right)}{765765e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(17*A*e*(65*b^2*e^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 30
*b*c*e*(-16*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + c^2*(128*d^4
- 448*d^3*e*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4)) + B*(255
*b^2*e^2*(-16*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + 34*b*c*e*(1
28*d^4 - 448*d^3*e*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4) -
5*c^2*(256*d^5 - 896*d^4*e*x + 2016*d^3*e^2*x^2 - 3696*d^2*e^3*x^3 + 6006*d
*e^4*x^4 - 9009*e^5*x^5))))/(765765*e^6)
```

IntegrateAlgebraic [A] time = 0.19, size = 399, normalized size = 1.49

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-109395*B*c^2*d^5 + 218790*b*B*c*d^4*e + 109395*A*c^2*d
^4*e - 109395*b^2*B*d^3*e^2 - 218790*A*b*c*d^3*e^2 + 109395*A*b^2*d^2*e^3 +
 425425*B*c^2*d^4*(d + e*x) - 680680*b*B*c*d^3*e*(d + e*x) - 340340*A*c^2*d
^3*e*(d + e*x) + 255255*b^2*B*d^2*e^2*(d + e*x) + 510510*A*b*c*d^2*e^2*(d +
 e*x) - 170170*A*b^2*d*e^3*(d + e*x) - 696150*B*c^2*d^3*(d + e*x)^2 + 83538
0*b*B*c*d^2*e*(d + e*x)^2 + 417690*A*c^2*d^2*e*(d + e*x)^2 - 208845*b^2*B*d
*e^2*(d + e*x)^2 - 417690*A*b*c*d*e^2*(d + e*x)^2 + 69615*A*b^2*e^3*(d + e*
x)^2 + 589050*B*c^2*d^2*(d + e*x)^3 - 471240*b*B*c*d*e*(d + e*x)^3 - 235620
*A*c^2*d*e*(d + e*x)^3 + 58905*b^2*B*e^2*(d + e*x)^3 + 117810*A*b*c*e^2*(d
+ e*x)^3 - 255255*B*c^2*d*(d + e*x)^4 + 102102*b*B*c*e*(d + e*x)^4 + 51051*
A*c^2*e*(d + e*x)^4 + 45045*B*c^2*(d + e*x)^5))/(765765*e^6)
```

fricas [B] time = 0.42, size = 494, normalized size = 1.85

$$\frac{2\,\left(45045\,Bc^2e^8x^8 - 1280\,Bc^2d^8 + 8840\,Ab^2d^5e^3 + 2176\,\left(2\,Bbc + Ac^2\right)d^7e - 4080\,\left(Bb^2 + 2\,Abc\right)d^6e^2 + 3003\,\left(35\,Bc^2de^7 + 17\,\left(2\,Bbc + Ac^2\right)e^8\right)x^7 + 231\,\left(275\,Bc^2d^2e^6 + 527\,\left(2\,Bbc + Ac^2\right)de^7 + 255\,\left(Bb^2 + 2\,Abc\right)e^8\right)x^6 + 63\,\left(5\,Bc^2d^3e^5 + 1105\,Ab^2e^8 + 1207\,\left(2\,Bbc + Ac^2\right)d^2e^6 + 2295\,\left(Bb^2 + 2\,Abc\right)de^7\right)x^5 - 35\,\left(10\,Bc^2d^4e^4 - 5083\,Ab^2de^7 - 17\,\left(2\,Bbc + Ac^2\right)d^3e^5 - 2703\,\left(Bb^2 + 2\,Abc\right)d^2e^6\right)x^4 + 5\,\left(80\,Bc^2d^5e^3 + 24973\,Ab^2d^2e^6 - 136\,\left(2\,Bbc + Ac^2\right)d^4e^4 + 255\,\left(Bb^2 + 2\,Abc\right)d^3e^5\right)x^3 - 3\,\left(160\,Bc^2d^6e^2 - 1105\,Ab^2d^3e^5 - 272\,\left(2\,Bbc + Ac^2\right)d^5e^3 + 510\,\left(Bb^2 + 2\,Abc\right)d^4e^4\right)x^2 + 4\,\left(160\,Bc^2d^7e - 1105\,Ab^2d^4e^4 - 272\,\left(2\,Bbc + Ac^2\right)d^6e^2 + 510\,\left(Bb^2 + 2\,Abc\right)d^5e^3\right)x\right)\sqrt{ex + d}}{765765\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^2*e^8*x^8 - 1280*B*c^2*d^8 + 8840*A*b^2*d^5*e^3 + 2176*
(2*B*b*c + A*c^2)*d^7*e - 4080*(B*b^2 + 2*A*b*c)*d^6*e^2 + 3003*(35*B*c^2*d
*e^7 + 17*(2*B*b*c + A*c^2)*e^8)*x^7 + 231*(275*B*c^2*d^2*e^6 + 527*(2*B*b*
c + A*c^2)*d*e^7 + 255*(B*b^2 + 2*A*b*c)*e^8)*x^6 + 63*(5*B*c^2*d^3*e^5 + 1
105*A*b^2*e^8 + 1207*(2*B*b*c + A*c^2)*d^2*e^6 + 2295*(B*b^2 + 2*A*b*c)*d*e
^7)*x^5 - 35*(10*B*c^2*d^4*e^4 - 5083*A*b^2*d*e^7 - 17*(2*B*b*c + A*c^2)*d^
3*e^5 - 2703*(B*b^2 + 2*A*b*c)*d^2*e^6)*x^4 + 5*(80*B*c^2*d^5*e^3 + 24973*A
*b^2*d^2*e^6 - 136*(2*B*b*c + A*c^2)*d^4*e^4 + 255*(B*b^2 + 2*A*b*c)*d^3*e^
5)*x^3 - 3*(160*B*c^2*d^6*e^2 - 1105*A*b^2*d^3*e^5 - 272*(2*B*b*c + A*c^2)*
d^5*e^3 + 510*(B*b^2 + 2*A*b*c)*d^4*e^4)*x^2 + 4*(160*B*c^2*d^7*e - 1105*A*
b^2*d^4*e^4 - 272*(2*B*b*c + A*c^2)*d^6*e^2 + 510*(B*b^2 + 2*A*b*c)*d^5*e^3
)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.29, size = 2007, normalized size = 7.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/765765*(51051*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*A*b^2*d^3*e^(-2) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^3*e^(-3) + 43758*(5
*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(
x*e + d)*d^3)*A*b*c*d^3*e^(-3) + 4862*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*B*b*c*d^3*e^(-4) + 2431*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*A*c^2*d^3*e^(-4) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*d^3*e^(-5) + 65637*(5*(x*e + d)^(7/2) - 2
1*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*
d^2*e^(-2) + 7293*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d^2*e
^(-3) + 14586*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b*c*d^2*e^(-3
) + 6630*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
```

d)*d^5)*B*b*c*d^2*e^(-4) + 3315*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
d + 990(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c^2*d^2*e^(-4) + 765*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*B*c^2*d^2*e^(-5) + 7293*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*A*b^2*d*e^(-2) + 3315*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^2*d*e^(-3) + 6630*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*c*d*e^(-3) + 1530*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b*c*d*e^(-4) + 765*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*A*c^2*d*e^(-4) + 357*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
d + 12285(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*B*c^2*d*e^(-5) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*
e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*e^(-2) + 255*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*B*b^2*e^(-3) + 510*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
+ d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b*c*
e^(-3) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27
027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^
7)*B*b*c*e^(-4) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 122
85*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)
d^4 - 27027(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*
e + d)*d^7)*A*c^2*e^(-4) + 7*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2
)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x
*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6
- 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*c^2*e^(-5))*e^(
-1)

maple [A] time = 0.05, size = 341, normalized size = 1.28

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(45045B\,c^2x^5e^5+51051A\,c^2e^5x^4+102102Bbc\,e^5x^4-30030B\,c^2d\,e^4x^4+117810Abc\,e^5x^3-31416A\,c^2d\,e^4x^3+58905B\,b^2e^5x^3-62832Bbcd\,e^4x^3+18480B\,c^2d^2e^3x^3+69615A\,b^2e^5x^2-64260Abcd\,e^4x^2+17136A\,c^2d^2e^3x^2-32130B\,b^2d\,e^4x^2+34272Bbc\,d^2e^3x^2-10080B\,c^2d^3e^2x^2-30940A\,b^2d\,e^4x+28560Abc\,d^2e^3x-7616A\,c^2d^3e^2x+14280B\,b^2d^2e^3x-15232Bbc\,d^3e^2x+4480B\,c^2d^4ex+8840A\,b^2d^2e^3-8160Abc\,d^3e^2+2176A\,c^2d^4e-4080B\,b^2d^3e^2+4352Bbc\,d^4e-1280B\,c^2d^5\right)}{765765e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x)

[Out] 2/765765*(e*x+d)^(7/2)*(45045*B*c^2*e^5*x^5+51051*A*c^2*e^5*x^4+102102*B*b*
c*e^5*x^4-30030*B*c^2*d*e^4*x^4+117810*A*b*c*e^5*x^3-31416*A*c^2*d*e^4*x^3+
58905*B*b^2*e^5*x^3-62832*B*b*c*d*e^4*x^3+18480*B*c^2*d^2*e^3*x^3+69615*A*b
^2*e^5*x^2-64260*A*b*c*d*e^4*x^2+17136*A*c^2*d^2*e^3*x^2-32130*B*b^2*d*e^4*
x^2+34272*B*b*c*d^2*e^3*x^2-10080*B*c^2*d^3*e^2*x^2-30940*A*b^2*d*e^4*x+285
60*A*b*c*d^2*e^3*x-7616*A*c^2*d^3*e^2*x+14280*B*b^2*d^2*e^3*x-15232*B*b*c*d
^3*e^2*x+4480*B*c^2*d^4*e*x+8840*A*b^2*d^2*e^3-8160*A*b*c*d^3*e^2+2176*A*c^
2*d^4*e-4080*B*b^2*d^3*e^2+4352*B*b*c*d^4*e-1280*B*c^2*d^5)/e^6

maxima [A] time = 0.61, size = 291, normalized size = 1.09

$$\frac{2\left(45045\,(ex+d)^{\frac{17}{2}}Bc^2-51051\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{15}{2}}+58905\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)(ex+d)^{\frac{13}{2}}-69615\left(10\,Bc^2d^3-Ab^2e^3-6\left(2\,Bbc+Ac^2\right)d^2e+3\left(Bb^2+2\,Abc\right)de^2\right)(ex+d)^{\frac{11}{2}}+85085\left(5\,Bc^2d^4-2\,Ab^2de^3-4\left(2\,Bbc+Ac^2\right)d^3e+3\left(Bb^2+2\,Abc\right)d^2e^2\right)(ex+d)^{\frac{9}{2}}-109395\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2\right)(ex+d)^{\frac{7}{2}}\right)}{765765\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/765765*(45045*(e*x + d)^(17/2)*B*c^2 - 51051*(5*B*c^2*d - (2*B*b*c + A*c^
2)*e)*(e*x + d)^(15/2) + 58905*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B
*b^2 + 2*A*b*c)*e^2)*(e*x + d)^(13/2) - 69615*(10*B*c^2*d^3 - A*b^2*e^3 - 6
*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(11/2) + 85
085*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2
*A*b*c)*d^2*e^2)*(e*x + d)^(9/2) - 109395*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B
*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(7/2))/e^6
```

mupad [B] time = 1.62, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{15/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{15\,e^6}+\frac{(d+e\,x)^{11/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{11\,e^6}+\frac{(d+e\,x)^{13/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{13\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{17/2}}{17\,e^6}-\frac{2\,d\,\left(b\,e-c\,d\right)\,(d+e\,x)^{9/2}\,\left(2\,A\,b\,e^2+5\,B\,c\,d^2-4\,A\,c\,d\,e-3\,B\,b\,d\,e\right)}{9\,e^6}+\frac{2\,d^2\,\left(A\,e-B\,d\right)\,{\left(b\,e-c\,d\right)}^2\,(d+e\,x)^{7/2}}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(15/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(15*e^6) + ((d + e*
x)^(11/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12
*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(11*e^6) + ((d + e*x)^(13/2)*(2*B*b^2*e^2 +
 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(13*e^6) + (2*B*
c^2*(d + e*x)^(17/2))/(17*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(9/2)*(2*A*b*e^
2 + 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(9*e^6) + (2*d^2*(A*e - B*d)*(b*e -
 c*d)^2*(d + e*x)^(7/2))/(7*e^6)
```

sympy [B] time = 52.79, size = 1556, normalized size = 5.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)
**(7/2)/7)/e**3 + 4*A*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**
(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*A*b**2*(d**
4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/
7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 4*A*b*c*d**2*(-d*
*3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
+ (d + e*x)**(9/2)/9)/e**4 + 8*A*b*c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d
 + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
+ e*x)**(11/2)/11)/e**4 + 4*A*b*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x
)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
 + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 2*A*c**2*d**2*(d**4*(d +
e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d
*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 4*A*c**2*d*(-d**5*(d + e
*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2
*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5
 + 2*A*c**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*
(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)
/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*b**2*d**2
*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/
2)/7 + (d + e*x)**(9/2)/9)/e**4 + 4*B*b**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d
**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9
 + (d + e*x)**(11/2)/11)/e**4 + 2*B*b**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(
d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 -
 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 4*B*b*c*d**2*(d**4
*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 8*B*b*c*d*(-d**5*(
d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10
*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)
/e**5 + 4*B*b*c*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d
```

```
**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(1
1/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*c**2*
d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)*
*(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x
)**(13/2)/13)/e**6 + 4*B*c**2*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)
**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d*
*2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/
e**6 + 2*B*c**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d
**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/
2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)
**(17/2)/17)/e**6
```

3.1078 $\int (A+Bx)(d+ex)^{3/2} \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{11/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{11e^6}+\frac{2(d+ex)^{9/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2\right.\right.}{9e^6}$$

Rubi [A] time = 0.16, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{11/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{11e^6}+\frac{2(d+ex)^{9/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{9e^6}-\frac{2d^2(d+ex)^{5/2}(Bd-Ae)(cd-be)^2}{5e^6}-\frac{2c(d+ex)^{13/2}(-Ace-2bBe+5Bcd)}{13e^6}+\frac{2d(d+ex)^{7/2}(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{7e^6}+\frac{2Bc^2(d+ex)^{15/2}}{15e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(5/2))/(5*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(7/2))/(7*e^6) + (
2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))*(d + e*x)^(9/2))/(9*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2
*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(11/2))/(11*e^6) - (2*c*(5*B*c*d - 2
*b*B*e - A*c*e)*(d + e*x)^(13/2))/(13*e^6) + (2*B*c^2*(d + e*x)^(15/2))/(15
*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\left(bx+cx^2\right)^2\,dx = \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{3/2}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae}{e^5}\right.$$

$$=-\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{5/2}}{5e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2}{7e^6}$$

Mathematica [A] time = 0.19, size = 272, normalized size = 1.02

$$\frac{2(d+ex)^{5/2}\left(Ae\left(143b^2e^2\left(8d^2-20dex+35e^2x^2\right)+78bce\left(-16d^3+40d^2ex-70de^2x^2+105e^3x^3\right)+3c^2\left(128d^4-320d^3ex+560d^2e^2x^2-840de^3x^3+1155e^4x^4\right)\right)+B\left(39b^2e^2\left(-16d^3+40d^2ex-70de^2x^2+105e^3x^3\right)+6bce\left(128d^4-320d^3ex+560d^2e^2x^2-840de^3x^3+1155e^4x^4\right)+c^2\left(-256d^5+640d^4ex-1120d^3e^2x^2+1680d^2e^3x^3-2310de^4x^4+3003e^5x^5\right)\right)\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(A*e*(143*b^2*e^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 78*b
*c*e*(-16*d^3 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + 3*c^2*(128*d^4 -
 320*d^3*e*x + 560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4)) + B*(39*b^2
*e^2*(-16*d^3 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + 6*b*c*e*(128*d^4
 - 320*d^3*e*x + 560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4) + c^2*(-25
6*d^5 + 640*d^4*e*x - 1120*d^3*e^2*x^2 + 1680*d^2*e^3*x^3 - 2310*d*e^4*x^4
+ 3003*e^5*x^5))))/(45045*e^6)
```

IntegrateAlgebraic [A] time = 0.18, size = 399, normalized size = 1.49

$$\frac{2(d+ex)^{5/2}\left(9009Ab^2d^2e^3-12870Ab^2de^3(d+ex)+5005Ab^2e^3(d+ex)^2-18018Abcd^3e^2+38610Abcd^2e^2(d+ex)-30030Abcde^2(d+ex)^2+8190Abce^2(d+ex)^3+9009Ac^2d^4e-25740Ac^2d^3e(d+ex)+30030Ac^2d^2e(d+ex)^2-16380Ac^2de(d+ex)^3+3465Ac^2e(d+ex)^4-9009b^2Bd^3e^2+19305b^2Bd^2e^2(d+ex)-15015b^2Bde^2(d+ex)^2+4095b^2Be^2(d+ex)^3+18018bBcd^4e-51480bBcd^3e(d+ex)+60060bBcd^2e(d+ex)^2-32760bBcde(d+ex)^3+6930bBce(d+ex)^4-9009Bc^2d^5+32175Bc^2d^4(d+ex)-50050Bc^2d^3(d+ex)^2+40950Bc^2d^2(d+ex)^3-17325Bc^2d(d+ex)^4+3003Bc^2(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*B*c^2*d^5 + 18018*b*B*c*d^4*e + 9009*A*c^2*d^4*e
- 9009*b^2*B*d^3*e^2 - 18018*A*b*c*d^3*e^2 + 9009*A*b^2*d^2*e^3 + 32175*B*c
^2*d^4*(d + e*x) - 51480*b*B*c*d^3*e*(d + e*x) - 25740*A*c^2*d^3*e*(d + e*x
) + 19305*b^2*B*d^2*e^2*(d + e*x) + 38610*A*b*c*d^2*e^2*(d + e*x) - 12870*A
*b^2*d*e^3*(d + e*x) - 50050*B*c^2*d^3*(d + e*x)^2 + 60060*b*B*c*d^2*e*(d +
 e*x)^2 + 30030*A*c^2*d^2*e*(d + e*x)^2 - 15015*b^2*B*d*e^2*(d + e*x)^2 - 3
0030*A*b*c*d*e^2*(d + e*x)^2 + 5005*A*b^2*e^3*(d + e*x)^2 + 40950*B*c^2*d^2
*(d + e*x)^3 - 32760*b*B*c*d*e*(d + e*x)^3 - 16380*A*c^2*d*e*(d + e*x)^3 +
4095*b^2*B*e^2*(d + e*x)^3 + 8190*A*b*c*e^2*(d + e*x)^3 - 17325*B*c^2*d*(d
+ e*x)^4 + 6930*b*B*c*e*(d + e*x)^4 + 3465*A*c^2*e*(d + e*x)^4 + 3003*B*c^2
*(d + e*x)^5))/(45045*e^6)
```

fricas [A] time = 0.42, size = 425, normalized size = 1.59

$$\frac{2\left(3003\,Bc^2e^7x^7 - 256\,Bc^2d^7 + 1144\,Ab^2d^4e^3 + 384\left(2\,Bbc + Ac^2\right)d^6e - 624\left(Bb^2 + 2\,Abc\right)d^5e^2 + 231\left(16\,Bc^2de^6 + 15\left(2\,Bbc + Ac^2\right)e^7\right)x^6 + 63\left(Bc^2d^2e^5 + 70\left(2\,Bbc + Ac^2\right)de^6 + 65\left(Bb^2 + 2\,Abc\right)e^7\right)x^5 - 35\left(2\,Bc^2d^3e^4 - 143\,Ab^2e^7 - 3\left(2\,Bbc + Ac^2\right)d^2e^5 - 156\left(Bb^2 + 2\,Abc\right)de^6\right)x^4 + 5\left(16\,Bc^2d^4e^3 + 1430\,Ab^2de^6 - 24\left(2\,Bbc + Ac^2\right)d^3e^4 + 39\left(Bb^2 + 2\,Abc\right)d^2e^5\right)x^3 - 3\left(32\,Bc^2d^5e^2 - 143\,Ab^2d^2e^5 - 48\left(2\,Bbc + Ac^2\right)d^4e^3 + 78\left(Bb^2 + 2\,Abc\right)d^3e^4\right)x^2 + 4\left(32\,Bc^2d^6e - 143\,Ab^2d^3e^4 - 48\left(2\,Bbc + Ac^2\right)d^5e^2 + 78\left(Bb^2 + 2\,Abc\right)d^4e^3\right)x\right)\sqrt{ex + d}}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^2*e^7*x^7 - 256*B*c^2*d^7 + 1144*A*b^2*d^4*e^3 + 384*(2*B
*b*c + A*c^2)*d^6*e - 624*(B*b^2 + 2*A*b*c)*d^5*e^2 + 231*(16*B*c^2*d*e^6 +
 15*(2*B*b*c + A*c^2)*e^7)*x^6 + 63*(B*c^2*d^2*e^5 + 70*(2*B*b*c + A*c^2)*d
*e^6 + 65*(B*b^2 + 2*A*b*c)*e^7)*x^5 - 35*(2*B*c^2*d^3*e^4 - 143*A*b^2*e^7
- 3*(2*B*b*c + A*c^2)*d^2*e^5 - 156*(B*b^2 + 2*A*b*c)*d*e^6)*x^4 + 5*(16*B*
c^2*d^4*e^3 + 1430*A*b^2*d*e^6 - 24*(2*B*b*c + A*c^2)*d^3*e^4 + 39*(B*b^2 +
 2*A*b*c)*d^2*e^5)*x^3 - 3*(32*B*c^2*d^5*e^2 - 143*A*b^2*d^2*e^5 - 48*(2*B*
b*c + A*c^2)*d^4*e^3 + 78*(B*b^2 + 2*A*b*c)*d^3*e^4)*x^2 + 4*(32*B*c^2*d^6*
e - 143*A*b^2*d^3*e^4 - 48*(2*B*b*c + A*c^2)*d^5*e^2 + 78*(B*b^2 + 2*A*b*c)
*d^4*e^3)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.24, size = 1382, normalized size = 5.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/45045*(3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*
d^2)*A*b^2*d^2*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^2*e^(-3) + 2574*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*A*b*c*d^2*e^(-3) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*B*b*c*d^2*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*
c^2*d^2*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
 + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693
*sqrt(x*e + d)*d^5)*B*c^2*d^2*e^(-5) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e +
d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*d*e^(-2)
+ 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d*e^(-3) + 572*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b*c*d*e^(-3) + 260*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*c*d*e^
(-4) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/
2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
```

```
 + d)*d^5)*A*c^2*d*e^(-4) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*c^2*d*e^(-
5) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*
d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*e^(-2) + 65*(6
3*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386
*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*
b^2*e^(-3) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*A*b*c*e^(-3) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b*c*e^
(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^
(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
 + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*c^2*e^(-4) + 7*(429*(x*e + d)^(
15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e +
 d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 150
15*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*c^2*e^(-5))*e^(-1)
```

maple [A] time = 0.05, size = 341, normalized size = 1.28

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(3003B c^2x^5e^5+3465A c^2e^5x^4+6930Bbc e^5x^4-2310B c^2d e^4x^4+8190Abc e^5x^3-2520A c^2d e^4x^3+4095B b^2e^5x^3-5040Bbcd e^4x^3+1680B c^2d^2e^3x^3+5005A b^2e^5x^2-5460Abcd e^4x^2+1680A c^2d^2e^3x^2-2730B b^2d e^4x^2+3360Bbc d^2e^3x^2-1120B c^2d^3e^2x^2-2860A b^2d e^4x+3120Abc d^2e^3x-960A c^2d^3e^2x+1560B b^2d^2e^3x-1920Bbc d^3e^2x+640B c^2d^4ex+1144A b^2d^2e^3-1248Abc d^3e^2+384A c^2d^4e-624B b^2d^3e^2+768Bbc d^4e-256B c^2d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(3003*B*c^2*e^5*x^5+3465*A*c^2*e^5*x^4+6930*B*b*c*e^5
*x^4-2310*B*c^2*d*e^4*x^4+8190*A*b*c*e^5*x^3-2520*A*c^2*d*e^4*x^3+4095*B*b^
2*e^5*x^3-5040*B*b*c*d*e^4*x^3+1680*B*c^2*d^2*e^3*x^3+5005*A*b^2*e^5*x^2-54
60*A*b*c*d*e^4*x^2+1680*A*c^2*d^2*e^3*x^2-2730*B*b^2*d*e^4*x^2+3360*B*b*c*d
^2*e^3*x^2-1120*B*c^2*d^3*e^2*x^2-2860*A*b^2*d*e^4*x+3120*A*b*c*d^2*e^3*x-9
60*A*c^2*d^3*e^2*x+1560*B*b^2*d^2*e^3*x-1920*B*b*c*d^3*e^2*x+640*B*c^2*d^4*
e*x+1144*A*b^2*d^2*e^3-1248*A*b*c*d^3*e^2+384*A*c^2*d^4*e-624*B*b^2*d^3*e^2
+768*B*b*c*d^4*e-256*B*c^2*d^5)/e^6
```

maxima [A] time = 0.54, size = 291, normalized size = 1.09

$$\frac{2 \left(3003 (ex+d)^{\frac{15}{2}} Bc^2 - 3465 \left(5 Bc^2d - \left(2 Bbc + Ac^2\right)e\right)(ex+d)^{\frac{13}{2}} + 4095 \left(10 Bc^2d^2 - 4 \left(2 Bbc + Ac^2\right)de + \left(Bb^2 + 2 Abc\right)e^2\right)(ex+d)^{\frac{11}{2}} - 5005 \left(10 Bc^2d^3 - Ab^2e^3 - 6 \left(2 Bbc + Ac^2\right)d^2e + 3 \left(Bb^2 + 2 Abc\right)de^2\right)(ex+d)^{\frac{9}{2}} + 6435 \left(5 Bc^2d^4 - 2 Ab^2de^3 - 4 \left(2 Bbc + Ac^2\right)d^3e + 3 \left(Bb^2 + 2 Abc\right)d^2e^2\right)(ex+d)^{\frac{7}{2}} - 9009 \left(Bc^2d^5 - Ab^2d^2e^3 - \left(2 Bbc + Ac^2\right)d^4e + \left(Bb^2 + 2 Abc\right)d^3e^2\right)(ex+d)^{\frac{5}{2}}\right)}{45045 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*c^2 - 3465*(5*B*c^2*d - (2*B*b*c + A*c^2)*
e)*(e*x + d)^(13/2) + 4095*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2
 + 2*A*b*c)*e^2)*(e*x + d)^(11/2) - 5005*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B
*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(9/2) + 6435*(5*
B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)
*d^2*e^2)*(e*x + d)^(7/2) - 9009*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*
c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(5/2))/e^6
```

mupad [B] time = 0.06, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{13/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{13\,e^6}+\frac{(d+e\,x)^{9/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{9\,e^6}+\frac{(d+e\,x)^{11/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{11\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{15/2}}{15\,e^6}-\frac{2\,d\,(b\,e-c\,d)\,(d+e\,x)^{7/2}\,\left(2\,A\,b\,e^2+5\,B\,c\,d^2-4\,A\,c\,d\,e-3\,B\,b\,d\,e\right)}{7\,e^6}+\frac{2\,d^2\,(A\,e-B\,d)\,(b\,e-c\,d)^2\,(d+e\,x)^{5/2}}{5\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(13*e^6) + ((d + e*
x)^(9/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*
```

```
A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(9*e^6) + ((d + e*x)^(11/2)*(2*B*b^2*e^2 + 2
0*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(11*e^6) + (2*B*c^
2*(d + e*x)^(15/2))/(15*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(7/2)*(2*A*b*e^2
+ 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(7*e^6) + (2*d^2*(A*e - B*d)*(b*e - c
*d)^2*(d + e*x)^(5/2))/(5*e^6)
```

sympy [B] time = 33.46, size = 937, normalized size = 3.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(
7/2)/7)/e**3 + 2*A*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)
/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 4*A*b*c*d*(-d**3*(
d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d
 + e*x)**(9/2)/9)/e**4 + 4*A*b*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x
)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)
**(11/2)/11)/e**4 + 2*A*c**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)*
*(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**
(11/2)/11)/e**5 + 2*A*c**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2
) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)
**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*B*b**2*d*(-d**3*(d + e*x)**(3/
2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2
)/9)/e**4 + 2*B*b**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 +
 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)
/e**4 + 4*B*b*c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*
d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e*
*5 + 4*B*b*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d
 + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 +
(d + e*x)**(13/2)/13)/e**5 + 2*B*c**2*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d
 + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 -
5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 2*B*c**2*(d**6*(d +
 e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 2
0*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(
13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1079 $\int (A+Bx)\sqrt{d+ex}\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{9/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{9e^6}+\frac{2(d+ex)^{7/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2\right.\right.}{7e^6}$$

Rubi [A] time = 0.15, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{9/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{9e^6}+\frac{2(d+ex)^{7/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{7e^6}-\frac{2d^2(d+ex)^{3/2}(Bd-Ae)(cd-be)^2}{3e^6}-\frac{2c(d+ex)^{11/2}(-Ace-2bBe+5Bcd)}{11e^6}+\frac{2d(d+ex)^{5/2}(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{5e^6}+\frac{2Bc^2(d+ex)^{13/2}}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(3/2))/(3*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(5/2))/(5*e^6) + (
2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))*(d + e*x)^(7/2))/(7*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2
*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(9/2))/(9*e^6) - (2*c*(5*B*c*d - 2*b
*B*e - A*c*e)*(d + e*x)^(11/2))/(11*e^6) + (2*B*c^2*(d + e*x)^(13/2))/(13*e
^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\left(bx+cx^2\right)^2\,dx=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2\sqrt{d+ex}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd\right.$$

$$=-\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{3/2}}{3e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd\right.$$

Mathematica [A] time = 0.18, size = 273, normalized size = 1.02

$$\frac{2(d+ex)^{3/2}\left(13Ae\left(33b^2e^2\left(8d^2-12dex+15e^2x^2\right)+22bce\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)+c^2\left(128d^4-192d^3ex+240d^2e^2x^2-280de^3x^3+315e^4x^4\right)\right)+B\left(143b^2e^2\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)+26bce\left(128d^4-192d^3ex+240d^2e^2x^2-280de^3x^3+315e^4x^4\right)-5c^2\left(256d^5-384d^4ex+480d^3e^2x^2-560d^2e^3x^3+630de^4x^4-693e^5x^5\right)\right)\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(13*A*e*(33*b^2*e^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + 22
*b*c*e*(-16*d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + c^2*(128*d^4 -
192*d^3*e*x + 240*d^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4)) + B*(143*b^2*
e^2*(-16*d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + 26*b*c*e*(128*d^4
- 192*d^3*e*x + 240*d^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4) - 5*c^2*(256
*d^5 - 384*d^4*e*x + 480*d^3*e^2*x^2 - 560*d^2*e^3*x^3 + 630*d*e^4*x^4 - 69
3*e^5*x^5))))/(45045*e^6)
```

IntegrateAlgebraic [A] time = 0.17, size = 399, normalized size = 1.49

$$\frac{2(d+ex)^{3/2}\left(15015Ab^2d^2e^3-18018Ab^2de^3(d+ex)+6435Ab^2e^3(d+ex)^2-30030Abcd^3e^2+54054Abcd^2e^2(d+ex)-38610Abcde^2(d+ex)^2+10010Abce^2(d+ex)^3+15015Ac^2d^4e-36036Ac^2d^3e(d+ex)+38610Ac^2d^2e(d+ex)^2-20020Ac^2de(d+ex)^3+4095Ac^2e(d+ex)^4-15015b^2Bd^3e^2+27027b^2Bd^2e^2(d+ex)-19305b^2Bde^2(d+ex)^2+5005b^2Be^2(d+ex)^3+30030bBcd^4e-72072bBcd^3e(d+ex)+77220bBcd^2e(d+ex)^2-40040bBcde(d+ex)^3+8190bBce(d+ex)^4-15015Bc^2d^5+45045Bc^2d^4(d+ex)-64350Bc^2d^3(d+ex)^2+50050Bc^2d^2(d+ex)^3-20475Bc^2d(d+ex)^4+3465Bc^2(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-15015*B*c^2*d^5 + 30030*b*B*c*d^4*e + 15015*A*c^2*d^4*
e - 15015*b^2*B*d^3*e^2 - 30030*A*b*c*d^3*e^2 + 15015*A*b^2*d^2*e^3 + 45045
*B*c^2*d^4*(d + e*x) - 72072*b*B*c*d^3*e*(d + e*x) - 36036*A*c^2*d^3*e*(d +
 e*x) + 27027*b^2*B*d^2*e^2*(d + e*x) + 54054*A*b*c*d^2*e^2*(d + e*x) - 180
18*A*b^2*d*e^3*(d + e*x) - 64350*B*c^2*d^3*(d + e*x)^2 + 77220*b*B*c*d^2*e*
(d + e*x)^2 + 38610*A*c^2*d^2*e*(d + e*x)^2 - 19305*b^2*B*d*e^2*(d + e*x)^2
 - 38610*A*b*c*d*e^2*(d + e*x)^2 + 6435*A*b^2*e^3*(d + e*x)^2 + 50050*B*c^2
*d^2*(d + e*x)^3 - 40040*b*B*c*d*e*(d + e*x)^3 - 20020*A*c^2*d*e*(d + e*x)^
3 + 5005*b^2*B*e^2*(d + e*x)^3 + 10010*A*b*c*e^2*(d + e*x)^3 - 20475*B*c^2*
d*(d + e*x)^4 + 8190*b*B*c*e*(d + e*x)^4 + 4095*A*c^2*e*(d + e*x)^4 + 3465*
B*c^2*(d + e*x)^5))/(45045*e^6)
```

fricas [A] time = 0.43, size = 357, normalized size = 1.34

$$\frac{2\left(3465\,Bc^2e^6x^6-1280\,Bc^2d^6+3432\,Ab^2d^3e^3+1664\left(2\,Bbc+Ac^2\right)d^5e-2288\left(Bb^2+2\,Abc\right)d^4e^2+315\left(Bc^2de^5+13\left(2\,Bbc+Ac^2\right)e^6\right)x^5-35\left(10\,Bc^2d^2e^4-13\left(2\,Bbc+Ac^2\right)de^5-143\left(Bb^2+2\,Abc\right)e^6\right)x^4+5\left(80\,Bc^2d^3e^3+1287\,Ab^2e^6-104\left(2\,Bbc+Ac^2\right)d^2e^4+143\left(Bb^2+2\,Abc\right)de^5\right)x^3-3\left(160\,Bc^2d^4e^2-429\,Ab^2de^5-208\left(2\,Bbc+Ac^2\right)d^3e^3+286\left(Bb^2+2\,Abc\right)d^2e^4\right)x^2+4\left(160\,Bc^2d^5e-429\,Ab^2d^2e^4-208\left(2\,Bbc+Ac^2\right)d^4e^2+286\left(Bb^2+2\,Abc\right)d^3e^3\right)x\right)\sqrt{ex+d}}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*e^6*x^6 - 1280*B*c^2*d^6 + 3432*A*b^2*d^3*e^3 + 1664*(2
*B*b*c + A*c^2)*d^5*e - 2288*(B*b^2 + 2*A*b*c)*d^4*e^2 + 315*(B*c^2*d*e^5 +
 13*(2*B*b*c + A*c^2)*e^6)*x^5 - 35*(10*B*c^2*d^2*e^4 - 13*(2*B*b*c + A*c^2
)*d*e^5 - 143*(B*b^2 + 2*A*b*c)*e^6)*x^4 + 5*(80*B*c^2*d^3*e^3 + 1287*A*b^2
*e^6 - 104*(2*B*b*c + A*c^2)*d^2*e^4 + 143*(B*b^2 + 2*A*b*c)*d*e^5)*x^3 - 3
*(160*B*c^2*d^4*e^2 - 429*A*b^2*d*e^5 - 208*(2*B*b*c + A*c^2)*d^3*e^3 + 286
*(B*b^2 + 2*A*b*c)*d^2*e^4)*x^2 + 4*(160*B*c^2*d^5*e - 429*A*b^2*d^2*e^4 -
208*(2*B*b*c + A*c^2)*d^4*e^2 + 286*(B*b^2 + 2*A*b*c)*d^3*e^3)*x)*sqrt(e*x
+ d)/e^6
```

giac [B] time = 0.21, size = 835, normalized size = 3.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/45045*(3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*
d^2)*A*b^2*d*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d*e^(-3) + 2574*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*b*c*d*e^(-3) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*
b*c*d*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
 d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c^2*d*e^
(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*c^2*d*e^(-5) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*e^(-2) + 143*(35*(x*e
 + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*e^(-3) + 286*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*A*b*c*e^(-3) + 130*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*c*e^(-4) + 65*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c^2*e^(-
4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9
```

```
/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
 d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*c^2*e^(-5))*e^(-1)
```

maple [A]   time = 0.05, size = 341, normalized size = 1.28

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(3465B\,c^2x^5e^5+4095A\,c^2e^5x^4+8190Bbc\,e^5x^4-3150B\,c^2d\,e^4x^4+10010Abc\,e^5x^3-3640A\,c^2d\,e^4x^3+5005B\,b^2e^5x^3-7280Bbcd\,e^4x^3+2800B\,c^2d^2e^3x^3+6435A\,b^2e^5x^2-8580Abcd\,e^4x^2+3120A\,c^2d^2e^3x^2-4290B\,b^2d\,e^4x^2+6240Bbc\,d^2e^3x^2-2400B\,c^2d^3e^2x^2-5148A\,b^2d\,e^4x+6864Abc\,d^2e^3x-2496A\,c^2d^3e^2x+3432B\,b^2d^2e^3x-4992Bbc\,d^3e^2x+1920B\,c^2d^4ex+3432A\,b^2d^2e^3-4576Abc\,d^3e^2+1664A\,c^2d^4e-2288B\,b^2d^3e^2+3328Bbc\,d^4e-1280B\,c^2d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3465*B*c^2*e^5*x^5+4095*A*c^2*e^5*x^4+8190*B*b*c*e^5
*x^4-3150*B*c^2*d*e^4*x^4+10010*A*b*c*e^5*x^3-3640*A*c^2*d*e^4*x^3+5005*B*b
^2*e^5*x^3-7280*B*b*c*d*e^4*x^3+2800*B*c^2*d^2*e^3*x^3+6435*A*b^2*e^5*x^2-8
580*A*b*c*d*e^4*x^2+3120*A*c^2*d^2*e^3*x^2-4290*B*b^2*d*e^4*x^2+6240*B*b*c*
d^2*e^3*x^2-2400*B*c^2*d^3*e^2*x^2-5148*A*b^2*d*e^4*x+6864*A*b*c*d^2*e^3*x-
2496*A*c^2*d^3*e^2*x+3432*B*b^2*d^2*e^3*x-4992*B*b*c*d^3*e^2*x+1920*B*c^2*d
^4*e*x+3432*A*b^2*d^2*e^3-4576*A*b*c*d^3*e^2+1664*A*c^2*d^4*e-2288*B*b^2*d^
3*e^2+3328*B*b*c*d^4*e-1280*B*c^2*d^5)/e^6
```

maxima [A]   time = 0.51, size = 291, normalized size = 1.09

$$\frac{2\left(3465\,(ex+d)^{\frac{13}{2}}Bc^2-4095\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{11}{2}}+5005\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)(ex+d)^{\frac{9}{2}}-6435\left(10\,Bc^2d^3-Ab^2e^3-6\left(2\,Bbc+Ac^2\right)d^2e+3\left(Bb^2+2\,Abc\right)de^2\right)(ex+d)^{\frac{7}{2}}+9009\left(5\,Bc^2d^4-2\,Ab^2de^3-4\left(2\,Bbc+Ac^2\right)d^3e+3\left(Bb^2+2\,Abc\right)d^2e^2\right)(ex+d)^{\frac{5}{2}}-15015\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2\right)(ex+d)^{\frac{3}{2}}\right)}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/45045*(3465*(e*x + d)^(13/2)*B*c^2 - 4095*(5*B*c^2*d - (2*B*b*c + A*c^2)*
e)*(e*x + d)^(11/2) + 5005*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2
 + 2*A*b*c)*e^2)*(e*x + d)^(9/2) - 6435*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*
b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(7/2) + 9009*(5*B
*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*
d^2*e^2)*(e*x + d)^(5/2) - 15015*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*
c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(3/2))/e^6
```

mupad [B]   time = 1.53, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{11/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{11\,e^6}+\frac{(d+e\,x)^{7/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{7\,e^6}+\frac{(d+e\,x)^{9/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{9\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{13/2}}{13\,e^6}-\frac{2\,d\,(b\,e-c\,d)\,(d+e\,x)^{5/2}\,\left(2\,A\,b\,e^2+5\,B\,c\,d^2-4\,A\,c\,d\,e-3\,B\,b\,d\,e\right)}{5\,e^6}+\frac{2\,d^2\,(A\,e-B\,d)\,(b\,e-c\,d)^2\,(d+e\,x)^{3/2}}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(11*e^6) + ((d + e*
x)^(7/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*
A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(7*e^6) + ((d + e*x)^(9/2)*(2*B*b^2*e^2 + 20
*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(9*e^6) + (2*B*c^2*
(d + e*x)^(13/2))/(13*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(5/2)*(2*A*b*e^2 +
5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(5*e^6) + (2*d^2*(A*e - B*d)*(b*e - c*d
)^2*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A]   time = 7.01, size = 377, normalized size = 1.41

$$\frac{2\left(\frac{Bc^2(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(Ac^2e+2Bbce-5Bc^2d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(2Abce^2-4Ac^2de+Bb^2e^2-8Bbcde+10Bc^2d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(Ab^2e^3-6Abcde^2+6Ac^2d^2e-3Bb^2de^2+12Bbcd^2e-10Bc^2d^3\right)}{7e^5}+\frac{(d+ex)^{\frac{5}{2}}\left(-2Ab^2de^3+6Abcd^2e^2-4Ac^2d^3e+3Bb^2d^2e^2-8Bbcd^3e+5Bc^2d^4\right)}{5e^5}+\frac{(d+ex)^{\frac{3}{2}}\left(Ab^2d^2e^3-2Abcd^3e^2+Ac^2d^4e-Bb^2d^3e^2+2Bbcd^4e-Bc^2d^5\right)}{3e^5}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*(B*c**2*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(A*c**2*e + 2*B*b
*c*e - 5*B*c**2*d)/(11*e**5) + (d + e*x)**(9/2)*(2*A*b*c*e**2 - 4*A*c**2*d*
```

```
e + B*b**2*e**2 - 8*B*b*c*d*e + 10*B*c**2*d**2)/(9*e**5) + (d + e*x)**(7/2)
*(A*b**2*e**3 - 6*A*b*c*d*e**2 + 6*A*c**2*d**2*e - 3*B*b**2*d*e**2 + 12*B*b
*c*d**2*e - 10*B*c**2*d**3)/(7*e**5) + (d + e*x)**(5/2)*(-2*A*b**2*d*e**3 +
 6*A*b*c*d**2*e**2 - 4*A*c**2*d**3*e + 3*B*b**2*d**2*e**2 - 8*B*b*c*d**3*e
+ 5*B*c**2*d**4)/(5*e**5) + (d + e*x)**(3/2)*(A*b**2*d**2*e**3 - 2*A*b*c*d*
*3*e**2 + A*c**2*d**4*e - B*b**2*d**3*e**2 + 2*B*b*c*d**4*e - B*c**2*d**5)/
(3*e**5))/e
```

3.1080 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=265

$$-\frac{2(d+ex)^{7/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{7e^6}+\frac{2(d+ex)^{5/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2\right.\right.}{5e^6}$$

Rubi [A] time = 0.16, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{7/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{7e^6}+\frac{2(d+ex)^{5/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{5e^6}-\frac{2d^2\sqrt{d+ex}(Bd-Ae)(cd-be)^2}{e^6}-\frac{2c(d+ex)^{9/2}(-Ace-2bBe+5Bcd)}{9e^6}+\frac{2d(d+ex)^{3/2}(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6}+\frac{2Bc^2(d+ex)^{11/2}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*Sqrt[d + e*x])/e^6 + (2*d*(c*d - b*e)*(B*
d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(3/2))/(3*e^6) + (2*(A*e
*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e
^2))*(d + e*x)^(5/2))/(5*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 -
 8*b*c*d*e + b^2*e^2))*(d + e*x)^(7/2))/(7*e^6) - (2*c*(5*B*c*d - 2*b*B*e -
 A*c*e)*(d + e*x)^(9/2))/(9*e^6) + (2*B*c^2*(d + e*x)^(11/2))/(11*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx=\int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5\sqrt{d+ex}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))\sqrt{d+ex}}{e^5}\right.$$
$$=-\frac{2d^2(Bd-Ae)(cd-be)^2\sqrt{d+ex}}{e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))(d}{3e^6}$$

Mathematica [A] time = 0.20, size = 273, normalized size = 1.03

$$\frac{2\sqrt{d+ex}\left(11Ae\left(21b^2e^2\left(8d^2-4dex+3e^2x^2\right)+18bce\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)+c^2\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right)\right)+B\left(99b^2e^2\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)+22bce\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right)-5c^2\left(256d^5-128d^4ex+96d^3e^2x^2-80d^2e^3x^3+70de^4x^4-63e^5x^5\right)\right)\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(11*A*e*(21*b^2*e^2*(8*d^2 - 4*d*e*x + 3*e^2*x^2) + 18*b*c
*e*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3) + c^2*(128*d^4 - 64*d^3*
e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4)) + B*(99*b^2*e^2*(-16*d^3
 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3) + 22*b*c*e*(128*d^4 - 64*d^3*e*x +
48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4) - 5*c^2*(256*d^5 - 128*d^4*e*x
+ 96*d^3*e^2*x^2 - 80*d^2*e^3*x^3 + 70*d*e^4*x^4 - 63*e^5*x^5))))/(3465*e^6
)
```

IntegrateAlgebraic [A] time = 0.16, size = 399, normalized size = 1.51

$$\frac{2\sqrt{d+ex}\left(3465Ab^2d^2e^3-2310Ab^2de^3(d+ex)+693Ab^2e^3(d+ex)^2-6930Abcd^3e^2+6930Abcd^2e^2(d+ex)-4158Abcde^2(d+ex)^2+990Abce^2(d+ex)^3+3465Ac^2d^4e-4620Ac^2d^3e(d+ex)+4158Ac^2d^2e(d+ex)^2-1980Ac^2de(d+ex)^3+385Ac^2e(d+ex)^4-3465b^2Bd^3e^2+3465b^2Bd^2e^2(d+ex)-2079b^2Bde^2(d+ex)^2+495b^2Be^2(d+ex)^3+6930bBcd^4e-9240bBcd^3e(d+ex)+8316bBcd^2e(d+ex)^2-3960bBcde(d+ex)^3+770bBce(d+ex)^4-3465Bc^2d^5+5775Bc^2d^4(d+ex)-6930Bc^2d^3(d+ex)^2+4950Bc^2d^2(d+ex)^3-1925Bc^2d(d+ex)^4+315Bc^2(d+ex)^5\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-3465*B*c^2*d^5 + 6930*b*B*c*d^4*e + 3465*A*c^2*d^4*e - 3
465*b^2*B*d^3*e^2 - 6930*A*b*c*d^3*e^2 + 3465*A*b^2*d^2*e^3 + 5775*B*c^2*d^
4*(d + e*x) - 9240*b*B*c*d^3*e*(d + e*x) - 4620*A*c^2*d^3*e*(d + e*x) + 346
5*b^2*B*d^2*e^2*(d + e*x) + 6930*A*b*c*d^2*e^2*(d + e*x) - 2310*A*b^2*d*e^3
*(d + e*x) - 6930*B*c^2*d^3*(d + e*x)^2 + 8316*b*B*c*d^2*e*(d + e*x)^2 + 41
58*A*c^2*d^2*e*(d + e*x)^2 - 2079*b^2*B*d*e^2*(d + e*x)^2 - 4158*A*b*c*d*e^
2*(d + e*x)^2 + 693*A*b^2*e^3*(d + e*x)^2 + 4950*B*c^2*d^2*(d + e*x)^3 - 39
60*b*B*c*d*e*(d + e*x)^3 - 1980*A*c^2*d*e*(d + e*x)^3 + 495*b^2*B*e^2*(d +
e*x)^3 + 990*A*b*c*e^2*(d + e*x)^3 - 1925*B*c^2*d*(d + e*x)^4 + 770*b*B*c*e
*(d + e*x)^4 + 385*A*c^2*e*(d + e*x)^4 + 315*B*c^2*(d + e*x)^5))/(3465*e^6)
```

fricas [**A**] time = 0.42, size = 290, normalized size = 1.09

$$\frac{2\left(315\,Bc^2e^5x^5 - 1280\,Bc^2d^5 + 1848\,Ab^2d^2e^3 + 1408\left(2\,Bbc + Ac^2\right)d^4e - 1584\left(Bb^2 + 2\,Abc\right)d^3e^2 - 35\left(10\,Bc^2de^4 - 11\left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 5\left(80\,Bc^2d^2e^3 - 88\left(2\,Bbc + Ac^2\right)de^4 + 99\left(Bb^2 + 2\,Abc\right)e^5\right)x^3 - 3\left(160\,Bc^2d^3e^2 - 231\,Ab^2e^5 - 176\left(2\,Bbc + Ac^2\right)d^2e^3 + 198\left(Bb^2 + 2\,Abc\right)de^4\right)x^2 + 4\left(160\,Bc^2d^4e - 231\,Ab^2de^4 - 176\left(2\,Bbc + Ac^2\right)d^3e^2 + 198\left(Bb^2 + 2\,Abc\right)d^2e^3\right)x\right)\sqrt{ex + d}}{3465\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 1848*A*b^2*d^2*e^3 + 1408*(2*B
*b*c + A*c^2)*d^4*e - 1584*(B*b^2 + 2*A*b*c)*d^3*e^2 - 35*(10*B*c^2*d*e^4 -
 11*(2*B*b*c + A*c^2)*e^5)*x^4 + 5*(80*B*c^2*d^2*e^3 - 88*(2*B*b*c + A*c^2)
*d*e^4 + 99*(B*b^2 + 2*A*b*c)*e^5)*x^3 - 3*(160*B*c^2*d^3*e^2 - 231*A*b^2*e
^5 - 176*(2*B*b*c + A*c^2)*d^2*e^3 + 198*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 4*(
160*B*c^2*d^4*e - 231*A*b^2*d*e^4 - 176*(2*B*b*c + A*c^2)*d^3*e^2 + 198*(B*
b^2 + 2*A*b*c)*d^2*e^3)*x)*sqrt(e*x + d)/e^6
```

giac [**A**] time = 0.19, size = 378, normalized size = 1.43

$$\frac{2}{3465}\left(231\left(3\,(xe + d)^{\frac{5}{2}} - 10\,(xe + d)^{\frac{3}{2}}d + 15\,\sqrt{xe + d}\,d^2\right)Ab^2e^{(-2)} + 99\left(5\,(xe + d)^{\frac{7}{2}} - 21\,(xe + d)^{\frac{5}{2}}d + 35\,(xe + d)^{\frac{3}{2}}d^2 - 35\,\sqrt{xe + d}\,d^3\right)Bb^2e^{(-3)} + 198\left(5\,(xe + d)^{\frac{7}{2}} - 21\,(xe + d)^{\frac{5}{2}}d + 35\,(xe + d)^{\frac{3}{2}}d^2 - 35\,\sqrt{xe + d}\,d^3\right)Abce^{(-3)} + 22\left(35\,(xe + d)^{\frac{9}{2}} - 180\,(xe + d)^{\frac{7}{2}}d + 378\,(xe + d)^{\frac{5}{2}}d^2 - 420\,(xe + d)^{\frac{3}{2}}d^3 + 315\,\sqrt{xe + d}\,d^4\right)Bbce^{(-4)} + 11\left(35\,(xe + d)^{\frac{9}{2}} - 180\,(xe + d)^{\frac{7}{2}}d + 378\,(xe + d)^{\frac{5}{2}}d^2 - 420\,(xe + d)^{\frac{3}{2}}d^3 + 315\,\sqrt{xe + d}\,d^4\right)Ac^2e^{(-4)} + 5\left(63\,(xe + d)^{\frac{11}{2}} - 385\,(xe + d)^{\frac{9}{2}}d + 990\,(xe + d)^{\frac{7}{2}}d^2 - 1386\,(xe + d)^{\frac{5}{2}}d^3 + 1155\,(xe + d)^{\frac{3}{2}}d^4 - 693\,\sqrt{xe + d}\,d^5\right)Bc^2e^{(-5)}\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^
2)*A*b^2*e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*e^(-3) + 198*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b
*c*e^(-3) + 22*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*c*e^(-4) +
 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c^2*e^(-4) + 5*(63*(x*e
 + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
+ d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*e^
(-5))*e^(-1)
```

maple [**A**] time = 0.05, size = 341, normalized size = 1.29

$$\frac{2\left(315B\,c^2x^5e^5 + 385A\,c^2e^5x^4 + 770Bbc\,e^5x^4 - 350B\,c^2d\,e^4x^4 + 990Abc\,e^5x^3 - 440A\,c^2d\,e^4x^3 + 495B\,b^2e^5x^3 - 880Bbcd\,e^4x^3 + 400B\,c^2d^2e^3x^3 + 693A\,b^2e^5x^2 - 1188Abcd\,e^4x^2 + 528A\,c^2d^2e^3x^2 - 594B\,b^2d\,e^4x^2 + 1056Bbc\,d^2e^3x^2 - 480B\,c^2d^3e^2x^2 - 924A\,b^2d\,e^4x + 1584Abc\,d^2e^3x - 704A\,c^2d^3e^2x + 792B\,b^2d^2e^3x - 1408Bbc\,d^3e^2x + 640B\,c^2d^4ex + 1848A\,b^2d^2e^3 - 3168Abc\,d^3e^2 + 1408A\,c^2d^4e - 1584B\,b^2d^3e^2 + 2816Bbc\,d^4e - 1280B\,c^2d^5\right)\sqrt{ex + d}}{3465e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(315*B*c^2*e^5*x^5+385*A*c^2*e^5*x^4+770*B*b*c*e^5*x^4-350*B*c^2*d*e
^4*x^4+990*A*b*c*e^5*x^3-440*A*c^2*d*e^4*x^3+495*B*b^2*e^5*x^3-880*B*b*c*d*
e^4*x^3+400*B*c^2*d^2*e^3*x^3+693*A*b^2*e^5*x^2-1188*A*b*c*d*e^4*x^2+528*A*
c^2*d^2*e^3*x^2-594*B*b^2*d*e^4*x^2+1056*B*b*c*d^2*e^3*x^2-480*B*c^2*d^3*e^
```

```
2*x^2-924*A*b^2*d*e^4*x+1584*A*b*c*d^2*e^3*x-704*A*c^2*d^3*e^2*x+792*B*b^2*
d^2*e^3*x-1408*B*b*c*d^3*e^2*x+640*B*c^2*d^4*e*x+1848*A*b^2*d^2*e^3-3168*A*
b*c*d^3*e^2+1408*A*c^2*d^4*e-1584*B*b^2*d^3*e^2+2816*B*b*c*d^4*e-1280*B*c^2
*d^5)*(e*x+d)^(1/2)/e^6
```

maxima [A] time = 0.48, size = 291, normalized size = 1.10

$$\frac{2\left(315\,(ex+d)^{\frac{11}{2}}Bc^2-385\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{9}{2}}+495\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)(ex+d)^{\frac{7}{2}}-693\left(10\,Bc^2d^3-Ab^2e^3-6\left(2\,Bbc+Ac^2\right)d^2e+3\left(Bb^2+2\,Abc\right)de^2\right)(ex+d)^{\frac{5}{2}}+1155\left(5\,Bc^2d^4-2\,Ab^2de^3-4\left(2\,Bbc+Ac^2\right)d^3e+3\left(Bb^2+2\,Abc\right)d^2e^2\right)(ex+d)^{\frac{3}{2}}-3465\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2\right)\sqrt{ex+d}\right)}{3465\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c^2 - 385*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*
(e*x + d)^(9/2) + 495*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*
A*b*c)*e^2)*(e*x + d)^(7/2) - 693*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c +
A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(5/2) + 1155*(5*B*c^2*d
^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^2*e^
2)*(e*x + d)^(3/2) - 3465*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^
4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*sqrt(e*x + d))/e^6
```

mupad [B] time = 1.51, size = 254, normalized size = 0.96

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{9\,e^6}+\frac{(d+e\,x)^{5/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{5\,e^6}+\frac{(d+e\,x)^{7/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{7\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{11/2}}{11\,e^6}-\frac{2\,d\,(b\,e-c\,d)\,(d+e\,x)^{3/2}\,\left(2\,A\,b\,e^2+5\,B\,c\,d^2-4\,A\,c\,d\,e-3\,B\,b\,d\,e\right)}{3\,e^6}+\frac{2\,d^2\,(A\,e-B\,d)\,(b\,e-c\,d)^2\,\sqrt{d+e\,x}}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(9*e^6) + ((d + e*x)
^(5/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*
b*c*d*e^2 + 24*B*b*c*d^2*e))/(5*e^6) + ((d + e*x)^(7/2)*(2*B*b^2*e^2 + 20*B
*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(7*e^6) + (2*B*c^2*(d
 + e*x)^(11/2))/(11*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(3/2)*(2*A*b*e^2 + 5*
B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(3*e^6) + (2*d^2*(A*e - B*d)*(b*e - c*d)^
2*(d + e*x)^(1/2))/e^6
```

sympy [A] time = 106.60, size = 944, normalized size = 3.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*b**2*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)
**(3/2)/3)/e**2 - 2*A*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*
(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 4*A*b*c*d*(-d**3/sqrt(d + e*x
) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 -
4*A*b*c*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2
) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 2*A*c**2*d*(d**4/sq
rt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x
)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 2*A*c**2*(-d**5/sqrt(d + e*x) - 5*d
**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) +
5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*b**2*d*(-d**3/sqrt(
d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/
e**3 - 2*B*b**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*
x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 4*B*b*c*d*(
d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(
d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 4*B*b*c*(-d**5/sqrt(d + e*x)
 - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5
/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*c**2*d*(-d**5
/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2
```

```
*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 2*B
*c**2*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2)
+ 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/
2)/3 - (d + e*x)**(11/2)/11)/e**5)/e, Ne(e, 0)), ((A*b**2*x**3/3 + B*c**2*x
**6/6 + x**5*(A*c**2 + 2*B*b*c)/5 + x**4*(2*A*b*c + B*b**2)/4)/sqrt(d), Tru
e))
```

3.1081 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=263

$$-\frac{2(d+ex)^{5/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{5e^6}+\frac{2(d+ex)^{3/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2\right.\right.}{3e^6}$$

Rubi [A] time = 0.16, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{5/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{5e^6}+\frac{2(d+ex)^{3/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{3e^6}+\frac{2d^2(Bd-Ae)(cd-be)^2}{e^6\sqrt{d+ex}}-\frac{2c(d+ex)^{7/2}(-Ace-2bBe+5Bcd)}{7e^6}+\frac{2d\sqrt{d+ex}(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6}+\frac{2Bc^2(d+ex)^{9/2}}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*d^2*(B*d - A*e)*(c*d - b*e)^2)/(e^6*Sqrt[d + e*x]) + (2*d*(c*d - b*e)*(B
*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*Sqrt[d + e*x])/e^6 + (2*(A*e*(6*c
^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))*
(d + e*x)^(3/2))/(3*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*
c*d*e + b^2*e^2))*(d + e*x)^(5/2))/(5*e^6) - (2*c*(5*B*c*d - 2*b*B*e - A*c*
e)*(d + e*x)^(7/2))/(7*e^6) + (2*B*c^2*(d + e*x)^(9/2))/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^{3/2}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5\sqrt{d+ex}}+\frac{\left(Ae\left(6\right.\right.}{}\right.$$

$$=\frac{2d^2(Bd-Ae)(cd-be)^2}{e^6\sqrt{d+ex}}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))\sqrt{d+ex}}{e^6}+\ldots$$

Mathematica [A] time = 0.17, size = 273, normalized size = 1.04

$$\frac{2B\left(63b^2e^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+18bce\left(-128d^4-64d^3ex+16d^2e^2x^2-8de^3x^3+5e^4x^4\right)+5c^2\left(256d^5+128d^4ex-32d^3e^2x^2+16d^2e^3x^3-10de^4x^4+7e^5x^5\right)\right)-6Ae\left(35b^2e^2\left(8d^2+4dex-e^2x^2\right)-42bce\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+3c^2\left(128d^4+64d^3ex-16d^2e^2x^2+8de^3x^3-5e^4x^4\right)\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (-6*A*e*(35*b^2*e^2*(8*d^2 + 4*d*e*x - e^2*x^2) - 42*b*c*e*(16*d^3 + 8*d^2*
e*x - 2*d*e^2*x^2 + e^3*x^3) + 3*c^2*(128*d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2
 + 8*d*e^3*x^3 - 5*e^4*x^4)) + 2*B*(63*b^2*e^2*(16*d^3 + 8*d^2*e*x - 2*d*e^
2*x^2 + e^3*x^3) + 18*b*c*e*(-128*d^4 - 64*d^3*e*x + 16*d^2*e^2*x^2 - 8*d*e
^3*x^3 + 5*e^4*x^4) + 5*c^2*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^
2*e^3*x^3 - 10*d*e^4*x^4 + 7*e^5*x^5)))/(315*e^6*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.17, size = 399, normalized size = 1.52

$$\frac{2\left(-315Ab^2d^2e^3-630Ab^2de^3(d+ex)+105Ab^2e^3(d+ex)^2+630Abcd^3e^2+1890Abcd^2e^2(d+ex)-630Abcde^2(d+ex)^2+126Abce^2(d+ex)^3-315Ac^2d^4e-1260Ac^2d^3e(d+ex)+630Ac^2d^2e(d+ex)^2-252Ac^2de(d+ex)^3+45Ac^2e(d+ex)^4+315b^2Bd^3e^2+945b^2Bd^2e^2(d+ex)-315b^2Bde^2(d+ex)^2+63b^2Be^2(d+ex)^3-630bBcd^4e-2520bBcd^3e(d+ex)+1260bBcd^2e(d+ex)^2-504bBcde(d+ex)^3+90bBce(d+ex)^4+315Bc^2d^5+1575Bc^2d^4(d+ex)-1050Bc^2d^3(d+ex)^2+630Bc^2d^2(d+ex)^3-225Bc^2d(d+ex)^4+35Bc^2(d+ex)^5\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(315*B*c^2*d^5 - 630*b*B*c*d^4*e - 315*A*c^2*d^4*e + 315*b^2*B*d^3*e^2 +
 630*A*b*c*d^3*e^2 - 315*A*b^2*d^2*e^3 + 1575*B*c^2*d^4*(d + e*x) - 2520*b*
B*c*d^3*e*(d + e*x) - 1260*A*c^2*d^3*e*(d + e*x) + 945*b^2*B*d^2*e^2*(d + e
*x) + 1890*A*b*c*d^2*e^2*(d + e*x) - 630*A*b^2*d*e^3*(d + e*x) - 1050*B*c^2
*d^3*(d + e*x)^2 + 1260*b*B*c*d^2*e*(d + e*x)^2 + 630*A*c^2*d^2*e*(d + e*x)
^2 - 315*b^2*B*d*e^2*(d + e*x)^2 - 630*A*b*c*d*e^2*(d + e*x)^2 + 105*A*b^2*
e^3*(d + e*x)^2 + 630*B*c^2*d^2*(d + e*x)^3 - 504*b*B*c*d*e*(d + e*x)^3 - 2
52*A*c^2*d*e*(d + e*x)^3 + 63*b^2*B*e^2*(d + e*x)^3 + 126*A*b*c*e^2*(d + e*
x)^3 - 225*B*c^2*d*(d + e*x)^4 + 90*b*B*c*e*(d + e*x)^4 + 45*A*c^2*e*(d + e
*x)^4 + 35*B*c^2*(d + e*x)^5))/(315*e^6*Sqrt[d + e*x])
```

fricas [A] time = 0.40, size = 299, normalized size = 1.14

$$\frac{2\left(35 Bc^2e^5x^5 + 1280 Bc^2d^5 - 840 Ab^2d^2e^3 - 1152 (2 Bbc + Ac^2)d^4e + 1008 (Bb^2 + 2 Abc)d^3e^2 - 5 (10 Bc^2de^4 - 9 (2 Bbc + Ac^2)e^5)x^4 + (80 Bc^2d^2e^3 - 72 (2 Bbc + Ac^2)de^4 + 63 (Bb^2 + 2 Abc)e^5)x^3 - (160 Bc^2d^3e^2 - 105 Ab^2e^5 - 144 (2 Bbc + Ac^2)d^2e^3 + 126 (Bb^2 + 2 Abc)de^4)x^2 + 4 (160 Bc^2d^4e - 105 Ab^2de^4 - 144 (2 Bbc + Ac^2)d^3e^2 + 126 (Bb^2 + 2 Abc)d^2e^3)x\right)\sqrt{ex + d}}{315 (e^7x + de^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*e^5*x^5 + 1280*B*c^2*d^5 - 840*A*b^2*d^2*e^3 - 1152*(2*B*b*
c + A*c^2)*d^4*e + 1008*(B*b^2 + 2*A*b*c)*d^3*e^2 - 5*(10*B*c^2*d*e^4 - 9*(
2*B*b*c + A*c^2)*e^5)*x^4 + (80*B*c^2*d^2*e^3 - 72*(2*B*b*c + A*c^2)*d*e^4
+ 63*(B*b^2 + 2*A*b*c)*e^5)*x^3 - (160*B*c^2*d^3*e^2 - 105*A*b^2*e^5 - 144*
(2*B*b*c + A*c^2)*d^2*e^3 + 126*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 4*(160*B*c^2
*d^4*e - 105*A*b^2*d*e^4 - 144*(2*B*b*c + A*c^2)*d^3*e^2 + 126*(B*b^2 + 2*A
*b*c)*d^2*e^3)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [A] time = 0.56, size = 441, normalized size = 1.68

$$\frac{2}{315}\left(35 (xe + d)^{\frac{9}{2}} Bc^2e^{48} - 225 (xe + d)^{\frac{7}{2}} Bc^2de^{48} + 630 (xe + d)^{\frac{5}{2}} Bc^2d^2e^{48} - 1050 (xe + d)^{\frac{3}{2}} Bc^2d^3e^{48} + 1575 \sqrt{xe + d} Bc^2d^4e^{48} + 90 (xe + d)^{\frac{7}{2}} Bbce^{49} + 45 (xe + d)^{\frac{7}{2}} Ac^2e^{49} - 504 (xe + d)^{\frac{5}{2}} Bbcde^{49} - 252 (xe + d)^{\frac{5}{2}} Ac^2de^{49} + 1260 (xe + d)^{\frac{3}{2}} Bbcd^2e^{49} + 630 (xe + d)^{\frac{3}{2}} Ac^2d^2e^{49} - 2520 \sqrt{xe + d} Bbcd^3e^{49} - 1260 \sqrt{xe + d} Ac^2d^3e^{49} + 63 (xe + d)^{\frac{5}{2}} Bb^2e^{50} + 126 (xe + d)^{\frac{5}{2}} Abce^{50} - 315 (xe + d)^{\frac{3}{2}} Bb^2de^{50} - 630 (xe + d)^{\frac{3}{2}} Abcde^{50} + 945 \sqrt{xe + d} Bb^2d^2e^{50} + 1890 \sqrt{xe + d} Abcd^2e^{50} + 105 (xe + d)^{\frac{3}{2}} Ab^2e^{51} - 630 \sqrt{xe + d} Ab^2de^{51}\right)e^{(-54)} + \frac{2 \left(Bc^2d^5 - 2 Bbcd^4e - Ac^2d^4e + Bb^2d^3e^2 + 2 Abcd^3e^2 - Ab^2d^2e^3\right)e^{(-6)}}{\sqrt{xe + d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*c^2*e^48 - 225*(x*e + d)^(7/2)*B*c^2*d*e^48 + 6
30*(x*e + d)^(5/2)*B*c^2*d^2*e^48 - 1050*(x*e + d)^(3/2)*B*c^2*d^3*e^48 + 1
575*sqrt(x*e + d)*B*c^2*d^4*e^48 + 90*(x*e + d)^(7/2)*B*b*c*e^49 + 45*(x*e
+ d)^(7/2)*A*c^2*e^49 - 504*(x*e + d)^(5/2)*B*b*c*d*e^49 - 252*(x*e + d)^(5
/2)*A*c^2*d*e^49 + 1260*(x*e + d)^(3/2)*B*b*c*d^2*e^49 + 630*(x*e + d)^(3/2
)*A*c^2*d^2*e^49 - 2520*sqrt(x*e + d)*B*b*c*d^3*e^49 - 1260*sqrt(x*e + d)*A
*c^2*d^3*e^49 + 63*(x*e + d)^(5/2)*B*b^2*e^50 + 126*(x*e + d)^(5/2)*A*b*c*e
^50 - 315*(x*e + d)^(3/2)*B*b^2*d*e^50 - 630*(x*e + d)^(3/2)*A*b*c*d*e^50 +
 945*sqrt(x*e + d)*B*b^2*d^2*e^50 + 1890*sqrt(x*e + d)*A*b*c*d^2*e^50 + 105
*(x*e + d)^(3/2)*A*b^2*e^51 - 630*sqrt(x*e + d)*A*b^2*d*e^51)*e^(-54) + 2*(
B*c^2*d^5 - 2*B*b*c*d^4*e - A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*A*b*c*d^3*e^2 -
 A*b^2*d^2*e^3)*e^(-6)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 341, normalized size = 1.30

$$-\frac{2 \left(-35B c^2x^5e^5 - 45A c^2e^5x^4 - 90Bbc e^5x^4 + 50B c^2d e^4x^4 - 126Abc e^5x^3 + 72A c^2d e^4x^3 - 63B b^2e^5x^3 + 144Bbcd e^4x^3 - 80B c^2d^2e^3x^3 - 105A b^2e^5x^2 + 252Abcd e^4x^2 - 144A c^2d^2e^3x^2 + 126B b^2d e^4x^2 - 288Bbc d^2e^3x^2 + 160B c^2d^3e^2x^2 + 420A b^2d e^4x - 1008Abc d^2e^3x + 576A c^2d^3e^2x - 504B b^2d^2e^3x + 1152Bbc d^3e^2x - 640B c^2d^4ex + 840A b^2d^2e^3 - 2016Abc d^3e^2 + 1152A c^2d^4e - 1008B b^2d^3e^2 + 2304Bbc d^4e - 1280B c^2d^5\right)}{315\sqrt{ex + d}\, e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315*(-35*B*c^2*e^5*x^5-45*A*c^2*e^5*x^4-90*B*b*c*e^5*x^4+50*B*c^2*d*e^4*
x^4-126*A*b*c*e^5*x^3+72*A*c^2*d*e^4*x^3-63*B*b^2*e^5*x^3+144*B*b*c*d*e^4*x
^3-80*B*c^2*d^2*e^3*x^3-105*A*b^2*e^5*x^2+252*A*b*c*d*e^4*x^2-144*A*c^2*d^2
```

```
*e^3*x^2+126*B*b^2*d*e^4*x^2-288*B*b*c*d^2*e^3*x^2+160*B*c^2*d^3*e^2*x^2+42
0*A*b^2*d*e^4*x-1008*A*b*c*d^2*e^3*x+576*A*c^2*d^3*e^2*x-504*B*b^2*d^2*e^3*
x+1152*B*b*c*d^3*e^2*x-640*B*c^2*d^4*e*x+840*A*b^2*d^2*e^3-2016*A*b*c*d^3*e
^2+1152*A*c^2*d^4*e-1008*B*b^2*d^3*e^2+2304*B*b*c*d^4*e-1280*B*c^2*d^5)/(e*
x+d)^(1/2)/e^6
```

maxima [A] time = 0.49, size = 299, normalized size = 1.14

$$\frac{2\left(\frac{35\,(ex+d)^{\frac{9}{2}}Bc^2-45\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{7}{2}}+63\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)(ex+d)^{\frac{5}{2}}-105\left(10\,Bc^2d^3-Ab^2e^3-6\left(2\,Bbc+Ac^2\right)d^2e+3\left(Bb^2+2\,Abc\right)de^2\right)(ex+d)^{\frac{3}{2}}+315\left(5\,Bc^2d^4-2\,Ab^2de^3-4\left(2\,Bbc+Ac^2\right)d^3e+3\left(Bb^2+2\,Abc\right)d^2e^2\right)\sqrt{ex+d}}{e^5}+\frac{315\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2\right)}{\sqrt{ex+d}\,e^5}\right)}{315\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*c^2 - 45*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*(e*
x + d)^(7/2) + 63*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*
c)*e^2)*(e*x + d)^(5/2) - 105*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c + A*c^
2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(3/2) + 315*(5*B*c^2*d^4 -
2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^2*e^2)*sq
rt(e*x + d))/e^5 + 315*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^4*e
 + (B*b^2 + 2*A*b*c)*d^3*e^2)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 1.53, size = 296, normalized size = 1.13

$$\frac{(d+e\,x)^{7/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{7\,e^6}+\frac{(d+e\,x)^{3/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{3\,e^6}+\frac{(d+e\,x)^{5/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{5\,e^6}+\frac{2\,B\,b^2\,d^3\,e^2-2\,A\,b^2\,d^2\,e^3-4\,B\,b\,c\,d^4\,e+4\,A\,b\,c\,d^3\,e^2+2\,B\,c^2\,d^5-2\,A\,c^2\,d^4\,e}{e^6\,\sqrt{d+e\,x}}+\frac{2\,B\,c^2\,(d+e\,x)^{9/2}}{9\,e^6}-\frac{2\,d\,(b\,e-c\,d)\,\sqrt{d+e\,x}\,\left(2\,A\,b\,e^2+5\,B\,c\,d^2-4\,A\,c\,d\,e-3\,B\,b\,d\,e\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(7*e^6) + ((d + e*x)
^(3/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*
b*c*d*e^2 + 24*B*b*c*d^2*e))/(3*e^6) + ((d + e*x)^(5/2)*(2*B*b^2*e^2 + 20*B
*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(5*e^6) + (2*B*c^2*d^
5 - 2*A*c^2*d^4*e - 2*A*b^2*d^2*e^3 + 2*B*b^2*d^3*e^2 - 4*B*b*c*d^4*e + 4*A
*b*c*d^3*e^2)/(e^6*(d + e*x)^(1/2)) + (2*B*c^2*(d + e*x)^(9/2))/(9*e^6) - (
2*d*(b*e - c*d)*(d + e*x)^(1/2)*(2*A*b*e^2 + 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*
d*e))/e^6
```

sympy [A] time = 62.03, size = 321, normalized size = 1.22

$$\frac{2Bc^2\,(d+ex)^{\frac{9}{2}}}{9e^6}+\frac{2d^2\,(-Ae+Bd)\,(be-cd)^2}{e^6\sqrt{d+ex}}+\frac{(d+ex)^{\frac{7}{2}}\left(2Ac^2e+4Bbce-10Bc^2d\right)}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(4Abce^2-8Ac^2de+2Bb^2e^2-16Bbcde+20Bc^2d^2\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(2Ab^2e^3-12Abcde^2+12Ac^2d^2e-6Bb^2de^2+24Bbcd^2e-20Bc^2d^3\right)}{3e^6}+\frac{\sqrt{d+ex}\left(-4Ab^2de^3+12Abcd^2e^2-8Ac^2d^3e+6Bb^2d^2e^2-16Bbcd^3e+10Bc^2d^4\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(9/2)/(9*e**6) + 2*d**2*(-A*e + B*d)*(b*e - c*d)**2/(e*
*6*sqrt(d + e*x)) + (d + e*x)**(7/2)*(2*A*c**2*e + 4*B*b*c*e - 10*B*c**2*d)
/(7*e**6) + (d + e*x)**(5/2)*(4*A*b*c*e**2 - 8*A*c**2*d*e + 2*B*b**2*e**2 -
 16*B*b*c*d*e + 20*B*c**2*d**2)/(5*e**6) + (d + e*x)**(3/2)*(2*A*b**2*e**3
- 12*A*b*c*d*e**2 + 12*A*c**2*d**2*e - 6*B*b**2*d*e**2 + 24*B*b*c*d**2*e -
20*B*c**2*d**3)/(3*e**6) + sqrt(d + e*x)*(-4*A*b**2*d*e**3 + 12*A*b*c*d**2*
e**2 - 8*A*c**2*d**3*e + 6*B*b**2*d**2*e**2 - 16*B*b*c*d**3*e + 10*B*c**2*d
**4)/e**6
```

3.1082 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=263

$$-\frac{2(d+ex)^{3/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{3e^6}+\frac{2\sqrt{d+ex}\,\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e\right.\right.}{e^6}$$

Rubi [A] time = 0.15, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{3/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{3e^6}+\frac{2\sqrt{d+ex}\,\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6}+\frac{2d^2(Bd-Ae)(cd-be)^2}{3e^6(d+ex)^{3/2}}-\frac{2c(d+ex)^{5/2}(-Ace-2bBe+5Bcd)}{5e^6}-\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6\sqrt{d+ex}}+\frac{2Bc^2(d+ex)^{7/2}}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*d^2*(B*d - A*e)*(c*d - b*e)^2)/(3*e^6*(d + e*x)^(3/2)) - (2*d*(c*d - b*e
)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(e^6*Sqrt[d + e*x]) + (2*(A*
e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*
e^2))*Sqrt[d + e*x])/e^6 - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*
c*d*e + b^2*e^2))*(d + e*x)^(3/2))/(3*e^6) - (2*c*(5*B*c*d - 2*b*B*e - A*c*
e)*(d + e*x)^(5/2))/(5*e^6) + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx=\int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^{5/2}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^{3/2}}+\frac{Ae}{}\right.$$

$$=\frac{2d^2(Bd-Ae)(cd-be)^2}{3e^6(d+ex)^{3/2}}-\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6\sqrt{d+ex}}+\frac{2\left(Ae\right.}{}$$

Mathematica [A] time = 0.16, size = 271, normalized size = 1.03

$$\frac{2\left(7Ae\left(5b^2e^2\left(8d^2+12dex+3e^2x^2\right)+10bce\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)+c^2\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)\right)+B\left(35b^2e^2\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)+14bce\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)-5c^2\left(256d^5+384d^4ex+96d^3e^2x^2-16d^2e^3x^3+6de^4x^4-3e^5x^5\right)\right)\right)}{105e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(7*A*e*(5*b^2*e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 10*b*c*e*(-16*d^3 - 2
4*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + c^2*(128*d^4 + 192*d^3*e*x + 48*d^2*e^
2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)) + B*(35*b^2*e^2*(-16*d^3 - 24*d^2*e*x - 6
*d*e^2*x^2 + e^3*x^3) + 14*b*c*e*(128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 -
8*d*e^3*x^3 + 3*e^4*x^4) - 5*c^2*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 -
16*d^2*e^3*x^3 + 6*d*e^4*x^4 - 3*e^5*x^5))))/(105*e^6*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.17, size = 399, normalized size = 1.52

$$\frac{2\left(-35Ab^2d^2e^3+210Ab^2de^3(d+ex)+105Ab^2e^3(d+ex)^2+70Abcd^3e^2-630Abcd^2e^2(d+ex)-630Abcde^2(d+ex)^2+70Abce^2(d+ex)^3-35Ac^2d^4e+420Ac^2d^3e(d+ex)+630Ac^2d^2e(d+ex)^2-140Ac^2de(d+ex)^3+21Ac^2e(d+ex)^4+35b^2Bd^3e^2-315b^2Bd^2e^2(d+ex)-315b^2Bde^2(d+ex)^2+35b^2Be^2(d+ex)^3-70bBcd^4e+840bBcd^3e(d+ex)+1260bBcd^2e(d+ex)^2-280bBcde(d+ex)^3+42bBce(d+ex)^4+35Bc^2d^5-525Bc^2d^4(d+ex)-1050Bc^2d^3(d+ex)^2+350Bc^2d^2(d+ex)^3-105Bc^2d(d+ex)^4+15Bc^2(d+ex)^5\right)}{105e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(35*B*c^2*d^5 - 70*b*B*c*d^4*e - 35*A*c^2*d^4*e + 35*b^2*B*d^3*e^2 + 70*
A*b*c*d^3*e^2 - 35*A*b^2*d^2*e^3 - 525*B*c^2*d^4*(d + e*x) + 840*b*B*c*d^3*
e*(d + e*x) + 420*A*c^2*d^3*e*(d + e*x) - 315*b^2*B*d^2*e^2*(d + e*x) - 630
*A*b*c*d^2*e^2*(d + e*x) + 210*A*b^2*d*e^3*(d + e*x) - 1050*B*c^2*d^3*(d +
e*x)^2 + 1260*b*B*c*d^2*e*(d + e*x)^2 + 630*A*c^2*d^2*e*(d + e*x)^2 - 315*b
^2*B*d*e^2*(d + e*x)^2 - 630*A*b*c*d*e^2*(d + e*x)^2 + 105*A*b^2*e^3*(d + e
*x)^2 + 350*B*c^2*d^2*(d + e*x)^3 - 280*b*B*c*d*e*(d + e*x)^3 - 140*A*c^2*d
*e*(d + e*x)^3 + 35*b^2*B*e^2*(d + e*x)^3 + 70*A*b*c*e^2*(d + e*x)^3 - 105*
B*c^2*d*(d + e*x)^4 + 42*b*B*c*e*(d + e*x)^4 + 21*A*c^2*e*(d + e*x)^4 + 15*
B*c^2*(d + e*x)^5))/(105*e^6*(d + e*x)^(3/2))
```

fricas [A] time = 0.42, size = 310, normalized size = 1.18

$$\frac{2\left(15\,Bc^2e^5x^5-1280\,Bc^2d^5+280\,Ab^2d^2e^3+896\left(2\,Bbc+Ac^2\right)d^4e-560\left(Bb^2+2\,Abc\right)d^3e^2-3\left(10\,Bc^2de^4-7\left(2\,Bbc+Ac^2\right)e^5\right)x^4+\left(80\,Bc^2d^2e^3-56\left(2\,Bbc+Ac^2\right)de^4+35\left(Bb^2+2\,Abc\right)e^5\right)x^3-3\left(160\,Bc^2d^3e^2-35\,Ab^2e^5-112\left(2\,Bbc+Ac^2\right)d^2e^3+70\left(Bb^2+2\,Abc\right)de^4\right)x^2-12\left(160\,Bc^2d^4e-35\,Ab^2de^4-112\left(2\,Bbc+Ac^2\right)d^3e^2+70\left(Bb^2+2\,Abc\right)d^2e^3\right)x\right)\sqrt{ex+d}}{105\left(e^8x^2+2\,de^7x+d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 280*A*b^2*d^2*e^3 + 896*(2*B*b*c
 + A*c^2)*d^4*e - 560*(B*b^2 + 2*A*b*c)*d^3*e^2 - 3*(10*B*c^2*d*e^4 - 7*(2*
B*b*c + A*c^2)*e^5)*x^4 + (80*B*c^2*d^2*e^3 - 56*(2*B*b*c + A*c^2)*d*e^4 +
35*(B*b^2 + 2*A*b*c)*e^5)*x^3 - 3*(160*B*c^2*d^3*e^2 - 35*A*b^2*e^5 - 112*(
2*B*b*c + A*c^2)*d^2*e^3 + 70*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 - 12*(160*B*c^2*
d^4*e - 35*A*b^2*d*e^4 - 112*(2*B*b*c + A*c^2)*d^3*e^2 + 70*(B*b^2 + 2*A*b*
c)*d^2*e^3)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
```

giac [A] time = 0.26, size = 427, normalized size = 1.62

$$\frac{2}{105}\left(15\,(xe+d)^{\frac{7}{2}}Bc^2e^{36}-105\,(xe+d)^{\frac{5}{2}}Bc^2de^{36}+350\,(xe+d)^{\frac{3}{2}}Bc^2d^2e^{36}-1050\,\sqrt{xe+d}\,Bc^2d^3e^{36}+42\,(xe+d)^{\frac{5}{2}}Bbce^{37}+21\,(xe+d)^{\frac{5}{2}}Ac^2e^{37}-280\,(xe+d)^{\frac{3}{2}}Bbcde^{37}-140\,(xe+d)^{\frac{3}{2}}Ac^2de^{37}+1260\,\sqrt{xe+d}\,Bbcd^2e^{37}+630\,\sqrt{xe+d}\,Ac^2d^2e^{37}+35\,(xe+d)^{\frac{3}{2}}Bb^2e^{38}+70\,(xe+d)^{\frac{3}{2}}Abce^{38}-315\,\sqrt{xe+d}\,Bb^2de^{38}-630\,\sqrt{xe+d}\,Abcde^{38}+105\,\sqrt{xe+d}\,Ab^2e^{39}\right)e^{(-42)}-\frac{2\left(15\,(xe+d)Bc^2d^4-Bc^2d^5-24\,(xe+d)Bbcd^3e-12\,(xe+d)Ac^2d^3e+2\,Bbcd^4e+Ac^2d^4e+9\,(xe+d)Bb^2d^2e^2+18\,(xe+d)Abcd^2e^2-Bb^2d^3e^2-2\,Abcd^3e^2-6\,(xe+d)Ab^2de^3+Ab^2d^2e^3\right)e^{(-6)}}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*c^2*e^36 - 105*(x*e + d)^(5/2)*B*c^2*d*e^36 + 3
50*(x*e + d)^(3/2)*B*c^2*d^2*e^36 - 1050*sqrt(x*e + d)*B*c^2*d^3*e^36 + 42*
(x*e + d)^(5/2)*B*b*c*e^37 + 21*(x*e + d)^(5/2)*A*c^2*e^37 - 280*(x*e + d)^
(3/2)*B*b*c*d*e^37 - 140*(x*e + d)^(3/2)*A*c^2*d*e^37 + 1260*sqrt(x*e + d)*
B*b*c*d^2*e^37 + 630*sqrt(x*e + d)*A*c^2*d^2*e^37 + 35*(x*e + d)^(3/2)*B*b^
2*e^38 + 70*(x*e + d)^(3/2)*A*b*c*e^38 - 315*sqrt(x*e + d)*B*b^2*d*e^38 - 6
30*sqrt(x*e + d)*A*b*c*d*e^38 + 105*sqrt(x*e + d)*A*b^2*e^39)*e^(-42) - 2/3
*(15*(x*e + d)*B*c^2*d^4 - B*c^2*d^5 - 24*(x*e + d)*B*b*c*d^3*e - 12*(x*e +
 d)*A*c^2*d^3*e + 2*B*b*c*d^4*e + A*c^2*d^4*e + 9*(x*e + d)*B*b^2*d^2*e^2 +
 18*(x*e + d)*A*b*c*d^2*e^2 - B*b^2*d^3*e^2 - 2*A*b*c*d^3*e^2 - 6*(x*e + d)
*A*b^2*d*e^3 + A*b^2*d^2*e^3)*e^(-6)/(x*e + d)^(3/2)
```

maple [A] time = 0.06, size = 341, normalized size = 1.30

$$\frac{\frac{512}{15}Bbc\,d^4e-\frac{4}{7}B\,c^2d\,e^4x^4+2A\,b^2e^5x^2+\frac{16}{3}A\,b^2d^2e^3+\frac{256}{15}A\,c^2d^4e-\frac{32}{3}B\,b^2d^3e^2+\frac{2}{3}B\,b^2e^5x^3+\frac{2}{5}A\,c^2e^5x^4+\frac{256}{5}Bbc\,d^3e^2x-32Abc\,d^2e^3x-8Abcd\,e^4x^2+\frac{64}{5}Bbc\,d^2e^3x^2-\frac{32}{15}Bbcd\,e^4x^3+\frac{2}{7}B\,c^2x^5e^5-\frac{512}{21}B\,c^2d^5+\frac{32}{21}B\,c^2d^2e^3x^3+\frac{128}{5}A\,c^2d^3e^2x-16B\,b^2d^2e^3x-\frac{16}{15}A\,c^2d\,e^4x^3+\frac{32}{5}A\,c^2d^2e^3x^2-4B\,b^2d\,e^4x^2-\frac{64}{7}B\,c^2d^3e^2x^2+8A\,b^2d\,e^4x+\frac{4}{5}Bbc\,e^5x^4+\frac{4}{3}Abc\,e^5x^3-\frac{64}{3}Abc\,d^3e^2-\frac{256}{7}B\,c^2d^4ex}{(ex+d)^{\frac{3}{2}}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x)
```

```
[Out] 2/105*(15*B*c^2*e^5*x^5+21*A*c^2*e^5*x^4+42*B*b*c*e^5*x^4-30*B*c^2*d*e^4*x^
4+70*A*b*c*e^5*x^3-56*A*c^2*d*e^4*x^3+35*B*b^2*e^5*x^3-112*B*b*c*d*e^4*x^3+
80*B*c^2*d^2*e^3*x^3+105*A*b^2*e^5*x^2-420*A*b*c*d*e^4*x^2+336*A*c^2*d^2*e^
3*x^2-210*B*b^2*d*e^4*x^2+672*B*b*c*d^2*e^3*x^2-480*B*c^2*d^3*e^2*x^2+420*A
```

```
*b^2*d*e^4*x-1680*A*b*c*d^2*e^3*x+1344*A*c^2*d^3*e^2*x-840*B*b^2*d^2*e^3*x+
2688*B*b*c*d^3*e^2*x-1920*B*c^2*d^4*e*x+280*A*b^2*d^2*e^3-1120*A*b*c*d^3*e^
2+896*A*c^2*d^4*e-560*B*b^2*d^3*e^2+1792*B*b*c*d^4*e-1280*B*c^2*d^5)/(e*x+d
)^(3/2)/e^6
```

maxima [A] time = 0.54, size = 297, normalized size = 1.13

$$\frac{2\left(\frac{15\,(ex+d)^{\frac{7}{2}}Bc^2-21\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{5}{2}}+35\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)(ex+d)^{\frac{3}{2}}-105\left(10\,Bc^2d^3-Ab^2e^3-6\left(2\,Bbc+Ac^2\right)d^2e+3\left(Bb^2+2\,Abc\right)de^2\right)\sqrt{ex+d}}{e^5}+\frac{35\left(Bc^2d^5-Ab^2d^2e^3-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,Abc\right)d^3e^2-3\left(5\,Bc^2d^4-2\,Ab^2de^3-4\left(2\,Bbc+Ac^2\right)d^3e+3\left(Bb^2+2\,Abc\right)d^2e^2\right)(ex+d)\right)}{(ex+d)^{\frac{3}{2}}e^5}\right)}{105\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*(e*x + d)^(7/2)*B*c^2 - 21*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*(e*
x + d)^(5/2) + 35*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*
c)*e^2)*(e*x + d)^(3/2) - 105*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c + A*c^
2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*sqrt(e*x + d))/e^5 + 35*(B*c^2*d^5 -
A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 - 3*(5*
B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)
*d^2*e^2)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 0.07, size = 316, normalized size = 1.20

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{5\,e^6}-\frac{(d+e\,x)\,\left(6\,B\,b^2\,d^2\,e^2-4\,A\,b^2\,d\,e^3-16\,B\,b\,c\,d^3\,e+12\,A\,b\,c\,d^2\,e^2+10\,B\,c^2\,d^4-8\,A\,c^2\,d^3\,e\right)-\frac{2\,B\,c^2\,d^5}{3}+\frac{2\,A\,c^2\,d^4\,e}{3}+\frac{2\,A\,b^2\,d^2\,e^3}{3}-\frac{2\,B\,b^2\,d^3\,e^2}{3}+\frac{4\,B\,b\,c\,d^4\,e}{3}-\frac{4\,A\,b\,c\,d^3\,e^2}{3}}{e^6\,(d+e\,x)^{3/2}}+\frac{\sqrt{d+e\,x}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)}{e^6}+\frac{(d+e\,x)^{3/2}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{3\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{7/2}}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(5*e^6) - ((d + e*x)
*(10*B*c^2*d^4 - 4*A*b^2*d*e^3 - 8*A*c^2*d^3*e + 6*B*b^2*d^2*e^2 - 16*B*b*c
*d^3*e + 12*A*b*c*d^2*e^2) - (2*B*c^2*d^5)/3 + (2*A*c^2*d^4*e)/3 + (2*A*b^2
*d^2*e^3)/3 - (2*B*b^2*d^3*e^2)/3 + (4*B*b*c*d^4*e)/3 - (4*A*b*c*d^3*e^2)/3
)/(e^6*(d + e*x)^(3/2)) + ((d + e*x)^(1/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12
*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/e^6 + ((d
+ e*x)^(3/2)*(2*B*b^2*e^2 + 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B
*b*c*d*e))/(3*e^6) + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6)
```

sympy [A] time = 75.51, size = 292, normalized size = 1.11

$$\frac{2Bc^2\,(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{2d^2\,(-Ae+Bd)\,(be-cd)^2}{3e^6\,(d+ex)^{\frac{3}{2}}}-\frac{2d\,(be-cd)\left(-2Abe^2+4Acde+3Bbde-5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{(d+ex)^{\frac{5}{2}}\left(2Ac^2e+4Bbce-10Bc^2d\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(4Abce^2-8Ac^2de+2Bb^2e^2-16Bbcde+20Bc^2d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\left(2Ab^2e^3-12Abcde^2+12Ac^2d^2e-6Bb^2de^2+24Bbcd^2e-20Bc^2d^3\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(7/2)/(7*e**6) + 2*d**2*(-A*e + B*d)*(b*e - c*d)**2/(3*
e**6*(d + e*x)**(3/2)) - 2*d*(b*e - c*d)*(-2*A*b*e**2 + 4*A*c*d*e + 3*B*b*d
*e - 5*B*c*d**2)/(e**6*sqrt(d + e*x)) + (d + e*x)**(5/2)*(2*A*c**2*e + 4*B*
b*c*e - 10*B*c**2*d)/(5*e**6) + (d + e*x)**(3/2)*(4*A*b*c*e**2 - 8*A*c**2*d
*e + 2*B*b**2*e**2 - 16*B*b*c*d*e + 20*B*c**2*d**2)/(3*e**6) + sqrt(d + e*x
)*(2*A*b**2*e**3 - 12*A*b*c*d*e**2 + 12*A*c**2*d**2*e - 6*B*b**2*d*e**2 + 2
4*B*b*c*d**2*e - 20*B*c**2*d**3)/e**6
```

3.1083 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=263

$$-\frac{2\sqrt{d+ex}\,\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{e^6}-\frac{2\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+1\right.\right.}{e^6\sqrt{d+ex}}$$

Rubi [A] time = 0.16, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2\sqrt{d+ex}\,\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{e^6}-\frac{2\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6\sqrt{d+ex}}+\frac{2d^2(Bd-Ae)(cd-be)^2}{5e^6(d+ex)^{5/2}}-\frac{2c(d+ex)^{3/2}(-Ace-2bBe+5Bcd)}{3e^6}-\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6(d+ex)^{3/2}}+\frac{2Bc^2(d+ex)^{5/2}}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*d^2*(B*d - A*e)*(c*d - b*e)^2)/(5*e^6*(d + e*x)^(5/2)) - (2*d*(c*d - b*e
)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(3*e^6*(d + e*x)^(3/2)) - (2
*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*
b^2*e^2)))/(e^6*Sqrt[d + e*x]) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2
- 8*b*c*d*e + b^2*e^2))*Sqrt[d + e*x])/e^6 - (2*c*(5*B*c*d - 2*b*B*e - A*c*
e)*(d + e*x)^(3/2))/(3*e^6) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{7/2}}\,dx=\int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^{7/2}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^{5/2}}+\frac{Ae\left(6c\right.}{}\right.$$

$$=\frac{2d^2(Bd-Ae)(cd-be)^2}{5e^6(d+ex)^{5/2}}-\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6(d+ex)^{3/2}}-\frac{2\left(Ae\left(6c^2\right.\right.}{}$$

Mathematica [A] time = 0.15, size = 272, normalized size = 1.03

$$\frac{2\left(Ae\left(-b^2e^2\left(8d^2+20dex+15e^2x^2\right)+6bce\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)-\left(c^2\left(128d^4+320d^3ex+240d^2e^2x^2+40de^3x^3-5e^4x^4\right)\right)\right)+B\left(3b^2e^2\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)-2bce\left(128d^4+320d^3ex+240d^2e^2x^2+40de^3x^3-5e^4x^4\right)+c^2\left(256d^5+640d^4ex+480d^3e^2x^2+80d^2e^3x^3-10de^4x^4+3e^5x^5\right)\right)\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(A*e*(-(b^2*e^2*(8*d^2 + 20*d*e*x + 15*e^2*x^2)) + 6*b*c*e*(16*d^3 + 40*
d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3) - c^2*(128*d^4 + 320*d^3*e*x + 240*d^2*
e^2*x^2 + 40*d*e^3*x^3 - 5*e^4*x^4)) + B*(3*b^2*e^2*(16*d^3 + 40*d^2*e*x +
30*d*e^2*x^2 + 5*e^3*x^3) - 2*b*c*e*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^
2 + 40*d*e^3*x^3 - 5*e^4*x^4) + c^2*(256*d^5 + 640*d^4*e*x + 480*d^3*e^2*x^
2 + 80*d^2*e^3*x^3 - 10*d*e^4*x^4 + 3*e^5*x^5))))/(15*e^6*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.20, size = 399, normalized size = 1.52

$$\frac{2\left(-3Ab^2d^2e^3+10Ab^2de^3(d+ex)-15Ab^2e^3(d+ex)^2+6Abcd^3e^2-30Abcd^2e^2(d+ex)+90Abcde^2(d+ex)^2+30Abce^2(d+ex)^3-3Ac^2d^4e+20Ac^2d^3e(d+ex)-90Ac^2d^2e(d+ex)^2-60Ac^2de(d+ex)^3+5Ac^2e(d+ex)^4+3b^2Bd^3e^2-15b^2Bd^2e^2(d+ex)+45b^2Bde^2(d+ex)^2+15b^2Be^2(d+ex)^3-6bBcd^4e+40bBcd^3e(d+ex)-180bBcd^2e(d+ex)^2-120bBcde(d+ex)^3+10bBce(d+ex)^4+3Bc^2d^5-25Bc^2d^4(d+ex)+150Bc^2d^3(d+ex)^2+150Bc^2d^2(d+ex)^3-25Bc^2d(d+ex)^4+3Bc^2(d+ex)^5\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*B*c^2*d^5 - 6*b*B*c*d^4*e - 3*A*c^2*d^4*e + 3*b^2*B*d^3*e^2 + 6*A*b*c
*d^3*e^2 - 3*A*b^2*d^2*e^3 - 25*B*c^2*d^4*(d + e*x) + 40*b*B*c*d^3*e*(d + e
*x) + 20*A*c^2*d^3*e*(d + e*x) - 15*b^2*B*d^2*e^2*(d + e*x) - 30*A*b*c*d^2*
e^2*(d + e*x) + 10*A*b^2*d*e^3*(d + e*x) + 150*B*c^2*d^3*(d + e*x)^2 - 180*
b*B*c*d^2*e*(d + e*x)^2 - 90*A*c^2*d^2*e*(d + e*x)^2 + 45*b^2*B*d*e^2*(d +
e*x)^2 + 90*A*b*c*d*e^2*(d + e*x)^2 - 15*A*b^2*e^3*(d + e*x)^2 + 150*B*c^2*
d^2*(d + e*x)^3 - 120*b*B*c*d*e*(d + e*x)^3 - 60*A*c^2*d*e*(d + e*x)^3 + 15
*b^2*B*e^2*(d + e*x)^3 + 30*A*b*c*e^2*(d + e*x)^3 - 25*B*c^2*d*(d + e*x)^4
+ 10*b*B*c*e*(d + e*x)^4 + 5*A*c^2*e*(d + e*x)^4 + 3*B*c^2*(d + e*x)^5))/(1
5*e^6*(d + e*x)^(5/2))
```

fricas [A] time = 0.41, size = 322, normalized size = 1.22

$$\frac{2\left(3\,Bc^2e^5x^5 + 256\,Bc^2d^5 - 8\,Ab^2d^2e^3 - 128\left(2\,Bbc + Ac^2\right)d^4e + 48\left(Bb^2 + 2\,Abc\right)d^3e^2 - 5\left(2\,Bc^2de^4 - \left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 5\left(16\,Bc^2d^2e^3 - 8\left(2\,Bbc + Ac^2\right)de^4 + 3\left(Bb^2 + 2\,Abc\right)e^5\right)x^3 + 15\left(32\,Bc^2d^3e^2 - Ab^2e^5 - 16\left(2\,Bbc + Ac^2\right)d^2e^3 + 6\left(Bb^2 + 2\,Abc\right)de^4\right)x^2 + 20\left(32\,Bc^2d^4e - Ab^2de^4 - 16\left(2\,Bbc + Ac^2\right)d^3e^2 + 6\left(Bb^2 + 2\,Abc\right)d^2e^3\right)x\right)\sqrt{ex + d}}{15\left(e^9x^3 + 3\,de^8x^2 + 3\,d^2e^7x + d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*e^5*x^5 + 256*B*c^2*d^5 - 8*A*b^2*d^2*e^3 - 128*(2*B*b*c + A*
c^2)*d^4*e + 48*(B*b^2 + 2*A*b*c)*d^3*e^2 - 5*(2*B*c^2*d*e^4 - (2*B*b*c + A
*c^2)*e^5)*x^4 + 5*(16*B*c^2*d^2*e^3 - 8*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2
 + 2*A*b*c)*e^5)*x^3 + 15*(32*B*c^2*d^3*e^2 - A*b^2*e^5 - 16*(2*B*b*c + A*c
^2)*d^2*e^3 + 6*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 20*(32*B*c^2*d^4*e - A*b^2*d
*e^4 - 16*(2*B*b*c + A*c^2)*d^3*e^2 + 6*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)*sqrt(
e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.23, size = 427, normalized size = 1.62

$$\frac{2}{15}\left(3\left(xe + d\right)^{\frac{5}{2}}Bc^2e^{24} - 25\left(xe + d\right)^{\frac{3}{2}}Bc^2de^{24} + 150\sqrt{xe + d}\,Bc^2d^2e^{24} + 10\left(xe + d\right)^{\frac{3}{2}}Bbce^{25} + 5\left(xe + d\right)^{\frac{3}{2}}Ac^2e^{25} - 120\sqrt{xe + d}\,Bbcde^{25} - 60\sqrt{xe + d}\,Ac^2de^{25} + 15\sqrt{xe + d}\,Bb^2e^{26} + 30\sqrt{xe + d}\,Abce^{26}\right)e^{(-30)} + \frac{2\left(150\left(xe + d\right)^2Bc^2d^3 - 25\left(xe + d\right)Bc^2d^4 + 3\,Bc^2d^5 - 180\left(xe + d\right)^2Bbcd^2e - 90\left(xe + d\right)^2Ac^2d^2e + 40\left(xe + d\right)Bbcd^3e + 20\left(xe + d\right)Ac^2d^3e - 6\,Bbcd^4e - 3\,Ac^2d^4e + 45\left(xe + d\right)^2Bb^2de^2 + 90\left(xe + d\right)^2Abcde^2 - 15\left(xe + d\right)Bb^2d^2e^2 - 30\left(xe + d\right)Abcd^2e^2 + 3\,Bb^2d^3e^2 + 6\,Abcd^3e^2 - 15\left(xe + d\right)^2Ab^2e^3 + 10\left(xe + d\right)Ab^2de^3 - 3\,Ab^2d^2e^3\right)e^{(-6)}}{15\left(xe + d\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c^2*e^24 - 25*(x*e + d)^(3/2)*B*c^2*d*e^24 + 150*
sqrt(x*e + d)*B*c^2*d^2*e^24 + 10*(x*e + d)^(3/2)*B*b*c*e^25 + 5*(x*e + d)^
(3/2)*A*c^2*e^25 - 120*sqrt(x*e + d)*B*b*c*d*e^25 - 60*sqrt(x*e + d)*A*c^2*
d*e^25 + 15*sqrt(x*e + d)*B*b^2*e^26 + 30*sqrt(x*e + d)*A*b*c*e^26)*e^(-30)
 + 2/15*(150*(x*e + d)^2*B*c^2*d^3 - 25*(x*e + d)*B*c^2*d^4 + 3*B*c^2*d^5 -
 180*(x*e + d)^2*B*b*c*d^2*e - 90*(x*e + d)^2*A*c^2*d^2*e + 40*(x*e + d)*B*
b*c*d^3*e + 20*(x*e + d)*A*c^2*d^3*e - 6*B*b*c*d^4*e - 3*A*c^2*d^4*e + 45*(
x*e + d)^2*B*b^2*d*e^2 + 90*(x*e + d)^2*A*b*c*d*e^2 - 15*(x*e + d)*B*b^2*d^
2*e^2 - 30*(x*e + d)*A*b*c*d^2*e^2 + 3*B*b^2*d^3*e^2 + 6*A*b*c*d^3*e^2 - 15
*(x*e + d)^2*A*b^2*e^3 + 10*(x*e + d)*A*b^2*d*e^3 - 3*A*b^2*d^2*e^3)*e^(-6)
/(x*e + d)^(5/2)
```

maple [A] time = 0.06, size = 341, normalized size = 1.30

$$-\frac{2\left(-3B\,c^2x^5e^5 - 5A\,c^2e^5x^4 - 10Bbc\,e^5x^4 + 10B\,c^2d\,e^4x^4 - 30Abc\,e^5x^3 + 40A\,c^2d\,e^4x^3 - 15B\,b^2e^5x^3 + 80Bbcd\,e^4x^3 - 80B\,c^2d^2e^3x^3 + 15A\,b^2e^5x^2 - 180Abcd\,e^4x^2 + 240A\,c^2d^2e^3x^2 - 90B\,b^2d\,e^4x^2 + 480Bbc\,d^2e^3x^2 - 480B\,c^2d^3e^2x^2 + 20A\,b^2d\,e^4x - 240Abc\,d^2e^3x + 320A\,c^2d^3e^2x - 120B\,b^2d^2e^3x + 640Bbc\,d^3e^2x - 640B\,c^2d^4ex + 8A\,b^2d^2e^3 - 96Abc\,d^3e^2 + 128A\,c^2d^4e - 48B\,b^2d^3e^2 + 256Bbc\,d^4e - 256B\,c^2d^5\right)}{15\left(ex + d\right)^{\frac{5}{2}}e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-3*B*c^2*e^5*x^5-5*A*c^2*e^5*x^4-10*B*b*c*e^5*x^4+10*B*c^2*d*e^4*x^4
-30*A*b*c*e^5*x^3+40*A*c^2*d*e^4*x^3-15*B*b^2*e^5*x^3+80*B*b*c*d*e^4*x^3-80
*B*c^2*d^2*e^3*x^3+15*A*b^2*e^5*x^2-180*A*b*c*d*e^4*x^2+240*A*c^2*d^2*e^3*x
^2-90*B*b^2*d*e^4*x^2+480*B*b*c*d^2*e^3*x^2-480*B*c^2*d^3*e^2*x^2+20*A*b^2*
```

```
d*e^4*x-240*A*b*c*d^2*e^3*x+320*A*c^2*d^3*e^2*x-120*B*b^2*d^2*e^3*x+640*B*b
*c*d^3*e^2*x-640*B*c^2*d^4*e*x+8*A*b^2*d^2*e^3-96*A*b*c*d^3*e^2+128*A*c^2*d
^4*e-48*B*b^2*d^3*e^2+256*B*b*c*d^4*e-256*B*c^2*d^5)/(e*x+d)^(5/2)/e^6
```

maxima [A] time = 0.58, size = 298, normalized size = 1.13

$$\frac{2\left(\frac{3(ex+d)^{\frac{5}{2}}Bc^2-5\left(5Bc^2d-\left(2Bbc+Ac^2\right)e\right)(ex+d)^{\frac{3}{2}}+15\left(10Bc^2d^2-4\left(2Bbc+Ac^2\right)de+\left(Bb^2+2Abc\right)e^2\right)\sqrt{ex+d}}{e^5}+\frac{3Bc^2d^5-3Ab^2d^2e^3-3\left(2Bbc+Ac^2\right)d^4e+3\left(Bb^2+2Abc\right)d^3e^2+15\left(10Bc^2d^3-Ab^2e^3-6\left(2Bbc+Ac^2\right)d^2e+3\left(Bb^2+2Abc\right)de^2\right)(ex+d)^2-5\left(5Bc^2d^4-2Ab^2de^3-4\left(2Bbc+Ac^2\right)d^3e+3\left(Bb^2+2Abc\right)d^2e^2\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^5}\right)}{15e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c^2 - 5*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*(e*x +
 d)^(3/2) + 15*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*c)*
e^2)*sqrt(e*x + d))/e^5 + (3*B*c^2*d^5 - 3*A*b^2*d^2*e^3 - 3*(2*B*b*c + A*c
^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + 15*(10*B*c^2*d^3 - A*b^2*e^3 - 6*
(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^2 - 5*(5*B*c
^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^
2*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [B] time = 1.56, size = 312, normalized size = 1.19

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{3\,e^6}+\frac{\sqrt{d+e\,x}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{e^6}-\frac{(d+e\,x)\,\left(2\,B\,b^2\,d^2\,e^2-\frac{4\,A\,b^2\,d\,e^3}{3}-\frac{16\,B\,b\,c\,d^3\,e}{3}+4\,A\,b\,c\,d^2\,e^2+\frac{10\,B\,c^2\,d^4}{3}-\frac{8\,A\,c^2\,d^3\,e}{3}\right)+(d+e\,x)^2\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-20\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e\right)-\frac{2\,B\,c^2\,d^5}{5}+\frac{2\,A\,c^2\,d^4\,e}{5}+\frac{2\,A\,b^2\,d^2\,e^3}{5}-\frac{2\,B\,b^2\,d^3\,e^2}{5}+\frac{4\,B\,b\,c\,d^4\,e}{5}-\frac{4\,A\,b\,c\,d^3\,e^2}{5}}{e^6\,(d+e\,x)^{5/2}}+\frac{2\,B\,c^2\,(d+e\,x)^{5/2}}{5\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(3*e^6) + ((d + e*x)
^(1/2)*(2*B*b^2*e^2 + 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d
*e))/e^6 - ((d + e*x)*((10*B*c^2*d^4)/3 - (4*A*b^2*d*e^3)/3 - (8*A*c^2*d^3*
e)/3 + 2*B*b^2*d^2*e^2 - (16*B*b*c*d^3*e)/3 + 4*A*b*c*d^2*e^2) + (d + e*x)^
2*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*b*c*d
*e^2 + 24*B*b*c*d^2*e) - (2*B*c^2*d^5)/5 + (2*A*c^2*d^4*e)/5 + (2*A*b^2*d^2
*e^3)/5 - (2*B*b^2*d^3*e^2)/5 + (4*B*b*c*d^4*e)/5 - (4*A*b*c*d^3*e^2)/5)/(e
^6*(d + e*x)^(5/2)) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6)
```

sympy [A] time = 4.86, size = 1833, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-16*A*b**2*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*s
qrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 40*A*b**2*d*e**4*x/(15*d**2*e*
*6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
- 30*A*b**2*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*
x) + 15*e**8*x**2*sqrt(d + e*x)) + 192*A*b*c*d**3*e**2/(15*d**2*e**6*sqrt(d
 + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 480*A*b
*c*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15
*e**8*x**2*sqrt(d + e*x)) + 360*A*b*c*d*e**4*x**2/(15*d**2*e**6*sqrt(d + e*
x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 60*A*b*c*e**
5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) - 256*A*c**2*d**4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e*
*7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 640*A*c**2*d**3*e**2*x/(
15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(
d + e*x)) - 480*A*c**2*d**2*e**3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e*
*7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 80*A*c**2*d*e**4*x**3/(1
5*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d
 + e*x)) + 10*A*c**2*e**5*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sq
rt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 96*B*b**2*d**3*e**2/(15*d**2*e*
```

```
*6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
+ 240*B*b**2*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d +
 e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 180*B*b**2*d*e**4*x**2/(15*d**2*e**6*
sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 3
0*B*b**2*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x)
+ 15*e**8*x**2*sqrt(d + e*x)) - 512*B*b*c*d**4*e/(15*d**2*e**6*sqrt(d + e*x
) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1280*B*b*c*d*
*3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8
*x**2*sqrt(d + e*x)) - 960*B*b*c*d**2*e**3*x**2/(15*d**2*e**6*sqrt(d + e*x)
 + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 160*B*b*c*d*e*
*4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x
**2*sqrt(d + e*x)) + 20*B*b*c*e**5*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*
e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 512*B*c**2*d**5/(15*d*
*2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e
*x)) + 1280*B*c**2*d**4*e*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(
d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*B*c**2*d**3*e**2*x**2/(15*d**2
*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x
)) + 160*B*c**2*d**2*e**3*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sq
rt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*B*c**2*d*e**4*x**4/(15*d**2*
e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)
) + 6*B*c**2*e**5*x**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e
*x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*b**2*x**3/3 + A*b*c*x**4/
2 + A*c**2*x**5/5 + B*b**2*x**4/4 + 2*B*b*c*x**5/5 + B*c**2*x**6/6)/d**(7/2
), True))
```

3.1084 $\int \frac{(A+Bx)(d+ex)^{7/2}}{bx+cx^2}\,dx$

Optimal. Leaf size=228

$$\frac{2\sqrt{d+ex}\left(Ace\left(b^2e^2-3bcde+3c^2d^2\right)+B(cd-be)^3\right)}{c^4}-\frac{2(bB-Ac)(cd-be)^{7/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{9/2}}+\frac{2(d+ex)^{3/2}\left(A\right.}{}$$

Rubi [A] time = 0.56, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$\frac{2\sqrt{d+ex}\left(Ace\left(b^2e^2-3bcde+3c^2d^2\right)+B(cd-be)^3\right)}{c^4}+\frac{2(d+ex)^{5/2}(Ace-bBe+Bcd)}{5c^2}+\frac{2(d+ex)^{3/2}\left(Ace(2cd-be)+B(cd-be)^2\right)}{3c^3}-\frac{2(bB-Ac)(cd-be)^{7/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{9/2}}-\frac{2Ad^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B(d+ex)^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(B*(c*d - b*e)^3 + A*c*e*(3*c^2*d^2 - 3*b*c*d*e + b^2*e^2))*Sqrt[d + e*x
])/c^4 + (2*(B*(c*d - b*e)^2 + A*c*e*(2*c*d - b*e))*(d + e*x)^(3/2))/(3*c^3
) + (2*(B*c*d - b*B*e + A*c*e)*(d + e*x)^(5/2))/(5*c^2) + (2*B*(d + e*x)^(7
/2))/(7*c) - (2*A*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2*(b*B - A*c
)*(c*d - b*e)^(7/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^
(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{bx+cx^2}\,dx = \frac{2B(d+ex)^{7/2}}{7c} + \frac{\int \frac{(d+ex)^{5/2}(Acd+(Bcd-bBe+Ace)x)}{bx+cx^2}\,dx}{c}$$

$$= \frac{2(Bcd-bBe+Ace)(d+ex)^{5/2}}{5c^2} + \frac{2B(d+ex)^{7/2}}{7c} + \frac{\int \frac{(d+ex)^{3/2}\left(Ac^2d^2+\left(B(cd-be)^2+Ace(2cd\right.\right.}{bx+cx^2}}{c^2}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)(d+ex)^{3/2}}{3c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{5/2}}{5c^2} + 2B$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

Mathematica [A] time = 0.50, size = 212, normalized size = 0.93

$$\frac{2\left(\frac{(bB-Ac)\left(7(cd-be)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)+15c^{7/2}(d+ex)^{7/2}\right)}{c^{9/2}}-105Ad^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+A\sqrt{d+ex}\left(176d^3+122d^2ex+66de^2x^2+15e^3x^3\right)\right)}{105b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(A*Sqrt[d + e*x]*(176*d^3 + 122*d^2*e*x + 66*d*e^2*x^2 + 15*e^3*x^3) - 1
05*A*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]] + ((b*B - A*c)*(15*c^(7/2)*(d +
 e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d - b*e)*(Sqr
t[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*ArcTanh[(S
qrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))))/c^(9/2)))/(105*b)
```

IntegrateAlgebraic [A] time = 0.30, size = 311, normalized size = 1.36

$$\frac{2\sqrt{d+ex}\left(105ABc^3d^3-315Abc^2d^2e+315Ac^3d^2e+315b^2Bcde^2-315Abc^2de^2-105b^3Be^3+105Ab^2ce^3+35Bc^3d^2(d+ex)-70bBc^2de(d+ex)+70Ac^3de(d+ex)+35b^2Bce^2(d+ex)-35Abc^2e^2(d+ex)+21Bc^3d(d+ex)^2-21bBc^2e(d+ex)^2+21Ac^3e(d+ex)^2+15Bc^3(d+ex)^3\right)}{105c^4}+\frac{2(Ac-bB)(be-cd)^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{bc^{9/2}}-\frac{2Ad^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(105*B*c^3*d^3 - 315*b*B*c^2*d^2*e + 315*A*c^3*d^2*e + 315
*b^2*B*c*d*e^2 - 315*A*b*c^2*d*e^2 - 105*b^3*B*e^3 + 105*A*b^2*c*e^3 + 35*B
*c^3*d^2*(d + e*x) - 70*b*B*c^2*d*e*(d + e*x) + 70*A*c^3*d*e*(d + e*x) + 35
*b^2*B*c*e^2*(d + e*x) - 35*A*b*c^2*e^2*(d + e*x) + 21*B*c^3*d*(d + e*x)^2
- 21*b*B*c^2*e*(d + e*x)^2 + 21*A*c^3*e*(d + e*x)^2 + 15*B*c^3*(d + e*x)^3)
)/(105*c^4) + (2*(-(b*B) + A*c)*(-(c*d) + b*e)^(7/2)*ArcTan[(Sqrt[c]*Sqrt[-
(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b*c^(9/2)) - (2*A*d^(7/2)*ArcTan
h[Sqrt[d + e*x]/Sqrt[d]])/b
```

fricas [A] time = 15.89, size = 1474, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/105*(105*A*c^4*d^(7/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 10
5*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b
^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c
*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(15*B*b*c^
3*e^3*x^3 + 176*B*b*c^3*d^3 - 406*(B*b^2*c^2 - A*b*c^3)*d^2*e + 350*(B*b^3*
c - A*b^2*c^2)*d*e^2 - 105*(B*b^4 - A*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2 - 7*
(B*b^2*c^2 - A*b*c^3)*e^3)*x^2 + (122*B*b*c^3*d^2*e - 112*(B*b^2*c^2 - A*b*
c^3)*d*e^2 + 35*(B*b^3*c - A*b^2*c^2)*e^3)*x)*sqrt(e*x + d))/(b*c^4), 1/105
*(105*A*c^4*d^(7/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 210*((B*
b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2
)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)
*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + 2*(15*B*b*c^3*e^3*x^3 + 176*B*b*c^3*
d^3 - 406*(B*b^2*c^2 - A*b*c^3)*d^2*e + 350*(B*b^3*c - A*b^2*c^2)*d*e^2 - 1
05*(B*b^4 - A*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2 - 7*(B*b^2*c^2 - A*b*c^3)*e^
3)*x^2 + (122*B*b*c^3*d^2*e - 112*(B*b^2*c^2 - A*b*c^3)*d*e^2 + 35*(B*b^3*c
 - A*b^2*c^2)*e^3)*x)*sqrt(e*x + d))/(b*c^4), 1/105*(210*A*c^4*sqrt(-d)*d^3
*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 105*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c
^2 - A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3
)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*
d - b*e)/c))/(c*x + b)) + 2*(15*B*b*c^3*e^3*x^3 + 176*B*b*c^3*d^3 - 406*(B*
b^2*c^2 - A*b*c^3)*d^2*e + 350*(B*b^3*c - A*b^2*c^2)*d*e^2 - 105*(B*b^4 - A
*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2 - 7*(B*b^2*c^2 - A*b*c^3)*e^3)*x^2 + (122
*B*b*c^3*d^2*e - 112*(B*b^2*c^2 - A*b*c^3)*d*e^2 + 35*(B*b^3*c - A*b^2*c^2)
*e^3)*x)*sqrt(e*x + d))/(b*c^4), 2/105*(105*A*c^4*sqrt(-d)*d^3*arctan(sqrt(
e*x + d)*sqrt(-d)/d) - 105*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)
*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*sqrt(-(c*d
- b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + (15*B
*b*c^3*e^3*x^3 + 176*B*b*c^3*d^3 - 406*(B*b^2*c^2 - A*b*c^3)*d^2*e + 350*(B
*b^3*c - A*b^2*c^2)*d*e^2 - 105*(B*b^4 - A*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2
 - 7*(B*b^2*c^2 - A*b*c^3)*e^3)*x^2 + (122*B*b*c^3*d^2*e - 112*(B*b^2*c^2 -
 A*b*c^3)*d*e^2 + 35*(B*b^3*c - A*b^2*c^2)*e^3)*x)*sqrt(e*x + d))/(b*c^4)]
```

giac [B] time = 0.30, size = 476, normalized size = 2.09

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d^4*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*(B*b*c^4*d^4 - A*c^
5*d^4 - 4*B*b^2*c^3*d^3*e + 4*A*b*c^4*d^3*e + 6*B*b^3*c^2*d^2*e^2 - 6*A*b^2
*c^3*d^2*e^2 - 4*B*b^4*c*d*e^3 + 4*A*b^3*c^2*d*e^3 + B*b^5*e^4 - A*b^4*c*e^
4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b*c^4
) + 2/105*(15*(x*e + d)^(7/2)*B*c^6 + 21*(x*e + d)^(5/2)*B*c^6*d + 35*(x*e
+ d)^(3/2)*B*c^6*d^2 + 105*sqrt(x*e + d)*B*c^6*d^3 - 21*(x*e + d)^(5/2)*B*b
*c^5*e + 21*(x*e + d)^(5/2)*A*c^6*e - 70*(x*e + d)^(3/2)*B*b*c^5*d*e + 70*(
x*e + d)^(3/2)*A*c^6*d*e - 315*sqrt(x*e + d)*B*b*c^5*d^2*e + 315*sqrt(x*e +
 d)*A*c^6*d^2*e + 35*(x*e + d)^(3/2)*B*b^2*c^4*e^2 - 35*(x*e + d)^(3/2)*A*b
*c^5*e^2 + 315*sqrt(x*e + d)*B*b^2*c^4*d*e^2 - 315*sqrt(x*e + d)*A*b*c^5*d*
e^2 - 105*sqrt(x*e + d)*B*b^3*c^3*e^3 + 105*sqrt(x*e + d)*A*b^2*c^4*e^3)/c^
7
```

maple [B] time = 0.12, size = 741, normalized size = 3.25

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x)
```

```
[Out] 2/5/c*A*(e*x+d)^(5/2)*e+2/5/c*B*(e*x+d)^(5/2)*d+2/3/c*B*(e*x+d)^(3/2)*d^2+2
/c*B*d^3*(e*x+d)^(1/2)+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*B*d^4+8*b^2/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*A*d*e^3-12*b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/
((b*e-c*d)*c)^(1/2)*c)*A*d^2*e^2-8*b^3/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+
d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d*e^3+12*b^2/c^2/((b*e-c*d)*c)^(1/2)*arct
an((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2*e^2-8*b/c/((b*e-c*d)*c)^(1/2)
*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3*e-2/5/c^2*B*(e*x+d)^(5/2
)*b*e-2/3/c^2*A*(e*x+d)^(3/2)*b*e^2+4/3/c*A*(e*x+d)^(3/2)*d*e+2/3/c^3*B*(e*
x+d)^(3/2)*b^2*e^2+2/c^3*A*b^2*e^3*(e*x+d)^(1/2)+6/c*A*d^2*e*(e*x+d)^(1/2)-
2/c^4*B*b^3*e^3*(e*x+d)^(1/2)+8/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((
b*e-c*d)*c)^(1/2)*c)*A*d^3*e+2*b^4/c^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*B*e^4-4/3/c^2*B*(e*x+d)^(3/2)*b*d*e-6/c^2*A*b*d
*e^2*(e*x+d)^(1/2)+6/c^3*B*b^2*d*e^2*(e*x+d)^(1/2)-6/c^2*B*b*d^2*e*(e*x+d)^
(1/2)-2*b^3/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2
)*c)*A*e^4-2/b*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/
2)*c)*A*d^4+2/7*B*(e*x+d)^(7/2)/c-2*A*d^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2)
)/b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.36, size = 6515, normalized size = 28.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x)
```

```
[Out] ((2*A*e - 2*B*d)/(5*c) - (2*B*(b*e - 2*c*d))/(5*c^2))*(d + e*x)^(5/2) - (((
c*d^2 - b*d*e)*((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/c - ((b*e - 2
*c*d)*(((b*e - 2*c*d)*((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/c + (2
*B*(c*d^2 - b*d*e))/c^2))/c)*(d + e*x)^(1/2) - (((b*e - 2*c*d)*((2*A*e - 2*
B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/(3*c) + (2*B*(c*d^2 - b*d*e))/(3*c^2))*(
d + e*x)^(3/2) + (2*B*(d + e*x)^(7/2))/(7*c) - (A*atan(((A*((8*(d + e*x)^(1
/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8
*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5
*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7
*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4
*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9
- 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^
9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*
d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c
^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + (A*(d^7)^(1/2)*((8*(B*b^6*c^5*d
*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^
4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e
^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^7
)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2)*1i)/b + (A*((8*(d + e*x)^
(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c
^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c
^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d
^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d
```

^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - (A*(d^7)^(1/2)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^7)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2)*1i)/b)/((16*(4*A^3*c^9*d^11*e^3 + 52*A^3*b^2*c^7*d^9*e^5 - 69*A^3*b^3*c^6*d^8*e^6 + 56*A^3*b^4*c^5*d^7*e^7 - 28*A^3*b^5*c^4*d^6*e^8 + 8*A^3*b^6*c^3*d^5*e^9 - A^3*b^7*c^2*d^4*e^10 - A*B^2*b^9*d^4*e^10 + A^2*B*c^9*d^12*e^2 - 22*A^3*b*c^8*d^10*e^4 + 8*A*B^2*b^2*c^7*d^11*e^3 - 28*A*B^2*b^3*c^6*d^10*e^4 + 56*A*B^2*b^4*c^5*d^9*e^5 - 70*A*B^2*b^5*c^4*d^8*e^6 + 56*A*B^2*b^6*c^3*d^7*e^7 - 28*A*B^2*b^7*c^2*d^6*e^8 + 50*A^2*B*b^2*c^7*d^10*e^4 - 108*A^2*B*b^3*c^6*d^9*e^5 + 139*A^2*B*b^4*c^5*d^8*e^6 - 112*A^2*B*b^5*c^4*d^7*e^7 + 56*A^2*B*b^6*c^3*d^6*e^8 - 16*A^2*B*b^7*c^2*d^5*e^9 - A*B^2*b*c^8*d^12*e^2 + 8*A*B^2*b^8*c*d^5*e^9 - 12*A^2*B*b*c^8*d^11*e^3 + 2*A^2*B*b^8*c*d^4*e^10))/c^7 + (A*((8*(d + e*x)^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + (A*(d^7)^(1/2)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^7)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2))/b - (A*((8*(d + e*x)^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - (A*(d^7)^(1/2)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^7)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2))/b))*(d^7)^(1/2)*2i)/b - (atan((((-c^9*(b*e - c*d)^7)^(1/2)*((8*(d + e*x)^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + ((-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^16)))/(b*c^9))*(A*c - B*b)*1i)/(b*c^9) + ((-c^9*(b*e - c*d)^7)^(1/2)*((8*(d + e*x)^(1/2)*(B^2*

```
b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8*d^6*e^4
- 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5*d^3*e^7
+ 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7*e^3 + 28
*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4*e^6 - 56
*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b
*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2
 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 +
 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^
7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - ((-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*
((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*
d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6
*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8*(b^3*c^9*e^3 - 2*b^2*c^
10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^16))
)/(b*c^9))*(A*c - B*b)*1i)/(b*c^9))/((16*(4*A^3*c^9*d^11*e^3 + 52*A^3*b^2*c
^7*d^9*e^5 - 69*A^3*b^3*c^6*d^8*e^6 + 56*A^3*b^4*c^5*d^7*e^7 - 28*A^3*b^5*c
^4*d^6*e^8 + 8*A^3*b^6*c^3*d^5*e^9 - A^3*b^7*c^2*d^4*e^10 - A*B^2*b^9*d^4*e
^10 + A^2*B*c^9*d^12*e^2 - 22*A^3*b*c^8*d^10*e^4 + 8*A*B^2*b^2*c^7*d^11*e^3
 - 28*A*B^2*b^3*c^6*d^10*e^4 + 56*A*B^2*b^4*c^5*d^9*e^5 - 70*A*B^2*b^5*c^4*
d^8*e^6 + 56*A*B^2*b^6*c^3*d^7*e^7 - 28*A*B^2*b^7*c^2*d^6*e^8 + 50*A^2*B*b^
2*c^7*d^10*e^4 - 108*A^2*B*b^3*c^6*d^9*e^5 + 139*A^2*B*b^4*c^5*d^8*e^6 - 11
2*A^2*B*b^5*c^4*d^7*e^7 + 56*A^2*B*b^6*c^3*d^6*e^8 - 16*A^2*B*b^7*c^2*d^5*e
^9 - A*B^2*b*c^8*d^12*e^2 + 8*A*B^2*b^8*c*d^5*e^9 - 12*A^2*B*b*c^8*d^11*e^3
 + 2*A^2*B*b^8*c*d^4*e^10))/c^7 + ((-c^9*(b*e - c*d)^7)^(1/2)*((8*(d + e*x)
^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*
c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*
c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*
d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*
d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e
^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b
*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c
^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^
6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + ((-c^9*(b*e - c*d)^7)^(1/2)*
(A*c - B*b)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 -
6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8
*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*(b^3*c^9*e^
3 - 2*b^2*c^10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2
))/(b*c^16)))/(b*c^9))*(A*c - B*b))/(b*c^9) - ((-c^9*(b*e - c*d)^7)^(1/2)*(
(8*(d + e*x)^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 +
 28*A^2*b^2*c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 -
 56*A^2*b^5*c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*
B^2*b^3*c^7*d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*
B^2*b^6*c^4*d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B
^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^
10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 -
56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6
+ 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - ((-c^9*(b*e - c*
d)^7)^(1/2)*(A*c - B*b)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^
9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 -
 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8
*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d
 + e*x)^(1/2))/(b*c^16)))/(b*c^9))*(A*c - B*b))/(b*c^9)))*(-c^9*(b*e - c*d)
^7)^(1/2)*(A*c - B*b)*2i)/(b*c^9)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1085 $\int \frac{(A+Bx)(d+ex)^{5/2}}{bx+cx^2} \, dx$

Optimal. Leaf size=173

$$-\frac{2(bB-Ac)(cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{7/2}}+\frac{2\sqrt{d+ex}\left(Ace(2cd-be)+B(cd-be)^2\right)}{c^3}+\frac{2(d+ex)^{3/2}(Ace-bBe}{3c^2}$$

Rubi [A] time = 0.36, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$\frac{2(d+ex)^{3/2}(Ace-bBe+Bcd)}{3c^2}+\frac{2\sqrt{d+ex}\left(Ace(2cd-be)+B(cd-be)^2\right)}{c^3}-\frac{2(bB-Ac)(cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{7/2}}-\frac{2Ad^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B(d+ex)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(B*(c*d - b*e)^2 + A*c*e*(2*c*d - b*e))*Sqrt[d + e*x])/c^3 + (2*(B*c*d -
 b*B*e + A*c*e)*(d + e*x)^(3/2))/(3*c^2) + (2*B*(d + e*x)^(5/2))/(5*c) - (2
*A*d^(5/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2*(b*B - A*c)*(c*d - b*e)^(
5/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{bx+cx^2}\,dx = \frac{2B(d+ex)^{5/2}}{5c} + \frac{\int \frac{(d+ex)^{3/2}(Acd+(Bcd-bBe+Ace)x)}{bx+cx^2}\,dx}{c}$$

$$= \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + \frac{2B(d+ex)^{5/2}}{5c} + \frac{\int \frac{\sqrt{d+ex}\left(Ac^2d^2+\left(B(cd-be)^2+Ace(2cd-be)\right)\right.}{bx+cx^2}}{c^2}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + \frac{2B(d+}{5}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + \frac{2B(d+}{5}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + \frac{2B(d+}{5}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + \frac{2B(d+}{5}$$

Mathematica [A] time = 0.23, size = 174, normalized size = 1.01

$$\frac{2\left(\frac{(bB-Ac)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)}{c^{7/2}}-15Ad^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+A\sqrt{d+ex}\left(23d^2+11dex+3e^2x^2\right)\right)}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(A*Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3*e^2*x^2) - 15*A*d^(5/2)*ArcTanh[
Sqrt[d + e*x]/Sqrt[d]] + ((b*B - A*c)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d -
 b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*
ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))/c^(7/2)))/(15*b)
```

IntegrateAlgebraic [A] time = 0.21, size = 202, normalized size = 1.17

$$\frac{2\sqrt{d+ex}\left(-15Abce^2+5Ac^2e(d+ex)+30Ac^2de+15b^2Be^2-5bBce(d+ex)-30bBcde+15Bc^2d^2+3Bc^2(d+ex)^2+5Bc^2d(d+ex)\right)}{15c^3}-\frac{2(Ac-bB)(be-cd)^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{bc^{7/2}}-\frac{2Ad^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(15*B*c^2*d^2 - 30*b*B*c*d*e + 30*A*c^2*d*e + 15*b^2*B*e^2
 - 15*A*b*c*e^2 + 5*B*c^2*d*(d + e*x) - 5*b*B*c*e*(d + e*x) + 5*A*c^2*e*(d
+ e*x) + 3*B*c^2*(d + e*x)^2))/(15*c^3) - (2*(-(b*B) + A*c)*(-(c*d) + b*e)^
(5/2)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b*c^
(7/2)) - (2*A*d^(5/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b
```

fricas [A] time = 4.20, size = 1006, normalized size = 5.82

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/15*(15*A*c^3*d^(5/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 15*(
(B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^2)*
```

```
sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c*sqrt((c*d
- b*e)/c))/(c*x + b)) + 2*(3*B*b*c^2*e^2*x^2 + 23*B*b*c^2*d^2 - 35*(B*b^2*c
 - A*b*c^2)*d*e + 15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b*c^2*d*e - 5*(B*b^2*c -
 A*b*c^2)*e^2)*x)*sqrt(e*x + d))/(b*c^3), 1/15*(15*A*c^3*d^(5/2)*log((e*x -
 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 30*((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c
 - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(
e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + 2*(3*B*b*c^2*e^2*x^2 + 23*B*
b*c^2*d^2 - 35*(B*b^2*c - A*b*c^2)*d*e + 15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b
*c^2*d*e - 5*(B*b^2*c - A*b*c^2)*e^2)*x)*sqrt(e*x + d))/(b*c^3), 1/15*(30*A
*c^3*sqrt(-d)*d^2*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 15*((B*b*c^2 - A*c^3)*
d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^2)*sqrt((c*d - b*e)/c
)*log((c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x +
b)) + 2*(3*B*b*c^2*e^2*x^2 + 23*B*b*c^2*d^2 - 35*(B*b^2*c - A*b*c^2)*d*e +
15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b*c^2*d*e - 5*(B*b^2*c - A*b*c^2)*e^2)*x)*
sqrt(e*x + d))/(b*c^3), 2/15*(15*A*c^3*sqrt(-d)*d^2*arctan(sqrt(e*x + d)*sq
rt(-d)/d) - 15*((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3
- A*b^2*c)*e^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b
*e)/c)/(c*d - b*e)) + (3*B*b*c^2*e^2*x^2 + 23*B*b*c^2*d^2 - 35*(B*b^2*c - A
*b*c^2)*d*e + 15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b*c^2*d*e - 5*(B*b^2*c - A*b
*c^2)*e^2)*x)*sqrt(e*x + d))/(b*c^3)]
```

giac [**B**] time = 0.24, size = 316, normalized size = 1.83

$$\frac{2\,Ad^3\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2\left(Bbc^3d^3-Ac^4d^3-3\,Bb^2c^2d^2e+3\,Abc^3d^2e+3\,Bb^3cde^2-3\,Ab^2c^2de^2-Bb^4e^3+Ab^3ce^3\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,bc^3}+\frac{2\left(3\,(xe+d)^{\frac{5}{2}}Bc^4+5\,(xe+d)^{\frac{3}{2}}Bc^4d+15\,\sqrt{xe+d}\,Bc^4d^2-5\,(xe+d)^{\frac{3}{2}}Bbc^3e+5\,(xe+d)^{\frac{3}{2}}Ac^4e-30\,\sqrt{xe+d}\,Bbc^3de+30\,\sqrt{xe+d}\,Ac^4de+15\,\sqrt{xe+d}\,Bb^2c^2e^2-15\,\sqrt{xe+d}\,Abc^3e^2\right)}{15\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d^3*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*(B*b*c^3*d^3 - A*c^
4*d^3 - 3*B*b^2*c^2*d^2*e + 3*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2 - 3*A*b^2*c^2
*d*e^2 - B*b^4*e^3 + A*b^3*c*e^3)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*
e))/(sqrt(-c^2*d + b*c*e)*b*c^3) + 2/15*(3*(x*e + d)^(5/2)*B*c^4 + 5*(x*e +
 d)^(3/2)*B*c^4*d + 15*sqrt(x*e + d)*B*c^4*d^2 - 5*(x*e + d)^(3/2)*B*b*c^3*
e + 5*(x*e + d)^(3/2)*A*c^4*e - 30*sqrt(x*e + d)*B*b*c^3*d*e + 30*sqrt(x*e
+ d)*A*c^4*d*e + 15*sqrt(x*e + d)*B*b^2*c^2*e^2 - 15*sqrt(x*e + d)*A*b*c^3*
e^2)/c^5
```

maple [**B**] time = 0.08, size = 516, normalized size = 2.98

$$\frac{2A\,b^2e^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c^2}-\frac{6Abd\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c}-\frac{2Ac\,d^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,b}+\frac{6A\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}}-\frac{2B\,b^3e^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c^3}+\frac{6B\,b^2d\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c^2}-\frac{6Bb\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c}+\frac{2B\,d^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}}-\frac{2A\,d^{\frac{5}{2}}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b}-\frac{2\sqrt{ex+d}\,Ab\,e^2}{c^2}+\frac{4\sqrt{ex+d}\,Ade}{c}+\frac{2\sqrt{ex+d}\,B\,b^2e^2}{c^3}-\frac{4\sqrt{ex+d}\,Bbde}{c^2}+\frac{2\sqrt{ex+d}\,B\,d^2}{c}+\frac{2\,(ex+d)^{\frac{3}{2}}\,Ae}{3c}-\frac{2\,(ex+d)^{\frac{3}{2}}\,Bbe}{3c^2}+\frac{2\,(ex+d)^{\frac{3}{2}}\,Bd}{3c}+\frac{2\,(ex+d)^{\frac{5}{2}}\,B}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x)
```

```
[Out] 2/5*B*(e*x+d)^(5/2)/c+2/3/c*A*(e*x+d)^(3/2)*e-2/3/c^2*B*(e*x+d)^(3/2)*b*e+2
/3/c*B*(e*x+d)^(3/2)*d-2/c^2*A*b*e^2*(e*x+d)^(1/2)+4/c*A*d*e*(e*x+d)^(1/2)+
2/c^3*B*b^2*e^2*(e*x+d)^(1/2)-4/c^2*B*b*d*e*(e*x+d)^(1/2)+2/c*B*d^2*(e*x+d)
^(1/2)+2/c^2*b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/
2)*c)*A*e^3-6/c*b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*A*d*e^2+6/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/
2)*c)*A*d^2*e-2*c/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A*d^3-2/c^3*b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*B*e^3+6/c^2*b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*d*e^2-6/c*b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(b*e-c*d)*c)^(1/2)*c)*B*d^2*e+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((
b*e-c*d)*c)^(1/2)*c)*B*d^3-2*A*d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))/b
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.19, size = 5138, normalized size = 29.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x)
```

```
[Out] ((2*A*e - 2*B*d)/(3*c) - (2*B*(b*e - 2*c*d))/(3*c^2))*(d + e*x)^(3/2) - (((
b*e - 2*c*d)*((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/c + (2*B*(c*d^2
 - b*d*e))/c^2)*(d + e*x)^(1/2) + (2*B*(d + e*x)^(5/2))/(5*c) - (A*atan(((A
*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 1
5*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B
^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^
2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^
7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 1
2*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*
A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 + (A*((8*(A*b^4*c^5*d*e^
5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7
*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 + (8*A*(b^3*c^7*
e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2))/(b*c^5))*(d^5)^(1/2))/b
)*(d^5)^(1/2)*1i)/b + (A*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8
 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15
*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2
*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*
b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 -
 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A
*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5
 - (A*((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3
*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^
4))/c^5 - (8*A*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2))
/(b*c^5))*(d^5)^(1/2))/b)*(d^5)^(1/2)*1i)/b)/((16*(3*A^3*c^7*d^8*e^3 + 19*A
^3*b^2*c^5*d^6*e^5 - 15*A^3*b^3*c^4*d^5*e^6 + 6*A^3*b^4*c^3*d^4*e^7 - A^3*b
^5*c^2*d^3*e^8 - A*B^2*b^7*d^3*e^8 + A^2*B*c^7*d^9*e^2 - 12*A^3*b*c^6*d^7*e
^4 + 6*A*B^2*b^2*c^5*d^8*e^3 - 15*A*B^2*b^3*c^4*d^7*e^4 + 20*A*B^2*b^4*c^3*
d^6*e^5 - 15*A*B^2*b^5*c^2*d^5*e^6 + 27*A^2*B*b^2*c^5*d^7*e^4 - 39*A^2*B*b^
3*c^4*d^6*e^5 + 30*A^2*B*b^4*c^3*d^5*e^6 - 12*A^2*B*b^5*c^2*d^4*e^7 - A*B^2
*b*c^6*d^9*e^2 + 6*A*B^2*b^6*c*d^4*e^7 - 9*A^2*B*b*c^6*d^8*e^3 + 2*A^2*B*b^
6*c*d^3*e^8))/c^5 + (A*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 +
 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A
^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b
^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^
7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2
*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B
*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 +
(A*((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c
^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4)
)/c^5 + (8*A*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2))/(
b*c^5))*(d^5)^(1/2))/b)*(d^5)^(1/2))/b - (A*((8*(d + e*x)^(1/2)*(B^2*b^8*e^
8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b
^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c
^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c
^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7
```

```
- 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2
*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5
*c^3*d^2*e^6))/c^5 - (A*((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^
7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 +
 3*B*b^4*c^5*d^2*e^4))/c^5 - (8*A*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/
2)*(d + e*x)^(1/2))/(b*c^5))*(d^5)^(1/2))/b)*(d^5)^(1/2))/b))*(d^5)^(1/2)*2
i)/b - (atan((((-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(
B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4
- 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6
*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15
*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*
c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 +
12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 -
30*A*B*b^5*c^3*d^2*e^6))/c^5 + (((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*
A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d
^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 + (8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(-c
^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^12))*(-c^7*(b*e -
 c*d)^5)^(1/2)*(A*c - B*b))/(b*c^7))*1i)/(b*c^7) + ((-c^7*(b*e - c*d)^5)^(1
/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*
c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*
c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*
d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e
^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*
c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^
5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 - (((8*(A
*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^
4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 - (
8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d
 + e*x)^(1/2))/(b*c^12))*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b))/(b*c^7))*1
i)/(b*c^7))/((16*(3*A^3*c^7*d^8*e^3 + 19*A^3*b^2*c^5*d^6*e^5 - 15*A^3*b^3*c
^4*d^5*e^6 + 6*A^3*b^4*c^3*d^4*e^7 - A^3*b^5*c^2*d^3*e^8 - A*B^2*b^7*d^3*e^
8 + A^2*B*c^7*d^9*e^2 - 12*A^3*b*c^6*d^7*e^4 + 6*A*B^2*b^2*c^5*d^8*e^3 - 15
*A*B^2*b^3*c^4*d^7*e^4 + 20*A*B^2*b^4*c^3*d^6*e^5 - 15*A*B^2*b^5*c^2*d^5*e^
6 + 27*A^2*B*b^2*c^5*d^7*e^4 - 39*A^2*B*b^3*c^4*d^6*e^5 + 30*A^2*B*b^4*c^3*
d^5*e^6 - 12*A^2*B*b^5*c^2*d^4*e^7 - A*B^2*b*c^6*d^9*e^2 + 6*A*B^2*b^6*c*d^
4*e^7 - 9*A^2*B*b*c^6*d^8*e^3 + 2*A^2*B*b^6*c*d^3*e^8))/c^5 + ((-c^7*(b*e -
 c*d)^5)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e
^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 +
15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B
^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^
2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8
 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30
*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^
5 + (((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3
*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^
4))/c^5 + (8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(A*
c - B*b)*(d + e*x)^(1/2))/(b*c^12))*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b))
/(b*c^7)))/(b*c^7) - ((-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((8*(d + e*x)^
(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d
^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*
e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e
^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A
^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d
*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3
*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 - (((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e
^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^
3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 - (8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e
^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^12))*(-c^7
*(b*e - c*d)^5)^(1/2)*(A*c - B*b))/(b*c^7)))/(b*c^7)))*(-c^7*(b*e - c*d)^5)
```

```
^(1/2)*(A*c - B*b)*2i)/(b*c^7)
```

sympy [A] time = 136.77, size = 199, normalized size = 1.15

$$\frac{2Ad^3\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2B(d+ex)^{\frac{5}{2}}}{5c}+\frac{(d+ex)^{\frac{3}{2}}(2Ace-2Bbe+2Bcd)}{3c^2}+\frac{\sqrt{d+ex}\left(-2Abce^2+4Ac^2de+2Bb^2e^2-4Bbcde+2Bc^2d^2\right)}{c^3}-\frac{2(-Ac+Bb)(be-cd)^3\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{bc^4\sqrt{\frac{be-cd}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*d**3*atan(sqrt(d + e*x)/sqrt(-d))/(b*sqrt(-d)) + 2*B*(d + e*x)**(5/2)/(
5*c) + (d + e*x)**(3/2)*(2*A*c*e - 2*B*b*e + 2*B*c*d)/(3*c**2) + sqrt(d + e
*x)*(-2*A*b*c*e**2 + 4*A*c**2*d*e + 2*B*b**2*e**2 - 4*B*b*c*d*e + 2*B*c**2*
d**2)/c**3 - 2*(-A*c + B*b)*(b*e - c*d)**3*atan(sqrt(d + e*x)/sqrt((b*e - c
*d)/c))/(b*c**4*sqrt((b*e - c*d)/c))
```

3.1086 $\int \frac{(A+Bx)(d+ex)^{3/2}}{bx+cx^2}\,dx$

Optimal. Leaf size=131

$$-\frac{2(bB-Ac)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{5/2}}+\frac{2\sqrt{d+ex}\,(Ace-bBe+Bcd)}{c^2}-\frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B(d+ex}{3c}$$

Rubi [A] time = 0.30, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$\frac{2\sqrt{d+ex}\,(Ace-bBe+Bcd)}{c^2}-\frac{2(bB-Ac)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{5/2}}-\frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B(d+ex)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(B*c*d - b*B*e + A*c*e)*Sqrt[d + e*x])/c^2 + (2*B*(d + e*x)^(3/2))/(3*c)
 - (2*A*d^(3/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2*(b*B - A*c)*(c*d - b
*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{bx+cx^2}\,dx = \frac{2B(d+ex)^{3/2}}{3c} + \frac{\int \frac{\sqrt{d+ex}\,(Acd+(Bcd-bBe+Ace)x)}{bx+cx^2}\,dx}{c}$$

$$= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} + \frac{\int \frac{Ac^2d^2+\left(B(cd-be)^2+Ace(2cd-be)\right)x}{\sqrt{d+ex}\,(bx+cx^2)}\,dx}{c^2}$$

$$= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} + \frac{2\,\mathrm{Subst}\left(\int \frac{Ac^2d^2e-d\left(B(cd-be)^2+Ace(2cd-\cdots\right.}{cd^2-bde+(-2\cdots}\right.}{\cdots}$$

$$= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} + \frac{\left(2Acd^2\right)\mathrm{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\cdots\right.}{b}$$

$$= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} - \frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} - \frac{2(bB-Ac\cdots}{\cdots}$$

Mathematica [A] time = 0.15, size = 123, normalized size = 0.94

$$\frac{2(Ac-bB)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{5/2}} + \frac{2\sqrt{d+ex}\,(3Ace+B(-3be+4cd+cex))}{3c^2} - \frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(3*A*c*e + B*(4*c*d - 3*b*e + c*e*x)))/(3*c^2) - (2*A*d^(3
/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b + (2*(-(b*B) + A*c)*(c*d - b*e)^(3/2)
*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.16, size = 136, normalized size = 1.04

$$\frac{2(Ac-bB)(be-cd)^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{bc^{5/2}} + \frac{2\sqrt{d+ex}\,(3Ace-3bBe+Bc(d+ex)+3Bcd)}{3c^2} - \frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(3*B*c*d - 3*b*B*e + 3*A*c*e + B*c*(d + e*x)))/(3*c^2) + (
2*(-(b*B) + A*c)*(-(c*d) + b*e)^(3/2)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sq
rt[d + e*x])/(c*d - b*e)])/(b*c^(5/2)) - (2*A*d^(3/2)*ArcTanh[Sqrt[d + e*x]
/Sqrt[d]])/b
```

fricas [A] time = 1.06, size = 646, normalized size = 4.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/3*(3*A*c^2*d^(3/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 3*((B*
b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d
- b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(B*b*c*e*x +
4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt(e*x + d))/(b*c^2), 1/3*(3*A*c^2*d^(3/
2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 6*((B*b*c - A*c^2)*d - (B
*b^2 - A*b*c)*e)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d -
b*e)/c)/(c*d - b*e)) + 2*(B*b*c*e*x + 4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt
```

```
(e*x + d))/(b*c^2), 1/3*(6*A*c^2*sqrt(-d)*d*arctan(sqrt(e*x + d)*sqrt(-d)/d
) - 3*((B*b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*sqrt((c*d - b*e)/c)*log((c*e*
x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(B*
b*c*e*x + 4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt(e*x + d))/(b*c^2), 2/3*(3*A
*c^2*sqrt(-d)*d*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 3*((B*b*c - A*c^2)*d - (
B*b^2 - A*b*c)*e)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d -
 b*e)/c)/(c*d - b*e)) + (B*b*c*e*x + 4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt(
e*x + d))/(b*c^2)]
```

giac [A] time = 0.19, size = 197, normalized size = 1.50

$$\frac{2\,Ad^2\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2\left(Bbc^2d^2-Ac^3d^2-2\,Bb^2cde+2\,Abc^2de+Bb^3e^2-Ab^2ce^2\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,bc^2}+\frac{2\left((xe+d)^{\frac{3}{2}}Bc^2+3\,\sqrt{xe+d}\,Bc^2d-3\,\sqrt{xe+d}\,Bbce+3\,\sqrt{xe+d}\,Ac^2e\right)}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d^2*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*(B*b*c^2*d^2 - A*c^
3*d^2 - 2*B*b^2*c*d*e + 2*A*b*c^2*d*e + B*b^3*e^2 - A*b^2*c*e^2)*arctan(sqr
t(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b*c^2) + 2/3*((x*e
 + d)^(3/2)*B*c^2 + 3*sqrt(x*e + d)*B*c^2*d - 3*sqrt(x*e + d)*B*b*c*e + 3*s
qrt(x*e + d)*A*c^2*e)/c^3
```

maple [B] time = 0.09, size = 335, normalized size = 2.56

$$-\frac{2Ab\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,c}-\frac{2Ac\,d^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,b}+\frac{4Ade\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}+\frac{2B\,b^2e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,c^2}-\frac{4Bbde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,c}+\frac{2B\,d^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-\frac{2A\,d^{\frac{3}{2}}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b}+\frac{2\sqrt{ex+d}\,\,Ae}{c}-\frac{2\sqrt{ex+d}\,\,Bbe}{c^2}+\frac{2\sqrt{ex+d}\,\,Bd}{c}+\frac{2\,(ex+d)^{\frac{3}{2}}\,B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x)
```

```
[Out] 2/3*B*(e*x+d)^(3/2)/c+2/c*A*e*(e*x+d)^(1/2)-2/c^2*B*b*e*(e*x+d)^(1/2)+2/c*B
*d*(e*x+d)^(1/2)-2*b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*e^2+4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A*d*e-2/b*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A*d^2+2*b^2/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*
d)*c)^(1/2)*c)*B*e^2-4*b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c
*d)*c)^(1/2)*c)*B*d*e+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)
*c)^(1/2)*c)*B*d^2-2*A*d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))/b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 0.59, size = 3810, normalized size = 29.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x)
```

```
[Out] ((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2)*(d + e*x)^(1/2) + (2*B*(d + e
*x)^(3/2))/(3*c) - (A*atan(((A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c
```

^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 + (A*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 + (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2)*1i)/b + (A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - (A*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2)*1i)/b)/((16*(2*A^3*c^5*d^5*e^3 + 4*A^3*b^2*c^3*d^3*e^5 - A^3*b^3*c^2*d^2*e^6 - A*B^2*b^5*d^2*e^6 + A^2*B*c^5*d^6*e^2 - 5*A^3*b*c^4*d^4*e^4 + 4*A*B^2*b^2*c^3*d^5*e^3 - 6*A*B^2*b^3*c^2*d^4*e^4 + 11*A^2*B*b^2*c^3*d^4*e^4 - 8*A^2*B*b^3*c^2*d^3*e^5 - A*B^2*b*c^4*d^6*e^2 + 4*A*B^2*b^4*c*d^3*e^5 - 6*A^2*B*b*c^4*d^5*e^3 + 2*A^2*B*b^4*c*d^2*e^6))/c^3 + (A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 + (A*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 + (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2))/b - (A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - (A*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2))/b))*(d^3)^(1/2)*2i)/b - (atan((((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 + ((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 + (8*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^8)))/(b*c^5))*1i)/(b*c^5) + ((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - ((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^8)))/(b*c^5))*1i)/(b*c^5))/((16*(2*A^3*c^5*d^5*e^3 + 4*A^3*b^2*c^3*d^3*e^5 - A^3*b^3*c^2*d^2*e^6 - A*B^2*b^5*d^2*e^6 + A^2*B*c^5*d^6*e^2 - 5*A^3*b*c^4*d^4*e^4 + 4*A*B^2*b^2*c^3*d^5*e^3 - 6*A*B^2*b^3*c^2*d^4*e^4 + 11*A^2*B*b^2*c^3*d^4*e^4 - 8*A^2*B*b^3*c^2*d^3*e^5 - A*B^2*b*c^4*d^6*e^2 + 4*A*B^2*b^4*c*d^3*e^5 - 6*A^2*B*b*c^4*d^5*e^3 + 2*A^2*B*b^4*c*d^2*e^6))/c^3 + ((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2

```
- 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2
*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^
2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/
c^3 + ((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*
c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c
^3 + (8*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B
*b)*(d + e*x)^(1/2))/(b*c^8)))/(b*c^5)))/(b*c^5) - ((-c^5*(b*e - c*d)^3)^(1
/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*
c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d
^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 -
4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2
*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - ((-c^5*(b*e
 - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2
*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8*(b^3*c^5*
e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*(d + e*x)^(1/
2))/(b*c^8)))/(b*c^5)))/(b*c^5)))*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*2i
)/(b*c^5)
```

sympy [A] time = 82.05, size = 134, normalized size = 1.02

$$\frac{2Ad^2\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2B(d+ex)^{\frac{3}{2}}}{3c}+\frac{\sqrt{d+ex}\,(2Ace-2Bbe+2Bcd)}{c^2}+\frac{2(-Ac+Bb)(be-cd)^2\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{bc^3\sqrt{\frac{be-cd}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*d**2*atan(sqrt(d + e*x)/sqrt(-d))/(b*sqrt(-d)) + 2*B*(d + e*x)**(3/2)/(
3*c) + sqrt(d + e*x)*(2*A*c*e - 2*B*b*e + 2*B*c*d)/c**2 + 2*(-A*c + B*b)*(b
*e - c*d)**2*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c))/(b*c**3*sqrt((b*e - c*
d)/c))
```

3.1087 $\int \frac{(A+Bx)\sqrt{d+ex}}{bx+cx^2}\,dx$

Optimal. Leaf size=101

$$-\frac{2(bB-Ac)\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}}-\frac{2A\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B\sqrt{d+ex}}{c}$$

Rubi [A] time = 0.18, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$-\frac{2(bB-Ac)\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}}-\frac{2A\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[d + e*x])/c - (2*A*Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2
*(b*B - A*c)*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e
]])/(b*c^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{bx+cx^2}\,dx = \frac{2B\sqrt{d+ex}}{c} + \frac{\int \frac{Acd+(Bcd-bBe+Ace)x}{\sqrt{d+ex}\,(bx+cx^2)}\,dx}{c}$$
$$= \frac{2B\sqrt{d+ex}}{c} + \frac{2\,\text{Subst}\left(\int \frac{Acde-d(Bcd-bBe+Ace)+(Bcd-bBe+Ace)x^2}{cd^2-bde+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)}{c}$$
$$= \frac{2B\sqrt{d+ex}}{c} + \frac{(2Acd)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right)}{b} + \frac{(2(bB-Ac)(c}{}$$
$$= \frac{2B\sqrt{d+ex}}{c} - \frac{2A\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} - \frac{2(bB-Ac)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}}$$

Mathematica [A] time = 0.11, size = 101, normalized size = 1.00

$$\frac{2(Ac-bB)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}} - \frac{2A\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} + \frac{2B\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[d + e*x])/c - (2*A*Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b + (2
*(-(b*B) + A*c)*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d -
b*e]])/(b*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.18, size = 111, normalized size = 1.10

$$-\frac{2(Ac-bB)\sqrt{be-cd}\,\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{bc^{3/2}} - \frac{2A\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} + \frac{2B\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[d + e*x])/c - (2*(-(b*B) + A*c)*Sqrt[-(c*d) + b*e]*ArcTan[(Sqrt[c
]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b*c^(3/2)) - (2*A*Sqrt[d
]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b
```

fricas [A] time = 0.52, size = 450, normalized size = 4.46

$$\left[\frac{Ac\sqrt{d}\log\left(\frac{ex-2\sqrt{ex+d}\sqrt{d}+2d}{x}\right)+2\sqrt{ex+d}\,Bb-(Bb-Ac)\sqrt{\frac{cd-be}{c}}\log\left(\frac{cex+2cd-be+2\sqrt{ex+d}\,c\sqrt{\frac{cd-be}{c}}}{cx+b}\right)}{bc}, \frac{Ac\sqrt{d}\log\left(\frac{ex-2\sqrt{ex+d}\sqrt{d}+2d}{x}\right)+2\sqrt{ex+d}\,Bb-2(Bb-Ac)\sqrt{-\frac{cd-be}{c}}\arctan\left(-\frac{\sqrt{ex+d}\,c\sqrt{-\frac{cd-be}{c}}}{cd-be}\right)}{bc}, \frac{2Ac\sqrt{-d}\arctan\left(\frac{\sqrt{ex+d}\sqrt{-d}}{d}\right)+2\sqrt{ex+d}\,Bb-(Bb-Ac)\sqrt{\frac{cd-be}{c}}\log\left(\frac{cex+2cd-be+2\sqrt{ex+d}\,c\sqrt{\frac{cd-be}{c}}}{cx+b}\right)}{bc}, \frac{2\left(Ac\sqrt{-d}\arctan\left(\frac{\sqrt{ex+d}\sqrt{-d}}{d}\right)+\sqrt{ex+d}\,Bb-(Bb-Ac)\sqrt{-\frac{cd-be}{c}}\arctan\left(-\frac{\sqrt{ex+d}\,c\sqrt{-\frac{cd-be}{c}}}{cd-be}\right)\right)}{bc}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [(A*c*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*sqrt(e*x + d
)*B*b - (B*b - A*c)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e
*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)))/(b*c), (A*c*sqrt(d)*log((e*x - 2
*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*sqrt(e*x + d)*B*b - 2*(B*b - A*c)*sqrt
(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)))
/(b*c), (2*A*c*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 2*sqrt(e*x + d)*
B*b - (B*b - A*c)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x
 + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)))/(b*c), 2*(A*c*sqrt(-d)*arctan(sqrt
(e*x + d)*sqrt(-d)/d) + sqrt(e*x + d)*B*b - (B*b - A*c)*sqrt(-(c*d - b*e)/c
)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)))/(b*c)]
```

giac [A] time = 0.20, size = 116, normalized size = 1.15

$$\frac{2\,Ad\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2\,\sqrt{xe+d}\,B}{c}+\frac{2\left(Bbcd-Ac^2d-Bb^2e+Abce\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*sqrt(x*e + d)*B/c + 2
*(B*b*c*d - A*c^2*d - B*b^2*e + A*b*c*e)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d
 + b*c*e))/(sqrt(-c^2*d + b*c*e)*b*c)
```

maple [B] time = 0.06, size = 196, normalized size = 1.94

$$-\frac{2Acd\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}+\frac{2Ae\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-\frac{2Bbe\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}+\frac{2Bd\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-\frac{2A\sqrt{d}\;\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b}+\frac{2\sqrt{ex+d}\;B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x)
```

```
[Out] 2*B*(e*x+d)^(1/2)/c+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c
)^(1/2)*c)*A*e-2*c/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A*d-2/c*b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*B*e+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)
*c)*B*d-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))*d^(1/2)/b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 1.91, size = 2368, normalized size = 23.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2),x)
```

```
[Out] (2*B*(d + e*x)^(1/2))/c - (A*d^(1/2)*atan(((A*d^(1/2)*((8*(d + e*x)^(1/2)*(
B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2
*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^
2 + 4*A*B*b^2*c^2*d*e^3))/c + (A*d^(1/2)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*d
^2*e^2))/c + (8*A*d^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(d + e*x)^(1/2))/
(b*c)))/b)*1i)/b + (A*d^(1/2)*((8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^
2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2
*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3)
)/c - (A*d^(1/2)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c - (8*A*d^(1/2
)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(d + e*x)^(1/2))/(b*c)))/b)*1i)/b)/((16*(
A^3*c^3*d^2*e^3 - A*B^2*b^3*d*e^4 - A^3*b*c^2*d*e^4 + A^2*B*c^3*d^3*e^2 + 2
*A^2*B*b^2*c*d*e^4 - A*B^2*b*c^2*d^3*e^2 + 2*A*B^2*b^2*c*d^2*e^3 - 3*A^2*B*
b*c^2*d^2*e^3))/c - (A*d^(1/2)*((8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c
^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^
```

```
2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3
))/c + (A*d^(1/2)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c + (8*A*d^(1/
2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(d + e*x)^(1/2))/(b*c)))/b))/b + (A*d^(1
/2)*((8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2
+ B^2*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c
*e^4 - 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3))/c - (A*d^(1/2)*((8*(B*b^
3*c^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c - (8*A*d^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4
*d*e^2)*(d + e*x)^(1/2))/(b*c)))/b))/b))*2i)/b - (atan(((((8*(d + e*x)^(1/2
)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2
- 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2
*e^2 + 4*A*B*b^2*c^2*d*e^3))/c + ((A*c - B*b)*((8*(B*b^3*c^2*d*e^3 - B*b^2*
c^3*d^2*e^2))/c + (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c - B*b)*(-c^3*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d))^(1/2))/(b*c^3))
*(A*c - B*b)*(-c^3*(b*e - c*d))^(1/2)*1i)/(b*c^3) + (((8*(d + e*x)^(1/2)*(B
^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2*
A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^2
 + 4*A*B*b^2*c^2*d*e^3))/c - ((A*c - B*b)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*
d^2*e^2))/c - (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c - B*b)*(-c^3*(b*e - c
*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d))^(1/2))/(b*c^3))*(A*
c - B*b)*(-c^3*(b*e - c*d))^(1/2)*1i)/(b*c^3))/((16*(A^3*c^3*d^2*e^3 - A*B^
2*b^3*d*e^4 - A^3*b*c^2*d*e^4 + A^2*B*c^3*d^3*e^2 + 2*A^2*B*b^2*c*d*e^4 - A
*B^2*b*c^2*d^3*e^2 + 2*A*B^2*b^2*c*d^2*e^3 - 3*A^2*B*b*c^2*d^2*e^3))/c - ((
(8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2
*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4
- 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3))/c + ((A*c - B*b)*((8*(B*b^3*c
^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c + (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c
- B*b)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d)
)^(1/2))/(b*c^3))*(A*c - B*b)*(-c^3*(b*e - c*d))^(1/2))/(b*c^3) + (((8*(d +
 e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^
2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B
*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3))/c - ((A*c - B*b)*((8*(B*b^3*c^2*d*e^
3 - B*b^2*c^3*d^2*e^2))/c - (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c - B*b)*
(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d))^(1/2)
)/(b*c^3))*(A*c - B*b)*(-c^3*(b*e - c*d))^(1/2))/(b*c^3)))*(A*c - B*b)*(-c^
3*(b*e - c*d))^(1/2)*2i)/(b*c^3)
```

sympy [A] time = 17.77, size = 104, normalized size = 1.03

$$\frac{2\left(\frac{Ade\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{Be\sqrt{d+ex}}{c}-\frac{e(-Ac+Bb)(be-cd)\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{bc^2\sqrt{\frac{be-cd}{c}}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x),x)
```

```
[Out] 2*(A*d*e*atan(sqrt(d + e*x)/sqrt(-d))/(b*sqrt(-d)) + B*e*sqrt(d + e*x)/c -
e*(-A*c + B*b)*(b*e - c*d)*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c))/(b*c**2*
sqrt((b*e - c*d)/c)))/e
```

3.1088 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=86

$$-\frac{2(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b\sqrt{c}\sqrt{cd-be}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

Rubi [A] time = 0.18, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {826, 1166, 208}

$$-\frac{2(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b\sqrt{c}\sqrt{cd-be}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*Sqrt[d]) - (2*(b*B - A*c)*ArcTanh[
(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*Sqrt[c]*Sqrt[c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{cd^2-bde+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)$$

$$= \frac{(2Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right)}{b} + \left(2\left(\frac{B}{2}-\frac{2c(-Bd+Ae)-B(-2c}{2be}\right.\right.$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}-\frac{2(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b\sqrt{c}\sqrt{cd-be}}$$

Mathematica [A] time = 0.15, size = 84, normalized size = 0.98

$$\frac{2\left(\frac{(Ac-bB)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{\sqrt{c}\sqrt{cd-be}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)),x]
```

```
[Out] (2*(-((A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/Sqrt[d]) + ((-(b*B) + A*c)*ArcTanh
[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(Sqrt[c]*Sqrt[c*d - b*e])))/b
```

IntegrateAlgebraic [A] time = 0.16, size = 96, normalized size = 1.12

$$\frac{2(Ac-bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b\sqrt{c}\sqrt{be-cd}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)),x]
```

```
[Out] (2*(-(b*B) + A*c)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d -
b*e)])/(b*Sqrt[c]*Sqrt[-(c*d) + b*e]) - (2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]
)/(b*Sqrt[d])
```

fricas [A] time = 0.49, size = 489, normalized size = 5.69

$$\left[-\frac{\sqrt{c^2d-bce}\,(Bb-Ac)d\log\left(\frac{cex+2\,cd-be+2\,\sqrt{c^2d-bce}\,\sqrt{ex+d}}{cx+b}\right)-\left(Ac^2d-Abce\right)\sqrt{d}\,\log\left(\frac{ex-2\,\sqrt{ex+d}\,\sqrt{d}+2\,d}{x}\right)}{bc^2d^2-b^2cde},\ \frac{2\,\sqrt{-c^2d+bce}\,(Bb-Ac)d\arctan\left(\frac{\sqrt{-c^2d+bce}\,\sqrt{ex+d}}{cex+cd}\right)+\left(Ac^2d-Abce\right)\sqrt{d}\,\log\left(\frac{ex-2\,\sqrt{ex+d}\,\sqrt{d}+2\,d}{x}\right)}{bc^2d^2-b^2cde},\ -\frac{\sqrt{c^2d-bce}\,(Bb-Ac)d\log\left(\frac{cex+2\,cd-be+2\,\sqrt{c^2d-bce}\,\sqrt{ex+d}}{cx+b}\right)-2\left(Ac^2d-Abce\right)\sqrt{-d}\,\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{-d}}{d}\right)}{bc^2d^2-b^2cde},\ \frac{2\left(\sqrt{-c^2d+bce}\,(Bb-Ac)d\arctan\left(\frac{\sqrt{-c^2d+bce}\,\sqrt{ex+d}}{cex+cd}\right)+\left(Ac^2d-Abce\right)\sqrt{-d}\,\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{-d}}{d}\right)\right)}{bc^2d^2-b^2cde}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-(sqrt(c^2*d - b*c*e)*(B*b - A*c)*d*log((c*e*x + 2*c*d - b*e + 2*sqrt(c^2*
d - b*c*e)*sqrt(e*x + d))/(c*x + b)) - (A*c^2*d - A*b*c*e)*sqrt(d)*log((e*x
 - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x))/(b*c^2*d^2 - b^2*c*d*e), (2*sqrt(-c^2
*d + b*c*e)*(B*b - A*c)*d*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c*e*x
+ c*d)) + (A*c^2*d - A*b*c*e)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) +
2*d)/x))/(b*c^2*d^2 - b^2*c*d*e), -(sqrt(c^2*d - b*c*e)*(B*b - A*c)*d*log((
c*e*x + 2*c*d - b*e + 2*sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) - 2*(
A*c^2*d - A*b*c*e)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d))/(b*c^2*d^2 -
b^2*c*d*e), 2*(sqrt(-c^2*d + b*c*e)*(B*b - A*c)*d*arctan(sqrt(-c^2*d + b*c*
e)*sqrt(e*x + d)/(c*e*x + c*d)) + (A*c^2*d - A*b*c*e)*sqrt(-d)*arctan(sqrt(
e*x + d)*sqrt(-d)/d))/(b*c^2*d^2 - b^2*c*d*e)]
```

giac [A] time = 0.19, size = 79, normalized size = 0.92

$$\frac{2\,(Bb-Ac)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,b}+\frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b - A*c)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b
*c*e)*b) + 2*A*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d))
```

maple [A] time = 0.06, size = 101, normalized size = 1.17

$$-\frac{2Ac\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}+\frac{2B\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-\frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x)
```

```
[Out] -2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c+2/
((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2*A*arcta
nh((e*x+d)^(1/2)/d^(1/2))/b/d^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 1.92, size = 1130, normalized size = 13.14

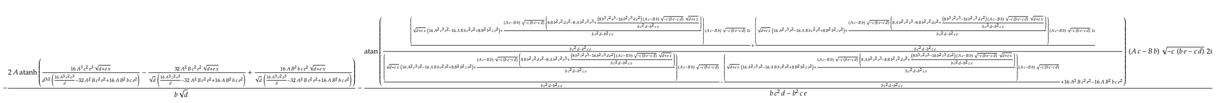

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(1/2)),x)
```

```
[Out] - (2*A*atanh((16*A^3*c^2*e^3*(d + e*x)^(1/2))/(d^(3/2)*((16*A^3*c^2*e^3)/d
- 32*A^2*B*c^2*e^2 + 16*A*B^2*b*c*e^2)) - (32*A^2*B*c^2*e^2*(d + e*x)^(1/2)
)/(d^(1/2)*((16*A^3*c^2*e^3)/d - 32*A^2*B*c^2*e^2 + 16*A*B^2*b*c*e^2)) + (1
6*A*B^2*b*c*e^2*(d + e*x)^(1/2))/(d^(1/2)*((16*A^3*c^2*e^3)/d - 32*A^2*B*c^
2*e^2 + 16*A*B^2*b*c*e^2))))/(b*d^(1/2)) - (atan(((((d + e*x)^(1/2)*(16*A^2
*c^3*e^2 + 8*B^2*b^2*c*e^2 - 16*A*B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b*e - c*
d))^(1/2)*(8*B*b^2*c^2*d*e^2 - 8*A*b^2*c^2*e^3 + ((8*b^3*c^2*e^3 - 16*b^2*c
^3*d*e^2)*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2*d - b^
2*c*e)))/(b*c^2*d - b^2*c*e))*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*1i)/(b*c^2
*d - b^2*c*e) + (((d + e*x)^(1/2)*(16*A^2*c^3*e^2 + 8*B^2*b^2*c*e^2 - 16*A*
B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(8*A*b^2*c^2*e^3 - 8*B*b
^2*c^2*d*e^2 + ((8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2)*(A*c - B*b)*(-c*(b*e - c
*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2*d - b^2*c*e)))/(b*c^2*d - b^2*c*e))*(A*c
 - B*b)*(-c*(b*e - c*d))^(1/2)*1i)/(b*c^2*d - b^2*c*e))/((((d + e*x)^(1/2)*
(16*A^2*c^3*e^2 + 8*B^2*b^2*c*e^2 - 16*A*B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b
*e - c*d))^(1/2)*(8*B*b^2*c^2*d*e^2 - 8*A*b^2*c^2*e^3 + ((8*b^3*c^2*e^3 - 1
6*b^2*c^3*d*e^2)*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2
*d - b^2*c*e)))/(b*c^2*d - b^2*c*e))*(A*c - B*b)*(-c*(b*e - c*d))^(1/2))/(b
*c^2*d - b^2*c*e) - (((d + e*x)^(1/2)*(16*A^2*c^3*e^2 + 8*B^2*b^2*c*e^2 - 1
6*A*B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(8*A*b^2*c^2*e^3 - 8
*B*b^2*c^2*d*e^2 + ((8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2)*(A*c - B*b)*(-c*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2*d - b^2*c*e)))/(b*c^2*d - b^2*c*e))*
(A*c - B*b)*(-c*(b*e - c*d))^(1/2))/(b*c^2*d - b^2*c*e) + 16*A^2*B*c^2*e^2
- 16*A*B^2*b*c*e^2))*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*2i)/(b*c^2*d - b^2*
c*e)
```

sympy [A] time = 69.75, size = 87, normalized size = 1.01

$$\frac{2A\operatorname{atan}\left(\frac{1}{\sqrt{-\frac{1}{d}}\sqrt{d+ex}}\right)}{bd\sqrt{-\frac{1}{d}}}-\frac{2\left(-Ac+Bb\right)\operatorname{atan}\left(\frac{1}{\sqrt{\frac{c}{be-cd}}\sqrt{d+ex}}\right)}{b\sqrt{\frac{c}{be-cd}}\left(be-cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(1/(sqrt(-1/d)*sqrt(d + e*x)))/(b*d*sqrt(-1/d)) - 2*(-A*c + B*b)*at
an(1/(sqrt(c/(b*e - c*d))*sqrt(d + e*x)))/(b*sqrt(c/(b*e - c*d))*(b*e - c*d
))
```

3.1089 $\int \frac{A+Bx}{(d+ex)^{3/2}(bx+cx^2)} dx$

Optimal. Leaf size=118

$$\frac{2(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{c}\,(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{3/2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}}$$

Rubi [A] time = 0.30, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {828, 826, 1166, 208}

$$\frac{2(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{c}\,(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{3/2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(d*(c*d - b*e)*Sqrt[d + e*x]) - (2*A*ArcTanh[Sqrt[d + e*x]/
Sqrt[d]])/(b*d^(3/2)) - (2*Sqrt[c]*(b*B - A*c)*ArcTanh[(Sqrt[c]*Sqrt[d + e*
x])/Sqrt[c*d - b*e]])/(b*(c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)}\,dx = \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} + \frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} + \frac{2\,\mathrm{Subst}\left(\int \frac{-cd(Bd-Ae)+Ae(cd-be)+c(Bd-Ae)x^2}{cd^2-bde+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} + \frac{(2Ac)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right)}{bd} + \frac{(2c(b}{}$$

$$= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} - \frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}} - \frac{2\sqrt{c}\,(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{3/2}}$$

Mathematica [C] time = 0.03, size = 89, normalized size = 0.75

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{ex}{d}+1\right)\right)}{bd\sqrt{d+ex}\,(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-1/2, 1, 1/2, (c*(d + e*x))/(c*d - b*e)
] + A*(c*d - b*e)*Hypergeometric2F1[-1/2, 1, 1/2, 1 + (e*x)/d]))/(b*d*(c*d
- b*e)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.33, size = 132, normalized size = 1.12

$$-\frac{2\left(Ac^{3/2}-bB\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}\,\sqrt{be-cd}}{cd-be}\right)}{b(be-cd)^{3/2}} + \frac{2(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)} - \frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(d*(c*d - b*e)*Sqrt[d + e*x]) - (2*(-(b*B*Sqrt[c]) + A*c^(3
/2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b*(-(
c*d) + b*e)^(3/2)) - (2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*d^(3/2))
```

fricas [B] time = 0.73, size = 835, normalized size = 7.08

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [(((B*b - A*c)*d^2*e*x + (B*b - A*c)*d^3)*sqrt(c/(c*d - b*e))*log((c*e*x +
2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) +
 (A*c*d^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x
+ d)*sqrt(d) + 2*d)/x) + 2*(B*b*d^2 - A*b*d*e)*sqrt(e*x + d))/(b*c*d^4 - b^
2*d^3*e + (b*c*d^3*e - b^2*d^2*e^2)*x), -(2*((B*b - A*c)*d^2*e*x + (B*b - A
*c)*d^3)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*
d - b*e))/(c*e*x + c*d)) - (A*c*d^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt
(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(B*b*d^2 - A*b*d*e)*sq
```

```
rt(e*x + d))/(b*c*d^4 - b^2*d^3*e + (b*c*d^3*e - b^2*d^2*e^2)*x), (2*(A*c*d
^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d
)/d) + ((B*b - A*c)*d^2*e*x + (B*b - A*c)*d^3)*sqrt(c/(c*d - b*e))*log((c*e
*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x +
b)) + 2*(B*b*d^2 - A*b*d*e)*sqrt(e*x + d))/(b*c*d^4 - b^2*d^3*e + (b*c*d^3*
e - b^2*d^2*e^2)*x), -2*(((B*b - A*c)*d^2*e*x + (B*b - A*c)*d^3)*sqrt(-c/(c
*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x +
c*d)) - (A*c*d^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt(-d)*arctan(sqrt(e*
x + d)*sqrt(-d)/d) - (B*b*d^2 - A*b*d*e)*sqrt(e*x + d))/(b*c*d^4 - b^2*d^3*
e + (b*c*d^3*e - b^2*d^2*e^2)*x)]
```

giac [A] time = 0.22, size = 129, normalized size = 1.09

$$\frac{2\left(Bbc - Ac^2\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(bcd - b^2e\right)\sqrt{-c^2d + bce}} + \frac{2\,(Bd - Ae)}{\left(cd^2 - bde\right)\sqrt{xe + d}} + \frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c - A*c^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c*d - b^
2*e)*sqrt(-c^2*d + b*c*e)) + 2*(B*d - A*e)/((c*d^2 - b*d*e)*sqrt(x*e + d))
+ 2*A*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)*d)
```

maple [A] time = 0.07, size = 168, normalized size = 1.42

$$\frac{2A\,c^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)\,c}\;b} - \frac{2Bc\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)\,c}} + \frac{2Ae}{(be-cd)\sqrt{ex+d}\;d} - \frac{2B}{(be-cd)\sqrt{ex+d}} - \frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b\,d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x)
```

```
[Out] 2/(b*e-c*d)*c^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*A-2/(b*e-c*d)*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(3/2)+2/(b*e-c*d)/d/(e
*x+d)^(1/2)*A*e-2/(b*e-c*d)/(e*x+d)^(1/2)*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.12, size = 3674, normalized size = 31.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(3/2)),x)
```

```
[Out] (atan((((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*A^2*c^8*d
^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2*b^4*c^4*
d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b^3*c^5*d^
```

7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*c^7*d^7*e^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^5*d^6*e^4 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^2 - 88*b^3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b^6*c^4*d^7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) - 16*A*b^2*c^7*d^9*e^3 + 72*A*b^3*c^6*d^8*e^4 - 128*A*b^4*c^5*d^7*e^5 + 112*A*b^5*c^4*d^6*e^6 - 48*A*b^6*c^3*d^5*e^7 + 8*A*b^7*c^2*d^4*e^8 + 8*B*b^2*c^7*d^10*e^2 - 32*B*b^3*c^6*d^9*e^3 + 48*B*b^4*c^5*d^8*e^4 - 32*B*b^5*c^4*d^7*e^5 + 8*B*b^6*c^3*d^6*e^6))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2))*1i)/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*A^2*c^8*d^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2*b^4*c^4*d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b^3*c^5*d^7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*c^7*d^7*e^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^5*d^6*e^4 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^2 - 88*b^3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b^6*c^4*d^7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + 16*A*b^2*c^7*d^9*e^3 - 72*A*b^3*c^6*d^8*e^4 + 128*A*b^4*c^5*d^7*e^5 - 112*A*b^5*c^4*d^6*e^6 + 48*A*b^6*c^3*d^5*e^7 - 8*A*b^7*c^2*d^4*e^8 - 8*B*b^2*c^7*d^10*e^2 + 32*B*b^3*c^6*d^9*e^3 - 48*B*b^4*c^5*d^8*e^4 + 32*B*b^5*c^4*d^7*e^5 - 8*B*b^6*c^3*d^6*e^6))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2))*1i)/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2))/(16*A^3*c^7*d^6*e^3 + ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*A^2*c^8*d^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2*b^4*c^4*d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b^3*c^5*d^7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*c^7*d^7*e^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^5*d^6*e^4 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^2 - 88*b^3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b^6*c^4*d^7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) - 16*A*b^2*c^7*d^9*e^3 + 72*A*b^3*c^6*d^8*e^4 - 128*A*b^4*c^5*d^7*e^5 + 112*A*b^5*c^4*d^6*e^6 - 48*A*b^6*c^3*d^5*e^7 + 8*A*b^7*c^2*d^4*e^8 + 8*B*b^2*c^7*d^10*e^2 - 32*B*b^3*c^6*d^9*e^3 + 48*B*b^4*c^5*d^8*e^4 - 32*B*b^5*c^4*d^7*e^5 + 8*B*b^6*c^3*d^6*e^6))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2)))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*A^2*c^8*d^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2*b^4*c^4*d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b^3*c^5*d^7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*c^7*d^7*e^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^5*d^6*e^4 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^2 - 88*b^3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b^6*c^4*d^7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + 16*A*b^2*c^7*d^9*e^3 - 72*A*b^3*c^6*d^8*e^4 + 128*A*b^4*c^5*d^7*e^5 - 112*A*b^5*c^4*d^6*e^6 + 48*A*b^6*c^3*d^5*e^7 - 8*A*b^7*c^2*d^4*e^8 - 8*B*b^2*c^7*d^10*e^2 + 32*B*b^3*c^6*d^9*e^3 - 48*B*b^4*c^5*d^8*e^4 + 32*B*b^5*c^4*d^7*e^5 - 8*B*b^6*c^3*d^6*e^6))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2)))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + 48*A^3*b^2*c^5*d^4*e^5 - 16*A^3*b^3*c^4*d^3*e^6 - 16*A^2*B*c^7*d^7*e^2 - 48*A^3*b*c^6*d^5*e^4 - 48*A*B^2*b^2*c^5*d^6*e^3 + 48*A*B^2*b^3*c^4*d^5*e^4 - 16*A*B^2*b^4*c^3*d^4*e^5 - 32*A^2*B*b^3*c^4*d^4*e^5 + 16*A^2*B*b^4*c^3*d^3*e^6 + 16*A*B^2*b*c^6*d^7*e^2 + 32*A^2*B*b*c^6*d^6*e^3))*(A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*2i)/(b^4*e^3 - b*c^3*d

```
^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) - (2*(A*e - B*d))/((c*d^2 - b*d*e)*(d
 + e*x)^(1/2)) + (A*atan((B^2*b^2*c^4*d^11*(d + e*x)^(1/2)*1i - A^2*b^6*d^5
*e^6*(d + e*x)^(1/2)*1i + A^2*b^5*c*d^6*e^5*(d + e*x)^(1/2)*6i - B^2*b^3*c^
3*d^10*e*(d + e*x)^(1/2)*3i - B^2*b^5*c*d^8*e^3*(d + e*x)^(1/2)*1i - A*B*b*
c^5*d^11*(d + e*x)^(1/2)*2i - A^2*b^2*c^4*d^9*e^2*(d + e*x)^(1/2)*12i + A^2
*b^3*c^3*d^8*e^3*(d + e*x)^(1/2)*19i - A^2*b^4*c^2*d^7*e^4*(d + e*x)^(1/2)*
15i + B^2*b^4*c^2*d^9*e^2*(d + e*x)^(1/2)*3i + A^2*b*c^5*d^10*e*(d + e*x)^(
1/2)*3i - A*B*b^3*c^3*d^9*e^2*(d + e*x)^(1/2)*6i + A*B*b^4*c^2*d^8*e^3*(d +
 e*x)^(1/2)*2i + A*B*b^2*c^4*d^10*e*(d + e*x)^(1/2)*6i)/(d^3*(d^3)^(1/2)*(d
^3*(d^3*(3*A^2*b*c^5*e + B^2*b^2*c^4*d - 3*B^2*b^3*c^3*e - 2*A*B*b*c^5*d +
6*A*B*b^2*c^4*e) - 15*A^2*b^4*c^2*e^4 - 12*A^2*b^2*c^4*d^2*e^2 + 3*B^2*b^4*
c^2*d^2*e^2 - B^2*b^5*c*d*e^3 + 19*A^2*b^3*c^3*d*e^3 + 2*A*B*b^4*c^2*d*e^3
- 6*A*B*b^3*c^3*d^2*e^2) - A^2*b^6*d*e^6 + 6*A^2*b^5*c*d^2*e^5)))*2i)/(b*(d
^3)^(1/2))
```

sympy [A] time = 61.49, size = 107, normalized size = 0.91

$$\frac{2A\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd\sqrt{-d}}-\frac{2\left(-Ae+Bd\right)}{d\sqrt{d+ex}\,\left(be-cd\right)}-\frac{2\left(-Ac+Bb\right)\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{b\sqrt{\frac{be-cd}{c}}\,\left(be-cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d*sqrt(-d)) - 2*(-A*e + B*d)/(d*sqrt(d
+ e*x)*(b*e - c*d)) - 2*(-A*c + B*b)*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c)
)/(b*sqrt((b*e - c*d)/c)*(b*e - c*d))
```

3.1090 $\int \frac{A+Bx}{(d+ex)^{5/2}(bx+cx^2)}\,dx$

Optimal. Leaf size=164

$$-\frac{2c^{3/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{5/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2(Bd-Ae)}{3d(d+ex)^{3/2}(cd-be)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}}$$

Rubi [A] time = 0.32, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {828, 826, 1166, 208}

$$-\frac{2c^{3/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{5/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2(Bd-Ae)}{3d(d+ex)^{3/2}(cd-be)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(3*d*(c*d - b*e)*(d + e*x)^(3/2)) + (2*(B*c*d^2 - A*e*(2*c*
d - b*e)))/(d^2*(c*d - b*e)^2*Sqrt[d + e*x]) - (2*A*ArcTanh[Sqrt[d + e*x]/S
qrt[d]])/(b*d^(5/2)) - (2*c^(3/2)*(b*B - A*c)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x
])/Sqrt[c*d - b*e]])/(b*(c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)}\,dx = \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}} + \frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{(d+ex)^{3/2}\left(bx+cx^2\right)}\,dx}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}} + \frac{\int \frac{A(cd-be)^2+c\left(Bcd^2-Ae(2cd-be)\right)x}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx}{d^2(cd-be)^2}$$

$$= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}} + \frac{2\,\text{Subst}\left(\int \frac{Ae(cd-be)^2-cd\left(Bcd^2-Ae\ldots\right.}{cd^2-bde-\ldots}\ldots\right)}{\ldots}$$

$$= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}} + \frac{(2Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+\ldots}\ldots\right)}{bd^2}\ldots$$

$$= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}} - \frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}} - \frac{2c^{3/2}(bB\ldots}{\ldots}$$

Mathematica [C] time = 0.03, size = 91, normalized size = 0.55

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{ex}{d}+1\right)\right)}{3bd(d+ex)^{3/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-3/2, 1, -1/2, (c*(d + e*x))/(c*d - b*e
)] + A*(c*d - b*e)*Hypergeometric2F1[-3/2, 1, -1/2, 1 + (e*x)/d]))/(3*b*d*(
c*d - b*e)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.48, size = 191, normalized size = 1.16

$$\frac{2\left(Ac^{5/2}-bBc^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b(be-cd)^{5/2}}+\frac{2\left(3Abe^2(d+ex)+Abde^2-Acd^2e-6Acde(d+ex)-bBd^2e+Bcd^3+3Bcd^2(d+ex)\right)}{3d^2(d+ex)^{3/2}(cd-be)^2}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*c*d^3 - b*B*d^2*e - A*c*d^2*e + A*b*d*e^2 + 3*B*c*d^2*(d + e*x) - 6*A
*c*d*e*(d + e*x) + 3*A*b*e^2*(d + e*x)))/(3*d^2*(c*d - b*e)^2*(d + e*x)^(3/
2)) + (2*(-(b*B*c^(3/2)) + A*c^(5/2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sq
rt[d + e*x])/(c*d - b*e)])/(b*(-(c*d) + b*e)^(5/2)) - (2*A*ArcTanh[Sqrt[d +
 e*x]/Sqrt[d]])/(b*d^(5/2))
```

fricas [B] time = 2.06, size = 1709, normalized size = 10.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*((B*b*c - A*c^2)*d^3*e^2*x^2 + 2*(B*b*c - A*c^2)*d^4*e*x + (B*b*c
- A*c^2)*d^5)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*
sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 3*(A*c^2*d^4 - 2*A*b*c*d^3*
e + A*b^2*d^2*e^2 + (A*c^2*d^2*e^2 - 2*A*b*c*d*e^3 + A*b^2*e^4)*x^2 + 2*(A*
c^2*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x
```

```
 + d)*sqrt(d) + 2*d)/x) - 2*(4*B*b*c*d^4 + 4*A*b^2*d^2*e^2 - (B*b^2 + 7*A*b
*c)*d^3*e + 3*(B*b*c*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(e*x + d
))/(b*c^2*d^7 - 2*b^2*c*d^6*e + b^3*d^5*e^2 + (b*c^2*d^5*e^2 - 2*b^2*c*d^4*
e^3 + b^3*d^3*e^4)*x^2 + 2*(b*c^2*d^6*e - 2*b^2*c*d^5*e^2 + b^3*d^4*e^3)*x)
, -1/3*(6*((B*b*c - A*c^2)*d^3*e^2*x^2 + 2*(B*b*c - A*c^2)*d^4*e*x + (B*b*c
 - A*c^2)*d^5)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(
-c/(c*d - b*e))/(c*e*x + c*d)) - 3*(A*c^2*d^4 - 2*A*b*c*d^3*e + A*b^2*d^2*e
^2 + (A*c^2*d^2*e^2 - 2*A*b*c*d*e^3 + A*b^2*e^4)*x^2 + 2*(A*c^2*d^3*e - 2*A
*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) +
 2*d)/x) - 2*(4*B*b*c*d^4 + 4*A*b^2*d^2*e^2 - (B*b^2 + 7*A*b*c)*d^3*e + 3*(
B*b*c*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(e*x + d))/(b*c^2*d^7 -
 2*b^2*c*d^6*e + b^3*d^5*e^2 + (b*c^2*d^5*e^2 - 2*b^2*c*d^4*e^3 + b^3*d^3*e
^4)*x^2 + 2*(b*c^2*d^6*e - 2*b^2*c*d^5*e^2 + b^3*d^4*e^3)*x), 1/3*(6*(A*c^2
*d^4 - 2*A*b*c*d^3*e + A*b^2*d^2*e^2 + (A*c^2*d^2*e^2 - 2*A*b*c*d*e^3 + A*b
^2*e^4)*x^2 + 2*(A*c^2*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(-d)*a
rctan(sqrt(e*x + d)*sqrt(-d)/d) - 3*((B*b*c - A*c^2)*d^3*e^2*x^2 + 2*(B*b*c
 - A*c^2)*d^4*e*x + (B*b*c - A*c^2)*d^5)*sqrt(c/(c*d - b*e))*log((c*e*x + 2
*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) +
2*(4*B*b*c*d^4 + 4*A*b^2*d^2*e^2 - (B*b^2 + 7*A*b*c)*d^3*e + 3*(B*b*c*d^3*e
 - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(e*x + d))/(b*c^2*d^7 - 2*b^2*c*d^
6*e + b^3*d^5*e^2 + (b*c^2*d^5*e^2 - 2*b^2*c*d^4*e^3 + b^3*d^3*e^4)*x^2 + 2
*(b*c^2*d^6*e - 2*b^2*c*d^5*e^2 + b^3*d^4*e^3)*x), -2/3*(3*((B*b*c - A*c^2)
*d^3*e^2*x^2 + 2*(B*b*c - A*c^2)*d^4*e*x + (B*b*c - A*c^2)*d^5)*sqrt(-c/(c*
d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c
*d)) - 3*(A*c^2*d^4 - 2*A*b*c*d^3*e + A*b^2*d^2*e^2 + (A*c^2*d^2*e^2 - 2*A*
b*c*d*e^3 + A*b^2*e^4)*x^2 + 2*(A*c^2*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3
)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (4*B*b*c*d^4 + 4*A*b^2*d^2
*e^2 - (B*b^2 + 7*A*b*c)*d^3*e + 3*(B*b*c*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d
*e^3)*x)*sqrt(e*x + d))/(b*c^2*d^7 - 2*b^2*c*d^6*e + b^3*d^5*e^2 + (b*c^2*d
^5*e^2 - 2*b^2*c*d^4*e^3 + b^3*d^3*e^4)*x^2 + 2*(b*c^2*d^6*e - 2*b^2*c*d^5*
e^2 + b^3*d^4*e^3)*x)]
```

giac [A] time = 0.22, size = 217, normalized size = 1.32

$$\frac{2\left(Bbc^2-Ac^3\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(bc^2d^2-2\,b^2cde+b^3e^2\right)\sqrt{-c^2d+bce}}+\frac{2\left(3\,(xe+d)Bcd^2+Bcd^3-6\,(xe+d)Acde-Bbd^2e-Acd^2e+3\,(xe+d)Abe^2+Abde^2\right)}{3\left(c^2d^4-2\,bcd^3e+b^2d^2e^2\right)(xe+d)^{\frac{3}{2}}}+\frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^2 - A*c^3)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c^2*d^
2 - 2*b^2*c*d*e + b^3*e^2)*sqrt(-c^2*d + b*c*e)) + 2/3*(3*(x*e + d)*B*c*d^2
 + B*c*d^3 - 6*(x*e + d)*A*c*d*e - B*b*d^2*e - A*c*d^2*e + 3*(x*e + d)*A*b*
e^2 + A*b*d*e^2)/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*(x*e + d)^(3/2)) +
2*A*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)*d^2)
```

maple [A] time = 0.07, size = 243, normalized size = 1.48

$$-\frac{2A\,c^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^2\sqrt{(be-cd)\,c}\;b}+\frac{2B\,c^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^2\sqrt{(be-cd)\,c}}+\frac{2Ab\,e^2}{(be-cd)^2\sqrt{ex+d}\;d^2}-\frac{4Ace}{(be-cd)^2\sqrt{ex+d}\;d}+\frac{2Bc}{(be-cd)^2\sqrt{ex+d}}+\frac{2Ae}{3\,(be-cd)\,(ex+d)^{\frac{3}{2}}\,d}-\frac{2B}{3\,(be-cd)\,(ex+d)^{\frac{3}{2}}}-\frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b\,d^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x)
```

```
[Out] -2/(b*e-c*d)^2*c^3/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A+2/(b*e-c*d)^2*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(5/2)+2/3/(b*e-
c*d)/d/(e*x+d)^(3/2)*A*e-2/3/(b*e-c*d)/(e*x+d)^(3/2)*B+2/(b*e-c*d)^2/d^2/(e
*x+d)^(1/2)*A*b*e^2-4/(b*e-c*d)^2/d/(e*x+d)^(1/2)*A*c*e+2/(b*e-c*d)^2/(e*x+
d)^(1/2)*B*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.92, size = 6340, normalized size = 38.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(5/2)),x)
```

```
[Out] (atan((((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^1
3*d^16*e^2 + 480*A^2*b^2*c^11*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*
A^2*b^4*c^9*d^12*e^6 - 2064*A^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^
8 - 960*A^2*b^7*c^6*d^9*e^9 + 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7
*e^11 + 8*A^2*b^10*c^3*d^6*e^12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10
*d^15*e^3 + 120*B^2*b^4*c^9*d^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b
^6*c^7*d^12*e^6 - 48*B^2*b^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^
2*b*c^12*d^15*e^3 - 16*A*B*b*c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240
*A*B*b^3*c^10*d^14*e^4 + 320*A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^
6 + 96*A*B*b^6*c^7*d^11*e^7 - 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)
^5)^(1/2)*(A*c - B*b)*(((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1
/2)*(16*b^2*c^13*d^21*e^2 - 168*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 -
 2280*b^5*c^10*d^18*e^5 + 4320*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5
376*b^8*c^7*d^15*e^8 - 3600*b^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 52
0*b^11*c^4*d^12*e^11 + 96*b^12*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*
e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3
 - 5*b^5*c*d*e^4) - 24*A*b^2*c^12*d^18*e^3 + 216*A*b^3*c^11*d^17*e^4 - 872*
A*b^4*c^10*d^16*e^5 + 2080*A*b^5*c^9*d^15*e^6 - 3248*A*b^6*c^8*d^14*e^7 + 3
472*A*b^7*c^7*d^13*e^8 - 2576*A*b^8*c^6*d^12*e^9 + 1312*A*b^9*c^5*d^11*e^10
 - 440*A*b^10*c^4*d^10*e^11 + 88*A*b^11*c^3*d^9*e^12 - 8*A*b^12*c^2*d^8*e^1
3 + 8*B*b^2*c^12*d^19*e^2 - 64*B*b^3*c^11*d^18*e^3 + 224*B*b^4*c^10*d^17*e^
4 - 448*B*b^5*c^9*d^16*e^5 + 560*B*b^6*c^8*d^15*e^6 - 448*B*b^7*c^7*d^14*e^
7 + 224*B*b^8*c^6*d^13*e^8 - 64*B*b^9*c^5*d^12*e^9 + 8*B*b^10*c^4*d^11*e^10
))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2
*d^2*e^3 - 5*b^5*c*d*e^4))*1i)/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*
b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + ((-c^3*(b*e - c*d)^
5)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^13*d^16*e^2 + 480*A^2*b^2*c
^11*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*A^2*b^4*c^9*d^12*e^6 - 206
4*A^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^8 - 960*A^2*b^7*c^6*d^9*e^
9 + 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7*e^11 + 8*A^2*b^10*c^3*d^6
*e^12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10*d^15*e^3 + 120*B^2*b^4*c^
9*d^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b^6*c^7*d^12*e^6 - 48*B^2*b
^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^2*b*c^12*d^15*e^3 - 16*A*B
*b*c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240*A*B*b^3*c^10*d^14*e^4 + 3
20*A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^6 + 96*A*B*b^6*c^7*d^11*e^
7 - 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(((-
c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^13*d^21*e^2
 - 168*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 - 2280*b^5*c^10*d^18*e^5 +
4320*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5376*b^8*c^7*d^15*e^8 - 360
0*b^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 520*b^11*c^4*d^12*e^11 + 96*
b^12*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^
```

4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + 24*A*b^2*c^12*d^18*e^3 - 216*A*b^3*c^11*d^17*e^4 + 872*A*b^4*c^10*d^16*e^5 - 2080*A*b^5*c^9*d^15*e^6 + 3248*A*b^6*c^8*d^14*e^7 - 3472*A*b^7*c^7*d^13*e^8 + 2576*A*b^8*c^6*d^12*e^9 - 1312*A*b^9*c^5*d^11*e^10 + 440*A*b^10*c^4*d^10*e^11 - 88*A*b^11*c^3*d^9*e^12 + 8*A*b^12*c^2*d^8*e^13 - 8*B*b^2*c^12*d^19*e^2 + 64*B*b^3*c^11*d^18*e^3 - 224*B*b^4*c^10*d^17*e^4 + 448*B*b^5*c^9*d^16*e^5 - 560*B*b^6*c^8*d^15*e^6 + 448*B*b^7*c^7*d^14*e^7 - 224*B*b^8*c^6*d^13*e^8 + 64*B*b^9*c^5*d^12*e^9 - 8*B*b^10*c^4*d^11*e^10))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4))*1i)/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4))/(32*A^3*c^12*d^13*e^3 + ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^13*d^16*e^2 + 480*A^2*b^2*c^11*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*A^2*b^4*c^9*d^12*e^6 - 2064*A^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^8 - 960*A^2*b^7*c^6*d^9*e^9 + 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7*e^11 + 8*A^2*b^10*c^3*d^6*e^12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10*d^15*e^3 + 120*B^2*b^4*c^9*d^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b^6*c^7*d^12*e^6 - 48*B^2*b^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^2*b*c^12*d^15*e^3 - 16*A*B*b*c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240*A*B*b^3*c^10*d^14*e^4 + 320*A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^6 + 96*A*B*b^6*c^7*d^11*e^7 - 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^13*d^21*e^2 - 168*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 - 2280*b^5*c^10*d^18*e^5 + 4320*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5376*b^8*c^7*d^15*e^8 - 3600*b^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 520*b^11*c^4*d^12*e^11 + 96*b^12*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) - 24*A*b^2*c^12*d^18*e^3 + 216*A*b^3*c^11*d^17*e^4 - 872*A*b^4*c^10*d^16*e^5 + 2080*A*b^5*c^9*d^15*e^6 - 3248*A*b^6*c^8*d^14*e^7 + 3472*A*b^7*c^7*d^13*e^8 - 2576*A*b^8*c^6*d^12*e^9 + 1312*A*b^9*c^5*d^11*e^10 - 440*A*b^10*c^4*d^10*e^11 + 88*A*b^11*c^3*d^9*e^12 - 8*A*b^12*c^2*d^8*e^13 + 8*B*b^2*c^12*d^19*e^2 - 64*B*b^3*c^11*d^18*e^3 + 224*B*b^4*c^10*d^17*e^4 - 448*B*b^5*c^9*d^16*e^5 + 560*B*b^6*c^8*d^15*e^6 - 448*B*b^7*c^7*d^14*e^7 + 224*B*b^8*c^6*d^13*e^8 - 64*B*b^9*c^5*d^12*e^9 + 8*B*b^10*c^4*d^11*e^10))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4)))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^13*d^16*e^2 + 480*A^2*b^2*c^11*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*A^2*b^4*c^9*d^12*e^6 - 2064*A^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^8 - 960*A^2*b^7*c^6*d^9*e^9 + 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7*e^11 + 8*A^2*b^10*c^3*d^6*e^12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10*d^15*e^3 + 120*B^2*b^4*c^9*d^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b^6*c^7*d^12*e^6 - 48*B^2*b^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^2*b*c^12*d^15*e^3 - 16*A*B*b*c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240*A*B*b^3*c^10*d^14*e^4 + 320*A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^6 + 96*A*B*b^6*c^7*d^11*e^7 - 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^13*d^21*e^2 - 168*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 - 2280*b^5*c^10*d^18*e^5 + 4320*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5376*b^8*c^7*d^15*e^8 - 3600*b^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 520*b^11*c^4*d^12*e^11 + 96*b^12*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + 24*A*b^2*c^12*d^18*e^3 - 216*A*b^3*c^11*d^17*e^4 + 872*A*b^4*c^10*d^16*e^5 - 2080*A*b^5*c^9*d^15*e^6 + 3248*A*b^6*c^8*d^14*e^7 - 3472*A*b^7*c^7*d^13*e^8 + 2576*A*b^8*c^6*d^12*e^9 - 1312*A*b^9*c^5*d^11*e^10 + 440*A*b^10*c^4*d^10*e^11 - 88*A*b^11*c^3*d^9*e^12 + 8*A*b^12*c^2*d^8*e^13 - 8*B*b^2*c^12*d^19*e^2 + 64*B*b^3*c^11*d^18*e^3 - 224*B*b^4*c^10*d^17*e^4 + 448*B*b^5*c^9*d^16*e^5 - 560*B*b^6*c^8*d^15*e^6 + 448*B*b^7*c^7*d^14*e^7 - 224*B*b^8*c^6*d^13*e^8 + 64*B*b^9*c^5*d^12*e^9 - 8*B*b

```
^10*c^4*d^11*e^10))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3
*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4)))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c
^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + 576*A
^3*b^2*c^10*d^11*e^5 - 880*A^3*b^3*c^9*d^10*e^6 + 800*A^3*b^4*c^8*d^9*e^7 -
 432*A^3*b^5*c^7*d^8*e^8 + 128*A^3*b^6*c^6*d^7*e^9 - 16*A^3*b^7*c^5*d^6*e^1
0 - 16*A^2*B*c^12*d^14*e^2 - 208*A^3*b*c^11*d^12*e^4 - 96*A*B^2*b^2*c^10*d^
13*e^3 + 240*A*B^2*b^3*c^9*d^12*e^4 - 320*A*B^2*b^4*c^8*d^11*e^5 + 240*A*B^
2*b^5*c^7*d^10*e^6 - 96*A*B^2*b^6*c^6*d^9*e^7 + 16*A*B^2*b^7*c^5*d^8*e^8 -
32*A^2*B*b^2*c^10*d^12*e^4 - 256*A^2*B*b^3*c^9*d^11*e^5 + 640*A^2*B*b^4*c^8
*d^10*e^6 - 704*A^2*B*b^5*c^7*d^9*e^7 + 416*A^2*B*b^6*c^6*d^8*e^8 - 128*A^2
*B*b^7*c^5*d^7*e^9 + 16*A^2*B*b^8*c^4*d^6*e^10 + 16*A*B^2*b*c^11*d^14*e^2 +
 64*A^2*B*b*c^11*d^13*e^3))*(-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*2i)/(b^6
*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^
3 - 5*b^5*c*d*e^4) - (A*atan((B^2*b^2*c^9*d^21*(d + e*x)^(1/2)*1i + A^2*b^1
1*d^10*e^11*(d + e*x)^(1/2)*1i - A^2*b^10*c*d^11*e^10*(d + e*x)^(1/2)*11i -
 B^2*b^3*c^8*d^20*e*(d + e*x)^(1/2)*6i - A*B*b*c^10*d^21*(d + e*x)^(1/2)*2i
 - A^2*b^2*c^9*d^19*e^2*(d + e*x)^(1/2)*40i + A^2*b^3*c^8*d^18*e^3*(d + e*x
)^(1/2)*145i - A^2*b^4*c^7*d^17*e^4*(d + e*x)^(1/2)*315i + A^2*b^5*c^6*d^16
*e^5*(d + e*x)^(1/2)*456i - A^2*b^6*c^5*d^15*e^6*(d + e*x)^(1/2)*461i + A^2
*b^7*c^4*d^14*e^7*(d + e*x)^(1/2)*330i - A^2*b^8*c^3*d^13*e^8*(d + e*x)^(1/
2)*165i + A^2*b^9*c^2*d^12*e^9*(d + e*x)^(1/2)*55i + B^2*b^4*c^7*d^19*e^2*(
d + e*x)^(1/2)*15i - B^2*b^5*c^6*d^18*e^3*(d + e*x)^(1/2)*20i + B^2*b^6*c^5
*d^17*e^4*(d + e*x)^(1/2)*15i - B^2*b^7*c^4*d^16*e^5*(d + e*x)^(1/2)*6i + B
^2*b^8*c^3*d^15*e^6*(d + e*x)^(1/2)*1i + A^2*b*c^10*d^20*e*(d + e*x)^(1/2)*
5i - A*B*b^3*c^8*d^19*e^2*(d + e*x)^(1/2)*30i + A*B*b^4*c^7*d^18*e^3*(d + e
*x)^(1/2)*40i - A*B*b^5*c^6*d^17*e^4*(d + e*x)^(1/2)*30i + A*B*b^6*c^5*d^16
*e^5*(d + e*x)^(1/2)*12i - A*B*b^7*c^4*d^15*e^6*(d + e*x)^(1/2)*2i + A*B*b^
2*c^9*d^20*e*(d + e*x)^(1/2)*12i)/(d^5*(d^5)^(1/2)*(d^5*(d^5*(315*A^2*b^4*c
^7*e^4 - B^2*b^2*c^9*d^4 - 15*B^2*b^6*c^5*e^4 + 40*A^2*b^2*c^9*d^2*e^2 - 15
*B^2*b^4*c^7*d^2*e^2 + 30*A*B*b^5*c^6*e^4 - 5*A^2*b*c^10*d^3*e - 145*A^2*b^
3*c^8*d*e^3 + 6*B^2*b^3*c^8*d^3*e + 20*B^2*b^5*c^6*d*e^3 + 2*A*B*b*c^10*d^4
 - 12*A*B*b^2*c^9*d^3*e - 40*A*B*b^4*c^7*d*e^3 + 30*A*B*b^3*c^8*d^2*e^2) -
55*A^2*b^9*c^2*e^9 - 456*A^2*b^5*c^6*d^4*e^5 + 461*A^2*b^6*c^5*d^3*e^6 - 33
0*A^2*b^7*c^4*d^2*e^7 + 6*B^2*b^7*c^4*d^4*e^5 - B^2*b^8*c^3*d^3*e^6 + 165*A
^2*b^8*c^3*d*e^8 - 12*A*B*b^6*c^5*d^4*e^5 + 2*A*B*b^7*c^4*d^3*e^6) - A^2*b^
11*d^3*e^11 + 11*A^2*b^10*c*d^4*e^10)))*2i)/(b*(d^5)^(1/2)) - ((2*(A*e - B*
d))/(3*(c*d^2 - b*d*e)) - (2*(d + e*x)*(A*b*e^2 + B*c*d^2 - 2*A*c*d*e))/(c*
d^2 - b*d*e)^2)/(d + e*x)^(3/2)
```

sympy [A] time = 66.52, size = 160, normalized size = 0.98

$$\frac{2A\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd^2\sqrt{-d}} - \frac{2(-Ae+Bd)}{3d(d+ex)^{\frac{3}{2}}(be-cd)} + \frac{2\left(Abe^2-2Acde+Bcd^2\right)}{d^2\sqrt{d+ex}\,(be-cd)^2} + \frac{2c(-Ac+Bb)\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{b\sqrt{\frac{be-cd}{c}}\,(be-cd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d**2*sqrt(-d)) - 2*(-A*e + B*d)/(3*d*(d
 + e*x)**(3/2)*(b*e - c*d)) + 2*(A*b*e**2 - 2*A*c*d*e + B*c*d**2)/(d**2*sqr
t(d + e*x)*(b*e - c*d)**2) + 2*c*(-A*c + B*b)*atan(sqrt(d + e*x)/sqrt((b*e
- c*d)/c))/(b*sqrt((b*e - c*d)/c)*(b*e - c*d)**2)
```

3.1091 $\int \frac{A+Bx}{(d+ex)^{7/2}(bx+cx^2)}\,dx$

Optimal. Leaf size=225

$$\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{2c^{5/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(d+ex)^{3/2}(cd-be)^2}+\frac{2(B}{5d(d+e}$$

Rubi [A] time = 0.45, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {828, 826, 1166, 208}

$$\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{2c^{5/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(d+ex)^{3/2}(cd-be)^2}+\frac{2(Bd-Ae)}{5d(d+ex)^{5/2}(cd-be)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(5*d*(c*d - b*e)*(d + e*x)^(5/2)) + (2*(B*c*d^2 - A*e*(2*c*
d - b*e)))/(3*d^2*(c*d - b*e)^2*(d + e*x)^(3/2)) + (2*(B*c^2*d^3 - A*e*(3*c
^2*d^2 - 3*b*c*d*e + b^2*e^2)))/(d^3*(c*d - b*e)^3*Sqrt[d + e*x]) - (2*A*Ar
cTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*d^(7/2)) - (2*c^(5/2)*(b*B - A*c)*ArcTanh[
(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*(c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)}\,dx = \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{(d+ex)^{5/2}\left(bx+cx^2\right)}\,dx}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{\int \frac{A(cd-be)^2+c\left(Bcd^2-Ae(2cd-be)\right)x}{(d+ex)^{3/2}\left(bx+cx^2\right)}\,dx}{d^2(cd-be)^2}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{d^3(cd-be)^3\sqrt{d+ex}}$$

Mathematica [C] time = 0.03, size = 91, normalized size = 0.40

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{ex}{d}+1\right)\right)}{5bd(d+ex)^{5/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-5/2, 1, -3/2, (c*(d + e*x))/(c*d - b*e
)] + A*(c*d - b*e)*Hypergeometric2F1[-5/2, 1, -3/2, 1 + (e*x)/d]))/(5*b*d*(
c*d - b*e)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.66, size = 329, normalized size = 1.46

$$\frac{2\left(-3Ab^2d^2e^3-5Ab^2de^3(d+ex)-15Ab^2e^3(d+ex)^2+6Abcd^3e^2+15Abcd^2e^2(d+ex)+45Abcde^2(d+ex)^2-3Ac^2d^4e-10Ac^2d^3e(d+ex)-45Ac^2d^2e(d+ex)^2+3b^2Bd^3e^2-6bBcd^4e-5bBcd^3e(d+ex)+3Bc^2d^5+5Bc^2d^4(d+ex)+15Bc^2d^3(d+ex)^2\right)}{15d^3(d+ex)^{5/2}(cd-be)^3}-\frac{2\left(Ac^{7/2}-bBc^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b(be-cd)^{7/2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(3*B*c^2*d^5 - 6*b*B*c*d^4*e - 3*A*c^2*d^4*e + 3*b^2*B*d^3*e^2 + 6*A*b*c
*d^3*e^2 - 3*A*b^2*d^2*e^3 + 5*B*c^2*d^4*(d + e*x) - 5*b*B*c*d^3*e*(d + e*x
) - 10*A*c^2*d^3*e*(d + e*x) + 15*A*b*c*d^2*e^2*(d + e*x) - 5*A*b^2*d*e^3*(
d + e*x) + 15*B*c^2*d^3*(d + e*x)^2 - 45*A*c^2*d^2*e*(d + e*x)^2 + 45*A*b*c
*d*e^2*(d + e*x)^2 - 15*A*b^2*e^3*(d + e*x)^2))/(15*d^3*(c*d - b*e)^3*(d +
e*x)^(5/2)) - (2*(-(b*B*c^(5/2)) + A*c^(7/2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) +
 b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b*(-(c*d) + b*e)^(7/2)) - (2*A*ArcTanh[
Sqrt[d + e*x]/Sqrt[d]])/(b*d^(7/2))
```

fricas [B] time = 7.48, size = 3081, normalized size = 13.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="fricas")
```

[Out] [1/15*(15*((B*b*c^2 - A*c^3)*d^4*e^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B*b*c^2 - A*c^3)*d^7)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + 15*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b^2*c*d^4*e^2 - A*b^3*d^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2*c*d*e^5 - A*b^3*e^6)*x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 - A*b^3*d^2*e^4)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(23*B*b*c^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B*b^3 + 22*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3 - 7*A*b^3*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^3*d^10 - 3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 - 3*b^2*c^2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2 - 3*b^2*c^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e - 3*b^2*c^2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x), -1/15*(30*((B*b*c^2 - A*c^3)*d^4*e^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B*b*c^2 - A*c^3)*d^7)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 15*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b^2*c*d^4*e^2 - A*b^3*d^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2*c*d*e^5 - A*b^3*e^6)*x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 - A*b^3*d^2*e^4)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(23*B*b*c^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B*b^3 + 22*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3 - 7*A*b^3*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^3*d^10 - 3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 - 3*b^2*c^2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2 - 3*b^2*c^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e - 3*b^2*c^2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x), 1/15*(30*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b^2*c*d^4*e^2 - A*b^3*d^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2*c*d*e^5 - A*b^3*e^6)*x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 - A*b^3*d^2*e^4)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 15*((B*b*c^2 - A*c^3)*d^4*e^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B*b*c^2 - A*c^3)*d^7)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + 2*(23*B*b*c^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B*b^3 + 22*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3 - 7*A*b^3*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^3*d^10 - 3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 - 3*b^2*c^2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2 - 3*b^2*c^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e - 3*b^2*c^2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x), -2/15*(15*((B*b*c^2 - A*c^3)*d^4*e^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B*b*c^2 - A*c^3)*d^7)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 15*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b^2*c*d^4*e^2 - A*b^3*d^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2*c*d*e^5 - A*b^3*e^6)*x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 - A*b^3*d^2*e^4)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (23*B*b*c^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B*b^3 + 22*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3 - 7*A*b^3*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^3*d^10 - 3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 -

```
3*b^2*c^2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2
- 3*b^2*c^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e -
3*b^2*c^2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x)]
```

giac [A] time = 0.23, size = 386, normalized size = 1.72

$$\frac{2\left(Bbc^3 - Ac^4\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(bc^3d^3 - 3\,b^2c^2d^2e + 3\,b^3cde^2 - b^4e^3\right)\sqrt{-c^2d+bce}} + \frac{2\left(15\,(xe+d)^2Bc^2d^3 + 5\,(xe+d)Bc^2d^4 + 3\,Bc^2d^5 - 45\,(xe+d)^2Ac^2d^2e - 5\,(xe+d)Bbcd^3e - 10\,(xe+d)Ac^2d^3e - 6\,Bbcd^4e - 3\,Ac^2d^4e + 45\,(xe+d)^2Abcde^2 + 15\,(xe+d)Abcd^2e^2 + 3\,Bb^2d^3e^2 + 6\,Abcd^3e^2 - 15\,(xe+d)^2Ab^2e^3 - 5\,(xe+d)Ab^2de^3 - 3\,Ab^2d^2e^3\right)}{15\left(c^3d^6 - 3\,bc^2d^5e + 3\,b^2cd^4e^2 - b^3d^3e^3\right)(xe+d)^{\frac{5}{2}}} + \frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^3 - A*c^4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c^3*d^
3 - 3*b^2*c^2*d^2*e + 3*b^3*c*d*e^2 - b^4*e^3)*sqrt(-c^2*d + b*c*e)) + 2/15
*(15*(x*e + d)^2*B*c^2*d^3 + 5*(x*e + d)*B*c^2*d^4 + 3*B*c^2*d^5 - 45*(x*e
+ d)^2*A*c^2*d^2*e - 5*(x*e + d)*B*b*c*d^3*e - 10*(x*e + d)*A*c^2*d^3*e - 6
*B*b*c*d^4*e - 3*A*c^2*d^4*e + 45*(x*e + d)^2*A*b*c*d*e^2 + 15*(x*e + d)*A*
b*c*d^2*e^2 + 3*B*b^2*d^3*e^2 + 6*A*b*c*d^3*e^2 - 15*(x*e + d)^2*A*b^2*e^3
- 5*(x*e + d)*A*b^2*d*e^3 - 3*A*b^2*d^2*e^3)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*
b^2*c*d^4*e^2 - b^3*d^3*e^3)*(x*e + d)^(5/2)) + 2*A*arctan(sqrt(x*e + d)/sq
rt(-d))/(b*sqrt(-d)*d^3)
```

maple [A] time = 0.07, size = 350, normalized size = 1.56

$$\frac{2Ac^4\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\sqrt{(be-cd)\,c}\;b} - \frac{2Bc^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\sqrt{(be-cd)\,c}} + \frac{2Ab^2e^3}{(be-cd)^3\sqrt{ex+d}\;d^3} - \frac{6Abce^2}{(be-cd)^3\sqrt{ex+d}\;d^2} + \frac{6Ac^2e}{(be-cd)^3\sqrt{ex+d}\;d} - \frac{2Bc^2}{(be-cd)^3\sqrt{ex+d}} + \frac{2Abe^2}{3\,(be-cd)^2\,(ex+d)^{\frac{3}{2}}\,d^2} - \frac{4Ace}{3\,(be-cd)^2\,(ex+d)^{\frac{3}{2}}\,d} + \frac{2Bc}{3\,(be-cd)^2\,(ex+d)^{\frac{3}{2}}} + \frac{2Ae}{5\,(be-cd)\,(ex+d)^{\frac{5}{2}}\,d} - \frac{2B}{5\,(be-cd)\,(ex+d)^{\frac{5}{2}}} - \frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b\,d^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x)
```

```
[Out] 2/(b*e-c*d)^3*c^4/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A-2/(b*e-c*d)^3*c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e
-c*d)*c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(7/2)+2/5/(b*e-c
*d)/d/(e*x+d)^(5/2)*A*e-2/5/(b*e-c*d)/(e*x+d)^(5/2)*B+2/3/(b*e-c*d)^2/d^2/(
e*x+d)^(3/2)*A*b*e^2-4/3/(b*e-c*d)^2/d/(e*x+d)^(3/2)*A*c*e+2/3/(b*e-c*d)^2/
(e*x+d)^(3/2)*B*c+2/(b*e-c*d)^3/d^3/(e*x+d)^(1/2)*A*b^2*e^3-6/(b*e-c*d)^3/d
^2/(e*x+d)^(1/2)*A*b*c*e^2+6/(b*e-c*d)^3/d/(e*x+d)^(1/2)*A*c^2*e-2/(b*e-c*d
)^3/(e*x+d)^(1/2)*B*c^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 4.72, size = 13404, normalized size = 59.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(7/2)),x)
```

```
[Out] - ((2*(A*e - B*d))/(5*(c*d^2 - b*d*e)) + (2*(d + e*x)^2*(A*b^2*e^3 - B*c^2*
d^3 + 3*A*c^2*d^2*e - 3*A*b*c*d*e^2))/(c*d^2 - b*d*e)^3 - (2*(d + e*x)*(A*b
*e^2 + B*c*d^2 - 2*A*c*d*e))/(3*(c*d^2 - b*d*e)^2))/(d + e*x)^(5/2) - (atan
((((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^18*d^2
```

4*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2
*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*
e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^
2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^1
3*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2
*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 7
2*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21
*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^
8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*
B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 +
 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*
d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A
*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^1
0 + 16*A*B*b^10*c^8*d^15*e^11) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((
(-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^
2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5
 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25
*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*
c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200
*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 1
36*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2
*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 +
 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) - 32*A*b^2*c^17*d^27*e^3 + 432*A*b^3*c
^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*A*b^5*c^14*d^24*e^6 - 28608
*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8 - 85184*A*b^8*c^11*d^21*e^
9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^9*d^19*e^11 + 63536*A*b^11*
c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14552*A*b^13*c^6*d^16*e^14 - 4
480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e^16 - 128*A*b^16*c^3*d^13*e
^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28*e^2 - 96*B*b^3*c^16*d^27*e
^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d^25*e^5 + 3960*B*b^6*c^13*d
^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*c^11*d^22*e^8 - 6336*B*b^9*
c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760*B*b^11*c^8*d^19*e^11 + 528
*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13 + 8*B*b^14*c^5*d^16*e^14))/
(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^
4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6))*1i)/(b^8*
e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3
 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) + ((-c^5*(b*e -
 c*d)^7)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^
2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*
e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2
*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*
e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A
^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*
e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*
d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2
*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8
 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^
15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^
16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016
*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^1
8*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10
*c^8*d^15*e^11) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(((-c^5*(b*e - c*
d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^1
7*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^
14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b
^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 +
 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*
e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^1
6*e^17 + 8*b^18*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21

*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2
*e^5 - 7*b^7*c*d*e^6) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 +
2720*A*b^4*c^15*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^2
3*e^7 - 56672*A*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9
*c^10*d^20*e^10 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 +
34848*A*b^12*c^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*
d^15*e^15 - 960*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*
c^2*d^12*e^18 - 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*
c^15*d^26*e^4 + 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*
B*b^7*c^12*d^23*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 -
3960*B*b^10*c^9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^1
8*e^12 + 96*B*b^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b^8*e^7 - b*c^
7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*
c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6))*1i)/(b^8*e^7 - b*c^7*d^7
+ 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d
^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6))/(((-c^5*(b*e - c*d)^7)^(1/2)*
(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22
*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2
*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*
e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^
2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^1
2*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^
15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*
B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*
e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*
c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A
^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 5
76*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d
^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B
*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11)
- ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(((-c^5*(b*e - c*d)^7)^(1/2)*(A*
c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 18
00*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 5
8968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^
9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8
*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^1
5*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18
*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^
2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*
d*e^6) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 + 2720*A*b^4*c^15
*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^23*e^7 - 56672*A
*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9*c^10*d^20*e^10
+ 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 + 34848*A*b^12*c
^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*d^15*e^15 - 960
*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*c^2*d^12*e^18 -
8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*c^15*d^26*e^4 +
1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*B*b^7*c^12*d^23
*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 - 3960*B*b^10*c^
9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^18*e^12 + 96*B*b
^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c
^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 2
1*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6)))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e
- 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^
2*d^2*e^5 - 7*b^7*c*d*e^6) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((d +
e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^
3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7
+ 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^
8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^
12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b

^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) - 32*A*b^2*c^17*d^27*e^3 + 432*A*b^3*c^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*A*b^5*c^14*d^24*e^6 - 28608*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8 - 85184*A*b^8*c^11*d^21*e^9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^9*d^19*e^11 + 63536*A*b^11*c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14552*A*b^13*c^6*d^16*e^14 - 4480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e^16 - 128*A*b^16*c^3*d^13*e^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28*e^2 - 96*B*b^3*c^16*d^27*e^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d^25*e^5 + 3960*B*b^6*c^13*d^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*c^11*d^22*e^8 - 6336*B*b^9*c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760*B*b^11*c^8*d^19*e^11 + 528*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13 + 8*B*b^14*c^5*d^16*e^14))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6)))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) - 48*A^3*c^17*d^20*e^3 - 2176*A^3*b^2*c^15*d^18*e^5 + 5904*A^3*b^3*c^14*d^17*e^6 - 10656*A^3*b^4*c^13*d^16*e^7 + 13440*A^3*b^5*c^12*d^15*e^8 - 12096*A^3*b^6*c^11*d^14*e^9 + 7776*A^3*b^7*c^10*d^13*e^10 - 3504*A^3*b^8*c^9*d^12*e^11 + 1056*A^3*b^9*c^8*d^11*e^12 - 192*A^3*b^10*c^7*d^10*e^13 + 16*A^3*b^11*c^6*d^9*e^14 + 16*A^2*B*c^17*d^21*e^2 + 480*A^3*b*c^16*d^19*e^4 + 144*A*B^2*b^2*c^15*d^20*e^3 - 576*A*B^2*b^3*c^14*d^19*e^4 + 1344*A*B^2*b^4*c^13*d^18*e^5 - 2016*A*B^2*b^5*c^12*d^17*e^6 + 2016*A*B^2*b^6*c^11*d^16*e^7 - 1344*A*B^2*b^7*c^10*d^15*e^8 + 576*A*B^2*b^8*c^9*d^14*e^9 - 144*A*B^2*b^9*c^8*d^13*e^10 + 16*A*B^2*b^10*c^7*d^12*e^11 + 96*A^2*B*b^2*c^15*d^19*e^4 + 832*A^2*B*b^3*c^14*d^18*e^5 - 3888*A^2*B*b^4*c^13*d^17*e^6 + 8640*A^2*B*b^5*c^12*d^16*e^7 - 12096*A^2*B*b^6*c^11*d^15*e^8 + 11520*A^2*B*b^7*c^10*d^14*e^9 - 7632*A^2*B*b^8*c^9*d^13*e^10 + 3488*A^2*B*b^9*c^8*d^12*e^11 - 1056*A^2*B*b^10*c^7*d^11*e^12 + 192*A^2*B*b^11*c^6*d^10*e^13 - 16*A^2*B*b^12*c^5*d^9*e^14 - 16*A*B^2*b*c^16*d^21*e^2 - 96*A^2*B*b*c^16*d^20*e^3))*(-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*2i)/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) - (A*atan(((A*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 1

44*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) - 32*A*b^2*c^17*d^27*e^3 + 432*A*b^3*c^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*A*b^5*c^14*d^24*e^6 - 28608*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8 - 85184*A*b^8*c^11*d^21*e^9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^9*d^19*e^11 + 63536*A*b^11*c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14552*A*b^13*c^6*d^16*e^14 - 4480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e^16 - 128*A*b^16*c^3*d^13*e^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28*e^2 - 96*B*b^3*c^16*d^27*e^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d^25*e^5 + 3960*B*b^6*c^13*d^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*c^11*d^22*e^8 - 6336*B*b^9*c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760*B*b^11*c^8*d^19*e^11 + 528*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13 + 8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2)))*1i)/(b*(d^7)^(1/2)) + (A*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 + 2720*A*b^4*c^15*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^23*e^7 - 56672*A*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9*c^10*d^20*e^10 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 + 34848*A*b^12*c^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*d^15*e^15 - 960*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*c^2*d^12*e^18 - 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*c^15*d^26*e^4 + 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*B*b^7*c^12*d^23*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 - 3960*B*b^10*c^9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^18*e^12 + 96*B*b^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2)))*1i)/(b*(d^7)^(1/2)))/((A*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3

+ 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 + 2720*A*b^4*c^15*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^23*e^7 - 56672*A*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9*c^10*d^20*e^10 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 + 34848*A*b^12*c^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*d^15*e^15 - 960*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*c^2*d^12*e^18 - 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*c^15*d^26*e^4 + 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*B*b^7*c^12*d^23*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 - 3960*B*b^10*c^9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^18*e^12 + 96*B*b^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2))))/(b*(d^7)^(1/2)) - (A*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) - 32*A*b^2*c^17*d^27*e^3 + 432*A*b^3*c^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*A*b^5*c^14*d^24*e^6 - 28608*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8 - 85184*A*b^8*c^11*d^21*e^9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^9*d^19*e^11 + 63536*A*b^11*c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14552*A*b^13*c^6*d^16*e^14 - 4480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e^16 - 128*A*b^16*c^3*d^13*e^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28*e^2 - 96*B*b^3*c^16*d^27*e^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d^25*e^5 + 3960*B*b^6*c^13*d^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*c^11*d^22*e^8 - 6336*B*b^9*c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760*B*b^11*c^8*d^19*e^11 + 528*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13 + 8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2))))/(b*(d^7)^(1/2)) - 48*A^3*c^17*d^20*e^3 - 2176*A^3*b^2*c^15*d^18*e^5 + 5904*A^3*b^3*c^14*d^17*e^6 - 10656*A^3*b^4*c^13*d^16*e^7 + 13440*A^3*b^5*c^12*d^15*e^8 - 12096*A^3*b^6*c^11*d^14*e^9 + 7776*A^3*b^7*c^10*d^13*e^10 - 3504*A^3*b^8*c^9*d^12*e^11 + 1056*A

```
^3*b^9*c^8*d^11*e^12 - 192*A^3*b^10*c^7*d^10*e^13 + 16*A^3*b^11*c^6*d^9*e^1
4 + 16*A^2*B*c^17*d^21*e^2 + 480*A^3*b*c^16*d^19*e^4 + 144*A*B^2*b^2*c^15*d
^20*e^3 - 576*A*B^2*b^3*c^14*d^19*e^4 + 1344*A*B^2*b^4*c^13*d^18*e^5 - 2016
*A*B^2*b^5*c^12*d^17*e^6 + 2016*A*B^2*b^6*c^11*d^16*e^7 - 1344*A*B^2*b^7*c^
10*d^15*e^8 + 576*A*B^2*b^8*c^9*d^14*e^9 - 144*A*B^2*b^9*c^8*d^13*e^10 + 16
*A*B^2*b^10*c^7*d^12*e^11 + 96*A^2*B*b^2*c^15*d^19*e^4 + 832*A^2*B*b^3*c^14
*d^18*e^5 - 3888*A^2*B*b^4*c^13*d^17*e^6 + 8640*A^2*B*b^5*c^12*d^16*e^7 - 1
2096*A^2*B*b^6*c^11*d^15*e^8 + 11520*A^2*B*b^7*c^10*d^14*e^9 - 7632*A^2*B*b
^8*c^9*d^13*e^10 + 3488*A^2*B*b^9*c^8*d^12*e^11 - 1056*A^2*B*b^10*c^7*d^11*
e^12 + 192*A^2*B*b^11*c^6*d^10*e^13 - 16*A^2*B*b^12*c^5*d^9*e^14 - 16*A*B^2
*b*c^16*d^21*e^2 - 96*A^2*B*b*c^16*d^20*e^3))*2i)/(b*(d^7)^(1/2))
```

sympy [A] time = 78.32, size = 228, normalized size = 1.01

$$\frac{2A\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd^3\sqrt{-d}}-\frac{2(-Ae+Bd)}{5d(d+ex)^{\frac{5}{2}}(be-cd)}+\frac{2\left(Abe^2-2Acde+Bcd^2\right)}{3d^2(d+ex)^{\frac{3}{2}}(be-cd)^2}+\frac{2\left(Ab^2e^3-3Abcde^2+3Ac^2d^2e-Bc^2d^3\right)}{d^3\sqrt{d+ex}\,(be-cd)^3}-\frac{2c^2(-Ac+Bb)\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{b\sqrt{\frac{be-cd}{c}}\,(be-cd)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d**3*sqrt(-d)) - 2*(-A*e + B*d)/(5*d*(d
 + e*x)**(5/2)*(b*e - c*d)) + 2*(A*b*e**2 - 2*A*c*d*e + B*c*d**2)/(3*d**2*(
d + e*x)**(3/2)*(b*e - c*d)**2) + 2*(A*b**2*e**3 - 3*A*b*c*d*e**2 + 3*A*c**
2*d**2*e - B*c**2*d**3)/(d**3*sqrt(d + e*x)*(b*e - c*d)**3) - 2*c**2*(-A*c
+ B*b)*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c))/(b*sqrt((b*e - c*d)/c)*(b*e
- c*d)**3)
```

3.1092 $\int \frac{A+Bx}{(d+ex)^{9/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=301

$$\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{3d^3(d+ex)^{3/2}(cd-be)^3}+\frac{2\left(Bc^3d^4-Ae\left(-b^3e^3+4b^2cde^2-6bc^2d^2e+4c^3d^3\right)\right)}{d^4\sqrt{d+ex}\,(cd-be)^4}-\frac{2c^{7/2}(bB-Ac)\,\mathrm{t}}{b(cd}$$

Rubi [A] time = 0.55, antiderivative size = 301, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {828, 826, 1166, 208}

$$\frac{2\left(Bc^3d^4-Ae\left(4b^2cde^2-b^3e^3-6bc^2d^2e+4c^3d^3\right)\right)}{d^4\sqrt{d+ex}\,(cd-be)^4}+\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{3d^3(d+ex)^{3/2}(cd-be)^3}-\frac{2c^{7/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{9/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(d+ex)^{5/2}(cd-be)^2}+\frac{2(Bd-Ae)}{7d(d+ex)^{7/2}(cd-be)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(7*d*(c*d - b*e)*(d + e*x)^(7/2)) + (2*(B*c*d^2 - A*e*(2*c*
d - b*e)))/(5*d^2*(c*d - b*e)^2*(d + e*x)^(5/2)) + (2*(B*c^2*d^3 - A*e*(3*c
^2*d^2 - 3*b*c*d*e + b^2*e^2)))/(3*d^3*(c*d - b*e)^3*(d + e*x)^(3/2)) + (2*
(B*c^3*d^4 - A*e*(4*c^3*d^3 - 6*b*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3)))/(d
^4*(c*d - b*e)^4*Sqrt[d + e*x]) - (2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*d
^(9/2)) - (2*c^(7/2)*(b*B - A*c)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d -
 b*e]])/(b*(c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{9/2}\left(bx+cx^2\right)}\,dx = \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{(d+ex)^{7/2}\left(bx+cx^2\right)}\,dx}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}} + \frac{\int \frac{A(cd-be)^2+c\left(Bcd^2-Ae(2cd-be)\right)x}{(d+ex)^{5/2}\left(bx+cx^2\right)}\,dx}{d^2(cd-be)^2}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{3d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{3d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{3d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{3d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}} + \frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bcde\right.\right.}{3d^3(cd-be)^3(d+ex)^{3/2}}$$

Mathematica [C] time = 0.04, size = 91, normalized size = 0.30

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};\frac{ex}{d}+1\right)\right)}{7bd(d+ex)^{7/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-7/2, 1, -5/2, (c*(d + e*x))/(c*d - b*e
)] + A*(c*d - b*e)*Hypergeometric2F1[-7/2, 1, -5/2, 1 + (e*x)/d]))/(7*b*d*(
c*d - b*e)*(d + e*x)^(7/2))
```

IntegrateAlgebraic [A] time = 0.94, size = 531, normalized size = 1.76

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(15*B*c^3*d^7 - 45*b*B*c^2*d^6*e - 15*A*c^3*d^6*e + 45*b^2*B*c*d^5*e^2 +
 45*A*b*c^2*d^5*e^2 - 15*b^3*B*d^4*e^3 - 45*A*b^2*c*d^4*e^3 + 15*A*b^3*d^3*
e^4 + 21*B*c^3*d^6*(d + e*x) - 42*b*B*c^2*d^5*e*(d + e*x) - 42*A*c^3*d^5*e*
(d + e*x) + 21*b^2*B*c*d^4*e^2*(d + e*x) + 105*A*b*c^2*d^4*e^2*(d + e*x) -
84*A*b^2*c*d^3*e^3*(d + e*x) + 21*A*b^3*d^2*e^4*(d + e*x) + 35*B*c^3*d^5*(d
 + e*x)^2 - 35*b*B*c^2*d^4*e*(d + e*x)^2 - 105*A*c^3*d^4*e*(d + e*x)^2 + 21
0*A*b*c^2*d^3*e^2*(d + e*x)^2 - 140*A*b^2*c*d^2*e^3*(d + e*x)^2 + 35*A*b^3*
d*e^4*(d + e*x)^2 + 105*B*c^3*d^4*(d + e*x)^3 - 420*A*c^3*d^3*e*(d + e*x)^3
 + 630*A*b*c^2*d^2*e^2*(d + e*x)^3 - 420*A*b^2*c*d*e^3*(d + e*x)^3 + 105*A*
b^3*e^4*(d + e*x)^3))/(105*d^4*(c*d - b*e)^4*(d + e*x)^(7/2)) + (2*(-(b*B*c
^(7/2)) + A*c^(9/2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d
```

```
 - b*e)])/(b*(-(c*d) + b*e)^(9/2)) - (2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(
b*d^(9/2))
```

fricas [B] time = 25.17, size = 4757, normalized size = 15.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*((B*b*c^3 - A*c^4)*d^5*e^4*x^4 + 4*(B*b*c^3 - A*c^4)*d^6*e^3*x
^3 + 6*(B*b*c^3 - A*c^4)*d^7*e^2*x^2 + 4*(B*b*c^3 - A*c^4)*d^8*e*x + (B*b*c
^3 - A*c^4)*d^9)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*
e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 105*(A*c^4*d^8 - 4*A*b*c
^3*d^7*e + 6*A*b^2*c^2*d^6*e^2 - 4*A*b^3*c*d^5*e^3 + A*b^4*d^4*e^4 + (A*c^4
*d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c*d*e^7 + A*b^
4*e^8)*x^4 + 4*(A*c^4*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4
*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b*c^3*d^5*e^3
+ 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*c*d^3*e^5 + A*b^4*d^2*e^6)*x^2 + 4*(A*c^4*d
^7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4*e^4 + A*b^4*
d^3*e^5)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(176*B
*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*c^2 + 291*A*b*c^3)*d^7*e + 66*
(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4 + 689*A*b^3*c)*d^5*e^3 + 105*(
B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e
^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^2 + 60*A*b^2*c^2*d^4*e^4 - 40*
A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c^2 + 39*A*b*c^3)*d^5*e^3)*x^2
+ 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 + 58*A*b^4*d^3*e^5 - 8*(2*B*b^2
*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115*A*b^2*c^2)*d^5*e^3)*x)*sqrt(e
*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b^3*c^2*d^11*e^2 - 4*b^4*c*d^10
*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c^3*d^8*e^5 + 6*b^3*c^2*d^7*e^6
 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*c^4*d^10*e^3 - 4*b^2*c^3*d^9*e
^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^5*d^6*e^7)*x^3 + 6*(b*c^4*d^11
*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4 - 4*b^4*c*d^8*e^5 + b^5*d^7*e
^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^2 + 6*b^3*c^2*d^10*e^3 - 4*b^4
*c*d^9*e^4 + b^5*d^8*e^5)*x), -1/105*(210*((B*b*c^3 - A*c^4)*d^5*e^4*x^4 +
4*(B*b*c^3 - A*c^4)*d^6*e^3*x^3 + 6*(B*b*c^3 - A*c^4)*d^7*e^2*x^2 + 4*(B*b*
c^3 - A*c^4)*d^8*e*x + (B*b*c^3 - A*c^4)*d^9)*sqrt(-c/(c*d - b*e))*arctan(-
(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 105*(A*c^4*
d^8 - 4*A*b*c^3*d^7*e + 6*A*b^2*c^2*d^6*e^2 - 4*A*b^3*c*d^5*e^3 + A*b^4*d^4
*e^4 + (A*c^4*d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c
*d*e^7 + A*b^4*e^8)*x^4 + 4*(A*c^4*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^
2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b
*c^3*d^5*e^3 + 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*c*d^3*e^5 + A*b^4*d^2*e^6)*x^2
 + 4*(A*c^4*d^7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4
*e^4 + A*b^4*d^3*e^5)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/
x) - 2*(176*B*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*c^2 + 291*A*b*c^3
)*d^7*e + 66*(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4 + 689*A*b^3*c)*d^
5*e^3 + 105*(B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*
A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^2 + 60*A*b^2*c^2*
d^4*e^4 - 40*A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c^2 + 39*A*b*c^3)*
d^5*e^3)*x^2 + 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 + 58*A*b^4*d^3*e^5
 - 8*(2*B*b^2*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115*A*b^2*c^2)*d^5*e
^3)*x)*sqrt(e*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b^3*c^2*d^11*e^2 -
 4*b^4*c*d^10*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c^3*d^8*e^5 + 6*b^
3*c^2*d^7*e^6 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*c^4*d^10*e^3 - 4*
b^2*c^3*d^9*e^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^5*d^6*e^7)*x^3 +
6*(b*c^4*d^11*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4 - 4*b^4*c*d^8*e^
5 + b^5*d^7*e^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^2 + 6*b^3*c^2*d^1
0*e^3 - 4*b^4*c*d^9*e^4 + b^5*d^8*e^5)*x), 1/105*(210*(A*c^4*d^8 - 4*A*b*c^
3*d^7*e + 6*A*b^2*c^2*d^6*e^2 - 4*A*b^3*c*d^5*e^3 + A*b^4*d^4*e^4 + (A*c^4*
```

```
d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c*d*e^7 + A*b^4
*e^8)*x^4 + 4*(A*c^4*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*
A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b*c^3*d^5*e^3 +
 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*c*d^3*e^5 + A*b^4*d^2*e^6)*x^2 + 4*(A*c^4*d^
7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4*e^4 + A*b^4*d
^3*e^5)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 105*((B*b*c^3 - A*c^
4)*d^5*e^4*x^4 + 4*(B*b*c^3 - A*c^4)*d^6*e^3*x^3 + 6*(B*b*c^3 - A*c^4)*d^7*
e^2*x^2 + 4*(B*b*c^3 - A*c^4)*d^8*e*x + (B*b*c^3 - A*c^4)*d^9)*sqrt(c/(c*d
- b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d
- b*e)))/(c*x + b)) + 2*(176*B*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*
c^2 + 291*A*b*c^3)*d^7*e + 66*(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4
+ 689*A*b^3*c)*d^5*e^3 + 105*(B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2
*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^
2 + 60*A*b^2*c^2*d^4*e^4 - 40*A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c
^2 + 39*A*b*c^3)*d^5*e^3)*x^2 + 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 +
 58*A*b^4*d^3*e^5 - 8*(2*B*b^2*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115
*A*b^2*c^2)*d^5*e^3)*x)*sqrt(e*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b
^3*c^2*d^11*e^2 - 4*b^4*c*d^10*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c
^3*d^8*e^5 + 6*b^3*c^2*d^7*e^6 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*
c^4*d^10*e^3 - 4*b^2*c^3*d^9*e^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^
5*d^6*e^7)*x^3 + 6*(b*c^4*d^11*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4
 - 4*b^4*c*d^8*e^5 + b^5*d^7*e^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^
2 + 6*b^3*c^2*d^10*e^3 - 4*b^4*c*d^9*e^4 + b^5*d^8*e^5)*x), -2/105*(105*((B
*b*c^3 - A*c^4)*d^5*e^4*x^4 + 4*(B*b*c^3 - A*c^4)*d^6*e^3*x^3 + 6*(B*b*c^3
- A*c^4)*d^7*e^2*x^2 + 4*(B*b*c^3 - A*c^4)*d^8*e*x + (B*b*c^3 - A*c^4)*d^9)
*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e)
)/(c*e*x + c*d)) - 105*(A*c^4*d^8 - 4*A*b*c^3*d^7*e + 6*A*b^2*c^2*d^6*e^2 -
 4*A*b^3*c*d^5*e^3 + A*b^4*d^4*e^4 + (A*c^4*d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6
*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c*d*e^7 + A*b^4*e^8)*x^4 + 4*(A*c^4*d^5*e^3 -
4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*
x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b*c^3*d^5*e^3 + 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*
c*d^3*e^5 + A*b^4*d^2*e^6)*x^2 + 4*(A*c^4*d^7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b
^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4*e^4 + A*b^4*d^3*e^5)*x)*sqrt(-d)*arctan(sqrt
(e*x + d)*sqrt(-d)/d) - (176*B*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*
c^2 + 291*A*b*c^3)*d^7*e + 66*(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4
+ 689*A*b^3*c)*d^5*e^3 + 105*(B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2
*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^
2 + 60*A*b^2*c^2*d^4*e^4 - 40*A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c
^2 + 39*A*b*c^3)*d^5*e^3)*x^2 + 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 +
 58*A*b^4*d^3*e^5 - 8*(2*B*b^2*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115
*A*b^2*c^2)*d^5*e^3)*x)*sqrt(e*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b
^3*c^2*d^11*e^2 - 4*b^4*c*d^10*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c
^3*d^8*e^5 + 6*b^3*c^2*d^7*e^6 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*
c^4*d^10*e^3 - 4*b^2*c^3*d^9*e^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^
5*d^6*e^7)*x^3 + 6*(b*c^4*d^11*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4
 - 4*b^4*c*d^8*e^5 + b^5*d^7*e^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^
2 + 6*b^3*c^2*d^10*e^3 - 4*b^4*c*d^9*e^4 + b^5*d^8*e^5)*x)]
```

giac [B] time = 0.28, size = 615, normalized size = 2.04

$$\frac{2\left(Bbc^4 - Ac^5\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(bc^4d^4 - 4\,b^2c^3d^3e + 6\,b^3c^2d^2e^2 - 4\,b^4cde^3 + b^5e^4\right)\sqrt{-c^2d+bce}} + \frac{2\left(105\,(xe+d)^3Bc^3d^4 + 35\,(xe+d)^2Bc^3d^5 + 21\,(xe+d)Bc^3d^6 + 15\,Bc^3d^7 - 420\,(xe+d)^3Ac^3d^3e - 35\,(xe+d)^2Bbc^2d^4e - 105\,(xe+d)^2Ac^3d^4e - 42\,(xe+d)Bbc^2d^5e - 42\,(xe+d)Ac^3d^5e - 45\,Bbc^2d^6e - 15\,Ac^3d^6e + 630\,(xe+d)^3Abc^2d^2e^2 + 210\,(xe+d)^2Abc^2d^3e^2 + 21\,(xe+d)Bb^2cd^4e^2 + 105\,(xe+d)Abc^2d^4e^2 + 45\,Bb^2cd^5e^2 + 45\,Abc^2d^5e^2 - 420\,(xe+d)^3Ab^2cde^3 - 140\,(xe+d)^2Ab^2cd^2e^3 - 84\,(xe+d)Ab^2cd^3e^3 - 15\,Bb^3d^4e^3 - 45\,Ab^2cd^4e^3 + 105\,(xe+d)^3Ab^3e^4 + 35\,(xe+d)^2Ab^3de^4 + 21\,(xe+d)Ab^3d^2e^4 + 15\,Ab^3d^3e^4\right)}{105\left(c^4d^8 - 4\,bc^3d^7e + 6\,b^2c^2d^6e^2 - 4\,b^3cd^5e^3 + b^4d^4e^4\right)(xe+d)^{\frac{7}{2}}} + \frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^4 - A*c^5)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c^4*d^
4 - 4*b^2*c^3*d^3*e + 6*b^3*c^2*d^2*e^2 - 4*b^4*c*d*e^3 + b^5*e^4)*sqrt(-c^
2*d + b*c*e)) + 2/105*(105*(x*e + d)^3*B*c^3*d^4 + 35*(x*e + d)^2*B*c^3*d^5
 + 21*(x*e + d)*B*c^3*d^6 + 15*B*c^3*d^7 - 420*(x*e + d)^3*A*c^3*d^3*e - 35
*(x*e + d)^2*B*b*c^2*d^4*e - 105*(x*e + d)^2*A*c^3*d^4*e - 42*(x*e + d)*B*b
```

```
*c^2*d^5*e - 42*(x*e + d)*A*c^3*d^5*e - 45*B*b*c^2*d^6*e - 15*A*c^3*d^6*e +
 630*(x*e + d)^3*A*b*c^2*d^2*e^2 + 210*(x*e + d)^2*A*b*c^2*d^3*e^2 + 21*(x*
e + d)*B*b^2*c*d^4*e^2 + 105*(x*e + d)*A*b*c^2*d^4*e^2 + 45*B*b^2*c*d^5*e^2
 + 45*A*b*c^2*d^5*e^2 - 420*(x*e + d)^3*A*b^2*c*d*e^3 - 140*(x*e + d)^2*A*b
^2*c*d^2*e^3 - 84*(x*e + d)*A*b^2*c*d^3*e^3 - 15*B*b^3*d^4*e^3 - 45*A*b^2*c
*d^4*e^3 + 105*(x*e + d)^3*A*b^3*e^4 + 35*(x*e + d)^2*A*b^3*d*e^4 + 21*(x*e
 + d)*A*b^3*d^2*e^4 + 15*A*b^3*d^3*e^4)/((c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c
^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*(x*e + d)^(7/2)) + 2*A*arctan(s
qrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)*d^4)
```

maple [A] time = 0.10, size = 489, normalized size = 1.62

$$-\frac{2Ac^5\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)c}\,b}+\frac{2Bc^4\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)c}}+\frac{2Ab^3e^4}{(be-cd)^4\sqrt{ex+d}\,d^4}-\frac{8Ab^2ce^3}{(be-cd)^4\sqrt{ex+d}\,d^3}+\frac{12Abc^2e^2}{(be-cd)^4\sqrt{ex+d}\,d^2}-\frac{8Ac^3e}{(be-cd)^4\sqrt{ex+d}\,d}+\frac{2Bc^3}{(be-cd)^4\sqrt{ex+d}}+\frac{2Ab^2e^3}{3(be-cd)^3(ex+d)^{\frac{3}{2}}d^3}-\frac{2Abce^2}{(be-cd)^3(ex+d)^{\frac{3}{2}}d^2}+\frac{2Ac^2e}{(be-cd)^3(ex+d)^{\frac{3}{2}}d}-\frac{2Bc^2}{3(be-cd)^3(ex+d)^{\frac{3}{2}}}+\frac{2Abe^2}{5(be-cd)^2(ex+d)^{\frac{5}{2}}d^2}-\frac{4Ace}{5(be-cd)^2(ex+d)^{\frac{5}{2}}d}+\frac{2Bc}{5(be-cd)^2(ex+d)^{\frac{5}{2}}}+\frac{2Ae}{7(be-cd)(ex+d)^{\frac{7}{2}}d}-\frac{2B}{7(be-cd)(ex+d)^{\frac{7}{2}}}-\frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b\,d^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x)
```

```
[Out] -2/(b*e-c*d)^4*c^5/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A+2/(b*e-c*d)^4*c^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(9/2)+2/7/(b*e-
c*d)/d/(e*x+d)^(7/2)*A*e-2/7/(b*e-c*d)/(e*x+d)^(7/2)*B+2/5/(b*e-c*d)^2/d^2/
(e*x+d)^(5/2)*A*b*e^2-4/5/(b*e-c*d)^2/d/(e*x+d)^(5/2)*A*c*e+2/5/(b*e-c*d)^2
/(e*x+d)^(5/2)*B*c+2/3/(b*e-c*d)^3/d^3/(e*x+d)^(3/2)*A*b^2*e^3-2/(b*e-c*d)^
3/d^2/(e*x+d)^(3/2)*A*b*c*e^2+2/(b*e-c*d)^3/d/(e*x+d)^(3/2)*A*c^2*e-2/3/(b*
e-c*d)^3/(e*x+d)^(3/2)*B*c^2+2/(b*e-c*d)^4/d^4/(e*x+d)^(1/2)*A*b^3*e^4-8/(b
*e-c*d)^4/d^3/(e*x+d)^(1/2)*A*b^2*c*e^3+12/(b*e-c*d)^4/d^2/(e*x+d)^(1/2)*A*
b*c^2*e^2-8/(b*e-c*d)^4/d/(e*x+d)^(1/2)*A*c^3*e+2/(b*e-c*d)^4/(e*x+d)^(1/2)
*B*c^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 5.65, size = 11601, normalized size = 38.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(9/2)),x)
```

```
[Out] (A*atan((B^2*b^2*c^19*d^41*(d + e*x)^(1/2)*1i + A^2*b^21*d^20*e^21*(d + e*x
)^(1/2)*1i - A^2*b^20*c*d^21*e^20*(d + e*x)^(1/2)*21i - B^2*b^3*c^18*d^40*e
*(d + e*x)^(1/2)*12i - A*B*b*c^20*d^41*(d + e*x)^(1/2)*2i - A^2*b^2*c^19*d^
39*e^2*(d + e*x)^(1/2)*144i + A^2*b^3*c^18*d^38*e^3*(d + e*x)^(1/2)*1110i -
 A^2*b^4*c^17*d^37*e^4*(d + e*x)^(1/2)*5490i + A^2*b^5*c^16*d^36*e^5*(d + e
*x)^(1/2)*19557i - A^2*b^6*c^15*d^35*e^6*(d + e*x)^(1/2)*53340i + A^2*b^7*c
^14*d^34*e^7*(d + e*x)^(1/2)*115488i - A^2*b^8*c^13*d^33*e^8*(d + e*x)^(1/2
)*202995i + A^2*b^9*c^12*d^32*e^9*(d + e*x)^(1/2)*293710i - A^2*b^10*c^11*d
^31*e^10*(d + e*x)^(1/2)*352650i + A^2*b^11*c^10*d^30*e^11*(d + e*x)^(1/2)*
352704i - A^2*b^12*c^9*d^29*e^12*(d + e*x)^(1/2)*293929i + A^2*b^13*c^8*d^2
8*e^13*(d + e*x)^(1/2)*203490i - A^2*b^14*c^7*d^27*e^14*(d + e*x)^(1/2)*116
280i + A^2*b^15*c^6*d^26*e^15*(d + e*x)^(1/2)*54264i - A^2*b^16*c^5*d^25*e^
```

16*(d + e*x)^(1/2)*20349i + A^2*b^17*c^4*d^24*e^17*(d + e*x)^(1/2)*5985i - A^2*b^18*c^3*d^23*e^18*(d + e*x)^(1/2)*1330i + A^2*b^19*c^2*d^22*e^19*(d + e*x)^(1/2)*210i + B^2*b^4*c^17*d^39*e^2*(d + e*x)^(1/2)*66i - B^2*b^5*c^16*d^38*e^3*(d + e*x)^(1/2)*220i + B^2*b^6*c^15*d^37*e^4*(d + e*x)^(1/2)*495i - B^2*b^7*c^14*d^36*e^5*(d + e*x)^(1/2)*792i + B^2*b^8*c^13*d^35*e^6*(d + e*x)^(1/2)*924i - B^2*b^9*c^12*d^34*e^7*(d + e*x)^(1/2)*792i + B^2*b^10*c^11*d^33*e^8*(d + e*x)^(1/2)*495i - B^2*b^11*c^10*d^32*e^9*(d + e*x)^(1/2)*220i + B^2*b^12*c^9*d^31*e^10*(d + e*x)^(1/2)*66i - B^2*b^13*c^8*d^30*e^11*(d + e*x)^(1/2)*12i + B^2*b^14*c^7*d^29*e^12*(d + e*x)^(1/2)*1i + A^2*b*c^20*d^40*e*(d + e*x)^(1/2)*9i - A*B*b^3*c^18*d^39*e^2*(d + e*x)^(1/2)*132i + A*B*b^4*c^17*d^38*e^3*(d + e*x)^(1/2)*440i - A*B*b^5*c^16*d^37*e^4*(d + e*x)^(1/2)*990i + A*B*b^6*c^15*d^36*e^5*(d + e*x)^(1/2)*1584i - A*B*b^7*c^14*d^35*e^6*(d + e*x)^(1/2)*1848i + A*B*b^8*c^13*d^34*e^7*(d + e*x)^(1/2)*1584i - A*B*b^9*c^12*d^33*e^8*(d + e*x)^(1/2)*990i + A*B*b^10*c^11*d^32*e^9*(d + e*x)^(1/2)*440i - A*B*b^11*c^10*d^31*e^10*(d + e*x)^(1/2)*132i + A*B*b^12*c^9*d^30*e^11*(d + e*x)^(1/2)*24i - A*B*b^13*c^8*d^29*e^12*(d + e*x)^(1/2)*2i + A*B*b^2*c^19*d^40*e*(d + e*x)^(1/2)*24i)/(d^9*(d^9)^(1/2)*(d^9*(d^9*(d^9*(9*A^2*b*c^20*e + B^2*b^2*c^19*d - 12*B^2*b^3*c^18*e - 2*A*B*b*c^20*d + 24*A*B*b^2*c^19*e) - 352650*A^2*b^10*c^11*e^10 + 66*B^2*b^12*c^9*e^10 - 144*A^2*b^2*c^19*d^8*e^2 + 1110*A^2*b^3*c^18*d^7*e^3 - 5490*A^2*b^4*c^17*d^6*e^4 + 19557*A^2*b^5*c^16*d^5*e^5 - 53340*A^2*b^6*c^15*d^4*e^6 + 115488*A^2*b^7*c^14*d^3*e^7 - 202995*A^2*b^8*c^13*d^2*e^8 + 66*B^2*b^4*c^17*d^8*e^2 - 220*B^2*b^5*c^16*d^7*e^3 + 495*B^2*b^6*c^15*d^6*e^4 - 792*B^2*b^7*c^14*d^5*e^5 + 924*B^2*b^8*c^13*d^4*e^6 - 792*B^2*b^9*c^12*d^3*e^7 + 495*B^2*b^10*c^11*d^2*e^8 - 132*A*B*b^11*c^10*e^10 + 293710*A^2*b^9*c^12*d*e^9 - 220*B^2*b^11*c^10*d*e^9 + 440*A*B*b^10*c^11*d*e^9 - 132*A*B*b^3*c^18*d^8*e^2 + 440*A*B*b^4*c^17*d^7*e^3 - 990*A*B*b^5*c^16*d^6*e^4 + 1584*A*B*b^6*c^15*d^5*e^5 - 1848*A*B*b^7*c^14*d^4*e^6 + 1584*A*B*b^8*c^13*d^3*e^7 - 990*A*B*b^9*c^12*d^2*e^8) + 210*A^2*b^19*c^2*e^19 + 352704*A^2*b^11*c^10*d^8*e^11 - 293929*A^2*b^12*c^9*d^7*e^12 + 203490*A^2*b^13*c^8*d^6*e^13 - 116280*A^2*b^14*c^7*d^5*e^14 + 54264*A^2*b^15*c^6*d^4*e^15 - 20349*A^2*b^16*c^5*d^3*e^16 + 5985*A^2*b^17*c^4*d^2*e^17 - 12*B^2*b^13*c^8*d^8*e^11 + B^2*b^14*c^7*d^7*e^12 - 1330*A^2*b^18*c^3*d*e^18 + 24*A*B*b^12*c^9*d^8*e^11 - 2*A*B*b^13*c^8*d^7*e^12) + A^2*b^21*d^7*e^21 - 21*A^2*b^20*c*d^8*e^20)))*2i)/(b*(d^9)^(1/2)) - ((2*(A*e - B*d))/(7*(c*d^2 - b*d*e)) - (2*(d + e*x)^3*(A*b^3*e^4 + B*c^3*d^4 - 4*A*c^3*d^3*e + 6*A*b*c^2*d^2*e^2 - 4*A*b^2*c*d*e^3))/(c*d^2 - b*d*e)^4 + (2*(d + e*x)^2*(A*b^2*e^3 - B*c^2*d^3 + 3*A*c^2*d^2*e - 3*A*b*c*d*e^2))/(3*(c*d^2 - b*d*e)^3) - (2*(d + e*x)*(A*b*e^2 + B*c*d^2 - 2*A*c*d*e))/(5*(c*d^2 - b*d*e)^2))/(d + e*x)^(7/2) + (atan((((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 + 2048*A^2*b^2*c^21*d^30*e^4 - 10880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^19*d^28*e^6 - 130368*A^2*b^5*c^18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 - 626496*A^2*b^7*c^16*d^25*e^9 + 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^2*b^9*c^14*d^23*e^11 + 1478576*A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c^12*d^21*e^13 + 1007768*A^2*b^12*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19*e^15 + 310080*A^2*b^14*c^9*d^18*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 38760*A^2*b^16*c^7*d^16*e^18 - 9120*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5*d^14*e^20 - 160*A^2*b^19*c^4*d^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*b^2*c^21*d^32*e^2 - 96*B^2*b^3*c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 - 1760*B^2*b^5*c^18*d^29*e^5 + 3960*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16*d^27*e^7 + 7392*B^2*b^8*c^15*d^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*B^2*b^10*c^13*d^24*e^10 - 1760*B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*d^22*e^12 - 96*B^2*b^13*c^10*d^21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2*b*c^22*d^31*e^3 - 16*A*B*b*c^22*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 1056*A*B*b^3*c^20*d^30*e^4 + 3520*A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^28*e^6 + 12672*A*B*b^6*c^17*d^27*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*A*B*b^8*c^15*d^25*e^9 - 7920*A*B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^23*e^11 - 1056*A*B*b^11*c^12*d^22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A*B*b^13*c^10*d^20*e^14) - ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b) *(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328*b^3*c^22*d^40*e^3 + 3200*b^4*c^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 86640*b^6*c^19*d^37*e^6 - 286824*b^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8 - 1550400*b^9*c^16*d^34*e^9 + 2635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^14*d^32*e^11 + 4299776*b^12*c^13*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 + 3359200*b^14*c^11*d^29*e^14 - 2248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^9*d^27*e^16 - 558144*b^17*c^8*d^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000*b^19*c^6*d^24*e^19 + 12160*b^20*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 + 176*b^22*c^3*d^21*e^22 - 8*b^23*c^2*d^20*e^23))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) - 40*A*b^2*c^22*d^36*e^3 + 720*A*b^3*c^21*d^35*e^4 - 6160*A*b^4*c^20*d^34*e^5 + 33320*A*b^5*c^19*d^33*e^6 - 127848*A*b^6*c^18*d^32*e^7 + 370048*A*b^7*c^17*d^31*e^8 - 838720*A*b^8*c^16*d^30*e^9 + 1524960*A*b^9*c^15*d^29*e^10 - 2259920*A*b^10*c^14*d^28*e^11 + 2757664*A*b^11*c^13*d^27*e^12 - 2786784*A*b^12*c^12*d^26*e^13 + 2336880*A*b^13*c^11*d^25*e^14 - 1623440*A*b^14*c^10*d^24*e^15 + 929280*A*b^15*c^9*d^23*e^16 - 433984*A*b^16*c^8*d^22*e^17 + 162784*A*b^17*c^7*d^21*e^18 - 47880*A*b^18*c^6*d^20*e^19 + 10640*A*b^19*c^5*d^19*e^20 - 1680*A*b^20*c^4*d^18*e^21 + 168*A*b^21*c^3*d^17*e^22 - 8*A*b^22*c^2*d^16*e^23 + 8*B*b^2*c^22*d^37*e^2 - 128*B*b^3*c^21*d^36*e^3 + 960*B*b^4*c^20*d^35*e^4 - 4480*B*b^5*c^19*d^34*e^5 + 14560*B*b^6*c^18*d^33*e^6 - 34944*B*b^7*c^17*d^32*e^7 + 64064*B*b^8*c^16*d^31*e^8 - 91520*B*b^9*c^15*d^30*e^9 + 102960*B*b^10*c^14*d^29*e^10 - 91520*B*b^11*c^13*d^28*e^11 + 64064*B*b^12*c^12*d^27*e^12 - 34944*B*b^13*c^11*d^26*e^13 + 14560*B*b^14*c^10*d^25*e^14 - 4480*B*b^15*c^9*d^24*e^15 + 960*B*b^16*c^8*d^23*e^16 - 128*B*b^17*c^7*d^22*e^17 + 8*B*b^18*c^6*d^21*e^18))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8))*1i)/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) + ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 + 2048*A^2*b^2*c^21*d^30*e^4 - 10880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^19*d^28*e^6 - 130368*A^2*b^5*c^18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 - 626496*A^2*b^7*c^16*d^25*e^9 + 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^2*b^9*c^14*d^23*e^11 + 1478576*A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c^12*d^21*e^13 + 1007768*A^2*b^12*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19*e^15 + 310080*A^2*b^14*c^9*d^18*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 38760*A^2*b^16*c^7*d^16*e^18 - 9120*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5*d^14*e^20 - 160*A^2*b^19*c^4*d^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*b^2*c^21*d^32*e^2 - 96*B^2*b^3*c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 - 1760*B^2*b^5*c^18*d^29*e^5 + 3960*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16*d^27*e^7 + 7392*B^2*b^8*c^15*d^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*B^2*b^10*c^13*d^24*e^10 - 1760*B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*d^22*e^12 - 96*B^2*b^13*c^10*d^21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2*b*c^22*d^31*e^3 - 16*A*B*b*c^22*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 1056*A*B*b^3*c^20*d^30*e^4 + 3520*A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^28*e^6 + 12672*A*B*b^6*c^17*d^27*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*A*B*b^8*c^15*d^25*e^9 - 7920*A*B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^23*e^11 - 1056*A*B*b^11*c^12*d^22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A*B*b^13*c^10*d^20*e^14) - ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328*b^3*c^22*d^40*e^3 + 3200*b^4*c^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 86640*b^6*c^19*d^37*e^6 - 286824*b^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8 - 1550400*b^9*c^16*d^34*e^9 + 2635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^14*d^32*e^11 + 4299776*b^12*c^13*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 + 3359200*b^14*c^11*d^29*e^14 - 2248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^9*d^27*e^16 - 558144*b^17*c^8*d^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000*b^19*c^6*d^24*e^19 + 12160*b^20*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 + 176*b^22*c^3*d^21*e^22 - 8*b^23*c^2*d^20*e^23))/(b^10

*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^
3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8
*c^2*d^2*e^7 - 9*b^9*c*d*e^8) + 40*A*b^2*c^22*d^36*e^3 - 720*A*b^3*c^21*d^3
5*e^4 + 6160*A*b^4*c^20*d^34*e^5 - 33320*A*b^5*c^19*d^33*e^6 + 127848*A*b^6
*c^18*d^32*e^7 - 370048*A*b^7*c^17*d^31*e^8 + 838720*A*b^8*c^16*d^30*e^9 -
1524960*A*b^9*c^15*d^29*e^10 + 2259920*A*b^10*c^14*d^28*e^11 - 2757664*A*b^
11*c^13*d^27*e^12 + 2786784*A*b^12*c^12*d^26*e^13 - 2336880*A*b^13*c^11*d^2
5*e^14 + 1623440*A*b^14*c^10*d^24*e^15 - 929280*A*b^15*c^9*d^23*e^16 + 4339
84*A*b^16*c^8*d^22*e^17 - 162784*A*b^17*c^7*d^21*e^18 + 47880*A*b^18*c^6*d^
20*e^19 - 10640*A*b^19*c^5*d^19*e^20 + 1680*A*b^20*c^4*d^18*e^21 - 168*A*b^
21*c^3*d^17*e^22 + 8*A*b^22*c^2*d^16*e^23 - 8*B*b^2*c^22*d^37*e^2 + 128*B*b
^3*c^21*d^36*e^3 - 960*B*b^4*c^20*d^35*e^4 + 4480*B*b^5*c^19*d^34*e^5 - 145
60*B*b^6*c^18*d^33*e^6 + 34944*B*b^7*c^17*d^32*e^7 - 64064*B*b^8*c^16*d^31*
e^8 + 91520*B*b^9*c^15*d^30*e^9 - 102960*B*b^10*c^14*d^29*e^10 + 91520*B*b^
11*c^13*d^28*e^11 - 64064*B*b^12*c^12*d^27*e^12 + 34944*B*b^13*c^11*d^26*e^
13 - 14560*B*b^14*c^10*d^25*e^14 + 4480*B*b^15*c^9*d^24*e^15 - 960*B*b^16*c
^8*d^23*e^16 + 128*B*b^17*c^7*d^22*e^17 - 8*B*b^18*c^6*d^21*e^18))/(b^10*e^
9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 -
126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^
2*d^2*e^7 - 9*b^9*c*d*e^8))*1i)/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 3
6*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*
d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8))/(((-c^7
*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 +
2048*A^2*b^2*c^21*d^30*e^4 - 10880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^
19*d^28*e^6 - 130368*A^2*b^5*c^18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 -
626496*A^2*b^7*c^16*d^25*e^9 + 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^
2*b^9*c^14*d^23*e^11 + 1478576*A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c
^12*d^21*e^13 + 1007768*A^2*b^12*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19
*e^15 + 310080*A^2*b^14*c^9*d^18*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 387
60*A^2*b^16*c^7*d^16*e^18 - 9120*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5
*d^14*e^20 - 160*A^2*b^19*c^4*d^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*
b^2*c^21*d^32*e^2 - 96*B^2*b^3*c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 -
1760*B^2*b^5*c^18*d^29*e^5 + 3960*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16
*d^27*e^7 + 7392*B^2*b^8*c^15*d^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*
B^2*b^10*c^13*d^24*e^10 - 1760*B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*
d^22*e^12 - 96*B^2*b^13*c^10*d^21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2
*b*c^22*d^31*e^3 - 16*A*B*b*c^22*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 105
6*A*B*b^3*c^20*d^30*e^4 + 3520*A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^
28*e^6 + 12672*A*B*b^6*c^17*d^27*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*
A*B*b^8*c^15*d^25*e^9 - 7920*A*B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^
23*e^11 - 1056*A*B*b^11*c^12*d^22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A
*B*b^13*c^10*d^20*e^14) - ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(
b*e - c*d)^9)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328
*b^3*c^22*d^40*e^3 + 3200*b^4*c^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 866
40*b^6*c^19*d^37*e^6 - 286824*b^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8
- 1550400*b^9*c^16*d^34*e^9 + 2635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^
14*d^32*e^11 + 4299776*b^12*c^13*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 +
3359200*b^14*c^11*d^29*e^14 - 2248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^
9*d^27*e^16 - 558144*b^17*c^8*d^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000
*b^19*c^6*d^24*e^19 + 12160*b^20*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 +
176*b^22*c^3*d^21*e^22 - 8*b^23*c^2*d^20*e^23))/(b^10*e^9 - b*c^9*d^9 + 9*b
^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^
4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c
*d*e^8) - 40*A*b^2*c^22*d^36*e^3 + 720*A*b^3*c^21*d^35*e^4 - 6160*A*b^4*c^2
0*d^34*e^5 + 33320*A*b^5*c^19*d^33*e^6 - 127848*A*b^6*c^18*d^32*e^7 + 37004
8*A*b^7*c^17*d^31*e^8 - 838720*A*b^8*c^16*d^30*e^9 + 1524960*A*b^9*c^15*d^2
9*e^10 - 2259920*A*b^10*c^14*d^28*e^11 + 2757664*A*b^11*c^13*d^27*e^12 - 27
86784*A*b^12*c^12*d^26*e^13 + 2336880*A*b^13*c^11*d^25*e^14 - 1623440*A*b^1
4*c^10*d^24*e^15 + 929280*A*b^15*c^9*d^23*e^16 - 433984*A*b^16*c^8*d^22*e^1

7 + 162784*A*b^17*c^7*d^21*e^18 - 47880*A*b^18*c^6*d^20*e^19 + 10640*A*b^19
*c^5*d^19*e^20 - 1680*A*b^20*c^4*d^18*e^21 + 168*A*b^21*c^3*d^17*e^22 - 8*A
*b^22*c^2*d^16*e^23 + 8*B*b^2*c^22*d^37*e^2 - 128*B*b^3*c^21*d^36*e^3 + 960
*B*b^4*c^20*d^35*e^4 - 4480*B*b^5*c^19*d^34*e^5 + 14560*B*b^6*c^18*d^33*e^6
 - 34944*B*b^7*c^17*d^32*e^7 + 64064*B*b^8*c^16*d^31*e^8 - 91520*B*b^9*c^15
*d^30*e^9 + 102960*B*b^10*c^14*d^29*e^10 - 91520*B*b^11*c^13*d^28*e^11 + 64
064*B*b^12*c^12*d^27*e^12 - 34944*B*b^13*c^11*d^26*e^13 + 14560*B*b^14*c^10
*d^25*e^14 - 4480*B*b^15*c^9*d^24*e^15 + 960*B*b^16*c^8*d^23*e^16 - 128*B*b
^17*c^7*d^22*e^17 + 8*B*b^18*c^6*d^21*e^18))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*
c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 +
 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*
e^8)))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^
4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*
e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) - ((-c^7*(b*e - c*d)^9)^(1/2)*(A*
c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 + 2048*A^2*b^2*c^21*d^30*e^
4 - 10880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^19*d^28*e^6 - 130368*A^2*
b^5*c^18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 - 626496*A^2*b^7*c^16*d^25
*e^9 + 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^2*b^9*c^14*d^23*e^11 + 14
78576*A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c^12*d^21*e^13 + 1007768*A
^2*b^12*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19*e^15 + 310080*A^2*b^14*c
^9*d^18*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 38760*A^2*b^16*c^7*d^16*e^18
 - 9120*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5*d^14*e^20 - 160*A^2*b^19
*c^4*d^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*b^2*c^21*d^32*e^2 - 96*B^
2*b^3*c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 - 1760*B^2*b^5*c^18*d^29*e^
5 + 3960*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16*d^27*e^7 + 7392*B^2*b^8*
c^15*d^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*B^2*b^10*c^13*d^24*e^10 -
 1760*B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*d^22*e^12 - 96*B^2*b^13*c
^10*d^21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2*b*c^22*d^31*e^3 - 16*A*B
*b*c^22*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 1056*A*B*b^3*c^20*d^30*e^4 +
 3520*A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^28*e^6 + 12672*A*B*b^6*c^
17*d^27*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*A*B*b^8*c^15*d^25*e^9 - 7
920*A*B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^23*e^11 - 1056*A*B*b^11*c
^12*d^22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A*B*b^13*c^10*d^20*e^14) -
 ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(b*e - c*d)^9)^(1/2)*(A*c
 - B*b)*(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328*b^3*c^22*d^40*e^3 + 3200
*b^4*c^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 86640*b^6*c^19*d^37*e^6 - 28
6824*b^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8 - 1550400*b^9*c^16*d^34*e
^9 + 2635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^14*d^32*e^11 + 4299776*b^
12*c^13*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 + 3359200*b^14*c^11*d^29*e^
14 - 2248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^9*d^27*e^16 - 558144*b^17
*c^8*d^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000*b^19*c^6*d^24*e^19 + 121
60*b^20*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 + 176*b^22*c^3*d^21*e^22 -
 8*b^23*c^2*d^20*e^23))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7
*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 -
 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) + 40*A*b^2*c^22*d
^36*e^3 - 720*A*b^3*c^21*d^35*e^4 + 6160*A*b^4*c^20*d^34*e^5 - 33320*A*b^5*
c^19*d^33*e^6 + 127848*A*b^6*c^18*d^32*e^7 - 370048*A*b^7*c^17*d^31*e^8 + 8
38720*A*b^8*c^16*d^30*e^9 - 1524960*A*b^9*c^15*d^29*e^10 + 2259920*A*b^10*c
^14*d^28*e^11 - 2757664*A*b^11*c^13*d^27*e^12 + 2786784*A*b^12*c^12*d^26*e^
13 - 2336880*A*b^13*c^11*d^25*e^14 + 1623440*A*b^14*c^10*d^24*e^15 - 929280
*A*b^15*c^9*d^23*e^16 + 433984*A*b^16*c^8*d^22*e^17 - 162784*A*b^17*c^7*d^2
1*e^18 + 47880*A*b^18*c^6*d^20*e^19 - 10640*A*b^19*c^5*d^19*e^20 + 1680*A*b
^20*c^4*d^18*e^21 - 168*A*b^21*c^3*d^17*e^22 + 8*A*b^22*c^2*d^16*e^23 - 8*B
*b^2*c^22*d^37*e^2 + 128*B*b^3*c^21*d^36*e^3 - 960*B*b^4*c^20*d^35*e^4 + 44
80*B*b^5*c^19*d^34*e^5 - 14560*B*b^6*c^18*d^33*e^6 + 34944*B*b^7*c^17*d^32*
e^7 - 64064*B*b^8*c^16*d^31*e^8 + 91520*B*b^9*c^15*d^30*e^9 - 102960*B*b^10
*c^14*d^29*e^10 + 91520*B*b^11*c^13*d^28*e^11 - 64064*B*b^12*c^12*d^27*e^12
 + 34944*B*b^13*c^11*d^26*e^13 - 14560*B*b^14*c^10*d^25*e^14 + 4480*B*b^15*
c^9*d^24*e^15 - 960*B*b^16*c^8*d^23*e^16 + 128*B*b^17*c^7*d^22*e^17 - 8*B*b

```
^18*c^6*d^21*e^18))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^
7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84
*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8)))/(b^10*e^9 - b*c^9*
d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c
^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7
- 9*b^9*c*d*e^8) + 64*A^3*c^22*d^27*e^3 + 5440*A^3*b^2*c^20*d^25*e^5 - 2120
0*A^3*b^3*c^19*d^24*e^6 + 57216*A^3*b^4*c^18*d^23*e^7 - 113344*A^3*b^5*c^17
*d^22*e^8 + 170368*A^3*b^6*c^16*d^21*e^9 - 198000*A^3*b^7*c^15*d^20*e^10 +
179520*A^3*b^8*c^14*d^19*e^11 - 127072*A^3*b^9*c^13*d^18*e^12 + 69696*A^3*b
^10*c^12*d^17*e^13 - 29104*A^3*b^11*c^11*d^16*e^14 + 8960*A^3*b^12*c^10*d^1
5*e^15 - 1920*A^3*b^13*c^9*d^14*e^16 + 256*A^3*b^14*c^8*d^13*e^17 - 16*A^3*
b^15*c^7*d^12*e^18 - 16*A^2*B*c^22*d^28*e^2 - 864*A^3*b*c^21*d^26*e^4 - 192
*A*B^2*b^2*c^20*d^27*e^3 + 1056*A*B^2*b^3*c^19*d^26*e^4 - 3520*A*B^2*b^4*c^
18*d^25*e^5 + 7920*A*B^2*b^5*c^17*d^24*e^6 - 12672*A*B^2*b^6*c^16*d^23*e^7
+ 14784*A*B^2*b^7*c^15*d^22*e^8 - 12672*A*B^2*b^8*c^14*d^21*e^9 + 7920*A*B^
2*b^9*c^13*d^20*e^10 - 3520*A*B^2*b^10*c^12*d^19*e^11 + 1056*A*B^2*b^11*c^1
1*d^18*e^12 - 192*A*B^2*b^12*c^10*d^17*e^13 + 16*A*B^2*b^13*c^9*d^16*e^14 -
 192*A^2*B*b^2*c^20*d^26*e^4 - 1920*A^2*B*b^3*c^19*d^25*e^5 + 13280*A^2*B*b
^4*c^18*d^24*e^6 - 44544*A^2*B*b^5*c^17*d^23*e^7 + 98560*A^2*B*b^6*c^16*d^2
2*e^8 - 157696*A^2*B*b^7*c^15*d^21*e^9 + 190080*A^2*B*b^8*c^14*d^20*e^10 -
176000*A^2*B*b^9*c^13*d^19*e^11 + 126016*A^2*B*b^10*c^12*d^18*e^12 - 69504*
A^2*B*b^11*c^11*d^17*e^13 + 29088*A^2*B*b^12*c^10*d^16*e^14 - 8960*A^2*B*b^
13*c^9*d^15*e^15 + 1920*A^2*B*b^14*c^8*d^14*e^16 - 256*A^2*B*b^15*c^7*d^13*
e^17 + 16*A^2*B*b^16*c^6*d^12*e^18 + 16*A*B^2*b*c^21*d^28*e^2 + 128*A^2*B*b
*c^21*d^27*e^3))*(-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*2i)/(b^10*e^9 - b*c
^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^
5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e
^7 - 9*b^9*c*d*e^8)
```

sympy [A] time = 92.51, size = 311, normalized size = 1.03

$$\frac{2A\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd^4\sqrt{-d}} - \frac{2(-Ae+Bd)}{7d(d+ex)^{\frac{7}{2}}(be-cd)} + \frac{2\left(Abe^2-2Acde+Bcd^2\right)}{5d^2(d+ex)^{\frac{5}{2}}(be-cd)^2} + \frac{2\left(Ab^2e^3-3Abcde^2+3Ac^2d^2e-Bc^2d^3\right)}{3d^3(d+ex)^{\frac{3}{2}}(be-cd)^3} + \frac{2\left(Ab^3e^4-4Ab^2cde^3+6Abc^2d^2e^2-4Ac^3d^3e+Bc^3d^4\right)}{d^4\sqrt{d+ex}\,(be-cd)^4} + \frac{2c^3(-Ac+Bb)\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{b\sqrt{\frac{be-cd}{c}}\,(be-cd)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(9/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d**4*sqrt(-d)) - 2*(-A*e + B*d)/(7*d*(d
 + e*x)**(7/2)*(b*e - c*d)) + 2*(A*b*e**2 - 2*A*c*d*e + B*c*d**2)/(5*d**2*(
d + e*x)**(5/2)*(b*e - c*d)**2) + 2*(A*b**2*e**3 - 3*A*b*c*d*e**2 + 3*A*c**
2*d**2*e - B*c**2*d**3)/(3*d**3*(d + e*x)**(3/2)*(b*e - c*d)**3) + 2*(A*b**
3*e**4 - 4*A*b**2*c*d*e**3 + 6*A*b*c**2*d**2*e**2 - 4*A*c**3*d**3*e + B*c**
3*d**4)/(d**4*sqrt(d + e*x)*(b*e - c*d)**4) + 2*c**3*(-A*c + B*b)*atan(sqrt
(d + e*x)/sqrt((b*e - c*d)/c))/(b*sqrt((b*e - c*d)/c)*(b*e - c*d)**4)
```

3.1093 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=386

$$-\frac{d^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(9Abe-4Acd+2bBd)}{b^3}-\frac{(d+ex)^{7/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e(d+}{}$$

Rubi [A] time = 1.19, antiderivative size = 386, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 824, 826, 1166, 208}

$$\frac{e(d+ex)^{3/2}\left(b^2ce(5Ae+12Bd)-3bc^2d(2Ae+Bd)+6Ac^3d^2-7b^3Be^2\right)}{3b^2c^3}+\frac{e\sqrt{d+ex}\left(b^2c^2de(11Ae+15Bd)-b^3ce^2(5Ae+19Bd)-bc^3d^2(3Ae+Bd)+2Ac^4d^3+7b^4Be^3\right)}{b^2c^4}-\frac{(d+ex)^{7/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e(d+ex)^{5/2}\left(-5bc(Ae+Bd)+10Ac^2d+7b^2Be\right)}{5b^2c^2}-\frac{(cd-be)^{7/2}\left(-bc(2Bd-5Ae)+4Ac^2d-7b^2Be\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3c^{9/2}}-\frac{d^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(9Abe-4Acd+2bBd)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*(2*A*c^4*d^3 + 7*b^4*B*e^3 - b*c^3*d^2*(B*d + 3*A*e) - b^3*c*e^2*(19*B*d
 + 5*A*e) + b^2*c^2*d*e*(15*B*d + 11*A*e))*Sqrt[d + e*x])/(b^2*c^4) + (e*(6
*A*c^3*d^2 - 7*b^3*B*e^2 - 3*b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(12*B*d + 5*A*
e))*(d + e*x)^(3/2))/(3*b^2*c^3) + (e*(10*A*c^2*d + 7*b^2*B*e - 5*b*c*(B*d
+ A*e))*(d + e*x)^(5/2))/(5*b^2*c^2) - ((d + e*x)^(7/2)*(A*b*c*d + (2*A*c^2
*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c*(b*x + c*x^2)) - (d^(7/2)*(2*b*B
*d - 4*A*c*d + 9*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b^3 - ((c*d - b*e)^
(7/2)*(4*A*c^2*d - 7*b^2*B*e - b*c*(2*B*d - 5*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d
 + e*x])/Sqrt[c*d - b*e]])/(b^3*c^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
```

```
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}+\int\frac{(d+ex)^{5/2}\left(\frac{1}{2}cd(2bBd-4Acd+9A\right.}{}$$

$$=\frac{e\left(10Ac^2d+7b^2Be-5bc(Bd+Ae)\right)(d+ex)^{5/2}}{5b^2c^2}-\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$=\frac{e\left(6Ac^3d^2-7b^3Be^2-3bc^2d(Bd+2Ae)+b^2ce(12Bd+5Ae)\right)(d+ex)^{3/2}}{3b^2c^3}+\frac{e\left(10Ac^2d\right.}{}$$

$$=\frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11Ae)\right.}{b^2c^4}$$

$$=\frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11Ae)\right.}{b^2c^4}$$

$$=\frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11Ae)\right.}{b^2c^4}$$

$$=\frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11Ae)\right.}{b^2c^4}$$

Mathematica [A] time = 2.36, size = 376, normalized size = 0.97

$$-\frac{-\frac{315\left(\frac{2}{315}\sqrt{d+ex}\left(563d^4+506d^3ex+408d^2e^2x^2+185de^3x^3+35e^4x^4\right)-2d^{9/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)(9Abe-4Acd+2bBd)-\frac{2d\left(bc(2Bd-5Ae)-4Ac^2d+7b^2Be\right)\left(3(cd-be)\left(7(cd-be)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)+15c^{7/2}(d+ex)^{7/2}\right)+35c^{9/2}(d+ex)^{9/2}\right)}{c^{9/2}(cd-be)}}{630b^2}+\frac{c(d+ex)^{11/2}(Abe-2Acd+bBd)}{b(b+cx)(be-cd)}+\frac{A(d+ex)^{11/2}}{x(b+cx)}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(11/2))/(b*(-(c*d) + b*e)*(b + c*
x)) + (A*(d + e*x)^(11/2))/(x*(b + c*x)) - (315*(2*b*B*d - 4*A*c*d + 9*A*b*
e)*((2*Sqrt[d + e*x]*(563*d^4 + 506*d^3*e*x + 408*d^2*e^2*x^2 + 185*d*e^3*x
^3 + 35*e^4*x^4))/315 - 2*d^(9/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - (2*d*(-
4*A*c^2*d + 7*b^2*B*e + b*c*(2*B*d - 5*A*e))*(35*c^(9/2)*(d + e*x)^(9/2) +
3*(c*d - b*e)*(15*c^(7/2)*(d + e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e
*x)^(5/2) + 5*(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) -
```

```
3*(c*d - b*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))))/(
c^(9/2)*(c*d - b*e)))/(630*b^2))/(b*d))
```

IntegrateAlgebraic [A] time = 0.96, size = 669, normalized size = 1.73

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[d + e*x]*(-15*b*B*c^4*d^5 + 30*A*c^5*d^5 + 240*b^2*B*c^3*d^4*e - 75*A
*b*c^4*d^4*e - 510*b^3*B*c^2*d^3*e^2 + 210*A*b^2*c^3*d^3*e^2 + 390*b^4*B*c*
d^2*e^3 - 240*A*b^3*c^2*d^2*e^3 - 105*b^5*B*d*e^4 + 75*A*b^4*c*d*e^4 + 15*b
*B*c^4*d^4*(d + e*x) - 30*A*c^5*d^4*(d + e*x) - 390*b^2*B*c^3*d^3*e*(d + e*
x) + 60*A*b*c^4*d^3*e*(d + e*x) + 700*b^3*B*c^2*d^2*e^2*(d + e*x) - 320*A*b
^2*c^3*d^2*e^2*(d + e*x) - 460*b^4*B*c*d*e^3*(d + e*x) + 290*A*b^3*c^2*d*e^
3*(d + e*x) + 105*b^5*B*e^4*(d + e*x) - 75*A*b^4*c*e^4*(d + e*x) + 126*b^2*
B*c^3*d^2*e*(d + e*x)^2 - 176*b^3*B*c^2*d*e^2*(d + e*x)^2 + 100*A*b^2*c^3*d
*e^2*(d + e*x)^2 + 70*b^4*B*c*e^3*(d + e*x)^2 - 50*A*b^3*c^2*e^3*(d + e*x)^
2 + 18*b^2*B*c^3*d*e*(d + e*x)^3 - 14*b^3*B*c^2*e^2*(d + e*x)^3 + 10*A*b^2*
c^3*e^2*(d + e*x)^3 + 6*b^2*B*c^3*e*(d + e*x)^4))/(15*b^2*c^4*x*(-(c*d) + b
*e + c*(d + e*x))) + ((2*b*B*c*d*(-(c*d) + b*e)^(7/2) - 4*A*c^2*d*(-(c*d) +
 b*e)^(7/2) + 7*b^2*B*e*(-(c*d) + b*e)^(7/2) - 5*A*b*c*e*(-(c*d) + b*e)^(7/
2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b^3*c^
(9/2)) + ((-2*b*B*d^(9/2) + 4*A*c*d^(9/2) - 9*A*b*d^(7/2)*e)*ArcTanh[Sqrt[d
 + e*x]/Sqrt[d]])/b^3
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.31, size = 846, normalized size = 2.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (2*B*b*d^5 - 4*A*c*d^5 + 9*A*b*d^4*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*s
qrt(-d)) - (2*B*b*c^5*d^5 - 4*A*c^6*d^5 - B*b^2*c^4*d^4*e + 11*A*b*c^5*d^4*
e - 16*B*b^3*c^3*d^3*e^2 - 4*A*b^2*c^4*d^3*e^2 + 34*B*b^4*c^2*d^2*e^3 - 14*
A*b^3*c^3*d^2*e^3 - 26*B*b^5*c*d*e^4 + 16*A*b^4*c^2*d*e^4 + 7*B*b^6*e^5 - 5
*A*b^5*c*e^5)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b
*c*e)*b^3*c^4) + ((x*e + d)^(3/2)*B*b*c^4*d^4*e - 2*(x*e + d)^(3/2)*A*c^5*d
^4*e - sqrt(x*e + d)*B*b*c^4*d^5*e + 2*sqrt(x*e + d)*A*c^5*d^5*e - 4*(x*e +
 d)^(3/2)*B*b^2*c^3*d^3*e^2 + 4*(x*e + d)^(3/2)*A*b*c^4*d^3*e^2 + 4*sqrt(x*
e + d)*B*b^2*c^3*d^4*e^2 - 5*sqrt(x*e + d)*A*b*c^4*d^4*e^2 + 6*(x*e + d)^(3
/2)*B*b^3*c^2*d^2*e^3 - 6*(x*e + d)^(3/2)*A*b^2*c^3*d^2*e^3 - 6*sqrt(x*e +
d)*B*b^3*c^2*d^3*e^3 + 6*sqrt(x*e + d)*A*b^2*c^3*d^3*e^3 - 4*(x*e + d)^(3/2
)*B*b^4*c*d*e^4 + 4*(x*e + d)^(3/2)*A*b^3*c^2*d*e^4 + 4*sqrt(x*e + d)*B*b^4
*c*d^2*e^4 - 4*sqrt(x*e + d)*A*b^3*c^2*d^2*e^4 + (x*e + d)^(3/2)*B*b^5*e^5
- (x*e + d)^(3/2)*A*b^4*c*e^5 - sqrt(x*e + d)*B*b^5*d*e^5 + sqrt(x*e + d)*A
*b^4*c*d*e^5)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b
*d*e)*b^2*c^4) + 2/15*(3*(x*e + d)^(5/2)*B*c^8*e^2 + 15*(x*e + d)^(3/2)*B*c
```

```
^8*d*e^2 + 90*sqrt(x*e + d)*B*c^8*d^2*e^2 - 10*(x*e + d)^(3/2)*B*b*c^7*e^3
+ 5*(x*e + d)^(3/2)*A*c^8*e^3 - 120*sqrt(x*e + d)*B*b*c^7*d*e^3 + 60*sqrt(x
*e + d)*A*c^8*d*e^3 + 45*sqrt(x*e + d)*B*b^2*c^6*e^4 - 30*sqrt(x*e + d)*A*b
*c^7*e^4)/c^10
```

maple [B] time = 0.10, size = 1075, normalized size = 2.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e^5*b^3/c^4*(e*x+d)^(1/2)/(c*e*x+b*e)*B+5*e^5*b^2/c^3/((b*e-c*d)*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-7*e^5*b^3/c^4/((b*e-c*d)*c)^(1
/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+16*e^2/c/((b*e-c*d)*c)^(1
/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3+e/b/((b*e-c*d)*c)^(1/
2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^4+e/b*(e*x+d)^(1/2)/(c*e
*x+b*e)*B*d^4+14*e^3/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*d^2+4*e^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*
d)*c)^(1/2)*c)*A*d^3-4*e^2/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d^3-6*e^3/c*(e*x+d
)^(1/2)/(c*e*x+b*e)*A*d^2+4*e^2/b*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^3-2/b^2*c/(
(b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^5+4/b^3*
c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^5+2
/3*e^3/c^2*A*(e*x+d)^(3/2)+2/5*e^2/c^2*B*(e*x+d)^(5/2)-2*d^(9/2)/b^2*arctan
h((e*x+d)^(1/2)/d^(1/2))*B-16*e^3/c^3*B*b*d*(e*x+d)^(1/2)-e^5*b^2/c^3*(e*x+
d)^(1/2)/(c*e*x+b*e)*A-d^4/b^2*A*(e*x+d)^(1/2)/x+6*e^4/c^4*B*b^2*(e*x+d)^(1
/2)+4*d^(9/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+2*e^2/c^2*B*(e*x+d)^(3
/2)*d+12*e^2/c^2*B*d^2*(e*x+d)^(1/2)-9*e*d^(7/2)/b^2*arctanh((e*x+d)^(1/2)/
d^(1/2))*A-4/3*e^3/c^3*B*(e*x+d)^(3/2)*b-4*e^4/c^3*A*b*(e*x+d)^(1/2)+8*e^3/
c^2*A*d*(e*x+d)^(1/2)-4*e^4*b^2/c^3*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d+26*e^4*b^
2/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-3
4*e^3*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)
*B*d^2-16*e^4*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A*d-11*e/b^2*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)
*c)^(1/2)*c)*A*d^4+6*e^3*b/c^2*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d^2+4*e^4*b/c^2*
(e*x+d)^(1/2)/(c*e*x+b*e)*A*d-e/b^2*c*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.71, size = 12636, normalized size = 32.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x)
```

```
[Out] atan(((((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 + 8*A*b^6*c^10*d^5*e^3 -
 20*A*b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*b^9*c^7*d^2*e^6 - 4*B*b
^7*c^9*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^7*d^3*e^5 + 104*B*b^10*
c^6*d^2*e^6)/(b^6*c^7) - (2*(4*b^7*c^9*e^3 - 8*b^6*c^10*d*e^2)*(d + e*x)^(1
/2)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^
```

9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) - (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2)*1i - (((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 + 8*A*b^6*c^10*d^5*e^3 - 20*A*b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*b^9*c^7*d^2*e^6 - 4*B*b^7*c^9*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^7*d^3*e^5 + 104*B*b^10*c^6*d^2*e^6)/(b^6*c^7) + (2*(4*b^7*c^9*e^3 - 8*b^6*c^10*d*e^2)*(d + e*x)^(1/2)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315

*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10
*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7
*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*
d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(
1/2) + (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2
*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^
2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*
A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 -
4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 +
84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^
8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*
d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^
12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9
*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*
d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8
*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((16*A^2*c^11*d^9 - 4
9*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^
7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6
*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c
^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^
7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2
*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^1
0*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 +
126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4
+ 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*
e^7)/(4*b^6*c^9))^(1/2)*1i)/((((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 +
8*A*b^6*c^10*d^5*e^3 - 20*A*b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*
b^9*c^7*d^2*e^6 - 4*B*b^7*c^9*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^
7*d^3*e^5 + 104*B*b^10*c^6*d^2*e^6)/(b^6*c^7) - (2*(4*b^7*c^9*e^3 - 8*b^6*c
^10*d*e^2)*(d + e*x)^(1/2)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9
*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6
*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*
d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^
6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^
8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^1
0*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 +
36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 5
46*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5
- 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b
^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b
^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4
*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*
b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^
2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 83
7*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^
2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^
8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6
*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*
d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) - (2*(d + e*x)^(1/2)*
(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b
^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^
2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*
A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63
*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1
008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e
^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^
9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^
2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*
e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*

d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) + (((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 + 8*A*b^6*c^10*d^5*e^3 - 20*A*b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*b^9*c^7*d^2*e^6 - 4*B*b^7*c^9*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^7*d^3*e^5 + 104*B*b^10*c^6*d^2*e^6)/(b^6*c^7) + (2*(4*b^7*c^9*e^3 - 8*b^6*c^10*d*e^2)*(d + e*x)^(1/2)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) + (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) - (2*(32*A^3*c^12*d^14*e^3 + 98*B^3*b^12*d^5*e^12 + 326*A^3*b^2*c^10*d^12*e^5 + 956*A^3*b^3*c^9*d^11*e^6 - 3430*A^3*b^4*c^8*d^10*e^7 + 3048*A^3*b^5*c^7*d^9*e^8 + 1659*A^3*b^6*c^6*d^8*e^9 - 5256*A^3*b^7*c^5*d^7*e^10 + 4204*A^3*b^8*c^4*d^6*e^11 - 1540*A^3*b^

9*c^3*d^5*e^12 + 225*A^3*b^10*c^2*d^4*e^13 - 4*B^3*b^3*c^9*d^14*e^3 - 62*B^3*b^4*c^8*d^13*e^4 + 200*B^3*b^5*c^7*d^12*e^5 + 272*B^3*b^6*c^6*d^11*e^6 - 2044*B^3*b^7*c^5*d^10*e^7 + 3948*B^3*b^8*c^4*d^9*e^8 - 3984*B^3*b^9*c^3*d^8*e^9 + 2304*B^3*b^10*c^2*d^7*e^10 + 441*A*B^2*b^12*d^4*e^13 - 224*A^3*b*c^11*d^13*e^4 - 728*B^3*b^11*c*d^6*e^11 + 24*A*B^2*b^2*c^10*d^14*e^3 + 192*A*B^2*b^3*c^9*d^13*e^4 - 1407*A*B^2*b^4*c^8*d^12*e^5 + 1824*A*B^2*b^5*c^7*d^11*e^6 + 4848*A*B^2*b^6*c^6*d^10*e^7 - 19404*A*B^2*b^7*c^5*d^9*e^8 + 29574*A*B^2*b^8*c^4*d^8*e^9 - 25272*A*B^2*b^9*c^3*d^7*e^10 + 12792*A*B^2*b^10*c^2*d^6*e^11 - 24*A^2*B*b^2*c^10*d^13*e^4 + 1851*A^2*B*b^3*c^9*d^12*e^5 - 6672*A^2*B*b^4*c^8*d^11*e^6 + 8214*A^2*B*b^5*c^7*d^10*e^7 + 2538*A^2*B*b^6*c^6*d^9*e^8 - 18891*A^2*B*b^7*c^5*d^8*e^9 + 23544*A^2*B*b^8*c^4*d^7*e^10 - 14568*A^2*B*b^9*c^3*d^6*e^11 + 4686*A^2*B*b^10*c^2*d^5*e^12 - 3612*A*B^2*b^11*c*d^5*e^12 - 48*A^2*B*b*c^11*d^14*e^3 - 630*A^2*B*b^11*c*d^4*e^13))/(b^6*c^7)))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2)*2i - (((d + e*x)^(1/2)*(2*A*c^5*d^5*e - B*b^5*d*e^5 - 5*A*b*c^4*d^4*e^2 + 4*B*b^4*c*d^2*e^4 + 6*A*b^2*c^3*d^3*e^3 - 4*A*b^3*c^2*d^2*e^4 + 4*B*b^2*c^3*d^4*e^2 - 6*B*b^3*c^2*d^3*e^3 + A*b^4*c*d*e^5 - B*b*c^4*d^5*e))/b^2 + ((d + e*x)^(3/2)*(B*b^5*e^5 - A*b^4*c*e^5 - 2*A*c^5*d^4*e + 4*A*b*c^4*d^3*e^2 + 4*A*b^3*c^2*d*e^4 - 6*A*b^2*c^3*d^2*e^3 - 4*B*b^2*c^3*d^3*e^2 + 6*B*b^3*c^2*d^2*e^3 + B*b*c^4*d^4*e - 4*B*b^4*c*d*e^4))/b^2)/((2*c^5*d - b*c^4*e)*(d + e*x) - c^5*(d + e*x)^2 - c^5*d^2 + b*c^4*d*e) - log((((((4*d*e^3*(b*e - c*d)*(2*A*c^4*d^3 + 7*B*b^4*e^3 - 5*A*b^3*c*e^3 - B*b*c^3*d^3 + 11*A*b^2*c^2*d*e^2 + 15*B*b^2*c^2*d^2*e - 3*A*b*c^3*d^2*e - 19*B*b^3*c*d*e^2))/c^2 + 4*b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))/2 + (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))/2 - (d^4*e^3*(b*e - c*d)^4*(4*B^3*b^3*c^5*d^6 - 225*A^3*b^6*c^2*e^6 - 32*A^3*c^8*d^6 - 441*A*B^2*b^8*e^6 - 98*B^3*b^8*d*e^5 + 250*A^3*b^2*c^6*d^4*e^2 - 660*A^3*b^3*c^5*d^3*e^3 - 294*A^3*b^4*c^4*d^2*e^4 + 88*B^3*b^5*c^3*d^4*e^2 - 372*B^3*b^6*c^2*d^3*e^3 + 48*A^2*B*b*c^7*d^6 + 630*A^2*B*b^7*c*e^6 + 96*A^3*b*c^7*d^5*e - 24*A*B^2*b^2*c^6*d^6 + 640*A^3*b^5*c^3*d*e^5 + 78*B^3*b^4*c^4*d^5*e + 336*B^3*b^7*c*d^2*e^4 + 399*A*B^2*b^4*c^4*d^4*e^2 + 1404*A*B^2*b^5*c^3*d^3*e^3 - 2754*A*B^2*b^6*c^2*d^2*e^4 - 1275*A^2*B*b^3*c^5*d^4*e^2 + 468*A^2*B*b^4*c^4*d^3*e^3 + 2124*A^2*B*b^5*c^3*d^2*e^4 + 1848*A*B^2*b^7*c*d*e^5 - 288*A*B^2*b^3*c^5*d^5*e + 216*A^2*B*b^2*c^6*d^5*e - 2166*A^2*B*b^6*c^2*d*e^5))/(b^6*c^7))*((4*A^2*c^2*d^9 + B^2*b^2*d^9 + (81*A^2*b^2*d^7*e^2)/4 - 4*A*B*b*c*d^9 + 9*A*B*b^2*d^8*e - 18*A^2*b*c*d^8*e)/b^6)^(1/2) + log((((((4*d*e^3*(b*e - c*d)*(2*A*c^4*d^3 + 7*B*b^4*e^3 - 5*A*b^3*c*e^3 - B*b*c^3*d^3 + 11*A*b^2*c^2*d*e^2 + 15*B*b^2*c^2*d^2*e - 3*A*b*c^3*d^2*e - 19*B*b^3*c*d*

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e^2))/c^2 - 4*b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^7*(9*A*b*e - 4*
A*c*d + 2*B*b*d)^2)/b^6)^(1/2))*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)
^(1/2))/2 - (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 3
2*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 4
20*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 -
 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e
^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e
^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d
^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^
11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11
*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^1
0*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5
*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*
B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((d^7*(9*A*b*e -
 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))/2 - (d^4*e^3*(b*e - c*d)^4*(4*B^3*b^3*c^
5*d^6 - 225*A^3*b^6*c^2*e^6 - 32*A^3*c^8*d^6 - 441*A*B^2*b^8*e^6 - 98*B^3*b
^8*d*e^5 + 250*A^3*b^2*c^6*d^4*e^2 - 660*A^3*b^3*c^5*d^3*e^3 - 294*A^3*b^4*
c^4*d^2*e^4 + 88*B^3*b^5*c^3*d^4*e^2 - 372*B^3*b^6*c^2*d^3*e^3 + 48*A^2*B*b
*c^7*d^6 + 630*A^2*B*b^7*c*e^6 + 96*A^3*b*c^7*d^5*e - 24*A*B^2*b^2*c^6*d^6
+ 640*A^3*b^5*c^3*d*e^5 + 78*B^3*b^4*c^4*d^5*e + 336*B^3*b^7*c*d^2*e^4 + 39
9*A*B^2*b^4*c^4*d^4*e^2 + 1404*A*B^2*b^5*c^3*d^3*e^3 - 2754*A*B^2*b^6*c^2*d
^2*e^4 - 1275*A^2*B*b^3*c^5*d^4*e^2 + 468*A^2*B*b^4*c^4*d^3*e^3 + 2124*A^2*
B*b^5*c^3*d^2*e^4 + 1848*A*B^2*b^7*c*d*e^5 - 288*A*B^2*b^3*c^5*d^5*e + 216*
A^2*B*b^2*c^6*d^5*e - 2166*A^2*B*b^6*c^2*d*e^5))/(b^6*c^7))*((16*A^2*c^2*d^
9 + 4*B^2*b^2*d^9 + 81*A^2*b^2*d^7*e^2 - 16*A*B*b*c*d^9 + 36*A*B*b^2*d^8*e
- 72*A^2*b*c*d^8*e)/(4*b^6))^(1/2) + ((2*A*e^3 - 2*B*d*e^2)/(3*c^2) + (2*B*
e^2*(4*c^2*d - 2*b*c*e))/(3*c^4))*(d + e*x)^(3/2) + (((4*c^2*d - 2*b*c*e)*(
(2*A*e^3 - 2*B*d*e^2)/c^2 + (2*B*e^2*(4*c^2*d - 2*b*c*e))/c^4))/c^2 - (2*B*
e^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c*d*e))/c^4)*(d + e*x)^(1/2) + (2*B*e^2*(d +
 e*x)^(5/2))/(5*c^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1094 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=292

$$-\frac{d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(7Abe-4Acd+2bBd)}{b^3}-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e(d+ex)}{}$$

Rubi [A] time = 0.88, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 824, 826, 1166, 208}

$$\frac{e\sqrt{d+ex}\left(b^2ce(3Ae+8Bd)-bc^2d(2Ae+Bd)+2Ac^3d^2-5b^3Be^2\right)}{b^2c^3}-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e(d+ex)^{3/2}\left(-3bc(Ae+Bd)+6Ac^2d+5b^2Be\right)}{3b^2c^2}+\frac{(cd-be)^{5/2}\left(-3Abce-4Ac^2d+5b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3c^{7/2}}-\frac{d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(7Abe-4Acd+2bBd)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*(2*A*c^3*d^2 - 5*b^3*B*e^2 - b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(8*B*d + 3*
A*e))*Sqrt[d + e*x])/(b^2*c^3) + (e*(6*A*c^2*d + 5*b^2*B*e - 3*b*c*(B*d + A
*e))*(d + e*x)^(3/2))/(3*b^2*c^2) - ((d + e*x)^(5/2)*(A*b*c*d + (2*A*c^2*d
+ b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c*(b*x + c*x^2)) - (d^(5/2)*(2*b*B*d
- 4*A*c*d + 7*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b^3 + ((c*d - b*e)^(5/
2)*(2*b*B*c*d - 4*A*c^2*d + 5*b^2*B*e - 3*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d
+ e*x])/Sqrt[c*d - b*e]])/(b^3*c^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}+\int\frac{(d+ex)^{3/2}\left(\frac{1}{2}cd(2bBd-4Acd\ldots\right.}{\ldots}$$

$$=\frac{e\left(6Ac^2d+5b^2Be-3bc(Bd+Ae)\right)(d+ex)^{3/2}}{3b^2c^2}-\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2\ldots\right.\right.}{b^2c\left(bx+cx^2\ldots\right.}$$

$$=\frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3}+\frac{e\left(6Ac^2d+\ldots\right.}{\ldots}$$

$$=\frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3}+\frac{e\left(6Ac^2d+\ldots\right.}{\ldots}$$

$$=\frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3}+\frac{e\left(6Ac^2d+\ldots\right.}{\ldots}$$

$$=\frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3}+\frac{e\left(6Ac^2d+\ldots\right.}{\ldots}$$

Mathematica [A] time = 1.55, size = 341, normalized size = 1.17

$$-\frac{-\frac{105\left(-2d^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+\frac{2}{15}d\sqrt{d+ex}\left(23d^2+11dex+3e^2x^2\right)+\frac{2}{7}(d+ex)^{7/2}\right)(7Abe-4Acd+2bBd)-\frac{2d\left(bc(2Bd-3Ae)-4Ac^2d+5b^2Be\right)\left(7(cd-be)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)+15c^{7/2}(d+ex)^{7/2}\right)}{c^{7/2}(cd-be)}}{210b^2}+\frac{c(d+ex)^{9/2}(Abe-2Acd+bBd)}{b(b+cx)(be-cd)}+\frac{A(d+ex)^{9/2}}{x(b+cx)}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(9/2))/(b*(-(c*d) + b*e)*(b + c*x
)) + (A*(d + e*x)^(9/2))/(x*(b + c*x)) - (105*(2*b*B*d - 4*A*c*d + 7*A*b*e)
*((2*(d + e*x)^(7/2))/7 + (2*d*Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3*e^2*x^2
))/15 - 2*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - (2*d*(-4*A*c^2*d + 5*b^
2*B*e + b*c*(2*B*d - 3*A*e))*(15*c^(7/2)*(d + e*x)^(7/2) + 7*(c*d - b*e)*(3
*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*
b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d
 - b*e]]))))/(c^(7/2)*(c*d - b*e)))/(210*b^2))/(b*d))
```

IntegrateAlgebraic [A] time = 0.77, size = 501, normalized size = 1.72

$$\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(-7Abd^{5/2}e+4Acd^{7/2}-2bBd^{7/2}\right)}{b^3}+\frac{\left(4Ac^2d(be-cd)^{5/2}+3Abce(be-cd)^{5/2}-5b^2Be(be-cd)^{5/2}-2bBcd(be-cd)^{5/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b^3c^{7/2}}-\frac{\sqrt{d+ex}\left(-9Ab^3ce^3(d+ex)+9Ab^3cde^3-15Ab^2c^2d^2e^2-6Ab^2c^2e^2(d+ex)^2+21Ab^2c^2de^2(d+ex)+12Abc^3d^3e-9Abc^3d^2e(d+ex)-6Ac^4d^4+6Ac^4d^3(d+ex)+15b^4Be^3(d+ex)-15b^4Bde^3+39b^3Bcd^2e^2+10b^3Bce^2(d+ex)^2-49b^3Bcde^2(d+ex)-27b^2Bc^2d^3e+43b^2Bc^2d^2e(d+ex)-2b^2Bc^2e(d+ex)^3-14b^2Bc^2de(d+ex)^2+3bBc^3d^4-3bBc^3d^3(d+ex)\right)}{3b^2c^3x(be+c(d+ex)-cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -1/3*(Sqrt[d + e*x]*(3*b*B*c^3*d^4 - 6*A*c^4*d^4 - 27*b^2*B*c^2*d^3*e + 12*
A*b*c^3*d^3*e + 39*b^3*B*c*d^2*e^2 - 15*A*b^2*c^2*d^2*e^2 - 15*b^4*B*d*e^3
+ 9*A*b^3*c*d*e^3 - 3*b*B*c^3*d^3*(d + e*x) + 6*A*c^4*d^3*(d + e*x) + 43*b^
2*B*c^2*d^2*e*(d + e*x) - 9*A*b*c^3*d^2*e*(d + e*x) - 49*b^3*B*c*d*e^2*(d +
 e*x) + 21*A*b^2*c^2*d*e^2*(d + e*x) + 15*b^4*B*e^3*(d + e*x) - 9*A*b^3*c*e
^3*(d + e*x) - 14*b^2*B*c^2*d*e*(d + e*x)^2 + 10*b^3*B*c*e^2*(d + e*x)^2 -
6*A*b^2*c^2*e^2*(d + e*x)^2 - 2*b^2*B*c^2*e*(d + e*x)^3))/(b^2*c^3*x*(-(c*d
) + b*e + c*(d + e*x))) + ((-2*b*B*c*d*(-(c*d) + b*e)^(5/2) + 4*A*c^2*d*(-(
c*d) + b*e)^(5/2) - 5*b^2*B*e*(-(c*d) + b*e)^(5/2) + 3*A*b*c*e*(-(c*d) + b*
e)^(5/2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(
b^3*c^(7/2)) + ((-2*b*B*d^(7/2) + 4*A*c*d^(7/2) - 7*A*b*d^(5/2)*e)*ArcTanh[
Sqrt[d + e*x]/Sqrt[d]])/b^3
```

fricas [A] time = 73.70, size = 2104, normalized size = 7.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((2*(B*b*c^4 - 2*A*c^5)*d^3 + (B*b^2*c^3 + 5*A*b*c^4)*d^2*e - 2*(4
*B*b^3*c^2 - A*b^2*c^3)*d*e^2 + (5*B*b^4*c - 3*A*b^3*c^2)*e^3)*x^2 + (2*(B*
b^2*c^3 - 2*A*b*c^4)*d^3 + (B*b^3*c^2 + 5*A*b^2*c^3)*d^2*e - 2*(4*B*b^4*c -
 A*b^3*c^2)*d*e^2 + (5*B*b^5 - 3*A*b^4*c)*e^3)*x)*sqrt((c*d - b*e)/c)*log((
c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) - 3
*((7*A*b*c^4*d^2*e + 2*(B*b*c^4 - 2*A*c^5)*d^3)*x^2 + (7*A*b^2*c^3*d^2*e +
2*(B*b^2*c^3 - 2*A*b*c^4)*d^3)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d
) + 2*d)/x) - 2*(2*B*b^3*c^2*e^3*x^3 - 3*A*b^2*c^3*d^3 + 2*(10*B*b^3*c^2*d*
e^2 - (5*B*b^4*c - 3*A*b^3*c^2)*e^3)*x^2 + (3*(B*b^2*c^3 - 2*A*b*c^4)*d^3 -
 9*(B*b^3*c^2 - A*b^2*c^3)*d^2*e + (29*B*b^4*c - 9*A*b^3*c^2)*d*e^2 - 3*(5*
B*b^5 - 3*A*b^4*c)*e^3)*x)*sqrt(e*x + d))/(b^3*c^4*x^2 + b^4*c^3*x), 1/6*(6
*((2*(B*b*c^4 - 2*A*c^5)*d^3 + (B*b^2*c^3 + 5*A*b*c^4)*d^2*e - 2*(4*B*b^3*c
^2 - A*b^2*c^3)*d*e^2 + (5*B*b^4*c - 3*A*b^3*c^2)*e^3)*x^2 + (2*(B*b^2*c^3
- 2*A*b*c^4)*d^3 + (B*b^3*c^2 + 5*A*b^2*c^3)*d^2*e - 2*(4*B*b^4*c - A*b^3*c
^2)*d*e^2 + (5*B*b^5 - 3*A*b^4*c)*e^3)*x)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt
(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + 3*((7*A*b*c^4*d^2*e + 2*(B*
b*c^4 - 2*A*c^5)*d^3)*x^2 + (7*A*b^2*c^3*d^2*e + 2*(B*b^2*c^3 - 2*A*b*c^4)*
d^3)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*B*b^3*c
^2*e^3*x^3 - 3*A*b^2*c^3*d^3 + 2*(10*B*b^3*c^2*d*e^2 - (5*B*b^4*c - 3*A*b^3
*c^2)*e^3)*x^2 + (3*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 9*(B*b^3*c^2 - A*b^2*c^3)
*d^2*e + (29*B*b^4*c - 9*A*b^3*c^2)*d*e^2 - 3*(5*B*b^5 - 3*A*b^4*c)*e^3)*x)
*sqrt(e*x + d))/(b^3*c^4*x^2 + b^4*c^3*x), 1/6*(6*((7*A*b*c^4*d^2*e + 2*(B*
b*c^4 - 2*A*c^5)*d^3)*x^2 + (7*A*b^2*c^3*d^2*e + 2*(B*b^2*c^3 - 2*A*b*c^4)*
d^3)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 3*((2*(B*b*c^4 - 2*A*c^
5)*d^3 + (B*b^2*c^3 + 5*A*b*c^4)*d^2*e - 2*(4*B*b^3*c^2 - A*b^2*c^3)*d*e^2
+ (5*B*b^4*c - 3*A*b^3*c^2)*e^3)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + (B*
b^3*c^2 + 5*A*b^2*c^3)*d^2*e - 2*(4*B*b^4*c - A*b^3*c^2)*d*e^2 + (5*B*b^5 -
 3*A*b^4*c)*e^3)*x)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e - 2*sqrt(e
*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(2*B*b^3*c^2*e^3*x^3 - 3*A*b^
2*c^3*d^3 + 2*(10*B*b^3*c^2*d*e^2 - (5*B*b^4*c - 3*A*b^3*c^2)*e^3)*x^2 + (3
*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 9*(B*b^3*c^2 - A*b^2*c^3)*d^2*e + (29*B*b^4*
c - 9*A*b^3*c^2)*d*e^2 - 3*(5*B*b^5 - 3*A*b^4*c)*e^3)*x)*sqrt(e*x + d))/(b^
3*c^4*x^2 + b^4*c^3*x), 1/3*(3*((2*(B*b*c^4 - 2*A*c^5)*d^3 + (B*b^2*c^3 + 5
*A*b*c^4)*d^2*e - 2*(4*B*b^3*c^2 - A*b^2*c^3)*d*e^2 + (5*B*b^4*c - 3*A*b^3*
c^2)*e^3)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + (B*b^3*c^2 + 5*A*b^2*c^3)*
d^2*e - 2*(4*B*b^4*c - A*b^3*c^2)*d*e^2 + (5*B*b^5 - 3*A*b^4*c)*e^3)*x)*sqr
t(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e))
```

```
 + 3*((7*A*b*c^4*d^2*e + 2*(B*b*c^4 - 2*A*c^5)*d^3)*x^2 + (7*A*b^2*c^3*d^2*
e + 2*(B*b^2*c^3 - 2*A*b*c^4)*d^3)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d
)/d) + (2*B*b^3*c^2*e^3*x^3 - 3*A*b^2*c^3*d^3 + 2*(10*B*b^3*c^2*d*e^2 - (5*
B*b^4*c - 3*A*b^3*c^2)*e^3)*x^2 + (3*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 9*(B*b^3
*c^2 - A*b^2*c^3)*d^2*e + (29*B*b^4*c - 9*A*b^3*c^2)*d*e^2 - 3*(5*B*b^5 - 3
*A*b^4*c)*e^3)*x)*sqrt(e*x + d))/(b^3*c^4*x^2 + b^4*c^3*x)]
```

giac [B] time = 0.31, size = 639, normalized size = 2.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (2*B*b*d^4 - 4*A*c*d^4 + 7*A*b*d^3*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*s
qrt(-d)) - (2*B*b*c^4*d^4 - 4*A*c^5*d^4 - B*b^2*c^3*d^3*e + 9*A*b*c^4*d^3*e
 - 9*B*b^3*c^2*d^2*e^2 - 3*A*b^2*c^3*d^2*e^2 + 13*B*b^4*c*d*e^3 - 5*A*b^3*c
^2*d*e^3 - 5*B*b^5*e^4 + 3*A*b^4*c*e^4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d
+ b*c*e))/(sqrt(-c^2*d + b*c*e)*b^3*c^3) + 2/3*((x*e + d)^(3/2)*B*c^4*e^2 +
 9*sqrt(x*e + d)*B*c^4*d*e^2 - 6*sqrt(x*e + d)*B*b*c^3*e^3 + 3*sqrt(x*e + d
)*A*c^4*e^3)/c^6 + ((x*e + d)^(3/2)*B*b*c^3*d^3*e - 2*(x*e + d)^(3/2)*A*c^4
*d^3*e - sqrt(x*e + d)*B*b*c^3*d^4*e + 2*sqrt(x*e + d)*A*c^4*d^4*e - 3*(x*e
 + d)^(3/2)*B*b^2*c^2*d^2*e^2 + 3*(x*e + d)^(3/2)*A*b*c^3*d^2*e^2 + 3*sqrt(
x*e + d)*B*b^2*c^2*d^3*e^2 - 4*sqrt(x*e + d)*A*b*c^3*d^3*e^2 + 3*(x*e + d)^
(3/2)*B*b^3*c*d*e^3 - 3*(x*e + d)^(3/2)*A*b^2*c^2*d*e^3 - 3*sqrt(x*e + d)*B
*b^3*c*d^2*e^3 + 3*sqrt(x*e + d)*A*b^2*c^2*d^2*e^3 - (x*e + d)^(3/2)*B*b^4*
e^4 + (x*e + d)^(3/2)*A*b^3*c*e^4 + sqrt(x*e + d)*B*b^4*d*e^4 - sqrt(x*e +
d)*A*b^3*c*d*e^4)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e
 - b*d*e)*b^2*c^3)
```

maple [B] time = 0.09, size = 823, normalized size = 2.82

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x)
```

```
[Out] 2*e^3/c^2*A*(e*x+d)^(1/2)+2/3*e^2/c^2*B*(e*x+d)^(3/2)-2*d^(7/2)/b^2*arctanh
((e*x+d)^(1/2)/d^(1/2))*B+e/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*d^3-3*e^3/c*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d+4/b^3*c^2/((
b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^4-2/b^2*c
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^4+e^4*
b/c^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e^4*b^2/c^3*(e*x+d)^(1/2)/(c*e*x+b*e)*B-3
*e^4*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*
A+5*e^4*b^2/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2
)*c)*B-d^3/b^2*A*(e*x+d)^(1/2)/x+4*d^(7/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2
))*A*c-7*e*d^(5/2)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*A-4*e^3/c^3*B*b*(e*x+
d)^(1/2)+6*e^2/c^2*B*d*(e*x+d)^(1/2)+3*e^2/b*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^
2-3*e^2/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d^2+e/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d
^3+5*e^3/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*
A*d+3*e^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)
*A*d^2+9*e^2/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)
*c)*B*d^2+3*e^3*b/c^2*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d-9*e/b^2*c/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3-13*e^3*b/c^2/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-e/b^2*c*(e*x
+d)^(1/2)/(c*e*x+b*e)*A*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.29, size = 7328, normalized size = 25.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (((d + e*x)^(3/2)*(B*b^4*e^4 - A*b^3*c*e^4 + 2*A*c^4*d^3*e - 3*A*b*c^3*d^2*
e^2 + 3*A*b^2*c^2*d*e^3 + 3*B*b^2*c^2*d^2*e^2 - B*b*c^3*d^3*e - 3*B*b^3*c*d
*e^3))/b^2 - ((d + e*x)^(1/2)*(2*A*c^4*d^4*e + B*b^4*d*e^4 - 4*A*b*c^3*d^3*
e^2 - 3*B*b^3*c*d^2*e^3 + 3*A*b^2*c^2*d^2*e^3 + 3*B*b^2*c^2*d^3*e^2 - A*b^3
*c*d*e^4 - B*b*c^3*d^4*e))/b^2)/((2*c^4*d - b*c^3*e)*(d + e*x) - c^4*(d + e
*x)^2 - c^4*d^2 + b*c^3*d*e) + ((2*A*e^3 - 2*B*d*e^2)/c^2 + (2*B*e^2*(4*c^2
*d - 2*b*c*e))/c^4)*(d + e*x)^(1/2) + (atan((((((((12*A*b^9*c^5*d*e^6 - 20*B
*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6
*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^
5)/(b^6*c^5) + ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/
2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d
 + 2*B*b*d))/(2*b^3) + (2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2
*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*
e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*
e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^
4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e
^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3
- 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B
*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*
b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*
B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d)*1i
)/(2*b^3) - (((((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4
*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 -
36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) - ((4*b^7*c^7*e^3 -
8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))
/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) - (2*(d + e*
x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154
*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 8
4*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B
^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B
^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 13
0*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b
^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d
^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5
*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d
^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3))/((2*(32*A^3*c^10*d^11*
e^3 + 50*B^3*b^10*d^4*e^10 + 262*A^3*b^2*c^8*d^9*e^5 + 141*A^3*b^3*c^7*d^8*
e^6 - 658*A^3*b^4*c^6*d^7*e^7 + 413*A^3*b^5*c^5*d^6*e^8 + 169*A^3*b^6*c^4*d
^5*e^9 - 246*A^3*b^7*c^3*d^4*e^10 + 63*A^3*b^8*c^2*d^3*e^11 - 4*B^3*b^3*c^7
*d^11*e^3 - 34*B^3*b^4*c^6*d^10*e^4 + 88*B^3*b^5*c^5*d^9*e^5 + 90*B^3*b^6*c
^4*d^8*e^6 - 448*B^3*b^7*c^3*d^7*e^7 + 518*B^3*b^8*c^2*d^6*e^8 + 175*A*B^2*
b^10*d^3*e^11 - 176*A^3*b*c^9*d^10*e^4 - 260*B^3*b^9*c*d^5*e^9 + 24*A*B^2*b
^2*c^8*d^11*e^3 + 92*A*B^2*b^3*c^7*d^10*e^4 - 605*A*B^2*b^4*c^6*d^9*e^5 + 5
94*A*B^2*b^5*c^5*d^8*e^6 + 1113*A*B^2*b^6*c^4*d^7*e^7 - 2912*A*B^2*b^7*c^3*
d^6*e^8 + 2589*A*B^2*b^8*c^2*d^5*e^9 + 40*A^2*B*b^2*c^8*d^10*e^4 + 727*A^2*
```

B*b^3*c^7*d^9*e^5 - 2133*A^2*B*b^4*c^6*d^8*e^6 + 1953*A^2*B*b^5*c^5*d^7*e^7 + 287*A^2*B*b^6*c^4*d^6*e^8 - 1650*A^2*B*b^7*c^3*d^5*e^9 + 1034*A^2*B*b^8*c^2*d^4*e^10 - 1070*A*B^2*b^9*c*d^4*e^10 - 48*A^2*B*b*c^9*d^11*e^3 - 210*A^2*B*b^9*c*d^3*e^11))/(b^6*c^5) + (((((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) + ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) + (2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) + ((((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) - ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) - (2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3)))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/b^3 + (2*B*e^2*(d + e*x)^(3/2))/(3*c^2) + (atan((((-c^7*(b*e - c*d)^5)^(1/2)*((2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5) + ((-c^7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) + ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d)*1i)/(2*b^3*c^7) + ((-c^7*(b*e - c*d)^5)^(1/2)*((2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2

```
*e^8))/(b^4*c^5) - ((-c^7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*
b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*
d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5
)/(b^6*c^5) - ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)
*(d + e*x)^(1/2)*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12
))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d
 - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d)*1i)/(2*b^3*c^7))/((2*(32*A^3*c^10*d^1
1*e^3 + 50*B^3*b^10*d^4*e^10 + 262*A^3*b^2*c^8*d^9*e^5 + 141*A^3*b^3*c^7*d^
8*e^6 - 658*A^3*b^4*c^6*d^7*e^7 + 413*A^3*b^5*c^5*d^6*e^8 + 169*A^3*b^6*c^4
*d^5*e^9 - 246*A^3*b^7*c^3*d^4*e^10 + 63*A^3*b^8*c^2*d^3*e^11 - 4*B^3*b^3*c
^7*d^11*e^3 - 34*B^3*b^4*c^6*d^10*e^4 + 88*B^3*b^5*c^5*d^9*e^5 + 90*B^3*b^6
*c^4*d^8*e^6 - 448*B^3*b^7*c^3*d^7*e^7 + 518*B^3*b^8*c^2*d^6*e^8 + 175*A*B^
2*b^10*d^3*e^11 - 176*A^3*b*c^9*d^10*e^4 - 260*B^3*b^9*c*d^5*e^9 + 24*A*B^2
*b^2*c^8*d^11*e^3 + 92*A*B^2*b^3*c^7*d^10*e^4 - 605*A*B^2*b^4*c^6*d^9*e^5 +
 594*A*B^2*b^5*c^5*d^8*e^6 + 1113*A*B^2*b^6*c^4*d^7*e^7 - 2912*A*B^2*b^7*c^
3*d^6*e^8 + 2589*A*B^2*b^8*c^2*d^5*e^9 + 40*A^2*B*b^2*c^8*d^10*e^4 + 727*A^
2*B*b^3*c^7*d^9*e^5 - 2133*A^2*B*b^4*c^6*d^8*e^6 + 1953*A^2*B*b^5*c^5*d^7*e
^7 + 287*A^2*B*b^6*c^4*d^6*e^8 - 1650*A^2*B*b^7*c^3*d^5*e^9 + 1034*A^2*B*b^
8*c^2*d^4*e^10 - 1070*A*B^2*b^9*c*d^4*e^10 - 48*A^2*B*b*c^9*d^11*e^3 - 210*
A^2*B*b^9*c*d^3*e^11))/(b^6*c^5) + ((-c^7*(b*e - c*d)^5)^(1/2)*((2*(d + e*x
)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*
A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84
*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^
2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^
2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130
*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^
9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^
7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*
d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5) + ((
-c^7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*
b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7
*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) + ((4*b^7
*c^7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A
*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12))*(4*A*c^2*d - 5*B*b
^2*e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*
c*e - 2*B*b*c*d))/(2*b^3*c^7) - ((-c^7*(b*e - c*d)^5)^(1/2)*((2*(d + e*x)^(
1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2
*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^
2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b
^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b
^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^
2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c
*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e
^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4
*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5) - ((-c^
7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6
*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^
4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) - ((4*b^7*c^
7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^
2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12))*(4*A*c^2*d - 5*B*b^2*
e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e
 - 2*B*b*c*d))/(2*b^3*c^7)))*(-c^7*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d - 5*B*b^
2*e + 3*A*b*c*e - 2*B*b*c*d)*1i)/(b^3*c^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1095 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=225

$$-\frac{d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(5Abe-4Acd+2bBd)}{b^3}-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e\sqrt{d+ex}}{}$$

Rubi [A] time = 0.58, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {818, 824, 826, 1166, 208}

$$-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e\sqrt{d+ex}\left(-bc(Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^2c^2}-\frac{(cd-be)^{3/2}\left(-bc(2Bd-Ae)+4Ac^2d-3b^2Be\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3c^{5/2}}-\frac{d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(5Abe-4Acd+2bBd)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*(2*A*c^2*d + 3*b^2*B*e - b*c*(B*d + A*e))*Sqrt[d + e*x])/(b^2*c^2) - ((d
 + e*x)^(3/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c
*(b*x + c*x^2)) - (d^(3/2)*(2*b*B*d - 4*A*c*d + 5*A*b*e)*ArcTanh[Sqrt[d + e
*x]/Sqrt[d]])/b^3 - ((c*d - b*e)^(3/2)*(4*A*c^2*d - 3*b^2*B*e - b*c*(2*B*d
- A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*c^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
```

```
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} + \int \frac{\sqrt{d+ex}\left(\frac{1}{2}cd(2bBd-4Acd+5\right.}{}$$

$$= \frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2} - \frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$= \frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2} - \frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$= \frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2} - \frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$= \frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2} - \frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

Mathematica [A] time = 1.23, size = 302, normalized size = 1.34

$$-\frac{\frac{\frac{2d\left(bc(2Bd-Ae)-4Ac^2d+3b^2Be\right)\left(\sqrt{c}\sqrt{d+ex}\left(15b^2e^2-5bce(7d+ex)+c^2\left(23d^2+11dex+3e^2x^2\right)\right)-15(cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)}{c^{5/2}(cd-be)}+2\left(15d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)-\sqrt{d+ex}\left(23d^2+11dex+3e^2x^2\right)\right)(5Abe-4Acd+2bBd)}{30b^2}+\frac{c(d+ex)^{7/2}(Abe-2Acd+bBd)}{b(b+cx)(be-cd)}+\frac{A(d+ex)^{7/2}}{x(b+cx)}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(7/2))/(b*(-(c*d) + b*e)*(b + c*x
)) + (A*(d + e*x)^(7/2))/(x*(b + c*x)) + (2*(2*b*B*d - 4*A*c*d + 5*A*b*e)*(
-(Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3*e^2*x^2)) + 15*d^(5/2)*ArcTanh[Sqrt[
d + e*x]/Sqrt[d]]) + (2*d*(-4*A*c^2*d + 3*b^2*B*e + b*c*(2*B*d - A*e))*(Sqr
t[c]*Sqrt[d + e*x]*(15*b^2*e^2 - 5*b*c*e*(7*d + e*x) + c^2*(23*d^2 + 11*d*e
*x + 3*e^2*x^2)) - 15*(c*d - b*e)^(5/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqr
t[c*d - b*e]]))/(c^(5/2)*(c*d - b*e)))/(30*b^2))/(b*d))
```

IntegrateAlgebraic [A] time = 1.05, size = 387, normalized size = 1.72

$$\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(-5Abd^{3/2}e+4Acd^{5/2}-2bBd^{5/2}\right)}{b^3}+\frac{\left(-4Ac^2d(be-cd)^{3/2}-Abce(be-cd)^{3/2}+3b^2Be(be-cd)^{3/2}+2bBcd(be-cd)^{3/2}\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b^3c^{5/2}}+\frac{\sqrt{d+ex}\left(-Ab^2ce^3(d+ex)+Ab^2cde^3-3Abc^2d^2e^2+2Abc^2de^2(d+ex)+2Ac^3d^3e-2Ac^3d^2e(d+ex)+3b^3Be^3(d+ex)-3b^3Bde^3+4b^2Bcd^2e^2+2b^2Bce^2(d+ex)^2-6b^2Bcde^2(d+ex)-bBc^2d^3e+bBc^2d^2e(d+ex)\right)}{b^2c^2ex(be+c(d+ex)-cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[d + e*x]*(-(b*B*c^2*d^3*e) + 2*A*c^3*d^3*e + 4*b^2*B*c*d^2*e^2 - 3*A*
b*c^2*d^2*e^2 - 3*b^3*B*d*e^3 + A*b^2*c*d*e^3 + b*B*c^2*d^2*e*(d + e*x) - 2
*A*c^3*d^2*e*(d + e*x) - 6*b^2*B*c*d*e^2*(d + e*x) + 2*A*b*c^2*d*e^2*(d + e
*x) + 3*b^3*B*e^3*(d + e*x) - A*b^2*c*e^3*(d + e*x) + 2*b^2*B*c*e^2*(d + e*
x)^2))/(b^2*c^2*e*x*(-(c*d) + b*e + c*(d + e*x))) + ((2*b*B*c*d*(-(c*d) + b
*e)^(3/2) - 4*A*c^2*d*(-(c*d) + b*e)^(3/2) + 3*b^2*B*e*(-(c*d) + b*e)^(3/2)
 - A*b*c*e*(-(c*d) + b*e)^(3/2))*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d
+ e*x]])/(c*d - b*e)])/(b^3*c^(5/2)) + ((-2*b*B*d^(5/2) + 4*A*c*d^(5/2) - 5*
A*b*d^(3/2)*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b^3
```

fricas [A] time = 10.83, size = 1589, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2 + 3*A*b*c^3)*d*e - (3*B*b^3*
c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (B*b^3*c + 3*A*b
^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt((c*d - b*e)/c)*log((c*e*x +
2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + ((5*A*b*c
^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (5*A*b^2*c^2*d*e + 2*(B*b^2*c^2 -
 2*A*b*c^3)*d^2)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) +
2*(2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*(B*
b^3*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x + d))/(b^3*c^
3*x^2 + b^4*c^2*x), 1/2*(2*((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2 + 3*A*b
*c^3)*d*e - (3*B*b^3*c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d
^2 + (B*b^3*c + 3*A*b^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(-(c*d -
 b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + ((5*A*
b*c^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (5*A*b^2*c^2*d*e + 2*(B*b^2*c^
2 - 2*A*b*c^3)*d^2)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x)
 + 2*(2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*
(B*b^3*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x + d))/(b^3
*c^3*x^2 + b^4*c^2*x), 1/2*(2*((5*A*b*c^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*
x^2 + (5*A*b^2*c^2*d*e + 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2)*x)*sqrt(-d)*arctan(
sqrt(e*x + d)*sqrt(-d)/d) + ((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2 + 3*A*
b*c^3)*d*e - (3*B*b^3*c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*
d^2 + (B*b^3*c + 3*A*b^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt((c*d -
 b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/
(c*x + b)) + 2*(2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3
)*d^2 - 2*(B*b^3*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x
+ d))/(b^3*c^3*x^2 + b^4*c^2*x), (((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2
+ 3*A*b*c^3)*d*e - (3*B*b^3*c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b
*c^3)*d^2 + (B*b^3*c + 3*A*b^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(
-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) +
 ((5*A*b*c^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (5*A*b^2*c^2*d*e + 2*(B
*b^2*c^2 - 2*A*b*c^3)*d^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (
2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*(B*b^3
*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x + d))/(b^3*c^3*x
^2 + b^4*c^2*x)]
```

giac [B] time = 0.24, size = 468, normalized size = 2.08

$$\frac{2\sqrt{xe+d}\,Be^{2}}{c^{2}} + \frac{\left(2\,Bbd^{3} - 4\,Acd^{3} + 5\,Abd^{2}e\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^{3}\sqrt{-d}} - \frac{\left(2\,Bbc^{3}d^{3} - 4\,Ac^{4}d^{3} - Bb^{2}c^{2}d^{2}e + 7\,Abc^{3}d^{2}e - 4\,Bb^{3}cde^{2} - 2\,Ab^{2}c^{2}de^{2} + 3\,Bb^{4}e^{3} - Ab^{3}ce^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\sqrt{-c^{2}d+bce}\,b^{3}c^{2}} + \frac{(xe+d)^{\frac{3}{2}}Bbc^{2}d^{2}e - 2\,(xe+d)^{\frac{3}{2}}Ac^{3}d^{2}e - \sqrt{xe+d}\,Bbc^{2}d^{3}e + 2\sqrt{xe+d}\,Ac^{3}d^{3}e - 2\,(xe+d)^{\frac{3}{2}}Bb^{2}cde^{2} + 2\,(xe+d)^{\frac{3}{2}}Abc^{2}de^{2} + 2\sqrt{xe+d}\,Bb^{2}cd^{2}e^{2} - 3\sqrt{xe+d}\,Abc^{2}d^{2}e^{2} + (xe+d)^{\frac{3}{2}}Bb^{3}e^{3} - (xe+d)^{\frac{3}{2}}Ab^{2}ce^{3} - \sqrt{xe+d}\,Bb^{3}de^{3} + \sqrt{xe+d}\,Ab^{2}cde^{3}}{\left((xe+d)^{2}c - 2\,(xe+d)cd + cd^{2} + (xe+d)be - bde\right)b^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^2/c^2 + (2*B*b*d^3 - 4*A*c*d^3 + 5*A*b*d^2*e)*arctan(sq
rt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)) - (2*B*b*c^3*d^3 - 4*A*c^4*d^3 - B*b^2
```

```
*c^2*d^2*e + 7*A*b*c^3*d^2*e - 4*B*b^3*c*d*e^2 - 2*A*b^2*c^2*d*e^2 + 3*B*b^
4*e^3 - A*b^3*c*e^3)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^
2*d + b*c*e)*b^3*c^2) + ((x*e + d)^(3/2)*B*b*c^2*d^2*e - 2*(x*e + d)^(3/2)*
A*c^3*d^2*e - sqrt(x*e + d)*B*b*c^2*d^3*e + 2*sqrt(x*e + d)*A*c^3*d^3*e - 2
*(x*e + d)^(3/2)*B*b^2*c*d*e^2 + 2*(x*e + d)^(3/2)*A*b*c^2*d*e^2 + 2*sqrt(x
*e + d)*B*b^2*c*d^2*e^2 - 3*sqrt(x*e + d)*A*b*c^2*d^2*e^2 + (x*e + d)^(3/2)
*B*b^3*e^3 - (x*e + d)^(3/2)*A*b^2*c*e^3 - sqrt(x*e + d)*B*b^3*d*e^3 + sqrt
(x*e + d)*A*b^2*c*d*e^3)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e +
 d)*b*e - b*d*e)*b^2*c^2)
```

maple [B] time = 0.07, size = 614, normalized size = 2.73

$$\frac{2Ade^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,b}-\frac{7Acd^{2}e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,b^{2}}+\frac{4Ac^{2}d^{3}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,b^{3}}+\frac{Ae^{3}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c}-\frac{3Bbe^{3}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c^{2}}+\frac{Bd^{2}e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,b}-\frac{2Bcd^{3}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,b^{2}}+\frac{4Bde^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)c}\,c}+\frac{2\sqrt{ex+d}\,Ade^{2}}{(cex+be)b}-\frac{\sqrt{ex+d}\,Acd^{2}e}{(cex+be)b^{2}}-\frac{\sqrt{ex+d}\,Ae^{3}}{(cex+be)c}+\frac{\sqrt{ex+d}\,Bbe^{3}}{(cex+be)c^{2}}+\frac{\sqrt{ex+d}\,Bd^{2}e}{(cex+be)b}-\frac{2\sqrt{ex+d}\,Bde^{2}}{(cex+be)c}-\frac{5Ad^{\frac{3}{2}}e\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{2}}+\frac{4Acd^{\frac{5}{2}}\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{3}}-\frac{2Bd^{\frac{5}{2}}\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{2}}+\frac{2\sqrt{ex+d}\,Be^{2}}{c^{2}}-\frac{\sqrt{ex+d}\,Ad^{2}}{b^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x)
```

```
[Out] 2*e^2*B/c^2*(e*x+d)^(1/2)-e^3/c*(e*x+d)^(1/2)/(c*e*x+b*e)*A+2*e^2/b*(e*x+d)
^(1/2)/(c*e*x+b*e)*A*d-e/b^2*c*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^2+e^3*b/c^2*(e
*x+d)^(1/2)/(c*e*x+b*e)*B-2*e^2/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d+e/b*(e*x+d)
^(1/2)/(c*e*x+b*e)*B*d^2+e^3/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b
*e-c*d)*c)^(1/2)*c)*A+2*e^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*A*d-7*e/b^2*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(b*e-c*d)*c)^(1/2)*c)*A*d^2+4/b^3*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1
/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3-3*e^3*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*
x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+4*e^2/c/((b*e-c*d)*c)^(1/2)*arctan((e*x
+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d+e/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)
^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2-2/b^2*c/((b*e-c*d)*c)^(1/2)*arctan((e*x
+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3-d^2/b^2*A*(e*x+d)^(1/2)/x-5*e*d^(3/2
)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4*d^(5/2)/b^3*arctanh((e*x+d)^(1/2)/
d^(1/2))*A*c-2*d^(5/2)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.70, size = 5878, normalized size = 26.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (atan(((((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d
^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d
^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4
*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7
 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*
c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5
*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) + ((
d^3)^(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 -
 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^
```

3) + ((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3) + (((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) - ((d^3)^(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3))/((2*(32*A^3*c^8*d^8*e^3 + 18*B^3*b^8*d^3*e^8 + 166*A^3*b^2*c^6*d^6*e^5 - 50*A^3*b^3*c^5*d^5*e^6 - 41*A^3*b^4*c^4*d^4*e^7 + 16*A^3*b^5*c^3*d^3*e^8 + 5*A^3*b^6*c^2*d^2*e^9 - 4*B^3*b^3*c^5*d^8*e^3 - 14*B^3*b^4*c^4*d^7*e^4 + 28*B^3*b^5*c^3*d^6*e^5 + 20*B^3*b^6*c^2*d^5*e^6 + 45*A*B^2*b^8*d^2*e^9 - 128*A^3*b*c^7*d^7*e^4 - 48*B^3*b^7*c*d^4*e^7 + 24*A*B^2*b^2*c^6*d^8*e^3 + 24*A*B^2*b^3*c^5*d^7*e^4 - 183*A*B^2*b^4*c^4*d^6*e^5 + 120*A*B^2*b^5*c^3*d^5*e^6 + 138*A*B^2*b^6*c^2*d^4*e^7 + 72*A^2*B*b^2*c^6*d^7*e^4 + 171*A^2*B*b^3*c^5*d^6*e^5 - 420*A^2*B*b^4*c^4*d^5*e^6 + 249*A^2*B*b^5*c^3*d^4*e^7 + 6*A^2*B*b^6*c^2*d^3*e^8 - 168*A*B^2*b^7*c*d^3*e^8 - 48*A^2*B*b*c^7*d^8*e^3 - 30*A^2*B*b^7*c*d^2*e^9))/(b^6*c^3) - (((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) + ((d^3)^(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) + ((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) + (((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) - ((d^3)^(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3)))*(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/b^3 - (((d + e*x)^(1/2)*(2*A*c^3*d^3*e - B*b^3*d*e^3 - 3*A*b*c^2*d^2*e^2 + 2*B*b^2*c*d^2*e^2 + A*b^2*c*d*e^3 - B*b*c^2*d^3*e))/b^2 + ((d + e*x)^(3/2)*(B*b^3*e^3 - A*b^2*c*e^3 - 2*A*c^3*d^2*e + 2*A*b*c^2*d*e^2 + B*b*c^2*d^2*e - 2*B*b^2*c*d*e^2))/b^2)/((2*c^3*d - b*c^2*e)*(d + e*x) - c^3*(d + e*x)^2 - c^3*d^2 + b*c^2*d*e) + (2*B*e^2*(d + e*x)^(1/2))/c^2 + (atan(((((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c

```
^3*d^2*e^6))/(b^4*c^3) + ((-c^5*(b*e - c*d)^3)^(1/2)*((4*A*b^8*c^4*d*e^5 -
12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c
^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) + ((4*b^7*c^5*e^3 - 8*b^6*c^6*
d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d - 3*B*b^2*e +
A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c
*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c
*e - 2*B*b*c*d)*1i)/(2*b^3*c^5) + (((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2
*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5
*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d
^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d
^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 -
6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c
^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c
^3*d^2*e^6))/(b^4*c^3) - ((-c^5*(b*e - c*d)^3)^(1/2)*((4*A*b^8*c^4*d*e^5 -
12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c
^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4*b^7*c^5*e^3 - 8*b^6*c^6*
d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d - 3*B*b^2*e +
A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c
*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c
*e - 2*B*b*c*d)*1i)/(2*b^3*c^5))/((2*(32*A^3*c^8*d^8*e^3 + 18*B^3*b^8*d^3*e
^8 + 166*A^3*b^2*c^6*d^6*e^5 - 50*A^3*b^3*c^5*d^5*e^6 - 41*A^3*b^4*c^4*d^4*
e^7 + 16*A^3*b^5*c^3*d^3*e^8 + 5*A^3*b^6*c^2*d^2*e^9 - 4*B^3*b^3*c^5*d^8*e^
3 - 14*B^3*b^4*c^4*d^7*e^4 + 28*B^3*b^5*c^3*d^6*e^5 + 20*B^3*b^6*c^2*d^5*e^
6 + 45*A*B^2*b^8*d^2*e^9 - 128*A^3*b*c^7*d^7*e^4 - 48*B^3*b^7*c*d^4*e^7 + 2
4*A*B^2*b^2*c^6*d^8*e^3 + 24*A*B^2*b^3*c^5*d^7*e^4 - 183*A*B^2*b^4*c^4*d^6*
e^5 + 120*A*B^2*b^5*c^3*d^5*e^6 + 138*A*B^2*b^6*c^2*d^4*e^7 + 72*A^2*B*b^2*
c^6*d^7*e^4 + 171*A^2*B*b^3*c^5*d^6*e^5 - 420*A^2*B*b^4*c^4*d^5*e^6 + 249*A
^2*B*b^5*c^3*d^4*e^7 + 6*A^2*B*b^6*c^2*d^3*e^8 - 168*A*B^2*b^7*c*d^3*e^8 -
48*A^2*B*b*c^7*d^8*e^3 - 30*A^2*B*b^7*c*d^2*e^9))/(b^6*c^3) - (((2*(d + e*x
)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*
c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c
^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^
3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*
e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*
b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^
4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) + ((-c^5*(b*e - c*d)^3)^
(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A
*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) +
((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/
2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3
*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4
*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5) + (((2*(d + e*x)^(
1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6
*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*
d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d
^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3
 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6
*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c
^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) - ((-c^5*(b*e - c*d)^3)^(1/
2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^
7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4
*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*
(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3*B*
b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4*A*
c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5)))*(-c^5*(b*e - c*d)^3
)^(1/2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d)*1i)/(b^3*c^5)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1096 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=181

$$-\frac{\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(3Abe-4Acd+2bBd)}{b^3}-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}-\frac{\sqrt{cd-b}$$

Rubi [A] time = 0.34, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 826, 1166, 208}

$$-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}-\frac{\sqrt{cd-be}\left(-bc(Ae+2Bd)+4Ac^2d+b^2(-B)e\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3c^{3/2}}-\frac{\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(3Abe-4Acd+2bBd)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[d + e*x]*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^
2*c*(b*x + c*x^2))) - (Sqrt[d]*(2*b*B*d - 4*A*c*d + 3*A*b*e)*ArcTanh[Sqrt[d
 + e*x]/Sqrt[d]])/b^3 - (Sqrt[c*d - b*e]*(4*A*c^2*d - b^2*B*e - b*c*(2*B*d
+ A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*c^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} + \frac{\int \frac{\frac{1}{2}cd(2bBd-4Acd+3Abe)-\frac{1}{2}e\left(2Ac^2\right.}{\sqrt{d+ex}\,\left(bx+cx\right.}}{b^2c}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} + \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}cde(2bBd-4Acd+3A}{}\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} + \frac{(cd(2bBd-4Acd+3Abe))\,\mathrm{S}}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} - \frac{\sqrt{d}\,(2bBd-4Acd+3Abe)\,\mathrm{t}}{b^3}$$

Mathematica [A] time = 0.33, size = 171, normalized size = 0.94

$$\frac{-\frac{\sqrt{cd-be}\left(-bc(Ae+2Bd)+4Ac^2d+b^2(-B)e\right)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{c^{3/2}}+\frac{b\sqrt{d+ex}\,(Ac(-bd+bex-2cdx)+bBx(cd-be))}{cx(b+cx)}+\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-3Abe+4Acd-2bBd)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x]
```

```
[Out] ((b*Sqrt[d + e*x]*(b*B*(c*d - b*e)*x + A*c*(-(b*d) - 2*c*d*x + b*e*x)))/(c*
x*(b + c*x)) + Sqrt[d]*(-2*b*B*d + 4*A*c*d - 3*A*b*e)*ArcTanh[Sqrt[d + e*x]
/Sqrt[d]] - (Sqrt[c*d - b*e]*(4*A*c^2*d - b^2*B*e - b*c*(2*B*d + A*e))*ArcT
anh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/c^(3/2))/b^3
```

IntegrateAlgebraic [A] time = 0.81, size = 280, normalized size = 1.55

$$\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(-3Ab\sqrt{d}\,e+4Acd^{3/2}-2bBd^{3/2}\right)}{b^3}-\frac{\sqrt{d+ex}\,\left(-Abce(d+ex)+2Abcde-2Ac^2d^2+2Ac^2d(d+ex)+b^2Be(d+ex)+b^2(-B)de+bBcd^2-bBcd(d+ex)\right)}{b^2cx(be+c(d+ex)-cd)}+\frac{\left(-Ab^2ce^2+5Abc^2de-4Ac^3d^2+b^3(-B)e^2-b^2Bcde+2bBc^2d^2\right)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}\,\sqrt{be-cd}}{cd-be}\right)}{b^3c^{3/2}\sqrt{be-cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[d + e*x]*(b*B*c*d^2 - 2*A*c^2*d^2 - b^2*B*d*e + 2*A*b*c*d*e - b*B*c
*d*(d + e*x) + 2*A*c^2*d*(d + e*x) + b^2*B*e*(d + e*x) - A*b*c*e*(d + e*x))
)/(b^2*c*x*(-(c*d) + b*e + c*(d + e*x)))) + ((2*b*B*c^2*d^2 - 4*A*c^3*d^2 -
 b^2*B*c*d*e + 5*A*b*c^2*d*e - b^3*B*e^2 - A*b^2*c*e^2)*ArcTan[(Sqrt[c]*Sqr
t[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b^3*c^(3/2)*Sqrt[-(c*d) + b*e
]) + ((-2*b*B*d^(3/2) + 4*A*c*d^(3/2) - 3*A*b*Sqrt[d]*e)*ArcTanh[Sqrt[d + e
*x]/Sqrt[d]])/b^3
```

fricas [A] time = 1.26, size = 1146, normalized size = 6.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)*e)*x^2 + (2*(B*b^2*c
- 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt((c*d - b*e)/c)*log((c*e*x + 2
*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + ((3*A*b*c^
```

```
2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*c^2)
*d)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c*d
- ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d))/(b^3*c^
2*x^2 + b^4*c*x), 1/2*(2*((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)*e)
*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt(-(c*d - b*
e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + ((3*A*b*c
^2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*c^2
)*d)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c*d
 - ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d))/(b^3*c
^2*x^2 + b^4*c*x), 1/2*(2*((3*A*b*c^2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3
*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*c^2)*d)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sq
rt(-d)/d) + ((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)*e)*x^2 + (2*(B*
b^2*c - 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt((c*d - b*e)/c)*log((c*e
*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) - 2*(A
*b^2*c*d - ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d)
)/(b^3*c^2*x^2 + b^4*c*x), (((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)
*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt(-(c*d -
 b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + ((3*A*
b*c^2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*
c^2)*d)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (A*b^2*c*d - ((B*b^2
*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d))/(b^3*c^2*x^2 + b
^4*c*x)]
```

giac [B] time = 0.21, size = 334, normalized size = 1.85

$$\frac{\left(2\,Bbd^2-4\,Acd^2+3\,Abde\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}}-\frac{\left(2\,Bbc^2d^2-4\,Ac^3d^2-Bb^2cde+5\,Abc^2de-Bb^3e^2-Ab^2ce^2\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,b^3c}+\frac{(xe+d)^{\frac{3}{2}}Bbcde-2\,(xe+d)^{\frac{3}{2}}Ac^2de-\sqrt{xe+d}\,Bbcd^2e+2\,\sqrt{xe+d}\,Ac^2d^2e-(xe+d)^{\frac{3}{2}}Bb^2e^2+(xe+d)^{\frac{3}{2}}Abce^2+\sqrt{xe+d}\,Bb^2de^2-2\,\sqrt{xe+d}\,Abcde^2}{\left((xe+d)^2c-2\,(xe+d)cd+cd^2+(xe+d)be-bde\right)b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (2*B*b*d^2 - 4*A*c*d^2 + 3*A*b*d*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqr
t(-d)) - (2*B*b*c^2*d^2 - 4*A*c^3*d^2 - B*b^2*c*d*e + 5*A*b*c^2*d*e - B*b^3
*e^2 - A*b^2*c*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2
*d + b*c*e)*b^3*c) + ((x*e + d)^(3/2)*B*b*c*d*e - 2*(x*e + d)^(3/2)*A*c^2*d
*e - sqrt(x*e + d)*B*b*c*d^2*e + 2*sqrt(x*e + d)*A*c^2*d^2*e - (x*e + d)^(3
/2)*B*b^2*e^2 + (x*e + d)^(3/2)*A*b*c*e^2 + sqrt(x*e + d)*B*b^2*d*e^2 - 2*s
qrt(x*e + d)*A*b*c*d*e^2)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e
+ d)*b*e - b*d*e)*b^2*c)
```

maple [B] time = 0.07, size = 443, normalized size = 2.45

$$\frac{A\,e^2\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}-\frac{5Acde\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^2}+\frac{4A\,c^2d^2\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^3}+\frac{Bde\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}-\frac{2Bc\,d^2\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^2}+\frac{B\,e^2\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}+\frac{\sqrt{ex+d}\;A\,e^2}{(cex+be)\,b}-\frac{\sqrt{ex+d}\;Acde}{(cex+be)\,b^2}+\frac{\sqrt{ex+d}\;Bde}{(cex+be)\,b}-\frac{\sqrt{ex+d}\;B\,e^2}{(cex+be)\,c}-\frac{3A\sqrt{d}\;e\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2}+\frac{4Ac\,d^{\frac{3}{2}}\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^3}-\frac{2B\,d^{\frac{3}{2}}\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2}-\frac{\sqrt{ex+d}\;Ad}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e^2/b*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A*c*d-e^2
/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B+e/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d+e^2/b/((b*
e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-5*e/b^2/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c*d+4/b^3*c^2/
((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^2+e^2/c
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+e/b/((b*
e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-2/b^2/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2*c-d/b^2*A*
(e*x+d)^(1/2)/x-3*e*d^(1/2)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4*d^(3/2)/
b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2*d^(3/2)/b^2*arctanh((e*x+d)^(1/2)/
d^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.61, size = 4391, normalized size = 24.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (d^(1/2)*atan(((d^(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6
+ 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B
^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c
^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2
- 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b
^4*c) + (d^(1/2)*((8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*
e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) + (d^(1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*
e^2)*(d + e*x)^(1/2)*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A
*c*d + 2*B*b*d))/(2*b^3))*(3*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3) + (d^(1
/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2
 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 -
 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*
b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^
5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) - (d^(1/2)*((8
*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^
2*e^3)/(b^6*c) - (d^(1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(d + e*x)^(1/2)
*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(2*
b^3))*(3*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3))/((2*(32*A^3*c^6*d^5*e^3 +
2*B^3*b^6*d^2*e^6 + 70*A^3*b^2*c^4*d^3*e^5 - 25*A^3*b^3*c^3*d^2*e^6 - 4*B^3
*b^3*c^3*d^5*e^3 - 2*B^3*b^4*c^2*d^4*e^4 + 3*A*B^2*b^6*d*e^7 - 80*A^3*b*c^5
*d^4*e^4 + 3*A^3*b^4*c^2*d*e^7 + 4*B^3*b^5*c*d^3*e^5 + 24*A*B^2*b^2*c^4*d^5
*e^3 - 12*A*B^2*b^3*c^3*d^4*e^4 - 21*A*B^2*b^4*c^2*d^3*e^5 + 72*A^2*B*b^2*c
^4*d^4*e^4 - 9*A^2*B*b^3*c^3*d^3*e^5 - 21*A^2*B*b^4*c^2*d^2*e^6 + 6*A^2*B*b
^5*c*d*e^7 + 6*A*B^2*b^5*c*d^2*e^6 - 48*A^2*B*b*c^5*d^5*e^3))/(b^6*c) + (d^
(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e
^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3
 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^
2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*
e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) + (d^(1/2)*(
(8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*
d^2*e^3)/(b^6*c) + (d^(1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(d + e*x)^(1/
2)*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(
2*b^3))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) - (d^(1/2)*((2*(d + e*x)^(1/
2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2
*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^
4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B
*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^
3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) - (d^(1/2)*((8*A*b^7*c^3*d*e^4 - 4*
B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) - (d^(
1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(d + e*x)^(1/2)*(3*A*b*e - 4*A*c*d +
 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(3*A*b*e - 4*A*
c*d + 2*B*b*d))/(2*b^3)))*(3*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/b^3 - (((d + e*
x)^(3/2)*(B*b^2*e^2 - A*b*c*e^2 + 2*A*c^2*d*e - B*b*c*d*e))/(b^2*c) - ((d +
 e*x)^(1/2)*(2*A*c^2*d^2*e + B*b^2*d*e^2 - 2*A*b*c*d*e^2 - B*b*c*d^2*e))/(b
^2*c))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 + c*d^2 - b*d*e) + (atan(((
```

```
(-c^3*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6
 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*
B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*
c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2
 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(
b^4*c) + (((8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4
*B*b^7*c^3*d^2*e^3)/(b^6*c) + ((4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-c^3*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))
/(b^7*c^4))*(-c^3*(b*e - c*d))^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b
*c*d))/(2*b^3*c^3))*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d)*1i)/(2*b^3*
c^3) + ((-c^3*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4
*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*
e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 6
4*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5
*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2
*e^4))/(b^4*c) - (((8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2
*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) - ((4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-
c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B
*b*c*d))/(b^7*c^4))*(-c^3*(b*e - c*d))^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e
 + 2*B*b*c*d))/(2*b^3*c^3))*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d)*1i)
/(2*b^3*c^3))/((2*(32*A^3*c^6*d^5*e^3 + 2*B^3*b^6*d^2*e^6 + 70*A^3*b^2*c^4*
d^3*e^5 - 25*A^3*b^3*c^3*d^2*e^6 - 4*B^3*b^3*c^3*d^5*e^3 - 2*B^3*b^4*c^2*d^
4*e^4 + 3*A*B^2*b^6*d*e^7 - 80*A^3*b*c^5*d^4*e^4 + 3*A^3*b^4*c^2*d*e^7 + 4*
B^3*b^5*c*d^3*e^5 + 24*A*B^2*b^2*c^4*d^5*e^3 - 12*A*B^2*b^3*c^3*d^4*e^4 - 2
1*A*B^2*b^4*c^2*d^3*e^5 + 72*A^2*B*b^2*c^4*d^4*e^4 - 9*A^2*B*b^3*c^3*d^3*e^
5 - 21*A^2*B*b^4*c^2*d^2*e^6 + 6*A^2*B*b^5*c*d*e^7 + 6*A*B^2*b^5*c*d^2*e^6
- 48*A^2*B*b*c^5*d^5*e^3))/(b^6*c) + ((-c^3*(b*e - c*d))^(1/2)*((2*(d + e*x
)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^
4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d
^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 +
2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c
^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) + (((8*A*b^7*c^3*d*e^4 - 4*B*b
^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) + ((4*b^7
*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(B*b^2
*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(b^7*c^4))*(-c^3*(b*e - c*d))^(1/2)*
(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3))*(B*b^2*e - 4*A*c^
2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3) - ((-c^3*(b*e - c*d))^(1/2)*((2*(d
+ e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b
^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*
c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e
^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*
b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) - (((8*A*b^7*c^3*d*e^4 -
4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) - ((
4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(
B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(b^7*c^4))*(-c^3*(b*e - c*d))^(
1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3))*(B*b^2*e - 4
*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3)))*(-c^3*(b*e - c*d))^(1/2)*(B*
b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d)*1i)/(b^3*c^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1097 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(Abe-4Acd+2bBd)}{b^3\sqrt{d}}-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{b^2\left(bx+cx^2\right)}+\frac{\left(3Abce-4Ac^2d+b^2(-B)e+2bBcd\right)\tan}{b^3\sqrt{c}\,\sqrt{cd-be}}$$

Rubi [A] time = 0.31, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {820, 826, 1166, 208}

$$\frac{\left(3Abce-4Ac^2d+b^2(-B)e+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3\sqrt{c}\,\sqrt{cd-be}}-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{b^2\left(bx+cx^2\right)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(Abe-4Acd+2bBd)}{b^3\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^2,x]
```

```
[Out] -(((A*b - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/(b^2*(b*x + c*x^2))) - ((2*b*B*d
 - 4*A*c*d + A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*Sqrt[d]) + ((2*b*B*
c*d - 4*A*c^2*d - b^2*B*e + 3*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt
[c*d - b*e]])/(b^3*Sqrt[c]*Sqrt[c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}(4Acd-b(2Bd+Ae))-\frac{1}{2}(bB-2Ac)ex}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx}{b^2}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} - \frac{2\,\text{Subst}\left(\int \frac{\frac{1}{2}(bB-2Ac)de+\frac{1}{2}e(4Acd-b(2Bd+Ae))-\frac{1}{2}(bB-2Ac)e}{cd^2-bde+(-2cd+be)x^2+cx^4}\right.}{b^2}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} + \frac{(c(2bBd-4Acd+Abe))\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+c}\right.}{b^3}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} - \frac{(2bBd-4Acd+Abe)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b^3\sqrt{d}} + \frac{(2bBcd-}{}$$

Mathematica [A] time = 0.55, size = 232, normalized size = 1.47

$$\frac{\frac{\frac{d(-bc(3Ae+2Bd)+4Ac^2d+b^2Be)\left(\sqrt{c}\sqrt{d+ex}-\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)}{\sqrt{c}(cd-be)}+\left(\sqrt{d+ex}-\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)(Abe-4Acd+2bBd)}{b^2}-\frac{c(d+ex)^{3/2}(Abe-2Acd+bBd)}{b(b+cx)(be-cd)}-\frac{A(d+ex)^{3/2}}{x(b+cx)}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^2,x]
```

```
[Out] (-((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(3/2))/(b*(-(c*d) + b*e)*(b + c*x
))) - (A*(d + e*x)^(3/2))/(x*(b + c*x)) + ((2*b*B*d - 4*A*c*d + A*b*e)*(Sqr
t[d + e*x] - Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) + (d*(4*A*c^2*d + b^2*
B*e - b*c*(2*B*d + 3*A*e))*(Sqrt[c]*Sqrt[d + e*x] - Sqrt[c*d - b*e]*ArcTanh
[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))/(Sqrt[c]*(c*d - b*e)))/b^2)/(b*
d)
```

IntegrateAlgebraic [A] time = 0.74, size = 194, normalized size = 1.23

$$\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe+4Acd-2bBd)}{b^3\sqrt{d}}-\frac{\sqrt{d+ex}\,(Abe+2Ac(d+ex)-2Acd-bB(d+ex)+bBd)}{b^2x(be+c(d+ex)-cd)}+\frac{\left(3Abce-4Ac^2d+b^2(-B)e+2bBcd\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b^3\sqrt{c}\sqrt{be-cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[d + e*x]*(b*B*d - 2*A*c*d + A*b*e - b*B*(d + e*x) + 2*A*c*(d + e*x)
))/(b^2*x*(-(c*d) + b*e + c*(d + e*x)))) + ((2*b*B*c*d - 4*A*c^2*d - b^2*B*
e + 3*A*b*c*e)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e
)])/(b^3*Sqrt[c]*Sqrt[-(c*d) + b*e]) + ((-2*b*B*d + 4*A*c*d - A*b*e)*ArcTan
h[Sqrt[d + e*x]/Sqrt[d]])/(b^3*Sqrt[d])
```

fricas [B] time = 0.88, size = 1574, normalized size = 9.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(c^2*d - b*c*e)*((2*(B*b*c^2 - 2*A*c^3)*d^2 - (B*b^2*c - 3*A*b*c^
2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2 - (B*b^3 - 3*A*b^2*c)*d*e)*x)*lo
g((c*e*x + 2*c*d - b*e + 2*sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) -
```

```
((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^2 + (2*B*b^2*c^2 - 5*A*b*c^3)*d*e
)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (2*B*b^3*c - 5*A*b^2
*c^2)*d*e)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b
^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (B*b^3*c - 2*A*b^
2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*x^2 + (b^4*c^2*d
^2 - b^5*c*d*e)*x), -1/2*(2*sqrt(-c^2*d + b*c*e)*((2*(B*b*c^2 - 2*A*c^3)*d^
2 - (B*b^2*c - 3*A*b*c^2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2 - (B*b^3
- 3*A*b^2*c)*d*e)*x)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c*e*x + c*d
)) + ((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^2 + (2*B*b^2*c^2 - 5*A*b*c^3
)*d*e)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (2*B*b^3*c - 5*
A*b^2*c^2)*d*e)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2
*(A*b^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (B*b^3*c - 2
*A*b^2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*x^2 + (b^4*
c^2*d^2 - b^5*c*d*e)*x), -1/2*(2*((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^
2 + (2*B*b^2*c^2 - 5*A*b*c^3)*d*e)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*
b*c^3)*d^2 + (2*B*b^3*c - 5*A*b^2*c^2)*d*e)*x)*sqrt(-d)*arctan(sqrt(e*x + d
)*sqrt(-d)/d) - sqrt(c^2*d - b*c*e)*((2*(B*b*c^2 - 2*A*c^3)*d^2 - (B*b^2*c
- 3*A*b*c^2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2 - (B*b^3 - 3*A*b^2*c)*
d*e)*x)*log((c*e*x + 2*c*d - b*e + 2*sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*
x + b)) + 2*(A*b^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (
B*b^3*c - 2*A*b^2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*
x^2 + (b^4*c^2*d^2 - b^5*c*d*e)*x), -(sqrt(-c^2*d + b*c*e)*((2*(B*b*c^2 - 2
*A*c^3)*d^2 - (B*b^2*c - 3*A*b*c^2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2
 - (B*b^3 - 3*A*b^2*c)*d*e)*x)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c
*e*x + c*d)) + ((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^2 + (2*B*b^2*c^2 -
 5*A*b*c^3)*d*e)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (2*B*
b^3*c - 5*A*b^2*c^2)*d*e)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (A
*b^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (B*b^3*c - 2*A*
b^2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*x^2 + (b^4*c^2
*d^2 - b^5*c*d*e)*x)]
```

giac [A] time = 0.22, size = 234, normalized size = 1.48

$$-\frac{\left(2\,Bbcd - 4\,Ac^2d - Bb^2e + 3\,Abce\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d + bce}\,b^3} + \frac{\left(2\,Bbd - 4\,Acd + Abe\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}} + \frac{(xe+d)^{\frac{3}{2}}Bbe - 2\,(xe+d)^{\frac{3}{2}}Ace - \sqrt{xe+d}\,Bbde + 2\,\sqrt{xe+d}\,Acde - \sqrt{xe+d}\,Abe^2}{\left((xe+d)^2c - 2\,(xe+d)cd + cd^2 + (xe+d)be - bde\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c*d - 4*A*c^2*d - B*b^2*e + 3*A*b*c*e)*arctan(sqrt(x*e + d)*c/sqrt(
-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b^3) + (2*B*b*d - 4*A*c*d + A*b*e)*a
rctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)) + ((x*e + d)^(3/2)*B*b*e - 2*(
x*e + d)^(3/2)*A*c*e - sqrt(x*e + d)*B*b*d*e + 2*sqrt(x*e + d)*A*c*d*e - sq
rt(x*e + d)*A*b*e^2)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*
b*e - b*d*e)*b^2)
```

maple [B] time = 0.07, size = 299, normalized size = 1.89

$$-\frac{3Ace\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^2} + \frac{4A\,c^2d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^3} + \frac{Be\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b} - \frac{2Bcd\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^2} - \frac{\sqrt{ex+d}\;Ace}{(cex+be)\,b^2} + \frac{\sqrt{ex+d}\;Be}{(cex+be)\,b} - \frac{Ae\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2\sqrt{d}} + \frac{4Ac\sqrt{d}\;\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^3} - \frac{2B\sqrt{d}\;\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2} - \frac{\sqrt{ex+d}\;A}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -e/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A*c+e/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B-3*e/b^
2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c+4/b^3
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c^2*d+e/
b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2/b^2/(
(b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*c*d-1/b^2*
A*(e*x+d)^(1/2)/x-e/b^2/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4/b^3*d^(1
```

```
/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2*d^(1/2)*arctanh((e*x+d)^(1/2)/
d^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.56, size = 2558, normalized size = 16.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (atan((((-c*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*(10*A^2*b^2*c^3*e^4 + 32
*A^2*c^5*d^2*e^2 + B^2*b^4*c*e^4 + 8*B^2*b^2*c^3*d^2*e^2 - 6*A*B*b^3*c^2*e^
4 - 32*A^2*b*c^4*d*e^3 - 4*B^2*b^3*c^2*d*e^3 - 32*A*B*b*c^4*d^2*e^2 + 24*A*
B*b^2*c^3*d*e^3))/b^4 + (((4*A*b^7*c^2*e^4 - 8*A*b^6*c^3*d*e^3 + 4*B*b^7*c^
2*d*e^3)/b^6 + ((4*b^7*c^2*e^3 - 8*b^6*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d
 + e*x)^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(b^4*(b^3*c^2*
d - b^4*c*e)))*(-c*(b*e - c*d))^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*
B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)))*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B
*b*c*d)*1i)/(2*(b^3*c^2*d - b^4*c*e)) + ((-c*(b*e - c*d))^(1/2)*((2*(d + e*
x)^(1/2)*(10*A^2*b^2*c^3*e^4 + 32*A^2*c^5*d^2*e^2 + B^2*b^4*c*e^4 + 8*B^2*b
^2*c^3*d^2*e^2 - 6*A*B*b^3*c^2*e^4 - 32*A^2*b*c^4*d*e^3 - 4*B^2*b^3*c^2*d*e
^3 - 32*A*B*b*c^4*d^2*e^2 + 24*A*B*b^2*c^3*d*e^3))/b^4 - (((4*A*b^7*c^2*e^4
 - 8*A*b^6*c^3*d*e^3 + 4*B*b^7*c^2*d*e^3)/b^6 - ((4*b^7*c^2*e^3 - 8*b^6*c^3
*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b
*c*e - 2*B*b*c*d))/(b^4*(b^3*c^2*d - b^4*c*e)))*(-c*(b*e - c*d))^(1/2)*(4*A
*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)))*(4*A*
c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d)*1i)/(2*(b^3*c^2*d - b^4*c*e)))/((2
*(6*A^3*b^2*c^3*e^5 + 32*A^3*c^5*d^2*e^3 - 4*B^3*b^3*c^2*d^2*e^3 + A*B^2*b^
4*c*e^5 - 32*A^3*b*c^4*d*e^4 + 2*B^3*b^4*c*d*e^4 - 5*A^2*B*b^3*c^2*e^5 + 24
*A*B^2*b^2*c^3*d^2*e^3 - 16*A*B^2*b^3*c^2*d*e^4 - 48*A^2*B*b*c^4*d^2*e^3 +
40*A^2*B*b^2*c^3*d*e^4))/b^6 + ((-c*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*
(10*A^2*b^2*c^3*e^4 + 32*A^2*c^5*d^2*e^2 + B^2*b^4*c*e^4 + 8*B^2*b^2*c^3*d^
2*e^2 - 6*A*B*b^3*c^2*e^4 - 32*A^2*b*c^4*d*e^3 - 4*B^2*b^3*c^2*d*e^3 - 32*A
*B*b*c^4*d^2*e^2 + 24*A*B*b^2*c^3*d*e^3))/b^4 + (((4*A*b^7*c^2*e^4 - 8*A*b^
6*c^3*d*e^3 + 4*B*b^7*c^2*d*e^3)/b^6 + ((4*b^7*c^2*e^3 - 8*b^6*c^3*d*e^2)*(
-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*
B*b*c*d))/(b^4*(b^3*c^2*d - b^4*c*e)))*(-c*(b*e - c*d))^(1/2)*(4*A*c^2*d +
B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)))*(4*A*c^2*d + B
*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)) - ((-c*(b*e - c*
d))^(1/2)*((2*(d + e*x)^(1/2)*(10*A^2*b^2*c^3*e^4 + 32*A^2*c^5*d^2*e^2 + B^
2*b^4*c*e^4 + 8*B^2*b^2*c^3*d^2*e^2 - 6*A*B*b^3*c^2*e^4 - 32*A^2*b*c^4*d*e^
3 - 4*B^2*b^3*c^2*d*e^3 - 32*A*B*b*c^4*d^2*e^2 + 24*A*B*b^2*c^3*d*e^3))/b^4
 - (((4*A*b^7*c^2*e^4 - 8*A*b^6*c^3*d*e^3 + 4*B*b^7*c^2*d*e^3)/b^6 - ((4*b^
7*c^2*e^3 - 8*b^6*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(4*A*c^
2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(b^4*(b^3*c^2*d - b^4*c*e)))*(-c*(b
*e - c*d))^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2
*d - b^4*c*e)))*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*
d - b^4*c*e))))*(-c*(b*e - c*d))^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2
*B*b*c*d)*1i)/(b^3*c^2*d - b^4*c*e) - (((d + e*x)^(1/2)*(A*b*e^2 - 2*A*c*d*
```

```
e + B*b*d*e))/b^2 + ((2*A*c*e - B*b*e)*(d + e*x)^(3/2))/b^2)/((b*e - 2*c*d)
*(d + e*x) + c*(d + e*x)^2 + c*d^2 - b*d*e) - (atanh((4*B^3*c*d^(1/2)*e^4*(
d + e*x)^(1/2))/(2*A*B^2*c*e^5 - (8*A^3*c^3*e^5)/b^2 + 4*B^3*c*d*e^4 + (2*A
^3*c^2*e^6)/(b*d) - (16*A*B^2*c^2*d*e^4)/b + (16*A^2*B*c^3*d*e^4)/b^2) + (2
*A^3*c^2*e^6*(d + e*x)^(1/2))/(d^(3/2)*((2*A^3*c^2*e^6)/d - (8*A^3*c^3*e^5)
/b - 16*A*B^2*c^2*d*e^4 + 2*A*B^2*b*c*e^5 + 4*B^3*b*c*d*e^4 + (16*A^2*B*c^3
*d*e^4)/b)) - (8*A^3*c^3*e^5*(d + e*x)^(1/2))/(d^(1/2)*(2*A*B^2*b^2*c*e^5 -
 8*A^3*c^3*e^5 + 16*A^2*B*c^3*d*e^4 + 4*B^3*b^2*c*d*e^4 + (2*A^3*b*c^2*e^6)
/d - 16*A*B^2*b*c^2*d*e^4)) - (16*A*B^2*c^2*d^(1/2)*e^4*(d + e*x)^(1/2))/((
2*A^3*c^2*e^6)/d - (8*A^3*c^3*e^5)/b - 16*A*B^2*c^2*d*e^4 + 2*A*B^2*b*c*e^5
 + 4*B^3*b*c*d*e^4 + (16*A^2*B*c^3*d*e^4)/b) + (16*A^2*B*c^3*d^(1/2)*e^4*(d
 + e*x)^(1/2))/(2*A*B^2*b^2*c*e^5 - 8*A^3*c^3*e^5 + 16*A^2*B*c^3*d*e^4 + 4*
B^3*b^2*c*d*e^4 + (2*A^3*b*c^2*e^6)/d - 16*A*B^2*b*c^2*d*e^4) + (2*A*B^2*c*
e^5*(d + e*x)^(1/2))/(d^(1/2)*(2*A*B^2*c*e^5 - (8*A^3*c^3*e^5)/b^2 + 4*B^3*
c*d*e^4 + (2*A^3*c^2*e^6)/(b*d) - (16*A*B^2*c^2*d*e^4)/b + (16*A^2*B*c^3*d*
e^4)/b^2)))*(A*b*e - 4*A*c*d + 2*B*b*d))/(b^3*d^(1/2))
```

sympy [B] time = 147.85, size = 1431, normalized size = 9.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*c**2*d*e*sqrt(d + e*x)/(2*b**4*e**2 - 2*b**3*c*d*e + 2*b**3*c*e**2*x -
2*b**2*c**2*d*e*x) - 2*A*c*e**2*sqrt(d + e*x)/(2*b**3*e**2 - 2*b**2*c*d*e +
 2*b**2*c*e**2*x - 2*b*c**2*d*e*x) + A*c*e**2*sqrt(-1/(c*(b*e - c*d)**3))*l
og(-b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d
)**3)) - c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/(2*b) - A*c
*e**2*sqrt(-1/(c*(b*e - c*d)**3))*log(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3))
 - 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d)
**3)) + sqrt(d + e*x))/(2*b) - A*c**2*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log(-
b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3
)) - c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/(2*b**2) + A*c*
*2*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)
) - 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d
)**3)) + sqrt(d + e*x))/(2*b**2) - A*d*e*sqrt(d**(-3))*log(-d**2*sqrt(d**(-
3)) + sqrt(d + e*x))/(2*b**2) + A*d*e*sqrt(d**(-3))*log(d**2*sqrt(d**(-3))
+ sqrt(d + e*x))/(2*b**2) - 2*A*e*atan(sqrt(d + e*x)/sqrt(b*e/c - d))/(b**2
*sqrt(b*e/c - d)) + 2*A*e*atan(sqrt(d + e*x)/sqrt(-d))/(b**2*sqrt(-d)) - A*
sqrt(d + e*x)/(b**2*x) + 4*A*c*d*atan(sqrt(d + e*x)/sqrt(b*e/c - d))/(b**3*
sqrt(b*e/c - d)) - 4*A*c*d*atan(sqrt(d + e*x)/sqrt(-d))/(b**3*sqrt(-d)) - 2
*B*c*d*e*sqrt(d + e*x)/(2*b**3*e**2 - 2*b**2*c*d*e + 2*b**2*c*e**2*x - 2*b*
c**2*d*e*x) - B*e**2*sqrt(-1/(c*(b*e - c*d)**3))*log(-b**2*e**2*sqrt(-1/(c*
(b*e - c*d)**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) - c**2*d**2*sqrt(-
1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/2 + B*e**2*sqrt(-1/(c*(b*e - c*d)**3
))*log(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) - 2*b*c*d*e*sqrt(-1/(c*(b*e -
c*d)**3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/2 + 2*B*
e**2*sqrt(d + e*x)/(2*b**2*e**2 - 2*b*c*d*e + 2*b*c*e**2*x - 2*c**2*d*e*x)
+ B*c*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log(-b**2*e**2*sqrt(-1/(c*(b*e - c*d)
**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) - c**2*d**2*sqrt(-1/(c*(b*e -
 c*d)**3)) + sqrt(d + e*x))/(2*b) - B*c*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log
(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) - 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**
3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/(2*b) - 2*B*d*
atan(sqrt(d + e*x)/sqrt(b*e/c - d))/(b**2*sqrt(b*e/c - d)) + 2*B*d*atan(sqr
t(d + e*x)/sqrt(-d))/(b**2*sqrt(-d))
```

3.1098 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=188

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe-4Acd+2bBd)}{b^3d^{3/2}}-\frac{\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\left(bx+cx^2\right)(cd-be)}+\frac{\sqrt{c}\,\left(5Abce-4A\right.}{}$$

Rubi [A] time = 0.34, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 826, 1166, 208}

$$\frac{\sqrt{c}\left(5Abce-4Ac^2d-3b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3(cd-be)^{3/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe-4Acd+2bBd)}{b^3d^{3/2}}-\frac{\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\left(bx+cx^2\right)(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^2),x]
```

```
[Out] -((Sqrt[d + e*x]*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*
(c*d - b*e)*(b*x + c*x^2))) - ((2*b*B*d - 4*A*c*d - A*b*e)*ArcTanh[Sqrt[d +
 e*x]/Sqrt[d]])/(b^3*d^(3/2)) + (Sqrt[c]*(2*b*B*c*d - 4*A*c^2*d - 3*b^2*B*e
 + 5*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*(c*d -
 b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^2}dx = -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-Abe)-\frac{1}{2}ce(bE}{\sqrt{d+ex}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} - \frac{2\,\text{Subst}\left(\int \frac{-\frac{1}{2}e(cd-be)(2bBd-4Acd-}{}\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} + \frac{(c(2bBd-4Acd-Abe))\,\text{Subst}}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} - \frac{(2bBd-4Acd-Abe)\tanh^{-1}\left(\right.}{b^3d^{3/2}}$$

Mathematica [A] time = 0.43, size = 231, normalized size = 1.23

$$\frac{-\frac{2\sqrt{c}\,d\left(-bc(5Ae+2Bd)+4Ac^2d+3b^2Be\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^2(cd-be)^{3/2}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe-4Acd+2bBd)}{b^2\sqrt{d}} + \frac{c\sqrt{d+ex}\,(Abe+4Acd-2bBd)}{b(b+cx)(be-cd)} + \frac{3Ace\sqrt{d+ex}}{(b+cx)(cd-be)} - \frac{2A\sqrt{d+ex}}{x(b+cx)}}{2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^2),x]
```

```
[Out] ((3*A*c*e*Sqrt[d + e*x])/((c*d - b*e)*(b + c*x)) + (c*(-2*b*B*d + 4*A*c*d +
 A*b*e)*Sqrt[d + e*x])/(b*(-(c*d) + b*e)*(b + c*x)) - (2*A*Sqrt[d + e*x])/(
x*(b + c*x)) - (2*(2*b*B*d - 4*A*c*d - A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]
])/(b^2*Sqrt[d]) - (2*Sqrt[c]*d*(4*A*c^2*d + 3*b^2*B*e - b*c*(2*B*d + 5*A*e
))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^2*(c*d - b*e)^(3/2)
))/(2*b*d)
```

IntegrateAlgebraic [A] time = 1.30, size = 249, normalized size = 1.32

$$\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(Abe+4Acd-2bBd)}{b^3d^{3/2}} - \frac{\sqrt{d+ex}\left(Ab^2e^2+Abce(d+ex)-2Abcde+2Ac^2d^2-2Ac^2d(d+ex)-bBcd^2+bBcd(d+ex)\right)}{b^2dx(be-cd)(be+c(d+ex)-cd)} + \frac{\left(-5Abc^{3/2}e+4Ac^{5/2}d+3b^2B\sqrt{c}\,e-2bBc^{3/2}d\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b^3(be-cd)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^2),x]
```

```
[Out] -((Sqrt[d + e*x]*(-(b*B*c*d^2) + 2*A*c^2*d^2 - 2*A*b*c*d*e + A*b^2*e^2 + b*
B*c*d*(d + e*x) - 2*A*c^2*d*(d + e*x) + A*b*c*e*(d + e*x)))/(b^2*d*(-(c*d)
+ b*e)*x*(-(c*d) + b*e + c*(d + e*x)))) + ((-2*b*B*c^(3/2)*d + 4*A*c^(5/2)*
d + 3*b^2*B*Sqrt[c]*e - 5*A*b*c^(3/2)*e)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]
*Sqrt[d + e*x])/(c*d - b*e)])/(b^3*(-(c*d) + b*e)^(3/2)) + ((-2*b*B*d + 4*A
*c*d + A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(3/2))
```

fricas [B] time = 2.92, size = 1540, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(((2*(B*b*c^2 - 2*A*c^3)*d^3 - (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^2 + (
2*(B*b^2*c - 2*A*b*c^2)*d^3 - (3*B*b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(c/(c*d -
```

```
b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d -
b*e)))/(c*x + b)) + ((A*b^2*c*e^2 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c
- 3*A*b*c^2)*d*e)*x^2 + (A*b^3*e^2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^
3 - 3*A*b^2*c)*d*e)*x)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x)
 + 2*(A*b^2*c*d^2 - A*b^3*d*e - (A*b^2*c*d*e + (B*b^2*c - 2*A*b*c^2)*d^2)*x
)*sqrt(e*x + d))/((b^3*c^2*d^3 - b^4*c*d^2*e)*x^2 + (b^4*c*d^3 - b^5*d^2*e)
*x), 1/2*(2*((2*(B*b*c^2 - 2*A*c^3)*d^3 - (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^
2 + (2*(B*b^2*c - 2*A*b*c^2)*d^3 - (3*B*b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(-c/
(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x
+ c*d)) - ((A*b^2*c*e^2 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c - 3*A*b*c^
2)*d*e)*x^2 + (A*b^3*e^2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^3 - 3*A*b^2
*c)*d*e)*x)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2
*c*d^2 - A*b^3*d*e - (A*b^2*c*d*e + (B*b^2*c - 2*A*b*c^2)*d^2)*x)*sqrt(e*x
+ d))/((b^3*c^2*d^3 - b^4*c*d^2*e)*x^2 + (b^4*c*d^3 - b^5*d^2*e)*x), 1/2*(2
*((A*b^2*c*e^2 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c - 3*A*b*c^2)*d*e)*x
^2 + (A*b^3*e^2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^3 - 3*A*b^2*c)*d*e)*
x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - ((2*(B*b*c^2 - 2*A*c^3)*d^3
- (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^3 - (3*B*
b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2
*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(A*b^2*c*d^2
- A*b^3*d*e - (A*b^2*c*d*e + (B*b^2*c - 2*A*b*c^2)*d^2)*x)*sqrt(e*x + d))/
((b^3*c^2*d^3 - b^4*c*d^2*e)*x^2 + (b^4*c*d^3 - b^5*d^2*e)*x), (((2*(B*b*c^
2 - 2*A*c^3)*d^3 - (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^2 + (2*(B*b^2*c - 2*A*b
*c^2)*d^3 - (3*B*b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c
*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) + ((A*b^2*c*e^2
 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c - 3*A*b*c^2)*d*e)*x^2 + (A*b^3*e^
2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^3 - 3*A*b^2*c)*d*e)*x)*sqrt(-d)*ar
ctan(sqrt(e*x + d)*sqrt(-d)/d) - (A*b^2*c*d^2 - A*b^3*d*e - (A*b^2*c*d*e +
(B*b^2*c - 2*A*b*c^2)*d^2)*x)*sqrt(e*x + d))/((b^3*c^2*d^3 - b^4*c*d^2*e)*x
^2 + (b^4*c*d^3 - b^5*d^2*e)*x)]
```

giac [A] time = 0.24, size = 315, normalized size = 1.68

$$-\frac{\left(2\,Bbc^{2}d-4\,Ac^{3}d-3\,Bb^{2}ce+5\,Abc^{2}e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\left(b^{3}cd-b^{4}e\right)\sqrt{-c^{2}d+bce}}+\frac{(xe+d)^{\frac{3}{2}}Bbcde-2\,(xe+d)^{\frac{3}{2}}Ac^{2}de-\sqrt{xe+d}\,Bbcd^{2}e+2\,\sqrt{xe+d}\,Ac^{2}d^{2}e+(xe+d)^{\frac{3}{2}}Abce^{2}-2\,\sqrt{xe+d}\,Abcde^{2}+\sqrt{xe+d}\,Ab^{2}e^{3}}{\left(b^{2}cd^{2}-b^{3}de\right)\left((xe+d)^{2}c-2\,(xe+d)cd+cd^{2}+(xe+d)be-bde\right)}+\frac{(2\,Bbd-4\,Acd-Abe)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^{3}\sqrt{-d}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^2*d - 4*A*c^3*d - 3*B*b^2*c*e + 5*A*b*c^2*e)*arctan(sqrt(x*e + d)
*c/sqrt(-c^2*d + b*c*e))/((b^3*c*d - b^4*e)*sqrt(-c^2*d + b*c*e)) + ((x*e +
 d)^(3/2)*B*b*c*d*e - 2*(x*e + d)^(3/2)*A*c^2*d*e - sqrt(x*e + d)*B*b*c*d^2
*e + 2*sqrt(x*e + d)*A*c^2*d^2*e + (x*e + d)^(3/2)*A*b*c*e^2 - 2*sqrt(x*e +
 d)*A*b*c*d*e^2 + sqrt(x*e + d)*A*b^2*e^3)/((b^2*c*d^2 - b^3*d*e)*((x*e + d
)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)) + (2*B*b*d - 4*A*
c*d - A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)*d)
```

maple [B] time = 0.07, size = 370, normalized size = 1.97

$$\frac{5A\,c^{2}e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b^{2}}-\frac{4A\,c^{3}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b^{3}}-\frac{3Bce\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b}+\frac{2B\,c^{2}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b^{2}}+\frac{\sqrt{ex+d}\;A\,c^{2}e}{(be-cd)\,(cex+be)\,b^{2}}-\frac{\sqrt{ex+d}\;Bce}{(be-cd)\,(cex+be)\,b}+\frac{Ae\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{2}d^{\frac{3}{2}}}+\frac{4Ac\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{3}\sqrt{d}}-\frac{2B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{2}\sqrt{d}}-\frac{\sqrt{ex+d}\;A}{b^{2}dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e*c^2/b^2/(b*e-c*d)*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e*c/b/(b*e-c*d)*(e*x+d)^(1/
2)/(c*e*x+b*e)*B+5*e*c^2/b^2/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*A-4*c^3/b^3/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arcta
n((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-3*e*c/b/(b*e-c*d)/((b*e-c*d)*c)^
(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+2*c^2/b^2/(b*e-c*d)/((b
*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-1/b^2*A/d*
```

```
(e*x+d)^(1/2)/x+e/b^2/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4/b^3/d^(1/2
)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(1/2)*arctanh((e*x+d)^(1/2)/d^
(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 4.28, size = 5828, normalized size = 31.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(1/2)),x)
```

```
[Out] (((d + e*x)^(1/2)*(A*b^2*e^3 + 2*A*c^2*d^2*e - 2*A*b*c*d*e^2 - B*b*c*d^2*e)
)/(b^2*(c*d^2 - b*d*e)) + (c*(d + e*x)^(3/2)*(A*b*e^2 - 2*A*c*d*e + B*b*d*e
))/(b^2*(c*d^2 - b*d*e)))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 + c*d^2
- b*d*e) + (atan(((((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^
2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3
 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32
*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*
b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*
c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^
5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*
c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x
)^(1/2)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^
9*c^2*d^2*e^5)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d
^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e
- 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*
c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e
^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c
*d)*1i)/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)) + (((
2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^
2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2
*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 -
4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^
4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c
^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e
^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2
 - 2*b^7*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(8*b^6*c^5*d^
5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5)*(4*A*c
^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d^4 + b^6*d^2*e^2 - 2*
b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-
c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*
(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)
^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d)*1i)/(2*(b^6*e^3 -
 b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))/((2*(5*A^3*b^3*c^4*e^6 +
32*A^3*c^7*d^3*e^3 - 4*B^3*b^3*c^4*d^3*e^3 + 6*B^3*b^4*c^3*d^2*e^4 - 3*A^2*
B*b^4*c^3*e^6 - 48*A^3*b*c^6*d^2*e^4 + 6*A^3*b^2*c^5*d*e^5 + 24*A*B^2*b^2*c
^5*d^3*e^3 - 36*A*B^2*b^3*c^4*d^2*e^4 + 72*A^2*B*b^2*c^5*d^2*e^4 + 3*A*B^2*
b^4*c^3*d*e^5 - 48*A^2*B*b*c^6*d^3*e^3 - 9*A^2*B*b^3*c^4*d*e^5))/(b^6*c^2*d
^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 +
```

32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)) - (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2))))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d)*1i)/(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2) + (atan(((((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d - 2*B*b*d)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5))/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)))*(A*b*e + 4*A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(2*b^3*(d^3)^(1/2)) + (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) - ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d - 2*B*b*d)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5))/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)))*(A*b*e + 4*A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(2*b^3*(d^3)^(1/2)))/((2*(5*A^3*b^3*c^4*e^6 + 32*A^3*c^7*d^3*e^3 - 4*B^3*b^3*c^4*d^3*e^3 + 6*B^3*b^4*c^3*d^2*e^4 - 3*A^2*B*b^4*c^3*e^6 - 48*A^3*b*c^6*d^2*e^4 + 6*A^3*b^2*c^5*d*e^5 + 24*A*B^2*b^2*c^5*d^3*e^3 - 36*A*B^2*b^3*c^4*d^2*e^4 + 72*A^2*B*b^2*c^5*d^2*e^4 + 3*A*B^2*b^4*c^3*d*e^5 - 48*A^2*B*b*c^6*d^3*e^3 - 9*A^2*B*b^3*c^4*d*e^5))/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*

```
c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c
^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*
e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4
))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*c^2*d*e^6 + 8*A
*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4
*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d
^2*e^2 - 2*b^7*c*d^3*e) + ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d - 2*B*b*d)*(8*b
^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^
5))/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)))*(A*b*e +
 4*A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d - 2*B*b*d))/(2*b
^3*(d^3)^(1/2)) - (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^
2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3
 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32
*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*
b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*
c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^
5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*
c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) - ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d
- 2*B*b*d)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4
*b^9*c^2*d^2*e^5))/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^
3*e)))*(A*b*e + 4*A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d -
 2*B*b*d))/(2*b^3*(d^3)^(1/2))))*(A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(b^3*(d^3)
^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1099 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=254

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-3Abe-4Acd+2bBd)}{b^3d^{5/2}}-\frac{e\left(b^2(-e)(2Bd-3Ae)-bcd(2Ae+Bd)+2Ac^2d^2\right)}{b^2d^2\sqrt{d+ex}\,(cd-be)^2}-\frac{cx(2Acd-b(A}{b^2d\left(bx+c\right.}$$

Rubi [A] time = 0.56, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {822, 828, 826, 1166, 208}

$$-\frac{e\left(b^2(-e)(2Bd-3Ae)-bcd(2Ae+Bd)+2Ac^2d^2\right)}{b^2d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{c^{3/2}\left(7Abce-4Ac^2d-5b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3(cd-be)^{5/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-3Abe-4Acd+2bBd)}{b^3d^{5/2}}-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{b^2d\left(bx+cx^2\right)\sqrt{d+ex}\,(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -((e*(2*A*c^2*d^2 - b^2*e*(2*B*d - 3*A*e) - b*c*d*(B*d + 2*A*e)))/(b^2*d^2*
(c*d - b*e)^2*Sqrt[d + e*x])) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*
e))*x)/(b^2*d*(c*d - b*e)*Sqrt[d + e*x]*(b*x + c*x^2)) - ((2*b*B*d - 4*A*c*
d - 3*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(5/2)) + (c^(3/2)*(2*b*
B*c*d - 4*A*c^2*d - 5*b^2*B*e + 7*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/
Sqrt[c*d - b*e]])/(b^3*(c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
```

```
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^2}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-3Abe)-\frac{3}{2}ce(bBd-2Acd+}{(d+ex)^{3/2}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\left(bx+\right.}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\left(bx+\right.}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\left(bx+\right.}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\left(bx+\right.}$$

Mathematica [C] time = 0.18, size = 191, normalized size = 0.75

$$\frac{-x(b+cx)\left(cd^2\left(bc(7Ae+2Bd)-4Ac^2d-5b^2Be\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+(cd-be)^2{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{ex}{d}+1\right)(3Abe+4Acd-2bBd)\right)-Ab^2d(cd-be)^2-bcdx(be-cd)(Abe-2Acd+bBd)}{b^3d^2x(b+cx)\sqrt{d+ex}\,(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-(A*b^2*d*(c*d - b*e)^2) - b*c*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e)*
x - x*(b + c*x)*(c*d^2*(-4*A*c^2*d - 5*b^2*B*e + b*c*(2*B*d + 7*A*e))*Hyper
geometric2F1[-1/2, 1, 1/2, (c*(d + e*x))/(c*d - b*e)] + (c*d - b*e)^2*(-2*b
*B*d + 4*A*c*d + 3*A*b*e)*Hypergeometric2F1[-1/2, 1, 1/2, 1 + (e*x)/d]))/(b
^3*d^2*(c*d - b*e)^2*x*(b + c*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.81, size = 429, normalized size = 1.69

$$\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(3Abe+4Acd-2bBd)}{b^3d^{5/2}}+\frac{\left(7Abc^{5/2}e-4Ac^{7/2}d-5b^2Bc^{3/2}e+2bBc^{5/2}d\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{b^3(cd-be)^2\sqrt{be-cd}}-\frac{3Ab^3e^3(d+ex)-2Ab^3de^3+2Ab^2cd^2e^2+3Ab^2ce^2(d+ex)^2-7Ab^2cde^2(d+ex)+3Abc^2d^2e(d+ex)-2Abc^2de(d+ex)^2-2Ac^3d^3(d+ex)+2Ac^3d^2(d+ex)^2+2b^3Bd^2e^2-2b^3Bde^2(d+ex)-2b^2Bcd^3e+4b^2Bcd^2e(d+ex)-2b^2Bcde(d+ex)^2+bBc^2d^3(d+ex)-bBc^2d^2(d+ex)^2}{b^2d^2x\sqrt{d+ex}\,(be-cd)^2(be+c(d+ex)-cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -((-2*b^2*B*c*d^3*e + 2*b^3*B*d^2*e^2 + 2*A*b^2*c*d^2*e^2 - 2*A*b^3*d*e^3 +
 b*B*c^2*d^3*(d + e*x) - 2*A*c^3*d^3*(d + e*x) + 4*b^2*B*c*d^2*e*(d + e*x)
```

```
+ 3*A*b*c^2*d^2*e*(d + e*x) - 2*b^3*B*d*e^2*(d + e*x) - 7*A*b^2*c*d*e^2*(d
+ e*x) + 3*A*b^3*e^3*(d + e*x) - b*B*c^2*d^2*(d + e*x)^2 + 2*A*c^3*d^2*(d +
 e*x)^2 - 2*b^2*B*c*d*e*(d + e*x)^2 - 2*A*b*c^2*d*e*(d + e*x)^2 + 3*A*b^2*c
*e^2*(d + e*x)^2)/(b^2*d^2*(-(c*d) + b*e)^2*x*Sqrt[d + e*x]*(-(c*d) + b*e +
 c*(d + e*x)))) + ((2*b*B*c^(5/2)*d - 4*A*c^(7/2)*d - 5*b^2*B*c^(3/2)*e + 7
*A*b*c^(5/2)*e)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*
e)])/(b^3*(c*d - b*e)^2*Sqrt[-(c*d) + b*e]) + ((-2*b*B*d + 4*A*c*d + 3*A*b*
e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(5/2))
```

fricas [B] time = 18.12, size = 3240, normalized size = 12.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((2*(B*b*c^3 - 2*A*c^4)*d^4*e - (5*B*b^2*c^2 - 7*A*b*c^3)*d^3*e^2)*x^
3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*b^2*c^2 - A*b*c^3)*d^4*e - (5*B*b^3*c
 - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d^5 - (5*B*b^3*c
- 7*A*b^2*c^2)*d^4*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(
c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + ((3*A*b^3*c*e^4
- 2*(B*b*c^3 - 2*A*c^4)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c^3)*d^2*e^2 - 2*(B*b^
3*c + A*b^2*c^2)*d*e^3)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^4 + (2
*B*b^2*c^2 - A*b*c^3)*d^3*e + (2*B*b^3*c - 7*A*b^2*c^2)*d^2*e^2 - (2*B*b^4
- A*b^3*c)*d*e^3)*x^2 + (3*A*b^4*d*e^3 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^4 + (4
*B*b^3*c - 5*A*b^2*c^2)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(d)*log
((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c^2*d^4 - 2*A*b^3*c*d^
3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2*A*b*c^3)*d^3*e - 2*
(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e - 3*A*b^4*d*e^3 + (B*
b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(e*x + d))/(
(b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3 + (b^3*c^3*d^6 - b^
4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c^2*d^6 - 2*b^5*c*d^5
*e + b^6*d^4*e^2)*x), 1/2*(2*((2*(B*b*c^3 - 2*A*c^4)*d^4*e - (5*B*b^2*c^2 -
 7*A*b*c^3)*d^3*e^2)*x^3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*b^2*c^2 - A*b*
c^3)*d^4*e - (5*B*b^3*c - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b
*c^3)*d^5 - (5*B*b^3*c - 7*A*b^2*c^2)*d^4*e)*x)*sqrt(-c/(c*d - b*e))*arctan
(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) + ((3*A*b^3
*c*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c^3)*d^2*e^2 -
2*(B*b^3*c + A*b^2*c^2)*d*e^3)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d
^4 + (2*B*b^2*c^2 - A*b*c^3)*d^3*e + (2*B*b^3*c - 7*A*b^2*c^2)*d^2*e^2 - (2
*B*b^4 - A*b^3*c)*d*e^3)*x^2 + (3*A*b^4*d*e^3 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d
^4 + (4*B*b^3*c - 5*A*b^2*c^2)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt
(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c^2*d^4 - 2*A*b
^3*c*d^3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2*A*b*c^3)*d^3
*e - 2*(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e - 3*A*b^4*d*e^
3 + (B*b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(e*x
+ d))/((b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3 + (b^3*c^3*d
^6 - b^4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c^2*d^6 - 2*b^
5*c*d^5*e + b^6*d^4*e^2)*x), -1/2*(2*((3*A*b^3*c*e^4 - 2*(B*b*c^3 - 2*A*c^4
)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c^3)*d^2*e^2 - 2*(B*b^3*c + A*b^2*c^2)*d*e^3
)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^4 + (2*B*b^2*c^2 - A*b*c^3)*
d^3*e + (2*B*b^3*c - 7*A*b^2*c^2)*d^2*e^2 - (2*B*b^4 - A*b^3*c)*d*e^3)*x^2
+ (3*A*b^4*d*e^3 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^4 + (4*B*b^3*c - 5*A*b^2*c^2
)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqr
t(-d)/d) - ((2*(B*b*c^3 - 2*A*c^4)*d^4*e - (5*B*b^2*c^2 - 7*A*b*c^3)*d^3*e^
2)*x^3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*b^2*c^2 - A*b*c^3)*d^4*e - (5*B*
b^3*c - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d^5 - (5*B*b
^3*c - 7*A*b^2*c^2)*d^4*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e
+ 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + 2*(A*b^2*c^
2*d^4 - 2*A*b^3*c*d^3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2
```

```
*A*b*c^3)*d^3*e - 2*(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e -
 3*A*b^4*d*e^3 + (B*b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)
*x)*sqrt(e*x + d))/((b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3
 + (b^3*c^3*d^6 - b^4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c
^2*d^6 - 2*b^5*c*d^5*e + b^6*d^4*e^2)*x), (((2*(B*b*c^3 - 2*A*c^4)*d^4*e -
(5*B*b^2*c^2 - 7*A*b*c^3)*d^3*e^2)*x^3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*
b^2*c^2 - A*b*c^3)*d^4*e - (5*B*b^3*c - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b
^2*c^2 - 2*A*b*c^3)*d^5 - (5*B*b^3*c - 7*A*b^2*c^2)*d^4*e)*x)*sqrt(-c/(c*d
- b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d
)) - ((3*A*b^3*c*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c
^3)*d^2*e^2 - 2*(B*b^3*c + A*b^2*c^2)*d*e^3)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^
3 - 2*A*c^4)*d^4 + (2*B*b^2*c^2 - A*b*c^3)*d^3*e + (2*B*b^3*c - 7*A*b^2*c^2
)*d^2*e^2 - (2*B*b^4 - A*b^3*c)*d*e^3)*x^2 + (3*A*b^4*d*e^3 - 2*(B*b^2*c^2
- 2*A*b*c^3)*d^4 + (4*B*b^3*c - 5*A*b^2*c^2)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^
2*e^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (A*b^2*c^2*d^4 - 2*A*
b^3*c*d^3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2*A*b*c^3)*d^
3*e - 2*(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e - 3*A*b^4*d*e
^3 + (B*b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(e*x
 + d))/((b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3 + (b^3*c^3*
d^6 - b^4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c^2*d^6 - 2*b
^5*c*d^5*e + b^6*d^4*e^2)*x)]
```

giac [**B**] time = 0.26, size = 500, normalized size = 1.97

$$-\frac{\left(2\,Bbc^{3}d-4\,Ac^{4}d-5\,Bb^{2}c^{2}e+7\,Abc^{3}e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\left(b^{3}c^{2}d^{2}-2\,b^{4}cde+b^{5}e^{2}\right)\sqrt{-c^{2}d+bce}}+\frac{(xe+d)^{2}Bbc^{2}d^{2}e-2\,(xe+d)^{2}Ac^{3}d^{2}e-(xe+d)Bbc^{2}d^{3}e+2\,(xe+d)Ac^{3}d^{3}e+2\,(xe+d)^{2}Bb^{2}cde^{2}+2\,(xe+d)^{2}Abc^{2}de^{2}-4\,(xe+d)Bb^{2}cd^{2}e^{2}-3\,(xe+d)Abc^{2}d^{2}e^{2}+2\,Bb^{2}cd^{3}e^{2}-3\,(xe+d)^{2}Ab^{2}ce^{3}+2\,(xe+d)Bb^{3}de^{3}+7\,(xe+d)Ab^{2}cde^{3}-2\,Bb^{3}d^{2}e^{3}-2\,Ab^{2}cd^{2}e^{3}-3\,(xe+d)Ab^{3}e^{4}+2\,Ab^{3}de^{4}}{\left(b^{2}c^{2}d^{4}-2\,b^{3}cd^{3}e+b^{4}d^{2}e^{2}\right)\left((xe+d)^{\frac{5}{2}}c-2\,(xe+d)^{\frac{3}{2}}cd+\sqrt{xe+d}\,cd^{2}+(xe+d)^{\frac{3}{2}}be-\sqrt{xe+d}\,bde\right)}+\frac{(2\,Bbd-4\,Acd-3\,Abe)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^{3}\sqrt{-d}\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^3*d - 4*A*c^4*d - 5*B*b^2*c^2*e + 7*A*b*c^3*e)*arctan(sqrt(x*e +
d)*c/sqrt(-c^2*d + b*c*e))/((b^3*c^2*d^2 - 2*b^4*c*d*e + b^5*e^2)*sqrt(-c^2
*d + b*c*e)) + ((x*e + d)^2*B*b*c^2*d^2*e - 2*(x*e + d)^2*A*c^3*d^2*e - (x*
e + d)*B*b*c^2*d^3*e + 2*(x*e + d)*A*c^3*d^3*e + 2*(x*e + d)^2*B*b^2*c*d*e^
2 + 2*(x*e + d)^2*A*b*c^2*d*e^2 - 4*(x*e + d)*B*b^2*c*d^2*e^2 - 3*(x*e + d)
*A*b*c^2*d^2*e^2 + 2*B*b^2*c*d^3*e^2 - 3*(x*e + d)^2*A*b^2*c*e^3 + 2*(x*e +
 d)*B*b^3*d*e^3 + 7*(x*e + d)*A*b^2*c*d*e^3 - 2*B*b^3*d^2*e^3 - 2*A*b^2*c*d
^2*e^3 - 3*(x*e + d)*A*b^3*e^4 + 2*A*b^3*d*e^4)/((b^2*c^2*d^4 - 2*b^3*c*d^3
*e + b^4*d^2*e^2)*((x*e + d)^(5/2)*c - 2*(x*e + d)^(3/2)*c*d + sqrt(x*e + d
)*c*d^2 + (x*e + d)^(3/2)*b*e - sqrt(x*e + d)*b*d*e)) + (2*B*b*d - 4*A*c*d
- 3*A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)*d^2)
```

maple [**A**] time = 0.08, size = 427, normalized size = 1.68

$$-\frac{7A\,c^{3}e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b^{2}}+\frac{4A\,c^{4}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b^{3}}+\frac{5B\,c^{2}e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b}-\frac{2B\,c^{3}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b^{2}}-\frac{\sqrt{ex+d}\;A\,c^{3}e}{(be-cd)^{2}\,(cex+be)\,b^{2}}+\frac{\sqrt{ex+d}\;B\,c^{2}e}{(be-cd)^{2}\,(cex+be)\,b}-\frac{2A\,e^{3}}{(be-cd)^{2}\sqrt{ex+d}\;d^{2}}+\frac{2B\,e^{2}}{(be-cd)^{2}\sqrt{ex+d}\;d}+\frac{3Ae\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{2}d^{\frac{5}{2}}}+\frac{4Ac\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{3}d^{\frac{3}{2}}}-\frac{2B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{2}d^{\frac{3}{2}}}-\frac{\sqrt{ex+d}\;A}{b^{2}d^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -e*c^3/(b*e-c*d)^2/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A+e*c^2/(b*e-c*d)^2/b*(e*x
+d)^(1/2)/(c*e*x+b*e)*B-7*e*c^3/(b*e-c*d)^2/b^2/((b*e-c*d)*c)^(1/2)*arctan(
(e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+4*c^4/(b*e-c*d)^2/b^3/((b*e-c*d)*c)^
(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d+5*e*c^2/(b*e-c*d)^2/b
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2*c^3/(b
*e-c*d)^2/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*
c)*B*d-1/b^2/d^2*A*(e*x+d)^(1/2)/x+3*e/b^2/d^(5/2)*arctanh((e*x+d)^(1/2)/d^
(1/2))*A+4/b^3/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(3/2)*arc
tanh((e*x+d)^(1/2)/d^(1/2))*B-2*e^3/(b*e-c*d)^2/d^2/(e*x+d)^(1/2)*A+2*e^2/(
b*e-c*d)^2/d/(e*x+d)^(1/2)*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.08, size = 8946, normalized size = 35.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(3/2)),x)
```

```
[Out] (atan(((((d + e*x)^(1/2)*(64*A^2*b^6*c^15*d^18*e^2 - 576*A^2*b^7*c^14*d^17*
e^3 + 2228*A^2*b^8*c^13*d^16*e^4 - 4768*A^2*b^9*c^12*d^15*e^5 + 5960*A^2*b^
10*c^11*d^14*e^6 - 3976*A^2*b^11*c^10*d^13*e^7 + 578*A^2*b^12*c^9*d^12*e^8
+ 1004*A^2*b^13*c^8*d^11*e^9 - 442*A^2*b^14*c^7*d^10*e^10 - 320*A^2*b^15*c^
6*d^9*e^11 + 362*A^2*b^16*c^5*d^8*e^12 - 132*A^2*b^17*c^4*d^7*e^13 + 18*A^2
*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c^13*d^18*e^2 - 168*B^2*b^9*c^12*d^17*e^3 +
 770*B^2*b^10*c^11*d^16*e^4 - 2020*B^2*b^11*c^10*d^15*e^5 + 3350*B^2*b^12*c
^9*d^14*e^6 - 3664*B^2*b^13*c^8*d^13*e^7 + 2678*B^2*b^14*c^7*d^12*e^8 - 130
0*B^2*b^15*c^6*d^11*e^9 + 410*B^2*b^16*c^5*d^10*e^10 - 80*B^2*b^17*c^4*d^9*
e^11 + 8*B^2*b^18*c^3*d^8*e^12 - 64*A*B*b^7*c^14*d^18*e^2 + 624*A*B*b^8*c^1
3*d^17*e^3 - 2636*A*B*b^9*c^12*d^16*e^4 + 6280*A*B*b^10*c^11*d^15*e^5 - 914
0*A*B*b^11*c^10*d^14*e^6 + 8056*A*B*b^12*c^9*d^13*e^7 - 3620*A*B*b^13*c^8*d
^12*e^8 - 224*A*B*b^14*c^7*d^11*e^9 + 1300*A*B*b^15*c^6*d^10*e^10 - 760*A*B
*b^16*c^5*d^9*e^11 + 208*A*B*b^17*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d^7*e^13)
- ((-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*
d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*
A*b*c*e - 2*B*b*c*d)*(16*b^12*c^13*d^21*e^2 - 168*b^13*c^12*d^20*e^3 + 800*
b^14*c^11*d^19*e^4 - 2280*b^15*c^10*d^18*e^5 + 4320*b^16*c^9*d^17*e^6 - 571
2*b^17*c^8*d^16*e^7 + 5376*b^18*c^7*d^15*e^8 - 3600*b^19*c^6*d^14*e^9 + 168
0*b^20*c^5*d^13*e^10 - 520*b^21*c^4*d^12*e^11 + 96*b^22*c^3*d^11*e^12 - 8*b
^23*c^2*d^10*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^
3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) - 8*A*b^10*c^13*d^19*e^3 +
 76*A*b^11*c^12*d^18*e^4 - 300*A*b^12*c^11*d^17*e^5 + 612*A*b^13*c^10*d^16*
e^6 - 576*A*b^14*c^9*d^15*e^7 - 168*A*b^15*c^8*d^14*e^8 + 1176*A*b^16*c^7*d
^13*e^9 - 1560*A*b^17*c^6*d^12*e^10 + 1128*A*b^18*c^5*d^11*e^11 - 484*A*b^1
9*c^4*d^10*e^12 + 116*A*b^20*c^3*d^9*e^13 - 12*A*b^21*c^2*d^8*e^14 + 4*B*b^
11*c^12*d^19*e^3 - 56*B*b^12*c^11*d^18*e^4 + 312*B*b^13*c^10*d^17*e^5 - 960
*B*b^14*c^9*d^16*e^6 + 1848*B*b^15*c^8*d^15*e^7 - 2352*B*b^16*c^7*d^14*e^8
+ 2016*B*b^17*c^6*d^13*e^9 - 1152*B*b^18*c^5*d^12*e^10 + 420*B*b^19*c^4*d^1
1*e^11 - 88*B*b^20*c^3*d^10*e^12 + 8*B*b^21*c^2*d^9*e^13))/(2*(b^8*e^5 - b^
3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b
^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e
 - 2*B*b*c*d)*1i)/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*
d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) + (((d + e*x)^(1/2)*(64*A^2*
b^6*c^15*d^18*e^2 - 576*A^2*b^7*c^14*d^17*e^3 + 2228*A^2*b^8*c^13*d^16*e^4
- 4768*A^2*b^9*c^12*d^15*e^5 + 5960*A^2*b^10*c^11*d^14*e^6 - 3976*A^2*b^11*
c^10*d^13*e^7 + 578*A^2*b^12*c^9*d^12*e^8 + 1004*A^2*b^13*c^8*d^11*e^9 - 44
2*A^2*b^14*c^7*d^10*e^10 - 320*A^2*b^15*c^6*d^9*e^11 + 362*A^2*b^16*c^5*d^8
*e^12 - 132*A^2*b^17*c^4*d^7*e^13 + 18*A^2*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c
^13*d^18*e^2 - 168*B^2*b^9*c^12*d^17*e^3 + 770*B^2*b^10*c^11*d^16*e^4 - 202
0*B^2*b^11*c^10*d^15*e^5 + 3350*B^2*b^12*c^9*d^14*e^6 - 3664*B^2*b^13*c^8*d
```

^13*e^7 + 2678*B^2*b^14*c^7*d^12*e^8 - 1300*B^2*b^15*c^6*d^11*e^9 + 410*B^2
*b^16*c^5*d^10*e^10 - 80*B^2*b^17*c^4*d^9*e^11 + 8*B^2*b^18*c^3*d^8*e^12 -
64*A*B*b^7*c^14*d^18*e^2 + 624*A*B*b^8*c^13*d^17*e^3 - 2636*A*B*b^9*c^12*d^
16*e^4 + 6280*A*B*b^10*c^11*d^15*e^5 - 9140*A*B*b^11*c^10*d^14*e^6 + 8056*A
*B*b^12*c^9*d^13*e^7 - 3620*A*B*b^13*c^8*d^12*e^8 - 224*A*B*b^14*c^7*d^11*e
^9 + 1300*A*B*b^15*c^6*d^10*e^10 - 760*A*B*b^16*c^5*d^9*e^11 + 208*A*B*b^17
*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d^7*e^13) - ((-c^3*(b*e - c*d)^5)^(1/2)*(4*
A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(
d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(16*b^12*c^1
3*d^21*e^2 - 168*b^13*c^12*d^20*e^3 + 800*b^14*c^11*d^19*e^4 - 2280*b^15*c^
10*d^18*e^5 + 4320*b^16*c^9*d^17*e^6 - 5712*b^17*c^8*d^16*e^7 + 5376*b^18*c
^7*d^15*e^8 - 3600*b^19*c^6*d^14*e^9 + 1680*b^20*c^5*d^13*e^10 - 520*b^21*c
^4*d^12*e^11 + 96*b^22*c^3*d^11*e^12 - 8*b^23*c^2*d^10*e^13))/(2*(b^8*e^5 -
b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 -
5*b^7*c*d*e^4)) + 8*A*b^10*c^13*d^19*e^3 - 76*A*b^11*c^12*d^18*e^4 + 300*A*
b^12*c^11*d^17*e^5 - 612*A*b^13*c^10*d^16*e^6 + 576*A*b^14*c^9*d^15*e^7 + 1
68*A*b^15*c^8*d^14*e^8 - 1176*A*b^16*c^7*d^13*e^9 + 1560*A*b^17*c^6*d^12*e^
10 - 1128*A*b^18*c^5*d^11*e^11 + 484*A*b^19*c^4*d^10*e^12 - 116*A*b^20*c^3*
d^9*e^13 + 12*A*b^21*c^2*d^8*e^14 - 4*B*b^11*c^12*d^19*e^3 + 56*B*b^12*c^11
*d^18*e^4 - 312*B*b^13*c^10*d^17*e^5 + 960*B*b^14*c^9*d^16*e^6 - 1848*B*b^1
5*c^8*d^15*e^7 + 2352*B*b^16*c^7*d^14*e^8 - 2016*B*b^17*c^6*d^13*e^9 + 1152
*B*b^18*c^5*d^12*e^10 - 420*B*b^19*c^4*d^11*e^11 + 88*B*b^20*c^3*d^10*e^12
- 8*B*b^21*c^2*d^9*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*
b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5
)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*1i)/(2*(b^8*e^5 - b
^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*
b^7*c*d*e^4)))/((((d + e*x)^(1/2)*(64*A^2*b^6*c^15*d^18*e^2 - 576*A^2*b^7*c
^14*d^17*e^3 + 2228*A^2*b^8*c^13*d^16*e^4 - 4768*A^2*b^9*c^12*d^15*e^5 + 59
60*A^2*b^10*c^11*d^14*e^6 - 3976*A^2*b^11*c^10*d^13*e^7 + 578*A^2*b^12*c^9*
d^12*e^8 + 1004*A^2*b^13*c^8*d^11*e^9 - 442*A^2*b^14*c^7*d^10*e^10 - 320*A^
2*b^15*c^6*d^9*e^11 + 362*A^2*b^16*c^5*d^8*e^12 - 132*A^2*b^17*c^4*d^7*e^13
 + 18*A^2*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c^13*d^18*e^2 - 168*B^2*b^9*c^12*d
^17*e^3 + 770*B^2*b^10*c^11*d^16*e^4 - 2020*B^2*b^11*c^10*d^15*e^5 + 3350*B
^2*b^12*c^9*d^14*e^6 - 3664*B^2*b^13*c^8*d^13*e^7 + 2678*B^2*b^14*c^7*d^12*
e^8 - 1300*B^2*b^15*c^6*d^11*e^9 + 410*B^2*b^16*c^5*d^10*e^10 - 80*B^2*b^17
*c^4*d^9*e^11 + 8*B^2*b^18*c^3*d^8*e^12 - 64*A*B*b^7*c^14*d^18*e^2 + 624*A*
B*b^8*c^13*d^17*e^3 - 2636*A*B*b^9*c^12*d^16*e^4 + 6280*A*B*b^10*c^11*d^15*
e^5 - 9140*A*B*b^11*c^10*d^14*e^6 + 8056*A*B*b^12*c^9*d^13*e^7 - 3620*A*B*b
^13*c^8*d^12*e^8 - 224*A*B*b^14*c^7*d^11*e^9 + 1300*A*B*b^15*c^6*d^10*e^10
- 760*A*B*b^16*c^5*d^9*e^11 + 208*A*B*b^17*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d
^7*e^13) - ((-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e -
 2*B*b*c*d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b
^2*e - 7*A*b*c*e - 2*B*b*c*d)*(16*b^12*c^13*d^21*e^2 - 168*b^13*c^12*d^20*e
^3 + 800*b^14*c^11*d^19*e^4 - 2280*b^15*c^10*d^18*e^5 + 4320*b^16*c^9*d^17*
e^6 - 5712*b^17*c^8*d^16*e^7 + 5376*b^18*c^7*d^15*e^8 - 3600*b^19*c^6*d^14*
e^9 + 1680*b^20*c^5*d^13*e^10 - 520*b^21*c^4*d^12*e^11 + 96*b^22*c^3*d^11*e
^12 - 8*b^23*c^2*d^10*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e -
10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) + 8*A*b^10*c^13*d
^19*e^3 - 76*A*b^11*c^12*d^18*e^4 + 300*A*b^12*c^11*d^17*e^5 - 612*A*b^13*c
^10*d^16*e^6 + 576*A*b^14*c^9*d^15*e^7 + 168*A*b^15*c^8*d^14*e^8 - 1176*A*b
^16*c^7*d^13*e^9 + 1560*A*b^17*c^6*d^12*e^10 - 1128*A*b^18*c^5*d^11*e^11 +
484*A*b^19*c^4*d^10*e^12 - 116*A*b^20*c^3*d^9*e^13 + 12*A*b^21*c^2*d^8*e^14
 - 4*B*b^11*c^12*d^19*e^3 + 56*B*b^12*c^11*d^18*e^4 - 312*B*b^13*c^10*d^17*
e^5 + 960*B*b^14*c^9*d^16*e^6 - 1848*B*b^15*c^8*d^15*e^7 + 2352*B*b^16*c^7*
d^14*e^8 - 2016*B*b^17*c^6*d^13*e^9 + 1152*B*b^18*c^5*d^12*e^10 - 420*B*b^1
9*c^4*d^11*e^11 + 88*B*b^20*c^3*d^10*e^12 - 8*B*b^21*c^2*d^9*e^13))/(2*(b^8
*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*
e^3 - 5*b^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e -
7*A*b*c*e - 2*B*b*c*d))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^

5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) - (((d + e*x)^(1/2)*(64*A^2*b^6*c^15*d^18*e^2 - 576*A^2*b^7*c^14*d^17*e^3 + 2228*A^2*b^8*c^13*d^16*e^4 - 4768*A^2*b^9*c^12*d^15*e^5 + 5960*A^2*b^10*c^11*d^14*e^6 - 3976*A^2*b^11*c^10*d^13*e^7 + 578*A^2*b^12*c^9*d^12*e^8 + 1004*A^2*b^13*c^8*d^11*e^9 - 442*A^2*b^14*c^7*d^10*e^10 - 320*A^2*b^15*c^6*d^9*e^11 + 362*A^2*b^16*c^5*d^8*e^12 - 132*A^2*b^17*c^4*d^7*e^13 + 18*A^2*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c^13*d^18*e^2 - 168*B^2*b^9*c^12*d^17*e^3 + 770*B^2*b^10*c^11*d^16*e^4 - 2020*B^2*b^11*c^10*d^15*e^5 + 3350*B^2*b^12*c^9*d^14*e^6 - 3664*B^2*b^13*c^8*d^13*e^7 + 2678*B^2*b^14*c^7*d^12*e^8 - 1300*B^2*b^15*c^6*d^11*e^9 + 410*B^2*b^16*c^5*d^10*e^10 - 80*B^2*b^17*c^4*d^9*e^11 + 8*B^2*b^18*c^3*d^8*e^12 - 64*A*B*b^7*c^14*d^18*e^2 + 624*A*B*b^8*c^13*d^17*e^3 - 2636*A*B*b^9*c^12*d^16*e^4 + 6280*A*B*b^10*c^11*d^15*e^5 - 9140*A*B*b^11*c^10*d^14*e^6 + 8056*A*B*b^12*c^9*d^13*e^7 - 3620*A*B*b^13*c^8*d^12*e^8 - 224*A*B*b^14*c^7*d^11*e^9 + 1300*A*B*b^15*c^6*d^10*e^10 - 760*A*B*b^16*c^5*d^9*e^11 + 208*A*B*b^17*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d^7*e^13) - ((-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(16*b^12*c^13*d^21*e^2 - 168*b^13*c^12*d^20*e^3 + 800*b^14*c^11*d^19*e^4 - 2280*b^15*c^10*d^18*e^5 + 4320*b^16*c^9*d^17*e^6 - 5712*b^17*c^8*d^16*e^7 + 5376*b^18*c^7*d^15*e^8 - 3600*b^19*c^6*d^14*e^9 + 1680*b^20*c^5*d^13*e^10 - 520*b^21*c^4*d^12*e^11 + 96*b^22*c^3*d^11*e^12 - 8*b^23*c^2*d^10*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) - 8*A*b^10*c^13*d^19*e^3 + 76*A*b^11*c^12*d^18*e^4 - 300*A*b^12*c^11*d^17*e^5 + 612*A*b^13*c^10*d^16*e^6 - 576*A*b^14*c^9*d^15*e^7 - 168*A*b^15*c^8*d^14*e^8 + 1176*A*b^16*c^7*d^13*e^9 - 1560*A*b^17*c^6*d^12*e^10 + 1128*A*b^18*c^5*d^11*e^11 - 484*A*b^19*c^4*d^10*e^12 + 116*A*b^20*c^3*d^9*e^13 - 12*A*b^21*c^2*d^8*e^14 + 4*B*b^11*c^12*d^19*e^3 - 56*B*b^12*c^11*d^18*e^4 + 312*B*b^13*c^10*d^17*e^5 - 960*B*b^14*c^9*d^16*e^6 + 1848*B*b^15*c^8*d^15*e^7 - 2352*B*b^16*c^7*d^14*e^8 + 2016*B*b^17*c^6*d^13*e^9 - 1152*B*b^18*c^5*d^12*e^10 + 420*B*b^19*c^4*d^11*e^11 - 88*B*b^20*c^3*d^10*e^12 + 8*B*b^21*c^2*d^9*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) + 64*A^3*b^4*c^15*d^16*e^3 - 512*A^3*b^5*c^14*d^15*e^4 + 1804*A^3*b^6*c^13*d^14*e^5 - 3668*A^3*b^7*c^12*d^13*e^6 + 4606*A^3*b^8*c^11*d^12*e^7 - 3248*A^3*b^9*c^10*d^11*e^8 + 322*A^3*b^10*c^9*d^10*e^9 + 1756*A^3*b^11*c^8*d^9*e^10 - 1742*A^3*b^12*c^7*d^8*e^11 + 744*A^3*b^13*c^6*d^7*e^12 - 126*A^3*b^14*c^5*d^6*e^13 - 8*B^3*b^7*c^12*d^16*e^3 + 52*B^3*b^8*c^11*d^15*e^4 - 104*B^3*b^9*c^10*d^14*e^5 - 20*B^3*b^10*c^9*d^13*e^6 + 400*B^3*b^11*c^8*d^12*e^7 - 692*B^3*b^12*c^7*d^11*e^8 + 568*B^3*b^13*c^6*d^10*e^9 - 236*B^3*b^14*c^5*d^9*e^10 + 40*B^3*b^15*c^4*d^8*e^11 + 48*A*B^2*b^6*c^13*d^16*e^3 - 336*A*B^2*b^7*c^12*d^15*e^4 + 930*A*B^2*b^8*c^11*d^14*e^5 - 1332*A*B^2*b^9*c^10*d^13*e^6 + 1230*A*B^2*b^10*c^9*d^12*e^7 - 1248*A*B^2*b^11*c^8*d^11*e^8 + 1566*A*B^2*b^12*c^7*d^10*e^9 - 1380*A*B^2*b^13*c^6*d^9*e^10 + 642*A*B^2*b^14*c^5*d^8*e^11 - 120*A*B^2*b^15*c^4*d^7*e^12 - 96*A^2*B*b^5*c^14*d^16*e^3 + 720*A^2*B*b^6*c^13*d^15*e^4 - 2346*A^2*B*b^7*c^12*d^14*e^5 + 4524*A^2*B*b^8*c^11*d^13*e^6 - 6012*A^2*B*b^9*c^10*d^12*e^7 + 5916*A^2*B*b^10*c^9*d^11*e^8 - 4080*A^2*B*b^11*c^8*d^10*e^9 + 1476*A^2*B*b^12*c^7*d^9*e^10 + 156*A^2*B*b^13*c^6*d^8*e^11 - 348*A^2*B*b^14*c^5*d^7*e^12 + 90*A^2*B*b^15*c^4*d^6*e^13))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*1i)/(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4) - (atan((B^3*b^14*d^13*e^11*(d + e*x)^(1/2)*8i - A^3*b^14*d^10*e^14*(d + e*x)^(1/2)*27i + A^3*b^13*c*d^11*e^13*(d + e*x)^(1/2)*189i - B^3*b^13*c*d^14*e^10*(d + e*x)^(1/2)*88i + A^3*b^3*c^11*d^21*e^3*(d + e*x)^(1/2)*140i - A^3*b^4*c^10*d^20*e^4*(d + e*x)^(1/2)*1015i + A^3*b^5*c^9*d^19*e^5*(d + e*x)^(1/2)*2996i - A^3*b^6*c^8*d^18*e^6*(d + e*x)^(1/2)*4375i + A^3*b^7*c^7*d^17*e^7*(d + e*x)^(1/2)*2561i + A^3*b^8*c^6*d^16*e^8*(d + e*x)^(1/2)*1316i - A^3*b^9*c^5*d^15*e^9*(d + e*x)^

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(1/2)*3073i + A^3*b^10*c^4*d^14*e^10*(d + e*x)^(1/2)*1694i + A^3*b^11*c^3*d
^13*e^11*(d + e*x)^(1/2)*35i - A^3*b^12*c^2*d^12*e^12*(d + e*x)^(1/2)*441i
- B^3*b^5*c^9*d^22*e^2*(d + e*x)^(1/2)*30i + B^3*b^6*c^8*d^21*e^3*(d + e*x)
^(1/2)*260i - B^3*b^7*c^7*d^20*e^4*(d + e*x)^(1/2)*970i + B^3*b^8*c^6*d^19*
e^5*(d + e*x)^(1/2)*2048i - B^3*b^9*c^5*d^18*e^6*(d + e*x)^(1/2)*2698i + B^
3*b^10*c^4*d^17*e^7*(d + e*x)^(1/2)*2300i - B^3*b^11*c^3*d^16*e^8*(d + e*x)
^(1/2)*1270i + B^3*b^12*c^2*d^15*e^9*(d + e*x)^(1/2)*440i - A*B^2*b^14*d^12
*e^12*(d + e*x)^(1/2)*36i + A^2*B*b^14*d^11*e^13*(d + e*x)^(1/2)*54i + A*B^
2*b^13*c*d^13*e^11*(d + e*x)^(1/2)*348i - A^2*B*b^13*c*d^12*e^12*(d + e*x)^
(1/2)*450i + A*B^2*b^4*c^10*d^22*e^2*(d + e*x)^(1/2)*120i - A*B^2*b^5*c^9*d
^21*e^3*(d + e*x)^(1/2)*915i + A*B^2*b^6*c^8*d^20*e^4*(d + e*x)^(1/2)*2850i
 - A*B^2*b^7*c^7*d^19*e^5*(d + e*x)^(1/2)*4473i + A*B^2*b^8*c^6*d^18*e^6*(d
 + e*x)^(1/2)*3072i + A*B^2*b^9*c^5*d^17*e^7*(d + e*x)^(1/2)*951i - A*B^2*b
^10*c^4*d^16*e^8*(d + e*x)^(1/2)*3690i + A*B^2*b^11*c^3*d^15*e^9*(d + e*x)^
(1/2)*3225i - A*B^2*b^12*c^2*d^14*e^10*(d + e*x)^(1/2)*1452i - A^2*B*b^3*c^
11*d^22*e^2*(d + e*x)^(1/2)*120i + A^2*B*b^4*c^10*d^21*e^3*(d + e*x)^(1/2)*
720i - A^2*B*b^5*c^9*d^20*e^4*(d + e*x)^(1/2)*1380i - A^2*B*b^6*c^8*d^19*e^
5*(d + e*x)^(1/2)*204i + A^2*B*b^7*c^7*d^18*e^6*(d + e*x)^(1/2)*4878i - A^2
*B*b^8*c^6*d^17*e^7*(d + e*x)^(1/2)*8130i + A^2*B*b^9*c^5*d^16*e^8*(d + e*x
)^(1/2)*5646i - A^2*B*b^10*c^4*d^15*e^9*(d + e*x)^(1/2)*450i - A^2*B*b^11*c
^3*d^14*e^10*(d + e*x)^(1/2)*2046i + A^2*B*b^12*c^2*d^13*e^11*(d + e*x)^(1/
2)*1482i)/(d^5*(d^5)^(1/2)*(d^5*(d^5*(2561*A^3*b^7*c^7*e^7 - d^5*(30*B^3*b^
5*c^9*e^2 - 120*A*B^2*b^4*c^10*e^2 + 120*A^2*B*b^3*c^11*e^2) + 2300*B^3*b^1
0*c^4*e^7 + 140*A^3*b^3*c^11*d^4*e^3 - 1015*A^3*b^4*c^10*d^3*e^4 + 2996*A^3
*b^5*c^9*d^2*e^5 + 260*B^3*b^6*c^8*d^4*e^3 - 970*B^3*b^7*c^7*d^3*e^4 + 2048
*B^3*b^8*c^6*d^2*e^5 + 951*A*B^2*b^9*c^5*e^7 - 8130*A^2*B*b^8*c^6*e^7 - 437
5*A^3*b^6*c^8*d*e^6 - 2698*B^3*b^9*c^5*d*e^6 - 915*A*B^2*b^5*c^9*d^4*e^3 +
2850*A*B^2*b^6*c^8*d^3*e^4 - 4473*A*B^2*b^7*c^7*d^2*e^5 + 720*A^2*B*b^4*c^1
0*d^4*e^3 - 1380*A^2*B*b^5*c^9*d^3*e^4 - 204*A^2*B*b^6*c^8*d^2*e^5 + 3072*A
*B^2*b^8*c^6*d*e^6 + 4878*A^2*B*b^7*c^7*d*e^6) - 441*A^3*b^12*c^2*e^12 - 36
*A*B^2*b^14*e^12 + 8*B^3*b^14*d*e^11 + 1316*A^3*b^8*c^6*d^4*e^8 - 3073*A^3*
b^9*c^5*d^3*e^9 + 1694*A^3*b^10*c^4*d^2*e^10 - 1270*B^3*b^11*c^3*d^4*e^8 +
440*B^3*b^12*c^2*d^3*e^9 - 450*A^2*B*b^13*c*e^12 + 35*A^3*b^11*c^3*d*e^11 -
 88*B^3*b^13*c*d^2*e^10 - 3690*A*B^2*b^10*c^4*d^4*e^8 + 3225*A*B^2*b^11*c^3
*d^3*e^9 - 1452*A*B^2*b^12*c^2*d^2*e^10 + 5646*A^2*B*b^9*c^5*d^4*e^8 - 450*
A^2*B*b^10*c^4*d^3*e^9 - 2046*A^2*B*b^11*c^3*d^2*e^10 + 348*A*B^2*b^13*c*d*
e^11 + 1482*A^2*B*b^12*c^2*d*e^11) - 27*A^3*b^14*d^3*e^14 + 54*A^2*B*b^14*d
^4*e^13 + 189*A^3*b^13*c*d^4*e^13)))*(3*A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(b^3
*(d^5)^(1/2)) - ((2*(A*e^3 - B*d*e^2))/(c*d^2 - b*d*e) + ((d + e*x)*(3*A*b^
3*e^4 - 2*A*c^3*d^3*e - 2*B*b^3*d*e^3 + 3*A*b*c^2*d^2*e^2 + 4*B*b^2*c*d^2*e
^2 - 7*A*b^2*c*d*e^3 + B*b*c^2*d^3*e))/(b^2*(c*d^2 - b*d*e)^2) - ((d + e*x)
^2*(2*A*b*c^2*d*e^2 - 2*A*c^3*d^2*e - 3*A*b^2*c*e^3 + B*b*c^2*d^2*e + 2*B*b
^2*c*d*e^2))/(b^2*(c*d^2 - b*d*e)^2))/(c*(d + e*x)^(5/2) + (c*d^2 - b*d*e)*
(d + e*x)^(1/2) + (b*e - 2*c*d)*(d + e*x)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**2,x)
[Out] Timed out
```

3.1100 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=344

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-5Abe-4Acd+2bBd)}{b^3d^{7/2}}-\frac{e\left(b^2(-e)(2Bd-5Ae)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{3b^2d^2(d+ex)^{3/2}(cd-be)^2}-\frac{cx(2Acd-b(\cdots}{b^2d\left(bx+c\cdots\right.}$$

Rubi [A] time = 0.92, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {822, 828, 826, 1166, 208}

$$-\frac{e\left(-b^2cde(6Bd-11Ae)+b^3e^2(2Bd-5Ae)-bc^2d^2(3Ae+Bd)+2Ac^3d^3\right)}{b^2d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{e\left(b^2(-e)(2Bd-5Ae)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{3b^2d^2(d+ex)^{3/2}(cd-be)^2}+\frac{c^{5/2}\left(9Abce-4Ac^2d-7b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3(cd-be)^{7/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-5Abe-4Acd+2bBd)}{b^3d^{7/2}}-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{b^2d\left(bx+cx^2\right)(d+ex)^{3/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -(e*(6*A*c^2*d^2 - b^2*e*(2*B*d - 5*A*e) - 3*b*c*d*(B*d + 2*A*e)))/(3*b^2*d
^2*(c*d - b*e)^2*(d + e*x)^(3/2)) - (e*(2*A*c^3*d^3 - b^2*c*d*e*(6*B*d - 11
*A*e) + b^3*e^2*(2*B*d - 5*A*e) - b*c^2*d^2*(B*d + 3*A*e)))/(b^2*d^3*(c*d -
 b*e)^3*Sqrt[d + e*x]) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x)/
(b^2*d*(c*d - b*e)*(d + e*x)^(3/2)*(b*x + c*x^2)) - ((2*b*B*d - 4*A*c*d - 5
*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(7/2)) + (c^(5/2)*(2*b*B*c*d
 - 4*A*c^2*d - 7*b^2*B*e + 9*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[
c*d - b*e]])/(b^3*(c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
```

```
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^2}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{b^2d(cd-be)(d+ex)^{3/2}\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-5Abe)-\frac{5}{2}ce(bBd-2Acd+}{(d+ex)^{5/2}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)(d+ex)^{3/2}\left(bx\right.}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

Mathematica [C] time = 0.19, size = 194, normalized size = 0.56

$$\frac{-x(b+cx)\left(cd^2\left(bc(9Ae+2Bd)-4Ac^2d-7b^2Be\right){}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+(cd-be)^2{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{ex}{d}+1\right)(5Abe+4Acd-2bBd)\right)-3Ab^2d(cd-be)^2-3bcdx(be-cd)(Abe-2Acd+bBd)}{3b^3d^2x(b+cx)(d+ex)^{3/2}(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-3*A*b^2*d*(c*d - b*e)^2 - 3*b*c*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e
)*x - x*(b + c*x)*(c*d^2*(-4*A*c^2*d - 7*b^2*B*e + b*c*(2*B*d + 9*A*e))*Hyp
ergeometric2F1[-3/2, 1, -1/2, (c*(d + e*x))/(c*d - b*e)] + (c*d - b*e)^2*(-
2*b*B*d + 4*A*c*d + 5*A*b*e)*Hypergeometric2F1[-3/2, 1, -1/2, 1 + (e*x)/d])
)/(3*b^3*d^2*(c*d - b*e)^2*x*(b + c*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 1.05, size = 672, normalized size = 1.95

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -1/3*(2*b^2*B*c^2*d^5*e - 4*b^3*B*c*d^4*e^2 - 2*A*b^2*c^2*d^4*e^2 + 2*b^4*B
*d^3*e^3 + 4*A*b^3*c*d^3*e^3 - 2*A*b^4*d^2*e^4 + 14*b^2*B*c^2*d^4*e*(d + e*
x) - 18*b^3*B*c*d^3*e^2*(d + e*x) - 20*A*b^2*c^2*d^3*e^2*(d + e*x) + 4*b^4*
B*d^2*e^3*(d + e*x) + 30*A*b^3*c*d^2*e^3*(d + e*x) - 10*A*b^4*d*e^4*(d + e*
x) - 3*b*B*c^3*d^4*(d + e*x)^2 + 6*A*c^4*d^4*(d + e*x)^2 - 34*b^2*B*c^2*d^3
*e*(d + e*x)^2 - 12*A*b*c^3*d^3*e*(d + e*x)^2 + 28*b^3*B*c*d^2*e^2*(d + e*x
)^2 + 64*A*b^2*c^2*d^2*e^2*(d + e*x)^2 - 6*b^4*B*d*e^3*(d + e*x)^2 - 58*A*b
^3*c*d*e^3*(d + e*x)^2 + 15*A*b^4*e^4*(d + e*x)^2 + 3*b*B*c^3*d^3*(d + e*x)
^3 - 6*A*c^4*d^3*(d + e*x)^3 + 18*b^2*B*c^2*d^2*e*(d + e*x)^3 + 9*A*b*c^3*d
^2*e*(d + e*x)^3 - 6*b^3*B*c*d*e^2*(d + e*x)^3 - 33*A*b^2*c^2*d*e^2*(d + e*
x)^3 + 15*A*b^3*c*e^3*(d + e*x)^3)/(b^2*d^3*(-(c*d) + b*e)^3*x*(d + e*x)^(3
/2)*(-(c*d) + b*e + c*(d + e*x))) + ((2*b*B*c^(7/2)*d - 4*A*c^(9/2)*d - 7*b
^2*B*c^(5/2)*e + 9*A*b*c^(7/2)*e)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d
 + e*x])/(c*d - b*e)])/(b^3*(c*d - b*e)^3*Sqrt[-(c*d) + b*e]) + ((-2*b*B*d
+ 4*A*c*d + 5*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(7/2))
```

fricas [B] time = 49.60, size = 5665, normalized size = 16.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*b*c^4)*d^4*e^
3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b*c^4)*d^5*e^2
 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*A*c^5)*d^7 -
(3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*d^5*e^2)*x^2
+ (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^6*e)*x)*sq
rt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sq
rt(c/(c*d - b*e)))/(c*x + b)) + 3*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d
^4*e^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^
2*e^4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 -
 2*A*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^
2*c^3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d
*e^5)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*
b*c^4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*
c^2)*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(
B*b^2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4
*c + A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(d)*log((e
*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d
^5*e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^
3 - 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c +
 11*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d
^5*e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*
d^3*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b
^5*d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4
*e^2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2
- 3*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d
^8*e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)
*x^3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 -
 2*b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^
7*d^6*e^3)*x), 1/6*(6*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*
b*c^4)*d^4*e^3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b
*c^4)*d^5*e^2 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*
A*c^5)*d^7 - (3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*
d^5*e^2)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)
*d^6*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(
c*d - b*e))/(c*e*x + c*d)) - 3*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d^4*
e^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^2*e
```

^4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 - 2*A*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^2*c^3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d*e^5)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*b*c^4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*c^2)*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(B*b^2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4*c + A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d^5*e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^3 - 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c + 11*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d^5*e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*d^3*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b^5*d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4*e^2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2 - 3*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d^8*e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)*x^3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 - 2*b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^7*d^6*e^3)*x), 1/6*(6*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d^4*e^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^2*e^4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 - 2*A*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^2*c^3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d*e^5)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*b*c^4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*c^2)*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(B*b^2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4*c + A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 3*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*b*c^4)*d^4*e^3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b*c^4)*d^5*e^2 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*A*c^5)*d^7 - (3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*d^5*e^2)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^6*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d^5*e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^3 - 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c + 11*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d^5*e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*d^3*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b^5*d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4*e^2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2 - 3*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d^8*e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)*x^3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 - 2*b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^7*d^6*e^3)*x), 1/3*(3*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*b*c^4)*d^4*e^3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b*c^4)*d^5*e^2 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*A*c^5)*d^7 - (3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*d^5*e^2)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^6*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) + 3*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d^4*e^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^2*e^4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 - 2*A*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^2*c^3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d*e^5

)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*b*c^4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*c^2)*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(B*b^2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4*c + A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d^5*e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^3 - 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c + 11*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d^5*e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*d^3*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b^5*d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4*e^2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2 - 3*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d^8*e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)*x^3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 - 2*b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^7*d^6*e^3)*x)]

giac [A] time = 0.32, size = 603, normalized size = 1.75

$$-\frac{\left(2\,Bbc^4d-4\,Ac^5d-7\,Bb^2c^3e+9\,Abc^4e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(b^3c^3d^3-3\,b^4c^2d^2e+3\,b^5cde^2-b^6e^3\right)\sqrt{-c^2d+bce}}+\frac{(xe+d)^{\frac{3}{2}}Bbc^3d^3e-2\,(xe+d)^{\frac{3}{2}}Ac^4d^3e-\sqrt{xe+d}\,Bbc^3d^4e+2\,\sqrt{xe+d}\,Ac^4d^4e+3\,(xe+d)^{\frac{3}{2}}Abc^3d^2e^2-4\,\sqrt{xe+d}\,Abc^3d^3e^2-3\,(xe+d)^{\frac{3}{2}}Ab^2c^2de^3+6\,\sqrt{xe+d}\,Ab^2c^2d^2e^3+(xe+d)^{\frac{3}{2}}Ab^3ce^4-4\,\sqrt{xe+d}\,Ab^3cde^4+\sqrt{xe+d}\,Ab^4e^5}{\left(b^2c^3d^6-3\,b^3c^2d^5e+3\,b^4cd^4e^2-b^5d^3e^3\right)\left((xe+d)^2c-2\,(xe+d)cd+cd^2+(xe+d)be-bde\right)}+\frac{2\left(9\,(xe+d)Bcd^2e^2+Bcd^3e^2-3\,(xe+d)Bbde^3-12\,(xe+d)Acde^3-Bbd^2e^3-Acd^2e^3+6\,(xe+d)Abe^4+Abde^4\right)}{3\left(c^3d^6-3\,bc^2d^5e+3\,b^2cd^4e^2-b^3d^3e^3\right)(xe+d)^{\frac{3}{2}}}+\frac{(2\,Bbd-4\,Acd-5\,Abe)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="giac")

[Out] -(2*B*b*c^4*d - 4*A*c^5*d - 7*B*b^2*c^3*e + 9*A*b*c^4*e)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b^3*c^3*d^3 - 3*b^4*c^2*d^2*e + 3*b^5*c*d*e^2 - b^6*e^3)*sqrt(-c^2*d + b*c*e)) + ((x*e + d)^(3/2)*B*b*c^3*d^3*e - 2*(x*e + d)^(3/2)*A*c^4*d^3*e - sqrt(x*e + d)*B*b*c^3*d^4*e + 2*sqrt(x*e + d)*A*c^4*d^4*e + 3*(x*e + d)^(3/2)*A*b*c^3*d^2*e^2 - 4*sqrt(x*e + d)*A*b*c^3*d^3*e^2 - 3*(x*e + d)^(3/2)*A*b^2*c^2*d*e^3 + 6*sqrt(x*e + d)*A*b^2*c^2*d^2*e^3 + (x*e + d)^(3/2)*A*b^3*c*e^4 - 4*sqrt(x*e + d)*A*b^3*c*d*e^4 + sqrt(x*e + d)*A*b^4*e^5)/((b^2*c^3*d^6 - 3*b^3*c^2*d^5*e + 3*b^4*c*d^4*e^2 - b^5*d^3*e^3)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)) + 2/3*(9*(x*e + d)*B*c*d^2*e^2 + B*c*d^3*e^2 - 3*(x*e + d)*B*b*d*e^3 - 12*(x*e + d)*A*c*d*e^3 - B*b*d^2*e^3 - A*c*d^2*e^3 + 6*(x*e + d)*A*b*e^4 + A*b*d*e^4)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3)*(x*e + d)^(3/2)) + (2*B*b*d - 4*A*c*d - 5*A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)*d^3)

maple [A] time = 0.08, size = 535, normalized size = 1.56

$$\frac{9Ac^4e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\sqrt{(be-cd)c}\,b^2}-\frac{4Ac^5d\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\sqrt{(be-cd)c}\,b^3}-\frac{7Bc^3e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\sqrt{(be-cd)c}\,b}+\frac{2Bc^4d\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\sqrt{(be-cd)c}\,b^2}+\frac{\sqrt{ex+d}\,Ac^4e}{(be-cd)^3(cex+be)b^2}-\frac{\sqrt{ex+d}\,Bc^3e}{(be-cd)^3(cex+be)b}-\frac{4Abe^4}{(be-cd)^3\sqrt{ex+d}\,d^3}+\frac{8Ace^3}{(be-cd)^3\sqrt{ex+d}\,d^2}+\frac{2Bbe^3}{(be-cd)^3\sqrt{ex+d}\,d^2}-\frac{6Bce^2}{(be-cd)^3\sqrt{ex+d}\,d}-\frac{2Ae^3}{3(be-cd)^2(ex+d)^{\frac{3}{2}}d^2}+\frac{2Be^2}{3(be-cd)^2(ex+d)^{\frac{3}{2}}d}+\frac{5Ae\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2d^{\frac{7}{2}}}+\frac{4Ac\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^3d^{\frac{5}{2}}}-\frac{2B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2d^{\frac{5}{2}}}-\frac{\sqrt{ex+d}\,A}{b^2d^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x)

[Out] e*c^4/(b*e-c*d)^3/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e*c^3/(b*e-c*d)^3/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B+9*e*c^4/(b*e-c*d)^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-4*c^5/(b*e-c*d)^3/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-7*e*c^3/(b*e-c*d)^3/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+2*c^4/(b*e-c*d)^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-1/b^2/d^3*A*(e*x+d)^(1/2)/x+5*e/b^2/d^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4/b^3/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-2/3*e^3/(b*e-c*d)^2/d^2/(e*x+d)^(3/2)*A+2/3*e^2/(b*e-c*d)^2/d/(e*x+d)^(3/2)*B-4*e^4/(b*e-c*d)^3/d^3/(e*x+d)^(1/2)*A*b+8*e^3/(b*e-c*d)^3/d^2/(e*x+d)^(1/2)*A*c+2*e^3/(b*e-c*d)^3/d^2/(e*x+d)^(1/2)*B*b-6*e^2/(b*e-c*d)^3/d/(e*x+d)^(1/2)*B*c

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.10, size = 18450, normalized size = 53.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(5/2)),x)
```

```
[Out] atan((A^2*c^13*d^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*
d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*
B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^
7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3
*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*32i
 - b^6*c^11*d^17*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2
 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b
*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 +
 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^
3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*2i + b
^17*d^6*e^11*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 4
9*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8
*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b
^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^
4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*1i + B^2*b
^2*c^11*d^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 4
9*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8
*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b
^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^
4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*8i - b^8*c
^9*d^15*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49
*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*
d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^
7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4
 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*100i + b^9*
c^8*d^14*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 4
9*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8
*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b
^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^
4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*285i - b^1
0*c^7*d^13*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 +
 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c
^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7
*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*
e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*540i + b
^11*c^6*d^12*e^5*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2
 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b
*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 +
 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^
3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*714i -
 b^12*c^5*d^11*e^6*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d
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^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B *b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3* d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*672i + b^13*c^4*d^10*e^7*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7 *d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A *B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d ^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^ 3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*45 0i - b^14*c^3*d^9*e^8*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^ 7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16* A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7* d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c ^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*2 10i + b^15*c^2*d^8*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c ^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16 *A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7 *d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10* c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)* 65i + A^2*b^12*c*e^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^ 7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16* A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7* d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c ^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2 5i + b^7*c^10*d^16*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7 *d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A *B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d ^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^ 3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*21 i - b^16*c*d^7*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7* d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A* B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^ 7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3 *d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*12i - A^2*b*c^12*d^11*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7 *d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A *B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d ^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^ 3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*25 6i - A^2*b^11*c^2*d*e^11*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2 *c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c ^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^1 0*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*210i - B^2*b^3*c^10*d^11*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2 *b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d* e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b ^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35 *b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^ (1/2)*84i + B^2*b^12*c*d^2*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4* B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6 *d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e* x)^(1/2)*4i - A*B*b*c^12*d^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^ 2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d *e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 3 5*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)

^(1/2)*32i + A^2*b^2*c^11*d^10*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*810i - A^2*b^3*c^10*d^9*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1190i + A^2*b^4*c^9*d^8*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*475i + A^2*b^5*c^8*d^7*e^5*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*972i - A^2*b^6*c^7*d^6*e^6*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1389i + A^2*b^7*c^6*d^5*e^7*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*180i + A^2*b^8*c^5*d^4*e^8*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1170i - A^2*b^9*c^4*d^3*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1360i + A^2*b^10*c^3*d^2*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*741i + B^2*b^4*c^9*d^10*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*365i - B^2*b^5*c^8*d^9*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*860i + B^2*b^6*c^7*d^8*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^

7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1250i - B^2*b^7*c^6*d^7*e^5*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1232i + B^2*b^8*c^5*d^6*e^6*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*889i - B^2*b^9*c^4*d^5*e^7*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*480i + B^2*b^10*c^3*d^4*e^8*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*180i - B^2*b^11*c^2*d^3*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*40i - A*B*b^12*c*d*e^11*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*20i + A*B*b^2*c^11*d^11*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*296i - A*B*b^3*c^10*d^10*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1110i + A*B*b^4*c^9*d^9*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2140i - A*B*b^5*c^8*d^8*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2100i + A*B*b^6*c^7*d^7*e^5*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*428i + A*B*b^7*c^6*d^6*e^6*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126

*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1554i - A*B*b^8*c^5*d^5*e^7*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2280i + A*B*b^9*c^4*d^4*e^8*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1680i - A*B*b^10*c^3*d^3*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*740i + A*B*b^11*c^2*d^2*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*184i)/(225*A^3*b^7*c^4*e^10 + 420*A^3*c^11*d^7*e^3 + 3591*A^3*b^2*c^9*d^5*e^5 - 1113*A^3*b^3*c^8*d^4*e^6 - 2367*A^3*b^4*c^7*d^3*e^7 + 2889*A^3*b^5*c^6*d^2*e^8 - 70*B^3*b^2*c^9*d^8*e^2 + 525*B^3*b^3*c^8*d^7*e^3 - 1260*B^3*b^4*c^7*d^6*e^4 + 1148*B^3*b^5*c^6*d^5*e^5 - 644*B^3*b^6*c^5*d^4*e^6 + 204*B^3*b^7*c^4*d^3*e^7 - 28*B^3*b^8*c^3*d^2*e^8 - 175*A^2*B*b^8*c^3*e^10 - 280*A^2*B*c^11*d^8*e^2 - 2205*A^3*b*c^10*d^6*e^4 - 1315*A^3*b^6*c^5*d*e^9 - 1645*A*B^2*b^2*c^9*d^7*e^3 + 2520*A*B^2*b^3*c^8*d^6*e^4 + 112*A*B^2*b^4*c^7*d^5*e^5 - 2296*A*B^2*b^5*c^6*d^4*e^6 + 2136*A*B^2*b^6*c^5*d^3*e^7 - 872*A*B^2*b^7*c^4*d^2*e^8 + 665*A^2*B*b^2*c^9*d^6*e^4 - 5299*A^2*B*b^3*c^8*d^5*e^5 + 5537*A^2*B*b^4*c^7*d^4*e^6 - 1717*A^2*B*b^5*c^6*d^3*e^7 - 901*A^2*B*b^6*c^5*d^2*e^8 + 280*A*B^2*b*c^10*d^8*e^2 + 140*A*B^2*b^8*c^3*d*e^9 + 980*A^2*B*b*c^10*d^7*e^3 + 815*A^2*B*b^7*c^4*d*e^9))*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(4*(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6)))^(1/2)*2i - log(32*A^3*b^4*c^20*d^23*e^3 - ((((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(1/2)*((d + e*x)^(1/2)*(((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(1/2)*(16*b^12*c^18*d^31*e^2 - 248*b^13*c^17*d^30*e^3 + 1800*b^14*c^16*d^29*e^4 - 8120*b^15*c^15*d^28*e^5 + 25480*b^16*c^14*d^27*e^6 - 58968*b^17*c^13*d^26*e^7 + 104104*b^18*c^12*d^25*e^8 - 143000*b^19*c^11*d^24*e^9 + 154440*b^20*c^10*d^23*e^10 - 131560*b^21*c^9*d^22*e^11 + 88088*b^22*c^8*d^21*e^12 - 45864*b^23*c^7*d^20*e^13 + 18200*b^24*c^6*d^19*e^14 - 5320*b^25*c^5*d^18*e^15 + 1080*b^26*c^4*d^17*e^16 - 136*b^27*c^3*d^16*e^17 + 8*b^28*c^2*d^15*e^18) + 8*A*b^10*c^18*d^28*e^3 - 112*A*b^11*c^17*d^27*e^4 + 664*A*b^12*c^16*d^26*e^5 - 2080*A*b^13*c^15*d^25*e^6 + 2996*A*b^14*c^14*d^24*e^7 + 2528*A*b^15*c^13*d^23*e^8 - 23056*A*b^16*c^12*d^22*e^9 + 59312*A*b^17*c^11*d^21*e^10 - 95700*A*b^18*c^10*d^20*e^11 + 109648*A*b^19*c^9*d^19*e^12 - 92840*A*b^20*c^8*d^18*e^13 + 58688*A*b^21*c^7*d^17*e^14 - 27476*A*b^22*c^6*d^16*e^15 + 9280*A*b^23*c^5*d^15*e^16 - 2144*A*b^24*c^4*d^14*e^17 + 304*A*b^25*c^3*d^13*e^18 - 20*A*b^26*c^2*d^12*e^19 - 4*B*b^11*c^17*d^28*e^3 + 96*B*b^12*c^16*d^27*e^4 - 872*B*b^13*c^15*d^26*e^5 + 4440*B*b^14*c^14*d^25*e^6 - 14748*B*b^15*c^13*d^24*e^7 + 34496*B*b^16*c^12*d^23*e^8 - 59312*B*b^17*c^11*d^22*e^9 + 76824*B*b^18*c^10*d

^21*e^10 - 75900*B*b^19*c^9*d^20*e^11 + 57376*B*b^20*c^8*d^19*e^12 - 33000*B*b^21*c^7*d^18*e^13 + 14216*B*b^22*c^6*d^17*e^14 - 4452*B*b^23*c^5*d^16*e^15 + 960*B*b^24*c^4*d^15*e^16 - 128*B*b^25*c^3*d^14*e^17 + 8*B*b^26*c^2*d^13*e^18) - (d + e*x)^(1/2)*(64*A^2*b^6*c^20*d^26*e^2 - 832*A^2*b^7*c^19*d^25*e^3 + 4820*A^2*b^8*c^18*d^24*e^4 - 16240*A^2*b^9*c^17*d^23*e^5 + 34490*A^2*b^10*c^16*d^22*e^6 - 45430*A^2*b^11*c^15*d^21*e^7 + 29414*A^2*b^12*c^14*d^20*e^8 + 10670*A^2*b^13*c^13*d^19*e^9 - 39550*A^2*b^14*c^12*d^18*e^10 + 25730*A^2*b^15*c^11*d^17*e^11 + 19048*A^2*b^16*c^10*d^16*e^12 - 53852*A^2*b^17*c^9*d^15*e^13 + 55510*A^2*b^18*c^8*d^14*e^14 - 35210*A^2*b^19*c^7*d^13*e^15 + 14830*A^2*b^20*c^6*d^12*e^16 - 4082*A^2*b^21*c^5*d^11*e^17 + 670*A^2*b^22*c^4*d^10*e^18 - 50*A^2*b^23*c^3*d^9*e^19 + 16*B^2*b^8*c^18*d^26*e^2 - 248*B^2*b^9*c^17*d^25*e^3 + 1730*B^2*b^10*c^16*d^24*e^4 - 7210*B^2*b^11*c^15*d^23*e^5 + 20160*B^2*b^12*c^14*d^22*e^6 - 40320*B^2*b^13*c^13*d^21*e^7 + 60116*B^2*b^14*c^12*d^20*e^8 - 68820*B^2*b^15*c^11*d^19*e^9 + 61800*B^2*b^16*c^10*d^18*e^10 - 44080*B^2*b^17*c^9*d^17*e^11 + 24962*B^2*b^18*c^8*d^16*e^12 - 11018*B^2*b^19*c^7*d^15*e^13 + 3640*B^2*b^20*c^6*d^14*e^14 - 840*B^2*b^21*c^5*d^13*e^15 + 120*B^2*b^22*c^4*d^12*e^16 - 8*B^2*b^23*c^3*d^11*e^17 - 64*A*B*b^7*c^19*d^26*e^2 + 912*A*B*b^8*c^18*d^25*e^3 - 5820*A*B*b^9*c^17*d^24*e^4 + 21940*A*B*b^10*c^16*d^23*e^5 - 54040*A*B*b^11*c^15*d^22*e^6 + 89880*A*B*b^12*c^14*d^21*e^7 - 97664*A*B*b^13*c^13*d^20*e^8 + 54080*A*B*b^14*c^12*d^19*e^9 + 23400*A*B*b^15*c^11*d^18*e^10 - 86480*A*B*b^16*c^10*d^17*e^11 + 101652*A*B*b^17*c^9*d^16*e^12 - 76188*A*B*b^18*c^8*d^15*e^13 + 40040*A*B*b^19*c^7*d^14*e^14 - 14840*A*B*b^20*c^6*d^13*e^15 + 3720*A*B*b^21*c^5*d^12*e^16 - 568*A*B*b^22*c^4*d^11*e^17 + 40*A*B*b^23*c^3*d^10*e^18))*(((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(1/2) - 368*A^3*b^5*c^19*d^22*e^4 + 2006*A^3*b^6*c^18*d^21*e^5 - 6895*A^3*b^7*c^17*d^20*e^6 + 16250*A^3*b^8*c^16*d^19*e^7 - 25764*A^3*b^9*c^15*d^18*e^8 + 22851*A^3*b^10*c^14*d^17*e^9 + 2958*A^3*b^11*c^13*d^16*e^10 - 41520*A^3*b^12*c^12*d^15*e^11 + 64900*A^3*b^13*c^11*d^14*e^12 - 57568*A^3*b^14*c^10*d^13*e^13 + 32617*A^3*b^15*c^9*d^12*e^14 - 11714*A^3*b^16*c^8*d^11*e^15 + 2440*A^3*b^17*c^7*d^10*e^16 - 225*A^3*b^18*c^6*d^9*e^17 - 4*B^3*b^7*c^17*d^23*e^3 + 26*B^3*b^8*c^16*d^22*e^4 + 38*B^3*b^9*c^15*d^21*e^5 - 880*B^3*b^10*c^14*d^20*e^6 + 3900*B^3*b^11*c^13*d^19*e^7 - 9492*B^3*b^12*c^12*d^18*e^8 + 14868*B^3*b^13*c^11*d^17*e^9 - 15816*B^3*b^14*c^10*d^16*e^10 + 11580*B^3*b^15*c^9*d^15*e^11 - 5750*B^3*b^16*c^8*d^14*e^12 + 1846*B^3*b^17*c^7*d^13*e^13 - 344*B^3*b^18*c^6*d^12*e^14 + 28*B^3*b^19*c^5*d^11*e^15 + 24*A*B^2*b^6*c^18*d^23*e^3 - 196*A*B^2*b^7*c^17*d^22*e^4 + 487*A*B^2*b^8*c^16*d^21*e^5 + 165*A*B^2*b^9*c^15*d^20*e^6 - 2800*A*B^2*b^10*c^14*d^19*e^7 + 3552*A*B^2*b^11*c^13*d^18*e^8 + 5922*A*B^2*b^12*c^12*d^17*e^9 - 25434*A*B^2*b^13*c^11*d^16*e^10 + 39900*A*B^2*b^14*c^10*d^15*e^11 - 36600*A*B^2*b^15*c^9*d^14*e^12 + 21199*A*B^2*b^16*c^8*d^13*e^13 - 7651*A*B^2*b^17*c^7*d^12*e^14 + 1572*A*B^2*b^18*c^6*d^11*e^15 - 140*A*B^2*b^19*c^5*d^10*e^16 - 48*A^2*B*b^5*c^19*d^23*e^3 + 472*A^2*B*b^6*c^18*d^22*e^4 - 2129*A^2*B*b^7*c^17*d^21*e^5 + 6450*A^2*B*b^8*c^16*d^20*e^6 - 16250*A^2*B*b^9*c^15*d^19*e^7 + 35246*A^2*B*b^10*c^14*d^18*e^8 - 59679*A^2*B*b^11*c^13*d^17*e^9 + 71028*A^2*B*b^12*c^12*d^16*e^10 - 52860*A^2*B*b^13*c^11*d^15*e^11 + 16500*A^2*B*b^14*c^10*d^14*e^12 + 9377*A^2*B*b^15*c^9*d^13*e^13 - 13318*A^2*B*b^16*c^8*d^12*e^14 + 6726*A^2*B*b^17*c^7*d^11*e^15 - 1690*A^2*B*b^18*c^6*d^10*e^16 + 175*A^2*B*b^19*c^5*d^9*e^17)*(((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(1/2) + log((((25*A^2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c*d*e)/(4*b^6*d^7))^(1/2)*((d + e*x)^(1/2)*((25*A^2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c*d*e)/(4*b^6*d^7))^(1/2)*(16*b^12*c^18*d^31*e^2 - 248*b^13*c^17*d^30*e^3 + 1800*b^14*c^16*d^29*e^4 - 8120*b^15*c^15*d^28*e^5 + 25480*b^16*c^14*d^27*e^6 - 58968*b^17*c^13*d^26*e^7 + 104104*b^18*c^12*d^25*e^8 - 143000*b^19*c^11*d^24*e^9 + 154440*b^20*c^10*d^23*e^10 - 131560*b^21*c^9*d^22*e^11 + 88088*b^22*c^8*d^21*e^12 - 45864*b^23*c^7*d^20*e^13 + 18200*b^24*c^6*d^19*e^14 - 5320*b^25*c^5*d^18*e^15 + 1080*b^26*c^4*d^17*e^16 - 13

6*b^27*c^3*d^16*e^17 + 8*b^28*c^2*d^15*e^18) - 8*A*b^10*c^18*d^28*e^3 + 112
*A*b^11*c^17*d^27*e^4 - 664*A*b^12*c^16*d^26*e^5 + 2080*A*b^13*c^15*d^25*e^
6 - 2996*A*b^14*c^14*d^24*e^7 - 2528*A*b^15*c^13*d^23*e^8 + 23056*A*b^16*c^
12*d^22*e^9 - 59312*A*b^17*c^11*d^21*e^10 + 95700*A*b^18*c^10*d^20*e^11 - 1
09648*A*b^19*c^9*d^19*e^12 + 92840*A*b^20*c^8*d^18*e^13 - 58688*A*b^21*c^7*
d^17*e^14 + 27476*A*b^22*c^6*d^16*e^15 - 9280*A*b^23*c^5*d^15*e^16 + 2144*A
*b^24*c^4*d^14*e^17 - 304*A*b^25*c^3*d^13*e^18 + 20*A*b^26*c^2*d^12*e^19 +
4*B*b^11*c^17*d^28*e^3 - 96*B*b^12*c^16*d^27*e^4 + 872*B*b^13*c^15*d^26*e^5
 - 4440*B*b^14*c^14*d^25*e^6 + 14748*B*b^15*c^13*d^24*e^7 - 34496*B*b^16*c^
12*d^23*e^8 + 59312*B*b^17*c^11*d^22*e^9 - 76824*B*b^18*c^10*d^21*e^10 + 75
900*B*b^19*c^9*d^20*e^11 - 57376*B*b^20*c^8*d^19*e^12 + 33000*B*b^21*c^7*d^
18*e^13 - 14216*B*b^22*c^6*d^17*e^14 + 4452*B*b^23*c^5*d^16*e^15 - 960*B*b^
24*c^4*d^15*e^16 + 128*B*b^25*c^3*d^14*e^17 - 8*B*b^26*c^2*d^13*e^18) - (d
 + e*x)^(1/2)*(64*A^2*b^6*c^20*d^26*e^2 - 832*A^2*b^7*c^19*d^25*e^3 + 4820*A
^2*b^8*c^18*d^24*e^4 - 16240*A^2*b^9*c^17*d^23*e^5 + 34490*A^2*b^10*c^16*d^
22*e^6 - 45430*A^2*b^11*c^15*d^21*e^7 + 29414*A^2*b^12*c^14*d^20*e^8 + 1067
0*A^2*b^13*c^13*d^19*e^9 - 39550*A^2*b^14*c^12*d^18*e^10 + 25730*A^2*b^15*c
^11*d^17*e^11 + 19048*A^2*b^16*c^10*d^16*e^12 - 53852*A^2*b^17*c^9*d^15*e^1
3 + 55510*A^2*b^18*c^8*d^14*e^14 - 35210*A^2*b^19*c^7*d^13*e^15 + 14830*A^2
*b^20*c^6*d^12*e^16 - 4082*A^2*b^21*c^5*d^11*e^17 + 670*A^2*b^22*c^4*d^10*e
^18 - 50*A^2*b^23*c^3*d^9*e^19 + 16*B^2*b^8*c^18*d^26*e^2 - 248*B^2*b^9*c^1
7*d^25*e^3 + 1730*B^2*b^10*c^16*d^24*e^4 - 7210*B^2*b^11*c^15*d^23*e^5 + 20
160*B^2*b^12*c^14*d^22*e^6 - 40320*B^2*b^13*c^13*d^21*e^7 + 60116*B^2*b^14*
c^12*d^20*e^8 - 68820*B^2*b^15*c^11*d^19*e^9 + 61800*B^2*b^16*c^10*d^18*e^1
0 - 44080*B^2*b^17*c^9*d^17*e^11 + 24962*B^2*b^18*c^8*d^16*e^12 - 11018*B^2
*b^19*c^7*d^15*e^13 + 3640*B^2*b^20*c^6*d^14*e^14 - 840*B^2*b^21*c^5*d^13*e
^15 + 120*B^2*b^22*c^4*d^12*e^16 - 8*B^2*b^23*c^3*d^11*e^17 - 64*A*B*b^7*c^
19*d^26*e^2 + 912*A*B*b^8*c^18*d^25*e^3 - 5820*A*B*b^9*c^17*d^24*e^4 + 2194
0*A*B*b^10*c^16*d^23*e^5 - 54040*A*B*b^11*c^15*d^22*e^6 + 89880*A*B*b^12*c^
14*d^21*e^7 - 97664*A*B*b^13*c^13*d^20*e^8 + 54080*A*B*b^14*c^12*d^19*e^9 +
 23400*A*B*b^15*c^11*d^18*e^10 - 86480*A*B*b^16*c^10*d^17*e^11 + 101652*A*B
*b^17*c^9*d^16*e^12 - 76188*A*B*b^18*c^8*d^15*e^13 + 40040*A*B*b^19*c^7*d^1
4*e^14 - 14840*A*B*b^20*c^6*d^13*e^15 + 3720*A*B*b^21*c^5*d^12*e^16 - 568*A
*B*b^22*c^4*d^11*e^17 + 40*A*B*b^23*c^3*d^10*e^18))*((25*A^2*b^2*e^2 + 16*A
^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c*d
*e)/(4*b^6*d^7))^(1/2) + 32*A^3*b^4*c^20*d^23*e^3 - 368*A^3*b^5*c^19*d^22*e
^4 + 2006*A^3*b^6*c^18*d^21*e^5 - 6895*A^3*b^7*c^17*d^20*e^6 + 16250*A^3*b^
8*c^16*d^19*e^7 - 25764*A^3*b^9*c^15*d^18*e^8 + 22851*A^3*b^10*c^14*d^17*e^
9 + 2958*A^3*b^11*c^13*d^16*e^10 - 41520*A^3*b^12*c^12*d^15*e^11 + 64900*A^
3*b^13*c^11*d^14*e^12 - 57568*A^3*b^14*c^10*d^13*e^13 + 32617*A^3*b^15*c^9*
d^12*e^14 - 11714*A^3*b^16*c^8*d^11*e^15 + 2440*A^3*b^17*c^7*d^10*e^16 - 22
5*A^3*b^18*c^6*d^9*e^17 - 4*B^3*b^7*c^17*d^23*e^3 + 26*B^3*b^8*c^16*d^22*e^
4 + 38*B^3*b^9*c^15*d^21*e^5 - 880*B^3*b^10*c^14*d^20*e^6 + 3900*B^3*b^11*c
^13*d^19*e^7 - 9492*B^3*b^12*c^12*d^18*e^8 + 14868*B^3*b^13*c^11*d^17*e^9 -
 15816*B^3*b^14*c^10*d^16*e^10 + 11580*B^3*b^15*c^9*d^15*e^11 - 5750*B^3*b^
16*c^8*d^14*e^12 + 1846*B^3*b^17*c^7*d^13*e^13 - 344*B^3*b^18*c^6*d^12*e^14
 + 28*B^3*b^19*c^5*d^11*e^15 + 24*A*B^2*b^6*c^18*d^23*e^3 - 196*A*B^2*b^7*c
^17*d^22*e^4 + 487*A*B^2*b^8*c^16*d^21*e^5 + 165*A*B^2*b^9*c^15*d^20*e^6 -
2800*A*B^2*b^10*c^14*d^19*e^7 + 3552*A*B^2*b^11*c^13*d^18*e^8 + 5922*A*B^2*
b^12*c^12*d^17*e^9 - 25434*A*B^2*b^13*c^11*d^16*e^10 + 39900*A*B^2*b^14*c^1
0*d^15*e^11 - 36600*A*B^2*b^15*c^9*d^14*e^12 + 21199*A*B^2*b^16*c^8*d^13*e^
13 - 7651*A*B^2*b^17*c^7*d^12*e^14 + 1572*A*B^2*b^18*c^6*d^11*e^15 - 140*A*
B^2*b^19*c^5*d^10*e^16 - 48*A^2*B*b^5*c^19*d^23*e^3 + 472*A^2*B*b^6*c^18*d^
22*e^4 - 2129*A^2*B*b^7*c^17*d^21*e^5 + 6450*A^2*B*b^8*c^16*d^20*e^6 - 1625
0*A^2*B*b^9*c^15*d^19*e^7 + 35246*A^2*B*b^10*c^14*d^18*e^8 - 59679*A^2*B*b^
11*c^13*d^17*e^9 + 71028*A^2*B*b^12*c^12*d^16*e^10 - 52860*A^2*B*b^13*c^11*
d^15*e^11 + 16500*A^2*B*b^14*c^10*d^14*e^12 + 9377*A^2*B*b^15*c^9*d^13*e^13
 - 13318*A^2*B*b^16*c^8*d^12*e^14 + 6726*A^2*B*b^17*c^7*d^11*e^15 - 1690*A^
2*B*b^18*c^6*d^10*e^16 + 175*A^2*B*b^19*c^5*d^9*e^17)*((25*A^2*b^2*e^2 + 16

```
*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c
*d*e)/(4*b^6*d^7))^(1/2) - ((2*(A*e^3 - B*d*e^2))/(3*(c*d^2 - b*d*e)) - (2*
(d + e*x)*(5*A*b*e^4 - 10*A*c*d*e^3 - 2*B*b*d*e^3 + 7*B*c*d^2*e^2))/(3*(c*d
^2 - b*d*e)^2) + ((d + e*x)^2*(6*B*b^4*d*e^4 - 6*A*c^4*d^4*e - 15*A*b^4*e^5
 + 12*A*b*c^3*d^3*e^2 - 28*B*b^3*c*d^2*e^3 - 64*A*b^2*c^2*d^2*e^3 + 34*B*b^
2*c^2*d^3*e^2 + 58*A*b^3*c*d*e^4 + 3*B*b*c^3*d^4*e))/(3*b^2*(c*d^2 - b*d*e)
^3) - ((d + e*x)^3*(5*A*b^3*c*e^4 - 2*A*c^4*d^3*e + 3*A*b*c^3*d^2*e^2 - 11*
A*b^2*c^2*d*e^3 + 6*B*b^2*c^2*d^2*e^2 + B*b*c^3*d^3*e - 2*B*b^3*c*d*e^3))/(
b^2*(c*d^2 - b*d*e)^3))/(c*(d + e*x)^(7/2) + (c*d^2 - b*d*e)*(d + e*x)^(3/2
) + (b*e - 2*c*d)*(d + e*x)^(5/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1101 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=457

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-7Abe-4Acd+2bBd)}{b^3d^{9/2}}-\frac{e\left(b^2(-e)(2Bd-7Ae)-5bcd(2Ae+Bd)+10Ac^2d^2\right)}{5b^2d^2(d+ex)^{5/2}(cd-be)^2}-\frac{cx(2Acd-b(A}{b^2d\left(bx+cx^2\right.}$$

Rubi [A] time = 1.28, antiderivative size = 457, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {822, 828, 826, 1166, 208}

$$-\frac{e\left(-2b^2c^2d^2e(6Bd-13Ae)+8b^3cde^2(Bd-3Ae)+b^4\left(-e^3\right)(2Bd-7Ae)-bc^3d^3(4Ae+Bd)+2Ac^4d^4\right)}{b^2d^4\sqrt{d+ex}(cd-be)^4}-\frac{e\left(-b^2cde(6Bd-17Ae)+b^3e^2(2Bd-7Ae)-3bc^2d^2(3Ae+Bd)+6Ac^3d^3\right)}{3b^2d^3(d+ex)^{3/2}(cd-be)^3}-\frac{e\left(b^2(-e)(2Bd-7Ae)-5bcd(2Ae+Bd)+10Ac^2d^2\right)}{5b^2d^2(d+ex)^{5/2}(cd-be)^2}+\frac{c^{7/2}\left(11Abce-4Ac^2d-9b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3(cd-be)^{9/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-7Abe-4Acd+2bBd)}{b^3d^{9/2}}-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{b^2d\left(bx+cx^2\right)(d+ex)^{5/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -(e*(10*A*c^2*d^2 - b^2*e*(2*B*d - 7*A*e) - 5*b*c*d*(B*d + 2*A*e)))/(5*b^2*
d^2*(c*d - b*e)^2*(d + e*x)^(5/2)) - (e*(6*A*c^3*d^3 - b^2*c*d*e*(6*B*d - 1
7*A*e) + b^3*e^2*(2*B*d - 7*A*e) - 3*b*c^2*d^2*(B*d + 3*A*e)))/(3*b^2*d^3*(
c*d - b*e)^3*(d + e*x)^(3/2)) - (e*(2*A*c^4*d^4 - 2*b^2*c^2*d^2*e*(6*B*d -
13*A*e) - b^4*e^3*(2*B*d - 7*A*e) + 8*b^3*c*d*e^2*(B*d - 3*A*e) - b*c^3*d^3
*(B*d + 4*A*e)))/(b^2*d^4*(c*d - b*e)^4*Sqrt[d + e*x]) - (A*b*(c*d - b*e) +
 c*(2*A*c*d - b*(B*d + A*e))*x)/(b^2*d*(c*d - b*e)*(d + e*x)^(5/2)*(b*x + c
*x^2)) - ((2*b*B*d - 4*A*c*d - 7*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^
3*d^(9/2)) + (c^(7/2)*(2*b*B*c*d - 4*A*c^2*d - 9*b^2*B*e + 11*A*b*c*e)*ArcT
anh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*(c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
```

```
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)^2}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{b^2d(cd-be)(d+ex)^{5/2}\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-7Abe)-\frac{7}{2}ce(bBd-2A}{(d+ex)^{7/2}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{Ab(cd-be)+c(2Acd-}{b^2d(cd-be)(d+ex)^{5/2}}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

Mathematica [C] time = 0.20, size = 194, normalized size = 0.42

$$\frac{-x(b+cx)\left(cd^2\left(bc(11Ae+2Bd)-4Ac^2d-9b^2Be\right){}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{c(d+ex)}{cd-be}\right)+(cd-be)^2{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{ex}{d}+1\right)(7Abe+4Acd-2bBd)\right)-5Ab^2d(cd-be)^2-5bcdx(be-cd)(Abe-2Acd+bBd)}{5b^3d^2x(b+cx)(d+ex)^{5/2}(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-5*A*b^2*d*(c*d - b*e)^2 - 5*b*c*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e
)*x - x*(b + c*x)*(c*d^2*(-4*A*c^2*d - 9*b^2*B*e + b*c*(2*B*d + 11*A*e))*Hy
pergeometric2F1[-5/2, 1, -3/2, (c*(d + e*x))/(c*d - b*e)] + (c*d - b*e)^2*(
-2*b*B*d + 4*A*c*d + 7*A*b*e)*Hypergeometric2F1[-5/2, 1, -3/2, 1 + (e*x)/d]
))/(5*b^3*d^2*(c*d - b*e)^2*x*(b + c*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 1.36, size = 994, normalized size = 2.18

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -1/15*(-6*b^2*B*c^3*d^7*e + 18*b^3*B*c^2*d^6*e^2 + 6*A*b^2*c^3*d^6*e^2 - 18
*b^4*B*c*d^5*e^3 - 18*A*b^3*c^2*d^5*e^3 + 6*b^5*B*d^4*e^4 + 18*A*b^4*c*d^4*
e^4 - 6*A*b^5*d^3*e^5 - 18*b^2*B*c^3*d^6*e*(d + e*x) + 40*b^3*B*c^2*d^5*e^2
*(d + e*x) + 28*A*b^2*c^3*d^5*e^2*(d + e*x) - 26*b^4*B*c*d^4*e^3*(d + e*x)
- 70*A*b^3*c^2*d^4*e^3*(d + e*x) + 4*b^5*B*d^3*e^4*(d + e*x) + 56*A*b^4*c*d
^3*e^4*(d + e*x) - 14*A*b^5*d^2*e^5*(d + e*x) - 126*b^2*B*c^3*d^5*e*(d + e*
x)^2 + 202*b^3*B*c^2*d^4*e^2*(d + e*x)^2 + 226*A*b^2*c^3*d^4*e^2*(d + e*x)^
2 - 96*b^4*B*c*d^3*e^3*(d + e*x)^2 - 452*A*b^3*c^2*d^3*e^3*(d + e*x)^2 + 20
*b^5*B*d^2*e^4*(d + e*x)^2 + 296*A*b^4*c*d^2*e^4*(d + e*x)^2 - 70*A*b^5*d*e
^5*(d + e*x)^2 + 15*b*B*c^4*d^5*(d + e*x)^3 - 30*A*c^5*d^5*(d + e*x)^3 + 33
0*b^2*B*c^3*d^4*e*(d + e*x)^3 + 75*A*b*c^4*d^4*e*(d + e*x)^3 - 380*b^3*B*c^
2*d^3*e^2*(d + e*x)^3 - 710*A*b^2*c^3*d^3*e^2*(d + e*x)^3 + 170*b^4*B*c*d^2
*e^3*(d + e*x)^3 + 990*A*b^3*c^2*d^2*e^3*(d + e*x)^3 - 30*b^5*B*d*e^4*(d +
e*x)^3 - 535*A*b^4*c*d*e^4*(d + e*x)^3 + 105*A*b^5*e^5*(d + e*x)^3 - 15*b*B
*c^4*d^4*(d + e*x)^4 + 30*A*c^5*d^4*(d + e*x)^4 - 180*b^2*B*c^3*d^3*e*(d +
e*x)^4 - 60*A*b*c^4*d^3*e*(d + e*x)^4 + 120*b^3*B*c^2*d^2*e^2*(d + e*x)^4 +
 390*A*b^2*c^3*d^2*e^2*(d + e*x)^4 - 30*b^4*B*c*d*e^3*(d + e*x)^4 - 360*A*b
^3*c^2*d*e^3*(d + e*x)^4 + 105*A*b^4*c*e^4*(d + e*x)^4)/(b^2*d^4*(-(c*d) +
b*e)^4*x*(d + e*x)^(5/2)*(-(c*d) + b*e + c*(d + e*x))) + ((2*b*B*c^(9/2)*d
- 4*A*c^(11/2)*d - 9*b^2*B*c^(7/2)*e + 11*A*b*c^(9/2)*e)*ArcTan[(Sqrt[c]*Sq
rt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(b^3*(c*d - b*e)^4*Sqrt[-(c*d
) + b*e]) + ((-2*b*B*d + 4*A*c*d + 7*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])
/(b^3*d^(9/2))
```

fricas [B] time = 131.54, size = 8537, normalized size = 18.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/30*(15*((2*(B*b*c^5 - 2*A*c^6)*d^6*e^3 - (9*B*b^2*c^4 - 11*A*b*c^5)*d^5*
e^4)*x^5 + (6*(B*b*c^5 - 2*A*c^6)*d^7*e^2 - (25*B*b^2*c^4 - 29*A*b*c^5)*d^6
*e^3 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^5*e^4)*x^4 + 3*(2*(B*b*c^5 - 2*A*c^6)
*d^8*e - 7*(B*b^2*c^4 - A*b*c^5)*d^7*e^2 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^6
*e^3)*x^3 + (2*(B*b*c^5 - 2*A*c^6)*d^9 - (3*B*b^2*c^4 + A*b*c^5)*d^8*e - 3*
(9*B*b^3*c^3 - 11*A*b^2*c^4)*d^7*e^2)*x^2 + (2*(B*b^2*c^4 - 2*A*b*c^5)*d^9
- (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^8*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2
*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) +
15*((7*A*b^5*c*e^8 - 2*(B*b*c^5 - 2*A*c^6)*d^5*e^3 + (8*B*b^2*c^4 - 9*A*b*c
^5)*d^4*e^4 - 4*(3*B*b^3*c^3 + A*b^2*c^4)*d^3*e^5 + 2*(4*B*b^4*c^2 + 13*A*b
^3*c^3)*d^2*e^6 - 2*(B*b^5*c + 12*A*b^4*c^2)*d*e^7)*x^5 + (7*A*b^6*e^8 - 6*
(B*b*c^5 - 2*A*c^6)*d^6*e^2 + (22*B*b^2*c^4 - 23*A*b*c^5)*d^5*e^3 - 7*(4*B*
b^3*c^3 + 3*A*b^2*c^4)*d^4*e^4 + 2*(6*B*b^4*c^2 + 37*A*b^3*c^3)*d^3*e^5 + 2
*(B*b^5*c - 23*A*b^4*c^2)*d^2*e^6 - (2*B*b^6 + 3*A*b^5*c)*d*e^7)*x^4 + 3*(7
*A*b^6*d*e^7 - 2*(B*b*c^5 - 2*A*c^6)*d^7*e + (6*B*b^2*c^4 - 5*A*b*c^5)*d^6*
e^2 - (4*B*b^3*c^3 + 13*A*b^2*c^4)*d^5*e^3 - 2*(2*B*b^4*c^2 - 11*A*b^3*c^3)
*d^4*e^4 + 2*(3*B*b^5*c + A*b^4*c^2)*d^3*e^5 - (2*B*b^6 + 17*A*b^5*c)*d^2*e
^6)*x^3 + (21*A*b^6*d^2*e^6 - 2*(B*b*c^5 - 2*A*c^6)*d^8 + (2*B*b^2*c^4 + 3*
A*b*c^5)*d^7*e + (12*B*b^3*c^3 - 31*A*b^2*c^4)*d^6*e^2 - 14*(2*B*b^4*c^2 -
A*b^3*c^3)*d^5*e^3 + 2*(11*B*b^5*c + 27*A*b^4*c^2)*d^4*e^4 - (6*B*b^6 + 65*
A*b^5*c)*d^3*e^5)*x^2 + (7*A*b^6*d^3*e^5 - 2*(B*b^2*c^4 - 2*A*b*c^5)*d^8 +
(8*B*b^3*c^3 - 9*A*b^2*c^4)*d^7*e - 4*(3*B*b^4*c^2 + A*b^3*c^3)*d^6*e^2 + 2
```

```
*(4*B*b^5*c + 13*A*b^4*c^2)*d^5*e^3 - 2*(B*b^6 + 12*A*b^5*c)*d^4*e^4)*x)*sq
rt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(15*A*b^2*c^4*d^8 -
60*A*b^3*c^3*d^7*e + 90*A*b^4*c^2*d^6*e^2 - 60*A*b^5*c*d^5*e^3 + 15*A*b^6*d
^4*e^4 + 15*(7*A*b^5*c*d*e^7 - (B*b^2*c^4 - 2*A*b*c^5)*d^5*e^3 - 4*(3*B*b^3
*c^3 + A*b^2*c^4)*d^4*e^4 + 2*(4*B*b^4*c^2 + 13*A*b^3*c^3)*d^3*e^5 - 2*(B*b
^5*c + 12*A*b^4*c^2)*d^2*e^6)*x^4 + 5*(21*A*b^6*d*e^7 - 9*(B*b^2*c^4 - 2*A*
b*c^5)*d^6*e^2 - 3*(26*B*b^3*c^3 + 11*A*b^2*c^4)*d^5*e^3 + 10*(2*B*b^4*c^2
+ 17*A*b^3*c^3)*d^4*e^4 + 10*(B*b^5*c - 9*A*b^4*c^2)*d^3*e^5 - (6*B*b^6 + 2
3*A*b^5*c)*d^2*e^6)*x^3 + (245*A*b^6*d^2*e^6 - 45*(B*b^2*c^4 - 2*A*b*c^5)*d
^7*e - 27*(8*B*b^3*c^3 + 5*A*b^2*c^4)*d^6*e^2 - 218*(B*b^4*c^2 - 2*A*b^3*c^
3)*d^5*e^3 + 2*(117*B*b^5*c + 179*A*b^4*c^2)*d^4*e^4 - 7*(10*B*b^6 + 97*A*b
^5*c)*d^3*e^5)*x^2 - (15*A*b^2*c^4*d^7*e - 161*A*b^6*d^3*e^5 + 15*(B*b^2*c^
4 - 2*A*b*c^5)*d^8 + 18*(12*B*b^4*c^2 + 5*A*b^3*c^3)*d^6*e^2 - 4*(43*B*b^5*
c + 139*A*b^4*c^2)*d^5*e^3 + (46*B*b^6 + 537*A*b^5*c)*d^4*e^4)*x)*sqrt(e*x
+ d))/((b^3*c^5*d^9*e^3 - 4*b^4*c^4*d^8*e^4 + 6*b^5*c^3*d^7*e^5 - 4*b^6*c^2
*d^6*e^6 + b^7*c*d^5*e^7)*x^5 + (3*b^3*c^5*d^10*e^2 - 11*b^4*c^4*d^9*e^3 +
14*b^5*c^3*d^8*e^4 - 6*b^6*c^2*d^7*e^5 - b^7*c*d^6*e^6 + b^8*d^5*e^7)*x^4 +
 3*(b^3*c^5*d^11*e - 3*b^4*c^4*d^10*e^2 + 2*b^5*c^3*d^9*e^3 + 2*b^6*c^2*d^8
*e^4 - 3*b^7*c*d^7*e^5 + b^8*d^6*e^6)*x^3 + (b^3*c^5*d^12 - b^4*c^4*d^11*e
- 6*b^5*c^3*d^10*e^2 + 14*b^6*c^2*d^9*e^3 - 11*b^7*c*d^8*e^4 + 3*b^8*d^7*e^
5)*x^2 + (b^4*c^4*d^12 - 4*b^5*c^3*d^11*e + 6*b^6*c^2*d^10*e^2 - 4*b^7*c*d^
9*e^3 + b^8*d^8*e^4)*x), 1/30*(30*((2*(B*b*c^5 - 2*A*c^6)*d^6*e^3 - (9*B*b^
2*c^4 - 11*A*b*c^5)*d^5*e^4)*x^5 + (6*(B*b*c^5 - 2*A*c^6)*d^7*e^2 - (25*B*b
^2*c^4 - 29*A*b*c^5)*d^6*e^3 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^5*e^4)*x^4 +
3*(2*(B*b*c^5 - 2*A*c^6)*d^8*e - 7*(B*b^2*c^4 - A*b*c^5)*d^7*e^2 - (9*B*b^3
*c^3 - 11*A*b^2*c^4)*d^6*e^3)*x^3 + (2*(B*b*c^5 - 2*A*c^6)*d^9 - (3*B*b^2*c
^4 + A*b*c^5)*d^8*e - 3*(9*B*b^3*c^3 - 11*A*b^2*c^4)*d^7*e^2)*x^2 + (2*(B*b
^2*c^4 - 2*A*b*c^5)*d^9 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^8*e)*x)*sqrt(-c/(c
*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x +
c*d)) + 15*((7*A*b^5*c*e^8 - 2*(B*b*c^5 - 2*A*c^6)*d^5*e^3 + (8*B*b^2*c^4 -
 9*A*b*c^5)*d^4*e^4 - 4*(3*B*b^3*c^3 + A*b^2*c^4)*d^3*e^5 + 2*(4*B*b^4*c^2
+ 13*A*b^3*c^3)*d^2*e^6 - 2*(B*b^5*c + 12*A*b^4*c^2)*d*e^7)*x^5 + (7*A*b^6*
e^8 - 6*(B*b*c^5 - 2*A*c^6)*d^6*e^2 + (22*B*b^2*c^4 - 23*A*b*c^5)*d^5*e^3 -
 7*(4*B*b^3*c^3 + 3*A*b^2*c^4)*d^4*e^4 + 2*(6*B*b^4*c^2 + 37*A*b^3*c^3)*d^3
*e^5 + 2*(B*b^5*c - 23*A*b^4*c^2)*d^2*e^6 - (2*B*b^6 + 3*A*b^5*c)*d*e^7)*x^
4 + 3*(7*A*b^6*d*e^7 - 2*(B*b*c^5 - 2*A*c^6)*d^7*e + (6*B*b^2*c^4 - 5*A*b*c
^5)*d^6*e^2 - (4*B*b^3*c^3 + 13*A*b^2*c^4)*d^5*e^3 - 2*(2*B*b^4*c^2 - 11*A*
b^3*c^3)*d^4*e^4 + 2*(3*B*b^5*c + A*b^4*c^2)*d^3*e^5 - (2*B*b^6 + 17*A*b^5*
c)*d^2*e^6)*x^3 + (21*A*b^6*d^2*e^6 - 2*(B*b*c^5 - 2*A*c^6)*d^8 + (2*B*b^2*
c^4 + 3*A*b*c^5)*d^7*e + (12*B*b^3*c^3 - 31*A*b^2*c^4)*d^6*e^2 - 14*(2*B*b^
4*c^2 - A*b^3*c^3)*d^5*e^3 + 2*(11*B*b^5*c + 27*A*b^4*c^2)*d^4*e^4 - (6*B*b
^6 + 65*A*b^5*c)*d^3*e^5)*x^2 + (7*A*b^6*d^3*e^5 - 2*(B*b^2*c^4 - 2*A*b*c^5
)*d^8 + (8*B*b^3*c^3 - 9*A*b^2*c^4)*d^7*e - 4*(3*B*b^4*c^2 + A*b^3*c^3)*d^6
*e^2 + 2*(4*B*b^5*c + 13*A*b^4*c^2)*d^5*e^3 - 2*(B*b^6 + 12*A*b^5*c)*d^4*e^
4)*x)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(15*A*b^2*c^
4*d^8 - 60*A*b^3*c^3*d^7*e + 90*A*b^4*c^2*d^6*e^2 - 60*A*b^5*c*d^5*e^3 + 15
*A*b^6*d^4*e^4 + 15*(7*A*b^5*c*d*e^7 - (B*b^2*c^4 - 2*A*b*c^5)*d^5*e^3 - 4*
(3*B*b^3*c^3 + A*b^2*c^4)*d^4*e^4 + 2*(4*B*b^4*c^2 + 13*A*b^3*c^3)*d^3*e^5
- 2*(B*b^5*c + 12*A*b^4*c^2)*d^2*e^6)*x^4 + 5*(21*A*b^6*d*e^7 - 9*(B*b^2*c^
4 - 2*A*b*c^5)*d^6*e^2 - 3*(26*B*b^3*c^3 + 11*A*b^2*c^4)*d^5*e^3 + 10*(2*B*
b^4*c^2 + 17*A*b^3*c^3)*d^4*e^4 + 10*(B*b^5*c - 9*A*b^4*c^2)*d^3*e^5 - (6*B
*b^6 + 23*A*b^5*c)*d^2*e^6)*x^3 + (245*A*b^6*d^2*e^6 - 45*(B*b^2*c^4 - 2*A*
b*c^5)*d^7*e - 27*(8*B*b^3*c^3 + 5*A*b^2*c^4)*d^6*e^2 - 218*(B*b^4*c^2 - 2*
A*b^3*c^3)*d^5*e^3 + 2*(117*B*b^5*c + 179*A*b^4*c^2)*d^4*e^4 - 7*(10*B*b^6
+ 97*A*b^5*c)*d^3*e^5)*x^2 - (15*A*b^2*c^4*d^7*e - 161*A*b^6*d^3*e^5 + 15*(
B*b^2*c^4 - 2*A*b*c^5)*d^8 + 18*(12*B*b^4*c^2 + 5*A*b^3*c^3)*d^6*e^2 - 4*(4
3*B*b^5*c + 139*A*b^4*c^2)*d^5*e^3 + (46*B*b^6 + 537*A*b^5*c)*d^4*e^4)*x)*s
qrt(e*x + d))/((b^3*c^5*d^9*e^3 - 4*b^4*c^4*d^8*e^4 + 6*b^5*c^3*d^7*e^5 - 4
*b^6*c^2*d^6*e^6 + b^7*c*d^5*e^7)*x^5 + (3*b^3*c^5*d^10*e^2 - 11*b^4*c^4*d^
```

9*e^3 + 14*b^5*c^3*d^8*e^4 - 6*b^6*c^2*d^7*e^5 - b^7*c*d^6*e^6 + b^8*d^5*e^7)*x^4 + 3*(b^3*c^5*d^11*e - 3*b^4*c^4*d^10*e^2 + 2*b^5*c^3*d^9*e^3 + 2*b^6*c^2*d^8*e^4 - 3*b^7*c*d^7*e^5 + b^8*d^6*e^6)*x^3 + (b^3*c^5*d^12 - b^4*c^4*d^11*e - 6*b^5*c^3*d^10*e^2 + 14*b^6*c^2*d^9*e^3 - 11*b^7*c*d^8*e^4 + 3*b^8*d^7*e^5)*x^2 + (b^4*c^4*d^12 - 4*b^5*c^3*d^11*e + 6*b^6*c^2*d^10*e^2 - 4*b^7*c*d^9*e^3 + b^8*d^8*e^4)*x), -1/30*(30*((7*A*b^5*c*e^8 - 2*(B*b*c^5 - 2*A*c^6)*d^5*e^3 + (8*B*b^2*c^4 - 9*A*b*c^5)*d^4*e^4 - 4*(3*B*b^3*c^3 + A*b^2*c^4)*d^3*e^5 + 2*(4*B*b^4*c^2 + 13*A*b^3*c^3)*d^2*e^6 - 2*(B*b^5*c + 12*A*b^4*c^2)*d*e^7)*x^5 + (7*A*b^6*e^8 - 6*(B*b*c^5 - 2*A*c^6)*d^6*e^2 + (22*B*b^2*c^4 - 23*A*b*c^5)*d^5*e^3 - 7*(4*B*b^3*c^3 + 3*A*b^2*c^4)*d^4*e^4 + 2*(6*B*b^4*c^2 + 37*A*b^3*c^3)*d^3*e^5 + 2*(B*b^5*c - 23*A*b^4*c^2)*d^2*e^6 - (2*B*b^6 + 3*A*b^5*c)*d*e^7)*x^4 + 3*(7*A*b^6*d*e^7 - 2*(B*b*c^5 - 2*A*c^6)*d^7*e + (6*B*b^2*c^4 - 5*A*b*c^5)*d^6*e^2 - (4*B*b^3*c^3 + 13*A*b^2*c^4)*d^5*e^3 - 2*(2*B*b^4*c^2 - 11*A*b^3*c^3)*d^4*e^4 + 2*(3*B*b^5*c + A*b^4*c^2)*d^3*e^5 - (2*B*b^6 + 17*A*b^5*c)*d^2*e^6)*x^3 + (21*A*b^6*d^2*e^6 - 2*(B*b*c^5 - 2*A*c^6)*d^8 + (2*B*b^2*c^4 + 3*A*b*c^5)*d^7*e + (12*B*b^3*c^3 - 31*A*b^2*c^4)*d^6*e^2 - 14*(2*B*b^4*c^2 - A*b^3*c^3)*d^5*e^3 + 2*(11*B*b^5*c + 27*A*b^4*c^2)*d^4*e^4 - (6*B*b^6 + 65*A*b^5*c)*d^3*e^5)*x^2 + (7*A*b^6*d^3*e^5 - 2*(B*b^2*c^4 - 2*A*b*c^5)*d^8 + (8*B*b^3*c^3 - 9*A*b^2*c^4)*d^7*e - 4*(3*B*b^4*c^2 + A*b^3*c^3)*d^6*e^2 + 2*(4*B*b^5*c + 13*A*b^4*c^2)*d^5*e^3 - 2*(B*b^6 + 12*A*b^5*c)*d^4*e^4)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 15*((2*(B*b*c^5 - 2*A*c^6)*d^6*e^3 - (9*B*b^2*c^4 - 11*A*b*c^5)*d^5*e^4)*x^5 + (6*(B*b*c^5 - 2*A*c^6)*d^7*e^2 - (25*B*b^2*c^4 - 29*A*b*c^5)*d^6*e^3 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^5*e^4)*x^4 + 3*(2*(B*b*c^5 - 2*A*c^6)*d^8*e - 7*(B*b^2*c^4 - A*b*c^5)*d^7*e^2 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^6*e^3)*x^3 + (2*(B*b*c^5 - 2*A*c^6)*d^9 - (3*B*b^2*c^4 + A*b*c^5)*d^8*e - 3*(9*B*b^3*c^3 - 11*A*b^2*c^4)*d^7*e^2)*x^2 + (2*(B*b^2*c^4 - 2*A*b*c^5)*d^9 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^8*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + 2*(15*A*b^2*c^4*d^8 - 60*A*b^3*c^3*d^7*e + 90*A*b^4*c^2*d^6*e^2 - 60*A*b^5*c*d^5*e^3 + 15*A*b^6*d^4*e^4 + 15*(7*A*b^5*c*d*e^7 - (B*b^2*c^4 - 2*A*b*c^5)*d^5*e^3 - 4*(3*B*b^3*c^3 + A*b^2*c^4)*d^4*e^4 + 2*(4*B*b^4*c^2 + 13*A*b^3*c^3)*d^3*e^5 - 2*(B*b^5*c + 12*A*b^4*c^2)*d^2*e^6)*x^4 + 5*(21*A*b^6*d*e^7 - 9*(B*b^2*c^4 - 2*A*b*c^5)*d^6*e^2 - 3*(26*B*b^3*c^3 + 11*A*b^2*c^4)*d^5*e^3 + 10*(2*B*b^4*c^2 + 17*A*b^3*c^3)*d^4*e^4 + 10*(B*b^5*c - 9*A*b^4*c^2)*d^3*e^5 - (6*B*b^6 + 23*A*b^5*c)*d^2*e^6)*x^3 + (245*A*b^6*d^2*e^6 - 45*(B*b^2*c^4 - 2*A*b*c^5)*d^7*e - 27*(8*B*b^3*c^3 + 5*A*b^2*c^4)*d^6*e^2 - 218*(B*b^4*c^2 - 2*A*b^3*c^3)*d^5*e^3 + 2*(117*B*b^5*c + 179*A*b^4*c^2)*d^4*e^4 - 7*(10*B*b^6 + 97*A*b^5*c)*d^3*e^5)*x^2 - (15*A*b^2*c^4*d^7*e - 161*A*b^6*d^3*e^5 + 15*(B*b^2*c^4 - 2*A*b*c^5)*d^8 + 18*(12*B*b^4*c^2 + 5*A*b^3*c^3)*d^6*e^2 - 4*(43*B*b^5*c + 139*A*b^4*c^2)*d^5*e^3 + (46*B*b^6 + 537*A*b^5*c)*d^4*e^4)*x)*sqrt(e*x + d))/((b^3*c^5*d^9*e^3 - 4*b^4*c^4*d^8*e^4 + 6*b^5*c^3*d^7*e^5 - 4*b^6*c^2*d^6*e^6 + b^7*c*d^5*e^7)*x^5 + (3*b^3*c^5*d^10*e^2 - 11*b^4*c^4*d^9*e^3 + 14*b^5*c^3*d^8*e^4 - 6*b^6*c^2*d^7*e^5 - b^7*c*d^6*e^6 + b^8*d^5*e^7)*x^4 + 3*(b^3*c^5*d^11*e - 3*b^4*c^4*d^10*e^2 + 2*b^5*c^3*d^9*e^3 + 2*b^6*c^2*d^8*e^4 - 3*b^7*c*d^7*e^5 + b^8*d^6*e^6)*x^3 + (b^3*c^5*d^12 - b^4*c^4*d^11*e - 6*b^5*c^3*d^10*e^2 + 14*b^6*c^2*d^9*e^3 - 11*b^7*c*d^8*e^4 + 3*b^8*d^7*e^5)*x^2 + (b^4*c^4*d^12 - 4*b^5*c^3*d^11*e + 6*b^6*c^2*d^10*e^2 - 4*b^7*c*d^9*e^3 + b^8*d^8*e^4)*x), 1/15*(15*((2*(B*b*c^5 - 2*A*c^6)*d^6*e^3 - (9*B*b^2*c^4 - 11*A*b*c^5)*d^5*e^4)*x^5 + (6*(B*b*c^5 - 2*A*c^6)*d^7*e^2 - (25*B*b^2*c^4 - 29*A*b*c^5)*d^6*e^3 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^5*e^4)*x^4 + 3*(2*(B*b*c^5 - 2*A*c^6)*d^8*e - 7*(B*b^2*c^4 - A*b*c^5)*d^7*e^2 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^6*e^3)*x^3 + (2*(B*b*c^5 - 2*A*c^6)*d^9 - (3*B*b^2*c^4 + A*b*c^5)*d^8*e - 3*(9*B*b^3*c^3 - 11*A*b^2*c^4)*d^7*e^2)*x^2 + (2*(B*b^2*c^4 - 2*A*b*c^5)*d^9 - (9*B*b^3*c^3 - 11*A*b^2*c^4)*d^8*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 15*((7*A*b^5*c*e^8 - 2*(B*b*c^5 - 2*A*c^6)*d^5*e^3 + (8*B*b^2*c^4 - 9*A*b*c^5)*d^4*e^4 - 4*(3*B*b^3*c^3 + A*b^2*c^4)*d^3*e^5 + 2*(4*B*b^4*c^2 + 13*A*b^3*c^3)*d^2*e^6 - 2*(B*b^5*c + 12*A*b^4*c^2)*

```
d*e^7)*x^5 + (7*A*b^6*e^8 - 6*(B*b*c^5 - 2*A*c^6)*d^6*e^2 + (22*B*b^2*c^4 -
 23*A*b*c^5)*d^5*e^3 - 7*(4*B*b^3*c^3 + 3*A*b^2*c^4)*d^4*e^4 + 2*(6*B*b^4*c
^2 + 37*A*b^3*c^3)*d^3*e^5 + 2*(B*b^5*c - 23*A*b^4*c^2)*d^2*e^6 - (2*B*b^6
+ 3*A*b^5*c)*d*e^7)*x^4 + 3*(7*A*b^6*d*e^7 - 2*(B*b*c^5 - 2*A*c^6)*d^7*e +
(6*B*b^2*c^4 - 5*A*b*c^5)*d^6*e^2 - (4*B*b^3*c^3 + 13*A*b^2*c^4)*d^5*e^3 -
2*(2*B*b^4*c^2 - 11*A*b^3*c^3)*d^4*e^4 + 2*(3*B*b^5*c + A*b^4*c^2)*d^3*e^5
- (2*B*b^6 + 17*A*b^5*c)*d^2*e^6)*x^3 + (21*A*b^6*d^2*e^6 - 2*(B*b*c^5 - 2*
A*c^6)*d^8 + (2*B*b^2*c^4 + 3*A*b*c^5)*d^7*e + (12*B*b^3*c^3 - 31*A*b^2*c^4
)*d^6*e^2 - 14*(2*B*b^4*c^2 - A*b^3*c^3)*d^5*e^3 + 2*(11*B*b^5*c + 27*A*b^4
*c^2)*d^4*e^4 - (6*B*b^6 + 65*A*b^5*c)*d^3*e^5)*x^2 + (7*A*b^6*d^3*e^5 - 2*
(B*b^2*c^4 - 2*A*b*c^5)*d^8 + (8*B*b^3*c^3 - 9*A*b^2*c^4)*d^7*e - 4*(3*B*b^
4*c^2 + A*b^3*c^3)*d^6*e^2 + 2*(4*B*b^5*c + 13*A*b^4*c^2)*d^5*e^3 - 2*(B*b^
6 + 12*A*b^5*c)*d^4*e^4)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (15
*A*b^2*c^4*d^8 - 60*A*b^3*c^3*d^7*e + 90*A*b^4*c^2*d^6*e^2 - 60*A*b^5*c*d^5
*e^3 + 15*A*b^6*d^4*e^4 + 15*(7*A*b^5*c*d*e^7 - (B*b^2*c^4 - 2*A*b*c^5)*d^5
*e^3 - 4*(3*B*b^3*c^3 + A*b^2*c^4)*d^4*e^4 + 2*(4*B*b^4*c^2 + 13*A*b^3*c^3)
*d^3*e^5 - 2*(B*b^5*c + 12*A*b^4*c^2)*d^2*e^6)*x^4 + 5*(21*A*b^6*d*e^7 - 9*
(B*b^2*c^4 - 2*A*b*c^5)*d^6*e^2 - 3*(26*B*b^3*c^3 + 11*A*b^2*c^4)*d^5*e^3 +
 10*(2*B*b^4*c^2 + 17*A*b^3*c^3)*d^4*e^4 + 10*(B*b^5*c - 9*A*b^4*c^2)*d^3*e
^5 - (6*B*b^6 + 23*A*b^5*c)*d^2*e^6)*x^3 + (245*A*b^6*d^2*e^6 - 45*(B*b^2*c
^4 - 2*A*b*c^5)*d^7*e - 27*(8*B*b^3*c^3 + 5*A*b^2*c^4)*d^6*e^2 - 218*(B*b^4
*c^2 - 2*A*b^3*c^3)*d^5*e^3 + 2*(117*B*b^5*c + 179*A*b^4*c^2)*d^4*e^4 - 7*(
10*B*b^6 + 97*A*b^5*c)*d^3*e^5)*x^2 - (15*A*b^2*c^4*d^7*e - 161*A*b^6*d^3*e
^5 + 15*(B*b^2*c^4 - 2*A*b*c^5)*d^8 + 18*(12*B*b^4*c^2 + 5*A*b^3*c^3)*d^6*e
^2 - 4*(43*B*b^5*c + 139*A*b^4*c^2)*d^5*e^3 + (46*B*b^6 + 537*A*b^5*c)*d^4*
e^4)*x)*sqrt(e*x + d))/((b^3*c^5*d^9*e^3 - 4*b^4*c^4*d^8*e^4 + 6*b^5*c^3*d^
7*e^5 - 4*b^6*c^2*d^6*e^6 + b^7*c*d^5*e^7)*x^5 + (3*b^3*c^5*d^10*e^2 - 11*b
^4*c^4*d^9*e^3 + 14*b^5*c^3*d^8*e^4 - 6*b^6*c^2*d^7*e^5 - b^7*c*d^6*e^6 + b
^8*d^5*e^7)*x^4 + 3*(b^3*c^5*d^11*e - 3*b^4*c^4*d^10*e^2 + 2*b^5*c^3*d^9*e^
3 + 2*b^6*c^2*d^8*e^4 - 3*b^7*c*d^7*e^5 + b^8*d^6*e^6)*x^3 + (b^3*c^5*d^12
- b^4*c^4*d^11*e - 6*b^5*c^3*d^10*e^2 + 14*b^6*c^2*d^9*e^3 - 11*b^7*c*d^8*e
^4 + 3*b^8*d^7*e^5)*x^2 + (b^4*c^4*d^12 - 4*b^5*c^3*d^11*e + 6*b^6*c^2*d^10
*e^2 - 4*b^7*c*d^9*e^3 + b^8*d^8*e^4)*x)]
```

giac [B] time = 0.49, size = 867, normalized size = 1.90

$$-\frac{\left(2\,Bbc^5d - 4\,Ac^6d - 9\,Bb^2c^4e + 11\,Abc^5e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(b^3c^4d^4 - 4\,b^4c^3d^3e + 6\,b^5c^2d^2e^2 - 4\,b^6cde^3 + b^7e^4\right)\sqrt{-c^2d+bce}} + \frac{(xe+d)^{\frac{3}{2}}Bbc^4d^4e - 2\,(xe+d)^{\frac{3}{2}}Ac^5d^4e - \sqrt{xe+d}\,Bbc^4d^5e + 2\,\sqrt{xe+d}\,Ac^5d^5e + 4\,(xe+d)^{\frac{3}{2}}Abc^4d^3e^2 - 5\,\sqrt{xe+d}\,Abc^4d^4e^2 - 6\,(xe+d)^{\frac{3}{2}}Ab^2c^3d^2e^3 + 10\,\sqrt{xe+d}\,Ab^2c^3d^3e^3 + 4\,(xe+d)^{\frac{3}{2}}Ab^3c^2de^4 - 10\,\sqrt{xe+d}\,Ab^3c^2d^2e^4 - (xe+d)^{\frac{3}{2}}Ab^4ce^5 + 5\,\sqrt{xe+d}\,Ab^4cde^5 - \sqrt{xe+d}\,Ab^5e^6}{\left(b^2c^4d^8 - 4\,b^3c^3d^7e + 6\,b^4c^2d^6e^2 - 4\,b^5cd^5e^3 + b^6d^4e^4\right)\left((xe+d)^2c - 2\,(xe+d)cd + cd^2 + (xe+d)be - bde\right)} + \frac{2\left(90\,(xe+d)^2Bc^2d^3e^2 + 15\,(xe+d)Bc^2d^4e^2 + 3\,Bc^2d^5e^2 - 60\,(xe+d)^2Bbcd^2e^3 - 150\,(xe+d)^2Ac^2d^2e^3 - 20\,(xe+d)Bbcd^3e^3 - 20\,(xe+d)Ac^2d^3e^3 - 6\,Bbcd^4e^3 - 3\,Ac^2d^4e^3 + 15\,(xe+d)^2Bb^2de^4 + 150\,(xe+d)^2Abcde^4 + 5\,(xe+d)Bb^2d^2e^4 + 30\,(xe+d)Abcd^2e^4 + 3\,Bb^2d^3e^4 + 6\,Abcd^3e^4 - 45\,(xe+d)^2Ab^2e^5 - 10\,(xe+d)Ab^2de^5 - 3\,Ab^2d^2e^5\right)}{15\left(c^4d^8 - 4\,bc^3d^7e + 6\,b^2c^2d^6e^2 - 4\,b^3cd^5e^3 + b^4d^4e^4\right)(xe+d)^{\frac{5}{2}}} + \frac{\left(2\,Bbd - 4\,Acd - 7\,Abe\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^5*d - 4*A*c^6*d - 9*B*b^2*c^4*e + 11*A*b*c^5*e)*arctan(sqrt(x*e +
 d)*c/sqrt(-c^2*d + b*c*e))/((b^3*c^4*d^4 - 4*b^4*c^3*d^3*e + 6*b^5*c^2*d^2
*e^2 - 4*b^6*c*d*e^3 + b^7*e^4)*sqrt(-c^2*d + b*c*e)) + ((x*e + d)^(3/2)*B*
b*c^4*d^4*e - 2*(x*e + d)^(3/2)*A*c^5*d^4*e - sqrt(x*e + d)*B*b*c^4*d^5*e +
 2*sqrt(x*e + d)*A*c^5*d^5*e + 4*(x*e + d)^(3/2)*A*b*c^4*d^3*e^2 - 5*sqrt(x
*e + d)*A*b*c^4*d^4*e^2 - 6*(x*e + d)^(3/2)*A*b^2*c^3*d^2*e^3 + 10*sqrt(x*e
 + d)*A*b^2*c^3*d^3*e^3 + 4*(x*e + d)^(3/2)*A*b^3*c^2*d*e^4 - 10*sqrt(x*e +
 d)*A*b^3*c^2*d^2*e^4 - (x*e + d)^(3/2)*A*b^4*c*e^5 + 5*sqrt(x*e + d)*A*b^4
*c*d*e^5 - sqrt(x*e + d)*A*b^5*e^6)/((b^2*c^4*d^8 - 4*b^3*c^3*d^7*e + 6*b^4
*c^2*d^6*e^2 - 4*b^5*c*d^5*e^3 + b^6*d^4*e^4)*((x*e + d)^2*c - 2*(x*e + d)*
c*d + c*d^2 + (x*e + d)*b*e - b*d*e)) + 2/15*(90*(x*e + d)^2*B*c^2*d^3*e^2
+ 15*(x*e + d)*B*c^2*d^4*e^2 + 3*B*c^2*d^5*e^2 - 60*(x*e + d)^2*B*b*c*d^2*e
^3 - 150*(x*e + d)^2*A*c^2*d^2*e^3 - 20*(x*e + d)*B*b*c*d^3*e^3 - 20*(x*e +
 d)*A*c^2*d^3*e^3 - 6*B*b*c*d^4*e^3 - 3*A*c^2*d^4*e^3 + 15*(x*e + d)^2*B*b^
2*d*e^4 + 150*(x*e + d)^2*A*b*c*d*e^4 + 5*(x*e + d)*B*b^2*d^2*e^4 + 30*(x*e
 + d)*A*b*c*d^2*e^4 + 3*B*b^2*d^3*e^4 + 6*A*b*c*d^3*e^4 - 45*(x*e + d)^2*A*
b^2*e^5 - 10*(x*e + d)*A*b^2*d*e^5 - 3*A*b^2*d^2*e^5)/((c^4*d^8 - 4*b*c^3*d
^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*(x*e + d)^(5/2))
```

```
+ (2*B*b*d - 4*A*c*d - 7*A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d
)*d^4)
```

maple [A] time = 0.10, size = 707, normalized size = 1.55

$$-\frac{11 A c^5 e \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)c}\,b^2}+\frac{4 A c^6 d \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)c}\,b^3}+\frac{9 B c^4 e \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)c}\,b}-\frac{2 B c^5 d \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)c}\,b^2}-\frac{\sqrt{ex+d}\,A c^5 e}{(be-cd)^4(cex+be)b^2}+\frac{\sqrt{ex+d}\,B c^4 e}{(be-cd)^4(cex+be)b}-\frac{6 A b^2 e^5}{(be-cd)^4\sqrt{ex+d}\,d^4}+\frac{20 A b c e^4}{(be-cd)^4\sqrt{ex+d}\,d^3}-\frac{20 A c^2 e^3}{(be-cd)^4\sqrt{ex+d}\,d^2}+\frac{2 B b^2 e^4}{(be-cd)^4\sqrt{ex+d}\,d^3}-\frac{8 B b c e^3}{(be-cd)^4\sqrt{ex+d}\,d^2}+\frac{12 B c^2 e^2}{(be-cd)^4\sqrt{ex+d}\,d}-\frac{4 A b e^4}{3(be-cd)^3(ex+d)^{\frac{3}{2}}d^3}+\frac{8 A c e^3}{3(be-cd)^3(ex+d)^{\frac{3}{2}}d^2}+\frac{2 B b e^3}{3(be-cd)^3(ex+d)^{\frac{3}{2}}d^2}-\frac{2 B c e^2}{(be-cd)^3(ex+d)^{\frac{3}{2}}d}-\frac{2 A e^3}{5(be-cd)^2(ex+d)^{\frac{5}{2}}d^2}+\frac{2 B e^2}{5(be-cd)^2(ex+d)^{\frac{5}{2}}d}+\frac{7 A e \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2 d^{\frac{9}{2}}}+\frac{4 A c \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^3 d^{\frac{7}{2}}}-\frac{2 B \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^2 d^{\frac{7}{2}}}-\frac{\sqrt{ex+d}\,A}{b^2 d^4 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -e*c^5/(b*e-c*d)^4/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A+e*c^4/(b*e-c*d)^4/b*(e*x
+d)^(1/2)/(c*e*x+b*e)*B-11*e*c^5/(b*e-c*d)^4/b^2/((b*e-c*d)*c)^(1/2)*arctan
((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+4*c^6/(b*e-c*d)^4/b^3/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d+9*e*c^4/(b*e-c*d)^4/
b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2*c^5/(
b*e-c*d)^4/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)
*c)*B*d-1/b^2/d^4*A*(e*x+d)^(1/2)/x+7*e/b^2/d^(9/2)*arctanh((e*x+d)^(1/2)/d
^(1/2))*A+4/b^3/d^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(7/2)*ar
ctanh((e*x+d)^(1/2)/d^(1/2))*B-2/5*e^3/(b*e-c*d)^2/d^2/(e*x+d)^(5/2)*A+2/5*
e^2/(b*e-c*d)^2/d/(e*x+d)^(5/2)*B-4/3*e^4/(b*e-c*d)^3/d^3/(e*x+d)^(3/2)*A*b
+8/3*e^3/(b*e-c*d)^3/d^2/(e*x+d)^(3/2)*A*c+2/3*e^3/(b*e-c*d)^3/d^2/(e*x+d)^
(3/2)*B*b-2*e^2/(b*e-c*d)^3/d/(e*x+d)^(3/2)*B*c-6*e^5/(b*e-c*d)^4/d^4/(e*x+
d)^(1/2)*A*b^2+20*e^4/(b*e-c*d)^4/d^3/(e*x+d)^(1/2)*A*b*c-20*e^3/(b*e-c*d)^
4/d^2/(e*x+d)^(1/2)*A*c^2+2*e^4/(b*e-c*d)^4/d^3/(e*x+d)^(1/2)*B*b^2-8*e^3/(
b*e-c*d)^4/d^2/(e*x+d)^(1/2)*B*b*c+12*e^2/(b*e-c*d)^4/d/(e*x+d)^(1/2)*B*c^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 7.16, size = 20597, normalized size = 45.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(7/2)),x)
```

```
[Out] log((((49*A^2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 2
8*A*B*b^2*d*e + 56*A^2*b*c*d*e)/(4*b^6*d^9))^(1/2)*((d + e*x)^(1/2)*((49*A^
2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 28*A*B*b^2*d*
e + 56*A^2*b*c*d*e)/(4*b^6*d^9))^(1/2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^
22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^
16*c^19*d^37*e^6 - 286824*b^17*c^18*d^36*e^7 + 744192*b^18*c^17*d^35*e^8 -
1550400*b^19*c^16*d^34*e^9 + 2635680*b^20*c^15*d^33*e^10 - 3695120*b^21*c^1
4*d^32*e^11 + 4299776*b^22*c^13*d^31*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3
359200*b^24*c^11*d^29*e^14 - 2248080*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9
*d^27*e^16 - 558144*b^27*c^8*d^26*e^17 + 201552*b^28*c^7*d^25*e^18 - 57000*
b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 1
76*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^20*e^23) - 8*A*b^10*c^23*d^37*e^3 + 14
8*A*b^11*c^22*d^36*e^4 - 1160*A*b^12*c^21*d^35*e^5 + 4760*A*b^13*c^20*d^34*
e^6 - 8036*A*b^14*c^19*d^33*e^7 - 21868*A*b^15*c^18*d^32*e^8 + 194304*A*b^1
6*c^17*d^31*e^9 - 709280*A*b^17*c^16*d^30*e^10 + 1744160*A*b^18*c^15*d^29*e
```

^11 - 3218072*A*b^19*c^14*d^28*e^12 + 4654832*A*b^20*c^13*d^27*e^13 - 53944
80*A*b^21*c^12*d^26*e^14 + 5063240*A*b^22*c^11*d^25*e^15 - 3863800*A*b^23*c
^10*d^24*e^16 + 2393152*A*b^24*c^9*d^23*e^17 - 1194528*A*b^25*c^8*d^22*e^18
 + 474056*A*b^26*c^7*d^21*e^19 - 146300*A*b^27*c^6*d^20*e^20 + 33880*A*b^28
*c^5*d^19*e^21 - 5544*A*b^29*c^4*d^18*e^22 + 572*A*b^30*c^3*d^17*e^23 - 28*
A*b^31*c^2*d^16*e^24 + 4*B*b^11*c^22*d^37*e^3 - 144*B*b^12*c^21*d^36*e^4 +
1840*B*b^13*c^20*d^35*e^5 - 13160*B*b^14*c^19*d^34*e^6 + 62328*B*b^15*c^18*
d^33*e^7 - 212800*B*b^16*c^17*d^32*e^8 + 550432*B*b^17*c^16*d^31*e^9 - 1113
120*B*b^18*c^15*d^30*e^10 + 1796600*B*b^19*c^14*d^29*e^11 - 2345824*B*b^20*
c^13*d^28*e^12 + 2498496*B*b^21*c^12*d^27*e^13 - 2179632*B*b^22*c^11*d^26*e
^14 + 1557920*B*b^23*c^10*d^25*e^15 - 909120*B*b^24*c^9*d^24*e^16 + 429664*
B*b^25*c^8*d^23*e^17 - 162208*B*b^26*c^7*d^22*e^18 + 47844*B*b^27*c^6*d^21*
e^19 - 10640*B*b^28*c^5*d^20*e^20 + 1680*B*b^29*c^4*d^19*e^21 - 168*B*b^30*
c^3*d^18*e^22 + 8*B*b^31*c^2*d^17*e^23) + (d + e*x)^(1/2)*(1088*A^2*b^7*c^2
4*d^33*e^3 - 64*A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*
A^2*b^9*c^22*d^31*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^2
0*d^29*e^7 - 267432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 +
 473880*A^2*b^14*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A
^2*b^16*c^15*d^24*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18
*c^13*d^22*e^14 + 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d
^20*e^16 + 3751968*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18
 + 1013232*A^2*b^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A
^2*b^25*c^6*d^15*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^
13*e^23 - 98*A^2*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^
9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^
5 - 69252*B^2*b^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B
^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^
15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24
*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 +
 622176*B^2*b^21*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^
2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^1
7*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b
^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 +
 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^
11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^2
8*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 12
44088*A*B*b^16*c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A
*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20
*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^
19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 5
7760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*
c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^23))*((49*A^2*b^2*e^2 + 16*A^2*c^2*d
^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 28*A*B*b^2*d*e + 56*A^2*b*c*d*e)/(4*b
^6*d^9))^(1/2) + 32*A^3*b^4*c^25*d^30*e^3 - 480*A^3*b^5*c^24*d^29*e^4 + 359
0*A^3*b^6*c^23*d^28*e^5 - 17780*A^3*b^7*c^22*d^27*e^6 + 62874*A^3*b^8*c^21*
d^26*e^7 - 157248*A^3*b^9*c^20*d^25*e^8 + 254443*A^3*b^10*c^19*d^24*e^9 - 1
63416*A^3*b^11*c^18*d^23*e^10 - 380204*A^3*b^12*c^17*d^22*e^11 + 1403292*A^
3*b^13*c^16*d^21*e^12 - 2458995*A^3*b^14*c^15*d^20*e^13 + 2901724*A^3*b^15*
c^14*d^19*e^14 - 2487478*A^3*b^16*c^13*d^18*e^15 + 1581048*A^3*b^17*c^12*d^
17*e^16 - 741891*A^3*b^18*c^11*d^16*e^17 + 250736*A^3*b^19*c^10*d^15*e^18 -
 57912*A^3*b^20*c^9*d^14*e^19 + 8204*A^3*b^21*c^8*d^13*e^20 - 539*A^3*b^22*
c^7*d^12*e^21 - 4*B^3*b^7*c^22*d^30*e^3 + 18*B^3*b^8*c^21*d^29*e^4 + 344*B^
3*b^9*c^20*d^28*e^5 - 4228*B^3*b^10*c^19*d^27*e^6 + 22848*B^3*b^11*c^18*d^2
6*e^7 - 76706*B^3*b^12*c^17*d^25*e^8 + 178640*B^3*b^13*c^16*d^24*e^9 - 3041
28*B^3*b^14*c^15*d^23*e^10 + 389136*B^3*b^15*c^14*d^22*e^11 - 379346*B^3*b^
16*c^13*d^21*e^12 + 282744*B^3*b^17*c^12*d^20*e^13 - 160244*B^3*b^18*c^11*d
^19*e^14 + 67984*B^3*b^19*c^10*d^18*e^15 - 20958*B^3*b^20*c^9*d^17*e^16 + 4
448*B^3*b^21*c^8*d^16*e^17 - 584*B^3*b^22*c^7*d^15*e^18 + 36*B^3*b^23*c^6*d
^14*e^19 + 24*A*B^2*b^6*c^23*d^30*e^3 - 192*A*B^2*b^7*c^22*d^29*e^4 - 111*A

```
*B^2*b^8*c^21*d^28*e^5 + 6636*A*B^2*b^9*c^20*d^27*e^6 - 32970*A*B^2*b^10*c^
19*d^26*e^7 + 75432*A*B^2*b^11*c^18*d^25*e^8 - 55881*A*B^2*b^12*c^17*d^24*e
^9 - 172920*A*B^2*b^13*c^16*d^23*e^10 + 664488*A*B^2*b^14*c^15*d^22*e^11 -
1211100*A*B^2*b^15*c^14*d^21*e^12 + 1461999*A*B^2*b^16*c^13*d^20*e^13 - 126
4452*A*B^2*b^17*c^12*d^19*e^14 + 802158*A*B^2*b^18*c^11*d^18*e^15 - 372624*
A*B^2*b^19*c^10*d^17*e^16 + 123945*A*B^2*b^20*c^9*d^16*e^17 - 28080*A*B^2*b
^21*c^8*d^15*e^18 + 3900*A*B^2*b^22*c^7*d^14*e^19 - 252*A*B^2*b^23*c^6*d^13
*e^20 - 48*A^2*B*b^5*c^24*d^30*e^3 + 552*A^2*B*b^6*c^23*d^29*e^4 - 2949*A^2
*B*b^7*c^22*d^28*e^5 + 11844*A^2*B*b^8*c^21*d^27*e^6 - 47628*A^2*B*b^9*c^20
*d^26*e^7 + 176274*A^2*B*b^10*c^19*d^25*e^8 - 502782*A^2*B*b^11*c^18*d^24*e
^9 + 1030776*A^2*B*b^12*c^17*d^23*e^10 - 1480512*A^2*B*b^13*c^16*d^22*e^11
+ 1411806*A^2*B*b^14*c^15*d^21*e^12 - 703164*A^2*B*b^15*c^14*d^20*e^13 - 20
5212*A^2*B*b^16*c^13*d^19*e^14 + 729540*A^2*B*b^17*c^12*d^18*e^15 - 708498*
A^2*B*b^18*c^11*d^17*e^16 + 417222*A^2*B*b^19*c^10*d^16*e^17 - 162912*A^2*B
*b^20*c^9*d^15*e^18 + 41592*A^2*B*b^21*c^8*d^14*e^19 - 6342*A^2*B*b^22*c^7*
d^13*e^20 + 441*A^2*B*b^23*c^6*d^12*e^21)*((49*A^2*b^2*e^2 + 16*A^2*c^2*d^2
 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 28*A*B*b^2*d*e + 56*A^2*b*c*d*e)/(4*b^6
*d^9))^(1/2) - log(32*A^3*b^4*c^25*d^30*e^3 - ((((49*A^2*b^2*e^2)/4 + 4*A^2
*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 7*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(b
^6*d^9))^(1/2)*((d + e*x)^(1/2)*((((49*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*
b^2*d^2 - 4*A*B*b*c*d^2 - 7*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(b^6*d^9))^(1/2)*
(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4 -
 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d^3
6*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*b^
20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*e^
12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*b^
25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^17
+ 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d^2
3*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^20
*e^23) + 8*A*b^10*c^23*d^37*e^3 - 148*A*b^11*c^22*d^36*e^4 + 1160*A*b^12*c^
21*d^35*e^5 - 4760*A*b^13*c^20*d^34*e^6 + 8036*A*b^14*c^19*d^33*e^7 + 21868
*A*b^15*c^18*d^32*e^8 - 194304*A*b^16*c^17*d^31*e^9 + 709280*A*b^17*c^16*d^
30*e^10 - 1744160*A*b^18*c^15*d^29*e^11 + 3218072*A*b^19*c^14*d^28*e^12 - 4
654832*A*b^20*c^13*d^27*e^13 + 5394480*A*b^21*c^12*d^26*e^14 - 5063240*A*b^
22*c^11*d^25*e^15 + 3863800*A*b^23*c^10*d^24*e^16 - 2393152*A*b^24*c^9*d^23
*e^17 + 1194528*A*b^25*c^8*d^22*e^18 - 474056*A*b^26*c^7*d^21*e^19 + 146300
*A*b^27*c^6*d^20*e^20 - 33880*A*b^28*c^5*d^19*e^21 + 5544*A*b^29*c^4*d^18*e
^22 - 572*A*b^30*c^3*d^17*e^23 + 28*A*b^31*c^2*d^16*e^24 - 4*B*b^11*c^22*d^
37*e^3 + 144*B*b^12*c^21*d^36*e^4 - 1840*B*b^13*c^20*d^35*e^5 + 13160*B*b^1
4*c^19*d^34*e^6 - 62328*B*b^15*c^18*d^33*e^7 + 212800*B*b^16*c^17*d^32*e^8
- 550432*B*b^17*c^16*d^31*e^9 + 1113120*B*b^18*c^15*d^30*e^10 - 1796600*B*b
^19*c^14*d^29*e^11 + 2345824*B*b^20*c^13*d^28*e^12 - 2498496*B*b^21*c^12*d^
27*e^13 + 2179632*B*b^22*c^11*d^26*e^14 - 1557920*B*b^23*c^10*d^25*e^15 + 9
09120*B*b^24*c^9*d^24*e^16 - 429664*B*b^25*c^8*d^23*e^17 + 162208*B*b^26*c^
7*d^22*e^18 - 47844*B*b^27*c^6*d^21*e^19 + 10640*B*b^28*c^5*d^20*e^20 - 168
0*B*b^29*c^4*d^19*e^21 + 168*B*b^30*c^3*d^18*e^22 - 8*B*b^31*c^2*d^17*e^23)
 + (d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A^2*b^6*c^25*d^34*e^2 -
 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31*e^5 - 116512*A^2*b^10
*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 267432*A^2*b^12*c^19*d^28*
e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*c^17*d^26*e^10 - 85113
6*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24*e^12 + 1207368*A^2*b^
17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 + 4835160*A^2*b^19*c^12
*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 3751968*A^2*b^21*c^10*d^19*e
^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^23*c^8*d^17*e^19 - 353
210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*e^21 - 16412*A^2*b^26*
c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*b^28*c^3*d^12*e^24 - 1
6*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^
32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^12*c^19*d^30*e^6 + 2016
48*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15
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*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^
25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13
 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*c^10*d^21*e^15 - 31024
2*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c
^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 +
160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^3
4*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*
B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19
*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 +
 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^15*d^25*e^11 - 3244396
*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^
19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10
*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18
 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B
*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^
23))*(((49*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 7
*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(b^6*d^9))^(1/2) - 480*A^3*b^5*c^24*d^29*e^4
 + 3590*A^3*b^6*c^23*d^28*e^5 - 17780*A^3*b^7*c^22*d^27*e^6 + 62874*A^3*b^8
*c^21*d^26*e^7 - 157248*A^3*b^9*c^20*d^25*e^8 + 254443*A^3*b^10*c^19*d^24*e
^9 - 163416*A^3*b^11*c^18*d^23*e^10 - 380204*A^3*b^12*c^17*d^22*e^11 + 1403
292*A^3*b^13*c^16*d^21*e^12 - 2458995*A^3*b^14*c^15*d^20*e^13 + 2901724*A^3
*b^15*c^14*d^19*e^14 - 2487478*A^3*b^16*c^13*d^18*e^15 + 1581048*A^3*b^17*c
^12*d^17*e^16 - 741891*A^3*b^18*c^11*d^16*e^17 + 250736*A^3*b^19*c^10*d^15*
e^18 - 57912*A^3*b^20*c^9*d^14*e^19 + 8204*A^3*b^21*c^8*d^13*e^20 - 539*A^3
*b^22*c^7*d^12*e^21 - 4*B^3*b^7*c^22*d^30*e^3 + 18*B^3*b^8*c^21*d^29*e^4 +
344*B^3*b^9*c^20*d^28*e^5 - 4228*B^3*b^10*c^19*d^27*e^6 + 22848*B^3*b^11*c^
18*d^26*e^7 - 76706*B^3*b^12*c^17*d^25*e^8 + 178640*B^3*b^13*c^16*d^24*e^9
- 304128*B^3*b^14*c^15*d^23*e^10 + 389136*B^3*b^15*c^14*d^22*e^11 - 379346*
B^3*b^16*c^13*d^21*e^12 + 282744*B^3*b^17*c^12*d^20*e^13 - 160244*B^3*b^18*
c^11*d^19*e^14 + 67984*B^3*b^19*c^10*d^18*e^15 - 20958*B^3*b^20*c^9*d^17*e^
16 + 4448*B^3*b^21*c^8*d^16*e^17 - 584*B^3*b^22*c^7*d^15*e^18 + 36*B^3*b^23
*c^6*d^14*e^19 + 24*A*B^2*b^6*c^23*d^30*e^3 - 192*A*B^2*b^7*c^22*d^29*e^4 -
 111*A*B^2*b^8*c^21*d^28*e^5 + 6636*A*B^2*b^9*c^20*d^27*e^6 - 32970*A*B^2*b
^10*c^19*d^26*e^7 + 75432*A*B^2*b^11*c^18*d^25*e^8 - 55881*A*B^2*b^12*c^17*
d^24*e^9 - 172920*A*B^2*b^13*c^16*d^23*e^10 + 664488*A*B^2*b^14*c^15*d^22*e
^11 - 1211100*A*B^2*b^15*c^14*d^21*e^12 + 1461999*A*B^2*b^16*c^13*d^20*e^13
 - 1264452*A*B^2*b^17*c^12*d^19*e^14 + 802158*A*B^2*b^18*c^11*d^18*e^15 - 3
72624*A*B^2*b^19*c^10*d^17*e^16 + 123945*A*B^2*b^20*c^9*d^16*e^17 - 28080*A
*B^2*b^21*c^8*d^15*e^18 + 3900*A*B^2*b^22*c^7*d^14*e^19 - 252*A*B^2*b^23*c^
6*d^13*e^20 - 48*A^2*B*b^5*c^24*d^30*e^3 + 552*A^2*B*b^6*c^23*d^29*e^4 - 29
49*A^2*B*b^7*c^22*d^28*e^5 + 11844*A^2*B*b^8*c^21*d^27*e^6 - 47628*A^2*B*b^
9*c^20*d^26*e^7 + 176274*A^2*B*b^10*c^19*d^25*e^8 - 502782*A^2*B*b^11*c^18*
d^24*e^9 + 1030776*A^2*B*b^12*c^17*d^23*e^10 - 1480512*A^2*B*b^13*c^16*d^22
*e^11 + 1411806*A^2*B*b^14*c^15*d^21*e^12 - 703164*A^2*B*b^15*c^14*d^20*e^1
3 - 205212*A^2*B*b^16*c^13*d^19*e^14 + 729540*A^2*B*b^17*c^12*d^18*e^15 - 7
08498*A^2*B*b^18*c^11*d^17*e^16 + 417222*A^2*B*b^19*c^10*d^16*e^17 - 162912
*A^2*B*b^20*c^9*d^15*e^18 + 41592*A^2*B*b^21*c^8*d^14*e^19 - 6342*A^2*B*b^2
2*c^7*d^13*e^20 + 441*A^2*B*b^23*c^6*d^12*e^21)*(((49*A^2*b^2*e^2)/4 + 4*A^
2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 7*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(
b^6*d^9))^(1/2) + atan((((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A
^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31
*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 2674
32*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*
c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24
*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 +
 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 375196
8*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^
23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*
e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*
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b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^17 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^20*e^23) - 8*A*b^10*c^23*d^37*e^3 + 148*A*b^11*c^22*d^36*e^4 - 1160*A*b^12*c^21*d^35*e^5 + 4760*A*b^13*c^20*d^34*e^6 - 8036*A*b^14*c^19*d^33*e^7 - 21868*A*b^15*c^18*d^32*e^8 + 194304*A*b^16*c^17*d^31*e^9 - 709280*A*b^17*c^16*d^30*e^10 + 1744160*A*b^18*c^15*d^29*e^11 - 3218072*A*b^19*c^14*d^28*e^12 + 4654832*A*b^20*c^13*d^27*e^13 - 5394480*A*b^21*c^12*d^26*e^14 + 5063240*A*b^22*c^11*d^25*e^15 - 3863800*A*b^23*c^10*d^24*e^16 + 2393152*A*b^24*c^9*d^23*e^17 - 1194528*A*b^25*c^8*d^22*e^18 + 474056*A*b^26*c^7*d^21*e^19 - 146300*A*b^27*c^6*d^20*e^20 + 33880*A*b^28*c^5*d^19*e^21 - 5544*A*b^29*c^4*d^18*e^22 + 572*A*b^30*c^3*d^17*e^23 - 28*A*b^31*c^2*d^16*e^24 + 4*B*b^11*c^22*d^37*e^3 - 144*B*b^12*c^21*d^36*e^4 + 1840*B*b^13*c^20*d^35*e^5 - 13160*B*b^14*c^19*d^34*e^6 + 62328*B*b^15*c^18*d^33*e^7 - 212800*B*b^16*c^17*d^32*e^8 + 550432*B*b^17*c^16*d^31*e^9 - 1113120*B*b^18*c^15*d^30*e^10 + 1796600*B*b^19*c^14*d^29*e^11 - 2345824*B*b^20*c^13*d^28*e^12 + 2498496*B*b^21*c^12*d^27*e^13 - 2179632*B*b^22*c^11*d^26*e^14 + 1557920*B*b^23*c^10*d^25*e^15 - 909120*B*b^24*c^9*d^24*e^16 + 429664*B*b^25*c^8*d^23*e^17 - 162208*B*b^26*c^7*d^22*e^18 + 47844*B*b^27*c^6*d^21*e^19 - 10640*B*b^28*c^5*d^20*e^20 + 1680*B*b^29*c^4*d^19*e^21 - 168*B*b^30*c^3*d^18*e^22 + 8*B*b^31*c^2*d^17*e^23))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^

14*c*d*e^8)))^(1/2)*1i + ((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 267432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 + 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 3751968*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^17 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^20*e^23) + 8*A*b^10*c^23*d^37*e^3 - 148*A*b^11*c^22*d^36*e^4 + 1160*A*b^12*c^21*d^35*e^5 - 4760*A*b^13*c^20*d^34*e^6 + 8036*A*b^14*c^19*d^33*e^7 + 21868*A*b^15*c^18*d^32*e^8 - 194304*A*b^16*c^17*d^31*e^9 + 709280*A*b^17*c^16*d^30*e^10 - 1744160*A*b^18*c^15*d^29*e^11 + 3218072*A*b^19*c^14*d^28*e^12 - 4654832*A*b^20*c^13*d^27*e^13 + 5394480*A*b^21*c^12*d^26*e^14 - 5063240*A*b^22*c^11*d^25*e^15 + 3863800*A*b^23*c^10*d^24*e^16 - 2393152*A*b^24*c^9*d^23*e^17 + 1194528*A*b^25*c^8*d^22*e^18 - 474056*A*b^26*c^7*d^21*e^19 + 146300*A*b^27*c^6*d^20*e^20 - 33880*A*b^28*c^5*d^19*e^21 + 5544*A*b^29*c^4*d^18*e^22 - 572*A*b^30*c^3*d^17*e^23 + 28*A*b^31*c^2*d^16*e^24 - 4*B*b^11*c^22*d^37*e^3 + 144*B*b^12*c^21*d^36*e^4 - 1840*B*b^13*c^20*d^35*e^5 + 13160*B*b^14*c^19*d^34*e^6 - 62328*B*b^15*c^18*d^33*e^7 + 212800*B*b^16*c^17*d^32*e^8 - 550432*B*b^17*c^16*d^31*e^9 + 1113120*B*b^18*c^15*d^30*e^10 - 1796600*

B*b^19*c^14*d^29*e^11 + 2345824*B*b^20*c^13*d^28*e^12 - 2498496*B*b^21*c^12
*d^27*e^13 + 2179632*B*b^22*c^11*d^26*e^14 - 1557920*B*b^23*c^10*d^25*e^15
+ 909120*B*b^24*c^9*d^24*e^16 - 429664*B*b^25*c^8*d^23*e^17 + 162208*B*b^26
*c^7*d^22*e^18 - 47844*B*b^27*c^6*d^21*e^19 + 10640*B*b^28*c^5*d^20*e^20 -
1680*B*b^29*c^4*d^19*e^21 + 168*B*b^30*c^3*d^18*e^22 - 8*B*b^31*c^2*d^17*e^
23))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*
b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2
- 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b
^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e
^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b
^14*c*d*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64
*A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^
31*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 26
7432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^1
4*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^
24*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14
 + 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 3751
968*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*
b^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^1
5*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^
2*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3
 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b
^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^
28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 +
1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168
*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^2
1*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19
*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B
^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^
22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*
c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^
6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*
A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*
c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^
23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15
 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 71318
4*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c
^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 +
 56*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*
B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8
*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^1
5*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6
*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 +
36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^
11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198
*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d
*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36
*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4
*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1
/2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e
^4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18
*d^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 263568
0*b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^3
1*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 224808
0*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e
^17 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5
*d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*
d^20*e^23) + 8*A*b^10*c^23*d^37*e^3 - 148*A*b^11*c^22*d^36*e^4 + 1160*A*b^1
2*c^21*d^35*e^5 - 4760*A*b^13*c^20*d^34*e^6 + 8036*A*b^14*c^19*d^33*e^7 + 2

1868*A*b^15*c^18*d^32*e^8 - 194304*A*b^16*c^17*d^31*e^9 + 709280*A*b^17*c^16*d^30*e^10 - 1744160*A*b^18*c^15*d^29*e^11 + 3218072*A*b^19*c^14*d^28*e^12 - 4654832*A*b^20*c^13*d^27*e^13 + 5394480*A*b^21*c^12*d^26*e^14 - 5063240*A*b^22*c^11*d^25*e^15 + 3863800*A*b^23*c^10*d^24*e^16 - 2393152*A*b^24*c^9*d^23*e^17 + 1194528*A*b^25*c^8*d^22*e^18 - 474056*A*b^26*c^7*d^21*e^19 + 146300*A*b^27*c^6*d^20*e^20 - 33880*A*b^28*c^5*d^19*e^21 + 5544*A*b^29*c^4*d^18*e^22 - 572*A*b^30*c^3*d^17*e^23 + 28*A*b^31*c^2*d^16*e^24 - 4*B*b^11*c^22*d^37*e^3 + 144*B*b^12*c^21*d^36*e^4 - 1840*B*b^13*c^20*d^35*e^5 + 13160*B*b^14*c^19*d^34*e^6 - 62328*B*b^15*c^18*d^33*e^7 + 212800*B*b^16*c^17*d^32*e^8 - 550432*B*b^17*c^16*d^31*e^9 + 1113120*B*b^18*c^15*d^30*e^10 - 1796600*B*b^19*c^14*d^29*e^11 + 2345824*B*b^20*c^13*d^28*e^12 - 2498496*B*b^21*c^12*d^27*e^13 + 2179632*B*b^22*c^11*d^26*e^14 - 1557920*B*b^23*c^10*d^25*e^15 + 909120*B*b^24*c^9*d^24*e^16 - 429664*B*b^25*c^8*d^23*e^17 + 162208*B*b^26*c^7*d^22*e^18 - 47844*B*b^27*c^6*d^21*e^19 + 10640*B*b^28*c^5*d^20*e^20 - 1680*B*b^29*c^4*d^19*e^21 + 168*B*b^30*c^3*d^18*e^22 - 8*B*b^31*c^2*d^17*e^23))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2) - ((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 267432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 + 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 3751968*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2

)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4
 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d
^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*
b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*
e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*
b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^1
7 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d
^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^
20*e^23) - 8*A*b^10*c^23*d^37*e^3 + 148*A*b^11*c^22*d^36*e^4 - 1160*A*b^12*
c^21*d^35*e^5 + 4760*A*b^13*c^20*d^34*e^6 - 8036*A*b^14*c^19*d^33*e^7 - 218
68*A*b^15*c^18*d^32*e^8 + 194304*A*b^16*c^17*d^31*e^9 - 709280*A*b^17*c^16*
d^30*e^10 + 1744160*A*b^18*c^15*d^29*e^11 - 3218072*A*b^19*c^14*d^28*e^12 +
 4654832*A*b^20*c^13*d^27*e^13 - 5394480*A*b^21*c^12*d^26*e^14 + 5063240*A*
b^22*c^11*d^25*e^15 - 3863800*A*b^23*c^10*d^24*e^16 + 2393152*A*b^24*c^9*d^
23*e^17 - 1194528*A*b^25*c^8*d^22*e^18 + 474056*A*b^26*c^7*d^21*e^19 - 1463
00*A*b^27*c^6*d^20*e^20 + 33880*A*b^28*c^5*d^19*e^21 - 5544*A*b^29*c^4*d^18
*e^22 + 572*A*b^30*c^3*d^17*e^23 - 28*A*b^31*c^2*d^16*e^24 + 4*B*b^11*c^22*
d^37*e^3 - 144*B*b^12*c^21*d^36*e^4 + 1840*B*b^13*c^20*d^35*e^5 - 13160*B*b
^14*c^19*d^34*e^6 + 62328*B*b^15*c^18*d^33*e^7 - 212800*B*b^16*c^17*d^32*e^
8 + 550432*B*b^17*c^16*d^31*e^9 - 1113120*B*b^18*c^15*d^30*e^10 + 1796600*B
*b^19*c^14*d^29*e^11 - 2345824*B*b^20*c^13*d^28*e^12 + 2498496*B*b^21*c^12*
d^27*e^13 - 2179632*B*b^22*c^11*d^26*e^14 + 1557920*B*b^23*c^10*d^25*e^15 -
 909120*B*b^24*c^9*d^24*e^16 + 429664*B*b^25*c^8*d^23*e^17 - 162208*B*b^26*
c^7*d^22*e^18 + 47844*B*b^27*c^6*d^21*e^19 - 10640*B*b^28*c^5*d^20*e^20 + 1
680*B*b^29*c^4*d^19*e^21 - 168*B*b^30*c^3*d^18*e^22 + 8*B*b^31*c^2*d^17*e^2
3))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b
^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 -
 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^
7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^
4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^
14*c*d*e^8)))^(1/2) - 64*A^3*b^4*c^25*d^30*e^3 + 960*A^3*b^5*c^24*d^29*e^4
 - 7180*A^3*b^6*c^23*d^28*e^5 + 35560*A^3*b^7*c^22*d^27*e^6 - 125748*A^3*b^8
*c^21*d^26*e^7 + 314496*A^3*b^9*c^20*d^25*e^8 - 508886*A^3*b^10*c^19*d^24*e
^9 + 326832*A^3*b^11*c^18*d^23*e^10 + 760408*A^3*b^12*c^17*d^22*e^11 - 2806
584*A^3*b^13*c^16*d^21*e^12 + 4917990*A^3*b^14*c^15*d^20*e^13 - 5803448*A^3
*b^15*c^14*d^19*e^14 + 4974956*A^3*b^16*c^13*d^18*e^15 - 3162096*A^3*b^17*c
^12*d^17*e^16 + 1483782*A^3*b^18*c^11*d^16*e^17 - 501472*A^3*b^19*c^10*d^15
*e^18 + 115824*A^3*b^20*c^9*d^14*e^19 - 16408*A^3*b^21*c^8*d^13*e^20 + 1078
*A^3*b^22*c^7*d^12*e^21 + 8*B^3*b^7*c^22*d^30*e^3 - 36*B^3*b^8*c^21*d^29*e^
4 - 688*B^3*b^9*c^20*d^28*e^5 + 8456*B^3*b^10*c^19*d^27*e^6 - 45696*B^3*b^1
1*c^18*d^26*e^7 + 153412*B^3*b^12*c^17*d^25*e^8 - 357280*B^3*b^13*c^16*d^24
*e^9 + 608256*B^3*b^14*c^15*d^23*e^10 - 778272*B^3*b^15*c^14*d^22*e^11 + 75
8692*B^3*b^16*c^13*d^21*e^12 - 565488*B^3*b^17*c^12*d^20*e^13 + 320488*B^3*
b^18*c^11*d^19*e^14 - 135968*B^3*b^19*c^10*d^18*e^15 + 41916*B^3*b^20*c^9*d
^17*e^16 - 8896*B^3*b^21*c^8*d^16*e^17 + 1168*B^3*b^22*c^7*d^15*e^18 - 72*B
^3*b^23*c^6*d^14*e^19 - 48*A*B^2*b^6*c^23*d^30*e^3 + 384*A*B^2*b^7*c^22*d^2
9*e^4 + 222*A*B^2*b^8*c^21*d^28*e^5 - 13272*A*B^2*b^9*c^20*d^27*e^6 + 65940
*A*B^2*b^10*c^19*d^26*e^7 - 150864*A*B^2*b^11*c^18*d^25*e^8 + 111762*A*B^2*
b^12*c^17*d^24*e^9 + 345840*A*B^2*b^13*c^16*d^23*e^10 - 1328976*A*B^2*b^14*
c^15*d^22*e^11 + 2422200*A*B^2*b^15*c^14*d^21*e^12 - 2923998*A*B^2*b^16*c^1
3*d^20*e^13 + 2528904*A*B^2*b^17*c^12*d^19*e^14 - 1604316*A*B^2*b^18*c^11*d
^18*e^15 + 745248*A*B^2*b^19*c^10*d^17*e^16 - 247890*A*B^2*b^20*c^9*d^16*e^
17 + 56160*A*B^2*b^21*c^8*d^15*e^18 - 7800*A*B^2*b^22*c^7*d^14*e^19 + 504*A
*B^2*b^23*c^6*d^13*e^20 + 96*A^2*B*b^5*c^24*d^30*e^3 - 1104*A^2*B*b^6*c^23*
d^29*e^4 + 5898*A^2*B*b^7*c^22*d^28*e^5 - 23688*A^2*B*b^8*c^21*d^27*e^6 + 9
5256*A^2*B*b^9*c^20*d^26*e^7 - 352548*A^2*B*b^10*c^19*d^25*e^8 + 1005564*A^
2*B*b^11*c^18*d^24*e^9 - 2061552*A^2*B*b^12*c^17*d^23*e^10 + 2961024*A^2*B*
b^13*c^16*d^22*e^11 - 2823612*A^2*B*b^14*c^15*d^21*e^12 + 1406328*A^2*B*b^1
5*c^14*d^20*e^13 + 410424*A^2*B*b^16*c^13*d^19*e^14 - 1459080*A^2*B*b^17*c^

```
12*d^18*e^15 + 1416996*A^2*B*b^18*c^11*d^17*e^16 - 834444*A^2*B*b^19*c^10*d
^16*e^17 + 325824*A^2*B*b^20*c^9*d^15*e^18 - 83184*A^2*B*b^21*c^8*d^14*e^19
 + 12684*A^2*B*b^22*c^7*d^13*e^20 - 882*A^2*B*b^23*c^6*d^12*e^21))*(-(16*A^
2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 -
 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^
10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e
- 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11
*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8))
)^(1/2)*2i - ((2*(A*e^3 - B*d*e^2))/(5*(c*d^2 - b*d*e)) - (2*(d + e*x)*(7*A
*b*e^4 - 14*A*c*d*e^3 - 2*B*b*d*e^3 + 9*B*c*d^2*e^2))/(15*(c*d^2 - b*d*e)^2
) + (2*(d + e*x)^2*(35*A*b^2*e^5 - 10*B*b^2*d*e^4 + 113*A*c^2*d^2*e^3 - 63*
B*c^2*d^3*e^2 - 113*A*b*c*d*e^4 + 38*B*b*c*d^2*e^3))/(15*(c*d^2 - b*d*e)^3)
 + ((d + e*x)^3*(21*A*b^5*e^6 - 6*A*c^5*d^5*e - 6*B*b^5*d*e^5 + 15*A*b*c^4*
d^4*e^2 + 34*B*b^4*c*d^2*e^4 - 142*A*b^2*c^3*d^3*e^3 + 198*A*b^3*c^2*d^2*e^
4 + 66*B*b^2*c^3*d^4*e^2 - 76*B*b^3*c^2*d^3*e^3 - 107*A*b^4*c*d*e^5 + 3*B*b
*c^4*d^5*e))/(3*b^2*(c*d^2 - b*d*e)^4) - ((d + e*x)^4*(4*A*b*c^4*d^3*e^2 -
2*A*c^5*d^4*e - 7*A*b^4*c*e^5 + 24*A*b^3*c^2*d*e^4 - 26*A*b^2*c^3*d^2*e^3 +
 12*B*b^2*c^3*d^3*e^2 - 8*B*b^3*c^2*d^2*e^3 + B*b*c^4*d^4*e + 2*B*b^4*c*d*e
^4))/(b^2*(c*d^2 - b*d*e)^4))/(c*(d + e*x)^(9/2) + (c*d^2 - b*d*e)*(d + e*x
)^(5/2) + (b*e - 2*c*d)*(d + e*x)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1102 $\int \frac{(A+Bx)(d+ex)^{9/2}}{(bx+cx^2)^3}\,dx$

Optimal. Leaf size=461

$$-\frac{(d+ex)^{7/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{3d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(3b^2e(7Ae+4Bd)-4bcd(9Ae+\right.}{4b^5}$$

Rubi [A] time = 1.22, antiderivative size = 461, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 824, 826, 1166, 208}

$$\frac{(d+ex)^{3/2}\left(x\left(b^2c^2de(10Ae+9Bd)+b^3ce^2(Ae+4Bd)-12bc^3d^2(3Ae+Bd)+24Ac^4d^3-5b^4Be^3\right)+bcd^2\left(-bc(13Ae+6Bd)+12Ac^2d+2b^2Be\right)\right)}{4b^4c^2\left(bx+cx^2\right)}-\frac{3e\sqrt{d+ex}\left(b^2c^2de(2Ae+3Bd)+b^3ce^2(Ae+2Bd)-4bc^3d^2(3Ae+Bd)+8Ac^4d^3-5b^4Be^3\right)}{4b^4c^3}+\frac{3(cd-be)^{5/2}\left(-b^2ce(8Bd-Ae)-4bc^2d(2Bd-Ae)+16Ac^3d^2-5b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5c^{7/2}}-\frac{3d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(3b^2e(7Ae+4Bd)-4bcd(9Ae+2Bd)+16Ac^2d^2\right)}{4b^5}-\frac{(d+ex)^{7/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x]
```

```
[Out] (-3*e*(8*A*c^4*d^3 - 5*b^4*B*e^3 + b^3*c*e^2*(2*B*d + A*e) + b^2*c^2*d*e*(3
*B*d + 2*A*e) - 4*b*c^3*d^2*(B*d + 3*A*e))*Sqrt[d + e*x])/(4*b^4*c^3) - ((d
 + e*x)^(7/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2*b^2
*c*(b*x + c*x^2)^2) + ((d + e*x)^(3/2)*(b*c*d^2*(12*A*c^2*d + 2*b^2*B*e - b
*c*(6*B*d + 13*A*e)) + (24*A*c^4*d^3 - 5*b^4*B*e^3 + b^3*c*e^2*(4*B*d + A*e
) - 12*b*c^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(9*B*d + 10*A*e))*x))/(4*b^4*c
^2*(b*x + c*x^2)) - (3*d^(5/2)*(16*A*c^2*d^2 + 3*b^2*e*(4*B*d + 7*A*e) - 4*
b*c*d*(2*B*d + 9*A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5) + (3*(c*d -
b*e)^(5/2)*(16*A*c^3*d^2 - 5*b^3*B*e^2 - 4*b*c^2*d*(2*B*d - A*e) - b^2*c*e*
(8*B*d - A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*c^(
7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int \frac{(d+ex)^{5/2}\left(-\frac{1}{2}d\left(12Ac^2d+2b\right.\right.}{}}{}$$

$$= -\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{(d+ex)^{3/2}\left(bcd^2\left(12Ac\right.\right.}{}$$

$$= -\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3A\right.}{4b^4c^3}$$

$$= -\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3A\right.}{4b^4c^3}$$

$$= -\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3A\right.}{4b^4c^3}$$

$$= -\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3A\right.}{4b^4c^3}$$

Mathematica [A] time = 5.22, size = 589, normalized size = 1.28

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((630*c*(-12*A*c^2*d^2 - b^2*e*(4*B*d + 7*A*e) + b*c*d*(6*B*d + 17*A*e))*(d
 + e*x)^(11/2))/(b^2*d*(-(c*d) + b*e)) - (1260*A*(d + e*x)^(11/2))/x^2 - (6
30*(4*b*B*d - 8*A*c*d + 7*A*b*e)*(d + e*x)^(11/2))/(b*d*x) + ((b + c*x)*(-6
30*b*c^(13/2)*(-24*A*c^3*d^3 + 12*b*c^2*d^2*(B*d + 3*A*e) + b^3*e^2*(4*B*d
+ 7*A*e) - b^2*c*d*e*(9*B*d + 26*A*e))*(d + e*x)^(11/2) + (b + c*x)*(945*c^
(11/2)*(c*d - b*e)^2*(16*A*c^2*d^2 + 3*b^2*e*(4*B*d + 7*A*e) - 4*b*c*d*(2*B
*d + 9*A*e))*((2*Sqrt[d + e*x]*(563*d^4 + 506*d^3*e*x + 408*d^2*e^2*x^2 + 1
85*d*e^3*x^3 + 35*e^4*x^4))/315 - 2*d^(9/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])
```

```
- 6*c^2*d^2*(16*A*c^3*d^2 - 5*b^3*B*e^2 + b^2*c*e*(-8*B*d + A*e) + 4*b*c^2
*d*(-2*B*d + A*e))*(35*c^(9/2)*(d + e*x)^(9/2) + 3*(c*d - b*e)*(15*c^(7/2)*
(d + e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d - b*e)*
(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*ArcTan
h[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))))))/(b^4*c^(11/2)*d*(c*d - b*
e)^2))/(2520*b*d*(b + c*x)^2)
```

IntegrateAlgebraic [B] time = 2.01, size = 1306, normalized size = 2.83

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x]
```

```
[Out] (12*b*B*c^5*d^7*e*Sqrt[d + e*x] - 24*A*c^6*d^7*e*Sqrt[d + e*x] - 33*b^2*B*c
^4*d^6*e^2*Sqrt[d + e*x] + 84*A*b*c^5*d^6*e^2*Sqrt[d + e*x] + 24*b^3*B*c^3*
d^5*e^3*Sqrt[d + e*x] - 102*A*b^2*c^4*d^5*e^3*Sqrt[d + e*x] + 18*b^4*B*c^2*
d^4*e^4*Sqrt[d + e*x] + 45*A*b^3*c^3*d^4*e^4*Sqrt[d + e*x] - 36*b^5*B*c*d^3
*e^5*Sqrt[d + e*x] + 15*b^6*B*d^2*e^6*Sqrt[d + e*x] - 3*A*b^5*c*d^2*e^6*Sqr
t[d + e*x] - 36*b*B*c^5*d^6*e*(d + e*x)^(3/2) + 72*A*c^6*d^6*e*(d + e*x)^(3
/2) + 81*b^2*B*c^4*d^5*e^2*(d + e*x)^(3/2) - 216*A*b*c^5*d^5*e^2*(d + e*x)^
(3/2) - 41*b^3*B*c^3*d^4*e^3*(d + e*x)^(3/2) + 217*A*b^2*c^4*d^4*e^3*(d + e
*x)^(3/2) - 71*b^4*B*c^2*d^3*e^4*(d + e*x)^(3/2) - 74*A*b^3*c^3*d^3*e^4*(d
+ e*x)^(3/2) + 97*b^5*B*c*d^2*e^5*(d + e*x)^(3/2) - 5*A*b^4*c^2*d^2*e^5*(d
+ e*x)^(3/2) - 30*b^6*B*d*e^6*(d + e*x)^(3/2) + 6*A*b^5*c*d*e^6*(d + e*x)^(
3/2) + 36*b*B*c^5*d^5*e*(d + e*x)^(5/2) - 72*A*c^6*d^5*e*(d + e*x)^(5/2) -
63*b^2*B*c^4*d^4*e^2*(d + e*x)^(5/2) + 180*A*b*c^5*d^4*e^2*(d + e*x)^(5/2)
+ 14*b^3*B*c^3*d^3*e^3*(d + e*x)^(5/2) - 136*A*b^2*c^4*d^3*e^3*(d + e*x)^(5
/2) + 96*b^4*B*c^2*d^2*e^4*(d + e*x)^(5/2) + 24*A*b^3*c^3*d^2*e^4*(d + e*x)
^(5/2) - 86*b^5*B*c*d*e^5*(d + e*x)^(5/2) + 10*A*b^4*c^2*d*e^5*(d + e*x)^(5
/2) + 15*b^6*B*e^6*(d + e*x)^(5/2) - 3*A*b^5*c*e^6*(d + e*x)^(5/2) - 12*b*B
*c^5*d^4*e*(d + e*x)^(7/2) + 24*A*c^6*d^4*e*(d + e*x)^(7/2) + 15*b^2*B*c^4*
d^3*e^2*(d + e*x)^(7/2) - 48*A*b*c^5*d^3*e^2*(d + e*x)^(7/2) + 3*b^3*B*c^3*
d^2*e^3*(d + e*x)^(7/2) + 21*A*b^2*c^4*d^2*e^3*(d + e*x)^(7/2) - 51*b^4*B*c
^2*d*e^4*(d + e*x)^(7/2) + 3*A*b^3*c^3*d*e^4*(d + e*x)^(7/2) + 25*b^5*B*c*e
^5*(d + e*x)^(7/2) - 5*A*b^4*c^2*e^5*(d + e*x)^(7/2) + 8*b^4*B*c^2*e^4*(d +
 e*x)^(9/2))/(4*b^4*c^3*e^2*x^2*(c*d - b*e - c*(d + e*x))^2) - (3*(-8*b*B*c
^2*d^2*(-(c*d) + b*e)^(5/2) + 16*A*c^3*d^2*(-(c*d) + b*e)^(5/2) - 8*b^2*B*c
*d*e*(-(c*d) + b*e)^(5/2) + 4*A*b*c^2*d*e*(-(c*d) + b*e)^(5/2) - 5*b^3*B*e^
2*(-(c*d) + b*e)^(5/2) + A*b^2*c*e^2*(-(c*d) + b*e)^(5/2))*ArcTan[(Sqrt[c]*
Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(4*b^5*c^(7/2)) - (3*(-8*b*
B*c*d^(9/2) + 16*A*c^2*d^(9/2) + 12*b^2*B*d^(7/2)*e - 36*A*b*c*d^(7/2)*e +
21*A*b^2*d^(5/2)*e^2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5)
```

fricas [B] time = 141.14, size = 3989, normalized size = 8.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*((8*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(2*B*b^2*c^5 - 7*A*b*c^6)*d^3*e - 3
*(B*b^3*c^4 + 3*A*b^2*c^5)*d^2*e^2 - 2*(B*b^4*c^3 + A*b^3*c^4)*d*e^3 + (5*B
*b^5*c^2 - A*b^4*c^3)*e^4)*x^4 + 2*(8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 - 4*(2*B*
b^3*c^4 - 7*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 3*A*b^3*c^4)*d^2*e^2 - 2*(B*b
^5*c^2 + A*b^4*c^3)*d*e^3 + (5*B*b^6*c - A*b^5*c^2)*e^4)*x^3 + (8*(B*b^3*c^
4 - 2*A*b^2*c^5)*d^4 - 4*(2*B*b^4*c^3 - 7*A*b^3*c^4)*d^3*e - 3*(B*b^5*c^2 +
 3*A*b^4*c^3)*d^2*e^2 - 2*(B*b^6*c + A*b^5*c^2)*d*e^3 + (5*B*b^7 - A*b^6*c)
*e^4)*x^2)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c
*sqrt((c*d - b*e)/c))/(c*x + b)) + 3*((21*A*b^2*c^5*d^2*e^2 - 8*(B*b*c^6 -
```

2*A*c^7)*d^4 + 12*(B*b^2*c^5 - 3*A*b*c^6)*d^3*e)*x^4 + 2*(21*A*b^3*c^4*d^2*
e^2 - 8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 12*(B*b^3*c^4 - 3*A*b^2*c^5)*d^3*e)*x
^3 + (21*A*b^4*c^3*d^2*e^2 - 8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 + 12*(B*b^4*c^
3 - 3*A*b^3*c^4)*d^3*e)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2
d)/x) + 2(8*B*b^5*c^2*e^4*x^4 - 2*A*b^4*c^3*d^4 - (12*(B*b^2*c^5 - 2*A*b*
c^6)*d^4 - 3*(5*B*b^3*c^4 - 16*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 7*A*b^3*c^
4)*d^2*e^2 + (19*B*b^5*c^2 - 3*A*b^4*c^3)*d*e^3 - 5*(5*B*b^6*c - A*b^5*c^2)
*e^4)*x^3 - (18*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - (23*B*b^4*c^3 - 73*A*b^3*c^
4)*d^3*e + 3*(3*B*b^5*c^2 - 11*A*b^4*c^3)*d^2*e^2 + (11*B*b^6*c + 5*A*b^5*c
^2)*d*e^3 - 3*(5*B*b^7 - A*b^6*c)*e^4)*x^2 - (17*A*b^4*c^3*d^3*e + 4*(B*b^4
*c^3 - 2*A*b^3*c^4)*d^4)*x)*sqrt(e*x + d))/(b^5*c^5*x^4 + 2*b^6*c^4*x^3 + b
^7*c^3*x^2), -1/8*(6*((8*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(2*B*b^2*c^5 - 7*A*b*c
^6)*d^3*e - 3*(B*b^3*c^4 + 3*A*b^2*c^5)*d^2*e^2 - 2*(B*b^4*c^3 + A*b^3*c^4)
*d*e^3 + (5*B*b^5*c^2 - A*b^4*c^3)*e^4)*x^4 + 2*(8*(B*b^2*c^5 - 2*A*b*c^6)*
d^4 - 4*(2*B*b^3*c^4 - 7*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 3*A*b^3*c^4)*d^2
e^2 - 2(B*b^5*c^2 + A*b^4*c^3)*d*e^3 + (5*B*b^6*c - A*b^5*c^2)*e^4)*x^3 +
(8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - 4*(2*B*b^4*c^3 - 7*A*b^3*c^4)*d^3*e - 3
*(B*b^5*c^2 + 3*A*b^4*c^3)*d^2*e^2 - 2*(B*b^6*c + A*b^5*c^2)*d*e^3 + (5*B*b
^7 - A*b^6*c)*e^4)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-
(c*d - b*e)/c)/(c*d - b*e)) - 3*((21*A*b^2*c^5*d^2*e^2 - 8*(B*b*c^6 - 2*A*c
^7)*d^4 + 12*(B*b^2*c^5 - 3*A*b*c^6)*d^3*e)*x^4 + 2*(21*A*b^3*c^4*d^2*e^2 -
8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 12*(B*b^3*c^4 - 3*A*b^2*c^5)*d^3*e)*x^3 +
(21*A*b^4*c^3*d^2*e^2 - 8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 + 12*(B*b^4*c^3 - 3
*A*b^3*c^4)*d^3*e)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x
) - 2*(8*B*b^5*c^2*e^4*x^4 - 2*A*b^4*c^3*d^4 - (12*(B*b^2*c^5 - 2*A*b*c^6)*
d^4 - 3*(5*B*b^3*c^4 - 16*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 7*A*b^3*c^4)*d^
2*e^2 + (19*B*b^5*c^2 - 3*A*b^4*c^3)*d*e^3 - 5*(5*B*b^6*c - A*b^5*c^2)*e^4)
x^3 - (18(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - (23*B*b^4*c^3 - 73*A*b^3*c^4)*d^
3*e + 3*(3*B*b^5*c^2 - 11*A*b^4*c^3)*d^2*e^2 + (11*B*b^6*c + 5*A*b^5*c^2)*d
e^3 - 3(5*B*b^7 - A*b^6*c)*e^4)*x^2 - (17*A*b^4*c^3*d^3*e + 4*(B*b^4*c^3
- 2*A*b^3*c^4)*d^4)*x)*sqrt(e*x + d))/(b^5*c^5*x^4 + 2*b^6*c^4*x^3 + b^7*c^
3*x^2), 1/8*(6*((21*A*b^2*c^5*d^2*e^2 - 8*(B*b*c^6 - 2*A*c^7)*d^4 + 12*(B*b
^2*c^5 - 3*A*b*c^6)*d^3*e)*x^4 + 2*(21*A*b^3*c^4*d^2*e^2 - 8*(B*b^2*c^5 - 2
*A*b*c^6)*d^4 + 12*(B*b^3*c^4 - 3*A*b^2*c^5)*d^3*e)*x^3 + (21*A*b^4*c^3*d^2
e^2 - 8(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 + 12*(B*b^4*c^3 - 3*A*b^3*c^4)*d^3*e
)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 3*((8*(B*b*c^6 - 2*A*c^7
)*d^4 - 4*(2*B*b^2*c^5 - 7*A*b*c^6)*d^3*e - 3*(B*b^3*c^4 + 3*A*b^2*c^5)*d^2
e^2 - 2(B*b^4*c^3 + A*b^3*c^4)*d*e^3 + (5*B*b^5*c^2 - A*b^4*c^3)*e^4)*x^4
+ 2*(8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 - 4*(2*B*b^3*c^4 - 7*A*b^2*c^5)*d^3*e -
3*(B*b^4*c^3 + 3*A*b^3*c^4)*d^2*e^2 - 2*(B*b^5*c^2 + A*b^4*c^3)*d*e^3 + (5
*B*b^6*c - A*b^5*c^2)*e^4)*x^3 + (8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - 4*(2*B*
b^4*c^3 - 7*A*b^3*c^4)*d^3*e - 3*(B*b^5*c^2 + 3*A*b^4*c^3)*d^2*e^2 - 2*(B*b
^6*c + A*b^5*c^2)*d*e^3 + (5*B*b^7 - A*b^6*c)*e^4)*x^2)*sqrt((c*d - b*e)/c)
*log((c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b
)) + 2*(8*B*b^5*c^2*e^4*x^4 - 2*A*b^4*c^3*d^4 - (12*(B*b^2*c^5 - 2*A*b*c^6)
d^4 - 3(5*B*b^3*c^4 - 16*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 7*A*b^3*c^4)*d
^2*e^2 + (19*B*b^5*c^2 - 3*A*b^4*c^3)*d*e^3 - 5*(5*B*b^6*c - A*b^5*c^2)*e^4
)*x^3 - (18*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - (23*B*b^4*c^3 - 73*A*b^3*c^4)*d
^3*e + 3*(3*B*b^5*c^2 - 11*A*b^4*c^3)*d^2*e^2 + (11*B*b^6*c + 5*A*b^5*c^2)*
d*e^3 - 3*(5*B*b^7 - A*b^6*c)*e^4)*x^2 - (17*A*b^4*c^3*d^3*e + 4*(B*b^4*c^3
- 2*A*b^3*c^4)*d^4)*x)*sqrt(e*x + d))/(b^5*c^5*x^4 + 2*b^6*c^4*x^3 + b^7*c
^3*x^2), -1/4*(3*((8*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(2*B*b^2*c^5 - 7*A*b*c^6)*
d^3*e - 3*(B*b^3*c^4 + 3*A*b^2*c^5)*d^2*e^2 - 2*(B*b^4*c^3 + A*b^3*c^4)*d*e
^3 + (5*B*b^5*c^2 - A*b^4*c^3)*e^4)*x^4 + 2*(8*(B*b^2*c^5 - 2*A*b*c^6)*d^4
- 4*(2*B*b^3*c^4 - 7*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 3*A*b^3*c^4)*d^2*e^2
- 2*(B*b^5*c^2 + A*b^4*c^3)*d*e^3 + (5*B*b^6*c - A*b^5*c^2)*e^4)*x^3 + (8*
(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - 4*(2*B*b^4*c^3 - 7*A*b^3*c^4)*d^3*e - 3*(B*
b^5*c^2 + 3*A*b^4*c^3)*d^2*e^2 - 2*(B*b^6*c + A*b^5*c^2)*d*e^3 + (5*B*b^7 -
A*b^6*c)*e^4)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d

```
 - b*e)/c)/(c*d - b*e)) - 3*((21*A*b^2*c^5*d^2*e^2 - 8*(B*b*c^6 - 2*A*c^7)*
d^4 + 12*(B*b^2*c^5 - 3*A*b*c^6)*d^3*e)*x^4 + 2*(21*A*b^3*c^4*d^2*e^2 - 8*(
B*b^2*c^5 - 2*A*b*c^6)*d^4 + 12*(B*b^3*c^4 - 3*A*b^2*c^5)*d^3*e)*x^3 + (21*
A*b^4*c^3*d^2*e^2 - 8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 + 12*(B*b^4*c^3 - 3*A*b
^3*c^4)*d^3*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (8*B*b^5*c^
2*e^4*x^4 - 2*A*b^4*c^3*d^4 - (12*(B*b^2*c^5 - 2*A*b*c^6)*d^4 - 3*(5*B*b^3*
c^4 - 16*A*b^2*c^5)*d^3*e - 3*(B*b^4*c^3 + 7*A*b^3*c^4)*d^2*e^2 + (19*B*b^5
*c^2 - 3*A*b^4*c^3)*d*e^3 - 5*(5*B*b^6*c - A*b^5*c^2)*e^4)*x^3 - (18*(B*b^3
*c^4 - 2*A*b^2*c^5)*d^4 - (23*B*b^4*c^3 - 73*A*b^3*c^4)*d^3*e + 3*(3*B*b^5*
c^2 - 11*A*b^4*c^3)*d^2*e^2 + (11*B*b^6*c + 5*A*b^5*c^2)*d*e^3 - 3*(5*B*b^7
 - A*b^6*c)*e^4)*x^2 - (17*A*b^4*c^3*d^3*e + 4*(B*b^4*c^3 - 2*A*b^3*c^4)*d^
4)*x)*sqrt(e*x + d))/(b^5*c^5*x^4 + 2*b^6*c^4*x^3 + b^7*c^3*x^2)]
```

giac [B] time = 0.36, size = 1245, normalized size = 2.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^4/c^3 - 3/4*(8*B*b*c*d^5 - 16*A*c^2*d^5 - 12*B*b^2*d^4*
e + 36*A*b*c*d^4*e - 21*A*b^2*d^3*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*
sqrt(-d)) + 3/4*(8*B*b*c^5*d^5 - 16*A*c^6*d^5 - 16*B*b^2*c^4*d^4*e + 44*A*b
*c^5*d^4*e + 5*B*b^3*c^3*d^3*e^2 - 37*A*b^2*c^4*d^3*e^2 + B*b^4*c^2*d^2*e^3
 + 7*A*b^3*c^3*d^2*e^3 + 7*B*b^5*c*d*e^4 + A*b^4*c^2*d*e^4 - 5*B*b^6*e^5 +
A*b^5*c*e^5)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*
c*e)*b^5*c^3) - 1/4*(12*(x*e + d)^(7/2)*B*b*c^5*d^4*e - 24*(x*e + d)^(7/2)*
A*c^6*d^4*e - 36*(x*e + d)^(5/2)*B*b*c^5*d^5*e + 72*(x*e + d)^(5/2)*A*c^6*d
^5*e + 36*(x*e + d)^(3/2)*B*b*c^5*d^6*e - 72*(x*e + d)^(3/2)*A*c^6*d^6*e -
12*sqrt(x*e + d)*B*b*c^5*d^7*e + 24*sqrt(x*e + d)*A*c^6*d^7*e - 15*(x*e + d
)^(7/2)*B*b^2*c^4*d^3*e^2 + 48*(x*e + d)^(7/2)*A*b*c^5*d^3*e^2 + 63*(x*e +
d)^(5/2)*B*b^2*c^4*d^4*e^2 - 180*(x*e + d)^(5/2)*A*b*c^5*d^4*e^2 - 81*(x*e
+ d)^(3/2)*B*b^2*c^4*d^5*e^2 + 216*(x*e + d)^(3/2)*A*b*c^5*d^5*e^2 + 33*sqr
t(x*e + d)*B*b^2*c^4*d^6*e^2 - 84*sqrt(x*e + d)*A*b*c^5*d^6*e^2 - 3*(x*e +
d)^(7/2)*B*b^3*c^3*d^2*e^3 - 21*(x*e + d)^(7/2)*A*b^2*c^4*d^2*e^3 - 14*(x*e
 + d)^(5/2)*B*b^3*c^3*d^3*e^3 + 136*(x*e + d)^(5/2)*A*b^2*c^4*d^3*e^3 + 41*
(x*e + d)^(3/2)*B*b^3*c^3*d^4*e^3 - 217*(x*e + d)^(3/2)*A*b^2*c^4*d^4*e^3 -
 24*sqrt(x*e + d)*B*b^3*c^3*d^5*e^3 + 102*sqrt(x*e + d)*A*b^2*c^4*d^5*e^3 +
 19*(x*e + d)^(7/2)*B*b^4*c^2*d*e^4 - 3*(x*e + d)^(7/2)*A*b^3*c^3*d*e^4 - 4
8*(x*e + d)^(5/2)*B*b^4*c^2*d^2*e^4 - 24*(x*e + d)^(5/2)*A*b^3*c^3*d^2*e^4
+ 39*(x*e + d)^(3/2)*B*b^4*c^2*d^3*e^4 + 74*(x*e + d)^(3/2)*A*b^3*c^3*d^3*e
^4 - 10*sqrt(x*e + d)*B*b^4*c^2*d^4*e^4 - 45*sqrt(x*e + d)*A*b^3*c^3*d^4*e^
4 - 9*(x*e + d)^(7/2)*B*b^5*c*e^5 + 5*(x*e + d)^(7/2)*A*b^4*c^2*e^5 + 38*(x
*e + d)^(5/2)*B*b^5*c*d*e^5 - 10*(x*e + d)^(5/2)*A*b^4*c^2*d*e^5 - 49*(x*e
+ d)^(3/2)*B*b^5*c*d^2*e^5 + 5*(x*e + d)^(3/2)*A*b^4*c^2*d^2*e^5 + 20*sqrt(
x*e + d)*B*b^5*c*d^3*e^5 - 7*(x*e + d)^(5/2)*B*b^6*e^6 + 3*(x*e + d)^(5/2)*
A*b^5*c*e^6 + 14*(x*e + d)^(3/2)*B*b^6*d*e^6 - 6*(x*e + d)^(3/2)*A*b^5*c*d*
e^6 - 7*sqrt(x*e + d)*B*b^6*d^2*e^6 + 3*sqrt(x*e + d)*A*b^5*c*d^2*e^6)/(((x
*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2*b^4*c^3)
```

maple [B] time = 0.09, size = 1421, normalized size = 3.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*e^4*B/c^3*(e*x+d)^(1/2)+5/2*e^4/c/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^2+15/2*
e^4/b/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^2+3/4*e^4/b/(c*e*x+b*e)^2*(e*x+d)^(3/
2)*A*d-19/4*e^4/c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d+3/4*e^3/b/(c*e*x+b*e)^2*(
e*x+d)^(3/2)*B*d^2+21/4*e^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((
```

```
b*e-c*d)*c)^(1/2)*c)*A*d^2+5*e^3/b/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^3+6/b^4*
c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^5-1
2/b^5*c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A
*d^5+9/4*e^5*b/c^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B-3/4*e^6*b/c^2/(c*e*x+b*e)^
2*A*(e*x+d)^(1/2)-15/4*e^5*b/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(b*e-c*d)*c)^(1/2)*c)*B+7/4*e^6*b^2/c^3/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)-1/e*d
^4/b^3/x^2*(e*x+d)^(3/2)*B+1/e*d^5/b^3/x^2*(e*x+d)^(1/2)*B+27*e*d^(7/2)/b^4
*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+21/4*e^4/c^2/((b*e-c*d)*c)^(1/2)*arctan
((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d+15/4*e^2/b^2/((b*e-c*d)*c)^(1/2)*
arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3+3/4*e^5/c^2/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-17/4*d^3/b^3/x^2*(e*x+
d)^(3/2)*A+15/4*d^4/b^3/x^2*(e*x+d)^(1/2)*A-12*d^(9/2)/b^5*arctanh((e*x+d)^
(1/2)/d^(1/2))*A*c^2+6*d^(9/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*B*c-5/4*e
^5/c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A-63/4*e^2*d^(5/2)/b^3*arctanh((e*x+d)^(1/
2)/d^(1/2))*A-9*e*d^(7/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*B-111/4*e^2/b^
3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3+3
3*e/b^4*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)
*A*d^4+3/4*e^4/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(
1/2)*c)*A*d-25/4*e^2/b^2*c/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^4+2*e/b^3*c^2/(c
*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^5+45/4*e^2/b^3*c^2/(c*e*x+b*e)^2*A*(e*x+d)^(1
/2)*d^4-3*e/b^4*c^3/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^5-5*e^5*b/c^2/(c*e*x+b*
e)^2*B*(e*x+d)^(1/2)*d-15*e^3/b^2*c/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^3+21/4*
e^3/b^2*c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*d^2-31/4*e^2/b^3*c^2/(c*e*x+b*e)^2*
(e*x+d)^(3/2)*A*d^3-12*e/b^3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b
*e-c*d)*c)^(1/2)*c)*B*d^4+3*e/b^4*c^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*d^4+15/
4*e^2/b^2*c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d^3-2*e/b^3*c^2/(c*e*x+b*e)^2*(e*
x+d)^(3/2)*B*d^4+3/e*d^4/b^4/x^2*(e*x+d)^(3/2)*A*c-3/e*d^5/b^4/x^2*(e*x+d)^
(1/2)*A*c+3/4*e^3/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c
)^(1/2)*c)*B*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 5.05, size = 16542, normalized size = 35.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x)
```

```
[Out] atan(((((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5
*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2
*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*
e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10
*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b
^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c
^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*
c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^
6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^
9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3
*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 9
60*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504
```

*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2)*1i - (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2) + ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 +

21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*
e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^1
0*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2
*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 207
9*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10
 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11
 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 +
 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8
*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b
^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b
^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2
*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^
2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^
2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189
*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 115
2*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^
3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*
e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^
3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3
*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2)*1i)/((((3*(64*A*b^14*c
^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*
d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d
^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^
2*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(
1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2
*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^
4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^
7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2
*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^
2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^
8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e +
6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 -
210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6
 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8*b^8*c^5))*((9*(256*A^2
*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A
^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 2
1*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 1
44*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5
+ 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e +
45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B
*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e
^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d
^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3
*d^2*e^7))/(64*b^10*c^7))^(1/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A
^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44
928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*
e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d
^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*
b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646
*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 +
 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e
^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2
+ 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d
^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^
6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A
*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9
- A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^
2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A
^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105

*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6
*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*
b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*
e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^
2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4
*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1
/2) + (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5
*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2
*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*
e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((64*b^11*c^7*e^3 - 128*b^10
*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b
^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c
^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*
c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^
6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^
9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3
*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 9
60*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504
*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 -
420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8
*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B
^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*
A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*
A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 1
89*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1
152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*
b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^
8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*
e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d
^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2) + ((d + e*x)^(1/2)*(
225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^
2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6
 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*
e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*
c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2
*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 32
4*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 -
 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 46
08*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^
3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^
7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*
b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^11
*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^
2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2
*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^
2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*
B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^
2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^
10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 -
1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^
4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*
e^7))/(64*b^10*c^7))^(1/2) - (3*(2700*B^3*b^13*d^4*e^13 - 18432*A^3*c^13*d^
14*e^3 - 381312*A^3*b^2*c^11*d^12*e^5 + 610560*A^3*b^3*c^10*d^11*e^6 - 5629
68*A^3*b^4*c^9*d^10*e^7 + 293112*A^3*b^5*c^8*d^9*e^8 - 84483*A^3*b^6*c^7*d^
8*e^9 + 23868*A^3*b^7*c^6*d^7*e^10 - 11943*A^3*b^8*c^5*d^6*e^11 + 2331*A^3*
b^9*c^4*d^5*e^12 + 54*A^3*b^10*c^3*d^4*e^13 + 189*A^3*b^11*c^2*d^3*e^14 + 2
304*B^3*b^3*c^10*d^14*e^3 - 10944*B^3*b^4*c^9*d^13*e^4 + 17856*B^3*b^5*c^8*
d^12*e^5 - 14328*B^3*b^6*c^7*d^11*e^6 + 18828*B^3*b^7*c^6*d^10*e^7 - 30672*
B^3*b^8*c^5*d^9*e^8 + 21060*B^3*b^9*c^4*d^8*e^9 - 6696*B^3*b^10*c^3*d^7*e^1

0 + 9252*B^3*b^11*c^2*d^6*e^11 + 4725*A*B^2*b^13*d^3*e^14 + 129024*A^3*b*c^12*d^13*e^4 - 9360*B^3*b^12*c*d^5*e^12 - 13824*A*B^2*b^2*c^11*d^14*e^3 + 76032*A*B^2*b^3*c^10*d^13*e^4 - 158976*A*B^2*b^4*c^9*d^12*e^5 + 167184*A*B^2*b^5*c^8*d^11*e^6 - 143316*A*B^2*b^6*c^7*d^10*e^7 + 184869*A*B^2*b^7*c^6*d^9*e^8 - 187434*A*B^2*b^8*c^5*d^8*e^9 + 93987*A*B^2*b^9*c^4*d^7*e^10 - 35640*A*B^2*b^10*c^3*d^6*e^11 + 34803*A*B^2*b^11*c^2*d^5*e^12 - 172800*A^2*B*b^2*c^11*d^13*e^4 + 437184*A^2*B*b^3*c^10*d^12*e^5 - 578448*A^2*B*b^4*c^9*d^11*e^6 + 471420*A^2*B*b^5*c^8*d^10*e^7 - 361773*A^2*B*b^6*c^7*d^9*e^8 + 350001*A^2*B*b^7*c^6*d^8*e^9 - 253071*A^2*B*b^8*c^5*d^7*e^10 + 90423*A^2*B*b^9*c^4*d^6*e^11 - 12798*A^2*B*b^10*c^3*d^5*e^12 + 4104*A^2*B*b^11*c^2*d^4*e^13 - 22410*A*B^2*b^12*c*d^4*e^13 + 27648*A^2*B*b*c^12*d^14*e^3 - 1890*A^2*B*b^12*c*d^3*e^14))/(32*b^12*c^5)))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2)*2i + atan(((((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2)*1i - (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 +

1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 19
2*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^
2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2) + ((d + e*x)^(1/2)*
(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A
^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6
 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3
*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3
*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^
2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 3
24*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11
 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4
608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e
^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c
^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B
*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^4
*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 196
8*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^
2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^
2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2)*1i)/((((3*(64*A*b^14*c^
5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d
^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^
5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2
*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1
/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B
^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*
b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*
d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2))/(8
*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4
 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 11
52*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B
*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1
/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*
c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21
546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^
8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*
d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b
^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*
B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 -
 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 -
 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 1
9584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d
^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7
*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8
c^5))((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 14
4*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A
^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c
^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2)
+ (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3
 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6
 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5
+ 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((64*b^11*c^7*e^3 - 128*b^10*c^8
*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2
*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4
*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*
e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/
(64*b^10))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 +
441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*
A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3
*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7

*e^2))/(64*b^10))^(1/2) + ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*
c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*
b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 56
7*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10
+ 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*
d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7
*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2
*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*
A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B
*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 +
19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^
5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c
^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*
A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*
b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d
^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2
))/(64*b^10))^(1/2) - (3*(2700*B^3*b^13*d^4*e^13 - 18432*A^3*c^13*d^14*e^3
- 381312*A^3*b^2*c^11*d^12*e^5 + 610560*A^3*b^3*c^10*d^11*e^6 - 562968*A^3*
b^4*c^9*d^10*e^7 + 293112*A^3*b^5*c^8*d^9*e^8 - 84483*A^3*b^6*c^7*d^8*e^9 +
23868*A^3*b^7*c^6*d^7*e^10 - 11943*A^3*b^8*c^5*d^6*e^11 + 2331*A^3*b^9*c^4
*d^5*e^12 + 54*A^3*b^10*c^3*d^4*e^13 + 189*A^3*b^11*c^2*d^3*e^14 + 2304*B^3
*b^3*c^10*d^14*e^3 - 10944*B^3*b^4*c^9*d^13*e^4 + 17856*B^3*b^5*c^8*d^12*e^
5 - 14328*B^3*b^6*c^7*d^11*e^6 + 18828*B^3*b^7*c^6*d^10*e^7 - 30672*B^3*b^8
*c^5*d^9*e^8 + 21060*B^3*b^9*c^4*d^8*e^9 - 6696*B^3*b^10*c^3*d^7*e^10 + 925
2*B^3*b^11*c^2*d^6*e^11 + 4725*A*B^2*b^13*d^3*e^14 + 129024*A^3*b*c^12*d^13
*e^4 - 9360*B^3*b^12*c*d^5*e^12 - 13824*A*B^2*b^2*c^11*d^14*e^3 + 76032*A*B
^2*b^3*c^10*d^13*e^4 - 158976*A*B^2*b^4*c^9*d^12*e^5 + 167184*A*B^2*b^5*c^8
*d^11*e^6 - 143316*A*B^2*b^6*c^7*d^10*e^7 + 184869*A*B^2*b^7*c^6*d^9*e^8 -
187434*A*B^2*b^8*c^5*d^8*e^9 + 93987*A*B^2*b^9*c^4*d^7*e^10 - 35640*A*B^2*b
^10*c^3*d^6*e^11 + 34803*A*B^2*b^11*c^2*d^5*e^12 - 172800*A^2*B*b^2*c^11*d^
13*e^4 + 437184*A^2*B*b^3*c^10*d^12*e^5 - 578448*A^2*B*b^4*c^9*d^11*e^6 + 4
71420*A^2*B*b^5*c^8*d^10*e^7 - 361773*A^2*B*b^6*c^7*d^9*e^8 + 350001*A^2*B*
b^7*c^6*d^8*e^9 - 253071*A^2*B*b^8*c^5*d^7*e^10 + 90423*A^2*B*b^9*c^4*d^6*e
^11 - 12798*A^2*B*b^10*c^3*d^5*e^12 + 4104*A^2*B*b^11*c^2*d^4*e^13 - 22410*
A*B^2*b^12*c*d^4*e^13 + 27648*A^2*B*b*c^12*d^14*e^3 - 1890*A^2*B*b^12*c*d^3
*e^14))/(32*b^12*c^5)))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2
*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4
*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*
e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/
(64*b^10))^(1/2)*2i + (((d + e*x)^(1/2)*(7*B*b^6*d^2*e^6 - 24*A*c^6*d^7*e +
84*A*b*c^5*d^6*e^2 - 3*A*b^5*c*d^2*e^6 - 20*B*b^5*c*d^3*e^5 - 102*A*b^2*c^
4*d^5*e^3 + 45*A*b^3*c^3*d^4*e^4 - 33*B*b^2*c^4*d^6*e^2 + 24*B*b^3*c^3*d^5*
e^3 + 10*B*b^4*c^2*d^4*e^4 + 12*B*b*c^5*d^7*e))/(4*b^4) - ((d + e*x)^(3/2)*
(14*B*b^6*d*e^6 - 72*A*c^6*d^6*e + 216*A*b*c^5*d^5*e^2 - 49*B*b^5*c*d^2*e^5
- 217*A*b^2*c^4*d^4*e^3 + 74*A*b^3*c^3*d^3*e^4 + 5*A*b^4*c^2*d^2*e^5 - 81*
B*b^2*c^4*d^5*e^2 + 41*B*b^3*c^3*d^4*e^3 + 39*B*b^4*c^2*d^3*e^4 - 6*A*b^5*c
*d*e^6 + 36*B*b*c^5*d^6*e))/(4*b^4) + ((d + e*x)^(7/2)*(9*B*b^5*c*e^5 + 24*
A*c^6*d^4*e - 5*A*b^4*c^2*e^5 - 48*A*b*c^5*d^3*e^2 + 3*A*b^3*c^3*d*e^4 - 19
*B*b^4*c^2*d*e^4 + 21*A*b^2*c^4*d^2*e^3 + 15*B*b^2*c^4*d^3*e^2 + 3*B*b^3*c^
3*d^2*e^3 - 12*B*b*c^5*d^4*e))/(4*b^4) + ((d + e*x)^(5/2)*(7*B*b^6*e^6 - 3*
A*b^5*c*e^6 - 72*A*c^6*d^5*e + 180*A*b*c^5*d^4*e^2 + 10*A*b^4*c^2*d*e^5 - 1
36*A*b^2*c^4*d^3*e^3 + 24*A*b^3*c^3*d^2*e^4 - 63*B*b^2*c^4*d^4*e^2 + 14*B*b
^3*c^3*d^3*e^3 + 48*B*b^4*c^2*d^2*e^4 + 36*B*b*c^5*d^5*e - 38*B*b^5*c*d*e^5
))/(4*b^4))/(c^5*(d + e*x)^4 - (d + e*x)*(4*c^5*d^3 + 2*b^2*c^3*d*e^2 - 6*b
*c^4*d^2*e) - (4*c^5*d - 2*b*c^4*e)*(d + e*x)^3 + c^5*d^4 + (d + e*x)^2*(6*
c^5*d^2 + b^2*c^3*e^2 - 6*b*c^4*d*e) + b^2*c^3*d^2*e^2 - 2*b*c^4*d^3*e) + (
2*B*e^4*(d + e*x)^(1/2))/c^3

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1103 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=363

$$-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(7b^2e(5Ae+4Bd)-12bcd(7Ae\right.}{4b^5}$$

Rubi [A] time = 0.83, antiderivative size = 363, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 826, 1166, 208}

$$\frac{\sqrt{d+ex}\left(x\left(b^2c^2de(14Ae+11Bd)-Ab^3ce^3-12bc^3d^2(3Ae+Bd)+24Ac^4d^3-3b^4Be^3\right)+bcd^2\left(-bc(11Ae+6Bd)+12Ac^2d+2b^2Be\right)\right)}{4b^4c^2\left(bx+cx^2\right)}+\frac{(cd-be)^{3/2}\left(-b^2ce(Ae+8Bd)-12bc^2d(Ae+2Bd)+48Ac^3d^2-3b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5c^{5/2}}-\frac{d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(7b^2e(5Ae+4Bd)-12bcd(7Ae+2Bd)+48Ac^2d^2\right)}{4b^5}-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^(5/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2
*b^2*c*(b*x + c*x^2)^2) + (Sqrt[d + e*x]*(b*c*d^2*(12*A*c^2*d + 2*b^2*B*e -
 b*c*(6*B*d + 11*A*e)) + (24*A*c^4*d^3 - 3*b^4*B*e^3 - A*b^3*c*e^3 - 12*b*c
^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(11*B*d + 14*A*e))*x))/(4*b^4*c^2*(b*x +
 c*x^2)) - (d^(3/2)*(48*A*c^2*d^2 + 7*b^2*e*(4*B*d + 5*A*e) - 12*b*c*d*(2*B
*d + 7*A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5) + ((c*d - b*e)^(3/2)*(
48*A*c^3*d^2 - 3*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + A*e) - b^2*c*e*(8*B*d + A*
e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*c^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
```

```
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2} + \frac{\int \frac{(d+ex)^{3/2}\left(-\frac{1}{2}d\left(12Ac^2d+2b^2Be-\right.\right.}{\cdots}}{\cdots}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\left(bcd^2\left(12Ac^2d+\cdots\right.\right.}{\cdots}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\left(bcd^2\left(12Ac^2d+\cdots\right.\right.}{\cdots}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\left(bcd^2\left(12Ac^2d+\cdots\right.\right.}{\cdots}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\left(bcd^2\left(12Ac^2d+\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 4.05, size = 554, normalized size = 1.53

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((-210*c*(12*A*c^2*d^2 - 3*b*c*d*(2*B*d + 5*A*e) + b^2*e*(4*B*d + 5*A*e))*(
d + e*x)^(9/2))/(b^2*d*(-(c*d) + b*e)) - (420*A*(d + e*x)^(9/2))/x^2 - (210
*(4*b*B*d - 8*A*c*d + 5*A*b*e)*(d + e*x)^(9/2))/(b*d*x) + ((b + c*x)*(-210*
b*c^(11/2)*(-24*A*c^3*d^3 - 11*b^2*c*d*e*(B*d + 2*A*e) + 12*b*c^2*d^2*(B*d
+ 3*A*e) + b^3*e^2*(4*B*d + 5*A*e))*(d + e*x)^(9/2) + (b + c*x)*(105*c^(9/2
)*(c*d - b*e)^2*(48*A*c^2*d^2 + 7*b^2*e*(4*B*d + 5*A*e) - 12*b*c*d*(2*B*d +
 7*A*e))*((2*(d + e*x)^(7/2))/7 + (2*d*Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3
*e^2*x^2))/15 - 2*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - 2*c^2*d^2*(48*A
*c^3*d^2 - 3*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + A*e) - b^2*c*e*(8*B*d + A*e))*
(15*c^(7/2)*(d + e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*
(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^
(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))))))/(b^4*c^(9/2)*d
*(c*d - b*e)^2))/(840*b*d*(b + c*x)^2)
```

IntegrateAlgebraic [B] time = 2.67, size = 1116, normalized size = 3.07

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x]
```

```
[Out] (12*b*B*c^4*d^6*e*Sqrt[d + e*x] - 24*A*c^5*d^6*e*Sqrt[d + e*x] - 29*b^2*B*c
^3*d^5*e^2*Sqrt[d + e*x] + 72*A*b*c^4*d^5*e^2*Sqrt[d + e*x] + 19*b^3*B*c^2*
d^4*e^3*Sqrt[d + e*x] - 73*A*b^2*c^3*d^4*e^3*Sqrt[d + e*x] + b^4*B*c*d^3*e^
4*Sqrt[d + e*x] + 26*A*b^3*c^2*d^3*e^4*Sqrt[d + e*x] - 3*b^5*B*d^2*e^5*Sqrt
[d + e*x] - A*b^4*c*d^2*e^5*Sqrt[d + e*x] - 36*b*B*c^4*d^5*e*(d + e*x)^(3/2
) + 72*A*c^5*d^5*e*(d + e*x)^(3/2) + 69*b^2*B*c^3*d^4*e^2*(d + e*x)^(3/2) -
 180*A*b*c^4*d^4*e^2*(d + e*x)^(3/2) - 32*b^3*B*c^2*d^3*e^3*(d + e*x)^(3/2)
 + 148*A*b^2*c^3*d^3*e^3*(d + e*x)^(3/2) - 7*b^4*B*c*d^2*e^4*(d + e*x)^(3/2
) - 42*A*b^3*c^2*d^2*e^4*(d + e*x)^(3/2) + 6*b^5*B*d*e^5*(d + e*x)^(3/2) +
2*A*b^4*c*d*e^5*(d + e*x)^(3/2) + 36*b*B*c^4*d^4*e*(d + e*x)^(5/2) - 72*A*c
^5*d^4*e*(d + e*x)^(5/2) - 51*b^2*B*c^3*d^3*e^2*(d + e*x)^(5/2) + 144*A*b*c
^4*d^3*e^2*(d + e*x)^(5/2) + 11*b^3*B*c^2*d^2*e^3*(d + e*x)^(5/2) - 85*A*b^
2*c^3*d^2*e^3*(d + e*x)^(5/2) + 11*b^4*B*c*d*e^4*(d + e*x)^(5/2) + 13*A*b^3
*c^2*d*e^4*(d + e*x)^(5/2) - 3*b^5*B*e^5*(d + e*x)^(5/2) - A*b^4*c*e^5*(d +
 e*x)^(5/2) - 12*b*B*c^4*d^3*e*(d + e*x)^(7/2) + 24*A*c^5*d^3*e*(d + e*x)^(
7/2) + 11*b^2*B*c^3*d^2*e^2*(d + e*x)^(7/2) - 36*A*b*c^4*d^2*e^2*(d + e*x)^
(7/2) + 2*b^3*B*c^2*d*e^3*(d + e*x)^(7/2) + 10*A*b^2*c^3*d*e^3*(d + e*x)^(7
/2) - 5*b^4*B*c*e^4*(d + e*x)^(7/2) + A*b^3*c^2*e^4*(d + e*x)^(7/2))/(4*b^4
*c^2*e^2*x^2*(c*d - b*e - c*(d + e*x))^2) + ((-24*b*B*c^4*d^4 + 48*A*c^5*d^
4 + 40*b^2*B*c^3*d^3*e - 108*A*b*c^4*d^3*e - 11*b^3*B*c^2*d^2*e^2 + 71*A*b^
2*c^3*d^2*e^2 - 2*b^4*B*c*d*e^3 - 10*A*b^3*c^2*d*e^3 - 3*b^5*B*e^4 - A*b^4*
c*e^4)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(4*b
^5*c^(5/2)*Sqrt[-(c*d) + b*e]) + ((24*b*B*c*d^(7/2) - 48*A*c^2*d^(7/2) - 28
*b^2*B*d^(5/2)*e + 84*A*b*c*d^(5/2)*e - 35*A*b^2*d^(3/2)*e^2)*ArcTanh[Sqrt[
d + e*x]/Sqrt[d]])/(4*b^5)
```

fricas [B] time = 34.35, size = 3378, normalized size = 9.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(((24*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(4*B*b^2*c^4 - 15*A*b*c^5)*d^2*e -
(5*B*b^3*c^3 + 11*A*b^2*c^4)*d*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*e^3)*x^4 + 2
*(24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(4*B*b^3*c^3 - 15*A*b^2*c^4)*d^2*e - (
5*B*b^4*c^2 + 11*A*b^3*c^3)*d*e^2 - (3*B*b^5*c + A*b^4*c^2)*e^3)*x^3 + (24*
(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(4*B*b^4*c^2 - 15*A*b^3*c^3)*d^2*e - (5*B
*b^5*c + 11*A*b^4*c^2)*d*e^2 - (3*B*b^6 + A*b^5*c)*e^3)*x^2)*sqrt((c*d - b*
e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*
x + b)) - ((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5 - 2*A*c^6)*d^3 + 28*(B*b^2*c^4
 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*e^2 - 24*(B*b^2*c^4 - 2*A*b*c^
5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (35*A*b^4*c^2*d*e^2 - 24
*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e)*x^2)*s
qrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^2*d^3 +
(12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*A*b^2*c^4)*d^2*e - 2*(
B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c^2)*e^3)*x^3 + (18*(B*
b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + 4*(B*b^5
*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^2 + (13*A*b^4*c^2*d^2*
e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d))/(b^5*c^4*x^4 + 2*b^6
*c^3*x^3 + b^7*c^2*x^2), -1/8*(2*((24*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(4*B*b^2*
c^4 - 15*A*b*c^5)*d^2*e - (5*B*b^3*c^3 + 11*A*b^2*c^4)*d*e^2 - (3*B*b^4*c^2
 + A*b^3*c^3)*e^3)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(4*B*b^3*c^3
 - 15*A*b^2*c^4)*d^2*e - (5*B*b^4*c^2 + 11*A*b^3*c^3)*d*e^2 - (3*B*b^5*c +
A*b^4*c^2)*e^3)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(4*B*b^4*c^2 -
15*A*b^3*c^3)*d^2*e - (5*B*b^5*c + 11*A*b^4*c^2)*d*e^2 - (3*B*b^6 + A*b^5*c
)*e^3)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/
c)/(c*d - b*e)) - ((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5 - 2*A*c^6)*d^3 + 28*(B
*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*e^2 - 24*(B*b^2*c^4 -
2*A*b*c^5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (35*A*b^4*c^2*d*
```

```
e^2 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e
)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^
2*d^3 + (12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*A*b^2*c^4)*d^2
*e - 2*(B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c^2)*e^3)*x^3 +
 (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e +
4*(B*b^5*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^2 + (13*A*b^4*
c^2*d^2*e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d))/(b^5*c^4*x^4
 + 2*b^6*c^3*x^3 + b^7*c^2*x^2), 1/8*(2*((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5
- 2*A*c^6)*d^3 + 28*(B*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*
e^2 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*
x^3 + (35*A*b^4*c^2*d*e^2 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^
2 - 3*A*b^3*c^3)*d^2*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - ((
24*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(4*B*b^2*c^4 - 15*A*b*c^5)*d^2*e - (5*B*b^3*
c^3 + 11*A*b^2*c^4)*d*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*e^3)*x^4 + 2*(24*(B*b
^2*c^4 - 2*A*b*c^5)*d^3 - 4*(4*B*b^3*c^3 - 15*A*b^2*c^4)*d^2*e - (5*B*b^4*c
^2 + 11*A*b^3*c^3)*d*e^2 - (3*B*b^5*c + A*b^4*c^2)*e^3)*x^3 + (24*(B*b^3*c^
3 - 2*A*b^2*c^4)*d^3 - 4*(4*B*b^4*c^2 - 15*A*b^3*c^3)*d^2*e - (5*B*b^5*c +
11*A*b^4*c^2)*d*e^2 - (3*B*b^6 + A*b^5*c)*e^3)*x^2)*sqrt((c*d - b*e)/c)*log
((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) -
 2*(2*A*b^4*c^2*d^3 + (12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*
A*b^2*c^4)*d^2*e - 2*(B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c
^2)*e^3)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3
*c^3)*d^2*e + 4*(B*b^5*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^
2 + (13*A*b^4*c^2*d^2*e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d)
)/(b^5*c^4*x^4 + 2*b^6*c^3*x^3 + b^7*c^2*x^2), -1/4*(((24*(B*b*c^5 - 2*A*c^
6)*d^3 - 4*(4*B*b^2*c^4 - 15*A*b*c^5)*d^2*e - (5*B*b^3*c^3 + 11*A*b^2*c^4)*
d*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*e^3)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)*
d^3 - 4*(4*B*b^3*c^3 - 15*A*b^2*c^4)*d^2*e - (5*B*b^4*c^2 + 11*A*b^3*c^3)*d
*e^2 - (3*B*b^5*c + A*b^4*c^2)*e^3)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3
 - 4*(4*B*b^4*c^2 - 15*A*b^3*c^3)*d^2*e - (5*B*b^5*c + 11*A*b^4*c^2)*d*e^2
- (3*B*b^6 + A*b^5*c)*e^3)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*
c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) - ((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5 -
2*A*c^6)*d^3 + 28*(B*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*e^
2 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^
3 + (35*A*b^4*c^2*d*e^2 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^2
- 3*A*b^3*c^3)*d^2*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (2*A
*b^4*c^2*d^3 + (12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*A*b^2*c
^4)*d^2*e - 2*(B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c^2)*e^3
)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3*c^3)*d
^2*e + 4*(B*b^5*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^2 + (13
*A*b^4*c^2*d^2*e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d))/(b^5*
c^4*x^4 + 2*b^6*c^3*x^3 + b^7*c^2*x^2)]
```

giac [B] time = 0.34, size = 1047, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/4*(24*B*b*c*d^4 - 48*A*c^2*d^4 - 28*B*b^2*d^3*e + 84*A*b*c*d^3*e - 35*A*
b^2*d^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sqrt(-d)) + 1/4*(24*B*b*c^
4*d^4 - 48*A*c^5*d^4 - 40*B*b^2*c^3*d^3*e + 108*A*b*c^4*d^3*e + 11*B*b^3*c^
2*d^2*e^2 - 71*A*b^2*c^3*d^2*e^2 + 2*B*b^4*c*d*e^3 + 10*A*b^3*c^2*d*e^3 + 3
*B*b^5*e^4 + A*b^4*c*e^4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqr
t(-c^2*d + b*c*e)*b^5*c^2) - 1/4*(12*(x*e + d)^(7/2)*B*b*c^4*d^3*e - 24*(x*
e + d)^(7/2)*A*c^5*d^3*e - 36*(x*e + d)^(5/2)*B*b*c^4*d^4*e + 72*(x*e + d)^
(5/2)*A*c^5*d^4*e + 36*(x*e + d)^(3/2)*B*b*c^4*d^5*e - 72*(x*e + d)^(3/2)*A
*c^5*d^5*e - 12*sqrt(x*e + d)*B*b*c^4*d^6*e + 24*sqrt(x*e + d)*A*c^5*d^6*e
- 11*(x*e + d)^(7/2)*B*b^2*c^3*d^2*e^2 + 36*(x*e + d)^(7/2)*A*b*c^4*d^2*e^2
```

```
 + 51*(x*e + d)^(5/2)*B*b^2*c^3*d^3*e^2 - 144*(x*e + d)^(5/2)*A*b*c^4*d^3*e
^2 - 69*(x*e + d)^(3/2)*B*b^2*c^3*d^4*e^2 + 180*(x*e + d)^(3/2)*A*b*c^4*d^4
*e^2 + 29*sqrt(x*e + d)*B*b^2*c^3*d^5*e^2 - 72*sqrt(x*e + d)*A*b*c^4*d^5*e^
2 - 2*(x*e + d)^(7/2)*B*b^3*c^2*d*e^3 - 10*(x*e + d)^(7/2)*A*b^2*c^3*d*e^3
- 11*(x*e + d)^(5/2)*B*b^3*c^2*d^2*e^3 + 85*(x*e + d)^(5/2)*A*b^2*c^3*d^2*e
^3 + 32*(x*e + d)^(3/2)*B*b^3*c^2*d^3*e^3 - 148*(x*e + d)^(3/2)*A*b^2*c^3*d
^3*e^3 - 19*sqrt(x*e + d)*B*b^3*c^2*d^4*e^3 + 73*sqrt(x*e + d)*A*b^2*c^3*d^
4*e^3 + 5*(x*e + d)^(7/2)*B*b^4*c*e^4 - (x*e + d)^(7/2)*A*b^3*c^2*e^4 - 11*
(x*e + d)^(5/2)*B*b^4*c*d*e^4 - 13*(x*e + d)^(5/2)*A*b^3*c^2*d*e^4 + 7*(x*e
 + d)^(3/2)*B*b^4*c*d^2*e^4 + 42*(x*e + d)^(3/2)*A*b^3*c^2*d^2*e^4 - sqrt(x
*e + d)*B*b^4*c*d^3*e^4 - 26*sqrt(x*e + d)*A*b^3*c^2*d^3*e^4 + 3*(x*e + d)^
(5/2)*B*b^5*e^5 + (x*e + d)^(5/2)*A*b^4*c*e^5 - 6*(x*e + d)^(3/2)*B*b^5*d*e
^5 - 2*(x*e + d)^(3/2)*A*b^4*c*d*e^5 + 3*sqrt(x*e + d)*B*b^5*d^2*e^5 + sqrt
(x*e + d)*A*b^4*c*d^2*e^5)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e
 + d)*b*e - b*d*e)^2*b^4*c^2)
```

maple [B] time = 0.12, size = 1218, normalized size = 3.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 21*e*d^(5/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+15/4*e^3/b/(c*e*x+b*e)^
2*(e*x+d)^(1/2)*B*d^2+5/2*e^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/
((b*e-c*d)*c)^(1/2)*c)*A*d+11/4*e^2/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^
(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2+6/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)
^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^4*c^2-12/b^5*c^3/((b*e-c*d)*c)^(1/2)*arct
an((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^4+1/4*e^4/(c*e*x+b*e)^2/c*(e*x+
d)^(1/2)*B*d-3/4*e^5*b/(c*e*x+b*e)^2/c^2*(e*x+d)^(1/2)*B+1/2*e^3/b/(c*e*x+b
*e)^2*(e*x+d)^(3/2)*B*d+15/4*e^4/b/(c*e*x+b*e)^2*(e*x+d)^(1/2)*A*d+1/e*d^4/
b^3/x^2*(e*x+d)^(1/2)*B+1/4*e^4/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2
)/((b*e-c*d)*c)^(1/2)*c)*A-1/e*d^3/b^3/x^2*(e*x+d)^(3/2)*B+11/4*d^3/b^3/x^2
*(e*x+d)^(1/2)*A-7*e*d^(5/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*B+1/4*e^4/b
/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A-13/4*d^2/b^3/x^2*(e*x+d)^(3/2)*A+6*d^(7/2)/b
^4*arctanh((e*x+d)^(1/2)/d^(1/2))*B*c+3/4*e^4/c^2/((b*e-c*d)*c)^(1/2)*arcta
n((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-1/4*e^5/(c*e*x+b*e)^2/c*(e*x+d)^(1
/2)*A-5/4*e^4/(c*e*x+b*e)^2/c*(e*x+d)^(3/2)*B-35/4*e^2*d^(3/2)/b^3*arctanh(
(e*x+d)^(1/2)/d^(1/2))*A-12*d^(7/2)/b^5*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^
2+11/4*e^2/b^2/(c*e*x+b*e)^2*c*(e*x+d)^(3/2)*B*d^2-2*e/b^3/(c*e*x+b*e)^2*(e
*x+d)^(3/2)*B*d^3*c^2-3*e/b^4/(c*e*x+b*e)^2*c^3*(e*x+d)^(1/2)*A*d^4-39/4*e^
3/b^2/(c*e*x+b*e)^2*c*(e*x+d)^(1/2)*A*d^2+37/4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d
)^(1/2)*A*d^3*c^2+3*e/b^4/(c*e*x+b*e)^2*c^3*(e*x+d)^(3/2)*A*d^3-21/4*e^2/b^
2/(c*e*x+b*e)^2*c*(e*x+d)^(1/2)*B*d^3+2*e/b^3/(c*e*x+b*e)^2*(e*x+d)^(1/2)*B
*d^4*c^2-71/4*e^2/b^3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)
*c)^(1/2)*c)*A*d^2+27*e/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-
c*d)*c)^(1/2)*c)*A*d^3*c^2+1/2*e^3/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-10*e/b^3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+
d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3-3/e*d^4/b^4/x^2*c*(e*x+d)^(1/2)*A-23/
4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^2*d^2+3/e*d^3/b^4/x^2*c*(e*x+d)^(
3/2)*A+5/2*e^3/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.40, size = 11072, normalized size = 30.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x)
```

```
[Out] atan(((((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A*b^10*c^7*d^4*e
^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768*B*b^11*c^6*d^4
*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64*b^12*c^3) - ((
64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B^2*b^9*e^7 - 23
04*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*
d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*
c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^
7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*
d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 672
0*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 196
0*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/
(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^
2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*
b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B
^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 806
4*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^
3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e
 + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e
^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2
) - ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4608*A^2*c^10*d^
8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^5 + 8330*A^2*b^
4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1152*B^
2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e^4 - 7
84*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^3*e^7
+ 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e^3 + 2
0*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*A*B*b^
8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 + 10304
*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3*e^7 -
 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7
 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880
*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 -
784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5
+ 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B
^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*
d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*
d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))
^(1/2)*1i - (((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A*b^10*c^7
*d^4*e^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768*B*b^11*c
^6*d^4*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64*b^12*c^3
) + ((64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B^2*b^9*e^
7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^
2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^
2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*
B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^
6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7
 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2
 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2
*e^5)/(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^
7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 588
0*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 -
```

784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2)*1i)/((((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A*b^10*c^7*d^4*e^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768*B*b^11*c^6*d^4*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64*b^12*c^3) - ((64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2) + (((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A

*b^10*c^7*d^4*e^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768
*B*b^11*c^6*d^4*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64
*b^12*c^3) + ((64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B
^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 104
16*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^
4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*
e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 +
21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*
b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^
6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^
6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A
^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*
e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*
d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^
2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^
6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*
B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*
B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*
b^10*c^5))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4
608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^
5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^
2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*
c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b
^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*
c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*
e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*
d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^
6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2
304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7
*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5
*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b
^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3
*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 67
20*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 19
60*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)
/(64*b^10*c^5))^(1/2) - (252*B^3*b^11*d^3*e^11 - 55296*A^3*c^11*d^11*e^3 -
694656*A^3*b^2*c^9*d^9*e^5 + 844992*A^3*b^3*c^8*d^8*e^6 - 579096*A^3*b^4*c^
7*d^7*e^7 + 212436*A^3*b^5*c^6*d^6*e^8 - 31282*A^3*b^6*c^5*d^5*e^9 - 1877*A
^3*b^7*c^4*d^4*e^10 + 616*A^3*b^8*c^3*d^3*e^11 + 35*A^3*b^9*c^2*d^2*e^12 +
6912*B^3*b^3*c^8*d^11*e^3 - 25920*B^3*b^4*c^7*d^10*e^4 + 33408*B^3*b^5*c^6*
d^9*e^5 - 16808*B^3*b^6*c^5*d^8*e^6 + 5180*B^3*b^7*c^4*d^7*e^7 - 4816*B^3*b
^8*c^3*d^6*e^8 + 1672*B^3*b^9*c^2*d^5*e^9 + 315*A*B^2*b^11*d^2*e^12 + 30412
8*A^3*b*c^10*d^10*e^4 + 120*B^3*b^10*c*d^4*e^10 - 41472*A*B^2*b^2*c^9*d^11*
e^3 + 179712*A*B^2*b^3*c^8*d^10*e^4 - 293184*A*B^2*b^4*c^7*d^9*e^5 + 220464
*A*B^2*b^5*c^6*d^8*e^6 - 83076*A*B^2*b^6*c^5*d^7*e^7 + 31899*A*B^2*b^7*c^4*
d^6*e^8 - 18012*A*B^2*b^8*c^3*d^5*e^9 + 3522*A*B^2*b^9*c^2*d^4*e^10 - 40780
8*A^2*B*b^2*c^9*d^10*e^4 + 800064*A^2*B*b^3*c^8*d^9*e^5 - 790704*A^2*B*b^4*
c^7*d^8*e^6 + 413028*A^2*B*b^5*c^6*d^7*e^7 - 122283*A^2*B*b^6*c^5*d^6*e^8 +
36402*A^2*B*b^7*c^4*d^5*e^9 - 13617*A^2*B*b^8*c^3*d^4*e^10 + 1764*A^2*B*b^
9*c^2*d^3*e^11 - 168*A*B^2*b^10*c*d^3*e^11 + 82944*A^2*B*b*c^10*d^11*e^3 +
210*A^2*B*b^10*c*d^2*e^12)/(32*b^12*c^3)))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*
d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5
880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5
 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e
^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 134
4*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c
^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c
^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^
5))^(1/2)*2i - log((d^2*e^3*(b*e - c*d)^2*(35*A^3*b^7*c^2*e^7 - 55296*A^3*c

^9*d^7 + 6912*B^3*b^3*c^6*d^7 + 315*A*B^2*b^9*e^7 + 252*B^3*b^9*d*e^6 - 252
288*A^3*b^2*c^7*d^5*e^2 + 146880*A^3*b^3*c^6*d^4*e^3 - 33048*A^3*b^4*c^5*d^
3*e^4 - 540*A^3*b^5*c^4*d^2*e^5 + 2304*B^3*b^5*c^4*d^5*e^2 - 104*B^3*b^6*c^
3*d^4*e^3 + 2668*B^3*b^7*c^2*d^3*e^4 + 82944*A^2*B*b*c^8*d^7 + 210*A^2*B*b^
8*c*e^7 + 193536*A^3*b*c^8*d^6*e - 41472*A*B^2*b^2*c^7*d^7 + 686*A^3*b^6*c^
3*d*e^6 - 12096*B^3*b^4*c^5*d^6*e + 624*B^3*b^8*c*d^2*e^5 - 58176*A*B^2*b^4
*c^5*d^5*e^2 + 7344*A*B^2*b^5*c^4*d^4*e^3 - 10212*A*B^2*b^6*c^3*d^3*e^4 + 4
131*A*B^2*b^7*c^2*d^2*e^5 + 233280*A^2*B*b^3*c^6*d^5*e^2 - 82224*A^2*B*b^4*
c^5*d^4*e^3 + 15300*A^2*B*b^5*c^4*d^3*e^4 - 9459*A^2*B*b^6*c^3*d^2*e^5 + 46
2*A*B^2*b^8*c*d*e^6 + 96768*A*B^2*b^3*c^6*d^6*e - 241920*A^2*B*b^2*c^7*d^6*
e + 2184*A^2*B*b^7*c^2*d*e^6))/(64*b^12*c^3) - (((((d*e^3*(b*e - c*d)*(24*A
*c^3*d^2 + 3*B*b^3*e^2 + A*b^2*c*e^2 - 12*B*b*c^2*d^2 - 24*A*b*c^2*d*e + 5*
B*b^2*c*d*e))/b^2 - b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^3*(35*A*b
^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*A*b*c*d*e)^2)/b^10
)^(1/2))*((d^3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e -
 84*A*b*c*d*e)^2)/b^10)^(1/2))/8 - ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*
b^8*c^2*e^10 + 4608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^
2*b^3*c^7*d^5*e^5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 4
2*A^2*b^6*c^4*d^2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3
 + 2912*B^2*b^4*c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4
*e^6 - 196*B^2*b^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^
9 - 18432*A^2*b*c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 460
8*A*B*b*c^9*d^8*e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19
488*A*B*b^3*c^7*d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*
e^6 + 504*A*B*b^6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*((d^
3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*A*b*c*d*e
)^2)/b^10)^(1/2))/8)*((36*A^2*c^4*d^7 + 9*B^2*b^2*c^2*d^7 + (1225*A^2*b^4*d
^3*e^4)/64 + (49*B^2*b^4*d^5*e^2)/4 + (651*A^2*b^2*c^2*d^5*e^2)/4 + (245*A*
B*b^4*d^4*e^3)/8 - 126*A^2*b*c^3*d^6*e - 21*B^2*b^3*c*d^6*e - (735*A^2*b^3*
c*d^4*e^3)/8 - 36*A*B*b*c^3*d^7 + 105*A*B*b^2*c^2*d^6*e - (399*A*B*b^3*c*d^
5*e^2)/4)/b^10)^(1/2) + log((d^2*e^3*(b*e - c*d)^2*(35*A^3*b^7*c^2*e^7 - 55
296*A^3*c^9*d^7 + 6912*B^3*b^3*c^6*d^7 + 315*A*B^2*b^9*e^7 + 252*B^3*b^9*d*
e^6 - 252288*A^3*b^2*c^7*d^5*e^2 + 146880*A^3*b^3*c^6*d^4*e^3 - 33048*A^3*b
^4*c^5*d^3*e^4 - 540*A^3*b^5*c^4*d^2*e^5 + 2304*B^3*b^5*c^4*d^5*e^2 - 104*B
^3*b^6*c^3*d^4*e^3 + 2668*B^3*b^7*c^2*d^3*e^4 + 82944*A^2*B*b*c^8*d^7 + 210
*A^2*B*b^8*c*e^7 + 193536*A^3*b*c^8*d^6*e - 41472*A*B^2*b^2*c^7*d^7 + 686*A
^3*b^6*c^3*d*e^6 - 12096*B^3*b^4*c^5*d^6*e + 624*B^3*b^8*c*d^2*e^5 - 58176*
A*B^2*b^4*c^5*d^5*e^2 + 7344*A*B^2*b^5*c^4*d^4*e^3 - 10212*A*B^2*b^6*c^3*d^
3*e^4 + 4131*A*B^2*b^7*c^2*d^2*e^5 + 233280*A^2*B*b^3*c^6*d^5*e^2 - 82224*A
^2*B*b^4*c^5*d^4*e^3 + 15300*A^2*B*b^5*c^4*d^3*e^4 - 9459*A^2*B*b^6*c^3*d^2
*e^5 + 462*A*B^2*b^8*c*d*e^6 + 96768*A*B^2*b^3*c^6*d^6*e - 241920*A^2*B*b^2
*c^7*d^6*e + 2184*A^2*B*b^7*c^2*d*e^6))/(64*b^12*c^3) - (((((d*e^3*(b*e - c
d)(24*A*c^3*d^2 + 3*B*b^3*e^2 + A*b^2*c*e^2 - 12*B*b*c^2*d^2 - 24*A*b*c^2
*d*e + 5*B*b^2*c*d*e))/b^2 + b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^
3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*A*b*c*d*e
)^2)/b^10)^(1/2))*((d^3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*
b^2*d*e - 84*A*b*c*d*e)^2)/b^10)^(1/2))/8 + ((d + e*x)^(1/2)*(9*B^2*b^10*e^
10 + A^2*b^8*c^2*e^10 + 4608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 -
 22176*A^2*b^3*c^7*d^5*e^5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^
3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^
7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^
6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b
^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e
^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7
*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5
*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c
^3))*((d^3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*
A*b*c*d*e)^2)/b^10)^(1/2))/8)*((2304*A^2*c^4*d^7 + 576*B^2*b^2*c^2*d^7 + 12
25*A^2*b^4*d^3*e^4 + 784*B^2*b^4*d^5*e^2 + 10416*A^2*b^2*c^2*d^5*e^2 + 1960

```
*A*B*b^4*d^4*e^3 - 8064*A^2*b*c^3*d^6*e - 1344*B^2*b^3*c*d^6*e - 5880*A^2*b
^3*c*d^4*e^3 - 2304*A*B*b*c^3*d^7 + 6720*A*B*b^2*c^2*d^6*e - 6384*A*B*b^3*c
*d^5*e^2)/(64*b^10))^(1/2) + (((d + e*x)^(7/2)*(A*b^3*c*e^4 - 5*B*b^4*e^4 +
 24*A*c^4*d^3*e - 36*A*b*c^3*d^2*e^2 + 10*A*b^2*c^2*d*e^3 + 11*B*b^2*c^2*d^
2*e^2 - 12*B*b*c^3*d^3*e + 2*B*b^3*c*d*e^3))/(4*b^4*c) - ((d + e*x)^(5/2)*(
3*B*b^5*e^5 + A*b^4*c*e^5 + 72*A*c^5*d^4*e - 144*A*b*c^4*d^3*e^2 - 13*A*b^3
*c^2*d*e^4 + 85*A*b^2*c^3*d^2*e^3 + 51*B*b^2*c^3*d^3*e^2 - 11*B*b^3*c^2*d^2
*e^3 - 36*B*b*c^4*d^4*e - 11*B*b^4*c*d*e^4))/(4*b^4*c^2) - ((d + e*x)^(1/2)
*(24*A*c^5*d^6*e + 3*B*b^5*d^2*e^5 - 72*A*b*c^4*d^5*e^2 + A*b^4*c*d^2*e^5 -
 B*b^4*c*d^3*e^4 + 73*A*b^2*c^3*d^4*e^3 - 26*A*b^3*c^2*d^3*e^4 + 29*B*b^2*c
^3*d^5*e^2 - 19*B*b^3*c^2*d^4*e^3 - 12*B*b*c^4*d^6*e))/(4*b^4*c^2) + ((d +
e*x)^(3/2)*(72*A*c^5*d^5*e + 6*B*b^5*d*e^5 - 180*A*b*c^4*d^4*e^2 - 7*B*b^4*
c*d^2*e^4 + 148*A*b^2*c^3*d^3*e^3 - 42*A*b^3*c^2*d^2*e^4 + 69*B*b^2*c^3*d^4
*e^2 - 32*B*b^3*c^2*d^3*e^3 + 2*A*b^4*c*d*e^5 - 36*B*b*c^4*d^5*e))/(4*b^4*c
^2))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) -
 (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c
*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1104 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=344

$$-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(5b^2e(3Ae+4Bd)-12bcd(5Ae\right.}{4b^5}$$

Rubi [A] time = 0.70, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 820, 826, 1166, 208}

$$-\frac{\sqrt{d+ex}\left(bd\left(9Abce-12Ac^2d-2b^2Be+6bBcd\right)-x\left(b^2ce(3Ae+7Bd)-12bc^2d(2Ae+Bd)+24Ac^3d^2+b^3Be^2\right)\right)}{4b^4c\left(bx+cx^2\right)}+\frac{\sqrt{cd-be}\left(b^2ce(3Ae+8Bd)-12bc^2d(3Ae+2Bd)+48Ac^3d^2+b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5c^{3/2}}-\frac{\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(5b^2e(3Ae+4Bd)-12bcd(5Ae+2Bd)+48Ac^2d^2\right)}{4b^5}-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^(3/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2
*b^2*c*(b*x + c*x^2)^2) - (Sqrt[d + e*x]*(b*d*(6*b*B*c*d - 12*A*c^2*d - 2*b
^2*B*e + 9*A*b*c*e) - (24*A*c^3*d^2 + b^3*B*e^2 - 12*b*c^2*d*(B*d + 2*A*e)
+ b^2*c*e*(7*B*d + 3*A*e))*x))/(4*b^4*c*(b*x + c*x^2)) - (Sqrt[d]*(48*A*c^2
*d^2 + 5*b^2*e*(4*B*d + 3*A*e) - 12*b*c*d*(2*B*d + 5*A*e))*ArcTanh[Sqrt[d +
 e*x]/Sqrt[d]])/(4*b^5) + (Sqrt[c*d - b*e]*(48*A*c^3*d^2 + b^3*B*e^2 - 12*b
*c^2*d*(2*B*d + 3*A*e) + b^2*c*e*(8*B*d + 3*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d +
 e*x])/Sqrt[c*d - b*e]])/(4*b^5*c^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int \frac{\sqrt{d+ex}\left(\frac{1}{2}d\left(6bBcd-12Ac^2d-2b\right.\right.}{}}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-12A\right.\right.}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-12A\right.\right.}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-12A\right.\right.}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-12A\right.\right.}{}$$

Mathematica [A] time = 3.04, size = 516, normalized size = 1.50

$$\frac{\frac{30c(d+ex)^{7/2}\left(b^2(-e)(3Ae+4Bd)+bcd(13Ae+6Bd)-12Ac^2d^2\right)}{b^2d(be-cd)}+\frac{(b+cx)\left((b+cx)\left(15c^{7/2}(cd-be)^2\left(-2d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+\frac{2}{3}d\sqrt{d+ex}(4d+ex)+\frac{2}{5}(d+ex)^{5/2}\right)\left(5b^2e(3Ae+4Bd)-12bcd(5Ae+2Bd)+48Ac^2d^2\right)-2c^2d^2\left(b^2ce(3Ae+8Bd)-12bc^2d(3Ae+2Bd)+48Ac^3d^2+b^3Be^2\right)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)\right)-30bc^{9/2}(d+ex)^{7/2}\left(b^3e^2(3Ae+4Bd)-b^2cde(18Ae+13Bd)+12bc^2d^2(3Ae+Bd)-24Ac^3d^3\right)\right)}{b^4c^{7/2}d(cd-be)^2}-\frac{30(d+ex)^{7/2}(3Abe-8Acd+4bBd)}{bdx}-\frac{60A(d+ex)^{7/2}}{x^2}}{120bd(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((30*c*(-12*A*c^2*d^2 - b^2*e*(4*B*d + 3*A*e) + b*c*d*(6*B*d + 13*A*e))*(d
+ e*x)^(7/2))/(b^2*d*(-(c*d) + b*e)) - (60*A*(d + e*x)^(7/2))/x^2 - (30*(4*
b*B*d - 8*A*c*d + 3*A*b*e)*(d + e*x)^(7/2))/(b*d*x) + ((b + c*x)*(-30*b*c^(
9/2)*(-24*A*c^3*d^3 + 12*b*c^2*d^2*(B*d + 3*A*e) + b^3*e^2*(4*B*d + 3*A*e)
- b^2*c*d*e*(13*B*d + 18*A*e))*(d + e*x)^(7/2) + (b + c*x)*(15*c^(7/2)*(c*d
 - b*e)^2*(48*A*c^2*d^2 + 5*b^2*e*(4*B*d + 3*A*e) - 12*b*c*d*(2*B*d + 5*A*e
))*((2*(d + e*x)^(5/2))/5 + (2*d*Sqrt[d + e*x]*(4*d + e*x))/3 - 2*d^(5/2)*A
rcTanh[Sqrt[d + e*x]/Sqrt[d]]) - 2*c^2*d^2*(48*A*c^3*d^2 + b^3*B*e^2 - 12*b
*c^2*d*(2*B*d + 3*A*e) + b^2*c*e*(8*B*d + 3*A*e))*(3*c^(5/2)*(d + e*x)^(5/2
) + 5*(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d -
 b*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))))/(b^4*c^(7
/2)*d*(c*d - b*e)^2))/(120*b*d*(b + c*x)^2)
```

IntegrateAlgebraic [B] time = 2.21, size = 746, normalized size = 2.17

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(Sqrt[d + e*x]*(-12*b*B*c^3*d^5 + 24*A*c^4*d^5 + 25*b^2*B*c^2*d^4*e -
60*A*b*c^3*d^4*e - 14*b^3*B*c*d^3*e^2 + 48*A*b^2*c^2*d^3*e^2 + b^4*B*d^2*e^
3 - 12*A*b^3*c*d^2*e^3 + 36*b*B*c^3*d^4*(d + e*x) - 72*A*c^4*d^4*(d + e*x)
- 57*b^2*B*c^2*d^3*e*(d + e*x) + 144*A*b*c^3*d^3*e*(d + e*x) + 23*b^3*B*c*d
^2*e^2*(d + e*x) - 91*A*b^2*c^2*d^2*e^2*(d + e*x) - 2*b^4*B*d*e^3*(d + e*x)
 + 19*A*b^3*c*d*e^3*(d + e*x) - 36*b*B*c^3*d^3*(d + e*x)^2 + 72*A*c^4*d^3*(
d + e*x)^2 + 39*b^2*B*c^2*d^2*e*(d + e*x)^2 - 108*A*b*c^3*d^2*e*(d + e*x)^2
 - 8*b^3*B*c*d*e^2*(d + e*x)^2 + 46*A*b^2*c^2*d*e^2*(d + e*x)^2 + b^4*B*e^3
*(d + e*x)^2 - 5*A*b^3*c*e^3*(d + e*x)^2 + 12*b*B*c^3*d^2*(d + e*x)^3 - 24*
A*c^4*d^2*(d + e*x)^3 - 7*b^2*B*c^2*d*e*(d + e*x)^3 + 24*A*b*c^3*d*e*(d + e
*x)^3 - b^3*B*c*e^2*(d + e*x)^3 - 3*A*b^2*c^2*e^2*(d + e*x)^3))/(b^4*c*e*x^
2*(-(c*d) + b*e + c*(d + e*x))^2) + ((-24*b*B*c^3*d^3 + 48*A*c^4*d^3 + 32*b
^2*B*c^2*d^2*e - 84*A*b*c^3*d^2*e - 7*b^3*B*c*d*e^2 + 39*A*b^2*c^2*d*e^2 -
b^4*B*e^3 - 3*A*b^3*c*e^3)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x]
)/(c*d - b*e)])/(4*b^5*c^(3/2)*Sqrt[-(c*d) + b*e]) + ((24*b*B*c*d^(5/2) - 4
8*A*c^2*d^(5/2) - 20*b^2*B*d^(3/2)*e + 60*A*b*c*d^(3/2)*e - 15*A*b^2*Sqrt[d
]*e^2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5)
```

fricas [B] time = 4.03, size = 2754, normalized size = 8.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(((24*(B*b*c^4 - 2*A*c^5)*d^2 - 4*(2*B*b^2*c^3 - 9*A*b*c^4)*d*e - (B*
b^3*c^2 + 3*A*b^2*c^3)*e^2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(2*
B*b^3*c^2 - 9*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (24*(B*b^
3*c^2 - 2*A*b^2*c^3)*d^2 - 4*(2*B*b^4*c - 9*A*b^3*c^2)*d*e - (B*b^5 + 3*A*b
^4*c)*e^2)*x^2)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x +
 d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) - ((15*A*b^2*c^3*e^2 - 24*(B*b*c^4 -
2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(15*A*b^3*c^2*e^2 -
24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (1
5*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 20*(B*b^4*c - 3*A*b^3*c^
2)*d*e)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*
b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*b^3*c^2 - 24*A*b^2*c^3)*
d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2
- (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^4*c)*e^2)*x^2 + (9*A*b^4
*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x + d))/(b^5*c^3*x^4 + 2*
b^6*c^2*x^3 + b^7*c*x^2), -1/8*(2*((24*(B*b*c^4 - 2*A*c^5)*d^2 - 4*(2*B*b^2
*c^3 - 9*A*b*c^4)*d*e - (B*b^3*c^2 + 3*A*b^2*c^3)*e^2)*x^4 + 2*(24*(B*b^2*c
^3 - 2*A*b*c^4)*d^2 - 4*(2*B*b^3*c^2 - 9*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^
3*c^2)*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 - 4*(2*B*b^4*c - 9*A*b^
3*c^2)*d*e - (B*b^5 + 3*A*b^4*c)*e^2)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqr
t(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) - ((15*A*b^2*c^3*e^2 - 24*(B
*b*c^4 - 2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(15*A*b^3*c
^2*e^2 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)
*x^3 + (15*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 20*(B*b^4*c - 3
*A*b^3*c^2)*d*e)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x)
+ 2*(2*A*b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*b^3*c^2 - 24*A*
b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3*c^2 - 2*A*b^2*
c^3)*d^2 - (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^4*c)*e^2)*x^2 +
 (9*A*b^4*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x + d))/(b^5*c^3
```

```
*x^4 + 2*b^6*c^2*x^3 + b^7*c*x^2), 1/8*(2*((15*A*b^2*c^3*e^2 - 24*(B*b*c^4
- 2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(15*A*b^3*c^2*e^2
- 24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 +
(15*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 20*(B*b^4*c - 3*A*b^3*
c^2)*d*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - ((24*(B*b*c^4 -
2*A*c^5)*d^2 - 4*(2*B*b^2*c^3 - 9*A*b*c^4)*d*e - (B*b^3*c^2 + 3*A*b^2*c^3)*
e^2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(2*B*b^3*c^2 - 9*A*b^2*c^3
)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^
2 - 4*(2*B*b^4*c - 9*A*b^3*c^2)*d*e - (B*b^5 + 3*A*b^4*c)*e^2)*x^2)*sqrt((c
*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/
c))/(c*x + b)) - 2*(2*A*b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*
b^3*c^2 - 24*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3
*c^2 - 2*A*b^2*c^3)*d^2 - (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^
4*c)*e^2)*x^2 + (9*A*b^4*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x
 + d))/(b^5*c^3*x^4 + 2*b^6*c^2*x^3 + b^7*c*x^2), -1/4*(((24*(B*b*c^4 - 2*A
*c^5)*d^2 - 4*(2*B*b^2*c^3 - 9*A*b*c^4)*d*e - (B*b^3*c^2 + 3*A*b^2*c^3)*e^2
)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(2*B*b^3*c^2 - 9*A*b^2*c^3)*d
*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 -
 4*(2*B*b^4*c - 9*A*b^3*c^2)*d*e - (B*b^5 + 3*A*b^4*c)*e^2)*x^2)*sqrt(-(c*d
 - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) - ((15
*A*b^2*c^3*e^2 - 24*(B*b*c^4 - 2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*
e)*x^4 + 2*(15*A*b^3*c^2*e^2 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c
^2 - 3*A*b^2*c^3)*d*e)*x^3 + (15*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)
*d^2 + 20*(B*b^4*c - 3*A*b^3*c^2)*d*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*s
qrt(-d)/d) + (2*A*b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*b^3*c^
2 - 24*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3*c^2 -
 2*A*b^2*c^3)*d^2 - (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^4*c)*e
^2)*x^2 + (9*A*b^4*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x + d))
/(b^5*c^3*x^4 + 2*b^6*c^2*x^3 + b^7*c*x^2)]
```

giac [**B**] time = 0.34, size = 841, normalized size = 2.44

$$-\frac{\left(24 Bbcd^3 - 48 Ac^2d^3 - 20 Bb^2d^2e + 60 Abcd^2e - 15 Ab^2de^2\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{4 b^5\sqrt{-d}} + \frac{\left(24 Bbc^3d^3 - 48 Ac^4d^3 - 32 Bb^2c^2d^2e + 84 Abc^3d^2e + 7 Bb^3cde^2 - 39 Ab^2c^2de^2 + Bb^4e^3 + 3 Ab^3ce^3\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{4\sqrt{-c^2d+bce}\,b^5c} - [illegible]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/4*(24*B*b*c*d^3 - 48*A*c^2*d^3 - 20*B*b^2*d^2*e + 60*A*b*c*d^2*e - 15*A*
b^2*d*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sqrt(-d)) + 1/4*(24*B*b*c^3*
d^3 - 48*A*c^4*d^3 - 32*B*b^2*c^2*d^2*e + 84*A*b*c^3*d^2*e + 7*B*b^3*c*d*e^
2 - 39*A*b^2*c^2*d*e^2 + B*b^4*e^3 + 3*A*b^3*c*e^3)*arctan(sqrt(x*e + d)*c/
sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b^5*c) - 1/4*(12*(x*e + d)^(7/2
)*B*b*c^3*d^2*e - 24*(x*e + d)^(7/2)*A*c^4*d^2*e - 36*(x*e + d)^(5/2)*B*b*c
^3*d^3*e + 72*(x*e + d)^(5/2)*A*c^4*d^3*e + 36*(x*e + d)^(3/2)*B*b*c^3*d^4*
e - 72*(x*e + d)^(3/2)*A*c^4*d^4*e - 12*sqrt(x*e + d)*B*b*c^3*d^5*e + 24*sq
rt(x*e + d)*A*c^4*d^5*e - 7*(x*e + d)^(7/2)*B*b^2*c^2*d*e^2 + 24*(x*e + d)^
(7/2)*A*b*c^3*d*e^2 + 39*(x*e + d)^(5/2)*B*b^2*c^2*d^2*e^2 - 108*(x*e + d)^
(5/2)*A*b*c^3*d^2*e^2 - 57*(x*e + d)^(3/2)*B*b^2*c^2*d^3*e^2 + 144*(x*e + d
)^(3/2)*A*b*c^3*d^3*e^2 + 25*sqrt(x*e + d)*B*b^2*c^2*d^4*e^2 - 60*sqrt(x*e
+ d)*A*b*c^3*d^4*e^2 - (x*e + d)^(7/2)*B*b^3*c*e^3 - 3*(x*e + d)^(7/2)*A*b^
2*c^2*e^3 - 8*(x*e + d)^(5/2)*B*b^3*c*d*e^3 + 46*(x*e + d)^(5/2)*A*b^2*c^2*
d*e^3 + 23*(x*e + d)^(3/2)*B*b^3*c*d^2*e^3 - 91*(x*e + d)^(3/2)*A*b^2*c^2*d
^2*e^3 - 14*sqrt(x*e + d)*B*b^3*c*d^3*e^3 + 48*sqrt(x*e + d)*A*b^2*c^2*d^3*
e^3 + (x*e + d)^(5/2)*B*b^4*e^4 - 5*(x*e + d)^(5/2)*A*b^3*c*e^4 - 2*(x*e +
d)^(3/2)*B*b^4*d*e^4 + 19*(x*e + d)^(3/2)*A*b^3*c*d*e^4 + sqrt(x*e + d)*B*b
^4*d^2*e^4 - 12*sqrt(x*e + d)*A*b^3*c*d^2*e^4)/(((x*e + d)^2*c - 2*(x*e + d
)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2*b^4*c)
```

maple [**B**] time = 0.08, size = 1004, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 15*e*d^(3/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+6/b^4*c^2/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3+7/4*e^2/b^2/((b*e-
c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-12/b^5*c^3/((
b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3+3/4*e^3
/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c+1/4*e^3/b/(c*e*x+b*e)^2*(e*x+d)^(3/2)*
B-5*e*d^(3/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*B+3/4*e^3/b^2/((b*e-c*d)*c
)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+5/4*e^4/b/(c*e*x+b*e)
^2*(e*x+d)^(1/2)*A+7/4*d^2/b^3/x^2*(e*x+d)^(1/2)*A-12*d^(5/2)/b^5*arctanh((
e*x+d)^(1/2)/d^(1/2))*A*c^2+6*d^(5/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*B*
c-9/4*d/b^3/x^2*(e*x+d)^(3/2)*A-1/4*e^4/(c*e*x+b*e)^2/c*(e*x+d)^(1/2)*B-15/
4*e^2*d^(1/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*A-1/e*d^2/b^3/x^2*(e*x+d)^
(3/2)*B+1/e*d^3/b^3/x^2*(e*x+d)^(1/2)*B+5/2*e^3/b/(c*e*x+b*e)^2*(e*x+d)^(1/
2)*B*d+1/4*e^3/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(
1/2)*c)*B-39/4*e^2/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*c*d+21*e/b^4*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b
*e-c*d)*c)^(1/2)*c)*A*d^2-8*e/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/
((b*e-c*d)*c)^(1/2)*c)*B*d^2*c-2*e/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c^2*d^
2+2*e/b^3/(c*e*x+b*e)^2*c^2*(e*x+d)^(1/2)*B*d^3+3/e*d^2/b^4/x^2*(e*x+d)^(3/
2)*A*c-3/e*d^3/b^4/x^2*(e*x+d)^(1/2)*A*c-17/4*e^2/b^2/(c*e*x+b*e)^2*(e*x+d)
^(1/2)*B*d^2*c+7/4*e^2/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c*d-11/2*e^3/b^2/(
c*e*x+b*e)^2*(e*x+d)^(1/2)*A*c*d+3*e/b^4/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^3*
d^2+29/4*e^2/b^3/(c*e*x+b*e)^2*c^2*(e*x+d)^(1/2)*A*d^2-3*e/b^4/(c*e*x+b*e)^
2*c^3*(e*x+d)^(1/2)*A*d^3-15/4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^2*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.85, size = 7001, normalized size = 20.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(7/2)*(B*b^3*e^3 + 3*A*b^2*c*e^3 + 24*A*c^3*d^2*e - 24*A*b*c^2*
d*e^2 - 12*B*b*c^2*d^2*e + 7*B*b^2*c*d*e^2))/(4*b^4) - ((d + e*x)^(5/2)*(B*
b^4*e^4 - 5*A*b^3*c*e^4 + 72*A*c^4*d^3*e - 108*A*b*c^3*d^2*e^2 + 46*A*b^2*c
^2*d*e^3 + 39*B*b^2*c^2*d^2*e^2 - 36*B*b*c^3*d^3*e - 8*B*b^3*c*d*e^3))/(4*b
^4*c) - ((d + e*x)^(1/2)*(24*A*c^4*d^5*e + B*b^4*d^2*e^4 - 60*A*b*c^3*d^4*e
^2 - 12*A*b^3*c*d^2*e^4 - 14*B*b^3*c*d^3*e^3 + 48*A*b^2*c^2*d^3*e^3 + 25*B*
b^2*c^2*d^4*e^2 - 12*B*b*c^3*d^5*e))/(4*b^4*c) + ((d + e*x)^(3/2)*(72*A*c^4
*d^4*e + 2*B*b^4*d*e^4 - 144*A*b*c^3*d^3*e^2 - 23*B*b^3*c*d^2*e^3 + 91*A*b^
2*c^2*d^2*e^3 + 57*B*b^2*c^2*d^3*e^2 - 19*A*b^3*c*d*e^4 - 36*B*b*c^3*d^4*e)
)/(4*b^4*c))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*
d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2
 - 6*b*c*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (d^(1/2)*atan(((d^(1
/2)*((d^(1/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*
e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4
```

)/(b^12*c) - (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/2
)*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e
))/(64*b^13*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e
- 60*A*b*c*d*e))/(8*b^5) - ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^
8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3
*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c
^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^
6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*
c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7
+ 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4
*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d^
2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e)*1i)/(8*b^5) - (d^(1/2)*((d^
(1/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36
*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*
c) + (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/2)*(15*A*
b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(64*b
^13*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b
*c*d*e))/(8*b^5) + ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608
*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2
250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e
^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^
2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^
7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904
*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5
- 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B
*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e)*1i)/(8*b^5))/(((5*B^3*b^9*d^2*e^9)/
8 - 1728*A^3*c^9*d^8*e^3 - 11124*A^3*b^2*c^7*d^6*e^5 + 9180*A^3*b^3*c^6*d^5
*e^6 - (16389*A^3*b^4*c^5*d^4*e^7)/4 + (1917*A^3*b^5*c^4*d^3*e^8)/2 - (3375
*A^3*b^6*c^3*d^2*e^9)/32 + 216*B^3*b^3*c^6*d^8*e^3 - 594*B^3*b^4*c^5*d^7*e^
4 + 558*B^3*b^5*c^4*d^6*e^5 - (725*B^3*b^6*c^3*d^5*e^6)/4 - (59*B^3*b^7*c^2
*d^4*e^7)/8 + (15*A*B^2*b^9*d*e^10)/32 + 6912*A^3*b*c^8*d^7*e^4 + (135*A^3*
b^7*c^2*d*e^10)/32 + 8*B^3*b^8*c*d^3*e^8 - 1296*A*B^2*b^2*c^7*d^8*e^3 + 410
4*A*B^2*b^3*c^6*d^7*e^4 - 4788*A*B^2*b^4*c^5*d^6*e^5 + (4815*A*B^2*b^5*c^4*
d^5*e^6)/2 - (3171*A*B^2*b^6*c^3*d^4*e^7)/8 - (1281*A*B^2*b^7*c^2*d^3*e^8)/
32 - 9288*A^2*B*b^2*c^7*d^7*e^4 + 12906*A^2*B*b^3*c^6*d^6*e^5 - (17235*A^2*
B*b^4*c^5*d^5*e^6)/2 + (21717*A^2*B*b^5*c^4*d^4*e^7)/8 - (9423*A^2*B*b^6*c^
3*d^3*e^8)/32 - (495*A^2*B*b^7*c^2*d^2*e^9)/32 + (45*A^2*B*b^8*c*d*e^10)/16
+ (135*A*B^2*b^8*c*d^2*e^9)/16 + 2592*A^2*B*b*c^8*d^8*e^3)/(b^12*c) + (d^(
1/2)*((d^(1/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3
*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^
4)/(b^12*c) - (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/
2)*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*
e))/(64*b^13*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e
- 60*A*b*c*d*e))/(8*b^5) - ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e
^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^
3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*
c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b
^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5
*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^
7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^
4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d
^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(8*b^5) + (d^(1/2)*((d^(1
/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A
*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c)
+ (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/2)*(15*A*b^
2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(64*b^1
3*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c
*d*e))/(8*b^5) + ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A
^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 225

0*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(8*b^5)))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e)*1i)/(4*b^5) + (atan((((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c) - (((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c) - ((64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^13*c^4))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e)*1i)/(8*b^5*c^3) + ((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c) + (((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c) + ((64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^13*c^4))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e)*1i)/(8*b^5*c^3))/((((5*B^3*b^9*d^2*e^9)/8 - 1728*A^3*c^9*d^8*e^3 - 11124*A^3*b^2*c^7*d^6*e^5 + 9180*A^3*b^3*c^6*d^5*e^6 - (16389*A^3*b^4*c^5*d^4*e^7)/4 + (1917*A^3*b^5*c^4*d^3*e^8)/2 - (3375*A^3*b^6*c^3*d^2*e^9)/32 + 216*B^3*b^3*c^6*d^8*e^3 - 594*B^3*b^4*c^5*d^7*e^4 + 558*B^3*b^5*c^4*d^6*e^5 - (725*B^3*b^6*c^3*d^5*e^6)/4 - (59*B^3*b^7*c^2*d^4*e^7)/8 + (15*A*B^2*b^9*d*e^10)/32 + 6912*A^3*b*c^8*d^7*e^4 + (135*A^3*b^7*c^2*d*e^10)/32 + 8*B^3*b^8*c*d^3*e^8 - 1296*A*B^2*b^2*c^7*d^8*e^3 + 4104*A*B^2*b^3*c^6*d^7*e^4 - 4788*A*B^2*b^4*c^5*d^6*e^5 + (4815*A*B^2*b^5*c^4*d^5*e^6)/2 - (3171*A*B^2*b^6*c^3*d^4*e^7)/8 - (1281*A*B^2*b^7*c^2*d^3*e^8)/32 - 9288*A^2*B*b^2*c^7*d^7*e^4 + 12906*A^2*B*b^3*c^6*d^6*e^5 - (17235*A^2*B*b^4*c^5*d^5*e^6)/2 + (21717*A^2*B*b^5*c^4*d^4*e^7)/8 - (9423*A^2*B*b^6*c^3*d^3*e^8)/32 - (495*A^2*B*b^7*c^2*d^2*e^9)/32 + (45*A^2*B*b^8*c*d*e^10)/16 + (135*A*B^2*b^8*c*d^2*e^9)/16 + 2592*A^2*B*b*c^8*d^8*e^3)/(b^12*c) - ((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c) - (((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b

```
^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12
*c^3*d^2*e^4)/(b^12*c) - ((64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(-c^3*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 -
24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^13*c^4))*(-c^3*(b*e
 - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 -
 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))*(-c^3*(b*e - c*d))^(1/2)*(48
*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e +
8*B*b^2*c*d*e))/(8*b^5*c^3) + ((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c
^2*e^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^
5*d^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*
b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B
^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2
*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*
d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^
4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c) + (((12*A*b^12*c^3*d*e^
5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B
*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c) + ((64*b^11*c^3*e^3 - 1
28*b^10*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 +
 B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*
e))/(64*b^13*c^4))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A
*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))
*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*
b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3)))*(-c^3*(b*e - c*d
))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*
b*c^2*d*e + 8*B*b^2*c*d*e)*1i)/(4*b^5*c^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1105 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=346

$$-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(Ae+4Bd)-4bcd(3Ae+2Bd)\right.}{4b^5\sqrt{d}}$$

Rubi [A] time = 0.87, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 822, 826, 1166, 208}

$$\frac{3\left(b^2ce(5Ae+8Bd)-4bc^2d(5Ae+2Bd)+16Ac^3d^2+b^3(-B)e^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5\sqrt{c}\sqrt{cd-be}}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(Ae+4Bd)-4bcd(3Ae+2Bd)+16Ac^2d^2\right)}{4b^5\sqrt{d}}-\frac{\sqrt{d+ex}\left(b(cd-be)\left(7Abce-12Ac^2d-2b^2Be+6bBcd\right)-3cx(cd-be)\left(-4bc(Ae+Bd)+8Ac^2d+b^2Be\right)\right)}{4b^4c\left(bx+cx^2\right)(cd-be)}-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -(Sqrt[d + e*x]*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2*b
^2*c*(b*x + c*x^2)^2) - (Sqrt[d + e*x]*(b*(c*d - b*e)*(6*b*B*c*d - 12*A*c^2
*d - 2*b^2*B*e + 7*A*b*c*e) - 3*c*(c*d - b*e)*(8*A*c^2*d + b^2*B*e - 4*b*c*
(B*d + A*e))*x))/(4*b^4*c*(c*d - b*e)*(b*x + c*x^2)) - (3*(16*A*c^2*d^2 + b
^2*e*(4*B*d + A*e) - 4*b*c*d*(2*B*d + 3*A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]
])/(4*b^5*Sqrt[d]) + (3*(16*A*c^3*d^2 - b^3*B*e^2 - 4*b*c^2*d*(2*B*d + 5*A*
e) + b^2*c*e*(8*B*d + 5*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*
e]])/(4*b^5*Sqrt[c]*Sqrt[c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int\frac{-\frac{1}{2}d\left(12Ac^2d+2b^2Be-bc(6Bd+7A\cdots\right.}{\sqrt{d+ex}\cdots}}{2\cdots}$$

$$= -\frac{\sqrt{d+ex}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(b(cd-be)\left(6bBcd\cdots\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(b(cd-be)\left(6bBcd\cdots\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(b(cd-be)\left(6bBcd\cdots\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(b(cd-be)\left(6bBcd\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 2.85, size = 472, normalized size = 1.36

$$\frac{\frac{6b^2c^{7/2}(d+ex)^{5/2}(cd-be)\left(b^2e(Ae+4Bd)-bcd(11Ae+6Bd)+12Ac^2d^2\right)+(b+cx)\left((b+cx)\left(9c^{5/2}(cd-be)^2\left(\frac{2}{3}\sqrt{d+ex}(4d+ex)-2d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)\left(b^2e(Ae+4Bd)-4bcd(3Ae+2Bd)+16Ac^2d^2\right)-6c^2d^2\left(b^2ce(5Ae+8Bd)-4bc^2d(5Ae+2Bd)+16Ac^3d^2+b^3(-B)e^2\right)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)\right)-6bc^{7/2}(d+ex)^{5/2}\left(b^3e^2(Ae+4Bd)-b^2cde(14Ae+15Bd)+12bc^2d^2(3Ae+Bd)-24Ac^3d^3\right)\right)}{b^4c^{5/2}d(cd-be)^2}-\frac{6(d+ex)^{5/2}(Abe-8Acd+4bBd)}{bdx}-\frac{12A(d+ex)^{5/2}}{x^2}}{24bd(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((-12*A*(d + e*x)^(5/2))/x^2 - (6*(4*b*B*d - 8*A*c*d + A*b*e)*(d + e*x)^(5/
2))/(b*d*x) + (6*b^2*c^(7/2)*(c*d - b*e)*(12*A*c^2*d^2 + b^2*e*(4*B*d + A*e
) - b*c*d*(6*B*d + 11*A*e))*(d + e*x)^(5/2) + (b + c*x)*(-6*b*c^(7/2)*(-24*
A*c^3*d^3 + b^3*e^2*(4*B*d + A*e) + 12*b*c^2*d^2*(B*d + 3*A*e) - b^2*c*d*e*
(15*B*d + 14*A*e))*(d + e*x)^(5/2) + (b + c*x)*(9*c^(5/2)*(c*d - b*e)^2*(16
*A*c^2*d^2 + b^2*e*(4*B*d + A*e) - 4*b*c*d*(2*B*d + 3*A*e))*((2*Sqrt[d + e*
x]*(4*d + e*x))/3 - 2*d^(3/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - 6*c^2*d^2*(
16*A*c^3*d^2 - b^3*B*e^2 - 4*b*c^2*d*(2*B*d + 5*A*e) + b^2*c*e*(8*B*d + 5*A
```

```
*e))*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*A
rcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))))/(b^4*c^(5/2)*d*(c*d - b
*e)^2))/(24*b*d*(b + c*x)^2)
```

IntegrateAlgebraic [**A**] time = 2.19, size = 568, normalized size = 1.64

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(Ab^2e^2-12Abcde+16Ac^2d^2+4b^2Bde-8bBcd^2\right)}{4b^5\sqrt{d}}+\frac{3\left(5Ab^2ce^2-20Abc^2de+16Ac^3d^2+b^3(-B)e^2+8b^2Bcde-8bBc^2d^2\right)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}\sqrt{be-cd}}{cd-be}\right)}{4b^5\sqrt{c}\sqrt{be-cd}}-\frac{\sqrt{d+ex}\left(5Ab^3e^3(d+ex)-3Ab^3de^3+27Ab^2cd^2e^2-46Ab^2cde^2(d+ex)+19Ab^2ce^2(d+ex)^2-48Abc^2d^3e+108Abc^2d^2e(d+ex)-72Abc^2de(d+ex)^2+12Abc^2e(d+ex)^3+24Ac^3d^4-72Ac^3d^3(d+ex)+72Ac^3d^2(d+ex)^2-24Ac^3d(d+ex)^3-9b^3Bd^2e^2+14b^3Bde^2(d+ex)-5b^3Be^2(d+ex)^2+21b^2Bcd^3e-45b^2Bcd^2e(d+ex)+27b^2Bcde(d+ex)^2-3b^2Bce(d+ex)^3-12bBc^2d^4+36bBc^2d^3(d+ex)-36bBc^2d^2(d+ex)^2+12bBc^2d(d+ex)^3\right)}{4b^4ex^2(be+c(d+ex)-cd)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(Sqrt[d + e*x]*(-12*b*B*c^2*d^4 + 24*A*c^3*d^4 + 21*b^2*B*c*d^3*e - 48
*A*b*c^2*d^3*e - 9*b^3*B*d^2*e^2 + 27*A*b^2*c*d^2*e^2 - 3*A*b^3*d*e^3 + 36*
b*B*c^2*d^3*(d + e*x) - 72*A*c^3*d^3*(d + e*x) - 45*b^2*B*c*d^2*e*(d + e*x)
 + 108*A*b*c^2*d^2*e*(d + e*x) + 14*b^3*B*d*e^2*(d + e*x) - 46*A*b^2*c*d*e^
2*(d + e*x) + 5*A*b^3*e^3*(d + e*x) - 36*b*B*c^2*d^2*(d + e*x)^2 + 72*A*c^3
*d^2*(d + e*x)^2 + 27*b^2*B*c*d*e*(d + e*x)^2 - 72*A*b*c^2*d*e*(d + e*x)^2
- 5*b^3*B*e^2*(d + e*x)^2 + 19*A*b^2*c*e^2*(d + e*x)^2 + 12*b*B*c^2*d*(d +
e*x)^3 - 24*A*c^3*d*(d + e*x)^3 - 3*b^2*B*c*e*(d + e*x)^3 + 12*A*b*c^2*e*(d
 + e*x)^3))/(b^4*e*x^2*(-(c*d) + b*e + c*(d + e*x))^2) + (3*(-8*b*B*c^2*d^2
 + 16*A*c^3*d^2 + 8*b^2*B*c*d*e - 20*A*b*c^2*d*e - b^3*B*e^2 + 5*A*b^2*c*e^
2)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(4*b^5*S
qrt[c]*Sqrt[-(c*d) + b*e]) - (3*(-8*b*B*c*d^2 + 16*A*c^2*d^2 + 4*b^2*B*d*e
- 12*A*b*c*d*e + A*b^2*e^2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*Sqrt[d])
```

fricas [**B**] time = 2.07, size = 3471, normalized size = 10.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*((8*(B*b*c^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (
B*b^3*c^2 - 5*A*b^2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*
(2*B*b^3*c^2 - 5*A*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8
*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5
 - 5*A*b^4*c)*d*e^2)*x^2)*sqrt(c^2*d - b*c*e)*log((c*e*x + 2*c*d - b*e - 2*
sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) - 3*((A*b^3*c^3*e^3 + 8*(B*b*
c^5 - 2*A*c^6)*d^3 - 4*(3*B*b^2*c^4 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*
A*b^2*c^4)*d*e^2)*x^4 + 2*(A*b^4*c^2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 -
4*(3*B*b^3*c^3 - 7*A*b^2*c^4)*d^2*e + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x
^3 + (A*b^5*c*e^3 + 8*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*
b^3*c^3)*d^2*e + (4*B*b^5*c - 13*A*b^4*c^2)*d*e^2)*x^2)*sqrt(d)*log((e*x -
2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(2*A*b^4*c^2*d^3 - 2*A*b^5*c*d^2*e +
3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (5*B*b^3*c^3 - 12*A*b^2*c^4)*d^2*e + (B*
b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (23
*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + (5*B*b^5*c - 19*A*b^4*c^2)*d*e^2)*x^2 -
(5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3 + (4*B*b^5*c - 13*A*b^4*
c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^4*d^2 - b^6*c^3*d*e)*x^4 + 2*(b^6*c^3
*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*d^2 - b^8*c*d*e)*x^2), 1/8*(6*((8*(B*b*c
^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (B*b^3*c^2 - 5*A*b^
2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*(2*B*b^3*c^2 - 5*A
*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8*(B*b^3*c^2 - 2*A*
b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5 - 5*A*b^4*c)*d*e^
2)*x^2)*sqrt(-c^2*d + b*c*e)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c*e
*x + c*d)) - 3*((A*b^3*c^3*e^3 + 8*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(3*B*b^2*c^4
 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*A*b^2*c^4)*d*e^2)*x^4 + 2*(A*b^4*c^
2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(3*B*b^3*c^3 - 7*A*b^2*c^4)*d^2*e
 + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x^3 + (A*b^5*c*e^3 + 8*(B*b^3*c^3 -
2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*b^3*c^3)*d^2*e + (4*B*b^5*c - 13*A*
```

```
b^4*c^2)*d*e^2)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) -
 2*(2*A*b^4*c^2*d^3 - 2*A*b^5*c*d^2*e + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 -
(5*B*b^3*c^3 - 12*A*b^2*c^4)*d^2*e + (B*b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 +
 (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (23*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e +
(5*B*b^5*c - 19*A*b^4*c^2)*d*e^2)*x^2 - (5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2
*A*b^3*c^3)*d^3 + (4*B*b^5*c - 13*A*b^4*c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5
*c^4*d^2 - b^6*c^3*d*e)*x^4 + 2*(b^6*c^3*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*
d^2 - b^8*c*d*e)*x^2), -1/8*(6*((A*b^3*c^3*e^3 + 8*(B*b*c^5 - 2*A*c^6)*d^3
- 4*(3*B*b^2*c^4 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*A*b^2*c^4)*d*e^2)*x
^4 + 2*(A*b^4*c^2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(3*B*b^3*c^3 - 7*
A*b^2*c^4)*d^2*e + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x^3 + (A*b^5*c*e^3 +
 8*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*b^3*c^3)*d^2*e + (4
*B*b^5*c - 13*A*b^4*c^2)*d*e^2)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)
/d) - 3*((8*(B*b*c^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (
B*b^3*c^2 - 5*A*b^2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*
(2*B*b^3*c^2 - 5*A*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8
*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5
 - 5*A*b^4*c)*d*e^2)*x^2)*sqrt(c^2*d - b*c*e)*log((c*e*x + 2*c*d - b*e - 2*
sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) + 2*(2*A*b^4*c^2*d^3 - 2*A*b^
5*c*d^2*e + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (5*B*b^3*c^3 - 12*A*b^2*c^4)
*d^2*e + (B*b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^
4)*d^3 - (23*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + (5*B*b^5*c - 19*A*b^4*c^2)*d
*e^2)*x^2 - (5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3 + (4*B*b^5*c
 - 13*A*b^4*c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^4*d^2 - b^6*c^3*d*e)*x^4
+ 2*(b^6*c^3*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*d^2 - b^8*c*d*e)*x^2), 1/4*(
3*((8*(B*b*c^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (B*b^3*
c^2 - 5*A*b^2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*(2*B*b
^3*c^2 - 5*A*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8*(B*b^
3*c^2 - 2*A*b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5 - 5*A
*b^4*c)*d*e^2)*x^2)*sqrt(-c^2*d + b*c*e)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e
*x + d)/(c*e*x + c*d)) - 3*((A*b^3*c^3*e^3 + 8*(B*b*c^5 - 2*A*c^6)*d^3 - 4*
(3*B*b^2*c^4 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*A*b^2*c^4)*d*e^2)*x^4 +
 2*(A*b^4*c^2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(3*B*b^3*c^3 - 7*A*b^
2*c^4)*d^2*e + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x^3 + (A*b^5*c*e^3 + 8*(
B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*b^3*c^3)*d^2*e + (4*B*b
^5*c - 13*A*b^4*c^2)*d*e^2)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d)
- (2*A*b^4*c^2*d^3 - 2*A*b^5*c*d^2*e + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (
5*B*b^3*c^3 - 12*A*b^2*c^4)*d^2*e + (B*b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 +
(18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (23*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + (
5*B*b^5*c - 19*A*b^4*c^2)*d*e^2)*x^2 - (5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2*
A*b^3*c^3)*d^3 + (4*B*b^5*c - 13*A*b^4*c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5*
c^4*d^2 - b^6*c^3*d*e)*x^4 + 2*(b^6*c^3*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*d
^2 - b^8*c*d*e)*x^2)]
```

giac [B] time = 0.28, size = 661, normalized size = 1.91

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3/4*(8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 8*B*b^2*c*d*e + 20*A*b*c^2*d*e + B*b^3*
e^2 - 5*A*b^2*c*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^
2*d + b*c*e)*b^5) - 3/4*(8*B*b*c*d^2 - 16*A*c^2*d^2 - 4*B*b^2*d*e + 12*A*b*
c*d*e - A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sqrt(-d)) - 1/4*(12*
(x*e + d)^(7/2)*B*b*c^2*d*e - 24*(x*e + d)^(7/2)*A*c^3*d*e - 36*(x*e + d)^(
5/2)*B*b*c^2*d^2*e + 72*(x*e + d)^(5/2)*A*c^3*d^2*e + 36*(x*e + d)^(3/2)*B*
b*c^2*d^3*e - 72*(x*e + d)^(3/2)*A*c^3*d^3*e - 12*sqrt(x*e + d)*B*b*c^2*d^4
*e + 24*sqrt(x*e + d)*A*c^3*d^4*e - 3*(x*e + d)^(7/2)*B*b^2*c*e^2 + 12*(x*e
 + d)^(7/2)*A*b*c^2*e^2 + 27*(x*e + d)^(5/2)*B*b^2*c*d*e^2 - 72*(x*e + d)^(
```

```
5/2)*A*b*c^2*d*e^2 - 45*(x*e + d)^(3/2)*B*b^2*c*d^2*e^2 + 108*(x*e + d)^(3/
2)*A*b*c^2*d^2*e^2 + 21*sqrt(x*e + d)*B*b^2*c*d^3*e^2 - 48*sqrt(x*e + d)*A*
b*c^2*d^3*e^2 - 5*(x*e + d)^(5/2)*B*b^3*e^3 + 19*(x*e + d)^(5/2)*A*b^2*c*e^
3 + 14*(x*e + d)^(3/2)*B*b^3*d*e^3 - 46*(x*e + d)^(3/2)*A*b^2*c*d*e^3 - 9*s
qrt(x*e + d)*B*b^3*d^2*e^3 + 27*sqrt(x*e + d)*A*b^2*c*d^2*e^3 + 5*(x*e + d)
^(3/2)*A*b^3*e^4 - 3*sqrt(x*e + d)*A*b^3*d*e^4)/(((x*e + d)^2*c - 2*(x*e +
d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2*b^4)
```

maple [B] time = 0.08, size = 785, normalized size = 2.27

$$-\frac{9\sqrt{ex+d}\,Ace^{3}}{4\left(cex+be\right)^{2}b^{2}}+\frac{21\sqrt{ex+d}\,Ac^{2}de^{2}}{4\left(cex+be\right)^{2}b^{3}}-\frac{3\sqrt{ex+d}\,Ac^{3}d^{2}e}{\left(cex+be\right)^{2}b^{4}}+\frac{5\sqrt{ex+d}\,Be^{3}}{4\left(cex+be\right)^{2}b}-\frac{13\sqrt{ex+d}\,Bcde^{2}}{4\left(cex+be\right)^{2}b^{2}}+\frac{2\sqrt{ex+d}\,Bc^{2}d^{2}e}{\left(cex+be\right)^{2}b^{3}}-\frac{7\left(ex+d\right)^{\frac{3}{2}}Ac^{2}e^{2}}{4\left(cex+be\right)^{2}b^{3}}-\frac{15Ace^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{4\sqrt{\left(be-cd\right)c}\,b^{3}}+\frac{3\left(ex+d\right)^{\frac{3}{2}}Ac^{3}de}{\left(cex+be\right)^{2}b^{4}}+\frac{15Ac^{2}de\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\sqrt{\left(be-cd\right)c}\,b^{4}}-\frac{12Ac^{3}d^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\sqrt{\left(be-cd\right)c}\,b^{5}}+\frac{3\left(ex+d\right)^{\frac{3}{2}}Bce^{2}}{4\left(cex+be\right)^{2}b^{2}}+\frac{3Be^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{4\sqrt{\left(be-cd\right)c}\,b^{2}}-\frac{2\left(ex+d\right)^{\frac{3}{2}}Bc^{2}de}{\left(cex+be\right)^{2}b^{3}}-\frac{6Bcde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\sqrt{\left(be-cd\right)c}\,b^{3}}+\frac{6Bc^{2}d^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\sqrt{\left(be-cd\right)c}\,b^{4}}-\frac{3Ae^{2}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{4b^{3}\sqrt{d}}+\frac{9Ac\sqrt{d}\,e\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{4}}-\frac{12Ac^{2}d^{\frac{3}{2}}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{5}}-\frac{3B\sqrt{d}\,e\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{3}}+\frac{6Bcd^{\frac{3}{2}}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{4}}+\frac{3\sqrt{ex+d}\,Ad}{4b^{3}x^{2}}-\frac{3\sqrt{ex+d}\,Acd^{2}}{b^{4}ex^{2}}+\frac{\sqrt{ex+d}\,Bd^{2}}{b^{3}ex^{2}}-\frac{5\left(ex+d\right)^{\frac{3}{2}}A}{4b^{3}x^{2}}+\frac{3\left(ex+d\right)^{\frac{3}{2}}Acd}{b^{4}ex^{2}}-\frac{\left(ex+d\right)^{\frac{3}{2}}Bd}{b^{3}ex^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -12/b^5/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c
^3*d^2+6/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c
)*B*c^2*d^2-15/4*e^2/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*A*c-7/4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^2+3/4*e^2/b^2
/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c-1/e/b^3/x^2*(e*x+d)^(3/2)*B*d-9/4*e^3/b^2/
(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*c+9*e/b^4*d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/
2))*A*c+1/e/b^3/x^2*(e*x+d)^(1/2)*B*d^2-5/4/b^3/x^2*(e*x+d)^(3/2)*A-12/b^5*
d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+5/4*e^3/b/(c*e*x+b*e)^2*B*(e*x
+d)^(1/2)-3/4*e^2/b^3/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A-3*e/b^3*d^(1
/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B+6/b^4*d^(3/2)*arctanh((e*x+d)^(1/2)/d^
(1/2))*B*c+3/4/b^3/x^2*(e*x+d)^(1/2)*A*d+3/4*e^2/b^2/((b*e-c*d)*c)^(1/2)*ar
ctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+3/e/b^4/x^2*(e*x+d)^(3/2)*A*c*d
-3/e/b^4/x^2*(e*x+d)^(1/2)*A*c*d^2+3*e/b^4/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^
3*d-3*e/b^4/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*c^3*d^2-13/4*e^2/b^2/(c*e*x+b*e)^
2*B*(e*x+d)^(1/2)*c*d-6*e/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*c*d-2*e/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c^2*d+21/4*e
^2/b^3/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*c^2*d+2*e/b^3/(c*e*x+b*e)^2*B*(e*x+d)^
(1/2)*c^2*d^2+15*e/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*c^2*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 4.46, size = 5796, normalized size = 16.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x)
```

```
[Out] ((3*(d + e*x)^(1/2)*(A*b^3*d*e^4 - 8*A*c^3*d^4*e + 3*B*b^3*d^2*e^3 + 16*A*b
*c^2*d^3*e^2 - 9*A*b^2*c*d^2*e^3 - 7*B*b^2*c*d^3*e^2 + 4*B*b*c^2*d^4*e))/(4
*b^4) - ((d + e*x)^(3/2)*(5*A*b^3*e^4 - 72*A*c^3*d^3*e + 14*B*b^3*d*e^3 + 1
08*A*b*c^2*d^2*e^2 - 45*B*b^2*c*d^2*e^2 - 46*A*b^2*c*d*e^3 + 36*B*b*c^2*d^3
*e))/(4*b^4) + ((d + e*x)^(5/2)*(5*B*b^3*e^3 - 19*A*b^2*c*e^3 - 72*A*c^3*d^
2*e + 72*A*b*c^2*d*e^2 + 36*B*b*c^2*d^2*e - 27*B*b^2*c*d*e^2))/(4*b^4) + (3
```

```
*c*(d + e*x)^(7/2)*(B*b^2*e^2 - 4*A*b*c*e^2 + 8*A*c^2*d*e - 4*B*b*c*d*e))/(
4*b^4))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e
) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*
b*c*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) + (atan((((-c*(b*e - c*d))^
(1/2)*(((d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2
*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2
*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*
b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b
*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B
*b^3*c^4*d^2*e^4))/(8*b^8) - (3*(-c*(b*e - c*d))^(1/2)*((3*A*b^12*c^2*e^5 -
 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^
11*c^3*d^2*e^3)/b^12 - (3*(64*b^11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(-c*(b*e -
 c*d))^(1/2)*(d + e*x)^(1/2)*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*
B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^8*(b^5*c^2*d - b^6*c*e
)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*
d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2
+ 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e)*3i)/(8*(b
^5*c^2*d - b^6*c*e)) + ((-c*(b*e - c*d))^(1/2)*(((d + e*x)^(1/2)*(234*A^2*b
^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*
e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3
*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d
*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*
e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) + (3*(-
c*(b*e - c*d))^(1/2)*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^
2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 + (3*(64*b^11
*c^2*e^3 - 128*b^10*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(16*A
*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B
*b^2*c*d*e))/(64*b^8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*
A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*
d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 -
20*A*b*c^2*d*e + 8*B*b^2*c*d*e)*3i)/(8*(b^5*c^2*d - b^6*c*e)))/(((135*A^3*b
^5*c^3*e^8)/8 - 1728*A^3*c^8*d^5*e^3 - 3996*A^3*b^2*c^6*d^3*e^5 + 1674*A^3*
b^3*c^5*d^2*e^6 + 216*B^3*b^3*c^5*d^5*e^3 - 378*B^3*b^4*c^4*d^4*e^4 + 216*B
^3*b^5*c^3*d^3*e^5 - (189*B^3*b^6*c^2*d^2*e^6)/4 + (27*A*B^2*b^7*c*e^8)/32
+ (27*B^3*b^7*c*d*e^7)/8 - (243*A^2*B*b^6*c^2*e^8)/32 + 4320*A^3*b*c^7*d^4*
e^4 - (1215*A^3*b^4*c^4*d*e^7)/4 - 1296*A*B^2*b^2*c^6*d^5*e^3 + 2592*A*B^2*
b^3*c^5*d^4*e^4 - 1782*A*B^2*b^4*c^4*d^3*e^5 + (999*A*B^2*b^5*c^3*d^2*e^6)/
2 - 5832*A^2*B*b^2*c^6*d^4*e^4 + 4698*A^2*B*b^3*c^5*d^3*e^5 - (3267*A^2*B*b
^4*c^4*d^2*e^6)/2 - (405*A*B^2*b^6*c^2*d*e^7)/8 + 2592*A^2*B*b*c^7*d^5*e^3
+ (1809*A^2*B*b^5*c^3*d*e^7)/8)/b^12 - (3*(-c*(b*e - c*d))^(1/2)*(((d + e*x
)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 662
4*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3
 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 -
2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1
152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4
))/(8*b^8) - (3*(-c*(b*e - c*d))^(1/2)*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d
*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/
b^12 - (3*(64*b^11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d
+ e*x)^(1/2)*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20
*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^
2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*
d*e))/(8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2
- 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e)
) + (3*(-c*(b*e - c*d))^(1/2)*(((d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608
*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^
2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B
*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^
5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^
2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) + (3*(-c*(b*e - c*d))^(1
```

```
/2)*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^
10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 + (3*(64*b^11*c^2*e^3 - 128*b^
10*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(16*A*c^3*d^2 - B*b^3*
e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*
b^8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B
*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e)))*(1
6*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e +
8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e))))*(-c*(b*e - c*d))^(1/2)*(16*A*c^
3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^
2*c*d*e)*3i)/(4*(b^5*c^2*d - b^6*c*e)) + (atan((((((d + e*x)^(1/2)*(234*A^2
*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^
2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c
^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4
*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*
d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) - (3*
((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c
^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 - (3*(64*b^11*c^2*e^3 - 128*b^10*c
^3*d*e^2)*(d + e*x)^(1/2)*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2
*d*e - 12*A*b*c*d*e))/(64*b^13*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*
c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2
*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e)*3i)/(8*b^5*d^(1/2)) + ((((
d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^
6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*
d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3
*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*
e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*
d^2*e^4))/(8*b^8) + (3*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*
c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 + (3*(64*b^
11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(d + e*x)^(1/2)*(A*b^2*e^2 + 16*A*c^2*d^2
- 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(64*b^13*d^(1/2)))*(A*b^2*e^2
+ 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2))
)*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e)*3i)
/(8*b^5*d^(1/2)))/(((135*A^3*b^5*c^3*e^8)/8 - 1728*A^3*c^8*d^5*e^3 - 3996*A
^3*b^2*c^6*d^3*e^5 + 1674*A^3*b^3*c^5*d^2*e^6 + 216*B^3*b^3*c^5*d^5*e^3 - 3
78*B^3*b^4*c^4*d^4*e^4 + 216*B^3*b^5*c^3*d^3*e^5 - (189*B^3*b^6*c^2*d^2*e^6
)/4 + (27*A*B^2*b^7*c*e^8)/32 + (27*B^3*b^7*c*d*e^7)/8 - (243*A^2*B*b^6*c^2
*e^8)/32 + 4320*A^3*b*c^7*d^4*e^4 - (1215*A^3*b^4*c^4*d*e^7)/4 - 1296*A*B^2
*b^2*c^6*d^5*e^3 + 2592*A*B^2*b^3*c^5*d^4*e^4 - 1782*A*B^2*b^4*c^4*d^3*e^5
+ (999*A*B^2*b^5*c^3*d^2*e^6)/2 - 5832*A^2*B*b^2*c^6*d^4*e^4 + 4698*A^2*B*b
^3*c^5*d^3*e^5 - (3267*A^2*B*b^4*c^4*d^2*e^6)/2 - (405*A*B^2*b^6*c^2*d*e^7)
/8 + 2592*A^2*B*b*c^7*d^5*e^3 + (1809*A^2*B*b^5*c^3*d*e^7)/8)/b^12 - (3*(((
d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^
6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*
d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3
*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*
e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*
d^2*e^4))/(8*b^8) - (3*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*
c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 - (3*(64*b^
11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(d + e*x)^(1/2)*(A*b^2*e^2 + 16*A*c^2*d^2
- 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(64*b^13*d^(1/2)))*(A*b^2*e^2
+ 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2))
)*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8
*b^5*d^(1/2)) + (3*(((d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^
4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e
^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^
6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5
 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e
^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) + (3*((3*A*b^12*c^2*e^5 - 24*A*b^11
*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2
```

```
*e^3)/b^12 + (3*(64*b^11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(d + e*x)^(1/2)*(A*b
^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(64*b^13
*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c
*d*e))/(8*b^5*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d
*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2))))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d
^2 + 4*B*b^2*d*e - 12*A*b*c*d*e)*3i)/(4*b^5*d^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1106 $\int \frac{(A+Bx)\sqrt{d+ex}}{(bx+cx^2)^3}\,dx$

Optimal. Leaf size=317

$$-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{2b^2\left(bx+cx^2\right)^2}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(4Bd-Ae)-12bcd(Ae+2Bd)+48Ac^2d^2\right)}{4b^5d^{3/2}}-\frac{\sqrt{d+ex}\,\left(b(\right.}{}$$

Rubi [A] time = 0.70, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {820, 822, 826, 1166, 208}

$$\frac{\sqrt{c}\left(5b^2ce(7Ae+8Bd)-12bc^2d(7Ae+2Bd)+48Ac^3d^2-15b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5(cd-be)^{3/2}}-\frac{\sqrt{d+ex}\left(b(cd-be)(Abe-12Acd+6bBd)-cx\left(b^2e(Ae+11Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)\right)}{4b^4d\left(bx+cx^2\right)(cd-be)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(4Bd-Ae)-12bcd(Ae+2Bd)+48Ac^2d^2\right)}{4b^5d^{3/2}}-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{2b^2\left(bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^3,x]
```

```
[Out] -((A*b - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/(2*b^2*(b*x + c*x^2)^2) - (Sqrt[d
+ e*x]*(b*(c*d - b*e)*(6*b*B*d - 12*A*c*d + A*b*e) - c*(24*A*c^2*d^2 + b^2*
e*(11*B*d + A*e) - 12*b*c*d*(B*d + 2*A*e))*x))/(4*b^4*d*(c*d - b*e)*(b*x +
c*x^2)) - ((48*A*c^2*d^2 + b^2*e*(4*B*d - A*e) - 12*b*c*d*(2*B*d + A*e))*Ar
cTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(3/2)) + (Sqrt[c]*(48*A*c^3*d^2 - 15
*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 7*A*e) + 5*b^2*c*e*(8*B*d + 7*A*e))*ArcTan
h[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*(c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}(12Acd-b(6Bd+Ae))-\frac{5}{2}(bB-2Ac)ex}{\sqrt{d+ex}\left(bx+cx^2\right)^2}\,dx}{2b^2}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\left(24Ac\right.\right.}{4b^4d(cd-be)\left(b\right.}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\left(24Ac\right.\right.}{4b^4d(cd-be)\left(b\right.}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\left(24Ac\right.\right.}{4b^4d(cd-be)\left(b\right.}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\left(24Ac\right.\right.}{4b^4d(cd-be)\left(b\right.}$$

Mathematica [A] time = 2.22, size = 449, normalized size = 1.42

$$\frac{\frac{(b+cx)\left((b+cx)\left(2c^{3/2}(cd-be)^2\left(\sqrt{d+ex}-\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)\left(b^2e(4Bd-Ae)-12bcd(Ae+2Bd)+48Ac^2d^2\right)+2c^2d^2\left(-5b^2ce(7Ae+8Bd)+12bc^2d(7Ae+2Bd)-48Ac^3d^2+15b^3Be^2\right)\left(\sqrt{c}\sqrt{d+ex}-\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)\right)+2bc^{5/2}(d+ex)^{3/2}\left(b^3e^2(Ae-4Bd)+b^2cde(10Ae+17Bd)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)\right)-2b^2c^{5/2}(d+ex)^{3/2}(cd-be)\left(b^2e(Ae-4Bd)+3bcd(3Ae+2Bd)-12Ac^2d^2\right)}{b^4c^{3/2}d(cd-be)^2}-\frac{2(d+ex)^{3/2}(-Abe-8Acd+4bBd)}{bdx}-\frac{4A(d+ex)^{3/2}}{x^2}}{8bd(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^3,x]
```

```
[Out] ((-4*A*(d + e*x)^(3/2))/x^2 - (2*(4*b*B*d - 8*A*c*d - A*b*e)*(d + e*x)^(3/2
))/(b*d*x) + (-2*b^2*c^(5/2)*(c*d - b*e)*(-12*A*c^2*d^2 + b^2*e*(-4*B*d + A
*e) + 3*b*c*d*(2*B*d + 3*A*e))*(d + e*x)^(3/2) + (b + c*x)*(2*b*c^(5/2)*(24
*A*c^3*d^3 + b^3*e^2*(-4*B*d + A*e) - 12*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*
e*(17*B*d + 10*A*e))*(d + e*x)^(3/2) + (b + c*x)*(2*c^(3/2)*(c*d - b*e)^2*(
48*A*c^2*d^2 + b^2*e*(4*B*d - A*e) - 12*b*c*d*(2*B*d + A*e))*(Sqrt[d + e*x]
 - Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) + 2*c^2*d^2*(-48*A*c^3*d^2 + 15*
b^3*B*e^2 + 12*b*c^2*d*(2*B*d + 7*A*e) - 5*b^2*c*e*(8*B*d + 7*A*e))*(Sqrt[c
]*Sqrt[d + e*x] - Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d
- b*e]]))))/(b^4*c^(3/2)*d*(c*d - b*e)^2))/(8*b*d*(b + c*x)^2)
```

IntegrateAlgebraic [B] time = 3.10, size = 730, normalized size = 2.30

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[d + e*x]*(-12*b*B*c^3*d^5 + 24*A*c^4*d^5 + 29*b^2*B*c^2*d^4*e - 60*A*
b*c^3*d^4*e - 21*b^3*B*c*d^3*e^2 + 46*A*b^2*c^2*d^3*e^2 + 4*b^4*B*d^2*e^3 -
 9*A*b^3*c*d^2*e^3 - A*b^4*d*e^4 + 36*b*B*c^3*d^4*(d + e*x) - 72*A*c^4*d^4*
(d + e*x) - 69*b^2*B*c^2*d^3*e*(d + e*x) + 144*A*b*c^3*d^3*e*(d + e*x) + 38
*b^3*B*c*d^2*e^2*(d + e*x) - 85*A*b^2*c^2*d^2*e^2*(d + e*x) - 4*b^4*B*d*e^3
*(d + e*x) + 13*A*b^3*c*d*e^3*(d + e*x) - A*b^4*e^4*(d + e*x) - 36*b*B*c^3*
d^3*(d + e*x)^2 + 72*A*c^4*d^3*(d + e*x)^2 + 51*b^2*B*c^2*d^2*e*(d + e*x)^2
 - 108*A*b*c^3*d^2*e*(d + e*x)^2 - 17*b^3*B*c*d*e^2*(d + e*x)^2 + 40*A*b^2*
c^2*d*e^2*(d + e*x)^2 - 2*A*b^3*c*e^3*(d + e*x)^2 + 12*b*B*c^3*d^2*(d + e*x
)^3 - 24*A*c^4*d^2*(d + e*x)^3 - 11*b^2*B*c^2*d*e*(d + e*x)^3 + 24*A*b*c^3*
d*e*(d + e*x)^3 - A*b^2*c^2*e^2*(d + e*x)^3))/(4*b^4*d*e*(-(c*d) + b*e)*x^2
*(-(c*d) + b*e + c*(d + e*x))^2) + ((-24*b*B*c^(5/2)*d^2 + 48*A*c^(7/2)*d^2
 + 40*b^2*B*c^(3/2)*d*e - 84*A*b*c^(5/2)*d*e - 15*b^3*B*Sqrt[c]*e^2 + 35*A*
b^2*c^(3/2)*e^2)*ArcTan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b
*e)])/(4*b^5*(c*d - b*e)*Sqrt[-(c*d) + b*e]) + ((24*b*B*c*d^2 - 48*A*c^2*d^
2 - 4*b^2*B*d*e + 12*A*b*c*d*e + A*b^2*e^2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])
/(4*b^5*d^(3/2))
```

fricas [B] time = 7.84, size = 3396, normalized size = 10.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(((24*(B*b*c^4 - 2*A*c^5)*d^4 - 4*(10*B*b^2*c^3 - 21*A*b*c^4)*d^3*e +
5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*
d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3)*d^3*e + 5*(3*B*b^4*c - 7*A*b^3*c^2)*d
^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^4 - 4*(10*B*b^4*c - 21*A*b^3*
c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^2)*x^2)*sqrt(c/(c*d - b*e))*log(
(c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*
x + b)) - ((A*b^3*c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d^3 + 4*(7*B*b^2*c^3 - 1
5*A*b*c^4)*d^2*e - (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^2)*x^4 + 2*(A*b^4*c*e^3
 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 - 15*A*b^2*c^3)*d^2*e -
(4*B*b^4*c - 11*A*b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 - 24*(B*b^3*c^2 - 2*A*b^
2*c^3)*d^3 + 4*(7*B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4*B*b^5 - 11*A*b^4*c)*d*
e^2)*x^2)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(2*A*b^4
*c*d^3 - 2*A*b^5*d^2*e - (A*b^3*c^2*d*e^2 - 12*(B*b^2*c^3 - 2*A*b*c^4)*d^3
+ (11*B*b^3*c^2 - 24*A*b^2*c^3)*d^2*e)*x^3 - (2*A*b^4*c*d*e^2 - 18*(B*b^3*c
^2 - 2*A*b^2*c^3)*d^3 + (17*B*b^4*c - 37*A*b^3*c^2)*d^2*e)*x^2 - (A*b^5*d*e
^2 - 4*(B*b^4*c - 2*A*b^3*c^2)*d^3 + (4*B*b^5 - 9*A*b^4*c)*d^2*e)*x)*sqrt(e
*x + d))/((b^5*c^3*d^3 - b^6*c^2*d^2*e)*x^4 + 2*(b^6*c^2*d^3 - b^7*c*d^2*e)
*x^3 + (b^7*c*d^3 - b^8*d^2*e)*x^2), -1/8*(2*((24*(B*b*c^4 - 2*A*c^5)*d^4 -
 4*(10*B*b^2*c^3 - 21*A*b*c^4)*d^3*e + 5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^
2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3
)*d^3*e + 5*(3*B*b^4*c - 7*A*b^3*c^2)*d^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b
^2*c^3)*d^4 - 4*(10*B*b^4*c - 21*A*b^3*c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)
*d^2*e^2)*x^2)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(
-c/(c*d - b*e))/(c*e*x + c*d)) + ((A*b^3*c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d
^3 + 4*(7*B*b^2*c^3 - 15*A*b*c^4)*d^2*e - (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^
2)*x^4 + 2*(A*b^4*c*e^3 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 -
 15*A*b^2*c^3)*d^2*e - (4*B*b^4*c - 11*A*b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 -
 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + 4*(7*B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4
```

```
*B*b^5 - 11*A*b^4*c)*d*e^2)*x^2)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d)
 + 2*d)/x) + 2*(2*A*b^4*c*d^3 - 2*A*b^5*d^2*e - (A*b^3*c^2*d*e^2 - 12*(B*b^
2*c^3 - 2*A*b*c^4)*d^3 + (11*B*b^3*c^2 - 24*A*b^2*c^3)*d^2*e)*x^3 - (2*A*b^
4*c*d*e^2 - 18*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + (17*B*b^4*c - 37*A*b^3*c^2)*
d^2*e)*x^2 - (A*b^5*d*e^2 - 4*(B*b^4*c - 2*A*b^3*c^2)*d^3 + (4*B*b^5 - 9*A*
b^4*c)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^3*d^3 - b^6*c^2*d^2*e)*x^4 + 2*(b^6
*c^2*d^3 - b^7*c*d^2*e)*x^3 + (b^7*c*d^3 - b^8*d^2*e)*x^2), 1/8*(2*((A*b^3*
c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d^3 + 4*(7*B*b^2*c^3 - 15*A*b*c^4)*d^2*e -
 (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^2)*x^4 + 2*(A*b^4*c*e^3 - 24*(B*b^2*c^3 -
 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 - 15*A*b^2*c^3)*d^2*e - (4*B*b^4*c - 11*A*
b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + 4*(7*
B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4*B*b^5 - 11*A*b^4*c)*d*e^2)*x^2)*sqrt(-d)
*arctan(sqrt(e*x + d)*sqrt(-d)/d) + ((24*(B*b*c^4 - 2*A*c^5)*d^4 - 4*(10*B*
b^2*c^3 - 21*A*b*c^4)*d^3*e + 5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^2)*x^4 +
2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3)*d^3*e +
 5*(3*B*b^4*c - 7*A*b^3*c^2)*d^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d
^4 - 4*(10*B*b^4*c - 21*A*b^3*c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^2)
*x^2)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x
 + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(2*A*b^4*c*d^3 - 2*A*b^5*d^2*e -
(A*b^3*c^2*d*e^2 - 12*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + (11*B*b^3*c^2 - 24*A*b^
2*c^3)*d^2*e)*x^3 - (2*A*b^4*c*d*e^2 - 18*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + (
17*B*b^4*c - 37*A*b^3*c^2)*d^2*e)*x^2 - (A*b^5*d*e^2 - 4*(B*b^4*c - 2*A*b^3
*c^2)*d^3 + (4*B*b^5 - 9*A*b^4*c)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^3*d^3 -
b^6*c^2*d^2*e)*x^4 + 2*(b^6*c^2*d^3 - b^7*c*d^2*e)*x^3 + (b^7*c*d^3 - b^8*d
^2*e)*x^2), -1/4*(((24*(B*b*c^4 - 2*A*c^5)*d^4 - 4*(10*B*b^2*c^3 - 21*A*b*c
^4)*d^3*e + 5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^2)*x^4 + 2*(24*(B*b^2*c^3 -
 2*A*b*c^4)*d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3)*d^3*e + 5*(3*B*b^4*c - 7*
A*b^3*c^2)*d^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^4 - 4*(10*B*b^4*c
 - 21*A*b^3*c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^2)*x^2)*sqrt(-c/(c*d
 - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*
d)) - ((A*b^3*c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d^3 + 4*(7*B*b^2*c^3 - 15*A*
b*c^4)*d^2*e - (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^2)*x^4 + 2*(A*b^4*c*e^3 - 2
4*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 - 15*A*b^2*c^3)*d^2*e - (4*B
*b^4*c - 11*A*b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 - 24*(B*b^3*c^2 - 2*A*b^2*c^
3)*d^3 + 4*(7*B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4*B*b^5 - 11*A*b^4*c)*d*e^2)
*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (2*A*b^4*c*d^3 - 2*A*b^5*
d^2*e - (A*b^3*c^2*d*e^2 - 12*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + (11*B*b^3*c^2 -
 24*A*b^2*c^3)*d^2*e)*x^3 - (2*A*b^4*c*d*e^2 - 18*(B*b^3*c^2 - 2*A*b^2*c^3)
*d^3 + (17*B*b^4*c - 37*A*b^3*c^2)*d^2*e)*x^2 - (A*b^5*d*e^2 - 4*(B*b^4*c -
 2*A*b^3*c^2)*d^3 + (4*B*b^5 - 9*A*b^4*c)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^
3*d^3 - b^6*c^2*d^2*e)*x^4 + 2*(b^6*c^2*d^3 - b^7*c*d^2*e)*x^3 + (b^7*c*d^3
 - b^8*d^2*e)*x^2)]
```

giac [B] time = 0.29, size = 841, normalized size = 2.65

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(24*B*b*c^3*d^2 - 48*A*c^4*d^2 - 40*B*b^2*c^2*d*e + 84*A*b*c^3*d*e + 15
*B*b^3*c*e^2 - 35*A*b^2*c^2*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e
))/((b^5*c*d - b^6*e)*sqrt(-c^2*d + b*c*e)) - 1/4*(12*(x*e + d)^(7/2)*B*b*c
^3*d^2*e - 24*(x*e + d)^(7/2)*A*c^4*d^2*e - 36*(x*e + d)^(5/2)*B*b*c^3*d^3*
e + 72*(x*e + d)^(5/2)*A*c^4*d^3*e + 36*(x*e + d)^(3/2)*B*b*c^3*d^4*e - 72*
(x*e + d)^(3/2)*A*c^4*d^4*e - 12*sqrt(x*e + d)*B*b*c^3*d^5*e + 24*sqrt(x*e
+ d)*A*c^4*d^5*e - 11*(x*e + d)^(7/2)*B*b^2*c^2*d*e^2 + 24*(x*e + d)^(7/2)*
A*b*c^3*d*e^2 + 51*(x*e + d)^(5/2)*B*b^2*c^2*d^2*e^2 - 108*(x*e + d)^(5/2)*
A*b*c^3*d^2*e^2 - 69*(x*e + d)^(3/2)*B*b^2*c^2*d^3*e^2 + 144*(x*e + d)^(3/2
)*A*b*c^3*d^3*e^2 + 29*sqrt(x*e + d)*B*b^2*c^2*d^4*e^2 - 60*sqrt(x*e + d)*A
```

```
*b*c^3*d^4*e^2 - (x*e + d)^(7/2)*A*b^2*c^2*e^3 - 17*(x*e + d)^(5/2)*B*b^3*c
*d*e^3 + 40*(x*e + d)^(5/2)*A*b^2*c^2*d*e^3 + 38*(x*e + d)^(3/2)*B*b^3*c*d^
2*e^3 - 85*(x*e + d)^(3/2)*A*b^2*c^2*d^2*e^3 - 21*sqrt(x*e + d)*B*b^3*c*d^3
*e^3 + 46*sqrt(x*e + d)*A*b^2*c^2*d^3*e^3 - 2*(x*e + d)^(5/2)*A*b^3*c*e^4 -
 4*(x*e + d)^(3/2)*B*b^4*d*e^4 + 13*(x*e + d)^(3/2)*A*b^3*c*d*e^4 + 4*sqrt(
x*e + d)*B*b^4*d^2*e^4 - 9*sqrt(x*e + d)*A*b^3*c*d^2*e^4 - (x*e + d)^(3/2)*
A*b^4*e^5 - sqrt(x*e + d)*A*b^4*d*e^5)/((b^4*c*d^2 - b^5*d*e)*((x*e + d)^2*
c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2) - 1/4*(24*B*b*c*d^2
 - 48*A*c^2*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e + A*b^2*e^2)*arctan(sqrt(x*e +
 d)/sqrt(-d))/(b^5*sqrt(-d)*d)
```

maple [B] time = 0.08, size = 829, normalized size = 2.62

$$\frac{11 (ex+d)^{\frac{3}{2}} A c^3 e^2}{4 (cex+be)^2 (be-cd) b^3}+\frac{35 A c^2 e^2 \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{4 (be-cd)\sqrt{(be-cd)c}\, b^3}-\frac{3 (ex+d)^{\frac{3}{2}} A c^4 de}{(cex+be)^2 (be-cd) b^4}-\frac{21 A c^3 de \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)c}\, b^4}+\frac{12 A c^4 d^2 \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)c}\, b^5}-\frac{7 (ex+d)^{\frac{3}{2}} B c^2 e^2}{4 (cex+be)^2 (be-cd) b^2}-\frac{15 B c e^2 \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{4 (be-cd)\sqrt{(be-cd)c}\, b^2}+\frac{2 (ex+d)^{\frac{3}{2}} B c^3 de}{(cex+be)^2 (be-cd) b^3}+\frac{10 B c^2 de \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)c}\, b^3}-\frac{6 B c^3 d^2 \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)c}\, b^4}+\frac{13\sqrt{ex+d}\, A c^2 e^2}{4 (cex+be)^2 b^3}-\frac{3\sqrt{ex+d}\, A c^3 de}{(cex+be)^2 b^4}-\frac{9\sqrt{ex+d}\, B c e^2}{4 (cex+be)^2 b^2}+\frac{2\sqrt{ex+d}\, B c^2 de}{(cex+be)^2 b^3}+\frac{A e^2 \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{4 b^3 d^{\frac{3}{2}}}+\frac{3 A c e \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^4\sqrt{d}}-\frac{12 A c^2\sqrt{d}\, \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^5}-\frac{B e \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^3\sqrt{d}}+\frac{6 B c\sqrt{d}\, \operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^4}-\frac{\sqrt{ex+d}\, A}{4 b^3 x^2}-\frac{3\sqrt{ex+d}\, A c d}{b^4 e x^2}+\frac{\sqrt{ex+d}\, B d}{b^3 e x^2}-\frac{(ex+d)^{\frac{3}{2}} A}{4 b^3 d x^2}+\frac{3 (ex+d)^{\frac{3}{2}} A c}{b^4 e x^2}-\frac{(ex+d)^{\frac{3}{2}} B}{b^3 e x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/4/b^3/x^2*(e*x+d)^(1/2)*A-1/4/b^3/x^2/d*(e*x+d)^(3/2)*A-7/4*e^2*c^2/b^2/
(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(3/2)*B-3*e*c^3/b^4/(c*e*x+b*e)^2*A*(e*x+d)
^(1/2)*d+2*e*c^2/b^3/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d+35/4*e^2*c^2/b^3/(b*e-
c*d)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-15/4
*e^2*c/b^2/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*B+11/4*e^2*c^3/b^3/(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(3/2)*A-3/e/b^
4/x^2*(e*x+d)^(1/2)*A*c*d+12*c^4/b^5/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arctan((
e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^2-6*c^3/b^4/(b*e-c*d)/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2+2*e*c^3/b^3/(c*e*x
+b*e)^2/(b*e-c*d)*(e*x+d)^(3/2)*B*d-21*e*c^3/b^4/(b*e-c*d)/((b*e-c*d)*c)^(1
/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-3*e*c^4/b^4/(c*e*x+b*e)
^2/(b*e-c*d)*(e*x+d)^(3/2)*A*d+10*e*c^2/b^3/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d+3/e/b^4/x^2*(e*x+d)^(3/2)*A*
c+1/e/b^3/x^2*(e*x+d)^(1/2)*B*d+3*e/b^4/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/
2))*A*c+13/4*e^2*c^2/b^3/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)-9/4*e^2*c/b^2/(c*e*x
+b*e)^2*B*(e*x+d)^(1/2)-1/e/b^3/x^2*(e*x+d)^(3/2)*B+6/b^4*d^(1/2)*arctanh((
e*x+d)^(1/2)/d^(1/2))*B*c-e/b^3/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-12
/b^5*d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+1/4*e^2/b^3/d^(3/2)*arcta
nh((e*x+d)^(1/2)/d^(1/2))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 5.72, size = 8411, normalized size = 26.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(3/2)*(A*b^4*e^5 + 72*A*c^4*d^4*e + 4*B*b^4*d*e^4 - 144*A*b*c^3
*d^3*e^2 - 38*B*b^3*c*d^2*e^3 + 85*A*b^2*c^2*d^2*e^3 + 69*B*b^2*c^2*d^3*e^2
 - 13*A*b^3*c*d*e^4 - 36*B*b*c^3*d^4*e))/(4*b^4*(c*d^2 - b*d*e)) - ((d + e*
```

x)^(1/2)*(A*b^3*e^4 + 24*A*c^3*d^3*e - 4*B*b^3*d*e^3 - 36*A*b*c^2*d^2*e^2 + 17*B*b^2*c*d^2*e^2 + 10*A*b^2*c*d*e^3 - 12*B*b*c^2*d^3*e))/(4*b^4) + ((d + e*x)^(5/2)*(2*A*b^3*c*e^4 - 72*A*c^4*d^3*e + 108*A*b*c^3*d^2*e^2 - 40*A*b^2*c^2*d*e^3 - 51*B*b^2*c^2*d^2*e^2 + 36*B*b*c^3*d^3*e + 17*B*b^3*c*d*e^3))/(4*b^4*(c*d^2 - b*d*e)) + (c*(d + e*x)^(7/2)*(A*b^2*c*e^3 + 24*A*c^3*d^2*e - 24*A*b*c^2*d*e^2 - 12*B*b*c^2*d^2*e + 11*B*b^2*c*d*e^2))/(4*b^4*(c*d^2 - b*d*e)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (atan((((-c*(b*e - c*d)^3)^(1/2)*(((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e)*1i)/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)) + ((-c*(b*e - c*d)^3)^(1/2)*(((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e)*1i)/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))/((1728*A^3*c^10*d^6*e^3 - (35*A^3*b^6*c^4*e^9)/32 + 5508*A^3*b^2*c^8*d^4*e^5 - 2376*A^3*b^3*c^7*d^3*e^6 + (1233*A^3*b^4*c^6*d^2*e^7)/4 - 216*B^3*b^3*c^7*d^6*e^3 + 594*B^3*b^4*c^6*d^5*e^4 - 558*B^3*b^5*c^5*d^4*e^5 + (805*B^3*b^6*c^4*d^3*e^6)/4 - (165*B^3*b^7*c^3*d^2*e^7)/8 + (15*A^2*B*b^7*c^3*e^9)/32 - 5184*A^3*b*c^9*d^5*e^4 + (63*A^3*b^5*c^5*d*e^8)/4 + 1296*A*B^2*b^2*c^8*d^6*e^3 - 3672*A*B^2*b^3*c^7*d^5*e^4 + 3600*A*B^2*b^4*c^6*d^4*e^5 - (2763*A*B^2*b^5*c^5*d^3*e^6)/2 + (1215*A*B^2*b^6*c^4*d^2*e^7)/8 + 7560*A^2*B*b^2*c^8*d^5*e^4 - 7722*A^2*B*b^3*c^7*d^4*e^5 + (6291*A^2*B*b^4*c^6*d^3*e^6)/2 - (2997*A^2*B*b^5*c^5*d^2*e^7)/8 + (105*A*B^2*b^7*c^3*d*e^8)/32 - 2592*A^2*B*b*c^9*d^6*e^3 - (465*A^2*B*b^6*c^4*d*e^8)/32)/(b^12*c^2*d^4 + b^14*d

^2*e^2 - 2*b^13*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(((d + e*x)^(1/2)*(A^2
*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*
b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 326
4*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5
 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7
 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3
 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*
d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*
d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e
^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 +
 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2
 - 2*b^13*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(128*b^10*c^
5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e
^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b
*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e
)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c*(b*e - c*
d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2
 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d
^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*
B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 +
 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)) - ((-c*(b*e - c*d)^3)^(1/2)*(((d + e*x)^
(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 -
 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6
*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c
^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5
*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c
^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*
B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A
*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12
*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4
*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^
14*d^2*e^2 - 2*b^13*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(1
28*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13
*c^2*d^2*e^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^
2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b
^9*c*d^3*e)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c
*(b*e - c*d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*
b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3
*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c
*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5
*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2))))*(-c*(b*e - c*d)^3)^(1/2)*(48
*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*
e + 40*B*b^2*c*d*e)*1i)/(4*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7
*c*d*e^2)) - (atan((((((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*
e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c
^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2
*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 138
24*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*
B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6
368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10
*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 +
60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B
*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^1
4*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) - ((d + e*x)^
(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 -
 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*
e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*
c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*
c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B

*b^2*d*e + 12*A*b*c*d*e)*1i)/(8*b^5*(d^3)^(1/2)) + ((((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) + ((d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)*1i)/(8*b^5*(d^3)^(1/2)))/((1728*A^3*c^10*d^6*e^3 - (35*A^3*b^6*c^4*e^9)/32 + 5508*A^3*b^2*c^8*d^4*e^5 - 2376*A^3*b^3*c^7*d^3*e^6 + (1233*A^3*b^4*c^6*d^2*e^7)/4 - 216*B^3*b^3*c^7*d^6*e^3 + 594*B^3*b^4*c^6*d^5*e^4 - 558*B^3*b^5*c^5*d^4*e^5 + (805*B^3*b^6*c^4*d^3*e^6)/4 - (165*B^3*b^7*c^3*d^2*e^7)/8 + (15*A^2*B*b^7*c^3*e^9)/32 - 5184*A^3*b*c^9*d^5*e^4 + (63*A^3*b^5*c^5*d*e^8)/4 + 1296*A*B^2*b^2*c^8*d^6*e^3 - 3672*A*B^2*b^3*c^7*d^5*e^4 + 3600*A*B^2*b^4*c^6*d^4*e^5 - (2763*A*B^2*b^5*c^5*d^3*e^6)/2 + (1215*A*B^2*b^6*c^4*d^2*e^7)/8 + 7560*A^2*B*b^2*c^8*d^5*e^4 - 7722*A^2*B*b^3*c^7*d^4*e^5 + (6291*A^2*B*b^4*c^6*d^3*e^6)/2 - (2997*A^2*B*b^5*c^5*d^2*e^7)/8 + (105*A*B^2*b^7*c^3*d*e^8)/32 - 2592*A^2*B*b*c^9*d^6*e^3 - (465*A^2*B*b^6*c^4*d*e^8)/32)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) + ((((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) - ((d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)) - ((((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) + ((d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 -

```
48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/
2))))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e
)*1i)/(4*b^5*(d^3)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1107 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=394

$$-\frac{\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{2b^2d\left(bx+cx^2\right)^2(cd-be)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2(-e)(4Bd-3Ae)-12bcd(2Bd-Ae)+48A\right.}{4b^5d^{5/2}}$$

Rubi [A] time = 0.90, antiderivative size = 394, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 826, 1166, 208}

$$\frac{\sqrt{d+ex}\left(cx\left(b^2cde(6Ae+19Bd)+b^3\left(-e^2\right)(4Bd-3Ae)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)+b(cd-be)\left(b^2e(4Bd-3Ae)-bcd(7Ae+6Bd)+12Ac^2d^2\right)\right)}{4b^4d^2\left(bx+cx^2\right)(cd-be)^2}+\frac{c^{3/2}\left(7b^2ce(9Ae+8Bd)-12bc^2d(9Ae+2Bd)+48Ac^3d^2-35b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5(cd-be)^{5/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2(-e)(4Bd-3Ae)-12bcd(2Bd-Ae)+48Ac^2d^2\right)}{4b^5d^{5/2}}-\frac{\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{2b^2d\left(bx+cx^2\right)^2(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^3),x]
```

```
[Out] -(Sqrt[d + e*x]*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(2*b^2*d
*(c*d - b*e)*(b*x + c*x^2)^2) + (Sqrt[d + e*x]*(b*(c*d - b*e)*(12*A*c^2*d^2
 + b^2*e*(4*B*d - 3*A*e) - b*c*d*(6*B*d + 7*A*e)) + c*(24*A*c^3*d^3 - b^3*e
^2*(4*B*d - 3*A*e) - 12*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*e*(19*B*d + 6*A*e
))*x))/(4*b^4*d^2*(c*d - b*e)^2*(b*x + c*x^2)) - ((48*A*c^2*d^2 - b^2*e*(4*
B*d - 3*A*e) - 12*b*c*d*(2*B*d - A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b
^5*d^(5/2)) + (c^(3/2)*(48*A*c^3*d^2 - 35*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 9
*A*e) + 7*b^2*c*e*(8*B*d + 9*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d
 - b*e]])/(4*b^5*(c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
```

```
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(12Ac^2d^2+b^2e(4Bd-3Ae)-bcd(\cdots\right.}{\sqrt{d+ex}\,(\cdots}}{2b^2d(\cdots}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(b(cd-be)\left(12Ac^2\cdots\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(b(cd-be)\left(12Ac^2\cdots\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(b(cd-be)\left(12Ac^2\cdots\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(b(cd-be)\left(12Ac^2\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 1.48, size = 408, normalized size = 1.04

$$\frac{\frac{c\sqrt{d+ex}\left(b^2e(3Ae-4Bd)+bcd(7Ae+6Bd)-12Ac^2d^2\right)}{b^2d(b+cx)^2(be-cd)}+\frac{-\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(3Ae-4Bd)+12bcd(Ae-2Bd)+48Ac^2d^2\right)-\frac{bc\sqrt{d}\sqrt{d+ex}\left(b^3e^2(4Bd-3Ae)-b^2cde(6Ae+19Bd)+12bc^2d^2(3Ae+Bd)-24Ac^3d^3\right)}{(b+cx)(cd-be)^2}+\frac{c^{3/2}d^{5/2}\left(7b^2ce(9Ae+8Bd)-12bc^2d(9Ae+2Bd)+48Ac^3d^2-35b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{(cd-be)^{5/2}}}{b^4d^{3/2}}+\frac{\sqrt{d+ex}\,(3Abe+8Acd-4bBd)}{bdx(b+cx)^2}-\frac{2A\sqrt{d+ex}}{x^2(b+cx)^2}}{4bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^3),x]
```

```
[Out] ((c*(-12*A*c^2*d^2 + b^2*e*(-4*B*d + 3*A*e) + b*c*d*(6*B*d + 7*A*e))*Sqrt[d
 + e*x])/(b^2*d*(-(c*d) + b*e)*(b + c*x)^2) - (2*A*Sqrt[d + e*x])/(x^2*(b +
 c*x)^2) + ((-4*b*B*d + 8*A*c*d + 3*A*b*e)*Sqrt[d + e*x])/(b*d*x*(b + c*x)^
2) + (-((b*c*Sqrt[d]*(-24*A*c^3*d^3 + b^3*e^2*(4*B*d - 3*A*e) + 12*b*c^2*d^
2*(B*d + 3*A*e) - b^2*c*d*e*(19*B*d + 6*A*e))*Sqrt[d + e*x])/((c*d - b*e)^2
*(b + c*x))) - (48*A*c^2*d^2 + 12*b*c*d*(-2*B*d + A*e) + b^2*e*(-4*B*d + 3*
A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]] + (c^(3/2)*d^(5/2)*(48*A*c^3*d^2 - 35*
b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 9*A*e) + 7*b^2*c*e*(8*B*d + 9*A*e))*ArcTanh
[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(c*d - b*e)^(5/2))/(b^4*d^(3/2))
)/(4*b*d)
```

IntegrateAlgebraic [B] time = 2.47, size = 888, normalized size = 2.25

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^3),x]
```

```
[Out] (Sqrt[d + e*x]*(12*b*B*c^4*d^6 - 24*A*c^5*d^6 - 37*b^2*B*c^3*d^5*e + 72*A*b
*c^4*d^5*e + 37*b^3*B*c^2*d^4*e^2 - 69*A*b^2*c^3*d^4*e^2 - 16*b^4*B*c*d^3*e
^3 + 18*A*b^3*c^2*d^3*e^3 + 4*b^5*B*d^2*e^4 + 8*A*b^4*c*d^2*e^4 - 5*A*b^5*d
```

```
*e^5 - 36*b*B*c^4*d^5*(d + e*x) + 72*A*c^5*d^5*(d + e*x) + 93*b^2*B*c^3*d^4
*e*(d + e*x) - 180*A*b*c^4*d^4*e*(d + e*x) - 74*b^3*B*c^2*d^3*e^2*(d + e*x)
 + 136*A*b^2*c^3*d^3*e^2*(d + e*x) + 24*b^4*B*c*d^2*e^3*(d + e*x) - 24*A*b^
3*c^2*d^2*e^3*(d + e*x) - 4*b^5*B*d*e^4*(d + e*x) - 10*A*b^4*c*d*e^4*(d + e
*x) + 3*A*b^5*e^5*(d + e*x) + 36*b*B*c^4*d^4*(d + e*x)^2 - 72*A*c^5*d^4*(d
+ e*x)^2 - 75*b^2*B*c^3*d^3*e*(d + e*x)^2 + 144*A*b*c^4*d^3*e*(d + e*x)^2 +
 41*b^3*B*c^2*d^2*e^2*(d + e*x)^2 - 73*A*b^2*c^3*d^2*e^2*(d + e*x)^2 - 8*b^
4*B*c*d*e^3*(d + e*x)^2 + A*b^3*c^2*d*e^3*(d + e*x)^2 + 6*A*b^4*c*e^4*(d +
e*x)^2 - 12*b*B*c^4*d^3*(d + e*x)^3 + 24*A*c^5*d^3*(d + e*x)^3 + 19*b^2*B*c
^3*d^2*e*(d + e*x)^3 - 36*A*b*c^4*d^2*e*(d + e*x)^3 - 4*b^3*B*c^2*d*e^2*(d
+ e*x)^3 + 6*A*b^2*c^3*d*e^2*(d + e*x)^3 + 3*A*b^3*c^2*e^3*(d + e*x)^3))/(4
*b^4*d^2*e*(-(c*d) + b*e)^2*x^2*(-(c*d) + b*e + c*(d + e*x))^2) + ((-24*b*B
*c^(7/2)*d^2 + 48*A*c^(9/2)*d^2 + 56*b^2*B*c^(5/2)*d*e - 108*A*b*c^(7/2)*d*
e - 35*b^3*B*c^(3/2)*e^2 + 63*A*b^2*c^(5/2)*e^2)*ArcTan[(Sqrt[c]*Sqrt[-(c*d
) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(4*b^5*(c*d - b*e)^2*Sqrt[-(c*d) + b*
e]) + ((24*b*B*c*d^2 - 48*A*c^2*d^2 + 4*b^2*B*d*e - 12*A*b*c*d*e - 3*A*b^2*
e^2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(5/2))
```

fricas [B] time = 34.57, size = 4310, normalized size = 10.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^2*c^4 - 27*A*b*c^5)*d^4*e +
 7*(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)
*d^5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7*(5*B*b^4*c^2 - 9*A*b^3*c^3
)*d^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 4*(14*B*b^4*c^2 - 27*A
*b^3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^3*e^2)*x^2)*sqrt(c/(c*d - b
*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b
*e)))/(c*x + b)) - ((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B
*b^2*c^4 - 21*A*b*c^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2
*B*b^4*c^2 - 3*A*b^3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2
*A*b*c^5)*d^4 + 4*(11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*
A*b^3*c^3)*d^2*e^2 - 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4
- 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e
- (16*B*b^5*c - 27*A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)
*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^2*d^4
- 4*A*b^5*c*d^3*e + 2*A*b^6*d^2*e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 -
2*A*b*c^5)*d^4 + (19*B*b^3*c^3 - 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A
*b^3*c^3)*d^2*e^2)*x^3 - (6*A*b^5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^
4 + (29*B*b^4*c^2 - 55*A*b^3*c^3)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e
^2)*x^2 - (3*A*b^6*d*e^3 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 1
3*A*b^4*c^2)*d^3*e - 2*(2*B*b^6 - A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5
*c^4*d^5 - 2*b^6*c^3*d^4*e + b^7*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*
c^2*d^4*e + b^8*c*d^3*e^2)*x^3 + (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2
)*x^2), -1/8*(2*((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^2*c^4 - 27*A*b*c^5
)*d^4*e + 7*(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*(24*(B*b^2*c^4 - 2
*A*b*c^5)*d^5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7*(5*B*b^4*c^2 - 9*
A*b^3*c^3)*d^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 4*(14*B*b^4*c
^2 - 27*A*b^3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^3*e^2)*x^2)*sqrt(-
c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*
x + c*d)) - ((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B*b^2*c^
4 - 21*A*b*c^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2*B*b^4*
c^2 - 3*A*b^3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2*A*b*c^
5)*d^4 + 4*(11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*A*b^3*c
^3)*d^2*e^2 - 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4 - 24*(B
*b^3*c^3 - 2*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e - (16*B
*b^5*c - 27*A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)*sqrt(d
```

```
)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^2*d^4 - 4*A*b
^5*c*d^3*e + 2*A*b^6*d^2*e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 - 2*A*b*c
^5)*d^4 + (19*B*b^3*c^3 - 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A*b^3*c^
3)*d^2*e^2)*x^3 - (6*A*b^5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + (29
*B*b^4*c^2 - 55*A*b^3*c^3)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e^2)*x^2
 - (3*A*b^6*d*e^3 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 13*A*b^4
*c^2)*d^3*e - 2*(2*B*b^6 - A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5*c^4*d^
5 - 2*b^6*c^3*d^4*e + b^7*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*c^2*d^4
*e + b^8*c*d^3*e^2)*x^3 + (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2)*x^2),
 1/8*(2*((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B*b^2*c^4 -
21*A*b*c^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2*B*b^4*c^2
- 3*A*b^3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d
^4 + 4*(11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*A*b^3*c^3)*
d^2*e^2 - 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4 - 24*(B*b^3
*c^3 - 2*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e - (16*B*b^5
*c - 27*A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)*sqrt(-d)*a
rctan(sqrt(e*x + d)*sqrt(-d)/d) - ((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^
2*c^4 - 27*A*b*c^5)*d^4*e + 7*(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*
(24*(B*b^2*c^4 - 2*A*b*c^5)*d^5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7
*(5*B*b^4*c^2 - 9*A*b^3*c^3)*d^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d
^5 - 4*(14*B*b^4*c^2 - 27*A*b^3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^
3*e^2)*x^2)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sq
rt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(2*A*b^4*c^2*d^4 - 4*A*b^5*
c*d^3*e + 2*A*b^6*d^2*e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 - 2*A*b*c^5)
*d^4 + (19*B*b^3*c^3 - 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A*b^3*c^3)*
d^2*e^2)*x^3 - (6*A*b^5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + (29*B*
b^4*c^2 - 55*A*b^3*c^3)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e^2)*x^2 -
(3*A*b^6*d*e^3 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 13*A*b^4*c^
2)*d^3*e - 2*(2*B*b^6 - A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5*c^4*d^5 -
 2*b^6*c^3*d^4*e + b^7*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*c^2*d^4*e
+ b^8*c*d^3*e^2)*x^3 + (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2)*x^2), -1
/4*(((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^2*c^4 - 27*A*b*c^5)*d^4*e + 7*
(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)*d^
5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7*(5*B*b^4*c^2 - 9*A*b^3*c^3)*d
^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 4*(14*B*b^4*c^2 - 27*A*b^
3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^3*e^2)*x^2)*sqrt(-c/(c*d - b*e
))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) -
((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B*b^2*c^4 - 21*A*b*c
^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2*B*b^4*c^2 - 3*A*b^
3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d^4 + 4*(
11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*A*b^3*c^3)*d^2*e^2
- 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4 - 24*(B*b^3*c^3 - 2
*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e - (16*B*b^5*c - 27*
A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)*sqrt(-d)*arctan(sq
rt(e*x + d)*sqrt(-d)/d) + (2*A*b^4*c^2*d^4 - 4*A*b^5*c*d^3*e + 2*A*b^6*d^2*
e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 - 2*A*b*c^5)*d^4 + (19*B*b^3*c^3 -
 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e^2)*x^3 - (6*A*b^
5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + (29*B*b^4*c^2 - 55*A*b^3*c^3
)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e^2)*x^2 - (3*A*b^6*d*e^3 - 4*(B*
b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 13*A*b^4*c^2)*d^3*e - 2*(2*B*b^6
- A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5*c^4*d^5 - 2*b^6*c^3*d^4*e + b^7
*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*c^2*d^4*e + b^8*c*d^3*e^2)*x^3 +
 (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2)*x^2)]
```

giac [B] time = 0.31, size = 1046, normalized size = 2.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(24*B*b*c^4*d^2 - 48*A*c^5*d^2 - 56*B*b^2*c^3*d*e + 108*A*b*c^4*d*e + 3
5*B*b^3*c^2*e^2 - 63*A*b^2*c^3*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*
c*e))/((b^5*c^2*d^2 - 2*b^6*c*d*e + b^7*e^2)*sqrt(-c^2*d + b*c*e)) - 1/4*(1
2*(x*e + d)^(7/2)*B*b*c^4*d^3*e - 24*(x*e + d)^(7/2)*A*c^5*d^3*e - 36*(x*e
+ d)^(5/2)*B*b*c^4*d^4*e + 72*(x*e + d)^(5/2)*A*c^5*d^4*e + 36*(x*e + d)^(3
/2)*B*b*c^4*d^5*e - 72*(x*e + d)^(3/2)*A*c^5*d^5*e - 12*sqrt(x*e + d)*B*b*c
^4*d^6*e + 24*sqrt(x*e + d)*A*c^5*d^6*e - 19*(x*e + d)^(7/2)*B*b^2*c^3*d^2*
e^2 + 36*(x*e + d)^(7/2)*A*b*c^4*d^2*e^2 + 75*(x*e + d)^(5/2)*B*b^2*c^3*d^3
*e^2 - 144*(x*e + d)^(5/2)*A*b*c^4*d^3*e^2 - 93*(x*e + d)^(3/2)*B*b^2*c^3*d
^4*e^2 + 180*(x*e + d)^(3/2)*A*b*c^4*d^4*e^2 + 37*sqrt(x*e + d)*B*b^2*c^3*d
^5*e^2 - 72*sqrt(x*e + d)*A*b*c^4*d^5*e^2 + 4*(x*e + d)^(7/2)*B*b^3*c^2*d*e
^3 - 6*(x*e + d)^(7/2)*A*b^2*c^3*d*e^3 - 41*(x*e + d)^(5/2)*B*b^3*c^2*d^2*e
^3 + 73*(x*e + d)^(5/2)*A*b^2*c^3*d^2*e^3 + 74*(x*e + d)^(3/2)*B*b^3*c^2*d^
3*e^3 - 136*(x*e + d)^(3/2)*A*b^2*c^3*d^3*e^3 - 37*sqrt(x*e + d)*B*b^3*c^2*
d^4*e^3 + 69*sqrt(x*e + d)*A*b^2*c^3*d^4*e^3 - 3*(x*e + d)^(7/2)*A*b^3*c^2*
e^4 + 8*(x*e + d)^(5/2)*B*b^4*c*d*e^4 - (x*e + d)^(5/2)*A*b^3*c^2*d*e^4 - 2
4*(x*e + d)^(3/2)*B*b^4*c*d^2*e^4 + 24*(x*e + d)^(3/2)*A*b^3*c^2*d^2*e^4 +
16*sqrt(x*e + d)*B*b^4*c*d^3*e^4 - 18*sqrt(x*e + d)*A*b^3*c^2*d^3*e^4 - 6*(
x*e + d)^(5/2)*A*b^4*c*e^5 + 4*(x*e + d)^(3/2)*B*b^5*d*e^5 + 10*(x*e + d)^(
3/2)*A*b^4*c*d*e^5 - 4*sqrt(x*e + d)*B*b^5*d^2*e^5 - 8*sqrt(x*e + d)*A*b^4*
c*d^2*e^5 - 3*(x*e + d)^(3/2)*A*b^5*e^6 + 5*sqrt(x*e + d)*A*b^5*d*e^6)/((b^
4*c^2*d^4 - 2*b^5*c*d^3*e + b^6*d^2*e^2)*((x*e + d)^2*c - 2*(x*e + d)*c*d +
 c*d^2 + (x*e + d)*b*e - b*d*e)^2) - 1/4*(24*B*b*c*d^2 - 48*A*c^2*d^2 + 4*B
*b^2*d*e - 12*A*b*c*d*e - 3*A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*
sqrt(-d)*d^2)
```

maple [B] time = 0.08, size = 1009, normalized size = 2.56

$$-\frac{15\left(ex+d\right)^{\frac{3}{2}}Ac^{4}e^{2}}{4\left(cex+be\right)^{2}\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)b^{3}}-\frac{63Ac^{3}e^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{4\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)\sqrt{\left(be-cd\right)c}\,b^{3}}+\frac{3\left(ex+d\right)^{\frac{3}{2}}Ac^{5}de}{\left(cex+be\right)^{2}\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)b^{4}}+\frac{27Ac^{4}de\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)\sqrt{\left(be-cd\right)c}\,b^{4}}-\frac{12Ac^{5}d^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)\sqrt{\left(be-cd\right)c}\,b^{5}}+\frac{11\left(ex+d\right)^{\frac{3}{2}}Bc^{3}e^{2}}{4\left(cex+be\right)^{2}\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)b^{2}}+\frac{35Bc^{2}e^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{4\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)\sqrt{\left(be-cd\right)c}\,b^{2}}-\frac{2\left(ex+d\right)^{\frac{3}{2}}Bc^{4}de}{\left(cex+be\right)^{2}\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)b^{3}}-\frac{14Bc^{3}de\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)\sqrt{\left(be-cd\right)c}\,b^{3}}+\frac{6Bc^{4}d^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(be-cd\right)c}}\right)}{\left(b^{2}e^{2}-2bcde+c^{2}d^{2}\right)\sqrt{\left(be-cd\right)c}\,b^{4}}-\frac{17\sqrt{ex+d}\,Ac^{3}e^{2}}{4\left(cex+be\right)^{2}\left(be-cd\right)b^{3}}+\frac{3\sqrt{ex+d}\,Ac^{4}de}{\left(cex+be\right)^{2}\left(be-cd\right)b^{4}}+\frac{13\sqrt{ex+d}\,Bc^{2}e^{2}}{4\left(cex+be\right)^{2}\left(be-cd\right)b^{2}}-\frac{2\sqrt{ex+d}\,Bc^{3}de}{\left(cex+be\right)^{2}\left(be-cd\right)b^{3}}-\frac{3Ae^{2}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{4b^{3}d^{\frac{5}{2}}}-\frac{3Ace\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{4}d^{\frac{3}{2}}}-\frac{12Ac^{2}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{5}\sqrt{d}}+\frac{Be\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{3}d^{\frac{3}{2}}}+\frac{6Bc\operatorname{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b^{4}\sqrt{d}}-\frac{5\sqrt{ex+d}\,A}{4b^{3}dx^{2}}-\frac{3\sqrt{ex+d}\,Ac}{b^{4}ex^{2}}+\frac{\sqrt{ex+d}\,B}{b^{3}ex^{2}}+\frac{3\left(ex+d\right)^{\frac{3}{2}}A}{4b^{3}d^{2}x^{2}}+\frac{3\left(ex+d\right)^{\frac{3}{2}}Ac}{b^{4}dex^{2}}-\frac{\left(ex+d\right)^{\frac{3}{2}}B}{b^{3}dex^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -3/e/b^4/x^2*(e*x+d)^(1/2)*A*c-3*e/b^4/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2
))*A*c-1/e/b^3/x^2/d*(e*x+d)^(3/2)*B-2*e*c^3/b^3/(c*e*x+b*e)^2/(b*e-c*d)*(e
*x+d)^(1/2)*B*d+3*e*c^4/b^4/(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(1/2)*A*d+3*e*c
^5/b^4/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*A*d-2*e*c^4/
b^3/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*B*d-14*e*c^3/b^
3/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*d+27*e*c^4/b^4/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*
c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-5/4/b^3/x^2/d*(e*x
+d)^(1/2)*A+3/4/b^3/x^2/d^2*(e*x+d)^(3/2)*A+6/b^4/d^(1/2)*arctanh((e*x+d)^(
1/2)/d^(1/2))*B*c+e/b^3/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-12/b^5/d^(
1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+1/e/b^3/x^2*(e*x+d)^(1/2)*B-3/4*e
^2/b^3/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A-63/4*e^2*c^3/b^3/(b^2*e^2-2
*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*A+35/4*e^2*c^2/b^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+6*c^4/b^4/(b^2*e^2-2*b*c*d*e+c
^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d
^2-12*c^5/b^5/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d
)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^2+3/e/b^4/x^2/d*(e*x+d)^(3/2)*A*c-15/4*e
^2*c^4/b^3/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*A+11/4*e
^2*c^3/b^2/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*B-17/4*e
^2*c^3/b^3/(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(1/2)*A+13/4*e^2*c^2/b^2/(c*e*x+
b*e)^2/(b*e-c*d)*(e*x+d)^(1/2)*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 7.11, size = 11338, normalized size = 28.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^(1/2)),x)
```

```
[Out] log((((((c^2*e^3*(3*A*b^4*e^4 + 24*A*c^4*d^4 - 12*B*b*c^3*d^4 - 4*B*b^4*d*e
^3 + 25*B*b^2*c^2*d^3*e - 12*B*b^3*c*d^2*e^2 + 21*A*b^2*c^2*d^2*e^2 - 48*A*
b*c^3*d^3*e + 3*A*b^3*c*d*e^3))/(b^2*d^2*(b*e - c*d)^2) - b^2*c^2*e^2*(b*e
- 2*c*d)*(d + e*x)^(1/2)*((3*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*
b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5))^(1/2))*((3*A*b^2*e^2 + 48*A*c^2*d^2 -
 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5))^(1/2))/8 - ((d +
e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*
d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^
5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B
^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 +
1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8
 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^
2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^
6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*
c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*b^8*d^4*(b*e - c*d)^4))*((3*A*b^
2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d
^5))^(1/2))/8 - (567*A^3*b^7*c^5*e^10 + 55296*A^3*c^12*d^7*e^3 + 224640*A^3
*b^2*c^10*d^5*e^5 - 77760*A^3*b^3*c^9*d^4*e^6 - 13608*A^3*b^4*c^8*d^3*e^7 +
 1404*A^3*b^5*c^7*d^2*e^8 - 6912*B^3*b^3*c^9*d^7*e^3 + 25920*B^3*b^4*c^8*d^
6*e^4 - 33408*B^3*b^5*c^7*d^5*e^5 + 15016*B^3*b^6*c^6*d^4*e^6 + 196*B^3*b^7
*c^5*d^3*e^7 - 560*B^3*b^8*c^4*d^2*e^8 - 315*A^2*B*b^8*c^4*e^10 - 193536*A^
3*b*c^11*d^6*e^4 + 2430*A^3*b^6*c^6*d*e^9 + 41472*A*B^2*b^2*c^10*d^7*e^3 -
152064*A*B^2*b^3*c^9*d^6*e^4 + 189504*A*B^2*b^4*c^8*d^5*e^5 - 78768*A*B^2*b
^5*c^7*d^4*e^6 - 4764*A*B^2*b^6*c^6*d^3*e^7 + 2709*A*B^2*b^7*c^5*d^2*e^8 +
297216*A^2*B*b^2*c^10*d^6*e^4 - 357696*A^2*B*b^3*c^9*d^5*e^5 + 136368*A^2*B
*b^4*c^8*d^4*e^6 + 15516*A^2*B*b^5*c^7*d^3*e^7 - 3861*A^2*B*b^6*c^6*d^2*e^8
 + 840*A*B^2*b^8*c^4*d*e^9 - 82944*A^2*B*b*c^11*d^7*e^3 - 2898*A^2*B*b^7*c^
5*d*e^9)/(64*b^12*d^4*(b*e - c*d)^4))*((9*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 +
576*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 432*A^2*b^2*c^2*d^2*e^2 + 1152*A
^2*b*c^3*d^3*e + 72*A^2*b^3*c*d*e^3 + 192*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*
d^4 - 24*A*B*b^4*d*e^3 - 960*A*B*b^2*c^2*d^3*e - 240*A*B*b^3*c*d^2*e^2)/(64
*b^10*d^5))^(1/2) - log((((((c^2*e^3*(3*A*b^4*e^4 + 24*A*c^4*d^4 - 12*B*b*c
^3*d^4 - 4*B*b^4*d*e^3 + 25*B*b^2*c^2*d^3*e - 12*B*b^3*c*d^2*e^2 + 21*A*b^2
*c^2*d^2*e^2 - 48*A*b*c^3*d^3*e + 3*A*b^3*c*d*e^3))/(b^2*d^2*(b*e - c*d)^2)
 + b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((3*A*b^2*e^2 + 48*A*c^2*d^2 -
 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5))^(1/2))*((3*A*b^2*
e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5
))^(1/2))/8 + ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2
+ 27360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*
d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*
c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^
2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16
*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 46
08*A*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 -
28704*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^
4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*b^8*d^4*(b*e
 - c*d)^4))*((3*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*
```

A*b*c*d*e)^2/(b^10*d^5))^(1/2))/8 - (567*A^3*b^7*c^5*e^10 + 55296*A^3*c^12*d^7*e^3 + 224640*A^3*b^2*c^10*d^5*e^5 - 77760*A^3*b^3*c^9*d^4*e^6 - 13608*A^3*b^4*c^8*d^3*e^7 + 1404*A^3*b^5*c^7*d^2*e^8 - 6912*B^3*b^3*c^9*d^7*e^3 + 25920*B^3*b^4*c^8*d^6*e^4 - 33408*B^3*b^5*c^7*d^5*e^5 + 15016*B^3*b^6*c^6*d^4*e^6 + 196*B^3*b^7*c^5*d^3*e^7 - 560*B^3*b^8*c^4*d^2*e^8 - 315*A^2*B*b^8*c^4*e^10 - 193536*A^3*b*c^11*d^6*e^4 + 2430*A^3*b^6*c^6*d*e^9 + 41472*A*B^2*b^2*c^10*d^7*e^3 - 152064*A*B^2*b^3*c^9*d^6*e^4 + 189504*A*B^2*b^4*c^8*d^5*e^5 - 78768*A*B^2*b^5*c^7*d^4*e^6 - 4764*A*B^2*b^6*c^6*d^3*e^7 + 2709*A*B^2*b^7*c^5*d^2*e^8 + 297216*A^2*B*b^2*c^10*d^6*e^4 - 357696*A^2*B*b^3*c^9*d^5*e^5 + 136368*A^2*B*b^4*c^8*d^4*e^6 + 15516*A^2*B*b^5*c^7*d^3*e^7 - 3861*A^2*B*b^6*c^6*d^2*e^8 + 840*A*B^2*b^8*c^4*d*e^9 - 82944*A^2*B*b*c^11*d^7*e^3 - 2898*A^2*B*b^7*c^5*d*e^9)/(64*b^12*d^4*(b*e - c*d)^4))*(((9*A^2*b^4*e^4)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (B^2*b^4*d^2*e^2)/4 + (27*A^2*b^2*c^2*d^2*e^2)/4 + 18*A^2*b*c^3*d^3*e + (9*A^2*b^3*c*d*e^3)/8 + 3*B^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (3*A*B*b^4*d*e^3)/8 - 15*A*B*b^2*c^2*d^3*e - (15*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^5))^(1/2) - atan(((((6144*A*b^11*c^7*d^7*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c^6*d^6*e^5 + 5568*A*b^13*c^5*d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15*c^3*d^3*e^8 - 192*A*b^16*c^2*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^12*c^6*d^7*e^4 + 4736*B*b^13*c^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b^15*c^3*d^4*e^7 + 256*B*b^16*c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4 - 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) - ((d + e*x)^(1/2)*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c^6*d^8*e^3 + 1024*b^12*c^5*d^7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^5*e^6 - 64*b^15*c^2*d^4*e^7))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*1i - (((6144*A*b^11*c^7*d^7*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c^6*d^6*e^5 + 5568*A*b^13*c^5*d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15*c^3*d^3*e^8 - 192*A*b^16*c^2*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^12*c^6*d^7*e^4 + 4736*B*b^13*c^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b^15*c^3*d^4*e^7 + 256*B*b^16*c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4

- 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) + ((d + e*x)^(1/2)*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c^6*d^8*e^3 + 1024*b^12*c^5*d^7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^5*e^6 - 64*b^15*c^2*d^4*e^7))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2) - ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*1i)/((567*A^3*b^7*c^5*e^10 + 55296*A^3*c^12*d^7*e^3 + 224640*A^3*b^2*c^10*d^5*e^5 - 77760*A^3*b^3*c^9*d^4*e^6 - 13608*A^3*b^4*c^8*d^3*e^7 + 1404*A^3*b^5*c^7*d^2*e^8 - 6912*B^3*b^3*c^9*d^7*e^3 + 25920*B^3*b^4*c^8*d^6*e^4 - 33408*B^3*b^5*c^7*d^5*e^5 + 15016*B^3*b^6*c^6*d^4*e^6 + 196*B^3*b^7*c^5*d^3*e^7 - 560*B^3*b^8*c^4*d^2*e^8 - 315*A^2*B*b^8*c^4*e^10 - 193536*A^3*b*c^11*d^6*e^4 + 2430*A^3*b^6*c^6*d*e^9 + 41472*A*B^2*b^2*c^10*d^7*e^3 - 152064*A*B^2*b^3*c^9*d^6*e^4 + 189504*A*B^2*b^4*c^8*d^5*e^5 - 78768*A*B^2*b^5*c^7*d^4*e^6 - 4764*A*B^2*b^6*c^6*d^3*e^7 + 2709*A*B^2*b^7*c^5*d^2*e^8 + 297216*A^2*B*b^2*c^10*d^6*e^4 - 357696*A^2*B*b^3*c^9*d^5*e^5 + 136368*A^2*B*b^4*c^8*d^4*e^6 + 15516*A^2*B*b^5*c^7*d^3*e^7 - 3861*A^2*B*b^6*c^6*d^2*e^8 + 840*A*B^2*b^8*c^4*d*e^9 - 82944*A^2*B*b*c^11*d^7*e^3 - 2898*A^2*B*b^7*c^5*d*e^9)/(32*(b^12*c^4*d^8 + b^16*d^4*e^4 - 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) + (((6144*A*b^11*c^7*d^7*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c^6*d^6*e^5 + 5568*A*b^13*c^5*d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15*c^3*d^3*e^8 - 192*A*b^16*c^2*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^12*c^6*d^7*e^4 + 4736*B*b^13*c^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b^15*c^3*d^4*e^7 + 256*B*b^16*c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4 - 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) - ((d + e*x)^(1/2)*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c^6*d^8*e^3 + 1024*b^12*c^5*d^

7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^5*e^6 - 64*b^15*c^2*d^4*e^7))
/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^
10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*
c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c
^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c
^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8
*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^
6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^
3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9
*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*d^6*e^4 - 175
68*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7
 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^
7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*
c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*
b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^2 - 24*A*B*b^
8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^6*e^4 + 19008
*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 -
 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e
 - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*
b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^
7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c
^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*
c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^
5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*
c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(
1/2) + (((6144*A*b^11*c^7*d^7*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c
^6*d^6*e^5 + 5568*A*b^13*c^5*d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15
*c^3*d^3*e^8 - 192*A*b^16*c^2*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^1
2*c^6*d^7*e^4 + 4736*B*b^13*c^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b
^15*c^3*d^4*e^7 + 256*B*b^16*c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4
 - 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) + ((d + e*x)^(
1/2)*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 122
5*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 -
4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 26
88*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*
A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(6
4*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^
13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c
^6*d^8*e^3 + 1024*b^12*c^5*d^7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^
5*e^6 - 64*b^15*c^2*d^4*e^7))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^
7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A
^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2
*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*
b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b
^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4
*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^
11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4))
)^(1/2) - ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27
360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*
e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*
d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^
5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2
*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A
*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 2870
4*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^
6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b
^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-
(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b
^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*

```
B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*
b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2
*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15
*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*
d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*
e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^
2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e
 - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^
3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3
- 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*
e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*2i
- (((d + e*x)^(3/2)*(4*B*b^5*d*e^5 - 72*A*c^5*d^5*e - 3*A*b^5*e^6 + 180*A*b
*c^4*d^4*e^2 - 24*B*b^4*c*d^2*e^4 - 136*A*b^2*c^3*d^3*e^3 + 24*A*b^3*c^2*d^
2*e^4 - 93*B*b^2*c^3*d^4*e^2 + 74*B*b^3*c^2*d^3*e^3 + 10*A*b^4*c*d*e^5 + 36
*B*b*c^4*d^5*e))/(4*b^4*(c*d^2 - b*d*e)^2) - ((d + e*x)^(5/2)*(6*A*b^4*c*e^
5 - 72*A*c^5*d^4*e + 144*A*b*c^4*d^3*e^2 + A*b^3*c^2*d*e^4 - 73*A*b^2*c^3*d
^2*e^3 - 75*B*b^2*c^3*d^3*e^2 + 41*B*b^3*c^2*d^2*e^3 + 36*B*b*c^4*d^4*e - 8
*B*b^4*c*d*e^4))/(4*b^4*(c*d^2 - b*d*e)^2) + ((d + e*x)^(1/2)*(24*A*c^4*d^4
*e - 5*A*b^4*e^5 + 4*B*b^4*d*e^4 - 48*A*b*c^3*d^3*e^2 - 12*B*b^3*c*d^2*e^3
+ 21*A*b^2*c^2*d^2*e^3 + 25*B*b^2*c^2*d^3*e^2 + 3*A*b^3*c*d*e^4 - 12*B*b*c^
3*d^4*e))/(4*b^4*(c*d^2 - b*d*e)) - (c*(d + e*x)^(7/2)*(3*A*b^3*c*e^4 + 24*
A*c^4*d^3*e - 36*A*b*c^3*d^2*e^2 + 6*A*b^2*c^2*d*e^3 + 19*B*b^2*c^2*d^2*e^2
 - 12*B*b*c^3*d^3*e - 4*B*b^3*c*d*e^3))/(4*b^4*(c*d^2 - b*d*e)^2))/(c^2*(d
+ e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2
*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c*d*e) + c^2*d
^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1108 $\int \frac{A+Bx}{(d+ex)^{3/2}(bx+cx^2)^3} \, dx$

Optimal. Leaf size=506

$$-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{2b^2d\left(bx+cx^2\right)^2\sqrt{d+ex}\,(cd-be)}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2(-e)(4Bd-5Ae)-4bcd(2Bd-3Ae)+16Ac^2d^2\right)}{4b^5d^{7/2}}+$$

Rubi [A] time = 1.45, antiderivative size = 506, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {822, 828, 826, 1166, 208}

$$\frac{cx\left(b^2cde(2Ae+21Bd)+b^3\left(-e^2\right)(4Bd-5Ae)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)+b(cd-be)\left(b^2e(4Bd-5Ae)-bcd(5Ae+6Bd)+12Ac^2d^2\right)}{4b^4d^2\left(bx+cx^2\right)\sqrt{d+ex}\,(cd-be)^2}+\frac{3e\left(b^2c^2d^2e(5Ae+9Bd)-b^3cde^2(4Bd-3Ae)+b^4e^3(4Bd-5Ae)-4bc^3d^3(4Ae+Bd)+8Ac^4d^4\right)}{4b^4d^3\sqrt{d+ex}\,(cd-be)^3}+\frac{3c^{5/2}\left(3b^2ce(11Ae+8Bd)-4bc^2d(11Ae+2Bd)+16Ac^3d^2-21b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5(cd-be)^{7/2}}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2(-e)(4Bd-5Ae)-4bcd(2Bd-3Ae)+16Ac^2d^2\right)}{4b^5d^{7/2}}-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{2b^2d\left(bx+cx^2\right)^2\sqrt{d+ex}\,(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (3*e*(8*A*c^4*d^4 + b^4*e^3*(4*B*d - 5*A*e) - b^3*c*d*e^2*(4*B*d - 3*A*e) -
 4*b*c^3*d^3*(B*d + 4*A*e) + b^2*c^2*d^2*e*(9*B*d + 5*A*e)))/(4*b^4*d^3*(c*
d - b*e)^3*Sqrt[d + e*x]) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*
x)/(2*b^2*d*(c*d - b*e)*Sqrt[d + e*x]*(b*x + c*x^2)^2) + (b*(c*d - b*e)*(12
*A*c^2*d^2 + b^2*e*(4*B*d - 5*A*e) - b*c*d*(6*B*d + 5*A*e)) + c*(24*A*c^3*d
^3 - b^3*e^2*(4*B*d - 5*A*e) + b^2*c*d*e*(21*B*d + 2*A*e) - 12*b*c^2*d^2*(B
*d + 3*A*e))*x)/(4*b^4*d^2*(c*d - b*e)^2*Sqrt[d + e*x]*(b*x + c*x^2)) - (3*
(16*A*c^2*d^2 - b^2*e*(4*B*d - 5*A*e) - 4*b*c*d*(2*B*d - 3*A*e))*ArcTanh[Sq
rt[d + e*x]/Sqrt[d]])/(4*b^5*d^(7/2)) + (3*c^(5/2)*(16*A*c^3*d^2 - 21*b^3*B
*e^2 - 4*b*c^2*d*(2*B*d + 11*A*e) + 3*b^2*c*e*(8*B*d + 11*A*e))*ArcTanh[(Sq
rt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*(c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^3}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)\sqrt{d+ex}\,\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(12Ac^2d^2+b^2e(4Bd-5Ae)-bcd(6Bd+5Ae)\right)}{(d+ex)^{3/2}\left(bx+cx^2\right)^2}}{2b^2d(cd-be)}$$

$$= -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)\sqrt{d+ex}\,\left(bx+cx^2\right)^2} + \frac{b(cd-be)\left(12Ac^2d^2+b^2e(4Bd-5A\right.}{}$$

$$= \frac{3e\left(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c\right.}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{3e\left(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c\right.}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{3e\left(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c\right.}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{3e\left(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c\right.}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

Mathematica [C] time = 0.55, size = 387, normalized size = 0.76

$$\frac{2Ab^4d^2(be-cd)^3+b^3dx(be-cd)^3(-5Abe-8Acd+4bBd)+x^2\left(b^2cd(cd-be)^2\left(b^2e(4Bd-5Ae)-bcd(5Ae+6Bd)+12Ac^2d^2\right)+(b+cx)\left(bcd(be-cd)\left(b^3e^2(4Bd-5Ae)-b^2cde(2Ae+21Bd)+12bc^2d^2(3Ae+Bd)-24Ac^3d^3\right)-(b+cx)\left(3c^2d^3\left(3b^2ce(11Ae+8Bd)-4bc^2d(11Ae+2Bd)+16Ac^3d^2-21b^3Be^2\right)\,_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)-3(cd-be)^3\,_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{ex}{d}+1\right)\left(b^2e(5Ae-4Bd)+4bcd(3Ae-2Bd)+16Ac^2d^2\right)\right)\right)\right)}{4b^5d^3x^2(b+cx)^2\sqrt{d+ex}\,(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (2*A*b^4*d^2*(-(c*d) + b*e)^3 + b^3*d*(-(c*d) + b*e)^3*(4*b*B*d - 8*A*c*d -
 5*A*b*e)*x + x^2*(b^2*c*d*(c*d - b*e)^2*(12*A*c^2*d^2 + b^2*e*(4*B*d - 5*A
*e) - b*c*d*(6*B*d + 5*A*e)) + (b + c*x)*(b*c*d*(-(c*d) + b*e)*(-24*A*c^3*d
^3 + b^3*e^2*(4*B*d - 5*A*e) - b^2*c*d*e*(21*B*d + 2*A*e) + 12*b*c^2*d^2*(B
*d + 3*A*e)) - (b + c*x)*(3*c^2*d^3*(16*A*c^3*d^2 - 21*b^3*B*e^2 - 4*b*c^2*
d*(2*B*d + 11*A*e) + 3*b^2*c*e*(8*B*d + 11*A*e))*Hypergeometric2F1[-1/2, 1,
 1/2, (c*(d + e*x))/(c*d - b*e)] - 3*(c*d - b*e)^3*(16*A*c^2*d^2 + 4*b*c*d*
```

```
(-2*B*d + 3*A*e) + b^2*e*(-4*B*d + 5*A*e))*Hypergeometric2F1[-1/2, 1, 1/2,
1 + (e*x)/d]))))/(4*b^5*d^3*(c*d - b*e)^3*x^2*(b + c*x)^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [B] time = 2.31, size = 1208, normalized size = 2.39

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] -1/4*(8*b^4*B*c^2*d^5*e^3 - 16*b^5*B*c*d^4*e^4 - 8*A*b^4*c^2*d^4*e^4 + 8*b^
6*B*d^3*e^5 + 16*A*b^5*c*d^3*e^5 - 8*A*b^6*d^2*e^6 + 12*b*B*c^5*d^7*(d + e*
x) - 24*A*c^6*d^7*(d + e*x) - 45*b^2*B*c^4*d^6*e*(d + e*x) + 84*A*b*c^5*d^6
*e*(d + e*x) + 57*b^3*B*c^3*d^5*e^2*(d + e*x) - 96*A*b^2*c^4*d^5*e^2*(d + e
*x) - 72*b^4*B*c^2*d^4*e^3*(d + e*x) + 30*A*b^3*c^3*d^4*e^3*(d + e*x) + 68*
b^5*B*c*d^3*e^4*(d + e*x) + 62*A*b^4*c^2*d^3*e^4*(d + e*x) - 20*b^6*B*d^2*e
^5*(d + e*x) - 81*A*b^5*c*d^2*e^5*(d + e*x) + 25*A*b^6*d*e^6*(d + e*x) - 36
*b*B*c^5*d^6*(d + e*x)^2 + 72*A*c^6*d^6*(d + e*x)^2 + 117*b^2*B*c^4*d^5*e*(
d + e*x)^2 - 216*A*b*c^5*d^5*e*(d + e*x)^2 - 122*b^3*B*c^3*d^4*e^2*(d + e*x
)^2 + 199*A*b^2*c^4*d^4*e^2*(d + e*x)^2 + 120*b^4*B*c^2*d^3*e^3*(d + e*x)^2
 - 38*A*b^3*c^3*d^3*e^3*(d + e*x)^2 - 76*b^5*B*c*d^2*e^4*(d + e*x)^2 - 106*
A*b^4*c^2*d^2*e^4*(d + e*x)^2 + 12*b^6*B*d*e^5*(d + e*x)^2 + 89*A*b^5*c*d*e
^5*(d + e*x)^2 - 15*A*b^6*e^6*(d + e*x)^2 + 36*b*B*c^5*d^5*(d + e*x)^3 - 72
*A*c^6*d^5*(d + e*x)^3 - 99*b^2*B*c^4*d^4*e*(d + e*x)^3 + 180*A*b*c^5*d^4*e
*(d + e*x)^3 + 77*b^3*B*c^3*d^3*e^2*(d + e*x)^3 - 118*A*b^2*c^4*d^3*e^2*(d
+ e*x)^3 - 68*b^4*B*c^2*d^2*e^3*(d + e*x)^3 - 3*A*b^3*c^3*d^2*e^3*(d + e*x)
^3 + 24*b^5*B*c*d*e^4*(d + e*x)^3 + 73*A*b^4*c^2*d*e^4*(d + e*x)^3 - 30*A*b
^5*c*e^5*(d + e*x)^3 - 12*b*B*c^5*d^4*(d + e*x)^4 + 24*A*c^6*d^4*(d + e*x)^
4 + 27*b^2*B*c^4*d^3*e*(d + e*x)^4 - 48*A*b*c^5*d^3*e*(d + e*x)^4 - 12*b^3*
B*c^3*d^2*e^2*(d + e*x)^4 + 15*A*b^2*c^4*d^2*e^2*(d + e*x)^4 + 12*b^4*B*c^2
*d*e^3*(d + e*x)^4 + 9*A*b^3*c^3*d*e^3*(d + e*x)^4 - 15*A*b^4*c^2*e^4*(d +
e*x)^4)/(b^4*d^3*e*(-(c*d) + b*e)^3*x^2*Sqrt[d + e*x]*(-(c*d) + b*e + c*(d
+ e*x))^2) - (3*(-8*b*B*c^(9/2)*d^2 + 16*A*c^(11/2)*d^2 + 24*b^2*B*c^(7/2)*
d*e - 44*A*b*c^(9/2)*d*e - 21*b^3*B*c^(5/2)*e^2 + 33*A*b^2*c^(7/2)*e^2)*Arc
Tan[(Sqrt[c]*Sqrt[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(4*b^5*(-(c*d)
 + b*e)^(7/2)) + (3*(8*b*B*c*d^2 - 16*A*c^2*d^2 + 4*b^2*B*d*e - 12*A*b*c*d*
e - 5*A*b^2*e^2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(7/2))
```

fricas [B] time = 116.35, size = 7400, normalized size = 14.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(3*((8*(B*b*c^6 - 2*A*c^7)*d^6*e - 4*(6*B*b^2*c^5 - 11*A*b*c^6)*d^5*e
^2 + 3*(7*B*b^3*c^4 - 11*A*b^2*c^5)*d^4*e^3)*x^5 + (8*(B*b*c^6 - 2*A*c^7)*d
^7 - 4*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e - (27*B*b^3*c^4 - 55*A*b^2*c^5)*d^5*
e^2 + 6*(7*B*b^4*c^3 - 11*A*b^3*c^4)*d^4*e^3)*x^4 + (16*(B*b^2*c^5 - 2*A*b*
c^6)*d^7 - 8*(5*B*b^3*c^4 - 9*A*b^2*c^5)*d^6*e + 2*(9*B*b^4*c^3 - 11*A*b^3*
c^4)*d^5*e^2 + 3*(7*B*b^5*c^2 - 11*A*b^4*c^3)*d^4*e^3)*x^3 + (8*(B*b^3*c^4
- 2*A*b^2*c^5)*d^7 - 4*(6*B*b^4*c^3 - 11*A*b^3*c^4)*d^6*e + 3*(7*B*b^5*c^2
- 11*A*b^4*c^3)*d^5*e^2)*x^2)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e
+ 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 3*((5*A*b^5
*c^2*e^6 + 8*(B*b*c^6 - 2*A*c^7)*d^5*e - 4*(5*B*b^2*c^5 - 9*A*b*c^6)*d^4*e^
2 + (12*B*b^3*c^4 - 17*A*b^2*c^5)*d^3*e^3 + (4*B*b^4*c^3 - 5*A*b^3*c^4)*d^2
*e^4 - (4*B*b^5*c^2 + 3*A*b^4*c^3)*d*e^5)*x^5 + (10*A*b^6*c*e^6 + 8*(B*b*c^
6 - 2*A*c^7)*d^6 - 4*(B*b^2*c^5 - A*b*c^6)*d^5*e - (28*B*b^3*c^4 - 55*A*b^2
*c^5)*d^4*e^2 + (28*B*b^4*c^3 - 39*A*b^3*c^4)*d^3*e^3 + (4*B*b^5*c^2 - 13*A
*b^4*c^3)*d^2*e^4 - (8*B*b^6*c + A*b^5*c^2)*d*e^5)*x^4 + (5*A*b^7*e^6 + 16*
```

```
(B*b^2*c^5 - 2*A*b*c^6)*d^6 - 8*(4*B*b^3*c^4 - 7*A*b^2*c^5)*d^5*e + 2*(2*B*
b^4*c^3 + A*b^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 27*A*b^4*c^3)*d^3*e^3 - (4*B
*b^6*c + 11*A*b^5*c^2)*d^2*e^4 - (4*B*b^7 - 7*A*b^6*c)*d*e^5)*x^3 + (5*A*b^
7*d*e^5 + 8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^6 - 4*(5*B*b^4*c^3 - 9*A*b^3*c^4)*d
^5*e + (12*B*b^5*c^2 - 17*A*b^4*c^3)*d^4*e^2 + (4*B*b^6*c - 5*A*b^5*c^2)*d^
3*e^3 - (4*B*b^7 + 3*A*b^6*c)*d^2*e^4)*x^2)*sqrt(d)*log((e*x + 2*sqrt(e*x +
 d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^3*d^6 - 6*A*b^5*c^2*d^5*e + 6*A*b^6*c*
d^4*e^2 - 2*A*b^7*d^3*e^3 + 3*(5*A*b^5*c^2*d*e^5 + 4*(B*b^2*c^5 - 2*A*b*c^6
)*d^5*e - (9*B*b^3*c^4 - 16*A*b^2*c^5)*d^4*e^2 + (4*B*b^4*c^3 - 5*A*b^3*c^4
)*d^3*e^3 - (4*B*b^5*c^2 + 3*A*b^4*c^3)*d^2*e^4)*x^4 + (30*A*b^6*c*d*e^5 +
12*(B*b^2*c^5 - 2*A*b*c^6)*d^6 - 3*(3*B*b^3*c^4 - 4*A*b^2*c^5)*d^5*e - 29*(
B*b^4*c^3 - 2*A*b^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 33*A*b^4*c^3)*d^3*e^3 -
(24*B*b^6*c + 13*A*b^5*c^2)*d^2*e^4)*x^3 + (15*A*b^7*d*e^5 + 18*(B*b^3*c^4
- 2*A*b^2*c^5)*d^6 - (37*B*b^4*c^3 - 65*A*b^3*c^4)*d^5*e + (12*B*b^5*c^2 -
7*A*b^4*c^3)*d^4*e^2 + (4*B*b^6*c - 23*A*b^5*c^2)*d^3*e^3 - (12*B*b^7 - A*b
^6*c)*d^2*e^4)*x^2 + (5*A*b^7*d^2*e^4 + 4*(B*b^4*c^3 - 2*A*b^3*c^4)*d^6 - (
12*B*b^5*c^2 - 19*A*b^4*c^3)*d^5*e + 3*(4*B*b^6*c - 3*A*b^5*c^2)*d^4*e^2 -
(4*B*b^7 + 7*A*b^6*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^5*c^5*d^7*e - 3*b^6*c^
4*d^6*e^2 + 3*b^7*c^3*d^5*e^3 - b^8*c^2*d^4*e^4)*x^5 + (b^5*c^5*d^8 - b^6*c
^4*d^7*e - 3*b^7*c^3*d^6*e^2 + 5*b^8*c^2*d^5*e^3 - 2*b^9*c*d^4*e^4)*x^4 + (
2*b^6*c^4*d^8 - 5*b^7*c^3*d^7*e + 3*b^8*c^2*d^6*e^2 + b^9*c*d^5*e^3 - b^10*
d^4*e^4)*x^3 + (b^7*c^3*d^8 - 3*b^8*c^2*d^7*e + 3*b^9*c*d^6*e^2 - b^10*d^5*
e^3)*x^2), -1/8*(6*((8*(B*b*c^6 - 2*A*c^7)*d^6*e - 4*(6*B*b^2*c^5 - 11*A*b*
c^6)*d^5*e^2 + 3*(7*B*b^3*c^4 - 11*A*b^2*c^5)*d^4*e^3)*x^5 + (8*(B*b*c^6 -
2*A*c^7)*d^7 - 4*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e - (27*B*b^3*c^4 - 55*A*b^2
*c^5)*d^5*e^2 + 6*(7*B*b^4*c^3 - 11*A*b^3*c^4)*d^4*e^3)*x^4 + (16*(B*b^2*c^
5 - 2*A*b*c^6)*d^7 - 8*(5*B*b^3*c^4 - 9*A*b^2*c^5)*d^6*e + 2*(9*B*b^4*c^3 -
 11*A*b^3*c^4)*d^5*e^2 + 3*(7*B*b^5*c^2 - 11*A*b^4*c^3)*d^4*e^3)*x^3 + (8*(
B*b^3*c^4 - 2*A*b^2*c^5)*d^7 - 4*(6*B*b^4*c^3 - 11*A*b^3*c^4)*d^6*e + 3*(7*
B*b^5*c^2 - 11*A*b^4*c^3)*d^5*e^2)*x^2)*sqrt(-c/(c*d - b*e))*arctan(-(c*d -
 b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 3*((5*A*b^5*c^2*e
^6 + 8*(B*b*c^6 - 2*A*c^7)*d^5*e - 4*(5*B*b^2*c^5 - 9*A*b*c^6)*d^4*e^2 + (1
2*B*b^3*c^4 - 17*A*b^2*c^5)*d^3*e^3 + (4*B*b^4*c^3 - 5*A*b^3*c^4)*d^2*e^4 -
 (4*B*b^5*c^2 + 3*A*b^4*c^3)*d*e^5)*x^5 + (10*A*b^6*c*e^6 + 8*(B*b*c^6 - 2*
A*c^7)*d^6 - 4*(B*b^2*c^5 - A*b*c^6)*d^5*e - (28*B*b^3*c^4 - 55*A*b^2*c^5)*
d^4*e^2 + (28*B*b^4*c^3 - 39*A*b^3*c^4)*d^3*e^3 + (4*B*b^5*c^2 - 13*A*b^4*c
^3)*d^2*e^4 - (8*B*b^6*c + A*b^5*c^2)*d*e^5)*x^4 + (5*A*b^7*e^6 + 16*(B*b^2
*c^5 - 2*A*b*c^6)*d^6 - 8*(4*B*b^3*c^4 - 7*A*b^2*c^5)*d^5*e + 2*(2*B*b^4*c^
3 + A*b^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 27*A*b^4*c^3)*d^3*e^3 - (4*B*b^6*c
 + 11*A*b^5*c^2)*d^2*e^4 - (4*B*b^7 - 7*A*b^6*c)*d*e^5)*x^3 + (5*A*b^7*d*e^
5 + 8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^6 - 4*(5*B*b^4*c^3 - 9*A*b^3*c^4)*d^5*e +
 (12*B*b^5*c^2 - 17*A*b^4*c^3)*d^4*e^2 + (4*B*b^6*c - 5*A*b^5*c^2)*d^3*e^3
- (4*B*b^7 + 3*A*b^6*c)*d^2*e^4)*x^2)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sq
rt(d) + 2*d)/x) + 2*(2*A*b^4*c^3*d^6 - 6*A*b^5*c^2*d^5*e + 6*A*b^6*c*d^4*e^
2 - 2*A*b^7*d^3*e^3 + 3*(5*A*b^5*c^2*d*e^5 + 4*(B*b^2*c^5 - 2*A*b*c^6)*d^5*
e - (9*B*b^3*c^4 - 16*A*b^2*c^5)*d^4*e^2 + (4*B*b^4*c^3 - 5*A*b^3*c^4)*d^3*
e^3 - (4*B*b^5*c^2 + 3*A*b^4*c^3)*d^2*e^4)*x^4 + (30*A*b^6*c*d*e^5 + 12*(B*
b^2*c^5 - 2*A*b*c^6)*d^6 - 3*(3*B*b^3*c^4 - 4*A*b^2*c^5)*d^5*e - 29*(B*b^4*
c^3 - 2*A*b^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 33*A*b^4*c^3)*d^3*e^3 - (24*B*
b^6*c + 13*A*b^5*c^2)*d^2*e^4)*x^3 + (15*A*b^7*d*e^5 + 18*(B*b^3*c^4 - 2*A*
b^2*c^5)*d^6 - (37*B*b^4*c^3 - 65*A*b^3*c^4)*d^5*e + (12*B*b^5*c^2 - 7*A*b^
4*c^3)*d^4*e^2 + (4*B*b^6*c - 23*A*b^5*c^2)*d^3*e^3 - (12*B*b^7 - A*b^6*c)*
d^2*e^4)*x^2 + (5*A*b^7*d^2*e^4 + 4*(B*b^4*c^3 - 2*A*b^3*c^4)*d^6 - (12*B*b
^5*c^2 - 19*A*b^4*c^3)*d^5*e + 3*(4*B*b^6*c - 3*A*b^5*c^2)*d^4*e^2 - (4*B*b
^7 + 7*A*b^6*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^5*c^5*d^7*e - 3*b^6*c^4*d^6*
e^2 + 3*b^7*c^3*d^5*e^3 - b^8*c^2*d^4*e^4)*x^5 + (b^5*c^5*d^8 - b^6*c^4*d^7
*e - 3*b^7*c^3*d^6*e^2 + 5*b^8*c^2*d^5*e^3 - 2*b^9*c*d^4*e^4)*x^4 + (2*b^6*
c^4*d^8 - 5*b^7*c^3*d^7*e + 3*b^8*c^2*d^6*e^2 + b^9*c*d^5*e^3 - b^10*d^4*e^
4)*x^3 + (b^7*c^3*d^8 - 3*b^8*c^2*d^7*e + 3*b^9*c*d^6*e^2 - b^10*d^5*e^3)*x
```

^2), -1/8*(6*((5*A*b^5*c^2*e^6 + 8*(B*b*c^6 - 2*A*c^7)*d^5*e - 4*(5*B*b^2*c
^5 - 9*A*b*c^6)*d^4*e^2 + (12*B*b^3*c^4 - 17*A*b^2*c^5)*d^3*e^3 + (4*B*b^4*
c^3 - 5*A*b^3*c^4)*d^2*e^4 - (4*B*b^5*c^2 + 3*A*b^4*c^3)*d*e^5)*x^5 + (10*A
*b^6*c*e^6 + 8*(B*b*c^6 - 2*A*c^7)*d^6 - 4*(B*b^2*c^5 - A*b*c^6)*d^5*e - (2
8*B*b^3*c^4 - 55*A*b^2*c^5)*d^4*e^2 + (28*B*b^4*c^3 - 39*A*b^3*c^4)*d^3*e^3
 + (4*B*b^5*c^2 - 13*A*b^4*c^3)*d^2*e^4 - (8*B*b^6*c + A*b^5*c^2)*d*e^5)*x^
4 + (5*A*b^7*e^6 + 16*(B*b^2*c^5 - 2*A*b*c^6)*d^6 - 8*(4*B*b^3*c^4 - 7*A*b^
2*c^5)*d^5*e + 2*(2*B*b^4*c^3 + A*b^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 27*A*b
^4*c^3)*d^3*e^3 - (4*B*b^6*c + 11*A*b^5*c^2)*d^2*e^4 - (4*B*b^7 - 7*A*b^6*c
)*d*e^5)*x^3 + (5*A*b^7*d*e^5 + 8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^6 - 4*(5*B*b^
4*c^3 - 9*A*b^3*c^4)*d^5*e + (12*B*b^5*c^2 - 17*A*b^4*c^3)*d^4*e^2 + (4*B*b
^6*c - 5*A*b^5*c^2)*d^3*e^3 - (4*B*b^7 + 3*A*b^6*c)*d^2*e^4)*x^2)*sqrt(-d)*
arctan(sqrt(e*x + d)*sqrt(-d)/d) + 3*((8*(B*b*c^6 - 2*A*c^7)*d^6*e - 4*(6*B
*b^2*c^5 - 11*A*b*c^6)*d^5*e^2 + 3*(7*B*b^3*c^4 - 11*A*b^2*c^5)*d^4*e^3)*x^
5 + (8*(B*b*c^6 - 2*A*c^7)*d^7 - 4*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e - (27*B*
b^3*c^4 - 55*A*b^2*c^5)*d^5*e^2 + 6*(7*B*b^4*c^3 - 11*A*b^3*c^4)*d^4*e^3)*x
^4 + (16*(B*b^2*c^5 - 2*A*b*c^6)*d^7 - 8*(5*B*b^3*c^4 - 9*A*b^2*c^5)*d^6*e
+ 2*(9*B*b^4*c^3 - 11*A*b^3*c^4)*d^5*e^2 + 3*(7*B*b^5*c^2 - 11*A*b^4*c^3)*d
^4*e^3)*x^3 + (8*(B*b^3*c^4 - 2*A*b^2*c^5)*d^7 - 4*(6*B*b^4*c^3 - 11*A*b^3*
c^4)*d^6*e + 3*(7*B*b^5*c^2 - 11*A*b^4*c^3)*d^5*e^2)*x^2)*sqrt(c/(c*d - b*e
))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e
)))/(c*x + b)) + 2*(2*A*b^4*c^3*d^6 - 6*A*b^5*c^2*d^5*e + 6*A*b^6*c*d^4*e^2
 - 2*A*b^7*d^3*e^3 + 3*(5*A*b^5*c^2*d*e^5 + 4*(B*b^2*c^5 - 2*A*b*c^6)*d^5*e
 - (9*B*b^3*c^4 - 16*A*b^2*c^5)*d^4*e^2 + (4*B*b^4*c^3 - 5*A*b^3*c^4)*d^3*e
^3 - (4*B*b^5*c^2 + 3*A*b^4*c^3)*d^2*e^4)*x^4 + (30*A*b^6*c*d*e^5 + 12*(B*b
^2*c^5 - 2*A*b*c^6)*d^6 - 3*(3*B*b^3*c^4 - 4*A*b^2*c^5)*d^5*e - 29*(B*b^4*c
^3 - 2*A*b^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 33*A*b^4*c^3)*d^3*e^3 - (24*B*b
^6*c + 13*A*b^5*c^2)*d^2*e^4)*x^3 + (15*A*b^7*d*e^5 + 18*(B*b^3*c^4 - 2*A*b
^2*c^5)*d^6 - (37*B*b^4*c^3 - 65*A*b^3*c^4)*d^5*e + (12*B*b^5*c^2 - 7*A*b^4
*c^3)*d^4*e^2 + (4*B*b^6*c - 23*A*b^5*c^2)*d^3*e^3 - (12*B*b^7 - A*b^6*c)*d
^2*e^4)*x^2 + (5*A*b^7*d^2*e^4 + 4*(B*b^4*c^3 - 2*A*b^3*c^4)*d^6 - (12*B*b^
5*c^2 - 19*A*b^4*c^3)*d^5*e + 3*(4*B*b^6*c - 3*A*b^5*c^2)*d^4*e^2 - (4*B*b^
7 + 7*A*b^6*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^5*c^5*d^7*e - 3*b^6*c^4*d^6*e
^2 + 3*b^7*c^3*d^5*e^3 - b^8*c^2*d^4*e^4)*x^5 + (b^5*c^5*d^8 - b^6*c^4*d^7*
e - 3*b^7*c^3*d^6*e^2 + 5*b^8*c^2*d^5*e^3 - 2*b^9*c*d^4*e^4)*x^4 + (2*b^6*c
^4*d^8 - 5*b^7*c^3*d^7*e + 3*b^8*c^2*d^6*e^2 + b^9*c*d^5*e^3 - b^10*d^4*e^4
)*x^3 + (b^7*c^3*d^8 - 3*b^8*c^2*d^7*e + 3*b^9*c*d^6*e^2 - b^10*d^5*e^3)*x^
2), -1/4*(3*((8*(B*b*c^6 - 2*A*c^7)*d^6*e - 4*(6*B*b^2*c^5 - 11*A*b*c^6)*d^
5*e^2 + 3*(7*B*b^3*c^4 - 11*A*b^2*c^5)*d^4*e^3)*x^5 + (8*(B*b*c^6 - 2*A*c^7
)*d^7 - 4*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e - (27*B*b^3*c^4 - 55*A*b^2*c^5)*d
^5*e^2 + 6*(7*B*b^4*c^3 - 11*A*b^3*c^4)*d^4*e^3)*x^4 + (16*(B*b^2*c^5 - 2*A
*b*c^6)*d^7 - 8*(5*B*b^3*c^4 - 9*A*b^2*c^5)*d^6*e + 2*(9*B*b^4*c^3 - 11*A*b
^3*c^4)*d^5*e^2 + 3*(7*B*b^5*c^2 - 11*A*b^4*c^3)*d^4*e^3)*x^3 + (8*(B*b^3*c
^4 - 2*A*b^2*c^5)*d^7 - 4*(6*B*b^4*c^3 - 11*A*b^3*c^4)*d^6*e + 3*(7*B*b^5*c
^2 - 11*A*b^4*c^3)*d^5*e^2)*x^2)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*s
qrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) + 3*((5*A*b^5*c^2*e^6 + 8*
(B*b*c^6 - 2*A*c^7)*d^5*e - 4*(5*B*b^2*c^5 - 9*A*b*c^6)*d^4*e^2 + (12*B*b^3
*c^4 - 17*A*b^2*c^5)*d^3*e^3 + (4*B*b^4*c^3 - 5*A*b^3*c^4)*d^2*e^4 - (4*B*b
^5*c^2 + 3*A*b^4*c^3)*d*e^5)*x^5 + (10*A*b^6*c*e^6 + 8*(B*b*c^6 - 2*A*c^7)*
d^6 - 4*(B*b^2*c^5 - A*b*c^6)*d^5*e - (28*B*b^3*c^4 - 55*A*b^2*c^5)*d^4*e^2
 + (28*B*b^4*c^3 - 39*A*b^3*c^4)*d^3*e^3 + (4*B*b^5*c^2 - 13*A*b^4*c^3)*d^2
*e^4 - (8*B*b^6*c + A*b^5*c^2)*d*e^5)*x^4 + (5*A*b^7*e^6 + 16*(B*b^2*c^5 -
2*A*b*c^6)*d^6 - 8*(4*B*b^3*c^4 - 7*A*b^2*c^5)*d^5*e + 2*(2*B*b^4*c^3 + A*b
^3*c^4)*d^4*e^2 + (20*B*b^5*c^2 - 27*A*b^4*c^3)*d^3*e^3 - (4*B*b^6*c + 11*A
*b^5*c^2)*d^2*e^4 - (4*B*b^7 - 7*A*b^6*c)*d*e^5)*x^3 + (5*A*b^7*d*e^5 + 8*(
B*b^3*c^4 - 2*A*b^2*c^5)*d^6 - 4*(5*B*b^4*c^3 - 9*A*b^3*c^4)*d^5*e + (12*B*
b^5*c^2 - 17*A*b^4*c^3)*d^4*e^2 + (4*B*b^6*c - 5*A*b^5*c^2)*d^3*e^3 - (4*B*
b^7 + 3*A*b^6*c)*d^2*e^4)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) +
(2*A*b^4*c^3*d^6 - 6*A*b^5*c^2*d^5*e + 6*A*b^6*c*d^4*e^2 - 2*A*b^7*d^3*e^3

```
+ 3*(5*A*b^5*c^2*d*e^5 + 4*(B*b^2*c^5 - 2*A*b*c^6)*d^5*e - (9*B*b^3*c^4 - 1
6*A*b^2*c^5)*d^4*e^2 + (4*B*b^4*c^3 - 5*A*b^3*c^4)*d^3*e^3 - (4*B*b^5*c^2 +
 3*A*b^4*c^3)*d^2*e^4)*x^4 + (30*A*b^6*c*d*e^5 + 12*(B*b^2*c^5 - 2*A*b*c^6)
*d^6 - 3*(3*B*b^3*c^4 - 4*A*b^2*c^5)*d^5*e - 29*(B*b^4*c^3 - 2*A*b^3*c^4)*d
^4*e^2 + (20*B*b^5*c^2 - 33*A*b^4*c^3)*d^3*e^3 - (24*B*b^6*c + 13*A*b^5*c^2
)*d^2*e^4)*x^3 + (15*A*b^7*d*e^5 + 18*(B*b^3*c^4 - 2*A*b^2*c^5)*d^6 - (37*B
*b^4*c^3 - 65*A*b^3*c^4)*d^5*e + (12*B*b^5*c^2 - 7*A*b^4*c^3)*d^4*e^2 + (4*
B*b^6*c - 23*A*b^5*c^2)*d^3*e^3 - (12*B*b^7 - A*b^6*c)*d^2*e^4)*x^2 + (5*A*
b^7*d^2*e^4 + 4*(B*b^4*c^3 - 2*A*b^3*c^4)*d^6 - (12*B*b^5*c^2 - 19*A*b^4*c^
3)*d^5*e + 3*(4*B*b^6*c - 3*A*b^5*c^2)*d^4*e^2 - (4*B*b^7 + 7*A*b^6*c)*d^3*
e^3)*x)*sqrt(e*x + d))/((b^5*c^5*d^7*e - 3*b^6*c^4*d^6*e^2 + 3*b^7*c^3*d^5*
e^3 - b^8*c^2*d^4*e^4)*x^5 + (b^5*c^5*d^8 - b^6*c^4*d^7*e - 3*b^7*c^3*d^6*e
^2 + 5*b^8*c^2*d^5*e^3 - 2*b^9*c*d^4*e^4)*x^4 + (2*b^6*c^4*d^8 - 5*b^7*c^3*
d^7*e + 3*b^8*c^2*d^6*e^2 + b^9*c*d^5*e^3 - b^10*d^4*e^4)*x^3 + (b^7*c^3*d^
8 - 3*b^8*c^2*d^7*e + 3*b^9*c*d^6*e^2 - b^10*d^5*e^3)*x^2)]
```

giac [B] time = 0.41, size = 1313, normalized size = 2.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3/4*(8*B*b*c^5*d^2 - 16*A*c^6*d^2 - 24*B*b^2*c^4*d*e + 44*A*b*c^5*d*e + 21*
B*b^3*c^3*e^2 - 33*A*b^2*c^4*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*
e))/((b^5*c^3*d^3 - 3*b^6*c^2*d^2*e + 3*b^7*c*d*e^2 - b^8*e^3)*sqrt(-c^2*d
+ b*c*e)) + 2*(B*d*e^4 - A*e^5)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2
 - b^3*d^3*e^3)*sqrt(x*e + d)) - 1/4*(12*(x*e + d)^(7/2)*B*b*c^5*d^4*e - 24
*(x*e + d)^(7/2)*A*c^6*d^4*e - 36*(x*e + d)^(5/2)*B*b*c^5*d^5*e + 72*(x*e +
 d)^(5/2)*A*c^6*d^5*e + 36*(x*e + d)^(3/2)*B*b*c^5*d^6*e - 72*(x*e + d)^(3/
2)*A*c^6*d^6*e - 12*sqrt(x*e + d)*B*b*c^5*d^7*e + 24*sqrt(x*e + d)*A*c^6*d^
7*e - 27*(x*e + d)^(7/2)*B*b^2*c^4*d^3*e^2 + 48*(x*e + d)^(7/2)*A*b*c^5*d^3
*e^2 + 99*(x*e + d)^(5/2)*B*b^2*c^4*d^4*e^2 - 180*(x*e + d)^(5/2)*A*b*c^5*d
^4*e^2 - 117*(x*e + d)^(3/2)*B*b^2*c^4*d^5*e^2 + 216*(x*e + d)^(3/2)*A*b*c^
5*d^5*e^2 + 45*sqrt(x*e + d)*B*b^2*c^4*d^6*e^2 - 84*sqrt(x*e + d)*A*b*c^5*d
^6*e^2 + 12*(x*e + d)^(7/2)*B*b^3*c^3*d^2*e^3 - 15*(x*e + d)^(7/2)*A*b^2*c^
4*d^2*e^3 - 77*(x*e + d)^(5/2)*B*b^3*c^3*d^3*e^3 + 118*(x*e + d)^(5/2)*A*b^
2*c^4*d^3*e^3 + 122*(x*e + d)^(3/2)*B*b^3*c^3*d^4*e^3 - 199*(x*e + d)^(3/2)
*A*b^2*c^4*d^4*e^3 - 57*sqrt(x*e + d)*B*b^3*c^3*d^5*e^3 + 96*sqrt(x*e + d)*
A*b^2*c^4*d^5*e^3 - 4*(x*e + d)^(7/2)*B*b^4*c^2*d*e^4 - 9*(x*e + d)^(7/2)*A
*b^3*c^3*d*e^4 + 36*(x*e + d)^(5/2)*B*b^4*c^2*d^2*e^4 + 3*(x*e + d)^(5/2)*A
*b^3*c^3*d^2*e^4 - 72*(x*e + d)^(3/2)*B*b^4*c^2*d^3*e^4 + 38*(x*e + d)^(3/2
)*A*b^3*c^3*d^3*e^4 + 40*sqrt(x*e + d)*B*b^4*c^2*d^4*e^4 - 30*sqrt(x*e + d)
*A*b^3*c^3*d^4*e^4 + 7*(x*e + d)^(7/2)*A*b^4*c^2*e^5 - 8*(x*e + d)^(5/2)*B*
b^5*c*d*e^5 - 41*(x*e + d)^(5/2)*A*b^4*c^2*d*e^5 + 28*(x*e + d)^(3/2)*B*b^5
*c*d^2*e^5 + 58*(x*e + d)^(3/2)*A*b^4*c^2*d^2*e^5 - 20*sqrt(x*e + d)*B*b^5*
c*d^3*e^5 - 30*sqrt(x*e + d)*A*b^4*c^2*d^3*e^5 + 14*(x*e + d)^(5/2)*A*b^5*c
*e^6 - 4*(x*e + d)^(3/2)*B*b^6*d*e^6 - 41*(x*e + d)^(3/2)*A*b^5*c*d*e^6 + 4
*sqrt(x*e + d)*B*b^6*d^2*e^6 + 33*sqrt(x*e + d)*A*b^5*c*d^2*e^6 + 7*(x*e +
d)^(3/2)*A*b^6*e^7 - 9*sqrt(x*e + d)*A*b^6*d*e^7)/((b^4*c^3*d^6 - 3*b^5*c^2
*d^5*e + 3*b^6*c*d^4*e^2 - b^7*d^3*e^3)*((x*e + d)^2*c - 2*(x*e + d)*c*d +
c*d^2 + (x*e + d)*b*e - b*d*e)^2) - 3/4*(8*B*b*c*d^2 - 16*A*c^2*d^2 + 4*B*b
^2*d*e - 12*A*b*c*d*e - 5*A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sq
rt(-d)*d^3)
```

maple [B] time = 0.10, size = 1022, normalized size = 2.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 18*e*c^4/(b*e-c*d)^3/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*B*d+2*e*c^5/(b*e-c*d)^3/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d-3
*e*c^6/(b*e-c*d)^3/b^4/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*d+3*e*c^6/(b*e-c*d)^3/
b^4/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^2-33/4*e^2*c^5/(b*e-c*d)^3/b^3/(c*e*x+b
*e)^2*A*(e*x+d)^(1/2)*d+25/4*e^2*c^4/(b*e-c*d)^3/b^2/(c*e*x+b*e)^2*B*(e*x+d
)^(1/2)*d-33*e*c^5/(b*e-c*d)^3/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)
/((b*e-c*d)*c)^(1/2)*c)*A*d-2*e*c^5/(b*e-c*d)^3/b^3/(c*e*x+b*e)^2*B*(e*x+d)
^(1/2)*d^2+2*e^5/(b*e-c*d)^3/d^3/(e*x+d)^(1/2)*A+3*e/b^3/d^(5/2)*arctanh((e
*x+d)^(1/2)/d^(1/2))*B-2*e^4/(b*e-c*d)^3/d^2/(e*x+d)^(1/2)*B-15/4*e^2/b^3/d
^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A-9/4/b^3/d^2/x^2*(e*x+d)^(1/2)*A-12/
b^5/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+6/b^4/d^(3/2)*arctanh((e*x
+d)^(1/2)/d^(1/2))*B*c+7/4/b^3/d^3/x^2*A*(e*x+d)^(3/2)+3/e/b^4/d^2/x^2*A*(e
*x+d)^(3/2)*c-3/e/b^4/d/x^2*(e*x+d)^(1/2)*A*c+19/4*e^2*c^5/(b*e-c*d)^3/b^3/
(c*e*x+b*e)^2*(e*x+d)^(3/2)*A-15/4*e^2*c^4/(b*e-c*d)^3/b^2/(c*e*x+b*e)^2*(e
*x+d)^(3/2)*B+21/4*e^3*c^4/(b*e-c*d)^3/b^2/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)-17
/4*e^3*c^3/(b*e-c*d)^3/b/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)+99/4*e^2*c^4/(b*e-c*
d)^3/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+
12*c^6/(b*e-c*d)^3/b^5/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*d^2-6*c^5/(b*e-c*d)^3/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^
(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2-63/4*e^2*c^3/(b*e-c*d)^3/b^2/((b*e-c*d)*
c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+1/e/b^3/d/x^2*(e*x+d
)^(1/2)*B-9*e/b^4/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-1/e/b^3/d^2/x^
2*B*(e*x+d)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 9.53, size = 23541, normalized size = 46.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^(3/2)),x)
```

```
[Out] - ((2*(A*e^5 - B*d*e^4))/(c*d^2 - b*d*e) + ((d + e*x)^2*(15*A*b^6*e^7 - 72*
A*c^6*d^6*e - 12*B*b^6*d*e^6 + 216*A*b*c^5*d^5*e^2 + 76*B*b^5*c*d^2*e^5 - 1
99*A*b^2*c^4*d^4*e^3 + 38*A*b^3*c^3*d^3*e^4 + 106*A*b^4*c^2*d^2*e^5 - 117*B
*b^2*c^4*d^5*e^2 + 122*B*b^3*c^3*d^4*e^3 - 120*B*b^4*c^2*d^3*e^4 - 89*A*b^5
*c*d*e^6 + 36*B*b*c^5*d^6*e))/(4*b^4*(c*d^2 - b*d*e)^3) + ((d + e*x)^3*(30*
A*b^5*c*e^6 + 72*A*c^6*d^5*e - 180*A*b*c^5*d^4*e^2 - 73*A*b^4*c^2*d*e^5 + 1
18*A*b^2*c^4*d^3*e^3 + 3*A*b^3*c^3*d^2*e^4 + 99*B*b^2*c^4*d^4*e^2 - 77*B*b^
3*c^3*d^3*e^3 + 68*B*b^4*c^2*d^2*e^4 - 36*B*b*c^5*d^5*e - 24*B*b^5*c*d*e^5)
)/(4*b^4*(c*d^2 - b*d*e)^3) + ((d + e*x)*(25*A*b^5*e^6 + 24*A*c^5*d^5*e - 2
0*B*b^5*d*e^5 - 60*A*b*c^4*d^4*e^2 + 48*B*b^4*c*d^2*e^4 + 36*A*b^2*c^3*d^3*
e^3 + 6*A*b^3*c^2*d^2*e^4 + 33*B*b^2*c^3*d^4*e^2 - 24*B*b^3*c^2*d^3*e^3 - 5
6*A*b^4*c*d*e^5 - 12*B*b*c^4*d^5*e))/(4*b^4*(c*d^2 - b*d*e)^2) - (3*(d + e*
x)^4*(8*A*c^6*d^4*e - 5*A*b^4*c^2*e^5 - 16*A*b*c^5*d^3*e^2 + 3*A*b^3*c^3*d*
e^4 + 4*B*b^4*c^2*d*e^4 + 5*A*b^2*c^4*d^2*e^3 + 9*B*b^2*c^4*d^3*e^2 - 4*B*b
^3*c^3*d^2*e^3 - 4*B*b*c^5*d^4*e))/(4*b^4*(c*d^2 - b*d*e)^3))/(c^2*(d + e*x
)^(9/2) - (4*c^2*d - 2*b*c*e)*(d + e*x)^(7/2) - (d + e*x)^(3/2)*(4*c^2*d^3
+ 2*b^2*d*e^2 - 6*b*c*d^2*e) + (d + e*x)^(5/2)*(b^2*e^2 + 6*c^2*d^2 - 6*b*c
*d*e) + (d + e*x)^(1/2)*(c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)) - atan(-(((d
```

+ e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x)^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 356352*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^16*d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8 - 90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 105566208*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28*c^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e^15 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 1302528*A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^12*e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088*B*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14*d^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 - 45551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*B*b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*d^18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 1081344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^2*d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*1i + ((

d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x)^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) + 24576*A*b^18*c^19*d^29*e^3 - 356352*A*b^19*c^18*d^28*e^4 + 2396160*A*b^20*c^17*d^27*e^5 - 9897984*A*b^21*c^16*d^26*e^6 + 28065792*A*b^22*c^15*d^25*e^7 - 57891840*A*b^23*c^14*d^24*e^8 + 90071040*A*b^24*c^13*d^23*e^9 - 108810240*A*b^25*c^12*d^22*e^10 + 105566208*A*b^26*c^11*d^21*e^11 - 86406144*A*b^27*c^10*d^20*e^12 + 63393792*A*b^28*c^9*d^19*e^13 - 43075584*A*b^29*c^8*d^18*e^14 + 26173440*A*b^30*c^7*d^17*e^15 - 13108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528*A*b^33*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12*e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*B*b^21*c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*d^25*e^7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 + 45551616*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B*b^28*c^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d^18*e^14 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 1081344*B*b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2*d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*1i)/((

(d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x)^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 356352*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^16*d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8 - 90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 105566208*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28*c^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e^15 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 1302528*A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^12*e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088*B*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14*d^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 - 45551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*B*b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*d^18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 1081344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^2*d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2) - ((d

+ e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x)^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) + 24576*A*b^18*c^19*d^29*e^3 - 356352*A*b^19*c^18*d^28*e^4 + 2396160*A*b^20*c^17*d^27*e^5 - 9897984*A*b^21*c^16*d^26*e^6 + 28065792*A*b^22*c^15*d^25*e^7 - 57891840*A*b^23*c^14*d^24*e^8 + 90071040*A*b^24*c^13*d^23*e^9 - 108810240*A*b^25*c^12*d^22*e^10 + 105566208*A*b^26*c^11*d^21*e^11 - 86406144*A*b^27*c^10*d^20*e^12 + 63393792*A*b^28*c^9*d^19*e^13 - 43075584*A*b^29*c^8*d^18*e^14 + 26173440*A*b^30*c^7*d^17*e^15 - 13108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528*A*b^33*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12*e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*B*b^21*c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*d^25*e^7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 + 45551616*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B*b^28*c^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d^18*e^14 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 1081344*B*b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2*d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2) - 17694

72*A^3*b^8*c^23*d^26*e^3 + 23003136*A^3*b^9*c^22*d^25*e^4 - 136138752*A^3*b^10*c^21*d^24*e^5 + 483508224*A^3*b^11*c^20*d^23*e^6 - 1141579008*A^3*b^12*c^19*d^22*e^7 + 1869094656*A^3*b^13*c^18*d^21*e^8 - 2133106272*A^3*b^14*c^17*d^20*e^9 + 1631703744*A^3*b^15*c^16*d^19*e^10 - 716335488*A^3*b^16*c^15*d^18*e^11 + 36390816*A^3*b^17*c^14*d^17*e^12 + 153641664*A^3*b^18*c^13*d^16*e^13 - 89697024*A^3*b^19*c^12*d^15*e^14 + 40065408*A^3*b^20*c^11*d^14*e^15 - 43695936*A^3*b^21*c^10*d^13*e^16 + 41388192*A^3*b^22*c^9*d^12*e^17 - 21843648*A^3*b^23*c^8*d^11*e^18 + 6082560*A^3*b^24*c^7*d^10*e^19 - 712800*A^3*b^25*c^6*d^9*e^20 + 221184*B^3*b^11*c^20*d^26*e^3 - 3041280*B^3*b^12*c^19*d^25*e^4 + 19132416*B^3*b^13*c^18*d^24*e^5 - 72873216*B^3*b^14*c^17*d^23*e^6 + 187373952*B^3*b^15*c^16*d^22*e^7 - 343108224*B^3*b^16*c^15*d^21*e^8 + 459302400*B^3*b^17*c^14*d^20*e^9 - 452086272*B^3*b^18*c^13*d^19*e^10 + 320101632*B^3*b^19*c^12*d^18*e^11 - 148172544*B^3*b^20*c^11*d^17*e^12 + 24731136*B^3*b^21*c^10*d^16*e^13 + 23604480*B^3*b^22*c^9*d^15*e^14 - 23497344*B^3*b^23*c^8*d^14*e^15 + 10675584*B^3*b^24*c^7*d^13*e^16 - 2654208*B^3*b^25*c^6*d^12*e^17 + 290304*B^3*b^26*c^5*d^11*e^18 - 1327104*A*B^2*b^10*c^21*d^26*e^3 + 17915904*A*B^2*b^11*c^20*d^25*e^4 - 110481408*A*B^2*b^12*c^19*d^24*e^5 + 411360768*A*B^2*b^13*c^18*d^23*e^6 - 1029158784*A*B^2*b^14*c^17*d^22*e^7 + 1819508832*A*B^2*b^15*c^16*d^21*e^8 - 2321496288*A*B^2*b^16*c^15*d^20*e^9 + 2131940736*A*B^2*b^17*c^14*d^19*e^10 - 1360146816*A*B^2*b^18*c^13*d^18*e^11 + 537046848*A*B^2*b^19*c^12*d^17*e^12 - 75442752*A*B^2*b^20*c^11*d^16*e^13 - 26096256*A*B^2*b^21*c^10*d^15*e^14 - 9808128*A*B^2*b^22*c^9*d^14*e^15 + 30634848*A*B^2*b^23*c^8*d^13*e^16 - 19613664*A*B^2*b^24*c^7*d^12*e^17 + 5889024*A*B^2*b^25*c^6*d^11*e^18 - 725760*A*B^2*b^26*c^5*d^10*e^19 + 2654208*A^2*B*b^9*c^22*d^26*e^3 - 35168256*A^2*B*b^10*c^21*d^25*e^4 + 212502528*A^2*B*b^11*c^20*d^24*e^5 - 772996608*A^2*B*b^12*c^19*d^23*e^6 + 1879770240*A^2*B*b^13*c^18*d^22*e^7 - 3201998688*A^2*B*b^14*c^17*d^21*e^8 + 3875314752*A^2*B*b^15*c^16*d^20*e^9 - 3278408256*A^2*B*b^16*c^15*d^19*e^10 + 1809184896*A^2*B*b^17*c^14*d^18*e^11 - 509470560*A^2*B*b^18*c^13*d^17*e^12 - 26137728*A^2*B*b^19*c^12*d^16*e^13 + 20559744*A^2*B*b^20*c^11*d^15*e^14 + 65536128*A^2*B*b^21*c^10*d^14*e^15 - 57254688*A^2*B*b^22*c^9*d^13*e^16 + 15059520*A^2*B*b^23*c^8*d^12*e^17 + 3043008*A^2*B*b^24*c^7*d^11*e^18 - 2643840*A^2*B*b^25*c^6*d^10*e^19 + 453600*A^2*B*b^26*c^5*d^9*e^20))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*2i - atan(-(((d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c

^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 356352*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^16*d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8 - 90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 105566208*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28*c^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e^15 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 1302528*A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^12*e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088*B*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14*d^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 - 45551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*B*b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*d^18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 1081344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^2*d^13*e^19))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*1i + ((d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 52196

1984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560 *B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b ^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^ 15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b ^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19 *d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24 *e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^ 8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 1 10656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 320947 2*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^2 8*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11 *e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b ^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^ 2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^ 3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e ^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^1 5*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11 *d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 29 92*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1 408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 100 8*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A* B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3 *d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d ^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880* b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26* e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 1581465 60*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d ^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447 680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16* e^17 + 8192*b^38*c^2*d^15*e^18) + 24576*A*b^18*c^19*d^29*e^3 - 356352*A*b^1 9*c^18*d^28*e^4 + 2396160*A*b^20*c^17*d^27*e^5 - 9897984*A*b^21*c^16*d^26*e ^6 + 28065792*A*b^22*c^15*d^25*e^7 - 57891840*A*b^23*c^14*d^24*e^8 + 900710 40*A*b^24*c^13*d^23*e^9 - 108810240*A*b^25*c^12*d^22*e^10 + 105566208*A*b^2 6*c^11*d^21*e^11 - 86406144*A*b^27*c^10*d^20*e^12 + 63393792*A*b^28*c^9*d^1 9*e^13 - 43075584*A*b^29*c^8*d^18*e^14 + 26173440*A*b^30*c^7*d^17*e^15 - 13 108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528*A*b^33 *c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12*e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*B*b^21* c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*d^25*e^ 7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 + 4555161 6*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B*b^28*c ^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d^18*e^1 4 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 1081344*B *b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2*d^13*e ^19))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384 *B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B *b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b ^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c ^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^ (1/2)*1i)/(((d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^ 13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^1 9*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^

23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 356352*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^16*d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8 - 90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 105566208*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28*c^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e^15 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 1302528*A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^12*e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088*B*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14*d^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 - 45551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*B*b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*d^18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 1081344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^2*d^13*e^19))*(-(9*(256*A

^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e
^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*
e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*
e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e +
3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^
7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b
^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2) - ((d + e*x
)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 5
3342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 5648601
60*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*
A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2
*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^
22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c
^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^1
4*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 -
1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*
b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d
^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5
 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 48
2904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 4074186
24*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B
^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*
c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e
^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432
*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*
c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d
^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*
e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9
 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 -
 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27
548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*
B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^
5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20)
 - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441
*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 138
6*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^
2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^
2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17
*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*
d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/
2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*
b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*
c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c
^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*
d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^
2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e
^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^
16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 +
 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^
14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 -
146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^
31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^1
3 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36
*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) + 245
76*A*b^18*c^19*d^29*e^3 - 356352*A*b^19*c^18*d^28*e^4 + 2396160*A*b^20*c^17
*d^27*e^5 - 9897984*A*b^21*c^16*d^26*e^6 + 28065792*A*b^22*c^15*d^25*e^7 -
57891840*A*b^23*c^14*d^24*e^8 + 90071040*A*b^24*c^13*d^23*e^9 - 108810240*A
*b^25*c^12*d^22*e^10 + 105566208*A*b^26*c^11*d^21*e^11 - 86406144*A*b^27*c^
10*d^20*e^12 + 63393792*A*b^28*c^9*d^19*e^13 - 43075584*A*b^29*c^8*d^18*e^1

4 + 26173440*A*b^30*c^7*d^17*e^15 - 13108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528*A*b^33*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12*e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*B*b^21*c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*d^25*e^7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 + 45551616*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B*b^28*c^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d^18*e^14 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 1081344*B*b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2*d^13*e^19))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2) - 1769472*A^3*b^8*c^23*d^26*e^3 + 23003136*A^3*b^9*c^22*d^25*e^4 - 136138752*A^3*b^10*c^21*d^24*e^5 + 483508224*A^3*b^11*c^20*d^23*e^6 - 1141579008*A^3*b^12*c^19*d^22*e^7 + 1869094656*A^3*b^13*c^18*d^21*e^8 - 2133106272*A^3*b^14*c^17*d^20*e^9 + 1631703744*A^3*b^15*c^16*d^19*e^10 - 716335488*A^3*b^16*c^15*d^18*e^11 + 36390816*A^3*b^17*c^14*d^17*e^12 + 153641664*A^3*b^18*c^13*d^16*e^13 - 89697024*A^3*b^19*c^12*d^15*e^14 + 40065408*A^3*b^20*c^11*d^14*e^15 - 43695936*A^3*b^21*c^10*d^13*e^16 + 41388192*A^3*b^22*c^9*d^12*e^17 - 21843648*A^3*b^23*c^8*d^11*e^18 + 6082560*A^3*b^24*c^7*d^10*e^19 - 712800*A^3*b^25*c^6*d^9*e^20 + 221184*B^3*b^11*c^20*d^26*e^3 - 3041280*B^3*b^12*c^19*d^25*e^4 + 19132416*B^3*b^13*c^18*d^24*e^5 - 72873216*B^3*b^14*c^17*d^23*e^6 + 187373952*B^3*b^15*c^16*d^22*e^7 - 343108224*B^3*b^16*c^15*d^21*e^8 + 459302400*B^3*b^17*c^14*d^20*e^9 - 452086272*B^3*b^18*c^13*d^19*e^10 + 320101632*B^3*b^19*c^12*d^18*e^11 - 148172544*B^3*b^20*c^11*d^17*e^12 + 24731136*B^3*b^21*c^10*d^16*e^13 + 23604480*B^3*b^22*c^9*d^15*e^14 - 23497344*B^3*b^23*c^8*d^14*e^15 + 10675584*B^3*b^24*c^7*d^13*e^16 - 2654208*B^3*b^25*c^6*d^12*e^17 + 290304*B^3*b^26*c^5*d^11*e^18 - 1327104*A*B^2*b^10*c^21*d^26*e^3 + 17915904*A*B^2*b^11*c^20*d^25*e^4 - 110481408*A*B^2*b^12*c^19*d^24*e^5 + 411360768*A*B^2*b^13*c^18*d^23*e^6 - 1029158784*A*B^2*b^14*c^17*d^22*e^7 + 1819508832*A*B^2*b^15*c^16*d^21*e^8 - 2321496288*A*B^2*b^16*c^15*d^20*e^9 + 2131940736*A*B^2*b^17*c^14*d^19*e^10 - 1360146816*A*B^2*b^18*c^13*d^18*e^11 + 537046848*A*B^2*b^19*c^12*d^17*e^12 - 75442752*A*B^2*b^20*c^11*d^16*e^13 - 26096256*A*B^2*b^21*c^10*d^15*e^14 - 9808128*A*B^2*b^22*c^9*d^14*e^15 + 30634848*A*B^2*b^23*c^8*d^13*e^16 - 19613664*A*B^2*b^24*c^7*d^12*e^17 + 5889024*A*B^2*b^25*c^6*d^11*e^18 - 725760*A*B^2*b^26*c^5*d^10*e^19 + 2654208*A^2*B*b^9*c^22*d^26*e^3 - 35168256*A^2*B*b^10*c^21*d^25*e^4 + 212502528*A^2*B*b^11*c^20*d^24*e^5 - 772996608*A^2*B*b^12*c^19*d^23*e^6 + 1879770240*A^2*B*b^13*c^18*d^22*e^7 - 3201998688*A^2*B*b^14*c^17*d^21*e^8 + 3875314752*A^2*B*b^15*c^16*d^20*e^9 - 3278408256*A^2*B*b^16*c^15*d^19*e^10 + 1809184896*A^2*B*b^17*c^14*d^18*e^11 - 509470560*A^2*B*b^18*c^13*d^17*e^12 - 26137728*A^2*B*b^19*c^12*d^16*e^13 + 20559744*A^2*B*b^20*c^11*d^15*e^14 + 65536128*A^2*B*b^21*c^10*d^14*e^15 - 57254688*A^2*B*b^22*c^9*d^13*e^16 + 15059520*A^2*B*b^23*c^8*d^12*e^17 + 3043008*A^2*B*b^24*c^7*d^11*e^18 - 2643840*A^2*B*b^25*c^6*d^10*e^19 + 453600*A^2*B*b^26*c^5*d^9*e^20))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*2i

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1109 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=644

$$-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{2b^2d\left(bx+cx^2\right)^2(d+ex)^{3/2}(cd-be)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(-5b^2e(4Bd-7Ae)-12bcd(2Bd-5Ae)+48Ac^2d^2\right)}{4b^5d^{9/2}}+ \cdots$$

Rubi [A] time = 1.79, antiderivative size = 644, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {822, 828, 826, 1166, 208}

$$\frac{cx\left(b^2cde(23Bd-2Ae)+b^3\left(-e^2\right)(4Bd-7Ae)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)+b(cd-be)\left(b^2e(4Bd-7Ae)-3bcd(Ae+2Bd)+12Ac^2d^2\right)}{4b^4d^2\left(bx+cx^2\right)(d+ex)^{3/2}(cd-be)^2}+\frac{e\left(-6b^3c^2d^2e^2(4Bd-3Ae)+7b^2c^3d^3e(4Ae+5Bd)+8b^4cde^3(7Bd-10Ae)-5b^5e^4(4Bd-7Ae)-12bc^4d^4(5Ae+Bd)+24Ac^5d^5\right)}{4b^4d^4\sqrt{d+ex}(cd-be)^4}+\frac{e\left(3b^2c^2d^2e(9Ae+29Bd)-9b^3cde^2(4Bd-5Ae)+5b^4e^3(4Bd-7Ae)-36bc^3d^3(4Ae+Bd)+72Ac^4d^4\right)}{12b^4d^3(d+ex)^{3/2}(cd-be)^3}+\frac{c^{7/2}\left(11b^2ce(13Ae+8Bd)-12bc^2d(13Ae+2Bd)+48Ac^3d^2-99b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5(cd-be)^{9/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(-5b^2e(4Bd-7Ae)-12bcd(2Bd-5Ae)+48Ac^2d^2\right)}{4b^5d^{9/2}}-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{2b^2d\left(bx+cx^2\right)^2(d+ex)^{3/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (e*(72*A*c^4*d^4 + 5*b^4*e^3*(4*B*d - 7*A*e) - 9*b^3*c*d*e^2*(4*B*d - 5*A*e
) - 36*b*c^3*d^3*(B*d + 4*A*e) + 3*b^2*c^2*d^2*e*(29*B*d + 9*A*e)))/(12*b^4
*d^3*(c*d - b*e)^3*(d + e*x)^(3/2)) + (e*(24*A*c^5*d^5 + 8*b^4*c*d*e^3*(7*B
*d - 10*A*e) - 5*b^5*e^4*(4*B*d - 7*A*e) - 6*b^3*c^2*d^2*e^2*(4*B*d - 3*A*e
) + 7*b^2*c^3*d^3*e*(5*B*d + 4*A*e) - 12*b*c^4*d^4*(B*d + 5*A*e)))/(4*b^4*d
^4*(c*d - b*e)^4*Sqrt[d + e*x]) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d +
A*e))*x)/(2*b^2*d*(c*d - b*e)*(d + e*x)^(3/2)*(b*x + c*x^2)^2) + (b*(c*d -
b*e)*(12*A*c^2*d^2 + b^2*e*(4*B*d - 7*A*e) - 3*b*c*d*(2*B*d + A*e)) + c*(24
*A*c^3*d^3 - b^3*e^2*(4*B*d - 7*A*e) + b^2*c*d*e*(23*B*d - 2*A*e) - 12*b*c^
2*d^2*(B*d + 3*A*e))*x)/(4*b^4*d^2*(c*d - b*e)^2*(d + e*x)^(3/2)*(b*x + c*x
^2)) - ((48*A*c^2*d^2 - 5*b^2*e*(4*B*d - 7*A*e) - 12*b*c*d*(2*B*d - 5*A*e))
*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(9/2)) + (c^(7/2)*(48*A*c^3*d^2 -
 99*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 13*A*e) + 11*b^2*c*e*(8*B*d + 13*A*e))*
ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*(c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
```

```
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^3}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)(d+ex)^{3/2}\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(12Ac^2d^2+b^2e(4Bd-7Ae)-3bcd(2Bd+Ae)\right)\cdots}{(d+ex)^{5/2}\left(bx+cx^2\right)^2}}{2b^2d(cd-be)}$$

$$= -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)(d+ex)^{3/2}\left(bx+cx^2\right)^2} + \frac{b(cd-be)\left(12Ac^2d^2+b^2e(4Bd-7A\cdots\right.}{\cdots}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+\cdots\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+\cdots\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+\cdots\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+\cdots\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+\cdots\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

Mathematica [C] time = 0.57, size = 388, normalized size = 0.60

$$\frac{6Ab^4d^2(be-cd)^3+3b^3dx(be-cd)^3(-7Abe-8Acd+4bBd)+x^2\left(3b^2cd(cd-be)^2\left(b^2e(4Bd-7Ae)-3bcd(Ae+2Bd)+12Ac^2d^2\right)+(b+cx)\left(3bcd(be-cd)\left(b^3e^2(4Bd-7Ae)+b^2cde(2Ae-23Bd)+12bc^2d^2(3Ae+Bd)-24Ac^3d^3\right)-(b+cx)\left(c^2d^3\left(11b^2ce(13Ae+8Bd)-12bc^2d(13Ae+2Bd)+48Ac^3d^2-99b^3Be^2\right){}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)-(cd-be)^3\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{ex}{d}+1\right)\left(5b^2e(7Ae-4Bd)+12bcd(5Ae-2Bd)+48Ac^2d^2\right)\right)\right)\right)}{12b^5d^3x^2(b+cx)^2(d+ex)^{3/2}(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (6*A*b^4*d^2*(-(c*d) + b*e)^3 + 3*b^3*d*(-(c*d) + b*e)^3*(4*b*B*d - 8*A*c*d
 - 7*A*b*e)*x + x^2*(3*b^2*c*d*(c*d - b*e)^2*(12*A*c^2*d^2 + b^2*e*(4*B*d -
 7*A*e) - 3*b*c*d*(2*B*d + A*e)) + (b + c*x)*(3*b*c*d*(-(c*d) + b*e)*(-24*A
*c^3*d^3 + b^3*e^2*(4*B*d - 7*A*e) + b^2*c*d*e*(-23*B*d + 2*A*e) + 12*b*c^2
*d^2*(B*d + 3*A*e)) - (b + c*x)*(c^2*d^3*(48*A*c^3*d^2 - 99*b^3*B*e^2 - 12*
b*c^2*d*(2*B*d + 13*A*e) + 11*b^2*c*e*(8*B*d + 13*A*e))*Hypergeometric2F1[-
3/2, 1, -1/2, (c*(d + e*x))/(c*d - b*e)] - (c*d - b*e)^3*(48*A*c^2*d^2 + 12
*b*c*d*(-2*B*d + 5*A*e) + 5*b^2*e*(-4*B*d + 7*A*e))*Hypergeometric2F1[-3/2,
 1, -1/2, 1 + (e*x)/d]))))/(12*b^5*d^3*(c*d - b*e)^3*x^2*(b + c*x)^2*(d + e
*x)^(3/2))
```

IntegrateAlgebraic [B] time = 2.70, size = 1590, normalized size = 2.47

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^3),x]
```

```
[Out] -1/12*(-8*b^4*B*c^3*d^7*e^3 + 24*b^5*B*c^2*d^6*e^4 + 8*A*b^4*c^3*d^6*e^4 -
24*b^6*B*c*d^5*e^5 - 24*A*b^5*c^2*d^5*e^5 + 8*b^7*B*d^4*e^6 + 24*A*b^6*c*d^
4*e^6 - 8*A*b^7*d^3*e^7 - 88*b^4*B*c^3*d^6*e^3*(d + e*x) + 208*b^5*B*c^2*d^
5*e^4*(d + e*x) + 112*A*b^4*c^3*d^5*e^4*(d + e*x) - 152*b^6*B*c*d^4*e^5*(d
+ e*x) - 280*A*b^5*c^2*d^4*e^5*(d + e*x) + 32*b^7*B*d^3*e^6*(d + e*x) + 224
*A*b^6*c*d^3*e^6*(d + e*x) - 56*A*b^7*d^2*e^7*(d + e*x) - 36*b*B*c^6*d^8*(d
 + e*x)^2 + 72*A*c^7*d^8*(d + e*x)^2 + 159*b^2*B*c^5*d^7*e*(d + e*x)^2 - 28
8*A*b*c^6*d^7*e*(d + e*x)^2 - 243*b^3*B*c^4*d^6*e^2*(d + e*x)^2 + 381*A*b^2
*c^5*d^6*e^2*(d + e*x)^2 + 672*b^4*B*c^3*d^5*e^3*(d + e*x)^2 - 135*A*b^3*c^
4*d^5*e^3*(d + e*x)^2 - 996*b^5*B*c^2*d^4*e^4*(d + e*x)^2 - 768*A*b^4*c^3*d
^4*e^4*(d + e*x)^2 + 544*b^6*B*c*d^3*e^5*(d + e*x)^2 + 1425*A*b^5*c^2*d^3*e
^5*(d + e*x)^2 - 100*b^7*B*d^2*e^6*(d + e*x)^2 - 862*A*b^6*c*d^2*e^6*(d + e
*x)^2 + 175*A*b^7*d*e^7*(d + e*x)^2 + 108*b*B*c^6*d^7*(d + e*x)^3 - 216*A*c
^7*d^7*(d + e*x)^3 - 423*b^2*B*c^5*d^6*e*(d + e*x)^3 + 756*A*b*c^6*d^6*e*(d
 + e*x)^3 + 546*b^3*B*c^4*d^5*e^2*(d + e*x)^3 - 822*A*b^2*c^5*d^5*e^2*(d +
e*x)^3 - 1168*b^4*B*c^3*d^4*e^3*(d + e*x)^3 + 165*A*b^3*c^4*d^4*e^3*(d + e*
x)^3 + 1260*b^5*B*c^2*d^3*e^4*(d + e*x)^3 + 1372*A*b^4*c^3*d^3*e^4*(d + e*x
)^3 - 488*b^6*B*c*d^2*e^5*(d + e*x)^3 - 1845*A*b^5*c^2*d^2*e^5*(d + e*x)^3
+ 60*b^7*B*d*e^6*(d + e*x)^3 + 800*A*b^6*c*d*e^6*(d + e*x)^3 - 105*A*b^7*e^
7*(d + e*x)^3 - 108*b*B*c^6*d^6*(d + e*x)^4 + 216*A*c^7*d^6*(d + e*x)^4 + 3
69*b^2*B*c^5*d^5*e*(d + e*x)^4 - 648*A*b*c^6*d^5*e*(d + e*x)^4 - 375*b^3*B*
c^4*d^4*e^2*(d + e*x)^4 + 525*A*b^2*c^5*d^4*e^2*(d + e*x)^4 + 760*b^4*B*c^3
*d^3*e^3*(d + e*x)^4 + 30*A*b^3*c^4*d^3*e^3*(d + e*x)^4 - 556*b^5*B*c^2*d^2
*e^4*(d + e*x)^4 - 988*A*b^4*c^3*d^2*e^4*(d + e*x)^4 + 120*b^6*B*c*d*e^5*(d
 + e*x)^4 + 865*A*b^5*c^2*d*e^5*(d + e*x)^4 - 210*A*b^6*c*e^6*(d + e*x)^4 +
 36*b*B*c^6*d^5*(d + e*x)^5 - 72*A*c^7*d^5*(d + e*x)^5 - 105*b^2*B*c^5*d^4*
e*(d + e*x)^5 + 180*A*b*c^6*d^4*e*(d + e*x)^5 + 72*b^3*B*c^4*d^3*e^2*(d + e
*x)^5 - 84*A*b^2*c^5*d^3*e^2*(d + e*x)^5 - 168*b^4*B*c^3*d^2*e^3*(d + e*x)^
5 - 54*A*b^3*c^4*d^2*e^3*(d + e*x)^5 + 60*b^5*B*c^2*d*e^4*(d + e*x)^5 + 240
*A*b^4*c^3*d*e^4*(d + e*x)^5 - 105*A*b^5*c^2*e^5*(d + e*x)^5)/(b^4*d^4*e*(-
(c*d) + b*e)^4*x^2*(d + e*x)^(3/2)*(-(c*d) + b*e + c*(d + e*x))^2) + ((-24*
b*B*c^(11/2)*d^2 + 48*A*c^(13/2)*d^2 + 88*b^2*B*c^(9/2)*d*e - 156*A*b*c^(11
/2)*d*e - 99*b^3*B*c^(7/2)*e^2 + 143*A*b^2*c^(9/2)*e^2)*ArcTan[(Sqrt[c]*Sqr
t[-(c*d) + b*e]*Sqrt[d + e*x])/(c*d - b*e)])/(4*b^5*(-(c*d) + b*e)^(9/2)) +
 ((24*b*B*c*d^2 - 48*A*c^2*d^2 + 20*b^2*B*d*e - 60*A*b*c*d*e - 35*A*b^2*e^2
)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(9/2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 1.09, size = 1600, normalized size = 2.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(24*B*b*c^6*d^2 - 48*A*c^7*d^2 - 88*B*b^2*c^5*d*e + 156*A*b*c^6*d*e + 9
9*B*b^3*c^4*e^2 - 143*A*b^2*c^5*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b
*c*e))/((b^5*c^4*d^4 - 4*b^6*c^3*d^3*e + 6*b^7*c^2*d^2*e^2 - 4*b^8*c*d*e^3
+ b^9*e^4)*sqrt(-c^2*d + b*c*e)) + 2/3*(15*(x*e + d)*B*c*d^2*e^4 + B*c*d^3*
e^4 - 6*(x*e + d)*B*b*d*e^5 - 18*(x*e + d)*A*c*d*e^5 - B*b*d^2*e^5 - A*c*d^
2*e^5 + 9*(x*e + d)*A*b*e^6 + A*b*d*e^6)/((c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*
c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*(x*e + d)^(3/2)) - 1/4*(12*(x*
e + d)^(7/2)*B*b*c^6*d^5*e - 24*(x*e + d)^(7/2)*A*c^7*d^5*e - 36*(x*e + d)^
(5/2)*B*b*c^6*d^6*e + 72*(x*e + d)^(5/2)*A*c^7*d^6*e + 36*(x*e + d)^(3/2)*B
*b*c^6*d^7*e - 72*(x*e + d)^(3/2)*A*c^7*d^7*e - 12*sqrt(x*e + d)*B*b*c^6*d^
8*e + 24*sqrt(x*e + d)*A*c^7*d^8*e - 35*(x*e + d)^(7/2)*B*b^2*c^5*d^4*e^2 +
 60*(x*e + d)^(7/2)*A*b*c^6*d^4*e^2 + 123*(x*e + d)^(5/2)*B*b^2*c^5*d^5*e^2
 - 216*(x*e + d)^(5/2)*A*b*c^6*d^5*e^2 - 141*(x*e + d)^(3/2)*B*b^2*c^5*d^6*
e^2 + 252*(x*e + d)^(3/2)*A*b*c^6*d^6*e^2 + 53*sqrt(x*e + d)*B*b^2*c^5*d^7*
e^2 - 96*sqrt(x*e + d)*A*b*c^6*d^7*e^2 + 24*(x*e + d)^(7/2)*B*b^3*c^4*d^3*e
^3 - 28*(x*e + d)^(7/2)*A*b^2*c^5*d^3*e^3 - 125*(x*e + d)^(5/2)*B*b^3*c^4*d
^4*e^3 + 175*(x*e + d)^(5/2)*A*b^2*c^5*d^4*e^3 + 182*(x*e + d)^(3/2)*B*b^3*
c^4*d^5*e^3 - 274*(x*e + d)^(3/2)*A*b^2*c^5*d^5*e^3 - 81*sqrt(x*e + d)*B*b^
3*c^4*d^6*e^3 + 127*sqrt(x*e + d)*A*b^2*c^5*d^6*e^3 - 16*(x*e + d)^(7/2)*B*
b^4*c^3*d^2*e^4 - 18*(x*e + d)^(7/2)*A*b^3*c^4*d^2*e^4 + 96*(x*e + d)^(5/2)
*B*b^4*c^3*d^3*e^4 + 10*(x*e + d)^(5/2)*A*b^3*c^4*d^3*e^4 - 160*(x*e + d)^(
3/2)*B*b^4*c^3*d^4*e^4 + 55*(x*e + d)^(3/2)*A*b^3*c^4*d^4*e^4 + 80*sqrt(x*e
 + d)*B*b^4*c^3*d^5*e^4 - 45*sqrt(x*e + d)*A*b^3*c^4*d^5*e^4 + 4*(x*e + d)^
(7/2)*B*b^5*c^2*d*e^5 + 32*(x*e + d)^(7/2)*A*b^4*c^3*d*e^5 - 44*(x*e + d)^(
5/2)*B*b^5*c^2*d^2*e^5 - 140*(x*e + d)^(5/2)*A*b^4*c^3*d^2*e^5 + 100*(x*e +
 d)^(3/2)*B*b^5*c^2*d^3*e^5 + 180*(x*e + d)^(3/2)*A*b^4*c^3*d^3*e^5 - 60*sq
rt(x*e + d)*B*b^5*c^2*d^4*e^5 - 80*sqrt(x*e + d)*A*b^4*c^3*d^4*e^5 - 11*(x*
e + d)^(7/2)*A*b^5*c^2*e^6 + 8*(x*e + d)^(5/2)*B*b^6*c*d*e^6 + 99*(x*e + d)
^(5/2)*A*b^5*c^2*d*e^6 - 32*(x*e + d)^(3/2)*B*b^6*c*d^2*e^6 - 199*(x*e + d)
^(3/2)*A*b^5*c^2*d^2*e^6 + 24*sqrt(x*e + d)*B*b^6*c*d^3*e^6 + 123*sqrt(x*e
+ d)*A*b^5*c^2*d^3*e^6 - 22*(x*e + d)^(5/2)*A*b^6*c*e^7 + 4*(x*e + d)^(3/2)
*B*b^7*d*e^7 + 80*(x*e + d)^(3/2)*A*b^6*c*d*e^7 - 4*sqrt(x*e + d)*B*b^7*d^2
*e^7 - 66*sqrt(x*e + d)*A*b^6*c*d^2*e^7 - 11*(x*e + d)^(3/2)*A*b^7*e^8 + 13
*sqrt(x*e + d)*A*b^7*d*e^8)/((b^4*c^4*d^8 - 4*b^5*c^3*d^7*e + 6*b^6*c^2*d^6
*e^2 - 4*b^7*c*d^5*e^3 + b^8*d^4*e^4)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*
d^2 + (x*e + d)*b*e - b*d*e)^2) - 1/4*(24*B*b*c*d^2 - 48*A*c^2*d^2 + 20*B*b
^2*d*e - 60*A*b*c*d*e - 35*A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*s
qrt(-d)*d^4)
```

maple [A] time = 0.09, size = 1130, normalized size = 1.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -29/4*e^2*c^5/(b*e-c*d)^4/b^2/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d+2*e*c^6/(b*e-
c*d)^4/b^3/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^2+39*e*c^6/(b*e-c*d)^4/b^4/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-22*e*c^5/(b*
e-c*d)^4/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c
)*B*d-3*e*c^7/(b*e-c*d)^4/b^4/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^2-2*e*c^6/(b*
```

```
e-c*d)^4/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d+3*e*c^7/(b*e-c*d)^4/b^4/(c*e*x
+b*e)^2*(e*x+d)^(3/2)*A*d+37/4*e^2*c^6/(b*e-c*d)^4/b^3/(c*e*x+b*e)^2*A*(e*x
+d)^(1/2)*d-35/4*e^2/b^3/d^(9/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+5*e/b^3/d
^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-12/b^5/d^(5/2)*arctanh((e*x+d)^(1/2
)/d^(1/2))*A*c^2+6/b^4/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B*c+11/4/b^3/
d^4/x^2*A*(e*x+d)^(3/2)-13/4/b^3/d^3/x^2*(e*x+d)^(1/2)*A-2/3*e^4/(b*e-c*d)^
3/d^2/(e*x+d)^(3/2)*B+2/3*e^5/(b*e-c*d)^3/d^3/(e*x+d)^(3/2)*A-1/e/b^3/d^3/x
^2*B*(e*x+d)^(3/2)+1/e/b^3/d^2/x^2*(e*x+d)^(1/2)*B+10*e^4/(b*e-c*d)^4/d^2/(
e*x+d)^(1/2)*B*c+6*e^6/(b*e-c*d)^4/d^4/(e*x+d)^(1/2)*A*b-12*e^5/(b*e-c*d)^4
/d^3/(e*x+d)^(1/2)*A*c-4*e^5/(b*e-c*d)^4/d^3/(e*x+d)^(1/2)*B*b-15*e/b^4/d^(
7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-3/e/b^4/d^2/x^2*(e*x+d)^(1/2)*A*c-1
2*c^7/(b*e-c*d)^4/b^5/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c
)^(1/2)*c)*A*d^2+6*c^6/(b*e-c*d)^4/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2-23/4*e^2*c^6/(b*e-c*d)^4/b^3/(c*e*x+b*e)^
2*(e*x+d)^(3/2)*A+19/4*e^2*c^5/(b*e-c*d)^4/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*
B-25/4*e^3*c^5/(b*e-c*d)^4/b^2/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)+21/4*e^3*c^4/(
b*e-c*d)^4/b/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)-143/4*e^2*c^5/(b*e-c*d)^4/b^3/((
b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+99/4*e^2*c^
4/(b*e-c*d)^4/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*B+3/e/b^4/d^3/x^2*A*(e*x+d)^(3/2)*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.93, size = 24572, normalized size = 38.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^(5/2)),x)
```

```
[Out] log(14598144*A^3*b^9*c^27*d^32*e^4 - 884736*A^3*b^8*c^28*d^33*e^3 - ((d + e
*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3
+ 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707
439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822
016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 189361075
20*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641
408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 1026563
9040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597
440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 26085297
92*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 127446528
0*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2
*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c
^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^
26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555
520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B
^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*
b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^2
2*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24
*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^
13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B^2*b^28*c^11*
d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20
```

*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - ((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 1400*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^10*d^9))^(1/2)*((d + e*x)^(1/2)*((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 1400*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^10*d^9))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23) + 24576*A*b^18*c^24*d^38*e^3 - 466944*A*b^19*c^23*d^37*e^4 + 4185088*A*b^20*c^22*d^36*e^5 - 23500800*A*b^21*c^21*d^35*e^6 + 92710912*A*b^22*c^20*d^34*e^7 - 273566720*A*b^23*c^19*d^33*e^8 + 629578752*A*b^24*c^18*d^32*e^9 - 1169833984*A*b^25*c^17*d^31*e^10 + 1818910720*A*b^26*c^16*d^30*e^11 - 2465058816*A*b^27*c^15*d^29*e^12 + 3031169024*A*b^28*c^14*d^28*e^13 - 3457871872*A*b^29*c^13*d^27*e^14 + 3626348544*A*b^30*c^12*d^26*e^15 - 3385559040*A*b^31*c^11*d^25*e^16 + 2714064896*A*b^32*c^10*d^24*e^17 - 1813512192*A*b^33*c^9*d^23*e^18 + 986251264*A*b^34*c^8*d^22*e^19 - 426815488*A*b^35*c^7*d^21*e^20 + 143109120*A*b^36*c^6*d^20*e^21 - 35796992*A*b^37*c^5*d^19*e^22 + 6285312*A*b^38*c^4*d^18*e^23 - 691200*A*b^39*c^3*d^17*e^24 + 35840*A*b^40*c^2*d^16*e^25 - 12288*B*b^19*c^23*d^38*e^3 + 238592*B*b^20*c^22*d^37*e^4 - 2187264*B*b^21*c^21*d^36*e^5 + 12492800*B*b^22*c^20*d^35*e^6 - 49401856*B*b^23*c^19*d^34*e^7 + 141926400*B*b^24*c^18*d^33*e^8 - 300793856*B*b^25*c^17*d^32*e^9 + 460562432*B*b^26*c^16*d^31*e^10 - 455516160*B*b^27*c^15*d^30*e^11 + 116267008*B*b^28*c^14*d^29*e^12 + 543981568*B*b^29*c^13*d^28*e^13 - 1250156544*B*b^30*c^12*d^27*e^14 + 1639292928*B*b^31*c^11*d^26*e^15 - 1547694080*B*b^32*c^10*d^25*e^16 + 1115799552*B*b^33*c^9*d^24*e^17 - 624861184*B*b^34*c^8*d^23*e^18 + 271372288*B*b^35*c^7*d^22*e^19 - 89988096*B*b^36*c^6*d^21*e^20 + 22077440*B*b^37*c^5*d^20*e^21 - 3784704*B*b^38*c^4*d^19*e^22 + 405504*B*b^39*c^3*d^18*e^23 - 20480*B*b^40*c^2*d^17*e^24))*((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 1400*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^10*d^9))^(1/2) - 111310848*A^3*b^10*c^26*d^31*e^5 + 518538240*A^3*b^11*c^25*d^30*e^6 - 1640557440*A^3*b^12*c^24*d^29*e^7 + 3692369088*A^3*b^13*c^23*d^28*e^8 - 5970365632*A^3*b^14*c^22*d^27*e^9 + 6695810784*A^3*b^15*c^21*d^26*e^10 - 4411189120*A^3*b^16*c^20*d^25*e^11 - 87084400*A^3*b^17*c^19*d^24*e^12 + 3954268032*A^3*b^18*c^18*d^23*e^13 -

5135394368*A^3*b^19*c^17*d^22*e^14 + 4434262976*A^3*b^20*c^16*d^21*e^15 - 4011472080*A^3*b^21*c^15*d^20*e^16 + 4506553920*A^3*b^22*c^14*d^19*e^17 - 4740529184*A^3*b^23*c^13*d^18*e^18 + 3806470656*A^3*b^24*c^12*d^17*e^19 - 2198096912*A^3*b^25*c^11*d^16*e^20 + 886408960*A^3*b^26*c^10*d^15*e^21 - 237886080*A^3*b^27*c^9*d^14*e^22 + 38292800*A^3*b^28*c^8*d^13*e^23 - 2802800*A^3*b^29*c^7*d^12*e^24 + 110592*B^3*b^11*c^25*d^33*e^3 - 1963008*B^3*b^12*c^24*d^32*e^4 + 16183296*B^3*b^13*c^23*d^31*e^5 - 82448000*B^3*b^14*c^22*d^30*e^6 + 291430080*B^3*b^15*c^21*d^29*e^7 - 760810496*B^3*b^16*c^20*d^28*e^8 + 1523208064*B^3*b^17*c^19*d^27*e^9 - 2387603328*B^3*b^18*c^18*d^26*e^10 + 2934367040*B^3*b^19*c^17*d^25*e^11 - 2735068160*B^3*b^20*c^16*d^24*e^12 + 1688898816*B^3*b^21*c^15*d^23*e^13 - 207986304*B^3*b^22*c^14*d^22*e^14 - 992919232*B^3*b^23*c^13*d^21*e^15 + 1419909120*B^3*b^24*c^12*d^20*e^16 - 1147707520*B^3*b^25*c^11*d^19*e^17 + 629449088*B^3*b^26*c^10*d^18*e^18 - 238930752*B^3*b^27*c^9*d^17*e^19 + 60427264*B^3*b^28*c^8*d^16*e^20 - 9180160*B^3*b^29*c^7*d^15*e^21 + 633600*B^3*b^30*c^6*d^14*e^22 - 663552*A*B^2*b^10*c^26*d^33*e^3 + 11501568*A*B^2*b^11*c^25*d^32*e^4 - 92445696*A*B^2*b^12*c^24*d^31*e^5 + 457608960*A*B^2*b^13*c^23*d^30*e^6 - 1561961280*A*B^2*b^14*c^22*d^29*e^7 + 3897633456*A*B^2*b^15*c^21*d^28*e^8 - 7341910464*A*B^2*b^16*c^20*d^27*e^9 + 10584928608*A*B^2*b^17*c^19*d^26*e^10 - 11615091840*A*B^2*b^18*c^18*d^25*e^11 + 9351305040*A*B^2*b^19*c^17*d^24*e^12 - 4949763456*A*B^2*b^20*c^16*d^23*e^13 + 1152719424*A*B^2*b^21*c^15*d^22*e^14 + 35479872*A*B^2*b^22*c^14*d^21*e^15 + 987243600*A*B^2*b^23*c^13*d^20*e^16 - 2238056640*A*B^2*b^24*c^12*d^19*e^17 + 2350093152*A*B^2*b^25*c^11*d^18*e^18 - 1531638528*A*B^2*b^26*c^10*d^17*e^19 + 658359216*A*B^2*b^27*c^9*d^16*e^20 - 183198720*A*B^2*b^28*c^8*d^15*e^21 + 30074880*A*B^2*b^29*c^7*d^14*e^22 - 2217600*A*B^2*b^30*c^6*d^13*e^23 + 1327104*A^2*B*b^9*c^27*d^33*e^3 - 22450176*A^2*B*b^10*c^26*d^32*e^4 + 175813632*A^2*B*b^11*c^25*d^31*e^5 - 844727040*A^2*B*b^12*c^24*d^30*e^6 + 2778960960*A^2*B*b^13*c^23*d^29*e^7 - 6601799472*A^2*B*b^14*c^22*d^28*e^8 + 11593951488*A^2*B*b^15*c^21*d^27*e^9 - 15030223296*A^2*B*b^16*c^20*d^26*e^10 + 13855558080*A^2*B*b^17*c^19*d^25*e^11 - 7973238240*A^2*B*b^18*c^18*d^24*e^12 + 1330213632*A^2*B*b^19*c^17*d^23*e^13 + 1474407552*A^2*B*b^20*c^16*d^22*e^14 + 280293696*A^2*B*b^21*c^15*d^21*e^15 - 3189392640*A^2*B*b^22*c^14*d^20*e^16 + 3911942400*A^2*B*b^23*c^13*d^19*e^17 - 2360240064*A^2*B*b^24*c^12*d^18*e^18 + 534716736*A^2*B*b^25*c^11*d^17*e^19 + 282511968*A^2*B*b^26*c^10*d^16*e^20 - 290822400*A^2*B*b^27*c^9*d^15*e^21 + 114170880*A^2*B*b^28*c^8*d^14*e^22 - 22915200*A^2*B*b^29*c^7*d^13*e^23 + 1940400*A^2*B*b^30*c^6*d^12*e^24)*((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 1400*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^10*d^9))^(1/2) - log(((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15

 - 107134720*B^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 12198 9120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2 *b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^ 14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 18787 64800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545 216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 214068518 40*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523 328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 41114918 40*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920 *A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368* A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B *b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33 *c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^1 4*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - (((1225*A^2*b^4*e^4)/64 + 36*A^2* c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A^2*b^2*c^2*d^2 *e^2)/4 + 90*A^2*b*c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2*d^3*e - (255*A *B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2)*((d + e*x)^(1/2)*(((1225*A^2*b^4*e^4)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A ^2*b^2*c^2*d^2*e^2)/4 + 90*A^2*b*c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B ^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2* d^3*e - (255*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2)*(16384*b^22*c^23*d^41* e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^2 5*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^ 7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 26989363 20*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c ^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29* e^14 - 2302033920*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571 539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^ 6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 18 0224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23) - 24576*A*b^18*c^24*d^38 *e^3 + 466944*A*b^19*c^23*d^37*e^4 - 4185088*A*b^20*c^22*d^36*e^5 + 2350080 0*A*b^21*c^21*d^35*e^6 - 92710912*A*b^22*c^20*d^34*e^7 + 273566720*A*b^23*c ^19*d^33*e^8 - 629578752*A*b^24*c^18*d^32*e^9 + 1169833984*A*b^25*c^17*d^31 *e^10 - 1818910720*A*b^26*c^16*d^30*e^11 + 2465058816*A*b^27*c^15*d^29*e^12 - 3031169024*A*b^28*c^14*d^28*e^13 + 3457871872*A*b^29*c^13*d^27*e^14 - 36 26348544*A*b^30*c^12*d^26*e^15 + 3385559040*A*b^31*c^11*d^25*e^16 - 2714064 896*A*b^32*c^10*d^24*e^17 + 1813512192*A*b^33*c^9*d^23*e^18 - 986251264*A*b ^34*c^8*d^22*e^19 + 426815488*A*b^35*c^7*d^21*e^20 - 143109120*A*b^36*c^6*d ^20*e^21 + 35796992*A*b^37*c^5*d^19*e^22 - 6285312*A*b^38*c^4*d^18*e^23 + 6 91200*A*b^39*c^3*d^17*e^24 - 35840*A*b^40*c^2*d^16*e^25 + 12288*B*b^19*c^23 *d^38*e^3 - 238592*B*b^20*c^22*d^37*e^4 + 2187264*B*b^21*c^21*d^36*e^5 - 12 492800*B*b^22*c^20*d^35*e^6 + 49401856*B*b^23*c^19*d^34*e^7 - 141926400*B*b ^24*c^18*d^33*e^8 + 300793856*B*b^25*c^17*d^32*e^9 - 460562432*B*b^26*c^16* d^31*e^10 + 455516160*B*b^27*c^15*d^30*e^11 - 116267008*B*b^28*c^14*d^29*e^ 12 - 543981568*B*b^29*c^13*d^28*e^13 + 1250156544*B*b^30*c^12*d^27*e^14 - 1 639292928*B*b^31*c^11*d^26*e^15 + 1547694080*B*b^32*c^10*d^25*e^16 - 111579 9552*B*b^33*c^9*d^24*e^17 + 624861184*B*b^34*c^8*d^23*e^18 - 271372288*B*b^ 35*c^7*d^22*e^19 + 89988096*B*b^36*c^6*d^21*e^20 - 22077440*B*b^37*c^5*d^20 *e^21 + 3784704*B*b^38*c^4*d^19*e^22 - 405504*B*b^39*c^3*d^18*e^23 + 20480* B*b^40*c^2*d^17*e^24))*(((1225*A^2*b^4*e^4)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2 *c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A^2*b^2*c^2*d^2*e^2)/4 + 90*A^2*b* c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2*d^3*e - (255*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2) - 884736*A^3*b^8*c^28*d^33*e^3 + 14598144*A^3*b^9*c^27* d^32*e^4 - 111310848*A^3*b^10*c^26*d^31*e^5 + 518538240*A^3*b^11*c^25*d^30* e^6 - 1640557440*A^3*b^12*c^24*d^29*e^7 + 3692369088*A^3*b^13*c^23*d^28*e^8

- 5970365632*A^3*b^14*c^22*d^27*e^9 + 6695810784*A^3*b^15*c^21*d^26*e^10 - 4411189120*A^3*b^16*c^20*d^25*e^11 - 87084400*A^3*b^17*c^19*d^24*e^12 + 3954268032*A^3*b^18*c^18*d^23*e^13 - 5135394368*A^3*b^19*c^17*d^22*e^14 + 4434262976*A^3*b^20*c^16*d^21*e^15 - 4011472080*A^3*b^21*c^15*d^20*e^16 + 4506553920*A^3*b^22*c^14*d^19*e^17 - 4740529184*A^3*b^23*c^13*d^18*e^18 + 3806470656*A^3*b^24*c^12*d^17*e^19 - 2198096912*A^3*b^25*c^11*d^16*e^20 + 886408960*A^3*b^26*c^10*d^15*e^21 - 237886080*A^3*b^27*c^9*d^14*e^22 + 38292800*A^3*b^28*c^8*d^13*e^23 - 2802800*A^3*b^29*c^7*d^12*e^24 + 110592*B^3*b^11*c^25*d^33*e^3 - 1963008*B^3*b^12*c^24*d^32*e^4 + 16183296*B^3*b^13*c^23*d^31*e^5 - 82448000*B^3*b^14*c^22*d^30*e^6 + 291430080*B^3*b^15*c^21*d^29*e^7 - 760810496*B^3*b^16*c^20*d^28*e^8 + 1523208064*B^3*b^17*c^19*d^27*e^9 - 2387603328*B^3*b^18*c^18*d^26*e^10 + 2934367040*B^3*b^19*c^17*d^25*e^11 - 2735068160*B^3*b^20*c^16*d^24*e^12 + 1688898816*B^3*b^21*c^15*d^23*e^13 - 207986304*B^3*b^22*c^14*d^22*e^14 - 992919232*B^3*b^23*c^13*d^21*e^15 + 1419909120*B^3*b^24*c^12*d^20*e^16 - 1147707520*B^3*b^25*c^11*d^19*e^17 + 629449088*B^3*b^26*c^10*d^18*e^18 - 238930752*B^3*b^27*c^9*d^17*e^19 + 60427264*B^3*b^28*c^8*d^16*e^20 - 9180160*B^3*b^29*c^7*d^15*e^21 + 633600*B^3*b^30*c^6*d^14*e^22 - 663552*A*B^2*b^10*c^26*d^33*e^3 + 11501568*A*B^2*b^11*c^25*d^32*e^4 - 92445696*A*B^2*b^12*c^24*d^31*e^5 + 457608960*A*B^2*b^13*c^23*d^30*e^6 - 1561961280*A*B^2*b^14*c^22*d^29*e^7 + 3897633456*A*B^2*b^15*c^21*d^28*e^8 - 7341910464*A*B^2*b^16*c^20*d^27*e^9 + 10584928608*A*B^2*b^17*c^19*d^26*e^10 - 11615091840*A*B^2*b^18*c^18*d^25*e^11 + 9351305040*A*B^2*b^19*c^17*d^24*e^12 - 4949763456*A*B^2*b^20*c^16*d^23*e^13 + 1152719424*A*B^2*b^21*c^15*d^22*e^14 + 35479872*A*B^2*b^22*c^14*d^21*e^15 + 987243600*A*B^2*b^23*c^13*d^20*e^16 - 2238056640*A*B^2*b^24*c^12*d^19*e^17 + 2350093152*A*B^2*b^25*c^11*d^18*e^18 - 1531638528*A*B^2*b^26*c^10*d^17*e^19 + 658359216*A*B^2*b^27*c^9*d^16*e^20 - 183198720*A*B^2*b^28*c^8*d^15*e^21 + 30074880*A*B^2*b^29*c^7*d^14*e^22 - 2217600*A*B^2*b^30*c^6*d^13*e^23 + 1327104*A^2*B*b^9*c^27*d^33*e^3 - 22450176*A^2*B*b^10*c^26*d^32*e^4 + 175813632*A^2*B*b^11*c^25*d^31*e^5 - 844727040*A^2*B*b^12*c^24*d^30*e^6 + 2778960960*A^2*B*b^13*c^23*d^29*e^7 - 6601799472*A^2*B*b^14*c^22*d^28*e^8 + 11593951488*A^2*B*b^15*c^21*d^27*e^9 - 15030223296*A^2*B*b^16*c^20*d^26*e^10 + 13855558080*A^2*B*b^17*c^19*d^25*e^11 - 7973238240*A^2*B*b^18*c^18*d^24*e^12 + 1330213632*A^2*B*b^19*c^17*d^23*e^13 + 1474407552*A^2*B*b^20*c^16*d^22*e^14 + 280293696*A^2*B*b^21*c^15*d^21*e^15 - 3189392640*A^2*B*b^22*c^14*d^20*e^16 + 3911942400*A^2*B*b^23*c^13*d^19*e^17 - 2360240064*A^2*B*b^24*c^12*d^18*e^18 + 534716736*A^2*B*b^25*c^11*d^17*e^19 + 282511968*A^2*B*b^26*c^10*d^16*e^20 - 290822400*A^2*B*b^27*c^9*d^15*e^21 + 114170880*A^2*B*b^28*c^8*d^14*e^22 - 22915200*A^2*B*b^29*c^7*d^13*e^23 + 1940400*A^2*B*b^30*c^6*d^12*e^24)*(((1225*A^2*b^4*e^4)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A^2*b^2*c^2*d^2*e^2)/4 + 90*A^2*b*c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2*d^3*e - (255*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2) - ((2*(A*e^5 - B*d*e^4))/(3*(c*d^2 - b*d*e)) - (2*(d + e*x)*(7*A*b*e^6 - 14*A*c*d*e^5 - 4*B*b*d*e^5 + 11*B*c*d^2*e^4))/(3*(c*d^2 - b*d*e)^2) - ((d + e*x)^5*(24*A*c^7*d^5*e + 35*A*b^5*c^2*e^6 - 60*A*b*c^6*d^4*e^2 - 80*A*b^4*c^3*d*e^5 - 20*B*b^5*c^2*d*e^5 + 28*A*b^2*c^5*d^3*e^3 + 18*A*b^3*c^4*d^2*e^4 + 35*B*b^2*c^5*d^4*e^2 - 24*B*b^3*c^4*d^3*e^3 + 56*B*b^4*c^3*d^2*e^4 - 12*B*b*c^6*d^5*e))/(4*b^4*(c*d^2 - b*d*e)^4) + ((d + e*x)^2*(72*A*c^6*d^6*e - 175*A*b^6*e^7 + 100*B*b^6*d*e^6 - 216*A*b*c^5*d^5*e^2 - 444*B*b^5*c*d^2*e^5 + 165*A*b^2*c^4*d^4*e^3 + 30*A*b^3*c^3*d^3*e^4 - 738*A*b^4*c^2*d^2*e^5 + 123*B*b^2*c^4*d^5*e^2 - 120*B*b^3*c^3*d^4*e^3 + 552*B*b^4*c^2*d^3*e^4 + 687*A*b^5*c*d*e^6 - 36*B*b*c^5*d^6*e))/(12*b^4*(c*d^2 - b*d*e)^3) + ((d + e*x)^3*(60*B*b^7*d*e^7 - 216*A*c^7*d^7*e - 105*A*b^7*e^8 + 756*A*b*c^6*d^6*e^2 - 488*B*b^6*c*d^2*e^6 - 822*A*b^2*c^5*d^5*e^3 + 165*A*b^3*c^4*d^4*e^4 + 1372*A*b^4*c^3*d^3*e^5 - 1845*A*b^5*c^2*d^2*e^6 - 423*B*b^2*c^5*d^6*e^2 + 546*B*b^3*c^4*d^5*e^3 - 1168*B*b^4*c^3*d^4*e^4 + 1260*B*b^5*c^2*d^3*e^5 + 800*A*b^6*c*d*e^7 + 108*B*b*c^6*d^7*e))/(12*b^4*(c*d^2 - b*d*e)^4) + ((d + e*x)^4*(216*A*c^7*d^6*e - 210*A*b^6*c*e^7 - 648*A*b*c^6*d^5*e^2 + 865*A*b^5*c^2*d*e^6 + 525*A*b^2*c^5*d

^4*e^3 + 30*A*b^3*c^4*d^3*e^4 - 988*A*b^4*c^3*d^2*e^5 + 369*B*b^2*c^5*d^5*e
^2 - 375*B*b^3*c^4*d^4*e^3 + 760*B*b^4*c^3*d^3*e^4 - 556*B*b^5*c^2*d^2*e^5
- 108*B*b*c^6*d^6*e + 120*B*b^6*c*d*e^6))/(12*b^4*(c*d^2 - b*d*e)^4))/(c^2*
(d + e*x)^(11/2) - (4*c^2*d - 2*b*c*e)*(d + e*x)^(9/2) - (d + e*x)^(5/2)*(4
*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) + (d + e*x)^(7/2)*(b^2*e^2 + 6*c^2*d^
2 - 6*b*c*d*e) + (d + e*x)^(3/2)*(c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)) - a
tan(-(((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c
^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^
33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*
e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^
9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^
11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e
^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e
^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^
17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^1
9 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 +
301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 199308
80*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^3
6*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^3
5*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5
+ 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 30
62171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 60763
71840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 327354
9312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 66812224
0*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B
^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*
b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*
c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16
*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 5898
24*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*
b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17
*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c
^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^
18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c
^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^
14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12
*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*
d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18
*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22
- 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 17920
0*A*B*b^36*c^3*d^13*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 +
576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 +
12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e
- 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*
e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*
e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8
*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 +
126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*
c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*
e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*
e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*
d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*
c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*
c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^
11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5
*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9
*b^18*c*d*e^8)))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^
3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^2
6*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e

^8 - 1587609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 37838
02880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^3
3*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^
28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8*d^26*e^17 + 20
6389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 12451840*b^40*c^
5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d^21*e^22 - 8192
*b^43*c^2*d^20*e^23) - 24576*A*b^18*c^24*d^38*e^3 + 466944*A*b^19*c^23*d^37
*e^4 - 4185088*A*b^20*c^22*d^36*e^5 + 23500800*A*b^21*c^21*d^35*e^6 - 92710
912*A*b^22*c^20*d^34*e^7 + 273566720*A*b^23*c^19*d^33*e^8 - 629578752*A*b^2
4*c^18*d^32*e^9 + 1169833984*A*b^25*c^17*d^31*e^10 - 1818910720*A*b^26*c^16
*d^30*e^11 + 2465058816*A*b^27*c^15*d^29*e^12 - 3031169024*A*b^28*c^14*d^28
*e^13 + 3457871872*A*b^29*c^13*d^27*e^14 - 3626348544*A*b^30*c^12*d^26*e^15
 + 3385559040*A*b^31*c^11*d^25*e^16 - 2714064896*A*b^32*c^10*d^24*e^17 + 18
13512192*A*b^33*c^9*d^23*e^18 - 986251264*A*b^34*c^8*d^22*e^19 + 426815488*
A*b^35*c^7*d^21*e^20 - 143109120*A*b^36*c^6*d^20*e^21 + 35796992*A*b^37*c^5
*d^19*e^22 - 6285312*A*b^38*c^4*d^18*e^23 + 691200*A*b^39*c^3*d^17*e^24 - 3
5840*A*b^40*c^2*d^16*e^25 + 12288*B*b^19*c^23*d^38*e^3 - 238592*B*b^20*c^22
*d^37*e^4 + 2187264*B*b^21*c^21*d^36*e^5 - 12492800*B*b^22*c^20*d^35*e^6 +
49401856*B*b^23*c^19*d^34*e^7 - 141926400*B*b^24*c^18*d^33*e^8 + 300793856*
B*b^25*c^17*d^32*e^9 - 460562432*B*b^26*c^16*d^31*e^10 + 455516160*B*b^27*c
^15*d^30*e^11 - 116267008*B*b^28*c^14*d^29*e^12 - 543981568*B*b^29*c^13*d^2
8*e^13 + 1250156544*B*b^30*c^12*d^27*e^14 - 1639292928*B*b^31*c^11*d^26*e^1
5 + 1547694080*B*b^32*c^10*d^25*e^16 - 1115799552*B*b^33*c^9*d^24*e^17 + 62
4861184*B*b^34*c^8*d^23*e^18 - 271372288*B*b^35*c^7*d^22*e^19 + 89988096*B*
b^36*c^6*d^21*e^20 - 22077440*B*b^37*c^5*d^20*e^21 + 3784704*B*b^38*c^4*d^1
9*e^22 - 405504*B*b^39*c^3*d^18*e^23 + 20480*B*b^40*c^2*d^17*e^24))*(-(2304
*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6
*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A
*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B
^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A
*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(
64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b
^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3
*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*1i + ((d + e*x)^(1
/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3 + 8951
8080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707439360
*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822016*A^
2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 18936107520*A^2
*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641408*A^
2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 10265639040*A
^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597440*A^
2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 2608529792*A^2
*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 1274465280*A^2*
b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2*b^32*
c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c^5*d^1
4*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^26 + 1
47456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555520*B^
2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B^2*b^1
8*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*b^20*c
^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^22*c^17
*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24*c^15*
d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^13*d^2
4*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B^2*b^28*c^11*d^22*e
^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20*e^18
 - 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*c^7*d^18*e^20 - 364
95360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16*e^22 - 901120*B^2*
b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 589824*A*B*b^13*c^26*d^
36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^34*e^4
 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17*c^22*d^32*e^6 + 51

51263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c^20*d^30*e^8 + 1718
6104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^18*d^28*e^10 + 2069
3207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c^16*d^26*e^12 + 895
5257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^14*d^24*e^14 + 1413
002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12*d^22*e^16 - 128094
2080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*d^20*e^18 - 1489551
360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18*e^20 - 383708160*A
*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22 - 24217600*A*B*b^3
4*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 179200*A*B*b^36*c^3*d^13
*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^
4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d
^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^1
0*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^
12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3
*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^
7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e
^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*((
d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c
^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4
*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b
^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*
B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A
*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b
^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4
*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1
/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^
21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 2
93707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^2
9*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^3
2*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 +
3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^28*e^15 + 127008768
0*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^
25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 18841
60*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23
) + 24576*A*b^18*c^24*d^38*e^3 - 466944*A*b^19*c^23*d^37*e^4 + 4185088*A*b^
20*c^22*d^36*e^5 - 23500800*A*b^21*c^21*d^35*e^6 + 92710912*A*b^22*c^20*d^3
4*e^7 - 273566720*A*b^23*c^19*d^33*e^8 + 629578752*A*b^24*c^18*d^32*e^9 - 1
169833984*A*b^25*c^17*d^31*e^10 + 1818910720*A*b^26*c^16*d^30*e^11 - 246505
8816*A*b^27*c^15*d^29*e^12 + 3031169024*A*b^28*c^14*d^28*e^13 - 3457871872*
A*b^29*c^13*d^27*e^14 + 3626348544*A*b^30*c^12*d^26*e^15 - 3385559040*A*b^3
1*c^11*d^25*e^16 + 2714064896*A*b^32*c^10*d^24*e^17 - 1813512192*A*b^33*c^9
*d^23*e^18 + 986251264*A*b^34*c^8*d^22*e^19 - 426815488*A*b^35*c^7*d^21*e^2
0 + 143109120*A*b^36*c^6*d^20*e^21 - 35796992*A*b^37*c^5*d^19*e^22 + 628531
2*A*b^38*c^4*d^18*e^23 - 691200*A*b^39*c^3*d^17*e^24 + 35840*A*b^40*c^2*d^1
6*e^25 - 12288*B*b^19*c^23*d^38*e^3 + 238592*B*b^20*c^22*d^37*e^4 - 2187264
*B*b^21*c^21*d^36*e^5 + 12492800*B*b^22*c^20*d^35*e^6 - 49401856*B*b^23*c^1
9*d^34*e^7 + 141926400*B*b^24*c^18*d^33*e^8 - 300793856*B*b^25*c^17*d^32*e^
9 + 460562432*B*b^26*c^16*d^31*e^10 - 455516160*B*b^27*c^15*d^30*e^11 + 116
267008*B*b^28*c^14*d^29*e^12 + 543981568*B*b^29*c^13*d^28*e^13 - 1250156544
*B*b^30*c^12*d^27*e^14 + 1639292928*B*b^31*c^11*d^26*e^15 - 1547694080*B*b^
32*c^10*d^25*e^16 + 1115799552*B*b^33*c^9*d^24*e^17 - 624861184*B*b^34*c^8*
d^23*e^18 + 271372288*B*b^35*c^7*d^22*e^19 - 89988096*B*b^36*c^6*d^21*e^20
+ 22077440*B*b^37*c^5*d^20*e^21 - 3784704*B*b^38*c^4*d^19*e^22 + 405504*B*b
^39*c^3*d^18*e^23 - 20480*B*b^40*c^2*d^17*e^24))*(-(2304*A^2*c^13*d^4 + 204
49*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^
2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14
976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e -
17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e +
56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10

*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^1

6 - 571539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*
b^39*c^6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^
21 + 180224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23) - 24576*A*b^18*c^
24*d^38*e^3 + 466944*A*b^19*c^23*d^37*e^4 - 4185088*A*b^20*c^22*d^36*e^5 +
23500800*A*b^21*c^21*d^35*e^6 - 92710912*A*b^22*c^20*d^34*e^7 + 273566720*A
*b^23*c^19*d^33*e^8 - 629578752*A*b^24*c^18*d^32*e^9 + 1169833984*A*b^25*c^
17*d^31*e^10 - 1818910720*A*b^26*c^16*d^30*e^11 + 2465058816*A*b^27*c^15*d^
29*e^12 - 3031169024*A*b^28*c^14*d^28*e^13 + 3457871872*A*b^29*c^13*d^27*e^
14 - 3626348544*A*b^30*c^12*d^26*e^15 + 3385559040*A*b^31*c^11*d^25*e^16 -
2714064896*A*b^32*c^10*d^24*e^17 + 1813512192*A*b^33*c^9*d^23*e^18 - 986251
264*A*b^34*c^8*d^22*e^19 + 426815488*A*b^35*c^7*d^21*e^20 - 143109120*A*b^3
6*c^6*d^20*e^21 + 35796992*A*b^37*c^5*d^19*e^22 - 6285312*A*b^38*c^4*d^18*e
^23 + 691200*A*b^39*c^3*d^17*e^24 - 35840*A*b^40*c^2*d^16*e^25 + 12288*B*b^
19*c^23*d^38*e^3 - 238592*B*b^20*c^22*d^37*e^4 + 2187264*B*b^21*c^21*d^36*e
^5 - 12492800*B*b^22*c^20*d^35*e^6 + 49401856*B*b^23*c^19*d^34*e^7 - 141926
400*B*b^24*c^18*d^33*e^8 + 300793856*B*b^25*c^17*d^32*e^9 - 460562432*B*b^2
6*c^16*d^31*e^10 + 455516160*B*b^27*c^15*d^30*e^11 - 116267008*B*b^28*c^14*
d^29*e^12 - 543981568*B*b^29*c^13*d^28*e^13 + 1250156544*B*b^30*c^12*d^27*e
^14 - 1639292928*B*b^31*c^11*d^26*e^15 + 1547694080*B*b^32*c^10*d^25*e^16 -
 1115799552*B*b^33*c^9*d^24*e^17 + 624861184*B*b^34*c^8*d^23*e^18 - 2713722
88*B*b^35*c^7*d^22*e^19 + 89988096*B*b^36*c^6*d^21*e^20 - 22077440*B*b^37*c
^5*d^20*e^21 + 3784704*B*b^38*c^4*d^19*e^22 - 405504*B*b^39*c^3*d^18*e^23 +
 20480*B*b^40*c^2*d^17*e^24))*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4
+ 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2
+ 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*
e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*
d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*
d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c
^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4
 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^1
8*c*d*e^8)))^(1/2) - ((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 1061
6832*A^2*b^13*c^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A
^2*b^15*c^24*d^33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*
b^17*c^22*d^31*e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^
19*c^20*d^29*e^9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^
21*c^18*d^27*e^11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b
^23*c^16*d^25*e^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b
^25*c^14*d^23*e^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^
27*c^12*d^21*e^17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^2
9*c^10*d^19*e^19 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c
^8*d^17*e^21 + 301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^1
5*e^23 + 19930880*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 +
 156800*A^2*b^36*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^
2*b^15*c^24*d^35*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17
*c^22*d^33*e^5 + 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^2
0*d^31*e^7 + 3062171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d
^29*e^9 + 6076371840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^2
7*e^11 + 3273549312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*
e^13 - 668122240*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^1
5 - 107134720*B^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 +
 437847168*B^2*b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 1219
89120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^
2*b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d
^14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3
- 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878
764800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 1071354
5216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851
840*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 1546352
3328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491

840*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 17844992
0*A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368
*A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*
B*b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^3
3*c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^
14*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2
*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*
c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^
2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424
*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056
*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d
^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^1
4*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^
2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 204
49*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^
2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14
976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e -
 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e +
 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10
*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 1
26*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*
c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^
23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5
 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b
^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^
33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 -
 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 23020339
20*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8
*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 1
2451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d
^21*e^22 - 8192*b^43*c^2*d^20*e^23) + 24576*A*b^18*c^24*d^38*e^3 - 466944*A
*b^19*c^23*d^37*e^4 + 4185088*A*b^20*c^22*d^36*e^5 - 23500800*A*b^21*c^21*d
^35*e^6 + 92710912*A*b^22*c^20*d^34*e^7 - 273566720*A*b^23*c^19*d^33*e^8 +
629578752*A*b^24*c^18*d^32*e^9 - 1169833984*A*b^25*c^17*d^31*e^10 + 1818910
720*A*b^26*c^16*d^30*e^11 - 2465058816*A*b^27*c^15*d^29*e^12 + 3031169024*A
*b^28*c^14*d^28*e^13 - 3457871872*A*b^29*c^13*d^27*e^14 + 3626348544*A*b^30
*c^12*d^26*e^15 - 3385559040*A*b^31*c^11*d^25*e^16 + 2714064896*A*b^32*c^10
*d^24*e^17 - 1813512192*A*b^33*c^9*d^23*e^18 + 986251264*A*b^34*c^8*d^22*e^
19 - 426815488*A*b^35*c^7*d^21*e^20 + 143109120*A*b^36*c^6*d^20*e^21 - 3579
6992*A*b^37*c^5*d^19*e^22 + 6285312*A*b^38*c^4*d^18*e^23 - 691200*A*b^39*c^
3*d^17*e^24 + 35840*A*b^40*c^2*d^16*e^25 - 12288*B*b^19*c^23*d^38*e^3 + 238
592*B*b^20*c^22*d^37*e^4 - 2187264*B*b^21*c^21*d^36*e^5 + 12492800*B*b^22*c
^20*d^35*e^6 - 49401856*B*b^23*c^19*d^34*e^7 + 141926400*B*b^24*c^18*d^33*e
^8 - 300793856*B*b^25*c^17*d^32*e^9 + 460562432*B*b^26*c^16*d^31*e^10 - 455
516160*B*b^27*c^15*d^30*e^11 + 116267008*B*b^28*c^14*d^29*e^12 + 543981568*
B*b^29*c^13*d^28*e^13 - 1250156544*B*b^30*c^12*d^27*e^14 + 1639292928*B*b^3
1*c^11*d^26*e^15 - 1547694080*B*b^32*c^10*d^25*e^16 + 1115799552*B*b^33*c^9
*d^24*e^17 - 624861184*B*b^34*c^8*d^23*e^18 + 271372288*B*b^35*c^7*d^22*e^1
9 - 89988096*B*b^36*c^6*d^21*e^20 + 22077440*B*b^37*c^5*d^20*e^21 - 3784704
*B*b^38*c^4*d^19*e^22 + 405504*B*b^39*c^3*d^18*e^23 - 20480*B*b^40*c^2*d^17
e^24))(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4
 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^
2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10
*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^1
2*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*
c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7
*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^
5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2) - 1
769472*A^3*b^8*c^28*d^33*e^3 + 29196288*A^3*b^9*c^27*d^32*e^4 - 222621696*A

```
^3*b^10*c^26*d^31*e^5 + 1037076480*A^3*b^11*c^25*d^30*e^6 - 3281114880*A^3*
b^12*c^24*d^29*e^7 + 7384738176*A^3*b^13*c^23*d^28*e^8 - 11940731264*A^3*b^
14*c^22*d^27*e^9 + 13391621568*A^3*b^15*c^21*d^26*e^10 - 8822378240*A^3*b^1
6*c^20*d^25*e^11 - 174168800*A^3*b^17*c^19*d^24*e^12 + 7908536064*A^3*b^18*
c^18*d^23*e^13 - 10270788736*A^3*b^19*c^17*d^22*e^14 + 8868525952*A^3*b^20*
c^16*d^21*e^15 - 8022944160*A^3*b^21*c^15*d^20*e^16 + 9013107840*A^3*b^22*c
^14*d^19*e^17 - 9481058368*A^3*b^23*c^13*d^18*e^18 + 7612941312*A^3*b^24*c^
12*d^17*e^19 - 4396193824*A^3*b^25*c^11*d^16*e^20 + 1772817920*A^3*b^26*c^1
0*d^15*e^21 - 475772160*A^3*b^27*c^9*d^14*e^22 + 76585600*A^3*b^28*c^8*d^13
*e^23 - 5605600*A^3*b^29*c^7*d^12*e^24 + 221184*B^3*b^11*c^25*d^33*e^3 - 39
26016*B^3*b^12*c^24*d^32*e^4 + 32366592*B^3*b^13*c^23*d^31*e^5 - 164896000*
B^3*b^14*c^22*d^30*e^6 + 582860160*B^3*b^15*c^21*d^29*e^7 - 1521620992*B^3*
b^16*c^20*d^28*e^8 + 3046416128*B^3*b^17*c^19*d^27*e^9 - 4775206656*B^3*b^1
8*c^18*d^26*e^10 + 5868734080*B^3*b^19*c^17*d^25*e^11 - 5470136320*B^3*b^20
*c^16*d^24*e^12 + 3377797632*B^3*b^21*c^15*d^23*e^13 - 415972608*B^3*b^22*c
^14*d^22*e^14 - 1985838464*B^3*b^23*c^13*d^21*e^15 + 2839818240*B^3*b^24*c^
12*d^20*e^16 - 2295415040*B^3*b^25*c^11*d^19*e^17 + 1258898176*B^3*b^26*c^1
0*d^18*e^18 - 477861504*B^3*b^27*c^9*d^17*e^19 + 120854528*B^3*b^28*c^8*d^1
6*e^20 - 18360320*B^3*b^29*c^7*d^15*e^21 + 1267200*B^3*b^30*c^6*d^14*e^22 -
 1327104*A*B^2*b^10*c^26*d^33*e^3 + 23003136*A*B^2*b^11*c^25*d^32*e^4 - 184
891392*A*B^2*b^12*c^24*d^31*e^5 + 915217920*A*B^2*b^13*c^23*d^30*e^6 - 3123
922560*A*B^2*b^14*c^22*d^29*e^7 + 7795266912*A*B^2*b^15*c^21*d^28*e^8 - 146
83820928*A*B^2*b^16*c^20*d^27*e^9 + 21169857216*A*B^2*b^17*c^19*d^26*e^10 -
 23230183680*A*B^2*b^18*c^18*d^25*e^11 + 18702610080*A*B^2*b^19*c^17*d^24*e
^12 - 9899526912*A*B^2*b^20*c^16*d^23*e^13 + 2305438848*A*B^2*b^21*c^15*d^2
2*e^14 + 70959744*A*B^2*b^22*c^14*d^21*e^15 + 1974487200*A*B^2*b^23*c^13*d^
20*e^16 - 4476113280*A*B^2*b^24*c^12*d^19*e^17 + 4700186304*A*B^2*b^25*c^11
*d^18*e^18 - 3063277056*A*B^2*b^26*c^10*d^17*e^19 + 1316718432*A*B^2*b^27*c
^9*d^16*e^20 - 366397440*A*B^2*b^28*c^8*d^15*e^21 + 60149760*A*B^2*b^29*c^7
*d^14*e^22 - 4435200*A*B^2*b^30*c^6*d^13*e^23 + 2654208*A^2*B*b^9*c^27*d^33
*e^3 - 44900352*A^2*B*b^10*c^26*d^32*e^4 + 351627264*A^2*B*b^11*c^25*d^31*e
^5 - 1689454080*A^2*B*b^12*c^24*d^30*e^6 + 5557921920*A^2*B*b^13*c^23*d^29*
e^7 - 13203598944*A^2*B*b^14*c^22*d^28*e^8 + 23187902976*A^2*B*b^15*c^21*d^
27*e^9 - 30060446592*A^2*B*b^16*c^20*d^26*e^10 + 27711116160*A^2*B*b^17*c^1
9*d^25*e^11 - 15946476480*A^2*B*b^18*c^18*d^24*e^12 + 2660427264*A^2*B*b^19
*c^17*d^23*e^13 + 2948815104*A^2*B*b^20*c^16*d^22*e^14 + 560587392*A^2*B*b^
21*c^15*d^21*e^15 - 6378785280*A^2*B*b^22*c^14*d^20*e^16 + 7823884800*A^2*B
*b^23*c^13*d^19*e^17 - 4720480128*A^2*B*b^24*c^12*d^18*e^18 + 1069433472*A^
2*B*b^25*c^11*d^17*e^19 + 565023936*A^2*B*b^26*c^10*d^16*e^20 - 581644800*A
^2*B*b^27*c^9*d^15*e^21 + 228341760*A^2*B*b^28*c^8*d^14*e^22 - 45830400*A^2
*B*b^29*c^7*d^13*e^23 + 3880800*A^2*B*b^30*c^6*d^12*e^24))*(-(2304*A^2*c^13
*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4
+ 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^
8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^
10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^
11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*
e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d
^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6
+ 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1110 $\int (A+Bx)(d+ex)^5 \left(a+cx^2\right) dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^7 \left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{(d+ex)^6 \left(ae^2+cd^2\right) (Bd-Ae)}{6e^4}-\frac{c(d+ex)^8(3Bd-Ae)}{8e^4}+\frac{Bc(d+ex)^9}{9e^4}$$

Rubi [A] time = 0.18, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^7 \left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{(d+ex)^6 \left(ae^2+cd^2\right) (Bd-Ae)}{6e^4}-\frac{c(d+ex)^8(3Bd-Ae)}{8e^4}+\frac{Bc(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^6)/(6*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^7)/(7*e^4) - (c*(3*B*d - A*e)*(d + e*x)^8)/(8*e^4) +
 (B*c*(d + e*x)^9)/(9*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5 \left(a+cx^2\right) dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^5}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^6}{e^3}+\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^6}{6e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^7}{7e^4}-\frac{c(3}{}\end{aligned}$$

Mathematica [B] time = 0.06, size = 233, normalized size = 2.16

$$\frac{1}{7}e^3x^7\left(aBe^2+5Acde+10Bcd^2\right)+\frac{1}{3}d^3x^3\left(10aAe^2+5aBde+Acd^2\right)+\frac{1}{6}e^2x^6\left(aAe^3+5aBde^2+10Acd^2e+10Bcd^3\right)+dex^5\left(aAe^3+2aBde^2+2Acd^2e+Bcd^3\right)+\frac{1}{4}d^2x^4\left(10aAe^3+10aBde^2+5Acd^2e+Bcd^3\right)+\frac{1}{2}ad^4x^2(5Ae+Bd)+aAd^5x+\frac{1}{8}ce^4x^8(Ae+5Bd)+\frac{1}{9}Bce^5x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + c*x^2),x]
```

```
[Out] a*A*d^5*x + (a*d^4*(B*d + 5*A*e)*x^2)/2 + (d^3*(A*c*d^2 + 5*a*B*d*e + 10*a*
A*e^2)*x^3)/3 + (d^2*(B*c*d^3 + 5*A*c*d^2*e + 10*a*B*d*e^2 + 10*a*A*e^3)*x^
4)/4 + d*e*(B*c*d^3 + 2*A*c*d^2*e + 2*a*B*d*e^2 + a*A*e^3)*x^5 + (e^2*(10*B
*c*d^3 + 10*A*c*d^2*e + 5*a*B*d*e^2 + a*A*e^3)*x^6)/6 + (e^3*(10*B*c*d^2 +
5*A*c*d*e + a*B*e^2)*x^7)/7 + (c*e^4*(5*B*d + A*e)*x^8)/8 + (B*c*e^5*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5 \left(a+cx^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + c*x^2), x]
```

fricas [B] time = 0.39, size = 268, normalized size = 2.48

$$\frac{1}{9}x^9e^5cB + \frac{5}{8}x^8e^4dcB + \frac{1}{8}x^8e^5cA + \frac{10}{7}x^7e^3d^2cB + \frac{1}{7}x^7e^5aB + \frac{5}{7}x^7e^4dcA + \frac{5}{3}x^6e^2d^3cB + \frac{5}{6}x^6e^4daB + \frac{5}{3}x^6e^3d^2cA + \frac{1}{6}x^6e^5aA + x^5ed^4cB + 2x^5e^3d^2aB + 2x^5e^2d^3cA + x^5e^4daA + \frac{1}{4}x^4d^5cB + \frac{5}{2}x^4e^2d^3aB + \frac{5}{4}x^4ed^4cA + \frac{5}{2}x^4e^3d^2aA + \frac{5}{3}x^3ed^4aB + \frac{1}{3}x^3d^5cA + \frac{10}{3}x^3e^2d^3aA + \frac{1}{2}x^2d^5aB + \frac{5}{2}x^2ed^4aA + xd^5aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*c*B + 5/8*x^8*e^4*d*c*B + 1/8*x^8*e^5*c*A + 10/7*x^7*e^3*d^2*c*
B + 1/7*x^7*e^5*a*B + 5/7*x^7*e^4*d*c*A + 5/3*x^6*e^2*d^3*c*B + 5/6*x^6*e^4
*d*a*B + 5/3*x^6*e^3*d^2*c*A + 1/6*x^6*e^5*a*A + x^5*e*d^4*c*B + 2*x^5*e^3*
d^2*a*B + 2*x^5*e^2*d^3*c*A + x^5*e^4*d*a*A + 1/4*x^4*d^5*c*B + 5/2*x^4*e^2
*d^3*a*B + 5/4*x^4*e*d^4*c*A + 5/2*x^4*e^3*d^2*a*A + 5/3*x^3*e*d^4*a*B + 1/
3*x^3*d^5*c*A + 10/3*x^3*e^2*d^3*a*A + 1/2*x^2*d^5*a*B + 5/2*x^2*e*d^4*a*A
+ x*d^5*a*A
```

giac [B] time = 0.16, size = 256, normalized size = 2.37

$$\frac{1}{9}Bcx^9e^5 + \frac{5}{8}Bcdx^8e^4 + \frac{10}{7}Bcd^2x^7e^3 + \frac{5}{3}Bcd^3x^6e^2 + Bcd^4x^5e + \frac{1}{4}Bcd^5x^4 + \frac{1}{8}Acx^8e^5 + \frac{5}{7}Acdx^7e^4 + \frac{5}{3}Acd^2x^6e^3 + 2\,Acd^3x^5e^2 + \frac{5}{4}Acd^4x^4e + \frac{1}{3}Acd^5x^3 + \frac{1}{7}Bax^7e^5 + \frac{5}{6}Badx^6e^4 + 2\,Bad^2x^5e^3 + \frac{5}{2}Bad^3x^4e^2 + \frac{5}{3}Bad^4x^3e + \frac{1}{2}Bad^5x^2 + \frac{1}{6}Aax^6e^5 + Aadx^5e^4 + \frac{5}{2}Aad^2x^4e^3 + \frac{10}{3}Aad^3x^3e^2 + \frac{5}{2}Aad^4x^2e + Aad^5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/9*B*c*x^9*e^5 + 5/8*B*c*d*x^8*e^4 + 10/7*B*c*d^2*x^7*e^3 + 5/3*B*c*d^3*x^
6*e^2 + B*c*d^4*x^5*e + 1/4*B*c*d^5*x^4 + 1/8*A*c*x^8*e^5 + 5/7*A*c*d*x^7*e
^4 + 5/3*A*c*d^2*x^6*e^3 + 2*A*c*d^3*x^5*e^2 + 5/4*A*c*d^4*x^4*e + 1/3*A*c*
d^5*x^3 + 1/7*B*a*x^7*e^5 + 5/6*B*a*d*x^6*e^4 + 2*B*a*d^2*x^5*e^3 + 5/2*B*a
*d^3*x^4*e^2 + 5/3*B*a*d^4*x^3*e + 1/2*B*a*d^5*x^2 + 1/6*A*a*x^6*e^5 + A*a*
d*x^5*e^4 + 5/2*A*a*d^2*x^4*e^3 + 10/3*A*a*d^3*x^3*e^2 + 5/2*A*a*d^4*x^2*e
+ A*a*d^5*x
```

maple [B] time = 0.05, size = 247, normalized size = 2.29

$$\frac{Bc\,e^5x^9}{9} + \frac{\left(A\,e^5 + 5Bd\,e^4\right)c\,x^8}{8} + Aa\,d^5x + \frac{\left(Ba\,e^5 + \left(5Ad\,e^4 + 10B\,d^2e^3\right)c\right)x^7}{7} + \frac{\left(\left(A\,e^5 + 5Bd\,e^4\right)a + \left(10A\,d^2e^3 + 10B\,d^3e^2\right)c\right)x^6}{6} + \frac{\left(\left(5Ad\,e^4 + 10B\,d^2e^3\right)a + \left(10A\,d^3e^2 + 5B\,d^4e\right)c\right)x^5}{5} + \frac{\left(\left(10A\,d^2e^3 + 10B\,d^3e^2\right)a + \left(5A\,d^4e + B\,d^5\right)c\right)x^4}{4} + \frac{\left(5A\,d^4e + B\,d^5\right)a\,x^2}{2} + \frac{\left(Ac\,d^5 + \left(10A\,d^3e^2 + 5B\,d^4e\right)a\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+a),x)
```

```
[Out] 1/9*B*e^5*c*x^9+1/8*(A*e^5+5*B*d*e^4)*c*x^8+1/7*((5*A*d*e^4+10*B*d^2*e^3)*c
+B*e^5*a)*x^7+1/6*((10*A*d^2*e^3+10*B*d^3*e^2)*c+(A*e^5+5*B*d*e^4)*a)*x^6+1
/5*((10*A*d^3*e^2+5*B*d^4*e)*c+(5*A*d*e^4+10*B*d^2*e^3)*a)*x^5+1/4*((5*A*d^
4*e+B*d^5)*c+(10*A*d^2*e^3+10*B*d^3*e^2)*a)*x^4+1/3*(A*d^5*c+(10*A*d^3*e^2+
5*B*d^4*e)*a)*x^3+1/2*(5*A*d^4*e+B*d^5)*a*x^2+A*d^5*a*x
```

maxima [B] time = 0.55, size = 237, normalized size = 2.19

$$\frac{1}{9}\,Bce^5x^9 + \frac{1}{8}\,(5\,Bcde^4 + Ace^5)x^8 + Aad^5x + \frac{1}{7}\,(10\,Bcd^2e^3 + 5\,Acde^4 + Bae^5)x^7 + \frac{1}{6}\,(10\,Bcd^3e^2 + 10\,Acd^2e^3 + 5\,Bade^4 + Aae^5)x^6 + (Bcd^4e + 2\,Acd^3e^2 + 2\,Bad^2e^3 + Aade^4)x^5 + \frac{1}{4}\,(Bcd^5 + 5\,Acd^4e + 10\,Bad^3e^2 + 10\,Aad^2e^3)x^4 + \frac{1}{3}\,(Acd^5 + 5\,Bad^4e + 10\,Aad^3e^2)x^3 + \frac{1}{2}\,(Bad^5 + 5\,Aad^4e)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/9*B*c*e^5*x^9 + 1/8*(5*B*c*d*e^4 + A*c*e^5)*x^8 + A*a*d^5*x + 1/7*(10*B*c
*d^2*e^3 + 5*A*c*d*e^4 + B*a*e^5)*x^7 + 1/6*(10*B*c*d^3*e^2 + 10*A*c*d^2*e^
3 + 5*B*a*d*e^4 + A*a*e^5)*x^6 + (B*c*d^4*e + 2*A*c*d^3*e^2 + 2*B*a*d^2*e^3
 + A*a*d*e^4)*x^5 + 1/4*(B*c*d^5 + 5*A*c*d^4*e + 10*B*a*d^3*e^2 + 10*A*a*d^
2*e^3)*x^4 + 1/3*(A*c*d^5 + 5*B*a*d^4*e + 10*A*a*d^3*e^2)*x^3 + 1/2*(B*a*d^
5 + 5*A*a*d^4*e)*x^2
```

mupad [B] time = 0.12, size = 231, normalized size = 2.14

$$x^5\,\left(B\,c\,d^4\,e+2\,A\,c\,d^3\,e^2+2\,B\,a\,d^2\,e^3+A\,a\,d\,e^4\right)+x^3\,\left(\frac{A\,c\,d^5}{3}+\frac{5\,B\,a\,d^4\,e}{3}+\frac{10\,A\,a\,d^3\,e^2}{3}\right)+x^7\,\left(\frac{10\,B\,c\,d^2\,e^3}{7}+\frac{5\,A\,c\,d\,e^4}{7}+\frac{B\,a\,e^5}{7}\right)+x^4\,\left(\frac{B\,c\,d^5}{4}+\frac{5\,A\,c\,d^4\,e}{4}+\frac{5\,B\,a\,d^3\,e^2}{2}+\frac{5\,A\,a\,d^2\,e^3}{2}\right)+x^6\,\left(\frac{5\,B\,c\,d^3\,e^2}{3}+\frac{5\,A\,c\,d^2\,e^3}{3}+\frac{5\,B\,a\,d\,e^4}{6}+\frac{A\,a\,e^5}{6}\right)+A\,a\,d^5\,x+\frac{B\,c\,e^5\,x^9}{9}+\frac{a\,d^4\,x^2\,\left(5\,A\,e+B\,d\right)}{2}+\frac{c\,e^4\,x^8\,\left(A\,e+5\,B\,d\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^5,x)
```

```
[Out] x^5*(A*a*d*e^4 + B*c*d^4*e + 2*B*a*d^2*e^3 + 2*A*c*d^3*e^2) + x^3*((A*c*d^5
)/3 + (5*B*a*d^4*e)/3 + (10*A*a*d^3*e^2)/3) + x^7*((B*a*e^5)/7 + (5*A*c*d*e
^4)/7 + (10*B*c*d^2*e^3)/7) + x^4*((B*c*d^5)/4 + (5*A*c*d^4*e)/4 + (5*A*a*d
^2*e^3)/2 + (5*B*a*d^3*e^2)/2) + x^6*((A*a*e^5)/6 + (5*B*a*d*e^4)/6 + (5*A*
c*d^2*e^3)/3 + (5*B*c*d^3*e^2)/3) + A*a*d^5*x + (B*c*e^5*x^9)/9 + (a*d^4*x^
2*(5*A*e + B*d))/2 + (c*e^4*x^8*(A*e + 5*B*d))/8
```

sympy [B] time = 0.11, size = 287, normalized size = 2.66

$$Aad^5x+\frac{Bce^5x^9}{9}+x^8\left(\frac{Ace^5}{8}+\frac{5Bcde^4}{8}\right)+x^7\left(\frac{5Acde^4}{7}+\frac{Bae^5}{7}+\frac{10Bcd^2e^3}{7}\right)+x^6\left(\frac{Aae^5}{6}+\frac{5Acd^2e^3}{3}+\frac{5Bade^4}{6}+\frac{5Bcd^3e^2}{3}\right)+x^5\left(Aade^4+2Acd^3e^2+2Bad^2e^3+Bcd^4e\right)+x^4\left(\frac{5Aad^2e^3}{2}+\frac{5Acd^4e}{4}+\frac{5Bad^3e^2}{2}+\frac{Bcd^5}{4}\right)+x^3\left(\frac{10Aad^3e^2}{3}+\frac{Acd^5}{3}+\frac{5Bad^4e}{3}\right)+x^2\left(\frac{5Aad^4e}{2}+\frac{Bad^5}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+a),x)
```

```
[Out] A*a*d**5*x + B*c*e**5*x**9/9 + x**8*(A*c*e**5/8 + 5*B*c*d*e**4/8) + x**7*(5
*A*c*d*e**4/7 + B*a*e**5/7 + 10*B*c*d**2*e**3/7) + x**6*(A*a*e**5/6 + 5*A*c
*d**2*e**3/3 + 5*B*a*d*e**4/6 + 5*B*c*d**3*e**2/3) + x**5*(A*a*d*e**4 + 2*A
*c*d**3*e**2 + 2*B*a*d**2*e**3 + B*c*d**4*e) + x**4*(5*A*a*d**2*e**3/2 + 5*
A*c*d**4*e/4 + 5*B*a*d**3*e**2/2 + B*c*d**5/4) + x**3*(10*A*a*d**3*e**2/3 +
 A*c*d**5/3 + 5*B*a*d**4*e/3) + x**2*(5*A*a*d**4*e/2 + B*a*d**5/2)
```

3.1111 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right) dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^6 \left(aBe^2-2Acde+3Bcd^2\right)}{6e^4}-\frac{(d+ex)^5 \left(ae^2+cd^2\right) (Bd-Ae)}{5e^4}-\frac{c(d+ex)^7(3Bd-Ae)}{7e^4}+\frac{Bc(d+ex)^8}{8e^4}$$

Rubi [A] time = 0.14, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^6 \left(aBe^2-2Acde+3Bcd^2\right)}{6e^4}-\frac{(d+ex)^5 \left(ae^2+cd^2\right) (Bd-Ae)}{5e^4}-\frac{c(d+ex)^7(3Bd-Ae)}{7e^4}+\frac{Bc(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^5)/(5*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^6)/(6*e^4) - (c*(3*B*d - A*e)*(d + e*x)^7)/(7*e^4) +
 (B*c*(d + e*x)^8)/(8*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a+cx^2\right) dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^5}{e^3}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^6}{6e^4}-$$

Mathematica [A] time = 0.05, size = 194, normalized size = 1.80

$$\frac{1}{6}e^2x^6\left(aBe^2+4Acde+6Bcd^2\right)+\frac{1}{3}d^2x^3\left(6aAe^2+4aBde+Acd^2\right)+\frac{1}{5}ex^5\left(aAe^3+4aBde^2+6Acd^2e+4Bcd^3\right)+\frac{1}{4}dx^4\left(4aAe^3+6aBde^2+4Acd^2e+Bcd^3\right)+\frac{1}{2}ad^3x^2(4Ae+Bd)+aAd^4x+\frac{1}{7}ce^3x^7(Ae+4Bd)+\frac{1}{8}Bce^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + c*x^2),x]
```

```
[Out] a*A*d^4*x + (a*d^3*(B*d + 4*A*e)*x^2)/2 + (d^2*(A*c*d^2 + 4*a*B*d*e + 6*a*A
*e^2)*x^3)/3 + (d*(B*c*d^3 + 4*A*c*d^2*e + 6*a*B*d*e^2 + 4*a*A*e^3)*x^4)/4
+ (e*(4*B*c*d^3 + 6*A*c*d^2*e + 4*a*B*d*e^2 + a*A*e^3)*x^5)/5 + (e^2*(6*B*c
*d^2 + 4*A*c*d*e + a*B*e^2)*x^6)/6 + (c*e^3*(4*B*d + A*e)*x^7)/7 + (B*c*e^4
*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a+cx^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + c*x^2), x]
```

fricas [B] time = 0.36, size = 215, normalized size = 1.99

$$\frac{1}{8}x^8e^4cB+\frac{4}{7}x^7e^3dcB+\frac{1}{7}x^7e^4cA+x^6e^2d^2cB+\frac{1}{6}x^6e^4aB+\frac{2}{3}x^6e^3dcA+\frac{4}{5}x^5ed^3cB+\frac{4}{5}x^5e^3daB+\frac{6}{5}x^5e^2d^2cA+\frac{1}{5}x^5e^4aA+\frac{1}{4}x^4d^4cB+\frac{3}{2}x^4e^2d^2aB+x^4ed^3cA+x^4e^3daA+\frac{4}{3}x^3ed^3aB+\frac{1}{3}x^3d^4cA+2x^3e^2d^2aA+\frac{1}{2}x^2d^4aB+2x^2ed^3aA+xd^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c*B + 4/7*x^7*e^3*d*c*B + 1/7*x^7*e^4*c*A + x^6*e^2*d^2*c*B + 1
/6*x^6*e^4*a*B + 2/3*x^6*e^3*d*c*A + 4/5*x^5*e*d^3*c*B + 4/5*x^5*e^3*d*a*B
+ 6/5*x^5*e^2*d^2*c*A + 1/5*x^5*e^4*a*A + 1/4*x^4*d^4*c*B + 3/2*x^4*e^2*d^2
*a*B + x^4*e*d^3*c*A + x^4*e^3*d*a*A + 4/3*x^3*e*d^3*a*B + 1/3*x^3*d^4*c*A
+ 2*x^3*e^2*d^2*a*A + 1/2*x^2*d^4*a*B + 2*x^2*e*d^3*a*A + x*d^4*a*A
```

giac [B] time = 0.15, size = 207, normalized size = 1.92

$$\frac{1}{8}Bcx^8e^4+\frac{4}{7}Bcdx^7e^3+Bcd^2x^6e^2+\frac{4}{5}Bcd^3x^5e+\frac{1}{4}Bcd^4x^4+\frac{1}{7}Acx^7e^4+\frac{2}{3}Acdx^6e^3+\frac{6}{5}Acd^2x^5e^2+Acd^3x^4e+\frac{1}{3}Acd^4x^3+\frac{1}{6}Bax^6e^4+\frac{4}{5}Badx^5e^3+\frac{3}{2}Bad^2x^4e^2+\frac{4}{3}Bad^3x^3e+\frac{1}{2}Bad^4x^2+\frac{1}{5}Aax^5e^4+Aadx^4e^3+2Aad^2x^3e^2+2Aad^3x^2e+Aad^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8*e^4 + 4/7*B*c*d*x^7*e^3 + B*c*d^2*x^6*e^2 + 4/5*B*c*d^3*x^5*e +
 1/4*B*c*d^4*x^4 + 1/7*A*c*x^7*e^4 + 2/3*A*c*d*x^6*e^3 + 6/5*A*c*d^2*x^5*e^
2 + A*c*d^3*x^4*e + 1/3*A*c*d^4*x^3 + 1/6*B*a*x^6*e^4 + 4/5*B*a*d*x^5*e^3 +
 3/2*B*a*d^2*x^4*e^2 + 4/3*B*a*d^3*x^3*e + 1/2*B*a*d^4*x^2 + 1/5*A*a*x^5*e^
4 + A*a*d*x^4*e^3 + 2*A*a*d^2*x^3*e^2 + 2*A*a*d^3*x^2*e + A*a*d^4*x
```

maple [A] time = 0.04, size = 199, normalized size = 1.84

$$\frac{Bce^4x^8}{8}+\frac{\left(Ae^4+4Bde^3\right)cx^7}{7}+Aad^4x+\frac{\left(Bae^4+\left(4Ade^3+6Bd^2e^2\right)c\right)x^6}{6}+\frac{\left(\left(Ae^4+4Bde^3\right)a+\left(6Ad^2e^2+4Bd^3e\right)c\right)x^5}{5}+\frac{\left(\left(4Ade^3+6Bd^2e^2\right)a+\left(4Ad^3e+Bd^4\right)c\right)x^4}{4}+\frac{\left(4Ad^3e+Bd^4\right)ax^2}{2}+\frac{\left(Acd^4+\left(6Ad^2e^2+4Bd^3e\right)a\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+a),x)
```

```
[Out] 1/8*B*e^4*c*x^8+1/7*(A*e^4+4*B*d*e^3)*c*x^7+1/6*((4*A*d*e^3+6*B*d^2*e^2)*c+
B*e^4*a)*x^6+1/5*((6*A*d^2*e^2+4*B*d^3*e)*c+(A*e^4+4*B*d*e^3)*a)*x^5+1/4*((
4*A*d^3*e+B*d^4)*c+(4*A*d*e^3+6*B*d^2*e^2)*a)*x^4+1/3*(A*d^4*c+(6*A*d^2*e^2
+4*B*d^3*e)*a)*x^3+1/2*(4*A*d^3*e+B*d^4)*a*x^2+A*d^4*a*x
```

maxima [A] time = 0.47, size = 194, normalized size = 1.80

$$\frac{1}{8}Bce^4x^8+\frac{1}{7}\left(4Bcde^3+Ace^4\right)x^7+Aad^4x+\frac{1}{6}\left(6Bcd^2e^2+4Acde^3+Bae^4\right)x^6+\frac{1}{5}\left(4Bcd^3e+6Acd^2e^2+4Bade^3+Aae^4\right)x^5+\frac{1}{4}\left(Bcd^4+4Acd^3e+6Bad^2e^2+4Aade^3\right)x^4+\frac{1}{3}\left(Acd^4+4Bad^3e+6Aad^2e^2\right)x^3+\frac{1}{2}\left(Bad^4+4Aad^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/8*B*c*e^4*x^8 + 1/7*(4*B*c*d*e^3 + A*c*e^4)*x^7 + A*a*d^4*x + 1/6*(6*B*c*
d^2*e^2 + 4*A*c*d*e^3 + B*a*e^4)*x^6 + 1/5*(4*B*c*d^3*e + 6*A*c*d^2*e^2 + 4
*B*a*d*e^3 + A*a*e^4)*x^5 + 1/4*(B*c*d^4 + 4*A*c*d^3*e + 6*B*a*d^2*e^2 + 4*
A*a*d*e^3)*x^4 + 1/3*(A*c*d^4 + 4*B*a*d^3*e + 6*A*a*d^2*e^2)*x^3 + 1/2*(B*a
*d^4 + 4*A*a*d^3*e)*x^2
```

mupad [B] time = 0.09, size = 185, normalized size = 1.71

$$x^3\left(\frac{Acd^4}{3}+\frac{4Bad^3e}{3}+2Aad^2e^2\right)+x^6\left(Bcd^2e^2+\frac{2Acde^3}{3}+\frac{Bae^4}{6}\right)+x^4\left(\frac{Bcd^4}{4}+Acd^3e+\frac{3Bad^2e^2}{2}+Aade^3\right)+x^5\left(\frac{4Bcd^3e}{5}+\frac{6Acd^2e^2}{5}+\frac{4Bade^3}{5}+\frac{Aae^4}{5}\right)+Aad^4x+\frac{Bce^4x^8}{8}+\frac{ad^3x^2\,(4Ae+Bd)}{2}+\frac{ce^3x^7\,(Ae+4Bd)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^3*((A*c*d^4)/3 + (4*B*a*d^3*e)/3 + 2*A*a*d^2*e^2) + x^6*((B*a*e^4)/6 + (2
*A*c*d*e^3)/3 + B*c*d^2*e^2) + x^4*((B*c*d^4)/4 + A*a*d*e^3 + A*c*d^3*e + (
3*B*a*d^2*e^2)/2) + x^5*((A*a*e^4)/5 + (4*B*a*d*e^3)/5 + (4*B*c*d^3*e)/5 +
(6*A*c*d^2*e^2)/5) + A*a*d^4*x + (B*c*e^4*x^8)/8 + (a*d^3*x^2*(4*A*e + B*d)
)/2 + (c*e^3*x^7*(A*e + 4*B*d))/7
```

sympy [B] time = 0.10, size = 226, normalized size = 2.09

$$Aad^4x + \frac{Bce^4x^8}{8} + x^7\left(\frac{Ace^4}{7} + \frac{4Bcde^3}{7}\right) + x^6\left(\frac{2Acde^3}{3} + \frac{Bae^4}{6} + Bcd^2e^2\right) + x^5\left(\frac{Aae^4}{5} + \frac{6Acd^2e^2}{5} + \frac{4Bade^3}{5} + \frac{4Bcd^3e}{5}\right) + x^4\left(Aade^3 + Acd^3e + \frac{3Bad^2e^2}{2} + \frac{Bcd^4}{4}\right) + x^3\left(2Aad^2e^2 + \frac{Acd^4}{3} + \frac{4Bad^3e}{3}\right) + x^2\left(2Aad^3e + \frac{Bad^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+a),x)
```

```
[Out] A*a*d**4*x + B*c*e**4*x**8/8 + x**7*(A*c*e**4/7 + 4*B*c*d*e**3/7) + x**6*(2
*A*c*d*e**3/3 + B*a*e**4/6 + B*c*d**2*e**2) + x**5*(A*a*e**4/5 + 6*A*c*d**2
*e**2/5 + 4*B*a*d*e**3/5 + 4*B*c*d**3*e/5) + x**4*(A*a*d*e**3 + A*c*d**3*e
+ 3*B*a*d**2*e**2/2 + B*c*d**4/4) + x**3*(2*A*a*d**2*e**2 + A*c*d**4/3 + 4*
B*a*d**3*e/3) + x**2*(2*A*a*d**3*e + B*a*d**4/2)
```

3.1112 $\int (A+Bx)(d+ex)^3 \left(a+cx^2\right) \, dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^5 \left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{(d+ex)^4 \left(ae^2+cd^2\right) (Bd-Ae)}{4e^4}-\frac{c(d+ex)^6(3Bd-Ae)}{6e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

Rubi [A] time = 0.11, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^5 \left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{(d+ex)^4 \left(ae^2+cd^2\right) (Bd-Ae)}{4e^4}-\frac{c(d+ex)^6(3Bd-Ae)}{6e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^4)/(4*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^5)/(5*e^4) - (c*(3*B*d - A*e)*(d + e*x)^6)/(6*e^4) +
 (B*c*(d + e*x)^7)/(7*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^3 \left(a+cx^2\right) \, dx = \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right) (d+ex)^3}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right) (d+ex)^4}{e^3}+\right.$$
$$= -\frac{(Bd-Ae) \left(cd^2+ae^2\right) (d+ex)^4}{4e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right) (d+ex)^5}{5e^4}-\frac{c(3}{}$$

Mathematica [A] time = 0.04, size = 150, normalized size = 1.39

$$\frac{1}{5}ex^5 \left(aBe^2+3Acde+3Bcd^2\right)+\frac{1}{3}dx^3 \left(3aAe^2+3aBde+Acd^2\right)+\frac{1}{4}x^4 \left(aAe^3+3aBde^2+3Acd^2e+Bcd^3\right)+\frac{1}{2}ad^2x^2(3Ae+Bd)+aAd^3x+\frac{1}{6}ce^2x^6(Ae+3Bd)+\frac{1}{7}Bce^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + c*x^2),x]
```

```
[Out] a*A*d^3*x + (a*d^2*(B*d + 3*A*e)*x^2)/2 + (d*(A*c*d^2 + 3*a*B*d*e + 3*a*A*e
^2)*x^3)/3 + ((B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x^4)/4 + (e*(
3*B*c*d^2 + 3*A*c*d*e + a*B*e^2)*x^5)/5 + (c*e^2*(3*B*d + A*e)*x^6)/6 + (B*
c*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3 \left(a+cx^2\right) \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + c*x^2), x]
```

fricas [A] time = 0.35, size = 164, normalized size = 1.52

$$\frac{1}{7}x^7e^3cB + \frac{1}{2}x^6e^2dcB + \frac{1}{6}x^6e^3cA + \frac{3}{5}x^5ed^2cB + \frac{1}{5}x^5e^3aB + \frac{3}{5}x^5e^2dcA + \frac{1}{4}x^4d^3cB + \frac{3}{4}x^4e^2daB + \frac{3}{4}x^4ed^2cA + \frac{1}{4}x^4e^3aA + x^3ed^2aB + \frac{1}{3}x^3d^3cA + x^3e^2daA + \frac{1}{2}x^2d^3aB + \frac{3}{2}x^2ed^2aA + xd^3aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c*B + 1/2*x^6*e^2*d*c*B + 1/6*x^6*e^3*c*A + 3/5*x^5*e*d^2*c*B +
 1/5*x^5*e^3*a*B + 3/5*x^5*e^2*d*c*A + 1/4*x^4*d^3*c*B + 3/4*x^4*e^2*d*a*B
+ 3/4*x^4*e*d^2*c*A + 1/4*x^4*e^3*a*A + x^3*e*d^2*a*B + 1/3*x^3*d^3*c*A + x
^3*e^2*d*a*A + 1/2*x^2*d^3*a*B + 3/2*x^2*e*d^2*a*A + x*d^3*a*A
```

giac [A] time = 0.15, size = 160, normalized size = 1.48

$$\frac{1}{7}Bcx^7e^3 + \frac{1}{2}Bcdx^6e^2 + \frac{3}{5}Bcd^2x^5e + \frac{1}{4}Bcd^3x^4 + \frac{1}{6}Acx^6e^3 + \frac{3}{5}Acdx^5e^2 + \frac{3}{4}Acd^2x^4e + \frac{1}{3}Acd^3x^3 + \frac{1}{5}Bax^5e^3 + \frac{3}{4}Badx^4e^2 + Bad^2x^3e + \frac{1}{2}Bad^3x^2 + \frac{1}{4}Aax^4e^3 + Aadx^3e^2 + \frac{3}{2}Aad^2x^2e + Aad^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7*e^3 + 1/2*B*c*d*x^6*e^2 + 3/5*B*c*d^2*x^5*e + 1/4*B*c*d^3*x^4 +
 1/6*A*c*x^6*e^3 + 3/5*A*c*d*x^5*e^2 + 3/4*A*c*d^2*x^4*e + 1/3*A*c*d^3*x^3
+ 1/5*B*a*x^5*e^3 + 3/4*B*a*d*x^4*e^2 + B*a*d^2*x^3*e + 1/2*B*a*d^3*x^2 + 1
/4*A*a*x^4*e^3 + A*a*d*x^3*e^2 + 3/2*A*a*d^2*x^2*e + A*a*d^3*x
```

maple [A] time = 0.04, size = 151, normalized size = 1.40

$$\frac{Bce^3x^7}{7} + \frac{\left(Ae^3 + 3Bde^2\right)cx^6}{6} + Aad^3x + \frac{\left(Bae^3 + \left(3Ade^2 + 3Bd^2e\right)c\right)x^5}{5} + \frac{\left(\left(Ae^3 + 3Bde^2\right)a + \left(3Ad^2e + Bd^3\right)c\right)x^4}{4} + \frac{\left(3Ad^2e + Bd^3\right)ax^2}{2} + \frac{\left(Acd^3 + \left(3Ade^2 + 3Bd^2e\right)a\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+a),x)
```

```
[Out] 1/7*B*e^3*c*x^7+1/6*(A*e^3+3*B*d*e^2)*c*x^6+1/5*((3*A*d*e^2+3*B*d^2*e)*c+B*
e^3*a)*x^5+1/4*((3*A*d^2*e+B*d^3)*c+(A*e^3+3*B*d*e^2)*a)*x^4+1/3*(A*d^3*c+(
3*A*d*e^2+3*B*d^2*e)*a)*x^3+1/2*(3*A*d^2*e+B*d^3)*a*x^2+A*d^3*a*x
```

maxima [A] time = 0.64, size = 148, normalized size = 1.37

$$\frac{1}{7}Bce^3x^7 + \frac{1}{6}\left(3Bcde^2 + Ace^3\right)x^6 + Aad^3x + \frac{1}{5}\left(3Bcd^2e + 3Acde^2 + Bae^3\right)x^5 + \frac{1}{4}\left(Bcd^3 + 3Acd^2e + 3Bade^2 + Aae^3\right)x^4 + \frac{1}{3}\left(Acd^3 + 3Bad^2e + 3Aade^2\right)x^3 + \frac{1}{2}\left(Bad^3 + 3Aad^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*e^3*x^7 + 1/6*(3*B*c*d*e^2 + A*c*e^3)*x^6 + A*a*d^3*x + 1/5*(3*B*c*
d^2*e + 3*A*c*d*e^2 + B*a*e^3)*x^5 + 1/4*(B*c*d^3 + 3*A*c*d^2*e + 3*B*a*d*e
^2 + A*a*e^3)*x^4 + 1/3*(A*c*d^3 + 3*B*a*d^2*e + 3*A*a*d*e^2)*x^3 + 1/2*(B*
a*d^3 + 3*A*a*d^2*e)*x^2
```

mupad [B] time = 0.06, size = 141, normalized size = 1.31

$$x^4\left(\frac{Bcd^3}{4} + \frac{3Acd^2e}{4} + \frac{3Bade^2}{4} + \frac{Aae^3}{4}\right) + x^3\left(\frac{Acd^3}{3} + Bad^2e + Aade^2\right) + x^5\left(\frac{3Bcd^2e}{5} + \frac{3Acde^2}{5} + \frac{Bae^3}{5}\right) + Aad^3x + \frac{Bce^3x^7}{7} + \frac{ad^2x^2\left(3Ae + Bd\right)}{2} + \frac{ce^2x^6\left(Ae + 3Bd\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^4*((A*a*e^3)/4 + (B*c*d^3)/4 + (3*B*a*d*e^2)/4 + (3*A*c*d^2*e)/4) + x^3*(
(A*c*d^3)/3 + A*a*d*e^2 + B*a*d^2*e) + x^5*((B*a*e^3)/5 + (3*A*c*d*e^2)/5 +
 (3*B*c*d^2*e)/5) + A*a*d^3*x + (B*c*e^3*x^7)/7 + (a*d^2*x^2*(3*A*e + B*d))
/2 + (c*e^2*x^6*(A*e + 3*B*d))/6
```

sympy [A] time = 0.09, size = 173, normalized size = 1.60

$$Aad^3x+\frac{Bce^3x^7}{7}+x^6\left(\frac{Ace^3}{6}+\frac{Bcde^2}{2}\right)+x^5\left(\frac{3Acde^2}{5}+\frac{Bae^3}{5}+\frac{3Bcd^2e}{5}\right)+x^4\left(\frac{Aae^3}{4}+\frac{3Acd^2e}{4}+\frac{3Bade^2}{4}+\frac{Bcd^3}{4}\right)+x^3\left(Aade^2+\frac{Acd^3}{3}+Bad^2e\right)+x^2\left(\frac{3Aad^2e}{2}+\frac{Bad^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+a),x)
```

```
[Out] A*a*d**3*x + B*c*e**3*x**7/7 + x**6*(A*c*e**3/6 + B*c*d*e**2/2) + x**5*(3*A
*c*d*e**2/5 + B*a*e**3/5 + 3*B*c*d**2*e/5) + x**4*(A*a*e**3/4 + 3*A*c*d**2*
e/4 + 3*B*a*d*e**2/4 + B*c*d**3/4) + x**3*(A*a*d*e**2 + A*c*d**3/3 + B*a*d*
*2*e) + x**2*(3*A*a*d**2*e/2 + B*a*d**3/2)
```

3.1113 $\int (A+Bx)(d+ex)^2\left(a+cx^2\right)\,dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^4\left(aBe^2-2Acde+3Bcd^2\right)}{4e^4}-\frac{(d+ex)^3\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{c(d+ex)^5(3Bd-Ae)}{5e^4}+\frac{Bc(d+ex)^6}{6e^4}$$

Rubi [A] time = 0.09, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^4\left(aBe^2-2Acde+3Bcd^2\right)}{4e^4}-\frac{(d+ex)^3\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{c(d+ex)^5(3Bd-Ae)}{5e^4}+\frac{Bc(d+ex)^6}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^3)/(3*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^4)/(4*e^4) - (c*(3*B*d - A*e)*(d + e*x)^5)/(5*e^4) +
 (B*c*(d + e*x)^6)/(6*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a+cx^2\right)\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^2}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^3}{e^3}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^3}{3e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^4}{4e^4}-\end{aligned}$$

Mathematica [A] time = 0.03, size = 106, normalized size = 0.98

$$\frac{1}{4}x^4\left(aBe^2+2Acde+Bcd^2\right)+\frac{1}{3}x^3\left(aAe^2+2aBde+Acd^2\right)+\frac{1}{2}adx^2(2Ae+Bd)+aAd^2x+\frac{1}{5}cex^5(Ae+2Bd)+\frac{1}{6}Bce^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + c*x^2),x]
```

```
[Out] a*A*d^2*x + (a*d*(B*d + 2*A*e)*x^2)/2 + ((A*c*d^2 + 2*a*B*d*e + a*A*e^2)*x^
3)/3 + ((B*c*d^2 + 2*A*c*d*e + a*B*e^2)*x^4)/4 + (c*e*(2*B*d + A*e)*x^5)/5
+ (B*c*e^2*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + c*x^2), x]
```

fricas [A] time = 0.51, size = 113, normalized size = 1.05

$$\frac{1}{6}x^6e^2cB+\frac{2}{5}x^5edcB+\frac{1}{5}x^5e^2cA+\frac{1}{4}x^4d^2cB+\frac{1}{4}x^4e^2aB+\frac{1}{2}x^4edcA+\frac{2}{3}x^3edaB+\frac{1}{3}x^3d^2cA+\frac{1}{3}x^3e^2aA+\frac{1}{2}x^2d^2aB+x^2edaA+xd^2aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c*B + 2/5*x^5*e*d*c*B + 1/5*x^5*e^2*c*A + 1/4*x^4*d^2*c*B + 1/4
*x^4*e^2*a*B + 1/2*x^4*e*d*c*A + 2/3*x^3*e*d*a*B + 1/3*x^3*d^2*c*A + 1/3*x^
3*e^2*a*A + 1/2*x^2*d^2*a*B + x^2*e*d*a*A + x*d^2*a*A
```

giac [A] time = 0.16, size = 113, normalized size = 1.05

$$\frac{1}{6}Bcx^6e^2+\frac{2}{5}Bcdx^5e+\frac{1}{4}Bcd^2x^4+\frac{1}{5}Acx^5e^2+\frac{1}{2}Acdx^4e+\frac{1}{3}Acd^2x^3+\frac{1}{4}Bax^4e^2+\frac{2}{3}Badx^3e+\frac{1}{2}Bad^2x^2+\frac{1}{3}Aax^3e^2+Aadx^2e+Aad^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6*e^2 + 2/5*B*c*d*x^5*e + 1/4*B*c*d^2*x^4 + 1/5*A*c*x^5*e^2 + 1/2
*A*c*d*x^4*e + 1/3*A*c*d^2*x^3 + 1/4*B*a*x^4*e^2 + 2/3*B*a*d*x^3*e + 1/2*B*
a*d^2*x^2 + 1/3*A*a*x^3*e^2 + A*a*d*x^2*e + A*a*d^2*x
```

maple [A] time = 0.04, size = 103, normalized size = 0.95

$$\frac{Bce^2x^6}{6}+\frac{\left(Ae^2+2Bde\right)cx^5}{5}+Aad^2x+\frac{\left(Bae^2+\left(2Ade+Bd^2\right)c\right)x^4}{4}+\frac{\left(2Ade+Bd^2\right)ax^2}{2}+\frac{\left(Acd^2+\left(Ae^2+2Bde\right)a\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+a),x)
```

```
[Out] 1/6*B*c*e^2*x^6+1/5*(A*e^2+2*B*d*e)*c*x^5+1/4*((2*A*d*e+B*d^2)*c+a*B*e^2)*x
^4+1/3*(A*c*d^2+(A*e^2+2*B*d*e)*a)*x^3+1/2*(2*A*d*e+B*d^2)*a*x^2+A*d^2*a*x
```

maxima [A] time = 0.58, size = 102, normalized size = 0.94

$$\frac{1}{6}Bce^2x^6+\frac{1}{5}\left(2Bcde+Ace^2\right)x^5+Aad^2x+\frac{1}{4}\left(Bcd^2+2Acde+Bae^2\right)x^4+\frac{1}{3}\left(Acd^2+2Bade+Aae^2\right)x^3+\frac{1}{2}\left(Bad^2+2Aade\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*e^2*x^6 + 1/5*(2*B*c*d*e + A*c*e^2)*x^5 + A*a*d^2*x + 1/4*(B*c*d^2
+ 2*A*c*d*e + B*a*e^2)*x^4 + 1/3*(A*c*d^2 + 2*B*a*d*e + A*a*e^2)*x^3 + 1/2*
(B*a*d^2 + 2*A*a*d*e)*x^2
```

mupad [B] time = 0.04, size = 98, normalized size = 0.91

$$x^3\left(\frac{A\,c\,d^2}{3}+\frac{2\,B\,a\,d\,e}{3}+\frac{A\,a\,e^2}{3}\right)+x^4\left(\frac{B\,c\,d^2}{4}+\frac{A\,c\,d\,e}{2}+\frac{B\,a\,e^2}{4}\right)+A\,a\,d^2\,x+\frac{a\,d\,x^2\,\left(2\,A\,e+B\,d\right)}{2}+\frac{c\,e\,x^5\,\left(A\,e+2\,B\,d\right)}{5}+\frac{B\,c\,e^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^3*((A*a*e^2)/3 + (A*c*d^2)/3 + (2*B*a*d*e)/3) + x^4*((B*a*e^2)/4 + (B*c*d
^2)/4 + (A*c*d*e)/2) + A*a*d^2*x + (a*d*x^2*(2*A*e + B*d))/2 + (c*e*x^5*(A*
e + 2*B*d))/5 + (B*c*e^2*x^6)/6
```

sympy [A] time = 0.08, size = 119, normalized size = 1.10

$$Aad^2x+\frac{Bce^2x^6}{6}+x^5\left(\frac{Ace^2}{5}+\frac{2Bcde}{5}\right)+x^4\left(\frac{Acde}{2}+\frac{Bae^2}{4}+\frac{Bcd^2}{4}\right)+x^3\left(\frac{Aae^2}{3}+\frac{Acd^2}{3}+\frac{2Bade}{3}\right)+x^2\left(Aade+\frac{Bad^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+a),x)
```

```
[Out] A*a*d**2*x + B*c*e**2*x**6/6 + x**5*(A*c*e**2/5 + 2*B*c*d*e/5) + x**4*(A*c*
d*e/2 + B*a*e**2/4 + B*c*d**2/4) + x**3*(A*a*e**2/3 + A*c*d**2/3 + 2*B*a*d*
e/3) + x**2*(A*a*d*e + B*a*d**2/2)
```

3.1114 $\int (A+Bx)(d+ex)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=62

$$\frac{1}{3}x^3(aBe+Acd)+\frac{1}{2}ax^2(Ae+Bd)+aAdx+\frac{1}{4}cx^4(Ae+Bd)+\frac{1}{5}Bcex^5$$

Rubi [A] time = 0.06, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {772}

$$\frac{1}{3}x^3(aBe+Acd)+\frac{1}{2}ax^2(Ae+Bd)+aAdx+\frac{1}{4}cx^4(Ae+Bd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + c*x^2),x]
```

```
[Out] a*A*d*x + (a*(B*d + A*e)*x^2)/2 + ((A*c*d + a*B*e)*x^3)/3 + (c*(B*d + A*e)*
x^4)/4 + (B*c*e*x^5)/5
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+cx^2\right)\,dx &= \int \left(aAd+a(Bd+Ae)x+(Acd+aBe)x^2+c(Bd+Ae)x^3+Bcex^4\right)\,dx\\ &= aAdx+\frac{1}{2}a(Bd+Ae)x^2+\frac{1}{3}(Acd+aBe)x^3+\frac{1}{4}c(Bd+Ae)x^4+\frac{1}{5}Bcex^5\end{aligned}$$

Mathematica [A] time = 0.02, size = 62, normalized size = 1.00

$$\frac{1}{3}x^3(aBe+Acd)+\frac{1}{2}ax^2(Ae+Bd)+aAdx+\frac{1}{4}cx^4(Ae+Bd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + c*x^2),x]
```

```
[Out] a*A*d*x + (a*(B*d + A*e)*x^2)/2 + ((A*c*d + a*B*e)*x^3)/3 + (c*(B*d + A*e)*
x^4)/4 + (B*c*e*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + c*x^2), x]
```

fricas [A] time = 0.39, size = 62, normalized size = 1.00

$$\frac{1}{5}x^5ecB+\frac{1}{4}x^4dcB+\frac{1}{4}x^4ecA+\frac{1}{3}x^3eaB+\frac{1}{3}x^3dcA+\frac{1}{2}x^2daB+\frac{1}{2}x^2eaA+xdaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c*B + 1/4*x^4*d*c*B + 1/4*x^4*e*c*A + 1/3*x^3*e*a*B + 1/3*x^3*d*c
*A + 1/2*x^2*d*a*B + 1/2*x^2*e*a*A + x*d*a*A
```

giac [A] time = 0.16, size = 66, normalized size = 1.06

$$\frac{1}{5}\,Bcx^5e + \frac{1}{4}\,Bcdx^4 + \frac{1}{4}\,Acx^4e + \frac{1}{3}\,Acdx^3 + \frac{1}{3}\,Bax^3e + \frac{1}{2}\,Badx^2 + \frac{1}{2}\,Aax^2e + Aadx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5*e + 1/4*B*c*d*x^4 + 1/4*A*c*x^4*e + 1/3*A*c*d*x^3 + 1/3*B*a*x^3
*e + 1/2*B*a*d*x^2 + 1/2*A*a*x^2*e + A*a*d*x
```

maple [A] time = 0.04, size = 55, normalized size = 0.89

$$\frac{Bce\,x^5}{5} + \frac{(Ae+Bd)\,c\,x^4}{4} + Aadx + \frac{(Ae+Bd)\,a\,x^2}{2} + \frac{(Acd+aBe)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+a),x)
```

```
[Out] a*A*d*x+1/2*a*(A*e+B*d)*x^2+1/3*(A*c*d+B*a*e)*x^3+1/4*c*(A*e+B*d)*x^4+1/5*B
*c*e*x^5
```

maxima [A] time = 0.49, size = 56, normalized size = 0.90

$$\frac{1}{5}\,Bcex^5 + \frac{1}{4}\,(Bcd + Ace)x^4 + Aadx + \frac{1}{3}\,(Acd + Bae)x^3 + \frac{1}{2}\,(Bad + Aae)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*e*x^5 + 1/4*(B*c*d + A*c*e)*x^4 + A*a*d*x + 1/3*(A*c*d + B*a*e)*x^3
 + 1/2*(B*a*d + A*a*e)*x^2
```

mupad [B] time = 1.67, size = 55, normalized size = 0.89

$$\frac{B\,c\,e\,x^5}{5} + \frac{c\,\left(A\,e+B\,d\right)\,x^4}{4} + \left(\frac{A\,c\,d}{3} + \frac{B\,a\,e}{3}\right)\,x^3 + \frac{a\,\left(A\,e+B\,d\right)\,x^2}{2} + A\,a\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((A*c*d)/3 + (B*a*e)/3) + (a*x^2*(A*e + B*d))/2 + (c*x^4*(A*e + B*d))/4
 + (B*c*e*x^5)/5 + A*a*d*x
```

sympy [A] time = 0.07, size = 66, normalized size = 1.06

$$Aadx + \frac{Bcex^5}{5} + x^4\left(\frac{Ace}{4} + \frac{Bcd}{4}\right) + x^3\left(\frac{Acd}{3} + \frac{Bae}{3}\right) + x^2\left(\frac{Aae}{2} + \frac{Bad}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+a),x)
```

```
[Out] A*a*d*x + B*c*e*x**5/5 + x**4*(A*c*e/4 + B*c*d/4) + x**3*(A*c*d/3 + B*a*e/3
) + x**2*(A*a*e/2 + B*a*d/2)
```

3.1115 $\int (A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=31

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {641}

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2),x]
[Out] a*A*x + (A*c*x^3)/3 + (B*(a + c*x^2)^2)/(4*c)
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)\,dx&=\frac{B\left(a+cx^2\right)^2}{4c}+A\int \left(a+cx^2\right)\,dx\\&=aAx+\frac{1}{3}Acx^3+\frac{B\left(a+cx^2\right)^2}{4c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 32, normalized size = 1.03

$$aAx+\frac{1}{2}aBx^2+\frac{1}{3}Acx^3+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2),x]
[Out] a*A*x + (a*B*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2), x]
```

fricas [A] time = 0.37, size = 26, normalized size = 0.84

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="fricas")
[Out] 1/4*x^4*c*B + 1/3*x^3*c*A + 1/2*x^2*a*B + x*a*A
```

giac [A] time = 0.15, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^4 + \frac{1}{3}\,Acx^3 + \frac{1}{2}\,Bax^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="giac")
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

maple [A] time = 0.04, size = 27, normalized size = 0.87

$$\frac{1}{4}Bc\,x^4 + \frac{1}{3}Ac\,x^3 + \frac{1}{2}Ba\,x^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a),x)
[Out] 1/4*B*c*x^4+1/3*A*c*x^3+1/2*B*a*x^2+A*a*x
```

maxima [A] time = 0.49, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^4 + \frac{1}{3}\,Acx^3 + \frac{1}{2}\,Bax^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="maxima")
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

mupad [B] time = 0.04, size = 26, normalized size = 0.84

$$\frac{B\,c\,x^4}{4} + \frac{A\,c\,x^3}{3} + \frac{B\,a\,x^2}{2} + A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x),x)
[Out] A*a*x + (B*a*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

sympy [A] time = 0.06, size = 29, normalized size = 0.94

$$Aax + \frac{Acx^3}{3} + \frac{Bax^2}{2} + \frac{Bcx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a),x)
[Out] A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4
```

3.1116 $\int \frac{(A+Bx)(a+cx^2)}{d+ex}\,dx$

Optimal. Leaf size=86

$$-\frac{\left(ae^2+cd^2\right)(Bd-Ae)\log(d+ex)}{e^4}+\frac{x\left(aBe^2-Acde+Bcd^2\right)}{e^3}-\frac{cx^2(Bd-Ae)}{2e^2}+\frac{Bcx^3}{3e}$$

Rubi [A] time = 0.08, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{x\left(aBe^2-Acde+Bcd^2\right)}{e^3}-\frac{\left(ae^2+cd^2\right)(Bd-Ae)\log(d+ex)}{e^4}-\frac{cx^2(Bd-Ae)}{2e^2}+\frac{Bcx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x),x]
```

```
[Out] ((B*c*d^2 - A*c*d*e + a*B*e^2)*x)/e^3 - (c*(B*d - A*e)*x^2)/(2*e^2) + (B*c*
x^3)/(3*e) - ((B*d - A*e)*(c*d^2 + a*e^2)*Log[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{Bcd^2-Acde+aBe^2}{e^3}+\frac{c(-Bd+Ae)x}{e^2}+\frac{Bcx^2}{e}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)}\right)dx\\ &= \frac{\left(Bcd^2-Acde+aBe^2\right)x}{e^3}-\frac{c(Bd-Ae)x^2}{2e^2}+\frac{Bcx^3}{3e}-\frac{(Bd-Ae)\left(cd^2+ae^2\right)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.93

$$\frac{ex\left(6aBe^2+3Ace(ex-2d)+Bc\left(6d^2-3dex+2e^2x^2\right)\right)-6\left(ae^2+cd^2\right)(Bd-Ae)\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(6*a*B*e^2 + 3*A*c*e*(-2*d + e*x) + B*c*(6*d^2 - 3*d*e*x + 2*e^2*x^2))
 - 6*(B*d - A*e)*(c*d^2 + a*e^2)*Log[d + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x), x]
```

fricas [A] time = 0.41, size = 98, normalized size = 1.14

$$\frac{2\,Bce^3x^3-3\left(Bcde^2-Ace^3\right)x^2+6\left(Bcd^2e-Acde^2+Bae^3\right)x-6\left(Bcd^3-Acd^2e+Bade^2-Aae^3\right)\log\left(ex+d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c*e^3*x^3 - 3*(B*c*d*e^2 - A*c*e^3)*x^2 + 6*(B*c*d^2*e - A*c*d*e^2
 + B*a*e^3)*x - 6*(B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)*log(e*x + d))
/e^4
```

giac [A] time = 0.15, size = 97, normalized size = 1.13

$$-\left(Bcd^3-Acd^2e+Bade^2-Aae^3\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,Bcx^3e^2-3\,Bcdx^2e+6\,Bcd^2x+3\,Acx^2e^2-6\,Acdxe+6\,Baxe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)*e^(-4)*log(abs(x*e + d)) + 1/6
*(2*B*c*x^3*e^2 - 3*B*c*d*x^2*e + 6*B*c*d^2*x + 3*A*c*x^2*e^2 - 6*A*c*d*x*e
 + 6*B*a*x*e^2)*e^(-3)
```

maple [A] time = 0.05, size = 116, normalized size = 1.35

$$\frac{Bc\,x^3}{3e}+\frac{Ac\,x^2}{2e}-\frac{Bcd\,x^2}{2e^2}+\frac{Aa\ln\left(ex+d\right)}{e}+\frac{Ac\,d^2\ln\left(ex+d\right)}{e^3}-\frac{Acdx}{e^2}-\frac{Bad\ln\left(ex+d\right)}{e^2}+\frac{Bax}{e}-\frac{Bc\,d^3\ln\left(ex+d\right)}{e^4}+\frac{Bc\,d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d),x)
```

```
[Out] 1/3*B*c/e*x^3+1/2/e*A*x^2*c-1/2/e^2*B*x^2*c*d-1/e^2*A*x*c*d+1/e*B*x*a+1/e^3
*B*x*c*d^2+1/e*ln(e*x+d)*a*A+1/e^3*ln(e*x+d)*A*c*d^2-1/e^2*ln(e*x+d)*a*B*d-
1/e^4*ln(e*x+d)*B*c*d^3
```

maxima [A] time = 0.62, size = 97, normalized size = 1.13

$$\frac{2\,Bce^2x^3-3\left(Bcde-Ace^2\right)x^2+6\left(Bcd^2-Acde+Bae^2\right)x}{6\,e^3}-\frac{\left(Bcd^3-Acd^2e+Bade^2-Aae^3\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*B*c*e^2*x^3 - 3*(B*c*d*e - A*c*e^2)*x^2 + 6*(B*c*d^2 - A*c*d*e + B*a
*e^2)*x)/e^3 - (B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)*log(e*x + d)/e^4
```

mupad [B] time = 1.68, size = 100, normalized size = 1.16

$$x^2\left(\frac{A\,c}{2\,e}-\frac{B\,c\,d}{2\,e^2}\right)+x\left(\frac{B\,a}{e}-\frac{d\left(\frac{A\,c}{e}-\frac{B\,c\,d}{e^2}\right)}{e}\right)+\frac{\ln\left(d+e\,x\right)\left(-B\,c\,d^3+A\,c\,d^2\,e-B\,a\,d\,e^2+A\,a\,e^3\right)}{e^4}+\frac{B\,c\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x),x)
```

```
[Out] x^2*((A*c)/(2*e) - (B*c*d)/(2*e^2)) + x*((B*a)/e - (d*((A*c)/e - (B*c*d)/e^
2))/e) + (log(d + e*x)*(A*a*e^3 - B*c*d^3 - B*a*d*e^2 + A*c*d^2*e))/e^4 + (
B*c*x^3)/(3*e)
```

sympy [A] time = 0.33, size = 82, normalized size = 0.95

$$\frac{Bcx^3}{3e}+x^2\left(\frac{Ac}{2e}-\frac{Bcd}{2e^2}\right)+x\left(-\frac{Acd}{e^2}+\frac{Ba}{e}+\frac{Bcd^2}{e^3}\right)-\frac{(-Ae+Bd)\left(ae^2+cd^2\right)\log\left(d+ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d),x)
```

```
[Out] B*c*x**3/(3*e) + x**2*(A*c/(2*e) - B*c*d/(2*e**2)) + x*(-A*c*d/e**2 + B*a/e
 + B*c*d**2/e**3) - (-A*e + B*d)*(a*e**2 + c*d**2)*log(d + e*x)/e**4
```

3.1117 $\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^2} dx$

Optimal. Leaf size=89

$$\frac{(ae^2+cd^2)(Bd-Ae)}{e^4(d+ex)}+\frac{\log(d+ex)(aBe^2-2Acde+3Bcd^2)}{e^4}-\frac{cx(2Bd-Ae)}{e^3}+\frac{Bcx^2}{2e^2}$$

Rubi [A] time = 0.08, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(ae^2+cd^2)(Bd-Ae)}{e^4(d+ex)}+\frac{\log(d+ex)(aBe^2-2Acde+3Bcd^2)}{e^4}-\frac{cx(2Bd-Ae)}{e^3}+\frac{Bcx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -((c*(2*B*d - A*e)*x)/e^3) + (B*c*x^2)/(2*e^2) + ((B*d - A*e)*(c*d^2 + a*e^
2))/(e^4*(d + e*x)) + ((3*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^2} dx = \int \left(\frac{c(-2Bd+Ae)}{e^3}+\frac{Bcx}{e^2}+\frac{(-Bd+Ae)(cd^2+ae^2)}{e^3(d+ex)^2}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)}\right) dx$$
$$=-\frac{c(2Bd-Ae)x}{e^3}+\frac{Bcx^2}{2e^2}+\frac{(Bd-Ae)(cd^2+ae^2)}{e^4(d+ex)}+\frac{(3Bcd^2-2Acde+aBe^2)\log(d}{e^4}$$

Mathematica [A] time = 0.06, size = 86, normalized size = 0.97

$$\frac{\frac{2(ae^2+cd^2)(Bd-Ae)}{d+ex}+2\log(d+ex)(aBe^2-2Acde+3Bcd^2)+2cex(Ae-2Bd)+Bce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*c*e*(-2*B*d + A*e)*x + B*c*e^2*x^2 + (2*(B*d - A*e)*(c*d^2 + a*e^2))/(d
+ e*x) + 2*(3*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d + e*x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^2, x]
```

fricas [A] time = 0.42, size = 152, normalized size = 1.71

$$\frac{Bce^3x^3 + 2\,Bcd^3 - 2\,Acd^2e + 2\,Bade^2 - 2\,Aae^3 - \left(3\,Bcde^2 - 2\,Ace^3\right)x^2 - 2\left(2\,Bcd^2e - Acde^2\right)x + 2\left(3\,Bcd^3 - 2\,Acd^2e + Bade^2 + \left(3\,Bcd^2e - 2\,Acde^2 + Bae^3\right)x\right)\log\left(ex + d\right)}{2\left(e^5x + de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*e^3*x^3 + 2*B*c*d^3 - 2*A*c*d^2*e + 2*B*a*d*e^2 - 2*A*a*e^3 - (3*B
*c*d*e^2 - 2*A*c*e^3)*x^2 - 2*(2*B*c*d^2*e - A*c*d*e^2)*x + 2*(3*B*c*d^3 -
2*A*c*d^2*e + B*a*d*e^2 + (3*B*c*d^2*e - 2*A*c*d*e^2 + B*a*e^3)*x)*log(e*x
+ d))/(e^5*x + d*e^4)
```

giac [A] time = 0.16, size = 151, normalized size = 1.70

$$\frac{1}{2}\left(Bc - \frac{2\left(3\,Bcde - Ace^2\right)e^{(-1)}}{xe + d}\right)(xe + d)^2e^{(-4)} - \left(3\,Bcd^2 - 2\,Acde + Bae^2\right)e^{(-4)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{Bcd^3e^2}{xe + d} - \frac{Acd^2e^3}{xe + d} + \frac{Bade^4}{xe + d} - \frac{Aae^5}{xe + d}\right)e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*c - 2*(3*B*c*d*e - A*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*e^(-4) - (
3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2
) + (B*c*d^3*e^2/(x*e + d) - A*c*d^2*e^3/(x*e + d) + B*a*d*e^4/(x*e + d) -
A*a*e^5/(x*e + d))*e^(-6)
```

maple [A] time = 0.06, size = 131, normalized size = 1.47

$$\frac{Bc\,x^2}{2e^2} - \frac{Aa}{(ex + d)\,e} - \frac{Ac\,d^2}{(ex + d)\,e^3} - \frac{2Acd\ln(ex + d)}{e^3} + \frac{Acx}{e^2} + \frac{Bad}{(ex + d)\,e^2} + \frac{Ba\ln(ex + d)}{e^2} + \frac{Bc\,d^3}{(ex + d)\,e^4} + \frac{3Bc\,d^2\ln(ex + d)}{e^4} - \frac{2Bcdx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*c/e^2*x^2+c/e^2*A*x-2*c/e^3*B*d*x-1/e/(e*x+d)*a*A-1/e^3/(e*x+d)*A*c*d
^2+1/e^2/(e*x+d)*a*B*d+1/e^4/(e*x+d)*B*c*d^3-2/e^3*ln(e*x+d)*A*c*d+1/e^2*ln
(e*x+d)*B*a+3/e^4*ln(e*x+d)*B*c*d^2
```

maxima [A] time = 0.54, size = 101, normalized size = 1.13

$$\frac{Bcd^3 - Acd^2e + Bade^2 - Aae^3}{e^5x + de^4} + \frac{Bcex^2 - 2\,(2\,Bcd - Ace)x}{2\,e^3} + \frac{\left(3\,Bcd^2 - 2\,Acde + Bae^2\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)/(e^5*x + d*e^4) + 1/2*(B*c*e*x^
2 - 2*(2*B*c*d - A*c*e)*x)/e^3 + (3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*log(e*x
+ d)/e^4
```

mupad [B] time = 0.08, size = 105, normalized size = 1.18

$$x\left(\frac{A\,c}{e^2} - \frac{2\,B\,c\,d}{e^3}\right) - \frac{-B\,c\,d^3 + A\,c\,d^2\,e - B\,a\,d\,e^2 + A\,a\,e^3}{e\,\left(x\,e^4 + d\,e^3\right)} + \frac{\ln\left(d + e\,x\right)\,\left(3\,B\,c\,d^2 - 2\,A\,c\,d\,e + B\,a\,e^2\right)}{e^4} + \frac{B\,c\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*c)/e^2 - (2*B*c*d)/e^3) - (A*a*e^3 - B*c*d^3 - B*a*d*e^2 + A*c*d^2*e)
/(e*(d*e^3 + e^4*x)) + (log(d + e*x)*(B*a*e^2 + 3*B*c*d^2 - 2*A*c*d*e))/e^4
 + (B*c*x^2)/(2*e^2)
```

sympy [A] time = 0.59, size = 104, normalized size = 1.17

$$\frac{Bcx^2}{2e^2}+x\left(\frac{Ac}{e^2}-\frac{2Bcd}{e^3}\right)+\frac{-Aae^3-Acd^2e+Bade^2+Bcd^3}{de^4+e^5x}+\frac{\left(-2Acde+Bae^2+3Bcd^2\right)\log\left(d+ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**2,x)
```

```
[Out] B*c*x**2/(2*e**2) + x*(A*c/e**2 - 2*B*c*d/e**3) + (-A*a*e**3 - A*c*d**2*e +
 B*a*d*e**2 + B*c*d**3)/(d*e**4 + e**5*x) + (-2*A*c*d*e + B*a*e**2 + 3*B*c*
d**2)*log(d + e*x)/e**4
```

3.1118 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=94

$$\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{2e^4(d+ex)^2}-\frac{aBe^2-2Acde+3Bcd^2}{e^4(d+ex)}-\frac{c(3Bd-Ae)\log(d+ex)}{e^4}+\frac{Bcx}{e^3}$$

Rubi [A] time = 0.07, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{2e^4(d+ex)^2}-\frac{aBe^2-2Acde+3Bcd^2}{e^4(d+ex)}-\frac{c(3Bd-Ae)\log(d+ex)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + ((B*d - A*e)*(c*d^2 + a*e^2))/(2*e^4*(d + e*x)^2) - (3*B*c*d^
2 - 2*A*c*d*e + a*B*e^2)/(e^4*(d + e*x)) - (c*(3*B*d - A*e)*Log[d + e*x])/e
^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{Bc}{e^3}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^3}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^2}+\frac{c(-3Bd+Ae)}{e^3(d+ex)}\right)dx\\ &= \frac{Bcx}{e^3}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)}{2e^4(d+ex)^2}-\frac{3Bcd^2-2Acde+aBe^2}{e^4(d+ex)}-\frac{c(3Bd-Ae)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 88, normalized size = 0.94

$$\frac{\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{(d+ex)^2}-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{d+ex}+2\log(d+ex)(Ace-3Bcd)+2Bcex}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*B*c*e*x + ((B*d - A*e)*(c*d^2 + a*e^2))/(d + e*x)^2 - (2*(3*B*c*d^2 - 2*
A*c*d*e + a*B*e^2))/(d + e*x) + 2*(-3*B*c*d + A*c*e)*Log[d + e*x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^3, x]
```

fricas [A]   time = 0.41, size = 168, normalized size = 1.79

$$\frac{2\,Bce^{3}x^{3}+4\,Bcde^{2}x^{2}-5\,Bcd^{3}+3\,Acd^{2}e-Bade^{2}-Aae^{3}-2\left(2\,Bcd^{2}e-2\,Acde^{2}+Bae^{3}\right)x-2\left(3\,Bcd^{3}-Acd^{2}e+\left(3\,Bcde^{2}-Ace^{3}\right)x^{2}+2\left(3\,Bcd^{2}e-Acde^{2}\right)x\right)\log\left(ex+d\right)}{2\left(e^{6}x^{2}+2\,de^{5}x+d^{2}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*e^3*x^3 + 4*B*c*d*e^2*x^2 - 5*B*c*d^3 + 3*A*c*d^2*e - B*a*d*e^2
- A*a*e^3 - 2*(2*B*c*d^2*e - 2*A*c*d*e^2 + B*a*e^3)*x - 2*(3*B*c*d^3 - A*c*
d^2*e + (3*B*c*d*e^2 - A*c*e^3)*x^2 + 2*(3*B*c*d^2*e - A*c*d*e^2)*x)*log(e*
x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A]   time = 0.15, size = 96, normalized size = 1.02

$$Bcxe^{(-3)}-\left(3\,Bcd-Ace\right)e^{(-4)}\log\left(|xe+d|\right)-\frac{\left(5\,Bcd^{3}-3\,Acd^{2}e+Bade^{2}+Aae^{3}+2\left(3\,Bcd^{2}e-2\,Acde^{2}+Bae^{3}\right)x\right)e^{(-4)}}{2\left(xe+d\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*c*x*e^(-3) - (3*B*c*d - A*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*B*c*d^3
- 3*A*c*d^2*e + B*a*d*e^2 + A*a*e^3 + 2*(3*B*c*d^2*e - 2*A*c*d*e^2 + B*a*e^
3)*x)*e^(-4)/(x*e + d)^2
```

maple [A]   time = 0.05, size = 144, normalized size = 1.53

$$-\frac{Aa}{2\left(ex+d\right)^{2}e}-\frac{Ac\,d^{2}}{2\left(ex+d\right)^{2}e^{3}}+\frac{Bad}{2\left(ex+d\right)^{2}e^{2}}+\frac{Bc\,d^{3}}{2\left(ex+d\right)^{2}e^{4}}+\frac{2Acd}{\left(ex+d\right)e^{3}}+\frac{Ac\ln\left(ex+d\right)}{e^{3}}-\frac{Ba}{\left(ex+d\right)e^{2}}-\frac{3Bc\,d^{2}}{\left(ex+d\right)e^{4}}-\frac{3Bcd\ln\left(ex+d\right)}{e^{4}}+\frac{Bcx}{e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^3,x)
```

```
[Out] B*c/e^3*x+2/e^3/(e*x+d)*A*c*d-1/e^2/(e*x+d)*B*a-3/e^4/(e*x+d)*B*c*d^2-1/2/e
/(e*x+d)^2*a*A-1/2/e^3/(e*x+d)^2*A*c*d^2+1/2/e^2/(e*x+d)^2*a*B*d+1/2/e^4/(e
*x+d)^2*B*c*d^3+c/e^3*ln(e*x+d)*A-3*c/e^4*ln(e*x+d)*B*d
```

maxima [A]   time = 0.63, size = 111, normalized size = 1.18

$$-\frac{5\,Bcd^{3}-3\,Acd^{2}e+Bade^{2}+Aae^{3}+2\left(3\,Bcd^{2}e-2\,Acde^{2}+Bae^{3}\right)x}{2\left(e^{6}x^{2}+2\,de^{5}x+d^{2}e^{4}\right)}+\frac{Bcx}{e^{3}}-\frac{\left(3\,Bcd-Ace\right)\log\left(ex+d\right)}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*B*c*d^3 - 3*A*c*d^2*e + B*a*d*e^2 + A*a*e^3 + 2*(3*B*c*d^2*e - 2*A*
c*d*e^2 + B*a*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) + B*c*x/e^3 - (3*B*c*
d - A*c*e)*log(e*x + d)/e^4
```

mupad [B]   time = 1.76, size = 111, normalized size = 1.18

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c\,e-3\,B\,c\,d\right)}{e^4}-\frac{\frac{5\,B\,c\,d^3-3\,A\,c\,d^2\,e+B\,a\,d\,e^2+A\,a\,e^3}{2\,e}+x\,\left(3\,B\,c\,d^2-2\,A\,c\,d\,e+B\,a\,e^2\right)}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}+\frac{B\,c\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*c*e - 3*B*c*d))/e^4 - ((A*a*e^3 + 5*B*c*d^3 + B*a*d*e^2 -
3*A*c*d^2*e)/(2*e) + x*(B*a*e^2 + 3*B*c*d^2 - 2*A*c*d*e))/(d^2*e^3 + e^5*x^
2 + 2*d*e^4*x) + (B*c*x)/e^3
```

sympy [A] time = 1.27, size = 117, normalized size = 1.24

$$\frac{Bcx}{e^3} - \frac{c(-Ae + 3Bd)\log(d + ex)}{e^4} + \frac{-Aae^3 + 3Acd^2e - Bade^2 - 5Bcd^3 + x\left(4Acde^2 - 2Bae^3 - 6Bcd^2e\right)}{2d^2e^4 + 4de^5x + 2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**3,x)
```

```
[Out] B*c*x/e**3 - c*(-A*e + 3*B*d)*log(d + e*x)/e**4 + (-A*a*e**3 + 3*A*c*d**2*e
 - B*a*d*e**2 - 5*B*c*d**3 + x*(4*A*c*d*e**2 - 2*B*a*e**3 - 6*B*c*d**2*e))/
(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
```

3.1119 $\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^4}\,dx$

Optimal. Leaf size=101

$$-\frac{aBe^2-2Acde+3Bcd^2}{2e^4(d+ex)^2}+\frac{(ae^2+cd^2)(Bd-Ae)}{3e^4(d+ex)^3}+\frac{c(3Bd-Ae)}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

Rubi [A] time = 0.07, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{2e^4(d+ex)^2}+\frac{(ae^2+cd^2)(Bd-Ae)}{3e^4(d+ex)^3}+\frac{c(3Bd-Ae)}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^4,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(3*e^4*(d + e*x)^3) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(2*e^4*(d + e*x)^2) + (c*(3*B*d - A*e))/(e^4*(d + e*x)) + (B*c*L
og[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^4}\,dx &= \int \left(\frac{(-Bd+Ae)(cd^2+ae^2)}{e^3(d+ex)^4}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^3}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^2}+\frac{Bc}{e^3(d+e}\right.\\ &= \frac{(Bd-Ae)(cd^2+ae^2)}{3e^4(d+ex)^3}-\frac{3Bcd^2-2Acde+aBe^2}{2e^4(d+ex)^2}+\frac{c(3Bd-Ae)}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 98, normalized size = 0.97

$$\frac{-2Ae\left(ae^2+c\left(d^2+3dex+3e^2x^2\right)\right)+B\left(cd\left(11d^2+27dex+18e^2x^2\right)-ae^2(d+3ex)\right)+6Bc(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (-2*A*e*(a*e^2 + c*(d^2 + 3*d*e*x + 3*e^2*x^2)) + B*(-(a*e^2*(d + 3*e*x)) +
 c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 6*B*c*(d + e*x)^3*Log[d + e*x])/(6
*e^4*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^4,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^4, x]

fricas [A] time = 0.41, size = 160, normalized size = 1.58

$$\frac{11\,Bcd^3-2\,Acd^2e-Bade^2-2\,Aae^3+6\left(3\,Bcde^2-Ace^3\right)x^2+3\left(9\,Bcd^2e-2\,Acde^2-Bae^3\right)x+6\left(Bce^3x^3+3\,Bcde^2x^2+3\,Bcd^2ex+Bcd^3\right)\log\left(ex+d\right)}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^4,x, algorithm="fricas")

[Out] 1/6*(11*B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 - 2*A*a*e^3 + 6*(3*B*c*d*e^2 - A*c*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x + 6*(B*c*e^3*x^3 + 3*B*c*d*e^2*x^2 + 3*B*c*d^2*e*x + B*c*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)

giac [A] time = 0.16, size = 103, normalized size = 1.02

$$Bce^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,Bcde-Ace^2\right)x^2+3\left(9\,Bcd^2-2\,Acde-Bae^2\right)x+\left(11\,Bcd^3-2\,Acd^2e-Bade^2-2\,Aae^3\right)e^{(-1)}\right)e^{(-3)}}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^4,x, algorithm="giac")

[Out] B*c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*c*d*e - A*c*e^2)*x^2 + 3*(9*B*c*d^2 - 2*A*c*d*e - B*a*e^2)*x + (11*B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 - 2*A*a*e^3)*e^(-1))*e^(-3)/(x*e + d)^3

maple [A] time = 0.06, size = 151, normalized size = 1.50

$$-\frac{Aa}{3\left(ex+d\right)^3e}-\frac{Acd^2}{3\left(ex+d\right)^3e^3}+\frac{Bad}{3\left(ex+d\right)^3e^2}+\frac{Bcd^3}{3\left(ex+d\right)^3e^4}+\frac{Acd}{\left(ex+d\right)^2e^3}-\frac{Ba}{2\left(ex+d\right)^2e^2}-\frac{3Bcd^2}{2\left(ex+d\right)^2e^4}-\frac{Ac}{\left(ex+d\right)e^3}+\frac{3Bcd}{\left(ex+d\right)e^4}+\frac{Bc\ln\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^4,x)

[Out] -c/e^3/(e*x+d)*A+3*c/e^4/(e*x+d)*B*d+1/e^3/(e*x+d)^2*A*c*d-1/2/e^2/(e*x+d)^2*B*a-3/2/e^4/(e*x+d)^2*B*c*d^2-1/3/e/(e*x+d)^3*a*A-1/3/e^3/(e*x+d)^3*A*c*d^2+1/3/e^2/(e*x+d)^3*a*B*d+1/3/e^4/(e*x+d)^3*B*c*d^3+B*c/e^4*ln(e*x+d)

maxima [A] time = 0.46, size = 129, normalized size = 1.28

$$\frac{11\,Bcd^3-2\,Acd^2e-Bade^2-2\,Aae^3+6\left(3\,Bcde^2-Ace^3\right)x^2+3\left(9\,Bcd^2e-2\,Acde^2-Bae^3\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{Bc\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^4,x, algorithm="maxima")

[Out] 1/6*(11*B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 - 2*A*a*e^3 + 6*(3*B*c*d*e^2 - A*c*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*c*log(e*x + d)/e^4

mupad [B] time = 0.10, size = 122, normalized size = 1.21

$$\frac{B\,c\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{-11\,B\,c\,d^3+2\,A\,c\,d^2\,e+B\,a\,d\,e^2+2\,A\,a\,e^3}{6\,e^4}+\frac{x\,\left(-9\,B\,c\,d^2+2\,A\,c\,d\,e+B\,a\,e^2\right)}{2\,e^3}+\frac{c\,x^2\,\left(A\,e-3\,B\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] (B*c*log(d + e*x))/e^4 - ((2*A*a*e^3 - 11*B*c*d^3 + B*a*d*e^2 + 2*A*c*d^2*e
)/(6*e^4) + (x*(B*a*e^2 - 9*B*c*d^2 + 2*A*c*d*e))/(2*e^3) + (c*x^2*(A*e - 3
*B*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [A] time = 2.60, size = 138, normalized size = 1.37

$$\frac{Bc\log(d+ex)}{e^4}+\frac{-2Aae^3-2Acd^2e-Bade^2+11Bcd^3+x^2\left(-6Ace^3+18Bcde^2\right)+x\left(-6Acde^2-3Bae^3+27Bcd^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**4,x)
```

```
[Out] B*c*log(d + e*x)/e**4 + (-2*A*a*e**3 - 2*A*c*d**2*e - B*a*d*e**2 + 11*B*c*d
**3 + x**2*(-6*A*c*e**3 + 18*B*c*d*e**2) + x*(-6*A*c*d*e**2 - 3*B*a*e**3 +
27*B*c*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**
3)
```

3.1120 $\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^5} dx$

Optimal. Leaf size=106

$$-\frac{aBe^2-2Acde+3Bcd^2}{3e^4(d+ex)^3}+\frac{(ae^2+cd^2)(Bd-Ae)}{4e^4(d+ex)^4}+\frac{c(3Bd-Ae)}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

Rubi [A] time = 0.07, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{3e^4(d+ex)^3}+\frac{(ae^2+cd^2)(Bd-Ae)}{4e^4(d+ex)^4}+\frac{c(3Bd-Ae)}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^5,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(4*e^4*(d + e*x)^4) - (3*B*c*d^2 - 2*A*c*d*e
 + a*B*e^2)/(3*e^4*(d + e*x)^3) + (c*(3*B*d - A*e))/(2*e^4*(d + e*x)^2) - (B
*c)/(e^4*(d + e*x))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^5}\,dx &= \int \left(\frac{(-Bd+Ae)(cd^2+ae^2)}{e^3(d+ex)^5}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^4}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^3}+\frac{Bc}{e^3(d+ex)^2}\right)dx\\ &= \frac{(Bd-Ae)(cd^2+ae^2)}{4e^4(d+ex)^4}-\frac{3Bcd^2-2Acde+aBe^2}{3e^4(d+ex)^3}+\frac{c(3Bd-Ae)}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 87, normalized size = 0.82

$$-\frac{3aAe^3+aBe^2(d+4ex)+Ace(d^2+4dex+6e^2x^2)+3Bc(d^3+4d^2ex+6de^2x^2+4e^3x^3)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(3*a*A*e^3 + a*B*e^2*(d + 4*e*x) + A*c*e*(d^2 + 4*d*e*x + 6*e^2*x^2)
 + 3*B*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3))/(e^4*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^5, x]
```

fricas [A] time = 0.40, size = 132, normalized size = 1.25

$$-\frac{12\,Bce^{3}x^{3}+3\,Bcd^{3}+Acd^{2}e+Bade^{2}+3\,Aae^{3}+6\left(3\,Bcde^{2}+Ace^{3}\right)x^{2}+4\left(3\,Bcd^{2}e+Acde^{2}+Bae^{3}\right)x}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*c*d^2*e + B*a*d*e^2 + 3*A*a*e^3 + 6*(
3*B*c*d*e^2 + A*c*e^3)*x^2 + 4*(3*B*c*d^2*e + A*c*d*e^2 + B*a*e^3)*x)/(e^8*
x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.16, size = 151, normalized size = 1.42

$$-\frac{1}{12}\left(\frac{12\,Bce^{(-1)}}{xe+d}-\frac{18\,Bcde^{(-1)}}{(xe+d)^{2}}+\frac{12\,Bcd^{2}e^{(-1)}}{(xe+d)^{3}}-\frac{3\,Bcd^{3}e^{(-1)}}{(xe+d)^{4}}+\frac{6\,Ac}{(xe+d)^{2}}-\frac{8\,Acd}{(xe+d)^{3}}+\frac{3\,Acd^{2}}{(xe+d)^{4}}+\frac{4\,Bae}{(xe+d)^{3}}-\frac{3\,Bade}{(xe+d)^{4}}+\frac{3\,Aae^{2}}{(xe+d)^{4}}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*e^(-1)/(x*e + d) - 18*B*c*d*e^(-1)/(x*e + d)^2 + 12*B*c*d^2*e
^(-1)/(x*e + d)^3 - 3*B*c*d^3*e^(-1)/(x*e + d)^4 + 6*A*c/(x*e + d)^2 - 8*A*
c*d/(x*e + d)^3 + 3*A*c*d^2/(x*e + d)^4 + 4*B*a*e/(x*e + d)^3 - 3*B*a*d*e/(
x*e + d)^4 + 3*A*a*e^2/(x*e + d)^4)*e^(-3)
```

maple [A] time = 0.05, size = 110, normalized size = 1.04

$$-\frac{Bc}{(ex+d)\,e^{4}}-\frac{(Ae-3Bd)\,c}{2\,(ex+d)^{2}\,e^{4}}-\frac{aA\,e^{3}+Ac\,d^{2}e-aBd\,e^{2}-Bc\,d^{3}}{4\,(ex+d)^{4}\,e^{4}}-\frac{-2Acde+Ba\,e^{2}+3Bc\,d^{2}}{3\,(ex+d)^{3}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^5,x)
```

```
[Out] -1/(e*x+d)*B*c/e^4-1/4*(A*a*e^3+A*c*d^2*e-B*a*d*e^2-B*c*d^3)/e^4/(e*x+d)^4-
1/2*c*(A*e-3*B*d)/e^4/(e*x+d)^2-1/3*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/(e*x
+d)^3
```

maxima [A] time = 0.57, size = 132, normalized size = 1.25

$$-\frac{12\,Bce^{3}x^{3}+3\,Bcd^{3}+Acd^{2}e+Bade^{2}+3\,Aae^{3}+6\left(3\,Bcde^{2}+Ace^{3}\right)x^{2}+4\left(3\,Bcd^{2}e+Acde^{2}+Bae^{3}\right)x}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*c*d^2*e + B*a*d*e^2 + 3*A*a*e^3 + 6*(
3*B*c*d*e^2 + A*c*e^3)*x^2 + 4*(3*B*c*d^2*e + A*c*d*e^2 + B*a*e^3)*x)/(e^8*
x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 1.71, size = 128, normalized size = 1.21

$$-\frac{\frac{3\,B\,c\,d^{3}+A\,c\,d^{2}\,e+B\,a\,d\,e^{2}+3\,A\,a\,e^{3}}{12\,e^{4}}+\frac{x\left(3\,B\,c\,d^{2}+A\,c\,d\,e+B\,a\,e^{2}\right)}{3\,e^{3}}+\frac{B\,c\,x^{3}}{e}+\frac{c\,x^{2}\,(A\,e+3\,B\,d)}{2\,e^{2}}}{d^{4}+4\,d^{3}\,e\,x+6\,d^{2}\,e^{2}\,x^{2}+4\,d\,e^{3}\,x^{3}+e^{4}\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] -((3*A*a*e^3 + 3*B*c*d^3 + B*a*d*e^2 + A*c*d^2*e)/(12*e^4) + (x*(B*a*e^2 +
3*B*c*d^2 + A*c*d*e))/(3*e^3) + (B*c*x^3)/e + (c*x^2*(A*e + 3*B*d))/(2*e^2)
)/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [A] time = 4.89, size = 150, normalized size = 1.42

$$\frac{-3Aae^3 - Acd^2e - Bade^2 - 3Bcd^3 - 12Bce^3x^3 + x^2\left(-6Ace^3 - 18Bcde^2\right) + x\left(-4Acde^2 - 4Bae^3 - 12Bcd^2e\right)}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a*e**3 - A*c*d**2*e - B*a*d*e**2 - 3*B*c*d**3 - 12*B*c*e**3*x**3 + x*
*2*(-6*A*c*e**3 - 18*B*c*d*e**2) + x*(-4*A*c*d*e**2 - 4*B*a*e**3 - 12*B*c*d
**2*e))/(12*d**4*e**4 + 48*d**3*e**5*x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3
 + 12*e**8*x**4)
```

3.1121 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^6}\,dx$

Optimal. Leaf size=108

$$-\frac{aBe^2-2Acde+3Bcd^2}{4e^4(d+ex)^4}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4(d+ex)^5}+\frac{c(3Bd-Ae)}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}$$

Rubi [A] time = 0.07, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{4e^4(d+ex)^4}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4(d+ex)^5}+\frac{c(3Bd-Ae)}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(5*e^4*(d + e*x)^5) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(4*e^4*(d + e*x)^4) + (c*(3*B*d - A*e))/(3*e^4*(d + e*x)^3) - (B
*c)/(2*e^4*(d + e*x)^2)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^6}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^6}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^5}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^4}+\frac{Bc}{e^3(d+e\ldots}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)}{5e^4(d+ex)^5}-\frac{3Bcd^2-2Acde+aBe^2}{4e^4(d+ex)^4}+\frac{c(3Bd-Ae)}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 90, normalized size = 0.83

$$-\frac{2Ae\left(6ae^2+c\left(d^2+5dex+10e^2x^2\right)\right)+3B\left(ae^2(d+5ex)+c\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(2*A*e*(6*a*e^2 + c*(d^2 + 5*d*e*x + 10*e^2*x^2)) + 3*B*(a*e^2*(d + 5
*e*x) + c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)))/(e^4*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^6,x]
```

[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^6, x]

fricas [A] time = 0.41, size = 148, normalized size = 1.37

$$-\frac{30\,Bce^{3}x^{3}+3\,Bcd^{3}+2\,Acd^{2}e+3\,Bade^{2}+12\,Aae^{3}+10\left(3\,Bcde^{2}+2\,Ace^{3}\right)x^{2}+5\left(3\,Bcd^{2}e+2\,Acde^{2}+3\,Bae^{3}\right)x}{60\left(e^{9}x^{5}+5\,de^{8}x^{4}+10\,d^{2}e^{7}x^{3}+10\,d^{3}e^{6}x^{2}+5\,d^{4}e^{5}x+d^{5}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 2*A*c*d^2*e + 3*B*a*d*e^2 + 12*A*a*e^3
+ 10*(3*B*c*d*e^2 + 2*A*c*e^3)*x^2 + 5*(3*B*c*d^2*e + 2*A*c*d*e^2 + 3*B*a*e
^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5
*x + d^5*e^4)
```

giac [A] time = 0.18, size = 95, normalized size = 0.88

$$-\frac{\left(30\,Bcx^{3}e^{3}+30\,Bcdx^{2}e^{2}+15\,Bcd^{2}xe+3\,Bcd^{3}+20\,Acx^{2}e^{3}+10\,Acdxe^{2}+2\,Acd^{2}e+15\,Baxe^{3}+3\,Bade^{2}+12\,Aae^{3}\right)e^{(-4)}}{60\,(xe+d)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3*e^3 + 30*B*c*d*x^2*e^2 + 15*B*c*d^2*x*e + 3*B*c*d^3 + 20*
A*c*x^2*e^3 + 10*A*c*d*x*e^2 + 2*A*c*d^2*e + 15*B*a*x*e^3 + 3*B*a*d*e^2 + 1
2*A*a*e^3)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.06, size = 110, normalized size = 1.02

$$-\frac{Bc}{2\left(ex+d\right)^{2}e^{4}}-\frac{\left(Ae-3Bd\right)c}{3\left(ex+d\right)^{3}e^{4}}-\frac{-2Acde+Ba\,e^{2}+3Bc\,d^{2}}{4\left(ex+d\right)^{4}e^{4}}-\frac{aA\,e^{3}+Ac\,d^{2}e-aBd\,e^{2}-Bc\,d^{3}}{5\left(ex+d\right)^{5}e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^6,x)
```

```
[Out] -1/4*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/(e*x+d)^4-1/2/(e*x+d)^2*B*c/e^4-1/3
*c*(A*e-3*B*d)/e^4/(e*x+d)^3-1/5*(A*a*e^3+A*c*d^2*e-B*a*d*e^2-B*c*d^3)/e^4/
(e*x+d)^5
```

maxima [A] time = 0.62, size = 148, normalized size = 1.37

$$-\frac{30\,Bce^{3}x^{3}+3\,Bcd^{3}+2\,Acd^{2}e+3\,Bade^{2}+12\,Aae^{3}+10\left(3\,Bcde^{2}+2\,Ace^{3}\right)x^{2}+5\left(3\,Bcd^{2}e+2\,Acde^{2}+3\,Bae^{3}\right)x}{60\left(e^{9}x^{5}+5\,de^{8}x^{4}+10\,d^{2}e^{7}x^{3}+10\,d^{3}e^{6}x^{2}+5\,d^{4}e^{5}x+d^{5}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 2*A*c*d^2*e + 3*B*a*d*e^2 + 12*A*a*e^3
+ 10*(3*B*c*d*e^2 + 2*A*c*e^3)*x^2 + 5*(3*B*c*d^2*e + 2*A*c*d*e^2 + 3*B*a*e
^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5
*x + d^5*e^4)
```

mupad [B] time = 0.07, size = 145, normalized size = 1.34

$$-\frac{\frac{3\,B\,c\,d^{3}+2\,A\,c\,d^{2}\,e+3\,B\,a\,d\,e^{2}+12\,A\,a\,e^{3}}{60\,e^{4}}+\frac{x\left(3\,B\,c\,d^{2}+2\,A\,c\,d\,e+3\,B\,a\,e^{2}\right)}{12\,e^{3}}+\frac{B\,c\,x^{3}}{2\,e}+\frac{c\,x^{2}\,\left(2\,A\,e+3\,B\,d\right)}{6\,e^{2}}}{d^{5}+5\,d^{4}\,e\,x+10\,d^{3}\,e^{2}\,x^{2}+10\,d^{2}\,e^{3}\,x^{3}+5\,d\,e^{4}\,x^{4}+e^{5}\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] -((12*A*a*e^3 + 3*B*c*d^3 + 3*B*a*d*e^2 + 2*A*c*d^2*e)/(60*e^4) + (x*(3*B*a
*e^2 + 3*B*c*d^2 + 2*A*c*d*e))/(12*e^3) + (B*c*x^3)/(2*e) + (c*x^2*(2*A*e +
 3*B*d))/(6*e^2))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^
3*x^3 + 5*d^4*e*x)
```

sympy [A] time = 8.41, size = 165, normalized size = 1.53

$$\frac{-12Aae^3 - 2Acd^2e - 3Bade^2 - 3Bcd^3 - 30Bce^3x^3 + x^2\left(-20Ace^3 - 30Bcde^2\right) + x\left(-10Acde^2 - 15Bae^3 - 15Bcd^2e\right)}{60d^5e^4 + 300d^4e^5x + 600d^3e^6x^2 + 600d^2e^7x^3 + 300de^8x^4 + 60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a*e**3 - 2*A*c*d**2*e - 3*B*a*d*e**2 - 3*B*c*d**3 - 30*B*c*e**3*x**3
 + x**2*(-20*A*c*e**3 - 30*B*c*d*e**2) + x*(-10*A*c*d*e**2 - 15*B*a*e**3 -
15*B*c*d**2*e))/(60*d**5*e**4 + 300*d**4*e**5*x + 600*d**3*e**6*x**2 + 600*
d**2*e**7*x**3 + 300*d*e**8*x**4 + 60*e**9*x**5)
```

3.1122 $\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^7}\,dx$

Optimal. Leaf size=108

$$-\frac{aBe^2-2Acde+3Bcd^2}{5e^4(d+ex)^5}+\frac{(ae^2+cd^2)(Bd-Ae)}{6e^4(d+ex)^6}+\frac{c(3Bd-Ae)}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

Rubi [A] time = 0.07, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{5e^4(d+ex)^5}+\frac{(ae^2+cd^2)(Bd-Ae)}{6e^4(d+ex)^6}+\frac{c(3Bd-Ae)}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(6*e^4*(d + e*x)^6) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(5*e^4*(d + e*x)^5) + (c*(3*B*d - A*e))/(4*e^4*(d + e*x)^4) - (B
*c)/(3*e^4*(d + e*x)^3)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^7}\,dx &= \int \left(\frac{(-Bd+Ae)(cd^2+ae^2)}{e^3(d+ex)^7}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^6}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^5}+\frac{Bc}{e^3(d+ex)^4}\right)dx\\ &= \frac{(Bd-Ae)(cd^2+ae^2)}{6e^4(d+ex)^6}-\frac{3Bcd^2-2Acde+aBe^2}{5e^4(d+ex)^5}+\frac{c(3Bd-Ae)}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 87, normalized size = 0.81

$$-\frac{10aAe^3+2aBe^2(d+6ex)+Ace(d^2+6dex+15e^2x^2)+Bc(d^3+6d^2ex+15de^2x^2+20e^3x^3)}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(10*a*A*e^3 + 2*a*B*e^2*(d + 6*e*x) + A*c*e*(d^2 + 6*d*e*x + 15*e^2*x
^2) + B*c*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3))/(e^4*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^7, x]
```

fricas [A] time = 0.40, size = 153, normalized size = 1.42

$$-\frac{20\,Bce^{3}x^{3}+Bcd^{3}+Acd^{2}e+2\,Bade^{2}+10\,Aae^{3}+15\,\left(Bcde^{2}+Ace^{3}\right)x^{2}+6\,\left(Bcd^{2}e+Acde^{2}+2\,Bae^{3}\right)x}{60\,\left(e^{10}x^{6}+6\,de^{9}x^{5}+15\,d^{2}e^{8}x^{4}+20\,d^{3}e^{7}x^{3}+15\,d^{4}e^{6}x^{2}+6\,d^{5}e^{5}x+d^{6}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + A*c*d^2*e + 2*B*a*d*e^2 + 10*A*a*e^3 + 15
*(B*c*d*e^2 + A*c*e^3)*x^2 + 6*(B*c*d^2*e + A*c*d*e^2 + 2*B*a*e^3)*x)/(e^10
*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d
^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.17, size = 93, normalized size = 0.86

$$-\frac{\left(20\,Bcx^{3}e^{3}+15\,Bcdx^{2}e^{2}+6\,Bcd^{2}xe+Bcd^{3}+15\,Acx^{2}e^{3}+6\,Acdxe^{2}+Acd^{2}e+12\,Baxe^{3}+2\,Bade^{2}+10\,Aae^{3}\right)e^{(-4)}}{60\,(xe+d)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^3*e^3 + 15*B*c*d*x^2*e^2 + 6*B*c*d^2*x*e + B*c*d^3 + 15*A*c
*x^2*e^3 + 6*A*c*d*x*e^2 + A*c*d^2*e + 12*B*a*x*e^3 + 2*B*a*d*e^2 + 10*A*a*
e^3)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 110, normalized size = 1.02

$$-\frac{Bc}{3\,(ex+d)^{3}\,e^{4}}-\frac{(Ae-3Bd)\,c}{4\,(ex+d)^{4}\,e^{4}}-\frac{aA\,e^{3}+Ac\,d^{2}e-aBd\,e^{2}-Bc\,d^{3}}{6\,(ex+d)^{6}\,e^{4}}-\frac{-2Acde+Ba\,e^{2}+3Bc\,d^{2}}{5\,(ex+d)^{5}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^7,x)
```

```
[Out] -1/6*(A*a*e^3+A*c*d^2*e-B*a*d*e^2-B*c*d^3)/e^4/(e*x+d)^6-1/4*c*(A*e-3*B*d)/
e^4/(e*x+d)^4-1/3*B*c/e^4/(e*x+d)^3-1/5*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/
(e*x+d)^5
```

maxima [A] time = 0.59, size = 153, normalized size = 1.42

$$-\frac{20\,Bce^{3}x^{3}+Bcd^{3}+Acd^{2}e+2\,Bade^{2}+10\,Aae^{3}+15\,\left(Bcde^{2}+Ace^{3}\right)x^{2}+6\,\left(Bcd^{2}e+Acde^{2}+2\,Bae^{3}\right)x}{60\,\left(e^{10}x^{6}+6\,de^{9}x^{5}+15\,d^{2}e^{8}x^{4}+20\,d^{3}e^{7}x^{3}+15\,d^{4}e^{6}x^{2}+6\,d^{5}e^{5}x+d^{6}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + A*c*d^2*e + 2*B*a*d*e^2 + 10*A*a*e^3 + 15
*(B*c*d*e^2 + A*c*e^3)*x^2 + 6*(B*c*d^2*e + A*c*d*e^2 + 2*B*a*e^3)*x)/(e^10
*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d
^5*e^5*x + d^6*e^4)
```

mupad [B] time = 1.78, size = 150, normalized size = 1.39

$$-\frac{\frac{B\,c\,d^{3}+A\,c\,d^{2}\,e+2\,B\,a\,d\,e^{2}+10\,A\,a\,e^{3}}{60\,e^{4}}+\frac{x\,\left(B\,c\,d^{2}+A\,c\,d\,e+2\,B\,a\,e^{2}\right)}{10\,e^{3}}+\frac{B\,c\,x^{3}}{3\,e}+\frac{c\,x^{2}\,(A\,e+B\,d)}{4\,e^{2}}}{d^{6}+6\,d^{5}\,e\,x+15\,d^{4}\,e^{2}\,x^{2}+20\,d^{3}\,e^{3}\,x^{3}+15\,d^{2}\,e^{4}\,x^{4}+6\,d\,e^{5}\,x^{5}+e^{6}\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -((10*A*a*e^3 + B*c*d^3 + 2*B*a*d*e^2 + A*c*d^2*e)/(60*e^4) + (x*(2*B*a*e^2
 + B*c*d^2 + A*c*d*e))/(10*e^3) + (B*c*x^3)/(3*e) + (c*x^2*(A*e + B*d))/(4*
e^2))/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d
^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [A] time = 13.57, size = 173, normalized size = 1.60

$$\frac{-10Aae^3 - Acd^2e - 2Bade^2 - Bcd^3 - 20Bce^3x^3 + x^2\left(-15Ace^3 - 15Bcde^2\right) + x\left(-6Acde^2 - 12Bae^3 - 6Bcd^2e\right)}{60d^6e^4 + 360d^5e^5x + 900d^4e^6x^2 + 1200d^3e^7x^3 + 900d^2e^8x^4 + 360de^9x^5 + 60e^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**7,x)
```

```
[Out] (-10*A*a*e**3 - A*c*d**2*e - 2*B*a*d*e**2 - B*c*d**3 - 20*B*c*e**3*x**3 + x
**2*(-15*A*c*e**3 - 15*B*c*d*e**2) + x*(-6*A*c*d*e**2 - 12*B*a*e**3 - 6*B*c
*d**2*e))/(60*d**6*e**4 + 360*d**5*e**5*x + 900*d**4*e**6*x**2 + 1200*d**3*
e**7*x**3 + 900*d**2*e**8*x**4 + 360*d*e**9*x**5 + 60*e**10*x**6)
```

3.1123 $\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=206

$$\frac{2c(d+ex)^9 \left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}+\frac{(d+ex)^7 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{7e^6}-\frac{(d+ex)^6 \left(ae^2+cd^2\right)^2 (B}{6e^6}$$

Rubi [A] time = 0.39, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2c(d+ex)^9 \left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}-\frac{c(d+ex)^8 \left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{4e^6}+\frac{(d+ex)^7 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{7e^6}-\frac{(d+ex)^6 \left(ae^2+cd^2\right)^2 (Bd-Ae)}{6e^6}-\frac{c^2(d+ex)^{10}(5Bd-Ae)}{10e^6}+\frac{Bc^2(d+ex)^{11}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^6)/(6*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^7)/(7*e^6) - (c*(5*B*c*d^3 - 3*A*c
*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^8)/(4*e^6) + (2*c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^9)/(9*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^10)/
(10*e^6) + (B*c^2*(d + e*x)^11)/(11*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2 (d+ex)^5}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+a\right.}{e^5}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2 (d+ex)^6}{6e^6}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{7e^6}$$

Mathematica [A] time = 0.10, size = 390, normalized size = 1.89

$$\frac{1}{7}ex^7 \left(a^2Be^4+10aAcde^3+20aBcd^2e^2+10Ac^2d^3e+5Bc^2d^4\right)+\frac{1}{5}dx^5 \left(5a^2Ae^4+10a^2Bde^3+20aAcd^2e^2+10aBcd^3e+Ac^2d^4\right)+\frac{1}{6}x^6 \left(a^2Ae^5+5a^2Bde^4+20aAcd^2e^3+20aBcd^3e^2+5Ac^2d^4e+Bc^2d^5\right)+\frac{1}{2}a^2d^4x^2(5Ae+Bd)+a^2Ad^5x+\frac{1}{9}ce^3x^9 \left(2aBe^2+5Acde+10Bcd^2\right)+\frac{1}{3}ad^3x^3 \left(10aAe^2+5aBde+2Acd^2\right)+\frac{1}{4}ce^2x^8 \left(aAe^3+5aBde^2+5Acd^2e+5Bcd^3\right)+\frac{1}{2}ad^2x^4 \left(5aAe^3+5aBde^2+5Acd^2e+Bcd^3\right)+\frac{1}{10}c^2e^4x^{10}(Ae+5Bd)+\frac{1}{11}Bc^2e^5x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^5*x + (a^2*d^4*(B*d + 5*A*e)*x^2)/2 + (a*d^3*(2*A*c*d^2 + 5*a*B*d*e
 + 10*a*A*e^2)*x^3)/3 + (a*d^2*(B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + 5*a*A
*e^3)*x^4)/2 + (d*(A*c^2*d^4 + 10*a*B*c*d^3*e + 20*a*A*c*d^2*e^2 + 10*a^2*B
*d*e^3 + 5*a^2*A*e^4)*x^5)/5 + ((B*c^2*d^5 + 5*A*c^2*d^4*e + 20*a*B*c*d^3*e
^2 + 20*a*A*c*d^2*e^3 + 5*a^2*B*d*e^4 + a^2*A*e^5)*x^6)/6 + (e*(5*B*c^2*d^4
 + 10*A*c^2*d^3*e + 20*a*B*c*d^2*e^2 + 10*a*A*c*d*e^3 + a^2*B*e^4)*x^7)/7 +
 (c*e^2*(5*B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + a*A*e^3)*x^8)/4 + (c*e^3*(
10*B*c*d^2 + 5*A*c*d*e + 2*a*B*e^2)*x^9)/9 + (c^2*e^4*(5*B*d + A*e)*x^10)/1
0 + (B*c^2*e^5*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + c*x^2)^2, x]
```

fricas [B] time = 0.36, size = 465, normalized size = 2.26

$$\frac{1}{11} x^{11} e^{5} c^{2} B + \frac{1}{2} x^{10} e^{4} d c^{2} B + \frac{1}{10} x^{10} e^{5} c^{2} A + \frac{10}{9} x^{9} e^{3} d^{2} c^{2} B + \frac{2}{9} x^{9} e^{5} c a B + \frac{5}{9} x^{9} e^{4} d c^{2} A + \frac{5}{4} x^{8} e^{2} d^{3} c^{2} B + \frac{5}{4} x^{8} e^{4} d c a B + \frac{5}{4} x^{8} e^{3} d^{2} c^{2} A + \frac{1}{4} x^{8} e^{5} c a A + \frac{5}{7} x^{7} e d^{4} c^{2} B + \frac{20}{7} x^{7} e^{3} d^{2} c a B + \frac{1}{7} x^{7} e^{5} a^{2} B + \frac{10}{7} x^{7} e^{2} d^{3} c^{2} A + \frac{10}{7} x^{7} e^{4} d c a A + \frac{1}{6} x^{6} d^{5} c^{2} B + \frac{10}{3} x^{6} e^{2} d^{3} c a B + \frac{5}{6} x^{6} e^{4} d a^{2} B + \frac{5}{6} x^{6} e d^{4} c^{2} A + \frac{10}{3} x^{6} e^{3} d^{2} c a A + \frac{1}{6} x^{6} e^{5} a^{2} A + 2 x^{5} e d^{4} c a B + 2 x^{5} e^{3} d^{2} a^{2} B + \frac{1}{5} x^{5} d^{5} c^{2} A + 4 x^{5} e^{2} d^{3} c a A + x^{5} e^{4} d a^{2} A + \frac{1}{2} x^{4} d^{5} c a B + \frac{5}{2} x^{4} e^{2} d^{3} a^{2} B + \frac{5}{2} x^{4} e d^{4} c a A + \frac{5}{2} x^{4} e^{3} d^{2} a^{2} A + \frac{5}{3} x^{3} e d^{4} a^{2} B + \frac{2}{3} x^{3} d^{5} c a A + \frac{10}{3} x^{3} e^{2} d^{3} a^{2} A + \frac{1}{2} x^{2} d^{5} a^{2} B + \frac{5}{2} x^{2} e d^{4} a^{2} A + x d^{5} a^{2} A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*c^2*B + 1/2*x^10*e^4*d*c^2*B + 1/10*x^10*e^5*c^2*A + 10/9*x^9
*e^3*d^2*c^2*B + 2/9*x^9*e^5*c*a*B + 5/9*x^9*e^4*d*c^2*A + 5/4*x^8*e^2*d^3*
c^2*B + 5/4*x^8*e^4*d*c*a*B + 5/4*x^8*e^3*d^2*c^2*A + 1/4*x^8*e^5*c*a*A + 5
/7*x^7*e*d^4*c^2*B + 20/7*x^7*e^3*d^2*c*a*B + 1/7*x^7*e^5*a^2*B + 10/7*x^7*
e^2*d^3*c^2*A + 10/7*x^7*e^4*d*c*a*A + 1/6*x^6*d^5*c^2*B + 10/3*x^6*e^2*d^3
*c*a*B + 5/6*x^6*e^4*d*a^2*B + 5/6*x^6*e*d^4*c^2*A + 10/3*x^6*e^3*d^2*c*a*A
 + 1/6*x^6*e^5*a^2*A + 2*x^5*e*d^4*c*a*B + 2*x^5*e^3*d^2*a^2*B + 1/5*x^5*d^
5*c^2*A + 4*x^5*e^2*d^3*c*a*A + x^5*e^4*d*a^2*A + 1/2*x^4*d^5*c*a*B + 5/2*x
^4*e^2*d^3*a^2*B + 5/2*x^4*e*d^4*c*a*A + 5/2*x^4*e^3*d^2*a^2*A + 5/3*x^3*e*
d^4*a^2*B + 2/3*x^3*d^5*c*a*A + 10/3*x^3*e^2*d^3*a^2*A + 1/2*x^2*d^5*a^2*B
+ 5/2*x^2*e*d^4*a^2*A + x*d^5*a^2*A
```

giac [B] time = 0.19, size = 447, normalized size = 2.17

$$\frac{1}{11} B c^{2} x^{11} e^{5} + \frac{1}{2} B c^{2} d x^{10} e^{4} + \frac{10}{9} B c^{2} d^{2} x^{9} e^{3} + \frac{5}{4} B c^{2} d^{3} x^{8} e^{2} + \frac{5}{7} B c^{2} d^{4} x^{7} e + \frac{1}{6} B c^{2} d^{5} x^{6} + \frac{1}{10} A c^{2} x^{10} e^{5} + \frac{5}{9} A c^{2} d x^{9} e^{4} + \frac{5}{4} A c^{2} d^{2} x^{8} e^{3} + \frac{10}{7} A c^{2} d^{3} x^{7} e^{2} + \frac{5}{6} A c^{2} d^{4} x^{6} e + \frac{1}{5} A c^{2} d^{5} x^{5} + \frac{2}{9} B a c x^{9} e^{5} + \frac{5}{4} B a c d x^{8} e^{4} + \frac{20}{7} B a c d^{2} x^{7} e^{3} + \frac{10}{3} B a c d^{3} x^{6} e^{2} + 2 B a c d^{4} x^{5} e + \frac{1}{2} B a c d^{5} x^{4} + \frac{1}{4} A a c x^{8} e^{5} + \frac{10}{7} A a c d x^{7} e^{4} + \frac{10}{3} A a c d^{2} x^{6} e^{3} + 4 A a c d^{3} x^{5} e^{2} + \frac{5}{2} A a c d^{4} x^{4} e + \frac{2}{3} A a c d^{5} x^{3} + \frac{1}{7} B a^{2} x^{7} e^{5} + \frac{5}{6} B a^{2} d x^{6} e^{4} + 2 B a^{2} d^{2} x^{5} e^{3} + \frac{5}{2} B a^{2} d^{3} x^{4} e^{2} + \frac{5}{3} B a^{2} d^{4} x^{3} e + \frac{1}{2} B a^{2} d^{5} x^{2} + \frac{1}{6} A a^{2} x^{6} e^{5} + A a^{2} d x^{5} e^{4} + \frac{5}{2} A a^{2} d^{2} x^{4} e^{3} + \frac{10}{3} A a^{2} d^{3} x^{3} e^{2} + \frac{5}{2} A a^{2} d^{4} x^{2} e + A a^{2} d^{5} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/11*B*c^2*x^11*e^5 + 1/2*B*c^2*d*x^10*e^4 + 10/9*B*c^2*d^2*x^9*e^3 + 5/4*B
*c^2*d^3*x^8*e^2 + 5/7*B*c^2*d^4*x^7*e + 1/6*B*c^2*d^5*x^6 + 1/10*A*c^2*x^1
0*e^5 + 5/9*A*c^2*d*x^9*e^4 + 5/4*A*c^2*d^2*x^8*e^3 + 10/7*A*c^2*d^3*x^7*e^
2 + 5/6*A*c^2*d^4*x^6*e + 1/5*A*c^2*d^5*x^5 + 2/9*B*a*c*x^9*e^5 + 5/4*B*a*c
*d*x^8*e^4 + 20/7*B*a*c*d^2*x^7*e^3 + 10/3*B*a*c*d^3*x^6*e^2 + 2*B*a*c*d^4*
x^5*e + 1/2*B*a*c*d^5*x^4 + 1/4*A*a*c*x^8*e^5 + 10/7*A*a*c*d*x^7*e^4 + 10/3
*A*a*c*d^2*x^6*e^3 + 4*A*a*c*d^3*x^5*e^2 + 5/2*A*a*c*d^4*x^4*e + 2/3*A*a*c*
d^5*x^3 + 1/7*B*a^2*x^7*e^5 + 5/6*B*a^2*d*x^6*e^4 + 2*B*a^2*d^2*x^5*e^3 + 5
/2*B*a^2*d^3*x^4*e^2 + 5/3*B*a^2*d^4*x^3*e + 1/2*B*a^2*d^5*x^2 + 1/6*A*a^2*
x^6*e^5 + A*a^2*d*x^5*e^4 + 5/2*A*a^2*d^2*x^4*e^3 + 10/3*A*a^2*d^3*x^3*e^2
+ 5/2*A*a^2*d^4*x^2*e + A*a^2*d^5*x
```

maple [B] time = 0.04, size = 402, normalized size = 1.95

$$\frac{B c^{2} e^{5} x^{11}}{11}+\frac{\left(A e^{5}+5 B d e^{4}\right) c^{2} x^{10}}{10}+A a^{2} d^{5} x+\frac{\left(2 B a c e^{5}+\left(5 A d e^{4}+10 B d^{2} e^{3}\right) c^{2}\right) x^{9}}{9}+\frac{\left(2 \left(A e^{5}+5 B d e^{4}\right) a c+\left(10 A d^{2} e^{3}+10 B d^{3} e^{2}\right) c^{2}\right) x^{8}}{8}+\frac{\left(B a^{2} e^{5}+2 \left(5 A d e^{4}+10 B d^{2} e^{3}\right) a c+\left(10 A d^{3} e^{2}+5 B d^{4} e\right) c^{2}\right) x^{7}}{7}+\frac{\left(\left(A e^{5}+5 B d e^{4}\right) a^{2}+2 \left(10 A d^{2} e^{3}+10 B d^{3} e^{2}\right) a c+\left(5 A d^{4} e+B d^{5}\right) c^{2}\right) x^{6}}{6}+\frac{\left(A c^{2} d^{5}+\left(5 A d e^{4}+10 B d^{2} e^{3}\right) a^{2}+2 \left(10 A d^{3} e^{2}+5 B d^{4} e\right) a c\right) x^{5}}{5}+\frac{\left(5 A d^{4} e+B d^{5}\right) a^{2} x^{2}}{2}+\frac{\left(\left(10 A d^{2} e^{3}+10 B d^{3} e^{2}\right) a^{2}+2 \left(5 A d^{4} e+B d^{5}\right) a c\right) x^{4}}{4}+\frac{\left(2 A a c d^{5}+\left(10 A d^{3} e^{2}+5 B d^{4} e\right) a^{2}\right) x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x)
```

```
[Out] 1/11*B*e^5*c^2*x^11+1/10*(A*e^5+5*B*d*e^4)*c^2*x^10+1/9*((5*A*d*e^4+10*B*d^
2*e^3)*c^2+2*B*e^5*a*c)*x^9+1/8*((10*A*d^2*e^3+10*B*d^3*e^2)*c^2+2*(A*e^5+5
*B*d*e^4)*a*c)*x^8+1/7*((10*A*d^3*e^2+5*B*d^4*e)*c^2+2*(5*A*d*e^4+10*B*d^2*
e^3)*a*c+B*e^5*a^2)*x^7+1/6*((5*A*d^4*e+B*d^5)*c^2+2*(10*A*d^2*e^3+10*B*d^3
*e^2)*a*c+(A*e^5+5*B*d*e^4)*a^2)*x^6+1/5*(A*d^5*c^2+2*(10*A*d^3*e^2+5*B*d^4
*e)*a*c+(5*A*d*e^4+10*B*d^2*e^3)*a^2)*x^5+1/4*(2*(5*A*d^4*e+B*d^5)*a*c+(10*
A*d^2*e^3+10*B*d^3*e^2)*a^2)*x^4+1/3*(2*A*d^5*a*c+(10*A*d^3*e^2+5*B*d^4*e)*
a^2)*x^3+1/2*(5*A*d^4*e+B*d^5)*a^2*x^2+A*d^5*a^2*x
```

maxima [B] time = 0.53, size = 410, normalized size = 1.99

$$\frac{1}{11}Bc^2e^5x^{11}+\frac{1}{10}\left(5Bc^2de^4+Ac^2e^5\right)x^{10}+\frac{1}{9}\left(10Bc^2d^2e^3+5Ac^2de^4+2Bace^5\right)x^9+Aa^2d^5x+\frac{1}{4}\left(5Bc^2d^3e^2+5Ac^2d^2e^3+5Bacde^4+Aace^5\right)x^8+\frac{1}{7}\left(5Bc^2d^4e+10Ac^2d^3e^2+20Bacd^2e^3+10Aacde^4+Ba^2e^5\right)x^7+\frac{1}{6}\left(Bc^2d^5+5Ac^2d^4e+20Bacd^3e^2+20Aacd^2e^3+5Ba^2de^4+Aa^2e^5\right)x^6+\frac{1}{5}\left(Ac^2d^5+10Bacd^4e+20Aacd^3e^2+10Ba^2d^2e^3+5Aa^2de^4\right)x^5+\frac{1}{2}\left(Bacd^5+5Aacd^4e+5Ba^2d^3e^2+5Aa^2d^2e^3\right)x^4+\frac{1}{3}\left(2Aacd^5+5Ba^2d^4e+10Aa^2d^3e^2\right)x^3+\frac{1}{2}\left(Ba^2d^5+5Aa^2d^4e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^2*e^5*x^11 + 1/10*(5*B*c^2*d*e^4 + A*c^2*e^5)*x^10 + 1/9*(10*B*c^2
*d^2*e^3 + 5*A*c^2*d*e^4 + 2*B*a*c*e^5)*x^9 + A*a^2*d^5*x + 1/4*(5*B*c^2*d^
3*e^2 + 5*A*c^2*d^2*e^3 + 5*B*a*c*d*e^4 + A*a*c*e^5)*x^8 + 1/7*(5*B*c^2*d^4
*e + 10*A*c^2*d^3*e^2 + 20*B*a*c*d^2*e^3 + 10*A*a*c*d*e^4 + B*a^2*e^5)*x^7
+ 1/6*(B*c^2*d^5 + 5*A*c^2*d^4*e + 20*B*a*c*d^3*e^2 + 20*A*a*c*d^2*e^3 + 5*
B*a^2*d*e^4 + A*a^2*e^5)*x^6 + 1/5*(A*c^2*d^5 + 10*B*a*c*d^4*e + 20*A*a*c*d
^3*e^2 + 10*B*a^2*d^2*e^3 + 5*A*a^2*d*e^4)*x^5 + 1/2*(B*a*c*d^5 + 5*A*a*c*d
^4*e + 5*B*a^2*d^3*e^2 + 5*A*a^2*d^2*e^3)*x^4 + 1/3*(2*A*a*c*d^5 + 5*B*a^2*
d^4*e + 10*A*a^2*d^3*e^2)*x^3 + 1/2*(B*a^2*d^5 + 5*A*a^2*d^4*e)*x^2
```

mupad [B] time = 1.86, size = 374, normalized size = 1.82

$$x^5\left(2Ba^2d^2e^3+Aa^2de^4+2Bacd^4e+4Aacd^3e^2+\frac{Ac^2d^5}{5}\right)+x^7\left(\frac{Ba^2e^5}{7}+\frac{20Bacd^2e^3}{7}+\frac{10Aacde^4}{7}+\frac{5Bc^2d^4e}{7}+\frac{10Ac^2d^3e^2}{7}\right)+x^6\left(\frac{5Ba^2de^4}{6}+\frac{Aa^2e^5}{6}+\frac{10Bacd^3e^2}{3}+\frac{10Aacd^2e^3}{3}+\frac{Bc^2d^5}{6}+\frac{5Ac^2d^4e}{6}\right)+\frac{ad^3x^3\left(2Acd^2+5Bade+10Aae^2\right)}{3}+\frac{ce^3x^9\left(10Bcd^2+5Acde+2Bae^2\right)}{9}+\frac{a^2d^4x^2\left(5Ae+Bd\right)}{2}+\frac{c^2e^4x^{10}\left(Ae+5Bd\right)}{10}+Aa^2d^5x+\frac{ad^2x^4\left(Bcd^3+5Acd^2e+5Bade^2+5Aae^3\right)}{2}+\frac{ce^2x^8\left(5Bcd^3+5Acd^2e+5Bade^2+Aae^3\right)}{4}+\frac{Bc^2e^5x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^5,x)
```

```
[Out] x^5*((A*c^2*d^5)/5 + A*a^2*d*e^4 + 2*B*a^2*d^2*e^3 + 2*B*a*c*d^4*e + 4*A*a*
c*d^3*e^2) + x^7*((B*a^2*e^5)/7 + (5*B*c^2*d^4*e)/7 + (10*A*c^2*d^3*e^2)/7
+ (10*A*a*c*d*e^4)/7 + (20*B*a*c*d^2*e^3)/7) + x^6*((A*a^2*e^5)/6 + (B*c^2*
d^5)/6 + (5*B*a^2*d*e^4)/6 + (5*A*c^2*d^4*e)/6 + (10*A*a*c*d^2*e^3)/3 + (10
*B*a*c*d^3*e^2)/3) + (a*d^3*x^3*(10*A*a*e^2 + 2*A*c*d^2 + 5*B*a*d*e))/3 + (
c*e^3*x^9*(2*B*a*e^2 + 10*B*c*d^2 + 5*A*c*d*e))/9 + (a^2*d^4*x^2*(5*A*e + B
*d))/2 + (c^2*e^4*x^10*(A*e + 5*B*d))/10 + A*a^2*d^5*x + (a*d^2*x^4*(5*A*a*
e^3 + B*c*d^3 + 5*B*a*d*e^2 + 5*A*c*d^2*e))/2 + (c*e^2*x^8*(A*a*e^3 + 5*B*c
*d^3 + 5*B*a*d*e^2 + 5*A*c*d^2*e))/4 + (B*c^2*e^5*x^11)/11
```

sympy [B] time = 0.14, size = 495, normalized size = 2.40

$$Aa^2d^5x+\frac{Bc^2e^5x^{11}}{11}+x^{10}\left(\frac{Ac^2e^5}{10}+\frac{Bc^2de^4}{2}\right)+x^9\left(\frac{5Ac^2de^4}{9}+\frac{2Bace^5}{9}+\frac{10Bc^2d^2e^3}{9}\right)+x^8\left(\frac{Aace^5}{4}+\frac{5Ac^2d^2e^3}{4}+\frac{5Bacde^4}{4}+\frac{5Bc^2d^3e^2}{4}\right)+x^7\left(\frac{10Aacde^4}{7}+\frac{10Ac^2d^3e^2}{7}+\frac{Ba^2e^5}{7}+\frac{20Bacd^2e^3}{7}+\frac{5Bc^2d^4e}{7}\right)+x^6\left(\frac{Aa^2e^5}{6}+\frac{10Aacd^2e^3}{3}+\frac{5Ac^2d^4e}{6}+\frac{5Ba^2de^4}{6}+\frac{10Bacd^3e^2}{3}+\frac{Bc^2d^5}{6}\right)+x^5\left(Aa^2de^4+4Aacd^3e^2+\frac{Ac^2d^5}{5}+2Ba^2d^2e^3+2Bacd^4e\right)+x^4\left(\frac{5Aa^2d^2e^3}{2}+\frac{5Aacd^4e}{2}+\frac{5Ba^2d^3e^2}{2}+\frac{Bacd^5}{2}\right)+x^3\left(\frac{10Aa^2d^3e^2}{3}+\frac{2Aacd^5}{3}+\frac{5Ba^2d^4e}{3}\right)+x^2\left(\frac{5Aa^2d^4e}{2}+\frac{Ba^2d^5}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**5*x + B*c**2*e**5*x**11/11 + x**10*(A*c**2*e**5/10 + B*c**2*d*e**
4/2) + x**9*(5*A*c**2*d*e**4/9 + 2*B*a*c*e**5/9 + 10*B*c**2*d**2*e**3/9) +
x**8*(A*a*c*e**5/4 + 5*A*c**2*d**2*e**3/4 + 5*B*a*c*d*e**4/4 + 5*B*c**2*d**
3*e**2/4) + x**7*(10*A*a*c*d*e**4/7 + 10*A*c**2*d**3*e**2/7 + B*a**2*e**5/7
 + 20*B*a*c*d**2*e**3/7 + 5*B*c**2*d**4*e/7) + x**6*(A*a**2*e**5/6 + 10*A*a
*c*d**2*e**3/3 + 5*A*c**2*d**4*e/6 + 5*B*a**2*d*e**4/6 + 10*B*a*c*d**3*e**2
/3 + B*c**2*d**5/6) + x**5*(A*a**2*d*e**4 + 4*A*a*c*d**3*e**2 + A*c**2*d**5
/5 + 2*B*a**2*d**2*e**3 + 2*B*a*c*d**4*e) + x**4*(5*A*a**2*d**2*e**3/2 + 5*
A*a*c*d**4*e/2 + 5*B*a**2*d**3*e**2/2 + B*a*c*d**5/2) + x**3*(10*A*a**2*d**
3*e**2/3 + 2*A*a*c*d**5/3 + 5*B*a**2*d**4*e/3) + x**2*(5*A*a**2*d**4*e/2 +
B*a**2*d**5/2)
```

3.1124 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=206

$$\frac{c(d+ex)^8 \left(aBe^2-2Acde+5Bcd^2\right)}{4e^6}+\frac{(d+ex)^6 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{6e^6}-\frac{(d+ex)^5 \left(ae^2+cd^2\right)^2 (Bd-$$

Rubi [A] time = 0.27, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c(d+ex)^8 \left(aBe^2-2Acde+5Bcd^2\right)}{4e^6}-\frac{2c(d+ex)^7 \left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{7e^6}+\frac{(d+ex)^6 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{6e^6}-\frac{(d+ex)^5 \left(ae^2+cd^2\right)^2 (Bd-Ae)}{5e^6}-\frac{c^2(d+ex)^9(5Bd-Ae)}{9e^6}+\frac{Bc^2(d+ex)^{10}}{10e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^5)/(5*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^6)/(6*e^6) - (2*c*(5*B*c*d^3 - 3*A
*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^7)/(7*e^6) + (c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^8)/(4*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^9)/(
9*e^6) + (B*c^2*(d + e*x)^10)/(10*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right)^2 (d+ex)^4}{e^5}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe\right.}{e^5}\right.$$

$$= -\frac{(Bd-Ae) \left(cd^2+ae^2\right)^2 (d+ex)^5}{5e^6}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe^2\right) (d}{6e^6}$$

Mathematica [A] time = 0.08, size = 314, normalized size = 1.52

$$\frac{1}{6}x^6 \left(a^2Be^4+8aAcde^3+12aBcd^2e^2+4Ac^2d^3e+Bc^2d^4\right)+\frac{1}{5}x^5 \left(a^2Ae^4+4a^2Bde^3+12aAcd^2e^2+8aBcd^3e+Ac^2d^4\right)+\frac{1}{2}a^2d^3x^2(4Ae+Bd)+a^2Ad^4x+\frac{1}{4}ce^2x^8 \left(aBe^2+2Acde+3Bcd^2\right)+\frac{2}{3}ad^2x^3 \left(3aAe^2+2aBde+Acd^2\right)+\frac{2}{7}cex^7 \left(aAe^3+4aBde^2+3Acd^2e+2Bcd^3\right)+\frac{1}{2}adx^4 \left(2aAe^3+3aBde^2+4Acd^2e+Bcd^3\right)+\frac{1}{9}c^2e^3x^9(Ae+4Bd)+\frac{1}{10}Bc^2e^4x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^4*x + (a^2*d^3*(B*d + 4*A*e)*x^2)/2 + (2*a*d^2*(A*c*d^2 + 2*a*B*d*e
 + 3*a*A*e^2)*x^3)/3 + (a*d*(B*c*d^3 + 4*A*c*d^2*e + 3*a*B*d*e^2 + 2*a*A*e^
3)*x^4)/2 + ((A*c^2*d^4 + 8*a*B*c*d^3*e + 12*a*A*c*d^2*e^2 + 4*a^2*B*d*e^3
+ a^2*A*e^4)*x^5)/5 + ((B*c^2*d^4 + 4*A*c^2*d^3*e + 12*a*B*c*d^2*e^2 + 8*a*
A*c*d*e^3 + a^2*B*e^4)*x^6)/6 + (2*c*e*(2*B*c*d^3 + 3*A*c*d^2*e + 4*a*B*d*e
^2 + a*A*e^3)*x^7)/7 + (c*e^2*(3*B*c*d^2 + 2*A*c*d*e + a*B*e^2)*x^8)/4 + (c
^2*e^3*(4*B*d + A*e)*x^9)/9 + (B*c^2*e^4*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 377, normalized size = 1.83

$$\frac{1}{10}x^{10}e^4c^2B+\frac{4}{9}x^9e^3dc^2B+\frac{1}{9}x^9e^4c^2A+\frac{3}{4}x^8e^2d^2c^2B+\frac{1}{4}x^8e^4caB+\frac{1}{2}x^8e^3dc^2A+\frac{4}{7}x^7ed^3c^2B+\frac{8}{7}x^7e^3dcaB+\frac{6}{7}x^7e^2d^2c^2A+\frac{2}{7}x^7e^4caA+\frac{1}{6}x^6d^4c^2B+2x^6e^2d^2caB+\frac{1}{6}x^6e^4a^2B+\frac{2}{3}x^6ed^3c^2A+\frac{4}{3}x^6e^3dcaA+\frac{8}{5}x^5ed^3caB+\frac{4}{5}x^5e^3da^2B+\frac{1}{5}x^5d^4c^2A+\frac{12}{5}x^5e^2d^2caA+\frac{1}{5}x^5e^4a^2A+\frac{1}{2}x^4d^4caB+\frac{3}{2}x^4e^2d^2a^2B+2x^4ed^3caA+x^4e^3da^2A+\frac{4}{3}x^3ed^3a^2B+\frac{2}{3}x^3d^4caA+2x^3e^2d^2a^2A+\frac{1}{2}x^2d^4a^2B+2x^2ed^3a^2A+xd^4a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*c^2*B + 4/9*x^9*e^3*d*c^2*B + 1/9*x^9*e^4*c^2*A + 3/4*x^8*e^2
*d^2*c^2*B + 1/4*x^8*e^4*c*a*B + 1/2*x^8*e^3*d*c^2*A + 4/7*x^7*e*d^3*c^2*B
+ 8/7*x^7*e^3*d*c*a*B + 6/7*x^7*e^2*d^2*c^2*A + 2/7*x^7*e^4*c*a*A + 1/6*x^6
*d^4*c^2*B + 2*x^6*e^2*d^2*c*a*B + 1/6*x^6*e^4*a^2*B + 2/3*x^6*e*d^3*c^2*A
+ 4/3*x^6*e^3*d*c*a*A + 8/5*x^5*e*d^3*c*a*B + 4/5*x^5*e^3*d*a^2*B + 1/5*x^5
*d^4*c^2*A + 12/5*x^5*e^2*d^2*c*a*A + 1/5*x^5*e^4*a^2*A + 1/2*x^4*d^4*c*a*B
 + 3/2*x^4*e^2*d^2*a^2*B + 2*x^4*e*d^3*c*a*A + x^4*e^3*d*a^2*A + 4/3*x^3*e*
d^3*a^2*B + 2/3*x^3*d^4*c*a*A + 2*x^3*e^2*d^2*a^2*A + 1/2*x^2*d^4*a^2*B + 2
*x^2*e*d^3*a^2*A + x*d^4*a^2*A
```

giac [A] time = 0.19, size = 365, normalized size = 1.77

$$\frac{1}{10}Bc^2x^{10}e^4+\frac{4}{9}Bc^2dx^9e^3+\frac{3}{4}Bc^2d^2x^8e^2+\frac{4}{7}Bc^2d^3x^7e+\frac{1}{6}Bc^2d^4x^6+\frac{1}{9}Ac^2x^9e^4+\frac{1}{2}Ac^2dx^8e^3+\frac{6}{7}Ac^2d^2x^7e^2+\frac{2}{3}Ac^2d^3x^6e+\frac{1}{5}Ac^2d^4x^5+\frac{1}{4}Bacx^8e^4+\frac{8}{7}Bacdx^7e^3+2Bacd^2x^6e^2+\frac{8}{5}Bacd^3x^5e+\frac{1}{2}Bacd^4x^4+\frac{2}{7}Aacx^7e^4+\frac{4}{3}Aacdx^6e^3+\frac{12}{5}Aacd^2x^5e^2+2Aacd^3x^4e+\frac{2}{3}Aacd^4x^3+\frac{1}{6}Ba^2x^6e^4+\frac{4}{5}Ba^2dx^5e^3+\frac{3}{2}Ba^2d^2x^4e^2+\frac{4}{3}Ba^2d^3x^3e+\frac{1}{2}Ba^2d^4x^2+\frac{1}{5}Aa^2x^5e^4+Aa^2dx^4e^3+2Aa^2d^2x^3e^2+2Aa^2d^3x^2e+Aa^2d^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*c^2*x^10*e^4 + 4/9*B*c^2*d*x^9*e^3 + 3/4*B*c^2*d^2*x^8*e^2 + 4/7*B*c
^2*d^3*x^7*e + 1/6*B*c^2*d^4*x^6 + 1/9*A*c^2*x^9*e^4 + 1/2*A*c^2*d*x^8*e^3
+ 6/7*A*c^2*d^2*x^7*e^2 + 2/3*A*c^2*d^3*x^6*e + 1/5*A*c^2*d^4*x^5 + 1/4*B*a
*c*x^8*e^4 + 8/7*B*a*c*d*x^7*e^3 + 2*B*a*c*d^2*x^6*e^2 + 8/5*B*a*c*d^3*x^5*
e + 1/2*B*a*c*d^4*x^4 + 2/7*A*a*c*x^7*e^4 + 4/3*A*a*c*d*x^6*e^3 + 12/5*A*a*
c*d^2*x^5*e^2 + 2*A*a*c*d^3*x^4*e + 2/3*A*a*c*d^4*x^3 + 1/6*B*a^2*x^6*e^4 +
 4/5*B*a^2*d*x^5*e^3 + 3/2*B*a^2*d^2*x^4*e^2 + 4/3*B*a^2*d^3*x^3*e + 1/2*B*
a^2*d^4*x^2 + 1/5*A*a^2*x^5*e^4 + A*a^2*d*x^4*e^3 + 2*A*a^2*d^2*x^3*e^2 + 2
*A*a^2*d^3*x^2*e + A*a^2*d^4*x
```

maple [A] time = 0.04, size = 327, normalized size = 1.59

$$\frac{Bc^2e^4x^{10}}{10}+\frac{\left(Ae^4+4Bde^3\right)c^2x^9}{9}+Aa^2d^4x+\frac{\left(2Bace^4+\left(4Ade^3+6Bd^2e^2\right)c^2\right)x^8}{8}+\frac{\left(2\left(Ae^4+4Bde^3\right)ac+\left(6Ad^2e^2+4Bd^3e\right)c^2\right)x^7}{7}+\frac{\left(Ba^2e^4+2\left(4Ade^3+6Bd^2e^2\right)ac+\left(4Ad^3e+Bd^4\right)c^2\right)x^6}{6}+\frac{\left(Ac^2d^4+\left(Ae^4+4Bde^3\right)a^2+2\left(6Ad^2e^2+4Bd^3e\right)ac\right)x^5}{5}+\frac{\left(4Ad^3e+Bd^4\right)a^2x^2}{2}+\frac{\left(\left(4Ade^3+6Bd^2e^2\right)a^2+2\left(4Ad^3e+Bd^4\right)ac\right)x^4}{4}+\frac{\left(2Aacd^4+\left(6Ad^2e^2+4Bd^3e\right)a^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x)
```

```
[Out] 1/10*B*e^4*c^2*x^10+1/9*(A*e^4+4*B*d*e^3)*c^2*x^9+1/8*((4*A*d*e^3+6*B*d^2*e
^2)*c^2+2*B*e^4*a*c)*x^8+1/7*((6*A*d^2*e^2+4*B*d^3*e)*c^2+2*(A*e^4+4*B*d*e^
3)*a*c)*x^7+1/6*((4*A*d^3*e+B*d^4)*c^2+2*(4*A*d*e^3+6*B*d^2*e^2)*a*c+B*e^4*
a^2)*x^6+1/5*(A*d^4*c^2+2*(6*A*d^2*e^2+4*B*d^3*e)*a*c+(A*e^4+4*B*d*e^3)*a^2
)*x^5+1/4*(2*(4*A*d^3*e+B*d^4)*a*c+(4*A*d*e^3+6*B*d^2*e^2)*a^2)*x^4+1/3*(2*
A*d^4*a*c+(6*A*d^2*e^2+4*B*d^3*e)*a^2)*x^3+1/2*(4*A*d^3*e+B*d^4)*a^2*x^2+A*
d^4*a^2*x
```

maxima [A] time = 0.51, size = 332, normalized size = 1.61

$$\frac{1}{10}Bc^2e^4x^{10}+\frac{1}{9}\left(4Bc^2de^3+Ac^2e^4\right)x^9+\frac{1}{4}\left(3Bc^2d^2e^2+2Ac^2de^3+Bace^4\right)x^8+Aa^2d^4x+\frac{2}{7}\left(2Bc^2d^3e+3Ac^2d^2e^2+4Bacde^3+Aace^4\right)x^7+\frac{1}{6}\left(Bc^2d^4+4Ac^2d^3e+12Bacd^2e^2+8Aacde^3+Ba^2e^4\right)x^6+\frac{1}{5}\left(Ac^2d^4+8Bacd^3e+12Aacd^2e^2+4Ba^2de^3+Aa^2e^4\right)x^5+\frac{1}{2}\left(Bacd^4+4Aacd^3e+3Ba^2d^2e^2+2Aa^2de^3\right)x^4+\frac{2}{3}\left(Aacd^4+2Ba^2d^3e+3Aa^2d^2e^2\right)x^3+\frac{1}{2}\left(Ba^2d^4+4Aa^2d^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^2*e^4*x^10 + 1/9*(4*B*c^2*d*e^3 + A*c^2*e^4)*x^9 + 1/4*(3*B*c^2*d^
2*e^2 + 2*A*c^2*d*e^3 + B*a*c*e^4)*x^8 + A*a^2*d^4*x + 2/7*(2*B*c^2*d^3*e +
 3*A*c^2*d^2*e^2 + 4*B*a*c*d*e^3 + A*a*c*e^4)*x^7 + 1/6*(B*c^2*d^4 + 4*A*c^
2*d^3*e + 12*B*a*c*d^2*e^2 + 8*A*a*c*d*e^3 + B*a^2*e^4)*x^6 + 1/5*(A*c^2*d^
4 + 8*B*a*c*d^3*e + 12*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*x^5 + 1/2
*(B*a*c*d^4 + 4*A*a*c*d^3*e + 3*B*a^2*d^2*e^2 + 2*A*a^2*d*e^3)*x^4 + 2/3*(A
*a*c*d^4 + 2*B*a^2*d^3*e + 3*A*a^2*d^2*e^2)*x^3 + 1/2*(B*a^2*d^4 + 4*A*a^2*
d^3*e)*x^2
```

mupad [B] time = 0.13, size = 298, normalized size = 1.45

$$x^5\left(\frac{4Ba^2de^3}{5}+\frac{Aa^2e^4}{5}+\frac{8Bacd^3e}{5}+\frac{12Aacd^2e^2}{5}+\frac{Ac^2d^4}{5}\right)+x^6\left(\frac{Ba^2e^4}{6}+2Bacd^2e^2+\frac{4Aacde^3}{3}+\frac{Bc^2d^4}{6}+\frac{2Ac^2d^3e}{3}\right)+\frac{2ad^2x^3\left(Acd^2+2Bade+3Aae^2\right)}{3}+\frac{ce^2x^8\left(3Bcd^2+2Acde+Bae^2\right)}{4}+\frac{a^2d^3x^2\left(4Ae+Bd\right)}{2}+\frac{c^2e^3x^9\left(Ae+4Bd\right)}{9}+\frac{adx^4\left(Bcd^3+4Acd^2e+3Bade^2+2Aae^3\right)}{2}+\frac{2cex^7\left(2Bcd^3+3Acd^2e+4Bade^2+Aae^3\right)}{7}+Aa^2d^4x+\frac{Bc^2e^4x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^5*((A*a^2*e^4)/5 + (A*c^2*d^4)/5 + (4*B*a^2*d*e^3)/5 + (8*B*a*c*d^3*e)/5
+ (12*A*a*c*d^2*e^2)/5) + x^6*((B*a^2*e^4)/6 + (B*c^2*d^4)/6 + (2*A*c^2*d^3
*e)/3 + (4*A*a*c*d*e^3)/3 + 2*B*a*c*d^2*e^2) + (2*a*d^2*x^3*(3*A*a*e^2 + A*
c*d^2 + 2*B*a*d*e))/3 + (c*e^2*x^8*(B*a*e^2 + 3*B*c*d^2 + 2*A*c*d*e))/4 + (
a^2*d^3*x^2*(4*A*e + B*d))/2 + (c^2*e^3*x^9*(A*e + 4*B*d))/9 + (a*d*x^4*(2*
A*a*e^3 + B*c*d^3 + 3*B*a*d*e^2 + 4*A*c*d^2*e))/2 + (2*c*e*x^7*(A*a*e^3 + 2
*B*c*d^3 + 4*B*a*d*e^2 + 3*A*c*d^2*e))/7 + A*a^2*d^4*x + (B*c^2*e^4*x^10)/1
0
```

sympy [A] time = 0.12, size = 398, normalized size = 1.93

$$Aa^2d^4x+\frac{Bc^2e^4x^{10}}{10}+x^9\left(\frac{Ac^2e^4}{9}+\frac{4Bc^2de^3}{9}\right)+x^8\left(\frac{Ac^2de^3}{2}+\frac{Bace^4}{4}+\frac{3Bc^2d^2e^2}{4}\right)+x^7\left(\frac{2Aace^4}{7}+\frac{6Ac^2d^2e^2}{7}+\frac{8Bacde^3}{7}+\frac{4Bc^2d^3e}{7}\right)+x^6\left(\frac{4Aacde^3}{3}+\frac{2Ac^2d^3e}{3}+\frac{Ba^2e^4}{6}+2Bacd^2e^2+\frac{Bc^2d^4}{6}\right)+x^5\left(\frac{Aa^2e^4}{5}+\frac{12Aacd^2e^2}{5}+\frac{Ac^2d^4}{5}+\frac{4Ba^2de^3}{5}+\frac{8Bacd^3e}{5}\right)+x^4\left(Aa^2de^3+2Aacd^3e+\frac{3Ba^2d^2e^2}{2}+\frac{Bacd^4}{2}\right)+x^3\left(2Aa^2d^2e^2+\frac{2Aacd^4}{3}+\frac{4Ba^2d^3e}{3}\right)+x^2\left(2Aa^2d^3e+\frac{Ba^2d^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**4*x + B*c**2*e**4*x**10/10 + x**9*(A*c**2*e**4/9 + 4*B*c**2*d*e**
3/9) + x**8*(A*c**2*d*e**3/2 + B*a*c*e**4/4 + 3*B*c**2*d**2*e**2/4) + x**7*
(2*A*a*c*e**4/7 + 6*A*c**2*d**2*e**2/7 + 8*B*a*c*d*e**3/7 + 4*B*c**2*d**3*e
/7) + x**6*(4*A*a*c*d*e**3/3 + 2*A*c**2*d**3*e/3 + B*a**2*e**4/6 + 2*B*a*c*
d**2*e**2 + B*c**2*d**4/6) + x**5*(A*a**2*e**4/5 + 12*A*a*c*d**2*e**2/5 + A
*c**2*d**4/5 + 4*B*a**2*d*e**3/5 + 8*B*a*c*d**3*e/5) + x**4*(A*a**2*d*e**3
+ 2*A*a*c*d**3*e + 3*B*a**2*d**2*e**2/2 + B*a*c*d**4/2) + x**3*(2*A*a**2*d*
*2*e**2 + 2*A*a*c*d**4/3 + 4*B*a**2*d**3*e/3) + x**2*(2*A*a**2*d**3*e + B*a
**2*d**4/2)
```

3.1125 $\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=206

$$\frac{2c(d+ex)^7 \left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}+\frac{(d+ex)^5 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{5e^6}-\frac{(d+ex)^4 \left(ae^2+cd^2\right)^2 (B$$

Rubi [A] time = 0.22, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{2c(d+ex)^7 \left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}-\frac{c(d+ex)^6 \left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6}+\frac{(d+ex)^5 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{5e^6}-\frac{(d+ex)^4 \left(ae^2+cd^2\right)^2 (Bd-Ae)}{4e^6}-\frac{c^2(d+ex)^8(5Bd-Ae)}{8e^6}+\frac{Bc^2(d+ex)^9}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^4)/(4*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^5)/(5*e^6) - (c*(5*B*c*d^3 - 3*A*c
*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^6)/(3*e^6) + (2*c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^7)/(7*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^8)/(
8*e^6) + (B*c^2*(d + e*x)^9)/(9*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^2 \, dx &= \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right)^2 (d+ex)^3}{e^5}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+a\right.}{e^5}\right. \\
&= -\frac{(Bd-Ae) \left(cd^2+ae^2\right)^2 (d+ex)^4}{4e^6}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe^2\right)}{5e^6}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 244, normalized size = 1.18

$$\frac{1}{5}x^5 \left(a^2Be^3+6aAcde^2+6aBcd^2e+Ac^2d^3\right)+\frac{1}{2}a^2d^2x^2(3Ae+Bd)+a^2Ad^3x+\frac{1}{7}cex^7 \left(2aBe^2+3Acde+3Bcd^2\right)+\frac{1}{3}adx^3 \left(3aAe^2+3aBde+2Acd^2\right)+\frac{1}{6}cx^6 \left(2aAe^3+6aBde^2+3Acd^2e+Bcd^3\right)+\frac{1}{4}ax^4 \left(aAe^3+3aBde^2+6Acd^2e+2Bcd^3\right)+\frac{1}{8}c^2e^2x^8(Ae+3Bd)+\frac{1}{9}Bc^2e^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^3*x + (a^2*d^2*(B*d + 3*A*e)*x^2)/2 + (a*d*(2*A*c*d^2 + 3*a*B*d*e +
 3*a*A*e^2)*x^3)/3 + (a*(2*B*c*d^3 + 6*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x
^4)/4 + ((A*c^2*d^3 + 6*a*B*c*d^2*e + 6*a*A*c*d*e^2 + a^2*B*e^3)*x^5)/5 + (
c*(B*c*d^3 + 3*A*c*d^2*e + 6*a*B*d*e^2 + 2*a*A*e^3)*x^6)/6 + (c*e*(3*B*c*d^
2 + 3*A*c*d*e + 2*a*B*e^2)*x^7)/7 + (c^2*e^2*(3*B*d + A*e)*x^8)/8 + (B*c^2*
e^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 287, normalized size = 1.39

$$\frac{1}{9}x^9e^3c^2B+\frac{3}{8}x^8e^2dc^2B+\frac{1}{8}x^8e^3c^2A+\frac{3}{7}x^7ed^2c^2B+\frac{2}{7}x^7e^3caB+\frac{3}{7}x^7e^2dc^2A+\frac{1}{6}x^6d^3c^2B+x^6e^2dcaB+\frac{1}{2}x^6ed^2c^2A+\frac{1}{3}x^6e^3caA+\frac{6}{5}x^5ed^2caB+\frac{1}{5}x^5e^3a^2B+\frac{1}{5}x^5d^3c^2A+\frac{6}{5}x^5e^2dcaA+\frac{1}{2}x^4d^3caB+\frac{3}{4}x^4e^2da^2B+\frac{3}{2}x^4ed^2caA+\frac{1}{4}x^4e^3a^2A+x^3ed^2a^2B+\frac{2}{3}x^3d^3caA+x^3e^2da^2A+\frac{1}{2}x^2d^3a^2B+\frac{3}{2}x^2ed^2a^2A+xd^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*c^2*B + 3/8*x^8*e^2*d*c^2*B + 1/8*x^8*e^3*c^2*A + 3/7*x^7*e*d^2
*c^2*B + 2/7*x^7*e^3*c*a*B + 3/7*x^7*e^2*d*c^2*A + 1/6*x^6*d^3*c^2*B + x^6*
e^2*d*c*a*B + 1/2*x^6*e*d^2*c^2*A + 1/3*x^6*e^3*c*a*A + 6/5*x^5*e*d^2*c*a*B
 + 1/5*x^5*e^3*a^2*B + 1/5*x^5*d^3*c^2*A + 6/5*x^5*e^2*d*c*a*A + 1/2*x^4*d^
3*c*a*B + 3/4*x^4*e^2*d*a^2*B + 3/2*x^4*e*d^2*c*a*A + 1/4*x^4*e^3*a^2*A + x
^3*e*d^2*a^2*B + 2/3*x^3*d^3*c*a*A + x^3*e^2*d*a^2*A + 1/2*x^2*d^3*a^2*B +
3/2*x^2*e*d^2*a^2*A + x*d^3*a^2*A
```

giac [A] time = 0.19, size = 281, normalized size = 1.36

$$\frac{1}{9}Bc^2x^9e^3+\frac{3}{8}Bc^2dx^8e^2+\frac{3}{7}Bc^2d^2x^7e+\frac{1}{6}Bc^2d^3x^6+\frac{1}{8}Ac^2x^8e^3+\frac{3}{7}Ac^2dx^7e^2+\frac{1}{2}Ac^2d^2x^6e+\frac{1}{5}Ac^2d^3x^5+\frac{2}{7}Bacx^7e^3+Bacdx^6e^2+\frac{6}{5}Bacd^2x^5e+\frac{1}{2}Bacd^3x^4+\frac{1}{3}Aacx^6e^3+\frac{6}{5}Aacdx^5e^2+\frac{3}{2}Aacd^2x^4e+\frac{2}{3}Aacd^3x^3+\frac{1}{5}Ba^2x^5e^3+\frac{3}{4}Ba^2dx^4e^2+Ba^2d^2x^3e+\frac{1}{2}Ba^2d^3x^2+\frac{1}{4}Aa^2x^4e^3+Aa^2dx^3e^2+\frac{3}{2}Aa^2d^2x^2e+Aa^2d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9*e^3 + 3/8*B*c^2*d*x^8*e^2 + 3/7*B*c^2*d^2*x^7*e + 1/6*B*c^2*d
^3*x^6 + 1/8*A*c^2*x^8*e^3 + 3/7*A*c^2*d*x^7*e^2 + 1/2*A*c^2*d^2*x^6*e + 1/
5*A*c^2*d^3*x^5 + 2/7*B*a*c*x^7*e^3 + B*a*c*d*x^6*e^2 + 6/5*B*a*c*d^2*x^5*e
 + 1/2*B*a*c*d^3*x^4 + 1/3*A*a*c*x^6*e^3 + 6/5*A*a*c*d*x^5*e^2 + 3/2*A*a*c*
d^2*x^4*e + 2/3*A*a*c*d^3*x^3 + 1/5*B*a^2*x^5*e^3 + 3/4*B*a^2*d*x^4*e^2 + B
*a^2*d^2*x^3*e + 1/2*B*a^2*d^3*x^2 + 1/4*A*a^2*x^4*e^3 + A*a^2*d*x^3*e^2 +
3/2*A*a^2*d^2*x^2*e + A*a^2*d^3*x
```

maple [A] time = 0.04, size = 252, normalized size = 1.22

$$\frac{Bc^2e^3x^9}{9}+\frac{\left(Ae^3+3Bde^2\right)c^2x^8}{8}+Aa^2d^3x+\frac{\left(2Bace^3+\left(3Ade^2+3Bd^2e\right)c^2\right)x^7}{7}+\frac{\left(2\left(Ae^3+3Bde^2\right)ac+\left(3Ad^2e+Bd^3\right)c^2\right)x^6}{6}+\frac{\left(Ac^2d^3+Ba^2e^3+2\left(3Ade^2+3Bd^2e\right)ac\right)x^5}{5}+\frac{\left(3Ad^2e+Bd^3\right)a^2x^2}{2}+\frac{\left(\left(Ae^3+3Bde^2\right)a^2+2\left(3Ad^2e+Bd^3\right)ac\right)x^4}{4}+\frac{\left(2Aacd^3+\left(3Ade^2+3Bd^2e\right)a^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x)
```

```
[Out] 1/9*B*c^2*e^3*x^9+1/8*(A*e^3+3*B*d*e^2)*c^2*x^8+1/7*((3*A*d*e^2+3*B*d^2*e)*
c^2+2*B*e^3*a*c)*x^7+1/6*((3*A*d^2*e+B*d^3)*c^2+2*(A*e^3+3*B*d*e^2)*a*c)*x^
6+1/5*(A*d^3*c^2+2*(3*A*d*e^2+3*B*d^2*e)*a*c+a^2*B*e^3)*x^5+1/4*(2*(3*A*d^2
*e+B*d^3)*a*c+(A*e^3+3*B*d*e^2)*a^2)*x^4+1/3*(2*A*d^3*a*c+(3*A*d*e^2+3*B*d^
2*e)*a^2)*x^3+1/2*(3*A*d^2*e+B*d^3)*a^2*x^2+A*d^3*a^2*x
```

maxima [A] time = 0.63, size = 260, normalized size = 1.26

$$\frac{1}{9}Bc^2e^3x^9+\frac{1}{8}\left(3Bc^2de^2+Ac^2e^3\right)x^8+\frac{1}{7}\left(3Bc^2d^2e+3Ac^2de^2+2Bace^3\right)x^7+Aa^2d^3x+\frac{1}{6}\left(Bc^2d^3+3Ac^2d^2e+6Bacde^2+2Aace^3\right)x^6+\frac{1}{5}\left(Ac^2d^3+6Bacd^2e+6Aacde^2+Ba^2e^3\right)x^5+\frac{1}{4}\left(2Bacd^3+6Aacd^2e+3Ba^2de^2+Aa^2e^3\right)x^4+\frac{1}{3}\left(2Aacd^3+3Ba^2d^2e+3Aa^2de^2\right)x^3+\frac{1}{2}\left(Ba^2d^3+3Aa^2d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*e^3*x^9 + 1/8*(3*B*c^2*d*e^2 + A*c^2*e^3)*x^8 + 1/7*(3*B*c^2*d^2*
e + 3*A*c^2*d*e^2 + 2*B*a*c*e^3)*x^7 + A*a^2*d^3*x + 1/6*(B*c^2*d^3 + 3*A*c
^2*d^2*e + 6*B*a*c*d*e^2 + 2*A*a*c*e^3)*x^6 + 1/5*(A*c^2*d^3 + 6*B*a*c*d^2*
e + 6*A*a*c*d*e^2 + B*a^2*e^3)*x^5 + 1/4*(2*B*a*c*d^3 + 6*A*a*c*d^2*e + 3*B
```

```
*a^2*d*e^2 + A*a^2*e^3)*x^4 + 1/3*(2*A*a*c*d^3 + 3*B*a^2*d^2*e + 3*A*a^2*d*
e^2)*x^3 + 1/2*(B*a^2*d^3 + 3*A*a^2*d^2*e)*x^2
```

mupad [B] time = 1.75, size = 229, normalized size = 1.11

$$x^5\left(\frac{B\,a^2\,e^3}{5}+\frac{6\,B\,a\,c\,d^2\,e}{5}+\frac{6\,A\,a\,c\,d\,e^2}{5}+\frac{A\,c^2\,d^3}{5}\right)+\frac{a\,x^4\,\left(2\,B\,c\,d^3+6\,A\,c\,d^2\,e+3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{4}+\frac{c\,x^6\,\left(B\,c\,d^3+3\,A\,c\,d^2\,e+6\,B\,a\,d\,e^2+2\,A\,a\,e^3\right)}{6}+\frac{a^2\,d^2\,x^2\,\left(3\,A\,e+B\,d\right)}{2}+\frac{c^2\,e^2\,x^8\,\left(A\,e+3\,B\,d\right)}{8}+A\,a^2\,d^3\,x+\frac{a\,d\,x^3\,\left(2\,A\,c\,d^2+3\,B\,a\,d\,e+3\,A\,a\,e^2\right)}{3}+\frac{c\,e\,x^7\,\left(3\,B\,c\,d^2+3\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{7}+\frac{B\,c^2\,e^3\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^5*((A*c^2*d^3)/5 + (B*a^2*e^3)/5 + (6*A*a*c*d*e^2)/5 + (6*B*a*c*d^2*e)/5)
 + (a*x^4*(A*a*e^3 + 2*B*c*d^3 + 3*B*a*d*e^2 + 6*A*c*d^2*e))/4 + (c*x^6*(2*
A*a*e^3 + B*c*d^3 + 6*B*a*d*e^2 + 3*A*c*d^2*e))/6 + (a^2*d^2*x^2*(3*A*e + B
*d))/2 + (c^2*e^2*x^8*(A*e + 3*B*d))/8 + A*a^2*d^3*x + (a*d*x^3*(3*A*a*e^2
+ 2*A*c*d^2 + 3*B*a*d*e))/3 + (c*e*x^7*(2*B*a*e^2 + 3*B*c*d^2 + 3*A*c*d*e))
/7 + (B*c^2*e^3*x^9)/9
```

sympy [A] time = 0.11, size = 303, normalized size = 1.47

$$Aa^2d^3x+\frac{Bc^2e^3x^9}{9}+x^8\left(\frac{Ac^2e^3}{8}+\frac{3Bc^2de^2}{8}\right)+x^7\left(\frac{3Ac^2de^2}{7}+\frac{2Bace^3}{7}+\frac{3Bc^2d^2e}{7}\right)+x^6\left(\frac{Aace^3}{3}+\frac{Ac^2d^2e}{2}+Bacde^2+\frac{Bc^2d^3}{6}\right)+x^5\left(\frac{6Aacde^2}{5}+\frac{Ac^2d^3}{5}+\frac{Ba^2e^3}{5}+\frac{6Bacd^2e}{5}\right)+x^4\left(\frac{Aa^2e^3}{4}+\frac{3Aacd^2e}{2}+\frac{3Ba^2de^2}{4}+\frac{Bacd^3}{2}\right)+x^3\left(Aa^2de^2+\frac{2Aacd^3}{3}+Ba^2d^2e\right)+x^2\left(\frac{3Aa^2d^2e}{2}+\frac{Ba^2d^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**3*x + B*c**2*e**3*x**9/9 + x**8*(A*c**2*e**3/8 + 3*B*c**2*d*e**2/
8) + x**7*(3*A*c**2*d*e**2/7 + 2*B*a*c*e**3/7 + 3*B*c**2*d**2*e/7) + x**6*(
A*a*c*e**3/3 + A*c**2*d**2*e/2 + B*a*c*d*e**2 + B*c**2*d**3/6) + x**5*(6*A*
a*c*d*e**2/5 + A*c**2*d**3/5 + B*a**2*e**3/5 + 6*B*a*c*d**2*e/5) + x**4*(A*
a**2*e**3/4 + 3*A*a*c*d**2*e/2 + 3*B*a**2*d*e**2/4 + B*a*c*d**3/2) + x**3*(
A*a**2*d*e**2 + 2*A*a*c*d**3/3 + B*a**2*d**2*e) + x**2*(3*A*a**2*d**2*e/2 +
 B*a**2*d**3/2)
```

3.1126 $\int (A+Bx)(d+ex)^2 \left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=206

$$\frac{c(d+ex)^6 \left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}+\frac{(d+ex)^4 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{4e^6}-\frac{(d+ex)^3 \left(ae^2+cd^2\right)^2 (Bd-$$

Rubi [A] time = 0.17, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c(d+ex)^6 \left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}-\frac{2c(d+ex)^5 \left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{5e^6}+\frac{(d+ex)^4 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{4e^6}-\frac{(d+ex)^3 \left(ae^2+cd^2\right)^2 (Bd-Ae)}{3e^6}-\frac{c^2(d+ex)^7(5Bd-Ae)}{7e^6}+\frac{Bc^2(d+ex)^8}{8e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^3)/(3*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^4)/(4*e^6) - (2*c*(5*B*c*d^3 - 3*A
*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^5)/(5*e^6) + (c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^6)/(3*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^7)/(
7*e^6) + (B*c^2*(d + e*x)^8)/(8*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^2 \left(a+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right)^2 (d+ex)^2}{e^5}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe\right.}{e^5}\right.$$

$$= -\frac{(Bd-Ae) \left(cd^2+ae^2\right)^2 (d+ex)^3}{3e^6}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe^2\right) (d}{4e^6}$$

Mathematica [A] time = 0.04, size = 174, normalized size = 0.84

$$\frac{1}{2}a^2dx^2(2Ae+Bd)+a^2Ad^2x+\frac{1}{6}cx^6 \left(2aBe^2+2Acde+Bcd^2\right)+\frac{1}{5}cx^5 \left(2aAe^2+4aBde+Acd^2\right)+\frac{1}{4}ax^4 \left(aBe^2+4Acde+2Bcd^2\right)+\frac{1}{3}ax^3 \left(aAe^2+2aBde+2Acd^2\right)+\frac{1}{7}c^2ex^7(Ae+2Bd)+\frac{1}{8}Bc^2e^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^2*x + (a^2*d*(B*d + 2*A*e)*x^2)/2 + (a*(2*A*c*d^2 + 2*a*B*d*e + a*A
*e^2)*x^3)/3 + (a*(2*B*c*d^2 + 4*A*c*d*e + a*B*e^2)*x^4)/4 + (c*(A*c*d^2 +
4*a*B*d*e + 2*a*A*e^2)*x^5)/5 + (c*(B*c*d^2 + 2*A*c*d*e + 2*a*B*e^2)*x^6)/6
 + (c^2*e*(2*B*d + A*e)*x^7)/7 + (B*c^2*e^2*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2 \left(a+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 200, normalized size = 0.97

$$\frac{1}{8}x^8e^2c^2B + \frac{2}{7}x^7edc^2B + \frac{1}{7}x^7e^2c^2A + \frac{1}{6}x^6d^2c^2B + \frac{1}{3}x^6e^2caB + \frac{1}{3}x^6edc^2A + \frac{4}{5}x^5edcaB + \frac{1}{5}x^5d^2c^2A + \frac{2}{5}x^5e^2caA + \frac{1}{2}x^4d^2caB + \frac{1}{4}x^4e^2a^2B + x^4edcaA + \frac{2}{3}x^3eda^2B + \frac{2}{3}x^3d^2caA + \frac{1}{3}x^3e^2a^2A + \frac{1}{2}x^2d^2a^2B + x^2eda^2A + xd^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*c^2*B + 2/7*x^7*e*d*c^2*B + 1/7*x^7*e^2*c^2*A + 1/6*x^6*d^2*c^2
*B + 1/3*x^6*e^2*c*a*B + 1/3*x^6*e*d*c^2*A + 4/5*x^5*e*d*c*a*B + 1/5*x^5*d^
2*c^2*A + 2/5*x^5*e^2*c*a*A + 1/2*x^4*d^2*c*a*B + 1/4*x^4*e^2*a^2*B + x^4*e
*d*c*a*A + 2/3*x^3*e*d*a^2*B + 2/3*x^3*d^2*c*a*A + 1/3*x^3*e^2*a^2*A + 1/2*
x^2*d^2*a^2*B + x^2*e*d*a^2*A + x*d^2*a^2*A
```

giac [A] time = 0.16, size = 200, normalized size = 0.97

$$\frac{1}{8}Bc^2x^8e^2 + \frac{2}{7}Bc^2dx^7e + \frac{1}{6}Bc^2d^2x^6 + \frac{1}{7}Ac^2x^7e^2 + \frac{1}{3}Ac^2dx^6e + \frac{1}{5}Ac^2d^2x^5 + \frac{1}{3}Bacx^6e^2 + \frac{4}{5}Bacdx^5e + \frac{1}{2}Bacd^2x^4 + \frac{2}{5}Aacx^5e^2 + Aacdx^4e + \frac{2}{3}Aacd^2x^3 + \frac{1}{4}Ba^2x^4e^2 + \frac{2}{3}Ba^2dx^3e + \frac{1}{2}Ba^2d^2x^2 + \frac{1}{3}Aa^2x^3e^2 + Aa^2dx^2e + Aa^2d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8*e^2 + 2/7*B*c^2*d*x^7*e + 1/6*B*c^2*d^2*x^6 + 1/7*A*c^2*x^7*e
^2 + 1/3*A*c^2*d*x^6*e + 1/5*A*c^2*d^2*x^5 + 1/3*B*a*c*x^6*e^2 + 4/5*B*a*c*
d*x^5*e + 1/2*B*a*c*d^2*x^4 + 2/5*A*a*c*x^5*e^2 + A*a*c*d*x^4*e + 2/3*A*a*c
*d^2*x^3 + 1/4*B*a^2*x^4*e^2 + 2/3*B*a^2*d*x^3*e + 1/2*B*a^2*d^2*x^2 + 1/3*
A*a^2*x^3*e^2 + A*a^2*d*x^2*e + A*a^2*d^2*x
```

maple [A] time = 0.04, size = 177, normalized size = 0.86

$$\frac{Bc^2e^2x^8}{8} + \frac{\left(Ae^2+2Bde\right)c^2x^7}{7} + Aa^2d^2x + \frac{\left(2Bace^2+\left(2Ade+Bd^2\right)c^2\right)x^6}{6} + \frac{\left(Ac^2d^2+2\left(Ae^2+2Bde\right)ac\right)x^5}{5} + \frac{\left(2Ade+Bd^2\right)a^2x^2}{2} + \frac{\left(Ba^2e^2+2\left(2Ade+Bd^2\right)ac\right)x^4}{4} + \frac{\left(2Aacd^2+\left(Ae^2+2Bde\right)a^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x)
```

```
[Out] 1/8*B*c^2*e^2*x^8+1/7*(A*e^2+2*B*d*e)*c^2*x^7+1/6*((2*A*d*e+B*d^2)*c^2+2*B*
e^2*a*c)*x^6+1/5*(A*c^2*d^2+2*(A*e^2+2*B*d*e)*a*c)*x^5+1/4*(2*(2*A*d*e+B*d^
2)*a*c+a^2*B*e^2)*x^4+1/3*(2*A*d^2*a*c+(A*e^2+2*B*d*e)*a^2)*x^3+1/2*(2*A*d*
e+B*d^2)*a^2*x^2+A*d^2*a^2*x
```

maxima [A] time = 0.57, size = 184, normalized size = 0.89

$$\frac{1}{8}Bc^2e^2x^8 + \frac{1}{7}\left(2Bc^2de + Ac^2e^2\right)x^7 + \frac{1}{6}\left(Bc^2d^2 + 2Ac^2de + 2Bace^2\right)x^6 + Aa^2d^2x + \frac{1}{5}\left(Ac^2d^2 + 4Bacde + 2Aace^2\right)x^5 + \frac{1}{4}\left(2Bacd^2 + 4Aacde + Ba^2e^2\right)x^4 + \frac{1}{3}\left(2Aacd^2 + 2Ba^2de + Aa^2e^2\right)x^3 + \frac{1}{2}\left(Ba^2d^2 + 2Aa^2de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*e^2*x^8 + 1/7*(2*B*c^2*d*e + A*c^2*e^2)*x^7 + 1/6*(B*c^2*d^2 + 2*
A*c^2*d*e + 2*B*a*c*e^2)*x^6 + A*a^2*d^2*x + 1/5*(A*c^2*d^2 + 4*B*a*c*d*e +
 2*A*a*c*e^2)*x^5 + 1/4*(2*B*a*c*d^2 + 4*A*a*c*d*e + B*a^2*e^2)*x^4 + 1/3*(
2*A*a*c*d^2 + 2*B*a^2*d*e + A*a^2*e^2)*x^3 + 1/2*(B*a^2*d^2 + 2*A*a^2*d*e)*
x^2
```

mupad [B] time = 1.73, size = 168, normalized size = 0.82

$$x^3\left(\frac{2Ba^2de}{3} + \frac{Aa^2e^2}{3} + \frac{2Acad^2}{3}\right) + x^6\left(\frac{Bc^2d^2}{6} + \frac{Ac^2de}{3} + \frac{Bace^2}{3}\right) + \frac{cx^5\left(Acd^2+4Bade+2Aae^2\right)}{5} + \frac{ax^4\left(2Bcd^2+4Acde+Bae^2\right)}{4} + Aa^2d^2x + \frac{a^2dx^2\left(2Ae+Bd\right)}{2} + \frac{c^2ex^7\left(Ae+2Bd\right)}{7} + \frac{Bc^2e^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^3*((A*a^2*e^2)/3 + (2*A*a*c*d^2)/3 + (2*B*a^2*d*e)/3) + x^6*((B*c^2*d^2)/
6 + (B*a*c*e^2)/3 + (A*c^2*d*e)/3) + (c*x^5*(2*A*a*e^2 + A*c*d^2 + 4*B*a*d*
e))/5 + (a*x^4*(B*a*e^2 + 2*B*c*d^2 + 4*A*c*d*e))/4 + A*a^2*d^2*x + (a^2*d*
x^2*(2*A*e + B*d))/2 + (c^2*e*x^7*(A*e + 2*B*d))/7 + (B*c^2*e^2*x^8)/8
```

sympy [A] time = 0.10, size = 211, normalized size = 1.02

$$Aa^2d^2x + \frac{Bc^2e^2x^8}{8} + x^7\left(\frac{Ac^2e^2}{7} + \frac{2Bc^2de}{7}\right) + x^6\left(\frac{Ac^2de}{3} + \frac{Bace^2}{3} + \frac{Bc^2d^2}{6}\right) + x^5\left(\frac{2Aace^2}{5} + \frac{Ac^2d^2}{5} + \frac{4Bacde}{5}\right) + x^4\left(Aacde + \frac{Ba^2e^2}{4} + \frac{Bacd^2}{2}\right) + x^3\left(\frac{Aa^2e^2}{3} + \frac{2Aacd^2}{3} + \frac{2Ba^2de}{3}\right) + x^2\left(Aa^2de + \frac{Ba^2d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**2*x + B*c**2*e**2*x**8/8 + x**7*(A*c**2*e**2/7 + 2*B*c**2*d*e/7)
+ x**6*(A*c**2*d*e/3 + B*a*c*e**2/3 + B*c**2*d**2/6) + x**5*(2*A*a*c*e**2/5
 + A*c**2*d**2/5 + 4*B*a*c*d*e/5) + x**4*(A*a*c*d*e + B*a**2*e**2/4 + B*a*c
*d**2/2) + x**3*(A*a**2*e**2/3 + 2*A*a*c*d**2/3 + 2*B*a**2*d*e/3) + x**2*(A
*a**2*d*e + B*a**2*d**2/2)
```

3.1127 $\int (A+Bx)(d+ex)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=106

$$\frac{1}{2}a^2x^2(Ae+Bd)+a^2Adx+\frac{1}{5}cx^5(2aBe+Acd)+\frac{1}{2}acx^4(Ae+Bd)+\frac{1}{3}ax^3(aBe+2Acd)+\frac{1}{6}c^2x^6(Ae+Bd)+\frac{1}{7}Bc^2ex^7$$

Rubi [A] time = 0.13, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{1}{2}a^2x^2(Ae+Bd)+a^2Adx+\frac{1}{5}cx^5(2aBe+Acd)+\frac{1}{2}acx^4(Ae+Bd)+\frac{1}{3}ax^3(aBe+2Acd)+\frac{1}{6}c^2x^6(Ae+Bd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d*x + (a^2*(B*d + A*e)*x^2)/2 + (a*(2*A*c*d + a*B*e)*x^3)/3 + (a*c*(B
*d + A*e)*x^4)/2 + (c*(A*c*d + 2*a*B*e)*x^5)/5 + (c^2*(B*d + A*e)*x^6)/6 +
(B*c^2*e*x^7)/7
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+cx^2\right)^2\,dx &= \int \left(a^2Ad+a^2(Bd+Ae)x+a(2Acd+aBe)x^2+2ac(Bd+Ae)x^3+c(Acd\right.\\ &= a^2Adx+\frac{1}{2}a^2(Bd+Ae)x^2+\frac{1}{3}a(2Acd+aBe)x^3+\frac{1}{2}ac(Bd+Ae)x^4+\frac{1}{5}c(\end{aligned}$$

Mathematica [A] time = 0.04, size = 95, normalized size = 0.90

$$\frac{1}{210}x\left(35a^2(3A(2d+ex)+Bx(3d+2ex))+7acx^2(5A(4d+3ex)+3Bx(5d+4ex))+c^2x^4(7A(6d+5ex)+5Bx(7d+6ex))\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + c*x^2)^2,x]
```

```
[Out] (x*(35*a^2*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + 7*a*c*x^2*(5*A*(4*d + 3*
e*x) + 3*B*x*(5*d + 4*e*x)) + c^2*x^4*(7*A*(6*d + 5*e*x) + 5*B*x*(7*d + 6*e
*x))))/210
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 114, normalized size = 1.08

$$\frac{1}{7}x^7ec^2B+\frac{1}{6}x^6dc^2B+\frac{1}{6}x^6ec^2A+\frac{2}{5}x^5ecaB+\frac{1}{5}x^5dc^2A+\frac{1}{2}x^4dcaB+\frac{1}{2}x^4ecaA+\frac{1}{3}x^3ea^2B+\frac{2}{3}x^3dcaA+\frac{1}{2}x^2da^2B+\frac{1}{2}x^2ea^2A+xda^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*c^2*B + 1/6*x^6*d*c^2*B + 1/6*x^6*e*c^2*A + 2/5*x^5*e*c*a*B + 1/5
*x^5*d*c^2*A + 1/2*x^4*d*c*a*B + 1/2*x^4*e*c*a*A + 1/3*x^3*e*a^2*B + 2/3*x^
3*d*c*a*A + 1/2*x^2*d*a^2*B + 1/2*x^2*e*a^2*A + x*d*a^2*A
```

giac [A] time = 0.16, size = 120, normalized size = 1.13

$$\frac{1}{7}Bc^2x^7e+\frac{1}{6}Bc^2dx^6+\frac{1}{6}Ac^2x^6e+\frac{1}{5}Ac^2dx^5+\frac{2}{5}Bacx^5e+\frac{1}{2}Bacdx^4+\frac{1}{2}Aacx^4e+\frac{2}{3}Aacdx^3+\frac{1}{3}Ba^2x^3e+\frac{1}{2}Ba^2dx^2+\frac{1}{2}Aa^2x^2e+Aa^2dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7*e + 1/6*B*c^2*d*x^6 + 1/6*A*c^2*x^6*e + 1/5*A*c^2*d*x^5 + 2/5
*B*a*c*x^5*e + 1/2*B*a*c*d*x^4 + 1/2*A*a*c*x^4*e + 2/3*A*a*c*d*x^3 + 1/3*B*
a^2*x^3*e + 1/2*B*a^2*d*x^2 + 1/2*A*a^2*x^2*e + A*a^2*d*x
```

maple [A] time = 0.04, size = 99, normalized size = 0.93

$$\frac{Bc^2e\,x^7}{7}+\frac{(Ae+Bd)\,c^2x^6}{6}+\frac{(Ae+Bd)\,ac\,x^4}{2}+A\,a^2dx+\frac{\left(A\,c^2d+2Beac\right)x^5}{5}+\frac{(Ae+Bd)\,a^2x^2}{2}+\frac{\left(2Adac+Be\,a^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+a)^2,x)
```

```
[Out] 1/7*B*c^2*e*x^7+1/6*c^2*(A*e+B*d)*x^6+1/5*(A*c^2*d+2*B*a*c*e)*x^5+1/2*a*c*(
A*e+B*d)*x^4+1/3*(2*A*a*c*d+B*a^2*e)*x^3+1/2*a^2*(A*e+B*d)*x^2+a^2*A*d*x
```

maxima [A] time = 0.57, size = 106, normalized size = 1.00

$$\frac{1}{7}Bc^2ex^7+\frac{1}{6}\left(Bc^2d+Ac^2e\right)x^6+\frac{1}{5}\left(Ac^2d+2\,Bace\right)x^5+Aa^2dx+\frac{1}{2}\left(Bacd+Aace\right)x^4+\frac{1}{3}\left(2\,Aacd+Ba^2e\right)x^3+\frac{1}{2}\left(Ba^2d+Aa^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*e*x^7 + 1/6*(B*c^2*d + A*c^2*e)*x^6 + 1/5*(A*c^2*d + 2*B*a*c*e)*x
^5 + A*a^2*d*x + 1/2*(B*a*c*d + A*a*c*e)*x^4 + 1/3*(2*A*a*c*d + B*a^2*e)*x^
3 + 1/2*(B*a^2*d + A*a^2*e)*x^2
```

mupad [B] time = 1.68, size = 98, normalized size = 0.92

$$x^3\left(\frac{B\,e\,a^2}{3}+\frac{2\,A\,c\,d\,a}{3}\right)+x^5\left(\frac{A\,d\,c^2}{5}+\frac{2\,B\,a\,e\,c}{5}\right)+\frac{a^2\,x^2\,\left(A\,e+B\,d\right)}{2}+\frac{c^2\,x^6\,\left(A\,e+B\,d\right)}{6}+A\,a^2\,d\,x+\frac{a\,c\,x^4\,\left(A\,e+B\,d\right)}{2}+\frac{B\,c^2\,e\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((B*a^2*e)/3 + (2*A*a*c*d)/3) + x^5*((A*c^2*d)/5 + (2*B*a*c*e)/5) + (a^
2*x^2*(A*e + B*d))/2 + (c^2*x^6*(A*e + B*d))/6 + A*a^2*d*x + (a*c*x^4*(A*e
+ B*d))/2 + (B*c^2*e*x^7)/7
```

sympy [A] time = 0.08, size = 124, normalized size = 1.17

$$Aa^2dx+\frac{Bc^2ex^7}{7}+x^6\left(\frac{Ac^2e}{6}+\frac{Bc^2d}{6}\right)+x^5\left(\frac{Ac^2d}{5}+\frac{2Bace}{5}\right)+x^4\left(\frac{Aace}{2}+\frac{Bacd}{2}\right)+x^3\left(\frac{2Aacd}{3}+\frac{Ba^2e}{3}\right)+x^2\left(\frac{Aa^2e}{2}+\frac{Ba^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d*x + B*c**2*e*x**7/7 + x**6*(A*c**2*e/6 + B*c**2*d/6) + x**5*(A*c**
2*d/5 + 2*B*a*c*e/5) + x**4*(A*a*c*e/2 + B*a*c*d/2) + x**3*(2*A*a*c*d/3 + B
*a**2*e/3) + x**2*(A*a**2*e/2 + B*a**2*d/2)
```

3.1128 $\int (A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=45

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (2*a*A*c*x^3)/3 + (A*c^2*x^5)/5 + (B*(a + c*x^2)^3)/(6*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^2\,dx&=\frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a+cx^2\right)^2\,dx\\&=\frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a^2+2acx^2+c^2x^4\right)\,dx\\&=a^2Ax+\frac{2}{3}aAcx^3+\frac{1}{5}Ac^2x^5+\frac{B\left(a+cx^2\right)^3}{6c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 60, normalized size = 1.33

$$a^2Ax+\frac{1}{2}a^2Bx^2+\frac{2}{3}aAcx^3+\frac{1}{2}aBcx^4+\frac{1}{5}Ac^2x^5+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a^2*B*x^2)/2 + (2*a*A*c*x^3)/3 + (a*B*c*x^4)/2 + (A*c^2*x^5)/5 +
 (B*c^2*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 50, normalized size = 1.11

$$\frac{1}{6}x^6c^2B + \frac{1}{5}x^5c^2A + \frac{1}{2}x^4caB + \frac{2}{3}x^3caA + \frac{1}{2}x^2a^2B + xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 1/5*x^5*c^2*A + 1/2*x^4*c*a*B + 2/3*x^3*c*a*A + 1/2*x^2*a^2
*B + x*a^2*A
```

giac [A] time = 0.15, size = 50, normalized size = 1.11

$$\frac{1}{6}Bc^2x^6 + \frac{1}{5}Ac^2x^5 + \frac{1}{2}Bacx^4 + \frac{2}{3}Aacx^3 + \frac{1}{2}Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

maple [A] time = 0.04, size = 51, normalized size = 1.13

$$\frac{1}{6}B\,c^2x^6 + \frac{1}{5}A\,c^2x^5 + \frac{1}{2}Bac\,x^4 + \frac{2}{3}Aac\,x^3 + \frac{1}{2}B\,a^2x^2 + A\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*A*c^2*x^5+1/2*B*a*c*x^4+2/3*A*a*c*x^3+1/2*B*a^2*x^2+A*a^2
*x
```

maxima [A] time = 0.65, size = 50, normalized size = 1.11

$$\frac{1}{6}Bc^2x^6 + \frac{1}{5}Ac^2x^5 + \frac{1}{2}Bacx^4 + \frac{2}{3}Aacx^3 + \frac{1}{2}Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

mupad [B] time = 0.02, size = 50, normalized size = 1.11

$$\frac{B\,a^2\,x^2}{2} + A\,a^2\,x + \frac{B\,a\,c\,x^4}{2} + \frac{2\,A\,a\,c\,x^3}{3} + \frac{B\,c^2\,x^6}{6} + \frac{A\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (B*a^2*x^2)/2 + (A*c^2*x^5)/5 + (B*c^2*x^6)/6 + A*a^2*x + (2*A*a*c*x^3)/3 +
 (B*a*c*x^4)/2
```

sympy [**A**] time = 0.07, size = 58, normalized size = 1.29

$$Aa^2x + \frac{2Aacx^3}{3} + \frac{Ac^2x^5}{5} + \frac{Ba^2x^2}{2} + \frac{Bacx^4}{2} + \frac{Bc^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5/5 + B*a**2*x**2/2 + B*a*c*x**4/2 +
B*c**2*x**6/6
```

3.1129 $\int \frac{(A+Bx)(a+cx^2)^2}{d+ex}\,dx$

Optimal. Leaf size=169

$$-\frac{(ae^2+cd^2)^2(Bd-Ae)\log(d+ex)}{e^6}+\frac{x\left(B\left(ae^2+cd^2\right)^2-Acde\left(2ae^2+cd^2\right)\right)}{e^5}-\frac{cx^2\left(2ae^2+cd^2\right)(Bd-Ae)}{2e^4}+\frac{cx^3\left(2\right.}{}$$

Rubi [A] time = 0.19, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{cx^3\left(2aBe^2-Acde+Bcd^2\right)}{3e^3}-\frac{cx^2\left(2ae^2+cd^2\right)(Bd-Ae)}{2e^4}+\frac{x\left(B\left(ae^2+cd^2\right)^2-Acde\left(2ae^2+cd^2\right)\right)}{e^5}-\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)\log(d+ex)}{e^6}-\frac{c^2x^4(Bd-Ae)}{4e^2}+\frac{Bc^2x^5}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x),x]
```

```
[Out] ((B*(c*d^2 + a*e^2)^2 - A*c*d*e*(c*d^2 + 2*a*e^2))*x)/e^5 - (c*(B*d - A*e)*
(c*d^2 + 2*a*e^2)*x^2)/(2*e^4) + (c*(B*c*d^2 - A*c*d*e + 2*a*B*e^2)*x^3)/(3
*e^3) - (c^2*(B*d - A*e)*x^4)/(4*e^2) + (B*c^2*x^5)/(5*e) - ((B*d - A*e)*(c
*d^2 + a*e^2)^2*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{d+ex}\,dx &= \int \left(\frac{B\left(cd^2+ae^2\right)^2-Acde\left(cd^2+2ae^2\right)}{e^5}+\frac{c(-Bd+Ae)\left(cd^2+2ae^2\right)x}{e^4}-\frac{c\left(-Bcd^2+\right.}{}\right.\\ &= \frac{\left(B\left(cd^2+ae^2\right)^2-Acde\left(cd^2+2ae^2\right)\right)x}{e^5}-\frac{c(Bd-Ae)\left(cd^2+2ae^2\right)x^2}{2e^4}+\frac{c\left(Bcd^2-A\right.}{}\end{aligned}$$

Mathematica [A] time = 0.10, size = 174, normalized size = 1.03

$$\frac{ex\left(B\left(60a^2e^4+20ace^2\left(6d^2-3dex+2e^2x^2\right)+c^2\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)+5Ace\left(12ae^2(ex-2d)+c\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)\right)-60\left(ae^2+cd^2\right)^2(Bd-Ae)\log(d+ex)}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(5*A*c*e*(12*a*e^2*(-2*d + e*x) + c*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
 + 3*e^3*x^3)) + B*(60*a^2*e^4 + 20*a*c*e^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2) +
 c^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4))) -
 60*(B*d - A*e)*(c*d^2 + a*e^2)^2*Log[d + e*x])/(60*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x), x]
```

fricas [A] time = 0.39, size = 243, normalized size = 1.44

$$\frac{12\,Bc^2e^5x^5 - 15\,\left(Bc^2de^4 - Ac^2e^5\right)x^4 + 20\,\left(Bc^2d^2e^3 - Ac^2de^4 + 2\,Bace^5\right)x^3 - 30\,\left(Bc^2d^3e^2 - Ac^2d^2e^3 + 2\,Bacde^4 - 2\,Aace^5\right)x^2 + 60\,\left(Bc^2d^4e - Ac^2d^3e^2 + 2\,Bacd^2e^3 - 2\,Aacde^4 + Ba^2e^5\right)x - 60\,\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)\log\left(ex + d\right)}{60\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*c^2*e^5*x^5 - 15*(B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 20*(B*c^2*d^2*e
^3 - A*c^2*d*e^4 + 2*B*a*c*e^5)*x^3 - 30*(B*c^2*d^3*e^2 - A*c^2*d^2*e^3 + 2
*B*a*c*d*e^4 - 2*A*a*c*e^5)*x^2 + 60*(B*c^2*d^4*e - A*c^2*d^3*e^2 + 2*B*a*c
*d^2*e^3 - 2*A*a*c*d*e^4 + B*a^2*e^5)*x - 60*(B*c^2*d^5 - A*c^2*d^4*e + 2*B
*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*log(e*x + d))/e^6
```

giac [A] time = 0.16, size = 244, normalized size = 1.44

$$-\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{60}\,\left(12\,Bc^2x^5e^4 - 15\,Bc^2dx^4e^3 + 20\,Bc^2d^2x^3e^2 - 30\,Bc^2d^3x^2e + 60\,Bc^2d^4x + 15\,Ac^2x^4e^4 - 20\,Ac^2dx^3e^3 + 30\,Ac^2d^2x^2e^2 - 60\,Ac^2d^3xe + 40\,Bacx^3e^4 - 60\,Bacdx^2e^3 + 120\,Bacd^2xe^2 + 60\,Aacx^2e^4 - 120\,Aacdxe^3 + 60\,Ba^2xe^4\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4
 - A*a^2*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*B*c^2*x^5*e^4 - 15*B*c^2*
d*x^4*e^3 + 20*B*c^2*d^2*x^3*e^2 - 30*B*c^2*d^3*x^2*e + 60*B*c^2*d^4*x + 15
*A*c^2*x^4*e^4 - 20*A*c^2*d*x^3*e^3 + 30*A*c^2*d^2*x^2*e^2 - 60*A*c^2*d^3*x
*e + 40*B*a*c*x^3*e^4 - 60*B*a*c*d*x^2*e^3 + 120*B*a*c*d^2*x*e^2 + 60*A*a*c
*x^2*e^4 - 120*A*a*c*d*x*e^3 + 60*B*a^2*x*e^4)*e^(-5)
```

maple [A] time = 0.05, size = 285, normalized size = 1.69

$$\frac{B\,c^2x^5}{5e} + \frac{A\,c^2x^4}{4e} - \frac{B\,c^2d\,x^4}{4e^2} - \frac{A\,c^2d\,x^3}{3e^2} + \frac{2Bac\,x^3}{3e} + \frac{B\,c^2d^2x^3}{3e^3} + \frac{Aac\,x^2}{e} + \frac{A\,c^2d^2x^2}{2e^3} - \frac{Bacd\,x^2}{e^2} - \frac{B\,c^2d^3x^2}{2e^4} + \frac{A\,a^2\ln\left(ex + d\right)}{e} + \frac{2Aac\,d^2\ln\left(ex + d\right)}{e^3} - \frac{2Aacdx}{e^2} + \frac{A\,c^2d^4\ln\left(ex + d\right)}{e^5} - \frac{A\,c^2d^3x}{e^4} - \frac{B\,a^2d\ln\left(ex + d\right)}{e^2} + \frac{B\,a^2x}{e} - \frac{2Bac\,d^3\ln\left(ex + d\right)}{e^4} + \frac{2Bac\,d^2x}{e^3} - \frac{B\,c^2d^5\ln\left(ex + d\right)}{e^6} + \frac{B\,c^2d^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d),x)
```

```
[Out] 1/5*B*c^2/e*x^5+1/4/e*A*x^4*c^2-1/4/e^2*B*x^4*c^2*d-1/3/e^2*A*x^3*c^2*d+2/3
/e*B*x^3*a*c+1/3/e^3*B*x^3*c^2*d^2+1/e*A*x^2*a*c+1/2/e^3*A*x^2*c^2*d^2-1/e^
2*B*x^2*a*c*d-1/2/e^4*B*x^2*c^2*d^3-2/e^2*A*x*a*c*d-1/e^4*A*x*c^2*d^3+1/e*B
*x*a^2+2/e^3*B*x*a*c*d^2+1/e^5*B*x*c^2*d^4+1/e*ln(e*x+d)*A*a^2+2/e^3*ln(e*x
+d)*A*a*c*d^2+1/e^5*ln(e*x+d)*A*c^2*d^4-1/e^2*ln(e*x+d)*B*a^2*d-2/e^4*ln(e*
x+d)*B*a*c*d^3-1/e^6*ln(e*x+d)*B*c^2*d^5
```

maxima [A] time = 0.56, size = 242, normalized size = 1.43

$$\frac{12\,Bc^2e^4x^5 - 15\,\left(Bc^2de^3 - Ac^2e^4\right)x^4 + 20\,\left(Bc^2d^2e^2 - Ac^2de^3 + 2\,Bace^4\right)x^3 - 30\,\left(Bc^2d^3e - Ac^2d^2e^2 + 2\,Bacde^3 - 2\,Aace^4\right)x^2 + 60\,\left(Bc^2d^4 - Ac^2d^3e + 2\,Bacd^2e^2 - 2\,Aacde^3 + Ba^2e^4\right)x}{60\,e^5} - \frac{\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*c^2*e^4*x^5 - 15*(B*c^2*d*e^3 - A*c^2*e^4)*x^4 + 20*(B*c^2*d^2*e
^2 - A*c^2*d*e^3 + 2*B*a*c*e^4)*x^3 - 30*(B*c^2*d^3*e - A*c^2*d^2*e^2 + 2*B
*a*c*d*e^3 - 2*A*a*c*e^4)*x^2 + 60*(B*c^2*d^4 - A*c^2*d^3*e + 2*B*a*c*d^2*e
^2 - 2*A*a*c*d*e^3 + B*a^2*e^4)*x)/e^5 - (B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c
*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*log(e*x + d)/e^6
```

mupad [B] time = 0.07, size = 260, normalized size = 1.54

$$x\left(\frac{Ba^2}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{Ac^2}{e}-\frac{Bc^2d}{e^2}\right)}{e}-\frac{2Bac}{e}\right)}{e}+\frac{2Aac}{e}\right)}{e}\right)+x^4\left(\frac{Ac^2}{4e}-\frac{Bc^2d}{4e^2}\right)-x^3\left(\frac{d\left(\frac{Ac^2}{e}-\frac{Bc^2d}{e^2}\right)}{3e}-\frac{2Bac}{3e}\right)+x^2\left(\frac{d\left(\frac{d\left(\frac{Ac^2}{e}-\frac{Bc^2d}{e^2}\right)}{e}-\frac{2Bac}{e}\right)}{2e}+\frac{Aac}{e}\right)+\frac{\ln(d+ex)\left(-Ba^2de^4+Aa^2e^5-2Bacd^3e^2+2Aacd^2e^3-Bc^2d^5+Ac^2d^4e\right)}{e^6}+\frac{Bc^2x^5}{5e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x),x)
```

```
[Out] x*((B*a^2)/e - (d*((d*((d*((A*c^2)/e - (B*c^2*d)/e^2))/e - (2*B*a*c)/e))/e
+ (2*A*a*c)/e))/e) + x^4*((A*c^2)/(4*e) - (B*c^2*d)/(4*e^2)) - x^3*((d*((A*
c^2)/e - (B*c^2*d)/e^2))/(3*e) - (2*B*a*c)/(3*e)) + x^2*((d*((d*((A*c^2)/e
- (B*c^2*d)/e^2))/e - (2*B*a*c)/e))/(2*e) + (A*a*c)/e) + (log(d + e*x)*(A*a
^2*e^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + 2*A*a*c*d^2*e^3 - 2*B*a*c*
d^3*e^2))/e^6 + (B*c^2*x^5)/(5*e)
```

sympy [A] time = 0.58, size = 207, normalized size = 1.22

$$\frac{Bc^2x^5}{5e}+x^4\left(\frac{Ac^2}{4e}-\frac{Bc^2d}{4e^2}\right)+x^3\left(-\frac{Ac^2d}{3e^2}+\frac{2Bac}{3e}+\frac{Bc^2d^2}{3e^3}\right)+x^2\left(\frac{Aac}{e}+\frac{Ac^2d^2}{2e^3}-\frac{Bacd}{e^2}-\frac{Bc^2d^3}{2e^4}\right)+x\left(-\frac{2Aacd}{e^2}-\frac{Ac^2d^3}{e^4}+\frac{Ba^2}{e}+\frac{2Bacd^2}{e^3}+\frac{Bc^2d^4}{e^5}\right)-\frac{(-Ae+Bd)\left(ae^2+cd^2\right)^2\log(d+ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d),x)
```

```
[Out] B*c**2*x**5/(5*e) + x**4*(A*c**2/(4*e) - B*c**2*d/(4*e**2)) + x**3*(-A*c**2
*d/(3*e**2) + 2*B*a*c/(3*e) + B*c**2*d**2/(3*e**3)) + x**2*(A*a*c/e + A*c**
2*d**2/(2*e**3) - B*a*c*d/e**2 - B*c**2*d**3/(2*e**4)) + x*(-2*A*a*c*d/e**2
 - A*c**2*d**3/e**4 + B*a**2/e + 2*B*a*c*d**2/e**3 + B*c**2*d**4/e**5) - (-
A*e + B*d)*(a*e**2 + c*d**2)**2*log(d + e*x)/e**6
```

3.1130 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^2} dx$

Optimal. Leaf size=180

$$\frac{\left(ae^2+cd^2\right)^2 (Bd-Ae)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)\log(d+ex)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6}+\frac{cx^2\left(2aBe^2-2Acde+3Bcd^2\right)}{2e^4}-\frac{cx\,(\cdots}{\cdots}$$

Rubi [A] time = 0.22, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{cx^2\left(2aBe^2-2Acde+3Bcd^2\right)}{2e^4}-\frac{cx\left(-2aAe^3+4aBde^2-3Acd^2e+4Bcd^3\right)}{e^5}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)\log(d+ex)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6}-\frac{c^2x^3(2Bd-Ae)}{3e^3}+\frac{Bc^2x^4}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -((c*(4*B*c*d^3 - 3*A*c*d^2*e + 4*a*B*d*e^2 - 2*a*A*e^3)*x)/e^5) + (c*(3*B*
c*d^2 - 2*A*c*d*e + 2*a*B*e^2)*x^2)/(2*e^4) - (c^2*(2*B*d - A*e)*x^3)/(3*e^
3) + (B*c^2*x^4)/(4*e^2) + ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(e^6*(d + e*x))
+ ((c*d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^2}\,dx=\int \left(\frac{c\left(-4Bcd^3+3Acd^2e-4aBde^2+2aAe^3\right)}{e^5}-\frac{c\left(-3Bcd^2+2Acde-2aBe^2\right)x}{e^4}+\cdots\right.$$

$$=-\frac{c\left(4Bcd^3-3Acd^2e+4aBde^2-2aAe^3\right)x}{e^5}+\frac{c\left(3Bcd^2-2Acde+2aBe^2\right)x^2}{2e^4}-\frac{c^2(\cdots}{\cdots}$$

Mathematica [A] time = 0.14, size = 175, normalized size = 0.97

$$\frac{6ce^2x^2\left(2aBe^2-2Acde+3Bcd^2\right)+\frac{12\left(ae^2+cd^2\right)^2(Bd-Ae)}{d+ex}+12\left(ae^2+cd^2\right)\log(d+ex)\left(aBe^2-4Acde+5Bcd^2\right)+12cex\left(Ae\left(2ae^2+3cd^2\right)-4B\left(ade^2+cd^3\right)\right)+4c^2e^3x^3(Ae-2Bd)+3Bc^2e^4x^4}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*c*e*(A*e*(3*c*d^2 + 2*a*e^2) - 4*B*(c*d^3 + a*d*e^2))*x + 6*c*e^2*(3*B*
c*d^2 - 2*A*c*d*e + 2*a*B*e^2)*x^2 + 4*c^2*e^3*(-2*B*d + A*e)*x^3 + 3*B*c^2
*e^4*x^4 + (12*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(d + e*x) + 12*(c*d^2 + a*e^2
)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*Log[d + e*x])/(12*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^2,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^2, x]

fricas [B] time = 0.41, size = 354, normalized size = 1.97

$$\frac{3\,Bc^2e^5x^5+12\,Bc^2d^5-12\,Ac^2d^4e+24\,Bacd^3e^2-24\,Aacd^2e^3+12\,Ba^2de^4-12\,Aa^2e^5-\left(5\,Bc^2de^4-4\,Ac^2e^5\right)x^4+2\left(5\,Bc^2d^2e^3-4\,Ac^2de^4+6\,Bace^5\right)x^3-6\left(5\,Bc^2d^3e^2-4\,Ac^2d^2e^3+6\,Bacde^4-4\,Aace^5\right)x^2-12\left(4\,Bc^2d^4e-3\,Ac^2d^3e^2+4\,Bacd^2e^3-2\,Aacde^4\right)x+12\left(5\,Bc^2d^5-4\,Ac^2d^4e+6\,Bacd^3e^2-4\,Aacd^2e^3+Ba^2de^4+\left(5\,Bc^2d^4e-4\,Ac^2d^3e^2+6\,Bacd^2e^3-4\,Aacde^4+Ba^2e^5\right)x\right)\log\left(ex+d\right)}{12\left(e^7x+de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*e^5*x^5 + 12*B*c^2*d^5 - 12*A*c^2*d^4*e + 24*B*a*c*d^3*e^2 -
24*A*a*c*d^2*e^3 + 12*B*a^2*d*e^4 - 12*A*a^2*e^5 - (5*B*c^2*d*e^4 - 4*A*c^2
*e^5)*x^4 + 2*(5*B*c^2*d^2*e^3 - 4*A*c^2*d*e^4 + 6*B*a*c*e^5)*x^3 - 6*(5*B*
c^2*d^3*e^2 - 4*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 - 4*A*a*c*e^5)*x^2 - 12*(4*B*
c^2*d^4*e - 3*A*c^2*d^3*e^2 + 4*B*a*c*d^2*e^3 - 2*A*a*c*d*e^4)*x + 12*(5*B*
c^2*d^5 - 4*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 + B*a^2*d*e^4 +
 (5*B*c^2*d^4*e - 4*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 + B*a^2
*e^5)*x)*log(e*x + d))/(e^7*x + d*e^6)
```

giac [A] time = 0.23, size = 317, normalized size = 1.76

$$\frac{1}{12}\left(3\,Bc^2-\frac{4\left(5\,Bc^2de-Ac^2e^2\right)e^{(-1)}}{xe+d}+\frac{12\left(5\,Bc^2d^2e^2-2\,Ac^2de^3+Bace^4\right)e^{(-2)}}{(xe+d)^2}-\frac{24\left(5\,Bc^2d^3e^3-3\,Ac^2d^2e^4+3\,Bacde^5-Aace^6\right)e^{(-3)}}{(xe+d)^3}\right)(xe+d)^4e^{(-6)}-\left(5\,Bc^2d^4-4\,Ac^2d^3e+6\,Bacd^2e^2-4\,Aacde^3+Ba^2e^4\right)e^{(-6)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right)+\left(\frac{Bc^2d^5e^4}{xe+d}-\frac{Ac^2d^4e^5}{xe+d}+\frac{2\,Bacd^3e^6}{xe+d}-\frac{2\,Aacd^2e^7}{xe+d}+\frac{Ba^2de^8}{xe+d}-\frac{Aa^2e^9}{xe+d}\right)e^{(-10)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*c^2 - 4*(5*B*c^2*d*e - A*c^2*e^2)*e^(-1)/(x*e + d) + 12*(5*B*c^2*
d^2*e^2 - 2*A*c^2*d*e^3 + B*a*c*e^4)*e^(-2)/(x*e + d)^2 - 24*(5*B*c^2*d^3*e
^3 - 3*A*c^2*d^2*e^4 + 3*B*a*c*d*e^5 - A*a*c*e^6)*e^(-3)/(x*e + d)^3)*(x*e
+ d)^4*e^(-6) - (5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*
e^3 + B*a^2*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*c^2*d^5*e
^4/(x*e + d) - A*c^2*d^4*e^5/(x*e + d) + 2*B*a*c*d^3*e^6/(x*e + d) - 2*A*a*
c*d^2*e^7/(x*e + d) + B*a^2*d*e^8/(x*e + d) - A*a^2*e^9/(x*e + d))*e^(-10)
```

maple [A] time = 0.05, size = 309, normalized size = 1.72

$$\frac{B\,c^2x^4}{4e^2}+\frac{A\,c^2x^3}{3e^2}-\frac{2B\,c^2d\,x^3}{3e^3}-\frac{A\,c^2d\,x^2}{e^3}+\frac{Bac\,x^2}{e^2}+\frac{3B\,c^2d^2x^2}{2e^4}-\frac{A\,a^2}{(ex+d)\,e}-\frac{2Aac\,d^2}{(ex+d)\,e^3}-\frac{4Aacd\ln(ex+d)}{e^3}+\frac{2Aacx}{e^2}-\frac{A\,c^2d^4}{(ex+d)\,e^5}-\frac{4A\,c^2d^3\ln(ex+d)}{e^5}+\frac{3A\,c^2d^2x}{e^4}+\frac{B\,a^2d}{(ex+d)\,e^2}+\frac{B\,a^2\ln(ex+d)}{e^2}+\frac{2Bac\,d^3}{(ex+d)\,e^4}+\frac{6Bac\,d^2\ln(ex+d)}{e^4}-\frac{4Bacdx}{e^3}+\frac{B\,c^2d^5}{(ex+d)\,e^6}+\frac{5B\,c^2d^4\ln(ex+d)}{e^6}-\frac{4B\,c^2d^3x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x)
```

```
[Out] 1/4*B*c^2/e^2*x^4+1/3*c^2/e^2*A*x^3-2/3*c^2/e^3*B*x^3*d-c^2/e^3*A*x^2*d+c/e
^2*B*x^2*a+3/2*c^2/e^4*B*x^2*d^2+2*c/e^2*a*A*x+3*c^2/e^4*A*d^2*x-4*c/e^3*a*
B*d*x-4*c^2/e^5*B*d^3*x-1/e/(e*x+d)*A*a^2-2/e^3/(e*x+d)*A*a*c*d^2-1/e^5/(e*
x+d)*A*c^2*d^4+1/e^2/(e*x+d)*B*d*a^2+2/e^4/(e*x+d)*B*a*c*d^3+1/e^6/(e*x+d)*
B*c^2*d^5-4/e^3*ln(e*x+d)*A*a*c*d-4/e^5*ln(e*x+d)*A*c^2*d^3+1/e^2*ln(e*x+d)
*B*a^2+6/e^4*ln(e*x+d)*B*a*c*d^2+5/e^6*ln(e*x+d)*B*c^2*d^4
```

maxima [A] time = 0.58, size = 249, normalized size = 1.38

$$\frac{Bc^2d^5-Ac^2d^4e+2\,Bacd^3e^2-2\,Aacd^2e^3+Ba^2de^4-Aa^2e^5}{e^7x+de^6}+\frac{3\,Bc^2e^3x^4-4\left(2\,Bc^2de^2-Ac^2e^3\right)x^3+6\left(3\,Bc^2d^2e-2\,Ac^2de^2+2\,Bace^3\right)x^2-12\left(4\,Bc^2d^3-3\,Ac^2d^2e+4\,Bacde^2-2\,Aace^3\right)x}{12\,e^5}+\frac{\left(5\,Bc^2d^4-4\,Ac^2d^3e+6\,Bacd^2e^2-4\,Aacde^3+Ba^2e^4\right)\log\left(ex+d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4
- A*a^2*e^5)/(e^7*x + d*e^6) + 1/12*(3*B*c^2*e^3*x^4 - 4*(2*B*c^2*d*e^2 - A
*c^2*e^3)*x^3 + 6*(3*B*c^2*d^2*e - 2*A*c^2*d*e^2 + 2*B*a*c*e^3)*x^2 - 12*(4
*B*c^2*d^3 - 3*A*c^2*d^2*e + 4*B*a*c*d*e^2 - 2*A*a*c*e^3)*x)/e^5 + (5*B*c^2
```

```
*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*log(e*x
 + d)/e^6
```

mupad [B] time = 0.09, size = 311, normalized size = 1.73

$$x^3\left(\frac{Ac^2}{3e^2}-\frac{2Bc^2d}{3e^3}\right)-x^2\left(\frac{d\left(\frac{Ac^2}{e^2}-\frac{2Bc^2d}{e^3}\right)}{e}-\frac{Bac}{e^2}+\frac{Bc^2d^2}{2e^4}\right)+x\left(\frac{2d\left(\frac{2d\left(\frac{Ac^2}{e^2}-\frac{2Bc^2d}{e^3}\right)}{e}-\frac{2Bac}{e^2}+\frac{Bc^2d^2}{e^4}\right)}{e}-\frac{d^2\left(\frac{Ac^2}{e^2}-\frac{2Bc^2d}{e^3}\right)}{e^2}+\frac{2Aac}{e^2}\right)+\frac{\ln(d+ex)\left(Ba^2e^4+6Bacd^2e^2-4Aacde^3+5Bc^2d^4-4Ac^2d^3e\right)}{e^6}-\frac{-Ba^2de^4+Aa^2e^5-2Bacd^3e^2+2Aacd^2e^3-Bc^2d^5+Ac^2d^4e}{e\left(xe^6+de^5\right)}+\frac{Bc^2x^4}{4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x^3*((A*c^2)/(3*e^2) - (2*B*c^2*d)/(3*e^3)) - x^2*((d*((A*c^2)/e^2 - (2*B*c
^2*d)/e^3))/e - (B*a*c)/e^2 + (B*c^2*d^2)/(2*e^4)) + x*((2*d*((2*d*((A*c^2)
/e^2 - (2*B*c^2*d)/e^3))/e - (2*B*a*c)/e^2 + (B*c^2*d^2)/e^4))/e - (d^2*((A
*c^2)/e^2 - (2*B*c^2*d)/e^3))/e^2 + (2*A*a*c)/e^2) + (log(d + e*x)*(B*a^2*e
^4 + 5*B*c^2*d^4 - 4*A*c^2*d^3*e - 4*A*a*c*d*e^3 + 6*B*a*c*d^2*e^2))/e^6 -
(A*a^2*e^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + 2*A*a*c*d^2*e^3 - 2*B*
a*c*d^3*e^2)/(e*(d*e^5 + e^6*x)) + (B*c^2*x^4)/(4*e^2)
```

sympy [A] time = 1.19, size = 246, normalized size = 1.37

$$\frac{Bc^2x^4}{4e^2}+x^3\left(\frac{Ac^2}{3e^2}-\frac{2Bc^2d}{3e^3}\right)+x^2\left(-\frac{Ac^2d}{e^3}+\frac{Bac}{e^2}+\frac{3Bc^2d^2}{2e^4}\right)+x\left(\frac{2Aac}{e^2}+\frac{3Ac^2d^2}{e^4}-\frac{4Bacd}{e^3}-\frac{4Bc^2d^3}{e^5}\right)+\frac{-Aa^2e^5-2Aacd^2e^3-Ac^2d^4e+Ba^2de^4+2Bacd^3e^2+Bc^2d^5}{de^6+e^7x}+\frac{\left(ae^2+cd^2\right)\left(-4Acde+Bae^2+5Bcd^2\right)\log\left(d+ex\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**2,x)
```

```
[Out] B*c**2*x**4/(4*e**2) + x**3*(A*c**2/(3*e**2) - 2*B*c**2*d/(3*e**3)) + x**2*
(-A*c**2*d/e**3 + B*a*c/e**2 + 3*B*c**2*d**2/(2*e**4)) + x*(2*A*a*c/e**2 +
3*A*c**2*d**2/e**4 - 4*B*a*c*d/e**3 - 4*B*c**2*d**3/e**5) + (-A*a**2*e**5 -
 2*A*a*c*d**2*e**3 - A*c**2*d**4*e + B*a**2*d*e**4 + 2*B*a*c*d**3*e**2 + B*
c**2*d**5)/(d*e**6 + e**7*x) + (a*e**2 + c*d**2)*(-4*A*c*d*e + B*a*e**2 + 5
*B*c*d**2)*log(d + e*x)/e**6
```

3.1131 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=185

$$-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{2e^6(d+ex)^2}+\frac{cx\left(2aBe^2-3Acde+6Bcd^2\right)}{e^5}-\frac{2c\log(d+ex)\left(-a\right.}{}$$

Rubi [A] time = 0.20, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{cx\left(2aBe^2-3Acde+6Bcd^2\right)}{e^5}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{2e^6(d+ex)^2}-\frac{2c\log(d+ex)\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6}-\frac{c^2x^2(3Bd-Ae)}{2e^4}+\frac{Bc^2x^3}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (c*(6*B*c*d^2 - 3*A*c*d*e + 2*a*B*e^2)*x)/e^5 - (c^2*(3*B*d - A*e)*x^2)/(2*
e^4) + (B*c^2*x^3)/(3*e^3) + ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(2*e^6*(d + e*
x)^2) - ((c*d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(e^6*(d + e*x))
 - (2*c*(5*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^3}\,dx=\int\left(-\frac{c\left(-6Bcd^2+3Acde-2aBe^2\right)}{e^5}+\frac{c^2(-3Bd+Ae)x}{e^4}+\frac{Bc^2x^2}{e^3}+\frac{(-Bd+Ae)\left(cd^2\right.}{e^5(d+ex)^3}\right.$$

$$=\frac{c\left(6Bcd^2-3Acde+2aBe^2\right)x}{e^5}-\frac{c^2(3Bd-Ae)x^2}{2e^4}+\frac{Bc^2x^3}{3e^3}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{2e^6(d+ex)^2}$$

Mathematica [A] time = 0.16, size = 174, normalized size = 0.94

$$\frac{6cex\left(2aBe^2-3Acde+6Bcd^2\right)-\frac{6\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{d+ex}+\frac{3\left(ae^2+cd^2\right)^2(Bd-Ae)}{(d+ex)^2}+12c\log(d+ex)\left(aAe^3-3aBde^2+3Acd^2e-5Bcd^3\right)+3c^2e^2x^2(Ae-3Bd)+2Bc^2e^3x^3}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*c*e*(6*B*c*d^2 - 3*A*c*d*e + 2*a*B*e^2)*x + 3*c^2*e^2*(-3*B*d + A*e)*x^2
 + 2*B*c^2*e^3*x^3 + (3*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(d + e*x)^2 - (6*(c*
d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(d + e*x) + 12*c*(-5*B*c*d^
3 + 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[d + e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^3, x]
```

fricas [B] time = 0.40, size = 394, normalized size = 2.13

$$\frac{2\,Bc^2e^5x^5 - 27\,Bc^2d^5 + 21\,Ac^2d^4e - 30\,Bacd^3e^2 + 18\,Aacd^2e^3 - 3\,Ba^2de^4 - 3\,Aa^2e^5 - \left(5\,Bc^2de^4 - 3\,Ac^2e^5\right)x^4 + 4\left(5\,Bc^2d^2e^3 - 3\,Ac^2de^4 + 3\,Bace^5\right)x^3 + 3\left(21\,Bc^2d^3e^2 - 11\,Ac^2d^2e^3 + 8\,Bacde^4\right)x^2 + 6\left(Bc^2d^4e + Ac^2d^3e^2 - 4\,Bacd^2e^3 + 4\,Aacde^4 - Ba^2e^5\right)x - 12\left(5\,Bc^2d^5 - 3\,Ac^2d^4e + 3\,Bacd^3e^2 - Aacd^2e^3 + \left(5\,Bc^2d^3e^2 - 3\,Ac^2d^2e^3 + 3\,Bacde^4 - Aace^5\right)x^2 + 2\left(5\,Bc^2d^4e - 3\,Ac^2d^3e^2 + 3\,Bacd^2e^3 - Aacde^4\right)x\right)\log\left(ex + d\right)}{6\left(e^8x^2 + 2\,de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*e^5*x^5 - 27*B*c^2*d^5 + 21*A*c^2*d^4*e - 30*B*a*c*d^3*e^2 + 1
8*A*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 3*A*a^2*e^5 - (5*B*c^2*d*e^4 - 3*A*c^2*e^
5)*x^4 + 4*(5*B*c^2*d^2*e^3 - 3*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 3*(21*B*c^
2*d^3*e^2 - 11*A*c^2*d^2*e^3 + 8*B*a*c*d*e^4)*x^2 + 6*(B*c^2*d^4*e + A*c^2*
d^3*e^2 - 4*B*a*c*d^2*e^3 + 4*A*a*c*d*e^4 - B*a^2*e^5)*x - 12*(5*B*c^2*d^5
- 3*A*c^2*d^4*e + 3*B*a*c*d^3*e^2 - A*a*c*d^2*e^3 + (5*B*c^2*d^3*e^2 - 3*A*
c^2*d^2*e^3 + 3*B*a*c*d*e^4 - A*a*c*e^5)*x^2 + 2*(5*B*c^2*d^4*e - 3*A*c^2*d
^3*e^2 + 3*B*a*c*d^2*e^3 - A*a*c*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7
*x + d^2*e^6)
```

giac [A] time = 0.19, size = 237, normalized size = 1.28

$$-2\left(5\,Bc^2d^3 - 3\,Ac^2d^2e + 3\,Bacde^2 - Aace^3\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,Bc^2x^3e^6 - 9\,Bc^2dx^2e^5 + 36\,Bc^2d^2xe^4 + 3\,Ac^2x^2e^6 - 18\,Ac^2dxe^5 + 12\,Bacxe^6\right)e^{(-9)} - \frac{\left(9\,Bc^2d^5 - 7\,Ac^2d^4e + 10\,Bacd^3e^2 - 6\,Aacd^2e^3 + Ba^2de^4 + Aa^2e^5 + 2\left(5\,Bc^2d^4e - 4\,Ac^2d^3e^2 + 6\,Bacd^2e^3 - 4\,Aacde^4 + Ba^2e^5\right)x\right)e^{(-6)}}{2\left(xe + d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -2*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*e^(-6)*log(abs
(x*e + d)) + 1/6*(2*B*c^2*x^3*e^6 - 9*B*c^2*d*x^2*e^5 + 36*B*c^2*d^2*x*e^4
+ 3*A*c^2*x^2*e^6 - 18*A*c^2*d*x*e^5 + 12*B*a*c*x*e^6)*e^(-9) - 1/2*(9*B*c^
2*d^5 - 7*A*c^2*d^4*e + 10*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 + B*a^2*d*e^4 +
A*a^2*e^5 + 2*(5*B*c^2*d^4*e - 4*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 - 4*A*a*c*
d*e^4 + B*a^2*e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [A] time = 0.06, size = 331, normalized size = 1.79

$$\frac{B\,c^2x^3}{3e^3} - \frac{A\,a^2}{2\left(ex+d\right)^2 e} - \frac{Aac\,d^2}{\left(ex+d\right)^2 e^3} - \frac{A\,c^2d^4}{2\left(ex+d\right)^2 e^5} + \frac{A\,c^2x^2}{2e^3} + \frac{B\,a^2d}{2\left(ex+d\right)^2 e^2} + \frac{Bac\,d^3}{\left(ex+d\right)^2 e^4} + \frac{B\,c^2d^5}{2\left(ex+d\right)^2 e^6} - \frac{3B\,c^2d\,x^2}{2e^4} + \frac{4Aacd}{\left(ex+d\right)e^3} + \frac{2Aac\ln\left(ex+d\right)}{e^3} + \frac{4A\,c^2d^3}{\left(ex+d\right)e^5} + \frac{6A\,c^2d^2\ln\left(ex+d\right)}{e^5} - \frac{3A\,c^2dx}{e^4} - \frac{B\,a^2}{\left(ex+d\right)e^2} - \frac{6Bac\,d^2}{\left(ex+d\right)e^4} - \frac{6Bacd\ln\left(ex+d\right)}{e^4} + \frac{2Bacx}{e^3} - \frac{5B\,c^2d^4}{\left(ex+d\right)e^6} - \frac{10B\,c^2d^3\ln\left(ex+d\right)}{e^6} + \frac{6B\,c^2d^2x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x)
```

```
[Out] 1/3*B*c^2/e^3*x^3+1/2*c^2/e^3*A*x^2-3/2*c^2/e^4*B*x^2*d-3*c^2/e^4*A*x*d+2*c
/e^3*B*x*a+6*c^2/e^5*B*x*d^2+4/e^3/(e*x+d)*A*a*c*d+4/e^5/(e*x+d)*A*c^2*d^3-
1/e^2/(e*x+d)*B*a^2-6/e^4/(e*x+d)*B*a*c*d^2-5/e^6/(e*x+d)*B*c^2*d^4-1/2/e/(
e*x+d)^2*A*a^2-1/e^3/(e*x+d)^2*A*d^2*a*c-1/2/e^5/(e*x+d)^2*A*c^2*d^4+1/2/e^
2/(e*x+d)^2*B*d*a^2+1/e^4/(e*x+d)^2*B*a*c*d^3+1/2/e^6/(e*x+d)^2*B*c^2*d^5+2
*c/e^3*ln(e*x+d)*a*A+6*c^2/e^5*ln(e*x+d)*A*d^2-6*c/e^4*ln(e*x+d)*a*B*d-10*c
^2/e^6*ln(e*x+d)*B*d^3
```

maxima [A] time = 0.56, size = 258, normalized size = 1.39

$$-\frac{9\,Bc^2d^5 - 7\,Ac^2d^4e + 10\,Bacd^3e^2 - 6\,Aacd^2e^3 + Ba^2de^4 + Aa^2e^5 + 2\left(5\,Bc^2d^4e - 4\,Ac^2d^3e^2 + 6\,Bacd^2e^3 - 4\,Aacde^4 + Ba^2e^5\right)x}{2\left(e^8x^2 + 2\,de^7x + d^2e^6\right)} + \frac{2\,Bc^2e^2x^3 - 3\left(3\,Bc^2de - Ac^2e^2\right)x^2 + 6\left(6\,Bc^2d^2 - 3\,Ac^2de + 2\,Bace^2\right)x}{6\,e^5} - \frac{2\left(5\,Bc^2d^3 - 3\,Ac^2d^2e + 3\,Bacde^2 - Aace^3\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*c^2*d^5 - 7*A*c^2*d^4*e + 10*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 + B*
a^2*d*e^4 + A*a^2*e^5 + 2*(5*B*c^2*d^4*e - 4*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^
3 - 4*A*a*c*d*e^4 + B*a^2*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(2*
B*c^2*e^2*x^3 - 3*(3*B*c^2*d*e - A*c^2*e^2)*x^2 + 6*(6*B*c^2*d^2 - 3*A*c^2*
d*e + 2*B*a*c*e^2)*x)/e^5 - 2*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2
- A*a*c*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 1.75, size = 275, normalized size = 1.49

$$x^2\left(\frac{A\,c^2}{2\,e^3}-\frac{3\,B\,c^2\,d}{2\,e^4}\right)-\frac{x\,\left(B\,a^2\,e^4+6\,B\,a\,c\,d^2\,e^2-4\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4-4\,A\,c^2\,d^3\,e\right)+\frac{B\,a^2\,d\,e^4+A\,a^2\,e^5+10\,B\,a\,c\,d^3\,e^2-6\,A\,a\,c\,d^2\,e^3+9\,B\,c^2\,d^5-7\,A\,c^2\,d^4\,e}{2\,e}}{d^2\,e^5+2\,d\,e^6\,x+e^7\,x^2}-x\,\left(\frac{3\,d\,\left(\frac{A\,c^2}{e^3}-\frac{3\,B\,c^2\,d}{e^4}\right)}{e}-\frac{2\,B\,a\,c}{e^3}+\frac{3\,B\,c^2\,d^2}{e^5}\right)-\frac{\ln\left(d+e\,x\right)\,\left(10\,B\,c^2\,d^3-6\,A\,c^2\,d^2\,e+6\,B\,a\,c\,d\,e^2-2\,A\,a\,c\,e^3\right)}{e^6}+\frac{B\,c^2\,x^3}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x^2*((A*c^2)/(2*e^3) - (3*B*c^2*d)/(2*e^4)) - (x*(B*a^2*e^4 + 5*B*c^2*d^4 -
 4*A*c^2*d^3*e - 4*A*a*c*d*e^3 + 6*B*a*c*d^2*e^2) + (A*a^2*e^5 + 9*B*c^2*d^
5 + B*a^2*d*e^4 - 7*A*c^2*d^4*e - 6*A*a*c*d^2*e^3 + 10*B*a*c*d^3*e^2)/(2*e)
)/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3*d*((A*c^2)/e^3 - (3*B*c^2*d)/e^4)
)/e - (2*B*a*c)/e^3 + (3*B*c^2*d^2)/e^5) - (log(d + e*x)*(10*B*c^2*d^3 - 2*
A*a*c*e^3 - 6*A*c^2*d^2*e + 6*B*a*c*d*e^2))/e^6 + (B*c^2*x^3)/(3*e^3)
```

sympy [A] time = 3.33, size = 282, normalized size = 1.52

$$\frac{Bc^2x^3}{3e^3}-\frac{2c\left(-Aae^3-3Acd^2e+3Bade^2+5Bcd^3\right)\log\left(d+ex\right)}{e^6}+x^2\left(\frac{Ac^2}{2e^3}-\frac{3Bc^2d}{2e^4}\right)+x\left(-\frac{3Ac^2d}{e^4}+\frac{2Bac}{e^3}+\frac{6Bc^2d^2}{e^5}\right)+\frac{-Aa^2e^5+6Aacd^2e^3+7Ac^2d^4e-Ba^2de^4-10Bacd^3e^2-9Bc^2d^5+x\left(8Aacde^4+8Ac^2d^3e^2-2Ba^2e^5-12Bacd^2e^3-10Bc^2d^4e\right)}{2d^2e^6+4de^7x+2e^8x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**3,x)
```

```
[Out] B*c**2*x**3/(3*e**3) - 2*c*(-A*a*e**3 - 3*A*c*d**2*e + 3*B*a*d*e**2 + 5*B*c
*d**3)*log(d + e*x)/e**6 + x**2*(A*c**2/(2*e**3) - 3*B*c**2*d/(2*e**4)) + x
*(-3*A*c**2*d/e**4 + 2*B*a*c/e**3 + 6*B*c**2*d**2/e**5) + (-A*a**2*e**5 + 6
*A*a*c*d**2*e**3 + 7*A*c**2*d**4*e - B*a**2*d*e**4 - 10*B*a*c*d**3*e**2 - 9
*B*c**2*d**5 + x*(8*A*a*c*d*e**4 + 8*A*c**2*d**3*e**2 - 2*B*a**2*e**5 - 12*
B*a*c*d**2*e**3 - 10*B*c**2*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**
2)
```

3.1132 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=189

$$-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{2e^6(d+ex)^2}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^3}+\frac{2c\log(d+ex)\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}+\frac{2c\left(\cdot\right.}{}$$

Rubi [A] time = 0.19, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6(d+ex)}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{2e^6(d+ex)^2}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^3}+\frac{2c\log(d+ex)\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}-\frac{c^2x(4Bd-Ae)}{e^5}+\frac{Bc^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c^2*(4*B*d - A*e)*x)/e^5) + (B*c^2*x^2)/(2*e^4) + ((B*d - A*e)*(c*d^2 +
a*e^2)^2)/(3*e^6*(d + e*x)^3) - ((c*d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a
*B*e^2))/(2*e^6*(d + e*x)^2) + (2*c*(5*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2
- a*A*e^3))/(e^6*(d + e*x)) + (2*c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d
+ e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^4}\,dx &= \int \left(\frac{c^2(-4Bd+Ae)}{e^5}+\frac{Bc^2x}{e^4}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^4}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4\right.}{e^5(d+ex)^3}\right.\\ &= -\frac{c^2(4Bd-Ae)x}{e^5}+\frac{Bc^2x^2}{2e^4}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acd\right.}{2e^6(d+ex)^2}\end{aligned}$$

Mathematica [A] time = 0.11, size = 232, normalized size = 1.23

$$\frac{-2Ae\left(a^2e^4+2ace^2\left(d^2+3dex+3e^2x^2\right)+c^2\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)\right)+B\left(-a^2e^4(d+3ex)+2acde^2\left(11d^2+27dex+18e^2x^2\right)+c^2\left(47d^5+81d^4ex-9d^3e^2x^2-63d^2e^3x^3-15de^4x^4+3e^5x^5\right)\right)+12c(d+ex)^3\log(d+ex)\left(aBe^2-2Acde+5Bcd^2\right)}{6e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (-2*A*e*(a^2*e^4 + 2*a*c*e^2*(d^2 + 3*d*e*x + 3*e^2*x^2) + c^2*(13*d^4 + 27
*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^3 - 3*e^4*x^4)) + B*(-(a^2*e^4*(d + 3*
e*x)) + 2*a*c*d*e^2*(11*d^2 + 27*d*e*x + 18*e^2*x^2) + c^2*(47*d^5 + 81*d^4
*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 + 3*e^5*x^5)) + 12*c*(
5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^3*Log[d + e*x])/(6*e^6*(d + e*x)
^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^4, x]
```

fricas [B] time = 0.41, size = 411, normalized size = 2.17

$$\frac{3 Bc^2e^5x^5 + 47 Bc^2d^5 - 26 Ac^2d^4e + 22 Bacd^3e^2 - 4 Aacd^2e^3 - Ba^2de^4 - 2 Aa^2e^5 - 3 \left(5 Bc^2de^4 - 2 Ac^2e^5\right)x^4 - 9 \left(7 Bc^2d^2e^3 - 2 Ac^2de^4\right)x^3 - 3 \left(3 Bc^2d^3e^2 + 6 Ac^2d^2e^3 - 12 Bacde^4 + 4 Aace^5\right)x^2 + 3 \left(27 Bc^2d^4e - 18 Ac^2d^3e^2 + 18 Bacd^2e^3 - 4 Aacde^4 - Ba^2e^5\right)x + 12 \left(5 Bc^2d^5 - 2 Ac^2d^4e + Bacd^3e^2 + \left(5 Bc^2d^2e^3 - 2 Ac^2de^4 + Bace^5\right)x^3 + 3 \left(5 Bc^2d^3e^2 - 2 Ac^2d^2e^3 + Bacde^4\right)x^2 + 3 \left(5 Bc^2d^4e - 2 Ac^2d^3e^2 + Bacd^2e^3\right)x\right) \log\left(ex + d\right)}{6 \left(e^9x^3 + 3 de^8x^2 + 3 d^2e^7x + d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*e^5*x^5 + 47*B*c^2*d^5 - 26*A*c^2*d^4*e + 22*B*a*c*d^3*e^2 - 4
*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 2*A*a^2*e^5 - 3*(5*B*c^2*d*e^4 - 2*A*c^2*e^5
)*x^4 - 9*(7*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4)*x^3 - 3*(3*B*c^2*d^3*e^2 + 6*A*
c^2*d^2*e^3 - 12*B*a*c*d*e^4 + 4*A*a*c*e^5)*x^2 + 3*(27*B*c^2*d^4*e - 18*A*
c^2*d^3*e^2 + 18*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 - B*a^2*e^5)*x + 12*(5*B*c^2
*d^5 - 2*A*c^2*d^4*e + B*a*c*d^3*e^2 + (5*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 + B
*a*c*e^5)*x^3 + 3*(5*B*c^2*d^3*e^2 - 2*A*c^2*d^2*e^3 + B*a*c*d*e^4)*x^2 + 3
*(5*B*c^2*d^4*e - 2*A*c^2*d^3*e^2 + B*a*c*d^2*e^3)*x)*log(e*x + d))/(e^9*x^
3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.15, size = 237, normalized size = 1.25

$$2 \left(5 Bc^2d^2 - 2 Ac^2de + Bace^2\right)e^{(-6)} \log\left(|xe + d|\right) + \frac{1}{2} \left(Bc^2x^2e^4 - 8 Bc^2dxe^3 + 2 Ac^2xe^4\right)e^{(-8)} + \frac{\left(47 Bc^2d^5 - 26 Ac^2d^4e + 22 Bacd^3e^2 - 4 Aacd^2e^3 - Ba^2de^4 - 2 Aa^2e^5 + 12 \left(5 Bc^2d^3e^2 - 3 Ac^2d^2e^3 + 3 Bacde^4 - Aace^5\right)x^2 + 3 \left(35 Bc^2d^4e - 20 Ac^2d^3e^2 + 18 Bacd^2e^3 - 4 Aacde^4 - Ba^2e^5\right)x\right)e^{(-6)}}{6 \left(xe + d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 2*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(B
*c^2*x^2*e^4 - 8*B*c^2*d*x*e^3 + 2*A*c^2*x*e^4)*e^(-8) + 1/6*(47*B*c^2*d^5
- 26*A*c^2*d^4*e + 22*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 2*A*a
^2*e^5 + 12*(5*B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 - A*a*c*e^5)
*x^2 + 3*(35*B*c^2*d^4*e - 20*A*c^2*d^3*e^2 + 18*B*a*c*d^2*e^3 - 4*A*a*c*d*
e^4 - B*a^2*e^5)*x)*e^(-6)/(x*e + d)^3
```

maple [A] time = 0.06, size = 346, normalized size = 1.83

$$-\frac{A a^2}{3 \left(ex + d\right)^3 e} - \frac{2Aac d^2}{3 \left(ex + d\right)^3 e^3} - \frac{A c^2d^4}{3 \left(ex + d\right)^3 e^5} + \frac{B a^2d}{3 \left(ex + d\right)^3 e^2} + \frac{2Bac d^3}{3 \left(ex + d\right)^3 e^4} + \frac{B c^2d^5}{3 \left(ex + d\right)^3 e^6} + \frac{2Aacd}{\left(ex + d\right)^2 e^3} + \frac{2A c^2d^3}{\left(ex + d\right)^2 e^5} - \frac{B a^2}{2 \left(ex + d\right)^2 e^2} - \frac{3Bac d^2}{\left(ex + d\right)^2 e^4} - \frac{5B c^2d^4}{2 \left(ex + d\right)^2 e^6} + \frac{B c^2x^2}{2e^4} - \frac{2Aac}{\left(ex + d\right) e^3} - \frac{6A c^2d^2}{\left(ex + d\right) e^5} - \frac{4A c^2d \ln\left(ex + d\right)}{e^5} + \frac{A c^2x}{e^4} + \frac{6Bacd}{\left(ex + d\right) e^4} + \frac{2Bac \ln\left(ex + d\right)}{e^4} + \frac{10B c^2d^3}{\left(ex + d\right) e^6} + \frac{10B c^2d^2 \ln\left(ex + d\right)}{e^6} - \frac{4B c^2dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x)
```

```
[Out] 1/2*B*c^2/e^4*x^2+c^2/e^4*A*x-4*c^2/e^5*B*d*x-2*c/e^3/(e*x+d)*a*A-6*c^2/e^5
/(e*x+d)*A*d^2+6*c/e^4/(e*x+d)*a*B*d+10*c^2/e^6/(e*x+d)*B*d^3+2/e^3/(e*x+d)
^2*A*a*c*d+2/e^5/(e*x+d)^2*A*c^2*d^3-1/2/e^2/(e*x+d)^2*B*a^2-3/e^4/(e*x+d)^
2*B*a*c*d^2-5/2/e^6/(e*x+d)^2*B*c^2*d^4-1/3/e/(e*x+d)^3*A*a^2-2/3/e^3/(e*x+
d)^3*A*d^2*a*c-1/3/e^5/(e*x+d)^3*A*c^2*d^4+1/3/e^2/(e*x+d)^3*B*d*a^2+2/3/e^
4/(e*x+d)^3*B*d^3*a*c+1/3/e^6/(e*x+d)^3*B*c^2*d^5-4*c^2/e^5*ln(e*x+d)*A*d+2
*c/e^4*ln(e*x+d)*B*a+10*c^2/e^6*ln(e*x+d)*B*d^2
```

maxima [A] time = 0.61, size = 270, normalized size = 1.43

$$\frac{47 Bc^2d^5 - 26 Ac^2d^4e + 22 Bacd^3e^2 - 4 Aacd^2e^3 - Ba^2de^4 - 2 Aa^2e^5 + 12 \left(5 Bc^2d^3e^2 - 3 Ac^2d^2e^3 + 3 Bacde^4 - Aace^5\right)x^2 + 3 \left(35 Bc^2d^4e - 20 Ac^2d^3e^2 + 18 Bacd^2e^3 - 4 Aacde^4 - Ba^2e^5\right)x}{6 \left(e^9x^3 + 3 de^8x^2 + 3 d^2e^7x + d^3e^6\right)} + \frac{Bc^2ex^2 - 2 \left(4 Bc^2d - Ac^2e\right)x}{2 e^5} + \frac{2 \left(5 Bc^2d^2 - 2 Ac^2de + Bace^2\right) \log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*c^2*d^5 - 26*A*c^2*d^4*e + 22*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - B
*a^2*d*e^4 - 2*A*a^2*e^5 + 12*(5*B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 + 3*B*a*c*
d*e^4 - A*a*c*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 20*A*c^2*d^3*e^2 + 18*B*a*c*d^
2*e^3 - 4*A*a*c*d*e^4 - B*a^2*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x
+ d^3*e^6) + 1/2*(B*c^2*e*x^2 - 2*(4*B*c^2*d - A*c^2*e)*x)/e^5 + 2*(5*B*c^2
*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.77, size = 268, normalized size = 1.42

$$x\left(\frac{A\,c^2}{e^4}-\frac{4\,B\,c^2\,d}{e^5}\right)-\frac{x\,\left(\frac{B\,a^2\,e^4}{2}-9\,B\,a\,c\,d^2\,e^2+2\,A\,a\,c\,d\,e^3-\frac{35\,B\,c^2\,d^4}{2}+10\,A\,c^2\,d^3\,e\right)+\frac{B\,a^2\,d\,e^4+2\,A\,a^2\,e^5-22\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3-47\,B\,c^2\,d^5+26\,A\,c^2\,d^4\,e}{6\,e}+x^2\,\left(-10\,B\,c^2\,d^3\,e+6\,A\,c^2\,d^2\,e^2-6\,B\,a\,c\,d\,e^3+2\,A\,a\,c\,e^4\right)}{d^3\,e^5+3\,d^2\,e^6\,x+3\,d\,e^7\,x^2+e^8\,x^3}+\frac{\ln\left(d+e\,x\right)\,\left(10\,B\,c^2\,d^2-4\,A\,c^2\,d\,e+2\,B\,a\,c\,e^2\right)}{e^6}+\frac{B\,c^2\,x^2}{2\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] x*((A*c^2)/e^4 - (4*B*c^2*d)/e^5) - (x*((B*a^2*e^4)/2 - (35*B*c^2*d^4)/2 +
10*A*c^2*d^3*e + 2*A*a*c*d*e^3 - 9*B*a*c*d^2*e^2) + (2*A*a^2*e^5 - 47*B*c^2
*d^5 + B*a^2*d*e^4 + 26*A*c^2*d^4*e + 4*A*a*c*d^2*e^3 - 22*B*a*c*d^3*e^2)/(
6*e) + x^2*(2*A*a*c*e^4 - 10*B*c^2*d^3*e + 6*A*c^2*d^2*e^2 - 6*B*a*c*d*e^3)
)/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (log(d + e*x)*(10*B*c^2
*d^2 + 2*B*a*c*e^2 - 4*A*c^2*d*e))/e^6 + (B*c^2*x^2)/(2*e^4)
```

sympy [A] time = 9.16, size = 294, normalized size = 1.56

$$\frac{Bc^2x^2}{2e^4}+\frac{2c\left(-2Acde+Bae^2+5Bcd^2\right)\log\left(d+ex\right)}{e^6}+x\left(\frac{Ac^2}{e^4}-\frac{4Bc^2d}{e^5}\right)+\frac{-2Aa^2e^5-4Aacd^2e^3-26Ac^2d^4e-Ba^2de^4+22Bacd^3e^2+47Bc^2d^5+x^2\left(-12Aace^5-36Ac^2d^2e^3+36Bacde^4+60Bc^2d^3e^2\right)+x\left(-12Aacde^4-60Ac^2d^3e^2-3Ba^2e^5+54Bacd^2e^3+105Bc^2d^4e\right)}{6d^3e^6+18d^2e^7x+18de^8x^2+6e^9x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**4,x)
```

```
[Out] B*c**2*x**2/(2*e**4) + 2*c*(-2*A*c*d*e + B*a*e**2 + 5*B*c*d**2)*log(d + e*x
)/e**6 + x*(A*c**2/e**4 - 4*B*c**2*d/e**5) + (-2*A*a**2*e**5 - 4*A*a*c*d**2
*e**3 - 26*A*c**2*d**4*e - B*a**2*d*e**4 + 22*B*a*c*d**3*e**2 + 47*B*c**2*d
**5 + x**2*(-12*A*a*c*e**5 - 36*A*c**2*d**2*e**3 + 36*B*a*c*d*e**4 + 60*B*c
**2*d**3*e**2) + x*(-12*A*a*c*d*e**4 - 60*A*c**2*d**3*e**2 - 3*B*a**2*e**5
+ 54*B*a*c*d**2*e**3 + 105*B*c**2*d**4*e))/(6*d**3*e**6 + 18*d**2*e**7*x +
18*d*e**8*x**2 + 6*e**9*x**3)
```

3.1133 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=189

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^3}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{4e^6(d+ex)^4}+\frac{c\left(-aAe^3+3aBde^2\right.}{e^6(d\ldots}$$

Rubi [A] time = 0.17, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)}+\frac{c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6(d+ex)^2}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^3}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{4e^6(d+ex)^4}-\frac{c^2(5Bd-Ae)\log(d+ex)}{e^6}+\frac{Bc^2x}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (B*c^2*x)/e^5 + ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(4*e^6*(d + e*x)^4) - ((c*d
^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^3) + (c*(5*
B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^6*(d + e*x)^2) - (2*c*(5
*B*c*d^2 - 2*A*c*d*e + a*B*e^2))/(e^6*(d + e*x)) - (c^2*(5*B*d - A*e)*Log[d
 + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^5}\,dx=\int\left(\frac{Bc^2}{e^5}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^4}+\frac{2c\left(-5\ldots\right.}{\ldots}\right.$$

$$=\frac{Bc^2x}{e^5}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{4e^6(d+ex)^4}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{3e^6(d+ex)^3}+\frac{c\left(5Bcd^3-\ldots\right.}{\ldots}$$

Mathematica [A] time = 0.11, size = 221, normalized size = 1.17

$$\frac{Ae\left(-3a^2e^4-2ace^2\left(d^2+4dex+6e^2x^2\right)+c^2d\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)-B\left(a^2e^4(d+4ex)+6ace^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)+c^2\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)\right)-12c^2(d+ex)^4(5Bd-Ae)\log(d+ex)}{12e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (A*e*(-3*a^2*e^4 - 2*a*c*e^2*(d^2 + 4*d*e*x + 6*e^2*x^2) + c^2*d*(25*d^3 +
88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) - B*(a^2*e^4*(d + 4*e*x) + 6*a*c*
e^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + c^2*(77*d^5 + 248*d^4*e*x
 + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5)) - 12*c^2*
(5*B*d - A*e)*(d + e*x)^4*Log[d + e*x])/(12*e^6*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^5, x]
```

fricas [B] time = 0.39, size = 405, normalized size = 2.14

$$\frac{12\,Bc^2e^5x^5 + 48\,Bc^2de^4x^4 - 77\,Bc^2d^5 + 25\,Ac^2d^4e - 6\,Bacd^3e^2 - 2\,Aacd^2e^3 - Ba^2de^4 - 3\,Aa^2e^5 - 24\left(2\,Bc^2d^2e^3 - 2\,Ac^2de^4 + Bace^5\right)x^3 - 12\left(21\,Bc^2d^3e^2 - 9\,Ac^2d^2e^3 + 3\,Bacde^4 + Aace^5\right)x^2 - 4\left(62\,Bc^2d^4e - 22\,Ac^2d^3e^2 + 6\,Bacd^2e^3 + 2\,Aacde^4 + Ba^2e^5\right)x - 12\left(5\,Bc^2d^5 - Ac^2d^4e + \left(5\,Bc^2de^4 - Ac^2e^5\right)x^4 + 4\left(5\,Bc^2d^2e^3 - Ac^2de^4\right)x^3 + 6\left(5\,Bc^2d^3e^2 - Ac^2d^2e^3\right)x^2 + 4\left(5\,Bc^2d^4e - Ac^2d^3e^2\right)x\right)\log\left(ex + d\right)}{12\left(e^{10}x^4 + 4\,de^9x^3 + 6\,d^2e^8x^2 + 4\,d^3e^7x + d^4e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*e^5*x^5 + 48*B*c^2*d*e^4*x^4 - 77*B*c^2*d^5 + 25*A*c^2*d^4*e
 - 6*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 3*A*a^2*e^5 - 24*(2*B*
c^2*d^2*e^3 - 2*A*c^2*d*e^4 + B*a*c*e^5)*x^3 - 12*(21*B*c^2*d^3*e^2 - 9*A*c
^2*d^2*e^3 + 3*B*a*c*d*e^4 + A*a*c*e^5)*x^2 - 4*(62*B*c^2*d^4*e - 22*A*c^2*
d^3*e^2 + 6*B*a*c*d^2*e^3 + 2*A*a*c*d*e^4 + B*a^2*e^5)*x - 12*(5*B*c^2*d^5
- A*c^2*d^4*e + (5*B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 4*(5*B*c^2*d^2*e^3 - A*c^
2*d*e^4)*x^3 + 6*(5*B*c^2*d^3*e^2 - A*c^2*d^2*e^3)*x^2 + 4*(5*B*c^2*d^4*e -
 A*c^2*d^3*e^2)*x)*log(e*x + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 +
4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.17, size = 372, normalized size = 1.97

$$(xe + d)Bc^2e^{(-6)} + \left(5\,Bc^2d - Ac^2e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) - \frac{1}{12}\left(\frac{120\,Bc^2d^2e^{22}}{xe + d} - \frac{60\,Bc^2d^3e^{22}}{(xe + d)^2} + \frac{20\,Bc^2d^4e^{22}}{(xe + d)^3} - \frac{3\,Bc^2d^5e^{22}}{(xe + d)^4} - \frac{48\,Ac^2de^{23}}{xe + d} + \frac{36\,Ac^2d^2e^{23}}{(xe + d)^2} - \frac{16\,Ac^2d^3e^{23}}{(xe + d)^3} + \frac{3\,Ac^2d^4e^{23}}{(xe + d)^4} + \frac{24\,Bace^{24}}{xe + d} - \frac{36\,Bacde^{24}}{(xe + d)^2} + \frac{24\,Bacd^2e^{24}}{(xe + d)^3} - \frac{6\,Bacd^3e^{24}}{(xe + d)^4} + \frac{12\,Aace^{25}}{(xe + d)^2} - \frac{16\,Aacde^{25}}{(xe + d)^3} + \frac{6\,Aacd^2e^{25}}{(xe + d)^4} + \frac{4\,Ba^2e^{26}}{(xe + d)^3} - \frac{3\,Ba^2de^{26}}{(xe + d)^4} + \frac{3\,Aa^2e^{27}}{(xe + d)^4}\right)e^{(-28)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*c^2*e^(-6) + (5*B*c^2*d - A*c^2*e)*e^(-6)*log(abs(x*e + d)*e^(-
1)/(x*e + d)^2) - 1/12*(120*B*c^2*d^2*e^22/(x*e + d) - 60*B*c^2*d^3*e^22/(x
*e + d)^2 + 20*B*c^2*d^4*e^22/(x*e + d)^3 - 3*B*c^2*d^5*e^22/(x*e + d)^4 -
48*A*c^2*d*e^23/(x*e + d) + 36*A*c^2*d^2*e^23/(x*e + d)^2 - 16*A*c^2*d^3*e^
23/(x*e + d)^3 + 3*A*c^2*d^4*e^23/(x*e + d)^4 + 24*B*a*c*e^24/(x*e + d) - 3
6*B*a*c*d*e^24/(x*e + d)^2 + 24*B*a*c*d^2*e^24/(x*e + d)^3 - 6*B*a*c*d^3*e^
24/(x*e + d)^4 + 12*A*a*c*e^25/(x*e + d)^2 - 16*A*a*c*d*e^25/(x*e + d)^3 +
6*A*a*c*d^2*e^25/(x*e + d)^4 + 4*B*a^2*e^26/(x*e + d)^3 - 3*B*a^2*d*e^26/(x
*e + d)^4 + 3*A*a^2*e^27/(x*e + d)^4)*e^(-28)
```

maple [A] time = 0.06, size = 356, normalized size = 1.88

$$-\frac{A\,a^2}{4\,(ex+d)^4\,e} - \frac{Aac\,d^2}{2\,(ex+d)^4\,e^3} - \frac{A\,c^2d^4}{4\,(ex+d)^4\,e^5} + \frac{B\,a^2d}{4\,(ex+d)^4\,e^2} + \frac{Bac\,d^3}{2\,(ex+d)^4\,e^4} + \frac{B\,c^2d^5}{4\,(ex+d)^4\,e^6} + \frac{4Aacd}{3\,(ex+d)^3\,e^3} + \frac{4A\,c^2d^3}{3\,(ex+d)^3\,e^5} - \frac{B\,a^2}{3\,(ex+d)^3\,e^2} - \frac{2Bac\,d^2}{(ex+d)^3\,e^4} - \frac{5B\,c^2d^4}{3\,(ex+d)^3\,e^6} - \frac{Aac}{(ex+d)^2\,e^3} - \frac{3A\,c^2d^2}{(ex+d)^2\,e^5} + \frac{3Bacd}{(ex+d)^2\,e^4} + \frac{5B\,c^2d^3}{(ex+d)^2\,e^6} + \frac{4A\,c^2d}{(ex+d)\,e^5} + \frac{A\,c^2\ln(ex+d)}{e^5} - \frac{2Bac}{(ex+d)\,e^4} - \frac{10B\,c^2d^2}{(ex+d)\,e^6} - \frac{5B\,c^2d\ln(ex+d)}{e^6} + \frac{B\,c^2x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x)
```

```
[Out] B*c^2/e^5*x+4/(e*x+d)*A*c^2*d/e^5-2*c/e^4/(e*x+d)*B*a-10/(e*x+d)*B*c^2*d^2/
e^6-1/4/e/(e*x+d)^4*A*a^2-1/2/e^3/(e*x+d)^4*A*d^2*a*c-1/4/(e*x+d)^4*A*c^2*d
^4/e^5+1/4/e^2/(e*x+d)^4*B*d*a^2+1/2/e^4/(e*x+d)^4*B*d^3*a*c+1/4/(e*x+d)^4*
B*c^2*d^5/e^6-c/e^3/(e*x+d)^2*a*A-3/(e*x+d)^2*A*c^2*d^2/e^5+3*c/e^4/(e*x+d)
^2*a*B*d+5/(e*x+d)^2*B*c^2*d^3/e^6+4/3/e^3/(e*x+d)^3*A*a*c*d+4/3/(e*x+d)^3*
A*c^2*d^3/e^5-1/3/e^2/(e*x+d)^3*B*a^2-2/e^4/(e*x+d)^3*B*a*c*d^2-5/3/(e*x+d)
^3*B*c^2*d^4/e^6+A*c^2/e^5*ln(e*x+d)-5*B*c^2*d/e^6*ln(e*x+d)
```

maxima [A] time = 0.58, size = 279, normalized size = 1.48

$$-\frac{77\,Bc^2d^5 - 25\,Ac^2d^4e + 6\,Bacd^3e^2 + 2\,Aacd^2e^3 + Ba^2de^4 + 3\,Aa^2e^5 + 24\left(5\,Bc^2d^2e^3 - 2\,Ac^2de^4 + Bace^5\right)x^3 + 12\left(25\,Bc^2d^3e^2 - 9\,Ac^2d^2e^3 + 3\,Bacde^4 + Aace^5\right)x^2 + 4\left(65\,Bc^2d^4e - 22\,Ac^2d^3e^2 + 6\,Bacd^2e^3 + 2\,Aacde^4 + Ba^2e^5\right)x}{12\left(e^{10}x^4 + 4\,de^9x^3 + 6\,d^2e^8x^2 + 4\,d^3e^7x + d^4e^6\right)} + \frac{Bc^2x}{e^5} - \frac{\left(5\,Bc^2d - Ac^2e\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(77*B*c^2*d^5 - 25*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 + 2*A*a*c*d^2*e^3 +
B*a^2*d*e^4 + 3*A*a^2*e^5 + 24*(5*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 + B*a*c*e^5
)*x^3 + 12*(25*B*c^2*d^3*e^2 - 9*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 + A*a*c*e^5)
*x^2 + 4*(65*B*c^2*d^4*e - 22*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 + 2*A*a*c*d*e
^4 + B*a^2*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x +
d^4*e^6) + B*c^2*x/e^5 - (5*B*c^2*d - A*c^2*e)*log(e*x + d)/e^6
```

mupad [**B**] time = 1.84, size = 277, normalized size = 1.47

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^2\,e-5\,B\,c^2\,d\right)}{e^6}-\frac{x^3\,\left(10\,B\,c^2\,d^2\,e^2-4\,A\,c^2\,d\,e^3+2\,B\,a\,c\,e^4\right)+x\,\left(\frac{B\,a^2\,e^4}{3}+2\,B\,a\,c\,d^2\,e^2+\frac{2\,A\,a\,c\,d\,e^3}{3}+\frac{65\,B\,c^2\,d^4}{3}-\frac{22\,A\,c^2\,d^3\,e}{3}\right)+\frac{B\,a^2\,d\,e^4+3\,A\,a^2\,e^5+6\,B\,a\,c\,d^3\,e^2+2\,A\,a\,c\,d^2\,e^3+77\,B\,c^2\,d^5-25\,A\,c^2\,d^4\,e}{12\,e}+x^2\,\left(25\,B\,c^2\,d^3\,e-9\,A\,c^2\,d^2\,e^2+3\,B\,a\,c\,d\,e^3+A\,a\,c\,e^4\right)}{d^4\,e^5+4\,d^3\,e^6\,x+6\,d^2\,e^7\,x^2+4\,d\,e^8\,x^3+e^9\,x^4}+\frac{B\,c^2\,x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*c^2*e - 5*B*c^2*d))/e^6 - (x^3*(2*B*a*c*e^4 - 4*A*c^2*d*e^
3 + 10*B*c^2*d^2*e^2) + x*((B*a^2*e^4)/3 + (65*B*c^2*d^4)/3 - (22*A*c^2*d^3
*e)/3 + (2*A*a*c*d*e^3)/3 + 2*B*a*c*d^2*e^2) + (3*A*a^2*e^5 + 77*B*c^2*d^5
+ B*a^2*d*e^4 - 25*A*c^2*d^4*e + 2*A*a*c*d^2*e^3 + 6*B*a*c*d^3*e^2)/(12*e)
+ x^2*(A*a*c*e^4 + 25*B*c^2*d^3*e - 9*A*c^2*d^2*e^2 + 3*B*a*c*d*e^3))/(d^4*
e^5 + e^9*x^4 + 4*d^3*e^6*x + 4*d*e^8*x^3 + 6*d^2*e^7*x^2) + (B*c^2*x)/e^5
```

sympy [**A**] time = 21.57, size = 304, normalized size = 1.61

$$\frac{Bc^2x}{e^5}-\frac{c^2\left(-Ae+5Bd\right)\log\left(d+ex\right)}{e^6}+\frac{-3Aa^2e^5-2Aacd^2e^3+25Ac^2d^4e-Ba^2de^4-6Bacd^3e^2-77Bc^2d^5+x^3\left(48Ac^2de^4-24Bace^5-120Bc^2d^2e^3\right)+x^2\left(-12Aace^5+108Ac^2d^2e^3-36Bacde^4-300Bc^2d^3e^2\right)+x\left(-8Aacde^4+88Ac^2d^3e^2-4Ba^2e^5-24Bacd^2e^3-260Bc^2d^4e\right)}{12d^4e^6+48d^3e^7x+72d^2e^8x^2+48de^9x^3+12e^{10}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**5,x)
```

```
[Out] B*c**2*x/e**5 - c**2*(-A*e + 5*B*d)*log(d + e*x)/e**6 + (-3*A*a**2*e**5 - 2
*A*a*c*d**2*e**3 + 25*A*c**2*d**4*e - B*a**2*d*e**4 - 6*B*a*c*d**3*e**2 - 7
7*B*c**2*d**5 + x**3*(48*A*c**2*d*e**4 - 24*B*a*c*e**5 - 120*B*c**2*d**2*e*
*3) + x**2*(-12*A*a*c*e**5 + 108*A*c**2*d**2*e**3 - 36*B*a*c*d*e**4 - 300*B
*c**2*d**3*e**2) + x*(-8*A*a*c*d*e**4 + 88*A*c**2*d**3*e**2 - 4*B*a**2*e**5
 - 24*B*a*c*d**2*e**3 - 260*B*c**2*d**4*e))/(12*d**4*e**6 + 48*d**3*e**7*x
+ 72*d**2*e**8*x**2 + 48*d*e**9*x**3 + 12*e**10*x**4)
```

3.1134 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^6} dx$

Optimal. Leaf size=197

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)^2}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{4e^6(d+ex)^4}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{5e^6(d+ex)^5}+\frac{2c\left(-aAe^3+3aB\cdots\right.}{3e^6\cdots}$$

Rubi [A] time = 0.15, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)^2}+\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6(d+ex)^3}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{4e^6(d+ex)^4}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{5e^6(d+ex)^5}+\frac{c^2(5Bd-Ae)}{e^6(d+ex)}+\frac{Bc^2\log(d+ex)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(5*e^6*(d + e*x)^5) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(4*e^6*(d + e*x)^4) + (2*c*(5*B*c*d^3 - 3*A*
c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(3*e^6*(d + e*x)^3) - (c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(e^6*(d + e*x)^2) + (c^2*(5*B*d - A*e))/(e^6*(d + e*x))
+ (B*c^2*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^6}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^6}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^5}+\frac{2c\left(-5Bc\cdots\right.}{\cdots}\right.$$
$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{5e^6(d+ex)^5}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{4e^6(d+ex)^4}+\frac{2c\left(5Bcd^3-3A\cdots\right.}{3e\cdots}$$

Mathematica [A] time = 0.11, size = 212, normalized size = 1.08

$$\frac{-4Ae\left(3a^2e^4+ace^2\left(d^2+5dex+10e^2x^2\right)+3c^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+B\left(-3a^2e^4(d+5ex)-6ace^2\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+c^2d\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)\right)+60Bc^2(d+ex)^5\log(d+ex)}{60e^6(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-4*A*e*(3*a^2*e^4 + a*c*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*c^2*(d^4 + 5*
d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + B*(-3*a^2*e^4*(d +
5*e*x) - 6*a*c*e^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + c^2*d*(1
37*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4)) + 6
0*B*c^2*(d + e*x)^5*Log[d + e*x])/(60*e^6*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^6,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^6, x]

fricas [A] time = 0.40, size = 365, normalized size = 1.85

$$\frac{137 \, B c^{2} d^{5} - 12 \, A c^{2} d^{4} e - 6 \, B a c d^{3} e^{2} - 4 \, A a c d^{2} e^{3} - 3 \, B a^{2} d e^{4} - 12 \, A a^{2} e^{5} + 60 \, {\left(5 \, B c^{2} d e^{4} - A c^{2} e^{5}\right)} x^{4} + 60 \, {\left(15 \, B c^{2} d^{2} e^{3} - 2 \, A c^{2} d e^{4} - B a c e^{5}\right)} x^{3} + 20 \, {\left(55 \, B c^{2} d^{3} e^{2} - 6 \, A c^{2} d^{2} e^{3} - 3 \, B a c d e^{4} - 2 \, A a c e^{5}\right)} x^{2} + 5 \, {\left(125 \, B c^{2} d^{4} e - 12 \, A c^{2} d^{3} e^{2} - 6 \, B a c d^{2} e^{3} - 4 \, A a c d e^{4} - 3 \, B a^{2} e^{5}\right)} x + 60 \, {\left(B c^{2} e^{5} x^{5} + 5 \, B c^{2} d e^{4} x^{4} + 10 \, B c^{2} d^{2} e^{3} x^{3} + 10 \, B c^{2} d^{3} e^{2} x^{2} + 5 \, B c^{2} d^{4} e x + B c^{2} d^{5}\right)} \log\left(e x + d\right)}{60 \, {\left(e^{11} x^{5} + 5 \, d e^{10} x^{4} + 10 \, d^{2} e^{9} x^{3} + 10 \, d^{3} e^{8} x^{2} + 5 \, d^{4} e^{7} x + d^{5} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x, algorithm="fricas")

[Out] 1/60*(137*B*c^2*d^5 - 12*A*c^2*d^4*e - 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 12*A*a^2*e^5 + 60*(5*B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 60*(15*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 - B*a*c*e^5)*x^3 + 20*(55*B*c^2*d^3*e^2 - 6*A*c^2*d^2*e^3 - 3*B*a*c*d*e^4 - 2*A*a*c*e^5)*x^2 + 5*(125*B*c^2*d^4*e - 12*A*c^2*d^3*e^2 - 6*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 - 3*B*a^2*e^5)*x + 60*(B*c^2*e^5*x^5 + 5*B*c^2*d*e^4*x^4 + 10*B*c^2*d^2*e^3*x^3 + 10*B*c^2*d^3*e^2*x^2 + 5*B*c^2*d^4*e*x + B*c^2*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)

giac [A] time = 0.20, size = 239, normalized size = 1.21

$$B c^{2} e^{\left(-6\right)} \log\left({\left| x e + d \right|}\right) + \frac{{\left(60 \, {\left(5 \, B c^{2} d e^{3} - A c^{2} e^{4}\right)} x^{4} + 60 \, {\left(15 \, B c^{2} d^{2} e^{2} - 2 \, A c^{2} d e^{3} - B a c e^{4}\right)} x^{3} + 20 \, {\left(55 \, B c^{2} d^{3} e - 6 \, A c^{2} d^{2} e^{2} - 3 \, B a c d e^{3} - 2 \, A a c e^{4}\right)} x^{2} + 5 \, {\left(125 \, B c^{2} d^{4} - 12 \, A c^{2} d^{3} e - 6 \, B a c d^{2} e^{2} - 4 \, A a c d e^{3} - 3 \, B a^{2} e^{4}\right)} x + {\left(137 \, B c^{2} d^{5} - 12 \, A c^{2} d^{4} e - 6 \, B a c d^{3} e^{2} - 4 \, A a c d^{2} e^{3} - 3 \, B a^{2} d e^{4} - 12 \, A a^{2} e^{5}\right)} e^{\left(-1\right)}\right)} e^{\left(-5\right)}}{60 \, {\left(x e + d\right)}^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x, algorithm="giac")

[Out] B*c^2*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*c^2*d*e^3 - A*c^2*e^4)*x^4 + 60*(15*B*c^2*d^2*e^2 - 2*A*c^2*d*e^3 - B*a*c*e^4)*x^3 + 20*(55*B*c^2*d^3*e - 6*A*c^2*d^2*e^2 - 3*B*a*c*d*e^3 - 2*A*a*c*e^4)*x^2 + 5*(125*B*c^2*d^4 - 12*A*c^2*d^3*e - 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 - 3*B*a^2*e^4)*x + (137*B*c^2*d^5 - 12*A*c^2*d^4*e - 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 12*A*a^2*e^5)*e^(-1))*e^(-5)/(x*e + d)^5

maple [A] time = 0.05, size = 362, normalized size = 1.84

$$-\frac{A a^{2}}{5 \left(e x +d \right)^{5} e}-\frac{2 A a c \,d^{2}}{5 \left(e x +d \right)^{5} e^{3}}-\frac{A \,c^{2} d^{4}}{5 \left(e x +d \right)^{5} e^{5}}+\frac{B \,a^{2} d}{5 \left(e x +d \right)^{5} e^{2}}+\frac{2 B a c \,d^{3}}{5 \left(e x +d \right)^{5} e^{4}}+\frac{B \,c^{2} d^{5}}{5 \left(e x +d \right)^{5} e^{6}}+\frac{A a c d}{\left(e x +d \right)^{4} e^{3}}+\frac{A \,c^{2} d^{3}}{\left(e x +d \right)^{4} e^{5}}-\frac{B \,a^{2}}{4 \left(e x +d \right)^{4} e^{2}}-\frac{3 B a c \,d^{2}}{2 \left(e x +d \right)^{4} e^{4}}-\frac{5 B \,c^{2} d^{4}}{4 \left(e x +d \right)^{4} e^{6}}-\frac{2 A a c}{3 \left(e x +d \right)^{3} e^{3}}-\frac{2 A \,c^{2} d^{2}}{\left(e x +d \right)^{3} e^{5}}+\frac{2 B a c d}{\left(e x +d \right)^{3} e^{4}}+\frac{10 B \,c^{2} d^{3}}{3 \left(e x +d \right)^{3} e^{6}}+\frac{2 A \,c^{2} d}{\left(e x +d \right)^{2} e^{5}}-\frac{B a c}{\left(e x +d \right)^{2} e^{4}}-\frac{5 B \,c^{2} d^{2}}{\left(e x +d \right)^{2} e^{6}}-\frac{A \,c^{2}}{\left(e x +d \right) e^{5}}+\frac{5 B \,c^{2} d}{\left(e x +d \right) e^{6}}+\frac{B \,c^{2} \ln \left(e x +d \right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x)

[Out] -c^2/e^5/(e*x+d)*A+5*c^2/e^6/(e*x+d)*B*d+1/e^3/(e*x+d)^4*A*d*a*c+1/e^5/(e*x+d)^4*A*c^2*d^3-1/4/e^2/(e*x+d)^4*B*a^2-3/2/e^4/(e*x+d)^4*B*d^2*a*c-5/4/e^6/(e*x+d)^4*B*d^4*c^2+2*c^2/e^5/(e*x+d)^2*A*d-c/e^4/(e*x+d)^2*B*a-5*c^2/e^6/(e*x+d)^2*B*d^2-2/3*c/e^3/(e*x+d)^3*a*A-2*c^2/e^5/(e*x+d)^3*A*d^2+2*c/e^4/(e*x+d)^3*a*B*d+10/3*c^2/e^6/(e*x+d)^3*B*d^3+B*c^2/e^6*ln(e*x+d)-1/5/e/(e*x+d)^5*A*a^2-2/5/e^3/(e*x+d)^5*A*d^2*a*c-1/5/e^5/(e*x+d)^5*A*c^2*d^4+1/5/e^2/(e*x+d)^5*B*d*a^2+2/5/e^4/(e*x+d)^5*B*d^3*a*c+1/5/e^6/(e*x+d)^5*B*c^2*d^5

maxima [A] time = 0.64, size = 298, normalized size = 1.51

$$\frac{137 \, B c^{2} d^{5} - 12 \, A c^{2} d^{4} e - 6 \, B a c d^{3} e^{2} - 4 \, A a c d^{2} e^{3} - 3 \, B a^{2} d e^{4} - 12 \, A a^{2} e^{5} + 60 \, {\left(5 \, B c^{2} d e^{4} - A c^{2} e^{5}\right)} x^{4} + 60 \, {\left(15 \, B c^{2} d^{2} e^{3} - 2 \, A c^{2} d e^{4} - B a c e^{5}\right)} x^{3} + 20 \, {\left(55 \, B c^{2} d^{3} e^{2} - 6 \, A c^{2} d^{2} e^{3} - 3 \, B a c d e^{4} - 2 \, A a c e^{5}\right)} x^{2} + 5 \, {\left(125 \, B c^{2} d^{4} e - 12 \, A c^{2} d^{3} e^{2} - 6 \, B a c d^{2} e^{3} - 4 \, A a c d e^{4} - 3 \, B a^{2} e^{5}\right)} x}{60 \, {\left(e^{11} x^{5} + 5 \, d e^{10} x^{4} + 10 \, d^{2} e^{9} x^{3} + 10 \, d^{3} e^{8} x^{2} + 5 \, d^{4} e^{7} x + d^{5} e^{6}\right)}} + \frac{B c^{2} \log\left(e x + d\right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x, algorithm="maxima")

[Out] 1/60*(137*B*c^2*d^5 - 12*A*c^2*d^4*e - 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 12*A*a^2*e^5 + 60*(5*B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 60*(15*

```
B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 - B*a*c*e^5)*x^3 + 20*(55*B*c^2*d^3*e^2 - 6*A
*c^2*d^2*e^3 - 3*B*a*c*d*e^4 - 2*A*a*c*e^5)*x^2 + 5*(125*B*c^2*d^4*e - 12*A
*c^2*d^3*e^2 - 6*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 - 3*B*a^2*e^5)*x)/(e^11*x^5
+ 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6) +
 B*c^2*log(e*x + d)/e^6
```

mupad [B] time = 1.78, size = 243, normalized size = 1.23

$$\frac{B\,c^2\,\ln\left(d+e\,x\right)}{e^6}-\frac{x^2\,\left(-\frac{55\,B\,c^2\,d^3\,e^2}{3}+2\,A\,c^2\,d^2\,e^3+B\,a\,c\,d\,e^4+\frac{2\,A\,a\,c\,e^5}{3}\right)+x^3\,\left(-15\,B\,c^2\,d^2\,e^3+2\,A\,c^2\,d\,e^4+B\,a\,c\,e^5\right)+x^4\,\left(A\,c^2\,e^5-5\,B\,c^2\,d\,e^4\right)+x\,\left(\frac{B\,a^2\,e^5}{4}+\frac{B\,a\,c\,d^2\,e^3}{2}+\frac{A\,a\,c\,d\,e^4}{3}-\frac{125\,B\,c^2\,d^4\,e}{12}+A\,c^2\,d^3\,e^2\right)+\frac{A\,a^2\,e^5}{5}-\frac{137\,B\,c^2\,d^5}{60}+\frac{B\,a^2\,d\,e^4}{20}+\frac{A\,c^2\,d^4\,e}{5}+\frac{A\,a\,c\,d^2\,e^3}{15}+\frac{B\,a\,c\,d^3\,e^2}{10}}{e^6\,{\left(d+e\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] (B*c^2*log(d + e*x))/e^6 - (x^2*((2*A*a*c*e^5)/3 + 2*A*c^2*d^2*e^3 - (55*B*
c^2*d^3*e^2)/3 + B*a*c*d*e^4) + x^3*(B*a*c*e^5 + 2*A*c^2*d*e^4 - 15*B*c^2*d
^2*e^3) + x^4*(A*c^2*e^5 - 5*B*c^2*d*e^4) + x*((B*a^2*e^5)/4 - (125*B*c^2*d
^4*e)/12 + A*c^2*d^3*e^2 + (A*a*c*d*e^4)/3 + (B*a*c*d^2*e^3)/2) + (A*a^2*e^
5)/5 - (137*B*c^2*d^5)/60 + (B*a^2*d*e^4)/20 + (A*c^2*d^4*e)/5 + (A*a*c*d^2
*e^3)/15 + (B*a*c*d^3*e^2)/10)/(e^6*(d + e*x)^5)
```

sympy [A] time = 54.06, size = 326, normalized size = 1.65

$$\frac{Bc^2\log\left(d+ex\right)}{e^6}+\frac{-12Aa^2e^5-4Aacd^2e^3-12Ac^2d^4e-3Ba^2de^4-6Bacd^3e^2+137Bc^2d^5+x^4\left(-60Ac^2e^5+300Bc^2de^4\right)+x^3\left(-120Ac^2de^4-60Bace^5+900Bc^2d^2e^3\right)+x^2\left(-40Aace^5-120Ac^2d^2e^3-60Bacde^4+1100Bc^2d^3e^2\right)+x\left(-20Aacde^4-60Ac^2d^3e^2-15Ba^2e^5-30Bacd^2e^3+625Bc^2d^4e\right)}{60d^5e^6+300d^4e^7x+600d^3e^8x^2+600d^2e^9x^3+300de^{10}x^4+60e^{11}x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**6,x)
```

```
[Out] B*c**2*log(d + e*x)/e**6 + (-12*A*a**2*e**5 - 4*A*a*c*d**2*e**3 - 12*A*c**2
*d**4*e - 3*B*a**2*d*e**4 - 6*B*a*c*d**3*e**2 + 137*B*c**2*d**5 + x**4*(-60
*A*c**2*e**5 + 300*B*c**2*d*e**4) + x**3*(-120*A*c**2*d*e**4 - 60*B*a*c*e**
5 + 900*B*c**2*d**2*e**3) + x**2*(-40*A*a*c*e**5 - 120*A*c**2*d**2*e**3 - 6
0*B*a*c*d*e**4 + 1100*B*c**2*d**3*e**2) + x*(-20*A*a*c*d*e**4 - 60*A*c**2*d
**3*e**2 - 15*B*a**2*e**5 - 30*B*a*c*d**2*e**3 + 625*B*c**2*d**4*e))/(60*d*
*5*e**6 + 300*d**4*e**7*x + 600*d**3*e**8*x**2 + 600*d**2*e**9*x**3 + 300*d
*e**10*x**4 + 60*e**11*x**5)
```

3.1135 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^7} dx$

Optimal. Leaf size=204

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^3}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^5}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{6e^6(d+ex)^6}+\frac{c\left(-aAe^3+3aBde^2\right.}{2e^6(d}$$

Rubi [A] time = 0.14, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^3}+\frac{c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{2e^6(d+ex)^4}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^5}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{6e^6(d+ex)^6}+\frac{c^2(5Bd-Ae)}{2e^6(d+ex)^2}-\frac{Bc^2}{e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(6*e^6*(d + e*x)^6) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(5*e^6*(d + e*x)^5) + (c*(5*B*c*d^3 - 3*A*c*
d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(2*e^6*(d + e*x)^4) - (2*c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^3) + (c^2*(5*B*d - A*e))/(2*e^6*(d + e*
x)^2) - (B*c^2)/(e^6*(d + e*x))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^7} dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^7}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^6}+\frac{2c\left(-5Bcd^3\right.}{}\right.$$
$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{6e^6(d+ex)^6}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{5e^6(d+ex)^5}+\frac{c\left(5Bcd^3-3Acd^2e\right.}{2e^6(d}$$

Mathematica [A] time = 0.10, size = 198, normalized size = 0.97

$$-\frac{Ae\left(5a^2e^4+ace^2\left(d^2+6dex+15e^2x^2\right)+c^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)+B\left(a^2e^4(d+6ex)+ace^2\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+5c^2\left(d^5+6d^4ex+15d^3e^2x^2+20d^2e^3x^3+15de^4x^4+6e^5x^5\right)\right)}{30e^6(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/30*(A*e*(5*a^2*e^4 + a*c*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + c^2*(d^4 + 6
*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + B*(a^2*e^4*(d + 6
*e*x) + a*c*e^2*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 5*c^2*(d^5
+ 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5)))
/(e^6*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^7} dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^7,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^7, x]

fricas [A] time = 0.40, size = 292, normalized size = 1.43

$$-\frac{30 \, B c^{2} e^{5} x^{5} + 5 \, B c^{2} d^{5} + A c^{2} d^{4} e + B a c d^{3} e^{2} + A a c d^{2} e^{3} + B a^{2} d e^{4} + 5 \, A a^{2} e^{5} + 15 \, {\left(5 \, B c^{2} d e^{4} + A c^{2} e^{5}\right)} x^{4} + 20 \, {\left(5 \, B c^{2} d^{2} e^{3} + A c^{2} d e^{4} + B a c e^{5}\right)} x^{3} + 15 \, {\left(5 \, B c^{2} d^{3} e^{2} + A c^{2} d^{2} e^{3} + B a c d e^{4} + A a c e^{5}\right)} x^{2} + 6 \, {\left(5 \, B c^{2} d^{4} e + A c^{2} d^{3} e^{2} + B a c d^{2} e^{3} + A a c d e^{4} + B a^{2} e^{5}\right)} x}{30 \, {\left(e^{12} x^{6} + 6 \, d e^{11} x^{5} + 15 \, d^{2} e^{10} x^{4} + 20 \, d^{3} e^{9} x^{3} + 15 \, d^{4} e^{8} x^{2} + 6 \, d^{5} e^{7} x + d^{6} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x, algorithm="fricas")

[Out] -1/30*(30*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + A*c^2*d^4*e + B*a*c*d^3*e^2 + A*a*c*d^2*e^3 + B*a^2*d*e^4 + 5*A*a^2*e^5 + 15*(5*B*c^2*d*e^4 + A*c^2*e^5)*x^4 + 20*(5*B*c^2*d^2*e^3 + A*c^2*d*e^4 + B*a*c*e^5)*x^3 + 15*(5*B*c^2*d^3*e^2 + A*c^2*d^2*e^3 + B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 6*(5*B*c^2*d^4*e + A*c^2*d^3*e^2 + B*a*c*d^2*e^3 + A*a*c*d*e^4 + B*a^2*e^5)*x)/(e^12*x^6 + 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x + d^6*e^6)

giac [A] time = 0.17, size = 238, normalized size = 1.17

$$-\frac{{\left(30 \, B c^{2} x^{5} e^{5} + 75 \, B c^{2} d x^{4} e^{4} + 100 \, B c^{2} d^{2} x^{3} e^{3} + 75 \, B c^{2} d^{3} x^{2} e^{2} + 30 \, B c^{2} d^{4} x e + 5 \, B c^{2} d^{5} + 15 \, A c^{2} x^{4} e^{5} + 20 \, A c^{2} d x^{3} e^{4} + 15 \, A c^{2} d^{2} x^{2} e^{3} + 6 \, A c^{2} d^{3} x e^{2} + A c^{2} d^{4} e + 20 \, B a c x^{3} e^{5} + 15 \, B a c d x^{2} e^{4} + 6 \, B a c d^{2} x e^{3} + B a c d^{3} e^{2} + 15 \, A a c x^{2} e^{5} + 6 \, A a c d x e^{4} + A a c d^{2} e^{3} + 6 \, B a^{2} x e^{5} + B a^{2} d e^{4} + 5 \, A a^{2} e^{5}\right)} e^{\left(-6\right)}}{30 \, {\left(x e + d\right)}^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x, algorithm="giac")

[Out] -1/30*(30*B*c^2*x^5*e^5 + 75*B*c^2*d*x^4*e^4 + 100*B*c^2*d^2*x^3*e^3 + 75*B*c^2*d^3*x^2*e^2 + 30*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 15*A*c^2*x^4*e^5 + 20*A*c^2*d*x^3*e^4 + 15*A*c^2*d^2*x^2*e^3 + 6*A*c^2*d^3*x*e^2 + A*c^2*d^4*e + 20*B*a*c*x^3*e^5 + 15*B*a*c*d*x^2*e^4 + 6*B*a*c*d^2*x*e^3 + B*a*c*d^3*e^2 + 15*A*a*c*x^2*e^5 + 6*A*a*c*d*x*e^4 + A*a*c*d^2*e^3 + 6*B*a^2*x*e^5 + B*a^2*d*e^4 + 5*A*a^2*e^5)*e^(-6)/(x*e + d)^6

maple [A] time = 0.05, size = 249, normalized size = 1.22

$$-\frac{B c^{2}}{\left(e x +d \right) e^{6}}-\frac{\left(A e -5 B d \right) c^{2}}{2 \left(e x +d \right)^{2} e^{6}}-\frac{\left(a A \,e^{3}+3 A c \,d^{2} e -3 a B d \,e^{2}-5 B c \,d^{3}\right) c}{2 \left(e x +d \right)^{4} e^{6}}+\frac{2 \left(2 A c d e -B a \,e^{2}-5 B c \,d^{2}\right) c}{3 \left(e x +d \right)^{3} e^{6}}-\frac{A \,a^{2} e^{5}+2 A \,d^{2} a c \,e^{3}+A \,c^{2} d^{4} e -B d \,a^{2} e^{4}-2 B \,d^{3} a c \,e^{2}-B \,d^{5} c^{2}}{6 \left(e x +d \right)^{6} e^{6}}-\frac{-4 A d a c \,e^{3}-4 A \,c^{2} d^{3} e +B \,a^{2} e^{4}+6 B \,d^{2} a c \,e^{2}+5 B \,d^{4} c^{2}}{5 \left(e x +d \right)^{5} e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x)

[Out] -1/(e*x+d)*B*c^2/e^6-1/2*c*(A*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B*c*d^3)/e^6/(e*x+d)^4-1/2*c^2*(A*e-5*B*d)/e^6/(e*x+d)^2+2/3*c*(2*A*c*d*e-B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^3-1/6*(A*a^2*e^5+2*A*a*c*d^2*e^3+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c^2*d^5)/e^6/(e*x+d)^6-1/5*(-4*A*a*c*d*e^3-4*A*c^2*d^3*e+B*a^2*e^4+6*B*a*c*d^2*e^2+5*B*c^2*d^4)/e^6/(e*x+d)^5

maxima [A] time = 0.66, size = 292, normalized size = 1.43

$$-\frac{30 \, B c^{2} e^{5} x^{5} + 5 \, B c^{2} d^{5} + A c^{2} d^{4} e + B a c d^{3} e^{2} + A a c d^{2} e^{3} + B a^{2} d e^{4} + 5 \, A a^{2} e^{5} + 15 \, {\left(5 \, B c^{2} d e^{4} + A c^{2} e^{5}\right)} x^{4} + 20 \, {\left(5 \, B c^{2} d^{2} e^{3} + A c^{2} d e^{4} + B a c e^{5}\right)} x^{3} + 15 \, {\left(5 \, B c^{2} d^{3} e^{2} + A c^{2} d^{2} e^{3} + B a c d e^{4} + A a c e^{5}\right)} x^{2} + 6 \, {\left(5 \, B c^{2} d^{4} e + A c^{2} d^{3} e^{2} + B a c d^{2} e^{3} + A a c d e^{4} + B a^{2} e^{5}\right)} x}{30 \, {\left(e^{12} x^{6} + 6 \, d e^{11} x^{5} + 15 \, d^{2} e^{10} x^{4} + 20 \, d^{3} e^{9} x^{3} + 15 \, d^{4} e^{8} x^{2} + 6 \, d^{5} e^{7} x + d^{6} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x, algorithm="maxima")

[Out] -1/30*(30*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + A*c^2*d^4*e + B*a*c*d^3*e^2 + A*a*c*d^2*e^3 + B*a^2*d*e^4 + 5*A*a^2*e^5 + 15*(5*B*c^2*d*e^4 + A*c^2*e^5)*x^4 + 20*(5*B*c^2*d^2*e^3 + A*c^2*d*e^4 + B*a*c*e^5)*x^3 + 15*(5*B*c^2*d^3*e^2 + A*c^2*d^2*e^3 + B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 6*(5*B*c^2*d^4*e + A*c^2*d

```
3*e^2 + B*a*c*d^2*e^3 + A*a*c*d*e^4 + B*a^2*e^5)*x)/(e^12*x^6 + 6*d*e^11*x^
5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x + d^6*e
^6)
```

mupad [B] time = 0.11, size = 273, normalized size = 1.34

$$-\frac{\frac{B\,a^2\,d\,e^4+5\,A\,a^2\,e^5+B\,a\,c\,d^3\,e^2+A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+A\,c^2\,d^4\,e}{30\,e^6}+\frac{x\,\left(B\,a^2\,e^4+B\,a\,c\,d^2\,e^2+A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+A\,c^2\,d^3\,e\right)}{5\,e^5}+\frac{2\,c\,x^3\,\left(5\,B\,c\,d^2+A\,c\,d\,e+B\,a\,e^2\right)}{3\,e^3}+\frac{c^2\,x^4\,\left(A\,e+5\,B\,d\right)}{2\,e^2}+\frac{c\,x^2\,\left(5\,B\,c\,d^3+A\,c\,d^2\,e+B\,a\,d\,e^2+A\,a\,e^3\right)}{2\,e^4}+\frac{B\,c^2\,x^5}{e}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -((5*A*a^2*e^5 + 5*B*c^2*d^5 + B*a^2*d*e^4 + A*c^2*d^4*e + A*a*c*d^2*e^3 +
B*a*c*d^3*e^2)/(30*e^6) + (x*(B*a^2*e^4 + 5*B*c^2*d^4 + A*c^2*d^3*e + A*a*c
*d*e^3 + B*a*c*d^2*e^2))/(5*e^5) + (2*c*x^3*(B*a*e^2 + 5*B*c*d^2 + A*c*d*e)
)/(3*e^3) + (c^2*x^4*(A*e + 5*B*d))/(2*e^2) + (c*x^2*(A*a*e^3 + 5*B*c*d^3 +
 B*a*d*e^2 + A*c*d^2*e))/(2*e^4) + (B*c^2*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*
x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [A] time = 125.89, size = 337, normalized size = 1.65

$$\frac{-5Aa^2e^5 - Aacd^2e^3 - Ac^2d^4e - Ba^2de^4 - Bacd^3e^2 - 5Bc^2d^5 - 30Bc^2e^5x^5 + x^4\left(-15Ac^2e^5 - 75Bc^2de^4\right) + x^3\left(-20Ac^2de^4 - 20Bace^5 - 100Bc^2d^2e^3\right) + x^2\left(-15Aace^5 - 15Ac^2d^2e^3 - 15Bacde^4 - 75Bc^2d^3e^2\right) + x\left(-6Aacde^4 - 6Ac^2d^3e^2 - 6Ba^2e^5 - 6Bacd^2e^3 - 30Bc^2d^4e\right)}{30d^6e^6 + 180d^5e^7x + 450d^4e^8x^2 + 600d^3e^9x^3 + 450d^2e^{10}x^4 + 180de^{11}x^5 + 30e^{12}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**7,x)
```

```
[Out] (-5*A*a**2*e**5 - A*a*c*d**2*e**3 - A*c**2*d**4*e - B*a**2*d*e**4 - B*a*c*d
**3*e**2 - 5*B*c**2*d**5 - 30*B*c**2*e**5*x**5 + x**4*(-15*A*c**2*e**5 - 75
*B*c**2*d*e**4) + x**3*(-20*A*c**2*d*e**4 - 20*B*a*c*e**5 - 100*B*c**2*d**2
*e**3) + x**2*(-15*A*a*c*e**5 - 15*A*c**2*d**2*e**3 - 15*B*a*c*d*e**4 - 75*
B*c**2*d**3*e**2) + x*(-6*A*a*c*d*e**4 - 6*A*c**2*d**3*e**2 - 6*B*a**2*e**5
 - 6*B*a*c*d**2*e**3 - 30*B*c**2*d**4*e))/(30*d**6*e**6 + 180*d**5*e**7*x +
 450*d**4*e**8*x**2 + 600*d**3*e**9*x**3 + 450*d**2*e**10*x**4 + 180*d*e**1
1*x**5 + 30*e**12*x**6)
```

3.1136 $\int \frac{(A+Bx)(a+cx^2)^2}{(d+ex)^8}\,dx$

Optimal. Leaf size=206

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{2e^6(d+ex)^4}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{6e^6(d+ex)^6}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{7e^6(d+ex)^7}+\frac{2c\left(-aAe^3+3aB\right.}{5e^6}$$

Rubi [A] time = 0.14, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{2e^6(d+ex)^4}+\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{5e^6(d+ex)^5}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{6e^6(d+ex)^6}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{7e^6(d+ex)^7}+\frac{c^2(5Bd-Ae)}{3e^6(d+ex)^3}-\frac{Bc^2}{2e^6(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(7*e^6*(d + e*x)^7) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(6*e^6*(d + e*x)^6) + (2*c*(5*B*c*d^3 - 3*A*
c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(5*e^6*(d + e*x)^5) - (c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(2*e^6*(d + e*x)^4) + (c^2*(5*B*d - A*e))/(3*e^6*(d + e*
x)^3) - (B*c^2)/(2*e^6*(d + e*x)^2)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^8}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^8}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^7}+\frac{2c\left(-5Bcd\right.}{}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{7e^6(d+ex)^7}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{6e^6(d+ex)^6}+\frac{2c\left(5Bcd^3-3A\right.}{5e}$$

Mathematica [A] time = 0.09, size = 202, normalized size = 0.98

$$-\frac{2Ae\left(15a^2e^4+2ace^2\left(d^2+7dex+21e^2x^2\right)+c^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+B\left(5a^2e^4(d+7ex)+3ace^2\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+5c^2\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)\right)}{210e^6(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/210*(2*A*e*(15*a^2*e^4 + 2*a*c*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + c^2*(d
^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + B*(5*a^2*e^
4*(d + 7*e*x) + 3*a*c*e^2*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 5
*c^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21
*e^5*x^5)))/(e^6*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^8, x]
```

fricas [A] time = 0.40, size = 317, normalized size = 1.54

$$-\frac{105 \, B c^{2} e^{5} x^{5} + 5 \, B c^{2} d^{5} + 2 \, A c^{2} d^{4} e + 3 \, B a c d^{3} e^{2} + 4 \, A a c d^{2} e^{3} + 5 \, B a^{2} d e^{4} + 30 \, A a^{2} e^{5} + 35 \, {\left(5 \, B c^{2} d e^{4} + 2 \, A c^{2} e^{5}\right)} x^{4} + 35 \, {\left(5 \, B c^{2} d^{2} e^{3} + 2 \, A c^{2} d e^{4} + 3 \, B a c e^{5}\right)} x^{3} + 21 \, {\left(5 \, B c^{2} d^{3} e^{2} + 2 \, A c^{2} d^{2} e^{3} + 3 \, B a c d e^{4} + 4 \, A a c e^{5}\right)} x^{2} + 7 \, {\left(5 \, B c^{2} d^{4} e + 2 \, A c^{2} d^{3} e^{2} + 3 \, B a c d^{2} e^{3} + 4 \, A a c d e^{4} + 5 \, B a^{2} e^{5}\right)} x}{210 \, {\left(e^{13} x^{7} + 7 \, d e^{12} x^{6} + 21 \, d^{2} e^{11} x^{5} + 35 \, d^{3} e^{10} x^{4} + 35 \, d^{4} e^{9} x^{3} + 21 \, d^{5} e^{8} x^{2} + 7 \, d^{6} e^{7} x + d^{7} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/210*(105*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 2*A*c^2*d^4*e + 3*B*a*c*d^3*e^2 +
 4*A*a*c*d^2*e^3 + 5*B*a^2*d*e^4 + 30*A*a^2*e^5 + 35*(5*B*c^2*d*e^4 + 2*A*c
^2*e^5)*x^4 + 35*(5*B*c^2*d^2*e^3 + 2*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 21*(
5*B*c^2*d^3*e^2 + 2*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 + 4*A*a*c*e^5)*x^2 + 7*(5
*B*c^2*d^4*e + 2*A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 + 4*A*a*c*d*e^4 + 5*B*a^2*
e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d
^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [A] time = 0.18, size = 242, normalized size = 1.17

$$-\frac{{\left(105 \, B c^{2} x^{5} e^{5} + 175 \, B c^{2} d x^{4} e^{4} + 175 \, B c^{2} d^{2} x^{3} e^{3} + 105 \, B c^{2} d^{3} x^{2} e^{2} + 35 \, B c^{2} d^{4} x e + 5 \, B c^{2} d^{5} + 70 \, A c^{2} x^{4} e^{5} + 70 \, A c^{2} d x^{3} e^{4} + 42 \, A c^{2} d^{2} x^{2} e^{3} + 14 \, A c^{2} d^{3} x e^{2} + 2 \, A c^{2} d^{4} e + 105 \, B a c x^{3} e^{5} + 63 \, B a c d x^{2} e^{4} + 21 \, B a c d^{2} x e^{3} + 3 \, B a c d^{3} e^{2} + 84 \, A a c x^{2} e^{5} + 28 \, A a c d x e^{4} + 4 \, A a c d^{2} e^{3} + 35 \, B a^{2} x e^{5} + 5 \, B a^{2} d e^{4} + 30 \, A a^{2} e^{5}\right)} e^{\left(-6\right)}}{210 \, {\left(x e + d\right)}^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/210*(105*B*c^2*x^5*e^5 + 175*B*c^2*d*x^4*e^4 + 175*B*c^2*d^2*x^3*e^3 + 1
05*B*c^2*d^3*x^2*e^2 + 35*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 70*A*c^2*x^4*e^5 +
70*A*c^2*d*x^3*e^4 + 42*A*c^2*d^2*x^2*e^3 + 14*A*c^2*d^3*x*e^2 + 2*A*c^2*d^
4*e + 105*B*a*c*x^3*e^5 + 63*B*a*c*d*x^2*e^4 + 21*B*a*c*d^2*x*e^3 + 3*B*a*c
*d^3*e^2 + 84*A*a*c*x^2*e^5 + 28*A*a*c*d*x*e^4 + 4*A*a*c*d^2*e^3 + 35*B*a^2
*x*e^5 + 5*B*a^2*d*e^4 + 30*A*a^2*e^5)*e^(-6)/(x*e + d)^7
```

maple [A] time = 0.05, size = 249, normalized size = 1.21

$$-\frac{B \,c^{2}}{2 \left(e x +d \right)^{2} e^{6}}-\frac{\left(A e -5 B d \right) c^{2}}{3 \left(e x +d \right)^{3} e^{6}}+\frac{\left(2 A c d e -B a \,e^{2}-5 B c \,d^{2}\right) c}{2 \left(e x +d \right)^{4} e^{6}}-\frac{2 \left(a A \,e^{3}+3 A c \,d^{2} e -3 a B d \,e^{2}-5 B c \,d^{3}\right) c}{5 \left(e x +d \right)^{5} e^{6}}-\frac{-4 A d a c \,e^{3}-4 A \,c^{2} d^{3} e +B \,a^{2} e^{4}+6 B \,d^{2} a c \,e^{2}+5 B \,d^{4} c^{2}}{6 \left(e x +d \right)^{6} e^{6}}-\frac{A \,a^{2} e^{5}+2 A \,d^{2} a c \,e^{3}+A \,c^{2} d^{4} e -B d \,a^{2} e^{4}-2 B \,d^{3} a c \,e^{2}-B \,d^{5} c^{2}}{7 \left(e x +d \right)^{7} e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x)
```

```
[Out] 1/2*c*(2*A*c*d*e-B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^4-1/2/(e*x+d)^2*B*c^2/e^6-1
/3*c^2*(A*e-5*B*d)/e^6/(e*x+d)^3-1/6*(-4*A*a*c*d*e^3-4*A*c^2*d^3*e+B*a^2*e^
4+6*B*a*c*d^2*e^2+5*B*c^2*d^4)/e^6/(e*x+d)^6-1/7*(A*a^2*e^5+2*A*a*c*d^2*e^3
+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c^2*d^5)/e^6/(e*x+d)^7-2/5*c*(A*
a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B*c*d^3)/e^6/(e*x+d)^5
```

maxima [A] time = 0.58, size = 317, normalized size = 1.54

$$-\frac{105 \, B c^{2} e^{5} x^{5} + 5 \, B c^{2} d^{5} + 2 \, A c^{2} d^{4} e + 3 \, B a c d^{3} e^{2} + 4 \, A a c d^{2} e^{3} + 5 \, B a^{2} d e^{4} + 30 \, A a^{2} e^{5} + 35 \, {\left(5 \, B c^{2} d e^{4} + 2 \, A c^{2} e^{5}\right)} x^{4} + 35 \, {\left(5 \, B c^{2} d^{2} e^{3} + 2 \, A c^{2} d e^{4} + 3 \, B a c e^{5}\right)} x^{3} + 21 \, {\left(5 \, B c^{2} d^{3} e^{2} + 2 \, A c^{2} d^{2} e^{3} + 3 \, B a c d e^{4} + 4 \, A a c e^{5}\right)} x^{2} + 7 \, {\left(5 \, B c^{2} d^{4} e + 2 \, A c^{2} d^{3} e^{2} + 3 \, B a c d^{2} e^{3} + 4 \, A a c d e^{4} + 5 \, B a^{2} e^{5}\right)} x}{210 \, {\left(e^{13} x^{7} + 7 \, d e^{12} x^{6} + 21 \, d^{2} e^{11} x^{5} + 35 \, d^{3} e^{10} x^{4} + 35 \, d^{4} e^{9} x^{3} + 21 \, d^{5} e^{8} x^{2} + 7 \, d^{6} e^{7} x + d^{7} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/210*(105*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 2*A*c^2*d^4*e + 3*B*a*c*d^3*e^2 +
 4*A*a*c*d^2*e^3 + 5*B*a^2*d*e^4 + 30*A*a^2*e^5 + 35*(5*B*c^2*d*e^4 + 2*A*c
^2*e^5)*x^4 + 35*(5*B*c^2*d^2*e^3 + 2*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 21*(
5*B*c^2*d^3*e^2 + 2*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 + 4*A*a*c*e^5)*x^2 + 7*(5
*B*c^2*d^4*e + 2*A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 + 4*A*a*c*d*e^4 + 5*B*a^2*
```

```
e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d
^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [B] time = 1.73, size = 299, normalized size = 1.45

$$-\frac{\frac{5\,B\,a^2\,d\,e^4+30\,A\,a^2\,e^5+3\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+2\,A\,c^2\,d^4\,e}{210\,e^6}+\frac{x\,\left(5\,B\,a^2\,e^4+3\,B\,a\,c\,d^2\,e^2+4\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+2\,A\,c^2\,d^3\,e\right)}{30\,e^5}+\frac{c\,x^3\,\left(5\,B\,c\,d^2+2\,A\,c\,d\,e+3\,B\,a\,e^2\right)}{6\,e^3}+\frac{c^2\,x^4\,\left(2\,A\,e+5\,B\,d\right)}{6\,e^2}+\frac{c\,x^2\,\left(5\,B\,c\,d^3+2\,A\,c\,d^2\,e+3\,B\,a\,d\,e^2+4\,A\,a\,e^3\right)}{10\,e^4}+\frac{B\,c^2\,x^5}{2\,e}}{d^7+7\,d^6\,e\,x+21\,d^5\,e^2\,x^2+35\,d^4\,e^3\,x^3+35\,d^3\,e^4\,x^4+21\,d^2\,e^5\,x^5+7\,d\,e^6\,x^6+e^7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] -((30*A*a^2*e^5 + 5*B*c^2*d^5 + 5*B*a^2*d*e^4 + 2*A*c^2*d^4*e + 4*A*a*c*d^2
*e^3 + 3*B*a*c*d^3*e^2)/(210*e^6) + (x*(5*B*a^2*e^4 + 5*B*c^2*d^4 + 2*A*c^2
*d^3*e + 4*A*a*c*d*e^3 + 3*B*a*c*d^2*e^2))/(30*e^5) + (c*x^3*(3*B*a*e^2 + 5
*B*c*d^2 + 2*A*c*d*e))/(6*e^3) + (c^2*x^4*(2*A*e + 5*B*d))/(6*e^2) + (c*x^2
*(4*A*a*e^3 + 5*B*c*d^3 + 3*B*a*d*e^2 + 2*A*c*d^2*e))/(10*e^4) + (B*c^2*x^5
)/(2*e))/(d^7 + e^7*x^7 + 7*d*e^6*x^6 + 21*d^5*e^2*x^2 + 35*d^4*e^3*x^3 + 3
5*d^3*e^4*x^4 + 21*d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1137 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^9}\,dx$

Optimal. Leaf size=206

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6(d+ex)^5}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{7e^6(d+ex)^7}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{8e^6(d+ex)^8}+\frac{c\left(-aAe^3+3aBde^2\right.}{3e^6(d}$$

Rubi [A] time = 0.14, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6(d+ex)^5}+\frac{c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6(d+ex)^6}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{7e^6(d+ex)^7}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{8e^6(d+ex)^8}+\frac{c^2(5Bd-Ae)}{4e^6(d+ex)^4}-\frac{Bc^2}{3e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(8*e^6*(d + e*x)^8) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(7*e^6*(d + e*x)^7) + (c*(5*B*c*d^3 - 3*A*c*
d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(3*e^6*(d + e*x)^6) - (2*c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(5*e^6*(d + e*x)^5) + (c^2*(5*B*d - A*e))/(4*e^6*(d + e*
x)^4) - (B*c^2)/(3*e^6*(d + e*x)^3)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^9}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^9}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^8}+\frac{2c\left(-5Bcd^3\right.}{}\right.$$
$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{8e^6(d+ex)^8}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{7e^6(d+ex)^7}+\frac{c\left(5Bcd^3-3Acd^2e\right.}{3e^6(d}$$

Mathematica [A] time = 0.09, size = 202, normalized size = 0.98

$$-\frac{Ae\left(105a^2e^4+10ace^2\left(d^2+8dex+28e^2x^2\right)+3c^2\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)+B\left(15a^2e^4(d+8ex)+6ace^2\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+5c^2\left(d^5+8d^4ex+28d^3e^2x^2+56d^2e^3x^3+70de^4x^4+56e^5x^5\right)\right)}{840e^6(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -1/840*(A*e*(105*a^2*e^4 + 10*a*c*e^2*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*c^2*
(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + B*(15*a^2
*e^4*(d + 8*e*x) + 6*a*c*e^2*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)
+ 5*c^2*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 +
 56*e^5*x^5)))/(e^6*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^9, x]
```

fricas [A] time = 0.40, size = 328, normalized size = 1.59

$$-\frac{280 \, B c^{2} e^{5} x^{5} + 5 \, B c^{2} d^{5} + 3 \, A c^{2} d^{4} e + 6 \, B a c d^{3} e^{2} + 10 \, A a c d^{2} e^{3} + 15 \, B a^{2} d e^{4} + 105 \, A a^{2} e^{5} + 70 \, {\left(5 \, B c^{2} d e^{4} + 3 \, A c^{2} e^{5}\right)} x^{4} + 56 \, {\left(5 \, B c^{2} d^{2} e^{3} + 3 \, A c^{2} d e^{4} + 6 \, B a c e^{5}\right)} x^{3} + 28 \, {\left(5 \, B c^{2} d^{3} e^{2} + 3 \, A c^{2} d^{2} e^{3} + 6 \, B a c d e^{4} + 10 \, A a c e^{5}\right)} x^{2} + 8 \, {\left(5 \, B c^{2} d^{4} e + 3 \, A c^{2} d^{3} e^{2} + 6 \, B a c d^{2} e^{3} + 10 \, A a c d e^{4} + 15 \, B a^{2} e^{5}\right)} x}{840 \, {\left(e^{14} x^{8} + 8 \, d e^{13} x^{7} + 28 \, d^{2} e^{12} x^{6} + 56 \, d^{3} e^{11} x^{5} + 70 \, d^{4} e^{10} x^{4} + 56 \, d^{5} e^{9} x^{3} + 28 \, d^{6} e^{8} x^{2} + 8 \, d^{7} e^{7} x + d^{8} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 3*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 +
 10*A*a*c*d^2*e^3 + 15*B*a^2*d*e^4 + 105*A*a^2*e^5 + 70*(5*B*c^2*d*e^4 + 3*
A*c^2*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*A*c^2*d*e^4 + 6*B*a*c*e^5)*x^3 + 2
8*(5*B*c^2*d^3*e^2 + 3*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 + 10*A*a*c*e^5)*x^2 +
8*(5*B*c^2*d^4*e + 3*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 + 10*A*a*c*d*e^4 + 15*
B*a^2*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^5
+ 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e^6
)
```

giac [A] time = 0.19, size = 242, normalized size = 1.17

$$-\frac{{\left(280 \, B c^{2} x^{5} e^{5} + 350 \, B c^{2} d x^{4} e^{4} + 280 \, B c^{2} d^{2} x^{3} e^{3} + 140 \, B c^{2} d^{3} x^{2} e^{2} + 40 \, B c^{2} d^{4} x e + 5 \, B c^{2} d^{5} + 210 \, A c^{2} x^{4} e^{5} + 168 \, A c^{2} d x^{3} e^{4} + 84 \, A c^{2} d^{2} x^{2} e^{3} + 24 \, A c^{2} d^{3} x e^{2} + 3 \, A c^{2} d^{4} e + 336 \, B a c x^{3} e^{5} + 168 \, B a c d x^{2} e^{4} + 48 \, B a c d^{2} x e^{3} + 6 \, B a c d^{3} e^{2} + 280 \, A a c x^{2} e^{5} + 80 \, A a c d x e^{4} + 10 \, A a c d^{2} e^{3} + 120 \, B a^{2} x e^{5} + 15 \, B a^{2} d e^{4} + 105 \, A a^{2} e^{5}\right)} e^{\left(-6\right)}}{840 \, {\left(x e + d\right)}^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 280*B*c^2*d^2*x^3*e^3 + 1
40*B*c^2*d^3*x^2*e^2 + 40*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 210*A*c^2*x^4*e^5 +
 168*A*c^2*d*x^3*e^4 + 84*A*c^2*d^2*x^2*e^3 + 24*A*c^2*d^3*x*e^2 + 3*A*c^2*
d^4*e + 336*B*a*c*x^3*e^5 + 168*B*a*c*d*x^2*e^4 + 48*B*a*c*d^2*x*e^3 + 6*B*
a*c*d^3*e^2 + 280*A*a*c*x^2*e^5 + 80*A*a*c*d*x*e^4 + 10*A*a*c*d^2*e^3 + 120
*B*a^2*x*e^5 + 15*B*a^2*d*e^4 + 105*A*a^2*e^5)*e^(-6)/(x*e + d)^8
```

maple [A] time = 0.06, size = 249, normalized size = 1.21

$$-\frac{B c^{2}}{3 \left(e x +d \right)^{3} e^{6}}-\frac{\left(A e -5 B d \right) c^{2}}{4 \left(e x +d \right)^{4} e^{6}}+\frac{2 \left(2 A c d e -B a \,e^{2}-5 B c \,d^{2}\right) c}{5 \left(e x +d \right)^{5} e^{6}}-\frac{\left(a A \,e^{3}+3 A c \,d^{2} e -3 a B d \,e^{2}-5 B c \,d^{3}\right) c}{3 \left(e x +d \right)^{6} e^{6}}-\frac{A \,a^{2} e^{5}+2 A \,d^{2} a c \,e^{3}+A \,c^{2} d^{4} e -B d \,a^{2} e^{4}-2 B \,d^{3} a c \,e^{2}-B \,d^{5} c^{2}}{8 \left(e x +d \right)^{8} e^{6}}-\frac{-4 A d a c \,e^{3}-4 A \,c^{2} d^{3} e +B \,a^{2} e^{4}+6 B \,d^{2} a c \,e^{2}+5 B \,d^{4} c^{2}}{7 \left(e x +d \right)^{7} e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x)
```

```
[Out] -1/4*c^2*(A*e-5*B*d)/e^6/(e*x+d)^4-1/3*B*c^2/e^6/(e*x+d)^3-1/8*(A*a^2*e^5+2
*A*a*c*d^2*e^3+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c^2*d^5)/e^6/(e*x+
d)^8-1/7*(-4*A*a*c*d*e^3-4*A*c^2*d^3*e+B*a^2*e^4+6*B*a*c*d^2*e^2+5*B*c^2*d^
4)/e^6/(e*x+d)^7+2/5*c*(2*A*c*d*e-B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^5-1/3*c*(A
*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B*c*d^3)/e^6/(e*x+d)^6
```

maxima [A] time = 0.55, size = 328, normalized size = 1.59

$$-\frac{280 \, B c^{2} e^{5} x^{5} + 5 \, B c^{2} d^{5} + 3 \, A c^{2} d^{4} e + 6 \, B a c d^{3} e^{2} + 10 \, A a c d^{2} e^{3} + 15 \, B a^{2} d e^{4} + 105 \, A a^{2} e^{5} + 70 \, {\left(5 \, B c^{2} d e^{4} + 3 \, A c^{2} e^{5}\right)} x^{4} + 56 \, {\left(5 \, B c^{2} d^{2} e^{3} + 3 \, A c^{2} d e^{4} + 6 \, B a c e^{5}\right)} x^{3} + 28 \, {\left(5 \, B c^{2} d^{3} e^{2} + 3 \, A c^{2} d^{2} e^{3} + 6 \, B a c d e^{4} + 10 \, A a c e^{5}\right)} x^{2} + 8 \, {\left(5 \, B c^{2} d^{4} e + 3 \, A c^{2} d^{3} e^{2} + 6 \, B a c d^{2} e^{3} + 10 \, A a c d e^{4} + 15 \, B a^{2} e^{5}\right)} x}{840 \, {\left(e^{14} x^{8} + 8 \, d e^{13} x^{7} + 28 \, d^{2} e^{12} x^{6} + 56 \, d^{3} e^{11} x^{5} + 70 \, d^{4} e^{10} x^{4} + 56 \, d^{5} e^{9} x^{3} + 28 \, d^{6} e^{8} x^{2} + 8 \, d^{7} e^{7} x + d^{8} e^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 3*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 +
 10*A*a*c*d^2*e^3 + 15*B*a^2*d*e^4 + 105*A*a^2*e^5 + 70*(5*B*c^2*d*e^4 + 3*
A*c^2*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*A*c^2*d*e^4 + 6*B*a*c*e^5)*x^3 + 2
8*(5*B*c^2*d^3*e^2 + 3*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 + 10*A*a*c*e^5)*x^2 +
```

```
8*(5*B*c^2*d^4*e + 3*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 + 10*A*a*c*d*e^4 + 15*
B*a^2*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^5
+ 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e^6
)
```

mupad [B] time = 0.12, size = 310, normalized size = 1.50

$$-\frac{\frac{15\,B\,a^2\,d\,e^4+105\,A\,a^2\,e^5+6\,B\,a\,c\,d^3\,e^2+10\,A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+3\,A\,c^2\,d^4\,e}{840\,e^6}+\frac{x\,\left(15\,B\,a^2\,e^4+6\,B\,a\,c\,d^2\,e^2+10\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+3\,A\,c^2\,d^3\,e\right)}{105\,e^5}+\frac{c\,x^3\,\left(5\,B\,c\,d^2+3\,A\,c\,d\,e+6\,B\,a\,e^2\right)}{15\,e^3}+\frac{c^2\,x^4\,\left(3\,A\,e+5\,B\,d\right)}{12\,e^2}+\frac{c\,x^2\,\left(5\,B\,c\,d^3+3\,A\,c\,d^2\,e+6\,B\,a\,d\,e^2+10\,A\,a\,e^3\right)}{30\,e^4}+\frac{B\,c^2\,x^5}{3\,e}}{d^8+8\,d^7\,e\,x+28\,d^6\,e^2\,x^2+56\,d^5\,e^3\,x^3+70\,d^4\,e^4\,x^4+56\,d^3\,e^5\,x^5+28\,d^2\,e^6\,x^6+8\,d\,e^7\,x^7+e^8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^9,x)
```

```
[Out] -((105*A*a^2*e^5 + 5*B*c^2*d^5 + 15*B*a^2*d*e^4 + 3*A*c^2*d^4*e + 10*A*a*c*
d^2*e^3 + 6*B*a*c*d^3*e^2)/(840*e^6) + (x*(15*B*a^2*e^4 + 5*B*c^2*d^4 + 3*A
*c^2*d^3*e + 10*A*a*c*d*e^3 + 6*B*a*c*d^2*e^2))/(105*e^5) + (c*x^3*(6*B*a*e
^2 + 5*B*c*d^2 + 3*A*c*d*e))/(15*e^3) + (c^2*x^4*(3*A*e + 5*B*d))/(12*e^2)
+ (c*x^2*(10*A*a*e^3 + 5*B*c*d^3 + 6*B*a*d*e^2 + 3*A*c*d^2*e))/(30*e^4) + (
B*c^2*x^5)/(3*e))/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^
3*x^3 + 70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1138 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=206

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^6}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{8e^6(d+ex)^8}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{9e^6(d+ex)^9}+\frac{2c\left(-aAe^3+3aB\right.}{7e^6}$$

Rubi [A] time = 0.14, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^6}+\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{7e^6(d+ex)^7}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{8e^6(d+ex)^8}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{9e^6(d+ex)^9}+\frac{c^2(5Bd-Ae)}{5e^6(d+ex)^5}-\frac{Bc^2}{4e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(9*e^6*(d + e*x)^9) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(8*e^6*(d + e*x)^8) + (2*c*(5*B*c*d^3 - 3*A*
c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(7*e^6*(d + e*x)^7) - (c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^6) + (c^2*(5*B*d - A*e))/(5*e^6*(d + e*
x)^5) - (B*c^2)/(4*e^6*(d + e*x)^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{10}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{10}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^9}+\frac{2c\left(-5Bcd\right.}{}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{9e^6(d+ex)^9}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{8e^6(d+ex)^8}+\frac{2c\left(5Bcd^3-3A\right.}{7e}$$

Mathematica [A] time = 0.09, size = 202, normalized size = 0.98

$$-\frac{4Ae\left(70a^2e^4+5ace^2\left(d^2+9dex+36e^2x^2\right)+c^2\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)\right)+5B\left(7a^2e^4(d+9ex)+2ace^2\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)+c^2\left(d^5+9d^4ex+36d^3e^2x^2+84d^2e^3x^3+126de^4x^4+126e^5x^5\right)\right)}{2520e^6(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(4*A*e*(70*a^2*e^4 + 5*a*c*e^2*(d^2 + 9*d*e*x + 36*e^2*x^2) + c^2*(
d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + 5*B*(7*a^
2*e^4*(d + 9*e*x) + 2*a*c*e^2*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3)
 + c^2*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 +
 126*e^5*x^5)))/(e^6*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^10, x]
```

fricas [A] time = 0.39, size = 339, normalized size = 1.65

$$-\frac{630\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 4\,Ac^2d^4e + 10\,Bacd^3e^2 + 20\,Aacd^2e^3 + 35\,Ba^2de^4 + 280\,Aa^2e^5 + 126\left(5\,Bc^2de^4 + 4\,Ac^2e^5\right)x^4 + 84\left(5\,Bc^2d^2e^3 + 4\,Ac^2de^4 + 10\,Bace^5\right)x^3 + 36\left(5\,Bc^2d^3e^2 + 4\,Ac^2d^2e^3 + 10\,Bacde^4 + 20\,Aace^5\right)x^2 + 9\left(5\,Bc^2d^4e + 4\,Ac^2d^3e^2 + 10\,Bacd^2e^3 + 20\,Aacde^4 + 35\,Ba^2e^5\right)x}{2520\left(e^{15}x^9 + 9\,de^{14}x^8 + 36\,d^2e^{13}x^7 + 84\,d^3e^{12}x^6 + 126\,d^4e^{11}x^5 + 126\,d^5e^{10}x^4 + 84\,d^6e^9x^3 + 36\,d^7e^8x^2 + 9\,d^8e^7x + d^9e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 4*A*c^2*d^4*e + 10*B*a*c*d^3*e^2
 + 20*A*a*c*d^2*e^3 + 35*B*a^2*d*e^4 + 280*A*a^2*e^5 + 126*(5*B*c^2*d*e^4 +
 4*A*c^2*e^5)*x^4 + 84*(5*B*c^2*d^2*e^3 + 4*A*c^2*d*e^4 + 10*B*a*c*e^5)*x^3
 + 36*(5*B*c^2*d^3*e^2 + 4*A*c^2*d^2*e^3 + 10*B*a*c*d*e^4 + 20*A*a*c*e^5)*x
^2 + 9*(5*B*c^2*d^4*e + 4*A*c^2*d^3*e^2 + 10*B*a*c*d^2*e^3 + 20*A*a*c*d*e^4
 + 35*B*a^2*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7 + 84*d^3*e^1
2*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 + 36*d^7*e^8*x
^2 + 9*d^8*e^7*x + d^9*e^6)
```

giac [A] time = 0.19, size = 242, normalized size = 1.17

$$-\frac{\left(630\,Bc^2x^5e^5 + 630\,Bc^2dx^4e^4 + 420\,Bc^2d^2x^3e^3 + 180\,Bc^2d^3x^2e^2 + 45\,Bc^2d^4xe + 5\,Bc^2d^5 + 504\,Ac^2x^4e^5 + 336\,Ac^2dx^3e^4 + 144\,Ac^2d^2x^2e^3 + 36\,Ac^2d^3xe^2 + 4\,Ac^2d^4e + 840\,Bacx^3e^5 + 360\,Bacdx^2e^4 + 90\,Bacd^2xe^3 + 10\,Bacd^3e^2 + 720\,Aacx^2e^5 + 180\,Aacdxe^4 + 20\,Aacd^2e^3 + 315\,Ba^2xe^5 + 35\,Ba^2de^4 + 280\,Aa^2e^5\right)e^{(-6)}}{2520\,(xe + d)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(630*B*c^2*x^5*e^5 + 630*B*c^2*d*x^4*e^4 + 420*B*c^2*d^2*x^3*e^3 +
180*B*c^2*d^3*x^2*e^2 + 45*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 504*A*c^2*x^4*e^5
+ 336*A*c^2*d*x^3*e^4 + 144*A*c^2*d^2*x^2*e^3 + 36*A*c^2*d^3*x*e^2 + 4*A*c^
2*d^4*e + 840*B*a*c*x^3*e^5 + 360*B*a*c*d*x^2*e^4 + 90*B*a*c*d^2*x*e^3 + 10
*B*a*c*d^3*e^2 + 720*A*a*c*x^2*e^5 + 180*A*a*c*d*x*e^4 + 20*A*a*c*d^2*e^3 +
 315*B*a^2*x*e^5 + 35*B*a^2*d*e^4 + 280*A*a^2*e^5)*e^(-6)/(x*e + d)^9
```

maple [A] time = 0.05, size = 249, normalized size = 1.21

$$-\frac{Bc^2}{4\,(ex+d)^4\,e^6} - \frac{(Ae-5Bd)\,c^2}{5\,(ex+d)^5\,e^6} + \frac{\left(2Acde - Bae^2 - 5Bcd^2\right)c}{3\,(ex+d)^6\,e^6} - \frac{2\left(aAe^3 + 3Acd^2e - 3aBde^2 - 5Bcd^3\right)c}{7\,(ex+d)^7\,e^6} - \frac{Aa^2e^5 + 2Ad^2ace^3 + Ac^2d^4e - Bda^2e^4 - 2Bd^3ace^2 - Bd^5c^2}{9\,(ex+d)^9\,e^6} - \frac{-4Adace^3 - 4Ac^2d^3e + Ba^2e^4 + 6Bd^2ace^2 + 5Bd^4c^2}{8\,(ex+d)^8\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x)
```

```
[Out] -1/9*(A*a^2*e^5+2*A*a*c*d^2*e^3+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c
^2*d^5)/e^6/(e*x+d)^9-1/4*B*c^2/e^6/(e*x+d)^4-1/8*(-4*A*a*c*d*e^3-4*A*c^2*d
^3*e+B*a^2*e^4+6*B*a*c*d^2*e^2+5*B*c^2*d^4)/e^6/(e*x+d)^8+1/3*c*(2*A*c*d*e-
B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^6-2/7*c*(A*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B
*c*d^3)/e^6/(e*x+d)^7-1/5*c^2*(A*e-5*B*d)/e^6/(e*x+d)^5
```

maxima [A] time = 0.78, size = 339, normalized size = 1.65

$$-\frac{630\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 4\,Ac^2d^4e + 10\,Bacd^3e^2 + 20\,Aacd^2e^3 + 35\,Ba^2de^4 + 280\,Aa^2e^5 + 126\left(5\,Bc^2de^4 + 4\,Ac^2e^5\right)x^4 + 84\left(5\,Bc^2d^2e^3 + 4\,Ac^2de^4 + 10\,Bace^5\right)x^3 + 36\left(5\,Bc^2d^3e^2 + 4\,Ac^2d^2e^3 + 10\,Bacde^4 + 20\,Aace^5\right)x^2 + 9\left(5\,Bc^2d^4e + 4\,Ac^2d^3e^2 + 10\,Bacd^2e^3 + 20\,Aacde^4 + 35\,Ba^2e^5\right)x}{2520\left(e^{15}x^9 + 9\,de^{14}x^8 + 36\,d^2e^{13}x^7 + 84\,d^3e^{12}x^6 + 126\,d^4e^{11}x^5 + 126\,d^5e^{10}x^4 + 84\,d^6e^9x^3 + 36\,d^7e^8x^2 + 9\,d^8e^7x + d^9e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(630*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 4*A*c^2*d^4*e + 10*B*a*c*d^3*e^2
 + 20*A*a*c*d^2*e^3 + 35*B*a^2*d*e^4 + 280*A*a^2*e^5 + 126*(5*B*c^2*d*e^4 +
 4*A*c^2*e^5)*x^4 + 84*(5*B*c^2*d^2*e^3 + 4*A*c^2*d*e^4 + 10*B*a*c*e^5)*x^3
 + 36*(5*B*c^2*d^3*e^2 + 4*A*c^2*d^2*e^3 + 10*B*a*c*d*e^4 + 20*A*a*c*e^5)*x
```

```
^2 + 9*(5*B*c^2*d^4*e + 4*A*c^2*d^3*e^2 + 10*B*a*c*d^2*e^3 + 20*A*a*c*d*e^4
 + 35*B*a^2*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7 + 84*d^3*e^1
2*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 + 36*d^7*e^8*x
^2 + 9*d^8*e^7*x + d^9*e^6)
```

mupad [B] time = 1.76, size = 321, normalized size = 1.56

$$-\frac{\frac{35\,B\,a^2\,d\,e^4+280\,A\,a^2\,e^5+10\,B\,a\,c\,d^3\,e^2+20\,A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+4\,A\,c^2\,d^4\,e}{2520\,e^6}+\frac{x\,\left(35\,B\,a^2\,e^4+10\,B\,a\,c\,d^2\,e^2+20\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+4\,A\,c^2\,d^3\,e\right)}{280\,e^5}+\frac{c\,x^3\,\left(5\,B\,c\,d^2+4\,A\,c\,d\,e+10\,B\,a\,e^2\right)}{30\,e^3}+\frac{c^2\,x^4\,\left(4\,A\,e+5\,B\,d\right)}{20\,e^2}+\frac{c\,x^2\,\left(5\,B\,c\,d^3+4\,A\,c\,d^2\,e+10\,B\,a\,d\,e^2+20\,A\,a\,e^3\right)}{70\,e^4}+\frac{B\,c^2\,x^5}{4\,e}}{d^9+9\,d^8\,e\,x+36\,d^7\,e^2\,x^2+84\,d^6\,e^3\,x^3+126\,d^5\,e^4\,x^4+126\,d^4\,e^5\,x^5+84\,d^3\,e^6\,x^6+36\,d^2\,e^7\,x^7+9\,d\,e^8\,x^8+e^9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^2*e^5 + 5*B*c^2*d^5 + 35*B*a^2*d*e^4 + 4*A*c^2*d^4*e + 20*A*a*c*
d^2*e^3 + 10*B*a*c*d^3*e^2)/(2520*e^6) + (x*(35*B*a^2*e^4 + 5*B*c^2*d^4 + 4
*A*c^2*d^3*e + 20*A*a*c*d*e^3 + 10*B*a*c*d^2*e^2))/(280*e^5) + (c*x^3*(10*B
*a*e^2 + 5*B*c*d^2 + 4*A*c*d*e))/(30*e^3) + (c^2*x^4*(4*A*e + 5*B*d))/(20*e
^2) + (c*x^2*(20*A*a*e^3 + 5*B*c*d^3 + 10*B*a*d*e^2 + 4*A*c*d^2*e))/(70*e^4
) + (B*c^2*x^5)/(4*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 + 36*d^7*e^2*x^2 + 84*d
^6*e^3*x^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d^3*e^6*x^6 + 36*d^2*e^
7*x^7 + 9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1139 $\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^3 \, dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^9\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{9e^8}+\frac{3c^2(d+ex)^{11}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}-\frac{c^2(\cdots}{}$$

Rubi [A] time = 0.60, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^9\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{9e^8}+\frac{3c^2(d+ex)^{11}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}-\frac{c^2(d+ex)^{10}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{10e^8}-\frac{3c(d+ex)^8\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{8e^8}+\frac{(d+ex)^7\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{7e^8}-\frac{(d+ex)^6\left(ae^2+cd^2\right)^3(Bd-Ae)}{6e^8}-\frac{c^3(d+ex)^{12}(7Bd-Ae)}{12e^8}+\frac{Bc^3(d+ex)^{13}}{13e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^6)/(6*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^7)/(7*e^8) - (3*c*(c*d^2 + a*e^2
)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^8)/(8*e^8) -
(c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*
e^4))*(d + e*x)^9)/(9*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
 - 3*a*A*e^3)*(d + e*x)^10)/(10*e^8) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*
e^2)*(d + e*x)^11)/(11*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^12)/(12*e^8) + (
B*c^3*(d + e*x)^13)/(13*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a+cx^2\right)^3\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^5}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aB\cdots\right.}{e^7}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^6}{6e^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)(\cdots}{7e^8}$$

Mathematica [A] time = 0.15, size = 542, normalized size = 1.62

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^5*x + (a^3*d^4*(B*d + 5*A*e)*x^2)/2 + (a^2*d^3*(3*A*c*d^2 + 5*a*B*d
*e + 10*a*A*e^2)*x^3)/3 + (a^2*d^2*(3*B*c*d^3 + 15*A*c*d^2*e + 10*a*B*d*e^2
 + 10*a*A*e^3)*x^4)/4 + (a*d*(5*a*B*d*e*(3*c*d^2 + 2*a*e^2) + A*(3*c^2*d^4
+ 30*a*c*d^2*e^2 + 5*a^2*e^4))*x^5)/5 + (a*(A*e*(15*c^2*d^4 + 30*a*c*d^2*e^
2 + a^2*e^4) + B*(3*c^2*d^5 + 30*a*c*d^3*e^2 + 5*a^2*d*e^4))*x^6)/6 + ((a*B
*e*(15*c^2*d^4 + 30*a*c*d^2*e^2 + a^2*e^4) + A*c*d*(c^2*d^4 + 30*a*c*d^2*e^
2 + 15*a^2*e^4))*x^7)/7 + (c*(A*e*(5*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4)
+ B*(c^2*d^5 + 30*a*c*d^3*e^2 + 15*a^2*d*e^4))*x^8)/8 + (c*e*(5*A*c*d*e*(2*
```

```
c*d^2 + 3*a*e^2) + B*(5*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4))*x^9)/9 + (c^
2*e^2*(10*B*c*d^3 + 10*A*c*d^2*e + 15*a*B*d*e^2 + 3*a*A*e^3)*x^10)/10 + (c^
2*e^3*(10*B*c*d^2 + 5*A*c*d*e + 3*a*B*e^2)*x^11)/11 + (c^3*e^4*(5*B*d + A*e
)*x^12)/12 + (B*c^3*e^5*x^13)/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + c*x^2)^3, x]
```

fricas [B] time = 0.34, size = 658, normalized size = 1.97

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^5*c^3*B + 5/12*x^12*e^4*d*c^3*B + 1/12*x^12*e^5*c^3*A + 10/11*x
^11*e^3*d^2*c^3*B + 3/11*x^11*e^5*c^2*a*B + 5/11*x^11*e^4*d*c^3*A + x^10*e^
2*d^3*c^3*B + 3/2*x^10*e^4*d*c^2*a*B + x^10*e^3*d^2*c^3*A + 3/10*x^10*e^5*c
^2*a*A + 5/9*x^9*e*d^4*c^3*B + 10/3*x^9*e^3*d^2*c^2*a*B + 1/3*x^9*e^5*c*a^2
*B + 10/9*x^9*e^2*d^3*c^3*A + 5/3*x^9*e^4*d*c^2*a*A + 1/8*x^8*d^5*c^3*B + 1
5/4*x^8*e^2*d^3*c^2*a*B + 15/8*x^8*e^4*d*c*a^2*B + 5/8*x^8*e*d^4*c^3*A + 15
/4*x^8*e^3*d^2*c^2*a*A + 3/8*x^8*e^5*c*a^2*A + 15/7*x^7*e*d^4*c^2*a*B + 30/
7*x^7*e^3*d^2*c*a^2*B + 1/7*x^7*e^5*a^3*B + 1/7*x^7*d^5*c^3*A + 30/7*x^7*e^
2*d^3*c^2*a*A + 15/7*x^7*e^4*d*c*a^2*A + 1/2*x^6*d^5*c^2*a*B + 5*x^6*e^2*d^
3*c*a^2*B + 5/6*x^6*e^4*d*a^3*B + 5/2*x^6*e*d^4*c^2*a*A + 5*x^6*e^3*d^2*c*a
^2*A + 1/6*x^6*e^5*a^3*A + 3*x^5*e*d^4*c*a^2*B + 2*x^5*e^3*d^2*a^3*B + 3/5*
x^5*d^5*c^2*a*A + 6*x^5*e^2*d^3*c*a^2*A + x^5*e^4*d*a^3*A + 3/4*x^4*d^5*c*a
^2*B + 5/2*x^4*e^2*d^3*a^3*B + 15/4*x^4*e*d^4*c*a^2*A + 5/2*x^4*e^3*d^2*a^3
*A + 5/3*x^3*e*d^4*a^3*B + x^3*d^5*c*a^2*A + 10/3*x^3*e^2*d^3*a^3*A + 1/2*x
^2*d^5*a^3*B + 5/2*x^2*e*d^4*a^3*A + x*d^5*a^3*A
```

giac [A] time = 0.19, size = 634, normalized size = 1.90

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/13*B*c^3*x^13*e^5 + 5/12*B*c^3*d*x^12*e^4 + 10/11*B*c^3*d^2*x^11*e^3 + B*
c^3*d^3*x^10*e^2 + 5/9*B*c^3*d^4*x^9*e + 1/8*B*c^3*d^5*x^8 + 1/12*A*c^3*x^1
2*e^5 + 5/11*A*c^3*d*x^11*e^4 + A*c^3*d^2*x^10*e^3 + 10/9*A*c^3*d^3*x^9*e^2
 + 5/8*A*c^3*d^4*x^8*e + 1/7*A*c^3*d^5*x^7 + 3/11*B*a*c^2*x^11*e^5 + 3/2*B*
a*c^2*d*x^10*e^4 + 10/3*B*a*c^2*d^2*x^9*e^3 + 15/4*B*a*c^2*d^3*x^8*e^2 + 15
/7*B*a*c^2*d^4*x^7*e + 1/2*B*a*c^2*d^5*x^6 + 3/10*A*a*c^2*x^10*e^5 + 5/3*A*
a*c^2*d*x^9*e^4 + 15/4*A*a*c^2*d^2*x^8*e^3 + 30/7*A*a*c^2*d^3*x^7*e^2 + 5/2
*A*a*c^2*d^4*x^6*e + 3/5*A*a*c^2*d^5*x^5 + 1/3*B*a^2*c*x^9*e^5 + 15/8*B*a^2
*c*d*x^8*e^4 + 30/7*B*a^2*c*d^2*x^7*e^3 + 5*B*a^2*c*d^3*x^6*e^2 + 3*B*a^2*c
*d^4*x^5*e + 3/4*B*a^2*c*d^5*x^4 + 3/8*A*a^2*c*x^8*e^5 + 15/7*A*a^2*c*d*x^7
*e^4 + 5*A*a^2*c*d^2*x^6*e^3 + 6*A*a^2*c*d^3*x^5*e^2 + 15/4*A*a^2*c*d^4*x^4
*e + A*a^2*c*d^5*x^3 + 1/7*B*a^3*x^7*e^5 + 5/6*B*a^3*d*x^6*e^4 + 2*B*a^3*d^
2*x^5*e^3 + 5/2*B*a^3*d^3*x^4*e^2 + 5/3*B*a^3*d^4*x^3*e + 1/2*B*a^3*d^5*x^2
 + 1/6*A*a^3*x^6*e^5 + A*a^3*d*x^5*e^4 + 5/2*A*a^3*d^2*x^4*e^3 + 10/3*A*a^3
*d^3*x^3*e^2 + 5/2*A*a^3*d^4*x^2*e + A*a^3*d^5*x
```

maple [A] time = 0.05, size = 557, normalized size = 1.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x)
```

```
[Out] 1/13*B*e^5*c^3*x^13+1/12*(A*e^5+5*B*d*e^4)*c^3*x^12+1/11*((5*A*d*e^4+10*B*d
^2*e^3)*c^3+3*B*e^5*a*c^2)*x^11+1/10*((10*A*d^2*e^3+10*B*d^3*e^2)*c^3+3*(A*
e^5+5*B*d*e^4)*a*c^2)*x^10+1/9*((10*A*d^3*e^2+5*B*d^4*e)*c^3+3*(5*A*d*e^4+1
0*B*d^2*e^3)*a*c^2+3*B*e^5*a^2*c)*x^9+1/8*((5*A*d^4*e+B*d^5)*c^3+3*(10*A*d^
2*e^3+10*B*d^3*e^2)*a*c^2+3*(A*e^5+5*B*d*e^4)*a^2*c)*x^8+1/7*(A*d^5*c^3+3*(
10*A*d^3*e^2+5*B*d^4*e)*a*c^2+3*(5*A*d*e^4+10*B*d^2*e^3)*a^2*c+B*e^5*a^3)*x
^7+1/6*(3*(5*A*d^4*e+B*d^5)*a*c^2+3*(10*A*d^2*e^3+10*B*d^3*e^2)*a^2*c+(A*e^
5+5*B*d*e^4)*a^3)*x^6+1/5*(3*A*d^5*a*c^2+3*(10*A*d^3*e^2+5*B*d^4*e)*a^2*c+(
5*A*d*e^4+10*B*d^2*e^3)*a^3)*x^5+1/4*(3*(5*A*d^4*e+B*d^5)*a^2*c+(10*A*d^2*e
^3+10*B*d^3*e^2)*a^3)*x^4+1/3*(3*A*d^5*a^2*c+(10*A*d^3*e^2+5*B*d^4*e)*a^3)*
x^3+1/2*(5*A*d^4*e+B*d^5)*a^3*x^2+A*d^5*a^3*x
```

maxima [A] time = 0.66, size = 584, normalized size = 1.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^3*e^5*x^13 + 1/12*(5*B*c^3*d*e^4 + A*c^3*e^5)*x^12 + 1/11*(10*B*c^
3*d^2*e^3 + 5*A*c^3*d*e^4 + 3*B*a*c^2*e^5)*x^11 + 1/10*(10*B*c^3*d^3*e^2 +
10*A*c^3*d^2*e^3 + 15*B*a*c^2*d*e^4 + 3*A*a*c^2*e^5)*x^10 + A*a^3*d^5*x + 1
/9*(5*B*c^3*d^4*e + 10*A*c^3*d^3*e^2 + 30*B*a*c^2*d^2*e^3 + 15*A*a*c^2*d*e^
4 + 3*B*a^2*c*e^5)*x^9 + 1/8*(B*c^3*d^5 + 5*A*c^3*d^4*e + 30*B*a*c^2*d^3*e^
2 + 30*A*a*c^2*d^2*e^3 + 15*B*a^2*c*d*e^4 + 3*A*a^2*c*e^5)*x^8 + 1/7*(A*c^3
*d^5 + 15*B*a*c^2*d^4*e + 30*A*a*c^2*d^3*e^2 + 30*B*a^2*c*d^2*e^3 + 15*A*a^
2*c*d*e^4 + B*a^3*e^5)*x^7 + 1/6*(3*B*a*c^2*d^5 + 15*A*a*c^2*d^4*e + 30*B*a
^2*c*d^3*e^2 + 30*A*a^2*c*d^2*e^3 + 5*B*a^3*d*e^4 + A*a^3*e^5)*x^6 + 1/5*(3
*A*a*c^2*d^5 + 15*B*a^2*c*d^4*e + 30*A*a^2*c*d^3*e^2 + 10*B*a^3*d^2*e^3 + 5
*A*a^3*d*e^4)*x^5 + 1/4*(3*B*a^2*c*d^5 + 15*A*a^2*c*d^4*e + 10*B*a^3*d^3*e^
2 + 10*A*a^3*d^2*e^3)*x^4 + 1/3*(3*A*a^2*c*d^5 + 5*B*a^3*d^4*e + 10*A*a^3*d
^3*e^2)*x^3 + 1/2*(B*a^3*d^5 + 5*A*a^3*d^4*e)*x^2
```

mupad [B] time = 1.86, size = 542, normalized size = 1.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^5,x)
```

```
[Out] x^6*((A*a^3*e^5)/6 + (B*a*c^2*d^5)/2 + (5*B*a^3*d*e^4)/6 + 5*A*a^2*c*d^2*e^
3 + 5*B*a^2*c*d^3*e^2 + (5*A*a*c^2*d^4*e)/2) + x^7*((A*c^3*d^5)/7 + (B*a^3*
e^5)/7 + (30*A*a*c^2*d^3*e^2)/7 + (30*B*a^2*c*d^2*e^3)/7 + (15*A*a^2*c*d*e^
4)/7 + (15*B*a*c^2*d^4*e)/7) + x^8*((B*c^3*d^5)/8 + (3*A*a^2*c*e^5)/8 + (5*
A*c^3*d^4*e)/8 + (15*A*a*c^2*d^2*e^3)/4 + (15*B*a*c^2*d^3*e^2)/4 + (15*B*a^
2*c*d*e^4)/8) + x^5*((3*A*a*c^2*d^5)/5 + A*a^3*d*e^4 + 2*B*a^3*d^2*e^3 + 6*
A*a^2*c*d^3*e^2 + 3*B*a^2*c*d^4*e) + x^9*((B*a^2*c*e^5)/3 + (5*B*c^3*d^4*e)
/9 + (10*A*c^3*d^3*e^2)/9 + (10*B*a*c^2*d^2*e^3)/3 + (5*A*a*c^2*d*e^4)/3) +
 (c^2*e^2*x^10*(3*A*a*e^3 + 10*B*c*d^3 + 15*B*a*d*e^2 + 10*A*c*d^2*e))/10 +
 (a^3*d^4*x^2*(5*A*e + B*d))/2 + (c^3*e^4*x^12*(A*e + 5*B*d))/12 + (a^2*d^3
*x^3*(10*A*a*e^2 + 3*A*c*d^2 + 5*B*a*d*e))/3 + (c^2*e^3*x^11*(3*B*a*e^2 + 1
```

```
0*B*c*d^2 + 5*A*c*d*e))/11 + A*a^3*d^5*x + (a^2*d^2*x^4*(10*A*a*e^3 + 3*B*c
*d^3 + 10*B*a*d*e^2 + 15*A*c*d^2*e))/4 + (B*c^3*e^5*x^13)/13
```

sympy [B] time = 0.16, size = 694, normalized size = 2.08

$$Aa^3d^5x + \frac{Bc^3e^5x^{13}}{13} + x^{12}\left(\frac{Ac^3e^5}{12} + \frac{5Bc^3de^4}{12}\right) + x^{11}\left(\frac{5Ac^3de^4}{11} + \frac{3Bac^2e^5}{11} + \frac{10Bc^3d^2e^3}{11}\right) + x^{10}\left(\frac{3Aac^2e^5}{10} + Ac^3d^2e^3 + \frac{3Bac^2de^4}{2} + Bc^3d^3e^2\right) + x^9\left(\frac{5Aac^2de^4}{3} + \frac{10Ac^3d^3e^2}{9} + \frac{Ba^2ce^5}{3} + \frac{10Bac^2d^2e^3}{3} + \frac{5Bc^3d^4e}{9}\right) + x^8\left(\frac{3Aa^2ce^5}{8} + \frac{15Aac^2d^2e^3}{4} + \frac{5Ac^3d^4e}{8} + \frac{15Ba^2cde^4}{8} + \frac{15Bac^2d^3e^2}{4} + \frac{Bc^3d^5}{8}\right) + x^7\left(\frac{15Aa^2cde^4}{7} + \frac{30Aac^2d^3e^2}{7} + \frac{Ac^3d^5}{7} + \frac{Ba^3e^5}{7} + \frac{30Ba^2cd^2e^3}{7} + \frac{15Bac^2d^4e}{7}\right) + x^6\left(\frac{Aa^3e^5}{6} + 5Aa^2cd^2e^3 + \frac{5Aac^2d^4e}{2} + \frac{5Ba^3de^4}{6} + 5Ba^2cd^3e^2 + \frac{Bac^2d^5}{2}\right) + x^5\left(Aa^3de^4 + 6Aa^2cd^3e^2 + \frac{3Aac^2d^5}{5} + 2Ba^3d^2e^3 + 3Ba^2cd^4e\right) + x^4\left(\frac{5Aa^3d^2e^3}{2} + \frac{15Aa^2cd^4e}{4} + \frac{5Ba^3d^3e^2}{2} + \frac{3Ba^2cd^5}{4}\right) + x^3\left(\frac{10Aa^3d^3e^2}{3} + Aa^2cd^5 + \frac{5Ba^3d^4e}{3}\right) + x^2\left(\frac{5Aa^3d^4e}{2} + \frac{Ba^3d^5}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**5*x + B*c**3*e**5*x**13/13 + x**12*(A*c**3*e**5/12 + 5*B*c**3*d*e
**4/12) + x**11*(5*A*c**3*d*e**4/11 + 3*B*a*c**2*e**5/11 + 10*B*c**3*d**2*e
**3/11) + x**10*(3*A*a*c**2*e**5/10 + A*c**3*d**2*e**3 + 3*B*a*c**2*d*e**4/
2 + B*c**3*d**3*e**2) + x**9*(5*A*a*c**2*d*e**4/3 + 10*A*c**3*d**3*e**2/9 +
 B*a**2*c*e**5/3 + 10*B*a*c**2*d**2*e**3/3 + 5*B*c**3*d**4*e/9) + x**8*(3*A
*a**2*c*e**5/8 + 15*A*a*c**2*d**2*e**3/4 + 5*A*c**3*d**4*e/8 + 15*B*a**2*c*
d*e**4/8 + 15*B*a*c**2*d**3*e**2/4 + B*c**3*d**5/8) + x**7*(15*A*a**2*c*d*e
**4/7 + 30*A*a*c**2*d**3*e**2/7 + A*c**3*d**5/7 + B*a**3*e**5/7 + 30*B*a**2
*c*d**2*e**3/7 + 15*B*a*c**2*d**4*e/7) + x**6*(A*a**3*e**5/6 + 5*A*a**2*c*d
**2*e**3 + 5*A*a*c**2*d**4*e/2 + 5*B*a**3*d*e**4/6 + 5*B*a**2*c*d**3*e**2 +
 B*a*c**2*d**5/2) + x**5*(A*a**3*d*e**4 + 6*A*a**2*c*d**3*e**2 + 3*A*a*c**2
*d**5/5 + 2*B*a**3*d**2*e**3 + 3*B*a**2*c*d**4*e) + x**4*(5*A*a**3*d**2*e**
3/2 + 15*A*a**2*c*d**4*e/4 + 5*B*a**3*d**3*e**2/2 + 3*B*a**2*c*d**5/4) + x*
*3*(10*A*a**3*d**3*e**2/3 + A*a**2*c*d**5 + 5*B*a**3*d**4*e/3) + x**2*(5*A*
a**3*d**4*e/2 + B*a**3*d**5/2)
```

3.1140 $\int (A + Bx)(d + ex)^4 \left(a + cx^2\right)^3 dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^8 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{8e^8}+\frac{3c^2(d+ex)^{10}\left(aBe^2-2Acde+7Bcd^2\right)}{10e^8}-\frac{c^2(}{}$$

Rubi [A] time = 0.45, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^8\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{8e^8}+\frac{3c^2(d+ex)^{10}\left(aBe^2-2Acde+7Bcd^2\right)}{10e^8}-\frac{c^2(d+ex)^9\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{9e^8}-\frac{3c(d+ex)^7\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{7e^8}+\frac{(d+ex)^6\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{6e^8}-\frac{(d+ex)^5\left(ae^2+cd^2\right)^3(Bd-Ae)}{5e^8}-\frac{c^3(d+ex)^{11}(7Bd-Ae)}{11e^8}+\frac{Bc^3(d+ex)^{12}}{12e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^5)/(5*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^6)/(6*e^8) - (3*c*(c*d^2 + a*e^2
)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^7)/(7*e^8) -
(c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*
e^4))*(d + e*x)^8)/(8*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
 - 3*a*A*e^3)*(d + e*x)^9)/(9*e^8) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^
2)*(d + e*x)^10)/(10*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^11)/(11*e^8) + (B*
c^3*(d + e*x)^12)/(12*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4\left(a+cx^2\right)^3 dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^4}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aB\right.}{e^7}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^5}{5e^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)(}{6e^8}$$

Mathematica [A] time = 0.12, size = 436, normalized size = 1.31

$$\frac{1}{2}a^3d^3x^2(4Ae+Bd)+a^3Ad^4x+\frac{1}{8}cx^8\left(B\left(3a^2e^4+18acd^2e^2+c^2d^4\right)+4Acde\left(3ae^2+cd^2\right)\right)+\frac{1}{7}cx^7\left(A\left(3a^2e^4+18acd^2e^2+c^2d^4\right)+12aBde\left(ae^2+cd^2\right)\right)+\frac{1}{6}ax^6\left(B\left(a^2e^4+18acd^2e^2+3c^2d^4\right)+12Acde\left(ae^2+cd^2\right)\right)+\frac{1}{5}ax^5\left(A\left(a^2e^4+18acd^2e^2+3c^2d^4\right)+4aBde\left(ae^2+3cd^2\right)\right)+\frac{1}{3}a^2d^2x^3\left(6aAe^2+4aBde+3Acd^2\right)+\frac{1}{4}a^2dx^4\left(4aAe^3+6aBde^2+12Acd^2e+3Bcd^3\right)+\frac{1}{10}c^2e^2x^{10}\left(3aBe^2+4Acde+6Bcd^2\right)+\frac{1}{9}c^2ex^9\left(3aAe^3+12aBde^2+6Acd^2e+4Bcd^3\right)+\frac{1}{11}c^3e^3x^{11}(Ae+4Bd)+\frac{1}{12}Bc^3e^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^4*x + (a^3*d^3*(B*d + 4*A*e)*x^2)/2 + (a^2*d^2*(3*A*c*d^2 + 4*a*B*d
*e + 6*a*A*e^2)*x^3)/3 + (a^2*d*(3*B*c*d^3 + 12*A*c*d^2*e + 6*a*B*d*e^2 + 4
*a*A*e^3)*x^4)/4 + (a*(4*a*B*d*e*(3*c*d^2 + a*e^2) + A*(3*c^2*d^4 + 18*a*c*
d^2*e^2 + a^2*e^4))*x^5)/5 + (a*(12*A*c*d*e*(c*d^2 + a*e^2) + B*(3*c^2*d^4
+ 18*a*c*d^2*e^2 + a^2*e^4))*x^6)/6 + (c*(12*a*B*d*e*(c*d^2 + a*e^2) + A*(c
^2*d^4 + 18*a*c*d^2*e^2 + 3*a^2*e^4))*x^7)/7 + (c*(4*A*c*d*e*(c*d^2 + 3*a*e
^2) + B*(c^2*d^4 + 18*a*c*d^2*e^2 + 3*a^2*e^4))*x^8)/8 + (c^2*e*(4*B*c*d^3
+ 6*A*c*d^2*e + 12*a*B*d*e^2 + 3*a*A*e^3)*x^9)/9 + (c^2*e^2*(6*B*c*d^2 + 4*
```

```
A*c*d*e + 3*a*B*e^2)*x^10)/10 + (c^3*e^3*(4*B*d + A*e)*x^11)/11 + (B*c^3*e^
4*x^12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + c*x^2)^3, x]
```

fricas [A] time = 0.36, size = 536, normalized size = 1.60

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*c^3*B + 4/11*x^11*e^3*d*c^3*B + 1/11*x^11*e^4*c^3*A + 3/5*x^1
0*e^2*d^2*c^3*B + 3/10*x^10*e^4*c^2*a*B + 2/5*x^10*e^3*d*c^3*A + 4/9*x^9*e*
d^3*c^3*B + 4/3*x^9*e^3*d*c^2*a*B + 2/3*x^9*e^2*d^2*c^3*A + 1/3*x^9*e^4*c^2
*a*A + 1/8*x^8*d^4*c^3*B + 9/4*x^8*e^2*d^2*c^2*a*B + 3/8*x^8*e^4*c*a^2*B +
1/2*x^8*e*d^3*c^3*A + 3/2*x^8*e^3*d*c^2*a*A + 12/7*x^7*e*d^3*c^2*a*B + 12/7
*x^7*e^3*d*c*a^2*B + 1/7*x^7*d^4*c^3*A + 18/7*x^7*e^2*d^2*c^2*a*A + 3/7*x^7
*e^4*c*a^2*A + 1/2*x^6*d^4*c^2*a*B + 3*x^6*e^2*d^2*c*a^2*B + 1/6*x^6*e^4*a^
3*B + 2*x^6*e*d^3*c^2*a*A + 2*x^6*e^3*d*c*a^2*A + 12/5*x^5*e*d^3*c*a^2*B +
4/5*x^5*e^3*d*a^3*B + 3/5*x^5*d^4*c^2*a*A + 18/5*x^5*e^2*d^2*c*a^2*A + 1/5*
x^5*e^4*a^3*A + 3/4*x^4*d^4*c*a^2*B + 3/2*x^4*e^2*d^2*a^3*B + 3*x^4*e*d^3*c
*a^2*A + x^4*e^3*d*a^3*A + 4/3*x^3*e*d^3*a^3*B + x^3*d^4*c*a^2*A + 2*x^3*e^
2*d^2*a^3*A + 1/2*x^2*d^4*a^3*B + 2*x^2*e*d^3*a^3*A + x*d^4*a^3*A
```

giac [A] time = 0.21, size = 520, normalized size = 1.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12*e^4 + 4/11*B*c^3*d*x^11*e^3 + 3/5*B*c^3*d^2*x^10*e^2 + 4/9*
B*c^3*d^3*x^9*e + 1/8*B*c^3*d^4*x^8 + 1/11*A*c^3*x^11*e^4 + 2/5*A*c^3*d*x^1
0*e^3 + 2/3*A*c^3*d^2*x^9*e^2 + 1/2*A*c^3*d^3*x^8*e + 1/7*A*c^3*d^4*x^7 + 3
/10*B*a*c^2*x^10*e^4 + 4/3*B*a*c^2*d*x^9*e^3 + 9/4*B*a*c^2*d^2*x^8*e^2 + 12
/7*B*a*c^2*d^3*x^7*e + 1/2*B*a*c^2*d^4*x^6 + 1/3*A*a*c^2*x^9*e^4 + 3/2*A*a*
c^2*d*x^8*e^3 + 18/7*A*a*c^2*d^2*x^7*e^2 + 2*A*a*c^2*d^3*x^6*e + 3/5*A*a*c^
2*d^4*x^5 + 3/8*B*a^2*c*x^8*e^4 + 12/7*B*a^2*c*d*x^7*e^3 + 3*B*a^2*c*d^2*x^
6*e^2 + 12/5*B*a^2*c*d^3*x^5*e + 3/4*B*a^2*c*d^4*x^4 + 3/7*A*a^2*c*x^7*e^4
+ 2*A*a^2*c*d*x^6*e^3 + 18/5*A*a^2*c*d^2*x^5*e^2 + 3*A*a^2*c*d^3*x^4*e + A*
a^2*c*d^4*x^3 + 1/6*B*a^3*x^6*e^4 + 4/5*B*a^3*d*x^5*e^3 + 3/2*B*a^3*d^2*x^4
*e^2 + 4/3*B*a^3*d^3*x^3*e + 1/2*B*a^3*d^4*x^2 + 1/5*A*a^3*x^5*e^4 + A*a^3*
d*x^4*e^3 + 2*A*a^3*d^2*x^3*e^2 + 2*A*a^3*d^3*x^2*e + A*a^3*d^4*x
```

maple [A] time = 0.05, size = 455, normalized size = 1.36

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x)
```

```
[Out] 1/12*B*c^3*e^4*x^12+1/11*(A*e^4+4*B*d*e^3)*c^3*x^11+1/10*((4*A*d*e^3+6*B*d^
2*e^2)*c^3+3*B*e^4*a*c^2)*x^10+1/9*((6*A*d^2*e^2+4*B*d^3*e)*c^3+3*(A*e^4+4*
B*d*e^3)*a*c^2)*x^9+1/8*((4*A*d^3*e+B*d^4)*c^3+3*(4*A*d*e^3+6*B*d^2*e^2)*a*
c^2+3*B*e^4*a^2*c)*x^8+1/7*(A*d^4*c^3+3*(6*A*d^2*e^2+4*B*d^3*e)*a*c^2+3*(A*
e^4+4*B*d*e^3)*a^2*c)*x^7+1/6*(3*(4*A*d^3*e+B*d^4)*a*c^2+3*(4*A*d*e^3+6*B*d
^2*e^2)*a^2*c+B*e^4*a^3)*x^6+1/5*(3*A*d^4*a*c^2+3*(6*A*d^2*e^2+4*B*d^3*e)*a
^2*c+(A*e^4+4*B*d*e^3)*a^3)*x^5+1/4*(3*(4*A*d^3*e+B*d^4)*a^2*c+(4*A*d*e^3+6
*B*d^2*e^2)*a^3)*x^4+1/3*(3*A*d^4*a^2*c+(6*A*d^2*e^2+4*B*d^3*e)*a^3)*x^3+1/
2*(4*A*d^3*e+B*d^4)*a^3*x^2+A*d^4*a^3*x
```

maxima [A] time = 0.63, size = 478, normalized size = 1.43

$$\frac{1}{12} B c^3 e^4 x^{12} + \frac{1}{11} \left(4 B c^3 d e^3 + A c^3 e^4\right) x^{11} + \frac{1}{10} \left(6 B c^3 d^2 e^2 + 4 A c^3 d e^3 + 3 B a c^2 e^4\right) x^{10} + \frac{1}{9} \left(4 B c^3 d^3 e + 6 A c^3 d^2 e^2 + 12 B a c^2 d e^3 + 3 A a c^2 e^4\right) x^9 + A a^3 d^4 x + \frac{1}{8} \left(B c^3 d^4 + 4 A c^3 d^3 e + 18 B a c^2 d^2 e^2 + 12 A a c^2 d e^3 + 3 B a^2 c e^4\right) x^8 + \frac{1}{7} \left(A c^3 d^4 + 12 B a c^2 d^3 e + 18 A a c^2 d^2 e^2 + 12 B a^2 c d e^3 + 3 A a^2 c e^4\right) x^7 + \frac{1}{6} \left(3 B a c^2 d^4 + 12 A a c^2 d^3 e + 18 B a^2 c d^2 e^2 + 12 A a^2 c d e^3 + B a^3 e^4\right) x^6 + \frac{1}{5} \left(3 A a c^2 d^4 + 12 B a^2 c d^3 e + 18 A a^2 c d^2 e^2 + 4 B a^3 d e^3 + A a^3 e^4\right) x^5 + \frac{1}{4} \left(3 B a^2 c d^4 + 12 A a^2 c d^3 e + 6 B a^3 d^2 e^2 + 4 A a^3 d e^3\right) x^4 + \frac{1}{3} \left(3 A a^2 c d^4 + 4 B a^3 d^3 e + 6 A a^3 d^2 e^2\right) x^3 + \frac{1}{2} \left(B a^3 d^4 + 4 A a^3 d^3 e\right) x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*e^4*x^12 + 1/11*(4*B*c^3*d*e^3 + A*c^3*e^4)*x^11 + 1/10*(6*B*c^3
*d^2*e^2 + 4*A*c^3*d*e^3 + 3*B*a*c^2*e^4)*x^10 + 1/9*(4*B*c^3*d^3*e + 6*A*c
^3*d^2*e^2 + 12*B*a*c^2*d*e^3 + 3*A*a*c^2*e^4)*x^9 + A*a^3*d^4*x + 1/8*(B*c
^3*d^4 + 4*A*c^3*d^3*e + 18*B*a*c^2*d^2*e^2 + 12*A*a*c^2*d*e^3 + 3*B*a^2*c*
e^4)*x^8 + 1/7*(A*c^3*d^4 + 12*B*a*c^2*d^3*e + 18*A*a*c^2*d^2*e^2 + 12*B*a^
2*c*d*e^3 + 3*A*a^2*c*e^4)*x^7 + 1/6*(3*B*a*c^2*d^4 + 12*A*a*c^2*d^3*e + 18
*B*a^2*c*d^2*e^2 + 12*A*a^2*c*d*e^3 + B*a^3*e^4)*x^6 + 1/5*(3*A*a*c^2*d^4 +
 12*B*a^2*c*d^3*e + 18*A*a^2*c*d^2*e^2 + 4*B*a^3*d*e^3 + A*a^3*e^4)*x^5 + 1
/4*(3*B*a^2*c*d^4 + 12*A*a^2*c*d^3*e + 6*B*a^3*d^2*e^2 + 4*A*a^3*d*e^3)*x^4
 + 1/3*(3*A*a^2*c*d^4 + 4*B*a^3*d^3*e + 6*A*a^3*d^2*e^2)*x^3 + 1/2*(B*a^3*d
^4 + 4*A*a^3*d^3*e)*x^2
```

mupad [B] time = 0.19, size = 438, normalized size = 1.31

$$x^5 \left(\frac{4 B a^3 d e^3}{5} + \frac{A a^3 e^4}{5} + \frac{12 B a^2 c d^3 e}{5} + \frac{18 A a^2 c d^2 e^2}{5} + \frac{3 A a c^2 d^4}{5}\right) + x^8 \left(\frac{3 B a^2 c e^4}{8} + \frac{9 B a c^2 d^2 e^2}{4} + \frac{3 A a c^2 d e^3}{2} + \frac{B c^3 d^4}{8} + \frac{A c^3 d^3 e}{2}\right) + x^6 \left(\frac{B a^3 e^4}{6} + 3 B a^2 c d^2 e^2 + 2 A a^2 c d e^3 + \frac{B a c^2 d^4}{2} + 2 A a c^2 d^3 e\right) + x^7 \left(\frac{12 B a^2 c d e^3}{7} + \frac{3 A a^2 c e^4}{7} + \frac{12 B a c^2 d^3 e}{7} + \frac{18 A a c^2 d^2 e^2}{7} + \frac{A c^3 d^4}{7}\right) + \frac{a^3 d^3 x^2 (4 A e + B d)}{2} + \frac{c^3 e^3 x^{11} (A e + 4 B d)}{11} + \frac{a^2 d^2 x^3 \left(3 A c d^2 + 4 B a d e + 6 A a e^2\right)}{3} + \frac{c^2 e^2 x^{10} \left(6 B c d^2 + 4 A c d e + 3 B a e^2\right)}{10} + A a^3 d^4 x + \frac{a^2 d x^4 \left(3 B c d^3 + 12 A c d^2 e + 6 B a d e^2 + 4 A a e^3\right)}{4} + \frac{c^2 e x^9 \left(4 B c d^3 + 6 A c d^2 e + 12 B a d e^2 + 3 A a e^3\right)}{9} + \frac{B c^3 e^4 x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^5*((A*a^3*e^4)/5 + (3*A*a*c^2*d^4)/5 + (4*B*a^3*d*e^3)/5 + (18*A*a^2*c*d^
2*e^2)/5 + (12*B*a^2*c*d^3*e)/5) + x^8*((B*c^3*d^4)/8 + (3*B*a^2*c*e^4)/8 +
 (A*c^3*d^3*e)/2 + (9*B*a*c^2*d^2*e^2)/4 + (3*A*a*c^2*d*e^3)/2) + x^6*((B*a
^3*e^4)/6 + (B*a*c^2*d^4)/2 + 3*B*a^2*c*d^2*e^2 + 2*A*a*c^2*d^3*e + 2*A*a^2
*c*d*e^3) + x^7*((A*c^3*d^4)/7 + (3*A*a^2*c*e^4)/7 + (18*A*a*c^2*d^2*e^2)/7
 + (12*B*a*c^2*d^3*e)/7 + (12*B*a^2*c*d*e^3)/7) + (a^3*d^3*x^2*(4*A*e + B*d
))/2 + (c^3*e^3*x^11*(A*e + 4*B*d))/11 + (a^2*d^2*x^3*(6*A*a*e^2 + 3*A*c*d^
2 + 4*B*a*d*e))/3 + (c^2*e^2*x^10*(3*B*a*e^2 + 6*B*c*d^2 + 4*A*c*d*e))/10 +
 A*a^3*d^4*x + (a^2*d*x^4*(4*A*a*e^3 + 3*B*c*d^3 + 6*B*a*d*e^2 + 12*A*c*d^2
*e))/4 + (c^2*e*x^9*(3*A*a*e^3 + 4*B*c*d^3 + 12*B*a*d*e^2 + 6*A*c*d^2*e))/9
 + (B*c^3*e^4*x^12)/12
```

sympy [A] time = 0.15, size = 564, normalized size = 1.69

$$A a^3 d^4 x + \frac{B c^3 e^4 x^{12}}{12} + x^{11} \left(\frac{A c^3 e^4}{11} + \frac{4 B c^3 d e^3}{11}\right) + x^{10} \left(\frac{2 A c^3 d e^3}{5} + \frac{3 B a c^2 e^4}{10} + \frac{3 B c^3 d^2 e^2}{5}\right) + x^9 \left(\frac{A a c^2 e^4}{3} + \frac{2 A c^3 d^2 e^2}{3} + \frac{4 B a c^2 d e^3}{3} + \frac{4 B c^3 d^3 e}{9}\right) + x^8 \left(\frac{3 A a c^2 d e^3}{2} + \frac{A c^3 d^3 e}{2} + \frac{3 B a^2 c e^4}{8} + \frac{9 B a c^2 d^2 e^2}{4} + \frac{B c^3 d^4}{8}\right) + x^7 \left(\frac{3 A a^2 c e^4}{7} + \frac{18 A a c^2 d^2 e^2}{7} + \frac{A c^3 d^4}{7} + \frac{12 B a^2 c d e^3}{7} + \frac{12 B a c^2 d^3 e}{7}\right) + x^6 \left(2 A a^2 c d e^3 + 2 A a c^2 d^3 e + \frac{B a^3 e^4}{6} + 3 B a^2 c d^2 e^2 + \frac{B a c^2 d^4}{2}\right) + x^5 \left(\frac{A a^3 e^4}{5} + \frac{18 A a^2 c d^2 e^2}{5} + \frac{3 A a c^2 d^4}{5} + \frac{4 B a^3 d e^3}{5} + \frac{12 B a^2 c d^3 e}{5}\right) + x^4 \left(A a^3 d e^3 + 3 A a^2 c d^3 e + \frac{3 B a^3 d^2 e^2}{2} + \frac{3 B a^2 c d^4}{4}\right) + x^3 \left(2 A a^3 d^2 e^2 + A a^2 c d^4 + \frac{4 B a^3 d^3 e}{3}\right) + x^2 \left(2 A a^3 d^3 e + \frac{B a^3 d^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**4*x + B*c**3*e**4*x**12/12 + x**11*(A*c**3*e**4/11 + 4*B*c**3*d*e
**3/11) + x**10*(2*A*c**3*d*e**3/5 + 3*B*a*c**2*e**4/10 + 3*B*c**3*d**2*e**
2/5) + x**9*(A*a*c**2*e**4/3 + 2*A*c**3*d**2*e**2/3 + 4*B*a*c**2*d*e**3/3 +
 4*B*c**3*d**3*e/9) + x**8*(3*A*a*c**2*d*e**3/2 + A*c**3*d**3*e/2 + 3*B*a**
```

```
2*c*e**4/8 + 9*B*a*c**2*d**2*e**2/4 + B*c**3*d**4/8) + x**7*(3*A*a**2*c*e**
4/7 + 18*A*a*c**2*d**2*e**2/7 + A*c**3*d**4/7 + 12*B*a**2*c*d*e**3/7 + 12*B
*a*c**2*d**3*e/7) + x**6*(2*A*a**2*c*d*e**3 + 2*A*a*c**2*d**3*e + B*a**3*e*
*4/6 + 3*B*a**2*c*d**2*e**2 + B*a*c**2*d**4/2) + x**5*(A*a**3*e**4/5 + 18*A
*a**2*c*d**2*e**2/5 + 3*A*a*c**2*d**4/5 + 4*B*a**3*d*e**3/5 + 12*B*a**2*c*d
**3*e/5) + x**4*(A*a**3*d*e**3 + 3*A*a**2*c*d**3*e + 3*B*a**3*d**2*e**2/2 +
 3*B*a**2*c*d**4/4) + x**3*(2*A*a**3*d**2*e**2 + A*a**2*c*d**4 + 4*B*a**3*d
**3*e/3) + x**2*(2*A*a**3*d**3*e + B*a**3*d**4/2)
```

3.1141 $\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^3 \, dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^7 \left(4Acde \left(3ae^2+5cd^2\right)-B \left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{c^2(d+ex)^9 \left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-\frac{c^2(d$$

Rubi [A] time = 0.37, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{c(d+ex)^7 \left(4Acde \left(3ae^2+5cd^2\right)-B \left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{c^2(d+ex)^9 \left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-\frac{c^2(d+ex)^8 \left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{8e^8}-\frac{c(d+ex)^6 \left(ae^2+cd^2\right) \left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{2e^8}+\frac{(d+ex)^5 \left(ae^2+cd^2\right)^2 \left(aBe^2-6Acde+7Bcd^2\right)}{5e^8}-\frac{(d+ex)^4 \left(ae^2+cd^2\right)^3 (Bd-Ae)}{4e^8}-\frac{c^3(d+ex)^{10}(7Bd-Ae)}{10e^8}+\frac{Bc^3(d+ex)^{11}}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^4)/(4*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^5)/(5*e^8) - (c*(c*d^2 + a*e^2)*
(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^6)/(2*e^8) - (c
*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^
4))*(d + e*x)^7)/(7*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 -
 3*a*A*e^3)*(d + e*x)^8)/(8*e^8) + (c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(
d + e*x)^9)/(3*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^10)/(10*e^8) + (B*c^3*(d
 + e*x)^11)/(11*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right)^3 (d+ex)^3}{e^7}+\frac{\left(cd^2+ae^2\right)^2 \left(7Bcd^2-6Acde+aB\right.}{e^7}\right.$$

$$= -\frac{(Bd-Ae) \left(cd^2+ae^2\right)^3 (d+ex)^4}{4e^8}+\frac{\left(cd^2+ae^2\right)^2 \left(7Bcd^2-6Acde+aBe^2\right) (}{5e^8}$$

Mathematica [A] time = 0.09, size = 323, normalized size = 0.97

$$\frac{1}{2}a^3d^2x^2(3Ae+Bd)+a^3Ad^3x+a^2dx^3 \left(aAe^2+aBde+Acd^2\right)+\frac{1}{4}a^2x^4 \left(aAe^3+3aBde^2+9Acd^2e+3Bcd^3\right)+\frac{1}{3}c^2ex^9 \left(aBe^2+Acde+Bcd^2\right)+\frac{1}{8}c^2x^8 \left(3aAe^3+9aBde^2+3Acd^2e+Bcd^3\right)+\frac{1}{7}cx^7 \left(Acd \left(9ae^2+cd^2\right)+3aBe \left(ae^2+3cd^2\right)\right)+\frac{1}{5}ax^5 \left(3Acd \left(3ae^2+cd^2\right)+aBe \left(ae^2+9cd^2\right)\right)+\frac{1}{2}acx^6 \left(aAe^3+3aBde^2+3Acd^2e+Bcd^3\right)+\frac{1}{10}c^3e^2x^{10}(Ae+3Bd)+\frac{1}{11}Bc^3e^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^3*x + (a^3*d^2*(B*d + 3*A*e)*x^2)/2 + a^2*d*(A*c*d^2 + a*B*d*e + a*
A*e^2)*x^3 + (a^2*(3*B*c*d^3 + 9*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x^4)/4
+ (a*(a*B*e*(9*c*d^2 + a*e^2) + 3*A*c*d*(c*d^2 + 3*a*e^2))*x^5)/5 + (a*c*(B
*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x^6)/2 + (c*(3*a*B*e*(3*c*d^2
 + a*e^2) + A*c*d*(c*d^2 + 9*a*e^2))*x^7)/7 + (c^2*(B*c*d^3 + 3*A*c*d^2*e +
 9*a*B*d*e^2 + 3*a*A*e^3)*x^8)/8 + (c^2*e*(B*c*d^2 + A*c*d*e + a*B*e^2)*x^9
)/3 + (c^3*e^2*(3*B*d + A*e)*x^10)/10 + (B*c^3*e^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + c*x^2)^3, x]
```

fricas [A] time = 0.36, size = 411, normalized size = 1.23

$$\frac{1}{11}x^{11}e^3c^3B+\frac{3}{10}x^{10}e^2dc^3B+\frac{1}{10}x^{10}e^3c^3A+\frac{1}{3}x^9ed^2c^3B+\frac{1}{3}x^9e^3c^2aB+\frac{1}{3}x^9e^2dc^3A+\frac{1}{8}x^8d^3c^3B+\frac{9}{8}x^8e^2dc^2aB+\frac{3}{8}x^8ed^2c^3A+\frac{3}{8}x^8e^3c^2aA+\frac{9}{7}x^7ed^2c^2aB+\frac{3}{7}x^7e^3ca^2B+\frac{1}{7}x^7d^3c^3A+\frac{9}{7}x^7e^2dc^2aA+\frac{1}{2}x^6d^3c^2aB+\frac{3}{2}x^6e^2dca^2B+\frac{3}{2}x^6ed^2c^2aA+\frac{1}{2}x^6e^3ca^2A+\frac{9}{5}x^5ed^2ca^2B+\frac{1}{5}x^5e^3a^3B+\frac{3}{5}x^5d^3c^2aA+\frac{9}{5}x^5e^2dca^2A+\frac{3}{4}x^4d^3ca^2B+\frac{3}{4}x^4e^2da^3B+\frac{9}{4}x^4ed^2ca^2A+\frac{1}{4}x^4e^3a^3A+x^3ed^2a^3B+x^3d^3ca^2A+x^3e^2da^3A+\frac{1}{2}x^2d^3a^3B+\frac{3}{2}x^2ed^2a^3A+xd^3a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*c^3*B + 3/10*x^10*e^2*d*c^3*B + 1/10*x^10*e^3*c^3*A + 1/3*x^9
*e*d^2*c^3*B + 1/3*x^9*e^3*c^2*a*B + 1/3*x^9*e^2*d*c^3*A + 1/8*x^8*d^3*c^3*
B + 9/8*x^8*e^2*d*c^2*a*B + 3/8*x^8*e*d^2*c^3*A + 3/8*x^8*e^3*c^2*a*A + 9/7
*x^7*e*d^2*c^2*a*B + 3/7*x^7*e^3*c*a^2*B + 1/7*x^7*d^3*c^3*A + 9/7*x^7*e^2*
d*c^2*a*A + 1/2*x^6*d^3*c^2*a*B + 3/2*x^6*e^2*d*c*a^2*B + 3/2*x^6*e*d^2*c^2
*a*A + 1/2*x^6*e^3*c*a^2*A + 9/5*x^5*e*d^2*c*a^2*B + 1/5*x^5*e^3*a^3*B + 3/
5*x^5*d^3*c^2*a*A + 9/5*x^5*e^2*d*c*a^2*A + 3/4*x^4*d^3*c*a^2*B + 3/4*x^4*e
^2*d*a^3*B + 9/4*x^4*e*d^2*c*a^2*A + 1/4*x^4*e^3*a^3*A + x^3*e*d^2*a^3*B +
x^3*d^3*c*a^2*A + x^3*e^2*d*a^3*A + 1/2*x^2*d^3*a^3*B + 3/2*x^2*e*d^2*a^3*A
 + x*d^3*a^3*A
```

giac [A] time = 0.18, size = 403, normalized size = 1.21

$$\frac{1}{11}Bc^3x^{11}e^3+\frac{3}{10}Bc^3dx^{10}e^2+\frac{1}{3}Bc^3d^2x^9e+\frac{1}{8}Bc^3d^3x^8+\frac{1}{10}Ac^3x^{10}e^3+\frac{1}{3}Ac^3dx^9e^2+\frac{3}{8}Ac^3d^2x^8e+\frac{1}{7}Ac^3d^3x^7+\frac{1}{3}Bac^2x^9e^3+\frac{9}{8}Bac^2dx^8e^2+\frac{9}{7}Bac^2d^2x^7e+\frac{1}{2}Bac^2d^3x^6+\frac{3}{8}Aac^2x^8e^3+\frac{9}{7}Aac^2dx^7e^2+\frac{3}{2}Aac^2d^2x^6e+\frac{3}{5}Aac^2d^3x^5+\frac{3}{7}Ba^2cx^7e^3+\frac{3}{2}Ba^2cdx^6e^2+\frac{9}{5}Ba^2cd^2x^5e+\frac{3}{4}Ba^2cd^3x^4+\frac{1}{2}Aa^2cx^6e^3+\frac{9}{5}Aa^2cdx^5e^2+\frac{9}{4}Aa^2cd^2x^4e+Aa^2cd^3x^3+\frac{1}{5}Ba^3x^5e^3+\frac{3}{4}Ba^3dx^4e^2+Ba^3d^2x^3e+\frac{1}{2}Ba^3d^3x^2+\frac{1}{4}Aa^3x^4e^3+Aa^3dx^3e^2+\frac{3}{2}Aa^3d^2x^2e+Aa^3d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11*e^3 + 3/10*B*c^3*d*x^10*e^2 + 1/3*B*c^3*d^2*x^9*e + 1/8*B*c
^3*d^3*x^8 + 1/10*A*c^3*x^10*e^3 + 1/3*A*c^3*d*x^9*e^2 + 3/8*A*c^3*d^2*x^8*
e + 1/7*A*c^3*d^3*x^7 + 1/3*B*a*c^2*x^9*e^3 + 9/8*B*a*c^2*d*x^8*e^2 + 9/7*B
*a*c^2*d^2*x^7*e + 1/2*B*a*c^2*d^3*x^6 + 3/8*A*a*c^2*x^8*e^3 + 9/7*A*a*c^2*
d*x^7*e^2 + 3/2*A*a*c^2*d^2*x^6*e + 3/5*A*a*c^2*d^3*x^5 + 3/7*B*a^2*c*x^7*e
^3 + 3/2*B*a^2*c*d*x^6*e^2 + 9/5*B*a^2*c*d^2*x^5*e + 3/4*B*a^2*c*d^3*x^4 +
1/2*A*a^2*c*x^6*e^3 + 9/5*A*a^2*c*d*x^5*e^2 + 9/4*A*a^2*c*d^2*x^4*e + A*a^2
*c*d^3*x^3 + 1/5*B*a^3*x^5*e^3 + 3/4*B*a^3*d*x^4*e^2 + B*a^3*d^2*x^3*e + 1/
2*B*a^3*d^3*x^2 + 1/4*A*a^3*x^4*e^3 + A*a^3*d*x^3*e^2 + 3/2*A*a^3*d^2*x^2*e
 + A*a^3*d^3*x
```

maple [A] time = 0.04, size = 353, normalized size = 1.06

$$\frac{Bc^3e^3x^{11}}{11}+\frac{\left(Ae^3+3Bde^2\right)c^3x^{10}}{10}+\frac{\left(3Bac^2e^3+\left(3Ade^2+3Bd^2e\right)c^3\right)x^9}{9}+Aa^3d^3x+\frac{\left(3\left(Ae^3+3Bde^2\right)ac^2+\left(3Ad^2e+Bd^3\right)c^3\right)x^8}{8}+\frac{\left(Ac^3d^3+3Ba^2ce^3+3\left(3Ade^2+3Bd^2e\right)ac^2\right)x^7}{7}+\frac{\left(3\left(Ae^3+3Bde^2\right)a^2c+3\left(3Ad^2e+Bd^3\right)ac^2\right)x^6}{6}+\frac{\left(3Ad^2e+Bd^3\right)a^3x^2}{2}+\frac{\left(3Aac^2d^3+Ba^3e^3+3\left(3Ade^2+3Bd^2e\right)a^2c\right)x^5}{5}+\frac{\left(\left(Ae^3+3Bde^2\right)a^3+3\left(3Ad^2e+Bd^3\right)a^2c\right)x^4}{4}+\frac{\left(3Aa^2cd^3+\left(3Ade^2+3Bd^2e\right)a^3\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x)
```

```
[Out] 1/11*B*c^3*e^3*x^11+1/10*(A*e^3+3*B*d*e^2)*c^3*x^10+1/9*((3*A*d*e^2+3*B*d^2
*e)*c^3+3*B*e^3*a*c^2)*x^9+1/8*((3*A*d^2*e+B*d^3)*c^3+3*(A*e^3+3*B*d*e^2)*a
*c^2)*x^8+1/7*(A*c^3*d^3+3*(3*A*d*e^2+3*B*d^2*e)*a*c^2+3*B*e^3*a^2*c)*x^7+1
/6*(3*(3*A*d^2*e+B*d^3)*a*c^2+3*(A*e^3+3*B*d*e^2)*a^2*c)*x^6+1/5*(3*A*d^3*a
*c^2+3*(3*A*d*e^2+3*B*d^2*e)*a^2*c+B*e^3*a^3)*x^5+1/4*(3*(3*A*d^2*e+B*d^3)*
```

```
a^2*c+(A*e^3+3*B*d*e^2)*a^3)*x^4+1/3*(3*A*d^3*a^2*c+(3*A*d*e^2+3*B*d^2*e)*a
^3)*x^3+1/2*(3*A*d^2*e+B*d^3)*a^3*x^2+A*d^3*a^3*x
```

maxima [A] time = 0.49, size = 363, normalized size = 1.09

$$\frac{1}{11}Bc^3e^3x^{11}+\frac{1}{10}\left(3Bc^3de^2+Ac^3e^3\right)x^{10}+\frac{1}{3}\left(Bc^3d^2e+Ac^3de^2+Bac^2e^3\right)x^9+\frac{1}{8}\left(Bc^3d^3+3Ac^3d^2e+9Bac^2de^2+3Aac^2e^3\right)x^8+Aa^3d^3x+\frac{1}{7}\left(Ac^3d^3+9Bac^2d^2e+9Aac^2de^2+3Ba^2ce^3\right)x^7+\frac{1}{2}\left(Bac^2d^3+3Aac^2d^2e+3Ba^2cde^2+Aa^2ce^3\right)x^6+\frac{1}{5}\left(3Aac^2d^3+9Ba^2cd^2e+9Aa^2cde^2+Ba^3e^3\right)x^5+\frac{1}{4}\left(3Ba^2cd^3+9Aa^2cd^2e+3Ba^3de^2+Aa^3e^3\right)x^4+\left(Aa^2cd^3+Ba^3d^2e+Aa^3de^2\right)x^3+\frac{1}{2}\left(Ba^3d^3+3Aa^3d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*e^3*x^11 + 1/10*(3*B*c^3*d*e^2 + A*c^3*e^3)*x^10 + 1/3*(B*c^3*d^
2*e + A*c^3*d*e^2 + B*a*c^2*e^3)*x^9 + 1/8*(B*c^3*d^3 + 3*A*c^3*d^2*e + 9*B
*a*c^2*d*e^2 + 3*A*a*c^2*e^3)*x^8 + A*a^3*d^3*x + 1/7*(A*c^3*d^3 + 9*B*a*c^
2*d^2*e + 9*A*a*c^2*d*e^2 + 3*B*a^2*c*e^3)*x^7 + 1/2*(B*a*c^2*d^3 + 3*A*a*c
^2*d^2*e + 3*B*a^2*c*d*e^2 + A*a^2*c*e^3)*x^6 + 1/5*(3*A*a*c^2*d^3 + 9*B*a^
2*c*d^2*e + 9*A*a^2*c*d*e^2 + B*a^3*e^3)*x^5 + 1/4*(3*B*a^2*c*d^3 + 9*A*a^2
*c*d^2*e + 3*B*a^3*d*e^2 + A*a^3*e^3)*x^4 + (A*a^2*c*d^3 + B*a^3*d^2*e + A*
a^3*d*e^2)*x^3 + 1/2*(B*a^3*d^3 + 3*A*a^3*d^2*e)*x^2
```

mupad [B] time = 0.15, size = 317, normalized size = 0.95

$$x^5\left(\frac{Ba^3e^3}{5}+\frac{9Ba^2cd^2e}{5}+\frac{9Aa^2cde^2}{5}+\frac{3Aac^2d^3}{5}\right)+x^7\left(\frac{3Ba^2ce^3}{7}+\frac{9Bac^2d^2e}{7}+\frac{9Aac^2de^2}{7}+\frac{Ac^3d^3}{7}\right)+\frac{a^2x^4\left(3Bcd^3+9Acd^2e+3Bade^2+Aae^3\right)}{4}+\frac{c^2x^8\left(Bcd^3+3Acd^2e+9Bade^2+3Aae^3\right)}{8}+a^2dx^3\left(Acd^2+Bade+Aae^2\right)+\frac{c^2ex^9\left(Bcd^2+Acde+Bae^2\right)}{3}+\frac{a^3d^2x^2\left(3Ae+Bd\right)}{2}+\frac{c^3e^2x^{10}\left(Ae+3Bd\right)}{10}+\frac{acx^6\left(Bcd^3+3Acd^2e+3Bade^2+Aae^3\right)}{2}+Aa^3d^3x+\frac{Bc^3e^3x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^5*((B*a^3*e^3)/5 + (3*A*a*c^2*d^3)/5 + (9*A*a^2*c*d*e^2)/5 + (9*B*a^2*c*d
^2*e)/5) + x^7*((A*c^3*d^3)/7 + (3*B*a^2*c*e^3)/7 + (9*A*a*c^2*d*e^2)/7 + (
9*B*a*c^2*d^2*e)/7) + (a^2*x^4*(A*a*e^3 + 3*B*c*d^3 + 3*B*a*d*e^2 + 9*A*c*d
^2*e))/4 + (c^2*x^8*(3*A*a*e^3 + B*c*d^3 + 9*B*a*d*e^2 + 3*A*c*d^2*e))/8 +
a^2*d*x^3*(A*a*e^2 + A*c*d^2 + B*a*d*e) + (c^2*e*x^9*(B*a*e^2 + B*c*d^2 + A
*c*d*e))/3 + (a^3*d^2*x^2*(3*A*e + B*d))/2 + (c^3*e^2*x^10*(A*e + 3*B*d))/1
0 + (a*c*x^6*(A*a*e^3 + B*c*d^3 + 3*B*a*d*e^2 + 3*A*c*d^2*e))/2 + A*a^3*d^3
*x + (B*c^3*e^3*x^11)/11
```

sympy [A] time = 0.14, size = 435, normalized size = 1.30

$$Aa^3d^3x+\frac{Bc^3e^3x^{11}}{11}+x^{10}\left(\frac{Ac^3e^3}{10}+\frac{3Bc^3de^2}{10}\right)+x^9\left(\frac{Ac^3de^2}{3}+\frac{Bac^2e^3}{3}+\frac{Bc^3d^2e}{3}\right)+x^8\left(\frac{3Aac^2e^3}{8}+\frac{3Ac^3d^2e}{8}+\frac{9Bac^2de^2}{8}+\frac{Bc^3d^3}{8}\right)+x^7\left(\frac{9Aac^2de^2}{7}+\frac{Ac^3d^3}{7}+\frac{3Ba^2ce^3}{7}+\frac{9Bac^2d^2e}{7}\right)+x^6\left(\frac{Aa^2ce^3}{2}+\frac{3Aac^2d^2e}{2}+\frac{3Ba^2cde^2}{2}+\frac{Bac^2d^3}{2}\right)+x^5\left(\frac{9Aa^2cde^2}{5}+\frac{3Aac^2d^3}{5}+\frac{Ba^3e^3}{5}+\frac{9Ba^2cd^2e}{5}\right)+x^4\left(\frac{Aa^3e^3}{4}+\frac{9Aa^2cd^2e}{4}+\frac{3Ba^3de^2}{4}+\frac{3Ba^2cd^3}{4}\right)+x^3\left(Aa^3de^2+Aa^2cd^3+Ba^3d^2e\right)+x^2\left(\frac{3Aa^3d^2e}{2}+\frac{Ba^3d^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**3*x + B*c**3*e**3*x**11/11 + x**10*(A*c**3*e**3/10 + 3*B*c**3*d*e
**2/10) + x**9*(A*c**3*d*e**2/3 + B*a*c**2*e**3/3 + B*c**3*d**2*e/3) + x**8
*(3*A*a*c**2*e**3/8 + 3*A*c**3*d**2*e/8 + 9*B*a*c**2*d*e**2/8 + B*c**3*d**3
/8) + x**7*(9*A*a*c**2*d*e**2/7 + A*c**3*d**3/7 + 3*B*a**2*c*e**3/7 + 9*B*a
*c**2*d**2*e/7) + x**6*(A*a**2*c*e**3/2 + 3*A*a*c**2*d**2*e/2 + 3*B*a**2*c*
d*e**2/2 + B*a*c**2*d**3/2) + x**5*(9*A*a**2*c*d*e**2/5 + 3*A*a*c**2*d**3/5
 + B*a**3*e**3/5 + 9*B*a**2*c*d**2*e/5) + x**4*(A*a**3*e**3/4 + 9*A*a**2*c*
d**2*e/4 + 3*B*a**3*d*e**2/4 + 3*B*a**2*c*d**3/4) + x**3*(A*a**3*d*e**2 + A
*a**2*c*d**3 + B*a**3*d**2*e) + x**2*(3*A*a**3*d**2*e/2 + B*a**3*d**3/2)
```

3.1142 $\int (A+Bx)(d+ex)^2 \left(a+cx^2\right)^3 \, dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^6 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8}+\frac{3c^2(d+ex)^8\left(aBe^2-2Acde+7Bcd^2\right)}{8e^8}-\cdots$$

Rubi [A] time = 0.31, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^6 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8}+\frac{3c^2(d+ex)^8\left(aBe^2-2Acde+7Bcd^2\right)}{8e^8}-\frac{c^2(d+ex)^7\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{7e^8}-\frac{3c(d+ex)^5\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{5e^8}+\frac{(d+ex)^4\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{4e^8}-\frac{(d+ex)^3\left(ae^2+cd^2\right)^3(Bd-Ae)}{3e^8}-\frac{c^3(d+ex)^9(7Bd-Ae)}{9e^8}+\frac{Bc^3(d+ex)^{10}}{10e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^3)/(3*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^4)/(4*e^8) - (3*c*(c*d^2 + a*e^2
)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^5)/(5*e^8) -
(c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*
e^4))*(d + e*x)^6)/(6*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
 - 3*a*A*e^3)*(d + e*x)^7)/(7*e^8) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^
2)*(d + e*x)^8)/(8*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^9)/(9*e^8) + (B*c^3*
(d + e*x)^10)/(10*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(a+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^2}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+\cdots\right.}{e^7}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^3}{3e^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe\cdots\right.}{4e^8}$$

Mathematica [A] time = 0.06, size = 238, normalized size = 0.71

$$\frac{1}{2}a^3dx^2(2Ae+Bd)+a^3Ad^2x+\frac{1}{4}a^2x^4\left(aBe^2+6Acde+3Bcd^2\right)+\frac{1}{3}a^2x^3\left(aAe^2+2aBde+3Acd^2\right)+\frac{1}{8}c^2x^8\left(3aBe^2+2Acde+Bcd^2\right)+\frac{1}{7}c^2x^7\left(3aAe^2+6aBde+Acd^2\right)+\frac{1}{2}acx^6\left(aBe^2+2Acde+Bcd^2\right)+\frac{3}{5}acx^5\left(aAe^2+2aBde+Acd^2\right)+\frac{1}{9}c^3ex^9(Ae+2Bd)+\frac{1}{10}Bc^3e^2x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^2*x + (a^3*d*(B*d + 2*A*e)*x^2)/2 + (a^2*(3*A*c*d^2 + 2*a*B*d*e + a
*A*e^2)*x^3)/3 + (a^2*(3*B*c*d^2 + 6*A*c*d*e + a*B*e^2)*x^4)/4 + (3*a*c*(A*
c*d^2 + 2*a*B*d*e + a*A*e^2)*x^5)/5 + (a*c*(B*c*d^2 + 2*A*c*d*e + a*B*e^2)*
x^6)/2 + (c^2*(A*c*d^2 + 6*a*B*d*e + 3*a*A*e^2)*x^7)/7 + (c^2*(B*c*d^2 + 2*
A*c*d*e + 3*a*B*e^2)*x^8)/8 + (c^3*e*(2*B*d + A*e)*x^9)/9 + (B*c^3*e^2*x^10
)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + c*x^2)^3, x]
```

fricas [A] time = 0.36, size = 287, normalized size = 0.86

$$\frac{1}{10}x^{10}e^2c^3B+\frac{2}{9}x^9edc^3B+\frac{1}{9}x^9e^2c^3A+\frac{1}{8}x^8d^2c^3B+\frac{3}{8}x^8e^2c^2aB+\frac{1}{4}x^8edc^3A+\frac{6}{7}x^7edc^2aB+\frac{1}{7}x^7d^2c^3A+\frac{3}{7}x^7e^2c^2aA+\frac{1}{2}x^6d^2c^2aB+\frac{1}{2}x^6e^2ca^2B+x^6edc^2aA+\frac{6}{5}x^5edca^2B+\frac{3}{5}x^5d^2c^2aA+\frac{3}{5}x^5e^2ca^2A+\frac{3}{4}x^4d^2ca^2B+\frac{1}{4}x^4e^2a^3B+\frac{3}{2}x^4edca^2A+\frac{2}{3}x^3eda^3B+x^3d^2ca^2A+\frac{1}{3}x^3e^2a^3A+\frac{1}{2}x^2d^2a^3B+x^2eda^3A+xd^2a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*c^3*B + 2/9*x^9*e*d*c^3*B + 1/9*x^9*e^2*c^3*A + 1/8*x^8*d^2*c
^3*B + 3/8*x^8*e^2*c^2*a*B + 1/4*x^8*e*d*c^3*A + 6/7*x^7*e*d*c^2*a*B + 1/7*
x^7*d^2*c^3*A + 3/7*x^7*e^2*c^2*a*A + 1/2*x^6*d^2*c^2*a*B + 1/2*x^6*e^2*c*a
^2*B + x^6*e*d*c^2*a*A + 6/5*x^5*e*d*c*a^2*B + 3/5*x^5*d^2*c^2*a*A + 3/5*x^
5*e^2*c*a^2*A + 3/4*x^4*d^2*c*a^2*B + 1/4*x^4*e^2*a^3*B + 3/2*x^4*e*d*c*a^2
*A + 2/3*x^3*e*d*a^3*B + x^3*d^2*c*a^2*A + 1/3*x^3*e^2*a^3*A + 1/2*x^2*d^2*
a^3*B + x^2*e*d*a^3*A + x*d^2*a^3*A
```

giac [A] time = 0.15, size = 287, normalized size = 0.86

$$\frac{1}{10}Bc^3x^{10}e^2+\frac{2}{9}Bc^3dx^9e+\frac{1}{8}Bc^3d^2x^8+\frac{1}{9}Ac^3x^9e^2+\frac{1}{4}Ac^3dx^8e+\frac{1}{7}Ac^3d^2x^7+\frac{3}{8}Bac^2x^8e^2+\frac{6}{7}Bac^2dx^7e+\frac{1}{2}Bac^2d^2x^6+\frac{3}{7}Aac^2x^7e^2+Aac^2dx^6e+\frac{3}{5}Aac^2d^2x^5+\frac{1}{2}Ba^2cx^6e^2+\frac{6}{5}Ba^2cdx^5e+\frac{3}{4}Ba^2cd^2x^4+\frac{3}{5}Aa^2cx^5e^2+\frac{3}{2}Aa^2cdx^4e+Aa^2cd^2x^3+\frac{1}{4}Ba^3x^4e^2+\frac{2}{3}Ba^3dx^3e+\frac{1}{2}Ba^3d^2x^2+\frac{1}{3}Aa^3x^3e^2+Aa^3dx^2e+Aa^3d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10*e^2 + 2/9*B*c^3*d*x^9*e + 1/8*B*c^3*d^2*x^8 + 1/9*A*c^3*x^9
*e^2 + 1/4*A*c^3*d*x^8*e + 1/7*A*c^3*d^2*x^7 + 3/8*B*a*c^2*x^8*e^2 + 6/7*B*
a*c^2*d*x^7*e + 1/2*B*a*c^2*d^2*x^6 + 3/7*A*a*c^2*x^7*e^2 + A*a*c^2*d*x^6*e
 + 3/5*A*a*c^2*d^2*x^5 + 1/2*B*a^2*c*x^6*e^2 + 6/5*B*a^2*c*d*x^5*e + 3/4*B*
a^2*c*d^2*x^4 + 3/5*A*a^2*c*x^5*e^2 + 3/2*A*a^2*c*d*x^4*e + A*a^2*c*d^2*x^3
 + 1/4*B*a^3*x^4*e^2 + 2/3*B*a^3*d*x^3*e + 1/2*B*a^3*d^2*x^2 + 1/3*A*a^3*x^
3*e^2 + A*a^3*d*x^2*e + A*a^3*d^2*x
```

maple [A] time = 0.04, size = 251, normalized size = 0.75

$$\frac{Bc^3e^2x^{10}}{10}+\frac{\left(Ae^2+2Bde\right)c^3x^9}{9}+\frac{\left(3Bac^2e^2+\left(2Ade+Bd^2\right)c^3\right)x^8}{8}+Aa^3d^2x+\frac{\left(Ac^3d^2+3\left(Ae^2+2Bde\right)ac^2\right)x^7}{7}+\frac{\left(3Ba^2ce^2+3\left(2Ade+Bd^2\right)ac^2\right)x^6}{6}+\frac{\left(2Ade+Bd^2\right)a^3x^2}{2}+\frac{\left(3Aac^2d^2+3\left(Ae^2+2Bde\right)a^2c\right)x^5}{5}+\frac{\left(Ba^3e^2+3\left(2Ade+Bd^2\right)a^2c\right)x^4}{4}+\frac{\left(3Aa^2cd^2+\left(Ae^2+2Bde\right)a^3\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x)
```

```
[Out] 1/10*B*c^3*e^2*x^10+1/9*(A*e^2+2*B*d*e)*c^3*x^9+1/8*((2*A*d*e+B*d^2)*c^3+3*
B*e^2*a*c^2)*x^8+1/7*(A*c^3*d^2+3*(A*e^2+2*B*d*e)*a*c^2)*x^7+1/6*(3*(2*A*d*
e+B*d^2)*a*c^2+3*B*e^2*a^2*c)*x^6+1/5*(3*A*d^2*a*c^2+3*(A*e^2+2*B*d*e)*a^2*
c)*x^5+1/4*(3*(2*A*d*e+B*d^2)*a^2*c+B*e^2*a^3)*x^4+1/3*(3*A*d^2*a^2*c+(A*e^
2+2*B*d*e)*a^3)*x^3+1/2*(2*A*d*e+B*d^2)*a^3*x^2+A*d^2*a^3*x
```

maxima [A] time = 0.49, size = 262, normalized size = 0.78

$$\frac{1}{10}Bc^3e^2x^{10}+\frac{1}{9}\left(2Bc^3de+Ac^3e^2\right)x^9+\frac{1}{8}\left(Bc^3d^2+2Ac^3de+3Bac^2e^2\right)x^8+\frac{1}{7}\left(Ac^3d^2+6Bac^2de+3Aac^2e^2\right)x^7+Aa^3d^2x+\frac{1}{2}\left(Bac^2d^2+2Aac^2de+Ba^2ce^2\right)x^6+\frac{3}{5}\left(Aac^2d^2+2Ba^2cde+Aa^2ce^2\right)x^5+\frac{1}{4}\left(3Ba^2cd^2+6Aa^2cde+Ba^3e^2\right)x^4+\frac{1}{3}\left(3Aa^2cd^2+2Ba^3de+Aa^3e^2\right)x^3+\frac{1}{2}\left(Ba^3d^2+2Aa^3de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*e^2*x^10 + 1/9*(2*B*c^3*d*e + A*c^3*e^2)*x^9 + 1/8*(B*c^3*d^2 +
2*A*c^3*d*e + 3*B*a*c^2*e^2)*x^8 + 1/7*(A*c^3*d^2 + 6*B*a*c^2*d*e + 3*A*a*c
^2*e^2)*x^7 + A*a^3*d^2*x + 1/2*(B*a*c^2*d^2 + 2*A*a*c^2*d*e + B*a^2*c*e^2)
*x^6 + 3/5*(A*a*c^2*d^2 + 2*B*a^2*c*d*e + A*a^2*c*e^2)*x^5 + 1/4*(3*B*a^2*c
```

```
*d^2 + 6*A*a^2*c*d*e + B*a^3*e^2)*x^4 + 1/3*(3*A*a^2*c*d^2 + 2*B*a^3*d*e +
A*a^3*e^2)*x^3 + 1/2*(B*a^3*d^2 + 2*A*a^3*d*e)*x^2
```

mupad [B]   time = 1.73, size = 227, normalized size = 0.68

$$x^3\left(\frac{2Ba^3de}{3}+\frac{Aa^3e^2}{3}+Aca^2d^2\right)+x^8\left(\frac{Bc^3d^2}{8}+\frac{Ac^3de}{4}+\frac{3Bac^2e^2}{8}\right)+\frac{c^2x^7\left(Acd^2+6Bade+3Aae^2\right)}{7}+\frac{a^2x^4\left(3Bcd^2+6Acde+Bae^2\right)}{4}+Aa^3d^2x+\frac{3acx^5\left(Acd^2+2Bade+Aae^2\right)}{5}+\frac{acx^6\left(Bcd^2+2Acde+Bae^2\right)}{2}+\frac{a^3dx^2\left(2Ae+Bd\right)}{2}+\frac{c^3ex^9\left(Ae+2Bd\right)}{9}+\frac{Bc^3e^2x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^3*((A*a^3*e^2)/3 + (2*B*a^3*d*e)/3 + A*a^2*c*d^2) + x^8*((B*c^3*d^2)/8 +
(A*c^3*d*e)/4 + (3*B*a*c^2*e^2)/8) + (c^2*x^7*(3*A*a*e^2 + A*c*d^2 + 6*B*a*
d*e))/7 + (a^2*x^4*(B*a*e^2 + 3*B*c*d^2 + 6*A*c*d*e))/4 + A*a^3*d^2*x + (3*
a*c*x^5*(A*a*e^2 + A*c*d^2 + 2*B*a*d*e))/5 + (a*c*x^6*(B*a*e^2 + B*c*d^2 +
2*A*c*d*e))/2 + (a^3*d*x^2*(2*A*e + B*d))/2 + (c^3*e*x^9*(A*e + 2*B*d))/9 +
 (B*c^3*e^2*x^10)/10
```

sympy [A]   time = 0.11, size = 306, normalized size = 0.92

$$Aa^3d^2x+\frac{Bc^3e^2x^{10}}{10}+x^9\left(\frac{Ac^3e^2}{9}+\frac{2Bc^3de}{9}\right)+x^8\left(\frac{Ac^3de}{4}+\frac{3Bac^2e^2}{8}+\frac{Bc^3d^2}{8}\right)+x^7\left(\frac{3Aac^2e^2}{7}+\frac{Ac^3d^2}{7}+\frac{6Bac^2de}{7}\right)+x^6\left(Aac^2de+\frac{Ba^2ce^2}{2}+\frac{Bac^2d^2}{2}\right)+x^5\left(\frac{3Aa^2ce^2}{5}+\frac{3Aac^2d^2}{5}+\frac{6Ba^2cde}{5}\right)+x^4\left(\frac{3Aa^2cde}{2}+\frac{Ba^3e^2}{4}+\frac{3Ba^2cd^2}{4}\right)+x^3\left(\frac{Aa^3e^2}{3}+Aa^2cd^2+\frac{2Ba^3de}{3}\right)+x^2\left(Aa^3de+\frac{Ba^3d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**2*x + B*c**3*e**2*x**10/10 + x**9*(A*c**3*e**2/9 + 2*B*c**3*d*e/9
) + x**8*(A*c**3*d*e/4 + 3*B*a*c**2*e**2/8 + B*c**3*d**2/8) + x**7*(3*A*a*c
**2*e**2/7 + A*c**3*d**2/7 + 6*B*a*c**2*d*e/7) + x**6*(A*a*c**2*d*e + B*a**
2*c*e**2/2 + B*a*c**2*d**2/2) + x**5*(3*A*a**2*c*e**2/5 + 3*A*a*c**2*d**2/5
 + 6*B*a**2*c*d*e/5) + x**4*(3*A*a**2*c*d*e/2 + B*a**3*e**2/4 + 3*B*a**2*c*
d**2/4) + x**3*(A*a**3*e**2/3 + A*a**2*c*d**2 + 2*B*a**3*d*e/3) + x**2*(A*a
**3*d*e + B*a**3*d**2/2)
```

3.1143 $\int (A+Bx)(d+ex)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=148

$$\frac{1}{2}a^3x^2(Ae+Bd)+a^3Adx+\frac{3}{4}a^2cx^4(Ae+Bd)+\frac{1}{3}a^2x^3(aBe+3Acd)+\frac{1}{7}c^2x^7(3aBe+Acd)+\frac{1}{2}ac^2x^6(Ae+Bd)+\frac{3}{5}acx^5(aBe+$$

Rubi [A] time = 0.21, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{3}{4}a^2cx^4(Ae+Bd)+\frac{1}{3}a^2x^3(aBe+3Acd)+\frac{1}{2}a^3x^2(Ae+Bd)+a^3Adx+\frac{1}{7}c^2x^7(3aBe+Acd)+\frac{1}{2}ac^2x^6(Ae+Bd)+\frac{3}{5}acx^5(aBe+Acd)+\frac{1}{8}c^3x^8(Ae+Bd)+\frac{1}{9}Bc^3ex^9$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d*x + (a^3*(B*d + A*e)*x^2)/2 + (a^2*(3*A*c*d + a*B*e)*x^3)/3 + (3*a^
2*c*(B*d + A*e)*x^4)/4 + (3*a*c*(A*c*d + a*B*e)*x^5)/5 + (a*c^2*(B*d + A*e)
*x^6)/2 + (c^2*(A*c*d + 3*a*B*e)*x^7)/7 + (c^3*(B*d + A*e)*x^8)/8 + (B*c^3*
e*x^9)/9
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(a+cx^2\right)^3\,dx=\int \left(a^3Ad+a^3(Bd+Ae)x+a^2(3Acd+aBe)x^2+3a^2c(Bd+Ae)x^3+3ac(Ac$$
$$=a^3Adx+\frac{1}{2}a^3(Bd+Ae)x^2+\frac{1}{3}a^2(3Acd+aBe)x^3+\frac{3}{4}a^2c(Bd+Ae)x^4+\frac{3}{5}ac($$

Mathematica [A] time = 0.05, size = 135, normalized size = 0.91

$$\frac{1}{6}a^3x(3A(2d+ex)+Bx(3d+2ex))+\frac{1}{20}a^2cx^3(5A(4d+3ex)+3Bx(5d+4ex))+\frac{1}{70}ac^2x^5(7A(6d+5ex)+5Bx(7d+6ex))+\frac{1}{504}c^3x^7(9A(8d+7ex)+7Bx(9d+8ex))$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*x*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)))/6 + (a^2*c*x^3*(5*A*(4*d + 3*
e*x) + 3*B*x*(5*d + 4*e*x)))/20 + (a*c^2*x^5*(7*A*(6*d + 5*e*x) + 5*B*x*(7*
d + 6*e*x)))/70 + (c^3*x^7*(9*A*(8*d + 7*e*x) + 7*B*x*(9*d + 8*e*x)))/504
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + c*x^2)^3, x]
```

fricas [A] time = 0.37, size = 165, normalized size = 1.11

$$\frac{1}{9}x^9ec^3B+\frac{1}{8}x^8dc^3B+\frac{1}{8}x^8ec^3A+\frac{3}{7}x^7ec^2aB+\frac{1}{7}x^7dc^3A+\frac{1}{2}x^6dc^2aB+\frac{1}{2}x^6ec^2aA+\frac{3}{5}x^5eca^2B+\frac{3}{5}x^5dc^2aA+\frac{3}{4}x^4dca^2B+\frac{3}{4}x^4eca^2A+\frac{1}{3}x^3ea^3B+x^3dca^2A+\frac{1}{2}x^2da^3B+\frac{1}{2}x^2ea^3A+xda^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*c^3*B + 1/8*x^8*d*c^3*B + 1/8*x^8*e*c^3*A + 3/7*x^7*e*c^2*a*B + 1
/7*x^7*d*c^3*A + 1/2*x^6*d*c^2*a*B + 1/2*x^6*e*c^2*a*A + 3/5*x^5*e*c*a^2*B
+ 3/5*x^5*d*c^2*a*A + 3/4*x^4*d*c*a^2*B + 3/4*x^4*e*c*a^2*A + 1/3*x^3*e*a^3
*B + x^3*d*c*a^2*A + 1/2*x^2*d*a^3*B + 1/2*x^2*e*a^3*A + x*d*a^3*A
```

giac [A] time = 0.17, size = 173, normalized size = 1.17

$$\frac{1}{9}Bc^3x^9e + \frac{1}{8}Bc^3dx^8 + \frac{1}{8}Ac^3x^8e + \frac{1}{7}Ac^3dx^7 + \frac{3}{7}Bac^2x^7e + \frac{1}{2}Bac^2dx^6 + \frac{1}{2}Aac^2x^6e + \frac{3}{5}Aac^2dx^5 + \frac{3}{5}Ba^2cx^5e + \frac{3}{4}Ba^2cdx^4 + \frac{3}{4}Aa^2cx^4e + Aa^2cdx^3 + \frac{1}{3}Ba^3x^3e + \frac{1}{2}Ba^3dx^2 + \frac{1}{2}Aa^3x^2e + Aa^3dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9*e + 1/8*B*c^3*d*x^8 + 1/8*A*c^3*x^8*e + 1/7*A*c^3*d*x^7 + 3/7
*B*a*c^2*x^7*e + 1/2*B*a*c^2*d*x^6 + 1/2*A*a*c^2*x^6*e + 3/5*A*a*c^2*d*x^5
+ 3/5*B*a^2*c*x^5*e + 3/4*B*a^2*c*d*x^4 + 3/4*A*a^2*c*x^4*e + A*a^2*c*d*x^3
 + 1/3*B*a^3*x^3*e + 1/2*B*a^3*d*x^2 + 1/2*A*a^3*x^2*e + A*a^3*d*x
```

maple [A] time = 0.04, size = 143, normalized size = 0.97

$$\frac{Bc^3ex^9}{9} + \frac{(Ae+Bd)\,c^3x^8}{8} + \frac{(Ae+Bd)\,a\,c^2x^6}{2} + \frac{3\,(Ae+Bd)\,a^2c\,x^4}{4} + \frac{\left(Ad\,c^3+3Bea\,c^2\right)x^7}{7} + A\,a^3dx + \frac{(Ae+Bd)\,a^3x^2}{2} + \frac{\left(3Ada\,c^2+3Be\,a^2c\right)x^5}{5} + \frac{\left(3Ad\,a^2c+Be\,a^3\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+a)^3,x)
```

```
[Out] 1/9*B*c^3*e*x^9+1/8*c^3*(A*e+B*d)*x^8+1/7*(A*c^3*d+3*B*a*c^2*e)*x^7+1/2*a*c
^2*(A*e+B*d)*x^6+1/5*(3*A*a*c^2*d+3*B*a^2*c*e)*x^5+3/4*a^2*c*(A*e+B*d)*x^4+
1/3*(3*A*a^2*c*d+B*a^3*e)*x^3+1/2*a^3*(A*e+B*d)*x^2+a^3*A*d*x
```

maxima [A] time = 0.53, size = 154, normalized size = 1.04

$$\frac{1}{9}Bc^3ex^9 + \frac{1}{8}\left(Bc^3d + Ac^3e\right)x^8 + \frac{1}{7}\left(Ac^3d + 3\,Bac^2e\right)x^7 + \frac{1}{2}\left(Bac^2d + Aac^2e\right)x^6 + Aa^3dx + \frac{3}{5}\left(Aac^2d + Ba^2ce\right)x^5 + \frac{3}{4}\left(Ba^2cd + Aa^2ce\right)x^4 + \frac{1}{3}\left(3\,Aa^2cd + Ba^3e\right)x^3 + \frac{1}{2}\left(Ba^3d + Aa^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*e*x^9 + 1/8*(B*c^3*d + A*c^3*e)*x^8 + 1/7*(A*c^3*d + 3*B*a*c^2*e)
*x^7 + 1/2*(B*a*c^2*d + A*a*c^2*e)*x^6 + A*a^3*d*x + 3/5*(A*a*c^2*d + B*a^2
*c*e)*x^5 + 3/4*(B*a^2*c*d + A*a^2*c*e)*x^4 + 1/3*(3*A*a^2*c*d + B*a^3*e)*x
^3 + 1/2*(B*a^3*d + A*a^3*e)*x^2
```

mupad [B] time = 0.07, size = 140, normalized size = 0.95

$$x^3\left(\frac{B\,e\,a^3}{3} + A\,c\,d\,a^2\right) + x^7\left(\frac{A\,d\,c^3}{7} + \frac{3\,B\,a\,e\,c^2}{7}\right) + x^5\left(\frac{3\,B\,e\,a^2\,c}{5} + \frac{3\,A\,d\,a\,c^2}{5}\right) + \frac{a^3\,x^2\,\left(A\,e+B\,d\right)}{2} + \frac{c^3\,x^8\,\left(A\,e+B\,d\right)}{8} + A\,a^3\,d\,x + \frac{B\,c^3\,e\,x^9}{9} + \frac{3\,a^2\,c\,x^4\,\left(A\,e+B\,d\right)}{4} + \frac{a\,c^2\,x^6\,\left(A\,e+B\,d\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((B*a^3*e)/3 + A*a^2*c*d) + x^7*((A*c^3*d)/7 + (3*B*a*c^2*e)/7) + x^5*(
(3*A*a*c^2*d)/5 + (3*B*a^2*c*e)/5) + (a^3*x^2*(A*e + B*d))/2 + (c^3*x^8*(A*
e + B*d))/8 + A*a^3*d*x + (B*c^3*e*x^9)/9 + (3*a^2*c*x^4*(A*e + B*d))/4 + (
a*c^2*x^6*(A*e + B*d))/2
```

sympy [A] time = 0.09, size = 182, normalized size = 1.23

$$Aa^3dx + \frac{Bc^3ex^9}{9} + x^8\left(\frac{Ac^3e}{8} + \frac{Bc^3d}{8}\right) + x^7\left(\frac{Ac^3d}{7} + \frac{3Bac^2e}{7}\right) + x^6\left(\frac{Aac^2e}{2} + \frac{Bac^2d}{2}\right) + x^5\left(\frac{3Aac^2d}{5} + \frac{3Ba^2ce}{5}\right) + x^4\left(\frac{3Aa^2ce}{4} + \frac{3Ba^2cd}{4}\right) + x^3\left(Aa^2cd + \frac{Ba^3e}{3}\right) + x^2\left(\frac{Aa^3e}{2} + \frac{Ba^3d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d*x + B*c**3*e*x**9/9 + x**8*(A*c**3*e/8 + B*c**3*d/8) + x**7*(A*c**
3*d/7 + 3*B*a*c**2*e/7) + x**6*(A*a*c**2*e/2 + B*a*c**2*d/2) + x**5*(3*A*a*
c**2*d/5 + 3*B*a**2*c*e/5) + x**4*(3*A*a**2*c*e/4 + 3*B*a**2*c*d/4) + x**3*
(A*a**2*c*d + B*a**3*e/3) + x**2*(A*a**3*e/2 + B*a**3*d/2)
```

3.1144 $\int (A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=56

$$a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

Rubi [A] time = 0.02, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Acx^3+a^3Ax+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + a^2*A*c*x^3 + (3*a*A*c^2*x^5)/5 + (A*c^3*x^7)/7 + (B*(a + c*x^2)^
4)/(8*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^3\,dx&=\frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a+cx^2\right)^3\,dx\\&=\frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a^3+3a^2cx^2+3ac^2x^4+c^3x^6\right)\,dx\\&=a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{1}{7}Ac^3x^7+\frac{B\left(a+cx^2\right)^4}{8c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 85, normalized size = 1.52

$$a^3Ax+\frac{1}{2}a^3Bx^2+a^2Acx^3+\frac{3}{4}a^2Bcx^4+\frac{3}{5}aAc^2x^5+\frac{1}{2}aBc^2x^6+\frac{1}{7}Ac^3x^7+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^3*B*x^2)/2 + a^2*A*c*x^3 + (3*a^2*B*c*x^4)/4 + (3*a*A*c^2*x^5)
/5 + (a*B*c^2*x^6)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + c*x^2)^3, x]
```

fricas [A] time = 0.36, size = 73, normalized size = 1.30

$$\frac{1}{8}x^8c^3B + \frac{1}{7}x^7c^3A + \frac{1}{2}x^6c^2aB + \frac{3}{5}x^5c^2aA + \frac{3}{4}x^4ca^2B + x^3ca^2A + \frac{1}{2}x^2a^3B + xa^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 1/7*x^7*c^3*A + 1/2*x^6*c^2*a*B + 3/5*x^5*c^2*a*A + 3/4*x^4
*c*a^2*B + x^3*c*a^2*A + 1/2*x^2*a^3*B + x*a^3*A
```

giac [A] time = 0.17, size = 73, normalized size = 1.30

$$\frac{1}{8}Bc^3x^8 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bac^2x^6 + \frac{3}{5}Aac^2x^5 + \frac{3}{4}Ba^2cx^4 + Aa^2cx^3 + \frac{1}{2}Ba^3x^2 + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

maple [A] time = 0.04, size = 74, normalized size = 1.32

$$\frac{1}{8}B\,c^3x^8 + \frac{1}{7}A\,c^3x^7 + \frac{1}{2}Ba\,c^2x^6 + \frac{3}{5}Aa\,c^2x^5 + \frac{3}{4}B\,a^2c\,x^4 + A\,a^2c\,x^3 + \frac{1}{2}B\,a^3x^2 + A\,a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*A*c^3*x^7+1/2*B*a*c^2*x^6+3/5*A*a*c^2*x^5+3/4*B*a^2*c*x^4
+A*a^2*c*x^3+1/2*B*a^3*x^2+A*a^3*x
```

maxima [A] time = 0.64, size = 73, normalized size = 1.30

$$\frac{1}{8}Bc^3x^8 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bac^2x^6 + \frac{3}{5}Aac^2x^5 + \frac{3}{4}Ba^2cx^4 + Aa^2cx^3 + \frac{1}{2}Ba^3x^2 + Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

mupad [B] time = 0.03, size = 73, normalized size = 1.30

$$\frac{B\,a^3\,x^2}{2} + A\,a^3\,x + \frac{3\,B\,a^2\,c\,x^4}{4} + A\,a^2\,c\,x^3 + \frac{B\,a\,c^2\,x^6}{2} + \frac{3\,A\,a\,c^2\,x^5}{5} + \frac{B\,c^3\,x^8}{8} + \frac{A\,c^3\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (B*a^3*x^2)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8 + A*a^3*x + A*a^2*c*x^3 + (3*
A*a*c^2*x^5)/5 + (3*B*a^2*c*x^4)/4 + (B*a*c^2*x^6)/2
```

sympy [A] time = 0.08, size = 85, normalized size = 1.52

$$Aa^3x + Aa^2cx^3 + \frac{3Aac^2x^5}{5} + \frac{Ac^3x^7}{7} + \frac{Ba^3x^2}{2} + \frac{3Ba^2cx^4}{4} + \frac{Bac^2x^6}{2} + \frac{Bc^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a**3*x**2/
2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8
```

3.1145 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=290

$$\frac{x\left(B\left(ae^2+cd^2\right)^3-Acde\left(3a^2e^4+3acd^2e^2+c^2d^4\right)\right)}{e^7}-\frac{cx^2\left(3a^2e^4+3acd^2e^2+c^2d^4\right)(Bd-Ae)}{2e^6}-\frac{cx^3\left(Acde\left(3ae^2+\right.\right.}{}$$

Rubi [A] time = 0.40, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{cx^3\left(Acde\left(3ae^2+cd^2\right)-B\left(3a^2e^4+3acd^2e^2+c^2d^4\right)\right)}{3e^5}-\frac{cx^2\left(3a^2e^4+3acd^2e^2+c^2d^4\right)(Bd-Ae)}{2e^6}+\frac{x\left(B\left(ae^2+cd^2\right)^3-Acde\left(3a^2e^4+3acd^2e^2+c^2d^4\right)\right)}{e^7}+\frac{c^2x^5\left(3aBe^2-Acde+Bcd^2\right)}{5e^3}-\frac{c^2x^4\left(3ae^2+cd^2\right)(Bd-Ae)}{4e^4}-\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)\log(d+ex)}{e^8}-\frac{c^3x^6(Bd-Ae)}{6e^2}+\frac{Bc^3x^7}{7e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x),x]
```

```
[Out] ((B*(c*d^2 + a*e^2)^3 - A*c*d*e*(c^2*d^4 + 3*a*c*d^2*e^2 + 3*a^2*e^4))*x)/e
^7 - (c*(B*d - A*e)*(c^2*d^4 + 3*a*c*d^2*e^2 + 3*a^2*e^4)*x^2)/(2*e^6) - (c
*(A*c*d*e*(c*d^2 + 3*a*e^2) - B*(c^2*d^4 + 3*a*c*d^2*e^2 + 3*a^2*e^4))*x^3)
/(3*e^5) - (c^2*(B*d - A*e)*(c*d^2 + 3*a*e^2)*x^4)/(4*e^4) + (c^2*(B*c*d^2
- A*c*d*e + 3*a*B*e^2)*x^5)/(5*e^3) - (c^3*(B*d - A*e)*x^6)/(6*e^2) + (B*c^
3*x^7)/(7*e) - ((B*d - A*e)*(c*d^2 + a*e^2)^3*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{d+ex}\,dx &= \int \left(\frac{B\left(cd^2+ae^2\right)^3-Acde\left(c^2d^4+3acd^2e^2+3a^2e^4\right)}{e^7}+\frac{c(-Bd+Ae)\left(c^2d^4+3acd^2e^2\right.}{e^6}\right.\\ &= \frac{\left(B\left(cd^2+ae^2\right)^3-Acde\left(c^2d^4+3acd^2e^2+3a^2e^4\right)\right)x}{e^7}-\frac{c(Bd-Ae)\left(c^2d^4+3acd^2e^2+\right.}{2e^6}\end{aligned}$$

Mathematica [A] time = 0.18, size = 311, normalized size = 1.07

$$\frac{ex\left(7Ace\left(90a^2e^4(ex-2d)+15ace^2\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+c^2\left(-60d^5+30d^4ex-20d^3e^2x^2+15d^2e^3x^3-12de^4x^4+10e^5x^5\right)\right)+B\left(420a^3e^6+210a^2ce^4\left(6d^2-3dex+2e^2x^2\right)+21ac^2e^2\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)+c^3\left(420d^6-210d^5ex+140d^4e^2x^2-105d^3e^3x^3+84d^2e^4x^4-70de^5x^5+60e^6x^6\right)\right)\right)-420\left(ae^2+cd^2\right)^3(Bd-Ae)\log(d+ex)}{420e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (e*x*(7*A*c*e*(90*a^2*e^4*(-2*d + e*x) + 15*a*c*e^2*(-12*d^3 + 6*d^2*e*x -
4*d*e^2*x^2 + 3*e^3*x^3) + c^2*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*
d^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5)) + B*(420*a^3*e^6 + 210*a^2*c*e^4*
(6*d^2 - 3*d*e*x + 2*e^2*x^2) + 21*a*c^2*e^2*(60*d^4 - 30*d^3*e*x + 20*d^2*
e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + c^3*(420*d^6 - 210*d^5*e*x + 140*d^4
*e^2*x^2 - 105*d^3*e^3*x^3 + 84*d^2*e^4*x^4 - 70*d*e^5*x^5 + 60*e^6*x^6)))
- 420*(B*d - A*e)*(c*d^2 + a*e^2)^3*Log[d + e*x])/(420*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x), x]
```

fricas [A] time = 0.39, size = 448, normalized size = 1.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*B*c^3*e^7*x^7 - 70*(B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 84*(B*c^3*d^2*
e^5 - A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 - 105*(B*c^3*d^3*e^4 - A*c^3*d^2*e^5
 + 3*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 + 140*(B*c^3*d^4*e^3 - A*c^3*d^3*e^
4 + 3*B*a*c^2*d^2*e^5 - 3*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 - 210*(B*c^3*d
^5*e^2 - A*c^3*d^4*e^3 + 3*B*a*c^2*d^3*e^4 - 3*A*a*c^2*d^2*e^5 + 3*B*a^2*c*
d*e^6 - 3*A*a^2*c*e^7)*x^2 + 420*(B*c^3*d^6*e - A*c^3*d^5*e^2 + 3*B*a*c^2*d
^4*e^3 - 3*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 - 3*A*a^2*c*d*e^6 + B*a^3*e^
7)*x - 420*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3
 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)*log(e*x
 + d))/e^8
```

giac [A] time = 0.18, size = 459, normalized size = 1.58

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2
*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)*e^(-8)*log(abs(x*
e + d)) + 1/420*(60*B*c^3*x^7*e^6 - 70*B*c^3*d*x^6*e^5 + 84*B*c^3*d^2*x^5*e
^4 - 105*B*c^3*d^3*x^4*e^3 + 140*B*c^3*d^4*x^3*e^2 - 210*B*c^3*d^5*x^2*e +
420*B*c^3*d^6*x + 70*A*c^3*x^6*e^6 - 84*A*c^3*d*x^5*e^5 + 105*A*c^3*d^2*x^4
*e^4 - 140*A*c^3*d^3*x^3*e^3 + 210*A*c^3*d^4*x^2*e^2 - 420*A*c^3*d^5*x*e +
252*B*a*c^2*x^5*e^6 - 315*B*a*c^2*d*x^4*e^5 + 420*B*a*c^2*d^2*x^3*e^4 - 630
*B*a*c^2*d^3*x^2*e^3 + 1260*B*a*c^2*d^4*x*e^2 + 315*A*a*c^2*x^4*e^6 - 420*A
*a*c^2*d*x^3*e^5 + 630*A*a*c^2*d^2*x^2*e^4 - 1260*A*a*c^2*d^3*x*e^3 + 420*B
*a^2*c*x^3*e^6 - 630*B*a^2*c*d*x^2*e^5 + 1260*B*a^2*c*d^2*x*e^4 + 630*A*a^2
*c*x^2*e^6 - 1260*A*a^2*c*d*x*e^5 + 420*B*a^3*x*e^6)*e^(-7)
```

maple [A] time = 0.05, size = 526, normalized size = 1.81

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d),x)
```

```
[Out] 1/6/e*A*x^6*c^3+1/e*B*x*a^3+1/e*ln(e*x+d)*A*a^3-1/6/e^2*B*x^6*c^3*d+1/2/e^5
*A*x^2*c^3*d^4-1/e^2*ln(e*x+d)*B*a^3*d-1/e^8*ln(e*x+d)*B*c^3*d^7-1/3/e^4*A*
x^3*c^3*d^3+1/5/e^3*B*x^5*c^3*d^2+3/4/e*A*x^4*a*c^2-1/5/e^2*A*x^5*c^3*d+1/e
^7*ln(e*x+d)*A*c^3*d^6-1/e^6*A*x*c^3*d^5-1/2/e^6*B*x^2*c^3*d^5+1/e^7*B*x*c^
```

```
3*d^6+1/e*B*x^3*a^2*c+3/5/e*B*x^5*a*c^2+3/2/e*A*x^2*a^2*c+1/4/e^3*A*x^4*c^3
*d^2-1/4/e^4*B*x^4*c^3*d^3+1/3/e^5*B*x^3*c^3*d^4+3/e^5*B*x*a*c^2*d^4-3/e^2*
A*x*a^2*c*d-3/e^4*A*x*a*c^2*d^3+3/e^3*B*x*a^2*c*d^2+1/e^3*B*x^3*a*c^2*d^2+3
/e^3*ln(e*x+d)*A*a^2*c*d^2+3/e^5*ln(e*x+d)*A*a*c^2*d^4-3/e^4*ln(e*x+d)*B*a^
2*c*d^3-3/e^6*ln(e*x+d)*B*a*c^2*d^5-3/2/e^4*B*x^2*a*c^2*d^3-3/2/e^2*B*x^2*a
^2*c*d+3/2/e^3*A*x^2*a*c^2*d^2-1/e^2*A*x^3*a*c^2*d-3/4/e^2*B*x^4*a*c^2*d+1/
7*B*c^3/e*x^7
```

maxima [A] time = 0.56, size = 447, normalized size = 1.54

$$\frac{60\,Bc^3e^6x^7 - 70\left(Bc^3de^5 - Ac^3e^6\right)x^6 + 84\left(Bc^3d^2e^4 - Ac^3de^5 + 3\,Bac^2e^6\right)x^5 - 105\left(Bc^3d^3e^3 - Ac^3d^2e^4 + 3\,Bac^2de^5 - 3\,Aac^2e^6\right)x^4 + 140\left(Bc^3d^4e^2 - Ac^3d^3e^3 + 3\,Bac^2d^2e^4 - 3\,Aac^2de^5 + 3\,Ba^2ce^6\right)x^3 - 210\left(Bc^3d^5e - Ac^3d^4e^2 + 3\,Bac^2d^3e^3 - 3\,Aac^2d^2e^4 + 3\,Ba^2cde^5 - 3\,Aa^2ce^6\right)x^2 + 420\left(Bc^3d^6 - Ac^3d^5e + 3\,Bac^2d^4e^2 - 3\,Aac^2d^3e^3 + 3\,Ba^2cd^2e^4 - 3\,Aa^2cde^5 + Ba^3e^6\right)x}{420\,e^7} - \frac{\left(Bc^3d^7 - Ac^3d^6e + 3\,Bac^2d^5e^2 - 3\,Aac^2d^4e^3 + 3\,Ba^2cd^3e^4 - 3\,Aa^2cd^2e^5 + Ba^3de^6 - Aa^3e^7\right)\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*B*c^3*e^6*x^7 - 70*(B*c^3*d*e^5 - A*c^3*e^6)*x^6 + 84*(B*c^3*d^2*
e^4 - A*c^3*d*e^5 + 3*B*a*c^2*e^6)*x^5 - 105*(B*c^3*d^3*e^3 - A*c^3*d^2*e^4
 + 3*B*a*c^2*d*e^5 - 3*A*a*c^2*e^6)*x^4 + 140*(B*c^3*d^4*e^2 - A*c^3*d^3*e^
3 + 3*B*a*c^2*d^2*e^4 - 3*A*a*c^2*d*e^5 + 3*B*a^2*c*e^6)*x^3 - 210*(B*c^3*d
^5*e - A*c^3*d^4*e^2 + 3*B*a*c^2*d^3*e^3 - 3*A*a*c^2*d^2*e^4 + 3*B*a^2*c*d*
e^5 - 3*A*a^2*c*e^6)*x^2 + 420*(B*c^3*d^6 - A*c^3*d^5*e + 3*B*a*c^2*d^4*e^2
 - 3*A*a*c^2*d^3*e^3 + 3*B*a^2*c*d^2*e^4 - 3*A*a^2*c*d*e^5 + B*a^3*e^6)*x)/
e^7 - (B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*
B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)*log(e*x + d)
/e^8
```

mupad [B] time = 0.08, size = 494, normalized size = 1.70

$$x^2\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{Ac^3}{e}-\frac{Bc^3d}{e^2}\right)}{e}-\frac{3Bac^2}{e}\right)}{e}+\frac{3Aac^2}{e}\right)}{e}-\frac{3Ba^2c}{e}\right)}{2e}+\frac{3Aa^2c}{2e}\right)+x^4\left(\frac{d\left(\frac{d\left(\frac{Ac^3}{e}-\frac{Bc^3d}{e^2}\right)}{e}-\frac{3Bac^2}{e}\right)}{4e}+\frac{3Aac^2}{4e}\right)+x^6\left(\frac{Ac^3}{6e}-\frac{Bc^3d}{6e^2}\right)-x^3\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{Ac^3}{e}-\frac{Bc^3d}{e^2}\right)}{e}-\frac{3Bac^2}{e}\right)}{e}+\frac{3Aac^2}{e}\right)}{3e}-\frac{Ba^2c}{e}\right)+x\left(\frac{Ba^3}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{Ac^3}{e}-\frac{Bc^3d}{e^2}\right)}{e}-\frac{3Bac^2}{e}\right)}{e}+\frac{3Aac^2}{e}\right)}{e}-\frac{3Ba^2c}{e}\right)}{e}+\frac{3Aa^2c}{e}\right)}{e}\right)-x^5\left(\frac{d\left(\frac{Ac^3}{e}-\frac{Bc^3d}{e^2}\right)}{5e}-\frac{3Bac^2}{5e}\right)+\frac{\ln\left(d+ex\right)\left(-Ba^3de^6+Aa^3e^7-3Ba^2cd^3e^4+3Aa^2cd^2e^5-3Bac^2d^5e^2+3Aac^2d^4e^3-Bc^3d^7+Ac^3d^6e\right)}{e^8}+\frac{Bc^3x^7}{7e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x),x)
```

```
[Out] x^2*((d*((d*((d*((d*((A*c^3)/e - (B*c^3*d)/e^2))/e - (3*B*a*c^2)/e))/e + (3
*A*a*c^2)/e))/e - (3*B*a^2*c)/e))/(2*e) + (3*A*a^2*c)/(2*e)) + x^4*((d*((d*
((A*c^3)/e - (B*c^3*d)/e^2))/e - (3*B*a*c^2)/e))/(4*e) + (3*A*a*c^2)/(4*e))
 + x^6*((A*c^3)/(6*e) - (B*c^3*d)/(6*e^2)) - x^3*((d*((d*((d*((A*c^3)/e - (
B*c^3*d)/e^2))/e - (3*B*a*c^2)/e))/e + (3*A*a*c^2)/e))/(3*e) - (B*a^2*c)/e)
 + x*((B*a^3)/e - (d*((d*((d*((d*((d*((A*c^3)/e - (B*c^3*d)/e^2))/e - (3*B*
a*c^2)/e))/e + (3*A*a*c^2)/e))/e - (3*B*a^2*c)/e))/e + (3*A*a^2*c)/e))/e) -
 x^5*((d*((A*c^3)/e - (B*c^3*d)/e^2))/(5*e) - (3*B*a*c^2)/(5*e)) + (log(d +
 e*x)*(A*a^3*e^7 - B*c^3*d^7 - B*a^3*d*e^6 + A*c^3*d^6*e + 3*A*a*c^2*d^4*e^
3 + 3*A*a^2*c*d^2*e^5 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4))/e^8 + (B*c^
3*x^7)/(7*e)
```

sympy [A] time = 0.92, size = 410, normalized size = 1.41

$$\frac{Bc^3x^7}{7e} + x^6\left(\frac{Ac^3}{6e} - \frac{Bc^3d}{6e^2}\right) + x^5\left(-\frac{Ac^3d}{5e^2} + \frac{3Bac^2}{5e} + \frac{Bc^3d^2}{5e^3}\right) + x^4\left(\frac{3Aac^2}{4e} + \frac{Ac^3d^2}{4e^3} - \frac{3Bac^2d}{4e^2} - \frac{Bc^3d^3}{4e^4}\right) + x^3\left(-\frac{Aac^2d}{e^2} - \frac{Ac^3d^3}{3e^4} + \frac{Ba^2c}{e} + \frac{Bac^2d^2}{e^3} + \frac{Bc^3d^4}{3e^5}\right) + x^2\left(\frac{3Aa^2c}{2e} + \frac{3Aac^2d^2}{2e^3} + \frac{Ac^3d^4}{2e^5} - \frac{3Ba^2cd}{2e^2} - \frac{3Bac^2d^3}{2e^4} - \frac{Bc^3d^5}{2e^6}\right) + x\left(-\frac{3Aa^2cd}{e^2} - \frac{3Aac^2d^3}{e^4} - \frac{Ac^3d^5}{e^6} + \frac{Ba^3}{e} + \frac{3Ba^2cd^2}{e^3} + \frac{3Bac^2d^4}{e^5} + \frac{Bc^3d^6}{e^7}\right) - \frac{(-Ae + Bd)\left(ae^2 + cd^2\right)^3\log\left(d + ex\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d),x)
```

```
[Out] B*c**3*x**7/(7*e) + x**6*(A*c**3/(6*e) - B*c**3*d/(6*e**2)) + x**5*(-A*c**3
*d/(5*e**2) + 3*B*a*c**2/(5*e) + B*c**3*d**2/(5*e**3)) + x**4*(3*A*a*c**2/(
4*e) + A*c**3*d**2/(4*e**3) - 3*B*a*c**2*d/(4*e**2) - B*c**3*d**3/(4*e**4))
 + x**3*(-A*a*c**2*d/e**2 - A*c**3*d**3/(3*e**4) + B*a**2*c/e + B*a*c**2*d*
*2/e**3 + B*c**3*d**4/(3*e**5)) + x**2*(3*A*a**2*c/(2*e) + 3*A*a*c**2*d**2/
(2*e**3) + A*c**3*d**4/(2*e**5) - 3*B*a**2*c*d/(2*e**2) - 3*B*a*c**2*d**3/(
2*e**4) - B*c**3*d**5/(2*e**6)) + x*(-3*A*a**2*c*d/e**2 - 3*A*a*c**2*d**3/e
**4 - A*c**3*d**5/e**6 + B*a**3/e + 3*B*a**2*c*d**2/e**3 + 3*B*a*c**2*d**4/
e**5 + B*c**3*d**6/e**7) - (-A*e + B*d)*(a*e**2 + c*d**2)**3*log(d + e*x)/e
**8
```

3.1146 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=309

$$-\frac{cx\left(6Bd\left(ae^2+cd^2\right)^2-Ae\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)\right)}{e^7}-\frac{cx^2\left(2Acde\left(3ae^2+2cd^2\right)-B\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)\right.}{2e^6}$$

Rubi [A] time = 0.44, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{cx^2\left(2Acde\left(3ae^2+2cd^2\right)-B\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)\right)}{2e^6}-\frac{cx\left(6Bd\left(ae^2+cd^2\right)^2-Ae\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)\right)}{e^7}-\frac{c^2x^4\left(2Acde-3B\left(ae^2+cd^2\right)\right)}{4e^4}+\frac{c^2x^3\left(3Ae\left(ae^2+cd^2\right)-B\left(6ade^2+4cd^3\right)\right)}{3e^5}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{e^8(d+ex)}+\frac{\left(ae^2+cd^2\right)^2\log(d+ex)\left(aBe^2-6Acde+7Bcd^2\right)}{e^8}-\frac{c^3x^5(2Bd-Ae)}{5e^3}+\frac{Bc^3x^6}{6e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] -((c*(6*B*d*(c*d^2 + a*e^2)^2 - A*e*(5*c^2*d^4 + 9*a*c*d^2*e^2 + 3*a^2*e^4)
)*x)/e^7) - (c*(2*A*c*d*e*(2*c*d^2 + 3*a*e^2) - B*(5*c^2*d^4 + 9*a*c*d^2*e^
2 + 3*a^2*e^4))*x^2)/(2*e^6) + (c^2*(3*A*e*(c*d^2 + a*e^2) - B*(4*c*d^3 + 6
*a*d*e^2))*x^3)/(3*e^5) - (c^2*(2*A*c*d*e - 3*B*(c*d^2 + a*e^2))*x^4)/(4*e^
4) - (c^3*(2*B*d - A*e)*x^5)/(5*e^3) + (B*c^3*x^6)/(6*e^2) + ((B*d - A*e)*(
c*d^2 + a*e^2)^3)/(e^8*(d + e*x)) + ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d
*e + a*B*e^2)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^2}\,dx=\int \left(\frac{c\left(-6Bd\left(cd^2+ae^2\right)^2+Ae\left(5c^2d^4+9acd^2e^2+3a^2e^4\right)\right)}{e^7}-\frac{c\left(-5Bc^2d^4+4Ac^2d^3e\right.}{}\right.$$

$$=-\frac{c\left(6Bd\left(cd^2+ae^2\right)^2-Ae\left(5c^2d^4+9acd^2e^2+3a^2e^4\right)\right)x}{e^7}-\frac{c\left(2Acde\left(2cd^2+3ae^2\right)-\right.}{}$$

Mathematica [A] time = 0.18, size = 405, normalized size = 1.31

$$\frac{6Ae\left(-10a^3e^6+30a^2ce^4\left(-d^2+dex+e^2x^2\right)+10ac^2e^2\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+c^3\left(-10d^6+50d^5ex+30d^4e^2x^2-10d^3e^3x^3+5d^2e^4x^4-3de^5x^5+2e^6x^6\right)\right)+B\left(60a^3de^6+90a^2ce^4\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+15ac^2e^2\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)+c^3\left(60d^7-360d^6ex-210d^5e^2x^2+70d^4e^3x^3-35d^3e^4x^4+21d^2e^5x^5-14de^6x^6+10e^7x^7\right)\right)+60(d+ex)\left(ae^2+cd^2\right)^2\log(d+ex)\left(aBe^2-6Acde+7Bcd^2\right)}{60e^8(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (6*A*e*(-10*a^3*e^6 + 30*a^2*c*e^4*(-d^2 + d*e*x + e^2*x^2) + 10*a*c^2*e^2*
(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + c^3*(-10*d^6
 + 50*d^5*e*x + 30*d^4*e^2*x^2 - 10*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 3*d*e^5*x
^5 + 2*e^6*x^6)) + B*(60*a^3*d*e^6 + 90*a^2*c*e^4*(2*d^3 - 4*d^2*e*x - 3*d*
e^2*x^2 + e^3*x^3) + 15*a*c^2*e^2*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 1
0*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5) + c^3*(60*d^7 - 360*d^6*e*x - 210*
d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 - 14*d*e^6*x
```

```
^6 + 10*e^7*x^7)) + 60*(c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*
(d + e*x)*Log[d + e*x])/(60*e^8*(d + e*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^2, x]
```

fricas [B] time = 0.42, size = 621, normalized size = 2.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*e^7*x^7 + 60*B*c^3*d^7 - 60*A*c^3*d^6*e + 180*B*a*c^2*d^5*e^
2 - 180*A*a*c^2*d^4*e^3 + 180*B*a^2*c*d^3*e^4 - 180*A*a^2*c*d^2*e^5 + 60*B*
a^3*d*e^6 - 60*A*a^3*e^7 - 2*(7*B*c^3*d*e^6 - 6*A*c^3*e^7)*x^6 + 3*(7*B*c^3
*d^2*e^5 - 6*A*c^3*d*e^6 + 15*B*a*c^2*e^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 6*A*c
^3*d^2*e^5 + 15*B*a*c^2*d*e^6 - 12*A*a*c^2*e^7)*x^4 + 10*(7*B*c^3*d^4*e^3 -
 6*A*c^3*d^3*e^4 + 15*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 + 9*B*a^2*c*e^7)*x
^3 - 30*(7*B*c^3*d^5*e^2 - 6*A*c^3*d^4*e^3 + 15*B*a*c^2*d^3*e^4 - 12*A*a*c^
2*d^2*e^5 + 9*B*a^2*c*d*e^6 - 6*A*a^2*c*e^7)*x^2 - 60*(6*B*c^3*d^6*e - 5*A*
c^3*d^5*e^2 + 12*B*a*c^2*d^4*e^3 - 9*A*a*c^2*d^3*e^4 + 6*B*a^2*c*d^2*e^5 -
3*A*a^2*c*d*e^6)*x + 60*(7*B*c^3*d^7 - 6*A*c^3*d^6*e + 15*B*a*c^2*d^5*e^2 -
 12*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 - 6*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 +
 (7*B*c^3*d^6*e - 6*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4
 + 9*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 + B*a^3*e^7)*x)*log(e*x + d))/(e^9*x
 + d*e^8)
```

giac [A] time = 0.20, size = 539, normalized size = 1.74

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*B*c^3 - 12*(7*B*c^3*d*e - A*c^3*e^2)*e^(-1)/(x*e + d) + 45*(7*B*c^
3*d^2*e^2 - 2*A*c^3*d*e^3 + B*a*c^2*e^4)*e^(-2)/(x*e + d)^2 - 20*(35*B*c^3*
d^3*e^3 - 15*A*c^3*d^2*e^4 + 15*B*a*c^2*d*e^5 - 3*A*a*c^2*e^6)*e^(-3)/(x*e
+ d)^3 + 30*(35*B*c^3*d^4*e^4 - 20*A*c^3*d^3*e^5 + 30*B*a*c^2*d^2*e^6 - 12*
A*a*c^2*d*e^7 + 3*B*a^2*c*e^8)*e^(-4)/(x*e + d)^4 - 180*(7*B*c^3*d^5*e^5 -
5*A*c^3*d^4*e^6 + 10*B*a*c^2*d^3*e^7 - 6*A*a*c^2*d^2*e^8 + 3*B*a^2*c*d*e^9
- A*a^2*c*e^10)*e^(-5)/(x*e + d)^5)*(x*e + d)^6*e^(-8) - (7*B*c^3*d^6 - 6*A
*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 -
6*A*a^2*c*d*e^5 + B*a^3*e^6)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) +
(B*c^3*d^7*e^6/(x*e + d) - A*c^3*d^6*e^7/(x*e + d) + 3*B*a*c^2*d^5*e^8/(x*e
 + d) - 3*A*a*c^2*d^4*e^9/(x*e + d) + 3*B*a^2*c*d^3*e^10/(x*e + d) - 3*A*a^
2*c*d^2*e^11/(x*e + d) + B*a^3*d*e^12/(x*e + d) - A*a^3*e^13/(x*e + d))*e^(
-14)
```

maple [A] time = 0.06, size = 558, normalized size = 1.81

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x)
```

```
[Out] -3/e^5/(e*x+d)*A*a*c^2*d^4+1/e^2*ln(e*x+d)*B*a^3+1/5*c^3/e^2*A*x^5-1/e/(e*x
+d)*A*a^3-6*c^3/e^7*B*d^5*x-1/e^7/(e*x+d)*A*c^3*d^6-12/e^5*ln(e*x+d)*A*a*c^
2*d^3+9/e^4*ln(e*x+d)*B*a^2*c*d^2+15/e^6*ln(e*x+d)*B*a*c^2*d^4+3/e^4/(e*x+d
)*B*a^2*c*d^3+3/e^6/(e*x+d)*B*a*c^2*d^5-6/e^3*ln(e*x+d)*A*a^2*c*d+9*c^2/e^4
*A*d^2*a*x-6*c/e^3*B*d*a^2*x-12*c^2/e^5*B*d^3*a*x+9/2*c^2/e^4*B*x^2*a*d^2-2
*c^2/e^3*B*x^3*a*d-3*c^2/e^3*A*x^2*a*d-3/e^3/(e*x+d)*A*a^2*c*d^2+1/e^2/(e*x
+d)*B*d*a^3+1/e^8/(e*x+d)*B*c^3*d^7-6/e^7*ln(e*x+d)*A*c^3*d^5-2/5*c^3/e^3*B
*x^5*d-1/2*c^3/e^3*A*x^4*d+7/e^8*ln(e*x+d)*B*c^3*d^6+3/4*c^2/e^2*B*x^4*a+3/
4*c^3/e^4*B*x^4*d^2+c^2/e^2*A*x^3*a+c^3/e^4*A*x^3*d^2-4/3*c^3/e^5*B*x^3*d^3
-2*c^3/e^5*A*x^2*d^3+3/2*c/e^2*B*x^2*a^2+5/2*c^3/e^6*B*x^2*d^4+3*c/e^2*A*a^
2*x+5*c^3/e^6*A*d^4*x+1/6*B*c^3/e^2*x^6
```

maxima [A] time = 0.56, size = 456, normalized size = 1.48

$$\frac{B c^3 d^7 - A c^3 d^6 e + 3 B a c^2 d^5 e^2 - 3 A a c^2 d^4 e^3 + 3 B a^2 c d^3 e^4 - 3 A a^2 c d^2 e^5 + B a^3 d e^6 - A a^3 e^7}{e^9 x + d e^8} + \frac{10 B c^3 e^5 x^6 - 12 \left(2 B c^3 d e^4 - A c^3 e^5\right) x^5 + 15 \left(3 B c^3 d^2 e^3 - 2 A c^3 d e^4 + 3 B a c^2 e^5\right) x^4 - 20 \left(4 B c^3 d^3 e^2 - 3 A c^3 d^2 e^3 + 6 B a c^2 d e^4 - 3 A a c^2 e^5\right) x^3 + 30 \left(5 B c^3 d^4 e - 4 A c^3 d^3 e^2 + 9 B a c^2 d^2 e^3 - 6 A a c^2 d e^4 + 3 B a^2 c e^5\right) x^2 - 60 \left(6 B c^3 d^5 - 5 A c^3 d^4 e + 12 B a c^2 d^3 e^2 - 9 A a c^2 d^2 e^3 + 6 B a^2 c d e^4 - 3 A a^2 c e^5\right) x}{60 e^7} + \frac{\left(7 B c^3 d^6 - 6 A c^3 d^5 e + 15 B a c^2 d^4 e^2 - 12 A a c^2 d^3 e^3 + 9 B a^2 c d^2 e^4 - 6 A a^2 c d e^5 + B a^3 e^6\right) \log\left(e x + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*
c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)/(e^9*x + d*e^8) +
1/60*(10*B*c^3*e^5*x^6 - 12*(2*B*c^3*d*e^4 - A*c^3*e^5)*x^5 + 15*(3*B*c^3*d
^2*e^3 - 2*A*c^3*d*e^4 + 3*B*a*c^2*e^5)*x^4 - 20*(4*B*c^3*d^3*e^2 - 3*A*c^3
*d^2*e^3 + 6*B*a*c^2*d*e^4 - 3*A*a*c^2*e^5)*x^3 + 30*(5*B*c^3*d^4*e - 4*A*c
^3*d^3*e^2 + 9*B*a*c^2*d^2*e^3 - 6*A*a*c^2*d*e^4 + 3*B*a^2*c*e^5)*x^2 - 60*
(6*B*c^3*d^5 - 5*A*c^3*d^4*e + 12*B*a*c^2*d^3*e^2 - 9*A*a*c^2*d^2*e^3 + 6*B
*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x)/e^7 + (7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*
a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 +
B*a^3*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 1.74, size = 826, normalized size = 2.67

$$x^3 \left(\frac{2 d \left(\frac{2 d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e}-\frac{3 B a c^2}{e^2}+\frac{B c^3 d^2}{e^4}\right)}{3 e}-\frac{d^2 \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{3 e^2}+\frac{A a c^2}{e^2}\right)+x^5 \left(\frac{A c^3}{5 e^2}-\frac{2 B c^3 d}{5 e^3}\right)-x^4 \left(\frac{d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{2 e}-\frac{3 B a c^2}{4 e^2}+\frac{B c^3 d^2}{4 e^4}\right)-x \left(\frac{2 d \left(\frac{d^2 \left(\frac{2 d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e}-\frac{3 B a c^2}{e^2}+\frac{B c^3 d^2}{e^4}\right)}{e^2}-\frac{2 d \left(\frac{2 d \left(\frac{2 d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e}-\frac{3 B a c^2}{e^2}+\frac{B c^3 d^2}{e^4}\right)}{e}-\frac{d^2 \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e^2}+\frac{3 A a c^2}{e^2}\right)}{e}+\frac{3 B a^2 c}{e^2}\right)}{e}+\frac{d^2 \left(\frac{2 d \left(\frac{2 d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e}-\frac{3 B a c^2}{e^2}+\frac{B c^3 d^2}{e^4}\right)}{e}-\frac{d^2 \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e^2}+\frac{3 A a c^2}{e^2}\right)}{e^2}-\frac{3 A a^2 c}{e^2}\right)+x^2 \left(\frac{d^2 \left(\frac{2 d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e}-\frac{3 B a c^2}{e^2}+\frac{B c^3 d^2}{e^4}\right)}{2 e^2}-\frac{d \left(\frac{2 d \left(\frac{2 d \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e}-\frac{3 B a c^2}{e^2}+\frac{B c^3 d^2}{e^4}\right)}{e}-\frac{d^2 \left(\frac{A c^3}{e^2}-\frac{2 B c^3 d}{e^3}\right)}{e^2}+\frac{3 A a c^2}{e^2}\right)}{e}+\frac{3 B a^2 c}{2 e^2}\right)+\frac{\ln\left(d+e x\right) \left(B a^3 e^6+9 B a^2 c d^2 e^4-6 A a^2 c d e^5+15 B a c^2 d^4 e^2-12 A a c^2 d^3 e^3+7 B c^3 d^6-6 A c^3 d^5 e\right)}{e^8}-\frac{-B a^3 d e^6+A a^3 e^7-3 B a^2 c d^3 e^4+3 A a^2 c d^2 e^5-3 B a c^2 d^5 e^2+3 A a c^2 d^4 e^3-B c^3 d^7+A c^3 d^6 e}{e \left(x e^8+d e^7\right)}+\frac{B c^3 x^6}{6 e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x^3*((2*d*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c^2)/e^2 + (B*c
^3*d^2)/e^4))/(3*e) - (d^2*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/(3*e^2) + (A*a*
c^2)/e^2) + x^5*((A*c^3)/(5*e^2) - (2*B*c^3*d)/(5*e^3)) - x^4*((d*((A*c^3)/
e^2 - (2*B*c^3*d)/e^3))/(2*e) - (3*B*a*c^2)/(4*e^2) + (B*c^3*d^2)/(4*e^4))
- x*((2*d*((d^2*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c^2)/e^2
+ (B*c^3*d^2)/e^4))/e^2 - (2*d*((2*d*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))
/e - (3*B*a*c^2)/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*((A*c^3)/e^2 - (2*B*c^3*d
)/e^3))/e^2 + (3*A*a*c^2)/e^2))/e + (3*B*a^2*c)/e^2))/e + (d^2*((2*d*((2*d*
((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c^2)/e^2 + (B*c^3*d^2)/e^4))/e
- (d^2*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e^2 + (3*A*a*c^2)/e^2))/e^2 - (3*A*
a^2*c)/e^2) + x^2*((d^2*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c
^2)/e^2 + (B*c^3*d^2)/e^4))/(2*e^2) - (d*((2*d*((2*d*((A*c^3)/e^2 - (2*B*c^
3*d)/e^3))/e - (3*B*a*c^2)/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*((A*c^3)/e^2 -
(2*B*c^3*d)/e^3))/e^2 + (3*A*a*c^2)/e^2))/e + (3*B*a^2*c)/(2*e^2)) + (log(d
 + e*x)*(B*a^3*e^6 + 7*B*c^3*d^6 - 6*A*c^3*d^5*e - 12*A*a*c^2*d^3*e^3 + 15*
B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5))/e^8 - (A*a^3*e^7 -
B*c^3*d^7 - B*a^3*d*e^6 + A*c^3*d^6*e + 3*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e
```

```
^5 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4)/(e*(d*e^7 + e^8*x)) + (B*c^3*x^
6)/(6*e^2)
```

sympy [A] time = 1.96, size = 454, normalized size = 1.47

$$\frac{Bc^3x^6}{6e^2} + x^5\left(\frac{Ac^3}{5e^2} - \frac{2Bc^3d}{5e^3}\right) + x^4\left(-\frac{Ac^3d}{2e^3} + \frac{3Bac^2}{4e^2} + \frac{3Bc^3d^2}{4e^4}\right) + x^3\left(\frac{Aac^2}{e^2} + \frac{Ac^3d^2}{e^4} - \frac{2Bac^2d}{e^3} - \frac{4Bc^3d^3}{3e^5}\right) + x^2\left(-\frac{3Aac^2d}{e^3} - \frac{2Ac^3d^3}{e^5} + \frac{3Ba^2c}{2e^2} + \frac{9Bac^2d^2}{2e^4} + \frac{5Bc^3d^4}{2e^6}\right) + x\left(\frac{3Aa^2c}{e^2} + \frac{9Aac^2d^2}{e^4} + \frac{5Ac^3d^4}{e^6} - \frac{6Ba^2cd}{e^3} - \frac{12Bac^2d^3}{e^5} - \frac{6Bc^3d^5}{e^7}\right) + \frac{-Aa^3e^7 - 3Aa^2cd^2e^5 - 3Aac^2d^4e^3 - Ac^3d^6e + Ba^3de^6 + 3Ba^2cd^3e^4 + 3Bac^2d^5e^2 + Bc^3d^7}{de^8 + e^9x} + \frac{\left(ae^2 + cd^2\right)^2\left(-6Acde + Bae^2 + 7Bcd^2\right)\log\left(d + ex\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**2,x)
```

```
[Out] B*c**3*x**6/(6*e**2) + x**5*(A*c**3/(5*e**2) - 2*B*c**3*d/(5*e**3)) + x**4*
(-A*c**3*d/(2*e**3) + 3*B*a*c**2/(4*e**2) + 3*B*c**3*d**2/(4*e**4)) + x**3*
(A*a*c**2/e**2 + A*c**3*d**2/e**4 - 2*B*a*c**2*d/e**3 - 4*B*c**3*d**3/(3*e*
*5)) + x**2*(-3*A*a*c**2*d/e**3 - 2*A*c**3*d**3/e**5 + 3*B*a**2*c/(2*e**2)
+ 9*B*a*c**2*d**2/(2*e**4) + 5*B*c**3*d**4/(2*e**6)) + x*(3*A*a**2*c/e**2 +
 9*A*a*c**2*d**2/e**4 + 5*A*c**3*d**4/e**6 - 6*B*a**2*c*d/e**3 - 12*B*a*c**
2*d**3/e**5 - 6*B*c**3*d**5/e**7) + (-A*a**3*e**7 - 3*A*a**2*c*d**2*e**5 -
3*A*a*c**2*d**4*e**3 - A*c**3*d**6*e + B*a**3*d*e**6 + 3*B*a**2*c*d**3*e**4
 + 3*B*a*c**2*d**5*e**2 + B*c**3*d**7)/(d*e**8 + e**9*x) + (a*e**2 + c*d**2
)**2*(-6*A*c*d*e + B*a*e**2 + 7*B*c*d**2)*log(d + e*x)/e**8
```

3.1147 $\int \frac{(A+Bx)(a+cx^2)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=300

$$-\frac{cx\left(Acde\left(9ae^2+10cd^2\right)-3B\left(a^2e^4+6acd^2e^2+5c^2d^4\right)\right)}{e^7}+\frac{c^2x^3\left(aBe^2-Acde+2Bcd^2\right)}{e^5}-\frac{c^2x^2\left(-3aAe^3+9aBde^2\right.}{2e^6}$$

Rubi [A] time = 0.42, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{cx\left(Acde\left(9ae^2+10cd^2\right)-3B\left(a^2e^4+6acd^2e^2+5c^2d^4\right)\right)}{e^7}+\frac{c^2x^3\left(aBe^2-Acde+2Bcd^2\right)}{e^5}-\frac{c^2x^2\left(-3aAe^3+9aBde^2-6Acd^2e+10Bcd^3\right)}{2e^6}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{e^8(d+ex)}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{2e^8(d+ex)^2}-\frac{3c\left(ae^2+cd^2\right)\log(d+ex)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8}-\frac{c^3x^4(3Bd-Ae)}{4e^4}+\frac{Bc^3x^5}{5e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] -((c*(A*c*d*e*(10*c*d^2 + 9*a*e^2) - 3*B*(5*c^2*d^4 + 6*a*c*d^2*e^2 + a^2*e
^4))*x)/e^7) - (c^2*(10*B*c*d^3 - 6*A*c*d^2*e + 9*a*B*d*e^2 - 3*a*A*e^3)*x^
2)/(2*e^6) + (c^2*(2*B*c*d^2 - A*c*d*e + a*B*e^2)*x^3)/e^5 - (c^3*(3*B*d -
A*e)*x^4)/(4*e^4) + (B*c^3*x^5)/(5*e^3) + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(
2*e^8*(d + e*x)^2) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/
(e^8*(d + e*x)) - (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e
^2 - a*A*e^3)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^3}\,dx = \int \left(\frac{c\left(-Acde\left(10cd^2+9ae^2\right)+3B\left(5c^2d^4+6acd^2e^2+a^2e^4\right)\right)}{e^7}+\frac{c^2\left(-10Bcd^3+6Acd\right.}{}\right.$$

$$= -\frac{c\left(Acde\left(10cd^2+9ae^2\right)-3B\left(5c^2d^4+6acd^2e^2+a^2e^4\right)\right)x}{e^7}-\frac{c^2\left(10Bcd^3-6Acd^2e+\right.}{2e^6}$$

Mathematica [A] time = 0.19, size = 414, normalized size = 1.38

$$\frac{5Ae\left(-2a^3e^6+6a^2cde^4(3d+4ex)+6ac^2e^2\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)+c^3\left(22d^6-16d^5ex-68d^4e^2x^2-20d^3e^3x^3+5d^2e^4x^4-2de^5x^5+e^6x^6\right)\right)+B\left(-10a^3e^6(d+2ex)+30a^2ce^4\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+10ac^2e^2\left(-27d^5+6d^4ex+63d^3e^2x^2+20d^2e^3x^3-5de^4x^4+2e^5x^5\right)+c^3\left(-130d^7+160d^6ex+500d^5e^2x^2+140d^4e^3x^3-35d^3e^4x^4+14d^2e^5x^5-7de^6x^6+4e^7x^7\right)\right)-60c(d+ex)^2\left(ae^2+cd^2\right)\log(d+ex)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{20e^8(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (5*A*e*(-2*a^3*e^6 + 6*a^2*c*d*e^4*(3*d + 4*e*x) + 6*a*c^2*e^2*(7*d^4 + 2*d
^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + c^3*(22*d^6 - 16*d^5*e*x
 - 68*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*d*e^5*x^5 + e^6*x^6)
) + B*(-10*a^3*e^6*(d + 2*e*x) + 30*a^2*c*e^4*(-5*d^3 - 4*d^2*e*x + 4*d*e^2
*x^2 + 2*e^3*x^3) + 10*a*c^2*e^2*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*x^2 + 20
*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) + c^3*(-130*d^7 + 160*d^6*e*x + 500
*d^5*e^2*x^2 + 140*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 14*d^2*e^5*x^5 - 7*d*e^6*
x^6 + 4*e^7*x^7)) - 60*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d
*e^2 - a*A*e^3)*(d + e*x)^2*Log[d + e*x])/(20*e^8*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^3,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^3, x]
```

fricas [B] time = 0.40, size = 691, normalized size = 2.30

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x, algorithm="fricas")
[Out] 1/20*(4*B*c^3*e^7*x^7 - 130*B*c^3*d^7 + 110*A*c^3*d^6*e - 270*B*a*c^2*d^5*e
^2 + 210*A*a*c^2*d^4*e^3 - 150*B*a^2*c*d^3*e^4 + 90*A*a^2*c*d^2*e^5 - 10*B*
a^3*d*e^6 - 10*A*a^3*e^7 - (7*B*c^3*d*e^6 - 5*A*c^3*e^7)*x^6 + 2*(7*B*c^3*d
^2*e^5 - 5*A*c^3*d*e^6 + 10*B*a*c^2*e^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 5*A*c^3
*d^2*e^5 + 10*B*a*c^2*d*e^6 - 6*A*a*c^2*e^7)*x^4 + 20*(7*B*c^3*d^4*e^3 - 5*
A*c^3*d^3*e^4 + 10*B*a*c^2*d^2*e^5 - 6*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 +
 10*(50*B*c^3*d^5*e^2 - 34*A*c^3*d^4*e^3 + 63*B*a*c^2*d^3*e^4 - 33*A*a*c^2*
d^2*e^5 + 12*B*a^2*c*d*e^6)*x^2 + 20*(8*B*c^3*d^6*e - 4*A*c^3*d^5*e^2 + 3*B
*a*c^2*d^4*e^3 + 3*A*a*c^2*d^3*e^4 - 6*B*a^2*c*d^2*e^5 + 6*A*a^2*c*d*e^6 -
B*a^3*e^7)*x - 60*(7*B*c^3*d^7 - 5*A*c^3*d^6*e + 10*B*a*c^2*d^5*e^2 - 6*A*a
*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - A*a^2*c*d^2*e^5 + (7*B*c^3*d^5*e^2 - 5*A
*c^3*d^4*e^3 + 10*B*a*c^2*d^3*e^4 - 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 - A
*a^2*c*e^7)*x^2 + 2*(7*B*c^3*d^6*e - 5*A*c^3*d^5*e^2 + 10*B*a*c^2*d^4*e^3 -
 6*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 - A*a^2*c*d*e^6)*x)*log(e*x + d))/(e
^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.16, size = 440, normalized size = 1.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x, algorithm="giac")
[Out] -3*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 +
3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(4*B*c^3*x^5
*e^12 - 15*B*c^3*d*x^4*e^11 + 40*B*c^3*d^2*x^3*e^10 - 100*B*c^3*d^3*x^2*e^9
 + 300*B*c^3*d^4*x*e^8 + 5*A*c^3*x^4*e^12 - 20*A*c^3*d*x^3*e^11 + 60*A*c^3*
d^2*x^2*e^10 - 200*A*c^3*d^3*x*e^9 + 20*B*a*c^2*x^3*e^12 - 90*B*a*c^2*d*x^2
*e^11 + 360*B*a*c^2*d^2*x*e^10 + 30*A*a*c^2*x^2*e^12 - 180*A*a*c^2*d*x*e^11
 + 60*B*a^2*c*x*e^12)*e^(-15) - 1/2*(13*B*c^3*d^7 - 11*A*c^3*d^6*e + 27*B*a
*c^2*d^5*e^2 - 21*A*a*c^2*d^4*e^3 + 15*B*a^2*c*d^3*e^4 - 9*A*a^2*c*d^2*e^5
+ B*a^3*d*e^6 + A*a^3*e^7 + 2*(7*B*c^3*d^6*e - 6*A*c^3*d^5*e^2 + 15*B*a*c^2
*d^4*e^3 - 12*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 + B*a^3
*e^7)*x)*e^(-8)/(x*e + d)^2
```

maple [B] time = 0.06, size = 589, normalized size = 1.96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x)
```

```
[Out] -c^3/e^4*A*x^3*d-7/e^8/(e*x+d)*B*c^3*d^6-1/2/e^7/(e*x+d)^2*A*c^3*d^6+1/2/e^
2/(e*x+d)^2*B*d*a^3+6/e^7/(e*x+d)*A*c^3*d^5+1/4*c^3/e^3*A*x^4-1/e^2/(e*x+d)
*B*a^3-1/2/e/(e*x+d)^2*A*a^3-15/e^6/(e*x+d)*B*a*c^2*d^4-3/2/e^3/(e*x+d)^2*A
*d^2*a^2*c-3/2/e^5/(e*x+d)^2*A*a*c^2*d^4+3/2/e^4/(e*x+d)^2*B*a^2*c*d^3+3/2/
e^6/(e*x+d)^2*B*a*c^2*d^5+3*c^3/e^5*A*x^2*d^2+1/2/e^8/(e*x+d)^2*B*c^3*d^7+3
*c/e^3*ln(e*x+d)*A*a^2+15*c^3/e^7*ln(e*x+d)*A*d^4-21*c^3/e^8*ln(e*x+d)*B*d^
5+15*c^3/e^7*B*x*d^4-3/4*c^3/e^4*B*x^4*d+18*c^2/e^5*ln(e*x+d)*A*d^2*a-9*c/e
^4*ln(e*x+d)*B*d*a^2-30*c^2/e^6*ln(e*x+d)*B*d^3*a-9/2*c^2/e^4*B*x^2*a*d-9*c
^2/e^4*A*x*a*d+18*c^2/e^5*B*x*a*d^2+6/e^3/(e*x+d)*A*a^2*c*d+12/e^5/(e*x+d)*
A*a*c^2*d^3-9/e^4/(e*x+d)*B*a^2*c*d^2+3/2*c^2/e^3*A*x^2*a-5*c^3/e^6*B*x^2*d
^3-10*c^3/e^6*A*x*d^3+3*c/e^3*B*x*a^2+c^2/e^3*B*x^3*a+2*c^3/e^5*B*x^3*d^2+1
/5*B*c^3/e^3*x^5
```

maxima [A] time = 0.69, size = 464, normalized size = 1.55

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*B*c^3*d^7 - 11*A*c^3*d^6*e + 27*B*a*c^2*d^5*e^2 - 21*A*a*c^2*d^4*e
^3 + 15*B*a^2*c*d^3*e^4 - 9*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + A*a^3*e^7 + 2*(
7*B*c^3*d^6*e - 6*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 +
 9*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 + B*a^3*e^7)*x)/(e^10*x^2 + 2*d*e^9*x
+ d^2*e^8) + 1/20*(4*B*c^3*e^4*x^5 - 5*(3*B*c^3*d*e^3 - A*c^3*e^4)*x^4 + 20
*(2*B*c^3*d^2*e^2 - A*c^3*d*e^3 + B*a*c^2*e^4)*x^3 - 10*(10*B*c^3*d^3*e - 6
*A*c^3*d^2*e^2 + 9*B*a*c^2*d*e^3 - 3*A*a*c^2*e^4)*x^2 + 20*(15*B*c^3*d^4 -
10*A*c^3*d^3*e + 18*B*a*c^2*d^2*e^2 - 9*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*x)/e
^7 - 3*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^
3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*log(e*x + d)/e^8
```

mupad [B] time = 0.14, size = 681, normalized size = 2.27

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x^4*((A*c^3)/(4*e^3) - (3*B*c^3*d)/(4*e^4)) - ((A*a^3*e^7 + 13*B*c^3*d^7 +
B*a^3*d*e^6 - 11*A*c^3*d^6*e - 21*A*a*c^2*d^4*e^3 - 9*A*a^2*c*d^2*e^5 + 27*
B*a*c^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4)/(2*e) + x*(B*a^3*e^6 + 7*B*c^3*d^6 -
6*A*c^3*d^5*e - 12*A*a*c^2*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4
 - 6*A*a^2*c*d*e^5))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) - x*((3*d*((3*d*((3*d*
((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e - (3*B*a*c^2)/e^3 + (3*B*c^3*d^2)/e^5))/
e - (3*d^2*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e^2 + (3*A*a*c^2)/e^3 - (B*c^3*
d^3)/e^6))/e - (3*d^2*((3*d*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e - (3*B*a*c^2
)/e^3 + (3*B*c^3*d^2)/e^5))/e^2 + (d^3*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e^3
 - (3*B*a^2*c)/e^3) - x^3*((d*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e - (B*a*c^2
)/e^3 + (B*c^3*d^2)/e^5) + x^2*((3*d*((3*d*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))
/e - (3*B*a*c^2)/e^3 + (3*B*c^3*d^2)/e^5))/(2*e) - (3*d^2*((A*c^3)/e^3 - (3
*B*c^3*d)/e^4))/(2*e^2) + (3*A*a*c^2)/(2*e^3) - (B*c^3*d^3)/(2*e^6)) - (log
(d + e*x)*(21*B*c^3*d^5 - 3*A*a^2*c*e^5 - 15*A*c^3*d^4*e - 18*A*a*c^2*d^2*e
^3 + 30*B*a*c^2*d^3*e^2 + 9*B*a^2*c*d*e^4))/e^8 + (B*c^3*x^5)/(5*e^3)
```

sympy [A] time = 6.10, size = 490, normalized size = 1.63

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**3,x)
```

```
[Out] B*c**3*x**5/(5*e**3) - 3*c*(a*e**2 + c*d**2)*(-A*a*e**3 - 5*A*c*d**2*e + 3*
B*a*d*e**2 + 7*B*c*d**3)*log(d + e*x)/e**8 + x**4*(A*c**3/(4*e**3) - 3*B*c*
*3*d/(4*e**4)) + x**3*(-A*c**3*d/e**4 + B*a*c**2/e**3 + 2*B*c**3*d**2/e**5)
 + x**2*(3*A*a*c**2/(2*e**3) + 3*A*c**3*d**2/e**5 - 9*B*a*c**2*d/(2*e**4) -
 5*B*c**3*d**3/e**6) + x*(-9*A*a*c**2*d/e**4 - 10*A*c**3*d**3/e**6 + 3*B*a*
*2*c/e**3 + 18*B*a*c**2*d**2/e**5 + 15*B*c**3*d**4/e**7) + (-A*a**3*e**7 +
9*A*a**2*c*d**2*e**5 + 21*A*a*c**2*d**4*e**3 + 11*A*c**3*d**6*e - B*a**3*d*
e**6 - 15*B*a**2*c*d**3*e**4 - 27*B*a*c**2*d**5*e**2 - 13*B*c**3*d**7 + x*(
12*A*a**2*c*d*e**6 + 24*A*a*c**2*d**3*e**4 + 12*A*c**3*d**5*e**2 - 2*B*a**3
*e**7 - 18*B*a**2*c*d**2*e**5 - 30*B*a*c**2*d**4*e**3 - 14*B*c**3*d**6*e))/
(2*d**2*e**8 + 4*d*e**9*x + 2*e**10*x**2)
```

3.1148 $\int \frac{(A+Bx)(a+cx^2)^3}{(d+ex)^4} \, dx$

Optimal. Leaf size=310

$$-\frac{c\log(d+ex)\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{c^2x^2\left(3aBe^2-4Acde+10Bcd^2\right)}{2e^6}-\frac{c^2x\left(-\right.}{}$$

Rubi [A] time = 0.40, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{c\log(d+ex)\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{c^2x^2\left(3aBe^2-4Acde+10Bcd^2\right)}{2e^6}-\frac{c^2x\left(-3aAe^3+12aBde^2-10Acd^2e+20Bcd^3\right)}{e^7}+\frac{3c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8(d+ex)}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{2e^8(d+ex)^2}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{3e^8(d+ex)^3}-\frac{c^3x^3(4Bd-Ae)}{3e^5}+\frac{Bc^3x^4}{4e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] -((c^2*(20*B*c*d^3 - 10*A*c*d^2*e + 12*a*B*d*e^2 - 3*a*A*e^3)*x)/e^7) + (c^
2*(10*B*c*d^2 - 4*A*c*d*e + 3*a*B*e^2)*x^2)/(2*e^6) - (c^3*(4*B*d - A*e)*x^
3)/(3*e^5) + (B*c^3*x^4)/(4*e^4) + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(3*e^8*(
d + e*x)^3) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(2*e^8*
(d + e*x)^2) + (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2
- a*A*e^3))/(e^8*(d + e*x)) - (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2
*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4))*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^4}\,dx = \int \left(\frac{c^2\left(-20Bcd^3+10Acd^2e-12aBde^2+3aAe^3\right)}{e^7}-\frac{c^2\left(-10Bcd^2+4Acde-3aBe^2\right)x}{e^6}\right.$$

$$= -\frac{c^2\left(20Bcd^3-10Acd^2e+12aBde^2-3aAe^3\right)x}{e^7}+\frac{c^2\left(10Bcd^2-4Acde+3aBe^2\right)x^2}{2e^6}-$$

Mathematica [A] time = 0.13, size = 294, normalized size = 0.95

$$\frac{12c\log(d+ex)\left(B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)-4Acde\left(3ae^2+5cd^2\right)\right)+6c^2e^2x^2\left(3aBe^2-4Acde+10Bcd^2\right)+12c^2ex\left(Ae\left(3ae^2+10cd^2\right)-4B\left(3ade^2+5cd^3\right)\right)-\frac{6\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{(d+ex)^2}+\frac{4\left(ae^2+cd^2\right)^3(Bd-Ae)}{(d+ex)^3}+\frac{36c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{d+ex}+4c^3e^3x^3(Ae-4Bd)+3Bc^3e^4x^4}{12e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (12*c^2*e*(A*e*(10*c*d^2 + 3*a*e^2) - 4*B*(5*c*d^3 + 3*a*d*e^2))*x + 6*c^2*
e^2*(10*B*c*d^2 - 4*A*c*d*e + 3*a*B*e^2)*x^2 + 4*c^3*e^3*(-4*B*d + A*e)*x^3
 + 3*B*c^3*e^4*x^4 + (4*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(d + e*x)^3 - (6*(c*
d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(d + e*x)^2 + (36*c*(c*d^
2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(d + e*x) + 1
2*c*(-4*A*c*d*e*(5*c*d^2 + 3*a*e^2) + B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^
2*e^4))*Log[d + e*x])/(12*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^4, x]
```

fricas [B] time = 0.41, size = 732, normalized size = 2.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*e^7*x^7 + 214*B*c^3*d^7 - 148*A*c^3*d^6*e + 282*B*a*c^2*d^5*e
^2 - 156*A*a*c^2*d^4*e^3 + 66*B*a^2*c*d^3*e^4 - 12*A*a^2*c*d^2*e^5 - 2*B*a^
3*d*e^6 - 4*A*a^3*e^7 - (7*B*c^3*d*e^6 - 4*A*c^3*e^7)*x^6 + 3*(7*B*c^3*d^2*
e^5 - 4*A*c^3*d*e^6 + 6*B*a*c^2*e^7)*x^5 - 3*(35*B*c^3*d^3*e^4 - 20*A*c^3*d
^2*e^5 + 30*B*a*c^2*d*e^6 - 12*A*a*c^2*e^7)*x^4 - 2*(278*B*c^3*d^4*e^3 - 14
6*A*c^3*d^3*e^4 + 189*B*a*c^2*d^2*e^5 - 54*A*a*c^2*d*e^6)*x^3 - 6*(68*B*c^3
*d^5*e^2 - 26*A*c^3*d^4*e^3 + 9*B*a*c^2*d^3*e^4 + 18*A*a*c^2*d^2*e^5 - 18*B
*a^2*c*d*e^6 + 6*A*a^2*c*e^7)*x^2 + 6*(37*B*c^3*d^6*e - 34*A*c^3*d^5*e^2 +
81*B*a*c^2*d^4*e^3 - 54*A*a*c^2*d^3*e^4 + 27*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*
e^6 - B*a^3*e^7)*x + 12*(35*B*c^3*d^7 - 20*A*c^3*d^6*e + 30*B*a*c^2*d^5*e^2
 - 12*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 + (35*B*c^3*d^4*e^3 - 20*A*c^3*d^
3*e^4 + 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 3*(35*
B*c^3*d^5*e^2 - 20*A*c^3*d^4*e^3 + 30*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5
+ 3*B*a^2*c*d*e^6)*x^2 + 3*(35*B*c^3*d^6*e - 20*A*c^3*d^5*e^2 + 30*B*a*c^2*
d^4*e^3 - 12*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5)*x)*log(e*x + d))/(e^11*x^
3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [A] time = 0.16, size = 435, normalized size = 1.40

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3 + 3*
B*a^2*c*e^4)*e^(-8)*log(abs(x*e + d)) + 1/12*(3*B*c^3*x^4*e^12 - 16*B*c^3*d
*x^3*e^11 + 60*B*c^3*d^2*x^2*e^10 - 240*B*c^3*d^3*x*e^9 + 4*A*c^3*x^3*e^12
- 24*A*c^3*d*x^2*e^11 + 120*A*c^3*d^2*x*e^10 + 18*B*a*c^2*x^2*e^12 - 144*B*
a*c^2*d*x*e^11 + 36*A*a*c^2*x*e^12)*e^(-16) + 1/6*(107*B*c^3*d^7 - 74*A*c^3
*d^6*e + 141*B*a*c^2*d^5*e^2 - 78*A*a*c^2*d^4*e^3 + 33*B*a^2*c*d^3*e^4 - 6*
A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 2*A*a^3*e^7 + 18*(7*B*c^3*d^5*e^2 - 5*A*c^3
*d^4*e^3 + 10*B*a*c^2*d^3*e^4 - 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 - A*a^2
*c*e^7)*x^2 + 3*(77*B*c^3*d^6*e - 54*A*c^3*d^5*e^2 + 105*B*a*c^2*d^4*e^3 -
60*A*a*c^2*d^3*e^4 + 27*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 - B*a^3*e^7)*x)*e
^(-8)/(x*e + d)^3
```

maple [B] time = 0.07, size = 611, normalized size = 1.97

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x)
```

```
[Out] -12*c^2/e^5*a*B*d*x+3/e^3/(e*x+d)^2*A*a^2*c*d+6/e^5/(e*x+d)^2*A*a*c^2*d^3-9
/2/e^4/(e*x+d)^2*B*a^2*c*d^2-15/2/e^6/(e*x+d)^2*B*a*c^2*d^4-1/e^3/(e*x+d)^3
*A*d^2*a^2*c+3/e^7/(e*x+d)^2*A*c^3*d^5-7/2/e^8/(e*x+d)^2*B*c^3*d^6-1/2/e^2/
(e*x+d)^2*B*a^3-1/3/e/(e*x+d)^3*A*a^3+1/3*c^3/e^4*A*x^3-18*c^2/e^5/(e*x+d)*
A*d^2*a+9*c/e^4/(e*x+d)*B*a^2*d+30*c^2/e^6/(e*x+d)*B*d^3*a-12*c^2/e^5*ln(e*
x+d)*A*d*a+30*c^2/e^6*ln(e*x+d)*B*d^2*a+1/e^4/(e*x+d)^3*B*d^3*a^2*c+1/e^6/(
e*x+d)^3*B*a*c^2*d^5-1/3/e^7/(e*x+d)^3*A*c^3*d^6-4/3*c^3/e^5*B*x^3*d-2*c^3/
e^5*A*x^2*d-20*c^3/e^7*ln(e*x+d)*A*d^3+3*c/e^4*ln(e*x+d)*B*a^2+35*c^3/e^8*l
n(e*x+d)*B*d^4-1/e^5/(e*x+d)^3*A*a*c^2*d^4+3/2*c^2/e^4*B*x^2*a+5*c^3/e^6*B*
x^2*d^2+3*c^2/e^4*a*A*x+10*c^3/e^6*A*d^2*x-20*c^3/e^7*B*d^3*x-3*c/e^3/(e*x+
d)*A*a^2-15*c^3/e^7/(e*x+d)*A*d^4+21*c^3/e^8/(e*x+d)*B*d^5+1/3/e^8/(e*x+d)^
3*B*c^3*d^7+1/3/e^2/(e*x+d)^3*B*d*a^3+1/4*B*c^3/e^4*x^4
```

maxima [A] time = 0.66, size = 478, normalized size = 1.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*B*c^3*d^7 - 74*A*c^3*d^6*e + 141*B*a*c^2*d^5*e^2 - 78*A*a*c^2*d^4*
e^3 + 33*B*a^2*c*d^3*e^4 - 6*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 2*A*a^3*e^7 +
18*(7*B*c^3*d^5*e^2 - 5*A*c^3*d^4*e^3 + 10*B*a*c^2*d^3*e^4 - 6*A*a*c^2*d^2*
e^5 + 3*B*a^2*c*d*e^6 - A*a^2*c*e^7)*x^2 + 3*(77*B*c^3*d^6*e - 54*A*c^3*d^5
*e^2 + 105*B*a*c^2*d^4*e^3 - 60*A*a*c^2*d^3*e^4 + 27*B*a^2*c*d^2*e^5 - 6*A*
a^2*c*d*e^6 - B*a^3*e^7)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^
8) + 1/12*(3*B*c^3*e^3*x^4 - 4*(4*B*c^3*d*e^2 - A*c^3*e^3)*x^3 + 6*(10*B*c^
3*d^2*e - 4*A*c^3*d*e^2 + 3*B*a*c^2*e^3)*x^2 - 12*(20*B*c^3*d^3 - 10*A*c^3*
d^2*e + 12*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*x)/e^7 + (35*B*c^3*d^4 - 20*A*c^3
*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*log(e*x + d
)/e^8
```

mupad [B] time = 1.78, size = 548, normalized size = 1.77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] x^3*((A*c^3)/(3*e^4) - (4*B*c^3*d)/(3*e^5)) - ((2*A*a^3*e^7 - 107*B*c^3*d^7
 + B*a^3*d*e^6 + 74*A*c^3*d^6*e + 78*A*a*c^2*d^4*e^3 + 6*A*a^2*c*d^2*e^5 -
141*B*a*c^2*d^5*e^2 - 33*B*a^2*c*d^3*e^4)/(6*e) + x^2*(3*A*a^2*c*e^6 - 21*B
*c^3*d^5*e + 15*A*c^3*d^4*e^2 + 18*A*a*c^2*d^2*e^4 - 30*B*a*c^2*d^3*e^3 - 9
*B*a^2*c*d*e^5) + x*((B*a^3*e^6)/2 - (77*B*c^3*d^6)/2 + 27*A*c^3*d^5*e + 30
*A*a*c^2*d^3*e^3 - (105*B*a*c^2*d^4*e^2)/2 - (27*B*a^2*c*d^2*e^4)/2 + 3*A*a
^2*c*d*e^5))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) + x*((4*d*((4
*d*((A*c^3)/e^4 - (4*B*c^3*d)/e^5))/e - (3*B*a*c^2)/e^4 + (6*B*c^3*d^2)/e^6
))/e - (6*d^2*((A*c^3)/e^4 - (4*B*c^3*d)/e^5))/e^2 + (3*A*a*c^2)/e^4 - (4*B
*c^3*d^3)/e^7) - x^2*((2*d*((A*c^3)/e^4 - (4*B*c^3*d)/e^5))/e - (3*B*a*c^2)
/(2*e^4) + (3*B*c^3*d^2)/e^6) + (log(d + e*x)*(35*B*c^3*d^4 + 3*B*a^2*c*e^4
 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3))/e^8 + (B*c^3*x^
4)/(4*e^4)
```

sympy [A] time = 18.98, size = 530, normalized size = 1.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**4,x)
```

```
[Out] B*c**3*x**4/(4*e**4) + c*(-12*A*a*c*d*e**3 - 20*A*c**2*d**3*e + 3*B*a**2*e*
*4 + 30*B*a*c*d**2*e**2 + 35*B*c**2*d**4)*log(d + e*x)/e**8 + x**3*(A*c**3/
(3*e**4) - 4*B*c**3*d/(3*e**5)) + x**2*(-2*A*c**3*d/e**5 + 3*B*a*c**2/(2*e*
*4) + 5*B*c**3*d**2/e**6) + x*(3*A*a*c**2/e**4 + 10*A*c**3*d**2/e**6 - 12*B
*a*c**2*d/e**5 - 20*B*c**3*d**3/e**7) + (-2*A*a**3*e**7 - 6*A*a**2*c*d**2*e
**5 - 78*A*a*c**2*d**4*e**3 - 74*A*c**3*d**6*e - B*a**3*d*e**6 + 33*B*a**2*
c*d**3*e**4 + 141*B*a*c**2*d**5*e**2 + 107*B*c**3*d**7 + x**2*(-18*A*a**2*c
*e**7 - 108*A*a*c**2*d**2*e**5 - 90*A*c**3*d**4*e**3 + 54*B*a**2*c*d*e**6 +
 180*B*a*c**2*d**3*e**4 + 126*B*c**3*d**5*e**2) + x*(-18*A*a**2*c*d*e**6 -
180*A*a*c**2*d**3*e**4 - 162*A*c**3*d**5*e**2 - 3*B*a**3*e**7 + 81*B*a**2*c
*d**2*e**5 + 315*B*a*c**2*d**4*e**3 + 231*B*c**3*d**6*e))/(6*d**3*e**8 + 18
*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3)
```

3.1149 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^5}\,dx$

Optimal. Leaf size=314

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(d+ex)}-\frac{c^2x\left(5Acde-3B\left(ae^2+5cd^2\right)\right)}{e^7}-\frac{c^2\log(d+ex)\left(-3aA\right.}{}$$

Rubi [A] time = 0.38, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(d+ex)}-\frac{c^2x\left(5Acde-3B\left(ae^2+5cd^2\right)\right)}{e^7}-\frac{c^2\log(d+ex)\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{e^8}+\frac{3c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{2e^8(d+ex)^2}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{3e^8(d+ex)^3}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{4e^8(d+ex)^4}-\frac{c^3x^2(5Bd-Ae)}{2e^6}+\frac{Bc^3x^3}{3e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] -((c^2*(5*A*c*d*e - 3*B*(5*c*d^2 + a*e^2))*x)/e^7) - (c^3*(5*B*d - A*e)*x^2
)/(2*e^6) + (B*c^3*x^3)/(3*e^5) + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(4*e^8*(d
 + e*x)^4) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(3*e^8*(
d + e*x)^3) + (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 -
 a*A*e^3))/(2*e^8*(d + e*x)^2) + (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*
c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4)))/(e^8*(d + e*x)) - (c^2*(35*B*c*d^3
- 15*A*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^5}\,dx=\int \left(-\frac{c^2\left(-15Bcd^2+5Acde-3aBe^2\right)}{e^7}+\frac{c^3(-5Bd+Ae)x}{e^6}+\frac{Bc^3x^2}{e^5}+\frac{(-Bd+Ae)\left(cd^2\right.}{e^7(d+ex}\right.$$

$$=-\frac{c^2\left(5Acde-3B\left(5cd^2+ae^2\right)\right)x}{e^7}-\frac{c^3(5Bd-Ae)x^2}{2e^6}+\frac{Bc^3x^3}{3e^5}+\frac{(Bd-Ae)\left(cd^2+ae^2\right.}{4e^8(d+ex)^4}$$

Mathematica [A] time = 0.21, size = 405, normalized size = 1.29

$$\frac{3Ae\left(-a^3e^6-a^2ce^4\left(d^2+4dex+6e^2x^2\right)+ac^2de^2\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)+c^3\left(57d^6+168d^5ex+132d^4e^2x^2-32d^3e^3x^3-68d^2e^4x^4-12de^5x^5+2e^6x^6\right)\right)-B\left(a^3e^6(d+4ex)+9a^2ce^4\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)+3ac^2e^2\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)+c^3\left(319d^7+856d^6ex+444d^5e^2x^2-544d^4e^3x^3-556d^3e^4x^4-84d^2e^5x^5+14de^6x^6-4e^7x^7\right)\right)+12c^2(d+ex)^4\log(d+ex)\left(3Ae\left(ae^2+5cd^2\right)-5B\left(3ade^2+7cd^3\right)\right)}{12e^8(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] (3*A*e*(-(a^3*e^6) - a^2*c*e^4*(d^2 + 4*d*e*x + 6*e^2*x^2) + a*c^2*d*e^2*(2
5*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) + c^3*(57*d^6 + 168*d^5*e*
x + 132*d^4*e^2*x^2 - 32*d^3*e^3*x^3 - 68*d^2*e^4*x^4 - 12*d*e^5*x^5 + 2*e^
6*x^6)) - B*(a^3*e^6*(d + 4*e*x) + 9*a^2*c*e^4*(d^3 + 4*d^2*e*x + 6*d*e^2*x
^2 + 4*e^3*x^3) + 3*a*c^2*e^2*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*
d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5) + c^3*(319*d^7 + 856*d^6*e*x + 444
*d^5*e^2*x^2 - 544*d^4*e^3*x^3 - 556*d^3*e^4*x^4 - 84*d^2*e^5*x^5 + 14*d*e^
6*x^6 - 4*e^7*x^7)) + 12*c^2*(3*A*e*(5*c*d^2 + a*e^2) - 5*B*(7*c*d^3 + 3*a*
d*e^2))*(d + e*x)^4*Log[d + e*x])/(12*e^8*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^5, x]
```

fricas [B] time = 0.42, size = 746, normalized size = 2.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*c^3*e^7*x^7 - 319*B*c^3*d^7 + 171*A*c^3*d^6*e - 231*B*a*c^2*d^5*e
^2 + 75*A*a*c^2*d^4*e^3 - 9*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 - B*a^3*d*e
^6 - 3*A*a^3*e^7 - 2*(7*B*c^3*d*e^6 - 3*A*c^3*e^7)*x^6 + 12*(7*B*c^3*d^2*e^
5 - 3*A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 + 4*(139*B*c^3*d^3*e^4 - 51*A*c^3*d^
2*e^5 + 36*B*a*c^2*d*e^6)*x^4 + 4*(136*B*c^3*d^4*e^3 - 24*A*c^3*d^3*e^4 - 3
6*B*a*c^2*d^2*e^5 + 36*A*a*c^2*d*e^6 - 9*B*a^2*c*e^7)*x^3 - 6*(74*B*c^3*d^5
*e^2 - 66*A*c^3*d^4*e^3 + 126*B*a*c^2*d^3*e^4 - 54*A*a*c^2*d^2*e^5 + 9*B*a^
2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 - 4*(214*B*c^3*d^6*e - 126*A*c^3*d^5*e^2 + 1
86*B*a*c^2*d^4*e^3 - 66*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e
^6 + B*a^3*e^7)*x - 12*(35*B*c^3*d^7 - 15*A*c^3*d^6*e + 15*B*a*c^2*d^5*e^2
- 3*A*a*c^2*d^4*e^3 + (35*B*c^3*d^3*e^4 - 15*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e
^6 - 3*A*a*c^2*e^7)*x^4 + 4*(35*B*c^3*d^4*e^3 - 15*A*c^3*d^3*e^4 + 15*B*a*c
^2*d^2*e^5 - 3*A*a*c^2*d*e^6)*x^3 + 6*(35*B*c^3*d^5*e^2 - 15*A*c^3*d^4*e^3
+ 15*B*a*c^2*d^3*e^4 - 3*A*a*c^2*d^2*e^5)*x^2 + 4*(35*B*c^3*d^6*e - 15*A*c^
3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 - 3*A*a*c^2*d^3*e^4)*x)*log(e*x + d))/(e^12*
x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8)
```

giac [B] time = 0.18, size = 647, normalized size = 2.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 1/6*(2*B*c^3 - 3*(7*B*c^3*d*e - A*c^3*e^2)*e^(-1)/(x*e + d) + 18*(7*B*c^3*d
^2*e^2 - 2*A*c^3*d*e^3 + B*a*c^2*e^4)*e^(-2)/(x*e + d)^2)*(x*e + d)^3*e^(-8
) + (35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*e^(-
8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(420*B*c^3*d^4*e^36/(x*e + d
) - 126*B*c^3*d^5*e^36/(x*e + d)^2 + 28*B*c^3*d^6*e^36/(x*e + d)^3 - 3*B*c^
3*d^7*e^36/(x*e + d)^4 - 240*A*c^3*d^3*e^37/(x*e + d) + 90*A*c^3*d^4*e^37/(
x*e + d)^2 - 24*A*c^3*d^5*e^37/(x*e + d)^3 + 3*A*c^3*d^6*e^37/(x*e + d)^4 +
 360*B*a*c^2*d^2*e^38/(x*e + d) - 180*B*a*c^2*d^3*e^38/(x*e + d)^2 + 60*B*a
*c^2*d^4*e^38/(x*e + d)^3 - 9*B*a*c^2*d^5*e^38/(x*e + d)^4 - 144*A*a*c^2*d*
e^39/(x*e + d) + 108*A*a*c^2*d^2*e^39/(x*e + d)^2 - 48*A*a*c^2*d^3*e^39/(x*
e + d)^3 + 9*A*a*c^2*d^4*e^39/(x*e + d)^4 + 36*B*a^2*c*e^40/(x*e + d) - 54*
B*a^2*c*d*e^40/(x*e + d)^2 + 36*B*a^2*c*d^2*e^40/(x*e + d)^3 - 9*B*a^2*c*d^
3*e^40/(x*e + d)^4 + 18*A*a^2*c*e^41/(x*e + d)^2 - 24*A*a^2*c*d*e^41/(x*e +
 d)^3 + 9*A*a^2*c*d^2*e^41/(x*e + d)^4 + 4*B*a^3*e^42/(x*e + d)^3 - 3*B*a^3
*d*e^42/(x*e + d)^4 + 3*A*a^3*e^43/(x*e + d)^4)*e^(-44)
```

maple [B] time = 0.07, size = 632, normalized size = 2.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x)
```

```
[Out] 1/2*c^3/e^5*A*x^2-1/3/e^2/(e*x+d)^3*B*a^3-1/4/e/(e*x+d)^4*A*a^3-7/3/e^8/(e*
x+d)^3*B*c^3*d^6+20*c^3/e^7/(e*x+d)*A*d^3-3*c/e^4/(e*x+d)*B*a^2-35*c^3/e^8/
(e*x+d)*B*d^4-1/4/e^7/(e*x+d)^4*A*c^3*d^6+1/4/e^2/(e*x+d)^4*B*d*a^3+1/4/e^8
/(e*x+d)^4*B*c^3*d^7-5/2*c^3/e^6*B*x^2*d+3*c^2/e^5*ln(e*x+d)*a*A+15*c^3/e^7
*ln(e*x+d)*A*d^2-35*c^3/e^8*ln(e*x+d)*B*d^3-3/2*c/e^3/(e*x+d)^2*A*a^2-15/2*
c^3/e^7/(e*x+d)^2*A*d^4+21/2*c^3/e^8/(e*x+d)^2*B*d^5+2/e^7/(e*x+d)^3*A*c^3*
d^5+12*c^2/e^5/(e*x+d)*A*d*a-30*c^2/e^6/(e*x+d)*B*d^2*a-3/4/e^3/(e*x+d)^4*A
*d^2*a^2*c-3/4/e^5/(e*x+d)^4*A*d^4*a*c^2+3/4/e^4/(e*x+d)^4*B*d^3*a^2*c+2/e^
3/(e*x+d)^3*A*a^2*c*d+4/e^5/(e*x+d)^3*A*a*c^2*d^3-3/e^4/(e*x+d)^3*B*a^2*c*d
^2+3*c^2/e^5*B*x*a+15*c^3/e^7*B*x*d^2+1/3*B*c^3*x^3/e^5-5/e^6/(e*x+d)^3*B*a
*c^2*d^4-15*c^2/e^6*ln(e*x+d)*a*B*d+3/4/e^6/(e*x+d)^4*B*a*c^2*d^5-9*c^2/e^5
/(e*x+d)^2*A*d^2*a+9/2*c/e^4/(e*x+d)^2*B*a^2*d+15*c^2/e^6/(e*x+d)^2*B*d^3*a
-5*c^3/e^6*A*x*d
```

maxima [A] time = 0.61, size = 487, normalized size = 1.55

$$-\frac{319 \, B c^{3} d^{7} - 171 \, A c^{3} d^{6} e + 231 \, B a c^{2} d^{5} e^{2} - 75 \, A a c^{2} d^{4} e^{3} + 9 \, B a^{2} c d^{3} e^{4} + 3 \, A a^{2} c d^{2} e^{5} + B a^{3} d e^{6} + 3 \, A a^{3} e^{7} + 12 \, {\left(35 \, B c^{3} d^{4} e^{3} - 20 \, A c^{3} d^{3} e^{4} + 30 \, B a c^{2} d^{2} e^{5} - 12 \, A a c^{2} d e^{6} + 3 \, B a^{2} c e^{7}\right)} x^{3} + 18 \, {\left(63 \, B c^{3} d^{5} e^{2} - 35 \, A c^{3} d^{4} e^{3} + 50 \, B a c^{2} d^{3} e^{4} - 18 \, A a c^{2} d^{2} e^{5} + 3 \, B a^{2} c d e^{6} + A a^{2} c e^{7}\right)} x^{2} + 4 \, {\left(259 \, B c^{3} d^{6} e - 141 \, A c^{3} d^{5} e^{2} + 195 \, B a c^{2} d^{4} e^{3} - 66 \, A a c^{2} d^{3} e^{4} + 9 \, B a^{2} c d^{2} e^{5} + 3 \, A a^{2} c d e^{6} + B a^{3} e^{7}\right)} x}{12 \, {\left(e^{12} x^{4} + 4 \, d e^{11} x^{3} + 6 \, d^{2} e^{10} x^{2} + 4 \, d^{3} e^{9} x + d^{4} e^{8}\right)}} + \frac{2 \, B c^{3} e^{2} x^{3} - 3 \, {\left(5 \, B c^{3} d e - A c^{3} e^{2}\right)} x^{2} + 6 \, {\left(15 \, B c^{3} d^{2} - 5 \, A c^{3} d e + 3 \, B a c^{2} e^{2}\right)} x}{6 \, e^{7}} - \frac{{\left(35 \, B c^{3} d^{3} - 15 \, A c^{3} d^{2} e + 15 \, B a c^{2} d e^{2} - 3 \, A a c^{2} e^{3}\right)} \log\left(e x + d\right)}{e^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(319*B*c^3*d^7 - 171*A*c^3*d^6*e + 231*B*a*c^2*d^5*e^2 - 75*A*a*c^2*d
^4*e^3 + 9*B*a^2*c*d^3*e^4 + 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + 3*A*a^3*e^7
+ 12*(35*B*c^3*d^4*e^3 - 20*A*c^3*d^3*e^4 + 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2
*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 18*(63*B*c^3*d^5*e^2 - 35*A*c^3*d^4*e^3 + 50*
B*a*c^2*d^3*e^4 - 18*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 + A*a^2*c*e^7)*x^2 +
 4*(259*B*c^3*d^6*e - 141*A*c^3*d^5*e^2 + 195*B*a*c^2*d^4*e^3 - 66*A*a*c^2*
d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e^6 + B*a^3*e^7)*x)/(e^12*x^4 + 4
*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8) + 1/6*(2*B*c^3*e^2*x^
3 - 3*(5*B*c^3*d*e - A*c^3*e^2)*x^2 + 6*(15*B*c^3*d^2 - 5*A*c^3*d*e + 3*B*a
*c^2*e^2)*x)/e^7 - (35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*
a*c^2*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 1.80, size = 501, normalized size = 1.60

$$x^2\,\left(\frac{A\,c^3}{2\,e^5}-\frac{5\,B\,c^3\,d}{2\,e^6}\right)-x\,\left(\frac{5\,d\,\left(\frac{A\,c^3}{e^5}-\frac{5\,B\,c^3\,d}{e^6}\right)}{e}-\frac{3\,B\,a\,c^2}{e^5}+\frac{10\,B\,c^3\,d^2}{e^7}\right)-\frac{\frac{B\,a^3\,d\,e^6+3\,A\,a^3\,e^7+9\,B\,a^2\,c\,d^3\,e^4+3\,A\,a^2\,c\,d^2\,e^5+231\,B\,a\,c^2\,d^5\,e^2-75\,A\,a\,c^2\,d^4\,e^3+319\,B\,c^3\,d^7-171\,A\,c^3\,d^6\,e}{12\,e}+x^2\,\left(\frac{9\,B\,a^2\,c\,d\,e^5}{2}+\frac{3\,A\,a^2\,c\,e^6}{2}+75\,B\,a\,c^2\,d^3\,e^3-27\,A\,a\,c^2\,d^2\,e^4+\frac{189\,B\,c^3\,d^5\,e}{2}-\frac{105\,A\,c^3\,d^4\,e^2}{2}\right)+x^3\,\left(3\,B\,a^2\,c\,e^6+30\,B\,a\,c^2\,d^2\,e^4-12\,A\,a\,c^2\,d\,e^5+35\,B\,c^3\,d^4\,e^2-20\,A\,c^3\,d^3\,e^3\right)+x\,\left(\frac{B\,a^3\,e^6}{3}+3\,B\,a^2\,c\,d^2\,e^4+A\,a^2\,c\,d\,e^5+65\,B\,a\,c^2\,d^4\,e^2-22\,A\,a\,c^2\,d^3\,e^3+\frac{259\,B\,c^3\,d^6}{3}-47\,A\,c^3\,d^5\,e\right)}{d^4\,e^7+4\,d^3\,e^8\,x+6\,d^2\,e^9\,x^2+4\,d\,e^{10}\,x^3+e^{11}\,x^4}-\frac{\ln\left(d+e\,x\right)\,\left(35\,B\,c^3\,d^3-15\,A\,c^3\,d^2\,e+15\,B\,a\,c^2\,d\,e^2-3\,A\,a\,c^2\,e^3\right)}{e^8}+\frac{B\,c^3\,x^3}{3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] x^2*((A*c^3)/(2*e^5) - (5*B*c^3*d)/(2*e^6)) - x*((5*d*((A*c^3)/e^5 - (5*B*c
^3*d)/e^6))/e - (3*B*a*c^2)/e^5 + (10*B*c^3*d^2)/e^7) - ((3*A*a^3*e^7 + 319
*B*c^3*d^7 + B*a^3*d*e^6 - 171*A*c^3*d^6*e - 75*A*a*c^2*d^4*e^3 + 3*A*a^2*c
*d^2*e^5 + 231*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4)/(12*e) + x^2*((3*A*a^2*
c*e^6)/2 + (189*B*c^3*d^5*e)/2 - (105*A*c^3*d^4*e^2)/2 - 27*A*a*c^2*d^2*e^4
 + 75*B*a*c^2*d^3*e^3 + (9*B*a^2*c*d*e^5)/2) + x^3*(3*B*a^2*c*e^6 - 20*A*c^
3*d^3*e^3 + 35*B*c^3*d^4*e^2 + 30*B*a*c^2*d^2*e^4 - 12*A*a*c^2*d*e^5) + x*(
(B*a^3*e^6)/3 + (259*B*c^3*d^6)/3 - 47*A*c^3*d^5*e - 22*A*a*c^2*d^3*e^3 + 6
5*B*a*c^2*d^4*e^2 + 3*B*a^2*c*d^2*e^4 + A*a^2*c*d*e^5))/(d^4*e^7 + e^11*x^4
 + 4*d^3*e^8*x + 4*d*e^10*x^3 + 6*d^2*e^9*x^2) - (log(d + e*x)*(35*B*c^3*d^
3 - 3*A*a*c^2*e^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2))/e^8 + (B*c^3*x^3)/(
3*e^5)
```

sympy [A] time = 63.11, size = 537, normalized size = 1.71

$$\frac{B c^{3} x^{3}}{3 e^{5}} - \frac{c^{2} \left(- 3 A a e^{3} - 15 A c d^{2} e + 15 B a d e^{2} + 35 B c d^{3}\right) \log{\left(d + e x \right)}}{e^{8}} + x^{2} \left(\frac{A c^{3}}{2 e^{5}} - \frac{5 B c^{3} d}{2 e^{6}}\right) + x \left(- \frac{5 A c^{3} d}{e^{6}} + \frac{3 B a c^{2}}{e^{5}} + \frac{15 B c^{3} d^{2}}{e^{7}}\right) + \frac{- 3 A a^{3} e^{7} - 3 A a^{2} c d^{2} e^{5} + 75 A a c^{2} d^{4} e^{3} + 171 A c^{3} d^{6} e - B a^{3} d e^{6} - 9 B a^{2} c d^{3} e^{4} - 231 B a c^{2} d^{5} e^{2} - 319 B c^{3} d^{7} + x^{3} \left(144 A a c^{2} d e^{6} + 240 A c^{3} d^{3} e^{4} - 36 B a^{2} c e^{7} - 360 B a c^{2} d^{2} e^{5} - 420 B c^{3} d^{4} e^{3}\right) + x^{2} \left(- 18 A a^{2} c e^{7} + 324 A a c^{2} d^{2} e^{5} + 630 A c^{3} d^{4} e^{3} - 54 B a^{2} c d e^{6} - 900 B a c^{2} d^{3} e^{4} - 1134 B c^{3} d^{5} e^{2}\right) + x \left(- 12 A a^{2} c d e^{6} + 264 A a c^{2} d^{3} e^{4} + 564 A c^{3} d^{5} e^{2} - 4 B a^{3} e^{7} - 36 B a^{2} c d^{2} e^{5} - 780 B a c^{2} d^{4} e^{3} - 1036 B c^{3} d^{6} e\right)}{12 d^{4} e^{8} + 48 d^{3} e^{9} x + 72 d^{2} e^{10} x^{2} + 48 d e^{11} x^{3} + 12 e^{12} x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**5,x)
```

```
[Out] B*c**3*x**3/(3*e**5) - c**2*(-3*A*a*e**3 - 15*A*c*d**2*e + 15*B*a*d*e**2 +
35*B*c*d**3)*log(d + e*x)/e**8 + x**2*(A*c**3/(2*e**5) - 5*B*c**3*d/(2*e**6
)) + x*(-5*A*c**3*d/e**6 + 3*B*a*c**2/e**5 + 15*B*c**3*d**2/e**7) + (-3*A*a
**3*e**7 - 3*A*a**2*c*d**2*e**5 + 75*A*a*c**2*d**4*e**3 + 171*A*c**3*d**6*e
 - B*a**3*d*e**6 - 9*B*a**2*c*d**3*e**4 - 231*B*a*c**2*d**5*e**2 - 319*B*c*
*3*d**7 + x**3*(144*A*a*c**2*d*e**6 + 240*A*c**3*d**3*e**4 - 36*B*a**2*c*e*
*7 - 360*B*a*c**2*d**2*e**5 - 420*B*c**3*d**4*e**3) + x**2*(-18*A*a**2*c*e*
*7 + 324*A*a*c**2*d**2*e**5 + 630*A*c**3*d**4*e**3 - 54*B*a**2*c*d*e**6 - 9
00*B*a*c**2*d**3*e**4 - 1134*B*c**3*d**5*e**2) + x*(-12*A*a**2*c*d*e**6 + 2
64*A*a*c**2*d**3*e**4 + 564*A*c**3*d**5*e**2 - 4*B*a**3*e**7 - 36*B*a**2*c*
d**2*e**5 - 780*B*a*c**2*d**4*e**3 - 1036*B*c**3*d**6*e))/(12*d**4*e**8 + 4
8*d**3*e**9*x + 72*d**2*e**10*x**2 + 48*d*e**11*x**3 + 12*e**12*x**4)
```

3.1150 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^6}\,dx$

Optimal. Leaf size=313

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{2e^8(d+ex)^2}+\frac{3c^2\log(d+ex)\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+\frac{c^2\left(-3aAe^3\right.}{}$$

Rubi [A] time = 0.34, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{2e^8(d+ex)^2}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{e^8(d+ex)}+\frac{3c^2\log(d+ex)\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+\frac{c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8(d+ex)^3}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{4e^8(d+ex)^4}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{5e^8(d+ex)^5}-\frac{c^3x(6Bd-Ae)}{e^7}+\frac{Bc^3x^2}{2e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] -((c^3*(6*B*d - A*e)*x)/e^7) + (B*c^3*x^2)/(2*e^6) + ((B*d - A*e)*(c*d^2 +
a*e^2)^3)/(5*e^8*(d + e*x)^5) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e +
 a*B*e^2))/(4*e^8*(d + e*x)^4) + (c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*
e + 3*a*B*d*e^2 - a*A*e^3))/(e^8*(d + e*x)^3) + (c*(4*A*c*d*e*(5*c*d^2 + 3*
a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4)))/(2*e^8*(d + e*x)^2)
+ (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3))/(e^8*(d + e*
x)) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^6}\,dx = \int \left(\frac{c^3(-6Bd+Ae)}{e^7}+\frac{Bc^3x}{e^6}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^6}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6A\right.}{e^7(d+ex)^5}\right.$$

$$= -\frac{c^3(6Bd-Ae)x}{e^7}+\frac{Bc^3x^2}{2e^6}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{5e^8(d+ex)^5}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde\right.}{4e^8(d+ex)^4}$$

Mathematica [A] time = 0.20, size = 388, normalized size = 1.24

$$\frac{-2Ae\left(2a^3e^6+a^2ce^4\left(d^2+5dex+10e^2x^2\right)+6ac^2e^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)+c^3\left(87d^6+375d^5ex+600d^4e^2x^2+400d^3e^3x^3+50d^2e^4x^4-50de^5x^5-10e^6x^6\right)\right)+B\left(-a^3e^6(d+5ex)-3a^2ce^4\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+ac^2de^2\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)+c^3\left(459d^7+1875d^6ex+2700d^5e^2x^2+1300d^4e^3x^3-400d^3e^4x^4-500d^2e^5x^5-70de^6x^6+10e^7x^7\right)\right)+60c^2(d+ex)^5\log(d+ex)\left(aBe^2-2Acde+7Bcd^2\right)}{20e^8(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] (-2*A*e*(2*a^3*e^6 + a^2*c*e^4*(d^2 + 5*d*e*x + 10*e^2*x^2) + 6*a*c^2*e^2*(
d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4) + c^3*(87*d^6
+ 375*d^5*e*x + 600*d^4*e^2*x^2 + 400*d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e
^5*x^5 - 10*e^6*x^6)) + B*(-(a^3*e^6*(d + 5*e*x)) - 3*a^2*c*e^4*(d^3 + 5*d^
2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + a*c^2*d*e^2*(137*d^4 + 625*d^3*e*x + 1
100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4) + c^3*(459*d^7 + 1875*d^6*e*
x + 2700*d^5*e^2*x^2 + 1300*d^4*e^3*x^3 - 400*d^3*e^4*x^4 - 500*d^2*e^5*x^5
 - 70*d*e^6*x^6 + 10*e^7*x^7)) + 60*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(
d + e*x)^5*Log[d + e*x])/(20*e^8*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^6, x]
```

fricas [B] time = 0.41, size = 730, normalized size = 2.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*c^3*e^7*x^7 + 459*B*c^3*d^7 - 174*A*c^3*d^6*e + 137*B*a*c^2*d^5*
e^2 - 12*A*a*c^2*d^4*e^3 - 3*B*a^2*c*d^3*e^4 - 2*A*a^2*c*d^2*e^5 - B*a^3*d*
e^6 - 4*A*a^3*e^7 - 10*(7*B*c^3*d*e^6 - 2*A*c^3*e^7)*x^6 - 100*(5*B*c^3*d^2
*e^5 - A*c^3*d*e^6)*x^5 - 20*(20*B*c^3*d^3*e^4 + 5*A*c^3*d^2*e^5 - 15*B*a*c
^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 10*(130*B*c^3*d^4*e^3 - 80*A*c^3*d^3*e^4 +
90*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 - 3*B*a^2*c*e^7)*x^3 + 10*(270*B*c^3*
d^5*e^2 - 120*A*c^3*d^4*e^3 + 110*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 - 3*
B*a^2*c*d*e^6 - 2*A*a^2*c*e^7)*x^2 + 5*(375*B*c^3*d^6*e - 150*A*c^3*d^5*e^2
 + 125*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 - 3*B*a^2*c*d^2*e^5 - 2*A*a^2*c
*d*e^6 - B*a^3*e^7)*x + 60*(7*B*c^3*d^7 - 2*A*c^3*d^6*e + B*a*c^2*d^5*e^2 +
 (7*B*c^3*d^2*e^5 - 2*A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 5*(7*B*c^3*d^3*e^4 -
 2*A*c^3*d^2*e^5 + B*a*c^2*d*e^6)*x^4 + 10*(7*B*c^3*d^4*e^3 - 2*A*c^3*d^3*e
^4 + B*a*c^2*d^2*e^5)*x^3 + 10*(7*B*c^3*d^5*e^2 - 2*A*c^3*d^4*e^3 + B*a*c^2
*d^3*e^4)*x^2 + 5*(7*B*c^3*d^6*e - 2*A*c^3*d^5*e^2 + B*a*c^2*d^4*e^3)*x)*lo
g(e*x + d))/(e^13*x^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 +
5*d^4*e^9*x + d^5*e^8)
```

giac [A] time = 0.16, size = 429, normalized size = 1.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 3*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*e^(-8)*log(abs(x*e + d)) + 1/2*
(B*c^3*x^2*e^6 - 12*B*c^3*d*x*e^5 + 2*A*c^3*x*e^6)*e^(-12) + 1/20*(459*B*c^
3*d^7 - 174*A*c^3*d^6*e + 137*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^4*e^3 - 3*B*a^
2*c*d^3*e^4 - 2*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 + 20*(35*B*c^3*d^3*e^4 - 15*A
*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 - 4*A*a^3*e^7 + 10*(24
5*B*c^3*d^4*e^3 - 100*A*c^3*d^3*e^4 + 90*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6
 - 3*B*a^2*c*e^7)*x^3 + 10*(329*B*c^3*d^5*e^2 - 130*A*c^3*d^4*e^3 + 110*B*a
*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 - 3*B*a^2*c*d*e^6 - 2*A*a^2*c*e^7)*x^2 +
5*(399*B*c^3*d^6*e - 154*A*c^3*d^5*e^2 + 125*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d
^3*e^4 - 3*B*a^2*c*d^2*e^5 - 2*A*a^2*c*d*e^6 - B*a^3*e^7)*x)*e^(-8)/(x*e +
d)^5
```

maple [B] time = 0.06, size = 646, normalized size = 2.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x)
```

```
[Out] -1/5/e/(e*x+d)^5*A*a^3+c^3/e^6*A*x-1/4/e^2/(e*x+d)^4*B*a^3+15*c^2/e^6/(e*x+
d)*a*B*d+3/2/e^3/(e*x+d)^4*A*a^2*c*d-1/5/e^7/(e*x+d)^5*A*c^3*d^6+1/5/e^2/(e
*x+d)^5*B*d*a^3-6*c^3/e^7*B*d*x+21*c^3/e^8*ln(e*x+d)*B*d^2-6*c^2/e^5/(e*x+d
)^3*A*d^2*a+3*c/e^4/(e*x+d)^3*B*a^2*d+10*c^2/e^6/(e*x+d)^3*B*d^3*a-3/5/e^3/
(e*x+d)^5*A*d^2*a^2*c-3/5/e^5/(e*x+d)^5*A*d^4*a*c^2+3/5/e^4/(e*x+d)^5*B*d^3
*a^2*c+3/5/e^6/(e*x+d)^5*B*d^5*a*c^2-15*c^2/e^6/(e*x+d)^2*B*d^2*a-15*c^3/e^
7/(e*x+d)*A*d^2+10*c^3/e^7/(e*x+d)^2*A*d^3-3/2*c/e^4/(e*x+d)^2*B*a^2-35/2*c
^3/e^8/(e*x+d)^2*B*d^4+1/2*B*c^3*x^2/e^6+1/5/e^8/(e*x+d)^5*B*c^3*d^7-6*c^3/
e^7*ln(e*x+d)*A*d+3*c^2/e^6*ln(e*x+d)*B*a-c/e^3/(e*x+d)^3*A*a^2-5*c^3/e^7/(
e*x+d)^3*A*d^4+7*c^3/e^8/(e*x+d)^3*B*d^5+35*c^3/e^8/(e*x+d)*B*d^3+3/2/e^7/(
e*x+d)^4*A*c^3*d^5-7/4/e^8/(e*x+d)^4*B*c^3*d^6-3*c^2/e^5/(e*x+d)*a*A+3/e^5/
(e*x+d)^4*A*a*c^2*d^3-9/4/e^4/(e*x+d)^4*B*a^2*c*d^2-15/4/e^6/(e*x+d)^4*B*a*
c^2*d^4+6*c^2/e^5/(e*x+d)^2*A*d*a
```

maxima [A] time = 0.79, size = 499, normalized size = 1.59

$$\frac{459\,Bc^3d^7 - 174\,Ac^3d^6e + 137\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 3\,Ba^2cd^3e^4 - 2\,Aa^2cd^2e^5 - Ba^3de^6 - 4\,Aa^3e^7 + 20\left(35\,Bc^3d^3e^4 - 15\,Ac^3d^2e^5 + 15\,Bac^2de^6 - 3\,Aac^2e^7\right)x^4 + 10\left(245\,Bc^3d^4e^3 - 100\,Ac^3d^3e^4 + 90\,Bac^2d^2e^5 - 12\,Aac^2de^6 - 3\,Ba^2ce^7\right)x^3 + 10\left(329\,Bc^3d^5e^2 - 130\,Ac^3d^4e^3 + 110\,Bac^2d^3e^4 - 12\,Aac^2d^2e^5 - 3\,Ba^2cde^6 - 2\,Aa^2ce^7\right)x^2 + 5\left(399\,Bc^3d^6e - 154\,Ac^3d^5e^2 + 125\,Bac^2d^4e^3 - 12\,Aac^2d^3e^4 - 3\,Ba^2cd^2e^5 - 2\,Aa^2cde^6 - Ba^3e^7\right)x}{20\left(e^{13}x^5 + 5\,de^{12}x^4 + 10\,d^2e^{11}x^3 + 10\,d^3e^{10}x^2 + 5\,d^4e^9x + d^5e^8\right)} + \frac{Bc^3ex^2 - 2\left(6\,Bc^3d - Ac^3e\right)x}{2\,e^7} + \frac{3\left(7\,Bc^3d^2 - 2\,Ac^3de + Bac^2e^2\right)\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/20*(459*B*c^3*d^7 - 174*A*c^3*d^6*e + 137*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^
4*e^3 - 3*B*a^2*c*d^3*e^4 - 2*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 4*A*a^3*e^7 +
 20*(35*B*c^3*d^3*e^4 - 15*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7
)*x^4 + 10*(245*B*c^3*d^4*e^3 - 100*A*c^3*d^3*e^4 + 90*B*a*c^2*d^2*e^5 - 12
*A*a*c^2*d*e^6 - 3*B*a^2*c*e^7)*x^3 + 10*(329*B*c^3*d^5*e^2 - 130*A*c^3*d^4
*e^3 + 110*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 - 3*B*a^2*c*d*e^6 - 2*A*a^2
*c*e^7)*x^2 + 5*(399*B*c^3*d^6*e - 154*A*c^3*d^5*e^2 + 125*B*a*c^2*d^4*e^3
- 12*A*a*c^2*d^3*e^4 - 3*B*a^2*c*d^2*e^5 - 2*A*a^2*c*d*e^6 - B*a^3*e^7)*x)/
(e^13*x^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*d^4*e^9*x
+ d^5*e^8) + 1/2*(B*c^3*e*x^2 - 2*(6*B*c^3*d - A*c^3*e)*x)/e^7 + 3*(7*B*c^3
*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*log(e*x + d)/e^8
```

mupad [B] time = 0.16, size = 494, normalized size = 1.58

$$x\left(\frac{A\,c^3}{e^6}-\frac{6\,B\,c^3\,d}{e^7}\right)-\frac{\frac{B\,a^3\,d\,e^6+4\,A\,a^3\,e^7+3\,B\,a^2\,c\,d^3\,e^4+2\,A\,a^2\,c\,d^2\,e^5-137\,B\,a\,c^2\,d^5\,e^2+12\,A\,a\,c^2\,d^4\,e^3-459\,B\,c^3\,d^7+174\,A\,c^3\,d^6\,e}{20\,e}+x^2\left(\frac{3\,B\,a^2\,c\,d\,e^5}{2}+A\,a^2\,c\,e^6-55\,B\,a\,c^2\,d^3\,e^3+6\,A\,a\,c^2\,d^2\,e^4-\frac{329\,B\,c^3\,d^5\,e}{2}+65\,A\,c^3\,d^4\,e^2\right)+x^3\left(\frac{3\,B\,a^2\,c\,e^6}{2}-45\,B\,a\,c^2\,d^2\,e^4+6\,A\,a\,c^2\,d\,e^5-\frac{245\,B\,c^3\,d^4\,e^2}{2}+50\,A\,c^3\,d^3\,e^3\right)+x\left(\frac{B\,a^3\,e^6}{4}+\frac{3\,B\,a^2\,c\,d^2\,e^4}{4}+\frac{A\,a^2\,c\,d\,e^5}{2}-\frac{125\,B\,a\,c^2\,d^4\,e^2}{4}+3\,A\,a\,c^2\,d^3\,e^3-\frac{399\,B\,c^3\,d^6}{4}+\frac{77\,A\,c^3\,d^5\,e}{2}\right)+x^4\left(-35\,B\,c^3\,d^3\,e^3+15\,A\,c^3\,d^2\,e^4-15\,B\,a\,c^2\,d\,e^5+3\,A\,a\,c^2\,e^6\right)}{d^5\,e^7+5\,d^4\,e^8\,x+10\,d^3\,e^9\,x^2+10\,d^2\,e^{10}\,x^3+5\,d\,e^{11}\,x^4+e^{12}\,x^5}+\frac{\ln\left(d+e\,x\right)\left(21\,B\,c^3\,d^2-6\,A\,c^3\,d\,e+3\,B\,a\,c^2\,e^2\right)}{e^8}+\frac{B\,c^3\,x^2}{2\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] x*((A*c^3)/e^6 - (6*B*c^3*d)/e^7) - ((4*A*a^3*e^7 - 459*B*c^3*d^7 + B*a^3*d
*e^6 + 174*A*c^3*d^6*e + 12*A*a*c^2*d^4*e^3 + 2*A*a^2*c*d^2*e^5 - 137*B*a*c
^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4)/(20*e) + x^2*(A*a^2*c*e^6 - (329*B*c^3*d^5*
e)/2 + 65*A*c^3*d^4*e^2 + 6*A*a*c^2*d^2*e^4 - 55*B*a*c^2*d^3*e^3 + (3*B*a^2
*c*d*e^5)/2) + x^3*((3*B*a^2*c*e^6)/2 + 50*A*c^3*d^3*e^3 - (245*B*c^3*d^4*e
^2)/2 - 45*B*a*c^2*d^2*e^4 + 6*A*a*c^2*d*e^5) + x*((B*a^3*e^6)/4 - (399*B*c
^3*d^6)/4 + (77*A*c^3*d^5*e)/2 + 3*A*a*c^2*d^3*e^3 - (125*B*a*c^2*d^4*e^2)/
4 + (3*B*a^2*c*d^2*e^4)/4 + (A*a^2*c*d*e^5)/2) + x^4*(3*A*a*c^2*e^6 + 15*A*
c^3*d^2*e^4 - 35*B*c^3*d^3*e^3 - 15*B*a*c^2*d*e^5))/(d^5*e^7 + e^12*x^5 + 5
*d^4*e^8*x + 5*d*e^11*x^4 + 10*d^3*e^9*x^2 + 10*d^2*e^10*x^3) + (log(d + e*
x)*(21*B*c^3*d^2 - 6*A*c^3*d*e + 3*B*a*c^2*e^2))/e^8 + (B*c^3*x^2)/(2*e^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.1151 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^7}\,dx$

Optimal. Leaf size=320

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^3}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)}+\frac{c^2\left(-3aAe^3+15aBd\right.}{2e^8(}$$

Rubi [A] time = 0.32, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^3}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{2e^8(d+ex)^2}+\frac{3c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{4e^8(d+ex)^4}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{5e^8(d+ex)^5}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{6e^8(d+ex)^6}-\frac{c^3(7Bd-Ae)\log(d+ex)}{e^8}+\frac{Bc^3x}{e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] (B*c^3*x)/e^7 + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(6*e^8*(d + e*x)^6) - ((c*d
^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(5*e^8*(d + e*x)^5) + (3*c
*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(4*e^8*
(d + e*x)^4) + (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d
^2*e^2 + 3*a^2*e^4)))/(3*e^8*(d + e*x)^3) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e
 + 15*a*B*d*e^2 - 3*a*A*e^3))/(2*e^8*(d + e*x)^2) - (3*c^2*(7*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(e^8*(d + e*x)) - (c^3*(7*B*d - A*e)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^7}\,dx=\int \left(\frac{Bc^3}{e^7}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^6}+\frac{3c}{}\right.$$

$$=\frac{Bc^3x}{e^7}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{6e^8(d+ex)^6}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{5e^8(d+ex)^5}+\frac{3c\left(cd^2\right.}{}$$

Mathematica [A] time = 0.21, size = 377, normalized size = 1.18

$$-\frac{Ae\left(10a^3e^6+3a^2ce^4\left(d^2+6dex+15e^2x^2\right)+6ac^2e^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)-c^3d\left(147d^5+822d^4ex+1875d^3e^2x^2+2200d^2e^3x^3+1350de^4x^4+360e^5x^5\right)\right)+B\left(2a^3e^6(d+6ex)+3a^2ce^4\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+30ac^2e^2\left(d^5+6d^4ex+15d^3e^2x^2+20d^2e^3x^3+15de^4x^4+6e^5x^5\right)+c^3\left(669d^7+3594d^6ex+7725d^5e^2x^2+8200d^4e^3x^3+4050d^3e^4x^4+360d^2e^5x^5-360de^6x^6-60e^7x^7\right)\right)+60c^3(7Bd-Ae)(d+ex)^6\log(d+ex)}{60e^8(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(10*a^3*e^6 + 3*a^2*c*e^4*(d^2 + 6*d*e*x + 15*e^2*x^2) + 6*a*c^2
*e^2*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) - c^3*d
*(147*d^5 + 822*d^4*e*x + 1875*d^3*e^2*x^2 + 2200*d^2*e^3*x^3 + 1350*d*e^4*
x^4 + 360*e^5*x^5)) + B*(2*a^3*e^6*(d + 6*e*x) + 3*a^2*c*e^4*(d^3 + 6*d^2*e
*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 30*a*c^2*e^2*(d^5 + 6*d^4*e*x + 15*d^3*e^
2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5) + c^3*(669*d^7 + 3594*d^
6*e*x + 7725*d^5*e^2*x^2 + 8200*d^4*e^3*x^3 + 4050*d^3*e^4*x^4 + 360*d^2*e^
5*x^5 - 360*d*e^6*x^6 - 60*e^7*x^7)) + 60*c^3*(7*B*d - A*e)*(d + e*x)^6*Log
[d + e*x])/(e^8*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^7, x]
```

fricas [B] time = 0.41, size = 695, normalized size = 2.17

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^3*e^7*x^7 + 360*B*c^3*d*e^6*x^6 - 669*B*c^3*d^7 + 147*A*c^3*d^
6*e - 30*B*a*c^2*d^5*e^2 - 6*A*a*c^2*d^4*e^3 - 3*B*a^2*c*d^3*e^4 - 3*A*a^2*
c*d^2*e^5 - 2*B*a^3*d*e^6 - 10*A*a^3*e^7 - 180*(2*B*c^3*d^2*e^5 - 2*A*c^3*d
*e^6 + B*a*c^2*e^7)*x^5 - 90*(45*B*c^3*d^3*e^4 - 15*A*c^3*d^2*e^5 + 5*B*a*c
^2*d*e^6 + A*a*c^2*e^7)*x^4 - 20*(410*B*c^3*d^4*e^3 - 110*A*c^3*d^3*e^4 + 3
0*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 - 15*(515*B*c^3*d^
5*e^2 - 125*A*c^3*d^4*e^3 + 30*B*a*c^2*d^3*e^4 + 6*A*a*c^2*d^2*e^5 + 3*B*a^
2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 - 6*(599*B*c^3*d^6*e - 137*A*c^3*d^5*e^2 + 3
0*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e^6
 + 2*B*a^3*e^7)*x - 60*(7*B*c^3*d^7 - A*c^3*d^6*e + (7*B*c^3*d*e^6 - A*c^3*
e^7)*x^6 + 6*(7*B*c^3*d^2*e^5 - A*c^3*d*e^6)*x^5 + 15*(7*B*c^3*d^3*e^4 - A*
c^3*d^2*e^5)*x^4 + 20*(7*B*c^3*d^4*e^3 - A*c^3*d^3*e^4)*x^3 + 15*(7*B*c^3*d
^5*e^2 - A*c^3*d^4*e^3)*x^2 + 6*(7*B*c^3*d^6*e - A*c^3*d^5*e^2)*x)*log(e*x
+ d))/(e^14*x^6 + 6*d*e^13*x^5 + 15*d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4
*e^10*x^2 + 6*d^5*e^9*x + d^6*e^8)
```

giac [A] time = 0.16, size = 426, normalized size = 1.33

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] B*c^3*x*e^(-7) - (7*B*c^3*d - A*c^3*e)*e^(-8)*log(abs(x*e + d)) - 1/60*(669
*B*c^3*d^7 - 147*A*c^3*d^6*e + 30*B*a*c^2*d^5*e^2 + 6*A*a*c^2*d^4*e^3 + 3*B
*a^2*c*d^3*e^4 + 3*A*a^2*c*d^2*e^5 + 180*(7*B*c^3*d^2*e^5 - 2*A*c^3*d*e^6 +
 B*a*c^2*e^7)*x^5 + 2*B*a^3*d*e^6 + 30*(175*B*c^3*d^3*e^4 - 45*A*c^3*d^2*e^
5 + 15*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 10*A*a^3*e^7 + 20*(455*B*c^3*d^
4*e^3 - 110*A*c^3*d^3*e^4 + 30*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 3*B*a^2*
c*e^7)*x^3 + 15*(539*B*c^3*d^5*e^2 - 125*A*c^3*d^4*e^3 + 30*B*a*c^2*d^3*e^4
 + 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 + 6*(609*B*c^3*
d^6*e - 137*A*c^3*d^5*e^2 + 30*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 3*B*a^
2*c*d^2*e^5 + 3*A*a^2*c*d*e^6 + 2*B*a^3*e^7)*x)*e^(-8)/(x*e + d)^6
```

maple [B] time = 0.06, size = 656, normalized size = 2.05

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x)
```

```
[Out] -9/2*c^2/e^5/(e*x+d)^4*A*d^2*a+9/4*c/e^4/(e*x+d)^4*B*a^2*d+6/5/e^3/(e*x+d)^
5*A*a^2*c*d+12/5/e^5/(e*x+d)^5*A*a*c^2*d^3-9/5/e^4/(e*x+d)^5*B*a^2*c*d^2-3/
e^6/(e*x+d)^5*B*a*c^2*d^4+1/2/e^6/(e*x+d)^6*B*d^5*a*c^2-10*c^2/e^6/(e*x+d)^
3*B*d^2*a+4*c^2/e^5/(e*x+d)^3*A*d*a-1/6/e/(e*x+d)^6*A*a^3-1/5/e^2/(e*x+d)^5
*B*a^3+c^3/e^7*ln(e*x+d)*A+15/2*c^2/e^6/(e*x+d)^4*B*d^3*a+15/2*c^2/e^6/(e*x
+d)^2*a*B*d-1/2/e^3/(e*x+d)^6*A*d^2*a^2*c-1/2/e^5/(e*x+d)^6*A*d^4*a*c^2+1/2
/e^4/(e*x+d)^6*B*d^3*a^2*c+35/2*c^3/e^8/(e*x+d)^2*B*d^3-7*c^3/e^8*ln(e*x+d)
*B*d+20/3*c^3/e^7/(e*x+d)^3*A*d^3+6*c^3/e^7/(e*x+d)*A*d-3*c^2/e^6/(e*x+d)*B
*a-c/e^4/(e*x+d)^3*B*a^2-35/3*c^3/e^8/(e*x+d)^3*B*d^4-3/4*c/e^3/(e*x+d)^4*A
*a^2-15/4*c^3/e^7/(e*x+d)^4*A*d^4+21/4*c^3/e^8/(e*x+d)^4*B*d^5-1/6/e^7/(e*x
+d)^6*A*d^6*c^3+1/6/e^2/(e*x+d)^6*B*d*a^3+1/6/e^8/(e*x+d)^6*B*c^3*d^7-21*c^
3/e^8/(e*x+d)*B*d^2-3/2*c^2/e^5/(e*x+d)^2*a*A-15/2*c^3/e^7/(e*x+d)^2*A*d^2+
6/5/e^7/(e*x+d)^5*A*c^3*d^5-7/5/e^8/(e*x+d)^5*B*c^3*d^6+B*c^3*x/e^7
```

maxima [A] time = 0.77, size = 511, normalized size = 1.60

$$-\frac{669\,Bc^3d^7 - 147\,Ac^3d^6e + 30\,Bac^2d^5e^2 + 6\,Aac^2d^4e^3 + 3\,Ba^2cd^3e^4 + 3\,Aa^2cd^2e^5 + 2\,Ba^3de^6 + 10\,Aa^3e^7 + 180\left(7\,Bc^3d^2e^5 - 2\,Ac^3de^6 + Bac^2e^7\right)x^5 + 30\left(175\,Bc^3d^3e^4 - 45\,Ac^3d^2e^5 + 15\,Bac^2de^6 + 3\,Aac^2e^7\right)x^4 + 20\left(455\,Bc^3d^4e^3 - 110\,Ac^3d^3e^4 + 30\,Bac^2d^2e^5 + 6\,Aac^2de^6 + 3\,Ba^2ce^7\right)x^3 + 15\left(539\,Bc^3d^5e^2 - 125\,Ac^3d^4e^3 + 30\,Bac^2d^3e^4 + 6\,Aac^2d^2e^5 + 3\,Ba^2cde^6 + 3\,Aa^2ce^7\right)x^2 + 6\left(609\,Bc^3d^6e - 137\,Ac^3d^5e^2 + 30\,Bac^2d^4e^3 + 6\,Aac^2d^3e^4 + 3\,Ba^2cd^2e^5 + 3\,Aa^2cde^6 + 2\,Ba^3e^7\right)x}{60\left(e^{14}x^6 + 6\,de^{13}x^5 + 15\,d^2e^{12}x^4 + 20\,d^3e^{11}x^3 + 15\,d^4e^{10}x^2 + 6\,d^5e^9x + d^6e^8\right)} + \frac{Bc^3x}{e^7} - \frac{\left(7\,Bc^3d - Ac^3e\right)\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(669*B*c^3*d^7 - 147*A*c^3*d^6*e + 30*B*a*c^2*d^5*e^2 + 6*A*a*c^2*d^4
*e^3 + 3*B*a^2*c*d^3*e^4 + 3*A*a^2*c*d^2*e^5 + 2*B*a^3*d*e^6 + 10*A*a^3*e^7
 + 180*(7*B*c^3*d^2*e^5 - 2*A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 30*(175*B*c^3*
d^3*e^4 - 45*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 20*(45
5*B*c^3*d^4*e^3 - 110*A*c^3*d^3*e^4 + 30*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6
+ 3*B*a^2*c*e^7)*x^3 + 15*(539*B*c^3*d^5*e^2 - 125*A*c^3*d^4*e^3 + 30*B*a*c
^2*d^3*e^4 + 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 + 6*(
609*B*c^3*d^6*e - 137*A*c^3*d^5*e^2 + 30*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^
4 + 3*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e^6 + 2*B*a^3*e^7)*x)/(e^14*x^6 + 6*d*e
^13*x^5 + 15*d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4*e^10*x^2 + 6*d^5*e^9*x
 + d^6*e^8) + B*c^3*x/e^7 - (7*B*c^3*d - A*c^3*e)*log(e*x + d)/e^8
```

mupad [B] time = 1.86, size = 505, normalized size = 1.58

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^3\,e-7\,B\,c^3\,d\right)}{e^8}-\frac{\frac{2\,B\,a^3\,d\,e^6+10\,A\,a^3\,e^7+3\,B\,a^2\,c\,d^3\,e^4+3\,A\,a^2\,c\,d^2\,e^5+30\,B\,a\,c^2\,d^5\,e^2+6\,A\,a\,c^2\,d^4\,e^3+669\,B\,c^3\,d^7-147\,A\,c^3\,d^6\,e}{60\,e}+x^2\,\left(\frac{3\,B\,a^2\,c\,d\,e^5}{4}+\frac{3\,A\,a^2\,c\,e^6}{4}+\frac{15\,B\,a\,c^2\,d^3\,e^3}{2}+\frac{3\,A\,a\,c^2\,d^2\,e^4}{2}+\frac{539\,B\,c^3\,d^5\,e}{4}-\frac{125\,A\,c^3\,d^4\,e^2}{4}\right)+x^3\,\left(B\,a^2\,c\,e^6+10\,B\,a\,c^2\,d^2\,e^4+2\,A\,a\,c^2\,d\,e^5+\frac{455\,B\,c^3\,d^4\,e^2}{3}-\frac{110\,A\,c^3\,d^3\,e^3}{3}\right)+x^5\,\left(21\,B\,c^3\,d^2\,e^4-6\,A\,c^3\,d\,e^5+3\,B\,a\,c^2\,e^6\right)+x\,\left(\frac{B\,a^3\,e^6}{5}+\frac{3\,B\,a^2\,c\,d^2\,e^4}{10}+\frac{3\,A\,a^2\,c\,d\,e^5}{10}+3\,B\,a\,c^2\,d^4\,e^2+\frac{3\,A\,a\,c^2\,d^3\,e^3}{5}+\frac{609\,B\,c^3\,d^6}{10}-\frac{137\,A\,c^3\,d^5\,e}{10}\right)+x^4\,\left(\frac{175\,B\,c^3\,d^3\,e^3}{2}-\frac{45\,A\,c^3\,d^2\,e^4}{2}+\frac{15\,B\,a\,c^2\,d\,e^5}{2}+\frac{3\,A\,a\,c^2\,e^6}{2}\right)}{d^6\,e^7+6\,d^5\,e^8\,x+15\,d^4\,e^9\,x^2+20\,d^3\,e^{10}\,x^3+15\,d^2\,e^{11}\,x^4+6\,d\,e^{12}\,x^5+e^{13}\,x^6}+\frac{B\,c^3\,x}{e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] (log(d + e*x)*(A*c^3*e - 7*B*c^3*d))/e^8 - ((10*A*a^3*e^7 + 669*B*c^3*d^7 +
 2*B*a^3*d*e^6 - 147*A*c^3*d^6*e + 6*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 +
30*B*a*c^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4)/(60*e) + x^2*((3*A*a^2*c*e^6)/4 + (
539*B*c^3*d^5*e)/4 - (125*A*c^3*d^4*e^2)/4 + (3*A*a*c^2*d^2*e^4)/2 + (15*B*
a*c^2*d^3*e^3)/2 + (3*B*a^2*c*d*e^5)/4) + x^3*(B*a^2*c*e^6 - (110*A*c^3*d^3
*e^3)/3 + (455*B*c^3*d^4*e^2)/3 + 10*B*a*c^2*d^2*e^4 + 2*A*a*c^2*d*e^5) + x
^5*(3*B*a*c^2*e^6 - 6*A*c^3*d*e^5 + 21*B*c^3*d^2*e^4) + x*((B*a^3*e^6)/5 +
(609*B*c^3*d^6)/10 - (137*A*c^3*d^5*e)/10 + (3*A*a*c^2*d^3*e^3)/5 + 3*B*a*c
^2*d^4*e^2 + (3*B*a^2*c*d^2*e^4)/10 + (3*A*a^2*c*d*e^5)/10) + x^4*((3*A*a*c
^2*e^6)/2 - (45*A*c^3*d^2*e^4)/2 + (175*B*c^3*d^3*e^3)/2 + (15*B*a*c^2*d*e^
5)/2))/(d^6*e^7 + e^13*x^6 + 6*d^5*e^8*x + 6*d*e^12*x^5 + 15*d^4*e^9*x^2 +
20*d^3*e^10*x^3 + 15*d^2*e^11*x^4) + (B*c^3*x)/e^7
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.1152 $\int \frac{(A+Bx)(a+cx^2)^3}{(d+ex)^8} dx$

Optimal. Leaf size=327

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{4e^8(d+ex)^4}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{2e^8(d+ex)^2}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{3e^8(d+}$$

Rubi [A] time = 0.30, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{4e^8(d+ex)^4}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{2e^8(d+ex)^2}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{3e^8(d+ex)^3}+\frac{3c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{5e^8(d+ex)^5}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{6e^8(d+ex)^6}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{7e^8(d+ex)^7}+\frac{c^3(7Bd-Ae)}{e^8(d+ex)}+\frac{Bc^3\log(d+ex)}{e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(7*e^8*(d + e*x)^7) - ((c*d^2 + a*e^2)^2*(7
*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(6*e^8*(d + e*x)^6) + (3*c*(c*d^2 + a*e^2)
*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(5*e^8*(d + e*x)^5) + (
c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e
^4)))/(4*e^8*(d + e*x)^4) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
- 3*a*A*e^3))/(3*e^8*(d + e*x)^3) - (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2
))/(2*e^8*(d + e*x)^2) + (c^3*(7*B*d - A*e))/(e^8*(d + e*x)) + (B*c^3*Log[d
 + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^8} dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^7}+\frac{3c\left(cd^2+ae\right.}{}\right.$$

$$= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{7e^8(d+ex)^7}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{6e^8(d+ex)^6}+\frac{3c\left(cd^2+ae^2\right)(7B}{}$$

Mathematica [A] time = 0.20, size = 366, normalized size = 1.12

$$\frac{-12Ae\left(5a^3e^6+a^2ce^4\left(d^2+7dex+21e^2x^2\right)+ac^2e^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)+5c^3\left(d^6+7d^5ex+21d^4e^2x^2+35d^3e^3x^3+35d^2e^4x^4+21de^5x^5+7e^6x^6\right)\right)+B\left(-10a^3e^6(d+7ex)-9a^2ce^4\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)-30ac^2e^2\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)+c^3d\left(1089d^6+7203d^5ex+20139d^4e^2x^2+30625d^3e^3x^3+26950d^2e^4x^4+13230de^5x^5+2940e^6x^6\right)\right)+420Bc^3(d+ex)^7\log(d+ex)}{420e^8(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] (-12*A*e*(5*a^3*e^6 + a^2*c*e^4*(d^2 + 7*d*e*x + 21*e^2*x^2) + a*c^2*e^2*(d
^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*c^3*(d^6 +
 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^
5 + 7*e^6*x^6)) + B*(-10*a^3*e^6*(d + 7*e*x) - 9*a^2*c*e^4*(d^3 + 7*d^2*e*x
 + 21*d*e^2*x^2 + 35*e^3*x^3) - 30*a*c^2*e^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*
x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5) + c^3*d*(1089*d^6 + 7203*
d^5*e*x + 20139*d^4*e^2*x^2 + 30625*d^3*e^3*x^3 + 26950*d^2*e^4*x^4 + 13230
```

```
*d*e^5*x^5 + 2940*e^6*x^6)) + 420*B*c^3*(d + e*x)^7*Log[d + e*x])/(420*e^8*
(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^8, x]
```

fricas [A] time = 0.41, size = 624, normalized size = 1.91

$$\frac{1089\,Bc^3d^7 - 60\,Ac^3d^6e - 30\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 9\,Ba^2cd^3e^4 - 12\,Aa^2cd^2e^5 - 10\,Ba^3de^6 - 60\,Aa^3e^7 + 420\left(7\,Bc^3de^6 - Ac^3e^7\right)x^6 + 630\left(21\,Bc^3d^2e^5 - 2\,Ac^3de^6 - Bac^2e^7\right)x^5 + 70\left(385\,Bc^3d^3e^4 - 30\,Ac^3d^2e^5 - 15\,Bac^2de^6 - 6\,Aac^2e^7\right)x^4 + 35\left(875\,Bc^3d^4e^3 - 60\,Ac^3d^3e^4 - 30\,Bac^2d^2e^5 - 12\,Aac^2de^6 - 9\,Ba^2ce^7\right)x^3 + 21\left(959\,Bc^3d^5e^2 - 60\,Ac^3d^4e^3 - 30\,Bac^2d^3e^4 - 12\,Aac^2d^2e^5 - 9\,Ba^2cde^6 - 12\,Aa^2ce^7\right)x^2 + 7\left(1029\,Bc^3d^6e - 60\,Ac^3d^5e^2 - 30\,Bac^2d^4e^3 - 12\,Aac^2d^3e^4 - 9\,Ba^2cd^2e^5 - 12\,Aa^2cde^6 - 10\,Ba^3e^7\right)x + 420\left(Bc^3e^7x^7 + 7\,Bc^3de^6x^6 + 21\,Bc^3d^2e^5x^5 + 35\,Bc^3d^3e^4x^4 + 35\,Bc^3d^4e^3x^3 + 21\,Bc^3d^5e^2x^2 + 7\,Bc^3d^6ex + Bc^3d^7\right)\log\left(ex+d\right)}{420\left(e^{15}x^7 + 7\,de^{14}x^6 + 21\,d^2e^{13}x^5 + 35\,d^3e^{12}x^4 + 35\,d^4e^{11}x^3 + 21\,d^5e^{10}x^2 + 7\,d^6e^9x + d^7e^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*c^3*d^6*e - 30*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^
4*e^3 - 9*B*a^2*c*d^3*e^4 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 60*A*a^3*
e^7 + 420*(7*B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*A*c^3
*d*e^6 - B*a*c^2*e^7)*x^5 + 70*(385*B*c^3*d^3*e^4 - 30*A*c^3*d^2*e^5 - 15*B
*a*c^2*d*e^6 - 6*A*a*c^2*e^7)*x^4 + 35*(875*B*c^3*d^4*e^3 - 60*A*c^3*d^3*e^
4 - 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 - 9*B*a^2*c*e^7)*x^3 + 21*(959*B*
c^3*d^5*e^2 - 60*A*c^3*d^4*e^3 - 30*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 -
9*B*a^2*c*d*e^6 - 12*A*a^2*c*e^7)*x^2 + 7*(1029*B*c^3*d^6*e - 60*A*c^3*d^5*
e^2 - 30*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 - 9*B*a^2*c*d^2*e^5 - 12*A*a^
2*c*d*e^6 - 10*B*a^3*e^7)*x + 420*(B*c^3*e^7*x^7 + 7*B*c^3*d*e^6*x^6 + 21*B
*c^3*d^2*e^5*x^5 + 35*B*c^3*d^3*e^4*x^4 + 35*B*c^3*d^4*e^3*x^3 + 21*B*c^3*d
^5*e^2*x^2 + 7*B*c^3*d^6*e*x + B*c^3*d^7)*log(e*x + d))/(e^15*x^7 + 7*d*e^1
4*x^6 + 21*d^2*e^13*x^5 + 35*d^3*e^12*x^4 + 35*d^4*e^11*x^3 + 21*d^5*e^10*x
^2 + 7*d^6*e^9*x + d^7*e^8)
```

giac [A] time = 0.19, size = 431, normalized size = 1.32

$$Bc^3e^{(-8)}\log\left(|xe+d|\right) + \frac{\left(420\left(7\,Bc^3de^5 - Ac^3e^6\right)x^6 + 630\left(21\,Bc^3d^2e^4 - 2\,Ac^3de^5 - Bac^2e^6\right)x^5 + 70\left(385\,Bc^3d^3e^3 - 30\,Ac^3d^2e^4 - 15\,Bac^2de^5 - 6\,Aac^2e^6\right)x^4 + 35\left(875\,Bc^3d^4e^2 - 60\,Ac^3d^3e^3 - 30\,Bac^2d^2e^4 - 12\,Aac^2de^5 - 9\,Ba^2ce^6\right)x^3 + 21\left(959\,Bc^3d^5e - 60\,Ac^3d^4e^2 - 30\,Bac^2d^3e^3 - 12\,Aac^2d^2e^4 - 9\,Ba^2cde^5 - 12\,Aa^2ce^6\right)x^2 + 7\left(1029\,Bc^3d^6 - 60\,Ac^3d^5e - 30\,Bac^2d^4e^2 - 12\,Aac^2d^3e^3 - 9\,Ba^2cd^2e^4 - 12\,Aa^2cde^5 - 10\,Ba^3e^6\right)x + \left(1089\,Bc^3d^7 - 60\,Ac^3d^6e - 30\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 9\,Ba^2cd^3e^4 - 12\,Aa^2cd^2e^5 - 10\,Ba^3de^6 - 60\,Aa^3e^7\right)e^{(-1)}\right)e^{(-7)}}{420\,(xe+d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] B*c^3*e^(-8)*log(abs(x*e + d)) + 1/420*(420*(7*B*c^3*d*e^5 - A*c^3*e^6)*x^6
 + 630*(21*B*c^3*d^2*e^4 - 2*A*c^3*d*e^5 - B*a*c^2*e^6)*x^5 + 70*(385*B*c^3
*d^3*e^3 - 30*A*c^3*d^2*e^4 - 15*B*a*c^2*d*e^5 - 6*A*a*c^2*e^6)*x^4 + 35*(8
75*B*c^3*d^4*e^2 - 60*A*c^3*d^3*e^3 - 30*B*a*c^2*d^2*e^4 - 12*A*a*c^2*d*e^5
 - 9*B*a^2*c*e^6)*x^3 + 21*(959*B*c^3*d^5*e - 60*A*c^3*d^4*e^2 - 30*B*a*c^2
*d^3*e^3 - 12*A*a*c^2*d^2*e^4 - 9*B*a^2*c*d*e^5 - 12*A*a^2*c*e^6)*x^2 + 7*(
1029*B*c^3*d^6 - 60*A*c^3*d^5*e - 30*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 -
 9*B*a^2*c*d^2*e^4 - 12*A*a^2*c*d*e^5 - 10*B*a^3*e^6)*x + (1089*B*c^3*d^7 -
 60*A*c^3*d^6*e - 30*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^4*e^3 - 9*B*a^2*c*d^3*e
^4 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 60*A*a^3*e^7)*e^(-1))*e^(-7)/(x*
e + d)^7
```

maple [B] time = 0.06, size = 662, normalized size = 2.02

$$-\frac{Aa^3}{7(ex+d)^7e}-\frac{3Aa^2cd^2}{7(ex+d)^7e^3}-\frac{3Aac^2d^4}{7(ex+d)^7e^5}-\frac{Ac^3d^6}{7(ex+d)^7e^7}+\frac{Ba^3d}{7(ex+d)^7e^2}+\frac{3Ba^2cd^3}{7(ex+d)^7e^4}+\frac{3Bac^2d^5}{7(ex+d)^7e^6}+\frac{Bc^3d^7}{7(ex+d)^7e^8}+\frac{Aa^2cd}{(ex+d)^6e^3}+\frac{2Aac^2d^3}{(ex+d)^6e^5}+\frac{Ac^3d^5}{(ex+d)^6e^7}-\frac{Ba^3}{6(ex+d)^6e^2}-\frac{3Ba^2cd^2}{2(ex+d)^6e^4}-\frac{5Bac^2d^4}{2(ex+d)^6e^6}-\frac{7Bc^3d^6}{6(ex+d)^6e^8}-\frac{3Aa^2c}{5(ex+d)^5e^3}-\frac{18Aac^2d^2}{5(ex+d)^5e^5}-\frac{3Ac^3d^4}{(ex+d)^5e^7}+\frac{9Ba^2cd}{5(ex+d)^5e^4}+\frac{6Bac^2d^3}{(ex+d)^5e^6}+\frac{21Bc^3d^5}{5(ex+d)^5e^8}+\frac{3Aac^2d}{(ex+d)^4e^5}+\frac{5Ac^3d^3}{(ex+d)^4e^7}-\frac{3Ba^2c}{4(ex+d)^4e^4}-\frac{15Bac^2d^2}{2(ex+d)^4e^6}-\frac{35Bc^3d^4}{4(ex+d)^4e^8}-\frac{Aac^2}{(ex+d)^3e^5}-\frac{5Ac^3d^2}{(ex+d)^3e^7}+\frac{5Bac^2d}{(ex+d)^3e^6}+\frac{35Bc^3d^3}{3(ex+d)^3e^8}+\frac{3Ac^3d}{(ex+d)^2e^7}-\frac{3Bac^2}{2(ex+d)^2e^6}-\frac{21Bc^3d^2}{2(ex+d)^2e^8}-\frac{Ac^3}{(ex+d)e^7}+\frac{7Bc^3d}{(ex+d)e^8}+\frac{Bc^3\ln(ex+d)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x)
```

```
[Out] 9/5*c/e^4/(e*x+d)^5*B*a^2*d-18/5*c^2/e^5/(e*x+d)^5*A*d^2*a+3*c^2/e^5/(e*x+d
)^4*A*d*a+6*c^2/e^6/(e*x+d)^5*B*d^3*a+5*c^2/e^6/(e*x+d)^3*a*B*d-15/2*c^2/e^
6/(e*x+d)^4*B*d^2*a-3/2/e^4/(e*x+d)^6*B*d^2*a^2*c-5/2/e^6/(e*x+d)^6*B*d^4*a
*c^2-3/7/e^3/(e*x+d)^7*A*d^2*a^2*c-3/7/e^5/(e*x+d)^7*A*a*c^2*d^4+1/e^3/(e*x
+d)^6*A*d*a^2*c+2/e^5/(e*x+d)^6*A*d^3*a*c^2+3/7/e^6/(e*x+d)^7*B*d^5*a*c^2+5
*c^3/e^7/(e*x+d)^4*A*d^3-1/6/e^2/(e*x+d)^6*B*a^3-1/7/e/(e*x+d)^7*A*a^3-c^3/
e^7/(e*x+d)*A-1/7/e^7/(e*x+d)^7*A*d^6*c^3+1/7/e^2/(e*x+d)^7*B*d*a^3+1/7/e^8
/(e*x+d)^7*B*c^3*d^7+1/e^7/(e*x+d)^6*A*c^3*d^5+3*c^3/e^7/(e*x+d)^2*A*d-7/6/
e^8/(e*x+d)^6*B*d^6*c^3-3/5*c/e^3/(e*x+d)^5*A*a^2-3*c^3/e^7/(e*x+d)^5*A*d^4
+21/5*c^3/e^8/(e*x+d)^5*B*d^5+3/7/e^4/(e*x+d)^7*B*d^3*a^2*c-c^2/e^5/(e*x+d)
^3*a*A-5*c^3/e^7/(e*x+d)^3*A*d^2+35/3*c^3/e^8/(e*x+d)^3*B*d^3+7*c^3/e^8/(e*
x+d)*B*d-3/4*c/e^4/(e*x+d)^4*B*a^2-35/4*c^3/e^8/(e*x+d)^4*B*d^4-21/2*c^3/e^
8/(e*x+d)^2*B*d^2-3/2*c^2/e^6/(e*x+d)^2*B*a+B*c^3*ln(e*x+d)/e^8
```

maxima [A] time = 0.68, size = 527, normalized size = 1.61

$$\frac{1089 \, Bc^3d^7 - 60 \, Ac^3d^6e - 30 \, Bac^2d^5e^2 - 12 \, Aac^2d^4e^3 - 9 \, Ba^2cd^3e^4 - 12 \, Aa^2cd^2e^5 - 10 \, Ba^3de^6 - 60 \, Aa^3e^7 + 420 \, \left(7 \, Bc^3de^6 - Ac^3e^7\right)x^6 + 630 \, \left(21 \, Bc^3d^2e^5 - 2 \, Ac^3de^6 - Bac^2e^7\right)x^5 + 70 \, \left(385 \, Bc^3d^3e^4 - 30 \, Ac^3d^2e^5 - 15 \, Bac^2de^6 - 6 \, Aac^2e^7\right)x^4 + 35 \, \left(875 \, Bc^3d^4e^3 - 60 \, Ac^3d^3e^4 - 30 \, Bac^2d^2e^5 - 12 \, Aac^2de^6 - 9 \, Ba^2ce^7\right)x^3 + 21 \, \left(959 \, Bc^3d^5e^2 - 60 \, Ac^3d^4e^3 - 30 \, Bac^2d^3e^4 - 12 \, Aac^2d^2e^5 - 9 \, Ba^2cde^6 - 12 \, Aa^2ce^7\right)x^2 + 7 \, \left(1029 \, Bc^3d^6e - 60 \, Ac^3d^5e^2 - 30 \, Bac^2d^4e^3 - 12 \, Aac^2d^3e^4 - 9 \, Ba^2cd^2e^5 - 12 \, Aa^2cde^6 - 10 \, Ba^3e^7\right)x}{420 \, \left(e^{15}x^7 + 7 \, de^{14}x^6 + 21 \, d^2e^{13}x^5 + 35 \, d^3e^{12}x^4 + 35 \, d^4e^{11}x^3 + 21 \, d^5e^{10}x^2 + 7 \, d^6e^9x + d^7e^8\right)} + \frac{Bc^3\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*c^3*d^6*e - 30*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^
4*e^3 - 9*B*a^2*c*d^3*e^4 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 60*A*a^3*
e^7 + 420*(7*B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*A*c^3
*d*e^6 - B*a*c^2*e^7)*x^5 + 70*(385*B*c^3*d^3*e^4 - 30*A*c^3*d^2*e^5 - 15*B
*a*c^2*d*e^6 - 6*A*a*c^2*e^7)*x^4 + 35*(875*B*c^3*d^4*e^3 - 60*A*c^3*d^3*e^
4 - 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 - 9*B*a^2*c*e^7)*x^3 + 21*(959*B*
c^3*d^5*e^2 - 60*A*c^3*d^4*e^3 - 30*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 -
9*B*a^2*c*d*e^6 - 12*A*a^2*c*e^7)*x^2 + 7*(1029*B*c^3*d^6*e - 60*A*c^3*d^5*
e^2 - 30*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 - 9*B*a^2*c*d^2*e^5 - 12*A*a^
2*c*d*e^6 - 10*B*a^3*e^7)*x)/(e^15*x^7 + 7*d*e^14*x^6 + 21*d^2*e^13*x^5 + 3
5*d^3*e^12*x^4 + 35*d^4*e^11*x^3 + 21*d^5*e^10*x^2 + 7*d^6*e^9*x + d^7*e^8)
 + B*c^3*log(e*x + d)/e^8
```

mupad [B] time = 1.81, size = 448, normalized size = 1.37

$$\frac{B\,c^3\,\ln\left(d+e\,x\right)}{e^8}-\frac{x^3\,\left(\frac{3\,B\,a^2\,c\,e^7}{4}+\frac{5\,B\,a\,c^2\,d^2\,e^5}{2}+A\,a\,c^2\,d\,e^6-\frac{875\,B\,c^3\,d^4\,e^3}{12}+5\,A\,c^3\,d^3\,e^4\right)+x^6\,\left(A\,c^3\,e^7-7\,B\,c^3\,d\,e^6\right)+x^2\,\left(\frac{9\,B\,a^2\,c\,d\,e^6}{20}+\frac{3\,A\,a^2\,c\,e^7}{5}+\frac{3\,B\,a\,c^2\,d^3\,e^4}{2}+\frac{3\,A\,a\,c^2\,d^2\,e^5}{5}-\frac{959\,B\,c^3\,d^5\,e^2}{20}+3\,A\,c^3\,d^4\,e^3\right)+x^5\,\left(-\frac{63\,B\,c^3\,d^2\,e^5}{2}+3\,A\,c^3\,d\,e^6+\frac{3\,B\,a\,c^2\,e^7}{2}\right)+x\,\left(\frac{B\,a^3\,e^7}{6}+\frac{3\,B\,a^2\,c\,d^2\,e^5}{20}+\frac{A\,a^2\,c\,d\,e^6}{5}+\frac{B\,a\,c^2\,d^4\,e^3}{2}+\frac{A\,a\,c^2\,d^3\,e^4}{5}-\frac{343\,B\,c^3\,d^6\,e}{20}+A\,c^3\,d^5\,e^2\right)+x^4\,\left(-\frac{385\,B\,c^3\,d^3\,e^4}{6}+5\,A\,c^3\,d^2\,e^5+\frac{5\,B\,a\,c^2\,d\,e^6}{2}+A\,a\,c^2\,e^7\right)+\frac{A\,a^3\,e^7}{7}-\frac{363\,B\,c^3\,d^7}{140}+\frac{B\,a^3\,d\,e^6}{42}+\frac{A\,c^3\,d^6\,e}{7}+\frac{A\,a\,c^2\,d^4\,e^3}{35}+\frac{A\,a^2\,c\,d^2\,e^5}{35}+\frac{B\,a\,c^2\,d^5\,e^2}{14}+\frac{3\,B\,a^2\,c\,d^3\,e^4}{140}}{e^8\,{\left(d+e\,x\right)}^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] (B*c^3*log(d + e*x))/e^8 - (x^3*((3*B*a^2*c*e^7)/4 + 5*A*c^3*d^3*e^4 - (875
*B*c^3*d^4*e^3)/12 + (5*B*a*c^2*d^2*e^5)/2 + A*a*c^2*d*e^6) + x^6*(A*c^3*e^
7 - 7*B*c^3*d*e^6) + x^2*((3*A*a^2*c*e^7)/5 + 3*A*c^3*d^4*e^3 - (959*B*c^3*
d^5*e^2)/20 + (3*A*a*c^2*d^2*e^5)/5 + (3*B*a*c^2*d^3*e^4)/2 + (9*B*a^2*c*d*
e^6)/20) + x^5*((3*B*a*c^2*e^7)/2 + 3*A*c^3*d*e^6 - (63*B*c^3*d^2*e^5)/2) +
 x*((B*a^3*e^7)/6 - (343*B*c^3*d^6*e)/20 + A*c^3*d^5*e^2 + (A*a*c^2*d^3*e^4
)/5 + (B*a*c^2*d^4*e^3)/2 + (3*B*a^2*c*d^2*e^5)/20 + (A*a^2*c*d*e^6)/5) + x
^4*(A*a*c^2*e^7 + 5*A*c^3*d^2*e^5 - (385*B*c^3*d^3*e^4)/6 + (5*B*a*c^2*d*e^
6)/2) + (A*a^3*e^7)/7 - (363*B*c^3*d^7)/140 + (B*a^3*d*e^6)/42 + (A*c^3*d^6
*e)/7 + (A*a*c^2*d^4*e^3)/35 + (A*a^2*c*d^2*e^5)/35 + (B*a*c^2*d^5*e^2)/14
+ (3*B*a^2*c*d^3*e^4)/140)/(e^8*(d + e*x)^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1153 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^9}\,dx$

Optimal. Leaf size=330

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8(d+ex)^5}-\frac{c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)^3}+\frac{c^2\left(-3aAe^3+15aBde^2-\right.}{4e^8(d+}$$

Rubi [A] time = 0.27, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8(d+ex)^5}-\frac{c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)^3}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{4e^8(d+ex)^4}+\frac{c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{2e^8(d+ex)^6}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{7e^8(d+ex)^7}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{8e^8(d+ex)^8}+\frac{c^3(7Bd-Ae)}{2e^8(d+ex)^2}-\frac{Bc^3}{e^8(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(8*e^8*(d + e*x)^8) - ((c*d^2 + a*e^2)^2*(7
*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(7*e^8*(d + e*x)^7) + (c*(c*d^2 + a*e^2)*(
7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(2*e^8*(d + e*x)^6) + (c*
(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4
)))/(5*e^8*(d + e*x)^5) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 -
3*a*A*e^3))/(4*e^8*(d + e*x)^4) - (c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2))/(
e^8*(d + e*x)^3) + (c^3*(7*B*d - A*e))/(2*e^8*(d + e*x)^2) - (B*c^3)/(e^8*(
d + e*x))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^9}\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^9}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^8}+\frac{3c\left(cd^2+ae\right.}{}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{8e^8(d+ex)^8}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{7e^8(d+ex)^7}+\frac{c\left(cd^2+ae^2\right)\left(7Bc\right.}{}$$

Mathematica [A] time = 0.17, size = 357, normalized size = 1.08

$$-\frac{Ae\left(35a^3e^6+5a^2ce^4\left(d^2+8dex+28e^2x^2\right)+3ac^2e^2\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)+5c^3\left(d^6+8d^5ex+28d^4e^2x^2+56d^3e^3x^3+70d^2e^4x^4+56de^5x^5+28e^6x^6\right)\right)+B\left(5a^3e^6(d+8ex)+3a^2ce^4\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+5ac^2e^2\left(d^5+8d^4ex+28d^3e^2x^2+56d^2e^3x^3+70de^4x^4+56e^5x^5\right)+35c^3\left(d^7+8d^6ex+28d^5e^2x^2+56d^4e^3x^3+70d^3e^4x^4+56d^2e^5x^5+28de^6x^6+8e^7x^7\right)\right)}{280e^8(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] -1/280*(A*e*(35*a^3*e^6 + 5*a^2*c*e^4*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*a*c^
2*e^2*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) + 5*c^
3*(d^6 + 8*d^5*e*x + 28*d^4*e^2*x^2 + 56*d^3*e^3*x^3 + 70*d^2*e^4*x^4 + 56*
d*e^5*x^5 + 28*e^6*x^6)) + B*(5*a^3*e^6*(d + 8*e*x) + 3*a^2*c*e^4*(d^3 + 8*
d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + 5*a*c^2*e^2*(d^5 + 8*d^4*e*x + 28*d^
3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + 35*c^3*(d^7 + 8*d
^6*e*x + 28*d^5*e^2*x^2 + 56*d^4*e^3*x^3 + 70*d^3*e^4*x^4 + 56*d^2*e^5*x^5
+ 28*d*e^6*x^6 + 8*e^7*x^7)))/(e^8*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^9, x]
```

fricas [A] time = 0.39, size = 532, normalized size = 1.61

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 5*A*c^3*d^6*e + 5*B*a*c^2*d^5*e^
2 + 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 + 5*A*a^2*c*d^2*e^5 + 5*B*a^3*d*e
^6 + 35*A*a^3*e^7 + 140*(7*B*c^3*d*e^6 + A*c^3*e^7)*x^6 + 280*(7*B*c^3*d^2*
e^5 + A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 70*(35*B*c^3*d^3*e^4 + 5*A*c^3*d^2*e
^5 + 5*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 56*(35*B*c^3*d^4*e^3 + 5*A*c^3*
d^3*e^4 + 5*B*a*c^2*d^2*e^5 + 3*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 28*(35
*B*c^3*d^5*e^2 + 5*A*c^3*d^4*e^3 + 5*B*a*c^2*d^3*e^4 + 3*A*a*c^2*d^2*e^5 +
3*B*a^2*c*d*e^6 + 5*A*a^2*c*e^7)*x^2 + 8*(35*B*c^3*d^6*e + 5*A*c^3*d^5*e^2
+ 5*B*a*c^2*d^4*e^3 + 3*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 + 5*A*a^2*c*d*e
^6 + 5*B*a^3*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^14*x^6 + 56*d^3*e^
13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*x^2 + 8*d^7*e^9*x
+ d^8*e^8)
```

giac [A] time = 0.19, size = 457, normalized size = 1.38

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/280*(280*B*c^3*x^7*e^7 + 980*B*c^3*d*x^6*e^6 + 1960*B*c^3*d^2*x^5*e^5 +
2450*B*c^3*d^3*x^4*e^4 + 1960*B*c^3*d^4*x^3*e^3 + 980*B*c^3*d^5*x^2*e^2 + 2
80*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 140*A*c^3*x^6*e^7 + 280*A*c^3*d*x^5*e^6 +
 350*A*c^3*d^2*x^4*e^5 + 280*A*c^3*d^3*x^3*e^4 + 140*A*c^3*d^4*x^2*e^3 + 40
*A*c^3*d^5*x*e^2 + 5*A*c^3*d^6*e + 280*B*a*c^2*x^5*e^7 + 350*B*a*c^2*d*x^4*
e^6 + 280*B*a*c^2*d^2*x^3*e^5 + 140*B*a*c^2*d^3*x^2*e^4 + 40*B*a*c^2*d^4*x*
e^3 + 5*B*a*c^2*d^5*e^2 + 210*A*a*c^2*x^4*e^7 + 168*A*a*c^2*d*x^3*e^6 + 84*
A*a*c^2*d^2*x^2*e^5 + 24*A*a*c^2*d^3*x*e^4 + 3*A*a*c^2*d^4*e^3 + 168*B*a^2*
c*x^3*e^7 + 84*B*a^2*c*d*x^2*e^6 + 24*B*a^2*c*d^2*x*e^5 + 3*B*a^2*c*d^3*e^4
 + 140*A*a^2*c*x^2*e^7 + 40*A*a^2*c*d*x*e^6 + 5*A*a^2*c*d^2*e^5 + 40*B*a^3*
x*e^7 + 5*B*a^3*d*e^6 + 35*A*a^3*e^7)*e^(-8)/(x*e + d)^8
```

maple [A] time = 0.05, size = 448, normalized size = 1.36

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x)
```

```
[Out] -B*c^3/e^8/(e*x+d)-1/4*c^2*(3*A*a*e^3+15*A*c*d^2*e-15*B*a*d*e^2-35*B*c*d^3)
/e^8/(e*x+d)^4-1/2*c^3*(A*e-7*B*d)/e^8/(e*x+d)^2+c^2*(2*A*c*d*e-B*a*e^2-7*B
```

```
*c*d^2)/e^8/(e*x+d)^3-1/8*(A*a^3*e^7+3*A*a^2*c*d^2*e^5+3*A*a*c^2*d^4*e^3+A*
c^3*d^6*e-B*a^3*d*e^6-3*B*a^2*c*d^3*e^4-3*B*a*c^2*d^5*e^2-B*c^3*d^7)/e^8/(e
*x+d)^8-1/7*(-6*A*a^2*c*d*e^5-12*A*a*c^2*d^3*e^3-6*A*c^3*d^5*e+B*a^3*e^6+9*
B*a^2*c*d^2*e^4+15*B*a*c^2*d^4*e^2+7*B*c^3*d^6)/e^8/(e*x+d)^7-1/2*c*(A*a^2*
e^5+6*A*a*c*d^2*e^3+5*A*c^2*d^4*e-3*B*a^2*d*e^4-10*B*a*c*d^3*e^2-7*B*c^2*d^
5)/e^8/(e*x+d)^6+1/5*c*(12*A*a*c*d*e^3+20*A*c^2*d^3*e-3*B*a^2*e^4-30*B*a*c*
d^2*e^2-35*B*c^2*d^4)/e^8/(e*x+d)^5
```

maxima [A]   time = 0.66, size = 532, normalized size = 1.61

$$-\frac{280 Bc^3e^7x^7 + 35 Bc^3d^7 + 5 Ac^3d^6e + 5 Bac^2d^5e^2 + 3 Aac^2d^4e^3 + 3 Ba^2cd^3e^4 + 5 Aa^2cd^2e^5 + 5 Ba^3de^6 + 35 Aa^3e^7 + 140 \left(7 Bc^3de^6 + Ac^3e^7\right)x^6 + 280 \left(7 Bc^3d^2e^5 + Ac^3de^6 + Bac^2e^7\right)x^5 + 70 \left(35 Bc^3d^3e^4 + 5 Ac^3d^2e^5 + 5 Bac^2de^6 + 3 Aac^2e^7\right)x^4 + 56 \left(35 Bc^3d^4e^3 + 5 Ac^3d^3e^4 + 5 Bac^2d^2e^5 + 3 Aac^2de^6 + 3 Ba^2ce^7\right)x^3 + 28 \left(35 Bc^3d^5e^2 + 5 Ac^3d^4e^3 + 5 Bac^2d^3e^4 + 3 Aac^2d^2e^5 + 3 Ba^2cde^6 + 5 Aa^2ce^7\right)x^2 + 8 \left(35 Bc^3d^6e + 5 Ac^3d^5e^2 + 5 Bac^2d^4e^3 + 3 Aac^2d^3e^4 + 3 Ba^2cd^2e^5 + 5 Aa^2cde^6 + 5 Ba^3e^7\right)x}{280 \left(e^{16}x^8 + 8 de^{15}x^7 + 28 d^2e^{14}x^6 + 56 d^3e^{13}x^5 + 70 d^4e^{12}x^4 + 56 d^5e^{11}x^3 + 28 d^6e^{10}x^2 + 8 d^7e^9x + d^8e^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 5*A*c^3*d^6*e + 5*B*a*c^2*d^5*e^
2 + 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 + 5*A*a^2*c*d^2*e^5 + 5*B*a^3*d*e
^6 + 35*A*a^3*e^7 + 140*(7*B*c^3*d*e^6 + A*c^3*e^7)*x^6 + 280*(7*B*c^3*d^2*
e^5 + A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 70*(35*B*c^3*d^3*e^4 + 5*A*c^3*d^2*e
^5 + 5*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 56*(35*B*c^3*d^4*e^3 + 5*A*c^3*
d^3*e^4 + 5*B*a*c^2*d^2*e^5 + 3*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 28*(35
*B*c^3*d^5*e^2 + 5*A*c^3*d^4*e^3 + 5*B*a*c^2*d^3*e^4 + 3*A*a*c^2*d^2*e^5 +
3*B*a^2*c*d*e^6 + 5*A*a^2*c*e^7)*x^2 + 8*(35*B*c^3*d^6*e + 5*A*c^3*d^5*e^2
+ 5*B*a*c^2*d^4*e^3 + 3*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 + 5*A*a^2*c*d*e
^6 + 5*B*a^3*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^14*x^6 + 56*d^3*e^
13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*x^2 + 8*d^7*e^9*x
+ d^8*e^8)
```

mupad [B]   time = 0.16, size = 570, normalized size = 1.73

$$-\frac{35 Aa^3e^7 + 35 Bc^3d^7 + 5 Ba^3de^6 + 5 Ac^3d^6e + 40 Ba^3e^7x + 140 Ac^3e^7x^6 + 280 Bc^3e^7x^7 + 280 Bc^3d^6ex + 3 Aac^2d^4e^3 + 5 Aa^2cd^2e^5 + 5 Bac^2d^5e^2 + 3 Ba^2cd^3e^4 + 140 Aa^2ce^7x^2 + 210 Aac^2e^7x^4 + 168 Ba^2ce^7x^3 + 280 Bac^2e^7x^5 + 40 Ac^3d^5e^2x + 280 Ac^3de^6x^5 + 980 Bc^3de^6x^6 + 140 Ac^3d^4e^3x^2 + 280 Ac^3d^3e^4x^3 + 350 Ac^3d^2e^5x^4 + 980 Bc^3d^5e^2x^2 + 1960 Bc^3d^4e^3x^3 + 2450 Bc^3d^3e^4x^4 + 1960 Bc^3d^2e^5x^5 + 84 Aac^2d^2e^5x^2 + 140 Bac^2d^3e^4x^2 + 280 Bac^2d^2e^5x^3 + 40 Aa^2cde^6x + 24 Aac^2d^3e^4x + 168 Aac^2de^6x^3 + 40 Bac^2d^4e^3x + 24 Ba^2cd^2e^5x + 84 Ba^2cde^6x^2 + 350 Bac^2de^6x^4}{280 d^8e^8 + 280 e^{16}x^8 + 2240 d^7e^9x + 2240 de^{15}x^7 + 7840 d^6e^{10}x^2 + 15680 d^5e^{11}x^3 + 19600 d^4e^{12}x^4 + 15680 d^3e^{13}x^5 + 7840 d^2e^{14}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^9,x)
```

```
[Out] -(35*A*a^3*e^7 + 35*B*c^3*d^7 + 5*B*a^3*d*e^6 + 5*A*c^3*d^6*e + 40*B*a^3*e^
7*x + 140*A*c^3*e^7*x^6 + 280*B*c^3*e^7*x^7 + 280*B*c^3*d^6*e*x + 3*A*a*c^2
*d^4*e^3 + 5*A*a^2*c*d^2*e^5 + 5*B*a*c^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 + 140*
A*a^2*c*e^7*x^2 + 210*A*a*c^2*e^7*x^4 + 168*B*a^2*c*e^7*x^3 + 280*B*a*c^2*e
^7*x^5 + 40*A*c^3*d^5*e^2*x + 280*A*c^3*d*e^6*x^5 + 980*B*c^3*d*e^6*x^6 + 1
40*A*c^3*d^4*e^3*x^2 + 280*A*c^3*d^3*e^4*x^3 + 350*A*c^3*d^2*e^5*x^4 + 980*
B*c^3*d^5*e^2*x^2 + 1960*B*c^3*d^4*e^3*x^3 + 2450*B*c^3*d^3*e^4*x^4 + 1960*
B*c^3*d^2*e^5*x^5 + 84*A*a*c^2*d^2*e^5*x^2 + 140*B*a*c^2*d^3*e^4*x^2 + 280*
B*a*c^2*d^2*e^5*x^3 + 40*A*a^2*c*d*e^6*x + 24*A*a*c^2*d^3*e^4*x + 168*A*a*c
^2*d*e^6*x^3 + 40*B*a*c^2*d^4*e^3*x + 24*B*a^2*c*d^2*e^5*x + 84*B*a^2*c*d*e
^6*x^2 + 350*B*a*c^2*d*e^6*x^4)/(280*d^8*e^8 + 280*e^16*x^8 + 2240*d^7*e^9*
x + 2240*d*e^15*x^7 + 7840*d^6*e^10*x^2 + 15680*d^5*e^11*x^3 + 19600*d^4*e^
12*x^4 + 15680*d^3*e^13*x^5 + 7840*d^2*e^14*x^6)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1154 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=334

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8(d+ex)^6}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{4e^8(d+ex)^4}+\frac{c^2\left(-3aAe^3+15aBd\right.}{5e^8(}$$

Rubi [A] time = 0.26, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8(d+ex)^6}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{4e^8(d+ex)^4}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{5e^8(d+ex)^5}+\frac{3c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{7e^8(d+ex)^7}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{8e^8(d+ex)^8}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{9e^8(d+ex)^9}+\frac{c^3(7Bd-Ae)}{3e^8(d+ex)^3}-\frac{Bc^3}{2e^8(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(9*e^8*(d + e*x)^9) - ((c*d^2 + a*e^2)^2*(7
*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(8*e^8*(d + e*x)^8) + (3*c*(c*d^2 + a*e^2)
*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(7*e^8*(d + e*x)^7) + (
c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e
^4)))/(6*e^8*(d + e*x)^6) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
- 3*a*A*e^3))/(5*e^8*(d + e*x)^5) - (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2
))/(4*e^8*(d + e*x)^4) + (c^3*(7*B*d - A*e))/(3*e^8*(d + e*x)^3) - (B*c^3)/
(2*e^8*(d + e*x)^2)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{10}}\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{10}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^9}+\frac{3c\left(cd^2+\right.}{}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{9e^8(d+ex)^9}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{8e^8(d+ex)^8}+\frac{3c\left(cd^2+ae^2\right)}{}$$

Mathematica [A] time = 0.18, size = 359, normalized size = 1.07

$$-\frac{2Ae\left(140a^3e^6+15a^2ce^4\left(d^2+9dex+36e^2x^2\right)+6ac^2e^2\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)+5c^3\left(d^6+9d^5ex+36d^4e^2x^2+84d^3e^3x^3+126d^2e^4x^4+126de^5x^5+84e^6x^6\right)\right)+5B\left(7a^3e^6(d+9ex)+3a^2ce^4\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)+3ac^2e^2\left(d^5+9d^4ex+36d^3e^2x^2+84d^2e^3x^3+126de^4x^4+126e^5x^5\right)+7c^3\left(d^7+9d^6ex+36d^5e^2x^2+84d^4e^3x^3+126d^3e^4x^4+126d^2e^5x^5+84de^6x^6+36e^7x^7\right)\right)}{2520e^8(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(2*A*e*(140*a^3*e^6 + 15*a^2*c*e^4*(d^2 + 9*d*e*x + 36*e^2*x^2) + 6
*a*c^2*e^2*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)
+ 5*c^3*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^
4 + 126*d*e^5*x^5 + 84*e^6*x^6)) + 5*B*(7*a^3*e^6*(d + 9*e*x) + 3*a^2*c*e^4
*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 3*a*c^2*e^2*(d^5 + 9*d^4*e
*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5) + 7*c^3
*(d^7 + 9*d^6*e*x + 36*d^5*e^2*x^2 + 84*d^4*e^3*x^3 + 126*d^3*e^4*x^4 + 126
*d^2*e^5*x^5 + 84*d*e^6*x^6 + 36*e^7*x^7)))/(e^8*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^10, x]
```

fricas [A] time = 0.39, size = 546, normalized size = 1.63

$$-\frac{1260\,Bc^3e^7x^7+35\,Bc^3d^7+10\,Ac^3d^6e+15\,Bac^2d^5e^2+12\,Aac^2d^4e^3+15\,Ba^2cd^3e^4+30\,Aa^2cd^2e^5+35\,Ba^3de^6+280\,Aa^3e^7+420\left(7\,Bc^3de^6+2\,Ac^3e^7\right)x^6+630\left(7\,Bc^3d^2e^5+2\,Ac^3de^6+3\,Bac^2e^7\right)x^5+126\left(35\,Bc^3d^3e^4+10\,Ac^3d^2e^5+15\,Bac^2de^6+12\,Aac^2e^7\right)x^4+84\left(35\,Bc^3d^4e^3+10\,Ac^3d^3e^4+15\,Bac^2d^2e^5+12\,Aac^2de^6+15\,Ba^2ce^7\right)x^3+36\left(35\,Bc^3d^5e^2+10\,Ac^3d^4e^3+15\,Bac^2d^3e^4+12\,Aac^2d^2e^5+15\,Ba^2cde^6+30\,Aa^2ce^7\right)x^2+9\left(35\,Bc^3d^6e+10\,Ac^3d^5e^2+15\,Bac^2d^4e^3+12\,Aac^2d^3e^4+15\,Ba^2cd^2e^5+30\,Aa^2cde^6+35\,Ba^3e^7\right)x}{2520\left(e^{17}x^9+9\,de^{16}x^8+36\,d^2e^{15}x^7+84\,d^3e^{14}x^6+126\,d^4e^{13}x^5+126\,d^5e^{12}x^4+84\,d^6e^{11}x^3+36\,d^7e^{10}x^2+9\,d^8e^9x+d^9e^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 10*A*c^3*d^6*e + 15*B*a*c^2*d^
5*e^2 + 12*A*a*c^2*d^4*e^3 + 15*B*a^2*c*d^3*e^4 + 30*A*a^2*c*d^2*e^5 + 35*B
*a^3*d*e^6 + 280*A*a^3*e^7 + 420*(7*B*c^3*d*e^6 + 2*A*c^3*e^7)*x^6 + 630*(7
*B*c^3*d^2*e^5 + 2*A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4
 + 10*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 + 12*A*a*c^2*e^7)*x^4 + 84*(35*B*c^3
*d^4*e^3 + 10*A*c^3*d^3*e^4 + 15*B*a*c^2*d^2*e^5 + 12*A*a*c^2*d*e^6 + 15*B*
a^2*c*e^7)*x^3 + 36*(35*B*c^3*d^5*e^2 + 10*A*c^3*d^4*e^3 + 15*B*a*c^2*d^3*e
^4 + 12*A*a*c^2*d^2*e^5 + 15*B*a^2*c*d*e^6 + 30*A*a^2*c*e^7)*x^2 + 9*(35*B*
c^3*d^6*e + 10*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 + 12*A*a*c^2*d^3*e^4 + 15
*B*a^2*c*d^2*e^5 + 30*A*a^2*c*d*e^6 + 35*B*a^3*e^7)*x)/(e^17*x^9 + 9*d*e^16
*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d^4*e^13*x^5 + 126*d^5*e^12*
x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*e^9*x + d^9*e^8)
```

giac [A] time = 0.20, size = 457, normalized size = 1.37

$$-\frac{\left(1260\,Bc^3x^7e^7+2940\,Bc^3dx^6e^6+4410\,Bc^3d^2x^5e^5+4410\,Bc^3d^3x^4e^4+2940\,Bc^3d^4x^3e^3+1260\,Bc^3d^5x^2e^2+315\,Bc^3d^6xe+35\,Bc^3d^7+840\,Ac^3x^6e^7+1260\,Ac^3dx^5e^6+1260\,Ac^3d^2x^4e^5+840\,Ac^3d^3x^3e^4+360\,Ac^3d^4x^2e^3+90\,Ac^3d^5xe^2+10\,Ac^3d^6e+1890\,Bac^2x^5e^7+1890\,Bac^2dx^4e^6+1260\,Bac^2d^2x^3e^5+540\,Bac^2d^3x^2e^4+135\,Bac^2d^4xe^3+15\,Bac^2d^5e^2+1512\,Aac^2x^4e^7+1008\,Aac^2dx^3e^6+432\,Aac^2d^2x^2e^5+108\,Aac^2d^3xe^4+12\,Aac^2d^4e^3+1260\,Ba^2cx^3e^7+540\,Ba^2cdx^2e^6+135\,Ba^2cd^2xe^5+15\,Ba^2cd^3e^4+1080\,Aa^2cx^2e^7+270\,Aa^2cdxe^6+30\,Aa^2cd^2e^5+315\,Ba^3xe^7+35\,Ba^3de^6+280\,Aa^3e^7\right)e^{(-8)}}{2520\,(xe+d)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(1260*B*c^3*x^7*e^7 + 2940*B*c^3*d*x^6*e^6 + 4410*B*c^3*d^2*x^5*e^5
 + 4410*B*c^3*d^3*x^4*e^4 + 2940*B*c^3*d^4*x^3*e^3 + 1260*B*c^3*d^5*x^2*e^2
 + 315*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 840*A*c^3*x^6*e^7 + 1260*A*c^3*d*x^5*
e^6 + 1260*A*c^3*d^2*x^4*e^5 + 840*A*c^3*d^3*x^3*e^4 + 360*A*c^3*d^4*x^2*e^
3 + 90*A*c^3*d^5*x*e^2 + 10*A*c^3*d^6*e + 1890*B*a*c^2*x^5*e^7 + 1890*B*a*c
^2*d*x^4*e^6 + 1260*B*a*c^2*d^2*x^3*e^5 + 540*B*a*c^2*d^3*x^2*e^4 + 135*B*a
*c^2*d^4*x*e^3 + 15*B*a*c^2*d^5*e^2 + 1512*A*a*c^2*x^4*e^7 + 1008*A*a*c^2*d
*x^3*e^6 + 432*A*a*c^2*d^2*x^2*e^5 + 108*A*a*c^2*d^3*x*e^4 + 12*A*a*c^2*d^4
*e^3 + 1260*B*a^2*c*x^3*e^7 + 540*B*a^2*c*d*x^2*e^6 + 135*B*a^2*c*d^2*x*e^5
 + 15*B*a^2*c*d^3*e^4 + 1080*A*a^2*c*x^2*e^7 + 270*A*a^2*c*d*x*e^6 + 30*A*a
^2*c*d^2*e^5 + 315*B*a^3*x*e^7 + 35*B*a^3*d*e^6 + 280*A*a^3*e^7)*e^(-8)/(x*
e + d)^9
```

maple [A] time = 0.05, size = 449, normalized size = 1.34

$$-\frac{Bc^3}{2(ex+d)^2e^8}-\frac{(Ae-7Bd)c^3}{3(ex+d)^3e^8}+\frac{3\left(2Acde-Bae^2-7Bcd^2\right)c^2}{4(ex+d)^4e^8}-\frac{\left(3aAe^3+15Acd^2e-15aBde^2-35Bcd^3\right)c^2}{5(ex+d)^5e^8}-\frac{3\left(Aa^2e^5+6Ad^2ace^3+5Ac^2d^4e-3Ba^2de^4-10Bd^3ace^2-7Bc^2d^5\right)c}{7(ex+d)^7e^8}+\frac{\left(12Adace^3+20Ac^2d^3e-3Ba^2e^4-30Bd^2ace^2-35Bc^2d^4\right)c}{6(ex+d)^6e^8}-\frac{Aa^3e^7+3Ad^2a^2ce^5+3Aac^2d^4e^3+Ad^6c^3e-Bda^3e^6-3Bd^3a^2ce^4-3Bd^5ac^2e^2-Bd^7c^3}{9(ex+d)^9e^8}-\frac{-6Ada^2ce^5-12Ad^3ac^2e^3-6Ac^3d^5e+Ba^3e^6+9Bd^2a^2ce^4+15Bd^4ac^2e^2+7Bd^6c^3}{8(ex+d)^8e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x)
```

```
[Out] -1/9*(A*a^3*e^7+3*A*a^2*c*d^2*e^5+3*A*a*c^2*d^4*e^3+A*c^3*d^6*e-B*a^3*d*e^6
-3*B*a^2*c*d^3*e^4-3*B*a*c^2*d^5*e^2-B*c^3*d^7)/e^8/(e*x+d)^9+3/4*c^2*(2*A*
c*d*e-B*a*e^2-7*B*c*d^2)/e^8/(e*x+d)^4-1/2*B*c^3/e^8/(e*x+d)^2-1/3*c^3*(A*e
-7*B*d)/e^8/(e*x+d)^3-1/8*(-6*A*a^2*c*d*e^5-12*A*a*c^2*d^3*e^3-6*A*c^3*d^5*
e+B*a^3*e^6+9*B*a^2*c*d^2*e^4+15*B*a*c^2*d^4*e^2+7*B*c^3*d^6)/e^8/(e*x+d)^8
-3/7*c*(A*a^2*e^5+6*A*a*c*d^2*e^3+5*A*c^2*d^4*e-3*B*a^2*d*e^4-10*B*a*c*d^3*
e^2-7*B*c^2*d^5)/e^8/(e*x+d)^7+1/6*c*(12*A*a*c*d*e^3+20*A*c^2*d^3*e-3*B*a^2
*e^4-30*B*a*c*d^2*e^2-35*B*c^2*d^4)/e^8/(e*x+d)^6-1/5*c^2*(3*A*a*e^3+15*A*c
*d^2*e-15*B*a*d*e^2-35*B*c*d^3)/e^8/(e*x+d)^5
```

maxima [A] time = 0.60, size = 546, normalized size = 1.63

$$-\frac{1260 \, B c^{3} e^{7} x^{7} + 35 \, B c^{3} d^{7} + 10 \, A c^{3} d^{6} e + 15 \, B a c^{2} d^{5} e^{2} + 12 \, A a c^{2} d^{4} e^{3} + 15 \, B a^{2} c d^{3} e^{4} + 30 \, A a^{2} c d^{2} e^{5} + 35 \, B a^{3} d e^{6} + 280 \, A a^{3} e^{7} + 420 \, {\left(7 \, B c^{3} d e^{6} + 2 \, A c^{3} e^{7}\right)} x^{6} + 630 \, {\left(7 \, B c^{3} d^{2} e^{5} + 2 \, A c^{3} d e^{6} + 3 \, B a c^{2} e^{7}\right)} x^{5} + 126 \, {\left(35 \, B c^{3} d^{3} e^{4} + 10 \, A c^{3} d^{2} e^{5} + 15 \, B a c^{2} d e^{6} + 12 \, A a c^{2} e^{7}\right)} x^{4} + 84 \, {\left(35 \, B c^{3} d^{4} e^{3} + 10 \, A c^{3} d^{3} e^{4} + 15 \, B a c^{2} d^{2} e^{5} + 12 \, A a c^{2} d e^{6} + 15 \, B a^{2} c e^{7}\right)} x^{3} + 36 \, {\left(35 \, B c^{3} d^{5} e^{2} + 10 \, A c^{3} d^{4} e^{3} + 15 \, B a c^{2} d^{3} e^{4} + 12 \, A a c^{2} d^{2} e^{5} + 15 \, B a^{2} c d e^{6} + 30 \, A a^{2} c e^{7}\right)} x^{2} + 9 \, {\left(35 \, B c^{3} d^{6} e + 10 \, A c^{3} d^{5} e^{2} + 15 \, B a c^{2} d^{4} e^{3} + 12 \, A a c^{2} d^{3} e^{4} + 15 \, B a^{2} c d^{2} e^{5} + 30 \, A a^{2} c d e^{6} + 35 \, B a^{3} e^{7}\right)} x}{2520 \, {\left(e^{17} x^{9} + 9 \, d e^{16} x^{8} + 36 \, d^{2} e^{15} x^{7} + 84 \, d^{3} e^{14} x^{6} + 126 \, d^{4} e^{13} x^{5} + 126 \, d^{5} e^{12} x^{4} + 84 \, d^{6} e^{11} x^{3} + 36 \, d^{7} e^{10} x^{2} + 9 \, d^{8} e^{9} x + d^{9} e^{8}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 10*A*c^3*d^6*e + 15*B*a*c^2*d^
5*e^2 + 12*A*a*c^2*d^4*e^3 + 15*B*a^2*c*d^3*e^4 + 30*A*a^2*c*d^2*e^5 + 35*B
*a^3*d*e^6 + 280*A*a^3*e^7 + 420*(7*B*c^3*d*e^6 + 2*A*c^3*e^7)*x^6 + 630*(7
*B*c^3*d^2*e^5 + 2*A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4
 + 10*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 + 12*A*a*c^2*e^7)*x^4 + 84*(35*B*c^3
*d^4*e^3 + 10*A*c^3*d^3*e^4 + 15*B*a*c^2*d^2*e^5 + 12*A*a*c^2*d*e^6 + 15*B*
a^2*c*e^7)*x^3 + 36*(35*B*c^3*d^5*e^2 + 10*A*c^3*d^4*e^3 + 15*B*a*c^2*d^3*e
^4 + 12*A*a*c^2*d^2*e^5 + 15*B*a^2*c*d*e^6 + 30*A*a^2*c*e^7)*x^2 + 9*(35*B*
c^3*d^6*e + 10*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 + 12*A*a*c^2*d^3*e^4 + 15
*B*a^2*c*d^2*e^5 + 30*A*a^2*c*d*e^6 + 35*B*a^3*e^7)*x)/(e^17*x^9 + 9*d*e^16
*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d^4*e^13*x^5 + 126*d^5*e^12*
x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*e^9*x + d^9*e^8)
```

mupad [B] time = 1.80, size = 513, normalized size = 1.54

$$-\frac{\frac{35\,B\,a^3\,d\,e^6+280\,A\,a^3\,e^7+15\,B\,a^2\,c\,d^3\,e^4+30\,A\,a^2\,c\,d^2\,e^5+15\,B\,a\,c^2\,d^5\,e^2+12\,A\,a\,c^2\,d^4\,e^3+35\,B\,c^3\,d^7+10\,A\,c^3\,d^6\,e}{2520\,e^8}+\frac{x\,\left(35\,B\,a^3\,e^6+15\,B\,a^2\,c\,d^2\,e^4+30\,A\,a^2\,c\,d\,e^5+15\,B\,a\,c^2\,d^4\,e^2+12\,A\,a\,c^2\,d^3\,e^3+35\,B\,c^3\,d^6+10\,A\,c^3\,d^5\,e\right)}{280\,e^7}+\frac{c^2\,x^4\,\left(35\,B\,c\,d^3+10\,A\,c\,d^2\,e+15\,B\,a\,d\,e^2+12\,A\,a\,e^3\right)}{20\,e^4}+\frac{c\,x^3\,\left(15\,B\,a^2\,e^4+15\,B\,a\,c\,d^2\,e^2+12\,A\,a\,c\,d\,e^3+35\,B\,c^2\,d^4+10\,A\,c^2\,d^3\,e\right)}{30\,e^5}+\frac{c^3\,x^6\,\left(2\,A\,e+7\,B\,d\right)}{6\,e^2}+\frac{c^2\,x^5\,\left(7\,B\,c\,d^2+2\,A\,c\,d\,e+3\,B\,a\,e^2\right)}{4\,e^3}+\frac{c\,x^2\,\left(15\,B\,a^2\,d\,e^4+30\,A\,a^2\,e^5+15\,B\,a\,c\,d^3\,e^2+12\,A\,a\,c\,d^2\,e^3+35\,B\,c^2\,d^5+10\,A\,c^2\,d^4\,e\right)}{70\,e^6}+\frac{B\,c^3\,x^7}{2\,e}}{d^9+9\,d^8\,e\,x+36\,d^7\,e^2\,x^2+84\,d^6\,e^3\,x^3+126\,d^5\,e^4\,x^4+126\,d^4\,e^5\,x^5+84\,d^3\,e^6\,x^6+36\,d^2\,e^7\,x^7+9\,d\,e^8\,x^8+e^9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^3*e^7 + 35*B*c^3*d^7 + 35*B*a^3*d*e^6 + 10*A*c^3*d^6*e + 12*A*a*
c^2*d^4*e^3 + 30*A*a^2*c*d^2*e^5 + 15*B*a*c^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4)
/(2520*e^8) + (x*(35*B*a^3*e^6 + 35*B*c^3*d^6 + 10*A*c^3*d^5*e + 12*A*a*c^2
*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 15*B*a^2*c*d^2*e^4 + 30*A*a^2*c*d*e^5))/(28
0*e^7) + (c^2*x^4*(12*A*a*e^3 + 35*B*c*d^3 + 15*B*a*d*e^2 + 10*A*c*d^2*e))/
(20*e^4) + (c*x^3*(15*B*a^2*e^4 + 35*B*c^2*d^4 + 10*A*c^2*d^3*e + 12*A*a*c*
d*e^3 + 15*B*a*c*d^2*e^2))/(30*e^5) + (c^3*x^6*(2*A*e + 7*B*d))/(6*e^2) + (
c^2*x^5*(3*B*a*e^2 + 7*B*c*d^2 + 2*A*c*d*e))/(4*e^3) + (c*x^2*(30*A*a^2*e^5
 + 35*B*c^2*d^5 + 15*B*a^2*d*e^4 + 10*A*c^2*d^4*e + 12*A*a*c*d^2*e^3 + 15*B
*a*c*d^3*e^2))/(70*e^6) + (B*c^3*x^7)/(2*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 +
 36*d^7*e^2*x^2 + 84*d^6*e^3*x^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d
^3*e^6*x^6 + 36*d^2*e^7*x^7 + 9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1155 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11}} dx$

Optimal. Leaf size=334

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8(d+ex)^7}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8(d+ex)^5}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{6e^8(d+}$$

Rubi [A] time = 0.26, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8(d+ex)^7}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8(d+ex)^5}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{6e^8(d+ex)^6}+\frac{3c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{8e^8(d+ex)^8}-\frac{\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{9e^8(d+ex)^9}+\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)}{10e^8(d+ex)^{10}}+\frac{c^3(7Bd-Ae)}{4e^8(d+ex)^4}-\frac{Bc^3}{3e^8(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(10*e^8*(d + e*x)^10) - ((c*d^2 + a*e^2)^2*
(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(9*e^8*(d + e*x)^9) + (3*c*(c*d^2 + a*e^
2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(8*e^8*(d + e*x)^8) +
 (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2
*e^4)))/(7*e^8*(d + e*x)^7) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^
2 - 3*a*A*e^3))/(6*e^8*(d + e*x)^6) - (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e
^2))/(5*e^8*(d + e*x)^5) + (c^3*(7*B*d - A*e))/(4*e^8*(d + e*x)^4) - (B*c^3
)/(3*e^8*(d + e*x)^3)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11}} dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{11}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{10}}+\frac{3c\left(cd^2+ae\right.}{}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{10e^8(d+ex)^{10}}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{9e^8(d+ex)^9}+\frac{3c\left(cd^2+ae^2\right)(7B}{}$$

Mathematica [A] time = 0.17, size = 357, normalized size = 1.07

$$-\frac{3Ae\left(84a^3e^6+7a^2ce^4\left(d^2+10dex+45e^2x^2\right)+2ac^2e^2\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)+c^3\left(d^6+10d^5ex+45d^4e^2x^2+120d^3e^3x^3+210d^2e^4x^4+252de^5x^5+210e^6x^6\right)\right)+B\left(28a^3e^6(d+10ex)+9a^2ce^4\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)+6ac^2e^2\left(d^5+10d^4ex+45d^3e^2x^2+120d^2e^3x^3+210de^4x^4+252e^5x^5\right)+7c^3\left(d^7+10d^6ex+45d^5e^2x^2+120d^4e^3x^3+210d^3e^4x^4+252d^2e^5x^5+210de^6x^6+120e^7x^7\right)\right)}{2520e^8(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] -1/2520*(3*A*e*(84*a^3*e^6 + 7*a^2*c*e^4*(d^2 + 10*d*e*x + 45*e^2*x^2) + 2*
a*c^2*e^2*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)
 + c^3*(d^6 + 10*d^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 + 210*d^2*e^4*x
^4 + 252*d*e^5*x^5 + 210*e^6*x^6)) + B*(28*a^3*e^6*(d + 10*e*x) + 9*a^2*c*e
^4*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 6*a*c^2*e^2*(d^5 + 10*
d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5) +
 7*c^3*(d^7 + 10*d^6*e*x + 45*d^5*e^2*x^2 + 120*d^4*e^3*x^3 + 210*d^3*e^4*x
^4 + 252*d^2*e^5*x^5 + 210*d*e^6*x^6 + 120*e^7*x^7)))/(e^8*(d + e*x)^10)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^11, x]
```

fricas [A] time = 0.40, size = 557, normalized size = 1.67

$$-\frac{840 \, B c^{3} e^{7} x^{7} + 7 \, B c^{3} d^{7} + 3 \, A c^{3} d^{6} e + 6 \, B a c^{2} d^{5} e^{2} + 6 \, A a c^{2} d^{4} e^{3} + 9 \, B a^{2} c d^{3} e^{4} + 21 \, A a^{2} c d^{2} e^{5} + 28 \, B a^{3} d e^{6} + 252 \, A a^{3} e^{7} + 210 \, {\left(7 \, B c^{3} d e^{6} + 3 \, A c^{3} e^{7}\right)} x^{6} + 252 \, {\left(7 \, B c^{3} d^{2} e^{5} + 3 \, A c^{3} d e^{6} + 6 \, B a c^{2} e^{7}\right)} x^{5} + 210 \, {\left(7 \, B c^{3} d^{3} e^{4} + 3 \, A c^{3} d^{2} e^{5} + 6 \, B a c^{2} d e^{6} + 6 \, A a c^{2} e^{7}\right)} x^{4} + 120 \, {\left(7 \, B c^{3} d^{4} e^{3} + 3 \, A c^{3} d^{3} e^{4} + 6 \, B a c^{2} d^{2} e^{5} + 6 \, A a c^{2} d e^{6} + 9 \, B a^{2} c e^{7}\right)} x^{3} + 45 \, {\left(7 \, B c^{3} d^{5} e^{2} + 3 \, A c^{3} d^{4} e^{3} + 6 \, B a c^{2} d^{3} e^{4} + 6 \, A a c^{2} d^{2} e^{5} + 9 \, B a^{2} c d e^{6} + 21 \, A a^{2} c e^{7}\right)} x^{2} + 10 \, {\left(7 \, B c^{3} d^{6} e + 3 \, A c^{3} d^{5} e^{2} + 6 \, B a c^{2} d^{4} e^{3} + 6 \, A a c^{2} d^{3} e^{4} + 9 \, B a^{2} c d^{2} e^{5} + 21 \, A a^{2} c d e^{6} + 28 \, B a^{3} e^{7}\right)} x}{2520 \, {\left(e^{18} x^{10} + 10 \, d e^{17} x^{9} + 45 \, d^{2} e^{16} x^{8} + 120 \, d^{3} e^{15} x^{7} + 210 \, d^{4} e^{14} x^{6} + 252 \, d^{5} e^{13} x^{5} + 210 \, d^{6} e^{12} x^{4} + 120 \, d^{7} e^{11} x^{3} + 45 \, d^{8} e^{10} x^{2} + 10 \, d^{9} e^{9} x + d^{10} e^{8}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 3*A*c^3*d^6*e + 6*B*a*c^2*d^5*e^
2 + 6*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 + 21*A*a^2*c*d^2*e^5 + 28*B*a^3*d
*e^6 + 252*A*a^3*e^7 + 210*(7*B*c^3*d*e^6 + 3*A*c^3*e^7)*x^6 + 252*(7*B*c^3
*d^2*e^5 + 3*A*c^3*d*e^6 + 6*B*a*c^2*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*A*
c^3*d^2*e^5 + 6*B*a*c^2*d*e^6 + 6*A*a*c^2*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 +
 3*A*c^3*d^3*e^4 + 6*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 9*B*a^2*c*e^7)*x^3
 + 45*(7*B*c^3*d^5*e^2 + 3*A*c^3*d^4*e^3 + 6*B*a*c^2*d^3*e^4 + 6*A*a*c^2*d^
2*e^5 + 9*B*a^2*c*d*e^6 + 21*A*a^2*c*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*A*c^3
*d^5*e^2 + 6*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 21*A
*a^2*c*d*e^6 + 28*B*a^3*e^7)*x)/(e^18*x^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^
8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x
^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2 + 10*d^9*e^9*x + d^10*e^8)
```

giac [A] time = 0.17, size = 457, normalized size = 1.37

$$-\frac{{\left(840 \, B c^{3} x^{7} e^{7} + 1470 \, B c^{3} d x^{6} e^{6} + 1764 \, B c^{3} d^{2} x^{5} e^{5} + 1470 \, B c^{3} d^{3} x^{4} e^{4} + 840 \, B c^{3} d^{4} x^{3} e^{3} + 315 \, B c^{3} d^{5} x^{2} e^{2} + 70 \, B c^{3} d^{6} x e + 7 \, B c^{3} d^{7} + 630 \, A c^{3} x^{6} e^{7} + 756 \, A c^{3} d x^{5} e^{6} + 630 \, A c^{3} d^{2} x^{4} e^{5} + 360 \, A c^{3} d^{3} x^{3} e^{4} + 135 \, A c^{3} d^{4} x^{2} e^{3} + 30 \, A c^{3} d^{5} x e^{2} + 3 \, A c^{3} d^{6} e + 1512 \, B a c^{2} x^{5} e^{7} + 1260 \, B a c^{2} d x^{4} e^{6} + 720 \, B a c^{2} d^{2} x^{3} e^{5} + 270 \, B a c^{2} d^{3} x^{2} e^{4} + 60 \, B a c^{2} d^{4} x e^{3} + 6 \, B a c^{2} d^{5} e^{2} + 1260 \, A a c^{2} x^{4} e^{7} + 720 \, A a c^{2} d x^{3} e^{6} + 270 \, A a c^{2} d^{2} x^{2} e^{5} + 60 \, A a c^{2} d^{3} x e^{4} + 6 \, A a c^{2} d^{4} e^{3} + 1080 \, B a^{2} c x^{3} e^{7} + 405 \, B a^{2} c d x^{2} e^{6} + 90 \, B a^{2} c d^{2} x e^{5} + 9 \, B a^{2} c d^{3} e^{4} + 945 \, A a^{2} c x^{2} e^{7} + 210 \, A a^{2} c d x e^{6} + 21 \, A a^{2} c d^{2} e^{5} + 280 \, B a^{3} x e^{7} + 28 \, B a^{3} d e^{6} + 252 \, A a^{3} e^{7}\right)} e^{\left(-8\right)}}{2520 \, {\left(x e + d\right)}^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*c^3*x^7*e^7 + 1470*B*c^3*d*x^6*e^6 + 1764*B*c^3*d^2*x^5*e^5
+ 1470*B*c^3*d^3*x^4*e^4 + 840*B*c^3*d^4*x^3*e^3 + 315*B*c^3*d^5*x^2*e^2 +
70*B*c^3*d^6*x*e + 7*B*c^3*d^7 + 630*A*c^3*x^6*e^7 + 756*A*c^3*d*x^5*e^6 +
630*A*c^3*d^2*x^4*e^5 + 360*A*c^3*d^3*x^3*e^4 + 135*A*c^3*d^4*x^2*e^3 + 30*
A*c^3*d^5*x*e^2 + 3*A*c^3*d^6*e + 1512*B*a*c^2*x^5*e^7 + 1260*B*a*c^2*d*x^4
*e^6 + 720*B*a*c^2*d^2*x^3*e^5 + 270*B*a*c^2*d^3*x^2*e^4 + 60*B*a*c^2*d^4*x
*e^3 + 6*B*a*c^2*d^5*e^2 + 1260*A*a*c^2*x^4*e^7 + 720*A*a*c^2*d*x^3*e^6 + 2
70*A*a*c^2*d^2*x^2*e^5 + 60*A*a*c^2*d^3*x*e^4 + 6*A*a*c^2*d^4*e^3 + 1080*B*
a^2*c*x^3*e^7 + 405*B*a^2*c*d*x^2*e^6 + 90*B*a^2*c*d^2*x*e^5 + 9*B*a^2*c*d^
3*e^4 + 945*A*a^2*c*x^2*e^7 + 210*A*a^2*c*d*x*e^6 + 21*A*a^2*c*d^2*e^5 + 28
0*B*a^3*x*e^7 + 28*B*a^3*d*e^6 + 252*A*a^3*e^7)*e^(-8)/(x*e + d)^10
```

maple [A] time = 0.05, size = 449, normalized size = 1.34

$$-\frac{B c^3}{3(ex+d)^3 e^8}-\frac{(Ae-7Bd)c^3}{4(ex+d)^4 e^8}-\frac{\left(3aAe^3+15Acd^2e-15aBde^2-35Bcd^3\right)c^2}{6(ex+d)^6 e^8}+\frac{3\left(2Acde-Bae^2-7Bcd^2\right)c^2}{5(ex+d)^5 e^8}-\frac{3\left(Aa^2e^5+6Ad^2ace^3+5Ac^2d^4e-3Ba^2de^4-10Bd^3ace^2-7Bc^2d^5\right)c}{8(ex+d)^8 e^8}+\frac{\left(12Adace^3+20Ac^2d^3e-3Ba^2e^4-30Bd^2ace^2-35Bc^2d^4\right)c}{7(ex+d)^7 e^8}-\frac{-6Ada^2ce^5-12Ad^3ac^2e^3-6Ac^3d^5e+Ba^3e^6+9Bd^2a^2ce^4+15Bd^4ac^2e^2+7Bd^6c^3}{9(ex+d)^9 e^8}-\frac{Aa^3e^7+3Ad^2a^2ce^5+3Aac^2d^4e^3+Ad^6c^3e-Bda^3e^6-3Bd^3a^2ce^4-3Bd^5ac^2e^2-Bd^7c^3}{10(ex+d)^{10} e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x)
```

```
[Out] -1/9*(-6*A*a*a^2*c*d*e^5-12*A*a*c^2*d^3*e^3-6*A*c^3*d^5*e+B*a^3*e^6+9*B*a^2*c
*d^2*e^4+15*B*a*c^2*d^4*e^2+7*B*c^3*d^6)/e^8/(e*x+d)^9-1/4*c^3*(A*e-7*B*d)/
```

```
e^8/(e*x+d)^4-1/3*B*c^3/e^8/(e*x+d)^3-3/8*c*(A*a^2*e^5+6*A*a*c*d^2*e^3+5*A*
c^2*d^4*e-3*B*a^2*d*e^4-10*B*a*c*d^3*e^2-7*B*c^2*d^5)/e^8/(e*x+d)^8+1/7*c*(
12*A*a*c*d*e^3+20*A*c^2*d^3*e-3*B*a^2*e^4-30*B*a*c*d^2*e^2-35*B*c^2*d^4)/e^
8/(e*x+d)^7-1/10*(A*a^3*e^7+3*A*a^2*c*d^2*e^5+3*A*a*c^2*d^4*e^3+A*c^3*d^6*e
-B*a^3*d*e^6-3*B*a^2*c*d^3*e^4-3*B*a*c^2*d^5*e^2-B*c^3*d^7)/e^8/(e*x+d)^10-
1/6*c^2*(3*A*a*e^3+15*A*c*d^2*e-15*B*a*d*e^2-35*B*c*d^3)/e^8/(e*x+d)^6+3/5*
c^2*(2*A*c*d*e-B*a*e^2-7*B*c*d^2)/e^8/(e*x+d)^5
```

maxima [A] time = 0.70, size = 557, normalized size = 1.67

$$-\frac{840\,Bc^{3}e^{7}x^{7}+7\,Bc^{3}d^{7}+3\,Ac^{3}d^{6}e+6\,Bac^{2}d^{5}e^{2}+6\,Aac^{2}d^{4}e^{3}+9\,Ba^{2}cd^{3}e^{4}+21\,Aa^{2}cd^{2}e^{5}+28\,Ba^{3}de^{6}+252\,Aa^{3}e^{7}+210\left(7\,Bc^{3}de^{6}+3\,Ac^{3}e^{7}\right)x^{6}+252\left(7\,Bc^{3}d^{2}e^{5}+3\,Ac^{3}de^{6}+6\,Bac^{2}e^{7}\right)x^{5}+210\left(7\,Bc^{3}d^{3}e^{4}+3\,Ac^{3}d^{2}e^{5}+6\,Bac^{2}de^{6}+6\,Aac^{2}e^{7}\right)x^{4}+120\left(7\,Bc^{3}d^{4}e^{3}+3\,Ac^{3}d^{3}e^{4}+6\,Bac^{2}d^{2}e^{5}+6\,Aac^{2}de^{6}+9\,Ba^{2}ce^{7}\right)x^{3}+45\left(7\,Bc^{3}d^{5}e^{2}+3\,Ac^{3}d^{4}e^{3}+6\,Bac^{2}d^{3}e^{4}+6\,Aac^{2}d^{2}e^{5}+9\,Ba^{2}cde^{6}+21\,Aa^{2}ce^{7}\right)x^{2}+10\left(7\,Bc^{3}d^{6}e+3\,Ac^{3}d^{5}e^{2}+6\,Bac^{2}d^{4}e^{3}+6\,Aac^{2}d^{3}e^{4}+9\,Ba^{2}cd^{2}e^{5}+21\,Aa^{2}cde^{6}+28\,Ba^{3}e^{7}\right)x}{2520\left(e^{18}x^{10}+10\,de^{17}x^{9}+45\,d^{2}e^{16}x^{8}+120\,d^{3}e^{15}x^{7}+210\,d^{4}e^{14}x^{6}+252\,d^{5}e^{13}x^{5}+210\,d^{6}e^{12}x^{4}+120\,d^{7}e^{11}x^{3}+45\,d^{8}e^{10}x^{2}+10\,d^{9}e^{9}x+d^{10}e^{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 3*A*c^3*d^6*e + 6*B*a*c^2*d^5*e^
2 + 6*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 + 21*A*a^2*c*d^2*e^5 + 28*B*a^3*d
*e^6 + 252*A*a^3*e^7 + 210*(7*B*c^3*d*e^6 + 3*A*c^3*e^7)*x^6 + 252*(7*B*c^3
*d^2*e^5 + 3*A*c^3*d*e^6 + 6*B*a*c^2*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*A*
c^3*d^2*e^5 + 6*B*a*c^2*d*e^6 + 6*A*a*c^2*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 +
 3*A*c^3*d^3*e^4 + 6*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 9*B*a^2*c*e^7)*x^3
 + 45*(7*B*c^3*d^5*e^2 + 3*A*c^3*d^4*e^3 + 6*B*a*c^2*d^3*e^4 + 6*A*a*c^2*d^
2*e^5 + 9*B*a^2*c*d*e^6 + 21*A*a^2*c*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*A*c^3
*d^5*e^2 + 6*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 21*A
*a^2*c*d*e^6 + 28*B*a^3*e^7)*x)/(e^18*x^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^
8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x
^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2 + 10*d^9*e^9*x + d^10*e^8)
```

mupad [B] time = 1.91, size = 524, normalized size = 1.57

$$-\frac{\frac{28\,B\,a^3\,d\,e^6+252\,A\,a^3\,e^7+9\,B\,a^2\,c\,d^3\,e^4+21\,A\,a^2\,c\,d^2\,e^5+6\,B\,a\,c^2\,d^5\,e^2+6\,A\,a\,c^2\,d^4\,e^3+7\,B\,c^3\,d^7+3\,A\,c^3\,d^6\,e}{2520\,e^8}+\frac{x\,\left(28\,B\,a^3\,e^6+9\,B\,a^2\,c\,d^2\,e^4+21\,A\,a^2\,c\,d\,e^5+6\,B\,a\,c^2\,d^4\,e^2+6\,A\,a\,c^2\,d^3\,e^3+7\,B\,c^3\,d^6+3\,A\,c^3\,d^5\,e\right)}{252\,e^7}+\frac{c^2\,x^4\,\left(7\,B\,c\,d^3+3\,A\,c\,d^2\,e+6\,B\,a\,d\,e^2+6\,A\,a\,e^3\right)}{12\,e^4}+\frac{c\,x^3\,\left(9\,B\,a^2\,e^4+6\,B\,a\,c\,d^2\,e^2+6\,A\,a\,c\,d\,e^3+7\,B\,c^2\,d^4+3\,A\,c^2\,d^3\,e\right)}{21\,e^5}+\frac{c^3\,x^6\,\left(3\,A\,e+7\,B\,d\right)}{12\,e^2}+\frac{c^2\,x^5\,\left(7\,B\,c\,d^2+3\,A\,c\,d\,e+6\,B\,a\,e^2\right)}{10\,e^3}+\frac{c\,x^2\,\left(9\,B\,a^2\,d\,e^4+21\,A\,a^2\,e^5+6\,B\,a\,c\,d^3\,e^2+6\,A\,a\,c\,d^2\,e^3+7\,B\,c^2\,d^5+3\,A\,c^2\,d^4\,e\right)}{56\,e^6}+\frac{B\,c^3\,x^7}{3\,e}}{d^{10}+10\,d^9\,e\,x+45\,d^8\,e^2\,x^2+120\,d^7\,e^3\,x^3+210\,d^6\,e^4\,x^4+252\,d^5\,e^5\,x^5+210\,d^4\,e^6\,x^6+120\,d^3\,e^7\,x^7+45\,d^2\,e^8\,x^8+10\,d\,e^9\,x^9+e^{10}\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^11,x)
```

```
[Out] -((252*A*a^3*e^7 + 7*B*c^3*d^7 + 28*B*a^3*d*e^6 + 3*A*c^3*d^6*e + 6*A*a*c^2
*d^4*e^3 + 21*A*a^2*c*d^2*e^5 + 6*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4)/(252
0*e^8) + (x*(28*B*a^3*e^6 + 7*B*c^3*d^6 + 3*A*c^3*d^5*e + 6*A*a*c^2*d^3*e^3
 + 6*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 + 21*A*a^2*c*d*e^5))/(252*e^7) + (
c^2*x^4*(6*A*a*e^3 + 7*B*c*d^3 + 6*B*a*d*e^2 + 3*A*c*d^2*e))/(12*e^4) + (c*
x^3*(9*B*a^2*e^4 + 7*B*c^2*d^4 + 3*A*c^2*d^3*e + 6*A*a*c*d*e^3 + 6*B*a*c*d^
2*e^2))/(21*e^5) + (c^3*x^6*(3*A*e + 7*B*d))/(12*e^2) + (c^2*x^5*(6*B*a*e^2
 + 7*B*c*d^2 + 3*A*c*d*e))/(10*e^3) + (c*x^2*(21*A*a^2*e^5 + 7*B*c^2*d^5 +
9*B*a^2*d*e^4 + 3*A*c^2*d^4*e + 6*A*a*c*d^2*e^3 + 6*B*a*c*d^3*e^2))/(56*e^6
) + (B*c^3*x^7)/(3*e))/(d^10 + e^10*x^10 + 10*d*e^9*x^9 + 45*d^8*e^2*x^2 +
120*d^7*e^3*x^3 + 210*d^6*e^4*x^4 + 252*d^5*e^5*x^5 + 210*d^4*e^6*x^6 + 120
*d^3*e^7*x^7 + 45*d^2*e^8*x^8 + 10*d^9*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1156 $\int \frac{(A+Bx)(d+ex)^4}{a+cx^2}\,dx$

Optimal. Leaf size=240

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(4aBde\left(cd^2-ae^2\right)-A\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{\log\left(a+cx^2\right)\left(B\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4A\right.}{2c^3}$$

Rubi [A] time = 0.26, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(B\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4Acde\left(cd^2-ae^2\right)\right)}{2c^3}-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(4aBde\left(cd^2-ae^2\right)-A\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{e^2x^2\left(-aBe^2+4Acde+6Bcd^2\right)}{2c^2}+\frac{ex\left(-aAe^3-4aBde^2+6Acd^2e+4Bcd^3\right)}{c^2}+\frac{e^3x^3(Ae+4Bd)}{3c}+\frac{Be^4x^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + c*x^2),x]
```

```
[Out] (e*(4*B*c*d^3 + 6*A*c*d^2*e - 4*a*B*d*e^2 - a*A*e^3)*x)/c^2 + (e^2*(6*B*c*d
^2 + 4*A*c*d*e - a*B*e^2)*x^2)/(2*c^2) + (e^3*(4*B*d + A*e)*x^3)/(3*c) + (B
*e^4*x^4)/(4*c) - ((4*a*B*d*e*(c*d^2 - a*e^2) - A*(c^2*d^4 - 6*a*c*d^2*e^2
+ a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(5/2)) + ((4*A*c*d*e*(c
*d^2 - a*e^2) + B*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*Log[a + c*x^2])/(2*c
^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{a+cx^2}\,dx = \int \left(\frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x}{c^2} + \frac{e^3(4Bd+}{c}\right.$$

$$= \frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)x}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x^2}{2c^2} + \frac{e^3(4Bd+}{3c}$$

$$= \frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)x}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x^2}{2c^2} + \frac{e^3(4Bd+}{3c}$$

$$= \frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)x}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x^2}{2c^2} + \frac{e^3(4Bd+}{3c}$$

Mathematica [A] time = 0.18, size = 217, normalized size = 0.90

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4aBde\left(ae^2-cd^2\right)\right)}{\sqrt{a}c^{5/2}} + \frac{6\log\left(a+cx^2\right)\left(B\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4Acde\left(cd^2-ae^2\right)\right)+cex\left(-12aAe^3-6aBe^2(8d+ex)+4Ace\left(18d^2+6dex+e^2x^2\right)+Bc\left(48d^3+36d^2ex+16de^2x^2+3e^3x^3\right)\right)}{12c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + c*x^2),x]
```

```
[Out] ((4*a*B*d*e*(-(c*d^2) + a*e^2) + A*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*Arc
Tan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(5/2)) + (c*e*x*(-12*a*A*e^3 - 6*a*B*e
^2*(8*d + e*x) + 4*A*c*e*(18*d^2 + 6*d*e*x + e^2*x^2) + B*c*(48*d^3 + 36*d^
2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3)) + 6*(4*A*c*d*e*(c*d^2 - a*e^2) + B*(c^2*
d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*Log[a + c*x^2])/(12*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + c*x^2), x]
```

fricas [A] time = 0.44, size = 550, normalized size = 2.29

$$\left[\frac{3Bac^2e^4x^4+4\left(4Bac^2de^3+Aac^2e^4\right)x^3+6\left(6Bac^2d^2e^2+4Aac^2de^3-Ba^2ce^4\right)x^2-6\left(Ac^2d^4-4Bacd^3e-6Aacd^2e^2+4Ba^2de^3+Aa^2e^4\right)\sqrt{-ac}\log\left(\frac{cx^2-2\sqrt{-ac}x-a}{cx^2+a}\right)+12\left(4Bac^2d^3e+6Aac^2d^2e^2-4Ba^2cde^3-Aa^2ce^4\right)x+6\left(Bac^2d^4+4Aac^2d^3e-6Ba^2cd^2e^2-4Aa^2cde^3+Ba^3e^4\right)\log\left(cx^2+a\right)}{12ac^3}, \frac{3Bac^2e^4x^4+4\left(4Bac^2de^3+Aac^2e^4\right)x^3+6\left(6Bac^2d^2e^2+4Aac^2de^3-Ba^2ce^4\right)x^2+12\left(Ac^2d^4-4Bacd^3e-6Aacd^2e^2+4Ba^2de^3+Aa^2e^4\right)\sqrt{ac}\arctan\left(\frac{\sqrt{ac}x}{a}\right)+12\left(4Bac^2d^3e+6Aac^2d^2e^2-4Ba^2cde^3-Aa^2ce^4\right)x+6\left(Bac^2d^4+4Aac^2d^3e-6Ba^2cd^2e^2-4Aa^2cde^3+Ba^3e^4\right)\log\left(cx^2+a\right)}{12ac^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/12*(3*B*a*c^2*e^4*x^4 + 4*(4*B*a*c^2*d*e^3 + A*a*c^2*e^4)*x^3 + 6*(6*B*a
*c^2*d^2*e^2 + 4*A*a*c^2*d*e^3 - B*a^2*c*e^4)*x^2 - 6*(A*c^2*d^4 - 4*B*a*c*
d^3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*sqrt(-a*c)*log((c*x^2
- 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 12*(4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^
2 - 4*B*a^2*c*d*e^3 - A*a^2*c*e^4)*x + 6*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6
*B*a^2*c*d^2*e^2 - 4*A*a^2*c*d*e^3 + B*a^3*e^4)*log(c*x^2 + a))/(a*c^3), 1/
12*(3*B*a*c^2*e^4*x^4 + 4*(4*B*a*c^2*d*e^3 + A*a*c^2*e^4)*x^3 + 6*(6*B*a*c^
2*d^2*e^2 + 4*A*a*c^2*d*e^3 - B*a^2*c*e^4)*x^2 + 12*(A*c^2*d^4 - 4*B*a*c*d^
3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*sqrt(a*c)*arctan(sqrt(a*
c)*x/a) + 12*(4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 - 4*B*a^2*c*d*e^3 - A*a^2
*c*e^4)*x + 6*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6*B*a^2*c*d^2*e^2 - 4*A*a^2*
c*d*e^3 + B*a^3*e^4)*log(c*x^2 + a))/(a*c^3)]
```

giac [A] time = 0.16, size = 245, normalized size = 1.02

$$\frac{\left(Ac^{2}d^{4}-4\,Bacd^{3}e-6\,Aacd^{2}e^{2}+4\,Ba^{2}de^{3}+Aa^{2}e^{4}\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^{2}}+\frac{\left(Bc^{2}d^{4}+4\,Ac^{2}d^{3}e-6\,Bacd^{2}e^{2}-4\,Aacde^{3}+Ba^{2}e^{4}\right)\log\left(cx^{2}+a\right)}{2\,c^{3}}+\frac{3\,Bc^{3}x^{4}e^{4}+16\,Bc^{3}dx^{3}e^{3}+36\,Bc^{3}d^{2}x^{2}e^{2}+48\,Bc^{3}d^{3}xe+4\,Ac^{3}x^{3}e^{4}+24\,Ac^{3}dx^{2}e^{3}+72\,Ac^{3}d^{2}xe^{2}-6\,Bac^{2}x^{2}e^{4}-48\,Bac^{2}dxe^{3}-12\,Aac^{2}xe^{4}}{12\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a),x, algorithm="giac")
```

```
[Out] (A*c^2*d^4 - 4*B*a*c*d^3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*a
rctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*(B*c^2*d^4 + 4*A*c^2*d^3*e - 6*B
*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*log(c*x^2 + a)/c^3 + 1/12*(3*B*c^
3*x^4*e^4 + 16*B*c^3*d*x^3*e^3 + 36*B*c^3*d^2*x^2*e^2 + 48*B*c^3*d^3*x*e +
4*A*c^3*x^3*e^4 + 24*A*c^3*d*x^2*e^3 + 72*A*c^3*d^2*x*e^2 - 6*B*a*c^2*x^2*e
^4 - 48*B*a*c^2*d*x*e^3 - 12*A*a*c^2*x*e^4)/c^4
```

maple [A] time = 0.05, size = 345, normalized size = 1.44

$$\frac{Be^{4}x^{4}}{4c}+\frac{Ae^{4}x^{3}}{3c}+\frac{4Bde^{3}x^{3}}{3c}+\frac{Aa^{2}e^{4}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^{2}}-\frac{6Aad^{2}e^{2}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{2Ade^{3}x^{2}}{c}+\frac{Ad^{4}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{4Ba^{2}de^{3}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^{2}}-\frac{4Bad^{3}e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}-\frac{Bae^{4}x^{2}}{2c^{2}}+\frac{3Bd^{2}e^{2}x^{2}}{c}-\frac{2Aade^{3}\ln\left(cx^{2}+a\right)}{c^{2}}-\frac{Aae^{4}x}{c^{2}}+\frac{2Ad^{3}e\ln\left(cx^{2}+a\right)}{c}+\frac{6Ad^{2}e^{2}x}{c}+\frac{Ba^{2}e^{4}\ln\left(cx^{2}+a\right)}{2c^{3}}-\frac{3Bad^{2}e^{2}\ln\left(cx^{2}+a\right)}{c^{2}}-\frac{4Bade^{3}x}{c^{2}}+\frac{Bd^{4}\ln\left(cx^{2}+a\right)}{2c}+\frac{4Bd^{3}ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+a),x)
```

```
[Out] 1/4*B/c*e^4*x^4+1/3/c*e^4*A*x^3+4/3/c*e^3*B*x^3*d+2/c*e^3*A*x^2*d-1/2/c^2*e
^4*B*x^2*a+3/c*e^2*B*x^2*d^2-1/c^2*e^4*a*A*x+6/c*e^2*A*d^2*x-4/c^2*e^3*a*B*
d*x+4/c*e*B*d^3*x-2/c^2*ln(c*x^2+a)*A*d*a*e^3+2/c*ln(c*x^2+a)*A*d^3*e+1/2/c
^3*ln(c*x^2+a)*B*a^2*e^4-3/c^2*ln(c*x^2+a)*B*d^2*a*e^2+1/2/c*ln(c*x^2+a)*B*
d^4+1/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*a^2*e^4-6/c/(a*c)^(1/2)*a
rctan(1/(a*c)^(1/2)*c*x)*A*a*d^2*e^2+1/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x
)*A*d^4+4/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a^2*d*e^3-4/c/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a*d^3*e
```

maxima [A] time = 1.17, size = 230, normalized size = 0.96

$$\frac{\left(Ac^{2}d^{4}-4\,Bacd^{3}e-6\,Aacd^{2}e^{2}+4\,Ba^{2}de^{3}+Aa^{2}e^{4}\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^{2}}+\frac{3\,Bce^{4}x^{4}+4\left(4\,Bcde^{3}+Ace^{4}\right)x^{3}+6\left(6\,Bcd^{2}e^{2}+4\,Acde^{3}-Bae^{4}\right)x^{2}+12\left(4\,Bcd^{3}e+6\,Acd^{2}e^{2}-4\,Bade^{3}-Aae^{4}\right)x}{12\,c^{2}}+\frac{\left(Bc^{2}d^{4}+4\,Ac^{2}d^{3}e-6\,Bacd^{2}e^{2}-4\,Aacde^{3}+Ba^{2}e^{4}\right)\log\left(cx^{2}+a\right)}{2\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] (A*c^2*d^4 - 4*B*a*c*d^3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*a
rctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/12*(3*B*c*e^4*x^4 + 4*(4*B*c*d*e^3
 + A*c*e^4)*x^3 + 6*(6*B*c*d^2*e^2 + 4*A*c*d*e^3 - B*a*e^4)*x^2 + 12*(4*B*c
*d^3*e + 6*A*c*d^2*e^2 - 4*B*a*d*e^3 - A*a*e^4)*x)/c^2 + 1/2*(B*c^2*d^4 + 4
*A*c^2*d^3*e - 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*log(c*x^2 + a)/
c^3
```

mupad [B] time = 0.24, size = 249, normalized size = 1.04

$$\frac{x^{3}\left(A\,e^{4}+4\,B\,d\,e^{3}\right)}{3\,c}-x\left(\frac{a\left(A\,e^{4}+4\,B\,d\,e^{3}\right)}{c^{2}}-\frac{2\,d^{2}\,e\,\left(3\,A\,e+2\,B\,d\right)}{c}\right)-x^{2}\left(\frac{B\,a\,e^{4}}{2\,c^{2}}-\frac{d\,e^{2}\,\left(2\,A\,e+3\,B\,d\right)}{c}\right)+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(4\,B\,a^{2}\,d\,e^{3}+A\,a^{2}\,e^{4}-4\,B\,a\,c\,d^{3}\,e-6\,A\,a\,c\,d^{2}\,e^{2}+A\,c^{2}\,d^{4}\right)}{\sqrt{a}\,c^{5/2}}+\frac{\ln\left(c\,x^{2}+a\right)\left(4\,B\,a^{3}\,c^{3}\,e^{4}-24\,B\,a^{2}\,c^{4}\,d^{2}\,e^{2}-16\,A\,a^{2}\,c^{4}\,d\,e^{3}+4\,B\,a\,c^{5}\,d^{4}+16\,A\,a\,c^{5}\,d^{3}\,e\right)}{8\,a\,c^{6}}+\frac{B\,e^{4}\,x^{4}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + c*x^2),x)
```

```
[Out] (x^3*(A*e^4 + 4*B*d*e^3))/(3*c) - x*((a*(A*e^4 + 4*B*d*e^3))/c^2 - (2*d^2*e
*(3*A*e + 2*B*d))/c) - x^2*((B*a*e^4)/(2*c^2) - (d*e^2*(2*A*e + 3*B*d))/c)
+ (atan((c^(1/2)*x)/a^(1/2))*(A*a^2*e^4 + A*c^2*d^4 + 4*B*a^2*d*e^3 - 4*B*a
*c*d^3*e - 6*A*a*c*d^2*e^2))/(a^(1/2)*c^(5/2)) + (log(a + c*x^2)*(4*B*a*c^5
*d^4 + 4*B*a^3*c^3*e^4 - 16*A*a^2*c^4*d*e^3 - 24*B*a^2*c^4*d^2*e^2 + 16*A*a
*c^5*d^3*e))/(8*a*c^6) + (B*e^4*x^4)/(4*c)
```

sympy [B] time = 3.50, size = 908, normalized size = 3.78

$$\frac{Be^4x^4}{4c}+x^3\left(\frac{Ae^4}{3c}+\frac{4Bde^3}{3c}\right)+x^2\left(\frac{2Ade^3}{c}-\frac{Bae^4}{2c^2}+\frac{3Bd^2e^2}{c}\right)+x\left(-\frac{Aae^4}{c^2}+\frac{6Ad^2e^2}{c}-\frac{4Bade^3}{c^2}+\frac{4Bd^3e}{c}\right)+\left(\frac{-4Aacde^3+4Ac^2d^3e+Ba^2e^4-6Bacd^2e^2+Bc^2d^4}{2c^3}-\frac{\sqrt{-ac^7}\left(Aa^2e^4-6Aacd^2e^2+Ac^2d^4+4Ba^2de^3-4Bacd^3e\right)}{2ac^6}\right)\log\left(x+\frac{4Aa^2cde^3-4Aac^2d^3e-Ba^3e^4+6Ba^2cd^2e^2-Bac^2d^4+2ac^3\left(\frac{-4Aacde^3+4Ac^2d^3e+Ba^2e^4-6Bacd^2e^2+Bc^2d^4}{2c^3}-\frac{\sqrt{-ac^7}\left(Aa^2e^4-6Aacd^2e^2+Ac^2d^4+4Ba^2de^3-4Bacd^3e\right)}{2ac^6}\right)}{Aa^2ce^4-6Aac^2d^2e^2+Ac^3d^4+4Ba^2cde^3-4Bac^2d^3e}\right)+\left(\frac{-4Aacde^3+4Ac^2d^3e+Ba^2e^4-6Bacd^2e^2+Bc^2d^4}{2c^3}+\frac{\sqrt{-ac^7}\left(Aa^2e^4-6Aacd^2e^2+Ac^2d^4+4Ba^2de^3-4Bacd^3e\right)}{2ac^6}\right)\log\left(x+\frac{4Aa^2cde^3-4Aac^2d^3e-Ba^3e^4+6Ba^2cd^2e^2-Bac^2d^4+2ac^3\left(\frac{-4Aacde^3+4Ac^2d^3e+Ba^2e^4-6Bacd^2e^2+Bc^2d^4}{2c^3}+\frac{\sqrt{-ac^7}\left(Aa^2e^4-6Aacd^2e^2+Ac^2d^4+4Ba^2de^3-4Bacd^3e\right)}{2ac^6}\right)}{Aa^2ce^4-6Aac^2d^2e^2+Ac^3d^4+4Ba^2cde^3-4Bac^2d^3e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+a),x)
```

```
[Out] B*e**4*x**4/(4*c) + x**3*(A*e**4/(3*c) + 4*B*d*e**3/(3*c)) + x**2*(2*A*d*e*
*3/c - B*a*e**4/(2*c**2) + 3*B*d**2*e**2/c) + x*(-A*a*e**4/c**2 + 6*A*d**2*
e**2/c - 4*B*a*d*e**3/c**2 + 4*B*d**3*e/c) + ((-4*A*a*c*d*e**3 + 4*A*c**2*d
**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 + B*c**2*d**4)/(2*c**3) - sqrt(-a*c
**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A*c**2*d**4 + 4*B*a**2*d*e**3 - 4*B
*a*c*d**3*e)/(2*a*c**6))*log(x + (4*A*a**2*c*d*e**3 - 4*A*a*c**2*d**3*e - B
*a**3*e**4 + 6*B*a**2*c*d**2*e**2 - B*a*c**2*d**4 + 2*a*c**3*((-4*A*a*c*d*e
**3 + 4*A*c**2*d**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 + B*c**2*d**4)/(2*c
**3) - sqrt(-a*c**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A*c**2*d**4 + 4*B*a
**2*d*e**3 - 4*B*a*c*d**3*e)/(2*a*c**6)))/(A*a**2*c*e**4 - 6*A*a*c**2*d**2*
e**2 + A*c**3*d**4 + 4*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*e)) + ((-4*A*a*c*d
*e**3 + 4*A*c**2*d**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 + B*c**2*d**4)/(2
*c**3) + sqrt(-a*c**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A*c**2*d**4 + 4*B
*a**2*d*e**3 - 4*B*a*c*d**3*e)/(2*a*c**6))*log(x + (4*A*a**2*c*d*e**3 - 4*A
*a*c**2*d**3*e - B*a**3*e**4 + 6*B*a**2*c*d**2*e**2 - B*a*c**2*d**4 + 2*a*c
**3*((-4*A*a*c*d*e**3 + 4*A*c**2*d**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 +
 B*c**2*d**4)/(2*c**3) + sqrt(-a*c**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A
*c**2*d**4 + 4*B*a**2*d*e**3 - 4*B*a*c*d**3*e)/(2*a*c**6)))/(A*a**2*c*e**4
- 6*A*a*c**2*d**2*e**2 + A*c**3*d**4 + 4*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*
e))
```

3.1157 $\int \frac{(A+Bx)(d+ex)^3}{a+cx^2}\,dx$

Optimal. Leaf size=167

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)-aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{ex\left(-aBe^2+3Acde+3Bcd^2\right)}{c^2}+\frac{\log\left(a+cx^2\right)\left(-aAe^3-3a\right.}{2c^2}$$

Rubi [A] time = 0.18, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(-aAe^3-3aBde^2+3Acd^2e+Bcd^3\right)}{2c^2}+\frac{ex\left(-aBe^2+3Acde+3Bcd^2\right)}{c^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)-aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{e^2x^2(Ae+3Bd)}{2c}+\frac{Be^3x^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + c*x^2),x]
```

```
[Out] (e*(3*B*c*d^2 + 3*A*c*d*e - a*B*e^2)*x)/c^2 + (e^2*(3*B*d + A*e)*x^2)/(2*c)
 + (B*e^3*x^3)/(3*c) + ((A*c*d*(c*d^2 - 3*a*e^2) - a*B*e*(3*c*d^2 - a*e^2))
*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(5/2)) + ((B*c*d^3 + 3*A*c*d^2*e -
 3*a*B*d*e^2 - a*A*e^3)*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{a+cx^2}\,dx &= \int \left(\frac{e\left(3Bcd^2+3Acde-aBe^2\right)}{c^2}+\frac{e^2(3Bd+Ae)x}{c}+\frac{Be^3x^2}{c}+\frac{Acd\left(cd^2-3ae^2\right)-aB\right.\\ &= \frac{e\left(3Bcd^2+3Acde-aBe^2\right)x}{c^2}+\frac{e^2(3Bd+Ae)x^2}{2c}+\frac{Be^3x^3}{3c}+\frac{\int \frac{Acd\left(cd^2-3ae^2\right)-aBe\left(3cd^2-a\right.}{}}{}\\ &= \frac{e\left(3Bcd^2+3Acde-aBe^2\right)x}{c^2}+\frac{e^2(3Bd+Ae)x^2}{2c}+\frac{Be^3x^3}{3c}+\frac{\left(Bcd^3+3Acd^2e-3aBd\right.}{c}\\ &= \frac{e\left(3Bcd^2+3Acde-aBe^2\right)x}{c^2}+\frac{e^2(3Bd+Ae)x^2}{2c}+\frac{Be^3x^3}{3c}+\frac{\left(Acd\left(cd^2-3ae^2\right)-aBe\right.}{\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 151, normalized size = 0.90

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(ae^2-3cd^2\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{ex\left(-6aBe^2+3Ace(6d+ex)+Bc\left(18d^2+9dex+2e^2x^2\right)\right)+3\log\left(a+cx^2\right)\left(-aAe^3-3aBde^2+3Acd^2e+Bcd^3\right)}{6c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + c*x^2),x]
```

```
[Out] ((A*c*d*(c*d^2 - 3*a*e^2) + a*B*e*(-3*c*d^2 + a*e^2))*ArcTan[(Sqrt[c]*x)/Sq
rt[a]])/(Sqrt[a]*c^(5/2)) + (e*x*(-6*a*B*e^2 + 3*A*c*e*(6*d + e*x) + B*c*(1
8*d^2 + 9*d*e*x + 2*e^2*x^2)) + 3*(B*c*d^3 + 3*A*c*d^2*e - 3*a*B*d*e^2 - a*
A*e^3)*Log[a + c*x^2])/(6*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + c*x^2), x]
```

fricas [A] time = 0.42, size = 398, normalized size = 2.38

$$\left[\frac{2\,Bac^2e^3x^3+3\left(3\,Bac^2de^2+Aac^2e^3\right)x^2-3\left(Ac^2d^3-3\,Bacd^2e-3\,Aacde^2+Ba^2e^3\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)+6\left(3\,Bac^2d^2e+3\,Aac^2de^2-Ba^2ce^3\right)x+3\left(Bac^2d^3+3\,Aac^2d^2e-3\,Ba^2cde^2-Aa^2ce^3\right)\log\left(cx^2+a\right)}{6\,ac^3},\ \frac{2\,Bac^2e^3x^3+3\left(3\,Bac^2de^2+Aac^2e^3\right)x^2+6\left(Ac^2d^3-3\,Bacd^2e-3\,Aacde^2+Ba^2e^3\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)+6\left(3\,Bac^2d^2e+3\,Aac^2de^2-Ba^2ce^3\right)x+3\left(Bac^2d^3+3\,Aac^2d^2e-3\,Ba^2cde^2-Aa^2ce^3\right)\log\left(cx^2+a\right)}{6\,ac^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*B*a*c^2*e^3*x^3 + 3*(3*B*a*c^2*d*e^2 + A*a*c^2*e^3)*x^2 - 3*(A*c^2*
d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*sqrt(-a*c)*log((c*x^2 - 2*
sqrt(-a*c)*x - a)/(c*x^2 + a)) + 6*(3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 - B*a
^2*c*e^3)*x + 3*(B*a*c^2*d^3 + 3*A*a*c^2*d^2*e - 3*B*a^2*c*d*e^2 - A*a^2*c*
e^3)*log(c*x^2 + a))/(a*c^3), 1/6*(2*B*a*c^2*e^3*x^3 + 3*(3*B*a*c^2*d*e^2 +
 A*a*c^2*e^3)*x^2 + 6*(A*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^
3)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 6*(3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 -
 B*a^2*c*e^3)*x + 3*(B*a*c^2*d^3 + 3*A*a*c^2*d^2*e - 3*B*a^2*c*d*e^2 - A*a^
2*c*e^3)*log(c*x^2 + a))/(a*c^3)]
```

giac [A] time = 0.15, size = 165, normalized size = 0.99

$$\frac{\left(Bcd^3+3\,Acd^2e-3\,Bade^2-Aae^3\right)\log\left(cx^2+a\right)}{2\,c^2}+\frac{\left(Ac^2d^3-3\,Bacd^2e-3\,Aacde^2+Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}+\frac{2\,Bc^2x^3e^3+9\,Bc^2dx^2e^2+18\,Bc^2d^2xe+3\,Ac^2x^2e^3+18\,Ac^2dxe^2-6\,Bacxe^3}{6\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c*d^3 + 3*A*c*d^2*e - 3*B*a*d*e^2 - A*a*e^3)*log(c*x^2 + a)/c^2 + (A
*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))
/(sqrt(a*c)*c^2) + 1/6*(2*B*c^2*x^3*e^3 + 9*B*c^2*d*x^2*e^2 + 18*B*c^2*d^2*
x*e + 3*A*c^2*x^2*e^3 + 18*A*c^2*d*x*e^2 - 6*B*a*c*x*e^3)/c^3
```

maple [A] time = 0.05, size = 238, normalized size = 1.43

$$\frac{Be^3x^3}{3c}-\frac{3Aade^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{Ae^3x^2}{2c}+\frac{Ad^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{Ba^2e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}-\frac{3Bad^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{3Bde^2x^2}{2c}-\frac{Aae^3\ln\left(cx^2+a\right)}{2c^2}+\frac{3Ad^2e\ln\left(cx^2+a\right)}{2c}+\frac{3Ade^2x}{c}-\frac{3Bade^2\ln\left(cx^2+a\right)}{2c^2}-\frac{Bae^3x}{c^2}+\frac{Bd^3\ln\left(cx^2+a\right)}{2c}+\frac{3Bd^2ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+a),x)
```

```
[Out] 1/3*B/c*e^3*x^3+1/2/c*e^3*A*x^2+3/2/c*e^2*B*x^2*d+3/c*e^2*A*x*d-1/c^2*e^3*B
*x*a+3/c*e*B*x*d^2-1/2/c^2*ln(c*x^2+a)*A*a*e^3+3/2/c*ln(c*x^2+a)*A*d^2*e-3/
2/c^2*ln(c*x^2+a)*B*a*d*e^2+1/2/c*ln(c*x^2+a)*B*d^3-3/c/(a*c)^(1/2)*arctan(
1/(a*c)^(1/2)*c*x)*A*a*d*e^2+1/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^3+
1/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a^2*e^3-3/c/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*B*a*d^2*e
```

maxima [A] time = 1.16, size = 160, normalized size = 0.96

$$\frac{\left(Bcd^{3}+3\,Acd^{2}e-3\,Bade^{2}-Aae^{3}\right)\log\left(cx^{2}+a\right)}{2\,c^{2}}+\frac{\left(Ac^{2}d^{3}-3\,Bacd^{2}e-3\,Aacde^{2}+Ba^{2}e^{3}\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^{2}}+\frac{2\,Bce^{3}x^{3}+3\left(3\,Bcde^{2}+Ace^{3}\right)x^{2}+6\left(3\,Bcd^{2}e+3\,Acde^{2}-Bae^{3}\right)x}{6\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*c*d^3 + 3*A*c*d^2*e - 3*B*a*d*e^2 - A*a*e^3)*log(c*x^2 + a)/c^2 + (A
*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))
/(sqrt(a*c)*c^2) + 1/6*(2*B*c*e^3*x^3 + 3*(3*B*c*d*e^2 + A*c*e^3)*x^2 + 6*(
3*B*c*d^2*e + 3*A*c*d*e^2 - B*a*e^3)*x)/c^2
```

mupad [B] time = 1.82, size = 175, normalized size = 1.05

$$x\left(\frac{3\,d\,e\,\left(A\,e+B\,d\right)}{c}-\frac{B\,a\,e^{3}}{c^{2}}\right)+\frac{x^{2}\,\left(A\,e^{3}+3\,B\,d\,e^{2}\right)}{2\,c}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,\left(B\,a^{2}\,e^{3}-3\,B\,a\,c\,d^{2}\,e-3\,A\,a\,c\,d\,e^{2}+A\,c^{2}\,d^{3}\right)}{\sqrt{a}\,c^{5/2}}+\frac{\ln\left(c\,x^{2}+a\right)\,\left(-12\,B\,a^{2}\,c^{3}\,d\,e^{2}-4\,A\,a^{2}\,c^{3}\,e^{3}+4\,B\,a\,c^{4}\,d^{3}+12\,A\,a\,c^{4}\,d^{2}\,e\right)}{8\,a\,c^{5}}+\frac{B\,e^{3}\,x^{3}}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + c*x^2),x)
```

```
[Out] x*((3*d*e*(A*e + B*d))/c - (B*a*e^3)/c^2) + (x^2*(A*e^3 + 3*B*d*e^2))/(2*c)
 + (atan((c^(1/2)*x)/a^(1/2))*(A*c^2*d^3 + B*a^2*e^3 - 3*A*a*c*d*e^2 - 3*B*
a*c*d^2*e))/(a^(1/2)*c^(5/2)) + (log(a + c*x^2)*(4*B*a*c^4*d^3 - 4*A*a^2*c^
3*e^3 - 12*B*a^2*c^3*d*e^2 + 12*A*a*c^4*d^2*e))/(8*a*c^5) + (B*e^3*x^3)/(3*
c)
```

sympy [B] time = 2.15, size = 641, normalized size = 3.84

$$\frac{Be^{3}x^{3}}{3c}+x^{2}\left(\frac{Ae^{3}}{2c}+\frac{3Bde^{2}}{2c}\right)+x\left(\frac{3Ade^{2}}{c}-\frac{Bae^{3}}{c^{2}}+\frac{3Bd^{2}e}{c}\right)+\left(-\frac{Aae^{3}-3Acd^{2}e+3Bade^{2}-Bcd^{3}}{2c^{2}}-\frac{\sqrt{-ac^{5}}\left(-3Aacde^{2}+Ac^{2}d^{3}+Ba^{2}e^{3}-3Bacd^{2}e\right)}{2ac^{5}}\right)\log\left(x+\frac{Aa^{2}e^{3}-3Aacd^{2}e+3Ba^{2}de^{2}-Bacd^{3}+2ac^{2}\left(-\frac{Aae^{3}-3Acd^{2}e+3Bade^{2}-Bcd^{3}}{2c^{2}}-\frac{\sqrt{-ac^{5}}\left(-3Aacde^{2}+Ac^{2}d^{3}+Ba^{2}e^{3}-3Bacd^{2}e\right)}{2ac^{5}}\right)}{-3Aacde^{2}+Ac^{2}d^{3}+Ba^{2}e^{3}-3Bacd^{2}e}\right)+\left(-\frac{Aae^{3}-3Acd^{2}e+3Bade^{2}-Bcd^{3}}{2c^{2}}+\frac{\sqrt{-ac^{5}}\left(-3Aacde^{2}+Ac^{2}d^{3}+Ba^{2}e^{3}-3Bacd^{2}e\right)}{2ac^{5}}\right)\log\left(x+\frac{Aa^{2}e^{3}-3Aacd^{2}e+3Ba^{2}de^{2}-Bacd^{3}+2ac^{2}\left(-\frac{Aae^{3}-3Acd^{2}e+3Bade^{2}-Bcd^{3}}{2c^{2}}+\frac{\sqrt{-ac^{5}}\left(-3Aacde^{2}+Ac^{2}d^{3}+Ba^{2}e^{3}-3Bacd^{2}e\right)}{2ac^{5}}\right)}{-3Aacde^{2}+Ac^{2}d^{3}+Ba^{2}e^{3}-3Bacd^{2}e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+a),x)
```

```
[Out] B*e**3*x**3/(3*c) + x**2*(A*e**3/(2*c) + 3*B*d*e**2/(2*c)) + x*(3*A*d*e**2/
c - B*a*e**3/c**2 + 3*B*d**2*e/c) + (-(A*a*e**3 - 3*A*c*d**2*e + 3*B*a*d*e*
*2 - B*c*d**3)/(2*c**2) - sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*c**2*d**3 + B*
a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5))*log(x + (A*a**2*e**3 - 3*A*a*c*d**2
*e + 3*B*a**2*d*e**2 - B*a*c*d**3 + 2*a*c**2*(-(A*a*e**3 - 3*A*c*d**2*e + 3
*B*a*d*e**2 - B*c*d**3)/(2*c**2) - sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*c**2*
d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5)))/(-3*A*a*c*d*e**2 + A*c**2
*d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e)) + (-(A*a*e**3 - 3*A*c*d**2*e + 3*B*a
*d*e**2 - B*c*d**3)/(2*c**2) + sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*c**2*d**3
 + B*a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5))*log(x + (A*a**2*e**3 - 3*A*a*c
*d**2*e + 3*B*a**2*d*e**2 - B*a*c*d**3 + 2*a*c**2*(-(A*a*e**3 - 3*A*c*d**2*
e + 3*B*a*d*e**2 - B*c*d**3)/(2*c**2) + sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*
c**2*d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5)))/(-3*A*a*c*d*e**2 + A
*c**2*d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e))
```

3.1158 $\int \frac{(A+Bx)(d+ex)^2}{a+cx^2}\,dx$

Optimal. Leaf size=108

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(-aAe^2-2aBde+Acd^2\right)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)\left(-aBe^2+2Acde+Bcd^2\right)}{2c^2}+\frac{ex(Ae+2Bd)}{c}+\frac{Be^2x^2}{2c}$$

Rubi [A] time = 0.09, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2+2Acde+Bcd^2\right)}{2c^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(-aAe^2-2aBde+Acd^2\right)}{\sqrt{a}\,c^{3/2}}+\frac{ex(Ae+2Bd)}{c}+\frac{Be^2x^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + c*x^2),x]
```

```
[Out] (e*(2*B*d + A*e)*x)/c + (B*e^2*x^2)/(2*c) + ((A*c*d^2 - 2*a*B*d*e - a*A*e^2
)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(3/2)) + ((B*c*d^2 + 2*A*c*d*e -
a*B*e^2)*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{a+cx^2}\,dx &= \int \left(\frac{e(2Bd+Ae)}{c}+\frac{Be^2x}{c}+\frac{Acd^2-2aBde-aAe^2+\left(Bcd^2+2Acde-aBe^2\right)x}{c\left(a+cx^2\right)}\right)dx\\
&= \frac{e(2Bd+Ae)x}{c}+\frac{Be^2x^2}{2c}+\frac{\int \frac{Acd^2-2aBde-aAe^2+\left(Bcd^2+2Acde-aBe^2\right)x}{a+cx^2}\,dx}{c}\\
&= \frac{e(2Bd+Ae)x}{c}+\frac{Be^2x^2}{2c}+\frac{\left(Acd^2-2aBde-aAe^2\right)\int \frac{1}{a+cx^2}\,dx}{c}+\frac{\left(Bcd^2+2Acde-aBe^2\right.}{c}\\
&= \frac{e(2Bd+Ae)x}{c}+\frac{Be^2x^2}{2c}+\frac{\left(Acd^2-2aBde-aAe^2\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,c^{3/2}}+\frac{\left(Bcd^2+2Acde-aB\right.}{2c^2}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 99, normalized size = 0.92

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2+2Acde+Bcd^2\right)-\frac{2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aAe^2+2aBde-Acd^2\right)}{\sqrt{a}}+cex(2Ae+4Bd+Bex)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + c*x^2),x]
```

```
[Out] (c*e*x*(4*B*d + 2*A*e + B*e*x) - (2*Sqrt[c]*(-(A*c*d^2) + 2*a*B*d*e + a*A*e
^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a] + (B*c*d^2 + 2*A*c*d*e - a*B*e^2)*
Log[a + c*x^2])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + c*x^2), x]
```

fricas [A] time = 0.42, size = 235, normalized size = 2.18

$$\left[\frac{Bace^2x^2+\left(Acd^2-2\,Bade-Aae^2\right)\sqrt{-ac}\,\log\left(\frac{cx^2+2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)+2\left(2\,Bacde+Aace^2\right)x+\left(Bacd^2+2\,Aacde-Ba^2e^2\right)\log\left(cx^2+a\right)}{2\,ac^2},\ \frac{Bace^2x^2+2\left(Acd^2-2\,Bade-Aae^2\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)+2\left(2\,Bacde+Aace^2\right)x+\left(Bacd^2+2\,Aacde-Ba^2e^2\right)\log\left(cx^2+a\right)}{2\,ac^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*c*e^2*x^2 + (A*c*d^2 - 2*B*a*d*e - A*a*e^2)*sqrt(-a*c)*log((c*x^2
 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 2*(2*B*a*c*d*e + A*a*c*e^2)*x + (B*a*
c*d^2 + 2*A*a*c*d*e - B*a^2*e^2)*log(c*x^2 + a))/(a*c^2), 1/2*(B*a*c*e^2*x^
2 + 2*(A*c*d^2 - 2*B*a*d*e - A*a*e^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 2*(
2*B*a*c*d*e + A*a*c*e^2)*x + (B*a*c*d^2 + 2*A*a*c*d*e - B*a^2*e^2)*log(c*x^
2 + a))/(a*c^2)]
```

giac [A] time = 0.16, size = 101, normalized size = 0.94

$$\frac{\left(Acd^2-2\,Bade-Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{\left(Bcd^2+2\,Acde-Bae^2\right)\log\left(cx^2+a\right)}{2\,c^2}+\frac{Bcx^2e^2+4\,Bcdxe+2\,Acxe^2}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a),x, algorithm="giac")
```

```
[Out] (A*c*d^2 - 2*B*a*d*e - A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + 1/2*(
B*c*d^2 + 2*A*c*d*e - B*a*e^2)*log(c*x^2 + a)/c^2 + 1/2*(B*c*x^2*e^2 + 4*B*
c*d*x*e + 2*A*c*x*e^2)/c^2
```

maple [A] time = 0.05, size = 148, normalized size = 1.37

$$-\frac{Aa\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{A\,d^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}-\frac{2Bade\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{B\,e^2x^2}{2c}+\frac{Ade\ln\left(c\,x^2+a\right)}{c}+\frac{A\,e^2x}{c}-\frac{Ba\,e^2\ln\left(c\,x^2+a\right)}{2c^2}+\frac{B\,d^2\ln\left(c\,x^2+a\right)}{2c}+\frac{2Bdex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+a),x)
```

```
[Out] 1/2*B/c*e^2*x^2+1/c*e^2*A*x+2/c*e*B*d*x+1/c*ln(c*x^2+a)*A*d*e-1/2/c^2*ln(c*
x^2+a)*B*a*e^2+1/2/c*ln(c*x^2+a)*B*d^2-1/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)
*c*x)*A*a*e^2+1/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2-2/c/(a*c)^(1/2)
*arctan(1/(a*c)^(1/2)*c*x)*a*B*d*e
```

maxima [A] time = 1.27, size = 100, normalized size = 0.93

$$\frac{\left(Acd^2 - 2\,Bade - Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c} + \frac{Be^2x^2 + 2\left(2\,Bde + Ae^2\right)x}{2\,c} + \frac{\left(Bcd^2 + 2\,Acde - Bae^2\right)\log\left(cx^2 + a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] (A*c*d^2 - 2*B*a*d*e - A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + 1/2*(
B*e^2*x^2 + 2*(2*B*d*e + A*e^2)*x)/c + 1/2*(B*c*d^2 + 2*A*c*d*e - B*a*e^2)*
log(c*x^2 + a)/c^2
```

mupad [B] time = 0.14, size = 114, normalized size = 1.06

$$\frac{x\,\left(A\,e^2+2\,B\,d\,e\right)}{c}+\frac{\ln\left(c\,x^2+a\right)\,\left(-4\,B\,a^2\,c^2\,e^2+4\,B\,a\,c^3\,d^2+8\,A\,a\,c^3\,d\,e\right)}{8\,a\,c^4}-\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,\left(-A\,c\,d^2+2\,B\,a\,d\,e+A\,a\,e^2\right)}{\sqrt{a}\,c^{3/2}}+\frac{B\,e^2\,x^2}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + c*x^2),x)
```

```
[Out] (x*(A*e^2 + 2*B*d*e))/c + (log(a + c*x^2)*(4*B*a*c^3*d^2 - 4*B*a^2*c^2*e^2
+ 8*A*a*c^3*d*e))/(8*a*c^4) - (atan((c^(1/2)*x)/a^(1/2))*(A*a*e^2 - A*c*d^2
 + 2*B*a*d*e))/(a^(1/2)*c^(3/2)) + (B*e^2*x^2)/(2*c)
```

sympy [B] time = 1.41, size = 425, normalized size = 3.94

$$\frac{Be^2x^2}{2c} + x\left(\frac{Ae^2}{c} + \frac{2Bde}{c}\right) + \left(-\frac{-2Acde + Bae^2 - Bcd^2}{2c^2} - \frac{\sqrt{-ac^5}\left(Aae^2 - Acd^2 + 2Bade\right)}{2ac^4}\right)\log\left(x + \frac{2Aacde - Ba^2e^2 + Bacd^2 - 2ac^2\left(-\frac{-2Acde+Bae^2-Bcd^2}{2c^2} - \frac{\sqrt{-ac^5}\left(Aae^2-Acd^2+2Bade\right)}{2ac^4}\right)}{Aace^2 - Ac^2d^2 + 2Bacde}\right) + \left(-\frac{-2Acde + Bae^2 - Bcd^2}{2c^2} + \frac{\sqrt{-ac^5}\left(Aae^2 - Acd^2 + 2Bade\right)}{2ac^4}\right)\log\left(x + \frac{2Aacde - Ba^2e^2 + Bacd^2 - 2ac^2\left(-\frac{-2Acde+Bae^2-Bcd^2}{2c^2} + \frac{\sqrt{-ac^5}\left(Aae^2-Acd^2+2Bade\right)}{2ac^4}\right)}{Aace^2 - Ac^2d^2 + 2Bacde}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+a),x)
```

```
[Out] B*e**2*x**2/(2*c) + x*(A*e**2/c + 2*B*d*e/c) + (-(-2*A*c*d*e + B*a*e**2 - B
*c*d**2)/(2*c**2) - sqrt(-a*c**5)*(A*a*e**2 - A*c*d**2 + 2*B*a*d*e)/(2*a*c*
*4))*log(x + (2*A*a*c*d*e - B*a**2*e**2 + B*a*c*d**2 - 2*a*c**2*(-(-2*A*c*d
*e + B*a*e**2 - B*c*d**2)/(2*c**2) - sqrt(-a*c**5)*(A*a*e**2 - A*c*d**2 + 2
*B*a*d*e)/(2*a*c**4)))/(A*a*c*e**2 - A*c**2*d**2 + 2*B*a*c*d*e)) + (-(-2*A*
c*d*e + B*a*e**2 - B*c*d**2)/(2*c**2) + sqrt(-a*c**5)*(A*a*e**2 - A*c*d**2
+ 2*B*a*d*e)/(2*a*c**4))*log(x + (2*A*a*c*d*e - B*a**2*e**2 + B*a*c*d**2 -
2*a*c**2*(-(-2*A*c*d*e + B*a*e**2 - B*c*d**2)/(2*c**2) + sqrt(-a*c**5)*(A*a
*e**2 - A*c*d**2 + 2*B*a*d*e)/(2*a*c**4)))/(A*a*c*e**2 - A*c**2*d**2 + 2*B*
a*c*d*e))
```

3.1159 $\int \frac{(A+Bx)(d+ex)}{a+cx^2}\,dx$

Optimal. Leaf size=64

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(Acd-aBe)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)(Ae+Bd)}{2c}+\frac{Bex}{c}$$

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {774, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(Acd-aBe)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)(Ae+Bd)}{2c}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (B*e*x)/c + ((A*c*d - a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(3/2))
 + ((B*d + A*e)*Log[a + c*x^2])/(2*c)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)}{a+cx^2}\,dx &= \frac{Bex}{c}+\frac{\int \frac{Acd-aBe+c(Bd+Ae)x}{a+cx^2}\,dx}{c}\\
&= \frac{Bex}{c}+(Bd+Ae)\int \frac{x}{a+cx^2}\,dx+\frac{(Acd-aBe)\int \frac{1}{a+cx^2}\,dx}{c}\\
&= \frac{Bex}{c}+\frac{(Acd-aBe)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,c^{3/2}}+\frac{(Bd+Ae)\log\left(a+cx^2\right)}{2c}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 65, normalized size = 1.02

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe-Acd)}{\sqrt{a}c^{3/2}}+\frac{\log\left(a+cx^2\right)(Ae+Bd)}{2c}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (B*e*x)/c - ((-(A*c*d) + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(3/
2)) + ((B*d + A*e)*Log[a + c*x^2])/(2*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + c*x^2), x]
```

fricas [A] time = 0.43, size = 147, normalized size = 2.30

$$\left[\frac{2\,Bacex+(Acd-Bae)\sqrt{-ac}\,\log\left(\frac{cx^2+2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)+(Bacd+Aace)\log\left(cx^2+a\right)}{2\,ac^2},\frac{2\,Bacex+2\,(Acd-Bae)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)+(Bacd+Aace)\log\left(cx^2+a\right)}{2\,ac^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*B*a*c*e*x + (A*c*d - B*a*e)*sqrt(-a*c)*log((c*x^2 + 2*sqrt(-a*c)*x
- a)/(c*x^2 + a)) + (B*a*c*d + A*a*c*e)*log(c*x^2 + a))/(a*c^2), 1/2*(2*B*a
*c*e*x + 2*(A*c*d - B*a*e)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + (B*a*c*d + A*a
*c*e)*log(c*x^2 + a))/(a*c^2)]
```

giac [A] time = 0.15, size = 59, normalized size = 0.92

$$\frac{Bxe}{c}+\frac{(Bd+Ae)\log\left(cx^2+a\right)}{2\,c}+\frac{(Acd-Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] B*x*e/c + 1/2*(B*d + A*e)*log(c*x^2 + a)/c + (A*c*d - B*a*e)*arctan(c*x/sqr
t(a*c))/(sqrt(a*c)*c)
```

maple [A] time = 0.05, size = 78, normalized size = 1.22

$$\frac{Ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}-\frac{Bae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{Ae\ln\left(c\,x^2+a\right)}{2c}+\frac{Bd\ln\left(c\,x^2+a\right)}{2c}+\frac{Bex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+a),x)
```

```
[Out] B/c*e*x+1/2/c*ln(c*x^2+a)*A*e+1/2/c*ln(c*x^2+a)*B*d+1/(a*c)^(1/2)*arctan(1/
(a*c)^(1/2)*c*x)*A*d-1/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*a*B*e
```

maxima [A] time = 1.15, size = 56, normalized size = 0.88

$$\frac{Bex}{c} + \frac{(Bd + Ae)\log\left(cx^2 + a\right)}{2\,c} + \frac{(Acd - Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] B*e*x/c + 1/2*(B*d + A*e)*log(c*x^2 + a)/c + (A*c*d - B*a*e)*arctan(c*x/sqr
t(a*c))/(sqrt(a*c)*c)
```

mupad [B] time = 1.73, size = 75, normalized size = 1.17

$$\frac{B\,e\,x}{c} + \frac{A\,e\,\ln\left(c\,x^2 + a\right)}{2\,c} + \frac{B\,d\,\ln\left(c\,x^2 + a\right)}{2\,c} + \frac{A\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}} - \frac{B\,\sqrt{a}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (B*e*x)/c + (A*e*log(a + c*x^2))/(2*c) + (B*d*log(a + c*x^2))/(2*c) + (A*d*
atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(1/2)) - (B*a^(1/2)*e*atan((c^(1/2)*x
)/a^(1/2)))/c^(3/2)
```

sympy [B] time = 0.73, size = 212, normalized size = 3.31

$$\frac{Bex}{c} + \left(\frac{Ae+Bd}{2c} - \frac{\sqrt{-ac^3}\,(-Acd+Bae)}{2ac^3}\right)\log\left(x + \frac{Aae + Bad - 2ac\left(\frac{Ae+Bd}{2c} - \frac{\sqrt{-ac^3}\,(-Acd+Bae)}{2ac^3}\right)}{-Acd+Bae}\right) + \left(\frac{Ae+Bd}{2c} + \frac{\sqrt{-ac^3}\,(-Acd+Bae)}{2ac^3}\right)\log\left(x + \frac{Aae + Bad - 2ac\left(\frac{Ae+Bd}{2c} + \frac{\sqrt{-ac^3}\,(-Acd+Bae)}{2ac^3}\right)}{-Acd+Bae}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+a),x)
```

```
[Out] B*e*x/c + ((A*e + B*d)/(2*c) - sqrt(-a*c**3)*(-A*c*d + B*a*e)/(2*a*c**3))*l
og(x + (A*a*e + B*a*d - 2*a*c*((A*e + B*d)/(2*c) - sqrt(-a*c**3)*(-A*c*d +
B*a*e)/(2*a*c**3)))/(-A*c*d + B*a*e)) + ((A*e + B*d)/(2*c) + sqrt(-a*c**3)*
(-A*c*d + B*a*e)/(2*a*c**3))*log(x + (A*a*e + B*a*d - 2*a*c*((A*e + B*d)/(2
*c) + sqrt(-a*c**3)*(-A*c*d + B*a*e)/(2*a*c**3)))/(-A*c*d + B*a*e))
```

3.1160 $\int \frac{A+Bx}{a+cx^2} dx$

Optimal. Leaf size=42

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}$$

Rubi [A] time = 0.02, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {635, 205, 260}

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2),x]
```

```
[Out] (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (B*Log[a + c*x^2])/(2*c
)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a+cx^2}\,dx&=A\int \frac{1}{a+cx^2}\,dx+B\int \frac{x}{a+cx^2}\,dx\\&=\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2),x]
```

```
[Out] (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (B*Log[a + c*x^2])/(2*c
)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{a+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(a + c*x^2), x]
```

fricas [A] time = 0.41, size = 98, normalized size = 2.33

$$\left[\frac{Ba\log\left(cx^2+a\right)-\sqrt{-ac}\,A\log\left(\frac{cx^2-2\sqrt{-ac}\,x-a}{cx^2+a}\right)}{2\,ac}, \frac{Ba\log\left(cx^2+a\right)+2\sqrt{ac}\,A\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*log(c*x^2 + a) - sqrt(-a*c)*A*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c
*x^2 + a)))/(a*c), 1/2*(B*a*log(c*x^2 + a) + 2*sqrt(a*c)*A*arctan(sqrt(a*c)
*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 31, normalized size = 0.74

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{B\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] A*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*B*log(c*x^2 + a)/c
```

maple [A] time = 0.06, size = 32, normalized size = 0.76

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{B\ln\left(c\,x^2+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a),x)
```

```
[Out] 1/2*B*ln(c*x^2+a)/c+A/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.16, size = 31, normalized size = 0.74

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{B\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] A*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*B*log(c*x^2 + a)/c
```

mupad [B] time = 0.05, size = 32, normalized size = 0.76

$$\frac{B\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{A\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2),x)
```

```
[Out] (B*log(a + c*x^2))/(2*c) + (A*atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(1/2))
```

sympy [B] time = 0.26, size = 124, normalized size = 2.95

$$\left(-\frac{A\sqrt{-ac^3}}{2ac^2}+\frac{B}{2c}\right)\log\left(x+\frac{-Ba+2ac\left(-\frac{A\sqrt{-ac^3}}{2ac^2}+\frac{B}{2c}\right)}{Ac}\right)+\left(\frac{A\sqrt{-ac^3}}{2ac^2}+\frac{B}{2c}\right)\log\left(x+\frac{-Ba+2ac\left(\frac{A\sqrt{-ac^3}}{2ac^2}+\frac{B}{2c}\right)}{Ac}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a),x)
```

```
[Out] (-A*sqrt(-a*c**3)/(2*a*c**2) + B/(2*c))*log(x + (-B*a + 2*a*c*(-A*sqrt(-a*c
**3)/(2*a*c**2) + B/(2*c)))/(A*c)) + (A*sqrt(-a*c**3)/(2*a*c**2) + B/(2*c))
*log(x + (-B*a + 2*a*c*(A*sqrt(-a*c**3)/(2*a*c**2) + B/(2*c)))/(A*c))
```

3.1161 $\int \frac{A+Bx}{(d+ex)(a+cx^2)}\,dx$

Optimal. Leaf size=109

$$\frac{\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2+cd^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{\sqrt{a}\sqrt{c}\left(ae^2+cd^2\right)}$$

Rubi [A] time = 0.11, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2+cd^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{\sqrt{a}\sqrt{c}\left(ae^2+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + c*x^2)),x]
```

```
[Out] ((A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]*(c*d^2 + a*e
^2)) - ((B*d - A*e)*Log[d + e*x])/(c*d^2 + a*e^2) + ((B*d - A*e)*Log[a + c*
x^2])/(2*(c*d^2 + a*e^2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)}\,dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)} + \frac{Acd+aBe+c(Bd-Ae)x}{\left(cd^2+ae^2\right)\left(a+cx^2\right)}\right)dx$$
$$= -\frac{(Bd-Ae)\log(d+ex)}{cd^2+ae^2} + \frac{\int \frac{Acd+aBe+c(Bd-Ae)x}{a+cx^2}\,dx}{cd^2+ae^2}$$
$$= -\frac{(Bd-Ae)\log(d+ex)}{cd^2+ae^2} + \frac{(c(Bd-Ae))\int \frac{x}{a+cx^2}\,dx}{cd^2+ae^2} + \frac{(Acd+aBe)\int \frac{1}{a+cx^2}\,dx}{cd^2+ae^2}$$
$$= \frac{(Acd+aBe)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{c}\left(cd^2+ae^2\right)} - \frac{(Bd-Ae)\log(d+ex)}{cd^2+ae^2} + \frac{(Bd-Ae)\log\left(a+cx^2\right)}{2\left(cd^2+ae^2\right)}$$

Mathematica [A] time = 0.06, size = 91, normalized size = 0.83

$$\frac{2\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd) - \sqrt{a}\sqrt{c}(Bd-Ae)\left(2\log(d+ex)-\log\left(a+cx^2\right)\right)}{2\sqrt{a}\sqrt{c}\left(ae^2+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + c*x^2)),x]
```

```
[Out] (2*(A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]] - Sqrt[a]*Sqrt[c]*(B*d - A*e
)*(2*Log[d + e*x] - Log[a + c*x^2]))/(2*Sqrt[a]*Sqrt[c]*(c*d^2 + a*e^2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + c*x^2)), x]
```

fricas [A] time = 1.35, size = 200, normalized size = 1.83

$$\left[-\frac{(Acd+Bae)\sqrt{-ac}\log\left(\frac{cx^2-2\sqrt{-ac}\,x-a}{cx^2+a}\right)-(Bacd-Aace)\log\left(cx^2+a\right)+2(Bacd-Aace)\log(ex+d)}{2\left(ac^2d^2+a^2ce^2\right)}, \frac{2(Acd+Bae)\sqrt{ac}\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)+(Bacd-Aace)\log\left(cx^2+a\right)-2(Bacd-Aace)\log(ex+d)}{2\left(ac^2d^2+a^2ce^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [-1/2*((A*c*d + B*a*e)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 +
 a)) - (B*a*c*d - A*a*c*e)*log(c*x^2 + a) + 2*(B*a*c*d - A*a*c*e)*log(e*x +
 d))/(a*c^2*d^2 + a^2*c*e^2), 1/2*(2*(A*c*d + B*a*e)*sqrt(a*c)*arctan(sqrt(
a*c)*x/a) + (B*a*c*d - A*a*c*e)*log(c*x^2 + a) - 2*(B*a*c*d - A*a*c*e)*log(
e*x + d))/(a*c^2*d^2 + a^2*c*e^2)]
```

giac [A] time = 0.16, size = 104, normalized size = 0.95

$$\frac{(Bd-Ae)\log\left(cx^2+a\right)}{2\left(cd^2+ae^2\right)} - \frac{\left(Bde-Ae^2\right)\log(|xe+d|)}{cd^2e+ae^3} + \frac{(Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(cd^2+ae^2\right)\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*d - A*e)*log(c*x^2 + a)/(c*d^2 + a*e^2) - (B*d*e - A*e^2)*log(abs(x*
e + d))/(c*d^2*e + a*e^3) + (A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/((c*d^2 +
 a*e^2)*sqrt(a*c))
```

maple [A] time = 0.06, size = 159, normalized size = 1.46

$$\frac{Acd \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a e^2+c d^2\right)\sqrt{ac}}+\frac{Bae \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a e^2+c d^2\right)\sqrt{ac}}-\frac{Ae\ln\left(c x^2+a\right)}{2\left(a e^2+c d^2\right)}+\frac{Ae\ln\left(ex+d\right)}{a e^2+c d^2}+\frac{Bd\ln\left(c x^2+a\right)}{2a e^2+2c d^2}-\frac{Bd\ln\left(ex+d\right)}{a e^2+c d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+a),x)
```

```
[Out] -1/2/(a*e^2+c*d^2)*ln(c*x^2+a)*A*e+1/2/(a*e^2+c*d^2)*ln(c*x^2+a)*B*d+1/(a*e
^2+c*d^2)/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*c*d+1/(a*e^2+c*d^2)/(a*c)
^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*a*B*e+1/(a*e^2+c*d^2)*ln(e*x+d)*A*e-1/(a*e
^2+c*d^2)*ln(e*x+d)*B*d
```

maxima [A] time = 1.31, size = 98, normalized size = 0.90

$$\frac{(Bd-Ae)\log\left(cx^2+a\right)}{2\left(cd^2+ae^2\right)}-\frac{(Bd-Ae)\log\left(ex+d\right)}{cd^2+ae^2}+\frac{(Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(cd^2+ae^2\right)\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*d - A*e)*log(c*x^2 + a)/(c*d^2 + a*e^2) - (B*d - A*e)*log(e*x + d)/(
c*d^2 + a*e^2) + (A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/((c*d^2 + a*e^2)*sqr
t(a*c))
```

mupad [B] time = 3.13, size = 535, normalized size = 4.91

$$\frac{\ln(d+ex)\,(Ae-Bd)}{cd^2+ae^2}-\frac{\ln\left(B^2cex-\frac{\left(c\left(a\left(\frac{Ae}{2}-\frac{Bd}{2}\right)+\frac{Ad\sqrt{-ac}}{2}\right)+\frac{Bae\sqrt{-ac}}{2}\right)\left(x\left(3Ac^2e^2-Bc^2de\right)-\frac{\left(c\left(a\left(\frac{Ae}{2}-\frac{Bd}{2}\right)+\frac{Ad\sqrt{-ac}}{2}\right)+\frac{Bae\sqrt{-ac}}{2}\right)\left(x\left(6ac^2e^3-2c^3d^2e\right)+8ac^2de^2\right)}{a^2ce^2+ac^2d^2}-Bace^2+Ac^2de\right)}{a^2ce^2+ac^2d^2}+ABce\right)\left(c\left(a\left(\frac{Ae}{2}-\frac{Bd}{2}\right)+\frac{Ad\sqrt{-ac}}{2}\right)+\frac{Bae\sqrt{-ac}}{2}\right)}{a^2ce^2+ac^2d^2}-\frac{\ln\left(B^2cex-\frac{\left(c\left(a\left(\frac{Ae}{2}-\frac{Bd}{2}\right)-\frac{Ad\sqrt{-ac}}{2}\right)-\frac{Bae\sqrt{-ac}}{2}\right)\left(x\left(3Ac^2e^2-Bc^2de\right)-\frac{\left(c\left(a\left(\frac{Ae}{2}-\frac{Bd}{2}\right)-\frac{Ad\sqrt{-ac}}{2}\right)-\frac{Bae\sqrt{-ac}}{2}\right)\left(x\left(6ac^2e^3-2c^3d^2e\right)+8ac^2de^2\right)}{a^2ce^2+ac^2d^2}-Bace^2+Ac^2de\right)}{a^2ce^2+ac^2d^2}+ABce\right)\left(c\left(a\left(\frac{Ae}{2}-\frac{Bd}{2}\right)-\frac{Ad\sqrt{-ac}}{2}\right)-\frac{Bae\sqrt{-ac}}{2}\right)}{a^2ce^2+ac^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)*(d + e*x)),x)
```

```
[Out] (log(d + e*x)*(A*e - B*d))/(a*e^2 + c*d^2) - (log(B^2*c*e*x - ((c*(a*((A*e)
/2 - (B*d)/2) + (A*d*(-a*c)^(1/2))/2) + (B*a*e*(-a*c)^(1/2))/2)*(x*(3*A*c^2
*e^2 - B*c^2*d*e) - ((c*(a*((A*e)/2 - (B*d)/2) + (A*d*(-a*c)^(1/2))/2) + (B
*a*e*(-a*c)^(1/2))/2)*(x*(6*a*c^2*e^3 - 2*c^3*d^2*e) + 8*a*c^2*d*e^2))/(a*c
^2*d^2 + a^2*c*e^2) - B*a*c*e^2 + A*c^2*d*e))/(a*c^2*d^2 + a^2*c*e^2) + A*B
*c*e)*(c*(a*((A*e)/2 - (B*d)/2) + (A*d*(-a*c)^(1/2))/2) + (B*a*e*(-a*c)^(1/
2))/2))/(a*c^2*d^2 + a^2*c*e^2) - (log(B^2*c*e*x - ((c*(a*((A*e)/2 - (B*d)/
2) - (A*d*(-a*c)^(1/2))/2) - (B*a*e*(-a*c)^(1/2))/2)*(x*(3*A*c^2*e^2 - B*c^
2*d*e) - ((c*(a*((A*e)/2 - (B*d)/2) - (A*d*(-a*c)^(1/2))/2) - (B*a*e*(-a*c)
^(1/2))/2)*(x*(6*a*c^2*e^3 - 2*c^3*d^2*e) + 8*a*c^2*d*e^2))/(a*c^2*d^2 + a^
2*c*e^2) - B*a*c*e^2 + A*c^2*d*e))/(a*c^2*d^2 + a^2*c*e^2) + A*B*c*e)*(c*(a
*((A*e)/2 - (B*d)/2) - (A*d*(-a*c)^(1/2))/2) - (B*a*e*(-a*c)^(1/2))/2))/(a*
c^2*d^2 + a^2*c*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.1162 $\int \frac{A+Bx}{(d+ex)^2(a+cx^2)}\,dx$

Optimal. Leaf size=173

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2-2Acde+Bcd^2\right)}{2\left(ae^2+cd^2\right)^2}+\frac{Bd-Ae}{(d+ex)\left(ae^2+cd^2\right)}-\frac{\log(d+ex)\left(-aBe^2-2Acde+Bcd^2\right)}{\left(ae^2+cd^2\right)^2}+\frac{\sqrt{c}\tan^{-1}\left(\right.}{}$$

Rubi [A] time = 0.17, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2-2Acde+Bcd^2\right)}{2\left(ae^2+cd^2\right)^2}+\frac{Bd-Ae}{(d+ex)\left(ae^2+cd^2\right)}-\frac{\log(d+ex)\left(-aBe^2-2Acde+Bcd^2\right)}{\left(ae^2+cd^2\right)^2}+\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(-aAe^2+2aBde+Acd^2\right)}{\sqrt{a}\left(ae^2+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + c*x^2)),x]
```

```
[Out] (B*d - A*e)/((c*d^2 + a*e^2)*(d + e*x)) + (Sqrt[c]*(A*c*d^2 + 2*a*B*d*e - a
*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*(c*d^2 + a*e^2)^2) - ((B*c*d^
2 - 2*A*c*d*e - a*B*e^2)*Log[d + e*x])/(c*d^2 + a*e^2)^2 + ((B*c*d^2 - 2*A*
c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)}dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)^2} + \frac{e\left(-Bcd^2+2Acde+aBe^2\right)}{\left(cd^2+ae^2\right)^2(d+ex)} + \frac{c\left(Acd^2+2aBde-aAe^2\right.}{\left(cd^2+ae\right.}\right.$$

$$= \frac{Bd-Ae}{\left(cd^2+ae^2\right)(d+ex)} - \frac{\left(Bcd^2-2Acde-aBe^2\right)\log(d+ex)}{\left(cd^2+ae^2\right)^2} + \frac{c\int \frac{Acd^2+2aBde-aAe^2+(\ldots}{a+cx}}{\left(cd^2+\ldots\right.}$$

$$= \frac{Bd-Ae}{\left(cd^2+ae^2\right)(d+ex)} - \frac{\left(Bcd^2-2Acde-aBe^2\right)\log(d+ex)}{\left(cd^2+ae^2\right)^2} + \frac{\left(c\left(Acd^2+2aBde-\ldots\right.\right.}{\left(cd^2+a\ldots\right.}$$

$$= \frac{Bd-Ae}{\left(cd^2+ae^2\right)(d+ex)} + \frac{\sqrt{c}\left(Acd^2+2aBde-aAe^2\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{a}\left(cd^2+ae^2\right)^2} - \frac{\left(Bcd^2-2Acde\ldots\right.}{\left(cd^2\ldots\right.}$$

Mathematica [A] time = 0.18, size = 148, normalized size = 0.86

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2-2Acde+Bcd^2\right)+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{d+ex}+\log(d+ex)\left(2aBe^2+4Acde-2Bcd^2\right)+\frac{2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(-aAe^2+2aBde+Acd^2\right)}{\sqrt{a}}}{2\left(ae^2+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + c*x^2)),x]
```

```
[Out] ((2*(B*d - A*e)*(c*d^2 + a*e^2))/(d + e*x) + (2*Sqrt[c]*(A*c*d^2 + 2*a*B*d*
e - a*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a] + (-2*B*c*d^2 + 4*A*c*d*e
 + 2*a*B*e^2)*Log[d + e*x] + (B*c*d^2 - 2*A*c*d*e - a*B*e^2)*Log[a + c*x^2]
)/(2*(c*d^2 + a*e^2)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + c*x^2)), x]
```

fricas [A] time = 6.94, size = 562, normalized size = 3.25

$$\left[\frac{2Bcd^3-2Acd^2e+2Bade^2-2Aae^3-\left(Acd^3+2Bad^2e-Aade^2+\left(Acd^2e+2Bade^2-Aae^3\right)x\right)\sqrt{-\frac{c}{a}}\log\left(\frac{cx^2-2ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)+\left(Bcd^3-2Acd^2e-Bade^2+\left(Bcd^2e-2Acde^2-Bae^3\right)x\right)\log\left(cx^2+a\right)-2\left(Bcd^3-2Acd^2e-Bade^2+\left(Bcd^2e-2Acde^2-Bae^3\right)x\right)\log\left(ex+d\right)}{2\left(c^2d^5+2acd^3e^2+a^2de^4+\left(c^2d^4e+2acd^2e^3+a^2e^5\right)x\right)}, \frac{2Bcd^3-2Acd^2e+2Bade^2-2Aae^3+2\left(Acd^3+2Bad^2e-Aade^2+\left(Acd^2e+2Bade^2-Aae^3\right)x\right)\sqrt{\frac{c}{a}}\arctan\left(x\sqrt{\frac{c}{a}}\right)+\left(Bcd^3-2Acd^2e-Bade^2+\left(Bcd^2e-2Acde^2-Bae^3\right)x\right)\log\left(cx^2+a\right)-2\left(Bcd^3-2Acd^2e-Bade^2+\left(Bcd^2e-2Acde^2-Bae^3\right)x\right)\log\left(ex+d\right)}{2\left(c^2d^5+2acd^3e^2+a^2de^4+\left(c^2d^4e+2acd^2e^3+a^2e^5\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*B*c*d^3 - 2*A*c*d^2*e + 2*B*a*d*e^2 - 2*A*a*e^3 - (A*c*d^3 + 2*B*a*
d^2*e - A*a*d*e^2 + (A*c*d^2*e + 2*B*a*d*e^2 - A*a*e^3)*x)*sqrt(-c/a)*log((
c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) + (B*c*d^3 - 2*A*c*d^2*e - B*a*d
*e^2 + (B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)*log(c*x^2 + a) - 2*(B*c*d^3 -
 2*A*c*d^2*e - B*a*d*e^2 + (B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)*log(e*x +
 d))/(c^2*d^5 + 2*a*c*d^3*e^2 + a^2*d*e^4 + (c^2*d^4*e + 2*a*c*d^2*e^3 + a^
2*e^5)*x), 1/2*(2*B*c*d^3 - 2*A*c*d^2*e + 2*B*a*d*e^2 - 2*A*a*e^3 + 2*(A*c*
d^3 + 2*B*a*d^2*e - A*a*d*e^2 + (A*c*d^2*e + 2*B*a*d*e^2 - A*a*e^3)*x)*sqrt
(c/a)*arctan(x*sqrt(c/a)) + (B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 + (B*c*d^2*e
 - 2*A*c*d*e^2 - B*a*e^3)*x)*log(c*x^2 + a) - 2*(B*c*d^3 - 2*A*c*d^2*e - B*
```

```
a*d*e^2 + (B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)*log(e*x + d))/(c^2*d^5 + 2
*a*c*d^3*e^2 + a^2*d*e^4 + (c^2*d^4*e + 2*a*c*d^2*e^3 + a^2*e^5)*x)]
```

giac [A] time = 0.16, size = 229, normalized size = 1.32

$$\frac{\left(Ac^2d^2e^2 + 2\,Bacde^3 - Aace^4\right)\arctan\left(\frac{\left(cd - \frac{cd^2}{xe+d} - \frac{ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{ac}}\right)e^{(-2)}}{\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)\sqrt{ac}} + \frac{\left(Bcd^2 - 2\,Acde - Bae^2\right)\log\left(c - \frac{2\,cd}{xe+d} + \frac{cd^2}{(xe+d)^2} + \frac{ae^2}{(xe+d)^2}\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} + \frac{\frac{Bde^2}{xe+d} - \frac{Ae^3}{xe+d}}{cd^2e^2 + ae^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a),x, algorithm="giac")
```

```
[Out] (A*c^2*d^2*e^2 + 2*B*a*c*d*e^3 - A*a*c*e^4)*arctan((c*d - c*d^2/(x*e + d) -
 a*e^2/(x*e + d))*e^(-1)/sqrt(a*c))*e^(-2)/((c^2*d^4 + 2*a*c*d^2*e^2 + a^2*
e^4)*sqrt(a*c)) + 1/2*(B*c*d^2 - 2*A*c*d*e - B*a*e^2)*log(c - 2*c*d/(x*e +
d) + c*d^2/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*
e^4) + (B*d*e^2/(x*e + d) - A*e^3/(x*e + d))/(c*d^2*e^2 + a*e^4)
```

maple [A] time = 0.05, size = 312, normalized size = 1.80

$$-\frac{Aac\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} + \frac{A\,c^2d^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} + \frac{2Bacde\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} - \frac{Acde\ln\left(c\,x^2 + a\right)}{\left(a\,e^2 + c\,d^2\right)^2} + \frac{2Acde\ln(ex + d)}{\left(a\,e^2 + c\,d^2\right)^2} - \frac{Ba\,e^2\ln\left(c\,x^2 + a\right)}{2\left(a\,e^2 + c\,d^2\right)^2} + \frac{Ba\,e^2\ln(ex + d)}{\left(a\,e^2 + c\,d^2\right)^2} + \frac{Bc\,d^2\ln\left(c\,x^2 + a\right)}{2\left(a\,e^2 + c\,d^2\right)^2} - \frac{Bc\,d^2\ln(ex + d)}{\left(a\,e^2 + c\,d^2\right)^2} - \frac{Ae}{\left(a\,e^2 + c\,d^2\right)(ex + d)} + \frac{Bd}{\left(a\,e^2 + c\,d^2\right)(ex + d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+a),x)
```

```
[Out] -c/(a*e^2+c*d^2)^2*ln(c*x^2+a)*A*d*e-1/2/(a*e^2+c*d^2)^2*ln(c*x^2+a)*B*a*e^
2+1/2*c/(a*e^2+c*d^2)^2*ln(c*x^2+a)*B*d^2-c/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arc
tan(1/(a*c)^(1/2)*c*x)*A*a*e^2+c^2/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*
c)^(1/2)*c*x)*A*d^2+2*c/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*
x)*a*B*d*e-1/(a*e^2+c*d^2)/(e*x+d)*A*e+1/(a*e^2+c*d^2)/(e*x+d)*B*d+2/(a*e^2
+c*d^2)^2*ln(e*x+d)*A*c*d*e+1/(a*e^2+c*d^2)^2*ln(e*x+d)*B*a*e^2-1/(a*e^2+c*
d^2)^2*ln(e*x+d)*B*c*d^2
```

maxima [A] time = 1.31, size = 216, normalized size = 1.25

$$\frac{\left(Bcd^2 - 2\,Acde - Bae^2\right)\log\left(cx^2 + a\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} - \frac{\left(Bcd^2 - 2\,Acde - Bae^2\right)\log\left(ex + d\right)}{c^2d^4 + 2\,acd^2e^2 + a^2e^4} + \frac{\left(Ac^2d^2 + 2\,Bacde - Aace^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)\sqrt{ac}} + \frac{Bd - Ae}{cd^3 + ade^2 + \left(cd^2e + ae^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*c*d^2 - 2*A*c*d*e - B*a*e^2)*log(c*x^2 + a)/(c^2*d^4 + 2*a*c*d^2*e^2
 + a^2*e^4) - (B*c*d^2 - 2*A*c*d*e - B*a*e^2)*log(e*x + d)/(c^2*d^4 + 2*a*c
*d^2*e^2 + a^2*e^4) + (A*c^2*d^2 + 2*B*a*c*d*e - A*a*c*e^2)*arctan(c*x/sqrt
(a*c))/((c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4)*sqrt(a*c)) + (B*d - A*e)/(c*d^3
 + a*d*e^2 + (c*d^2*e + a*e^3)*x)
```

mupad [B] time = 3.32, size = 810, normalized size = 4.68

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)*(d + e*x)^2),x)
```

```
[Out] (log(3*B*a^3*e^4 + 3*B*a*c^2*d^4 + A*c^3*d^4*x + A*a^2*e^4*(-a*c)^(1/2) + A
*c^2*d^4*(-a*c)^(1/2) + 14*A*d^2*e^2*(-a*c)^(3/2) + A*a^2*c*e^4*x - 8*B*a^2
*d*e^3*(-a*c)^(1/2) - 3*B*a^2*e^4*x*(-a*c)^(1/2) - 3*B*c^2*d^4*x*(-a*c)^(1/
2) - 10*B*a^2*c*d^2*e^2 + 8*A*d*e^3*x*(-a*c)^(3/2) - 8*A*a*c^2*d^3*e + 8*A*
```

```
a^2*c*d*e^3 + 8*B*a*c*d^3*e*(-a*c)^(1/2) + 8*B*a*c^2*d^3*e*x - 8*B*a^2*c*d*
e^3*x + 8*A*c^2*d^3*e*x*(-a*c)^(1/2) - 14*A*a*c^2*d^2*e^2*x + 10*B*a*c*d^2*
e^2*x*(-a*c)^(1/2))*(c*((B*a*d^2)/2 + (A*d^2*(-a*c)^(1/2))/2 - A*a*d*e) - e
^2*((B*a^2)/2 + (A*a*(-a*c)^(1/2))/2) + B*a*d*e*(-a*c)^(1/2)))/(a^3*e^4 + a
*c^2*d^4 + 2*a^2*c*d^2*e^2) - (log(d + e*x)*(c*(B*d^2 - 2*A*d*e) - B*a*e^2)
)/(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2) - (log(3*B*a^3*e^4 + 8*B*d^3*e*(-a*c)
^(3/2) + 3*B*a*c^2*d^4 + A*c^3*d^4*x - A*a^2*e^4*(-a*c)^(1/2) - A*c^2*d^4*(
-a*c)^(1/2) + A*a^2*c*e^4*x + 8*B*a^2*d*e^3*(-a*c)^(1/2) + 3*B*a^2*e^4*x*(-
a*c)^(1/2) + 3*B*c^2*d^4*x*(-a*c)^(1/2) + 10*B*d^2*e^2*x*(-a*c)^(3/2) - 10*
B*a^2*c*d^2*e^2 - 8*A*a*c^2*d^3*e + 8*A*a^2*c*d*e^3 + 8*B*a*c^2*d^3*e*x - 8
*B*a^2*c*d*e^3*x + 14*A*a*c*d^2*e^2*(-a*c)^(1/2) - 8*A*c^2*d^3*e*x*(-a*c)^(
1/2) - 14*A*a*c^2*d^2*e^2*x + 8*A*a*c*d*e^3*x*(-a*c)^(1/2))*(e^2*((B*a^2)/2
 - (A*a*(-a*c)^(1/2))/2) + c*((A*d^2*(-a*c)^(1/2))/2 - (B*a*d^2)/2 + A*a*d*
e) + B*a*d*e*(-a*c)^(1/2)))/(a^3*e^4 + a*c^2*d^4 + 2*a^2*c*d^2*e^2) - (A*e
- B*d)/((a*e^2 + c*d^2)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.1163 $\int \frac{A+Bx}{(d+ex)^3(a+cx^2)}\,dx$

Optimal. Leaf size=251

$$\frac{Bd-Ae}{2(d+ex)^2\left(ae^2+cd^2\right)}+\frac{-aBe^2-2Acde+Bcd^2}{(d+ex)\left(ae^2+cd^2\right)^2}+\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}\left(ae^2+cd^2\right)^3}+\frac{c\log\left(a\right.}{}$$

Rubi [A] time = 0.32, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {801, 635, 205, 260}

$$\frac{c\log\left(a+cx^2\right)\left(aAe^3-3aBde^2-3Acd^2e+Bcd^3\right)}{2\left(ae^2+cd^2\right)^3}+\frac{Bd-Ae}{2(d+ex)^2\left(ae^2+cd^2\right)}+\frac{-aBe^2-2Acde+Bcd^2}{(d+ex)\left(ae^2+cd^2\right)^2}-\frac{c\log(d+ex)\left(aAe^3-3aBde^2-3Acd^2e+Bcd^3\right)}{\left(ae^2+cd^2\right)^3}+\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*(c*d^2 + a*e^2)*(d + e*x)^2) + (B*c*d^2 - 2*A*c*d*e - a*B*e^
2)/((c*d^2 + a*e^2)^2*(d + e*x)) + (Sqrt[c]*(A*c*d*(c*d^2 - 3*a*e^2) + a*B*
e*(3*c*d^2 - a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*(c*d^2 + a*e^2)^
3) - (c*(B*c*d^3 - 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[d + e*x])/(c*d^
2 + a*e^2)^3 + (c*(B*c*d^3 - 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[a + c
*x^2])/(2*(c*d^2 + a*e^2)^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a+cx^2\right)}dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)^3} + \frac{e\left(-Bcd^2+2Acde+aBe^2\right)}{\left(cd^2+ae^2\right)^2(d+ex)^2} + \frac{ce\left(-Bcd^3+3Acd^2e+3\right.}{\left(cd^2+ae^2\right)^3(d}\right.$$

$$= \frac{Bd-Ae}{2\left(cd^2+ae^2\right)(d+ex)^2} + \frac{Bcd^2-2Acde-aBe^2}{\left(cd^2+ae^2\right)^2(d+ex)} - \frac{c\left(Bcd^3-3Acd^2e-3aBde^2+aA\right.}{\left(cd^2+ae^2\right)^3}$$

$$= \frac{Bd-Ae}{2\left(cd^2+ae^2\right)(d+ex)^2} + \frac{Bcd^2-2Acde-aBe^2}{\left(cd^2+ae^2\right)^2(d+ex)} - \frac{c\left(Bcd^3-3Acd^2e-3aBde^2+aA\right.}{\left(cd^2+ae^2\right)^3}$$

$$= \frac{Bd-Ae}{2\left(cd^2+ae^2\right)(d+ex)^2} + \frac{Bcd^2-2Acde-aBe^2}{\left(cd^2+ae^2\right)^2(d+ex)} + \frac{\sqrt{c}\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3c\right.\right.}{\sqrt{a}\left(cd^2+ae\right.}$$

Mathematica [A] time = 0.36, size = 223, normalized size = 0.89

$$\frac{\frac{\left(ae^2+cd^2\right)\left(B\left(cd^2(3d+2ex)-ae^2(d+2ex)\right)-Ae\left(ae^2+cd(5d+4ex)\right)\right)}{(d+ex)^2}+\frac{2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}}+c\log\left(a+cx^2\right)\left(aAe^3-3aBde^2-3Acd^2e+Bcd^3\right)-2c\log(d+ex)\left(aAe^3-3aBde^2-3Acd^2e+Bcd^3\right)}{2\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a + c*x^2)),x]
```

```
[Out] (((c*d^2 + a*e^2)*(B*(-(a*e^2*(d + 2*e*x)) + c*d^2*(3*d + 2*e*x)) - A*e*(a*
e^2 + c*d*(5*d + 4*e*x))))/(d + e*x)^2 + (2*Sqrt[c]*(A*c*d*(c*d^2 - 3*a*e^2
) + a*B*e*(3*c*d^2 - a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a] - 2*c*(B*
c*d^3 - 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[d + e*x] + c*(B*c*d^3 - 3*
A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^3\left(a+cx^2\right)}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a + c*x^2)), x]
```

fricas [B] time = 35.12, size = 1350, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(3*B*c^2*d^5 - 5*A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 - B*a
^2*d*e^4 - A*a^2*e^5 - (A*c^2*d^5 + 3*B*a*c*d^4*e - 3*A*a*c*d^3*e^2 - B*a^2
*d^2*e^3 + (A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 - 3*A*a*c*d*e^4 - B*a^2*e^5)*x^
2 + 2*(A*c^2*d^4*e + 3*B*a*c*d^3*e^2 - 3*A*a*c*d^2*e^3 - B*a^2*d*e^4)*x)*sq
rt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) + 2*(B*c^2*d^4*e -
 2*A*c^2*d^3*e^2 - 2*A*a*c*d*e^4 - B*a^2*e^5)*x + (B*c^2*d^5 - 3*A*c^2*d^4*
e - 3*B*a*c*d^3*e^2 + A*a*c*d^2*e^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*
B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 2*(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d
^2*e^3 + A*a*c*d*e^4)*x)*log(c*x^2 + a) - 2*(B*c^2*d^5 - 3*A*c^2*d^4*e - 3*
B*a*c*d^3*e^2 + A*a*c*d^2*e^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*B*a*c*
d*e^4 + A*a*c*e^5)*x^2 + 2*(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d^2*e^3
```

```
 + A*a*c*d*e^4)*x)*log(e*x + d))/(c^3*d^8 + 3*a*c^2*d^6*e^2 + 3*a^2*c*d^4*e
^4 + a^3*d^2*e^6 + (c^3*d^6*e^2 + 3*a*c^2*d^4*e^4 + 3*a^2*c*d^2*e^6 + a^3*e
^8)*x^2 + 2*(c^3*d^7*e + 3*a*c^2*d^5*e^3 + 3*a^2*c*d^3*e^5 + a^3*d*e^7)*x),
 1/2*(3*B*c^2*d^5 - 5*A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 - B*a
^2*d*e^4 - A*a^2*e^5 + 2*(A*c^2*d^5 + 3*B*a*c*d^4*e - 3*A*a*c*d^3*e^2 - B*a
^2*d^2*e^3 + (A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 - 3*A*a*c*d*e^4 - B*a^2*e^5)*
x^2 + 2*(A*c^2*d^4*e + 3*B*a*c*d^3*e^2 - 3*A*a*c*d^2*e^3 - B*a^2*d*e^4)*x)*
sqrt(c/a)*arctan(x*sqrt(c/a)) + 2*(B*c^2*d^4*e - 2*A*c^2*d^3*e^2 - 2*A*a*c*
d*e^4 - B*a^2*e^5)*x + (B*c^2*d^5 - 3*A*c^2*d^4*e - 3*B*a*c*d^3*e^2 + A*a*c
*d^2*e^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*B*a*c*d*e^4 + A*a*c*e^5)*x^
2 + 2*(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d^2*e^3 + A*a*c*d*e^4)*x)*lo
g(c*x^2 + a) - 2*(B*c^2*d^5 - 3*A*c^2*d^4*e - 3*B*a*c*d^3*e^2 + A*a*c*d^2*e
^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 2*
(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d^2*e^3 + A*a*c*d*e^4)*x)*log(e*x
+ d))/(c^3*d^8 + 3*a*c^2*d^6*e^2 + 3*a^2*c*d^4*e^4 + a^3*d^2*e^6 + (c^3*d^6
*e^2 + 3*a*c^2*d^4*e^4 + 3*a^2*c*d^2*e^6 + a^3*e^8)*x^2 + 2*(c^3*d^7*e + 3*
a*c^2*d^5*e^3 + 3*a^2*c*d^3*e^5 + a^3*d*e^7)*x)]
```

giac [A] time = 0.17, size = 383, normalized size = 1.53

$$\frac{\left(Bc^2d^3 - 3\,Ac^2d^2e - 3\,Bacde^2 + Aace^3\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(Bc^2d^3e - 3\,Ac^2d^2e^2 - 3\,Bacde^3 + Aace^4\right)\log\left(|xe + d|\right)}{c^3d^6e + 3\,ac^2d^4e^3 + 3\,a^2cd^2e^5 + a^3e^7} + \frac{\left(Ac^3d^3 + 3\,Bac^2d^2e - 3\,Aac^2de^2 - Ba^2ce^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)\sqrt{ac}} + \frac{3\,Bc^2d^5 - 5\,Ac^2d^4e + 2\,Bacd^3e^2 - 6\,Aacd^2e^3 - Ba^2de^4 - Aa^2e^5 + 2\left(Bc^2d^4e - 2\,Ac^2d^3e^2 - 2\,Aacde^4 - Ba^2e^5\right)x}{2\left(cd^2 + ae^2\right)^3\left(xe + d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c^2*d^3 - 3*A*c^2*d^2*e - 3*B*a*c*d*e^2 + A*a*c*e^3)*log(c*x^2 + a)/
(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) - (B*c^2*d^3*e - 3*
A*c^2*d^2*e^2 - 3*B*a*c*d*e^3 + A*a*c*e^4)*log(abs(x*e + d))/(c^3*d^6*e + 3
*a*c^2*d^4*e^3 + 3*a^2*c*d^2*e^5 + a^3*e^7) + (A*c^3*d^3 + 3*B*a*c^2*d^2*e
- 3*A*a*c^2*d*e^2 - B*a^2*c*e^3)*arctan(c*x/sqrt(a*c))/((c^3*d^6 + 3*a*c^2*
d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6)*sqrt(a*c)) + 1/2*(3*B*c^2*d^5 - 5*A*c^
2*d^4*e + 2*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 - B*a^2*d*e^4 - A*a^2*e^5 + 2*(
B*c^2*d^4*e - 2*A*c^2*d^3*e^2 - 2*A*a*c*d*e^4 - B*a^2*e^5)*x)/((c*d^2 + a*e
^2)^3*(x*e + d)^2)
```

maple [B] time = 0.06, size = 509, normalized size = 2.03

$$-\frac{3Aa\,c^2d\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}} + \frac{A\,c^3d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}} - \frac{B\,a^2c\,e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}} + \frac{3Ba\,c^2d^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}} + \frac{Aac\,e^3\ln\left(c\,x^2+a\right)}{2\left(a\,e^2+c\,d^2\right)^3} - \frac{Aac\,e^3\ln\left(ex+d\right)}{\left(a\,e^2+c\,d^2\right)^3} - \frac{3A\,c^2d^2e\ln\left(c\,x^2+a\right)}{2\left(a\,e^2+c\,d^2\right)^3} + \frac{3A\,c^2d^2e\ln\left(ex+d\right)}{\left(a\,e^2+c\,d^2\right)^3} - \frac{3Bacd\,e^2\ln\left(c\,x^2+a\right)}{2\left(a\,e^2+c\,d^2\right)^3} + \frac{3Bacd\,e^2\ln\left(ex+d\right)}{\left(a\,e^2+c\,d^2\right)^3} + \frac{B\,c^2d^3\ln\left(c\,x^2+a\right)}{2\left(a\,e^2+c\,d^2\right)^3} - \frac{B\,c^2d^3\ln\left(ex+d\right)}{\left(a\,e^2+c\,d^2\right)^3} - \frac{2Acde}{\left(a\,e^2+c\,d^2\right)^2\left(ex+d\right)} - \frac{Ba\,e^2}{\left(a\,e^2+c\,d^2\right)^2\left(ex+d\right)} + \frac{Bc\,d^2}{\left(a\,e^2+c\,d^2\right)^2\left(ex+d\right)} - \frac{Ae}{2\left(a\,e^2+c\,d^2\right)\left(ex+d\right)^2} + \frac{Bd}{2\left(a\,e^2+c\,d^2\right)\left(ex+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+a),x)
```

```
[Out] 1/2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*a*A*e^3-3/2*c^2/(a*e^2+c*d^2)^3*ln(c*x^2+
a)*A*d^2*e-3/2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*a*B*d*e^2+1/2*c^2/(a*e^2+c*d^2
)^3*ln(c*x^2+a)*B*d^3-3*c^2/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*a*d*e^2+c^3/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
A*d^3-c/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a^2*e^3+3*c
^2/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a*d^2*e-1/2/(a*e
^2+c*d^2)/(e*x+d)^2*A*e+1/2/(a*e^2+c*d^2)/(e*x+d)^2*B*d-2/(a*e^2+c*d^2)^2/(
e*x+d)*A*c*d*e-1/(a*e^2+c*d^2)^2/(e*x+d)*B*a*e^2+1/(a*e^2+c*d^2)^2/(e*x+d)*
B*c*d^2-c/(a*e^2+c*d^2)^3*ln(e*x+d)*a*A*e^3+3*c^2/(a*e^2+c*d^2)^3*ln(e*x+d)
*A*d^2*e+3*c/(a*e^2+c*d^2)^3*ln(e*x+d)*a*B*d*e^2-c^2/(a*e^2+c*d^2)^3*ln(e*x
+d)*B*d^3
```

maxima [A] time = 1.35, size = 419, normalized size = 1.67

$$\frac{\left(Bc^2d^3 - 3\,Ac^2d^2e - 3\,Bacde^2 + Aace^3\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(Bc^2d^3 - 3\,Ac^2d^2e - 3\,Bacde^2 + Aace^3\right)\log\left(ex + d\right)}{c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6} + \frac{\left(Ac^3d^3 + 3\,Bac^2d^2e - 3\,Aac^2de^2 - Ba^2ce^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)\sqrt{ac}} + \frac{3\,Bcd^3 - 5\,Acd^2e - Bade^2 - Aae^3 + 2\left(Bcd^2e - 2\,Acde^2 - Bae^3\right)x}{2\left(c^2d^6 + 2\,acd^4e^2 + a^2d^2e^4 + \left(c^2d^4e^2 + 2\,acd^2e^4 + a^2e^6\right)x^2 + 2\left(c^2d^5e + 2\,acd^3e^3 + a^2de^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*c^2*d^3 - 3*A*c^2*d^2*e - 3*B*a*c*d*e^2 + A*a*c*e^3)*log(c*x^2 + a)/
(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) - (B*c^2*d^3 - 3*A*
c^2*d^2*e - 3*B*a*c*d*e^2 + A*a*c*e^3)*log(e*x + d)/(c^3*d^6 + 3*a*c^2*d^4*
e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) + (A*c^3*d^3 + 3*B*a*c^2*d^2*e - 3*A*a*c^2
*d*e^2 - B*a^2*c*e^3)*arctan(c*x/sqrt(a*c))/((c^3*d^6 + 3*a*c^2*d^4*e^2 + 3
*a^2*c*d^2*e^4 + a^3*e^6)*sqrt(a*c)) + 1/2*(3*B*c*d^3 - 5*A*c*d^2*e - B*a*d
*e^2 - A*a*e^3 + 2*(B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)/(c^2*d^6 + 2*a*c*
d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 + 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^
2*d^5*e + 2*a*c*d^3*e^3 + a^2*d*e^5)*x)
```

mupad [B] time = 3.64, size = 1680, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)*(d + e*x)^3),x)
```

```
[Out] (log(B^2*a^7*e^10*(-a*c)^(1/2) - A^2*c^5*d^10*(-a*c)^(3/2) - 9*A^2*a^5*e^10
*(-a*c)^(3/2) + 9*B^2*c^3*d^10*(-a*c)^(5/2) + A^2*a*c^7*d^10*x + B^2*a^7*c*
e^10*x + 6*A^2*a*d^4*e^6*(-a*c)^(7/2) + 6*B^2*a*d^6*e^4*(-a*c)^(7/2) - 106*
A^2*c*d^6*e^4*(-a*c)^(7/2) + 27*B^2*c*d^8*e^2*(-a*c)^(7/2) + 9*A^2*a^6*c^2*
e^10*x + 9*B^2*a^2*c^6*d^10*x - 27*A^2*a^3*d^2*e^8*(-a*c)^(5/2) + 106*B^2*a
^3*d^4*e^6*(-a*c)^(5/2) - 77*B^2*a^5*d^2*e^8*(-a*c)^(3/2) + 77*A^2*c^3*d^8*
e^2*(-a*c)^(5/2) - 224*A*B*a*d^5*e^5*(-a*c)^(7/2) + 48*A*B*a^5*d*e^9*(-a*c)
^(3/2) - 64*A*B*c*d^7*e^3*(-a*c)^(7/2) - 48*A*B*c^3*d^9*e*(-a*c)^(5/2) + 77
*A^2*a^2*c^6*d^8*e^2*x + 106*A^2*a^3*c^5*d^6*e^4*x - 6*A^2*a^4*c^4*d^4*e^6*
x - 27*A^2*a^5*c^3*d^2*e^8*x - 27*B^2*a^3*c^5*d^8*e^2*x - 6*B^2*a^4*c^4*d^6
*e^4*x + 106*B^2*a^5*c^3*d^4*e^6*x + 77*B^2*a^6*c^2*d^2*e^8*x + 64*A*B*a^3*
d^3*e^7*(-a*c)^(5/2) - 48*A*B*a^2*c^6*d^9*e*x - 48*A*B*a^6*c^2*d*e^9*x + 64
*A*B*a^3*c^5*d^7*e^3*x + 224*A*B*a^4*c^4*d^5*e^5*x + 64*A*B*a^5*c^3*d^3*e^7
*x)*(a^2*e^3*((A*c)/2 - (B*(-a*c)^(1/2))/2) - e^2*((3*B*a^2*c*d)/2 + (3*A*a
*c*d*(-a*c)^(1/2))/2) - a*e*((3*A*c^2*d^2)/2 - (3*B*c*d^2*(-a*c)^(1/2))/2)
+ (B*a*c^2*d^3)/2 + (A*c^2*d^3*(-a*c)^(1/2))/2))/(a^4*e^6 + a*c^3*d^6 + 3*a
^3*c*d^2*e^4 + 3*a^2*c^2*d^4*e^2) - (log(d + e*x)*(c^2*(B*d^3 - 3*A*d^2*e)
+ a*c*(A*e^3 - 3*B*d*e^2)))/(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*
d^2*e^4) - (log(9*A^2*a^5*e^10*(-a*c)^(3/2) + A^2*c^5*d^10*(-a*c)^(3/2) - B
^2*a^7*e^10*(-a*c)^(1/2) - 9*B^2*c^3*d^10*(-a*c)^(5/2) + A^2*a*c^7*d^10*x +
 B^2*a^7*c*e^10*x - 6*A^2*a*d^4*e^6*(-a*c)^(7/2) - 6*B^2*a*d^6*e^4*(-a*c)^(
7/2) + 106*A^2*c*d^6*e^4*(-a*c)^(7/2) - 27*B^2*c*d^8*e^2*(-a*c)^(7/2) + 9*A
^2*a^6*c^2*e^10*x + 9*B^2*a^2*c^6*d^10*x + 27*A^2*a^3*d^2*e^8*(-a*c)^(5/2)
- 106*B^2*a^3*d^4*e^6*(-a*c)^(5/2) + 77*B^2*a^5*d^2*e^8*(-a*c)^(3/2) - 77*A
^2*c^3*d^8*e^2*(-a*c)^(5/2) + 224*A*B*a*d^5*e^5*(-a*c)^(7/2) - 48*A*B*a^5*d
*e^9*(-a*c)^(3/2) + 64*A*B*c*d^7*e^3*(-a*c)^(7/2) + 48*A*B*c^3*d^9*e*(-a*c)
^(5/2) + 77*A^2*a^2*c^6*d^8*e^2*x + 106*A^2*a^3*c^5*d^6*e^4*x - 6*A^2*a^4*c
^4*d^4*e^6*x - 27*A^2*a^5*c^3*d^2*e^8*x - 27*B^2*a^3*c^5*d^8*e^2*x - 6*B^2*
a^4*c^4*d^6*e^4*x + 106*B^2*a^5*c^3*d^4*e^6*x + 77*B^2*a^6*c^2*d^2*e^8*x -
64*A*B*a^3*d^3*e^7*(-a*c)^(5/2) - 48*A*B*a^2*c^6*d^9*e*x - 48*A*B*a^6*c^2*d
*e^9*x + 64*A*B*a^3*c^5*d^7*e^3*x + 224*A*B*a^4*c^4*d^5*e^5*x + 64*A*B*a^5*
c^3*d^3*e^7*x)*(e^2*((3*B*a^2*c*d)/2 - (3*A*a*c*d*(-a*c)^(1/2))/2) - a^2*e^
3*((A*c)/2 + (B*(-a*c)^(1/2))/2) + a*e*((3*A*c^2*d^2)/2 + (3*B*c*d^2*(-a*c)
^(1/2))/2) - (B*a*c^2*d^3)/2 + (A*c^2*d^3*(-a*c)^(1/2))/2))/(a^4*e^6 + a*c^
3*d^6 + 3*a^3*c*d^2*e^4 + 3*a^2*c^2*d^4*e^2) - ((A*a*e^3 - 3*B*c*d^3 + B*a*
d*e^2 + 5*A*c*d^2*e)/(2*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)) + (x*(B*a*e^3
+ 2*A*c*d*e^2 - B*c*d^2*e))/(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2))/(d^2 + e^2
*x^2 + 2*d*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.1164 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=297

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)+5aBe\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}c^{7/2}}-\frac{e^2x\left(3Acd\left(2cd^2-5ae^2\right)-5a\right.}{2ac^3}$$

Rubi [A] time = 0.34, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {819, 801, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)+5aBe\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}c^{7/2}}-\frac{e^3x^2\left(-aAe^2-5aBde+2Acd^2\right)}{ac^2}+\frac{e^2\log\left(a+cx^2\right)\left(-aAe^3-5aBde^2+5Acd^2e+5Bcd^3\right)}{c^3}-\frac{e^2x\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)}{2ac^3}-\frac{e^4x^3(3Acd-5aBe)}{6ac^2}-\frac{(d+ex)^4(a(Ae+Bd)-x(Acd-aBe))}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x]
```

```
[Out] -(e^2*(3*A*c*d*(2*c*d^2 - 5*a*e^2) - 5*a*B*e*(6*c*d^2 - a*e^2))*x)/(2*a*c^3
) - (e^3*(2*A*c*d^2 - 5*a*B*d*e - a*A*e^2)*x^2)/(a*c^2) - (e^4*(3*A*c*d - 5
*a*B*e)*x^3)/(6*a*c^2) - ((d + e*x)^4*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/
(2*a*c*(a + c*x^2)) + ((A*c*d*(c^2*d^4 + 10*a*c*d^2*e^2 - 15*a^2*e^4) + 5*a
*B*e*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a
^(3/2)*c^(7/2)) + (e^2*(5*B*c*d^3 + 5*A*c*d^2*e - 5*a*B*d*e^2 - a*A*e^3)*Lo
g[a + c*x^2])/c^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)}+\frac{\int \frac{(d+ex)^3\left(Acd^2+ae(5Bd+4Ae)-e(3Acd-5aBe)x\right)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)}+\frac{\int \left(-\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)}{c^2}-\frac{4e^3(2A\cdots}{\cdots}\right.}{\cdots}$$

$$= -\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)x}{2ac^3}-\frac{e^3\left(2Acd^2-5aBde-aAe^2\right)x^2}{ac^2}-\frac{e^4\cdots}{\cdots}$$

$$= -\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)x}{2ac^3}-\frac{e^3\left(2Acd^2-5aBde-aAe^2\right)x^2}{ac^2}-\frac{e^4\cdots}{\cdots}$$

$$= -\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)x}{2ac^3}-\frac{e^3\left(2Acd^2-5aBde-aAe^2\right)x^2}{ac^2}-\frac{e^4\cdots}{\cdots}$$

Mathematica [A] time = 0.18, size = 307, normalized size = 1.03

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)+5aBe\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}c^{7/2}}+\frac{-a^3e^4(Ae+5Bd+Bex)+5a^2cde^2(Ae(2d+ex)+2Bd(d+ex))-ac^2d^3(5Ae(d+2ex)+Bd(d+5ex))+Ac^3d^5x}{2ac^3\left(a+cx^2\right)}+\frac{e^3x\left(-2aBe^2+5Acde+10Bcd^2\right)}{c^3}+\frac{e^2\log\left(a+cx^2\right)\left(-aAe^3-5aBde^2+5Acd^2e+5Bcd^3\right)}{c^3}+\frac{e^4x^2(Ae+5Bd)}{2c^2}+\frac{Be^5x^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x]
```

```
[Out] (e^3*(10*B*c*d^2 + 5*A*c*d*e - 2*a*B*e^2)*x)/c^3 + (e^4*(5*B*d + A*e)*x^2)/
(2*c^2) + (B*e^5*x^3)/(3*c^2) + (A*c^3*d^5*x - a^3*e^4*(5*B*d + A*e + B*e*x
) + 5*a^2*c*d*e^2*(2*B*d*(d + e*x) + A*e*(2*d + e*x)) - a*c^2*d^3*(5*A*e*(d
 + 2*e*x) + B*d*(d + 5*e*x)))/(2*a*c^3*(a + c*x^2)) + ((A*c*d*(c^2*d^4 + 10
*a*c*d^2*e^2 - 15*a^2*e^4) + 5*a*B*e*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*A
rcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(7/2)) + (e^2*(5*B*c*d^3 + 5*A*c*d
^2*e - 5*a*B*d*e^2 - a*A*e^3)*Log[a + c*x^2])/c^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2, x]
```

fricas [B] time = 0.43, size = 1190, normalized size = 4.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/12*(4*B*a^2*c^3*e^5*x^5 - 6*B*a^2*c^3*d^5 - 30*A*a^2*c^3*d^4*e + 60*B*a^
3*c^2*d^3*e^2 + 60*A*a^3*c^2*d^2*e^3 - 30*B*a^4*c*d*e^4 - 6*A*a^4*c*e^5 + 6
*(5*B*a^2*c^3*d*e^4 + A*a^2*c^3*e^5)*x^4 + 20*(6*B*a^2*c^3*d^2*e^3 + 3*A*a^
```

```
2*c^3*d*e^4 - B*a^3*c^2*e^5)*x^3 + 6*(5*B*a^3*c^2*d*e^4 + A*a^3*c^2*e^5)*x^
2 - 3*(A*a*c^3*d^5 + 5*B*a^2*c^2*d^4*e + 10*A*a^2*c^2*d^3*e^2 - 30*B*a^3*c*
d^2*e^3 - 15*A*a^3*c*d*e^4 + 5*B*a^4*e^5 + (A*c^4*d^5 + 5*B*a*c^3*d^4*e + 1
0*A*a*c^3*d^3*e^2 - 30*B*a^2*c^2*d^2*e^3 - 15*A*a^2*c^2*d*e^4 + 5*B*a^3*c*e
^5)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 6*(A*a*
c^4*d^5 - 5*B*a^2*c^3*d^4*e - 10*A*a^2*c^3*d^3*e^2 + 30*B*a^3*c^2*d^2*e^3 +
 15*A*a^3*c^2*d*e^4 - 5*B*a^4*c*e^5)*x + 12*(5*B*a^3*c^2*d^3*e^2 + 5*A*a^3*
c^2*d^2*e^3 - 5*B*a^4*c*d*e^4 - A*a^4*c*e^5 + (5*B*a^2*c^3*d^3*e^2 + 5*A*a^
2*c^3*d^2*e^3 - 5*B*a^3*c^2*d*e^4 - A*a^3*c^2*e^5)*x^2)*log(c*x^2 + a))/(a^
2*c^5*x^2 + a^3*c^4), 1/6*(2*B*a^2*c^3*e^5*x^5 - 3*B*a^2*c^3*d^5 - 15*A*a^2
*c^3*d^4*e + 30*B*a^3*c^2*d^3*e^2 + 30*A*a^3*c^2*d^2*e^3 - 15*B*a^4*c*d*e^4
 - 3*A*a^4*c*e^5 + 3*(5*B*a^2*c^3*d*e^4 + A*a^2*c^3*e^5)*x^4 + 10*(6*B*a^2*
c^3*d^2*e^3 + 3*A*a^2*c^3*d*e^4 - B*a^3*c^2*e^5)*x^3 + 3*(5*B*a^3*c^2*d*e^4
 + A*a^3*c^2*e^5)*x^2 + 3*(A*a*c^3*d^5 + 5*B*a^2*c^2*d^4*e + 10*A*a^2*c^2*d
^3*e^2 - 30*B*a^3*c*d^2*e^3 - 15*A*a^3*c*d*e^4 + 5*B*a^4*e^5 + (A*c^4*d^5 +
 5*B*a*c^3*d^4*e + 10*A*a*c^3*d^3*e^2 - 30*B*a^2*c^2*d^2*e^3 - 15*A*a^2*c^2
*d*e^4 + 5*B*a^3*c*e^5)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 3*(A*a*c^4*d
^5 - 5*B*a^2*c^3*d^4*e - 10*A*a^2*c^3*d^3*e^2 + 30*B*a^3*c^2*d^2*e^3 + 15*A
*a^3*c^2*d*e^4 - 5*B*a^4*c*e^5)*x + 6*(5*B*a^3*c^2*d^3*e^2 + 5*A*a^3*c^2*d^
2*e^3 - 5*B*a^4*c*d*e^4 - A*a^4*c*e^5 + (5*B*a^2*c^3*d^3*e^2 + 5*A*a^2*c^3*
d^2*e^3 - 5*B*a^3*c^2*d*e^4 - A*a^3*c^2*e^5)*x^2)*log(c*x^2 + a))/(a^2*c^5*
x^2 + a^3*c^4)]
```

giac [**A**] time = 0.16, size = 347, normalized size = 1.17

$$\frac{\left(5\,Bcd^3e^2+5\,Acd^2e^3-5\,Bade^4-Aae^5\right)\log\left(cx^2+a\right)}{c^3}+\frac{\left(Ac^3d^5+5\,Bac^2d^4e+10\,Aac^2d^3e^2-30\,Ba^2cd^2e^3-15\,Aa^2cde^4+5\,Ba^3e^5\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac^3}-\frac{Bac^2d^5+5\,Aac^2d^4e-10\,Ba^2cd^3e^2-10\,Aa^2cd^2e^3+5\,Ba^3de^4+Aa^3e^5-\left(Ac^3d^5-5\,Bac^2d^4e-10\,Aac^2d^3e^2+10\,Ba^2cd^2e^3+5\,Aa^2cde^4-Ba^3e^5\right)x}{2\left(cx^2+a\right)ac^3}+\frac{2\,Bc^4x^3e^5+15\,Bc^4dx^2e^4+60\,Bc^4d^2xe^3+3\,Ac^4x^2e^5+30\,Ac^4dxe^4-12\,Bac^3xe^5}{6\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] (5*B*c*d^3*e^2 + 5*A*c*d^2*e^3 - 5*B*a*d*e^4 - A*a*e^5)*log(c*x^2 + a)/c^3
+ 1/2*(A*c^3*d^5 + 5*B*a*c^2*d^4*e + 10*A*a*c^2*d^3*e^2 - 30*B*a^2*c*d^2*e^
3 - 15*A*a^2*c*d*e^4 + 5*B*a^3*e^5)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c^3)
 - 1/2*(B*a*c^2*d^5 + 5*A*a*c^2*d^4*e - 10*B*a^2*c*d^3*e^2 - 10*A*a^2*c*d^2
*e^3 + 5*B*a^3*d*e^4 + A*a^3*e^5 - (A*c^3*d^5 - 5*B*a*c^2*d^4*e - 10*A*a*c^
2*d^3*e^2 + 10*B*a^2*c*d^2*e^3 + 5*A*a^2*c*d*e^4 - B*a^3*e^5)*x)/((c*x^2 +
a)*a*c^3) + 1/6*(2*B*c^4*x^3*e^5 + 15*B*c^4*d*x^2*e^4 + 60*B*c^4*d^2*x*e^3
+ 3*A*c^4*x^2*e^5 + 30*A*c^4*d*x*e^4 - 12*B*a*c^3*x*e^5)/c^6
```

maple [**A**] time = 0.06, size = 553, normalized size = 1.86

$$\frac{Be^5x^3}{3c^2}+\frac{5Aade^4x}{2\left(cx^2+a\right)c^2}-\frac{15Aade^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c^2}+\frac{Ad^5x}{2\left(cx^2+a\right)a}+\frac{Ad^5\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,a}-\frac{5Ad^3e^2x}{\left(cx^2+a\right)c}+\frac{5Ad^3e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{Ae^5x^2}{2c^2}-\frac{Ba^2e^5x}{2\left(cx^2+a\right)c^3}+\frac{5Ba^2e^5\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c^3}+\frac{5Bad^2e^3x}{\left(cx^2+a\right)c^2}-\frac{15Bad^2e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}-\frac{5Bd^4ex}{2\left(cx^2+a\right)c}+\frac{5Bd^4e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c}+\frac{5Bde^4x^2}{2c^2}-\frac{Aa^2e^5}{2\left(cx^2+a\right)c^3}+\frac{5Aad^2e^3}{\left(cx^2+a\right)c^2}-\frac{Aae^5\ln\left(cx^2+a\right)}{c^3}-\frac{5Ad^4e}{2\left(cx^2+a\right)c}+\frac{5Ad^2e^3\ln\left(cx^2+a\right)}{c^2}+\frac{5Ade^4x}{c^2}-\frac{5Ba^2de^4}{2\left(cx^2+a\right)c^3}+\frac{5Bad^3e^2}{\left(cx^2+a\right)c^2}-\frac{5Bade^4\ln\left(cx^2+a\right)}{c^3}-\frac{2Bae^5x}{c^3}-\frac{Bd^5}{2\left(cx^2+a\right)c}+\frac{5Bd^3e^2\ln\left(cx^2+a\right)}{c^2}+\frac{10Bd^2e^3x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x)
```

```
[Out] 1/2*e^5/c^2*A*x^2-1/2/c^3/(c*x^2+a)*A*a^2*e^5-5/2/c/(c*x^2+a)*A*d^4*e-1/2/c
/(c*x^2+a)*B*d^5+1/3*e^5/c^2*B*x^3+5/c^2/(c*x^2+a)*a*x*B*d^2*e^3-1/c^3*a*ln
(c*x^2+a)*A*e^5+5/c^2*ln(c*x^2+a)*A*d^2*e^3-15/c^2*a/(a*c)^(1/2)*arctan(1/(
a*c)^(1/2)*c*x)*B*d^2*e^3+5/2/c^2/(c*x^2+a)*a*x*A*d*e^4-15/2/c^2*a/(a*c)^(1
/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d*e^4+5/c^2/(c*x^2+a)*A*d^2*a*e^3-5/c/(c*x^
2+a)*x*A*d^3*e^2+10*e^3/c^2*B*x*d^2-2*e^5/c^3*B*x*a+5/2*e^4/c^2*B*x^2*d+5*e
^4/c^2*A*x*d+1/2/(c*x^2+a)/a*x*A*d^5+5/c^2*ln(c*x^2+a)*B*d^3*e^2+1/2/a/(a*c
)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^5+5/2/c^3*a^2/(a*c)^(1/2)*arctan(1/(a
*c)^(1/2)*c*x)*B*e^5+5/2/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^4*e-1/
2/c^3/(c*x^2+a)*a^2*x*B*e^5-5/2/c/(c*x^2+a)*x*B*d^4*e-5/2/c^3/(c*x^2+a)*B*a
^2*d*e^4+5/c^2/(c*x^2+a)*B*d^3*a*e^2-5/c^3*a*ln(c*x^2+a)*B*d*e^4+5/c/(a*c)^
(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^3*e^2
```

maxima [A] time = 1.34, size = 356, normalized size = 1.20

$$-\frac{Bac^2d^5 + 5\,Aac^2d^4e - 10\,Ba^2cd^3e^2 - 10\,Aa^2cd^2e^3 + 5\,Ba^3de^4 + Aa^3e^5 - \left(Ac^3d^5 - 5\,Bac^2d^4e - 10\,Aac^2d^3e^2 + 10\,Ba^2cd^2e^3 + 5\,Aa^2cde^4 - Ba^3e^5\right)x}{2\left(ac^4x^2 + a^2c^3\right)} + \frac{\left(5\,Bcd^3e^2 + 5\,Acd^2e^3 - 5\,Bade^4 - Aae^5\right)\log\left(cx^2 + a\right)}{c^3} + \frac{2\,Bce^5x^3 + 3\left(5\,Bcde^4 + Ace^5\right)x^2 + 6\left(10\,Bcd^2e^3 + 5\,Acde^4 - 2\,Bae^5\right)x}{6\,c^3} + \frac{\left(Ac^3d^5 + 5\,Bac^2d^4e + 10\,Aac^2d^3e^2 - 30\,Ba^2cd^2e^3 - 15\,Aa^2cde^4 + 5\,Ba^3e^5\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*a*c^2*d^5 + 5*A*a*c^2*d^4*e - 10*B*a^2*c*d^3*e^2 - 10*A*a^2*c*d^2*e
^3 + 5*B*a^3*d*e^4 + A*a^3*e^5 - (A*c^3*d^5 - 5*B*a*c^2*d^4*e - 10*A*a*c^2*
d^3*e^2 + 10*B*a^2*c*d^2*e^3 + 5*A*a^2*c*d*e^4 - B*a^3*e^5)*x)/(a*c^4*x^2 +
 a^2*c^3) + (5*B*c*d^3*e^2 + 5*A*c*d^2*e^3 - 5*B*a*d*e^4 - A*a*e^5)*log(c*x
^2 + a)/c^3 + 1/6*(2*B*c*e^5*x^3 + 3*(5*B*c*d*e^4 + A*c*e^5)*x^2 + 6*(10*B*
c*d^2*e^3 + 5*A*c*d*e^4 - 2*B*a*e^5)*x)/c^3 + 1/2*(A*c^3*d^5 + 5*B*a*c^2*d^
4*e + 10*A*a*c^2*d^3*e^2 - 30*B*a^2*c*d^2*e^3 - 15*A*a^2*c*d*e^4 + 5*B*a^3*
e^5)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c^3)
```

mupad [B] time = 0.32, size = 370, normalized size = 1.25

$$\frac{x^2\left(A\,e^5+5\,B\,d\,e^4\right)}{2\,c^2}-\frac{\frac{A\,a^2\,e^5}{2}+\frac{B\,c^2\,d^5}{2}-\frac{x\left(-B\,a^3\,e^5+10\,B\,a^2\,c\,d^2\,e^3+5\,A\,a^2\,c\,d\,e^4-5\,B\,a\,c^2\,d^4\,e-10\,A\,a\,c^2\,d^3\,e^2+A\,c^3\,d^5\right)}{2\,a}+\frac{5\,B\,a^2\,d\,e^4}{2}+\frac{5\,A\,c^2\,d^4\,e}{2}-5\,A\,a\,c\,d^2\,e^3-5\,B\,a\,c\,d^3\,e^2}{c^4\,x^2+a\,c^3}-x\left(\frac{2\,B\,a\,e^5}{c^3}-\frac{5\,d\,e^3\,\left(A\,e+2\,B\,d\right)}{c^2}\right)-\frac{\ln\left(c\,x^2+a\right)\left(160\,B\,a^4\,c^4\,d\,e^4+32\,A\,a^4\,c^4\,e^5-160\,B\,a^3\,c^5\,d^3\,e^2-160\,A\,a^3\,c^5\,d^2\,e^3\right)}{32\,a^3\,c^7}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(5\,B\,a^3\,e^5-30\,B\,a^2\,c\,d^2\,e^3-15\,A\,a^2\,c\,d\,e^4+5\,B\,a\,c^2\,d^4\,e+10\,A\,a\,c^2\,d^3\,e^2+A\,c^3\,d^5\right)}{2\,a^{3/2}\,c^{7/2}}+\frac{B\,e^5\,x^3}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x)
```

```
[Out] (x^2*(A*e^5 + 5*B*d*e^4))/(2*c^2) - ((A*a^2*e^5)/2 + (B*c^2*d^5)/2 - (x*(A*
c^3*d^5 - B*a^3*e^5 - 10*A*a*c^2*d^3*e^2 + 10*B*a^2*c*d^2*e^3 + 5*A*a^2*c*d
*e^4 - 5*B*a*c^2*d^4*e))/(2*a) + (5*B*a^2*d*e^4)/2 + (5*A*c^2*d^4*e)/2 - 5*
A*a*c*d^2*e^3 - 5*B*a*c*d^3*e^2)/(a*c^3 + c^4*x^2) - x*((2*B*a*e^5)/c^3 - (
5*d*e^3*(A*e + 2*B*d))/c^2) - (log(a + c*x^2)*(32*A*a^4*c^4*e^5 + 160*B*a^4
*c^4*d*e^4 - 160*A*a^3*c^5*d^2*e^3 - 160*B*a^3*c^5*d^3*e^2))/(32*a^3*c^7) +
 (atan((c^(1/2)*x)/a^(1/2))*(A*c^3*d^5 + 5*B*a^3*e^5 + 10*A*a*c^2*d^3*e^2 -
 30*B*a^2*c*d^2*e^3 - 15*A*a^2*c*d*e^4 + 5*B*a*c^2*d^4*e))/(2*a^(3/2)*c^(7/
2)) + (B*e^5*x^3)/(3*c^2)
```

sympy [B] time = 14.77, size = 1091, normalized size = 3.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+a)**2,x)
```

```
[Out] B*e**5*x**3/(3*c**2) + x**2*(A*e**5/(2*c**2) + 5*B*d*e**4/(2*c**2)) + x*(5*
A*d*e**4/c**2 - 2*B*a*e**5/c**3 + 10*B*d**2*e**3/c**2) + (-e**2*(A*a*e**3 -
 5*A*c*d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 - sqrt(-a**3*c**7)*(-15*A*a
**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**5 - 30*B*a
**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7))*log(x + (4*A*a**3*e**5
- 20*A*a**2*c*d**2*e**3 + 20*B*a**3*d*e**4 - 20*B*a**2*c*d**3*e**2 + 4*a**2
*c**3*(-e**2*(A*a*e**3 - 5*A*c*d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 - s
qrt(-a**3*c**7)*(-15*A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5
+ 5*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7))
)/(-15*A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**
5 - 30*B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)) + (-e**2*(A*a*e**3 - 5*A*c*
d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 + sqrt(-a**3*c**7)*(-15*A*a**2*c*d
*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**5 - 30*B*a**2*c*d
**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7))*log(x + (4*A*a**3*e**5 - 20*A*
a**2*c*d**2*e**3 + 20*B*a**3*d*e**4 - 20*B*a**2*c*d**3*e**2 + 4*a**2*c**3*(
-e**2*(A*a*e**3 - 5*A*c*d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 + sqrt(-a*
*3*c**7)*(-15*A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a
**3*e**5 - 30*B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7)))/(-15*
A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**5 - 30*
```

```
B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)) + (-A*a**3*e**5 + 10*A*a**2*c*d**2
*e**3 - 5*A*a*c**2*d**4*e - 5*B*a**3*d*e**4 + 10*B*a**2*c*d**3*e**2 - B*a*c
**2*d**5 + x*(5*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 - B*a
**3*e**5 + 10*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e))/(2*a**2*c**3 + 2*a*c
**4*x**2)
```

3.1165 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=220

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+4aBde\left(cd^2-3ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)\left(-aBe^2+2Acde+3Bcd^2\right)}{c^3}-3$$

Rubi [A] time = 0.28, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {819, 801, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+4aBde\left(cd^2-3ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)\left(-aBe^2+2Acde+3Bcd^2\right)}{c^3}-\frac{3e^2x\left(-aAe^2-4aBde+Acd^2\right)}{2ac^2}-\frac{e^3x^2(Acd-2aBe)}{2ac^2}-\frac{(d+ex)^3(a(Ae+Bd)-x(Acd-aBe))}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x]
```

```
[Out] (-3*e^2*(A*c*d^2 - 4*a*B*d*e - a*A*e^2)*x)/(2*a*c^2) - (e^3*(A*c*d - 2*a*B*
e)*x^2)/(2*a*c^2) - ((d + e*x)^3*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(2*a*
c*(a + c*x^2)) + ((4*a*B*d*e*(c*d^2 - 3*a*e^2) + A*(c^2*d^4 + 6*a*c*d^2*e^2
 - 3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(5/2)) + (e^2*(3*B
*c*d^2 + 2*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/c^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{(d+ex)^2\left(Acd^2+ae(4Bd+3Ae)-2e(Acd-2aBe)x\right)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \left(-\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)}{c} - \frac{2e^3(Acd-2aBe)x}{c}\right.}{}$$

$$= -\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)x}{2ac^2} - \frac{e^3(Acd-2aBe)x^2}{2ac^2} - \frac{(d+ex)^3(a(Bd+Ae)-(Acd}{2ac\left(a+cx^2\right)}$$

$$= -\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)x}{2ac^2} - \frac{e^3(Acd-2aBe)x^2}{2ac^2} - \frac{(d+ex)^3(a(Bd+Ae)-(Acd}{2ac\left(a+cx^2\right)}$$

$$= -\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)x}{2ac^2} - \frac{e^3(Acd-2aBe)x^2}{2ac^2} - \frac{(d+ex)^3(a(Bd+Ae)-(Acd}{2ac\left(a+cx^2\right)}$$

Mathematica [A] time = 0.20, size = 231, normalized size = 1.05

$$\frac{\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+4aBde\left(cd^2-3ae^2\right)\right)}{a^{3/2}} + \frac{-a^3Be^4+a^2ce^2(Ae(4d+ex)+2Bd(3d+2ex))-ac^2d^2(2Ae(2d+3ex)+Bd(d+4ex))+Ac^3d^4x}{a\left(a+cx^2\right)} + 2e^2\log\left(a+cx^2\right)\left(-aBe^2+2Acde+3Bcd^2\right)+2ce^3x(Ae+4Bd)+Bce^4x^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x]
```

```
[Out] (2*c*e^3*(4*B*d + A*e)*x + B*c*e^4*x^2 + (-(a^3*B*e^4) + A*c^3*d^4*x + a^2*
c*e^2*(A*e*(4*d + e*x) + 2*B*d*(3*d + 2*e*x)) - a*c^2*d^2*(2*A*e*(2*d + 3*e
*x) + B*d*(d + 4*e*x)))/(a*(a + c*x^2)) + (Sqrt[c]*(4*a*B*d*e*(c*d^2 - 3*a*
e^2) + A*(c^2*d^4 + 6*a*c*d^2*e^2 - 3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]]
)/a^(3/2) + 2*e^2*(3*B*c*d^2 + 2*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2, x]
```

fricas [B] time = 0.43, size = 849, normalized size = 3.86

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*B*a^2*c^2*e^4*x^4 + 2*B*a^3*c*e^4*x^2 - 2*B*a^2*c^2*d^4 - 8*A*a^2*c
^2*d^3*e + 12*B*a^3*c*d^2*e^2 + 8*A*a^3*c*d*e^3 - 2*B*a^4*e^4 + 4*(4*B*a^2*
c^2*d*e^3 + A*a^2*c^2*e^4)*x^3 + (A*a*c^2*d^4 + 4*B*a^2*c*d^3*e + 6*A*a^2*c
*d^2*e^2 - 12*B*a^3*d*e^3 - 3*A*a^3*e^4 + (A*c^3*d^4 + 4*B*a*c^2*d^3*e + 6*
A*a*c^2*d^2*e^2 - 12*B*a^2*c*d*e^3 - 3*A*a^2*c*e^4)*x^2)*sqrt(-a*c)*log((c*
x^2 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 2*(A*a*c^3*d^4 - 4*B*a^2*c^2*d^3*e
```

```
 - 6*A*a^2*c^2*d^2*e^2 + 12*B*a^3*c*d*e^3 + 3*A*a^3*c*e^4)*x + 4*(3*B*a^3*c
*d^2*e^2 + 2*A*a^3*c*d*e^3 - B*a^4*e^4 + (3*B*a^2*c^2*d^2*e^2 + 2*A*a^2*c^2
*d*e^3 - B*a^3*c*e^4)*x^2)*log(c*x^2 + a))/(a^2*c^4*x^2 + a^3*c^3), 1/2*(B*
a^2*c^2*e^4*x^4 + B*a^3*c*e^4*x^2 - B*a^2*c^2*d^4 - 4*A*a^2*c^2*d^3*e + 6*B
*a^3*c*d^2*e^2 + 4*A*a^3*c*d*e^3 - B*a^4*e^4 + 2*(4*B*a^2*c^2*d*e^3 + A*a^2
*c^2*e^4)*x^3 + (A*a*c^2*d^4 + 4*B*a^2*c*d^3*e + 6*A*a^2*c*d^2*e^2 - 12*B*a
^3*d*e^3 - 3*A*a^3*e^4 + (A*c^3*d^4 + 4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 -
 12*B*a^2*c*d*e^3 - 3*A*a^2*c*e^4)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + (
A*a*c^3*d^4 - 4*B*a^2*c^2*d^3*e - 6*A*a^2*c^2*d^2*e^2 + 12*B*a^3*c*d*e^3 +
3*A*a^3*c*e^4)*x + 2*(3*B*a^3*c*d^2*e^2 + 2*A*a^3*c*d*e^3 - B*a^4*e^4 + (3*
B*a^2*c^2*d^2*e^2 + 2*A*a^2*c^2*d*e^3 - B*a^3*c*e^4)*x^2)*log(c*x^2 + a))/(
a^2*c^4*x^2 + a^3*c^3)]
```

giac [A] time = 0.20, size = 261, normalized size = 1.19

$$\frac{\left(3 Bcd^2e^2 + 2 Acde^3 - Bae^4\right)\log\left(cx^2 + a\right)}{c^3} + \frac{\left(Ac^2d^4 + 4 Bacd^3e + 6 Aacd^2e^2 - 12 Ba^2de^3 - 3 Aa^2e^4\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,ac^2} + \frac{Bc^2x^2e^4 + 8 Bc^2dxe^3 + 2 Ac^2xe^4}{2c^4} - \frac{Bac^2d^4 + 4 Aac^2d^3e - 6 Ba^2cd^2e^2 - 4 Aa^2cde^3 + Ba^3e^4 - \left(Ac^3d^4 - 4 Bac^2d^3e - 6 Aac^2d^2e^2 + 4 Ba^2cde^3 + Aa^2ce^4\right)x}{2\left(cx^2 + a\right)ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] (3*B*c*d^2*e^2 + 2*A*c*d*e^3 - B*a*e^4)*log(c*x^2 + a)/c^3 + 1/2*(A*c^2*d^4
 + 4*B*a*c*d^3*e + 6*A*a*c*d^2*e^2 - 12*B*a^2*d*e^3 - 3*A*a^2*e^4)*arctan(c
*x/sqrt(a*c))/(sqrt(a*c)*a*c^2) + 1/2*(B*c^2*x^2*e^4 + 8*B*c^2*d*x*e^3 + 2*
A*c^2*x*e^4)/c^4 - 1/2*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6*B*a^2*c*d^2*e^2 -
 4*A*a^2*c*d*e^3 + B*a^3*e^4 - (A*c^3*d^4 - 4*B*a*c^2*d^3*e - 6*A*a*c^2*d^2
*e^2 + 4*B*a^2*c*d*e^3 + A*a^2*c*e^4)*x)/((c*x^2 + a)*a*c^3)
```

maple [B] time = 0.05, size = 414, normalized size = 1.88

$$\frac{Aae^4x}{2\left(cx^2 + a\right)c^2} - \frac{3Aae^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c^2} + \frac{Ad^4x}{2\left(cx^2 + a\right)a} + \frac{Ad^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,a} - \frac{3Ad^2e^2x}{\left(cx^2 + a\right)c} + \frac{3Ad^2e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c} + \frac{2Bade^3x}{\left(cx^2 + a\right)c^2} - \frac{6Bade^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2} - \frac{2Bd^3ex}{\left(cx^2 + a\right)c} + \frac{2Bd^3e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c} + \frac{Be^4x^2}{2c^2} + \frac{2Aade^3}{\left(cx^2 + a\right)c^2} - \frac{2Ad^3e}{\left(cx^2 + a\right)c} + \frac{2Ade^3\ln\left(cx^2 + a\right)}{c^2} + \frac{Ae^4x}{c^2} - \frac{Ba^2e^4}{2\left(cx^2 + a\right)c^3} + \frac{3Bad^2e^2}{\left(cx^2 + a\right)c^2} - \frac{Bae^4\ln\left(cx^2 + a\right)}{c^3} - \frac{Bd^4}{2\left(cx^2 + a\right)c} + \frac{3Bd^2e^2\ln\left(cx^2 + a\right)}{c^2} + \frac{4Bde^3x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x)
```

```
[Out] 1/2*B/c^2*e^4*x^2+A/c^2*e^4*x+4*B/c^2*d*e^3*x+1/2/c^2/(c*x^2+a)*a*x*A*e^4-3
/c/(c*x^2+a)*x*A*d^2*e^2+1/2/(c*x^2+a)/a*x*A*d^4+2/c^2/(c*x^2+a)*a*x*B*d*e^
3-2/c/(c*x^2+a)*x*B*d^3*e+2/c^2/(c*x^2+a)*A*a*d*e^3-2/c/(c*x^2+a)*A*d^3*e-1
/2/c^3/(c*x^2+a)*B*a^2*e^4+3/c^2/(c*x^2+a)*a*d^2*B*e^2-1/2/c/(c*x^2+a)*B*d^
4+2/c^2*ln(c*x^2+a)*A*d*e^3-1/c^3*a*ln(c*x^2+a)*B*e^4+3/c^2*ln(c*x^2+a)*B*d
^2*e^2-3/2/c^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*e^4+3/c/(a*c)^(1/2
)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2*e^2+1/2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*d^4-6/c^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d*e^3+2/c/(a*c
)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^3*e
```

maxima [A] time = 1.51, size = 268, normalized size = 1.22

$$-\frac{Bac^2d^4 + 4 Aac^2d^3e - 6 Ba^2cd^2e^2 - 4 Aa^2cde^3 + Ba^3e^4 - \left(Ac^3d^4 - 4 Bac^2d^3e - 6 Aac^2d^2e^2 + 4 Ba^2cde^3 + Aa^2ce^4\right)x}{2\left(ac^4x^2 + a^2c^3\right)} + \frac{Be^4x^2 + 2\left(4 Bde^3 + Ae^4\right)x}{2c^2} + \frac{\left(3 Bcd^2e^2 + 2 Acde^3 - Bae^4\right)\log\left(cx^2 + a\right)}{c^3} + \frac{\left(Ac^2d^4 + 4 Bacd^3e + 6 Aacd^2e^2 - 12 Ba^2de^3 - 3 Aa^2e^4\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6*B*a^2*c*d^2*e^2 - 4*A*a^2*c*d*e^3 +
 B*a^3*e^4 - (A*c^3*d^4 - 4*B*a*c^2*d^3*e - 6*A*a*c^2*d^2*e^2 + 4*B*a^2*c*d
*e^3 + A*a^2*c*e^4)*x)/(a*c^4*x^2 + a^2*c^3) + 1/2*(B*e^4*x^2 + 2*(4*B*d*e^
3 + A*e^4)*x)/c^2 + (3*B*c*d^2*e^2 + 2*A*c*d*e^3 - B*a*e^4)*log(c*x^2 + a)/
c^3 + 1/2*(A*c^2*d^4 + 4*B*a*c*d^3*e + 6*A*a*c*d^2*e^2 - 12*B*a^2*d*e^3 - 3
*A*a^2*e^4)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c^2)
```

mupad [B] time = 1.91, size = 276, normalized size = 1.25

$$\frac{x\left(Ae^4 + 4Bde^3\right)}{c^2} - \frac{\frac{Ba^2e^4 - 6Bacd^2e^2 - 4Aacde^3 + Bc^2d^4 + 4Ac^2d^3e}{2c} - \frac{x\left(4Ba^2de^3 + Aa^2e^4 - 4Bacd^3e - 6Aacd^2e^2 + Ac^2d^4\right)}{2a}}{c^3x^2 + ac^2} + \frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(-12Ba^2de^3 - 3Aa^2e^4 + 4Bacd^3e + 6Aacd^2e^2 + Ac^2d^4\right)}{2a^{3/2}c^{5/2}} + \frac{\ln\left(cx^2 + a\right)\left(-32Ba^4c^3e^4 + 96Ba^3c^4d^2e^2 + 64Aa^3c^4de^3\right)}{32a^3c^6} + \frac{Be^4x^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x)
```

```
[Out] (x*(A*e^4 + 4*B*d*e^3))/c^2 - ((B*a^2*e^4 + B*c^2*d^4 + 4*A*c^2*d^3*e - 4*A
*a*c*d*e^3 - 6*B*a*c*d^2*e^2)/(2*c) - (x*(A*a^2*e^4 + A*c^2*d^4 + 4*B*a^2*d
*e^3 - 4*B*a*c*d^3*e - 6*A*a*c*d^2*e^2))/(2*a))/(a*c^2 + c^3*x^2) + (atan((
c^(1/2)*x)/a^(1/2))*(A*c^2*d^4 - 3*A*a^2*e^4 - 12*B*a^2*d*e^3 + 4*B*a*c*d^3
*e + 6*A*a*c*d^2*e^2))/(2*a^(3/2)*c^(5/2)) + (log(a + c*x^2)*(64*A*a^3*c^4*
d*e^3 - 32*B*a^4*c^3*e^4 + 96*B*a^3*c^4*d^2*e^2))/(32*a^3*c^6) + (B*e^4*x^2
)/(2*c^2)
```

sympy [B] time = 10.54, size = 836, normalized size = 3.80

$$\frac{Be^4x^2}{2c^2} + x\left(\frac{Ae^4}{c^2} + \frac{4Bde^3}{c^2}\right) + \left(-\frac{e^2\left(-2Acde + Bae^2 - 3Bcd^2\right)}{c^3} - \frac{\sqrt{-a^3c^7}\left(3Aa^2e^4 - 6Aacd^2e^2 - Ac^2d^4 + 12Ba^2de^3 - 4Bacd^3e\right)}{4a^3c^6}\right)\log\left(x + \frac{8Aa^2cde^3 - 4Ba^3e^4 + 12Ba^2cd^2e^2 - 4a^2c^3\left(-\frac{e^2(-2Acde+Bae^2-3Bcd^2)}{c^3} - \frac{\sqrt{-a^3c^7}(3Aa^2e^4-6Aacd^2e^2-Ac^2d^4+12Ba^2de^3-4Bacd^3e)}{4a^3c^6}\right)}{3Aa^2ce^4 - 6Aac^2d^2e^2 - Ac^3d^4 + 12Ba^2cde^3 - 4Bac^2d^3e}\right) + \left(-\frac{e^2\left(-2Acde + Bae^2 - 3Bcd^2\right)}{c^3} + \frac{\sqrt{-a^3c^7}\left(3Aa^2e^4 - 6Aacd^2e^2 - Ac^2d^4 + 12Ba^2de^3 - 4Bacd^3e\right)}{4a^3c^6}\right)\log\left(x + \frac{8Aa^2cde^3 - 4Ba^3e^4 + 12Ba^2cd^2e^2 - 4a^2c^3\left(-\frac{e^2(-2Acde+Bae^2-3Bcd^2)}{c^3} + \frac{\sqrt{-a^3c^7}(3Aa^2e^4-6Aacd^2e^2-Ac^2d^4+12Ba^2de^3-4Bacd^3e)}{4a^3c^6}\right)}{3Aa^2ce^4 - 6Aac^2d^2e^2 - Ac^3d^4 + 12Ba^2cde^3 - 4Bac^2d^3e}\right) + \frac{4Aa^2cde^3 - 4Aac^2d^3e - Ba^3e^4 + 6Ba^2cd^2e^2 - Bac^2d^4 + x\left(Aa^2ce^4 - 6Aac^2d^2e^2 + Ac^3d^4 + 4Ba^2cde^3 - 4Bac^2d^3e\right)}{2a^2c^3 + 2ac^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+a)**2,x)
```

```
[Out] B*e**4*x**2/(2*c**2) + x*(A*e**4/c**2 + 4*B*d*e**3/c**2) + (-e**2*(-2*A*c*d
*e + B*a*e**2 - 3*B*c*d**2)/c**3 - sqrt(-a**3*c**7)*(3*A*a**2*e**4 - 6*A*a*
c*d**2*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B*a*c*d**3*e)/(4*a**3*c**6
))*log(x + (8*A*a**2*c*d*e**3 - 4*B*a**3*e**4 + 12*B*a**2*c*d**2*e**2 - 4*a
**2*c**3*(-e**2*(-2*A*c*d*e + B*a*e**2 - 3*B*c*d**2)/c**3 - sqrt(-a**3*c**7
)*(3*A*a**2*e**4 - 6*A*a*c*d**2*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B
*a*c*d**3*e)/(4*a**3*c**6)))/(3*A*a**2*c*e**4 - 6*A*a*c**2*d**2*e**2 - A*c*
*3*d**4 + 12*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*e)) + (-e**2*(-2*A*c*d*e + B
*a*e**2 - 3*B*c*d**2)/c**3 + sqrt(-a**3*c**7)*(3*A*a**2*e**4 - 6*A*a*c*d**2
*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B*a*c*d**3*e)/(4*a**3*c**6))*log
(x + (8*A*a**2*c*d*e**3 - 4*B*a**3*e**4 + 12*B*a**2*c*d**2*e**2 - 4*a**2*c*
*3*(-e**2*(-2*A*c*d*e + B*a*e**2 - 3*B*c*d**2)/c**3 + sqrt(-a**3*c**7)*(3*A
*a**2*e**4 - 6*A*a*c*d**2*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B*a*c*d
**3*e)/(4*a**3*c**6)))/(3*A*a**2*c*e**4 - 6*A*a*c**2*d**2*e**2 - A*c**3*d**
4 + 12*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*e)) + (4*A*a**2*c*d*e**3 - 4*A*a*c
**2*d**3*e - B*a**3*e**4 + 6*B*a**2*c*d**2*e**2 - B*a*c**2*d**4 + x*(A*a**2
*c*e**4 - 6*A*a*c**2*d**2*e**2 + A*c**3*d**4 + 4*B*a**2*c*d*e**3 - 4*B*a*c*
*2*d**3*e))/(2*a**2*c**3 + 2*a*c**4*x**2)
```

3.1166 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^2} dx$

Optimal. Leaf size=161

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)(Ae+3Bd)}{2c^2}-\frac{e^2x(Acd-3aBe)}{2ac^2}-\frac{(d+ex)^2(a(}{}$$

Rubi [A] time = 0.21, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {819, 774, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)(Ae+3Bd)}{2c^2}-\frac{e^2x(Acd-3aBe)}{2ac^2}-\frac{(d+ex)^2(a(Ae+Bd)-x(Acd-aBe))}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x]
```

```
[Out] -(e^2*(A*c*d - 3*a*B*e)*x)/(2*a*c^2) - ((d + e*x)^2*(a*(B*d + A*e) - (A*c*d
 - a*B*e)*x))/(2*a*c*(a + c*x^2)) + ((3*a*B*e*(c*d^2 - a*e^2) + A*c*d*(c*d^
2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(5/2)) + (e^2*(3*B*
d + A*e)*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{(d+ex)\left(Acd^2+ae(3Bd+2Ae)-e(Acd-3aBe)x\right)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{e^2(Acd-3aBe)x}{2ac^2} - \frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{ae^2(Acd-3aBe)+cd\left(Acd\right.}{}}{}$$

$$= -\frac{e^2(Acd-3aBe)x}{2ac^2} - \frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(e^2(3Bd+Ae)\right)\int \frac{}{a+}}{c}$$

$$= -\frac{e^2(Acd-3aBe)x}{2ac^2} - \frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(3aBe\left(cd^2-ae^2\right)+\right.}{}$$

Mathematica [A] time = 0.12, size = 171, normalized size = 1.06

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)}{a^{3/2}} + \frac{\sqrt{c}\left(a^2e^2(Ae+3Bd+Bex)-acd(3Ae(d+ex)+Bd(d+3ex))+Ac^2d^3x\right)}{a\left(a+cx^2\right)} + \sqrt{c}e^2\log\left(a+cx^2\right)(Ae+3Bd)+2B\sqrt{c}e^3x}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x]
```

```
[Out] (2*B*Sqrt[c]*e^3*x + (Sqrt[c]*(A*c^2*d^3*x + a^2*e^2*(3*B*d + A*e + B*e*x)
- a*c*d*(3*A*e*(d + e*x) + B*d*(d + 3*e*x))))/(a*(a + c*x^2)) + ((3*a*B*e*(
c*d^2 - a*e^2) + A*c*d*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3
/2) + Sqrt[c]*e^2*(3*B*d + A*e)*Log[a + c*x^2])/(2*c^(5/2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2, x]
```

fricas [B] time = 0.42, size = 609, normalized size = 3.78

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(4*B*a^2*c^2*e^3*x^3 - 2*B*a^2*c^2*d^3 - 6*A*a^2*c^2*d^2*e + 6*B*a^3*c
*d*e^2 + 2*A*a^3*c*e^3 + (A*a*c^2*d^3 + 3*B*a^2*c*d^2*e + 3*A*a^2*c*d*e^2 -
 3*B*a^3*e^3 + (A*c^3*d^3 + 3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 - 3*B*a^2*c*e
^3)*x^2)*sqrt(-a*c)*log((c*x^2 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 2*(A*a*
c^3*d^3 - 3*B*a^2*c^2*d^2*e - 3*A*a^2*c^2*d*e^2 + 3*B*a^3*c*e^3)*x + 2*(3*B
*a^3*c*d*e^2 + A*a^3*c*e^3 + (3*B*a^2*c^2*d*e^2 + A*a^2*c^2*e^3)*x^2)*log(c
*x^2 + a))/(a^2*c^4*x^2 + a^3*c^3), 1/2*(2*B*a^2*c^2*e^3*x^3 - B*a^2*c^2*d^
3 - 3*A*a^2*c^2*d^2*e + 3*B*a^3*c*d*e^2 + A*a^3*c*e^3 + (A*a*c^2*d^3 + 3*B*
a^2*c*d^2*e + 3*A*a^2*c*d*e^2 - 3*B*a^3*e^3 + (A*c^3*d^3 + 3*B*a*c^2*d^2*e
+ 3*A*a*c^2*d*e^2 - 3*B*a^2*c*e^3)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + (
```

```
A*a*c^3*d^3 - 3*B*a^2*c^2*d^2*e - 3*A*a^2*c^2*d*e^2 + 3*B*a^3*c*e^3)*x + (3
*B*a^3*c*d*e^2 + A*a^3*c*e^3 + (3*B*a^2*c^2*d*e^2 + A*a^2*c^2*e^3)*x^2)*log
(c*x^2 + a))/(a^2*c^4*x^2 + a^3*c^3)]
```

giac [A] time = 0.19, size = 179, normalized size = 1.11

$$\frac{Bxe^3}{c^2} + \frac{\left(3\,Bde^2 + Ae^3\right)\log\left(cx^2 + a\right)}{2\,c^2} + \frac{\left(Ac^2d^3 + 3\,Bacd^2e + 3\,Aacde^2 - 3\,Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac^2} - \frac{Bacd^3 + 3\,Aacd^2e - 3\,Ba^2de^2 - Aa^2e^3 - \left(Ac^2d^3 - 3\,Bacd^2e - 3\,Aacde^2 + Ba^2e^3\right)x}{2\left(cx^2 + a\right)ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] B*x*e^3/c^2 + 1/2*(3*B*d*e^2 + A*e^3)*log(c*x^2 + a)/c^2 + 1/2*(A*c^2*d^3 +
 3*B*a*c*d^2*e + 3*A*a*c*d*e^2 - 3*B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(sqrt(a
*c)*a*c^2) - 1/2*(B*a*c*d^3 + 3*A*a*c*d^2*e - 3*B*a^2*d*e^2 - A*a^2*e^3 - (
A*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*x)/((c*x^2 + a)*a*c^
2)
```

maple [B] time = 0.05, size = 296, normalized size = 1.84

$$\frac{A\,d^3x}{2\left(c\,x^2+a\right)a} + \frac{A\,d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a} - \frac{3Ad\,e^2x}{2\left(c\,x^2+a\right)c} + \frac{3Ad\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c} + \frac{Ba\,e^3x}{2\left(c\,x^2+a\right)c^2} - \frac{3Ba\,e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^2} - \frac{3B\,d^2ex}{2\left(c\,x^2+a\right)c} + \frac{3B\,d^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c} + \frac{Aa\,e^3}{2\left(c\,x^2+a\right)c^2} - \frac{3A\,d^2e}{2\left(c\,x^2+a\right)c} + \frac{A\,e^3\ln\left(c\,x^2+a\right)}{2c^2} + \frac{3Bad\,e^2}{2\left(c\,x^2+a\right)c^2} - \frac{B\,d^3}{2\left(c\,x^2+a\right)c} + \frac{3Bd\,e^2\ln\left(c\,x^2+a\right)}{2c^2} + \frac{B\,e^3x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x)
```

```
[Out] B/c^2*e^3*x-3/2/c/(c*x^2+a)*x*A*d*e^2+1/2/(c*x^2+a)/a*x*A*d^3+1/2/c^2/(c*x^
2+a)*a*x*B*e^3-3/2/c/(c*x^2+a)*x*B*d^2*e+1/2/c^2/(c*x^2+a)*a*A*e^3-3/2/c/(c
*x^2+a)*A*d^2*e+3/2/c^2/(c*x^2+a)*a*B*d*e^2-1/2/c/(c*x^2+a)*B*d^3+1/2/c^2*l
n(c*x^2+a)*A*e^3+3/2/c^2*ln(c*x^2+a)*B*d*e^2+3/2/c/(a*c)^(1/2)*arctan(1/(a*
c)^(1/2)*c*x)*A*d*e^2+1/2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^3-3/2
/c^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*e^3+3/2/c/(a*c)^(1/2)*arctan
(1/(a*c)^(1/2)*c*x)*B*d^2*e
```

maxima [A] time = 1.15, size = 188, normalized size = 1.17

$$\frac{Be^3x}{c^2} - \frac{Bacd^3 + 3\,Aacd^2e - 3\,Ba^2de^2 - Aa^2e^3 - \left(Ac^2d^3 - 3\,Bacd^2e - 3\,Aacde^2 + Ba^2e^3\right)x}{2\left(ac^3x^2 + a^2c^2\right)} + \frac{\left(3\,Bde^2 + Ae^3\right)\log\left(cx^2 + a\right)}{2\,c^2} + \frac{\left(Ac^2d^3 + 3\,Bacd^2e + 3\,Aacde^2 - 3\,Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] B*e^3*x/c^2 - 1/2*(B*a*c*d^3 + 3*A*a*c*d^2*e - 3*B*a^2*d*e^2 - A*a^2*e^3 -
(A*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*x)/(a*c^3*x^2 + a^2
*c^2) + 1/2*(3*B*d*e^2 + A*e^3)*log(c*x^2 + a)/c^2 + 1/2*(A*c^2*d^3 + 3*B*a
*c*d^2*e + 3*A*a*c*d*e^2 - 3*B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*
c^2)
```

mupad [B] time = 0.19, size = 193, normalized size = 1.20

$$\frac{\frac{x\left(B\,a^2\,e^3-3\,B\,a\,c\,d^2\,e-3\,A\,a\,c\,d\,e^2+A\,c^2\,d^3\right)}{2\,a} + \frac{A\,a\,e^3}{2} - \frac{B\,c\,d^3}{2} + \frac{3\,B\,a\,d\,e^2}{2} - \frac{3\,A\,c\,d^2\,e}{2}}{c^3\,x^2 + a\,c^2} + \frac{\ln\left(c\,x^2 + a\right)\,\left(16\,A\,a^3\,c^3\,e^3 + 48\,B\,d\,a^3\,c^3\,e^2\right)}{32\,a^3\,c^5} + \frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,\left(-3\,B\,a^2\,e^3 + 3\,B\,a\,c\,d^2\,e + 3\,A\,a\,c\,d\,e^2 + A\,c^2\,d^3\right)}{2\,a^{3/2}\,c^{5/2}} + \frac{B\,e^3\,x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x)
```

```
[Out] ((x*(A*c^2*d^3 + B*a^2*e^3 - 3*A*a*c*d*e^2 - 3*B*a*c*d^2*e))/(2*a) + (A*a*e
^3)/2 - (B*c*d^3)/2 + (3*B*a*d*e^2)/2 - (3*A*c*d^2*e)/2)/(a*c^2 + c^3*x^2)
+ (log(a + c*x^2)*(16*A*a^3*c^3*e^3 + 48*B*a^3*c^3*d*e^2))/(32*a^3*c^5) + (
atan((c^(1/2)*x)/a^(1/2))*(A*c^2*d^3 - 3*B*a^2*e^3 + 3*A*a*c*d*e^2 + 3*B*a*
c*d^2*e))/(2*a^(3/2)*c^(5/2)) + (B*e^3*x)/c^2
```

sympy [B] time = 6.04, size = 583, normalized size = 3.62

$$\frac{Be^3x}{c^2} + \left(\frac{e^2(Ae+3Bd)}{2c^2} - \frac{\sqrt{-a^3c^5}\left(-3Aacde^2 - Ac^2d^3 + 3Ba^2e^3 - 3Bacd^2e\right)}{4a^3c^5}\right)\log\left(x + \frac{2Aa^2e^3 + 6Ba^2de^2 - 4a^2c^2\left(\frac{e^2(Ae+3Bd)}{2c^2} - \frac{\sqrt{-a^3c^5}\left(-3Aacde^2 - Ac^2d^3 + 3Ba^2e^3 - 3Bacd^2e\right)}{4a^3c^5}\right)}{-3Aacde^2 - Ac^2d^3 + 3Ba^2e^3 - 3Bacd^2e}\right) + \left(\frac{e^2(Ae+3Bd)}{2c^2} + \frac{\sqrt{-a^3c^5}\left(-3Aacde^2 - Ac^2d^3 + 3Ba^2e^3 - 3Bacd^2e\right)}{4a^3c^5}\right)\log\left(x + \frac{2Aa^2e^3 + 6Ba^2de^2 - 4a^2c^2\left(\frac{e^2(Ae+3Bd)}{2c^2} + \frac{\sqrt{-a^3c^5}\left(-3Aacde^2 - Ac^2d^3 + 3Ba^2e^3 - 3Bacd^2e\right)}{4a^3c^5}\right)}{-3Aacde^2 - Ac^2d^3 + 3Ba^2e^3 - 3Bacd^2e}\right) + \frac{Aa^2e^3 - 3Aacd^2e + 3Ba^2de^2 - Bacd^3 + x\left(-3Aacde^2 + Ac^2d^3 + Ba^2e^3 - 3Bacd^2e\right)}{2a^2c^2 + 2ac^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+a)**2,x)
```

```
[Out] B*e**3*x/c**2 + (e**2*(A*e + 3*B*d)/(2*c**2) - sqrt(-a**3*c**5)*(-3*A*a*c*d
*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 - 3*B*a*c*d**2*e)/(4*a**3*c**5))*log(x
+ (2*A*a**2*e**3 + 6*B*a**2*d*e**2 - 4*a**2*c**2*(e**2*(A*e + 3*B*d)/(2*c**
2) - sqrt(-a**3*c**5)*(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 - 3*B*
a*c*d**2*e)/(4*a**3*c**5)))/(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3
- 3*B*a*c*d**2*e)) + (e**2*(A*e + 3*B*d)/(2*c**2) + sqrt(-a**3*c**5)*(-3*A*
a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 - 3*B*a*c*d**2*e)/(4*a**3*c**5))*l
og(x + (2*A*a**2*e**3 + 6*B*a**2*d*e**2 - 4*a**2*c**2*(e**2*(A*e + 3*B*d)/(
2*c**2) + sqrt(-a**3*c**5)*(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 -
 3*B*a*c*d**2*e)/(4*a**3*c**5)))/(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*
e**3 - 3*B*a*c*d**2*e)) + (A*a**2*e**3 - 3*A*a*c*d**2*e + 3*B*a**2*d*e**2 -
 B*a*c*d**3 + x*(-3*A*a*c*d*e**2 + A*c**2*d**3 + B*a**2*e**3 - 3*B*a*c*d**2
*e))/(2*a**2*c**2 + 2*a*c**3*x**2)
```

3.1167 $\int \frac{(A+Bx)(d+ex)^2}{(a+cx^2)^2} dx$

Optimal. Leaf size=112

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(ae(Ae+2Bd)+Acd^2)}{2a^{3/2}c^{3/2}}-\frac{(d+ex)(a(Ae+Bd)-x(Acd-aBe))}{2ac(a+cx^2)}+\frac{Be^2\log(a+cx^2)}{2c^2}$$

Rubi [A] time = 0.07, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {819, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(ae(Ae+2Bd)+Acd^2)}{2a^{3/2}c^{3/2}}-\frac{(d+ex)(a(Ae+Bd)-x(Acd-aBe))}{2ac(a+cx^2)}+\frac{Be^2\log(a+cx^2)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x]
```

```
[Out] -((d + e*x)*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(2*a*c*(a + c*x^2)) + ((A*
c*d^2 + a*e*(2*B*d + A*e))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(3/2))
 + (B*e^2*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{Acd^2+ae(2Bd+Ae)+2aBe^2x}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{(d+ex)(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(Be^2\right)\int \frac{x}{a+cx^2}\,dx}{c} + \frac{\left(Acd^2+ae(2Bd+Ae\right.}{2ac}$$

$$= -\frac{(d+ex)(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(Acd^2+ae(2Bd+Ae)\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}c^{3/2}} + \frac{B}{}$$

Mathematica [A] time = 0.10, size = 119, normalized size = 1.06

$$\frac{\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aAe^2+2aBde+Acd^2\right)}{a^{3/2}} + \frac{a^2Be^2-ac(Ae(2d+ex)+Bd(d+2ex))+Ac^2d^2x}{a\left(a+cx^2\right)} + Be^2\log\left(a+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x]
```

```
[Out] ((a^2*B*e^2 + A*c^2*d^2*x - a*c*(A*e*(2*d + e*x) + B*d*(d + 2*e*x)))/(a*(a
+ c*x^2)) + (Sqrt[c]*(A*c*d^2 + 2*a*B*d*e + a*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqr
t[a]])/a^(3/2) + B*e^2*Log[a + c*x^2])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2, x]
```

fricas [A] time = 0.42, size = 384, normalized size = 3.43

$$\left[-\frac{2Ba^2cd^2+4Aa^2cde-2Ba^3e^2+\left(Aacd^2+2Ba^2de+Aa^2e^2+\left(Ac^2d^2+2Bacde+Aace^2\right)x^2\right)\sqrt{-ac}\log\left(\frac{cx^2-2\sqrt{-ac}\,x-a}{cx^2+a}\right)-2\left(Aac^2d^2-2Ba^2cde-Aa^2ce^2\right)x-2\left(Ba^2ce^2x^2+Ba^3e^2\right)\log\left(cx^2+a\right)}{4\left(a^2c^3x^2+a^3c^2\right)}, -\frac{Ba^2cd^2+2Aa^2cde-Ba^3e^2-\left(Aacd^2+2Ba^2de+Aa^2e^2+\left(Ac^2d^2+2Bacde+Aace^2\right)x^2\right)\sqrt{ac}\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)-\left(Aac^2d^2-2Ba^2cde-Aa^2ce^2\right)x-\left(Ba^2ce^2x^2+Ba^3e^2\right)\log\left(cx^2+a\right)}{2\left(a^2c^3x^2+a^3c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a^2*c*d^2 + 4*A*a^2*c*d*e - 2*B*a^3*e^2 + (A*a*c*d^2 + 2*B*a^2*d
*e + A*a^2*e^2 + (A*c^2*d^2 + 2*B*a*c*d*e + A*a*c*e^2)*x^2)*sqrt(-a*c)*log(
(c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(A*a*c^2*d^2 - 2*B*a^2*c*d*e
- A*a^2*c*e^2)*x - 2*(B*a^2*c*e^2*x^2 + B*a^3*e^2)*log(c*x^2 + a))/(a^2*c^3
*x^2 + a^3*c^2), -1/2*(B*a^2*c*d^2 + 2*A*a^2*c*d*e - B*a^3*e^2 - (A*a*c*d^2
 + 2*B*a^2*d*e + A*a^2*e^2 + (A*c^2*d^2 + 2*B*a*c*d*e + A*a*c*e^2)*x^2)*sqr
t(a*c)*arctan(sqrt(a*c)*x/a) - (A*a*c^2*d^2 - 2*B*a^2*c*d*e - A*a^2*c*e^2)*
x - (B*a^2*c*e^2*x^2 + B*a^3*e^2)*log(c*x^2 + a))/(a^2*c^3*x^2 + a^3*c^2)]
```

giac [A] time = 0.16, size = 127, normalized size = 1.13

$$\frac{Be^2\log\left(cx^2+a\right)}{2c^2} + \frac{\left(Acd^2+2Bade+Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,ac} + \frac{\left(Acd^2-2Bade-Aae^2\right)x-\frac{Bacd^2+2Aacde-Ba^2e^2}{c}}{2\left(cx^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*B*e^2*log(c*x^2 + a)/c^2 + 1/2*(A*c*d^2 + 2*B*a*d*e + A*a*e^2)*arctan(c
*x/sqrt(a*c))/(sqrt(a*c)*a*c) + 1/2*((A*c*d^2 - 2*B*a*d*e - A*a*e^2)*x - (B
*a*c*d^2 + 2*A*a*c*d*e - B*a^2*e^2)/c)/((c*x^2 + a)*a*c)
```

maple [A] time = 0.06, size = 151, normalized size = 1.35

$$\frac{A d^2 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,a}+\frac{A e^2 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c}+\frac{Bde \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{B e^2 \ln\left(c x^2+a\right)}{2c^2}+\frac{-\frac{\left(Aa e^2-Ac d^2+2aBde\right)x}{2ac}-\frac{2Acde-Ba e^2+Bc d^2}{2c^2}}{c x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x)
```

```
[Out] (-1/2*(A*a*e^2-A*c*d^2+2*B*a*d*e)/a/c*x-1/2*(2*A*c*d*e-B*a*e^2+B*c*d^2)/c^2
)/(c*x^2+a)+1/2*B*e^2*ln(c*x^2+a)/c^2+1/2/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*e^2+1/2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2+1/c/(a*c)^(1
/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d*e
```

maxima [A] time = 1.28, size = 130, normalized size = 1.16

$$\frac{Be^2\log\left(cx^2+a\right)}{2\,c^2}-\frac{Bacd^2+2\,Aacde-Ba^2e^2-\left(Ac^2d^2-2\,Bacde-Aace^2\right)x}{2\left(ac^3x^2+a^2c^2\right)}+\frac{\left(Acd^2+2\,Bade+Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*e^2*log(c*x^2 + a)/c^2 - 1/2*(B*a*c*d^2 + 2*A*a*c*d*e - B*a^2*e^2 - (
A*c^2*d^2 - 2*B*a*c*d*e - A*a*c*e^2)*x)/(a*c^3*x^2 + a^2*c^2) + 1/2*(A*c*d^
2 + 2*B*a*d*e + A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c)
```

mupad [B] time = 1.80, size = 203, normalized size = 1.81

$$\frac{B\,a\,e^2}{2\,\left(c^3\,x^2+a\,c^2\right)}-\frac{B\,d^2}{2\,\left(c^2\,x^2+a\,c\right)}-\frac{A\,d\,e}{c^2\,x^2+a\,c}+\frac{A\,d^2\,x}{2\,\left(a^2+c\,a\,x^2\right)}-\frac{A\,e^2\,x}{2\,\left(c^2\,x^2+a\,c\right)}+\frac{B\,e^2\,\ln\left(c\,x^2+a\right)}{2\,c^2}+\frac{A\,d^2\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,a^{3/2}\,\sqrt{c}}+\frac{A\,e^2\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,\sqrt{a}\,c^{3/2}}-\frac{B\,d\,e\,x}{c^2\,x^2+a\,c}+\frac{B\,d\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x)
```

```
[Out] (B*a*e^2)/(2*(a*c^2 + c^3*x^2)) - (B*d^2)/(2*(a*c + c^2*x^2)) - (A*d*e)/(a*
c + c^2*x^2) + (A*d^2*x)/(2*(a^2 + a*c*x^2)) - (A*e^2*x)/(2*(a*c + c^2*x^2)
) + (B*e^2*log(a + c*x^2))/(2*c^2) + (A*d^2*atan((c^(1/2)*x)/a^(1/2)))/(2*a
^(3/2)*c^(1/2)) + (A*e^2*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(1/2)*c^(3/2)) - (
B*d*e*x)/(a*c + c^2*x^2) + (B*d*e*atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(3/
2))
```

sympy [B] time = 2.96, size = 382, normalized size = 3.41

$$\left(\frac{Be^2}{2c^2}-\frac{\sqrt{-a^3c^5}\left(Aae^2+Acd^2+2Bade\right)}{4a^3c^4}\right)\log\left(x+\frac{-2Ba^2e^2+4a^2c^2\left(\frac{Be^2}{2c^2}-\frac{\sqrt{-a^3c^5}\left(Aae^2+Acd^2+2Bade\right)}{4a^3c^4}\right)}{Aace^2+Ac^2d^2+2Bacde}\right)+\left(\frac{Be^2}{2c^2}+\frac{\sqrt{-a^3c^5}\left(Aae^2+Acd^2+2Bade\right)}{4a^3c^4}\right)\log\left(x+\frac{-2Ba^2e^2+4a^2c^2\left(\frac{Be^2}{2c^2}+\frac{\sqrt{-a^3c^5}\left(Aae^2+Acd^2+2Bade\right)}{4a^3c^4}\right)}{Aace^2+Ac^2d^2+2Bacde}\right)+\frac{-2Aacde+Ba^2e^2-Bacd^2+x\left(-Aace^2+Ac^2d^2-2Bacde\right)}{2a^2c^2+2ac^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+a)**2,x)
```

```
[Out] (B*e**2/(2*c**2) - sqrt(-a**3*c**5)*(A*a*e**2 + A*c*d**2 + 2*B*a*d*e)/(4*a*
*3*c**4))*log(x + (-2*B*a**2*e**2 + 4*a**2*c**2*(B*e**2/(2*c**2) - sqrt(-a*
*3*c**5)*(A*a*e**2 + A*c*d**2 + 2*B*a*d*e)/(4*a**3*c**4)))/(A*a*c*e**2 + A*
```

```
c**2*d**2 + 2*B*a*c*d*e)) + (B*e**2/(2*c**2) + sqrt(-a**3*c**5)*(A*a*e**2 +
 A*c*d**2 + 2*B*a*d*e)/(4*a**3*c**4))*log(x + (-2*B*a**2*e**2 + 4*a**2*c**2
*(B*e**2/(2*c**2) + sqrt(-a**3*c**5)*(A*a*e**2 + A*c*d**2 + 2*B*a*d*e)/(4*a
**3*c**4)))/(A*a*c*e**2 + A*c**2*d**2 + 2*B*a*c*d*e)) + (-2*A*a*c*d*e + B*a
**2*e**2 - B*a*c*d**2 + x*(-A*a*c*e**2 + A*c**2*d**2 - 2*B*a*c*d*e))/(2*a**
2*c**2 + 2*a*c**3*x**2)
```

3.1168 $\int \frac{(A+Bx)(d+ex)}{(a+cx^2)^2}\,dx$

Optimal. Leaf size=79

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{2a^{3/2}c^{3/2}}-\frac{a(Ae+Bd)-x(Acd-aBe)}{2ac\left(a+cx^2\right)}$$

Rubi [A] time = 0.03, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {778, 205}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{2a^{3/2}c^{3/2}}-\frac{a(Ae+Bd)-x(Acd-aBe)}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] -(a*(B*d + A*e) - (A*c*d - a*B*e)*x)/(2*a*c*(a + c*x^2)) + ((A*c*d + a*B*e)
*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(3/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^2}\,dx &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{2ac\left(a+cx^2\right)}+\frac{(Acd+aBe)\int \frac{1}{a+cx^2}\,dx}{2ac}\\ &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{2ac\left(a+cx^2\right)}+\frac{(Acd+aBe)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 78, normalized size = 0.99

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{2a^{3/2}c^{3/2}}+\frac{-aAe-aBd-aBex+Acdx}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (-(a*B*d) - a*A*e + A*c*d*x - a*B*e*x)/(2*a*c*(a + c*x^2)) + ((A*c*d + a*B*
e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(3/2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + c*x^2)^2, x]
```

fricas [A] time = 0.41, size = 225, normalized size = 2.85

$$\left[-\frac{2\,Ba^2cd+2\,Aa^2ce+\left(Aacd+Ba^2e+\left(Ac^2d+Bace\right)x^2\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)-2\left(Aac^2d-Ba^2ce\right)x}{4\left(a^2c^3x^2+a^3c^2\right)},\,-\frac{Ba^2cd+Aa^2ce-\left(Aacd+Ba^2e+\left(Ac^2d+Bace\right)x^2\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)-\left(Aac^2d-Ba^2ce\right)x}{2\left(a^2c^3x^2+a^3c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a^2*c*d + 2*A*a^2*c*e + (A*a*c*d + B*a^2*e + (A*c^2*d + B*a*c*e)
*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(A*a*c^2
*d - B*a^2*c*e)*x)/(a^2*c^3*x^2 + a^3*c^2), -1/2*(B*a^2*c*d + A*a^2*c*e - (
A*a*c*d + B*a^2*e + (A*c^2*d + B*a*c*e)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a
) - (A*a*c^2*d - B*a^2*c*e)*x)/(a^2*c^3*x^2 + a^3*c^2)]
```

giac [A] time = 0.15, size = 74, normalized size = 0.94

$$\frac{(Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac}+\frac{Acdx-Baxe-Bad-Aae}{2\left(cx^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c) + 1/2*(A*c*d*x -
B*a*x*e - B*a*d - A*a*e)/((c*x^2 + a)*a*c)
```

maple [A] time = 0.06, size = 86, normalized size = 1.09

$$\frac{Ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}+\frac{Be\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c}+\frac{\frac{(Acd-aBe)x}{2ac}-\frac{Ae+Bd}{2c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] (1/2*(A*c*d-B*a*e)/a/c*x-1/2*(A*e+B*d)/c)/(c*x^2+a)+1/2/a/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*A*d+1/2/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*e
```

maxima [A] time = 1.20, size = 72, normalized size = 0.91

$$-\frac{Bad+Aae-(Acd-Bae)x}{2\left(ac^2x^2+a^2c\right)}+\frac{(Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*a*d + A*a*e - (A*c*d - B*a*e)*x)/(a*c^2*x^2 + a^2*c) + 1/2*(A*c*d +
 B*a*e)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c)
```

mupad [B] time = 1.77, size = 70, normalized size = 0.89

$$\frac{\operatorname{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(A\,c\,d+B\,a\,e)}{2\,a^{3/2}\,c^{3/2}}-\frac{\frac{A\,e+B\,d}{2\,c}-\frac{x\,(A\,c\,d-B\,a\,e)}{2\,a\,c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (atan((c^(1/2)*x)/a^(1/2))*(A*c*d + B*a*e))/(2*a^(3/2)*c^(3/2)) - ((A*e + B
*d)/(2*c) - (x*(A*c*d - B*a*e))/(2*a*c))/(a + c*x^2)
```

sympy [A] time = 0.92, size = 133, normalized size = 1.68

$$-\frac{\sqrt{-\frac{1}{a^3c^3}}\,(Acd+Bae)\log\left(-a^2c\sqrt{-\frac{1}{a^3c^3}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{a^3c^3}}\,(Acd+Bae)\log\left(a^2c\sqrt{-\frac{1}{a^3c^3}}+x\right)}{4}+\frac{-Aae-Bad+x\,(Acd-Bae)}{2a^2c+2ac^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] -sqrt(-1/(a**3*c**3))*(A*c*d + B*a*e)*log(-a**2*c*sqrt(-1/(a**3*c**3)) + x)
/4 + sqrt(-1/(a**3*c**3))*(A*c*d + B*a*e)*log(a**2*c*sqrt(-1/(a**3*c**3)) +
 x)/4 + (-A*a*e - B*a*d + x*(A*c*d - B*a*e))/(2*a**2*c + 2*a*c**2*x**2)
```

3.1169 $\int \frac{A+Bx}{(a+cx^2)^2} dx$

Optimal. Leaf size=57

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{Acx-aB}{2ac(a+cx^2)}$$

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {639, 205}

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{aB-Acx}{2ac(a+cx^2)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^2,x]
```

```
[Out] -(a*B - A*c*x)/(2*a*c*(a + c*x^2)) + (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(
3/2)*Sqrt[c])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(a+cx^2)^2}\,dx &= -\frac{aB-Acx}{2ac(a+cx^2)}+\frac{A\int \frac{1}{a+cx^2}\,dx}{2a}\\ &= -\frac{aB-Acx}{2ac(a+cx^2)}+\frac{A\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 1.00

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{Acx-aB}{2ac(a+cx^2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^2,x]
```

```
[Out] (-(a*B) + A*c*x)/(2*a*c*(a + c*x^2)) + (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a
^(3/2)*Sqrt[c])
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(a+cx^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(a + c*x^2)^2, x]
```

fricas [A] time = 0.42, size = 140, normalized size = 2.46

$$\left[\frac{2\,Aacx-2\,Ba^2-\left(Acx^2+Aa\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{4\,\left(a^2c^2x^2+a^3c\right)},\ \frac{Aacx-Ba^2+\left(Acx^2+Aa\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,\left(a^2c^2x^2+a^3c\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*A*a*c*x - 2*B*a^2 - (A*c*x^2 + A*a)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(
-a*c)*x - a)/(c*x^2 + a)))/(a^2*c^2*x^2 + a^3*c), 1/2*(A*a*c*x - B*a^2 + (A
*c*x^2 + A*a)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a^2*c^2*x^2 + a^3*c)]
```

giac [A] time = 0.17, size = 47, normalized size = 0.82

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a}+\frac{Acx-Ba}{2\,\left(cx^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(A*c*x - B*a)/((c*x^2 + a)*
a*c)
```

maple [A] time = 0.05, size = 49, normalized size = 0.86

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}+\frac{2Acx-2Ba}{4\left(c\,x^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 1/4*(2*A*c*x-2*B*a)/a/c/(c*x^2+a)+1/2*A/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*
c*x)
```

maxima [A] time = 1.16, size = 48, normalized size = 0.84

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a}+\frac{Acx-Ba}{2\,\left(ac^2x^2+a^2c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(A*c*x - B*a)/(a*c^2*x^2 +
a^2*c)
```

mupad [B] time = 0.05, size = 44, normalized size = 0.77

$$\frac{A\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,a^{3/2}\,\sqrt{c}}-\frac{\frac{B}{2\,c}-\frac{A\,x}{2\,a}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^2,x)
```

```
[Out] (A*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(3/2)*c^(1/2)) - (B/(2*c) - (A*x)/(2*a))
/(a + c*x^2)
```

sympy [A] time = 0.30, size = 90, normalized size = 1.58

$$A\left(-\frac{\sqrt{-\frac{1}{a^3c}}\log\left(-a^2\sqrt{-\frac{1}{a^3c}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{a^3c}}\log\left(a^2\sqrt{-\frac{1}{a^3c}}+x\right)}{4}\right)+\frac{Acx-Ba}{2a^2c+2ac^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] A*(-sqrt(-1/(a**3*c))*log(-a**2*sqrt(-1/(a**3*c)) + x)/4 + sqrt(-1/(a**3*c)
)*log(a**2*sqrt(-1/(a**3*c)) + x)/4) + (A*c*x - B*a)/(2*a**2*c + 2*a*c**2*x
**2)
```

3.1170 $\int \frac{A+Bx}{(d+ex)(a+cx^2)^2}\,dx$

Optimal. Leaf size=195

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aBe\left(cd^2-ae^2\right)-Acd\left(3ae^2+cd^2\right)\right)}{2a^{3/2}\sqrt{c}\left(ae^2+cd^2\right)^2}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)\left(ae^2+cd^2\right)}+\frac{e^2\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)^2}-\frac{e^2(}{}$$

Rubi [A] time = 0.28, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {823, 801, 635, 205, 260}

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aBe\left(cd^2-ae^2\right)-Acd\left(3ae^2+cd^2\right)\right)}{2a^{3/2}\sqrt{c}\left(ae^2+cd^2\right)^2}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)\left(ae^2+cd^2\right)}+\frac{e^2\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)^2}-\frac{e^2(Bd-Ae)\log(d+ex)}{\left(ae^2+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + c*x^2)^2),x]
```

```
[Out] -(a*(B*d - A*e) - (A*c*d + a*B*e)*x)/(2*a*(c*d^2 + a*e^2)*(a + c*x^2)) - ((
a*B*e*(c*d^2 - a*e^2) - A*c*d*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]
])/(2*a^(3/2)*Sqrt[c]*(c*d^2 + a*e^2)^2) - (e^2*(B*d - A*e)*Log[d + e*x])/(
c*d^2 + a*e^2)^2 + (e^2*(B*d - A*e)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^2}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\int \frac{c\left(aBde-A\left(cd^2+2ae^2\right)\right)-ce(Acd+aBe)x}{(d+ex)\left(a+cx^2\right)}\,dx}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\int \left(-\frac{2ace^3(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)} + \frac{c\left(aBe\left(cd^2-ae^2\right)-Acd\left(cd^2+3ae^2\right)-2ace^2 \ldots\right.}{\left(cd^2+ae^2\right)\left(a+cx^2\right)}\right.}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{e^2(Bd-Ae)\log(d+ex)}{\left(cd^2+ae^2\right)^2} - \frac{\int \frac{aBe\left(cd^2-ae^2\right)-Acd\left(cd^2+3a \ldots\right.}{a+cx^2}}{2a\left(cd^2+ \ldots\right.}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{e^2(Bd-Ae)\log(d+ex)}{\left(cd^2+ae^2\right)^2} + \frac{\left(ce^2(Bd-Ae)\right)\int \frac{x}{a+cx^2} \ldots}{\left(cd^2+ae^2\right)^2}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\left(aBe\left(cd^2-ae^2\right)-Acd\left(cd^2+3ae^2\right)\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}\left(cd^2+ae^2\right)^2} \ldots$$

Mathematica [A] time = 0.16, size = 158, normalized size = 0.81

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+aBe\left(ae^2-cd^2\right)\right)}{a^{3/2}\sqrt{c}} + \frac{\left(ae^2+cd^2\right)(a(Ae-Bd+Bex)+Acdx)}{a\left(a+cx^2\right)} + e^2\log\left(a+cx^2\right)(Bd-Ae) + 2e^2(Ae-Bd)\log(d+ex)}{2\left(ae^2+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + c*x^2)^2),x]
```

```
[Out] (((c*d^2 + a*e^2)*(A*c*d*x + a*(-(B*d) + A*e + B*e*x)))/(a*(a + c*x^2)) + (
(a*B*e*(-(c*d^2) + a*e^2) + A*c*d*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqr
t[a]])/(a^(3/2)*Sqrt[c]) + 2*e^2*(-(B*d) + A*e)*Log[d + e*x] + e^2*(B*d - A
*e)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + c*x^2)^2), x]
```

fricas [B] time = 16.50, size = 795, normalized size = 4.08

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a^2*c^2*d^3 - 2*A*a^2*c^2*d^2*e + 2*B*a^3*c*d*e^2 - 2*A*a^3*c*e^
3 + (A*a*c^2*d^3 - B*a^2*c*d^2*e + 3*A*a^2*c*d*e^2 + B*a^3*e^3 + (A*c^3*d^3
 - B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 + B*a^2*c*e^3)*x^2)*sqrt(-a*c)*log((c*x^
2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A
*a^2*c^2*d*e^2 + B*a^3*c*e^3)*x - 2*(B*a^3*c*d*e^2 - A*a^3*c*e^3 + (B*a^2*c
```

```
^2*d*e^2 - A*a^2*c^2*e^3)*x^2)*log(c*x^2 + a) + 4*(B*a^3*c*d*e^2 - A*a^3*c*
e^3 + (B*a^2*c^2*d*e^2 - A*a^2*c^2*e^3)*x^2)*log(e*x + d))/(a^3*c^3*d^4 + 2
*a^4*c^2*d^2*e^2 + a^5*c*e^4 + (a^2*c^4*d^4 + 2*a^3*c^3*d^2*e^2 + a^4*c^2*e
^4)*x^2), -1/2*(B*a^2*c^2*d^3 - A*a^2*c^2*d^2*e + B*a^3*c*d*e^2 - A*a^3*c*e
^3 - (A*a*c^2*d^3 - B*a^2*c*d^2*e + 3*A*a^2*c*d*e^2 + B*a^3*e^3 + (A*c^3*d^
3 - B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 + B*a^2*c*e^3)*x^2)*sqrt(a*c)*arctan(sq
rt(a*c)*x/a) - (A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A*a^2*c^2*d*e^2 + B*a^3*c*e
^3)*x - (B*a^3*c*d*e^2 - A*a^3*c*e^3 + (B*a^2*c^2*d*e^2 - A*a^2*c^2*e^3)*x^
2)*log(c*x^2 + a) + 2*(B*a^3*c*d*e^2 - A*a^3*c*e^3 + (B*a^2*c^2*d*e^2 - A*a
^2*c^2*e^3)*x^2)*log(e*x + d))/(a^3*c^3*d^4 + 2*a^4*c^2*d^2*e^2 + a^5*c*e^4
 + (a^2*c^4*d^4 + 2*a^3*c^3*d^2*e^2 + a^4*c^2*e^4)*x^2)]
```

giac [**A**] time = 0.18, size = 268, normalized size = 1.37

$$\frac{\left(Bde^2 - Ae^3\right)\log\left(cx^2 + a\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} - \frac{\left(Bde^3 - Ae^4\right)\log\left(|xe + d|\right)}{c^2d^4e + 2\,acd^2e^3 + a^2e^5} + \frac{\left(Ac^2d^3 - Bacd^2e + 3\,Aacde^2 + Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ac^2d^4 + 2\,a^2cd^2e^2 + a^3e^4\right)\sqrt{ac}} - \frac{Bacd^3 - Aacd^2e + Ba^2de^2 - Aa^2e^3 - \left(Ac^2d^3 + Bacd^2e + Aacde^2 + Ba^2e^3\right)x}{2\left(cd^2 + ae^2\right)^2\left(cx^2 + a\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*d*e^2 - A*e^3)*log(c*x^2 + a)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4) -
(B*d*e^3 - A*e^4)*log(abs(x*e + d))/(c^2*d^4*e + 2*a*c*d^2*e^3 + a^2*e^5) +
 1/2*(A*c^2*d^3 - B*a*c*d^2*e + 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(
a*c))/((a*c^2*d^4 + 2*a^2*c*d^2*e^2 + a^3*e^4)*sqrt(a*c)) - 1/2*(B*a*c*d^3
- A*a*c*d^2*e + B*a^2*d*e^2 - A*a^2*e^3 - (A*c^2*d^3 + B*a*c*d^2*e + A*a*c*
d*e^2 + B*a^2*e^3)*x)/((c*d^2 + a*e^2)^2*(c*x^2 + a)*a)
```

maple [**B**] time = 0.06, size = 495, normalized size = 2.54

$$\frac{Ac^2d^3x}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)a} + \frac{Ac^2d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ae^2+cd^2\right)^2\sqrt{ac}\,a} + \frac{Acde^2x}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} + \frac{3Acde^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ae^2+cd^2\right)^2\sqrt{ac}} + \frac{Bae^3x}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} + \frac{Bae^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ae^2+cd^2\right)^2\sqrt{ac}} + \frac{Bcd^2ex}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} - \frac{Bcd^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ae^2+cd^2\right)^2\sqrt{ac}} + \frac{Aae^3}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} + \frac{Acd^2e}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} - \frac{Ae^3\ln\left(cx^2+a\right)}{2\left(ae^2+cd^2\right)^2} + \frac{Ae^3\ln\left(ex+d\right)}{\left(ae^2+cd^2\right)^2} - \frac{Bade^2}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} - \frac{Bcd^3}{2\left(ae^2+cd^2\right)^2\left(cx^2+a\right)} + \frac{Bde^2\ln\left(cx^2+a\right)}{2\left(ae^2+cd^2\right)^2} - \frac{Bde^2\ln\left(ex+d\right)}{\left(ae^2+cd^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*x*A*c*d*e^2+1/2/(a*e^2+c*d^2)^2/(c*x^2+a)/a*x
*A*c^2*d^3+1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*a*x*B*e^3+1/2/(a*e^2+c*d^2)^2/(c*x
^2+a)*x*B*c*d^2*e+1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*a*A*e^3+1/2/(a*e^2+c*d^2)^2
/(c*x^2+a)*A*c*d^2*e-1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*a*B*d*e^2-1/2/(a*e^2+c*d
^2)^2/(c*x^2+a)*B*c*d^3-1/2/(a*e^2+c*d^2)^2*ln(c*x^2+a)*A*e^3+1/2/(a*e^2+c*
d^2)^2*ln(c*x^2+a)*B*d*e^2+3/2/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*c)^(
1/2)*c*x)*A*c*d*e^2+1/2/(a*e^2+c*d^2)^2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*
c*x)*A*c^2*d^3+1/2/(a*e^2+c*d^2)^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
B*e^3-1/2/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*c*d^2*e+e
^3/(a*e^2+c*d^2)^2*ln(e*x+d)*A-e^2/(a*e^2+c*d^2)^2*ln(e*x+d)*B*d
```

maxima [**A**] time = 1.34, size = 243, normalized size = 1.25

$$\frac{\left(Bde^2 - Ae^3\right)\log\left(cx^2 + a\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} - \frac{\left(Bde^2 - Ae^3\right)\log\left(ex + d\right)}{c^2d^4 + 2\,acd^2e^2 + a^2e^4} + \frac{\left(Ac^2d^3 - Bacd^2e + 3\,Aacde^2 + Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ac^2d^4 + 2\,a^2cd^2e^2 + a^3e^4\right)\sqrt{ac}} - \frac{Bad - Aae - (Acd + Bae)x}{2\left(a^2cd^2 + a^3e^2 + \left(ac^2d^2 + a^2ce^2\right)x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(B*d*e^2 - A*e^3)*log(c*x^2 + a)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4) -
(B*d*e^2 - A*e^3)*log(e*x + d)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4) + 1/2*(A
*c^2*d^3 - B*a*c*d^2*e + 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(
(a*c^2*d^4 + 2*a^2*c*d^2*e^2 + a^3*e^4)*sqrt(a*c)) - 1/2*(B*a*d - A*a*e - (
A*c*d + B*a*e)*x)/(a^2*c*d^2 + a^3*e^2 + (a*c^2*d^2 + a^2*c*e^2)*x^2)
```

mupad [B] time = 3.76, size = 1086, normalized size = 5.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^2*(d + e*x)),x)
```

```
[Out] ((A*e - B*d)/(2*(a*e^2 + c*d^2)) + (x*(A*c*d + B*a*e))/(2*a*(a*e^2 + c*d^2)
))/(a + c*x^2) - (log(A*c^3*d^5*(-a^3*c)^(1/2) - B*a^3*e^5*(-a^3*c)^(1/2) -
 6*A*a^4*c*e^5 + B*a^4*c*e^5*x + 2*A*a^2*c^3*d^4*e + 12*A*a^3*c^2*d^2*e^3 -
 8*B*a^3*c^2*d^3*e^2 + 8*B*a^4*c*d*e^4 - A*a*c^4*d^5*x - 2*A*a^2*c^3*d^3*e^
2*x - 14*B*a^3*c^2*d^2*e^3*x + 2*A*a*c^2*d^3*e^2*(-a^3*c)^(1/2) + 14*B*a^2*
c*d^2*e^3*(-a^3*c)^(1/2) + 15*A*a^3*c^2*d*e^4*x + B*a^2*c^3*d^4*e*x - 15*A*
a^2*c*d*e^4*(-a^3*c)^(1/2) - B*a*c^2*d^4*e*(-a^3*c)^(1/2) - 6*A*a^2*c*e^5*x
*(-a^3*c)^(1/2) + 2*A*c^3*d^4*e*x*(-a^3*c)^(1/2) + 8*B*a^2*c*d*e^4*x*(-a^3*
c)^(1/2) + 12*A*a*c^2*d^2*e^3*x*(-a^3*c)^(1/2) - 8*B*a*c^2*d^3*e^2*x*(-a^3*
c)^(1/2))*(c*(a*((3*A*d*e^2*(-a^3*c)^(1/2))/4 - (B*d^2*e*(-a^3*c)^(1/2))/4)
 + a^3*((A*e^3)/2 - (B*d*e^2)/2)) + (A*c^2*d^3*(-a^3*c)^(1/2))/4 + (B*a^2*e
^3*(-a^3*c)^(1/2))/4))/(a^5*c*e^4 + a^3*c^3*d^4 + 2*a^4*c^2*d^2*e^2) + (log
(A*c^3*d^5*(-a^3*c)^(1/2) - B*a^3*e^5*(-a^3*c)^(1/2) + 6*A*a^4*c*e^5 - B*a^
4*c*e^5*x - 2*A*a^2*c^3*d^4*e - 12*A*a^3*c^2*d^2*e^3 + 8*B*a^3*c^2*d^3*e^2
- 8*B*a^4*c*d*e^4 + A*a*c^4*d^5*x + 2*A*a^2*c^3*d^3*e^2*x + 14*B*a^3*c^2*d^
2*e^3*x + 2*A*a*c^2*d^3*e^2*(-a^3*c)^(1/2) + 14*B*a^2*c*d^2*e^3*(-a^3*c)^(1
/2) - 15*A*a^3*c^2*d*e^4*x - B*a^2*c^3*d^4*e*x - 15*A*a^2*c*d*e^4*(-a^3*c)^
(1/2) - B*a*c^2*d^4*e*(-a^3*c)^(1/2) - 6*A*a^2*c*e^5*x*(-a^3*c)^(1/2) + 2*A
*c^3*d^4*e*x*(-a^3*c)^(1/2) + 8*B*a^2*c*d*e^4*x*(-a^3*c)^(1/2) + 12*A*a*c^2
*d^2*e^3*x*(-a^3*c)^(1/2) - 8*B*a*c^2*d^3*e^2*x*(-a^3*c)^(1/2))*(c*(a*((3*A
*d*e^2*(-a^3*c)^(1/2))/4 - (B*d^2*e*(-a^3*c)^(1/2))/4) - a^3*((A*e^3)/2 - (
B*d*e^2)/2)) + (A*c^2*d^3*(-a^3*c)^(1/2))/4 + (B*a^2*e^3*(-a^3*c)^(1/2))/4)
)/(a^5*c*e^4 + a^3*c^3*d^4 + 2*a^4*c^2*d^2*e^2) + (log(d + e*x)*(A*e^3 - B*
d*e^2))/(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1171 $\int \frac{A+Bx}{(d+ex)^2(a+cx^2)^2}\,dx$

Optimal. Leaf size=290

$$-\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(2aBde\left(cd^2-3ae^2\right)-A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}\left(ae^2+cd^2\right)^3}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)}+\frac{e^2\log}{}$$

Rubi [A] time = 0.41, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {823, 801, 635, 205, 260}

$$-\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(2aBde\left(cd^2-3ae^2\right)-A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}\left(ae^2+cd^2\right)^3}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)}+\frac{e^2\log\left(a+cx^2\right)\left(-aBe^2-4Acde+3Bcd^2\right)}{2\left(ae^2+cd^2\right)^3}+\frac{e\left(-3aAe^2+4aBde+Acd^2\right)}{2a(d+ex)\left(ae^2+cd^2\right)^2}-\frac{e^2\log(d+ex)\left(-aBe^2-4Acde+3Bcd^2\right)}{\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + c*x^2)^2),x]
```

```
[Out] (e*(A*c*d^2 + 4*a*B*d*e - 3*a*A*e^2))/(2*a*(c*d^2 + a*e^2)^2*(d + e*x)) - (
a*(B*d - A*e) - (A*c*d + a*B*e)*x)/(2*a*(c*d^2 + a*e^2)*(d + e*x)*(a + c*x^
2)) - (Sqrt[c]*(2*a*B*d*e*(c*d^2 - 3*a*e^2) - A*(c^2*d^4 + 6*a*c*d^2*e^2 -
3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*(c*d^2 + a*e^2)^3) - (e
^2*(3*B*c*d^2 - 4*A*c*d*e - a*B*e^2)*Log[d + e*x])/(c*d^2 + a*e^2)^3 + (e^2
*(3*B*c*d^2 - 4*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^2}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{\int \frac{-c\left(Acd^2-2aBde+3aAe^2\right)-2ce(Acd+aBe)x}{(d+ex)^2\left(a+cx^2\right)}\,dx}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{\int\left(\frac{ce^2\left(Acd^2+4aBde-3aAe^2\right)}{\left(cd^2+ae^2\right)(d+ex)^2} - \frac{2ace^3\left(-3Bcd^2+4Acde+a\cdots\right.}{\left(cd^2+ae^2\right)^2(d+ex)}\cdots\right.}{\cdots}$$

$$= \frac{e\left(Acd^2+4aBde-3aAe^2\right)}{2a\left(cd^2+ae^2\right)^2(d+ex)} - \frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{e^2\left(3Bcd^2-4Ac\cdots\right.}{\left(c\cdots\right.}$$

$$= \frac{e\left(Acd^2+4aBde-3aAe^2\right)}{2a\left(cd^2+ae^2\right)^2(d+ex)} - \frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{e^2\left(3Bcd^2-4Ac\cdots\right.}{\left(c\cdots\right.}$$

$$= \frac{e\left(Acd^2+4aBde-3aAe^2\right)}{2a\left(cd^2+ae^2\right)^2(d+ex)} - \frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{\sqrt{c}\left(2aBde\left(cd^2\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 0.36, size = 251, normalized size = 0.87

$$\frac{\frac{\left(ae^2+cd^2\right)\left(a^2Be^2-ac(Ae(ex-2d)+Bd(d-2ex))+Ac^2d^2x\right)}{a\left(a+cx^2\right)}+\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+2aBde\left(3ae^2-cd^2\right)\right)}{a^{3/2}}-e^2\log\left(a+cx^2\right)\left(aBe^2+4Acde-3Bcd^2\right)-\frac{2e^2\left(ae^2+cd^2\right)(Ae-Bd)}{d+ex}+2e^2\log(d+ex)\left(aBe^2+4Acde-3Bcd^2\right)}{2\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + c*x^2)^2),x]
```

```
[Out] ((-2*e^2*(-(B*d) + A*e)*(c*d^2 + a*e^2))/(d + e*x) + ((c*d^2 + a*e^2)*(a^2*
B*e^2 + A*c^2*d^2*x - a*c*(B*d*(d - 2*e*x) + A*e*(-2*d + e*x))))/(a*(a + c*
x^2)) + (Sqrt[c]*(2*a*B*d*e*(-(c*d^2) + 3*a*e^2) + A*(c^2*d^4 + 6*a*c*d^2*e
^2 - 3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) + 2*e^2*(-3*B*c*d^2 +
 4*A*c*d*e + a*B*e^2)*Log[d + e*x] - e^2*(-3*B*c*d^2 + 4*A*c*d*e + a*B*e^2)
*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + c*x^2)^2), x]
```

fricas [B] time = 57.64, size = 1940, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a*c^2*d^5 - 4*A*a*c^2*d^4*e - 4*B*a^2*c*d^3*e^2 - 6*B*a^3*d*e^4
+ 4*A*a^3*e^5 - 2*(A*c^3*d^4*e + 4*B*a*c^2*d^3*e^2 - 2*A*a*c^2*d^2*e^3 + 4*
B*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x^2 + (A*a*c^2*d^5 - 2*B*a^2*c*d^4*e + 6*A*a
```

```
^2*c*d^3*e^2 + 6*B*a^3*d^2*e^3 - 3*A*a^3*d*e^4 + (A*c^3*d^4*e - 2*B*a*c^2*d
^3*e^2 + 6*A*a*c^2*d^2*e^3 + 6*B*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x^3 + (A*c^3*
d^5 - 2*B*a*c^2*d^4*e + 6*A*a*c^2*d^3*e^2 + 6*B*a^2*c*d^2*e^3 - 3*A*a^2*c*d
*e^4)*x^2 + (A*a*c^2*d^4*e - 2*B*a^2*c*d^3*e^2 + 6*A*a^2*c*d^2*e^3 + 6*B*a^
3*d*e^4 - 3*A*a^3*e^5)*x)*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*
x^2 + a)) - 2*(A*c^3*d^5 + B*a*c^2*d^4*e + 2*A*a*c^2*d^3*e^2 + 2*B*a^2*c*d^
2*e^3 + A*a^2*c*d*e^4 + B*a^3*e^5)*x - 2*(3*B*a^2*c*d^3*e^2 - 4*A*a^2*c*d^2
*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^2*e^3 - 4*A*a*c^2*d*e^4 - B*a^2*c*e^5)*x^
3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2*d^2*e^3 - B*a^2*c*d*e^4)*x^2 + (3*B*a^2*
c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^3*e^5)*x)*log(c*x^2 + a) + 4*(3*B*a^2*c*d
^3*e^2 - 4*A*a^2*c*d^2*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^2*e^3 - 4*A*a*c^2*d
*e^4 - B*a^2*c*e^5)*x^3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2*d^2*e^3 - B*a^2*c*
d*e^4)*x^2 + (3*B*a^2*c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^3*e^5)*x)*log(e*x +
 d))/(a^2*c^3*d^7 + 3*a^3*c^2*d^5*e^2 + 3*a^4*c*d^3*e^4 + a^5*d*e^6 + (a*c^
4*d^6*e + 3*a^2*c^3*d^4*e^3 + 3*a^3*c^2*d^2*e^5 + a^4*c*e^7)*x^3 + (a*c^4*d
^7 + 3*a^2*c^3*d^5*e^2 + 3*a^3*c^2*d^3*e^4 + a^4*c*d*e^6)*x^2 + (a^2*c^3*d^
6*e + 3*a^3*c^2*d^4*e^3 + 3*a^4*c*d^2*e^5 + a^5*e^7)*x), -1/2*(B*a*c^2*d^5
- 2*A*a*c^2*d^4*e - 2*B*a^2*c*d^3*e^2 - 3*B*a^3*d*e^4 + 2*A*a^3*e^5 - (A*c^
3*d^4*e + 4*B*a*c^2*d^3*e^2 - 2*A*a*c^2*d^2*e^3 + 4*B*a^2*c*d*e^4 - 3*A*a^2
*c*e^5)*x^2 - (A*a*c^2*d^5 - 2*B*a^2*c*d^4*e + 6*A*a^2*c*d^3*e^2 + 6*B*a^3*
d^2*e^3 - 3*A*a^3*d*e^4 + (A*c^3*d^4*e - 2*B*a*c^2*d^3*e^2 + 6*A*a*c^2*d^2*
e^3 + 6*B*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x^3 + (A*c^3*d^5 - 2*B*a*c^2*d^4*e +
 6*A*a*c^2*d^3*e^2 + 6*B*a^2*c*d^2*e^3 - 3*A*a^2*c*d*e^4)*x^2 + (A*a*c^2*d^
4*e - 2*B*a^2*c*d^3*e^2 + 6*A*a^2*c*d^2*e^3 + 6*B*a^3*d*e^4 - 3*A*a^3*e^5)*
x)*sqrt(c/a)*arctan(x*sqrt(c/a)) - (A*c^3*d^5 + B*a*c^2*d^4*e + 2*A*a*c^2*d
^3*e^2 + 2*B*a^2*c*d^2*e^3 + A*a^2*c*d*e^4 + B*a^3*e^5)*x - (3*B*a^2*c*d^3*
e^2 - 4*A*a^2*c*d^2*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^2*e^3 - 4*A*a*c^2*d*e^
4 - B*a^2*c*e^5)*x^3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2*d^2*e^3 - B*a^2*c*d*e
^4)*x^2 + (3*B*a^2*c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^3*e^5)*x)*log(c*x^2 +
a) + 2*(3*B*a^2*c*d^3*e^2 - 4*A*a^2*c*d^2*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^
2*e^3 - 4*A*a*c^2*d*e^4 - B*a^2*c*e^5)*x^3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2
*d^2*e^3 - B*a^2*c*d*e^4)*x^2 + (3*B*a^2*c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^
3*e^5)*x)*log(e*x + d))/(a^2*c^3*d^7 + 3*a^3*c^2*d^5*e^2 + 3*a^4*c*d^3*e^4
+ a^5*d*e^6 + (a*c^4*d^6*e + 3*a^2*c^3*d^4*e^3 + 3*a^3*c^2*d^2*e^5 + a^4*c*
e^7)*x^3 + (a*c^4*d^7 + 3*a^2*c^3*d^5*e^2 + 3*a^3*c^2*d^3*e^4 + a^4*c*d*e^6
)*x^2 + (a^2*c^3*d^6*e + 3*a^3*c^2*d^4*e^3 + 3*a^4*c*d^2*e^5 + a^5*e^7)*x)]
```

giac [**A**] time = 0.18, size = 494, normalized size = 1.70

$$\frac{\left(Ac^3d^4e^2 - 2\,Bac^2d^3e^3 + 6\,Aac^2d^2e^4 + 6\,Ba^2cde^5 - 3\,Aa^2ce^6\right)\arctan\left(\frac{\left(cd-\frac{cd^2}{xe+d}-\frac{ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{ac}}\right)e^{(-2)}}{2\left(ac^3d^6 + 3\,a^2c^2d^4e^2 + 3\,a^3cd^2e^4 + a^4e^6\right)\sqrt{ac}} + \frac{\left(3\,Bcd^2e^2 - 4\,Acde^3 - Bae^4\right)\log\left(c - \frac{2\,cd}{xe+d} + \frac{cd^2}{(xe+d)^2} + \frac{ae^2}{(xe+d)^2}\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} + \frac{\frac{Bde^6}{xe+d} - \frac{Ae^7}{xe+d}}{c^2d^4e^4 + 2\,acd^2e^6 + a^2e^8} + \frac{\frac{Ac^3d^3e+3\,Bac^2d^2e^2-3\,Aac^2de^3-Ba^2ce^4}{cd^2+ae^2} - \frac{\left(Ac^3d^4e^2+4\,Bac^2d^3e^3-6\,Aac^2d^2e^4-4\,Ba^2cde^5+Aa^2ce^6\right)e^{(-1)}}{\left(cd^2+ae^2\right)(xe+d)}}{2\left(cd^2+ae^2\right)^2 a\left(c - \frac{2\,cd}{xe+d} + \frac{cd^2}{(xe+d)^2} + \frac{ae^2}{(xe+d)^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(A*c^3*d^4*e^2 - 2*B*a*c^2*d^3*e^3 + 6*A*a*c^2*d^2*e^4 + 6*B*a^2*c*d*e^
5 - 3*A*a^2*c*e^6)*arctan((c*d - c*d^2/(x*e + d) - a*e^2/(x*e + d))*e^(-1)/
sqrt(a*c))*e^(-2)/((a*c^3*d^6 + 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 + a^4*e
^6)*sqrt(a*c)) + 1/2*(3*B*c*d^2*e^2 - 4*A*c*d*e^3 - B*a*e^4)*log(c - 2*c*d/
(x*e + d) + c*d^2/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^3*d^6 + 3*a*c^2*d^4*e
^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) + (B*d*e^6/(x*e + d) - A*e^7/(x*e + d))/(c^
2*d^4*e^4 + 2*a*c*d^2*e^6 + a^2*e^8) + 1/2*((A*c^3*d^3*e + 3*B*a*c^2*d^2*e^
2 - 3*A*a*c^2*d*e^3 - B*a^2*c*e^4)/(c*d^2 + a*e^2) - (A*c^3*d^4*e^2 + 4*B*a
*c^2*d^3*e^3 - 6*A*a*c^2*d^2*e^4 - 4*B*a^2*c*d*e^5 + A*a^2*c*e^6)*e^(-1)/((
c*d^2 + a*e^2)*(x*e + d)))/((c*d^2 + a*e^2)^2*a*(c - 2*c*d/(x*e + d) + c*d^
2/(x*e + d)^2 + a*e^2/(x*e + d)^2))
```

maple [**B**] time = 0.07, size = 661, normalized size = 2.28

$$-\frac{Aac e^4 x}{2\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} - \frac{3Aac e^4 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(a e^2+c d^2\right)^3\sqrt{ac}} + \frac{A c^3 d^4 x}{2\left(a e^2+c d^2\right)^3\left(c x^2+a\right)a} + \frac{A c^3 d^4 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(a e^2+c d^2\right)^3\sqrt{ac}\, a} + \frac{3A c^2 d^2 e^2 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a e^2+c d^2\right)^3\sqrt{ac}} + \frac{Bacd e^3 x}{\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} + \frac{3Bacd e^3 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a e^2+c d^2\right)^3\sqrt{ac}} + \frac{B c^2 d^3 e x}{\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} - \frac{B c^2 d^3 e \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a e^2+c d^2\right)^3\sqrt{ac}} + \frac{Aacd e^3}{\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} + \frac{A c^2 d^3 e}{\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} - \frac{2Acd e^3 \ln\left(c x^2+a\right)}{\left(a e^2+c d^2\right)^3} + \frac{4Acd e^3 \ln(ex+d)}{\left(a e^2+c d^2\right)^3} + \frac{B a^2 e^4}{2\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} - \frac{Ba e^4 \ln\left(c x^2+a\right)}{2\left(a e^2+c d^2\right)^3} + \frac{Ba e^4 \ln(ex+d)}{\left(a e^2+c d^2\right)^3} - \frac{B c^2 d^4}{2\left(a e^2+c d^2\right)^3\left(c x^2+a\right)} + \frac{3Bc d^2 e^2 \ln\left(c x^2+a\right)}{2\left(a e^2+c d^2\right)^3} - \frac{3Bc d^2 e^2 \ln(ex+d)}{\left(a e^2+c d^2\right)^3} - \frac{A e^3}{\left(a e^2+c d^2\right)^2(ex+d)} + \frac{Bd e^2}{\left(a e^2+c d^2\right)^2(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/(a*e^2+c*d^2)^3/(c*x^2+a)*a*x*A*e^4+1/2*c^3/(a*e^2+c*d^2)^3/(c*x^2+a
)/a*x*A*d^4+c/(a*e^2+c*d^2)^3/(c*x^2+a)*a*x*B*d*e^3+c^2/(a*e^2+c*d^2)^3/(c*
x^2+a)*x*B*d^3*e+c/(a*e^2+c*d^2)^3/(c*x^2+a)*A*a*d*e^3+c^2/(a*e^2+c*d^2)^3/
(c*x^2+a)*A*d^3*e+1/2/(a*e^2+c*d^2)^3/(c*x^2+a)*B*a^2*e^4-1/2*c^2/(a*e^2+c*
d^2)^3/(c*x^2+a)*B*d^4-2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*A*d*e^3-1/2/(a*e^2+c
*d^2)^3*a*ln(c*x^2+a)*B*e^4+3/2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*d^2*B*e^2-3/2
*c/(a*e^2+c*d^2)^3*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*e^4+3*c^2/(a*e
^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2*e^2+1/2*c^3/(a*e^2+
c*d^2)^3/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^4+3*c/(a*e^2+c*d^2)^3*
a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d*e^3-c^2/(a*e^2+c*d^2)^3/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^3*e+4*e^3/(a*e^2+c*d^2)^3*ln(e*x+d)*A*c*
d+e^4/(a*e^2+c*d^2)^3*ln(e*x+d)*B*a-3*e^2/(a*e^2+c*d^2)^3*ln(e*x+d)*B*c*d^2
-e^3/(a*e^2+c*d^2)^2/(e*x+d)*A+e^2/(a*e^2+c*d^2)^2/(e*x+d)*B*d
```

maxima [A] time = 1.35, size = 511, normalized size = 1.76

$$\frac{\left(3 Bcd^2e^2 - 4 Acde^3 - Bae^4\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3 ac^2d^4e^2 + 3 a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(3 Bcd^2e^2 - 4 Acde^3 - Bae^4\right)\log\left(ex + d\right)}{c^3d^6 + 3 ac^2d^4e^2 + 3 a^2cd^2e^4 + a^3e^6} + \frac{\left(Ac^3d^4 - 2 Bac^2d^3e + 6 Aac^2d^2e^2 + 6 Ba^2cde^3 - 3 Aa^2ce^4\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ac^3d^6 + 3 a^2c^2d^4e^2 + 3 a^3cd^2e^4 + a^4e^6\right)\sqrt{ac}} - \frac{Bacd^3 - 2 Aacd^2e - 3 Ba^2de^2 + 2 Aa^2e^3 - \left(Ac^2d^2e + 4 Bacde^2 - 3 Aace^3\right)x^2 - \left(Ac^2d^3 + Bacd^2e + Aacde^2 + Ba^2e^3\right)x}{2\left(a^2c^2d^5 + 2 a^3cd^3e^2 + a^4de^4 + \left(ac^3d^4e + 2 a^2c^2d^2e^3 + a^3ce^5\right)x^3 + \left(ac^3d^5 + 2 a^2c^2d^3e^2 + a^3cde^4\right)x^2 + \left(a^2c^2d^4e + 2 a^3cd^2e^3 + a^4e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(3*B*c*d^2*e^2 - 4*A*c*d*e^3 - B*a*e^4)*log(c*x^2 + a)/(c^3*d^6 + 3*a*c
^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) - (3*B*c*d^2*e^2 - 4*A*c*d*e^3 - B*
a*e^4)*log(e*x + d)/(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6)
 + 1/2*(A*c^3*d^4 - 2*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 + 6*B*a^2*c*d*e^3 -
 3*A*a^2*c*e^4)*arctan(c*x/sqrt(a*c))/((a*c^3*d^6 + 3*a^2*c^2*d^4*e^2 + 3*a
^3*c*d^2*e^4 + a^4*e^6)*sqrt(a*c)) - 1/2*(B*a*c*d^3 - 2*A*a*c*d^2*e - 3*B*a
^2*d*e^2 + 2*A*a^2*e^3 - (A*c^2*d^2*e + 4*B*a*c*d*e^2 - 3*A*a*c*e^3)*x^2 -
(A*c^2*d^3 + B*a*c*d^2*e + A*a*c*d*e^2 + B*a^2*e^3)*x)/(a^2*c^2*d^5 + 2*a^3
*c*d^3*e^2 + a^4*d*e^4 + (a*c^3*d^4*e + 2*a^2*c^2*d^2*e^3 + a^3*c*e^5)*x^3
+ (a*c^3*d^5 + 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)*x^2 + (a^2*c^2*d^4*e + 2*a^
3*c*d^2*e^3 + a^4*e^5)*x)
```

mupad [B] time = 4.05, size = 2029, normalized size = 7.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^2*(d + e*x)^2),x)
```

```
[Out] ((x*(A*c*d + B*a*e))/(2*a*(a*e^2 + c*d^2)) - (2*A*a*e^3 + B*c*d^3 - 3*B*a*d
*e^2 - 2*A*c*d^2*e)/(2*(a*e^2 + c*d^2)^2) + (x^2*(A*c^2*d^2*e - 3*A*a*c*e^3
 + 4*B*a*c*d*e^2))/(2*a*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)))/(a*d + a*e*x
+ c*d*x^2 + c*e*x^3) + (log(9*A^2*a^6*e^12*(-a^3*c)^(3/2) + A^2*c^6*d^12*(-
a^3*c)^(3/2) - 36*B^2*a^10*e^12*(-a^3*c)^(1/2) - 558*A^2*a^2*d^2*e^10*(-a^3
*c)^(5/2) + 24*B^2*a^2*d^4*e^8*(-a^3*c)^(5/2) - 108*B^2*a^6*d^2*e^10*(-a^3*
c)^(3/2) - 612*A^2*c^2*d^6*e^6*(-a^3*c)^(5/2) - 308*B^2*c^2*d^8*e^4*(-a^3*c
)^(5/2) + 36*B^2*a^11*c*e^12*x + A^2*a^4*c^8*d^12*x + 9*A^2*a^10*c^2*e^12*x
 + 276*A*B*a^2*d^3*e^9*(-a^3*c)^(5/2) + 808*A*B*c^2*d^7*e^5*(-a^3*c)^(5/2)
- 1119*A^2*a*c*d^4*e^8*(-a^3*c)^(5/2) - 424*B^2*a*c*d^6*e^6*(-a^3*c)^(5/2)
+ 14*A^2*a^5*c^7*d^10*e^2*x + 55*A^2*a^6*c^6*d^8*e^4*x + 612*A^2*a^7*c^5*d^
6*e^6*x + 1119*A^2*a^8*c^4*d^4*e^8*x + 558*A^2*a^9*c^3*d^2*e^10*x + 4*B^2*a
^6*c^6*d^10*e^2*x + 308*B^2*a^7*c^5*d^8*e^4*x + 424*B^2*a^8*c^4*d^6*e^6*x -
 24*B^2*a^9*c^3*d^4*e^8*x - 108*B^2*a^10*c^2*d^2*e^10*x + 14*A^2*a*c^5*d^10
*e^2*(-a^3*c)^(3/2) + 252*A*B*a^6*d*e^11*(-a^3*c)^(3/2) + 55*A^2*a^2*c^4*d^
8*e^4*(-a^3*c)^(3/2) + 4*B^2*a^2*c^4*d^10*e^2*(-a^3*c)^(3/2) - 4*A*B*a^5*c^
7*d^11*e*x + 252*A*B*a^10*c^2*d*e^11*x + 1320*A*B*a*c*d^5*e^7*(-a^3*c)^(5/2
```

```
) - 4*A*B*a*c^5*d^11*e*(-a^3*c)^(3/2) - 20*A*B*a^6*c^6*d^9*e^3*x - 808*A*B*
a^7*c^5*d^7*e^5*x - 1320*A*B*a^8*c^4*d^5*e^7*x - 276*A*B*a^9*c^3*d^3*e^9*x
- 20*A*B*a^2*c^4*d^9*e^3*(-a^3*c)^(3/2))*(c*(a^3*((3*B*d^2*e^2)/2 - 2*A*d*e
^3) - a*((3*A*d^2*e^2*(-a^3*c)^(1/2))/2 - (B*d^3*e*(-a^3*c)^(1/2))/2)) + a^
2*((3*A*e^4*(-a^3*c)^(1/2))/4 - (3*B*d*e^3*(-a^3*c)^(1/2))/2) - (B*a^4*e^4)
/2 - (A*c^2*d^4*(-a^3*c)^(1/2))/4))/(a^6*e^6 + a^3*c^3*d^6 + 3*a^5*c*d^2*e^
4 + 3*a^4*c^2*d^4*e^2) + (log(36*B^2*a^10*e^12*(-a^3*c)^(1/2) - A^2*c^6*d^1
2*(-a^3*c)^(3/2) - 9*A^2*a^6*e^12*(-a^3*c)^(3/2) + 558*A^2*a^2*d^2*e^10*(-a
^3*c)^(5/2) - 24*B^2*a^2*d^4*e^8*(-a^3*c)^(5/2) + 108*B^2*a^6*d^2*e^10*(-a^
3*c)^(3/2) + 612*A^2*c^2*d^6*e^6*(-a^3*c)^(5/2) + 308*B^2*c^2*d^8*e^4*(-a^3
*c)^(5/2) + 36*B^2*a^11*c*e^12*x + A^2*a^4*c^8*d^12*x + 9*A^2*a^10*c^2*e^12
*x - 276*A*B*a^2*d^3*e^9*(-a^3*c)^(5/2) - 808*A*B*c^2*d^7*e^5*(-a^3*c)^(5/2
) + 1119*A^2*a*c*d^4*e^8*(-a^3*c)^(5/2) + 424*B^2*a*c*d^6*e^6*(-a^3*c)^(5/2
) + 14*A^2*a^5*c^7*d^10*e^2*x + 55*A^2*a^6*c^6*d^8*e^4*x + 612*A^2*a^7*c^5*
d^6*e^6*x + 1119*A^2*a^8*c^4*d^4*e^8*x + 558*A^2*a^9*c^3*d^2*e^10*x + 4*B^2
*a^6*c^6*d^10*e^2*x + 308*B^2*a^7*c^5*d^8*e^4*x + 424*B^2*a^8*c^4*d^6*e^6*x
 - 24*B^2*a^9*c^3*d^4*e^8*x - 108*B^2*a^10*c^2*d^2*e^10*x - 14*A^2*a*c^5*d^
10*e^2*(-a^3*c)^(3/2) - 252*A*B*a^6*d*e^11*(-a^3*c)^(3/2) - 55*A^2*a^2*c^4*
d^8*e^4*(-a^3*c)^(3/2) - 4*B^2*a^2*c^4*d^10*e^2*(-a^3*c)^(3/2) - 4*A*B*a^5*
c^7*d^11*e*x + 252*A*B*a^10*c^2*d*e^11*x - 1320*A*B*a*c*d^5*e^7*(-a^3*c)^(5
/2) + 4*A*B*a*c^5*d^11*e*(-a^3*c)^(3/2) - 20*A*B*a^6*c^6*d^9*e^3*x - 808*A*
B*a^7*c^5*d^7*e^5*x - 1320*A*B*a^8*c^4*d^5*e^7*x - 276*A*B*a^9*c^3*d^3*e^9*
x + 20*A*B*a^2*c^4*d^9*e^3*(-a^3*c)^(3/2))*(c*(a^3*((3*B*d^2*e^2)/2 - 2*A*d
*e^3) + a*((3*A*d^2*e^2*(-a^3*c)^(1/2))/2 - (B*d^3*e*(-a^3*c)^(1/2))/2)) -
a^2*((3*A*e^4*(-a^3*c)^(1/2))/4 - (3*B*d*e^3*(-a^3*c)^(1/2))/2) - (B*a^4*e^
4)/2 + (A*c^2*d^4*(-a^3*c)^(1/2))/4))/(a^6*e^6 + a^3*c^3*d^6 + 3*a^5*c*d^2*
e^4 + 3*a^4*c^2*d^4*e^2) - (log(d + e*x)*(c*(3*B*d^2*e^2 - 4*A*d*e^3) - B*a
*e^4))/(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+a)**2,x)

[Out] Timed out
```

3.1172 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^3} dx$

Optimal. Leaf size=304

$$-\frac{e^2x\left(Acd\left(7ae^2+3cd^2\right)+5aBe\left(cd^2-3ae^2\right)\right)}{8a^2c^3}-\frac{(d+ex)^2\left(2ae\left(2aAe^2+5aBde+Acd^2\right)-x\left(Acd\left(5ae^2+3cd^2\right.\right.\right.}{8a^2c^2\left(a+cx^2\right)}$$

Rubi [A] time = 0.42, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {819, 774, 635, 205, 260}

$$-\frac{(d+ex)^2\left(2ae\left(2aAe^2+5aBde+Acd^2\right)-x\left(Acd\left(5ae^2+3cd^2\right)+5aBe\left(cd^2-ae^2\right)\right)\right)}{8a^2c^2\left(a+cx^2\right)}-\frac{e^2x\left(Acd\left(7ae^2+3cd^2\right)+5aBe\left(cd^2-3ae^2\right)\right)}{8a^2c^3}+\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)+5aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{8a^{5/2}c^{7/2}}+\frac{e^4\log\left(a+cx^2\right)(Ae+5Bd)}{2c^3}-\frac{(d+ex)^4(a(Ae+Bd)-x(Acd-aBe))}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x]
```

```
[Out] -(e^2*(5*a*B*e*(c*d^2 - 3*a*e^2) + A*c*d*(3*c*d^2 + 7*a*e^2))*x)/(8*a^2*c^3
) - ((d + e*x)^4*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(4*a*c*(a + c*x^2)^2)
 - ((d + e*x)^2*(2*a*e*(A*c*d^2 + 5*a*B*d*e + 2*a*A*e^2) - (5*a*B*e*(c*d^2
- a*e^2) + A*c*d*(3*c*d^2 + 5*a*e^2))*x))/(8*a^2*c^2*(a + c*x^2)) + ((5*a*B
*e*(c^2*d^4 + 6*a*c*d^2*e^2 - 3*a^2*e^4) + A*c*d*(3*c^2*d^4 + 10*a*c*d^2*e^
2 + 15*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(7/2)) + (e^4*(5
*B*d + A*e)*Log[a + c*x^2])/(2*c^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^3}\,dx = -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} + \frac{\int \frac{(d+ex)^3\left(3Acd^2+ae(5Bd+4Ae)-e(Acd-5aBe)x\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)^2\left(2ae\left(Acd^2+5aBde+2aAe^2\right)-(\right.}{8a^2c^2\left(a\right.}$$

$$= -\frac{e^2\left(5aBe\left(cd^2-3ae^2\right)+Acd\left(3cd^2+7ae^2\right)\right)x}{8a^2c^3} - \frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

$$= -\frac{e^2\left(5aBe\left(cd^2-3ae^2\right)+Acd\left(3cd^2+7ae^2\right)\right)x}{8a^2c^3} - \frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

$$= -\frac{e^2\left(5aBe\left(cd^2-3ae^2\right)+Acd\left(3cd^2+7ae^2\right)\right)x}{8a^2c^3} - \frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

Mathematica [A] time = 0.25, size = 341, normalized size = 1.12

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)+5aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{a^{5/2}}+\frac{2\sqrt{c}\left(-a^3e^4(Ae+5Bd+Bex)+5a^2cde^2(Ae(2d+ex)+2Bd(d+ex))-ac^2d^3(5Ae(d+2ex)+Bd(d+5ex))+Ac^3d^5x\right)}{a\left(a+cx^2\right)^2}+\frac{\sqrt{c}\left(a^3e^4(8Ae+40Bd+9Bex)-5a^2cde^2(Ae(8d+5ex)+2Bd(4d+5ex))+5ac^2d^3ex(2Ae+Bd)+3Ac^3d^5x\right)}{a^2\left(a+cx^2\right)}+4\sqrt{c}e^4\log\left(a+cx^2\right)(Ae+5Bd)+8B\sqrt{c}e^5x}{8c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x]
```

```
[Out] (8*B*Sqrt[c]*e^5*x + (2*Sqrt[c]*(A*c^3*d^5*x - a^3*e^4*(5*B*d + A*e + B*e*x
) + 5*a^2*c*d*e^2*(2*B*d*(d + e*x) + A*e*(2*d + e*x)) - a*c^2*d^3*(5*A*e*(d
 + 2*e*x) + B*d*(d + 5*e*x))))/(a*(a + c*x^2)^2) + (Sqrt[c]*(3*A*c^3*d^5*x
+ 5*a*c^2*d^3*e*(B*d + 2*A*e)*x + a^3*e^4*(40*B*d + 8*A*e + 9*B*e*x) - 5*a^
2*c*d*e^2*(2*B*d*(4*d + 5*e*x) + A*e*(8*d + 5*e*x))))/(a^2*(a + c*x^2)) + (
(5*a*B*e*(c^2*d^4 + 6*a*c*d^2*e^2 - 3*a^2*e^4) + A*c*d*(3*c^2*d^4 + 10*a*c*
d^2*e^2 + 15*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(5/2) + 4*Sqrt[c]*e^4
*(5*B*d + A*e)*Log[a + c*x^2])/(8*c^(7/2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3, x]
```

fricas [B] time = 0.46, size = 1403, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(16*B*a^3*c^3*e^5*x^5 - 4*B*a^3*c^3*d^5 - 20*A*a^3*c^3*d^4*e - 40*B*a
^4*c^2*d^3*e^2 - 40*A*a^4*c^2*d^2*e^3 + 60*B*a^5*c*d*e^4 + 12*A*a^5*c*e^5 +
```

```
2*(3*A*a*c^5*d^5 + 5*B*a^2*c^4*d^4*e + 10*A*a^2*c^4*d^3*e^2 - 50*B*a^3*c^3
*d^2*e^3 - 25*A*a^3*c^3*d*e^4 + 25*B*a^4*c^2*e^5)*x^3 - 16*(5*B*a^3*c^3*d^3
*e^2 + 5*A*a^3*c^3*d^2*e^3 - 5*B*a^4*c^2*d*e^4 - A*a^4*c^2*e^5)*x^2 + (3*A*
a^2*c^3*d^5 + 5*B*a^3*c^2*d^4*e + 10*A*a^3*c^2*d^3*e^2 + 30*B*a^4*c*d^2*e^3
 + 15*A*a^4*c*d*e^4 - 15*B*a^5*e^5 + (3*A*c^5*d^5 + 5*B*a*c^4*d^4*e + 10*A*
a*c^4*d^3*e^2 + 30*B*a^2*c^3*d^2*e^3 + 15*A*a^2*c^3*d*e^4 - 15*B*a^3*c^2*e^
5)*x^4 + 2*(3*A*a*c^4*d^5 + 5*B*a^2*c^3*d^4*e + 10*A*a^2*c^3*d^3*e^2 + 30*B
*a^3*c^2*d^2*e^3 + 15*A*a^3*c^2*d*e^4 - 15*B*a^4*c*e^5)*x^2)*sqrt(-a*c)*log
((c*x^2 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 10*(A*a^2*c^4*d^5 - B*a^3*c^3*
d^4*e - 2*A*a^3*c^3*d^3*e^2 - 6*B*a^4*c^2*d^2*e^3 - 3*A*a^4*c^2*d*e^4 + 3*B
*a^5*c*e^5)*x + 8*(5*B*a^5*c*d*e^4 + A*a^5*c*e^5 + (5*B*a^3*c^3*d*e^4 + A*a
^3*c^3*e^5)*x^4 + 2*(5*B*a^4*c^2*d*e^4 + A*a^4*c^2*e^5)*x^2)*log(c*x^2 + a)
)/(a^3*c^6*x^4 + 2*a^4*c^5*x^2 + a^5*c^4), 1/8*(8*B*a^3*c^3*e^5*x^5 - 2*B*a
^3*c^3*d^5 - 10*A*a^3*c^3*d^4*e - 20*B*a^4*c^2*d^3*e^2 - 20*A*a^4*c^2*d^2*e
^3 + 30*B*a^5*c*d*e^4 + 6*A*a^5*c*e^5 + (3*A*a*c^5*d^5 + 5*B*a^2*c^4*d^4*e
+ 10*A*a^2*c^4*d^3*e^2 - 50*B*a^3*c^3*d^2*e^3 - 25*A*a^3*c^3*d*e^4 + 25*B*a
^4*c^2*e^5)*x^3 - 8*(5*B*a^3*c^3*d^3*e^2 + 5*A*a^3*c^3*d^2*e^3 - 5*B*a^4*c^
2*d*e^4 - A*a^4*c^2*e^5)*x^2 + (3*A*a^2*c^3*d^5 + 5*B*a^3*c^2*d^4*e + 10*A*
a^3*c^2*d^3*e^2 + 30*B*a^4*c*d^2*e^3 + 15*A*a^4*c*d*e^4 - 15*B*a^5*e^5 + (3
*A*c^5*d^5 + 5*B*a*c^4*d^4*e + 10*A*a*c^4*d^3*e^2 + 30*B*a^2*c^3*d^2*e^3 +
15*A*a^2*c^3*d*e^4 - 15*B*a^3*c^2*e^5)*x^4 + 2*(3*A*a*c^4*d^5 + 5*B*a^2*c^3
*d^4*e + 10*A*a^2*c^3*d^3*e^2 + 30*B*a^3*c^2*d^2*e^3 + 15*A*a^3*c^2*d*e^4 -
 15*B*a^4*c*e^5)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 5*(A*a^2*c^4*d^5 -
B*a^3*c^3*d^4*e - 2*A*a^3*c^3*d^3*e^2 - 6*B*a^4*c^2*d^2*e^3 - 3*A*a^4*c^2*d
*e^4 + 3*B*a^5*c*e^5)*x + 4*(5*B*a^5*c*d*e^4 + A*a^5*c*e^5 + (5*B*a^3*c^3*d
*e^4 + A*a^3*c^3*e^5)*x^4 + 2*(5*B*a^4*c^2*d*e^4 + A*a^4*c^2*e^5)*x^2)*log(
c*x^2 + a))/(a^3*c^6*x^4 + 2*a^4*c^5*x^2 + a^5*c^4)]
```

giac [A] time = 0.16, size = 403, normalized size = 1.33

$$\frac{Bxe^5}{c^3} + \frac{\left(5\,Bde^4 + Ae^5\right)\log\left(cx^2 + a\right)}{2\,c^3} + \frac{\left(3\,Ac^3d^5 + 5\,Bac^2d^4e + 10\,Aac^2d^3e^2 + 30\,Ba^2cd^2e^3 + 15\,Aa^2cde^4 - 15\,Ba^3e^5\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c^3} - \frac{2\,Ba^2c^2d^5 + 10\,Aa^2c^2d^4e + 20\,Ba^3cd^3e^2 + 20\,Aa^3cd^2e^3 - 30\,Ba^4de^4 - 6\,Aa^4e^5 - \left(3\,Ac^4d^5 + 5\,Bac^3d^4e + 10\,Aac^3d^3e^2 - 50\,Ba^2c^2d^2e^3 - 25\,Aa^2c^2de^4 + 9\,Ba^3ce^5\right)x^3 + 8\left(5\,Ba^2c^2d^3e^2 + 5\,Aa^2c^2d^2e^3 - 5\,Ba^3cde^4 - Aa^3ce^5\right)x^2 - \left(5\,Aac^3d^5 - 5\,Ba^2c^2d^4e - 10\,Aa^2c^2d^3e^2 - 30\,Ba^3cd^2e^3 - 15\,Aa^3cde^4 + 7\,Ba^4e^5\right)x}{8\left(cx^2 + a\right)^2a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] B*x*e^5/c^3 + 1/2*(5*B*d*e^4 + A*e^5)*log(c*x^2 + a)/c^3 + 1/8*(3*A*c^3*d^5
 + 5*B*a*c^2*d^4*e + 10*A*a*c^2*d^3*e^2 + 30*B*a^2*c*d^2*e^3 + 15*A*a^2*c*d
*e^4 - 15*B*a^3*e^5)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c^3) - 1/8*(2*B*a
^2*c^2*d^5 + 10*A*a^2*c^2*d^4*e + 20*B*a^3*c*d^3*e^2 + 20*A*a^3*c*d^2*e^3 -
 30*B*a^4*d*e^4 - 6*A*a^4*e^5 - (3*A*c^4*d^5 + 5*B*a*c^3*d^4*e + 10*A*a*c^3
*d^3*e^2 - 50*B*a^2*c^2*d^2*e^3 - 25*A*a^2*c^2*d*e^4 + 9*B*a^3*c*e^5)*x^3 +
 8*(5*B*a^2*c^2*d^3*e^2 + 5*A*a^2*c^2*d^2*e^3 - 5*B*a^3*c*d*e^4 - A*a^3*c*e
^5)*x^2 - (5*A*a*c^3*d^5 - 5*B*a^2*c^2*d^4*e - 10*A*a^2*c^2*d^3*e^2 - 30*B*
a^3*c*d^2*e^3 - 15*A*a^3*c*d*e^4 + 7*B*a^4*e^5)*x)/((c*x^2 + a)^2*a^2*c^3)
```

maple [B] time = 0.06, size = 678, normalized size = 2.23

$$\frac{5Ad^3e^2x^3}{4\left(cx^2+a\right)^2a} + \frac{3Acd^5x^3}{8\left(cx^2+a\right)^2a^2} - \frac{25Ade^4x^3}{8\left(cx^2+a\right)^2c} + \frac{9Bae^5x^3}{8\left(cx^2+a\right)^2c^2} + \frac{5Bd^4ex^3}{8\left(cx^2+a\right)^2a} - \frac{25Bd^2e^3x^3}{4\left(cx^2+a\right)^2c} + \frac{Aae^5x^2}{\left(cx^2+a\right)^2c^2} - \frac{5Ad^2e^3x^2}{\left(cx^2+a\right)^2c} + \frac{5Bade^4x^2}{\left(cx^2+a\right)^2c^2} - \frac{5Bd^3e^2x^2}{\left(cx^2+a\right)^2c} - \frac{15Aade^4x}{8\left(cx^2+a\right)^2c^2} + \frac{5Ad^5x}{8\left(cx^2+a\right)^2a} - \frac{5Ad^3e^2x}{4\left(cx^2+a\right)^2c} + \frac{7Ba^2e^5x}{8\left(cx^2+a\right)^2c^3} - \frac{15Bad^2e^3x}{4\left(cx^2+a\right)^2c^2} - \frac{5Bd^4ex}{8\left(cx^2+a\right)^2c} + \frac{3Aa^2e^5}{4\left(cx^2+a\right)^2c^3} - \frac{5Aad^2e^3}{2\left(cx^2+a\right)^2c^2} + \frac{5Ad^3e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{4\sqrt{ac}\,ac} + \frac{3Ad^5\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,a^2} - \frac{5Ad^4e}{4\left(cx^2+a\right)^2c} + \frac{15Ade^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,c^2} + \frac{15Ba^2de^4}{4\left(cx^2+a\right)^2c^3} - \frac{5Bad^3e^2}{2\left(cx^2+a\right)^2c^2} - \frac{15Bae^5\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,c^3} + \frac{5Bd^4e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,ac} - \frac{Bd^5}{4\left(cx^2+a\right)^2c} + \frac{15Bd^2e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{4\sqrt{ac}\,c^2} + \frac{Ae^5\ln\left(cx^2+a\right)}{2c^3} + \frac{5Bde^4\ln\left(cx^2+a\right)}{2c^3} + \frac{Be^5x}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x)
```

```
[Out] -1/4/c/(c*x^2+a)^2*B*d^5+1/2/c^3*ln(c*x^2+a)*A*e^5+5/4/c/a/(a*c)^(1/2)*arct
an(1/(a*c)^(1/2)*c*x)*A*d^3*e^2+5/8/c/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*
x)*B*d^4*e-15/4/c^2/(c*x^2+a)^2*a*x*B*d^2*e^3-15/8/c^2/(c*x^2+a)^2*a*x*A*d*
e^4+5/c^2/(c*x^2+a)^2*B*x^2*a*d*e^4+3/8/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*d^5+5/2/c^3*ln(c*x^2+a)*B*d*e^4+3/4/c^3/(c*x^2+a)^2*A*a^2*e^5-5/4/
c/(c*x^2+a)^2*A*d^4*e+5/8/(c*x^2+a)^2/a*x*A*d^5+5/8/(c*x^2+a)^2/a*x^3*B*d^4
*e+5/4/(c*x^2+a)^2/a*x^3*A*d^3*e^2+15/8/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
```

```
)*c*x)*A*d*e^4+15/4/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^2*e^3+1/c
^2/(c*x^2+a)^2*A*x^2*a*e^5+9/8/c^2/(c*x^2+a)^2*a*x^3*B*e^5-25/8/c/(c*x^2+a)
^2*x^3*A*d*e^4+3/8*c/(c*x^2+a)^2/a^2*x^3*A*d^5-15/8/c^3*a/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*B*e^5+B/c^3*e^5*x-5/c/(c*x^2+a)^2*A*x^2*d^2*e^3-5/c/(c
*x^2+a)^2*B*x^2*d^3*e^2-5/4/c/(c*x^2+a)^2*x*A*d^3*e^2-5/8/c/(c*x^2+a)^2*x*B
*d^4*e-5/2/c^2/(c*x^2+a)^2*A*d^2*a*e^3-5/2/c^2/(c*x^2+a)^2*B*d^3*a*e^2+15/4
/c^3/(c*x^2+a)^2*B*a^2*d*e^4+7/8/c^3/(c*x^2+a)^2*a^2*x*B*e^5-25/4/c/(c*x^2+
a)^2*x^3*B*d^2*e^3
```

maxima [A] time = 1.15, size = 438, normalized size = 1.44

$$\frac{Be^5x}{c^3} - \frac{2\,Ba^2c^2d^5 + 10\,Aa^2c^2d^4e + 20\,Ba^3cd^3e^2 + 20\,Aa^3cd^2e^3 - 30\,Ba^4de^4 - 6\,Aa^4e^5 - \left(3\,Ac^4d^5 + 5\,Bac^3d^4e + 10\,Aac^3d^3e^2 - 50\,Ba^2c^2d^2e^3 - 25\,Aa^2c^2de^4 + 9\,Ba^3ce^5\right)x^3 + 8\left(5\,Ba^2c^2d^3e^2 + 5\,Aa^2c^2d^2e^3 - 5\,Ba^3cde^4 - Aa^3ce^5\right)x^2 - \left(5\,Aac^3d^5 - 5\,Ba^2c^2d^4e - 10\,Aa^2c^2d^3e^2 - 30\,Ba^3cd^2e^3 - 15\,Aa^3cde^4 + 7\,Ba^4e^5\right)x}{8\left(a^2c^5x^4 + 2\,a^3c^4x^2 + a^4c^3\right)} + \frac{\left(5\,Bde^4 + Ae^5\right)\log\left(cx^2 + a\right)}{2\,c^3} + \frac{\left(3\,Ac^3d^5 + 5\,Bac^2d^4e + 10\,Aac^2d^3e^2 + 30\,Ba^2cd^2e^3 + 15\,Aa^2cde^4 - 15\,Ba^3e^5\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] B*e^5*x/c^3 - 1/8*(2*B*a^2*c^2*d^5 + 10*A*a^2*c^2*d^4*e + 20*B*a^3*c*d^3*e^
2 + 20*A*a^3*c*d^2*e^3 - 30*B*a^4*d*e^4 - 6*A*a^4*e^5 - (3*A*c^4*d^5 + 5*B*
a*c^3*d^4*e + 10*A*a*c^3*d^3*e^2 - 50*B*a^2*c^2*d^2*e^3 - 25*A*a^2*c^2*d*e^
4 + 9*B*a^3*c*e^5)*x^3 + 8*(5*B*a^2*c^2*d^3*e^2 + 5*A*a^2*c^2*d^2*e^3 - 5*B
*a^3*c*d*e^4 - A*a^3*c*e^5)*x^2 - (5*A*a*c^3*d^5 - 5*B*a^2*c^2*d^4*e - 10*A
*a^2*c^2*d^3*e^2 - 30*B*a^3*c*d^2*e^3 - 15*A*a^3*c*d*e^4 + 7*B*a^4*e^5)*x)/
(a^2*c^5*x^4 + 2*a^3*c^4*x^2 + a^4*c^3) + 1/2*(5*B*d*e^4 + A*e^5)*log(c*x^2
 + a)/c^3 + 1/8*(3*A*c^3*d^5 + 5*B*a*c^2*d^4*e + 10*A*a*c^2*d^3*e^2 + 30*B*
a^2*c*d^2*e^3 + 15*A*a^2*c*d*e^4 - 15*B*a^3*e^5)*arctan(c*x/sqrt(a*c))/(sqr
t(a*c)*a^2*c^3)
```

mupad [B] time = 0.29, size = 424, normalized size = 1.39

$$\frac{\ln\left(c\,x^2+a\right)\,\left(256\,A\,a^5\,c^4\,e^5+1280\,B\,d\,a^5\,c^4\,e^4\right)}{512\,a^5\,c^7}-\frac{\frac{B\,c^2\,d^5}{4}-\frac{3\,A\,a^2\,e^5}{4}-x^2\,\left(-5\,B\,c^2\,d^3\,e^2-5\,A\,c^2\,d^2\,e^3+5\,B\,a\,c\,d\,e^4+A\,a\,c\,e^5\right)-\frac{x^3\,\left(9\,B\,a^3\,c\,e^5-50\,B\,a^2\,c^2\,d^2\,e^3-25\,A\,a^2\,c^2\,d\,e^4+5\,B\,a\,c^3\,d^4\,e+10\,A\,a\,c^3\,d^3\,e^2+3\,A\,c^4\,d^5\right)}{8\,a^2}+\frac{x\,\left(-7\,B\,a^3\,e^5+30\,B\,a^2\,c\,d^2\,e^3+15\,A\,a^2\,c\,d\,e^4+5\,B\,a\,c^2\,d^4\,e+10\,A\,a\,c^2\,d^3\,e^2-5\,A\,c^3\,d^5\right)}{8\,a}-\frac{15\,B\,a^2\,d\,e^4}{4}+\frac{5\,A\,c^2\,d^4\,e}{4}+\frac{5\,A\,a\,c\,d^2\,e^3}{2}+\frac{5\,B\,a\,c\,d^3\,e^2}{2}}{a^2\,c^3+2\,a\,c^4\,x^2+c^5\,x^4}+\frac{B\,e^5\,x}{c^3}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,\left(-15\,B\,a^3\,e^5+30\,B\,a^2\,c\,d^2\,e^3+15\,A\,a^2\,c\,d\,e^4+5\,B\,a\,c^2\,d^4\,e+10\,A\,a\,c^2\,d^3\,e^2+3\,A\,c^3\,d^5\right)}{8\,a^{5/2}\,c^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x)
```

```
[Out] (log(a + c*x^2)*(256*A*a^5*c^4*e^5 + 1280*B*a^5*c^4*d*e^4))/(512*a^5*c^7) -
 ((B*c^2*d^5)/4 - (3*A*a^2*e^5)/4 - x^2*(A*a*c*e^5 - 5*A*c^2*d^2*e^3 - 5*B*
c^2*d^3*e^2 + 5*B*a*c*d*e^4) - (x^3*(3*A*c^4*d^5 + 9*B*a^3*c*e^5 + 10*A*a*c
^3*d^3*e^2 - 25*A*a^2*c^2*d*e^4 - 50*B*a^2*c^2*d^2*e^3 + 5*B*a*c^3*d^4*e))/
(8*a^2) + (x*(10*A*a*c^2*d^3*e^2 - 7*B*a^3*e^5 - 5*A*c^3*d^5 + 30*B*a^2*c*d
^2*e^3 + 15*A*a^2*c*d*e^4 + 5*B*a*c^2*d^4*e))/(8*a) - (15*B*a^2*d*e^4)/4 +
(5*A*c^2*d^4*e)/4 + (5*A*a*c*d^2*e^3)/2 + (5*B*a*c*d^3*e^2)/2)/(a^2*c^3 + c
^5*x^4 + 2*a*c^4*x^2) + (B*e^5*x)/c^3 + (atan((c^(1/2)*x)/a^(1/2))*(3*A*c^3
*d^5 - 15*B*a^3*e^5 + 10*A*a*c^2*d^3*e^2 + 30*B*a^2*c*d^2*e^3 + 15*A*a^2*c*
d*e^4 + 5*B*a*c^2*d^4*e))/(8*a^(5/2)*c^(7/2))
```

sympy [B] time = 97.93, size = 1044, normalized size = 3.43

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+a)**3,x)
```

```
[Out] B*e**5*x/c**3 + (e**4*(A*e + 5*B*d)/(2*c**3) - sqrt(-a**5*c**7)*(-15*A*a**2
*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c**3*d**5 + 15*B*a**3*e**5 - 30*B*a
**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)/(16*a**5*c**7))*log(x + (8*A*a**3*e**5
 + 40*B*a**3*d*e**4 - 16*a**3*c**3*(e**4*(A*e + 5*B*d)/(2*c**3) - sqrt(-a**
5*c**7)*(-15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c**3*d**5 + 15*B
*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)/(16*a**5*c**7)))/(-
15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c**3*d**5 + 15*B*a**3*e**5
```

```
 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)) + (e**4*(A*e + 5*B*d)/(2*c**
3) + sqrt(-a**5*c**7)*(-15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c*
*3*d**5 + 15*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)/(16*a
**5*c**7))*log(x + (8*A*a**3*e**5 + 40*B*a**3*d*e**4 - 16*a**3*c**3*(e**4*(
A*e + 5*B*d)/(2*c**3) + sqrt(-a**5*c**7)*(-15*A*a**2*c*d*e**4 - 10*A*a*c**2
*d**3*e**2 - 3*A*c**3*d**5 + 15*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a
*c**2*d**4*e)/(16*a**5*c**7)))/(-15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2
 - 3*A*c**3*d**5 + 15*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4
*e)) + (6*A*a**4*e**5 - 20*A*a**3*c*d**2*e**3 - 10*A*a**2*c**2*d**4*e + 30*
B*a**4*d*e**4 - 20*B*a**3*c*d**3*e**2 - 2*B*a**2*c**2*d**5 + x**3*(-25*A*a*
*2*c**2*d*e**4 + 10*A*a*c**3*d**3*e**2 + 3*A*c**4*d**5 + 9*B*a**3*c*e**5 -
50*B*a**2*c**2*d**2*e**3 + 5*B*a*c**3*d**4*e) + x**2*(8*A*a**3*c*e**5 - 40*
A*a**2*c**2*d**2*e**3 + 40*B*a**3*c*d*e**4 - 40*B*a**2*c**2*d**3*e**2) + x*
(-15*A*a**3*c*d*e**4 - 10*A*a**2*c**2*d**3*e**2 + 5*A*a*c**3*d**5 + 7*B*a**
4*e**5 - 30*B*a**3*c*d**2*e**3 - 5*B*a**2*c**2*d**4*e))/(8*a**4*c**3 + 16*a
**3*c**4*x**2 + 8*a**2*c**5*x**4)
```

3.1173 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^3} \, dx$

Optimal. Leaf size=216

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(3A\left(ae^2+cd^2\right)^2+4aBde\left(3ae^2+cd^2\right)\right)}{8a^{5/2}c^{5/2}}-\frac{(d+ex)\left(x\left(4a^2Be^3-cd\left(ae(3Ae+4Bd)+3Acd^2\right)\right)+ae\left(3\right.\right.}{8a^2c^2\left(a+cx^2\right)}$$

Rubi [A] time = 0.21, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {819, 635, 205, 260}

$$-\frac{(d+ex)\left(x\left(4a^2Be^3-cd\left(ae(3Ae+4Bd)+3Acd^2\right)\right)+ae\left(3A\left(ae^2+cd^2\right)+8aBde\right)\right)}{8a^2c^2\left(a+cx^2\right)}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(3A\left(ae^2+cd^2\right)^2+4aBde\left(3ae^2+cd^2\right)\right)}{8a^{5/2}c^{5/2}}-\frac{(d+ex)^3(a(Ae+Bd)-x(Acd-aBe))}{4ac\left(a+cx^2\right)^2}+\frac{Be^4\log\left(a+cx^2\right)}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^3*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(4*a*c*(a + c*x^2)^2) -
((d + e*x)*(a*e*(8*a*B*d*e + 3*A*(c*d^2 + a*e^2)) + (4*a^2*B*e^3 - c*d*(3*A
*c*d^2 + a*e*(4*B*d + 3*A*e)))*x))/(8*a^2*c^2*(a + c*x^2)) + ((3*A*(c*d^2 +
 a*e^2)^2 + 4*a*B*d*e*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^
(5/2)*c^(5/2)) + (B*e^4*Log[a + c*x^2])/(2*c^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^3}\,dx = -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} + \frac{\int \frac{(d+ex)^2\left(3Acd^2+ae(4Bd+3Ae)+4aBe^2x\right)}{\left(a+cx^2\right)^2}dx}{4ac}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)\left(ae\left(8aBde+3A\left(cd^2+ae^2\right)\right)+\right.}{8a^2c^2}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)\left(ae\left(8aBde+3A\left(cd^2+ae^2\right)\right)+\right.}{8a^2c^2}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)\left(ae\left(8aBde+3A\left(cd^2+ae^2\right)\right)+\right.}{8a^2c^2}$$

Mathematica [A] time = 0.21, size = 263, normalized size = 1.22

$$\frac{\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(3A\left(ae^2+cd^2\right)^2+4aBde\left(3ae^2+cd^2\right)\right)}{a^{5/2}}+\frac{-2a^3Be^4+2a^2ce^2(Ae(4d+ex)+2Bd(3d+2ex))-2ac^2d^2(2Ae(2d+3ex)+Bd(d+4ex))+2Ac^3d^4x}{a\left(a+cx^2\right)^2}+\frac{8a^3Be^4-a^2ce^2(Ae(16d+5ex)+4Bd(6d+5ex))+2ac^2d^2ex(3Ae+2Bd)+3Ac^3d^4x}{a^2\left(a+cx^2\right)}+4Be^4\log\left(a+cx^2\right)}{8c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x]
```

```
[Out] ((-2*a^3*B*e^4 + 2*A*c^3*d^4*x + 2*a^2*c*e^2*(A*e*(4*d + e*x) + 2*B*d*(3*d
+ 2*e*x)) - 2*a*c^2*d^2*(2*A*e*(2*d + 3*e*x) + B*d*(d + 4*e*x)))/(a*(a + c*
x^2)^2) + (8*a^3*B*e^4 + 3*A*c^3*d^4*x + 2*a*c^2*d^2*e*(2*B*d + 3*A*e)*x -
a^2*c*e^2*(4*B*d*(6*d + 5*e*x) + A*e*(16*d + 5*e*x)))/(a^2*(a + c*x^2)) + (
Sqrt[c]*(3*A*(c*d^2 + a*e^2)^2 + 4*a*B*d*e*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[
c]*x)/Sqrt[a]])/a^(5/2) + 4*B*e^4*Log[a + c*x^2])/(8*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3, x]
```

fricas [B] time = 0.45, size = 1055, normalized size = 4.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c^2*d^4 + 16*A*a^3*c^2*d^3*e + 24*B*a^4*c*d^2*e^2 + 16*A*a^
4*c*d*e^3 - 12*B*a^5*e^4 - 2*(3*A*a*c^4*d^4 + 4*B*a^2*c^3*d^3*e + 6*A*a^2*c
^3*d^2*e^2 - 20*B*a^3*c^2*d*e^3 - 5*A*a^3*c^2*e^4)*x^3 + 16*(3*B*a^3*c^2*d^
2*e^2 + 2*A*a^3*c^2*d*e^3 - B*a^4*c*e^4)*x^2 + (3*A*a^2*c^2*d^4 + 4*B*a^3*c
*d^3*e + 6*A*a^3*c*d^2*e^2 + 12*B*a^4*d*e^3 + 3*A*a^4*e^4 + (3*A*c^4*d^4 +
4*B*a*c^3*d^3*e + 6*A*a*c^3*d^2*e^2 + 12*B*a^2*c^2*d*e^3 + 3*A*a^2*c^2*e^4)
*x^4 + 2*(3*A*a*c^3*d^4 + 4*B*a^2*c^2*d^3*e + 6*A*a^2*c^2*d^2*e^2 + 12*B*a^
```

```
3*c*d*e^3 + 3*A*a^3*c*e^4)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)
/(c*x^2 + a)) - 2*(5*A*a^2*c^3*d^4 - 4*B*a^3*c^2*d^3*e - 6*A*a^3*c^2*d^2*e^
2 - 12*B*a^4*c*d*e^3 - 3*A*a^4*c*e^4)*x - 8*(B*a^3*c^2*e^4*x^4 + 2*B*a^4*c*
e^4*x^2 + B*a^5*e^4)*log(c*x^2 + a))/(a^3*c^5*x^4 + 2*a^4*c^4*x^2 + a^5*c^3
), -1/8*(2*B*a^3*c^2*d^4 + 8*A*a^3*c^2*d^3*e + 12*B*a^4*c*d^2*e^2 + 8*A*a^4
*c*d*e^3 - 6*B*a^5*e^4 - (3*A*a*c^4*d^4 + 4*B*a^2*c^3*d^3*e + 6*A*a^2*c^3*d
^2*e^2 - 20*B*a^3*c^2*d*e^3 - 5*A*a^3*c^2*e^4)*x^3 + 8*(3*B*a^3*c^2*d^2*e^2
 + 2*A*a^3*c^2*d*e^3 - B*a^4*c*e^4)*x^2 - (3*A*a^2*c^2*d^4 + 4*B*a^3*c*d^3*
e + 6*A*a^3*c*d^2*e^2 + 12*B*a^4*d*e^3 + 3*A*a^4*e^4 + (3*A*c^4*d^4 + 4*B*a
*c^3*d^3*e + 6*A*a*c^3*d^2*e^2 + 12*B*a^2*c^2*d*e^3 + 3*A*a^2*c^2*e^4)*x^4
+ 2*(3*A*a*c^3*d^4 + 4*B*a^2*c^2*d^3*e + 6*A*a^2*c^2*d^2*e^2 + 12*B*a^3*c*d
*e^3 + 3*A*a^3*c*e^4)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^3*d
^4 - 4*B*a^3*c^2*d^3*e - 6*A*a^3*c^2*d^2*e^2 - 12*B*a^4*c*d*e^3 - 3*A*a^4*c
*e^4)*x - 4*(B*a^3*c^2*e^4*x^4 + 2*B*a^4*c*e^4*x^2 + B*a^5*e^4)*log(c*x^2 +
 a))/(a^3*c^5*x^4 + 2*a^4*c^4*x^2 + a^5*c^3)]
```

giac [A]   time = 0.16, size = 312, normalized size = 1.44

$$\frac{Be^{4}\log\left(cx^{2}+a\right)}{2\,c^{3}}+\frac{\left(3\,Ac^{2}d^{4}+4\,Bacd^{3}e+6\,Aacd^{2}e^{2}+12\,Ba^{2}de^{3}+3\,Aa^{2}e^{4}\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^{2}c^{2}}+\frac{\left(3\,Ac^{3}d^{4}+4\,Bac^{2}d^{3}e+6\,Aac^{2}d^{2}e^{2}-20\,Ba^{2}cde^{3}-5\,Aa^{2}ce^{4}\right)x^{3}-8\left(3\,Ba^{2}cd^{2}e^{2}+2\,Aa^{2}cde^{3}-Ba^{3}e^{4}\right)x^{2}+\left(5\,Aac^{2}d^{4}-4\,Ba^{2}cd^{3}e-6\,Aa^{2}cd^{2}e^{2}-12\,Ba^{3}de^{3}-3\,Aa^{3}e^{4}\right)x-\frac{2\left(Ba^{2}c^{2}d^{4}+4\,Aa^{2}c^{2}d^{3}e+6\,Ba^{3}cd^{2}e^{2}+4\,Aa^{3}cde^{3}-3\,Ba^{4}e^{4}\right)}{c}}{8\left(cx^{2}+a\right)^{2}a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*B*e^4*log(c*x^2 + a)/c^3 + 1/8*(3*A*c^2*d^4 + 4*B*a*c*d^3*e + 6*A*a*c*d
^2*e^2 + 12*B*a^2*d*e^3 + 3*A*a^2*e^4)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2
*c^2) + 1/8*((3*A*c^3*d^4 + 4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 - 20*B*a^2*
c*d*e^3 - 5*A*a^2*c*e^4)*x^3 - 8*(3*B*a^2*c*d^2*e^2 + 2*A*a^2*c*d*e^3 - B*a
^3*e^4)*x^2 + (5*A*a*c^2*d^4 - 4*B*a^2*c*d^3*e - 6*A*a^2*c*d^2*e^2 - 12*B*a
^3*d*e^3 - 3*A*a^3*e^4)*x - 2*(B*a^2*c^2*d^4 + 4*A*a^2*c^2*d^3*e + 6*B*a^3*
c*d^2*e^2 + 4*A*a^3*c*d*e^3 - 3*B*a^4*e^4)/c)/((c*x^2 + a)^2*a^2*c^2)
```

maple [A]   time = 0.05, size = 359, normalized size = 1.66

$$\frac{3Ad^{2}e^{2}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{4\sqrt{ac}\,ac}+\frac{3Ad^{4}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,a^{2}}+\frac{3Ae^{4}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,c^{2}}+\frac{Bd^{3}e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,ac}+\frac{3Bde^{3}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c^{2}}+\frac{Be^{4}\ln\left(cx^{2}+a\right)}{2c^{3}}+\frac{-\frac{\left(2Acde-Bae^{2}+3Bcd^{2}\right)e^{2}x^{2}}{c^{2}}-\frac{\left(5Aa^{2}e^{4}-6Aacd^{2}e^{2}-3Ac^{2}d^{4}+20Ba^{2}de^{3}-4Bacd^{3}e\right)x^{3}}{8a^{2}c}-\frac{\left(3Aa^{2}e^{4}+6Aacd^{2}e^{2}-5Ac^{2}d^{4}+12Ba^{2}de^{3}+4Bacd^{3}e\right)x}{8ac^{2}}-\frac{4Adace^{3}+4Ac^{2}d^{3}e-3Ba^{2}e^{4}+6ad^{2}Be^{2}c+Bc^{2}d^{4}}{4c^{3}}}{\left(cx^{2}+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x)
```

```
[Out] (-1/8*(5*A*a^2*e^4-6*A*a*c*d^2*e^2-3*A*c^2*d^4+20*B*a^2*d*e^3-4*B*a*c*d^3*e
)/a^2/c*x^3-e^2*(2*A*c*d*e-B*a*e^2+3*B*c*d^2)/c^2*x^2-1/8*(3*A*a^2*e^4+6*A*
a*c*d^2*e^2-5*A*c^2*d^4+12*B*a^2*d*e^3+4*B*a*c*d^3*e)/a/c^2*x-1/4*(4*A*a*c*
d*e^3+4*A*c^2*d^3*e-3*B*a^2*e^4+6*B*a*c*d^2*e^2+B*c^2*d^4)/c^3)/(c*x^2+a)^2
+1/2*B*e^4*ln(c*x^2+a)/c^3+3/8/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*
e^4+3/4/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2*e^2+3/8/a^2/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^4+3/2/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/
2)*c*x)*B*d*e^3+1/2/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^3*e
```

maxima [A]   time = 1.34, size = 352, normalized size = 1.63

$$\frac{Be^{4}\log\left(cx^{2}+a\right)}{2\,c^{3}}-\frac{2\,Ba^{2}c^{2}d^{4}+8\,Aa^{2}c^{2}d^{3}e+12\,Ba^{3}cd^{2}e^{2}+8\,Aa^{3}cde^{3}-6\,Ba^{4}e^{4}-\left(3\,Ac^{4}d^{4}+4\,Bac^{3}d^{3}e+6\,Aac^{3}d^{2}e^{2}-20\,Ba^{2}c^{2}de^{3}-5\,Aa^{2}c^{2}e^{4}\right)x^{3}+8\left(3\,Ba^{2}c^{2}d^{2}e^{2}+2\,Aa^{2}c^{2}de^{3}-Ba^{3}ce^{4}\right)x^{2}-\left(5\,Aac^{3}d^{4}-4\,Ba^{2}c^{2}d^{3}e-6\,Aa^{2}c^{2}d^{2}e^{2}-12\,Ba^{3}cde^{3}-3\,Aa^{3}ce^{4}\right)x}{8\left(a^{2}c^{5}x^{4}+2\,a^{3}c^{4}x^{2}+a^{4}c^{3}\right)}+\frac{\left(3\,Ac^{2}d^{4}+4\,Bacd^{3}e+6\,Aacd^{2}e^{2}+12\,Ba^{2}de^{3}+3\,Aa^{2}e^{4}\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*B*e^4*log(c*x^2 + a)/c^3 - 1/8*(2*B*a^2*c^2*d^4 + 8*A*a^2*c^2*d^3*e + 1
2*B*a^3*c*d^2*e^2 + 8*A*a^3*c*d*e^3 - 6*B*a^4*e^4 - (3*A*c^4*d^4 + 4*B*a*c^
3*d^3*e + 6*A*a*c^3*d^2*e^2 - 20*B*a^2*c^2*d*e^3 - 5*A*a^2*c^2*e^4)*x^3 + 8
*(3*B*a^2*c^2*d^2*e^2 + 2*A*a^2*c^2*d*e^3 - B*a^3*c*e^4)*x^2 - (5*A*a*c^3*d
^4 - 4*B*a^2*c^2*d^3*e - 6*A*a^2*c^2*d^2*e^2 - 12*B*a^3*c*d*e^3 - 3*A*a^3*c
```

```
*e^4)*x)/(a^2*c^5*x^4 + 2*a^3*c^4*x^2 + a^4*c^3) + 1/8*(3*A*c^2*d^4 + 4*B*a
*c*d^3*e + 6*A*a*c*d^2*e^2 + 12*B*a^2*d*e^3 + 3*A*a^2*e^4)*arctan(c*x/sqrt(
a*c))/(sqrt(a*c)*a^2*c^2)
```

mupad [B]   time = 2.56, size = 763, normalized size = 3.53

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x)
```

```
[Out] (5*A*d^4*x)/(8*(a^3 + 2*a^2*c*x^2 + a*c^2*x^4)) - (B*d^4)/(4*(a^2*c + c^3*x
^4 + 2*a*c^2*x^2)) + (3*B*a^2*e^4)/(4*(a^2*c^3 + c^5*x^4 + 2*a*c^4*x^2)) -
(A*d^3*e)/(a^2*c + c^3*x^4 + 2*a*c^2*x^2) - (5*A*e^4*x^3)/(8*(a^2*c + c^3*x
^4 + 2*a*c^2*x^2)) + (B*e^4*log(a + c*x^2))/(2*c^3) - (A*a*d*e^3)/(a^2*c^2
+ c^4*x^4 + 2*a*c^3*x^2) + (3*A*c*d^4*x^3)/(8*(a^4 + 2*a^3*c*x^2 + a^2*c^2*
x^4)) - (3*A*a*e^4*x)/(8*(a^2*c^2 + c^4*x^4 + 2*a*c^3*x^2)) + (3*A*d^2*e^2*
x^3)/(4*(a^3 + 2*a^2*c*x^2 + a*c^2*x^4)) - (3*A*d^2*e^2*x)/(4*(a^2*c + c^3*
x^4 + 2*a*c^2*x^2)) - (2*A*d*e^3*x^2)/(a^2*c + c^3*x^4 + 2*a*c^2*x^2) - (5*
B*d*e^3*x^3)/(2*(a^2*c + c^3*x^4 + 2*a*c^2*x^2)) - (3*B*a*d^2*e^2)/(2*(a^2*
c^2 + c^4*x^4 + 2*a*c^3*x^2)) + (B*a*e^4*x^2)/(a^2*c^2 + c^4*x^4 + 2*a*c^3*
x^2) - (3*B*d^2*e^2*x^2)/(a^2*c + c^3*x^4 + 2*a*c^2*x^2) + (3*A*d^4*atan((c
^(1/2)*x)/a^(1/2)))/(8*a^(5/2)*c^(1/2)) + (3*A*e^4*atan((c^(1/2)*x)/a^(1/2)
))/(8*a^(1/2)*c^(5/2)) + (B*d^3*e*x^3)/(2*(a^3 + 2*a^2*c*x^2 + a*c^2*x^4))
- (B*d^3*e*x)/(2*(a^2*c + c^3*x^4 + 2*a*c^2*x^2)) + (3*B*d*e^3*atan((c^(1/2
)*x)/a^(1/2)))/(2*a^(1/2)*c^(5/2)) + (B*d^3*e*atan((c^(1/2)*x)/a^(1/2)))/(2
*a^(3/2)*c^(3/2)) + (3*A*d^2*e^2*atan((c^(1/2)*x)/a^(1/2)))/(4*a^(3/2)*c^(3
/2)) - (3*B*a*d*e^3*x)/(2*(a^2*c^2 + c^4*x^4 + 2*a*c^3*x^2))
```

sympy [B]   time = 46.14, size = 816, normalized size = 3.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+a)**3,x)
```

```
[Out] (B*e**4/(2*c**3) - sqrt(-a**5*c**7)*(3*A*a**2*e**4 + 6*A*a*c*d**2*e**2 + 3*
A*c**2*d**4 + 12*B*a**2*d*e**3 + 4*B*a*c*d**3*e)/(16*a**5*c**6))*log(x + (-
8*B*a**3*e**4 + 16*a**3*c**3*(B*e**4/(2*c**3) - sqrt(-a**5*c**7)*(3*A*a**2*
e**4 + 6*A*a*c*d**2*e**2 + 3*A*c**2*d**4 + 12*B*a**2*d*e**3 + 4*B*a*c*d**3*
e)/(16*a**5*c**6)))/(3*A*a**2*c*e**4 + 6*A*a*c**2*d**2*e**2 + 3*A*c**3*d**4
 + 12*B*a**2*c*d*e**3 + 4*B*a*c**2*d**3*e)) + (B*e**4/(2*c**3) + sqrt(-a**5
*c**7)*(3*A*a**2*e**4 + 6*A*a*c*d**2*e**2 + 3*A*c**2*d**4 + 12*B*a**2*d*e**
3 + 4*B*a*c*d**3*e)/(16*a**5*c**6))*log(x + (-8*B*a**3*e**4 + 16*a**3*c**3*
(B*e**4/(2*c**3) + sqrt(-a**5*c**7)*(3*A*a**2*e**4 + 6*A*a*c*d**2*e**2 + 3*
A*c**2*d**4 + 12*B*a**2*d*e**3 + 4*B*a*c*d**3*e)/(16*a**5*c**6)))/(3*A*a**2
*c*e**4 + 6*A*a*c**2*d**2*e**2 + 3*A*c**3*d**4 + 12*B*a**2*c*d*e**3 + 4*B*a
*c**2*d**3*e)) + (-8*A*a**3*c*d*e**3 - 8*A*a**2*c**2*d**3*e + 6*B*a**4*e**4
 - 12*B*a**3*c*d**2*e**2 - 2*B*a**2*c**2*d**4 + x**3*(-5*A*a**2*c**2*e**4 +
 6*A*a*c**3*d**2*e**2 + 3*A*c**4*d**4 - 20*B*a**2*c**2*d*e**3 + 4*B*a*c**3*
d**3*e) + x**2*(-16*A*a**2*c**2*d*e**3 + 8*B*a**3*c*e**4 - 24*B*a**2*c**2*d
**2*e**2) + x*(-3*A*a**3*c*e**4 - 6*A*a**2*c**2*d**2*e**2 + 5*A*a*c**3*d**4
 - 12*B*a**3*c*d*e**3 - 4*B*a**2*c**2*d**3*e))/(8*a**4*c**3 + 16*a**3*c**4*
x**2 + 8*a**2*c**5*x**4)
```

3.1174 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=125

$$\frac{3\left(ae^2+cd^2\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{8a^{5/2}c^{5/2}}-\frac{3(d+ex)(ae-cdx)(aBe+Acd)}{8a^2c^2\left(a+cx^2\right)}-\frac{(d+ex)^3(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

Rubi [A] time = 0.06, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {805, 723, 205}

$$\frac{3\left(ae^2+cd^2\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{8a^{5/2}c^{5/2}}-\frac{3(d+ex)(ae-cdx)(aBe+Acd)}{8a^2c^2\left(a+cx^2\right)}-\frac{(d+ex)^3(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x]
```

```
[Out] -((a*B - A*c*x)*(d + e*x)^3)/(4*a*c*(a + c*x^2)^2) - (3*(A*c*d + a*B*e)*(a*
e - c*d*x)*(d + e*x))/(8*a^2*c^2*(a + c*x^2)) + (3*(A*c*d + a*B*e)*(c*d^2 +
 a*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(5/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 723

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
((d + e*x)^(m - 1)*(a*e - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] +
 Dist[((2*p + 3)*(c*d^2 + a*e^2))/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 2)*(a
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0
] && EqQ[m + 2*p + 2, 0] && LtQ[p, -1]
```

Rule 805

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[(m*(c*d*f + a*e*g))/(2*a*c*(p + 1)), Int[(d + e*x)^(m
 - 1)*(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^3}\,dx=-\frac{(aB-Acx)(d+ex)^3}{4ac\left(a+cx^2\right)^2}+\frac{(3(Acd+aBe))\int \frac{(d+ex)^2}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$=-\frac{(aB-Acx)(d+ex)^3}{4ac\left(a+cx^2\right)^2}-\frac{3(Acd+aBe)(ae-cdx)(d+ex)}{8a^2c^2\left(a+cx^2\right)}+\frac{\left(3(Acd+aBe)\left(cd^2+ae^2\right)\right.}{8a^2c^2}$$

$$=-\frac{(aB-Acx)(d+ex)^3}{4ac\left(a+cx^2\right)^2}-\frac{3(Acd+aBe)(ae-cdx)(d+ex)}{8a^2c^2\left(a+cx^2\right)}+\frac{3(Acd+aBe)\left(cd^2+ae^2\right)}{8a^{5/2}c^{5/2}}$$

Mathematica [A] time = 0.10, size = 186, normalized size = 1.49

$$\frac{3\left(ae^2+cd^2\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{8a^{5/2}c^{5/2}}+\frac{-a^2e^2(4Ae+12Bd+5Bex)+3acdex(Ae+Bd)+3Ac^2d^3x}{8a^2c^2\left(a+cx^2\right)}+\frac{a^2e^2(Ae+3Bd+Bex)-acd(3Ae(d+ex)+Bd(d+3ex))+Ac^2d^3x}{4ac^2\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x]
```

```
[Out] (3*A*c^2*d^3*x + 3*a*c*d*e*(B*d + A*e)*x - a^2*e^2*(12*B*d + 4*A*e + 5*B*e*
x))/(8*a^2*c^2*(a + c*x^2)) + (A*c^2*d^3*x + a^2*e^2*(3*B*d + A*e + B*e*x)
- a*c*d*(3*A*e*(d + e*x) + B*d*(d + 3*e*x)))/(4*a*c^2*(a + c*x^2)^2) + (3*(
A*c*d + a*B*e)*(c*d^2 + a*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(5
/2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3, x]
```

fricas [B] time = 0.44, size = 752, normalized size = 6.02

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c^2*d^3 + 12*A*a^3*c^2*d^2*e + 12*B*a^4*c*d*e^2 + 4*A*a^4*c
*e^3 - 2*(3*A*a*c^4*d^3 + 3*B*a^2*c^3*d^2*e + 3*A*a^2*c^3*d*e^2 - 5*B*a^3*c
^2*e^3)*x^3 + 8*(3*B*a^3*c^2*d*e^2 + A*a^3*c^2*e^3)*x^2 + 3*(A*a^2*c^2*d^3
+ B*a^3*c*d^2*e + A*a^3*c*d*e^2 + B*a^4*e^3 + (A*c^4*d^3 + B*a*c^3*d^2*e +
A*a*c^3*d*e^2 + B*a^2*c^2*e^3)*x^4 + 2*(A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A*a
^2*c^2*d*e^2 + B*a^3*c*e^3)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a
)/(c*x^2 + a)) - 2*(5*A*a^2*c^3*d^3 - 3*B*a^3*c^2*d^2*e - 3*A*a^3*c^2*d*e^2
 - 3*B*a^4*c*e^3)*x)/(a^3*c^5*x^4 + 2*a^4*c^4*x^2 + a^5*c^3), -1/8*(2*B*a^3
*c^2*d^3 + 6*A*a^3*c^2*d^2*e + 6*B*a^4*c*d*e^2 + 2*A*a^4*c*e^3 - (3*A*a*c^4
*d^3 + 3*B*a^2*c^3*d^2*e + 3*A*a^2*c^3*d*e^2 - 5*B*a^3*c^2*e^3)*x^3 + 4*(3*
B*a^3*c^2*d*e^2 + A*a^3*c^2*e^3)*x^2 - 3*(A*a^2*c^2*d^3 + B*a^3*c*d^2*e + A
*a^3*c*d*e^2 + B*a^4*e^3 + (A*c^4*d^3 + B*a*c^3*d^2*e + A*a*c^3*d*e^2 + B*a
^2*c^2*e^3)*x^4 + 2*(A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A*a^2*c^2*d*e^2 + B*a^
3*c*e^3)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^3*d^3 - 3*B*a^3*
c^2*d^2*e - 3*A*a^3*c^2*d*e^2 - 3*B*a^4*c*e^3)*x)/(a^3*c^5*x^4 + 2*a^4*c^4*
x^2 + a^5*c^3)]
```

giac [B] time = 0.19, size = 233, normalized size = 1.86

$$\frac{3\left(Ac^2d^3+Bacd^2e+Aacde^2+Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,a^2c^2}+\frac{3\,Ac^3d^3x^3+3\,Bac^2d^2x^3e+3\,Aac^2dx^3e^2+5\,Aac^2d^3x-5\,Ba^2cx^3e^3-12\,Ba^2cdx^2e^2-3\,Ba^2cd^2xe-2\,Ba^2cd^3-4\,Aa^2cx^2e^3-3\,Aa^2cdxe^2-6\,Aa^2cd^2e-3\,Ba^3xe^3-6\,Ba^3de^2-2\,Aa^3e^3}{8\left(cx^2+a\right)^2a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 3/8*(A*c^2*d^3 + B*a*c*d^2*e + A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c
))/(sqrt(a*c)*a^2*c^2) + 1/8*(3*A*c^3*d^3*x^3 + 3*B*a*c^2*d^2*x^3*e + 3*A*a
*c^2*d*x^3*e^2 + 5*A*a*c^2*d^3*x - 5*B*a^2*c*x^3*e^3 - 12*B*a^2*c*d*x^2*e^2
```

```
 - 3*B*a^2*c*d^2*x*e - 2*B*a^2*c*d^3 - 4*A*a^2*c*x^2*e^3 - 3*A*a^2*c*d*x*e^
2 - 6*A*a^2*c*d^2*e - 3*B*a^3*x*e^3 - 6*B*a^3*d*e^2 - 2*A*a^3*e^3)/((c*x^2
+ a)^2*a^2*c^2)
```

maple [B] time = 0.06, size = 260, normalized size = 2.08

$$\frac{3Ad\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,ac}+\frac{3A\,d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,a^2}+\frac{3B\,d^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,ac}+\frac{3B\,e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,c^2}+\frac{-\frac{(Ae+3Bd)e^2x^2}{2c}+\frac{\left(3Aacd\,e^2+3A\,c^2d^3-5B\,a^2e^3+3Bac\,d^2e\right)x^3}{8a^2c}-\frac{\left(3Aacd\,e^2-5A\,c^2d^3+3B\,a^2e^3+3Bac\,d^2e\right)x}{8a\,c^2}-\frac{aA\,e^3+3Ac\,d^2e+3aBd\,e^2+Bc\,d^3}{4c^2}}{\left(c\,x^2+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x)
```

```
[Out] (1/8*(3*A*a*c*d*e^2+3*A*c^2*d^3-5*B*a^2*e^3+3*B*a*c*d^2*e)/a^2/c*x^3-1/2*e^
2*(A*e+3*B*d)*x^2/c-1/8*(3*A*a*c*d*e^2-5*A*c^2*d^3+3*B*a^2*e^3+3*B*a*c*d^2*
e)/a/c^2*x-1/4*(A*a*e^3+3*A*c*d^2*e+3*B*a*d*e^2+B*c*d^3)/c^2)/(c*x^2+a)^2+3
/8/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d*e^2+3/8/a^2/(a*c)^(1/2)*ar
ctan(1/(a*c)^(1/2)*c*x)*A*d^3+3/8/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
*B*e^3+3/8/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^2*e
```

maxima [B] time = 1.51, size = 248, normalized size = 1.98

$$-\frac{2\,Ba^2cd^3+6\,Aa^2cd^2e+6\,Ba^3de^2+2\,Aa^3e^3-\left(3\,Ac^3d^3+3\,Bac^2d^2e+3\,Aac^2de^2-5\,Ba^2ce^3\right)x^3+4\left(3\,Ba^2cde^2+Aa^2ce^3\right)x^2-\left(5\,Aac^2d^3-3\,Ba^2cd^2e-3\,Aa^2cde^2-3\,Ba^3e^3\right)x}{8\left(a^2c^4x^4+2\,a^3c^3x^2+a^4c^2\right)}+\frac{3\left(Ac^2d^3+Bacd^2e+Aacde^2+Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/8*(2*B*a^2*c*d^3 + 6*A*a^2*c*d^2*e + 6*B*a^3*d*e^2 + 2*A*a^3*e^3 - (3*A*
c^3*d^3 + 3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 - 5*B*a^2*c*e^3)*x^3 + 4*(3*B*a
^2*c*d*e^2 + A*a^2*c*e^3)*x^2 - (5*A*a*c^2*d^3 - 3*B*a^2*c*d^2*e - 3*A*a^2*
c*d*e^2 - 3*B*a^3*e^3)*x)/(a^2*c^4*x^4 + 2*a^3*c^3*x^2 + a^4*c^2) + 3/8*(A*
c^2*d^3 + B*a*c*d^2*e + A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(sqr
t(a*c)*a^2*c^2)
```

mupad [B] time = 0.22, size = 265, normalized size = 2.12

$$\frac{3\,\mathrm{atan}\left(\frac{\sqrt{c}\,x\,(A\,c\,d+B\,a\,e)\left(c\,d^2+a\,e^2\right)}{\sqrt{a}\left(B\,a^2\,e^3+B\,a\,c\,d^2\,e+A\,a\,c\,d\,e^2+A\,c^2\,d^3\right)}\right)(A\,c\,d+B\,a\,e)\left(c\,d^2+a\,e^2\right)}{8\,a^{5/2}\,c^{5/2}}-\frac{\frac{B\,c\,d^3+3\,A\,c\,d^2\,e+3\,B\,a\,d\,e^2+A\,a\,e^3}{4\,c^2}+\frac{x^2\left(A\,e^3+3\,B\,d\,e^2\right)}{2\,c}+\frac{x\left(3\,B\,a^2\,e^3+3\,B\,a\,c\,d^2\,e+3\,A\,a\,c\,d\,e^2-5\,A\,c^2\,d^3\right)}{8\,a\,c^2}-\frac{x^3\left(-5\,B\,a^2\,e^3+3\,B\,a\,c\,d^2\,e+3\,A\,a\,c\,d\,e^2+3\,A\,c^2\,d^3\right)}{8\,a^2\,c}}{a^2+2\,a\,c\,x^2+c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x)
```

```
[Out] (3*atan((c^(1/2)*x*(A*c*d + B*a*e)*(a*e^2 + c*d^2))/(a^(1/2)*(A*c^2*d^3 + B
*a^2*e^3 + A*a*c*d*e^2 + B*a*c*d^2*e)))*(A*c*d + B*a*e)*(a*e^2 + c*d^2))/(8
*a^(5/2)*c^(5/2)) - ((A*a*e^3 + B*c*d^3 + 3*B*a*d*e^2 + 3*A*c*d^2*e)/(4*c^2
) + (x^2*(A*e^3 + 3*B*d*e^2))/(2*c) + (x*(3*B*a^2*e^3 - 5*A*c^2*d^3 + 3*A*a
*c*d*e^2 + 3*B*a*c*d^2*e))/(8*a*c^2) - (x^3*(3*A*c^2*d^3 - 5*B*a^2*e^3 + 3*
A*a*c*d*e^2 + 3*B*a*c*d^2*e))/(8*a^2*c))/(a^2 + c^2*x^4 + 2*a*c*x^2)
```

sympy [B] time = 20.05, size = 468, normalized size = 3.74

$$-\frac{3\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)\log\left(-\frac{3a^3c^2\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)}{3Aacde^2+3Ac^2d^3+3Ba^2e^3+3Bacd^2e}+x\right)}{16}+\frac{3\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)\log\left(\frac{3a^3c^2\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)}{3Aacde^2+3Ac^2d^3+3Ba^2e^3+3Bacd^2e}+x\right)}{16}+\frac{-2Aa^3e^3-6Aa^2cd^2e-6Ba^3de^2-2Ba^2cd^3+x^3\left(3Aac^2de^2+3Ac^3d^3-5Ba^2ce^3+3Bac^2d^2e\right)+x^2\left(-4Aa^2ce^3-12Ba^2cde^2\right)+x\left(-3Aa^2cde^2+5Aac^2d^3-3Ba^3e^3-3Ba^2cd^2e\right)}{8a^4c^2+16a^3c^3x^2+8a^2c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+a)**3,x)
```

```
[Out] -3*sqrt(-1/(a**5*c**5))*(a*e**2 + c*d**2)*(A*c*d + B*a*e)*log(-3*a**3*c**2*
sqrt(-1/(a**5*c**5))*(a*e**2 + c*d**2)*(A*c*d + B*a*e)/(3*A*a*c*d*e**2 + 3*
A*c**2*d**3 + 3*B*a**2*e**3 + 3*B*a*c*d**2*e) + x)/16 + 3*sqrt(-1/(a**5*c**
5))*(a*e**2 + c*d**2)*(A*c*d + B*a*e)*log(3*a**3*c**2*sqrt(-1/(a**5*c**5))*
```

```
(a*e**2 + c*d**2)*(A*c*d + B*a*e)/(3*A*a*c*d*e**2 + 3*A*c**2*d**3 + 3*B*a**
2*e**3 + 3*B*a*c*d**2*e) + x)/16 + (-2*A*a**3*e**3 - 6*A*a**2*c*d**2*e - 6*
B*a**3*d*e**2 - 2*B*a**2*c*d**3 + x**3*(3*A*a*c**2*d*e**2 + 3*A*c**3*d**3 -
 5*B*a**2*c*e**3 + 3*B*a*c**2*d**2*e) + x**2*(-4*A*a**2*c*e**3 - 12*B*a**2*
c*d*e**2) + x*(-3*A*a**2*c*d*e**2 + 5*A*a*c**2*d**3 - 3*B*a**3*e**3 - 3*B*a
**2*c*d**2*e))/(8*a**4*c**2 + 16*a**3*c**3*x**2 + 8*a**2*c**4*x**4)
```

3.1175 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^3} dx$

Optimal. Leaf size=142

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aAe^2+2aBde+3Acd^2\right)}{8a^{5/2}c^{3/2}}-\frac{2ae(aBe+2Acd)-cx\left(-aAe^2+2aBde+3Acd^2\right)}{8a^2c^2\left(a+cx^2\right)}-\frac{(d+ex)^2(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

Rubi [A] time = 0.13, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {821, 778, 205}

$$-\frac{2ae(aBe+2Acd)-cx\left(-aAe^2+2aBde+3Acd^2\right)}{8a^2c^2\left(a+cx^2\right)}+\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aAe^2+2aBde+3Acd^2\right)}{8a^{5/2}c^{3/2}}-\frac{(d+ex)^2(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x]
```

```
[Out] -((a*B - A*c*x)*(d + e*x)^2)/(4*a*c*(a + c*x^2)^2) - (2*a*e*(2*A*c*d + a*B*
e) - c*(3*A*c*d^2 + 2*a*B*d*e - a*A*e^2)*x)/(8*a^2*c^2*(a + c*x^2)) + ((3*A
*c*d^2 + 2*a*B*d*e + a*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(3/
2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^3} dx = -\frac{(aB-Acx)(d+ex)^2}{4ac\left(a+cx^2\right)^2}+\frac{\int \frac{(d+ex)(3Acd+2aBe+Acex)}{\left(a+cx^2\right)^2} dx}{4ac}$$

$$= -\frac{(aB-Acx)(d+ex)^2}{4ac\left(a+cx^2\right)^2}-\frac{2ae(2Acd+aBe)-c\left(3Acd^2+2aBde-aAe^2\right)x}{8a^2c^2\left(a+cx^2\right)}+\frac{\left(3Acd^2+\right.}{}$$

$$= -\frac{(aB-Acx)(d+ex)^2}{4ac\left(a+cx^2\right)^2}-\frac{2ae(2Acd+aBe)-c\left(3Acd^2+2aBde-aAe^2\right)x}{8a^2c^2\left(a+cx^2\right)}+\frac{\left(3Acd^2+\right.}{}$$

Mathematica [A] time = 0.11, size = 158, normalized size = 1.11

$$\frac{\frac{\sqrt{a}\left(-4a^2Be^2+acex(Ae+2Bd)+3Ac^2d^2x\right)}{a+cx^2}+\frac{2a^{3/2}\left(a^2Be^2-ac(Ae(2d+ex)+Bd(d+2ex))+Ac^2d^2x\right)}{\left(a+cx^2\right)^2}+\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aAe^2+2aBde+3Acd^2\right)}{8a^{5/2}c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x]
```

```
[Out] ((Sqrt[a]*(-4*a^2*B*e^2 + 3*A*c^2*d^2*x + a*c*e*(2*B*d + A*e)*x))/(a + c*x^
2) + (2*a^(3/2)*(a^2*B*e^2 + A*c^2*d^2*x - a*c*(A*e*(2*d + e*x) + B*d*(d +
2*e*x))))/(a + c*x^2)^2 + Sqrt[c]*(3*A*c*d^2 + 2*a*B*d*e + a*A*e^2)*ArcTan[
(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3, x]
```

fricas [B] time = 0.43, size = 537, normalized size = 3.78

$$\left[-\frac{8Ba^3ce^2x^2+4Ba^3cd^2+8Aa^3cde+4Ba^4e^2-2\left(3Aac^3d^2+2Ba^2c^2de+Aa^2c^2e^2\right)x^3+\left(3Aa^2cd^2+2Ba^3de+Aa^3e^2+\left(3Ac^3d^2+2Bac^2de+Aac^2e^2\right)x^4+2\left(3Aac^2d^2+2Ba^2cde+Aa^2ce^2\right)x^2\right)\sqrt{-ac}\log\left(\frac{cx^2-2\sqrt{-ac}x-a}{cx^2+a}\right)-2\left(5Aa^2c^2d^2-2Ba^3cde-Aa^3ce^2\right)x}{16\left(a^3c^4x^4+2a^4c^3x^2+a^5c^2\right)},-\frac{4Ba^3ce^2x^2+2Ba^3cd^2+4Aa^3cde+2Ba^4e^2-\left(3Aac^3d^2+2Ba^2c^2de+Aa^2c^2e^2\right)x^3-\left(3Aa^2cd^2+2Ba^3de+Aa^3e^2+\left(3Ac^3d^2+2Bac^2de+Aac^2e^2\right)x^4+2\left(3Aac^2d^2+2Ba^2cde+Aa^2ce^2\right)x^2\right)\sqrt{ac}\arctan\left(\frac{\sqrt{ac}x}{a}\right)-\left(5Aa^2c^2d^2-2Ba^3cde-Aa^3ce^2\right)x}{8\left(a^3c^4x^4+2a^4c^3x^2+a^5c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(8*B*a^3*c*e^2*x^2 + 4*B*a^3*c*d^2 + 8*A*a^3*c*d*e + 4*B*a^4*e^2 - 2
*(3*A*a*c^3*d^2 + 2*B*a^2*c^2*d*e + A*a^2*c^2*e^2)*x^3 + (3*A*a^2*c*d^2 + 2
*B*a^3*d*e + A*a^3*e^2 + (3*A*c^3*d^2 + 2*B*a*c^2*d*e + A*a*c^2*e^2)*x^4 +
2*(3*A*a*c^2*d^2 + 2*B*a^2*c*d*e + A*a^2*c*e^2)*x^2)*sqrt(-a*c)*log((c*x^2
- 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(5*A*a^2*c^2*d^2 - 2*B*a^3*c*d*e - A
*a^3*c*e^2)*x)/(a^3*c^4*x^4 + 2*a^4*c^3*x^2 + a^5*c^2), -1/8*(4*B*a^3*c*e^2
*x^2 + 2*B*a^3*c*d^2 + 4*A*a^3*c*d*e + 2*B*a^4*e^2 - (3*A*a*c^3*d^2 + 2*B*a
^2*c^2*d*e + A*a^2*c^2*e^2)*x^3 - (3*A*a^2*c*d^2 + 2*B*a^3*d*e + A*a^3*e^2
+ (3*A*c^3*d^2 + 2*B*a*c^2*d*e + A*a*c^2*e^2)*x^4 + 2*(3*A*a*c^2*d^2 + 2*B*
a^2*c*d*e + A*a^2*c*e^2)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^
2*d^2 - 2*B*a^3*c*d*e - A*a^3*c*e^2)*x)/(a^3*c^4*x^4 + 2*a^4*c^3*x^2 + a^5*
c^2)]
```

giac [A] time = 0.16, size = 169, normalized size = 1.19

$$\frac{\left(3Acd^2+2Bade+Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}a^2c}+\frac{3Ac^3d^2x^3+2Bac^2dx^3e+Aac^2x^3e^2+5Aac^2d^2x-4Ba^2cx^2e^2-2Ba^2cdxe-2Ba^2cd^2-Aa^2cxe^2-4Aa^2cde-2Ba^3e^2}{8\left(cx^2+a\right)^2a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*A*c*d^2 + 2*B*a*d*e + A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*
c) + 1/8*(3*A*c^3*d^2*x^3 + 2*B*a*c^2*d*x^3*e + A*a*c^2*x^3*e^2 + 5*A*a*c^2
*d^2*x - 4*B*a^2*c*x^2*e^2 - 2*B*a^2*c*d*x*e - 2*B*a^2*c*d^2 - A*a^2*c*x*e^
2 - 4*A*a^2*c*d*e - 2*B*a^3*e^2)/((c*x^2 + a)^2*a^2*c^2)
```

maple [A] time = 0.05, size = 180, normalized size = 1.27

$$\frac{A e^{2} \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{8 \sqrt{a c}\, a c}+\frac{3 A d^{2} \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{8 \sqrt{a c}\, a^{2}}+\frac{B d e \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{4 \sqrt{a c}\, a c}+\frac{-\frac{B e^{2} x^{2}}{2 c}+\frac{\left(A a e^{2}+3 A c d^{2}+2 a B d e\right) x^{3}}{8 a^{2}}-\frac{\left(A a e^{2}-5 A c d^{2}+2 a B d e\right) x}{8 a c}-\frac{2 A c d e+B a e^{2}+B c d^{2}}{4 c^{2}}}{\left(c x^{2}+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x)
```

```
[Out] (1/8*(A*a*e^2+3*A*c*d^2+2*B*a*d*e)/a^2*x^3-1/2*B/c*e^2*x^2-1/8*(A*a*e^2-5*A
*c*d^2+2*B*a*d*e)/a/c*x-1/4*(2*A*c*d*e+B*a*e^2+B*c*d^2)/c^2)/(c*x^2+a)^2+1/
8/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*e^2+3/8/a^2/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*A*d^2+1/4/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*
d*e
```

maxima [A] time = 1.18, size = 184, normalized size = 1.30

$$-\frac{4 B a^{2} c e^{2} x^{2}+2 B a^{2} c d^{2}+4 A a^{2} c d e+2 B a^{3} e^{2}-\left(3 A c^{3} d^{2}+2 B a c^{2} d e+A a c^{2} e^{2}\right) x^{3}-\left(5 A a c^{2} d^{2}-2 B a^{2} c d e-A a^{2} c e^{2}\right) x}{8\left(a^{2} c^{4} x^{4}+2 a^{3} c^{3} x^{2}+a^{4} c^{2}\right)}+\frac{\left(3 A c d^{2}+2 B a d e+A a e^{2}\right) \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{8 \sqrt{a c}\, a^{2} c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/8*(4*B*a^2*c*e^2*x^2 + 2*B*a^2*c*d^2 + 4*A*a^2*c*d*e + 2*B*a^3*e^2 - (3*
A*c^3*d^2 + 2*B*a*c^2*d*e + A*a*c^2*e^2)*x^3 - (5*A*a*c^2*d^2 - 2*B*a^2*c*d
*e - A*a^2*c*e^2)*x)/(a^2*c^4*x^4 + 2*a^3*c^3*x^2 + a^4*c^2) + 1/8*(3*A*c*d
^2 + 2*B*a*d*e + A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c)
```

mupad [B] time = 1.81, size = 154, normalized size = 1.08

$$\frac{\operatorname{atan}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)\left(3 A c d^{2}+2 B a d e+A a e^{2}\right)}{8 a^{5/2} c^{3/2}}-\frac{\frac{B c d^{2}+2 A c d e+B a e^{2}}{4 c^{2}}-\frac{x^{3}\left(3 A c d^{2}+2 B a d e+A a e^{2}\right)}{8 a^{2}}+\frac{x\left(-5 A c d^{2}+2 B a d e+A a e^{2}\right)}{8 a c}+\frac{B e^{2} x^{2}}{2 c}}{a^{2}+2 a c x^{2}+c^{2} x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x)
```

```
[Out] (atan((c^(1/2)*x)/a^(1/2))*(A*a*e^2 + 3*A*c*d^2 + 2*B*a*d*e))/(8*a^(5/2)*c^
(3/2)) - ((B*a*e^2 + B*c*d^2 + 2*A*c*d*e)/(4*c^2) - (x^3*(A*a*e^2 + 3*A*c*d
^2 + 2*B*a*d*e))/(8*a^2) + (x*(A*a*e^2 - 5*A*c*d^2 + 2*B*a*d*e))/(8*a*c) +
(B*e^2*x^2)/(2*c))/(a^2 + c^2*x^4 + 2*a*c*x^2)
```

sympy [A] time = 7.84, size = 274, normalized size = 1.93

$$-\frac{\sqrt{-\frac{1}{a^{5} c^{3}}}\left(A a e^{2}+3 A c d^{2}+2 B a d e\right) \log\left(-a^{3} c \sqrt{-\frac{1}{a^{5} c^{3}}}+x\right)}{16}+\frac{\sqrt{-\frac{1}{a^{5} c^{3}}}\left(A a e^{2}+3 A c d^{2}+2 B a d e\right) \log\left(a^{3} c \sqrt{-\frac{1}{a^{5} c^{3}}}+x\right)}{16}+\frac{-4 A a^{2} c d e-2 B a^{3} e^{2}-2 B a^{2} c d^{2}-4 B a^{2} c e^{2} x^{2}+x^{3}\left(A a c^{2} e^{2}+3 A c^{3} d^{2}+2 B a c^{2} d e\right)+x\left(-A a^{2} c e^{2}+5 A a c^{2} d^{2}-2 B a^{2} c d e\right)}{8 a^{4} c^{2}+16 a^{3} c^{3} x^{2}+8 a^{2} c^{4} x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+a)**3,x)
```

```
[Out] -sqrt(-1/(a**5*c**3))*(A*a*e**2 + 3*A*c*d**2 + 2*B*a*d*e)*log(-a**3*c*sqrt(
-1/(a**5*c**3)) + x)/16 + sqrt(-1/(a**5*c**3))*(A*a*e**2 + 3*A*c*d**2 + 2*B
*a*d*e)*log(a**3*c*sqrt(-1/(a**5*c**3)) + x)/16 + (-4*A*a**2*c*d*e - 2*B*a*
*3*e**2 - 2*B*a**2*c*d**2 - 4*B*a**2*c*e**2*x**2 + x**3*(A*a*c**2*e**2 + 3*
A*c**3*d**2 + 2*B*a*c**2*d*e) + x*(-A*a**2*c*e**2 + 5*A*a*c**2*d**2 - 2*B*a
**2*c*d*e))/(8*a**4*c**2 + 16*a**3*c**3*x**2 + 8*a**2*c**4*x**4)
```

3.1176 $\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=110

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+3Acd)}{8a^{5/2}c^{3/2}}+\frac{x(aBe+3Acd)}{8a^2c\left(a+cx^2\right)}-\frac{a(Ae+Bd)-x(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

Rubi [A] time = 0.04, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {778, 199, 205}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+3Acd)}{8a^{5/2}c^{3/2}}+\frac{x(aBe+3Acd)}{8a^2c\left(a+cx^2\right)}-\frac{a(Ae+Bd)-x(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + c*x^2)^3,x]
```

```
[Out] -(a*(B*d + A*e) - (A*c*d - a*B*e)*x)/(4*a*c*(a + c*x^2)^2) + ((3*A*c*d + a*
B*e)*x)/(8*a^2*c*(a + c*x^2)) + ((3*A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[
a]])/(8*a^(5/2)*c^(3/2))
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^3}\,dx &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{4ac\left(a+cx^2\right)^2}+\frac{(3Acd+aBe)\int \frac{1}{\left(a+cx^2\right)^2}\,dx}{4ac}\\ &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{4ac\left(a+cx^2\right)^2}+\frac{(3Acd+aBe)x}{8a^2c\left(a+cx^2\right)}+\frac{(3Acd+aBe)\int \frac{1}{a+cx^2}\,dx}{8a^2c}\\ &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{4ac\left(a+cx^2\right)^2}+\frac{(3Acd+aBe)x}{8a^2c\left(a+cx^2\right)}+\frac{(3Acd+aBe)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 101, normalized size = 0.92

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+3Acd)}{8a^{5/2}c^{3/2}}+\frac{-a^2(2Ae+2Bd+Bex)+acx\left(5Ad+Bex^2\right)+3Ac^2dx^3}{8a^2c\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + c*x^2)^3,x]
```

```
[Out] (3*A*c^2*d*x^3 - a^2*(2*B*d + 2*A*e + B*e*x) + a*c*x*(5*A*d + B*e*x^2))/(8*
a^2*c*(a + c*x^2)^2) + ((3*A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a
^(5/2)*c^(3/2))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + c*x^2)^3, x]
```

fricas [A] time = 0.43, size = 355, normalized size = 3.23

$$\left[-\frac{4Ba^3cd+4Aa^3ce-2\left(3Aac^3d+Ba^2c^2e\right)x^3+\left(3Aa^2cd+Ba^3e+\left(3Ac^3d+Bac^2e\right)x^4+2\left(3Aac^2d+Ba^2ce\right)x^2\right)\sqrt{-ac}\log\left(\frac{cx^2-2\sqrt{-ac}x-a}{cx^2+a}\right)-2\left(5Aa^2c^2d-Ba^3ce\right)x}{16\left(a^3c^4x^4+2a^4c^3x^2+a^5c^2\right)}, -\frac{2Ba^3cd+2Aa^3ce-\left(3Aac^3d+Ba^2c^2e\right)x^3-\left(3Aa^2cd+Ba^3e+\left(3Ac^3d+Bac^2e\right)x^4+2\left(3Aac^2d+Ba^2ce\right)x^2\right)\sqrt{ac}\arctan\left(\frac{\sqrt{ac}x}{a}\right)-\left(5Aa^2c^2d-Ba^3ce\right)x}{8\left(a^3c^4x^4+2a^4c^3x^2+a^5c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c*d + 4*A*a^3*c*e - 2*(3*A*a*c^3*d + B*a^2*c^2*e)*x^3 + (3*
A*a^2*c*d + B*a^3*e + (3*A*c^3*d + B*a*c^2*e)*x^4 + 2*(3*A*a*c^2*d + B*a^2*
c*e)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(5*A
*a^2*c^2*d - B*a^3*c*e)*x)/(a^3*c^4*x^4 + 2*a^4*c^3*x^2 + a^5*c^2), -1/8*(2
*B*a^3*c*d + 2*A*a^3*c*e - (3*A*a*c^3*d + B*a^2*c^2*e)*x^3 - (3*A*a^2*c*d +
 B*a^3*e + (3*A*c^3*d + B*a*c^2*e)*x^4 + 2*(3*A*a*c^2*d + B*a^2*c*e)*x^2)*s
qrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^2*d - B*a^3*c*e)*x)/(a^3*c^4*x^
4 + 2*a^4*c^3*x^2 + a^5*c^2)]
```

giac [A] time = 0.16, size = 102, normalized size = 0.93

$$\frac{(3\,Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c}+\frac{3\,Ac^2dx^3+Bacx^3e+5\,Aacdx-Ba^2xe-2\,Ba^2d-2\,Aa^2e}{8\left(cx^2+a\right)^2a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c) + 1/8*(3*A*c^
2*d*x^3 + B*a*c*x^3*e + 5*A*a*c*d*x - B*a^2*x*e - 2*B*a^2*d - 2*A*a^2*e)/((
c*x^2 + a)^2*a^2*c)
```

maple [A] time = 0.06, size = 108, normalized size = 0.98

$$\frac{3Ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;a^2}+\frac{Be\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;ac}+\frac{\frac{(3Acd+aBe)x^3}{8a^2}+\frac{(5Acd-aBe)x}{8ac}-\frac{Ae+Bd}{4c}}{\left(c\,x^2+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+a)^3,x)
```

```
[Out] (1/8*(3*A*c*d+B*a*e)/a^2*x^3+1/8*(5*A*c*d-B*a*e)/a/c*x-1/4*(A*e+B*d)/c)/(c*
x^2+a)^2+3/8/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d+1/8/a/c/(a*c)^(1
/2)*arctan(1/(a*c)^(1/2)*c*x)*B*e
```

maxima [A] time = 1.12, size = 114, normalized size = 1.04

$$-\frac{2\,Ba^2d+2\,Aa^2e-\left(3\,Ac^2d+Bace\right)x^3-\left(5\,Aacd-Ba^2e\right)x}{8\,\left(a^2c^3x^4+2\,a^3c^2x^2+a^4c\right)}+\frac{\left(3\,Acd+Bae\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/8*(2*B*a^2*d + 2*A*a^2*e - (3*A*c^2*d + B*a*c*e)*x^3 - (5*A*a*c*d - B*a^
2*e)*x)/(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c) + 1/8*(3*A*c*d + B*a*e)*arcta
n(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c)
```

mupad [B] time = 1.77, size = 100, normalized size = 0.91

$$\frac{\frac{x^3\,\left(3\,A\,c\,d+B\,a\,e\right)}{8\,a^2}-\frac{A\,e+B\,d}{4\,c}+\frac{x\,\left(5\,A\,c\,d-B\,a\,e\right)}{8\,a\,c}}{a^2+2\,a\,c\,x^2+c^2\,x^4}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,\left(3\,A\,c\,d+B\,a\,e\right)}{8\,a^{5/2}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + c*x^2)^3,x)
```

```
[Out] ((x^3*(3*A*c*d + B*a*e))/(8*a^2) - (A*e + B*d)/(4*c) + (x*(5*A*c*d - B*a*e)
)/(8*a*c))/(a^2 + c^2*x^4 + 2*a*c*x^2) + (atan((c^(1/2)*x)/a^(1/2))*(3*A*c*
d + B*a*e))/(8*a^(5/2)*c^(3/2))
```

sympy [A] time = 1.93, size = 180, normalized size = 1.64

$$-\frac{\sqrt{-\frac{1}{a^5c^3}}\,(3Acd+Bae)\log\left(-a^3c\sqrt{-\frac{1}{a^5c^3}}+x\right)}{16}+\frac{\sqrt{-\frac{1}{a^5c^3}}\,(3Acd+Bae)\log\left(a^3c\sqrt{-\frac{1}{a^5c^3}}+x\right)}{16}+\frac{-2Aa^2e-2Ba^2d+x^3\left(3Ac^2d+Bace\right)+x\left(5Aacd-Ba^2e\right)}{8a^4c+16a^3c^2x^2+8a^2c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+a)**3,x)
```

```
[Out] -sqrt(-1/(a**5*c**3))*(3*A*c*d + B*a*e)*log(-a**3*c*sqrt(-1/(a**5*c**3)) +
x)/16 + sqrt(-1/(a**5*c**3))*(3*A*c*d + B*a*e)*log(a**3*c*sqrt(-1/(a**5*c**
3)) + x)/16 + (-2*A*a**2*e - 2*B*a**2*d + x**3*(3*A*c**2*d + B*a*c*e) + x*(
5*A*a*c*d - B*a**2*e))/(8*a**4*c + 16*a**3*c**2*x**2 + 8*a**2*c**3*x**4)
```

3.1177 $\int \frac{A+Bx}{\left(a+cx^2\right)^3} \, dx$

Optimal. Leaf size=75

$$\frac{3A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{c}}+\frac{3Ax}{8a^2\left(a+cx^2\right)}+\frac{Acx-aB}{4ac\left(a+cx^2\right)^2}$$

Rubi [A] time = 0.02, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {639, 199, 205}

$$\frac{3Ax}{8a^2\left(a+cx^2\right)}+\frac{3A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{c}}-\frac{aB-Acx}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^3,x]
```

```
[Out] -(a*B - A*c*x)/(4*a*c*(a + c*x^2)^2) + (3*A*x)/(8*a^2*(a + c*x^2)) + (3*A*A
rcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[c])
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+cx^2\right)^3}\,dx &= -\frac{aB-Acx}{4ac\left(a+cx^2\right)^2}+\frac{(3A)\int \frac{1}{\left(a+cx^2\right)^2}\,dx}{4a}\\ &= -\frac{aB-Acx}{4ac\left(a+cx^2\right)^2}+\frac{3Ax}{8a^2\left(a+cx^2\right)}+\frac{(3A)\int \frac{1}{a+cx^2}\,dx}{8a^2}\\ &= -\frac{aB-Acx}{4ac\left(a+cx^2\right)^2}+\frac{3Ax}{8a^2\left(a+cx^2\right)}+\frac{3A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 71, normalized size = 0.95

$$\frac{\frac{\sqrt{a}\left(-2a^2B+5aAcx+3Ac^2x^3\right)}{\left(a+cx^2\right)^2}+3A\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{8a^{5/2}c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^3,x]
```

```
[Out] ((Sqrt[a]*(-2*a^2*B + 5*a*A*c*x + 3*A*c^2*x^3))/(a + c*x^2)^2 + 3*A*Sqrt[c]
*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(a + c*x^2)^3, x]
```

fricas [A] time = 0.43, size = 212, normalized size = 2.83

$$\left[\frac{6\,Aac^2x^3+10\,Aa^2cx-4\,Ba^3-3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{16\left(a^3c^3x^4+2\,a^4c^2x^2+a^5c\right)}, \frac{3\,Aac^2x^3+5\,Aa^2cx-2\,Ba^3+3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{8\left(a^3c^3x^4+2\,a^4c^2x^2+a^5c\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(6*A*a*c^2*x^3 + 10*A*a^2*c*x - 4*B*a^3 - 3*(A*c^2*x^4 + 2*A*a*c*x^2
+ A*a^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)))/(a^3*c^3
*x^4 + 2*a^4*c^2*x^2 + a^5*c), 1/8*(3*A*a*c^2*x^3 + 5*A*a^2*c*x - 2*B*a^3 +
 3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a^3*
c^3*x^4 + 2*a^4*c^2*x^2 + a^5*c)]
```

giac [A] time = 0.19, size = 60, normalized size = 0.80

$$\frac{3\,A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2}+\frac{3\,Ac^2x^3+5\,Aacx-2\,Ba^2}{8\left(cx^2+a\right)^2a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 3/8*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) + 1/8*(3*A*c^2*x^3 + 5*A*a*c*x
- 2*B*a^2)/((c*x^2 + a)^2*a^2*c)
```

maple [A] time = 0.05, size = 65, normalized size = 0.87

$$\frac{3Ax}{8\left(c\,x^2+a\right)a^2}+\frac{3A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;a^2}+\frac{2Acx-2Ba}{8\left(c\,x^2+a\right)^2\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 1/8*(2*A*c*x-2*B*a)/a/c/(c*x^2+a)^2+3/8*A*x/a^2/(c*x^2+a)+3/8*A/a^2/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.30, size = 74, normalized size = 0.99

$$\frac{3\,Ac^2x^3+5\,Aacx-2\,Ba^2}{8\left(a^2c^3x^4+2\,a^3c^2x^2+a^4c\right)}+\frac{3\,A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*(3*A*c^2*x^3 + 5*A*a*c*x - 2*B*a^2)/(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*
c) + 3/8*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2)
```

mupad [B] time = 0.08, size = 64, normalized size = 0.85

$$\frac{\frac{5\,A\,x}{8\,a}-\frac{B}{4\,c}+\frac{3\,A\,c\,x^3}{8\,a^2}}{a^2+2\,a\,c\,x^2+c^2\,x^4}+\frac{3\,A\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8\,a^{5/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^3,x)
```

```
[Out] ((5*A*x)/(8*a) - B/(4*c) + (3*A*c*x^3)/(8*a^2))/(a^2 + c^2*x^4 + 2*a*c*x^2)
 + (3*A*atan((c^(1/2)*x)/a^(1/2)))/(8*a^(5/2)*c^(1/2))
```

sympy [A] time = 0.45, size = 124, normalized size = 1.65

$$A\left(-\frac{3\sqrt{-\frac{1}{a^5c}}\log\left(-a^3\sqrt{-\frac{1}{a^5c}}+x\right)}{16}+\frac{3\sqrt{-\frac{1}{a^5c}}\log\left(a^3\sqrt{-\frac{1}{a^5c}}+x\right)}{16}\right)+\frac{5Aacx+3Ac^2x^3-2Ba^2}{8a^4c+16a^3c^2x^2+8a^2c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] A*(-3*sqrt(-1/(a**5*c))*log(-a**3*sqrt(-1/(a**5*c)) + x)/16 + 3*sqrt(-1/(a*
*5*c))*log(a**3*sqrt(-1/(a**5*c)) + x)/16) + (5*A*a*c*x + 3*A*c**2*x**3 - 2
*B*a**2)/(8*a**4*c + 16*a**3*c**2*x**2 + 8*a**2*c**3*x**4)
```

3.1178 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=307

$$-\frac{4a^2e^2(Bd-Ae)+x\left(aBe\left(cd^2-3ae^2\right)-Acd\left(7ae^2+3cd^2\right)\right)}{8a^2\left(a+cx^2\right)\left(ae^2+cd^2\right)^2}-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)-\ldots\right.}{8a^{5/2}\sqrt{c}\,\left(ae^2+c\ldots\right.}$$

Rubi [A] time = 0.51, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {823, 801, 635, 205, 260}

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)-Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)\right)}{8a^{5/2}\sqrt{c}\left(ae^2+cd^2\right)^3}-\frac{4a^2e^2(Bd-Ae)+x\left(aBe\left(cd^2-3ae^2\right)-Acd\left(7ae^2+3cd^2\right)\right)}{8a^2\left(a+cx^2\right)\left(ae^2+cd^2\right)^2}-\frac{a(Bd-Ae)-x(aBe+Acd)}{4a\left(a+cx^2\right)^2\left(ae^2+cd^2\right)}+\frac{e^4\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)^3}-\frac{e^4(Bd-Ae)\log(d+ex)}{\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + c*x^2)^3),x]
```

```
[Out] -(a*(B*d - A*e) - (A*c*d + a*B*e)*x)/(4*a*(c*d^2 + a*e^2)*(a + c*x^2)^2) -
(4*a^2*e^2*(B*d - A*e) + (a*B*e*(c*d^2 - 3*a*e^2) - A*c*d*(3*c*d^2 + 7*a*e^
2))*x)/(8*a^2*(c*d^2 + a*e^2)^2*(a + c*x^2)) - ((a*B*e*(c^2*d^4 + 6*a*c*d^2
*e^2 - 3*a^2*e^4) - A*c*d*(3*c^2*d^4 + 10*a*c*d^2*e^2 + 15*a^2*e^4))*ArcTan
[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[c]*(c*d^2 + a*e^2)^3) - (e^4*(B*d -
A*e)*Log[d + e*x])/(c*d^2 + a*e^2)^3 + (e^4*(B*d - A*e)*Log[a + c*x^2])/(2*
(c*d^2 + a*e^2)^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^3}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{\int \frac{-c\left(3Acd^2-aBde+4aAe^2\right)-3ce(Acd+aBe)x}{(d+ex)\left(a+cx^2\right)^2}\,dx}{4ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\left(aBe\left(cd^2-3ae^2\right)-Acd\left(3cd^2+7a\right.\right.}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\left(aBe\left(cd^2-3ae^2\right)-Acd\left(3cd^2+7a\right.\right.}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\left(aBe\left(cd^2-3ae^2\right)-Acd\left(3cd^2+7a\right.\right.}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\left(aBe\left(cd^2-3ae^2\right)-Acd\left(3cd^2+7a\right.\right.}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\left(aBe\left(cd^2-3ae^2\right)-Acd\left(3cd^2+7a\right.\right.}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

Mathematica [A] time = 0.28, size = 263, normalized size = 0.86

$$\frac{\frac{\left(ae^2+cd^2\right)\left(a^2e^2(4Ae-4Bd+3Bex)+acdex(7Ae-Bd)+3Ac^2d^3x\right)}{a^2\left(a+cx^2\right)}+\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)+aBe\left(3a^2e^4-6acd^2e^2-c^2d^4\right)\right)}{a^{5/2}\sqrt{c}}+\frac{2\left(ae^2+cd^2\right)^2(a(Ae-Bd+Bex)+Acdx)}{a\left(a+cx^2\right)^2}+4e^4\log\left(a+cx^2\right)(Bd-Ae)+8e^4(Ae-Bd)\log(d+ex)}{8\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + c*x^2)^3),x]
```

```
[Out] ((2*(c*d^2 + a*e^2)^2*(A*c*d*x + a*(-(B*d) + A*e + B*e*x)))/(a*(a + c*x^2)^
2) + ((c*d^2 + a*e^2)*(3*A*c^2*d^3*x + a*c*d*e*(-(B*d) + 7*A*e)*x + a^2*e^2
*(-4*B*d + 4*A*e + 3*B*e*x)))/(a^2*(a + c*x^2)) + ((a*B*e*(-(c^2*d^4) - 6*a
*c*d^2*e^2 + 3*a^2*e^4) + A*c*d*(3*c^2*d^4 + 10*a*c*d^2*e^2 + 15*a^2*e^4))*
ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(a^(5/2)*Sqrt[c]) + 8*e^4*(-(B*d) + A*e)*Log[d
 + e*x] + 4*e^4*(B*d - A*e)*Log[a + c*x^2])/(8*(c*d^2 + a*e^2)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + c*x^2)^3), x]
```

fricas [B] time = 135.50, size = 1797, normalized size = 5.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c^3*d^5 - 4*A*a^3*c^3*d^4*e + 16*B*a^4*c^2*d^3*e^2 - 16*A*a
^4*c^2*d^2*e^3 + 12*B*a^5*c*d*e^4 - 12*A*a^5*c*e^5 - 2*(3*A*a*c^5*d^5 - B*a
^2*c^4*d^4*e + 10*A*a^2*c^4*d^3*e^2 + 2*B*a^3*c^3*d^2*e^3 + 7*A*a^3*c^3*d*e
^4 + 3*B*a^4*c^2*e^5)*x^3 + 8*(B*a^3*c^3*d^3*e^2 - A*a^3*c^3*d^2*e^3 + B*a^
4*c^2*d*e^4 - A*a^4*c^2*e^5)*x^2 + (3*A*a^2*c^3*d^5 - B*a^3*c^2*d^4*e + 10*
A*a^3*c^2*d^3*e^2 - 6*B*a^4*c*d^2*e^3 + 15*A*a^4*c*d*e^4 + 3*B*a^5*e^5 + (3
*A*c^5*d^5 - B*a*c^4*d^4*e + 10*A*a*c^4*d^3*e^2 - 6*B*a^2*c^3*d^2*e^3 + 15*
A*a^2*c^3*d*e^4 + 3*B*a^3*c^2*e^5)*x^4 + 2*(3*A*a*c^4*d^5 - B*a^2*c^3*d^4*e
 + 10*A*a^2*c^3*d^3*e^2 - 6*B*a^3*c^2*d^2*e^3 + 15*A*a^3*c^2*d*e^4 + 3*B*a^
4*c*e^5)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*
(5*A*a^2*c^4*d^5 + B*a^3*c^3*d^4*e + 14*A*a^3*c^3*d^3*e^2 + 6*B*a^4*c^2*d^2
*e^3 + 9*A*a^4*c^2*d*e^4 + 5*B*a^5*c*e^5)*x - 8*(B*a^5*c*d*e^4 - A*a^5*c*e^
5 + (B*a^3*c^3*d*e^4 - A*a^3*c^3*e^5)*x^4 + 2*(B*a^4*c^2*d*e^4 - A*a^4*c^2*
e^5)*x^2)*log(c*x^2 + a) + 16*(B*a^5*c*d*e^4 - A*a^5*c*e^5 + (B*a^3*c^3*d*e
^4 - A*a^3*c^3*e^5)*x^4 + 2*(B*a^4*c^2*d*e^4 - A*a^4*c^2*e^5)*x^2)*log(e*x
+ d))/(a^5*c^4*d^6 + 3*a^6*c^3*d^4*e^2 + 3*a^7*c^2*d^2*e^4 + a^8*c*e^6 + (a
^3*c^6*d^6 + 3*a^4*c^5*d^4*e^2 + 3*a^5*c^4*d^2*e^4 + a^6*c^3*e^6)*x^4 + 2*(
a^4*c^5*d^6 + 3*a^5*c^4*d^4*e^2 + 3*a^6*c^3*d^2*e^4 + a^7*c^2*e^6)*x^2), -1
/8*(2*B*a^3*c^3*d^5 - 2*A*a^3*c^3*d^4*e + 8*B*a^4*c^2*d^3*e^2 - 8*A*a^4*c^2
*d^2*e^3 + 6*B*a^5*c*d*e^4 - 6*A*a^5*c*e^5 - (3*A*a*c^5*d^5 - B*a^2*c^4*d^4
*e + 10*A*a^2*c^4*d^3*e^2 + 2*B*a^3*c^3*d^2*e^3 + 7*A*a^3*c^3*d*e^4 + 3*B*a
^4*c^2*e^5)*x^3 + 4*(B*a^3*c^3*d^3*e^2 - A*a^3*c^3*d^2*e^3 + B*a^4*c^2*d*e^
4 - A*a^4*c^2*e^5)*x^2 - (3*A*a^2*c^3*d^5 - B*a^3*c^2*d^4*e + 10*A*a^3*c^2*
d^3*e^2 - 6*B*a^4*c*d^2*e^3 + 15*A*a^4*c*d*e^4 + 3*B*a^5*e^5 + (3*A*c^5*d^5
 - B*a*c^4*d^4*e + 10*A*a*c^4*d^3*e^2 - 6*B*a^2*c^3*d^2*e^3 + 15*A*a^2*c^3*
d*e^4 + 3*B*a^3*c^2*e^5)*x^4 + 2*(3*A*a*c^4*d^5 - B*a^2*c^3*d^4*e + 10*A*a^
2*c^3*d^3*e^2 - 6*B*a^3*c^2*d^2*e^3 + 15*A*a^3*c^2*d*e^4 + 3*B*a^4*c*e^5)*x
^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^4*d^5 + B*a^3*c^3*d^4*e +
14*A*a^3*c^3*d^3*e^2 + 6*B*a^4*c^2*d^2*e^3 + 9*A*a^4*c^2*d*e^4 + 5*B*a^5*c*
e^5)*x - 4*(B*a^5*c*d*e^4 - A*a^5*c*e^5 + (B*a^3*c^3*d*e^4 - A*a^3*c^3*e^5)
*x^4 + 2*(B*a^4*c^2*d*e^4 - A*a^4*c^2*e^5)*x^2)*log(c*x^2 + a) + 8*(B*a^5*c
*d*e^4 - A*a^5*c*e^5 + (B*a^3*c^3*d*e^4 - A*a^3*c^3*e^5)*x^4 + 2*(B*a^4*c^2
*d*e^4 - A*a^4*c^2*e^5)*x^2)*log(e*x + d))/(a^5*c^4*d^6 + 3*a^6*c^3*d^4*e^2
 + 3*a^7*c^2*d^2*e^4 + a^8*c*e^6 + (a^3*c^6*d^6 + 3*a^4*c^5*d^4*e^2 + 3*a^5
*c^4*d^2*e^4 + a^6*c^3*e^6)*x^4 + 2*(a^4*c^5*d^6 + 3*a^5*c^4*d^4*e^2 + 3*a^
6*c^3*d^2*e^4 + a^7*c^2*e^6)*x^2)]
```

giac [A] time = 0.19, size = 534, normalized size = 1.74

$$\frac{\left(Bde^4 - Ae^5\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(Bde^5 - Ae^6\right)\log\left(|xe + d|\right)}{c^3d^6e + 3\,ac^2d^4e^3 + 3\,a^2cd^2e^5 + a^3e^7} + \frac{\left(3\,Ac^3d^5 - Bac^2d^4e + 10\,Aac^2d^3e^2 - 6\,Ba^2cd^2e^3 + 15\,Aa^2cde^4 + 3\,Ba^3e^5\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\left(a^2c^3d^6 + 3\,a^3c^2d^4e^2 + 3\,a^4cd^2e^4 + a^5e^6\right)\sqrt{ac}} - \frac{2\,Ba^2c^2d^5 - 2\,Aa^2c^2d^4e + 8\,Ba^3cd^3e^2 - 8\,Aa^3cd^2e^3 + 6\,Ba^4de^4 - 6\,Aa^4e^5 - \left(3\,Ac^4d^5 - Bac^3d^4e + 10\,Aac^3d^3e^2 + 2\,Ba^2c^2d^2e^3 + 7\,Aa^2c^2de^4 + 3\,Ba^3ce^5\right)x^3 + 4\left(Ba^2c^2d^3e^2 - Aa^2c^2d^2e^3 + Ba^3cde^4 - Aa^3ce^5\right)x^2 - \left(5\,Aac^3d^5 + Ba^2c^2d^4e + 14\,Aa^2c^2d^3e^2 + 6\,Ba^3cd^2e^3 + 9\,Aa^3cde^4 + 5\,Ba^4e^5\right)x}{8\left(cd^2 + ae^2\right)^3\left(cx^2 + a\right)^2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*(B*d*e^4 - A*e^5)*log(c*x^2 + a)/(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d
^2*e^4 + a^3*e^6) - (B*d*e^5 - A*e^6)*log(abs(x*e + d))/(c^3*d^6*e + 3*a*c^
2*d^4*e^3 + 3*a^2*c*d^2*e^5 + a^3*e^7) + 1/8*(3*A*c^3*d^5 - B*a*c^2*d^4*e +
 10*A*a*c^2*d^3*e^2 - 6*B*a^2*c*d^2*e^3 + 15*A*a^2*c*d*e^4 + 3*B*a^3*e^5)*a
rctan(c*x/sqrt(a*c))/((a^2*c^3*d^6 + 3*a^3*c^2*d^4*e^2 + 3*a^4*c*d^2*e^4 +
a^5*e^6)*sqrt(a*c)) - 1/8*(2*B*a^2*c^2*d^5 - 2*A*a^2*c^2*d^4*e + 8*B*a^3*c*
d^3*e^2 - 8*A*a^3*c*d^2*e^3 + 6*B*a^4*d*e^4 - 6*A*a^4*e^5 - (3*A*c^4*d^5 -
B*a*c^3*d^4*e + 10*A*a*c^3*d^3*e^2 + 2*B*a^2*c^2*d^2*e^3 + 7*A*a^2*c^2*d*e^
4 + 3*B*a^3*c*e^5)*x^3 + 4*(B*a^2*c^2*d^3*e^2 - A*a^2*c^2*d^2*e^3 + B*a^3*c
*d*e^4 - A*a^3*c*e^5)*x^2 - (5*A*a*c^3*d^5 + B*a^2*c^2*d^4*e + 14*A*a^2*c^2
*d^3*e^2 + 6*B*a^3*c*d^2*e^3 + 9*A*a^3*c*d*e^4 + 5*B*a^4*e^5)*x)/((c*d^2 +
a*e^2)^3*(c*x^2 + a)^2*a^2)
```

maple [B] time = 0.10, size = 1087, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+a)^3,x)
```

```
[Out] 9/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*a*x*A*c*d*e^4+5/4/(a*e^2+c*d^2)^3/a/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*c^2*d^3*e^2+e^5/(a*e^2+c*d^2)^3*ln(e*x+d)*
A-1/2/(a*e^2+c*d^2)^3*ln(c*x^2+a)*A*e^5+3/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*a*x
*B*c*d^2*e^3-1/2/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x^2*B*a*c*d*e^4+5/4/(a*e^2+c*d
^2)^3/(c*x^2+a)^2*c^3/a*x^3*A*d^3*e^2-1/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*c^3/a
*x^3*B*d^4*e+3/8/(a*e^2+c*d^2)^3/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
A*c^3*d^5+15/8/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*c*d*
e^4-3/4/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*c*d^2*e^3-1
/(a*e^2+c*d^2)^3/(c*x^2+a)^2*B*d^3*a*c*e^2-1/8/(a*e^2+c*d^2)^3/a/(a*c)^(1/2
)*arctan(1/(a*c)^(1/2)*c*x)*B*c^2*d^4*e+5/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*a^2
*x*B*e^5+1/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*A*c^2*d^4*e+7/8/(a*e^2+c*d^2)^3/(c
*x^2+a)^2*c^2*x^3*A*d*e^4+1/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x*B*c^2*d^4*e+1/(
a*e^2+c*d^2)^3/(c*x^2+a)^2*A*d^2*a*c*e^3+3/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*c^
4/a^2*x^3*A*d^5-1/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*B*c^2*d^5+1/2/(a*e^2+c*d^2)
^3*ln(c*x^2+a)*B*d*e^4-e^4/(a*e^2+c*d^2)^3*ln(e*x+d)*B*d+3/4/(a*e^2+c*d^2)^
3/(c*x^2+a)^2*A*a^2*e^5+3/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*c*a*x^3*B*e^5+1/4/(
a*e^2+c*d^2)^3/(c*x^2+a)^2*c^2*x^3*B*d^2*e^3+1/2/(a*e^2+c*d^2)^3/(c*x^2+a)^
2*x^2*A*a*c*e^5+1/2/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x^2*A*c^2*d^2*e^3-1/2/(a*e^
2+c*d^2)^3/(c*x^2+a)^2*x^2*B*c^2*d^3*e^2+7/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x*
A*c^2*d^3*e^2+5/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2/a*x*A*c^3*d^5-3/4/(a*e^2+c*d^
2)^3/(c*x^2+a)^2*B*a^2*d*e^4+3/8/(a*e^2+c*d^2)^3*a/(a*c)^(1/2)*arctan(1/(a*
c)^(1/2)*c*x)*B*e^5
```

<u>**maxima**</u> **[A]** time = 1.27, size = 525, normalized size = 1.71

$$\frac{\left(Bde^4 - Ae^5\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(Bde^4 - Ae^5\right)\log\left(ex + d\right)}{c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6} + \frac{\left(3\,Ac^3d^5 - Bac^2d^4e + 10\,Aac^2d^3e^2 - 6\,Ba^2cd^2e^3 + 15\,Aa^2cde^4 + 3\,Ba^3e^5\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\left(a^2c^3d^6 + 3\,a^3c^2d^4e^2 + 3\,a^4cd^2e^4 + a^5e^6\right)\sqrt{ac}} - \frac{2\,Ba^2cd^3 - 2\,Aa^2cd^2e + 6\,Ba^3de^2 - 6\,Aa^3e^3 - \left(3\,Ac^3d^3 - Bac^2d^2e + 7\,Aac^2de^2 + 3\,Ba^2ce^3\right)x^3 + 4\left(Ba^2cde^2 - Aa^2ce^3\right)x^2 - \left(5\,Aac^2d^3 + Ba^2cd^2e + 9\,Aa^2cde^2 + 5\,Ba^3e^3\right)x}{8\left(a^4c^2d^4 + 2\,a^5cd^2e^2 + a^6e^4 + \left(a^2c^4d^4 + 2\,a^3c^3d^2e^2 + a^4c^2e^4\right)x^4 + 2\left(a^3c^3d^4 + 2\,a^4c^2d^2e^2 + a^5ce^4\right)x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(B*d*e^4 - A*e^5)*log(c*x^2 + a)/(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d
^2*e^4 + a^3*e^6) - (B*d*e^4 - A*e^5)*log(e*x + d)/(c^3*d^6 + 3*a*c^2*d^4*e
^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) + 1/8*(3*A*c^3*d^5 - B*a*c^2*d^4*e + 10*A*a
*c^2*d^3*e^2 - 6*B*a^2*c*d^2*e^3 + 15*A*a^2*c*d*e^4 + 3*B*a^3*e^5)*arctan(c
*x/sqrt(a*c))/((a^2*c^3*d^6 + 3*a^3*c^2*d^4*e^2 + 3*a^4*c*d^2*e^4 + a^5*e^6
)*sqrt(a*c)) - 1/8*(2*B*a^2*c*d^3 - 2*A*a^2*c*d^2*e + 6*B*a^3*d*e^2 - 6*A*a
^3*e^3 - (3*A*c^3*d^3 - B*a*c^2*d^2*e + 7*A*a*c^2*d*e^2 + 3*B*a^2*c*e^3)*x^
3 + 4*(B*a^2*c*d*e^2 - A*a^2*c*e^3)*x^2 - (5*A*a*c^2*d^3 + B*a^2*c*d^2*e +
9*A*a^2*c*d*e^2 + 5*B*a^3*e^3)*x)/(a^4*c^2*d^4 + 2*a^5*c*d^2*e^2 + a^6*e^4
+ (a^2*c^4*d^4 + 2*a^3*c^3*d^2*e^2 + a^4*c^2*e^4)*x^4 + 2*(a^3*c^3*d^4 + 2*
a^4*c^2*d^2*e^2 + a^5*c*e^4)*x^2)
```

<u>**mupad**</u> **[B]** time = 4.44, size = 2415, normalized size = 7.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^3*(d + e*x)),x)
```

```
[Out] ((3*A*a*e^3 - B*c*d^3 - 3*B*a*d*e^2 + A*c*d^2*e)/(4*(a^2*e^4 + c^2*d^4 + 2*
a*c*d^2*e^2)) + (x^2*(A*c*e^3 - B*c*d*e^2))/(2*(a^2*e^4 + c^2*d^4 + 2*a*c*d
^2*e^2)) + (x^3*(3*A*c^3*d^3 + 3*B*a^2*c*e^3 + 7*A*a*c^2*d*e^2 - B*a*c^2*d^
2*e))/(8*a^2*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)) + (x*(5*A*c^2*d^3 + 5*B*a
^2*e^3 + 9*A*a*c*d*e^2 + B*a*c*d^2*e))/(8*a*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*
e^2)))/(a^2 + c^2*x^4 + 2*a*c*x^2) - (log(576*A^2*a^7*e^14*(-a^5*c)^(3/2) +
 9*A^2*c^7*d^14*(-a^5*c)^(3/2) - 9*B^2*a^13*e^14*(-a^5*c)^(1/2) + 558*B^2*a
^7*d^2*e^12*(-a^5*c)^(3/2) + 9*B^2*a^15*c*e^14*x + 9*A^2*a^7*c^9*d^14*x + 5
```

```
76*A^2*a^14*c^2*e^14*x - 1377*A^2*a*d^2*e^12*(-a^5*c)^(5/2) - 1119*B^2*a*d^
4*e^10*(-a^5*c)^(5/2) - 1326*A^2*c*d^4*e^10*(-a^5*c)^(5/2) - 612*B^2*c*d^6*
e^8*(-a^5*c)^(5/2) + 78*A^2*a^8*c^8*d^12*e^2*x + 319*A^2*a^9*c^7*d^10*e^4*x
 + 740*A^2*a^10*c^6*d^8*e^6*x + 1015*A^2*a^11*c^5*d^6*e^8*x + 1326*A^2*a^12
*c^4*d^4*e^10*x + 1377*A^2*a^13*c^3*d^2*e^12*x + B^2*a^9*c^7*d^12*e^2*x + 1
4*B^2*a^10*c^6*d^10*e^4*x + 55*B^2*a^11*c^5*d^8*e^6*x + 612*B^2*a^12*c^4*d^
6*e^8*x + 1119*B^2*a^13*c^3*d^4*e^10*x + 558*B^2*a^14*c^2*d^2*e^12*x + 78*A
^2*a*c^6*d^12*e^2*(-a^5*c)^(3/2) + 2244*A*B*a*d^3*e^11*(-a^5*c)^(5/2) - 106
2*A*B*a^7*d*e^13*(-a^5*c)^(3/2) + 1434*A*B*c*d^5*e^9*(-a^5*c)^(5/2) + 319*A
^2*a^2*c^5*d^10*e^4*(-a^5*c)^(3/2) + 740*A^2*a^3*c^4*d^8*e^6*(-a^5*c)^(3/2)
 + 1015*A^2*a^4*c^3*d^6*e^8*(-a^5*c)^(3/2) + B^2*a^2*c^5*d^12*e^2*(-a^5*c)^
(3/2) + 14*B^2*a^3*c^4*d^10*e^4*(-a^5*c)^(3/2) + 55*B^2*a^4*c^3*d^8*e^6*(-a
^5*c)^(3/2) - 6*A*B*a^8*c^8*d^13*e*x - 1062*A*B*a^14*c^2*d*e^13*x - 6*A*B*a
*c^6*d^13*e*(-a^5*c)^(3/2) - 68*A*B*a^9*c^7*d^11*e^3*x - 250*A*B*a^10*c^6*d
^9*e^5*x - 440*A*B*a^11*c^5*d^7*e^7*x - 1434*A*B*a^12*c^4*d^5*e^9*x - 2244*
A*B*a^13*c^3*d^3*e^11*x - 68*A*B*a^2*c^5*d^11*e^3*(-a^5*c)^(3/2) - 250*A*B*
a^3*c^4*d^9*e^5*(-a^5*c)^(3/2) - 440*A*B*a^4*c^3*d^7*e^7*(-a^5*c)^(3/2))*(a
*c^2*((5*A*d^3*e^2*(-a^5*c)^(1/2))/8 - (B*d^4*e*(-a^5*c)^(1/2))/16) - c*(a^
2*((3*B*d^2*e^3*(-a^5*c)^(1/2))/8 - (15*A*d*e^4*(-a^5*c)^(1/2))/16) - a^5*(
(A*e^5)/2 - (B*d*e^4)/2)) + (3*A*c^3*d^5*(-a^5*c)^(1/2))/16 + (3*B*a^3*e^5*
(-a^5*c)^(1/2))/16))/(a^8*c*e^6 + a^5*c^4*d^6 + 3*a^6*c^3*d^4*e^2 + 3*a^7*c
^2*d^2*e^4) + (log(9*B^2*a^13*e^14*(-a^5*c)^(1/2) - 9*A^2*c^7*d^14*(-a^5*c)
^(3/2) - 576*A^2*a^7*e^14*(-a^5*c)^(3/2) - 558*B^2*a^7*d^2*e^12*(-a^5*c)^(3
/2) + 9*B^2*a^15*c*e^14*x + 9*A^2*a^7*c^9*d^14*x + 576*A^2*a^14*c^2*e^14*x
+ 1377*A^2*a*d^2*e^12*(-a^5*c)^(5/2) + 1119*B^2*a*d^4*e^10*(-a^5*c)^(5/2) +
 1326*A^2*c*d^4*e^10*(-a^5*c)^(5/2) + 612*B^2*c*d^6*e^8*(-a^5*c)^(5/2) + 78
*A^2*a^8*c^8*d^12*e^2*x + 319*A^2*a^9*c^7*d^10*e^4*x + 740*A^2*a^10*c^6*d^8
*e^6*x + 1015*A^2*a^11*c^5*d^6*e^8*x + 1326*A^2*a^12*c^4*d^4*e^10*x + 1377*
A^2*a^13*c^3*d^2*e^12*x + B^2*a^9*c^7*d^12*e^2*x + 14*B^2*a^10*c^6*d^10*e^4
*x + 55*B^2*a^11*c^5*d^8*e^6*x + 612*B^2*a^12*c^4*d^6*e^8*x + 1119*B^2*a^13
*c^3*d^4*e^10*x + 558*B^2*a^14*c^2*d^2*e^12*x - 78*A^2*a*c^6*d^12*e^2*(-a^5
*c)^(3/2) - 2244*A*B*a*d^3*e^11*(-a^5*c)^(5/2) + 1062*A*B*a^7*d*e^13*(-a^5*
c)^(3/2) - 1434*A*B*c*d^5*e^9*(-a^5*c)^(5/2) - 319*A^2*a^2*c^5*d^10*e^4*(-a
^5*c)^(3/2) - 740*A^2*a^3*c^4*d^8*e^6*(-a^5*c)^(3/2) - 1015*A^2*a^4*c^3*d^6
*e^8*(-a^5*c)^(3/2) - B^2*a^2*c^5*d^12*e^2*(-a^5*c)^(3/2) - 14*B^2*a^3*c^4*
d^10*e^4*(-a^5*c)^(3/2) - 55*B^2*a^4*c^3*d^8*e^6*(-a^5*c)^(3/2) - 6*A*B*a^8
*c^8*d^13*e*x - 1062*A*B*a^14*c^2*d*e^13*x + 6*A*B*a*c^6*d^13*e*(-a^5*c)^(3
/2) - 68*A*B*a^9*c^7*d^11*e^3*x - 250*A*B*a^10*c^6*d^9*e^5*x - 440*A*B*a^11
*c^5*d^7*e^7*x - 1434*A*B*a^12*c^4*d^5*e^9*x - 2244*A*B*a^13*c^3*d^3*e^11*x
 + 68*A*B*a^2*c^5*d^11*e^3*(-a^5*c)^(3/2) + 250*A*B*a^3*c^4*d^9*e^5*(-a^5*c
)^(3/2) + 440*A*B*a^4*c^3*d^7*e^7*(-a^5*c)^(3/2))*(a*c^2*((5*A*d^3*e^2*(-a^
5*c)^(1/2))/8 - (B*d^4*e*(-a^5*c)^(1/2))/16) - c*(a^2*((3*B*d^2*e^3*(-a^5*c
)^(1/2))/8 - (15*A*d*e^4*(-a^5*c)^(1/2))/16) + a^5*((A*e^5)/2 - (B*d*e^4)/2
)) + (3*A*c^3*d^5*(-a^5*c)^(1/2))/16 + (3*B*a^3*e^5*(-a^5*c)^(1/2))/16))/(a
^8*c*e^6 + a^5*c^4*d^6 + 3*a^6*c^3*d^4*e^2 + 3*a^7*c^2*d^2*e^4) + (log(d +
e*x)*(A*e^5 - B*d*e^4))/(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*
e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+a)**3,x)
[Out] Timed out
```

3.1179 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=443

$$-\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(-5a^2e^4+4acd^2e^2+c^2d^4\right)\right)}{8a^2(d+ex)\left(ae^2+cd^2\right)^3}-\frac{x\left(2aBe\left(cd^2-2ae^2\right)-3Acd\left(3ae^2+cd^2\right)\right)+ae\left(-5a\right.}{8a^2\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)}$$

Rubi [A] time = 0.72, antiderivative size = 443, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {823, 801, 635, 205, 260}

$$-\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(-5a^2e^4+4acd^2e^2+c^2d^4\right)\right)}{8a^2(d+ex)\left(ae^2+cd^2\right)^3}-\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(2aBde\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)-3A\left(15a^2cd^2e^4-5a^3e^6+5ac^2d^4e^2+c^3d^6\right)\right)}{8a^{5/2}\left(ae^2+cd^2\right)^4}-\frac{x\left(2aBe\left(cd^2-2ae^2\right)-3Acd\left(3ae^2+cd^2\right)\right)+ae\left(-5aAe^2+6aBde+Acd^2\right)}{8a^2\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)^2}-\frac{a(Bd-Ae)-x(aBe+Acd)}{4a\left(a+cx^2\right)^2(d+ex)\left(ae^2+cd^2\right)}+\frac{e^4\log\left(a+cx^2\right)\left(-aBe^2-6Acde+5Bcd^2\right)}{2\left(ae^2+cd^2\right)^4}-\frac{e^4\log(d+ex)\left(-aBe^2-6Acde+5Bcd^2\right)}{\left(ae^2+cd^2\right)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + c*x^2)^3),x]
```

```
[Out] -(e*(2*a*B*d*e*(c*d^2 - 11*a*e^2) - 3*A*(c^2*d^4 + 4*a*c*d^2*e^2 - 5*a^2*e^
4)))/(8*a^2*(c*d^2 + a*e^2)^3*(d + e*x)) - (a*(B*d - A*e) - (A*c*d + a*B*e)
*x)/(4*a*(c*d^2 + a*e^2)*(d + e*x)*(a + c*x^2)^2) - (a*e*(A*c*d^2 + 6*a*B*d
*e - 5*a*A*e^2) + (2*a*B*e*(c*d^2 - 2*a*e^2) - 3*A*c*d*(c*d^2 + 3*a*e^2))*x
)/(8*a^2*(c*d^2 + a*e^2)^2*(d + e*x)*(a + c*x^2)) - (Sqrt[c]*(2*a*B*d*e*(c^
2*d^4 + 10*a*c*d^2*e^2 - 15*a^2*e^4) - 3*A*(c^3*d^6 + 5*a*c^2*d^4*e^2 + 15*
a^2*c*d^2*e^4 - 5*a^3*e^6))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*(c*d^2
+ a*e^2)^4) - (e^4*(5*B*c*d^2 - 6*A*c*d*e - a*B*e^2)*Log[d + e*x])/(c*d^2 +
 a*e^2)^4 + (e^4*(5*B*c*d^2 - 6*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*(c*d^
2 + a*e^2)^4)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
```

```
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^3}\,dx &= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)^2}-\frac{\int \frac{-c\left(3Acd^2-2aBde+5aAe^2\right)-4ce(Acd+aBe)x}{(d+ex)^2\left(a+cx^2\right)^2}\,dx}{4ac\left(cd^2+ae^2\right)} \\
&= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)^2}-\frac{ae\left(Acd^2+6aBde-5aAe^2\right)+\left(2aBe\left(cd^2-\right.\right.}{8a^2\left(cd^2+ae^2\right)^2(d+ex} \\
&= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)^2}-\frac{ae\left(Acd^2+6aBde-5aAe^2\right)+\left(2aBe\left(cd^2-\right.\right.}{8a^2\left(cd^2+ae^2\right)^2(d+ex} \\
&= -\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(c^2d^4+4acd^2e^2-5a^2e^4\right)\right)}{8a^2\left(cd^2+ae^2\right)^3(d+ex)}-\frac{a(Bd-Ae)-(Acd}{4a\left(cd^2+ae^2\right)(d+ex} \\
&= -\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(c^2d^4+4acd^2e^2-5a^2e^4\right)\right)}{8a^2\left(cd^2+ae^2\right)^3(d+ex)}-\frac{a(Bd-Ae)-(Acd}{4a\left(cd^2+ae^2\right)(d+ex} \\
&= -\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(c^2d^4+4acd^2e^2-5a^2e^4\right)\right)}{8a^2\left(cd^2+ae^2\right)^3(d+ex)}-\frac{a(Bd-Ae)-(Acd}{4a\left(cd^2+ae^2\right)(d+ex}
\end{aligned}$$

Mathematica [A] time = 0.49, size = 378, normalized size = 0.85

$$\frac{\frac{2\left(ae^2+cd^2\right)^2\left(a^2Be^2-ac(Ae(ex-2d)+Bd(d-2ex))+Ac^2d^2x\right)}{a\left(a+cx^2\right)^2}+\frac{\left(ae^2+cd^2\right)\left(4a^3Be^4+a^2ce^2(Ae(16d-7ex)-2Bd(6d-7ex))-2ac^2d^2ex(Bd-6Ae)+3Ac^3d^4x\right)}{a^2\left(a+cx^2\right)}+\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(2aBde\left(15a^2e^4-10acd^2e^2-c^2d^4\right)+3A\left(-5a^3e^6+15a^2cd^2e^4+5ac^2d^4e^2+c^3d^6\right)\right)}{a^{5/2}}-4e^4\log\left(a+cx^2\right)\left(aBe^2+6Acde-5Bcd^2\right)-\frac{8e^4\left(ae^2+cd^2\right)(Ae-Bd)}{d+ex}+8e^4\log(d+ex)\left(aBe^2+6Acde-5Bcd^2\right)}{8\left(ae^2+cd^2\right)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + c*x^2)^3),x]
```

```
[Out] ((-8*e^4*(-(B*d) + A*e)*(c*d^2 + a*e^2))/(d + e*x) + ((c*d^2 + a*e^2)*(4*a^
3*B*e^4 + 3*A*c^3*d^4*x - 2*a*c^2*d^2*e*(B*d - 6*A*e)*x + a^2*c*e^2*(-2*B*d
*(6*d - 7*e*x) + A*e*(16*d - 7*e*x))))/(a^2*(a + c*x^2)) + (2*(c*d^2 + a*e^
2)^2*(a^2*B*e^2 + A*c^2*d^2*x - a*c*(B*d*(d - 2*e*x) + A*e*(-2*d + e*x))))/
(a*(a + c*x^2)^2) + (Sqrt[c]*(2*a*B*d*e*(-(c^2*d^4) - 10*a*c*d^2*e^2 + 15*a
^2*e^4) + 3*A*(c^3*d^6 + 5*a*c^2*d^4*e^2 + 15*a^2*c*d^2*e^4 - 5*a^3*e^6))*A
rcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(5/2) + 8*e^4*(-5*B*c*d^2 + 6*A*c*d*e + a*B*e
^2)*Log[d + e*x] - 4*e^4*(-5*B*c*d^2 + 6*A*c*d*e + a*B*e^2)*Log[a + c*x^2])
/(8*(c*d^2 + a*e^2)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + c*x^2)^3), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [A] time = 0.22, size = 836, normalized size = 1.89

$$\frac{\left(3 A c^{4} d^{6} e^{2}-2 B a c^{3} d^{5} e^{3}+15 A a c^{3} d^{4} e^{4}-20 B a^{2} c^{2} d^{3} e^{5}+45 A a^{2} c^{2} d^{2} e^{6}+30 B a^{3} c d e^{7}-15 A a^{3} c e^{8}\right) \arctan\left(\frac{\left(c d-\frac{c d^{2}}{x e+d}-\frac{a e^{2}}{x e+d}\right) e^{(-1)}}{\sqrt{a c}}\right) e^{(-2)}}{8\left(a^{2} c^{4} d^{8}+4 a^{3} c^{3} d^{6} e^{2}+6 a^{4} c^{2} d^{4} e^{4}+4 a^{5} c d^{2} e^{6}+a^{6} e^{8}\right) \sqrt{a c}}+\frac{\left(5 B c d^{2} e^{4}-6 A c d e^{5}-B a e^{6}\right) \log\left(c-\frac{2 c d}{x e+d}+\frac{c d^{2}}{(x e+d)^{2}}+\frac{a e^{2}}{(x e+d)^{2}}\right)}{2\left(c^{4} d^{8}+4 a c^{3} d^{6} e^{2}+6 a^{2} c^{2} d^{4} e^{4}+4 a^{3} c d^{2} e^{6}+a^{4} e^{8}\right)}+\frac{\frac{B d e^{10}}{x e+d}-\frac{A e^{11}}{x e+d}}{c^{3} d^{6} e^{6}+3 a c^{2} d^{4} e^{8}+3 a^{2} c d^{2} e^{10}+a^{3} e^{12}}+\frac{3 A c^{5} d^{5} e-2 B a c^{4} d^{4} e^{2}+14 A a c^{4} d^{3} e^{3}+32 B a^{2} c^{3} d^{2} e^{4}-29 A a^{2} c^{3} d e^{5}-6 B a^{3} c^{2} e^{6}-\frac{\left(9 A c^{5} d^{6} e^{2}-6 B a c^{4} d^{5} e^{3}+41 A a c^{4} d^{4} e^{4}+116 B a^{2} c^{3} d^{3} e^{5}-121 A a^{2} c^{3} d^{2} e^{6}-38 B a^{3} c^{2} d e^{7}+7 A a^{3} c^{2} e^{8}\right) e^{(-1)}}{x e+d}+\frac{\left(9 A c^{5} d^{7} e^{3}-6 B a c^{4} d^{6} e^{4}+45 A a c^{4} d^{5} e^{5}+140 B a^{2} c^{3} d^{4} e^{6}-145 A a^{2} c^{3} d^{3} e^{7}-22 B a^{3} c^{2} d^{2} e^{8}-21 A a^{3} c^{2} d e^{9}-8 B a^{4} c e^{10}\right) e^{(-2)}}{(x e+d)^{2}}-\frac{\left(3 A c^{5} d^{8} e^{4}-2 B a c^{4} d^{7} e^{5}+18 A a c^{4} d^{6} e^{6}+58 B a^{2} c^{3} d^{5} e^{7}-60 A a^{2} c^{3} d^{4} e^{8}+26 B a^{3} c^{2} d^{3} e^{9}-66 A a^{3} c^{2} d^{2} e^{10}-34 B a^{4} c d e^{11}+9 A a^{4} c e^{12}\right) e^{(-3)}}{(x e+d)^{3}}}{8\left(c d^{2}+a e^{2}\right)^{4} a^{2}\left(c-\frac{2 c d}{x e+d}+\frac{c d^{2}}{(x e+d)^{2}}+\frac{a e^{2}}{(x e+d)^{2}}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*A*c^4*d^6*e^2 - 2*B*a*c^3*d^5*e^3 + 15*A*a*c^3*d^4*e^4 - 20*B*a^2*c^
2*d^3*e^5 + 45*A*a^2*c^2*d^2*e^6 + 30*B*a^3*c*d*e^7 - 15*A*a^3*c*e^8)*arcta
n((c*d - c*d^2/(x*e + d) - a*e^2/(x*e + d))*e^(-1)/sqrt(a*c))*e^(-2)/((a^2*
c^4*d^8 + 4*a^3*c^3*d^6*e^2 + 6*a^4*c^2*d^4*e^4 + 4*a^5*c*d^2*e^6 + a^6*e^8
)*sqrt(a*c)) + 1/2*(5*B*c*d^2*e^4 - 6*A*c*d*e^5 - B*a*e^6)*log(c - 2*c*d/(x
*e + d) + c*d^2/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^4*d^8 + 4*a*c^3*d^6*e^2
 + 6*a^2*c^2*d^4*e^4 + 4*a^3*c*d^2*e^6 + a^4*e^8) + (B*d*e^10/(x*e + d) - A
*e^11/(x*e + d))/(c^3*d^6*e^6 + 3*a*c^2*d^4*e^8 + 3*a^2*c*d^2*e^10 + a^3*e^
12) + 1/8*(3*A*c^5*d^5*e - 2*B*a*c^4*d^4*e^2 + 14*A*a*c^4*d^3*e^3 + 32*B*a^
2*c^3*d^2*e^4 - 29*A*a^2*c^3*d*e^5 - 6*B*a^3*c^2*e^6 - (9*A*c^5*d^6*e^2 - 6
*B*a*c^4*d^5*e^3 + 41*A*a*c^4*d^4*e^4 + 116*B*a^2*c^3*d^3*e^5 - 121*A*a^2*c
^3*d^2*e^6 - 38*B*a^3*c^2*d*e^7 + 7*A*a^3*c^2*e^8)*e^(-1)/(x*e + d) + (9*A*
c^5*d^7*e^3 - 6*B*a*c^4*d^6*e^4 + 45*A*a*c^4*d^5*e^5 + 140*B*a^2*c^3*d^4*e^
6 - 145*A*a^2*c^3*d^3*e^7 - 22*B*a^3*c^2*d^2*e^8 - 21*A*a^3*c^2*d*e^9 - 8*B
*a^4*c*e^10)*e^(-2)/(x*e + d)^2 - (3*A*c^5*d^8*e^4 - 2*B*a*c^4*d^7*e^5 + 18
*A*a*c^4*d^6*e^6 + 58*B*a^2*c^3*d^5*e^7 - 60*A*a^2*c^3*d^4*e^8 + 26*B*a^3*c
^2*d^3*e^9 - 66*A*a^3*c^2*d^2*e^10 - 34*B*a^4*c*d*e^11 + 9*A*a^4*c*e^12)*e^
(-3)/(x*e + d)^3)/((c*d^2 + a*e^2)^4*a^2*(c - 2*c*d/(x*e + d) + c*d^2/(x*e
+ d)^2 + a*e^2/(x*e + d)^2)^2)
```

maple [B] time = 0.12, size = 1410, normalized size = 3.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x)
```

```
[Out] -e^5/(a*e^2+c*d^2)^3/(e*x+d)*A-c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x^2*B*a*d^2*
e^4-1/4*c^4/(a*e^2+c*d^2)^4/(c*x^2+a)^2/a*x^3*B*d^5*e+2*c^2/(a*e^2+c*d^2)^4
/(c*x^2+a)^2*x^2*A*a*d*e^5-1/4*c^3/(a*e^2+c*d^2)^4/a/(a*c)^(1/2)*arctan(1/(
a*c)^(1/2)*c*x)*B*d^5*e+15/4*c/(a*e^2+c*d^2)^4*a/(a*c)^(1/2)*arctan(1/(a*c)
^(1/2)*c*x)*B*d*e^5+7/4*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a*x^3*B*d*e^5+9/4*c
/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a^2*x*B*d*e^5+15/8*c^3/(a*e^2+c*d^2)^4/a/(a*c)
^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^4*e^2+3/8*c^2/(a*e^2+c*d^2)^4/(c*x^2+a
)^2*a*x*A*d^2*e^4+5/2*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a*x*B*d^3*e^3+15/8*c^
4/(a*e^2+c*d^2)^4/(c*x^2+a)^2/a*x^3*A*d^4*e^2+1/2*c/(a*e^2+c*d^2)^4/(c*x^2+
a)^2*x^2*a^2*B*e^6-9/8*c/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a^2*x*A*e^6-3/2*c^3/(a
*e^2+c*d^2)^4/(c*x^2+a)^2*x^2*B*d^4*e^2+5/8*c^4/(a*e^2+c*d^2)^4/(c*x^2+a)^2
/a*x*A*d^6+2*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x^2*A*d^3*e^3+5/8*c^3/(a*e^2+c
*d^2)^4/(c*x^2+a)^2*x^3*A*d^2*e^4-1/4*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*B*d^6
+3*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*A*d^3*a*e^3-7/4*c^2/(a*e^2+c*d^2)^4/(c*x
^2+a)^2*B*d^4*a*e^2+3/2*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x^3*B*d^3*e^3+17/8*
c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x*A*d^4*e^2+1/4*c^3/(a*e^2+c*d^2)^4/(c*x^2+
a)^2*x*B*d^5*e+45/8*c^2/(a*e^2+c*d^2)^4/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*
```

```
x)*A*d^2*e^4-5/2*c^2/(a*e^2+c*d^2)^4/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
B*d^3*e^3-15/8*c/(a*e^2+c*d^2)^4*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*
e^6+3/8*c^4/(a*e^2+c*d^2)^4/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^6
-3/4*c/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a^2*B*d^2*e^4+5/2*c/(a*e^2+c*d^2)^4/(c*x
^2+a)^2*A*a^2*d*e^5-7/8*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a*x^3*A*e^6+3/8*c^5
/(a*e^2+c*d^2)^4/(c*x^2+a)^2/a^2*x^3*A*d^6-1/2/(a*e^2+c*d^2)^4*a*ln(c*x^2+a
)*B*e^6+e^6/(a*e^2+c*d^2)^4*ln(e*x+d)*B*a+e^4/(a*e^2+c*d^2)^3/(e*x+d)*B*d+3
/4/(a*e^2+c*d^2)^4/(c*x^2+a)^2*B*a^3*e^6+5/2*c/(a*e^2+c*d^2)^4*ln(c*x^2+a)*
B*d^2*e^4+6*e^5/(a*e^2+c*d^2)^4*ln(e*x+d)*A*c*d-5*e^4/(a*e^2+c*d^2)^4*ln(e*
x+d)*B*c*d^2+1/2*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*A*d^5*e-3*c/(a*e^2+c*d^2)^
4*ln(c*x^2+a)*A*d*e^5
```

maxima [**B**] time = 1.39, size = 997, normalized size = 2.25

$$\frac{\left(5 Bcd^2e^4-6 Acde^5-Bae^6\right)\log\left(cx^2+a\right)}{2\left(c^4d^8+4 ac^3d^6e^2+6 a^2c^2d^4e^4+4 a^3cd^2e^6+a^4e^8\right)}-\frac{\left(5 Bcd^2e^4-6 Acde^5-Bae^6\right)\log\left(ex+d\right)}{c^4d^8+4 ac^3d^6e^2+6 a^2c^2d^4e^4+4 a^3cd^2e^6+a^4e^8}+\frac{\left(3 Ac^4d^6-2 Bac^3d^5e+15 Aac^3d^4e^2-20 Ba^2c^2d^3e^3+45 Aa^2c^2d^2e^4+30 Ba^3cde^5-15 Aa^3ce^6\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\left(a^2c^4d^8+4 a^3c^3d^6e^2+6 a^4c^2d^4e^4+4 a^5cd^2e^6+a^6e^8\right)\sqrt{ac}}-\frac{2 Ba^2c^2d^5-4 Aa^2c^2d^4e+12 Ba^3cd^3e^2-20 Aa^3cd^2e^3-14 Ba^4de^4+8 Aa^4e^5-\left(3 Ac^4d^4e-2 Bac^3d^3e^2+12 Aac^3d^2e^3+22 Ba^2c^2de^4-15 Aa^2c^2e^5\right)x^4-\left(3 Ac^4d^5-2 Bac^3d^4e+12 Aac^3d^3e^2+2 Ba^2c^2d^2e^3+9 Aa^2c^2de^4+4 Ba^3ce^5\right)x^3-\left(5 Aac^3d^4e-10 Ba^2c^2d^3e^2+28 Aa^2c^2d^2e^3+38 Ba^3cde^4-25 Aa^3ce^5\right)x^2-\left(5 Aac^3d^5+16 Aa^2c^2d^3e^2+6 Ba^3cd^2e^3+11 Aa^3cde^4+6 Ba^4e^5\right)x}{8\left(a^4c^3d^7+3 a^5c^2d^5e^2+3 a^6cd^3e^4+a^7de^6+\left(a^2c^5d^6e+3 a^3c^4d^4e^3+3 a^4c^3d^2e^5+a^5c^2e^7\right)x^5+\left(a^2c^5d^7+3 a^3c^4d^5e^2+3 a^4c^3d^3e^4+a^5c^2de^6\right)x^4+2\left(a^3c^4d^6e+3 a^4c^3d^4e^3+3 a^5c^2d^2e^5+a^6ce^7\right)x^3+2\left(a^3c^4d^7+3 a^4c^3d^5e^2+3 a^5c^2d^3e^4+a^6cde^6\right)x^2+\left(a^4c^3d^6e+3 a^5c^2d^4e^3+3 a^6cd^2e^5+a^7e^7\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(5*B*c*d^2*e^4 - 6*A*c*d*e^5 - B*a*e^6)*log(c*x^2 + a)/(c^4*d^8 + 4*a*c
^3*d^6*e^2 + 6*a^2*c^2*d^4*e^4 + 4*a^3*c*d^2*e^6 + a^4*e^8) - (5*B*c*d^2*e^
4 - 6*A*c*d*e^5 - B*a*e^6)*log(e*x + d)/(c^4*d^8 + 4*a*c^3*d^6*e^2 + 6*a^2*
c^2*d^4*e^4 + 4*a^3*c*d^2*e^6 + a^4*e^8) + 1/8*(3*A*c^4*d^6 - 2*B*a*c^3*d^5
*e + 15*A*a*c^3*d^4*e^2 - 20*B*a^2*c^2*d^3*e^3 + 45*A*a^2*c^2*d^2*e^4 + 30*
B*a^3*c*d*e^5 - 15*A*a^3*c*e^6)*arctan(c*x/sqrt(a*c))/((a^2*c^4*d^8 + 4*a^3
*c^3*d^6*e^2 + 6*a^4*c^2*d^4*e^4 + 4*a^5*c*d^2*e^6 + a^6*e^8)*sqrt(a*c)) -
1/8*(2*B*a^2*c^2*d^5 - 4*A*a^2*c^2*d^4*e + 12*B*a^3*c*d^3*e^2 - 20*A*a^3*c*
d^2*e^3 - 14*B*a^4*d*e^4 + 8*A*a^4*e^5 - (3*A*c^4*d^4*e - 2*B*a*c^3*d^3*e^2
 + 12*A*a*c^3*d^2*e^3 + 22*B*a^2*c^2*d*e^4 - 15*A*a^2*c^2*e^5)*x^4 - (3*A*c
^4*d^5 - 2*B*a*c^3*d^4*e + 12*A*a*c^3*d^3*e^2 + 2*B*a^2*c^2*d^2*e^3 + 9*A*a
^2*c^2*d*e^4 + 4*B*a^3*c*e^5)*x^3 - (5*A*a*c^3*d^4*e - 10*B*a^2*c^2*d^3*e^2
 + 28*A*a^2*c^2*d^2*e^3 + 38*B*a^3*c*d*e^4 - 25*A*a^3*c*e^5)*x^2 - (5*A*a*c
^3*d^5 + 16*A*a^2*c^2*d^3*e^2 + 6*B*a^3*c*d^2*e^3 + 11*A*a^3*c*d*e^4 + 6*B*
a^4*e^5)*x)/(a^4*c^3*d^7 + 3*a^5*c^2*d^5*e^2 + 3*a^6*c*d^3*e^4 + a^7*d*e^6
+ (a^2*c^5*d^6*e + 3*a^3*c^4*d^4*e^3 + 3*a^4*c^3*d^2*e^5 + a^5*c^2*e^7)*x^5
 + (a^2*c^5*d^7 + 3*a^3*c^4*d^5*e^2 + 3*a^4*c^3*d^3*e^4 + a^5*c^2*d*e^6)*x^
4 + 2*(a^3*c^4*d^6*e + 3*a^4*c^3*d^4*e^3 + 3*a^5*c^2*d^2*e^5 + a^6*c*e^7)*x
^3 + 2*(a^3*c^4*d^7 + 3*a^4*c^3*d^5*e^2 + 3*a^5*c^2*d^3*e^4 + a^6*c*d*e^6)*
x^2 + (a^4*c^3*d^6*e + 3*a^5*c^2*d^4*e^3 + 3*a^6*c*d^2*e^5 + a^7*e^7)*x)
```

mupad [**B**] time = 5.51, size = 3015, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^3*(d + e*x)^2),x)
```

```
[Out] ((x*(5*A*c^2*d^3 + 6*B*a^2*e^3 + 11*A*a*c*d*e^2))/(8*a*(a^2*e^4 + c^2*d^4 +
 2*a*c*d^2*e^2)) - (4*A*a^2*e^5 + B*c^2*d^5 - 7*B*a^2*d*e^4 - 2*A*c^2*d^4*e
 - 10*A*a*c*d^2*e^3 + 6*B*a*c*d^3*e^2)/(4*(a*e^2 + c*d^2)*(a^2*e^4 + c^2*d^
4 + 2*a*c*d^2*e^2)) + (x^3*(3*A*c^3*d^3 + 4*B*a^2*c*e^3 + 9*A*a*c^2*d*e^2 -
 2*B*a*c^2*d^2*e))/(8*a^2*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)) + (x^4*(3*A*
c^4*d^4*e - 15*A*a^2*c^2*e^5 + 12*A*a*c^3*d^2*e^3 - 2*B*a*c^3*d^3*e^2 + 22*
B*a^2*c^2*d*e^4))/(8*a^2*(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2
*e^4)) + (x^2*(5*A*c^3*d^4*e - 25*A*a^2*c*e^5 + 28*A*a*c^2*d^2*e^3 - 10*B*a
*c^2*d^3*e^2 + 38*B*a^2*c*d*e^4))/(8*a*(a*e^2 + c*d^2)*(a^2*e^4 + c^2*d^4 +
 2*a*c*d^2*e^2)))/(a^2*d + c^2*d*x^4 + c^2*e*x^5 + a^2*e*x + 2*a*c*d*x^2 +
2*a*c*e*x^3) - (log(d + e*x)*(c*(5*B*d^2*e^4 - 6*A*d*e^5) - B*a*e^6))/(a^4*
e^8 + c^4*d^8 + 4*a*c^3*d^6*e^2 + 4*a^3*c*d^2*e^6 + 6*a^2*c^2*d^4*e^4) + (l
og(576*B^2*a^14*e^16*(-a^5*c)^(1/2) - 9*A^2*c^8*d^16*(-a^5*c)^(3/2) - 225*A
^2*a^8*e^16*(-a^5*c)^(3/2) + 19836*A^2*a^2*d^2*e^14*(-a^5*c)^(5/2) + 4056*B
```

```
^2*a^2*d^4*e^12*(-a^5*c)^(5/2) + 3708*B^2*a^8*d^2*e^14*(-a^5*c)^(3/2) + 237
96*A^2*c^2*d^6*e^10*(-a^5*c)^(5/2) + 13840*B^2*c^2*d^8*e^8*(-a^5*c)^(5/2) +
 576*B^2*a^16*c*e^16*x + 9*A^2*a^7*c^10*d^16*x + 225*A^2*a^15*c^2*e^16*x -
19236*A*B*a^2*d^3*e^13*(-a^5*c)^(5/2) - 33540*A*B*c^2*d^7*e^9*(-a^5*c)^(5/2
) + 40572*A^2*a*c*d^4*e^12*(-a^5*c)^(5/2) + 21820*B^2*a*c*d^6*e^10*(-a^5*c)
^(5/2) + 108*A^2*a^8*c^9*d^14*e^2*x + 684*A^2*a^9*c^8*d^12*e^4*x + 2340*A^2
*a^10*c^7*d^10*e^6*x + 4590*A^2*a^11*c^6*d^8*e^8*x + 23796*A^2*a^12*c^5*d^6
*e^10*x + 40572*A^2*a^13*c^4*d^4*e^12*x + 19836*A^2*a^14*c^3*d^2*e^14*x + 4
*B^2*a^9*c^8*d^14*e^2*x + 88*B^2*a^10*c^7*d^12*e^4*x + 444*B^2*a^11*c^6*d^1
0*e^6*x + 13840*B^2*a^12*c^5*d^8*e^8*x + 21820*B^2*a^13*c^4*d^6*e^10*x + 40
56*B^2*a^14*c^3*d^4*e^12*x - 3708*B^2*a^15*c^2*d^2*e^14*x - 108*A^2*a*c^7*d
^14*e^2*(-a^5*c)^(3/2) - 6012*A*B*a^8*d*e^15*(-a^5*c)^(3/2) - 684*A^2*a^2*c
^6*d^12*e^4*(-a^5*c)^(3/2) - 2340*A^2*a^3*c^5*d^10*e^6*(-a^5*c)^(3/2) - 459
0*A^2*a^4*c^4*d^8*e^8*(-a^5*c)^(3/2) - 4*B^2*a^2*c^6*d^14*e^2*(-a^5*c)^(3/2
) - 88*B^2*a^3*c^5*d^12*e^4*(-a^5*c)^(3/2) - 444*B^2*a^4*c^4*d^10*e^6*(-a^5
*c)^(3/2) - 12*A*B*a^8*c^9*d^15*e*x + 6012*A*B*a^15*c^2*d*e^15*x - 57348*A*
B*a*c*d^5*e^11*(-a^5*c)^(5/2) + 12*A*B*a*c^7*d^15*e*(-a^5*c)^(3/2) - 204*A*
B*a^9*c^8*d^13*e^3*x - 972*A*B*a^10*c^7*d^11*e^5*x - 2220*A*B*a^11*c^6*d^9*
e^7*x - 33540*A*B*a^12*c^5*d^7*e^9*x - 57348*A*B*a^13*c^4*d^5*e^11*x - 1923
6*A*B*a^14*c^3*d^3*e^13*x + 204*A*B*a^2*c^6*d^13*e^3*(-a^5*c)^(3/2) + 972*A
*B*a^3*c^5*d^11*e^5*(-a^5*c)^(3/2) + 2220*A*B*a^4*c^4*d^9*e^7*(-a^5*c)^(3/2
))*(c*(a^5*((5*B*d^2*e^4)/2 - 3*A*d*e^5) + a^2*((45*A*d^2*e^4*(-a^5*c)^(1/2
))/16 - (5*B*d^3*e^3*(-a^5*c)^(1/2))/4)) - a^3*((15*A*e^6*(-a^5*c)^(1/2))/1
6 - (15*B*d*e^5*(-a^5*c)^(1/2))/8) - (B*a^6*e^6)/2 + a*c^2*((15*A*d^4*e^2*(
-a^5*c)^(1/2))/16 - (B*d^5*e*(-a^5*c)^(1/2))/8) + (3*A*c^3*d^6*(-a^5*c)^(1/
2))/16))/(a^9*e^8 + a^5*c^4*d^8 + 4*a^8*c*d^2*e^6 + 4*a^6*c^3*d^6*e^2 + 6*a
^7*c^2*d^4*e^4) - (log(225*A^2*a^8*e^16*(-a^5*c)^(3/2) + 9*A^2*c^8*d^16*(-a
^5*c)^(3/2) - 576*B^2*a^14*e^16*(-a^5*c)^(1/2) - 19836*A^2*a^2*d^2*e^14*(-a
^5*c)^(5/2) - 4056*B^2*a^2*d^4*e^12*(-a^5*c)^(5/2) - 3708*B^2*a^8*d^2*e^14*
(-a^5*c)^(3/2) - 23796*A^2*c^2*d^6*e^10*(-a^5*c)^(5/2) - 13840*B^2*c^2*d^8*
e^8*(-a^5*c)^(5/2) + 576*B^2*a^16*c*e^16*x + 9*A^2*a^7*c^10*d^16*x + 225*A^
2*a^15*c^2*e^16*x + 19236*A*B*a^2*d^3*e^13*(-a^5*c)^(5/2) + 33540*A*B*c^2*d
^7*e^9*(-a^5*c)^(5/2) - 40572*A^2*a*c*d^4*e^12*(-a^5*c)^(5/2) - 21820*B^2*a
*c*d^6*e^10*(-a^5*c)^(5/2) + 108*A^2*a^8*c^9*d^14*e^2*x + 684*A^2*a^9*c^8*d
^12*e^4*x + 2340*A^2*a^10*c^7*d^10*e^6*x + 4590*A^2*a^11*c^6*d^8*e^8*x + 23
796*A^2*a^12*c^5*d^6*e^10*x + 40572*A^2*a^13*c^4*d^4*e^12*x + 19836*A^2*a^1
4*c^3*d^2*e^14*x + 4*B^2*a^9*c^8*d^14*e^2*x + 88*B^2*a^10*c^7*d^12*e^4*x +
444*B^2*a^11*c^6*d^10*e^6*x + 13840*B^2*a^12*c^5*d^8*e^8*x + 21820*B^2*a^13
*c^4*d^6*e^10*x + 4056*B^2*a^14*c^3*d^4*e^12*x - 3708*B^2*a^15*c^2*d^2*e^14
*x + 108*A^2*a*c^7*d^14*e^2*(-a^5*c)^(3/2) + 6012*A*B*a^8*d*e^15*(-a^5*c)^(
3/2) + 684*A^2*a^2*c^6*d^12*e^4*(-a^5*c)^(3/2) + 2340*A^2*a^3*c^5*d^10*e^6*
(-a^5*c)^(3/2) + 4590*A^2*a^4*c^4*d^8*e^8*(-a^5*c)^(3/2) + 4*B^2*a^2*c^6*d^
14*e^2*(-a^5*c)^(3/2) + 88*B^2*a^3*c^5*d^12*e^4*(-a^5*c)^(3/2) + 444*B^2*a^
4*c^4*d^10*e^6*(-a^5*c)^(3/2) - 12*A*B*a^8*c^9*d^15*e*x + 6012*A*B*a^15*c^2
*d*e^15*x + 57348*A*B*a*c*d^5*e^11*(-a^5*c)^(5/2) - 12*A*B*a*c^7*d^15*e*(-a
^5*c)^(3/2) - 204*A*B*a^9*c^8*d^13*e^3*x - 972*A*B*a^10*c^7*d^11*e^5*x - 22
20*A*B*a^11*c^6*d^9*e^7*x - 33540*A*B*a^12*c^5*d^7*e^9*x - 57348*A*B*a^13*c
^4*d^5*e^11*x - 19236*A*B*a^14*c^3*d^3*e^13*x - 204*A*B*a^2*c^6*d^13*e^3*(-
a^5*c)^(3/2) - 972*A*B*a^3*c^5*d^11*e^5*(-a^5*c)^(3/2) - 2220*A*B*a^4*c^4*d
^9*e^7*(-a^5*c)^(3/2))*((B*a^6*e^6)/2 - a^3*((15*A*e^6*(-a^5*c)^(1/2))/16 -
 (15*B*d*e^5*(-a^5*c)^(1/2))/8) - c*(a^5*((5*B*d^2*e^4)/2 - 3*A*d*e^5) - a^
2*((45*A*d^2*e^4*(-a^5*c)^(1/2))/16 - (5*B*d^3*e^3*(-a^5*c)^(1/2))/4)) + a*
c^2*((15*A*d^4*e^2*(-a^5*c)^(1/2))/16 - (B*d^5*e*(-a^5*c)^(1/2))/8) + (3*A*
c^3*d^6*(-a^5*c)^(1/2))/16))/(a^9*e^8 + a^5*c^4*d^8 + 4*a^8*c*d^2*e^6 + 4*a
^6*c^3*d^6*e^2 + 6*a^7*c^2*d^4*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+a)**3,x)
[Out] Timed out
```

3.1180 $\int \frac{-11+6x}{(-1+2x)\left(-1+x^2\right)}\,dx$

Optimal. Leaf size=29

$$\frac{16}{3}\log(1-2x)-\frac{5}{2}\log(1-x)-\frac{17}{6}\log(x+1)$$

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {801}

$$\frac{16}{3}\log(1-2x)-\frac{5}{2}\log(1-x)-\frac{17}{6}\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Int[(-11 + 6*x)/((-1 + 2*x)*(-1 + x^2)),x]
```

```
[Out] (16*Log[1 - 2*x])/3 - (5*Log[1 - x])/2 - (17*Log[1 + x])/6
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{-11+6x}{(-1+2x)\left(-1+x^2\right)}\,dx &= \int \left(-\frac{5}{2(-1+x)}-\frac{17}{6(1+x)}+\frac{32}{3(-1+2x)}\right)dx\\ &= \frac{16}{3}\log(1-2x)-\frac{5}{2}\log(1-x)-\frac{17}{6}\log(1+x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 1.07

$$-\frac{5}{2}\log(2-2x)+\frac{16}{3}\log(2x-1)-\frac{17}{6}\log(2x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-11 + 6*x)/((-1 + 2*x)*(-1 + x^2)),x]
```

```
[Out] (-5*Log[2 - 2*x])/2 + (16*Log[-1 + 2*x])/3 - (17*Log[2 + 2*x])/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{-11+6x}{(-1+2x)\left(-1+x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(-11 + 6*x)/((-1 + 2*x)*(-1 + x^2)),x]
```

```
[Out] IntegrateAlgebraic[(-11 + 6*x)/((-1 + 2*x)*(-1 + x^2)), x]
```

fricas [A] time = 0.42, size = 21, normalized size = 0.72

$$\frac{16}{3}\log(2x-1)-\frac{17}{6}\log(x+1)-\frac{5}{2}\log(x-1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x^2-1),x, algorithm="fricas")
[Out] 16/3*log(2*x - 1) - 17/6*log(x + 1) - 5/2*log(x - 1)
```

giac [A] time = 0.17, size = 24, normalized size = 0.83

$$\frac{16}{3}\log(|2x-1|)-\frac{17}{6}\log(|x+1|)-\frac{5}{2}\log(|x-1|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x^2-1),x, algorithm="giac")
[Out] 16/3*log(abs(2*x - 1)) - 17/6*log(abs(x + 1)) - 5/2*log(abs(x - 1))
```

maple [A] time = 0.05, size = 22, normalized size = 0.76

$$-\frac{5\ln(x-1)}{2}-\frac{17\ln(x+1)}{6}+\frac{16\ln(2x-1)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-11+6*x)/(2*x-1)/(x^2-1),x)
[Out] -5/2*ln(x-1)+16/3*ln(2*x-1)-17/6*ln(x+1)
```

maxima [A] time = 0.57, size = 21, normalized size = 0.72

$$\frac{16}{3}\log(2x-1)-\frac{17}{6}\log(x+1)-\frac{5}{2}\log(x-1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x^2-1),x, algorithm="maxima")
[Out] 16/3*log(2*x - 1) - 17/6*log(x + 1) - 5/2*log(x - 1)
```

mupad [B] time = 0.07, size = 19, normalized size = 0.66

$$\frac{16\ln\left(x-\frac{1}{2}\right)}{3}-\frac{17\ln(x+1)}{6}-\frac{5\ln(x-1)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((6*x - 11)/((2*x - 1)*(x^2 - 1)),x)
[Out] (16*log(x - 1/2))/3 - (17*log(x + 1))/6 - (5*log(x - 1))/2
```

sympy [A] time = 0.14, size = 26, normalized size = 0.90

$$-\frac{5\log(x-1)}{2}+\frac{16\log\left(x-\frac{1}{2}\right)}{3}-\frac{17\log(x+1)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x**2-1),x)
[Out] -5*log(x - 1)/2 + 16*log(x - 1/2)/3 - 17*log(x + 1)/6
```

3.1181 $\int \frac{x(1+x)^2}{\left(1+x^2\right)^3} \, dx$

Optimal. Leaf size=39

$$-\frac{(x+1)^2}{4\left(x^2+1\right)^2}-\frac{1-x}{4\left(x^2+1\right)}+\frac{1}{4}\tan^{-1}(x)$$

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {819, 639, 203}

$$-\frac{(x+1)^2}{4\left(x^2+1\right)^2}-\frac{1-x}{4\left(x^2+1\right)}+\frac{1}{4}\tan^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 + x)^2)/(1 + x^2)^3,x]
```

```
[Out] -(1 + x)^2/(4*(1 + x^2)^2) - (1 - x)/(4*(1 + x^2)) + ArcTan[x]/4
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x(1+x)^2}{\left(1+x^2\right)^3} \, dx &= -\frac{(1+x)^2}{4\left(1+x^2\right)^2}+\frac{1}{4}\int \frac{2+2x}{\left(1+x^2\right)^2} \, dx\\
&= -\frac{(1+x)^2}{4\left(1+x^2\right)^2}-\frac{1-x}{4\left(1+x^2\right)}+\frac{1}{4}\int \frac{1}{1+x^2} \, dx\\
&= -\frac{(1+x)^2}{4\left(1+x^2\right)^2}-\frac{1-x}{4\left(1+x^2\right)}+\frac{1}{4}\tan^{-1}(x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.72

$$\frac{1}{4}\left(\frac{x^3-2x^2-x-2}{\left(x^2+1\right)^2}+\tan^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 + x)^2)/(1 + x^2)^3,x]
[Out] ((-2 - x - 2*x^2 + x^3)/(1 + x^2)^2 + ArcTan[x])/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(1+x)^2}{\left(1+x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(1 + x)^2)/(1 + x^2)^3,x]
[Out] IntegrateAlgebraic[(x*(1 + x)^2)/(1 + x^2)^3, x]
```

fricas [A] time = 0.41, size = 40, normalized size = 1.03

$$\frac{x^3-2\,x^2+\left(x^4+2\,x^2+1\right)\arctan(x)-x-2}{4\left(x^4+2\,x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+1)^3,x, algorithm="fricas")
[Out] 1/4*(x^3 - 2*x^2 + (x^4 + 2*x^2 + 1)*arctan(x) - x - 2)/(x^4 + 2*x^2 + 1)
```

giac [A] time = 0.15, size = 27, normalized size = 0.69

$$\frac{x^3-2\,x^2-x-2}{4\left(x^2+1\right)^2}+\frac{1}{4}\arctan(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+1)^3,x, algorithm="giac")
[Out] 1/4*(x^3 - 2*x^2 - x - 2)/(x^2 + 1)^2 + 1/4*arctan(x)
```

maple [A] time = 0.04, size = 29, normalized size = 0.74

$$\frac{\arctan(x)}{4}+\frac{\frac{1}{4}x^3-\frac{1}{2}x^2-\frac{1}{4}x-\frac{1}{2}}{\left(x^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x+1)^2/(x^2+1)^3,x)
[Out] (1/4*x^3-1/2*x^2-1/4*x-1/2)/(x^2+1)^2+1/4*arctan(x)
```

maxima [A] time = 1.18, size = 32, normalized size = 0.82

$$\frac{x^3-2\,x^2-x-2}{4\left(x^4+2\,x^2+1\right)}+\frac{1}{4}\arctan(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+1)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(x^3 - 2*x^2 - x - 2)/(x^4 + 2*x^2 + 1) + 1/4*arctan(x)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.74

$$\frac{\operatorname{atan}(x)}{4}-\frac{-\frac{x^3}{4}+\frac{x^2}{2}+\frac{x}{4}+\frac{1}{2}}{\left(x^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(x + 1)^2)/(x^2 + 1)^3,x)
```

```
[Out] atan(x)/4 - (x/4 + x^2/2 - x^3/4 + 1/2)/(x^2 + 1)^2
```

sympy [A] time = 0.13, size = 27, normalized size = 0.69

$$\frac{\operatorname{atan}(x)}{4}+\frac{x^3-2x^2-x-2}{4x^4+8x^2+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)**2/(x**2+1)**3,x)
```

```
[Out] atan(x)/4 + (x**3 - 2*x**2 - x - 2)/(4*x**4 + 8*x**2 + 4)
```

3.1182 $\int (5-x)(3+2x)^4\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=122

$$-\frac{1}{21}\left(3x^2+2\right)^{3/2}(2x+3)^4+\frac{29}{63}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{923}{315}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{405}(4599x+13781)\left(3x^2+2\right)^{3}$$

Rubi [A] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{21}\left(3x^2+2\right)^{3/2}(2x+3)^4+\frac{29}{63}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{923}{315}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{405}(4599x+13781)\left(3x^2+2\right)^{3/2}+\frac{2341}{18}x\sqrt{3x^2+2}+\frac{2341\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 3*x^2],x]
```

```
[Out] (2341*x*Sqrt[2 + 3*x^2])/18 + (923*(3 + 2*x)^2*(2 + 3*x^2)^(3/2))/315 + (29
*(3 + 2*x)^3*(2 + 3*x^2)^(3/2))/63 - ((3 + 2*x)^4*(2 + 3*x^2)^(3/2))/21 + (
2*(13781 + 4599*x)*(2 + 3*x^2)^(3/2))/405 + (2341*ArcSinh[Sqrt[3/2]*x])/(9*
Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4\sqrt{2+3x^2}\,dx = -\frac{1}{21}(3+2x)^4\left(2+3x^2\right)^{3/2} + \frac{1}{21}\int (3+2x)^3(331+174x)\sqrt{2+3x^2}\,dx$$
$$= \frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2} - \frac{1}{21}(3+2x)^4\left(2+3x^2\right)^{3/2} + \frac{1}{378}\int (3+2x)^2(15786$$
$$= \frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2} - \frac{1}{21}(3+2x)^4\left(2+3x^2\right)^{3}$$
$$= \frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2} - \frac{1}{21}(3+2x)^4\left(2+3x^2\right)^{3}$$
$$= \frac{2341}{18}x\sqrt{2+3x^2} + \frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2} - \frac{1}{21}($$
$$= \frac{2341}{18}x\sqrt{2+3x^2} + \frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2} - \frac{1}{21}($$

Mathematica [A] time = 0.08, size = 65, normalized size = 0.53

$$\frac{\sqrt{3x^2+2}\left(-12960x^6-15120x^5+297648x^4+1222200x^3+1956174x^2+1558935x+1167988\right)}{5670}+\frac{2341\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(1167988 + 1558935*x + 1956174*x^2 + 1222200*x^3 + 297648*
x^4 - 15120*x^5 - 12960*x^6))/5670 + (2341*ArcSinh[Sqrt[3/2]*x])/(9*Sqrt[3]
)
```

IntegrateAlgebraic [A] time = 0.36, size = 76, normalized size = 0.62

$$\frac{\sqrt{3x^2+2}\left(-12960x^6-15120x^5+297648x^4+1222200x^3+1956174x^2+1558935x+1167988\right)}{5670}-\frac{2341\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(1167988 + 1558935*x + 1956174*x^2 + 1222200*x^3 + 297648*
x^4 - 15120*x^5 - 12960*x^6))/5670 - (2341*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^
2]])/(9*Sqrt[3])
```

fricas [A] time = 0.43, size = 70, normalized size = 0.57

$$-\frac{1}{5670}\left(12960x^6+15120x^5-297648x^4-1222200x^3-1956174x^2-1558935x-1167988\right)\sqrt{3x^2+2}+\frac{2341}{54}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/5670*(12960*x^6 + 15120*x^5 - 297648*x^4 - 1222200*x^3 - 1956174*x^2 - 1
558935*x - 1167988)*sqrt(3*x^2 + 2) + 2341/54*sqrt(3)*log(-sqrt(3)*sqrt(3*x
^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 64, normalized size = 0.52

$$-\frac{1}{5670}\left(3\left(2\left(12\left(6\left(5\left(6x+7\right)x-689\right)x-16975\right)x-326029\right)x-519645\right)x-1167988\right)\sqrt{3x^2+2}-\frac{2341}{27}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/5670*(3*(2*(12*(6*(5*(6*x + 7)*x - 689)*x - 16975)*x - 326029)*x - 51964
5)*x - 1167988)*sqrt(3*x^2 + 2) - 2341/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x
^2 + 2))
```

maple [A] time = 0.05, size = 91, normalized size = 0.75

$$-\frac{16\left(3x^{2}+2\right)^{\frac{3}{2}}x^{4}}{21}-\frac{8\left(3x^{2}+2\right)^{\frac{3}{2}}x^{3}}{9}+\frac{5672\left(3x^{2}+2\right)^{\frac{3}{2}}x^{2}}{315}+\frac{652\left(3x^{2}+2\right)^{\frac{3}{2}}x}{9}+\frac{2341\sqrt{3x^{2}+2}\,x}{18}+\frac{2341\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{291997\left(3x^{2}+2\right)^{\frac{3}{2}}}{2835}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+2)^(1/2),x)
```

```
[Out] -16/21*x^4*(3*x^2+2)^(3/2)+5672/315*x^2*(3*x^2+2)^(3/2)+291997/2835*(3*x^2+
2)^(3/2)-8/9*x^3*(3*x^2+2)^(3/2)+652/9*x*(3*x^2+2)^(3/2)+2341/18*(3*x^2+2)^
(1/2)*x+2341/27*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.39, size = 90, normalized size = 0.74

$$-\frac{16}{21}\left(3x^{2}+2\right)^{\frac{3}{2}}x^{4}-\frac{8}{9}\left(3x^{2}+2\right)^{\frac{3}{2}}x^{3}+\frac{5672}{315}\left(3x^{2}+2\right)^{\frac{3}{2}}x^{2}+\frac{652}{9}\left(3x^{2}+2\right)^{\frac{3}{2}}x+\frac{291997}{2835}\left(3x^{2}+2\right)^{\frac{3}{2}}+\frac{2341}{18}\sqrt{3x^{2}+2}\,x+\frac{2341}{27}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/21*(3*x^2 + 2)^(3/2)*x^4 - 8/9*(3*x^2 + 2)^(3/2)*x^3 + 5672/315*(3*x^2
+ 2)^(3/2)*x^2 + 652/9*(3*x^2 + 2)^(3/2)*x + 291997/2835*(3*x^2 + 2)^(3/2)
+ 2341/18*sqrt(3*x^2 + 2)*x + 2341/27*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.71, size = 55, normalized size = 0.45

$$\frac{2341\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(-\frac{48x^{6}}{7}-8x^{5}+\frac{5512x^{4}}{35}+\frac{1940x^{3}}{3}+\frac{326029x^{2}}{315}+\frac{4949x}{6}+\frac{583994}{945}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (2341*3^(1/2)*asinh((6^(1/2)*x)/2))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((4949*
x)/6 + (326029*x^2)/315 + (1940*x^3)/3 + (5512*x^4)/35 - 8*x^5 - (48*x^6)/7
 + 583994/945))/3
```

sympy [A] time = 3.13, size = 131, normalized size = 1.07

$$-\frac{16x^{6}\sqrt{3x^{2}+2}}{7}-\frac{8x^{5}\sqrt{3x^{2}+2}}{3}+\frac{5512x^{4}\sqrt{3x^{2}+2}}{105}+\frac{1940x^{3}\sqrt{3x^{2}+2}}{9}+\frac{326029x^{2}\sqrt{3x^{2}+2}}{945}+\frac{4949x\sqrt{3x^{2}+2}}{18}+\frac{583994\sqrt{3x^{2}+2}}{2835}+\frac{2341\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+2)**(1/2),x)
```

```
[Out] -16*x**6*sqrt(3*x**2 + 2)/7 - 8*x**5*sqrt(3*x**2 + 2)/3 + 5512*x**4*sqrt(3*
x**2 + 2)/105 + 1940*x**3*sqrt(3*x**2 + 2)/9 + 326029*x**2*sqrt(3*x**2 + 2)
/945 + 4949*x*sqrt(3*x**2 + 2)/18 + 583994*sqrt(3*x**2 + 2)/2835 + 2341*sqr
t(3)*asinh(sqrt(6)*x/2)/27
```

3.1183 $\int (5-x)(3+2x)^3\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=100

$$-\frac{1}{18}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{17}{30}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{7}{270}(267x+898)\left(3x^2+2\right)^{3/2}+\frac{511}{9}x\sqrt{3x^2+2}+\frac{1022\sinh^{-1}(}{9\sqrt{3}}$$

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{18}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{17}{30}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{7}{270}(267x+898)\left(3x^2+2\right)^{3/2}+\frac{511}{9}x\sqrt{3x^2+2}+\frac{1022\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 3*x^2],x]
```

```
[Out] (511*x*Sqrt[2 + 3*x^2])/9 + (17*(3 + 2*x)^2*(2 + 3*x^2)^(3/2))/30 - ((3 + 2
*x)^3*(2 + 3*x^2)^(3/2))/18 + (7*(898 + 267*x)*(2 + 3*x^2)^(3/2))/270 + (10
22*ArcSinh[Sqrt[3/2]*x])/(9*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\sqrt{2+3x^2}\,dx = -\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{1}{18}\int (3+2x)^2(282+153x)\sqrt{2+3x^2}\,dx$$
$$= \frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{1}{270}\int (3+2x)(1146$$
$$= \frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{7}{270}(898+267x)\left(2\right.$$
$$= \frac{511}{9}x\sqrt{2+3x^2}+\frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{7}{27}$$
$$= \frac{511}{9}x\sqrt{2+3x^2}+\frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{7}{27}$$

Mathematica [A] time = 0.05, size = 60, normalized size = 0.60

$$\frac{1}{270}\left(10220\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(360x^5-216x^4-8445x^3-21918x^2-21120x-14516\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-14516 - 21120*x - 21918*x^2 - 8445*x^3 - 216*x^4 + 360
*x^5)) + 10220*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/270
```

IntegrateAlgebraic [A] time = 0.30, size = 71, normalized size = 0.71

$$\frac{1}{270}\sqrt{3x^2+2}\left(-360x^5+216x^4+8445x^3+21918x^2+21120x+14516\right)-\frac{1022\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(14516 + 21120*x + 21918*x^2 + 8445*x^3 + 216*x^4 - 360*x^
5))/270 - (1022*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(9*Sqrt[3])
```

fricas [A] time = 0.42, size = 65, normalized size = 0.65

$$-\frac{1}{270}\left(360x^5-216x^4-8445x^3-21918x^2-21120x-14516\right)\sqrt{3x^2+2}+\frac{511}{27}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/270*(360*x^5 - 216*x^4 - 8445*x^3 - 21918*x^2 - 21120*x - 14516)*sqrt(3*
x^2 + 2) + 511/27*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 57, normalized size = 0.57

$$-\frac{1}{270}\left(3\left(((24(5x-3)x-2815)x-7306)x-7040\right)x-14516\right)\sqrt{3x^2+2}-\frac{1022}{27}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/270*(3*(((24*(5*x - 3)*x - 2815)*x - 7306)*x - 7040)*x - 14516)*sqrt(3*x
^2 + 2) - 1022/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 77, normalized size = 0.77

$$-\frac{4\left(3x^{2}+2\right)^{\frac{3}{2}}x^{3}}{9}+\frac{4\left(3x^{2}+2\right)^{\frac{3}{2}}x^{2}}{15}+\frac{193\left(3x^{2}+2\right)^{\frac{3}{2}}x}{18}+\frac{511\sqrt{3x^{2}+2}\,x}{9}+\frac{1022\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{3629\left(3x^{2}+2\right)^{\frac{3}{2}}}{135}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+2)^(3/2)*x^3+193/18*(3*x^2+2)^(3/2)*x+511/9*(3*x^2+2)^(1/2)*x+1
022/27*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+4/15*(3*x^2+2)^(3/2)*x^2+3629/135*(3*
x^2+2)^(3/2)
```

maxima [A] time = 1.10, size = 76, normalized size = 0.76

$$-\frac{4}{9}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{3}+\frac{4}{15}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{2}+\frac{193}{18}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x+\frac{3629}{135}\left(3\,x^{2}+2\right)^{\frac{3}{2}}+\frac{511}{9}\sqrt{3\,x^{2}+2}\,x+\frac{1022}{27}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*(3*x^2 + 2)^(3/2)*x^3 + 4/15*(3*x^2 + 2)^(3/2)*x^2 + 193/18*(3*x^2 + 2
)^(3/2)*x + 3629/135*(3*x^2 + 2)^(3/2) + 511/9*sqrt(3*x^2 + 2)*x + 1022/27*
sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.69, size = 50, normalized size = 0.50

$$\frac{1022\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(-4\,x^{5}+\frac{12\,x^{4}}{5}+\frac{563\,x^{3}}{6}+\frac{3653\,x^{2}}{15}+\frac{704\,x}{3}+\frac{7258}{45}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (1022*3^(1/2)*asinh((6^(1/2)*x)/2))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((704*x
)/3 + (3653*x^2)/15 + (563*x^3)/6 + (12*x^4)/5 - 4*x^5 + 7258/45))/3
```

sympy [A] time = 20.72, size = 150, normalized size = 1.50

$$-\frac{4x^{7}}{\sqrt{3x^{2}+2}}+\frac{547x^{5}}{6\sqrt{3x^{2}+2}}+\frac{1705x^{3}}{18\sqrt{3x^{2}+2}}+\frac{135x\sqrt{3x^{2}+2}}{2}+\frac{193x}{9\sqrt{3x^{2}+2}}+\frac{16\sqrt{2}\left(\frac{3x^{2}}{2}+1\right)^{\frac{5}{2}}}{45}-\frac{16\sqrt{2}\left(\frac{3x^{2}}{2}+1\right)^{\frac{3}{2}}}{27}+27\left(3x^{2}+2\right)^{\frac{3}{2}}+\frac{1022\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+2)**(1/2),x)
```

```
[Out] -4*x**7/sqrt(3*x**2 + 2) + 547*x**5/(6*sqrt(3*x**2 + 2)) + 1705*x**3/(18*sq
rt(3*x**2 + 2)) + 135*x*sqrt(3*x**2 + 2)/2 + 193*x/(9*sqrt(3*x**2 + 2)) + 1
6*sqrt(2)*(3*x**2/2 + 1)**(5/2)/45 - 16*sqrt(2)*(3*x**2/2 + 1)**(3/2)/27 +
27*(3*x**2 + 2)**(3/2) + 1022*sqrt(3)*asinh(sqrt(6)*x/2)/27
```

3.1184 $\int (5-x)(3+2x)^2\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=78

$$-\frac{1}{15}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{135}(99x+431)\left(3x^2+2\right)^{3/2}+\frac{131}{6}x\sqrt{3x^2+2}+\frac{131\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{15}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{135}(99x+431)\left(3x^2+2\right)^{3/2}+\frac{131}{6}x\sqrt{3x^2+2}+\frac{131\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 3*x^2],x]
```

```
[Out] (131*x*Sqrt[2 + 3*x^2])/6 - ((3 + 2*x)^2*(2 + 3*x^2)^(3/2))/15 + (2*(431 +
99*x)*(2 + 3*x^2)^(3/2))/135 + (131*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\sqrt{2+3x^2}\,dx = -\frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{1}{15}\int (3+2x)(233+132x)\sqrt{2+3x^2}\,dx$$
$$= -\frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{2}{135}(431+99x)\left(2+3x^2\right)^{3/2} + \frac{131}{3}\int \sqrt{2+3x^2}\,d$$
$$= \frac{131}{6}x\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{2}{135}(431+99x)\left(2+3x^2\right)^{3/2} + \frac{13}{3}$$
$$= \frac{131}{6}x\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2} + \frac{2}{135}(431+99x)\left(2+3x^2\right)^{3/2} + \frac{13}{}$$

Mathematica [A] time = 0.04, size = 55, normalized size = 0.71

$$\frac{1}{270}\left(3930\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \sqrt{3x^2+2}\left(216x^4-540x^3-4542x^2-6255x-3124\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-3124 - 6255*x - 4542*x^2 - 540*x^3 + 216*x^4)) + 3930*
Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/270
```

IntegrateAlgebraic [A] time = 0.22, size = 66, normalized size = 0.85

$$\frac{1}{270}\sqrt{3x^2+2}\left(-216x^4+540x^3+4542x^2+6255x+3124\right) - \frac{131\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(3124 + 6255*x + 4542*x^2 + 540*x^3 - 216*x^4))/270 - (131
*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.41, size = 60, normalized size = 0.77

$$-\frac{1}{270}\left(216\,x^4-540\,x^3-4542\,x^2-6255\,x-3124\right)\sqrt{3\,x^2+2} + \frac{131}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/270*(216*x^4 - 540*x^3 - 4542*x^2 - 6255*x - 3124)*sqrt(3*x^2 + 2) + 131
/18*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.16, size = 54, normalized size = 0.69

$$-\frac{1}{270}\left(3\left(2\left(18\left(2\,x-5\right)x-757\right)x-2085\right)x-3124\right)\sqrt{3\,x^2+2} - \frac{131}{9}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/270*(3*(2*(18*(2*x - 5)*x - 757)*x - 2085)*x - 3124)*sqrt(3*x^2 + 2) - 1
31/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 63, normalized size = 0.81

$$-\frac{4\left(3x^{2}+2\right)^{\frac{3}{2}} x^{2}}{15}+\frac{2\left(3x^{2}+2\right)^{\frac{3}{2}} x}{3}+\frac{131\sqrt{3x^{2}+2}\, x}{6}+\frac{131\sqrt{3}\, \operatorname{arcsinh}\left(\frac{\sqrt{6}\, x}{2}\right)}{9}+\frac{781\left(3x^{2}+2\right)^{\frac{3}{2}}}{135}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+2)^(1/2),x)
```

```
[Out] -4/15*(3*x^2+2)^(3/2)*x^2+781/135*(3*x^2+2)^(3/2)+2/3*(3*x^2+2)^(3/2)*x+131
/6*(3*x^2+2)^(1/2)*x+131/9*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.28, size = 62, normalized size = 0.79

$$-\frac{4}{15}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{2}+\frac{2}{3}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x+\frac{781}{135}\left(3\,x^{2}+2\right)^{\frac{3}{2}}+\frac{131}{6}\,\sqrt{3\,x^{2}+2}\,x+\frac{131}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 2)^(3/2)*x^2 + 2/3*(3*x^2 + 2)^(3/2)*x + 781/135*(3*x^2 + 2)
^(3/2) + 131/6*sqrt(3*x^2 + 2)*x + 131/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.71, size = 45, normalized size = 0.58

$$\frac{131\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{12\,x^4}{5}+6\,x^3+\frac{757\,x^2}{15}+\frac{139\,x}{2}+\frac{1562}{45}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (131*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((139*x)/
2 + (757*x^2)/15 + 6*x^3 - (12*x^4)/5 + 1562/45))/3
```

sympy [A] time = 0.93, size = 95, normalized size = 1.22

$$-\frac{4x^{4}\sqrt{3x^{2}+2}}{5}+2x^{3}\sqrt{3x^{2}+2}+\frac{757x^{2}\sqrt{3x^{2}+2}}{45}+\frac{139x\sqrt{3x^{2}+2}}{6}+\frac{1562\sqrt{3x^{2}+2}}{135}+\frac{131\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+2)**(1/2),x)
```

```
[Out] -4*x**4*sqrt(3*x**2 + 2)/5 + 2*x**3*sqrt(3*x**2 + 2) + 757*x**2*sqrt(3*x**2
 + 2)/45 + 139*x*sqrt(3*x**2 + 2)/6 + 1562*sqrt(3*x**2 + 2)/135 + 131*sqrt(
3)*asinh(sqrt(6)*x/2)/9
```

3.1185 $\int (5-x)(3+2x)\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=56

$$\frac{1}{18}(14-3x)\left(3x^2+2\right)^{3/2}+\frac{23}{3}x\sqrt{3x^2+2}+\frac{46\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.01, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {780, 195, 215}

$$\frac{1}{18}(14-3x)\left(3x^2+2\right)^{3/2}+\frac{23}{3}x\sqrt{3x^2+2}+\frac{46\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (23*x*Sqrt[2 + 3*x^2])/3 + ((14 - 3*x)*(2 + 3*x^2)^(3/2))/18 + (46*ArcSinh[
Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)\sqrt{2+3x^2}\,dx &= \frac{1}{18}(14-3x)\left(2+3x^2\right)^{3/2}+\frac{46}{3}\int \sqrt{2+3x^2}\,dx\\ &= \frac{23}{3}x\sqrt{2+3x^2}+\frac{1}{18}(14-3x)\left(2+3x^2\right)^{3/2}+\frac{46}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= \frac{23}{3}x\sqrt{2+3x^2}+\frac{1}{18}(14-3x)\left(2+3x^2\right)^{3/2}+\frac{46\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 50, normalized size = 0.89

$$\frac{1}{18}\left(92\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(9x^3-42x^2-132x-28\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-28 - 132*x - 42*x^2 + 9*x^3)) + 92*Sqrt[3]*ArcSinh[Sqr
t[3/2]*x])/18
```

IntegrateAlgebraic [A] time = 0.18, size = 61, normalized size = 1.09

$$\frac{1}{18}\sqrt{3x^2+2}\left(-9x^3+42x^2+132x+28\right)-\frac{46\log\left(\sqrt{3x^2+2}-\sqrt{3}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(28 + 132*x + 42*x^2 - 9*x^3))/18 - (46*Log[-(Sqrt[3]*x) +
 Sqrt[2 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.42, size = 55, normalized size = 0.98

$$-\frac{1}{18}\left(9\,x^3-42\,x^2-132\,x-28\right)\sqrt{3\,x^2+2}+\frac{23}{9}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/18*(9*x^3 - 42*x^2 - 132*x - 28)*sqrt(3*x^2 + 2) + 23/9*sqrt(3)*log(-sqr
t(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.22, size = 48, normalized size = 0.86

$$-\frac{1}{18}\left(3\left((3\,x-14)x-44\right)x-28\right)\sqrt{3\,x^2+2}-\frac{46}{9}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/18*(3*((3*x - 14)*x - 44)*x - 28)*sqrt(3*x^2 + 2) - 46/9*sqrt(3)*log(-sq
rt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 49, normalized size = 0.88

$$-\frac{\left(3x^2+2\right)^{\frac{3}{2}}x}{6}+\frac{23\sqrt{3x^2+2}\,x}{3}+\frac{46\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{7\left(3x^2+2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+2)^(1/2),x)
```

```
[Out] -1/6*(3*x^2+2)^(3/2)*x+23/3*(3*x^2+2)^(1/2)*x+46/9*arcsinh(1/2*6^(1/2)*x)*3
^(1/2)+7/9*(3*x^2+2)^(3/2)
```

maxima [A] time = 1.46, size = 48, normalized size = 0.86

$$-\frac{1}{6}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{7}{9}\left(3\,x^2+2\right)^{\frac{3}{2}}+\frac{23}{3}\,\sqrt{3\,x^2+2}\,x+\frac{46}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*(3*x^2 + 2)^(3/2)*x + 7/9*(3*x^2 + 2)^(3/2) + 23/3*sqrt(3*x^2 + 2)*x +
 46/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.03, size = 40, normalized size = 0.71

$$\frac{46\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{3\,x^3}{2}+7\,x^2+22\,x+\frac{14}{3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (46*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(22*x + 7*
x^2 - (3*x^3)/2 + 14/3))/3
```

sympy [A] time = 8.08, size = 94, normalized size = 1.68

$$-\frac{3x^5}{2\sqrt{3x^2+2}}-\frac{3x^3}{2\sqrt{3x^2+2}}+\frac{15x\sqrt{3x^2+2}}{2}-\frac{x}{3\sqrt{3x^2+2}}+\frac{7\left(3x^2+2\right)^{\frac{3}{2}}}{9}+\frac{46\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+2)**(1/2),x)
```

```
[Out] -3*x**5/(2*sqrt(3*x**2 + 2)) - 3*x**3/(2*sqrt(3*x**2 + 2)) + 15*x*sqrt(3*x*
*2 + 2)/2 - x/(3*sqrt(3*x**2 + 2)) + 7*(3*x**2 + 2)**(3/2)/9 + 46*sqrt(3)*a
sinh(sqrt(6)*x/2)/9
```

3.1186 $\int (5-x)\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=49

$$-\frac{1}{9}\left(3x^2+2\right)^{3/2}+\frac{5}{2}x\sqrt{3x^2+2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}$$

Rubi [A] time = 0.01, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 195, 215}

$$-\frac{1}{9}\left(3x^2+2\right)^{3/2}+\frac{5}{2}x\sqrt{3x^2+2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (5*x*Sqrt[2 + 3*x^2])/2 - (2 + 3*x^2)^(3/2)/9 + (5*ArcSinh[Sqrt[3/2]*x])/Sq
rt[3]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{2+3x^2}\,dx &= -\frac{1}{9}\left(2+3x^2\right)^{3/2}+5\int \sqrt{2+3x^2}\,dx\\ &= \frac{5}{2}x\sqrt{2+3x^2}-\frac{1}{9}\left(2+3x^2\right)^{3/2}+5\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= \frac{5}{2}x\sqrt{2+3x^2}-\frac{1}{9}\left(2+3x^2\right)^{3/2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.88

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}-\frac{1}{18}\sqrt{3x^2+2}\left(6x^2-45x+4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] -1/18*(Sqrt[2 + 3*x^2]*(4 - 45*x + 6*x^2)) + (5*ArcSinh[Sqrt[3/2]*x])/Sqrt[
3]
```

IntegrateAlgebraic [A] time = 0.13, size = 54, normalized size = 1.10

$$\frac{1}{18}\left(-6x^2+45x-4\right)\sqrt{3x^2+2}-\frac{5\log\left(\sqrt{3x^2+2}-\sqrt{3}\,x\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] ((-4 + 45*x - 6*x^2)*Sqrt[2 + 3*x^2])/18 - (5*Log[-(Sqrt[3]*x) + Sqrt[2 + 3
*x^2]])/Sqrt[3]
```

fricas [A] time = 0.43, size = 50, normalized size = 1.02

$$-\frac{1}{18}\left(6\,x^2-45\,x+4\right)\sqrt{3\,x^2+2}+\frac{5}{6}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/18*(6*x^2 - 45*x + 4)*sqrt(3*x^2 + 2) + 5/6*sqrt(3)*log(-sqrt(3)*sqrt(3*
x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.16, size = 44, normalized size = 0.90

$$-\frac{1}{18}\,(3\,(2\,x-15)x+4)\sqrt{3\,x^2+2}-\frac{5}{3}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/18*(3*(2*x - 15)*x + 4)*sqrt(3*x^2 + 2) - 5/3*sqrt(3)*log(-sqrt(3)*x + s
qrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 37, normalized size = 0.76

$$\frac{5\sqrt{3x^2+2}\,x}{2}+\frac{5\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\left(3x^2+2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2),x)
```

```
[Out] -1/9*(3*x^2+2)^(3/2)+5/3*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+5/2*(3*x^2+2)^(1/2)
*x
```

maxima [A] time = 1.38, size = 36, normalized size = 0.73

$$-\frac{1}{9}\left(3\,x^2+2\right)^{\frac{3}{2}}+\frac{5}{2}\,\sqrt{3\,x^2+2}\,x+\frac{5}{3}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 2)^(3/2) + 5/2*sqrt(3*x^2 + 2)*x + 5/3*sqrt(3)*arcsinh(1/2*sq
rt(6)*x)
```

mupad [B] time = 0.03, size = 33, normalized size = 0.67

$$\frac{5\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(x^2-\frac{15\,x}{2}+\frac{2}{3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (5*3^(1/2)*asinh((6^(1/2)*x)/2))/3 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(x^2 - (15*
x)/2 + 2/3))/3
```

sympy [A] time = 0.26, size = 61, normalized size = 1.24

$$-\frac{x^2\sqrt{3x^2+2}}{3}+\frac{5x\sqrt{3x^2+2}}{2}-\frac{2\sqrt{3x^2+2}}{9}+\frac{5\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2),x)
```

```
[Out] -x**2*sqrt(3*x**2 + 2)/3 + 5*x*sqrt(3*x**2 + 2)/2 - 2*sqrt(3*x**2 + 2)/9 +
5*sqrt(3)*asinh(sqrt(6)*x/2)/3
```

3.1187 $\int \frac{(5-x)\sqrt{2+3x^2}}{3+2x}\,dx$

Optimal. Leaf size=72

$$\frac{1}{4}\sqrt{3x^2+2}\,(13-x)-\frac{13}{8}\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {815, 844, 215, 725, 206}

$$\frac{1}{4}\sqrt{3x^2+2}\,(13-x)-\frac{13}{8}\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x),x]
```

```
[Out] ((13 - x)*Sqrt[2 + 3*x^2])/4 - (121*ArcSinh[Sqrt[3/2]*x])/(8*Sqrt[3]) - (13
*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/8
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+3x^2}}{3+2x}\,dx = \frac{1}{4}(13-x)\sqrt{2+3x^2} + \frac{1}{24}\int \frac{276-726x}{(3+2x)\sqrt{2+3x^2}}\,dx$$
$$= \frac{1}{4}(13-x)\sqrt{2+3x^2} - \frac{121}{8}\int \frac{1}{\sqrt{2+3x^2}}\,dx + \frac{455}{8}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx$$
$$= \frac{1}{4}(13-x)\sqrt{2+3x^2} - \frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}} - \frac{455}{8}\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right)$$
$$= \frac{1}{4}(13-x)\sqrt{2+3x^2} - \frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}} - \frac{13}{8}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)$$

Mathematica [A] time = 0.04, size = 68, normalized size = 0.94

$$\frac{1}{24}\left(-6\sqrt{3x^2+2}\,(x-13) - 39\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - 121\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x),x]
```

```
[Out] (-6*(-13 + x)*Sqrt[2 + 3*x^2] - 121*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 39*Sqrt[
35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/24
```

IntegrateAlgebraic [A] time = 0.40, size = 99, normalized size = 1.38

$$\frac{1}{4}\sqrt{3x^2+2}\,(13-x) + \frac{121\log\left(\sqrt{3x^2+2}-\sqrt{3}\,x\right)}{8\sqrt{3}} + \frac{13}{4}\sqrt{35}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x),x]
```

```
[Out] ((13 - x)*Sqrt[2 + 3*x^2])/4 + (13*Sqrt[35]*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3
/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/4 + (121*Log[-(Sqrt[3]*x) + Sqrt[2
+ 3*x^2]])/(8*Sqrt[3])
```

fricas [A] time = 0.43, size = 90, normalized size = 1.25

$$-\frac{1}{4}\sqrt{3x^2+2}\,(x-13) + \frac{121}{48}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+2}\,x - 3x^2 - 1\right) + \frac{13}{16}\sqrt{35}\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4) + 93x^2 - 36x + 43}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/4*sqrt(3*x^2 + 2)*(x - 13) + 121/48*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 2)*
x - 3*x^2 - 1) + 13/16*sqrt(35)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) +
93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.25, size = 104, normalized size = 1.44

$$-\frac{1}{4}\sqrt{3x^2+2}\,(x-13) + \frac{121}{24}\sqrt{3}\log\left(-\sqrt{3}\,x + \sqrt{3x^2+2}\right) + \frac{13}{8}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}\,x - \sqrt{35} - 3\sqrt{3} + 2\sqrt{3x^2+2}\right|}{2\sqrt{3}\,x - \sqrt{35} + 3\sqrt{3} - 2\sqrt{3x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(3*x^2 + 2)*(x - 13) + 121/24*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2
+ 2)) + 13/8*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.06, size = 72, normalized size = 1.00

$$-\frac{\sqrt{3x^2+2}\,x}{4}-\frac{121\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{24}-\frac{13\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{8}+\frac{13\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3),x)
```

```
[Out] -1/4*(3*x^2+2)^(1/2)*x-121/24*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+13/8*(12*(x+3/
2)^2-36*x-19)^(1/2)-13/8*35^(1/2)*arctanh(2/35*(4-9*x)*35^(1/2)/(12*(x+3/2)
^2-36*x-19)^(1/2))
```

maxima [A] time = 1.08, size = 70, normalized size = 0.97

$$-\frac{1}{4}\sqrt{3\,x^2+2}\,x-\frac{121}{24}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{13}{8}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{13}{4}\sqrt{3\,x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(3*x^2 + 2)*x - 121/24*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 13/8*sqrt(
35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 13/4*s
qrt(3*x^2 + 2)
```

mupad [B] time = 0.17, size = 66, normalized size = 0.92

$$\frac{\sqrt{35}\,\left(910\,\ln\left(x+\frac{3}{2}\right)-910\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{560}-\frac{121\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{24}-\frac{\sqrt{3}\,\left(\frac{3\,x}{4}-\frac{39}{4}\right)\,\sqrt{x^2+\frac{2}{3}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3),x)
```

```
[Out] (35^(1/2)*(910*log(x + 3/2) - 910*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/
2))/9 - 4/9)))/560 - (121*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/24 - (3^(1/
2)*((3*x)/4 - 39/4)*(x^2 + 2/3)^(1/2))/3
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+2}}{2x+3}\right)dx-\int\frac{x\sqrt{3x^2+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(2*x + 3), x) - Integral(x*sqrt(3*x**2 + 2)/(
2*x + 3), x)
```

3.1188 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{\sqrt{3x^2+2}\,(x+8)}{2(2x+3)}+\frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{\sqrt{35}}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Rubi [A] time = 0.04, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {813, 844, 215, 725, 206}

$$-\frac{\sqrt{3x^2+2}\,(x+8)}{2(2x+3)}+\frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{\sqrt{35}}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -((8 + x)*Sqrt[2 + 3*x^2])/(2*(3 + 2*x)) + 2*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] +
 (19*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/Sqrt[35]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx &= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)} - \frac{1}{8}\int \frac{8-96x}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)} + 6\int \frac{1}{\sqrt{2+3x^2}}\,dx - 19\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)} + 2\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) + 19\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right) \\
&= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)} + 2\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) + \frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{\sqrt{35}}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 71, normalized size = 0.97

$$
-\frac{\sqrt{3x^2+2}\,(x+8)}{4x+6} + \frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{\sqrt{35}} + 2\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -(((8 + x)*Sqrt[2 + 3*x^2])/(6 + 4*x)) + 2*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] + (
19*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/Sqrt[35]
```

IntegrateAlgebraic [A] time = 0.59, size = 102, normalized size = 1.40

$$
\frac{\sqrt{3x^2+2}\,(-x-8)}{2(2x+3)} - 2\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) - \frac{38\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right)}{\sqrt{35}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] ((-8 - x)*Sqrt[2 + 3*x^2])/(2*(3 + 2*x)) - (38*ArcTanh[3*Sqrt[3/35] + 2*Sqr
t[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/Sqrt[35] - 2*Sqrt[3]*Log[-(Sqrt[
3]*x) + Sqrt[2 + 3*x^2]]
```

fricas [A] time = 0.43, size = 109, normalized size = 1.49

$$
\frac{70\sqrt{3}(2x+3)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+19\sqrt{35}(2x+3)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right)-35\sqrt{3x^2+2}\,(x+8)}{70(2x+3)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/70*(70*sqrt(3)*(2*x + 3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 19
*sqrt(35)*(2*x + 3)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x
 - 43)/(4*x^2 + 12*x + 9)) - 35*sqrt(3*x^2 + 2)*(x + 8))/(2*x + 3)
```

giac [B] time = 0.57, size = 285, normalized size = 3.90

$$
\frac{19}{35}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)\text{sgn}\left(\frac{1}{2x+3}\right) - 2\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{2\sqrt{35}}{2x+3}\right|}{2\left(\sqrt{3}+\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)}\right)\text{sgn}\left(\frac{1}{2x+3}\right) - \frac{13}{8}\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}\,\text{sgn}\left(\frac{1}{2x+3}\right) + \frac{3\left(3\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)\text{sgn}\left(\frac{1}{2x+3}\right)-\sqrt{35}\,\text{sgn}\left(\frac{1}{2x+3}\right)\right)}{4\left(\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)^2-3\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] 19/35*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqr
t(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 2*sqrt(3)*log(1/2*abs(-2*sqrt(3) +
 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*x + 3))/(sqrt(3
) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)))*sgn(1/(
2*x + 3)) - 13/8*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3)*sgn(1/(2*x + 3))
+ 3/4*(3*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))*sg
n(1/(2*x + 3)) - sqrt(35)*sgn(1/(2*x + 3)))/((sqrt(-18/(2*x + 3) + 35/(2*x
+ 3)^2 + 3) + sqrt(35)/(2*x + 3))^2 - 3)
```

maple [A] time = 0.05, size = 98, normalized size = 1.34

$$\frac{39\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{70}+2\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)+\frac{19\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{35}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{70\left(x+\frac{3}{2}\right)}-\frac{19\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}{35}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^2,x)
```

```
[Out] -13/70/(x+3/2)*(3*(x+3/2)^2-9*x-19/4)^(3/2)-19/35*(-36*x+12*(x+3/2)^2-19)^(
1/2)+2*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+19/35*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+39/70*x*(3*(x+3/2)^2-9*x-19/4)^(1/2
)
```

maxima [A] time = 1.25, size = 76, normalized size = 1.04

$$2\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)-\frac{19}{35}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)-\frac{1}{4}\,\sqrt{3\,x^{2}+2}-\frac{13\,\sqrt{3\,x^{2}+2}}{4\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] 2*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 19/35*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs
(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 1/4*sqrt(3*x^2 + 2) - 13/4*sqrt(3*x
^2 + 2)/(2*x + 3)
```

mupad [B] time = 0.11, size = 80, normalized size = 1.10

$$2\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)-\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{4}-\frac{19\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{35}+\frac{19\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{35}-\frac{13\,\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{8\,\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^2,x)
```

```
[Out] 2*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2) - (3^(1/2)*(x^2 + 2/3)^(1/2))/4 - (1
9*35^(1/2)*log(x + 3/2))/35 + (19*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 +
 2/3)^(1/2))/9 - 4/9))/35 - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(8*(x + 3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{4x^{2}+12x+9}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{4x^{2}+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(4*x**2 + 12*x + 9), x) - Integral(x*sqrt(3*x
**2 + 2)/(4*x**2 + 12*x + 9), x)
```

3.1189 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=79

$$\frac{\sqrt{3x^2+2}\,(187x+53)}{140(2x+3)^2}-\frac{471\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{280\sqrt{35}}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {811, 844, 215, 725, 206}

$$\frac{\sqrt{3x^2+2}\,(187x+53)}{140(2x+3)^2}-\frac{471\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{280\sqrt{35}}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((53 + 187*x)*Sqrt[2 + 3*x^2])/(140*(3 + 2*x)^2) - (Sqrt[3]*ArcSinh[Sqrt[3/
2]*x])/8 - (471*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(280*Sqrt[35
])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 && !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx &= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2}-\frac{1}{560}\int \frac{-312+420x}{(3+2x)\sqrt{2+3x^2}}\,dx\\
&= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2}-\frac{3}{8}\int \frac{1}{\sqrt{2+3x^2}}\,dx+\frac{471}{280}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\
&= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-\frac{471}{280}\mathrm{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)\\
&= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-\frac{471\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{280\sqrt{35}}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 80, normalized size = 1.01

$$
\frac{\frac{70(187x+53)\sqrt{3x^2+2}}{(2x+3)^2}-471\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{9800}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] -1/8*(Sqrt[3]*ArcSinh[Sqrt[3/2]*x]) + ((70*(53 + 187*x)*Sqrt[2 + 3*x^2])/(3
 + 2*x)^2 - 471*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/980
0
```

IntegrateAlgebraic [A] time = 0.70, size = 106, normalized size = 1.34

$$
\frac{\sqrt{3x^2+2}\,(187x+53)}{140(2x+3)^2}+\frac{1}{8}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}\,x\right)+\frac{471\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{140\sqrt{35}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((53 + 187*x)*Sqrt[2 + 3*x^2])/(140*(3 + 2*x)^2) + (471*ArcTanh[3*Sqrt[3/35
] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(140*Sqrt[35]) + (Sqrt[
3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/8
```

fricas [B] time = 0.43, size = 126, normalized size = 1.59

$$
\frac{1225\sqrt{3}\left(4x^2+12x+9\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+471\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+140\sqrt{3x^2+2}\,(187x+53)}{19600\left(4x^2+12x+9\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/19600*(1225*sqrt(3)*(4*x^2 + 12*x + 9)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*
x^2 - 1) + 471*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(
9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 140*sqrt(3*x^2 + 2)*(1
87*x + 53))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.27, size = 205, normalized size = 2.59

$$
\frac{1}{8}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)+\frac{471}{9800}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}\,x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}\,x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{3048\left(\sqrt{3}\,x-\sqrt{3x^2+2}\right)^3+4301\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3x^2+2}\right)^2-7368\sqrt{3}\,x+1496\sqrt{3}+7368\sqrt{3x^2+2}}{560\left(\left(\sqrt{3}\,x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3x^2+2}\right)-2\right)^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] 1/8*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 471/9800*sqrt(35)*log(-abs(
-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqr
t(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/560*(3048*(sqrt(3)*x - sqrt(3*x
^2 + 2))^3 + 4301*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 7368*sqrt(3)*x
+ 1496*sqrt(3) + 7368*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3
*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^2
```

maple [A] time = 0.06, size = 119, normalized size = 1.51

$$\frac{141\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{4900}-\frac{\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{8}-\frac{471\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{9800}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{280\left(x+\frac{3}{2}\right)^{2}}-\frac{47\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{4900\left(x+\frac{3}{2}\right)}+\frac{471\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}{9800}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^3,x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-47/4900/(x+3/2)*(-9*x+3*(x+
3/2)^2-19/4)^(3/2)+471/9800*(-36*x+12*(x+3/2)^2-19)^(1/2)-471/9800*35^(1/2)
*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+141/4900*(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x-1/8*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.25, size = 99, normalized size = 1.25

$$-\frac{1}{8}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)+\frac{471}{9800}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{39}{280}\sqrt{3\,x^{2}+2}-\frac{13\left(3\,x^{2}+2\right)^{\frac{3}{2}}}{70\left(4\,x^{2}+12\,x+9\right)}-\frac{47\sqrt{3\,x^{2}+2}}{280\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] -1/8*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 471/9800*sqrt(35)*arcsinh(3/2*sqrt(6)
*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 39/280*sqrt(3*x^2 + 2) - 13/7
0*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 47/280*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.90, size = 92, normalized size = 1.16

$$\frac{471\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{9800}-\frac{\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{8}-\frac{471\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{9800}+\frac{187\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{560\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{32\left(x^{2}+3\,x+\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^3,x)
```

```
[Out] (471*35^(1/2)*log(x + 3/2))/9800 - (3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/8
 - (471*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/980
0 + (187*3^(1/2)*(x^2 + 2/3)^(1/2))/(560*(x + 3/2)) - (13*3^(1/2)*(x^2 + 2/
3)^(1/2))/(32*(3*x + x^2 + 9/4))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{8x^{3}+36x^{2}+54x+27}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{8x^{3}+36x^{2}+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - Integral
(x*sqrt(3*x**2 + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
```

3.1190 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=82

$$-\frac{13\left(3x^2+2\right)^{3/2}}{105(2x+3)^3}-\frac{41(4-9x)\sqrt{3x^2+2}}{2450(2x+3)^2}-\frac{123\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Rubi [A] time = 0.03, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {807, 721, 725, 206}

$$-\frac{13\left(3x^2+2\right)^{3/2}}{105(2x+3)^3}-\frac{41(4-9x)\sqrt{3x^2+2}}{2450(2x+3)^2}-\frac{123\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (-41*(4 - 9*x)*Sqrt[2 + 3*x^2])/(2450*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(3/2))
/(105*(3 + 2*x)^3) - (123*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1
225*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx &= -\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}+\frac{41}{35}\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx \\
&= -\frac{41(4-9x)\sqrt{2+3x^2}}{2450(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}+\frac{123\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225} \\
&= -\frac{41(4-9x)\sqrt{2+3x^2}}{2450(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}-\frac{123\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225} \\
&= -\frac{41(4-9x)\sqrt{2+3x^2}}{2450(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}-\frac{123\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 65, normalized size = 0.79

$$
\frac{-\frac{35\sqrt{3x^2+2}\left(516x^2-2337x+3296\right)}{(2x+3)^3}-738\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{257250}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(3296 - 2337*x + 516*x^2))/(3 + 2*x)^3 - 738*Sqrt[35]
*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/257250
```

IntegrateAlgebraic [A] time = 0.84, size = 81, normalized size = 0.99

$$
\frac{\sqrt{3x^2+2}\left(-516x^2+2337x-3296\right)}{7350(2x+3)^3}+\frac{246\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{1225\sqrt{35}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] ((-3296 + 2337*x - 516*x^2)*Sqrt[2 + 3*x^2])/(7350*(3 + 2*x)^3) + (246*ArcT
anh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(1225*Sq
rt[35])
```

fricas [A] time = 0.42, size = 104, normalized size = 1.27

$$
\frac{369\sqrt{35}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(516x^2-2337x+3296\right)\sqrt{3x^2+2}}{257250\left(8x^3+36x^2+54x+27\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/257250*(369*sqrt(35)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(sqrt(35)*sqrt(3*x
^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(516*x^2 -
 2337*x + 3296)*sqrt(3*x^2 + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.31, size = 232, normalized size = 2.83

$$
\frac{123}{42875}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{\sqrt{3}\left(1553\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+30\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+3870\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-25740\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2-20\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-1376\right)}{9800\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] 123/42875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 1/980
0*sqrt(3)*(1553*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 30*(sqrt(3)*x - s
qrt(3*x^2 + 2))^4 + 3870*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 25740*(s
qrt(3)*x - sqrt(3*x^2 + 2))^2 - 20*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
1376)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 2)) - 2)^3
```

maple [A] time = 0.06, size = 128, normalized size = 1.56

$$\frac{1107\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{85750}-\frac{123\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{42875}-\frac{41\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{4900\left(x+\frac{3}{2}\right)^{2}}-\frac{369\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{85750\left(x+\frac{3}{2}\right)}+\frac{123\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}{42875}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{840\left(x+\frac{3}{2}\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^4,x)
```

```
[Out] -41/4900/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-369/85750/(x+3/2)*(-9*x+3*
(x+3/2)^2-19/4)^(3/2)+123/42875*(-36*x+12*(x+3/2)^2-19)^(1/2)-123/42875*35^
(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+1107/85
750*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4
)^(3/2)
```

maxima [A] time = 1.35, size = 115, normalized size = 1.40

$$\frac{123}{42875}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)+\frac{123}{4900}\sqrt{3x^{2}+2}-\frac{13\left(3x^{2}+2\right)^{\frac{3}{2}}}{105\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{41\left(3x^{2}+2\right)^{\frac{3}{2}}}{1225\left(4x^{2}+12x+9\right)}-\frac{369\sqrt{3x^{2}+2}}{4900\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 123/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 123/4900*sqrt(3*x^2 + 2) - 13/105*(3*x^2 + 2)^(3/2)/(8*x^3 + 36*x^
2 + 54*x + 27) - 41/1225*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 369/4900*sq
rt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.81, size = 106, normalized size = 1.29

$$\frac{123\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{123\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}-\frac{43\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{4900\left(x+\frac{3}{2}\right)}+\frac{37\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{560\left(x^{2}+3x+\frac{9}{4}\right)}-\frac{13\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{96\left(x^{3}+\frac{9x^{2}}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^4,x)
```

```
[Out] (123*35^(1/2)*log(x + 3/2))/42875 - (123*35^(1/2)*log(x - (3^(1/2)*35^(1/2)
*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875 - (43*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900*
(x + 3/2)) + (37*3^(1/2)*(x^2 + 2/3)^(1/2))/(560*(3*x + x^2 + 9/4)) - (13*3
^(1/2)*(x^2 + 2/3)^(1/2))/(96*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81),
x) - Integral(x*sqrt(3*x**2 + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81
), x)
```

3.1191 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=104

$$-\frac{89\left(3x^2+2\right)^{3/2}}{2940(2x+3)^3}-\frac{13\left(3x^2+2\right)^{3/2}}{140(2x+3)^4}-\frac{33(4-9x)\sqrt{3x^2+2}}{8575(2x+3)^2}-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

Rubi [A] time = 0.05, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{89\left(3x^2+2\right)^{3/2}}{2940(2x+3)^3}-\frac{13\left(3x^2+2\right)^{3/2}}{140(2x+3)^4}-\frac{33(4-9x)\sqrt{3x^2+2}}{8575(2x+3)^2}-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] (-33*(4 - 9*x)*Sqrt[2 + 3*x^2])/(8575*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(3/2))
/(140*(3 + 2*x)^4) - (89*(2 + 3*x^2)^(3/2))/(2940*(3 + 2*x)^3) - (198*ArcTa
nh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8575*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
```

```
p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx = -\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4} - \frac{1}{140}\int \frac{(-164+39x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx$$
$$= -\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4} - \frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3} + \frac{66}{245}\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx$$
$$= -\frac{33(4-9x)\sqrt{2+3x^2}}{8575(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4} - \frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3} + \frac{198\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{8575}$$
$$= -\frac{33(4-9x)\sqrt{2+3x^2}}{8575(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4} - \frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3} - \frac{198\,\mathrm{Subst}\left(\int \frac{1}{35-x^2}\,dx,\right.}{8575}$$
$$= -\frac{33(4-9x)\sqrt{2+3x^2}}{8575(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4} - \frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3} - \frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right.}{8575\sqrt{35}}$$

Mathematica [A] time = 0.08, size = 70, normalized size = 0.67

$$-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}} - \frac{\sqrt{3x^2+2}\left(2217x^3+10134x^2-304x+26028\right)}{51450(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] -1/51450*(Sqrt[2 + 3*x^2]*(26028 - 304*x + 10134*x^2 + 2217*x^3))/(3 + 2*x)
^4 - (198*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8575*Sqrt[35])
```

IntegrateAlgebraic [A] time = 1.05, size = 86, normalized size = 0.83

$$\frac{396\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{8575\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-2217x^3-10134x^2+304x-26028\right)}{51450(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-26028 + 304*x - 10134*x^2 - 2217*x^3))/(51450*(3 + 2*x)^
4) + (396*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[
35]])/(8575*Sqrt[35])
```

fricas [A] time = 0.41, size = 119, normalized size = 1.14

$$\frac{594\sqrt{35}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(2217x^3+10134x^2-304x+26028\right)\sqrt{3x^2+2}}{1800750\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/1800750*(594*sqrt(35)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-(sqrt
(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) -
```

```
35*(2217*x^3 + 10134*x^2 - 304*x + 26028)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3
 + 216*x^2 + 216*x + 81)
```

giac [B] time = 0.22, size = 181, normalized size = 1.74

$$\frac{1}{9604000}\sqrt{35}\left(739\sqrt{35}\sqrt{3}+6336\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{198}{300125}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{823200}\left(\frac{35\left(\frac{7\left(\frac{1365\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-257\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+9\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+2217\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] 1/9604000*sqrt(35)*(739*sqrt(35)*sqrt(3) + 6336*log(sqrt(35)*sqrt(3) - 9))*
sgn(1/(2*x + 3)) - 198/300125*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 3
5/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 1/823200*(
35*(7*(1365*sgn(1/(2*x + 3))/(2*x + 3) - 257*sgn(1/(2*x + 3)))/(2*x + 3) +
9*sgn(1/(2*x + 3)))/(2*x + 3) + 2217*sgn(1/(2*x + 3)))*sqrt(-18/(2*x + 3) +
 35/(2*x + 3)^2 + 3)
```

maple [A] time = 0.06, size = 149, normalized size = 1.43

$$\frac{891\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{300125}-\frac{198\sqrt{35}\,\mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{300125}-\frac{89\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{23520\left(x+\frac{3}{2}\right)^3}-\frac{33\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{17150\left(x+\frac{3}{2}\right)^2}-\frac{297\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{300125\left(x+\frac{3}{2}\right)}+\frac{198\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{300125}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{2240\left(x+\frac{3}{2}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^5,x)
```

```
[Out] -89/23520/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-33/17150/(x+3/2)^2*(-9*x+
3*(x+3/2)^2-19/4)^(3/2)-297/300125/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+19
8/300125*(-36*x+12*(x+3/2)^2-19)^(1/2)-198/300125*35^(1/2)*arctanh(2/35*(-9
*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+891/300125*(-9*x+3*(x+3/2)^2-
19/4)^(1/2)*x-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.17, size = 148, normalized size = 1.42

$$\frac{198}{300125}\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{99}{17150}\sqrt{3x^2+2}-\frac{13\left(3x^2+2\right)^{\frac{3}{2}}}{140\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{89\left(3x^2+2\right)^{\frac{3}{2}}}{2940\left(8x^3+36x^2+54x+27\right)}-\frac{66\left(3x^2+2\right)^{\frac{3}{2}}}{8575\left(4x^2+12x+9\right)}-\frac{297\sqrt{3x^2+2}}{17150(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 198/300125*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*
x + 3)) + 99/17150*sqrt(3*x^2 + 2) - 13/140*(3*x^2 + 2)^(3/2)/(16*x^4 + 96*
x^3 + 216*x^2 + 216*x + 81) - 89/2940*(3*x^2 + 2)^(3/2)/(8*x^3 + 36*x^2 + 5
4*x + 27) - 66/8575*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 297/17150*sqrt(3
*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.86, size = 140, normalized size = 1.35

$$\frac{198\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{300125}-\frac{198\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{300125}-\frac{13\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{256\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{739\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{274400\left(x+\frac{3}{2}\right)}-\frac{3\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{15680\left(x^2+3x+\frac{9}{4}\right)}+\frac{257\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{13440\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^5,x)
```

```
[Out] (198*35^(1/2)*log(x + 3/2))/300125 - (198*35^(1/2)*log(x - (3^(1/2)*35^(1/2
)*(x^2 + 2/3)^(1/2))/9 - 4/9))/300125 - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(256
*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (739*3^(1/2)*(x^2 + 2/3)^
```

```
(1/2))/(274400*(x + 3/2)) - (3*3^(1/2)*(x^2 + 2/3)^(1/2))/(15680*(3*x + x^2
 + 9/4)) + (257*3^(1/2)*(x^2 + 2/3)^(1/2))/(13440*((27*x)/4 + (9*x^2)/2 + x
^3 + 27/8))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**5,x)
```

```
[Out] Timed out
```

3.1192 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=126

$$-\frac{43\left(3x^2+2\right)^{3/2}}{6125(2x+3)^3}-\frac{23\left(3x^2+2\right)^{3/2}}{875(2x+3)^4}-\frac{13\left(3x^2+2\right)^{3/2}}{175(2x+3)^5}-\frac{339(4-9x)\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{1017\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{214375\sqrt{35}}$$

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{43\left(3x^2+2\right)^{3/2}}{6125(2x+3)^3}-\frac{23\left(3x^2+2\right)^{3/2}}{875(2x+3)^4}-\frac{13\left(3x^2+2\right)^{3/2}}{175(2x+3)^5}-\frac{339(4-9x)\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{1017\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{214375\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] (-339*(4 - 9*x)*Sqrt[2 + 3*x^2])/(428750*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(3/
2))/(175*(3 + 2*x)^5) - (23*(2 + 3*x^2)^(3/2))/(875*(3 + 2*x)^4) - (43*(2 +
 3*x^2)^(3/2))/(6125*(3 + 2*x)^3) - (1017*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[
2 + 3*x^2])])/(214375*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
```

```
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx &= -\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{1}{175}\int \frac{(-205+78x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx\\
&= -\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}+\frac{\int \frac{(6132-1932x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx}{24500}\\
&= -\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}+\frac{339\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{6125}\\
&= -\frac{339(4-9x)\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}+\frac{101}{}\\
&= -\frac{339(4-9x)\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}-\frac{101}{}\\
&= -\frac{339(4-9x)\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}-\frac{101}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 75, normalized size = 0.60

$$\frac{-2034\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{35\sqrt{3x^2+2}\left(11712x^4+76992x^3+186392x^2+108167x+222112\right)}{(2x+3)^5}}{15006250}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(222112 + 108167*x + 186392*x^2 + 76992*x^3 + 11712*x
^4))/(3 + 2*x)^5 - 2034*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2
])])/15006250
```

IntegrateAlgebraic [A] time = 1.30, size = 91, normalized size = 0.72

$$\frac{2034\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{214375\sqrt{35}}+\frac{\sqrt{3x^2+2}\,\left(-11712x^4-76992x^3-186392x^2-108167x-222112\right)}{428750(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-222112 - 108167*x - 186392*x^2 - 76992*x^3 - 11712*x^4))
/(428750*(3 + 2*x)^5) + (2034*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sq
rt[2 + 3*x^2])/Sqrt[35]])/(214375*Sqrt[35])
```

fricas [A] time = 0.42, size = 134, normalized size = 1.06

$$\frac{1017\sqrt{35}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(11712x^4+76992x^3+186392x^2+108167x+222112\right)\sqrt{3x^2+2}}{15006250\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/15006250*(1017*sqrt(35)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
243)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2
+ 12*x + 9)) - 35*(11712*x^4 + 76992*x^3 + 186392*x^2 + 108167*x + 222112)*
sqrt(3*x^2 + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.26, size = 322, normalized size = 2.56

$$\frac{1017}{7503125}\,\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3\sqrt{3}\left(904\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^9+36612\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^8+254217\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^7-142464\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^6-338184\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5-4315808\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+1676892\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-1737184\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+219776\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-31232\right)}{1715000\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] 1017/7503125*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/
1715000*sqrt(3)*(904*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 36612*(sqrt(
3)*x - sqrt(3*x^2 + 2))^8 + 254217*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^7
- 142464*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 338184*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 2))^5 - 4315808*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 1676892*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 1737184*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 +
 219776*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 31232)/((sqrt(3)*x - sqrt(3
*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^5
```

maple [A] time = 0.07, size = 170, normalized size = 1.35

$$\frac{9153\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{15006250}-\frac{1017\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{7503125}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{5600\left(x+\frac{3}{2}\right)^5}-\frac{23\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{14000\left(x+\frac{3}{2}\right)^4}-\frac{43\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{49000\left(x+\frac{3}{2}\right)^3}-\frac{339\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{857500\left(x+\frac{3}{2}\right)^2}-\frac{3051\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{15006250\left(x+\frac{3}{2}\right)}+\frac{1017\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{7503125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^6,x)
```

```
[Out] -13/5600/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-23/14000/(x+3/2)^4*(-9*x+3
*(x+3/2)^2-19/4)^(3/2)-43/49000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-339
/857500/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-3051/15006250/(x+3/2)*(-9*x
+3*(x+3/2)^2-19/4)^(3/2)+1017/7503125*(-36*x+12*(x+3/2)^2-19)^(1/2)-1017/75
03125*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2)
)+9153/15006250*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
```

maxima [A] time = 1.23, size = 186, normalized size = 1.48

$$\frac{1017}{7503125}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)+\frac{1017}{857500}\,\sqrt{3x^2+2}-\frac{13\left(3x^2+2\right)^{\frac{3}{2}}}{175\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{23\left(3x^2+2\right)^{\frac{3}{2}}}{875\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{43\left(3x^2+2\right)^{\frac{3}{2}}}{6125\left(8x^3+36x^2+54x+27\right)}-\frac{339\left(3x^2+2\right)^{\frac{3}{2}}}{214375\left(4x^2+12x+9\right)}-\frac{3051\sqrt{3x^2+2}}{857500\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 1017/7503125*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(
2*x + 3)) + 1017/857500*sqrt(3*x^2 + 2) - 13/175*(3*x^2 + 2)^(3/2)/(32*x^5
+ 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 23/875*(3*x^2 + 2)^(3/2)/(1
6*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 43/6125*(3*x^2 + 2)^(3/2)/(8*x^3 +
 36*x^2 + 54*x + 27) - 339/214375*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 30
51/857500*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.80, size = 178, normalized size = 1.41

$$\frac{1017\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{7503125}-\frac{1017\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{7503125}+\frac{73\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{11200\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{13\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{640\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)}-\frac{183\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{214375\left(x+\frac{3}{2}\right)}-\frac{3\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{6125\left(x^2+3x+\frac{9}{4}\right)}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{7000\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^6,x)
```

```
[Out] (1017*35^(1/2)*log(x + 3/2))/7503125 - (1017*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/7503125 + (73*3^(1/2)*(x^2 + 2/3)^(1/2))/
(11200*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (13*3^(1/2)*(x^2 +
2/3)^(1/2))/(640*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5
+ 243/32)) - (183*3^(1/2)*(x^2 + 2/3)^(1/2))/(214375*(x + 3/2)) - (3*3^(1/2
)*(x^2 + 2/3)^(1/2))/(6125*(3*x + x^2 + 9/4)) + (3^(1/2)*(x^2 + 2/3)^(1/2))
/(7000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**6,x)
```

```
[Out] Timed out
```

3.1193 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=148

$$-\frac{1207\left(3x^2+2\right)^{3/2}}{857500(2x+3)^3}-\frac{111\left(3x^2+2\right)^{3/2}}{17500(2x+3)^4}-\frac{281\left(3x^2+2\right)^{3/2}}{12250(2x+3)^5}-\frac{13\left(3x^2+2\right)^{3/2}}{210(2x+3)^6}-\frac{1017(4-9x)\sqrt{3x^2+2}}{7503125(2x+3)^2}-\frac{6102\tanh^{-1}\left(\cdots\right.}{7503125\cdots}$$

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {835, 807, 721, 725, 206}

$$-\frac{1207\left(3x^2+2\right)^{3/2}}{857500(2x+3)^3}-\frac{111\left(3x^2+2\right)^{3/2}}{17500(2x+3)^4}-\frac{281\left(3x^2+2\right)^{3/2}}{12250(2x+3)^5}-\frac{13\left(3x^2+2\right)^{3/2}}{210(2x+3)^6}-\frac{1017(4-9x)\sqrt{3x^2+2}}{7503125(2x+3)^2}-\frac{6102\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{7503125\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] (-1017*(4 - 9*x)*Sqrt[2 + 3*x^2])/(7503125*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(
3/2))/(210*(3 + 2*x)^6) - (281*(2 + 3*x^2)^(3/2))/(12250*(3 + 2*x)^5) - (11
1*(2 + 3*x^2)^(3/2))/(17500*(3 + 2*x)^4) - (1207*(2 + 3*x^2)^(3/2))/(857500
*(3 + 2*x)^3) - (6102*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(75031
25*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
```

```
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^7}\,dx = -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{1}{210}\int \frac{(-246+117x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} + \frac{\int \frac{(8730-5058x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx}{36750}$$

$$= -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} - \frac{\int \frac{(-233352+97902x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx}{5145000}$$

$$= -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} - \frac{1207\left(2+3x^2\right)^{3/2}}{857500(3+2x)^3} + \frac{2034}{}$$

$$= -\frac{1017(4-9x)\sqrt{2+3x^2}}{7503125(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} -$$

$$= -\frac{1017(4-9x)\sqrt{2+3x^2}}{7503125(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} -$$

$$= -\frac{1017(4-9x)\sqrt{2+3x^2}}{7503125(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} -$$

Mathematica [A] time = 0.09, size = 80, normalized size = 0.54

$$\frac{-36612\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\sqrt{3x^2+2}\left(642132x^5+5388660x^4+18236055x^3+30753930x^2+18651300x+22308548\right)}{(2x+3)^6}}{1575656250}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(22308548 + 18651300*x + 30753930*x^2 + 18236055*x^3
+ 5388660*x^4 + 642132*x^5))/(3 + 2*x)^6 - 36612*Sqrt[35]*ArcTanh[(4 - 9*x)
/(Sqrt[35]*Sqrt[2 + 3*x^2])])/1575656250
```

IntegrateAlgebraic [A] time = 1.61, size = 96, normalized size = 0.65

$$\frac{12204\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)}{7503125\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-642132x^5 - 5388660x^4 - 18236055x^3 - 30753930x^2 - 18651300x - 22308548\right)}{45018750(2x+3)^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-22308548 - 18651300*x - 30753930*x^2 - 18236055*x^3 - 53
88660*x^4 - 642132*x^5))/(45018750*(3 + 2*x)^6) + (12204*ArcTanh[3*Sqrt[3/3
5] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(7503125*Sqrt[35])
```

fricas [A] time = 0.42, size = 149, normalized size = 1.01

$$\frac{18306\sqrt{35}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 35\left(642132x^5+5388660x^4+18236055x^3+30753930x^2+18651300x+22308548\right)\sqrt{3x^2+2}}{1575656250\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/1575656250*(18306*sqrt(35)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860
*x^2 + 2916*x + 729)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36
*x + 43)/(4*x^2 + 12*x + 9)) - 35*(642132*x^5 + 5388660*x^4 + 18236055*x^3
+ 30753930*x^2 + 18651300*x + 22308548)*sqrt(3*x^2 + 2))/(64*x^6 + 576*x^5
+ 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.27, size = 367, normalized size = 2.48

$$\frac{6102}{262609375}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3\sqrt{3}\left(21696\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{11}+1073952\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{10}+6978880\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{9}+87678735\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{8}-66333990\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{7}-258582989\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{6}-426764436\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{5}+755892540\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{4}-355133440\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{3}+207134880\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{2}-19853952\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)+2283136\right)}{240100000\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{2}+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 6102/262609375*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sq
rt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) -
3/240100000*sqrt(3)*(21696*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 10739
52*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 + 6978880*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 2))^9 + 87678735*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 66333990*sqrt(3)*(s
qrt(3)*x - sqrt(3*x^2 + 2))^7 - 258582989*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 -
 426764436*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 755892540*(sqrt(3)*x -
 sqrt(3*x^2 + 2))^4 - 355133440*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 2
07134880*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 19853952*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 2)) + 2283136)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 2)) - 2)^6
```

maple [A] time = 0.07, size = 191, normalized size = 1.29

$$\frac{27459\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{262609375}-\frac{6102\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{262609375}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{13440\left(x+\frac{3}{2}\right)^{6}}-\frac{281\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{392000\left(x+\frac{3}{2}\right)^{5}}-\frac{111\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{280000\left(x+\frac{3}{2}\right)^{4}}-\frac{1207\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{6860000\left(x+\frac{3}{2}\right)^{3}}-\frac{1017\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{15006250\left(x+\frac{3}{2}\right)^{2}}-\frac{9153\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{262609375\left(x+\frac{3}{2}\right)}+\frac{6102\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}{262609375}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^7,x)
```

```
[Out] -13/13440/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-281/392000/(x+3/2)^5*(-9*
x+3*(x+3/2)^2-19/4)^(3/2)-111/280000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(3/2
)-1207/6860000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-1017/15006250/(x+3/2
)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-9153/262609375/(x+3/2)*(-9*x+3*(x+3/2)^2-
19/4)^(3/2)+6102/262609375*(-36*x+12*(x+3/2)^2-19)^(1/2)-6102/262609375*35^
(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+27459/2
62609375*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
```

maxima [A] time = 1.23, size = 229, normalized size = 1.55

$$\frac{6102}{262609375}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{3051}{15006250}\sqrt{3x^2+2}-\frac{13\left(3x^2+2\right)^{\frac{3}{2}}}{210\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{281\left(3x^2+2\right)^{\frac{3}{2}}}{12250\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{111\left(3x^2+2\right)^{\frac{3}{2}}}{17500\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{1207\left(3x^2+2\right)^{\frac{3}{2}}}{857500\left(8x^3+36x^2+54x+27\right)}-\frac{2034\left(3x^2+2\right)^{\frac{3}{2}}}{7503125\left(4x^2+12x+9\right)}-\frac{9153\sqrt{3x^2+2}}{15006250\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 6102/262609375*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/ab
s(2*x + 3)) + 3051/15006250*sqrt(3*x^2 + 2) - 13/210*(3*x^2 + 2)^(3/2)/(64*
x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 281/12250*
(3*x^2 + 2)^(3/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 1
11/17500*(3*x^2 + 2)^(3/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 1207/
857500*(3*x^2 + 2)^(3/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 2034/7503125*(3*x^2
 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 9153/15006250*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B]   time = 0.13, size = 223, normalized size = 1.51

$$\frac{6102\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{262609375}-\frac{6102\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{262609375}+\frac{127\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1568000\,\left(x^4+6\,x^3+\frac{27\,x^2}{2}+\frac{27\,x}{2}+\frac{81}{16}\right)}+\frac{109\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{44800\,\left(x^5+\frac{15\,x^4}{2}+\frac{45\,x^3}{2}+\frac{135\,x^2}{4}+\frac{405\,x}{16}+\frac{243}{32}\right)}-\frac{53511\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{240100000\,\left(x+\frac{3}{2}\right)}-\frac{13\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1536\,\left(x^6+9\,x^5+\frac{135\,x^4}{4}+\frac{135\,x^3}{2}+\frac{1215\,x^2}{16}+\frac{729\,x}{16}+\frac{729}{64}\right)}-\frac{2727\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{13720000\,\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{479\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{3920000\,\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^7,x)
```

```
[Out] (6102*35^(1/2)*log(x + 3/2))/262609375 - (6102*35^(1/2)*log(x - (3^(1/2)*35
^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/262609375 + (127*3^(1/2)*(x^2 + 2/3)^(1
/2))/(1568000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (109*3^(1/2)
*(x^2 + 2/3)^(1/2))/(44800*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4
)/2 + x^5 + 243/32)) - (53511*3^(1/2)*(x^2 + 2/3)^(1/2))/(240100000*(x + 3/
2)) - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(1536*((729*x)/16 + (1215*x^2)/16 + (1
35*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) - (2727*3^(1/2)*(x^2 + 2/3
)^(1/2))/(13720000*(3*x + x^2 + 9/4)) - (479*3^(1/2)*(x^2 + 2/3)^(1/2))/(39
20000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**7,x)
```

```
[Out] Timed out
```

3.1194 $\int (5-x)(3+2x)^4 \left(2+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=138

$$-\frac{1}{27}\left(3x^2+2\right)^{5/2}(2x+3)^4+\frac{13}{36}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{4421\left(3x^2+2\right)^{5/2}(2x+3)^2}{2268}+\frac{(226755x+661583)\left(3x^2+2\right)^{5}}{17010}$$

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{27}\left(3x^2+2\right)^{5/2}(2x+3)^4+\frac{13}{36}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{4421\left(3x^2+2\right)^{5/2}(2x+3)^2}{2268}+\frac{(226755x+661583)\left(3x^2+2\right)^{5/2}}{17010}+\frac{2777}{36}x\left(3x^2+2\right)^{3/2}+\frac{2777}{12}x\sqrt{3x^2+2}+\frac{2777\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2777*x*Sqrt[2 + 3*x^2])/12 + (2777*x*(2 + 3*x^2)^(3/2))/36 + (4421*(3 + 2*
x)^2*(2 + 3*x^2)^(5/2))/2268 + (13*(3 + 2*x)^3*(2 + 3*x^2)^(5/2))/36 - ((3
+ 2*x)^4*(2 + 3*x^2)^(5/2))/27 + ((661583 + 226755*x)*(2 + 3*x^2)^(5/2))/17
010 + (2777*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4 \left(2+3x^2\right)^{3/2} dx = -\frac{1}{27}(3+2x)^4 \left(2+3x^2\right)^{5/2} + \frac{1}{27}\int (3+2x)^3(421+234x)\left(2+3x^2\right)^{3/2} dx$$
$$= \frac{13}{36}(3+2x)^3\left(2+3x^2\right)^{5/2} - \frac{1}{27}(3+2x)^4\left(2+3x^2\right)^{5/2} + \frac{1}{648}\int (3+2x)^2(2$$
$$= \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268} + \frac{13}{36}(3+2x)^3\left(2+3x^2\right)^{5/2} - \frac{1}{27}(3+2x)^4\left(2\right.$$
$$= \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268} + \frac{13}{36}(3+2x)^3\left(2+3x^2\right)^{5/2} - \frac{1}{27}(3+2x)^4\left(2\right.$$
$$= \frac{2777}{36}x\left(2+3x^2\right)^{3/2} + \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268} + \frac{13}{36}(3+2x)^3\left(2+3x^2\right.$$
$$= \frac{2777}{12}x\sqrt{2+3x^2} + \frac{2777}{36}x\left(2+3x^2\right)^{3/2} + \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268} + \frac{13}{36}$$
$$= \frac{2777}{12}x\sqrt{2+3x^2} + \frac{2777}{36}x\left(2+3x^2\right)^{3/2} + \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268} + \frac{13}{36}$$

Mathematica [A] time = 0.08, size = 75, normalized size = 0.54

$$\frac{\sqrt{3x^2+2}\left(-181440x^8-204120x^7+3676320x^6+14492520x^5+24490404x^4+27468315x^3+27537072x^2+19683405x+8598544\right)}{34020}+\frac{2777\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(8598544 + 19683405*x + 27537072*x^2 + 27468315*x^3 + 2449
0404*x^4 + 14492520*x^5 + 3676320*x^6 - 204120*x^7 - 181440*x^8))/34020 + (
2777*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

IntegrateAlgebraic [A] time = 0.42, size = 86, normalized size = 0.62

$$\frac{\sqrt{3x^2+2}\left(-181440x^8-204120x^7+3676320x^6+14492520x^5+24490404x^4+27468315x^3+27537072x^2+19683405x+8598544\right)}{34020}-\frac{2777\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(8598544 + 19683405*x + 27537072*x^2 + 27468315*x^3 + 2449
0404*x^4 + 14492520*x^5 + 3676320*x^6 - 204120*x^7 - 181440*x^8))/34020 - (
2777*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(6*Sqrt[3])
```

fricas [A] time = 0.43, size = 80, normalized size = 0.58

$$-\frac{1}{34020}\left(181440x^8+204120x^7-3676320x^6-14492520x^5-24490404x^4-27468315x^3-27537072x^2-19683405x-8598544\right)\sqrt{3x^2+2}+\frac{2777}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/34020*(181440*x^8 + 204120*x^7 - 3676320*x^6 - 14492520*x^5 - 24490404*x
^4 - 27468315*x^3 - 27537072*x^2 - 19683405*x - 8598544)*sqrt(3*x^2 + 2) +
2777/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 72, normalized size = 0.52

$$-\frac{1}{34020}(3((9(4(10((21(8x+9)x-3404)x-13419)x-226763)x-1017345)x-9179024)x-6561135)x-8598544)\sqrt{3x^2+2}-\frac{2777}{18}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/34020*(3*((9*(4*(10*((21*(8*x + 9)*x - 3404)*x - 13419)*x - 226763)*x -
1017345)*x - 9179024)*x - 6561135)*x - 8598544)*sqrt(3*x^2 + 2) - 2777/18*s
qrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 103, normalized size = 0.75

$$-\frac{16\left(3x^2+2\right)^{\frac{5}{2}}x^4}{27}-\frac{2\left(3x^2+2\right)^{\frac{5}{2}}x^3}{3}+\frac{7256\left(3x^2+2\right)^{\frac{5}{2}}x^2}{567}+\frac{434\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{2777\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{2777\sqrt{3x^2+2}\,x}{12}+\frac{2777\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{537409\left(3x^2+2\right)^{\frac{5}{2}}}{8505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+2)^(3/2),x)
```

```
[Out] -16/27*x^4*(3*x^2+2)^(5/2)+7256/567*x^2*(3*x^2+2)^(5/2)+537409/8505*(3*x^2+
2)^(5/2)-2/3*x^3*(3*x^2+2)^(5/2)+434/9*x*(3*x^2+2)^(5/2)+2777/36*(3*x^2+2)^
(3/2)*x+2777/12*(3*x^2+2)^(1/2)*x+2777/18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.28, size = 102, normalized size = 0.74

$$-\frac{16}{27}\left(3x^2+2\right)^{\frac{5}{2}}x^4-\frac{2}{3}\left(3x^2+2\right)^{\frac{5}{2}}x^3+\frac{7256}{567}\left(3x^2+2\right)^{\frac{5}{2}}x^2+\frac{434}{9}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{537409}{8505}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{2777}{36}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{2777}{12}\sqrt{3x^2+2}\,x+\frac{2777}{18}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/27*(3*x^2 + 2)^(5/2)*x^4 - 2/3*(3*x^2 + 2)^(5/2)*x^3 + 7256/567*(3*x^2
+ 2)^(5/2)*x^2 + 434/9*(3*x^2 + 2)^(5/2)*x + 537409/8505*(3*x^2 + 2)^(5/2)
+ 2777/36*(3*x^2 + 2)^(3/2)*x + 2777/12*sqrt(3*x^2 + 2)*x + 2777/18*sqrt(3)
*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 2.10, size = 65, normalized size = 0.47

$$\frac{2777\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-16\,x^8-18\,x^7+\frac{6808\,x^6}{21}+1278\,x^5+\frac{226763\,x^4}{105}+\frac{9689\,x^3}{4}+\frac{2294756\,x^2}{945}+\frac{6943\,x}{4}+\frac{2149636}{2835}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (2777*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((6943*
x)/4 + (2294756*x^2)/945 + (9689*x^3)/4 + (226763*x^4)/105 + 1278*x^5 + (68
08*x^6)/21 - 18*x^7 - 16*x^8 + 2149636/2835))/3
```

sympy [A] time = 22.52, size = 162, normalized size = 1.17

$$-\frac{16x^8\sqrt{3x^2+2}}{3}-6x^7\sqrt{3x^2+2}+\frac{6808x^6\sqrt{3x^2+2}}{63}+426x^5\sqrt{3x^2+2}+\frac{226763x^4\sqrt{3x^2+2}}{315}+\frac{9689x^3\sqrt{3x^2+2}}{12}+\frac{2294756x^2\sqrt{3x^2+2}}{2835}+\frac{6943x\sqrt{3x^2+2}}{12}+\frac{2149636\sqrt{3x^2+2}}{8505}+\frac{2777\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+2)**(3/2),x)
```

```
[Out] -16*x**8*sqrt(3*x**2 + 2)/3 - 6*x**7*sqrt(3*x**2 + 2) + 6808*x**6*sqrt(3*x*
*2 + 2)/63 + 426*x**5*sqrt(3*x**2 + 2) + 226763*x**4*sqrt(3*x**2 + 2)/315 +
 9689*x**3*sqrt(3*x**2 + 2)/12 + 2294756*x**2*sqrt(3*x**2 + 2)/2835 + 6943*
x*sqrt(3*x**2 + 2)/12 + 2149636*sqrt(3*x**2 + 2)/8505 + 2777*sqrt(3)*asinh(
sqrt(6)*x/2)/18
```

3.1195 $\int (5-x)(3+2x)^3 \left(2+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=116

$$-\frac{1}{24}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{71}{168}\left(3x^2+2\right)^{5/2}(2x+3)^2+\frac{(5405x+16973)\left(3x^2+2\right)^{5/2}}{1260}+\frac{1087}{36}x\left(3x^2+2\right)^{3/2}+\frac{108}{12}$$

Rubi [A] time = 0.05, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{24}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{71}{168}\left(3x^2+2\right)^{5/2}(2x+3)^2+\frac{(5405x+16973)\left(3x^2+2\right)^{5/2}}{1260}+\frac{1087}{36}x\left(3x^2+2\right)^{3/2}+\frac{1087}{12}x\sqrt{3x^2+2}+\frac{1087\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (1087*x*Sqrt[2 + 3*x^2])/12 + (1087*x*(2 + 3*x^2)^(3/2))/36 + (71*(3 + 2*x)
^2*(2 + 3*x^2)^(5/2))/168 - ((3 + 2*x)^3*(2 + 3*x^2)^(5/2))/24 + ((16973 +
5405*x)*(2 + 3*x^2)^(5/2))/1260 + (1087*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\left(2+3x^2\right)^{3/2}dx = -\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}+\frac{1}{24}\int (3+2x)^2(372+213x)\left(2+3x^2\right)^{3/2}dx$$

$$= \frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}+\frac{1}{504}\int (3+2x)(217$$

$$= \frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}+\frac{(16973+5405x)\left(2\right.}{1260}$$

$$= \frac{1087}{36}x\left(2+3x^2\right)^{3/2}+\frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}$$

$$= \frac{1087}{12}x\sqrt{2+3x^2}+\frac{1087}{36}x\left(2+3x^2\right)^{3/2}+\frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3$$

$$= \frac{1087}{12}x\sqrt{2+3x^2}+\frac{1087}{36}x\left(2+3x^2\right)^{3/2}+\frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3$$

Mathematica [A] time = 0.06, size = 70, normalized size = 0.60

$$\frac{76090\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(3780x^7-2160x^6-75600x^5-186012x^4-219975x^3-245136x^2-226065x-81392\right)}{1260}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-81392 - 226065*x - 245136*x^2 - 219975*x^3 - 186012*x^
4 - 75600*x^5 - 2160*x^6 + 3780*x^7)) + 76090*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])
/1260
```

IntegrateAlgebraic [A] time = 0.39, size = 81, normalized size = 0.70

$$\frac{\sqrt{3x^2+2}\left(-3780x^7+2160x^6+75600x^5+186012x^4+219975x^3+245136x^2+226065x+81392\right)}{1260}-\frac{1087\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(81392 + 226065*x + 245136*x^2 + 219975*x^3 + 186012*x^4 +
 75600*x^5 + 2160*x^6 - 3780*x^7))/1260 - (1087*Log[-(Sqrt[3]*x) + Sqrt[2 +
 3*x^2]])/(6*Sqrt[3])
```

fricas [A] time = 0.42, size = 75, normalized size = 0.65

$$-\frac{1}{1260}\left(3780x^7-2160x^6-75600x^5-186012x^4-219975x^3-245136x^2-226065x-81392\right)\sqrt{3x^2+2}+\frac{1087}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/1260*(3780*x^7 - 2160*x^6 - 75600*x^5 - 186012*x^4 - 219975*x^3 - 245136
*x^2 - 226065*x - 81392)*sqrt(3*x^2 + 2) + 1087/36*sqrt(3)*log(-sqrt(3)*sqr
t(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.18, size = 66, normalized size = 0.57

$$-\frac{1}{1260}(3(((12(15((7x-4)x-140)x-5167)x-73325)x-81712)x-75355)x-81392)\sqrt{3x^2+2}-\frac{1087}{18}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/1260*(3*(((12*(15*((7*x - 4)*x - 140)*x - 5167)*x - 73325)*x - 81712)*x
- 75355)*x - 81392)*sqrt(3*x^2 + 2) - 1087/18*sqrt(3)*log(-sqrt(3)*x + sqrt
(3*x^2 + 2))
```

maple [A] time = 0.06, size = 89, normalized size = 0.77

$$-\frac{\left(3x^{2}+2\right)^{\frac{5}{2}} x^{3}}{3}+\frac{4\left(3x^{2}+2\right)^{\frac{5}{2}} x^{2}}{21}+\frac{64\left(3x^{2}+2\right)^{\frac{5}{2}} x}{9}+\frac{1087\left(3x^{2}+2\right)^{\frac{3}{2}} x}{36}+\frac{1087\sqrt{3x^{2}+2}\, x}{12}+\frac{1087\sqrt{3}\, \operatorname{arcsinh}\left(\frac{\sqrt{6}\, x}{2}\right)}{18}+\frac{5087\left(3x^{2}+2\right)^{\frac{5}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+2)^(3/2),x)
```

```
[Out] -1/3*(3*x^2+2)^(5/2)*x^3+64/9*(3*x^2+2)^(5/2)*x+1087/36*(3*x^2+2)^(3/2)*x+1
087/12*(3*x^2+2)^(1/2)*x+1087/18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+4/21*(3*x^2
+2)^(5/2)*x^2+5087/315*(3*x^2+2)^(5/2)
```

maxima [A] time = 1.36, size = 88, normalized size = 0.76

$$-\frac{1}{3}\left(3 x^{2}+2\right)^{\frac{5}{2}} x^{3}+\frac{4}{21}\left(3 x^{2}+2\right)^{\frac{5}{2}} x^{2}+\frac{64}{9}\left(3 x^{2}+2\right)^{\frac{5}{2}} x+\frac{5087}{315}\left(3 x^{2}+2\right)^{\frac{5}{2}}+\frac{1087}{36}\left(3 x^{2}+2\right)^{\frac{3}{2}} x+\frac{1087}{12} \sqrt{3 x^{2}+2}\, x+\frac{1087}{18} \sqrt{3} \operatorname{arsinh}\left(\frac{1}{2} \sqrt{6}\, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/3*(3*x^2 + 2)^(5/2)*x^3 + 4/21*(3*x^2 + 2)^(5/2)*x^2 + 64/9*(3*x^2 + 2)^
(5/2)*x + 5087/315*(3*x^2 + 2)^(5/2) + 1087/36*(3*x^2 + 2)^(3/2)*x + 1087/1
2*sqrt(3*x^2 + 2)*x + 1087/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.05, size = 60, normalized size = 0.52

$$\frac{1087\sqrt{3}\, \operatorname{asinh}\left(\frac{\sqrt{6}\, x}{2}\right)}{18}+\frac{\sqrt{3}\, \sqrt{x^{2}+\frac{2}{3}}\, \left(-9\, x^{7}+\frac{36\, x^{6}}{7}+180\, x^{5}+\frac{15501\, x^{4}}{35}+\frac{2095\, x^{3}}{4}+\frac{20428\, x^{2}}{35}+\frac{2153\, x}{4}+\frac{20348}{105}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (1087*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((2153*
x)/4 + (20428*x^2)/35 + (2095*x^3)/4 + (15501*x^4)/35 + 180*x^5 + (36*x^6)/
7 - 9*x^7 + 20348/105))/3
```

sympy [A] time = 14.07, size = 144, normalized size = 1.24

$$-3x^{7}\sqrt{3x^{2}+2}+\frac{12x^{6}\sqrt{3x^{2}+2}}{7}+60x^{5}\sqrt{3x^{2}+2}+\frac{5167x^{4}\sqrt{3x^{2}+2}}{35}+\frac{2095x^{3}\sqrt{3x^{2}+2}}{12}+\frac{20428x^{2}\sqrt{3x^{2}+2}}{105}+\frac{2153x\sqrt{3x^{2}+2}}{12}+\frac{20348\sqrt{3x^{2}+2}}{315}+\frac{1087\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+2)**(3/2),x)
```

```
[Out] -3*x**7*sqrt(3*x**2 + 2) + 12*x**6*sqrt(3*x**2 + 2)/7 + 60*x**5*sqrt(3*x**2
 + 2) + 5167*x**4*sqrt(3*x**2 + 2)/35 + 2095*x**3*sqrt(3*x**2 + 2)/12 + 204
28*x**2*sqrt(3*x**2 + 2)/105 + 2153*x*sqrt(3*x**2 + 2)/12 + 20348*sqrt(3*x*
*2 + 2)/315 + 1087*sqrt(3)*asinh(sqrt(6)*x/2)/18
```

3.1196 $\int (5-x)(3+2x)^2 \left(2+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=94

$$-\frac{1}{21}(2x+3)^2\left(3x^2+2\right)^{5/2}+\frac{2}{315}(160x+611)\left(3x^2+2\right)^{5/2}+\frac{397}{36}x\left(3x^2+2\right)^{3/2}+\frac{397}{12}x\sqrt{3x^2+2}+\frac{397\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{21}(2x+3)^2\left(3x^2+2\right)^{5/2}+\frac{2}{315}(160x+611)\left(3x^2+2\right)^{5/2}+\frac{397}{36}x\left(3x^2+2\right)^{3/2}+\frac{397}{12}x\sqrt{3x^2+2}+\frac{397\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (397*x*Sqrt[2 + 3*x^2])/12 + (397*x*(2 + 3*x^2)^(3/2))/36 - ((3 + 2*x)^2*(2
 + 3*x^2)^(5/2))/21 + (2*(611 + 160*x)*(2 + 3*x^2)^(5/2))/315 + (397*ArcSin
h[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2 \left(2+3x^2\right)^{3/2} dx = -\frac{1}{21}(3+2x)^2 \left(2+3x^2\right)^{5/2} + \frac{1}{21}\int (3+2x)(323+192x)\left(2+3x^2\right)^{3/2} dx$$
$$= -\frac{1}{21}(3+2x)^2 \left(2+3x^2\right)^{5/2} + \frac{2}{315}(611+160x)\left(2+3x^2\right)^{5/2} + \frac{397}{9}\int (2+$$
$$= \frac{397}{36}x\left(2+3x^2\right)^{3/2} - \frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2} + \frac{2}{315}(611+160x)\left(2+3x\right.$$
$$= \frac{397}{12}x\sqrt{2+3x^2} + \frac{397}{36}x\left(2+3x^2\right)^{3/2} - \frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2} + \frac{2}{315}(61$$
$$= \frac{397}{12}x\sqrt{2+3x^2} + \frac{397}{36}x\left(2+3x^2\right)^{3/2} - \frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2} + \frac{2}{315}(61$$

Mathematica [A] time = 0.05, size = 65, normalized size = 0.69

$$\frac{27790\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \sqrt{3x^2+2}\left(2160x^6-5040x^5-36252x^4-48405x^3-51216x^2-71715x-17392\right)}{1260}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-17392 - 71715*x - 51216*x^2 - 48405*x^3 - 36252*x^4 -
5040*x^5 + 2160*x^6)) + 27790*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/1260
```

IntegrateAlgebraic [A] time = 0.31, size = 76, normalized size = 0.81

$$\frac{\sqrt{3x^2+2}\left(-2160x^6+5040x^5+36252x^4+48405x^3+51216x^2+71715x+17392\right)}{1260} - \frac{397\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(17392 + 71715*x + 51216*x^2 + 48405*x^3 + 36252*x^4 + 504
0*x^5 - 2160*x^6))/1260 - (397*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(6*Sqrt
[3])
```

fricas [A] time = 0.42, size = 70, normalized size = 0.74

$$-\frac{1}{1260}\left(2160x^6-5040x^5-36252x^4-48405x^3-51216x^2-71715x-17392\right)\sqrt{3x^2+2} + \frac{397}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/1260*(2160*x^6 - 5040*x^5 - 36252*x^4 - 48405*x^3 - 51216*x^2 - 71715*x
- 17392)*sqrt(3*x^2 + 2) + 397/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x -
3*x^2 - 1)
```

giac [A] time = 0.17, size = 62, normalized size = 0.66

$$-\frac{1}{1260}\left(3\left(\left(\left(12\left(20\left(3x-7\right)x-1007\right)x-16135\right)x-17072\right)x-23905\right)x-17392\right)\sqrt{3x^2+2} - \frac{397}{18}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/1260*(3*(((12*(20*(3*x - 7)*x - 1007)*x - 16135)*x - 17072)*x - 23905)*x
 - 17392)*sqrt(3*x^2 + 2) - 397/18*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)
)
```

maple [A] time = 0.06, size = 75, normalized size = 0.80

$$-\frac{4\left(3x^2+2\right)^{\frac{5}{2}}x^2}{21}+\frac{4\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{397\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{397\sqrt{3x^2+2}\,x}{12}+\frac{397\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{1087\left(3x^2+2\right)^{\frac{5}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+2)^(3/2),x)
```

```
[Out] -4/21*(3*x^2+2)^(5/2)*x^2+1087/315*(3*x^2+2)^(5/2)+4/9*(3*x^2+2)^(5/2)*x+39
7/36*(3*x^2+2)^(3/2)*x+397/12*(3*x^2+2)^(1/2)*x+397/18*arcsinh(1/2*6^(1/2)*
x)*3^(1/2)
```

maxima [A] time = 1.33, size = 74, normalized size = 0.79

$$-\frac{4}{21}\left(3x^2+2\right)^{\frac{5}{2}}x^2+\frac{4}{9}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{1087}{315}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{397}{36}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{397}{12}\sqrt{3x^2+2}\,x+\frac{397}{18}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/21*(3*x^2 + 2)^(5/2)*x^2 + 4/9*(3*x^2 + 2)^(5/2)*x + 1087/315*(3*x^2 + 2
)^(5/2) + 397/36*(3*x^2 + 2)^(3/2)*x + 397/12*sqrt(3*x^2 + 2)*x + 397/18*sq
rt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.04, size = 55, normalized size = 0.59

$$\frac{397\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{36\,x^6}{7}+12\,x^5+\frac{3021\,x^4}{35}+\frac{461\,x^3}{4}+\frac{4268\,x^2}{35}+\frac{683\,x}{4}+\frac{4348}{105}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (397*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((683*x)
/4 + (4268*x^2)/35 + (461*x^3)/4 + (3021*x^4)/35 + 12*x^5 - (36*x^6)/7 + 43
48/105))/3
```

sympy [A] time = 8.16, size = 129, normalized size = 1.37

$$-\frac{12x^6\sqrt{3x^2+2}}{7}+4x^5\sqrt{3x^2+2}+\frac{1007x^4\sqrt{3x^2+2}}{35}+\frac{461x^3\sqrt{3x^2+2}}{12}+\frac{4268x^2\sqrt{3x^2+2}}{105}+\frac{683x\sqrt{3x^2+2}}{12}+\frac{4348\sqrt{3x^2+2}}{315}+\frac{397\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+2)**(3/2),x)
```

```
[Out] -12*x**6*sqrt(3*x**2 + 2)/7 + 4*x**5*sqrt(3*x**2 + 2) + 1007*x**4*sqrt(3*x*
*2 + 2)/35 + 461*x**3*sqrt(3*x**2 + 2)/12 + 4268*x**2*sqrt(3*x**2 + 2)/105
+ 683*x*sqrt(3*x**2 + 2)/12 + 4348*sqrt(3*x**2 + 2)/315 + 397*sqrt(3)*asinh
(sqrt(6)*x/2)/18
```

3.1197 $\int (5-x)(3+2x)\left(2+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=72

$$\frac{1}{45}(21-5x)\left(3x^2+2\right)^{5/2}+\frac{137}{36}x\left(3x^2+2\right)^{3/2}+\frac{137}{12}x\sqrt{3x^2+2}+\frac{137\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {780, 195, 215}

$$\frac{1}{45}(21-5x)\left(3x^2+2\right)^{5/2}+\frac{137}{36}x\left(3x^2+2\right)^{3/2}+\frac{137}{12}x\sqrt{3x^2+2}+\frac{137\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (137*x*Sqrt[2 + 3*x^2])/12 + (137*x*(2 + 3*x^2)^(3/2))/36 + ((21 - 5*x)*(2
+ 3*x^2)^(5/2))/45 + (137*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)\left(2+3x^2\right)^{3/2}\,dx &= \frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137}{9}\int\left(2+3x^2\right)^{3/2}\,dx\\
&= \frac{137}{36}x\left(2+3x^2\right)^{3/2}+\frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137}{6}\int\sqrt{2+3x^2}\,dx\\
&= \frac{137}{12}x\sqrt{2+3x^2}+\frac{137}{36}x\left(2+3x^2\right)^{3/2}+\frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137}{6}\int\\
&= \frac{137}{12}x\sqrt{2+3x^2}+\frac{137}{36}x\left(2+3x^2\right)^{3/2}+\frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137\sinh}{6}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 60, normalized size = 0.83

$$\frac{1}{60}\sqrt{3x^2+2}\left(-60x^5+252x^4+605x^3+336x^2+1115x+112\right)+\frac{137\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(112 + 1115*x + 336*x^2 + 605*x^3 + 252*x^4 - 60*x^5))/60
+ (137*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

IntegrateAlgebraic [A] time = 0.26, size = 71, normalized size = 0.99

$$\frac{1}{60}\sqrt{3x^2+2}\left(-60x^5+252x^4+605x^3+336x^2+1115x+112\right)-\frac{137\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(112 + 1115*x + 336*x^2 + 605*x^3 + 252*x^4 - 60*x^5))/60
- (137*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(6*Sqrt[3])
```

fricas [A] time = 0.43, size = 65, normalized size = 0.90

$$-\frac{1}{60}\left(60x^5-252x^4-605x^3-336x^2-1115x-112\right)\sqrt{3x^2+2}+\frac{137}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/60*(60*x^5 - 252*x^4 - 605*x^3 - 336*x^2 - 1115*x - 112)*sqrt(3*x^2 + 2)
 + 137/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 56, normalized size = 0.78

$$-\frac{1}{60}\left((((12(5x-21)x-605)x-336)x-1115)x-112\right)\sqrt{3x^2+2}-\frac{137}{18}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/60*(((((12*(5*x - 21)*x - 605)*x - 336)*x - 1115)*x - 112)*sqrt(3*x^2 + 2
) - 137/18*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 61, normalized size = 0.85

$$-\frac{\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{137\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{137\sqrt{3x^2+2}\,x}{12}+\frac{137\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{7\left(3x^2+2\right)^{\frac{5}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+2)^(3/2),x)
```

```
[Out] -1/9*(3*x^2+2)^(5/2)*x+137/36*(3*x^2+2)^(3/2)*x+137/12*(3*x^2+2)^(1/2)*x+13
7/18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+7/15*(3*x^2+2)^(5/2)
```

maxima [A] time = 1.37, size = 60, normalized size = 0.83

$$-\frac{1}{9}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{7}{15}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{137}{36}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{137}{12}\sqrt{3x^2+2}\,x+\frac{137}{18}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 2)^(5/2)*x + 7/15*(3*x^2 + 2)^(5/2) + 137/36*(3*x^2 + 2)^(3/2
)*x + 137/12*sqrt(3*x^2 + 2)*x + 137/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.74, size = 50, normalized size = 0.69

$$\frac{137\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-3\,x^5+\frac{63\,x^4}{5}+\frac{121\,x^3}{4}+\frac{84\,x^2}{5}+\frac{223\,x}{4}+\frac{28}{5}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (137*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((223*x)
/4 + (84*x^2)/5 + (121*x^3)/4 + (63*x^4)/5 - 3*x^5 + 28/5))/3
```

sympy [A] time = 5.00, size = 110, normalized size = 1.53

$$-x^5\sqrt{3x^2+2}+\frac{21x^4\sqrt{3x^2+2}}{5}+\frac{121x^3\sqrt{3x^2+2}}{12}+\frac{28x^2\sqrt{3x^2+2}}{5}+\frac{223x\sqrt{3x^2+2}}{12}+\frac{28\sqrt{3x^2+2}}{15}+\frac{137\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+2)**(3/2),x)
```

```
[Out] -x**5*sqrt(3*x**2 + 2) + 21*x**4*sqrt(3*x**2 + 2)/5 + 121*x**3*sqrt(3*x**2
+ 2)/12 + 28*x**2*sqrt(3*x**2 + 2)/5 + 223*x*sqrt(3*x**2 + 2)/12 + 28*sqrt(
3*x**2 + 2)/15 + 137*sqrt(3)*asinh(sqrt(6)*x/2)/18
```

3.1198 $\int (5-x)\left(2+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=67

$$-\frac{1}{15}\left(3x^2+2\right)^{5/2}+\frac{5}{4}x\left(3x^2+2\right)^{3/2}+\frac{15}{4}x\sqrt{3x^2+2}+\frac{5}{2}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Rubi [A] time = 0.01, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 195, 215}

$$-\frac{1}{15}\left(3x^2+2\right)^{5/2}+\frac{5}{4}x\left(3x^2+2\right)^{3/2}+\frac{15}{4}x\sqrt{3x^2+2}+\frac{5}{2}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (15*x*Sqrt[2 + 3*x^2])/4 + (5*x*(2 + 3*x^2)^(3/2))/4 - (2 + 3*x^2)^(5/2)/15
 + (5*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/2
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int (5-x)\left(2+3x^2\right)^{3/2}\,dx &= -\frac{1}{15}\left(2+3x^2\right)^{5/2}+5\int \left(2+3x^2\right)^{3/2}\,dx\\
&= \frac{5}{4}x\left(2+3x^2\right)^{3/2}-\frac{1}{15}\left(2+3x^2\right)^{5/2}+\frac{15}{2}\int \sqrt{2+3x^2}\,dx\\
&= \frac{15}{4}x\sqrt{2+3x^2}+\frac{5}{4}x\left(2+3x^2\right)^{3/2}-\frac{1}{15}\left(2+3x^2\right)^{5/2}+\frac{15}{2}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\
&= \frac{15}{4}x\sqrt{2+3x^2}+\frac{5}{4}x\left(2+3x^2\right)^{3/2}-\frac{1}{15}\left(2+3x^2\right)^{5/2}+\frac{5}{2}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.82

$$\frac{5}{2}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\frac{1}{60}\sqrt{3x^2+2}\left(36x^4-225x^3+48x^2-375x+16\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/60*(Sqrt[2 + 3*x^2]*(16 - 375*x + 48*x^2 - 225*x^3 + 36*x^4)) + (5*Sqrt[
3]*ArcSinh[Sqrt[3/2]*x])/2
```

IntegrateAlgebraic [A] time = 0.19, size = 66, normalized size = 0.99

$$\frac{1}{60}\sqrt{3x^2+2}\left(-36x^4+225x^3-48x^2+375x-16\right)-\frac{5}{2}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-16 + 375*x - 48*x^2 + 225*x^3 - 36*x^4))/60 - (5*Sqrt[3]
*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/2
```

fricas [A] time = 0.41, size = 60, normalized size = 0.90

$$-\frac{1}{60}\left(36x^4-225x^3+48x^2-375x+16\right)\sqrt{3x^2+2}+\frac{5}{4}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/60*(36*x^4 - 225*x^3 + 48*x^2 - 375*x + 16)*sqrt(3*x^2 + 2) + 5/4*sqrt(3
)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 53, normalized size = 0.79

$$-\frac{1}{60}\left(3\left(\left(3\left(4x-25\right)x+16\right)x-125\right)x+16\right)\sqrt{3x^2+2}-\frac{5}{2}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/60*(3*((3*(4*x - 25)*x + 16)*x - 125)*x + 16)*sqrt(3*x^2 + 2) - 5/2*sqrt
(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.04, size = 49, normalized size = 0.73

$$\frac{5\left(3x^2+2\right)^{\frac{3}{2}}x}{4}+\frac{15\sqrt{3x^2+2}\,x}{4}+\frac{5\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{2}-\frac{\left(3x^2+2\right)^{\frac{5}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2),x)
```

```
[Out] 5/4*(3*x^2+2)^(3/2)*x-1/15*(3*x^2+2)^(5/2)+5/2*arcsinh(1/2*6^(1/2)*x)*3^(1/
2)+15/4*(3*x^2+2)^(1/2)*x
```

maxima [A] time = 1.33, size = 48, normalized size = 0.72

$$-\frac{1}{15}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{5}{4}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{15}{4}\sqrt{3x^2+2}\,x+\frac{5}{2}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*x^2 + 2)^(5/2) + 5/4*(3*x^2 + 2)^(3/2)*x + 15/4*sqrt(3*x^2 + 2)*x
+ 5/2*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.04, size = 45, normalized size = 0.67

$$\frac{5\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{2}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{9\,x^4}{5}-\frac{45\,x^3}{4}+\frac{12\,x^2}{5}-\frac{75\,x}{4}+\frac{4}{5}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (5*3^(1/2)*asinh((6^(1/2)*x)/2))/2 - (3^(1/2)*(x^2 + 2/3)^(1/2)*((12*x^2)/5
 - (75*x)/4 - (45*x^3)/4 + (9*x^4)/5 + 4/5))/3
```

sympy [A] time = 2.76, size = 97, normalized size = 1.45

$$-\frac{3x^4\sqrt{3x^2+2}}{5}+\frac{15x^3\sqrt{3x^2+2}}{4}-\frac{4x^2\sqrt{3x^2+2}}{5}+\frac{25x\sqrt{3x^2+2}}{4}-\frac{4\sqrt{3x^2+2}}{15}+\frac{5\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2),x)
```

```
[Out] -3*x**4*sqrt(3*x**2 + 2)/5 + 15*x**3*sqrt(3*x**2 + 2)/4 - 4*x**2*sqrt(3*x**
2 + 2)/5 + 25*x*sqrt(3*x**2 + 2)/4 - 4*sqrt(3*x**2 + 2)/15 + 5*sqrt(3)*asin
h(sqrt(6)*x/2)/2
```

3.1199 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx$

Optimal. Leaf size=92

$$\frac{1}{24}(26-3x)\left(3x^2+2\right)^{3/2}+\frac{1}{16}(455-123x)\sqrt{3x^2+2}-\frac{455}{32}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Rubi [A] time = 0.06, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {815, 844, 215, 725, 206}

$$\frac{1}{24}(26-3x)\left(3x^2+2\right)^{3/2}+\frac{1}{16}(455-123x)\sqrt{3x^2+2}-\frac{455}{32}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] ((455 - 123*x)*Sqrt[2 + 3*x^2])/16 + ((26 - 3*x)*(2 + 3*x^2)^(3/2))/24 - (1
529*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 - (455*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqr
t[35]*Sqrt[2 + 3*x^2])])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx = \frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2} + \frac{1}{48}\int \frac{(516-1476x)\sqrt{2+3x^2}}{3+2x}\,dx$$
$$= \frac{1}{16}(455-123x)\sqrt{2+3x^2} + \frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2} + \frac{\int \frac{77904-330264x}{(3+2x)\sqrt{2+3x^2}}\,dx}{1152}$$
$$= \frac{1}{16}(455-123x)\sqrt{2+3x^2} + \frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2} - \frac{4587}{32}\int \frac{1}{\sqrt{2+3x^2}}\,dx + \frac{159}{32}$$
$$= \frac{1}{16}(455-123x)\sqrt{2+3x^2} + \frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2} - \frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \frac{1}{}$$
$$= \frac{1}{16}(455-123x)\sqrt{2+3x^2} + \frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2} - \frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \frac{4}{3}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.87

$$\frac{1}{96}\left(-1365\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - 2\sqrt{3x^2+2}\left(18x^3-156x^2+381x-1469\right) - 4587\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] (-2*Sqrt[2 + 3*x^2]*(-1469 + 381*x - 156*x^2 + 18*x^3) - 4587*Sqrt[3]*ArcSi
nh[Sqrt[3/2]*x] - 1365*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2]
)])/96
```

IntegrateAlgebraic [A] time = 0.45, size = 109, normalized size = 1.18

$$\frac{1529}{32}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) + \frac{455}{16}\sqrt{35}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right) + \frac{1}{48}\sqrt{3x^2+2}\left(-18x^3+156x^2-381x+1469\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(1469 - 381*x + 156*x^2 - 18*x^3))/48 + (455*Sqrt[35]*ArcT
anh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/16 + (15
29*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/32
```

fricas [A] time = 0.47, size = 102, normalized size = 1.11

$$-\frac{1}{48}\left(18x^3-156x^2+381x-1469\right)\sqrt{3x^2+2} + \frac{1529}{64}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right) + \frac{455}{64}\sqrt{35}\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/48*(18*x^3 - 156*x^2 + 381*x - 1469)*sqrt(3*x^2 + 2) + 1529/64*sqrt(3)*l
og(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 455/64*sqrt(35)*log(-(sqrt(35)*
sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.27, size = 116, normalized size = 1.26

$$-\frac{1}{48}(3(2(3x-26)x+127)x-1469)\sqrt{3x^2+2} + \frac{1529}{32}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right) + \frac{455}{32}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/48*(3*(2*(3*x - 26)*x + 127)*x - 1469)*sqrt(3*x^2 + 2) + 1529/32*sqrt(3)
*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 455/32*sqrt(35)*log(-abs(-2*sqrt(3)*x
- sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqr
t(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.05, size = 117, normalized size = 1.27

$$-\frac{\left(3x^2+2\right)^{\frac{3}{2}} x}{8}-\frac{3\sqrt{3x^2+2}\, x}{8}-\frac{117\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\, x}{16}-\frac{1529\sqrt{3}\, \operatorname{arcsinh}\left(\frac{\sqrt{6}\, x}{2}\right)}{32}-\frac{455\sqrt{35}\, \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{32}+\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{12}+\frac{455\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3),x)
```

```
[Out] -1/8*(3*x^2+2)^(3/2)*x-3/8*(3*x^2+2)^(1/2)*x-1529/32*arcsinh(1/2*6^(1/2)*x)
*3^(1/2)+13/12*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-117/16*(-9*x+3*(x+3/2)^2-19/4)
^(1/2)*x+455/32*(-36*x+12*(x+3/2)^2-19)^(1/2)-455/32*35^(1/2)*arctanh(2/35*
(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.40, size = 93, normalized size = 1.01

$$-\frac{1}{8}\left(3x^2+2\right)^{\frac{3}{2}} x+\frac{13}{12}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{123}{16}\sqrt{3x^2+2}\, x-\frac{1529}{32}\sqrt{3}\, \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\, x\right)+\frac{455}{32}\sqrt{35}\, \operatorname{arsinh}\left(\frac{3\sqrt{6}\, x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{455}{16}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/8*(3*x^2 + 2)^(3/2)*x + 13/12*(3*x^2 + 2)^(3/2) - 123/16*sqrt(3*x^2 + 2)
*x - 1529/32*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 455/32*sqrt(35)*arcsinh(3/2*s
qrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 455/16*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 76, normalized size = 0.83

$$\frac{\sqrt{35}\left(31850\ln\left(x+\frac{3}{2}\right)-31850\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{2240}-\frac{1529\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{3}\, x}{2}\right)}{32}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{9x^3}{8}-\frac{39x^2}{4}+\frac{381x}{16}-\frac{1469}{16}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3),x)
```

```
[Out] (35^(1/2)*(31850*log(x + 3/2) - 31850*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)
^(1/2))/9 - 4/9)))/2240 - (1529*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/32 -
(3^(1/2)*(x^2 + 2/3)^(1/2)*((381*x)/16 - (39*x^2)/4 + (9*x^3)/8 - 1469/16))
/3
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+2}}{2x+3}\right)dx-\int\frac{2x\sqrt{3x^2+2}}{2x+3}\,dx-\int\left(-\frac{15x^2\sqrt{3x^2+2}}{2x+3}\right)dx-\int\frac{3x^3\sqrt{3x^2+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 2)/(2*x + 3), x) - Integral(2*x*sqrt(3*x**2 + 2
)/(2*x + 3), x) - Integral(-15*x**2*sqrt(3*x**2 + 2)/(2*x + 3), x) - Integr
al(3*x**3*sqrt(3*x**2 + 2)/(2*x + 3), x)
```

3.1200 $\int \frac{(5-x)(2+3x^2)^{3/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=97

$$-\frac{(x+21)\left(3x^2+2\right)^{3/2}}{6(2x+3)}-\frac{1}{8}(193-63x)\sqrt{3x^2+2}+\frac{193}{16}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+\frac{663}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Rubi [A] time = 0.06, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {813, 815, 844, 215, 725, 206}

$$-\frac{(x+21)\left(3x^2+2\right)^{3/2}}{6(2x+3)}-\frac{1}{8}(193-63x)\sqrt{3x^2+2}+\frac{193}{16}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+\frac{663}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] -((193 - 63*x)*Sqrt[2 + 3*x^2])/8 - ((21 + x)*(2 + 3*x^2)^(3/2))/(6*(3 + 2*
x)) + (663*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (193*Sqrt[35]*ArcTanh[(4 - 9*
x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/16
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
```

```
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^2}\,dx &= -\frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)} - \frac{1}{8}\int \frac{(8-252x)\sqrt{2+3x^2}}{3+2x}\,dx \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2} - \frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)} - \frac{1}{192}\int \frac{9456-47736x}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2} - \frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)} + \frac{1989}{16}\int \frac{1}{\sqrt{2+3x^2}}\,dx - \frac{6755}{16} \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2} - \frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)} + \frac{663}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) + \frac{675}{16} \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2} - \frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)} + \frac{663}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) + \frac{193}{16}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 87, normalized size = 0.90

$$\frac{1}{48}\left(579\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{2\sqrt{3x^2+2}\left(12x^3-126x^2+599x+1905\right)}{2x+3} + 1989\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-2*Sqrt[2 + 3*x^2]*(1905 + 599*x - 126*x^2 + 12*x^3))/(3 + 2*x) + 1989*Sq
rt[3]*ArcSinh[Sqrt[3/2]*x] + 579*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[
2 + 3*x^2])])/48
```

IntegrateAlgebraic [A] time = 0.58, size = 116, normalized size = 1.20

$$-\frac{663}{16}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) - \frac{193}{8}\sqrt{35}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right) + \frac{\sqrt{3x^2+2}\left(-12x^3+126x^2-599x-1905\right)}{24(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-1905 - 599*x + 126*x^2 - 12*x^3))/(24*(3 + 2*x)) - (193*
Sqrt[35]*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[3
5]])/8 - (663*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/16
```

fricas [A] time = 0.44, size = 121, normalized size = 1.25

$$\frac{1989\sqrt{3}(2x+3)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right) + 579\sqrt{35}(2x+3)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right) - 4\left(12x^3-126x^2+599x+1905\right)\sqrt{3x^2+2}}{96(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/96*(1989*sqrt(3)*(2*x + 3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) +
579*sqrt(35)*(2*x + 3)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 3
6*x - 43)/(4*x^2 + 12*x + 9)) - 4*(12*x^3 - 126*x^2 + 599*x + 1905)*sqrt(3*
x^2 + 2))/(2*x + 3)
```

giac [B] time = 0.73, size = 475, normalized size = 4.90

$$\frac{193}{16}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{663}{16}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{2\sqrt{35}}{2x+3}\right|}{2\left(\sqrt{3}+\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{455}{32}\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}\operatorname{sgn}\left(\frac{1}{2x+3}\right)+\frac{3\left(704\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)^5\operatorname{sgn}\left(\frac{1}{2x+3}\right)-323\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)^4\operatorname{sgn}\left(\frac{1}{2x+3}\right)-1944\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)^3\operatorname{sgn}\left(\frac{1}{2x+3}\right)+1158\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)^2\operatorname{sgn}\left(\frac{1}{2x+3}\right)+1872\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-1263\sqrt{35}\operatorname{sgn}\left(\frac{1}{2x+3}\right)\right)}{8\left(\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)^2-3\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] 193/16*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sq
rt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 663/16*sqrt(3)*log(1/2*abs(-2*sqr
t(3) + 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*x + 3))/(
sqrt(3) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)))*s
gn(1/(2*x + 3)) - 455/32*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3)*sgn(1/(2*
x + 3)) + 3/8*(704*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*
x + 3))^5*sgn(1/(2*x + 3)) - 323*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3
)^2 + 3) + sqrt(35)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 1944*(sqrt(-18/(2*x + 3
) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^3*sgn(1/(2*x + 3)) + 1158*sqr
t(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^2*sgn
(1/(2*x + 3)) + 1872*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(
2*x + 3))*sgn(1/(2*x + 3)) - 1263*sqrt(35)*sgn(1/(2*x + 3)))/((sqrt(-18/(2*
x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^2 - 3)^3
```

maple [A] time = 0.05, size = 131, normalized size = 1.35

$$\frac{63\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{8}+\frac{39\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{70}+\frac{663\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{16}+\frac{193\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{16}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{70\left(x+\frac{3}{2}\right)}-\frac{193\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{210}-\frac{193\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^2,x)
```

```
[Out] -13/70/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-193/210*(-9*x+3*(x+3/2)^2-19/4
)^(3/2)+63/8*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+663/16*arcsinh(1/2*6^(1/2)*x)*
3^(1/2)-193/16*(-36*x+12*(x+3/2)^2-19)^(1/2)+193/16*35^(1/2)*arctanh(2/35*(
-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+39/70*x*(-9*x+3*(x+3/2)^2-1
9/4)^(3/2)
```

maxima [A] time = 1.34, size = 99, normalized size = 1.02

$$-\frac{1}{12}\left(3x^2+2\right)^{\frac{3}{2}}+\frac{63}{8}\sqrt{3x^2+2}\,x+\frac{663}{16}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)-\frac{193}{16}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{193}{8}\sqrt{3x^2+2}-\frac{13\left(3x^2+2\right)^{\frac{3}{2}}}{4(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 2)^(3/2) + 63/8*sqrt(3*x^2 + 2)*x + 663/16*sqrt(3)*arcsinh(1
/2*sqrt(6)*x) - 193/16*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sq
rt(6)/abs(2*x + 3)) - 193/8*sqrt(3*x^2 + 2) - 13/4*(3*x^2 + 2)^(3/2)/(2*x +
 3)
```

mupad [B] time = 0.12, size = 108, normalized size = 1.11

$$\frac{663\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{16}-\frac{815\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{48}-\frac{193\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{16}+\frac{193\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{16}-\frac{\sqrt{3}\,x^2\sqrt{x^2+\frac{2}{3}}}{4}-\frac{455\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{32\left(x+\frac{3}{2}\right)}+3\sqrt{3}\,x\sqrt{x^2+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^2,x)
```

```
[Out] (663*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/16 - (815*3^(1/2)*(x^2 + 2/3)^(1
/2))/48 - (193*35^(1/2)*log(x + 3/2))/16 + (193*35^(1/2)*log(x - (3^(1/2)*3
5^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/16 - (3^(1/2)*x^2*(x^2 + 2/3)^(1/2))/4
 - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(32*(x + 3/2)) + 3*3^(1/2)*x*(x^2 + 2/3)
^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+2}}{4x^2+12x+9}\right)dx-\int\frac{2x\sqrt{3x^2+2}}{4x^2+12x+9}\,dx-\int\left(-\frac{15x^2\sqrt{3x^2+2}}{4x^2+12x+9}\right)dx-\int\frac{3x^3\sqrt{3x^2+2}}{4x^2+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 2)/(4*x**2 + 12*x + 9), x) - Integral(2*x*sqrt(
3*x**2 + 2)/(4*x**2 + 12*x + 9), x) - Integral(-15*x**2*sqrt(3*x**2 + 2)/(4
*x**2 + 12*x + 9), x) - Integral(3*x**3*sqrt(3*x**2 + 2)/(4*x**2 + 12*x + 9
), x)
```

3.1201 $\int \frac{(5-x)(2+3x^2)^{3/2}}{(3+2x)^3} dx$

Optimal. Leaf size=104

$$-\frac{(x+8)\left(3x^2+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(12x+37)\sqrt{3x^2+2}}{4(2x+3)}-\frac{1143\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8\sqrt{35}}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Rubi [A] time = 0.06, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {813, 844, 215, 725, 206}

$$-\frac{(x+8)\left(3x^2+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(12x+37)\sqrt{3x^2+2}}{4(2x+3)}-\frac{1143\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8\sqrt{35}}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] (3*(37 + 12*x)*Sqrt[2 + 3*x^2])/(4*(3 + 2*x)) - ((8 + x)*(2 + 3*x^2)^(3/2))
/(4*(3 + 2*x)^2) - (111*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/8 - (1143*ArcTanh[(4
- 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^3}\,dx = -\frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{3}{32}\int \frac{(16-192x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx$$
$$= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)} - \frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2} + \frac{3}{256}\int \frac{1536-7104x}{(3+2x)\sqrt{2+3x^2}}\,dx$$
$$= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)} - \frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{333}{8}\int \frac{1}{\sqrt{2+3x^2}}\,dx + \frac{1143}{8}\int \frac{}{(3}$$
$$= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)} - \frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \frac{1143}{8}\text{Su}$$
$$= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)} - \frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \frac{1143\tan}{}$$

Mathematica [A] time = 0.11, size = 89, normalized size = 0.86

$$-\frac{1143\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8\sqrt{35}} - \frac{\sqrt{3x^2+2}\left(3x^3-48x^2-328x-317\right)}{4(2x+3)^2} - \frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] -1/4*(Sqrt[2 + 3*x^2]*(-317 - 328*x - 48*x^2 + 3*x^3))/(3 + 2*x)^2 - (111*S
qrt[3]*ArcSinh[Sqrt[3/2]*x])/8 - (1143*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
 3*x^2])])/(8*Sqrt[35])
```

IntegrateAlgebraic [A] time = 0.75, size = 116, normalized size = 1.12

$$\frac{111}{8}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) + \frac{1143\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{4\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-3x^3+48x^2+328x+317\right)}{4(2x+3)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(317 + 328*x + 48*x^2 - 3*x^3))/(4*(3 + 2*x)^2) + (1143*Ar
cTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(4*Sqr
t[35]) + (111*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/8
```

fricas [A] time = 0.43, size = 136, normalized size = 1.31

$$\frac{3885\sqrt{3}\left(4x^2+12x+9\right)\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+1143\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-140\left(3x^3-48x^2-328x-317\right)\sqrt{3x^2+2}}{560\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/560*(3885*sqrt(3)*(4*x^2 + 12*x + 9)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^
2 - 1) + 1143*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9
*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 140*(3*x^3 - 48*x^2 - 3
28*x - 317)*sqrt(3*x^2 + 2))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.28, size = 219, normalized size = 2.11

$$-\frac{3}{16}\sqrt{3x^2+2}(x-19)+\frac{111}{8}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{1143}{280}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{5\left(1452\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3+3013\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2-6528\sqrt{3}x+1048\sqrt{3}+6528\sqrt{3x^2+2}\right)}{64\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -3/16*sqrt(3*x^2 + 2)*(x - 19) + 111/8*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2
+ 2)) + 1143/280*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
+ 5/64*(1452*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 3013*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 2))^2 - 6528*sqrt(3)*x + 1048*sqrt(3) + 6528*sqrt(3*x^2 + 2))/((
sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
2)^2
```

maple [A] time = 0.05, size = 152, normalized size = 1.46

$$-\frac{171\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{70}-\frac{561\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{4900}-\frac{111\sqrt{3}\,\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{8}-\frac{1143\sqrt{35}\,\mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{280}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{280\left(x+\frac{3}{2}\right)^2}+\frac{187\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{4900\left(x+\frac{3}{2}\right)}+\frac{381\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{1225}+\frac{1143\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{280}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^3,x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+187/4900/(x+3/2)*(-9*x+3*(x
+3/2)^2-19/4)^(5/2)+381/1225*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-171/70*(-9*x+3*(
x+3/2)^2-19/4)^(1/2)*x-111/8*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+1143/280*(-36*x
+12*(x+3/2)^2-19)^(1/2)-1143/280*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-
36*x+12*(x+3/2)^2-19)^(1/2))-561/4900*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x
```

maxima [A] time = 1.30, size = 122, normalized size = 1.17

$$\frac{39}{280}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{70\left(4x^2+12x+9\right)}-\frac{171}{70}\sqrt{3x^2+2}\,x-\frac{111}{8}\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)+\frac{1143}{280}\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{1143}{140}\sqrt{3x^2+2}+\frac{187\left(3x^2+2\right)^{\frac{3}{2}}}{280(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/280*(3*x^2 + 2)^(3/2) - 13/70*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) - 171
/70*sqrt(3*x^2 + 2)*x - 111/8*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 1143/280*sqr
t(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 1143
/140*sqrt(3*x^2 + 2) + 187/280*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 1.82, size = 117, normalized size = 1.12

$$\frac{1143\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{280}+\frac{57\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{16}-\frac{111\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{3}x}{2}\right)}{8}-\frac{1143\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{280}+\frac{655\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{64\left(x+\frac{3}{2}\right)}-\frac{455\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{128\left(x^2+3x+\frac{9}{4}\right)}-\frac{3\sqrt{3}\,x\sqrt{x^2+\frac{2}{3}}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^3,x)
```

```
[Out] (1143*35^(1/2)*log(x + 3/2))/280 + (57*3^(1/2)*(x^2 + 2/3)^(1/2))/16 - (111
*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/8 - (1143*35^(1/2)*log(x - (3^(1/2)*
35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/280 + (655*3^(1/2)*(x^2 + 2/3)^(1/2))
/(64*(x + 3/2)) - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(128*(3*x + x^2 + 9/4)) -
 (3*3^(1/2)*x*(x^2 + 2/3)^(1/2))/16
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**3,x)
```

```
[Out] Timed out
```

3.1202 $\int \frac{(5-x)(2+3x^2)^{3/2}}{(3+2x)^4} dx$

Optimal. Leaf size=106

$$\frac{(456x+229)\left(3x^2+2\right)^{3/2}}{420(2x+3)^3}-\frac{3(111x+385)\sqrt{3x^2+2}}{280(2x+3)}+\frac{11727\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{560\sqrt{35}}+\frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {811, 813, 844, 215, 725, 206}

$$\frac{(456x+229)\left(3x^2+2\right)^{3/2}}{420(2x+3)^3}-\frac{3(111x+385)\sqrt{3x^2+2}}{280(2x+3)}+\frac{11727\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{560\sqrt{35}}+\frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] (-3*(385 + 111*x)*Sqrt[2 + 3*x^2])/(280*(3 + 2*x)) + ((229 + 456*x)*(2 + 3*
x^2)^(3/2))/(420*(3 + 2*x)^3) + (33*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (117
27*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(560*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
```

```
x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx = \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} - \frac{1}{560}\int \frac{(-624+1332x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{\int \frac{-10656+55440x}{(3+2x)\sqrt{2+3x^2}}\,dx}{4480}$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{99}{16}\int \frac{1}{\sqrt{2+3x^2}}\,dx - \frac{1}{}$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) +$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) +$$

Mathematica [A] time = 0.12, size = 89, normalized size = 0.84

$$\frac{11727\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{560\sqrt{35}} - \frac{\sqrt{3x^2+2}\left(1260x^3+24474x^2+48747x+30269\right)}{840(2x+3)^3} + \frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] -1/840*(Sqrt[2 + 3*x^2]*(30269 + 48747*x + 24474*x^2 + 1260*x^3))/(3 + 2*x)
^3 + (33*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (11727*ArcTanh[(4 - 9*x)/(Sqrt[
35]*Sqrt[2 + 3*x^2])])/(560*Sqrt[35])
```

IntegrateAlgebraic [A] time = 0.93, size = 116, normalized size = 1.09

$$-\frac{33}{16}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) - \frac{11727\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{280\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-1260x^3-24474x^2-48747x-30269\right)}{840(2x+3)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-30269 - 48747*x - 24474*x^2 - 1260*x^3))/(840*(3 + 2*x)^
3) - (11727*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqr
t[35]])/(280*Sqrt[35]) - (33*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/1
6
```

fricas [A] time = 0.44, size = 151, normalized size = 1.42

$$\frac{121275 \sqrt{3} \left(8 x^{3} + 36 x^{2} + 54 x + 27\right) \log \left(-\sqrt{3} \sqrt{3 x^{2} + 2} x - 3 x^{2} - 1\right) + 35181 \sqrt{35} \left(8 x^{3} + 36 x^{2} + 54 x + 27\right) \log \left(\frac{\sqrt{35} \sqrt{3 x^{2} + 2} (9 x - 4) - 93 x^{2} + 36 x - 43}{4 x^{2} + 12 x + 9}\right) - 140 \left(1260 x^{3} + 24474 x^{2} + 48747 x + 30269\right) \sqrt{3 x^{2} + 2}}{117600 \left(8 x^{3} + 36 x^{2} + 54 x + 27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/117600*(121275*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-sqrt(3)*sqrt(3*x
^2 + 2)*x - 3*x^2 - 1) + 35181*sqrt(35)*(8*x^3 + 36*x^2 + 54*x + 27)*log((s
qrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9))
 - 140*(1260*x^3 + 24474*x^2 + 48747*x + 30269)*sqrt(3*x^2 + 2))/(8*x^3 + 3
6*x^2 + 54*x + 27)
```

giac [B] time = 0.28, size = 265, normalized size = 2.50

$$-\frac{33}{16} \sqrt{3} \log \left(-\sqrt{3} x + \sqrt{3 x^{2} + 2}\right) - \frac{11727}{19600} \sqrt{35} \log \left(-\frac{\left|-2 \sqrt{3} x - \sqrt{35} - 3 \sqrt{3} + 2 \sqrt{3 x^{2} + 2}\right|}{2 \sqrt{3} x - \sqrt{35} + 3 \sqrt{3} - 2 \sqrt{3 x^{2} + 2}}\right) - \frac{3}{16} \sqrt{3 x^{2} + 2} - \frac{\sqrt{3} \left(14792 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{5} + 189285 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{4} + 141030 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{3} - 561630 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{2} + 166480 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right) - 50144\right)}{1120 \left(\left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{2} + 3 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right) - 2\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -33/16*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 11727/19600*sqrt(35)*log
(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x
 - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/16*sqrt(3*x^2 + 2) - 1/11
20*sqrt(3)*(14792*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 189285*(sqrt(3)
*x - sqrt(3*x^2 + 2))^4 + 141030*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 -
561630*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 166480*sqrt(3)*(sqrt(3)*x - sqrt(3
*x^2 + 2)) - 50144)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 2)) - 2)^3
```

maple [B] time = 0.06, size = 173, normalized size = 1.63

$$\frac{3933 \sqrt{-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}}\, x}{9800} + \frac{1338 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}} x}{42875} + \frac{33 \sqrt{3}\, \operatorname{arcsinh}\left(\frac{\sqrt{6}\, x}{2}\right)}{16} + \frac{11727 \sqrt{35}\, \operatorname{arctanh}\left(\frac{2 (-9 x + 4) \sqrt{35}}{35 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}\right)}{19600} - \frac{\left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{2450 \left(x + \frac{3}{2}\right)^{2}} - \frac{446 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{42875 \left(x + \frac{3}{2}\right)} - \frac{3909 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}}}{85750} - \frac{11727 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}{19600} - \frac{13 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{840 \left(x + \frac{3}{2}\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^4,x)
```

```
[Out] -1/2450/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-446/42875/(x+3/2)*(-9*x+3*(
x+3/2)^2-19/4)^(5/2)-3909/85750*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+3933/9800*(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x+33/16*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-11727/196
00*(-36*x+12*(x+3/2)^2-19)^(1/2)+11727/19600*35^(1/2)*arctanh(2/35*(-9*x+4)
*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+1338/42875*(-9*x+3*(x+3/2)^2-19/4)
^(3/2)*x-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [A] time = 1.43, size = 150, normalized size = 1.42

$$\frac{3}{2450} \left(3 x^{2} + 2\right)^{\frac{3}{2}} - \frac{13 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{105 \left(8 x^{3} + 36 x^{2} + 54 x + 27\right)} - \frac{2 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{1225 \left(4 x^{2} + 12 x + 9\right)} + \frac{3933}{9800} \sqrt{3 x^{2} + 2} x + \frac{33}{16} \sqrt{3} \operatorname{arsinh}\left(\frac{1}{2} \sqrt{6} x\right) - \frac{11727}{19600} \sqrt{35} \operatorname{arsinh}\left(\frac{3 \sqrt{6} x}{2 |2 x + 3|} - \frac{2 \sqrt{6}}{3 |2 x + 3|}\right) - \frac{11727}{9800} \sqrt{3 x^{2} + 2} - \frac{223 \left(3 x^{2} + 2\right)^{\frac{3}{2}}}{1225 (2 x + 3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 3/2450*(3*x^2 + 2)^(3/2) - 13/105*(3*x^2 + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x
+ 27) - 2/1225*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) + 3933/9800*sqrt(3*x^2
+ 2)*x + 33/16*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 11727/19600*sqrt(35)*arcsin
h(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 11727/9800*sqrt(
3*x^2 + 2) - 223/1225*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 0.12, size = 133, normalized size = 1.25

$$\frac{33\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{16}-\frac{3\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{16}-\frac{11727\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{19600}+\frac{11727\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{19600}-\frac{1567\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{560\left(x+\frac{3}{2}\right)}+\frac{77\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{32\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{455\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{384\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^4,x)
```

```
[Out] (33*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/16 - (3*3^(1/2)*(x^2 + 2/3)^(1/2)
)/16 - (11727*35^(1/2)*log(x + 3/2))/19600 + (11727*35^(1/2)*log(x - (3^(1/
2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/19600 - (1567*3^(1/2)*(x^2 + 2/3)^
(1/2))/(560*(x + 3/2)) + (77*3^(1/2)*(x^2 + 2/3)^(1/2))/(32*(3*x + x^2 + 9/
4)) - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(384*((27*x)/4 + (9*x^2)/2 + x^3 + 27
/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**4,x)
```

```
[Out] Timed out
```

3.1203 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=106

$$\frac{(491x+54)\left(3x^2+2\right)^{3/2}}{840(2x+3)^4}+\frac{3(4097x+2943)\sqrt{3x^2+2}}{19600(2x+3)^2}-\frac{39663\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{39200\sqrt{35}}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {811, 844, 215, 725, 206}

$$\frac{(491x+54)\left(3x^2+2\right)^{3/2}}{840(2x+3)^4}+\frac{3(4097x+2943)\sqrt{3x^2+2}}{19600(2x+3)^2}-\frac{39663\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{39200\sqrt{35}}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] (3*(2943 + 4097*x)*Sqrt[2 + 3*x^2])/(19600*(3 + 2*x)^2) + ((54 + 491*x)*(2
+ 3*x^2)^(3/2))/(840*(3 + 2*x)^4) - (3*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 - (
39663*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(39200*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 && !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx = \frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4} - \frac{\int \frac{(-936+840x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{1120}$$

$$= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2} + \frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4} + \frac{\int \frac{105408-352800x}{(3+2x)\sqrt{2+3x^2}}\,dx}{627200}$$

$$= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2} + \frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4} - \frac{9}{32}\int \frac{1}{\sqrt{2+3x^2}}\,dx + -$$

$$= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2} + \frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4} - \frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) -$$

$$= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2} + \frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4} - \frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) -$$

Mathematica [A] time = 0.15, size = 90, normalized size = 0.85

$$\frac{\frac{70\sqrt{3x^2+2}\left(250602x^3+559764x^2+718441x+245943\right)}{(2x+3)^4} - 118989\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{4116000} - \frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] (-3*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 + ((70*Sqrt[2 + 3*x^2]*(245943 + 71844
1*x + 559764*x^2 + 250602*x^3))/(3 + 2*x)^4 - 118989*Sqrt[35]*ArcTanh[(4 -
9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/4116000
```

IntegrateAlgebraic [A] time = 1.17, size = 116, normalized size = 1.09

$$\frac{3}{32}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) + \frac{39663\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{19600\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(250602x^3+559764x^2+718441x+245943\right)}{58800(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(245943 + 718441*x + 559764*x^2 + 250602*x^3))/(58800*(3 +
 2*x)^4) + (39663*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2
])/Sqrt[35]])/(19600*Sqrt[35]) + (3*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x
^2]])/32
```

fricas [A] time = 0.44, size = 166, normalized size = 1.57

$$\frac{385875\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+118989\sqrt{35}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+140\left(250602x^3+559764x^2+718441x+245943\right)\sqrt{3x^2+2}}{8232000\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/8232000*(385875*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(sqrt
(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 118989*sqrt(35)*(16*x^4 + 96*x^3 + 216
*x^2 + 216*x + 81)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x
```

```
 + 43)/(4*x^2 + 12*x + 9)) + 140*(250602*x^3 + 559764*x^2 + 718441*x + 2459
43)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [A] time = 0.24, size = 106, normalized size = 1.00

$$-\frac{1}{470400}\left(35\left(\frac{35\left(\frac{1365\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-1193\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+16227\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\frac{}{2x+3}-125301\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}-\frac{41767}{156800}\sqrt{3}\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -1/470400*(35*(35*(1365*sgn(1/(2*x + 3))/(2*x + 3) - 1193*sgn(1/(2*x + 3)))
/(2*x + 3) + 16227*sgn(1/(2*x + 3)))/(2*x + 3) - 125301*sgn(1/(2*x + 3)))*s
qrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) - 41767/156800*sqrt(3)*sgn(1/(2*x +
 3))
```

maple [B] time = 0.07, size = 194, normalized size = 1.83

$$-\frac{7227\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{686000}+\frac{17337\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{12005000}-\frac{3\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{32}-\frac{39663\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1372000}-\frac{211\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{117600\left(x+\frac{3}{2}\right)^3}-\frac{999\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{686000\left(x+\frac{3}{2}\right)^2}-\frac{5779\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{12005000\left(x+\frac{3}{2}\right)}+\frac{13221\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{6002500}+\frac{39663\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{1372000}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{2240\left(x+\frac{3}{2}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^5,x)
```

```
[Out] -211/117600/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-999/686000/(x+3/2)^2*(-
9*x+3*(x+3/2)^2-19/4)^(5/2)-5779/12005000/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(
5/2)+13221/6002500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-7227/686000*(-9*x+3*(x+3/2
)^2-19/4)^(1/2)*x-3/32*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+39663/1372000*(-36*x+
12*(x+3/2)^2-19)^(1/2)-39663/1372000*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2
)/(-36*x+12*(x+3/2)^2-19)^(1/2))+17337/12005000*(-9*x+3*(x+3/2)^2-19/4)^(3/
2)*x-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.45, size = 183, normalized size = 1.73

$$\frac{2997}{686000}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{140\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{211\left(3x^2+2\right)^{\frac{5}{2}}}{14700\left(8x^3+36x^2+54x+27\right)}-\frac{999\left(3x^2+2\right)^{\frac{5}{2}}}{171500\left(4x^2+12x+9\right)}-\frac{7227}{686000}\sqrt{3x^2+2}\,x-\frac{3}{32}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{39663}{1372000}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)+\frac{39663}{686000}\sqrt{3x^2+2}-\frac{5779\left(3x^2+2\right)^{\frac{3}{2}}}{686000\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 2997/686000*(3*x^2 + 2)^(3/2) - 13/140*(3*x^2 + 2)^(5/2)/(16*x^4 + 96*x^3 +
 216*x^2 + 216*x + 81) - 211/14700*(3*x^2 + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x
 + 27) - 999/171500*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) - 7227/686000*sqrt
(3*x^2 + 2)*x - 3/32*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 39663/1372000*sqrt(35
)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 39663/68
6000*sqrt(3*x^2 + 2) - 5779/686000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 0.12, size = 155, normalized size = 1.46

$$\frac{39663\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1372000}-\frac{3\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{32}-\frac{39663\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1372000}-\frac{455\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1024\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}+\frac{41767\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{156800\left(x+\frac{3}{2}\right)}-\frac{5409\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{8960\left(x^2+3x+\frac{9}{4}\right)}+\frac{1193\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1536\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^5,x)
```

```
[Out] (39663*35^(1/2)*log(x + 3/2))/1372000 - (3*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x
)/2))/32 - (39663*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 -
```

```
4/9))/1372000 - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(1024*((27*x)/2 + (27*x^2)
/2 + 6*x^3 + x^4 + 81/16)) + (41767*3^(1/2)*(x^2 + 2/3)^(1/2))/(156800*(x +
 3/2)) - (5409*3^(1/2)*(x^2 + 2/3)^(1/2))/(8960*(3*x + x^2 + 9/4)) + (1193*
3^(1/2)*(x^2 + 2/3)^(1/2))/(1536*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**5,x)
```

```
[Out] Timed out
```

3.1204 $\int \frac{(5-x)(2+3x^2)^{3/2}}{(3+2x)^6} dx$

Optimal. Leaf size=109

$$-\frac{13(3x^2+2)^{5/2}}{175(2x+3)^5}-\frac{41(4-9x)(3x^2+2)^{3/2}}{4900(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{171500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{85750\sqrt{35}}$$

Rubi [A] time = 0.05, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {807, 721, 725, 206}

$$-\frac{13(3x^2+2)^{5/2}}{175(2x+3)^5}-\frac{41(4-9x)(3x^2+2)^{3/2}}{4900(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{171500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{85750\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] (-369*(4 - 9*x)*Sqrt[2 + 3*x^2])/(171500*(3 + 2*x)^2) - (41*(4 - 9*x)*(2 +
3*x^2)^(3/2))/(4900*(3 + 2*x)^4) - (13*(2 + 3*x^2)^(5/2))/(175*(3 + 2*x)^5)
 - (1107*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(85750*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx = -\frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5} + \frac{41}{35}\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$$

$$= -\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5} + \frac{369\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{2450}$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{171500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5} + \frac{1107\int \frac{\cdots}{(3+2\cdots}}{857\cdots}$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{171500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5} - \frac{1107\,\mathrm{Subst}\cdots}{\cdots}$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{171500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5} - \frac{1107\tanh^{-1}\cdots}{857\cdots}$$

Mathematica [A] time = 0.10, size = 112, normalized size = 1.03

$$\frac{1}{350}\left(-\frac{26\left(3x^2+2\right)^{5/2}}{(2x+3)^5} + \frac{41(9x-4)\left(3x^2+2\right)^{3/2}}{14(2x+3)^4} - \frac{369\left(6\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35(9x-4)\sqrt{3x^2+2}}{(2x+3)^2}\right)}{17150}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] ((41*(-4 + 9*x)*(2 + 3*x^2)^(3/2))/(14*(3 + 2*x)^4) - (26*(2 + 3*x^2)^(5/2)
)/(3 + 2*x)^5 - (369*((-35*(-4 + 9*x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2 + 6*Sqrt
[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])]))/17150)/350
```

IntegrateAlgebraic [A] time = 1.37, size = 91, normalized size = 0.83

$$\frac{1107\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)}{42875\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-10602x^4 + 189543x^3 - 26682x^2 + 64493x - 125252\right)}{171500(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-125252 + 64493*x - 26682*x^2 + 189543*x^3 - 10602*x^4))/
(171500*(3 + 2*x)^5) + (1107*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqr
t[2 + 3*x^2])/Sqrt[35]])/(42875*Sqrt[35])
```

fricas [A] time = 0.43, size = 134, normalized size = 1.23

$$\frac{1107\sqrt{35}\left(32x^5 + 240x^4 + 720x^3 + 1080x^2 + 810x + 243\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 35\left(10602x^4 - 189543x^3 + 26682x^2 - 64493x + 125252\right)\sqrt{3x^2+2}}{6002500\left(32x^5 + 240x^4 + 720x^3 + 1080x^2 + 810x + 243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/6002500*(1107*sqrt(35)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 2
43)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 +
 12*x + 9)) - 35*(10602*x^4 - 189543*x^3 + 26682*x^2 - 64493*x + 125252)*sq
rt(3*x^2 + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.27, size = 318, normalized size = 2.92

$$\frac{1107}{3001250}\sqrt{35}\log\left(\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{9\left(89686\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^9+138886\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^8+1224478\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^7+245133\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^6-1224531\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5-4374874\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+4855928\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-1339152\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2-586816\sqrt{3}x-37696\sqrt{3}+586816\sqrt{3x^2+2}\right)}{2744000\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] 1107/3001250*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 9/
2744000*(89686*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 138886*sqrt(3)*(sqrt(3)*x
- sqrt(3*x^2 + 2))^8 + 1224478*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 + 245133*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 1224531*(sqrt(3)*x - sqrt(3*x^2 + 2)
)^5 - 4374874*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 4855928*(sqrt(3)*x
- sqrt(3*x^2 + 2))^3 - 1339152*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 58
6816*sqrt(3)*x - 37696*sqrt(3) + 586816*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt
(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^5
```

maple [B] time = 0.07, size = 203, normalized size = 1.86

$$\frac{9963\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{6002500}+\frac{129519\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{210087500}-\frac{1107\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{3001250}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{5600\left(x+\frac{3}{2}\right)^5}-\frac{41\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{39200\left(x+\frac{3}{2}\right)^4}-\frac{369\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{686000\left(x+\frac{3}{2}\right)^3}-\frac{3813\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{12005000\left(x+\frac{3}{2}\right)^2}-\frac{43173\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{210087500\left(x+\frac{3}{2}\right)}+\frac{1476\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{52521875}+\frac{1107\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{3001250}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^6,x)
```

```
[Out] -13/5600/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-41/39200/(x+3/2)^4*(-9*x+3
*(x+3/2)^2-19/4)^(5/2)-369/686000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-3
813/12005000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-43173/210087500/(x+3/2
)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+1476/52521875*(-9*x+3*(x+3/2)^2-19/4)^(3/2)
+9963/6002500*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+1107/3001250*(-36*x+12*(x+3/2
)^2-19)^(1/2)-1107/3001250*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+1
2*(x+3/2)^2-19)^(1/2))+129519/210087500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x
```

maxima [B] time = 1.32, size = 209, normalized size = 1.92

$$\frac{11439}{12005000}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{175\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{41\left(3x^2+2\right)^{\frac{5}{2}}}{2450\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{369\left(3x^2+2\right)^{\frac{5}{2}}}{85750\left(8x^3+36x^2+54x+27\right)}-\frac{3813\left(3x^2+2\right)^{\frac{5}{2}}}{3001250\left(4x^2+12x+9\right)}+\frac{9963}{6002500}\sqrt{3x^2+2}\,x+\frac{1107}{3001250}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{1107}{1500625}\sqrt{3x^2+2}-\frac{43173\left(3x^2+2\right)^{\frac{3}{2}}}{12005000(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 11439/12005000*(3*x^2 + 2)^(3/2) - 13/175*(3*x^2 + 2)^(5/2)/(32*x^5 + 240*x
^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 41/2450*(3*x^2 + 2)^(5/2)/(16*x^4
+ 96*x^3 + 216*x^2 + 216*x + 81) - 369/85750*(3*x^2 + 2)^(5/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 3813/3001250*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) + 9963
/6002500*sqrt(3*x^2 + 2)*x + 1107/3001250*sqrt(35)*arcsinh(3/2*sqrt(6)*x/ab
s(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 1107/1500625*sqrt(3*x^2 + 2) - 431
73/12005000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 1.98, size = 179, normalized size = 1.64

$$\frac{1107\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{3001250}-\frac{1107\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{3001250}+\frac{731\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{2560\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{91\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{512\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)}-\frac{5301\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{2744000\left(x+\frac{3}{2}\right)}+\frac{7233\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{156800\left(x^2+3x+\frac{9}{4}\right)}-\frac{8349\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{44800\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^6,x)
```

```
[Out] (1107*35^(1/2)*log(x + 3/2))/3001250 - (1107*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/3001250 + (731*3^(1/2)*(x^2 + 2/3)^(1/2))
/(2560*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (91*3^(1/2)*(x^2 +
```

```
2/3)^(1/2))/(512*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5
+ 243/32)) - (5301*3^(1/2)*(x^2 + 2/3)^(1/2))/(2744000*(x + 3/2)) + (7233*3
^(1/2)*(x^2 + 2/3)^(1/2))/(156800*(3*x + x^2 + 9/4)) - (8349*3^(1/2)*(x^2 +
 2/3)^(1/2))/(44800*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**6,x)
```

```
[Out] Timed out
```

3.1205 $\int \frac{(5-x)(2+3x^2)^{3/2}}{(3+2x)^7} dx$

Optimal. Leaf size=131

$$-\frac{29\left(3x^2+2\right)^{5/2}}{1750(2x+3)^5}-\frac{13\left(3x^2+2\right)^{5/2}}{210(2x+3)^6}-\frac{(4-9x)\left(3x^2+2\right)^{3/2}}{500(2x+3)^4}-\frac{9(4-9x)\sqrt{3x^2+2}}{17500(2x+3)^2}-\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8750\sqrt{35}}$$

Rubi [A] time = 0.07, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{29\left(3x^2+2\right)^{5/2}}{1750(2x+3)^5}-\frac{13\left(3x^2+2\right)^{5/2}}{210(2x+3)^6}-\frac{(4-9x)\left(3x^2+2\right)^{3/2}}{500(2x+3)^4}-\frac{9(4-9x)\sqrt{3x^2+2}}{17500(2x+3)^2}-\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8750\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] (-9*(4 - 9*x)*Sqrt[2 + 3*x^2])/(17500*(3 + 2*x)^2) - ((4 - 9*x)*(2 + 3*x^2)
^(3/2))/(500*(3 + 2*x)^4) - (13*(2 + 3*x^2)^(5/2))/(210*(3 + 2*x)^6) - (29*
(2 + 3*x^2)^(5/2))/(1750*(3 + 2*x)^5) - (27*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqr
t[2 + 3*x^2])])/(8750*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
```

```
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^7}\,dx &= -\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6} - \frac{1}{210}\int \frac{(-246+39x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx \\
&= -\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6} - \frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5} + \frac{7}{25}\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx \\
&= -\frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6} - \frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5} + \frac{9}{250}\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx \\
&= -\frac{9(4-9x)\sqrt{2+3x^2}}{17500(3+2x)^2} - \frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6} - \frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5} \\
&= -\frac{9(4-9x)\sqrt{2+3x^2}}{17500(3+2x)^2} - \frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6} - \frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5} \\
&= -\frac{9(4-9x)\sqrt{2+3x^2}}{17500(3+2x)^2} - \frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6} - \frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 137, normalized size = 1.05

$$\frac{1}{210}\left(-\frac{13\left(3x^2+2\right)^{5/2}}{(2x+3)^6}-\frac{3\left(10150\left(3x^2+2\right)^{5/2}+(2x+3)\left(-315(9x-4)\sqrt{3x^2+2}\,(2x+3)^2-1225(9x-4)\left(3x^2+2\right)^{3/2}+54\sqrt{35}\,(2x+3)^4\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)\right)\right)}{8750(2x+3)^5}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6 - (3*(10150*(2 + 3*x^2)^(5/2) + (3 + 2
*x)*(-315*(3 + 2*x)^2*(-4 + 9*x)*Sqrt[2 + 3*x^2] - 1225*(-4 + 9*x)*(2 + 3*x
^2)^(3/2) + 54*Sqrt[35]*(3 + 2*x)^4*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*
x^2])])))/(8750*(3 + 2*x)^5))/210
```

IntegrateAlgebraic [A] time = 1.69, size = 96, normalized size = 0.73

$$\frac{27\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{4375\sqrt{35}}+\frac{\sqrt{3x^2+2}\,\left(-432x^5-2160x^4+39195x^3-33180x^2-3675x-39748\right)}{52500(2x+3)^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-39748 - 3675*x - 33180*x^2 + 39195*x^3 - 2160*x^4 - 432*
x^5))/(52500*(3 + 2*x)^6) + (27*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*
Sqrt[2 + 3*x^2])/Sqrt[35]])/(4375*Sqrt[35])
```

fricas [A] time = 0.44, size = 149, normalized size = 1.14

$$\frac{81\sqrt{35}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(432x^5+2160x^4-39195x^3+33180x^2+3675x+39748\right)\sqrt{3x^2+2}}{1837500\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/1837500*(81*sqrt(35)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 +
 2916*x + 729)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 4
3)/(4*x^2 + 12*x + 9)) - 35*(432*x^5 + 2160*x^4 - 39195*x^3 + 33180*x^2 + 3
675*x + 39748)*sqrt(3*x^2 + 2))/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4
860*x^2 + 2916*x + 729)
```

giac [B] time = 0.31, size = 367, normalized size = 2.80

$$\frac{27}{306250}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3\sqrt{3}\left(96\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{11}+17877\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{10}-4120\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{9}+25860\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{8}-225240\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{7}-173964\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{6}-648336\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{5}+641040\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{4}-309440\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{3}-135120\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{2}-10752\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)+1536\right)}{280000\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{2}+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 27/306250*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/280
000*sqrt(3)*(96*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 17877*(sqrt(3)*x
 - sqrt(3*x^2 + 2))^10 - 4120*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 258
60*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 225240*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 2))^7 - 173964*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 648336*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 2))^5 + 641040*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 309440*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 135120*(sqrt(3)*x - sqrt(3*x^2 + 2
))^2 - 10752*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 1536)/((sqrt(3)*x - sq
rt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^6
```

maple [B] time = 0.06, size = 224, normalized size = 1.71

$$\frac{243\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{612500}+\frac{3159\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{21437500}-\frac{27\sqrt{35}\,\mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{306250}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{13440\left(x+\frac{3}{2}\right)^{6}}-\frac{29\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{56000\left(x+\frac{3}{2}\right)^{5}}-\frac{\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{4000\left(x+\frac{3}{2}\right)^{4}}-\frac{9\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{70000\left(x+\frac{3}{2}\right)^{3}}-\frac{93\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{1225000\left(x+\frac{3}{2}\right)^{2}}-\frac{1053\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{21437500\left(x+\frac{3}{2}\right)}+\frac{36\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{5359375}+\frac{27\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}{306250}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^7,x)
```

```
[Out] -13/13440/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-29/56000/(x+3/2)^5*(-9*x+
3*(x+3/2)^2-19/4)^(5/2)-1/4000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-9/70
000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-93/1225000/(x+3/2)^2*(-9*x+3*(x
+3/2)^2-19/4)^(5/2)-1053/21437500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+36/
5359375*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+243/612500*(-9*x+3*(x+3/2)^2-19/4)^(1
/2)*x+27/306250*(-36*x+12*(x+3/2)^2-19)^(1/2)-27/306250*35^(1/2)*arctanh(2/
35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+3159/21437500*(-9*x+3*(
x+3/2)^2-19/4)^(3/2)*x
```

maxima [B] time = 1.32, size = 252, normalized size = 1.92

$$\frac{279}{1225000}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{210\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{29\left(3x^2+2\right)^{\frac{5}{2}}}{1750\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{\left(3x^2+2\right)^{\frac{5}{2}}}{250\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{9\left(3x^2+2\right)^{\frac{5}{2}}}{8750\left(8x^3+36x^2+54x+27\right)}-\frac{93\left(3x^2+2\right)^{\frac{5}{2}}}{306250\left(4x^2+12x+9\right)}+\frac{243}{612500}\sqrt{3x^2+2}\,x+\frac{27}{306250}\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{27}{153125}\sqrt{3x^2+2}-\frac{1053\left(3x^2+2\right)^{\frac{3}{2}}}{1225000(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 279/1225000*(3*x^2 + 2)^(3/2) - 13/210*(3*x^2 + 2)^(5/2)/(64*x^6 + 576*x^5
+ 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 29/1750*(3*x^2 + 2)^(5/2
)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 1/250*(3*x^2 + 2)
^(5/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 9/8750*(3*x^2 + 2)^(5/2)/
(8*x^3 + 36*x^2 + 54*x + 27) - 93/306250*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x +
9) + 243/612500*sqrt(3*x^2 + 2)*x + 27/306250*sqrt(35)*arcsinh(3/2*sqrt(6)*
x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 27/153125*sqrt(3*x^2 + 2) - 10
53/1225000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 1.86, size = 223, normalized size = 1.70

$$\frac{27\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{306250}-\frac{27\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{306250}-\frac{5977\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{89600\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}+\frac{577\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{5120\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)}-\frac{9\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{70000\left(x+\frac{3}{2}\right)}-\frac{455\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{6144\left(x^6+9x^5+\frac{135x^4}{4}+\frac{135x^3}{2}+\frac{1215x^2}{16}+\frac{729x}{16}+\frac{729}{64}\right)}+\frac{9\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{28000\left(x^2+3x+\frac{9}{4}\right)}+\frac{2829\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{224000\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^7,x)
```

```
[Out] (27*35^(1/2)*log(x + 3/2))/306250 - (27*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*
(x^2 + 2/3)^(1/2))/9 - 4/9))/306250 - (5977*3^(1/2)*(x^2 + 2/3)^(1/2))/(896
00*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (577*3^(1/2)*(x^2 + 2/3
)^(1/2))/(5120*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5 +
243/32)) - (9*3^(1/2)*(x^2 + 2/3)^(1/2))/(70000*(x + 3/2)) - (455*3^(1/2)*(
x^2 + 2/3)^(1/2))/(6144*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^
4)/4 + 9*x^5 + x^6 + 729/64)) + (9*3^(1/2)*(x^2 + 2/3)^(1/2))/(28000*(3*x +
 x^2 + 9/4)) + (2829*3^(1/2)*(x^2 + 2/3)^(1/2))/(224000*((27*x)/4 + (9*x^2)
/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**7,x)
```

```
[Out] Timed out
```

3.1206 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=153

$$-\frac{822\left(3x^2+2\right)^{5/2}}{214375(2x+3)^5}-\frac{404\left(3x^2+2\right)^{5/2}}{25725(2x+3)^6}-\frac{13\left(3x^2+2\right)^{5/2}}{245(2x+3)^7}-\frac{2689(4-9x)\left(3x^2+2\right)^{3/2}}{6002500(2x+3)^4}-\frac{24201(4-9x)\sqrt{3x^2+2}}{210087500(2x+3)^2}-\frac{7260(}{}$$

Rubi [A] time = 0.10, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{822\left(3x^2+2\right)^{5/2}}{214375(2x+3)^5}-\frac{404\left(3x^2+2\right)^{5/2}}{25725(2x+3)^6}-\frac{13\left(3x^2+2\right)^{5/2}}{245(2x+3)^7}-\frac{2689(4-9x)\left(3x^2+2\right)^{3/2}}{6002500(2x+3)^4}-\frac{24201(4-9x)\sqrt{3x^2+2}}{210087500(2x+3)^2}-\frac{72603\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{105043750\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] (-24201*(4 - 9*x)*Sqrt[2 + 3*x^2])/(210087500*(3 + 2*x)^2) - (2689*(4 - 9*x
)*(2 + 3*x^2)^(3/2))/(6002500*(3 + 2*x)^4) - (13*(2 + 3*x^2)^(5/2))/(245*(3
 + 2*x)^7) - (404*(2 + 3*x^2)^(5/2))/(25725*(3 + 2*x)^6) - (822*(2 + 3*x^2)
^(5/2))/(214375*(3 + 2*x)^5) - (72603*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
3*x^2])])/(105043750*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
```

```
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^8}\,dx = -\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{1}{245}\int \frac{(-287+78x)\left(2+3x^2\right)^{3/2}}{(3+2x)^7}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{404\left(2+3x^2\right)^{5/2}}{25725(3+2x)^6} + \frac{\int \frac{(13626-2424x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx}{51450}$$

$$= -\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{404\left(2+3x^2\right)^{5/2}}{25725(3+2x)^6} - \frac{822\left(2+3x^2\right)^{5/2}}{214375(3+2x)^5} + \frac{2689\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx}{42875}$$

$$= -\frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{404\left(2+3x^2\right)^{5/2}}{25725(3+2x)^6} - \frac{822\left(2+3x^2\right)}{214375(3+2x}$$

$$= -\frac{24201(4-9x)\sqrt{2+3x^2}}{210087500(3+2x)^2} - \frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{404\left(2\right.}{25725}$$

$$= -\frac{24201(4-9x)\sqrt{2+3x^2}}{210087500(3+2x)^2} - \frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{404\left(2\right.}{25725}$$

$$= -\frac{24201(4-9x)\sqrt{2+3x^2}}{210087500(3+2x)^2} - \frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4} - \frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7} - \frac{404\left(2\right.}{25725}$$

Mathematica [A] time = 0.15, size = 161, normalized size = 1.05

$$\frac{1}{245}\left(-\frac{822\left(3x^2+2\right)^{5/2}}{875(2x+3)^5} - \frac{404\left(3x^2+2\right)^{5/2}}{105(2x+3)^6} - \frac{13\left(3x^2+2\right)^{5/2}}{(2x+3)^7} - \frac{2689\left(-315(9x-4)\sqrt{3x^2+2}\,(2x+3)^2 - 1225(9x-4)\left(3x^2+2\right)^{3/2} + 54\sqrt{35}\,(2x+3)^4\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)\right)}{30012500(2x+3)^4}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7 - (404*(2 + 3*x^2)^(5/2))/(105*(3 + 2*
x)^6) - (822*(2 + 3*x^2)^(5/2))/(875*(3 + 2*x)^5) - (2689*(-315*(3 + 2*x)^2
*(-4 + 9*x)*Sqrt[2 + 3*x^2] - 1225*(-4 + 9*x)*(2 + 3*x^2)^(3/2) + 54*Sqrt[3
5]*(3 + 2*x)^4*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])]))/(30012500*(3
 + 2*x)^4))/245
```

IntegrateAlgebraic [A] time = 2.08, size = 101, normalized size = 0.66

$$\frac{72603\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)}{52521875\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-5104296x^6 - 44301924x^5 - 148868010x^4 + 98810025x^3 - 740031210x^2 - 256388969x - 471103116\right)}{630262500(2x+3)^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-471103116 - 256388969*x - 740031210*x^2 + 98810025*x^3 -
 148868010*x^4 - 44301924*x^5 - 5104296*x^6))/(630262500*(3 + 2*x)^7) + (72
603*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/
(52521875*Sqrt[35])
```

fricas [A] time = 0.43, size = 164, normalized size = 1.07

$$\frac{217809 \sqrt{35} \left(128 x^{7} + 1344 x^{6} + 6048 x^{5} + 15120 x^{4} + 22680 x^{3} + 20412 x^{2} + 10206 x + 2187\right) \log\left(-\frac{\sqrt{35} \sqrt{3 x^{2} + 2} (9 x - 4) + 93 x^{2} - 36 x + 43}{4 x^{2} + 12 x + 9}\right) - 35 \left(5104296 x^{6} + 44301924 x^{5} + 148868010 x^{4} - 98810025 x^{3} + 740031210 x^{2} + 256388969 x + 471103116\right) \sqrt{3 x^{2} + 2}}{22059187500 \left(128 x^{7} + 1344 x^{6} + 6048 x^{5} + 15120 x^{4} + 22680 x^{3} + 20412 x^{2} + 10206 x + 2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/22059187500*(217809*sqrt(35)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 +
 22680*x^3 + 20412*x^2 + 10206*x + 2187)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*
x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(5104296*x^6 + 443019
24*x^5 + 148868010*x^4 - 98810025*x^3 + 740031210*x^2 + 256388969*x + 47110
3116)*sqrt(3*x^2 + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x
^3 + 20412*x^2 + 10206*x + 2187)
```

giac [B] time = 0.28, size = 408, normalized size = 2.67

$$\frac{72603}{3676531250} \sqrt{35} \log\left(\frac{\left|-2 \sqrt{3} x - \sqrt{35} - 3 \sqrt{3} + 2 \sqrt{3 x^{2} + 2}\right|}{2 \sqrt{3} x - \sqrt{35} + 3 \sqrt{3} - 2 \sqrt{3 x^{2} + 2}}\right) - \frac{9 \left(258144 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{13} + 5033808 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{12} + 225898166 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{11} + 26360013 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{10} + 555459995 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{9} - 2679767547 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{8} - 4252091247 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{7} - 6029804778 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{6} + 11677158028 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{5} - 7324195080 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{4} + 2245361152 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{3} - 675266496 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{2} + 174039168 \sqrt{3} x - 6049536 \sqrt{3} - 174039168 \sqrt{3 x^{2} + 2}\right)}{3361400000 \left({\left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)}^{2} + 3 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right) - 2\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] 72603/3676531250*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
- 9/3361400000*(258144*(sqrt(3)*x - sqrt(3*x^2 + 2))^13 + 5033808*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 2))^12 + 225898166*(sqrt(3)*x - sqrt(3*x^2 + 2))^1
1 + 26360013*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 + 555459995*(sqrt(3)*
x - sqrt(3*x^2 + 2))^9 - 2679767547*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^8
 - 4252091247*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 - 6029804778*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 2))^6 + 11677158028*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 - 732
4195080*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 2245361152*(sqrt(3)*x - s
qrt(3*x^2 + 2))^3 - 675266496*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 174
039168*sqrt(3)*x - 6049536*sqrt(3) - 174039168*sqrt(3*x^2 + 2))/((sqrt(3)*x
 - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^7
```

maple [A] time = 0.08, size = 245, normalized size = 1.60

$$\frac{653427 \sqrt{-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}}\, x}{7353062500} + \frac{8494551 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}} x}{257357187500} - \frac{72603 \sqrt{35}\, \operatorname{arctanh}\left(\frac{2 (-9 x + 4) \sqrt{35}}{35 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}\right)}{3676531250} - \frac{101 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{411600 \left(x + \frac{3}{2}\right)^{6}} - \frac{411 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{3430000 \left(x + \frac{3}{2}\right)^{5}} - \frac{2689 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{48020000 \left(x + \frac{3}{2}\right)^{4}} - \frac{24201 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{840350000 \left(x + \frac{3}{2}\right)^{3}} - \frac{250077 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{14706125000 \left(x + \frac{3}{2}\right)^{2}} - \frac{2831517 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{257357187500 \left(x + \frac{3}{2}\right)} + \frac{96804 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}}}{64339296875} + \frac{72603 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}{3676531250} - \frac{13 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{31360 \left(x + \frac{3}{2}\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^8,x)
```

```
[Out] -101/411600/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-411/3430000/(x+3/2)^5*(
-9*x+3*(x+3/2)^2-19/4)^(5/2)-2689/48020000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4
)^(5/2)-24201/840350000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-250077/1470
6125000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-2831517/257357187500/(x+3/2
)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+96804/64339296875*(-9*x+3*(x+3/2)^2-19/4)^(
3/2)+653427/7353062500*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+72603/3676531250*(-3
6*x+12*(x+3/2)^2-19)^(1/2)-72603/3676531250*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+8494551/257357187500*(-9*x+3*(x+3/2
)^2-19/4)^(3/2)*x-13/31360/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.43, size = 300, normalized size = 1.96

$$\frac{750231}{14706125000} \left(3 x^{2} + 2\right)^{\frac{3}{2}} - \frac{13 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{245 \left(128 x^{7} + 1344 x^{6} + 6048 x^{5} + 15120 x^{4} + 22680 x^{3} + 20412 x^{2} + 10206 x + 2187\right)} - \frac{404 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{25725 \left(64 x^{6} + 576 x^{5} + 2160 x^{4} + 4320 x^{3} + 4860 x^{2} + 2916 x + 729\right)} - \frac{822 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{214375 \left(32 x^{5} + 240 x^{4} + 720 x^{3} + 1080 x^{2} + 810 x + 243\right)} - \frac{2689 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{3001250 \left(16 x^{4} + 96 x^{3} + 216 x^{2} + 216 x + 81\right)} - \frac{24201 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{105043750 \left(8 x^{3} + 36 x^{2} + 54 x + 27\right)} - \frac{250077 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{3676531250 \left(4 x^{2} + 12 x + 9\right)} + \frac{653427}{7353062500} \sqrt{3 x^{2} + 2}\, x + \frac{72603}{3676531250} \sqrt{35}\, \operatorname{arsinh}\left(\frac{3 \sqrt{6} x}{2 \left|2 x + 3\right|} - \frac{2 \sqrt{6}}{3 \left|2 x + 3\right|}\right) + \frac{72603}{1838265625} \sqrt{3 x^{2} + 2} - \frac{2831517 \left(3 x^{2} + 2\right)^{\frac{3}{2}}}{14706125000 (2 x + 3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 750231/14706125000*(3*x^2 + 2)^(3/2) - 13/245*(3*x^2 + 2)^(5/2)/(128*x^7 +
1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) -
 404/25725*(3*x^2 + 2)^(5/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860
*x^2 + 2916*x + 729) - 822/214375*(3*x^2 + 2)^(5/2)/(32*x^5 + 240*x^4 + 720
*x^3 + 1080*x^2 + 810*x + 243) - 2689/3001250*(3*x^2 + 2)^(5/2)/(16*x^4 + 9
6*x^3 + 216*x^2 + 216*x + 81) - 24201/105043750*(3*x^2 + 2)^(5/2)/(8*x^3 +
36*x^2 + 54*x + 27) - 250077/3676531250*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9
) + 653427/7353062500*sqrt(3*x^2 + 2)*x + 72603/3676531250*sqrt(35)*arcsinh
(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 72603/1838265625*
sqrt(3*x^2 + 2) - 2831517/14706125000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 0.14, size = 272, normalized size = 1.78

$$\frac{72603\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{3676531250}-\frac{72603\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{3676531250}+\frac{92453\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{21952000\,\left(x^4+6\,x^3+\frac{27\,x^2}{2}+\frac{27\,x}{2}+\frac{81}{16}\right)}-\frac{507\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{19600\,\left(x^5+\frac{15\,x^4}{2}+\frac{45\,x^3}{2}+\frac{135\,x^2}{4}+\frac{405\,x}{16}+\frac{243}{32}\right)}-\frac{212679\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{3361400000\,\left(x+\frac{3}{2}\right)}+\frac{125\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{2688\,\left(x^6+9\,x^5+\frac{135\,x^4}{4}+\frac{135\,x^3}{2}+\frac{1215\,x^2}{16}+\frac{729\,x}{16}+\frac{729}{64}\right)}+\frac{3897\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{192080000\,\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{65\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{2048\,\left(x^7+\frac{21\,x^6}{2}+\frac{189\,x^5}{4}+\frac{945\,x^4}{8}+\frac{2835\,x^3}{16}+\frac{5103\,x^2}{32}+\frac{5103\,x}{64}+\frac{2187}{128}\right)}+\frac{7569\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{54880000\,\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^8,x)
```

```
[Out] (72603*35^(1/2)*log(x + 3/2))/3676531250 - (72603*35^(1/2)*log(x - (3^(1/2)
*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/3676531250 + (92453*3^(1/2)*(x^2 + 2
/3)^(1/2))/(21952000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (507*
3^(1/2)*(x^2 + 2/3)^(1/2))/(19600*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 +
(15*x^4)/2 + x^5 + 243/32)) - (212679*3^(1/2)*(x^2 + 2/3)^(1/2))/(336140000
0*(x + 3/2)) + (125*3^(1/2)*(x^2 + 2/3)^(1/2))/(2688*((729*x)/16 + (1215*x^
2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (3897*3^(1/2)*
(x^2 + 2/3)^(1/2))/(192080000*(3*x + x^2 + 9/4)) - (65*3^(1/2)*(x^2 + 2/3)^
(1/2))/(2048*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (
189*x^5)/4 + (21*x^6)/2 + x^7 + 2187/128)) + (7569*3^(1/2)*(x^2 + 2/3)^(1/2
))/(54880000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**8,x)
```

```
[Out] Timed out
```

3.1207 $\int (5-x)(3+2x)^4 \left(2+3x^2\right)^{5/2} \, dx$

Optimal. Leaf size=154

$$-\frac{1}{33}\left(3x^2+2\right)^{7/2}(2x+3)^4+\frac{49}{165}\left(3x^2+2\right)^{7/2}(2x+3)^3+\frac{6433\left(3x^2+2\right)^{7/2}(2x+3)^2}{4455}+\frac{2(62244x+181243)\left(3x^2+2\right.}{13365}$$

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{33}\left(3x^2+2\right)^{7/2}(2x+3)^4+\frac{49}{165}\left(3x^2+2\right)^{7/2}(2x+3)^3+\frac{6433\left(3x^2+2\right)^{7/2}(2x+3)^2}{4455}+\frac{2(62244x+181243)\left(3x^2+2\right)^{7/2}}{13365}+\frac{4991}{90}x\left(3x^2+2\right)^{5/2}+\frac{4991}{36}x\left(3x^2+2\right)^{3/2}+\frac{4991}{12}x\sqrt{3x^2+2}+\frac{4991\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (4991*x*Sqrt[2 + 3*x^2])/12 + (4991*x*(2 + 3*x^2)^(3/2))/36 + (4991*x*(2 +
3*x^2)^(5/2))/90 + (6433*(3 + 2*x)^2*(2 + 3*x^2)^(7/2))/4455 + (49*(3 + 2*x
)^3*(2 + 3*x^2)^(7/2))/165 - ((3 + 2*x)^4*(2 + 3*x^2)^(7/2))/33 + (2*(18124
3 + 62244*x)*(2 + 3*x^2)^(7/2))/13365 + (4991*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt
[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int (5-x)(3+2x)^4\left(2+3x^2\right)^{5/2}dx &= -\frac{1}{33}(3+2x)^4\left(2+3x^2\right)^{7/2}+\frac{1}{33}\int (3+2x)^3(511+294x)\left(2+3x^2\right)^{5/2}dx \\
&= \frac{49}{165}(3+2x)^3\left(2+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4\left(2+3x^2\right)^{7/2}+\frac{1}{990}\int (3+2x)^2(\\
&= \frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+\frac{49}{165}(3+2x)^3\left(2+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4\left(2 \right. \\
&= \frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+\frac{49}{165}(3+2x)^3\left(2+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4\left(2 \right. \\
&= \frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+\frac{49}{165}(3+2x)^3\left(2+3x \right. \\
&= \frac{4991}{36}x\left(2+3x^2\right)^{3/2}+\frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+ \\
&= \frac{4991}{12}x\sqrt{2+3x^2}+\frac{4991}{36}x\left(2+3x^2\right)^{3/2}+\frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+}{} \\
&= \frac{4991}{12}x\sqrt{2+3x^2}+\frac{4991}{36}x\left(2+3x^2\right)^{3/2}+\frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+}{}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 85, normalized size = 0.55

$$\frac{\sqrt{3x^2+2}\left(-699840x^{10}-769824x^9+12921120x^8+50615928x^7+93646260x^6+129966606x^5+150762600x^4+127123425x^3+92160240x^2+64370295x+19537120\right)}{53460}+\frac{4991\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(19537120 + 64370295*x + 92160240*x^2 + 127123425*x^3 + 15
0762600*x^4 + 129966606*x^5 + 93646260*x^6 + 50615928*x^7 + 12921120*x^8 -
769824*x^9 - 699840*x^10))/53460 + (4991*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

IntegrateAlgebraic [A] time = 0.43, size = 96, normalized size = 0.62

$$\frac{\sqrt{3x^2+2}\left(-699840x^{10}-769824x^9+12921120x^8+50615928x^7+93646260x^6+129966606x^5+150762600x^4+127123425x^3+92160240x^2+64370295x+19537120\right)}{53460}-\frac{4991\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(19537120 + 64370295*x + 92160240*x^2 + 127123425*x^3 + 15
0762600*x^4 + 129966606*x^5 + 93646260*x^6 + 50615928*x^7 + 12921120*x^8 -
769824*x^9 - 699840*x^10))/53460 - (4991*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]
])/(6*Sqrt[3])
```

fricas [A] time = 0.42, size = 90, normalized size = 0.58

$$-\frac{1}{53460}\left(699840x^{10}+769824x^9-12921120x^8-50615928x^7-93646260x^6-129966606x^5-150762600x^4-127123425x^3-92160240x^2-64370295x-19537120\right)\sqrt{3x^2+2}+\frac{4991}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/53460*(699840*x^10 + 769824*x^9 - 12921120*x^8 - 50615928*x^7 - 93646260
*x^6 - 129966606*x^5 - 150762600*x^4 - 127123425*x^3 - 92160240*x^2 - 64370
295*x - 19537120)*sqrt(3*x^2 + 2) + 4991/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2
 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.18, size = 82, normalized size = 0.53

$$-\frac{1}{53460}\,(3\,((9\,(2\,((2\,(6\,(4\,(27\,(10\,x+11)x-4985)x-78111)x-867095)x-2406789)x-2791900)x-4708275)x-30720080)x-21456765)x-19537120)\sqrt{3\,x^2+2}-\frac{4991}{18}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/53460*(3*((9*(2*((2*(6*(4*(27*(10*x + 11)*x - 4985)*x - 78111)*x - 86709
5)*x - 2406789)*x - 2791900)*x - 4708275)*x - 30720080)*x - 21456765)*x - 1
9537120)*sqrt(3*x^2 + 2) - 4991/18*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)
)
```

maple [A] time = 0.07, size = 115, normalized size = 0.75

$$-\frac{16\left(3x^2+2\right)^{\frac{7}{2}}x^4}{33}-\frac{8\left(3x^2+2\right)^{\frac{7}{2}}x^3}{15}+\frac{8840\left(3x^2+2\right)^{\frac{7}{2}}x^2}{891}+\frac{542\left(3x^2+2\right)^{\frac{7}{2}}x}{15}+\frac{4991\left(3x^2+2\right)^{\frac{5}{2}}x}{90}+\frac{4991\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{4991\sqrt{3x^2+2}\,x}{12}+\frac{4991\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{122107\left(3x^2+2\right)^{\frac{7}{2}}}{2673}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+2)^(5/2),x)
```

```
[Out] -16/33*x^4*(3*x^2+2)^(7/2)+8840/891*x^2*(3*x^2+2)^(7/2)+122107/2673*(3*x^2+
2)^(7/2)-8/15*x^3*(3*x^2+2)^(7/2)+542/15*x*(3*x^2+2)^(7/2)+4991/90*(3*x^2+2
)^(5/2)*x+4991/36*(3*x^2+2)^(3/2)*x+4991/12*(3*x^2+2)^(1/2)*x+4991/18*arcsi
nh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.10, size = 114, normalized size = 0.74

$$-\frac{16}{33}\left(3\,x^2+2\right)^{\frac{7}{2}}x^4-\frac{8}{15}\left(3\,x^2+2\right)^{\frac{7}{2}}x^3+\frac{8840}{891}\left(3\,x^2+2\right)^{\frac{7}{2}}x^2+\frac{542}{15}\left(3\,x^2+2\right)^{\frac{7}{2}}x+\frac{122107}{2673}\left(3\,x^2+2\right)^{\frac{7}{2}}+\frac{4991}{90}\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{4991}{36}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{4991}{12}\sqrt{3\,x^2+2}\,x+\frac{4991}{18}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/33*(3*x^2 + 2)^(7/2)*x^4 - 8/15*(3*x^2 + 2)^(7/2)*x^3 + 8840/891*(3*x^2
 + 2)^(7/2)*x^2 + 542/15*(3*x^2 + 2)^(7/2)*x + 122107/2673*(3*x^2 + 2)^(7/2
) + 4991/90*(3*x^2 + 2)^(5/2)*x + 4991/36*(3*x^2 + 2)^(3/2)*x + 4991/12*sqr
t(3*x^2 + 2)*x + 4991/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.75, size = 75, normalized size = 0.49

$$\frac{4991\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{432\,x^{10}}{11}-\frac{216\,x^9}{5}+\frac{7976\,x^8}{11}+\frac{14202\,x^7}{5}+\frac{173419\,x^6}{33}+\frac{72933\,x^5}{10}+\frac{279190\,x^4}{33}+\frac{28535\,x^3}{4}+\frac{1536004\,x^2}{297}+\frac{14449\,x}{4}+\frac{976856}{891}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (4991*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((14449
*x)/4 + (1536004*x^2)/297 + (28535*x^3)/4 + (279190*x^4)/33 + (72933*x^5)/1
0 + (173419*x^6)/33 + (14202*x^7)/5 + (7976*x^8)/11 - (216*x^9)/5 - (432*x^
10)/11 + 976856/891))/3
```

sympy [A] time = 113.01, size = 199, normalized size = 1.29

$$-\frac{144x^{10}\sqrt{3x^2+2}}{11}-\frac{72x^9\sqrt{3x^2+2}}{5}+\frac{7976x^8\sqrt{3x^2+2}}{33}+\frac{4734x^7\sqrt{3x^2+2}}{5}+\frac{173419x^6\sqrt{3x^2+2}}{99}+\frac{24311x^5\sqrt{3x^2+2}}{10}+\frac{279190x^4\sqrt{3x^2+2}}{99}+\frac{28535x^3\sqrt{3x^2+2}}{12}+\frac{1536004x^2\sqrt{3x^2+2}}{891}+\frac{14449x\sqrt{3x^2+2}}{12}+\frac{976856\sqrt{3x^2+2}}{2673}+\frac{4991\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+2)**(5/2),x)
```

```
[Out] -144*x**10*sqrt(3*x**2 + 2)/11 - 72*x**9*sqrt(3*x**2 + 2)/5 + 7976*x**8*sqr
t(3*x**2 + 2)/33 + 4734*x**7*sqrt(3*x**2 + 2)/5 + 173419*x**6*sqrt(3*x**2 +
 2)/99 + 24311*x**5*sqrt(3*x**2 + 2)/10 + 279190*x**4*sqrt(3*x**2 + 2)/99 +
 28535*x**3*sqrt(3*x**2 + 2)/12 + 1536004*x**2*sqrt(3*x**2 + 2)/891 + 14449
*x*sqrt(3*x**2 + 2)/12 + 976856*sqrt(3*x**2 + 2)/2673 + 4991*sqrt(3)*asinh(
sqrt(6)*x/2)/18
```

3.1208 $\int (5-x)(3+2x)^3 \left(2+3x^2\right)^{5/2} dx$

Optimal. Leaf size=132

$$-\frac{1}{30}(2x+3)^3\left(3x^2+2\right)^{7/2}+\frac{91}{270}(2x+3)^2\left(3x^2+2\right)^{7/2}+\frac{(4977x+15244)\left(3x^2+2\right)^{7/2}}{1620}+\frac{3731}{180}x\left(3x^2+2\right)^{5/2}+\frac{3731}{72}$$

Rubi [A] time = 0.06, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{30}(2x+3)^3\left(3x^2+2\right)^{7/2}+\frac{91}{270}(2x+3)^2\left(3x^2+2\right)^{7/2}+\frac{(4977x+15244)\left(3x^2+2\right)^{7/2}}{1620}+\frac{3731}{180}x\left(3x^2+2\right)^{5/2}+\frac{3731}{72}x\left(3x^2+2\right)^{3/2}+\frac{3731}{24}x\sqrt{3x^2+2}+\frac{3731\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{12\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (3731*x*Sqrt[2 + 3*x^2])/24 + (3731*x*(2 + 3*x^2)^(3/2))/72 + (3731*x*(2 +
3*x^2)^(5/2))/180 + (91*(3 + 2*x)^2*(2 + 3*x^2)^(7/2))/270 - ((3 + 2*x)^3*(
2 + 3*x^2)^(7/2))/30 + ((15244 + 4977*x)*(2 + 3*x^2)^(7/2))/1620 + (3731*Ar
cSinh[Sqrt[3/2]*x])/(12*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\left(2+3x^2\right)^{5/2}dx = -\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}+\frac{1}{30}\int (3+2x)^2(462+273x)\left(2+3x^2\right)^{5/2}dx$$
$$= \frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}+\frac{1}{810}\int (3+2x)(352$$
$$= \frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}+\frac{(15244+4977x)\left(2\right.}{1620}$$
$$= \frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}$$
$$= \frac{3731}{72}x\left(2+3x^2\right)^{3/2}+\frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}($$
$$= \frac{3731}{24}x\sqrt{2+3x^2}+\frac{3731}{72}x\left(2+3x^2\right)^{3/2}+\frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+2x)^2$$
$$= \frac{3731}{24}x\sqrt{2+3x^2}+\frac{3731}{72}x\left(2+3x^2\right)^{3/2}+\frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+2x)^2$$

Mathematica [A] time = 0.08, size = 80, normalized size = 0.61

$$\frac{335790\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(23328x^9-12960x^8-418446x^7-1035720x^6-1503522x^5-2036880x^4-1922805x^3-1350240x^2-1245915x-299200\right)}{3240}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-299200 - 1245915*x - 1350240*x^2 - 1922805*x^3 - 20368
80*x^4 - 1503522*x^5 - 1035720*x^6 - 418446*x^7 - 12960*x^8 + 23328*x^9)) +
 335790*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/3240
```

IntegrateAlgebraic [A] time = 0.40, size = 91, normalized size = 0.69

$$\frac{\sqrt{3x^2+2}\left(-23328x^9+12960x^8+418446x^7+1035720x^6+1503522x^5+2036880x^4+1922805x^3+1350240x^2+1245915x+299200\right)}{3240}-\frac{3731\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{12\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(299200 + 1245915*x + 1350240*x^2 + 1922805*x^3 + 2036880*
x^4 + 1503522*x^5 + 1035720*x^6 + 418446*x^7 + 12960*x^8 - 23328*x^9))/3240
 - (3731*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(12*Sqrt[3])
```

fricas [A] time = 0.42, size = 85, normalized size = 0.64

$$-\frac{1}{3240}\left(23328x^9-12960x^8-418446x^7-1035720x^6-1503522x^5-2036880x^4-1922805x^3-1350240x^2-1245915x-299200\right)\sqrt{3x^2+2}+\frac{3731}{72}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3240*(23328*x^9 - 12960*x^8 - 418446*x^7 - 1035720*x^6 - 1503522*x^5 - 2
036880*x^4 - 1922805*x^3 - 1350240*x^2 - 1245915*x - 299200)*sqrt(3*x^2 + 2
) + 3731/72*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.23, size = 76, normalized size = 0.58

$$-\frac{1}{3240}(3((9(2(((3(16(9x-5)x-2583)x-19180)x-27843)x-37720)x-71215)x-450080)x-415305)x-299200)\sqrt{3x^2+2}-\frac{3731}{36}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3240*(3*((9*(2*(((3*(16*(9*x - 5)*x - 2583)*x - 19180)*x - 27843)*x - 37
720)*x - 71215)*x - 450080)*x - 415305)*x - 299200)*sqrt(3*x^2 + 2) - 3731/
36*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 101, normalized size = 0.77

$$-\frac{4\left(3x^{2}+2\right)^{\frac{7}{2}}x^{3}}{15}+\frac{4\left(3x^{2}+2\right)^{\frac{7}{2}}x^{2}}{27}+\frac{319\left(3x^{2}+2\right)^{\frac{7}{2}}x}{60}+\frac{3731\left(3x^{2}+2\right)^{\frac{5}{2}}x}{180}+\frac{3731\left(3x^{2}+2\right)^{\frac{3}{2}}x}{72}+\frac{3731\sqrt{3x^{2}+2}\,x}{24}+\frac{3731\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{935\left(3x^{2}+2\right)^{\frac{7}{2}}}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+2)^(5/2),x)
```

```
[Out] -4/15*(3*x^2+2)^(7/2)*x^3+319/60*(3*x^2+2)^(7/2)*x+3731/180*(3*x^2+2)^(5/2)
*x+3731/72*(3*x^2+2)^(3/2)*x+3731/24*(3*x^2+2)^(1/2)*x+3731/36*arcsinh(1/2*
6^(1/2)*x)*3^(1/2)+4/27*(3*x^2+2)^(7/2)*x^2+935/81*(3*x^2+2)^(7/2)
```

maxima [A] time = 1.16, size = 100, normalized size = 0.76

$$-\frac{4}{15}\left(3x^{2}+2\right)^{\frac{7}{2}}x^{3}+\frac{4}{27}\left(3x^{2}+2\right)^{\frac{7}{2}}x^{2}+\frac{319}{60}\left(3x^{2}+2\right)^{\frac{7}{2}}x+\frac{935}{81}\left(3x^{2}+2\right)^{\frac{7}{2}}+\frac{3731}{180}\left(3x^{2}+2\right)^{\frac{5}{2}}x+\frac{3731}{72}\left(3x^{2}+2\right)^{\frac{3}{2}}x+\frac{3731}{24}\sqrt{3x^{2}+2}\,x+\frac{3731}{36}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 2)^(7/2)*x^3 + 4/27*(3*x^2 + 2)^(7/2)*x^2 + 319/60*(3*x^2 +
2)^(7/2)*x + 935/81*(3*x^2 + 2)^(7/2) + 3731/180*(3*x^2 + 2)^(5/2)*x + 3731
/72*(3*x^2 + 2)^(3/2)*x + 3731/24*sqrt(3*x^2 + 2)*x + 3731/36*sqrt(3)*arcsi
nh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.75, size = 70, normalized size = 0.53

$$\frac{3731\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(-\frac{108\,x^{9}}{5}+12\,x^{8}+\frac{7749\,x^{7}}{20}+959\,x^{6}+\frac{27843\,x^{5}}{20}+1886\,x^{4}+\frac{14243\,x^{3}}{8}+\frac{11252\,x^{2}}{9}+\frac{9229\,x}{8}+\frac{7480}{27}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (3731*3^(1/2)*asinh((6^(1/2)*x)/2))/36 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((9229*
x)/8 + (11252*x^2)/9 + (14243*x^3)/8 + 1886*x^4 + (27843*x^5)/20 + 959*x^6
+ (7749*x^7)/20 + 12*x^8 - (108*x^9)/5 + 7480/27))/3
```

sympy [A] time = 77.88, size = 180, normalized size = 1.36

$$-\frac{36x^{9}\sqrt{3x^{2}+2}}{5}+4x^{8}\sqrt{3x^{2}+2}+\frac{2583x^{7}\sqrt{3x^{2}+2}}{20}+\frac{959x^{6}\sqrt{3x^{2}+2}}{3}+\frac{9281x^{5}\sqrt{3x^{2}+2}}{20}+\frac{1886x^{4}\sqrt{3x^{2}+2}}{3}+\frac{14243x^{3}\sqrt{3x^{2}+2}}{24}+\frac{11252x^{2}\sqrt{3x^{2}+2}}{27}+\frac{9229x\sqrt{3x^{2}+2}}{24}+\frac{7480\sqrt{3x^{2}+2}}{81}+\frac{3731\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{36}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+2)**(5/2),x)
```

```
[Out] -36*x**9*sqrt(3*x**2 + 2)/5 + 4*x**8*sqrt(3*x**2 + 2) + 2583*x**7*sqrt(3*x*
*2 + 2)/20 + 959*x**6*sqrt(3*x**2 + 2)/3 + 9281*x**5*sqrt(3*x**2 + 2)/20 +
1886*x**4*sqrt(3*x**2 + 2)/3 + 14243*x**3*sqrt(3*x**2 + 2)/24 + 11252*x**2*
sqrt(3*x**2 + 2)/27 + 9229*x*sqrt(3*x**2 + 2)/24 + 7480*sqrt(3*x**2 + 2)/81
 + 3731*sqrt(3)*asinh(sqrt(6)*x/2)/36
```

3.1209 $\int (5-x)(3+2x)^2 \left(2+3x^2\right)^{5/2} \, dx$

Optimal. Leaf size=110

$$-\frac{1}{27}(2x+3)^2 \left(3x^2+2\right)^{7/2}+\frac{1}{81}(63x+226) \left(3x^2+2\right)^{7/2}+\frac{133}{18}x \left(3x^2+2\right)^{5/2}+\frac{665}{36}x \left(3x^2+2\right)^{3/2}+\frac{665}{12}x\sqrt{3x^2+2}+\frac{66}{}$$

Rubi [A] time = 0.04, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{27}(2x+3)^2 \left(3x^2+2\right)^{7/2}+\frac{1}{81}(63x+226) \left(3x^2+2\right)^{7/2}+\frac{133}{18}x \left(3x^2+2\right)^{5/2}+\frac{665}{36}x \left(3x^2+2\right)^{3/2}+\frac{665}{12}x\sqrt{3x^2+2}+\frac{665 \sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (665*x*Sqrt[2 + 3*x^2])/12 + (665*x*(2 + 3*x^2)^(3/2))/36 + (133*x*(2 + 3*x
^2)^(5/2))/18 - ((3 + 2*x)^2*(2 + 3*x^2)^(7/2))/27 + ((226 + 63*x)*(2 + 3*x
^2)^(7/2))/81 + (665*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\left(2+3x^2\right)^{5/2}dx = -\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{27}\int (3+2x)(413+252x)\left(2+3x^2\right)^{5/2}dx$$
$$= -\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{81}(226+63x)\left(2+3x^2\right)^{7/2}+\frac{133}{3}\int \left(2+3\right.$$
$$= \frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{81}(226+63x)\left(2+3x^2\right)$$
$$= \frac{665}{36}x\left(2+3x^2\right)^{3/2}+\frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{81}($$
$$= \frac{665}{12}x\sqrt{2+3x^2}+\frac{665}{36}x\left(2+3x^2\right)^{3/2}+\frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2($$
$$= \frac{665}{12}x\sqrt{2+3x^2}+\frac{665}{36}x\left(2+3x^2\right)^{3/2}+\frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2($$

Mathematica [A] time = 0.07, size = 75, normalized size = 0.68

$$\frac{1}{324}\sqrt{3x^2+2}\left(-1296x^8+2916x^7+18900x^6+27378x^5+41256x^4+50571x^3+28272x^2+40365x+6368\right)+\frac{665\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(6368 + 40365*x + 28272*x^2 + 50571*x^3 + 41256*x^4 + 2737
8*x^5 + 18900*x^6 + 2916*x^7 - 1296*x^8))/324 + (665*ArcSinh[Sqrt[3/2]*x])/
(6*Sqrt[3])
```

IntegrateAlgebraic [A] time = 0.38, size = 86, normalized size = 0.78

$$\frac{1}{324}\sqrt{3x^2+2}\left(-1296x^8+2916x^7+18900x^6+27378x^5+41256x^4+50571x^3+28272x^2+40365x+6368\right)-\frac{665\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(6368 + 40365*x + 28272*x^2 + 50571*x^3 + 41256*x^4 + 2737
8*x^5 + 18900*x^6 + 2916*x^7 - 1296*x^8))/324 - (665*Log[-(Sqrt[3]*x) + Sqr
t[2 + 3*x^2]])/(6*Sqrt[3])
```

fricas [A] time = 0.43, size = 80, normalized size = 0.73

$$-\frac{1}{324}\left(1296\,x^8-2916\,x^7-18900\,x^6-27378\,x^5-41256\,x^4-50571\,x^3-28272\,x^2-40365\,x-6368\right)\sqrt{3\,x^2+2}+\frac{665}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/324*(1296*x^8 - 2916*x^7 - 18900*x^6 - 27378*x^5 - 41256*x^4 - 50571*x^3
 - 28272*x^2 - 40365*x - 6368)*sqrt(3*x^2 + 2) + 665/36*sqrt(3)*log(-sqrt(3
)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 72, normalized size = 0.65

$$-\frac{1}{324}\left(3\left((9\left(2\left((2\left(3\left(4\,x-9\right)x-175\right)x-507\right)x-764\right)x-1873\right)x-9424\right)x-13455\right)x-6368\right)\sqrt{3\,x^2+2}-\frac{665}{18}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/324*(3*((9*(2*((2*(3*(4*x - 9)*x - 175)*x - 507)*x - 764)*x - 1873)*x -
9424)*x - 13455)*x - 6368)*sqrt(3*x^2 + 2) - 665/18*sqrt(3)*log(-sqrt(3)*x
+ sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 87, normalized size = 0.79

$$-\frac{4\left(3x^2+2\right)^{\frac{7}{2}}x^2}{27}+\frac{\left(3x^2+2\right)^{\frac{7}{2}}x}{3}+\frac{133\left(3x^2+2\right)^{\frac{5}{2}}x}{18}+\frac{665\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{665\sqrt{3x^2+2}\,x}{12}+\frac{665\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{199\left(3x^2+2\right)^{\frac{7}{2}}}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+2)^(5/2),x)
```

```
[Out] -4/27*(3*x^2+2)^(7/2)*x^2+199/81*(3*x^2+2)^(7/2)+1/3*(3*x^2+2)^(7/2)*x+133/
18*(3*x^2+2)^(5/2)*x+665/36*(3*x^2+2)^(3/2)*x+665/12*(3*x^2+2)^(1/2)*x+665/
18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.32, size = 86, normalized size = 0.78

$$-\frac{4}{27}\left(3\,x^2+2\right)^{\frac{7}{2}}x^2+\frac{1}{3}\left(3\,x^2+2\right)^{\frac{7}{2}}x+\frac{199}{81}\left(3\,x^2+2\right)^{\frac{7}{2}}+\frac{133}{18}\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{665}{36}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{665}{12}\sqrt{3\,x^2+2}\,x+\frac{665}{18}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/27*(3*x^2 + 2)^(7/2)*x^2 + 1/3*(3*x^2 + 2)^(7/2)*x + 199/81*(3*x^2 + 2)^
(7/2) + 133/18*(3*x^2 + 2)^(5/2)*x + 665/36*(3*x^2 + 2)^(3/2)*x + 665/12*sq
rt(3*x^2 + 2)*x + 665/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.06, size = 65, normalized size = 0.59

$$\frac{665\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-12\,x^8+27\,x^7+175\,x^6+\frac{507\,x^5}{2}+382\,x^4+\frac{1873\,x^3}{4}+\frac{2356\,x^2}{9}+\frac{1495\,x}{4}+\frac{1592}{27}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (665*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((1495*x
)/4 + (2356*x^2)/9 + (1873*x^3)/4 + 382*x^4 + (507*x^5)/2 + 175*x^6 + 27*x^
7 - 12*x^8 + 1592/27))/3
```

sympy [A] time = 50.47, size = 162, normalized size = 1.47

$$-4x^8\sqrt{3x^2+2}+9x^7\sqrt{3x^2+2}+\frac{175x^6\sqrt{3x^2+2}}{3}+\frac{169x^5\sqrt{3x^2+2}}{2}+\frac{382x^4\sqrt{3x^2+2}}{3}+\frac{1873x^3\sqrt{3x^2+2}}{12}+\frac{2356x^2\sqrt{3x^2+2}}{27}+\frac{1495x\sqrt{3x^2+2}}{12}+\frac{1592\sqrt{3x^2+2}}{81}+\frac{665\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+2)**(5/2),x)
```

```
[Out] -4*x**8*sqrt(3*x**2 + 2) + 9*x**7*sqrt(3*x**2 + 2) + 175*x**6*sqrt(3*x**2 +
 2)/3 + 169*x**5*sqrt(3*x**2 + 2)/2 + 382*x**4*sqrt(3*x**2 + 2)/3 + 1873*x*
*3*sqrt(3*x**2 + 2)/12 + 2356*x**2*sqrt(3*x**2 + 2)/27 + 1495*x*sqrt(3*x**2
 + 2)/12 + 1592*sqrt(3*x**2 + 2)/81 + 665*sqrt(3)*asinh(sqrt(6)*x/2)/18
```

3.1210 $\int (5-x)(3+2x)\left(2+3x^2\right)^{5/2} dx$

Optimal. Leaf size=88

$$\frac{1}{12}(4-x)\left(3x^2+2\right)^{7/2}+\frac{91}{36}x\left(3x^2+2\right)^{5/2}+\frac{455}{72}x\left(3x^2+2\right)^{3/2}+\frac{455}{24}x\sqrt{3x^2+2}+\frac{455\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{12\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {780, 195, 215}

$$\frac{1}{12}(4-x)\left(3x^2+2\right)^{7/2}+\frac{91}{36}x\left(3x^2+2\right)^{5/2}+\frac{455}{72}x\left(3x^2+2\right)^{3/2}+\frac{455}{24}x\sqrt{3x^2+2}+\frac{455\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{12\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (455*x*Sqrt[2 + 3*x^2])/24 + (455*x*(2 + 3*x^2)^(3/2))/72 + (91*x*(2 + 3*x^
2)^(5/2))/36 + ((4 - x)*(2 + 3*x^2)^(7/2))/12 + (455*ArcSinh[Sqrt[3/2]*x])/
(12*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)\left(2+3x^2\right)^{5/2} dx &= \frac{1}{12}(4-x)\left(2+3x^2\right)^{7/2}+\frac{91}{6}\int \left(2+3x^2\right)^{5/2} dx \\
&= \frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)\left(2+3x^2\right)^{7/2}+\frac{455}{18}\int \left(2+3x^2\right)^{3/2} dx \\
&= \frac{455}{72}x\left(2+3x^2\right)^{3/2}+\frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)\left(2+3x^2\right)^{7/2}+\frac{455}{12}\int \sqrt{} \\
&= \frac{455}{24}x\sqrt{2+3x^2}+\frac{455}{72}x\left(2+3x^2\right)^{3/2}+\frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)\left(2+3\right. \\
&= \frac{455}{24}x\sqrt{2+3x^2}+\frac{455}{72}x\left(2+3x^2\right)^{3/2}+\frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)\left(2+3\right.
\end{aligned}$$

Mathematica [A] time = 0.06, size = 70, normalized size = 0.80

$$\frac{1}{72}\left(910\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-3\sqrt{3x^2+2}\left(54x^7-216x^6-438x^5-432x^4-1111x^3-288x^2-985x-64\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-3*Sqrt[2 + 3*x^2]*(-64 - 985*x - 288*x^2 - 1111*x^3 - 432*x^4 - 438*x^5 -
 216*x^6 + 54*x^7) + 910*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/72
```

IntegrateAlgebraic [A] time = 0.34, size = 81, normalized size = 0.92

$$\frac{1}{24}\sqrt{3x^2+2}\left(-54x^7+216x^6+438x^5+432x^4+1111x^3+288x^2+985x+64\right)-\frac{455\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{12\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(64 + 985*x + 288*x^2 + 1111*x^3 + 432*x^4 + 438*x^5 + 216
*x^6 - 54*x^7))/24 - (455*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(12*Sqrt[3])
```

fricas [A] time = 0.42, size = 75, normalized size = 0.85

$$-\frac{1}{24}\left(54x^7-216x^6-438x^5-432x^4-1111x^3-288x^2-985x-64\right)\sqrt{3x^2+2}+\frac{455}{72}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/24*(54*x^7 - 216*x^6 - 438*x^5 - 432*x^4 - 1111*x^3 - 288*x^2 - 985*x -
64)*sqrt(3*x^2 + 2) + 455/72*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2
 - 1)
```

giac [A] time = 0.21, size = 63, normalized size = 0.72

$$-\frac{1}{24}((((6((9(x-4)x-73)x-72)x-1111)x-288)x-985)x-64)\sqrt{3x^2+2}-\frac{455}{36}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/24*((((6*((9*(x - 4)*x - 73)*x - 72)*x - 1111)*x - 288)*x - 985)*x - 64)
*sqrt(3*x^2 + 2) - 455/36*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 73, normalized size = 0.83

$$-\frac{\left(3x^2+2\right)^{\frac{7}{2}}x}{12}+\frac{91\left(3x^2+2\right)^{\frac{5}{2}}x}{36}+\frac{455\left(3x^2+2\right)^{\frac{3}{2}}x}{72}+\frac{455\sqrt{3x^2+2}\,x}{24}+\frac{455\sqrt{3}\,\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{\left(3x^2+2\right)^{\frac{7}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+2)^(5/2),x)
```

```
[Out] -1/12*(3*x^2+2)^(7/2)*x+91/36*(3*x^2+2)^(5/2)*x+455/72*(3*x^2+2)^(3/2)*x+45
5/24*(3*x^2+2)^(1/2)*x+455/36*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+1/3*(3*x^2+2)^
(7/2)
```

maxima [A] time = 1.16, size = 72, normalized size = 0.82

$$-\frac{1}{12}\left(3x^2+2\right)^{\frac{7}{2}}x+\frac{1}{3}\left(3x^2+2\right)^{\frac{7}{2}}+\frac{91}{36}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{455}{72}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{455}{24}\sqrt{3x^2+2}\,x+\frac{455}{36}\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 2)^(7/2)*x + 1/3*(3*x^2 + 2)^(7/2) + 91/36*(3*x^2 + 2)^(5/2)
*x + 455/72*(3*x^2 + 2)^(3/2)*x + 455/24*sqrt(3*x^2 + 2)*x + 455/36*sqrt(3)
*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.86, size = 60, normalized size = 0.68

$$\frac{455\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{27\,x^7}{4}+27\,x^6+\frac{219\,x^5}{4}+54\,x^4+\frac{1111\,x^3}{8}+36\,x^2+\frac{985\,x}{8}+8\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (455*3^(1/2)*asinh((6^(1/2)*x)/2))/36 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((985*x)
/8 + 36*x^2 + (1111*x^3)/8 + 54*x^4 + (219*x^5)/4 + 27*x^6 - (27*x^7)/4 + 8
))/3
```

sympy [A] time = 34.01, size = 143, normalized size = 1.62

$$-\frac{9x^7\sqrt{3x^2+2}}{4}+9x^6\sqrt{3x^2+2}+\frac{73x^5\sqrt{3x^2+2}}{4}+18x^4\sqrt{3x^2+2}+\frac{1111x^3\sqrt{3x^2+2}}{24}+12x^2\sqrt{3x^2+2}+\frac{985x\sqrt{3x^2+2}}{24}+\frac{8\sqrt{3x^2+2}}{3}+\frac{455\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{36}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+2)**(5/2),x)
```

```
[Out] -9*x**7*sqrt(3*x**2 + 2)/4 + 9*x**6*sqrt(3*x**2 + 2) + 73*x**5*sqrt(3*x**2
+ 2)/4 + 18*x**4*sqrt(3*x**2 + 2) + 1111*x**3*sqrt(3*x**2 + 2)/24 + 12*x**2
*sqrt(3*x**2 + 2) + 985*x*sqrt(3*x**2 + 2)/24 + 8*sqrt(3*x**2 + 2)/3 + 455*
sqrt(3)*asinh(sqrt(6)*x/2)/36
```

3.1211 $\int (5-x)\left(2+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=83

$$-\frac{1}{21}\left(3x^2+2\right)^{7/2}+\frac{5}{6}x\left(3x^2+2\right)^{5/2}+\frac{25}{12}x\left(3x^2+2\right)^{3/2}+\frac{25}{4}x\sqrt{3x^2+2}+\frac{25\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 195, 215}

$$-\frac{1}{21}\left(3x^2+2\right)^{7/2}+\frac{5}{6}x\left(3x^2+2\right)^{5/2}+\frac{25}{12}x\left(3x^2+2\right)^{3/2}+\frac{25}{4}x\sqrt{3x^2+2}+\frac{25\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (25*x*Sqrt[2 + 3*x^2])/4 + (25*x*(2 + 3*x^2)^(3/2))/12 + (5*x*(2 + 3*x^2)^(
5/2))/6 - (2 + 3*x^2)^(7/2)/21 + (25*ArcSinh[Sqrt[3/2]*x])/(2*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\left(2+3x^2\right)^{5/2}\,dx&=-\frac{1}{21}\left(2+3x^2\right)^{7/2}+5\int\left(2+3x^2\right)^{5/2}\,dx\\&=\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25}{3}\int\left(2+3x^2\right)^{3/2}\,dx\\&=\frac{25}{12}x\left(2+3x^2\right)^{3/2}+\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25}{2}\int\sqrt{2+3x^2}\,dx\\&=\frac{25}{4}x\sqrt{2+3x^2}+\frac{25}{12}x\left(2+3x^2\right)^{3/2}+\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25}{2}\int\frac{1}{\sqrt{2+}}\\&=\frac{25}{4}x\sqrt{2+3x^2}+\frac{25}{12}x\left(2+3x^2\right)^{3/2}+\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25\sinh^{-1}\left(\right.}{2\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 65, normalized size = 0.78

$$\frac{1}{84}\left(350\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(108x^6-630x^5+216x^4-1365x^3+144x^2-1155x+32\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(32 - 1155*x + 144*x^2 - 1365*x^3 + 216*x^4 - 630*x^5 +
108*x^6)) + 350*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/84
```

IntegrateAlgebraic [A] time = 0.25, size = 76, normalized size = 0.92

$$\frac{1}{84}\sqrt{3x^2+2}\left(-108x^6+630x^5-216x^4+1365x^3-144x^2+1155x-32\right)-\frac{25\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-32 + 1155*x - 144*x^2 + 1365*x^3 - 216*x^4 + 630*x^5 - 1
08*x^6))/84 - (25*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(2*Sqrt[3])
```

fricas [A] time = 0.42, size = 70, normalized size = 0.84

$$-\frac{1}{84}\left(108\,x^6-630\,x^5+216\,x^4-1365\,x^3+144\,x^2-1155\,x+32\right)\sqrt{3\,x^2+2}+\frac{25}{12}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/84*(108*x^6 - 630*x^5 + 216*x^4 - 1365*x^3 + 144*x^2 - 1155*x + 32)*sqrt
(3*x^2 + 2) + 25/12*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 61, normalized size = 0.73

$$-\frac{1}{84}\,(3\,(((6\,((6\,x-35)x+12)x-455)x+48)x-385)x+32)\sqrt{3\,x^2+2}-\frac{25}{6}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/84*(3*(((6*((6*x - 35)*x + 12)*x - 455)*x + 48)*x - 385)*x + 32)*sqrt(3*
x^2 + 2) - 25/6*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 61, normalized size = 0.73

$$\frac{25\left(3x^2+2\right)^{\frac{3}{2}}x}{12}+\frac{5\left(3x^2+2\right)^{\frac{5}{2}}x}{6}+\frac{25\sqrt{3x^2+2}\,x}{4}+\frac{25\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{6}-\frac{\left(3x^2+2\right)^{\frac{7}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2),x)
```

```
[Out] 25/12*(3*x^2+2)^(3/2)*x+5/6*(3*x^2+2)^(5/2)*x-1/21*(3*x^2+2)^(7/2)+25/6*arc
sinh(1/2*6^(1/2)*x)*3^(1/2)+25/4*(3*x^2+2)^(1/2)*x
```

maxima [A] time = 1.13, size = 60, normalized size = 0.72

$$-\frac{1}{21}\left(3\,x^2+2\right)^{\frac{7}{2}}+\frac{5}{6}\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{25}{12}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{25}{4}\sqrt{3\,x^2+2}\,x+\frac{25}{6}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/21*(3*x^2 + 2)^(7/2) + 5/6*(3*x^2 + 2)^(5/2)*x + 25/12*(3*x^2 + 2)^(3/2)
*x + 25/4*sqrt(3*x^2 + 2)*x + 25/6*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.74, size = 55, normalized size = 0.66

$$\frac{25\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{6}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{27\,x^6}{7}-\frac{45\,x^5}{2}+\frac{54\,x^4}{7}-\frac{195\,x^3}{4}+\frac{36\,x^2}{7}-\frac{165\,x}{4}+\frac{8}{7}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (25*3^(1/2)*asinh((6^(1/2)*x)/2))/6 - (3^(1/2)*(x^2 + 2/3)^(1/2)*((36*x^2)/
7 - (165*x)/4 - (195*x^3)/4 + (54*x^4)/7 - (45*x^5)/2 + (27*x^6)/7 + 8/7))/
3
```

sympy [A] time = 20.99, size = 131, normalized size = 1.58

$$-\frac{9x^6\sqrt{3x^2+2}}{7}+\frac{15x^5\sqrt{3x^2+2}}{2}-\frac{18x^4\sqrt{3x^2+2}}{7}+\frac{65x^3\sqrt{3x^2+2}}{4}-\frac{12x^2\sqrt{3x^2+2}}{7}+\frac{55x\sqrt{3x^2+2}}{4}-\frac{8\sqrt{3x^2+2}}{21}+\frac{25\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2),x)
```

```
[Out] -9*x**6*sqrt(3*x**2 + 2)/7 + 15*x**5*sqrt(3*x**2 + 2)/2 - 18*x**4*sqrt(3*x*
*2 + 2)/7 + 65*x**3*sqrt(3*x**2 + 2)/4 - 12*x**2*sqrt(3*x**2 + 2)/7 + 55*x*
sqrt(3*x**2 + 2)/4 - 8*sqrt(3*x**2 + 2)/21 + 25*sqrt(3)*asinh(sqrt(6)*x/2)/
6
```

3.1212 $\int \frac{(5-x)(2+3x^2)^{5/2}}{3+2x}\,dx$

Optimal. Leaf size=112

$$\frac{1}{60}(39-5x)\left(3x^2+2\right)^{5/2}+\frac{7}{96}(130-53x)\left(3x^2+2\right)^{3/2}+\frac{7}{64}(2275-691x)\sqrt{3x^2+2}-\frac{15925}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9}{\sqrt{35}\sqrt{3x}}\right.$$

Rubi [A] time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {815, 844, 215, 725, 206}

$$\frac{1}{60}(39-5x)\left(3x^2+2\right)^{5/2}+\frac{7}{96}(130-53x)\left(3x^2+2\right)^{3/2}+\frac{7}{64}(2275-691x)\sqrt{3x^2+2}-\frac{15925}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{162673\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{128\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (7*(2275 - 691*x)*Sqrt[2 + 3*x^2])/64 + (7*(130 - 53*x)*(2 + 3*x^2)^(3/2))/
96 + ((39 - 5*x)*(2 + 3*x^2)^(5/2))/60 - (162673*ArcSinh[Sqrt[3/2]*x])/(128
*Sqrt[3]) - (15925*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/
128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{3+2x}\,dx &= \frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2}+\frac{1}{72}\int \frac{(756-2226x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx \\
&= \frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2}+\frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2}+\frac{\int \frac{(152712-1044792x)\sqrt{2+3x^2}}{3+2x}\,dx}{3456} \\
&= \frac{7}{64}(2275-691x)\sqrt{2+3x^2}+\frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2}+\frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2} \\
&= \frac{7}{64}(2275-691x)\sqrt{2+3x^2}+\frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2}+\frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2} \\
&= \frac{7}{64}(2275-691x)\sqrt{2+3x^2}+\frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2}+\frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2} \\
&= \frac{7}{64}(2275-691x)\sqrt{2+3x^2}+\frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2}+\frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 90, normalized size = 0.80

$$\frac{-238875\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-2\sqrt{3x^2+2}\left(720x^5-5616x^4+12090x^3-34788x^2+80295x-259571\right)-813365\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{1920}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (-2*Sqrt[2 + 3*x^2]*(-259571 + 80295*x - 34788*x^2 + 12090*x^3 - 5616*x^4 +
 720*x^5) - 813365*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 238875*Sqrt[35]*ArcTanh[(
4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/1920
```

IntegrateAlgebraic [A] time = 0.54, size = 119, normalized size = 1.06

$$\frac{162673\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{128\sqrt{3}}+\frac{15925}{64}\sqrt{35}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)+\frac{1}{960}\sqrt{3x^2+2}\left(-720x^5+5616x^4-12090x^3+34788x^2-80295x+259571\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(259571 - 80295*x + 34788*x^2 - 12090*x^3 + 5616*x^4 - 720
*x^5))/960 + (15925*Sqrt[35]*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqr
t[2 + 3*x^2])/Sqrt[35]])/64 + (162673*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/
(128*Sqrt[3])
```

fricas [A] time = 0.44, size = 112, normalized size = 1.00

$$-\frac{1}{960}\left(720x^5-5616x^4+12090x^3-34788x^2+80295x-259571\right)\sqrt{3x^2+2}+\frac{162673}{768}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+\frac{15925}{256}\sqrt{35}\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/960*(720*x^5 - 5616*x^4 + 12090*x^3 - 34788*x^2 + 80295*x - 259571)*sqrt
(3*x^2 + 2) + 162673/768*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
 + 15925/256*sqrt(35)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 3
6*x + 43)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.28, size = 125, normalized size = 1.12

$$-\frac{1}{960}\,(3\,(2\,((24\,(5\,x-39)x+2015)x-5798)x+26765)x-259571)\sqrt{3\,x^2+2}+\frac{162673}{384}\,\sqrt{3}\,\log\left(-\sqrt{3}x+\sqrt{3\,x^2+2}\right)+\frac{15925}{128}\,\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}x-\sqrt{35}-3\,\sqrt{3}+2\,\sqrt{3\,x^2+2}\right|}{2\,\sqrt{3}x-\sqrt{35}+3\,\sqrt{3}-2\,\sqrt{3\,x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/960*(3*(2*((24*(5*x - 39)*x + 2015)*x - 5798)*x + 26765)*x - 259571)*sqr
t(3*x^2 + 2) + 162673/384*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 15925
/128*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 +
 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.05, size = 162, normalized size = 1.45

$$-\frac{\left(3x^2+2\right)^{\frac{5}{2}}x}{12}-\frac{5\left(3x^2+2\right)^{\frac{3}{2}}x}{24}-\frac{5\sqrt{3x^2+2}\,x}{8}-\frac{117\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{32}-\frac{4797\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{64}-\frac{162673\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{384}-\frac{15925\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{128}+\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{20}+\frac{455\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{48}+\frac{15925\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3),x)
```

```
[Out] -1/12*(3*x^2+2)^(5/2)*x-5/24*(3*x^2+2)^(3/2)*x-5/8*(3*x^2+2)^(1/2)*x-162673
/384*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+13/20*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-117
/32*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x-4797/64*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
+455/48*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+15925/128*(-36*x+12*(x+3/2)^2-19)^(1/
2)-15925/128*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19
)^(1/2))
```

maxima [A] time = 1.31, size = 116, normalized size = 1.04

$$-\frac{1}{12}\,\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{13}{20}\,\left(3\,x^2+2\right)^{\frac{5}{2}}-\frac{371}{96}\,\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{455}{48}\,\left(3\,x^2+2\right)^{\frac{3}{2}}-\frac{4837}{64}\,\sqrt{3\,x^2+2}\,x-\frac{162673}{384}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}x\right)+\frac{15925}{128}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{15925}{64}\,\sqrt{3\,x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 2)^(5/2)*x + 13/20*(3*x^2 + 2)^(5/2) - 371/96*(3*x^2 + 2)^(3
/2)*x + 455/48*(3*x^2 + 2)^(3/2) - 4837/64*sqrt(3*x^2 + 2)*x - 162673/384*s
qrt(3)*arcsinh(1/2*sqrt(6)*x) + 15925/128*sqrt(35)*arcsinh(3/2*sqrt(6)*x/ab
s(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 15925/64*sqrt(3*x^2 + 2)
```

mupad [B] time = 1.81, size = 86, normalized size = 0.77

$$\frac{\sqrt{35}\,\left(1114750\,\ln\left(x+\frac{3}{2}\right)-1114750\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{8960}-\frac{162673\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{384}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{9\,x^5}{4}-\frac{351\,x^4}{20}+\frac{1209\,x^3}{32}-\frac{8697\,x^2}{80}+\frac{16059\,x}{64}-\frac{259571}{320}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3),x)
```

```
[Out] (35^(1/2)*(1114750*log(x + 3/2) - 1114750*log(x - (3^(1/2)*35^(1/2)*(x^2 +
2/3)^(1/2))/9 - 4/9)))/8960 - (162673*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))
/384 - (3^(1/2)*(x^2 + 2/3)^(1/2)*((16059*x)/64 - (8697*x^2)/80 + (1209*x^3
)/32 - (351*x^4)/20 + (9*x^5)/4 - 259571/320))/3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x),x)
```

```
[Out] Timed out
```

3.1213 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^2} dx$

Optimal. Leaf size=117

$$-\frac{(x+34)\left(3x^2+2\right)^{5/2}}{10(2x+3)}-\frac{1}{24}(310-153x)\left(3x^2+2\right)^{3/2}-\frac{7}{16}(775-243x)\sqrt{3x^2+2}+\frac{5425}{32}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right.$$

Rubi [A] time = 0.08, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {813, 815, 844, 215, 725, 206}

$$-\frac{(x+34)\left(3x^2+2\right)^{5/2}}{10(2x+3)}-\frac{1}{24}(310-153x)\left(3x^2+2\right)^{3/2}-\frac{7}{16}(775-243x)\sqrt{3x^2+2}+\frac{5425}{32}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+\frac{18543}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] (-7*(775 - 243*x)*Sqrt[2 + 3*x^2])/16 - ((310 - 153*x)*(2 + 3*x^2)^(3/2))/2
4 - ((34 + x)*(2 + 3*x^2)^(5/2))/(10*(3 + 2*x)) + (18543*Sqrt[3]*ArcSinh[Sq
rt[3/2]*x])/32 + (5425*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2]
)])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
```

```
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^2}\,dx = -\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)} - \frac{1}{8}\int \frac{(8-408x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx$$

$$= -\frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2} - \frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)} - \frac{1}{384}\int \frac{(15456-163296x}{3+2x}$$

$$= -\frac{7}{16}(775-243x)\sqrt{2+3x^2} - \frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2} - \frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}$$

$$= -\frac{7}{16}(775-243x)\sqrt{2+3x^2} - \frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2} - \frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}$$

$$= -\frac{7}{16}(775-243x)\sqrt{2+3x^2} - \frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2} - \frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}$$

$$= -\frac{7}{16}(775-243x)\sqrt{2+3x^2} - \frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2} - \frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}$$

Mathematica [A] time = 0.13, size = 97, normalized size = 0.83

$$\frac{1}{480}\left(81375\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{2\sqrt{3x^2+2}\left(216x^5-1836x^4+5118x^3-19458x^2+89521x+265989\right)}{2x+3} + 278145\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-2*Sqrt[2 + 3*x^2]*(265989 + 89521*x - 19458*x^2 + 5118*x^3 - 1836*x^4 +
216*x^5))/(3 + 2*x) + 278145*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] + 81375*Sqrt[35]*
ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/480
```

IntegrateAlgebraic [A] time = 0.66, size = 126, normalized size = 1.08

$$-\frac{18543}{32}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) - \frac{5425}{16}\sqrt{35}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right) + \frac{\sqrt{3x^2+2}\left(-216x^5+1836x^4-5118x^3+19458x^2-89521x-265989\right)}{240(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-265989 - 89521*x + 19458*x^2 - 5118*x^3 + 1836*x^4 - 216
*x^5))/(240*(3 + 2*x)) - (5425*Sqrt[35]*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]
*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/16 - (18543*Sqrt[3]*Log[-(Sqrt[3]*x) +
Sqrt[2 + 3*x^2]])/32
```

fricas [A] time = 0.44, size = 131, normalized size = 1.12

$$\frac{278145\sqrt{3}(2x+3)\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+81375\sqrt{35}(2x+3)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right)-4\left(216x^5-1836x^4+5118x^3-19458x^2+89521x+265989\right)\sqrt{3x^2+2}}{960(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/960*(278145*sqrt(3)*(2*x + 3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
 + 81375*sqrt(35)*(2*x + 3)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^
2 + 36*x - 43)/(4*x^2 + 12*x + 9)) - 4*(216*x^5 - 1836*x^4 + 5118*x^3 - 194
58*x^2 + 89521*x + 265989)*sqrt(3*x^2 + 2))/(2*x + 3)
```

giac [B] time = 1.02, size = 665, normalized size = 5.68

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] 5425/32*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + s
qrt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 18543/32*sqrt(3)*log(1/2*abs(-2*
sqrt(3) + 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*x + 3)
)/(sqrt(3) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))
)*sgn(1/(2*x + 3)) - 15925/128*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3)*sgn
(1/(2*x + 3)) + 9/320*(238455*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + s
qrt(35)/(2*x + 3))^9*sgn(1/(2*x + 3)) - 149045*sqrt(35)*(sqrt(-18/(2*x + 3)
 + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^8*sgn(1/(2*x + 3)) - 697600*(s
qrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^7*sgn(1/(2*x
+ 3)) + 719040*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35
)/(2*x + 3))^6*sgn(1/(2*x + 3)) + 4150566*(sqrt(-18/(2*x + 3) + 35/(2*x + 3
)^2 + 3) + sqrt(35)/(2*x + 3))^5*sgn(1/(2*x + 3)) - 2707250*sqrt(35)*(sqrt(
-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^4*sgn(1/(2*x + 3)
) - 6756120*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))
^3*sgn(1/(2*x + 3)) + 4557000*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2
 + 3) + sqrt(35)/(2*x + 3))^2*sgn(1/(2*x + 3)) + 3563595*(sqrt(-18/(2*x + 3
) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))*sgn(1/(2*x + 3)) - 2833425*sq
rt(35)*sgn(1/(2*x + 3)))/((sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(
35)/(2*x + 3))^2 - 3)^5
```

maple [A] time = 0.05, size = 164, normalized size = 1.40

$$\frac{51\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{8}+\frac{1701\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{16}+\frac{39\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{70}+\frac{18543\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{32}+\frac{5425\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{32}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{70\left(x+\frac{3}{2}\right)}-\frac{31\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{35}-\frac{155\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{12}-\frac{5425\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^2,x)
```

```
[Out] -13/70/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-31/35*(-9*x+3*(x+3/2)^2-19/4)^
(5/2)+51/8*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+1701/16*(-9*x+3*(x+3/2)^2-19/4)^
(1/2)*x+18543/32*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-155/12*(-9*x+3*(x+3/2)^2-19
/4)^(3/2)-5425/32*(-36*x+12*(x+3/2)^2-19)^(1/2)+5425/32*35^(1/2)*arctanh(2/
35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+39/70*x*(-9*x+3*(x+3/2)
^2-19/4)^(5/2)
```

maxima [A] time = 1.24, size = 122, normalized size = 1.04

$$-\frac{1}{20}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{51}{8}\left(3x^2+2\right)^{\frac{3}{2}}x-\frac{155}{12}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{4(2x+3)}+\frac{1701}{16}\sqrt{3x^2+2}\,x+\frac{18543}{32}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)-\frac{5425}{32}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{5425}{16}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/20*(3*x^2 + 2)^(5/2) + 51/8*(3*x^2 + 2)^(3/2)*x - 155/12*(3*x^2 + 2)^(3/
2) - 13/4*(3*x^2 + 2)^(5/2)/(2*x + 3) + 1701/16*sqrt(3*x^2 + 2)*x + 18543/3
2*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 5425/32*sqrt(35)*arcsinh(3/2*sqrt(6)*x/a
bs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 5425/16*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 138, normalized size = 1.18

$$\frac{18543\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{3}\,x}{2}\right)}{32}-\frac{275027\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{960}-\frac{5425\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{32}+\frac{5425\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{32}-\frac{1393\sqrt{3}\,x^2\sqrt{x^2+\frac{2}{3}}}{80}+\frac{9\sqrt{3}\,x^3\sqrt{x^2+\frac{2}{3}}}{2}-\frac{9\sqrt{3}\,x^4\sqrt{x^2+\frac{2}{3}}}{20}-\frac{15925\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{128\left(x+\frac{3}{2}\right)}+\frac{2133\sqrt{3}\,x\sqrt{x^2+\frac{2}{3}}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^2,x)
```

```
[Out] (18543*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/32 - (275027*3^(1/2)*(x^2 + 2/
3)^(1/2))/960 - (5425*35^(1/2)*log(x + 3/2))/32 + (5425*35^(1/2)*log(x - (3
^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/32 - (1393*3^(1/2)*x^2*(x^2 +
2/3)^(1/2))/80 + (9*3^(1/2)*x^3*(x^2 + 2/3)^(1/2))/2 - (9*3^(1/2)*x^4*(x^2
+ 2/3)^(1/2))/20 - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(128*(x + 3/2)) + (213
3*3^(1/2)*x*(x^2 + 2/3)^(1/2))/32
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**2,x)
```

```
[Out] Timed out
```

3.1214 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=126

$$-\frac{(2x+29)\left(3x^2+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(29x+178)\left(3x^2+2\right)^{3/2}}{32(2x+3)}+\frac{15}{64}(859-267x)\sqrt{3x^2+2}-\frac{12885}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+}}\right.$$

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {813, 815, 844, 215, 725, 206}

$$-\frac{(2x+29)\left(3x^2+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(29x+178)\left(3x^2+2\right)^{3/2}}{32(2x+3)}+\frac{15}{64}(859-267x)\sqrt{3x^2+2}-\frac{12885}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{43995}{128}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] (15*(859 - 267*x)*Sqrt[2 + 3*x^2])/64 + (5*(178 + 29*x)*(2 + 3*x^2)^(3/2))/
(32*(3 + 2*x)) - ((29 + 2*x)*(2 + 3*x^2)^(5/2))/(16*(3 + 2*x)^2) - (43995*S
qrt[3]*ArcSinh[Sqrt[3/2]*x])/128 - (12885*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[
35]*Sqrt[2 + 3*x^2])])/128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
```

```
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^3}\,dx = -\frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} - \frac{5}{64}\int \frac{(16-348x)\left(2+3x^2\right)^{3/2}}{(3+2x)^2}\,dx$$

$$= \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} + \frac{5}{512}\int \frac{(2784-25632x)\sqrt{2}}{3+2x}$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} +$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} -$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} -$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} -$$

Mathematica [A] time = 0.15, size = 97, normalized size = 0.77

$$\frac{1}{128}\left(-12885\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{2\sqrt{3x^2+2}\left(72x^5-696x^4+2826x^3-19268x^2-127403x-126181\right)}{(2x+3)^2} - 43995\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-2*Sqrt[2 + 3*x^2]*(-126181 - 127403*x - 19268*x^2 + 2826*x^3 - 696*x^4 +
 72*x^5))/(3 + 2*x)^2 - 43995*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 12885*Sqrt[35]
*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/128
```

IntegrateAlgebraic [A] time = 0.75, size = 126, normalized size = 1.00

$$\frac{43995}{128}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) + \frac{12885}{64}\sqrt{35}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right) + \frac{\sqrt{3x^2+2}\left(-72x^5+696x^4-2826x^3+19268x^2+127403x+126181\right)}{64(2x+3)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(126181 + 127403*x + 19268*x^2 - 2826*x^3 + 696*x^4 - 72*x
^5))/(64*(3 + 2*x)^2) + (12885*Sqrt[35]*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]
*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/64 + (43995*Sqrt[3]*Log[-(Sqrt[3]*x) +
Sqrt[2 + 3*x^2]])/128
```

fricas [A] time = 0.43, size = 146, normalized size = 1.16

$$\frac{43995\,\sqrt{3}\left(4\,x^{2}+12\,x+9\right)\log\left(\sqrt{3}\,\sqrt{3\,x^{2}+2}\,x-3\,x^{2}-1\right)+12885\,\sqrt{35}\left(4\,x^{2}+12\,x+9\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^{2}+2}\,(9\,x-4)+93\,x^{2}-36\,x+43}{4\,x^{2}+12\,x+9}\right)-4\left(72\,x^{5}-696\,x^{4}+2826\,x^{3}-19268\,x^{2}-127403\,x-126181\right)\sqrt{3\,x^{2}+2}}{256\left(4\,x^{2}+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/256*(43995*sqrt(3)*(4*x^2 + 12*x + 9)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x
^2 - 1) + 12885*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*
(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 4*(72*x^5 - 696*x^4 +
 2826*x^3 - 19268*x^2 - 127403*x - 126181)*sqrt(3*x^2 + 2))/(4*x^2 + 12*x +
 9)
```

giac [B] time = 0.29, size = 230, normalized size = 1.83

$$-\frac{1}{32}\,(3\,((3\,x-38)x+225)x-4177)\sqrt{3\,x^{2}+2}+\frac{43995}{128}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^{2}+2}\right)+\frac{12885}{128}\,\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}-3\,\sqrt{3}+2\,\sqrt{3\,x^{2}+2}\right|}{2\,\sqrt{3}\,x-\sqrt{35}+3\,\sqrt{3}-2\,\sqrt{3\,x^{2}+2}}\right)+\frac{35\left(11472\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{3}+25829\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{2}-57912\,\sqrt{3}\,x+8984\,\sqrt{3}+57912\,\sqrt{3\,x^{2}+2}\right)}{256\left(\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{2}+3\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)-2\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/32*(3*((3*x - 38)*x + 225)*x - 4177)*sqrt(3*x^2 + 2) + 43995/128*sqrt(3)
*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 12885/128*sqrt(35)*log(-abs(-2*sqrt(3)
*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*
sqrt(3) - 2*sqrt(3*x^2 + 2))) + 35/256*(11472*(sqrt(3)*x - sqrt(3*x^2 + 2))
^3 + 25829*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 57912*sqrt(3)*x + 8984
*sqrt(3) + 57912*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^2
```

maple [A] time = 0.06, size = 185, normalized size = 1.47

$$-\frac{807\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{224}-\frac{4005\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{64}-\frac{1263\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{4900}-\frac{43995\sqrt{3}\,\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{128}-\frac{12885\sqrt{35}\,\mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{128}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{280\left(x+\frac{3}{2}\right)^{2}}+\frac{421\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{4900\left(x+\frac{3}{2}\right)}+\frac{2577\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{4900}+\frac{859\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{112}+\frac{12885\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^3,x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+421/4900/(x+3/2)*(-9*x+3*(x
+3/2)^2-19/4)^(7/2)+2577/4900*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-807/224*(-9*x+3
*(x+3/2)^2-19/4)^(3/2)*x-4005/64*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-43995/128*
arcsinh(1/2*6^(1/2)*x)*3^(1/2)+859/112*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+12885/
128*(-36*x+12*(x+3/2)^2-19)^(1/2)-12885/128*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-1263/4900*(-9*x+3*(x+3/2)^2-19/4)^(
5/2)*x
```

maxima [A] time = 1.32, size = 145, normalized size = 1.15

$$\frac{39}{280}\left(3\,x^{2}+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^{2}+2\right)^{\frac{7}{2}}}{70\left(4\,x^{2}+12\,x+9\right)}-\frac{807}{224}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x+\frac{859}{112}\left(3\,x^{2}+2\right)^{\frac{3}{2}}+\frac{421\left(3\,x^{2}+2\right)^{\frac{5}{2}}}{280\,(2\,x+3)}-\frac{4005}{64}\,\sqrt{3\,x^{2}+2}\,x-\frac{43995}{128}\,\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{12885}{128}\,\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{12885}{64}\,\sqrt{3\,x^{2}+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/280*(3*x^2 + 2)^(5/2) - 13/70*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) - 807
/224*(3*x^2 + 2)^(3/2)*x + 859/112*(3*x^2 + 2)^(3/2) + 421/280*(3*x^2 + 2)^
(5/2)/(2*x + 3) - 4005/64*sqrt(3*x^2 + 2)*x - 43995/128*sqrt(3)*arcsinh(1/2
*sqrt(6)*x) + 12885/128*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*s
qrt(6)/abs(2*x + 3)) + 12885/64*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 147, normalized size = 1.17

$$\frac{12885\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{128}+\frac{4177\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{32}-\frac{43995\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{128}-\frac{12885\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{128}+\frac{57\,\sqrt{3}\,x^2\,\sqrt{x^2+\frac{2}{3}}}{16}-\frac{9\,\sqrt{3}\,x^3\,\sqrt{x^2+\frac{2}{3}}}{32}+\frac{39305\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{256\,\left(x+\frac{3}{2}\right)}-\frac{15925\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{512\,\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{675\,\sqrt{3}\,x\,\sqrt{x^2+\frac{2}{3}}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^3,x)
```

```
[Out] (12885*35^(1/2)*log(x + 3/2))/128 + (4177*3^(1/2)*(x^2 + 2/3)^(1/2))/32 - (
43995*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/128 - (12885*35^(1/2)*log(x - (
3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/128 + (57*3^(1/2)*x^2*(x^2 +
2/3)^(1/2))/16 - (9*3^(1/2)*x^3*(x^2 + 2/3)^(1/2))/32 + (39305*3^(1/2)*(x^2
 + 2/3)^(1/2))/(256*(x + 3/2)) - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(512*(3*
x + x^2 + 9/4)) - (675*3^(1/2)*x*(x^2 + 2/3)^(1/2))/32
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**3,x)
```

```
[Out] Timed out
```

3.1215 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=133

$$-\frac{(x+8)\left(3x^2+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(12x+37)\left(3x^2+2\right)^{3/2}}{12(2x+3)^2}-\frac{15(37x+119)\sqrt{3x^2+2}}{8(2x+3)}+\frac{3657}{16}\sqrt{\frac{5}{7}}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+$$

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {813, 844, 215, 725, 206}

$$-\frac{(x+8)\left(3x^2+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(12x+37)\left(3x^2+2\right)^{3/2}}{12(2x+3)^2}-\frac{15(37x+119)\sqrt{3x^2+2}}{8(2x+3)}+\frac{3657}{16}\sqrt{\frac{5}{7}}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+\frac{1785}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] (-15*(119 + 37*x)*Sqrt[2 + 3*x^2])/(8*(3 + 2*x)) + (5*(37 + 12*x)*(2 + 3*x^
2)^(3/2))/(12*(3 + 2*x)^2) - ((8 + x)*(2 + 3*x^2)^(5/2))/(6*(3 + 2*x)^3) +
(1785*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (3657*Sqrt[5/7]*ArcTanh[(4 - 9*x)/
(Sqrt[35]*Sqrt[2 + 3*x^2])])/16
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^4}\,dx &= -\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}-\frac{5}{72}\int \frac{(24-288x)\left(2+3x^2\right)^{3/2}}{(3+2x)^3}\,dx \\
&= \frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{5}{768}\int \frac{(4608-21312x)\sqrt{2+3}}{(3+2x)^2} \\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}-\frac{5\int}{} \\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{53}{1} \\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{17}{1} \\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{17}{1}
\end{aligned}
$$

Mathematica [A] time = 0.16, size = 97, normalized size = 0.73

$$
\frac{1}{336}\left(10971\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{14\sqrt{3x^2+2}\left(36x^5-432x^4+3408x^3+37974x^2+77061x+46103\right)}{(2x+3)^3}+37485\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-14*Sqrt[2 + 3*x^2]*(46103 + 77061*x + 37974*x^2 + 3408*x^3 - 432*x^4 + 3
6*x^5))/(3 + 2*x)^3 + 37485*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] + 10971*Sqrt[35]*A
rcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/336
```

IntegrateAlgebraic [A] time = 1.05, size = 128, normalized size = 0.96

$$
-\frac{1785}{16}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)-\frac{3657}{8}\sqrt{\frac{5}{7}}\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)+\frac{\sqrt{3x^2+2}\left(-36x^5+432x^4-3408x^3-37974x^2-77061x-46103\right)}{24(2x+3)^3}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-46103 - 77061*x - 37974*x^2 - 3408*x^3 + 432*x^4 - 36*x^
5))/(24*(3 + 2*x)^3) - (3657*Sqrt[5/7]*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*
x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/8 - (1785*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqr
t[2 + 3*x^2]])/16
```

fricas [A] time = 0.44, size = 167, normalized size = 1.26

$$
\frac{10971\sqrt{7}\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(\frac{\sqrt{7}\sqrt{5}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right)+37485\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)-28\left(36x^5-432x^4+3408x^3+37974x^2+77061x+46103\right)\sqrt{3x^2+2}}{672\left(8x^3+36x^2+54x+27\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/672*(10971*sqrt(7)*sqrt(5)*(8*x^3 + 36*x^2 + 54*x + 27)*log((sqrt(7)*sqrt
(5)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9)) + 3
7485*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x -
```

```
3*x^2 - 1) - 28*(36*x^5 - 432*x^4 + 3408*x^3 + 37974*x^2 + 77061*x + 46103)
*sqrt(3*x^2 + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.37, size = 275, normalized size = 2.07

$$-\frac{1}{32}(3(2x-33)x+973)\sqrt{3x^2+2}-\frac{1785}{16}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{3657}{112}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{\sqrt{3}\left(40667\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+589140\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+467730\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-1939920\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+585700\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-166304\right)}{128\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1/32*(3*(2*x - 33)*x + 973)*sqrt(3*x^2 + 2) - 1785/16*sqrt(3)*log(-sqrt(3)
*x + sqrt(3*x^2 + 2)) - 3657/112*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35)
- 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sq
rt(3*x^2 + 2))) - 1/128*sqrt(3)*(40667*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)
)^5 + 589140*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 467730*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 2))^3 - 1939920*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 585700*sqrt(
3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 166304)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2
 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^3
```

maple [A] time = 0.07, size = 206, normalized size = 1.55

$$\frac{591\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{490}+\frac{1143\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{56}+\frac{8457\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{85750}+\frac{1785\sqrt{3}\,\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{16}+\frac{3657\sqrt{35}\,\mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{112}+\frac{37\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{4900\left(x+\frac{3}{2}\right)^2}-\frac{2819\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{85750\left(x+\frac{3}{2}\right)}-\frac{7314\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{42875}-\frac{1219\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{490}-\frac{3657\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{112}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{840\left(x+\frac{3}{2}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^4,x)
```

```
[Out] 37/4900/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-2819/85750/(x+3/2)*(-9*x+3*
(x+3/2)^2-19/4)^(7/2)-7314/42875*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+591/490*(-9*
x+3*(x+3/2)^2-19/4)^(3/2)*x+1143/56*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+1785/16
*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-1219/490*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-3657
/112*(-36*x+12*(x+3/2)^2-19)^(1/2)+3657/112*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+8457/85750*(-9*x+3*(x+3/2)^2-19/4)^
(5/2)*x-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.44, size = 173, normalized size = 1.30

$$-\frac{111}{4900}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{105\left(8x^3+36x^2+54x+27\right)}+\frac{37\left(3x^2+2\right)^{\frac{7}{2}}}{1225\left(4x^2+12x+9\right)}+\frac{591}{490}\left(3x^2+2\right)^{\frac{3}{2}}x-\frac{1219}{490}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{2819\left(3x^2+2\right)^{\frac{5}{2}}}{4900(2x+3)}+\frac{1143}{56}\sqrt{3x^2+2}\,x+\frac{1785}{16}\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)-\frac{3657}{112}\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{3657}{56}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] -111/4900*(3*x^2 + 2)^(5/2) - 13/105*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54
*x + 27) + 37/1225*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 591/490*(3*x^2 +
2)^(3/2)*x - 1219/490*(3*x^2 + 2)^(3/2) - 2819/4900*(3*x^2 + 2)^(5/2)/(2*x
+ 3) + 1143/56*sqrt(3*x^2 + 2)*x + 1785/16*sqrt(3)*arcsinh(1/2*sqrt(6)*x) -
 3657/112*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) - 3657/56*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.12, size = 161, normalized size = 1.21

$$\frac{1785\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{16}-\frac{973\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{32}-\frac{3657\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{112}+\frac{3657\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{112}-\frac{3\sqrt{3}\,x^2\sqrt{x^2+\frac{2}{3}}}{16}-\frac{5197\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{64\left(x+\frac{3}{2}\right)}+\frac{9485\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{256\left(x^2+3x+\frac{9}{4}\right)}+\frac{99\sqrt{3}\,x\sqrt{x^2+\frac{2}{3}}}{32}-\frac{15925\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1536\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^4,x)
```

```
[Out] (1785*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/16 - (973*3^(1/2)*(x^2 + 2/3)^(
1/2))/32 - (3657*35^(1/2)*log(x + 3/2))/112 + (3657*35^(1/2)*log(x - (3^(1/
```

```
2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/112 - (3*3^(1/2)*x^2*(x^2 + 2/3)^(
1/2))/16 - (5197*3^(1/2)*(x^2 + 2/3)^(1/2))/(64*(x + 3/2)) + (9485*3^(1/2)*
(x^2 + 2/3)^(1/2))/(256*(3*x + x^2 + 9/4)) + (99*3^(1/2)*x*(x^2 + 2/3)^(1/2
))/32 - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(1536*((27*x)/4 + (9*x^2)/2 + x^3
 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**4,x)
```

```
[Out] Timed out
```

3.1216 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^5} dx$

Optimal. Leaf size=133

$$-\frac{(4x+19)(3x^2+2)^{5/2}}{16(2x+3)^4}-\frac{(5517x+5003)(3x^2+2)^{3/2}}{672(2x+3)^3}+\frac{3(1917x+6125)\sqrt{3x^2+2}}{448(2x+3)}-\frac{188379\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{896\sqrt{35}}-$$

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {813, 811, 844, 215, 725, 206}

$$-\frac{(4x+19)(3x^2+2)^{5/2}}{16(2x+3)^4}-\frac{(5517x+5003)(3x^2+2)^{3/2}}{672(2x+3)^3}+\frac{3(1917x+6125)\sqrt{3x^2+2}}{448(2x+3)}-\frac{188379\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{896\sqrt{35}}-\frac{2625}{128}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] (3*(6125 + 1917*x)*Sqrt[2 + 3*x^2])/(448*(3 + 2*x)) - ((5003 + 5517*x)*(2 +
 3*x^2)^(3/2))/(672*(3 + 2*x)^3) - ((19 + 4*x)*(2 + 3*x^2)^(5/2))/(16*(3 +
2*x)^4) - (2625*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/128 - (188379*ArcTanh[(4 - 9*
x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(896*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 && !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^5}\,dx = -\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4} - \frac{5}{64}\int \frac{(32-228x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx$$

$$= -\frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3} - \frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4} + \frac{\int \frac{(-35904+184032x)\sqrt{2+3x^2}}{(3+2x)^2}}{7168}$$

$$= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)} - \frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3} - \frac{(19+4x)\left(2+3x^2\right)^{5/}}{16(3+2x)^4}$$

$$= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)} - \frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3} - \frac{(19+4x)\left(2+3x^2\right)^{5/}}{16(3+2x)^4}$$

$$= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)} - \frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3} - \frac{(19+4x)\left(2+3x^2\right)^{5/}}{16(3+2x)^4}$$

$$= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)} - \frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3} - \frac{(19+4x)\left(2+3x^2\right)^{5/}}{16(3+2x)^4}$$

Mathematica [A] time = 0.16, size = 97, normalized size = 0.73

$$\frac{-565137\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{70\sqrt{3x^2+2}\left(3024x^5-57456x^4-898734x^3-2762820x^2-3335009x-1421955\right)}{(2x+3)^4} - 1929375\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{94080}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] ((-70*Sqrt[2 + 3*x^2]*(-1421955 - 3335009*x - 2762820*x^2 - 898734*x^3 - 57
456*x^4 + 3024*x^5))/(3 + 2*x)^4 - 1929375*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 5
65137*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/94080
```

IntegrateAlgebraic [A] time = 1.31, size = 126, normalized size = 0.95

$$\frac{2625}{128}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) + \frac{188379\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right)}{448\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-3024x^5+57456x^4+898734x^3+2762820x^2+3335009x+1421955\right)}{1344(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(1421955 + 3335009*x + 2762820*x^2 + 898734*x^3 + 57456*x^
4 - 3024*x^5))/(1344*(3 + 2*x)^4) + (188379*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3
```

```
/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(448*Sqrt[35]) + (2625*Sqrt[3]*Log[
-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/128
```

fricas [A] time = 0.46, size = 176, normalized size = 1.32

$$\frac{1929375 \sqrt{3} \left(16 x^{4} + 96 x^{3} + 216 x^{2} + 216 x + 81\right) \log\left(\sqrt{3} \sqrt{3 x^{2} + 2} x - 3 x^{2} - 1\right) + 565137 \sqrt{35} \left(16 x^{4} + 96 x^{3} + 216 x^{2} + 216 x + 81\right) \log\left(-\frac{\sqrt{35} \sqrt{3 x^{2} + 2} (9 x - 4) + 93 x^{2} - 36 x + 43}{4 x^{2} + 12 x + 9}\right) - 140 \left(3024 x^{5} - 57456 x^{4} - 898734 x^{3} - 2762820 x^{2} - 3335009 x - 1421955\right) \sqrt{3 x^{2} + 2}}{188160 \left(16 x^{4} + 96 x^{3} + 216 x^{2} + 216 x + 81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/188160*(1929375*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(sqrt
(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 565137*sqrt(35)*(16*x^4 + 96*x^3 + 216
*x^2 + 216*x + 81)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x
 + 43)/(4*x^2 + 12*x + 9)) - 140*(3024*x^5 - 57456*x^4 - 898734*x^3 - 27628
20*x^2 - 3335009*x - 1421955)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3 + 216*x^2 +
 216*x + 81)
```

giac [B] time = 0.82, size = 440, normalized size = 3.31

$$-\frac{188379}{31360} \sqrt{35} \log\left(\sqrt{35} \left(\sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{\sqrt{35}}{2 x + 3}\right) - 9\right) \mathrm{sgn}\left(\frac{1}{2 x + 3}\right) + \frac{2625}{128} \sqrt{3} \log\left(\frac{\left|-2 \sqrt{3} + 2 \sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{2 \sqrt{35}}{2 x + 3}\right|}{2 \left(\sqrt{3} + \sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{\sqrt{35}}{2 x + 3}\right)}\right) \mathrm{sgn}\left(\frac{1}{2 x + 3}\right) - \frac{1}{10752} \left(7 \left(\frac{35 \left(\frac{1365 \,\mathrm{sgn}\left(\frac{1}{2 x + 3}\right)}{2 x + 3} - 2129 \,\mathrm{sgn}\left(\frac{1}{2 x + 3}\right)\right)}{2 x + 3} + 57681 \,\mathrm{sgn}\left(\frac{1}{2 x + 3}\right)\right) \frac{1}{2 x + 3} - 242979 \,\mathrm{sgn}\left(\frac{1}{2 x + 3}\right)\right) \sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} - \frac{9 \left(256 \left(\sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{\sqrt{35}}{2 x + 3}\right)^{3} \mathrm{sgn}\left(\frac{1}{2 x + 3}\right) - 93 \sqrt{35} \left(\sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{\sqrt{35}}{2 x + 3}\right)^{2} \mathrm{sgn}\left(\frac{1}{2 x + 3}\right) - 582 \left(\sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{\sqrt{35}}{2 x + 3}\right) \mathrm{sgn}\left(\frac{1}{2 x + 3}\right) + 225 \sqrt{35} \,\mathrm{sgn}\left(\frac{1}{2 x + 3}\right)\right)}{64 \left(\left(\sqrt{-\frac{18}{2 x + 3} + \frac{35}{(2 x + 3)^{2}} + 3} + \frac{\sqrt{35}}{2 x + 3}\right)^{2} - 3\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -188379/31360*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 +
3) + sqrt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) + 2625/128*sqrt(3)*log(1/2*a
bs(-2*sqrt(3) + 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*
x + 3))/(sqrt(3) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x
 + 3)))*sgn(1/(2*x + 3)) - 1/10752*(7*(35*(1365*sgn(1/(2*x + 3))/(2*x + 3)
- 2129*sgn(1/(2*x + 3)))/(2*x + 3) + 57681*sgn(1/(2*x + 3)))/(2*x + 3) - 24
2979*sgn(1/(2*x + 3)))*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) - 9/64*(256
*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^3*sgn(1/(2
*x + 3)) - 93*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)
/(2*x + 3))^2*sgn(1/(2*x + 3)) - 582*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 +
 3) + sqrt(35)/(2*x + 3))*sgn(1/(2*x + 3)) + 225*sqrt(35)*sgn(1/(2*x + 3)))
/((sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^2 - 3)^2
```

maple [B] time = 0.07, size = 227, normalized size = 1.71

$$-\frac{58629 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}} x}{274400} - \frac{58491 \sqrt{-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}}\, x}{15680} - \frac{89151 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}} x}{6002500} - \frac{2625 \sqrt{3}\, \mathrm{arcsinh}\left(\frac{\sqrt{6}\, x}{2}\right)}{128} - \frac{188379 \sqrt{35}\, \mathrm{arctanh}\left(\frac{2 (-9 x + 4) \sqrt{35}}{35 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}\right)}{31360} + \frac{23 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{117600 \left(x + \frac{3}{2}\right)^{3}} - \frac{1041 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{343000 \left(x + \frac{3}{2}\right)^{2}} + \frac{29717 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{6002500 \left(x + \frac{3}{2}\right)} + \frac{188379 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{6002500} + \frac{62793 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}}}{137200} + \frac{188379 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}{31360} - \frac{13 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{2240 \left(x + \frac{3}{2}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^5,x)
```

```
[Out] 23/117600/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-1041/343000/(x+3/2)^2*(-9
*x+3*(x+3/2)^2-19/4)^(7/2)+29717/6002500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7
/2)+188379/6002500*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-58629/274400*(-9*x+3*(x+3/
2)^2-19/4)^(3/2)*x-58491/15680*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-2625/128*arc
sinh(1/2*6^(1/2)*x)*3^(1/2)+62793/137200*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+1883
79/31360*(-36*x+12*(x+3/2)^2-19)^(1/2)-188379/31360*35^(1/2)*arctanh(2/35*(
-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-89151/6002500*(-9*x+3*(x+3/
2)^2-19/4)^(5/2)*x-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.54, size = 206, normalized size = 1.55

$$\frac{3123}{343000} \left(3 x^{2} + 2\right)^{\frac{5}{2}} - \frac{13 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{140 \left(16 x^{4} + 96 x^{3} + 216 x^{2} + 216 x + 81\right)} + \frac{23 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{14700 \left(8 x^{3} + 36 x^{2} + 54 x + 27\right)} - \frac{1041 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{85750 \left(4 x^{2} + 12 x + 9\right)} - \frac{58629}{274400} \left(3 x^{2} + 2\right)^{\frac{3}{2}} x + \frac{62793}{137200} \left(3 x^{2} + 2\right)^{\frac{3}{2}} + \frac{29717 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{343000 (2 x + 3)} - \frac{58491}{15680} \sqrt{3 x^{2} + 2}\, x - \frac{2625}{128} \sqrt{3}\, \mathrm{arsinh}\left(\frac{1}{2} \sqrt{6}\, x\right) + \frac{188379}{31360} \sqrt{35}\, \mathrm{arsinh}\left(\frac{3 \sqrt{6}\, x}{2 |2 x + 3|} - \frac{2 \sqrt{6}}{3 |2 x + 3|}\right) + \frac{188379}{15680} \sqrt{3 x^{2} + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 3123/343000*(3*x^2 + 2)^(5/2) - 13/140*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 +
 216*x^2 + 216*x + 81) + 23/14700*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x
+ 27) - 1041/85750*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) - 58629/274400*(3*x
^2 + 2)^(3/2)*x + 62793/137200*(3*x^2 + 2)^(3/2) + 29717/343000*(3*x^2 + 2)
^(5/2)/(2*x + 3) - 58491/15680*sqrt(3*x^2 + 2)*x - 2625/128*sqrt(3)*arcsinh
(1/2*sqrt(6)*x) + 188379/31360*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3)
- 2/3*sqrt(6)/abs(2*x + 3)) + 188379/15680*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 180, normalized size = 1.35

$$\frac{188379\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{31360}+\frac{225\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{64}-\frac{2625\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{128}-\frac{188379\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{31360}-\frac{15925\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{4096\,\left(x^4+6\,x^3+\frac{27\,x^2}{2}+\frac{27\,x}{2}+\frac{81}{16}\right)}+\frac{80993\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{3584\,\left(x+\frac{3}{2}\right)}-\frac{19227\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1024\,\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{9\,\sqrt{3}\,x\,\sqrt{x^2+\frac{2}{3}}}{64}+\frac{74515\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{6144\,\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^5,x)
```

```
[Out] (188379*35^(1/2)*log(x + 3/2))/31360 + (225*3^(1/2)*(x^2 + 2/3)^(1/2))/64 -
 (2625*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/128 - (188379*35^(1/2)*log(x -
 (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/31360 - (15925*3^(1/2)*(x^2
 + 2/3)^(1/2))/(4096*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (8099
3*3^(1/2)*(x^2 + 2/3)^(1/2))/(3584*(x + 3/2)) - (19227*3^(1/2)*(x^2 + 2/3)^
(1/2))/(1024*(3*x + x^2 + 9/4)) - (9*3^(1/2)*x*(x^2 + 2/3)^(1/2))/64 + (745
15*3^(1/2)*(x^2 + 2/3)^(1/2))/(6144*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**5,x)
```

```
[Out] Timed out
```

3.1217 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^6} dx$

Optimal. Leaf size=133

$$\frac{(76x+23)(3x^2+2)^{5/2}}{140(2x+3)^5}+\frac{(8193x+6637)(3x^2+2)^{3/2}}{9800(2x+3)^3}-\frac{9(2643x+8575)\sqrt{3x^2+2}}{19600(2x+3)}+\frac{789723\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{39200\sqrt{35}}$$

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {811, 813, 844, 215, 725, 206}

$$\frac{(76x+23)(3x^2+2)^{5/2}}{140(2x+3)^5}+\frac{(8193x+6637)(3x^2+2)^{3/2}}{9800(2x+3)^3}-\frac{9(2643x+8575)\sqrt{3x^2+2}}{19600(2x+3)}+\frac{789723\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{39200\sqrt{35}}+\frac{63}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] (-9*(8575 + 2643*x)*Sqrt[2 + 3*x^2])/(19600*(3 + 2*x)) + ((6637 + 8193*x)*(
2 + 3*x^2)^(3/2))/(9800*(3 + 2*x)^3) + ((23 + 76*x)*(2 + 3*x^2)^(5/2))/(140
*(3 + 2*x)^5) + (63*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 + (789723*ArcTanh[(4 -
 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(39200*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 && !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
```

```
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^6}\,dx = \frac{(23+76x)\left(2+3x^2\right)^{5/2}}{140(3+2x)^5} - \frac{\int \frac{(-1248+1752x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx}{1120}$$

$$= \frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3} + \frac{(23+76x)\left(2+3x^2\right)^{5/2}}{140(3+2x)^5} + \frac{\int \frac{(372096-1522368x)\sqrt{2+3x^2}}{(3+2x)^2}}{627200}$$

$$= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)} + \frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3} + \frac{(23+76x)\left(2+3x\right.}{140(3+2x)^5}$$

$$= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)} + \frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3} + \frac{(23+76x)\left(2+3x\right.}{140(3+2x)^5}$$

$$= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)} + \frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3} + \frac{(23+76x)\left(2+3x\right.}{140(3+2x)^5}$$

$$= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)} + \frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3} + \frac{(23+76x)\left(2+3x\right.}{140(3+2x)^5}$$

Mathematica [A] time = 0.20, size = 100, normalized size = 0.75

$$\frac{789723\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{70\sqrt{3x^2+2}\left(88200x^5+2740188x^4+11367738x^3+20911298x^2+17940463x+5999363\right)}{(2x+3)^5}}{1372000} + \frac{63}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] (63*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 + ((-70*Sqrt[2 + 3*x^2]*(5999363 + 179
40463*x + 20911298*x^2 + 11367738*x^3 + 2740188*x^4 + 88200*x^5))/(3 + 2*x)
^5 + 789723*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/1372000
```

IntegrateAlgebraic [A] time = 1.57, size = 126, normalized size = 0.95

$$-\frac{63}{32}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) - \frac{789723\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{19600\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-88200x^5-2740188x^4-11367738x^3-20911298x^2-17940463x-5999363\right)}{19600(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-5999363 - 17940463*x - 20911298*x^2 - 11367738*x^3 - 274
0188*x^4 - 88200*x^5))/(19600*(3 + 2*x)^5) - (789723*ArcTanh[3*Sqrt[3/35] +
 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(19600*Sqrt[35]) - (63*Sqr
t[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/32
```

fricas [A] time = 0.43, size = 191, normalized size = 1.44

$$\frac{2701125\sqrt{3}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+789723\sqrt{35}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right)-140\left(88200x^5+2740188x^4+11367738x^3+20911298x^2+17940463x+5999363\right)\sqrt{3x^2+2}}{2744000\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/2744000*(2701125*sqrt(3)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
 243)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 789723*sqrt(35)*(32*x^5
 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)*log((sqrt(35)*sqrt(3*x^2 + 2
)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9)) - 140*(88200*x^5 + 27
40188*x^4 + 11367738*x^3 + 20911298*x^2 + 17940463*x + 5999363)*sqrt(3*x^2
+ 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.32, size = 355, normalized size = 2.67

$$-\frac{63}{32}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{789723}{1372000}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{9}{64}\sqrt{3x^2+2}-\frac{3\sqrt{3}\left(1034487\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^9+28143036\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^8+94364251\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^7+328235733\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^6-120044232\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5-774358774\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+578739476\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-495467552\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+66595728\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-11086336\right)}{156800\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -63/32*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 789723/1372000*sqrt(35)*
log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3
)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 9/64*sqrt(3*x^2 + 2) - 3
/156800*sqrt(3)*(1034487*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 28143036
*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 + 94364251*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 2))^7 + 328235733*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 120044232*sqrt(3)*(s
qrt(3)*x - sqrt(3*x^2 + 2))^5 - 774358774*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 +
 578739476*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 495467552*(sqrt(3)*x -
 sqrt(3*x^2 + 2))^2 + 66595728*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 1108
6336)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 2)) - 2)^5
```

maple [B] time = 0.06, size = 248, normalized size = 1.86

$$\frac{1131399\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{525218750}+\frac{267723\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{12005000}+\frac{248967\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{686000}+\frac{63\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{32}+\frac{789723\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1372000}-\frac{11\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{24500\left(x+\frac{3}{2}\right)^4}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{5600\left(x+\frac{3}{2}\right)^5}-\frac{521\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{857500\left(x+\frac{3}{2}\right)^3}-\frac{2241\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{30012500\left(x+\frac{3}{2}\right)^2}-\frac{377133\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{525218750\left(x+\frac{3}{2}\right)}-\frac{789723\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{262609375}-\frac{263241\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{6002500}-\frac{789723\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{1372000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^6,x)
```

```
[Out] -11/24500/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-13/5600/(x+3/2)^5*(-9*x+3
*(x+3/2)^2-19/4)^(7/2)-521/857500/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-2
241/30012500/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+1131399/525218750*(-9*
x+3*(x+3/2)^2-19/4)^(5/2)*x-377133/525218750/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4
)^(7/2)+267723/12005000*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+248967/686000*(-9*x
+3*(x+3/2)^2-19/4)^(1/2)*x+789723/1372000*35^(1/2)*arctanh(2/35*(-9*x+4)*35
^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+63/32*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-
789723/262609375*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-263241/6002500*(-9*x+3*(x+3/
2)^2-19/4)^(3/2)-789723/1372000*(-36*x+12*(x+3/2)^2-19)^(1/2)
```

maxima [B] time = 1.24, size = 244, normalized size = 1.83

$$\frac{6723}{30012500}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{175\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{44\left(3x^2+2\right)^{\frac{7}{2}}}{6125\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{1042\left(3x^2+2\right)^{\frac{7}{2}}}{214375\left(8x^3+36x^2+54x+27\right)}-\frac{2241\left(3x^2+2\right)^{\frac{7}{2}}}{7503125\left(4x^2+12x+9\right)}+\frac{267723}{12005000}\left(3x^2+2\right)^{\frac{3}{2}}x-\frac{263241}{6002500}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{377133\left(3x^2+2\right)^{\frac{5}{2}}}{30012500\,(2x+3)}+\frac{248967}{686000}\sqrt{3x^2+2}\,x+\frac{63}{32}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)-\frac{789723}{1372000}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{789723}{686000}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 6723/30012500*(3*x^2 + 2)^(5/2) - 13/175*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^
4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 44/6125*(3*x^2 + 2)^(7/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) - 1042/214375*(3*x^2 + 2)^(7/2)/(8*x^3 + 36
*x^2 + 54*x + 27) - 2241/7503125*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 267
723/12005000*(3*x^2 + 2)^(3/2)*x - 263241/6002500*(3*x^2 + 2)^(3/2) - 37713
3/30012500*(3*x^2 + 2)^(5/2)/(2*x + 3) + 248967/686000*sqrt(3*x^2 + 2)*x +
63/32*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 789723/1372000*sqrt(35)*arcsinh(3/2*
sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 789723/686000*sqrt(3*x
^2 + 2)
```

mupad [B] time = 1.95, size = 206, normalized size = 1.55

$$\frac{63\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{32}-\frac{9\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{64}-\frac{789723\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1372000}+\frac{789723\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1372000}+\frac{2303\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{512\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{3185\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{2048\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)}-\frac{64959\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{19600\left(x+\frac{3}{2}\right)}+\frac{44127\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{8960\left(x^2+3x+\frac{9}{4}\right)}-\frac{15397\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{2560\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^6,x)
```

```
[Out] (63*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/32 - (9*3^(1/2)*(x^2 + 2/3)^(1/2)
)/64 - (789723*35^(1/2)*log(x + 3/2))/1372000 + (789723*35^(1/2)*log(x - (3
^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1372000 + (2303*3^(1/2)*(x^2 +
 2/3)^(1/2))/(512*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (3185*3^
(1/2)*(x^2 + 2/3)^(1/2))/(2048*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15
*x^4)/2 + x^5 + 243/32)) - (64959*3^(1/2)*(x^2 + 2/3)^(1/2))/(19600*(x + 3/
2)) + (44127*3^(1/2)*(x^2 + 2/3)^(1/2))/(8960*(3*x + x^2 + 9/4)) - (15397*3
^(1/2)*(x^2 + 2/3)^(1/2))/(2560*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**6,x)
```

```
[Out] Timed out
```

3.1218 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^7} dx$

Optimal. Leaf size=133

$$\frac{(159x+11)\left(3x^2+2\right)^{5/2}}{420(2x+3)^6}+\frac{(403x+202)\left(3x^2+2\right)^{3/2}}{1568(2x+3)^4}+\frac{9(5167x+4373)\sqrt{3x^2+2}}{109760(2x+3)^2}-\frac{159759\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{219520\sqrt{35}}-$$

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {811, 844, 215, 725, 206}

$$\frac{(159x+11)\left(3x^2+2\right)^{5/2}}{420(2x+3)^6}+\frac{(403x+202)\left(3x^2+2\right)^{3/2}}{1568(2x+3)^4}+\frac{9(5167x+4373)\sqrt{3x^2+2}}{109760(2x+3)^2}-\frac{159759\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{219520\sqrt{35}}-\frac{9}{128}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] (9*(4373 + 5167*x)*Sqrt[2 + 3*x^2])/(109760*(3 + 2*x)^2) + ((202 + 403*x)*(
2 + 3*x^2)^(3/2))/(1568*(3 + 2*x)^4) + ((11 + 159*x)*(2 + 3*x^2)^(5/2))/(42
0*(3 + 2*x)^6) - (9*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/128 - (159759*ArcTanh[(4
- 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(219520*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx &= \frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6} - \frac{\int \frac{(-1560+1260x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx}{1680} \\
&= \frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4} + \frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6} + \frac{\int \frac{(496800-1058400x)\sqrt{2+3x^2}}{(3+2x)^3}}{1881600} \\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2} + \frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4} + \frac{(11+159x)\left(2+3x^2\right)^{5}}{420(3+2x)^6} \\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2} + \frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4} + \frac{(11+159x)\left(2+3x^2\right)^{5}}{420(3+2x)^6} \\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2} + \frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4} + \frac{(11+159x)\left(2+3x^2\right)^{5}}{420(3+2x)^6} \\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2} + \frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4} + \frac{(11+159x)\left(2+3x^2\right)^{5}}{420(3+2x)^6}
\end{aligned}
$$

Mathematica [A] time = 0.24, size = 100, normalized size = 0.75

$$
\frac{\frac{70\sqrt{3x^2+2}\left(4369608x^5+18915336x^4+47453802x^3+59256588x^2+39843609x+10361807\right)}{(2x+3)^6} - 479277\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{23049600} - \frac{9}{128}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] (-9*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/128 + ((70*Sqrt[2 + 3*x^2]*(10361807 + 39
843609*x + 59256588*x^2 + 47453802*x^3 + 18915336*x^4 + 4369608*x^5))/(3 +
2*x)^6 - 479277*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/230
49600
```

IntegrateAlgebraic [A] time = 1.87, size = 126, normalized size = 0.95

$$
\frac{9}{128}\sqrt{3}\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right) + \frac{159759\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{109760\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(4369608x^5+18915336x^4+47453802x^3+59256588x^2+39843609x+10361807\right)}{329280(2x+3)^6}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(10361807 + 39843609*x + 59256588*x^2 + 47453802*x^3 + 189
15336*x^4 + 4369608*x^5))/(329280*(3 + 2*x)^6) + (159759*ArcTanh[3*Sqrt[3/3
5] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(109760*Sqrt[35]) + (9
*Sqrt[3]*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/128
```

fricas [A] time = 0.45, size = 206, normalized size = 1.55

$$
\frac{1620675\sqrt{3}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+479277\sqrt{35}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+140\left(4369608x^5+18915336x^4+47453802x^3+59256588x^2+39843609x+10361807\right)\sqrt{3x^2+2}}{46099200\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/46099200*(1620675*sqrt(3)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*
x^2 + 2916*x + 729)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 479277*sqr
```

```
t(35)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)*lo
g(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x
+ 9)) + 140*(4369608*x^5 + 18915336*x^4 + 47453802*x^3 + 59256588*x^2 + 398
43609*x + 10361807)*sqrt(3*x^2 + 2))/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^
3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.34, size = 389, normalized size = 2.92

$$\frac{9}{128}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{159759}{7683200}\sqrt{35}\log\left(\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{\left|2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}\right|}\right)+\frac{3\sqrt{3}\left(566976\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{11}+16427322\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{10}+70792520\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{9}+421378065\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{8}+244013814\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{7}-879808433\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{6}-512612604\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{5}+2079633300\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{4}-831934400\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{3}+500387712\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{2}-51770496\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)+7768192\right)}{878080\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 9/128*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 159759/7683200*sqrt(35)*l
og(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)
*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 3/878080*sqrt(3)*(566976*
sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 16427322*(sqrt(3)*x - sqrt(3*x^2
 + 2))^10 + 70792520*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 421378065*(s
qrt(3)*x - sqrt(3*x^2 + 2))^8 + 244013814*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 2))^7 - 879808433*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 512612604*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 2))^5 + 2079633300*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 -
831934400*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 500387712*(sqrt(3)*x -
sqrt(3*x^2 + 2))^2 - 51770496*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 77681
92)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
2)) - 2)^6
```

maple [B] time = 0.07, size = 269, normalized size = 2.02

$$\frac{123129\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{1470612500}-\frac{27009\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{67228000}-\frac{45711\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{3841600}-\frac{9\sqrt{3}\,\mathrm{arcsinh}\left(\frac{\sqrt{6}x}{2}\right)}{128}-\frac{159759\sqrt{35}\,\mathrm{arctanh}\left(\frac{2\left(-9x+4\right)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{7683200}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{13440\left(x+\frac{3}{2}\right)^6}-\frac{113\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{548800\left(x+\frac{3}{2}\right)^4}-\frac{\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{3136\left(x+\frac{3}{2}\right)^5}-\frac{1039\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{9604000\left(x+\frac{3}{2}\right)^3}-\frac{6561\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{84035000\left(x+\frac{3}{2}\right)^2}-\frac{41043\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{1470612500\left(x+\frac{3}{2}\right)}+\frac{159759\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{1470612500}+\frac{53253\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{33614000}+\frac{159759\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{7683200}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^7,x)
```

```
[Out] -13/13440/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-113/548800/(x+3/2)^4*(-9*
x+3*(x+3/2)^2-19/4)^(7/2)-1/3136/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-10
39/9604000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-6561/84035000/(x+3/2)^2*
(-9*x+3*(x+3/2)^2-19/4)^(7/2)+123129/1470612500*(-9*x+3*(x+3/2)^2-19/4)^(5/
2)*x-41043/1470612500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-27009/67228000*
(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x-45711/3841600*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
*x-159759/7683200*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)
^2-19)^(1/2))-9/128*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+159759/1470612500*(-9*x+
3*(x+3/2)^2-19/4)^(5/2)+53253/33614000*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+159759
/7683200*(-36*x+12*(x+3/2)^2-19)^(1/2)
```

maxima [B] time = 1.56, size = 287, normalized size = 2.16

$$\frac{19683}{84035000}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{210\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{\left(3x^2+2\right)^{\frac{7}{2}}}{98\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{113\left(3x^2+2\right)^{\frac{7}{2}}}{34300\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{1039\left(3x^2+2\right)^{\frac{7}{2}}}{1200500\left(8x^3+36x^2+54x+27\right)}-\frac{6561\left(3x^2+2\right)^{\frac{7}{2}}}{21008750\left(4x^2+12x+9\right)}-\frac{27009}{67228000}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{53253}{33614000}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{41043\left(3x^2+2\right)^{\frac{5}{2}}}{84035000\left(2x+3\right)}-\frac{45711}{3841600}\sqrt{3x^2+2}\,x-\frac{9}{128}\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)+\frac{159759}{7683200}\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2\left|2x+3\right|}-\frac{2\sqrt{6}}{3\left|2x+3\right|}\right)+\frac{159759}{3841600}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 19683/84035000*(3*x^2 + 2)^(5/2) - 13/210*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x
^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 1/98*(3*x^2 + 2)^(7/2
)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 113/34300*(3*x^2
+ 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 1039/1200500*(3*x^2 +
 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 6561/21008750*(3*x^2 + 2)^(7/2)/(4
*x^2 + 12*x + 9) - 27009/67228000*(3*x^2 + 2)^(3/2)*x + 53253/33614000*(3*x
^2 + 2)^(3/2) - 41043/84035000*(3*x^2 + 2)^(5/2)/(2*x + 3) - 45711/3841600*
sqrt(3*x^2 + 2)*x - 9/128*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 159759/7683200*s
```

```
qrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 15
9759/3841600*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.14, size = 238, normalized size = 1.79

$$\frac{159759\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{7683200}-\frac{9\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{128}-\frac{159759\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{7683200}-\frac{9019\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{4096\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}+\frac{7315\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{4096\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)}+\frac{182067\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{878080\left(x+\frac{3}{2}\right)}-\frac{15925\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{24576\left(x^6+9x^5+\frac{135x^4}{4}+\frac{135x^3}{2}+\frac{1215x^2}{16}+\frac{729x}{16}+\frac{729}{64}\right)}-\frac{164961\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{250880\left(x^2+3x+\frac{9}{4}\right)}+\frac{109789\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{71680\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^7,x)
```

```
[Out] (159759*35^(1/2)*log(x + 3/2))/7683200 - (9*3^(1/2)*asinh((2^(1/2)*3^(1/2)*
x)/2))/128 - (159759*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/
9 - 4/9))/7683200 - (9019*3^(1/2)*(x^2 + 2/3)^(1/2))/(4096*((27*x)/2 + (27*
x^2)/2 + 6*x^3 + x^4 + 81/16)) + (7315*3^(1/2)*(x^2 + 2/3)^(1/2))/(4096*((4
05*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5 + 243/32)) + (182067
*3^(1/2)*(x^2 + 2/3)^(1/2))/(878080*(x + 3/2)) - (15925*3^(1/2)*(x^2 + 2/3)
^(1/2))/(24576*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*
x^5 + x^6 + 729/64)) - (164961*3^(1/2)*(x^2 + 2/3)^(1/2))/(250880*(3*x + x^
2 + 9/4)) + (109789*3^(1/2)*(x^2 + 2/3)^(1/2))/(71680*((27*x)/4 + (9*x^2)/2
 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**7,x)
```

```
[Out] Timed out
```

3.1219 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=136

$$-\frac{13\left(3x^2+2\right)^{7/2}}{245(2x+3)^7}-\frac{41(4-9x)\left(3x^2+2\right)^{5/2}}{7350(2x+3)^6}-\frac{41(4-9x)\left(3x^2+2\right)^{3/2}}{34300(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{1200500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{600250\sqrt{35}}$$

Rubi [A] time = 0.07, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {807, 721, 725, 206}

$$-\frac{13\left(3x^2+2\right)^{7/2}}{245(2x+3)^7}-\frac{41(4-9x)\left(3x^2+2\right)^{5/2}}{7350(2x+3)^6}-\frac{41(4-9x)\left(3x^2+2\right)^{3/2}}{34300(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{1200500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{600250\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (-369*(4 - 9*x)*Sqrt[2 + 3*x^2])/(1200500*(3 + 2*x)^2) - (41*(4 - 9*x)*(2 +
 3*x^2)^(3/2))/(34300*(3 + 2*x)^4) - (41*(4 - 9*x)*(2 + 3*x^2)^(5/2))/(7350
*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(245*(3 + 2*x)^7) - (1107*ArcTanh[(4
 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(600250*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx = -\frac{13\left(2+3x^2\right)^{7/2}}{245(3+2x)^7} + \frac{41}{35}\int \frac{\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$$

$$= -\frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{245(3+2x)^7} + \frac{41}{245}\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$$

$$= -\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{245(3+2x)^7} + \frac{369\int \frac{\sqrt{2+\cdots}}{(3+\cdots}}{1715\cdots} \cdots$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{1200500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\cdots}{24\cdots} \cdots$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{1200500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\cdots}{24\cdots} \cdots$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{1200500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\cdots}{24\cdots} \cdots$$

Mathematica [A] time = 0.18, size = 122, normalized size = 0.90

$$\frac{1}{490}\left(-\frac{26\left(3x^2+2\right)^{7/2}}{(2x+3)^7} + \frac{41(9x-4)\left(3x^2+2\right)^{5/2}}{15(2x+3)^6} + \frac{41\left(\frac{35\sqrt{3x^2+2}\left(1269x^3+408x^2+927x-604\right)}{(2x+3)^4} - 54\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)\right)}{85750}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] ((41*(-4 + 9*x)*(2 + 3*x^2)^(5/2))/(15*(3 + 2*x)^6) - (26*(2 + 3*x^2)^(7/2)
)/(3 + 2*x)^7 + (41*((35*Sqrt[2 + 3*x^2]*(-604 + 927*x + 408*x^2 + 1269*x^3
))/(3 + 2*x)^4 - 54*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])
)/85750)/490
```

IntegrateAlgebraic [A] time = 2.09, size = 101, normalized size = 0.74

$$\frac{1107\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right)}{300125\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-656424x^6+9455994x^5+2997810x^4+15015225x^3-3488490x^2+593639x-4499004\right)}{3601500(2x+3)^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-4499004 + 593639*x - 3488490*x^2 + 15015225*x^3 + 299781
0*x^4 + 9455994*x^5 - 656424*x^6))/(3601500*(3 + 2*x)^7) + (1107*ArcTanh[3*
Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(300125*Sqrt[3
5])
```

fricas [A] time = 0.44, size = 164, normalized size = 1.21

$$\frac{3321\sqrt{35}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 35\left(656424x^6-9455994x^5-2997810x^4-15015225x^3+3488490x^2-593639x+4499004\right)\sqrt{3x^2+2}}{126052500\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/126052500*(3321*sqrt(35)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 226
80*x^3 + 20412*x^2 + 10206*x + 2187)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x -
```

```
4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(656424*x^6 - 9455994*x^5
 - 2997810*x^4 - 15015225*x^3 + 3488490*x^2 - 593639*x + 4499004)*sqrt(3*x^
2 + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2
+ 10206*x + 2187)
```

giac [B] time = 0.32, size = 408, normalized size = 3.00

$$\frac{1107}{21008750}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{9\left(908247\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{13}+3755004\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{12}+52905908\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{11}+114259794\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{10}+422075810\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{9}-16674486\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{8}-1093657086\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{7}-205745364\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{6}+1886581864\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{5}-1023977040\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{4}+660654976\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{3}-94952448\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{2}-9114816\sqrt{3}x-1555968\sqrt{3}+9114816\sqrt{3x^2+2}\right)}{38416000\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] 1107/21008750*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqr
t(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 9
/38416000*(908247*(sqrt(3)*x - sqrt(3*x^2 + 2))^13 + 3755004*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 2))^12 + 52905908*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 11
4259794*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 + 422075810*(sqrt(3)*x - s
qrt(3*x^2 + 2))^9 - 16674486*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 1093
657086*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 - 205745364*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 2))^6 + 1886581864*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 - 1023977040*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 660654976*(sqrt(3)*x - sqrt(3*x^2
+ 2))^3 - 94952448*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 9114816*sqrt(3
)*x - 1555968*sqrt(3) + 9114816*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 +
 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^7
```

maple [B] time = 0.07, size = 278, normalized size = 2.04

$$\frac{4612869\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{128678593750}+\frac{129519\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{1470612500}+\frac{9963\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{42017500}-\frac{1107\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{21008750}-\frac{41\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{235200\left(x+\frac{3}{2}\right)^6}-\frac{1189\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{24010000\left(x+\frac{3}{2}\right)^4}-\frac{123\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{1372000\left(x+\frac{3}{2}\right)^5}-\frac{12177\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{420175000\left(x+\frac{3}{2}\right)^3}-\frac{132471\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{7353062500\left(x+\frac{3}{2}\right)^2}-\frac{1537623\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{128678593750\left(x+\frac{3}{2}\right)}+\frac{17712\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{64339296875}+\frac{1476\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{367653125}+\frac{1107\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}{21008750}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{31360\left(x+\frac{3}{2}\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^8,x)
```

```
[Out] -41/235200/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-1189/24010000/(x+3/2)^4*
(-9*x+3*(x+3/2)^2-19/4)^(7/2)-123/1372000/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)
^(7/2)-12177/420175000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-132471/73530
62500/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+4612869/128678593750*(-9*x+3*
(x+3/2)^2-19/4)^(5/2)*x-1537623/128678593750/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4
)^(7/2)+129519/1470612500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+9963/42017500*(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x-1107/21008750*35^(1/2)*arctanh(2/35*(-9*x+4)*3
5^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+17712/64339296875*(-9*x+3*(x+3/2)^2-
19/4)^(5/2)+1476/367653125*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+1107/21008750*(-36
*x+12*(x+3/2)^2-19)^(1/2)-13/31360/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.29, size = 323, normalized size = 2.38

$$\frac{397413}{7353062500}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{245\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}-\frac{41\left(3x^2+2\right)^{\frac{7}{2}}}{3675\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{123\left(3x^2+2\right)^{\frac{7}{2}}}{42875\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{1189\left(3x^2+2\right)^{\frac{7}{2}}}{1500625\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{12177\left(3x^2+2\right)^{\frac{7}{2}}}{52521875\left(8x^3+36x^2+54x+27\right)}-\frac{132471\left(3x^2+2\right)^{\frac{7}{2}}}{1838265625\left(4x^2+12x+9\right)}+\frac{129519}{1470612500}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{1476}{367653125}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{1537623\left(3x^2+2\right)^{\frac{5}{2}}}{7353062500(2x+3)}+\frac{9963}{42017500}\sqrt{3x^2+2}\,x+\frac{1107}{21008750}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{1107}{10504375}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 397413/7353062500*(3*x^2 + 2)^(5/2) - 13/245*(3*x^2 + 2)^(7/2)/(128*x^7 + 1
344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) -
41/3675*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^
2 + 2916*x + 729) - 123/42875*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3
 + 1080*x^2 + 810*x + 243) - 1189/1500625*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^
3 + 216*x^2 + 216*x + 81) - 12177/52521875*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^
2 + 54*x + 27) - 132471/1838265625*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 1
29519/1470612500*(3*x^2 + 2)^(3/2)*x + 1476/367653125*(3*x^2 + 2)^(3/2) - 1
537623/7353062500*(3*x^2 + 2)^(5/2)/(2*x + 3) + 9963/42017500*sqrt(3*x^2 +
```

```
2)*x + 1107/21008750*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt
(6)/abs(2*x + 3)) + 1107/10504375*sqrt(3*x^2 + 2)
```

mupad [B] time = 2.03, size = 272, normalized size = 2.00

$$\frac{1107\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{21008750}-\frac{1107\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{21008750}+\frac{34571\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{62720\left(x^4+6\,x^3+\frac{27\,x^2}{2}+\frac{27\,x}{2}+\frac{81}{16}\right)}-\frac{6213\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{7168\left(x^5+\frac{15\,x^4}{2}+\frac{45\,x^3}{2}+\frac{135\,x^2}{4}+\frac{405\,x}{16}+\frac{243}{32}\right)}-\frac{27351\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{19208000\left(x+\frac{3}{2}\right)}+\frac{9095\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{12288\left(x^6+9\,x^5+\frac{135\,x^4}{4}+\frac{135\,x^3}{2}+\frac{1215\,x^2}{16}+\frac{729\,x}{16}+\frac{729}{64}\right)}+\frac{73161\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{2195200\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{2275\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{8192\left(x^7+\frac{21\,x^6}{2}+\frac{189\,x^5}{4}+\frac{945\,x^4}{8}+\frac{2835\,x^3}{16}+\frac{5103\,x^2}{32}+\frac{5103\,x}{64}+\frac{2187}{128}\right)}-\frac{122553\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{627200\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^8,x)
```

```
[Out] (1107*35^(1/2)*log(x + 3/2))/21008750 - (1107*35^(1/2)*log(x - (3^(1/2)*35^
(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/21008750 + (34571*3^(1/2)*(x^2 + 2/3)^(1
/2))/(62720*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (6213*3^(1/2)*
(x^2 + 2/3)^(1/2))/(7168*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/
2 + x^5 + 243/32)) - (27351*3^(1/2)*(x^2 + 2/3)^(1/2))/(19208000*(x + 3/2))
 + (9095*3^(1/2)*(x^2 + 2/3)^(1/2))/(12288*((729*x)/16 + (1215*x^2)/16 + (1
35*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (73161*3^(1/2)*(x^2 + 2/
3)^(1/2))/(2195200*(3*x + x^2 + 9/4)) - (2275*3^(1/2)*(x^2 + 2/3)^(1/2))/(8
192*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (189*x^5)/
4 + (21*x^6)/2 + x^7 + 2187/128)) - (122553*3^(1/2)*(x^2 + 2/3)^(1/2))/(627
200*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**8,x)
```

```
[Out] Timed out
```

3.1220 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^9}\,dx$

Optimal. Leaf size=158

$$-\frac{773\left(3x^2+2\right)^{7/2}}{68600(2x+3)^7}-\frac{13\left(3x^2+2\right)^{7/2}}{280(2x+3)^8}-\frac{233(4-9x)\left(3x^2+2\right)^{5/2}}{171500(2x+3)^6}-\frac{699(4-9x)\left(3x^2+2\right)^{3/2}}{2401000(2x+3)^4}-\frac{6291(4-9x)\sqrt{3x^2+2}}{84035000(2x+3)^2}-$$

Rubi [A] time = 0.08, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{773\left(3x^2+2\right)^{7/2}}{68600(2x+3)^7}-\frac{13\left(3x^2+2\right)^{7/2}}{280(2x+3)^8}-\frac{233(4-9x)\left(3x^2+2\right)^{5/2}}{171500(2x+3)^6}-\frac{699(4-9x)\left(3x^2+2\right)^{3/2}}{2401000(2x+3)^4}-\frac{6291(4-9x)\sqrt{3x^2+2}}{84035000(2x+3)^2}-\frac{18873\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42017500\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] (-6291*(4 - 9*x)*Sqrt[2 + 3*x^2])/(84035000*(3 + 2*x)^2) - (699*(4 - 9*x)*(
2 + 3*x^2)^(3/2))/(2401000*(3 + 2*x)^4) - (233*(4 - 9*x)*(2 + 3*x^2)^(5/2))
/(171500*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(280*(3 + 2*x)^8) - (773*(2
+ 3*x^2)^(7/2))/(68600*(3 + 2*x)^7) - (18873*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sq
rt[2 + 3*x^2])])/(42017500*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
```

```
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx = -\frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8} - \frac{1}{280}\int \frac{(-328+39x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8} - \frac{773\left(2+3x^2\right)^{7/2}}{68600(3+2x)^7} + \frac{699\int \frac{\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx}{2450}$$

$$= -\frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8} - \frac{773\left(2+3x^2\right)^{7/2}}{68600(3+2x)^7} + \frac{699\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}}{17150}$$

$$= -\frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4} - \frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8} - \frac{773\left(2\right.}{68600(}$$

$$= -\frac{6291(4-9x)\sqrt{2+3x^2}}{84035000(3+2x)^2} - \frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4} - \frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6} -$$

$$= -\frac{6291(4-9x)\sqrt{2+3x^2}}{84035000(3+2x)^2} - \frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4} - \frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6} -$$

$$= -\frac{6291(4-9x)\sqrt{2+3x^2}}{84035000(3+2x)^2} - \frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4} - \frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6} -$$

Mathematica [A] time = 0.21, size = 144, normalized size = 0.91

$$\frac{1}{280}\left(-\frac{773\left(3x^2+2\right)^{7/2}}{245(2x+3)^7} - \frac{13\left(3x^2+2\right)^{7/2}}{(2x+3)^8} + \frac{466(9x-4)\left(3x^2+2\right)^{5/2}}{1225(2x+3)^6} + \frac{699\left(\frac{35\sqrt{3x^2+2}\left(1269x^3+408x^2+927x-604\right)}{(2x+3)^4} - 54\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)\right)}{10504375}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] ((466*(-4 + 9*x)*(2 + 3*x^2)^(5/2))/(1225*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7
/2))/(3 + 2*x)^8 - (773*(2 + 3*x^2)^(7/2))/(245*(3 + 2*x)^7) + (699*((35*Sq
rt[2 + 3*x^2]*(-604 + 927*x + 408*x^2 + 1269*x^3))/(3 + 2*x)^4 - 54*Sqrt[35
]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])]))/10504375)/280
```

IntegrateAlgebraic [A] time = 2.64, size = 106, normalized size = 0.67

$$\frac{18873\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)}{21008750\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(49626x^7 + 2206008x^6 + 210306726x^5 + 33613440x^4 + 226355535x^3 - 178164896x^2 - 38788883x - 104577556\right)}{84035000(2x+3)^8}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-104577556 - 38788883*x - 178164896*x^2 + 226355535*x^3 +
 33613440*x^4 + 210306726*x^5 + 2206008*x^6 + 49626*x^7))/(84035000*(3 + 2*
x)^8) + (18873*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/
Sqrt[35]])/(21008750*Sqrt[35])
```

fricas [A] time = 0.46, size = 179, normalized size = 1.13

$$\frac{18873 \sqrt{35} \left(256 x^{8} + 3072 x^{7} + 16128 x^{6} + 48384 x^{5} + 90720 x^{4} + 108864 x^{3} + 81648 x^{2} + 34992 x + 6561\right) \log\left(-\frac{\sqrt{35} \sqrt{3 x^{2} + 2} (9 x - 4) + 93 x^{2} - 36 x + 43}{4 x^{2} + 12 x + 9}\right) + 35 \left(49626 x^{7} + 2206008 x^{6} + 210306726 x^{5} + 33613440 x^{4} + 226355535 x^{3} - 178164896 x^{2} - 38788883 x - 104577556\right) \sqrt{3 x^{2} + 2}}{2941225000 \left(256 x^{8} + 3072 x^{7} + 16128 x^{6} + 48384 x^{5} + 90720 x^{4} + 108864 x^{3} + 81648 x^{2} + 34992 x + 6561\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/2941225000*(18873*sqrt(35)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 +
90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log(-(sqrt(35)*sqrt(3*
x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*(49626*x^
7 + 2206008*x^6 + 210306726*x^5 + 33613440*x^4 + 226355535*x^3 - 178164896*
x^2 - 38788883*x - 104577556)*sqrt(3*x^2 + 2))/(256*x^8 + 3072*x^7 + 16128*
x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)
```

giac [B] time = 0.33, size = 457, normalized size = 2.89

$$\frac{18873}{1470612500} \sqrt{35} \log\left(-\frac{\left|-2 \sqrt{3} x - \sqrt{35} - 3 \sqrt{3} + 2 \sqrt{3 x^{2} + 2}\right|}{2 \sqrt{3} x - \sqrt{35} + 3 \sqrt{3} - 2 \sqrt{3 x^{2} + 2}}\right) - \frac{9 \sqrt{3} \left(178944 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{15} + 138131220 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{14} + 30787400 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{13} + 573375810 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{12} - 3328877720 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{11} - 8681082564 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{10} - 13787031160 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{9} + 1566458475 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{8} - 28541438480 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{7} + 30582301680 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{6} - 23140527424 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{5} - 12885596640 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{4} + 1726278400 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{3} - 9101541120 \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{2} + 39843840 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right) - 1411584\right)}{10756480000 \left(\left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right)^{2} + 3 \sqrt{3} \left(\sqrt{3} x - \sqrt{3 x^{2} + 2}\right) - 2\right)^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] 18873/1470612500*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
- 9/10756480000*sqrt(3)*(178944*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^15 +
138131220*(sqrt(3)*x - sqrt(3*x^2 + 2))^14 + 30787400*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 2))^13 + 573375810*(sqrt(3)*x - sqrt(3*x^2 + 2))^12 - 33288777
20*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 - 8681082564*(sqrt(3)*x - sqrt(
3*x^2 + 2))^10 - 13787031160*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 1566
458475*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 28541438480*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 2))^7 + 30582301680*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 231405274
24*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 - 12885596640*(sqrt(3)*x - sqrt(
3*x^2 + 2))^4 + 1726278400*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 910154
1120*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 39843840*sqrt(3)*(sqrt(3)*x - sqrt(3
*x^2 + 2)) - 1411584)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 2)) - 2)^8
```

maple [B] time = 0.09, size = 299, normalized size = 1.89

$$\frac{78643791 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}} x}{9007501562500} + \frac{2208141 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}} x}{102942875000} + \frac{169857 \sqrt{-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}}\, x}{2941225000} - \frac{18873 \sqrt{35}\, \operatorname{arctanh}\left(\frac{2 (-9 x + 4) \sqrt{35}}{35 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}\right)}{1470612500} - \frac{233 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{5488000 \left(x + \frac{3}{2}\right)^{6}} - \frac{13 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{71680 \left(x + \frac{3}{2}\right)^{8}} - \frac{20271 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{1680700000 \left(x + \frac{3}{2}\right)^{4}} - \frac{2097 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{96040000 \left(x + \frac{3}{2}\right)^{5}} - \frac{207603 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{29412250000 \left(x + \frac{3}{2}\right)^{3}} - \frac{2258469 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{514714375000 \left(x + \frac{3}{2}\right)^{2}} - \frac{26214597 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{9007501562500 \left(x + \frac{3}{2}\right)} + \frac{150984 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{5}{2}}}{2251875390625} + \frac{12582 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{3}{2}}}{12867859375} + \frac{18873 \sqrt{-36 x + 12 \left(x + \frac{3}{2}\right)^{2} - 19}}{1470612500} - \frac{773 \left(-9 x + 3 \left(x + \frac{3}{2}\right)^{2} - \frac{19}{4}\right)^{\frac{7}{2}}}{8780800 \left(x + \frac{3}{2}\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^9,x)
```

```
[Out] -233/5488000/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-13/71680/(x+3/2)^8*(-9
*x+3*(x+3/2)^2-19/4)^(7/2)-20271/1680700000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/
4)^(7/2)-2097/96040000/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-207603/29412
250000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-2258469/514714375000/(x+3/2)
^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+78643791/9007501562500*(-9*x+3*(x+3/2)^2-1
9/4)^(5/2)*x-26214597/9007501562500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+2
208141/102942875000*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+169857/2941225000*(-9*x
+3*(x+3/2)^2-19/4)^(1/2)*x-18873/1470612500*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+150984/2251875390625*(-9*x+3*(x+3/2
)^2-19/4)^(5/2)+12582/12867859375*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+18873/14706
12500*(-36*x+12*(x+3/2)^2-19)^(1/2)-773/8780800/(x+3/2)^7*(-9*x+3*(x+3/2)^2
-19/4)^(7/2)
```

maxima [B] time = 1.45, size = 376, normalized size = 2.38

$$\frac{6775407}{514714375000} \left(3 x^{2} + 2\right)^{\frac{5}{2}} - \frac{13 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{280 \left(256 x^{8} + 3072 x^{7} + 16128 x^{6} + 48384 x^{5} + 90720 x^{4} + 108864 x^{3} + 81648 x^{2} + 34992 x + 6561\right)} - \frac{773 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{68600 \left(128 x^{7} + 1344 x^{6} + 6048 x^{5} + 15120 x^{4} + 22680 x^{3} + 20412 x^{2} + 10206 x + 2187\right)} - \frac{233 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{85750 \left(64 x^{6} + 576 x^{5} + 2160 x^{4} + 4320 x^{3} + 4860 x^{2} + 2916 x + 729\right)} - \frac{2097 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{3001250 \left(32 x^{5} + 240 x^{4} + 720 x^{3} + 1080 x^{2} + 810 x + 243\right)} - \frac{20271 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{105043750 \left(16 x^{4} + 96 x^{3} + 216 x^{2} + 216 x + 81\right)} - \frac{207603 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{3676531250 \left(8 x^{3} + 36 x^{2} + 54 x + 27\right)} - \frac{2258469 \left(3 x^{2} + 2\right)^{\frac{7}{2}}}{128678593750 \left(4 x^{2} + 12 x + 9\right)} + \frac{2208141}{102942875000} \left(3 x^{2} + 2\right)^{\frac{3}{2}} x + \frac{12582}{12867859375} \left(3 x^{2} + 2\right)^{\frac{3}{2}} - \frac{26214597 \left(3 x^{2} + 2\right)^{\frac{5}{2}}}{514714375000 (2 x + 3)} + \frac{169857}{2941225000} \sqrt{3 x^{2} + 2}\, x + \frac{18873}{1470612500} \sqrt{35} \operatorname{arsinh}\left(\frac{3 \sqrt{6} x}{2 |2 x + 3|} - \frac{2 \sqrt{6}}{3 |2 x + 3|}\right) + \frac{18873}{735306250} \sqrt{3 x^{2} + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 6775407/514714375000*(3*x^2 + 2)^(5/2) - 13/280*(3*x^2 + 2)^(7/2)/(256*x^8
+ 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 3
4992*x + 6561) - 773/68600*(3*x^2 + 2)^(7/2)/(128*x^7 + 1344*x^6 + 6048*x^5
 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 233/85750*(3*x^2 +
 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729
) - 2097/3001250*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 +
 810*x + 243) - 20271/105043750*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^
2 + 216*x + 81) - 207603/3676531250*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*
x + 27) - 2258469/128678593750*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 22081
41/102942875000*(3*x^2 + 2)^(3/2)*x + 12582/12867859375*(3*x^2 + 2)^(3/2) -
 26214597/514714375000*(3*x^2 + 2)^(5/2)/(2*x + 3) + 169857/2941225000*sqrt
(3*x^2 + 2)*x + 18873/1470612500*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3
) - 2/3*sqrt(6)/abs(2*x + 3)) + 18873/735306250*sqrt(3*x^2 + 2)
```

mupad [B] time = 1.89, size = 326, normalized size = 2.06

$$\frac{18873\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1470612500}-\frac{18873\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1470612500}-\frac{15925\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{131072\left(x^8+12x^7+63x^6+189x^5+\frac{2835x^4}{8}+\frac{1701x^3}{4}+\frac{5103x^2}{16}+\frac{2187x}{16}+\frac{6561}{256}\right)}-\frac{4816641\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{70246400\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}+\frac{861381\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{4014080\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)}+\frac{24813\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{10756480000\left(x+\frac{3}{2}\right)}-\frac{81899\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{229376\left(x^6+9x^5+\frac{135x^4}{4}+\frac{135x^3}{2}+\frac{1215x^2}{16}+\frac{729x}{16}+\frac{729}{64}\right)}+\frac{48141\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{614656000\left(x^2+3x+\frac{9}{4}\right)}+\frac{20705\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{65536\left(x^7+\frac{21x^6}{2}+\frac{189x^5}{4}+\frac{945x^4}{8}+\frac{2835x^3}{16}+\frac{5103x^2}{32}+\frac{5103x}{64}+\frac{2187}{128}\right)}+\frac{1573857\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{175616000\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^9,x)
```

```
[Out] (18873*35^(1/2)*log(x + 3/2))/1470612500 - (18873*35^(1/2)*log(x - (3^(1/2)
*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1470612500 - (15925*3^(1/2)*(x^2 + 2
/3)^(1/2))/(131072*((2187*x)/16 + (5103*x^2)/16 + (1701*x^3)/4 + (2835*x^4)
/8 + 189*x^5 + 63*x^6 + 12*x^7 + x^8 + 6561/256)) - (4816641*3^(1/2)*(x^2 +
 2/3)^(1/2))/(70246400*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (86
1381*3^(1/2)*(x^2 + 2/3)^(1/2))/(4014080*((405*x)/16 + (135*x^2)/4 + (45*x^
3)/2 + (15*x^4)/2 + x^5 + 243/32)) + (24813*3^(1/2)*(x^2 + 2/3)^(1/2))/(107
56480000*(x + 3/2)) - (81899*3^(1/2)*(x^2 + 2/3)^(1/2))/(229376*((729*x)/16
 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (48
141*3^(1/2)*(x^2 + 2/3)^(1/2))/(614656000*(3*x + x^2 + 9/4)) + (20705*3^(1/
2)*(x^2 + 2/3)^(1/2))/(65536*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 +
 (945*x^4)/8 + (189*x^5)/4 + (21*x^6)/2 + x^7 + 2187/128)) + (1573857*3^(1/
2)*(x^2 + 2/3)^(1/2))/(175616000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**9,x)
```

```
[Out] Timed out
```

3.1221 $\int \frac{(5-x)(2+3x^2)^{5/2}}{(3+2x)^{10}}\,dx$

Optimal. Leaf size=180

$$-\frac{4741\left(3x^2+2\right)^{7/2}}{1800750(2x+3)^7}-\frac{27\left(3x^2+2\right)^{7/2}}{2450(2x+3)^8}-\frac{13\left(3x^2+2\right)^{7/2}}{315(2x+3)^9}-\frac{949(4-9x)\left(3x^2+2\right)^{5/2}}{3001250(2x+3)^6}-\frac{2847(4-9x)\left(3x^2+2\right)^{3/2}}{42017500(2x+3)^4}-\frac{256\cdots}{14\cdots}$$

Rubi [A] time = 0.11, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{4741\left(3x^2+2\right)^{7/2}}{1800750(2x+3)^7}-\frac{27\left(3x^2+2\right)^{7/2}}{2450(2x+3)^8}-\frac{13\left(3x^2+2\right)^{7/2}}{315(2x+3)^9}-\frac{949(4-9x)\left(3x^2+2\right)^{5/2}}{3001250(2x+3)^6}-\frac{2847(4-9x)\left(3x^2+2\right)^{3/2}}{42017500(2x+3)^4}-\frac{25623(4-9x)\sqrt{3x^2+2}}{1470612500(2x+3)^2}-\frac{76869\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{735306250\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] (-25623*(4 - 9*x)*Sqrt[2 + 3*x^2])/(1470612500*(3 + 2*x)^2) - (2847*(4 - 9*
x)*(2 + 3*x^2)^(3/2))/(42017500*(3 + 2*x)^4) - (949*(4 - 9*x)*(2 + 3*x^2)^(
5/2))/(3001250*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(315*(3 + 2*x)^9) - (2
7*(2 + 3*x^2)^(7/2))/(2450*(3 + 2*x)^8) - (4741*(2 + 3*x^2)^(7/2))/(1800750
*(3 + 2*x)^7) - (76869*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(7353
06250*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
```

```
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx = -\frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{1}{315}\int \frac{(-369+78x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27\left(2+3x^2\right)^{7/2}}{2450(3+2x)^8} + \frac{\int \frac{(24072-2916x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx}{88200}$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27\left(2+3x^2\right)^{7/2}}{2450(3+2x)^8} - \frac{4741\left(2+3x^2\right)^{7/2}}{1800750(3+2x)^7} + \frac{2847\int \frac{\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx}{42875}$$

$$= -\frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27\left(2+3x^2\right)^{7/2}}{2450(3+2x)^8} - \frac{4741\left(2+3x^2\right)^{7/}}{1800750(3+2x)}$$

$$= -\frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27(2}{2450(}$$

$$= -\frac{25623(4-9x)\sqrt{2+3x^2}}{1470612500(3+2x)^2} - \frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6}$$

$$= -\frac{25623(4-9x)\sqrt{2+3x^2}}{1470612500(3+2x)^2} - \frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6}$$

$$= -\frac{25623(4-9x)\sqrt{2+3x^2}}{1470612500(3+2x)^2} - \frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6}$$

Mathematica [A] time = 0.31, size = 185, normalized size = 1.03

$$\frac{1}{315}\left(-\frac{243\left(3x^2+2\right)^{7/2}}{70(2x+3)^8} - \frac{13\left(3x^2+2\right)^{7/2}}{(2x+3)^9} - \frac{3\left(406540750\left(3x^2+2\right)^{7/2} + 2847(2x+3)\left(-945(9x-4)\sqrt{3x^2+2}(2x+3)^4 - 3675(9x-4)\left(3x^2+2\right)^{3/2}(2x+3)^2 - 17150(9x-4)\left(3x^2+2\right)^{5/2} + 162\sqrt{35}(2x+3)^6\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)\right)\right)}{1470612500(2x+3)^7}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(7/2))/(3 + 2*x)^9 - (243*(2 + 3*x^2)^(7/2))/(70*(3 + 2*x
)^8) - (3*(406540750*(2 + 3*x^2)^(7/2) + 2847*(3 + 2*x)*(-945*(3 + 2*x)^4*(
-4 + 9*x)*Sqrt[2 + 3*x^2] - 3675*(3 + 2*x)^2*(-4 + 9*x)*(2 + 3*x^2)^(3/2) -
 17150*(-4 + 9*x)*(2 + 3*x^2)^(5/2) + 162*Sqrt[35]*(3 + 2*x)^6*ArcTanh[(4 -
 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])))/(1470612500*(3 + 2*x)^7))/315
```

IntegrateAlgebraic [A] time = 3.13, size = 111, normalized size = 0.62

$$\frac{76869\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right)}{367653125\sqrt{35}} + \frac{\sqrt{3x^2+2}\left(-10968696x^8 - 30006612x^7 + 620594352x^6 + 25197346566x^5 - 9750269970x^4 + 11567526201x^3 - 42455611758x^2 - 11990965797x - 15948113036\right)}{13235512500(2x+3)^9}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-15948113036 - 11990965797*x - 42455611758*x^2 + 11567526
201*x^3 - 9750269970*x^4 + 25197346566*x^5 + 620594352*x^6 - 30006612*x^7 -
```

```
10968696*x^8))/(13235512500*(3 + 2*x)^9) + (76869*ArcTanh[3*Sqrt[3/35] + 2
*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(367653125*Sqrt[35])
```

fricas [A] time = 0.45, size = 194, normalized size = 1.08

$$\frac{691821\,\sqrt{35}\left(512\,x^9+6912\,x^8+41472\,x^7+145152\,x^6+326592\,x^5+489888\,x^4+489888\,x^3+314928\,x^2+118098\,x+19683\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right)-35\left(10968696\,x^8+30006612\,x^7-620594352\,x^6-25197346566\,x^5+9750269970\,x^4-11567526201\,x^3+42455611758\,x^2+11990965797\,x+15948113036\right)\sqrt{3\,x^2+2}}{463242937500\left(512\,x^9+6912\,x^8+41472\,x^7+145152\,x^6+326592\,x^5+489888\,x^4+489888\,x^3+314928\,x^2+118098\,x+19683\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^10,x, algorithm="fricas")
```

```
[Out] 1/463242937500*(691821*sqrt(35)*(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^
6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)*l
og(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x
 + 9)) - 35*(10968696*x^8 + 30006612*x^7 - 620594352*x^6 - 25197346566*x^5
+ 9750269970*x^4 - 11567526201*x^3 + 42455611758*x^2 + 11990965797*x + 1594
8113036)*sqrt(3*x^2 + 2))/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 32
6592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)
```

giac [B] time = 0.31, size = 502, normalized size = 2.79

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^10,x, algorithm="giac")
```

```
[Out] 76869/25735718750*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2
*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
 - 9/94119200000*sqrt(3)*(364416*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^17 +
 27877824*(sqrt(3)*x - sqrt(3*x^2 + 2))^16 + 1042205258*sqrt(3)*(sqrt(3)*x
- sqrt(3*x^2 + 2))^15 - 956098170*(sqrt(3)*x - sqrt(3*x^2 + 2))^14 + 100362
5490*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^13 - 85987901496*(sqrt(3)*x - sq
rt(3*x^2 + 2))^12 - 60468401868*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 -
331045664193*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 - 22913148915*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 2))^9 - 544736640510*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 + 2
84856270864*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 - 908850124224*(sqrt(3)
*x - sqrt(3*x^2 + 2))^6 + 90616216992*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))
^5 - 115517223360*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 52895204480*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 2))^3 - 565618176*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 +
140708352*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 17333248)/((sqrt(3)*x - s
qrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^9
```

maple [B] time = 0.10, size = 320, normalized size = 1.78

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^10,x)
```

```
[Out] -949/96040000/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-27/627200/(x+3/2)^8*(
-9*x+3*(x+3/2)^2-19/4)^(7/2)-13/161280/(x+3/2)^9*(-9*x+3*(x+3/2)^2-19/4)^(7
/2)-82563/29412250000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-8541/16807000
00/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-845559/514714375000/(x+3/2)^3*(-
9*x+3*(x+3/2)^2-19/4)^(7/2)-9198657/9007501562500/(x+3/2)^2*(-9*x+3*(x+3/2)
^2-19/4)^(7/2)+320313123/157631277343750*(-9*x+3*(x+3/2)^2-19/4)^(5/2)*x-10
6771041/157631277343750/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+8993673/18015
00312500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+691821/51471437500*(-9*x+3*(x+3/2)
^2-19/4)^(1/2)*x-76869/25735718750*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/
(-36*x+12*(x+3/2)^2-19)^(1/2))+1229904/78815638671875*(-9*x+3*(x+3/2)^2-19/
4)^(5/2)+102492/450375078125*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+76869/2573571875
```

0*(-36*x+12*(x+3/2)^2-19)^(1/2)-4741/230496000/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^(7/2)

maxima [B] time = 1.71, size = 434, normalized size = 2.41

$$\frac{27595971}{9007501562500}\left(3x^2+2\right)^{\frac{5}{2}} - \frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{315\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683\right)} - \frac{27\left(3x^2+2\right)^{\frac{7}{2}}}{2450\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)} - \frac{4741\left(3x^2+2\right)^{\frac{7}{2}}}{1800750\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)} - \frac{949\left(3x^2+2\right)^{\frac{7}{2}}}{1500625\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)} - \frac{8541\left(3x^2+2\right)^{\frac{7}{2}}}{52521875\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)} - \frac{82563\left(3x^2+2\right)^{\frac{7}{2}}}{1838265625\left(16x^4+96x^3+216x^2+216x+81\right)} - \frac{845559\left(3x^2+2\right)^{\frac{7}{2}}}{64339296875\left(8x^3+36x^2+54x+27\right)} - \frac{9198657\left(3x^2+2\right)^{\frac{7}{2}}}{2251875390625\left(4x^2+12x+9\right)} + \frac{8993673}{1801500312500}\left(3x^2+2\right)^{\frac{3}{2}}x + \frac{102492}{450375078125}\left(3x^2+2\right)^{\frac{3}{2}} - \frac{106771041\left(3x^2+2\right)^{\frac{5}{2}}}{9007501562500\left(2x+3\right)} + \frac{691821}{51471437500}\sqrt{3x^2+2}\,x + \frac{76869}{25735718750}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\left|2x+3\right|}-\frac{2\sqrt{6}}{3\left|2x+3\right|}\right) + \frac{76869}{12867859375}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^10,x, algorithm="maxima")
```

```
[Out] 27595971/9007501562500*(3*x^2 + 2)^(5/2) - 13/315*(3*x^2 + 2)^(7/2)/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683) - 27/2450*(3*x^2 + 2)^(7/2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561) - 4741/1800750*(3*x^2 + 2)^(7/2)/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 949/1500625*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 8541/52521875*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 82563/1838265625*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 845559/64339296875*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 9198657/2251875390625*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 8993673/1801500312500*(3*x^2 + 2)^(3/2)*x + 102492/450375078125*(3*x^2 + 2)^(3/2) - 106771041/9007501562500*(3*x^2 + 2)^(5/2)/(2*x + 3) + 691821/51471437500*sqrt(3*x^2 + 2)*x + 76869/25735718750*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 76869/12867859375*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.16, size = 385, normalized size = 2.14

$$\frac{76869\sqrt{35}\ln\left(x+\frac{3}{2}\right)}{25735718750} - \frac{76869\sqrt{35}\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{25735718750} + \frac{4515\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{32768\left(x^8+12x^7+63x^6+189x^5+\frac{2835x^4}{8}+\frac{1701x^3}{4}+\frac{5103x^2}{16}+\frac{2187x}{16}+\frac{6561}{256}\right)} + \frac{1838301\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{614656000\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)} - \frac{15925\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{294912\left(x^9+\frac{27x^8}{2}+81x^7+\frac{567x^6}{2}+\frac{5103x^5}{8}+\frac{15309x^4}{16}+\frac{15309x^3}{16}+\frac{19683x^2}{32}+\frac{59049x}{256}+\frac{19683}{512}\right)} - \frac{923241\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{35123200\left(x^5+\frac{15x^4}{2}+\frac{45x^3}{2}+\frac{135x^2}{4}+\frac{405x}{16}+\frac{243}{32}\right)} - \frac{152343\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{94119200000\left(x+\frac{3}{2}\right)} + \frac{35213\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{401408\left(x^6+9x^5+\frac{135x^4}{4}+\frac{135x^3}{2}+\frac{1215x^2}{16}+\frac{729x}{16}+\frac{729}{64}\right)} + \frac{80649\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{5378240000\left(x^2+3x+\frac{9}{4}\right)} - \frac{52201\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{344064\left(x^7+\frac{21x^6}{2}+\frac{189x^5}{4}+\frac{945x^4}{8}+\frac{2835x^3}{16}+\frac{5103x^2}{32}+\frac{5103x}{64}+\frac{2187}{128}\right)} + \frac{55473\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{1536640000\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^10,x)
```

```
[Out] (76869*35^(1/2)*log(x + 3/2))/25735718750 - (76869*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/25735718750 + (4515*3^(1/2)*(x^2 + 2/3)^(1/2))/(32768*((2187*x)/16 + (5103*x^2)/16 + (1701*x^3)/4 + (2835*x^4)/8 + 189*x^5 + 63*x^6 + 12*x^7 + x^8 + 6561/256)) + (1838301*3^(1/2)*(x^2 + 2/3)^(1/2))/(614656000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(294912*((59049*x)/256 + (19683*x^2)/32 + (15309*x^3)/16 + (15309*x^4)/16 + (5103*x^5)/8 + (567*x^6)/2 + 81*x^7 + (27*x^8)/2 + x^9 + 19683/512)) - (923241*3^(1/2)*(x^2 + 2/3)^(1/2))/(35123200*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5 + 243/32)) - (152343*3^(1/2)*(x^2 + 2/3)^(1/2))/(94119200000*(x + 3/2)) + (35213*3^(1/2)*(x^2 + 2/3)^(1/2))/(401408*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (80649*3^(1/2)*(x^2 + 2/3)^(1/2))/(5378240000*(3*x + x^2 + 9/4)) - (52201*3^(1/2)*(x^2 + 2/3)^(1/2))/(344064*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (189*x^5)/4 + (21*x^6)/2 + x^7 + 2187/128)) + (55473*3^(1/2)*(x^2 + 2/3)^(1/2))/(1536640000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**10,x)
```

```
[Out] Timed out
```

3.1222 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{11}}\,dx$

Optimal. Leaf size=202

$$-\frac{739619\left(3x^2+2\right)^{7/2}}{1260525000(2x+3)^7}-\frac{4393\left(3x^2+2\right)^{7/2}}{1715000(2x+3)^8}-\frac{1171\left(3x^2+2\right)^{7/2}}{110250(2x+3)^9}-\frac{13\left(3x^2+2\right)^{7/2}}{350(2x+3)^{10}}-\frac{73233(4-9x)\left(3x^2+2\right)^{5/2}}{1050437500(2x+3)^6}-\frac{219}{1}$$

Rubi [A] time = 0.13, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{739619\left(3x^2+2\right)^{7/2}}{1260525000(2x+3)^7}-\frac{4393\left(3x^2+2\right)^{7/2}}{1715000(2x+3)^8}-\frac{1171\left(3x^2+2\right)^{7/2}}{110250(2x+3)^9}-\frac{13\left(3x^2+2\right)^{7/2}}{350(2x+3)^{10}}-\frac{73233(4-9x)\left(3x^2+2\right)^{5/2}}{1050437500(2x+3)^6}-\frac{219699(4-9x)\left(3x^2+2\right)^{3/2}}{14706125000(2x+3)^4}-\frac{1977291(4-9x)\sqrt{3x^2+2}}{514714375000(2x+3)^2}-\frac{5931873\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{257357187500\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^11,x]
```

```
[Out] (-1977291*(4 - 9*x)*Sqrt[2 + 3*x^2])/(514714375000*(3 + 2*x)^2) - (219699*(
4 - 9*x)*(2 + 3*x^2)^(3/2))/(14706125000*(3 + 2*x)^4) - (73233*(4 - 9*x)*(2
 + 3*x^2)^(5/2))/(1050437500*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(350*(3
+ 2*x)^10) - (1171*(2 + 3*x^2)^(7/2))/(110250*(3 + 2*x)^9) - (4393*(2 + 3*x
^2)^(7/2))/(1715000*(3 + 2*x)^8) - (739619*(2 + 3*x^2)^(7/2))/(1260525000*(
3 + 2*x)^7) - (5931873*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(2573
57187500*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
```

```
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{11}}\,dx &= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}}-\frac{1}{350}\int \frac{(-410+117x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx \\
&= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}}-\frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^9}+\frac{\int \frac{(28998-7026x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx}{110250} \\
&= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}}-\frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^9}-\frac{4393\left(2+3x^2\right)^{7/2}}{1715000(3+2x)^8}-\frac{\int \frac{(-1863024+237222x)(2-}{(3+2x)^8}}{30870000} \\
&= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}}-\frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^9}-\frac{4393\left(2+3x^2\right)^{7/2}}{1715000(3+2x)^8}-\frac{739619\left(2+3x^2\right)^{7/2}}{1260525000(3+2x)^{}} \\
&= -\frac{73233(4-9x)\left(2+3x^2\right)^{5/2}}{1050437500(3+2x)^6}-\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}}-\frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^9}-\frac{4393\left(2+3\right.}{1715000(3-} \\
&= -\frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^4}-\frac{73233(4-9x)\left(2+3x^2\right)^{5/2}}{1050437500(3+2x)^6}-\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}}-\frac{1}{1} \\
&= -\frac{1977291(4-9x)\sqrt{2+3x^2}}{514714375000(3+2x)^2}-\frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^4}-\frac{73233(4-9x)\left(2+\right.}{1050437500(3+} \\
&= -\frac{1977291(4-9x)\sqrt{2+3x^2}}{514714375000(3+2x)^2}-\frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^4}-\frac{73233(4-9x)\left(2+\right.}{1050437500(3+} \\
&= -\frac{1977291(4-9x)\sqrt{2+3x^2}}{514714375000(3+2x)^2}-\frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^4}-\frac{73233(4-9x)\left(2+\right.}{1050437500(3+}
\end{aligned}
$$

Mathematica [A] time = 0.27, size = 207, normalized size = 1.02

$$
\frac{1}{350}\left(-\frac{4393\left(3x^2+2\right)^{7/2}}{4900(2x+3)^8}-\frac{1171\left(3x^2+2\right)^{7/2}}{315(2x+3)^9}-\frac{13\left(3x^2+2\right)^{7/2}}{(2x+3)^{10}}-\frac{31711164625\left(3x^2+2\right)^{7/2}+219699(2x+3)\left(-945(9x-4)\sqrt{3x^2+2}\,(2x+3)^4-3675(9x-4)\left(3x^2+2\right)^{3/2}(2x+3)^2-17150(9x-4)\left(3x^2+2\right)^{5/2}+162\sqrt{35}\,(2x+3)^6\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)\right)}{154414312500(2x+3)^7}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^11,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(7/2))/(3 + 2*x)^10 - (1171*(2 + 3*x^2)^(7/2))/(315*(3 +
2*x)^9) - (4393*(2 + 3*x^2)^(7/2))/(4900*(3 + 2*x)^8) - (31711164625*(2 + 3
*x^2)^(7/2) + 219699*(3 + 2*x)*(-945*(3 + 2*x)^4*(-4 + 9*x)*Sqrt[2 + 3*x^2]
 - 3675*(3 + 2*x)^2*(-4 + 9*x)*(2 + 3*x^2)^(3/2) - 17150*(-4 + 9*x)*(2 + 3*
x^2)^(5/2) + 162*Sqrt[35]*(3 + 2*x)^6*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
3*x^2])]))/(154414312500*(3 + 2*x)^7))/350
```

IntegrateAlgebraic [A] time = 3.64, size = 116, normalized size = 0.57

$$
\frac{5931873\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{128678593750\sqrt{35}}+\frac{\sqrt{3x^2+2}\left(-7968937464x^9-101311348104x^8-544524933294x^7-1541962687104x^6+3078520541586x^5-11369945485836x^4-47041328712 21x^3-18888919063956x^2-5421307926571x-5288003538036\right)}{4632429375000(2x+3)^{10}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^11,x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-5288003538036 - 5421307926571*x - 18888919063956*x^2 - 4
704132871221*x^3 - 11369945485836*x^4 + 3078520541586*x^5 - 1541962687104*x
^6 - 544524933294*x^7 - 101311348104*x^8 - 7968937464*x^9))/(4632429375000*
(3 + 2*x)^10) + (5931873*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2
+ 3*x^2])/Sqrt[35]])/(128678593750*Sqrt[35])
```

fricas [A] time = 0.45, size = 209, normalized size = 1.03

$$\frac{53386857\sqrt{35}\left(1024x^{10}+15360x^{9}+103680x^{8}+414720x^{7}+1088640x^{6}+1959552x^{5}+2449440x^{4}+2099520x^{3}+1180980x^{2}+393660x+59049\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^{2}+2}(9x-4)+93x^{2}-36x+43}{4x^{2}+12x+9}\right)-35\left(7968937464x^{9}+101311348104x^{8}+544524933294x^{7}+1541962687104x^{6}-3078520541586x^{5}+11369945485836x^{4}+4704132871221x^{3}+18888919063956x^{2}+5421307926571x+5288003538036\right)\sqrt{3x^{2}+2}}{162135028125000\left(1024x^{10}+15360x^{9}+103680x^{8}+414720x^{7}+1088640x^{6}+1959552x^{5}+2449440x^{4}+2099520x^{3}+1180980x^{2}+393660x+59049\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^11,x, algorithm="fricas")
```

```
[Out] 1/162135028125000*(53386857*sqrt(35)*(1024*x^10 + 15360*x^9 + 103680*x^8 +
414720*x^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 118098
0*x^2 + 393660*x + 59049)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2
 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(7968937464*x^9 + 101311348104*x^8 +
 544524933294*x^7 + 1541962687104*x^6 - 3078520541586*x^5 + 11369945485836*
x^4 + 4704132871221*x^3 + 18888919063956*x^2 + 5421307926571*x + 5288003538
036)*sqrt(3*x^2 + 2))/(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 10
88640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*
x + 59049)
```

giac [B] time = 0.53, size = 547, normalized size = 2.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^11,x, algorithm="giac")
```

```
[Out] 5931873/9007501562500*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3)
 + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 +
2))) - 9/65883440000000*sqrt(3)*(56242944*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 2))^19 + 4808771712*(sqrt(3)*x - sqrt(3*x^2 + 2))^18 + 60161202432*sqrt(3)
*(sqrt(3)*x - sqrt(3*x^2 + 2))^17 + 2449600006086*(sqrt(3)*x - sqrt(3*x^2 +
 2))^16 + 650003734476*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^15 + 113243432
51586*(sqrt(3)*x - sqrt(3*x^2 + 2))^14 - 43249498138224*sqrt(3)*(sqrt(3)*x
- sqrt(3*x^2 + 2))^13 - 114750161469717*(sqrt(3)*x - sqrt(3*x^2 + 2))^12 -
263561308381422*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 - 64560900263031*(
sqrt(3)*x - sqrt(3*x^2 + 2))^10 - 173527579922724*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 2))^9 + 409007369125548*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 81251529
2998272*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 + 775661489485344*(sqrt(3)*
x - sqrt(3*x^2 + 2))^6 - 309262645005696*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
2))^5 + 53888888658816*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 21200045958144*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 6293205518848*(sqrt(3)*x - sqrt(3*x^
2 + 2))^2 - 348990277632*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 2518577766
4)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2
)) - 2)^10
```

maple [B] time = 0.15, size = 341, normalized size = 1.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^11,x)
```

```
[Out] -73233/33614000000/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-4393/439040000/(
x+3/2)^8*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-1171/56448000/(x+3/2)^9*(-9*x+3*(x+3
```

```
/2)^2-19/4)^(7/2)-6371271/10294287500000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^
(7/2)-659097/588245000000/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-65250603/
180150031250000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-709847469/315262554
6875000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+24718114791/551709470703125
00*(-9*x+3*(x+3/2)^2-19/4)^(5/2)*x-8239371597/5517094707031250/(x+3/2)*(-9
*x+3*(x+3/2)^2-19/4)^(7/2)+694029141/630525109375000*(-9*x+3*(x+3/2)^2-19/4
)^(3/2)*x+53386857/18015003125000*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-5931873/9
007501562500*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19
)^(1/2))+47454984/13792736767578125*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+3954582/7
8815638671875*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+5931873/9007501562500*(-36*x+12
*(x+3/2)^2-19)^(1/2)-739619/161347200000/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^
(7/2)-13/358400/(x+3/2)^10*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.47, size = 497, normalized size = 2.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^11,x, algorithm="maxima")
```

```
[Out] 2129542407/3152625546875000*(3*x^2 + 2)^(5/2) - 13/350*(3*x^2 + 2)^(7/2)/(1
024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 1088640*x^6 + 1959552*x^5
+ 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*x + 59049) - 1171/110250
*(3*x^2 + 2)^(7/2)/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^
5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683) - 4393/1715000
*(3*x^2 + 2)^(7/2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4
+ 108864*x^3 + 81648*x^2 + 34992*x + 6561) - 739619/1260525000*(3*x^2 + 2)^
(7/2)/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 +
10206*x + 2187) - 73233/525218750*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x^5 + 216
0*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 659097/18382656250*(3*x^2 + 2
)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 6371271/643
392968750*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 6525
0603/22518753906250*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 709847
469/788156386718750*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 694029141/630525
109375000*(3*x^2 + 2)^(3/2)*x + 3954582/78815638671875*(3*x^2 + 2)^(3/2) -
8239371597/3152625546875000*(3*x^2 + 2)^(5/2)/(2*x + 3) + 53386857/18015003
125000*sqrt(3*x^2 + 2)*x + 5931873/9007501562500*sqrt(35)*arcsinh(3/2*sqrt(
6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 5931873/4503750781250*sqrt(
3*x^2 + 2)
```

mupad [B] time = 1.90, size = 449, normalized size = 2.22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^11,x)
```

```
[Out] (5931873*35^(1/2)*log(x + 3/2))/9007501562500 - (5931873*35^(1/2)*log(x - (
3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/9007501562500 - (43213*3^(1/2
)*(x^2 + 2/3)^(1/2))/(655360*((2187*x)/16 + (5103*x^2)/16 + (1701*x^3)/4 +
(2835*x^4)/8 + 189*x^5 + 63*x^6 + 12*x^7 + x^8 + 6561/256)) + (4728159*3^(1
/2)*(x^2 + 2/3)^(1/2))/(430259200000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 +
 81/16)) + (36029*3^(1/2)*(x^2 + 2/3)^(1/2))/(589824*((59049*x)/256 + (1968
3*x^2)/32 + (15309*x^3)/16 + (15309*x^4)/16 + (5103*x^5)/8 + (567*x^6)/2 +
81*x^7 + (27*x^8)/2 + x^9 + 19683/512)) + (27428781*3^(1/2)*(x^2 + 2/3)^(1/
2))/(24586240000*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5
+ 243/32)) - (3185*3^(1/2)*(x^2 + 2/3)^(1/2))/(131072*((98415*x)/256 + (295
245*x^2)/256 + (32805*x^3)/16 + (76545*x^4)/32 + (15309*x^5)/8 + (8505*x^6)
/8 + 405*x^7 + (405*x^8)/4 + 15*x^9 + x^10 + 59049/1024)) - (110679687*3^(1
```

```
/2)*(x^2 + 2/3)^(1/2))/(65883440000000*(x + 3/2)) - (2988711*3^(1/2)*(x^2 +
 2/3)^(1/2))/(280985600*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^
4)/4 + 9*x^5 + x^6 + 729/64)) + (4975641*3^(1/2)*(x^2 + 2/3)^(1/2))/(376476
8000000*(3*x + x^2 + 9/4)) + (1785563*3^(1/2)*(x^2 + 2/3)^(1/2))/(48168960*
((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (189*x^5)/4 +
(21*x^6)/2 + x^7 + 2187/128)) + (5833857*3^(1/2)*(x^2 + 2/3)^(1/2))/(107564
8000000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**11,x)
```

```
[Out] Timed out
```

3.1223 $\int \frac{(5-x)(3+2x)^4}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=106

$$-\frac{1}{15}\sqrt{3x^2+2}\,(2x+3)^4+\frac{19}{30}\sqrt{3x^2+2}\,(2x+3)^3+\frac{1477}{270}\sqrt{3x^2+2}\,(2x+3)^2+\frac{49}{81}(99x+383)\sqrt{3x^2+2}+\frac{343\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {833, 780, 215}

$$-\frac{1}{15}\sqrt{3x^2+2}\,(2x+3)^4+\frac{19}{30}\sqrt{3x^2+2}\,(2x+3)^3+\frac{1477}{270}\sqrt{3x^2+2}\,(2x+3)^2+\frac{49}{81}(99x+383)\sqrt{3x^2+2}+\frac{343\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (1477*(3 + 2*x)^2*Sqrt[2 + 3*x^2])/270 + (19*(3 + 2*x)^3*Sqrt[2 + 3*x^2])/3
0 - ((3 + 2*x)^4*Sqrt[2 + 3*x^2])/15 + (49*(383 + 99*x)*Sqrt[2 + 3*x^2])/81
 + (343*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\sqrt{2+3x^2}}\,dx = -\frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{1}{15}\int \frac{(3+2x)^3(241+114x)}{\sqrt{2+3x^2}}\,dx$$

$$= \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{1}{180}\int \frac{(3+2x)^2(7308+8862x)}{\sqrt{2+3x^2}}\,dx$$

$$= \frac{1477}{270}(3+2x)^2\sqrt{2+3x^2} + \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{\int \frac{(3+2x)(126}{\sqrt{2}}}{1}$$

$$= \frac{1477}{270}(3+2x)^2\sqrt{2+3x^2} + \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{49}{81}(383+9$$

$$= \frac{1477}{270}(3+2x)^2\sqrt{2+3x^2} + \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{49}{81}(383+9$$

Mathematica [A] time = 0.06, size = 55, normalized size = 0.52

$$\frac{1}{405}\left(15435\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \sqrt{3x^2+2}\left(432x^4+540x^3-12264x^2-58860x-118513\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-118513 - 58860*x - 12264*x^2 + 540*x^3 + 432*x^4)) + 1
5435*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/405
```

IntegrateAlgebraic [A] time = 0.34, size = 66, normalized size = 0.62

$$\frac{1}{405}\sqrt{3x^2+2}\left(-432x^4-540x^3+12264x^2+58860x+118513\right) - \frac{343\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(118513 + 58860*x + 12264*x^2 - 540*x^3 - 432*x^4))/405 -
(343*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.43, size = 60, normalized size = 0.57

$$-\frac{1}{405}\left(432\,x^4+540\,x^3-12264\,x^2-58860\,x-118513\right)\sqrt{3\,x^2+2} + \frac{343}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/405*(432*x^4 + 540*x^3 - 12264*x^2 - 58860*x - 118513)*sqrt(3*x^2 + 2) +
 343/18*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 53, normalized size = 0.50

$$-\frac{1}{405}\left(12\left(\left(9\left(4\,x+5\right)x-1022\right)x-4905\right)x-118513\right)\sqrt{3\,x^2+2} - \frac{343}{9}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/405*(12*((9*(4*x + 5)*x - 1022)*x - 4905)*x - 118513)*sqrt(3*x^2 + 2) -
343/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 79, normalized size = 0.75

$$-\frac{16\sqrt{3x^2+2}\,x^4}{15}-\frac{4\sqrt{3x^2+2}\,x^3}{3}+\frac{4088\sqrt{3x^2+2}\,x^2}{135}+\frac{436\sqrt{3x^2+2}\,x}{3}+\frac{343\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{118513\sqrt{3x^2+2}}{405}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+2)^(1/2),x)
```

```
[Out] -16/15*x^4*(3*x^2+2)^(1/2)+4088/135*x^2*(3*x^2+2)^(1/2)+118513/405*(3*x^2+2
)^(1/2)-4/3*x^3*(3*x^2+2)^(1/2)+436/3*(3*x^2+2)^(1/2)*x+343/9*arcsinh(1/2*6
^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.42, size = 78, normalized size = 0.74

$$-\frac{16}{15}\sqrt{3x^2+2}\,x^4-\frac{4}{3}\sqrt{3x^2+2}\,x^3+\frac{4088}{135}\sqrt{3x^2+2}\,x^2+\frac{436}{3}\sqrt{3x^2+2}\,x+\frac{343}{9}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{118513}{405}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/15*sqrt(3*x^2 + 2)*x^4 - 4/3*sqrt(3*x^2 + 2)*x^3 + 4088/135*sqrt(3*x^2
+ 2)*x^2 + 436/3*sqrt(3*x^2 + 2)*x + 343/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) +
 118513/405*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.04, size = 45, normalized size = 0.42

$$\frac{343\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{16\,x^4}{5}-4\,x^3+\frac{4088\,x^2}{45}+436\,x+\frac{118513}{135}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (343*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(436*x +
(4088*x^2)/45 - 4*x^3 - (16*x^4)/5 + 118513/135))/3
```

sympy [A] time = 1.93, size = 97, normalized size = 0.92

$$-\frac{16x^4\sqrt{3x^2+2}}{15}-\frac{4x^3\sqrt{3x^2+2}}{3}+\frac{4088x^2\sqrt{3x^2+2}}{135}+\frac{436x\sqrt{3x^2+2}}{3}+\frac{118513\sqrt{3x^2+2}}{405}+\frac{343\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+2)**(1/2),x)
```

```
[Out] -16*x**4*sqrt(3*x**2 + 2)/15 - 4*x**3*sqrt(3*x**2 + 2)/3 + 4088*x**2*sqrt(3
*x**2 + 2)/135 + 436*x*sqrt(3*x**2 + 2)/3 + 118513*sqrt(3*x**2 + 2)/405 + 3
43*sqrt(3)*asinh(sqrt(6)*x/2)/9
```

3.1224 $\int \frac{(5-x)(3+2x)^3}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=84

$$-\frac{1}{12}\sqrt{3x^2+2}\,(2x+3)^3+\frac{31}{36}\sqrt{3x^2+2}\,(2x+3)^2+\frac{5}{54}(171x+809)\sqrt{3x^2+2}+\frac{275\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {833, 780, 215}

$$-\frac{1}{12}\sqrt{3x^2+2}\,(2x+3)^3+\frac{31}{36}\sqrt{3x^2+2}\,(2x+3)^2+\frac{5}{54}(171x+809)\sqrt{3x^2+2}+\frac{275\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (31*(3 + 2*x)^2*Sqrt[2 + 3*x^2])/36 - ((3 + 2*x)^3*Sqrt[2 + 3*x^2])/12 + (5
*(809 + 171*x)*Sqrt[2 + 3*x^2])/54 + (275*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\sqrt{2+3x^2}}\,dx &= -\frac{1}{12}(3+2x)^3\sqrt{2+3x^2}+\frac{1}{12}\int \frac{(3+2x)^2(192+93x)}{\sqrt{2+3x^2}}\,dx\\ &= \frac{31}{36}(3+2x)^2\sqrt{2+3x^2}-\frac{1}{12}(3+2x)^3\sqrt{2+3x^2}+\frac{1}{108}\int \frac{(3+2x)(4440+5130x)}{\sqrt{2+3x^2}}\,dx\\ &= \frac{31}{36}(3+2x)^2\sqrt{2+3x^2}-\frac{1}{12}(3+2x)^3\sqrt{2+3x^2}+\frac{5}{54}(809+171x)\sqrt{2+3x^2}+\frac{275}{3}\int \frac{}{\sqrt{}}\\ &= \frac{31}{36}(3+2x)^2\sqrt{2+3x^2}-\frac{1}{12}(3+2x)^3\sqrt{2+3x^2}+\frac{5}{54}(809+171x)\sqrt{2+3x^2}+\frac{275\sinh^{}}{3\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 50, normalized size = 0.60

$$\frac{1}{27}\left(825\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(18x^3-12x^2-585x-2171\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-2171 - 585*x - 12*x^2 + 18*x^3)) + 825*Sqrt[3]*ArcSinh
[Sqrt[3/2]*x])/27
```

IntegrateAlgebraic [A] time = 0.32, size = 61, normalized size = 0.73

$$\frac{1}{27}\sqrt{3x^2+2}\left(-18x^3+12x^2+585x+2171\right)-\frac{275\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(2171 + 585*x + 12*x^2 - 18*x^3))/27 - (275*Log[-(Sqrt[3]*
x) + Sqrt[2 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.43, size = 55, normalized size = 0.65

$$-\frac{1}{27}\left(18x^3-12x^2-585x-2171\right)\sqrt{3x^2+2}+\frac{275}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/27*(18*x^3 - 12*x^2 - 585*x - 2171)*sqrt(3*x^2 + 2) + 275/18*sqrt(3)*log
(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.25, size = 49, normalized size = 0.58

$$-\frac{1}{27}\left(3\left(2\left(3x-2\right)x-195\right)x-2171\right)\sqrt{3x^2+2}-\frac{275}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/27*(3*(2*(3*x - 2)*x - 195)*x - 2171)*sqrt(3*x^2 + 2) - 275/9*sqrt(3)*lo
g(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 65, normalized size = 0.77

$$-\frac{2\sqrt{3x^2+2}\,x^3}{3}+\frac{4\sqrt{3x^2+2}\,x^2}{9}+\frac{65\sqrt{3x^2+2}\,x}{3}+\frac{275\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{2171\sqrt{3x^2+2}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+2)^(1/2),x)
```

```
[Out] -2/3*(3*x^2+2)^(1/2)*x^3+65/3*(3*x^2+2)^(1/2)*x+275/9*arcsinh(1/2*6^(1/2)*x
)*3^(1/2)+4/9*(3*x^2+2)^(1/2)*x^2+2171/27*(3*x^2+2)^(1/2)
```

maxima [A] time = 1.46, size = 64, normalized size = 0.76

$$-\frac{2}{3}\sqrt{3x^2+2}\,x^3+\frac{4}{9}\sqrt{3x^2+2}\,x^2+\frac{65}{3}\sqrt{3x^2+2}\,x+\frac{275}{9}\sqrt{3}\ \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{2171}{27}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(3*x^2 + 2)*x^3 + 4/9*sqrt(3*x^2 + 2)*x^2 + 65/3*sqrt(3*x^2 + 2)*x
 + 275/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 2171/27*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.04, size = 40, normalized size = 0.48

$$\frac{275\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-2\,x^3+\frac{4\,x^2}{3}+65\,x+\frac{2171}{9}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (275*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(65*x + (
4*x^2)/3 - 2*x^3 + 2171/9))/3
```

sympy [A] time = 1.08, size = 80, normalized size = 0.95

$$-\frac{2x^3\sqrt{3x^2+2}}{3}+\frac{4x^2\sqrt{3x^2+2}}{9}+\frac{65x\sqrt{3x^2+2}}{3}+\frac{2171\sqrt{3x^2+2}}{27}+\frac{275\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+2)**(1/2),x)
```

```
[Out] -2*x**3*sqrt(3*x**2 + 2)/3 + 4*x**2*sqrt(3*x**2 + 2)/9 + 65*x*sqrt(3*x**2 +
 2)/3 + 2171*sqrt(3*x**2 + 2)/27 + 275*sqrt(3)*asinh(sqrt(6)*x/2)/9
```

3.1225 $\int \frac{(5-x)(3+2x)^2}{\sqrt{2+3x^2}} dx$

Optimal. Leaf size=62

$$-\frac{1}{9}\sqrt{3x^2+2}\,(2x+3)^2+\frac{2}{27}(36x+251)\sqrt{3x^2+2}+\frac{127\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {833, 780, 215}

$$-\frac{1}{9}\sqrt{3x^2+2}\,(2x+3)^2+\frac{2}{27}(36x+251)\sqrt{3x^2+2}+\frac{127\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -((3 + 2*x)^2*Sqrt[2 + 3*x^2])/9 + (2*(251 + 36*x)*Sqrt[2 + 3*x^2])/27 + (1
27*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{\sqrt{2+3x^2}} dx &= -\frac{1}{9}(3+2x)^2\sqrt{2+3x^2}+\frac{1}{9}\int \frac{(3+2x)(143+72x)}{\sqrt{2+3x^2}} dx \\
&= -\frac{1}{9}(3+2x)^2\sqrt{2+3x^2}+\frac{2}{27}(251+36x)\sqrt{2+3x^2}+\frac{127}{3}\int \frac{1}{\sqrt{2+3x^2}} dx \\
&= -\frac{1}{9}(3+2x)^2\sqrt{2+3x^2}+\frac{2}{27}(251+36x)\sqrt{2+3x^2}+\frac{127\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 45, normalized size = 0.73

$$\frac{1}{27}\left(381\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(12x^2-36x-475\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-475 - 36*x + 12*x^2)) + 381*Sqrt[3]*ArcSinh[Sqrt[3/2]*
x])/27
```

IntegrateAlgebraic [A] time = 0.24, size = 56, normalized size = 0.90

$$\frac{1}{27}\left(-12x^2+36x+475\right)\sqrt{3x^2+2}-\frac{127\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 3*x^2],x]
```

```
[Out] ((475 + 36*x - 12*x^2)*Sqrt[2 + 3*x^2])/27 - (127*Log[-(Sqrt[3]*x) + Sqrt[2
 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.41, size = 50, normalized size = 0.81

$$-\frac{1}{27}\left(12x^2-36x-475\right)\sqrt{3x^2+2}+\frac{127}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/27*(12*x^2 - 36*x - 475)*sqrt(3*x^2 + 2) + 127/18*sqrt(3)*log(-sqrt(3)*s
qrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.18, size = 42, normalized size = 0.68

$$-\frac{1}{27}(12(x-3)x-475)\sqrt{3x^2+2}-\frac{127}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/27*(12*(x - 3)*x - 475)*sqrt(3*x^2 + 2) - 127/9*sqrt(3)*log(-sqrt(3)*x +
 sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 51, normalized size = 0.82

$$-\frac{4\sqrt{3x^2+2}\,x^2}{9}+\frac{4\sqrt{3x^2+2}\,x}{3}+\frac{127\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{475\sqrt{3x^2+2}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+2)^(1/2)*x^2+475/27*(3*x^2+2)^(1/2)+4/3*(3*x^2+2)^(1/2)*x+127/9
*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.40, size = 50, normalized size = 0.81

$$-\frac{4}{9}\sqrt{3x^2+2}\,x^2+\frac{4}{3}\sqrt{3x^2+2}\,x+\frac{127}{9}\sqrt{3}\ \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{475}{27}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*sqrt(3*x^2 + 2)*x^2 + 4/3*sqrt(3*x^2 + 2)*x + 127/9*sqrt(3)*arcsinh(1/
2*sqrt(6)*x) + 475/27*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.03, size = 35, normalized size = 0.56

$$\frac{127\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{4\,x^2}{3}+4\,x+\frac{475}{9}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (127*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(4*x - (4
*x^2)/3 + 475/9))/3
```

sympy [A] time = 0.54, size = 63, normalized size = 1.02

$$-\frac{4x^2\sqrt{3x^2+2}}{9}+\frac{4x\sqrt{3x^2+2}}{3}+\frac{475\sqrt{3x^2+2}}{27}+\frac{127\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+2)**(1/2),x)
```

```
[Out] -4*x**2*sqrt(3*x**2 + 2)/9 + 4*x*sqrt(3*x**2 + 2)/3 + 475*sqrt(3*x**2 + 2)/
27 + 127*sqrt(3)*asinh(sqrt(6)*x/2)/9
```

3.1226 $\int \frac{(5-x)(3+2x)}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=40

$$\frac{1}{3}\sqrt{3x^2+2}\,(7-x)+\frac{47\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.01, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {780, 215}

$$\frac{1}{3}\sqrt{3x^2+2}\,(7-x)+\frac{47\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/Sqrt[2 + 3*x^2],x]
```

```
[Out] ((7 - x)*Sqrt[2 + 3*x^2])/3 + (47*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\sqrt{2+3x^2}}\,dx &= \frac{1}{3}(7-x)\sqrt{2+3x^2}+\frac{47}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= \frac{1}{3}(7-x)\sqrt{2+3x^2}+\frac{47\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.95

$$\frac{1}{9}\left(47\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-3(x-7)\sqrt{3x^2+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-3*(-7 + x)*Sqrt[2 + 3*x^2] + 47*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/9
```

IntegrateAlgebraic [A] time = 0.18, size = 51, normalized size = 1.28

$$\frac{1}{3}(7-x)\sqrt{3x^2+2}-\frac{47\log\left(\sqrt{3x^2+2}-\sqrt{3}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/Sqrt[2 + 3*x^2],x]
```

```
[Out] ((7 - x)*Sqrt[2 + 3*x^2])/3 - (47*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(3*S
qrt[3])
```

fricas [A] time = 0.42, size = 43, normalized size = 1.08

$$-\frac{1}{3}\sqrt{3x^2+2}(x-7)+\frac{47}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/3*sqrt(3*x^2 + 2)*(x - 7) + 47/18*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x
 - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 37, normalized size = 0.92

$$-\frac{1}{3}\sqrt{3x^2+2}(x-7)-\frac{47}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/3*sqrt(3*x^2 + 2)*(x - 7) - 47/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2
))
```

maple [A] time = 0.05, size = 37, normalized size = 0.92

$$-\frac{\sqrt{3x^2+2}\,x}{3}+\frac{47\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{7\sqrt{3x^2+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+2)^(1/2),x)
```

```
[Out] -1/3*(3*x^2+2)^(1/2)*x+47/9*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+7/3*(3*x^2+2)^(1
/2)
```

maxima [A] time = 1.29, size = 36, normalized size = 0.90

$$-\frac{1}{3}\sqrt{3x^2+2}x+\frac{47}{9}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)+\frac{7}{3}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(3*x^2 + 2)*x + 47/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 7/3*sqrt(3*x
^2 + 2)
```

mupad [B] time = 0.03, size = 28, normalized size = 0.70

$$\frac{47\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\,(x-7)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (47*3^(1/2)*asinh((6^(1/2)*x)/2))/9 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(x - 7))/3
```

sympy [A] time = 0.30, size = 44, normalized size = 1.10

$$-\frac{x\sqrt{3x^2+2}}{3}+\frac{7\sqrt{3x^2+2}}{3}+\frac{47\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+2)**(1/2),x)
```

```
[Out] -x*sqrt(3*x**2 + 2)/3 + 7*sqrt(3*x**2 + 2)/3 + 47*sqrt(3)*asinh(sqrt(6)*x/2
)/9
```

3.1227 $\int \frac{5-x}{\sqrt{2+3x^2}} \, dx$

Optimal. Leaf size=33

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+2}$$

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {641, 215}

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -Sqrt[2 + 3*x^2]/3 + (5*ArcSinh[Sqrt[3/2]*x])/Sqrt[3]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\sqrt{2+3x^2}}\,dx &= -\frac{1}{3}\sqrt{2+3x^2}+5\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{1}{3}\sqrt{2+3x^2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 33, normalized size = 1.00

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -1/3*Sqrt[2 + 3*x^2] + (5*ArcSinh[Sqrt[3/2]*x])/Sqrt[3]
```

IntegrateAlgebraic [A] time = 0.13, size = 44, normalized size = 1.33

$$-\frac{1}{3}\sqrt{3x^2+2}-\frac{5\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -1/3*Sqrt[2 + 3*x^2] - (5*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/Sqrt[3]
```

fricas [A] time = 0.42, size = 40, normalized size = 1.21

$$\frac{5}{6}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)-\frac{1}{3}\,\sqrt{3\,x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 5/6*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) - 1/3*sqrt(3*x^2 +
2)
```

giac [A] time = 0.19, size = 34, normalized size = 1.03

$$-\frac{5}{3}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)-\frac{1}{3}\,\sqrt{3\,x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -5/3*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/3*sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 25, normalized size = 0.76

$$\frac{5\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\sqrt{3x^2+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+2)^(1/2),x)
```

```
[Out] 5/3*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-1/3*(3*x^2+2)^(1/2)
```

maxima [A] time = 1.30, size = 24, normalized size = 0.73

$$\frac{5}{3}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)-\frac{1}{3}\,\sqrt{3\,x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 5/3*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 1/3*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.03, size = 25, normalized size = 0.76

$$\frac{5\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (5*3^(1/2)*asinh((6^(1/2)*x)/2))/3 - (3^(1/2)*(x^2 + 2/3)^(1/2))/3
```

sympy [A] time = 0.18, size = 29, normalized size = 0.88

$$-\frac{\sqrt{3x^2+2}}{3}+\frac{5\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+2)**(1/2),x)
```

```
[Out] -sqrt(3*x**2 + 2)/3 + 5*sqrt(3)*asinh(sqrt(6)*x/2)/3
```

3.1228 $\int \frac{5-x}{(3+2x)\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=52

$$-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{2\sqrt{35}}-\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {844, 215, 725, 206}

$$-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{2\sqrt{35}}-\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*Sqrt[2 + 3*x^2]),x]
```

```
[Out] -ArcSinh[Sqrt[3/2]*x]/(2*Sqrt[3]) - (13*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
+ 3*x^2])])/(2*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\sqrt{2+3x^2}}\,dx &= -\left(\frac{1}{2}\int \frac{1}{\sqrt{2+3x^2}}\,dx\right)+\frac{13}{2}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= -\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}-\frac{13}{2}\operatorname{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)\\ &= -\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{2\sqrt{35}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 1.00

$$-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{2\sqrt{35}}-\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*Sqrt[2 + 3*x^2]),x]
```

```
[Out] -1/2*ArcSinh[Sqrt[3/2]*x]/Sqrt[3] - (13*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
+ 3*x^2])])/(2*Sqrt[35])
```

IntegrateAlgebraic [A] time = 0.31, size = 77, normalized size = 1.48

$$\frac{\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{2\sqrt{3}}+\frac{13\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (13*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/
Sqrt[35] + Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]]/(2*Sqrt[3])
```

fricas [A] time = 0.43, size = 76, normalized size = 1.46

$$\frac{1}{12}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+\frac{13}{140}\sqrt{35}\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 13/140*sqrt(35)*l
og(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x
 + 9))
```

giac [B] time = 0.25, size = 90, normalized size = 1.73

$$\frac{1}{6}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{13}{70}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 13/70*sqrt(35)*log(-abs(-2*
sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(3
5) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.05, size = 44, normalized size = 0.85

$$-\frac{\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{6}-\frac{13\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{70}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+2)^(1/2),x)
```

```
[Out] -1/6*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-13/70*35^(1/2)*arctanh(2/35*(-9*x+4)*35
^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.60, size = 47, normalized size = 0.90

$$-\frac{1}{6}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{13}{70}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 13/70*sqrt(35)*arcsinh(3/2*sqrt(6)*x/
abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3))
```

mupad [B] time = 0.12, size = 49, normalized size = 0.94

$$\frac{\sqrt{35}\,\left(26\,\ln\left(x+\frac{3}{2}\right)-26\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{140}-\frac{\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (35^(1/2)*(26*log(x + 3/2) - 26*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2)
)/9 - 4/9)))/140 - (3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/6
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{2x\sqrt{3x^2+2}+3\sqrt{3x^2+2}}\,dx-\int\left(-\frac{5}{2x\sqrt{3x^2+2}+3\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+2)**(1/2),x)
```

```
[Out] -Integral(x/(2*x*sqrt(3*x**2 + 2) + 3*sqrt(3*x**2 + 2)), x) - Integral(-5/(
2*x*sqrt(3*x**2 + 2) + 3*sqrt(3*x**2 + 2)), x)
```

3.1229 $\int \frac{5-x}{(3+2x)^2\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=55

$$-\frac{13\sqrt{3x^2+2}}{35(2x+3)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {807, 725, 206}

$$-\frac{13\sqrt{3x^2+2}}{35(2x+3)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(35*(3 + 2*x)) - (41*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt
[2 + 3*x^2])])/(35*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\sqrt{2+3x^2}}\,dx &= -\frac{13\sqrt{2+3x^2}}{35(3+2x)}+\frac{41}{35}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= -\frac{13\sqrt{2+3x^2}}{35(3+2x)}-\frac{41}{35}\operatorname{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)\\ &= -\frac{13\sqrt{2+3x^2}}{35(3+2x)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{35\sqrt{35}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 1.00

$$-\frac{13\sqrt{3x^2+2}}{35(2x+3)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(35*(3 + 2*x)) - (41*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt
[2 + 3*x^2])])/(35*Sqrt[35])
```

IntegrateAlgebraic [A] time = 0.45, size = 71, normalized size = 1.29

$$\frac{82\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{35\sqrt{35}}-\frac{13\sqrt{3x^2+2}}{35(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(35*(3 + 2*x)) + (82*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/
35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(35*Sqrt[35])
```

fricas [A] time = 0.42, size = 74, normalized size = 1.35

$$\frac{41\sqrt{35}(2x+3)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-910\sqrt{3x^2+2}}{2450(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2450*(41*sqrt(35)*(2*x + 3)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93
*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 910*sqrt(3*x^2 + 2))/(2*x + 3)
```

giac [B] time = 0.27, size = 125, normalized size = 2.27

$$\frac{1}{2450}\sqrt{35}\left(13\sqrt{35}\sqrt{3}+82\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{41\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)}{1225\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}-\frac{13\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}}{70\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2450*sqrt(35)*(13*sqrt(35)*sqrt(3) + 82*log(sqrt(35)*sqrt(3) - 9))*sgn(1/
(2*x + 3)) - 41/1225*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x +
3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3)) - 13/70*sqrt(-18/(2*x
 + 3) + 35/(2*x + 3)^2 + 3)/sgn(1/(2*x + 3))
```

maple [A] time = 0.06, size = 53, normalized size = 0.96

$$-\frac{41\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1225}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{70\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+2)^(1/2),x)
```

```
[Out] -13/70/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-41/1225*35^(1/2)*arctanh(2/35*
(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.35, size = 53, normalized size = 0.96

$$\frac{41}{1225}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)-\frac{13\sqrt{3\,x^2+2}}{35\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 41/1225*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x +
 3)) - 13/35*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.92, size = 53, normalized size = 0.96

$$\frac{41\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1225}-\frac{41\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1225}-\frac{13\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{70\,\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (41*35^(1/2)*log(x + 3/2))/1225 - (41*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x
^2 + 2/3)^(1/2))/9 - 4/9))/1225 - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(70*(x + 3
/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{4x^2\sqrt{3x^2+2}+12x\sqrt{3x^2+2}+9\sqrt{3x^2+2}}\,dx-\int\left(-\frac{5}{4x^2\sqrt{3x^2+2}+12x\sqrt{3x^2+2}+9\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+2)**(1/2),x)
```

```
[Out] -Integral(x/(4*x**2*sqrt(3*x**2 + 2) + 12*x*sqrt(3*x**2 + 2) + 9*sqrt(3*x**
2 + 2)), x) - Integral(-5/(4*x**2*sqrt(3*x**2 + 2) + 12*x*sqrt(3*x**2 + 2)
+ 9*sqrt(3*x**2 + 2)), x)
```

3.1230 $\int \frac{5-x}{(3+2x)^3\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=77

$$-\frac{281\sqrt{3x^2+2}}{2450(2x+3)}-\frac{13\sqrt{3x^2+2}}{70(2x+3)^2}-\frac{291\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Rubi [A] time = 0.04, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {835, 807, 725, 206}

$$-\frac{281\sqrt{3x^2+2}}{2450(2x+3)}-\frac{13\sqrt{3x^2+2}}{70(2x+3)^2}-\frac{291\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(70*(3 + 2*x)^2) - (281*Sqrt[2 + 3*x^2])/(2450*(3 + 2
*x)) - (291*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1225*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^3\sqrt{2+3x^2}}\,dx = -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2} - \frac{1}{70}\int \frac{-82+39x}{(3+2x)^2\sqrt{2+3x^2}}\,dx$$
$$= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2} - \frac{281\sqrt{2+3x^2}}{2450(3+2x)} + \frac{291\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225}$$
$$= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2} - \frac{281\sqrt{2+3x^2}}{2450(3+2x)} - \frac{291\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225}$$
$$= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2} - \frac{281\sqrt{2+3x^2}}{2450(3+2x)} - \frac{291\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}$$

Mathematica [A] time = 0.07, size = 60, normalized size = 0.78

$$\frac{-\frac{35\sqrt{3x^2+2}(281x+649)}{(2x+3)^2} - 291\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-35*(649 + 281*x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2 - 291*Sqrt[35]*ArcTanh[(4
- 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/42875
```

IntegrateAlgebraic [A] time = 0.60, size = 76, normalized size = 0.99

$$\frac{\sqrt{3x^2+2}(-281x-649)}{1225(2x+3)^2} + \frac{582\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-649 - 281*x)*Sqrt[2 + 3*x^2])/(1225*(3 + 2*x)^2) + (582*ArcTanh[3*Sqrt[3
/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(1225*Sqrt[35])
```

fricas [A] time = 0.41, size = 89, normalized size = 1.16

$$\frac{291\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 70\sqrt{3x^2+2}(281x+649)}{85750\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/85750*(291*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*
x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 70*sqrt(3*x^2 + 2)*(281*
x + 649))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.29, size = 183, normalized size = 2.38

$$\frac{291}{42875}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right) - \frac{1164\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3 + 6463\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2 - 17904\sqrt{3}x + 2248\sqrt{3} + 17904\sqrt{3x^2+2}}{4900\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2 + 3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right) - 2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 291/42875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 1/490
0*(1164*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 6463*sqrt(3)*(sqrt(3)*x - sqrt(3*
x^2 + 2))^2 - 17904*sqrt(3)*x + 2248*sqrt(3) + 17904*sqrt(3*x^2 + 2))/((sqr
t(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^
2
```

maple [A] time = 0.06, size = 74, normalized size = 0.96

$$-\frac{291\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{42875}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{280\left(x+\frac{3}{2}\right)^2}-\frac{281\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{4900\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+2)^(1/2),x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-281/4900/(x+3/2)*(-9*x+3*(x
+3/2)^2-19/4)^(1/2)-291/42875*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*
x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.45, size = 76, normalized size = 0.99

$$\frac{291}{42875}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{13\sqrt{3x^2+2}}{70\left(4x^2+12x+9\right)}-\frac{281\sqrt{3x^2+2}}{2450(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 291/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) - 13/70*sqrt(3*x^2 + 2)/(4*x^2 + 12*x + 9) - 281/2450*sqrt(3*x^2 + 2
)/(2*x + 3)
```

mupad [B] time = 1.86, size = 77, normalized size = 1.00

$$\frac{291\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{42875}-\frac{291\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}-\frac{281\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{4900\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{280\left(x^2+3x+\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (291*35^(1/2)*log(x + 3/2))/42875 - (291*35^(1/2)*log(x - (3^(1/2)*35^(1/2)
*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875 - (281*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900
*(x + 3/2)) - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(280*(3*x + x^2 + 9/4))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{8x^3\sqrt{3x^2+2}+36x^2\sqrt{3x^2+2}+54x\sqrt{3x^2+2}+27\sqrt{3x^2+2}}\,dx-\int\left(-\frac{5}{8x^3\sqrt{3x^2+2}+36x^2\sqrt{3x^2+2}+54x\sqrt{3x^2+2}+27\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+2)**(1/2),x)
```

```
[Out] -Integral(x/(8*x**3*sqrt(3*x**2 + 2) + 36*x**2*sqrt(3*x**2 + 2) + 54*x*sqrt
(3*x**2 + 2) + 27*sqrt(3*x**2 + 2)), x) - Integral(-5/(8*x**3*sqrt(3*x**2 +
 2) + 36*x**2*sqrt(3*x**2 + 2) + 54*x*sqrt(3*x**2 + 2) + 27*sqrt(3*x**2 + 2
)), x)
```

3.1231 $\int \frac{5-x}{(3+2x)^4\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=99

$$-\frac{10\sqrt{3x^2+2}}{343(2x+3)}-\frac{16\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{13\sqrt{3x^2+2}}{105(2x+3)^3}-\frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {835, 807, 725, 206}

$$-\frac{10\sqrt{3x^2+2}}{343(2x+3)}-\frac{16\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{13\sqrt{3x^2+2}}{105(2x+3)^3}-\frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(105*(3 + 2*x)^3) - (16*Sqrt[2 + 3*x^2])/(245*(3 + 2*
x)^2) - (10*Sqrt[2 + 3*x^2])/(343*(3 + 2*x)) - (57*ArcTanh[(4 - 9*x)/(Sqrt[
35]*Sqrt[2 + 3*x^2])])/(1715*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\sqrt{2+3x^2}}\,dx = -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3} - \frac{1}{105}\int \frac{-123+78x}{(3+2x)^3\sqrt{2+3x^2}}\,dx$$
$$= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3} - \frac{16\sqrt{2+3x^2}}{245(3+2x)^2} + \frac{\int \frac{1590-1440x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{7350}$$
$$= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3} - \frac{16\sqrt{2+3x^2}}{245(3+2x)^2} - \frac{10\sqrt{2+3x^2}}{343(3+2x)} + \frac{57\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1715}$$
$$= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3} - \frac{16\sqrt{2+3x^2}}{245(3+2x)^2} - \frac{10\sqrt{2+3x^2}}{343(3+2x)} - \frac{57\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right)}{1715}$$
$$= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3} - \frac{16\sqrt{2+3x^2}}{245(3+2x)^2} - \frac{10\sqrt{2+3x^2}}{343(3+2x)} - \frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1715\sqrt{35}}$$

Mathematica [A] time = 0.07, size = 65, normalized size = 0.66

$$-\frac{\sqrt{3x^2+2}\left(600x^2+2472x+2995\right)}{5145(2x+3)^3} - \frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 3*x^2]),x]
```

```
[Out] -1/5145*(Sqrt[2 + 3*x^2]*(2995 + 2472*x + 600*x^2))/(3 + 2*x)^3 - (57*ArcTa
nh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1715*Sqrt[35])
```

IntegrateAlgebraic [A] time = 0.78, size = 81, normalized size = 0.82

$$\frac{\sqrt{3x^2+2}\left(-600x^2-2472x-2995\right)}{5145(2x+3)^3} + \frac{114\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{1715\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-2995 - 2472*x - 600*x^2)*Sqrt[2 + 3*x^2])/(5145*(3 + 2*x)^3) + (114*ArcT
anh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(1715*Sq
rt[35])
```

fricas [A] time = 0.45, size = 104, normalized size = 1.05

$$\frac{171\sqrt{35}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 70\left(600x^2+2472x+2995\right)\sqrt{3x^2+2}}{360150\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/360150*(171*sqrt(35)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(sqrt(35)*sqrt(3*x
^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 70*(600*x^2 +
 2472*x + 2995)*sqrt(3*x^2 + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.32, size = 232, normalized size = 2.34

$$\frac{57}{60025}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right) - \frac{\sqrt{3}\left(38\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+855\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+2250\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-13290\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3448\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-800\right)}{3430\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 57/60025*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x
^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 1/3430
*sqrt(3)*(38*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 855*(sqrt(3)*x - sqr
t(3*x^2 + 2))^4 + 2250*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 13290*(sqr
t(3)*x - sqrt(3*x^2 + 2))^2 + 3448*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
800)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 2)) - 2)^3
```

maple [A] time = 0.06, size = 95, normalized size = 0.96

$$-\frac{57\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{60025}-\frac{4\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{245\left(x+\frac{3}{2}\right)^2}-\frac{5\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{343\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{840\left(x+\frac{3}{2}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+2)^(1/2),x)
```

```
[Out] -4/245/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-5/343/(x+3/2)*(-9*x+3*(x+3/2
)^2-19/4)^(1/2)-57/60025*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*
(x+3/2)^2-19)^(1/2))-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.38, size = 104, normalized size = 1.05

$$\frac{57}{60025}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{13\sqrt{3x^2+2}}{105\left(8x^3+36x^2+54x+27\right)}-\frac{16\sqrt{3x^2+2}}{245\left(4x^2+12x+9\right)}-\frac{10\sqrt{3x^2+2}}{343(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 57/60025*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
+ 3)) - 13/105*sqrt(3*x^2 + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 16/245*sqrt(3
*x^2 + 2)/(4*x^2 + 12*x + 9) - 10/343*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 0.11, size = 106, normalized size = 1.07

$$\frac{57\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{60025}-\frac{57\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{60025}-\frac{5\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{343\left(x+\frac{3}{2}\right)}-\frac{4\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{245\left(x^2+3x+\frac{9}{4}\right)}-\frac{13\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{840\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (57*35^(1/2)*log(x + 3/2))/60025 - (57*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(
x^2 + 2/3)^(1/2))/9 - 4/9))/60025 - (5*3^(1/2)*(x^2 + 2/3)^(1/2))/(343*(x +
 3/2)) - (4*3^(1/2)*(x^2 + 2/3)^(1/2))/(245*(3*x + x^2 + 9/4)) - (13*3^(1/2
)*(x^2 + 2/3)^(1/2))/(840*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+2)**(1/2),x)
```

```
[Out] Timed out
```

3.1232 $\int \frac{5-x}{(3+2x)^5\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=121

$$-\frac{991\sqrt{3x^2+2}}{171500(2x+3)}-\frac{87\sqrt{3x^2+2}}{4900(2x+3)^2}-\frac{97\sqrt{3x^2+2}}{2100(2x+3)^3}-\frac{13\sqrt{3x^2+2}}{140(2x+3)^4}+\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Rubi [A] time = 0.08, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {835, 807, 725, 206}

$$-\frac{991\sqrt{3x^2+2}}{171500(2x+3)}-\frac{87\sqrt{3x^2+2}}{4900(2x+3)^2}-\frac{97\sqrt{3x^2+2}}{2100(2x+3)^3}-\frac{13\sqrt{3x^2+2}}{140(2x+3)^4}+\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(140*(3 + 2*x)^4) - (97*Sqrt[2 + 3*x^2])/(2100*(3 + 2
*x)^3) - (87*Sqrt[2 + 3*x^2])/(4900*(3 + 2*x)^2) - (991*Sqrt[2 + 3*x^2])/(1
71500*(3 + 2*x)) + (27*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(4287
5*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^5\sqrt{2+3x^2}}\,dx = -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{1}{140}\int \frac{-164+117x}{(3+2x)^4\sqrt{2+3x^2}}\,dx$$
$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} + \frac{\int \frac{3024-4074x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{14700}$$
$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{\int \frac{-21840+54810x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{1029000}$$
$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{991\sqrt{2+3x^2}}{171500(3+2x)} - \frac{27\int \frac{}{(3+2x)}}{428}$$
$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{991\sqrt{2+3x^2}}{171500(3+2x)} + \frac{27\,\mathrm{Subst}\Big(}{}$$
$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{991\sqrt{2+3x^2}}{171500(3+2x)} + \frac{27\tanh^{-1}}{4287}$$

Mathematica [A] time = 0.08, size = 70, normalized size = 0.58

$$\frac{81\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\sqrt{3x^2+2}\left(5946x^3+35892x^2+79423x+70389\right)}{(2x+3)^4}}{4501875}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(70389 + 79423*x + 35892*x^2 + 5946*x^3))/(3 + 2*x)^4
 + 81*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/4501875
```

IntegrateAlgebraic [A] time = 0.99, size = 86, normalized size = 0.71

$$\frac{\sqrt{3x^2+2}\left(-5946x^3-35892x^2-79423x-70389\right)}{128625(2x+3)^4} - \frac{54\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-70389 - 79423*x - 35892*x^2 - 5946*x^3))/(128625*(3 + 2*
x)^4) - (54*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqr
t[35]])/(42875*Sqrt[35])
```

fricas [A] time = 0.44, size = 118, normalized size = 0.98

$$\frac{81\sqrt{35}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right) - 70\left(5946x^3+35892x^2+79423x+70389\right)\sqrt{3x^2+2}}{9003750\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/9003750*(81*sqrt(35)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((sqrt(3
5)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9)) - 70
*(5946*x^3 + 35892*x^2 + 79423*x + 70389)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3
 + 216*x^2 + 216*x + 81)
```

giac [A] time = 0.26, size = 191, normalized size = 1.58

$$\frac{1}{12005000}\sqrt{35}\left(991\sqrt{35}\sqrt{3}-216\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{1029000}\left(\frac{35\left(\frac{7\left(\frac{97}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{195}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{261}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{2973}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{27\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)}{1500625\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/12005000*sqrt(35)*(991*sqrt(35)*sqrt(3) - 216*log(sqrt(35)*sqrt(3) - 9))*
sgn(1/(2*x + 3)) - 1/1029000*(35*(7*(97/sgn(1/(2*x + 3)) + 195/((2*x + 3)*s
gn(1/(2*x + 3))))/(2*x + 3) + 261/sgn(1/(2*x + 3)))/(2*x + 3) + 2973/sgn(1/
(2*x + 3)))*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 27/1500625*sqrt(35)*
log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)
) - 9)/sgn(1/(2*x + 3))
```

maple [A] time = 0.07, size = 116, normalized size = 0.96

$$\frac{27\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1500625}-\frac{97\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{16800\left(x+\frac{3}{2}\right)^3}-\frac{87\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{19600\left(x+\frac{3}{2}\right)^2}-\frac{991\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{343000\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{2240\left(x+\frac{3}{2}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^5/(3*x^2+2)^(1/2),x)
```

```
[Out] -97/16800/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-87/19600/(x+3/2)^2*(-9*x+
3*(x+3/2)^2-19/4)^(1/2)-991/343000/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(1/2)+27
/1500625*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1
/2))-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.30, size = 137, normalized size = 1.13

$$-\frac{27}{1500625}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{13\sqrt{3x^2+2}}{140\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{97\sqrt{3x^2+2}}{2100\left(8x^3+36x^2+54x+27\right)}-\frac{87\sqrt{3x^2+2}}{4900\left(4x^2+12x+9\right)}-\frac{991\sqrt{3x^2+2}}{171500\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -27/1500625*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2
*x + 3)) - 13/140*sqrt(3*x^2 + 2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
- 97/2100*sqrt(3*x^2 + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 87/4900*sqrt(3*x^2
 + 2)/(4*x^2 + 12*x + 9) - 991/171500*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 0.21, size = 146, normalized size = 1.21

$$\frac{\sqrt{35}\left(\frac{2808\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{2808\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}\right)}{560}-\frac{\sqrt{35}\left(\frac{324\ln\left(x+\frac{3}{2}\right)}{8575}-\frac{324\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{8575}\right)}{280}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{18252}{42875\left(x+\frac{3}{2}\right)}+\frac{702}{1225\left(x+\frac{3}{2}\right)^2}+\frac{117}{175\left(x+\frac{3}{2}\right)^3}+\frac{39}{70\left(x+\frac{3}{2}\right)^4}\right)}{96}+\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{636}{8575\left(x+\frac{3}{2}\right)}+\frac{18}{245\left(x+\frac{3}{2}\right)^2}+\frac{2}{35\left(x+\frac{3}{2}\right)^3}\right)}{48}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (35^(1/2)*((2808*log(x + 3/2))/42875 - (2808*log(x - (3^(1/2)*35^(1/2)*(x^2
 + 2/3)^(1/2))/9 - 4/9))/42875))/560 - (35^(1/2)*((324*log(x + 3/2))/8575 -
 (324*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/8575))/280 - (
3^(1/2)*(x^2 + 2/3)^(1/2)*(18252/(42875*(x + 3/2)) + 702/(1225*(x + 3/2)^2)
 + 117/(175*(x + 3/2)^3) + 39/(70*(x + 3/2)^4)))/96 + (3^(1/2)*(x^2 + 2/3)^
(1/2)*(636/(8575*(x + 3/2)) + 18/(245*(x + 3/2)^2) + 2/(35*(x + 3/2)^3)))/4
8
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+2)**(1/2),x)
[Out] Timed out
```

3.1233 $\int \frac{5-x}{(3+2x)^6\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=143

$$-\frac{10023\sqrt{3x^2+2}}{15006250(2x+3)}-\frac{1611\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{797\sqrt{3x^2+2}}{61250(2x+3)^3}-\frac{439\sqrt{3x^2+2}}{12250(2x+3)^4}-\frac{13\sqrt{3x^2+2}}{175(2x+3)^5}+\frac{19737\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{7503125\sqrt{35}}$$

Rubi [A] time = 0.10, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {835, 807, 725, 206}

$$-\frac{10023\sqrt{3x^2+2}}{15006250(2x+3)}-\frac{1611\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{797\sqrt{3x^2+2}}{61250(2x+3)^3}-\frac{439\sqrt{3x^2+2}}{12250(2x+3)^4}-\frac{13\sqrt{3x^2+2}}{175(2x+3)^5}+\frac{19737\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{7503125\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(175*(3 + 2*x)^5) - (439*Sqrt[2 + 3*x^2])/(12250*(3 +
 2*x)^4) - (797*Sqrt[2 + 3*x^2])/(61250*(3 + 2*x)^3) - (1611*Sqrt[2 + 3*x^2
])/(428750*(3 + 2*x)^2) - (10023*Sqrt[2 + 3*x^2])/(15006250*(3 + 2*x)) + (1
9737*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(7503125*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^6\sqrt{2+3x^2}}\,dx &= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{1}{175}\int \frac{-205+156x}{(3+2x)^5\sqrt{2+3x^2}}\,dx \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{439\sqrt{2+3x^2}}{12250(3+2x)^4} + \frac{\int \frac{4884-7902x}{(3+2x)^4\sqrt{2+3x^2}}\,dx}{24500} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{439\sqrt{2+3x^2}}{12250(3+2x)^4} - \frac{797\sqrt{2+3x^2}}{61250(3+2x)^3} - \frac{\int \frac{-37044+200844x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{2572500} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{439\sqrt{2+3x^2}}{12250(3+2x)^4} - \frac{797\sqrt{2+3x^2}}{61250(3+2x)^3} - \frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2} + \frac{\int \frac{-9399}{(3+2}}{18} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{439\sqrt{2+3x^2}}{12250(3+2x)^4} - \frac{797\sqrt{2+3x^2}}{61250(3+2x)^3} - \frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2} - \frac{10023}{150062} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{439\sqrt{2+3x^2}}{12250(3+2x)^4} - \frac{797\sqrt{2+3x^2}}{61250(3+2x)^3} - \frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2} - \frac{10023}{150062} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5} - \frac{439\sqrt{2+3x^2}}{12250(3+2x)^4} - \frac{797\sqrt{2+3x^2}}{61250(3+2x)^3} - \frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2} - \frac{10023}{150062}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 75, normalized size = 0.52

$$
\frac{19737\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\sqrt{3x^2+2}\left(80184x^4+706644x^3+2487944x^2+4314244x+3409859\right)}{(2x+3)^5}}{262609375}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(3409859 + 4314244*x + 2487944*x^2 + 706644*x^3 + 801
84*x^4))/(3 + 2*x)^5 + 19737*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
3*x^2])])/262609375
```

IntegrateAlgebraic [A] time = 1.26, size = 91, normalized size = 0.64

$$
\frac{\sqrt{3x^2+2}\left(-80184x^4-706644x^3-2487944x^2-4314244x-3409859\right)}{7503125(2x+3)^5} - \frac{39474\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{7503125\sqrt{35}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(-3409859 - 4314244*x - 2487944*x^2 - 706644*x^3 - 80184*x
^4))/(7503125*(3 + 2*x)^5) - (39474*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x -
 (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(7503125*Sqrt[35])
```

fricas [A] time = 0.45, size = 133, normalized size = 0.93

$$
\frac{19737\sqrt{35}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right) - 70\left(80184x^4+706644x^3+2487944x^2+4314244x+3409859\right)\sqrt{3x^2+2}}{525218750\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/525218750*(19737*sqrt(35)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x
+ 243)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2
 + 12*x + 9)) - 70*(80184*x^4 + 706644*x^3 + 2487944*x^2 + 4314244*x + 3409
859)*sqrt(3*x^2 + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.27, size = 322, normalized size = 2.25

$$-\frac{19737}{262609375}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{3\sqrt{3}\left(8772\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^9+355266\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^8+1773406\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^7+11098773\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^6+2315313\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+49794206\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4-25535944\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3+16740688\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2-1744032\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)+213824\right)}{30012500\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -19737/262609375*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
+ 3/30012500*sqrt(3)*(8772*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 355266
*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 + 1773406*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 2))^7 + 11098773*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 + 2315313*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 2))^5 + 49794206*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 2553
5944*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 16740688*(sqrt(3)*x - sqrt(3
*x^2 + 2))^2 - 1744032*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 213824)/((sq
rt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)
^5
```

maple [A] time = 0.07, size = 137, normalized size = 0.96

$$\frac{19737\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{262609375}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{5600\left(x+\frac{3}{2}\right)^5}-\frac{439\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{196000\left(x+\frac{3}{2}\right)^4}-\frac{797\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{490000\left(x+\frac{3}{2}\right)^3}-\frac{1611\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{1715000\left(x+\frac{3}{2}\right)^2}-\frac{10023\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{30012500\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^6/(3*x^2+2)^(1/2),x)
```

```
[Out] -13/5600/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-439/196000/(x+3/2)^4*(-9*x
+3*(x+3/2)^2-19/4)^(1/2)-797/490000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
-1611/1715000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-10023/30012500/(x+3/2
)*(-9*x+3*(x+3/2)^2-19/4)^(1/2)+19737/262609375*35^(1/2)*arctanh(2/35*(-9*x
+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.16, size = 175, normalized size = 1.22

$$-\frac{19737}{262609375}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{13\sqrt{3x^2+2}}{175\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{439\sqrt{3x^2+2}}{12250\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{797\sqrt{3x^2+2}}{61250\left(8x^3+36x^2+54x+27\right)}-\frac{1611\sqrt{3x^2+2}}{428750\left(4x^2+12x+9\right)}-\frac{10023\sqrt{3x^2+2}}{15006250\left(2x+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -19737/262609375*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/
abs(2*x + 3)) - 13/175*sqrt(3*x^2 + 2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x
^2 + 810*x + 243) - 439/12250*sqrt(3*x^2 + 2)/(16*x^4 + 96*x^3 + 216*x^2 +
216*x + 81) - 797/61250*sqrt(3*x^2 + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 1611
/428750*sqrt(3*x^2 + 2)/(4*x^2 + 12*x + 9) - 10023/15006250*sqrt(3*x^2 + 2)
/(2*x + 3)
```

mupad [B] time = 1.93, size = 160, normalized size = 1.12

$$\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{1404}{42875\left(x+\frac{3}{2}\right)}+\frac{54}{1225\left(x+\frac{3}{2}\right)^2}+\frac{9}{175\left(x+\frac{3}{2}\right)^3}+\frac{3}{70\left(x+\frac{3}{2}\right)^4}\right)}{96}-\frac{\sqrt{35}\left(\frac{555984\ln\left(x+\frac{3}{2}\right)}{7503125}-\frac{555984\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{7503125}\right)}{1120}-\frac{\sqrt{35}\left(\frac{216\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{216\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}\right)}{560}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{972504}{7503125\left(x+\frac{3}{2}\right)}+\frac{57564}{214375\left(x+\frac{3}{2}\right)^2}+\frac{12714}{30625\left(x+\frac{3}{2}\right)^3}+\frac{3159}{6125\left(x+\frac{3}{2}\right)^4}+\frac{78}{175\left(x+\frac{3}{2}\right)^5}\right)}{192}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^6*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(1404/(42875*(x + 3/2)) + 54/(1225*(x + 3/2)^2)
+ 9/(175*(x + 3/2)^3) + 3/(70*(x + 3/2)^4)))/96 - (35^(1/2)*((555984*log(x
+ 3/2))/7503125 - (555984*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 -
4/9))/7503125))/1120 - (35^(1/2)*((216*log(x + 3/2))/42875 - (216*log(x - (
3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875))/560 - (3^(1/2)*(x^2 +
 2/3)^(1/2)*(972504/(7503125*(x + 3/2)) + 57564/(214375*(x + 3/2)^2) + 1271
4/(30625*(x + 3/2)^3) + 3159/(6125*(x + 3/2)^4) + 78/(175*(x + 3/2)^5)))/19
2
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**6/(3*x**2+2)**(1/2),x)
```

```
[Out] Timed out
```

3.1234 $\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=89

$$-\frac{7(2-7x)(2x+3)^3}{6\sqrt{3x^2+2}}-\frac{151}{27}\sqrt{3x^2+2}\,(2x+3)^2-\frac{10}{81}(207x+185)\sqrt{3x^2+2}+\frac{880\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {819, 833, 780, 215}

$$-\frac{7(2-7x)(2x+3)^3}{6\sqrt{3x^2+2}}-\frac{151}{27}\sqrt{3x^2+2}\,(2x+3)^2-\frac{10}{81}(207x+185)\sqrt{3x^2+2}+\frac{880\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^3)/(6*Sqrt[2 + 3*x^2]) - (151*(3 + 2*x)^2*Sqrt[2 +
3*x^2])/27 - (10*(185 + 207*x)*Sqrt[2 + 3*x^2])/81 + (880*ArcSinh[Sqrt[3/2]
*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx = -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}} + \frac{1}{6}\int \frac{(72-302x)(3+2x)^2}{\sqrt{2+3x^2}}\,dx$$
$$= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}} - \frac{151}{27}(3+2x)^2\sqrt{2+3x^2} + \frac{1}{54}\int \frac{(4360-4140x)(3+2x)}{\sqrt{2+3x^2}}\,dx$$
$$= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}} - \frac{151}{27}(3+2x)^2\sqrt{2+3x^2} - \frac{10}{81}(185+207x)\sqrt{2+3x^2} + \frac{880}{3}\int$$
$$= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}} - \frac{151}{27}(3+2x)^2\sqrt{2+3x^2} - \frac{10}{81}(185+207x)\sqrt{2+3x^2} + \frac{880\sin}{}$$

Mathematica [A] time = 0.05, size = 58, normalized size = 0.65

$$-\frac{288x^4+432x^3-15024x^2-15840\sqrt{9x^2+6}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)+14715x+33914}{162\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/162*(33914 + 14715*x - 15024*x^2 + 432*x^3 + 288*x^4 - 15840*Sqrt[6 + 9*
x^2]*ArcSinh[Sqrt[3/2]*x])/Sqrt[2 + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.38, size = 66, normalized size = 0.74

$$\frac{-288x^4-432x^3+15024x^2-14715x-33914}{162\sqrt{3x^2+2}} - \frac{880\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-33914 - 14715*x + 15024*x^2 - 432*x^3 - 288*x^4)/(162*Sqrt[2 + 3*x^2]) -
(880*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.41, size = 78, normalized size = 0.88

$$\frac{7920\sqrt{3}\left(3x^2+2\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(288x^4+432x^3-15024x^2+14715x+33914\right)\sqrt{3x^2+2}}{162\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/162*(7920*sqrt(3)*(3*x^2 + 2)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
 - (288*x^4 + 432*x^3 - 15024*x^2 + 14715*x + 33914)*sqrt(3*x^2 + 2))/(3*x^
2 + 2)
```

giac [A] time = 0.19, size = 54, normalized size = 0.61

$$-\frac{880}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{3\left(16\left(3\left(2x+3\right)x-313\right)x+4905\right)x+33914}{162\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="giac")
```

[Out] -880/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/162*(3*(16*(3*(2*x + 3
)*x - 313)*x + 4905)*x + 33914)/sqrt(3*x^2 + 2)

maple [A] time = 0.06, size = 79, normalized size = 0.89

$$-\frac{16x^4}{9\sqrt{3x^2+2}}-\frac{8x^3}{3\sqrt{3x^2+2}}+\frac{2504x^2}{27\sqrt{3x^2+2}}-\frac{545x}{6\sqrt{3x^2+2}}+\frac{880\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{16957}{81\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((5-x)*(2*x+3)^4/(3*x^2+2)^(3/2),x)

[Out] -16/9*x^4/(3*x^2+2)^(1/2)+2504/27*x^2/(3*x^2+2)^(1/2)-16957/81/(3*x^2+2)^(1
/2)-8/3*x^3/(3*x^2+2)^(1/2)-545/6*x/(3*x^2+2)^(1/2)+880/9*arcsinh(1/2*6^(1/
2)*x)*3^(1/2)

maxima [A] time = 1.41, size = 78, normalized size = 0.88

$$-\frac{16\,x^4}{9\,\sqrt{3\,x^2+2}}-\frac{8\,x^3}{3\,\sqrt{3\,x^2+2}}+\frac{2504\,x^2}{27\,\sqrt{3\,x^2+2}}+\frac{880}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)-\frac{545\,x}{6\,\sqrt{3\,x^2+2}}-\frac{16957}{81\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="maxima")

[Out] -16/9*x^4/sqrt(3*x^2 + 2) - 8/3*x^3/sqrt(3*x^2 + 2) + 2504/27*x^2/sqrt(3*x^
2 + 2) + 880/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 545/6*x/sqrt(3*x^2 + 2) - 1
6957/81/sqrt(3*x^2 + 2)

mupad [B] time = 0.06, size = 110, normalized size = 1.24

$$\frac{880\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{16\,x^2}{9}+\frac{8\,x}{3}-\frac{2536}{27}\right)}{3}+\frac{\sqrt{3}\,\sqrt{6}\,\left(-44058+\sqrt{6}\,4809{}\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1{}\mathrm{i}}{1944\,\left(x+\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\,\sqrt{6}\,\left(44058+\sqrt{6}\,4809{}\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1{}\mathrm{i}}{1944\,\left(x-\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(-((2*x + 3)^4*(x - 5))/(3*x^2 + 2)^(3/2),x)

[Out] (880*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(
(8*x)/3 + (16*x^2)/9 - 2536/27))/3 + (3^(1/2)*6^(1/2)*(6^(1/2)*4809i - 4405
8)*(x^2 + 2/3)^(1/2)*1i)/(1944*(x + (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(6^
(1/2)*4809i + 44058)*(x^2 + 2/3)^(1/2)*1i)/(1944*(x - (6^(1/2)*1i)/3))

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{864x^2}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{264x^3}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\frac{16x^4}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\,dx-\int\frac{16x^5}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\,dx-\int\left(-\frac{405}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3+2*x)**4/(3*x**2+2)**(3/2),x)

[Out] -Integral(-999*x/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integ
ral(-864*x**2/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral
(-264*x**3/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(16
*x**4/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(16*x**5
/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(-405/(3*x**2
*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x)

3.1235 $\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{7(2-7x)(2x+3)^2}{6\sqrt{3x^2+2}}-\frac{2}{9}(51x+131)\sqrt{3x^2+2}+\frac{134\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 780, 215}

$$-\frac{7(2-7x)(2x+3)^2}{6\sqrt{3x^2+2}}-\frac{2}{9}(51x+131)\sqrt{3x^2+2}+\frac{134\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^2)/(6*Sqrt[2 + 3*x^2]) - (2*(131 + 51*x)*Sqrt[2 + 3
*x^2])/9 + (134*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)(3+2x)^2}{6\sqrt{2+3x^2}}+\frac{1}{6}\int \frac{(44-204x)(3+2x)}{\sqrt{2+3x^2}}\,dx\\
&= -\frac{7(2-7x)(3+2x)^2}{6\sqrt{2+3x^2}}-\frac{2}{9}(131+51x)\sqrt{2+3x^2}+\frac{134}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\
&= -\frac{7(2-7x)(3+2x)^2}{6\sqrt{2+3x^2}}-\frac{2}{9}(131+51x)\sqrt{2+3x^2}+\frac{134\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 0.79

$$-\frac{24x^3-24x^2-268\sqrt{9x^2+6}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-411x+1426}{18\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/18*(1426 - 411*x - 24*x^2 + 24*x^3 - 268*Sqrt[6 + 9*x^2]*ArcSinh[Sqrt[3/
2]*x])/Sqrt[2 + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.36, size = 61, normalized size = 0.91

$$\frac{-24x^3+24x^2+411x-1426}{18\sqrt{3x^2+2}}-\frac{134\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-1426 + 411*x + 24*x^2 - 24*x^3)/(18*Sqrt[2 + 3*x^2]) - (134*Log[-(Sqrt[3]
*x) + Sqrt[2 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.49, size = 73, normalized size = 1.09

$$\frac{134\sqrt{3}\left(3x^2+2\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)-\left(24x^3-24x^2-411x+1426\right)\sqrt{3x^2+2}}{18\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/18*(134*sqrt(3)*(3*x^2 + 2)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) -
 (24*x^3 - 24*x^2 - 411*x + 1426)*sqrt(3*x^2 + 2))/(3*x^2 + 2)
```

giac [A] time = 0.18, size = 47, normalized size = 0.70

$$-\frac{134}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{3(8(x-1)x-137)x+1426}{18\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -134/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/18*(3*(8*(x - 1)*x - 1
37)*x + 1426)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 65, normalized size = 0.97

$$-\frac{4x^3}{3\sqrt{3x^2+2}}+\frac{4x^2}{3\sqrt{3x^2+2}}+\frac{137x}{6\sqrt{3x^2+2}}+\frac{134\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{713}{9\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+2)^(1/2)*x^3+137/6/(3*x^2+2)^(1/2)*x+134/9*arcsinh(1/2*6^(1/2)*
x)*3^(1/2)+4/3/(3*x^2+2)^(1/2)*x^2-713/9/(3*x^2+2)^(1/2)
```

maxima [A] time = 1.30, size = 64, normalized size = 0.96

$$-\frac{4\,x^3}{3\,\sqrt{3\,x^2+2}}+\frac{4\,x^2}{3\,\sqrt{3\,x^2+2}}+\frac{134}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{137\,x}{6\,\sqrt{3\,x^2+2}}-\frac{713}{9\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^3/sqrt(3*x^2 + 2) + 4/3*x^2/sqrt(3*x^2 + 2) + 134/9*sqrt(3)*arcsinh(
1/2*sqrt(6)*x) + 137/6*x/sqrt(3*x^2 + 2) - 713/9/sqrt(3*x^2 + 2)
```

mupad [B] time = 1.76, size = 105, normalized size = 1.57

$$\frac{134\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{\sqrt{3}\,\left(\frac{4\,x}{3}-\frac{4}{3}\right)\,\sqrt{x^2+\frac{2}{3}}}{3}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-12978+\sqrt{6}\,1281\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{1944\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(12978+\sqrt{6}\,1281\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{1944\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] (134*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (3^(1/2)*((4*x)/3 - 4/3)*(x^
2 + 2/3)^(1/2))/3 - (3^(1/2)*6^(1/2)*(6^(1/2)*1281i - 12978)*(x^2 + 2/3)^(1
/2)*1i)/(1944*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*1281i + 129
78)*(x^2 + 2/3)^(1/2)*1i)/(1944*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{126x^2}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{4x^3}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\frac{8x^4}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\,dx-\int\left(-\frac{135}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(-243*x/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integ
ral(-126*x**2/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral
(-4*x**3/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(8*x*
*4/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(-135/(3*x*
*2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x)
```

3.1236 $\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$-\frac{7(2-7x)(2x+3)}{6\sqrt{3x^2+2}}-\frac{53}{9}\sqrt{3x^2+2}+\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 641, 215}

$$-\frac{7(2-7x)(2x+3)}{6\sqrt{3x^2+2}}-\frac{53}{9}\sqrt{3x^2+2}+\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x))/(6*Sqrt[2 + 3*x^2]) - (53*Sqrt[2 + 3*x^2])/9 + (8*
ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)(3+2x)}{6\sqrt{2+3x^2}}+\frac{1}{6}\int \frac{16-106x}{\sqrt{2+3x^2}}\,dx\\
&= -\frac{7(2-7x)(3+2x)}{6\sqrt{2+3x^2}}-\frac{53}{9}\sqrt{2+3x^2}+\frac{8}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\
&= -\frac{7(2-7x)(3+2x)}{6\sqrt{2+3x^2}}-\frac{53}{9}\sqrt{2+3x^2}+\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 48, normalized size = 0.80

$$-\frac{24x^2-16\sqrt{9x^2+6}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-357x+338}{18\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/18*(338 - 357*x + 24*x^2 - 16*Sqrt[6 + 9*x^2]*ArcSinh[Sqrt[3/2]*x])/Sqrt
[2 + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.33, size = 56, normalized size = 0.93

$$\frac{-24x^2+357x-338}{18\sqrt{3x^2+2}}-\frac{8\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-338 + 357*x - 24*x^2)/(18*Sqrt[2 + 3*x^2]) - (8*Log[-(Sqrt[3]*x) + Sqrt[2
 + 3*x^2]])/(3*Sqrt[3])
```

fricas [A] time = 0.42, size = 68, normalized size = 1.13

$$\frac{8\sqrt{3}\left(3x^2+2\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)-\left(24x^2-357x+338\right)\sqrt{3x^2+2}}{18\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/18*(8*sqrt(3)*(3*x^2 + 2)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) - (
24*x^2 - 357*x + 338)*sqrt(3*x^2 + 2))/(3*x^2 + 2)
```

giac [A] time = 0.17, size = 44, normalized size = 0.73

$$-\frac{8}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{3(8x-119)x+338}{18\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -8/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/18*(3*(8*x - 119)*x + 33
8)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 51, normalized size = 0.85

$$-\frac{4x^2}{3\sqrt{3x^2+2}}+\frac{119x}{6\sqrt{3x^2+2}}+\frac{8\sqrt{3}\operatorname{arcsinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}-\frac{169}{9\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+2)^(1/2)*x^2-169/9/(3*x^2+2)^(1/2)+119/6/(3*x^2+2)^(1/2)*x+8/9*
arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.12, size = 50, normalized size = 0.83

$$-\frac{4\,x^2}{3\,\sqrt{3\,x^2+2}}+\frac{8}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{119\,x}{6\,\sqrt{3\,x^2+2}}-\frac{169}{9\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^2/sqrt(3*x^2 + 2) + 8/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 119/6*x/sqr
t(3*x^2 + 2) - 169/9/sqrt(3*x^2 + 2)
```

mupad [B] time = 1.75, size = 100, normalized size = 1.67

$$\frac{8\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{4\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-966+\sqrt{6}\,357\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(966+\sqrt{6}\,357\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] (8*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (4*3^(1/2)*(x^2 + 2/3)^(1/2))/
9 - (3^(1/2)*6^(1/2)*(6^(1/2)*357i - 966)*(x^2 + 2/3)^(1/2)*1i)/(648*(x - (
6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*357i + 966)*(x^2 + 2/3)^(1/2)*1
i)/(648*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{8x^2}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\frac{4x^3}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\,dx-\int\left(-\frac{45}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(-51*x/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integr
al(-8*x**2/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(4*
x**3/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(-45/(3*x
**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x)
```

3.1237 $\int \frac{(5-x)(3+2x)}{(2+3x^2)^{3/2}} \, dx$

Optimal. Leaf size=40

$$-\frac{7(2-7x)}{6\sqrt{3x^2+2}}-\frac{2\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.01, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {778, 215}

$$-\frac{7(2-7x)}{6\sqrt{3x^2+2}}-\frac{2\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x))/(6*Sqrt[2 + 3*x^2]) - (2*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)}{6\sqrt{2+3x^2}}-\frac{2}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)}{6\sqrt{2+3x^2}}-\frac{2\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 43, normalized size = 1.08

$$-\frac{4\sqrt{9x^2+6}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-147x+42}{18\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/18*(42 - 147*x + 4*Sqrt[6 + 9*x^2]*ArcSinh[Sqrt[3/2]*x])/Sqrt[2 + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.26, size = 51, normalized size = 1.28

$$\frac{7(7x-2)}{6\sqrt{3x^2+2}}+\frac{2\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (7*(-2 + 7*x))/(6*Sqrt[2 + 3*x^2]) + (2*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]]
)/(3*Sqrt[3])
```

fricas [B] time = 0.42, size = 62, normalized size = 1.55

$$\frac{2\sqrt{3}\left(3x^2+2\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+21\sqrt{3x^2+2}\,(7x-2)}{18\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/18*(2*sqrt(3)*(3*x^2 + 2)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 21
*sqrt(3*x^2 + 2)*(7*x - 2))/(3*x^2 + 2)
```

giac [A] time = 0.18, size = 39, normalized size = 0.98

$$\frac{2}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{7(7x-2)}{6\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 7/6*(7*x - 2)/sqrt(3*x^2 +
2)
```

maple [A] time = 0.05, size = 37, normalized size = 0.92

$$\frac{49x}{6\sqrt{3x^2+2}}-\frac{2\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{7}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+2)^(3/2),x)
```

```
[Out] 49/6/(3*x^2+2)^(1/2)*x-2/9*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-7/3/(3*x^2+2)^(1/
2)
```

maxima [A] time = 1.24, size = 36, normalized size = 0.90

$$-\frac{2}{9}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{49x}{6\sqrt{3x^2+2}}-\frac{7}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -2/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 49/6*x/sqrt(3*x^2 + 2) - 7/3/sqrt(3*x
^2 + 2)
```

mupad [B] time = 1.78, size = 88, normalized size = 2.20

$$-\frac{2\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{3}\,x}{2}\right)}{9}-\frac{\sqrt{3}\sqrt{6}\left(-126+\sqrt{6}\,147\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\sqrt{6}\left(126+\sqrt{6}\,147\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] - (2*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (3^(1/2)*6^(1/2)*(6^(1/2)*14
7i - 126)*(x^2 + 2/3)^(1/2)*1i)/(648*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/
2)*(6^(1/2)*147i + 126)*(x^2 + 2/3)^(1/2)*1i)/(648*(x + (6^(1/2)*1i)/3))
```

sympy [B] time = 14.98, size = 99, normalized size = 2.48

$$-\frac{6\sqrt{3}\,x^2\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27x^2+18}+\frac{6x\sqrt{3x^2+2}}{27x^2+18}+\frac{15x}{2\sqrt{3x^2+2}}-\frac{4\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27x^2+18}-\frac{7}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+2)**(3/2),x)
```

```
[Out] -6*sqrt(3)*x**2*asinh(sqrt(6)*x/2)/(27*x**2 + 18) + 6*x*sqrt(3*x**2 + 2)/(2
7*x**2 + 18) + 15*x/(2*sqrt(3*x**2 + 2)) - 4*sqrt(3)*asinh(sqrt(6)*x/2)/(27
*x**2 + 18) - 7/(3*sqrt(3*x**2 + 2))
```

3.1238 $\int \frac{5-x}{(2+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=20

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Rubi [A] time = 0.00, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {637}

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2 + 15*x)/(6*Sqrt[2 + 3*x^2])
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rubi steps

$$\int \frac{5-x}{(2+3x^2)^{3/2}}\,dx = \frac{2+15x}{6\sqrt{2+3x^2}}$$

Mathematica [A] time = 0.01, size = 20, normalized size = 1.00

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2 + 15*x)/(6*Sqrt[2 + 3*x^2])
```

IntegrateAlgebraic [A] time = 0.20, size = 20, normalized size = 1.00

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2 + 15*x)/(6*Sqrt[2 + 3*x^2])
```

fricas [A] time = 0.41, size = 16, normalized size = 0.80

$$\frac{15\,x+2}{6\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*(15*x + 2)/sqrt(3*x^2 + 2)
```

giac [A] time = 0.17, size = 16, normalized size = 0.80

$$\frac{15\,x+2}{6\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*(15*x + 2)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.04, size = 17, normalized size = 0.85

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+2)^(3/2),x)
```

```
[Out] 1/6*(2+15*x)/(3*x^2+2)^(1/2)
```

maxima [A] time = 0.54, size = 24, normalized size = 1.20

$$\frac{5\,x}{2\,\sqrt{3\,x^2+2}}+\frac{1}{3\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 5/2*x/sqrt(3*x^2 + 2) + 1/3/sqrt(3*x^2 + 2)
```

mupad [B] time = 0.04, size = 15, normalized size = 0.75

$$\frac{\frac{5\,x}{2}+\frac{1}{3}}{\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(3*x^2 + 2)^(3/2),x)
```

```
[Out] ((5*x)/2 + 1/3)/(3*x^2 + 2)^(1/2)
```

sympy [A] time = 14.37, size = 27, normalized size = 1.35

$$\frac{5x}{2\sqrt{3x^2+2}}+\frac{1}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+2)**(3/2),x)
```

```
[Out] 5*x/(2*sqrt(3*x**2 + 2)) + 1/(3*sqrt(3*x**2 + 2))
```

3.1239 $\int \frac{5-x}{(3+2x)(2+3x^2)^{3/2}} \, dx$

Optimal. Leaf size=53

$$\frac{41x+26}{70\sqrt{3x^2+2}} - \frac{26 \tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Rubi [A] time = 0.03, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 12, 725, 206}

$$\frac{41x+26}{70\sqrt{3x^2+2}} - \frac{26 \tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*Sqrt[2 + 3*x^2]) - (26*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
 3*x^2])])/(35*Sqrt[35])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{3/2}}\,dx = \frac{26+41x}{70\sqrt{2+3x^2}} - \frac{1}{210}\int -\frac{156}{(3+2x)\sqrt{2+3x^2}}\,dx$$
$$= \frac{26+41x}{70\sqrt{2+3x^2}} + \frac{26}{35}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx$$
$$= \frac{26+41x}{70\sqrt{2+3x^2}} - \frac{26}{35}\operatorname{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right)$$
$$= \frac{26+41x}{70\sqrt{2+3x^2}} - \frac{26\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{35\sqrt{35}}$$

Mathematica [A] time = 0.02, size = 53, normalized size = 1.00

$$\frac{123x+78}{210\sqrt{3x^2+2}} - \frac{26\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(3/2)),x]
[Out] (78 + 123*x)/(210*Sqrt[2 + 3*x^2]) - (26*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
 + 3*x^2])])/(35*Sqrt[35])
```

IntegrateAlgebraic [A] time = 0.42, size = 69, normalized size = 1.30

$$\frac{41x+26}{70\sqrt{3x^2+2}} + \frac{52\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}x + 3\sqrt{\frac{3}{35}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(3/2)),x]
[Out] (26 + 41*x)/(70*Sqrt[2 + 3*x^2]) + (52*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*
x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(35*Sqrt[35])
```

fricas [A] time = 0.43, size = 83, normalized size = 1.57

$$\frac{26\sqrt{35}\left(3x^2+2\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) + 35\sqrt{3x^2+2}(41x+26)}{2450\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="fricas")
[Out] 1/2450*(26*sqrt(35)*(3*x^2 + 2)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) +
93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*sqrt(3*x^2 + 2)*(41*x + 26))/(
3*x^2 + 2)
```

giac [A] time = 0.21, size = 84, normalized size = 1.58

$$\frac{26}{1225}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right) + \frac{41x+26}{70\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 26/1225*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^
2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/70*(4
1*x + 26)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 77, normalized size = 1.45

$$-\frac{x}{4\sqrt{3x^2+2}}+\frac{117x}{140\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{26\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1225}+\frac{13}{35\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+2)^(3/2),x)
```

```
[Out] -1/4/(3*x^2+2)^(1/2)*x+13/35/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+117/140*x/(-9*x+
3*(x+3/2)^2-19/4)^(1/2)-26/1225*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-3
6*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.24, size = 58, normalized size = 1.09

$$\frac{26}{1225}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{41\,x}{70\sqrt{3\,x^2+2}}+\frac{13}{35\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 26/1225*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x +
 3)) + 41/70*x/sqrt(3*x^2 + 2) + 13/35/sqrt(3*x^2 + 2)
```

mupad [B] time = 1.81, size = 106, normalized size = 2.00

$$\frac{\sqrt{35}\left(26\ln\left(x+\frac{3}{2}\right)-26\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{1225}-\frac{\sqrt{3}\sqrt{6}\left(-234+\sqrt{6}\,123\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{7560\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\sqrt{6}\left(234+\sqrt{6}\,123\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{7560\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (35^(1/2)*(26*log(x + 3/2) - 26*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2)
)/9 - 4/9)))/1225 - (3^(1/2)*6^(1/2)*(6^(1/2)*123i - 234)*(x^2 + 2/3)^(1/2)
*1i)/(7560*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*123i + 234)*(x
^2 + 2/3)^(1/2)*1i)/(7560*(x - (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{6x^3\sqrt{3x^2+2}+9x^2\sqrt{3x^2+2}+4x\sqrt{3x^2+2}+6\sqrt{3x^2+2}}\,dx-\int\left(-\frac{5}{6x^3\sqrt{3x^2+2}+9x^2\sqrt{3x^2+2}+4x\sqrt{3x^2+2}+6\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(x/(6*x**3*sqrt(3*x**2 + 2) + 9*x**2*sqrt(3*x**2 + 2) + 4*x*sqrt(3
*x**2 + 2) + 6*sqrt(3*x**2 + 2)), x) - Integral(-5/(6*x**3*sqrt(3*x**2 + 2)
 + 9*x**2*sqrt(3*x**2 + 2) + 4*x*sqrt(3*x**2 + 2) + 6*sqrt(3*x**2 + 2)), x)
```

3.1240 $\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=82

$$\frac{41x+26}{70(2x+3)\sqrt{3x^2+2}}+\frac{19\sqrt{3x^2+2}}{1225(2x+3)}-\frac{632\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Rubi [A] time = 0.04, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)\sqrt{3x^2+2}}+\frac{19\sqrt{3x^2+2}}{1225(2x+3)}-\frac{632\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)*Sqrt[2 + 3*x^2]) + (19*Sqrt[2 + 3*x^2])/(1225*(3
+ 2*x)) - (632*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1225*Sqrt[35
])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx = \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}} - \frac{1}{210}\int \frac{-312-246x}{(3+2x)^2\sqrt{2+3x^2}}\,dx$$
$$= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}} + \frac{19\sqrt{2+3x^2}}{1225(3+2x)} + \frac{632\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225}$$
$$= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}} + \frac{19\sqrt{2+3x^2}}{1225(3+2x)} - \frac{632\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225}$$
$$= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}} + \frac{19\sqrt{2+3x^2}}{1225(3+2x)} - \frac{632\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}$$

Mathematica [A] time = 0.04, size = 65, normalized size = 0.79

$$\frac{\frac{35\left(114x^2+1435x+986\right)}{(2x+3)\sqrt{3x^2+2}} - 1264\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{85750}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((35*(986 + 1435*x + 114*x^2))/((3 + 2*x)*Sqrt[2 + 3*x^2]) - 1264*Sqrt[35]*
ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/85750
```

IntegrateAlgebraic [F] time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] Defer[IntegrateAlgebraic][(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(3/2)), x]
```

fricas [A] time = 0.47, size = 104, normalized size = 1.27

$$\frac{632\sqrt{35}\left(6x^3+9x^2+4x+6\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) + 35\left(114x^2+1435x+986\right)\sqrt{3x^2+2}}{85750\left(6x^3+9x^2+4x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/85750*(632*sqrt(35)*(6*x^3 + 9*x^2 + 4*x + 6)*log(-(sqrt(35)*sqrt(3*x^2 +
 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*(114*x^2 + 143
5*x + 986)*sqrt(3*x^2 + 2))/(6*x^3 + 9*x^2 + 4*x + 6)
```

giac [B] time = 0.27, size = 168, normalized size = 2.05

$$-\frac{1}{85750}\sqrt{35}\left(19\sqrt{35}\sqrt{3} - 1264\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right) + \frac{\frac{\frac{1093}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)} - \frac{1820}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3} + \frac{57}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2450\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}} - \frac{632\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)}{42875\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/85750*sqrt(35)*(19*sqrt(35)*sqrt(3) - 1264*log(sqrt(35)*sqrt(3) - 9))*sg
n(1/(2*x + 3)) + 1/2450*((1093/sgn(1/(2*x + 3)) - 1820/((2*x + 3)*sgn(1/(2*
x + 3))))/(2*x + 3) + 57/sgn(1/(2*x + 3)))/sqrt(-18/(2*x + 3) + 35/(2*x + 3
)^2 + 3) - 632/42875*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x +
3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3))
```

maple [A] time = 0.05, size = 86, normalized size = 1.05

$$\frac{57x}{2450\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{632\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{42875}-\frac{13}{70\left(x+\frac{3}{2}\right)\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}+\frac{316}{1225\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+2)^(3/2),x)
```

```
[Out] -13/70/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+316/1225/(-9*x+3*(x+3/2)^2-19/
4)^(1/2)+57/2450/(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-632/42875*35^(1/2)*arctanh
(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.43, size = 86, normalized size = 1.05

$$\frac{632}{42875}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{57x}{2450\sqrt{3x^{2}+2}}+\frac{316}{1225\sqrt{3x^{2}+2}}-\frac{13}{35\left(2\sqrt{3x^{2}+2}\,x+3\sqrt{3x^{2}+2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 632/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 57/2450*x/sqrt(3*x^2 + 2) + 316/1225/sqrt(3*x^2 + 2) - 13/35/(2*sq
rt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 0.12, size = 157, normalized size = 1.91

$$\frac{632\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{632\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}+\frac{71\sqrt{3}\sqrt{x^{2}+\frac{2}{3}}}{4900\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{71\sqrt{3}\sqrt{x^{2}+\frac{2}{3}}}{4900\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{26\sqrt{3}\sqrt{x^{2}+\frac{2}{3}}}{1225\left(x+\frac{3}{2}\right)}-\frac{\sqrt{3}\sqrt{6}\sqrt{x^{2}+\frac{2}{3}}\,199\mathrm{i}}{14700\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\sqrt{6}\sqrt{x^{2}+\frac{2}{3}}\,199\mathrm{i}}{14700\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (632*35^(1/2)*log(x + 3/2))/42875 - (632*35^(1/2)*log(x - (3^(1/2)*35^(1/2)
*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875 + (71*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900*
(x - (6^(1/2)*1i)/3)) + (71*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900*(x + (6^(1/2)*
1i)/3)) - (26*3^(1/2)*(x^2 + 2/3)^(1/2))/(1225*(x + 3/2)) - (3^(1/2)*6^(1/2
)*(x^2 + 2/3)^(1/2)*199i)/(14700*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(
x^2 + 2/3)^(1/2)*199i)/(14700*(x + (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1241 $\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=104

$$\frac{41x+26}{70(2x+3)^2\sqrt{3x^2+2}}-\frac{331\sqrt{3x^2+2}}{8575(2x+3)}+\frac{9\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{1962\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

Rubi [A] time = 0.06, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)^2\sqrt{3x^2+2}}-\frac{331\sqrt{3x^2+2}}{8575(2x+3)}+\frac{9\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{1962\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)^2*Sqrt[2 + 3*x^2]) + (9*Sqrt[2 + 3*x^2])/(245*(3
+ 2*x)^2) - (331*Sqrt[2 + 3*x^2])/(8575*(3 + 2*x)) - (1962*ArcTanh[(4 - 9*x
)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8575*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
```

```
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx &= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}} - \frac{1}{210}\int \frac{-468-492x}{(3+2x)^3\sqrt{2+3x^2}}\,dx \\ &= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}} + \frac{9\sqrt{2+3x^2}}{245(3+2x)^2} + \frac{\int \frac{12360+1620x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{14700} \\ &= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}} + \frac{9\sqrt{2+3x^2}}{245(3+2x)^2} - \frac{331\sqrt{2+3x^2}}{8575(3+2x)} + \frac{1962\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,d}{8575} \\ &= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}} + \frac{9\sqrt{2+3x^2}}{245(3+2x)^2} - \frac{331\sqrt{2+3x^2}}{8575(3+2x)} - \frac{1962\,\mathrm{Subst}\left(\int \frac{1}{35-x^2}\,c\right.}{8575} \\ &= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}} + \frac{9\sqrt{2+3x^2}}{245(3+2x)^2} - \frac{331\sqrt{2+3x^2}}{8575(3+2x)} - \frac{1962\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+}}\right.}{8575\sqrt{35}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 70, normalized size = 0.67

$$\frac{-3924\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{35\left(3972x^3+4068x^2-7397x-3658\right)}{(2x+3)^2\sqrt{3x^2+2}}}{600250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((-35*(-3658 - 7397*x + 4068*x^2 + 3972*x^3))/((3 + 2*x)^2*Sqrt[2 + 3*x^2])
 - 3924*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/600250
```

IntegrateAlgebraic [A] time = 0.70, size = 86, normalized size = 0.83

$$\frac{3924\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}x+3\sqrt{\frac{3}{35}}\right)}{8575\sqrt{35}}+\frac{-3972x^3-4068x^2+7397x+3658}{17150(2x+3)^2\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (3658 + 7397*x - 4068*x^2 - 3972*x^3)/(17150*(3 + 2*x)^2*Sqrt[2 + 3*x^2]) +
 (3924*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]
])/(8575*Sqrt[35])
```

fricas [A] time = 0.44, size = 119, normalized size = 1.14

$$\frac{1962\sqrt{35}\left(12x^4+36x^3+35x^2+24x+18\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(3972x^3+4068x^2-7397x-3658\right)\sqrt{3x^2+2}}{600250\left(12x^4+36x^3+35x^2+24x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/600250*(1962*sqrt(35)*(12*x^4 + 36*x^3 + 35*x^2 + 24*x + 18)*log(-(sqrt(3
5)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35
*(3972*x^3 + 4068*x^2 - 7397*x - 3658)*sqrt(3*x^2 + 2))/(12*x^4 + 36*x^3 +
35*x^2 + 24*x + 18)
```

giac [B] time = 0.25, size = 199, normalized size = 1.91

$$\frac{1962}{300125}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3(157x-1478)}{85750\sqrt{3x^2+2}}-\frac{768\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3+2461\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2-6168\sqrt{3}x+856\sqrt{3}+6168\sqrt{3x^2+2}}{6125\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 1962/300125*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(
3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/8
5750*(157*x - 1478)/sqrt(3*x^2 + 2) - 1/6125*(768*(sqrt(3)*x - sqrt(3*x^2 +
 2))^3 + 2461*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 6168*sqrt(3)*x + 85
6*sqrt(3) + 6168*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^2
```

maple [A] time = 0.08, size = 107, normalized size = 1.03

$$-\frac{993x}{17150\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{1962\sqrt{35}\ \mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{300125}-\frac{103}{980\left(x+\frac{3}{2}\right)\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{981}{8575\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{13}{280\left(x+\frac{3}{2}\right)^2\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+2)^(3/2),x)
```

```
[Out] -103/980/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+981/8575/(-9*x+3*(x+3/2)^2-1
9/4)^(1/2)-993/17150/(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-1962/300125*35^(1/2)*a
rctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/280/(x+3/2)
^2/(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.42, size = 128, normalized size = 1.23

$$\frac{1962}{300125}\sqrt{35}\ \mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{993x}{17150\sqrt{3x^2+2}}+\frac{981}{8575\sqrt{3x^2+2}}-\frac{13}{70\left(4\sqrt{3x^2+2}x^2+12\sqrt{3x^2+2}x+9\sqrt{3x^2+2}\right)}-\frac{103}{490\left(2\sqrt{3x^2+2}x+3\sqrt{3x^2+2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1962/300125*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2
*x + 3)) - 993/17150*x/sqrt(3*x^2 + 2) + 981/8575/sqrt(3*x^2 + 2) - 13/70/(
4*sqrt(3*x^2 + 2)*x^2 + 12*sqrt(3*x^2 + 2)*x + 9*sqrt(3*x^2 + 2)) - 103/490
/(2*sqrt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 1.78, size = 181, normalized size = 1.74

$$\frac{1962\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{300125}-\frac{1962\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{300125}-\frac{157\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{171500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{157\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{171500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{107\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{6125\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{2450\left(x^2+3x+\frac{9}{4}\right)}-\frac{\sqrt{3}\sqrt{6}\sqrt{x^2+\frac{2}{3}}\,739\mathrm{i}}{171500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\sqrt{6}\sqrt{x^2+\frac{2}{3}}\,739\mathrm{i}}{171500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (1962*35^(1/2)*log(x + 3/2))/300125 - (1962*35^(1/2)*log(x - (3^(1/2)*35^(1
/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/300125 - (157*3^(1/2)*(x^2 + 2/3)^(1/2))/(
171500*(x - (6^(1/2)*1i)/3)) - (157*3^(1/2)*(x^2 + 2/3)^(1/2))/(171500*(x +
```

```
 (6^(1/2)*1i)/3)) - (107*3^(1/2)*(x^2 + 2/3)^(1/2))/(6125*(x + 3/2)) - (13*
3^(1/2)*(x^2 + 2/3)^(1/2))/(2450*(3*x + x^2 + 9/4)) - (3^(1/2)*6^(1/2)*(x^2
 + 2/3)^(1/2)*739i)/(171500*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(x^2 +
 2/3)^(1/2)*739i)/(171500*(x + (6^(1/2)*1i)/3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1242 $\int \frac{5-x}{(3+2x)^4(2+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=126

$$\frac{41x+26}{70(2x+3)^3\sqrt{3x^2+2}}-\frac{1051\sqrt{3x^2+2}}{42875(2x+3)}-\frac{27\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{23\sqrt{3x^2+2}}{525(2x+3)^3}-\frac{3312\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)^3\sqrt{3x^2+2}}-\frac{1051\sqrt{3x^2+2}}{42875(2x+3)}-\frac{27\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{23\sqrt{3x^2+2}}{525(2x+3)^3}-\frac{3312\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)^3*Sqrt[2 + 3*x^2]) + (23*Sqrt[2 + 3*x^2])/(525*(3
 + 2*x)^3) - (27*Sqrt[2 + 3*x^2])/(1225*(3 + 2*x)^2) - (1051*Sqrt[2 + 3*x^2
])/(42875*(3 + 2*x)) - (3312*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])
/(42875*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
```

```
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{3/2}}\,dx = \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} - \frac{1}{210}\int \frac{-624-738x}{(3+2x)^4\sqrt{2+3x^2}}\,dx$$

$$= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} + \frac{\int \frac{25704+5796x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{22050}$$

$$= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{\int \frac{-509040+102060x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{1543500}$$

$$= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{1051\sqrt{2+3x^2}}{42875(3+2x)} + \frac{33}{}$$

$$= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{1051\sqrt{2+3x^2}}{42875(3+2x)} - \frac{331}{}$$

$$= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{1051\sqrt{2+3x^2}}{42875(3+2x)} - \frac{331}{}$$

Mathematica [A] time = 0.08, size = 75, normalized size = 0.60

$$\frac{-19872\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\left(75672x^4+261036x^3+237930x^2+23349x+29438\right)}{(2x+3)^3\sqrt{3x^2+2}}}{9003750}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((-35*(29438 + 23349*x + 237930*x^2 + 261036*x^3 + 75672*x^4))/((3 + 2*x)^3
*Sqrt[2 + 3*x^2]) - 19872*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x
^2])])/9003750
```

IntegrateAlgebraic [A] time = 0.91, size = 91, normalized size = 0.72

$$\frac{6624\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)}{42875\sqrt{35}} + \frac{-75672x^4-261036x^3-237930x^2-23349x-29438}{257250(2x+3)^3\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (-29438 - 23349*x - 237930*x^2 - 261036*x^3 - 75672*x^4)/(257250*(3 + 2*x)^
3*Sqrt[2 + 3*x^2]) + (6624*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[
2 + 3*x^2])/Sqrt[35]])/(42875*Sqrt[35])
```

fricas [A] time = 0.42, size = 134, normalized size = 1.06

$$\frac{9936\sqrt{35}\left(24x^5+108x^4+178x^3+153x^2+108x+54\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 35\left(75672x^4+261036x^3+237930x^2+23349x+29438\right)\sqrt{3x^2+2}}{9003750\left(24x^5+108x^4+178x^3+153x^2+108x+54\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/9003750*(9936*sqrt(35)*(24*x^5 + 108*x^4 + 178*x^3 + 153*x^2 + 108*x + 54
)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 1
2*x + 9)) - 35*(75672*x^4 + 261036*x^3 + 237930*x^2 + 23349*x + 29438)*sqrt
(3*x^2 + 2))/(24*x^5 + 108*x^4 + 178*x^3 + 153*x^2 + 108*x + 54)
```

giac [B] time = 0.29, size = 248, normalized size = 1.97

$$\frac{3312}{1500625}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3(10281x-12674)}{3001250\sqrt{3x^2+2}}-\frac{2\sqrt{3}\left(12983\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+253320\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^4+298170\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3-1481160\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+425140\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-106016\right)}{1500625\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+3\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)-2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 3312/1500625*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/
3001250*(10281*x - 12674)/sqrt(3*x^2 + 2) - 2/1500625*sqrt(3)*(12983*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 253320*(sqrt(3)*x - sqrt(3*x^2 + 2))^4
+ 298170*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 1481160*(sqrt(3)*x - sqr
t(3*x^2 + 2))^2 + 425140*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 106016)/((
sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
2)^3
```

maple [A] time = 0.06, size = 128, normalized size = 1.02

$$-\frac{3153x}{85750\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{3312\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1500625}-\frac{17}{700\left(x+\frac{3}{2}\right)^2\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{101}{2450\left(x+\frac{3}{2}\right)\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{1656}{42875\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{13}{840\left(x+\frac{3}{2}\right)^3\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+2)^(3/2),x)
```

```
[Out] -17/700/(x+3/2)^2/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-101/2450/(x+3/2)/(-9*x+3*(x
+3/2)^2-19/4)^(1/2)+1656/42875/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-3153/85750/(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x-3312/1500625*35^(1/2)*arctanh(2/35*(-9*x+4)*35
^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/840/(x+3/2)^3/(-9*x+3*(x+3/2)^2-19
/4)^(1/2)
```

maxima [A] time = 1.30, size = 184, normalized size = 1.46

$$\frac{3312}{1500625}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{3153x}{85750\sqrt{3x^2+2}}+\frac{1656}{42875\sqrt{3x^2+2}}-\frac{13}{105\left(8\sqrt{3x^2+2}x^3+36\sqrt{3x^2+2}x^2+54\sqrt{3x^2+2}x+27\sqrt{3x^2+2}\right)}-\frac{17}{175\left(4\sqrt{3x^2+2}x^2+12\sqrt{3x^2+2}x+9\sqrt{3x^2+2}\right)}-\frac{101}{1225\left(2\sqrt{3x^2+2}x+3\sqrt{3x^2+2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 3312/1500625*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(
2*x + 3)) - 3153/85750*x/sqrt(3*x^2 + 2) + 1656/42875/sqrt(3*x^2 + 2) - 13/
105/(8*sqrt(3*x^2 + 2)*x^3 + 36*sqrt(3*x^2 + 2)*x^2 + 54*sqrt(3*x^2 + 2)*x
+ 27*sqrt(3*x^2 + 2)) - 17/175/(4*sqrt(3*x^2 + 2)*x^2 + 12*sqrt(3*x^2 + 2)*
x + 9*sqrt(3*x^2 + 2)) - 101/1225/(2*sqrt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 1.79, size = 210, normalized size = 1.67

$$\frac{3312\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1500625}-\frac{3312\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1500625}-\frac{10281\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{6002500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{10281\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{6002500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{13252\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{1500625\left(x+\frac{3}{2}\right)}-\frac{197\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{42875\left(x^2+3x+\frac{9}{4}\right)}-\frac{13\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{7350\left(x^3+\frac{9x^2}{2}+\frac{27x}{4}+\frac{27}{8}\right)}-\frac{\sqrt{3}\sqrt{6}\sqrt{x^2+\frac{2}{3}}\,6337\mathrm{i}}{6002500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\sqrt{6}\sqrt{x^2+\frac{2}{3}}\,6337\mathrm{i}}{6002500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (3312*35^(1/2)*log(x + 3/2))/1500625 - (3312*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1500625 - (10281*3^(1/2)*(x^2 + 2/3)^(1/2
))/(6002500*(x - (6^(1/2)*1i)/3)) - (10281*3^(1/2)*(x^2 + 2/3)^(1/2))/(6002
500*(x + (6^(1/2)*1i)/3)) - (13252*3^(1/2)*(x^2 + 2/3)^(1/2))/(1500625*(x +
 3/2)) - (197*3^(1/2)*(x^2 + 2/3)^(1/2))/(42875*(3*x + x^2 + 9/4)) - (13*3^
(1/2)*(x^2 + 2/3)^(1/2))/(7350*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8)) - (3^(1
/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*6337i)/(6002500*(x - (6^(1/2)*1i)/3)) + (3^(1
/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*6337i)/(6002500*(x + (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1243 $\int \frac{5-x}{(3+2x)^5\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{41x+26}{70(2x+3)^4\sqrt{3x^2+2}}-\frac{14944\sqrt{3x^2+2}}{1500625(2x+3)}-\frac{708\sqrt{3x^2+2}}{42875(2x+3)^2}-\frac{298\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{58\sqrt{3x^2+2}}{1225(2x+3)^4}-\frac{30078\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1500625\sqrt{35}}$$

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)^4\sqrt{3x^2+2}}-\frac{14944\sqrt{3x^2+2}}{1500625(2x+3)}-\frac{708\sqrt{3x^2+2}}{42875(2x+3)^2}-\frac{298\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{58\sqrt{3x^2+2}}{1225(2x+3)^4}-\frac{30078\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1500625\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)^4*Sqrt[2 + 3*x^2]) + (58*Sqrt[2 + 3*x^2])/(1225*(
3 + 2*x)^4) - (298*Sqrt[2 + 3*x^2])/(18375*(3 + 2*x)^3) - (708*Sqrt[2 + 3*x
^2])/(42875*(3 + 2*x)^2) - (14944*Sqrt[2 + 3*x^2])/(1500625*(3 + 2*x)) - (3
0078*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1500625*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
```

```
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^5\left(2+3x^2\right)^{3/2}}\,dx = \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} - \frac{1}{210}\int \frac{-780-984x}{(3+2x)^5\sqrt{2+3x^2}}\,dx$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} + \frac{\int \frac{43824+12528x}{(3+2x)^4\sqrt{2+3x^2}}\,dx}{29400}$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{\int \frac{-1333584+300384x}{(3+2x)^3\sqrt{2+3x^2}}}{3087000}$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} +$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} -$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} -$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} -$$

Mathematica [A] time = 0.09, size = 80, normalized size = 0.54

$$\frac{-180468\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\left(2151936x^5+11467872x^4+22188792x^3+18957672x^2+8562487x+4197366\right)}{(2x+3)^4\sqrt{3x^2+2}}}{315131250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((-35*(4197366 + 8562487*x + 18957672*x^2 + 22188792*x^3 + 11467872*x^4 + 2
151936*x^5))/((3 + 2*x)^4*Sqrt[2 + 3*x^2]) - 180468*Sqrt[35]*ArcTanh[(4 - 9
*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/315131250
```

IntegrateAlgebraic [A] time = 1.17, size = 96, normalized size = 0.65

$$\frac{60156\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}} + 2\sqrt{\frac{3}{35}}\,x + 3\sqrt{\frac{3}{35}}\right)}{1500625\sqrt{35}} + \frac{-2151936x^5 - 11467872x^4 - 22188792x^3 - 18957672x^2 - 8562487x - 4197366}{9003750(2x+3)^4\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^5*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (-4197366 - 8562487*x - 18957672*x^2 - 22188792*x^3 - 11467872*x^4 - 215193
6*x^5)/(9003750*(3 + 2*x)^4*Sqrt[2 + 3*x^2]) + (60156*ArcTanh[3*Sqrt[3/35]
+ 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(1500625*Sqrt[35])
```

fricas [A] time = 0.44, size = 149, normalized size = 1.01

$$\frac{90234\,\sqrt{35}\left(48\,x^{6}+288\,x^{5}+680\,x^{4}+840\,x^{3}+675\,x^{2}+432\,x+162\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^{2}+2}\,(9\,x-4)+93\,x^{2}-36\,x+43}{4\,x^{2}+12\,x+9}\right)-35\left(2151936\,x^{5}+11467872\,x^{4}+22188792\,x^{3}+18957672\,x^{2}+8562487\,x+4197366\right)\sqrt{3\,x^{2}+2}}{315131250\left(48\,x^{6}+288\,x^{5}+680\,x^{4}+840\,x^{3}+675\,x^{2}+432\,x+162\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/315131250*(90234*sqrt(35)*(48*x^6 + 288*x^5 + 680*x^4 + 840*x^3 + 675*x^2
 + 432*x + 162)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x +
43)/(4*x^2 + 12*x + 9)) - 35*(2151936*x^5 + 11467872*x^4 + 22188792*x^3 + 1
8957672*x^2 + 8562487*x + 4197366)*sqrt(3*x^2 + 2))/(48*x^6 + 288*x^5 + 680
*x^4 + 840*x^3 + 675*x^2 + 432*x + 162)
```

giac [A] time = 0.29, size = 234, normalized size = 1.58

$$\frac{2}{52521875}\,\sqrt{35}\left(3736\,\sqrt{35}\,\sqrt{3}+15039\,\log\left(\sqrt{35}\,\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)-\frac{\frac{35\left(\frac{7\left(\frac{5\left(\frac{913}{\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}+\frac{1365}{(2\,x+3)\,\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}\right)}{2\,x+3}+\frac{2646}{\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}\right)}{2\,x+3}+\frac{12858}{\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}\right)}{2\,x+3}-\frac{583956}{\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}}{2\,x+3}+\frac{134496}{\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}}{9003750\,\sqrt{-\frac{18}{2\,x+3}+\frac{35}{(2\,x+3)^{2}}+3}}-\frac{30078\,\sqrt{35}\,\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2\,x+3}+\frac{35}{(2\,x+3)^{2}}+3}+\frac{\sqrt{35}}{2\,x+3}\right)-9\right)}{52521875\,\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/52521875*sqrt(35)*(3736*sqrt(35)*sqrt(3) + 15039*log(sqrt(35)*sqrt(3) - 9
))*sgn(1/(2*x + 3)) - 1/9003750*((35*(7*(5*(913/sgn(1/(2*x + 3)) + 1365/((2
*x + 3)*sgn(1/(2*x + 3))))/(2*x + 3) + 2646/sgn(1/(2*x + 3)))/(2*x + 3) + 1
2858/sgn(1/(2*x + 3)))/(2*x + 3) - 583956/sgn(1/(2*x + 3)))/(2*x + 3) + 134
496/sgn(1/(2*x + 3)))/sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) - 30078/5252
1875*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt
(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3))
```

maple [A] time = 0.10, size = 149, normalized size = 1.01

$$-\frac{22416x}{1500625\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{30078\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{52521875}-\frac{913}{117600\left(x+\frac{3}{2}\right)^{3}\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{9}{1000\left(x+\frac{3}{2}\right)^{2}\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{2143}{171500\left(x+\frac{3}{2}\right)\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}+\frac{15039}{1500625\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{13}{2240\left(x+\frac{3}{2}\right)^{4}\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^5/(3*x^2+2)^(3/2),x)
```

```
[Out] -913/117600/(x+3/2)^3/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-9/1000/(x+3/2)^2/(-9*x+
3*(x+3/2)^2-19/4)^(1/2)-2143/171500/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+1
5039/1500625/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-22416/1500625/(-9*x+3*(x+3/2)^2-
19/4)^(1/2)*x-30078/52521875*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x
+12*(x+3/2)^2-19)^(1/2))-13/2240/(x+3/2)^4/(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [B] time = 1.30, size = 254, normalized size = 1.72

$$\frac{30078}{52521875}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)-\frac{22416\,x}{1500625\,\sqrt{3\,x^{2}+2}}+\frac{15039}{1500625\,\sqrt{3\,x^{2}+2}}-\frac{13}{140\left(16\,\sqrt{3\,x^{2}+2}\,x^{4}+96\,\sqrt{3\,x^{2}+2}\,x^{3}+216\,\sqrt{3\,x^{2}+2}\,x^{2}+216\,\sqrt{3\,x^{2}+2}\,x+81\,\sqrt{3\,x^{2}+2}\right)}-\frac{913}{14700\left(8\,\sqrt{3\,x^{2}+2}\,x^{3}+36\,\sqrt{3\,x^{2}+2}\,x^{2}+54\,\sqrt{3\,x^{2}+2}\,x+27\,\sqrt{3\,x^{2}+2}\right)}-\frac{9}{250\left(4\,\sqrt{3\,x^{2}+2}\,x^{2}+12\,\sqrt{3\,x^{2}+2}\,x+9\,\sqrt{3\,x^{2}+2}\right)}-\frac{2143}{85750\left(2\,\sqrt{3\,x^{2}+2}\,x+3\,\sqrt{3\,x^{2}+2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 30078/52521875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/ab
s(2*x + 3)) - 22416/1500625*x/sqrt(3*x^2 + 2) + 15039/1500625/sqrt(3*x^2 +
2) - 13/140/(16*sqrt(3*x^2 + 2)*x^4 + 96*sqrt(3*x^2 + 2)*x^3 + 216*sqrt(3*x
^2 + 2)*x^2 + 216*sqrt(3*x^2 + 2)*x + 81*sqrt(3*x^2 + 2)) - 913/14700/(8*sq
```

```
rt(3*x^2 + 2)*x^3 + 36*sqrt(3*x^2 + 2)*x^2 + 54*sqrt(3*x^2 + 2)*x + 27*sqrt
(3*x^2 + 2)) - 9/250/(4*sqrt(3*x^2 + 2)*x^2 + 12*sqrt(3*x^2 + 2)*x + 9*sqrt
(3*x^2 + 2)) - 2143/85750/(2*sqrt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 0.14, size = 244, normalized size = 1.65

$$\frac{30078\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{52521875}-\frac{30078\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{52521875}-\frac{13\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{19600\left(x^4+6\,x^3+\frac{27\,x^2}{2}+\frac{27\,x}{2}+\frac{81}{16}\right)}-\frac{168573\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{210087500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{168573\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{210087500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{354467\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{105043750\left(x+\frac{3}{2}\right)}-\frac{14499\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{6002500\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{323\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{205800\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,36471\mathrm{i}}{210087500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,36471\mathrm{i}}{210087500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (30078*35^(1/2)*log(x + 3/2))/52521875 - (30078*35^(1/2)*log(x - (3^(1/2)*3
5^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/52521875 - (13*3^(1/2)*(x^2 + 2/3)^(1/
2))/(19600*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (168573*3^(1/2)
*(x^2 + 2/3)^(1/2))/(210087500*(x - (6^(1/2)*1i)/3)) - (168573*3^(1/2)*(x^2
 + 2/3)^(1/2))/(210087500*(x + (6^(1/2)*1i)/3)) - (354467*3^(1/2)*(x^2 + 2/
3)^(1/2))/(105043750*(x + 3/2)) - (14499*3^(1/2)*(x^2 + 2/3)^(1/2))/(600250
0*(3*x + x^2 + 9/4)) - (323*3^(1/2)*(x^2 + 2/3)^(1/2))/(205800*((27*x)/4 +
(9*x^2)/2 + x^3 + 27/8)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*36471i)/(2100
87500*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*36471i)/(2
10087500*(x + (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1244 $\int \frac{(5-x)(3+2x)^6}{(2+3x^2)^{5/2}} dx$

Optimal. Leaf size=116

$$-\frac{7(2-7x)(2x+3)^5}{18\left(3x^2+2\right)^{3/2}}+\frac{(2427x+158)(2x+3)^3}{54\sqrt{3x^2+2}}-\frac{2639}{81}\sqrt{3x^2+2}\,(2x+3)^2-\frac{70}{243}(801x+2167)\sqrt{3x^2+2}+\frac{20720\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{27\sqrt{3}}$$

Rubi [A] time = 0.06, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {819, 833, 780, 215}

$$-\frac{7(2-7x)(2x+3)^5}{18\left(3x^2+2\right)^{3/2}}+\frac{(2427x+158)(2x+3)^3}{54\sqrt{3x^2+2}}-\frac{2639}{81}\sqrt{3x^2+2}\,(2x+3)^2-\frac{70}{243}(801x+2167)\sqrt{3x^2+2}+\frac{20720\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{27\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^6)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^5)/(18*(2 + 3*x^2)^(3/2)) + ((3 + 2*x)^3*(158 + 242
7*x))/(54*Sqrt[2 + 3*x^2]) - (2639*(3 + 2*x)^2*Sqrt[2 + 3*x^2])/81 - (70*(2
167 + 801*x)*Sqrt[2 + 3*x^2])/243 + (20720*ArcSinh[Sqrt[3/2]*x])/(27*Sqrt[3
])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^6}{\left(2+3x^2\right)^{5/2}}\,dx = -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{1}{18}\int \frac{(398-318x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx$$
$$= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}+\frac{1}{108}\int \frac{(-5712-31668x)(3+2x)^2}{\sqrt{2+3x^2}}$$
$$= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}-\frac{2639}{81}(3+2x)^2\sqrt{2+3x^2}+\frac{1}{972}\int$$
$$= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}-\frac{2639}{81}(3+2x)^2\sqrt{2+3x^2}-\frac{70}{243}(21$$
$$= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}-\frac{2639}{81}(3+2x)^2\sqrt{2+3x^2}-\frac{70}{243}(21$$

Mathematica [A] time = 0.08, size = 73, normalized size = 0.63

$$-\frac{3456x^6+20736x^5-130464x^4-1125999x^3+2363976x^2-124320\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-139815x+1798610}{486\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^6)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/486*(1798610 - 139815*x + 2363976*x^2 - 1125999*x^3 - 130464*x^4 + 20736
*x^5 + 3456*x^6 - 124320*Sqrt[3]*(2 + 3*x^2)^(3/2)*ArcSinh[Sqrt[3/2]*x])/(2
 + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.48, size = 76, normalized size = 0.66

$$\frac{-3456x^6-20736x^5+130464x^4+1125999x^3-2363976x^2+139815x-1798610}{486\left(3x^2+2\right)^{3/2}}-\frac{20720\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{27\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^6)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-1798610 + 139815*x - 2363976*x^2 + 1125999*x^3 + 130464*x^4 - 20736*x^5 -
 3456*x^6)/(486*(2 + 3*x^2)^(3/2)) - (20720*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x
^2]])/(27*Sqrt[3])
```

fricas [A] time = 0.42, size = 98, normalized size = 0.84

$$\frac{62160\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)-\left(3456x^6+20736x^5-130464x^4-1125999x^3+2363976x^2-139815x+1798610\right)\sqrt{3x^2+2}}{486\left(9x^4+12x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^6/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/486*(62160*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x -
3*x^2 - 1) - (3456*x^6 + 20736*x^5 - 130464*x^4 - 1125999*x^3 + 2363976*x^2
 - 139815*x + 1798610)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 60, normalized size = 0.52

$$-\frac{20720}{81}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)-\frac{9\,(((96\,(4\,(x+6)x-151)x-125111)x+262664)x-15535)x+1798610}{486\,\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^6/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -20720/81*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/486*(9*(((96*(4*(x
+ 6)*x - 151)*x - 125111)*x + 262664)*x - 15535)*x + 1798610)/(3*x^2 + 2)^(
3/2)
```

maple [A] time = 0.06, size = 119, normalized size = 1.03

$$-\frac{64x^6}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{128x^5}{3\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{2416x^4}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{20720x^3}{27\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{131332x^2}{27\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{55517x}{54\sqrt{3x^2+2}}-\frac{3537x}{2\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{20720\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{81}-\frac{899305}{243\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^6/(3*x^2+2)^(5/2),x)
```

```
[Out] -64/9*x^6/(3*x^2+2)^(3/2)+2416/9*x^4/(3*x^2+2)^(3/2)-131332/27*x^2/(3*x^2+2
)^(3/2)-899305/243/(3*x^2+2)^(3/2)-128/3*x^5/(3*x^2+2)^(3/2)-20720/27*x^3/(
3*x^2+2)^(3/2)+55517/54/(3*x^2+2)^(1/2)*x+20720/81*arcsinh(1/2*6^(1/2)*x)*3
^(1/2)-3537/2*x/(3*x^2+2)^(3/2)
```

maxima [A] time = 1.44, size = 133, normalized size = 1.15

$$-\frac{64\,x^6}{9\,\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{128\,x^5}{3\,\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{2416\,x^4}{9\,\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{20720}{81}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)+\frac{20720}{81}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}x\right)+\frac{249431\,x}{162\,\sqrt{3\,x^2+2}}-\frac{131332\,x^2}{27\,\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{3537\,x}{2\,\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{899305}{243\,\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^6/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -64/9*x^6/(3*x^2 + 2)^(3/2) - 128/3*x^5/(3*x^2 + 2)^(3/2) + 2416/9*x^4/(3*x
^2 + 2)^(3/2) - 20720/81*x*(9*x^2/(3*x^2 + 2)^(3/2) + 4/(3*x^2 + 2)^(3/2))
+ 20720/81*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 249431/162*x/sqrt(3*x^2 + 2) -
131332/27*x^2/(3*x^2 + 2)^(3/2) - 3537/2*x/(3*x^2 + 2)^(3/2) - 899305/243/(
3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.71, size = 222, normalized size = 1.91

$$\frac{20720\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{81}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{64\,x^2}{27}+\frac{128\,x}{9}-\frac{7504}{81}\right)}{3}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{206689}{144}+\frac{\sqrt{6}\,81809\mathrm{i}}{432}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(-\frac{206689}{216}+\frac{\sqrt{6}\,81809\mathrm{i}}{648}\right)\,1\mathrm{i}}{2\,{\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{\frac{206689}{144}+\frac{\sqrt{6}\,81809\mathrm{i}}{432}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\,\left(\frac{206689}{216}+\frac{\sqrt{6}\,81809\mathrm{i}}{648}\right)\,1\mathrm{i}}{2\,{\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-3390048+\sqrt{6}\,719421\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{23328\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(3390048+\sqrt{6}\,719421\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{23328\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^6*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (20720*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/81 - (3^(1/2)*(x^2 + 2/3)^(1/2
)*((128*x)/9 + (64*x^2)/27 - 7504/81))/3 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^
(1/2)*81809i)/432 - 206689/144)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*8
1809i)/648 - 206689/216)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*(x^
2 + 2/3)^(1/2)*(((6^(1/2)*81809i)/432 + 206689/144)/(x + (6^(1/2)*1i)/3) +
(6^(1/2)*((6^(1/2)*81809i)/648 + 206689/216)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)
))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*719421i - 3390048)*(x^2 + 2/3)^(1/2)*1i)/
(23328*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*719421i + 3390048)
*(x^2 + 2/3)^(1/2)*1i)/(23328*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{13851x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{21384x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{16740x^3}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{6480x^4}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{720x^5}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\frac{256x^6}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\frac{64x^7}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\left(-\frac{3645}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**6/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-13851*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*
sqrt(3*x**2 + 2)), x) - Integral(-21384*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*
x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-16740*x**3/(9*x
**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) -
 Integral(-6480*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) +
4*sqrt(3*x**2 + 2)), x) - Integral(-720*x**5/(9*x**4*sqrt(3*x**2 + 2) + 12*
x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(256*x**6/(9*x**4
*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - In
tegral(64*x**7/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt
(3*x**2 + 2)), x) - Integral(-3645/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(
3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x)
```

3.1245 $\int \frac{(5-x)(3+2x)^5}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{7(2-7x)(2x+3)^4}{18\left(3x^2+2\right)^{3/2}}-\frac{5(16-421x)(2x+3)^2}{54\sqrt{3x^2+2}}-\frac{50}{81}(93x+299)\sqrt{3x^2+2}+\frac{1600\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{27\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 780, 215}

$$-\frac{7(2-7x)(2x+3)^4}{18\left(3x^2+2\right)^{3/2}}-\frac{5(16-421x)(2x+3)^2}{54\sqrt{3x^2+2}}-\frac{50}{81}(93x+299)\sqrt{3x^2+2}+\frac{1600\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{27\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^5)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^4)/(18*(2 + 3*x^2)^(3/2)) - (5*(16 - 421*x)*(3 + 2*
x)^2)/(54*Sqrt[2 + 3*x^2]) - (50*(299 + 93*x)*Sqrt[2 + 3*x^2])/81 + (1600*A
rcSinh[Sqrt[3/2]*x])/(27*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^5}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} + \frac{1}{18}\int \frac{(370-220x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx \\
&= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} - \frac{5(16-421x)(3+2x)^2}{54\sqrt{2+3x^2}} + \frac{1}{108}\int \frac{(-2000-18600x)(3+2x)}{\sqrt{2+3x^2}}\,d \\
&= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} - \frac{5(16-421x)(3+2x)^2}{54\sqrt{2+3x^2}} - \frac{50}{81}(299+93x)\sqrt{2+3x^2} + \frac{1600}{27}\int \\
&= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} - \frac{5(16-421x)(3+2x)^2}{54\sqrt{2+3x^2}} - \frac{50}{81}(299+93x)\sqrt{2+3x^2} + \frac{1600\sin}{2}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 68, normalized size = 0.72

$$
-\frac{864x^5+4320x^4-183945x^3+147600x^2-3200\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-79215x+134126}{162\left(3x^2+2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^5)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/162*(134126 - 79215*x + 147600*x^2 - 183945*x^3 + 4320*x^4 + 864*x^5 - 3
200*Sqrt[3]*(2 + 3*x^2)^(3/2)*ArcSinh[Sqrt[3/2]*x])/(2 + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.47, size = 71, normalized size = 0.76

$$
\frac{-864x^5-4320x^4+183945x^3-147600x^2+79215x-134126}{162\left(3x^2+2\right)^{3/2}} - \frac{1600\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{27\sqrt{3}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^5)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-134126 + 79215*x - 147600*x^2 + 183945*x^3 - 4320*x^4 - 864*x^5)/(162*(2
+ 3*x^2)^(3/2)) - (1600*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(27*Sqrt[3])
```

fricas [A] time = 0.42, size = 93, normalized size = 0.99

$$
\frac{1600\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(864x^5+4320x^4-183945x^3+147600x^2-79215x+134126\right)\sqrt{3x^2+2}}{162\left(9x^4+12x^2+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/162*(1600*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3
*x^2 - 1) - (864*x^5 + 4320*x^4 - 183945*x^3 + 147600*x^2 - 79215*x + 13412
6)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.25, size = 55, normalized size = 0.59

$$
-\frac{1600}{81}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{3\left(\left(\left(288\left(x+5\right)x-61315\right)x+49200\right)x-26405\right)x+134126}{162\left(3x^2+2\right)^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1600/81*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/162*(3*(((288*(x + 5
)*x - 61315)*x + 49200)*x - 26405)*x + 134126)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.07, size = 105, normalized size = 1.12

$$-\frac{16x^5}{3\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{80x^4}{3\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{1600x^3}{27\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{8200x^2}{9\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{21505x}{54\sqrt{3x^2+2}}-\frac{615x}{2\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{1600\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{81}-\frac{67063}{81\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^5/(3*x^2+2)^(5/2),x)
```

```
[Out] -16/3/(3*x^2+2)^(3/2)*x^5-1600/27/(3*x^2+2)^(3/2)*x^3+21505/54/(3*x^2+2)^(1
/2)*x+1600/81*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-80/3/(3*x^2+2)^(3/2)*x^4-8200/
9/(3*x^2+2)^(3/2)*x^2-67063/81/(3*x^2+2)^(3/2)-615/2/(3*x^2+2)^(3/2)*x
```

maxima [A] time = 1.31, size = 119, normalized size = 1.27

$$-\frac{16\,x^5}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{80\,x^4}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{1600}{81}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)+\frac{1600}{81}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{70915\,x}{162\sqrt{3\,x^2+2}}-\frac{8200\,x^2}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{615\,x}{2\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{67063}{81\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/3*x^5/(3*x^2 + 2)^(3/2) - 80/3*x^4/(3*x^2 + 2)^(3/2) - 1600/81*x*(9*x^2
/(3*x^2 + 2)^(3/2) + 4/(3*x^2 + 2)^(3/2)) + 1600/81*sqrt(3)*arcsinh(1/2*sqr
t(6)*x) + 70915/162*x/sqrt(3*x^2 + 2) - 8200/9*x^2/(3*x^2 + 2)^(3/2) - 615/
2*x/(3*x^2 + 2)^(3/2) - 67063/81/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 0.05, size = 217, normalized size = 2.31

$$\frac{1600\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{2}\ \sqrt{3}\ x}{2}\right)}{81}-\frac{\sqrt{3}\ \left(\frac{16\,x}{9}+\frac{80}{9}\right)\sqrt{x^2+\frac{2}{3}}}{3}+\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{43799}{144}+\frac{\sqrt{6}\ 18823\mathrm{i}}{144}}{x-\frac{\sqrt{6}\ 1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(-\frac{43799}{216}+\frac{\sqrt{6}\ 18823\mathrm{i}}{216}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)^2}\right)}{27}-\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\left(\frac{\frac{43799}{144}+\frac{\sqrt{6}\ 18823\mathrm{i}}{144}}{x+\frac{\sqrt{6}\ 1\mathrm{i}}{3}}+\frac{\sqrt{6}\left(\frac{43799}{216}+\frac{\sqrt{6}\ 18823\mathrm{i}}{216}\right)1\mathrm{i}}{2\left(x+\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)^2}\right)}{27}-\frac{\sqrt{3}\ \sqrt{6}\ \left(-567360+\sqrt{6}\ 290595\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\ 1\mathrm{i}}{23328\left(x-\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\ \sqrt{6}\ \left(567360+\sqrt{6}\ 290595\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\ 1\mathrm{i}}{23328\left(x+\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^5*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (1600*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/81 - (3^(1/2)*((16*x)/9 + 80/9)
*(x^2 + 2/3)^(1/2))/3 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*18823i)/144 -
 43799/144)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*18823i)/216 - 43799/2
16)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(
1/2)*18823i)/144 + 43799/144)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*188
23i)/216 + 43799/216)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*6^(1/2
)*(6^(1/2)*290595i - 567360)*(x^2 + 2/3)^(1/2)*1i)/(23328*(x - (6^(1/2)*1i)
/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*290595i + 567360)*(x^2 + 2/3)^(1/2)*1i)/(2
3328*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{3807x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{4590x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{2520x^3}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{480x^4}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\frac{80x^5}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\frac{32x^6}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\left(-\frac{1215}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**5/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-3807*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*s
qrt(3*x**2 + 2)), x) - Integral(-4590*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x*
*2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-2520*x**3/(9*x**4
*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - In
```

```
tegral(-480*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sq
rt(3*x**2 + 2)), x) - Integral(80*x**5/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*s
qrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(32*x**6/(9*x**4*sqrt(3
*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(
-1215/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 +
 2)), x)
```

3.1246 $\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=87

$$-\frac{7(2-7x)(2x+3)^3}{18\left(3x^2+2\right)^{3/2}}-\frac{(318-1783x)(2x+3)}{54\sqrt{3x^2+2}}-\frac{2027}{81}\sqrt{3x^2+2}-\frac{16\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 641, 215}

$$-\frac{7(2-7x)(2x+3)^3}{18\left(3x^2+2\right)^{3/2}}-\frac{(318-1783x)(2x+3)}{54\sqrt{3x^2+2}}-\frac{2027}{81}\sqrt{3x^2+2}-\frac{16\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^3)/(18*(2 + 3*x^2)^(3/2)) - ((318 - 1783*x)*(3 + 2*
x))/(54*Sqrt[2 + 3*x^2]) - (2027*Sqrt[2 + 3*x^2])/81 - (16*ArcSinh[Sqrt[3/2
]*x])/(9*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{5/2}}\,dx = -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}} + \frac{1}{18}\int \frac{(342-122x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx$$
$$= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}} - \frac{(318-1783x)(3+2x)}{54\sqrt{2+3x^2}} + \frac{1}{108}\int \frac{-192-8108x}{\sqrt{2+3x^2}}\,dx$$
$$= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}} - \frac{(318-1783x)(3+2x)}{54\sqrt{2+3x^2}} - \frac{2027}{81}\sqrt{2+3x^2} - \frac{16}{9}\int \frac{1}{\sqrt{2+3x^2}}\,d$$
$$= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}} - \frac{(318-1783x)(3+2x)}{54\sqrt{2+3x^2}} - \frac{2027}{81}\sqrt{2+3x^2} - \frac{16\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{9\sqrt{3}}$$

Mathematica [A] time = 0.06, size = 63, normalized size = 0.72

$$-\frac{864x^4-57285x^3+16560x^2+96\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-33381x+25342}{162\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/162*(25342 - 33381*x + 16560*x^2 - 57285*x^3 + 864*x^4 + 96*Sqrt[3]*(2 +
 3*x^2)^(3/2)*ArcSinh[Sqrt[3/2]*x])/(2 + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.45, size = 66, normalized size = 0.76

$$\frac{16\log\left(\sqrt{3x^2+2}-\sqrt{3}\,x\right)}{9\sqrt{3}} + \frac{-864x^4+57285x^3-16560x^2+33381x-25342}{162\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-25342 + 33381*x - 16560*x^2 + 57285*x^3 - 864*x^4)/(162*(2 + 3*x^2)^(3/2)
) + (16*Log[-(Sqrt[3]*x) + Sqrt[2 + 3*x^2]])/(9*Sqrt[3])
```

fricas [A] time = 0.41, size = 87, normalized size = 1.00

$$\frac{48\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(864x^4-57285x^3+16560x^2-33381x+25342\right)\sqrt{3x^2+2}}{162\left(9x^4+12x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/162*(48*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^
2 - 1) - (864*x^4 - 57285*x^3 + 16560*x^2 - 33381*x + 25342)*sqrt(3*x^2 + 2
))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 52, normalized size = 0.60

$$\frac{16}{27}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)-\frac{9\left(\left(\left(96x-6365\right)x+1840\right)x-3709\right)x+25342}{162\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 16/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/162*(9*(((96*x - 6365)*
x + 1840)*x - 3709)*x + 25342)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.06, size = 91, normalized size = 1.05

$$-\frac{16x^4}{3\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{16x^3}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{920x^2}{9\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{2111x}{18\sqrt{3x^2+2}}-\frac{57x}{2\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{16\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}-\frac{12671}{81\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+2)^(5/2),x)
```

```
[Out] -16/3/(3*x^2+2)^(3/2)*x^4-920/9/(3*x^2+2)^(3/2)*x^2-12671/81/(3*x^2+2)^(3/2
)+16/9/(3*x^2+2)^(3/2)*x^3+2111/18/(3*x^2+2)^(1/2)*x-16/27*arcsinh(1/2*6^(1
/2)*x)*3^(1/2)-57/2/(3*x^2+2)^(3/2)*x
```

maxima [A] time = 1.35, size = 105, normalized size = 1.21

$$-\frac{16\,x^4}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{16}{27}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)-\frac{16}{27}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{6269\,x}{54\,\sqrt{3\,x^2+2}}-\frac{920\,x^2}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{57\,x}{2\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{12671}{81\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/3*x^4/(3*x^2 + 2)^(3/2) + 16/27*x*(9*x^2/(3*x^2 + 2)^(3/2) + 4/(3*x^2 +
 2)^(3/2)) - 16/27*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 6269/54*x/sqrt(3*x^2 +
2) - 920/9*x^2/(3*x^2 + 2)^(3/2) - 57/2*x/(3*x^2 + 2)^(3/2) - 12671/81/(3*x
^2 + 2)^(3/2)
```

mupad [B] time = 1.72, size = 212, normalized size = 2.44

$$-\frac{16\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{27}-\frac{16\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{1603}{48}+\frac{\sqrt{6}\,7343\mathrm{i}}{144}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(-\frac{1603}{72}+\frac{\sqrt{6}\,7343\mathrm{i}}{216}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\left(\frac{\frac{1603}{48}+\frac{\sqrt{6}\,7343\mathrm{i}}{144}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\left(\frac{1603}{72}+\frac{\sqrt{6}\,7343\mathrm{i}}{216}\right)1\mathrm{i}}{2\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-20544+\sqrt{6}\,27063\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{7776\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(20544+\sqrt{6}\,27063\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{7776\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*7343i)/144 - 1603/48)/(x - (6^(1/2)*1
i)/3) - (6^(1/2)*((6^(1/2)*7343i)/216 - 1603/72)*1i)/(2*(x - (6^(1/2)*1i)/3
)^2)))/27 - (16*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/27 - (16*3^(1/2)*(x^2
 + 2/3)^(1/2))/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*7343i)/144 + 1603
/48)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*7343i)/216 + 1603/72)*1i)/(2
*(x + (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*27063i - 20544)*(
x^2 + 2/3)^(1/2)*1i)/(7776*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2
)*27063i + 20544)*(x^2 + 2/3)^(1/2)*1i)/(7776*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{864x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{264x^3}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\frac{16x^4}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\frac{16x^5}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\left(-\frac{405}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-999*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sq
rt(3*x**2 + 2)), x) - Integral(-864*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2
*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-264*x**3/(9*x**4*sq
rt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integ
```

```
ral(16*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*
x**2 + 2)), x) - Integral(16*x**5/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3
*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-405/(9*x**4*sqrt(3*x**2 +
2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x)
```

3.1247 $\int \frac{(5-x)(3+2x)^3}{(2+3x^2)^{5/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{7(2-7x)(2x+3)^2}{18\left(3x^2+2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{3x^2+2}}-\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{9\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 778, 215}

$$-\frac{7(2-7x)(2x+3)^2}{18\left(3x^2+2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{3x^2+2}}-\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^2)/(18*(2 + 3*x^2)^(3/2)) - (556 - 1461*x)/(54*Sqrt
[2 + 3*x^2]) - (8*ArcSinh[Sqrt[3/2]*x])/(9*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)(3+2x)^2}{18\left(2+3x^2\right)^{3/2}}+\frac{1}{18}\int \frac{(314-24x)(3+2x)}{\left(2+3x^2\right)^{3/2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^2}{18\left(2+3x^2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{2+3x^2}}-\frac{8}{9}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^2}{18\left(2+3x^2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{2+3x^2}}-\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{9\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 58, normalized size = 0.87

$$-\frac{-4971x^3+72x^2+16\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-3741x+1490}{54\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/54*(1490 - 3741*x + 72*x^2 - 4971*x^3 + 16*Sqrt[3]*(2 + 3*x^2)^(3/2)*Arc
Sinh[Sqrt[3/2]*x])/(2 + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.42, size = 61, normalized size = 0.91

$$\frac{8\log\left(\sqrt{3x^2+2}-\sqrt{3}x\right)}{9\sqrt{3}}+\frac{4971x^3-72x^2+3741x-1490}{54\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-1490 + 3741*x - 72*x^2 + 4971*x^3)/(54*(2 + 3*x^2)^(3/2)) + (8*Log[-(Sqrt
[3]*x) + Sqrt[2 + 3*x^2]])/(9*Sqrt[3])
```

fricas [A] time = 0.42, size = 81, normalized size = 1.21

$$\frac{8\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+\left(4971x^3-72x^2+3741x-1490\right)\sqrt{3x^2+2}}{54\left(9x^4+12x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/54*(8*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2
- 1) + (4971*x^3 - 72*x^2 + 3741*x - 1490)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2
 + 4)
```

giac [A] time = 0.20, size = 48, normalized size = 0.72

$$\frac{8}{27}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{3\left(\left(1657x-24\right)x+1247\right)x-1490}{54\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 8/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 1/54*(3*((1657*x - 24)*x +
 1247)*x - 1490)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.05, size = 77, normalized size = 1.15

$$\frac{8x^3}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{4x^2}{3\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{547x}{18\sqrt{3x^2+2}}+\frac{17x}{2\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{8\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}-\frac{745}{27\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+2)^(5/2),x)
```

```
[Out] 8/9/(3*x^2+2)^(3/2)*x^3+547/18/(3*x^2+2)^(1/2)*x-8/27*arcsinh(1/2*6^(1/2)*x
)*3^(1/2)-4/3/(3*x^2+2)^(3/2)*x^2-745/27/(3*x^2+2)^(3/2)+17/2/(3*x^2+2)^(3/
2)*x
```

maxima [A] time = 1.18, size = 91, normalized size = 1.36

$$\frac{8}{27}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)-\frac{8}{27}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{1609\,x}{54\,\sqrt{3\,x^2+2}}-\frac{4\,x^2}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{17\,x}{2\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{745}{27\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 8/27*x*(9*x^2/(3*x^2 + 2)^(3/2) + 4/(3*x^2 + 2)^(3/2)) - 8/27*sqrt(3)*arcsi
nh(1/2*sqrt(6)*x) + 1609/54*x/sqrt(3*x^2 + 2) - 4/3*x^2/(3*x^2 + 2)^(3/2) +
 17/2*x/(3*x^2 + 2)^(3/2) - 745/27/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.70, size = 200, normalized size = 2.99

$$-\frac{8\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{427}{48}+\frac{\sqrt{6}\,721\mathrm{i}}{48}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\,\left(-\frac{427}{72}+\frac{\sqrt{6}\,721\mathrm{i}}{72}\right)\,1\mathrm{i}}{2\,{\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{\frac{427}{48}+\frac{\sqrt{6}\,721\mathrm{i}}{48}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(\frac{427}{72}+\frac{\sqrt{6}\,721\mathrm{i}}{72}\right)\,1\mathrm{i}}{2\,{\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-96+\sqrt{6}\,2067\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{2592\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(96+\sqrt{6}\,2067\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{2592\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*721i)/48 + 427/48)/(x - (6^(1/2)*1i)/
3) - (6^(1/2)*((6^(1/2)*721i)/72 + 427/72)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))
/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*721i)/48 - 427/48)/(x + (6^(1/2
)*1i)/3) + (6^(1/2)*((6^(1/2)*721i)/72 - 427/72)*1i)/(2*(x + (6^(1/2)*1i)/3
)^2)))/27 - (8*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/27 - (3^(1/2)*6^(1/2)*
(6^(1/2)*2067i - 96)*(x^2 + 2/3)^(1/2)*1i)/(2592*(x - (6^(1/2)*1i)/3)) - (3
^(1/2)*6^(1/2)*(6^(1/2)*2067i + 96)*(x^2 + 2/3)^(1/2)*1i)/(2592*(x + (6^(1/
2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{126x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{4x^3}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\frac{8x^4}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\left(-\frac{135}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-243*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sq
rt(3*x**2 + 2)), x) - Integral(-126*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2
*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-4*x**3/(9*x**4*sqrt
(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integra
l(8*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**
2 + 2)), x) - Integral(-135/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2
+ 2) + 4*sqrt(3*x**2 + 2)), x)
```

3.1248 $\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=48

$$\frac{(2x+3)^2(15x+2)}{18\left(3x^2+2\right)^{3/2}}-\frac{41(4-9x)}{54\sqrt{3x^2+2}}$$

Rubi [A] time = 0.02, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {805, 637}

$$\frac{(2x+3)^2(15x+2)}{18\left(3x^2+2\right)^{3/2}}-\frac{41(4-9x)}{54\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] ((3 + 2*x)^2*(2 + 15*x))/(18*(2 + 3*x^2)^(3/2)) - (41*(4 - 9*x))/(54*Sqrt[2
 + 3*x^2])
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 805

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[(m*(c*d*f + a*e*g))/(2*a*c*(p + 1)), Int[(d + e*x)^(m
 - 1)*(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{5/2}}\,dx &= \frac{(3+2x)^2(2+15x)}{18\left(2+3x^2\right)^{3/2}}+\frac{41}{9}\int \frac{3+2x}{\left(2+3x^2\right)^{3/2}}\,dx\\ &= \frac{(3+2x)^2(2+15x)}{18\left(2+3x^2\right)^{3/2}}-\frac{41(4-9x)}{54\sqrt{2+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.13, size = 30, normalized size = 0.62

$$-\frac{-1287x^3-72x^2-1215x+274}{54\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/54*(274 - 1215*x - 72*x^2 - 1287*x^3)/(2 + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.38, size = 30, normalized size = 0.62

$$\frac{1287x^3+72x^2+1215x-274}{54\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-274 + 1215*x + 72*x^2 + 1287*x^3)/(54*(2 + 3*x^2)^(3/2))
```

fricas [A]   time = 0.41, size = 40, normalized size = 0.83

$$\frac{\left(1287\,x^3+72\,x^2+1215\,x-274\right)\sqrt{3\,x^2+2}}{54\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/54*(1287*x^3 + 72*x^2 + 1215*x - 274)*sqrt(3*x^2 + 2)/(9*x^4 + 12*x^2 + 4
)
```

giac [A]   time = 0.18, size = 25, normalized size = 0.52

$$\frac{9\left((143\,x+8)x+135\right)x-274}{54\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/54*(9*((143*x + 8)*x + 135)*x - 274)/(3*x^2 + 2)^(3/2)
```

maple [A]   time = 0.04, size = 27, normalized size = 0.56

$$\frac{1287x^3+72x^2+1215x-274}{54\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+2)^(5/2),x)
```

```
[Out] 1/54*(1287*x^3+72*x^2+1215*x-274)/(3*x^2+2)^(3/2)
```

maxima [A]   time = 0.53, size = 50, normalized size = 1.04

$$\frac{143\,x}{18\sqrt{3\,x^2+2}}+\frac{4\,x^2}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{119\,x}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{137}{27\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 143/18*x/sqrt(3*x^2 + 2) + 4/3*x^2/(3*x^2 + 2)^(3/2) + 119/18*x/(3*x^2 + 2)
^(3/2) - 137/27/(3*x^2 + 2)^(3/2)
```

mupad [B]   time = 1.70, size = 185, normalized size = 3.85

$$-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{119}{16}+\frac{\sqrt{6}\,161\mathrm{i}}{48}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\,\left(-\frac{119}{24}+\frac{\sqrt{6}\,161\mathrm{i}}{72}\right)\,1\mathrm{i}}{2\,{\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{\frac{119}{16}+\frac{\sqrt{6}\,161\mathrm{i}}{48}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(\frac{119}{24}+\frac{\sqrt{6}\,161\mathrm{i}}{72}\right)\,1\mathrm{i}}{2\,{\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-96+\sqrt{6}\,453\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{2592\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(96+\sqrt{6}\,453\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{2592\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*161i)/48 + 119/16)/(x - (6^(1/2)*1i)/
3) - (6^(1/2)*((6^(1/2)*161i)/72 + 119/24)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))
/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*161i)/48 - 119/16)/(x + (6^(1/2
)*1i)/3) + (6^(1/2)*((6^(1/2)*161i)/72 - 119/24)*1i)/(2*(x + (6^(1/2)*1i)/3
)^2)))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*453i - 96)*(x^2 + 2/3)^(1/2)*1i)/(259
2*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*453i + 96)*(x^2 + 2/3)^
(1/2)*1i)/(2592*(x - (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{8x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\frac{4x^3}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\,dx-\int\left(-\frac{45}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-51*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqr
t(3*x**2 + 2)), x) - Integral(-8*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sq
rt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(4*x**3/(9*x**4*sqrt(3*x
**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-4
5/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2))
, x)
```

3.1249 $\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=37

$$\frac{43x}{18\sqrt{3x^2+2}}-\frac{7(2-7x)}{18\left(3x^2+2\right)^{3/2}}$$

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {778, 191}

$$\frac{43x}{18\sqrt{3x^2+2}}-\frac{7(2-7x)}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x))/(18*(2 + 3*x^2)^(3/2)) + (43*x)/(18*Sqrt[2 + 3*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)}{18\left(2+3x^2\right)^{3/2}}+\frac{43}{9}\int \frac{1}{\left(2+3x^2\right)^{3/2}}\,dx\\ &= -\frac{7(2-7x)}{18\left(2+3x^2\right)^{3/2}}+\frac{43x}{18\sqrt{2+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 25, normalized size = 0.68

$$-\frac{-129x^3-135x+14}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/18*(14 - 135*x - 129*x^3)/(2 + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.32, size = 25, normalized size = 0.68

$$\frac{129x^3+135x-14}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(5/2),x]
[Out] (-14 + 135*x + 129*x^3)/(18*(2 + 3*x^2)^(3/2))
```

fricas [A] time = 0.41, size = 35, normalized size = 0.95

$$\frac{\left(129\,x^3+135\,x-14\right)\sqrt{3\,x^2+2}}{18\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="fricas")
[Out] 1/18*(129*x^3 + 135*x - 14)*sqrt(3*x^2 + 2)/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 23, normalized size = 0.62

$$\frac{3\left(43\,x^2+45\right)x-14}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="giac")
[Out] 1/18*(3*(43*x^2 + 45)*x - 14)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.04, size = 22, normalized size = 0.59

$$\frac{129x^3+135x-14}{18\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+2)^(5/2),x)
[Out] 1/18*(129*x^3+135*x-14)/(3*x^2+2)^(3/2)
```

maxima [A] time = 0.50, size = 36, normalized size = 0.97

$$\frac{43\,x}{18\sqrt{3\,x^2+2}}+\frac{49\,x}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{7}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="maxima")
[Out] 43/18*x/sqrt(3*x^2 + 2) + 49/18*x/(3*x^2 + 2)^(3/2) - 7/9/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 0.04, size = 161, normalized size = 4.35

$$\frac{41\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{144\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{41\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{144\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{49}{16}+\frac{\sqrt{6}\,7\mathrm{i}}{16}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\left(-\frac{49}{24}+\frac{\sqrt{6}\,7\mathrm{i}}{24}\right)1\mathrm{i}}{2\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}+\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{\frac{49}{16}+\frac{\sqrt{6}\,7\mathrm{i}}{16}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(\frac{49}{24}+\frac{\sqrt{6}\,7\mathrm{i}}{24}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (41*3^(1/2)*(x^2 + 2/3)^(1/2))/(144*(x - (6^(1/2)*1i)/3)) + (41*3^(1/2)*(x^
2 + 2/3)^(1/2))/(144*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((
6^(1/2)*7i)/16 - 49/16)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*7i)/24 -
49/24)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((
6^(1/2)*7i)/16 + 49/16)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*7i)/24 +
49/24)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27
```

sympy [B] time = 58.40, size = 122, normalized size = 3.30

$$-\frac{2x^3}{18x^2\sqrt{3x^2+2}+12\sqrt{3x^2+2}}+\frac{15x^3}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}+\frac{15x}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}-\frac{7}{27x^2\sqrt{3x^2+2}+18\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+2)**(5/2),x)
```

```
[Out] -2*x**3/(18*x**2*sqrt(3*x**2 + 2) + 12*sqrt(3*x**2 + 2)) + 15*x**3/(6*x**2*
sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)) + 15*x/(6*x**2*sqrt(3*x**2 + 2) + 4*
sqrt(3*x**2 + 2)) - 7/(27*x**2*sqrt(3*x**2 + 2) + 18*sqrt(3*x**2 + 2))
```

3.1250 $\int \frac{5-x}{(2+3x^2)^{5/2}}\,dx$

Optimal. Leaf size=37

$$\frac{5x}{6\sqrt{3x^2+2}}+\frac{15x+2}{18(3x^2+2)^{3/2}}$$

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {639, 191}

$$\frac{5x}{6\sqrt{3x^2+2}}+\frac{15x+2}{18(3x^2+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (2 + 15*x)/(18*(2 + 3*x^2)^(3/2)) + (5*x)/(6*Sqrt[2 + 3*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(2+3x^2)^{5/2}}\,dx &= \frac{2+15x}{18(2+3x^2)^{3/2}}+\frac{5}{3}\int \frac{1}{(2+3x^2)^{3/2}}\,dx\\ &= \frac{2+15x}{18(2+3x^2)^{3/2}}+\frac{5x}{6\sqrt{2+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.68

$$\frac{45x^3+45x+2}{18(3x^2+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (2 + 45*x + 45*x^3)/(18*(2 + 3*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.28, size = 25, normalized size = 0.68

$$\frac{45x^3+45x+2}{18(3x^2+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (2 + 45*x + 45*x^3)/(18*(2 + 3*x^2)^(3/2))
```

fricas [A] time = 0.43, size = 35, normalized size = 0.95

$$\frac{\left(45\,x^{3}+45\,x+2\right)\sqrt{3\,x^{2}+2}}{18\,\left(9\,x^{4}+12\,x^{2}+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/18*(45*x^3 + 45*x + 2)*sqrt(3*x^2 + 2)/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 21, normalized size = 0.57

$$\frac{45\,\left(x^{2}+1\right)x+2}{18\,\left(3\,x^{2}+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/18*(45*(x^2 + 1)*x + 2)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.04, size = 22, normalized size = 0.59

$$\frac{45x^{3}+45x+2}{18\left(3x^{2}+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+2)^(5/2),x)
```

```
[Out] 1/18*(45*x^3+45*x+2)/(3*x^2+2)^(3/2)
```

maxima [A] time = 0.45, size = 36, normalized size = 0.97

$$\frac{5\,x}{6\,\sqrt{3\,x^{2}+2}}+\frac{5\,x}{6\,\left(3\,x^{2}+2\right)^{\frac{3}{2}}}+\frac{1}{9\,\left(3\,x^{2}+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 5/6*x/sqrt(3*x^2 + 2) + 5/6*x/(3*x^2 + 2)^(3/2) + 1/9/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.69, size = 161, normalized size = 4.35

$$\frac{5\,\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{48\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{5\,\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{48\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(\frac{-\frac{15}{16}+\frac{\sqrt{6}\,1\mathrm{i}}{16}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(-\frac{5}{8}+\frac{\sqrt{6}\,1\mathrm{i}}{24}\right)\,1\mathrm{i}}{2\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^{2}}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(\frac{\frac{15}{16}+\frac{\sqrt{6}\,1\mathrm{i}}{16}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\,\left(\frac{5}{8}+\frac{\sqrt{6}\,1\mathrm{i}}{24}\right)\,1\mathrm{i}}{2\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^{2}}\right)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (5*3^(1/2)*(x^2 + 2/3)^(1/2))/(48*(x - (6^(1/2)*1i)/3)) + (5*3^(1/2)*(x^2 +
 2/3)^(1/2))/(48*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1
/2)*1i)/16 - 15/16)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*1i)/24 - 5/8)
*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2
)*1i)/16 + 15/16)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*1i)/24 + 5/8)*1
i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27
```

sympy [B] time = 43.08, size = 90, normalized size = 2.43

$$\frac{5x^3}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}+\frac{5x}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}+\frac{1}{27x^2\sqrt{3x^2+2}+18\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+2)**(5/2),x)
```

```
[Out] 5*x**3/(6*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)) + 5*x/(6*x**2*sqrt(3*
x**2 + 2) + 4*sqrt(3*x**2 + 2)) + 1/(27*x**2*sqrt(3*x**2 + 2) + 18*sqrt(3*x
**2 + 2))
```

3.1251 $\int \frac{5-x}{(3+2x)(2+3x^2)^{5/2}}\,dx$

Optimal. Leaf size=73

$$\frac{41x+26}{210\left(3x^2+2\right)^{3/2}}+\frac{2137x+312}{7350\sqrt{3x^2+2}}-\frac{104\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Rubi [A] time = 0.04, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 12, 725, 206}

$$\frac{41x+26}{210\left(3x^2+2\right)^{3/2}}+\frac{2137x+312}{7350\sqrt{3x^2+2}}-\frac{104\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(2 + 3*x^2)^(3/2)) + (312 + 2137*x)/(7350*Sqrt[2 + 3*x^2])
 - (104*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1225*Sqrt[35])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{5/2}}\,dx = \frac{26+41x}{210\left(2+3x^2\right)^{3/2}} - \frac{1}{630}\int \frac{-1206-492x}{(3+2x)\left(2+3x^2\right)^{3/2}}\,dx$$

$$= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}} + \frac{312+2137x}{7350\sqrt{2+3x^2}} + \frac{\int \frac{11232}{(3+2x)\sqrt{2+3x^2}}\,dx}{132300}$$

$$= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}} + \frac{312+2137x}{7350\sqrt{2+3x^2}} + \frac{104\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225}$$

$$= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}} + \frac{312+2137x}{7350\sqrt{2+3x^2}} - \frac{104\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225}$$

$$= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}} + \frac{312+2137x}{7350\sqrt{2+3x^2}} - \frac{104\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.86

$$\frac{\frac{35\left(6411x^3+936x^2+5709x+1534\right)}{\left(3x^2+2\right)^{3/2}} - 624\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{257250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] ((35*(1534 + 5709*x + 936*x^2 + 6411*x^3))/(2 + 3*x^2)^(3/2) - 624*Sqrt[35]
*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/257250
```

IntegrateAlgebraic [F] time = 0.99, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] Defer[IntegrateAlgebraic][(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(5/2)), x]
```

fricas [A] time = 0.44, size = 103, normalized size = 1.41

$$\frac{312\sqrt{35}\left(9\,x^4+12\,x^2+4\right)\log\left(-\frac{\sqrt{35}\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right)+35\left(6411\,x^3+936\,x^2+5709\,x+1534\right)\sqrt{3\,x^2+2}}{257250\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/257250*(312*sqrt(35)*(9*x^4 + 12*x^2 + 4)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*
(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*(6411*x^3 + 936*x^
2 + 5709*x + 1534)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.21, size = 93, normalized size = 1.27

$$\frac{104}{42875}\sqrt{35}\,\log\left(-\frac{\left|-2\sqrt{3}\,x-\sqrt{35}-3\sqrt{3}+2\sqrt{3\,x^2+2}\right|}{2\sqrt{3}\,x-\sqrt{35}+3\sqrt{3}-2\sqrt{3\,x^2+2}}\right)+\frac{3\,((2137\,x+312)x+1903)x+1534}{7350\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 104/42875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/735
0*(3*((2137*x + 312)*x + 1903)*x + 1534)/(3*x^2 + 2)^(3/2)
```

maple [B] time = 0.05, size = 122, normalized size = 1.67

$$-\frac{x}{12\left(3x^{2}+2\right)^{\frac{3}{2}}}-\frac{x}{12\sqrt{3x^{2}+2}}+\frac{39x}{140\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{1833x}{4900\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{104\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{42875}+\frac{13}{105\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{52}{1225\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+2)^(5/2),x)
```

```
[Out] -1/12/(3*x^2+2)^(3/2)*x-1/12/(3*x^2+2)^(1/2)*x+13/105/(-9*x+3*(x+3/2)^2-19/
4)^(3/2)+39/140*x/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+1833/4900/(-9*x+3*(x+3/2)^2
-19/4)^(1/2)*x+52/1225/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-104/42875*35^(1/2)*arc
tanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.28, size = 81, normalized size = 1.11

$$\frac{104}{42875}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{2137\,x}{7350\sqrt{3\,x^{2}+2}}+\frac{52}{1225\sqrt{3\,x^{2}+2}}+\frac{41\,x}{210\left(3\,x^{2}+2\right)^{\frac{3}{2}}}+\frac{13}{105\left(3\,x^{2}+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 104/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 2137/7350*x/sqrt(3*x^2 + 2) + 52/1225/sqrt(3*x^2 + 2) + 41/210*x/(
3*x^2 + 2)^(3/2) + 13/105/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 0.14, size = 218, normalized size = 2.99

$$\frac{\sqrt{35}\left(104\ln\left(x+\frac{3}{2}\right)-104\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{42875}-\frac{\sqrt{3}\sqrt{x^{2}+\frac{2}{3}}\left(\frac{-\frac{123}{560}+\frac{\sqrt{6}\,39\mathrm{i}}{560}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(-\frac{41}{280}+\frac{\sqrt{6}\,13\mathrm{i}}{280}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^{2}}\right)}{27}+\frac{\sqrt{3}\sqrt{x^{2}+\frac{2}{3}}\left(\frac{\frac{123}{560}+\frac{\sqrt{6}\,39\mathrm{i}}{560}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\left(\frac{41}{280}+\frac{\sqrt{6}\,13\mathrm{i}}{280}\right)1\mathrm{i}}{2\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^{2}}\right)}{27}-\frac{\sqrt{3}\sqrt{6}\left(-3744+\sqrt{6}\,7113\mathrm{i}\right)\sqrt{x^{2}+\frac{2}{3}}\,1\mathrm{i}}{1058400\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\sqrt{6}\left(3744+\sqrt{6}\,7113\mathrm{i}\right)\sqrt{x^{2}+\frac{2}{3}}\,1\mathrm{i}}{1058400\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (35^(1/2)*(104*log(x + 3/2) - 104*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/
2))/9 - 4/9)))/42875 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*39i)/560 - 123
/560)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*13i)/280 - 41/280)*1i)/(2*(
x - (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*39i)/56
0 + 123/560)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*13i)/280 + 41/280)*1
i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*7113i - 3744
)*(x^2 + 2/3)^(1/2)*1i)/(1058400*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(
6^(1/2)*7113i + 3744)*(x^2 + 2/3)^(1/2)*1i)/(1058400*(x - (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1252 $\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=109

$$\frac{41x+26}{210(2x+3)\left(3x^2+2\right)^{3/2}}+\frac{277\sqrt{3x^2+2}}{5145(2x+3)}+\frac{507x+34}{1470(2x+3)\sqrt{3x^2+2}}-\frac{176\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 807, 725, 206}

$$\frac{41x+26}{210(2x+3)\left(3x^2+2\right)^{3/2}}+\frac{277\sqrt{3x^2+2}}{5145(2x+3)}+\frac{507x+34}{1470(2x+3)\sqrt{3x^2+2}}-\frac{176\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(3 + 2*x)*(2 + 3*x^2)^(3/2)) + (34 + 507*x)/(1470*(3 + 2*x
)*Sqrt[2 + 3*x^2]) + (277*Sqrt[2 + 3*x^2])/(5145*(3 + 2*x)) - (176*ArcTanh[
(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1715*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{5/2}}\,dx = \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}} - \frac{1}{630}\int \frac{-1362-738x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx$$

$$= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}} + \frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}} + \frac{\int \frac{12240+91260x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{132300}$$

$$= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}} + \frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}} + \frac{277\sqrt{2+3x^2}}{5145(3+2x)} + \frac{176\int \frac{}{(3+2x)}}{171}$$

$$= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}} + \frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}} + \frac{277\sqrt{2+3x^2}}{5145(3+2x)} - \frac{176\,\mathrm{Subst}\Big(}{}$$

$$= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}} + \frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}} + \frac{277\sqrt{2+3x^2}}{5145(3+2x)} - \frac{176\tanh^{-1}}{1715}$$

Mathematica [A] time = 0.05, size = 101, normalized size = 0.93

$$\frac{35\left(4986x^4+10647x^3+7362x^2+9107x+3966\right)-1056\sqrt{35}\sqrt{3x^2+2}\left(6x^3+9x^2+4x+6\right)\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{360150(2x+3)\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (35*(3966 + 9107*x + 7362*x^2 + 10647*x^3 + 4986*x^4) - 1056*Sqrt[35]*Sqrt[
2 + 3*x^2]*(6 + 4*x + 9*x^2 + 6*x^3)*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3
*x^2])])/(360150*(3 + 2*x)*(2 + 3*x^2)^(3/2))
```

IntegrateAlgebraic [F] time = 0.94, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{5/2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] Defer[IntegrateAlgebraic][(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(5/2)), x]
```

fricas [A] time = 0.43, size = 134, normalized size = 1.23

$$\frac{528\sqrt{35}\left(18x^5+27x^4+24x^3+36x^2+8x+12\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+35\left(4986x^4+10647x^3+7362x^2+9107x+3966\right)\sqrt{3x^2+2}}{360150\left(18x^5+27x^4+24x^3+36x^2+8x+12\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/360150*(528*sqrt(35)*(18*x^5 + 27*x^4 + 24*x^3 + 36*x^2 + 8*x + 12)*log(-
(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9
)) + 35*(4986*x^4 + 10647*x^3 + 7362*x^2 + 9107*x + 3966)*sqrt(3*x^2 + 2))/
(18*x^5 + 27*x^4 + 24*x^3 + 36*x^2 + 8*x + 12)
```

giac [B] time = 0.31, size = 233, normalized size = 2.14

$$-\frac{1}{360150}\sqrt{35}\left(277\sqrt{35}\sqrt{3}-1056\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{176\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)}{60025\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{\frac{\frac{\frac{7\left(\frac{4813}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{4368}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}-\frac{53523}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}+\frac{19269}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}-\frac{2493}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{10290\left(\frac{18}{2x+3}-\frac{35}{(2x+3)^2}-3\right)\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/360150*sqrt(35)*(277*sqrt(35)*sqrt(3) - 1056*log(sqrt(35)*sqrt(3) - 9))*
sgn(1/(2*x + 3)) - 176/60025*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35
/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3)) + 1/10290*(((
7*(4813/sgn(1/(2*x + 3)) + 4368/((2*x + 3)*sgn(1/(2*x + 3))))/(2*x + 3) - 5
3523/sgn(1/(2*x + 3)))/(2*x + 3) + 19269/sgn(1/(2*x + 3)))/(2*x + 3) - 2493
/sgn(1/(2*x + 3)))/((18/(2*x + 3) - 35/(2*x + 3)^2 - 3)*sqrt(-18/(2*x + 3)
+ 35/(2*x + 3)^2 + 3))
```

maple [A] time = 0.06, size = 119, normalized size = 1.09

$$-\frac{17x}{490\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{277x}{3430\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{176\sqrt{35}\,\mathrm{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{60025}-\frac{13}{70\left(x+\frac{3}{2}\right)\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{22}{147\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{88}{1715\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+2)^(5/2),x)
```

```
[Out] -13/70/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+22/147/(-9*x+3*(x+3/2)^2-19/4)
^(3/2)-17/490/(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+277/3430/(-9*x+3*(x+3/2)^2-19
/4)^(1/2)*x+88/1715/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-176/60025*35^(1/2)*arctan
h(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.22, size = 109, normalized size = 1.00

$$\frac{176}{60025}\sqrt{35}\,\mathrm{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{277x}{3430\sqrt{3x^2+2}}+\frac{88}{1715\sqrt{3x^2+2}}-\frac{17x}{490\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{13}{35\left(2\left(3x^2+2\right)^{\frac{3}{2}}x+3\left(3x^2+2\right)^{\frac{3}{2}}\right)}+\frac{22}{147\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 176/60025*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 277/3430*x/sqrt(3*x^2 + 2) + 88/1715/sqrt(3*x^2 + 2) - 17/490*x/(3
*x^2 + 2)^(3/2) - 13/35/(2*(3*x^2 + 2)^(3/2)*x + 3*(3*x^2 + 2)^(3/2)) + 22/
147/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.88, size = 270, normalized size = 2.48

$$\frac{\sqrt{35}\left(3464\ln\left(x+\frac{3}{2}\right)-3464\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{1500625}+\frac{\sqrt{35}\left(\frac{1872\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{1872\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}\right)}{70}-\frac{104\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{42875\left(x+\frac{3}{2}\right)}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{639}{19600}+\frac{\sqrt{6}\,597i}{19600}}{x-\frac{\sqrt{6}\,1i}{3}}-\frac{\sqrt{6}\left(-\frac{213}{9800}+\frac{\sqrt{6}\,199i}{9800}\right)1i}{2\left(x-\frac{\sqrt{6}\,1i}{3}\right)^2}\right)}{27}+\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(\frac{\frac{639}{19600}+\frac{\sqrt{6}\,597i}{19600}}{x+\frac{\sqrt{6}\,1i}{3}}+\frac{\sqrt{6}\left(\frac{213}{9800}+\frac{\sqrt{6}\,199i}{9800}\right)1i}{2\left(x+\frac{\sqrt{6}\,1i}{3}\right)^2}\right)}{27}-\frac{\sqrt{3}\sqrt{6}\left(-41568+\sqrt{6}\,27711i\right)\sqrt{x^2+\frac{2}{3}}\,1i}{12348000\left(x+\frac{\sqrt{6}\,1i}{3}\right)}-\frac{\sqrt{3}\sqrt{6}\left(41568+\sqrt{6}\,27711i\right)\sqrt{x^2+\frac{2}{3}}\,1i}{12348000\left(x-\frac{\sqrt{6}\,1i}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (35^(1/2)*(3464*log(x + 3/2) - 3464*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(
1/2))/9 - 4/9)))/1500625 + (35^(1/2)*((1872*log(x + 3/2))/42875 - (1872*log
(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875))/70 - (104*3^(1/
2)*(x^2 + 2/3)^(1/2))/(42875*(x + 3/2)) - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(
1/2)*597i)/19600 - 639/19600)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*199
```

```
i)/9800 - 213/9800)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2
/3)^(1/2)*(((6^(1/2)*597i)/19600 + 639/19600)/(x + (6^(1/2)*1i)/3) + (6^(1/
2)*((6^(1/2)*199i)/9800 + 213/9800)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 - (
3^(1/2)*6^(1/2)*(6^(1/2)*27711i - 41568)*(x^2 + 2/3)^(1/2)*1i)/(12348000*(x
 + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*27711i + 41568)*(x^2 + 2/3)
^(1/2)*1i)/(12348000*(x - (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1253 $\int \frac{5-x}{(3+2x)^3 (2+3x^2)^{5/2}} \, dx$

Optimal. Leaf size=131

$$\frac{41x+26}{210(2x+3)^2 (3x^2+2)^{3/2}}+\frac{857\sqrt{3x^2+2}}{128625(2x+3)}+\frac{83\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{419x+4}{1050(2x+3)^2\sqrt{3x^2+2}}-\frac{3072\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Rubi [A] time = 0.08, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{210(2x+3)^2 (3x^2+2)^{3/2}}+\frac{857\sqrt{3x^2+2}}{128625(2x+3)}+\frac{83\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{419x+4}{1050(2x+3)^2\sqrt{3x^2+2}}-\frac{3072\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(3 + 2*x)^2*(2 + 3*x^2)^(3/2)) + (4 + 419*x)/(1050*(3 + 2*
x)^2*Sqrt[2 + 3*x^2]) + (83*Sqrt[2 + 3*x^2])/(1225*(3 + 2*x)^2) + (857*Sqrt
[2 + 3*x^2])/(128625*(3 + 2*x)) - (3072*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
+ 3*x^2])])/(42875*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
```

```
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{5/2}}\,dx = \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}} - \frac{1}{630}\int \frac{-1518-984x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx$$

$$= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}} + \frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}} + \frac{\int \frac{3024+211176x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{132300}$$

$$= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}} + \frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}} + \frac{83\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{\int \frac{-174384\ldots}{(3+2x)\ldots}}{92\ldots}$$

$$= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}} + \frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}} + \frac{83\sqrt{2+3x^2}}{1225(3+2x)^2} + \frac{857\sqrt{2\ldots}}{128625(\ldots}$$

$$= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}} + \frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}} + \frac{83\sqrt{2+3x^2}}{1225(3+2x)^2} + \frac{857\sqrt{2\ldots}}{128625(\ldots}$$

$$= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}} + \frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}} + \frac{83\sqrt{2+3x^2}}{1225(3+2x)^2} + \frac{857\sqrt{2\ldots}}{128625(\ldots}$$

Mathematica [A] time = 0.11, size = 80, normalized size = 0.61

$$\frac{\frac{35\left(10284x^5+67716x^4+116367x^3+91268x^2+89749x+41366\right)}{(2x+3)^2\left(3x^2+2\right)^{3/2}} - 6144\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{3001250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] ((35*(41366 + 89749*x + 91268*x^2 + 116367*x^3 + 67716*x^4 + 10284*x^5))/((
3 + 2*x)^2*(2 + 3*x^2)^(3/2)) - 6144*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*S
qrt[2 + 3*x^2])])/3001250
```

IntegrateAlgebraic [A] time = 0.86, size = 96, normalized size = 0.73

$$\frac{6144\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{42875\sqrt{35}} + \frac{10284x^5+67716x^4+116367x^3+91268x^2+89749x+41366}{85750(2x+3)^2\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (41366 + 89749*x + 91268*x^2 + 116367*x^3 + 67716*x^4 + 10284*x^5)/(85750*(
3 + 2*x)^2*(2 + 3*x^2)^(3/2)) + (6144*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x
 - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(42875*Sqrt[35])
```

fricas [A] time = 0.44, size = 149, normalized size = 1.14

$$\frac{3072\,\sqrt{35}\left(36\,x^{6}+108\,x^{5}+129\,x^{4}+144\,x^{3}+124\,x^{2}+48\,x+36\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^{2}+2}\,(9\,x-4)+93\,x^{2}-36\,x+43}{4\,x^{2}+12\,x+9}\right)+35\left(10284\,x^{5}+67716\,x^{4}+116367\,x^{3}+91268\,x^{2}+89749\,x+41366\right)\sqrt{3\,x^{2}+2}}{3001250\left(36\,x^{6}+108\,x^{5}+129\,x^{4}+144\,x^{3}+124\,x^{2}+48\,x+36\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3001250*(3072*sqrt(35)*(36*x^6 + 108*x^5 + 129*x^4 + 144*x^3 + 124*x^2 +
48*x + 36)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(
4*x^2 + 12*x + 9)) + 35*(10284*x^5 + 67716*x^4 + 116367*x^3 + 91268*x^2 + 8
9749*x + 41366)*sqrt(3*x^2 + 2))/(36*x^6 + 108*x^5 + 129*x^4 + 144*x^3 + 12
4*x^2 + 48*x + 36)
```

giac [A] time = 0.27, size = 208, normalized size = 1.59

$$\frac{3072}{1500625}\,\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}-3\,\sqrt{3}+2\,\sqrt{3\,x^{2}+2}\right|}{2\,\sqrt{3}\,x-\sqrt{35}+3\,\sqrt{3}-2\,\sqrt{3\,x^{2}+2}}\right)+\frac{3\,((59203\,x+69168)x+37637)x+190066}{3001250\left(3\,x^{2}+2\right)^{\frac{3}{2}}}-\frac{4\left(9588\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{3}+27991\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{2}-68448\,\sqrt{3}\,x+9736\,\sqrt{3}+68448\,\sqrt{3\,x^{2}+2}\right)}{1500625\left(\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{2}+3\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)-2\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 3072/1500625*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/
3001250*(3*((59203*x + 69168)*x + 37637)*x + 190066)/(3*x^2 + 2)^(3/2) - 4/
1500625*(9588*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 27991*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 2))^2 - 68448*sqrt(3)*x + 9736*sqrt(3) + 68448*sqrt(3*x^2 + 2)
)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)
) - 2)^2
```

maple [A] time = 0.05, size = 140, normalized size = 1.07

$$-\frac{173x}{2450\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{857x}{85750\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{3072\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1500625}-\frac{107}{700\left(x+\frac{3}{2}\right)\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{128}{1225\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{1536}{42875\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{13}{280\left(x+\frac{3}{2}\right)^{2}\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+2)^(5/2),x)
```

```
[Out] -107/700/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+128/1225/(-9*x+3*(x+3/2)^2-1
9/4)^(3/2)-173/2450/(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+857/85750/(-9*x+3*(x+3/
2)^2-19/4)^(1/2)*x+1536/42875/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-3072/1500625*35
^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/280
/(x+3/2)^2/(-9*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.23, size = 151, normalized size = 1.15

$$\frac{3072}{1500625}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{857\,x}{85750\,\sqrt{3\,x^{2}+2}}+\frac{1536}{42875\,\sqrt{3\,x^{2}+2}}-\frac{173\,x}{2450\left(3\,x^{2}+2\right)^{\frac{3}{2}}}-\frac{13}{70\left(4\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{2}+12\left(3\,x^{2}+2\right)^{\frac{3}{2}}x+9\left(3\,x^{2}+2\right)^{\frac{3}{2}}\right)}-\frac{107}{350\left(2\left(3\,x^{2}+2\right)^{\frac{3}{2}}x+3\left(3\,x^{2}+2\right)^{\frac{3}{2}}\right)}+\frac{128}{1225\left(3\,x^{2}+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 3072/1500625*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(
2*x + 3)) + 857/85750*x/sqrt(3*x^2 + 2) + 1536/42875/sqrt(3*x^2 + 2) - 173/
2450*x/(3*x^2 + 2)^(3/2) - 13/70/(4*(3*x^2 + 2)^(3/2)*x^2 + 12*(3*x^2 + 2)^
(3/2)*x + 9*(3*x^2 + 2)^(3/2)) - 107/350/(2*(3*x^2 + 2)^(3/2)*x + 3*(3*x^2
+ 2)^(3/2)) + 128/1225/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.83, size = 301, normalized size = 2.30

$$\frac{3072\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1500625}-\frac{3072\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1500625}-\frac{739\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1029000\,\left(x^2+\frac{2{}\mathrm{i}\,\sqrt{6}\,x}{3}-\frac{2}{3}\right)}+\frac{59203\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{18007500\,\left(x-\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}+\frac{59203\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{18007500\,\left(x+\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}+\frac{739\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1029000\,\left(-x^2+\frac{2{}\mathrm{i}\,\sqrt{6}\,x}{3}+\frac{2}{3}\right)}-\frac{4868\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1500625\,\left(x+\frac{3}{2}\right)}-\frac{26\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{42875\,\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,157{}\mathrm{i}}{6174000\,\left(x^2+\frac{2{}\mathrm{i}\,\sqrt{6}\,x}{3}-\frac{2}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,164201{}\mathrm{i}}{72030000\,\left(x-\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,164201{}\mathrm{i}}{72030000\,\left(x+\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,157{}\mathrm{i}}{6174000\,\left(-x^2+\frac{2{}\mathrm{i}\,\sqrt{6}\,x}{3}+\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (3072*35^(1/2)*log(x + 3/2))/1500625 - (3072*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1500625 - (739*3^(1/2)*(x^2 + 2/3)^(1/2))
/(1029000*((6^(1/2)*x*2i)/3 + x^2 - 2/3)) + (59203*3^(1/2)*(x^2 + 2/3)^(1/2
))/(18007500*(x - (6^(1/2)*1i)/3)) + (59203*3^(1/2)*(x^2 + 2/3)^(1/2))/(180
07500*(x + (6^(1/2)*1i)/3)) + (739*3^(1/2)*(x^2 + 2/3)^(1/2))/(1029000*((6^
(1/2)*x*2i)/3 - x^2 + 2/3)) - (4868*3^(1/2)*(x^2 + 2/3)^(1/2))/(1500625*(x
+ 3/2)) - (26*3^(1/2)*(x^2 + 2/3)^(1/2))/(42875*(3*x + x^2 + 9/4)) - (3^(1/
2)*6^(1/2)*(x^2 + 2/3)^(1/2)*157i)/(6174000*((6^(1/2)*x*2i)/3 + x^2 - 2/3))
 - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*164201i)/(72030000*(x - (6^(1/2)*1i)/
3)) + (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*164201i)/(72030000*(x + (6^(1/2)*1
i)/3)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*157i)/(6174000*((6^(1/2)*x*2i)/
3 - x^2 + 2/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1254 $\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=153

$$-\frac{114-3331x}{7350(2x+3)^3\sqrt{3x^2+2}}-\frac{5987\sqrt{3x^2+2}}{1500625(2x+3)}+\frac{541\sqrt{3x^2+2}}{42875(2x+3)^2}+\frac{1471\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{41x+26}{210(2x+3)^3\left(3x^2+2\right)^{3/2}}-$$

Rubi [A] time = 0.10, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$-\frac{114-3331x}{7350(2x+3)^3\sqrt{3x^2+2}}-\frac{5987\sqrt{3x^2+2}}{1500625(2x+3)}+\frac{541\sqrt{3x^2+2}}{42875(2x+3)^2}+\frac{1471\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{41x+26}{210(2x+3)^3\left(3x^2+2\right)^{3/2}}-\frac{55344\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1500625\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(3 + 2*x)^3*(2 + 3*x^2)^(3/2)) - (114 - 3331*x)/(7350*(3 +
 2*x)^3*Sqrt[2 + 3*x^2]) + (1471*Sqrt[2 + 3*x^2])/(18375*(3 + 2*x)^3) + (54
1*Sqrt[2 + 3*x^2])/(42875*(3 + 2*x)^2) - (5987*Sqrt[2 + 3*x^2])/(1500625*(3
 + 2*x)) - (55344*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1500625*S
qrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{5/2}}\,dx = \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{1}{630}\int \frac{-1674-1230x}{(3+2x)^4\left(2+3x^2\right)^{3/2}}\,dx$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{\int \frac{-16416+359748x}{(3+2x)^4\sqrt{2+3x^2}}\,dx}{132300}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{\int \frac{-38737}{(3+2}}{13}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541\sqrt{2}}{42875(}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541\sqrt{2}}{42875(}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541\sqrt{2}}{42875(}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541\sqrt{2}}{42875(}$$

Mathematica [A] time = 0.12, size = 85, normalized size = 0.56

$$\frac{-332064\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{35\left(1293192x^6+1834596x^5-4920642x^4-9795297x^3-7866162x^2-9103449x-3788738\right)}{(2x+3)^3\left(3x^2+2\right)^{3/2}}}{315131250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] ((-35*(-3788738 - 9103449*x - 7866162*x^2 - 9795297*x^3 - 4920642*x^4 + 183
4596*x^5 + 1293192*x^6))/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)) - 332064*Sqrt[35]*
ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/315131250
```

IntegrateAlgebraic [A] time = 1.10, size = 101, normalized size = 0.66

$$\frac{110688\tanh^{-1}\left(-\frac{2\sqrt{3x^2+2}}{\sqrt{35}}+2\sqrt{\frac{3}{35}}\,x+3\sqrt{\frac{3}{35}}\right)}{1500625\sqrt{35}}+\frac{-1293192x^6-1834596x^5+4920642x^4+9795297x^3+7866162x^2+9103449x+3788738}{9003750(2x+3)^3\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(5/2)),x]
```

[Out] (3788738 + 9103449*x + 7866162*x^2 + 9795297*x^3 + 4920642*x^4 - 1834596*x^5 - 1293192*x^6)/(9003750*(3 + 2*x)^3*(2 + 3*x^2)^(3/2)) + (110688*ArcTanh[3*Sqrt[3/35] + 2*Sqrt[3/35]*x - (2*Sqrt[2 + 3*x^2])/Sqrt[35]])/(1500625*Sqrt[35])

fricas [A] time = 0.45, size = 164, normalized size = 1.07

$$\frac{166032\,\sqrt{35}\left(72\,x^7+324\,x^6+582\,x^5+675\,x^4+680\,x^3+468\,x^2+216\,x+108\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right)-35\left(1293192\,x^6+1834596\,x^5-4920642\,x^4-9795297\,x^3-7866162\,x^2-9103449\,x-3788738\right)\sqrt{3\,x^2+2}}{315131250\left(72\,x^7+324\,x^6+582\,x^5+675\,x^4+680\,x^3+468\,x^2+216\,x+108\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="fricas")

[Out] 1/315131250*(166032*sqrt(35)*(72*x^7 + 324*x^6 + 582*x^5 + 675*x^4 + 680*x^3 + 468*x^2 + 216*x + 108)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(1293192*x^6 + 1834596*x^5 - 4920642*x^4 - 9795297*x^3 - 7866162*x^2 - 9103449*x - 3788738)*sqrt(3*x^2 + 2))/(72*x^7 + 324*x^6 + 582*x^5 + 675*x^4 + 680*x^3 + 468*x^2 + 216*x + 108)

giac [B] time = 0.47, size = 257, normalized size = 1.68

$$\frac{55344}{52521875}\,\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}-3\,\sqrt{3}+2\,\sqrt{3\,x^2+2}\right|}{2\,\sqrt{3}\,x-\sqrt{35}+3\,\sqrt{3}-2\,\sqrt{3\,x^2+2}}\right)+\frac{9\,((49879\,x+344464)x-6729)x+2510374}{105043750\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{8\,\sqrt{3}\left(37652\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)^5+695865\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)^4+729630\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)^3-3472470\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)^2+1016800\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)-259424\right)}{52521875\left(\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)^2+3\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)-2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="giac")

[Out] 55344/52521875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/105043750*(9*((49879*x + 344464)*x - 6729)*x + 2510374)/(3*x^2 + 2)^(3/2) - 8/52521875*sqrt(3)*(37652*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 695865*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 729630*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 3472470*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 1016800*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 259424)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^3

maple [A] time = 0.07, size = 161, normalized size = 1.05

$$-\frac{4071x}{85750\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{17961x}{3001250\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{55344\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{52521875}-\frac{79}{2450\left(x+\frac{3}{2}\right)^2\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{516}{6125\left(x+\frac{3}{2}\right)\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{2306}{42875\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{27672}{1500625\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{13}{840\left(x+\frac{3}{2}\right)^3\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((5-x)/(2*x+3)^4/(3*x^2+2)^(5/2),x)

[Out] -79/2450/(x+3/2)^2/(-9*x+3*(x+3/2)^2-19/4)^(3/2)-516/6125/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+2306/42875/(-9*x+3*(x+3/2)^2-19/4)^(3/2)-4071/85750/(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x-17961/3001250/(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+27672/1500625/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-55344/52521875*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/840/(x+3/2)^3/(-9*x+3*(x+3/2)^2-19/4)^(3/2)

maxima [A] time = 1.42, size = 207, normalized size = 1.35

$$\frac{55344}{52521875}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)-\frac{17961\,x}{3001250\,\sqrt{3\,x^2+2}}+\frac{27672}{1500625\,\sqrt{3\,x^2+2}}-\frac{4071\,x}{85750\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{13}{105\left(8\left(3\,x^2+2\right)^{\frac{3}{2}}x^3+36\left(3\,x^2+2\right)^{\frac{3}{2}}x^2+54\left(3\,x^2+2\right)^{\frac{3}{2}}x+27\left(3\,x^2+2\right)^{\frac{3}{2}}\right)}-\frac{158}{1225\left(4\left(3\,x^2+2\right)^{\frac{3}{2}}x^2+12\left(3\,x^2+2\right)^{\frac{3}{2}}x+9\left(3\,x^2+2\right)^{\frac{3}{2}}\right)}-\frac{1032}{6125\left(2\left(3\,x^2+2\right)^{\frac{3}{2}}x+3\left(3\,x^2+2\right)^{\frac{3}{2}}\right)}+\frac{2306}{42875\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="maxima")

[Out] 55344/52521875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 17961/3001250*x/sqrt(3*x^2 + 2) + 27672/1500625/sqrt(3*x^2 +

```
2) - 4071/85750*x/(3*x^2 + 2)^(3/2) - 13/105/(8*(3*x^2 + 2)^(3/2)*x^3 + 36*
(3*x^2 + 2)^(3/2)*x^2 + 54*(3*x^2 + 2)^(3/2)*x + 27*(3*x^2 + 2)^(3/2)) - 15
8/1225/(4*(3*x^2 + 2)^(3/2)*x^2 + 12*(3*x^2 + 2)^(3/2)*x + 9*(3*x^2 + 2)^(3
/2)) - 1032/6125/(2*(3*x^2 + 2)^(3/2)*x + 3*(3*x^2 + 2)^(3/2)) + 2306/42875
/(3*x^2 + 2)^(3/2)
```

mupad [**B**] time = 1.86, size = 330, normalized size = 2.16

$$\frac{55344\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{52521875}-\frac{55344\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{52521875}-\frac{6337\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{36015000\left(x^2+\frac{2\mathrm{i}\,\sqrt{6}\,x}{3}-\frac{2}{3}\right)}+\frac{49879\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{210087500\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{49879\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{210087500\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{6337\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{36015000\left(-x^2+\frac{2\mathrm{i}\,\sqrt{6}\,x}{3}+\frac{2}{3}\right)}-\frac{129712\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{52521875\left(x+\frac{3}{2}\right)}-\frac{1256\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1500625\left(x^2+3\,x+\frac{9}{4}\right)}-\frac{26\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{128625\left(x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,3427\mathrm{i}}{72030000\left(x^2+\frac{2\mathrm{i}\,\sqrt{6}\,x}{3}-\frac{2}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,2288579\mathrm{i}}{2521050000\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,2288579\mathrm{i}}{2521050000\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\sqrt{x^2+\frac{2}{3}}\,3427\mathrm{i}}{72030000\left(-x^2+\frac{2\mathrm{i}\,\sqrt{6}\,x}{3}+\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (55344*35^(1/2)*log(x + 3/2))/52521875 - (55344*35^(1/2)*log(x - (3^(1/2)*3
5^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/52521875 - (6337*3^(1/2)*(x^2 + 2/3)^(
1/2))/(36015000*((6^(1/2)*x*2i)/3 + x^2 - 2/3)) + (49879*3^(1/2)*(x^2 + 2/3
)^(1/2))/(210087500*(x - (6^(1/2)*1i)/3)) + (49879*3^(1/2)*(x^2 + 2/3)^(1/2
))/(210087500*(x + (6^(1/2)*1i)/3)) + (6337*3^(1/2)*(x^2 + 2/3)^(1/2))/(360
15000*((6^(1/2)*x*2i)/3 - x^2 + 2/3)) - (129712*3^(1/2)*(x^2 + 2/3)^(1/2))/
(52521875*(x + 3/2)) - (1256*3^(1/2)*(x^2 + 2/3)^(1/2))/(1500625*(3*x + x^2
 + 9/4)) - (26*3^(1/2)*(x^2 + 2/3)^(1/2))/(128625*((27*x)/4 + (9*x^2)/2 + x
^3 + 27/8)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*3427i)/(72030000*((6^(1/2)
*x*2i)/3 + x^2 - 2/3)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*2288579i)/(2521
050000*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*2288579i)
/(2521050000*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*342
7i)/(72030000*((6^(1/2)*x*2i)/3 - x^2 + 2/3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1255 $\int (A+Bx)(d+ex)^{3/2}\left(a+cx^2\right)\,dx$

Optimal. Leaf size=116

$$\frac{2(d+ex)^{7/2}\left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4}-\frac{2c(d+ex)^{9/2}(3Bd-Ae)}{9e^4}+\frac{2Bc(d+e}{11e^4}$$

Rubi [A] time = 0.06, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2(d+ex)^{7/2}\left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4}-\frac{2c(d+ex)^{9/2}(3Bd-Ae)}{9e^4}+\frac{2Bc(d+ex)^{11/2}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a + c*x^2),x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^(5/2))/(5*e^4) + (2*(3*B*c*d^2 -
2*A*c*d*e + a*B*e^2)*(d + e*x)^(7/2))/(7*e^4) - (2*c*(3*B*d - A*e)*(d + e*x
)^(9/2))/(9*e^4) + (2*B*c*(d + e*x)^(11/2))/(11*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\left(a+cx^2\right)\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^{3/2}}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+e}{e^3}\right.$$

$$=-\frac{2(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^{5/2}}{5e^4}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)(d+ex}{7e^4}$$

Mathematica [A] time = 0.09, size = 99, normalized size = 0.85

$$\frac{2(d+ex)^{5/2}\left(11Ae\left(63ae^2+c\left(8d^2-20dex+35e^2x^2\right)\right)-3B\left(33ae^2(2d-5ex)+c\left(16d^3-40d^2ex+70de^2x^2-105e^3x^3\right)\right)\right)}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(11*A*e*(63*a*e^2 + c*(8*d^2 - 20*d*e*x + 35*e^2*x^2)) -
 3*B*(33*a*e^2*(2*d - 5*e*x) + c*(16*d^3 - 40*d^2*e*x + 70*d*e^2*x^2 - 105*
e^3*x^3))))/(3465*e^4)
```

IntegrateAlgebraic [A] time = 0.08, size = 117, normalized size = 1.01

$$\frac{2(d+ex)^{5/2}\left(693aAe^3+495aBe^2(d+ex)-693aBde^2+693Acd^2e-990Acde(d+ex)+385Ace(d+ex)^2-693Bcd^3+1485Bcd^2(d+ex)-1155Bcd(d+ex)^2+315Bc(d+ex)^3\right)}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(a + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-693*B*c*d^3 + 693*A*c*d^2*e - 693*a*B*d*e^2 + 693*a*A*
e^3 + 1485*B*c*d^2*(d + e*x) - 990*A*c*d*e*(d + e*x) + 495*a*B*e^2*(d + e*x
```

```
) - 1155*B*c*d*(d + e*x)^2 + 385*A*c*e*(d + e*x)^2 + 315*B*c*(d + e*x)^3))/
(3465*e^4)
```

fricas [A] time = 0.41, size = 190, normalized size = 1.64

$$\frac{2\left(315\,Bce^5x^5-48\,Bcd^5+88\,Acd^4e-198\,Bad^3e^2+693\,Aad^2e^3+35\left(12\,Bcde^4+11\,Ace^5\right)x^4+5\left(3\,Bcd^2e^3+110\,Acde^4+99\,Bae^5\right)x^3-3\left(6\,Bcd^3e^2-11\,Acd^2e^3-264\,Bade^4-231\,Aae^5\right)x^2+\left(24\,Bcd^4e-44\,Acd^3e^2+99\,Bad^2e^3+1386\,Aade^4\right)x\right)\sqrt{ex+d}}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*e^5*x^5 - 48*B*c*d^5 + 88*A*c*d^4*e - 198*B*a*d^3*e^2 + 693
*A*a*d^2*e^3 + 35*(12*B*c*d*e^4 + 11*A*c*e^5)*x^4 + 5*(3*B*c*d^2*e^3 + 110*
A*c*d*e^4 + 99*B*a*e^5)*x^3 - 3*(6*B*c*d^3*e^2 - 11*A*c*d^2*e^3 - 264*B*a*d
*e^4 - 231*A*a*e^5)*x^2 + (24*B*c*d^4*e - 44*A*c*d^3*e^2 + 99*B*a*d^2*e^3 +
 1386*A*a*d*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.35, size = 580, normalized size = 5.00

$$\frac{2}{3465}\left(1155\left((ex+d)^{\frac{3}{2}}-3\sqrt{ex+d}\,d\right)Bad^2e^{(-1)}+231\left(3(ex+d)^{\frac{5}{2}}-10(ex+d)^{\frac{3}{2}}d+15\sqrt{ex+d}\,d^2\right)Acd^2e^{(-2)}+99\left(5(ex+d)^{\frac{7}{2}}-21(ex+d)^{\frac{5}{2}}d+35(ex+d)^{\frac{3}{2}}d^2-35\sqrt{ex+d}\,d^3\right)Bcd^2e^{(-3)}+462\left(3(ex+d)^{\frac{5}{2}}-10(ex+d)^{\frac{3}{2}}d+15\sqrt{ex+d}\,d^2\right)Bade^{(-1)}+198\left(5(ex+d)^{\frac{7}{2}}-21(ex+d)^{\frac{5}{2}}d+35(ex+d)^{\frac{3}{2}}d^2-35\sqrt{ex+d}\,d^3\right)Acde^{(-2)}+22\left(35(ex+d)^{\frac{9}{2}}-180(ex+d)^{\frac{7}{2}}d+378(ex+d)^{\frac{5}{2}}d^2-420(ex+d)^{\frac{3}{2}}d^3+315\sqrt{ex+d}\,d^4\right)Bcde^{(-3)}+3465\sqrt{ex+d}\,Aad^2+2310\left((ex+d)^{\frac{3}{2}}-3\sqrt{ex+d}\,d\right)Aad+99\left(5(ex+d)^{\frac{7}{2}}-21(ex+d)^{\frac{5}{2}}d+35(ex+d)^{\frac{3}{2}}d^2-35\sqrt{ex+d}\,d^3\right)Bae^{(-1)}+11\left(35(ex+d)^{\frac{9}{2}}-180(ex+d)^{\frac{7}{2}}d+378(ex+d)^{\frac{5}{2}}d^2-420(ex+d)^{\frac{3}{2}}d^3+315\sqrt{ex+d}\,d^4\right)Ace^{(-2)}+5\left(63(ex+d)^{\frac{11}{2}}-385(ex+d)^{\frac{9}{2}}d+990(ex+d)^{\frac{7}{2}}d^2-1386(ex+d)^{\frac{5}{2}}d^3+1155(ex+d)^{\frac{3}{2}}d^4-693\sqrt{ex+d}\,d^5\right)Bce^{(-3)}+231\left(3(ex+d)^{\frac{5}{2}}-10(ex+d)^{\frac{3}{2}}d+15\sqrt{ex+d}\,d^2\right)Aa\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^2*e^(-1) + 231*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*d^2*e^(-
2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*c*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2) - 10*(x*e +
 d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*d*e^(-1) + 198*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*
d*e^(-2) + 22*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d*e^(-3) +
3465*sqrt(x*e + d)*A*a*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a
*d + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*a*e^(-1) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*A*c*e^(-2) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 99
0*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*B*c*e^(-3) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a)*e^(-1)
```

maple [A] time = 0.05, size = 101, normalized size = 0.87

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(315Bc\,x^3e^3+385Ac\,e^3x^2-210Bcd\,e^2x^2-220Acd\,e^2x+495Ba\,e^3x+120Bc\,d^2ex+693aA\,e^3+88Ac\,d^2e-198aBd\,e^2-48Bc\,d^3\right)}{3465e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x)
```

```
[Out] 2/3465*(e*x+d)^(5/2)*(315*B*c*e^3*x^3+385*A*c*e^3*x^2-210*B*c*d*e^2*x^2-220
*A*c*d*e^2*x+495*B*a*e^3*x+120*B*c*d^2*e*x+693*A*a*e^3+88*A*c*d^2*e-198*B*a
*d*e^2-48*B*c*d^3)/e^4
```

maxima [A] time = 0.64, size = 104, normalized size = 0.90

$$\frac{2\left(315\,(ex+d)^{\frac{11}{2}}Bc-385\,(3\,Bcd-Ace)(ex+d)^{\frac{9}{2}}+495\left(3\,Bcd^2-2\,Acde+Bae^2\right)(ex+d)^{\frac{7}{2}}-693\left(Bcd^3-Acd^2e+Bade^2-Aae^3\right)(ex+d)^{\frac{5}{2}}\right)}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c - 385*(3*B*c*d - A*c*e)*(e*x + d)^(9/2) +
495*(3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*(e*x + d)^(7/2) - 693*(B*c*d^3 - A*c*
d^2*e + B*a*d*e^2 - A*a*e^3)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 0.09, size = 100, normalized size = 0.86

$$\frac{(d+e\,x)^{7/2}\,\left(6\,B\,c\,d^2-4\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{7\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{11/2}}{11\,e^4}+\frac{2\,c\,\left(A\,e-3\,B\,d\right)\,(d+e\,x)^{9/2}}{9\,e^4}+\frac{2\,\left(c\,d^2+a\,e^2\right)\,\left(A\,e-B\,d\right)\,(d+e\,x)^{5/2}}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/(7*e^4) + (2*B*c*(d +
 e*x)^(11/2))/(11*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(9/2))/(9*e^4) + (2*(
a*e^2 + c*d^2)*(A*e - B*d)*(d + e*x)^(5/2))/(5*e^4)
```

sympy [A] time = 15.78, size = 379, normalized size = 3.27

$$Aad\left(\begin{cases}\sqrt{d}\,x & \text{for}\: e=0\\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2Aa\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{2Acd\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+\frac{2Ac\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^3}+\frac{2Bad\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{2Ba\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^2}+\frac{2Bcd\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^4}+\frac{2Bc\left(\frac{d^4(d+ex)^{\frac{3}{2}}}{3}-\frac{4d^3(d+ex)^{\frac{5}{2}}}{5}+\frac{6d^2(d+ex)^{\frac{7}{2}}}{7}-\frac{4d(d+ex)^{\frac{9}{2}}}{9}+\frac{(d+ex)^{\frac{11}{2}}}{11}\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(c*x**2+a),x)
```

```
[Out] A*a*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
2*A*a*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*A*c*d*(d**2*(d + e
*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 2*A*c*(-
d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/
7 + (d + e*x)**(9/2)/9)/e**3 + 2*B*a*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**
(5/2)/5)/e**2 + 2*B*a*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (
d + e*x)**(7/2)/7)/e**2 + 2*B*c*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e
*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*B*c*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1256 $\int (A+Bx)\sqrt{d+ex}\left(a+cx^2\right)dx$

Optimal. Leaf size=116

$$\frac{2(d+ex)^{5/2}\left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{2c(d+ex)^{7/2}(3Bd-Ae)}{7e^4}+\frac{2Bc(d+ex)^{9/2}}{9e^4}$$

Rubi [A] time = 0.05, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2(d+ex)^{5/2}\left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{2c(d+ex)^{7/2}(3Bd-Ae)}{7e^4}+\frac{2Bc(d+ex)^{9/2}}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2),x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^(3/2))/(3*e^4) + (2*(3*B*c*d^2 -
2*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^4) - (2*c*(3*B*d - A*e)*(d + e*x
)^(7/2))/(7*e^4) + (2*B*c*(d + e*x)^(9/2))/(9*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\left(a+cx^2\right)dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)\sqrt{d+ex}}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{3/2}}{e^3}+\right.$$

$$=-\frac{2(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^{3/2}}{3e^4}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{5/2}}{5e^4}$$

Mathematica [A] time = 0.07, size = 96, normalized size = 0.83

$$\frac{2(d+ex)^{3/2}\left(105aAe^3+21aBe^2(3ex-2d)+3Ace\left(8d^2-12dex+15e^2x^2\right)+Bc\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(105*a*A*e^3 + 21*a*B*e^2*(-2*d + 3*e*x) + 3*A*c*e*(8*d^
2 - 12*d*e*x + 15*e^2*x^2) + B*c*(-16*d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*
e^3*x^3)))/(315*e^4)
```

IntegrateAlgebraic [A] time = 0.07, size = 117, normalized size = 1.01

$$\frac{2(d+ex)^{3/2}\left(105aAe^3+63aBe^2(d+ex)-105aBde^2+105Acd^2e-126Acde(d+ex)+45Ace(d+ex)^2-105Bcd^3+189Bcd^2(d+ex)-135Bcd(d+ex)^2+35Bc(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*B*c*d^3 + 105*A*c*d^2*e - 105*a*B*d*e^2 + 105*a*A*
e^3 + 189*B*c*d^2*(d + e*x) - 126*A*c*d*e*(d + e*x) + 63*a*B*e^2*(d + e*x)
```

```
- 135*B*c*d*(d + e*x)^2 + 45*A*c*e*(d + e*x)^2 + 35*B*c*(d + e*x)^3))/(315*
e^4)
```

fricas [A] time = 0.42, size = 143, normalized size = 1.23

$$\frac{2\left(35\,Bce^{4}x^{4}-16\,Bcd^{4}+24\,Acd^{3}e-42\,Bad^{2}e^{2}+105\,Aade^{3}+5\left(Bcde^{3}+9\,Ace^{4}\right)x^{3}-3\left(2\,Bcd^{2}e^{2}-3\,Acde^{3}-21\,Bae^{4}\right)x^{2}+\left(8\,Bcd^{3}e-12\,Acd^{2}e^{2}+21\,Bade^{3}+105\,Aae^{4}\right)x\right)\sqrt{ex+d}}{315\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*e^4*x^4 - 16*B*c*d^4 + 24*A*c*d^3*e - 42*B*a*d^2*e^2 + 105*A*
a*d*e^3 + 5*(B*c*d*e^3 + 9*A*c*e^4)*x^3 - 3*(2*B*c*d^2*e^2 - 3*A*c*d*e^3 -
21*B*a*e^4)*x^2 + (8*B*c*d^3*e - 12*A*c*d^2*e^2 + 21*B*a*d*e^3 + 105*A*a*e^
4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.16, size = 327, normalized size = 2.82

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Bade^{(-1)}+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^{2}\right)Acde^{(-2)}+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^{2}-35\sqrt{xe+d}\,d^{3}\right)Bcde^{(-3)}+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^{2}\right)Bae^{(-1)}+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^{2}-35\sqrt{xe+d}\,d^{3}\right)Ace^{(-2)}+\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^{2}-420(xe+d)^{\frac{3}{2}}d^{3}+315\sqrt{xe+d}\,d^{4}\right)Bce^{(-3)}+315\sqrt{xe+d}\,Aad+105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aa\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d*e^(-1) + 21*(3*(x*e
+ d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*d*e^(-2) + 9*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*B*c*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*B*a*e^(-1) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*e^(-2) + (35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*e^(-3) + 315*sqrt(x*e + d)*A*a*
d + 105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a)*e^(-1)
```

maple [A] time = 0.05, size = 101, normalized size = 0.87

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(35Bc\,x^{3}e^{3}+45Ac\,e^{3}x^{2}-30Bcd\,e^{2}x^{2}-36Acd\,e^{2}x+63Ba\,e^{3}x+24Bc\,d^{2}ex+105aA\,e^{3}+24Ac\,d^{2}e-42aBd\,e^{2}-16Bc\,d^{3}\right)}{315e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(35*B*c*e^3*x^3+45*A*c*e^3*x^2-30*B*c*d*e^2*x^2-36*A*c*
d*e^2*x+63*B*a*e^3*x+24*B*c*d^2*e*x+105*A*a*e^3+24*A*c*d^2*e-42*B*a*d*e^2-1
6*B*c*d^3)/e^4
```

maxima [A] time = 0.77, size = 104, normalized size = 0.90

$$\frac{2\left(35\,(ex+d)^{\frac{9}{2}}Bc-45\,(3\,Bcd-Ace)(ex+d)^{\frac{7}{2}}+63\left(3\,Bcd^{2}-2\,Acde+Bae^{2}\right)(ex+d)^{\frac{5}{2}}-105\left(Bcd^{3}-Acd^{2}e+Bade^{2}-Aae^{3}\right)(ex+d)^{\frac{3}{2}}\right)}{315\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*B*c - 45*(3*B*c*d - A*c*e)*(e*x + d)^(7/2) + 63*(
3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*(e*x + d)^(5/2) - 105*(B*c*d^3 - A*c*d^2*e
 + B*a*d*e^2 - A*a*e^3)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 1.74, size = 100, normalized size = 0.86

$$\frac{(d+e\,x)^{5/2}\,\left(6\,B\,c\,d^{2}-4\,A\,c\,d\,e+2\,B\,a\,e^{2}\right)}{5\,e^{4}}+\frac{2\,B\,c\,(d+e\,x)^{9/2}}{9\,e^{4}}+\frac{2\,c\,(A\,e-3\,B\,d)\,(d+e\,x)^{7/2}}{7\,e^{4}}+\frac{2\,\left(c\,d^{2}+a\,e^{2}\right)\,(A\,e-B\,d)\,(d+e\,x)^{3/2}}{3\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/(5*e^4) + (2*B*c*(d +
 e*x)^(9/2))/(9*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(7/2))/(7*e^4) + (2*(a*
e^2 + c*d^2)*(A*e - B*d)*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 3.74, size = 131, normalized size = 1.13

$$\frac{2\left(\frac{Bc(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}(Ace-3Bcd)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(-2Acde+Bae^2+3Bcd^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(Aae^3+Acd^2e-Bade^2-Bcd^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*c*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(A*c*e - 3*B*c*d)/(7*e*
*3) + (d + e*x)**(5/2)*(-2*A*c*d*e + B*a*e**2 + 3*B*c*d**2)/(5*e**3) + (d +
 e*x)**(3/2)*(A*a*e**3 + A*c*d**2*e - B*a*d*e**2 - B*c*d**3)/(3*e**3))/e
```

3.1257 $\int \frac{(A+Bx)(a+cx^2)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=114

$$\frac{2(d+ex)^{3/2}\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)(Bd-Ae)}{e^4}-\frac{2c(d+ex)^{5/2}(3Bd-Ae)}{5e^4}+\frac{2Bc(d+ex)}{7e^4}$$

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2(d+ex)^{3/2}\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)(Bd-Ae)}{e^4}-\frac{2c(d+ex)^{5/2}(3Bd-Ae)}{5e^4}+\frac{2Bc(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)*Sqrt[d + e*x])/e^4 + (2*(3*B*c*d^2 - 2*A*c*
d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^4) - (2*c*(3*B*d - A*e)*(d + e*x)^(5/2
))/(5*e^4) + (2*B*c*(d + e*x)^(7/2))/(7*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{d+ex}}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3\sqrt{d+ex}}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)\sqrt{d+ex}}{e^3}+\frac{c(-3Bd+Ae)(}{e^3}\right.$$

$$= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)\sqrt{d+ex}}{e^4}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{3/2}}{3e^4}-\frac{2c(3I}{}$$

Mathematica [A] time = 0.08, size = 96, normalized size = 0.84

$$\frac{2\sqrt{d+ex}\left(105aAe^3+35aBe^2(ex-2d)+7Ace\left(8d^2-4dex+3e^2x^2\right)-3Bc\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(105*a*A*e^3 + 35*a*B*e^2*(-2*d + e*x) + 7*A*c*e*(8*d^2 -
4*d*e*x + 3*e^2*x^2) - 3*B*c*(16*d^3 - 8*d^2*e*x + 6*d*e^2*x^2 - 5*e^3*x^3)
))/(105*e^4)
```

IntegrateAlgebraic [A] time = 0.07, size = 117, normalized size = 1.03

$$\frac{2\sqrt{d+ex}\left(105aAe^3+35aBe^2(d+ex)-105aBde^2+105Acd^2e-70Acde(d+ex)+21Ace(d+ex)^2-105Bcd^3+105Bcd^2(d+ex)-63Bcd(d+ex)^2+15Bc(d+ex)^3\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-105*B*c*d^3 + 105*A*c*d^2*e - 105*a*B*d*e^2 + 105*a*A*e^
3 + 105*B*c*d^2*(d + e*x) - 70*A*c*d*e*(d + e*x) + 35*a*B*e^2*(d + e*x) - 6
3*B*c*d*(d + e*x)^2 + 21*A*c*e*(d + e*x)^2 + 15*B*c*(d + e*x)^3))/(105*e^4)
```

fricas [A] time = 0.43, size = 100, normalized size = 0.88

$$\frac{2 \left(15 \, Bce^{3}x^{3} - 48 \, Bcd^{3} + 56 \, Acd^{2}e - 70 \, Bade^{2} + 105 \, Aae^{3} - 3 \, \left(6 \, Bcde^{2} - 7 \, Ace^{3}\right)x^{2} + \left(24 \, Bcd^{2}e - 28 \, Acde^{2} + 35 \, Bae^{3}\right)x\right)\sqrt{ex + d}}{105 \, e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*e^3*x^3 - 48*B*c*d^3 + 56*A*c*d^2*e - 70*B*a*d*e^2 + 105*A*a*
e^3 - 3*(6*B*c*d*e^2 - 7*A*c*e^3)*x^2 + (24*B*c*d^2*e - 28*A*c*d*e^2 + 35*B
*a*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.20, size = 138, normalized size = 1.21

$$\frac{2}{105} \, \left(35 \, \left({\left(xe + d\right)}^{\frac{3}{2}} - 3 \, \sqrt{xe + d} d\right)Bae^{\left(-1\right)} + 7 \, \left(3 \, {\left(xe + d\right)}^{\frac{5}{2}} - 10 \, {\left(xe + d\right)}^{\frac{3}{2}} d + 15 \, \sqrt{xe + d} d^{2}\right)Ace^{\left(-2\right)} + 3 \, \left(5 \, {\left(xe + d\right)}^{\frac{7}{2}} - 21 \, {\left(xe + d\right)}^{\frac{5}{2}} d + 35 \, {\left(xe + d\right)}^{\frac{3}{2}} d^{2} - 35 \, \sqrt{xe + d} d^{3}\right)Bce^{\left(-3\right)} + 105 \, \sqrt{xe + d} Aa\right)e^{\left(-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*e^(-1) + 7*(3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*e^(-2) + 3*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*B*c*e^(-3) + 105*sqrt(x*e + d)*A*a)*e^(-1)
```

maple [A] time = 0.05, size = 101, normalized size = 0.89

$$\frac{2\sqrt{ex+d}\, \left(15Bc\,x^{3}e^{3}+21Ac\,e^{3}x^{2}-18Bcd\,e^{2}x^{2}-28Acd\,e^{2}x+35Ba\,e^{3}x+24Bc\,d^{2}ex+105aA\,e^{3}+56Ac\,d^{2}e-70aBd\,e^{2}-48Bc\,d^{3}\right)}{105e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(1/2)*(15*B*c*e^3*x^3+21*A*c*e^3*x^2-18*B*c*d*e^2*x^2-28*A*c*
d*e^2*x+35*B*a*e^3*x+24*B*c*d^2*e*x+105*A*a*e^3+56*A*c*d^2*e-70*B*a*d*e^2-4
8*B*c*d^3)/e^4
```

maxima [A] time = 0.58, size = 104, normalized size = 0.91

$$\frac{2 \, \left(15 \, {\left(ex + d\right)}^{\frac{7}{2}} Bc - 21 \, {\left(3 \, Bcd - Ace\right)} {\left(ex + d\right)}^{\frac{5}{2}} + 35 \, \left(3 \, Bcd^{2} - 2 \, Acde + Bae^{2}\right) {\left(ex + d\right)}^{\frac{3}{2}} - 105 \, \left(Bcd^{3} - Acd^{2}e + Bade^{2} - Aae^{3}\right)\sqrt{ex + d}\right)}{105 \, e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(15*(e*x + d)^(7/2)*B*c - 21*(3*B*c*d - A*c*e)*(e*x + d)^(5/2) + 35*(
3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*(e*x + d)^(3/2) - 105*(B*c*d^3 - A*c*d^2*e
 + B*a*d*e^2 - A*a*e^3)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 100, normalized size = 0.88

$$\frac{{\left(d+e\,x\right)}^{3/2}\,\left(6\,B\,c\,d^2-4\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{3\,e^4}+\frac{2\,B\,c\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}+\frac{2\,c\,\left(A\,e-3\,B\,d\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{2\,\left(c\,d^2+a\,e^2\right)\,\left(A\,e-B\,d\right)\,\sqrt{d+e\,x}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/(3*e^4) + (2*B*c*(d +
 e*x)^(7/2))/(7*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(5/2))/(5*e^4) + (2*(a*
e^2 + c*d^2)*(A*e - B*d)*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 36.49, size = 374, normalized size = 3.28

$$\begin{cases} \frac{-\frac{2Aad}{\sqrt{d+ex}} - 2Aa\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{2Acd\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2} - \frac{2Ac\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2} - \frac{2Bad\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{2Ba\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} - \frac{2Bcd\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^3} - \frac{2Bc\left(\frac{d^4}{\sqrt{d+ex}} + 4d^3\sqrt{d+ex} - 2d^2(d+ex)^{\frac{3}{2}} + \frac{4d(d+ex)^{\frac{5}{2}}}{5} - \frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}}{e} & \text{for } e \neq 0 \\ \frac{Aax + \frac{Acx^3}{3} + \frac{Bax^2}{2} + \frac{Bcx^4}{4}}{\sqrt{d}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a*d/sqrt(d + e*x) - 2*A*a*(-d/sqrt(d + e*x) - sqrt(d + e*x
)) - 2*A*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/
e**2 - 2*A*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/
2) - (d + e*x)**(5/2)/5)/e**2 - 2*B*a*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/
e - 2*B*a*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e -
 2*B*c*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) -
 (d + e*x)**(5/2)/5)/e**3 - 2*B*c*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x
) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/
e**3)/e, Ne(e, 0)), ((A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4)/sqrt(d)
, True))
```

3.1258 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=112

$$\frac{2\sqrt{d+ex}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(3Bd-Ae)}{3e^4}+\frac{2Bc(d+ex)^{5/2}}{5e^4}$$

Rubi [A] time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2\sqrt{d+ex}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(3Bd-Ae)}{3e^4}+\frac{2Bc(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2))/(e^4*Sqrt[d + e*x]) + (2*(3*B*c*d^2 - 2*A*c
*d*e + a*B*e^2)*Sqrt[d + e*x])/e^4 - (2*c*(3*B*d - A*e)*(d + e*x)^(3/2))/(3
*e^4) + (2*B*c*(d + e*x)^(5/2))/(5*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{3/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^{3/2}}+\frac{3Bcd^2-2Acde+aBe^2}{e^3\sqrt{d+ex}}+\frac{c(-3Bd+Ae)\sqrt{d+ex}}{e^3}+\frac{Bc\ldots}{\ldots}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)\sqrt{d+ex}}{e^4}-\frac{2c(3Bd-Ae)(d+ex\ldots}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 97, normalized size = 0.87

$$\frac{6B\left(5ae^2(2d+ex)+c\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)-10Ae\left(3ae^2+c\left(8d^2+4dex-e^2x^2\right)\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (-10*A*e*(3*a*e^2 + c*(8*d^2 + 4*d*e*x - e^2*x^2)) + 6*B*(5*a*e^2*(2*d + e*
x) + c*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3)))/(15*e^4*Sqrt[d + e*x]
)
```

IntegrateAlgebraic [A] time = 0.07, size = 117, normalized size = 1.04

$$\frac{2\left(-15aAe^3+15aBe^2(d+ex)+15aBde^2-15Acd^2e-30Acde(d+ex)+5Ace(d+ex)^2+15Bcd^3+45Bcd^2(d+ex)-15Bcd(d+ex)^2+3Bc(d+ex)^3\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(15*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 - 15*a*A*e^3 + 45*B*c*d^2*(d +
 e*x) - 30*A*c*d*e*(d + e*x) + 15*a*B*e^2*(d + e*x) - 15*B*c*d*(d + e*x)^2
+ 5*A*c*e*(d + e*x)^2 + 3*B*c*(d + e*x)^3))/(15*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.42, size = 110, normalized size = 0.98

$$\frac{2\left(3\,Bce^{3}x^{3}+48\,Bcd^{3}-40\,Acd^{2}e+30\,Bade^{2}-15\,Aae^{3}-\left(6\,Bcde^{2}-5\,Ace^{3}\right)x^{2}+\left(24\,Bcd^{2}e-20\,Acde^{2}+15\,Bae^{3}\right)x\right)\sqrt{ex+d}}{15\left(e^{5}x+de^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*e^3*x^3 + 48*B*c*d^3 - 40*A*c*d^2*e + 30*B*a*d*e^2 - 15*A*a*e^3
 - (6*B*c*d*e^2 - 5*A*c*e^3)*x^2 + (24*B*c*d^2*e - 20*A*c*d*e^2 + 15*B*a*e^
3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.17, size = 135, normalized size = 1.21

$$\frac{2}{15}\left(3\,(xe+d)^{\frac{5}{2}}Bce^{16}-15\,(xe+d)^{\frac{3}{2}}Bcde^{16}+45\,\sqrt{xe+d}\,Bcd^{2}e^{16}+5\,(xe+d)^{\frac{3}{2}}Ace^{17}-30\,\sqrt{xe+d}\,Acde^{17}+15\,\sqrt{xe+d}\,Bae^{18}\right)e^{(-20)}+\frac{2\left(Bcd^{3}-Acd^{2}e+Bade^{2}-Aae^{3}\right)e^{(-4)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c*e^16 - 15*(x*e + d)^(3/2)*B*c*d*e^16 + 45*sqrt(
x*e + d)*B*c*d^2*e^16 + 5*(x*e + d)^(3/2)*A*c*e^17 - 30*sqrt(x*e + d)*A*c*d
*e^17 + 15*sqrt(x*e + d)*B*a*e^18)*e^(-20) + 2*(B*c*d^3 - A*c*d^2*e + B*a*d
*e^2 - A*a*e^3)*e^(-4)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 101, normalized size = 0.90

$$-\frac{2\left(-3Bc\,x^{3}e^{3}-5Ac\,e^{3}x^{2}+6Bcd\,e^{2}x^{2}+20Acd\,e^{2}x-15Ba\,e^{3}x-24Bc\,d^{2}ex+15aA\,e^{3}+40Ac\,d^{2}e-30aBd\,e^{2}-48Bc\,d^{3}\right)}{15\sqrt{ex+d}\;e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x)
```

```
[Out] -2/15/(e*x+d)^(1/2)*(-3*B*c*e^3*x^3-5*A*c*e^3*x^2+6*B*c*d*e^2*x^2+20*A*c*d*
e^2*x-15*B*a*e^3*x-24*B*c*d^2*e*x+15*A*a*e^3+40*A*c*d^2*e-30*B*a*d*e^2-48*B
*c*d^3)/e^4
```

maxima [A] time = 0.51, size = 112, normalized size = 1.00

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc-5\,(3\,Bcd-Ace)(ex+d)^{\frac{3}{2}}+15\left(3\,Bcd^{2}-2\,Acde+Bae^{2}\right)\sqrt{ex+d}}{e^{3}}+\frac{15\left(Bcd^{3}-Acd^{2}e+Bade^{2}-Aae^{3}\right)}{\sqrt{ex+d}\,e^{3}}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c - 5*(3*B*c*d - A*c*e)*(e*x + d)^(3/2) + 15*(3*
B*c*d^2 - 2*A*c*d*e + B*a*e^2)*sqrt(e*x + d))/e^3 + 15*(B*c*d^3 - A*c*d^2*e
 + B*a*d*e^2 - A*a*e^3)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 0.07, size = 111, normalized size = 0.99

$$\frac{\sqrt{d+e\,x}\,\left(6\,B\,c\,d^2-4\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{e^4}-\frac{-2\,B\,c\,d^3+2\,A\,c\,d^2\,e-2\,B\,a\,d\,e^2+2\,A\,a\,e^3}{e^4\,\sqrt{d+e\,x}}+\frac{2\,B\,c\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{2\,c\,\left(A\,e-3\,B\,d\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/e^4 - (2*A*a*e^3 - 2*
B*c*d^3 - 2*B*a*d*e^2 + 2*A*c*d^2*e)/(e^4*(d + e*x)^(1/2)) + (2*B*c*(d + e*
x)^(5/2))/(5*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 21.21, size = 112, normalized size = 1.00

$$\frac{2Bc\left(d+ex\right)^{\frac{5}{2}}}{5e^4}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(2Ace-6Bcd\right)}{3e^4}+\frac{\sqrt{d+ex}\left(-4Acde+2Bae^2+6Bcd^2\right)}{e^4}+\frac{2\left(-Ae+Bd\right)\left(ae^2+cd^2\right)}{e^4\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(2*A*c*e - 6*B*c*d)/(3*e
**4) + sqrt(d + e*x)*(-4*A*c*d*e + 2*B*a*e**2 + 6*B*c*d**2)/e**4 + 2*(-A*e
+ B*d)*(a*e**2 + c*d**2)/(e**4*sqrt(d + e*x))
```

3.1259 $\int \frac{(A+Bx)(a+cx^2)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4(d+ex)^{3/2}}-\frac{2c\sqrt{d+ex}\,(3Bd-Ae)}{e^4}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

Rubi [A] time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4(d+ex)^{3/2}}-\frac{2c\sqrt{d+ex}\,(3Bd-Ae)}{e^4}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2))/(3*e^4*(d + e*x)^(3/2)) - (2*(3*B*c*d^2 - 2
*A*c*d*e + a*B*e^2))/(e^4*Sqrt[d + e*x]) - (2*c*(3*B*d - A*e)*Sqrt[d + e*x]
)/e^4 + (2*B*c*(d + e*x)^(3/2))/(3*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{5/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^{5/2}}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^{3/2}}+\frac{c(-3Bd+Ae)}{e^3\sqrt{d+ex}}+\frac{Bc\sqrt{d+}}{e^3}\right.$$
$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)}{3e^4(d+ex)^{3/2}}-\frac{2\left(3Bcd^2-2Acde+aBe^2\right)}{e^4\sqrt{d+ex}}-\frac{2c(3Bd-Ae)\sqrt{d+ex}}{e^4}+\frac{2}{}$$

Mathematica [A] time = 0.07, size = 94, normalized size = 0.84

$$-\frac{2\left(aAe^3+aBe^2(2d+3ex)-Ace\left(8d^2+12dex+3e^2x^2\right)+Bc\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(a*A*e^3 + a*B*e^2*(2*d + 3*e*x) - A*c*e*(8*d^2 + 12*d*e*x + 3*e^2*x^2)
 + B*c*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3)))/(3*e^4*(d + e*x)^(3/
2))
```

IntegrateAlgebraic [A] time = 0.08, size = 114, normalized size = 1.02

$$\frac{2\left(-aAe^3-3aBe^2(d+ex)+aBde^2-Acd^2e+6Acde(d+ex)+3Ace(d+ex)^2+Bcd^3-9Bcd^2(d+ex)-9Bcd(d+ex)^2+Bc(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*c*d^3 - A*c*d^2*e + a*B*d*e^2 - a*A*e^3 - 9*B*c*d^2*(d + e*x) + 6*A*c
*d*e*(d + e*x) - 3*a*B*e^2*(d + e*x) - 9*B*c*d*(d + e*x)^2 + 3*A*c*e*(d + e
*x)^2 + B*c*(d + e*x)^3))/(3*e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.41, size = 120, normalized size = 1.07

$$\frac{2\left(Bce^3x^3 - 16\,Bcd^3 + 8\,Acd^2e - 2\,Bade^2 - Aae^3 - 3\left(2\,Bcde^2 - Ace^3\right)x^2 - 3\left(8\,Bcd^2e - 4\,Acde^2 + Bae^3\right)x\right)\sqrt{ex+d}}{3\left(e^6x^2 + 2\,de^5x + d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*e^3*x^3 - 16*B*c*d^3 + 8*A*c*d^2*e - 2*B*a*d*e^2 - A*a*e^3 - 3*(2*
B*c*d*e^2 - A*c*e^3)*x^2 - 3*(8*B*c*d^2*e - 4*A*c*d*e^2 + B*a*e^3)*x)*sqrt(
e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.17, size = 126, normalized size = 1.12

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bce^8 - 9\sqrt{xe+d}\,Bcde^8 + 3\sqrt{xe+d}\,Ace^9\right)e^{(-12)} - \frac{2\left(9\,(xe+d)Bcd^2 - Bcd^3 - 6\,(xe+d)Acde + Acd^2e + 3\,(xe+d)Bae^2 - Bade^2 + Aae^3\right)e^{(-4)}}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*c*e^8 - 9*sqrt(x*e + d)*B*c*d*e^8 + 3*sqrt(x*e + d)*
A*c*e^9)*e^(-12) - 2/3*(9*(x*e + d)*B*c*d^2 - B*c*d^3 - 6*(x*e + d)*A*c*d*e
 + A*c*d^2*e + 3*(x*e + d)*B*a*e^2 - B*a*d*e^2 + A*a*e^3)*e^(-4)/(x*e + d)^
(3/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.89

$$-\frac{2\left(-Bc\,x^3e^3 - 3Ac\,e^3x^2 + 6Bcd\,e^2x^2 - 12Acd\,e^2x + 3Ba\,e^3x + 24Bc\,d^2ex + aA\,e^3 - 8Ac\,d^2e + 2aBd\,e^2 + 16Bc\,d^3\right)}{3\,(ex+d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-B*c*e^3*x^3-3*A*c*e^3*x^2+6*B*c*d*e^2*x^2-12*A*c*d*e^2
*x+3*B*a*e^3*x+24*B*c*d^2*e*x+A*a*e^3-8*A*c*d^2*e+2*B*a*d*e^2+16*B*c*d^3)/e
^4
```

maxima [A] time = 0.50, size = 108, normalized size = 0.96

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}}Bc-3\,(3\,Bcd-Ace)\sqrt{ex+d}}{e^3} + \frac{Bcd^3-Acd^2e+Bade^2-Aae^3-3\left(3\,Bcd^2-2\,Acde+Bae^2\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(((e*x + d)^(3/2)*B*c - 3*(3*B*c*d - A*c*e)*sqrt(e*x + d))/e^3 + (B*c*d
^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3 - 3*(3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*
(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 1.77, size = 113, normalized size = 1.01

$$\frac{2\,B\,c\,(d+e\,x)^3 - 2\,A\,a\,e^3 + 2\,B\,c\,d^3 + 2\,B\,a\,d\,e^2 - 2\,A\,c\,d^2\,e - 6\,B\,a\,e^2\,(d+e\,x) + 6\,A\,c\,e\,(d+e\,x)^2 - 18\,B\,c\,d\,(d+e\,x)^2 - 18\,B\,c\,d^2\,(d+e\,x) + 12\,A\,c\,d\,e\,(d+e\,x)}{3\,e^4\,(d+e\,x)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*B*c*(d + e*x)^3 - 2*A*a*e^3 + 2*B*c*d^3 + 2*B*a*d*e^2 - 2*A*c*d^2*e - 6*
B*a*e^2*(d + e*x) + 6*A*c*e*(d + e*x)^2 - 18*B*c*d*(d + e*x)^2 - 18*B*c*d^2
*(d + e*x) + 12*A*c*d*e*(d + e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.44, size = 449, normalized size = 4.01

$$\begin{cases} -\frac{2Aae^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{16Acd^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{24Acde^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{6Ace^3x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{4Bade^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{6Bae^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{32Bcd^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{48Bcd^2ex}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{12Bcde^2x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{2Bce^3x^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} & \text{for}\ e \neq 0 \\ \frac{Aax+\frac{Acx^3}{3}+\frac{Bax^2}{2}+\frac{Bcx^4}{4}}{d^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*A*a*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) +
16*A*c*d**2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*A*c*d*
e**2*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 6*A*c*e**3*x**2/
(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 4*B*a*d*e**2/(3*d*e**4*
sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 6*B*a*e**3*x/(3*d*e**4*sqrt(d + e
*x) + 3*e**5*x*sqrt(d + e*x)) - 32*B*c*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**
5*x*sqrt(d + e*x)) - 48*B*c*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqr
t(d + e*x)) - 12*B*c*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d
+ e*x)) + 2*B*c*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
, Ne(e, 0)), ((A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4)/d**(5/2), True
))
```

3.1260 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2c(3Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

Rubi [A] time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2c(3Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2))/(5*e^4*(d + e*x)^(5/2)) - (2*(3*B*c*d^2 - 2
*A*c*d*e + a*B*e^2))/(3*e^4*(d + e*x)^(3/2)) + (2*c*(3*B*d - A*e))/(e^4*Sqr
t[d + e*x]) + (2*B*c*Sqrt[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{7/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^{7/2}}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^{5/2}}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^{3/2}}+\frac{Bc}{e^3\sqrt{d+ex}}\right)dx\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)}{5e^4(d+ex)^{5/2}}-\frac{2\left(3Bcd^2-2Acde+aBe^2\right)}{3e^4(d+ex)^{3/2}}+\frac{2c(3Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2Bc\sqrt{d+ex}}{e^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 95, normalized size = 0.85

$$-\frac{2\left(3aAe^3+aBe^2(2d+5ex)+Ace\left(8d^2+20dex+15e^2x^2\right)-3Bc\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(3*a*A*e^3 + a*B*e^2*(2*d + 5*e*x) + A*c*e*(8*d^2 + 20*d*e*x + 15*e^2*x
^2) - 3*B*c*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3)))/(15*e^4*(d +
 e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.07, size = 117, normalized size = 1.04

$$\frac{2\left(-3aAe^3-5aBe^2(d+ex)+3aBde^2-3Acd^2e+10Acde(d+ex)-15Ace(d+ex)^2+3Bcd^3-15Bcd^2(d+ex)+45Bcd(d+ex)^2+15Bc(d+ex)^3\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - 3*a*A*e^3 - 15*B*c*d^2*(d + e*x
) + 10*A*c*d*e*(d + e*x) - 5*a*B*e^2*(d + e*x) + 45*B*c*d*(d + e*x)^2 - 15*
A*c*e*(d + e*x)^2 + 15*B*c*(d + e*x)^3))/(15*e^4*(d + e*x)^(5/2))
```

fricas [A] time = 0.41, size = 133, normalized size = 1.19

$$\frac{2\left(15\,Bce^{3}x^{3}+48\,Bcd^{3}-8\,Acd^{2}e-2\,Bade^{2}-3\,Aae^{3}+15\left(6\,Bcde^{2}-Ace^{3}\right)x^{2}+5\left(24\,Bcd^{2}e-4\,Acde^{2}-Bae^{3}\right)x\right)\sqrt{ex+d}}{15\left(e^{7}x^{3}+3\,de^{6}x^{2}+3\,d^{2}e^{5}x+d^{3}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*c*e^3*x^3 + 48*B*c*d^3 - 8*A*c*d^2*e - 2*B*a*d*e^2 - 3*A*a*e^3 +
 15*(6*B*c*d*e^2 - A*c*e^3)*x^2 + 5*(24*B*c*d^2*e - 4*A*c*d*e^2 - B*a*e^3)*
x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.17, size = 122, normalized size = 1.09

$$2\,\sqrt{xe+d}\,Bce^{(-4)}+\frac{2\left(45\,(xe+d)^{2}Bcd-15\,(xe+d)Bcd^{2}+3\,Bcd^{3}-15\,(xe+d)^{2}Ace+10\,(xe+d)Acde-3\,Acd^{2}e-5\,(xe+d)Bae^{2}+3\,Bade^{2}-3\,Aae^{3}\right)e^{(-4)}}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*c*e^(-4) + 2/15*(45*(x*e + d)^2*B*c*d - 15*(x*e + d)*B*c*
d^2 + 3*B*c*d^3 - 15*(x*e + d)^2*A*c*e + 10*(x*e + d)*A*c*d*e - 3*A*c*d^2*e
 - 5*(x*e + d)*B*a*e^2 + 3*B*a*d*e^2 - 3*A*a*e^3)*e^(-4)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 101, normalized size = 0.90

$$-\frac{2\left(-15Bc\,x^{3}e^{3}+15Ac\,e^{3}x^{2}-90Bcd\,e^{2}x^{2}+20Acd\,e^{2}x+5Ba\,e^{3}x-120Bc\,d^{2}ex+3aA\,e^{3}+8Ac\,d^{2}e+2aBd\,e^{2}-48Bc\,d^{3}\right)}{15\,(ex+d)^{\frac{5}{2}}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-15*B*c*e^3*x^3+15*A*c*e^3*x^2-90*B*c*d*e^2*x^2+20*A*c
*d*e^2*x+5*B*a*e^3*x-120*B*c*d^2*e*x+3*A*a*e^3+8*A*c*d^2*e+2*B*a*d*e^2-48*B
*c*d^3)/e^4
```

maxima [A] time = 0.52, size = 109, normalized size = 0.97

$$\frac{2\left(\frac{15\,\sqrt{ex+d}\,Bc}{e^{3}}+\frac{3\,Bcd^{3}-3\,Acd^{2}e+3\,Bade^{2}-3\,Aae^{3}+15\,(3\,Bcd-Ace)(ex+d)^{2}-5\left(3\,Bcd^{2}-2\,Acde+Bae^{2}\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^{3}}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*(15*sqrt(e*x + d)*B*c/e^3 + (3*B*c*d^3 - 3*A*c*d^2*e + 3*B*a*d*e^2 - 3
*A*a*e^3 + 15*(3*B*c*d - A*c*e)*(e*x + d)^2 - 5*(3*B*c*d^2 - 2*A*c*d*e + B*
a*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 1.74, size = 100, normalized size = 0.89

$$-\frac{2\left(-48\,B\,c\,d^{3}-120\,B\,c\,d^{2}\,e\,x+8\,A\,c\,d^{2}\,e-90\,B\,c\,d\,e^{2}\,x^{2}+20\,A\,c\,d\,e^{2}\,x+2\,B\,a\,d\,e^{2}-15\,B\,c\,e^{3}\,x^{3}+15\,A\,c\,e^{3}\,x^{2}+5\,B\,a\,e^{3}\,x+3\,A\,a\,e^{3}\right)}{15\,e^{4}\,(d+e\,x)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(3*A*a*e^3 - 48*B*c*d^3 + 2*B*a*d*e^2 + 8*A*c*d^2*e + 5*B*a*e^3*x + 15*
A*c*e^3*x^2 - 15*B*c*e^3*x^3 - 90*B*c*d*e^2*x^2 + 20*A*c*d*e^2*x - 120*B*c*
d^2*e*x))/(15*e^4*(d + e*x)^(5/2))
```

sympy [A] time = 3.22, size = 653, normalized size = 5.83

$$\begin{cases} - \frac{6Aae^{3}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} - \frac{16Acd^{2}e}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} - \frac{40Acde^{2}x}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} - \frac{30Ace^{3}x^{2}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} - \frac{4Bade^{2}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} - \frac{10Bae^{3}x}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} + \frac{96Bcd^{3}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} + \frac{240Bcd^{2}ex}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} + \frac{180Bcde^{2}x^{2}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} + \frac{30Bce^{3}x^{3}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}} & \text{for}\: e \neq 0 \\ \frac{Aax + \frac{Acx^{3}}{3} + \frac{Bax^{2}}{2} + \frac{Bcx^{4}}{4}}{d^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a*e**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e
*x) + 15*e**6*x**2*sqrt(d + e*x)) - 16*A*c*d**2*e/(15*d**2*e**4*sqrt(d + e*
x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 40*A*c*d*e**
2*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*
sqrt(d + e*x)) - 30*A*c*e**3*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x
*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 4*B*a*d*e**2/(15*d**2*e**4*s
qrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 10
*B*a*e**3*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e*
*6*x**2*sqrt(d + e*x)) + 96*B*c*d**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**
5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 240*B*c*d**2*e*x/(15*d**2
*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x
)) + 180*B*c*d*e**2*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d +
 e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 30*B*c*e**3*x**3/(15*d**2*e**4*sqrt(d
 + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)), Ne(e, 0)
), ((A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4)/d**(7/2), True))
```

3.1261 $\int (A+Bx)\sqrt{d+ex}\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=218

$$\frac{4c(d+ex)^{9/2}\left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}+\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}\left(ae^2+c\right.}{3e^6}$$

Rubi [A] time = 0.13, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c(d+ex)^{9/2}\left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}-\frac{4c(d+ex)^{7/2}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{7e^6}+\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6}-\frac{2c^2(d+ex)^{11/2}(5Bd-Ae)}{11e^6}+\frac{2Bc^2(d+ex)^{13/2}}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2)^2,x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^(3/2))/(3*e^6) + (2*(c*d^2 + a*
e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^6) - (4*c*(5*B
*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(7/2))/(7*e^6) + (4
*c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(9/2))/(9*e^6) - (2*c^2*(5*B
*d - A*e)*(d + e*x)^(11/2))/(11*e^6) + (2*B*c^2*(d + e*x)^(13/2))/(13*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\left(a+cx^2\right)^2\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2\sqrt{d+ex}}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+a\right.}{e^5}\right.$$

$$=-\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2(d+ex)^{3/2}}{3e^6}+\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+a\right.}{5e^6}$$

Mathematica [A] time = 0.19, size = 214, normalized size = 0.98

$$\frac{2(d+ex)^{3/2}\left(13Ae\left(1155a^2e^4+66ace^2\left(8d^2-12dex+15e^2x^2\right)+c^2\left(128d^4-192d^3ex+240d^2e^2x^2-280de^3x^3+315e^4x^4\right)\right)+B\left(3003a^2e^4(3ex-2d)+286ace^2\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)-5c^2\left(256d^5-384d^4ex+480d^3e^2x^2-560d^2e^3x^3+630de^4x^4-693e^5x^5\right)\right)\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(13*A*e*(1155*a^2*e^4 + 66*a*c*e^2*(8*d^2 - 12*d*e*x + 1
5*e^2*x^2) + c^2*(128*d^4 - 192*d^3*e*x + 240*d^2*e^2*x^2 - 280*d*e^3*x^3 +
 315*e^4*x^4)) + B*(3003*a^2*e^4*(-2*d + 3*e*x) + 286*a*c*e^2*(-16*d^3 + 24
*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) - 5*c^2*(256*d^5 - 384*d^4*e*x + 480*
d^3*e^2*x^2 - 560*d^2*e^3*x^3 + 630*d*e^4*x^4 - 693*e^5*x^5))))/(45045*e^6)
```

IntegrateAlgebraic [A] time = 0.14, size = 301, normalized size = 1.38

$$\frac{2(d+ex)^{3/2}\left(15015a^2Ae^5+9009a^2Be^4(d+ex)-15015a^2Bde^4+30030aAcd^2e^3-36036aAcde^3(d+ex)+12870aAce^3(d+ex)^2-30030aBcd^3e^2+54054aBcd^2e^2(d+ex)-38610aBcde^2(d+ex)^2+10010aBce^2(d+ex)^3+15015Ac^2d^4e-36036Ac^2d^3e(d+ex)+38610Ac^2d^2e(d+ex)^2-20020Ac^2de(d+ex)^3+4095Ac^2e(d+ex)^4-15015Bc^2d^5+45045Bc^2d^4(d+ex)-64350Bc^2d^3(d+ex)^2+50050Bc^2d^2(d+ex)^3-20475Bc^2d(d+ex)^4+3465Bc^2(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-15015*B*c^2*d^5 + 15015*A*c^2*d^4*e - 30030*a*B*c*d^3*
e^2 + 30030*a*A*c*d^2*e^3 - 15015*a^2*B*d*e^4 + 15015*a^2*A*e^5 + 45045*B*c
^2*d^4*(d + e*x) - 36036*A*c^2*d^3*e*(d + e*x) + 54054*a*B*c*d^2*e^2*(d + e
*x) - 36036*a*A*c*d*e^3*(d + e*x) + 9009*a^2*B*e^4*(d + e*x) - 64350*B*c^2*
d^3*(d + e*x)^2 + 38610*A*c^2*d^2*e*(d + e*x)^2 - 38610*a*B*c*d*e^2*(d + e*
x)^2 + 12870*a*A*c*e^3*(d + e*x)^2 + 50050*B*c^2*d^2*(d + e*x)^3 - 20020*A*
c^2*d*e*(d + e*x)^3 + 10010*a*B*c*e^2*(d + e*x)^3 - 20475*B*c^2*d*(d + e*x)
^4 + 4095*A*c^2*e*(d + e*x)^4 + 3465*B*c^2*(d + e*x)^5))/(45045*e^6)
```

fricas [A] time = 0.42, size = 320, normalized size = 1.47

$$\frac{2\left(3465\,Bc^2e^6x^6 - 1280\,Bc^2d^6 + 1664\,Ac^2d^5e - 4576\,Bacd^4e^2 + 6864\,Aacd^3e^3 - 6006\,Ba^2d^2e^4 + 15015\,Aa^2de^5 + 315\left(Bc^2de^5 + 13\,Ac^2e^6\right)x^5 - 35\left(10\,Bc^2d^2e^4 - 13\,Ac^2de^5 - 286\,Bace^6\right)x^4 + 10\left(40\,Bc^2d^3e^3 - 52\,Ac^2d^2e^4 + 143\,Bacde^5 + 1287\,Aace^6\right)x^3 - 3\left(160\,Bc^2d^4e^2 - 208\,Ac^2d^3e^3 + 572\,Bacd^2e^4 - 858\,Aacde^5 - 3003\,Ba^2e^6\right)x^2 + \left(640\,Bc^2d^5e - 832\,Ac^2d^4e^2 + 2288\,Bacd^3e^3 - 3432\,Aacd^2e^4 + 3003\,Ba^2de^5 + 15015\,Aa^2e^6\right)x\right)\sqrt{ex+d}}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*e^6*x^6 - 1280*B*c^2*d^6 + 1664*A*c^2*d^5*e - 4576*B*a*
c*d^4*e^2 + 6864*A*a*c*d^3*e^3 - 6006*B*a^2*d^2*e^4 + 15015*A*a^2*d*e^5 + 3
15*(B*c^2*d*e^5 + 13*A*c^2*e^6)*x^5 - 35*(10*B*c^2*d^2*e^4 - 13*A*c^2*d*e^5
 - 286*B*a*c*e^6)*x^4 + 10*(40*B*c^2*d^3*e^3 - 52*A*c^2*d^2*e^4 + 143*B*a*c
*d*e^5 + 1287*A*a*c*e^6)*x^3 - 3*(160*B*c^2*d^4*e^2 - 208*A*c^2*d^3*e^3 + 5
72*B*a*c*d^2*e^4 - 858*A*a*c*d*e^5 - 3003*B*a^2*e^6)*x^2 + (640*B*c^2*d^5*e
 - 832*A*c^2*d^4*e^2 + 2288*B*a*c*d^3*e^3 - 3432*A*a*c*d^2*e^4 + 3003*B*a^2
*d*e^5 + 15015*A*a^2*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.19, size = 670, normalized size = 3.07

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d*e^(-1) + 6006*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*c*d*e
^(-2) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)
*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*c*d*e^(-3) + 143*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*A*c^2*d*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
 + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*d*e^(-5) + 3003*(3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*e^(-1) + 2574*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a*c*e^(-2) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*B*a*c*e^(-3) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(
x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
693*sqrt(x*e + d)*d^5)*A*c^2*e^(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e
+ d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*
(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*
c^2*e^(-5) + 45045*sqrt(x*e + d)*A*a^2*d + 15015*((x*e + d)^(3/2) - 3*sqrt(
x*e + d)*d)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 259, normalized size = 1.19

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(3465B\,c^2x^5e^5 + 4095A\,c^2e^5x^4 - 3150B\,c^2d\,e^4x^4 - 3640A\,c^2d\,e^4x^3 + 10010Bac\,e^5x^3 + 2800B\,c^2d^2e^3x^3 + 12870Aac\,e^5x^2 + 3120A\,c^2d^2e^3x^2 - 8580Bacd\,e^4x^2 - 2400B\,c^2d^3e^2x^2 - 10296Aacd\,e^4x - 2496A\,c^2d^3e^2x + 9009B\,a^2e^5x + 6864Bac\,d^2e^3x + 1920B\,c^2d^4ex + 15015A\,a^2e^5 + 6864A\,d^2ac\,e^3 + 1664A\,c^2d^4e - 6006B\,a^2d\,e^4 - 4576B\,d^3ac\,e^2 - 1280B\,c^2d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3465*B*c^2*e^5*x^5+4095*A*c^2*e^5*x^4-3150*B*c^2*d*e
^4*x^4-3640*A*c^2*d*e^4*x^3+10010*B*a*c*e^5*x^3+2800*B*c^2*d^2*e^3*x^3+1287
0*A*a*c*e^5*x^2+3120*A*c^2*d^2*e^3*x^2-8580*B*a*c*d*e^4*x^2-2400*B*c^2*d^3*
e^2*x^2-10296*A*a*c*d*e^4*x-2496*A*c^2*d^3*e^2*x+9009*B*a^2*e^5*x+6864*B*a*
c*d^2*e^3*x+1920*B*c^2*d^4*e*x+15015*A*a^2*e^5+6864*A*a*c*d^2*e^3+1664*A*c^
2*d^4*e-6006*B*a^2*d*e^4-4576*B*a*c*d^3*e^2-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.54, size = 248, normalized size = 1.14

$$\frac{2\left(3465\,(ex+d)^{\frac{13}{2}}Bc^2-4095\left(5\,Bc^2d-Ac^2e\right)(ex+d)^{\frac{11}{2}}+10010\left(5\,Bc^2d^2-2\,Ac^2de+Bace^2\right)(ex+d)^{\frac{9}{2}}-12870\left(5\,Bc^2d^3-3\,Ac^2d^2e+3\,Bacde^2-Aace^3\right)(ex+d)^{\frac{7}{2}}+9009\left(5\,Bc^2d^4-4\,Ac^2d^3e+6\,Bacd^2e^2-4\,Aacde^3+Ba^2e^4\right)(ex+d)^{\frac{5}{2}}-15015\left(Bc^2d^5-Ac^2d^4e+2\,Bacd^3e^2-2\,Aacd^2e^3+Ba^2de^4-Aa^2e^5\right)(ex+d)^{\frac{3}{2}}\right)}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(3465*(e*x + d)^(13/2)*B*c^2 - 4095*(5*B*c^2*d - A*c^2*e)*(e*x + d)
^(11/2) + 10010*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(9/2) - 1
2870*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^(7
/2) + 9009*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 +
 B*a^2*e^4)*(e*x + d)^(5/2) - 15015*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*
e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*(e*x + d)^(3/2))/e^6
```

mupad [B] time = 1.79, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{9/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{9\,e^6}+\frac{4\,c\,(d+e\,x)^{7/2}\,\left(-5\,B\,c\,d^3+3\,A\,c\,d^2\,e-3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{7\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{13/2}}{13\,e^6}+\frac{2\,\left(c\,d^2+a\,e^2\right)\,(d+e\,x)^{5/2}\,\left(5\,B\,c\,d^2-4\,A\,c\,d\,e+B\,a\,e^2\right)}{5\,e^6}+\frac{2\,c^2\,(A\,e-5\,B\,d)\,(d+e\,x)^{11/2}}{11\,e^6}+\frac{2\,{\left(c\,d^2+a\,e^2\right)}^2\,(A\,e-B\,d)\,(d+e\,x)^{3/2}}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(9*e^6) + (4*c
*(d + e*x)^(7/2)*(A*a*e^3 - 5*B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*e))/(7*e^6)
 + (2*B*c^2*(d + e*x)^(13/2))/(13*e^6) + (2*(a*e^2 + c*d^2)*(d + e*x)^(5/2)
*(B*a*e^2 + 5*B*c*d^2 - 4*A*c*d*e))/(5*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x
)^(11/2))/(11*e^6) + (2*(a*e^2 + c*d^2)^2*(A*e - B*d)*(d + e*x)^(3/2))/(3*e
^6)
```

sympy [A] time = 5.56, size = 308, normalized size = 1.41

$$\frac{2\left(\frac{Bc^2(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(Ac^2e-5Bc^2d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(-4Ac^2de+2Bace^2+10Bc^2d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(2Aace^3+6Ac^2d^2e-6Bacde^2-10Bc^2d^3\right)}{7e^5}+\frac{(d+ex)^{\frac{5}{2}}\left(-4Aacde^3-4Ac^2d^3e+Ba^2e^4+6Bacd^2e^2+5Bc^2d^4\right)}{5e^5}+\frac{(d+ex)^{\frac{3}{2}}\left(Aa^2e^5+2Aacd^2e^3+Ac^2d^4e-Ba^2de^4-2Bacd^3e^2-Bc^2d^5\right)}{3e^5}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*c**2*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(A*c**2*e - 5*B*c
**2*d)/(11*e**5) + (d + e*x)**(9/2)*(-4*A*c**2*d*e + 2*B*a*c*e**2 + 10*B*c*
*2*d**2)/(9*e**5) + (d + e*x)**(7/2)*(2*A*a*c*e**3 + 6*A*c**2*d**2*e - 6*B*
a*c*d*e**2 - 10*B*c**2*d**3)/(7*e**5) + (d + e*x)**(5/2)*(-4*A*a*c*d*e**3 -
 4*A*c**2*d**3*e + B*a**2*e**4 + 6*B*a*c*d**2*e**2 + 5*B*c**2*d**4)/(5*e**5
) + (d + e*x)**(3/2)*(A*a**2*e**5 + 2*A*a*c*d**2*e**3 + A*c**2*d**4*e - B*a
**2*d*e**4 - 2*B*a*c*d**3*e**2 - B*c**2*d**5)/(3*e**5))/e
```

3.1262 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=216

$$\frac{4c(d+ex)^{7/2}\left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}+\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)^2}{e^6}$$

Rubi [A] time = 0.09, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c(d+ex)^{7/2}\left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}-\frac{4c(d+ex)^{5/2}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{5e^6}+\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)^2(Bd-Ae)}{e^6}-\frac{2c^2(d+ex)^{9/2}(5Bd-Ae)}{9e^6}+\frac{2Bc^2(d+ex)^{11/2}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)^2*Sqrt[d + e*x])/e^6 + (2*(c*d^2 + a*e^2)*(
5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^6) - (4*c*(5*B*c*d^3
 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(5/2))/(5*e^6) + (4*c*(5*
B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(7/2))/(7*e^6) - (2*c^2*(5*B*d - A
*e)*(d + e*x)^(9/2))/(9*e^6) + (2*B*c^2*(d + e*x)^(11/2))/(11*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{d+ex}}\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5\sqrt{d+ex}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)\sqrt{d+ex}}{e^5}+\frac{2c\left(\right.}{}\right.$$

$$=-\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2\sqrt{d+ex}}{e^6}+\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)(d+ex)}{3e^6}$$

Mathematica [A] time = 0.16, size = 213, normalized size = 0.99

$$\frac{2\sqrt{d+ex}\left(11Ae\left(315a^2e^4+42ace^2\left(8d^2-4dex+3e^2x^2\right)+c^2\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right)\right)+B\left(1155a^2e^4(ex-2d)+198ace^2\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)-5c^2\left(256d^5-128d^4ex+96d^3e^2x^2-80d^2e^3x^3+70de^4x^4-63e^5x^5\right)\right)\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(11*A*e*(315*a^2*e^4 + 42*a*c*e^2*(8*d^2 - 4*d*e*x + 3*e^2
*x^2) + c^2*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*
x^4)) + B*(1155*a^2*e^4*(-2*d + e*x) + 198*a*c*e^2*(-16*d^3 + 8*d^2*e*x - 6
*d*e^2*x^2 + 5*e^3*x^3) - 5*c^2*(256*d^5 - 128*d^4*e*x + 96*d^3*e^2*x^2 - 8
0*d^2*e^3*x^3 + 70*d*e^4*x^4 - 63*e^5*x^5))))/(3465*e^6)
```

IntegrateAlgebraic [A] time = 0.13, size = 301, normalized size = 1.39

$$\frac{2\sqrt{d+ex}\left(3465a^2Ae^5+1155a^2Be^4(d+ex)-3465a^2Bde^4+6930aAcd^2e^3-4620aAcde^3(d+ex)+1386aAce^3(d+ex)^2-6930aBcd^3e^2+6930aBcd^2e^2(d+ex)-4158aBcde^2(d+ex)^2+990aBce^2(d+ex)^3+3465Ac^2d^4e-4620Ac^2d^3e(d+ex)+4158Ac^2d^2e(d+ex)^2-1980Ac^2de(d+ex)^3+385Ac^2e(d+ex)^4-3465Bc^2d^5+5775Bc^2d^4(d+ex)-6930Bc^2d^3(d+ex)^2+4950Bc^2d^2(d+ex)^3-1925Bc^2d(d+ex)^4+315Bc^2(d+ex)^5\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-3465*B*c^2*d^5 + 3465*A*c^2*d^4*e - 6930*a*B*c*d^3*e^2 +
 6930*a*A*c*d^2*e^3 - 3465*a^2*B*d*e^4 + 3465*a^2*A*e^5 + 5775*B*c^2*d^4*(d
 + e*x) - 4620*A*c^2*d^3*e*(d + e*x) + 6930*a*B*c*d^2*e^2*(d + e*x) - 4620*
a*A*c*d*e^3*(d + e*x) + 1155*a^2*B*e^4*(d + e*x) - 6930*B*c^2*d^3*(d + e*x)
^2 + 4158*A*c^2*d^2*e*(d + e*x)^2 - 4158*a*B*c*d*e^2*(d + e*x)^2 + 1386*a*A
*c*e^3*(d + e*x)^2 + 4950*B*c^2*d^2*(d + e*x)^3 - 1980*A*c^2*d*e*(d + e*x)^
3 + 990*a*B*c*e^2*(d + e*x)^3 - 1925*B*c^2*d*(d + e*x)^4 + 385*A*c^2*e*(d +
 e*x)^4 + 315*B*c^2*(d + e*x)^5))/(3465*e^6)
```

fricas [A] time = 0.39, size = 247, normalized size = 1.14

$$\frac{2\left(315\,Bc^2e^5x^5 - 1280\,Bc^2d^5 + 1408\,Ac^2d^4e - 3168\,Bacd^3e^2 + 3696\,Aacd^2e^3 - 2310\,Ba^2de^4 + 3465\,Aa^2e^5 - 35\left(10\,Bc^2de^4 - 11\,Ac^2e^5\right)x^4 + 10\left(40\,Bc^2d^2e^3 - 44\,Ac^2de^4 + 99\,Bace^5\right)x^3 - 6\left(80\,Bc^2d^3e^2 - 88\,Ac^2d^2e^3 + 198\,Bacde^4 - 231\,Aace^5\right)x^2 + \left(640\,Bc^2d^4e - 704\,Ac^2d^3e^2 + 1584\,Bacd^2e^3 - 1848\,Aacde^4 + 1155\,Ba^2e^5\right)x\right)\sqrt{ex+d}}{3465\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 1408*A*c^2*d^4*e - 3168*B*a*c*
d^3*e^2 + 3696*A*a*c*d^2*e^3 - 2310*B*a^2*d*e^4 + 3465*A*a^2*e^5 - 35*(10*B
*c^2*d*e^4 - 11*A*c^2*e^5)*x^4 + 10*(40*B*c^2*d^2*e^3 - 44*A*c^2*d*e^4 + 99
*B*a*c*e^5)*x^3 - 6*(80*B*c^2*d^3*e^2 - 88*A*c^2*d^2*e^3 + 198*B*a*c*d*e^4
- 231*A*a*c*e^5)*x^2 + (640*B*c^2*d^4*e - 704*A*c^2*d^3*e^2 + 1584*B*a*c*d^
2*e^3 - 1848*A*a*c*d*e^4 + 1155*B*a^2*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [A] time = 0.18, size = 295, normalized size = 1.37

$$\frac{2}{3465}\left(1155\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)Ba^2e^{(-1)} + 462\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^2\right)Aace^{(-2)} + 198\left(5\,(xe+d)^{\frac{7}{2}} - 21\,(xe+d)^{\frac{5}{2}}d + 35\,(xe+d)^{\frac{3}{2}}d^2 - 35\sqrt{xe+d}\,d^3\right)Bace^{(-3)} + 11\left(35\,(xe+d)^{\frac{9}{2}} - 180\,(xe+d)^{\frac{7}{2}}d + 378\,(xe+d)^{\frac{5}{2}}d^2 - 420\,(xe+d)^{\frac{3}{2}}d^3 + 315\sqrt{xe+d}\,d^4\right)Ac^2e^{(-4)} + 5\left(63\,(xe+d)^{\frac{11}{2}} - 385\,(xe+d)^{\frac{9}{2}}d + 990\,(xe+d)^{\frac{7}{2}}d^2 - 1386\,(xe+d)^{\frac{5}{2}}d^3 + 1155\,(xe+d)^{\frac{3}{2}}d^4 - 693\sqrt{xe+d}\,d^5\right)Bc^2e^{(-5)} + 3465\sqrt{xe+d}\,Aa^2\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*e^(-1) + 462*(3*(x
*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*c*e^(-2) +
 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 3
5*sqrt(x*e + d)*d^3)*B*a*c*e^(-3) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*A*c^2*e^(-4) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*B*c^2*e^(-5) + 3465*sqrt(x*e + d)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 259, normalized size = 1.20

$$\frac{2\sqrt{ex+d}\,\left(315B\,c^2x^5e^5 + 385A\,c^2e^5x^4 - 350B\,c^2d\,e^4x^4 - 440A\,c^2d\,e^4x^3 + 990Bac\,e^5x^3 + 400B\,c^2d^2e^3x^3 + 1386Aac\,e^5x^2 + 528A\,c^2d^2e^3x^2 - 1188Bacd\,e^4x^2 - 480B\,c^2d^3e^2x^2 - 1848Aacd\,e^4x - 704A\,c^2d^3e^2x + 1155B\,a^2e^5x + 1584Bac\,d^2e^3x + 640B\,c^2d^4ex + 3465A\,a^2e^5 + 3696A\,d^2ac\,e^3 + 1408A\,c^2d^4e - 2310B\,a^2d\,e^4 - 3168B\,d^3ac\,e^2 - 1280B\,c^2d^5\right)}{3465e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(1/2)*(315*B*c^2*e^5*x^5+385*A*c^2*e^5*x^4-350*B*c^2*d*e^4*x
^4-440*A*c^2*d*e^4*x^3+990*B*a*c*e^5*x^3+400*B*c^2*d^2*e^3*x^3+1386*A*a*c*e
^5*x^2+528*A*c^2*d^2*e^3*x^2-1188*B*a*c*d*e^4*x^2-480*B*c^2*d^3*e^2*x^2-184
8*A*a*c*d*e^4*x-704*A*c^2*d^3*e^2*x+1155*B*a^2*e^5*x+1584*B*a*c*d^2*e^3*x+6
40*B*c^2*d^4*e*x+3465*A*a^2*e^5+3696*A*a*c*d^2*e^3+1408*A*c^2*d^4*e-2310*B*
a^2*d*e^4-3168*B*a*c*d^3*e^2-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.46, size = 248, normalized size = 1.15

$$\frac{2\left(315\,(ex+d)^{\frac{11}{2}}Bc^2 - 385\left(5\,Bc^2d - Ac^2e\right)(ex+d)^{\frac{9}{2}} + 990\left(5\,Bc^2d^2 - 2\,Ac^2de + Bace^2\right)(ex+d)^{\frac{7}{2}} - 1386\left(5\,Bc^2d^3 - 3\,Ac^2d^2e + 3\,Bacde^2 - Aace^3\right)(ex+d)^{\frac{5}{2}} + 1155\left(5\,Bc^2d^4 - 4\,Ac^2d^3e + 6\,Bacd^2e^2 - 4\,Aacde^3 + Ba^2e^4\right)(ex+d)^{\frac{3}{2}} - 3465\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)\sqrt{ex+d}\right)}{3465\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c^2 - 385*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(9
/2) + 990*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(7/2) - 1386*(5
*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^(5/2) + 1
155*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*
e^4)*(e*x + d)^(3/2) - 3465*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*
A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*sqrt(e*x + d))/e^6
```

mupad [**B**] time = 1.71, size = 197, normalized size = 0.91

$$\frac{(d+ex)^{7/2}\left(20Bc^2d^2-8Ac^2de+4Bace^2\right)}{7e^6}+\frac{4c(d+ex)^{5/2}\left(-5Bcd^3+3Acd^2e-3Bade^2+Aae^3\right)}{5e^6}+\frac{2Bc^2(d+ex)^{11/2}}{11e^6}+\frac{2\left(cd^2+ae^2\right)(d+ex)^{3/2}\left(5Bcd^2-4Acde+Bae^2\right)}{3e^6}+\frac{2c^2(Ae-5Bd)(d+ex)^{9/2}}{9e^6}+\frac{2\left(cd^2+ae^2\right)^2(Ae-Bd)\sqrt{d+ex}}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(7*e^6) + (4*c
*(d + e*x)^(5/2)*(A*a*e^3 - 5*B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*e))/(5*e^6)
 + (2*B*c^2*(d + e*x)^(11/2))/(11*e^6) + (2*(a*e^2 + c*d^2)*(d + e*x)^(3/2)
*(B*a*e^2 + 5*B*c*d^2 - 4*A*c*d*e))/(3*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x
)^(9/2))/(9*e^6) + (2*(a*e^2 + c*d^2)^2*(A*e - B*d)*(d + e*x)^(1/2))/e^6
```

sympy [**A**] time = 79.70, size = 772, normalized size = 3.57

$$\begin{cases}\frac{-\frac{2Aa^2d}{\sqrt{d+ex}}-2Aa^2\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)-\frac{4Aacd\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{4Aac\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Ac^2d\left(\frac{d^4}{\sqrt{d+ex}}+4d^3\sqrt{d+ex}-2d^2(d+ex)^{\frac{3}{2}}+\frac{4d(d+ex)^{\frac{5}{2}}}{5}-\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^4}-\frac{2Ac^2\left(-\frac{d^5}{\sqrt{d+ex}}-5d^4\sqrt{d+ex}+\frac{10d^3(d+ex)^{\frac{3}{2}}}{3}-2d^2(d+ex)^{\frac{5}{2}}+\frac{5d(d+ex)^{\frac{7}{2}}}{7}-\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^4}-\frac{2Ba^2d\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{2Ba^2\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{4Bacd\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^3}-\frac{4Bac\left(\frac{d^4}{\sqrt{d+ex}}+4d^3\sqrt{d+ex}-2d^2(d+ex)^{\frac{3}{2}}+\frac{4d(d+ex)^{\frac{5}{2}}}{5}-\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}-\frac{2Bc^2d\left(-\frac{d^5}{\sqrt{d+ex}}-5d^4\sqrt{d+ex}+\frac{10d^3(d+ex)^{\frac{3}{2}}}{3}-2d^2(d+ex)^{\frac{5}{2}}+\frac{5d(d+ex)^{\frac{7}{2}}}{7}-\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^5}-\frac{2Bc^2\left(\frac{d^6}{\sqrt{d+ex}}+6d^5\sqrt{d+ex}-5d^4(d+ex)^{\frac{3}{2}}+4d^3(d+ex)^{\frac{5}{2}}-\frac{15d^2(d+ex)^{\frac{7}{2}}}{7}+\frac{2d(d+ex)^{\frac{9}{2}}}{3}-\frac{(d+ex)^{\frac{11}{2}}}{11}\right)}{e^5}}{e} & \text{for } e \neq 0 \\ \frac{Aa^2x+\frac{2Aacx^3}{3}+\frac{Ac^2x^5}{5}+\frac{Ba^2x^2}{2}+\frac{Bacx^4}{2}+\frac{Bc^2x^6}{6}}{\sqrt{d}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**2*d/sqrt(d + e*x) - 2*A*a**2*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 4*A*a*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(
3/2)/3)/e**2 - 4*A*a*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d +
 e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 2*A*c**2*d*(d**4/sqrt(d + e*x) +
4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (
d + e*x)**(7/2)/7)/e**4 - 2*A*c**2*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e
*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)*
*(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*a**2*d*(-d/sqrt(d + e*x) - sqrt(d
 + e*x))/e - 2*B*a**2*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**
(3/2)/3)/e - 4*B*a*c*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d +
 e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 4*B*a*c*(d**4/sqrt(d + e*x) + 4*d
**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d +
 e*x)**(7/2)/7)/e**3 - 2*B*c**2*d*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*
x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**
(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 2*B*c**2*(d**6/sqrt(d + e*x) + 6*d**5*
sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**2
*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**5)/
e, Ne(e, 0)), ((A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5/5 + B*a**2*x**2/2 +
 B*a*c*x**4/2 + B*c**2*x**6/6)/sqrt(d), True))
```

3.1263 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{4c(d+ex)^{5/2}\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6}+\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6}+\frac{2\left(ae^2+cd^2\right)^2(Bd-}{e^6\sqrt{d+ex}}$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c(d+ex)^{5/2}\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6}-\frac{4c(d+ex)^{3/2}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6}+\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{e^6\sqrt{d+ex}}-\frac{2c^2(d+ex)^{7/2}(5Bd-Ae)}{7e^6}+\frac{2Bc^2(d+ex)^{9/2}}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(e^6*Sqrt[d + e*x]) + (2*(c*d^2 + a*e^2)*
(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^6 - (4*c*(5*B*c*d^3 - 3*
A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(3/2))/(3*e^6) + (4*c*(5*B*c*d
^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^6) - (2*c^2*(5*B*d - A*e)*(
d + e*x)^(7/2))/(7*e^6) + (2*B*c^2*(d + e*x)^(9/2))/(9*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{3/2}}\,dx&=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{3/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5\sqrt{d+ex}}+\frac{2c\left(-5Bc\right.}{}\right.\\&=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{e^6\sqrt{d+ex}}+\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)\sqrt{d+ex}}{e^6}-\frac{4c\left(\right.}{}\end{aligned}$$

Mathematica [A] time = 0.14, size = 214, normalized size = 1.00

$$\frac{2B\left(315a^2e^4(2d+ex)+126ace^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+5c^2\left(256d^5+128d^4ex-32d^3e^2x^2+16d^2e^3x^3-10de^4x^4+7e^5x^5\right)\right)-6Ae\left(105a^2e^4+70ace^2\left(8d^2+4dex-e^2x^2\right)+3c^2\left(128d^4+64d^3ex-16d^2e^2x^2+8de^3x^3-5e^4x^4\right)\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (-6*A*e*(105*a^2*e^4 + 70*a*c*e^2*(8*d^2 + 4*d*e*x - e^2*x^2) + 3*c^2*(128*
d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4)) + 2*B*(315*a^
2*e^4*(2*d + e*x) + 126*a*c*e^2*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3
) + 5*c^2*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e
^4*x^4 + 7*e^5*x^5)))/(315*e^6*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.14, size = 301, normalized size = 1.41

$$\frac{2\left(-315a^2Ae^5+315a^2Be^4(d+ex)+315a^2Bde^4-630aAcd^2e^3-1260aAcde^3(d+ex)+210aAce^3(d+ex)^2+630aBcd^3e^2+1890aBcd^2e^2(d+ex)-630aBcde^2(d+ex)^2+126aBce^2(d+ex)^3-315Ac^2d^4e-1260Ac^2d^3e(d+ex)+630Ac^2d^2e(d+ex)^2-252Ac^2de(d+ex)^3+45Ac^2e(d+ex)^4+315Bc^2d^5+1575Bc^2d^4(d+ex)-1050Bc^2d^3(d+ex)^2+630Bc^2d^2(d+ex)^3-225Bc^2d(d+ex)^4+35Bc^2(d+ex)^5\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(315*B*c^2*d^5 - 315*A*c^2*d^4*e + 630*a*B*c*d^3*e^2 - 630*a*A*c*d^2*e^3
 + 315*a^2*B*d*e^4 - 315*a^2*A*e^5 + 1575*B*c^2*d^4*(d + e*x) - 1260*A*c^2*
d^3*e*(d + e*x) + 1890*a*B*c*d^2*e^2*(d + e*x) - 1260*a*A*c*d*e^3*(d + e*x)
 + 315*a^2*B*e^4*(d + e*x) - 1050*B*c^2*d^3*(d + e*x)^2 + 630*A*c^2*d^2*e*(
d + e*x)^2 - 630*a*B*c*d*e^2*(d + e*x)^2 + 210*a*A*c*e^3*(d + e*x)^2 + 630*
B*c^2*d^2*(d + e*x)^3 - 252*A*c^2*d*e*(d + e*x)^3 + 126*a*B*c*e^2*(d + e*x)
^3 - 225*B*c^2*d*(d + e*x)^4 + 45*A*c^2*e*(d + e*x)^4 + 35*B*c^2*(d + e*x)^
5))/(315*e^6*Sqrt[d + e*x])
```

fricas [A] time = 0.41, size = 257, normalized size = 1.20

$$\frac{2\left(35\,Bc^2e^5x^5 + 1280\,Bc^2d^5 - 1152\,Ac^2d^4e + 2016\,Bacd^3e^2 - 1680\,Aacd^2e^3 + 630\,Ba^2de^4 - 315\,Aa^2e^5 - 5\left(10\,Bc^2de^4 - 9\,Ac^2e^5\right)x^4 + 2\left(40\,Bc^2d^2e^3 - 36\,Ac^2de^4 + 63\,Bace^5\right)x^3 - 2\left(80\,Bc^2d^3e^2 - 72\,Ac^2d^2e^3 + 126\,Bacde^4 - 105\,Aace^5\right)x^2 + \left(640\,Bc^2d^4e - 576\,Ac^2d^3e^2 + 1008\,Bacd^2e^3 - 840\,Aacde^4 + 315\,Ba^2e^5\right)x\right)\sqrt{ex+d}}{315\left(e^7x + de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*e^5*x^5 + 1280*B*c^2*d^5 - 1152*A*c^2*d^4*e + 2016*B*a*c*d^
3*e^2 - 1680*A*a*c*d^2*e^3 + 630*B*a^2*d*e^4 - 315*A*a^2*e^5 - 5*(10*B*c^2*
d*e^4 - 9*A*c^2*e^5)*x^4 + 2*(40*B*c^2*d^2*e^3 - 36*A*c^2*d*e^4 + 63*B*a*c*
e^5)*x^3 - 2*(80*B*c^2*d^3*e^2 - 72*A*c^2*d^2*e^3 + 126*B*a*c*d*e^4 - 105*A
*a*c*e^5)*x^2 + (640*B*c^2*d^4*e - 576*A*c^2*d^3*e^2 + 1008*B*a*c*d^2*e^3 -
 840*A*a*c*d*e^4 + 315*B*a^2*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [A] time = 0.19, size = 331, normalized size = 1.55

$$\frac{2}{315}\left(35\,(xe+d)^{\frac{9}{2}}Bc^2e^{48} - 225\,(xe+d)^{\frac{7}{2}}Bc^2de^{48} + 630\,(xe+d)^{\frac{5}{2}}Bc^2d^2e^{48} - 1050\,(xe+d)^{\frac{3}{2}}Bc^2d^3e^{48} + 1575\,\sqrt{xe+d}\,Bc^2d^4e^{48} + 45\,(xe+d)^{\frac{7}{2}}Ac^2e^{49} - 252\,(xe+d)^{\frac{5}{2}}Ac^2de^{49} + 630\,(xe+d)^{\frac{3}{2}}Ac^2d^2e^{49} - 1260\,\sqrt{xe+d}\,Ac^2d^3e^{49} + 126\,(xe+d)^{\frac{5}{2}}Bace^{50} - 630\,(xe+d)^{\frac{3}{2}}Bacde^{50} + 1890\,\sqrt{xe+d}\,Bacd^2e^{50} + 210\,(xe+d)^{\frac{3}{2}}Aace^{51} - 1260\,\sqrt{xe+d}\,Aacde^{51} + 315\,\sqrt{xe+d}\,Ba^2e^{52}\right)e^{(-54)} + \frac{2\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)e^{(-6)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*c^2*e^48 - 225*(x*e + d)^(7/2)*B*c^2*d*e^48 + 6
30*(x*e + d)^(5/2)*B*c^2*d^2*e^48 - 1050*(x*e + d)^(3/2)*B*c^2*d^3*e^48 + 1
575*sqrt(x*e + d)*B*c^2*d^4*e^48 + 45*(x*e + d)^(7/2)*A*c^2*e^49 - 252*(x*e
 + d)^(5/2)*A*c^2*d*e^49 + 630*(x*e + d)^(3/2)*A*c^2*d^2*e^49 - 1260*sqrt(x
*e + d)*A*c^2*d^3*e^49 + 126*(x*e + d)^(5/2)*B*a*c*e^50 - 630*(x*e + d)^(3/
2)*B*a*c*d*e^50 + 1890*sqrt(x*e + d)*B*a*c*d^2*e^50 + 210*(x*e + d)^(3/2)*A
*a*c*e^51 - 1260*sqrt(x*e + d)*A*a*c*d*e^51 + 315*sqrt(x*e + d)*B*a^2*e^52)
*e^(-54) + 2*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 +
 B*a^2*d*e^4 - A*a^2*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-35B\,c^2x^5e^5 - 45A\,c^2e^5x^4 + 50B\,c^2d\,e^4x^4 + 72A\,c^2d\,e^4x^3 - 126Bac\,e^5x^3 - 80B\,c^2d^2e^3x^3 - 210Aac\,e^5x^2 - 144A\,c^2d^2e^3x^2 + 252Bacd\,e^4x^2 + 160B\,c^2d^3e^2x^2 + 840Aacd\,e^4x + 576A\,c^2d^3e^2x - 315B\,a^2e^5x - 1008Bac\,d^2e^3x - 640B\,c^2d^4ex + 315A\,a^2e^5 + 1680A\,d^2ac\,e^3 + 1152A\,c^2d^4e - 630B\,a^2d\,e^4 - 2016B\,d^3ac\,e^2 - 1280B\,c^2d^5\right)}{315\sqrt{ex+d}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315/(e*x+d)^(1/2)*(-35*B*c^2*e^5*x^5-45*A*c^2*e^5*x^4+50*B*c^2*d*e^4*x^4
+72*A*c^2*d*e^4*x^3-126*B*a*c*e^5*x^3-80*B*c^2*d^2*e^3*x^3-210*A*a*c*e^5*x^
2-144*A*c^2*d^2*e^3*x^2+252*B*a*c*d*e^4*x^2+160*B*c^2*d^3*e^2*x^2+840*A*a*c
*d*e^4*x+576*A*c^2*d^3*e^2*x-315*B*a^2*e^5*x-1008*B*a*c*d^2*e^3*x-640*B*c^2
*d^4*e*x+315*A*a^2*e^5+1680*A*a*c*d^2*e^3+1152*A*c^2*d^4*e-630*B*a^2*d*e^4-
2016*B*a*c*d^3*e^2-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.48, size = 256, normalized size = 1.20

$$\frac{2\left(\frac{35\,(ex+d)^{\frac{9}{2}}Bc^2 - 45\left(5\,Bc^2d - Ac^2e\right)(ex+d)^{\frac{7}{2}} + 126\left(5\,Bc^2d^2 - 2\,Ac^2de + Bace^2\right)(ex+d)^{\frac{5}{2}} - 210\left(5\,Bc^2d^3 - 3\,Ac^2d^2e + 3\,Bacde^2 - Aace^3\right)(ex+d)^{\frac{3}{2}} + 315\left(5\,Bc^2d^4 - 4\,Ac^2d^3e + 6\,Bacd^2e^2 - 4\,Aacde^3 + Ba^2e^4\right)\sqrt{ex+d}}{e^5} + \frac{315\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)}{\sqrt{ex+d}\,e^5}\right)}{315\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*c^2 - 45*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(7/2)
 + 126*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(5/2) - 210*(5*B*c
^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^(3/2) + 315*(
5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*
sqrt(e*x + d))/e^5 + 315*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a
*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 0.07, size = 237, normalized size = 1.11

$$\frac{(d+e\,x)^{5/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{5\,e^6}-\frac{-2\,B\,a^2\,d\,e^4+2\,A\,a^2\,e^5-4\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3-2\,B\,c^2\,d^5+2\,A\,c^2\,d^4\,e}{e^6\,\sqrt{d+e\,x}}+\frac{4\,c\,(d+e\,x)^{3/2}\,\left(-5\,B\,c\,d^3+3\,A\,c\,d^2\,e-3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{3\,e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{9/2}}{9\,e^6}+\frac{2\,\left(c\,d^2+a\,e^2\right)\,\sqrt{d+e\,x}\,\left(5\,B\,c\,d^2-4\,A\,c\,d\,e+B\,a\,e^2\right)}{e^6}+\frac{2\,c^2\,(A\,e-5\,B\,d)\,(d+e\,x)^{7/2}}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(5*e^6) - (2*A
*a^2*e^5 - 2*B*c^2*d^5 - 2*B*a^2*d*e^4 + 2*A*c^2*d^4*e + 4*A*a*c*d^2*e^3 -
4*B*a*c*d^3*e^2)/(e^6*(d + e*x)^(1/2)) + (4*c*(d + e*x)^(3/2)*(A*a*e^3 - 5*
B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*e))/(3*e^6) + (2*B*c^2*(d + e*x)^(9/2))/(
9*e^6) + (2*(a*e^2 + c*d^2)*(d + e*x)^(1/2)*(B*a*e^2 + 5*B*c*d^2 - 4*A*c*d*
e))/e^6 + (2*c^2*(A*e - 5*B*d)*(d + e*x)^(7/2))/(7*e^6)
```

sympy [A] time = 48.99, size = 253, normalized size = 1.18

$$\frac{2Bc^2\,(d+ex)^{\frac{9}{2}}}{9e^6}+\frac{(d+ex)^{\frac{7}{2}}\left(2Ac^2e-10Bc^2d\right)}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(-8Ac^2de+4Bace^2+20Bc^2d^2\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(4Aace^3+12Ac^2d^2e-12Bacde^2-20Bc^2d^3\right)}{3e^6}+\frac{\sqrt{d+ex}\left(-8Aacde^3-8Ac^2d^3e+2Ba^2e^4+12Bacd^2e^2+10Bc^2d^4\right)}{e^6}+\frac{2\,(-Ae+Bd)\left(ae^2+cd^2\right)^2}{e^6\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(2*A*c**2*e - 10*B*c*
*2*d)/(7*e**6) + (d + e*x)**(5/2)*(-8*A*c**2*d*e + 4*B*a*c*e**2 + 20*B*c**2
*d**2)/(5*e**6) + (d + e*x)**(3/2)*(4*A*a*c*e**3 + 12*A*c**2*d**2*e - 12*B*
a*c*d*e**2 - 20*B*c**2*d**3)/(3*e**6) + sqrt(d + e*x)*(-8*A*a*c*d*e**3 - 8*
A*c**2*d**3*e + 2*B*a**2*e**4 + 12*B*a*c*d**2*e**2 + 10*B*c**2*d**4)/e**6 +
 2*(-A*e + B*d)*(a*e**2 + c*d**2)**2/(e**6*sqrt(d + e*x))
```

3.1264 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=214

$$\frac{4c(d+ex)^{3/2}\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^{3/2}}-\frac{4c\sqrt{d+}}{}$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c(d+ex)^{3/2}\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}-\frac{4c\sqrt{d+ex}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^{3/2}}-\frac{2c^2(d+ex)^{5/2}(5Bd-Ae)}{5e^6}+\frac{2Bc^2(d+ex)^{7/2}}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(3*e^6*(d + e*x)^(3/2)) - (2*(c*d^2 + a*e
^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(e^6*Sqrt[d + e*x]) - (4*c*(5*B*c*d^
3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*Sqrt[d + e*x])/e^6 + (4*c*(5*B*c*d
^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^6) - (2*c^2*(5*B*d - A*e)*(
d + e*x)^(5/2))/(5*e^6) + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{5/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{5/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^{3/2}}+\frac{2c\left(-5Bcd^3+\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{3e^6(d+ex)^{3/2}}-\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^6\sqrt{d+ex}}-\frac{4c\left(5Bcd^3-3A\right.}{}$$

Mathematica [A] time = 0.14, size = 214, normalized size = 1.00

$$\frac{14Ae\left(-5a^2e^4+10ace^2\left(8d^2+12dex+3e^2x^2\right)+c^2\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)\right)-10B\left(7a^2e^4(2d+3ex)+14ace^2\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)+c^2\left(256d^5+384d^4ex+96d^3e^2x^2-16d^2e^3x^3+6de^4x^4-3e^5x^5\right)\right)}{105e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (14*A*e*(-5*a^2*e^4 + 10*a*c*e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + c^2*(128*
d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)) - 10*B*(7*a^
2*e^4*(2*d + 3*e*x) + 14*a*c*e^2*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x
^3) + c^2*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^
4*x^4 - 3*e^5*x^5)))/(105*e^6*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.14, size = 301, normalized size = 1.41

$$\frac{2\left(-35a^2Ae^5-105a^2Be^4(d+ex)+35a^2Bde^4-70aAcd^2e^3+420aAcde^3(d+ex)+210aAce^3(d+ex)^2+70aBcd^3e^2-630aBcd^2e^2(d+ex)-630aBcde^2(d+ex)^2+70aBce^2(d+ex)^3-35Ac^2d^4e+420Ac^2d^3e(d+ex)+630Ac^2d^2e(d+ex)^2-140Ac^2de(d+ex)^3+21Ac^2e(d+ex)^4+35Bc^2d^5-525Bc^2d^4(d+ex)-1050Bc^2d^3(d+ex)^2+350Bc^2d^2(d+ex)^3-105Bc^2d(d+ex)^4+15Bc^2(d+ex)^5\right)}{105e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(35*B*c^2*d^5 - 35*A*c^2*d^4*e + 70*a*B*c*d^3*e^2 - 70*a*A*c*d^2*e^3 + 3
5*a^2*B*d*e^4 - 35*a^2*A*e^5 - 525*B*c^2*d^4*(d + e*x) + 420*A*c^2*d^3*e*(d
 + e*x) - 630*a*B*c*d^2*e^2*(d + e*x) + 420*a*A*c*d*e^3*(d + e*x) - 105*a^2
*B*e^4*(d + e*x) - 1050*B*c^2*d^3*(d + e*x)^2 + 630*A*c^2*d^2*e*(d + e*x)^2
 - 630*a*B*c*d*e^2*(d + e*x)^2 + 210*a*A*c*e^3*(d + e*x)^2 + 350*B*c^2*d^2*
(d + e*x)^3 - 140*A*c^2*d*e*(d + e*x)^3 + 70*a*B*c*e^2*(d + e*x)^3 - 105*B*
c^2*d*(d + e*x)^4 + 21*A*c^2*e*(d + e*x)^4 + 15*B*c^2*(d + e*x)^5))/(105*e^
6*(d + e*x)^(3/2))
```

fricas [A] time = 0.40, size = 269, normalized size = 1.26

$$\frac{2\left(15 Bc^2e^5x^5 - 1280 Bc^2d^5 + 896 Ac^2d^4e - 1120 Bacd^3e^2 + 560 Aacd^2e^3 - 70 Ba^2de^4 - 35 Aa^2e^5 - 3\left(10 Bc^2de^4 - 7 Ac^2e^5\right)x^4 + 2\left(40 Bc^2d^2e^3 - 28 Ac^2de^4 + 35 Bace^5\right)x^3 - 6\left(80 Bc^2d^3e^2 - 56 Ac^2d^2e^3 + 70 Bacde^4 - 35 Aace^5\right)x^2 - 3\left(640 Bc^2d^4e - 448 Ac^2d^3e^2 + 560 Bacd^2e^3 - 280 Aacde^4 + 35 Ba^2e^5\right)x\right)\sqrt{ex+d}}{105\left(e^8x^2 + 2 de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 896*A*c^2*d^4*e - 1120*B*a*c*d^3
*e^2 + 560*A*a*c*d^2*e^3 - 70*B*a^2*d*e^4 - 35*A*a^2*e^5 - 3*(10*B*c^2*d*e^
4 - 7*A*c^2*e^5)*x^4 + 2*(40*B*c^2*d^2*e^3 - 28*A*c^2*d*e^4 + 35*B*a*c*e^5)
*x^3 - 6*(80*B*c^2*d^3*e^2 - 56*A*c^2*d^2*e^3 + 70*B*a*c*d*e^4 - 35*A*a*c*e
^5)*x^2 - 3*(640*B*c^2*d^4*e - 448*A*c^2*d^3*e^2 + 560*B*a*c*d^2*e^3 - 280*
A*a*c*d*e^4 + 35*B*a^2*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6
)
```

giac [A] time = 0.27, size = 319, normalized size = 1.49

$$\frac{2}{105}\left(15 (xe + d)^{\frac{7}{2}} Bc^2e^{36} - 105 (xe + d)^{\frac{5}{2}} Bc^2de^{36} + 350 (xe + d)^{\frac{3}{2}} Bc^2d^2e^{36} - 1050 \sqrt{xe + d}\, Bc^2d^3e^{36} + 21 (xe + d)^{\frac{5}{2}} Ac^2e^{37} - 140 (xe + d)^{\frac{3}{2}} Ac^2de^{37} + 630 \sqrt{xe + d}\, Ac^2d^2e^{37} + 70 (xe + d)^{\frac{3}{2}} Bace^{38} - 630 \sqrt{xe + d}\, Bacde^{38} + 210 \sqrt{xe + d}\, Aace^{39}\right)e^{(-42)} - \frac{2\left(15 (xe + d)Bc^2d^4 - Bc^2d^5 - 12 (xe + d)Ac^2d^3e + Ac^2d^4e + 18 (xe + d)Bacd^2e^2 - 2 Bacd^3e^2 - 12 (xe + d)Aacde^3 + 2 Aacd^2e^3 + 3 (xe + d)Ba^2e^4 - Ba^2de^4 + Aa^2e^5\right)e^{(-6)}}{3 (xe + d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*c^2*e^36 - 105*(x*e + d)^(5/2)*B*c^2*d*e^36 + 3
50*(x*e + d)^(3/2)*B*c^2*d^2*e^36 - 1050*sqrt(x*e + d)*B*c^2*d^3*e^36 + 21*
(x*e + d)^(5/2)*A*c^2*e^37 - 140*(x*e + d)^(3/2)*A*c^2*d*e^37 + 630*sqrt(x*
e + d)*A*c^2*d^2*e^37 + 70*(x*e + d)^(3/2)*B*a*c*e^38 - 630*sqrt(x*e + d)*B
*a*c*d*e^38 + 210*sqrt(x*e + d)*A*a*c*e^39)*e^(-42) - 2/3*(15*(x*e + d)*B*c
^2*d^4 - B*c^2*d^5 - 12*(x*e + d)*A*c^2*d^3*e + A*c^2*d^4*e + 18*(x*e + d)*
B*a*c*d^2*e^2 - 2*B*a*c*d^3*e^2 - 12*(x*e + d)*A*a*c*d*e^3 + 2*A*a*c*d^2*e^
3 + 3*(x*e + d)*B*a^2*e^4 - B*a^2*d*e^4 + A*a^2*e^5)*e^(-6)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-15B c^2x^5e^5 - 21A c^2e^5x^4 + 30B c^2d e^4x^4 + 56A c^2d e^4x^3 - 70Bac e^5x^3 - 80B c^2d^2e^3x^3 - 210Aac e^5x^2 - 336A c^2d^2e^3x^2 + 420Bacd e^4x^2 + 480B c^2d^3e^2x^2 - 840Aacd e^4x - 1344A c^2d^3e^2x + 105B a^2e^5x + 1680Bac d^2e^3x + 1920B c^2d^4ex + 35A a^2e^5 - 560A d^2ac e^3 - 896A c^2d^4e + 70B a^2d e^4 + 1120B d^3ac e^2 + 1280B c^2d^5\right)}{105 (ex + d)^{\frac{3}{2}} e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/105/(e*x+d)^(3/2)*(-15*B*c^2*e^5*x^5-21*A*c^2*e^5*x^4+30*B*c^2*d*e^4*x^4
+56*A*c^2*d*e^4*x^3-70*B*a*c*e^5*x^3-80*B*c^2*d^2*e^3*x^3-210*A*a*c*e^5*x^2
-336*A*c^2*d^2*e^3*x^2+420*B*a*c*d*e^4*x^2+480*B*c^2*d^3*e^2*x^2-840*A*a*c*
d*e^4*x-1344*A*c^2*d^3*e^2*x+105*B*a^2*e^5*x+1680*B*a*c*d^2*e^3*x+1920*B*c^
2*d^4*e*x+35*A*a^2*e^5-560*A*a*c*d^2*e^3-896*A*c^2*d^4*e+70*B*a^2*d*e^4+112
0*B*a*c*d^3*e^2+1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.68, size = 254, normalized size = 1.19

$$\frac{2\left(\frac{15 (ex+d)^{\frac{7}{2}} Bc^2 - 21\left(5 Bc^2d - Ac^2e\right)(ex+d)^{\frac{5}{2}} + 70\left(5 Bc^2d^2 - 2 Ac^2de + Bace^2\right)(ex+d)^{\frac{3}{2}} - 210\left(5 Bc^2d^3 - 3 Ac^2d^2e + 3 Bacde^2 - Aace^3\right)\sqrt{ex+d}}{e^5} + \frac{35\left(Bc^2d^5 - Ac^2d^4e + 2 Bacd^3e^2 - 2 Aacd^2e^3 + Ba^2de^4 - Aa^2e^5 - 3\left(5 Bc^2d^4 - 4 Ac^2d^3e + 6 Bacd^2e^2 - 4 Aacde^3 + Ba^2e^4\right)(ex+d)\right)}{(ex+d)^{\frac{3}{2}} e^5}\right)}{105 e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*(e*x + d)^(7/2)*B*c^2 - 21*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(5/2)
 + 70*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(3/2) - 210*(5*B*c^
2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*sqrt(e*x + d))/e^5 + 35*
(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4
- A*a^2*e^5 - 3*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*
e^3 + B*a^2*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 1.73, size = 249, normalized size = 1.16

$$\frac{(d+e\,x)^{3/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{3\,e^6}-\frac{(d+e\,x)\,\left(2\,B\,a^2\,e^4+12\,B\,a\,c\,d^2\,e^2-8\,A\,a\,c\,d\,e^3+10\,B\,c^2\,d^4-8\,A\,c^2\,d^3\,e\right)+\frac{2\,A\,a^2\,e^5}{3}-\frac{2\,B\,c^2\,d^5}{3}-\frac{2\,B\,a^2\,d\,e^4}{3}+\frac{2\,A\,c^2\,d^4\,e}{3}+\frac{4\,A\,a\,c\,d^2\,e^3}{3}-\frac{4\,B\,a\,c\,d^3\,e^2}{3}}{e^6\,(d+e\,x)^{3/2}}+\frac{4\,c\,\sqrt{d+e\,x}\,\left(-5\,B\,c\,d^3+3\,A\,c\,d^2\,e-3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{e^6}+\frac{2\,B\,c^2\,(d+e\,x)^{7/2}}{7\,e^6}+\frac{2\,c^2\,(A\,e-5\,B\,d)\,(d+e\,x)^{5/2}}{5\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(3*e^6) - ((d
+ e*x)*(2*B*a^2*e^4 + 10*B*c^2*d^4 - 8*A*c^2*d^3*e - 8*A*a*c*d*e^3 + 12*B*a
*c*d^2*e^2) + (2*A*a^2*e^5)/3 - (2*B*c^2*d^5)/3 - (2*B*a^2*d*e^4)/3 + (2*A*
c^2*d^4*e)/3 + (4*A*a*c*d^2*e^3)/3 - (4*B*a*c*d^3*e^2)/3)/(e^6*(d + e*x)^(3
/2)) + (4*c*(d + e*x)^(1/2)*(A*a*e^3 - 5*B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*
e))/e^6 + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x
)^(5/2))/(5*e^6)
```

sympy [A] time = 61.95, size = 231, normalized size = 1.08

$$\frac{2Bc^2(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(2Ac^2e-10Bc^2d\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(-8Ac^2de+4Bace^2+20Bc^2d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\left(4Aace^3+12Ac^2d^2e-12Bacde^2-20Bc^2d^3\right)}{e^6}-\frac{2\left(ae^2+cd^2\right)\left(-4Acde+Bae^2+5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{2(-Ae+Bd)\left(ae^2+cd^2\right)^2}{3e^6(d+ex)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(7/2)/(7*e**6) + (d + e*x)**(5/2)*(2*A*c**2*e - 10*B*c*
*2*d)/(5*e**6) + (d + e*x)**(3/2)*(-8*A*c**2*d*e + 4*B*a*c*e**2 + 20*B*c**2
*d**2)/(3*e**6) + sqrt(d + e*x)*(4*A*a*c*e**3 + 12*A*c**2*d**2*e - 12*B*a*c
*d*e**2 - 20*B*c**2*d**3)/e**6 - 2*(a*e**2 + c*d**2)*(-4*A*c*d*e + B*a*e**2
 + 5*B*c*d**2)/(e**6*sqrt(d + e*x)) + 2*(-A*e + B*d)*(a*e**2 + c*d**2)**2/(
3*e**6*(d + e*x)**(3/2))
```

3.1265 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=214

$$\frac{4c\sqrt{d+ex}\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{5e^6(d+ex)^{5/2}}+\frac{4c\left(-\right.}{}$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c\sqrt{d+ex}\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}+\frac{4c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6\sqrt{d+ex}}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{5e^6(d+ex)^{5/2}}-\frac{2c^2(d+ex)^{3/2}(5Bd-Ae)}{3e^6}+\frac{2Bc^2(d+ex)^{5/2}}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(5*e^6*(d + e*x)^(5/2)) - (2*(c*d^2 + a*e
^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^(3/2)) + (4*c*(5*B*
c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^6*Sqrt[d + e*x]) + (4*c*(5
*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^6 - (2*c^2*(5*B*d - A*e)*(
d + e*x)^(3/2))/(3*e^6) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{7/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{7/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^{5/2}}+\frac{2c\left(-5Bc\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{5e^6(d+ex)^{5/2}}-\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{3e^6(d+ex)^{3/2}}+\frac{4c\left(5Bcd^3-\right.}{}\end{aligned}$$

Mathematica [A] time = 0.14, size = 212, normalized size = 0.99

$$-\frac{2\left(3a^2Ae^5+a^2Be^4(2d+5ex)+2aAce^3\left(8d^2+20dex+15e^2x^2\right)-6aBce^2\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)+Ac^2e\left(128d^4+320d^3ex+240d^2e^2x^2+40de^3x^3-5e^4x^4\right)-Bc^2\left(256d^5+640d^4ex+480d^3e^2x^2+80d^2e^3x^3-10de^4x^4+3e^5x^5\right)\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(3*a^2*A*e^5 + a^2*B*e^4*(2*d + 5*e*x) + 2*a*A*c*e^3*(8*d^2 + 20*d*e*x
+ 15*e^2*x^2) - 6*a*B*c*e^2*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3
) + A*c^2*e*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*e^3*x^3 - 5*e^4
*x^4) - B*c^2*(256*d^5 + 640*d^4*e*x + 480*d^3*e^2*x^2 + 80*d^2*e^3*x^3 - 1
0*d*e^4*x^4 + 3*e^5*x^5)))/(15*e^6*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.14, size = 301, normalized size = 1.41

$$\frac{2\left(-3a^2Ae^5-5a^2Be^4(d+ex)+3a^2Bde^4-6aAcd^2e^3+20aAcde^3(d+ex)-30aAce^3(d+ex)^2+6aBcd^3e^2-30aBcd^2e^2(d+ex)+90aBcde^2(d+ex)^2+30aBce^2(d+ex)^3-3Ac^2d^4e+20Ac^2d^3e(d+ex)-90Ac^2d^2e(d+ex)^2-60Ac^2de(d+ex)^3+5Ac^2e(d+ex)^4+3Bc^2d^5-25Bc^2d^4(d+ex)+150Bc^2d^3(d+ex)^2+150Bc^2d^2(d+ex)^3-25Bc^2d(d+ex)^4+3Bc^2(d+ex)^5\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*B*c^2*d^5 - 3*A*c^2*d^4*e + 6*a*B*c*d^3*e^2 - 6*a*A*c*d^2*e^3 + 3*a^2
*B*d*e^4 - 3*a^2*A*e^5 - 25*B*c^2*d^4*(d + e*x) + 20*A*c^2*d^3*e*(d + e*x)
- 30*a*B*c*d^2*e^2*(d + e*x) + 20*a*A*c*d*e^3*(d + e*x) - 5*a^2*B*e^4*(d +
e*x) + 150*B*c^2*d^3*(d + e*x)^2 - 90*A*c^2*d^2*e*(d + e*x)^2 + 90*a*B*c*d*
e^2*(d + e*x)^2 - 30*a*A*c*e^3*(d + e*x)^2 + 150*B*c^2*d^2*(d + e*x)^3 - 60
*A*c^2*d*e*(d + e*x)^3 + 30*a*B*c*e^2*(d + e*x)^3 - 25*B*c^2*d*(d + e*x)^4
+ 5*A*c^2*e*(d + e*x)^4 + 3*B*c^2*(d + e*x)^5))/(15*e^6*(d + e*x)^(5/2))
```

fricas [A] time = 0.42, size = 280, normalized size = 1.31

$$\frac{2\left(3\,Bc^2e^5x^5 + 256\,Bc^2d^5 - 128\,Ac^2d^4e + 96\,Bacd^3e^2 - 16\,Aacd^2e^3 - 2\,Ba^2de^4 - 3\,Aa^2e^5 - 5\left(2\,Bc^2de^4 - Ac^2e^5\right)x^4 + 10\left(8\,Bc^2d^2e^3 - 4\,Ac^2de^4 + 3\,Bace^5\right)x^3 + 30\left(16\,Bc^2d^3e^2 - 8\,Ac^2d^2e^3 + 6\,Bacde^4 - Aace^5\right)x^2 + 5\left(128\,Bc^2d^4e - 64\,Ac^2d^3e^2 + 48\,Bacd^2e^3 - 8\,Aacde^4 - Ba^2e^5\right)x\right)\sqrt{ex+d}}{15\left(e^9x^3 + 3\,de^8x^2 + 3\,d^2e^7x + d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*e^5*x^5 + 256*B*c^2*d^5 - 128*A*c^2*d^4*e + 96*B*a*c*d^3*e^2
- 16*A*a*c*d^2*e^3 - 2*B*a^2*d*e^4 - 3*A*a^2*e^5 - 5*(2*B*c^2*d*e^4 - A*c^2
*e^5)*x^4 + 10*(8*B*c^2*d^2*e^3 - 4*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 30*(16
*B*c^2*d^3*e^2 - 8*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 - A*a*c*e^5)*x^2 + 5*(128*
B*c^2*d^4*e - 64*A*c^2*d^3*e^2 + 48*B*a*c*d^2*e^3 - 8*A*a*c*d*e^4 - B*a^2*e
^5)*x)*sqrt(e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.21, size = 319, normalized size = 1.49

$$\frac{2}{15}\left(3\,(xe+d)^{\frac{5}{2}}Bc^2e^{24} - 25\,(xe+d)^{\frac{3}{2}}Bc^2de^{24} + 150\,\sqrt{xe+d}\,Bc^2d^2e^{24} + 5\,(xe+d)^{\frac{3}{2}}Ac^2e^{25} - 60\,\sqrt{xe+d}\,Ac^2de^{25} + 30\,\sqrt{xe+d}\,Bace^{26}\right)e^{(-30)} + \frac{2\left(150\,(xe+d)^2Bc^2d^3 - 25\,(xe+d)Bc^2d^4 + 3\,Bc^2d^5 - 90\,(xe+d)^2Ac^2d^2e + 20\,(xe+d)Ac^2d^3e - 3\,Ac^2d^4e + 90\,(xe+d)^2Bacde^2 - 30\,(xe+d)Bacd^2e^2 + 6\,Bacd^3e^2 - 30\,(xe+d)^2Aace^3 + 20\,(xe+d)Aacde^3 - 6\,Aacd^2e^3 - 5\,(xe+d)Ba^2e^4 + 3\,Ba^2de^4 - 3\,Aa^2e^5\right)e^{(-6)}}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c^2*e^24 - 25*(x*e + d)^(3/2)*B*c^2*d*e^24 + 150*
sqrt(x*e + d)*B*c^2*d^2*e^24 + 5*(x*e + d)^(3/2)*A*c^2*e^25 - 60*sqrt(x*e +
 d)*A*c^2*d*e^25 + 30*sqrt(x*e + d)*B*a*c*e^26)*e^(-30) + 2/15*(150*(x*e +
d)^2*B*c^2*d^3 - 25*(x*e + d)*B*c^2*d^4 + 3*B*c^2*d^5 - 90*(x*e + d)^2*A*c^
2*d^2*e + 20*(x*e + d)*A*c^2*d^3*e - 3*A*c^2*d^4*e + 90*(x*e + d)^2*B*a*c*d
*e^2 - 30*(x*e + d)*B*a*c*d^2*e^2 + 6*B*a*c*d^3*e^2 - 30*(x*e + d)^2*A*a*c*
e^3 + 20*(x*e + d)*A*a*c*d*e^3 - 6*A*a*c*d^2*e^3 - 5*(x*e + d)*B*a^2*e^4 +
3*B*a^2*d*e^4 - 3*A*a^2*e^5)*e^(-6)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-3B\,c^2x^5e^5 - 5A\,c^2e^5x^4 + 10B\,c^2d\,e^4x^4 + 40A\,c^2d\,e^4x^3 - 30Bac\,e^5x^3 - 80B\,c^2d^2e^3x^3 + 30Aac\,e^5x^2 + 240A\,c^2d^2e^3x^2 - 180Bacd\,e^4x^2 - 480B\,c^2d^3e^2x^2 + 40Aacd\,e^4x + 320A\,c^2d^3e^2x + 5B\,a^2e^5x - 240Bac\,d^2e^3x - 640B\,c^2d^4ex + 3A\,a^2e^5 + 16A\,d^2ac\,e^3 + 128A\,c^2d^4e + 2B\,a^2d\,e^4 - 96B\,d^3ac\,e^2 - 256B\,c^2d^5\right)}{15\,(ex+d)^{\frac{5}{2}}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-3*B*c^2*e^5*x^5-5*A*c^2*e^5*x^4+10*B*c^2*d*e^4*x^4+40
*A*c^2*d*e^4*x^3-30*B*a*c*e^5*x^3-80*B*c^2*d^2*e^3*x^3+30*A*a*c*e^5*x^2+240
*A*c^2*d^2*e^3*x^2-180*B*a*c*d*e^4*x^2-480*B*c^2*d^3*e^2*x^2+40*A*a*c*d*e^4
*x+320*A*c^2*d^3*e^2*x+5*B*a^2*e^5*x-240*B*a*c*d^2*e^3*x-640*B*c^2*d^4*e*x+
3*A*a^2*e^5+16*A*a*c*d^2*e^3+128*A*c^2*d^4*e+2*B*a^2*d*e^4-96*B*a*c*d^3*e^2
-256*B*c^2*d^5)/e^6
```

maxima [A] time = 0.57, size = 255, normalized size = 1.19

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc^2-5\left(5\,Bc^2d-Ac^2e\right)(ex+d)^{\frac{3}{2}}+30\left(5\,Bc^2d^2-2\,Ac^2de+Bace^2\right)\sqrt{ex+d}}{e^5} + \frac{3\,Bc^2d^5-3\,Ac^2d^4e+6\,Bacd^3e^2-6\,Aacd^2e^3+3\,Ba^2de^4-3\,Aa^2e^5+30\left(5\,Bc^2d^3-3\,Ac^2d^2e+3\,Bacde^2-Aace^3\right)(ex+d)^2-5\left(5\,Bc^2d^4-4\,Ac^2d^3e+6\,Bacd^2e^2-4\,Aacde^3+Ba^2e^4\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^5}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x, algorithm="maxima")

[Out] 2/15*((3*(e*x + d)^(5/2)*B*c^2 - 5*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(3/2) + 30*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*sqrt(e*x + d))/e^5 + (3*B*c^2*d^5 - 3*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 + 3*B*a^2*d*e^4 - 3*A*a^2*e^5 + 30*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^2 - 5*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e

mupad [B] time = 1.79, size = 251, normalized size = 1.17

$$\frac{\sqrt{d+e\,x}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{e^6}-\frac{\left(d+e\,x\right)\,\left(\frac{2\,B\,a^2\,e^4}{3}+4\,B\,a\,c\,d^2\,e^2-\frac{8\,A\,a\,c\,d\,e^3}{3}+\frac{10\,B\,c^2\,d^4}{3}-\frac{8\,A\,c^2\,d^3\,e}{3}\right)-{\left(d+e\,x\right)}^2\,\left(20\,B\,c^2\,d^3-12\,A\,c^2\,d^2\,e+12\,B\,a\,c\,d\,e^2-4\,A\,a\,c\,e^3\right)+\frac{2\,A\,a^2\,e^5}{5}-\frac{2\,B\,c^2\,d^5}{5}-\frac{2\,B\,a^2\,d\,e^4}{5}+\frac{2\,A\,c^2\,d^4\,e}{5}+\frac{4\,A\,a\,c\,d^2\,e^3}{5}-\frac{4\,B\,a\,c\,d^3\,e^2}{5}}{e^6\,{\left(d+e\,x\right)}^{5/2}}+\frac{2\,B\,c^2\,{\left(d+e\,x\right)}^{5/2}}{5\,e^6}+\frac{2\,c^2\,\left(A\,e-5\,B\,d\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(7/2),x)

[Out] ((d + e*x)^(1/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/e^6 - ((d + e*x)*((2*B*a^2*e^4)/3 + (10*B*c^2*d^4)/3 - (8*A*c^2*d^3*e)/3 - (8*A*a*c*d*e^3)/3 + 4*B*a*c*d^2*e^2) - (d + e*x)^2*(20*B*c^2*d^3 - 4*A*a*c*e^3 - 12*A*c^2*d^2*e + 12*B*a*c*d*e^2) + (2*A*a^2*e^5)/5 - (2*B*c^2*d^5)/5 - (2*B*a^2*d*e^4)/5 + (2*A*c^2*d^4*e)/5 + (4*A*a*c*d^2*e^3)/5 - (4*B*a*c*d^3*e^2)/5)/(e^6*(d + e*x)^(5/2)) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x)^(3/2))/(3*e^6)

sympy [A] time = 4.40, size = 1426, normalized size = 6.66

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(7/2),x)

[Out] Piecewise((-6*A*a**2*e**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 32*A*a*c*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 80*A*a*c*d*e**4*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 60*A*a*c*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 256*A*c**2*d**4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 640*A*c**2*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 480*A*c**2*d**2*e**3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 80*A*c**2*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 10*A*c**2*e**5*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 4*B*a**2*d*e**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 10*B*a**2*e**5*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 192*B*a*c*d**3*e**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 480*B*a*c*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 360*B*a*c*d*e**4*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 60*B*a*c*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 512*B*c**2*d**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1280*B*c**2*d**4*e*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*B*c**2*d**3*e**2*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 160*B*c**2*d**2*e**3*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqr

```
t(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*B*c**2*d*e**4*x**4/(15*d**2*e
**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
 + 6*B*c**2*e**5*x**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*
x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*a**2*x + 2*A*a*c*x**3/3 +
A*c**2*x**5/5 + B*a**2*x**2/2 + B*a*c*x**4/2 + B*c**2*x**6/6)/d**(7/2), Tru
e))
```

3.1266 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{4c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^{5/2}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{7e^6(d+ex)^{7/2}}+\frac{4c\left(-aAe^3+\right.}{}$$

Rubi [A] time = 0.10, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$-\frac{4c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{4c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6(d+ex)^{3/2}}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^{5/2}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{7e^6(d+ex)^{7/2}}-\frac{2c^2\sqrt{d+ex}(5Bd-Ae)}{e^6}+\frac{2Bc^2(d+ex)^{3/2}}{3e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(9/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(7*e^6*(d + e*x)^(7/2)) - (2*(c*d^2 + a*e
^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(5*e^6*(d + e*x)^(5/2)) + (4*c*(5*B*
c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(3*e^6*(d + e*x)^(3/2)) - (4*
c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2))/(e^6*Sqrt[d + e*x]) - (2*c^2*(5*B*d -
A*e)*Sqrt[d + e*x])/e^6 + (2*B*c^2*(d + e*x)^(3/2))/(3*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{9/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{9/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^{7/2}}+\frac{2c\left(-5Bc\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{7e^6(d+ex)^{7/2}}-\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{5e^6(d+ex)^{5/2}}+\frac{4c\left(5Bcd^3-\right.}{}$$

Mathematica [A] time = 0.15, size = 214, normalized size = 1.00

$$-\frac{2\left(Ae\left(15a^2e^4+2ace^2\left(8d^2+28dex+35e^2x^2\right)-3c^2\left(128d^4+448d^3ex+560d^2e^2x^2+280de^3x^3+35e^4x^4\right)\right)+B\left(3a^2e^4(2d+7ex)+6ace^2\left(16d^3+56d^2ex+70de^2x^2+35e^3x^3\right)+5c^2\left(256d^5+896d^4ex+1120d^3e^2x^2+560d^2e^3x^3+70de^4x^4-7e^5x^5\right)\right)\right)}{105e^6(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(9/2),x]
```

```
[Out] (-2*(A*e*(15*a^2*e^4 + 2*a*c*e^2*(8*d^2 + 28*d*e*x + 35*e^2*x^2) - 3*c^2*(1
28*d^4 + 448*d^3*e*x + 560*d^2*e^2*x^2 + 280*d*e^3*x^3 + 35*e^4*x^4)) + B*(
3*a^2*e^4*(2*d + 7*e*x) + 6*a*c*e^2*(16*d^3 + 56*d^2*e*x + 70*d*e^2*x^2 + 3
5*e^3*x^3) + 5*c^2*(256*d^5 + 896*d^4*e*x + 1120*d^3*e^2*x^2 + 560*d^2*e^3*
x^3 + 70*d*e^4*x^4 - 7*e^5*x^5))))/(105*e^6*(d + e*x)^(7/2))
```

IntegrateAlgebraic [A] time = 0.18, size = 301, normalized size = 1.41

$$\frac{2\left(-15a^2Ae^5-21a^2Be^4(d+ex)+15a^2Bde^4-30aAcd^2e^3+84aAcde^3(d+ex)-70aAce^3(d+ex)^2+30aBcd^3e^2-126aBcd^2e^2(d+ex)+210aBcde^2(d+ex)^2-210aBce^2(d+ex)^3-15Ac^2d^4e+84Ac^2d^3e(d+ex)-210Ac^2d^2e(d+ex)^2+420Ac^2de(d+ex)^3+105Ac^2e(d+ex)^4+15Bc^2d^5-105Bc^2d^4(d+ex)+350Bc^2d^3(d+ex)^2-1050Bc^2d^2(d+ex)^3-525Bc^2d(d+ex)^4+35Bc^2(d+ex)^5\right)}{105e^6(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(9/2),x]
```

```
[Out] (2*(15*B*c^2*d^5 - 15*A*c^2*d^4*e + 30*a*B*c*d^3*e^2 - 30*a*A*c*d^2*e^3 + 1
5*a^2*B*d*e^4 - 15*a^2*A*e^5 - 105*B*c^2*d^4*(d + e*x) + 84*A*c^2*d^3*e*(d
+ e*x) - 126*a*B*c*d^2*e^2*(d + e*x) + 84*a*A*c*d*e^3*(d + e*x) - 21*a^2*B*
e^4*(d + e*x) + 350*B*c^2*d^3*(d + e*x)^2 - 210*A*c^2*d^2*e*(d + e*x)^2 + 2
10*a*B*c*d*e^2*(d + e*x)^2 - 70*a*A*c*e^3*(d + e*x)^2 - 1050*B*c^2*d^2*(d +
 e*x)^3 + 420*A*c^2*d*e*(d + e*x)^3 - 210*a*B*c*e^2*(d + e*x)^3 - 525*B*c^2
*d*(d + e*x)^4 + 105*A*c^2*e*(d + e*x)^4 + 35*B*c^2*(d + e*x)^5))/(105*e^6*
(d + e*x)^(7/2))
```

fricas [A] time = 0.42, size = 290, normalized size = 1.36

$$\frac{2\left(35\,Bc^2e^5x^5-1280\,Bc^2d^5+384\,Ac^2d^4e-96\,Bacd^3e^2-16\,Aacd^2e^3-6\,Ba^2de^4-15\,Aa^2e^5-35\left(10\,Bc^2de^4-3\,Ac^2e^5\right)x^4-70\left(40\,Bc^2d^2e^3-12\,Ac^2de^4+3\,Bace^5\right)x^3-70\left(80\,Bc^2d^3e^2-24\,Ac^2d^2e^3+6\,Bacde^4+Aace^5\right)x^2-7\left(640\,Bc^2d^4e-192\,Ac^2d^3e^2+48\,Bacd^2e^3+8\,Aacde^4+3\,Ba^2e^5\right)x\right)\sqrt{ex+d}}{105\left(e^{10}x^4+4\,de^9x^3+6\,d^2e^8x^2+4\,d^3e^7x+d^4e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 384*A*c^2*d^4*e - 96*B*a*c*d^3*e
^2 - 16*A*a*c*d^2*e^3 - 6*B*a^2*d*e^4 - 15*A*a^2*e^5 - 35*(10*B*c^2*d*e^4 -
 3*A*c^2*e^5)*x^4 - 70*(40*B*c^2*d^2*e^3 - 12*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^
3 - 70*(80*B*c^2*d^3*e^2 - 24*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 + A*a*c*e^5)*x^
2 - 7*(640*B*c^2*d^4*e - 192*A*c^2*d^3*e^2 + 48*B*a*c*d^2*e^3 + 8*A*a*c*d*e
^4 + 3*B*a^2*e^5)*x)*sqrt(e*x + d)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2
+ 4*d^3*e^7*x + d^4*e^6)
```

giac [A] time = 0.22, size = 316, normalized size = 1.48

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bc^2e^{12}-15\,\sqrt{xe+d}\,Bc^2de^{12}+3\,\sqrt{xe+d}\,Ac^2e^{13}\right)e^{(-18)}-\frac{2\left(1050\,(xe+d)^3Bc^2d^2-350\,(xe+d)^2Bc^2d^3+105\,(xe+d)Bc^2d^4-15\,Bc^2d^5-420\,(xe+d)^3Ac^2de+210\,(xe+d)^2Ac^2d^2e-84\,(xe+d)Ac^2d^3e+15\,Ac^2d^4e+210\,(xe+d)^3Bace^2-210\,(xe+d)^2Bacde^2+126\,(xe+d)Bacd^2e^2-30\,Bacd^3e^2+70\,(xe+d)^2Aace^3-84\,(xe+d)Aacde^3+30\,Aacd^2e^3+21\,(xe+d)Ba^2e^4-15\,Ba^2de^4+15\,Aa^2e^5\right)e^{(-6)}}{105\,(xe+d)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*c^2*e^12 - 15*sqrt(x*e + d)*B*c^2*d*e^12 + 3*sqrt(x*
e + d)*A*c^2*e^13)*e^(-18) - 2/105*(1050*(x*e + d)^3*B*c^2*d^2 - 350*(x*e +
 d)^2*B*c^2*d^3 + 105*(x*e + d)*B*c^2*d^4 - 15*B*c^2*d^5 - 420*(x*e + d)^3*
A*c^2*d*e + 210*(x*e + d)^2*A*c^2*d^2*e - 84*(x*e + d)*A*c^2*d^3*e + 15*A*c
^2*d^4*e + 210*(x*e + d)^3*B*a*c*e^2 - 210*(x*e + d)^2*B*a*c*d*e^2 + 126*(x
*e + d)*B*a*c*d^2*e^2 - 30*B*a*c*d^3*e^2 + 70*(x*e + d)^2*A*a*c*e^3 - 84*(x
*e + d)*A*a*c*d*e^3 + 30*A*a*c*d^2*e^3 + 21*(x*e + d)*B*a^2*e^4 - 15*B*a^2*
d*e^4 + 15*A*a^2*e^5)*e^(-6)/(x*e + d)^(7/2)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-35B\,c^2x^5e^5-105A\,c^2e^5x^4+350B\,c^2d\,e^4x^4-840A\,c^2d\,e^4x^3+210Bac\,e^5x^3+2800B\,c^2d^2e^3x^3+70Aac\,e^5x^2-1680A\,c^2d^2e^3x^2+420Bacd\,e^4x^2+5600B\,c^2d^3e^2x^2+56Aacd\,e^4x-1344A\,c^2d^3e^2x+21B\,a^2e^5x+336Bac\,d^2e^3x+4480B\,c^2d^4ex+15A\,a^2e^5+16A\,d^2ac\,e^3-384A\,c^2d^4e+6B\,a^2d\,e^4+96B\,d^3ac\,e^2+1280B\,c^2d^5\right)}{105\,(ex+d)^{\frac{7}{2}}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x)
```

```
[Out] -2/105/(e*x+d)^(7/2)*(-35*B*c^2*e^5*x^5-105*A*c^2*e^5*x^4+350*B*c^2*d*e^4*x
^4-840*A*c^2*d*e^4*x^3+210*B*a*c*e^5*x^3+2800*B*c^2*d^2*e^3*x^3+70*A*a*c*e^
5*x^2-1680*A*c^2*d^2*e^3*x^2+420*B*a*c*d*e^4*x^2+5600*B*c^2*d^3*e^2*x^2+56*
A*a*c*d*e^4*x-1344*A*c^2*d^3*e^2*x+21*B*a^2*e^5*x+336*B*a*c*d^2*e^3*x+4480*
B*c^2*d^4*e*x+15*A*a^2*e^5+16*A*a*c*d^2*e^3-384*A*c^2*d^4*e+6*B*a^2*d*e^4+9
6*B*a*c*d^3*e^2+1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.68, size = 255, normalized size = 1.19

$$\frac{2\left(\frac{35\left((ex+d)^{\frac{3}{2}}Bc^2-3\left(5\,Bc^2d-Ac^2e\right)\sqrt{ex+d}\right)}{e^5}+\frac{15\,Bc^2d^5-15\,Ac^2d^4e+30\,Bacd^3e^2-30\,Aacd^2e^3+15\,Ba^2de^4-15\,Aa^2e^5-210\left(5\,Bc^2d^2-2\,Ac^2de+Bace^2\right)(ex+d)^3+70\left(5\,Bc^2d^3-3\,Ac^2d^2e+3\,Bacde^2-Aace^3\right)(ex+d)^2-21\left(5\,Bc^2d^4-4\,Ac^2d^3e+6\,Bacd^2e^2-4\,Aacde^3+Ba^2e^4\right)(ex+d)}{(ex+d)^{\frac{7}{2}}e^5}\right)}{105\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/105*(35*((e*x + d)^(3/2)*B*c^2 - 3*(5*B*c^2*d - A*c^2*e)*sqrt(e*x + d))/e
^5 + (15*B*c^2*d^5 - 15*A*c^2*d^4*e + 30*B*a*c*d^3*e^2 - 30*A*a*c*d^2*e^3 +
 15*B*a^2*d*e^4 - 15*A*a^2*e^5 - 210*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2
)*(e*x + d)^3 + 70*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3
)*(e*x + d)^2 - 21*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c
*d*e^3 + B*a^2*e^4)*(e*x + d))/((e*x + d)^(7/2)*e^5))/e
```

mupad [B] time = 1.82, size = 258, normalized size = 1.21

$$-\frac{2\left(6\,B\,a^2\,d\,e^4+21\,B\,a^2\,e^5\,x+15\,A\,a^2\,e^5+96\,B\,a\,c\,d^3\,e^2+336\,B\,a\,c\,d^2\,e^3\,x+16\,A\,a\,c\,d^2\,e^3+420\,B\,a\,c\,d\,e^4\,x^2+56\,A\,a\,c\,d\,e^4\,x+210\,B\,a\,c\,e^5\,x^3+70\,A\,a\,c\,e^5\,x^2+1280\,B\,c^2\,d^5+4480\,B\,c^2\,d^4\,e\,x-384\,A\,c^2\,d^4\,e+5600\,B\,c^2\,d^3\,e^2\,x^2-1344\,A\,c^2\,d^3\,e^2\,x+2800\,B\,c^2\,d^2\,e^3\,x^3-1680\,A\,c^2\,d^2\,e^3\,x^2+350\,B\,c^2\,d\,e^4\,x^4-840\,A\,c^2\,d\,e^4\,x^3-35\,B\,c^2\,e^5\,x^5-105\,A\,c^2\,e^5\,x^4\right)}{105\,e^6\,{\left(d+e\,x\right)}^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(9/2),x)
```

```
[Out] -(2*(15*A*a^2*e^5 + 1280*B*c^2*d^5 + 6*B*a^2*d*e^4 - 384*A*c^2*d^4*e + 21*B
*a^2*e^5*x - 105*A*c^2*e^5*x^4 - 35*B*c^2*e^5*x^5 + 70*A*a*c*e^5*x^2 + 210*
B*a*c*e^5*x^3 + 4480*B*c^2*d^4*e*x - 1344*A*c^2*d^3*e^2*x - 840*A*c^2*d*e^4
*x^3 + 350*B*c^2*d*e^4*x^4 - 1680*A*c^2*d^2*e^3*x^2 + 5600*B*c^2*d^3*e^2*x^
2 + 2800*B*c^2*d^2*e^3*x^3 + 16*A*a*c*d^2*e^3 + 96*B*a*c*d^3*e^2 + 56*A*a*c
*d*e^4*x + 336*B*a*c*d^2*e^3*x + 420*B*a*c*d*e^4*x^2))/(105*e^6*(d + e*x)^(
7/2))
```

sympy [A] time = 8.15, size = 1855, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(9/2),x)
```

```
[Out] Piecewise((-30*A*a**2*e**5/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*s
qrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x))
 - 32*A*a*c*d**2*e**3/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d
 + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 11
2*A*a*c*d*e**4*x/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*
x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 140*A*a
*c*e**5*x**2/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) +
 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 768*A*c**2*
d**4*e/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d
*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 2688*A*c**2*d**3*
e**2*x/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d
*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 3360*A*c**2*d**2*
e**3*x**2/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 31
5*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 1680*A*c**2*d*
e**4*x**3/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 31
5*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 210*A*c**2*e**
5*x**4/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d
*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 12*B*a**2*d*e**4/
(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x
**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 42*B*a**2*e**5*x/(105*d*
*3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqr
t(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 192*B*a*c*d**3*e**2/(105*d**3*e
**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d
+ e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 672*B*a*c*d**2*e**3*x/(105*d**3*e**
6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d +
e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 840*B*a*c*d*e**4*x**2/(105*d**3*e**6*
sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*
x) + 105*e**9*x**3*sqrt(d + e*x)) - 420*B*a*c*e**5*x**3/(105*d**3*e**6*sqrt
```

```
(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) +
 105*e**9*x**3*sqrt(d + e*x)) - 2560*B*c**2*d**5/(105*d**3*e**6*sqrt(d + e*
x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e*
*9*x**3*sqrt(d + e*x)) - 8960*B*c**2*d**4*e*x/(105*d**3*e**6*sqrt(d + e*x)
+ 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*
x**3*sqrt(d + e*x)) - 11200*B*c**2*d**3*e**2*x**2/(105*d**3*e**6*sqrt(d + e
*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e
**9*x**3*sqrt(d + e*x)) - 5600*B*c**2*d**2*e**3*x**3/(105*d**3*e**6*sqrt(d
+ e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 10
5*e**9*x**3*sqrt(d + e*x)) - 700*B*c**2*d*e**4*x**4/(105*d**3*e**6*sqrt(d +
 e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105
*e**9*x**3*sqrt(d + e*x)) + 70*B*c**2*e**5*x**5/(105*d**3*e**6*sqrt(d + e*x
) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**
9*x**3*sqrt(d + e*x)), Ne(e, 0)), ((A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5
/5 + B*a**2*x**2/2 + B*a*c*x**4/2 + B*c**2*x**6/6)/d**(9/2), True))
```

3.1267 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=348

$$-\frac{2c(d+ex)^{7/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{6c^2(d+ex)^{11/2}\left(aBe^2-2Acde+7Bcd\right.}{11e^8}$$

Rubi [A] time = 0.21, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$-\frac{2c(d+ex)^{7/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{6c^2(d+ex)^{11/2}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}-\frac{2c^2(d+ex)^{9/2}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{9e^8}-\frac{6c(d+ex)^{5/2}\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{5e^8}+\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{3e^8}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)^3(Bd-Ae)}{e^8}-\frac{2c^3(d+ex)^{13/2}(7Bd-Ae)}{13e^8}+\frac{2Bc^3(d+ex)^{15/2}}{15e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)^3*Sqrt[d + e*x])/e^8 + (2*(c*d^2 + a*e^2)^2
*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^8) - (6*c*(c*d^2 +
 a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(5/2))/
(5*e^8) - (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*
e^2 + 3*a^2*e^4))*(d + e*x)^(7/2))/(7*e^8) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^
2*e + 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(9/2))/(9*e^8) + (6*c^2*(7*B*c*d^
2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(11/2))/(11*e^8) - (2*c^3*(7*B*d - A*e)*
(d + e*x)^(13/2))/(13*e^8) + (2*B*c^3*(d + e*x)^(15/2))/(15*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{d+ex}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7\sqrt{d+ex}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)\sqrt{d+ex}}{e^7}+\right.$$

$$=-\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3\sqrt{d+ex}}{e^8}+\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)(d+}{3e^8}$$

Mathematica [A] time = 0.35, size = 373, normalized size = 1.07

$$\frac{2\sqrt{d+ex}\left(3Ae\left(15015a^3e^6+3003a^2ce^4\left(8d^2-4dex+3e^2x^2\right)+143ac^2e^2\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right)+5c^3\left(1024d^6-512d^5ex+384d^4e^2x^2-320d^3e^3x^3+280d^2e^4x^4-252de^5x^5+231e^6x^6\right)\right)+B\left(15015a^3e^6(ex-2d)+3861a^2ce^4\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)+195ac^2e^2\left(-256d^5+128d^4ex-96d^3e^2x^2+80d^2e^3x^3-70de^4x^4+63e^5x^5\right)-7c^3\left(2048d^7-1024d^6ex+768d^5e^2x^2-640d^4e^3x^3+560d^3e^4x^4-504d^2e^5x^5+462de^6x^6-429e^7x^7\right)\right)\right)}{45045e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(3*A*e*(15015*a^3*e^6 + 3003*a^2*c*e^4*(8*d^2 - 4*d*e*x +
3*e^2*x^2) + 143*a*c^2*e^2*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^
3*x^3 + 35*e^4*x^4) + 5*c^3*(1024*d^6 - 512*d^5*e*x + 384*d^4*e^2*x^2 - 320
*d^3*e^3*x^3 + 280*d^2*e^4*x^4 - 252*d*e^5*x^5 + 231*e^6*x^6)) + B*(15015*a
^3*e^6*(-2*d + e*x) + 3861*a^2*c*e^4*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5
*e^3*x^3) + 195*a*c^2*e^2*(-256*d^5 + 128*d^4*e*x - 96*d^3*e^2*x^2 + 80*d^2
*e^3*x^3 - 70*d*e^4*x^4 + 63*e^5*x^5) - 7*c^3*(2048*d^7 - 1024*d^6*e*x + 76
```

8*d^5*e^2*x^2 - 640*d^4*e^3*x^3 + 560*d^3*e^4*x^4 - 504*d^2*e^5*x^5 + 462*d
*e^6*x^6 - 429*e^7*x^7))))/(45045*e^8)

IntegrateAlgebraic [A] time = 0.25, size = 573, normalized size = 1.65

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/Sqrt[d + e*x],x]

[Out] (2*Sqrt[d + e*x]*(-45045*B*c^3*d^7 + 45045*A*c^3*d^6*e - 135135*a*B*c^2*d^5
*e^2 + 135135*a*A*c^2*d^4*e^3 - 135135*a^2*B*c*d^3*e^4 + 135135*a^2*A*c*d^2
*e^5 - 45045*a^3*B*d*e^6 + 45045*a^3*A*e^7 + 105105*B*c^3*d^6*(d + e*x) - 9
0090*A*c^3*d^5*e*(d + e*x) + 225225*a*B*c^2*d^4*e^2*(d + e*x) - 180180*a*A*
c^2*d^3*e^3*(d + e*x) + 135135*a^2*B*c*d^2*e^4*(d + e*x) - 90090*a^2*A*c*d*
e^5*(d + e*x) + 15015*a^3*B*e^6*(d + e*x) - 189189*B*c^3*d^5*(d + e*x)^2 +
135135*A*c^3*d^4*e*(d + e*x)^2 - 270270*a*B*c^2*d^3*e^2*(d + e*x)^2 + 16216
2*a*A*c^2*d^2*e^3*(d + e*x)^2 - 81081*a^2*B*c*d*e^4*(d + e*x)^2 + 27027*a^2
*A*c*e^5*(d + e*x)^2 + 225225*B*c^3*d^4*(d + e*x)^3 - 128700*A*c^3*d^3*e*(d
 + e*x)^3 + 193050*a*B*c^2*d^2*e^2*(d + e*x)^3 - 77220*a*A*c^2*d*e^3*(d + e
*x)^3 + 19305*a^2*B*c*e^4*(d + e*x)^3 - 175175*B*c^3*d^3*(d + e*x)^4 + 7507
5*A*c^3*d^2*e*(d + e*x)^4 - 75075*a*B*c^2*d*e^2*(d + e*x)^4 + 15015*a*A*c^2
e^3(d + e*x)^4 + 85995*B*c^3*d^2*(d + e*x)^5 - 24570*A*c^3*d*e*(d + e*x)^
5 + 12285*a*B*c^2*e^2*(d + e*x)^5 - 24255*B*c^3*d*(d + e*x)^6 + 3465*A*c^3*
e*(d + e*x)^6 + 3003*B*c^3*(d + e*x)^7))/(45045*e^8)

fricas [A] time = 0.41, size = 454, normalized size = 1.30

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x, algorithm="fricas")

[Out] 2/45045*(3003*B*c^3*e^7*x^7 - 14336*B*c^3*d^7 + 15360*A*c^3*d^6*e - 49920*B
*a*c^2*d^5*e^2 + 54912*A*a*c^2*d^4*e^3 - 61776*B*a^2*c*d^3*e^4 + 72072*A*a^
2*c*d^2*e^5 - 30030*B*a^3*d*e^6 + 45045*A*a^3*e^7 - 231*(14*B*c^3*d*e^6 - 1
5*A*c^3*e^7)*x^6 + 63*(56*B*c^3*d^2*e^5 - 60*A*c^3*d*e^6 + 195*B*a*c^2*e^7)
x^5 - 35(112*B*c^3*d^3*e^4 - 120*A*c^3*d^2*e^5 + 390*B*a*c^2*d*e^6 - 429*
A*a*c^2*e^7)*x^4 + 5*(896*B*c^3*d^4*e^3 - 960*A*c^3*d^3*e^4 + 3120*B*a*c^2*
d^2*e^5 - 3432*A*a*c^2*d*e^6 + 3861*B*a^2*c*e^7)*x^3 - 3*(1792*B*c^3*d^5*e^
2 - 1920*A*c^3*d^4*e^3 + 6240*B*a*c^2*d^3*e^4 - 6864*A*a*c^2*d^2*e^5 + 7722
*B*a^2*c*d*e^6 - 9009*A*a^2*c*e^7)*x^2 + (7168*B*c^3*d^6*e - 7680*A*c^3*d^5
*e^2 + 24960*B*a*c^2*d^4*e^3 - 27456*A*a*c^2*d^3*e^4 + 30888*B*a^2*c*d^2*e^
5 - 36036*A*a^2*c*d*e^6 + 15015*B*a^3*e^7)*x)*sqrt(e*x + d)/e^8

giac [A] time = 0.22, size = 504, normalized size = 1.45

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x, algorithm="giac")

[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*e^(-1) + 9009*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*c*e^(
-2) + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*c*e^(-3) + 429*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*A*a*c^2*e^(-4) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e

```
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*c^2*e^(-5) + 15*(231*(x*e + d)^
(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d
)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sq
rt(x*e + d)*d^6)*A*c^3*e^(-6) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(1
3/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*
e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
6435*sqrt(x*e + d)*d^7)*B*c^3*e^(-7) + 45045*sqrt(x*e + d)*A*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 489, normalized size = 1.41

$$\frac{2\sqrt{ex+d}\,\left(3003Bc^3x^7e^7+3465Ac^3e^7x^6-3234Bc^3de^6x^6-3780Ac^3de^6x^5+12285Bac^2e^7x^5+3528Bc^3d^2e^5x^5+15015Aac^2e^7x^4+4200Ac^3d^2e^5x^4-13650Bac^2de^6x^4-3920Bc^3d^3e^4x^4-17160Aac^2de^6x^3-4800Ac^3d^3e^4x^3+19305Ba^2ce^7x^3+15600Bac^2d^2e^5x^3+4480Bc^3d^4e^3x^3+27027Aa^2ce^7x^2+20592Aac^2d^2e^5x^2+5760Ac^3d^4e^3x^2-23166Ba^2cde^6x^2-18720Bac^2d^3e^4x^2-5376Bc^3d^5e^2x^2-36036Aa^2cde^6x-27456Aac^2d^3e^4x-7680Ac^3d^5e^2x+15015Ba^3e^7x+30888Ba^2cd^2e^5x+24960Bac^2d^4e^3x+7168Bc^3d^6ex+45045Aa^3e^7+72072Ad^2a^2ce^5+54912Aac^2d^4e^3+15360Ac^3d^6e-30030Ba^3de^6-61776Bd^3a^2ce^4-49920Bac^2d^5e^2-14336Bc^3d^7\right)}{45045e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(1/2)*(3003*B*c^3*e^7*x^7+3465*A*c^3*e^7*x^6-3234*B*c^3*d*e
^6*x^6-3780*A*c^3*d*e^6*x^5+12285*B*a*c^2*e^7*x^5+3528*B*c^3*d^2*e^5*x^5+15
015*A*a*c^2*e^7*x^4+4200*A*c^3*d^2*e^5*x^4-13650*B*a*c^2*d*e^6*x^4-3920*B*c
^3*d^3*e^4*x^4-17160*A*a*c^2*d*e^6*x^3-4800*A*c^3*d^3*e^4*x^3+19305*B*a^2*c
*e^7*x^3+15600*B*a*c^2*d^2*e^5*x^3+4480*B*c^3*d^4*e^3*x^3+27027*A*a^2*c*e^7
*x^2+20592*A*a*c^2*d^2*e^5*x^2+5760*A*c^3*d^4*e^3*x^2-23166*B*a^2*c*d*e^6*x
^2-18720*B*a*c^2*d^3*e^4*x^2-5376*B*c^3*d^5*e^2*x^2-36036*A*a^2*c*d*e^6*x-2
7456*A*a*c^2*d^3*e^4*x-7680*A*c^3*d^5*e^2*x+15015*B*a^3*e^7*x+30888*B*a^2*c
*d^2*e^5*x+24960*B*a*c^2*d^4*e^3*x+7168*B*c^3*d^6*e*x+45045*A*a^3*e^7+72072
*A*a^2*c*d^2*e^5+54912*A*a*c^2*d^4*e^3+15360*A*c^3*d^6*e-30030*B*a^3*d*e^6-
61776*B*a^2*c*d^3*e^4-49920*B*a*c^2*d^5*e^2-14336*B*c^3*d^7)/e^8
```

maxima [A] time = 0.56, size = 453, normalized size = 1.30

$$\frac{2\left(3003\,(ex+d)^{15/2}Bc^3-3465\,(7Bc^3d-Ac^3e)(ex+d)^{13/2}+12285\,(7Bc^3d^2-2Ac^3de+Bac^2e^2)(ex+d)^{11/2}-5005\,(35Bc^3d^3-15Ac^3d^2e+15Bac^2de^2-3Aac^2e^3)(ex+d)^{9/2}+6435\,(35Bc^3d^4-20Ac^3d^3e+30Bac^2d^2e^2-12Aac^2de^3+3Ba^2ce^4)(ex+d)^{7/2}-27027\,(7Bc^3d^5-5Ac^3d^4e+10Bac^2d^3e^2-6Aac^2d^2e^3+3Ba^2cde^4-Aa^2ce^5)(ex+d)^{5/2}+15015\,(7Bc^3d^6-6Ac^3d^5e+15Bac^2d^4e^2-12Aac^2d^3e^3+9Ba^2cd^2e^4-6Aa^2cde^5+Ba^3e^6)(ex+d)^{3/2}-45045\,(Bc^3d^7-Ac^3d^6e+3Bac^2d^5e^2-3Aac^2d^4e^3+3Ba^2cd^3e^4-3Aa^2cd^2e^5+Ba^3de^6-Aa^3e^7)\sqrt{ex+d}\right)}{45045\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*c^3 - 3465*(7*B*c^3*d - A*c^3*e)*(e*x + d)
^(13/2) + 12285*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(11/2)
- 5005*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(
e*x + d)^(9/2) + 6435*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 -
 12*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^(7/2) - 27027*(7*B*c^3*d^5 - 5
*A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A
*a^2*c*e^5)*(e*x + d)^(5/2) + 15015*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c
^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a
^3*e^6)*(e*x + d)^(3/2) - 45045*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^
2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6
 - A*a^3*e^7)*sqrt(e*x + d))/e^8
```

mupad [B] time = 0.14, size = 324, normalized size = 0.93

$$\frac{(d+ex)^{7/2}\left(6Ba^2ce^4+60Bac^2d^2e^2-24Aac^2de^3+70Bc^3d^4-40Ac^3d^3e\right)}{7e^8}+\frac{(d+ex)^{11/2}\left(42Bc^3d^2-12Ac^3de+6Bac^2e^2\right)}{11e^8}+\frac{2\left(cd^2+ae^2\right)^2(d+ex)^{3/2}\left(7Bcd^2-6Acde+Bae^2\right)}{3e^8}+\frac{2Bc^3(d+ex)^{15/2}}{15e^8}+\frac{2c^2(d+ex)^{9/2}\left(-35Bcd^3+15Acd^2e-15Bade^2+3Aae^3\right)}{9e^8}+\frac{2c^3(Ae-7Bd)(d+ex)^{13/2}}{13e^8}+\frac{2\left(cd^2+ae^2\right)^3(Ae-Bd)\sqrt{d+ex}}{e^8}+\frac{6c\left(cd^2+ae^2\right)(d+ex)^{5/2}\left(-7Bcd^3+5Acd^2e-3Bade^2+Aae^3\right)}{5e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/(7*e^8) + ((d + e*x)^(11/2)*(42*B*c^3*d^2 -
12*A*c^3*d*e + 6*B*a*c^2*e^2))/(11*e^8) + (2*(a*e^2 + c*d^2)^2*(d + e*x)^(3
/2)*(B*a*e^2 + 7*B*c*d^2 - 6*A*c*d*e))/(3*e^8) + (2*B*c^3*(d + e*x)^(15/2))
/(15*e^8) + (2*c^2*(d + e*x)^(9/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a*d*e^2 +
 15*A*c*d^2*e))/(9*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(13/2))/(13*e^8) +
```

```
(2*(a*e^2 + c*d^2)^3*(A*e - B*d)*(d + e*x)^(1/2))/e^8 + (6*c*(a*e^2 + c*d^
2)*(d + e*x)^(5/2)*(A*a*e^3 - 7*B*c*d^3 - 3*B*a*d*e^2 + 5*A*c*d^2*e))/(5*e^
8)
```

sympy [A] time = 139.19, size = 1284, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**3*d/sqrt(d + e*x) - 2*A*a**3*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 6*A*a**2*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)
**(3/2)/3)/e**2 - 6*A*a**2*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) +
d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 6*A*a*c**2*d*(d**4/sqrt(d +
 e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/
2)/5 - (d + e*x)**(7/2)/7)/e**4 - 6*A*a*c**2*(-d**5/sqrt(d + e*x) - 5*d**4*
sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*
(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*A*c**3*d*(d**6/sqrt(d + e
*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5
/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/
2)/11)/e**6 - 2*A*c**3*(-d**7/sqrt(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5
*(d + e*x)**(3/2) - 7*d**4*(d + e*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d
**2*(d + e*x)**(9/2)/3 + 7*d*(d + e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e
**6 - 2*B*a**3*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 2*B*a**3*(d**2/sqrt
(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 6*B*a**2*c*d*(-d**3
/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/
2)/5)/e**3 - 6*B*a**2*c*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2
*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 6*B
*a*c**2*d*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**
(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/
2)/9)/e**5 - 6*B*a*c**2*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4
*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 +
2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**5 - 2*B*c**3*d*(-d**7/sqr
t(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5*(d + e*x)**(3/2) - 7*d**4*(d + e
*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d**2*(d + e*x)**(9/2)/3 + 7*d*(d +
 e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e**7 - 2*B*c**3*(d**8/sqrt(d + e*x
) + 8*d**7*sqrt(d + e*x) - 28*d**6*(d + e*x)**(3/2)/3 + 56*d**5*(d + e*x)**
(5/2)/5 - 10*d**4*(d + e*x)**(7/2) + 56*d**3*(d + e*x)**(9/2)/9 - 28*d**2*(
d + e*x)**(11/2)/11 + 8*d*(d + e*x)**(13/2)/13 - (d + e*x)**(15/2)/15)/e**7
)/e, Ne(e, 0)), ((A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**
7/7 + B*a**3*x**2/2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8)/
sqrt(d), True))
```

3.1268 $\int \frac{(A+Bx)(a+cx^2)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=344

$$-\frac{2c(d+ex)^{5/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8}+\frac{2c^2(d+ex)^{9/2}\left(aBe^2-2Acde+7Bcd^2\right.}{3e^8}$$

Rubi [A] time = 0.16, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$-\frac{2c(d+ex)^{5/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8}+\frac{2c^2(d+ex)^{9/2}\left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-\frac{2c^2(d+ex)^{7/2}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{7e^8}-\frac{2c(d+ex)^{3/2}\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8}+\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{e^8}+\frac{2\left(ae^2+cd^2\right)^3(Bd-Ae)}{e^8\sqrt{d+ex}}-\frac{2c^3(d+ex)^{11/2}(7Bd-Ae)}{11e^8}+\frac{2Bc^3(d+ex)^{13/2}}{13e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(e^8*Sqrt[d + e*x]) + (2*(c*d^2 + a*e^2)^
2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^8 - (2*c*(c*d^2 + a*e^
2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(3/2))/e^8 -
 (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a
^2*e^4))*(d + e*x)^(5/2))/(5*e^8) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*
a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(7/2))/(7*e^8) + (2*c^2*(7*B*c*d^2 - 2*A*c
*d*e + a*B*e^2)*(d + e*x)^(9/2))/(3*e^8) - (2*c^3*(7*B*d - A*e)*(d + e*x)^(
11/2))/(11*e^8) + (2*B*c^3*(d + e*x)^(13/2))/(13*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{3/2}}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{3/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7\sqrt{d+ex}}+\frac{3c\left(cd^2+\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{e^8\sqrt{d+ex}}+\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)\sqrt{d+ex}}{e^8}-\frac{2c}{}$$

Mathematica [A] time = 0.29, size = 373, normalized size = 1.08

$$\frac{2B\left(15015a^3e^6(2d+ex)+9009a^2ce^4\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+715ac^2e^2\left(256d^5+128d^4ex-32d^3e^2x^2+16d^2e^3x^3-10de^4x^4+7e^5x^5\right)+35c^3\left(2048d^7+1024d^6ex-256d^5e^2x^2+128d^4e^3x^3-80d^3e^4x^4+56d^2e^5x^5-42de^6x^6+33e^7x^7\right)\right)-26Ae\left(1155a^3e^6+1155a^2ce^4\left(8d^2+4dex-e^2x^2\right)+99ac^2e^2\left(128d^4+64d^3ex-16d^2e^2x^2+8de^3x^3-5e^4x^4\right)+5c^3\left(1024d^6+512d^5ex-128d^4e^2x^2+64d^3e^3x^3-40d^2e^4x^4+28de^5x^5-21e^6x^6\right)\right)}{15015e^8\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (-26*A*e*(1155*a^3*e^6 + 1155*a^2*c*e^4*(8*d^2 + 4*d*e*x - e^2*x^2) + 99*a*
c^2*e^2*(128*d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4) +
 5*c^3*(1024*d^6 + 512*d^5*e*x - 128*d^4*e^2*x^2 + 64*d^3*e^3*x^3 - 40*d^2*
e^4*x^4 + 28*d*e^5*x^5 - 21*e^6*x^6)) + 2*B*(15015*a^3*e^6*(2*d + e*x) + 90
09*a^2*c*e^4*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + 715*a*c^2*e^2*(
256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4*x^4 + 7*
e^5*x^5) + 35*c^3*(2048*d^7 + 1024*d^6*e*x - 256*d^5*e^2*x^2 + 128*d^4*e^3*
```

```
x^3 - 80*d^3*e^4*x^4 + 56*d^2*e^5*x^5 - 42*d*e^6*x^6 + 33*e^7*x^7)))/(15015
*e^8*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.24, size = 573, normalized size = 1.67

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(15015*B*c^3*d^7 - 15015*A*c^3*d^6*e + 45045*a*B*c^2*d^5*e^2 - 45045*a*A
*c^2*d^4*e^3 + 45045*a^2*B*c*d^3*e^4 - 45045*a^2*A*c*d^2*e^5 + 15015*a^3*B*
d*e^6 - 15015*a^3*A*e^7 + 105105*B*c^3*d^6*(d + e*x) - 90090*A*c^3*d^5*e*(d
 + e*x) + 225225*a*B*c^2*d^4*e^2*(d + e*x) - 180180*a*A*c^2*d^3*e^3*(d + e*
x) + 135135*a^2*B*c*d^2*e^4*(d + e*x) - 90090*a^2*A*c*d*e^5*(d + e*x) + 150
15*a^3*B*e^6*(d + e*x) - 105105*B*c^3*d^5*(d + e*x)^2 + 75075*A*c^3*d^4*e*(
d + e*x)^2 - 150150*a*B*c^2*d^3*e^2*(d + e*x)^2 + 90090*a*A*c^2*d^2*e^3*(d
+ e*x)^2 - 45045*a^2*B*c*d*e^4*(d + e*x)^2 + 15015*a^2*A*c*e^5*(d + e*x)^2
+ 105105*B*c^3*d^4*(d + e*x)^3 - 60060*A*c^3*d^3*e*(d + e*x)^3 + 90090*a*B*
c^2*d^2*e^2*(d + e*x)^3 - 36036*a*A*c^2*d*e^3*(d + e*x)^3 + 9009*a^2*B*c*e^
4*(d + e*x)^3 - 75075*B*c^3*d^3*(d + e*x)^4 + 32175*A*c^3*d^2*e*(d + e*x)^4
 - 32175*a*B*c^2*d*e^2*(d + e*x)^4 + 6435*a*A*c^2*e^3*(d + e*x)^4 + 35035*B
*c^3*d^2*(d + e*x)^5 - 10010*A*c^3*d*e*(d + e*x)^5 + 5005*a*B*c^2*e^2*(d +
e*x)^5 - 9555*B*c^3*d*(d + e*x)^6 + 1365*A*c^3*e*(d + e*x)^6 + 1155*B*c^3*(
d + e*x)^7))/(15015*e^8*Sqrt[d + e*x])
```

fricas [A] time = 0.43, size = 463, normalized size = 1.35

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*e^7*x^7 + 71680*B*c^3*d^7 - 66560*A*c^3*d^6*e + 183040*
B*a*c^2*d^5*e^2 - 164736*A*a*c^2*d^4*e^3 + 144144*B*a^2*c*d^3*e^4 - 120120*
A*a^2*c*d^2*e^5 + 30030*B*a^3*d*e^6 - 15015*A*a^3*e^7 - 105*(14*B*c^3*d*e^6
 - 13*A*c^3*e^7)*x^6 + 35*(56*B*c^3*d^2*e^5 - 52*A*c^3*d*e^6 + 143*B*a*c^2*
e^7)*x^5 - 5*(560*B*c^3*d^3*e^4 - 520*A*c^3*d^2*e^5 + 1430*B*a*c^2*d*e^6 -
1287*A*a*c^2*e^7)*x^4 + (4480*B*c^3*d^4*e^3 - 4160*A*c^3*d^3*e^4 + 11440*B*
a*c^2*d^2*e^5 - 10296*A*a*c^2*d*e^6 + 9009*B*a^2*c*e^7)*x^3 - (8960*B*c^3*d
^5*e^2 - 8320*A*c^3*d^4*e^3 + 22880*B*a*c^2*d^3*e^4 - 20592*A*a*c^2*d^2*e^5
 + 18018*B*a^2*c*d*e^6 - 15015*A*a^2*c*e^7)*x^2 + (35840*B*c^3*d^6*e - 3328
0*A*c^3*d^5*e^2 + 91520*B*a*c^2*d^4*e^3 - 82368*A*a*c^2*d^3*e^4 + 72072*B*a
^2*c*d^2*e^5 - 60060*A*a^2*c*d*e^6 + 15015*B*a^3*e^7)*x)*sqrt(e*x + d)/(e^9
*x + d*e^8)
```

giac [A] time = 0.29, size = 615, normalized size = 1.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15015*(1155*(x*e + d)^(13/2)*B*c^3*e^96 - 9555*(x*e + d)^(11/2)*B*c^3*d*e
^96 + 35035*(x*e + d)^(9/2)*B*c^3*d^2*e^96 - 75075*(x*e + d)^(7/2)*B*c^3*d^
3*e^96 + 105105*(x*e + d)^(5/2)*B*c^3*d^4*e^96 - 105105*(x*e + d)^(3/2)*B*c
^3*d^5*e^96 + 105105*sqrt(x*e + d)*B*c^3*d^6*e^96 + 1365*(x*e + d)^(11/2)*A
*c^3*e^97 - 10010*(x*e + d)^(9/2)*A*c^3*d*e^97 + 32175*(x*e + d)^(7/2)*A*c^
3*d^2*e^97 - 60060*(x*e + d)^(5/2)*A*c^3*d^3*e^97 + 75075*(x*e + d)^(3/2)*A
```

```
*c^3*d^4*e^97 - 90090*sqrt(x*e + d)*A*c^3*d^5*e^97 + 5005*(x*e + d)^(9/2)*B
*a*c^2*e^98 - 32175*(x*e + d)^(7/2)*B*a*c^2*d*e^98 + 90090*(x*e + d)^(5/2)*
B*a*c^2*d^2*e^98 - 150150*(x*e + d)^(3/2)*B*a*c^2*d^3*e^98 + 225225*sqrt(x*
e + d)*B*a*c^2*d^4*e^98 + 6435*(x*e + d)^(7/2)*A*a*c^2*e^99 - 36036*(x*e +
d)^(5/2)*A*a*c^2*d*e^99 + 90090*(x*e + d)^(3/2)*A*a*c^2*d^2*e^99 - 180180*s
qrt(x*e + d)*A*a*c^2*d^3*e^99 + 9009*(x*e + d)^(5/2)*B*a^2*c*e^100 - 45045*
(x*e + d)^(3/2)*B*a^2*c*d*e^100 + 135135*sqrt(x*e + d)*B*a^2*c*d^2*e^100 +
15015*(x*e + d)^(3/2)*A*a^2*c*e^101 - 90090*sqrt(x*e + d)*A*a^2*c*d*e^101 +
 15015*sqrt(x*e + d)*B*a^3*e^102)*e^(-104) + 2*(B*c^3*d^7 - A*c^3*d^6*e + 3
*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^
5 + B*a^3*d*e^6 - A*a^3*e^7)*e^(-8)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 489, normalized size = 1.42

$$-\frac{2\left(-1155Bc^3x^7e^7-1365Ac^3e^7x^6+1470Bc^3de^6x^6+1820Ac^3de^6x^5-5005Bac^2e^7x^5-1960Bc^3d^2e^5x^5-6435Aac^2e^7x^4-2600Ac^3d^2e^5x^4+7150Bac^2de^6x^4+2800Bc^3d^3e^4x^4+10296Aac^2de^6x^3+4160Ac^3d^3e^4x^3-9009Ba^2ce^7x^3-11440Bac^2d^2e^5x^3-4480Bc^3d^4e^3x^3-15015Aa^2ce^7x^2-20592Aac^2d^2e^5x^2-8320Ac^3d^4e^3x^2+18018Ba^2cde^6x^2+22880Bac^2d^3e^4x^2+8960Bc^3d^5e^2x^2+60060Aa^2cde^6x+82368Aac^2d^3e^4x+33280Ac^3d^5e^2x-15015Ba^3e^7x-72072Ba^2cd^2e^5x-91520Bac^2d^4e^3x-35840Bc^3d^6ex+15015Aa^3e^7+120120Aa^2cd^2e^5+164736Aac^2d^4e^3+66560Ac^3d^6e-30030Ba^3de^6-144144Ba^2cd^3e^4-183040Bac^2d^5e^2-71680Bc^3d^7\right)}{15015\sqrt{ex+d}\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/15015/(e*x+d)^(1/2)*(-1155*B*c^3*e^7*x^7-1365*A*c^3*e^7*x^6+1470*B*c^3*d
*e^6*x^6+1820*A*c^3*d*e^6*x^5-5005*B*a*c^2*e^7*x^5-1960*B*c^3*d^2*e^5*x^5-6
435*A*a*c^2*e^7*x^4-2600*A*c^3*d^2*e^5*x^4+7150*B*a*c^2*d*e^6*x^4+2800*B*c^
3*d^3*e^4*x^4+10296*A*a*c^2*d*e^6*x^3+4160*A*c^3*d^3*e^4*x^3-9009*B*a^2*c*e
^7*x^3-11440*B*a*c^2*d^2*e^5*x^3-4480*B*c^3*d^4*e^3*x^3-15015*A*a^2*c*e^7*x
^2-20592*A*a*c^2*d^2*e^5*x^2-8320*A*c^3*d^4*e^3*x^2+18018*B*a^2*c*d*e^6*x^2
+22880*B*a*c^2*d^3*e^4*x^2+8960*B*c^3*d^5*e^2*x^2+60060*A*a^2*c*d*e^6*x+823
68*A*a*c^2*d^3*e^4*x+33280*A*c^3*d^5*e^2*x-15015*B*a^3*e^7*x-72072*B*a^2*c*
d^2*e^5*x-91520*B*a*c^2*d^4*e^3*x-35840*B*c^3*d^6*e*x+15015*A*a^3*e^7+12012
0*A*a^2*c*d^2*e^5+164736*A*a*c^2*d^4*e^3+66560*A*c^3*d^6*e-30030*B*a^3*d*e^
6-144144*B*a^2*c*d^3*e^4-183040*B*a*c^2*d^5*e^2-71680*B*c^3*d^7)/e^8
```

maxima [A] time = 0.55, size = 461, normalized size = 1.34

$$\frac{2\left(\frac{1155(ex+d)^{\frac{13}{2}}Bc^3-1365\left(7Bc^3d-Ac^3e\right)(ex+d)^{\frac{11}{2}}+5005\left(7Bc^3d^2-2Ac^3de+Bac^2e^2\right)(ex+d)^{\frac{9}{2}}-2145\left(35Bc^3d^3-15Ac^3d^2e+15Bac^2de^2-3Aac^2e^3\right)(ex+d)^{\frac{7}{2}}+3003\left(35Bc^3d^4-20Ac^3d^3e+30Bac^2d^2e^2-12Aac^2de^3+3Ba^2ce^4\right)(ex+d)^{\frac{5}{2}}-15015\left(7Bc^3d^5-5Ac^3d^4e+10Bac^2d^3e^2-6Aac^2d^2e^3+3Ba^2cde^4-Aa^2ce^5\right)(ex+d)^{\frac{3}{2}}+15015\left(7Bc^3d^6-6Ac^3d^5e+15Bac^2d^4e^2-12Aac^2d^3e^3+9Ba^2cd^2e^4-6Aa^2cde^5+Ba^3e^6\right)\sqrt{ex+d}}{e^7}+\frac{15015\left(Bc^3d^7-Ac^3d^6e+3Bac^2d^5e^2-3Aac^2d^4e^3+3Ba^2cd^3e^4-3Aa^2cd^2e^5+Ba^3de^6-Aa^3e^7\right)}{\sqrt{ex+d}\,e^7}\right)}{15015e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15015*((1155*(e*x + d)^(13/2)*B*c^3 - 1365*(7*B*c^3*d - A*c^3*e)*(e*x + d
)^(11/2) + 5005*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(9/2) -
 2145*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e
*x + d)^(7/2) + 3003*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 -
12*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^(5/2) - 15015*(7*B*c^3*d^5 - 5*
A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*
a^2*c*e^5)*(e*x + d)^(3/2) + 15015*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^
2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^
3*e^6)*sqrt(e*x + d))/e^7 + 15015*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*
e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e
^6 - A*a^3*e^7)/(sqrt(e*x + d)*e^7))/e
```

mupad [B] time = 1.84, size = 394, normalized size = 1.15

$$\frac{(d+ex)^{5/2}\left(6Ba^2ce^4+60Bac^2d^2e^2-24Aac^2de^3+70Bc^3d^4-40Ac^3d^3e\right)}{5e^8}-\frac{-2Ba^3de^6+2Aa^3e^7-6Ba^2cd^3e^4+6Aa^2cd^2e^5-6Bac^2d^5e^2+6Aac^2d^4e^3-2Bc^3d^7+2Ac^3d^6e}{e^8\sqrt{d+ex}}+\frac{(d+ex)^{9/2}\left(42Bc^3d^2-12Ac^3de+6Bac^2e^2\right)}{9e^8}+\frac{2\left(cd^2+ae^2\right)^2\sqrt{d+ex}\left(7Bcd^2-6Acde+Bae^2\right)}{e^8}+\frac{2Bc^3(d+ex)^{13/2}}{13e^8}+\frac{2c^2(d+ex)^{7/2}\left(-35Bcd^3+15Acd^2e-15Bade^2+3Aae^3\right)}{7e^8}+\frac{2c^3(Ae-7Bd)(d+ex)^{11/2}}{11e^8}+\frac{2c\left(cd^2+ae^2\right)(d+ex)^{3/2}\left(-7Bcd^3+5Acd^2e-3Bade^2+Aae^3\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/(5*e^8) - (2*A*a^3*e^7 - 2*B*c^3*d^7 - 2*B*a
```

```
^3*d*e^6 + 2*A*c^3*d^6*e + 6*A*a*c^2*d^4*e^3 + 6*A*a^2*c*d^2*e^5 - 6*B*a*c^
2*d^5*e^2 - 6*B*a^2*c*d^3*e^4)/(e^8*(d + e*x)^(1/2)) + ((d + e*x)^(9/2)*(42
*B*c^3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))/(9*e^8) + (2*(a*e^2 + c*d^2)^2*
(d + e*x)^(1/2)*(B*a*e^2 + 7*B*c*d^2 - 6*A*c*d*e))/e^8 + (2*B*c^3*(d + e*x)
^(13/2))/(13*e^8) + (2*c^2*(d + e*x)^(7/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a
*d*e^2 + 15*A*c*d^2*e))/(7*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(11/2))/(1
1*e^8) + (2*c*(a*e^2 + c*d^2)*(d + e*x)^(3/2)*(A*a*e^3 - 7*B*c*d^3 - 3*B*a*
d*e^2 + 5*A*c*d^2*e))/e^8
```

sympy [A] time = 101.30, size = 461, normalized size = 1.34

$$\frac{2Bc^3(d+ex)^{\frac{13}{2}}}{13e^8}+\frac{(d+ex)^{\frac{11}{2}}\left(2Ac^3e-14Bc^3d\right)}{11e^8}+\frac{(d+ex)^{\frac{9}{2}}\left(-12Ac^3de+6Bac^2e^2+42Bc^3d^2\right)}{9e^8}+\frac{(d+ex)^{\frac{7}{2}}\left(6Aac^2e^3+30Ac^3d^2e-30Bac^2de^2-70Bc^3d^3\right)}{7e^8}+\frac{(d+ex)^{\frac{5}{2}}\left(-24Aac^2de^3-40Ac^3d^3e+6Ba^2ce^4+60Bac^2d^2e^2+70Bc^3d^4\right)}{5e^8}+\frac{(d+ex)^{\frac{3}{2}}\left(6Aa^2ce^5+36Aac^2d^2e^3+30Ac^3d^4e-18Ba^2cde^4-60Bac^2d^3e^2-42Bc^3d^5\right)}{3e^8}+\frac{\sqrt{d+ex}\left(-12Aa^2cde^5-24Aac^2d^3e^3-12Ac^3d^5e+2Ba^3e^6+18Ba^2cd^2e^4+30Bac^2d^4e^2+14Bc^3d^6\right)}{e^8}+\frac{2(-Ae+Bd)\left(ae^2+cd^2\right)^3}{e^8\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c**3*(d + e*x)**(13/2)/(13*e**8) + (d + e*x)**(11/2)*(2*A*c**3*e - 14*B
*c**3*d)/(11*e**8) + (d + e*x)**(9/2)*(-12*A*c**3*d*e + 6*B*a*c**2*e**2 + 4
2*B*c**3*d**2)/(9*e**8) + (d + e*x)**(7/2)*(6*A*a*c**2*e**3 + 30*A*c**3*d**
2*e - 30*B*a*c**2*d*e**2 - 70*B*c**3*d**3)/(7*e**8) + (d + e*x)**(5/2)*(-24
*A*a*c**2*d*e**3 - 40*A*c**3*d**3*e + 6*B*a**2*c*e**4 + 60*B*a*c**2*d**2*e*
*2 + 70*B*c**3*d**4)/(5*e**8) + (d + e*x)**(3/2)*(6*A*a**2*c*e**5 + 36*A*a*
c**2*d**2*e**3 + 30*A*c**3*d**4*e - 18*B*a**2*c*d*e**4 - 60*B*a*c**2*d**3*e
**2 - 42*B*c**3*d**5)/(3*e**8) + sqrt(d + e*x)*(-12*A*a**2*c*d*e**5 - 24*A*
a*c**2*d**3*e**3 - 12*A*c**3*d**5*e + 2*B*a**3*e**6 + 18*B*a**2*c*d**2*e**4
 + 30*B*a*c**2*d**4*e**2 + 14*B*c**3*d**6)/e**8 + 2*(-A*e + B*d)*(a*e**2 +
c*d**2)**3/(e**8*sqrt(d + e*x))
```

3.1269 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=346

$$-\frac{2c(d+ex)^{3/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8}+\frac{6c^2(d+ex)^{7/2}\left(aBe^2-2Acde+7Bcd^2\right.}{7e^8}$$

Rubi [A] time = 0.16, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$-\frac{2c(d+ex)^{3/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8}+\frac{6c^2(d+ex)^{7/2}\left(aBe^2-2Acde+7Bcd^2\right)}{7e^8}-\frac{2c^2(d+ex)^{5/2}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{5e^8}-\frac{6c\sqrt{d+ex}\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8}-\frac{2\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{e^8\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)^3(Bd-Ae)}{3e^8(d+ex)^{3/2}}-\frac{2c^3(d+ex)^{9/2}(7Bd-Ae)}{9e^8}+\frac{2Bc^3(d+ex)^{11/2}}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(3*e^8*(d + e*x)^(3/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(e^8*Sqrt[d + e*x]) - (6*c*(c*d^2
+ a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*Sqrt[d + e*x])/e
^8 - (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 +
 3*a^2*e^4))*(d + e*x)^(3/2))/(3*e^8) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2*e +
 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(5/2))/(5*e^8) + (6*c^2*(7*B*c*d^2 - 2
*A*c*d*e + a*B*e^2)*(d + e*x)^(7/2))/(7*e^8) - (2*c^3*(7*B*d - A*e)*(d + e*
x)^(9/2))/(9*e^8) + (2*B*c^3*(d + e*x)^(11/2))/(11*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{5/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{5/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{3/2}}+\frac{3c\left(cd^2+\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{3e^8(d+ex)^{3/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^8\sqrt{d+ex}}-\frac{6c\left(cd^2+ae\right.}{}$$

Mathematica [A] time = 0.28, size = 375, normalized size = 1.08

$$\frac{22Ae\left(-105a^3e^6+315a^2ce^4\left(8d^2+12dex+3e^2x^2\right)+63ac^2e^2\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)+5c^3\left(1024d^6+1536d^5ex+384d^4e^2x^2-64d^3e^3x^3+24d^2e^4x^4-12de^5x^5+7e^6x^6\right)\right)-10B\left(231a^3e^6(2d+3ex)+693a^2ce^4\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)+99ac^2e^2\left(256d^5+384d^4ex+96d^3e^2x^2-16d^2e^3x^3+6de^4x^4-3e^5x^5\right)+7c^3\left(2048d^7+3072d^6ex+768d^5e^2x^2-128d^4e^3x^3+48d^3e^4x^4-24d^2e^5x^5+14de^6x^6-9e^7x^7\right)\right)}{3465e^8(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (22*A*e*(-105*a^3*e^6 + 315*a^2*c*e^4*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 63*a
*c^2*e^2*(128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)
 + 5*c^3*(1024*d^6 + 1536*d^5*e*x + 384*d^4*e^2*x^2 - 64*d^3*e^3*x^3 + 24*d
^2*e^4*x^4 - 12*d*e^5*x^5 + 7*e^6*x^6)) - 10*B*(231*a^3*e^6*(2*d + 3*e*x) +
 693*a^2*c*e^4*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3) + 99*a*c^2*e^2
*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^4*x^4 - 3
*e^5*x^5) + 7*c^3*(2048*d^7 + 3072*d^6*e*x + 768*d^5*e^2*x^2 - 128*d^4*e^3*
```

```
x^3 + 48*d^3*e^4*x^4 - 24*d^2*e^5*x^5 + 14*d*e^6*x^6 - 9*e^7*x^7)))/(3465*e
^8*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.23, size = 573, normalized size = 1.66

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(1155*B*c^3*d^7 - 1155*A*c^3*d^6*e + 3465*a*B*c^2*d^5*e^2 - 3465*a*A*c^2
*d^4*e^3 + 3465*a^2*B*c*d^3*e^4 - 3465*a^2*A*c*d^2*e^5 + 1155*a^3*B*d*e^6 -
 1155*a^3*A*e^7 - 24255*B*c^3*d^6*(d + e*x) + 20790*A*c^3*d^5*e*(d + e*x) -
 51975*a*B*c^2*d^4*e^2*(d + e*x) + 41580*a*A*c^2*d^3*e^3*(d + e*x) - 31185*
a^2*B*c*d^2*e^4*(d + e*x) + 20790*a^2*A*c*d*e^5*(d + e*x) - 3465*a^3*B*e^6*
(d + e*x) - 72765*B*c^3*d^5*(d + e*x)^2 + 51975*A*c^3*d^4*e*(d + e*x)^2 - 1
03950*a*B*c^2*d^3*e^2*(d + e*x)^2 + 62370*a*A*c^2*d^2*e^3*(d + e*x)^2 - 311
85*a^2*B*c*d*e^4*(d + e*x)^2 + 10395*a^2*A*c*e^5*(d + e*x)^2 + 40425*B*c^3*
d^4*(d + e*x)^3 - 23100*A*c^3*d^3*e*(d + e*x)^3 + 34650*a*B*c^2*d^2*e^2*(d
+ e*x)^3 - 13860*a*A*c^2*d*e^3*(d + e*x)^3 + 3465*a^2*B*c*e^4*(d + e*x)^3 -
 24255*B*c^3*d^3*(d + e*x)^4 + 10395*A*c^3*d^2*e*(d + e*x)^4 - 10395*a*B*c^
2*d*e^2*(d + e*x)^4 + 2079*a*A*c^2*e^3*(d + e*x)^4 + 10395*B*c^3*d^2*(d + e
*x)^5 - 2970*A*c^3*d*e*(d + e*x)^5 + 1485*a*B*c^2*e^2*(d + e*x)^5 - 2695*B*
c^3*d*(d + e*x)^6 + 385*A*c^3*e*(d + e*x)^6 + 315*B*c^3*(d + e*x)^7))/(3465
*e^8*(d + e*x)^(3/2))
```

fricas [A] time = 0.42, size = 475, normalized size = 1.37

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*e^7*x^7 - 71680*B*c^3*d^7 + 56320*A*c^3*d^6*e - 126720*B*
a*c^2*d^5*e^2 + 88704*A*a*c^2*d^4*e^3 - 55440*B*a^2*c*d^3*e^4 + 27720*A*a^2
*c*d^2*e^5 - 2310*B*a^3*d*e^6 - 1155*A*a^3*e^7 - 35*(14*B*c^3*d*e^6 - 11*A*
c^3*e^7)*x^6 + 15*(56*B*c^3*d^2*e^5 - 44*A*c^3*d*e^6 + 99*B*a*c^2*e^7)*x^5
- 3*(560*B*c^3*d^3*e^4 - 440*A*c^3*d^2*e^5 + 990*B*a*c^2*d*e^6 - 693*A*a*c^
2*e^7)*x^4 + (4480*B*c^3*d^4*e^3 - 3520*A*c^3*d^3*e^4 + 7920*B*a*c^2*d^2*e^
5 - 5544*A*a*c^2*d*e^6 + 3465*B*a^2*c*e^7)*x^3 - 3*(8960*B*c^3*d^5*e^2 - 70
40*A*c^3*d^4*e^3 + 15840*B*a*c^2*d^3*e^4 - 11088*A*a*c^2*d^2*e^5 + 6930*B*a
^2*c*d*e^6 - 3465*A*a^2*c*e^7)*x^2 - 3*(35840*B*c^3*d^6*e - 28160*A*c^3*d^5
*e^2 + 63360*B*a*c^2*d^4*e^3 - 44352*A*a*c^2*d^3*e^4 + 27720*B*a^2*c*d^2*e^
5 - 13860*A*a^2*c*d*e^6 + 1155*B*a^3*e^7)*x)*sqrt(e*x + d)/(e^10*x^2 + 2*d*
e^9*x + d^2*e^8)
```

giac [A] time = 0.23, size = 599, normalized size = 1.73

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3465*(315*(x*e + d)^(11/2)*B*c^3*e^80 - 2695*(x*e + d)^(9/2)*B*c^3*d*e^80
 + 10395*(x*e + d)^(7/2)*B*c^3*d^2*e^80 - 24255*(x*e + d)^(5/2)*B*c^3*d^3*e
^80 + 40425*(x*e + d)^(3/2)*B*c^3*d^4*e^80 - 72765*sqrt(x*e + d)*B*c^3*d^5*
e^80 + 385*(x*e + d)^(9/2)*A*c^3*e^81 - 2970*(x*e + d)^(7/2)*A*c^3*d*e^81 +
 10395*(x*e + d)^(5/2)*A*c^3*d^2*e^81 - 23100*(x*e + d)^(3/2)*A*c^3*d^3*e^8
1 + 51975*sqrt(x*e + d)*A*c^3*d^4*e^81 + 1485*(x*e + d)^(7/2)*B*a*c^2*e^82
```

```
- 10395*(x*e + d)^(5/2)*B*a*c^2*d*e^82 + 34650*(x*e + d)^(3/2)*B*a*c^2*d^2*
e^82 - 103950*sqrt(x*e + d)*B*a*c^2*d^3*e^82 + 2079*(x*e + d)^(5/2)*A*a*c^2
*e^83 - 13860*(x*e + d)^(3/2)*A*a*c^2*d*e^83 + 62370*sqrt(x*e + d)*A*a*c^2*
d^2*e^83 + 3465*(x*e + d)^(3/2)*B*a^2*c*e^84 - 31185*sqrt(x*e + d)*B*a^2*c*
d*e^84 + 10395*sqrt(x*e + d)*A*a^2*c*e^85)*e^(-88) - 2/3*(21*(x*e + d)*B*c^
3*d^6 - B*c^3*d^7 - 18*(x*e + d)*A*c^3*d^5*e + A*c^3*d^6*e + 45*(x*e + d)*B
*a*c^2*d^4*e^2 - 3*B*a*c^2*d^5*e^2 - 36*(x*e + d)*A*a*c^2*d^3*e^3 + 3*A*a*c
^2*d^4*e^3 + 27*(x*e + d)*B*a^2*c*d^2*e^4 - 3*B*a^2*c*d^3*e^4 - 18*(x*e + d
)*A*a^2*c*d*e^5 + 3*A*a^2*c*d^2*e^5 + 3*(x*e + d)*B*a^3*e^6 - B*a^3*d*e^6 +
 A*a^3*e^7)*e^(-8)/(x*e + d)^(3/2)
```

maple [A] time = 0.06, size = 489, normalized size = 1.41

$$-\frac{2\left(-315Bc^3x^7e^7-385Ac^3e^7x^6+490Bc^3de^6x^6+660Ac^3de^6x^5-1485Bac^2e^7x^5-840Bc^3d^2e^5x^5-2079Aac^2e^7x^4-1320Ac^3d^2e^5x^4+2970Bac^2de^6x^4+1680Bc^3d^3e^4x^4+5544Aac^2de^6x^3+3520Ac^3d^3e^4x^3-3465Ba^2ce^7x^3-7920Bac^2d^2e^5x^3-4480Bc^3d^4e^3x^3-10395Aa^2ce^7x^2-33264Aac^2d^2e^5x^2-21120Ac^3d^4e^3x^2+20790Ba^2cde^6x^2+47520Bac^2d^3e^4x^2+26880Bc^3d^5e^2x^2-41580Aa^2cde^6x-133056Aac^2d^3e^4x-84480Ac^3d^5e^2x+3465Ba^3e^7x+83160Ba^2cd^2e^5x+190080Bac^2d^4e^3x+107520Bc^3d^6ex+1155Aa^3e^7-27720Aa^2cd^2e^5-88704Aac^2d^4e^3-56320Ac^3d^6e+2310Ba^3de^6+55440Ba^2cd^3e^4+126720Bac^2d^5e^2+71680Bc^3d^7\right)}{3465\left(ex+d\right)^{\frac{3}{2}}e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/3465/(e*x+d)^(3/2)*(-315*B*c^3*e^7*x^7-385*A*c^3*e^7*x^6+490*B*c^3*d*e^6
*x^6+660*A*c^3*d*e^6*x^5-1485*B*a*c^2*e^7*x^5-840*B*c^3*d^2*e^5*x^5-2079*A*
a*c^2*e^7*x^4-1320*A*c^3*d^2*e^5*x^4+2970*B*a*c^2*d*e^6*x^4+1680*B*c^3*d^3*
e^4*x^4+5544*A*a*c^2*d*e^6*x^3+3520*A*c^3*d^3*e^4*x^3-3465*B*a^2*c*e^7*x^3-
7920*B*a*c^2*d^2*e^5*x^3-4480*B*c^3*d^4*e^3*x^3-10395*A*a^2*c*e^7*x^2-33264
*A*a*c^2*d^2*e^5*x^2-21120*A*c^3*d^4*e^3*x^2+20790*B*a^2*c*d*e^6*x^2+47520*
B*a*c^2*d^3*e^4*x^2+26880*B*c^3*d^5*e^2*x^2-41580*A*a^2*c*d*e^6*x-133056*A*
a*c^2*d^3*e^4*x-84480*A*c^3*d^5*e^2*x+3465*B*a^3*e^7*x+83160*B*a^2*c*d^2*e^
5*x+190080*B*a*c^2*d^4*e^3*x+107520*B*c^3*d^6*e*x+1155*A*a^3*e^7-27720*A*a^
2*c*d^2*e^5-88704*A*a*c^2*d^4*e^3-56320*A*c^3*d^6*e+2310*B*a^3*d*e^6+55440*
B*a^2*c*d^3*e^4+126720*B*a*c^2*d^5*e^2+71680*B*c^3*d^7)/e^8
```

maxima [A] time = 0.65, size = 459, normalized size = 1.33

$$\frac{2\left(\frac{315\left(ex+d\right)^{\frac{11}{2}}Bc^3-385\left(7Bc^3d-Ac^3e\right)\left(ex+d\right)^{\frac{9}{2}}+1485\left(7Bc^3d^2-2Ac^3de+Bac^2e^2\right)\left(ex+d\right)^{\frac{7}{2}}-693\left(35Bc^3d^3-15Ac^3d^2e+15Bac^2de^2-3Aac^2e^3\right)\left(ex+d\right)^{\frac{5}{2}}+1155\left(35Bc^3d^4-20Ac^3d^3e+30Bac^2d^2e^2-12Aac^2de^3+3Ba^2ce^4\right)\left(ex+d\right)^{\frac{3}{2}}-10395\left(7Bc^3d^5-5Ac^3d^4e+10Bac^2d^3e^2-6Aac^2d^2e^3+3Ba^2cde^4-Aa^2ce^5\right)\sqrt{ex+d}}{e^7}+\frac{1155\left(Bc^3d^7-Ac^3d^6e+3Bac^2d^5e^2-3Aac^2d^4e^3+3Ba^2cd^3e^4-3Aa^2cd^2e^5+Ba^3de^6-Aa^3e^7-3\left(7Bc^3d^6-6Ac^3d^5e+15Bac^2d^4e^2-12Aac^2d^3e^3+9Ba^2cd^2e^4-6Aa^2cde^5+Ba^3e^6\right)\left(ex+d\right)\right)}{\left(ex+d\right)^{\frac{3}{2}}e^7}\right)}{3465e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3465*((315*(e*x + d)^(11/2)*B*c^3 - 385*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(
9/2) + 1485*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(7/2) - 693
*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e*x +
d)^(5/2) + 1155*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*
a*c^2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^(3/2) - 10395*(7*B*c^3*d^5 - 5*A*c^3
*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c
*e^5)*sqrt(e*x + d))/e^7 + 1155*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^
2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6
 - A*a^3*e^7 - 3*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a
*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/
((e*x + d)^(3/2)*e^7))/e
```

mupad [B] time = 1.83, size = 434, normalized size = 1.25

$$\frac{{\left(d+e\,x\right)}^{3/2}\,\left(6\,B\,a^2\,c\,e^4+60\,B\,a\,c^2\,d^2\,e^2-24\,A\,a\,c^2\,d\,e^3+70\,B\,c^3\,d^4-40\,A\,c^3\,d^3\,e\right)}{3\,e^8}+\frac{{\left(d+e\,x\right)}^{7/2}\,\left(42\,B\,c^3\,d^2-12\,A\,c^3\,d\,e+6\,B\,a\,c^2\,e^2\right)}{7\,e^8}-\frac{\left(d+e\,x\right)\,\left(2\,B\,a^3\,e^6+18\,B\,a^2\,c\,d^2\,e^4-12\,A\,a^2\,c\,d\,e^5+30\,B\,a\,c^2\,d^4\,e^2-24\,A\,a\,c^2\,d^3\,e^3+14\,B\,c^3\,d^6-12\,A\,c^3\,d^5\,e\right)+\frac{2\,A\,a^3\,e^7}{3}-\frac{2\,B\,c^3\,d^7}{3}-\frac{2\,B\,a^3\,d\,e^6}{3}+\frac{2\,A\,c^3\,d^6\,e}{3}+2\,A\,a\,c^2\,d^4\,e^3+2\,A\,a^2\,c\,d^2\,e^5-2\,B\,a\,c^2\,d^5\,e^2-2\,B\,a^2\,c\,d^3\,e^4}{e^8\,{\left(d+e\,x\right)}^{3/2}}+\frac{2\,B\,c^3\,{\left(d+e\,x\right)}^{11/2}}{11\,e^8}+\frac{2\,c^2\,{\left(d+e\,x\right)}^{5/2}\,\left(-35\,B\,c\,d^3+15\,A\,c\,d^2\,e-15\,B\,a\,d\,e^2+3\,A\,a\,e^3\right)}{5\,e^8}+\frac{2\,c^3\,\left(A\,e-7\,B\,d\right)\,{\left(d+e\,x\right)}^{9/2}}{9\,e^8}+\frac{6\,c\,\left(c\,d^2+a\,e^2\right)\,\sqrt{d+e\,x}\,\left(-7\,B\,c\,d^3+5\,A\,c\,d^2\,e-3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/(3*e^8) + ((d + e*x)^(7/2)*(42*B*c^3*d^2 - 1
2*A*c^3*d*e + 6*B*a*c^2*e^2))/(7*e^8) - ((d + e*x)*(2*B*a^3*e^6 + 14*B*c^3*
```

```
d^6 - 12*A*c^3*d^5*e - 24*A*a*c^2*d^3*e^3 + 30*B*a*c^2*d^4*e^2 + 18*B*a^2*c
*d^2*e^4 - 12*A*a^2*c*d*e^5) + (2*A*a^3*e^7)/3 - (2*B*c^3*d^7)/3 - (2*B*a^3
*d*e^6)/3 + (2*A*c^3*d^6*e)/3 + 2*A*a*c^2*d^4*e^3 + 2*A*a^2*c*d^2*e^5 - 2*B
*a*c^2*d^5*e^2 - 2*B*a^2*c*d^3*e^4)/(e^8*(d + e*x)^(3/2)) + (2*B*c^3*(d + e
*x)^(11/2))/(11*e^8) + (2*c^2*(d + e*x)^(5/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*
B*a*d*e^2 + 15*A*c*d^2*e))/(5*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(9/2))/
(9*e^8) + (6*c*(a*e^2 + c*d^2)*(d + e*x)^(1/2)*(A*a*e^3 - 7*B*c*d^3 - 3*B*a
*d*e^2 + 5*A*c*d^2*e))/e^8
```

sympy [A] time = 113.12, size = 406, normalized size = 1.17

$$\frac{2Bc^3(d+ex)^{\frac{11}{2}}}{11e^8}+\frac{(d+ex)^{\frac{9}{2}}\left(2Ac^3e-14Bc^3d\right)}{9e^8}+\frac{(d+ex)^{\frac{7}{2}}\left(-12Ac^3de+6Bac^2e^2+42Bc^3d^2\right)}{7e^8}+\frac{(d+ex)^{\frac{5}{2}}\left(6Aac^2e^3+30Ac^3d^2e-30Bac^2de^2-70Bc^3d^3\right)}{5e^8}+\frac{(d+ex)^{\frac{3}{2}}\left(-24Aac^2de^3-40Ac^3d^3e+6Ba^2ce^4+60Bac^2d^2e^2+70Bc^3d^4\right)}{3e^8}+\frac{\sqrt{d+ex}\left(6Aa^2ce^5+36Aac^2d^2e^3+30Ac^3d^4e-18Ba^2cde^4-60Bac^2d^3e^2-42Bc^3d^5\right)}{e^8}-\frac{2\left(ae^2+cd^2\right)^2\left(-6Acde+Bae^2+7Bcd^2\right)}{e^8\sqrt{d+ex}}+\frac{2(-Ae+Bd)\left(ae^2+cd^2\right)^3}{3e^8(d+ex)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*c**3*(d + e*x)**(11/2)/(11*e**8) + (d + e*x)**(9/2)*(2*A*c**3*e - 14*B*
c**3*d)/(9*e**8) + (d + e*x)**(7/2)*(-12*A*c**3*d*e + 6*B*a*c**2*e**2 + 42*
B*c**3*d**2)/(7*e**8) + (d + e*x)**(5/2)*(6*A*a*c**2*e**3 + 30*A*c**3*d**2*
e - 30*B*a*c**2*d*e**2 - 70*B*c**3*d**3)/(5*e**8) + (d + e*x)**(3/2)*(-24*A
*a*c**2*d*e**3 - 40*A*c**3*d**3*e + 6*B*a**2*c*e**4 + 60*B*a*c**2*d**2*e**2
 + 70*B*c**3*d**4)/(3*e**8) + sqrt(d + e*x)*(6*A*a**2*c*e**5 + 36*A*a*c**2*
d**2*e**3 + 30*A*c**3*d**4*e - 18*B*a**2*c*d*e**4 - 60*B*a*c**2*d**3*e**2 -
 42*B*c**3*d**5)/e**8 - 2*(a*e**2 + c*d**2)**2*(-6*A*c*d*e + B*a*e**2 + 7*B
*c*d**2)/(e**8*sqrt(d + e*x)) + 2*(-A*e + B*d)*(a*e**2 + c*d**2)**3/(3*e**8
*(d + e*x)**(3/2))
```

3.1270 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=346

$$-\frac{2c\sqrt{d+ex}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{6c^2(d+ex)^{5/2}\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8}$$

Rubi [A] time = 0.16, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$-\frac{2c\sqrt{d+ex}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{6c^2(d+ex)^{5/2}\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8}-\frac{2c^2(d+ex)^{3/2}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{3e^8}+\frac{6c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8\sqrt{d+ex}}-\frac{2\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{3e^8(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)^3(Bd-Ae)}{5e^8(d+ex)^{5/2}}-\frac{2c^3(d+ex)^{7/2}(7Bd-Ae)}{7e^8}+\frac{2Bc^3(d+ex)^{9/2}}{9e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(5*e^8*(d + e*x)^(5/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(3*e^8*(d + e*x)^(3/2)) + (6*c*(c*
d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^8*Sqrt[d
 + e*x]) - (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2
*e^2 + 3*a^2*e^4))*Sqrt[d + e*x])/e^8 - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2*e +
 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(3/2))/(3*e^8) + (6*c^2*(7*B*c*d^2 - 2
*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^8) - (2*c^3*(7*B*d - A*e)*(d + e*
x)^(7/2))/(7*e^8) + (2*B*c^3*(d + e*x)^(9/2))/(9*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{7/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{7/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{5/2}}+\frac{3c\left(cd^2+\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{5e^8(d+ex)^{5/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{3e^8(d+ex)^{3/2}}+\frac{6c\left(cd^2+ae\right.}{}\end{aligned}$$

Mathematica [A] time = 0.28, size = 373, normalized size = 1.08

$$\frac{2\left(7B\left(-3a^3e^6(2d+5ex)+27a^2ce^4\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)+9ac^2e^2\left(256d^5+640d^4ex+480d^3e^2x^2+80d^2e^3x^3-10de^4x^4+3e^5x^5\right)+c^3\left(2048d^7+5120d^6ex+3840d^5e^2x^2+640d^4e^3x^3-80d^3e^4x^4+24d^2e^5x^5-10de^6x^6+5e^7x^7\right)\right)-9Ae\left(7a^3e^6+7a^2ce^4\left(8d^2+20dex+15e^2x^2\right)+7ac^2e^2\left(128d^4+320d^3ex+240d^2e^2x^2+40de^3x^3-5e^4x^4\right)+c^3\left(1024d^6+2560d^5ex+1920d^4e^2x^2+320d^3e^3x^3-40d^2e^4x^4+12de^5x^5-5e^6x^6\right)\right)\right)}{315e^8(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(-9*A*e*(7*a^3*e^6 + 7*a^2*c*e^4*(8*d^2 + 20*d*e*x + 15*e^2*x^2) + 7*a*c
^2*e^2*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*e^3*x^3 - 5*e^4*x^4)
 + c^3*(1024*d^6 + 2560*d^5*e*x + 1920*d^4*e^2*x^2 + 320*d^3*e^3*x^3 - 40*d
^2*e^4*x^4 + 12*d*e^5*x^5 - 5*e^6*x^6)) + 7*B*(-3*a^3*e^6*(2*d + 5*e*x) + 2
7*a^2*c*e^4*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3) + 9*a*c^2*e^2*
(256*d^5 + 640*d^4*e*x + 480*d^3*e^2*x^2 + 80*d^2*e^3*x^3 - 10*d*e^4*x^4 +
3*e^5*x^5) + c^3*(2048*d^7 + 5120*d^6*e*x + 3840*d^5*e^2*x^2 + 640*d^4*e^3*
```

```
x^3 - 80*d^3*e^4*x^4 + 24*d^2*e^5*x^5 - 10*d*e^6*x^6 + 5*e^7*x^7))))/(315*e
^8*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.24, size = 573, normalized size = 1.66

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(63*B*c^3*d^7 - 63*A*c^3*d^6*e + 189*a*B*c^2*d^5*e^2 - 189*a*A*c^2*d^4*e
^3 + 189*a^2*B*c*d^3*e^4 - 189*a^2*A*c*d^2*e^5 + 63*a^3*B*d*e^6 - 63*a^3*A*
e^7 - 735*B*c^3*d^6*(d + e*x) + 630*A*c^3*d^5*e*(d + e*x) - 1575*a*B*c^2*d^
4*e^2*(d + e*x) + 1260*a*A*c^2*d^3*e^3*(d + e*x) - 945*a^2*B*c*d^2*e^4*(d +
 e*x) + 630*a^2*A*c*d*e^5*(d + e*x) - 105*a^3*B*e^6*(d + e*x) + 6615*B*c^3*
d^5*(d + e*x)^2 - 4725*A*c^3*d^4*e*(d + e*x)^2 + 9450*a*B*c^2*d^3*e^2*(d +
e*x)^2 - 5670*a*A*c^2*d^2*e^3*(d + e*x)^2 + 2835*a^2*B*c*d*e^4*(d + e*x)^2
- 945*a^2*A*c*e^5*(d + e*x)^2 + 11025*B*c^3*d^4*(d + e*x)^3 - 6300*A*c^3*d^
3*e*(d + e*x)^3 + 9450*a*B*c^2*d^2*e^2*(d + e*x)^3 - 3780*a*A*c^2*d*e^3*(d
+ e*x)^3 + 945*a^2*B*c*e^4*(d + e*x)^3 - 3675*B*c^3*d^3*(d + e*x)^4 + 1575*
A*c^3*d^2*e*(d + e*x)^4 - 1575*a*B*c^2*d*e^2*(d + e*x)^4 + 315*a*A*c^2*e^3*
(d + e*x)^4 + 1323*B*c^3*d^2*(d + e*x)^5 - 378*A*c^3*d*e*(d + e*x)^5 + 189*
a*B*c^2*e^2*(d + e*x)^5 - 315*B*c^3*d*(d + e*x)^6 + 45*A*c^3*e*(d + e*x)^6
+ 35*B*c^3*(d + e*x)^7))/(315*e^8*(d + e*x)^(5/2))
```

fricas [A] time = 0.43, size = 487, normalized size = 1.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*e^7*x^7 + 14336*B*c^3*d^7 - 9216*A*c^3*d^6*e + 16128*B*a*c^
2*d^5*e^2 - 8064*A*a*c^2*d^4*e^3 + 3024*B*a^2*c*d^3*e^4 - 504*A*a^2*c*d^2*e
^5 - 42*B*a^3*d*e^6 - 63*A*a^3*e^7 - 5*(14*B*c^3*d*e^6 - 9*A*c^3*e^7)*x^6 +
 3*(56*B*c^3*d^2*e^5 - 36*A*c^3*d*e^6 + 63*B*a*c^2*e^7)*x^5 - 5*(112*B*c^3*
d^3*e^4 - 72*A*c^3*d^2*e^5 + 126*B*a*c^2*d*e^6 - 63*A*a*c^2*e^7)*x^4 + 5*(8
96*B*c^3*d^4*e^3 - 576*A*c^3*d^3*e^4 + 1008*B*a*c^2*d^2*e^5 - 504*A*a*c^2*d
*e^6 + 189*B*a^2*c*e^7)*x^3 + 15*(1792*B*c^3*d^5*e^2 - 1152*A*c^3*d^4*e^3 +
 2016*B*a*c^2*d^3*e^4 - 1008*A*a*c^2*d^2*e^5 + 378*B*a^2*c*d*e^6 - 63*A*a^2
*c*e^7)*x^2 + 5*(7168*B*c^3*d^6*e - 4608*A*c^3*d^5*e^2 + 8064*B*a*c^2*d^4*e
^3 - 4032*A*a*c^2*d^3*e^4 + 1512*B*a^2*c*d^2*e^5 - 252*A*a^2*c*d*e^6 - 21*B
*a^3*e^7)*x)*sqrt(e*x + d)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8
)
```

giac [A] time = 0.23, size = 599, normalized size = 1.73

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*c^3*e^64 - 315*(x*e + d)^(7/2)*B*c^3*d*e^64 + 1
323*(x*e + d)^(5/2)*B*c^3*d^2*e^64 - 3675*(x*e + d)^(3/2)*B*c^3*d^3*e^64 +
11025*sqrt(x*e + d)*B*c^3*d^4*e^64 + 45*(x*e + d)^(7/2)*A*c^3*e^65 - 378*(x
*e + d)^(5/2)*A*c^3*d*e^65 + 1575*(x*e + d)^(3/2)*A*c^3*d^2*e^65 - 6300*sqr
t(x*e + d)*A*c^3*d^3*e^65 + 189*(x*e + d)^(5/2)*B*a*c^2*e^66 - 1575*(x*e +
d)^(3/2)*B*a*c^2*d*e^66 + 9450*sqrt(x*e + d)*B*a*c^2*d^2*e^66 + 315*(x*e +
d)^(3/2)*A*a*c^2*e^67 - 3780*sqrt(x*e + d)*A*a*c^2*d*e^67 + 945*sqrt(x*e +
```

```
d)*B*a^2*c*e^68)*e^(-72) + 2/15*(315*(x*e + d)^2*B*c^3*d^5 - 35*(x*e + d)*B
*c^3*d^6 + 3*B*c^3*d^7 - 225*(x*e + d)^2*A*c^3*d^4*e + 30*(x*e + d)*A*c^3*d
^5*e - 3*A*c^3*d^6*e + 450*(x*e + d)^2*B*a*c^2*d^3*e^2 - 75*(x*e + d)*B*a*c
^2*d^4*e^2 + 9*B*a*c^2*d^5*e^2 - 270*(x*e + d)^2*A*a*c^2*d^2*e^3 + 60*(x*e
+ d)*A*a*c^2*d^3*e^3 - 9*A*a*c^2*d^4*e^3 + 135*(x*e + d)^2*B*a^2*c*d*e^4 -
45*(x*e + d)*B*a^2*c*d^2*e^4 + 9*B*a^2*c*d^3*e^4 - 45*(x*e + d)^2*A*a^2*c*e
^5 + 30*(x*e + d)*A*a^2*c*d*e^5 - 9*A*a^2*c*d^2*e^5 - 5*(x*e + d)*B*a^3*e^6
 + 3*B*a^3*d*e^6 - 3*A*a^3*e^7)*e^(-8)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 489, normalized size = 1.41

$$-\frac{2\left(-35Bc^3e^7x^7-45Ac^3e^7x^6+70Bc^3de^6x^6+108Ac^3de^6x^5-189Bac^2e^7x^5-168Bc^3d^2e^5x^5-315Aac^2e^7x^4-360Ac^3d^2e^5x^4+630Bac^2de^6x^4+560Bc^3d^3e^4x^4+2520Aac^2de^6x^3+2880Ac^3d^3e^4x^3-945Ba^2ce^7x^3-5040Bac^2d^2e^5x^3-4480Bc^3d^4e^3x^3+945Aa^2ce^7x^2+15120Aac^2d^2e^5x^2+17280Ac^3d^4e^3x^2-5670Ba^2cde^6x^2-30240Bac^2d^3e^4x^2-26880Bc^3d^5e^2x^2+1260Aa^2cde^6x+20160Aac^2d^3e^4x+23040Ac^3d^5e^2x+105Ba^3e^7x-7560Ba^2cd^2e^5x-40320Bac^2d^4e^3x-35840Bc^3d^6ex+63Aa^3e^7+504Aa^2cd^2e^5+8064Aac^2d^4e^3+9216Ac^3d^6e+42Ba^3de^6-3024Ba^2cd^3e^4-16128Bac^2d^5e^2-14336Bc^3d^7\right)}{315(ex+d)^{5/2}e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x)
```

```
[Out] -2/315/(e*x+d)^(5/2)*(-35*B*c^3*e^7*x^7-45*A*c^3*e^7*x^6+70*B*c^3*d*e^6*x^6
+108*A*c^3*d*e^6*x^5-189*B*a*c^2*e^7*x^5-168*B*c^3*d^2*e^5*x^5-315*A*a*c^2*
e^7*x^4-360*A*c^3*d^2*e^5*x^4+630*B*a*c^2*d*e^6*x^4+560*B*c^3*d^3*e^4*x^4+2
520*A*a*c^2*d*e^6*x^3+2880*A*c^3*d^3*e^4*x^3-945*B*a^2*c*e^7*x^3-5040*B*a*c
^2*d^2*e^5*x^3-4480*B*c^3*d^4*e^3*x^3+945*A*a^2*c*e^7*x^2+15120*A*a*c^2*d^2
*e^5*x^2+17280*A*c^3*d^4*e^3*x^2-5670*B*a^2*c*d*e^6*x^2-30240*B*a*c^2*d^3*e
^4*x^2-26880*B*c^3*d^5*e^2*x^2+1260*A*a^2*c*d*e^6*x+20160*A*a*c^2*d^3*e^4*x
+23040*A*c^3*d^5*e^2*x+105*B*a^3*e^7*x-7560*B*a^2*c*d^2*e^5*x-40320*B*a*c^2
*d^4*e^3*x-35840*B*c^3*d^6*e*x+63*A*a^3*e^7+504*A*a^2*c*d^2*e^5+8064*A*a*c^
2*d^4*e^3+9216*A*c^3*d^6*e+42*B*a^3*d*e^6-3024*B*a^2*c*d^3*e^4-16128*B*a*c^
2*d^5*e^2-14336*B*c^3*d^7)/e^8
```

maxima [A] time = 0.64, size = 461, normalized size = 1.33

$$\frac{2\left(\frac{35(ex+d)^{\frac{9}{2}}Bc^3-45\left(7Bc^3d-Ac^3e\right)(ex+d)^{\frac{7}{2}}+189\left(7Bc^3d^2-2Ac^3de+Bac^2e^2\right)(ex+d)^{\frac{5}{2}}-105\left(35Bc^3d^3-15Ac^3d^2e+15Bac^2de^2-3Aac^2e^3\right)(ex+d)^{\frac{3}{2}}+315\left(35Bc^3d^4-20Ac^3d^3e+30Bac^2d^2e^2-12Aac^2de^3+3Ba^2ce^4\right)\sqrt{ex+d}}{e^7}+\frac{21\left(3Bc^3d^7-3Ac^3d^6e+9Bac^2d^5e^2-9Aac^2d^4e^3+9Ba^2cd^3e^4-9Aa^2cd^2e^5+3Ba^3de^6-3Aa^3e^7+45\left(7Bc^3d^5-5Ac^3d^4e+10Bac^2d^3e^2-6Aac^2d^2e^3+3Ba^2cde^4-Aa^2ce^5\right)(ex+d)^2-5\left(7Bc^3d^6-6Ac^3d^5e+15Bac^2d^4e^2-12Aac^2d^3e^3+9Ba^2cd^2e^4-6Aa^2cde^5+Ba^3e^6\right)(ex+d)\right)}{(ex+d)^{\frac{5}{2}}e^7}\right)}{315e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*c^3 - 45*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(7/2)
 + 189*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(5/2) - 105*(35*
B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e*x + d)^(3
/2) + 315*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*
d*e^3 + 3*B*a^2*c*e^4)*sqrt(e*x + d))/e^7 + 21*(3*B*c^3*d^7 - 3*A*c^3*d^6*e
 + 9*B*a*c^2*d^5*e^2 - 9*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 - 9*A*a^2*c*d^
2*e^5 + 3*B*a^3*d*e^6 - 3*A*a^3*e^7 + 45*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*
B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*(e*x +
 d)^2 - 5*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^
3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/((e*x +
 d)^(5/2)*e^7))/e
```

mupad [B] time = 1.84, size = 455, normalized size = 1.32

$$\frac{\sqrt{d+ex}\left(6Ba^2ce^4+60Bac^2d^2e^2-24Aac^2de^3+70Bc^3d^4-40Ac^3d^3e\right)}{e^8}-\frac{(d+ex)\left(\frac{2Ba^3e^6}{3}+6Ba^2cd^2e^4-4Aa^2cde^5+10Bac^2d^4e^2-8Aac^2d^3e^3+\frac{14Bc^3d^6}{3}-4Ac^3d^5e\right)-(d+ex)^2\left(18Ba^2cde^4-6Aa^2ce^5+60Bac^2d^3e^2-36Aac^2d^2e^3+42Bc^3d^5-30Ac^3d^4e\right)+\frac{2Aa^3e^7}{5}-\frac{2Bc^3d^7}{5}-\frac{2Ba^3de^6}{5}+\frac{2Ac^3d^6e}{5}+\frac{6Aac^2d^4e^3}{5}+\frac{6Aa^2cd^2e^5}{5}-\frac{6Bac^2d^5e^2}{5}-\frac{6Ba^2cd^3e^4}{5}}{e^8(d+ex)^{5/2}}+\frac{(d+ex)^{5/2}\left(42Bc^3d^2-12Ac^3de+6Bac^2e^2\right)}{5e^8}+\frac{2Bc^3(d+ex)^{9/2}}{9e^8}+\frac{2c^2(d+ex)^{3/2}\left(-35Bcd^3+15Acd^2e-15Bade^2+3Aae^3\right)}{3e^8}+\frac{2c^3(Ae-7Bd)(d+ex)^{7/2}}{7e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/e^8 - ((d + e*x)*((2*B*a^3*e^6)/3 + (14*B*c^
3*d^6)/3 - 4*A*c^3*d^5*e - 8*A*a*c^2*d^3*e^3 + 10*B*a*c^2*d^4*e^2 + 6*B*a^2
*c*d^2*e^4 - 4*A*a^2*c*d*e^5) - (d + e*x)^2*(42*B*c^3*d^5 - 6*A*a^2*c*e^5 -
 30*A*c^3*d^4*e - 36*A*a*c^2*d^2*e^3 + 60*B*a*c^2*d^3*e^2 + 18*B*a^2*c*d*e^
```

```
4) + (2*A*a^3*e^7)/5 - (2*B*c^3*d^7)/5 - (2*B*a^3*d*e^6)/5 + (2*A*c^3*d^6*e
)/5 + (6*A*a*c^2*d^4*e^3)/5 + (6*A*a^2*c*d^2*e^5)/5 - (6*B*a*c^2*d^5*e^2)/5
 - (6*B*a^2*c*d^3*e^4)/5)/(e^8*(d + e*x)^(5/2)) + ((d + e*x)^(5/2)*(42*B*c^
3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))/(5*e^8) + (2*B*c^3*(d + e*x)^(9/2))/
(9*e^8) + (2*c^2*(d + e*x)^(3/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a*d*e^2 + 1
5*A*c*d^2*e))/(3*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(7/2))/(7*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1271 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=342

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8\sqrt{d+ex}}+\frac{2c^2(d+ex)^{3/2}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}-\frac{2c^2\sqrt{d+}}{}$$

Rubi [A] time = 0.16, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8\sqrt{d+ex}}+\frac{2c^2(d+ex)^{3/2}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}-\frac{2c^2\sqrt{d+ex}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{e^8}+\frac{2c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8(d+ex)^{3/2}}-\frac{2\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{5e^8(d+ex)^{5/2}}+\frac{2\left(ae^2+cd^2\right)^3(Bd-Ae)}{7e^8(d+ex)^{7/2}}-\frac{2c^3(d+ex)^{5/2}(7Bd-Ae)}{5e^8}+\frac{2Bc^3(d+ex)^{7/2}}{7e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(9/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(7*e^8*(d + e*x)^(7/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(5*e^8*(d + e*x)^(5/2)) + (2*c*(c*
d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^8*(d + e
*x)^(3/2)) + (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d
^2*e^2 + 3*a^2*e^4)))/(e^8*Sqrt[d + e*x]) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2
*e + 15*a*B*d*e^2 - 3*a*A*e^3)*Sqrt[d + e*x])/e^8 + (2*c^2*(7*B*c*d^2 - 2*A
*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/e^8 - (2*c^3*(7*B*d - A*e)*(d + e*x)^(5/
2))/(5*e^8) + (2*B*c^3*(d + e*x)^(7/2))/(7*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int\frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{9/2}}\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{9/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{7/2}}+\frac{3c\left(cd^2+\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{7e^8(d+ex)^{7/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{5e^8(d+ex)^{5/2}}+\frac{2c\left(cd^2+ae\right.}{}$$

Mathematica [A] time = 0.29, size = 372, normalized size = 1.09

$$\frac{2Ae\left(-5a^3e^6-a^2ce^4\left(8d^2+28dex+35e^2x^2\right)+3ac^2e^2\left(128d^4+448d^3ex+560d^2e^2x^2+280de^3x^3+35e^4x^4\right)+c^3\left(1024d^6+3584d^5ex+4480d^4e^2x^2+2240d^3e^3x^3+280d^2e^4x^4-28de^5x^5+7e^6x^6\right)\right)-2B\left(a^3e^6(2d+7ex)+3a^2ce^4\left(16d^3+56d^2ex+70de^2x^2+35e^3x^3\right)+5ac^2e^2\left(256d^5+896d^4ex+1120d^3e^2x^2+560d^2e^3x^3+70de^4x^4-7e^5x^5\right)+c^3\left(2048d^7+7168d^6ex+8960d^5e^2x^2+4480d^4e^3x^3+560d^3e^4x^4-56d^2e^5x^5+14de^6x^6-5e^7x^7\right)\right)}{35e^8(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(9/2),x]
```

```
[Out] (2*A*e*(-5*a^3*e^6 - a^2*c*e^4*(8*d^2 + 28*d*e*x + 35*e^2*x^2) + 3*a*c^2*e^
2*(128*d^4 + 448*d^3*e*x + 560*d^2*e^2*x^2 + 280*d*e^3*x^3 + 35*e^4*x^4) +
c^3*(1024*d^6 + 3584*d^5*e*x + 4480*d^4*e^2*x^2 + 2240*d^3*e^3*x^3 + 280*d^
2*e^4*x^4 - 28*d*e^5*x^5 + 7*e^6*x^6)) - 2*B*(a^3*e^6*(2*d + 7*e*x) + 3*a^2
*c*e^4*(16*d^3 + 56*d^2*e*x + 70*d*e^2*x^2 + 35*e^3*x^3) + 5*a*c^2*e^2*(256
*d^5 + 896*d^4*e*x + 1120*d^3*e^2*x^2 + 560*d^2*e^3*x^3 + 70*d*e^4*x^4 - 7*
e^5*x^5) + c^3*(2048*d^7 + 7168*d^6*e*x + 8960*d^5*e^2*x^2 + 4480*d^4*e^3*x
```

^3 + 560*d^3*e^4*x^4 - 56*d^2*e^5*x^5 + 14*d*e^6*x^6 - 5*e^7*x^7)))/(35*e^8
*(d + e*x)^(7/2))

IntegrateAlgebraic [A] time = 0.30, size = 573, normalized size = 1.68

$$\frac{2\left(-5a^3Ae^7-7a^3Be^6(d+ex)+5a^3Bde^6-15a^2Acd^2e^5+42a^2Acde^5(d+ex)-35a^2Ace^5(d+ex)^2+15a^2Bcd^3e^4-63a^2Bcd^2e^4(d+ex)+105a^2Bcde^4(d+ex)^2-105a^2Bce^4(d+ex)^3-15aAc^2d^4e^3+84aAc^2d^3e^3(d+ex)-210aAc^2d^2e^3(d+ex)^2+420aAc^2de^3(d+ex)^3+105aAc^2e^3(d+ex)^4+15aBc^2d^5e^2-105aBc^2d^4e^2(d+ex)+350aBc^2d^3e^2(d+ex)^2-1050aBc^2d^2e^2(d+ex)^3-525aBc^2de^2(d+ex)^4+35aBc^2e^2(d+ex)^5-5Ac^3d^6e+42Ac^3d^5e(d+ex)-175Ac^3d^4e(d+ex)^2+700Ac^3d^3e(d+ex)^3+525Ac^3d^2e(d+ex)^4-70Ac^3de(d+ex)^5+7Ac^3e(d+ex)^6+5Bc^3d^7-49Bc^3d^6(d+ex)+245Bc^3d^5(d+ex)^2-1225Bc^3d^4(d+ex)^3-1225Bc^3d^3(d+ex)^4+245Bc^3d^2(d+ex)^5-49Bc^3d(d+ex)^6+5Bc^3(d+ex)^7\right)}{35e^8(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(9/2),x]
```

```
[Out] (2*(5*B*c^3*d^7 - 5*A*c^3*d^6*e + 15*a*B*c^2*d^5*e^2 - 15*a*A*c^2*d^4*e^3 +
 15*a^2*B*c*d^3*e^4 - 15*a^2*A*c*d^2*e^5 + 5*a^3*B*d*e^6 - 5*a^3*A*e^7 - 49
*B*c^3*d^6*(d + e*x) + 42*A*c^3*d^5*e*(d + e*x) - 105*a*B*c^2*d^4*e^2*(d +
e*x) + 84*a*A*c^2*d^3*e^3*(d + e*x) - 63*a^2*B*c*d^2*e^4*(d + e*x) + 42*a^2
*A*c*d*e^5*(d + e*x) - 7*a^3*B*e^6*(d + e*x) + 245*B*c^3*d^5*(d + e*x)^2 -
175*A*c^3*d^4*e*(d + e*x)^2 + 350*a*B*c^2*d^3*e^2*(d + e*x)^2 - 210*a*A*c^2
*d^2*e^3*(d + e*x)^2 + 105*a^2*B*c*d*e^4*(d + e*x)^2 - 35*a^2*A*c*e^5*(d +
e*x)^2 - 1225*B*c^3*d^4*(d + e*x)^3 + 700*A*c^3*d^3*e*(d + e*x)^3 - 1050*a*
B*c^2*d^2*e^2*(d + e*x)^3 + 420*a*A*c^2*d*e^3*(d + e*x)^3 - 105*a^2*B*c*e^4
*(d + e*x)^3 - 1225*B*c^3*d^3*(d + e*x)^4 + 525*A*c^3*d^2*e*(d + e*x)^4 - 5
25*a*B*c^2*d*e^2*(d + e*x)^4 + 105*a*A*c^2*e^3*(d + e*x)^4 + 245*B*c^3*d^2*
(d + e*x)^5 - 70*A*c^3*d*e*(d + e*x)^5 + 35*a*B*c^2*e^2*(d + e*x)^5 - 49*B*
c^3*d*(d + e*x)^6 + 7*A*c^3*e*(d + e*x)^6 + 5*B*c^3*(d + e*x)^7))/(35*e^8*(
d + e*x)^(7/2))
```

fricas [A] time = 0.43, size = 496, normalized size = 1.45

$$\frac{2\left(5Bc^3e^7x^7-2048Bc^3d^7+1024Ac^3d^6e-1280Bac^2d^5e^2+384Aac^2d^4e^3-48Ba^2cd^3e^4-8Aa^2cd^2e^5-2Ba^3de^6-5Aa^3e^7-7\left(2Bc^3de^6-Ac^3e^7\right)x^6+7\left(8Bc^3d^2e^5-4Ac^3de^6+5Bac^2e^7\right)x^5-35\left(16Bc^3d^3e^4-8Ac^3d^2e^5+10Bac^2de^6-3Aac^2e^7\right)x^4-35\left(128Bc^3d^4e^3-64Ac^3d^3e^4+80Bac^2d^2e^5-24Aac^2de^6+3Ba^2ce^7\right)x^3-35\left(256Bc^3d^5e^2-128Ac^3d^4e^3+160Bac^2d^3e^4-48Aac^2d^2e^5+6Ba^2cde^6+Aa^2ce^7\right)x^2-7\left(1024Bc^3d^6e-512Ac^3d^5e^2+640Bac^2d^4e^3-192Aac^2d^3e^4+24Ba^2cd^2e^5+4Aa^2cde^6+Ba^3e^7\right)x\right)\sqrt{ex+d}}{35\left(e^{12}x^4+4de^{11}x^3+6d^2e^{10}x^2+4d^3e^9x+d^4e^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*e^7*x^7 - 2048*B*c^3*d^7 + 1024*A*c^3*d^6*e - 1280*B*a*c^2*d^
5*e^2 + 384*A*a*c^2*d^4*e^3 - 48*B*a^2*c*d^3*e^4 - 8*A*a^2*c*d^2*e^5 - 2*B*
a^3*d*e^6 - 5*A*a^3*e^7 - 7*(2*B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 7*(8*B*c^3*d^
2*e^5 - 4*A*c^3*d*e^6 + 5*B*a*c^2*e^7)*x^5 - 35*(16*B*c^3*d^3*e^4 - 8*A*c^3
*d^2*e^5 + 10*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 - 35*(128*B*c^3*d^4*e^3 -
64*A*c^3*d^3*e^4 + 80*B*a*c^2*d^2*e^5 - 24*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x
^3 - 35*(256*B*c^3*d^5*e^2 - 128*A*c^3*d^4*e^3 + 160*B*a*c^2*d^3*e^4 - 48*A
*a*c^2*d^2*e^5 + 6*B*a^2*c*d*e^6 + A*a^2*c*e^7)*x^2 - 7*(1024*B*c^3*d^6*e -
 512*A*c^3*d^5*e^2 + 640*B*a*c^2*d^4*e^3 - 192*A*a*c^2*d^3*e^4 + 24*B*a^2*c
*d^2*e^5 + 4*A*a^2*c*d*e^6 + B*a^3*e^7)*x)*sqrt(e*x + d)/(e^12*x^4 + 4*d*e^
11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8)
```

giac [A] time = 0.25, size = 597, normalized size = 1.75

$$[illegible]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x, algorithm="giac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*B*c^3*e^48 - 49*(x*e + d)^(5/2)*B*c^3*d*e^48 + 245*
(x*e + d)^(3/2)*B*c^3*d^2*e^48 - 1225*sqrt(x*e + d)*B*c^3*d^3*e^48 + 7*(x*e
 + d)^(5/2)*A*c^3*e^49 - 70*(x*e + d)^(3/2)*A*c^3*d*e^49 + 525*sqrt(x*e + d
)*A*c^3*d^2*e^49 + 35*(x*e + d)^(3/2)*B*a*c^2*e^50 - 525*sqrt(x*e + d)*B*a*
c^2*d*e^50 + 105*sqrt(x*e + d)*A*a*c^2*e^51)*e^(-56) - 2/35*(1225*(x*e + d)
^3*B*c^3*d^4 - 245*(x*e + d)^2*B*c^3*d^5 + 49*(x*e + d)*B*c^3*d^6 - 5*B*c^3
*d^7 - 700*(x*e + d)^3*A*c^3*d^3*e + 175*(x*e + d)^2*A*c^3*d^4*e - 42*(x*e
+ d)*A*c^3*d^5*e + 5*A*c^3*d^6*e + 1050*(x*e + d)^3*B*a*c^2*d^2*e^2 - 350*(
```

```
x*e + d)^2*B*a*c^2*d^3*e^2 + 105*(x*e + d)*B*a*c^2*d^4*e^2 - 15*B*a*c^2*d^5
*e^2 - 420*(x*e + d)^3*A*a*c^2*d*e^3 + 210*(x*e + d)^2*A*a*c^2*d^2*e^3 - 84
*(x*e + d)*A*a*c^2*d^3*e^3 + 15*A*a*c^2*d^4*e^3 + 105*(x*e + d)^3*B*a^2*c*e
^4 - 105*(x*e + d)^2*B*a^2*c*d*e^4 + 63*(x*e + d)*B*a^2*c*d^2*e^4 - 15*B*a^
2*c*d^3*e^4 + 35*(x*e + d)^2*A*a^2*c*e^5 - 42*(x*e + d)*A*a^2*c*d*e^5 + 15*
A*a^2*c*d^2*e^5 + 7*(x*e + d)*B*a^3*e^6 - 5*B*a^3*d*e^6 + 5*A*a^3*e^7)*e^(-
8)/(x*e + d)^(7/2)
```

maple [A] time = 0.05, size = 489, normalized size = 1.43

$$-\frac{2\left(-5Bc^3e^7x^7-7Ac^3e^7x^6+14Bc^3de^6x^6+28Ac^3de^6x^5-35Bac^2e^7x^5-56Bc^3d^2e^5x^5-105Aac^2e^7x^4-280Ac^3d^2e^5x^4+350Bac^2de^6x^4+560Bc^3d^3e^4x^4-840Aac^2de^6x^3-2240Ac^3d^3e^4x^3+105Ba^2ce^7x^3+2800Bac^2d^2e^5x^3+4480Bc^3d^4e^3x^3+35Aa^2ce^7x^2-1680Aac^2d^2e^5x^2-4480Ac^3d^4e^3x^2+210Ba^2cde^6x^2+5600Bac^2d^3e^4x^2+8960Bc^3d^5e^2x^2+28Aa^2cde^6x-1344Aac^2d^3e^4x-3584Ac^3d^5e^2x+7Ba^3e^7x+168Ba^2cd^2e^5x+4480Bac^2d^4e^3x+7168Bc^3d^6ex+5Aa^3e^7+8Aa^2cd^2e^5-384Aac^2d^4e^3-1024Ac^3d^6e+2Ba^3de^6+48Ba^2cd^3e^4+1280Bac^2d^5e^2+2048Bc^3d^7\right)}{35\left(ex+d\right)^{\frac{7}{2}}e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x)
```

```
[Out] -2/35/(e*x+d)^(7/2)*(-5*B*c^3*e^7*x^7-7*A*c^3*e^7*x^6+14*B*c^3*d*e^6*x^6+28
*A*c^3*d*e^6*x^5-35*B*a*c^2*e^7*x^5-56*B*c^3*d^2*e^5*x^5-105*A*a*c^2*e^7*x^
4-280*A*c^3*d^2*e^5*x^4+350*B*a*c^2*d*e^6*x^4+560*B*c^3*d^3*e^4*x^4-840*A*a
*c^2*d*e^6*x^3-2240*A*c^3*d^3*e^4*x^3+105*B*a^2*c*e^7*x^3+2800*B*a*c^2*d^2*
e^5*x^3+4480*B*c^3*d^4*e^3*x^3+35*A*a^2*c*e^7*x^2-1680*A*a*c^2*d^2*e^5*x^2-
4480*A*c^3*d^4*e^3*x^2+210*B*a^2*c*d*e^6*x^2+5600*B*a*c^2*d^3*e^4*x^2+8960*
B*c^3*d^5*e^2*x^2+28*A*a^2*c*d*e^6*x-1344*A*a*c^2*d^3*e^4*x-3584*A*c^3*d^5*
e^2*x+7*B*a^3*e^7*x+168*B*a^2*c*d^2*e^5*x+4480*B*a*c^2*d^4*e^3*x+7168*B*c^3
*d^6*e*x+5*A*a^3*e^7+8*A*a^2*c*d^2*e^5-384*A*a*c^2*d^4*e^3-1024*A*c^3*d^6*e
+2*B*a^3*d*e^6+48*B*a^2*c*d^3*e^4+1280*B*a*c^2*d^5*e^2+2048*B*c^3*d^7)/e^8
```

maxima [A] time = 0.63, size = 460, normalized size = 1.35

$$\frac{2\left(\frac{5\left(ex+d\right)^{\frac{7}{2}}Bc^3-7\left(7Bc^3d-Ac^3e\right)\left(ex+d\right)^{\frac{5}{2}}+35\left(7Bc^3d^2-2Ac^3de+Bac^2e^2\right)\left(ex+d\right)^{\frac{3}{2}}-35\left(35Bc^3d^3-15Ac^3d^2e+15Bac^2de^2-3Aac^2e^3\right)\sqrt{ex+d}}{e^7}+\frac{5Bc^3d^7-5Ac^3d^6e+15Bac^2d^5e^2-15Aac^2d^4e^3+15Ba^2cd^3e^4-15Aa^2cd^2e^5+5Ba^3de^6-5Aa^3e^7-35\left(35Bc^3d^4-20Ac^3d^3e+30Bac^2d^2e^2-12Aac^2de^3+3Ba^2ce^4\right)\left(ex+d\right)^3+35\left(7Bc^3d^5-5Ac^3d^4e+10Bac^2d^3e^2-6Aac^2d^2e^3+3Ba^2cde^4-Aa^2ce^5\right)\left(ex+d\right)^2-7\left(7Bc^3d^6-6Ac^3d^5e+15Bac^2d^4e^2-12Aac^2d^3e^3+9Ba^2cd^2e^4-6Aa^2cde^5+Ba^3e^6\right)\left(ex+d\right)}{\left(ex+d\right)^{\frac{7}{2}}e^7}\right)}{35e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/35*((5*(e*x + d)^(7/2)*B*c^3 - 7*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(5/2) +
35*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(3/2) - 35*(35*B*c^3
*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*sqrt(e*x + d))/e^
7 + (5*B*c^3*d^7 - 5*A*c^3*d^6*e + 15*B*a*c^2*d^5*e^2 - 15*A*a*c^2*d^4*e^3
+ 15*B*a^2*c*d^3*e^4 - 15*A*a^2*c*d^2*e^5 + 5*B*a^3*d*e^6 - 5*A*a^3*e^7 - 3
5*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3 +
3*B*a^2*c*e^4)*(e*x + d)^3 + 35*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*B*a*c^2*d
^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*(e*x + d)^2 - 7
*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9
*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/((e*x + d)^(7/2)
*e^7))/e
```

mupad [B] time = 1.85, size = 452, normalized size = 1.32

$$\frac{{\left(d+e\,x\right)}^{3/2}\,\left(42\,B\,c^3\,d^2-12\,A\,c^3\,d\,e+6\,B\,a\,c^2\,e^2\right)}{3\,e^8}-\frac{\left(d+e\,x\right)\,\left(\frac{2\,B\,a^3\,e^6}{5}+\frac{18\,B\,a^2\,c\,d^2\,e^4}{5}-\frac{12\,A\,a^2\,c\,d\,e^5}{5}+6\,B\,a\,c^2\,d^4\,e^2-\frac{24\,A\,a\,c^2\,d^3\,e^3}{5}+\frac{14\,B\,c^3\,d^6}{5}-\frac{12\,A\,c^3\,d^5\,e}{5}\right)+{\left(d+e\,x\right)}^3\,\left(6\,B\,a^2\,c\,e^4+60\,B\,a\,c^2\,d^2\,e^2-24\,A\,a\,c^2\,d\,e^3+70\,B\,c^3\,d^4-40\,A\,c^3\,d^3\,e\right)-{\left(d+e\,x\right)}^2\,\left(6\,B\,a^2\,c\,d\,e^4-2\,A\,a^2\,c\,e^5+20\,B\,a\,c^2\,d^3\,e^2-12\,A\,a\,c^2\,d^2\,e^3+14\,B\,c^3\,d^5-10\,A\,c^3\,d^4\,e\right)+\frac{2\,A\,a^3\,e^7}{7}-\frac{2\,B\,c^3\,d^7}{7}-\frac{2\,B\,a^3\,d\,e^6}{7}+\frac{2\,A\,c^3\,d^6\,e}{7}+\frac{6\,A\,a\,c^2\,d^4\,e^3}{7}+\frac{6\,A\,a^2\,c\,d^2\,e^5}{7}-\frac{6\,B\,a\,c^2\,d^5\,e^2}{7}-\frac{6\,B\,a^2\,c\,d^3\,e^4}{7}}{e^8\,{\left(d+e\,x\right)}^{7/2}}+\frac{2\,B\,c^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^8}+\frac{2\,c^2\,\sqrt{d+e\,x}\,\left(-35\,B\,c\,d^3+15\,A\,c\,d^2\,e-15\,B\,a\,d\,e^2+3\,A\,a\,e^3\right)}{e^8}+\frac{2\,c^3\,\left(A\,e-7\,B\,d\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(9/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(42*B*c^3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))/(3*e^8) - (
(d + e*x)*((2*B*a^3*e^6)/5 + (14*B*c^3*d^6)/5 - (12*A*c^3*d^5*e)/5 - (24*A*
a*c^2*d^3*e^3)/5 + 6*B*a*c^2*d^4*e^2 + (18*B*a^2*c*d^2*e^4)/5 - (12*A*a^2*c
*d*e^5)/5) + (d + e*x)^3*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 6
0*B*a*c^2*d^2*e^2 - 24*A*a*c^2*d*e^3) - (d + e*x)^2*(14*B*c^3*d^5 - 2*A*a^2
*c*e^5 - 10*A*c^3*d^4*e - 12*A*a*c^2*d^2*e^3 + 20*B*a*c^2*d^3*e^2 + 6*B*a^2
*c*d*e^4) + (2*A*a^3*e^7)/7 - (2*B*c^3*d^7)/7 - (2*B*a^3*d*e^6)/7 + (2*A*c^
```

```
3*d^6*e)/7 + (6*A*a*c^2*d^4*e^3)/7 + (6*A*a^2*c*d^2*e^5)/7 - (6*B*a*c^2*d^5
*e^2)/7 - (6*B*a^2*c*d^3*e^4)/7)/(e^8*(d + e*x)^(7/2)) + (2*B*c^3*(d + e*x)
^(7/2))/(7*e^8) + (2*c^2*(d + e*x)^(1/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a*d
*e^2 + 15*A*c*d^2*e))/e^8 + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(5/2))/(5*e^8)
```

sympy [A] time = 9.86, size = 3218, normalized size = 9.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(9/2),x)
```

```
[Out] Piecewise((-10*A*a**3*e**7/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sq
rt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x))
 - 16*A*a**2*c*d**2*e**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt
(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) -
 56*A*a**2*c*d*e**6*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 70
*A*a**2*c*e**7*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 768*
A*a*c**2*d**4*e**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e
*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 2688*
A*a*c**2*d**3*e**4*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 336
0*A*a*c**2*d**2*e**5*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqr
t(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x))
+ 1680*A*a*c**2*d*e**6*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*s
qrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)
) + 210*A*a*c**2*e**7*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sq
rt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x))
 + 2048*A*c**3*d**6*e/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 71
68*A*c**3*d**5*e**2*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 89
60*A*c**3*d**4*e**3*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt
(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) +
 4480*A*c**3*d**3*e**4*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*s
qrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)
) + 560*A*c**3*d**2*e**5*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x
*sqrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*
x)) - 56*A*c**3*d*e**6*x**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*s
qrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)
) + 14*A*c**3*e**7*x**6/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(
d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) -
4*B*a**3*d*e**6/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x)
 + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 14*B*a**
3*e**7*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*
d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 96*B*a**2*c*d**
3*e**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d*
e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 336*B*a**2*c*d**2
*e**5*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d
*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 420*B*a**2*c*d*e
**6*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*
d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 210*B*a**2*c*e*
*7*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d
*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 2560*B*a*c**2*d*
*5*e**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d
*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 8960*B*a*c**2*d*
*4*e**3*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105
*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 11200*B*a*c**2
```

```
*d**3*e**4*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x)
 + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 5600*B*a
*c**2*d**2*e**5*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 700
*B*a*c**2*d*e**6*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 70
*B*a*c**2*e**7*x**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 4096
*B*c**3*d**7/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) +
105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 14336*B*c**
3*d**6*e*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 10
5*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 17920*B*c**3*
d**5*e**2*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x)
+ 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 8960*B*c*
*3*d**4*e**3*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*
x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 1120*B
*c**3*d**3*e**4*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 112
*B*c**3*d**2*e**5*x**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
 + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 2
8*B*c**3*d*e**6*x**6/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 10*
B*c**3*e**7*x**7/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x
) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)), Ne(e, 0)
), ((A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a**3*
x**2/2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8)/d**(9/2), Tru
e))
```

3.1272 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=346

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^{3/2}}+\frac{6c^2\sqrt{d+ex}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+\frac{2c^2\left(-3aAe^3\right.}{}$$

Rubi [A] time = 0.16, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^{3/2}}+\frac{6c^2\sqrt{d+ex}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+\frac{2c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{e^8\sqrt{d+ex}}+\frac{6c\left(ae^2+cd^2\right)\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{5e^8(d+ex)^{5/2}}-\frac{2\left(ae^2+cd^2\right)^2\left(aBe^2-6Acde+7Bcd^2\right)}{7e^8(d+ex)^{7/2}}+\frac{2\left(ae^2+cd^2\right)^3(Bd-Ae)}{9e^8(d+ex)^{9/2}}-\frac{2c^3(d+ex)^{3/2}(7Bd-Ae)}{3e^8}+\frac{2Bc^3(d+ex)^{5/2}}{5e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(11/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(9*e^8*(d + e*x)^(9/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(7*e^8*(d + e*x)^(7/2)) + (6*c*(c*
d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(5*e^8*(d +
 e*x)^(5/2)) + (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c
*d^2*e^2 + 3*a^2*e^4)))/(3*e^8*(d + e*x)^(3/2)) + (2*c^2*(35*B*c*d^3 - 15*A
*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3))/(e^8*Sqrt[d + e*x]) + (6*c^2*(7*B*c*d
^2 - 2*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^8 - (2*c^3*(7*B*d - A*e)*(d + e*
x)^(3/2))/(3*e^8) + (2*B*c^3*(d + e*x)^(5/2))/(5*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{11/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{9/2}}+\frac{3c\left(cd^2+ae\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{9e^8(d+ex)^{9/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{7e^8(d+ex)^{7/2}}+\frac{6c\left(cd^2+ae^2\right)}{}$$

Mathematica [A] time = 0.30, size = 375, normalized size = 1.08

$$\frac{2B\left(-5a^3e^6(2d+9ex)-3a^2ce^4\left(16d^3+72d^2ex+126de^2x^2+105e^3x^3\right)+15ac^2e^2\left(256d^5+1152d^4ex+2016d^3e^2x^2+1680d^2e^3x^3+630de^4x^4+63e^5x^5\right)+7c^3\left(2048d^7+9216d^6ex+16128d^5e^2x^2+13440d^4e^3x^3+5040d^3e^4x^4+504d^2e^5x^5-42de^6x^6+9e^7x^7\right)\right)-2Ae\left(35a^3e^6+3a^2ce^4\left(8d^2+36dex+63e^2x^2\right)+3ac^2e^2\left(128d^4+576d^3ex+1008d^2e^2x^2+840de^3x^3+315e^4x^4\right)+5c^3\left(1024d^6+4608d^5ex+8064d^4e^2x^2+6720d^3e^3x^3+2520d^2e^4x^4+252de^5x^5-21e^6x^6\right)\right)}{315e^8(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(11/2),x]
```

```
[Out] (-2*A*e*(35*a^3*e^6 + 3*a^2*c*e^4*(8*d^2 + 36*d*e*x + 63*e^2*x^2) + 3*a*c^2
*e^2*(128*d^4 + 576*d^3*e*x + 1008*d^2*e^2*x^2 + 840*d*e^3*x^3 + 315*e^4*x^
4) + 5*c^3*(1024*d^6 + 4608*d^5*e*x + 8064*d^4*e^2*x^2 + 6720*d^3*e^3*x^3 +
 2520*d^2*e^4*x^4 + 252*d*e^5*x^5 - 21*e^6*x^6)) + 2*B*(-5*a^3*e^6*(2*d + 9
*e*x) - 3*a^2*c*e^4*(16*d^3 + 72*d^2*e*x + 126*d*e^2*x^2 + 105*e^3*x^3) + 1
5*a*c^2*e^2*(256*d^5 + 1152*d^4*e*x + 2016*d^3*e^2*x^2 + 1680*d^2*e^3*x^3 +
 630*d*e^4*x^4 + 63*e^5*x^5) + 7*c^3*(2048*d^7 + 9216*d^6*e*x + 16128*d^5*e
```

```
^2*x^2 + 13440*d^4*e^3*x^3 + 5040*d^3*e^4*x^4 + 504*d^2*e^5*x^5 - 42*d*e^6*
x^6 + 9*e^7*x^7)))/(315*e^8*(d + e*x)^(9/2))
```

IntegrateAlgebraic [A] time = 0.27, size = 573, normalized size = 1.66

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(11/2),x]
```

```
[Out] (2*(35*B*c^3*d^7 - 35*A*c^3*d^6*e + 105*a*B*c^2*d^5*e^2 - 105*a*A*c^2*d^4*e
^3 + 105*a^2*B*c*d^3*e^4 - 105*a^2*A*c*d^2*e^5 + 35*a^3*B*d*e^6 - 35*a^3*A*
e^7 - 315*B*c^3*d^6*(d + e*x) + 270*A*c^3*d^5*e*(d + e*x) - 675*a*B*c^2*d^4
*e^2*(d + e*x) + 540*a*A*c^2*d^3*e^3*(d + e*x) - 405*a^2*B*c*d^2*e^4*(d + e
*x) + 270*a^2*A*c*d*e^5*(d + e*x) - 45*a^3*B*e^6*(d + e*x) + 1323*B*c^3*d^5
*(d + e*x)^2 - 945*A*c^3*d^4*e*(d + e*x)^2 + 1890*a*B*c^2*d^3*e^2*(d + e*x)
^2 - 1134*a*A*c^2*d^2*e^3*(d + e*x)^2 + 567*a^2*B*c*d*e^4*(d + e*x)^2 - 189
*a^2*A*c*e^5*(d + e*x)^2 - 3675*B*c^3*d^4*(d + e*x)^3 + 2100*A*c^3*d^3*e*(d
 + e*x)^3 - 3150*a*B*c^2*d^2*e^2*(d + e*x)^3 + 1260*a*A*c^2*d*e^3*(d + e*x)
^3 - 315*a^2*B*c*e^4*(d + e*x)^3 + 11025*B*c^3*d^3*(d + e*x)^4 - 4725*A*c^3
*d^2*e*(d + e*x)^4 + 4725*a*B*c^2*d*e^2*(d + e*x)^4 - 945*a*A*c^2*e^3*(d +
e*x)^4 + 6615*B*c^3*d^2*(d + e*x)^5 - 1890*A*c^3*d*e*(d + e*x)^5 + 945*a*B*
c^2*e^2*(d + e*x)^5 - 735*B*c^3*d*(d + e*x)^6 + 105*A*c^3*e*(d + e*x)^6 + 6
3*B*c^3*(d + e*x)^7))/(315*e^8*(d + e*x)^(9/2))
```

fricas [A] time = 0.40, size = 509, normalized size = 1.47

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*c^3*e^7*x^7 + 14336*B*c^3*d^7 - 5120*A*c^3*d^6*e + 3840*B*a*c^2
*d^5*e^2 - 384*A*a*c^2*d^4*e^3 - 48*B*a^2*c*d^3*e^4 - 24*A*a^2*c*d^2*e^5 -
10*B*a^3*d*e^6 - 35*A*a^3*e^7 - 21*(14*B*c^3*d*e^6 - 5*A*c^3*e^7)*x^6 + 63*
(56*B*c^3*d^2*e^5 - 20*A*c^3*d*e^6 + 15*B*a*c^2*e^7)*x^5 + 315*(112*B*c^3*d
^3*e^4 - 40*A*c^3*d^2*e^5 + 30*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 + 105*(89
6*B*c^3*d^4*e^3 - 320*A*c^3*d^3*e^4 + 240*B*a*c^2*d^2*e^5 - 24*A*a*c^2*d*e^
6 - 3*B*a^2*c*e^7)*x^3 + 63*(1792*B*c^3*d^5*e^2 - 640*A*c^3*d^4*e^3 + 480*B
*a*c^2*d^3*e^4 - 48*A*a*c^2*d^2*e^5 - 6*B*a^2*c*d*e^6 - 3*A*a^2*c*e^7)*x^2
+ 9*(7168*B*c^3*d^6*e - 2560*A*c^3*d^5*e^2 + 1920*B*a*c^2*d^4*e^3 - 192*A*a
*c^2*d^3*e^4 - 24*B*a^2*c*d^2*e^5 - 12*A*a^2*c*d*e^6 - 5*B*a^3*e^7)*x)*sqrt
(e*x + d)/(e^13*x^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*
d^4*e^9*x + d^5*e^8)
```

giac [A] time = 0.24, size = 595, normalized size = 1.72

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c^3*e^32 - 35*(x*e + d)^(3/2)*B*c^3*d*e^32 + 315*
sqrt(x*e + d)*B*c^3*d^2*e^32 + 5*(x*e + d)^(3/2)*A*c^3*e^33 - 90*sqrt(x*e +
 d)*A*c^3*d*e^33 + 45*sqrt(x*e + d)*B*a*c^2*e^34)*e^(-40) + 2/315*(11025*(x
*e + d)^4*B*c^3*d^3 - 3675*(x*e + d)^3*B*c^3*d^4 + 1323*(x*e + d)^2*B*c^3*d
^5 - 315*(x*e + d)*B*c^3*d^6 + 35*B*c^3*d^7 - 4725*(x*e + d)^4*A*c^3*d^2*e
+ 2100*(x*e + d)^3*A*c^3*d^3*e - 945*(x*e + d)^2*A*c^3*d^4*e + 270*(x*e + d
)*A*c^3*d^5*e - 35*A*c^3*d^6*e + 4725*(x*e + d)^4*B*a*c^2*d*e^2 - 3150*(x*e
```

```
+ d)^3*B*a*c^2*d^2*e^2 + 1890*(x*e + d)^2*B*a*c^2*d^3*e^2 - 675*(x*e + d)*
B*a*c^2*d^4*e^2 + 105*B*a*c^2*d^5*e^2 - 945*(x*e + d)^4*A*a*c^2*e^3 + 1260*
(x*e + d)^3*A*a*c^2*d*e^3 - 1134*(x*e + d)^2*A*a*c^2*d^2*e^3 + 540*(x*e + d
)*A*a*c^2*d^3*e^3 - 105*A*a*c^2*d^4*e^3 - 315*(x*e + d)^3*B*a^2*c*e^4 + 567
*(x*e + d)^2*B*a^2*c*d*e^4 - 405*(x*e + d)*B*a^2*c*d^2*e^4 + 105*B*a^2*c*d^
3*e^4 - 189*(x*e + d)^2*A*a^2*c*e^5 + 270*(x*e + d)*A*a^2*c*d*e^5 - 105*A*a
^2*c*d^2*e^5 - 45*(x*e + d)*B*a^3*e^6 + 35*B*a^3*d*e^6 - 35*A*a^3*e^7)*e^(-
8)/(x*e + d)^(9/2)
```

maple [A] time = 0.05, size = 489, normalized size = 1.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x)
```

```
[Out] -2/315/(e*x+d)^(9/2)*(-63*B*c^3*e^7*x^7-105*A*c^3*e^7*x^6+294*B*c^3*d*e^6*x
^6+1260*A*c^3*d*e^6*x^5-945*B*a*c^2*e^7*x^5-3528*B*c^3*d^2*e^5*x^5+945*A*a*
c^2*e^7*x^4+12600*A*c^3*d^2*e^5*x^4-9450*B*a*c^2*d*e^6*x^4-35280*B*c^3*d^3*
e^4*x^4+2520*A*a*c^2*d*e^6*x^3+33600*A*c^3*d^3*e^4*x^3+315*B*a^2*c*e^7*x^3-
25200*B*a*c^2*d^2*e^5*x^3-94080*B*c^3*d^4*e^3*x^3+189*A*a^2*c*e^7*x^2+3024*
A*a*c^2*d^2*e^5*x^2+40320*A*c^3*d^4*e^3*x^2+378*B*a^2*c*d*e^6*x^2-30240*B*a
*c^2*d^3*e^4*x^2-112896*B*c^3*d^5*e^2*x^2+108*A*a^2*c*d*e^6*x+1728*A*a*c^2*
d^3*e^4*x+23040*A*c^3*d^5*e^2*x+45*B*a^3*e^7*x+216*B*a^2*c*d^2*e^5*x-17280*
B*a*c^2*d^4*e^3*x-64512*B*c^3*d^6*e*x+35*A*a^3*e^7+24*A*a^2*c*d^2*e^5+384*A
*a*c^2*d^4*e^3+5120*A*c^3*d^6*e+10*B*a^3*d*e^6+48*B*a^2*c*d^3*e^4-3840*B*a*
c^2*d^5*e^2-14336*B*c^3*d^7)/e^8
```

maxima [A] time = 0.58, size = 461, normalized size = 1.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x, algorithm="maxima")
```

```
[Out] 2/315*(21*(3*(e*x + d)^(5/2)*B*c^3 - 5*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(3/2
) + 45*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*sqrt(e*x + d))/e^7 + (35*B
*c^3*d^7 - 35*A*c^3*d^6*e + 105*B*a*c^2*d^5*e^2 - 105*A*a*c^2*d^4*e^3 + 105
*B*a^2*c*d^3*e^4 - 105*A*a^2*c*d^2*e^5 + 35*B*a^3*d*e^6 - 35*A*a^3*e^7 + 31
5*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e*x +
 d)^4 - 105*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^
2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^3 + 189*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 1
0*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*(e*x
 + d)^2 - 45*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2
*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/((e*
x + d)^(9/2)*e^7))/e
```

mupad [B] time = 1.89, size = 454, normalized size = 1.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(11/2),x)
```

```
[Out] ((d + e*x)^4*(70*B*c^3*d^3 - 6*A*a*c^2*e^3 - 30*A*c^3*d^2*e + 30*B*a*c^2*d*
e^2) - (d + e*x)*((2*B*a^3*e^6)/7 + 2*B*c^3*d^6 - (12*A*c^3*d^5*e)/7 - (24*
A*a*c^2*d^3*e^3)/7 + (30*B*a*c^2*d^4*e^2)/7 + (18*B*a^2*c*d^2*e^4)/7 - (12*
A*a^2*c*d*e^5)/7) - (d + e*x)^3*((70*B*c^3*d^4)/3 + 2*B*a^2*c*e^4 - (40*A*c
^3*d^3*e)/3 + 20*B*a*c^2*d^2*e^2 - 8*A*a*c^2*d*e^3) + (d + e*x)^2*((42*B*c^
```

```
3*d^5)/5 - (6*A*a^2*c*e^5)/5 - 6*A*c^3*d^4*e - (36*A*a*c^2*d^2*e^3)/5 + 12*
B*a*c^2*d^3*e^2 + (18*B*a^2*c*d*e^4)/5) - (2*A*a^3*e^7)/9 + (2*B*c^3*d^7)/9
 + (2*B*a^3*d*e^6)/9 - (2*A*c^3*d^6*e)/9 - (2*A*a*c^2*d^4*e^3)/3 - (2*A*a^2
*c*d^2*e^5)/3 + (2*B*a*c^2*d^5*e^2)/3 + (2*B*a^2*c*d^3*e^4)/3)/(e^8*(d + e*
x)^(9/2)) + ((d + e*x)^(1/2)*(42*B*c^3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))
/e^8 + (2*B*c^3*(d + e*x)^(5/2))/(5*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(
3/2))/(3*e^8)
```

sympy [A] time = 16.44, size = 3952, normalized size = 11.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(11/2),x)
```

```
[Out] Piecewise((-70*A*a**3*e**7/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*
sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt
(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 48*A*a**2*c*d**2*e**5/(315*d**4
*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2
*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d +
e*x)) - 216*A*a**2*c*d*e**6*x/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9
*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*s
qrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 378*A*a**2*c*e**7*x**2/(315*
d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*
x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(
d + e*x)) - 768*A*a*c**2*d**4*e**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3
*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x
**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 3456*A*a*c**2*d**3*e**4
*x/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**
2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x*
*4*sqrt(d + e*x)) - 6048*A*a*c**2*d**2*e**5*x**2/(315*d**4*e**8*sqrt(d + e*
x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) +
1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 5040*A*a*
c**2*d*e**6*x**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e
*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x)
+ 315*e**12*x**4*sqrt(d + e*x)) - 1890*A*a*c**2*e**7*x**4/(315*d**4*e**8*sq
rt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d
+ e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) -
10240*A*c**3*d**6*e/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d
+ e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*
x) + 315*e**12*x**4*sqrt(d + e*x)) - 46080*A*c**3*d**5*e**2*x/(315*d**4*e**
8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqr
t(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)
) - 80640*A*c**3*d**4*e**3*x**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e*
*9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3
*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 67200*A*c**3*d**3*e**4*x**
3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2
*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**
4*sqrt(d + e*x)) - 25200*A*c**3*d**2*e**5*x**4/(315*d**4*e**8*sqrt(d + e*x)
 + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 12
60*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 2520*A*c**3
*d*e**6*x**5/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x)
+ 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 31
5*e**12*x**4*sqrt(d + e*x)) + 210*A*c**3*e**7*x**6/(315*d**4*e**8*sqrt(d +
e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x)
+ 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 20*B*a*
*3*d*e**6/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1
890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e
**12*x**4*sqrt(d + e*x)) - 90*B*a**3*e**7*x/(315*d**4*e**8*sqrt(d + e*x) +
1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*
```

```
d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 96*B*a**2*c*d*
*3*e**4/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 189
0*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**
12*x**4*sqrt(d + e*x)) - 432*B*a**2*c*d**2*e**5*x/(315*d**4*e**8*sqrt(d + e
*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) +
 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 756*B*a*
*2*c*d*e**6*x**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e
*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x)
+ 315*e**12*x**4*sqrt(d + e*x)) - 630*B*a**2*c*e**7*x**3/(315*d**4*e**8*sqr
t(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d +
 e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 7
680*B*a*c**2*d**5*e**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt
(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d +
 e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 34560*B*a*c**2*d**4*e**3*x/(315*d**
4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**
2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d +
 e*x)) + 60480*B*a*c**2*d**3*e**4*x**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*
d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**
11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 50400*B*a*c**2*d**2
*e**5*x**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) +
1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*
e**12*x**4*sqrt(d + e*x)) + 18900*B*a*c**2*d*e**6*x**4/(315*d**4*e**8*sqrt(
d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e
*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 189
0*B*a*c**2*e**7*x**5/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d
 + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e
*x) + 315*e**12*x**4*sqrt(d + e*x)) + 28672*B*c**3*d**7/(315*d**4*e**8*sqrt
(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d +
e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 12
9024*B*c**3*d**6*e*x/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d
 + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e
*x) + 315*e**12*x**4*sqrt(d + e*x)) + 225792*B*c**3*d**5*e**2*x**2/(315*d**
4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**
2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d +
 e*x)) + 188160*B*c**3*d**4*e**3*x**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d
**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**1
1*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 70560*B*c**3*d**3*e*
*4*x**4/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 189
0*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**
12*x**4*sqrt(d + e*x)) + 7056*B*c**3*d**2*e**5*x**5/(315*d**4*e**8*sqrt(d +
 e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x)
 + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 588*B*
c**3*d*e**6*x**6/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e
*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x)
+ 315*e**12*x**4*sqrt(d + e*x)) + 126*B*c**3*e**7*x**7/(315*d**4*e**8*sqrt(
d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e
*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)), Ne(e
, 0)), ((A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a
**3*x**2/2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8)/d**(11/2)
, True))
```

3.1273 $\int \frac{(A+Bx)(d+ex)^{5/2}}{a-cx^2} \, dx$

Optimal. Leaf size=237

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}c^{9/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}c^{9/4}}-2$$

Rubi [A] time = 0.64, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {825, 827, 1166, 208}

$$-\frac{2\sqrt{d+ex}\left(aBe^2+2Acde+Bcd^2\right)}{c^2}+\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}c^{9/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}c^{9/4}}-\frac{2(d+ex)^{3/2}(Ae+Bd)}{3c}-\frac{2B(d+ex)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x]
```

```
[Out] (-2*(B*c*d^2 + 2*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/c^2 - (2*(B*d + A*e)*(d
+ e*x)^(3/2))/(3*c) - (2*B*(d + e*x)^(5/2))/(5*c) + ((Sqrt[a]*B - A*Sqrt[c]
)*(Sqrt[c]*d - Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c
]*d - Sqrt[a]*e]])/(Sqrt[a]*c^(9/4)) + ((Sqrt[a]*B + A*Sqrt[c])*(Sqrt[c]*d
+ Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]
*e]])/(Sqrt[a]*c^(9/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{5/2}}{a-cx^2}\,dx &= -\frac{2B(d+ex)^{5/2}}{5c} - \frac{\int \frac{(d+ex)^{3/2}(-Acd-aBe-c(Bd+Ae)x)}{a-cx^2}\,dx}{c} \\
&= -\frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} + \frac{\int \frac{\sqrt{d+ex}\left(c\left(Acd^2+2aBde+aAe^2\right)+c\left(Bcd^2+2Acde+aBe\right.\right.}{a-cx^2}}{c^2} \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} - \int \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} - \frac{2\,\mathrm{Su}}{} \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} + \frac{\left(\left(\sqrt{\right.\right.}{} \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} + \frac{\left(\sqrt{a}\right.}{}
\end{aligned}
$$

Mathematica [A] time = 0.46, size = 223, normalized size = 0.94

$$\frac{-2\sqrt{a}\sqrt[4]{c}\sqrt{d+ex}\left(15aBe^2+5Ace(7d+ex)+Bc\left(23d^2+11dex+3e^2x^2\right)\right)-15\left(A\sqrt{c}-\sqrt{a}B\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)+15\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{15\sqrt{a}c^{9/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[a]*c^(1/4)*Sqrt[d + e*x]*(15*a*B*e^2 + 5*A*c*e*(7*d + e*x) + B*c*(
23*d^2 + 11*d*e*x + 3*e^2*x^2)) - 15*(-(Sqrt[a]*B) + A*Sqrt[c])*(Sqrt[c]*d
- Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]
*e]] + 15*(Sqrt[a]*B + A*Sqrt[c])*(Sqrt[c]*d + Sqrt[a]*e)^(5/2)*ArcTanh[(c^
(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(15*Sqrt[a]*c^(9/4))
```

IntegrateAlgebraic [A] time = 0.80, size = 307, normalized size = 1.30

$$-\frac{2\sqrt{d+ex}\left(15aBe^2+5Ace(d+ex)+30Acde+15Bcd^2+5Bcd(d+ex)+3Bc(d+ex)^2\right)}{15c^2}-\frac{\left(A\sqrt{c}-\sqrt{a}B\right)\left(\sqrt{c}d-\sqrt{a}e\right)^3\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}e-cd}}{\sqrt{c}d-\sqrt{a}e}\right)}{\sqrt{a}c^2\sqrt{-\sqrt{c}\left(\sqrt{c}d-\sqrt{a}e\right)}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^3\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}e-cd}}{\sqrt{a}e+\sqrt{c}d}\right)}{\sqrt{a}c^2\sqrt{-\sqrt{c}\left(\sqrt{a}e+\sqrt{c}d\right)}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(15*B*c*d^2 + 30*A*c*d*e + 15*a*B*e^2 + 5*B*c*d*(d + e*x)
 + 5*A*c*e*(d + e*x) + 3*B*c*(d + e*x)^2))/(15*c^2) + ((Sqrt[a]*B + A*Sqrt[
c])*(Sqrt[c]*d + Sqrt[a]*e)^3*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt
[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(Sqrt[a]*c^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d
 + Sqrt[a]*e))]) - ((-(Sqrt[a]*B) + A*Sqrt[c])*(Sqrt[c]*d - Sqrt[a]*e)^3*Ar
cTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*
e)])/(Sqrt[a]*c^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 9.10, size = 7410, normalized size = 31.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/30*(15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e
^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^
2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5
 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*
e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^
2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*
d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6
 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*
a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (
B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4))*log(-(2*(
A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a^2*c^4 - A^4*c^6)*d^8*e + 16*(A*B^3*
a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*B^3*a^3*c^3 - A^3*B*a^2*c^4)*d^5*e^4
 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e^5 + 8*(B^4*a^5*c - A^4*a^3*c^3)*d^2
*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)*d*e^8 + (B^4*a^6 - A^4*a^4*c^2)*e^9
)*sqrt(e*x + d) + (2*A*B^2*a*c^6*d^7 + (5*B^3*a^2*c^5 + 9*A^2*B*a*c^6)*d^6*
e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*d^5*e^2 + 5*(3*B^3*a^3*c^4 + 11*A^2*
B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^4 + 2*A^3*a^2*c^5)*d^3*e^4 + (11*B^3
*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 + 2*(6*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d*
e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7 - (A*a*c^8*d^2 + 2*B*a^2*c^7*d*e +
A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*
e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a
^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*
A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B
^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*
c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*
c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^
2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^
2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A
^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c
^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^
2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 +
20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*
a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3
+ 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 2
0*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c +
 A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*
c^9)))/(a*c^4))) - 15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 +
 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3
*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*
(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A
^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3
*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3
*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*
c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c
+ 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^
2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4
))*log(-(2*(A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a^2*c^4 - A^4*c^6)*d^8*e
+ 16*(A*B^3*a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*B^3*a^3*c^3 - A^3*B*a^2*
c^4)*d^5*e^4 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e^5 + 8*(B^4*a^5*c - A^4*
a^3*c^3)*d^2*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)*d*e^8 + (B^4*a^6 - A^4*
a^4*c^2)*e^9)*sqrt(e*x + d) - (2*A*B^2*a*c^6*d^7 + (5*B^3*a^2*c^5 + 9*A^2*B
*a*c^6)*d^6*e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*d^5*e^2 + 5*(3*B^3*a^3*c
^4 + 11*A^2*B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^4 + 2*A^3*a^2*c^5)*d^3*e
^4 + (11*B^3*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 + 2*(6*A*B^2*a^4*c^3 + A^3
*a^3*c^4)*d*e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7 - (A*a*c^8*d^2 + 2*B*a^
2*c^7*d*e + A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3
*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 +
240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*
a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^
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5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240 *(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^ 2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^ 6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B ^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2* B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3) *d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A *B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^ 2)*e^10)/(a*c^9)))/(a*c^4))) + 15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2 *c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^ 2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 - a*c^4*sqrt((4*A^2*B^2*c^ 6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2 *a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 2 0*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a ^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20 *(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c ^9)))/(a*c^4))*log(-(2*(A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a^2*c^4 - A^4 *c^6)*d^8*e + 16*(A*B^3*a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*B^3*a^3*c^3 - A^3*B*a^2*c^4)*d^5*e^4 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e^5 + 8*(B^4* a^5*c - A^4*a^3*c^3)*d^2*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)*d*e^8 + (B^ 4*a^6 - A^4*a^4*c^2)*e^9)*sqrt(e*x + d) + (2*A*B^2*a*c^6*d^7 + (5*B^3*a^2*c ^5 + 9*A^2*B*a*c^6)*d^6*e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*d^5*e^2 + 5* (3*B^3*a^3*c^4 + 11*A^2*B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^4 + 2*A^3*a^ 2*c^5)*d^3*e^4 + (11*B^3*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 + 2*(6*A*B^2*a ^4*c^3 + A^3*a^3*c^4)*d*e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7 + (A*a*c^8* d^2 + 2*B*a^2*c^7*d*e + A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3 *a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2 *c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d ^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^ 2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e ^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*sqrt((10*A*B *a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3) *d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 - a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5 *B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^ 5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c ^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^ 3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2 *e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4))) - 15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^ 2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 - a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5) *d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B ^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)* d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A* B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2

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)*e^10)/(a*c^9)))/(a*c^4))*log(-(2*(A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a
^2*c^4 - A^4*c^6)*d^8*e + 16*(A*B^3*a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*
B^3*a^3*c^3 - A^3*B*a^2*c^4)*d^5*e^4 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e
^5 + 8*(B^4*a^5*c - A^4*a^3*c^3)*d^2*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)
*d*e^8 + (B^4*a^6 - A^4*a^4*c^2)*e^9)*sqrt(e*x + d) - (2*A*B^2*a*c^6*d^7 +
(5*B^3*a^2*c^5 + 9*A^2*B*a*c^6)*d^6*e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*
d^5*e^2 + 5*(3*B^3*a^3*c^4 + 11*A^2*B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^
4 + 2*A^3*a^2*c^5)*d^3*e^4 + (11*B^3*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 +
2*(6*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d*e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7
 + (A*a*c^8*d^2 + 2*B*a^2*c^7*d*e + A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10
 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5
 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B
^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3
 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^
4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*
a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*
a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*
sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^
2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^
2*c)*d*e^4 - a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*
d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B
^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4
+ 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(
11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*
a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*
a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^
2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4))) + 4*(3*B*c*e^2*x^2 + 2
3*B*c*d^2 + 35*A*c*d*e + 15*B*a*e^2 + (11*B*c*d*e + 5*A*c*e^2)*x)*sqrt(e*x
+ d))/c^2
```

giac [B] time = 0.44, size = 655, normalized size = 2.76

$$\frac{\left(\left(3\sqrt{ac}\,acd^2e^2+\sqrt{ac}\,a^2e^4\right)Ac^2+\left(\sqrt{ac}\,acd^3e+3\sqrt{ac}\,a^2de^3\right)Bc^2-2\left(ac^3d^3e-a^2c^2de^3\right)A|c|-\left(ac^3d^4-a^3ce^4\right)B|c|-\left(\sqrt{ac}\,c^4d^4+3\sqrt{ac}\,ac^3d^2e^2\right)A-\left(3\sqrt{ac}\,ac^3d^3e+\sqrt{ac}\,a^2c^2de^3\right)B\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^6d+\sqrt{c^{12}d^2-(c^6d^2-ac^5e^2)c^6}}{c^6}}}\right)}{\left(ac^4d-\sqrt{ac}\,ac^3e\right)\sqrt{-c^2d-\sqrt{ac}\,ce}}-\frac{\left(\left(3\sqrt{ac}\,acd^2e^2+\sqrt{ac}\,a^2e^4\right)Ac^2+\left(\sqrt{ac}\,acd^3e+3\sqrt{ac}\,a^2de^3\right)Bc^2+2\left(ac^3d^3e-a^2c^2de^3\right)A|c|+\left(ac^3d^4-a^3ce^4\right)B|c|-\left(\sqrt{ac}\,c^4d^4+3\sqrt{ac}\,ac^3d^2e^2\right)A-\left(3\sqrt{ac}\,ac^3d^3e+\sqrt{ac}\,a^2c^2de^3\right)B\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^6d-\sqrt{c^{12}d^2-(c^6d^2-ac^5e^2)c^6}}{c^6}}}\right)}{\left(ac^4d+\sqrt{ac}\,ac^3e\right)\sqrt{-c^2d+\sqrt{ac}\,ce}}-\frac{2\left(3(xe+d)^{\frac{5}{2}}Bc^4+5(xe+d)^{\frac{3}{2}}Bc^4d+15\sqrt{xe+d}\,Bc^4d^2+5(xe+d)^{\frac{3}{2}}Ac^4e+30\sqrt{xe+d}\,Ac^4de+15\sqrt{xe+d}\,Bac^3e^2\right)}{15c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] ((3*sqrt(a*c)*a*c*d^2*e^2 + sqrt(a*c)*a^2*e^4)*A*c^2 + (sqrt(a*c)*a*c*d^3*e
 + 3*sqrt(a*c)*a^2*d*e^3)*B*c^2 - 2*(a*c^3*d^3*e - a^2*c^2*d*e^3)*A*abs(c)
- (a*c^3*d^4 - a^3*c*e^4)*B*abs(c) - (sqrt(a*c)*c^4*d^4 + 3*sqrt(a*c)*a*c^3
*d^2*e^2)*A - (3*sqrt(a*c)*a*c^3*d^3*e + sqrt(a*c)*a^2*c^2*d*e^3)*B)*arctan
(sqrt(x*e + d)/sqrt(-(c^6*d + sqrt(c^12*d^2 - (c^6*d^2 - a*c^5*e^2)*c^6))/c
^6))/((a*c^4*d - sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*e)) - ((3*sqr
t(a*c)*a*c*d^2*e^2 + sqrt(a*c)*a^2*e^4)*A*c^2 + (sqrt(a*c)*a*c*d^3*e + 3*sq
rt(a*c)*a^2*d*e^3)*B*c^2 + 2*(a*c^3*d^3*e - a^2*c^2*d*e^3)*A*abs(c) + (a*c^
3*d^4 - a^3*c*e^4)*B*abs(c) - (sqrt(a*c)*c^4*d^4 + 3*sqrt(a*c)*a*c^3*d^2*e^
2)*A - (3*sqrt(a*c)*a*c^3*d^3*e + sqrt(a*c)*a^2*c^2*d*e^3)*B)*arctan(sqrt(x
*e + d)/sqrt(-(c^6*d - sqrt(c^12*d^2 - (c^6*d^2 - a*c^5*e^2)*c^6))/c^6))/((
a*c^4*d + sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d + sqrt(a*c)*c*e)) - 2/15*(3*(x*e +
 d)^(5/2)*B*c^4 + 5*(x*e + d)^(3/2)*B*c^4*d + 15*sqrt(x*e + d)*B*c^4*d^2 +
5*(x*e + d)^(3/2)*A*c^4*e + 30*sqrt(x*e + d)*A*c^4*d*e + 15*sqrt(x*e + d)*B
*a*c^3*e^2)/c^5
```

maple [B] time = 0.10, size = 981, normalized size = 4.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x)
```

```
[Out] -2/5*(e*x+d)^(5/2)*B/c-2/3/c*A*(e*x+d)^(3/2)*e-2/3/c*B*(e*x+d)^(3/2)*d-4/c*
A*(e*x+d)^(1/2)*d*e-2/c^2*B*(e*x+d)^(1/2)*a*e^2-2/c*B*(e*x+d)^(1/2)*d^2+3/(
a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*a*d*e^3+c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^
3*e+1/c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/
2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a^2*e^4+3/(a*c*e^2)^(1/2)/((c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*c)*B*a*d^2*e^2+1/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/
((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*a*e^3+3/((c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e+3/c/((c*
d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*c)*B*a*d*e^2+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)
/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^3+3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*
A*a*d*e^3+c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+
d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*A*d^3*e+1/c/(a*c*e^2)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))
*c)^(1/2))*B*a^2*e^4+3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arc
tan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*B*a*d^2*e^2-1/c/((-c*
d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2))*A*a*e^3-3/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)
/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*A*d^2*e-3/c/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*B*a*d*e^2-1/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/
2))*c)^(1/2))*B*d^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{cx^2-a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 - a), x)
```

mupad [B] time = 3.13, size = 11383, normalized size = 48.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x)
```

```
[Out] - (2*d*((2*A*e - 2*B*d)/c + (4*B*d)/c) + (2*B*(a*e^2 - c*d^2))/c^2)*(d + e*
x)^(1/2) - ((2*A*e - 2*B*d)/(3*c) + (4*B*d)/(3*c))*(d + e*x)^(3/2) - atan((
(((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d
^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e
^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^
6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d
^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4
+ 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^
(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*
B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20
*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 +
 B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*
B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5
*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*
c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*
(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2
```

*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*1i - (((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*1i)/((((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) +

A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c
e^5(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2)
+ 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4
 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*
d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^
3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a
^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e
^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2*(d + e*x)
^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10
*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/
2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a
^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*
d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^
(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*
A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*
a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^
8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^
3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*
c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*
B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*
(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(
1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^
(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*
e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*
A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c
*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d
^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 +
 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5
 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*
a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^
4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6
*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c
^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*
(3*A^3*c^5*d^8*e^3 + A*B^2*a^5*e^11 - A^3*a^4*c*e^11 + 3*B^3*a^5*d*e^10 + 6
*A^3*a^2*c^3*d^4*e^7 + 6*B^3*a^3*c^2*d^5*e^6 + A^2*B*c^5*d^9*e^2 - 8*A^3*a*
c^4*d^6*e^5 - B^3*a*c^4*d^9*e^2 - 8*B^3*a^4*c*d^3*e^8 + 8*A*B^2*a^2*c^3*d^6
*e^5 - 6*A*B^2*a^3*c^2*d^4*e^7 - 6*A^2*B*a^2*c^3*d^5*e^6 + 8*A^2*B*a^3*c^2*
d^3*e^8 - 3*A^2*B*a^4*c*d*e^10 - 3*A*B^2*a*c^4*d^8*e^3))/c^3))*((B^2*a^2*c^
7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^
2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*
e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A
^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2
*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*
c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^
3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*2i
 - atan(((((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B
*a*c^6*d^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 - B
^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^
2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A
^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^
6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a
^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e
^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1
/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c
^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e
^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5
*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*
A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^
2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3

*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a
^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) +
(16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2
*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^
3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^
3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(
1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^
2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)
^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^
5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2
*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*
e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3
e^2(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*1i - (((8*(4*B*a^3*c^4*e^6 - 8*A*a
*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2
*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^
8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^
3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*
c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*
B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*
(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(
1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^
(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2)
+ A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2
*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2
) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e
^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^
2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(
a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*
(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^
2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4
*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12
*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2
*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7
*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a
^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2
) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^
2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A
*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*
e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1
/2)*1i)/((((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*
B*a*c^6*d^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 -
B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B
^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*
A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c
^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(
a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*
e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(
1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*
c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*
e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^
5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5
*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c
^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^
3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(
a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) +
(16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^
2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c
^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e
^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^

```
(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A
^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9
)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c
^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^
2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2
*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^
3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (((8*(4*B*a^3*c^4*e^6 - 8*A*a*c
^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2*(
d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*
d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*
c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^
3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*
a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a
^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/
2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1
/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) +
A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c
*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2)
- 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4
 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*
d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^
3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a
^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*
c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e
^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A
*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a
^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d
^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4
*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2)
+ 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*
a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B
*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^
4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2
) - (16*(3*A^3*c^5*d^8*e^3 + A*B^2*a^5*e^11 - A^3*a^4*c*e^11 + 3*B^3*a^5*d*
e^10 + 6*A^3*a^2*c^3*d^4*e^7 + 6*B^3*a^3*c^2*d^5*e^6 + A^2*B*c^5*d^9*e^2 -
8*A^3*a*c^4*d^6*e^5 - B^3*a*c^4*d^9*e^2 - 8*B^3*a^4*c*d^3*e^8 + 8*A*B^2*a^2
*c^3*d^6*e^5 - 6*A*B^2*a^3*c^2*d^4*e^7 - 6*A^2*B*a^2*c^3*d^5*e^6 + 8*A^2*B*
a^3*c^2*d^3*e^8 - 3*A^2*B*a^4*c*d*e^10 - 3*A*B^2*a*c^4*d^8*e^3))/c^3))*((B^
2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^
7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*
a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/
2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B
^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*
A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d
*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(
1/2)*2i - (2*B*(d + e*x)^(5/2))/(5*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1274 $\int \frac{(A+Bx)(d+ex)^{3/2}}{a-cx^2}\,dx$

Optimal. Leaf size=202

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}c^{7/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}c^{7/4}}-2$$

Rubi [A] time = 0.44, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {825, 827, 1166, 208}

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}c^{7/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}c^{7/4}}-\frac{2\sqrt{d+ex}(Ae+Bd)}{c}-\frac{2B(d+ex)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x]
```

```
[Out] (-2*(B*d + A*e)*Sqrt[d + e*x])/c - (2*B*(d + e*x)^(3/2))/(3*c) + ((Sqrt[a]*
B - A*Sqrt[c])*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x]
)/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sqrt[a]*c^(7/4)) + ((Sqrt[a]*B + A*Sqrt[c]
)*(Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c
]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(7/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{a-cx^2}\,dx = -\frac{2B(d+ex)^{3/2}}{3c} - \frac{\int \frac{\sqrt{d+ex}\,(-Acd-aBe-c(Bd+Ae)x)}{a-cx^2}\,dx}{c}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{\int \frac{c\left(Acd^2+2aBde+aAe^2\right)+c\left(Bcd^2+2Acde+aBe^2\right)x}{\sqrt{d+ex}\,(a-cx^2)}\,dx}{c^2}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{2\,\mathrm{Subst}\left(\int \frac{ce\left(Acd^2+2aBde+aAe^2\right)-cd\left(Bcd^2+2Acde+\right.}{-cd^2+ae^2+2cdx}\right.}{c^2}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^2\right)\mathrm{Subst}\left(\int\right.}{\sqrt{a}\,c}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\tanh^{-1}\left(\right.}{\sqrt{a}\,c^{7/4}}$$

Mathematica [A] time = 0.24, size = 194, normalized size = 0.96

$$\frac{-2\sqrt{a}\,c^{3/4}\sqrt{d+ex}\,(3Ae+4Bd+Bex)-3\left(A\sqrt{c}-\sqrt{a}\,B\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)+3\left(\sqrt{a}\,B+A\sqrt{c}\right)\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{3\sqrt{a}\,c^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[a]*c^(3/4)*Sqrt[d + e*x]*(4*B*d + 3*A*e + B*e*x) - 3*(-(Sqrt[a]*B)
 + A*Sqrt[c])*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])
/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] + 3*(Sqrt[a]*B + A*Sqrt[c])*(Sqrt[c]*d + Sqrt
[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/
(3*Sqrt[a]*c^(7/4))
```

IntegrateAlgebraic [A] time = 0.60, size = 275, normalized size = 1.36

$$-\frac{\left(A\sqrt{c}-\sqrt{a}\,B\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^2\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{\sqrt{a}\,c^{3/2}\sqrt{-\sqrt{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^2\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{-\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{\sqrt{a}\,c^{3/2}\sqrt{-\sqrt{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}-\frac{2\sqrt{d+ex}\,(3Ae+B(d+ex)+3Bd)}{3c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(3*B*d + 3*A*e + B*(d + e*x)))/(3*c) + ((Sqrt[a]*B + A*Sq
rt[c])*(Sqrt[c]*d + Sqrt[a]*e)^2*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*S
qrt[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(Sqrt[a]*c^(3/2)*Sqrt[-(Sqrt[c]*(Sq
rt[c]*d + Sqrt[a]*e))]) - ((-(Sqrt[a]*B) + A*Sqrt[c])*(Sqrt[c]*d - Sqrt[a]*
e)^2*ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - S
qrt[a]*e)])/(Sqrt[a]*c^(3/2)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 1.86, size = 4480, normalized size = 22.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*c*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*
d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*
```

c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^
4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*
a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) +
(B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))*log((2*(A*B
^3*a*c^3 - A^3*B*c^4)*d^5 + 3*(B^4*a^2*c^2 - A^4*c^4)*d^4*e + 4*(A*B^3*a^2*
c^2 - A^3*B*a*c^3)*d^3*e^2 - 2*(B^4*a^3*c - A^4*a*c^3)*d^2*e^3 - 6*(A*B^3*a
^3*c - A^3*B*a^2*c^2)*d*e^4 - (B^4*a^4 - A^4*a^2*c^2)*e^5)*sqrt(e*x + d) +
(2*A*B^2*a*c^4*d^4 + (3*B^3*a^2*c^3 + 5*A^2*B*a*c^4)*d^3*e + 3*(3*A*B^2*a^2
*c^3 + A^3*a*c^4)*d^2*e^2 + (B^3*a^3*c^2 + 7*A^2*B*a^2*c^3)*d*e^3 + (A*B^2*
a^3*c^2 + A^3*a^2*c^3)*e^4 - (A*a*c^6*d + B*a^2*c^5*e)*sqrt((4*A^2*B^2*c^4*
d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*
c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^
4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*
a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)))*s
qrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(
A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^
4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c +
8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d
*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c +
A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))) - 3*c*sqrt((6*A*B*a*
c*d^2*e + 2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 +
A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^
2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2
*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a
^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3
+ 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))*log((2*(A*B^3*a*c^3 - A^3*B*c^4)*d
^5 + 3*(B^4*a^2*c^2 - A^4*c^4)*d^4*e + 4*(A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*
e^2 - 2*(B^4*a^3*c - A^4*a*c^3)*d^2*e^3 - 6*(A*B^3*a^3*c - A^3*B*a^2*c^2)*d
*e^4 - (B^4*a^4 - A^4*a^2*c^2)*e^5)*sqrt(e*x + d) - (2*A*B^2*a*c^4*d^4 + (3
*B^3*a^2*c^3 + 5*A^2*B*a*c^4)*d^3*e + 3*(3*A*B^2*a^2*c^3 + A^3*a*c^4)*d^2*e
^2 + (B^3*a^3*c^2 + 7*A^2*B*a^2*c^3)*d*e^3 + (A*B^2*a^3*c^2 + A^3*a^2*c^3)*
e^4 - (A*a*c^6*d + B*a^2*c^5*e)*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 +
A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^
2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2
*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a
^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)))*sqrt((6*A*B*a*c*d^2*e +
2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4
)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*
B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4
*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2
*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*
a^2 + A^2*a*c)*d*e^2)/(a*c^3))) + 3*c*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3
- a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(
3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 +
A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e
^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c +
A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c
)*d*e^2)/(a*c^3))*log((2*(A*B^3*a*c^3 - A^3*B*c^4)*d^5 + 3*(B^4*a^2*c^2 - A
^4*c^4)*d^4*e + 4*(A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^2 - 2*(B^4*a^3*c - A^
4*a*c^3)*d^2*e^3 - 6*(A*B^3*a^3*c - A^3*B*a^2*c^2)*d*e^4 - (B^4*a^4 - A^4*a
^2*c^2)*e^5)*sqrt(e*x + d) + (2*A*B^2*a*c^4*d^4 + (3*B^3*a^2*c^3 + 5*A^2*B*
a*c^4)*d^3*e + 3*(3*A*B^2*a^2*c^3 + A^3*a*c^4)*d^2*e^2 + (B^3*a^3*c^2 + 7*A
^2*B*a^2*c^3)*d*e^3 + (A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (A*a*c^6*d + B*a^
2*c^5*e)*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(
3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 +
A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e
^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c +
A^4*a^2*c^2)*e^6)/(a*c^7)))*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - a*c^3*s
qrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*

```
c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c
^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A
*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^
2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(
a*c^3))) - 3*c*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - a*c^3*sqrt((4*A^2*B^
2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*
B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 +
 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c +
A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^
7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))*log((
2*(A*B^3*a*c^3 - A^3*B*c^4)*d^5 + 3*(B^4*a^2*c^2 - A^4*c^4)*d^4*e + 4*(A*B^
3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^2 - 2*(B^4*a^3*c - A^4*a*c^3)*d^2*e^3 - 6*(A
*B^3*a^3*c - A^3*B*a^2*c^2)*d*e^4 - (B^4*a^4 - A^4*a^2*c^2)*e^5)*sqrt(e*x +
 d) - (2*A*B^2*a*c^4*d^4 + (3*B^3*a^2*c^3 + 5*A^2*B*a*c^4)*d^3*e + 3*(3*A*B
^2*a^2*c^3 + A^3*a*c^4)*d^2*e^2 + (B^3*a^3*c^2 + 7*A^2*B*a^2*c^3)*d*e^3 + (
A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (A*a*c^6*d + B*a^2*c^5*e)*sqrt((4*A^2*B^
2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*
B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 +
 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c +
A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^
7)))*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - a*c^3*sqrt((4*A^2*B^2*c^4*d^6
+ 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3
+ 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^
3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*
c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2
*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))) - 4*(B*e*x + 4
*B*d + 3*A*e)*sqrt(e*x + d))/c
```

giac [B] time = 0.41, size = 528, normalized size = 2.61

$$-\frac{\left(2\sqrt{ac}\,Bac^3d^2e - 2\sqrt{ac}\,Aac^3de^2 - \left(\sqrt{ac}\,acd^2e + \sqrt{ac}\,a^2e^3\right)Bc^2 + \left(ac^3d^2e - a^2c^2e^3\right)A|c| + \left(ac^3d^3 - a^2c^2de^2\right)B|c| + \left(\sqrt{ac}\,c^4d^3 + \sqrt{ac}\,ac^3de^2\right)A\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^4d+\sqrt{c^8d^2-(c^4d^2-ac^3e^2)c^4}}{c^4}}}\right)}{\left(ac^4d - \sqrt{ac}\,ac^3e\right)\sqrt{-c^2d - \sqrt{ac}\,ce}} + \frac{\left(2\sqrt{ac}\,Bac^3d^2e - 2\sqrt{ac}\,Aac^3de^2 - \left(\sqrt{ac}\,acd^2e + \sqrt{ac}\,a^2e^3\right)Bc^2 - \left(ac^3d^2e - a^2c^2e^3\right)A|c| - \left(ac^3d^3 - a^2c^2de^2\right)B|c| + \left(\sqrt{ac}\,c^4d^3 + \sqrt{ac}\,ac^3de^2\right)A\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^4d-\sqrt{c^8d^2-(c^4d^2-ac^3e^2)c^4}}{c^4}}}\right)}{\left(ac^4d + \sqrt{ac}\,ac^3e\right)\sqrt{-c^2d + \sqrt{ac}\,ce}} - \frac{2\left((xe+d)^{\frac{3}{2}}Bc^2 + 3\sqrt{xe+d}\,Bc^2d + 3\sqrt{xe+d}\,Ac^2e\right)}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -(2*sqrt(a*c)*B*a*c^3*d^2*e - 2*sqrt(a*c)*A*a*c^3*d*e^2 - (sqrt(a*c)*a*c*d^
2*e + sqrt(a*c)*a^2*e^3)*B*c^2 + (a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(c) + (a*
c^3*d^3 - a^2*c^2*d*e^2)*B*abs(c) + (sqrt(a*c)*c^4*d^3 + sqrt(a*c)*a*c^3*d*
e^2)*A)*arctan(sqrt(x*e + d)/sqrt(-(c^4*d + sqrt(c^8*d^2 - (c^4*d^2 - a*c^3
*e^2)*c^4))/c^4))/((a*c^4*d - sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*
e)) + (2*sqrt(a*c)*B*a*c^3*d^2*e - 2*sqrt(a*c)*A*a*c^3*d*e^2 - (sqrt(a*c)*a
*c*d^2*e + sqrt(a*c)*a^2*e^3)*B*c^2 - (a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(c)
- (a*c^3*d^3 - a^2*c^2*d*e^2)*B*abs(c) + (sqrt(a*c)*c^4*d^3 + sqrt(a*c)*a*c
^3*d*e^2)*A)*arctan(sqrt(x*e + d)/sqrt(-(c^4*d - sqrt(c^8*d^2 - (c^4*d^2 -
a*c^3*e^2)*c^4))/c^4))/((a*c^4*d + sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d + sqrt(a*
c)*c*e)) - 2/3*((x*e + d)^(3/2)*B*c^2 + 3*sqrt(x*e + d)*B*c^2*d + 3*sqrt(x*
e + d)*A*c^2*e)/c^3
```

maple [B] time = 0.08, size = 689, normalized size = 3.41

$$\frac{Aae^3\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{ace^2}\sqrt{\left(cd+\sqrt{ace^2}\right)c}} + \frac{Aae^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{ace^2}\sqrt{\left(-cd+\sqrt{ace^2}\right)c}} + \frac{Acd^2e\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{ace^2}\sqrt{\left(cd+\sqrt{ace^2}\right)c}} + \frac{Acd^2e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{ace^2}\sqrt{\left(-cd+\sqrt{ace^2}\right)c}} + \frac{2Bade^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{ace^2}\sqrt{\left(cd+\sqrt{ace^2}\right)c}} + \frac{2Bade^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{ace^2}\sqrt{\left(-cd+\sqrt{ace^2}\right)c}} + \frac{2Ade\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}} - \frac{2Ade\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}} + \frac{Bae^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}\,c} - \frac{Bae^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}\,c} + \frac{Bd^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ace^2}\right)c}} - \frac{Bd^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ace^2}\right)c}} - \frac{2\sqrt{ex+d}\,Ae}{c} - \frac{2\sqrt{ex+d}\,Bd}{c} - \frac{2(ex+d)^{\frac{3}{2}}B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x)
```

```
[Out] -2/3*(e*x+d)^(3/2)*B/c-2/c*A*e*(e*x+d)^(1/2)-2/c*B*d*(e*x+d)^(1/2)+1/(a*c*e
^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e+2/(
```

```
a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*B*d*e^2+2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*ar
ctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e+1/c/((c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*B*a*e^2+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(
a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2+1/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+
c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e+2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)
^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a
*B*d*e^2-2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e-1/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-1/((-c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*B*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{cx^2-a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 - a), x)
```

mupad [B] time = 2.71, size = 7560, normalized size = 37.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x)
```

```
[Out] - ((2*A*e - 2*B*d)/c + (4*B*d)/c)*(d + e*x)^(1/2) - atan(((((8*(4*A*a^2*c^4
*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 - 64
*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2
) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2
*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 +
A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c
^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c
^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 +
3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2
*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*
d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/
2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e
^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^
2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c
^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 +
3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2
*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*
d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/
2))/(4*a^2*c^7))^(1/2)*1i - (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B
*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(
(B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*
c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) +
 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) +
3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^
3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)
^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2
) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e
```

^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*
a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) - (d +
e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2
*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*
c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)
^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2
) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e
^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*
a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*1i)/((1
6*(B^3*a^4*e^8 - 2*A^3*c^4*d^5*e^3 - B^3*a^2*c^2*d^4*e^4 - A^2*B*a^3*c*e^8
- A^2*B*c^4*d^6*e^2 + 4*A^3*a*c^3*d^3*e^5 - 2*A^3*a^2*c^2*d*e^7 + B^3*a*c^3
*d^6*e^2 - B^3*a^3*c*d^2*e^6 - 4*A*B^2*a^2*c^2*d^3*e^5 + A^2*B*a^2*c^2*d^2*
e^6 + 2*A*B^2*a^3*c*d*e^7 + 2*A*B^2*a*c^3*d^5*e^3 + A^2*B*a*c^3*d^4*e^4))/c
^2 + (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^
2*c^4*d*e^4))/c^2 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 + B^2*
a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2
e(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 +
3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^
7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^
7))^(1/2))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3
+ 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*
c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c
^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a
*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*
e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2
*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2
*d^3*e^3))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3
+ 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*
c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c
^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a
*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (((8*(4*A*a^2*c^4*e^5 - 4*A*
a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^
2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c
^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^
3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3
*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e +
6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 + B^
2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d
^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
+ 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*
c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*
c^7))^(1/2) - (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2
*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2
*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 + B^
2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d
^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
+ 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*
c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*
c^7))^(1/2)))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d
^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a
^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^
3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*
B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*2i - atan(((((8*(4*A*a^2*c^
4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 - 6
4*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/
2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) -
2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 -
A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*
c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*

c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*1i - (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) - (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*1i)/((16*(B^3*a^4*e^8 - 2*A^3*c^4*d^5*e^3 - B^3*a^2*c^2*d^4*e^4 - A^2*B*a^3*c*e^8 - A^2*B*c^4*d^6*e^2 + 4*A^3*a*c^3*d^3*e^5 - 2*A^3*a^2*c^2*d*e^7 + B^3*a*c^3*d^6*e^2 - B^3*a^3*c*d^2*e^6 - 4*A*B^2*a^2*c^2*d^3*e^5 + A^2*B*a^2*c^2*d^2*e^6 + 2*A*B^2*a^3*c*d*e^7 + 2*A*B^2*a*c^3*d^5*e^3 + A^2*B*a*c^3*d^4*e^4))/c^2 + (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2

```
 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3
*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2
*c^7))^(1/2) - (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^
2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^
2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B
^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*
d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3
*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2
*c^7))^(1/2)))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*
d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(
a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a
^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A
*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*2i - (2*B*(d + e*x)^(3/2))
/(3*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1275 $\int \frac{(A+Bx)\sqrt{d+ex}}{a-cx^2}\,dx$

Optimal. Leaf size=179

$$\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,c^{5/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,c^{5/4}}-2B\sqrt{}$$

Rubi [A] time = 0.32, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {825, 827, 1166, 208}

$$\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,c^{5/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,c^{5/4}}-\frac{2B\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2),x]
```

```
[Out] (-2*B*Sqrt[d + e*x])/c + ((Sqrt[a]*B - A*Sqrt[c])*Sqrt[Sqrt[c]*d - Sqrt[a]*
e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sqrt[a]*c
^(5/4)) + ((Sqrt[a]*B + A*Sqrt[c])*Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(
1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(5/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{a-cx^2}\,dx = -\frac{2B\sqrt{d+ex}}{c} - \frac{\int \frac{-Acd-aBe-c(Bd+Ae)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{c}$$
$$= -\frac{2B\sqrt{d+ex}}{c} - \frac{2\,\text{Subst}\left(\int \frac{cd(Bd+Ae)+e(-Acd-aBe)-c(Bd+Ae)x^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx, x, \sqrt{d+ex}\right)}{c}$$
$$= -\frac{2B\sqrt{d+ex}}{c} + \frac{\left(\left(\sqrt{a}\,B+A\sqrt{c}\right)\left(\sqrt{c}\,d+\sqrt{a}\,e\right)\right)\text{Subst}\left(\int \frac{1}{cd+\sqrt{a}\,\sqrt{c}\,e-cx^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{a}\,\sqrt{c}}$$
$$= -\frac{2B\sqrt{d+ex}}{c} + \frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,c^{5/4}} + \frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\cdots}{\cdots}$$

Mathematica [A] time = 0.15, size = 178, normalized size = 0.99

$$\frac{-\left(A\sqrt{c}-\sqrt{a}\,B\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)+\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)-2\sqrt{a}\,B\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{a}\,c^{5/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[a]*B*c^(1/4)*Sqrt[d + e*x] - (-(Sqrt[a]*B) + A*Sqrt[c])*Sqrt[Sqrt[
c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*
e]] + (Sqrt[a]*B + A*Sqrt[c])*Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(1/4)*
Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(5/4))
```

IntegrateAlgebraic [A] time = 0.43, size = 259, normalized size = 1.45

$$\frac{\left(\sqrt{a}\,A\sqrt{c}\,e+\sqrt{a}\,B\sqrt{c}\,d+aBe+Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{-\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{\sqrt{a}\,c\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(\sqrt{a}\,A\sqrt{c}\,e+\sqrt{a}\,B\sqrt{c}\,d-aBe-Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{\sqrt{a}\,c\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}-\frac{2B\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2),x]
```

```
[Out] (-2*B*Sqrt[d + e*x])/c + ((Sqrt[a]*B*Sqrt[c]*d + A*c*d + a*B*e + Sqrt[a]*A*
Sqrt[c]*e)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]
*d + Sqrt[a]*e)])/(Sqrt[a]*c*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))]) + ((
Sqrt[a]*B*Sqrt[c]*d - A*c*d - a*B*e + Sqrt[a]*A*Sqrt[c]*e)*ArcTan[(Sqrt[-(c
*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(Sqrt[a]*
c*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 0.47, size = 1538, normalized size = 8.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/2*(c*sqrt((2*A*B*a*e + a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^
3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a +
 A^2*c)*d)/(a*c^2))*log(-(2*(A*B^3*a*c - A^3*B*c^2)*d + (B^4*a^2 - A^4*c^2)
*e)*sqrt(e*x + d) + (2*A*B^2*a*c^2*d - A*a*c^4*sqrt((4*A^2*B^2*c^2*d^2 + 4*
(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c
^5)) + (B^3*a^2*c + A^2*B*a*c^2)*e)*sqrt((2*A*B*a*e + a*c^2*sqrt((4*A^2*B^2
```

```
*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c
^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c^2))) - c*sqrt((2*A*B*a*e + a*c^
2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^
2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c^2))*log(-(2*(A
*B^3*a*c - A^3*B*c^2)*d + (B^4*a^2 - A^4*c^2)*e)*sqrt(e*x + d) - (2*A*B^2*a
*c^2*d - A*a*c^4*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e +
(B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^3*a^2*c + A^2*B*a*c^
2)*e)*sqrt((2*A*B*a*e + a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*
B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A
^2*c)*d)/(a*c^2))) + c*sqrt((2*A*B*a*e - a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*
(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c
^5)) + (B^2*a + A^2*c)*d)/(a*c^2))*log(-(2*(A*B^3*a*c - A^3*B*c^2)*d + (B^4
*a^2 - A^4*c^2)*e)*sqrt(e*x + d) + (2*A*B^2*a*c^2*d + A*a*c^4*sqrt((4*A^2*B
^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4
*c^2)*e^2)/(a*c^5)) + (B^3*a^2*c + A^2*B*a*c^2)*e)*sqrt((2*A*B*a*e - a*c^2*
sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*
B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c^2))) - c*sqrt((2
*A*B*a*e - a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e +
(B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c
^2))*log(-(2*(A*B^3*a*c - A^3*B*c^2)*d + (B^4*a^2 - A^4*c^2)*e)*sqrt(e*x +
d) - (2*A*B^2*a*c^2*d + A*a*c^4*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^
3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^3*a^2
*c + A^2*B*a*c^2)*e)*sqrt((2*A*B*a*e - a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A
*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5
)) + (B^2*a + A^2*c)*d)/(a*c^2))) + 4*sqrt(e*x + d)*B)/c
```

giac [B] time = 0.37, size = 303, normalized size = 1.69

$$-\frac{2\sqrt{xe+d}\,B}{c}-\frac{\left(\sqrt{ac}\,Ac^3d^2-\sqrt{ac}\,Aac^2e^2+\left(ac^2d^2-a^2ce^2\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^2d+\sqrt{c^4d^2-\left(c^2d^2-ace^2\right)c^2}}{c^2}}}\right)}{\left(ac^3d-\sqrt{ac}\,ac^2e\right)\sqrt{-c^2d-\sqrt{ac}\,ce}}+\frac{\left(\sqrt{ac}\,Ac^3d^2-\sqrt{ac}\,Aac^2e^2-\left(ac^2d^2-a^2ce^2\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^2d-\sqrt{c^4d^2-\left(c^2d^2-ace^2\right)c^2}}{c^2}}}\right)}{\left(ac^3d+\sqrt{ac}\,ac^2e\right)\sqrt{-c^2d+\sqrt{ac}\,ce}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -2*sqrt(x*e + d)*B/c - (sqrt(a*c)*A*c^3*d^2 - sqrt(a*c)*A*a*c^2*e^2 + (a*c^
2*d^2 - a^2*c*e^2)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c^2*d + sqrt(c^4*d
^2 - (c^2*d^2 - a*c*e^2)*c^2))/c^2))/((a*c^3*d - sqrt(a*c)*a*c^2*e)*sqrt(-c
^2*d - sqrt(a*c)*c*e)) + (sqrt(a*c)*A*c^3*d^2 - sqrt(a*c)*A*a*c^2*e^2 - (a*
c^2*d^2 - a^2*c*e^2)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c^2*d - sqrt(c^4
*d^2 - (c^2*d^2 - a*c*e^2)*c^2))/c^2))/((a*c^3*d + sqrt(a*c)*a*c^2*e)*sqrt(
-c^2*d + sqrt(a*c)*c*e))
```

maple [B] time = 0.07, size = 427, normalized size = 2.39

$$\frac{Acde\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}+\frac{Acde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ba\,e^2\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ba\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ae\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}-\frac{Ae\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{Bd\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}-\frac{Bd\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}-\frac{2\sqrt{ex+d}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x)
```

```
[Out] -2*(e*x+d)^(1/2)*B/c+1/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arct
anh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d*e+1/(a*c*e^2)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(
1/2))*c)^(1/2)*c)*B*a*e^2+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)
^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*e+1/((c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d+1/(a*c*e^
2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*c)*A*c*d*e+1/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c
```

```
)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-1/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2
))*c)^(1/2)*c)*A*e-1/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx+A)\sqrt{ex+d}}{cx^2-a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 - a), x)
```

mupad [B] time = 0.44, size = 4276, normalized size = 23.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a - c*x^2),x)
```

```
[Out] - 2*atanh((32*A^2*a*c^2*e^4*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c
^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*c
^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*
c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 - (16*A^2*B*e^5*(a^3*c^5)^(
1/2))/c^2 - (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 + (16
*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 - (32*A*B^2*d*e^4*(a
^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/
2))/(a*c) + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)) + (32*B^2*a^2*c*e^4*(
d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*
e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d
*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5
- 16*A*B^2*a^2*e^5 - (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 - (16*B^3*a*e^5*(a^
3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 + (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))
/c^2 - 32*A^2*B*a*c*d*e^4 - (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2
*a*c*d^2*e^3 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) + (16*A^2*B*d^2*e^3
*(a^3*c^5)^(1/2))/(a*c)) + (32*A^2*d*e^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((
B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2)
)/(4*a^2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))
/(2*a^2*c^4))^(1/2))/(16*A*B^2*a^3*e^5 + 16*A^3*a^2*c*e^5 + (16*B^3*a^2*e^5
*(a^3*c^5)^(1/2))/c^3 - 16*A^3*a*c^2*d^2*e^3 + (16*A^2*B*a*e^5*(a^3*c^5)^(1
/2))/c^2 + 32*A^2*B*a^2*c*d*e^4 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c - (1
6*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^
2*d^3*e^2 - (16*B^3*a*d^2*e^3*(a^3*c^5)^(1/2))/c^2 + (32*A*B^2*a*d*e^4*(a^3
*c^5)^(1/2))/c^2) - (32*B^2*d*e^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/
(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^
2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2
*c^4))^(1/2))/(16*A^3*c^3*d^2*e^3 - 16*A^3*a*c^2*e^5 - (16*A^2*B*e^5*(a^3*c
^5)^(1/2))/c - 16*A*B^2*a^2*c*e^5 - (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32
*A^2*B*c^3*d^3*e^2 + (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c - (32*A*B^2*d*e^4*(
a^3*c^5)^(1/2))/c - 32*A^2*B*a*c^2*d*e^4 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2
))/a + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/a + 16*A*B^2*a*c^2*d^2*e^3) + (64
*A*B*d^2*e^2*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*
c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*
c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A*B
^2*a^3*e^5 + 16*A^3*a^2*c*e^5 + (16*B^3*a^2*e^5*(a^3*c^5)^(1/2))/c^3 - 16*A
^3*a*c^2*d^2*e^3 + (16*A^2*B*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*a^2*c*d*
e^4 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1
/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^2*d^3*e^2 - (16*B^3*a*d^2*e^
```

3*(a^3*c^5)^(1/2))/c^2 + (32*A*B^2*a*d*e^4*(a^3*c^5)^(1/2))/c^2) + (64*A*B*a*c^2*d*e^3*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 - (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 - (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 + (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 - (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)))*((B^2*a*e*(a^3*c^5)^(1/2) + A^2*c*e*(a^3*c^5)^(1/2) + A^2*a*c^4*d + B^2*a^2*c^3*d + 2*A*B*a^2*c^3*e + 2*A*B*c*d*(a^3*c^5)^(1/2))/(4*a^2*c^5))^(1/2) - 2*atanh((32*A^2*a*c^2*e^4*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 + (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 + (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)) + (32*B^2*a^2*c*e^4*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 + (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 + (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)) - (32*A^2*d*e^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A*B^2*a^3*e^5 + 16*A^3*a^2*c*e^5 - (16*B^3*a^2*e^5*(a^3*c^5)^(1/2))/c^3 - 16*A^3*a*c^2*d^2*e^3 - (16*A^2*B*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*a^2*c*d*e^4 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^2*d^3*e^2 + (16*B^3*a*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - (32*A*B^2*a*d*e^4*(a^3*c^5)^(1/2))/c^2) + (32*B^2*d*e^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^3*d^2*e^3 - 16*A^3*a*c^2*e^5 + (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*e^5 + (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*c^3*d^3*e^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c - 32*A^2*B*a*c^2*d*e^4 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/a - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/a + 16*A*B^2*a*c^2*d^2*e^3) - (64*A*B*d^2*e^2*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A*B^2*a^3*e^5 + 16*A^3*a^2*c*e^5 - (16*B^3*a^2*e^5*(a^3*c^5)^(1/2))/c^3 - 16*A^3*a*c^2*d^2*e^3 - (16*A^2*B*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*a^2*c*d*e^4 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^2*d^3*e^2 + (16*B^3*a*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - (32*A*B^2*a*d*e^4*(a^3*c^5)^(1/2))/c^2) + (64*A*B*a*c^2*d*e^3*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 + (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 + (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)))*(-(B^2*a*e*(a^3*c^5)^(1/2) + A^2*c*e*(a^3*c^5)^(1/2) - A^2*a*c^4*d - B^2*a^2*c^3*d - 2*A*B*a^2*c^3*e + 2*A*B*c*d*(a^3*c^5)^(1/2))/(4*a^2*c^5))^(1/2)

```
- (2*B*(d + e*x)^(1/2))/c
```

sympy [B] time = 38.49, size = 396, normalized size = 2.21

$$-2Ae \operatorname{RootSum}\left(256t^4a^2c^3e^4 - 32t^2ac^2de^2 - ae^2 + cd^2, \left(t \mapsto t \log\left(-64t^3ac^2e^2 + 4tcd + \sqrt{d+ex}\right)\right)\right) - \frac{2Bae^2 \operatorname{RootSum}\left(t^4\left(256a^3ce^6 - 256a^2c^2d^2e^4\right) + 32t^2acde^2 - 1, \left(t \mapsto t \log\left(-64t^3a^2cde^4 + 64t^3ac^2d^3e^2 - 4tae^2 - 4tcd^2 + \sqrt{d+ex}\right)\right)\right)}{c} + 2Bd^2 \operatorname{RootSum}\left(t^4\left(256a^3ce^6 - 256a^2c^2d^2e^4\right) + 32t^2acde^2 - 1, \left(t \mapsto t \log\left(-64t^3a^2cde^4 + 64t^3ac^2d^3e^2 - 4tae^2 - 4tcd^2 + \sqrt{d+ex}\right)\right)\right) - 2Bd \operatorname{RootSum}\left(256t^4a^2c^3e^4 - 32t^2ac^2de^2 - ae^2 + cd^2, \left(t \mapsto t \log\left(-64t^3ac^2e^2 + 4tcd + \sqrt{d+ex}\right)\right)\right) - \frac{2B\sqrt{d+ex}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(-c*x**2+a),x)
```

```
[Out] -2*A*e*RootSum(256*_t**4*a**2*c**3*e**4 - 32*_t**2*a*c**2*d*e**2 - a*e**2 +
 c*d**2, Lambda(_t, _t*log(-64*_t**3*a*c**2*e**2 + 4*_t*c*d + sqrt(d + e*x)
))) - 2*B*a*e**2*RootSum(_t**4*(256*a**3*c*e**6 - 256*a**2*c**2*d**2*e**4)
+ 32*_t**2*a*c*d*e**2 - 1, Lambda(_t, _t*log(-64*_t**3*a**2*c*d*e**4 + 64*_
t**3*a*c**2*d**3*e**2 - 4*_t*a*e**2 - 4*_t*c*d**2 + sqrt(d + e*x))))/c + 2*
B*d**2*RootSum(_t**4*(256*a**3*c*e**6 - 256*a**2*c**2*d**2*e**4) + 32*_t**2
*a*c*d*e**2 - 1, Lambda(_t, _t*log(-64*_t**3*a**2*c*d*e**4 + 64*_t**3*a*c**
2*d**3*e**2 - 4*_t*a*e**2 - 4*_t*c*d**2 + sqrt(d + e*x)))) - 2*B*d*RootSum(
256*_t**4*a**2*c**3*e**4 - 32*_t**2*a*c**2*d*e**2 - a*e**2 + c*d**2, Lambda
(_t, _t*log(-64*_t**3*a*c**2*e**2 + 4*_t*c*d + sqrt(d + e*x)))) - 2*B*sqrt(
d + e*x)/c
```

3.1276 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx$

Optimal. Leaf size=152

$$\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{c^{3/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}$$

Rubi [A] time = 0.16, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {827, 1166, 208}

$$\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{c^{3/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)),x]
```

```
[Out] ((B - (A*Sqrt[c])/Sqrt[a])*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d -
 Sqrt[a]*e]])/(c^(3/4)*Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ((B + (A*Sqrt[c])/Sqr
t[a])*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(c^(3/4
)*Sqrt[Sqrt[c]*d + Sqrt[a]*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)}dx = 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{-cd^2+ae^2+2cdx^2-cx^4}dx, x, \sqrt{d+ex}\right)$$
$$= \left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{cd-\sqrt{a}\sqrt{c}\,e-cx^2}dx, x, \sqrt{d+ex}\right)+\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{}{c}\right.$$
$$= \frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d+\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d+\sqrt{a}\,e}}$$

Mathematica [A] time = 0.18, size = 155, normalized size = 1.02

$$\frac{\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{\sqrt{c}d-\sqrt{a}e}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{\sqrt{a}e+\sqrt{c}d}}}{\sqrt{a}\,c^{3/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)),x]
```

```
[Out] (((Sqrt[a]*B - A*Sqrt[c])*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d -
Sqrt[a]*e]])/Sqrt[Sqrt[c]*d - Sqrt[a]*e] + ((Sqrt[a]*B + A*Sqrt[c])*ArcTanh
[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/Sqrt[Sqrt[c]*d + Sqr
t[a]*e])/(Sqrt[a]*c^(3/4))
```

IntegrateAlgebraic [A] time = 0.40, size = 207, normalized size = 1.36

$$\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}e-cd}}{\sqrt{a}e+\sqrt{c}d}\right)}{\sqrt{a}\sqrt{c}\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}e-cd}}{\sqrt{c}d-\sqrt{a}e}\right)}{\sqrt{a}\sqrt{c}\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)),x]
```

```
[Out] ((Sqrt[a]*B + A*Sqrt[c])*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d +
e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(Sqrt[a]*Sqrt[c]*Sqrt[-(Sqrt[c]*(Sqrt[c]*d
+ Sqrt[a]*e))]) + ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sq
rt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(Sqrt[a]*Sqrt[c]*Sqrt[-(S
qrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 0.51, size = 2385, normalized size = 15.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d + (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*
A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c
+ A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2
- a^2*c*e^2))*log((2*(A*B^3*a*c - A^3*B*c^2)*d - (B^4*a^2 - A^4*c^2)*e)*sqr
t(e*x + d) + (2*A*B^2*a*c^2*d^2 - (B^3*a^2*c + 3*A^2*B*a*c^2)*d*e + (A*B^2*
a^2*c + A^3*a*c^2)*e^2 + (A*a*c^4*d^3 - B*a^2*c^3*d^2*e - A*a^2*c^3*d*e^2 +
 B*a^3*c^2*e^3)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (
```

```
B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^
3*c^3*e^4)))*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d + (a*c^2*d^2 - a^2*c*e^2)
*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2
*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a
*c^2*d^2 - a^2*c*e^2))) - 1/2*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d + (a*c^2
*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e +
 (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 +
a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2))*log((2*(A*B^3*a*c - A^3*B*c^2)*d -
(B^4*a^2 - A^4*c^2)*e)*sqrt(e*x + d) - (2*A*B^2*a*c^2*d^2 - (B^3*a^2*c + 3*
A^2*B*a*c^2)*d*e + (A*B^2*a^2*c + A^3*a*c^2)*e^2 + (A*a*c^4*d^3 - B*a^2*c^3
*d^2*e - A*a^2*c^3*d*e^2 + B*a^3*c^2*e^3)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^
3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^
4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d
 + (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c
^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d
^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2))) + 1/2*sqrt(-(2*A*B*a*e -
(B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*
B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*
d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2))*log((2*(A
*B^3*a*c - A^3*B*c^2)*d - (B^4*a^2 - A^4*c^2)*e)*sqrt(e*x + d) + (2*A*B^2*a
*c^2*d^2 - (B^3*a^2*c + 3*A^2*B*a*c^2)*d*e + (A*B^2*a^2*c + A^3*a*c^2)*e^2
- (A*a*c^4*d^3 - B*a^2*c^3*d^2*e - A*a^2*c^3*d*e^2 + B*a^3*c^2*e^3)*sqrt((4
*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c
 + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))*sqrt(-(2*A
*B*a*e - (B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^
2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2
)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2)))
 - 1/2*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e^2)*sqrt(
(4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a
*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d
^2 - a^2*c*e^2))*log((2*(A*B^3*a*c - A^3*B*c^2)*d - (B^4*a^2 - A^4*c^2)*e)*
sqrt(e*x + d) - (2*A*B^2*a*c^2*d^2 - (B^3*a^2*c + 3*A^2*B*a*c^2)*d*e + (A*B
^2*a^2*c + A^3*a*c^2)*e^2 - (A*a*c^4*d^3 - B*a^2*c^3*d^2*e - A*a^2*c^3*d*e^
2 + B*a^3*c^2*e^3)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e
+ (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 +
 a^3*c^3*e^4)))*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e
^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*
A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))
/(a*c^2*d^2 - a^2*c*e^2)))
```

giac [A] time = 0.26, size = 177, normalized size = 1.16

$$-\frac{\left(Ba|c|+\sqrt{ac}\,A|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{cd+\sqrt{c^2d^2-\left(cd^2-ae^2\right)c}}{c}}}\right)}{\sqrt{-c^2d-\sqrt{ac}\,ce}\,ac}-\frac{\left(Ba|c|-\sqrt{ac}\,A|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{cd-\sqrt{c^2d^2-\left(cd^2-ae^2\right)c}}{c}}}\right)}{\sqrt{-c^2d+\sqrt{ac}\,ce}\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -(B*a*abs(c) + sqrt(a*c)*A*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c*d + sqrt(c
^2*d^2 - (c*d^2 - a*e^2)*c))/c))/(sqrt(-c^2*d - sqrt(a*c)*c*e)*a*c) - (B*a*
abs(c) - sqrt(a*c)*A*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c*d - sqrt(c^2*d^2
 - (c*d^2 - a*e^2)*c))/c))/(sqrt(-c^2*d + sqrt(a*c)*c*e)*a*c)
```

maple [A] time = 0.08, size = 203, normalized size = 1.34

$$\frac{Ace\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ace\,\mathrm{arctan}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}-\frac{B\,\mathrm{arctan}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x)
```

```
[Out] c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*e+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arcta
nh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+c/(a*c*e^2)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A*e-1/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx+A}{\left(cx^2-a\right)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)*sqrt(e*x + d)), x)
```

mupad [B] time = 3.31, size = 2065, normalized size = 13.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)*(d + e*x)^(1/2)),x)
```

```
[Out] atan((a^2*c^5*d^3*((B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2
*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*
a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(3/2)*(d + e*x)^(1/2)*8i + A^2*a^2*c^3*e^2*((
B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c
^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*
c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - B^2*a^2*c^3*d^2*((B^2*a*e*(a^3*c^3)^(1
/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2
*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d +
 e*x)^(1/2)*2i + B^2*a^3*c^2*e^2*((B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c
^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*
c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - A^2
*a*c^4*d^2*((B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*
d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4
*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - a^3*c^4*d*e^2*((B^2*a*e*(
a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*
A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))
^(3/2)*(d + e*x)^(1/2)*8i)/(A^3*c*e^2*(a^3*c^3)^(1/2) - B^3*a^3*c*e^2 - 2*A
^2*B*a*c^3*d^2 - B^3*a*d*e*(a^3*c^3)^(1/2) - A^2*B*a^2*c^2*e^2 + A*B^2*a*e^
2*(a^3*c^3)^(1/2) + 2*A*B^2*c*d^2*(a^3*c^3)^(1/2) + A^3*a*c^3*d*e + 3*A*B^2
*a^2*c^2*d*e - 3*A^2*B*c*d*e*(a^3*c^3)^(1/2)))*((B^2*a*e*(a^3*c^3)^(1/2) +
A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2
*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*2i - atan(
(a^2*c^5*d^3*(-(B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c
^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*
c^4*d^2 - 4*a^3*c^3*e^2))^(3/2)*(d + e*x)^(1/2)*8i + A^2*a^2*c^3*e^2*(-(B^2
```

```
*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*
d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3
*e^2))^(1/2)*(d + e*x)^(1/2)*2i - B^2*a^2*c^3*d^2*(-(B^2*a*e*(a^3*c^3)^(1/2
) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e
 - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e
*x)^(1/2)*2i + B^2*a^3*c^2*e^2*(-(B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^
3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c
^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - A^2*
a*c^4*d^2*(-(B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*
d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4
*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - a^3*c^4*d*e^2*(-(B^2*a*e*
(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2
*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2)
)^(3/2)*(d + e*x)^(1/2)*8i)/(A^3*c*e^2*(a^3*c^3)^(1/2) + B^3*a^3*c*e^2 + 2*
A^2*B*a*c^3*d^2 - B^3*a*d*e*(a^3*c^3)^(1/2) + A^2*B*a^2*c^2*e^2 + A*B^2*a*e
^2*(a^3*c^3)^(1/2) + 2*A*B^2*c*d^2*(a^3*c^3)^(1/2) - A^3*a*c^3*d*e - 3*A*B^
2*a^2*c^2*d*e - 3*A^2*B*c*d*e*(a^3*c^3)^(1/2)))*(-(B^2*a*e*(a^3*c^3)^(1/2)
+ A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e -
 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*2i
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{A}{-a\sqrt{d+ex}+cx^2\sqrt{d+ex}}\,dx-\int \frac{Bx}{-a\sqrt{d+ex}+cx^2\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(-c*x**2+a),x)
```

```
[Out] -Integral(A/(-a*sqrt(d + e*x) + c*x**2*sqrt(d + e*x)), x) - Integral(B*x/(-
a*sqrt(d + e*x) + c*x**2*sqrt(d + e*x)), x)
```

3.1277 $\int \frac{A+Bx}{(d+ex)^{3/2}(a-cx^2)}\,dx$

Optimal. Leaf size=197

$$-\frac{2(Bd-Ae)}{\sqrt{d+ex}\left(cd^2-ae^2\right)}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}$$

Rubi [A] time = 0.40, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {829, 827, 1166, 208}

$$-\frac{2(Bd-Ae)}{\sqrt{d+ex}\left(cd^2-ae^2\right)}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)),x]
```

```
[Out] (-2*(B*d - A*e))/((c*d^2 - a*e^2)*Sqrt[d + e*x]) + ((Sqrt[a]*B - A*Sqrt[c])
*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sqrt[a]*c^(
1/4)*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)) + ((Sqrt[a]*B + A*Sqrt[c])*ArcTanh[(c^(
1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(1/4)*(Sqrt[c]
*d + Sqrt[a]*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx = -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}} + \frac{\int \frac{-Acd+aBe-c(Bd-Ae)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{-cd^2+ae^2}$$

$$= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}} - \frac{2\,\mathrm{Subst}\left(\int \frac{cd(Bd-Ae)+e(-Acd+aBe)-c(Bd-Ae)x^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx, x, \sqrt{d+ex}\right.}{cd^2-ae^2}$$

$$= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}} + \frac{\left(\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\sqrt{c}\right)\mathrm{Subst}\left(\int \frac{1}{cd-\sqrt{a}\sqrt{c}\,e-cx^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{c}\,d-\sqrt{a}\,e}$$

$$= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}} + \frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt[4]{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}} + \frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(-\right.}{\sqrt[4]{c}\left(\sqrt{c}\,d+\sqrt{a}\right.}$$

Mathematica [C] time = 0.33, size = 271, normalized size = 1.38

$$\frac{\frac{B\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt[4]{c}}-\frac{(Bd-Ae)\left(\left(\sqrt{a}\,e+\sqrt{c}\,d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}\,d-\sqrt{a}\,e}\right)+\left(\sqrt{a}\,e-\sqrt{c}\,d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}\,d+\sqrt{a}\,e}\right)\right)}{\sqrt{d+ex}\left(cd^2-ae^2\right)}}{\sqrt{a}\,e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)),x]
```

```
[Out] ((B*(-(ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]]/Sqrt[Sq
rt[c]*d - Sqrt[a]*e]) + ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sq
rt[a]*e]]/Sqrt[Sqrt[c]*d + Sqrt[a]*e]))/c^(1/4) - ((B*d - A*e)*((Sqrt[c]*d
+ Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d
 - Sqrt[a]*e)] + (-(Sqrt[c]*d) + Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2,
 (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[a]*e)]))/((c*d^2 - a*e^2)*Sqrt[d + e
*x]))/(Sqrt[a]*e)
```

IntegrateAlgebraic [A] time = 0.63, size = 265, normalized size = 1.35

$$-\frac{2(Bd-Ae)}{\sqrt{d+ex}\left(cd^2-ae^2\right)}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{\sqrt{a}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{\sqrt{a}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)),x]
```

```
[Out] (-2*(B*d - A*e))/((c*d^2 - a*e^2)*Sqrt[d + e*x]) + ((Sqrt[a]*B + A*Sqrt[c])
*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d + Sqrt[
a]*e)])/(Sqrt[a]*(Sqrt[c]*d + Sqrt[a]*e)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a
]*e))]) + ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]
*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(Sqrt[a]*(Sqrt[c]*d - Sqrt[a]*e)*
Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 2.76, size = 6448, normalized size = 32.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="fricas")

[Out] 1/2*((c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3 - 3*(B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B^4*a^3 - A^4*a*c^2)*e^3)*sqrt(e*x + d) + (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^2 + 7*A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B^3*a^3*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4 - (B^3*a^4 + A^2*B*a^3*c)*e^5 + (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2*c^4*d^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*e^6 + 2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))) - (c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3 - 3*(B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B^4*a^3 - A^4*a*c^2)*e^3)*sqrt(e*x + d) - (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^2 + 7*A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B^3*a^3*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4 - (B^3*a^4 + A^2*B*a^3*c)*e^5 + (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2*c^4*d^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*e^6 + 2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c

```
^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4
 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 1
5*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2
*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^
4*e^6))) + (c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*e +
 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 - (a
*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c
^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2
*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*
(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3
*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d
^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5
*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^
4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3 -
3*(B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B^4*
a^3 - A^4*a*c^2)*e^3)*sqrt(e*x + d) + (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^2 +
 7*A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B^3*
a^3*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4 -
(B^3*a^4 + A^2*B*a^3*c)*e^5 - (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2*c^
4*d^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*e^6
 + 2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3
 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*
e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a
^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4
*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2
 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2
*d^2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c
 + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 - (a*c^3*d^6 - 3*a^2*c^2*d^4*
e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3
+ A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e
^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^
2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*
a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2
+ 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*
d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 -
 a^4*e^6))) - (c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*
e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 -
 (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^
2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*
B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 +
 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c +
A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^
7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*
a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2
*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3
 - 3*(B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B
^4*a^3 - A^4*a*c^2)*e^3)*sqrt(e*x + d) - (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^
2 + 7*A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B
^3*a^3*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4
 - (B^3*a^4 + A^2*B*a^3*c)*e^5 - (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2
*c^4*d^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*
e^6 + 2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*
c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d
^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^
2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (
B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*
e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*
c^2*d^2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*
a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 - (a*c^3*d^6 - 3*a^2*c^2*d
```

```
^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c
^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^
4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2
*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B
^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e
^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c
^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^
4 - a^4*e^6))) - 4*(B*d - A*e)*sqrt(e*x + d))/(c*d^3 - a*d*e^2 + (c*d^2*e -
 a*e^3)*x)
```

giac [B] time = 0.70, size = 920, normalized size = 4.67

$$-\frac{2\,(Bd-Ae)}{(cd^2-ae^2)\sqrt{xe+d}}+\frac{\left((cd^2e-ae^3)^2\sqrt{ac}\,Bad|c|-(cd^2e-ae^3)^2\sqrt{ac}\,Aa|c|e+2\left(ac^2d^3e-a^2cde^3\right)A|cd^2e-ae^3||c|-\left(ac^2d^4-a^3e^4\right)B|cd^2e-ae^3||c|-\left(\sqrt{ac}\,c^3d^6e-2\sqrt{ac}\,ac^2d^4e^3+\sqrt{ac}\,a^2cd^2e^5\right)A|c|+\left(\sqrt{ac}\,ac^2d^5e^2-2\sqrt{ac}\,a^2cd^3e^4+\sqrt{ac}\,a^3de^6\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^2d^3-acde^2+\sqrt{(c^2d^3-acde^2)^2-(c^2d^4-2acd^2e^2+a^2e^4)(c^2d^2-ace^2)}}{c^2d^2-ace^2}}}\right)}{\left(ac^3d^5-\sqrt{ac}\,ac^2d^4e-2a^2c^2d^3e^2+2\sqrt{ac}\,a^2cd^2e^3+a^3cde^4-\sqrt{ac}\,a^3e^5\right)\sqrt{-c^2d-\sqrt{ac}\,ce}\,|cd^2e-ae^3|}-\frac{\left((cd^2e-ae^3)^2\sqrt{ac}\,Bad|c|-(cd^2e-ae^3)^2\sqrt{ac}\,Aa|c|e-2\left(ac^2d^3e-a^2cde^3\right)A|cd^2e-ae^3||c|+\left(ac^2d^4-a^3e^4\right)B|cd^2e-ae^3||c|-\left(\sqrt{ac}\,c^3d^6e-2\sqrt{ac}\,ac^2d^4e^3+\sqrt{ac}\,a^2cd^2e^5\right)A|c|+\left(\sqrt{ac}\,ac^2d^5e^2-2\sqrt{ac}\,a^2cd^3e^4+\sqrt{ac}\,a^3de^6\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^2d^3-acde^2-\sqrt{(c^2d^3-acde^2)^2-(c^2d^4-2acd^2e^2+a^2e^4)(c^2d^2-ace^2)}}{c^2d^2-ace^2}}}\right)}{\left(ac^3d^5+\sqrt{ac}\,ac^2d^4e-2a^2c^2d^3e^2-2\sqrt{ac}\,a^2cd^2e^3+a^3cde^4+\sqrt{ac}\,a^3e^5\right)\sqrt{-c^2d+\sqrt{ac}\,ce}\,|cd^2e-ae^3|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -2*(B*d - A*e)/((c*d^2 - a*e^2)*sqrt(x*e + d)) + ((c*d^2*e - a*e^3)^2*sqrt(
a*c)*B*a*d*abs(c) - (c*d^2*e - a*e^3)^2*sqrt(a*c)*A*a*abs(c)*e + 2*(a*c^2*d
^3*e - a^2*c*d*e^3)*A*abs(c*d^2*e - a*e^3)*abs(c) - (a*c^2*d^4 - a^3*e^4)*B
*abs(c*d^2*e - a*e^3)*abs(c) - (sqrt(a*c)*c^3*d^6*e - 2*sqrt(a*c)*a*c^2*d^4
*e^3 + sqrt(a*c)*a^2*c*d^2*e^5)*A*abs(c) + (sqrt(a*c)*a*c^2*d^5*e^2 - 2*sqr
t(a*c)*a^2*c*d^3*e^4 + sqrt(a*c)*a^3*d*e^6)*B*abs(c))*arctan(sqrt(x*e + d)/
sqrt(-(c^2*d^3 - a*c*d*e^2 + sqrt((c^2*d^3 - a*c*d*e^2)^2 - (c^2*d^4 - 2*a*
c*d^2*e^2 + a^2*e^4)*(c^2*d^2 - a*c*e^2)))/(c^2*d^2 - a*c*e^2)))/((a*c^3*d^
5 - sqrt(a*c)*a*c^2*d^4*e - 2*a^2*c^2*d^3*e^2 + 2*sqrt(a*c)*a^2*c*d^2*e^3 +
 a^3*c*d*e^4 - sqrt(a*c)*a^3*e^5)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(c*d^2*e
- a*e^3)) - ((c*d^2*e - a*e^3)^2*sqrt(a*c)*B*a*d*abs(c) - (c*d^2*e - a*e^3)
^2*sqrt(a*c)*A*a*abs(c)*e - 2*(a*c^2*d^3*e - a^2*c*d*e^3)*A*abs(c*d^2*e - a
*e^3)*abs(c) + (a*c^2*d^4 - a^3*e^4)*B*abs(c*d^2*e - a*e^3)*abs(c) - (sqrt(
a*c)*c^3*d^6*e - 2*sqrt(a*c)*a*c^2*d^4*e^3 + sqrt(a*c)*a^2*c*d^2*e^5)*A*abs
(c) + (sqrt(a*c)*a*c^2*d^5*e^2 - 2*sqrt(a*c)*a^2*c*d^3*e^4 + sqrt(a*c)*a^3*
d*e^6)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c^2*d^3 - a*c*d*e^2 - sqrt((c^
2*d^3 - a*c*d*e^2)^2 - (c^2*d^4 - 2*a*c*d^2*e^2 + a^2*e^4)*(c^2*d^2 - a*c*e
^2)))/(c^2*d^2 - a*c*e^2)))/((a*c^3*d^5 + sqrt(a*c)*a*c^2*d^4*e - 2*a^2*c^2
*d^3*e^2 - 2*sqrt(a*c)*a^2*c*d^2*e^3 + a^3*c*d*e^4 + sqrt(a*c)*a^3*e^5)*sqr
t(-c^2*d + sqrt(a*c)*c*e)*abs(c*d^2*e - a*e^3))
```

maple [B] time = 0.08, size = 588, normalized size = 2.98

$$-\frac{A c^2 de \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{ac e^2}\,\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}-\frac{A c^2 de \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{ac e^2}\,\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}+\frac{Bac e^2 \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{ac e^2}\,\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}+\frac{Bac e^2 \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{ac e^2}\,\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}+\frac{Ace \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}-\frac{Ace \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}-\frac{Bcd \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{\left(cd+\sqrt{ac e^2}\right)c}}+\frac{Bcd \arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}\right)}{\left(a e^2-c d^2\right)\sqrt{\left(-cd+\sqrt{ac e^2}\right)c}}-\frac{2Ae}{\left(a e^2-c d^2\right)\sqrt{ex+d}}+\frac{2Bd}{\left(a e^2-c d^2\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x)
```

```
[Out] -2/(a*e^2-c*d^2)/(e*x+d)^(1/2)*A*e+2/(a*e^2-c*d^2)/(e*x+d)^(1/2)*B*d-1/(a*e
^2-c*d^2)*c^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+
d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e+1/(a*e^2-c*d^2)*c/(a*c*e^
2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*c)*B*a*e^2+1/(a*e^2-c*d^2)*c/((c*d+(a*c*e^2)^(1/2))*c)^
(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*e-1/(a*e^2
-c*d^2)*c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*c)*B*d-1/(a*e^2-c*d^2)*c^2/(a*c*e^2)^(1/2)/((-c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*A*d*e+1/(a*e^2-c*d^2)*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-1/(a*e^2
-c*d^2)*c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*c)*A*e+1/(a*e^2-c*d^2)*c/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx + A}{\left(cx^2 - a\right)(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)*(e*x + d)^(3/2)), x)
```

mupad [B] time = 5.67, size = 10288, normalized size = 52.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)*(d + e*x)^(3/2)),x)
```

```
[Out] atan((((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A
*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) +
3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A
*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^
(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)
))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) +
A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e
^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*
(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B
*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 -
 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^
2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3
*e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^5*c^4*d*e^11 - 32*
B*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*d^5*e^7 - 256*A*a^
4*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e^6 - 64*B*a^4*c^5*
d^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 1
6*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a
^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c
^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*
d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c
)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 +
 A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*
c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/
2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3
*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*1i + ((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^
3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c
*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3
+ 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^
3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3
*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c
^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^
(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2
 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e +
3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^
6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*
d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 -
640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^3*e^12 - 64*A*a*c^
8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 256*A*a^2*c^7*d^7*e
^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B*a^2*c^7*d^8*e^4 +
 64*B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c^4*d^2*e^10) + (d
+ e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^
2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^
```

8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64 *A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2 *c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4 *(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)* 1i)/(((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3 *A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A ^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B* a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2 *c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3* e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^5*c^4*d*e^11 - 32*B *a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*d^5*e^7 - 256*A*a^4 *c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e^6 - 64*B*a^4*c^5*d ^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16 *B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d ^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c) ^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c ^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3* d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - ((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a ^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e ^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3* A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c) ^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3 *c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d ^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2 *A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11 *e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640* a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^3*e^12 - 64*A*a*c^8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 256*A*a^2*c^7*d^7*e^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B*a^2*c^7*d^8*e^4 + 64* B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c^4*d^2*e^10) + (d + e* x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B *a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2 *a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a ^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2 *d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - 16 *A^3*a^3*c^4*e^9 + 16*A^3*c^7*d^6*e^3 + 48*A^3*a^2*c^5*d^2*e^7 - 48*B^3*a^2 *c^5*d^5*e^4 + 48*B^3*a^3*c^4*d^3*e^6 + 16*A*B^2*a^4*c^3*e^9 - 16*A^2*B*c^7 *d^7*e^2 - 48*A^3*a*c^6*d^4*e^5 + 16*B^3*a*c^6*d^7*e^2 - 16*B^3*a^4*c^3*d*e

^8 + 48*A*B^2*a^2*c^5*d^4*e^5 - 48*A*B^2*a^3*c^4*d^2*e^7 - 48*A^2*B*a^2*c^5
*d^3*e^6 - 16*A*B^2*a*c^6*d^6*e^3 + 48*A^2*B*a*c^6*d^5*e^4 + 16*A^2*B*a^3*c
^4*d*e^8))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 -
2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2
) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) -
6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3
c)^(1/2))/(4(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*
e^4)))^(1/2)*2i + atan((((-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A
^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^
3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(
a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*
a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 -
3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^
3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c
*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3
- 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^
3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3
*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c
^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8
+ 320*a^5*c^5*d^3*e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^
5*c^4*d*e^11 - 32*B*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*
d^5*e^7 - 256*A*a^4*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e
^6 - 64*B*a^4*c^5*d^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^
2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*
d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^
6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9
- 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 -
B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3
*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*
a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c
*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c
^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*1i + ((-(B^2*a^2*c^
2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(
1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2
- 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3
*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6
- a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^
(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*
B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3
*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*
B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(
1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4))
)^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*
a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^
3*e^12 - 64*A*a*c^8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 2
56*A*a^2*c^7*d^7*e^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B
*a^2*c^7*d^8*e^4 + 64*B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c
^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 -
16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*
B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*
a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^
3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*
d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)
^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1
/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2
*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2
*d^2*e^4)))^(1/2)*1i)/(((-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^
2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3
*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a

^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^5*c^4*d*e^11 - 32*B*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*d^5*e^7 - 256*A*a^4*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e^6 - 64*B*a^4*c^5*d^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - ((-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^3*e^12 - 64*A*a*c^8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 256*A*a^2*c^7*d^7*e^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B*a^2*c^7*d^8*e^4 + 64*B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - 16*A^3*a^3*c^4*e^9 + 16*A^3*c^7*d^6*e^3 + 48*A^3*a^2*c^5*d^2*e^7 - 48*B^3*a^2*c^5*d^5*e^4 + 48*B^3*a^3*c^4*d^3*e^6 + 16*A*B^2*a^4*c^3*e^9 - 16*A^2*B*c^7*d^7*e^2 - 48*A^3*a*c^6*d^4*e^5 + 16*B^3*a*c^6*d^7*e^2 - 16*B^3*a^4*c^3*d*e^8 + 48*A*B^2*a^2*c^5*d^4*e^5 - 48*A*B^2*a^3*c^4*d^2*e^7 - 48*A^2*B*a^2*c^5*d^3*e^6 - 16*A*B^2*a*c^6*d^6*e^3 + 48*A^2*B*a*c^6*d^5*e^4 + 16*A^2*B*a^3*c^4*d*e^8))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*2i - (2*(A*e - B*d))/((a*e^2 - c*d^2)*(d + e*x)^(1/2))

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1278 $\int \frac{A+Bx}{(d+ex)^{5/2}(a-cx^2)}\,dx$

Optimal. Leaf size=243

$$-\frac{2(Bd-Ae)}{3(d+ex)^{3/2}\left(cd^2-ae^2\right)}-\frac{2\left(aBe^2-2Acde+Bcd^2\right)}{\sqrt{d+ex}\left(cd^2-ae^2\right)^2}+\frac{\sqrt[4]{c}\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\sqrt[4]{c}\left(\sqrt{a}\,B+A\sqrt{c}\right.}{\sqrt{a}\left(\sqrt{a}\right.}$$

Rubi [A] time = 0.54, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {829, 827, 1166, 208}

$$-\frac{2(Bd-Ae)}{3(d+ex)^{3/2}\left(cd^2-ae^2\right)}-\frac{2\left(aBe^2-2Acde+Bcd^2\right)}{\sqrt{d+ex}\left(cd^2-ae^2\right)^2}+\frac{\sqrt[4]{c}\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\sqrt[4]{c}\left(\sqrt{a}\,B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a - c*x^2)),x]
```

```
[Out] (-2*(B*d - A*e))/(3*(c*d^2 - a*e^2)*(d + e*x)^(3/2)) - (2*(B*c*d^2 - 2*A*c*
d*e + a*B*e^2))/((c*d^2 - a*e^2)^2*Sqrt[d + e*x]) + ((Sqrt[a]*B - A*Sqrt[c]
)*c^(1/4)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sq
rt[a]*(Sqrt[c]*d - Sqrt[a]*e)^(5/2)) + ((Sqrt[a]*B + A*Sqrt[c])*c^(1/4)*Arc
Tanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*(Sqrt[c
]*d + Sqrt[a]*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a-cx^2\right)}\,dx = -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} + \frac{\int \frac{-Acd+aBe-c(Bd-Ae)x}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx}{-cd^2+ae^2}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{\int \frac{c\left(Acd^2-2aBde+aAe^2\right)+c\left(Bc\right.}{\sqrt{d+ex}\left(a-cx\right.}}{\left(cd^2-ae^2\right.}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{2\,\mathrm{Subst}\left(\int \frac{ce\left(Acd^2-2aBde+\right.}{}\right.}{}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{\left(\left(\sqrt{a}B-A\sqrt{c}\right)c\right)\mathrm{Subs}}{\sqrt{a}\,\left(\right.}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{\left(\sqrt{a}B-A\sqrt{c}\right)\sqrt[4]{c}\,\tanh}{\sqrt{a}\left(\sqrt{c}d-\sqrt{\right.}}$$

Mathematica [C] time = 0.14, size = 266, normalized size = 1.09

$$\frac{3B(d+ex)\left(\left(\sqrt{a}e+\sqrt{c}d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d-\sqrt{a}e}\right)+\left(\sqrt{a}e-\sqrt{c}d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d+\sqrt{a}e}\right)\right)-(Bd-Ae)\left(\left(\sqrt{a}e+\sqrt{c}d\right){}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d-\sqrt{a}e}\right)+\left(\sqrt{a}e-\sqrt{c}d\right){}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d+\sqrt{a}e}\right)\right)}{3\sqrt{a}(d+ex)^{3/2}\left(cd^2e-ae^3\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a - c*x^2)),x]
```

```
[Out] (-((B*d - A*e)*((Sqrt[c]*d + Sqrt[a]*e)*Hypergeometric2F1[-3/2, 1, -1/2, (S
qrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[a]*e)] + (-(Sqrt[c]*d) + Sqrt[a]*e)*Hyp
ergeometric2F1[-3/2, 1, -1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[a]*e)])
) + 3*B*(d + e*x)*((Sqrt[c]*d + Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2,
(Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[a]*e)] + (-(Sqrt[c]*d) + Sqrt[a]*e)*H
ypergeometric2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[a]*e)]
))/(3*Sqrt[a]*(c*d^2*e - a*e^3)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 1.20, size = 325, normalized size = 1.34

$$-\frac{2\left(aAe^3+3aBe^2(d+ex)-aBde^2-Acd^2e-6Acde(d+ex)+Bcd^3+3Bcd^2(d+ex)\right)}{3(d+ex)^{3/2}\left(cd^2-ae^2\right)^2}+\frac{\left(\sqrt{a}B\sqrt{c}+Ac\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}e-cd}}{\sqrt{a}e+\sqrt{c}d}\right)}{\sqrt{a}\left(\sqrt{a}e+\sqrt{c}d\right)^2\sqrt{-\sqrt{c}\left(\sqrt{a}e+\sqrt{c}d\right)}}+\frac{\left(\sqrt{a}B\sqrt{c}-Ac\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}e-cd}}{\sqrt{c}d-\sqrt{a}e}\right)}{\sqrt{a}\left(\sqrt{c}d-\sqrt{a}e\right)^2\sqrt{-\sqrt{c}\left(\sqrt{c}d-\sqrt{a}e\right)}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(a - c*x^2)),x]
```

```
[Out] (-2*(B*c*d^3 - A*c*d^2*e - a*B*d*e^2 + a*A*e^3 + 3*B*c*d^2*(d + e*x) - 6*A*
c*d*e*(d + e*x) + 3*a*B*e^2*(d + e*x)))/(3*(c*d^2 - a*e^2)^2*(d + e*x)^(3/2
)) + ((Sqrt[a]*B*Sqrt[c] + A*c)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sq
rt[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(Sqrt[a]*(Sqrt[c]*d + Sqrt[a]*e)^2*S
qrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))]) + ((Sqrt[a]*B*Sqrt[c] - A*c)*ArcTa
n[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)]
)/(Sqrt[a]*(Sqrt[c]*d - Sqrt[a]*e)^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e)
)])
```

fricas [B] time = 15.76, size = 11231, normalized size = 46.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 - 2*a*c*d^2*e^
4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A
*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^
2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*
c^2)*d*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*
c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*
B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*
c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^
4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*
a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5
)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 +
 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c
^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^2
0 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*
a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c
^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^
5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^
5*c*d^2*e^8 - a^6*e^10))*log((2*(A*B^3*a*c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*
c^3 - A^4*c^5)*d^4*e + 20*(A*B^3*a^2*c^3 - A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a
^3*c^2 - A^4*a*c^4)*d^2*e^3 + 10*(A*B^3*a^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B
^4*a^4*c - A^4*a^2*c^3)*e^5)*sqrt(e*x + d) + (2*A*B^2*a*c^5*d^8 - (5*B^3*a^
2*c^4 + 11*A^2*B*a*c^5)*d^7*e + (41*A*B^2*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 -
 (25*B^3*a^3*c^3 + 87*A^2*B*a^2*c^4)*d^5*e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^
2*c^4)*d^4*e^4 - (31*B^3*a^4*c^2 + 81*A^2*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^
4*c^2 + 13*A^3*a^3*c^3)*d^2*e^6 - (3*B^3*a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 +
(A*B^2*a^5*c + A^3*a^4*c^2)*e^8 + (A*a*c^7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*
a^2*c^6*d^11*e^2 + 14*B*a^3*c^5*d^10*e^3 - 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c
^4*d^8*e^5 + 20*A*a^4*c^4*d^7*e^6 + 20*B*a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5
*e^8 - 5*B*a^6*c^2*d^4*e^9 + 14*A*a^6*c^2*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3
*A*a^7*c*d*e^12 + B*a^8*e^13)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 +
A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2
 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B
^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5
*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 -
240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a
^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 +
(B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c
^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12
*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14
+ 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))*sqrt(-(10*A*B*a*c
^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)
*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d
*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^
4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*
c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d
^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32
*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^
5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*
e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2
*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*
e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10
*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^
6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6
*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10
 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^
2*e^8 - a^6*e^10))) - 3*(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e
```

^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))*log((2*(A*B^3*a*c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*c^3 - A^4*c^5)*d^4*e + 20*(A*B^3*a^2*c^3 - A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a^3*c^2 - A^4*a*c^4)*d^2*e^3 + 10*(A*B^3*a^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B^4*a^4*c - A^4*a^2*c^3)*e^5)*sqrt(e*x + d) - (2*A*B^2*a*c^5*d^8 - (5*B^3*a^2*c^4 + 11*A^2*B*a*c^5)*d^7*e + (41*A*B^2*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 - (25*B^3*a^3*c^3 + 87*A^2*B*a^2*c^4)*d^5*e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^2*c^4)*d^4*e^4 - (31*B^3*a^4*c^2 + 81*A^2*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^4*c^2 + 13*A^3*a^3*c^3)*d^2*e^6 - (3*B^3*a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 + (A*B^2*a^5*c + A^3*a^4*c^2)*e^8 + (A*a*c^7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*a^2*c^6*d^11*e^2 + 14*B*a^3*c^5*d^10*e^3 - 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c^4*d^8*e^5 + 20*A*a^4*c^4*d^7*e^6 + 20*B*a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5*e^8 - 5*B*a^6*c^2*d^4*e^9 + 14*A*a^6*c^2*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3*A*a^7*c*d*e^12 + B*a^8*e^13)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))) + 3*(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10 - 5*a^2*c^4*d^8*

e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)
*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a
^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B
*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6
e^4 - 504(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 6
2*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^
3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8
 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^
2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16
*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10
+ 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^
10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d
^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))*log((2*(A*B^3*a*
c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*c^3 - A^4*c^5)*d^4*e + 20*(A*B^3*a^2*c^3
- A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a^3*c^2 - A^4*a*c^4)*d^2*e^3 + 10*(A*B^3*a
^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B^4*a^4*c - A^4*a^2*c^3)*e^5)*sqrt(e*x + d
) + (2*A*B^2*a*c^5*d^8 - (5*B^3*a^2*c^4 + 11*A^2*B*a*c^5)*d^7*e + (41*A*B^2
*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 - (25*B^3*a^3*c^3 + 87*A^2*B*a^2*c^4)*d^5*
e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^2*c^4)*d^4*e^4 - (31*B^3*a^4*c^2 + 81*A^2
*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^4*c^2 + 13*A^3*a^3*c^3)*d^2*e^6 - (3*B^3*
a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 + (A*B^2*a^5*c + A^3*a^4*c^2)*e^8 - (A*a*c^
7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*a^2*c^6*d^11*e^2 + 14*B*a^3*c^5*d^10*e^3
- 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c^4*d^8*e^5 + 20*A*a^4*c^4*d^7*e^6 + 20*B*
a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5*e^8 - 5*B*a^6*c^2*d^4*e^9 + 14*A*a^6*c^2
*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3*A*a^7*c*d*e^12 + B*a^8*e^13)*sqrt((4*A^2
*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*
A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*
e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(
A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^
3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e
^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3
*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*
c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a
^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^
4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^1
8 + a^11*e^20)))*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B
*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e
^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 +
10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt(
(4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5
 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6
)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 -
 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*
B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)
*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*
(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^
4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 -
 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*
a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d
^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4
 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))) - 3*(c^2*d^6 - 2*a*c*
d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^
2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*
a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2
*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10
 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^
2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d
^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^
3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 +

```
 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(1
1*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a
^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4
*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c +
 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2
+ 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a
^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2
*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e
^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))
*log((2*(A*B^3*a*c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*c^3 - A^4*c^5)*d^4*e + 2
0*(A*B^3*a^2*c^3 - A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a^3*c^2 - A^4*a*c^4)*d^2*
e^3 + 10*(A*B^3*a^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B^4*a^4*c - A^4*a^2*c^3)*
e^5)*sqrt(e*x + d) - (2*A*B^2*a*c^5*d^8 - (5*B^3*a^2*c^4 + 11*A^2*B*a*c^5)*
d^7*e + (41*A*B^2*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 - (25*B^3*a^3*c^3 + 87*A^
2*B*a^2*c^4)*d^5*e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^2*c^4)*d^4*e^4 - (31*B^3
*a^4*c^2 + 81*A^2*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^4*c^2 + 13*A^3*a^3*c^3)*
d^2*e^6 - (3*B^3*a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 + (A*B^2*a^5*c + A^3*a^4*c
^2)*e^8 - (A*a*c^7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*a^2*c^6*d^11*e^2 + 14*B*
a^3*c^5*d^10*e^3 - 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c^4*d^8*e^5 + 20*A*a^4*c^
4*d^7*e^6 + 20*B*a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5*e^8 - 5*B*a^6*c^2*d^4*e
^9 + 14*A*a^6*c^2*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3*A*a^7*c*d*e^12 + B*a^8*
e^13)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*
B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 +
A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6
)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^
3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3
*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^
2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a
^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8
*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*
e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 -
10*a^10*c*d^2*e^18 + a^11*e^20)))*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^
2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 +
 A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10 - 5*a
^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8
- a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e +
 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*
c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4
*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*
a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3
 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c
^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2
*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a
^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5
*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e
^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 1
0*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))) - 4*
(4*B*c*d^3 - 7*A*c*d^2*e + 2*B*a*d*e^2 + A*a*e^3 + 3*(B*c*d^2*e - 2*A*c*d*e
^2 + B*a*e^3)*x)*sqrt(e*x + d))/(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c
^2*d^4*e^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 +
a^2*d*e^5)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="giac")
[Out] sage0*x
```

maple [B] time = 0.08, size = 973, normalized size = 4.00

$$\frac{A a c^{2} e^{3} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{a c e^{2}}\, \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}+\frac{A a c^{2} e^{3} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{a c e^{2}}\, \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}+\frac{A c^{3} d^{2} e \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{a c e^{2}}\, \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}+\frac{A c^{3} d^{2} e \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{a c e^{2}}\, \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}-\frac{2 B a c^{2} d e^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{a c e^{2}}\, \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}-\frac{2 B a c^{2} d e^{2} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{a c e^{2}}\, \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}-\frac{2 A c^{2} d e \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}+\frac{2 A c^{2} d e \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}+\frac{B a c e^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}-\frac{B a c e^{2} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}+\frac{B c^{2} d^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}-\frac{B c^{2} d^{2} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}+\frac{4 A c d e}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{e x+d}}-\frac{2 B a e^{2}}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{e x+d}}-\frac{2 B c d^{2}}{\left(a e^{2}-c d^{2}\right)^{2} \sqrt{e x+d}}-\frac{2 A e}{3 \left(a e^{2}-c d^{2}\right) \left(e x+d\right)^{\frac{3}{2}}}+\frac{2 B d}{3 \left(a e^{2}-c d^{2}\right) \left(e x+d\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x)
```

```
[Out] c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh
((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+c^3/(a*e^2-c*d^2)
^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e-2*c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(
1/2))*c)^(1/2)*c)*a*B*d*e^2-2*c^2/(a*e^2-c*d^2)^2/((c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e+c/(a*
e^2-c*d^2)^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2+c^2/(a*e^2-c*d^2)^2/((c*d+(a*c*e^2)^(1/2
))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2+
c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+c^3/(a*e^2-c*d^2
)^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e-2*c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^
(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*c)*a*B*d*e^2+2*c^2/(a*e^2-c*d^2)^2/((-c*d+(a*c*e^2)^(1/2)
)*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e-c
/(a*e^2-c*d^2)^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-c^2/(a*e^2-c*d^2)^2/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*
B*d^2-2/3/(a*e^2-c*d^2)/(e*x+d)^(3/2)*A*e+2/3/(a*e^2-c*d^2)/(e*x+d)^(3/2)*B
*d+4/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*A*c*d*e-2/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*
B*a*e^2-2/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*B*c*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{B x + A}{\left(c x^{2} - a\right) \left(e x + d\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)*(e*x + d)^(5/2)), x)
```

mupad [B] time = 7.42, size = 17610, normalized size = 72.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)*(d + e*x)^(5/2)),x)
```

```
[Out] - atan((((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^
2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 -
1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4
*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^
5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*
B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 64
0*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*
e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^
6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^
5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)
^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1
```

/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(
a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e +
10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*
d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^
2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*
a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*
(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3
*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^
4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)
^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/
2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3
*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3
c)^(1/2))/(4(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^
2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 +
64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*
a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13
440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*
a^10*c^5*d^3*e^20) - 32*A*a^10*c^4*e^21 - 96*A*a*c^13*d^18*e^3 + 32*B*a*c^1
3*d^19*e^2 + 96*B*a^10*c^4*d*e^20 + 736*A*a^2*c^12*d^16*e^5 - 2432*A*a^3*c^
11*d^14*e^7 + 4480*A*a^4*c^10*d^12*e^9 - 4928*A*a^5*c^9*d^10*e^11 + 3136*A*
a^6*c^8*d^8*e^13 - 896*A*a^7*c^7*d^6*e^15 - 128*A*a^8*c^6*d^4*e^17 + 160*A*
a^9*c^5*d^2*e^19 - 160*B*a^2*c^12*d^17*e^4 + 128*B*a^3*c^11*d^15*e^6 + 896*
B*a^4*c^10*d^13*e^8 - 3136*B*a^5*c^9*d^11*e^10 + 4928*B*a^6*c^8*d^9*e^12 -
4480*B*a^7*c^7*d^7*e^14 + 2432*B*a^8*c^6*d^5*e^16 - 736*B*a^9*c^5*d^3*e^18)
)*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a
^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B
^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*
a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2)
 + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c
*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c
)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 -
 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*
e^6)))^(1/2)*1i + ((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^
18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d
^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a
^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1
440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*
e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d
*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^
4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*
A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^
2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d
^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*
(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c
^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^
3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*
A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7
*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6
*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 + B^
2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a
^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^
3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4
e(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(
a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) -
20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^
3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*
c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d
^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e
^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11

*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e
^18 - 640*a^10*c^5*d^3*e^20) + 32*A*a^10*c^4*e^21 + 96*A*a*c^13*d^18*e^3 -
32*B*a*c^13*d^19*e^2 - 96*B*a^10*c^4*d*e^20 - 736*A*a^2*c^12*d^16*e^5 + 243
2*A*a^3*c^11*d^14*e^7 - 4480*A*a^4*c^10*d^12*e^9 + 4928*A*a^5*c^9*d^10*e^11
 - 3136*A*a^6*c^8*d^8*e^13 + 896*A*a^7*c^7*d^6*e^15 + 128*A*a^8*c^6*d^4*e^1
7 - 160*A*a^9*c^5*d^2*e^19 + 160*B*a^2*c^12*d^17*e^4 - 128*B*a^3*c^11*d^15*
e^6 - 896*B*a^4*c^10*d^13*e^8 + 3136*B*a^5*c^9*d^11*e^10 - 4928*B*a^6*c^8*d
^9*e^12 + 4480*B*a^7*c^7*d^7*e^14 - 2432*B*a^8*c^6*d^5*e^16 + 736*B*a^9*c^5
*d^3*e^18))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5
+ 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(
1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2
) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^
3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10
*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*
e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*
c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^
5*c^2*d^4*e^6)))^(1/2)*1i)/(((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*
a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*
a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 -
 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^
10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^
7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B
*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 +
640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e
^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^
(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2
*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*
a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) +
 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*
A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2
*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2
))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a
^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^
3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2
+ 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4
+ 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A
^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2
*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c
)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*
B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^
8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(6
4*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c
^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^
6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9
*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) - 32*A*a^10*c^4*e^21 - 96*A*a*c^13*d
^18*e^3 + 32*B*a*c^13*d^19*e^2 + 96*B*a^10*c^4*d*e^20 + 736*A*a^2*c^12*d^16
*e^5 - 2432*A*a^3*c^11*d^14*e^7 + 4480*A*a^4*c^10*d^12*e^9 - 4928*A*a^5*c^9
*d^10*e^11 + 3136*A*a^6*c^8*d^8*e^13 - 896*A*a^7*c^7*d^6*e^15 - 128*A*a^8*c
^6*d^4*e^17 + 160*A*a^9*c^5*d^2*e^19 - 160*B*a^2*c^12*d^17*e^4 + 128*B*a^3*
c^11*d^15*e^6 + 896*B*a^4*c^10*d^13*e^8 - 3136*B*a^5*c^9*d^11*e^10 + 4928*B
*a^6*c^8*d^9*e^12 - 4480*B*a^7*c^7*d^7*e^14 + 2432*B*a^8*c^6*d^5*e^16 - 736
*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*
a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5
*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a
^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2
*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*
d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*
B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e
^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e

^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) - ((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) + 32*A*a^10*c^4*e^21 + 96*A*a*c^13*d^18*e^3 - 32*B*a*c^13*d^19*e^2 - 96*B*a^10*c^4*d*e^20 - 736*A*a^2*c^12*d^16*e^5 + 2432*A*a^3*c^11*d^14*e^7 - 4480*A*a^4*c^10*d^12*e^9 + 4928*A*a^5*c^9*d^10*e^11 - 3136*A*a^6*c^8*d^8*e^13 + 896*A*a^7*c^7*d^6*e^15 + 128*A*a^8*c^6*d^4*e^17 - 160*A*a^9*c^5*d^2*e^19 + 160*B*a^2*c^12*d^17*e^4 - 128*B*a^3*c^11*d^15*e^6 - 896*B*a^4*c^10*d^13*e^8 + 3136*B*a^5*c^9*d^11*e^10 - 4928*B*a^6*c^8*d^9*e^12 + 4480*B*a^7*c^7*d^7*e^14 - 2432*B*a^8*c^6*d^5*e^16 + 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) + 16*B^3*a^8*c^4*e^16 + 32*A^3*c^12*d^13*e^3 + 480*A^3*a^2*c^10*d^9*e^7 - 640*A^3*a^3*c^9*d^7*e^9 + 480*A^3*a^4*c^8*d^5*e^11 - 192*A^3*a^5*c^7*d^3*e^13 - 80*B^3*a^2*c^10*d^12*e^4 + 144*B^3*a^3*c^9*d^10*e^6 - 80*B^3*a^4*c^8*d^8*e^8 - 80*B^3*a^5*c^7*d^6*e^10 + 144*B^3*a^6*c^6*d^4*e^12 - 80*B^3*a^7*c^5*d^2*e^14 - 16*A^2*B*a^7*c^5*e^16 - 16*A^2*B*c^12*d^14*e^2 - 192*A^3*a*c^11*d^11*e^5 + 32*A^3*a^6*c^6*d*e^15 + 16*B^3*a*c^11*d^14*e^2 + 192*A*B^2*a^2*c^10*d^11*e^5 - 480*A*B^2*a^3*c^9*d^9*e^7 + 640*A*B^2*a^4*c^8*d^7*e^9 - 480*A*B^2*a^5*c^7*d^5*e^11 + 192*A*B^2*a^6*c^6*d^3*e^13 - 144*A^2*B*a^2*c^10*d^10*e^6 + 80*A^2*B*a^3*c^9*d^8*e^8 + 80*A^2*B*a^4*c^8*d^6*e^10 - 144*A^2*B*a^5*c^7*d^4*e^12 + 80*A^2*B*a^6*c^6*d^2*e^14 - 32*A*B^2*a*c^11*d^13*e^3 - 32*A*B^2*a^7*c^5*d*e^15 + 80*A^2*B*a*c^11*d^12*e^4))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e

+ 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*2i - atan((((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) - 32*A*a^10*c^4*e^21 - 96*A*a*c^13*d^18*e^3 + 32*B*a*c^13*d^19*e^2 + 96*B*a^10*c^4*d*e^20 + 736*A*a^2*c^12*d^16*e^5 - 2432*A*a^3*c^11*d^14*e^7 + 4480*A*a^4*c^10*d^12*e^9 - 4928*A*a^5*c^9*d^10*e^11 + 3136*A*a^6*c^8*d^8*e^13 - 896*A*a^7*c^7*d^6*e^15 - 128*A*a^8*c^6*d^4*e^17 + 160*A*a^9*c^5*d^2*e^19 - 160*B*a^2*c^12*d^17*e^4 + 128*B*a^3*c^11*d^15*e^6 + 896*B*a^4*c^10*d^13*e^8 - 3136*B*a^5*c^9*d^11*e^10 + 4928*B*a^6*c^8*d^9*e^12 - 4480*B*a^7*c^7*d^7*e^14 + 2432*B*a^8*c^6*d^5*e^16 - 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*1i + ((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^

3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) + 32*A*a^10*c^4*e^21 + 96*A*a*c^13*d^18*e^3 - 32*B*a*c^13*d^19*e^2 - 96*B*a^10*c^4*d*e^20 - 736*A*a^2*c^12*d^16*e^5 + 2432*A*a^3*c^11*d^14*e^7 - 4480*A*a^4*c^10*d^12*e^9 + 4928*A*a^5*c^9*d^10*e^11 - 3136*A*a^6*c^8*d^8*e^13 + 896*A*a^7*c^7*d^6*e^15 + 128*A*a^8*c^6*d^4*e^17 - 160*A*a^9*c^5*d^2*e^19 + 160*B*a^2*c^12*d^17*e^4 - 128*B*a^3*c^11*d^15*e^6 - 896*B*a^4*c^10*d^13*e^8 + 3136*B*a^5*c^9*d^11*e^10 - 4928*B*a^6*c^8*d^9*e^12 + 4480*B*a^7*c^7*d^7*e^14 - 2432*B*a^8*c^6*d^5*e^16 + 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*1i)/(((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) - 32*

A*a^10*c^4*e^21 - 96*A*a*c^13*d^18*e^3 + 32*B*a*c^13*d^19*e^2 + 96*B*a^10*c
^4*d*e^20 + 736*A*a^2*c^12*d^16*e^5 - 2432*A*a^3*c^11*d^14*e^7 + 4480*A*a^4
*c^10*d^12*e^9 - 4928*A*a^5*c^9*d^10*e^11 + 3136*A*a^6*c^8*d^8*e^13 - 896*A
*a^7*c^7*d^6*e^15 - 128*A*a^8*c^6*d^4*e^17 + 160*A*a^9*c^5*d^2*e^19 - 160*B
*a^2*c^12*d^17*e^4 + 128*B*a^3*c^11*d^15*e^6 + 896*B*a^4*c^10*d^13*e^8 - 31
36*B*a^5*c^9*d^11*e^10 + 4928*B*a^6*c^8*d^9*e^12 - 4480*B*a^7*c^7*d^7*e^14
+ 2432*B*a^8*c^6*d^5*e^16 - 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 - B
^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*
a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a
^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^
4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*
(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) -
20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d
^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3
*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) - ((d + e*x
)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 -
320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*
d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a
^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 +
1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e
^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^
13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5
*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(
B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^
3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^
4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c
*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10
*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*
e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/
2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^
6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6))
)^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A
^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*
d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5
*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*
c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c
^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10
*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^
7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^
6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^2
2 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8
+ 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e
^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20
) + 32*A*a^10*c^4*e^21 + 96*A*a*c^13*d^18*e^3 - 32*B*a*c^13*d^19*e^2 - 96*B
*a^10*c^4*d*e^20 - 736*A*a^2*c^12*d^16*e^5 + 2432*A*a^3*c^11*d^14*e^7 - 448
0*A*a^4*c^10*d^12*e^9 + 4928*A*a^5*c^9*d^10*e^11 - 3136*A*a^6*c^8*d^8*e^13
+ 896*A*a^7*c^7*d^6*e^15 + 128*A*a^8*c^6*d^4*e^17 - 160*A*a^9*c^5*d^2*e^19
+ 160*B*a^2*c^12*d^17*e^4 - 128*B*a^3*c^11*d^15*e^6 - 896*B*a^4*c^10*d^13*e
^8 + 3136*B*a^5*c^9*d^11*e^10 - 4928*B*a^6*c^8*d^9*e^12 + 4480*B*a^7*c^7*d^
7*e^14 - 2432*B*a^8*c^6*d^5*e^16 + 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*
d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 +
10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 +
5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2
*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d
^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^
(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*
a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8
+ 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) + 16
*B^3*a^8*c^4*e^16 + 32*A^3*c^12*d^13*e^3 + 480*A^3*a^2*c^10*d^9*e^7 - 640*A

```
^3*a^3*c^9*d^7*e^9 + 480*A^3*a^4*c^8*d^5*e^11 - 192*A^3*a^5*c^7*d^3*e^13 -
80*B^3*a^2*c^10*d^12*e^4 + 144*B^3*a^3*c^9*d^10*e^6 - 80*B^3*a^4*c^8*d^8*e^
8 - 80*B^3*a^5*c^7*d^6*e^10 + 144*B^3*a^6*c^6*d^4*e^12 - 80*B^3*a^7*c^5*d^2
*e^14 - 16*A^2*B*a^7*c^5*e^16 - 16*A^2*B*c^12*d^14*e^2 - 192*A^3*a*c^11*d^1
1*e^5 + 32*A^3*a^6*c^6*d*e^15 + 16*B^3*a*c^11*d^14*e^2 + 192*A*B^2*a^2*c^10
*d^11*e^5 - 480*A*B^2*a^3*c^9*d^9*e^7 + 640*A*B^2*a^4*c^8*d^7*e^9 - 480*A*B
^2*a^5*c^7*d^5*e^11 + 192*A*B^2*a^6*c^6*d^3*e^13 - 144*A^2*B*a^2*c^10*d^10*
e^6 + 80*A^2*B*a^3*c^9*d^8*e^8 + 80*A^2*B*a^4*c^8*d^6*e^10 - 144*A^2*B*a^5*
c^7*d^4*e^12 + 80*A^2*B*a^6*c^6*d^2*e^14 - 32*A*B^2*a*c^11*d^13*e^3 - 32*A*
B^2*a^7*c^5*d*e^15 + 80*A^2*B*a*c^11*d^12*e^4))*(-(B^2*a^2*c^3*d^5 - B^2*a^
3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c
^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^
2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(
a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*
c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A
*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^
2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*
d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*2i - ((2*(A*e -
B*d))/(3*(a*e^2 - c*d^2)) + (2*(d + e*x)*(B*a*e^2 + B*c*d^2 - 2*A*c*d*e))/(
a*e^2 - c*d^2)^2)/(d + e*x)^(3/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1279 $\int \frac{(A+Bx)(d+ex)^{5/2}}{(a-cx^2)^2}\,dx$

Optimal. Leaf size=269

$$-\frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{9/4}}+\frac{\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}\left(-3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2A\right.}{4a^{3/2}c^{9/4}}$$

Rubi [A] time = 0.54, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 825, 827, 1166, 208}

$$-\frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{9/4}}+\frac{\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}\left(-3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{9/4}}+\frac{e\sqrt{d+ex}\,(5aBe+Acd)}{2ac^2}+\frac{(d+ex)^{3/2}(x(aBe+Acd)+a(Ae+Bd))}{2ac\left(a-cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x]
```

```
[Out] (e*(A*c*d + 5*a*B*e)*Sqrt[d + e*x])/(2*a*c^2) + ((d + e*x)^(3/2)*(a*(B*d +
A*e) + (A*c*d + a*B*e)*x))/(2*a*c*(a - c*x^2)) - ((Sqrt[c]*d - Sqrt[a]*e)^(
3/2)*(2*A*c*d - 5*a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sqrt[d +
e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(9/4)) + ((Sqrt[c]*d + Sqr
t[a]*e)^(3/2)*(2*A*c*d - 5*a*B*e - 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*
Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(9/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^2}dx = \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\int \frac{\sqrt{d+ex}\left(\frac{1}{2}\left(-2Acd^2+ae(5Bd+3Ae)\right)+\frac{1}{2}e(Acd+5a\ldots}{a-cx^2}}{2ac}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\int \frac{\frac{1}{2}\left(2Acd\left(cd^2\ldots\right.\right.}{\ldots}}{\ldots}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\mathrm{Subst}\left(\int \ldots\right)}{\ldots}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\left(\left(\sqrt{c}\,d+\sqrt{a}\ldots\right.\right.}{\ldots}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\left(\sqrt{c}\,d-\sqrt{a}\ldots\right.}{\ldots}$$

Mathematica [A] time = 0.56, size = 279, normalized size = 1.04

$$\frac{2\sqrt{a}\sqrt[4]{c}\sqrt{d+ex}\left(5a^2Be^2+ac\left(Ae(2d+ex)+B\left(d^2+2dex-4e^2x^2\right)\right)+Ac^2d^2x\right)+\left(cx^2-a\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)-\left(cx^2-a\right)\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}\left(-3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{9/4}\left(a-cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x]
```

```
[Out] (2*Sqrt[a]*c^(1/4)*Sqrt[d + e*x]*(5*a^2*B*e^2 + A*c^2*d^2*x + a*c*(A*e*(2*d
 + e*x) + B*(d^2 + 2*d*e*x - 4*e^2*x^2))) + (Sqrt[c]*d - Sqrt[a]*e)^(3/2)*(
2*A*c*d - 5*a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2)*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - (Sqrt[c]*d + Sqrt[a]*e)^(3/2)*(
2*A*c*d - 5*a*B*e - 3*Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2)*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(9/4)*(a - c*x^2))
```

IntegrateAlgebraic [A] time = 1.64, size = 489, normalized size = 1.82

$$\frac{e\sqrt{d+ex}\left(5a^2Be^3+aAce^2(d+ex)+aAcde^2-5aBcd^2e+10aBcde(d+ex)-4aBce(d+ex)^2-Ac^2d^3+Ac^2d^2(d+ex)\right)}{2ac^2\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)}+\frac{\left(-3a^{3/2}A\sqrt{c}\,e^3-10a^{3/2}B\sqrt{c}\,de^2-5a^2Be^3+\sqrt{a}\,Ac^{3/2}d^2e-4aAcde^2-5aBcd^2e+2Ac^2d^3\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{4a^{3/2}c^2\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(-3a^{3/2}A\sqrt{c}\,e^3-10a^{3/2}B\sqrt{c}\,de^2+5a^2Be^3+\sqrt{a}\,Ac^{3/2}d^2e+4aAcde^2+5aBcd^2e-2Ac^2d^3\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{4a^{3/2}c^2\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x]
```

```
[Out] (e*Sqrt[d + e*x]*(-(A*c^2*d^3) - 5*a*B*c*d^2*e + a*A*c*d*e^2 + 5*a^2*B*e^3
+ A*c^2*d^2*(d + e*x) + 10*a*B*c*d*e*(d + e*x) + a*A*c*e^2*(d + e*x) - 4*a*
B*c*e*(d + e*x)^2))/(2*a*c^2*(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*(d + e
*x)^2)) + ((2*A*c^2*d^3 - 5*a*B*c*d^2*e + Sqrt[a]*A*c^(3/2)*d^2*e - 10*a^(3
/2)*B*Sqrt[c]*d*e^2 - 4*a*A*c*d*e^2 - 5*a^2*B*e^3 - 3*a^(3/2)*A*Sqrt[c]*e^3
)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d + Sqrt
```

```
[a]*e)])/(4*a^(3/2)*c^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))]) + ((-2*A*
c^2*d^3 + 5*a*B*c*d^2*e + Sqrt[a]*A*c^(3/2)*d^2*e - 10*a^(3/2)*B*Sqrt[c]*d*
e^2 + 4*a*A*c*d*e^2 + 5*a^2*B*e^3 - 3*a^(3/2)*A*Sqrt[c]*e^3)*ArcTan[(Sqrt[-
(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)]])/(4*a^(3
/2)*c^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 8.66, size = 5611, normalized size = 20.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a*c^3*x^2 - a^2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A
*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 -
 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B
^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e
^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(
25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c
+ 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2
+ 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*c^5*d^7*e^2
- 20*(45*A^2*B^2*a*c^4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c^3 - 77*A^3*
B*a*c^4)*d^5*e^4 - (1875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4
)*d^4*e^5 - 20*(175*A*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*
a^4*c - 1050*A^2*B^2*a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*
c - 81*A^3*B*a^3*c^2)*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x
+ d) + (30*A^2*B*a^2*c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e
^4 - 15*(25*B^3*a^4*c^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 +
 3*A^3*a^3*c^4)*d*e^6 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 - (2*A*a^3
*c^8*d^2 - 5*B*a^4*c^7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4
 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2
*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3
*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140
*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*
c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^
4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4
*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 -
 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*
c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e
^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*
B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2
)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) - (a*c^3*x^2 - a^
2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30
*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3
- A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d
^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*
c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^
3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^1
0)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2
*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*c^5*d^7*e^2 - 20*(45*A^2*B^2*a*c^
4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c^3 - 77*A^3*B*a*c^4)*d^5*e^4 - (1
875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4)*d^4*e^5 - 20*(175*A
*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*a^4*c - 1050*A^2*B^2*
a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*c - 81*A^3*B*a^3*c^2)
*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x + d) - (30*A^2*B*a^2*
c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e^4 - 15*(25*B^3*a^4*c
^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 + 3*A^3*a^3*c^4)*d*e^6
 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 - (2*A*a^3*c^8*d^2 - 5*B*a^4*c^
7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^
3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)
```

*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) + (a*c^3*x^2 - a^2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*c^5*d^7*e^2 - 20*(45*A^2*B^2*a*c^4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c^3 - 77*A^3*B*a*c^4)*d^5*e^4 - (1875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4)*d^4*e^5 - 20*(175*A*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*a^4*c - 1050*A^2*B^2*a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*c - 81*A^3*B*a^3*c^2)*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x + d) + (30*A^2*B*a^2*c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e^4 - 15*(25*B^3*a^4*c^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 + 3*A^3*a^3*c^4)*d*e^6 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 + (2*A*a^3*c^8*d^2 - 5*B*a^4*c^7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) - (a*c^3*x^2 - a^2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*c^5*d^7*e^2 - 20*(45*A^2*B^2*a*c^4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c^3 - 77*A^3*B*a*c^4)*d^5*e^4 - (1875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4)*d^4*e^5 - 20*(175*A*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*a^4*c - 1050*A^2*B^2*a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*c - 81*A^3*B*a^3*c^2)*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x + d) - (30*A^2*B*a^2*c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e^4 - 15*(25*B^3*a^4*c^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 + 3*A^3*a^3*c^4)*d*e^6 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 + (2*A*a^3*c^8*d^2 - 5*B*a^4*c^7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d

^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) - 4*(4*B*a*c*e^2*x^2 - B*a*c*d^2 - 2*A*a*c*d*e - 5*B*a^2*e^2 - (A*c^2*d^2 + 2*B*a*c*d*e + A*a*c*e^2)*x)*sqrt(e*x + d))/(a*c^3*x^2 - a^2*c^2)

giac [B] time = 0.78, size = 728, normalized size = 2.71

$$\frac{2\sqrt{xe+d}\,Be^2}{c^2} - \frac{\left(10\sqrt{ac}\,Ba^3d|c|e^3 - \left(\sqrt{ac}\,cd^2e^2 - 3\sqrt{ac}\,ae^4\right)Aa^2|c| - \left(ac^2d^3e - a^2cde^3\right)A|a||c| - 5\left(a^2cd^2e^2 - a^3e^4\right)B|a||c| + 2\left(\sqrt{ac}\,ac^2d^4 - 2\sqrt{ac}\,a^2cd^2e^2\right)A|c| - 5\left(\sqrt{ac}\,a^2cd^3e + \sqrt{ac}\,a^3de^3\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^3d+\sqrt{a^2c^6d^2-(ac^3d^2-a^2c^2e^2)ac^3}}{ac^3}}}\right)}{4\left(a^2c^3d - \sqrt{ac}\,a^2c^2e\right)\sqrt{-c^2d - \sqrt{ac}\,ce}\,|a|} + \frac{\left(10\,Ba^3cd|c|e^3 - \left(c^2d^2e^2 - 3\,ace^4\right)Aa^2|c| + \left(\sqrt{ac}\,c^2d^3e - \sqrt{ac}\,acde^3\right)A|a||c| + 5\left(\sqrt{ac}\,acd^2e^2 - \sqrt{ac}\,a^2e^4\right)B|a||c| + 2\left(ac^3d^4 - 2\,a^2c^2d^2e^2\right)A|c| - 5\left(a^2c^2d^3e + a^3cde^3\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^3d-\sqrt{a^2c^6d^2-(ac^3d^2-a^2c^2e^2)ac^3}}{ac^3}}}\right)}{4\left(a^2c^3e + \sqrt{ac}\,ac^3d\right)\sqrt{-c^2d + \sqrt{ac}\,ce}\,|a|} - \frac{(xe+d)^{\frac{3}{2}}Ac^2d^2e - \sqrt{xe+d}\,Ac^2d^3e + 2\,(xe+d)^{\frac{3}{2}}Bacde^2 - \sqrt{xe+d}\,Bacd^2e^2 + (xe+d)^{\frac{3}{2}}Aace^3 + \sqrt{xe+d}\,Aacde^3 + \sqrt{xe+d}\,Ba^2e^4}{2\left((xe+d)^2c - 2\,(xe+d)cd + cd^2 - ae^2\right)ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x, algorithm="giac")

[Out] 2*sqrt(x*e + d)*B*e^2/c^2 - 1/4*(10*sqrt(a*c)*B*a^3*d*abs(c)*e^3 - (sqrt(a*c)*c*d^2*e^2 - 3*sqrt(a*c)*a*e^4)*A*a^2*abs(c) - (a*c^2*d^3*e - a^2*c*d*e^3)*A*abs(a)*abs(c) - 5*(a^2*c*d^2*e^2 - a^3*e^4)*B*abs(a)*abs(c) + 2*(sqrt(a*c)*a*c^2*d^4 - 2*sqrt(a*c)*a^2*c*d^2*e^2)*A*abs(c) - 5*(sqrt(a*c)*a^2*c*d^3*e + sqrt(a*c)*a^3*d*e^3)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a*c^3*d + sqrt(a^2*c^6*d^2 - (a*c^3*d^2 - a^2*c^2*e^2)*a*c^3))/(a*c^3)))/((a^2*c^3*d - sqrt(a*c)*a^2*c^2*e)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(a)) + 1/4*(10*B*a^3*c*d*abs(c)*e^3 - (c^2*d^2*e^2 - 3*a*c*e^4)*A*a^2*abs(c) + (sqrt(a*c)*c^2*d^3*e - sqrt(a*c)*a*c*d*e^3)*A*abs(a)*abs(c) + 5*(sqrt(a*c)*a*c*d^2*e^2 - sqrt(a*c)*a^2*e^4)*B*abs(a)*abs(c) + 2*(a*c^3*d^4 - 2*a^2*c^2*d^2*e^2)*A*abs(c) - 5*(a^2*c^2*d^3*e + a^3*c*d*e^3)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a*c^3*d - sqrt(a^2*c^6*d^2 - (a*c^3*d^2 - a^2*c^2*e^2)*a*c^3))/(a*c^3)))/((a^2*c^3*e + sqrt(a*c)*a*c^3*d)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a)) - 1/2*((x*e + d)^(3/2)*A*c^2*d^2*e - sqrt(x*e + d)*A*c^2*d^3*e + 2*(x*e + d)^(3/2)*B*a*c*d*e^2 - sqrt(x*e + d)*B*a*c*d^2*e^2 + (x*e + d)^(3/2)*A*a*c*e^3 + sqrt(x*e + d)*A*a*c*d*e^3 + sqrt(x*e + d)*B*a^2*e^4)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)*a*c^2)

maple [B] time = 0.10, size = 1055, normalized size = 3.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x)

[Out] 2*e^2*B/c^2*(e*x+d)^(1/2)-1/2*e^3/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(3/2)*A-1/2*e/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(3/2)*A*d^2-e^2/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(3/2)*B*d-1/2*e^3/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(1/2)*A*d+1/2*e/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(1/2)*A*d^3-1/2*e^4/c^2/(c*e^2*x^2-a*e^2)*a*(e*x+d)^(1/2)*B+1/2*e^2/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(1/2)*B*d^2-e^3/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e*c/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3-5/4*e^4/c*a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-5/4*e^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-3/4*e^3/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/4*e/a/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-5/2*e^2/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-e^3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(

```
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e*c/a/(a*c*e^2)^(1/2)/((-c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*c)*A*d^3-5/4*e^4/c*a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arc
tan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-5/4*e^2/(a*c*e^2)^(
1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)
^(1/2))*c)^(1/2)*c)*B*d^2+3/4*e^3/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-1/4*e/a/((-c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*A*d^2+5/2*e^2/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\left(cx^2-a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 - a)^2, x)
```

mupad [B] time = 3.02, size = 9253, normalized size = 34.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x)
```

```
[Out] atan(((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 32
0*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a
^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B
^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2)
 + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1
/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*
c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*
c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*
c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c
^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*
a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9
)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*
B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) +
 ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 1
0*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150
*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*
((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e
^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c
^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^
9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e -
75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*
e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*1i - (((320*B*a^5*c^4*e^6 + 64*A*a
^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) +
64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^
9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5
*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^
6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^
(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*
a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((
4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2
 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9
```

)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*1i)/((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + (((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + (4*A^3*c^5*d^8*e^3 - 75*A*B^2*a^5*e^11 + 27*A^3*a^4*c*e^11 - 250*B^3*a^5*d*e^10 + 73*A^3*a^2*c^3*d^4*e^7 - 75*A^3*a^3*c^2*d^2*e^9 - 250*B^3*a^3*c^2*d^5*e^6 - 29*A^3*a*c^4*d^6*e^5 + 500*B^3*a^4*c*d^3*e^8 + 225*A*B^2*a^2*c^3*d^6*e^5 - 525*A*B^2*a^3*c^2*d^4*e^7 + 270*A^2*B*a^2*c^3*d^5*e^6 - 3

60*A^2*B*a^3*c^2*d^3*e^8 + 150*A^2*B*a^4*c*d*e^10 + 375*A*B^2*a^4*c*d^2*e^9 - 60*A^2*B*a*c^4*d^7*e^4)/(4*a^3*c^3)))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*2i + atan(((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*1i - (((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*1i)/((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e

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^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^
6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2
*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c
^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*
a^6*c^9))^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*
A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*
c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^
5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*
A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c
^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 +
9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B
*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^
3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + (((320*B*a^5*c^
4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/
(8*a^3*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a
^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 +
30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e
^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*
e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(
1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c
^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a
^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^
2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2
*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*
c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 7
0*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25
*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6
 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 +
100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 +
 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d
^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^
5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B
*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a
^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/
(64*a^6*c^9))^(1/2) + (4*A^3*c^5*d^8*e^3 - 75*A*B^2*a^5*e^11 + 27*A^3*a^4*c
*e^11 - 250*B^3*a^5*d*e^10 + 73*A^3*a^2*c^3*d^4*e^7 - 75*A^3*a^3*c^2*d^2*e^
9 - 250*B^3*a^3*c^2*d^5*e^6 - 29*A^3*a*c^4*d^6*e^5 + 500*B^3*a^4*c*d^3*e^8
+ 225*A*B^2*a^2*c^3*d^6*e^5 - 525*A*B^2*a^3*c^2*d^4*e^7 + 270*A^2*B*a^2*c^3
*d^5*e^6 - 360*A^2*B*a^3*c^2*d^3*e^8 + 150*A^2*B*a^4*c*d*e^10 + 375*A*B^2*a
^4*c*d^2*e^9 - 60*A^2*B*a*c^4*d^7*e^4)/(4*a^3*c^3)))*((4*A^2*a^3*c^8*d^5 +
25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^
3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5
*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*
c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^
9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(
64*a^6*c^9))^(1/2)*2i - (((d + e*x)^(1/2)*(B*a^2*e^4 - A*c^2*d^3*e + A*a*c*
d*e^3 - B*a*c*d^2*e^2))/(2*a) + ((d + e*x)^(3/2)*(A*a*c*e^3 + A*c^2*d^2*e +
 2*B*a*c*d*e^2))/(2*a))/(c^3*(d + e*x)^2 + c^3*d^2 - a*c^2*e^2 - 2*c^3*d*(d
 + e*x)) + (2*B*e^2*(d + e*x)^(1/2))/c^2
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1280 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=238

$$-\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{7/4}}+\frac{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\left(-\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)}{4a^{3/2}c^{7/4}}$$

Rubi [A] time = 0.39, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {819, 827, 1166, 208}

$$-\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{7/4}}+\frac{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\left(-\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{7/4}}+\frac{\sqrt{d+ex}\,(x(aBe+Acd)+a(Ae+Bd))}{2ac\left(a-cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(2*a*c*(a - c*x^2)) - (
Sqrt[Sqrt[c]*d - Sqrt[a]*e]*(2*A*c*d - 3*a*B*e + Sqrt[a]*A*Sqrt[c]*e)*ArcTa
nh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(7/4)
) + (Sqrt[Sqrt[c]*d + Sqrt[a]*e]*(2*A*c*d - 3*a*B*e - Sqrt[a]*A*Sqrt[c]*e)*
ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^
(7/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^2}\,dx = \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-2Acd^2+3aBde+aAe^2\right)-\frac{1}{2}e(Acd-3aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)}dx}{2ac}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}de(Acd-3aBe)+\frac{1}{2}e\left(-2Acd^2+3aBde+aAe^2\right)}{-cd^2+ae^2+2cdx^2-cx^4}\right.}{ac}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\left(\left(\sqrt{c}\,d+\sqrt{a}\,e\right)\left(2Acd-3aBe-\sqrt{a}\,A\sqrt{c}\,e\right)\right.}{4a^{3/2}}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\left(2Acd-3aBe+\sqrt{a}\,A\sqrt{c}\,e\right)}{4a^{3/2}c^{7/4}}$$

Mathematica [A] time = 0.37, size = 244, normalized size = 1.03

$$\frac{2\sqrt{a}\,c^{3/4}\sqrt{d+ex}\,(aAe+aB(d+ex)+Acdx)+\left(cx^2-a\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\left(\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)-\left(cx^2-a\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\left(-\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{7/4}\left(a-cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x]
```

```
[Out] (2*Sqrt[a]*c^(3/4)*Sqrt[d + e*x]*(a*A*e + A*c*d*x + a*B*(d + e*x)) + Sqrt[S
qrt[c]*d - Sqrt[a]*e]*(2*A*c*d - 3*a*B*e + Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2
)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[
c]*d + Sqrt[a]*e]*(2*A*c*d - 3*a*B*e - Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2)*Ar
cTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(7
/4)*(a - c*x^2))
```

IntegrateAlgebraic [A] time = 1.19, size = 378, normalized size = 1.59

$$\frac{\left(-3a^{3/2}Be^2+\sqrt{a}\,Acde-aA\sqrt{c}\,e^2-3aB\sqrt{c}\,de+2Ac^{3/2}d^2\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{-\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{4a^{3/2}c^{3/2}\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(-3a^{3/2}Be^2+\sqrt{a}\,Acde+aA\sqrt{c}\,e^2+3aB\sqrt{c}\,de-2Ac^{3/2}d^2\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{4a^{3/2}c^{3/2}\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}+\frac{e\sqrt{d+ex}\left(aAe^2+aBe(d+ex)-Acd^2+Acd(d+ex)\right)}{2ac\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x]
```

```
[Out] (e*Sqrt[d + e*x]*(-(A*c*d^2) + a*A*e^2 + A*c*d*(d + e*x) + a*B*e*(d + e*x))
)/(2*a*c*(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*(d + e*x)^2)) + ((2*A*c^(3
/2)*d^2 - 3*a*B*Sqrt[c]*d*e + Sqrt[a]*A*c*d*e - 3*a^(3/2)*B*e^2 - a*A*Sqrt[
c]*e^2)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d
+ Sqrt[a]*e)])/(4*a^(3/2)*c^(3/2)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))])
 + ((-2*A*c^(3/2)*d^2 + 3*a*B*Sqrt[c]*d*e + Sqrt[a]*A*c*d*e - 3*a^(3/2)*B*e
^2 + a*A*Sqrt[c]*e^2)*ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x
])/(Sqrt[c]*d - Sqrt[a]*e)])/(4*a^(3/2)*c^(3/2)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d -
 Sqrt[a]*e))])
```

fricas [B] time = 0.65, size = 2327, normalized size = 9.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a*c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2
*e^3 + a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*
d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*
a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))*log((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2*B^2*
a*c^2 + A^4*c^3)*d^2*e^3 + 6*(27*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (81*B^4
*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d) + (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B^2*a^
3*c^2 + A^3*a^2*c^3)*e^4 - (2*A*a^3*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^2*B^2
*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^
2*a*c + A^4*c^2)*e^6)/(a^3*c^7)))*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e +
6*A*B*a^2*e^3 + a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^
3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) +
3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))) - (a*c^2*x^2 - a^2*c)*sqrt((4*A^
2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 + a^3*c^3*sqrt((36*A^2*B^2*c^2
*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*
c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))*lo
g((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 6*(27*A*
B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (81*B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d
) - (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 - (2*A*a^3
*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^
3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)))*s
qrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 + a^3*c^3*sqrt((36*A^
2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A
^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3
*c^3))) + (a*c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*
B*a^2*e^3 - a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*
c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3
*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))*log((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2
*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 6*(27*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (8
1*B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d) + (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B
^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (2*A*a^3*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^
2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A
^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)))*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2
*e + 6*A*B*a^2*e^3 - a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c
 + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7
)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))) - (a*c^2*x^2 - a^2*c)*sqrt(
(4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 - a^3*c^3*sqrt((36*A^2*B^
2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B
^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3
))*log((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 6*(
27*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (81*B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*
x + d) - (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (2*
A*a^3*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c
 + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7
)))*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 - a^3*c^3*sqrt((
36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 +
 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)
/(a^3*c^3))) - 4*(B*a*d + A*a*e + (A*c*d + B*a*e)*x)*sqrt(e*x + d))/(a*c^2*
x^2 - a^2*c)
```

giac [B] time = 0.71, size = 533, normalized size = 2.24

$$\frac{\left(3\sqrt{ac}\,Ba^2c^3d^2e + \sqrt{ac}\,Aa^2c^3de^2 - 3\sqrt{ac}\,Ba^3c^2e^3 + \left(ac^3d^2e - a^2c^2e^3\right)A|a||c| - \left(2\sqrt{ac}\,ac^4d^3 - \sqrt{ac}\,a^2c^3de^2\right)A\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^2d+\sqrt{a^2c^4d^2-\left(ac^2d^2-a^2ce^2\right)ac^2}}{ac^2}}}\right)}{4\left(a^2c^4d - \sqrt{ac}\,a^2c^3e\right)\sqrt{-c^2d - \sqrt{ac}\,ce}\,|a|} - \frac{\left(3Ba^2c^3d^2e + Aa^2c^3de^2 - 3Ba^3c^2e^3 - \left(\sqrt{ac}\,c^2d^2e - \sqrt{ac}\,ace^3\right)A|a||c| - \left(2ac^4d^3 - a^2c^3de^2\right)A\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^2d-\sqrt{a^2c^4d^2-\left(ac^2d^2-a^2ce^2\right)ac^2}}{ac^2}}}\right)}{4\left(a^2c^3e + \sqrt{ac}\,ac^3d\right)\sqrt{-c^2d + \sqrt{ac}\,ce}\,|a|} - \frac{(xe+d)^{\frac{3}{2}}Acde - \sqrt{xe+d}\,Acd^2e + (xe+d)^{\frac{3}{2}}Bae^2 + \sqrt{xe+d}\,Aae^3}{2\left((xe+d)^2c - 2(xe+d)cd + cd^2 - ae^2\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*(3*sqrt(a*c)*B*a^2*c^3*d^2*e + sqrt(a*c)*A*a^2*c^3*d*e^2 - 3*sqrt(a*c)*
B*a^3*c^2*e^3 + (a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(a)*abs(c) - (2*sqrt(a*c)*
a*c^4*d^3 - sqrt(a*c)*a^2*c^3*d*e^2)*A)*arctan(sqrt(x*e + d)/sqrt(-(a*c^2*d
```

```
 + sqrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*c^2))/(a*c^2)))/((a^2*c^4*d
 - sqrt(a*c)*a^2*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(a)) - 1/4*(3*B*a^2
*c^3*d^2*e + A*a^2*c^3*d*e^2 - 3*B*a^3*c^2*e^3 - (sqrt(a*c)*c^2*d^2*e - sqr
t(a*c)*a*c*e^3)*A*abs(a)*abs(c) - (2*a*c^4*d^3 - a^2*c^3*d*e^2)*A)*arctan(s
qrt(x*e + d)/sqrt(-(a*c^2*d - sqrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*
c^2))/(a*c^2)))/((a^2*c^3*e + sqrt(a*c)*a*c^3*d)*sqrt(-c^2*d + sqrt(a*c)*c*
e)*abs(a)) - 1/2*((x*e + d)^(3/2)*A*c*d*e - sqrt(x*e + d)*A*c*d^2*e + (x*e
+ d)^(3/2)*B*a*e^2 + sqrt(x*e + d)*A*a*e^3)/(((x*e + d)^2*c - 2*(x*e + d)*c
*d + c*d^2 - a*e^2)*a*c)
```

maple [B] time = 0.11, size = 694, normalized size = 2.92

$$\frac{A c d^{2} e \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{2 \sqrt{a c e^{2}}\, \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, a}+\frac{A c d^{2} e \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{2 \sqrt{a c e^{2}}\, \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, a}-\frac{A e^{3} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{a c e^{2}}\, \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, c}-\frac{A e^{3} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{a c e^{2}}\, \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, c}-\frac{3 B d e^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{a c e^{2}}\, \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, c}-\frac{3 B d e^{2} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{a c e^{2}}\, \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, c}+\frac{\sqrt{e x+d}\, A d^{2} e}{2 \left(c e^{2} x^{2}-a e^{2}\right) a}+\frac{A d e \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, c a}-\frac{A d e \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, c a}-\frac{\sqrt{e x+d}\, A e^{3}}{2 \left(c e^{2} x^{2}-a e^{2}\right) c}-\frac{3 B e^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, c c}+\frac{3 B e^{2} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, c c}-\frac{\left(e x+d\right)^{\frac{3}{2}} A d e}{2 \left(c e^{2} x^{2}-a e^{2}\right) a}-\frac{\left(e x+d\right)^{\frac{3}{2}} B e^{2}}{2 \left(c e^{2} x^{2}-a e^{2}\right) c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/2*e/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(3/2)*A*d-1/2*e^2/(c*e^2*x^2-a*e^2)/c*(e
*x+d)^(3/2)*B-1/2*e^3/(c*e^2*x^2-a*e^2)*A/c*(e*x+d)^(1/2)+1/2*e/(c*e^2*x^2-
a*e^2)*A/a*(e*x+d)^(1/2)*d^2-1/4*e^3/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/2*e/
a*c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/(
(c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/4*e^2/(a*c*e^2)^(1/2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
c)*B*d+1/4*e/a/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d-3/4*e^2/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-1/4*e^3/(a*c*e^2
)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*c)*A+1/2*e/a*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/4
*e^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-1/4*e/a/((-c*d+(a*c*e^2)^(1/2))*c)^
(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+3/4*e^2/
c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(cx^2 - a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 - a)^2, x)
```

mupad [B] time = 0.92, size = 5212, normalized size = 21.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x)
```

```
[Out] atan(((((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*
e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2
*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^
5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6
*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3
*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*
```

d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i - (((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i)/((((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + (((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + (27*B^3*a^4*e^8 + 4*A^3*c^4*d^5*e^3 - 3*A^2*B*a^3*c*e^8 - 5*A^3*a*c^3*d^3*e^5 + A^3*a^2*c^2*d*e^7 - 27*B^3*a^3*c*d^2*e^6 + 45*A*B^2*a^2*c^2*d^3*e^5 + 27*A^2*B*a^2*c^2*d^2*e^6 - 45*A*B^2*a^3*c*d*e^7 - 24*A^2*B*a*c^3*d^4*e^4)/(4*a^3*c^2)))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*2i - (((B*a*e^2 + A*c*d*e)*(d + e*x)^(3/2))/(2*a*c) + ((A*a*e^3 - A*c*d^2*e)*(d + e*x)^(1/2))/(2*a*c))/(c*(d + e*x)^2 - a*e^2 + c*d^2 - 2*c*d*(d + e*x)) + atan(((((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*

```
d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c
^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e +
 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i - (((64*A*a^4*c^4*e^
5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*
A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) +
 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4
*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^
3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B
*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d
^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2
)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4
+ 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 - 9
*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3
- 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*
c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i)/((((64*A*a^4*c^4*e^5 - 64*
A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3
*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*
a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^
2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d
^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^
4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e +
6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d + e*x)^(1/2)*(9*B^
2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2
*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*
e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2
*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2
*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + (((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*
d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 -
 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^
3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*
B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 - 9*B^2
*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*
A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*
e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6
+ 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2
*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c
^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d
*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)
^(1/2))/(64*a^6*c^7))^(1/2) + (27*B^3*a^4*e^8 + 4*A^3*c^4*d^5*e^3 - 3*A^2*B
*a^3*c*e^8 - 5*A^3*a*c^3*d^3*e^5 + A^3*a^2*c^2*d*e^7 - 27*B^3*a^3*c*d^2*e^6
 + 45*A*B^2*a^2*c^2*d^3*e^5 + 27*A^2*B*a^2*c^2*d^2*e^6 - 45*A*B^2*a^3*c*d*e
^7 - 24*A^2*B*a*c^3*d^4*e^4)/(4*a^3*c^2)))*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^
3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a
^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(
a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1281 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=225

$$-\frac{\left(-\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}+\frac{\sqrt{d+ex}\,(}{2ac\,(}$$

Rubi [A] time = 0.40, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {821, 827, 1166, 208}

$$-\frac{\left(-\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}+\frac{\sqrt{d+ex}\,(aB+Acx)}{2ac\left(a-cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^2,x]
```

```
[Out] ((a*B + A*c*x)*Sqrt[d + e*x])/(2*a*c*(a - c*x^2)) - ((2*A*c*d - a*B*e - Sqr
t[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*
e]])/(4*a^(3/2)*c^(5/4)*Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ((2*A*c*d - a*B*e +
Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[
a]*e]])/(4*a^(3/2)*c^(5/4)*Sqrt[Sqrt[c]*d + Sqrt[a]*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^2}\,dx = \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\int \frac{\frac{1}{2}(-2Acd+aBe)-\frac{1}{2}Acex}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{2ac}$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}Acde+\frac{1}{2}e(-2Acd+aBe)-\frac{1}{2}Acex^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx, x, \sqrt{d+ex}\right)}{ac}$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\left(2Acd-aBe-\sqrt{a}\,A\sqrt{c}\,e\right)\text{Subst}\left(\int \frac{1}{cd-\sqrt{a}\,\sqrt{c}\,e-cx^2}\,dx, x, \sqrt{d+ex}\right.}{4a^{3/2}\sqrt{c}}$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\left(2Acd-aBe-\sqrt{a}\,A\sqrt{c}\,e\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}} + \frac{\left(2Acd-aBe\right.}{4}$$

Mathematica [A] time = 0.47, size = 375, normalized size = 1.67

$$\frac{-\frac{\sqrt[4]{c}\left(aAe^2+2aBde-3Acd^2\right)\left(\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)-\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)\right)}{2\sqrt{a}}+\frac{c(d+ex)^{3/2}(-aAe+aB(d-ex)+Acdx)}{cx^2-a}+\frac{(aBe-Acd)\left(2\sqrt{a}\,\sqrt[4]{c}\,e\sqrt{d+ex}+\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)-\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)\right)}{2\sqrt{a}\,\sqrt[4]{c}}}{2ac\left(ae^2-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^2,x]
```

```
[Out] ((c*(d + e*x)^(3/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)))/(-a + c*x^2) - (c
^(1/4)*(-3*A*c*d^2 + 2*a*B*d*e + a*A*e^2)*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcT
anh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d +
 Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/
(2*Sqrt[a]) + ((-(A*c*d) + a*B*e)*(2*Sqrt[a]*c^(1/4)*e*Sqrt[d + e*x] + (Sqr
t[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d -
Sqrt[a]*e]] - (Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])
/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(2*Sqrt[a]*c^(1/4)))/(2*a*c*(-(c*d^2) + a*e
^2))
```

IntegrateAlgebraic [A] time = 1.41, size = 337, normalized size = 1.50

$$-\frac{\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}\left(\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{-\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{4a^{3/2}c^{3/2}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}-\frac{\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}\left(-\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{4a^{3/2}c^{3/2}\left(\sqrt{a}\,e-\sqrt{c}\,d\right)}+\frac{e\sqrt{d+ex}\,(aBe+Ac(d+ex)-Acd)}{2ac\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^2,x]
```

```
[Out] (e*Sqrt[d + e*x]*(-(A*c*d) + a*B*e + A*c*(d + e*x)))/(2*a*c*(-(c*d^2) + a*e
^2 + 2*c*d*(d + e*x) - c*(d + e*x)^2)) - (Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[
a]*e))]*(2*A*c*d - a*B*e + Sqrt[a]*A*Sqrt[c]*e)*ArcTan[(Sqrt[-(c*d) - Sqrt[
a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(4*a^(3/2)*c^(3/2)*(
Sqrt[c]*d + Sqrt[a]*e)) - (Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))]*(2*A*c*
d - a*B*e - Sqrt[a]*A*Sqrt[c]*e)*ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*S
qrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(4*a^(3/2)*c^(3/2)*(-(Sqrt[c]*d) +
Sqrt[a]*e))
```

fricas [B] time = 2.43, size = 3195, normalized size = 14.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a*c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*
e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 + (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2
*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a
*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c
^3*d^2 - a^4*c^2*e^2))*log((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*
c^3)*d^2*e^3 + 2*(3*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2
)*e^5)*sqrt(e*x + d) + (2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^
2*c^3)*d*e^4 + (B^3*a^4*c + A^2*B*a^3*c^2)*e^5 + (2*A*a^3*c^6*d^4 - B*a^4*c
^5*d^3*e - 3*A*a^4*c^5*d^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A
^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2
*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt
((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d
*e^2 + (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a
*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d
^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) - (a*
c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B
^2*a^2 - 3*A^2*a*c)*d*e^2 + (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2
*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4
*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 -
 a^4*c^2*e^2))*log((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*c^3)*d^2
*e^3 + 2*(3*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2)*e^5)*s
qrt(e*x + d) - (2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^2*c^3)*d
*e^4 + (B^3*a^4*c + A^2*B*a^3*c^2)*e^5 + (2*A*a^3*c^6*d^4 - B*a^4*c^5*d^3*e
 - 3*A*a^4*c^5*d^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A^2*B^2*c
^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A
^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt((4*A^2*
c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 + (
a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3
*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a
^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) + (a*c^2*x^2
- a^2*c)*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 -
 3*A^2*a*c)*d*e^2 - (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4
 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^
6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2
*e^2))*log((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 2
*(3*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x
+ d) + (2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^2*c^3)*d*e^4 + (
B^3*a^4*c + A^2*B*a^3*c^2)*e^5 - (2*A*a^3*c^6*d^4 - B*a^4*c^5*d^3*e - 3*A*a
^4*c^5*d^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A^2*B^2*c^2*d^2*e
^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*
e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt((4*A^2*c^2*d^3
- 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 - (a^3*c^3*
d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*
d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d
^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) - (a*c^2*x^2 - a^2*c)
*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a
*c)*d*e^2 - (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*
B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*
c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))*l
og((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 2*(3*A*B^
3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d) - (
2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^2*c^3)*d*e^4 + (B^3*a^4*
c + A^2*B*a^3*c^2)*e^5 - (2*A*a^3*c^6*d^4 - B*a^4*c^5*d^3*e - 3*A*a^4*c^5*d
^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(
A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^
3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt((4*A^2*c^2*d^3 - 4*A*B*
a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 - (a^3*c^3*d^2 - a^
4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 +
```

```
(B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 +
 a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) - 4*(A*c*x + B*a)*sqrt(e*x +
d))/(a*c^2*x^2 - a^2*c)
```

giac [B] time = 0.54, size = 436, normalized size = 1.94

$$\frac{\left(2\,Aac^{3}d^{2}-Ba^{2}c^{2}de-\sqrt{ac}\,Acd|a||c|e-Aa^{2}c^{2}e^{2}+\sqrt{ac}\,Ba|a||c|e^{2}\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^{2}d+\sqrt{a^{2}c^{4}d^{2}-\left(ac^{2}d^{2}-a^{2}ce^{2}\right)ac^{2}}}{ac^{2}}}}\right)}{4\left(a^{2}c^{2}e-\sqrt{ac}\,ac^{2}d\right)\sqrt{-c^{2}d-\sqrt{ac}\,ce}\,|a|}+\frac{\left(2\,Aac^{3}d^{2}-Ba^{2}c^{2}de+\sqrt{ac}\,Acd|a||c|e-Aa^{2}c^{2}e^{2}-\sqrt{ac}\,Ba|a||c|e^{2}\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^{2}d-\sqrt{a^{2}c^{4}d^{2}-\left(ac^{2}d^{2}-a^{2}ce^{2}\right)ac^{2}}}{ac^{2}}}}\right)}{4\left(a^{2}c^{2}e+\sqrt{ac}\,ac^{2}d\right)\sqrt{-c^{2}d+\sqrt{ac}\,ce}\,|a|}-\frac{(xe+d)^{\frac{3}{2}}Ace-\sqrt{xe+d}\,Acde+\sqrt{xe+d}\,Bae^{2}}{2\left((xe+d)^{2}c-2\,(xe+d)cd+cd^{2}-ae^{2}\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*(2*A*a*c^3*d^2 - B*a^2*c^2*d*e - sqrt(a*c)*A*c*d*abs(a)*abs(c)*e - A*a^
2*c^2*e^2 + sqrt(a*c)*B*a*abs(a)*abs(c)*e^2)*arctan(sqrt(x*e + d)/sqrt(-(a*
c^2*d + sqrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*c^2))/(a*c^2)))/((a^2*
c^2*e - sqrt(a*c)*a*c^2*d)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(a)) + 1/4*(2*A*
a*c^3*d^2 - B*a^2*c^2*d*e + sqrt(a*c)*A*c*d*abs(a)*abs(c)*e - A*a^2*c^2*e^2
 - sqrt(a*c)*B*a*abs(a)*abs(c)*e^2)*arctan(sqrt(x*e + d)/sqrt(-(a*c^2*d - s
qrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*c^2))/(a*c^2)))/((a^2*c^2*e + s
qrt(a*c)*a*c^2*d)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a)) - 1/2*((x*e + d)^(3/
2)*A*c*e - sqrt(x*e + d)*A*c*d*e + sqrt(x*e + d)*B*a*e^2)/(((x*e + d)^2*c -
 2*(x*e + d)*c*d + c*d^2 - a*e^2)*a*c)
```

maple [B] time = 0.09, size = 432, normalized size = 1.92

$$\frac{Acde\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{2\sqrt{ac\,e^{2}}\,\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}\,a}+\frac{Acde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{2\sqrt{ac\,e^{2}}\,\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}\,a}-\frac{B\,e^{2}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{4\sqrt{ac\,e^{2}}\,\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}-\frac{B\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{4\sqrt{ac\,e^{2}}\,\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}}+\frac{\sqrt{ex+d}\,Ade}{2\left(c\,e^{2}x^{2}-a\,e^{2}\right)a}+\frac{Ae\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{4\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}\,a}-\frac{Ae\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{4\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}\,a}-\frac{\sqrt{ex+d}\,B\,e^{2}}{2\left(c\,e^{2}x^{2}-a\,e^{2}\right)c}-\frac{(ex+d)^{\frac{3}{2}}\,Ae}{2\left(c\,e^{2}x^{2}-a\,e^{2}\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/2*e/(c*e^2*x^2-a*e^2)*A/a*(e*x+d)^(3/2)+1/2*e/(c*e^2*x^2-a*e^2)/a*(e*x+d
)^(1/2)*A*d-1/2*e^2/(c*e^2*x^2-a*e^2)/c*(e*x+d)^(1/2)*B+1/2*e/a/(a*c*e^2)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*A*c*d-1/4*e^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^
(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+1/4*e/a/((
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A+1/2*e/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arct
an((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d-1/4*e^2/(a*c*e^2
)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*c)*B-1/4*e/a/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e
*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^{2}-a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 - a)^2, x)
```

mupad [B] time = 4.10, size = 5062, normalized size = 22.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a - c*x^2)^2,x)
```

```
[Out] atan(((((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) - 64*a*c^4*d*e^2*(d
 + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(
a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^
2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 -
 a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^
2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5
*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*
c^6*d^2 - a^7*c^5*e^2)))^(1/2) + ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*
a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 +
B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 -
 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*
e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)*1i - (((64*B*a
^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(
(4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2)
+ 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c
^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))
^(1/2))*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^
5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*
A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c
^5*e^2)))^(1/2) - ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2
*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*
c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*
d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(
1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)*1i)/((4*A^3*c^2*d^2*e^3 - A^3
*a*c*e^5 + A*B^2*a^2*e^5 - 4*A^2*B*a*c*d*e^4)/(4*a^3) + (((64*B*a^4*c^2*e^4
 - 64*A*a^3*c^3*d*e^3)/(8*a^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3
*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^
5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e -
 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((
4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) +
 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^
4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^
(1/2) + ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4
 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2)
 + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^
2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*
(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + (((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*
e^3)/(8*a^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e
^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*
a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^
9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3
+ B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3
 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*
d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) - ((d + e*x)
^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e
^3))/a^2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*
c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 -
4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7
*c^5*e^2)))^(1/2)))*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c
*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^
3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6
*d^2 - a^7*c^5*e^2)))^(1/2)*2i + atan(((((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d
*e^3)/(8*a^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*
e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2
*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a
^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3
 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^
3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c
*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + ((d + e*x
```

```
)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*
e^3))/a^2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9
*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 -
 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^
7*c^5*e^2)))^(1/2)*1i - (((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) +
 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(
1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2
+ B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/
(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a
^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c
^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5
)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) - ((d + e*x)^(1/2)*(4*A^2*
c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*
A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2
*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*
d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1
/2)*1i)/((4*A^3*c^2*d^2*e^3 - A^3*a*c*e^5 + A*B^2*a^2*e^5 - 4*A^2*B*a*c*d*e
^4)/(4*a^3) + (((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) - 64*a*c^4*
d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2
*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*
c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c
^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1
/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 +
 B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(
64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^
2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^
5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c
^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*
A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + (((6
4*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) + 64*a*c^4*d*e^2*(d + e*x)^(1
/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(
1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*
a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e
^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a
^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2
 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 -
a^7*c^5*e^2)))^(1/2) - ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4
+ B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*
(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4
*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c
^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)))*((4*A^2*a^3*c^5*d^3 -
B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 -
 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*
e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)*2i - ((A*e*(d
+ e*x)^(3/2))/(2*a) + ((B*a*e^2 - A*c*d*e)*(d + e*x)^(1/2))/(2*a*c))/(c*(d
+ e*x)^2 - a*e^2 + c*d^2 - 2*c*d*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1282 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=250

$$-\frac{\left(-3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}+\frac{\sqrt{d+}}{}$$

Rubi [A] time = 0.50, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {823, 827, 1166, 208}

$$-\frac{\left(-3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}+\frac{\sqrt{d+ex}\,(x(Acd-aBe)+a(Bd-Ae))}{2a\left(a-cx^2\right)\left(cd^2-ae^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^2),x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d - A*e) + (A*c*d - a*B*e)*x))/(2*a*(c*d^2 - a*e^2)*(a
 - c*x^2)) - ((2*A*c*d + a*B*e - 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(3/4)*(Sqrt[c]*d -
Sqrt[a]*e)^(3/2)) + ((2*A*c*d + a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(
1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(3/4)*(Sqrt[
c]*d + Sqrt[a]*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx = \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)} - \frac{\int \frac{-\frac{1}{2}c\left(2Acd^2+aBde-3aAe^2\right)-\frac{1}{2}ce(Acd-aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{2ac\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}cde(Acd-aBe)-\frac{1}{2}ce\left(2Acd^2+aBde-3aAe^2\right)-}{-cd^2+ae^2+2cdx^2-cx^4}\right.}{ac\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)} - \frac{\left(2Acd+aBe-3\sqrt{a}\,A\sqrt{c}\,e\right)\text{Subst}\left(\int \frac{}{cd-\sqrt{a}}\right.}{4a^{3/2}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)} - \frac{\left(2Acd+aBe-3\sqrt{a}\,A\sqrt{c}\,e\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+}}{\sqrt{\sqrt{c}\,d-}}\right.}{4a^{3/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}$$

Mathematica [A] time = 0.45, size = 353, normalized size = 1.41

$$\frac{-\frac{c^{3/4}\left(-3aAe^2+2aBde+Acd^2\right)\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{\sqrt{a}e+\sqrt{c}d}}-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{2\sqrt{a}}+\frac{c\sqrt{d+ex}\,(-aAe+aB(d-ex)+Acdx)}{cx^2-a}+\frac{\sqrt[4]{c}\,(Acd-aBe)\left(\sqrt{\sqrt{c}d-\sqrt{a}e}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-\sqrt{\sqrt{a}e+\sqrt{c}d}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{2\sqrt{a}}}{2ac\left(ae^2-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^2),x]
```

```
[Out] ((c*Sqrt[d + e*x]*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)))/(-a + c*x^2) - (c^(
3/4)*(A*c*d^2 + 2*a*B*d*e - 3*a*A*e^2)*(-(ArcTanh[(c^(1/4)*Sqrt[d + e*x])/S
qrt[Sqrt[c]*d - Sqrt[a]*e]]/Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ArcTanh[(c^(1/4)
*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]/Sqrt[Sqrt[c]*d + Sqrt[a]*e]))/
(2*Sqrt[a]) + (c^(1/4)*(A*c*d - a*B*e)*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh
[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d + Sq
rt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(2*
Sqrt[a]))/(2*a*c*(-(c*d^2) + a*e^2))
```

IntegrateAlgebraic [A] time = 0.99, size = 368, normalized size = 1.47

$$\frac{\left(3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}e-cd}}{\sqrt{a}e+\sqrt{c}d}\right)}{4a^{3/2}\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)\sqrt{-\sqrt{c}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(3\sqrt{a}\,A\sqrt{c}\,e-aBe-2Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}e-cd}}{\sqrt{c}d-\sqrt{a}e}\right)}{4a^{3/2}\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)\sqrt{-\sqrt{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}+\frac{e\sqrt{d+ex}\left(aAe^2+aBe(d+ex)-2aBde+Acd^2-Acd(d+ex)\right)}{2a\left(ae^2-cd^2\right)\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^2),x]
```

```
[Out] (e*Sqrt[d + e*x]*(A*c*d^2 - 2*a*B*d*e + a*A*e^2 - A*c*d*(d + e*x) + a*B*e*(
d + e*x)))/(2*a*(-(c*d^2) + a*e^2)*(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*
(d + e*x)^2)) + ((2*A*c*d + a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTan[(Sqrt[-(c
*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(4*a^(3/2
)*Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))])
 + ((-2*A*c*d - a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTan[(Sqrt[-(c*d) + Sqrt[a
]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(4*a^(3/2)*Sqrt[c]*(S
qrt[c]*d - Sqrt[a]*e)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 30.61, size = 7506, normalized size = 30.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2 - a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d
^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c -
 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 + (a^3*c^4*d^6 - 3
*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*
e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B
^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e
^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*
a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c
^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*
c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^
3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))*log(-(24*A^
3*B*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 - 5*A^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*
c^2 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*a^3*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*
a*c^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*A^3*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81
*A^4*a^2*c^2)*e^7)*sqrt(e*x + d) + (6*A^2*B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^
3*c^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a^4*c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 -
12*(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^2*e^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*
c^2)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4*c^2)*e^8 - (2*A*a^3*c^7*d^9 + B*a^4
*c^6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B*a^5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*
e^4 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^3*d^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^
8*c^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*
d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A
*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2
- 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a
^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^1
0*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^
8*c^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e -
6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 +
3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 + (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*
c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 -
 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^
4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^
2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*
d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 -
 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*
d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4
*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))) - (a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2
 - a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^
2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5
*A^2*a^2*c)*d*e^4 + (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 -
a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*
d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A
*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2
- 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a
^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^1
0*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^
8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c
^2*d^2*e^4 - a^6*c*e^6))*log(-(24*A^3*B*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 -
5*A^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*c^2 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*
a^3*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*a*c^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*
A^3*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81*A^4*a^2*c^2)*e^7)*sqrt(e*x + d) - (6*A
^2*B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^3*c^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a
^4*c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 - 12*(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^
2*e^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*c^2)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4
```

```
*c^2)*e^8 - (2*A*a^3*c^7*d^9 + B*a^4*c^6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B
*a^5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*e^4 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^
3*d^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^8*c^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4
 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*
a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7
+ 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3
*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)
*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6
*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((
4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (
B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 + (a^3*
c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B
^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2
- 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a
*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 -
 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 8
1*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^
4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*
e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)))
 + (a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2 - a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d^5
+ 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15
*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 - (a^3*c^4*d^6 - 3*a^
4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4
 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*
a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7
+ 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3
*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)
*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6
*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c
^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))*log(-(24*A^3*B
*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 - 5*A^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*c^2
 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*a^3*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*a*c
^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*A^3*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81*A^
4*a^2*c^2)*e^7)*sqrt(e*x + d) + (6*A^2*B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^3*c
^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a^4*c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 - 12*
(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^2*e^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*c^2
)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4*c^2)*e^8 + (2*A*a^3*c^7*d^9 + B*a^4*c^
6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B*a^5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*e^4
 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^3*d^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^8*c
^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5
*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^
3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 1
5*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4
+ 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e
^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c
^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A
*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(
B^2*a^3 + 5*A^2*a^2*c)*d*e^4 - (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2
*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*
A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e
^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B
^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e
^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*
a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4
*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^
2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))) - (a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2 -
a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e
^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^
2*a^2*c)*d*e^4 - (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6
```

```
*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5
*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^
3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 1
5*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4
+ 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e
^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c
^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*
d^2*e^4 - a^6*c*e^6))*log(-(24*A^3*B*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 - 5*A
^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*c^2 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*a^3
*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*a*c^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*A^3
*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81*A^4*a^2*c^2)*e^7)*sqrt(e*x + d) - (6*A^2*
B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^3*c^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a^4*
c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 - 12*(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^2*e
^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*c^2)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4*c^
2)*e^8 + (2*A*a^3*c^7*d^9 + B*a^4*c^6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B*a^
5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*e^4 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^3*d
^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^8*c^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4 +
12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c
^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6
*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c
+ 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^
10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^
6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((4*A
^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2
*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 - (a^3*c^4
*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*
c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 1
98*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^
3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28
*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A
^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 -
 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^1
2)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))) -
4*(B*a*d - A*a*e + (A*c*d - B*a*e)*x)*sqrt(e*x + d))/(a^2*c*d^2 - a^3*e^2 -
 (a*c^2*d^2 - a^2*c*e^2)*x^2)
```

giac [B] time = 0.91, size = 1156, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/4*((a*c*d^2*e - a^2*e^3)^2*A*c*d*abs(c)*e - (a*c*d^2*e - a^2*e^3)^2*B*a*
abs(c)*e^2 + (sqrt(a*c)*c^2*d^4*e - 4*sqrt(a*c)*a*c*d^2*e^3 + 3*sqrt(a*c)*a
^2*e^5)*A*abs(a*c*d^2*e - a^2*e^3)*abs(c) + 2*(sqrt(a*c)*a*c*d^3*e^2 - sqrt
(a*c)*a^2*d*e^4)*B*abs(a*c*d^2*e - a^2*e^3)*abs(c) - (2*a*c^4*d^7*e - 7*a^2
*c^3*d^5*e^3 + 8*a^3*c^2*d^3*e^5 - 3*a^4*c*d*e^7)*A*abs(c) - (a^2*c^3*d^6*e
^2 - 2*a^3*c^2*d^4*e^4 + a^4*c*d^2*e^6)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt
(-(a*c^2*d^3 - a^2*c*d*e^2 + sqrt((a*c^2*d^3 - a^2*c*d*e^2)^2 - (a*c^2*d^4
- 2*a^2*c*d^2*e^2 + a^3*e^4)*(a*c^2*d^2 - a^2*c*e^2)))/(a*c^2*d^2 - a^2*c*e
^2)))/((a^2*c^3*d^4*e - sqrt(a*c)*a*c^3*d^5 + 2*sqrt(a*c)*a^2*c^2*d^3*e^2 -
 2*a^3*c^2*d^2*e^3 - sqrt(a*c)*a^3*c*d*e^4 + a^4*c*e^5)*sqrt(-c^2*d - sqrt(
a*c)*c*e)*abs(a*c*d^2*e - a^2*e^3)) - 1/4*((a*c*d^2*e - a^2*e^3)^2*sqrt(a*c
)*A*c*d*abs(c)*e - (a*c*d^2*e - a^2*e^3)^2*sqrt(a*c)*B*a*abs(c)*e^2 - (a*c^
3*d^4*e - 4*a^2*c^2*d^2*e^3 + 3*a^3*c*e^5)*A*abs(a*c*d^2*e - a^2*e^3)*abs(c
) - 2*(a^2*c^2*d^3*e^2 - a^3*c*d*e^4)*B*abs(a*c*d^2*e - a^2*e^3)*abs(c) - (
2*sqrt(a*c)*a*c^4*d^7*e - 7*sqrt(a*c)*a^2*c^3*d^5*e^3 + 8*sqrt(a*c)*a^3*c^2
*d^3*e^5 - 3*sqrt(a*c)*a^4*c*d*e^7)*A*abs(c) - (sqrt(a*c)*a^2*c^3*d^6*e^2 -
 2*sqrt(a*c)*a^3*c^2*d^4*e^4 + sqrt(a*c)*a^4*c*d^2*e^6)*B*abs(c))*arctan(sq
```

```
rt(x*e + d)/sqrt(-(a*c^2*d^3 - a^2*c*d*e^2 - sqrt((a*c^2*d^3 - a^2*c*d*e^2)
^2 - (a*c^2*d^4 - 2*a^2*c*d^2*e^2 + a^3*e^4)*(a*c^2*d^2 - a^2*c*e^2)))/(a*c
^2*d^2 - a^2*c*e^2)))/((a^2*c^4*d^5 + sqrt(a*c)*a^2*c^3*d^4*e - 2*a^3*c^3*d
^3*e^2 - 2*sqrt(a*c)*a^3*c^2*d^2*e^3 + a^4*c^2*d*e^4 + sqrt(a*c)*a^4*c*e^5)
*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a*c*d^2*e - a^2*e^3)) - 1/2*((x*e + d)^(3
/2)*A*c*d*e - sqrt(x*e + d)*A*c*d^2*e - (x*e + d)^(3/2)*B*a*e^2 + 2*sqrt(x*
e + d)*B*a*d*e^2 - sqrt(x*e + d)*A*a*e^3)/((a*c*d^2 - a^2*e^2)*((x*e + d)^2
*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2))
```

maple [B] time = 0.29, size = 635, normalized size = 2.54

$$\frac{A c^{2} d e \arctanh\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{2 \sqrt{a c e^{2}}\, \left(c d+\sqrt{a c e^{2}}\right) \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, a}-\frac{A c^{2} d e \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{2 \sqrt{a c e^{2}}\, \left(-c d+\sqrt{a c e^{2}}\right) \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, a}+\frac{B c e^{2} \arctanh\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{a c e^{2}}\, \left(c d+\sqrt{a c e^{2}}\right) \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}-\frac{B c e^{2} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \sqrt{a c e^{2}}\, \left(-c d+\sqrt{a c e^{2}}\right) \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}+\frac{3 A c e \arctanh\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \left(c d+\sqrt{a c e^{2}}\right) \sqrt{\left(c d+\sqrt{a c e^{2}}\right) c}\, a}+\frac{3 A c e \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}}\right)}{4 \left(-c d+\sqrt{a c e^{2}}\right) \sqrt{\left(-c d+\sqrt{a c e^{2}}\right) c}\, a}-\frac{\sqrt{e x+d}\, B e^{2}}{4 \sqrt{a c e^{2}}\, \left(c d+\sqrt{a c e^{2}}\right) \left(e x-\frac{\sqrt{a c e^{2}}}{c}\right)}+\frac{\sqrt{e x+d}\, B e^{2}}{4 \sqrt{a c e^{2}}\, \left(c d-\sqrt{a c e^{2}}\right) \left(e x+\frac{\sqrt{a c e^{2}}}{c}\right)}-\frac{\sqrt{e x+d}\, A e}{4 \left(c d+\sqrt{a c e^{2}}\right) \left(e x-\frac{\sqrt{a c e^{2}}}{c}\right) a}-\frac{\sqrt{e x+d}\, A e}{4 \left(c d-\sqrt{a c e^{2}}\right) \left(e x+\frac{\sqrt{a c e^{2}}}{c}\right) a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/4*e^2/(a*c*e^2)^(1/2)/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)/(e*x-(a*c*e^2)
^(1/2)/c)*B-1/4*e/a/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)/(e*x-(a*c*e^2)^(1/2
)/c)*A+1/2*c^2*e/(a*c*e^2)^(1/2)/a/(c*d+(a*c*e^2)^(1/2))/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+
1/4*c*e^2/(a*c*e^2)^(1/2)/(c*d+(a*c*e^2)^(1/2))/((c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+3/4*c*e/a/(
c*d+(a*c*e^2)^(1/2))/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/
((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/4*e^2/(a*c*e^2)^(1/2)/(c*d-(a*c*e^2)
^(1/2))*(e*x+d)^(1/2)/(e*x+(a*c*e^2)^(1/2)/c)*B-1/4*e/a/(c*d-(a*c*e^2)^(1/2
))*(e*x+d)^(1/2)/(e*x+(a*c*e^2)^(1/2)/c)*A-1/2*c^2*e/(a*c*e^2)^(1/2)/a/(-c*
d+(a*c*e^2)^(1/2))/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d-1/4*c*e^2/(a*c*e^2)^(1/2)/(-c*d+(a*c*
e^2)^(1/2))/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*c)*B+3/4*c*e/a/(-c*d+(a*c*e^2)^(1/2))/((-c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c
)*A
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 - a\right)^2 \sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 - a)^2*sqrt(e*x + d)), x)
```

mupad [B] time = 6.24, size = 10862, normalized size = 43.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)^2*(d + e*x)^(1/2)),x)
```

```
[Out] atan(((((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 2
56*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2
*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*
c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e
^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c
^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2
) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3
*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6
 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^
```

3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*
e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^
3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^
3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*
c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^
2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a
^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c
^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6
 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a
*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e
^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3
*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3
)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c
^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2
*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^
9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^
4*d^2*e^4)))^(1/2)*1i - (((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a
^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4
 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) - ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 +
 B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2
 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d
*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*
e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/
2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6
*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5
*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*
d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) -
 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c
^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9
*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^
4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 1
4*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5
*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6
 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4
*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d
^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) -
15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^
2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*
A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4
*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14
*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*
d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*1i)/((B^3*a^3*c*e^6 - 4*A^3*c^4*d^3*e^
3 + 9*A^3*a*c^3*d*e^5 - 9*A^2*B*a^2*c^2*e^6 + 3*A*B^2*a^2*c^2*d*e^5)/(4*(a^
5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + (((192*A*a^5*c^3*e^7 - 128*B*a^5*
c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^
3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4
*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B
^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
+ 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2
) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2
e^3(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(
1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^
4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(
a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5
*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6
*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2
*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3
)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a
^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c

^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*
(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*
e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a
^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*
(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*
c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*
a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)
^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^
5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^
3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + (((192*A*a^5*c^3*e
^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 1
28*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) - ((d +
e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*
c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(
a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5
*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e
+ 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*
e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3
*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*
c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^
5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*
e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^
3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d
^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^
(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*
c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((
d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B
^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2
*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5
+ B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e
^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3
*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^
3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(
1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c
^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)))*((4
*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B
^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
+ 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2
) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2
e^3(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(
1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^
4)))^(1/2)*2i + atan(((((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3
*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 +
a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B
^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 -
6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e
^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^
2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2)
- 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d
^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c
^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^
4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 1
5*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2
*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A
^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*
c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*
A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d
^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 +
B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d

^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*1i - (((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) - ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*1i)/((B^3*a^3*c*e^6 - 4*A^3*c^4*d^3*e^3 + 9*A^3*a*c^3*d*e^5 - 9*A^2*B*a^2*c^2*e^6 + 3*A*B^2*a^2*c^2*d*e^5)/(4*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + (((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*

```
c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((
(192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4
*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d
^2*e^2)) - ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/
2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A
^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4
 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*
B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3
 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7
*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^
5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((
4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 +
B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
 + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/
2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^
2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^
(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e
^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2
*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3
*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4
*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B
^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
+ 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2
) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2
*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(
1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^
4)))^(1/2)))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4
*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*
(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^
5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e
 - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d
*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 +
3*a^8*c^4*d^2*e^4)))^(1/2)*2i - (((B*a*e^2 - A*c*d*e)*(d + e*x)^(3/2))/(2*a
*(a*e^2 - c*d^2)) + ((d + e*x)^(1/2)*(A*a*e^3 - 2*B*a*d*e^2 + A*c*d^2*e))/(
2*a*(a*e^2 - c*d^2)))/(c*(d + e*x)^2 - a*e^2 + c*d^2 - 2*c*d*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1283 $\int \frac{A+Bx}{(d+ex)^{3/2}(a-cx^2)^2}\,dx$

Optimal. Leaf size=303

$$-\frac{\left(-5\sqrt{a}\,A\sqrt{c}\,e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}\sqrt[4]{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\left(5\sqrt{a}\,A\sqrt{c}\,e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}\sqrt[4]{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{5/2}}+\frac{x}{2a\,(}$$

Rubi [A] time = 0.69, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {823, 829, 827, 1166, 208}

$$-\frac{\left(-5\sqrt{a}\,A\sqrt{c}\,e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}\sqrt[4]{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\left(5\sqrt{a}\,A\sqrt{c}\,e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}\sqrt[4]{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{5/2}}+\frac{x(Acd-aBe)+a(Bd-Ae)}{2a\left(a-cx^2\right)\sqrt{d+ex}\left(cd^2-ae^2\right)}-\frac{e\left(5aAe^2-6aBde+Acd^2\right)}{2a\sqrt{d+ex}\left(cd^2-ae^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)^2),x]
```

```
[Out] -(e*(A*c*d^2 - 6*a*B*d*e + 5*a*A*e^2))/(2*a*(c*d^2 - a*e^2)^2*Sqrt[d + e*x]
) + (a*(B*d - A*e) + (A*c*d - a*B*e)*x)/(2*a*(c*d^2 - a*e^2)*Sqrt[d + e*x]*
(a - c*x^2)) - ((2*A*c*d + 3*a*B*e - 5*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4
)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(1/4)*(Sqrt[c]*
d - Sqrt[a]*e)^(5/2)) + ((2*A*c*d + 3*a*B*e + 5*Sqrt[a]*A*Sqrt[c]*e)*ArcTan
h[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(1/4)*
(Sqrt[c]*d + Sqrt[a]*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)^2}\,dx = \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\left(a-cx^2\right)} - \frac{\int \frac{-\frac{1}{2}c\left(2Acd^2+3aBde-5aAe^2\right)-\frac{3}{2}ce(Acd-aBe)x}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx}{2ac\left(cd^2-ae^2\right)}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\left(a-cx^2\right)} + \frac{\int \frac{\frac{1}{2}c\left(2Acd\left(cd^2-4ac\right.\right.}{\cdots}}{\cdots}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\left(a-cx^2\right)} + \frac{\text{Subst}\left(\int \frac{-\frac{1}{2}c^2de\cdots}{\cdots}\right.}{\cdots}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\left(a-cx^2\right)} - \frac{\left(\sqrt{c}\left(2Acd+3a\cdots\right.\right.}{\cdots}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\left(a-cx^2\right)} - \frac{\left(2Acd+3aBe-\cdots\right.}{4a^{3/\cdots}}$$

Mathematica [C] time = 0.61, size = 365, normalized size = 1.20

$$\frac{-\frac{3c^{3/4}(Acd-aBe)\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{\sqrt{a}e+\sqrt{c}d}}-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{2\sqrt{a}}+\frac{c\left(5aAe^2-6aBde+Acd^2\right)\left(\left(\sqrt{a}e+\sqrt{c}d\right)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d-\sqrt{a}e}\right)+\left(\sqrt{a}e-\sqrt{c}d\right)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d+\sqrt{a}e}\right)\right)}{2\sqrt{a}\sqrt{d+ex}\left(cd^2-ae^2\right)}+\frac{c(-aAe+aB(d-ex)+Acdx)}{\left(cx^2-a\right)\sqrt{d+ex}}}{2ac\left(ae^2-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)^2),x]
```

```
[Out] ((c*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)))/(Sqrt[d + e*x]*(-a + c*x^2)) - (3
*c^(3/4)*(A*c*d - a*B*e)*(-(ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d
- Sqrt[a]*e]]/Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ArcTanh[(c^(1/4)*Sqrt[d + e*x]
)/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]/Sqrt[Sqrt[c]*d + Sqrt[a]*e]))/(2*Sqrt[a]) +
(c*(A*c*d^2 - 6*a*B*d*e + 5*a*A*e^2)*((Sqrt[c]*d + Sqrt[a]*e)*Hypergeometri
c2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[a]*e)] + (-(Sqrt[c
]*d) + Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt
[c]*d + Sqrt[a]*e)]))/(2*Sqrt[a]*(c*d^2 - a*e^2)*Sqrt[d + e*x]))/(2*a*c*(-(
c*d^2) + a*e^2))
```

IntegrateAlgebraic [A] time = 3.14, size = 461, normalized size = 1.52

$$\frac{\left(5\sqrt{a}A\sqrt{c}e+3aBe+2Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}e-cd}}{\sqrt{a}e+\sqrt{c}d}\right)}{4a^{3/2}\left(\sqrt{a}e+\sqrt{c}d\right)^2\sqrt{-\sqrt{c}\left(\sqrt{a}e+\sqrt{c}d\right)}}+\frac{\left(5\sqrt{a}A\sqrt{c}e-3aBe-2Acd\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}e-cd}}{\sqrt{c}d-\sqrt{a}e}\right)}{4a^{3/2}\left(\sqrt{c}d-\sqrt{a}e\right)^2\sqrt{-\sqrt{c}\left(\sqrt{c}d-\sqrt{a}e\right)}}-\frac{e\left(4a^2Ae^4-a^2Be^3(d+ex)-4a^2Bde^3-4aAcd^2e^2-5aAce^2(d+ex)^2+11aAcde^2(d+ex)+4aBcd^3e-11aBcd^2e(d+ex)+6aBcde(d+ex)^2+Ac^2d^3(d+ex)-Ac^2d^2(d+ex)^2\right)}{2a\sqrt{d+ex}\left(ae^2-cd^2\right)^2\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)^2),x]
```

```
[Out] -1/2*(e*(4*a*B*c*d^3*e - 4*a*A*c*d^2*e^2 - 4*a^2*B*d*e^3 + 4*a^2*A*e^4 + A*
c^2*d^3*(d + e*x) - 11*a*B*c*d^2*e*(d + e*x) + 11*a*A*c*d*e^2*(d + e*x) - a
^2*B*e^3*(d + e*x) - A*c^2*d^2*(d + e*x)^2 + 6*a*B*c*d*e*(d + e*x)^2 - 5*a*
A*c*e^2*(d + e*x)^2))/(a*(-(c*d^2) + a*e^2)^2*Sqrt[d + e*x]*(-(c*d^2) + a*e
^2 + 2*c*d*(d + e*x) - c*(d + e*x)^2)) + ((2*A*c*d + 3*a*B*e + 5*Sqrt[a]*A*
Sqrt[c]*e)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]
*d + Sqrt[a]*e)]]/(4*a^(3/2)*(Sqrt[c]*d + Sqrt[a]*e)^2*Sqrt[-(Sqrt[c]*(Sqrt
[c]*d + Sqrt[a]*e))]) + ((-2*A*c*d - 3*a*B*e + 5*Sqrt[a]*A*Sqrt[c]*e)*ArcTa
n[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)]
)/(4*a^(3/2)*(Sqrt[c]*d - Sqrt[a]*e)^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*
e))])
```

fricas [B] time = 113.38, size = 12458, normalized size = 41.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a^2*c^2*d^5 - 2*a^3*c*d^3*e^2 + a^4*d*e^4 - (a*c^3*d^4*e - 2*a^2*c^2
*d^2*e^3 + a^3*c*e^5)*x^3 - (a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)*x
^2 + (a^2*c^2*d^4*e - 2*a^3*c*d^2*e^3 + a^4*e^5)*x)*sqrt((4*A^2*c^4*d^7 + 1
2*A*B*a*c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B
*a^4*e^7 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2
*a^2*c^2)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 + (a^3*c^5*d^10 - 5*
a^4*c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8
 - a^8*e^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*
c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6
 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 +
1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*
B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4
*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 +
 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276
*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*
c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c
^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^1
0*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^1
6 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2
 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))*l
og(-(120*A^3*B*c^5*d^7*e^2 + 20*(27*A^2*B^2*a*c^4 - 7*A^4*c^5)*d^6*e^3 + 27
0*(3*A*B^3*a^2*c^3 - 7*A^3*B*a*c^4)*d^5*e^4 + 3*(135*B^4*a^3*c^2 - 1080*A^2
*B^2*a^2*c^3 + 497*A^4*a*c^4)*d^4*e^5 - 36*(15*A*B^3*a^3*c^2 - 161*A^3*B*a^
2*c^3)*d^3*e^6 + 6*(135*B^4*a^4*c - 414*A^2*B^2*a^3*c^2 - 625*A^4*a^2*c^3)*
d^2*e^7 - 6*(189*A*B^3*a^4*c - 625*A^3*B*a^3*c^2)*d*e^8 + (81*B^4*a^5 - 625
*A^4*a^3*c^2)*e^9)*sqrt(e*x + d) + (30*A^2*B*a^2*c^5*d^8*e^3 + 35*(9*A*B^2*
a^3*c^4 - A^3*a^2*c^5)*d^7*e^4 + 15*(27*B^3*a^4*c^3 - 59*A^2*B*a^3*c^4)*d^6
*e^5 - 3*(675*A*B^2*a^4*c^3 - 203*A^3*a^3*c^4)*d^5*e^6 + 27*(35*B^3*a^5*c^2
 + 129*A^2*B*a^4*c^3)*d^4*e^7 - 3*(981*A*B^2*a^5*c^2 + 659*A^3*a^4*c^3)*d^3
*e^8 + 3*(117*B^3*a^6*c + 827*A^2*B*a^5*c^2)*d^2*e^9 - (531*A*B^2*a^6*c + 3
25*A^3*a^5*c^2)*d*e^10 + 3*(9*B^3*a^7 + 25*A^2*B*a^6*c)*e^11 - (2*A*a^3*c^8
*d^14 + 3*B*a^4*c^7*d^13*e - 19*A*a^4*c^7*d^12*e^2 - 6*B*a^5*c^6*d^11*e^3 +
 60*A*a^5*c^6*d^10*e^4 - 15*B*a^6*c^5*d^9*e^5 - 85*A*a^6*c^5*d^8*e^6 + 60*B
*a^7*c^4*d^7*e^7 + 50*A*a^7*c^4*d^6*e^8 - 75*B*a^8*c^3*d^5*e^9 + 3*A*a^8*c^
3*d^4*e^10 + 42*B*a^9*c^2*d^3*e^11 - 16*A*a^9*c^2*d^2*e^12 - 9*B*a^10*c*d*e
^13 + 5*A*a^10*c*e^14)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5
- 7*A^3*B*c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^
6)*d^8*e^6 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*
a^3*c^3 + 1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*
c^3 + A^3*B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3
```

+ 3661*A^4*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*
d^3*e^11 + 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*
e^12 - 276*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^
2*B^2*a^5*c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2
+ 45*a^5*c^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a
^8*c^6*d^10*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c
^3*d^4*e^16 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))*sqrt((4*A^2*c^4*d^7 + 1
2*A*B*a*c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B
*a^4*e^7 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2
*a^2*c^2)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 + (a^3*c^5*d^10 - 5*
a^4*c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8
 - a^8*e^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*
c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6
 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 +
1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*
B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4
*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 +
 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276
*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*
c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c
^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^1
0*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^1
6 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2
 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10)))
- (a^2*c^2*d^5 - 2*a^3*c*d^3*e^2 + a^4*d*e^4 - (a*c^3*d^4*e - 2*a^2*c^2*d^2
*e^3 + a^3*c*e^5)*x^3 - (a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)*x^2 +
 (a^2*c^2*d^4*e - 2*a^3*c*d^2*e^3 + a^4*e^5)*x)*sqrt((4*A^2*c^4*d^7 + 12*A*
B*a*c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B*a^4
*e^7 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2*a^2
*c^2)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 + (a^3*c^5*d^10 - 5*a^4*
c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a
^8*e^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)
*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 2
40*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 1584
*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^
2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2
*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4*(
405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(9*
A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c +
625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d
^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^
10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 -
10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 1
0*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))*log(-
(120*A^3*B*c^5*d^7*e^2 + 20*(27*A^2*B^2*a*c^4 - 7*A^4*c^5)*d^6*e^3 + 270*(3
*A*B^3*a^2*c^3 - 7*A^3*B*a*c^4)*d^5*e^4 + 3*(135*B^4*a^3*c^2 - 1080*A^2*B^2
*a^2*c^3 + 497*A^4*a*c^4)*d^4*e^5 - 36*(15*A*B^3*a^3*c^2 - 161*A^3*B*a^2*c^
3)*d^3*e^6 + 6*(135*B^4*a^4*c - 414*A^2*B^2*a^3*c^2 - 625*A^4*a^2*c^3)*d^2*
e^7 - 6*(189*A*B^3*a^4*c - 625*A^3*B*a^3*c^2)*d*e^8 + (81*B^4*a^5 - 625*A^4
*a^3*c^2)*e^9)*sqrt(e*x + d) - (30*A^2*B*a^2*c^5*d^8*e^3 + 35*(9*A*B^2*a^3*
c^4 - A^3*a^2*c^5)*d^7*e^4 + 15*(27*B^3*a^4*c^3 - 59*A^2*B*a^3*c^4)*d^6*e^5
 - 3*(675*A*B^2*a^4*c^3 - 203*A^3*a^3*c^4)*d^5*e^6 + 27*(35*B^3*a^5*c^2 + 1
29*A^2*B*a^4*c^3)*d^4*e^7 - 3*(981*A*B^2*a^5*c^2 + 659*A^3*a^4*c^3)*d^3*e^8
 + 3*(117*B^3*a^6*c + 827*A^2*B*a^5*c^2)*d^2*e^9 - (531*A*B^2*a^6*c + 325*A
^3*a^5*c^2)*d*e^10 + 3*(9*B^3*a^7 + 25*A^2*B*a^6*c)*e^11 - (2*A*a^3*c^8*d^1
4 + 3*B*a^4*c^7*d^13*e - 19*A*a^4*c^7*d^12*e^2 - 6*B*a^5*c^6*d^11*e^3 + 60*
A*a^5*c^6*d^10*e^4 - 15*B*a^6*c^5*d^9*e^5 - 85*A*a^6*c^5*d^8*e^6 + 60*B*a^7
*c^4*d^7*e^7 + 50*A*a^7*c^4*d^6*e^8 - 75*B*a^8*c^3*d^5*e^9 + 3*A*a^8*c^3*d^
4*e^10 + 42*B*a^9*c^2*d^3*e^11 - 16*A*a^9*c^2*d^2*e^12 - 9*B*a^10*c*d*e^13

+ 5*A*a^10*c*e^14)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*
A^3*B*c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d
^8*e^6 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*
c^3 + 1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3
+ A^3*B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 36
61*A^4*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*
e^11 + 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12
 - 276*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^
2*a^5*c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45
*a^5*c^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c
^6*d^10*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d
^4*e^16 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))*sqrt((4*A^2*c^4*d^7 + 12*A*
B*a*c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B*a^4
*e^7 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2*a^2
*c^2)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 + (a^3*c^5*d^10 - 5*a^4*
c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a
^8*e^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)
*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 2
40*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 1584
*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^
2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2
*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4*(
405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(9*
A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c +
625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d
^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^
10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 -
10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 1
0*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))) + (a
^2*c^2*d^5 - 2*a^3*c*d^3*e^2 + a^4*d*e^4 - (a*c^3*d^4*e - 2*a^2*c^2*d^2*e^3
 + a^3*c*e^5)*x^3 - (a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)*x^2 + (a^
2*c^2*d^4*e - 2*a^3*c*d^2*e^3 + a^4*e^5)*x)*sqrt((4*A^2*c^4*d^7 + 12*A*B*a*
c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B*a^4*e^7
 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2*a^2*c^2
)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 - (a^3*c^5*d^10 - 5*a^4*c^4*
d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e
^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)*d^9
e^5 + 25(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 240*(
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*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^2*c^
4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2*c^4
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3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c + 625*
A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d^16*
e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^10 +
 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 - 10*a
^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 10*a^
5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))*log(-(120
*A^3*B*c^5*d^7*e^2 + 20*(27*A^2*B^2*a*c^4 - 7*A^4*c^5)*d^6*e^3 + 270*(3*A*B
^3*a^2*c^3 - 7*A^3*B*a*c^4)*d^5*e^4 + 3*(135*B^4*a^3*c^2 - 1080*A^2*B^2*a^2
*c^3 + 497*A^4*a*c^4)*d^4*e^5 - 36*(15*A*B^3*a^3*c^2 - 161*A^3*B*a^2*c^3)*d
^3*e^6 + 6*(135*B^4*a^4*c - 414*A^2*B^2*a^3*c^2 - 625*A^4*a^2*c^3)*d^2*e^7
- 6*(189*A*B^3*a^4*c - 625*A^3*B*a^3*c^2)*d*e^8 + (81*B^4*a^5 - 625*A^4*a^3
*c^2)*e^9)*sqrt(e*x + d) + (30*A^2*B*a^2*c^5*d^8*e^3 + 35*(9*A*B^2*a^3*c^4
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^2*B*a^4*c^3)*d^4*e^7 - 3*(981*A*B^2*a^5*c^2 + 659*A^3*a^4*c^3)*d^3*e^8 + 3
*(117*B^3*a^6*c + 827*A^2*B*a^5*c^2)*d^2*e^9 - (531*A*B^2*a^6*c + 325*A^3*a

^5*c^2)*d*e^10 + 3*(9*B^3*a^7 + 25*A^2*B*a^6*c)*e^11 + (2*A*a^3*c^8*d^14 + 3*B*a^4*c^7*d^13*e - 19*A*a^4*c^7*d^12*e^2 - 6*B*a^5*c^6*d^11*e^3 + 60*A*a^5*c^6*d^10*e^4 - 15*B*a^6*c^5*d^9*e^5 - 85*A*a^6*c^5*d^8*e^6 + 60*B*a^7*c^4*d^7*e^7 + 50*A*a^7*c^4*d^6*e^8 - 75*B*a^8*c^3*d^5*e^9 + 3*A*a^8*c^3*d^4*e^10 + 42*B*a^9*c^2*d^3*e^11 - 16*A*a^9*c^2*d^2*e^12 - 9*B*a^10*c*d*e^13 + 5*A*a^10*c*e^14)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))*sqrt((4*A^2*c^4*d^7 + 12*A*B*a*c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B*a^4*e^7 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2*a^2*c^2)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 - (a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))) - (a^2*c^2*d^5 - 2*a^3*c*d^3*e^2 + a^4*d*e^4 - (a*c^3*d^4*e - 2*a^2*c^2*d^2*e^3 + a^3*c*e^5)*x^3 - (a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)*x^2 + (a^2*c^2*d^4*e - 2*a^3*c*d^2*e^3 + a^4*e^5)*x)*sqrt((4*A^2*c^4*d^7 + 12*A*B*a*c^3*d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B*a^4*e^7 + (9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2*a^2*c^2)*d^3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 - (a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 1584*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c + 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 - 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))*log(-(120*A^3*B*c^5*d^7*e^2 + 20*(27*A^2*B^2*a*c^4 - 7*A^4*c^5)*d^6*e^3 + 270*(3*A*B^3*a^2*c^3 - 7*A^3*B*a*c^4)*d^5*e^4 + 3*(135*B^4*a^3*c^2 - 1080*A^2*B^2*a^2*c^3 + 497*A^4*a*c^4)*d^4*e^5 - 36*(15*A*B^3*a^3*c^2 - 161*A^3*B*a^2*c^3)*d^3*e^6 + 6*(135*B^4*a^4*c - 414*A^2*B^2*a^3*c^2 - 625*A^4*a^2*c^3)*d^2*e^7 - 6*(189*A*B^3*a^4*c - 625*A^3*B*a^3*c^2)*d*e^8 + (81*B^4*a^5 - 625*A^4*a^3*c^2

```
)*e^9)*sqrt(e*x + d) - (30*A^2*B*a^2*c^5*d^8*e^3 + 35*(9*A*B^2*a^3*c^4 - A^
3*a^2*c^5)*d^7*e^4 + 15*(27*B^3*a^4*c^3 - 59*A^2*B*a^3*c^4)*d^6*e^5 - 3*(67
5*A*B^2*a^4*c^3 - 203*A^3*a^3*c^4)*d^5*e^6 + 27*(35*B^3*a^5*c^2 + 129*A^2*B
*a^4*c^3)*d^4*e^7 - 3*(981*A*B^2*a^5*c^2 + 659*A^3*a^4*c^3)*d^3*e^8 + 3*(11
7*B^3*a^6*c + 827*A^2*B*a^5*c^2)*d^2*e^9 - (531*A*B^2*a^6*c + 325*A^3*a^5*c
^2)*d*e^10 + 3*(9*B^3*a^7 + 25*A^2*B*a^6*c)*e^11 + (2*A*a^3*c^8*d^14 + 3*B*
a^4*c^7*d^13*e - 19*A*a^4*c^7*d^12*e^2 - 6*B*a^5*c^6*d^11*e^3 + 60*A*a^5*c^
6*d^10*e^4 - 15*B*a^6*c^5*d^9*e^5 - 85*A*a^6*c^5*d^8*e^6 + 60*B*a^7*c^4*d^7
*e^7 + 50*A*a^7*c^4*d^6*e^8 - 75*B*a^8*c^3*d^5*e^9 + 3*A*a^8*c^3*d^4*e^10 +
 42*B*a^9*c^2*d^3*e^11 - 16*A*a^9*c^2*d^2*e^12 - 9*B*a^10*c*d*e^13 + 5*A*a^
10*c*e^14)*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^
6)*d^9*e^5 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 -
 240*(45*A*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 15
84*A^2*B^2*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*
a^2*c^4)*d^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a
^2*c^4)*d^4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4
*(405*B^4*a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(
9*A*B^3*a^5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c
+ 625*A^4*a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9
*d^16*e^4 - 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*
e^10 + 210*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16
- 10*a^12*c^2*d^2*e^18 + a^13*c*e^20)))*sqrt((4*A^2*c^4*d^7 + 12*A*B*a*c^3*
d^6*e - 30*A*B*a^2*c^2*d^4*e^3 - 240*A*B*a^3*c*d^2*e^5 - 30*A*B*a^4*e^7 + (
9*B^2*a^2*c^2 - 35*A^2*a*c^3)*d^5*e^2 + 10*(9*B^2*a^3*c + 7*A^2*a^2*c^2)*d^
3*e^4 + 15*(3*B^2*a^4 + 7*A^2*a^3*c)*d*e^6 - (a^3*c^5*d^10 - 5*a^4*c^4*d^8*
e^2 + 10*a^5*c^3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10)
*sqrt((900*A^2*B^2*c^6*d^10*e^4 + 300*(9*A*B^3*a*c^5 - 7*A^3*B*c^6)*d^9*e^5
 + 25*(81*B^4*a^2*c^4 - 558*A^2*B^2*a*c^5 + 49*A^4*c^6)*d^8*e^6 - 240*(45*A
*B^3*a^2*c^4 - 91*A^3*B*a*c^5)*d^7*e^7 + 20*(405*B^4*a^3*c^3 + 1584*A^2*B^2
*a^2*c^4 - 539*A^4*a*c^5)*d^6*e^8 - 44280*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d
^5*e^9 + 6*(1485*B^4*a^4*c^2 + 13170*A^2*B^2*a^3*c^3 + 3661*A^4*a^2*c^4)*d^
4*e^10 - 48*(585*A*B^3*a^4*c^2 + 1073*A^3*B*a^3*c^3)*d^3*e^11 + 4*(405*B^4*
a^5*c + 6579*A^2*B^2*a^4*c^2 + 1925*A^4*a^3*c^3)*d^2*e^12 - 276*(9*A*B^3*a^
5*c + 25*A^3*B*a^4*c^2)*d*e^13 + (81*B^4*a^6 + 450*A^2*B^2*a^5*c + 625*A^4*
a^4*c^2)*e^14)/(a^3*c^11*d^20 - 10*a^4*c^10*d^18*e^2 + 45*a^5*c^9*d^16*e^4
- 120*a^6*c^8*d^14*e^6 + 210*a^7*c^7*d^12*e^8 - 252*a^8*c^6*d^10*e^10 + 210
*a^9*c^5*d^8*e^12 - 120*a^10*c^4*d^6*e^14 + 45*a^11*c^3*d^4*e^16 - 10*a^12*
c^2*d^2*e^18 + a^13*c*e^20)))/(a^3*c^5*d^10 - 5*a^4*c^4*d^8*e^2 + 10*a^5*c^
3*d^6*e^4 - 10*a^6*c^2*d^4*e^6 + 5*a^7*c*d^2*e^8 - a^8*e^10))) - 4*(B*a*c*d
^3 - 2*A*a*c*d^2*e + 5*B*a^2*d*e^2 - 4*A*a^2*e^3 + (A*c^2*d^2*e - 6*B*a*c*d
*e^2 + 5*A*a*c*e^3)*x^2 + (A*c^2*d^3 - B*a*c*d^2*e - A*a*c*d*e^2 + B*a^2*e^
3)*x)*sqrt(e*x + d))/(a^2*c^2*d^5 - 2*a^3*c*d^3*e^2 + a^4*d*e^4 - (a*c^3*d^
4*e - 2*a^2*c^2*d^2*e^3 + a^3*c*e^5)*x^3 - (a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 +
 a^3*c*d*e^4)*x^2 + (a^2*c^2*d^4*e - 2*a^3*c*d^2*e^3 + a^4*e^5)*x)
```

giac [B] time = 2.07, size = 1895, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*(6*(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)^2*B*a*c*d*abs(c)*e^2 - (a*
c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)^2*(c^2*d^2*e + 5*a*c*e^3)*A*abs(c) -
 (sqrt(a*c)*c^4*d^7*e - 15*sqrt(a*c)*a*c^3*d^5*e^3 + 27*sqrt(a*c)*a^2*c^2*d
^3*e^5 - 13*sqrt(a*c)*a^3*c*d*e^7)*A*abs(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^
3*e^5)*abs(c) - 3*(3*sqrt(a*c)*a*c^3*d^6*e^2 - 5*sqrt(a*c)*a^2*c^2*d^4*e^4
+ sqrt(a*c)*a^3*c*d^2*e^6 + sqrt(a*c)*a^4*e^8)*B*abs(a*c^2*d^4*e - 2*a^2*c*
d^2*e^3 + a^3*e^5)*abs(c) + 2*(a*c^7*d^12*e - 8*a^2*c^6*d^10*e^3 + 22*a^3*c
^5*d^8*e^5 - 28*a^4*c^4*d^6*e^7 + 17*a^5*c^3*d^4*e^9 - 4*a^6*c^2*d^2*e^11)*
```

```
A*abs(c) + 3*(a^2*c^6*d^11*e^2 - 3*a^3*c^5*d^9*e^4 + 2*a^4*c^4*d^7*e^6 + 2*
a^5*c^3*d^5*e^8 - 3*a^6*c^2*d^3*e^10 + a^7*c*d*e^12)*B*abs(c))*arctan(sqrt(
x*e + d)/sqrt(-(a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4 + sqrt((a*c^3*d
^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)^2 - (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 +
3*a^3*c*d^2*e^4 - a^4*e^6)*(a*c^3*d^4 - 2*a^2*c^2*d^2*e^2 + a^3*c*e^4)))/(a
*c^3*d^4 - 2*a^2*c^2*d^2*e^2 + a^3*c*e^4)))/((a^2*c^5*d^8*e - sqrt(a*c)*a*c
^5*d^9 + 4*sqrt(a*c)*a^2*c^4*d^7*e^2 - 4*a^3*c^4*d^6*e^3 - 6*sqrt(a*c)*a^3*
c^3*d^5*e^4 + 6*a^4*c^3*d^4*e^5 + 4*sqrt(a*c)*a^4*c^2*d^3*e^6 - 4*a^5*c^2*d
^2*e^7 - sqrt(a*c)*a^5*c*d*e^8 + a^6*c*e^9)*sqrt(-c^2*d - sqrt(a*c)*c*e)*ab
s(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)) + 1/4*(6*(a*c^2*d^4*e - 2*a^2*c
*d^2*e^3 + a^3*e^5)^2*sqrt(a*c)*B*a*d*abs(c)*e^2 - (a*c^2*d^4*e - 2*a^2*c*d
^2*e^3 + a^3*e^5)^2*(sqrt(a*c)*c*d^2*e + 5*sqrt(a*c)*a*e^3)*A*abs(c) + (a*c
^4*d^7*e - 15*a^2*c^3*d^5*e^3 + 27*a^3*c^2*d^3*e^5 - 13*a^4*c*d*e^7)*A*abs(
a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)*abs(c) + 3*(3*a^2*c^3*d^6*e^2 - 5*
a^3*c^2*d^4*e^4 + a^4*c*d^2*e^6 + a^5*e^8)*B*abs(a*c^2*d^4*e - 2*a^2*c*d^2*
e^3 + a^3*e^5)*abs(c) + 2*(sqrt(a*c)*a*c^6*d^12*e - 8*sqrt(a*c)*a^2*c^5*d^1
0*e^3 + 22*sqrt(a*c)*a^3*c^4*d^8*e^5 - 28*sqrt(a*c)*a^4*c^3*d^6*e^7 + 17*sq
rt(a*c)*a^5*c^2*d^4*e^9 - 4*sqrt(a*c)*a^6*c*d^2*e^11)*A*abs(c) + 3*(sqrt(a*
c)*a^2*c^5*d^11*e^2 - 3*sqrt(a*c)*a^3*c^4*d^9*e^4 + 2*sqrt(a*c)*a^4*c^3*d^7
*e^6 + 2*sqrt(a*c)*a^5*c^2*d^5*e^8 - 3*sqrt(a*c)*a^6*c*d^3*e^10 + sqrt(a*c)
*a^7*d*e^12)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a*c^3*d^5 - 2*a^2*c^2*d^
3*e^2 + a^3*c*d*e^4 - sqrt((a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)^2
- (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*(a*c^3*d^4 -
2*a^2*c^2*d^2*e^2 + a^3*c*e^4)))/(a*c^3*d^4 - 2*a^2*c^2*d^2*e^2 + a^3*c*e^4
)))/((a^2*c^5*d^9 + sqrt(a*c)*a^2*c^4*d^8*e - 4*a^3*c^4*d^7*e^2 - 4*sqrt(a*
c)*a^3*c^3*d^6*e^3 + 6*a^4*c^3*d^5*e^4 + 6*sqrt(a*c)*a^4*c^2*d^4*e^5 - 4*a^
5*c^2*d^3*e^6 - 4*sqrt(a*c)*a^5*c*d^2*e^7 + a^6*c*d*e^8 + sqrt(a*c)*a^6*e^9
)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)
) - 1/2*((x*e + d)^2*A*c^2*d^2*e - (x*e + d)*A*c^2*d^3*e - 6*(x*e + d)^2*B*
a*c*d*e^2 + 11*(x*e + d)*B*a*c*d^2*e^2 - 4*B*a*c*d^3*e^2 + 5*(x*e + d)^2*A*
a*c*e^3 - 11*(x*e + d)*A*a*c*d*e^3 + 4*A*a*c*d^2*e^3 + (x*e + d)*B*a^2*e^4
+ 4*B*a^2*d*e^4 - 4*A*a^2*e^5)/((a*c^2*d^4 - 2*a^2*c*d^2*e^2 + a^3*e^4)*((x
*e + d)^(5/2)*c - 2*(x*e + d)^(3/2)*c*d + sqrt(x*e + d)*c*d^2 - sqrt(x*e +
d)*a*e^2))
```

maple [B] time = 0.10, size = 1392, normalized size = 4.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/2*e^3/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)*c*(e*x+d)^(3/2)*A-1/2*e/(a*e^2-c
*d^2)^2/(c*e^2*x^2-a*e^2)*c^2/a*(e*x+d)^(3/2)*A*d^2+e^2/(a*e^2-c*d^2)^2/(c*
e^2*x^2-a*e^2)*c*(e*x+d)^(3/2)*B*d+3/2*e^3/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2
)*(e*x+d)^(1/2)*A*c*d+1/2*e/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(1/
2)*A*c^2*d^3-1/2*e^4/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)*a*(e*x+d)^(1/2)*B-3/
2*e^2/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)*(e*x+d)^(1/2)*B*c*d^2-2*e^3/(a*e^2-
c*d^2)^2*c^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e/(a*e^2-c*d^2)^2/a*c^3/
(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d
+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+3/4*e^4/(a*e^2-c*d^2)^2*a*c/(a*c*e^2)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*B+3/4*e^2/(a*e^2-c*d^2)^2*c^2/(a*c*e^2)^(1/2)/((c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*B*d^2+5/4*e^3/(a*e^2-c*d^2)^2*c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh
((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/4*e/(a*e^2-c*d^2)^2/a
*c^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*A*d^2-3/2*e^2/(a*e^2-c*d^2)^2*c/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-2*e^3/
```

```
(a*e^2-c*d^2)^2*c^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e/(a*e^2-c*d^2)^
2/a*c^3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/
2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+3/4*e^4/(a*e^2-c*d^2)^2*a*c/(a
*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+3/4*e^2/(a*e^2-c*d^2)^2*c^2/(a*c*e^2)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2
))*c)^(1/2)*c)*B*d^2-5/4*e^3/(a*e^2-c*d^2)^2*c/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-1/4*e/(a*e^
2-c*d^2)^2/a*c^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2+3/2*e^2/(a*e^2-c*d^2)^2*c/((-c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*B*d-2*e^3/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*A+2*e^2/(a*e^2-c*d^2)^2/(e*x+d)
^(1/2)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 - a\right)^2 (ex + d)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 - a)^2*(e*x + d)^(3/2)), x)
```

mupad [B] time = 8.12, size = 19787, normalized size = 65.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)^2*(d + e*x)^(3/2)),x)
```

```
[Out] (((d + e*x)*(B*a^2*e^4 - A*c^2*d^3*e - 11*A*a*c*d*e^3 + 11*B*a*c*d^2*e^2))/
(2*a*(a*e^2 - c*d^2)^2) - (2*(A*e^3 - B*d*e^2))/(a*e^2 - c*d^2) + (c*(d + e
*x)^2*(5*A*a*e^3 - 6*B*a*d*e^2 + A*c*d^2*e))/(2*a*(a*e^2 - c*d^2)^2))/((a*e
^2 - c*d^2)*(d + e*x)^(1/2) - c*(d + e*x)^(5/2) + 2*c*d*(d + e*x)^(3/2)) -
atan((((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128
*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^
14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*
A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e
^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7
*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 +
18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^
4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A
*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^
11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a
^11*c^5*d^3*e^17) + (-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35
*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*
B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6
 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^
7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2)
+ 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*
d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 -
138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(6
4*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10
*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d +
e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*
c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c
^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^
2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*
```

B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i + ((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) - (-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B* a^15*c^3*e^22 - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) + (-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d

^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) - (-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B*a^15*c^3*e^22 - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2) + 1000*A^3*a^10*c^4*e^19 - 32*A^3*a^2*c^12*d^16*e^3 + 232*A^3*a^3*c^11*d^14*e^5 + 280*A^3*a^4*c^10*d^12*e^7 - 4760*A^3*a^5*c^9*d^10*e

^9 + 13720*A^3*a^6*c^8*d^8*e^11 - 19208*A^3*a^7*c^7*d^6*e^13 + 14728*A^3*a^8*c^6*d^4*e^15 - 5960*A^3*a^9*c^5*d^2*e^17 + 432*B^3*a^5*c^9*d^13*e^6 - 2592*B^3*a^6*c^8*d^11*e^8 + 6480*B^3*a^7*c^7*d^9*e^10 - 8640*B^3*a^8*c^6*d^7*e^12 + 6480*B^3*a^9*c^5*d^5*e^14 - 2592*B^3*a^10*c^4*d^3*e^16 - 360*A*B^2*a^11*c^3*e^19 + 432*B^3*a^11*c^3*d*e^18 + 504*A*B^2*a^4*c^10*d^14*e^5 - 3384*A*B^2*a^5*c^9*d^12*e^7 + 9720*A*B^2*a^6*c^8*d^10*e^9 - 15480*A*B^2*a^7*c^7*d^8*e^11 + 14760*A*B^2*a^8*c^6*d^6*e^13 - 8424*A*B^2*a^9*c^5*d^4*e^15 + 2664*A*B^2*a^10*c^4*d^2*e^17 + 96*A^2*B*a^3*c^11*d^15*e^4 - 2256*A^2*B*a^4*c^10*d^13*e^6 + 11520*A^2*B*a^5*c^9*d^11*e^8 - 27120*A^2*B*a^6*c^8*d^9*e^10 + 35040*A^2*B*a^7*c^7*d^7*e^12 - 25776*A^2*B*a^8*c^6*d^5*e^14 + 10176*A^2*B*a^9*c^5*d^3*e^16 - 1680*A^2*B*a^10*c^4*d*e^18))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*2i - atan((((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) + (-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^1

2 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i + ((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) - (-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B*a^15*c^3*e^22 - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2

))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) + (-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 38

40*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d
^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A
*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) - (-(4*A^2*a^3*c^5*d^7
- 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3
*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*
(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e
^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 15
4*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4
e^3(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^
4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A
*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5
*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^
(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) -
35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 +
90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*
e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c
*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/
2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2
*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5
+ 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))
/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 +
10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2
048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 -
245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^
11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*
c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B*a^15*c^3*e^22 - 3328*A*a^14
*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*
a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11
- 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c
^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*
B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^1
0 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*
c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A
^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*
A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A
^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 -
25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^
9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 4
5*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30
*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c
)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d
^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*
c^2*d^2*e^8)))^(1/2) + 1000*A^3*a^10*c^4*e^19 - 32*A^3*a^2*c^12*d^16*e^3 +
232*A^3*a^3*c^11*d^14*e^5 + 280*A^3*a^4*c^10*d^12*e^7 - 4760*A^3*a^5*c^9*d^
10*e^9 + 13720*A^3*a^6*c^8*d^8*e^11 - 19208*A^3*a^7*c^7*d^6*e^13 + 14728*A^
3*a^8*c^6*d^4*e^15 - 5960*A^3*a^9*c^5*d^2*e^17 + 432*B^3*a^5*c^9*d^13*e^6 -
2592*B^3*a^6*c^8*d^11*e^8 + 6480*B^3*a^7*c^7*d^9*e^10 - 8640*B^3*a^8*c^6*d
^7*e^12 + 6480*B^3*a^9*c^5*d^5*e^14 - 2592*B^3*a^10*c^4*d^3*e^16 - 360*A*B^
2*a^11*c^3*e^19 + 432*B^3*a^11*c^3*d*e^18 + 504*A*B^2*a^4*c^10*d^14*e^5 - 3
384*A*B^2*a^5*c^9*d^12*e^7 + 9720*A*B^2*a^6*c^8*d^10*e^9 - 15480*A*B^2*a^7*
c^7*d^8*e^11 + 14760*A*B^2*a^8*c^6*d^6*e^13 - 8424*A*B^2*a^9*c^5*d^4*e^15 +
2664*A*B^2*a^10*c^4*d^2*e^17 + 96*A^2*B*a^3*c^11*d^15*e^4 - 2256*A^2*B*a^4
*c^10*d^13*e^6 + 11520*A^2*B*a^5*c^9*d^11*e^8 - 27120*A^2*B*a^6*c^8*d^9*e^1
0 + 35040*A^2*B*a^7*c^7*d^7*e^12 - 25776*A^2*B*a^8*c^6*d^5*e^14 + 10176*A^2
*B*a^9*c^5*d^3*e^16 - 1680*A^2*B*a^10*c^4*d*e^18))*(-(4*A^2*a^3*c^5*d^7 - 9
*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^
4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^
9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*
(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A

```
^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^
3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e
^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*
a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^
8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/
2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1284 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=396

$$\frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(7aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{11/4}}-\frac{\left(\sqrt{a}\,e+\sqrt{c}\,d\right.}{}$$

Rubi [A] time = 0.88, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {819, 827, 1166, 208}

$$\frac{\sqrt{d+ex}\left(x\left(2Acd\left(3cd^2-2ae^2\right)-7aBe\left(ae^2+cd^2\right)\right)+ae\left(-5aAe^2-14aBde+7Acd^2\right)\right)}{16a^2c^2\left(a-cx^2\right)}+\frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(7aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{11/4}}-\frac{\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}\left(7aBe\left(2\sqrt{c}\,d-3\sqrt{a}\,e\right)-A\left(-18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{32a^{5/2}c^{11/4}}+\frac{(d+ex)^{5/2}(x(aBe+Acd)+a(Ae+Bd))}{4ac\left(a-cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(5/2)*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(4*a*c*(a - c*x^2)^2)
 + (Sqrt[d + e*x]*(a*e*(7*A*c*d^2 - 14*a*B*d*e - 5*a*A*e^2) + (2*A*c*d*(3*c
*d^2 - 2*a*e^2) - 7*a*B*e*(c*d^2 + a*e^2))*x))/(16*a^2*c^2*(a - c*x^2)) + (
(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*(7*a*B*e*(2*Sqrt[c]*d + 3*Sqrt[a]*e) - A*(12*
c^(3/2)*d^2 + 18*Sqrt[a]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d
+ e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a^(5/2)*c^(11/4)) - ((Sqrt[c]*d +
 Sqrt[a]*e)^(3/2)*(7*a*B*e*(2*Sqrt[c]*d - 3*Sqrt[a]*e) - A*(12*c^(3/2)*d^2
- 18*Sqrt[a]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt
[Sqrt[c]*d + Sqrt[a]*e]])/(32*a^(5/2)*c^(11/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a-cx^2\right)^3}\,dx = \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{(d+ex)^{3/2}\left(\frac{1}{2}\left(-6Acd^2+ae(7Bd+5Ae)\right)-\frac{1}{2}e(Acd-7}{\left(a-cx^2\right)^2}}{4ac}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

Mathematica [B] time = 2.96, size = 802, normalized size = 2.03

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(9/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(9/2)*(6*A*c^2*d^3*x + a*c*d*e*(-9*A*d
- 7*B*d*x + 4*A*e*x) - a^2*e^2*(-10*B*d + A*e + 3*B*e*x)))/(2*(a - c*x^2))
- ((-7*a*B*d*e*(9*c*d^2 + 11*a*e^2) + A*(54*c^2*d^4 + 81*a*c*d^2*e^2 + 5*a^
2*e^4))*(2*Sqrt[a]*c^(1/4)*e*Sqrt[d + e*x]*(15*a*e^2 + c*(58*d^2 + 16*d*e*x
 + 3*e^2*x^2)) + 15*(Sqrt[c]*d - Sqrt[a]*e)^(7/2)*ArcTanh[(c^(1/4)*Sqrt[d +
 e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - 15*(Sqrt[c]*d + Sqrt[a]*e)^(7/2)*ArcT
anh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(60*Sqrt[a]*c^(1
/4)) - ((2*A*c*d*(3*c*d^2 + 2*a*e^2) - a*B*e*(7*c*d^2 + 3*a*e^2))*((Sqrt[c]
*d - Sqrt[a]*e)*(15*c^(7/4)*(d + e*x)^(7/2) + 7*(Sqrt[c]*d - Sqrt[a]*e)*(3*
c^(5/4)*(d + e*x)^(5/2) + 5*(Sqrt[c]*d - Sqrt[a]*e)*(c^(1/4)*Sqrt[d + e*x]*
(-3*Sqrt[a]*e + Sqrt[c]*(4*d + e*x)) - 3*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcT
anh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]]))) - (Sqrt[c]*d +
Sqrt[a]*e)*(15*c^(7/4)*(d + e*x)^(7/2) + 7*(Sqrt[c]*d + Sqrt[a]*e)*(3*c^(5/
4)*(d + e*x)^(5/2) + 5*(Sqrt[c]*d + Sqrt[a]*e)*(c^(1/4)*Sqrt[d + e*x]*(3*Sq
rt[a]*e + Sqrt[c]*(4*d + e*x)) - 3*(Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c
^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])))))/(60*Sqrt[a]*c^(3/4)
))/(8*a^2*c^2*(c*d^2 - a*e^2)^2)
```

IntegrateAlgebraic [A] time = 4.78, size = 717, normalized size = 1.81

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x]
```

```
[Out] -1/16*(e*Sqrt[d + e*x]*(-6*A*c^3*d^6 + 7*a*B*c^2*d^5*e + 17*a*A*c^2*d^4*e^2
 - 14*a^2*B*c*d^3*e^3 - 16*a^2*A*c*d^2*e^4 + 7*a^3*B*d*e^5 + 5*a^3*A*e^6 +
18*A*c^3*d^5*(d + e*x) - 21*a*B*c^2*d^4*e*(d + e*x) - 32*a*A*c^2*d^3*e^2*(d
 + e*x) + 14*a^2*B*c*d^2*e^3*(d + e*x) + 14*a^2*A*c*d*e^4*(d + e*x) + 7*a^3
*B*e^5*(d + e*x) - 18*A*c^3*d^4*(d + e*x)^2 + 21*a*B*c^2*d^3*e*(d + e*x)^2
+ 23*a*A*c^2*d^2*e^2*(d + e*x)^2 + 7*a^2*B*c*d*e^3*(d + e*x)^2 - 9*a^2*A*c*
e^4*(d + e*x)^2 + 6*A*c^3*d^3*(d + e*x)^3 - 7*a*B*c^2*d^2*e*(d + e*x)^3 - 8
*a*A*c^2*d*e^2*(d + e*x)^3 - 11*a^2*B*c*e^3*(d + e*x)^3))/(a^2*c^2*(-(c*d^2
) + a*e^2 + 2*c*d*(d + e*x) - c*(d + e*x)^2)^2) + ((Sqrt[c]*d + Sqrt[a]*e)^
2*(12*A*c^(3/2)*d^2 - 14*a*B*Sqrt[c]*d*e - 18*Sqrt[a]*A*c*d*e + 21*a^(3/2)*
B*e^2 + 5*a*A*Sqrt[c]*e^2)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d
+ e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(32*a^(5/2)*c^(5/2)*Sqrt[-(Sqrt[c]*(Sqrt[
c]*d + Sqrt[a]*e))]) - ((Sqrt[c]*d - Sqrt[a]*e)^2*(12*A*c^(3/2)*d^2 - 14*a*
B*Sqrt[c]*d*e + 18*Sqrt[a]*A*c*d*e - 21*a^(3/2)*B*e^2 + 5*a*A*Sqrt[c]*e^2)*
ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a
]*e)])/(32*a^(5/2)*c^(5/2)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 11.79, size = 6669, normalized size = 16.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^4*d^7 - 336*
A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A
*B*a^4*e^7 + a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3
 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4
*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5
145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B
^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c
 + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d
^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*
a^3*c)*d*e^6)/(a^5*c^5))*log(-(30240*A^3*B*c^6*d^9*e^4 - 3024*(35*A^2*B^2*a
*c^5 + A^4*c^6)*d^8*e^5 + 504*(245*A*B^3*a^2*c^4 - 207*A^3*B*a*c^5)*d^7*e^6
 - 4*(12005*B^4*a^3*c^3 - 108486*A^2*B^2*a^2*c^4 - 2727*A^4*a*c^5)*d^6*e^7
- 14*(40523*A*B^3*a^3*c^3 - 8019*A^3*B*a^2*c^4)*d^5*e^8 + (242501*B^4*a^4*c
^2 - 573888*A^2*B^2*a^3*c^3 - 13509*A^4*a^2*c^4)*d^4*e^9 + 28*(29743*A*B^3*
a^4*c^2 - 1051*A^3*B*a^3*c^3)*d^3*e^10 - 2*(194481*B^4*a^5*c - 122892*A^2*B
^2*a^4*c^2 - 3125*A^4*a^3*c^3)*d^2*e^11 - 14*(27783*A*B^3*a^5*c + 625*A^3*B
*a^4*c^2)*d*e^12 + (194481*B^4*a^6 - 625*A^4*a^4*c^2)*e^13)*sqrt(e*x + d) +
 (1260*A^2*B*a^3*c^6*d^5*e^5 - 42*(70*A*B^2*a^4*c^5 + 3*A^3*a^3*c^6)*d^4*e^
6 + 49*(35*B^3*a^5*c^4 - 51*A^2*B*a^4*c^5)*d^3*e^7 + 3*(1911*A*B^2*a^5*c^4
+ 85*A^3*a^4*c^5)*d^2*e^8 - 21*(147*B^3*a^6*c^3 - 55*A^2*B*a^5*c^4)*d*e^9 -
 5*(441*A*B^2*a^6*c^3 + 25*A^3*a^5*c^4)*e^10 + (12*A*a^5*c^10*d^3 - 14*B*a^
6*c^9*d^2*e - 13*A*a^6*c^9*d*e^2 + 21*B*a^7*c^8*e^3)*sqrt((44100*A^2*B^2*c^
4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*
c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 3
87*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^
4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (1944
81*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)))*sqrt
((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A
*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 + a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^
8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 20
70*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B
*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)
*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a
```

```
^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a
^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4
 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))) - (a^2*c^4*x^4 - 2*a^3*c^
3*x^2 + a^4*c^2)*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2
*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 + a^5*c^5*sqrt((441
00*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(
1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^
3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^
2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d
*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5
*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11
*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))*log(-
(30240*A^3*B*c^6*d^9*e^4 - 3024*(35*A^2*B^2*a*c^5 + A^4*c^6)*d^8*e^5 + 504*
(245*A*B^3*a^2*c^4 - 207*A^3*B*a*c^5)*d^7*e^6 - 4*(12005*B^4*a^3*c^3 - 1084
86*A^2*B^2*a^2*c^4 - 2727*A^4*a*c^5)*d^6*e^7 - 14*(40523*A*B^3*a^3*c^3 - 80
19*A^3*B*a^2*c^4)*d^5*e^8 + (242501*B^4*a^4*c^2 - 573888*A^2*B^2*a^3*c^3 -
13509*A^4*a^2*c^4)*d^4*e^9 + 28*(29743*A*B^3*a^4*c^2 - 1051*A^3*B*a^3*c^3)*
d^3*e^10 - 2*(194481*B^4*a^5*c - 122892*A^2*B^2*a^4*c^2 - 3125*A^4*a^3*c^3)
*d^2*e^11 - 14*(27783*A*B^3*a^5*c + 625*A^3*B*a^4*c^2)*d*e^12 + (194481*B^4
*a^6 - 625*A^4*a^4*c^2)*e^13)*sqrt(e*x + d) - (1260*A^2*B*a^3*c^6*d^5*e^5 -
 42*(70*A*B^2*a^4*c^5 + 3*A^3*a^3*c^6)*d^4*e^6 + 49*(35*B^3*a^5*c^4 - 51*A^
2*B*a^4*c^5)*d^3*e^7 + 3*(1911*A*B^2*a^5*c^4 + 85*A^3*a^4*c^5)*d^2*e^8 - 21
*(147*B^3*a^6*c^3 - 55*A^2*B*a^5*c^4)*d*e^9 - 5*(441*A*B^2*a^6*c^3 + 25*A^3
*a^5*c^4)*e^10 + (12*A*a^5*c^10*d^3 - 14*B*a^6*c^9*d^2*e - 13*A*a^6*c^9*d*e
^2 + 21*B*a^7*c^8*e^3)*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c
^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A
^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*
(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A
*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3
*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)))*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*
c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4
*e^7 + a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A
^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*
d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^
4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3
*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625
*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2
 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)
*d*e^6)/(a^5*c^5))) + (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2
*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*
d^2*e^5 + 210*A*B*a^4*e^7 - a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*
(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^
2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d
^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12
 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 2205
0*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 -
15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7
*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))*log(-(30240*A^3*B*c^6*d^9*e^4 - 302
4*(35*A^2*B^2*a*c^5 + A^4*c^6)*d^8*e^5 + 504*(245*A*B^3*a^2*c^4 - 207*A^3*B
*a*c^5)*d^7*e^6 - 4*(12005*B^4*a^3*c^3 - 108486*A^2*B^2*a^2*c^4 - 2727*A^4*
a*c^5)*d^6*e^7 - 14*(40523*A*B^3*a^3*c^3 - 8019*A^3*B*a^2*c^4)*d^5*e^8 + (2
42501*B^4*a^4*c^2 - 573888*A^2*B^2*a^3*c^3 - 13509*A^4*a^2*c^4)*d^4*e^9 + 2
8*(29743*A*B^3*a^4*c^2 - 1051*A^3*B*a^3*c^3)*d^3*e^10 - 2*(194481*B^4*a^5*c
 - 122892*A^2*B^2*a^4*c^2 - 3125*A^4*a^3*c^3)*d^2*e^11 - 14*(27783*A*B^3*a^
5*c + 625*A^3*B*a^4*c^2)*d*e^12 + (194481*B^4*a^6 - 625*A^4*a^4*c^2)*e^13)*
sqrt(e*x + d) + (1260*A^2*B*a^3*c^6*d^5*e^5 - 42*(70*A*B^2*a^4*c^5 + 3*A^3*
a^3*c^6)*d^4*e^6 + 49*(35*B^3*a^5*c^4 - 51*A^2*B*a^4*c^5)*d^3*e^7 + 3*(1911
*A*B^2*a^5*c^4 + 85*A^3*a^4*c^5)*d^2*e^8 - 21*(147*B^3*a^6*c^3 - 55*A^2*B*a
^5*c^4)*d*e^9 - 5*(441*A*B^2*a^6*c^3 + 25*A^3*a^5*c^4)*e^10 - (12*A*a^5*c^1
```

```
0*d^3 - 14*B*a^6*c^9*d^2*e - 13*A*a^6*c^9*d*e^2 + 21*B*a^7*c^8*e^3)*sqrt((4
4100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49
*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*
B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*
a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)
*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a
^5*c^11)))*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d
^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 - a^5*c^5*sqrt((44100*A^2
*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B
^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*
c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2
+ 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13
+ (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)
) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a
^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))) - (a^2*c^4
*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e
 + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 - a^
5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)
*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10
+ 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c -
 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A
^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*
c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21
*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(
a^5*c^5))*log(-(30240*A^3*B*c^6*d^9*e^4 - 3024*(35*A^2*B^2*a*c^5 + A^4*c^6)
*d^8*e^5 + 504*(245*A*B^3*a^2*c^4 - 207*A^3*B*a*c^5)*d^7*e^6 - 4*(12005*B^4
*a^3*c^3 - 108486*A^2*B^2*a^2*c^4 - 2727*A^4*a*c^5)*d^6*e^7 - 14*(40523*A*B
^3*a^3*c^3 - 8019*A^3*B*a^2*c^4)*d^5*e^8 + (242501*B^4*a^4*c^2 - 573888*A^2
*B^2*a^3*c^3 - 13509*A^4*a^2*c^4)*d^4*e^9 + 28*(29743*A*B^3*a^4*c^2 - 1051*
A^3*B*a^3*c^3)*d^3*e^10 - 2*(194481*B^4*a^5*c - 122892*A^2*B^2*a^4*c^2 - 31
25*A^4*a^3*c^3)*d^2*e^11 - 14*(27783*A*B^3*a^5*c + 625*A^3*B*a^4*c^2)*d*e^1
2 + (194481*B^4*a^6 - 625*A^4*a^4*c^2)*e^13)*sqrt(e*x + d) - (1260*A^2*B*a^
3*c^6*d^5*e^5 - 42*(70*A*B^2*a^4*c^5 + 3*A^3*a^3*c^6)*d^4*e^6 + 49*(35*B^3*
a^5*c^4 - 51*A^2*B*a^4*c^5)*d^3*e^7 + 3*(1911*A*B^2*a^5*c^4 + 85*A^3*a^4*c^
5)*d^2*e^8 - 21*(147*B^3*a^6*c^3 - 55*A^2*B*a^5*c^4)*d*e^9 - 5*(441*A*B^2*a
^6*c^3 + 25*A^3*a^5*c^4)*e^10 - (12*A*a^5*c^10*d^3 - 14*B*a^6*c^9*d^2*e - 1
3*A*a^6*c^9*d*e^2 + 21*B*a^7*c^8*e^3)*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 294
0*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*
B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)
*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^
12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22
050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)))*sqrt((144*A^2*c^4*d
^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^
5 + 210*A*B*a^4*e^7 - a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*
B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^
3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^1
1 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532
*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*
B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2
*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a
^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))) - 4*(4*B*a^2*c*d^3 + 11*A*a^2*c*d^2*e -
14*B*a^3*d*e^2 - 5*A*a^3*e^3 - (6*A*c^3*d^3 - 7*B*a*c^2*d^2*e - 8*A*a*c^2*d
*e^2 - 11*B*a^2*c*e^3)*x^3 + (A*a*c^2*d^2*e + 26*B*a^2*c*d*e^2 + 9*A*a^2*c*
e^3)*x^2 + (10*A*a*c^2*d^3 + 5*B*a^2*c*d^2*e + 4*A*a^2*c*d*e^2 - 7*B*a^3*e^
3)*x)*sqrt(e*x + d))/(a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

sage$_2$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] sage2
```

maple [B] time = 0.11, size = 1828, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x)
```

```
[Out] 3/8*e/a^2*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^4+3/8*e/a^2*c/(a*c*e^2)^(1/2
)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/
2))*c)^(1/2)*c)*A*d^4-21/32*e^4/c^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+11/16*e^4/(c*e^2*x^2-a
*e^2)^2/c*(e*x+d)^(7/2)*B+9/16*e^5/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(5/2)*A+21
/32*e^4/c^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*c)*B+7/32*e^2/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-1/4*e^3/a/c/(
(c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*c)*A*d-7/32*e^2/a/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+
d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2+7/8*e^4/c/(a*c*e^2)^(1/2)
/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/
2))*c)^(1/2)*c)*B*d-7/16*e^2/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^3-19/32*e
^3/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(
e*x+d)^(1/2)*A*d^6+21/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*B*d^4-5/16
*e^7/(c*e^2*x^2-a*e^2)^2*a/c^2*(e*x+d)^(1/2)*A+e^5/(c*e^2*x^2-a*e^2)^2/c*(e
*x+d)^(1/2)*A*d^2-17/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(1/2)*A*d^4-7/16*
e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(1/2)*B*d^5-7/16*e^4/(c*e^2*x^2-a*e^2)^2/
c*(e*x+d)^(5/2)*B*d-7/8*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(3/2)*B*d^2+7/8*e
^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*B*d^3+5/32*e^5/c/(a*c*e^2)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A-3/16*e/a^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1
/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+5/32*e^5/c/(a*c*e^2)^(1/2)/((
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A+3/16*e/a^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*
(e*x+d)^(7/2)*A*d+7/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(7/2)*B*d^2-23/16*
e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5/2)*A*d^2-21/16*e^2/(c*e^2*x^2-a*e^2)^2
/a*(e*x+d)^(5/2)*B*d^3-7/8*e^5/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(3/2)*A*d+2*e^
3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*A*d^3-7/16*e^6/(c*e^2*x^2-a*e^2)^2/c^
2*a*(e*x+d)^(3/2)*B-3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(7/2)*A*d^3+9/8
*e/(c*e^2*x^2-a*e^2)^2*c/a^2*(e*x+d)^(5/2)*A*d^4+1/4*e^3/a/c/((-c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*A*d-7/16*e^2/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*
x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^3-19/32*e^3/a/(a*c*e^2)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*A*d^2+7/8*e^4/c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-7/16*e
^6/(c*e^2*x^2-a*e^2)^2*a/c^2*(e*x+d)^(1/2)*B*d-9/8*e/(c*e^2*x^2-a*e^2)^2*c/
a^2*(e*x+d)^(3/2)*A*d^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)(ex + d)^{\frac{7}{2}}}{\left(cx^2 - a\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(7/2)/(c*x^2 - a)^3, x)
```

mupad [B] time = 3.69, size = 11687, normalized size = 29.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x)
```

```
[Out] - atan(((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^
4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) -
 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a
^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B
^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2
*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*
e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1
/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*
A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^
11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^
7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 1
96*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21
*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^
6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11
)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1
120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^1
5*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)*(441*B^2*a^5*e^10
 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*
A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 4
20*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B
*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a
^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A
^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 73
5*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11
)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a
^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d
^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1
050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c
^11))^(1/2)*1i - (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a
^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a
^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 - 441*B^2*a
^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^
4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7
 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a
^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15
*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2
) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6
*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 - 441*B
^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^
3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6
*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B
^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(
a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^
(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d
*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)^(1/2)*(441*B^2
*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e
^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^
4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9
- 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^
7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2
```

) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5
*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(
a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a
*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*
a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^
4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(40
96*a^10*c^11))^(1/2)*1i)/((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 +
24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4
)/(4096*a^6*c^5) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 -
441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c
^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^
9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 +
735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*
e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c
^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*
a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^
7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a
^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*
B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^
6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*
d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^
15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*
A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)
*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*
c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a
^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4
*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c
^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c
^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^
7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*
d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 -
25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) -
336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a
^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(
1/2))/(4096*a^10*c^11))^(1/2) + (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*
e^6 + 24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d
^3*e^4)/(4096*a^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*
d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2
*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*
A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*
e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^
2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(
a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 26
6*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c
^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385
*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 +
210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^
7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*
B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e
^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5
+ 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)
^(1/2)*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^
2*a^2*c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735
*B^2*a^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A
*B*a^4*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B
*a^3*c^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(
a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*
B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^
2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d

*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + (9261*B^3*a^7*e^14 - 864*A^3*c^7*d^11*e^3 - 7398*A^3*a^2*c^5*d^7*e^7 + 6140*A^3*a^3*c^4*d^5*e^9 - 2182*A^3*a^4*c^3*d^3*e^11 + 1372*B^3*a^3*c^4*d^8*e^6 - 9947*B^3*a^4*c^3*d^6*e^8 + 25039*B^3*a^5*c^2*d^4*e^10 - 525*A^2*B*a^6*c*e^14 + 4104*A^3*a*c^6*d^9*e^5 + 200*A^3*a^5*c^2*d*e^13 - 25725*B^3*a^6*c*d^2*e^12 - 3528*A*B^2*a^2*c^5*d^9*e^5 + 22638*A*B^2*a^3*c^4*d^7*e^7 - 51156*A*B^2*a^4*c^3*d^5*e^9 + 48510*A*B^2*a^5*c^2*d^3*e^11 - 16884*A^2*B*a^2*c^5*d^8*e^6 + 34083*A^2*B*a^3*c^4*d^6*e^8 - 30135*A^2*B*a^4*c^3*d^4*e^10 + 10437*A^2*B*a^5*c^2*d^2*e^12 - 16464*A*B^2*a^6*c*d*e^13 + 3024*A^2*B*a*c^6*d^10*e^4)/(2048*a^6*c^5)))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2)*2i - atan((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2)*1i - (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21

*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)^(1/2)*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2)*1i)/((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*

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c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B
*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)^(1/2)*(4
41*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3
*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*
c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*
d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*
d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11
)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c
^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2
*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25
*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 33
6*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*
c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2
))/(4096*a^10*c^11))^(1/2) + (9261*B^3*a^7*e^14 - 864*A^3*c^7*d^11*e^3 - 73
98*A^3*a^2*c^5*d^7*e^7 + 6140*A^3*a^3*c^4*d^5*e^9 - 2182*A^3*a^4*c^3*d^3*e^
11 + 1372*B^3*a^3*c^4*d^8*e^6 - 9947*B^3*a^4*c^3*d^6*e^8 + 25039*B^3*a^5*c^
2*d^4*e^10 - 525*A^2*B*a^6*c*e^14 + 4104*A^3*a*c^6*d^9*e^5 + 200*A^3*a^5*c^
2*d*e^13 - 25725*B^3*a^6*c*d^2*e^12 - 3528*A*B^2*a^2*c^5*d^9*e^5 + 22638*A*
B^2*a^3*c^4*d^7*e^7 - 51156*A*B^2*a^4*c^3*d^5*e^9 + 48510*A*B^2*a^5*c^2*d^3
*e^11 - 16884*A^2*B*a^2*c^5*d^8*e^6 + 34083*A^2*B*a^3*c^4*d^6*e^8 - 30135*A
^2*B*a^4*c^3*d^4*e^10 + 10437*A^2*B*a^5*c^2*d^2*e^12 - 16464*A*B^2*a^6*c*d*
e^13 + 3024*A^2*B*a*c^6*d^10*e^4)/(2048*a^6*c^5)))*((144*A^2*a^5*c^10*d^7 +
 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*
c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a
^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 +
 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3
*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*
c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B
*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2)*2i - (((d + e*x)^(1/2
)*(5*A*a^3*e^7 + 7*B*a^3*d*e^6 - 6*A*c^3*d^6*e + 17*A*a*c^2*d^4*e^3 - 16*A*
a^2*c*d^2*e^5 + 7*B*a*c^2*d^5*e^2 - 14*B*a^2*c*d^3*e^4))/(16*a^2*c^2) + ((d
 + e*x)^(3/2)*(7*B*a^3*e^6 + 18*A*c^3*d^5*e - 32*A*a*c^2*d^3*e^3 - 21*B*a*c
^2*d^4*e^2 + 14*B*a^2*c*d^2*e^4 + 14*A*a^2*c*d*e^5))/(16*a^2*c^2) + ((d + e
*x)^(5/2)*(7*B*a^2*d*e^4 - 9*A*a^2*e^5 - 18*A*c^2*d^4*e + 23*A*a*c*d^2*e^3
+ 21*B*a*c*d^3*e^2))/(16*a^2*c) - ((d + e*x)^(7/2)*(11*B*a^2*e^4 - 6*A*c^2*
d^3*e + 8*A*a*c*d*e^3 + 7*B*a*c*d^2*e^2))/(16*a^2*c))/(c^2*(d + e*x)^4 + a^
2*e^4 + c^2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*
d*e^2)*(d + e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1285 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=372

$$\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\left(5aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-3A\left(2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{9/4}}-\frac{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}{}$$

Rubi [A] time = 0.69, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 821, 827, 1166, 208}

$$\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\left(5aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-3A\left(2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{9/4}}-\frac{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\left(5aBe\left(2\sqrt{c}\,d-\sqrt{a}\,e\right)-A\left(-6\sqrt{a}\,cde-3a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{32a^{5/2}c^{9/4}}+\frac{\sqrt{d+ex}\left(cx\left(6Acd^2-ae(3Ae+5Bd)\right)+ae(3Acd-5aBe)\right)}{16a^2c^2\left(a-cx^2\right)}+\frac{(d+ex)^{3/2}(x(aBe+Acd)+a(Ae+Bd))}{4ac\left(a-cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(3/2)*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(4*a*c*(a - c*x^2)^2)
 + (Sqrt[d + e*x]*(a*e*(3*A*c*d - 5*a*B*e) + c*(6*A*c*d^2 - a*e*(5*B*d + 3*
A*e))*x))/(16*a^2*c^2*(a - c*x^2)) + (Sqrt[Sqrt[c]*d - Sqrt[a]*e]*(5*a*B*e*
(2*Sqrt[c]*d + Sqrt[a]*e) - 3*A*(4*c^(3/2)*d^2 + 2*Sqrt[a]*c*d*e - a*Sqrt[c
]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a
^(5/2)*c^(9/4)) - (Sqrt[Sqrt[c]*d + Sqrt[a]*e]*(5*a*B*e*(2*Sqrt[c]*d - Sqrt
[a]*e) - A*(12*c^(3/2)*d^2 - 6*Sqrt[a]*c*d*e - 3*a*Sqrt[c]*e^2))*ArcTanh[(c
^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(32*a^(5/2)*c^(9/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
```

```
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^3}\,dx = \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{\sqrt{d+ex}\left(\frac{1}{2}\left(-6Acd^2+ae(5Bd+3Ae)\right)-\frac{1}{2}e(3Acd-5aBe)\ldots}{\left(a-cx^2\right)^2}}{4ac}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae(3Acd-5aBe)+c\left(6Acd^2-\ldots\right.\right.}{16a^2c^2\left(a-cx^2\right)}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae(3Acd-5aBe)+c\left(6Acd^2-\ldots\right.\right.}{16a^2c^2\left(a-cx^2\right)}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae(3Acd-5aBe)+c\left(6Acd^2-\ldots\right.\right.}{16a^2c^2\left(a-cx^2\right)}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\left(ae(3Acd-5aBe)+c\left(6Acd^2-\ldots\right.\right.}{16a^2c^2\left(a-cx^2\right)}$$

Mathematica [A] time = 1.56, size = 569, normalized size = 1.53

$$\frac{\frac{c^2(d+ex)^{7/2}\left(a^2e^2(Ae+6Bd-Bex)-acd^2e(7A+5Bx)+6Ac^2d^3x\right)}{2\left(a-cx^2\right)}+\frac{\sqrt[4]{c}\left(5aBde\left(5ae^2+7cd^2\right)-3A\left(-a^2e^4+7acd^2e^2+14c^2d^4\right)\right)\left(2\sqrt{a}c^{3/4}e\sqrt{d+ex}(7d+ex)+3\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-3\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{12\sqrt{a}}+\frac{2ac^2(d+ex)^{7/2}\left(cd^2-ae^2\right)(-aAe+aB(d-ex)+Acdx)}{\left(a-cx^2\right)^2}+\frac{\left(6Ac^2d^3-aBe\left(ae^2+5cd^2\right)\right)\left(2\sqrt{a}\sqrt[4]{c}e\sqrt{d+ex}\left(15ae^2+c\left(58d^2+16dex+3e^2x^2\right)\right)+15\left(\sqrt{c}d-\sqrt{a}e\right)^{7/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-15\left(\sqrt{a}e+\sqrt{c}d\right)^{7/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{12\sqrt{a}\sqrt[4]{c}}}{8a^2c^2\left(cd^2-ae^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(7/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(7/2)*(6*A*c^2*d^3*x - a*c*d^2*e*(7*A +
 5*B*x) + a^2*e^2*(6*B*d + A*e - B*e*x)))/(2*(a - c*x^2)) + (c^(1/4)*(5*a*B
*d*e*(7*c*d^2 + 5*a*e^2) - 3*A*(14*c^2*d^4 + 7*a*c*d^2*e^2 - a^2*e^4))*(2*S
qrt[a]*c^(3/4)*e*Sqrt[d + e*x]*(7*d + e*x) + 3*(Sqrt[c]*d - Sqrt[a]*e)^(5/2
)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - 3*(Sqrt[c]
*d + Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt
[a]*e]]))/(12*Sqrt[a]) + ((6*A*c^2*d^3 - a*B*e*(5*c*d^2 + a*e^2))*(2*Sqrt[a
]*c^(1/4)*e*Sqrt[d + e*x]*(15*a*e^2 + c*(58*d^2 + 16*d*e*x + 3*e^2*x^2)) +
15*(Sqrt[c]*d - Sqrt[a]*e)^(7/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[
c]*d - Sqrt[a]*e]] - 15*(Sqrt[c]*d + Sqrt[a]*e)^(7/2)*ArcTanh[(c^(1/4)*Sqrt
[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(12*Sqrt[a]*c^(1/4)))/(8*a^2*c^2*
(c*d^2 - a*e^2)^2)
```

IntegrateAlgebraic [A] time = 4.54, size = 669, normalized size = 1.80

$$\frac{\left(-3a^{3/2}A\sqrt{c}\,e^3-5a^{3/2}B\sqrt{c}\,de^2+5a^2Be^3+6\sqrt{a}\,Ac^{3/2}d^2e-9aAcde^2-10aBcd^2e+12Ac^2d^3\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{-\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{32a^{5/2}c^2\sqrt{-\sqrt{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}}+\frac{\left(-3a^{3/2}A\sqrt{c}\,e^3-5a^{3/2}B\sqrt{c}\,de^2-5a^2Be^3+6\sqrt{a}\,Ac^{3/2}d^2e+9aAcde^2+10aBcd^2e-12Ac^2d^3\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\,\sqrt{\sqrt{a}\,\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{32a^{5/2}c^2\sqrt{-\sqrt{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}}-\frac{e\sqrt{d+ex}\left(5a^3Be^5-a^2Ace^4(d+ex)-6a^2Acde^4-10a^2Bcd^2e^3+15a^2Bcde^3(d+ex)-9a^2Bce^3(d+ex)^2+12aAc^2d^3e^2-17aAc^2d^2e^2(d+ex)+8aAc^2de^2(d+ex)^2-3aAc^2e^2(d+ex)^3+5aBc^2d^4e-15aBc^2d^3e(d+ex)+15aBc^2d^2e(d+ex)^2-5aBc^2de(d+ex)^3-6Ac^3d^5+18Ac^3d^4(d+ex)-18Ac^3d^3(d+ex)^2+6Ac^3d^2(d+ex)^3\right)}{16a^2c^2\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x]
```

```
[Out] -1/16*(e*Sqrt[d + e*x]*(-6*A*c^3*d^5 + 5*a*B*c^2*d^4*e + 12*a*A*c^2*d^3*e^2
 - 10*a^2*B*c*d^2*e^3 - 6*a^2*A*c*d*e^4 + 5*a^3*B*e^5 + 18*A*c^3*d^4*(d + e
*x) - 15*a*B*c^2*d^3*e*(d + e*x) - 17*a*A*c^2*d^2*e^2*(d + e*x) + 15*a^2*B*
c*d*e^3*(d + e*x) - a^2*A*c*e^4*(d + e*x) - 18*A*c^3*d^3*(d + e*x)^2 + 15*a
*B*c^2*d^2*e*(d + e*x)^2 + 8*a*A*c^2*d*e^2*(d + e*x)^2 - 9*a^2*B*c*e^3*(d +
 e*x)^2 + 6*A*c^3*d^2*(d + e*x)^3 - 5*a*B*c^2*d*e*(d + e*x)^3 - 3*a*A*c^2*e
^2*(d + e*x)^3))/(a^2*c^2*(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*(d + e*x)
^2)^2) + ((12*A*c^2*d^3 - 10*a*B*c*d^2*e + 6*Sqrt[a]*A*c^(3/2)*d^2*e - 5*a^
(3/2)*B*Sqrt[c]*d*e^2 - 9*a*A*c*d*e^2 + 5*a^2*B*e^3 - 3*a^(3/2)*A*Sqrt[c]*e
^3)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d + Sq
rt[a]*e)])/(32*a^(5/2)*c^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))]) + ((-1
2*A*c^2*d^3 + 10*a*B*c*d^2*e + 6*Sqrt[a]*A*c^(3/2)*d^2*e - 5*a^(3/2)*B*Sqrt
[c]*d*e^2 + 9*a*A*c*d*e^2 - 5*a^2*B*e^3 - 3*a^(3/2)*A*Sqrt[c]*e^3)*ArcTan[(
Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(
32*a^(5/2)*c^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 1.22, size = 3382, normalized size = 9.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^3*d^5 - 240*
A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5 + a^5*c^4*sqrt((90
0*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9 + (625*B^4*a^
2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(5*B^2*a^2*c - 9*A^
2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a^5*c^4))*log(-(432
0*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^5 + 360*(25*
A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c - 1350*A^2*B^2*a^
2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27*A^3*B*a^2*c^2)*d*
e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) + (180*A^2*B*a^3*c^
4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 + 5*(25*B^3*a^5*c^2
+ 9*A^2*B*a^4*c^3)*e^7 - (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7*d*e - 3*A*a^6*c^7
*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9
 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)))*sqrt((144
*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5
 + a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*
d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*
(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(
a^5*c^4))) - (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^3*d^5
- 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5 + a^5*c^4*sq
rt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9 + (625*
B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(5*B^2*a^2*c
- 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a^5*c^4))*log
(-(4320*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^5 + 36
0*(25*A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c - 1350*A^2*
B^2*a^2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27*A^3*B*a^2*c
^2)*d*e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) - (180*A^2*B*
a^3*c^4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 + 5*(25*B^3*a^
5*c^2 + 9*A^2*B*a^4*c^3)*e^7 - (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7*d*e - 3*A*a
^6*c^7*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)
*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)))*sqr
```

```
t((144*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a
^3*e^5 + a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B
*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9))
 + 20*(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*
e^4)/(a^5*c^4))) + (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^
3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5 - a^5*
c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9 +
 (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(5*B^2*
a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a^5*c^4
))*log(-(4320*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^
5 + 360*(25*A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c - 135
0*A^2*B^2*a^2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27*A^3*B
*a^2*c^2)*d*e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) + (180*
A^2*B*a^3*c^4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 + 5*(25*
B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 + (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7*d*e -
 3*A*a^6*c^7*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*
B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)
))*sqrt((144*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30
*A*B*a^3*e^5 - a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9
*A^3*B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5
*c^9)) + 20*(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2
*c)*d*e^4)/(a^5*c^4))) - (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*
A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5
- a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d
*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(
5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a
^5*c^4))*log(-(4320*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*
d^4*e^5 + 360*(25*A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c
 - 1350*A^2*B^2*a^2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27
*A^3*B*a^2*c^2)*d*e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) -
 (180*A^2*B*a^3*c^4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 +
5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 + (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7
*d*e - 3*A*a^6*c^7*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c +
9*A^3*B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^
5*c^9)))*sqrt((144*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^
3 - 30*A*B*a^3*e^5 - a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a
*c + 9*A^3*B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10
)/(a^5*c^9)) + 20*(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A
^2*a^2*c)*d*e^4)/(a^5*c^4))) - 4*(4*B*a^2*c*d^2 + 7*A*a^2*c*d*e - 5*B*a^3*e
^2 - (6*A*c^3*d^2 - 5*B*a*c^2*d*e - 3*A*a*c^2*e^2)*x^3 + (A*a*c^2*d*e + 9*B
*a^2*c*e^2)*x^2 + (10*A*a*c^2*d^2 + 3*B*a^2*c*d*e + A*a^2*c*e^2)*x)*sqrt(e*
x + d))/(a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)
```

giac [B] time = 0.60, size = 728, normalized size = 1.96

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] -1/16*(6*(x*e + d)^(7/2)*A*c^3*d^2*e - 18*(x*e + d)^(5/2)*A*c^3*d^3*e + 18*
(x*e + d)^(3/2)*A*c^3*d^4*e - 6*sqrt(x*e + d)*A*c^3*d^5*e - 5*(x*e + d)^(7/
2)*B*a*c^2*d*e^2 + 15*(x*e + d)^(5/2)*B*a*c^2*d^2*e^2 - 15*(x*e + d)^(3/2)*
B*a*c^2*d^3*e^2 + 5*sqrt(x*e + d)*B*a*c^2*d^4*e^2 - 3*(x*e + d)^(7/2)*A*a*c
^2*e^3 + 8*(x*e + d)^(5/2)*A*a*c^2*d*e^3 - 17*(x*e + d)^(3/2)*A*a*c^2*d^2*e
^3 + 12*sqrt(x*e + d)*A*a*c^2*d^3*e^3 - 9*(x*e + d)^(5/2)*B*a^2*c*e^4 + 15*
(x*e + d)^(3/2)*B*a^2*c*d*e^4 - 10*sqrt(x*e + d)*B*a^2*c*d^2*e^4 - (x*e + d
)^(3/2)*A*a^2*c*e^5 - 6*sqrt(x*e + d)*A*a^2*c*d*e^5 + 5*sqrt(x*e + d)*B*a^3
*e^6)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)^2*a^2*c^2) - 1/32*
(3*(2*a*c*d*e - 4*sqrt(a*c)*c*d^2 + sqrt(a*c)*a*e^2)*sqrt(-c^2*d - sqrt(a*c
```

```
)*c*e)*A*abs(c) + 5*(2*sqrt(a*c)*a*d*e - a^2*e^2)*sqrt(-c^2*d - sqrt(a*c)*c
*e)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a^2*c^3*d + sqrt(a^4*c^6*d^2 - (a
^2*c^3*d^2 - a^3*c^2*e^2)*a^2*c^3))/(a^2*c^3)))/(a^3*c^4) - 1/32*(3*(2*a*c*
d*e + 4*sqrt(a*c)*c*d^2 - sqrt(a*c)*a*e^2)*sqrt(-c^2*d + sqrt(a*c)*c*e)*A*a
bs(c) - 5*(2*sqrt(a*c)*a*d*e + a^2*e^2)*sqrt(-c^2*d + sqrt(a*c)*c*e)*B*abs(
c))*arctan(sqrt(x*e + d)/sqrt(-(a^2*c^3*d - sqrt(a^4*c^6*d^2 - (a^2*c^3*d^2
 - a^3*c^2*e^2)*a^2*c^3))/(a^2*c^3)))/(a^3*c^4)
```

maple [B] time = 0.11, size = 1447, normalized size = 3.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x)
```

```
[Out] 3/8*e/a^2*c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)
^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+3/8*e^5/(c*e^2*x^2-a*e^2)^2
/c*(e*x+d)^(1/2)*A*d+5/8*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*B*d^2+5/32
*e^4/c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2
)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+5/32*e^4/c/(a*c*e^2)^(1/2)/((-c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*c)*B-3/16*e/a^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2+3/16*e/a^2/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-15/1
6*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(3/2)*B*d+3/8*e/a^2*c/(a*c*e^2)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2)
)*c)^(1/2)*c)*A*d^3+17/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*A*d^2+15/
16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*B*d^3-3/32*e^3/a/c/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*A+3/32*e^3/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*
d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-15/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5
/2)*B*d^2-1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5/2)*A*d-3/4*e^3/(c*e^2*x^
2-a*e^2)^2/a*(e*x+d)^(1/2)*A*d^3-5/16*e^6/(c*e^2*x^2-a*e^2)^2*a/c^2*(e*x+d)
^(1/2)*B+9/16*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(5/2)*B-5/16*e^2/(c*e^2*x^2
-a*e^2)^2/a*(e*x+d)^(1/2)*B*d^4+5/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(7/2
)*B*d+3/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(7/2)*A+1/16*e^5/(c*e^2*x^2-a*
e^2)^2/c*(e*x+d)^(3/2)*A-5/16*e^2/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-9/
32*e^3/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+9/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*
(e*x+d)^(5/2)*A*d^3+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(1/2)*A*d^5-3/8
*e/(c*e^2*x^2-a*e^2)^2/a^2*(e*x+d)^(7/2)*A*c*d^2-9/32*e^3/a/(a*c*e^2)^(1/2)
/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/
2))*c)^(1/2)*c)*A*d-5/16*e^2/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1
/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-5/32*e^2
/a/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*B*d+5/32*e^2/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-9/8*e/(c*e^2*x^2-a*e
^2)^2/a^2*c*(e*x+d)^(3/2)*A*d^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\left(cx^2-a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 - a)^3, x)
```

mupad [B] time = 3.00, size = 7702, normalized size = 20.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x)
```

```
[Out] ((e*(d + e*x)^(7/2)*(3*A*a*e^2 - 6*A*c*d^2 + 5*B*a*d*e))/(16*a^2) - ((d + e
*x)^(1/2)*(5*B*a^3*e^6 - 6*A*c^3*d^5*e + 12*A*a*c^2*d^3*e^3 + 5*B*a*c^2*d^4
*e^2 - 10*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5))/(16*a^2*c^2) + ((d + e*x)^(3/
2)*(A*a^2*e^5 - 15*B*a^2*d*e^4 - 18*A*c^2*d^4*e + 17*A*a*c*d^2*e^3 + 15*B*a
*c*d^3*e^2))/(16*a^2*c) + (e*(d + e*x)^(5/2)*(18*A*c^2*d^3 + 9*B*a^2*e^3 -
8*A*a*c*d*e^2 - 15*B*a*c*d^2*e))/(16*a^2*c))/(c^2*(d + e*x)^4 + a^2*e^4 + c
^2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d
 + e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c*d^2*e^2) - atan(((((20480*B*a^7*c^4*e
^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*
e^4)/(4096*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^15*
c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a
^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*
c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(
a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*B^
2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/
2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5
 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30
*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(
1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c
*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4
*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 +
240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 14
4*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2
 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75*
B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2)
 - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i - (((20480*B*a^7*c^4*
e^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2
*e^4)/(4096*a^6*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^15
*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*
a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7
*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*
(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*B
^2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1
/2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^
5 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 3
0*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^
(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*
c*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^
4*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 +
 240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 1
44*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2
 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75
*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2
) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i)/((((20480*B*a^7*c^4
*e^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^
2*e^4)/(4096*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^1
5*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2
*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^
7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4
*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*
B^2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(
1/2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e
^5 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e -
```

30*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))
^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3
*c*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d
^4*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3
+ 240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) -
144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^
2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 7
5*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/
2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) + (((20480*B*a^7*c^4*e
^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*
e^4)/(4096*a^6*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^15*
c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a
^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*
c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(
a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*B^
2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/
2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5
 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30
*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(
1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c
*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4
*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 +
240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 14
4*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2
 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75*
B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2)
 - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - (864*A^3*c^5*d^8*e^3 -
 75*A*B^2*a^5*e^11 + 27*A^3*a^4*c*e^11 - 125*B^3*a^5*d*e^10 + 1458*A^3*a^2*
c^3*d^4*e^7 - 405*A^3*a^3*c^2*d^2*e^9 - 500*B^3*a^3*c^2*d^5*e^6 - 1944*A^3*
a*c^4*d^6*e^5 + 625*B^3*a^4*c*d^3*e^8 + 1800*A*B^2*a^2*c^3*d^6*e^5 - 2850*A
*B^2*a^3*c^2*d^4*e^7 + 4140*A^2*B*a^2*c^3*d^5*e^6 - 2385*A^2*B*a^3*c^2*d^3*
e^8 + 405*A^2*B*a^4*c*d*e^10 + 1125*A*B^2*a^4*c*d^2*e^9 - 2160*A^2*B*a*c^4*
d^7*e^4)/(2048*a^6*c^3)))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^
8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^
7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*
d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a
^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*2i - atan(((((20480*B*a^7*c^4*e^6 -
24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/
(4096*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*
B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7
*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*
e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c
^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*
c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 18
0*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A
^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*
d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) +
((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 +
45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 -
75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B
*a^2*c^2*d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c
^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^
2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*
c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A
*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i - (((20480*B*a^7*c^4*e^6 - 24
576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/(4
096*a^6*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*B^
2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d
^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^

4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9
)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*c^
8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*
A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2
*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*
e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - ((
d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 45
*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 - 75
*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B*a
^2*c^2*d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9
)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*
a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^
5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B
*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i)/((((20480*B*a^7*c^4*e^6 - 2457
6*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/(409
6*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*B^2*
a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3
*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4
- 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^
(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*c^8*
d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^
2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a
^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^
4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) + ((d
+ e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 45*A
^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 - 75*B
^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B*a^2
*c^2*d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^
(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^
7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*
d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a
^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) + (((20480*B*a^7*c^4*e^6 - 24576*A*a
^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/(4096*a^6
*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5
*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2
+ 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*
B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2)
 + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*c^8*d^5 +
 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6
*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^
6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^
15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - ((d + e*x
)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 45*A^2*a^
2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 - 75*B^2*a^
3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B*a^2*c^2*
d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2)
 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6
*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4
 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^
6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - (864*A^3*c^5*d^8*e^3 - 75*A*B^2*a^5*e^1
1 + 27*A^3*a^4*c*e^11 - 125*B^3*a^5*d*e^10 + 1458*A^3*a^2*c^3*d^4*e^7 - 405
*A^3*a^3*c^2*d^2*e^9 - 500*B^3*a^3*c^2*d^5*e^6 - 1944*A^3*a*c^4*d^6*e^5 + 6
25*B^3*a^4*c*d^3*e^8 + 1800*A*B^2*a^2*c^3*d^6*e^5 - 2850*A*B^2*a^3*c^2*d^4*
e^7 + 4140*A^2*B*a^2*c^3*d^5*e^6 - 2385*A^2*B*a^3*c^2*d^3*e^8 + 405*A^2*B*a
^4*c*d*e^10 + 1125*A*B^2*a^4*c*d^2*e^9 - 2160*A^2*B*a*c^4*d^7*e^4)/(2048*a^
6*c^3)))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^
5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30
*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^
6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4

```
096*a^10*c^9))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(-c*x**2+a)**3,x)
[Out] Timed out
```

3.1286 $\int \frac{(A+Bx)(d+ex)^{3/2}}{(a-cx^2)^3} \, dx$

Optimal. Leaf size=350

$$\frac{3\left(aBe\left(2\sqrt{c}\,d-\sqrt{a}\,e\right)-A\left(-2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{7/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}-\frac{3\left(aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(2\sqrt{a}\right.\right.}{32a^{5/2}}$$

Rubi [A] time = 0.80, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 823, 827, 1166, 208}

$$\frac{3\left(aBe\left(2\sqrt{c}\,d-\sqrt{a}\,e\right)-A\left(-2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{7/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}-\frac{3\left(aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{32a^{5/2}c^{7/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}-\frac{\sqrt{d+ex}\,(aAe-3x(2Acd-aBe))}{16a^2c\left(a-cx^2\right)}+\frac{\sqrt{d+ex}\,(x(aBe+Acd)+a(Ae+Bd))}{4ac\left(a-cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(4*a*c*(a - c*x^2)^2) -
 (Sqrt[d + e*x]*(a*A*e - 3*(2*A*c*d - a*B*e)*x))/(16*a^2*c*(a - c*x^2)) + (
3*(a*B*e*(2*Sqrt[c]*d - Sqrt[a]*e) - A*(4*c^(3/2)*d^2 - 2*Sqrt[a]*c*d*e - a
*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]]
)/(32*a^(5/2)*c^(7/4)*Sqrt[Sqrt[c]*d - Sqrt[a]*e]) - (3*(a*B*e*(2*Sqrt[c]*d
 + Sqrt[a]*e) - A*(4*c^(3/2)*d^2 + 2*Sqrt[a]*c*d*e - a*Sqrt[c]*e^2))*ArcTan
h[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(32*a^(5/2)*c^(7/4)
*Sqrt[Sqrt[c]*d + Sqrt[a]*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
```

```
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^3}\,dx = \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(-6Acd^2+3aBde+aAe^2\right)-\frac{1}{2}e(5Acd-3aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx}{4ac}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{\int \frac{3}{4}\cdots}{\cdots}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{\text{Sub}\cdots}{\cdots}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{(3(\cdots}{\cdots}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{3(a\cdots}{\cdots}$$

Mathematica [A] time = 1.42, size = 550, normalized size = 1.57

$$\frac{\frac{c^2(d+ex)^{5/2}\left(a^2e^2(3Ae+2Bd+Bex)-acde(5Ad+4Aex+3Bdx)+6Ac^2d^3x\right)}{2\left(a-cx^2\right)}+\frac{3c^{3/4}\left(A\left(a^2e^4+5acd^2e^2-10c^2d^4\right)+aBde\left(5cd^2-ae^2\right)\right)\left(2\sqrt{a}\sqrt[4]{c}\,e\sqrt{d+ex}+\left(\sqrt{c}d-\sqrt{a}e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-\left(\sqrt{a}e+\sqrt{c}d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{4\sqrt{a}}+\frac{\sqrt[4]{c}\left(2Acd\left(3cd^2-2ae^2\right)+aBe\left(ae^2-3cd^2\right)\right)\left(2\sqrt{a}c^{3/4}e\sqrt{d+ex}(7d+ex)+3\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-3\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{4\sqrt{a}}+\frac{2ac^2(d+ex)^{5/2}\left(cd^2-ae^2\right)(-aAe+aB(d-ex)+Acdx)}{\left(a-cx^2\right)^2}}{8a^2c^2\left(cd^2-ae^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(5/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(5/2)*(6*A*c^2*d^3*x - a*c*d*e*(5*A*d +
 3*B*d*x + 4*A*e*x) + a^2*e^2*(2*B*d + 3*A*e + B*e*x)))/(2*(a - c*x^2)) + (
3*c^(3/4)*(a*B*d*e*(5*c*d^2 - a*e^2) + A*(-10*c^2*d^4 + 5*a*c*d^2*e^2 + a^2
*e^4))*(2*Sqrt[a]*c^(1/4)*e*Sqrt[d + e*x] + (Sqrt[c]*d - Sqrt[a]*e)^(3/2)*A
rcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - (Sqrt[c]*d +
Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e
]]))/(4*Sqrt[a]) + (c^(1/4)*(2*A*c*d*(3*c*d^2 - 2*a*e^2) + a*B*e*(-3*c*d^2
+ a*e^2))*(2*Sqrt[a]*c^(3/4)*e*Sqrt[d + e*x]*(7*d + e*x) + 3*(Sqrt[c]*d - S
qrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]
] - 3*(Sqrt[c]*d + Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sq
rt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]))/(8*a^2*c^2*(c*d^2 - a*e^2)^2)
```

IntegrateAlgebraic [A] time = 3.17, size = 523, normalized size = 1.49

$$\frac{3\left(-a^{3/2}Be^2+2\sqrt{a}\,Acde-aA\sqrt{c}\,e^2-2aB\sqrt{c}\,de+4Ac^{3/2}d^2\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}\,e-cd}}{\sqrt{a}\,e+\sqrt{c}\,d}\right)}{32a^{5/2}c^{3/2}\sqrt{-\sqrt{c}}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)}-\frac{3\left(a^{3/2}Be^2-2\sqrt{a}\,Acde-aA\sqrt{c}\,e^2-2aB\sqrt{c}\,de+4Ac^{3/2}d^2\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}\,e-cd}}{\sqrt{c}\,d-\sqrt{a}\,e}\right)}{32a^{5/2}c^{3/2}\sqrt{-\sqrt{c}}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}+\frac{e\sqrt{d+ex}\left(3a^2Ae^4+a^2Be^3(d+ex)+3a^2Bde^3-9aAcd^2e^2+8aAcde^2(d+ex)+aAce^2(d+ex)^2-3aBcd^3e+9aBcd^2e(d+ex)-9aBcde(d+ex)^2+3aBce(d+ex)^3+6Ac^2d^4-18Ac^2d^3(d+ex)+18Ac^2d^2(d+ex)^2-6Ac^2d(d+ex)^3\right)}{16a^2c\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x]
```

```
[Out] (e*Sqrt[d + e*x]*(6*A*c^2*d^4 - 3*a*B*c*d^3*e - 9*a*A*c*d^2*e^2 + 3*a^2*B*d
*e^3 + 3*a^2*A*e^4 - 18*A*c^2*d^3*(d + e*x) + 9*a*B*c*d^2*e*(d + e*x) + 8*a
*A*c*d*e^2*(d + e*x) + a^2*B*e^3*(d + e*x) + 18*A*c^2*d^2*(d + e*x)^2 - 9*a
*B*c*d*e*(d + e*x)^2 + a*A*c*e^2*(d + e*x)^2 - 6*A*c^2*d*(d + e*x)^3 + 3*a*
B*c*e*(d + e*x)^3))/(16*a^2*c*(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*(d +
e*x)^2)^2) + (3*(4*A*c^(3/2)*d^2 - 2*a*B*Sqrt[c]*d*e + 2*Sqrt[a]*A*c*d*e -
a^(3/2)*B*e^2 - a*A*Sqrt[c]*e^2)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*S
qrt[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(32*a^(5/2)*c^(3/2)*Sqrt[-(Sqrt[c]*
(Sqrt[c]*d + Sqrt[a]*e))]) - (3*(4*A*c^(3/2)*d^2 - 2*a*B*Sqrt[c]*d*e - 2*Sq
rt[a]*A*c*d*e + a^(3/2)*B*e^2 - a*A*Sqrt[c]*e^2)*ArcTan[(Sqrt[-(c*d) + Sqrt
[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(32*a^(5/2)*c^(3/2)
*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [B] time = 1.86, size = 4176, normalized size = 11.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(3*(a^2*c^3*x^4 - 2*a^3*c^2*x^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 - 16*A*
B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2
*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*c^3*
e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a
^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*
c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))*log(-27*(32*A^3*B*c^4*d^5*e^4 - 16*
(3*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^5 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3
*e^6 - 4*(B^4*a^3*c - 6*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*A*B^3
*a^3*c + 3*A^3*B*a^2*c^2)*d*e^8 + (B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*x + d
) + 27*(4*A^2*B*a^3*c^4*d^3*e^5 - 2*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^2*e^6
 + (B^3*a^5*c^2 - A^2*B*a^4*c^3)*d*e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)*e^8
+ (4*A*a^5*c^8*d^5 - 2*B*a^6*c^7*d^4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7*c^6*
d^2*e^3 + 3*A*a^7*c^6*d*e^4 - B*a^8*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e^8 -
4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)
/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^5 - 1
6*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5
*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*
c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B
^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 +
a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))) - 3*(a^2*c^3*x^4 - 2*a^3*c^2*x
^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^
3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^
2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 -
4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)
/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e
^2))*log(-27*(32*A^3*B*c^4*d^5*e^4 - 16*(3*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^5
 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^6 - 4*(B^4*a^3*c - 6*A^2*B^2*a^2
*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*A*B^3*a^3*c + 3*A^3*B*a^2*c^2)*d*e^8 + (
B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*x + d) - 27*(4*A^2*B*a^3*c^4*d^3*e^5 - 2
*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^2*e^6 + (B^3*a^5*c^2 - A^2*B*a^4*c^3)*d*
e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)*e^8 + (4*A*a^5*c^8*d^5 - 2*B*a^6*c^7*d^
4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7*c^6*d^2*e^3 + 3*A*a^7*c^6*d*e^4 - B*a^8
*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (
B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 +
 a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^
2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 -
5*A^2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^
```

```
8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e
^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c
^3*e^2))) + 3*(a^2*c^3*x^4 - 2*a^3*c^2*x^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 -
16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c -
5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 - a^6
*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (
B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 +
 a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))*log(-27*(32*A^3*B*c^4*d^5*e^4
- 16*(3*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^5 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3
)*d^3*e^6 - 4*(B^4*a^3*c - 6*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*
A*B^3*a^3*c + 3*A^3*B*a^2*c^2)*d*e^8 + (B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*
x + d) + 27*(4*A^2*B*a^3*c^4*d^3*e^5 - 2*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^
2*e^6 + (B^3*a^5*c^2 - A^2*B*a^4*c^3)*d*e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)
*e^8 - (4*A*a^5*c^8*d^5 - 2*B*a^6*c^7*d^4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7
*c^6*d^2*e^3 + 3*A*a^7*c^6*d*e^4 - B*a^8*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e
^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*
e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^
5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*
c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 -
 a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9
 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e
^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))) - 3*(a^2*c^3*x^4 - 2*a^3*
c^2*x^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d
^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 -
 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e
^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*
e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*
c^3*e^2))*log(-27*(32*A^3*B*c^4*d^5*e^4 - 16*(3*A^2*B^2*a*c^3 + A^4*c^4)*d^
4*e^5 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^6 - 4*(B^4*a^3*c - 6*A^2*B^
2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*A*B^3*a^3*c + 3*A^3*B*a^2*c^2)*d*e^
8 + (B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*x + d) - 27*(4*A^2*B*a^3*c^4*d^3*e^
5 - 2*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^2*e^6 + (B^3*a^5*c^2 - A^2*B*a^4*c^
3)*d*e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)*e^8 - (4*A*a^5*c^8*d^5 - 2*B*a^6*c
^7*d^4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7*c^6*d^2*e^3 + 3*A*a^7*c^6*d*e^4 -
B*a^8*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^
9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*
e^2 + a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2
*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a
^3 - 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d
^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c
^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 -
a^6*c^3*e^2))) - 4*(A*a*c*e*x^2 + 4*B*a^2*d + 3*A*a^2*e - 3*(2*A*c^2*d - B*
a*c*e)*x^3 + (10*A*a*c*d + B*a^2*e)*x)*sqrt(e*x + d))/(a^2*c^3*x^4 - 2*a^3*
c^2*x^2 + a^4*c)
```

giac [B] time = 0.74, size = 754, normalized size = 2.15

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 3/32*(2*sqrt(a*c)*B*a*c^3*d^2*e - B*a^2*c^2*d*abs(c)*e^2 + 2*sqrt(a*c)*A*a*
c^3*d*e^2 - sqrt(a*c)*B*a^2*c^2*e^3 + (2*a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(c
) - (4*sqrt(a*c)*c^4*d^3 - sqrt(a*c)*a*c^3*d*e^2)*A)*arctan(sqrt(x*e + d)/s
qrt(-(a^2*c^2*d + sqrt(a^4*c^4*d^2 - (a^2*c^2*d^2 - a^3*c*e^2)*a^2*c^2))/(a
^2*c^2)))/((a^3*c^4*d - sqrt(a*c)*a^3*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*e))
- 3/32*(2*sqrt(a*c)*B*a*c^3*d^2*e + B*a^2*c^2*d*abs(c)*e^2 + 2*sqrt(a*c)*A*
a*c^3*d*e^2 - sqrt(a*c)*B*a^2*c^2*e^3 - (2*a*c^3*d^2*e - a^2*c^2*e^3)*A*abs
(c) - (4*sqrt(a*c)*c^4*d^3 - sqrt(a*c)*a*c^3*d*e^2)*A)*arctan(sqrt(x*e + d)
```

```
/sqrt(-(a^2*c^2*d - sqrt(a^4*c^4*d^2 - (a^2*c^2*d^2 - a^3*c*e^2)*a^2*c^2))/
(a^2*c^2)))/((a^3*c^4*d + sqrt(a*c)*a^3*c^3*e)*sqrt(-c^2*d + sqrt(a*c)*c*e)
) - 1/16*(6*(x*e + d)^(7/2)*A*c^2*d*e - 18*(x*e + d)^(5/2)*A*c^2*d^2*e + 18
*(x*e + d)^(3/2)*A*c^2*d^3*e - 6*sqrt(x*e + d)*A*c^2*d^4*e - 3*(x*e + d)^(7
/2)*B*a*c*e^2 + 9*(x*e + d)^(5/2)*B*a*c*d*e^2 - 9*(x*e + d)^(3/2)*B*a*c*d^2
*e^2 + 3*sqrt(x*e + d)*B*a*c*d^3*e^2 - (x*e + d)^(5/2)*A*a*c*e^3 - 8*(x*e +
 d)^(3/2)*A*a*c*d*e^3 + 9*sqrt(x*e + d)*A*a*c*d^2*e^3 - (x*e + d)^(3/2)*B*a
^2*e^4 - 3*sqrt(x*e + d)*B*a^2*d*e^4 - 3*sqrt(x*e + d)*A*a^2*e^5)/(((x*e +
d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)^2*a^2*c)
```

maple [B] time = 0.09, size = 1060, normalized size = 3.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x)
```

```
[Out] -3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*(e*x+d)^(7/2)*A*c*d+3/16*e^2/(c*e^2*x^2-a*e^
2)^2/a*(e*x+d)^(7/2)*B+1/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5/2)*A+9/8*e
/(c*e^2*x^2-a*e^2)^2/a^2*(e*x+d)^(5/2)*A*c*d^2-9/16*e^2/(c*e^2*x^2-a*e^2)^2
/a*(e*x+d)^(5/2)*B*d+1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*A*d-9/8*e/
(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(3/2)*A*d^3+1/16*e^4/(c*e^2*x^2-a*e^2)^2/
c*(e*x+d)^(3/2)*B+9/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*B*d^2+3/16*e
^5/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*A-9/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*
x+d)^(1/2)*A*d^2+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(1/2)*A*d^4+3/16*e
^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*B*d-3/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(
e*x+d)^(1/2)*B*d^3-3/32*e^3/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+3/8*e/a^2*c/(
a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/16*e^2/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*B*d+3/16*e/a^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d
+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d-3/32*e^2/a/c/((c*d+(a*c*e^2)^(1/2))*c)^(1
/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-3/32*e^3/a/(
a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d
+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+3/8*e/a^2*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*
A*d^2-3/16*e^2/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e
*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-3/16*e/a^2/((-c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
c)*A*d+3/32*e^2/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(cx^2 - a\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 - a)^3, x)
```

mupad [B] time = 8.08, size = 7239, normalized size = 20.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x)
```

```
[Out] ((3*(B*a*e^2 - 2*A*c*d*e)*(d + e*x)^(7/2))/(16*a^2) + ((d + e*x)^(5/2)*(A*a
*e^3 - 9*B*a*d*e^2 + 18*A*c*d^2*e))/(16*a^2) + (3*(d + e*x)^(1/2)*(A*a^2*e^
5 + B*a^2*d*e^4 + 2*A*c^2*d^4*e - 3*A*a*c*d^2*e^3 - B*a*c*d^3*e^2))/(16*a^2
*c) + ((d + e*x)^(3/2)*(B*a^2*e^4 - 18*A*c^2*d^3*e + 8*A*a*c*d*e^3 + 9*B*a*
c*d^2*e^2))/(16*a^2*c))/(c^2*(d + e*x)^4 + a^2*e^4 + c^2*d^4 + (6*c^2*d^2 -
 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d + e*x) - 4*c^2*d*(d
+ e*x)^3 - 2*a*c*d^2*e^2) + atan(((((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4
*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) - 64*a*c^4*d*e^2*(d + e*x)
^(1/2)*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a
^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8
*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e
 - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^
8*d^2 - a^11*c^7*e^2)))^(1/2))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^
5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7
*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^
4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*
d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + ((d + e*x)^(1/2)*(9
*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4
 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*(-(9*(B^2*a*e^5
*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^
2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c
^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15
*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2))
)^(1/2)*1i - (((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c
^5*d^2*e^3))/(4096*a^6*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(9*(B^2*a*e^
5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A
^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*
c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^1
5*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)
))^(1/2))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5
*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*
a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^
4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10
*c^8*d^2 - a^11*c^7*e^2)))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^
2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e
^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 1
6*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4
*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*
c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*
a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)*1i)/((((3*(40
96*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^
6*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) -
16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 -
4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8
*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B
*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2))*(-(9*(B^2*a
*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 2
0*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a
^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(
a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e
^2)))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2
*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^
3*e^3))/(64*a^4))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A
^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2
+ 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^
6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(40
96*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + (((3*(4096*A*a^6*c^4*e^5 + 4096*
B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) + 64*a*c^4*d*e^2*
(d + e*x)^(1/2)*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2
```

*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 +
2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*
c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096
*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) -
16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 -
4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8
*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B
*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) - ((d + e*x)
^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^
2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*(-(9*(
B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2
) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*
A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*
e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*
c^7*e^2)))^(1/2) + (3*(9*B^3*a^4*e^8 + 288*A^3*c^4*d^5*e^3 - 9*A^2*B*a^3*c*
e^8 - 216*A^3*a*c^3*d^3*e^5 + 18*A^3*a^2*c^2*d*e^7 - 36*B^3*a^3*c*d^2*e^6 +
216*A*B^2*a^2*c^2*d^3*e^5 + 252*A^2*B*a^2*c^2*d^2*e^6 - 90*A*B^2*a^3*c*d*e
^7 - 432*A^2*B*a*c^3*d^4*e^4))/(2048*a^6*c^2)))*(-(9*(B^2*a*e^5*(a^15*c^7)^
(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^
3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3
*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2)
- 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)*2i +
atan(((((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2
*e^3))/(4096*a^6*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((9*(16*A^2*a^5*c^7*
d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*
c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e
^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^
(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2
))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c
^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*
e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*
A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2
- a^11*c^7*e^2)))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^
4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144
*A*B*a*c^2*d^3*e^3))/(64*a^4))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^
7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*
c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
- 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d
^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)*1i - (((3*(4096*A*a^6*
c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) +
64*a*c^4*d*e^2*(d + e*x)^(1/2)*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^
7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*
c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
- 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d
^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2))*((9*(16*A^2*a^5*c^7*d
^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c
^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^
4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(
1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)
- ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6
- 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64
a^4))((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^
15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*
c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e
- 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8
*d^2 - a^11*c^7*e^2)))^(1/2)*1i)/((((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4
*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) - 64*a*c^4*d*e^2*(d + e*x)
^(1/2)*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^
15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*

```
c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e
- 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8
*d^2 - a^11*c^7*e^2)))^(1/2))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7
)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c
^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
- 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^
2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + ((d + e*x)^(1/2)*(9*B
^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 +
 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*((9*(16*A^2*a^5*c
^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a
^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*
d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^
7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(
1/2) + (((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2
*e^3))/(4096*a^6*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((9*(16*A^2*a^5*c^7*
d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*
c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e
^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^
(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2
))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c
^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*
e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*
A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2
 - a^11*c^7*e^2)))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^
4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144
*A*B*a*c^2*d^3*e^3))/(64*a^4))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^
7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*
c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d
^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + (3*(9*B^3*a^4*e^8 +
288*A^3*c^4*d^5*e^3 - 9*A^2*B*a^3*c*e^8 - 216*A^3*a*c^3*d^3*e^5 + 18*A^3*a^
2*c^2*d*e^7 - 36*B^3*a^3*c*d^2*e^6 + 216*A*B^2*a^2*c^2*d^3*e^5 + 252*A^2*B*
a^2*c^2*d^2*e^6 - 90*A*B^2*a^3*c*d*e^7 - 432*A^2*B*a*c^3*d^4*e^4))/(2048*a^
6*c^2)))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(
a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^
8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*
e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c
^8*d^2 - a^11*c^7*e^2)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1287 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=372

$$\frac{\left(aBe\left(2\sqrt{c}\,d-3\sqrt{a}\,e\right)-A\left(-18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{5/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}-\frac{\left(aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(18\ldots\right.\right.}{32\ldots}$$

Rubi [A] time = 0.76, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {821, 823, 827, 1166, 208}

$$\frac{\left(aBe\left(2\sqrt{c}\,d-3\sqrt{a}\,e\right)-A\left(-18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{5/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}-\frac{\left(aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{32a^{5/2}c^{5/4}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}-\frac{\sqrt{d+ex}\left(ae(Acd-aBe)-cx\left(-5aAe^2-aBde+6Acd^2\right)\right)}{16a^2c\left(a-cx^2\right)\left(cd^2-ae^2\right)}+\frac{\sqrt{d+ex}\,(aB+Acx)}{4ac\left(a-cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^3,x]
```

```
[Out] ((a*B + A*c*x)*Sqrt[d + e*x])/(4*a*c*(a - c*x^2)^2) - (Sqrt[d + e*x]*(a*e*(
A*c*d - a*B*e) - c*(6*A*c*d^2 - a*B*d*e - 5*a*A*e^2)*x))/(16*a^2*c*(c*d^2 -
 a*e^2)*(a - c*x^2)) + ((a*B*e*(2*Sqrt[c]*d - 3*Sqrt[a]*e) - A*(12*c^(3/2)*
d^2 - 18*Sqrt[a]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/
Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a^(5/2)*c^(5/4)*(Sqrt[c]*d - Sqrt[a]*e)^(
3/2)) - ((a*B*e*(2*Sqrt[c]*d + 3*Sqrt[a]*e) - A*(12*c^(3/2)*d^2 + 18*Sqrt[a
]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d
+ Sqrt[a]*e]])/(32*a^(5/2)*c^(5/4)*(Sqrt[c]*d + Sqrt[a]*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
```

```
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^3}\,dx = \frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}(-6Acd+aBe)-\frac{5}{2}Acex}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx}{4ac}$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)} +$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)} +$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)} +$$

$$= \frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)} +$$

Mathematica [A] time = 1.04, size = 522, normalized size = 1.40

$$\frac{\frac{c^2(d+ex)^{3/2}\left(a^2e^2(5Ae-2Bd+3Bex)-acde(3Ad+8Aex+Bdx)+6Ac^2d^3x\right)}{2\left(a-cx^2\right)}-\frac{c^{5/4}\left(A\left(5a^2e^4-27acd^2e^2+18c^2d^4\right)+aBde\left(7ae^2-3cd^2\right)\right)\left(\sqrt{\sqrt{c}d-\sqrt{a}e}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-\sqrt{\sqrt{a}e+\sqrt{c}d}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{4\sqrt{a}}+\frac{c^{3/4}\left(2Acd\left(3cd^2-4ae^2\right)+aBe\left(3ae^2-cd^2\right)\right)\left(2\sqrt{a}\sqrt[4]{c}e\sqrt{d+ex}+\left(\sqrt{c}d-\sqrt{a}e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-\left(\sqrt{a}e+\sqrt{c}d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{4\sqrt{a}}+\frac{2ac^2(d+ex)^{3/2}\left(cd^2-ae^2\right)(-aAe+aB(d-ex)+Acdx)}{\left(a-cx^2\right)^2}}{8a^2c^2\left(cd^2-ae^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(3/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(3/2)*(6*A*c^2*d^3*x - a*c*d*e*(3*A*d +
 B*d*x + 8*A*e*x) + a^2*e^2*(-2*B*d + 5*A*e + 3*B*e*x)))/(2*(a - c*x^2)) -
(c^(5/4)*(a*B*d*e*(-3*c*d^2 + 7*a*e^2) + A*(18*c^2*d^4 - 27*a*c*d^2*e^2 + 5
*a^2*e^4))*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqr
t[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]) + (c^(3/4)*(2*A*c*d
*(3*c*d^2 - 4*a*e^2) + a*B*e*(-(c*d^2) + 3*a*e^2))*(2*Sqrt[a]*c^(1/4)*e*Sqr
t[d + e*x] + (Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/
Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - (Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/
4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]))/(8*a^2*c^2*(c
*d^2 - a*e^2)^2)
```

IntegrateAlgebraic [A] time = 2.61, size = 656, normalized size = 1.76

$$\frac{\left(-3a^{3/2}Be^2+18\sqrt{a}Acde+5aA\sqrt{c}e^2-2aB\sqrt{c}de+12Ac^{3/2}d^2\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{-\sqrt{a}\sqrt{c}e-cd}}{\sqrt{a}e+\sqrt{c}d}\right)}{32a^{5/2}c\left(\sqrt{a}e+\sqrt{c}d\right)\sqrt{-\sqrt{c}\left(\sqrt{a}e+\sqrt{c}d\right)}}+\frac{\left(-3a^{3/2}Be^2+18\sqrt{a}Acde-5aA\sqrt{c}e^2+2aB\sqrt{c}de-12Ac^{3/2}d^2\right)\tan^{-1}\left(\frac{\sqrt{d+ex}\sqrt{\sqrt{a}\sqrt{c}e-cd}}{\sqrt{c}d-\sqrt{a}e}\right)}{32a^{5/2}c\left(\sqrt{c}d-\sqrt{a}e\right)\sqrt{-\sqrt{c}\left(\sqrt{c}d-\sqrt{a}e\right)}}+\frac{e\sqrt{d+ex}\left(3a^3Be^5+9a^2Ace^4(d+ex)-8a^2Acde^4-4a^2Bcd^2e^3-a^2Bcde^3(d+ex)+a^2Bce^3(d+ex)^2+14aAc^2d^3e^2-23aAc^2d^2e^2(d+ex)+14aAc^2de^2(d+ex)^2-5aAc^2e^2(d+ex)^3+aBc^2d^4e-3aBc^2d^3e(d+ex)+3aBc^2d^2e(d+ex)^2-aBc^2de(d+ex)^3-6Ac^3d^5+18Ac^3d^4(d+ex)-18Ac^3d^3(d+ex)^2+6Ac^3d^2(d+ex)^3\right)}{16a^2c\left(ae^2-cd^2\right)\left(ae^2-cd^2+2cd(d+ex)-c(d+ex)^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^3,x]
```

```
[Out] (e*Sqrt[d + e*x]*(-6*A*c^3*d^5 + a*B*c^2*d^4*e + 14*a*A*c^2*d^3*e^2 - 4*a^2
*B*c*d^2*e^3 - 8*a^2*A*c*d*e^4 + 3*a^3*B*e^5 + 18*A*c^3*d^4*(d + e*x) - 3*a
*B*c^2*d^3*e*(d + e*x) - 23*a*A*c^2*d^2*e^2*(d + e*x) - a^2*B*c*d*e^3*(d +
e*x) + 9*a^2*A*c*e^4*(d + e*x) - 18*A*c^3*d^3*(d + e*x)^2 + 3*a*B*c^2*d^2*e
*(d + e*x)^2 + 14*a*A*c^2*d*e^2*(d + e*x)^2 + a^2*B*c*e^3*(d + e*x)^2 + 6*A
*c^3*d^2*(d + e*x)^3 - a*B*c^2*d*e*(d + e*x)^3 - 5*a*A*c^2*e^2*(d + e*x)^3)
)/(16*a^2*c*(-(c*d^2) + a*e^2)*(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*(d +
 e*x)^2)^2) + ((12*A*c^(3/2)*d^2 - 2*a*B*Sqrt[c]*d*e + 18*Sqrt[a]*A*c*d*e -
 3*a^(3/2)*B*e^2 + 5*a*A*Sqrt[c]*e^2)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]
*e]*Sqrt[d + e*x])/(Sqrt[c]*d + Sqrt[a]*e)])/(32*a^(5/2)*c*(Sqrt[c]*d + Sqr
t[a]*e)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e))]) + ((-12*A*c^(3/2)*d^2 + 2
*a*B*Sqrt[c]*d*e + 18*Sqrt[a]*A*c*d*e - 3*a^(3/2)*B*e^2 - 5*a*A*Sqrt[c]*e^2
)*ArcTan[(Sqrt[-(c*d) + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt
[a]*e)])/(32*a^(5/2)*c*(Sqrt[c]*d - Sqrt[a]*e)*Sqrt[-(Sqrt[c]*(Sqrt[c]*d -
Sqrt[a]*e))])
```

fricas [B] time = 60.10, size = 8803, normalized size = 23.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*((a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c
^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160
*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*
c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 1
5*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*
c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^
3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*
c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^
4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c
 + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2
*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*
a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)
))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))*log
((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5 + 72*(
5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*A^2*B^
2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3*B*a^2
*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2*c^3)*
d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^5 - 62
5*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) + (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(10*A*B
^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*a^4*c^4)*
d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*a^6*c^2 -
 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)*d*e^10 +
 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 - (12*A*a^5*c^9*d^10 - 2*B*a^6*c^8
*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^7*d^6*e^4
 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*e^7 + 34*
A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((900*A^2*B
^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^
2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387
*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*
c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4
+ 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^
10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a
^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^
6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*
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(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))) - (a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))*log((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5 + 72*(5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*A^2*B^2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3*B*a^2*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2*c^3)*d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^5 - 625*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) - (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(10*A*B^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*a^4*c^4)*d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*a^6*c^2 - 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)*d*e^10 + 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 - (12*A*a^5*c^9*d^10 - 2*B*a^6*c^8*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^7*d^6*e^4 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*e^7 + 34*A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))) + (a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 +

3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))*log((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5 + 72*(5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*A^2*B^2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3*B*a^2*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2*c^3)*d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^5 - 625*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) + (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(10*A*B^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*a^4*c^4)*d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*a^6*c^2 - 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)*d*e^10 + 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 + (12*A*a^5*c^9*d^10 - 2*B*a^6*c^8*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^7*d^6*e^4 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*e^7 + 34*A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))) - (a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))*log((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5 + 72*(5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*A^2*B^2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3*B*a^2*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2*c^3)*d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^5 - 625*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) - (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(10*A*B^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*

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a^4*c^4)*d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*
a^6*c^2 - 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)
*d*e^10 + 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 + (12*A*a^5*c^9*d^10 - 2*
B*a^6*c^8*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^
7*d^6*e^4 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*
e^7 + 34*A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((
900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B
^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*
c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 1
75*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81
*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^
6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*
e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B
*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4
*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^
2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^
4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8
- 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^
2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d
^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 -
 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a
^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7
*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^1
0 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 -
 a^8*c^2*e^6))) + 4*(4*B*a^2*c*d^2 - A*a^2*c*d*e - 3*B*a^3*e^2 - (6*A*c^3*d
^2 - B*a*c^2*d*e - 5*A*a*c^2*e^2)*x^3 + (A*a*c^2*d*e - B*a^2*c*e^2)*x^2 + (
10*A*a*c^2*d^2 - B*a^2*c*d*e - 9*A*a^2*c*e^2)*x)*sqrt(e*x + d))/(a^4*c^2*d^
2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c^3*d^2 - a^4*c^2*
e^2)*x^2)
```

giac [B] time = 1.25, size = 1637, normalized size = 4.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/32*((a^2*c^2*d^2*e - a^3*c*e^3)^2*B*a*d*abs(c)*e^2 - (a^2*c^2*d^2*e - a^3
*c*e^3)^2*(6*c*d^2*e - 5*a*e^3)*A*abs(c) - 2*(3*sqrt(a*c)*a*c^3*d^5*e - 7*s
qrt(a*c)*a^2*c^2*d^3*e^3 + 4*sqrt(a*c)*a^3*c*d*e^5)*A*abs(a^2*c^2*d^2*e - a
^3*c*e^3)*abs(c) + (sqrt(a*c)*a^2*c^2*d^4*e^2 - 4*sqrt(a*c)*a^3*c*d^2*e^4 +
 3*sqrt(a*c)*a^4*e^6)*B*abs(a^2*c^2*d^2*e - a^3*c*e^3)*abs(c) + (12*a^3*c^6
*d^8*e - 37*a^4*c^5*d^6*e^3 + 38*a^5*c^4*d^4*e^5 - 13*a^6*c^3*d^2*e^7)*A*ab
s(c) - (2*a^4*c^5*d^7*e^2 - 7*a^5*c^4*d^5*e^4 + 8*a^6*c^3*d^3*e^6 - 3*a^7*c
^2*d*e^8)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a^2*c^3*d^3 - a^3*c^2*d*e^2
 + sqrt((a^2*c^3*d^3 - a^3*c^2*d*e^2)^2 - (a^2*c^3*d^4 - 2*a^3*c^2*d^2*e^2
+ a^4*c*e^4)*(a^2*c^3*d^2 - a^3*c^2*e^2)))/(a^2*c^3*d^2 - a^3*c^2*e^2)))/((
a^4*c^4*d^4*e - sqrt(a*c)*a^3*c^4*d^5 + 2*sqrt(a*c)*a^4*c^3*d^3*e^2 - 2*a^5
*c^3*d^2*e^3 - sqrt(a*c)*a^5*c^2*d*e^4 + a^6*c^2*e^5)*sqrt(-c^2*d - sqrt(a*
c)*c*e)*abs(a^2*c^2*d^2*e - a^3*c*e^3)) + 1/32*((a^2*c^2*d^2*e - a^3*c*e^3)
^2*sqrt(a*c)*B*a*d*abs(c)*e^2 - (a^2*c^2*d^2*e - a^3*c*e^3)^2*(6*sqrt(a*c)*
c*d^2*e - 5*sqrt(a*c)*a*e^3)*A*abs(c) + 2*(3*a^2*c^4*d^5*e - 7*a^3*c^3*d^3*
e^3 + 4*a^4*c^2*d*e^5)*A*abs(a^2*c^2*d^2*e - a^3*c*e^3)*abs(c) - (a^3*c^3*d
^4*e^2 - 4*a^4*c^2*d^2*e^4 + 3*a^5*c*e^6)*B*abs(a^2*c^2*d^2*e - a^3*c*e^3)*
abs(c) + (12*sqrt(a*c)*a^3*c^6*d^8*e - 37*sqrt(a*c)*a^4*c^5*d^6*e^3 + 38*sq
rt(a*c)*a^5*c^4*d^4*e^5 - 13*sqrt(a*c)*a^6*c^3*d^2*e^7)*A*abs(c) - (2*sqrt(
a*c)*a^4*c^5*d^7*e^2 - 7*sqrt(a*c)*a^5*c^4*d^5*e^4 + 8*sqrt(a*c)*a^6*c^3*d^
3*e^6 - 3*sqrt(a*c)*a^7*c^2*d*e^8)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a^
2*c^3*d^3 - a^3*c^2*d*e^2 - sqrt((a^2*c^3*d^3 - a^3*c^2*d*e^2)^2 - (a^2*c^3
*d^4 - 2*a^3*c^2*d^2*e^2 + a^4*c*e^4)*(a^2*c^3*d^2 - a^3*c^2*e^2)))/(a^2*c^
```

```
3*d^2 - a^3*c^2*e^2)))/((a^4*c^5*d^5 + sqrt(a*c)*a^4*c^4*d^4*e - 2*a^5*c^4*
d^3*e^2 - 2*sqrt(a*c)*a^5*c^3*d^2*e^3 + a^6*c^3*d*e^4 + sqrt(a*c)*a^6*c^2*e
^5)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a^2*c^2*d^2*e - a^3*c*e^3)) - 1/16*(6*
(x*e + d)^(7/2)*A*c^3*d^2*e - 18*(x*e + d)^(5/2)*A*c^3*d^3*e + 18*(x*e + d)
^(3/2)*A*c^3*d^4*e - 6*sqrt(x*e + d)*A*c^3*d^5*e - (x*e + d)^(7/2)*B*a*c^2*
d*e^2 + 3*(x*e + d)^(5/2)*B*a*c^2*d^2*e^2 - 3*(x*e + d)^(3/2)*B*a*c^2*d^3*e
^2 + sqrt(x*e + d)*B*a*c^2*d^4*e^2 - 5*(x*e + d)^(7/2)*A*a*c^2*e^3 + 14*(x*
e + d)^(5/2)*A*a*c^2*d*e^3 - 23*(x*e + d)^(3/2)*A*a*c^2*d^2*e^3 + 14*sqrt(x
*e + d)*A*a*c^2*d^3*e^3 + (x*e + d)^(5/2)*B*a^2*c*e^4 - (x*e + d)^(3/2)*B*a
^2*c*d*e^4 - 4*sqrt(x*e + d)*B*a^2*c*d^2*e^4 + 9*(x*e + d)^(3/2)*A*a^2*c*e^
5 - 8*sqrt(x*e + d)*A*a^2*c*d*e^5 + 3*sqrt(x*e + d)*B*a^3*e^6)/((a^2*c^2*d^
2 - a^3*c*e^2)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)^2)
```

maple [B] time = 0.10, size = 1733, normalized size = 4.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x)
```

```
[Out] 13/32*e^3/a/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d-3/8*e/a^2/(a
*e^2-c*d^2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c^2*d^3+1/16*e^2/a/(a*e^2-c*d^
2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*c*d^2+1/16*e^2/a/(a*e^2-c*d^2)/(a*c*e^2
)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*c)*B*c*d^2+13/32*e^3/a/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*c)*A*c*d-3/8*e/a^2/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c^
2*d^3+9/8*e/(c*e^2*x^2-a*e^2)^2/a^2/(a*e^2-c*d^2)*(e*x+d)^(3/2)*A*c^2*d^4+1
/16*e^4/(c*e^2*x^2-a*e^2)^2/(a*e^2-c*d^2)*(e*x+d)^(5/2)*B+3/16*e^4/(c*e^2*x
^2-a*e^2)^2/c*(e*x+d)^(1/2)*B-1/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(1/2)*
B*d^2-3/32*e^4/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-3/32*e^4/(a*e
^2-c*d^2)/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+5/32*e^3/a/(a*e^2-c*d^2)/((c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*c)*A-1/16*e^4/(c*e^2*x^2-a*e^2)^2/(a*e^2-c*d^2)*(e*x+d)^(3/2)*B*d-5/32*e
^3/a/(a*e^2-c*d^2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(
1/2)*A*d+7/8*e^3/(c*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(5/2)*A*c*d-3/
16*e/a^2/(a*e^2-c*d^2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2
)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d^2+3/8*e/(c*e^2*x^2-a*e^2)^2*c^2/
a^2/(a*e^2-c*d^2)*(e*x+d)^(7/2)*A*d^2-9/8*e/(c*e^2*x^2-a*e^2)^2/a^2/(a*e^2-
c*d^2)*(e*x+d)^(5/2)*A*c^2*d^3+3/16*e/a^2/(a*e^2-c*d^2)/((-c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*
d^2-3/16*e^2/(c*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(3/2)*B*c*d^3+3/16
*e^2/(c*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(5/2)*B*c*d^2-23/16*e^3/(c
*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(3/2)*A*c*d^2-1/16*e^2/(c*e^2*x^2
-a*e^2)^2*c/a/(a*e^2-c*d^2)*(e*x+d)^(7/2)*B*d+9/16*e^5/(c*e^2*x^2-a*e^2)^2/
(a*e^2-c*d^2)*(e*x+d)^(3/2)*A-5/16*e^3/(c*e^2*x^2-a*e^2)^2*c/a/(a*e^2-c*d^2
)*(e*x+d)^(7/2)*A+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(1/2)*A*d^3-1/32*
e^2/a/(a*e^2-c*d^2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d+1/32*e^2/a/(a*e^2-c*d^2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2-a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 - a)^3, x)
```

mupad [B] time = 7.83, size = 13200, normalized size = 35.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a - c*x^2)^3,x)
```

```
[Out] atan(((((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*
e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^
2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) - ((d + e*x)^(1/2)*
((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^
5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^
3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*
a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30
*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^
5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38
*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^1
1*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*
c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d
^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*
a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*
a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2)
- 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^
(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*
a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^
2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e
^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(2
5*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3
*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d
^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*
e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7
 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c
^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^
3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^
2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^1
5*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) +
160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*
c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^1
2*c^6*d^2*e^4)))^(1/2)*1i - (((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7
- 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^
4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2
)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2
) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e
^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15
*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7
*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^
6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*
B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
- a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7
```

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*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a
^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15
*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7
*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2
*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A
^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*
a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^
3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^1
0*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)
 - ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c
*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2
*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7
+ 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))
*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d
^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d
^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2
*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 3
0*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e
^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 3
8*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^
11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*1i)/((((12288*B*a^8*c^2*e^8 -
32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 +
 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2
*d^4 - 2*a^7*c*d^2*e^2)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 - 9*B^2*a
^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4
 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21
*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*
d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/
2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^
7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2)
)/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*
e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*
e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7
 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c
^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^
3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^
2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^1
5*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) +
160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*
c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^1
2*c^6*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5
*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^
4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 -
 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^
4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/
2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*
e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^1
5*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^
7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d
^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A
*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + (((122
88*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 57344*
A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4096
*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) + ((d + e*x)^(1/2)*((144*A^2*a^
5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*
A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A
*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^
6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3
```

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*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)
^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e
^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^
2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2
- 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((
144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*
e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*
e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^
8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A
*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*
(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A
*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*
c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(25*A^2*a^3*c^
2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4
*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*
A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a
^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2
*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 +
 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A
^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*
e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2)
 - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*
c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/
(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^
4)))^(1/2) + (864*A^3*c^4*d^6*e^3 + 45*A*B^2*a^4*e^9 - 125*A^3*a^3*c*e^9 +
9*B^3*a^4*d*e^8 + 1170*A^3*a^2*c^2*d^2*e^7 - 1944*A^3*a*c^3*d^4*e^5 - 4*B^3
*a^3*c*d^3*e^6 + 72*A*B^2*a^2*c^2*d^4*e^5 + 972*A^2*B*a^2*c^2*d^3*e^6 - 465
*A^2*B*a^3*c*d*e^8 - 162*A*B^2*a^3*c*d^2*e^7 - 432*A^2*B*a*c^3*d^5*e^4)/(20
48*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2))))*((144*A^2*a^5*c^7*d^7 - 9*B
^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3
*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7
+ 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*
c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)
^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*
B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(
1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*
d^2*e^4)))^(1/2)*2i + atan(((((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7
- 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^
4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2
)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2
) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e
^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15
*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7
*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^
6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*
B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
- a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7
*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a
^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15
*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7
*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2
*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A
^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*
a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^
3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^1
0*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)
 + ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c
*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2
*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7
```

+ 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))
*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d
^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d
^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2
*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 3
0*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e
^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 3
8*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^
11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*1i - (((12288*B*a^8*c^2*e^8 -
32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 +
4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2
*d^4 - 2*a^7*c*d^2*e^2)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 + 9*B^2*a
^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4
+ 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21
*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*
d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/
2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^
7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2)
)/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*
e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*
e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7
+ 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c
^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^
3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^
2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^1
5*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) +
160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*
c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^1
2*c^6*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5
*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^
4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 -
68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^
4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/
2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*
e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^1
5*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^
7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d
^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A
*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
- a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*1i)/((((
12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 573
44*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4
096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) - ((d + e*x)^(1/2)*((144*A^2
*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 3
85*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 3
0*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d
*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*
d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c
^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*
d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4
*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e
^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))
*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d
^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d
^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2
*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 3
0*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e
^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 3
8*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^

11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(25*A^2*a^3
*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6
+ 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 -
48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64
*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*
a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^
4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 2
1*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3
*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1
/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a
^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2
))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2
*e^4)))^(1/2) + (((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^
5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*
a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) + ((d + e
x)^(1/2)((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*
a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*
a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2)
- 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^
(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*
a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^
2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e
^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 +
4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 -
2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2)
- 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2
- 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c
^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(
a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*
e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*
a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 -
a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) - ((d + e*x
)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A
^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A
^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^
2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a
^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385
*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*
A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e
^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^
3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5
)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*
e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e
^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + (864*A^3*c^4*d^6*e^3 + 45*A*B^2*a^4*e^9
- 125*A^3*a^3*c*e^9 + 9*B^3*a^4*d*e^8 + 1170*A^3*a^2*c^2*d^2*e^7 - 1944*A^3
*a*c^3*d^4*e^5 - 4*B^3*a^3*c*d^3*e^6 + 72*A*B^2*a^2*c^2*d^4*e^5 + 972*A^2*B
*a^2*c^2*d^3*e^6 - 465*A^2*B*a^3*c*d*e^8 - 162*A*B^2*a^3*c*d^2*e^7 - 432*A^
2*B*a*c^3*d^5*e^4)/(2048*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2))))*((144
*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2
+ 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4
+ 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c
^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*
c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^
15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*
a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7
*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*2i - (((d + e*x)^(3/2)*(B*a^2*d*e^4
- 9*A*a^2*e^5 - 18*A*c^2*d^4*e + 23*A*a*c*d^2*e^3 + 3*B*a*c*d^3*e^2))/(16*a
^2*(a*e^2 - c*d^2)) - ((d + e*x)^(1/2)*(3*B*a^2*e^4 + 6*A*c^2*d^3*e - 8*A*a
*c*d*e^3 - B*a*c*d^2*e^2))/(16*a^2*c) - ((d + e*x)^(5/2)*(B*a^2*e^4 - 18*A*

```
c^2*d^3*e + 14*A*a*c*d*e^3 + 3*B*a*c*d^2*e^2))/(16*a^2*(a*e^2 - c*d^2)) + (
c*(d + e*x)^(7/2)*(5*A*a*e^3 + B*a*d*e^2 - 6*A*c*d^2*e))/(16*a^2*(a*e^2 - c
*d^2)))/(c^2*(d + e*x)^4 + a^2*e^4 + c^2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d +
 e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d + e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c
*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1288 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=417

$$-\frac{\left(3A\left(-10\sqrt{a}\,cde+7a\sqrt{c}\,e^2+4c^{3/2}d^2\right)+aBe\left(2\sqrt{c}\,d-5\sqrt{a}\,e\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\left(3A\left(10\sqrt{a}\,cde+7a\sqrt{c}\,e\right.\right.}{}$$

Rubi [A] time = 0.93, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {823, 827, 1166, 208}

$$-\frac{\left(3A\left(-10\sqrt{a}\,cde+7a\sqrt{c}\,e^2+4c^{3/2}d^2\right)+aBe\left(2\sqrt{c}\,d-5\sqrt{a}\,e\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\left(3A\left(10\sqrt{a}\,cde+7a\sqrt{c}\,e^2+4c^{3/2}d^2\right)+aBe\left(5\sqrt{a}\,e+2\sqrt{c}\,d\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{32a^{5/2}c^{3/4}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{5/2}}-\frac{\sqrt{d+ex}\left(ae\left(-7aAe^2+6aBde+Acd^2\right)-x\left(6Acd\left(cd^2-2ae^2\right)+aBe\left(5ae^2+cd^2\right)\right)\right)}{16a^2\left(a-cx^2\right)\left(cd^2-ae^2\right)^2}+\frac{\sqrt{d+ex}\,(x(Acd-aBe)+a(Bd-Ae))}{4a\left(a-cx^2\right)^2\left(cd^2-ae^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^3),x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d - A*e) + (A*c*d - a*B*e)*x))/(4*a*(c*d^2 - a*e^2)*(a
 - c*x^2)^2) - (Sqrt[d + e*x]*(a*e*(A*c*d^2 + 6*a*B*d*e - 7*a*A*e^2) - (6*A
*c*d*(c*d^2 - 2*a*e^2) + a*B*e*(c*d^2 + 5*a*e^2))*x))/(16*a^2*(c*d^2 - a*e^
2)^2*(a - c*x^2)) - ((a*B*e*(2*Sqrt[c]*d - 5*Sqrt[a]*e) + 3*A*(4*c^(3/2)*d^
2 - 10*Sqrt[a]*c*d*e + 7*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sq
rt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a^(5/2)*c^(3/4)*(Sqrt[c]*d - Sqrt[a]*e)^(5/
2)) + ((a*B*e*(2*Sqrt[c]*d + 5*Sqrt[a]*e) + 3*A*(4*c^(3/2)*d^2 + 10*Sqrt[a]
*c*d*e + 7*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d +
 Sqrt[a]*e]])/(32*a^(5/2)*c^(3/4)*(Sqrt[c]*d + Sqrt[a]*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^3}\,dx = \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\int \frac{-\frac{1}{2}c\left(6Acd^2+aBde-7aAe^2\right)-\frac{5}{2}ce(Acd-aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx}{4ac\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6A\cdots\right.\right.}{16a^2\left(cd^2-ae^2\right)\cdots}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6A\cdots\right.\right.}{16a^2\left(cd^2-ae^2\right)\cdots}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6A\cdots\right.\right.}{16a^2\left(cd^2-ae^2\right)\cdots}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6A\cdots\right.\right.}{16a^2\left(cd^2-ae^2\right)\cdots}$$

Mathematica [A] time = 1.06, size = 536, normalized size = 1.29

$$\frac{\frac{c^2\sqrt{d+ex}\left(a^2e^2(7Ae-6Bd+5Bex)+acde(Bdx-A(d+12ex))+6Ac^2d^3x\right)}{2\left(a-cx^2\right)}+\frac{c^{7/4}\left(3A\left(7a^2e^4-5acd^2e^2+2c^2d^4\right)+aBde\left(cd^2-13ae^2\right)\right)\left(\sqrt{\sqrt{c}d-\sqrt{a}e}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)-\sqrt{\sqrt{a}e+\sqrt{c}d}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)\right)}{4\sqrt{a}\sqrt{\sqrt{c}d-\sqrt{a}e}\sqrt{\sqrt{a}e+\sqrt{c}d}}-\frac{c^{5/4}\left(6Acd\left(cd^2-2ae^2\right)+aBe\left(5ae^2+cd^2\right)\right)\left(\sqrt{\sqrt{c}d-\sqrt{a}e}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)-\sqrt{\sqrt{a}e+\sqrt{c}d}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)\right)}{4\sqrt{a}}+\frac{2ac^2\sqrt{d+ex}\left(cd^2-ae^2\right)(-aAe+aB(d-ex)+Acdx)}{\left(a-cx^2\right)^2}}{8a^2c^2\left(cd^2-ae^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^3),x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*Sqrt[d + e*x]*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)
))/(a - c*x^2)^2 + (c^2*Sqrt[d + e*x]*(6*A*c^2*d^3*x + a^2*e^2*(-6*B*d + 7*
A*e + 5*B*e*x) + a*c*d*e*(B*d*x - A*(d + 12*e*x))))/(2*(a - c*x^2)) + (c^(7
/4)*(a*B*d*e*(c*d^2 - 13*a*e^2) + 3*A*(2*c^2*d^4 - 5*a*c*d^2*e^2 + 7*a^2*e^
4))*(-(Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqr
t[c]*d - Sqrt[a]*e]]) + Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d
 + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]*Sqrt[Sqrt[c]*d - Sqrt[a]
*e]*Sqrt[Sqrt[c]*d + Sqrt[a]*e]) - (c^(5/4)*(6*A*c*d*(c*d^2 - 2*a*e^2) + a*
B*e*(c*d^2 + 5*a*e^2))*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d
 + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh
[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]))/(8*a^2
*c^2*(c*d^2 - a*e^2)^2)
```

IntegrateAlgebraic [A] time = 2.26, size = 727, normalized size = 1.74

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^3),x]
```

```
[Out] (e*Sqrt[d + e*x]*(6*A*c^3*d^6 + a*B*c^2*d^5*e - 21*a*A*c^2*d^4*e^2 + 18*a^2
*B*c*d^3*e^3 + 4*a^2*A*c*d^2*e^4 - 19*a^3*B*d*e^5 + 11*a^3*A*e^6 - 18*A*c^3
```

```
*d^5*(d + e*x) - 3*a*B*c^2*d^4*e*(d + e*x) + 44*a*A*c^2*d^3*e^2*(d + e*x) -
 30*a^2*B*c*d^2*e^3*(d + e*x) - 2*a^2*A*c*d*e^4*(d + e*x) + 9*a^3*B*e^5*(d
+ e*x) + 18*A*c^3*d^4*(d + e*x)^2 + 3*a*B*c^2*d^3*e*(d + e*x)^2 - 35*a*A*c^
2*d^2*e^2*(d + e*x)^2 + 21*a^2*B*c*d*e^3*(d + e*x)^2 - 7*a^2*A*c*e^4*(d + e
*x)^2 - 6*A*c^3*d^3*(d + e*x)^3 - a*B*c^2*d^2*e*(d + e*x)^3 + 12*a*A*c^2*d*
e^2*(d + e*x)^3 - 5*a^2*B*c*e^3*(d + e*x)^3))/(16*a^2*(-(c*d^2) + a*e^2)^2*
(-(c*d^2) + a*e^2 + 2*c*d*(d + e*x) - c*(d + e*x)^2)^2) + ((12*A*c^(3/2)*d^
2 + 2*a*B*Sqrt[c]*d*e + 30*Sqrt[a]*A*c*d*e + 5*a^(3/2)*B*e^2 + 21*a*A*Sqrt[
c]*e^2)*ArcTan[(Sqrt[-(c*d) - Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d
+ Sqrt[a]*e)])/(32*a^(5/2)*Sqrt[c]*(Sqrt[c]*d + Sqrt[a]*e)^2*Sqrt[-(Sqrt[c]
*(Sqrt[c]*d + Sqrt[a]*e))]) + ((-12*A*c^(3/2)*d^2 - 2*a*B*Sqrt[c]*d*e + 30*
Sqrt[a]*A*c*d*e + 5*a^(3/2)*B*e^2 - 21*a*A*Sqrt[c]*e^2)*ArcTan[(Sqrt[-(c*d)
 + Sqrt[a]*Sqrt[c]*e]*Sqrt[d + e*x])/(Sqrt[c]*d - Sqrt[a]*e)])/(32*a^(5/2)*
Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e)^2*Sqrt[-(Sqrt[c]*(Sqrt[c]*d - Sqrt[a]*e))])
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Value
```

maple [B] time = 0.71, size = 1778, normalized size = 4.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x)
```

```
[Out] 15/16*e*c/a^2/(-a*e^2-c*d^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+15/16*e
*c/a^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*ar
ctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+9/32*e/c*(a*c*e^
2)^(1/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e
*x+d)^(3/2)*A-11/32*e/c*(a*c*e^2)^(1/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-
(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*A-21/32*e^3*c/(a*c*e^2)^(1/2)/a/(-a*e^2-c*d^
2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2
)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-9/32*e/c*(a*c*e^2)^(1/2)/a^2/(e*x-(
a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*A+11/32
*e/c*(a*c*e^2)^(1/2)/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(c*d+(a*c*e^2)^(1/2))*(e
*x+d)^(1/2)*A+21/32*e^3*c/(a*c*e^2)^(1/2)/a/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*
d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*c)*A+1/16*e^2*c/(a*c*e^2)^(1/2)/a/(a*e^2+c*d^2+2*(a*c*e^2)^(1
/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*c)*B*d+3/8*e*c^2/(a*c*e^2)^(1/2)/a^2/(a*e^2+c*d^2+2*(a*c*
e^2)^(1/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(
a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/8*e*c^2/(a*c*e^2)^(1/2)/a^2/(-a*e^2-c*d
```

```
^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/
2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-1/16*e^2*c/(a*c*e^2)^(1/2)/a/(
-a*e^2-c*d^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((
e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-1/16/c*(a*c*e^2)^(1/2)
/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3
/2)*B*d+1/16/c*(a*c*e^2)^(1/2)/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(c*d+(a*c*e^2)
^(1/2))*(e*x+d)^(1/2)*B*d+1/16/c*(a*c*e^2)^(1/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c
)^2/(a*e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*B*d-1/16/c*(a*c*e^2)^(1
/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*B*d+3
/16*e/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*A*d
-3/16*e/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e*
x+d)^(3/2)*A*d+3/16*e/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-(a*c*e^2)^(1/2))*(
e*x+d)^(1/2)*A*d-3/16*e/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e
^2)^(1/2)*d)*(e*x+d)^(3/2)*A*d+7/32*e^2/c/a/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-
(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*B-5/32*e^2/c/a/(e*x+(a*c*e^2)^(1/2)/c)^2/(a*
e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*B+7/32*e^2/c/a/(e*x-(a*c*e^2)^
(1/2)/c)^2/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*B-5/32*e^2/c/a/(e*x-(a*c*e^2
)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*B+5/32*e^2/a/(
-a*e^2-c*d^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((
e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+5/32*e^2/a/(a*e^2+c*d^2+
2*(a*c*e^2)^(1/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/
((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx + A}{\left(cx^2 - a\right)^3 \sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)^3*sqrt(e*x + d)), x)
```

mupad [B] time = 9.23, size = 19125, normalized size = 45.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)^3*(d + e*x)^(1/2)),x)
```

```
[Out] - atan(((((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*
d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^
8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B
*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c
^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 -
 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c
^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*
c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) -
 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*
c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) +
 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^
7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*
a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 6
66*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2
))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*
d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d
*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^
6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 -
4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3
*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4
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- 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i - (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2* a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i)/((((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a

^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - (864*A^3*c^6*d^7*e^3 - 125*B^3*a^5*c*e^10 + 7398*A^3*a^2*c^4*d^3*e^7 + 4*B^3*a^3*c^3*d^4*e^6 - 5*B^3*a^4*c^2*d^2*e^8 + 2205*A^2*B*a^4*c^2*e^10 - 4104*A^3*a*c^5*d^5*e^5 - 5292*A^3*a^3*c^3*d*e^9 + 72*A*B^2*a^2*c^4*d^5*e^5 - 174*A*B^2*a^3*c^3*d^3*e^7 - 1548*A^2*B*a^2*c^4*d^4*e^6 + 1053*A^2*B*a^3*c^3*d^2*e^8 - 780*A*B^2*a^4*c^2*d*e^9 + 432*A^2*B*a*c^5*d^6*e^4)/(2048*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B* a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*2i - atan(((((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i - (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35

*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i)/((((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c

^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - (864*A^3*c^6*d^7*e^3 - 125*B^3*a^5*c*e^10 + 7398*A^3*a^2*c^4*d^3*e^7 + 4*B^3*a^3*c^3*d^4*e^6 - 5*B^3*a^4*c^2*d^2*e^8 + 2205*A^2*B*a^4*c^2*e^10 - 4104*A^3*a*c^5*d^5*e^5 - 5292*A^3*a^3*c^3*d*e^9 + 72*A*B^2*a^2*c^4*d^5*e^5 - 174*A*B^2*a^3*c^3*d^3*e^7 - 1548*A^2*B*a^2*c^4*d^4*e^6 + 1053*A^2*B*a^3*c^3*d^2*e^8 - 780*A*B^2*a^4*c^2*d*e^9 + 432*A^2*B*a*c^5*d^6*e^4)/(2048*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c

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^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a
^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^
10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5
*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*
e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6
 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6
 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 -
456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))
/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c
^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756
*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6
+ 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 +
 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^
4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 2
10*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*
d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^
5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B
^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) +
588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^1
0 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14
*c^4*d^2*e^8)))^(1/2)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(
1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^
4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3
*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*
A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2
*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*
A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*
c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/
2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3
)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^
15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^
6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*2i - (((d + e*x)^(3/2)*(18*A*c^3*d^5*e - 9*
B*a^3*e^6 - 44*A*a*c^2*d^3*e^3 + 3*B*a*c^2*d^4*e^2 + 30*B*a^2*c*d^2*e^4 + 2
*A*a^2*c*d*e^5))/(16*a^2*(a*e^2 - c*d^2)^2) + ((d + e*x)^(1/2)*(19*B*a^2*d*
e^4 - 11*A*a^2*e^5 + 6*A*c^2*d^4*e - 15*A*a*c*d^2*e^3 + B*a*c*d^3*e^2))/(16
*a^2*(a*e^2 - c*d^2)) - (c*(d + e*x)^(5/2)*(21*B*a^2*d*e^4 - 7*A*a^2*e^5 +
18*A*c^2*d^4*e - 35*A*a*c*d^2*e^3 + 3*B*a*c*d^3*e^2))/(16*a^2*(a*e^2 - c*d^
2)^2) + (c*(d + e*x)^(7/2)*(5*B*a^2*e^4 + 6*A*c^2*d^3*e - 12*A*a*c*d*e^3 +
B*a*c*d^2*e^2))/(16*a^2*(a*e^2 - c*d^2)^2))/(c^2*(d + e*x)^4 + a^2*e^4 + c^
2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d
+ e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1289 $\int \frac{A+Bx}{\sqrt{d+ex}\left(2ABd-A^2e-B^2ex^2\right)}\,dx$

Optimal. Leaf size=155

$$\frac{\log\left(\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+Bd\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}-\frac{\log\left(-\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+\right.}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}$$

Rubi [A] time = 0.21, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.079, Rules used = {827, 1164, 628}

$$\frac{\log\left(\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+Bd\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}-\frac{\log\left(-\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+Bd\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(2*A*B*d - A^2*e - B^2*e*x^2)),x]
```

```
[Out] -(Log[B*d - A*e - Sqrt[2]*Sqrt[B]*Sqrt[2*B*d - A*e]*Sqrt[d + e*x] + B*(d +
e*x)]/(Sqrt[2]*Sqrt[B]*e*Sqrt[2*B*d - A*e])) + Log[B*d - A*e + Sqrt[2]*Sqrt
[B]*Sqrt[2*B*d - A*e]*Sqrt[d + e*x] + B*(d + e*x)]/(Sqrt[2]*Sqrt[B]*e*Sqrt[
2*B*d - A*e])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1164

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(-2*d)/e - b/c, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e
+ q*x - x^2, x], x], x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^
2, x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c
*d^2 - a*e^2, 0] && !GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\left(2ABd-A^2e-B^2ex^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{-B^2d^2e+e^2\left(2ABd-A^2e\right)+2B^2dex^2-B^2ex^4}\,dx,x,\sqrt{d+e}\right.\\
&= -\frac{\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt{2Bd-Ae}}{\sqrt{B}}+2x}{-d+\frac{Ae}{B}-\frac{\sqrt{2}\sqrt{2Bd-Ae}\,x}{\sqrt{B}}-x^2}\,dx,x,\sqrt{d+ex}\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}-\frac{\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt{2Bd-}}{\sqrt{B}}}{-d+\frac{Ae}{B}+\frac{\sqrt{2}\sqrt{2}}{}}\right.}{\sqrt{2}\sqrt{B}\,e}\\
&= -\frac{\log\left(Bd-Ae-\sqrt{2}\sqrt{B}\sqrt{2Bd-Ae}\sqrt{d+ex}+B(d+ex)\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}+\frac{\log\left(Bd-\right.}{}
\end{aligned}$$

Mathematica [A] time = 1.23, size = 302, normalized size = 1.95

$$-\frac{\left(\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Ae-2Bd\right)\left(\sqrt{Bd-\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}}\sqrt{\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Bd}\tanh^{-1}\left(\frac{\sqrt{B}\sqrt{d+ex}}{\sqrt{Bd-\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}}}\right)+(Bd-Ae)\tanh^{-1}\left(\frac{\sqrt{B}\sqrt{d+ex}}{\sqrt{\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Bd}}\right)\right)}{\sqrt{B}\sqrt{2Bd-Ae}\sqrt{\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Bd}\left(A^{3/2}e^{5/2}-2\sqrt{A}Bde^{3/2}+Bde\sqrt{2Bd-Ae}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(2*A*B*d - A^2*e - B^2*e*x^2)),x]
```

```
[Out] -(((-2*B*d + A*e + Sqrt[A]*Sqrt[e]*Sqrt[2*B*d - A*e])*(Sqrt[B*d - Sqrt[A]*S
qrt[e]*Sqrt[2*B*d - A*e]]*Sqrt[B*d + Sqrt[A]*Sqrt[e]*Sqrt[2*B*d - A*e]]*Arc
Tanh[(Sqrt[B]*Sqrt[d + e*x])/Sqrt[B*d - Sqrt[A]*Sqrt[e]*Sqrt[2*B*d - A*e]]]
 + (B*d - A*e)*ArcTanh[(Sqrt[B]*Sqrt[d + e*x])/Sqrt[B*d + Sqrt[A]*Sqrt[e]*S
qrt[2*B*d - A*e]]]))/(Sqrt[B]*Sqrt[2*B*d - A*e]*Sqrt[B*d + Sqrt[A]*Sqrt[e]*
Sqrt[2*B*d - A*e]]*(-2*Sqrt[A]*B*d*e^(3/2) + A^(3/2)*e^(5/2) + B*d*e*Sqrt[2
*B*d - A*e])))
```

IntegrateAlgebraic [C] time = 0.94, size = 273, normalized size = 1.76

$$\frac{\left(-\sqrt{Ae-2Bd}+i\sqrt{A}\sqrt{e}\right)\tan^{-1}\left(\frac{\sqrt{B}\sqrt{d+ex}}{\sqrt{-Bd-i\sqrt{A}\sqrt{e}\sqrt{Ae-2Bd}}}\right)}{\sqrt{B}\,e\sqrt{Ae-2Bd}\sqrt{-Bd-i\sqrt{A}\sqrt{e}\sqrt{Ae-2Bd}}}+\frac{\left(-\sqrt{Ae-2Bd}-i\sqrt{A}\sqrt{e}\right)\tan^{-1}\left(\frac{\sqrt{B}\sqrt{d+ex}}{\sqrt{-Bd+i\sqrt{A}\sqrt{e}\sqrt{Ae-2Bd}}}\right)}{\sqrt{B}\,e\sqrt{Ae-2Bd}\sqrt{-Bd+i\sqrt{A}\sqrt{e}\sqrt{Ae-2Bd}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(2*A*B*d - A^2*e - B^2*e*x^2)),
x]
```

```
[Out] ((I*Sqrt[A]*Sqrt[e] - Sqrt[-2*B*d + A*e])*ArcTan[(Sqrt[B]*Sqrt[d + e*x])/Sq
rt[-(B*d) - I*Sqrt[A]*Sqrt[e]*Sqrt[-2*B*d + A*e]]])/(Sqrt[B]*e*Sqrt[-2*B*d
+ A*e]*Sqrt[-(B*d) - I*Sqrt[A]*Sqrt[e]*Sqrt[-2*B*d + A*e]]) + (((-I)*Sqrt[A
]*Sqrt[e] - Sqrt[-2*B*d + A*e])*ArcTan[(Sqrt[B]*Sqrt[d + e*x])/Sqrt[-(B*d)
+ I*Sqrt[A]*Sqrt[e]*Sqrt[-2*B*d + A*e]]])/(Sqrt[B]*e*Sqrt[-2*B*d + A*e]*Sqr
t[-(B*d) + I*Sqrt[A]*Sqrt[e]*Sqrt[-2*B*d + A*e]])
```

fricas [A] time = 0.44, size = 236, normalized size = 1.52

$$\left[\frac{\sqrt{2}\log\left(\frac{B^2e^2x^2+8\,B^2d^2-6\,ABde+A^2e^2+4\left(2\,B^2de-ABe^2\right)x+\frac{2\sqrt{2}\left(4\,B^3d^2-4\,AB^2de+A^2Be^2+\left(2\,B^3de-AB^2e^2\right)x\right)\sqrt{ex+d}}{\sqrt{2\,B^2d-ABe}}}{B^2ex^2-2\,ABd+A^2e}\right)}{2\sqrt{2\,B^2d-ABe}\,e},-\frac{\sqrt{2}\sqrt{-\frac{1}{2\,B^2d-ABe}}\arctan\left(\frac{\sqrt{2}\,(Bex+2\,Bd-Ae)\sqrt{-\frac{1}{2\,B^2d-ABe}}}{2\sqrt{ex+d}}\right)}{e}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] [1/2*sqrt(2)*log((B^2*e^2*x^2 + 8*B^2*d^2 - 6*A*B*d*e + A^2*e^2 + 4*(2*B^2*
d*e - A*B*e^2)*x + 2*sqrt(2)*(4*B^3*d^2 - 4*A*B^2*d*e + A^2*B*e^2 + (2*B^3*
d*e - A*B^2*e^2)*x)*sqrt(e*x + d)/sqrt(2*B^2*d - A*B*e))/(B^2*e*x^2 - 2*A*B
*d + A^2*e))/(sqrt(2*B^2*d - A*B*e)*e), -sqrt(2)*sqrt(-1/(2*B^2*d - A*B*e))
*arctan(1/2*sqrt(2)*(B*e*x + 2*B*d - A*e)*sqrt(-1/(2*B^2*d - A*B*e))/sqrt(e
*x + d))/e]
```

giac [B] time = 1.85, size = 2892, normalized size = 18.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x, algorithm="gi
ac")
```

[Out] -(4*A*B^6*d^2*e - 2*A^2*B^5*d*e^2 - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^2*e - 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^2 + 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 - 2*(2*A*B*d*e - A^2*e^2)*B^5*d - sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d - (8*A*B^4*d^2*e - 8*A^2*B^3*d*e^2 - 16*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d^2*e - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d^2 + 2*A^3*B^2*e^3 + 16*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B*d*e^2 + 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d*e - 4*(2*A*B*d*e - A^2*e^2)*B^3*d - 2*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d - 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*e^3 + 2*(2*A*B*d*e - A^2*e^2)*A*B^2*e + sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*e)*B^2 - (16*A*B^5*d^3*e + 16*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^3*e - 32*A^2*B^4*d^2*e^2 + 8*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^3 - 32*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d^2*e^2 - 12*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^2*e + 20*A^3*B^3*d*e^3 + 2*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^2 + 20*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*B^2*d*e^3 + 4*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 - 3*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d*e - 8*(2*A*B*d*e - A^2*e^2)*B^4*d^2 - 4*A^4*B^2*e^4 + 12*(2*A*B*d*e - A^2*e^2)*A*B^3*d*e - 4*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^4*B*e^4 + sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*e^2 - 4*(2*A*B*d*e - A^2*e^2)*A^2*B^2*e^2)*abs(B))*arctan(sqrt(x*e + d)/sqrt(-(B^2*d*e + sqrt(B^4*d^2*e^2 - (B^2*d^2*e - 2*A*B*d*e^2 + A^2*e^3)*B^2*e))*e^(-1)/B^2))/(16*A*B^7*d^4*e^2 + 8*B^8*d^4*e - 48*A^2*B^6*d^3*e^3 - 20*A*B^7*d^3*e^2 + 2*B^8*d^3*e + 52*A^3*B^5*d^2*e^4 + 16*A^2*B^6*d^2*e^3 - 5*A*B^7*d^2*e^2 - 24*A^4*B^4*d*e^5 - 4*A^3*B^5*d*e^4 + 4*A^2*B^6*d*e^3 + 4*A^5*B^3*e^6 - A^3*B^5*e^4) + (4*A*B^6*d^2*e - 2*A^2*B^5*d*e^2 - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^2*e - 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^2 + 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 - 2*(2*A*B*d*e - A^2*e^2)*B^5*d - sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d - (8*A*B^4*d^2*e - 8*A^2*B^3*d*e^2 - 16*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d^2*e - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d^2 + 2*A^3*B^2*e^3 + 16*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B*d*e^2 + 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d*e - 4*(2*A*B*d*e - A^2*e^2)*B^3*d - 2*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d - 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*e^3 + 2*(2*A*B*d*e - A^2*e^2)*A*B^2*e + sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*e)*B^2 - (16*A*B^5*d^3*e - 16*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^3*e - 32*A^2*B^4*d^2*e^2 - 8*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^3 + 32*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d^2*e^2 + 12*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^2*e + 20*A^3*B^3*d*e^3 - 2*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^2 - 20*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*B^2*d*e^3 - 4*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 + 3*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d*e - 8*(2*A*B*d*e - A^2*e^2)*B^4*d^2 - 4*A^4*B^2*e^4 + 12*(2*A*B*d*e - A^2*e^2)*A*B^3*d*e + 4*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^4*B*e^4 - sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*e^2 - 4*(2*A*B*d*e - A^2*e^2)*A^2*B^2*e^2)*abs(B))*arctan(sqrt(x*e + d)/sqrt(-(B^2*d*e - sqrt(B^4*d^2*e^2 - (B^2*d^2*e - 2*A*B*d*e^2 + A^2*e^3)*B^2*e))*e^(-1)/B^2))/(16*A*B^7*d^4*e^2 + 8*B^8*d^4*e - 48*A^2*B^6*d^3*e^3 - 20*A*B^7*d^3*e^2 + 2*B^8*d^3*e + 52*A^3*B^5*d^2*e^4 + 16*A^2*B^6*d^2*e^3 - 5*A*B^7*d^2*e^2 - 24*A^4*B^4*d*e^5 - 4*A^3*B^5*d*e^4 + 4*A^2*B^6*d*e^3 + 4*A^5*B^3*e^6 -

```
A^3*B^5*e^4)
```

maple [A] time = 0.19, size = 223, normalized size = 1.44

$$-\frac{2\left(-\frac{\left(-ABe+\sqrt{-(Ae-2Bd)A\,B^{2}e}\right)\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,B}{\sqrt{B^{2}d-\sqrt{-(Ae-2Bd)A\,B^{2}e}}}\right)}{2\sqrt{-(Ae-2Bd)A\,B^{2}e}\,\sqrt{B^{2}d-\sqrt{-(Ae-2Bd)A\,B^{2}e}}\,B^{2}}-\frac{\left(ABe+\sqrt{-(Ae-2Bd)A\,B^{2}e}\right)\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,B}{\sqrt{B^{2}d+\sqrt{-(Ae-2Bd)A\,B^{2}e}}}\right)}{2\sqrt{-(Ae-2Bd)A\,B^{2}e}\,\sqrt{B^{2}d+\sqrt{-(Ae-2Bd)A\,B^{2}e}}\,B^{2}}\right)B^{2}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x)
```

```
[Out] -2/e*B^2*(-1/2*(A*e*B+(-A*B^2*e*(A*e-2*B*d))^(1/2))/B^2/(-A*B^2*e*(A*e-2*B*
d))^(1/2)/(B^2*d+(-A*B^2*e*(A*e-2*B*d))^(1/2))^(1/2)*arctanh(B*(e*x+d)^(1/2
)/(B^2*d+(-A*B^2*e*(A*e-2*B*d))^(1/2))^(1/2))-1/2*(-A*e*B+(-A*B^2*e*(A*e-2*
B*d))^(1/2))/B^2/(-A*B^2*e*(A*e-2*B*d))^(1/2)/(B^2*d-(-A*B^2*e*(A*e-2*B*d))
^(1/2))^(1/2)*arctanh(B*(e*x+d)^(1/2)/(B^2*d-(-A*B^2*e*(A*e-2*B*d))^(1/2))^
(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx+A}{\left(B^{2}ex^{2}-2\,ABd+A^{2}e\right)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -integrate((B*x + A)/((B^2*e*x^2 - 2*A*B*d + A^2*e)*sqrt(e*x + d)), x)
```

mupad [B] time = 0.31, size = 310, normalized size = 2.00

$$\frac{\sqrt{2}\left(\operatorname{atan}\left(\frac{\left(A e^{2}\sqrt{A B e-2 B^{2} d}-2 B d e\sqrt{A B e-2 B^{2} d}\right)\left(\left(\frac{\sqrt{2}\left(\frac{2 B^{4} d-2 A B^{3} e}{e^{2}}-\frac{4 A^{2} B^{4} e^{4}-8 A B^{5} d e^{3}+4 B^{6} d^{2} e^{2}}{e^{4}\left(2 B^{2} d-A B e\right)}\right)}{(A e-B d)(A e-2 B d)}+\frac{4\sqrt{2}\,A B^{4}}{e\left(2 B^{2} d-A B e\right)(A e-B d)}\right)\sqrt{d+e x}-\frac{\sqrt{2}\left(\frac{2 B^{4}}{e^{2}}-\frac{4 B^{6} d}{e^{2}\left(2 B^{2} d-A B e\right)}\right)(d+e x)^{3/2}}{(A e-B d)(A e-2 B d)}\right)}{4 A B^{3}}\right)-\operatorname{atan}\left(\frac{\sqrt{2}\sqrt{A B e-2 B^{2} d}\sqrt{d+e x}}{2(A e-2 B d)}\right)\right)}{e\sqrt{A B e-2 B^{2} d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(A + B*x)/((d + e*x)^(1/2)*(A^2*e + B^2*e*x^2 - 2*A*B*d)),x)
```

```
[Out] (2^(1/2)*(atan(((A*e^2*(A*B*e - 2*B^2*d)^(1/2) - 2*B*d*e*(A*B*e - 2*B^2*d)^
(1/2))*(((2^(1/2)*((2*B^4*d - 2*A*B^3*e)/e^2 - (4*A^2*B^4*e^4 + 4*B^6*d^2*e
^2 - 8*A*B^5*d*e^3)/(e^4*(2*B^2*d - A*B*e))))/((A*e - B*d)*(A*e - 2*B*d)) +
 (4*2^(1/2)*A*B^4)/(e*(2*B^2*d - A*B*e)*(A*e - B*d)))*(d + e*x)^(1/2) - (2^
(1/2)*((2*B^4)/e^2 - (4*B^6*d)/(e^2*(2*B^2*d - A*B*e)))*(d + e*x)^(3/2))/((
A*e - B*d)*(A*e - 2*B*d))))/(4*A*B^3)) - atan((2^(1/2)*(A*B*e - 2*B^2*d)^(1
/2)*(d + e*x)^(1/2))/(2*(A*e - 2*B*d)))))/(e*(A*B*e - 2*B^2*d)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{A}{A^{2}e\sqrt{d+ex}-2ABd\sqrt{d+ex}+B^{2}ex^{2}\sqrt{d+ex}}\,dx-\int \frac{Bx}{A^{2}e\sqrt{d+ex}-2ABd\sqrt{d+ex}+B^{2}ex^{2}\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B**2*e*x**2-A**2*e+2*A*B*d)/(e*x+d)**(1/2),x)
```

```
[Out] -Integral(A/(A**2*e*sqrt(d + e*x) - 2*A*B*d*sqrt(d + e*x) + B**2*e*x**2*sqr
t(d + e*x)), x) - Integral(B*x/(A**2*e*sqrt(d + e*x) - 2*A*B*d*sqrt(d + e*x
) + B**2*e*x**2*sqrt(d + e*x)), x)
```

3.1290 $\int \frac{A+Bx}{\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\,(1+x^2)}\,dx$

Optimal. Leaf size=133

$$\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}+\frac{A}{B}\right)}{\sqrt{e}}-\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{A}{B}-\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}\right)}{\sqrt{e}}$$

Rubi [A] time = 0.43, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.093, Rules used = {827, 1161, 618, 204}

$$\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}+\frac{A}{B}\right)}{\sqrt{e}}-\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{A}{B}-\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}\right)}{\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[(A^2*e - B^2*e)/(2*A*B) + e*x]*(1 + x^2)),x]
```

```
[Out] -((Sqrt[2]*Sqrt[A]*Sqrt[B]*ArcTan[A/B - (Sqrt[A]*Sqrt[e*(A/B - B/A + 2*x)])
/(Sqrt[B]*Sqrt[e])])/Sqrt[e]) + (Sqrt[2]*Sqrt[A]*Sqrt[B]*ArcTan[A/B + (Sqrt
[A]*Sqrt[e*(A/B - B/A + 2*x)])/(Sqrt[B]*Sqrt[e])])/Sqrt[e]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\,(1+x^2)}dx = 2\,\text{Subst}\left(\int \frac{Ae-\frac{A^2e-B^2e}{2A}+Bx^2}{e^2+\frac{(A^2e-B^2e)^2}{4A^2B^2}-\frac{(A^2e-B^2e)x^2}{AB}+x^4}dx, x, \sqrt{\frac{A^2e-B^2e}{2AB}+ex}\right)$$

$$= B\,\text{Subst}\left(\int \frac{1}{\frac{(A^2+B^2)e}{2AB}-\frac{\sqrt{2}\sqrt{A}\sqrt{e}x}{\sqrt{B}}+x^2}dx, x, \sqrt{\frac{A^2e-B^2e}{2AB}+ex}\right)+B\,\text{Subst}\Big(\int$$

$$= -\left((2B)\,\text{Subst}\left(\int \frac{1}{-\frac{2Be}{A}-x^2}dx, x, \sqrt{2}\left(-\frac{\sqrt{A}\sqrt{e}}{\sqrt{B}}+\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}\right)\right)\right)-\Big($$

$$= -\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{\sqrt{A}\left(\frac{\sqrt{A}\sqrt{e}}{\sqrt{B}}-\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}\right)}{\sqrt{B}\sqrt{e}}\right)}{\sqrt{e}}+\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{\sqrt{A}\left(\frac{\sqrt{A}\sqrt{e}}{\sqrt{B}}\right.}{}\right.}{\sqrt{e}}$$

Mathematica [C] time = 0.18, size = 142, normalized size = 1.07

$$-\frac{i\sqrt{2}\sqrt{A}\sqrt{B}\sqrt{\frac{A}{B}-\frac{B}{A}+2x}\left(\tanh^{-1}\left(\frac{\sqrt{A}\sqrt{B}\sqrt{\frac{A}{B}-\frac{B}{A}+2x}}{A-iB}\right)-\tanh^{-1}\left(\frac{\sqrt{A}\sqrt{B}\sqrt{\frac{A}{B}-\frac{B}{A}+2x}}{A+iB}\right)\right)}{\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[(A^2*e - B^2*e)/(2*A*B) + e*x]*(1 + x^2)),x]
```

```
[Out] ((-I)*Sqrt[2]*Sqrt[A]*Sqrt[B]*Sqrt[A/B - B/A + 2*x]*(ArcTanh[(Sqrt[A]*Sqrt[
B]*Sqrt[A/B - B/A + 2*x])/(A - I*B)] - ArcTanh[(Sqrt[A]*Sqrt[B]*Sqrt[A/B -
B/A + 2*x])/(A + I*B)]))/Sqrt[e*(A/B - B/A + 2*x)]
```

IntegrateAlgebraic [C] time = 0.35, size = 145, normalized size = 1.09

$$\frac{i\sqrt{2}\sqrt{A}\sqrt{B}\tanh^{-1}\left(\frac{\sqrt{A}\sqrt{B}\sqrt{-\frac{Be}{A}+\frac{Ae}{B}+2ex}}{\sqrt{e}(A+iB)}\right)}{\sqrt{e}}-\frac{i\sqrt{2}\sqrt{A}\sqrt{B}\tanh^{-1}\left(\frac{\sqrt{A}\sqrt{B}\sqrt{-\frac{Be}{A}+\frac{Ae}{B}+2ex}}{\sqrt{e}(A-iB)}\right)}{\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[(A^2*e - B^2*e)/(2*A*B) + e*x]*(1 + x^2)
),x]
```

```
[Out] ((-I)*Sqrt[2]*Sqrt[A]*Sqrt[B]*ArcTanh[(Sqrt[A]*Sqrt[B]*Sqrt[(A*e)/B - (B*e)
/A + 2*e*x])/((A - I*B)*Sqrt[e])])/Sqrt[e] + (I*Sqrt[2]*Sqrt[A]*Sqrt[B]*Arc
Tanh[(Sqrt[A]*Sqrt[B]*Sqrt[(A*e)/B - (B*e)/A + 2*e*x])/((A + I*B)*Sqrt[e])]
)/Sqrt[e]
```

fricas [A] time = 0.44, size = 164, normalized size = 1.23

$$\left[\frac{1}{2}\sqrt{2}\sqrt{-\frac{AB}{e}}\log\left(\frac{A^2x^2-4ABx-A^2+2B^2+2(Ax-B)\sqrt{-\frac{AB}{e}}\sqrt{\frac{2ABex+(A^2-B^2)e}{AB}}}{x^2+1}\right), \sqrt{2}\sqrt{\frac{AB}{e}}\arctan\left(\frac{(Ax-B)\sqrt{\frac{AB}{e}}\sqrt{\frac{2ABex+(A^2-B^2)e}{AB}}}{2ABx+A^2-B^2}\right)\right]$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x, algorithm=
"fricas")

[Out] [1/2*sqrt(2)*sqrt(-A*B/e)*log((A^2*x^2 - 4*A*B*x - A^2 + 2*B^2 + 2*(A*x - B
)*sqrt(-A*B/e)*sqrt((2*A*B*e*x + (A^2 - B^2)*e)/(A*B)))/(x^2 + 1)), sqrt(2)
*sqrt(A*B/e)*arctan((A*x - B)*sqrt(A*B/e)*sqrt((2*A*B*e*x + (A^2 - B^2)*e)/
(A*B))/(2*A*B*x + A^2 - B^2))]

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x, algorithm=
"giac")

[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Undef
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ncountered in limit2*((8*(A^2*B^8*exp(1)^2-A^4*B^6*exp(1)^2-A^6*B^4*exp(1)^
2+A^8*B^2*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)
^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B
*exp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*im(sign(cos(acos((A^3*B*exp(
1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(-A^3*B^7*exp(1)^2
+A^7*B^3*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^
2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*B*
exp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*im(sign(sin(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(-A^3*B^7*exp(1)^2+
A^7*B^3*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2
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-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B*e
xp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*re(sign(cos(acos((A^3*B*exp(1)
-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+8*(A^2*B^8*exp(1)^2-A^4
*B^6*exp(1)^2-A^6*B^4*exp(1)^2+A^8*B^2*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^
4*B^4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)
-A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2
*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3
))/2)))+8*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A^12*B^4*exp(1)^4)*sqrt(A^2
*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B^7*ab
s(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*ex
p(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1
)*B^3))/2)))^3+48*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^4+A
^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2
-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B*e
xp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*
B+A*exp(1)*B^3))/2)))^2*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^5*B^11*exp(1)^4-A^7*B^9*exp(1)^4+A^9*
B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8
*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)
+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*re(sign(cos(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*
exp(1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*
B^4*exp(1)^2+A^6*B^2*exp(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A
^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-
A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*re(sign(sin(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*ex
p(1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^
4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3
*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*ex
p(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+48*(A^5*B^13*exp(
1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*
exp(1)^2+A^6*B^2*exp(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B
*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(
1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3
*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+96*(-A^6*B^12*
exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^
6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B
*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(ac
os((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign
(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*
re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
)/2)))+24*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A^12*B^4*exp(1)^4)*sqrt(A^2
*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B^7*ab
s(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*ex
p(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1
)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+
A*exp(1)*B^3))/2)))^2+96*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp
(1)^4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*e
xp(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+
A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*
exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/a
bs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*exp(1)^4-2*A^9*B^9*
exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^
2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(
1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A

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^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1)
)/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+16*(-A^5*B^11*exp(1)^4-A^7*B^9*exp
(1)^4+A^9*B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*ex
p(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2+A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(
1))*exp(1)-A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(sin(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^3+48*(-A^6*B
^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^4+A^12*B^6*exp(1)^4)*sqrt(A^
2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A
^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(si
n(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*r
e(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))
/2)))+24*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A^12*B^4*exp(1)^4)*sqrt(A^2*
B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2+A*B^7*abs
(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp
(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B
+A*exp(1)*B^3))/2)))+48*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(
1)^4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*ex
p(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A
^3*B*exp(1))*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*e
xp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/ab
s(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+48*(A^5*B^13*exp(1)^4-2*A^9*B^9*exp(1)
^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(
1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3
*B*exp(1))*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(
A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1
))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^5*B^11*exp(1)^4-A^7*B^9*exp(
1)^4+A^9*B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*exp
(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2+A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(1
))*exp(1)-A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(sin(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(a
cos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+16*(
-A^5*B^11*exp(1)^4-A^7*B^9*exp(1)^4+A^9*B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqr
t(A^2*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B
^7*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1
))*exp(1))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3))/2)))^3+24*(A^5*B^13*exp(1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1
)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2-A*B^3*abs(A*
B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)
)*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3))/2)))+48*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^
4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1
)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*
B*exp(1))*exp(1))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A
^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+8*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A
^12*B^4*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+
A^10*B^2*exp(1)^2+A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^7*B*abs(A*B
^3*exp(1)+A^3*B*exp(1))*exp(1))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1)
)/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^3)/(-64*A^3*exp(1)+64*A*B^2*exp(1))/
sqrt(-A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*B*exp(1)+A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3)/(A^3*exp(1)*B+A*exp(1)*B^3)^2*ln((A^2*exp(1)+2*A*B*x*ex
p(1)-B^2*exp(1))/A/B-2*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/
B^2)^(1/4)*sqrt((1+(A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3))/2)*sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3))/2))*sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*exp(1))/A/B)+((A^4*exp(1)^2+2
*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4)*((A^4*exp(1)^2+2*A^2*B^2*exp
```

(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))+(16*(A^4*B^8*exp(1)^3-A^8*B^4*exp(1)^3)
*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1)
)-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*(A^3*exp(1)*
B+A*exp(1)*B^3)^2*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3))/2)))+8*(A^3*B^9*exp(1)^3-A^5*B^7*exp(1)^3-A^7*B^5*exp(1
)^3+A^9*B^3*exp(1)^3)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3
*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*
exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+8*(A^3*B^9*exp(1)^3-A^5*B^7*ex
p(1)^3-A^7*B^5*exp(1)^3+A^9*B^3*exp(1)^3)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*
exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*
A^5*B^3*exp(1)-A^7*B*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*re(sign(cos(acos
((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(A^4*B
^8*exp(1)^3-A^8*B^4*exp(1)^3)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*a
bs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1
)-A^7*B*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*re(sign(sin(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(-A^6*B^12*exp(1)^5
-A^8*B^10*exp(1)^5+A^10*B^8*exp(1)^5+A^12*B^6*exp(1)^5)*sqrt(-A^8*abs(A*B^3
*exp(1)+A^3*B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)+A^2*
B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^6*B^2*
abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1
))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3))/2)))^3+24*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*s
qrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-
A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(cos(ac
os((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*im(si
gn(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))
)+24*(A^5*B^13*exp(1)^5-2*A^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(-A^8*abs
(A*B^3*exp(1)+A^3*B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1
)+A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^
6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B
*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*ex
p(1)*B^3))/2)))^2*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3))/2)))+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^11*B^9*
exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*ab
s(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)
-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*
B+A*exp(1)*B^3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^1
1*B^9*exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B
^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*e
xp(1)-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+96*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^
5+A^11*B^9*exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp
(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5
*B^3*exp(1)-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(
A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1
))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(A^6*B^14*exp(1)^5-2*A^10
*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B
^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*e
xp(1)-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(
1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^6*B^12*exp(1)^5-A^8*B^10*ex
p(1)^5+A^10*B^8*exp(1)^5+A^12*B^6*exp(1)^5)*sqrt(-A^8*abs(A*B^3*exp(1)+A^3*
B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)+A^2*B^6*abs(A*B^
3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^6*B^2*abs(A*B^3*ex

p(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*im(sign(c
os(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re
(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/
2)))^2+48*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*sqrt(-
A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7
*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(cos(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(si
gn(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))
)+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^11*B^9*exp(1)^5+A^13*B^7*exp(1
)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*exp
(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(c
os(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re
(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/
2)))^2+8*(A^5*B^13*exp(1)^5-2*A^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(A^8*
abs(A*B^3*exp(1)+A^3*B*exp(1))-B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*ex
p(1)-A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)
+A^6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^1
1*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A
*exp(1)*B^3))/2)))^3+24*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*ex
p(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*
exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sig
n(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))
^2*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3))/2)))+48*(-A^6*B^12*exp(1)^5-A^8*B^10*exp(1)^5+A^10*B^8*exp(1)^5+A^12*B
^6*exp(1)^5)*sqrt(A^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^8*abs(A*B^3*exp(1)+A
^3*B*exp(1))-A*B^11*exp(1)-A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9
*exp(1)-A^5*B^7*exp(1)+A^6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1
)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(
1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A
*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^6*B^14*exp(1)^5-2*A
^10*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1
))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B
^3*exp(1)-A^7*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))
/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+96*(-A^7*B^13*exp(1)^5-A^9*B^11*exp
(1)^5+A^11*B^9*exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*
exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*
A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/a
bs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A
*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*exp(1)^5-2*A
^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(A^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-
B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)-A^2*B^6*abs(A*B^3*exp(1)+A
^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)+A^6*B^2*abs(A*B^3*exp(1)+A^3*B
*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*im(sign(sin(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+8*(
A^5*B^13*exp(1)^5-2*A^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(-A^8*abs(A*B^3
*exp(1)+A^3*B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)+A^2*
B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^6*B^2*
abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1
))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3))/2)))^3+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^11*B^9*exp(1)^5+A^13
*B^7*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1
)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1)
)*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3))/2)))+24*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*exp(1

)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+16*(-A^6*B^12*exp(1)^5-A^8*B^10*exp(1)^5+A^10*B^8*exp(1)^5+A^12*B^6*exp(1)^5)*sqrt(A^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)-A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)+A^6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^3)/(32*A^6*B*exp(1)^2-32*A^2*B^5*exp(1)^2)/abs(A^3*B*exp(1)+A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)/(A^3*exp(1)*B+A*exp(1)*B^3)^2*atan((sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*exp(1))/A/B)-sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))*sqrt((1+(A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))/sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))/sqrt((1-(A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)/((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))+(-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(3*A^2-3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(-9*A^2+9*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(9*A^2-9*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+(-3*A^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2-18*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+18*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)

*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*ex
p(1)*B^3)))/2)^2+2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*
exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-6*A*B*sqrt(-A^3*
B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3
*exp(1)*B+A*exp(1)*B^3)))/2)^3-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(r
e(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh
(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(-
A^2+B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B*exp(1)-A*B
^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(3*A^2-3*B^2)*sqrt(-A^3*B*
exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1
)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3)))/2)+(-3*A^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1
))*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))
)/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)^2+(-A^2+B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B
*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(A^2-B^2)*sqrt(-
A^3*B*exp(1)-A*B^3*exp(1))*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*
exp(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(
A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(A^2-B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1)
)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/
2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))
)/2))/(4*sqrt(2)*A^3*exp(1)+4*sqrt(2)*A*B^2*exp(1))*ln((A^2*exp(1)+2*A*B*x*
exp(1)-B^2*exp(1))/A/B+2*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^
2/B^2)^(1/4)*cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3))/2)*sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*exp(1))/A/B)+((A^4*exp(1)^2+2
*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4)*((A^4*exp(1)^2+2*A^2*B^2*exp
(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))-((A^2-B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp
(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)^3+(-3*A^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos
((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(3*A^2
-3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+(-A^2+B^2)*sqrt(-A^3*B*ex
p(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B
+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(aco
s((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im
(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin
(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-18
*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1
))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*e
xp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+18*A*B*sqrt(-A^3*B*exp(1)-A
*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp
(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A
*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+
A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*

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B+A*exp(1)*B^3)))/2)^2-6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((
A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(aco
s((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(a
cos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(-3*A
^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B*exp(1)-A
*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+(9*A^2-9*B^2)*sqrt(-A^3*
B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3
*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(-9*A^2+9*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*ex
p(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3
)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp
(1)*B^3)))/2)^2+(-A^2+B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((
A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(3*A^2-3*B^2
)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/
abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))
/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp
(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(A^2-B^2)*sqrt(-A^3*B*exp(1)-A*B
^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1
)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp
(1)*B^3)))/2)-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*ex
p(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B
*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3
*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3
*exp(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos
h(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*s
in(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^
3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))
/2)^2-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B
^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+2*A*B*sqrt(-A^3*B*exp(1)-A*
B^3*exp(1))*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(
1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3)))/2)^3+2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*sin(re(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2))/(2*sqrt(2)*A^
3*exp(1)+2*sqrt(2)*A*B^2*exp(1))*atan((sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*
exp(1))/A/B)+cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3))/2)*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))/s
in(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)/((A^
4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4)))
```

maple [A] time = 0.33, size = 128, normalized size = 0.96

$$\frac{\sqrt{2}\, AB \arctan\left(\frac{2\sqrt{2ex+\frac{(A^2-B^2)e}{AB}}\, AB-2\sqrt{A^3Be}}{2\sqrt{ABe}\, B}\right)}{\sqrt{ABe}}+\frac{\sqrt{2}\, AB \arctan\left(\frac{2\sqrt{2ex+\frac{(A^2-B^2)e}{AB}}\, AB+2\sqrt{A^3Be}}{2\sqrt{ABe}\, B}\right)}{\sqrt{ABe}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x)
```

```
[Out] 2^(1/2)*A*B/(A*B*e)^(1/2)*arctan(1/2*(2*(2*e*x+e*(A^2-B^2)/A/B)^(1/2)*A*B+2
*(A^3*B*e)^(1/2))/B/(A*B*e)^(1/2))+2^(1/2)*A*B/(A*B*e)^(1/2)*arctan(1/2*(2*
(2*e*x+e*(A^2-B^2)/A/B)^(1/2)*A*B-2*(A^3*B*e)^(1/2))/B/(A*B*e)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2 \int \frac{Bx + A}{\sqrt{4\,ex + \frac{2\left(A^2e - B^2e\right)}{AB}}\left(x^2 + 1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x, algorithm=
"maxima")
```

```
[Out] 2*integrate((B*x + A)/(sqrt(4*e*x + 2*(A^2*e - B^2*e)/(A*B))*(x^2 + 1)), x)
```

mupad [B] time = 0.22, size = 206, normalized size = 1.55

$$\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\left(\mathrm{atan}\left(\frac{A^{3/2}\,{\left(4\,e\,x+\frac{2\,A^2\,e-2\,B^2\,e}{A\,B}\right)}^{3/2}\,\sqrt{2\,B}}{8\,e^{3/2}\,\left(A^2+B^2\right)}-\frac{A^{5/2}\,\sqrt{8\,e\,x+\frac{2\,\left(2\,A^2\,e-2\,B^2\,e\right)}{A\,B}}}{4\,\sqrt{B}\,\sqrt{e}\,\left(A^2+B^2\right)}+\frac{3\,\sqrt{2}\,\sqrt{A}\,B^{3/2}\,\sqrt{4\,e\,x+\frac{2\,A^2\,e-2\,B^2\,e}{A\,B}}}{4\,\sqrt{e}\,\left(A^2+B^2\right)}\right)+\mathrm{atan}\left(\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{4\,e\,x+\frac{2\,A^2\,e-2\,B^2\,e}{A\,B}}}{4\,\sqrt{B}\,\sqrt{e}}\right)\right)}{\sqrt{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*A + 2*B*x)/((x^2 + 1)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))^(1/2)),x)
```

```
[Out] (2^(1/2)*A^(1/2)*B^(1/2)*(atan((A^(3/2)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))
^(3/2)*(2*B)^(1/2))/(8*e^(3/2)*(A^2 + B^2)) - (A^(5/2)*(8*e*x + (2*(2*A^2*e
 - 2*B^2*e))/(A*B))^(1/2))/(4*B^(1/2)*e^(1/2)*(A^2 + B^2)) + (3*2^(1/2)*A^(
1/2)*B^(3/2)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))^(1/2))/(4*e^(1/2)*(A^2 + B
^2))) + atan((2^(1/2)*A^(1/2)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))^(1/2))/(4
*B^(1/2)*e^(1/2)))))/e^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*(B*x+A)/(x**2+1)/(2*(A**2*e-B**2*e)/A/B+4*e*x)**(1/2),x)
```

```
[Out] Timed out
```

3.1291 $\int \frac{A+Bx}{\sqrt{d+ex}\left(1-x^2\right)} dx$

Optimal. Leaf size=66

$$\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}$$

Rubi [A] time = 0.10, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {827, 1166, 206}

$$\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(1 - x^2)),x]
```

```
[Out] -(((A - B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d - e]])/Sqrt[d - e]) + ((A + B)*ArcT
anh[Sqrt[d + e*x]/Sqrt[d + e]])/Sqrt[d + e]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{d+ex}\left(1-x^2\right)} dx &= 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{-d^2+e^2+2dx^2-x^4} dx, x, \sqrt{d+ex}\right)\\ &= (-A+B)\,\text{Subst}\left(\int \frac{1}{d-e-x^2} dx, x, \sqrt{d+ex}\right)+(A+B)\,\text{Subst}\left(\int \frac{1}{d+e-x^2} dx, x\right.\\ &= -\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}+\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 66, normalized size = 1.00

$$\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(1 - x^2)),x]
```

```
[Out] -(((A - B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d - e]])/Sqrt[d - e]) + ((A + B)*ArcT
anh[Sqrt[d + e*x]/Sqrt[d + e]])/Sqrt[d + e]
```

IntegrateAlgebraic [A] time = 0.10, size = 85, normalized size = 1.29

$$\frac{(B-A)\tan^{-1}\left(\frac{\sqrt{e-d}\,\sqrt{d+ex}}{d-e}\right)}{\sqrt{e-d}}+\frac{(A+B)\tan^{-1}\left(\frac{\sqrt{-d-e}\,\sqrt{d+ex}}{d+e}\right)}{\sqrt{-d-e}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(1 - x^2)),x]
```

```
[Out] ((-A + B)*ArcTan[(Sqrt[-d + e]*Sqrt[d + e*x])/(d - e)])/Sqrt[-d + e] + ((A
+ B)*ArcTan[(Sqrt[-d - e]*Sqrt[d + e*x])/(d + e)])/Sqrt[-d - e]
```

fricas [A] time = 0.49, size = 451, normalized size = 6.83

$$\left[-\frac{((A-B)d+(A-B)e)\sqrt{d-e}\log\left(\frac{ex+2\sqrt{ex+d}\sqrt{d-e}+2d-e}{x+1}\right)-((A+B)d-(A+B)e)\sqrt{d+e}\log\left(\frac{ex+2\sqrt{ex+d}\sqrt{d+e}+2d+e}{x-1}\right)}{2\left(d^2-e^2\right)},\ -\frac{2((A-B)d+(A-B)e)\sqrt{-d+e}\arctan\left(-\frac{\sqrt{ex+d}\sqrt{-d+e}}{d-e}\right)-((A+B)d-(A+B)e)\sqrt{d+e}\log\left(\frac{ex+2\sqrt{ex+d}\sqrt{d+e}+2d+e}{x-1}\right)}{2\left(d^2-e^2\right)},\ -\frac{2((A+B)d-(A+B)e)\sqrt{-d-e}\arctan\left(\frac{\sqrt{ex+d}\sqrt{-d-e}}{d+e}\right)+((A-B)d+(A-B)e)\sqrt{d-e}\log\left(\frac{ex+2\sqrt{ex+d}\sqrt{d-e}+2d-e}{x+1}\right)}{2\left(d^2-e^2\right)},\ -\frac{((A-B)d+(A-B)e)\sqrt{-d+e}\arctan\left(-\frac{\sqrt{ex+d}\sqrt{-d+e}}{d-e}\right)+((A+B)d-(A+B)e)\sqrt{-d-e}\arctan\left(\frac{\sqrt{ex+d}\sqrt{-d-e}}{d+e}\right)}{d^2-e^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(((A - B)*d + (A - B)*e)*sqrt(d - e)*log((e*x + 2*sqrt(e*x + d)*sqrt(
d - e) + 2*d - e)/(x + 1)) - ((A + B)*d - (A + B)*e)*sqrt(d + e)*log((e*x +
 2*sqrt(e*x + d)*sqrt(d + e) + 2*d + e)/(x - 1)))/(d^2 - e^2), -1/2*(2*((A
- B)*d + (A - B)*e)*sqrt(-d + e)*arctan(-sqrt(e*x + d)*sqrt(-d + e)/(d - e)
) - ((A + B)*d - (A + B)*e)*sqrt(d + e)*log((e*x + 2*sqrt(e*x + d)*sqrt(d +
 e) + 2*d + e)/(x - 1)))/(d^2 - e^2), -1/2*(2*((A + B)*d - (A + B)*e)*sqrt(
-d - e)*arctan(sqrt(e*x + d)*sqrt(-d - e)/(d + e)) + ((A - B)*d + (A - B)*e
)*sqrt(d - e)*log((e*x + 2*sqrt(e*x + d)*sqrt(d - e) + 2*d - e)/(x + 1)))/(
d^2 - e^2), -(((A - B)*d + (A - B)*e)*sqrt(-d + e)*arctan(-sqrt(e*x + d)*sq
rt(-d + e)/(d - e)) + ((A + B)*d - (A + B)*e)*sqrt(-d - e)*arctan(sqrt(e*x
+ d)*sqrt(-d - e)/(d + e)))/(d^2 - e^2)]
```

giac [A] time = 0.19, size = 68, normalized size = 1.03

$$\frac{(A-B)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d+e}}\right)}{\sqrt{-d+e}}-\frac{(A+B)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d-e}}\right)}{\sqrt{-d-e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] (A - B)*arctan(sqrt(x*e + d)/sqrt(-d + e))/sqrt(-d + e) - (A + B)*arctan(sq
rt(x*e + d)/sqrt(-d - e))/sqrt(-d - e)
```

maple [A] time = 0.09, size = 95, normalized size = 1.44

$$\frac{A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}+\frac{A\arctan\left(\frac{\sqrt{ex+d}}{\sqrt{-d+e}}\right)}{\sqrt{-d+e}}+\frac{B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{B\arctan\left(\frac{\sqrt{ex+d}}{\sqrt{-d+e}}\right)}{\sqrt{-d+e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x)
```

```
[Out] 1/(d+e)^(1/2)*arctanh((e*x+d)^(1/2)/(d+e)^(1/2))*A+1/(d+e)^(1/2)*arctanh((e
*x+d)^(1/2)/(d+e)^(1/2))*B+1/(-d+e)^(1/2)*arctan((e*x+d)^(1/2)/(-d+e)^(1/2)
)*A-1/(-d+e)^(1/2)*arctan((e*x+d)^(1/2)/(-d+e)^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d-4*e>0)', see `assume?` for more
 details)Is 4*d-4*e positive or negative?
```

mupad [B] time = 1.99, size = 773, normalized size = 11.71

$$-\frac{\mathrm{atan}\left(\frac{\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Bde^2-32Ae^3+\frac{32de^2(A-B)\sqrt{d+ex}}{\sqrt{d-e}}\right)}{2\sqrt{d-e}}\right)(A-B)\,1\mathrm{i}}{2\sqrt{d-e}}+\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Ae^3-32Bde^2+\frac{32de^2(A-B)\sqrt{d+ex}}{\sqrt{d-e}}\right)}{2\sqrt{d-e}}\right)(A-B)\,1\mathrm{i}}{2\sqrt{d-e}}}{16B^3e^2-16A^2Be^2+\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Bde^2-32Ae^3+\frac{32de^2(A-B)\sqrt{d+ex}}{\sqrt{d-e}}\right)}{2\sqrt{d-e}}\right)(A-B)}{2\sqrt{d-e}}-\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Ae^3-32Bde^2+\frac{32de^2(A-B)\sqrt{d+ex}}{\sqrt{d-e}}\right)}{2\sqrt{d-e}}\right)(A-B)}{2\sqrt{d-e}}}\right)(A-B)\,1\mathrm{i}}{\sqrt{d-e}}-\frac{\mathrm{atan}\left(\frac{\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A+B)\left(32Bde^2-32Ae^3+\frac{32de^2(A+B)\sqrt{d+ex}}{\sqrt{d+e}}\right)}{2\sqrt{d+e}}\right)(A+B)\,1\mathrm{i}}{2\sqrt{d+e}}+\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A+B)\left(32Ae^3-32Bde^2+\frac{32de^2(A+B)\sqrt{d+ex}}{\sqrt{d+e}}\right)}{2\sqrt{d+e}}\right)(A+B)\,1\mathrm{i}}{2\sqrt{d+e}}}{16B^3e^2-16A^2Be^2+\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A+B)\left(32Bde^2-32Ae^3+\frac{32de^2(A+B)\sqrt{d+ex}}{\sqrt{d+e}}\right)}{2\sqrt{d+e}}\right)(A+B)}{2\sqrt{d+e}}-\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A+B)\left(32Ae^3-32Bde^2+\frac{32de^2(A+B)\sqrt{d+ex}}{\sqrt{d+e}}\right)}{2\sqrt{d+e}}\right)(A+B)}{2\sqrt{d+e}}}\right)(A+B)\,1\mathrm{i}}{\sqrt{d+e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(A + B*x)/((x^2 - 1)*(d + e*x)^(1/2)),x)
```

```
[Out] - (atan(((((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A - B)*(32*B*d*e^2
 - 32*A*e^3 + (32*d*e^2*(A - B)*(d + e*x)^(1/2))/(d - e)^(1/2)))/(2*(d - e)
^(1/2)))*(A - B)*1i)/(2*(d - e)^(1/2)) + (((16*A^2*e^2 + 16*B^2*e^2)*(d + e
*x)^(1/2) - ((A - B)*(32*A*e^3 - 32*B*d*e^2 + (32*d*e^2*(A - B)*(d + e*x)^(
1/2))/(d - e)^(1/2)))/(2*(d - e)^(1/2)))*(A - B)*1i)/(2*(d - e)^(1/2)))/(16
*B^3*e^2 - 16*A^2*B*e^2 + (((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A
 - B)*(32*B*d*e^2 - 32*A*e^3 + (32*d*e^2*(A - B)*(d + e*x)^(1/2))/(d - e)^(
1/2)))/(2*(d - e)^(1/2)))*(A - B))/(2*(d - e)^(1/2)) - (((16*A^2*e^2 + 16*B
^2*e^2)*(d + e*x)^(1/2) - ((A - B)*(32*A*e^3 - 32*B*d*e^2 + (32*d*e^2*(A -
B)*(d + e*x)^(1/2))/(d - e)^(1/2)))/(2*(d - e)^(1/2)))*(A - B))/(2*(d - e)^
(1/2))))*(A - B)*1i)/(d - e)^(1/2) - (atan(((((16*A^2*e^2 + 16*B^2*e^2)*(d
+ e*x)^(1/2) - ((A + B)*(32*B*d*e^2 - 32*A*e^3 + (32*d*e^2*(A + B)*(d + e*x
)^(1/2))/(d + e)^(1/2)))/(2*(d + e)^(1/2)))*(A + B)*1i)/(2*(d + e)^(1/2)) +
 (((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A + B)*(32*A*e^3 - 32*B*d*
e^2 + (32*d*e^2*(A + B)*(d + e*x)^(1/2))/(d + e)^(1/2)))/(2*(d + e)^(1/2)))
*(A + B)*1i)/(2*(d + e)^(1/2)))/(16*B^3*e^2 - 16*A^2*B*e^2 + (((16*A^2*e^2
+ 16*B^2*e^2)*(d + e*x)^(1/2) - ((A + B)*(32*B*d*e^2 - 32*A*e^3 + (32*d*e^2
*(A + B)*(d + e*x)^(1/2))/(d + e)^(1/2)))/(2*(d + e)^(1/2)))*(A + B))/(2*(d
 + e)^(1/2)) - (((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A + B)*(32*A
*e^3 - 32*B*d*e^2 + (32*d*e^2*(A + B)*(d + e*x)^(1/2))/(d + e)^(1/2)))/(2*(
d + e)^(1/2)))*(A + B))/(2*(d + e)^(1/2))))*(A + B)*1i)/(d + e)^(1/2)
```

sympy [A] time = 57.36, size = 78, normalized size = 1.18

$$\frac{(-A-B)\,\mathrm{atan}\left(\frac{1}{\sqrt{-\frac{1}{d+e}}\sqrt{d+ex}}\right)}{\sqrt{-\frac{1}{d+e}}\,(d+e)}+\frac{(A-B)\,\mathrm{atan}\left(\frac{1}{\sqrt{-\frac{1}{d-e}}\sqrt{d+ex}}\right)}{\sqrt{-\frac{1}{d-e}}\,(d-e)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x**2+1)/(e*x+d)**(1/2),x)
```

```
[Out] (-A - B)*atan(1/(sqrt(-1/(d + e))*sqrt(d + e*x)))/(sqrt(-1/(d + e))*(d + e)
) + (A - B)*atan(1/(sqrt(-1/(d - e))*sqrt(d + e*x)))/(sqrt(-1/(d - e))*(d -
 e))
```

3.1292 $\int \frac{A+Bx}{\sqrt{d+ex}\,(1+x^2)}\,dx$

Optimal. Leaf size=440

$$-\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)\log\left(-\sqrt{2}\sqrt{\sqrt{d^2+e^2}+d}\,\sqrt{d+ex}+\sqrt{d^2+e^2}+d+ex\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{\sqrt{d^2+e^2}+d}}+\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right.}{}$$

Rubi [A] time = 0.66, antiderivative size = 440, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {827, 1169, 634, 618, 206, 628}

$$-\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)\log\left(-\sqrt{2}\sqrt{\sqrt{d^2+e^2}+d}\,\sqrt{d+ex}+\sqrt{d^2+e^2}+d+ex\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{\sqrt{d^2+e^2}+d}}+\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)\log\left(\sqrt{2}\sqrt{\sqrt{d^2+e^2}+d}\,\sqrt{d+ex}+\sqrt{d^2+e^2}+d+ex\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{\sqrt{d^2+e^2}+d}}+\frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{\sqrt{d^2+e^2}+d}-\sqrt{2}\sqrt{d+ex}}{\sqrt{d-\sqrt{d^2+e^2}}}\right)}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d-\sqrt{d^2+e^2}}}-\frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{\sqrt{d^2+e^2}+d}+\sqrt{2}\sqrt{d+ex}}{\sqrt{d-\sqrt{d^2+e^2}}}\right)}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d-\sqrt{d^2+e^2}}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(1 + x^2)),x]
```

```
[Out] ((A*e - B*(d - Sqrt[d^2 + e^2]))*ArcTanh[(Sqrt[d + Sqrt[d^2 + e^2]] - Sqrt[
2]*Sqrt[d + e*x])/Sqrt[d - Sqrt[d^2 + e^2]]])/(Sqrt[2]*Sqrt[d^2 + e^2]*Sqrt
[d - Sqrt[d^2 + e^2]]) - ((A*e - B*(d - Sqrt[d^2 + e^2]))*ArcTanh[(Sqrt[d +
 Sqrt[d^2 + e^2]] + Sqrt[2]*Sqrt[d + e*x])/Sqrt[d - Sqrt[d^2 + e^2]]])/(Sqr
t[2]*Sqrt[d^2 + e^2]*Sqrt[d - Sqrt[d^2 + e^2]]) - ((A*e - B*(d + Sqrt[d^2 +
 e^2]))*Log[d + Sqrt[d^2 + e^2] + e*x - Sqrt[2]*Sqrt[d + Sqrt[d^2 + e^2]]*S
qrt[d + e*x]])/(2*Sqrt[2]*Sqrt[d^2 + e^2]*Sqrt[d + Sqrt[d^2 + e^2]]) + ((A*
e - B*(d + Sqrt[d^2 + e^2]))*Log[d + Sqrt[d^2 + e^2] + e*x + Sqrt[2]*Sqrt[d
 + Sqrt[d^2 + e^2]]*Sqrt[d + e*x]])/(2*Sqrt[2]*Sqrt[d^2 + e^2]*Sqrt[d + Sqr
t[d^2 + e^2]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
```

```
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1169

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[a/c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*q*r), Int
[(d*r - (d - e*q)*x)/(q - r*x + x^2), x], x] + Dist[1/(2*c*q*r), Int[(d*r +
 (d - e*q)*x)/(q + r*x + x^2), x], x]]] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NegQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(1+x^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{d^2+e^2-2dx^2+x^4}\,dx, x, \sqrt{d+ex}\right)$$

$$= \frac{\text{Subst}\left(\int \frac{\sqrt{2}(-Bd+Ae)\sqrt{d+\sqrt{d^2+e^2}}-\left(-Bd+Ae-B\sqrt{d^2+e^2}\right)x}{\sqrt{d^2+e^2}-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\,x+x^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d+\sqrt{d^2+e^2}}} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}(-Bd+\cdots}{\cdots}\right.}{\cdots}$$

$$= \frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\text{Subst}\left(\int \frac{1}{\sqrt{d^2+e^2}-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\,x+x^2}\,dx, x, \sqrt{d+ex}\right)}{2\sqrt{d^2+e^2}} + \frac{\left(Ae-\cdots\right.}{\cdots}$$

$$= -\frac{\left(Ae-B\left(d+\sqrt{d^2+e^2}\right)\right)\log\left(d+\sqrt{d^2+e^2}+ex-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\sqrt{d+ex}\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{d+\sqrt{d^2+e^2}}} + \cdots$$

$$= \frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{d+\sqrt{d^2+e^2}}-\sqrt{2}\sqrt{d+ex}}{\sqrt{d-\sqrt{d^2+e^2}}}\right)}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d-\sqrt{d^2+e^2}}} - \frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\tan\cdots}{\sqrt{2}\sqrt{d^2+e^2}\cdots}$$

Mathematica [C] time = 0.09, size = 89, normalized size = 0.20

$$\frac{i(A+iB)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+ie}}\right)}{\sqrt{d+ie}} - \frac{i(A-iB)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-ie}}\right)}{\sqrt{d-ie}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(1 + x^2)),x]
```

```
[Out] ((-I)*(A - I*B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d - I*e]])/Sqrt[d - I*e] + (I*(A
 + I*B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d + I*e]])/Sqrt[d + I*e]
```

IntegrateAlgebraic [C] time = 0.20, size = 115, normalized size = 0.26

$$\frac{i(A+iB)\tan^{-1}\left(\frac{\sqrt{-d-ie}\sqrt{d+ex}}{d+ie}\right)}{\sqrt{-d-ie}} - \frac{i(A-iB)\tan^{-1}\left(\frac{\sqrt{-d+ie}\sqrt{d+ex}}{d-ie}\right)}{\sqrt{-d+ie}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(1 + x^2)),x]
```

```
[Out] ((-I)*(A - I*B)*ArcTan[(Sqrt[-d + I*e]*Sqrt[d + e*x])/(d - I*e)])/Sqrt[-d +
 I*e] + (I*(A + I*B)*ArcTan[(Sqrt[-d - I*e]*Sqrt[d + e*x])/(d + I*e)])/Sqrt
[-d - I*e]
```

fricas [B] time = 3.56, size = 7715, normalized size = 17.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(d^2 + e^2)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A
^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt(((A^4 + 2*A^2*B^2
+ B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2
- B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/
(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^
4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4)*arctan((sqrt(2)*sqrt(e*x + d)*((2*(
A^3*B^2 + A*B^4)*d^6 - (3*A^4*B + 2*A^2*B^3 - B^5)*d^5*e + (A^5 + 4*A^3*B^2
 + 3*A*B^4)*d^4*e^2 - 2*(3*A^4*B + 2*A^2*B^3 - B^5)*d^3*e^3 + 2*(A^5 + A^3*
B^2)*d^2*e^4 - (3*A^4*B + 2*A^2*B^3 - B^5)*d*e^5 + (A^5 - A*B^4)*e^6)*sqrt(
(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4
+ 2*d^2*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + (2*(A^5*B^2
 + 2*A^3*B^4 + A*B^6)*d^5 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*d^4*e + 4*(A^
5*B^2 + 2*A^3*B^4 + A*B^6)*d^3*e^2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*d^
2*e^3 + 2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*d*e^4 - (A^6*B + A^4*B^3 - A^2*B^5
- B^7)*e^5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2
+ B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (
A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (
A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2
 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2
+ B^4)/(d^2 + e^2))^(3/4) - sqrt(2)*sqrt(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*
d^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)
*d*e^2 + sqrt(2)*(4*(A^4*B^3 + A^2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^
6)*d^2*e + (5*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A
^3*B^4 + A*B^6)*e^3 + (4*A^2*B^3*d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B +
 2*A^2*B^3 + B^5)*d^2*e^2 - 4*(A^3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3
+ B^5)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e +
2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^
4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2
+ B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*
A^4*B^4 + A^2*B^6)*d^2*e - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A
^8 - 2*A^4*B^4 + B^8)*e^3)*x + (4*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^
5)*d^3*e + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*
d*e^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(
d^2 + e^2)))*((B*d^5 - A*d^4*e + 2*B*d^3*e^2 - 2*A*d^2*e^3 + B*d*e^4 - A*e^
5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^
2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + ((A
^2*B + B^3)*d^4 + 2*(A^2*B + B^3)*d^2*e^2 + (A^2*B + B^3)*e^4)*sqrt((4*A^2*
B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2
*e^2 + e^4)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e
^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((
A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e
 + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4
) + (2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d^5 - (A^8 + 2*A^6*B^2 - 2*A
^2*B^6 - B^8)*d^4*e + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d^3*e^2 - 2
*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*d^2*e^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3
*B^5 + A*B^7)*d*e^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*e^5)*sqrt((4*A^2*
B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2
*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + (2*(A^9*B + 4*A^7*
```

```
B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*d^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 -
2*A^4*B^6 - 3*A^2*B^8 - B^10)*d^3*e + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*
A^3*B^7 + A*B^9)*d^2*e^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^
2*B^8 - B^10)*d*e^3)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2
*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4)))/(4*(A^10*B^2 + 4*A^8*B^4 + 6
*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*d^2*e - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5
- 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*d*e^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*
A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*e^3)) + 4*sqrt(2)*(d^2 + e^2)*sqrt((
4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 +
 2*d^2*e^2 + e^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B
^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*s
qrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3
)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))
^(3/4)*arctan((sqrt(2)*sqrt(e*x + d)*((2*(A^3*B^2 + A*B^4)*d^6 - (3*A^4*B +
 2*A^2*B^3 - B^5)*d^5*e + (A^5 + 4*A^3*B^2 + 3*A*B^4)*d^4*e^2 - 2*(3*A^4*B
+ 2*A^2*B^3 - B^5)*d^3*e^3 + 2*(A^5 + A^3*B^2)*d^2*e^4 - (3*A^4*B + 2*A^2*B
^3 - B^5)*d*e^5 + (A^5 - A*B^4)*e^6)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3
)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt((A^4 + 2
*A^2*B^2 + B^4)/(d^2 + e^2)) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*d^5 - (A^6*
B + A^4*B^3 - A^2*B^5 - B^7)*d^4*e + 4*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*d^3*e^
2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*d^2*e^3 + 2*(A^5*B^2 + 2*A^3*B^4 +
A*B^6)*d*e^4 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*e^5)*sqrt((4*A^2*B^2*d^2 -
 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^
4)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A
*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A
^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 -
 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4) - sqrt(
2)*sqrt(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^3 - 4*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)*d*e^2 - sqrt(2)*(4*(A^4*B^3 + A^
2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*d^2*e + (5*A^6*B - A^4*B^3 - 5
*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*e^3 + (4*A^2*B^3*
d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B + 2*A^2*B^3 + B^5)*d^2*e^2 - 4*(A^
3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3 + B^5)*e^4)*sqrt((A^4 + 2*A^2*B^2
 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^
4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^
2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 -
 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 +
B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^2*e - 4*(A^7
*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A^8 - 2*A^4*B^4 + B^8)*e^3)*x + (4
*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^5)*d^3*e + (A^6 + 3*A^4*B^2 + 3*A
^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*d*e^3 + (A^6 - A^4*B^2 - A^2*B^4
+ B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*((B*d^5 - A*d^4*e +
2*B*d^3*e^2 - 2*A*d^2*e^3 + B*d*e^4 - A*e^5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B
 - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt(
(A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + ((A^2*B + B^3)*d^4 + 2*(A^2*B + B^3)
*d^2*e^2 + (A^2*B + B^3)*e^4)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e +
 (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4)))*sqrt(((A^4 + 2*A^2*
B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (
A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2
)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*
((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4) - (2*(A^7*B + 3*A^5*B^3 + 3*A^3
*B^5 + A*B^7)*d^5 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*d^4*e + 4*(A^7*B +
3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d^3*e^2 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B
^8)*d^2*e^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d*e^4 - (A^8 + 2*A^
6*B^2 - 2*A^2*B^6 - B^8)*e^5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e +
 (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^
2 + B^4)/(d^2 + e^2)) - (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B
^9)*d^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*d^3
*e + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*d^2*e^2 - (A^10
```

```
+ 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*d*e^3)*sqrt((4*A^2*
B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2
*e^2 + e^4)))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*
d^2*e - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)
*d*e^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 +
B^12)*e^3)) - sqrt(2)*(A^4 + 2*A^2*B^2 + B^4 - (2*A*B*e + (A^2 - B^2)*d)*sq
rt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2
+ (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3
+ (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*
d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B
^2 + B^4)/(d^2 + e^2))^(1/4)*log(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^3 - 4*
(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)*d*e^2 +
 sqrt(2)*(4*(A^4*B^3 + A^2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*d^2*e
 + (5*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A^3*B^4 +
 A*B^6)*e^3 + (4*A^2*B^3*d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B + 2*A^2*B
^3 + B^5)*d^2*e^2 - 4*(A^3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3 + B^5)*e
^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^
3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2
+ e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e
^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4
+ A^2*B^6)*d^2*e - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A^8 - 2*A
^4*B^4 + B^8)*e^3)*x + (4*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^5)*d^3*e
 + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*d*e^3 +
(A^6 - A^4*B^2 - A^2*B^4 + B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^
2))) + sqrt(2)*(A^4 + 2*A^2*B^2 + B^4 - (2*A*B*e + (A^2 - B^2)*d)*sqrt((A^4
 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4
+ 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2
- B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4
*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^
4)/(d^2 + e^2))^(1/4)*log(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^3 - 4*(A^7*B
+ A^5*B^3 - A^3*B^5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)*d*e^2 - sqrt(2
)*(4*(A^4*B^3 + A^2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*d^2*e + (5*A
^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)
*e^3 + (4*A^2*B^3*d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B + 2*A^2*B^3 + B^
5)*d^2*e^2 - 4*(A^3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3 + B^5)*e^4)*sqr
t((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt(((A^4 + 2*A^2*B^
2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^
2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))
)/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((
A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B
^6)*d^2*e - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A^8 - 2*A^4*B^4
+ B^8)*e^3)*x + (4*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^5)*d^3*e + (A^6
 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*d*e^3 + (A^6 -
A^4*B^2 - A^2*B^4 + B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))))/(
A^4 + 2*A^2*B^2 + B^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.28, size = 3511, normalized size = 7.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x)

[Out] -1/(d^2+e^2)^(3/2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d^2+e^2)^(3/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^4-(d^2+e^2)^(1/2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d^2+e^2)^(1/2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^3+1/(d^2+e^2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^4-1/4/(d^2+e^2)/e^2*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3-(d^2+e^2)^(1/2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d^2+e^2)^(1/2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^3+1/(d^2+e^2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^4-1/4/(d^2+e^2)^(3/2)/e*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3-1/4/(d^2+e^2)^(3/2)*e*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+1/4/(d^2+e^2)^(3/2)/e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3+1/4/(d^2+e^2)^(3/2)*e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+1/4/(d^2+e^2)/e*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^2-1/(d^2+e^2)^(1/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2+3/(d^2+e^2)^(3/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2-1/(d^2+e^2)^(1/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2-1/4/(d^2+e^2)/e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^2-1/(d^2+e^2)^(3/2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d^2+e^2)^(3/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^4+1/4/(d^2+e^2)/e^2*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3+1/4/(d^2+e^2)*e*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+1/(d^2+e^2)^(1/2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+2/(d^2+e^2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^2+1/4/(d^2+e^2)*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+1/4/(d^2+e^2)^(3/2)*e^2*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+2/(d^2+e^2)^(3/2)*e^3/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A-1/(d^2+e^2)^(3/2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^3-1/(d^2+e^2)^(1/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A+1/4/(d^2+e^2)^(3/2)*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^2-1/4/e^2*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d-1/4/(d^2+e^2)*e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d

```
^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)-1/e^2/(2*(d^2+e^2)^(1/2)-2*d
)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)
^(1/2)-2*d)^(1/2))*B*d^2+1/(d^2+e^2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arct
an((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^
(1/2))*B+3/(d^2+e^2)^(3/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d
)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2
-1/4/(d^2+e^2)*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^
2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+2/(d^2+e^2)^(3/2)*e^3/(2*(d^2+e
^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))
/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A+1/(d^2+e^2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(
1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1
/2)-2*d)^(1/2))*B+1/(d^2+e^2)^(1/2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2
*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)
)*B*d+2/(d^2+e^2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*
(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^2-1/4/(d^2+e
^2)^(3/2)*e^2*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2
)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)-1/(d^2+e^2)^(3/2)/(2*(d^2+e^2)^(1/
2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^
2+e^2)^(1/2)-2*d)^(1/2))*B*d^3-1/(d^2+e^2)^(1/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^
(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(
1/2)-2*d)^(1/2))*A-1/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1
/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^2+1/4
/e^2*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*
B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d-1/4/(d^2+e^2)^(3/2)*ln(e*x+d+(e*x+d)^(1/2
)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^
(1/2)*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{ex+d}\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(e*x + d)*(x^2 + 1)), x)
```

mupad [B] time = 2.17, size = 1244, normalized size = 2.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((x^2 + 1)*(d + e*x)^(1/2)),x)
```

```
[Out] - atan((((32*B*d*e^2 - 32*A*e^3 + 64*d*e^2*(d + e*x)^(1/2)*((B^2*1i - A^2*1
i + 2*A*B)/(4*(d*1i - e)))^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e))
)^(1/2) + (16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2))*((B^2*1i - A^2*1i + 2*
A*B)/(4*(d*1i - e)))^(1/2)*1i + ((32*A*e^3 - 32*B*d*e^2 + 64*d*e^2*(d + e*x
)^(1/2)*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2))*((B^2*1i - A^2*1i
 + 2*A*B)/(4*(d*1i - e)))^(1/2) + (16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2)
)*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2)*1i)/(((32*A*e^3 - 32*B*d
*e^2 + 64*d*e^2*(d + e*x)^(1/2)*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^
(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2) + (16*A^2*e^2 - 16*
B^2*e^2)*(d + e*x)^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2)
- ((32*B*d*e^2 - 32*A*e^3 + 64*d*e^2*(d + e*x)^(1/2)*((B^2*1i - A^2*1i + 2*
A*B)/(4*(d*1i - e)))^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2
) + (16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(
4*(d*1i - e)))^(1/2) + 16*B^3*e^2 + 16*A^2*B*e^2))*((B^2*1i - A^2*1i + 2*A*
B)/(4*(d*1i - e)))^(1/2)*2i - atan((((16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1
/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*(32*B*d*e^2 - 32*A*e^3 +
```

```
64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)))*((B^
2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*1i + ((16*A^2*e^2 - 16*B^2*e^2)*(d
+ e*x)^(1/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*(32*A*e^3 - 32*B
*d*e^2 + 64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/
2)))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*1i)/(16*B^3*e^2 - ((16*A^2
*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^
(1/2)*(32*B*d*e^2 - 32*A*e^3 + 64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 + A*B*2
i)/(4*(d - e*1i)))^(1/2)))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2) + ((
16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*
1i)))^(1/2)*(32*A*e^3 - 32*B*d*e^2 + 64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 +
 A*B*2i)/(4*(d - e*1i)))^(1/2)))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2
) + 16*A^2*B*e^2))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*2i
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x**2+1)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(d + e*x)*(x**2 + 1)), x)
```

3.1293 $\int \frac{(1-x)\sqrt{1+x}}{1+x^2} dx$

Optimal. Leaf size=202

$$-2\sqrt{x+1}-\frac{\log\left(x-\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}+\frac{\log\left(x+\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}-\sqrt{1+\sqrt{2}}\ \text{t}$$

Rubi [A] time = 0.23, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 12, 708, 1094, 634, 618, 204, 628}

$$-2\sqrt{x+1}-\frac{\log\left(x-\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}+\frac{\log\left(x+\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}-\sqrt{1+\sqrt{2}}\tan^{-1}\left(\frac{\sqrt{2\left(1+\sqrt{2}\right)}-2\sqrt{x+1}}{\sqrt{2\left(\sqrt{2}-1\right)}}\right)+\sqrt{1+\sqrt{2}}\tan^{-1}\left(\frac{2\sqrt{x+1}+\sqrt{2\left(1+\sqrt{2}\right)}}{\sqrt{2\left(\sqrt{2}-1\right)}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((1 - x)*Sqrt[1 + x])/(1 + x^2),x]
```

```
[Out] -2*Sqrt[1 + x] - Sqrt[1 + Sqrt[2]]*ArcTan[(Sqrt[2*(1 + Sqrt[2])] - 2*Sqrt[1
 + x])/Sqrt[2*(-1 + Sqrt[2])]] + Sqrt[1 + Sqrt[2]]*ArcTan[(Sqrt[2*(1 + Sqrt
[2])] + 2*Sqrt[1 + x])/Sqrt[2*(-1 + Sqrt[2])]] - Log[1 + Sqrt[2] + x - Sqrt
[2*(1 + Sqrt[2])]*Sqrt[1 + x]]/(2*Sqrt[1 + Sqrt[2]]) + Log[1 + Sqrt[2] + x
+ Sqrt[2*(1 + Sqrt[2])]*Sqrt[1 + x]]/(2*Sqrt[1 + Sqrt[2]])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 708

```
Int[1/(Sqrt[(d_) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[2*
e, Subst[Int[1/(c*d^2 + a*e^2 - 2*c*d*x^2 + c*x^4), x], x, Sqrt[d + e*x]],
```

```
x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 1094

```
Int[((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(-1), x_Symbol] :> With[{q = Rt[a/
c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*q*r), Int[(r - x)/(q - r*x
 + x^2), x], x] + Dist[1/(2*c*q*r), Int[(r + x)/(q + r*x + x^2), x], x]]] /
; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1-x)\sqrt{1+x}}{1+x^2}\,dx &= -2\sqrt{1+x}+\int \frac{2}{\sqrt{1+x}\,\left(1+x^2\right)}\,dx\\
&= -2\sqrt{1+x}+2\int \frac{1}{\sqrt{1+x}\,\left(1+x^2\right)}\,dx\\
&= -2\sqrt{1+x}+4\,\text{Subst}\left(\int \frac{1}{2-2x^2+x^4}\,dx,x,\sqrt{1+x}\right)\\
&= -2\sqrt{1+x}+\frac{\text{Subst}\left(\int \frac{\sqrt{2\left(1+\sqrt{2}\right)}-x}{\sqrt{2}-\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\,dx,x,\sqrt{1+x}\right)}{\sqrt{1+\sqrt{2}}}+\frac{\text{Subst}\left(\int \frac{\sqrt{2\left(1+\sqrt{2}\right)}+x}{\sqrt{2}+\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\,dx,\right.}{\sqrt{1+\sqrt{2}}}\\
&= -2\sqrt{1+x}+\frac{\text{Subst}\left(\int \frac{1}{\sqrt{2}-\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\,dx,x,\sqrt{1+x}\right)}{\sqrt{2}}+\frac{\text{Subst}\left(\int \frac{1}{\sqrt{2}+\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\,dx,\right.}{\sqrt{2}}\\
&= -2\sqrt{1+x}-\frac{\log\left(1+\sqrt{2}+x-\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{1+x}\right)}{2\sqrt{1+\sqrt{2}}}+\frac{\log\left(1+\sqrt{2}+x+\sqrt{2\left(1+\sqrt{2}\right.}\right.}{2\sqrt{1+\sqrt{2}}}\\
&= -2\sqrt{1+x}-\frac{\tan^{-1}\left(\frac{\sqrt{2\left(1+\sqrt{2}\right)}-2\sqrt{1+x}}{\sqrt{2\left(-1+\sqrt{2}\right)}}\right)}{\sqrt{-1+\sqrt{2}}}+\frac{\tan^{-1}\left(\frac{\sqrt{2\left(1+\sqrt{2}\right)}+2\sqrt{1+x}}{\sqrt{2\left(-1+\sqrt{2}\right)}}\right)}{\sqrt{-1+\sqrt{2}}}-\frac{\log\left(1+\sqrt{2}+x-\right.}{2\sqrt{1}}
\end{aligned}
$$

Mathematica [C] time = 0.05, size = 58, normalized size = 0.29

$$-2\sqrt{x+1}+(1-i)^{3/2}\tanh^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{1-i}}\right)+(1+i)^{3/2}\tanh^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{1+i}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 - x)*Sqrt[1 + x])/(1 + x^2),x]
```

```
[Out] -2*Sqrt[1 + x] + (1 - I)^(3/2)*ArcTanh[Sqrt[1 + x]/Sqrt[1 - I]] + (1 + I)^(
3/2)*ArcTanh[Sqrt[1 + x]/Sqrt[1 + I]]
```

IntegrateAlgebraic [C] time = 0.12, size = 66, normalized size = 0.33

$$-2\sqrt{x+1}+\sqrt{2+2i}\tan^{-1}\left(\sqrt{-\frac{1}{2}-\frac{i}{2}}\sqrt{x+1}\right)+\sqrt{2-2i}\tan^{-1}\left(\sqrt{-\frac{1}{2}+\frac{i}{2}}\sqrt{x+1}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((1 - x)*Sqrt[1 + x])/(1 + x^2),x]
```

```
[Out] -2*Sqrt[1 + x] + Sqrt[2 + 2*I]*ArcTan[Sqrt[-1/2 - I/2]*Sqrt[1 + x]] + Sqrt[
2 - 2*I]*ArcTan[Sqrt[-1/2 + I/2]*Sqrt[1 + x]]
```

fricas [A] time = 0.46, size = 294, normalized size = 1.46

$$-\frac{1}{8}\cdot 8^{\frac{1}{4}}\sqrt{2\sqrt{2}+4}\left(\sqrt{2}-2\right)\log\left(2\cdot 8^{\frac{1}{4}}\sqrt{x+1}\sqrt{2\sqrt{2}+4}+4x+4\sqrt{2}+4\right)+\frac{1}{8}\cdot 8^{\frac{1}{4}}\sqrt{2\sqrt{2}+4}\left(\sqrt{2}-2\right)\log\left(-2\cdot 8^{\frac{1}{4}}\sqrt{x+1}\sqrt{2\sqrt{2}+4}+4x+4\sqrt{2}+4\right)-\frac{1}{2}\cdot 8^{\frac{1}{4}}\sqrt{2}\sqrt{2\sqrt{2}+4}\arctan\left(\frac{1}{16}\cdot 8^{\frac{3}{4}}\sqrt{2}\sqrt{2\cdot 8^{\frac{1}{4}}\sqrt{x+1}\sqrt{2\sqrt{2}+4}+4x+4\sqrt{2}+4}\sqrt{2\sqrt{2}+4}-\frac{1}{8}\cdot 8^{\frac{3}{4}}\sqrt{2}\sqrt{x+1}\sqrt{2\sqrt{2}+4}-\sqrt{2}-1\right)-\frac{1}{2}\cdot 8^{\frac{1}{4}}\sqrt{2}\sqrt{2\sqrt{2}+4}\arctan\left(\frac{1}{16}\cdot 8^{\frac{3}{4}}\sqrt{2}\sqrt{-2\cdot 8^{\frac{1}{4}}\sqrt{x+1}\sqrt{2\sqrt{2}+4}+4x+4\sqrt{2}+4}\sqrt{2\sqrt{2}+4}-\frac{1}{8}\cdot 8^{\frac{3}{4}}\sqrt{2}\sqrt{x+1}\sqrt{2\sqrt{2}+4}+\sqrt{2}+1\right)-2\sqrt{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)^(1/2)/(x^2+1),x, algorithm="fricas")
```

```
[Out] -1/8*8^(1/4)*sqrt(2*sqrt(2) + 4)*(sqrt(2) - 2)*log(2*8^(1/4)*sqrt(x + 1)*sq
rt(2*sqrt(2) + 4) + 4*x + 4*sqrt(2) + 4) + 1/8*8^(1/4)*sqrt(2*sqrt(2) + 4)*
(sqrt(2) - 2)*log(-2*8^(1/4)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) + 4*x + 4*sqrt
(2) + 4) - 1/2*8^(1/4)*sqrt(2)*sqrt(2*sqrt(2) + 4)*arctan(1/16*8^(3/4)*sqrt
(2)*sqrt(2*8^(1/4)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) + 4*x + 4*sqrt(2) + 4)*s
qrt(2*sqrt(2) + 4) - 1/8*8^(3/4)*sqrt(2)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) -
sqrt(2) - 1) - 1/2*8^(1/4)*sqrt(2)*sqrt(2*sqrt(2) + 4)*arctan(1/16*8^(3/4)*
sqrt(2)*sqrt(-2*8^(1/4)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) + 4*x + 4*sqrt(2) +
 4)*sqrt(2*sqrt(2) + 4) - 1/8*8^(3/4)*sqrt(2)*sqrt(x + 1)*sqrt(2*sqrt(2) +
4) + sqrt(2) + 1) - 2*sqrt(x + 1)
```

giac [A] time = 0.93, size = 157, normalized size = 0.78

$$\sqrt{\sqrt{2}+1}\arctan\left(\frac{2^{\frac{3}{4}}\left(2^{\frac{1}{4}}\sqrt{\sqrt{2}+2}+2\sqrt{x+1}\right)}{2\sqrt{-\sqrt{2}+2}}\right)+\sqrt{\sqrt{2}+1}\arctan\left(-\frac{2^{\frac{3}{4}}\left(2^{\frac{1}{4}}\sqrt{\sqrt{2}+2}-2\sqrt{x+1}\right)}{2\sqrt{-\sqrt{2}+2}}\right)+\frac{1}{2}\sqrt{\sqrt{2}-1}\log\left(2^{\frac{1}{4}}\sqrt{x+1}\sqrt{\sqrt{2}+2}+x+\sqrt{2}+1\right)-\frac{1}{2}\sqrt{\sqrt{2}-1}\log\left(-2^{\frac{1}{4}}\sqrt{x+1}\sqrt{\sqrt{2}+2}+x+\sqrt{2}+1\right)-2\sqrt{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)^(1/2)/(x^2+1),x, algorithm="giac")
```

```
[Out] sqrt(sqrt(2) + 1)*arctan(1/2*2^(3/4)*(2^(1/4)*sqrt(sqrt(2) + 2) + 2*sqrt(x
+ 1))/sqrt(-sqrt(2) + 2)) + sqrt(sqrt(2) + 1)*arctan(-1/2*2^(3/4)*(2^(1/4)*
sqrt(sqrt(2) + 2) - 2*sqrt(x + 1))/sqrt(-sqrt(2) + 2)) + 1/2*sqrt(sqrt(2) -
 1)*log(2^(1/4)*sqrt(x + 1)*sqrt(sqrt(2) + 2) + x + sqrt(2) + 1) - 1/2*sqrt
(sqrt(2) - 1)*log(-2^(1/4)*sqrt(x + 1)*sqrt(sqrt(2) + 2) + x + sqrt(2) + 1)
 - 2*sqrt(x + 1)
```

maple [B] time = 0.14, size = 429, normalized size = 2.12

$$\frac{\left(2+2\sqrt{2}\right)\sqrt{2}\arctan\left(\frac{2\sqrt{x+1}-\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{2\sqrt{-2+2\sqrt{2}}}-\frac{\left(2+2\sqrt{2}\right)\arctan\left(\frac{2\sqrt{x+1}-\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{\sqrt{-2+2\sqrt{2}}}+\frac{2\sqrt{2}\arctan\left(\frac{2\sqrt{x+1}-\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{\sqrt{-2+2\sqrt{2}}}+\frac{\left(2+2\sqrt{2}\right)\sqrt{2}\arctan\left(\frac{2\sqrt{x+1}+\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{2\sqrt{-2+2\sqrt{2}}}-\frac{\left(2+2\sqrt{2}\right)\arctan\left(\frac{2\sqrt{x+1}+\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{\sqrt{-2+2\sqrt{2}}}+\frac{2\sqrt{2}\arctan\left(\frac{2\sqrt{x+1}+\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{\sqrt{-2+2\sqrt{2}}}+\frac{\sqrt{2+2\sqrt{2}}\sqrt{2}\ln\left(x+1+\sqrt{2}-\sqrt{x+1}\sqrt{2+2\sqrt{2}}\right)}{4}-\frac{\sqrt{2+2\sqrt{2}}\ln\left(x+1+\sqrt{2}-\sqrt{x+1}\sqrt{2+2\sqrt{2}}\right)}{2}-\frac{\sqrt{2+2\sqrt{2}}\sqrt{2}\ln\left(x+1+\sqrt{2}+\sqrt{x+1}\sqrt{2+2\sqrt{2}}\right)}{4}+\frac{\sqrt{2+2\sqrt{2}}\ln\left(x+1+\sqrt{2}+\sqrt{x+1}\sqrt{2+2\sqrt{2}}\right)}{2}-2\sqrt{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-x+1)*(x+1)^(1/2)/(x^2+1),x)
```

```
[Out] -2*(x+1)^(1/2)-1/4*ln(x+1+2^(1/2)+(x+1)^(1/2)*(2+2*2^(1/2))^(1/2))*(2+2*2^(
1/2))^(1/2)*2^(1/2)+1/2*ln(x+1+2^(1/2)+(x+1)^(1/2)*(2+2*2^(1/2))^(1/2))*(2+
2*2^(1/2))^(1/2)+1/2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)+(2+2*2^(1/2
))^(1/2))/(-2+2*2^(1/2))^(1/2))*(2+2*2^(1/2))*2^(1/2)-1/(-2+2*2^(1/2))^(1/2
)*arctan((2*(x+1)^(1/2)+(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/2))*(2+2*2^(
1/2))+2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)+(2+2*2^(1/2))^(1/2))/(-2
+2*2^(1/2))^(1/2))*2^(1/2)+1/4*ln(x+1+2^(1/2)-(x+1)^(1/2)*(2+2*2^(1/2))^(1/
```

```
2))*(2+2*2^(1/2))^(1/2)*2^(1/2)-1/2*ln(x+1+2^(1/2)-(x+1)^(1/2)*(2+2*2^(1/2)
)^(1/2))*(2+2*2^(1/2))^(1/2)+1/2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)
-(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/2))*(2+2*2^(1/2))*2^(1/2)-1/(-2+2*2
^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)-(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/
2))*(2+2*2^(1/2))+2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)-(2+2*2^(1/2)
)^(1/2))/(-2+2*2^(1/2))^(1/2))*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{x+1}\,(x-1)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)^(1/2)/(x^2+1),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(x + 1)*(x - 1)/(x^2 + 1), x)
```

mupad [B] time = 1.81, size = 233, normalized size = 1.15

$$\operatorname{atanh}\left(\frac{64\sqrt{2}\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{x+1}}{256\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}-64}-\frac{64\sqrt{2}\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{x+1}}{256\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}-64}\right)\left(2\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}+2\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\right)-2\sqrt{x+1}-\operatorname{atanh}\left(\frac{64\sqrt{2}\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{x+1}}{256\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}+64}+\frac{64\sqrt{2}\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{x+1}}{256\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}+64}\right)\left(2\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}-2\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 1)*(x + 1)^(1/2))/(x^2 + 1),x)
```

```
[Out] atanh((64*2^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2)*(x + 1)^(1/2))/(256*(2^(1/2)/4
- 1/4)^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2) - 64) - (64*2^(1/2)*(2^(1/2)/4 - 1/4
)^(1/2)*(x + 1)^(1/2))/(256*(2^(1/2)/4 - 1/4)^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/
2) - 64))*(2*(- 2^(1/2)/4 - 1/4)^(1/2) + 2*(2^(1/2)/4 - 1/4)^(1/2)) - 2*(x
+ 1)^(1/2) - atanh((64*2^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2)*(x + 1)^(1/2))/(25
6*(2^(1/2)/4 - 1/4)^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2) + 64) + (64*2^(1/2)*(2^
(1/2)/4 - 1/4)^(1/2)*(x + 1)^(1/2))/(256*(2^(1/2)/4 - 1/4)^(1/2)*(- 2^(1/2)
/4 - 1/4)^(1/2) + 64))*(2*(- 2^(1/2)/4 - 1/4)^(1/2) - 2*(2^(1/2)/4 - 1/4)^(
1/2))
```

sympy [A] time = 10.72, size = 36, normalized size = 0.18

$$-2\sqrt{x+1}+4\operatorname{RootSum}\left(512t^4+32t^2+1,\left(t\mapsto t\log\left(-128t^3+\sqrt{x+1}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)**(1/2)/(x**2+1),x)
```

```
[Out] -2*sqrt(x + 1) + 4*RootSum(512*_t**4 + 32*_t**2 + 1, Lambda(_t, _t*log(-128
*_t**3 + sqrt(x + 1))))
```

3.1294 $\int \frac{3+x}{\sqrt{4+3x}\left(1+x^2\right)} dx$

Optimal. Leaf size=45

$$\sqrt{2}\tan^{-1}\left(\sqrt{6x+8}+3\right)-\sqrt{2}\tan^{-1}\left(3-\sqrt{2}\sqrt{3x+4}\right)$$

Rubi [A] time = 0.05, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {827, 1161, 618, 204}

$$\sqrt{2}\tan^{-1}\left(\sqrt{6x+8}+3\right)-\sqrt{2}\tan^{-1}\left(3-\sqrt{2}\sqrt{3x+4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(3 + x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] -(Sqrt[2]*ArcTan[3 - Sqrt[2]*Sqrt[4 + 3*x]]) + Sqrt[2]*ArcTan[3 + Sqrt[8 +
6*x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\int \frac{3+x}{\sqrt{4+3x}\,(1+x^2)}\,dx = 2\,\text{Subst}\left(\int \frac{5+x^2}{25-8x^2+x^4}\,dx, x, \sqrt{4+3x}\right)$$
$$= \text{Subst}\left(\int \frac{1}{5-3\sqrt{2}\,x+x^2}\,dx, x, \sqrt{4+3x}\right) + \text{Subst}\left(\int \frac{1}{5+3\sqrt{2}\,x+x^2}\,dx, x, \sqrt{4+3x}\right.$$
$$= -\left(2\,\text{Subst}\left(\int \frac{1}{-2-x^2}\,dx, x, -3\sqrt{2}+2\sqrt{4+3x}\right)\right) - 2\,\text{Subst}\left(\int \frac{1}{-2-x^2}\,dx, x, 3\sqrt{2}\right.$$
$$= -\sqrt{2}\tan^{-1}\left(3-\sqrt{2}\sqrt{4+3x}\right) + \sqrt{2}\tan^{-1}\left(3+\sqrt{2}\sqrt{4+3x}\right)$$

Mathematica [C] time = 0.04, size = 63, normalized size = 1.40

$$\frac{1}{5}\left((1-3i)\sqrt{4-3i}\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4-3i}}\right) + (1+3i)\sqrt{4+3i}\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4+3i}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] ((1 - 3*I)*Sqrt[4 - 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 - 3*I]] + (1 + 3*I)*S
qrt[4 + 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 + 3*I]])/5
```

IntegrateAlgebraic [A] time = 0.09, size = 36, normalized size = 0.80

$$\sqrt{2}\tan^{-1}\left(\frac{\frac{3x+4}{\sqrt{2}} - \frac{5}{\sqrt{2}}}{\sqrt{3x+4}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(3 + x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] Sqrt[2]*ArcTan[(-5/Sqrt[2] + (4 + 3*x)/Sqrt[2])/Sqrt[4 + 3*x]]
```

fricas [A] time = 0.42, size = 22, normalized size = 0.49

$$\sqrt{2}\arctan\left(\frac{\sqrt{2}\,(3\,x-1)}{2\,\sqrt{3\,x+4}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="fricas")
```

```
[Out] sqrt(2)*arctan(1/2*sqrt(2)*(3*x - 1)/sqrt(3*x + 4))
```

giac [A] time = 0.24, size = 63, normalized size = 1.40

$$\sqrt{2}\arctan\left(\frac{1}{250}\cdot 25^{\frac{3}{4}}\sqrt{10}\left(3\cdot 25^{\frac{1}{4}}\sqrt{10}+10\sqrt{3\,x+4}\right)\right) + \sqrt{2}\arctan\left(-\frac{1}{250}\cdot 25^{\frac{3}{4}}\sqrt{10}\left(3\cdot 25^{\frac{1}{4}}\sqrt{10}-10\sqrt{3\,x+4}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(2)*arctan(1/250*25^(3/4)*sqrt(10)*(3*25^(1/4)*sqrt(10) + 10*sqrt(3*x +
 4))) + sqrt(2)*arctan(-1/250*25^(3/4)*sqrt(10)*(3*25^(1/4)*sqrt(10) - 10*s
qrt(3*x + 4)))
```

maple [A] time = 0.16, size = 52, normalized size = 1.16

$$\sqrt{2}\ \arctan\left(\frac{\left(2\sqrt{3x+4}\ -3\sqrt{2}\right)\sqrt{2}}{2}\right)+\sqrt{2}\ \arctan\left(\frac{\left(2\sqrt{3x+4}\ +3\sqrt{2}\right)\sqrt{2}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+3)/(x^2+1)/(3*x+4)^(1/2),x)
```

```
[Out] 2^(1/2)*arctan(1/2*(2*(3*x+4)^(1/2)+3*2^(1/2))*2^(1/2))+2^(1/2)*arctan(1/2*
(2*(3*x+4)^(1/2)-3*2^(1/2))*2^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x+3}{\left(x^2+1\right)\sqrt{3\,x+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((x + 3)/((x^2 + 1)*sqrt(3*x + 4)), x)
```

mupad [B] time = 1.76, size = 38, normalized size = 0.84

$$\sqrt{2}\,\left(\mathrm{atan}\left(\frac{\sqrt{2}\,{\left(3\,x+4\right)}^{3/2}}{10}-\frac{3\,\sqrt{6\,x+8}}{10}\right)+\mathrm{atan}\left(\frac{\sqrt{6\,x+8}}{2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 3)/((3*x + 4)^(1/2)*(x^2 + 1)),x)
```

```
[Out] 2^(1/2)*(atan((2^(1/2)*(3*x + 4)^(3/2))/10 - (3*(6*x + 8)^(1/2))/10) + atan
((6*x + 8)^(1/2)/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x+3}{\sqrt{3x+4}\,\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x**2+1)/(4+3*x)**(1/2),x)
```

```
[Out] Integral((x + 3)/(sqrt(3*x + 4)*(x**2 + 1)), x)
```

3.1295 $\int \frac{1-3x}{\sqrt{4+3x}\,(1+x^2)}\,dx$

Optimal. Leaf size=53

$$\frac{\log\left(x+\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}-\frac{\log\left(x-\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}$$

Rubi [A] time = 0.05, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {827, 1164, 628}

$$\frac{\log\left(x+\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}-\frac{\log\left(x-\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - 3*x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] -(Log[3 + x - Sqrt[2]*Sqrt[4 + 3*x]]/Sqrt[2]) + Log[3 + x + Sqrt[2]*Sqrt[4
+ 3*x]]/Sqrt[2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1164

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(-2*d)/e - b/c, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e
+ q*x - x^2, x], x], x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^
2, x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c
*d^2 - a*e^2, 0] &&  !GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1-3x}{\sqrt{4+3x}\,(1+x^2)}\,dx &= 2\,\text{Subst}\left(\int \frac{15-3x^2}{25-8x^2+x^4}\,dx,x,\sqrt{4+3x}\right)\\ &= -\frac{\text{Subst}\left(\int \frac{3\sqrt{2}+2x}{-5-3\sqrt{2}x-x^2}\,dx,x,\sqrt{4+3x}\right)}{\sqrt{2}}-\frac{\text{Subst}\left(\int \frac{3\sqrt{2}-2x}{-5+3\sqrt{2}x-x^2}\,dx,x,\sqrt{4+3x}\right)}{\sqrt{2}}\\ &= -\frac{\log\left(3+x-\sqrt{2}\sqrt{4+3x}\right)}{\sqrt{2}}+\frac{\log\left(3+x+\sqrt{2}\sqrt{4+3x}\right)}{\sqrt{2}}\end{aligned}$$

Mathematica [C] time = 0.03, size = 63, normalized size = 1.19

$$\frac{1}{5}\left((3+i)\sqrt{4-3i}\,\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4-3i}}\right)+(3-i)\sqrt{4+3i}\,\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4+3i}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - 3*x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] ((3 + I)*Sqrt[4 - 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 - 3*I]] + (3 - I)*Sqrt[
4 + 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 + 3*I]])/5
```

IntegrateAlgebraic [A] time = 0.05, size = 30, normalized size = 0.57

$$\sqrt{2}\tanh^{-1}\left(\frac{3\sqrt{2}\sqrt{3x+4}}{3x+9}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(1 - 3*x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] Sqrt[2]*ArcTanh[(3*Sqrt[2]*Sqrt[4 + 3*x])/(9 + 3*x)]
```

fricas [A] time = 0.42, size = 37, normalized size = 0.70

$$\frac{1}{2}\sqrt{2}\log\left(\frac{2\sqrt{2}\sqrt{3x+4}(x+3)+x^2+12x+17}{x^2+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*log((2*sqrt(2)*sqrt(3*x + 4)*(x + 3) + x^2 + 12*x + 17)/(x^2 +
1))
```

giac [A] time = 0.22, size = 53, normalized size = 1.00

$$\frac{1}{2}\sqrt{2}\log\left(\frac{3}{5}\cdot 25^{\frac{1}{4}}\sqrt{10}\sqrt{3x+4}+3x+9\right)-\frac{1}{2}\sqrt{2}\log\left(-\frac{3}{5}\cdot 25^{\frac{1}{4}}\sqrt{10}\sqrt{3x+4}+3x+9\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*log(3/5*25^(1/4)*sqrt(10)*sqrt(3*x + 4) + 3*x + 9) - 1/2*sqrt(2
)*log(-3/5*25^(1/4)*sqrt(10)*sqrt(3*x + 4) + 3*x + 9)
```

maple [A] time = 0.07, size = 48, normalized size = 0.91

$$-\frac{\sqrt{2}\,\ln\left(3x+9-3\sqrt{2}\,\sqrt{3x+4}\right)}{2}+\frac{\sqrt{2}\,\ln\left(3x+9+3\sqrt{2}\,\sqrt{3x+4}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1-3*x)/(x^2+1)/(3*x+4)^(1/2),x)
```

```
[Out] 1/2*2^(1/2)*ln(3*x+9+3*2^(1/2)*(3*x+4)^(1/2))-1/2*2^(1/2)*ln(3*x+9-3*2^(1/2
)*(3*x+4)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{3x-1}{\left(x^2+1\right)\sqrt{3x+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x - 1)/((x^2 + 1)*sqrt(3*x + 4)), x)
```

mupad [B] time = 1.84, size = 21, normalized size = 0.40

$$\sqrt{2}\,\mathrm{atanh}\left(\frac{24\,\sqrt{6\,x+8}}{24\,x+72}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x - 1)/((3*x + 4)^(1/2)*(x^2 + 1)),x)
```

```
[Out] 2^(1/2)*atanh((24*(6*x + 8)^(1/2))/(24*x + 72))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{3x}{x^2\sqrt{3x+4}+\sqrt{3x+4}}\,dx - \int \left(-\frac{1}{x^2\sqrt{3x+4}+\sqrt{3x+4}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x**2+1)/(4+3*x)**(1/2),x)
```

```
[Out] -Integral(3*x/(x**2*sqrt(3*x + 4) + sqrt(3*x + 4)), x) - Integral(-1/(x**2*
sqrt(3*x + 4) + sqrt(3*x + 4)), x)
```

3.1296 $\int \frac{2+x}{\sqrt{3+4x}(1+x^2)}\,dx$

Optimal. Leaf size=29

$$\tan^{-1}\left(\sqrt{4x+3}+2\right)-\tan^{-1}\left(2-\sqrt{4x+3}\right)$$

Rubi [A] time = 0.03, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {827, 1161, 618, 204}

$$\tan^{-1}\left(\sqrt{4x+3}+2\right)-\tan^{-1}\left(2-\sqrt{4x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(2 + x)/(Sqrt[3 + 4*x]*(1 + x^2)),x]
```

```
[Out] -ArcTan[2 - Sqrt[3 + 4*x]] + ArcTan[2 + Sqrt[3 + 4*x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\begin{aligned}
\int \frac{2+x}{\sqrt{3+4x}\left(1+x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{5+x^2}{25-6x^2+x^4}\,dx,x,\sqrt{3+4x}\right)\\
&= \text{Subst}\left(\int \frac{1}{5-4x+x^2}\,dx,x,\sqrt{3+4x}\right)+\text{Subst}\left(\int \frac{1}{5+4x+x^2}\,dx,x,\sqrt{3+4x}\right)\\
&= -\left(2\,\text{Subst}\left(\int \frac{1}{-4-x^2}\,dx,x,-4+2\sqrt{3+4x}\right)\right)-2\,\text{Subst}\left(\int \frac{1}{-4-x^2}\,dx,x,4+2\sqrt{\right.\\
&= -\tan^{-1}\left(2-\sqrt{3+4x}\right)+\tan^{-1}\left(2+\sqrt{3+4x}\right)
\end{aligned}$$

Mathematica [C] time = 0.02, size = 41, normalized size = 1.41

$$\tan^{-1}\left(\left(\frac{1}{5}+\frac{2i}{5}\right)\sqrt{4x+3}\right)-i\tanh^{-1}\left(\left(\frac{2}{5}+\frac{i}{5}\right)\sqrt{4x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 + x)/(Sqrt[3 + 4*x]*(1 + x^2)),x]
```

```
[Out] ArcTan[(1/5 + (2*I)/5)*Sqrt[3 + 4*x]] - I*ArcTanh[(2/5 + I/5)*Sqrt[3 + 4*x]
]
```

IntegrateAlgebraic [A] time = 0.03, size = 24, normalized size = 0.83

$$\tan^{-1}\left(\frac{\frac{1}{2}(4x+3)-\frac{5}{2}}{\sqrt{4x+3}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(2 + x)/(Sqrt[3 + 4*x]*(1 + x^2)),x]
```

```
[Out] ArcTan[(-5/2 + (3 + 4*x)/2)/Sqrt[3 + 4*x]]
```

fricas [A] time = 0.43, size = 14, normalized size = 0.48

$$\arctan\left(\frac{2x-1}{\sqrt{4x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x^2+1)/(3+4*x)^(1/2),x, algorithm="fricas")
```

```
[Out] arctan((2*x - 1)/sqrt(4*x + 3))
```

giac [A] time = 0.19, size = 21, normalized size = 0.72

$$\arctan\left(\sqrt{4x+3}+2\right)+\arctan\left(\sqrt{4x+3}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x^2+1)/(3+4*x)^(1/2),x, algorithm="giac")
```

```
[Out] arctan(sqrt(4*x + 3) + 2) + arctan(sqrt(4*x + 3) - 2)
```

maple [A] time = 0.05, size = 22, normalized size = 0.76

$$\arctan\left(-2+\sqrt{4x+3}\right)+\arctan\left(2+\sqrt{4x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+2)/(x^2+1)/(4*x+3)^(1/2),x)
```

```
[Out] arctan(-2+(4*x+3)^(1/2))+arctan(2+(4*x+3)^(1/2))
```

maxima [A] time = 1.20, size = 21, normalized size = 0.72

$$\arctan\left(\sqrt{4x+3}+2\right)+\arctan\left(\sqrt{4x+3}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x^2+1)/(3+4*x)^(1/2),x, algorithm="maxima")
```

```
[Out] arctan(sqrt(4*x + 3) + 2) + arctan(sqrt(4*x + 3) - 2)
```

mupad [B] time = 0.14, size = 26, normalized size = 0.90

$$\operatorname{atan}\left(\frac{\sqrt{4\,x+3}}{2}\right)+\operatorname{atan}\left(\frac{(4\,x+2)\,\sqrt{4\,x+3}}{10}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 2)/((4*x + 3)^(1/2)*(x^2 + 1)),x)
[Out] atan((4*x + 3)^(1/2)/2) + atan(((4*x + 2)*(4*x + 3)^(1/2))/10)
```

sympy [A] time = 99.08, size = 26, normalized size = 0.90

$$\operatorname{atan}\left(2-\frac{5}{\sqrt{4x+3}}\right)-\operatorname{atan}\left(2+\frac{5}{\sqrt{4x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x**2+1)/(3+4*x)**(1/2),x)
[Out] atan(2 - 5/sqrt(4*x + 3)) - atan(2 + 5/sqrt(4*x + 3))
```

3.1297 $\int \frac{-2+x}{\sqrt{-3+x}\left(-8+x^2\right)} \, dx$

Optimal. Leaf size=45

$$\frac{\tan^{-1}\left(\left(\sqrt{2}-1\right)\sqrt{x-3}\right)}{\sqrt{2}}+\frac{\tan^{-1}\left(\left(1+\sqrt{2}\right)\sqrt{x-3}\right)}{\sqrt{2}}$$

Rubi [A] time = 0.08, antiderivative size = 57, normalized size of antiderivative = 1.27, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {827, 1163, 203}

$$\frac{\tan^{-1}\left(\frac{\sqrt{x-3}}{\sqrt{3-2\sqrt{2}}}\right)}{\sqrt{2}}+\frac{\tan^{-1}\left(\frac{\sqrt{x-3}}{\sqrt{3+2\sqrt{2}}}\right)}{\sqrt{2}}$$

Warning: Unable to verify antiderivative.

```
[In] Int[(-2 + x)/(Sqrt[-3 + x]*(-8 + x^2)),x]
```

```
[Out] ArcTan[Sqrt[-3 + x]/Sqrt[3 - 2*Sqrt[2]]]/Sqrt[2] + ArcTan[Sqrt[-3 + x]/Sqrt
[3 + 2*Sqrt[2]]]/Sqrt[2]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1163

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Eq
Q[c*d^2 - a*e^2, 0] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{-2+x}{\sqrt{-3+x}\left(-8+x^2\right)} \, dx &= 2\,\text{Subst}\left(\int \frac{1+x^2}{1+6x^2+x^4} \, dx, x, \sqrt{-3+x}\right)\\ &= \frac{1}{2}\left(2-\sqrt{2}\right)\text{Subst}\left(\int \frac{1}{3-2\sqrt{2}+x^2} \, dx, x, \sqrt{-3+x}\right)+\frac{1}{2}\left(2+\sqrt{2}\right)\text{Subst}\left(\int \frac{}{3+2}\right.\\ &= \frac{\tan^{-1}\left(\frac{\sqrt{-3+x}}{\sqrt{3-2\sqrt{2}}}\right)}{\sqrt{2}}+\frac{\tan^{-1}\left(\frac{\sqrt{-3+x}}{\sqrt{3+2\sqrt{2}}}\right)}{\sqrt{2}}\end{aligned}$$

Mathematica [A] time = 0.14, size = 69, normalized size = 1.53

$$\frac{\left(2+\sqrt{2}\right)\left(\tan^{-1}\left(\sqrt{3-2\sqrt{2}}\sqrt{x-3}\right)+\tan^{-1}\left(\sqrt{3+2\sqrt{2}}\sqrt{x-3}\right)\right)}{2\sqrt{3+2\sqrt{2}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(-2 + x)/(Sqrt[-3 + x]*(-8 + x^2)),x]
```

```
[Out] ((2 + Sqrt[2])*(ArcTan[Sqrt[3 - 2*Sqrt[2]]*Sqrt[-3 + x]] + ArcTan[Sqrt[3 + 2*Sqrt[2]]*Sqrt[-3 + x]]))/(2*Sqrt[3 + 2*Sqrt[2]])
```

IntegrateAlgebraic [A] time = 0.21, size = 37, normalized size = 0.82

$$\frac{\tan^{-1}\left(\frac{\frac{x-3}{2\sqrt{2}}-\frac{1}{2\sqrt{2}}}{\sqrt{x-3}}\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(-2 + x)/(Sqrt[-3 + x]*(-8 + x^2)),x]
```

```
[Out] ArcTan[(-1/2*1/Sqrt[2] + (-3 + x)/(2*Sqrt[2]))/Sqrt[-3 + x]]/Sqrt[2]
```

fricas [A] time = 0.40, size = 19, normalized size = 0.42

$$\frac{1}{2}\sqrt{2}\arctan\left(\frac{\sqrt{2}(x-4)}{4\sqrt{x-3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x^2-8)/(-3+x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*arctan(1/4*sqrt(2)*(x - 4)/sqrt(x - 3))
```

giac [A] time = 0.18, size = 23, normalized size = 0.51

$$\frac{1}{4}\sqrt{2}\left(\pi+2\arctan\left(\frac{\sqrt{2}(x-4)}{4\sqrt{x-3}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x^2-8)/(-3+x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*(pi + 2*arctan(1/4*sqrt(2)*(x - 4)/sqrt(x - 3)))
```

maple [B] time = 0.44, size = 119, normalized size = 2.64

$$\frac{2\arctan\left(\frac{2\sqrt{x-3}}{-2+2\sqrt{2}}\right)}{-2+2\sqrt{2}}-\frac{\sqrt{2}\arctan\left(\frac{2\sqrt{x-3}}{-2+2\sqrt{2}}\right)}{-2+2\sqrt{2}}+\frac{\sqrt{2}\arctan\left(\frac{2\sqrt{x-3}}{2+2\sqrt{2}}\right)}{2+2\sqrt{2}}+\frac{2\arctan\left(\frac{2\sqrt{x-3}}{2+2\sqrt{2}}\right)}{2+2\sqrt{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x-2)/(x^2-8)/(x-3)^(1/2),x)
```

```
[Out] 2/(-2+2*2^(1/2))*arctan(2*(x-3)^(1/2)/(-2+2*2^(1/2)))-2^(1/2)/(-2+2*2^(1/2)
)*arctan(2*(x-3)^(1/2)/(-2+2*2^(1/2)))+2^(1/2)/(2+2*2^(1/2))*arctan(2*(x-3)
^(1/2)/(2+2*2^(1/2)))+2/(2+2*2^(1/2))*arctan(2*(x-3)^(1/2)/(2+2*2^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x-2}{\left(x^2-8\right)\sqrt{x-3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x^2-8)/(-3+x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((x - 2)/((x^2 - 8)*sqrt(x - 3)), x)
```

mupad [B] time = 2.04, size = 39, normalized size = 0.87

$$\frac{\sqrt{2}\,\left(\mathrm{atan}\left(\frac{\sqrt{2}\,\sqrt{x-3}}{4}\right)+\mathrm{atan}\left(\frac{7\,\sqrt{2}\,\sqrt{x-3}}{4}+\frac{\sqrt{2}\,{(x-3)}^{3/2}}{4}\right)\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x - 2)/((x^2 - 8)*(x - 3)^(1/2)),x)
```

```
[Out] (2^(1/2)*(atan((2^(1/2)*(x - 3)^(1/2))/4) + atan((7*2^(1/2)*(x - 3)^(1/2))/
4 + (2^(1/2)*(x - 3)^(3/2))/4)))/2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x-2}{\sqrt{x-3}\,\left(x^2-8\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x**2-8)/(-3+x)**(1/2),x)
```

```
[Out] Integral((x - 2)/(sqrt(x - 3)*(x**2 - 8)), x)
```

3.1298 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=372

$$-\frac{c(d+ex)^{m+4}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(m+4)}+\frac{3c^2(d+ex)^{m+6}\left(aBe^2-2Acde+7Bcd\right.}{e^8(m+6)}$$

Rubi [A] time = 0.25, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^{m+4}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(m+4)}-\frac{c^2(d+ex)^{m+5}\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{e^8(m+5)}+\frac{3c^2(d+ex)^{m+6}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(m+6)}-\frac{\left(ae^2+cd^2\right)^3(Bd-Ae)(d+ex)^{m+1}}{e^8(m+1)}+\frac{\left(ae^2+cd^2\right)^2(d+ex)^{m+2}\left(aBe^2-6Acde+7Bcd^2\right)}{e^8(m+2)}-\frac{3c\left(ae^2+cd^2\right)(d+ex)^{m+3}\left(-aAe^3+3aBde^2-5Acd^2e+7Bcd^3\right)}{e^8(m+3)}-\frac{c^3(7Bd-Ae)(d+ex)^{m+7}}{e^8(m+7)}+\frac{Bc^3(d+ex)^{m+8}}{e^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + c*x^2)^3,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^(1 + m))/(e^8*(1 + m))) + ((c*d^
2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^(2 + m))/(e^8*(2 +
 m)) - (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^
3)*(d + e*x)^(3 + m))/(e^8*(3 + m)) - (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B
*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4))*(d + e*x)^(4 + m))/(e^8*(4 + m)
) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(
5 + m))/(e^8*(5 + m)) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^
(6 + m))/(e^8*(6 + m)) - (c^3*(7*B*d - A*e)*(d + e*x)^(7 + m))/(e^8*(7 + m)
) + (B*c^3*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(a+cx^2\right)^3\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^m}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+\right.}{e^7}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^{1+m}}{e^8(1+m)}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+a\right.}{e^8(2+m)}\end{aligned}$$

Mathematica [B] time = 1.62, size = 773, normalized size = 2.08

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((B*d - A*e)*(8 + m)*(e^6*(1 + m)*(2 + m)*(3 + m)*(4 +
 m)*(5 + m)*(6 + m)*(a + c*x^2)^3 + 6*(c*d^2 + a*e^2)*(6 + m)*(e^4*(1 + m)*
(2 + m)*(3 + m)*(4 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(4 + m)*(a*e^2*(6
 + 5*m + m^2) + c*(2*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2)*x^2)) - 4*
c*d*(1 + m)*(d + e*x)*(a*e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x
+ e^2*(6 + 5*m + m^2)*x^2))) - 6*c*d*(1 + m)*(d + e*x)*(e^4*(2 + m)*(3 + m)
*(4 + m)*(5 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(5 + m)*(a*e^2*(12 + 7*m
```

```
 + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x + e^2*(6 + 5*m + m^2)*x^2)) - 4*c*d*(2
 + m)*(d + e*x)*(a*e^2*(20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3 + m)*x + e^2*
(12 + 7*m + m^2)*x^2))))) + B*(1 + m)*(d + e*x)*(e^6*(2 + m)*(3 + m)*(4 + m
)*(5 + m)*(6 + m)*(7 + m)*(a + c*x^2)^3 + 6*(c*d^2 + a*e^2)*(7 + m)*(e^4*(2
 + m)*(3 + m)*(4 + m)*(5 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(5 + m)*(a*
e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x + e^2*(6 + 5*m + m^2)*x^2
)) - 4*c*d*(2 + m)*(d + e*x)*(a*e^2*(20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3
+ m)*x + e^2*(12 + 7*m + m^2)*x^2))) - 6*c*d*(2 + m)*(d + e*x)*(e^4*(3 + m)
*(4 + m)*(5 + m)*(6 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(6 + m)*(a*e^2*(
20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3 + m)*x + e^2*(12 + 7*m + m^2)*x^2)) -
 4*c*d*(3 + m)*(d + e*x)*(a*e^2*(30 + 11*m + m^2) + c*(2*d^2 - 2*d*e*(4 + m
)*x + e^2*(20 + 9*m + m^2)*x^2))))))/(e^8*(1 + m)*(2 + m)*(3 + m)*(4 + m)*(
5 + m)*(6 + m)*(7 + m)*(8 + m))
```

IntegrateAlgebraic [F] time = 0.19, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^m \left(a + cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a + c*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a + c*x^2)^3, x]
```

fricas [B] time = 0.50, size = 3116, normalized size = 8.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] (A*a^3*d*e^7*m^7 - 5040*B*c^3*d^8 + 5760*A*c^3*d^7*e - 20160*B*a*c^2*d^6*e^
2 + 24192*A*a*c^2*d^5*e^3 - 30240*B*a^2*c*d^4*e^4 + 40320*A*a^2*c*d^3*e^5 -
 20160*B*a^3*d^2*e^6 + 40320*A*a^3*d*e^7 + (B*c^3*e^8*m^7 + 28*B*c^3*e^8*m^
6 + 322*B*c^3*e^8*m^5 + 1960*B*c^3*e^8*m^4 + 6769*B*c^3*e^8*m^3 + 13132*B*c
^3*e^8*m^2 + 13068*B*c^3*e^8*m + 5040*B*c^3*e^8)*x^8 + (5760*A*c^3*e^8 + (B
*c^3*d*e^7 + A*c^3*e^8)*m^7 + (21*B*c^3*d*e^7 + 29*A*c^3*e^8)*m^6 + 7*(25*B
*c^3*d*e^7 + 49*A*c^3*e^8)*m^5 + 35*(21*B*c^3*d*e^7 + 61*A*c^3*e^8)*m^4 + 5
6*(29*B*c^3*d*e^7 + 134*A*c^3*e^8)*m^3 + 28*(63*B*c^3*d*e^7 + 527*A*c^3*e^8
)*m^2 + 144*(5*B*c^3*d*e^7 + 103*A*c^3*e^8)*m)*x^7 - (B*a^3*d^2*e^6 - 35*A*
a^3*d*e^7)*m^6 + (20160*B*a*c^2*e^8 + (A*c^3*d*e^7 + 3*B*a*c^2*e^8)*m^7 - (
7*B*c^3*d^2*e^6 - 23*A*c^3*d*e^7 - 90*B*a*c^2*e^8)*m^6 - (105*B*c^3*d^2*e^6
 - 205*A*c^3*d*e^7 - 1098*B*a*c^2*e^8)*m^5 - 5*(119*B*c^3*d^2*e^6 - 181*A*c
^3*d*e^7 - 1404*B*a*c^2*e^8)*m^4 - (1575*B*c^3*d^2*e^6 - 2074*A*c^3*d*e^7 -
 25227*B*a*c^2*e^8)*m^3 - 2*(959*B*c^3*d^2*e^6 - 1156*A*c^3*d*e^7 - 25245*B
*a*c^2*e^8)*m^2 - 24*(35*B*c^3*d^2*e^6 - 40*A*c^3*d*e^7 - 2143*B*a*c^2*e^8)
*m)*x^6 + (6*A*a^2*c*d^3*e^5 - 33*B*a^3*d^2*e^6 + 511*A*a^3*d*e^7)*m^5 + 3*
(8064*A*a*c^2*e^8 + (B*a*c^2*d*e^7 + A*a*c^2*e^8)*m^7 - (2*A*c^3*d^2*e^6 -
25*B*a*c^2*d*e^7 - 31*A*a*c^2*e^8)*m^6 + (14*B*c^3*d^3*e^5 - 36*A*c^3*d^2*e
^6 + 241*B*a*c^2*d*e^7 + 391*A*a*c^2*e^8)*m^5 + (140*B*c^3*d^3*e^5 - 230*A*
c^3*d^2*e^6 + 1135*B*a*c^2*d*e^7 + 2581*A*a*c^2*e^8)*m^4 + 2*(245*B*c^3*d^3
*e^5 - 330*A*c^3*d^2*e^6 + 1367*B*a*c^2*d*e^7 + 4772*A*a*c^2*e^8)*m^3 + 4*(
175*B*c^3*d^3*e^5 - 212*A*c^3*d^2*e^6 + 790*B*a*c^2*d*e^7 + 4891*A*a*c^2*e^
8)*m^2 + 48*(7*B*c^3*d^3*e^5 - 8*A*c^3*d^2*e^6 + 28*B*a*c^2*d*e^7 + 423*A*a
*c^2*e^8)*m)*x^5 - (18*B*a^2*c*d^4*e^4 - 180*A*a^2*c*d^3*e^5 + 445*B*a^3*d^
2*e^6 - 4025*A*a^3*d*e^7)*m^4 + 3*(10080*B*a^2*c*e^8 + (A*a*c^2*d*e^7 + B*a
^2*c*e^8)*m^7 - (5*B*a*c^2*d^2*e^6 - 27*A*a*c^2*d*e^7 - 32*B*a^2*c*e^8)*m^6
 + (10*A*c^3*d^3*e^5 - 105*B*a*c^2*d^2*e^6 + 283*A*a*c^2*d*e^7 + 418*B*a^2*
c*e^8)*m^5 - (70*B*c^3*d^4*e^4 - 140*A*c^3*d^3*e^5 + 785*B*a*c^2*d^2*e^6 -
1449*A*a*c^2*d*e^7 - 2864*B*a^2*c*e^8)*m^4 - (420*B*c^3*d^4*e^4 - 590*A*c^3
*d^3*e^5 + 2535*B*a*c^2*d^2*e^6 - 3748*A*a*c^2*d*e^7 - 10993*B*a^2*c*e^8)*m
```

```
^3 - 2*(385*B*c^3*d^4*e^4 - 470*A*c^3*d^3*e^5 + 1765*B*a*c^2*d^2*e^6 - 2286
*A*a*c^2*d*e^7 - 11656*B*a^2*c*e^8)*m^2 - 12*(35*B*c^3*d^4*e^4 - 40*A*c^3*d
^3*e^5 + 140*B*a*c^2*d^2*e^6 - 168*A*a*c^2*d*e^7 - 2073*B*a^2*c*e^8)*m)*x^4
 + (72*A*a*c^2*d^5*e^3 - 468*B*a^2*c*d^4*e^4 + 2130*A*a^2*c*d^3*e^5 - 3135*
B*a^3*d^2*e^6 + 18424*A*a^3*d*e^7)*m^3 + 3*(13440*A*a^2*c*e^8 + (B*a^2*c*d*
e^7 + A*a^2*c*e^8)*m^7 - (4*A*a*c^2*d^2*e^6 - 29*B*a^2*c*d*e^7 - 33*A*a^2*c
*e^8)*m^6 + (20*B*a*c^2*d^3*e^5 - 96*A*a*c^2*d^2*e^6 + 331*B*a^2*c*d*e^7 +
447*A*a^2*c*e^8)*m^5 - (40*A*c^3*d^4*e^4 - 360*B*a*c^2*d^3*e^5 + 844*A*a*c^
2*d^2*e^6 - 1871*B*a^2*c*d*e^7 - 3195*A*a^2*c*e^8)*m^4 + 4*(70*B*c^3*d^5*e^
3 - 110*A*c^3*d^4*e^4 + 515*B*a*c^2*d^3*e^5 - 816*A*a*c^2*d^2*e^6 + 1345*B*
a^2*c*d*e^7 + 3216*A*a^2*c*e^8)*m^3 + 4*(210*B*c^3*d^5*e^3 - 260*A*c^3*d^4*
e^4 + 990*B*a*c^2*d^3*e^5 - 1300*A*a*c^2*d^2*e^6 + 1793*B*a^2*c*d*e^7 + 717
3*A*a^2*c*e^8)*m^2 + 16*(35*B*c^3*d^5*e^3 - 40*A*c^3*d^4*e^4 + 140*B*a*c^2*
d^3*e^5 - 168*A*a*c^2*d^2*e^6 + 210*B*a^2*c*d*e^7 + 2003*A*a^2*c*e^8)*m)*x^
3 - 2*(180*B*a*c^2*d^6*e^2 - 756*A*a*c^2*d^5*e^3 + 2259*B*a^2*c*d^4*e^4 - 6
210*A*a^2*c*d^3*e^5 + 6077*B*a^3*d^2*e^6 - 24430*A*a^3*d*e^7)*m^2 + (20160*
B*a^3*e^8 + (3*A*a^2*c*d*e^7 + B*a^3*e^8)*m^7 - (9*B*a^2*c*d^2*e^6 - 93*A*a
^2*c*d*e^7 - 34*B*a^3*e^8)*m^6 + (36*A*a*c^2*d^3*e^5 - 243*B*a^2*c*d^2*e^6
+ 1155*A*a^2*c*d*e^7 + 478*B*a^3*e^8)*m^5 - (180*B*a*c^2*d^4*e^4 - 792*A*a*
c^2*d^3*e^5 + 2493*B*a^2*c*d^2*e^6 - 7275*A*a^2*c*d*e^7 - 3580*B*a^3*e^8)*m
^4 + (360*A*c^3*d^5*e^3 - 2880*B*a*c^2*d^4*e^4 + 6012*A*a*c^2*d^3*e^5 - 118
53*B*a^2*c*d^2*e^6 + 24042*A*a^2*c*d*e^7 + 15289*B*a^3*e^8)*m^3 - 2*(1260*B
*c^3*d^6*e^2 - 1620*A*c^3*d^5*e^3 + 6390*B*a*c^2*d^4*e^4 - 8676*A*a*c^2*d^3
*e^5 + 12357*B*a^2*c*d^2*e^6 - 18996*A*a^2*c*d*e^7 - 18353*B*a^3*e^8)*m^2 -
 72*(35*B*c^3*d^6*e^2 - 40*A*c^3*d^5*e^3 + 140*B*a*c^2*d^4*e^4 - 168*A*a*c^
2*d^3*e^5 + 210*B*a^2*c*d^2*e^6 - 280*A*a^2*c*d*e^7 - 621*B*a^3*e^8)*m)*x^2
 + 12*(60*A*c^3*d^7*e - 450*B*a*c^2*d^6*e^2 + 876*A*a*c^2*d^5*e^3 - 1599*B*
a^2*c*d^4*e^4 + 2972*A*a^2*c*d^3*e^5 - 2046*B*a^3*d^2*e^6 + 5772*A*a^3*d*e^
7)*m + (40320*A*a^3*e^8 + (B*a^3*d*e^7 + A*a^3*e^8)*m^7 - (6*A*a^2*c*d^2*e^
6 - 33*B*a^3*d*e^7 - 35*A*a^3*e^8)*m^6 + (18*B*a^2*c*d^3*e^5 - 180*A*a^2*c*
d^2*e^6 + 445*B*a^3*d*e^7 + 511*A*a^3*e^8)*m^5 - (72*A*a*c^2*d^4*e^4 - 468*
B*a^2*c*d^3*e^5 + 2130*A*a^2*c*d^2*e^6 - 3135*B*a^3*d*e^7 - 4025*A*a^3*e^8)
*m^4 + 2*(180*B*a*c^2*d^5*e^3 - 756*A*a*c^2*d^4*e^4 + 2259*B*a^2*c*d^3*e^5
- 6210*A*a^2*c*d^2*e^6 + 6077*B*a^3*d*e^7 + 9212*A*a^3*e^8)*m^3 - 4*(180*A*
c^3*d^6*e^2 - 1350*B*a*c^2*d^5*e^3 + 2628*A*a*c^2*d^4*e^4 - 4797*B*a^2*c*d^
3*e^5 + 8916*A*a^2*c*d^2*e^6 - 6138*B*a^3*d*e^7 - 12215*A*a^3*e^8)*m^2 + 14
4*(35*B*c^3*d^7*e - 40*A*c^3*d^6*e^2 + 140*B*a*c^2*d^5*e^3 - 168*A*a*c^2*d^
4*e^4 + 210*B*a^2*c*d^3*e^5 - 280*A*a^2*c*d^2*e^6 + 140*B*a^3*d*e^7 + 481*A
*a^3*e^8)*m)*x)*(e*x + d)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*e^8*
m^5 + 22449*e^8*m^4 + 67284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 40320
*e^8)
```

giac [B] time = 0.38, size = 5560, normalized size = 14.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^3*m^7*x^8*e^8 + (x*e + d)^m*B*c^3*d*m^7*x^7*e^7 + (x*e + d
)^m*A*c^3*m^7*x^7*e^8 + 28*(x*e + d)^m*B*c^3*m^6*x^8*e^8 + (x*e + d)^m*A*c^
3*d*m^7*x^6*e^7 + 21*(x*e + d)^m*B*c^3*d*m^6*x^7*e^7 - 7*(x*e + d)^m*B*c^3*
d^2*m^6*x^6*e^6 + 3*(x*e + d)^m*B*a*c^2*m^7*x^6*e^8 + 29*(x*e + d)^m*A*c^3*
m^6*x^7*e^8 + 322*(x*e + d)^m*B*c^3*m^5*x^8*e^8 + 3*(x*e + d)^m*B*a*c^2*d*m
^7*x^5*e^7 + 23*(x*e + d)^m*A*c^3*d*m^6*x^6*e^7 + 175*(x*e + d)^m*B*c^3*d*m
^5*x^7*e^7 - 6*(x*e + d)^m*A*c^3*d^2*m^6*x^5*e^6 - 105*(x*e + d)^m*B*c^3*d^
2*m^5*x^6*e^6 + 42*(x*e + d)^m*B*c^3*d^3*m^5*x^5*e^5 + 3*(x*e + d)^m*A*a*c^
2*m^7*x^5*e^8 + 90*(x*e + d)^m*B*a*c^2*m^6*x^6*e^8 + 343*(x*e + d)^m*A*c^3*
m^5*x^7*e^8 + 1960*(x*e + d)^m*B*c^3*m^4*x^8*e^8 + 3*(x*e + d)^m*A*a*c^2*d*
m^7*x^4*e^7 + 75*(x*e + d)^m*B*a*c^2*d*m^6*x^5*e^7 + 205*(x*e + d)^m*A*c^3*
```

d*m^5*x^6*e^7 + 735*(x*e + d)^m*B*c^3*d*m^4*x^7*e^7 - 15*(x*e + d)^m*B*a*c^2*d^2*m^6*x^4*e^6 - 108*(x*e + d)^m*A*c^3*d^2*m^5*x^5*e^6 - 595*(x*e + d)^m*B*c^3*d^2*m^4*x^6*e^6 + 30*(x*e + d)^m*A*c^3*d^3*m^5*x^4*e^5 + 420*(x*e + d)^m*B*c^3*d^3*m^4*x^5*e^5 - 210*(x*e + d)^m*B*c^3*d^4*m^4*x^4*e^4 + 3*(x*e + d)^m*B*a^2*c*m^7*x^4*e^8 + 93*(x*e + d)^m*A*a*c^2*m^6*x^5*e^8 + 1098*(x*e + d)^m*B*a*c^2*m^5*x^6*e^8 + 2135*(x*e + d)^m*A*c^3*m^4*x^7*e^8 + 6769*(x*e + d)^m*B*c^3*m^3*x^8*e^8 + 3*(x*e + d)^m*B*a^2*c*d*m^7*x^3*e^7 + 81*(x*e + d)^m*A*a*c^2*d*m^6*x^4*e^7 + 723*(x*e + d)^m*B*a*c^2*d*m^5*x^5*e^7 + 905*(x*e + d)^m*A*c^3*d*m^4*x^6*e^7 + 1624*(x*e + d)^m*B*c^3*d*m^3*x^7*e^7 - 12*(x*e + d)^m*A*a*c^2*d^2*m^6*x^3*e^6 - 315*(x*e + d)^m*B*a*c^2*d^2*m^5*x^4*e^6 - 690*(x*e + d)^m*A*c^3*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*B*c^3*d^2*m^3*x^6*e^6 + 60*(x*e + d)^m*B*a*c^2*d^3*m^5*x^3*e^5 + 420*(x*e + d)^m*A*c^3*d^3*m^4*x^4*e^5 + 1470*(x*e + d)^m*B*c^3*d^3*m^3*x^5*e^5 - 120*(x*e + d)^m*A*c^3*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m^3*x^4*e^4 + 840*(x*e + d)^m*B*c^3*d^5*m^3*x^3*e^3 + 3*(x*e + d)^m*A*a^2*c*m^7*x^3*e^8 + 96*(x*e + d)^m*B*a^2*c*m^6*x^4*e^8 + 1173*(x*e + d)^m*A*a*c^2*m^5*x^5*e^8 + 7020*(x*e + d)^m*B*a*c^2*m^4*x^6*e^8 + 7504*(x*e + d)^m*A*c^3*m^3*x^7*e^8 + 13132*(x*e + d)^m*B*c^3*m^2*x^8*e^8 + 3*(x*e + d)^m*A*a^2*c*d*m^7*x^2*e^7 + 87*(x*e + d)^m*B*a^2*c*d*m^6*x^3*e^7 + 849*(x*e + d)^m*A*a*c^2*d*m^5*x^4*e^7 + 3405*(x*e + d)^m*B*a*c^2*d*m^4*x^5*e^7 + 2074*(x*e + d)^m*A*c^3*d*m^3*x^6*e^7 + 1764*(x*e + d)^m*B*c^3*d*m^2*x^7*e^7 - 9*(x*e + d)^m*B*a^2*c*d^2*m^6*x^2*e^6 - 288*(x*e + d)^m*A*a*c^2*d^2*m^5*x^3*e^6 - 2355*(x*e + d)^m*B*a*c^2*d^2*m^4*x^4*e^6 - 1980*(x*e + d)^m*A*c^3*d^2*m^3*x^5*e^6 - 1918*(x*e + d)^m*B*c^3*d^2*m^2*x^6*e^6 + 36*(x*e + d)^m*A*a*c^2*d^3*m^5*x^2*e^5 + 1080*(x*e + d)^m*B*a*c^2*d^3*m^4*x^3*e^5 + 1770*(x*e + d)^m*A*c^3*d^3*m^3*x^4*e^5 + 2100*(x*e + d)^m*B*c^3*d^3*m^2*x^5*e^5 - 180*(x*e + d)^m*B*a*c^2*d^4*m^4*x^2*e^4 - 1320*(x*e + d)^m*A*c^3*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*B*c^3*d^4*m^2*x^4*e^4 + 360*(x*e + d)^m*A*c^3*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*B*c^3*d^5*m^2*x^3*e^3 - 2520*(x*e + d)^m*B*c^3*d^6*m^2*x^2*e^2 + (x*e + d)^m*B*a^3*m^7*x^2*e^8 + 99*(x*e + d)^m*A*a^2*c*m^6*x^3*e^8 + 1254*(x*e + d)^m*B*a^2*c*m^5*x^4*e^8 + 7743*(x*e + d)^m*A*a*c^2*m^4*x^5*e^8 + 25227*(x*e + d)^m*B*a*c^2*m^3*x^6*e^8 + 14756*(x*e + d)^m*A*c^3*m^2*x^7*e^8 + 13068*(x*e + d)^m*B*c^3*m*x^8*e^8 + (x*e + d)^m*B*a^3*d*m^7*x*e^7 + 93*(x*e + d)^m*A*a^2*c*d*m^6*x^2*e^7 + 993*(x*e + d)^m*B*a^2*c*d*m^5*x^3*e^7 + 4347*(x*e + d)^m*A*a*c^2*d*m^4*x^4*e^7 + 8202*(x*e + d)^m*B*a*c^2*d*m^3*x^5*e^7 + 2312*(x*e + d)^m*A*c^3*d*m^2*x^6*e^7 + 720*(x*e + d)^m*B*c^3*d*m*x^7*e^7 - 6*(x*e + d)^m*A*a^2*c*d^2*m^6*x*e^6 - 243*(x*e + d)^m*B*a^2*c*d^2*m^5*x^2*e^6 - 2532*(x*e + d)^m*A*a*c^2*d^2*m^4*x^3*e^6 - 7605*(x*e + d)^m*B*a*c^2*d^2*m^3*x^4*e^6 - 2544*(x*e + d)^m*A*c^3*d^2*m^2*x^5*e^6 - 840*(x*e + d)^m*B*c^3*d^2*m*x^6*e^6 + 18*(x*e + d)^m*B*a^2*c*d^3*m^5*x*e^5 + 792*(x*e + d)^m*A*a*c^2*d^3*m^4*x^2*e^5 + 6180*(x*e + d)^m*B*a*c^2*d^3*m^3*x^3*e^5 + 2820*(x*e + d)^m*A*c^3*d^3*m^2*x^4*e^5 + 1008*(x*e + d)^m*B*c^3*d^3*m*x^5*e^5 - 72*(x*e + d)^m*A*a*c^2*d^4*m^4*x*e^4 - 2880*(x*e + d)^m*B*a*c^2*d^4*m^3*x^2*e^4 - 3120*(x*e + d)^m*A*c^3*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m*x^4*e^4 + 360*(x*e + d)^m*B*a*c^2*d^5*m^3*x*e^3 + 3240*(x*e + d)^m*A*c^3*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*B*c^3*d^5*m*x^3*e^3 - 720*(x*e + d)^m*A*c^3*d^6*m^2*x*e^2 - 2520*(x*e + d)^m*B*c^3*d^6*m*x^2*e^2 + 5040*(x*e + d)^m*B*c^3*d^7*m*x*e + (x*e + d)^m*A*a^3*m^7*x*e^8 + 34*(x*e + d)^m*B*a^3*m^6*x^2*e^8 + 1341*(x*e + d)^m*A*a^2*c*m^5*x^3*e^8 + 8592*(x*e + d)^m*B*a^2*c*m^4*x^4*e^8 + 28632*(x*e + d)^m*A*a*c^2*m^3*x^5*e^8 + 50490*(x*e + d)^m*B*a*c^2*m^2*x^6*e^8 + 14832*(x*e + d)^m*A*c^3*m*x^7*e^8 + 5040*(x*e + d)^m*B*c^3*x^8*e^8 + (x*e + d)^m*A*a^3*d*m^7*e^7 + 33*(x*e + d)^m*B*a^3*d*m^6*x*e^7 + 1155*(x*e + d)^m*A*a^2*c*d*m^5*x^2*e^7 + 5613*(x*e + d)^m*B*a^2*c*d*m^4*x^3*e^7 + 11244*(x*e + d)^m*A*a*c^2*d*m^3*x^4*e^7 + 9480*(x*e + d)^m*B*a*c^2*d*m^2*x^5*e^7 + 960*(x*e + d)^m*A*c^3*d*m*x^6*e^7 - (x*e + d)^m*B*a^3*d^2*m^6*e^6 - 180*(x*e + d)^m*A*a^2*c*d^2*m^5*x*e^6 - 2493*(x*e + d)^m*B*a^2*c*d^2*m^4*x^2*e^6 - 9792*(x*e + d)^m*A*a*c^2*d^2*m^3*x^3*e^6 - 10590*(x*e + d)^m*B*a*c^2*d^2*m^2*x^4*e^6 - 1152*(x*e + d)^m*A*c^3*d^2*m*x^5*e^6 + 6*(x*e + d)^m*A*a^2*c*d^3*m^5*e^5 + 468*(x*e + d)^m*B*a^2*c*d^3*m^4*x*e^5 + 6012*(x*e + d)^m

```
*A*a*c^2*d^3*m^3*x^2*e^5 + 11880*(x*e + d)^m*B*a*c^2*d^3*m^2*x^3*e^5 + 1440
*(x*e + d)^m*A*c^3*d^3*m*x^4*e^5 - 18*(x*e + d)^m*B*a^2*c*d^4*m^4*e^4 - 151
2*(x*e + d)^m*A*a*c^2*d^4*m^3*x*e^4 - 12780*(x*e + d)^m*B*a*c^2*d^4*m^2*x^2
*e^4 - 1920*(x*e + d)^m*A*c^3*d^4*m*x^3*e^4 + 72*(x*e + d)^m*A*a*c^2*d^5*m^
3*e^3 + 5400*(x*e + d)^m*B*a*c^2*d^5*m^2*x*e^3 + 2880*(x*e + d)^m*A*c^3*d^5
*m*x^2*e^3 - 360*(x*e + d)^m*B*a*c^2*d^6*m^2*e^2 - 5760*(x*e + d)^m*A*c^3*d
^6*m*x*e^2 + 720*(x*e + d)^m*A*c^3*d^7*m*e - 5040*(x*e + d)^m*B*c^3*d^8 + 3
5*(x*e + d)^m*A*a^3*m^6*x*e^8 + 478*(x*e + d)^m*B*a^3*m^5*x^2*e^8 + 9585*(x
*e + d)^m*A*a^2*c*m^4*x^3*e^8 + 32979*(x*e + d)^m*B*a^2*c*m^3*x^4*e^8 + 586
92*(x*e + d)^m*A*a*c^2*m^2*x^5*e^8 + 51432*(x*e + d)^m*B*a*c^2*m*x^6*e^8 +
5760*(x*e + d)^m*A*c^3*x^7*e^8 + 35*(x*e + d)^m*A*a^3*d*m^6*e^7 + 445*(x*e
+ d)^m*B*a^3*d*m^5*x*e^7 + 7275*(x*e + d)^m*A*a^2*c*d*m^4*x^2*e^7 + 16140*(
x*e + d)^m*B*a^2*c*d*m^3*x^3*e^7 + 13716*(x*e + d)^m*A*a*c^2*d*m^2*x^4*e^7
+ 4032*(x*e + d)^m*B*a*c^2*d*m*x^5*e^7 - 33*(x*e + d)^m*B*a^3*d^2*m^5*e^6 -
 2130*(x*e + d)^m*A*a^2*c*d^2*m^4*x*e^6 - 11853*(x*e + d)^m*B*a^2*c*d^2*m^3
*x^2*e^6 - 15600*(x*e + d)^m*A*a*c^2*d^2*m^2*x^3*e^6 - 5040*(x*e + d)^m*B*a
*c^2*d^2*m*x^4*e^6 + 180*(x*e + d)^m*A*a^2*c*d^3*m^4*e^5 + 4518*(x*e + d)^m
*B*a^2*c*d^3*m^3*x*e^5 + 17352*(x*e + d)^m*A*a*c^2*d^3*m^2*x^2*e^5 + 6720*(
x*e + d)^m*B*a*c^2*d^3*m*x^3*e^5 - 468*(x*e + d)^m*B*a^2*c*d^4*m^3*e^4 - 10
512*(x*e + d)^m*A*a*c^2*d^4*m^2*x*e^4 - 10080*(x*e + d)^m*B*a*c^2*d^4*m*x^2
*e^4 + 1512*(x*e + d)^m*A*a*c^2*d^5*m^2*e^3 + 20160*(x*e + d)^m*B*a*c^2*d^5
*m*x*e^3 - 5400*(x*e + d)^m*B*a*c^2*d^6*m*e^2 + 5760*(x*e + d)^m*A*c^3*d^7*
e + 511*(x*e + d)^m*A*a^3*m^5*x*e^8 + 3580*(x*e + d)^m*B*a^3*m^4*x^2*e^8 +
38592*(x*e + d)^m*A*a^2*c*m^3*x^3*e^8 + 69936*(x*e + d)^m*B*a^2*c*m^2*x^4*e
^8 + 60912*(x*e + d)^m*A*a*c^2*m*x^5*e^8 + 20160*(x*e + d)^m*B*a*c^2*x^6*e^
8 + 511*(x*e + d)^m*A*a^3*d*m^5*e^7 + 3135*(x*e + d)^m*B*a^3*d*m^4*x*e^7 +
24042*(x*e + d)^m*A*a^2*c*d*m^3*x^2*e^7 + 21516*(x*e + d)^m*B*a^2*c*d*m^2*x
^3*e^7 + 6048*(x*e + d)^m*A*a*c^2*d*m*x^4*e^7 - 445*(x*e + d)^m*B*a^3*d^2*m
^4*e^6 - 12420*(x*e + d)^m*A*a^2*c*d^2*m^3*x*e^6 - 24714*(x*e + d)^m*B*a^2*
c*d^2*m^2*x^2*e^6 - 8064*(x*e + d)^m*A*a*c^2*d^2*m*x^3*e^6 + 2130*(x*e + d)
^m*A*a^2*c*d^3*m^3*e^5 + 19188*(x*e + d)^m*B*a^2*c*d^3*m^2*x*e^5 + 12096*(x
*e + d)^m*A*a*c^2*d^3*m*x^2*e^5 - 4518*(x*e + d)^m*B*a^2*c*d^4*m^2*e^4 - 24
192*(x*e + d)^m*A*a*c^2*d^4*m*x*e^4 + 10512*(x*e + d)^m*A*a*c^2*d^5*m*e^3 -
 20160*(x*e + d)^m*B*a*c^2*d^6*e^2 + 4025*(x*e + d)^m*A*a^3*m^4*x*e^8 + 152
89*(x*e + d)^m*B*a^3*m^3*x^2*e^8 + 86076*(x*e + d)^m*A*a^2*c*m^2*x^3*e^8 +
74628*(x*e + d)^m*B*a^2*c*m*x^4*e^8 + 24192*(x*e + d)^m*A*a*c^2*x^5*e^8 + 4
025*(x*e + d)^m*A*a^3*d*m^4*e^7 + 12154*(x*e + d)^m*B*a^3*d*m^3*x*e^7 + 379
92*(x*e + d)^m*A*a^2*c*d*m^2*x^2*e^7 + 10080*(x*e + d)^m*B*a^2*c*d*m*x^3*e^
7 - 3135*(x*e + d)^m*B*a^3*d^2*m^3*e^6 - 35664*(x*e + d)^m*A*a^2*c*d^2*m^2*
x*e^6 - 15120*(x*e + d)^m*B*a^2*c*d^2*m*x^2*e^6 + 12420*(x*e + d)^m*A*a^2*c
*d^3*m^2*e^5 + 30240*(x*e + d)^m*B*a^2*c*d^3*m*x*e^5 - 19188*(x*e + d)^m*B*
a^2*c*d^4*m*e^4 + 24192*(x*e + d)^m*A*a*c^2*d^5*e^3 + 18424*(x*e + d)^m*A*a
^3*m^3*x*e^8 + 36706*(x*e + d)^m*B*a^3*m^2*x^2*e^8 + 96144*(x*e + d)^m*A*a^
2*c*m*x^3*e^8 + 30240*(x*e + d)^m*B*a^2*c*x^4*e^8 + 18424*(x*e + d)^m*A*a^3
*d*m^3*e^7 + 24552*(x*e + d)^m*B*a^3*d*m^2*x*e^7 + 20160*(x*e + d)^m*A*a^2*
c*d*m*x^2*e^7 - 12154*(x*e + d)^m*B*a^3*d^2*m^2*e^6 - 40320*(x*e + d)^m*A*a
^2*c*d^2*m*x*e^6 + 35664*(x*e + d)^m*A*a^2*c*d^3*m*e^5 - 30240*(x*e + d)^m*
B*a^2*c*d^4*e^4 + 48860*(x*e + d)^m*A*a^3*m^2*x*e^8 + 44712*(x*e + d)^m*B*a
^3*m*x^2*e^8 + 40320*(x*e + d)^m*A*a^2*c*x^3*e^8 + 48860*(x*e + d)^m*A*a^3*
d*m^2*e^7 + 20160*(x*e + d)^m*B*a^3*d*m*x*e^7 - 24552*(x*e + d)^m*B*a^3*d^2
*m*e^6 + 40320*(x*e + d)^m*A*a^2*c*d^3*e^5 + 69264*(x*e + d)^m*A*a^3*m*x*e^
8 + 20160*(x*e + d)^m*B*a^3*x^2*e^8 + 69264*(x*e + d)^m*A*a^3*d*m*e^7 - 201
60*(x*e + d)^m*B*a^3*d^2*e^6 + 40320*(x*e + d)^m*A*a^3*x*e^8 + 40320*(x*e +
 d)^m*A*a^3*d*e^7)/(m^8*e^8 + 36*m^7*e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 224
49*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.07, size = 3176, normalized size = 8.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x)

[Out] (e*x+d)^(m+1)*(B*c^3*e^7*m^7*x^7+A*c^3*e^7*m^7*x^6+28*B*c^3*e^7*m^6*x^7+29*A*c^3*e^7*m^6*x^6+3*B*a*c^2*e^7*m^7*x^5-7*B*c^3*d*e^6*m^6*x^6+322*B*c^3*e^7*m^5*x^7+3*A*a*c^2*e^7*m^7*x^4-6*A*c^3*d*e^6*m^6*x^5+343*A*c^3*e^7*m^5*x^6+90*B*a*c^2*e^7*m^6*x^5-147*B*c^3*d*e^6*m^5*x^6+1960*B*c^3*e^7*m^4*x^7+93*A*a*c^2*e^7*m^6*x^4-138*A*c^3*d*e^6*m^5*x^5+2135*A*c^3*e^7*m^4*x^6+3*B*a^2*c*e^7*m^7*x^3-15*B*a*c^2*d*e^6*m^6*x^4+1098*B*a*c^2*e^7*m^5*x^5+42*B*c^3*d^2*e^5*m^5*x^5-1225*B*c^3*d*e^6*m^4*x^6+6769*B*c^3*e^7*m^3*x^7+3*A*a^2*c*e^7*m^7*x^2-12*A*a*c^2*d*e^6*m^6*x^3+1173*A*a*c^2*e^7*m^5*x^4+30*A*c^3*d^2*e^5*m^5*x^4-1230*A*c^3*d*e^6*m^4*x^5+7504*A*c^3*e^7*m^3*x^6+96*B*a^2*c*e^7*m^6*x^3-375*B*a*c^2*d*e^6*m^5*x^4+7020*B*a*c^2*e^7*m^4*x^5+630*B*c^3*d^2*e^5*m^4*x^5-5145*B*c^3*d*e^6*m^3*x^6+13132*B*c^3*e^7*m^2*x^7+99*A*a^2*c*e^7*m^6*x^2-324*A*a*c^2*d*e^6*m^5*x^3+7743*A*a*c^2*e^7*m^4*x^4+540*A*c^3*d^2*e^5*m^4*x^4-5430*A*c^3*d*e^6*m^3*x^5+14756*A*c^3*e^7*m^2*x^6+B*a^3*e^7*m^7*x-9*B*a^2*c*d*e^6*m^6*x^2+1254*B*a^2*c*e^7*m^5*x^3+60*B*a*c^2*d^2*e^5*m^5*x^3-3615*B*a*c^2*d*e^6*m^4*x^4+25227*B*a*c^2*e^7*m^3*x^5-210*B*c^3*d^3*e^4*m^4*x^4+3570*B*c^3*d^2*e^5*m^3*x^5-11368*B*c^3*d*e^6*m^2*x^6+13068*B*c^3*e^7*m*x^7+A*a^3*e^7*m^7-6*A*a^2*c*d*e^6*m^6*x+1341*A*a^2*c*e^7*m^5*x^2+36*A*a*c^2*d^2*e^5*m^5*x^2-3396*A*a*c^2*d*e^6*m^4*x^3+28632*A*a*c^2*e^7*m^3*x^4-120*A*c^3*d^3*e^4*m^4*x^3+3450*A*c^3*d^2*e^5*m^3*x^4-12444*A*c^3*d*e^6*m^2*x^5+14832*A*c^3*e^7*m*x^6+34*B*a^3*e^7*m^6*x-261*B*a^2*c*d*e^6*m^5*x^2+8592*B*a^2*c*e^7*m^4*x^3+1260*B*a*c^2*d^2*e^5*m^4*x^3-17025*B*a*c^2*d*e^6*m^3*x^4+50490*B*a*c^2*e^7*m^2*x^5-2100*B*c^3*d^3*e^4*m^3*x^4+9450*B*c^3*d^2*e^5*m^2*x^5-12348*B*c^3*d*e^6*m*x^6+5040*B*c^3*e^7*x^7+35*A*a^3*e^7*m^6-186*A*a^2*c*d*e^6*m^5*x+9585*A*a^2*c*e^7*m^4*x^2+864*A*a*c^2*d^2*e^5*m^4*x^2-17388*A*a*c^2*d*e^6*m^3*x^3+58692*A*a*c^2*e^7*m^2*x^4-1680*A*c^3*d^3*e^4*m^3*x^3+9900*A*c^3*d^2*e^5*m^2*x^4-13872*A*c^3*d*e^6*m*x^5+5760*A*c^3*e^7*x^6-B*a^3*d*e^6*m^6+478*B*a^3*e^7*m^5*x+18*B*a^2*c*d^2*e^5*m^5*x-2979*B*a^2*c*d*e^6*m^4*x^2+32979*B*a^2*c*e^7*m^3*x^3-180*B*a*c^2*d^3*e^4*m^4*x^2+9420*B*a*c^2*d^2*e^5*m^3*x^3-41010*B*a*c^2*d*e^6*m^2*x^4+51432*B*a*c^2*e^7*m*x^5+840*B*c^3*d^4*e^3*m^3*x^3-7350*B*c^3*d^3*e^4*m^2*x^4+11508*B*c^3*d^2*e^5*m*x^5-5040*B*c^3*d*e^6*x^6+511*A*a^3*e^7*m^5+6*A*a^2*c*d^2*e^5*m^5-2310*A*a^2*c*d*e^6*m^4*x+38592*A*a^2*c*e^7*m^3*x^2-72*A*a*c^2*d^3*e^4*m^4*x+7596*A*a*c^2*d^2*e^5*m^3*x^2-44976*A*a*c^2*d*e^6*m^2*x^3+60912*A*a*c^2*e^7*m*x^4+360*A*c^3*d^4*e^3*m^3*x^2-7080*A*c^3*d^3*e^4*m^2*x^3+12720*A*c^3*d^2*e^5*m*x^4-5760*A*c^3*d*e^6*x^5-33*B*a^3*d*e^6*m^5+3580*B*a^3*e^7*m^4*x+486*B*a^2*c*d^2*e^5*m^4*x-16839*B*a^2*c*d*e^6*m^3*x^2+69936*B*a^2*c*e^7*m^2*x^3-3240*B*a*c^2*d^3*e^4*m^3*x^2+30420*B*a*c^2*d^2*e^5*m^2*x^3-47400*B*a*c^2*d*e^6*m*x^4+20160*B*a*c^2*e^7*x^5+5040*B*c^3*d^4*e^3*m^2*x^3-10500*B*c^3*d^3*e^4*m*x^4+5040*B*c^3*d^2*e^5*x^5+4025*A*a^3*e^7*m^4+180*A*a^2*c*d^2*e^5*m^4-14550*A*a^2*c*d*e^6*m^3*x+86076*A*a^2*c*e^7*m^2*x^2-1584*A*a*c^2*d^3*e^4*m^3*x+29376*A*a*c^2*d^2*e^5*m^2*x^2-54864*A*a*c^2*d*e^6*m*x^3+24192*A*a*c^2*e^7*x^4+3960*A*c^3*d^4*e^3*m^2*x^2-11280*A*c^3*d^3*e^4*m*x^3+5760*A*c^3*d^2*e^5*x^4-445*B*a^3*d*e^6*m^4+15289*B*a^3*e^7*m^3*x-18*B*a^2*c*d^3*e^4*m^4+4986*B*a^2*c*d^2*e^5*m^3*x-48420*B*a^2*c*d*e^6*m^2*x^2+74628*B*a^2*c*e^7*m*x^3+360*B*a*c^2*d^4*e^3*m^3*x-18540*B*a*c^2*d^3*e^4*m^2*x^2+42360*B*a*c^2*d^2*e^5*m*x^3-20160*B*a*c^2*d*e^6*x^4-2520*B*c^3*d^5*e^2*m^2*x^2+9240*B*c^3*d^4*e^3*m*x^3-5040*B*c^3*d^3*e^4*x^4+18424*A*a^3*e^7*m^3+2130*A*a^2*c*d^2*e^5*m^3-48084*A*a^2*c*d*e^6*m^2*x+96144*A*a^2*c*e^7*m*x^2+72*A*a*c^2*d^4*e^3*m^3-12024*A*a*c^2*d^3*e^4*m^2*x+46800*A*a*c^2*d^2*e^5*m*x^2-24192*A*a*c^2*d*e^6*x^3-720*A*c^3*d^5*e^2*m^2*x+9360*A*c^3*d^4*e^3*m*x^2-5760*A*c^3*d^3*e^4*x^3-3135*B*a^3*d*e^6*m^3+36706*B*a^3*e^7*m^2*x-468*B*a^2*c*d^3*e^4*m^3+23706*B*a^2*c*d^2*e^5*m^2*x-64548*B*a^2*c*d*e^6*m*x^2+30240*B*a^2*c*e^7*x^3+5760*B*a*c^2*d^4*e^3*m^2*x-35640*B*a*c^2*d^3*e^4*m*x^2+20160*B*a*c^2*d^2*e^5*x^3-7560*B*c^3*d^5*e^2*m*x^2+5040*B*c^3*d^4*e^3*x^3+48860*A*a^3*e^7*m^2+12420*A*a^2*c*d^2*e^5*m^2-75984*A*a^2*c*d*e^6*m*x+40320*A*a^2*c*e^7*x^2+1512*A*a*c^2*d^4*e^3*m^2-34704*A*a*c^2*d^3*e^4*m*x+24192*A*a*c^2*d^2*e^5*x^2-6480*A*c^3*d^5*e^2*m*x+5760*A*c^3*d^4*e^3*x^2-12154*B*a^3*d*e^6*m^2+44712*B*a^3*e^7*m*x-4518*B*a^2*c*d^3*e^4*m^2+49428*B*a^2*c*d^2*e^5*m*x-30240*B*a^2*c*d*e^6*x^2-360*B*a*c^2*d^

```
5*e^2*m^2+25560*B*a*c^2*d^4*e^3*m*x-20160*B*a*c^2*d^3*e^4*x^2+5040*B*c^3*d^
6*e*m*x-5040*B*c^3*d^5*e^2*x^2+69264*A*a^3*e^7*m+35664*A*a^2*c*d^2*e^5*m-40
320*A*a^2*c*d*e^6*x+10512*A*a*c^2*d^4*e^3*m-24192*A*a*c^2*d^3*e^4*x+720*A*c
^3*d^6*e*m-5760*A*c^3*d^5*e^2*x-24552*B*a^3*d*e^6*m+20160*B*a^3*e^7*x-19188
*B*a^2*c*d^3*e^4*m+30240*B*a^2*c*d^2*e^5*x-5400*B*a*c^2*d^5*e^2*m+20160*B*a
*c^2*d^4*e^3*x+5040*B*c^3*d^6*e*x+40320*A*a^3*e^7+40320*A*a^2*c*d^2*e^5+241
92*A*a*c^2*d^4*e^3+5760*A*c^3*d^6*e-20160*B*a^3*d*e^6-30240*B*a^2*c*d^3*e^4
-20160*B*a*c^2*d^5*e^2-5040*B*c^3*d^7)/e^8/(m^8+36*m^7+546*m^6+4536*m^5+224
49*m^4+67284*m^3+118124*m^2+109584*m+40320)
```

maxima [B] time = 0.87, size = 1104, normalized size = 2.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^3/((m^2 + 3*m + 2)*e^2) +
 (e*x + d)^(m + 1)*A*a^3/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*a^2*c/((m^3 + 6*m^2 + 11*
m + 6)*e^3) + 3*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e
^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a^2*c
/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 3*((m^4 + 10*m^3 + 35*m^2 + 50
*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2
+ 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x
 + d)^m*A*a*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*(
(m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 3
5*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x
^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^
5*e*m*x - 120*d^6)*(e*x + d)^m*B*a*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 +
 1624*m^2 + 1764*m + 720)*e^6) + ((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*
m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 +
120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*x^5 +
30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)*d^4*e
^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*x + 720*d^7)*(e*x + d)^m*A
*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m +
 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 +
13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5 + 735*m^4 + 1624*m^3 + 17
64*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 +
120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^3*e^5*x^5
 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 + 840*(m^3 + 3*m^2 + 2*m)*d
^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^7*e*m*x - 5040*d^8)*(e*x +
 d)^m*B*c^3/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 1
18124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 3.27, size = 2585, normalized size = 6.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(40320*A*a^3*d*e^7 - 5040*B*c^3*d^8 + 5760*A*c^3*d^7*e - 20160
*B*a^3*d^2*e^6 + 24192*A*a*c^2*d^5*e^3 + 40320*A*a^2*c*d^3*e^5 - 20160*B*a*
c^2*d^6*e^2 - 30240*B*a^2*c*d^4*e^4 + 48860*A*a^3*d*e^7*m^2 + 18424*A*a^3*d
*e^7*m^3 + 4025*A*a^3*d*e^7*m^4 + 511*A*a^3*d*e^7*m^5 + 35*A*a^3*d*e^7*m^6
+ A*a^3*d*e^7*m^7 - 24552*B*a^3*d^2*e^6*m - 12154*B*a^3*d^2*e^6*m^2 - 3135*
B*a^3*d^2*e^6*m^3 - 445*B*a^3*d^2*e^6*m^4 - 33*B*a^3*d^2*e^6*m^5 - B*a^3*d^
2*e^6*m^6 + 69264*A*a^3*d*e^7*m + 720*A*c^3*d^7*e*m + 1512*A*a*c^2*d^5*e^3*
m^2 + 12420*A*a^2*c*d^3*e^5*m^2 + 72*A*a*c^2*d^5*e^3*m^3 + 2130*A*a^2*c*d^3
*e^5*m^3 + 180*A*a^2*c*d^3*e^5*m^4 + 6*A*a^2*c*d^3*e^5*m^5 - 360*B*a*c^2*d^
```

```
6*e^2*m^2 - 4518*B*a^2*c*d^4*e^4*m^2 - 468*B*a^2*c*d^4*e^4*m^3 - 18*B*a^2*c
*d^4*e^4*m^4 + 10512*A*a*c^2*d^5*e^3*m + 35664*A*a^2*c*d^3*e^5*m - 5400*B*a
*c^2*d^6*e^2*m - 19188*B*a^2*c*d^4*e^4*m))/(e^8*(109584*m + 118124*m^2 + 67
284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x*(d +
 e*x)^m*(40320*A*a^3*e^8 + 69264*A*a^3*e^8*m + 48860*A*a^3*e^8*m^2 + 18424*
A*a^3*e^8*m^3 + 4025*A*a^3*e^8*m^4 + 511*A*a^3*e^8*m^5 + 35*A*a^3*e^8*m^6 +
 A*a^3*e^8*m^7 + 24552*B*a^3*d*e^7*m^2 + 12154*B*a^3*d*e^7*m^3 + 3135*B*a^3
*d*e^7*m^4 + 445*B*a^3*d*e^7*m^5 + 33*B*a^3*d*e^7*m^6 + B*a^3*d*e^7*m^7 - 5
760*A*c^3*d^6*e^2*m - 720*A*c^3*d^6*e^2*m^2 + 20160*B*a^3*d*e^7*m + 5040*B*
c^3*d^7*e*m - 10512*A*a*c^2*d^4*e^4*m^2 - 35664*A*a^2*c*d^2*e^6*m^2 - 1512*
A*a*c^2*d^4*e^4*m^3 - 12420*A*a^2*c*d^2*e^6*m^3 - 72*A*a*c^2*d^4*e^4*m^4 -
2130*A*a^2*c*d^2*e^6*m^4 - 180*A*a^2*c*d^2*e^6*m^5 - 6*A*a^2*c*d^2*e^6*m^6
+ 5400*B*a*c^2*d^5*e^3*m^2 + 19188*B*a^2*c*d^3*e^5*m^2 + 360*B*a*c^2*d^5*e^
3*m^3 + 4518*B*a^2*c*d^3*e^5*m^3 + 468*B*a^2*c*d^3*e^5*m^4 + 18*B*a^2*c*d^3
*e^5*m^5 - 24192*A*a*c^2*d^4*e^4*m - 40320*A*a^2*c*d^2*e^6*m + 20160*B*a*c^
2*d^5*e^3*m + 30240*B*a^2*c*d^3*e^5*m))/(e^8*(109584*m + 118124*m^2 + 67284
*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (B*c^3*x^8
*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6
+ m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 +
546*m^6 + 36*m^7 + m^8 + 40320) + (x^2*(m + 1)*(d + e*x)^m*(20160*B*a^3*e^6
 + 24552*B*a^3*e^6*m - 2520*B*c^3*d^6*m + 12154*B*a^3*e^6*m^2 + 3135*B*a^3*
e^6*m^3 + 445*B*a^3*e^6*m^4 + 33*B*a^3*e^6*m^5 + B*a^3*e^6*m^6 + 360*A*c^3*
d^5*e*m^2 + 2880*A*c^3*d^5*e*m + 5256*A*a*c^2*d^3*e^3*m^2 + 756*A*a*c^2*d^3
*e^3*m^3 + 36*A*a*c^2*d^3*e^3*m^4 - 2700*B*a*c^2*d^4*e^2*m^2 - 9594*B*a^2*c
*d^2*e^4*m^2 - 180*B*a*c^2*d^4*e^2*m^3 - 2259*B*a^2*c*d^2*e^4*m^3 - 234*B*a
^2*c*d^2*e^4*m^4 - 9*B*a^2*c*d^2*e^4*m^5 + 20160*A*a^2*c*d*e^5*m + 12096*A*
a*c^2*d^3*e^3*m + 17832*A*a^2*c*d*e^5*m^2 + 6210*A*a^2*c*d*e^5*m^3 + 1065*A
*a^2*c*d*e^5*m^4 + 90*A*a^2*c*d*e^5*m^5 + 3*A*a^2*c*d*e^5*m^6 - 10080*B*a*c
^2*d^4*e^2*m - 15120*B*a^2*c*d^2*e^4*m))/(e^6*(109584*m + 118124*m^2 + 6728
4*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (3*c^2*x^
5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(336*A*a*e^3 + 146*A*a*e^
3*m + 14*B*c*d^3*m + 21*A*a*e^3*m^2 + A*a*e^3*m^3 + 56*B*a*d*e^2*m - 16*A*c
*d^2*e*m + 15*B*a*d*e^2*m^2 + B*a*d*e^2*m^3 - 2*A*c*d^2*e*m^2))/(e^3*(10958
4*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^
8 + 40320)) + (3*c*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(1680*B*a^2*e^4
 + 1066*B*a^2*e^4*m - 70*B*c^2*d^4*m + 251*B*a^2*e^4*m^2 + 26*B*a^2*e^4*m^3
 + B*a^2*e^4*m^4 + 10*A*c^2*d^3*e*m^2 + 80*A*c^2*d^3*e*m + 146*A*a*c*d*e^3*
m^2 + 21*A*a*c*d*e^3*m^3 + A*a*c*d*e^3*m^4 - 280*B*a*c*d^2*e^2*m - 75*B*a*c
*d^2*e^2*m^2 - 5*B*a*c*d^2*e^2*m^3 + 336*A*a*c*d*e^3*m))/(e^4*(109584*m + 1
18124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 403
20)) + (c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)
*(168*B*a*e^2 + 45*B*a*e^2*m - 7*B*c*d^2*m + 3*B*a*e^2*m^2 + 8*A*c*d*e*m +
A*c*d*e*m^2))/(e^2*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^
5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c^3*x^7*(d + e*x)^m*(8*A*e + A*e*m
+ B*d*m)*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/(e*(
109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7
 + m^8 + 40320)) + (3*c*x^3*(d + e*x)^m*(3*m + m^2 + 2)*(6720*A*a^2*e^5 + 5
944*A*a^2*e^5*m + 280*B*c^2*d^5*m + 2070*A*a^2*e^5*m^2 + 355*A*a^2*e^5*m^3
+ 30*A*a^2*e^5*m^4 + A*a^2*e^5*m^5 + 1066*B*a^2*d*e^4*m^2 + 251*B*a^2*d*e^4
*m^3 + 26*B*a^2*d*e^4*m^4 + B*a^2*d*e^4*m^5 - 40*A*c^2*d^4*e*m^2 + 1680*B*a
^2*d*e^4*m - 320*A*c^2*d^4*e*m - 1344*A*a*c*d^2*e^3*m + 1120*B*a*c*d^3*e^2*
m - 584*A*a*c*d^2*e^3*m^2 - 84*A*a*c*d^2*e^3*m^3 - 4*A*a*c*d^2*e^3*m^4 + 30
0*B*a*c*d^3*e^2*m^2 + 20*B*a*c*d^3*e^2*m^3))/(e^5*(109584*m + 118124*m^2 +
67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+a)**3,x)
[Out] Timed out
```

3.1299 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=234

$$-\frac{\left(ae^2+cd^2\right)^2 (Bd-Ae)(d+ex)^{m+1}}{e^6(m+1)}+\frac{\left(ae^2+cd^2\right)(d+ex)^{m+2}\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(m+2)}+\frac{2c(d+ex)^{m+4}\left(aBe^2-2A\right.}{e^6(m+4)}$$

Rubi [A] time = 0.14, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{\left(ae^2+cd^2\right)^2 (Bd-Ae)(d+ex)^{m+1}}{e^6(m+1)}+\frac{\left(ae^2+cd^2\right)(d+ex)^{m+2}\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(m+2)}-\frac{2c(d+ex)^{m+3}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6(m+3)}+\frac{2c(d+ex)^{m+4}\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(m+4)}-\frac{c^2(5Bd-Ae)(d+ex)^{m+5}}{e^6(m+5)}+\frac{Bc^2(d+ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + c*x^2)^2,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^(1 + m))/(e^6*(1 + m))) + ((c*d^
2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^(2 + m))/(e^6*(2 + m
)) - (2*c*(5*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(3 +
m))/(e^6*(3 + m)) + (2*c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(4 + m
))/(e^6*(4 + m)) - (c^2*(5*B*d - A*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (B
*c^2*(d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2 (d+ex)^m}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aB\right.}{e^5}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2 (d+ex)^{1+m}}{e^6(1+m)}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right.}{e^6(2+m)}$$

Mathematica [A] time = 0.53, size = 355, normalized size = 1.52

$$\frac{(d+ex)^{m+1}\left(B(m+1)(d+ex)\left(4(m+5)\left(ae^2+cd^2\right)\left(ae^2\left(m^2+7m+12\right)+c\left(2d^2-2de(m+2)x+e^2\left(m^2+5m+6\right)x^2\right)\right)-4cd(m+2)(d+ex)\left(ae^2\left(m^2+9m+20\right)+c\left(2d^2-2de(m+3)x+e^2\left(m^2+7m+12\right)x^2\right)\right)+e^4(m+2)(m+3)(m+4)(m+5)\left(a+cx^2\right)^2\right)-(m+6)(Bd-Ae)\left(4(m+4)\left(ae^2+cd^2\right)\left(ae^2\left(m^2+5m+6\right)+c\left(2d^2-2de(m+1)x+e^2\left(m^2+3m+2\right)x^2\right)\right)-4cd(m+1)(d+ex)\left(ae^2\left(m^2+7m+12\right)+c\left(2d^2-2de(m+2)x+e^2\left(m^2+5m+6\right)x^2\right)\right)+e^4(m+1)(m+2)(m+3)(m+4)\left(a+cx^2\right)^2\right)\right)}{e^6(m+1)(m+2)(m+3)(m+4)(m+5)(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((B*d - A*e)*(6 + m)*(e^4*(1 + m)*(2 + m)*(3 + m)*(4 +
 m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(4 + m)*(a*e^2*(6 + 5*m + m^2) + c*(2
*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2)*x^2)) - 4*c*d*(1 + m)*(d + e*x
)*(a*e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x + e^2*(6 + 5*m + m^2
)*x^2)))) + B*(1 + m)*(d + e*x)*(e^4*(2 + m)*(3 + m)*(4 + m)*(5 + m)*(a + c
*x^2)^2 + 4*(c*d^2 + a*e^2)*(5 + m)*(a*e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*
d*e*(2 + m)*x + e^2*(6 + 5*m + m^2)*x^2)) - 4*c*d*(2 + m)*(d + e*x)*(a*e^2*
(20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3 + m)*x + e^2*(12 + 7*m + m^2)*x^2)))
))/(e^6*(1 + m)*(2 + m)*(3 + m)*(4 + m)*(5 + m)*(6 + m))
```

IntegrateAlgebraic [F] time = 0.10, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m\left(a+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a + c*x^2)^2, x]
```

fricas [B] time = 0.44, size = 1373, normalized size = 5.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] (A*a^2*d*e^5*m^5 - 120*B*c^2*d^6 + 144*A*c^2*d^5*e - 360*B*a*c*d^4*e^2 + 48
0*A*a*c*d^3*e^3 - 360*B*a^2*d^2*e^4 + 720*A*a^2*d*e^5 + (B*c^2*e^6*m^5 + 15
*B*c^2*e^6*m^4 + 85*B*c^2*e^6*m^3 + 225*B*c^2*e^6*m^2 + 274*B*c^2*e^6*m + 1
20*B*c^2*e^6)*x^6 + (144*A*c^2*e^6 + (B*c^2*d*e^5 + A*c^2*e^6)*m^5 + 2*(5*B
*c^2*d*e^5 + 8*A*c^2*e^6)*m^4 + 5*(7*B*c^2*d*e^5 + 19*A*c^2*e^6)*m^3 + 10*(
5*B*c^2*d*e^5 + 26*A*c^2*e^6)*m^2 + 12*(2*B*c^2*d*e^5 + 27*A*c^2*e^6)*m)*x^
5 - (B*a^2*d^2*e^4 - 20*A*a^2*d*e^5)*m^4 + (360*B*a*c*e^6 + (A*c^2*d*e^5 +
2*B*a*c*e^6)*m^5 - (5*B*c^2*d^2*e^4 - 12*A*c^2*d*e^5 - 34*B*a*c*e^6)*m^4 -
(30*B*c^2*d^2*e^4 - 47*A*c^2*d*e^5 - 214*B*a*c*e^6)*m^3 - (55*B*c^2*d^2*e^4
 - 72*A*c^2*d*e^5 - 614*B*a*c*e^6)*m^2 - 6*(5*B*c^2*d^2*e^4 - 6*A*c^2*d*e^5
 - 132*B*a*c*e^6)*m)*x^4 + (4*A*a*c*d^3*e^3 - 18*B*a^2*d^2*e^4 + 155*A*a^2*
d*e^5)*m^3 + 2*(240*A*a*c*e^6 + (B*a*c*d*e^5 + A*a*c*e^6)*m^5 - 2*(A*c^2*d^
2*e^4 - 7*B*a*c*d*e^5 - 9*A*a*c*e^6)*m^4 + (10*B*c^2*d^3*e^3 - 18*A*c^2*d^2
*e^4 + 65*B*a*c*d*e^5 + 121*A*a*c*e^6)*m^3 + 2*(15*B*c^2*d^3*e^3 - 20*A*c^2
*d^2*e^4 + 56*B*a*c*d*e^5 + 186*A*a*c*e^6)*m^2 + 4*(5*B*c^2*d^3*e^3 - 6*A*c
^2*d^2*e^4 + 15*B*a*c*d*e^5 + 127*A*a*c*e^6)*m)*x^3 - (12*B*a*c*d^4*e^2 - 6
0*A*a*c*d^3*e^3 + 119*B*a^2*d^2*e^4 - 580*A*a^2*d*e^5)*m^2 + (360*B*a^2*e^6
 + (2*A*a*c*d*e^5 + B*a^2*e^6)*m^5 - (6*B*a*c*d^2*e^4 - 32*A*a*c*d*e^5 - 19
*B*a^2*e^6)*m^4 + (12*A*c^2*d^3*e^3 - 72*B*a*c*d^2*e^4 + 178*A*a*c*d*e^5 +
137*B*a^2*e^6)*m^3 - (60*B*c^2*d^4*e^2 - 84*A*c^2*d^3*e^3 + 246*B*a*c*d^2*e
^4 - 388*A*a*c*d*e^5 - 461*B*a^2*e^6)*m^2 - 6*(10*B*c^2*d^4*e^2 - 12*A*c^2*
d^3*e^3 + 30*B*a*c*d^2*e^4 - 40*A*a*c*d*e^5 - 117*B*a^2*e^6)*m)*x^2 + 2*(12
*A*c^2*d^5*e - 66*B*a*c*d^4*e^2 + 148*A*a*c*d^3*e^3 - 171*B*a^2*d^2*e^4 + 5
22*A*a^2*d*e^5)*m + (720*A*a^2*e^6 + (B*a^2*d*e^5 + A*a^2*e^6)*m^5 - 2*(2*A
*a*c*d^2*e^4 - 9*B*a^2*d*e^5 - 10*A*a^2*e^6)*m^4 + (12*B*a*c*d^3*e^3 - 60*A
*a*c*d^2*e^4 + 119*B*a^2*d*e^5 + 155*A*a^2*e^6)*m^3 - 2*(12*A*c^2*d^4*e^2 -
 66*B*a*c*d^3*e^3 + 148*A*a*c*d^2*e^4 - 171*B*a^2*d*e^5 - 290*A*a^2*e^6)*m^
2 + 12*(10*B*c^2*d^5*e - 12*A*c^2*d^4*e^2 + 30*B*a*c*d^3*e^3 - 40*A*a*c*d^2
*e^4 + 30*B*a^2*d*e^5 + 87*A*a^2*e^6)*m)*x)*(e*x + d)^m/(e^6*m^6 + 21*e^6*m
^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m + 720*e^6)
```

giac [B] time = 0.26, size = 2435, normalized size = 10.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^2*m^5*x^6*e^6 + (x*e + d)^m*B*c^2*d*m^5*x^5*e^5 + (x*e + d
)^m*A*c^2*m^5*x^5*e^6 + 15*(x*e + d)^m*B*c^2*m^4*x^6*e^6 + (x*e + d)^m*A*c^
2*d*m^5*x^4*e^5 + 10*(x*e + d)^m*B*c^2*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*c^2*
d^2*m^4*x^4*e^4 + 2*(x*e + d)^m*B*a*c*m^5*x^4*e^6 + 16*(x*e + d)^m*A*c^2*m^
4*x^5*e^6 + 85*(x*e + d)^m*B*c^2*m^3*x^6*e^6 + 2*(x*e + d)^m*B*a*c*d*m^5*x^
3*e^5 + 12*(x*e + d)^m*A*c^2*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*c^2*d*m^3*x^5
```

```
*e^5 - 4*(x*e + d)^m*A*c^2*d^2*m^4*x^3*e^4 - 30*(x*e + d)^m*B*c^2*d^2*m^3*x
^4*e^4 + 20*(x*e + d)^m*B*c^2*d^3*m^3*x^3*e^3 + 2*(x*e + d)^m*A*a*c*m^5*x^3
*e^6 + 34*(x*e + d)^m*B*a*c*m^4*x^4*e^6 + 95*(x*e + d)^m*A*c^2*m^3*x^5*e^6
+ 225*(x*e + d)^m*B*c^2*m^2*x^6*e^6 + 2*(x*e + d)^m*A*a*c*d*m^5*x^2*e^5 + 2
8*(x*e + d)^m*B*a*c*d*m^4*x^3*e^5 + 47*(x*e + d)^m*A*c^2*d*m^3*x^4*e^5 + 50
*(x*e + d)^m*B*c^2*d*m^2*x^5*e^5 - 6*(x*e + d)^m*B*a*c*d^2*m^4*x^2*e^4 - 36
*(x*e + d)^m*A*c^2*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*B*c^2*d^2*m^2*x^4*e^4 +
 12*(x*e + d)^m*A*c^2*d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*B*c^2*d^3*m^2*x^3*e^
3 - 60*(x*e + d)^m*B*c^2*d^4*m^2*x^2*e^2 + (x*e + d)^m*B*a^2*m^5*x^2*e^6 +
36*(x*e + d)^m*A*a*c*m^4*x^3*e^6 + 214*(x*e + d)^m*B*a*c*m^3*x^4*e^6 + 260*
(x*e + d)^m*A*c^2*m^2*x^5*e^6 + 274*(x*e + d)^m*B*c^2*m*x^6*e^6 + (x*e + d)
^m*B*a^2*d*m^5*x*e^5 + 32*(x*e + d)^m*A*a*c*d*m^4*x^2*e^5 + 130*(x*e + d)^m
*B*a*c*d*m^3*x^3*e^5 + 72*(x*e + d)^m*A*c^2*d*m^2*x^4*e^5 + 24*(x*e + d)^m*
B*c^2*d*m*x^5*e^5 - 4*(x*e + d)^m*A*a*c*d^2*m^4*x*e^4 - 72*(x*e + d)^m*B*a*
c*d^2*m^3*x^2*e^4 - 80*(x*e + d)^m*A*c^2*d^2*m^2*x^3*e^4 - 30*(x*e + d)^m*B
*c^2*d^2*m*x^4*e^4 + 12*(x*e + d)^m*B*a*c*d^3*m^3*x*e^3 + 84*(x*e + d)^m*A*
c^2*d^3*m^2*x^2*e^3 + 40*(x*e + d)^m*B*c^2*d^3*m*x^3*e^3 - 24*(x*e + d)^m*A
*c^2*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*c^2*d^4*m*x^2*e^2 + 120*(x*e + d)^m*B
*c^2*d^5*m*x*e + (x*e + d)^m*A*a^2*m^5*x*e^6 + 19*(x*e + d)^m*B*a^2*m^4*x^2
*e^6 + 242*(x*e + d)^m*A*a*c*m^3*x^3*e^6 + 614*(x*e + d)^m*B*a*c*m^2*x^4*e^
6 + 324*(x*e + d)^m*A*c^2*m*x^5*e^6 + 120*(x*e + d)^m*B*c^2*x^6*e^6 + (x*e
+ d)^m*A*a^2*d*m^5*e^5 + 18*(x*e + d)^m*B*a^2*d*m^4*x*e^5 + 178*(x*e + d)^m
*A*a*c*d*m^3*x^2*e^5 + 224*(x*e + d)^m*B*a*c*d*m^2*x^3*e^5 + 36*(x*e + d)^m
*A*c^2*d*m*x^4*e^5 - (x*e + d)^m*B*a^2*d^2*m^4*e^4 - 60*(x*e + d)^m*A*a*c*d
^2*m^3*x*e^4 - 246*(x*e + d)^m*B*a*c*d^2*m^2*x^2*e^4 - 48*(x*e + d)^m*A*c^2
*d^2*m*x^3*e^4 + 4*(x*e + d)^m*A*a*c*d^3*m^3*e^3 + 132*(x*e + d)^m*B*a*c*d^
3*m^2*x*e^3 + 72*(x*e + d)^m*A*c^2*d^3*m*x^2*e^3 - 12*(x*e + d)^m*B*a*c*d^4
*m^2*e^2 - 144*(x*e + d)^m*A*c^2*d^4*m*x*e^2 + 24*(x*e + d)^m*A*c^2*d^5*m*e
 - 120*(x*e + d)^m*B*c^2*d^6 + 20*(x*e + d)^m*A*a^2*m^4*x*e^6 + 137*(x*e +
d)^m*B*a^2*m^3*x^2*e^6 + 744*(x*e + d)^m*A*a*c*m^2*x^3*e^6 + 792*(x*e + d)^
m*B*a*c*m*x^4*e^6 + 144*(x*e + d)^m*A*c^2*x^5*e^6 + 20*(x*e + d)^m*A*a^2*d*
m^4*e^5 + 119*(x*e + d)^m*B*a^2*d*m^3*x*e^5 + 388*(x*e + d)^m*A*a*c*d*m^2*x
^2*e^5 + 120*(x*e + d)^m*B*a*c*d*m*x^3*e^5 - 18*(x*e + d)^m*B*a^2*d^2*m^3*e
^4 - 296*(x*e + d)^m*A*a*c*d^2*m^2*x*e^4 - 180*(x*e + d)^m*B*a*c*d^2*m*x^2*
e^4 + 60*(x*e + d)^m*A*a*c*d^3*m^2*e^3 + 360*(x*e + d)^m*B*a*c*d^3*m*x*e^3
- 132*(x*e + d)^m*B*a*c*d^4*m*e^2 + 144*(x*e + d)^m*A*c^2*d^5*e + 155*(x*e
+ d)^m*A*a^2*m^3*x*e^6 + 461*(x*e + d)^m*B*a^2*m^2*x^2*e^6 + 1016*(x*e + d)
^m*A*a*c*m*x^3*e^6 + 360*(x*e + d)^m*B*a*c*x^4*e^6 + 155*(x*e + d)^m*A*a^2*
d*m^3*e^5 + 342*(x*e + d)^m*B*a^2*d*m^2*x*e^5 + 240*(x*e + d)^m*A*a*c*d*m*x
^2*e^5 - 119*(x*e + d)^m*B*a^2*d^2*m^2*e^4 - 480*(x*e + d)^m*A*a*c*d^2*m*x*
e^4 + 296*(x*e + d)^m*A*a*c*d^3*m*e^3 - 360*(x*e + d)^m*B*a*c*d^4*e^2 + 580
*(x*e + d)^m*A*a^2*m^2*x*e^6 + 702*(x*e + d)^m*B*a^2*m*x^2*e^6 + 480*(x*e +
 d)^m*A*a*c*x^3*e^6 + 580*(x*e + d)^m*A*a^2*d*m^2*e^5 + 360*(x*e + d)^m*B*a
^2*d*m*x*e^5 - 342*(x*e + d)^m*B*a^2*d^2*m*e^4 + 480*(x*e + d)^m*A*a*c*d^3*
e^3 + 1044*(x*e + d)^m*A*a^2*m*x*e^6 + 360*(x*e + d)^m*B*a^2*x^2*e^6 + 1044
*(x*e + d)^m*A*a^2*d*m*e^5 - 360*(x*e + d)^m*B*a^2*d^2*e^4 + 720*(x*e + d)^
m*A*a^2*x*e^6 + 720*(x*e + d)^m*A*a^2*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^
4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1271, normalized size = 5.43

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(B*c^2*e^5*m^5*x^5+A*c^2*e^5*m^5*x^4+15*B*c^2*e^5*m^4*x^5+16*
A*c^2*e^5*m^4*x^4+2*B*a*c*e^5*m^5*x^3-5*B*c^2*d*e^4*m^4*x^4+85*B*c^2*e^5*m^
3*x^5+2*A*a*c*e^5*m^5*x^2-4*A*c^2*d*e^4*m^4*x^3+95*A*c^2*e^5*m^3*x^4+34*B*a
*c*e^5*m^4*x^3-50*B*c^2*d*e^4*m^3*x^4+225*B*c^2*e^5*m^2*x^5+36*A*a*c*e^5*m^
```

```
4*x^2-48*A*c^2*d*e^4*m^3*x^3+260*A*c^2*e^5*m^2*x^4+B*a^2*e^5*m^5*x-6*B*a*c*
d*e^4*m^4*x^2+214*B*a*c*e^5*m^3*x^3+20*B*c^2*d^2*e^3*m^3*x^3-175*B*c^2*d*e^
4*m^2*x^4+274*B*c^2*e^5*m*x^5+A*a^2*e^5*m^5-4*A*a*c*d*e^4*m^4*x+242*A*a*c*e
^5*m^3*x^2+12*A*c^2*d^2*e^3*m^3*x^2-188*A*c^2*d*e^4*m^2*x^3+324*A*c^2*e^5*m
*x^4+19*B*a^2*e^5*m^4*x-84*B*a*c*d*e^4*m^3*x^2+614*B*a*c*e^5*m^2*x^3+120*B*
c^2*d^2*e^3*m^2*x^3-250*B*c^2*d*e^4*m*x^4+120*B*c^2*e^5*x^5+20*A*a^2*e^5*m^
4-64*A*a*c*d*e^4*m^3*x+744*A*a*c*e^5*m^2*x^2+108*A*c^2*d^2*e^3*m^2*x^2-288*
A*c^2*d*e^4*m*x^3+144*A*c^2*e^5*x^4-B*a^2*d*e^4*m^4+137*B*a^2*e^5*m^3*x+12*
B*a*c*d^2*e^3*m^3*x-390*B*a*c*d*e^4*m^2*x^2+792*B*a*c*e^5*m*x^3-60*B*c^2*d^
3*e^2*m^2*x^2+220*B*c^2*d^2*e^3*m*x^3-120*B*c^2*d*e^4*x^4+155*A*a^2*e^5*m^3
+4*A*a*c*d^2*e^3*m^3-356*A*a*c*d*e^4*m^2*x+1016*A*a*c*e^5*m*x^2-24*A*c^2*d^
3*e^2*m^2*x+240*A*c^2*d^2*e^3*m*x^2-144*A*c^2*d*e^4*x^3-18*B*a^2*d*e^4*m^3+
461*B*a^2*e^5*m^2*x+144*B*a*c*d^2*e^3*m^2*x-672*B*a*c*d*e^4*m*x^2+360*B*a*c
*e^5*x^3-180*B*c^2*d^3*e^2*m*x^2+120*B*c^2*d^2*e^3*x^3+580*A*a^2*e^5*m^2+60
*A*a*c*d^2*e^3*m^2-776*A*a*c*d*e^4*m*x+480*A*a*c*e^5*x^2-168*A*c^2*d^3*e^2*
m*x+144*A*c^2*d^2*e^3*x^2-119*B*a^2*d*e^4*m^2+702*B*a^2*e^5*m*x-12*B*a*c*d^
3*e^2*m^2+492*B*a*c*d^2*e^3*m*x-360*B*a*c*d*e^4*x^2+120*B*c^2*d^4*e*m*x-120
*B*c^2*d^3*e^2*x^2+1044*A*a^2*e^5*m+296*A*a*c*d^2*e^3*m-480*A*a*c*d*e^4*x+2
4*A*c^2*d^4*e*m-144*A*c^2*d^3*e^2*x-342*B*a^2*d*e^4*m+360*B*a^2*e^5*x-132*B
*a*c*d^3*e^2*m+360*B*a*c*d^2*e^3*x+120*B*c^2*d^4*e*x+720*A*a^2*e^5+480*A*a*
c*d^2*e^3+144*A*c^2*d^4*e-360*B*a^2*d*e^4-360*B*a*c*d^3*e^2-120*B*c^2*d^5)/
e^6/(m^6+21*m^5+175*m^4+735*m^3+1624*m^2+1764*m+720)
```

maxima [B] time = 0.74, size = 575, normalized size = 2.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^2/((m^2 + 3*m + 2)*e^2) +
 (e*x + d)^(m + 1)*A*a^2/(e*(m + 1)) + 2*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*a*c/((m^3 + 6*m^2 + 11*m
+ 6)*e^3) + 2*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3
*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a*c/((m
^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 2
4)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)
*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^
m*A*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^5 + 15*
m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50
*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m
^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x -
120*d^6)*(e*x + d)^m*B*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 +
1764*m + 720)*e^6)
```

mupad [B] time = 2.46, size = 1229, normalized size = 5.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(720*A*a^2*d*e^5 - 120*B*c^2*d^6 + 144*A*c^2*d^5*e - 360*B*a^2
*d^2*e^4 + 580*A*a^2*d*e^5*m^2 + 155*A*a^2*d*e^5*m^3 + 20*A*a^2*d*e^5*m^4 +
 A*a^2*d*e^5*m^5 - 342*B*a^2*d^2*e^4*m - 119*B*a^2*d^2*e^4*m^2 - 18*B*a^2*d
^2*e^4*m^3 - B*a^2*d^2*e^4*m^4 + 480*A*a*c*d^3*e^3 - 360*B*a*c*d^4*e^2 + 10
44*A*a^2*d*e^5*m + 24*A*c^2*d^5*e*m + 296*A*a*c*d^3*e^3*m - 132*B*a*c*d^4*e
^2*m + 60*A*a*c*d^3*e^3*m^2 + 4*A*a*c*d^3*e^3*m^3 - 12*B*a*c*d^4*e^2*m^2))/
(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x*(d
```

```
+ e*x)^m*(720*A*a^2*e^6 + 1044*A*a^2*e^6*m + 580*A*a^2*e^6*m^2 + 155*A*a^2*
e^6*m^3 + 20*A*a^2*e^6*m^4 + A*a^2*e^6*m^5 + 342*B*a^2*d*e^5*m^2 + 119*B*a^
2*d*e^5*m^3 + 18*B*a^2*d*e^5*m^4 + B*a^2*d*e^5*m^5 - 144*A*c^2*d^4*e^2*m -
24*A*c^2*d^4*e^2*m^2 + 360*B*a^2*d*e^5*m + 120*B*c^2*d^5*e*m - 480*A*a*c*d^
2*e^4*m + 360*B*a*c*d^3*e^3*m - 296*A*a*c*d^2*e^4*m^2 - 60*A*a*c*d^2*e^4*m^
3 - 4*A*a*c*d^2*e^4*m^4 + 132*B*a*c*d^3*e^3*m^2 + 12*B*a*c*d^3*e^3*m^3))/(e
^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^2*(m
+ 1)*(d + e*x)^m*(360*B*a^2*e^4 + 342*B*a^2*e^4*m - 60*B*c^2*d^4*m + 119*B*
a^2*e^4*m^2 + 18*B*a^2*e^4*m^3 + B*a^2*e^4*m^4 + 12*A*c^2*d^3*e*m^2 + 72*A*
c^2*d^3*e*m + 148*A*a*c*d*e^3*m^2 + 30*A*a*c*d*e^3*m^3 + 2*A*a*c*d*e^3*m^4
- 180*B*a*c*d^2*e^2*m - 66*B*a*c*d^2*e^2*m^2 - 6*B*a*c*d^2*e^2*m^3 + 240*A*
a*c*d*e^3*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 +
720)) + (B*c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 1
20))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (c^2*x^
5*(d + e*x)^m*(6*A*e + A*e*m + B*d*m)*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))/
(e*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (c*x^4*(
d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(60*B*a*e^2 + 22*B*a*e^2*m - 5*B*c*d^2*
m + 2*B*a*e^2*m^2 + 6*A*c*d*e*m + A*c*d*e*m^2))/(e^2*(1764*m + 1624*m^2 + 7
35*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (2*c*x^3*(d + e*x)^m*(3*m + m^2 +
 2)*(120*A*a*e^3 + 74*A*a*e^3*m + 10*B*c*d^3*m + 15*A*a*e^3*m^2 + A*a*e^3*m
^3 + 30*B*a*d*e^2*m - 12*A*c*d^2*e*m + 11*B*a*d*e^2*m^2 + B*a*d*e^2*m^3 - 2
*A*c*d^2*e*m^2))/(e^3*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6
 + 720))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1300 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)\,dx$

Optimal. Leaf size=126

$$-\frac{\left(ae^2+cd^2\right)(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4(m+2)}-\frac{c(3Bd-Ae)(d+ex)^{m+3}}{e^4(m+3)}+\frac{Bc(d+e\ldots}{e^4(m+\ldots}$$

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{\left(ae^2+cd^2\right)(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4(m+2)}-\frac{c(3Bd-Ae)(d+ex)^{m+3}}{e^4(m+3)}+\frac{Bc(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + c*x^2),x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((3*B*c*
d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(2 + m))/(e^4*(2 + m)) - (c*(3*B*d - A
*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (B*c*(d + e*x)^(4 + m))/(e^4*(4 + m)
)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+cx^2\right)\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex\ldots}{e^3}\ldots\right.$$
$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{2\ldots}}{e^4(2+m)}\ldots$$

Mathematica [A] time = 0.20, size = 122, normalized size = 0.97

$$\frac{(d+ex)^{m+1}\left((Ae-Bd)\left(\frac{ae^2+cd^2}{m+1}+\frac{c(d+ex)^2}{m+3}-\frac{2cd(d+ex)}{m+2}\right)+B(d+ex)\left(\frac{ae^2+cd^2}{m+2}+\frac{c(d+ex)^2}{m+4}-\frac{2cd(d+ex)}{m+3}\right)\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*((-(B*d) + A*e)*((c*d^2 + a*e^2)/(1 + m) - (2*c*d*(d + e
*x))/(2 + m) + (c*(d + e*x)^2)/(3 + m)) + B*(d + e*x)*((c*d^2 + a*e^2)/(2 +
 m) - (2*c*d*(d + e*x))/(3 + m) + (c*(d + e*x)^2)/(4 + m))))/e^4
```

IntegrateAlgebraic [F] time = 0.07, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a + c*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a + c*x^2), x]
```

fricas [B] time = 0.45, size = 434, normalized size = 3.44

$$\frac{\left(Aade^3m^3 - 6\,Bcd^4 + 8\,Acd^3e - 12\,Bad^2e^2 + 24\,Aade^3 + \left(Bce^4m^3 + 6\,Bce^4m^2 + 11\,Bce^4m + 6\,Bce^4\right)x^4 + \left(8\,Ace^4 + \left(Bcde^3 + Ace^4\right)m^3 + \left(3\,Bcde^3 + 7\,Ace^4\right)m^2 + 2\left(Bcde^3 + 7\,Ace^4\right)m\right)x^3 - \left(Bad^2e^2 - 9\,Aade^3\right)m^2 + \left(12\,Bae^4 + \left(Acde^3 + Bae^4\right)m^3 - \left(3\,Bcd^2e^2 - 5\,Acde^3 - 8\,Bae^4\right)m^2 - \left(3\,Bcd^2e^2 - 4\,Acde^3 - 19\,Bae^4\right)m\right)x^2 + \left(2\,Acd^3e - 7\,Bad^2e^2 + 26\,Aade^3\right)m + \left(24\,Aae^4 + \left(Bade^3 + Aae^4\right)m^3 - \left(2\,Acd^2e^2 - 7\,Bade^3 - 9\,Aae^4\right)m^2 + 2\left(3\,Bcd^3e - 4\,Acd^2e^2 + 6\,Bade^3 + 13\,Aae^4\right)m\right)x\right)(ex+d)^m}{e^4m^4 + 10\,e^4m^3 + 35\,e^4m^2 + 50\,e^4m + 24\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] (A*a*d*e^3*m^3 - 6*B*c*d^4 + 8*A*c*d^3*e - 12*B*a*d^2*e^2 + 24*A*a*d*e^3 +
(B*c*e^4*m^3 + 6*B*c*e^4*m^2 + 11*B*c*e^4*m + 6*B*c*e^4)*x^4 + (8*A*c*e^4 +
 (B*c*d*e^3 + A*c*e^4)*m^3 + (3*B*c*d*e^3 + 7*A*c*e^4)*m^2 + 2*(B*c*d*e^3 +
 7*A*c*e^4)*m)*x^3 - (B*a*d^2*e^2 - 9*A*a*d*e^3)*m^2 + (12*B*a*e^4 + (A*c*d
*e^3 + B*a*e^4)*m^3 - (3*B*c*d^2*e^2 - 5*A*c*d*e^3 - 8*B*a*e^4)*m^2 - (3*B*
c*d^2*e^2 - 4*A*c*d*e^3 - 19*B*a*e^4)*m)*x^2 + (2*A*c*d^3*e - 7*B*a*d^2*e^2
 + 26*A*a*d*e^3)*m + (24*A*a*e^4 + (B*a*d*e^3 + A*a*e^4)*m^3 - (2*A*c*d^2*e
^2 - 7*B*a*d*e^3 - 9*A*a*e^4)*m^2 + 2*(3*B*c*d^3*e - 4*A*c*d^2*e^2 + 6*B*a*
d*e^3 + 13*A*a*e^4)*m)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 +
50*e^4*m + 24*e^4)
```

giac [B] time = 0.18, size = 770, normalized size = 6.11

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c*m^3*x^4*e^4 + (x*e + d)^m*B*c*d*m^3*x^3*e^3 + (x*e + d)^m*
A*c*m^3*x^3*e^4 + 6*(x*e + d)^m*B*c*m^2*x^4*e^4 + (x*e + d)^m*A*c*d*m^3*x^2
*e^3 + 3*(x*e + d)^m*B*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*c*d^2*m^2*x^2*e^2
+ (x*e + d)^m*B*a*m^3*x^2*e^4 + 7*(x*e + d)^m*A*c*m^2*x^3*e^4 + 11*(x*e + d
)^m*B*c*m*x^4*e^4 + (x*e + d)^m*B*a*d*m^3*x*e^3 + 5*(x*e + d)^m*A*c*d*m^2*x
^2*e^3 + 2*(x*e + d)^m*B*c*d*m*x^3*e^3 - 2*(x*e + d)^m*A*c*d^2*m^2*x*e^2 -
3*(x*e + d)^m*B*c*d^2*m*x^2*e^2 + 6*(x*e + d)^m*B*c*d^3*m*x*e + (x*e + d)^m
*A*a*m^3*x*e^4 + 8*(x*e + d)^m*B*a*m^2*x^2*e^4 + 14*(x*e + d)^m*A*c*m*x^3*e
^4 + 6*(x*e + d)^m*B*c*x^4*e^4 + (x*e + d)^m*A*a*d*m^3*e^3 + 7*(x*e + d)^m*
B*a*d*m^2*x*e^3 + 4*(x*e + d)^m*A*c*d*m*x^2*e^3 - (x*e + d)^m*B*a*d^2*m^2*e
^2 - 8*(x*e + d)^m*A*c*d^2*m*x*e^2 + 2*(x*e + d)^m*A*c*d^3*m*e - 6*(x*e + d
)^m*B*c*d^4 + 9*(x*e + d)^m*A*a*m^2*x*e^4 + 19*(x*e + d)^m*B*a*m*x^2*e^4 +
8*(x*e + d)^m*A*c*x^3*e^4 + 9*(x*e + d)^m*A*a*d*m^2*e^3 + 12*(x*e + d)^m*B*
a*d*m*x*e^3 - 7*(x*e + d)^m*B*a*d^2*m*e^2 + 8*(x*e + d)^m*A*c*d^3*e + 26*(x
*e + d)^m*A*a*m*x*e^4 + 12*(x*e + d)^m*B*a*x^2*e^4 + 26*(x*e + d)^m*A*a*d*m
*e^3 - 12*(x*e + d)^m*B*a*d^2*e^2 + 24*(x*e + d)^m*A*a*x*e^4 + 24*(x*e + d)
^m*A*a*d*e^3)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.05, size = 338, normalized size = 2.68

$$\frac{\left(Bce^3m^3x^3 + Ace^3m^3x^2 + 6Bce^3m^2x^3 + 7Ace^3m^2x^2 + Bae^3m^3x - 3Bcde^2m^2x^2 + 11Bce^3mx^3 + Aae^3m^3 - 2Acde^2m^2x + 14Ace^3mx^2 + 8Bae^3m^2x - 9Bcde^2mx^2 + 6Bcx^3e^3 + 9Aae^3m^2 - 10Acde^2mx + 8Ace^3x^2 - Bade^2m^2 + 19Bae^3mx + 6Bcd^2emx - 6Bcde^2x^2 + 26Aae^3m + 2Acd^2em - 8Acde^2x - 7Bade^2m + 12Bae^3x + 6Bcd^2ex + 24aAe^3 + 8Acd^2e - 12aBde^2 - 6Bcd^3\right)(ex+d)^{m+1}}{\left(m^4 + 10m^3 + 35m^2 + 50m + 24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+a),x)
```

```
[Out] (e*x+d)^(m+1)*(B*c*e^3*m^3*x^3+A*c*e^3*m^3*x^2+6*B*c*e^3*m^2*x^3+7*A*c*e^3*
m^2*x^2+B*a*e^3*m^3*x-3*B*c*d*e^2*m^2*x^2+11*B*c*e^3*m*x^3+A*a*e^3*m^3-2*A*
c*d*e^2*m^2*x+14*A*c*e^3*m*x^2+8*B*a*e^3*m^2*x-9*B*c*d*e^2*m*x^2+6*B*c*e^3*
x^3+9*A*a*e^3*m^2-10*A*c*d*e^2*m*x+8*A*c*e^3*x^2-B*a*d*e^2*m^2+19*B*a*e^3*m
*x+6*B*c*d^2*e*m*x-6*B*c*d*e^2*x^2+26*A*a*e^3*m+2*A*c*d^2*e*m-8*A*c*d*e^2*x
-7*B*a*d*e^2*m+12*B*a*e^3*x+6*B*c*d^2*e*x+24*A*a*e^3+8*A*c*d^2*e-12*B*a*d*e
^2-6*B*c*d^3)/e^4/(m^4+10*m^3+35*m^2+50*m+24)
```

maxima [A] time = 0.67, size = 238, normalized size = 1.89

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m Ba}{\left(m^2+3m+2\right)e^2}+\frac{(ex+d)^{m+1}Aa}{e(m+1)}+\frac{\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m Ac}{\left(m^3+6m^2+11m+6\right)e^3}+\frac{\left(\left(m^3+6m^2+11m+6\right)e^4x^4+\left(m^3+3m^2+2m\right)de^3x^3-3\left(m^2+m\right)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m Bc}{\left(m^4+10m^3+35m^2+50m+24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a/((m^2 + 3*m + 2)*e^2) + (
e*x + d)^(m + 1)*A*a/(e*(m + 1)) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e
^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*c/((m^3 + 6*m^2 + 11*m + 6)*e^3
) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(
m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*c/((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.04, size = 446, normalized size = 3.54

$$\frac{(d+ex)^m\left(-6Bcd^4+2Acd^3em+8Acd^3e-Bad^2e^2m^2-7Bad^2e^2m-12Bad^2e^2+Aade^3m^3+9Aade^3m^2+26Aade^3m+24Aade^3\right)}{e^4\left(m^4+10m^3+35m^2+50m+24\right)}+\frac{x(d+ex)^m\left(6Bcd^3em-2Acd^2e^2m^2-8Acd^2e^2m+Bade^3m^3+7Bade^3m^2+12Bade^3m+Aae^4m^3+9Aae^4m^2+26Aae^4m+24Aae^4\right)}{e^4\left(m^4+10m^3+35m^2+50m+24\right)}+\frac{x^2(m+1)(d+ex)^m\left(-3Bcd^2m+Acdem^2+4Acdem+Bae^2m^2+7Bae^2m+12Bae^2\right)}{e^2\left(m^4+10m^3+35m^2+50m+24\right)}+\frac{Bcx^4(d+ex)^m\left(m^3+6m^2+11m+6\right)}{m^4+10m^3+35m^2+50m+24}+\frac{cx^3(d+ex)^m(4Ae+Aem+Bdm)\left(m^2+3m+2\right)}{e\left(m^4+10m^3+35m^2+50m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(24*A*a*d*e^3 - 6*B*c*d^4 + 8*A*c*d^3*e - 12*B*a*d^2*e^2 - B*a
*d^2*e^2*m^2 + 26*A*a*d*e^3*m + 2*A*c*d^3*e*m + 9*A*a*d*e^3*m^2 + A*a*d*e^3
*m^3 - 7*B*a*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x*(d
+ e*x)^m*(24*A*a*e^4 + 26*A*a*e^4*m + 9*A*a*e^4*m^2 + A*a*e^4*m^3 - 2*A*c*d
^2*e^2*m^2 + 12*B*a*d*e^3*m + 6*B*c*d^3*e*m + 7*B*a*d*e^3*m^2 + B*a*d*e^3*m
^3 - 8*A*c*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^2*(m
+ 1)*(d + e*x)^m*(12*B*a*e^2 + 7*B*a*e^2*m - 3*B*c*d^2*m + B*a*e^2*m^2 + 4*
A*c*d*e*m + A*c*d*e*m^2))/(e^2*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (B*c*
x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 2
4) + (c*x^3*(d + e*x)^m*(4*A*e + A*e*m + B*d*m)*(3*m + m^2 + 2))/(e*(50*m +
 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.75, size = 3958, normalized size = 31.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+a),x)
```

```
[Out] Piecewise((d**m*(A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4), Eq(e, 0)),
(-2*A*a*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
- 2*A*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3
) - 6*A*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*
x**3) - 6*A*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*
e**7*x**3) - B*a*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*
e**7*x**3) - 3*B*a*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
6*e**7*x**3) + 6*B*c*d**3*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) + 11*B*c*d**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*
d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d**2*e*x*log(d/e + x)/(6*d**3*e**4 + 18
*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 27*B*c*d**2*e*x/(6*d**3*e**4
 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d*e**2*x**2*log(
d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18
*B*c*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x*
*3) + 6*B*c*e**3*x**3*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**
6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-A*a*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2
*e**6*x**2) + 2*A*c*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*
x**2) + 3*A*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**
2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2*x/
(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*c*e**3*x**2*log(d/e + x)/(2*
```

```
d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - B*a*d*e**2/(2*d**2*e**4 + 4*d*e**5*
x + 2*e**6*x**2) - 2*B*a*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) -
6*B*c*d**3*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*B*c*d*
*3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x*log(d/e + x)/
(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x/(2*d**2*e**4 + 4
*d*e**5*x + 2*e**6*x**2) - 6*B*c*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*
d*e**5*x + 2*e**6*x**2) + 2*B*c*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**
6*x**2), Eq(m, -3)), (-2*A*a*e**3/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e*log(
d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e/(2*d*e**4 + 2*e**5*x) - 4*A*c
*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*c*e**3*x**2/(2*d*e**4 +
2*e**5*x) + 2*B*a*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*B*a*d*e**2/
(2*d*e**4 + 2*e**5*x) + 2*B*a*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6
*B*c*d**3*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3/(2*d*e**4 + 2*e**
5*x) + 6*B*c*d**2*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*B*c*d*e**2*x**
2/(2*d*e**4 + 2*e**5*x) + B*c*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)),
(A*a*log(d/e + x)/e + A*c*d**2*log(d/e + x)/e**3 - A*c*d*x/e**2 + A*c*x**2/
(2*e) - B*a*d*log(d/e + x)/e**2 + B*a*x/e - B*c*d**3*log(d/e + x)/e**4 + B*
c*d**2*x/e**3 - B*c*d*x**2/(2*e**2) + B*c*x**3/(3*e), Eq(m, -1)), (A*a*d*e*
*3*m**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
 24*e**4) + 9*A*a*d*e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 26*A*a*d*e**3*m*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*d*e**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*a
*e**4*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 9*A*a*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 26*A*a*e**4*m*x*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*e**4*x*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 2*A*c*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4) + 8*A*c*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*A*c*d**2*e**2*m**2*x*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*A*c*d**2
*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
 + 24*e**4) + A*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 5*A*c*d*e**3*m**2*x**2*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*A*c*d*e
**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) + A*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*A*c*e**4*m**2*x**3*(d + e*x)**m/(e*
*4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*c*e**4*
m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + 8*A*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4
*m**2 + 50*e**4*m + 24*e**4) - B*a*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*B*a*d**2*e**2*m*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) -
 12*B*a*d**2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + B*a*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*B*a*d*e**3*m**2*x*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*B*a*
d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) + B*a*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*a*e**4*m**2*x**2*(d + e*x)**m/(e*
*4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 19*B*a*e**4*
m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + 12*B*a*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**
4*m**2 + 50*e**4*m + 24*e**4) - 6*B*c*d**4*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*d**3*e*m*x*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d
**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
```

```
50*e**4*m + 24*e**4) - 3*B*c*d**2*e**2*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*d*e**3*m**3*x**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
3*B*c*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 2*B*c*d*e**3*m*x**3*(d + e*x)**m/(e**4*m**4 + 10
*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*e**4*m**3*x**4*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6
*B*c*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) + 11*B*c*e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*e**4*x**4*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.1301 $\int(-ae+cdx)(d+ex)^{-3-2p}\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=31

$$\frac{\left(a+cx^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)}$$

Rubi [A] time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.033, Rules used = {803}

$$\frac{\left(a+cx^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(-(a*e) + c*d*x)*(d + e*x)^(-3 - 2*p)*(a + c*x^2)^p,x]
```

```
[Out] (a + c*x^2)^(1 + p)/(2*(1 + p)*(d + e*x)^(2*(1 + p)))
```

Rule 803

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] /; FreeQ[{a, c, d, e, f, g, m, p}, x] && N
eQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && EqQ[c*d*f + a*e*g,
 0]
```

Rubi steps

$$\int(-ae+cdx)(d+ex)^{-3-2p}\left(a+cx^2\right)^p\,dx=\frac{(d+ex)^{-2(1+p)}\left(a+cx^2\right)^{1+p}}{2(1+p)}$$

Mathematica [A] time = 0.06, size = 31, normalized size = 1.00

$$\frac{\left(a+cx^2\right)^{p+1}(d+ex)^{-2p-2}}{2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-(a*e) + c*d*x)*(d + e*x)^(-3 - 2*p)*(a + c*x^2)^p,x]
```

```
[Out] ((d + e*x)^(-2 - 2*p)*(a + c*x^2)^(1 + p))/(2*(1 + p))
```

IntegrateAlgebraic [F] time = 0.09, size = 0, normalized size = 0.00

$$\int(-ae+cdx)(d+ex)^{-3-2p}\left(a+cx^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(-(a*e) + c*d*x)*(d + e*x)^(-3 - 2*p)*(a + c*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(-(a*e) + c*d*x)*(d + e*x)^(-3 - 2*p)*(a + c*x^2)
^p, x]
```

fricas [A] time = 0.45, size = 47, normalized size = 1.52

$$\frac{\left(cex^3 + cdx^2 + aex + ad\right)\left(cx^2 + a\right)^p (ex + d)^{-2p-3}}{2\left(p + 1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)^(-3-2*p)*(c*x^2+a)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(c*e*x^3 + c*d*x^2 + a*e*x + a*d)*(c*x^2 + a)^p*(e*x + d)^(-2*p - 3)/(p
 + 1)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx - ae)\left(cx^2 + a\right)^p (ex + d)^{-2p-3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)^(-3-2*p)*(c*x^2+a)^p,x, algorithm="giac")
```

```
[Out] integrate((c*d*x - a*e)*(c*x^2 + a)^p*(e*x + d)^(-2*p - 3), x)
```

maple [A] time = 0.05, size = 30, normalized size = 0.97

$$\frac{\left(c\,x^2 + a\right)^{p+1} (ex + d)^{-2p-2}}{2p + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x-a*e)*(e*x+d)^(-2*p-3)*(c*x^2+a)^p,x)
```

```
[Out] 1/2*(c*x^2+a)^(p+1)*(e*x+d)^(-2*p-2)/(p+1)
```

maxima [A] time = 1.28, size = 58, normalized size = 1.87

$$\frac{\left(cx^2 + a\right)e^{\left(p\log\left(cx^2+a\right) - 2\,p\log(ex+d)\right)}}{2\left(e^2\left(p + 1\right)x^2 + 2\,de\left(p + 1\right)x + d^2\left(p + 1\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)^(-3-2*p)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] 1/2*(c*x^2 + a)*e^(p*log(c*x^2 + a) - 2*p*log(e*x + d))/(e^2*(p + 1)*x^2 +
2*d*e*(p + 1)*x + d^2*(p + 1))
```

mupad [B] time = 1.90, size = 98, normalized size = 3.16

$$\frac{\frac{a\,d\,\left(c\,x^2+a\right)^p}{2\,p+2} + \frac{a\,e\,x\,\left(c\,x^2+a\right)^p}{2\,p+2} + \frac{c\,d\,x^2\,\left(c\,x^2+a\right)^p}{2\,p+2} + \frac{c\,e\,x^3\,\left(c\,x^2+a\right)^p}{2\,p+2}}{\left(d + e\,x\right)^{2\,p+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((a*e - c*d*x)*(a + c*x^2)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] ((a*d*(a + c*x^2)^p)/(2*p + 2) + (a*e*x*(a + c*x^2)^p)/(2*p + 2) + (c*d*x^2
*(a + c*x^2)^p)/(2*p + 2) + (c*e*x^3*(a + c*x^2)^p)/(2*p + 2))/(d + e*x)^(2
*p + 3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)**(-3-2*p)*(c*x**2+a)**p,x)
```

```
[Out] Timed out
```

3.1302 $\int (b+2cx)(d+ex)^4 \left(a+bx+cx^2\right) \, dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^6\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{6e^4}-\frac{(d+ex)^5(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{3c(d+ex)^7(2cd-be)}{7e^4}+\frac{c^2(d}{4}$$

Rubi [A] time = 0.19, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^6\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{6e^4}-\frac{(d+ex)^5(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{3c(d+ex)^7(2cd-be)}{7e^4}+\frac{c^2(d+ex)^8}{4e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^5)/(5*e^4) + ((6*c^2*d^2
+ b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^6)/(6*e^4) - (3*c*(2*c*d - b*e)*
(d + e*x)^7)/(7*e^4) + (c^2*(d + e*x)^8)/(4*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b}{e^3}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-}{6e^4}$$

Mathematica [A] time = 0.07, size = 229, normalized size = 1.85

$$\frac{1}{6}e^2x^6\left(2ce(ae+6bd)+b^2e^2+12c^2d^2\right)+\frac{1}{2}d^3x^2\left(4abe+2acd+b^2d\right)+\frac{1}{3}d^2x^3\left(6abe^2+8acde+4b^2de+3bcd^2\right)+\frac{1}{5}ex^5\left(2cde(4ae+9bd)+be^2(ae+4bd)+8c^2d^3\right)+\frac{1}{2}dx^4\left(6cde(ae+bd)+be^2(2ae+3bd)+c^2d^3\right)+abd^4x+\frac{1}{7}ce^3x^7(3be+8cd)+\frac{1}{4}c^2e^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d^4*x + (d^3*(b^2*d + 2*a*c*d + 4*a*b*e)*x^2)/2 + (d^2*(3*b*c*d^2 + 4*b
^2*d*e + 8*a*c*d*e + 6*a*b*e^2)*x^3)/3 + (d*(c^2*d^3 + 6*c*d*e*(b*d + a*e)
+ b*e^2*(3*b*d + 2*a*e))*x^4)/2 + (e*(8*c^2*d^3 + b*e^2*(4*b*d + a*e) + 2*c
*d*e*(9*b*d + 4*a*e))*x^5)/5 + (e^2*(12*c^2*d^2 + b^2*e^2 + 2*c*e*(6*b*d +
a*e))*x^6)/6 + (c*e^3*(8*c*d + 3*b*e)*x^7)/7 + (c^2*e^4*x^8)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2), x]
```

fricas [B] time = 0.36, size = 280, normalized size = 2.26

$$\frac{1}{4}x^8e^4c^2+\frac{8}{7}x^7e^3dc^2+\frac{3}{7}x^7e^4cb+2x^6e^2d^2c^2+2x^6e^3dcb+\frac{1}{6}x^6e^4b^2+\frac{1}{3}x^6e^4ca+\frac{8}{5}x^5ed^3c^2+\frac{18}{5}x^5e^2d^2cb+\frac{4}{5}x^5e^3db^2+\frac{8}{5}x^5e^3dca+\frac{1}{5}x^5e^4ba+\frac{1}{2}x^4d^4c^2+3x^4ed^3cb+\frac{3}{2}x^4e^2d^2b^2+3x^4e^2d^2ca+x^4e^3dba+x^3d^4cb+\frac{4}{3}x^3ed^3b^2+\frac{8}{3}x^3ed^3ca+2x^3e^2d^2ba+\frac{1}{2}x^2d^4b^2+x^2d^4ca+2x^2ed^3ba+xd^4ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^8*e^4*c^2 + 8/7*x^7*e^3*d*c^2 + 3/7*x^7*e^4*c*b + 2*x^6*e^2*d^2*c^2 +
 2*x^6*e^3*d*c*b + 1/6*x^6*e^4*b^2 + 1/3*x^6*e^4*c*a + 8/5*x^5*e*d^3*c^2 +
18/5*x^5*e^2*d^2*c*b + 4/5*x^5*e^3*d*b^2 + 8/5*x^5*e^3*d*c*a + 1/5*x^5*e^4*
b*a + 1/2*x^4*d^4*c^2 + 3*x^4*e*d^3*c*b + 3/2*x^4*e^2*d^2*b^2 + 3*x^4*e^2*d
^2*c*a + x^4*e^3*d*b*a + x^3*d^4*c*b + 4/3*x^3*e*d^3*b^2 + 8/3*x^3*e*d^3*c*
a + 2*x^3*e^2*d^2*b*a + 1/2*x^2*d^4*b^2 + x^2*d^4*c*a + 2*x^2*e*d^3*b*a + x
*d^4*b*a
```

giac [B] time = 0.16, size = 270, normalized size = 2.18

$$\frac{1}{4}\,c^2x^8e^4+\frac{8}{7}\,c^2dx^7e^3+2\,c^2d^2x^6e^2+\frac{8}{5}\,c^2d^3x^5e+\frac{1}{2}\,c^2d^4x^4+\frac{3}{7}\,bcx^7e^4+2\,bcdx^6e^3+\frac{18}{5}\,bcd^2x^5e^2+3\,bcd^3x^4e+bcd^4x^3+\frac{1}{6}\,b^2x^6e^4+\frac{1}{3}\,acx^6e^4+\frac{4}{5}\,b^2dx^5e^3+\frac{8}{5}\,acdx^5e^3+\frac{3}{2}\,b^2d^2x^4e^2+3\,acd^2x^4e^2+\frac{4}{3}\,b^2d^3x^3e+\frac{8}{3}\,acd^3x^3e+\frac{1}{2}\,b^2d^4x^2+acd^4x^2+\frac{1}{5}\,abx^5e^4+abdx^4e^3+2\,abd^2x^3e^2+2\,abd^3x^2e+abd^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*c^2*x^8*e^4 + 8/7*c^2*d*x^7*e^3 + 2*c^2*d^2*x^6*e^2 + 8/5*c^2*d^3*x^5*e
 + 1/2*c^2*d^4*x^4 + 3/7*b*c*x^7*e^4 + 2*b*c*d*x^6*e^3 + 18/5*b*c*d^2*x^5*e
^2 + 3*b*c*d^3*x^4*e + b*c*d^4*x^3 + 1/6*b^2*x^6*e^4 + 1/3*a*c*x^6*e^4 + 4/
5*b^2*d*x^5*e^3 + 8/5*a*c*d*x^5*e^3 + 3/2*b^2*d^2*x^4*e^2 + 3*a*c*d^2*x^4*e
^2 + 4/3*b^2*d^3*x^3*e + 8/3*a*c*d^3*x^3*e + 1/2*b^2*d^4*x^2 + a*c*d^4*x^2
+ 1/5*a*b*x^5*e^4 + a*b*d*x^4*e^3 + 2*a*b*d^2*x^3*e^2 + 2*a*b*d^3*x^2*e + a
*b*d^4*x
```

maple [B] time = 0.04, size = 290, normalized size = 2.34

$$\frac{c^2e^4x^8}{4}+ab\,d^4x+\frac{\left(2bc\,e^4+\left(b\,e^4+8cd\,e^3\right)c\right)x^7}{7}+\frac{\left(2ac\,e^4+\left(b\,e^4+8cd\,e^3\right)b+\left(4bd\,e^3+12c\,d^2e^2\right)c\right)x^6}{6}+\frac{\left(\left(b\,e^4+8cd\,e^3\right)a+\left(4bd\,e^3+12c\,d^2e^2\right)b+\left(6b\,d^2e^2+8c\,d^3e\right)c\right)x^5}{5}+\frac{\left(\left(4bd\,e^3+12c\,d^2e^2\right)a+\left(6b\,d^2e^2+8c\,d^3e\right)b+\left(4b\,d^3e+2c\,d^4\right)c\right)x^4}{4}+\frac{\left(bc\,d^4+\left(6b\,d^2e^2+8c\,d^3e\right)a+\left(4b\,d^3e+2c\,d^4\right)b\right)x^3}{3}+\frac{\left(b^2d^4+\left(4b\,d^3e+2c\,d^4\right)a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x)
```

```
[Out] 1/4*c^2*e^4*x^8+1/7*((b*e^4+8*c*d*e^3)*c+2*c*e^4*b)*x^7+1/6*((4*b*d*e^3+12*
c*d^2*e^2)*c+(b*e^4+8*c*d*e^3)*b+2*a*c*e^4)*x^6+1/5*((6*b*d^2*e^2+8*c*d^3*e
)*c+(4*b*d*e^3+12*c*d^2*e^2)*b+(b*e^4+8*c*d*e^3)*a)*x^5+1/4*((4*b*d^3*e+2*c
*d^4)*c+(6*b*d^2*e^2+8*c*d^3*e)*b+(4*b*d*e^3+12*c*d^2*e^2)*a)*x^4+1/3*(b*d^
4*c+(4*b*d^3*e+2*c*d^4)*b+(6*b*d^2*e^2+8*c*d^3*e)*a)*x^3+1/2*(b^2*d^4+(4*b*
d^3*e+2*c*d^4)*a)*x^2+b*d^4*a*x
```

maxima [A] time = 0.60, size = 231, normalized size = 1.86

$$\frac{1}{4}\,c^2e^4x^8+\frac{1}{7}\left(8\,c^2de^3+3\,bce^4\right)x^7+abd^4x+\frac{1}{6}\left(12\,c^2d^2e^2+12\,bcde^3+\left(b^2+2\,ac\right)e^4\right)x^6+\frac{1}{5}\left(8\,c^2d^3e+18\,bcd^2e^2+abe^4+4\left(b^2+2\,ac\right)de^3\right)x^5+\frac{1}{2}\left(c^2d^4+6\,bcd^3e+2\,abde^3+3\left(b^2+2\,ac\right)d^2e^2\right)x^4+\frac{1}{3}\left(3\,bcd^4+6\,abd^2e^2+4\left(b^2+2\,ac\right)d^3e\right)x^3+\frac{1}{2}\left(4\,abd^3e+\left(b^2+2\,ac\right)d^4\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*c^2*e^4*x^8 + 1/7*(8*c^2*d*e^3 + 3*b*c*e^4)*x^7 + a*b*d^4*x + 1/6*(12*c
^2*d^2*e^2 + 12*b*c*d*e^3 + (b^2 + 2*a*c)*e^4)*x^6 + 1/5*(8*c^2*d^3*e + 18*
b*c*d^2*e^2 + a*b*e^4 + 4*(b^2 + 2*a*c)*d*e^3)*x^5 + 1/2*(c^2*d^4 + 6*b*c*d
^3*e + 2*a*b*d*e^3 + 3*(b^2 + 2*a*c)*d^2*e^2)*x^4 + 1/3*(3*b*c*d^4 + 6*a*b*
d^2*e^2 + 4*(b^2 + 2*a*c)*d^3*e)*x^3 + 1/2*(4*a*b*d^3*e + (b^2 + 2*a*c)*d^4
)*x^2
```

mupad [B] time = 0.11, size = 238, normalized size = 1.92

$$x^5\left(\frac{4b^2de^3}{5}+\frac{18bcd^2e^2}{5}+\frac{abe^4}{5}+\frac{8c^2d^3e}{5}+\frac{8acde^3}{5}\right)+x^6\left(\frac{b^2e^4}{6}+2bcde^3+2c^2d^2e^2+\frac{ace^4}{3}\right)+x^4\left(\frac{3b^2d^2e^2}{2}+3bcd^3e+abde^3+\frac{c^2d^4}{2}+3acd^2e^2\right)+x^2\left(\frac{b^2d^4}{2}+2aebd^3+acd^4\right)+x^3\left(\frac{4b^2d^3e}{3}+cbd^4+2abd^2e^2+\frac{8acd^3e}{3}\right)+\frac{c^2e^4x^8}{4}+\frac{ce^3x^7(3be+8cd)}{7}+abd^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x)
```

```
[Out] x^5*((4*b^2*d*e^3)/5 + (8*c^2*d^3*e)/5 + (a*b*e^4)/5 + (8*a*c*d*e^3)/5 + (1
8*b*c*d^2*e^2)/5) + x^6*((b^2*e^4)/6 + 2*c^2*d^2*e^2 + (a*c*e^4)/3 + 2*b*c*
d*e^3) + x^4*((c^2*d^4)/2 + (3*b^2*d^2*e^2)/2 + a*b*d*e^3 + 3*b*c*d^3*e + 3
*a*c*d^2*e^2) + x^2*((b^2*d^4)/2 + a*c*d^4 + 2*a*b*d^3*e) + x^3*((4*b^2*d^3
*e)/3 + b*c*d^4 + (8*a*c*d^3*e)/3 + 2*a*b*d^2*e^2) + (c^2*e^4*x^8)/4 + (c*e
^3*x^7*(3*b*e + 8*c*d))/7 + a*b*d^4*x
```

sympy [B] time = 0.11, size = 279, normalized size = 2.25

$$abd^4x+\frac{c^2e^4x^8}{4}+x^7\left(\frac{3bce^4}{7}+\frac{8c^2de^3}{7}\right)+x^6\left(\frac{ace^4}{3}+\frac{b^2e^4}{6}+2bcde^3+2c^2d^2e^2\right)+x^5\left(\frac{abe^4}{5}+\frac{8acde^3}{5}+\frac{4b^2de^3}{5}+\frac{18bcd^2e^2}{5}+\frac{8c^2d^3e}{5}\right)+x^4\left(abde^3+3acd^2e^2+\frac{3b^2d^2e^2}{2}+3bcd^3e+\frac{c^2d^4}{2}\right)+x^3\left(2abd^2e^2+\frac{8acd^3e}{3}+\frac{4b^2d^3e}{3}+bcd^4\right)+x^2\left(2abd^3e+acd^4+\frac{b^2d^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d**4*x + c**2*e**4*x**8/4 + x**7*(3*b*c*e**4/7 + 8*c**2*d*e**3/7) + x**
6*(a*c*e**4/3 + b**2*e**4/6 + 2*b*c*d*e**3 + 2*c**2*d**2*e**2) + x**5*(a*b*
e**4/5 + 8*a*c*d*e**3/5 + 4*b**2*d*e**3/5 + 18*b*c*d**2*e**2/5 + 8*c**2*d**
3*e/5) + x**4*(a*b*d*e**3 + 3*a*c*d**2*e**2 + 3*b**2*d**2*e**2/2 + 3*b*c*d*
*3*e + c**2*d**4/2) + x**3*(2*a*b*d**2*e**2 + 8*a*c*d**3*e/3 + 4*b**2*d**3*
e/3 + b*c*d**4) + x**2*(2*a*b*d**3*e + a*c*d**4 + b**2*d**4/2)
```

3.1303 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^5\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{(d+ex)^4(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{c(d+ex)^6(2cd-be)}{2e^4}+\frac{2c^2(d+e}{7e^4}$$

Rubi [A] time = 0.14, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^5\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{(d+ex)^4(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{c(d+ex)^6(2cd-be)}{2e^4}+\frac{2c^2(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4)/(4*e^4) + ((6*c^2*d^2
+ b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^5)/(5*e^4) - (c*(2*c*d - b*e)*(d
 + e*x)^6)/(2*e^4) + (2*c^2*(d + e*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)\,dx&=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-\right.}{e^3}\right.\\&=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right.}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 175, normalized size = 1.41

$$\frac{1}{5}ex^5\left(ce(2ae+9bd)+b^2e^2+6c^2d^2\right)+dx^3\left(abe^2+2acde+b^2de+bcd^2\right)+\frac{1}{2}d^2x^2\left(3abe+2acd+b^2d\right)+\frac{1}{4}x^4\left(3cde(2ae+3bd)+be^2(ae+3bd)+2c^2d^3\right)+abd^3x+\frac{1}{2}ce^2x^6(be+2cd)+\frac{2}{7}c^2e^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d^3*x + (d^2*(b^2*d + 2*a*c*d + 3*a*b*e)*x^2)/2 + d*(b*c*d^2 + b^2*d*e
+ 2*a*c*d*e + a*b*e^2)*x^3 + ((2*c^2*d^3 + b*e^2*(3*b*d + a*e) + 3*c*d*e*(3
*b*d + 2*a*e))*x^4)/4 + (e*(6*c^2*d^2 + b^2*e^2 + c*e*(9*b*d + 2*a*e))*x^5)
/5 + (c*e^2*(2*c*d + b*e)*x^6)/2 + (2*c^2*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.37, size = 211, normalized size = 1.70

$$\frac{2}{7}x^7e^3c^2 + x^6e^2dc^2 + \frac{1}{2}x^6e^3cb + \frac{6}{5}x^5ed^2c^2 + \frac{9}{5}x^5e^2dcb + \frac{1}{5}x^5e^3b^2 + \frac{2}{5}x^5e^3ca + \frac{1}{2}x^4d^3c^2 + \frac{9}{4}x^4ed^2cb + \frac{3}{4}x^4e^2db^2 + \frac{3}{2}x^4e^2dca + \frac{1}{4}x^4e^3ba + x^3d^3cb + x^3ed^2b^2 + 2x^3ed^2ca + x^3e^2dba + \frac{1}{2}x^2d^3b^2 + x^2d^3ca + \frac{3}{2}x^2ed^2ba + xd^3ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/7*x^7*e^3*c^2 + x^6*e^2*d*c^2 + 1/2*x^6*e^3*c*b + 6/5*x^5*e*d^2*c^2 + 9/5
*x^5*e^2*d*c*b + 1/5*x^5*e^3*b^2 + 2/5*x^5*e^3*c*a + 1/2*x^4*d^3*c^2 + 9/4*
x^4*e*d^2*c*b + 3/4*x^4*e^2*d*b^2 + 3/2*x^4*e^2*d*c*a + 1/4*x^4*e^3*b*a + x
^3*d^3*c*b + x^3*e*d^2*b^2 + 2*x^3*e*d^2*c*a + x^3*e^2*d*b*a + 1/2*x^2*d^3*
b^2 + x^2*d^3*c*a + 3/2*x^2*e*d^2*b*a + x*d^3*b*a
```

giac [A] time = 0.16, size = 206, normalized size = 1.66

$$\frac{2}{7}c^2x^7e^3 + c^2dx^6e^2 + \frac{6}{5}c^2d^2x^5e + \frac{1}{2}c^2d^3x^4 + \frac{1}{2}bcx^6e^3 + \frac{9}{5}bcdx^5e^2 + \frac{9}{4}bcd^2x^4e + bcd^3x^3 + \frac{1}{5}b^2x^5e^3 + \frac{2}{5}acx^5e^3 + \frac{3}{4}b^2dx^4e^2 + \frac{3}{2}acdx^4e^2 + b^2d^2x^3e + 2acd^2x^3e + \frac{1}{2}b^2d^3x^2 + acd^3x^2 + \frac{1}{4}abx^4e^3 + abdx^3e^2 + \frac{3}{2}abd^2x^2e + abd^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/7*c^2*x^7*e^3 + c^2*d*x^6*e^2 + 6/5*c^2*d^2*x^5*e + 1/2*c^2*d^3*x^4 + 1/2
*b*c*x^6*e^3 + 9/5*b*c*d*x^5*e^2 + 9/4*b*c*d^2*x^4*e + b*c*d^3*x^3 + 1/5*b^
2*x^5*e^3 + 2/5*a*c*x^5*e^3 + 3/4*b^2*d*x^4*e^2 + 3/2*a*c*d*x^4*e^2 + b^2*d
^2*x^3*e + 2*a*c*d^2*x^3*e + 1/2*b^2*d^3*x^2 + a*c*d^3*x^2 + 1/4*a*b*x^4*e^
3 + a*b*d*x^3*e^2 + 3/2*a*b*d^2*x^2*e + a*b*d^3*x
```

maple [A] time = 0.05, size = 221, normalized size = 1.78

$$\frac{2c^2e^3x^7}{7} + abd^3x + \frac{\left(2bce^3 + \left(be^3 + 6de^2c\right)c\right)x^6}{6} + \frac{\left(2ace^3 + \left(be^3 + 6de^2c\right)b + \left(3bde^2 + 6cd^2e\right)c\right)x^5}{5} + \frac{\left(\left(be^3 + 6de^2c\right)a + \left(3bde^2 + 6cd^2e\right)b + \left(3bd^2e + 2cd^3\right)c\right)x^4}{4} + \frac{\left(bcd^3 + \left(3bde^2 + 6cd^2e\right)a + \left(3bd^2e + 2cd^3\right)b\right)x^3}{3} + \frac{\left(b^2d^3 + \left(3bd^2e + 2cd^3\right)a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x)
```

```
[Out] 2/7*c^2*e^3*x^7+1/6*((b*e^3+6*c*d*e^2)*c+2*c*e^3*b)*x^6+1/5*((3*b*d*e^2+6*c
*d^2*e)*c+(b*e^3+6*c*d*e^2)*b+2*a*c*e^3)*x^5+1/4*((3*b*d^2*e+2*c*d^3)*c+(3*
b*d*e^2+6*c*d^2*e)*b+(b*e^3+6*c*d*e^2)*a)*x^4+1/3*(b*c*d^3+(3*b*d^2*e+2*c*d
^3)*b+(3*b*d*e^2+6*c*d^2*e)*a)*x^3+1/2*(b^2*d^3+(3*b*d^2*e+2*c*d^3)*a)*x^2+
b*d^3*a*x
```

maxima [A] time = 0.53, size = 174, normalized size = 1.40

$$\frac{2}{7}c^2e^3x^7 + \frac{1}{2}\left(2c^2de^2 + bce^3\right)x^6 + abd^3x + \frac{1}{5}\left(6c^2d^2e + 9bcde^2 + \left(b^2 + 2ac\right)e^3\right)x^5 + \frac{1}{4}\left(2c^2d^3 + 9bcd^2e + abe^3 + 3\left(b^2 + 2ac\right)de^2\right)x^4 + \left(bcd^3 + abde^2 + \left(b^2 + 2ac\right)d^2e\right)x^3 + \frac{1}{2}\left(3abd^2e + \left(b^2 + 2ac\right)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/7*c^2*e^3*x^7 + 1/2*(2*c^2*d*e^2 + b*c*e^3)*x^6 + a*b*d^3*x + 1/5*(6*c^2*
d^2*e + 9*b*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x^5 + 1/4*(2*c^2*d^3 + 9*b*c*d^2*e
 + a*b*e^3 + 3*(b^2 + 2*a*c)*d*e^2)*x^4 + (b*c*d^3 + a*b*d*e^2 + (b^2 + 2*a
*c)*d^2*e)*x^3 + 1/2*(3*a*b*d^2*e + (b^2 + 2*a*c)*d^3)*x^2
```

mupad [B] time = 0.07, size = 179, normalized size = 1.44

$$x^4\left(\frac{3b^2de^2}{4} + \frac{9bcd^2e}{4} + \frac{abe^3}{4} + \frac{c^2d^3}{2} + \frac{3acde^2}{2}\right) + x^3\left(b^2d^2e + cbd^3 + abde^2 + 2acd^2e\right) + x^2\left(\frac{b^2d^3}{2} + \frac{3aebd^2}{2} + acd^3\right) + x^5\left(\frac{b^2e^3}{5} + \frac{9bcde^2}{5} + \frac{6c^2d^2e}{5} + \frac{2ace^3}{5}\right) + \frac{2c^2e^3x^7}{7} + \frac{ce^2x^6\,(be + 2cd)}{2} + abd^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((c^2*d^3)/2 + (3*b^2*d*e^2)/4 + (a*b*e^3)/4 + (3*a*c*d*e^2)/2 + (9*b*c
*d^2*e)/4) + x^3*(b^2*d^2*e + b*c*d^3 + a*b*d*e^2 + 2*a*c*d^2*e) + x^2*((b^
2*d^3)/2 + a*c*d^3 + (3*a*b*d^2*e)/2) + x^5*((b^2*e^3)/5 + (6*c^2*d^2*e)/5
+ (2*a*c*e^3)/5 + (9*b*c*d*e^2)/5) + (2*c^2*e^3*x^7)/7 + (c*e^2*x^6*(b*e +
2*c*d))/2 + a*b*d^3*x
```

sympy [A] time = 0.10, size = 211, normalized size = 1.70

$$abd^3x + \frac{2c^2e^3x^7}{7} + x^6\left(\frac{bce^3}{2} + c^2de^2\right) + x^5\left(\frac{2ace^3}{5} + \frac{b^2e^3}{5} + \frac{9bcde^2}{5} + \frac{6c^2d^2e}{5}\right) + x^4\left(\frac{abe^3}{4} + \frac{3acde^2}{2} + \frac{3b^2de^2}{4} + \frac{9bcd^2e}{4} + \frac{c^2d^3}{2}\right) + x^3\left(abde^2 + 2acd^2e + b^2d^2e + bcd^3\right) + x^2\left(\frac{3abd^2e}{2} + acd^3 + \frac{b^2d^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d**3*x + 2*c**2*e**3*x**7/7 + x**6*(b*c*e**3/2 + c**2*d*e**2) + x**5*(2
*a*c*e**3/5 + b**2*e**3/5 + 9*b*c*d*e**2/5 + 6*c**2*d**2*e/5) + x**4*(a*b*e
**3/4 + 3*a*c*d*e**2/2 + 3*b**2*d*e**2/4 + 9*b*c*d**2*e/4 + c**2*d**3/2) +
x**3*(a*b*d*e**2 + 2*a*c*d**2*e + b**2*d**2*e + b*c*d**3) + x**2*(3*a*b*d**
2*e/2 + a*c*d**3 + b**2*d**3/2)
```

3.1304 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right) \, dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^4 \left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{4e^4}-\frac{(d+ex)^3(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{3c(d+ex)^5(2cd-be)}{5e^4}+\frac{c^2(d$$

Rubi [A] time = 0.11, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{(d+ex)^4 \left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{4e^4}-\frac{(d+ex)^3(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{3c(d+ex)^5(2cd-be)}{5e^4}+\frac{c^2(d+ex)^6}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3)/(3*e^4) + ((6*c^2*d^2
+ b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^4)/(4*e^4) - (3*c*(2*c*d - b*e)*
(d + e*x)^5)/(5*e^4) + (c^2*(d + e*x)^6)/(3*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right) \, dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^2}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b\right.}{e^3}\right.$$

$$= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^3}{3e^4}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-\right.}{4e^4}$$

Mathematica [A] time = 0.04, size = 133, normalized size = 1.07

$$\frac{1}{4}x^4\left(2ace^2+b^2e^2+6bcde+2c^2d^2\right)+\frac{1}{3}x^3\left(abe^2+4acde+2b^2de+3bcd^2\right)+\frac{1}{2}dx^2\left(2abe+2acd+b^2d\right)+abd^2x+\frac{1}{5}cex^5(3be+4cd)+\frac{1}{3}c^2e^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d^2*x + (d*(b^2*d + 2*a*c*d + 2*a*b*e)*x^2)/2 + ((3*b*c*d^2 + 2*b^2*d*e
 + 4*a*c*d*e + a*b*e^2)*x^3)/3 + ((2*c^2*d^2 + 6*b*c*d*e + b^2*e^2 + 2*a*c*
e^2)*x^4)/4 + (c*e*(4*c*d + 3*b*e)*x^5)/5 + (c^2*e^2*x^6)/3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right) \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.37, size = 146, normalized size = 1.18

$$\frac{1}{3}x^6e^2c^2 + \frac{4}{5}x^5edc^2 + \frac{3}{5}x^5e^2cb + \frac{1}{2}x^4d^2c^2 + \frac{3}{2}x^4edcb + \frac{1}{4}x^4e^2b^2 + \frac{1}{2}x^4e^2ca + x^3d^2cb + \frac{2}{3}x^3edb^2 + \frac{4}{3}x^3edca + \frac{1}{3}x^3e^2ba + \frac{1}{2}x^2d^2b^2 + x^2d^2ca + x^2edba + xd^2ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/3*x^6*e^2*c^2 + 4/5*x^5*e*d*c^2 + 3/5*x^5*e^2*c*b + 1/2*x^4*d^2*c^2 + 3/2
*x^4*e*d*c*b + 1/4*x^4*e^2*b^2 + 1/2*x^4*e^2*c*a + x^3*d^2*c*b + 2/3*x^3*e*
d*b^2 + 4/3*x^3*e*d*c*a + 1/3*x^3*e^2*b*a + 1/2*x^2*d^2*b^2 + x^2*d^2*c*a +
 x^2*e*d*b*a + x*d^2*b*a
```

giac [A] time = 0.18, size = 146, normalized size = 1.18

$$\frac{1}{3}c^2x^6e^2 + \frac{4}{5}c^2dx^5e + \frac{1}{2}c^2d^2x^4 + \frac{3}{5}bcx^5e^2 + \frac{3}{2}bcdx^4e + bcd^2x^3 + \frac{1}{4}b^2x^4e^2 + \frac{1}{2}acx^4e^2 + \frac{2}{3}b^2dx^3e + \frac{4}{3}acdx^3e + \frac{1}{2}b^2d^2x^2 + acd^2x^2 + \frac{1}{3}abx^3e^2 + abdx^2e + abd^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/3*c^2*x^6*e^2 + 4/5*c^2*d*x^5*e + 1/2*c^2*d^2*x^4 + 3/5*b*c*x^5*e^2 + 3/2
*b*c*d*x^4*e + b*c*d^2*x^3 + 1/4*b^2*x^4*e^2 + 1/2*a*c*x^4*e^2 + 2/3*b^2*d*
x^3*e + 4/3*a*c*d*x^3*e + 1/2*b^2*d^2*x^2 + a*c*d^2*x^2 + 1/3*a*b*x^3*e^2 +
 a*b*d*x^2*e + a*b*d^2*x
```

maple [A] time = 0.04, size = 152, normalized size = 1.23

$$\frac{c^2e^2x^6}{3} + abd^2x + \frac{\left(2bce^2 + \left(be^2 + 4cde\right)c\right)x^5}{5} + \frac{\left(2ace^2 + \left(be^2 + 4cde\right)b + \left(2bde + 2cd^2\right)c\right)x^4}{4} + \frac{\left(bcd^2 + \left(be^2 + 4cde\right)a + \left(2bde + 2cd^2\right)b\right)x^3}{3} + \frac{\left(b^2d^2 + \left(2bde + 2cd^2\right)a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x)
```

```
[Out] 1/3*c^2*e^2*x^6+1/5*((b*e^2+4*c*d*e)*c+2*c*e^2*b)*x^5+1/4*((2*b*d*e+2*c*d^2
)*c+(b*e^2+4*c*d*e)*b+2*a*c*e^2)*x^4+1/3*(b*c*d^2+(2*b*d*e+2*c*d^2)*b+(b*e^
2+4*c*d*e)*a)*x^3+1/2*(b^2*d^2+(2*b*d*e+2*c*d^2)*a)*x^2+b*d^2*a*x
```

maxima [A] time = 0.51, size = 126, normalized size = 1.02

$$\frac{1}{3}c^2e^2x^6 + \frac{1}{5}\left(4c^2de + 3bce^2\right)x^5 + abd^2x + \frac{1}{4}\left(2c^2d^2 + 6bcde + \left(b^2 + 2ac\right)e^2\right)x^4 + \frac{1}{3}\left(3bcd^2 + abe^2 + 2\left(b^2 + 2ac\right)de\right)x^3 + \frac{1}{2}\left(2abde + \left(b^2 + 2ac\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/3*c^2*e^2*x^6 + 1/5*(4*c^2*d*e + 3*b*c*e^2)*x^5 + a*b*d^2*x + 1/4*(2*c^2*
d^2 + 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*x^4 + 1/3*(3*b*c*d^2 + a*b*e^2 + 2*(b^
2 + 2*a*c)*d*e)*x^3 + 1/2*(2*a*b*d*e + (b^2 + 2*a*c)*d^2)*x^2
```

mupad [B] time = 0.05, size = 124, normalized size = 1.00

$$x^4\left(\frac{b^2e^2}{4} + \frac{3bcde}{2} + \frac{c^2d^2}{2} + \frac{ace^2}{2}\right) + x^3\left(\frac{2b^2de}{3} + cbd^2 + \frac{abe^2}{3} + \frac{4acde}{3}\right) + x^2\left(\frac{b^2d^2}{2} + aebd + acd^2\right) + \frac{c^2e^2x^6}{3} + abd^2x + \frac{cex^5\,(3be + 4cd)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((b^2*e^2)/4 + (c^2*d^2)/2 + (a*c*e^2)/2 + (3*b*c*d*e)/2) + x^3*((a*b*e
^2)/3 + b*c*d^2 + (2*b^2*d*e)/3 + (4*a*c*d*e)/3) + x^2*((b^2*d^2)/2 + a*c*d
^2 + a*b*d*e) + (c^2*e^2*x^6)/3 + a*b*d^2*x + (c*e*x^5*(3*b*e + 4*c*d))/5
```

sympy [A] time = 0.09, size = 146, normalized size = 1.18

$$abd^2x + \frac{c^2e^2x^6}{3} + x^5\left(\frac{3bce^2}{5} + \frac{4c^2de}{5}\right) + x^4\left(\frac{ace^2}{2} + \frac{b^2e^2}{4} + \frac{3bcde}{2} + \frac{c^2d^2}{2}\right) + x^3\left(\frac{abe^2}{3} + \frac{4acde}{3} + \frac{2b^2de}{3} + bcd^2\right) + x^2\left(abde + acd^2 + \frac{b^2d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d**2*x + c**2*e**2*x**6/3 + x**5*(3*b*c*e**2/5 + 4*c**2*d*e/5) + x**4*(
a*c*e**2/2 + b**2*e**2/4 + 3*b*c*d*e/2 + c**2*d**2/2) + x**3*(a*b*e**2/3 +
4*a*c*d*e/3 + 2*b**2*d*e/3 + b*c*d**2) + x**2*(a*b*d*e + a*c*d**2 + b**2*d*
*2/2)
```

3.1305 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=79

$$\frac{1}{3}x^3\left(2ace+b^2e+3bcd\right)+\frac{1}{2}x^2\left(abe+2acd+b^2d\right)+abdx+\frac{1}{4}cx^4(3be+2cd)+\frac{2}{5}c^2ex^5$$

Rubi [A] time = 0.06, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{1}{3}x^3\left(2ace+b^2e+3bcd\right)+\frac{1}{2}x^2\left(abe+2acd+b^2d\right)+abdx+\frac{1}{4}cx^4(3be+2cd)+\frac{2}{5}c^2ex^5$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d*x + ((b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((3*b*c*d + b^2*e + 2*a*c*e)*
x^3)/3 + (c*(2*c*d + 3*b*e)*x^4)/4 + (2*c^2*e*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)\,dx=\int \left(abd+\left(b^2d+2acd+abe\right)x+\left(3bcd+b^2e+2ace\right)x^2+c(2cd+3be)x$$
$$=abdx+\frac{1}{2}\left(b^2d+2acd+abe\right)x^2+\frac{1}{3}\left(3bcd+b^2e+2ace\right)x^3+\frac{1}{4}c(2cd+3$$

Mathematica [A] time = 0.02, size = 79, normalized size = 1.00

$$\frac{1}{3}x^3\left(2ace+b^2e+3bcd\right)+\frac{1}{2}x^2\left(abe+2acd+b^2d\right)+abdx+\frac{1}{4}cx^4(3be+2cd)+\frac{2}{5}c^2ex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d*x + ((b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((3*b*c*d + b^2*e + 2*a*c*e)*
x^3)/3 + (c*(2*c*d + 3*b*e)*x^4)/4 + (2*c^2*e*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.36, size = 80, normalized size = 1.01

$$\frac{2}{5}x^5ec^2+\frac{1}{2}x^4dc^2+\frac{3}{4}x^4ecb+x^3dcb+\frac{1}{3}x^3eb^2+\frac{2}{3}x^3eca+\frac{1}{2}x^2db^2+x^2dca+\frac{1}{2}x^2eba+xdba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/5*x^5*e*c^2 + 1/2*x^4*d*c^2 + 3/4*x^4*e*c*b + x^3*d*c*b + 1/3*x^3*e*b^2 +
 2/3*x^3*e*c*a + 1/2*x^2*d*b^2 + x^2*d*c*a + 1/2*x^2*e*b*a + x*d*b*a
```

giac [A] time = 0.19, size = 85, normalized size = 1.08

$$\frac{2}{5}c^2x^5e + \frac{1}{2}c^2dx^4 + \frac{3}{4}bcx^4e + bcdx^3 + \frac{1}{3}b^2x^3e + \frac{2}{3}acx^3e + \frac{1}{2}b^2dx^2 + acdx^2 + \frac{1}{2}abx^2e + abdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/5*c^2*x^5*e + 1/2*c^2*d*x^4 + 3/4*b*c*x^4*e + b*c*d*x^3 + 1/3*b^2*x^3*e +
 2/3*a*c*x^3*e + 1/2*b^2*d*x^2 + a*c*d*x^2 + 1/2*a*b*x^2*e + a*b*d*x
```

maple [A] time = 0.04, size = 83, normalized size = 1.05

$$\frac{2c^2e\,x^5}{5} + abdx + \frac{(2bce + (be + 2cd)\,c)\,x^4}{4} + \frac{(2ace + bcd + (be + 2cd)\,b)\,x^3}{3} + \frac{\left(b^2d + (be + 2cd)\,a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x)
```

```
[Out] 2/5*c^2*e*x^5+1/4*((b*e+2*c*d)*c+2*b*c*e)*x^4+1/3*(b*c*d+(b*e+2*c*d)*b+2*a*
c*e)*x^3+1/2*(b^2*d+(b*e+2*c*d)*a)*x^2+a*b*d*x
```

maxima [A] time = 0.53, size = 73, normalized size = 0.92

$$\frac{2}{5}c^2ex^5 + \frac{1}{4}\left(2\,c^2d + 3\,bce\right)x^4 + abdx + \frac{1}{3}\left(3\,bcd + \left(b^2 + 2\,ac\right)e\right)x^3 + \frac{1}{2}\left(abe + \left(b^2 + 2\,ac\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/5*c^2*e*x^5 + 1/4*(2*c^2*d + 3*b*c*e)*x^4 + a*b*d*x + 1/3*(3*b*c*d + (b^2
 + 2*a*c)*e)*x^3 + 1/2*(a*b*e + (b^2 + 2*a*c)*d)*x^2
```

mupad [B] time = 0.03, size = 71, normalized size = 0.90

$$x^2\left(\frac{d\,b^2}{2} + \frac{a\,e\,b}{2} + a\,c\,d\right) + x^3\left(\frac{e\,b^2}{3} + c\,d\,b + \frac{2\,a\,c\,e}{3}\right) + x^4\left(\frac{d\,c^2}{2} + \frac{3\,b\,e\,c}{4}\right) + \frac{2\,c^2\,e\,x^5}{5} + a\,b\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((b^2*d)/2 + (a*b*e)/2 + a*c*d) + x^3*((b^2*e)/3 + (2*a*c*e)/3 + b*c*d)
 + x^4*((c^2*d)/2 + (3*b*c*e)/4) + (2*c^2*e*x^5)/5 + a*b*d*x
```

sympy [A] time = 0.08, size = 82, normalized size = 1.04

$$abdx + \frac{2c^2ex^5}{5} + x^4\left(\frac{3bce}{4} + \frac{c^2d}{2}\right) + x^3\left(\frac{2ace}{3} + \frac{b^2e}{3} + bcd\right) + x^2\left(\frac{abe}{2} + acd + \frac{b^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d*x + 2*c**2*e*x**5/5 + x**4*(3*b*c*e/4 + c**2*d/2) + x**3*(2*a*c*e/3 +
 b**2*e/3 + b*c*d) + x**2*(a*b*e/2 + a*c*d + b**2*d/2)
```

3.1306 $\int (b+2cx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=16

$$\frac{1}{2}\left(a+bx+cx^2\right)^2$$

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {629}

$$\frac{1}{2}\left(a+bx+cx^2\right)^2$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a + b*x + c*x^2)^2/2
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)\,dx=\frac{1}{2}\left(a+bx+cx^2\right)^2$$

Mathematica [A] time = 0.00, size = 21, normalized size = 1.31

$$\frac{1}{2}x(b+cx)(2a+x(b+cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2),x]
```

```
[Out] (x*(b + c*x)*(2*a + x*(b + c*x)))/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2), x]
```

fricas [B] time = 0.37, size = 33, normalized size = 2.06

$$\frac{1}{2}x^4c^2+x^3cb+\frac{1}{2}x^2b^2+x^2ca+xba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*x^4*c^2 + x^3*c*b + 1/2*x^2*b^2 + x^2*c*a + x*b*a
```

giac [A] time = 0.15, size = 25, normalized size = 1.56

$$\frac{1}{2}\left(cx^2+bx\right)^2+\left(cx^2+bx\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a),x, algorithm="giac")
[Out] 1/2*(c*x^2 + b*x)^2 + (c*x^2 + b*x)*a
```

maple [B] time = 0.04, size = 33, normalized size = 2.06

$$\frac{c^2x^4}{2}+bc\,x^3+abx+\frac{\left(2ac+b^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a),x)
[Out] 1/2*c^2*x^4+b*c*x^3+1/2*(2*a*c+b^2)*x^2+a*b*x
```

maxima [A] time = 0.60, size = 14, normalized size = 0.88

$$\frac{1}{2}\left(cx^2+bx+a\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a),x, algorithm="maxima")
[Out] 1/2*(c*x^2 + b*x + a)^2
```

mupad [B] time = 0.04, size = 32, normalized size = 2.00

$$x^2\left(\frac{b^2}{2}+a\,c\right)+\frac{c^2\,x^4}{2}+a\,b\,x+b\,c\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2),x)
[Out] x^2*(a*c + b^2/2) + (c^2*x^4)/2 + a*b*x + b*c*x^3
```

sympy [B] time = 0.07, size = 31, normalized size = 1.94

$$abx+bcx^3+\frac{c^2x^4}{2}+x^2\left(ac+\frac{b^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a),x)
[Out] a*b*x + b*c*x**3 + c**2*x**4/2 + x**2*(a*c + b**2/2)
```

3.1307 $\int \frac{(b+2cx)(a+bx+cx^2)}{d+ex}\,dx$

Optimal. Leaf size=104

$$\frac{x\left(-ce(3bd-2ae)+b^2e^2+2c^2d^2\right)}{e^3}-\frac{(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{cx^2(2cd-3be)}{2e^2}+\frac{2c^2x^3}{3e}$$

Rubi [A] time = 0.11, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{x\left(-ce(3bd-2ae)+b^2e^2+2c^2d^2\right)}{e^3}-\frac{(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{cx^2(2cd-3be)}{2e^2}+\frac{2c^2x^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((2*c^2*d^2 + b^2*e^2 - c*e*(3*b*d - 2*a*e))*x)/e^3 - (c*(2*c*d - 3*b*e)*x^
2)/(2*e^2) + (2*c^2*x^3)/(3*e) - ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*Log
[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{d+ex}\,dx=\int \left(\frac{2c^2d^2+b^2e^2-ce(3bd-2ae)}{e^3}-\frac{c(2cd-3be)x}{e^2}+\frac{2c^2x^2}{e}+\frac{(-2cd+be)\left(cd^2-\right.}{e^3(d+ex}\right.$$

$$=\frac{\left(2c^2d^2+b^2e^2-ce(3bd-2ae)\right)x}{e^3}-\frac{c(2cd-3be)x^2}{2e^2}+\frac{2c^2x^3}{3e}-\frac{(2cd-be)\left(cd^2-b\right.}{}$$

Mathematica [A] time = 0.04, size = 95, normalized size = 0.91

$$\frac{ex\left(3ce(4ae-6bd+3bex)+6b^2e^2+2c^2\left(6d^2-3dex+2e^2x^2\right)\right)-6(2cd-be)\log(d+ex)\left(e(ae-bd)+cd^2\right)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(6*b^2*e^2 + 3*c*e*(-6*b*d + 4*a*e + 3*b*e*x) + 2*c^2*(6*d^2 - 3*d*e*x
 + 2*e^2*x^2)) - 6*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*Log[d + e*x])/(
6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x), x]
```

fricas [A] time = 0.42, size = 117, normalized size = 1.12

$$\frac{4\,c^2e^3x^3-3\left(2\,c^2de^2-3\,bce^3\right)x^2+6\left(2\,c^2d^2e-3\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x-6\left(2\,c^2d^3-3\,bcd^2e-abe^3+\left(b^2+2\,ac\right)de^2\right)\log\left(ex+d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(4*c^2*e^3*x^3 - 3*(2*c^2*d*e^2 - 3*b*c*e^3)*x^2 + 6*(2*c^2*d^2*e - 3*b
*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x - 6*(2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b
^2 + 2*a*c)*d*e^2)*log(e*x + d))/e^4
```

giac [A] time = 0.15, size = 118, normalized size = 1.13

$$-\left(2\,c^2d^3-3\,bcd^2e+b^2de^2+2\,acde^2-abe^3\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(4\,c^2x^3e^2-6\,c^2dx^2e+12\,c^2d^2x+9\,bcx^2e^2-18\,bcdxe+6\,b^2xe^2+12\,acxe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)*e^(-4)*log(a
bs(x*e + d)) + 1/6*(4*c^2*x^3*e^2 - 6*c^2*d*x^2*e + 12*c^2*d^2*x + 9*b*c*x^
2*e^2 - 18*b*c*d*x*e + 6*b^2*x*e^2 + 12*a*c*x*e^2)*e^(-3)
```

maple [A] time = 0.05, size = 146, normalized size = 1.40

$$\frac{2c^2x^3}{3e}+\frac{3bc\,x^2}{2e}-\frac{c^2d\,x^2}{e^2}+\frac{ab\ln\left(ex+d\right)}{e}-\frac{2acd\ln\left(ex+d\right)}{e^2}+\frac{2acx}{e}-\frac{b^2d\ln\left(ex+d\right)}{e^2}+\frac{b^2x}{e}+\frac{3bc\,d^2\ln\left(ex+d\right)}{e^3}-\frac{3bcdx}{e^2}-\frac{2c^2d^3\ln\left(ex+d\right)}{e^4}+\frac{2c^2d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x)
```

```
[Out] 2/3*c^2*x^3/e+3/2/e*x^2*b*c-1/e^2*x^2*c^2*d+2/e*x*a*c+1/e*x*b^2-3/e^2*x*b*c
*d+2/e^3*x*c^2*d^2+1/e*ln(e*x+d)*a*b-2/e^2*ln(e*x+d)*a*c*d-1/e^2*ln(e*x+d)*
b^2*d+3/e^3*ln(e*x+d)*b*c*d^2-2/e^4*ln(e*x+d)*c^2*d^3
```

maxima [A] time = 0.53, size = 116, normalized size = 1.12

$$\frac{4\,c^2e^2x^3-3\left(2\,c^2de-3\,bce^2\right)x^2+6\left(2\,c^2d^2-3\,bcde+\left(b^2+2\,ac\right)e^2\right)x}{6\,e^3}-\frac{\left(2\,c^2d^3-3\,bcd^2e-abe^3+\left(b^2+2\,ac\right)de^2\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(4*c^2*e^2*x^3 - 3*(2*c^2*d*e - 3*b*c*e^2)*x^2 + 6*(2*c^2*d^2 - 3*b*c*d
*e + (b^2 + 2*a*c)*e^2)*x)/e^3 - (2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2
+ 2*a*c)*d*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 1.78, size = 121, normalized size = 1.16

$$x\left(\frac{b^2+2\,a\,c}{e}+\frac{d\,\left(\frac{2\,c^2\,d}{e^2}-\frac{3\,b\,c}{e}\right)}{e}\right)-x^2\,\left(\frac{c^2\,d}{e^2}-\frac{3\,b\,c}{2\,e}\right)-\frac{\ln\left(d+e\,x\right)\,\left(b^2\,d\,e^2-3\,b\,c\,d^2\,e-a\,b\,e^3+2\,c^2\,d^3+2\,a\,c\,d\,e^2\right)}{e^4}+\frac{2\,c^2\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x)
```

```
[Out] x*((2*a*c + b^2)/e + (d*((2*c^2*d)/e^2 - (3*b*c)/e))/e) - x^2*((c^2*d)/e^2
- (3*b*c)/(2*e)) - (log(d + e*x)*(2*c^2*d^3 + b^2*d*e^2 - a*b*e^3 + 2*a*c*d
*e^2 - 3*b*c*d^2*e))/e^4 + (2*c^2*x^3)/(3*e)
```

sympy [A] time = 0.35, size = 100, normalized size = 0.96

$$\frac{2c^2x^3}{3e} + x^2\left(\frac{3bc}{2e} - \frac{c^2d}{e^2}\right) + x\left(\frac{2ac}{e} + \frac{b^2}{e} - \frac{3bcd}{e^2} + \frac{2c^2d^2}{e^3}\right) + \frac{(be - 2cd)\left(ae^2 - bde + cd^2\right)\log(d + ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] 2*c**2*x**3/(3*e) + x**2*(3*b*c/(2*e) - c**2*d/e**2) + x*(2*a*c/e + b**2/e
- 3*b*c*d/e**2 + 2*c**2*d**2/e**3) + (b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2
)*log(d + e*x)/e**4
```

3.1308 $\int \frac{(b+2cx)(a+bx+cx^2)}{(d+ex)^2}\,dx$

Optimal. Leaf size=102

$$\frac{\log(d+ex)\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{cx(4cd-3be)}{e^3}+\frac{c^2x^2}{e^2}$$

Rubi [A] time = 0.10, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{\log(d+ex)\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{cx(4cd-3be)}{e^3}+\frac{c^2x^2}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -((c*(4*c*d - 3*b*e)*x)/e^3) + (c^2*x^2)/e^2 + ((2*c*d - b*e)*(c*d^2 - b*d*
e + a*e^2))/(e^4*(d + e*x)) + ((6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*
Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx &= \int \left(-\frac{c(4cd-3be)}{e^3}+\frac{2c^2x}{e^2}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^2}+\frac{6c^2d^2+b^2e^2-}{e^3(d+}\right.\\ &= -\frac{c(4cd-3be)x}{e^3}+\frac{c^2x^2}{e^2}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{e^4(d+ex)}+\frac{\left(6c^2d^2+b^2e^2-2ce\right.}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 97, normalized size = 0.95

$$\frac{\log(d+ex)\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+\frac{(2cd-be)\left(e(ae-bd)+cd^2\right)}{d+ex}-cex(4cd-3be)+c^2e^2x^2}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (-(c*e*(4*c*d - 3*b*e)*x) + c^2*e^2*x^2 + ((2*c*d - b*e)*(c*d^2 + e*(-(b*d)
 + a*e)))/(d + e*x) + (6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e))*Log[d +
e*x])/e^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2, x]
```

fricas [A] time = 0.42, size = 172, normalized size = 1.69

$$\frac{c^2e^3x^3 + 2\,c^2d^3 - 3\,bcd^2e - abe^3 + \left(b^2 + 2\,ac\right)de^2 - 3\left(c^2de^2 - bce^3\right)x^2 - \left(4\,c^2d^2e - 3\,bcde^2\right)x + \left(6\,c^2d^3 - 6\,bcd^2e + \left(b^2 + 2\,ac\right)de^2 + \left(6\,c^2d^2e - 6\,bcde^2 + \left(b^2 + 2\,ac\right)e^3\right)x\right)\log\left(ex + d\right)}{e^5x + de^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] (c^2*e^3*x^3 + 2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2 - 3*
(c^2*d*e^2 - b*c*e^3)*x^2 - (4*c^2*d^2*e - 3*b*c*d*e^2)*x + (6*c^2*d^3 - 6*
b*c*d^2*e + (b^2 + 2*a*c)*d*e^2 + (6*c^2*d^2*e - 6*b*c*d*e^2 + (b^2 + 2*a*c
)*e^3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [A] time = 0.17, size = 177, normalized size = 1.74

$$\left(c^2 - \frac{3\left(2\,c^2de - bce^2\right)e^{(-1)}}{xe + d}\right)(xe + d)^2e^{(-4)} - \left(6\,c^2d^2 - 6\,bcde + b^2e^2 + 2\,ace^2\right)e^{(-4)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{2\,c^2d^3e^2}{xe + d} - \frac{3\,bcd^2e^3}{xe + d} + \frac{b^2de^4}{xe + d} + \frac{2\,acde^4}{xe + d} - \frac{abe^5}{xe + d}\right)e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] (c^2 - 3*(2*c^2*d*e - b*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*e^(-4) - (6*c^
2*d^2 - 6*b*c*d*e + b^2*e^2 + 2*a*c*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*
e + d)^2) + (2*c^2*d^3*e^2/(x*e + d) - 3*b*c*d^2*e^3/(x*e + d) + b^2*d*e^4/
(x*e + d) + 2*a*c*d*e^4/(x*e + d) - a*b*e^5/(x*e + d))*e^(-6)
```

maple [A] time = 0.09, size = 166, normalized size = 1.63

$$\frac{c^2x^2}{e^2} - \frac{ab}{(ex + d)\,e} + \frac{2acd}{(ex + d)\,e^2} + \frac{2ac\ln\left(ex + d\right)}{e^2} + \frac{b^2d}{(ex + d)\,e^2} + \frac{b^2\ln\left(ex + d\right)}{e^2} - \frac{3bc\,d^2}{(ex + d)\,e^3} - \frac{6bcd\ln\left(ex + d\right)}{e^3} + \frac{3bcx}{e^2} + \frac{2c^2d^3}{(ex + d)\,e^4} + \frac{6c^2d^2\ln\left(ex + d\right)}{e^4} - \frac{4c^2dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] c^2*x^2/e^2+3*c/e^2*b*x-4*c^2/e^3*x*d-1/e/(e*x+d)*a*b+2/e^2/(e*x+d)*a*c*d+1
/e^2/(e*x+d)*b^2*d-3/e^3/(e*x+d)*b*c*d^2+2/e^4/(e*x+d)*c^2*d^3+2/e^2*ln(e*x
+d)*a*c+1/e^2*ln(e*x+d)*b^2-6/e^3*ln(e*x+d)*b*c*d+6/e^4*ln(e*x+d)*c^2*d^2
```

maxima [A] time = 0.49, size = 117, normalized size = 1.15

$$\frac{2\,c^2d^3 - 3\,bcd^2e - abe^3 + \left(b^2 + 2\,ac\right)de^2}{e^5x + de^4} + \frac{c^2ex^2 - \left(4\,c^2d - 3\,bce\right)x}{e^3} + \frac{\left(6\,c^2d^2 - 6\,bcde + \left(b^2 + 2\,ac\right)e^2\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)/(e^5*x + d*e^4) +
 (c^2*e*x^2 - (4*c^2*d - 3*b*c*e)*x)/e^3 + (6*c^2*d^2 - 6*b*c*d*e + (b^2 +
2*a*c)*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 0.07, size = 127, normalized size = 1.25

$$\frac{b^2\,d\,e^2 - 3\,b\,c\,d^2\,e - a\,b\,e^3 + 2\,c^2\,d^3 + 2\,a\,c\,d\,e^2}{e\,\left(x\,e^4 + d\,e^3\right)} - x\,\left(\frac{4\,c^2\,d}{e^3} - \frac{3\,b\,c}{e^2}\right) + \frac{\ln\left(d + e\,x\right)\,\left(b^2\,e^2 - 6\,b\,c\,d\,e + 6\,c^2\,d^2 + 2\,a\,c\,e^2\right)}{e^4} + \frac{c^2\,x^2}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x)
```

```
[Out] (2*c^2*d^3 + b^2*d*e^2 - a*b*e^3 + 2*a*c*d*e^2 - 3*b*c*d^2*e)/(e*(d*e^3 + e
^4*x)) - x*((4*c^2*d)/e^3 - (3*b*c)/e^2) + (log(d + e*x)*(b^2*e^2 + 6*c^2*d
^2 + 2*a*c*e^2 - 6*b*c*d*e))/e^4 + (c^2*x^2)/e^2
```

sympy [A] time = 0.67, size = 126, normalized size = 1.24

$$\frac{c^2x^2}{e^2} + x\left(\frac{3bc}{e^2} - \frac{4c^2d}{e^3}\right) + \frac{-abe^3 + 2acde^2 + b^2de^2 - 3bcd^2e + 2c^2d^3}{de^4 + e^5x} + \frac{\left(2ace^2 + b^2e^2 - 6bcde + 6c^2d^2\right)\log(d + ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] c**2*x**2/e**2 + x*(3*b*c/e**2 - 4*c**2*d/e**3) + (-a*b*e**3 + 2*a*c*d*e**2
 + b**2*d*e**2 - 3*b*c*d**2*e + 2*c**2*d**3)/(d*e**4 + e**5*x) + (2*a*c*e**
2 + b**2*e**2 - 6*b*c*d*e + 6*c**2*d**2)*log(d + e*x)/e**4
```

3.1309 $\int \frac{(b+2cx)(a+bx+cx^2)}{(d+ex)^3}\,dx$

Optimal. Leaf size=111

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{e^4(d+ex)}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{3c(2cd-be)\log(d+ex)}{e^4}+\frac{2c^2x}{e^3}$$

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{e^4(d+ex)}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{3c(2cd-be)\log(d+ex)}{e^4}+\frac{2c^2x}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*c^2*x)/e^3 + ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(2*e^4*(d + e*x)^2)
 - (6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))/(e^4*(d + e*x)) - (3*c*(2*c*
d - b*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx = \int \left(\frac{2c^2}{e^3}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^3}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^2}-\frac{3c(2c}{e^3(a}\right.$$
$$=\frac{2c^2x}{e^3}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{2e^4(d+ex)^2}-\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^4(d+ex)}-\frac{3c(2cd-}{}$$

Mathematica [A] time = 0.05, size = 118, normalized size = 1.06

$$\frac{ce(3bd(3d+4ex)-2ae(d+2ex))-be^2(ae+b(d+2ex))-6c(d+ex)^2(2cd-be)\log(d+ex)+c^2\left(-10d^3-8d^2ex+8de^2x^2+4e^3x^3\right)}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (c^2*(-10*d^3 - 8*d^2*e*x + 8*d*e^2*x^2 + 4*e^3*x^3) - b*e^2*(a*e + b*(d +
2*e*x)) + c*e*(-2*a*e*(d + 2*e*x) + 3*b*d*(3*d + 4*e*x)) - 6*c*(2*c*d - b*e
)*(d + e*x)^2*Log[d + e*x])/(2*e^4*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3, x]
```

fricas [A] time = 0.41, size = 187, normalized size = 1.68

$$\frac{4\,c^2e^3x^3+8\,c^2de^2x^2-10\,c^2d^3+9\,bcd^2e-abe^3-\left(b^2+2\,ac\right)de^2-2\left(4\,c^2d^2e-6\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x-6\left(2\,c^2d^3-bcd^2e+\left(2\,c^2de^2-bce^3\right)x^2+2\left(2\,c^2d^2e-bcde^2\right)x\right)\log\left(ex+d\right)}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(4*c^2*e^3*x^3 + 8*c^2*d*e^2*x^2 - 10*c^2*d^3 + 9*b*c*d^2*e - a*b*e^3 -
 (b^2 + 2*a*c)*d*e^2 - 2*(4*c^2*d^2*e - 6*b*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x
- 6*(2*c^2*d^3 - b*c*d^2*e + (2*c^2*d*e^2 - b*c*e^3)*x^2 + 2*(2*c^2*d^2*e -
 b*c*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.15, size = 116, normalized size = 1.05

$$2\,c^2xe^{(-3)}-3\left(2\,c^2d-bce\right)e^{(-4)}\log\left(|xe+d|\right)-\frac{\left(10\,c^2d^3-9\,bcd^2e+b^2de^2+2\,acde^2+abe^3+2\left(6\,c^2d^2e-6\,bcde^2+b^2e^3+2\,ace^3\right)x\right)e^{(-4)}}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] 2*c^2*x*e^(-3) - 3*(2*c^2*d - b*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(10*c^2
*d^3 - 9*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 + a*b*e^3 + 2*(6*c^2*d^2*e - 6
*b*c*d*e^2 + b^2*e^3 + 2*a*c*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [A] time = 0.05, size = 179, normalized size = 1.61

$$-\frac{ab}{2\left(ex+d\right)^2e}+\frac{acd}{\left(ex+d\right)^2e^2}+\frac{b^2d}{2\left(ex+d\right)^2e^2}-\frac{3bc\,d^2}{2\left(ex+d\right)^2e^3}+\frac{c^2d^3}{\left(ex+d\right)^2e^4}-\frac{2ac}{\left(ex+d\right)e^2}-\frac{b^2}{\left(ex+d\right)e^2}+\frac{6bcd}{\left(ex+d\right)e^3}+\frac{3bc\ln\left(ex+d\right)}{e^3}-\frac{6c^2d^2}{\left(ex+d\right)e^4}-\frac{6c^2d\ln\left(ex+d\right)}{e^4}+\frac{2c^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] 2*c^2*x/e^3-2/e^2/(e*x+d)*a*c-1/e^2/(e*x+d)*b^2+6/e^3/(e*x+d)*b*c*d-6/e^4/(
e*x+d)*c^2*d^2-1/2/e/(e*x+d)^2*a*b+1/e^2/(e*x+d)^2*a*c*d+1/2/e^2/(e*x+d)^2*
b^2*d-3/2/e^3/(e*x+d)^2*b*c*d^2+1/e^4/(e*x+d)^2*c^2*d^3+3*c/e^3*ln(e*x+d)*b
-6*c^2/e^4*ln(e*x+d)*d
```

maxima [A] time = 0.65, size = 128, normalized size = 1.15

$$-\frac{10\,c^2d^3-9\,bcd^2e+abe^3+\left(b^2+2\,ac\right)de^2+2\left(6\,c^2d^2e-6\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}+\frac{2\,c^2x}{e^3}-\frac{3\left(2\,c^2d-bce\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(10*c^2*d^3 - 9*b*c*d^2*e + a*b*e^3 + (b^2 + 2*a*c)*d*e^2 + 2*(6*c^2*d
^2*e - 6*b*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
+ 2*c^2*x/e^3 - 3*(2*c^2*d - b*c*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.11, size = 135, normalized size = 1.22

$$\frac{2\,c^2\,x}{e^3}-\frac{\frac{b^2\,d\,e^2-9\,b\,c\,d^2\,e+a\,b\,e^3+10\,c^2\,d^3+2\,a\,c\,d\,e^2}{2\,e}+x\,\left(b^2\,e^2-6\,b\,c\,d\,e+6\,c^2\,d^2+2\,a\,c\,e^2\right)}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}-\frac{\ln\left(d+e\,x\right)\,\left(6\,c^2\,d-3\,b\,c\,e\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x)
```

```
[Out] (2*c^2*x)/e^3 - ((10*c^2*d^3 + b^2*d*e^2 + a*b*e^3 + 2*a*c*d*e^2 - 9*b*c*d^
2*e)/(2*e) + x*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e))/(d^2*e^3 + e^
5*x^2 + 2*d*e^4*x) - (log(d + e*x)*(6*c^2*d - 3*b*c*e))/e^4
```

sympy [A] time = 1.71, size = 139, normalized size = 1.25

$$\frac{2c^2x}{e^3} + \frac{3c\,(be - 2cd)\log{(d + ex)}}{e^4} + \frac{-abe^3 - 2acde^2 - b^2de^2 + 9bcd^2e - 10c^2d^3 + x\left(-4ace^3 - 2b^2e^3 + 12bcde^2 - 12c^2d^2e\right)}{2d^2e^4 + 4de^5x + 2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] 2*c**2*x/e**3 + 3*c*(b*e - 2*c*d)*log(d + e*x)/e**4 + (-a*b*e**3 - 2*a*c*d*
e**2 - b**2*d*e**2 + 9*b*c*d**2*e - 10*c**2*d**3 + x*(-4*a*c*e**3 - 2*b**2*
e**3 + 12*b*c*d*e**2 - 12*c**2*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*
x**2)
```

3.1310 $\int \frac{(b+2cx)(a+bx+cx^2)}{(d+ex)^4} dx$

Optimal. Leaf size=119

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{2e^4(d+ex)^2}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3c(2cd-be)}{e^4(d+ex)}+\frac{2c^2\log(d+ex)}{e^4}$$

Rubi [A] time = 0.09, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{2e^4(d+ex)^2}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3c(2cd-be)}{e^4(d+ex)}+\frac{2c^2\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^3) - (6*c^2*d^2 +
b^2*e^2 - 2*c*e*(3*b*d - a*e))/(2*e^4*(d + e*x)^2) + (3*c*(2*c*d - b*e))/(e
^4*(d + e*x)) + (2*c^2*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^4}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^3}-\frac{3c(2cd-}{e^3(d+e}\right.$$

$$=\frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^3}-\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{2e^4(d+ex)^2}+\frac{3c(2cd-be)}{e^4(d+ex)}+$$

Mathematica [A] time = 0.05, size = 111, normalized size = 0.93

$$\frac{-2ce\left(ae(d+3ex)+3b\left(d^2+3dex+3e^2x^2\right)\right)-be^2(2ae+b(d+3ex))+2c^2d\left(11d^2+27dex+18e^2x^2\right)+12c^2(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (2*c^2*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - b*e^2*(2*a*e + b*(d + 3*e*x)) -
 2*c*e*(a*e*(d + 3*e*x) + 3*b*(d^2 + 3*d*e*x + 3*e^2*x^2)) + 12*c^2*(d + e*
x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4, x]
```

fricas [A] time = 0.41, size = 179, normalized size = 1.50

$$\frac{22\,c^2d^3-6\,bcd^2e-2\,abe^3-\left(b^2+2\,ac\right)de^2+18\left(2\,c^2de^2-bce^3\right)x^2+3\left(18\,c^2d^2e-6\,bcde^2-\left(b^2+2\,ac\right)e^3\right)x+12\left(c^2e^3x^3+3\,c^2de^2x^2+3\,c^2d^2ex+c^2d^3\right)\log\left(ex+d\right)}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(22*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 - (b^2 + 2*a*c)*d*e^2 + 18*(2*c^2
*d*e^2 - b*c*e^3)*x^2 + 3*(18*c^2*d^2*e - 6*b*c*d*e^2 - (b^2 + 2*a*c)*e^3)*
x + 12*(c^2*e^3*x^3 + 3*c^2*d*e^2*x^2 + 3*c^2*d^2*e*x + c^2*d^3)*log(e*x +
d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.15, size = 123, normalized size = 1.03

$$2\,c^2e^{(-4)}\log\left(|xe+d|\right)+\frac{\left(18\left(2\,c^2de-bce^2\right)x^2+3\left(18\,c^2d^2-6\,bcde-b^2e^2-2\,ace^2\right)x+\left(22\,c^2d^3-6\,bcd^2e-b^2de^2-2\,acde^2-2\,abe^3\right)e^{(-1)}\right)e^{(-3)}}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 2*c^2*e^(-4)*log(abs(x*e + d)) + 1/6*(18*(2*c^2*d*e - b*c*e^2)*x^2 + 3*(18*
c^2*d^2 - 6*b*c*d*e - b^2*e^2 - 2*a*c*e^2)*x + (22*c^2*d^3 - 6*b*c*d^2*e -
b^2*d*e^2 - 2*a*c*d*e^2 - 2*a*b*e^3)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [A] time = 0.05, size = 188, normalized size = 1.58

$$-\frac{ab}{3\left(ex+d\right)^3e}+\frac{2acd}{3\left(ex+d\right)^3e^2}+\frac{b^2d}{3\left(ex+d\right)^3e^2}-\frac{bc\,d^2}{\left(ex+d\right)^3e^3}+\frac{2c^2d^3}{3\left(ex+d\right)^3e^4}-\frac{ac}{\left(ex+d\right)^2e^2}-\frac{b^2}{2\left(ex+d\right)^2e^2}+\frac{3bcd}{\left(ex+d\right)^2e^3}-\frac{3c^2d^2}{\left(ex+d\right)^2e^4}-\frac{3bc}{\left(ex+d\right)e^3}+\frac{6c^2d}{\left(ex+d\right)e^4}+\frac{2c^2\ln\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x)
```

```
[Out] -3*c/e^3/(e*x+d)*b+6*c^2/e^4/(e*x+d)*d-1/3/e/(e*x+d)^3*a*b+2/3/e^2/(e*x+d)^
3*a*c*d+1/3/e^2/(e*x+d)^3*b^2*d-1/e^3/(e*x+d)^3*b*c*d^2+2/3/e^4/(e*x+d)^3*c
^2*d^3-1/e^2/(e*x+d)^2*a*c-1/2/e^2/(e*x+d)^2*b^2+3/e^3/(e*x+d)^2*b*c*d-3/e^
4/(e*x+d)^2*c^2*d^2+2*c^2*ln(e*x+d)/e^4
```

maxima [A] time = 0.48, size = 146, normalized size = 1.23

$$\frac{22\,c^2d^3-6\,bcd^2e-2\,abe^3-\left(b^2+2\,ac\right)de^2+18\left(2\,c^2de^2-bce^3\right)x^2+3\left(18\,c^2d^2e-6\,bcde^2-\left(b^2+2\,ac\right)e^3\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{2\,c^2\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(22*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 - (b^2 + 2*a*c)*d*e^2 + 18*(2*c^2
*d*e^2 - b*c*e^3)*x^2 + 3*(18*c^2*d^2*e - 6*b*c*d*e^2 - (b^2 + 2*a*c)*e^3)*
x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + 2*c^2*log(e*x + d)/e^4
```

mupad [B] time = 1.83, size = 144, normalized size = 1.21

$$\frac{2\,c^2\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{b^2\,d\,e^2+6\,b\,c\,d^2\,e+2\,a\,b\,e^3-22\,c^2\,d^3+2\,a\,c\,d\,e^2}{6\,e^4}+\frac{x\,\left(b^2\,e^2+6\,b\,c\,d\,e-18\,c^2\,d^2+2\,a\,c\,e^2\right)}{2\,e^3}+\frac{3\,c\,x^2\,\left(b\,e-2\,c\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x)
```

```
[Out] (2*c^2*log(d + e*x))/e^4 - ((b^2*d*e^2 - 22*c^2*d^3 + 2*a*b*e^3 + 2*a*c*d*e
^2 + 6*b*c*d^2*e)/(6*e^4) + (x*(b^2*e^2 - 18*c^2*d^2 + 2*a*c*e^2 + 6*b*c*d*
e))/(2*e^3) + (3*c*x^2*(b*e - 2*c*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3
*d^2*e*x)
```

sympy [A] time = 3.82, size = 158, normalized size = 1.33

$$\frac{2c^2\log(d+ex)}{e^4}+\frac{-2abe^3-2acde^2-b^2de^2-6bcd^2e+22c^2d^3+x^2\left(-18bce^3+36c^2de^2\right)+x\left(-6ace^3-3b^2e^3-18bcde^2+54c^2d^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**4,x)
```

```
[Out] 2*c**2*log(d + e*x)/e**4 + (-2*a*b*e**3 - 2*a*c*d*e**2 - b**2*d*e**2 - 6*b*
c*d**2*e + 22*c**2*d**3 + x**2*(-18*b*c*e**3 + 36*c**2*d*e**2) + x*(-6*a*c*
e**3 - 3*b**2*e**3 - 18*b*c*d*e**2 + 54*c**2*d**2*e))/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.1311 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^5} dx$

Optimal. Leaf size=122

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{3e^4(d+ex)^3}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3c(2cd-be)}{2e^4(d+ex)^2}-\frac{2c^2}{e^4(d+ex)}$$

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{3e^4(d+ex)^3}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3c(2cd-be)}{2e^4(d+ex)^2}-\frac{2c^2}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(4*e^4*(d + e*x)^4) - (6*c^2*d^2 +
b^2*e^2 - 2*c*e*(3*b*d - a*e))/(3*e^4*(d + e*x)^3) + (3*c*(2*c*d - b*e))/(2
*e^4*(d + e*x)^2) - (2*c^2)/(e^4*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^5}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^4}-\frac{3c(2cd-be}{e^3(d+ex)^3}\right.\\ &= \frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{4e^4(d+ex)^4}-\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{3e^4(d+ex)^3}+\frac{3c(2cd-be)}{2e^4(d+ex)^2}-\frac{}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 100, normalized size = 0.82

$$-\frac{ce\left(2ae(d+4ex)+3b\left(d^2+4dex+6e^2x^2\right)\right)+be^2(3ae+b(d+4ex))+6c^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(6*c^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + b*e^2*(3*a*e + b
*(d + 4*e*x)) + c*e*(2*a*e*(d + 4*e*x) + 3*b*(d^2 + 4*d*e*x + 6*e^2*x^2)))/
(e^4*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5, x]
```

fricas [A] time = 0.44, size = 150, normalized size = 1.23

$$-\frac{24\,c^2e^3x^3+6\,c^2d^3+3\,bcd^2e+3\,abe^3+\left(b^2+2\,ac\right)de^2+18\left(2\,c^2de^2+bce^3\right)x^2+4\left(6\,c^2d^2e+3\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(24*c^2*e^3*x^3 + 6*c^2*d^3 + 3*b*c*d^2*e + 3*a*b*e^3 + (b^2 + 2*a*c)
*d*e^2 + 18*(2*c^2*d*e^2 + b*c*e^3)*x^2 + 4*(6*c^2*d^2*e + 3*b*c*d*e^2 + (b
^2 + 2*a*c)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x +
d^4*e^4)
```

giac [A] time = 0.19, size = 186, normalized size = 1.52

$$-\frac{1}{12}\left(\frac{24\,c^2e^{(-1)}}{xe+d}-\frac{36\,c^2de^{(-1)}}{(xe+d)^2}+\frac{24\,c^2d^2e^{(-1)}}{(xe+d)^3}-\frac{6\,c^2d^3e^{(-1)}}{(xe+d)^4}+\frac{18\,bc}{(xe+d)^2}-\frac{24\,bcd}{(xe+d)^3}+\frac{9\,bcd^2}{(xe+d)^4}+\frac{4\,b^2e}{(xe+d)^3}+\frac{8\,ace}{(xe+d)^3}-\frac{3\,b^2de}{(xe+d)^4}-\frac{6\,acde}{(xe+d)^4}+\frac{3\,abe^2}{(xe+d)^4}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(24*c^2*e^(-1)/(x*e + d) - 36*c^2*d*e^(-1)/(x*e + d)^2 + 24*c^2*d^2*e
^(-1)/(x*e + d)^3 - 6*c^2*d^3*e^(-1)/(x*e + d)^4 + 18*b*c/(x*e + d)^2 - 24*
b*c*d/(x*e + d)^3 + 9*b*c*d^2/(x*e + d)^4 + 4*b^2*e/(x*e + d)^3 + 8*a*c*e/(
x*e + d)^3 - 3*b^2*d*e/(x*e + d)^4 - 6*a*c*d*e/(x*e + d)^4 + 3*a*b*e^2/(x*e
 + d)^4)*e^(-3)
```

maple [A] time = 0.05, size = 131, normalized size = 1.07

$$-\frac{2c^2}{(ex+d)\,e^4}-\frac{3\,(be-2cd)\,c}{2\,(ex+d)^2\,e^4}-\frac{2ac\,e^2+b^2e^2-6bcde+6c^2d^2}{3\,(ex+d)^3\,e^4}-\frac{ab\,e^3-2acd\,e^2-b^2d\,e^2+3bc\,d^2e-2c^2d^3}{4\,(ex+d)^4\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x)
```

```
[Out] -2*c^2/e^4/(e*x+d)-1/3*(2*a*c*e^2+b^2*e^2-6*b*c*d*e+6*c^2*d^2)/e^4/(e*x+d)^
3-3/2*c*(b*e-2*c*d)/e^4/(e*x+d)^2-1/4*(a*b*e^3-2*a*c*d*e^2-b^2*d*e^2+3*b*c*
d^2*e-2*c^2*d^3)/e^4/(e*x+d)^4
```

maxima [A] time = 0.53, size = 150, normalized size = 1.23

$$-\frac{24\,c^2e^3x^3+6\,c^2d^3+3\,bcd^2e+3\,abe^3+\left(b^2+2\,ac\right)de^2+18\left(2\,c^2de^2+bce^3\right)x^2+4\left(6\,c^2d^2e+3\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(24*c^2*e^3*x^3 + 6*c^2*d^3 + 3*b*c*d^2*e + 3*a*b*e^3 + (b^2 + 2*a*c)
*d*e^2 + 18*(2*c^2*d*e^2 + b*c*e^3)*x^2 + 4*(6*c^2*d^2*e + 3*b*c*d*e^2 + (b
^2 + 2*a*c)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x +
d^4*e^4)
```

mupad [B] time = 1.81, size = 151, normalized size = 1.24

$$-\frac{\frac{b^2\,d\,e^2+3\,b\,c\,d^2\,e+3\,a\,b\,e^3+6\,c^2\,d^3+2\,a\,c\,d\,e^2}{12\,e^4}+\frac{x\,\left(b^2\,e^2+3\,b\,c\,d\,e+6\,c^2\,d^2+2\,a\,c\,e^2\right)}{3\,e^3}+\frac{2\,c^2\,x^3}{e}+\frac{3\,c\,x^2\,\left(b\,e+2\,c\,d\right)}{2\,e^2}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x)
```

```
[Out] -((6*c^2*d^3 + b^2*d*e^2 + 3*a*b*e^3 + 2*a*c*d*e^2 + 3*b*c*d^2*e)/(12*e^4)
+ (x*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 + 3*b*c*d*e))/(3*e^3) + (2*c^2*x^3)/e
 + (3*c*x^2*(b*e + 2*c*d))/(2*e^2))/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^
2*x^2 + 4*d^3*e*x)
```

sympy [A] time = 7.37, size = 170, normalized size = 1.39

$$\frac{-3abe^3-2acde^2-b^2de^2-3bcd^2e-6c^2d^3-24c^2e^3x^3+x^2\left(-18bce^3-36c^2de^2\right)+x\left(-8ace^3-4b^2e^3-12bcde^2-24c^2d^2e\right)}{12d^4e^4+48d^3e^5x+72d^2e^6x^2+48de^7x^3+12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**5,x)
```

```
[Out] (-3*a*b*e**3 - 2*a*c*d*e**2 - b**2*d*e**2 - 3*b*c*d**2*e - 6*c**2*d**3 - 24
*c**2*e**3*x**3 + x**2*(-18*b*c*e**3 - 36*c**2*d*e**2) + x*(-8*a*c*e**3 - 4
*b**2*e**3 - 12*b*c*d*e**2 - 24*c**2*d**2*e))/(12*d**4*e**4 + 48*d**3*e**5*
x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.1312 $\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=240

$$\frac{c(d+ex)^8\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{2e^6}-\frac{(d+ex)^7(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+\frac{(d+ex)^6\left(\right.}{}$$

Rubi [A] time = 0.42, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{c(d+ex)^8\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{2e^6}-\frac{(d+ex)^7(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+\frac{(d+ex)^6\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^5(2cd-be)\left(ae^2-bde+cd^2\right)^2}{5e^6}-\frac{5c^2(d+ex)^9(2cd-be)}{9e^6}+\frac{c^3(d+ex)^{10}}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^5)/(5*e^6) + ((c*d^2 -
b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^6)/(3*e^
6) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e*x
)^7)/(7*e^6) + (c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^8)/(2
*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^9)/(9*e^6) + (c^3*(d + e*x)^10)/(5*e
^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(\right.}{}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^5}{5e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5c^2d^2\right.}{}$$

Mathematica [A] time = 0.16, size = 433, normalized size = 1.80

$$\frac{1}{3}x^6\left(ce^2\left(a^2e^2+12abde+12b^2d^2\right)+b^2e^3(ae+2bd)+2c^2d^2e(6ae+5bd)+c^3d^4\right)+\frac{1}{5}x^5\left(b\left(a^2e^4+36acd^2e^2+5c^2d^4\right)+8b^2\left(ade^3+2cd^3e\right)+8acde\left(ae^2+2cd^2\right)+6b^3d^2e^2\right)+\frac{1}{3}d^2x^3\left(8a^2cde+8ab^2de+6ab\left(ae^2+cd^2\right)+b^3d^2\right)+a^2bd^4x+\frac{1}{7}ex^7\left(2c^2de(8ae+15bd)+2bce^2(3ae+8bd)+b^3e^3+8c^3d^3\right)+\frac{1}{2}ce^2x^8\left(ce(ae+5bd)+b^2e^2+3c^2d^2\right)+ad^3x^2\left(2abe+acd+b^2d\right)+dx^4\left(b^2\left(3ade^2+cd^3\right)+abe\left(ae^2+6cd^2\right)+acd\left(3ae^2+cd^2\right)+b^3d^2e\right)+\frac{1}{9}c^2e^3x^9(5be+8cd)+\frac{1}{5}c^3e^4x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d^4*x + a*d^3*(b^2*d + a*c*d + 2*a*b*e)*x^2 + (d^2*(b^3*d^2 + 8*a*b^2
*d*e + 8*a^2*c*d*e + 6*a*b*(c*d^2 + a*e^2))*x^3)/3 + d*(b^3*d^2*e + a*b*e*(
6*c*d^2 + a*e^2) + a*c*d*(c*d^2 + 3*a*e^2) + b^2*(c*d^3 + 3*a*d*e^2))*x^4 +
 ((6*b^3*d^2*e^2 + 8*a*c*d*e*(2*c*d^2 + a*e^2) + 8*b^2*(2*c*d^3*e + a*d*e^3
) + b*(5*c^2*d^4 + 36*a*c*d^2*e^2 + a^2*e^4))*x^5)/5 + ((c^3*d^4 + b^2*e^3*
(2*b*d + a*e) + 2*c^2*d^2*e*(5*b*d + 6*a*e) + c*e^2*(12*b^2*d^2 + 12*a*b*d*
e + a^2*e^2))*x^6)/3 + (e*(8*c^3*d^3 + b^3*e^3 + 2*b*c*e^2*(8*b*d + 3*a*e)
+ 2*c^2*d*e*(15*b*d + 8*a*e))*x^7)/7 + (c*e^2*(3*c^2*d^2 + b^2*e^2 + c*e*(5
*b*d + a*e))*x^8)/2 + (c^2*e^3*(8*c*d + 5*b*e)*x^9)/9 + (c^3*e^4*x^10)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.38, size = 561, normalized size = 2.34

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/5*x^10*e^4*c^3 + 8/9*x^9*e^3*d*c^3 + 5/9*x^9*e^4*c^2*b + 3/2*x^8*e^2*d^2*
c^3 + 5/2*x^8*e^3*d*c^2*b + 1/2*x^8*e^4*c*b^2 + 1/2*x^8*e^4*c^2*a + 8/7*x^7
*e*d^3*c^3 + 30/7*x^7*e^2*d^2*c^2*b + 16/7*x^7*e^3*d*c*b^2 + 1/7*x^7*e^4*b^
3 + 16/7*x^7*e^3*d*c^2*a + 6/7*x^7*e^4*c*b*a + 1/3*x^6*d^4*c^3 + 10/3*x^6*e
*d^3*c^2*b + 4*x^6*e^2*d^2*c*b^2 + 2/3*x^6*e^3*d*b^3 + 4*x^6*e^2*d^2*c^2*a
+ 4*x^6*e^3*d*c*b*a + 1/3*x^6*e^4*b^2*a + 1/3*x^6*e^4*c*a^2 + x^5*d^4*c^2*b
 + 16/5*x^5*e*d^3*c*b^2 + 6/5*x^5*e^2*d^2*b^3 + 16/5*x^5*e*d^3*c^2*a + 36/5
*x^5*e^2*d^2*c*b*a + 8/5*x^5*e^3*d*b^2*a + 8/5*x^5*e^3*d*c*a^2 + 1/5*x^5*e^
4*b*a^2 + x^4*d^4*c*b^2 + x^4*e*d^3*b^3 + x^4*d^4*c^2*a + 6*x^4*e*d^3*c*b*a
 + 3*x^4*e^2*d^2*b^2*a + 3*x^4*e^2*d^2*c*a^2 + x^4*e^3*d*b*a^2 + 1/3*x^3*d^
4*b^3 + 2*x^3*d^4*c*b*a + 8/3*x^3*e*d^3*b^2*a + 8/3*x^3*e*d^3*c*a^2 + 2*x^3
*e^2*d^2*b*a^2 + x^2*d^4*b^2*a + x^2*d^4*c*a^2 + 2*x^2*e*d^3*b*a^2 + x*d^4*
b*a^2
```

giac [B] time = 0.17, size = 543, normalized size = 2.26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/5*c^3*x^10*e^4 + 8/9*c^3*d*x^9*e^3 + 3/2*c^3*d^2*x^8*e^2 + 8/7*c^3*d^3*x^
7*e + 1/3*c^3*d^4*x^6 + 5/9*b*c^2*x^9*e^4 + 5/2*b*c^2*d*x^8*e^3 + 30/7*b*c^
2*d^2*x^7*e^2 + 10/3*b*c^2*d^3*x^6*e + b*c^2*d^4*x^5 + 1/2*b^2*c*x^8*e^4 +
1/2*a*c^2*x^8*e^4 + 16/7*b^2*c*d*x^7*e^3 + 16/7*a*c^2*d*x^7*e^3 + 4*b^2*c*d
^2*x^6*e^2 + 4*a*c^2*d^2*x^6*e^2 + 16/5*b^2*c*d^3*x^5*e + 16/5*a*c^2*d^3*x^
5*e + b^2*c*d^4*x^4 + a*c^2*d^4*x^4 + 1/7*b^3*x^7*e^4 + 6/7*a*b*c*x^7*e^4 +
 2/3*b^3*d*x^6*e^3 + 4*a*b*c*d*x^6*e^3 + 6/5*b^3*d^2*x^5*e^2 + 36/5*a*b*c*d
^2*x^5*e^2 + b^3*d^3*x^4*e + 6*a*b*c*d^3*x^4*e + 1/3*b^3*d^4*x^3 + 2*a*b*c*
d^4*x^3 + 1/3*a*b^2*x^6*e^4 + 1/3*a^2*c*x^6*e^4 + 8/5*a*b^2*d*x^5*e^3 + 8/5
*a^2*c*d*x^5*e^3 + 3*a*b^2*d^2*x^4*e^2 + 3*a^2*c*d^2*x^4*e^2 + 8/3*a*b^2*d^
3*x^3*e + 8/3*a^2*c*d^3*x^3*e + a*b^2*d^4*x^2 + a^2*c*d^4*x^2 + 1/5*a^2*b*x
^5*e^4 + a^2*b*d*x^4*e^3 + 2*a^2*b*d^2*x^3*e^2 + 2*a^2*b*d^3*x^2*e + a^2*b*
d^4*x
```

maple [B] time = 0.04, size = 554, normalized size = 2.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/5*c^3*e^4*x^10+1/9*((b*e^4+8*c*d*e^3)*c^2+4*c^2*e^4*b)*x^9+1/8*((4*b*d*e^
3+12*c*d^2*e^2)*c^2+2*(b*e^4+8*c*d*e^3)*b*c+2*c*e^4*(2*a*c+b^2))*x^8+1/7*((
6*b*d^2*e^2+8*c*d^3*e)*c^2+2*(4*b*d*e^3+12*c*d^2*e^2)*b*c+(b*e^4+8*c*d*e^3)
*(2*a*c+b^2)+4*a*b*c*e^4)*x^7+1/6*((4*b*d^3*e+2*c*d^4)*c^2+2*(6*b*d^2*e^2+8
*c*d^3*e)*b*c+(4*b*d*e^3+12*c*d^2*e^2)*(2*a*c+b^2)+2*(b*e^4+8*c*d*e^3)*a*b+
2*a^2*c*e^4)*x^6+1/5*(b*d^4*c^2+2*(4*b*d^3*e+2*c*d^4)*b*c+(6*b*d^2*e^2+8*c*
d^3*e)*(2*a*c+b^2)+2*(4*b*d*e^3+12*c*d^2*e^2)*a*b+(b*e^4+8*c*d*e^3)*a^2)*x^
5+1/4*(2*b^2*d^4*c+(4*b*d^3*e+2*c*d^4)*(2*a*c+b^2)+2*(6*b*d^2*e^2+8*c*d^3*e
)*a*b+(4*b*d*e^3+12*c*d^2*e^2)*a^2)*x^4+1/3*(b*d^4*(2*a*c+b^2)+2*(4*b*d^3*e
+2*c*d^4)*a*b+(6*b*d^2*e^2+8*c*d^3*e)*a^2)*x^3+1/2*(2*b^2*d^4*a+(4*b*d^3*e+
2*c*d^4)*a^2)*x^2+b*d^4*a^2*x
```

maxima [A] time = 0.54, size = 430, normalized size = 1.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/5*c^3*e^4*x^10 + 1/9*(8*c^3*d*e^3 + 5*b*c^2*e^4)*x^9 + 1/2*(3*c^3*d^2*e^2
 + 5*b*c^2*d*e^3 + (b^2*c + a*c^2)*e^4)*x^8 + a^2*b*d^4*x + 1/7*(8*c^3*d^3*
e + 30*b*c^2*d^2*e^2 + 16*(b^2*c + a*c^2)*d*e^3 + (b^3 + 6*a*b*c)*e^4)*x^7
+ 1/3*(c^3*d^4 + 10*b*c^2*d^3*e + 12*(b^2*c + a*c^2)*d^2*e^2 + 2*(b^3 + 6*a
*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*x^6 + 1/5*(5*b*c^2*d^4 + a^2*b*e^4 + 16*
(b^2*c + a*c^2)*d^3*e + 6*(b^3 + 6*a*b*c)*d^2*e^2 + 8*(a*b^2 + a^2*c)*d*e^3
)*x^5 + (a^2*b*d*e^3 + (b^2*c + a*c^2)*d^4 + (b^3 + 6*a*b*c)*d^3*e + 3*(a*b
^2 + a^2*c)*d^2*e^2)*x^4 + 1/3*(6*a^2*b*d^2*e^2 + (b^3 + 6*a*b*c)*d^4 + 8*(
a*b^2 + a^2*c)*d^3*e)*x^3 + (2*a^2*b*d^3*e + (a*b^2 + a^2*c)*d^4)*x^2
```

mupad [B] time = 1.88, size = 454, normalized size = 1.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((b^3*d^4)/3 + 2*a^2*b*d^2*e^2 + 2*a*b*c*d^4 + (8*a*b^2*d^3*e)/3 + (8*a
^2*c*d^3*e)/3) + x^7*((b^3*e^4)/7 + (8*c^3*d^3*e)/7 + (30*b*c^2*d^2*e^2)/7
+ (6*a*b*c*e^4)/7 + (16*a*c^2*d*e^3)/7 + (16*b^2*c*d*e^3)/7) + x^5*((a^2*b*
e^4)/5 + b*c^2*d^4 + (6*b^3*d^2*e^2)/5 + (8*a*b^2*d*e^3)/5 + (16*a*c^2*d^3*
e)/5 + (8*a^2*c*d*e^3)/5 + (16*b^2*c*d^3*e)/5 + (36*a*b*c*d^2*e^2)/5) + x^6
*((c^3*d^4)/3 + (a*b^2*e^4)/3 + (a^2*c*e^4)/3 + (2*b^3*d*e^3)/3 + 4*a*c^2*d
^2*e^2 + 4*b^2*c*d^2*e^2 + (10*b*c^2*d^3*e)/3 + 4*a*b*c*d*e^3) + x^4*(a*c^2
*d^4 + b^2*c*d^4 + b^3*d^3*e + 3*a*b^2*d^2*e^2 + 3*a^2*c*d^2*e^2 + a^2*b*d*
e^3 + 6*a*b*c*d^3*e) + (c^3*e^4*x^10)/5 + a*d^3*x^2*(b^2*d + 2*a*b*e + a*c*
d) + (c*e^2*x^8*(b^2*e^2 + 3*c^2*d^2 + a*c*e^2 + 5*b*c*d*e))/2 + (c^2*e^3*x
^9*(5*b*e + 8*c*d))/9 + a^2*b*d^4*x
```

sympy [B] time = 0.16, size = 552, normalized size = 2.30

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**4*x + c**3*e**4*x**10/5 + x**9*(5*b*c**2*e**4/9 + 8*c**3*d*e**3/9
) + x**8*(a*c**2*e**4/2 + b**2*c*e**4/2 + 5*b*c**2*d*e**3/2 + 3*c**3*d**2*e
**2/2) + x**7*(6*a*b*c*e**4/7 + 16*a*c**2*d*e**3/7 + b**3*e**4/7 + 16*b**2*
c*d*e**3/7 + 30*b*c**2*d**2*e**2/7 + 8*c**3*d**3*e/7) + x**6*(a**2*c*e**4/3
```

```
 + a*b**2*e**4/3 + 4*a*b*c*d*e**3 + 4*a*c**2*d**2*e**2 + 2*b**3*d*e**3/3 +
4*b**2*c*d**2*e**2 + 10*b*c**2*d**3*e/3 + c**3*d**4/3) + x**5*(a**2*b*e**4/
5 + 8*a**2*c*d*e**3/5 + 8*a*b**2*d*e**3/5 + 36*a*b*c*d**2*e**2/5 + 16*a*c**
2*d**3*e/5 + 6*b**3*d**2*e**2/5 + 16*b**2*c*d**3*e/5 + b*c**2*d**4) + x**4*
(a**2*b*d*e**3 + 3*a**2*c*d**2*e**2 + 3*a*b**2*d**2*e**2 + 6*a*b*c*d**3*e +
 a*c**2*d**4 + b**3*d**3*e + b**2*c*d**4) + x**3*(2*a**2*b*d**2*e**2 + 8*a*
*2*c*d**3*e/3 + 8*a*b**2*d**3*e/3 + 2*a*b*c*d**4 + b**3*d**4/3) + x**2*(2*a
**2*b*d**3*e + a**2*c*d**4 + a*b**2*d**4)
```

3.1313 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=240

$$\frac{4c(d+ex)^7\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{(d+ex)^6(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{6e^6}+\frac{2(d+ex)^5 \cdots}{\cdots}$$

Rubi [A] time = 0.32, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{4c(d+ex)^7\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{(d+ex)^6(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{6e^6}+\frac{2(d+ex)^5\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{5e^6}-\frac{(d+ex)^4(2cd-be)\left(ae^2-bde+cd^2\right)^2}{4e^6}-\frac{5c^2(d+ex)^8(2cd-be)}{8e^6}+\frac{2c^3(d+ex)^9}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^4)/(4*e^6) + (2*(c*d^2
- b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^5)/(5*
e^6) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e
*x)^6)/(6*e^6) + (4*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^7
)/(7*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^8)/(8*e^6) + (2*c^3*(d + e*x)^9)
/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(\cdots\right.}{\cdots}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{4e^6}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.12, size = 351, normalized size = 1.46

$$\frac{1}{3}dx^3\left(6a^2cde+6ab^2de+3ab\left(ae^2+2cd^2\right)+b^3d^2\right)+a^2bd^3x+\frac{1}{6}x^6\left(3c^2de(4ae+5bd)+6bce^2(ae+2bd)+b^3e^3+2c^3d^3\right)+\frac{1}{7}cex^7\left(ce(4ae+15bd)+4b^2e^2+6c^2d^2\right)+\frac{1}{2}ad^2x^2\left(3abe+2acd+2b^2d\right)+\frac{1}{5}x^5\left(2b^2\left(ae^3+6cd^2e\right)+bcd\left(18ae^2+5cd^2\right)+2ace\left(ae^2+6cd^2\right)+3b^3de^2\right)+\frac{1}{4}x^4\left(b^2\left(6ade^2+4cd^3\right)+abe\left(ae^2+18cd^2\right)+2acd\left(3ae^2+2cd^2\right)+3b^3d^2e\right)+\frac{1}{8}c^2e^2x^8(5be+6cd)+\frac{2}{9}c^3e^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d^3*x + (a*d^2*(2*b^2*d + 2*a*c*d + 3*a*b*e)*x^2)/2 + (d*(b^3*d^2 + 6
*a*b^2*d*e + 6*a^2*c*d*e + 3*a*b*(2*c*d^2 + a*e^2))*x^3)/3 + ((3*b^3*d^2*e
+ a*b*e*(18*c*d^2 + a*e^2) + 2*a*c*d*(2*c*d^2 + 3*a*e^2) + b^2*(4*c*d^3 + 6
*a*d*e^2))*x^4)/4 + ((3*b^3*d*e^2 + 2*a*c*e*(6*c*d^2 + a*e^2) + b*c*d*(5*c*
d^2 + 18*a*e^2) + 2*b^2*(6*c*d^2*e + a*e^3))*x^5)/5 + ((2*c^3*d^3 + b^3*e^3
 + 6*b*c*e^2*(2*b*d + a*e) + 3*c^2*d*e*(5*b*d + 4*a*e))*x^6)/6 + (c*e*(6*c^
2*d^2 + 4*b^2*e^2 + c*e*(15*b*d + 4*a*e))*x^7)/7 + (c^2*e^2*(6*c*d + 5*b*e)
*x^8)/8 + (2*c^3*e^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.37, size = 429, normalized size = 1.79

$$\frac{2}{9}x^9e^3c^3+\frac{3}{4}x^8e^2dc^3+\frac{5}{8}x^8e^3c^2b+\frac{6}{7}x^7ed^2c^3+\frac{15}{7}x^7e^2dc^2b+\frac{4}{7}x^7e^3cb^2+\frac{4}{7}x^7e^3c^2a+\frac{1}{3}x^6d^3c^3+\frac{5}{2}x^6ed^2c^2b+2x^6e^2dcb^2+\frac{1}{6}x^6e^3b^3+2x^6e^2dc^2a+x^6e^3cba+x^5d^3c^2b+\frac{12}{5}x^5ed^2cb^2+\frac{3}{5}x^5e^2db^3+\frac{12}{5}x^5ed^2c^2a+\frac{18}{5}x^5e^2dcba+\frac{2}{5}x^5e^3b^2a+\frac{2}{5}x^5e^3ca^2+x^4d^3cb^2+\frac{3}{4}x^4ed^2b^3+x^4d^3c^2a+\frac{9}{2}x^4ed^2cba+\frac{3}{2}x^4e^2db^2a+\frac{3}{2}x^4e^2dca^2+\frac{1}{4}x^4e^3ba^2+\frac{1}{3}x^3d^3b^3+2x^3d^3cba+2x^3ed^2b^2a+2x^3ed^2ca^2+x^3e^2dba^2+x^2d^3b^2a+x^2d^3ca^2+\frac{3}{2}x^2ed^2ba^2+xd^3ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/9*x^9*e^3*c^3 + 3/4*x^8*e^2*d*c^3 + 5/8*x^8*e^3*c^2*b + 6/7*x^7*e*d^2*c^3
 + 15/7*x^7*e^2*d*c^2*b + 4/7*x^7*e^3*c*b^2 + 4/7*x^7*e^3*c^2*a + 1/3*x^6*d
^3*c^3 + 5/2*x^6*e*d^2*c^2*b + 2*x^6*e^2*d*c*b^2 + 1/6*x^6*e^3*b^3 + 2*x^6*
e^2*d*c^2*a + x^6*e^3*c*b*a + x^5*d^3*c^2*b + 12/5*x^5*e*d^2*c*b^2 + 3/5*x^
5*e^2*d*b^3 + 12/5*x^5*e*d^2*c^2*a + 18/5*x^5*e^2*d*c*b*a + 2/5*x^5*e^3*b^2
*a + 2/5*x^5*e^3*c*a^2 + x^4*d^3*c*b^2 + 3/4*x^4*e*d^2*b^3 + x^4*d^3*c^2*a
+ 9/2*x^4*e*d^2*c*b*a + 3/2*x^4*e^2*d*b^2*a + 3/2*x^4*e^2*d*c*a^2 + 1/4*x^4
*e^3*b*a^2 + 1/3*x^3*d^3*b^3 + 2*x^3*d^3*c*b*a + 2*x^3*e*d^2*b^2*a + 2*x^3*
e*d^2*c*a^2 + x^3*e^2*d*b*a^2 + x^2*d^3*b^2*a + x^2*d^3*c*a^2 + 3/2*x^2*e*d
^2*b*a^2 + x*d^3*b*a^2
```

giac [A] time = 0.16, size = 420, normalized size = 1.75

$$\frac{2}{9}c^3x^9e^3+\frac{3}{4}c^3dx^8e^2+\frac{6}{7}c^3d^2x^7e+\frac{1}{3}c^3d^3x^6+\frac{5}{8}bc^2x^8e^3+\frac{15}{7}bc^2dx^7e^2+\frac{5}{2}bc^2d^2x^6e+bc^2d^3x^5+\frac{4}{7}b^2cx^7e^3+\frac{4}{7}ac^2x^7e^3+2b^2cdx^6e^2+2ac^2dx^6e^2+\frac{12}{5}b^2cd^2x^5e+\frac{12}{5}ac^2d^2x^5e+b^2cd^3x^4+ac^2d^3x^4+\frac{1}{6}b^3x^6e^3+abcx^6e^3+\frac{3}{5}b^3dx^5e^2+\frac{18}{5}abcdx^5e^2+\frac{3}{4}b^3d^2x^4e+\frac{9}{2}abcd^2x^4e+\frac{1}{3}b^3d^3x^3+2abcd^3x^3+\frac{2}{5}ab^2x^5e^3+\frac{2}{5}a^2cx^5e^3+\frac{3}{2}ab^2dx^4e^2+\frac{3}{2}a^2cdx^4e^2+2ab^2d^2x^3e+2a^2cd^2x^3e+ab^2d^3x^2+a^2cd^3x^2+\frac{1}{4}a^2bx^4e^3+a^2bdx^3e^2+\frac{3}{2}a^2bd^2x^2e+a^2bd^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/9*c^3*x^9*e^3 + 3/4*c^3*d*x^8*e^2 + 6/7*c^3*d^2*x^7*e + 1/3*c^3*d^3*x^6 +
 5/8*b*c^2*x^8*e^3 + 15/7*b*c^2*d*x^7*e^2 + 5/2*b*c^2*d^2*x^6*e + b*c^2*d^3
*x^5 + 4/7*b^2*c*x^7*e^3 + 4/7*a*c^2*x^7*e^3 + 2*b^2*c*d*x^6*e^2 + 2*a*c^2*
d*x^6*e^2 + 12/5*b^2*c*d^2*x^5*e + 12/5*a*c^2*d^2*x^5*e + b^2*c*d^3*x^4 + a
*c^2*d^3*x^4 + 1/6*b^3*x^6*e^3 + a*b*c*x^6*e^3 + 3/5*b^3*d*x^5*e^2 + 18/5*a
*b*c*d*x^5*e^2 + 3/4*b^3*d^2*x^4*e + 9/2*a*b*c*d^2*x^4*e + 1/3*b^3*d^3*x^3
+ 2*a*b*c*d^3*x^3 + 2/5*a*b^2*x^5*e^3 + 2/5*a^2*c*x^5*e^3 + 3/2*a*b^2*d*x^4
*e^2 + 3/2*a^2*c*d*x^4*e^2 + 2*a*b^2*d^2*x^3*e + 2*a^2*c*d^2*x^3*e + a*b^2*
d^3*x^2 + a^2*c*d^3*x^2 + 1/4*a^2*b*x^4*e^3 + a^2*b*d*x^3*e^2 + 3/2*a^2*b*d
^2*x^2*e + a^2*b*d^3*x
```

maple [A] time = 0.04, size = 428, normalized size = 1.78

$$\frac{2c^3e^3x^9}{9}+\frac{\left(4bc^2e^3+\left(be^3+6de^2c\right)c^2\right)x^8}{8}+a^2bd^3x+\frac{\left(2\left(2ac+b^2\right)ce^3+2\left(be^3+6de^2c\right)bc+\left(3bde^2+6cd^2e\right)c^2\right)x^7}{7}+\frac{\left(4abce^3+2\left(3bde^2+6cd^2e\right)bc+\left(3bd^2e+2cd^3\right)c^2+\left(be^3+6de^2c\right)\left(2ac+b^2\right)\right)x^6}{6}+\frac{\left(2a^2ce^3+bc^2d^3+2\left(be^3+6de^2c\right)ab+2\left(3bd^2e+2cd^3\right)bc+\left(3bde^2+6cd^2e\right)\left(2ac+b^2\right)\right)x^5}{5}+\frac{\left(2b^2cd^3+\left(be^3+6de^2c\right)a^2+2\left(3bde^2+6cd^2e\right)ab+\left(3bd^2e+2cd^3\right)\left(2ac+b^2\right)\right)x^4}{4}+\frac{\left(\left(2ac+b^2\right)bd^3+\left(3bde^2+6cd^2e\right)a^2+2\left(3bd^2e+2cd^3\right)ab\right)x^3}{3}+\frac{\left(2ab^2d^3+\left(3bd^2e+2cd^3\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/9*c^3*e^3*x^9+1/8*((b*e^3+6*c*d*e^2)*c^2+4*c^2*e^3*b)*x^8+1/7*((3*b*d*e^2
+6*c*d^2*e)*c^2+2*(b*e^3+6*c*d*e^2)*b*c+2*c*e^3*(2*a*c+b^2))*x^7+1/6*((3*b*
d^2*e+2*c*d^3)*c^2+2*(3*b*d*e^2+6*c*d^2*e)*b*c+(b*e^3+6*c*d*e^2)*(2*a*c+b^2
)+4*a*b*c*e^3)*x^6+1/5*(b*d^3*c^2+2*(3*b*d^2*e+2*c*d^3)*b*c+(3*b*d*e^2+6*c*
d^2*e)*(2*a*c+b^2)+2*(b*e^3+6*c*d*e^2)*a*b+2*a^2*c*e^3)*x^5+1/4*(2*b^2*d^3*
c+(3*b*d^2*e+2*c*d^3)*(2*a*c+b^2)+2*(3*b*d*e^2+6*c*d^2*e)*a*b+(b*e^3+6*c*d*
```

```
e^2)*a^2)*x^4+1/3*(b*d^3*(2*a*c+b^2)+2*(3*b*d^2*e+2*c*d^3)*a*b+(3*b*d*e^2+6
*c*d^2*e)*a^2)*x^3+1/2*(2*b^2*d^3*a+(3*b*d^2*e+2*c*d^3)*a^2)*x^2+b*d^3*a^2*
x
```

maxima [A] time = 0.49, size = 343, normalized size = 1.43

$$\frac{2}{9}c^3e^3x^9 + \frac{1}{8}\left(6c^3de^2 + 5bc^2e^3\right)x^8 + \frac{1}{7}\left(6c^3d^2e + 15bc^2de^2 + 4\left(b^2c + ac^2\right)e^3\right)x^7 + a^2bd^3x + \frac{1}{6}\left(2c^3d^3 + 15bc^2d^2e + 12\left(b^2c + ac^2\right)de^2 + \left(b^3 + 6abc\right)e^3\right)x^6 + \frac{1}{5}\left(5bc^2d^3 + 12\left(b^2c + ac^2\right)d^2e + 3\left(b^3 + 6abc\right)de^2 + 2\left(ab^2 + a^2c\right)e^3\right)x^5 + \frac{1}{4}\left(a^2be^3 + 4\left(b^2c + ac^2\right)d^3 + 3\left(b^3 + 6abc\right)d^2e + 6\left(ab^2 + a^2c\right)de^2\right)x^4 + \frac{1}{3}\left(3a^2bde^2 + \left(b^3 + 6abc\right)d^3 + 6\left(ab^2 + a^2c\right)d^2e\right)x^3 + \frac{1}{2}\left(3a^2bd^2e + 2\left(ab^2 + a^2c\right)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/9*c^3*e^3*x^9 + 1/8*(6*c^3*d*e^2 + 5*b*c^2*e^3)*x^8 + 1/7*(6*c^3*d^2*e +
15*b*c^2*d*e^2 + 4*(b^2*c + a*c^2)*e^3)*x^7 + a^2*b*d^3*x + 1/6*(2*c^3*d^3
+ 15*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 + (b^3 + 6*a*b*c)*e^3)*x^6 + 1/
5*(5*b*c^2*d^3 + 12*(b^2*c + a*c^2)*d^2*e + 3*(b^3 + 6*a*b*c)*d*e^2 + 2*(a*
b^2 + a^2*c)*e^3)*x^5 + 1/4*(a^2*b*e^3 + 4*(b^2*c + a*c^2)*d^3 + 3*(b^3 + 6
*a*b*c)*d^2*e + 6*(a*b^2 + a^2*c)*d*e^2)*x^4 + 1/3*(3*a^2*b*d*e^2 + (b^3 +
6*a*b*c)*d^3 + 6*(a*b^2 + a^2*c)*d^2*e)*x^3 + 1/2*(3*a^2*b*d^2*e + 2*(a*b^2
 + a^2*c)*d^3)*x^2
```

mupad [B] time = 0.11, size = 349, normalized size = 1.45

$$x^6\left(\frac{b^3e^3}{6} + 2b^2cde^2 + \frac{5bc^2d^2e}{2} + abce^3 + \frac{c^3d^3}{3} + 2ac^2de^2\right) + x^4\left(\frac{a^2be^3}{4} + \frac{3a^2cde^2}{2} + \frac{3ab^2de^2}{2} + \frac{9abcd^2e}{2} + ac^2d^3 + \frac{3b^3d^2e}{4} + b^2cd^3\right) + x^5\left(\frac{2a^2ce^3}{5} + \frac{2ab^2e^3}{5} + \frac{18abcde^2}{5} + \frac{12ac^2d^2e}{5} + \frac{3b^3de^2}{5} + \frac{12b^2cd^2e}{5} + bc^2d^3\right) + x^3\left(a^2bde^2 + 2ca^2d^2e + 2ab^2d^2e + 2cabd^3 + \frac{b^3d^3}{3}\right) + \frac{2c^3e^3x^9}{9} + \frac{ad^2x^2\left(2db^2 + 3aeb + 2acd\right)}{2} + \frac{c^2e^2x^8\left(5be + 6cd\right)}{8} + a^2bd^3x + \frac{cex^7\left(4b^2e^2 + 15bcde + 6c^2d^2 + 4ace^2\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^6*((b^3*e^3)/6 + (c^3*d^3)/3 + a*b*c*e^3 + 2*a*c^2*d*e^2 + (5*b*c^2*d^2*e
)/2 + 2*b^2*c*d*e^2) + x^4*(a*c^2*d^3 + (a^2*b*e^3)/4 + b^2*c*d^3 + (3*b^3*
d^2*e)/4 + (3*a*b^2*d*e^2)/2 + (3*a^2*c*d*e^2)/2 + (9*a*b*c*d^2*e)/2) + x^5
*((2*a*b^2*e^3)/5 + b*c^2*d^3 + (2*a^2*c*e^3)/5 + (3*b^3*d*e^2)/5 + (12*a*c
^2*d^2*e)/5 + (12*b^2*c*d^2*e)/5 + (18*a*b*c*d*e^2)/5) + x^3*((b^3*d^3)/3 +
 2*a*b*c*d^3 + 2*a*b^2*d^2*e + a^2*b*d*e^2 + 2*a^2*c*d^2*e) + (2*c^3*e^3*x^
9)/9 + (a*d^2*x^2*(2*b^2*d + 3*a*b*e + 2*a*c*d))/2 + (c^2*e^2*x^8*(5*b*e +
6*c*d))/8 + a^2*b*d^3*x + (c*e*x^7*(4*b^2*e^2 + 6*c^2*d^2 + 4*a*c*e^2 + 15*
b*c*d*e))/7
```

sympy [A] time = 0.14, size = 430, normalized size = 1.79

$$a^2bd^3x + \frac{2c^3e^3x^9}{9} + x^8\left(\frac{5bc^2e^3}{8} + \frac{3c^3de^2}{4}\right) + x^7\left(\frac{4ac^2e^3}{7} + \frac{4b^2ce^3}{7} + \frac{15bc^2de^2}{7} + \frac{6c^3d^2e}{7}\right) + x^6\left(abce^3 + 2ac^2de^2 + \frac{b^3e^3}{6} + 2b^2cde^2 + \frac{5bc^2d^2e}{2} + \frac{c^3d^3}{3}\right) + x^5\left(\frac{2a^2ce^3}{5} + \frac{2ab^2e^3}{5} + \frac{18abcde^2}{5} + \frac{12ac^2d^2e}{5} + \frac{3b^3de^2}{5} + \frac{12b^2cd^2e}{5} + bc^2d^3\right) + x^4\left(\frac{a^2be^3}{4} + \frac{3a^2cde^2}{2} + \frac{3ab^2de^2}{2} + \frac{9abcd^2e}{2} + ac^2d^3 + \frac{3b^3d^2e}{4} + b^2cd^3\right) + x^3\left(a^2bde^2 + 2a^2cd^2e + 2ab^2d^2e + 2abcd^3 + \frac{b^3d^3}{3}\right) + x^2\left(\frac{3a^2bd^2e}{2} + a^2cd^3 + ab^2d^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**3*x + 2*c**3*e**3*x**9/9 + x**8*(5*b*c**2*e**3/8 + 3*c**3*d*e**2/
4) + x**7*(4*a*c**2*e**3/7 + 4*b**2*c*e**3/7 + 15*b*c**2*d*e**2/7 + 6*c**3*
d**2*e/7) + x**6*(a*b*c*e**3 + 2*a*c**2*d*e**2 + b**3*e**3/6 + 2*b**2*c*d*e
**2 + 5*b*c**2*d**2*e/2 + c**3*d**3/3) + x**5*(2*a**2*c*e**3/5 + 2*a*b**2*e
**3/5 + 18*a*b*c*d*e**2/5 + 12*a*c**2*d**2*e/5 + 3*b**3*d*e**2/5 + 12*b**2*
c*d**2*e/5 + b*c**2*d**3) + x**4*(a**2*b*e**3/4 + 3*a**2*c*d*e**2/2 + 3*a*b
**2*d*e**2/2 + 9*a*b*c*d**2*e/2 + a*c**2*d**3 + 3*b**3*d**2*e/4 + b**2*c*d*
*3) + x**3*(a**2*b*d*e**2 + 2*a**2*c*d**2*e + 2*a*b**2*d**2*e + 2*a*b*c*d**
3 + b**3*d**3/3) + x**2*(3*a**2*b*d**2*e/2 + a**2*c*d**3 + a*b**2*d**3)
```

3.1314 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=240

$$\frac{2c(d+ex)^6\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^5(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+\frac{(d+ex)^4\left(ae\right.}{}$$

Rubi [A] time = 0.23, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2c(d+ex)^6\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^5(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+\frac{(d+ex)^4\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{2e^6}-\frac{(d+ex)^3(2cd-be)\left(ae^2-bde+cd^2\right)^2}{3e^6}-\frac{5c^2(d+ex)^7(2cd-be)}{7e^6}+\frac{c^3(d+ex)^8}{4e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^3)/(3*e^6) + ((c*d^2 -
b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^4)/(2*e^
6) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e*x
)^5)/(5*e^6) + (2*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^6)/
(3*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^7)/(7*e^6) + (c^3*(d + e*x)^8)/(4*
e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^2\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^2}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c\right.}{}\right.\\ &= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{3e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5c^2d^2+\right.}{2}\end{aligned}$$

Mathematica [A] time = 0.08, size = 244, normalized size = 1.02

$$\frac{1}{3}x^3\left(4a^2cde+4ab^2de+ab\left(ae^2+6cd^2\right)+b^3d^2\right)+a^2bd^2x+\frac{1}{3}cx^6\left(ce(2ae+5bd)+2b^2e^2+c^2d^2\right)+adx^2\left(abe+acd+b^2d\right)+\frac{1}{5}x^5\left(bc\left(6ae^2+5cd^2\right)+8ac^2de+b^3e^2+8b^2cde\right)+\frac{1}{2}x^4\left(b^2\left(ae^2+2cd^2\right)+6abcde+ac\left(ae^2+2cd^2\right)+b^3de\right)+\frac{1}{7}c^2ex^7(5be+4cd)+\frac{1}{4}c^3e^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d^2*x + a*d*(b^2*d + a*c*d + a*b*e)*x^2 + ((b^3*d^2 + 4*a*b^2*d*e + 4
*a^2*c*d*e + a*b*(6*c*d^2 + a*e^2))*x^3)/3 + ((b^3*d*e + 6*a*b*c*d*e + b^2*
(2*c*d^2 + a*e^2) + a*c*(2*c*d^2 + a*e^2))*x^4)/2 + ((8*b^2*c*d*e + 8*a*c^2
*d*e + b^3*e^2 + b*c*(5*c*d^2 + 6*a*e^2))*x^5)/5 + (c*(c^2*d^2 + 2*b^2*e^2
+ c*e*(5*b*d + 2*a*e))*x^6)/3 + (c^2*e*(4*c*d + 5*b*e)*x^7)/7 + (c^3*e^2*x^
8)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.40, size = 298, normalized size = 1.24

$$\frac{1}{4}x^8e^2c^3 + \frac{4}{7}x^7edc^3 + \frac{5}{7}x^7e^2c^2b + \frac{1}{3}x^6d^2c^3 + \frac{5}{3}x^6edc^2b + \frac{2}{3}x^6e^2cb^2 + \frac{2}{3}x^6e^2c^2a + x^5d^2c^2b + \frac{8}{5}x^5edcb^2 + \frac{1}{5}x^5e^2b^3 + \frac{8}{5}x^5edc^2a + \frac{6}{5}x^5e^2cba + x^4d^2cb^2 + \frac{1}{2}x^4edb^3 + x^4d^2c^2a + 3x^4edcba + \frac{1}{2}x^4e^2b^2a + \frac{1}{2}x^4e^2ca^2 + \frac{1}{3}x^3d^2b^3 + 2x^3d^2cba + \frac{4}{3}x^3edb^2a + \frac{4}{3}x^3edca^2 + \frac{1}{3}x^3e^2ba^2 + x^2d^2b^2a + x^2d^2ca^2 + x^2edba^2 + xd^2ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/4*x^8*e^2*c^3 + 4/7*x^7*e*d*c^3 + 5/7*x^7*e^2*c^2*b + 1/3*x^6*d^2*c^3 + 5
/3*x^6*e*d*c^2*b + 2/3*x^6*e^2*c*b^2 + 2/3*x^6*e^2*c^2*a + x^5*d^2*c^2*b +
8/5*x^5*e*d*c*b^2 + 1/5*x^5*e^2*b^3 + 8/5*x^5*e*d*c^2*a + 6/5*x^5*e^2*c*b*a
 + x^4*d^2*c*b^2 + 1/2*x^4*e*d*b^3 + x^4*d^2*c^2*a + 3*x^4*e*d*c*b*a + 1/2*
x^4*e^2*b^2*a + 1/2*x^4*e^2*c*a^2 + 1/3*x^3*d^2*b^3 + 2*x^3*d^2*c*b*a + 4/3
*x^3*e*d*b^2*a + 4/3*x^3*e*d*c*a^2 + 1/3*x^3*e^2*b*a^2 + x^2*d^2*b^2*a + x^
2*d^2*c*a^2 + x^2*e*d*b*a^2 + x*d^2*b*a^2
```

giac [A] time = 0.17, size = 298, normalized size = 1.24

$$\frac{1}{4}c^3x^8e^2 + \frac{4}{7}c^3dx^7e + \frac{1}{3}c^3d^2x^6 + \frac{5}{7}bc^2x^7e^2 + \frac{5}{3}bc^2dx^6e + bc^2d^2x^5 + \frac{2}{3}b^2cx^6e^2 + \frac{2}{3}ac^2x^6e^2 + \frac{8}{5}b^2cdx^5e + \frac{8}{5}ac^2dx^5e + b^2cd^2x^4 + ac^2d^2x^4 + \frac{1}{5}b^3x^5e^2 + \frac{6}{5}abcx^5e^2 + \frac{1}{2}b^3dx^4e + 3\,abcdx^4e + \frac{1}{3}b^3d^2x^3 + 2\,abcd^2x^3 + \frac{1}{2}ab^2x^4e^2 + \frac{1}{2}a^2cx^4e^2 + \frac{4}{3}ab^2dx^3e + \frac{4}{3}a^2cdx^3e + ab^2d^2x^2 + a^2cd^2x^2 + \frac{1}{3}a^2bx^3e^2 + a^2bdx^2e + a^2bd^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*c^3*x^8*e^2 + 4/7*c^3*d*x^7*e + 1/3*c^3*d^2*x^6 + 5/7*b*c^2*x^7*e^2 + 5
/3*b*c^2*d*x^6*e + b*c^2*d^2*x^5 + 2/3*b^2*c*x^6*e^2 + 2/3*a*c^2*x^6*e^2 +
8/5*b^2*c*d*x^5*e + 8/5*a*c^2*d*x^5*e + b^2*c*d^2*x^4 + a*c^2*d^2*x^4 + 1/5
*b^3*x^5*e^2 + 6/5*a*b*c*x^5*e^2 + 1/2*b^3*d*x^4*e + 3*a*b*c*d*x^4*e + 1/3*
b^3*d^2*x^3 + 2*a*b*c*d^2*x^3 + 1/2*a*b^2*x^4*e^2 + 1/2*a^2*c*x^4*e^2 + 4/3
*a*b^2*d*x^3*e + 4/3*a^2*c*d*x^3*e + a*b^2*d^2*x^2 + a^2*c*d^2*x^2 + 1/3*a^
2*b*x^3*e^2 + a^2*b*d*x^2*e + a^2*b*d^2*x
```

maple [A] time = 0.04, size = 302, normalized size = 1.26

$$\frac{c^3e^2x^8}{4} + \frac{\left(4bc^2e^2 + \left(be^2 + 4cde\right)c^2\right)x^7}{7} + a^2bd^2x + \frac{\left(2\left(2ac + b^2\right)ce^2 + 2\left(be^2 + 4cde\right)bc + \left(2bde + 2cd^2\right)c^2\right)x^6}{6} + \frac{\left(4abce^2 + bc^2d^2 + 2\left(2bde + 2cd^2\right)bc + \left(be^2 + 4cde\right)\left(2ac + b^2\right)\right)x^5}{5} + \frac{\left(2a^2ce^2 + 2b^2cd^2 + 2\left(be^2 + 4cde\right)ab + \left(2bde + 2cd^2\right)\left(2ac + b^2\right)\right)x^4}{4} + \frac{\left(\left(2ac + b^2\right)bd^2 + \left(be^2 + 4cde\right)a^2 + 2\left(2bde + 2cd^2\right)ab\right)x^3}{3} + \frac{\left(2ab^2d^2 + \left(2bde + 2cd^2\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/4*c^3*e^2*x^8+1/7*((b*e^2+4*c*d*e)*c^2+4*c^2*e^2*b)*x^7+1/6*((2*b*d*e+2*c
*d^2)*c^2+2*(b*e^2+4*c*d*e)*b*c+2*c*e^2*(2*a*c+b^2))*x^6+1/5*(b*c^2*d^2+2*(
2*b*d*e+2*c*d^2)*b*c+(b*e^2+4*c*d*e)*(2*a*c+b^2)+4*c*e^2*a*b)*x^5+1/4*(2*b^
2*d^2*c+(2*b*d*e+2*c*d^2)*(2*a*c+b^2)+2*(b*e^2+4*c*d*e)*a*b+2*c*e^2*a^2)*x^
4+1/3*(b*d^2*(2*a*c+b^2)+2*(2*b*d*e+2*c*d^2)*a*b+(b*e^2+4*c*d*e)*a^2)*x^3+1
/2*(2*a*b^2*d^2+(2*b*d*e+2*c*d^2)*a^2)*x^2+b*d^2*a^2*x
```

maxima [A] time = 0.60, size = 241, normalized size = 1.00

$$\frac{1}{4}c^3e^2x^8 + \frac{1}{7}\left(4c^3de + 5bc^2e^2\right)x^7 + \frac{1}{3}\left(c^3d^2 + 5bc^2de + 2\left(b^2c + ac^2\right)e^2\right)x^6 + a^2bd^2x + \frac{1}{5}\left(5bc^2d^2 + 8\left(b^2c + ac^2\right)de + \left(b^3 + 6abc\right)e^2\right)x^5 + \frac{1}{2}\left(2\left(b^2c + ac^2\right)d^2 + \left(b^3 + 6abc\right)de + \left(ab^2 + a^2c\right)e^2\right)x^4 + \frac{1}{3}\left(a^2be^2 + \left(b^3 + 6abc\right)d^2 + 4\left(ab^2 + a^2c\right)de\right)x^3 + \left(a^2bde + \left(ab^2 + a^2c\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/4*c^3*e^2*x^8 + 1/7*(4*c^3*d*e + 5*b*c^2*e^2)*x^7 + 1/3*(c^3*d^2 + 5*b*c^
2*d*e + 2*(b^2*c + a*c^2)*e^2)*x^6 + a^2*b*d^2*x + 1/5*(5*b*c^2*d^2 + 8*(b^
2*c + a*c^2)*d*e + (b^3 + 6*a*b*c)*e^2)*x^5 + 1/2*(2*(b^2*c + a*c^2)*d^2 +
```

```
(b^3 + 6*a*b*c)*d*e + (a*b^2 + a^2*c)*e^2)*x^4 + 1/3*(a^2*b*e^2 + (b^3 + 6*
a*b*c)*d^2 + 4*(a*b^2 + a^2*c)*d*e)*x^3 + (a^2*b*d*e + (a*b^2 + a^2*c)*d^2)
*x^2
```

mupad [B] time = 1.83, size = 242, normalized size = 1.01

$$x^6\left(\frac{2b^2ce^2}{3}+\frac{5bc^2de}{3}+\frac{c^3d^2}{3}+\frac{2ac^2e^2}{3}\right)+x^3\left(\frac{a^2be^2}{3}+\frac{4ca^2de}{3}+\frac{4ab^2de}{3}+2cabd^2+\frac{b^3d^2}{3}\right)+x^5\left(\frac{b^3e^2}{5}+\frac{8b^2cde}{5}+bc^2d^2+\frac{6abce^2}{5}+\frac{8ac^2de}{5}\right)+x^4\left(\frac{a^2ce^2}{2}+\frac{ab^2e^2}{2}+3abcde+ac^2d^2+\frac{b^3de}{2}+b^2cd^2\right)+\frac{c^3e^2x^8}{4}+\frac{c^2ex^7\,(5be+4cd)}{7}+a^2bd^2x+adx^2\left(db^2+aeb+acd\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^6*((c^3*d^2)/3 + (2*a*c^2*e^2)/3 + (2*b^2*c*e^2)/3 + (5*b*c^2*d*e)/3) + x
^3*((b^3*d^2)/3 + (a^2*b*e^2)/3 + 2*a*b*c*d^2 + (4*a*b^2*d*e)/3 + (4*a^2*c*
d*e)/3) + x^5*((b^3*e^2)/5 + b*c^2*d^2 + (6*a*b*c*e^2)/5 + (8*a*c^2*d*e)/5
+ (8*b^2*c*d*e)/5) + x^4*((a*b^2*e^2)/2 + a*c^2*d^2 + (a^2*c*e^2)/2 + b^2*c
*d^2 + (b^3*d*e)/2 + 3*a*b*c*d*e) + (c^3*e^2*x^8)/4 + (c^2*e*x^7*(5*b*e + 4
*c*d))/7 + a^2*b*d^2*x + a*d*x^2*(b^2*d + a*b*e + a*c*d)
```

sympy [A] time = 0.12, size = 294, normalized size = 1.22

$$a^2bd^2x+\frac{c^3e^2x^8}{4}+x^7\left(\frac{5bc^2e^2}{7}+\frac{4c^3de}{7}\right)+x^6\left(\frac{2ac^2e^2}{3}+\frac{2b^2ce^2}{3}+\frac{5bc^2de}{3}+\frac{c^3d^2}{3}\right)+x^5\left(\frac{6abce^2}{5}+\frac{8ac^2de}{5}+\frac{b^3e^2}{5}+\frac{8b^2cde}{5}+bc^2d^2\right)+x^4\left(\frac{a^2ce^2}{2}+\frac{ab^2e^2}{2}+3abcde+ac^2d^2+\frac{b^3de}{2}+b^2cd^2\right)+x^3\left(\frac{a^2be^2}{3}+\frac{4a^2cde}{3}+\frac{4ab^2de}{3}+2abcd^2+\frac{b^3d^2}{3}\right)+x^2\left(a^2bde+a^2cd^2+ab^2d^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**2*x + c**3*e**2*x**8/4 + x**7*(5*b*c**2*e**2/7 + 4*c**3*d*e/7) +
x**6*(2*a*c**2*e**2/3 + 2*b**2*c*e**2/3 + 5*b*c**2*d*e/3 + c**3*d**2/3) + x
**5*(6*a*b*c*e**2/5 + 8*a*c**2*d*e/5 + b**3*e**2/5 + 8*b**2*c*d*e/5 + b*c**
2*d**2) + x**4*(a**2*c*e**2/2 + a*b**2*e**2/2 + 3*a*b*c*d*e + a*c**2*d**2 +
 b**3*d*e/2 + b**2*c*d**2) + x**3*(a**2*b*e**2/3 + 4*a**2*c*d*e/3 + 4*a*b**
2*d*e/3 + 2*a*b*c*d**2 + b**3*d**2/3) + x**2*(a**2*b*d*e + a**2*c*d**2 + a*
b**2*d**2)
```

3.1315 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=153

$$\frac{1}{3}x^3\left(2a^2ce+2ab^2e+6abcd+b^3d\right)+a^2bdx+\frac{1}{5}cx^5\left(4ace+4b^2e+5bcd\right)+\frac{1}{2}ax^2\left(abe+2acd+2b^2d\right)+\frac{1}{4}x^4\left(6abc\right.$$

Rubi [A] time = 0.13, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{3}x^3\left(2a^2ce+2ab^2e+6abcd+b^3d\right)+a^2bdx+\frac{1}{4}x^4\left(6abce+4ac^2d+4b^2cd+b^3e\right)+\frac{1}{5}cx^5\left(4ace+4b^2e+5bcd\right)+\frac{1}{2}ax^2\left(abe+2acd+2b^2d\right)+\frac{1}{6}c^2x^6(5be+2cd)+\frac{2}{7}c^3ex^7$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d*x + (a*(2*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((b^3*d + 6*a*b*c*d + 2
*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((4*b^2*c*d + 4*a*c^2*d + b^3*e + 6*a*b*c*e)
*x^4)/4 + (c*(5*b*c*d + 4*b^2*e + 4*a*c*e)*x^5)/5 + (c^2*(2*c*d + 5*b*e)*x^
6)/6 + (2*c^3*e*x^7)/7
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2bd+a\left(2b^2d+2acd+abe\right)x+\left(b^3d+6abcd+2ab^2e+2a^2ce\right)\right.\\ &= a^2bdx+\frac{1}{2}a\left(2b^2d+2acd+abe\right)x^2+\frac{1}{3}\left(b^3d+6abcd+2ab^2e+2a^2c\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 153, normalized size = 1.00

$$\frac{1}{3}x^3\left(2a^2ce+2ab^2e+6abcd+b^3d\right)+a^2bdx+\frac{1}{5}cx^5\left(4ace+4b^2e+5bcd\right)+\frac{1}{2}ax^2\left(abe+2acd+2b^2d\right)+\frac{1}{4}x^4\left(6abce+4ac^2d+b^3e+4b^2cd\right)+\frac{1}{6}c^2x^6(5be+2cd)+\frac{2}{7}c^3ex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d*x + (a*(2*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((b^3*d + 6*a*b*c*d + 2
*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((4*b^2*c*d + 4*a*c^2*d + b^3*e + 6*a*b*c*e)
*x^4)/4 + (c*(5*b*c*d + 4*b^2*e + 4*a*c*e)*x^5)/5 + (c^2*(2*c*d + 5*b*e)*x^
6)/6 + (2*c^3*e*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.37, size = 167, normalized size = 1.09

$$\frac{2}{7}x^7ec^3+\frac{1}{3}x^6dc^3+\frac{5}{6}x^6ec^2b+x^5dc^2b+\frac{4}{5}x^5ecb^2+\frac{4}{5}x^5ec^2a+x^4dcb^2+\frac{1}{4}x^4eb^3+x^4dc^2a+\frac{3}{2}x^4ecba+\frac{1}{3}x^3db^3+2x^3dcba+\frac{2}{3}x^3eb^2a+\frac{2}{3}x^3eca^2+x^2db^2a+x^2dca^2+\frac{1}{2}x^2eba^2+xdba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/7*x^7*e*c^3 + 1/3*x^6*d*c^3 + 5/6*x^6*e*c^2*b + x^5*d*c^2*b + 4/5*x^5*e*c
*b^2 + 4/5*x^5*e*c^2*a + x^4*d*c*b^2 + 1/4*x^4*e*b^3 + x^4*d*c^2*a + 3/2*x^
4*e*c*b*a + 1/3*x^3*d*b^3 + 2*x^3*d*c*b*a + 2/3*x^3*e*b^2*a + 2/3*x^3*e*c*a
^2 + x^2*d*b^2*a + x^2*d*c*a^2 + 1/2*x^2*e*b*a^2 + x*d*b*a^2
```

giac [A] time = 0.19, size = 176, normalized size = 1.15

$$\frac{2}{7}c^3x^7e+\frac{1}{3}c^3dx^6+\frac{5}{6}bc^2x^6e+bc^2dx^5+\frac{4}{5}b^2cx^5e+\frac{4}{5}ac^2x^5e+b^2cdx^4+ac^2dx^4+\frac{1}{4}b^3x^4e+\frac{3}{2}abcx^4e+\frac{1}{3}b^3dx^3+2abcdx^3+\frac{2}{3}ab^2x^3e+\frac{2}{3}a^2cx^3e+ab^2dx^2+a^2cdx^2+\frac{1}{2}a^2bx^2e+a^2bdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/7*c^3*x^7*e + 1/3*c^3*d*x^6 + 5/6*b*c^2*x^6*e + b*c^2*d*x^5 + 4/5*b^2*c*x
^5*e + 4/5*a*c^2*x^5*e + b^2*c*d*x^4 + a*c^2*d*x^4 + 1/4*b^3*x^4*e + 3/2*a*
b*c*x^4*e + 1/3*b^3*d*x^3 + 2*a*b*c*d*x^3 + 2/3*a*b^2*x^3*e + 2/3*a^2*c*x^3
*e + a*b^2*d*x^2 + a^2*c*d*x^2 + 1/2*a^2*b*x^2*e + a^2*b*d*x
```

maple [A] time = 0.04, size = 176, normalized size = 1.15

$$\frac{2c^3ex^7}{7}+\frac{\left(4bc^2e+(be+2cd)c^2\right)x^6}{6}+a^2bdx+\frac{\left(bc^2d+2(be+2cd)bc+2\left(2ac+b^2\right)ce\right)x^5}{5}+\frac{\left(4abce+2b^2cd+(be+2cd)\left(2ac+b^2\right)\right)x^4}{4}+\frac{\left(2a^2ce+2(be+2cd)ab+\left(2ac+b^2\right)bd\right)x^3}{3}+\frac{\left(2ab^2d+(be+2cd)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/7*c^3*e*x^7+1/6*((b*e+2*c*d)*c^2+4*c^2*e*b)*x^6+1/5*(b*c^2*d+2*(b*e+2*c*d
)*b*c+2*c*e*(2*a*c+b^2))*x^5+1/4*(2*b^2*c*d+(b*e+2*c*d)*(2*a*c+b^2)+4*a*b*c
*e)*x^4+1/3*(b*d*(2*a*c+b^2)+2*(b*e+2*c*d)*a*b+2*a^2*c*e)*x^3+1/2*(2*b^2*d*
a+(b*e+2*c*d)*a^2)*x^2+a^2*b*d*x
```

maxima [A] time = 0.55, size = 151, normalized size = 0.99

$$\frac{2}{7}c^3ex^7+\frac{1}{6}\left(2c^3d+5bc^2e\right)x^6+\frac{1}{5}\left(5bc^2d+4\left(b^2c+ac^2\right)e\right)x^5+a^2bdx+\frac{1}{4}\left(4\left(b^2c+ac^2\right)d+\left(b^3+6abc\right)e\right)x^4+\frac{1}{3}\left(\left(b^3+6abc\right)d+2\left(ab^2+a^2c\right)e\right)x^3+\frac{1}{2}\left(a^2be+2\left(ab^2+a^2c\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/7*c^3*e*x^7 + 1/6*(2*c^3*d + 5*b*c^2*e)*x^6 + 1/5*(5*b*c^2*d + 4*(b^2*c +
 a*c^2)*e)*x^5 + a^2*b*d*x + 1/4*(4*(b^2*c + a*c^2)*d + (b^3 + 6*a*b*c)*e)*
x^4 + 1/3*((b^3 + 6*a*b*c)*d + 2*(a*b^2 + a^2*c)*e)*x^3 + 1/2*(a^2*b*e + 2*
(a*b^2 + a^2*c)*d)*x^2
```

mupad [B] time = 0.06, size = 144, normalized size = 0.94

$$x^6\left(\frac{dc^3}{3}+\frac{5bec^2}{6}\right)+x^2\left(\frac{ea^2b}{2}+cda^2+dab^2\right)+x^5\left(\frac{4eb^2c}{5}+dbc^2+\frac{4aec^2}{5}\right)+x^3\left(\frac{2cea^2}{3}+\frac{2eab^2}{3}+2cdab+\frac{db^3}{3}\right)+x^4\left(\frac{eb^3}{4}+db^2c+\frac{3aebc}{2}+adc^2\right)+\frac{2c^3ex^7}{7}+a^2bdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^6*((c^3*d)/3 + (5*b*c^2*e)/6) + x^2*(a*b^2*d + (a^2*b*e)/2 + a^2*c*d) + x
^5*((4*a*c^2*e)/5 + b*c^2*d + (4*b^2*c*e)/5) + x^3*((b^3*d)/3 + (2*a*b^2*e)
/3 + (2*a^2*c*e)/3 + 2*a*b*c*d) + x^4*((b^3*e)/4 + a*c^2*d + b^2*c*d + (3*a
*b*c*e)/2) + (2*c^3*e*x^7)/7 + a^2*b*d*x
```

sympy [A] time = 0.10, size = 168, normalized size = 1.10

$$a^2bdx + \frac{2c^3ex^7}{7} + x^6\left(\frac{5bc^2e}{6} + \frac{c^3d}{3}\right) + x^5\left(\frac{4ac^2e}{5} + \frac{4b^2ce}{5} + bc^2d\right) + x^4\left(\frac{3abce}{2} + ac^2d + \frac{b^3e}{4} + b^2cd\right) + x^3\left(\frac{2a^2ce}{3} + \frac{2ab^2e}{3} + 2abcd + \frac{b^3d}{3}\right) + x^2\left(\frac{a^2be}{2} + a^2cd + ab^2d\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d*x + 2*c**3*e*x**7/7 + x**6*(5*b*c**2*e/6 + c**3*d/3) + x**5*(4*a*c
**2*e/5 + 4*b**2*c*e/5 + b*c**2*d) + x**4*(3*a*b*c*e/2 + a*c**2*d + b**3*e/
4 + b**2*c*d) + x**3*(2*a**2*c*e/3 + 2*a*b**2*e/3 + 2*a*b*c*d + b**3*d/3) +
 x**2*(a**2*b*e/2 + a**2*c*d + a*b**2*d)
```

3.1316 $\int (b+2cx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=16

$$\frac{1}{3}\left(a+bx+cx^2\right)^3$$

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$\frac{1}{3}\left(a+bx+cx^2\right)^3$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a + b*x + c*x^2)^3/3
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^2\,dx=\frac{1}{3}\left(a+bx+cx^2\right)^3$$

Mathematica [B] time = 0.01, size = 36, normalized size = 2.25

$$\frac{1}{3}x(b+cx)\left(3a^2+3ax(b+cx)+x^2(b+cx)^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (x*(b + c*x)*(3*a^2 + 3*a*x*(b + c*x) + x^2*(b + c*x)^2))/3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.37, size = 71, normalized size = 4.44

$$\frac{1}{3}x^6c^3+x^5c^2b+x^4cb^2+x^4c^2a+\frac{1}{3}x^3b^3+2x^3cba+x^2b^2a+x^2ca^2+xba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

[Out] 1/3*x^6*c^3 + x^5*c^2*b + x^4*c*b^2 + x^4*c^2*a + 1/3*x^3*b^3 + 2*x^3*c*b*a + x^2*b^2*a + x^2*c*a^2 + x*b*a^2

giac [B] time = 0.16, size = 40, normalized size = 2.50

$$\frac{1}{3}\left(cx^2+bx\right)^3+\left(cx^2+bx\right)^2a+\left(cx^2+bx\right)a^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2,x, algorithm="giac")

[Out] 1/3*(c*x^2 + b*x)^3 + (c*x^2 + b*x)^2*a + (c*x^2 + b*x)*a^2

maple [B] time = 0.05, size = 86, normalized size = 5.38

$$\frac{c^3x^6}{3}+b\,c^2x^5+a^2bx+\frac{\left(2b^2c+2\left(2ac+b^2\right)c\right)x^4}{4}+\frac{\left(4abc+\left(2ac+b^2\right)b\right)x^3}{3}+\frac{\left(2c\,a^2+2a\,b^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)*(c*x^2+b*x+a)^2,x)

[Out] 1/3*c^3*x^6+b*c^2*x^5+1/4*(2*b^2*c+2*c*(2*a*c+b^2))*x^4+1/3*(b*(2*a*c+b^2)+4*a*b*c)*x^3+1/2*(2*a^2*c+2*a*b^2)*x^2+a^2*b*x

maxima [A] time = 0.53, size = 14, normalized size = 0.88

$$\frac{1}{3}\left(cx^2+bx+a\right)^3$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2,x, algorithm="maxima")

[Out] 1/3*(c*x^2 + b*x + a)^3

mupad [B] time = 0.03, size = 62, normalized size = 3.88

$$x^3\,\left(\frac{b^3}{3}+2\,a\,c\,b\right)+\frac{c^3\,x^6}{3}+b\,c^2\,x^5+a\,x^2\,\left(b^2+a\,c\right)+c\,x^4\,\left(b^2+a\,c\right)+a^2\,b\,x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b + 2*c*x)*(a + b*x + c*x^2)^2,x)

[Out] x^3*(b^3/3 + 2*a*b*c) + (c^3*x^6)/3 + b*c^2*x^5 + a*x^2*(a*c + b^2) + c*x^4*(a*c + b^2) + a^2*b*x

sympy [B] time = 0.09, size = 65, normalized size = 4.06

$$a^2bx+bc^2x^5+\frac{c^3x^6}{3}+x^4\left(ac^2+b^2c\right)+x^3\left(2abc+\frac{b^3}{3}\right)+x^2\left(a^2c+ab^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2,x)

[Out] a**2*b*x + b*c**2*x**5 + c**3*x**6/3 + x**4*(a*c**2 + b**2*c) + x**3*(2*a*b*c + b**3/3) + x**2*(a**2*c + a*b**2)

3.1317 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=229

$$\frac{4c(d+ex)^3\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^2(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6}+\frac{2x\left(ae^2-bd\right.}{}$$

Rubi [A] time = 0.28, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{4c(d+ex)^3\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^2(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6}+\frac{2x\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^5}-\frac{(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)^2}{e^6}-\frac{5c^2(d+ex)^4(2cd-be)}{4e^6}+\frac{2c^3(d+ex)^5}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*x)/e^5
 - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e*x)^
2)/(2*e^6) + (4*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^3)/(3
*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^4)/(4*e^6) + (2*c^3*(d + e*x)^5)/(5*
e^6) - ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx=\int \left(\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b^2e^2+ace^2\right)}{e^5}+\frac{(-2cd+be)\left(cd^2-bde\right.}{e^5(d+ex)}\right.$$

$$=\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5bd-ae)\right)x}{e^5}-\frac{(2cd-be)\left(10c^2d^2+b^2e^2\right.}{2}$$

Mathematica [A] time = 0.11, size = 228, normalized size = 1.00

$$\frac{ex\left(20ce^2\left(6a^2e^2+9abe(ex-2d)+2b^2\left(6d^2-3dex+2e^2x^2\right)\right)+30b^2e^3(4ae-2bd+bex)+5c^2e\left(8ae\left(6d^2-3dex+2e^2x^2\right)-5b\left(12d^3-6d^2ex+4de^2x^2-3e^3x^3\right)\right)+2c^3\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)-60(2cd-be)\log(d+ex)\left(e(ae-bd)+cd^2\right)^2}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(30*b^2*e^3*(-2*b*d + 4*a*e + b*e*x) + 2*c^3*(60*d^4 - 30*d^3*e*x + 20
*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + 20*c*e^2*(6*a^2*e^2 + 9*a*b*e*(
-2*d + e*x) + 2*b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 5*c^2*e*(8*a*e*(6*d^2
- 3*d*e*x + 2*e^2*x^2) - 5*b*(12*d^3 - 6*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3)
)) - 60*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))^2*Log[d + e*x])/(60*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x), x]
```

fricas [A]   time = 0.40, size = 308, normalized size = 1.34

$$\frac{24\,c^3e^5x^5 - 15\left(2\,c^3de^4 - 5\,bc^2e^5\right)x^4 + 20\left(2\,c^3d^2e^3 - 5\,bc^2de^4 + 4\left(b^2c + ac^2\right)e^5\right)x^3 - 30\left(2\,c^3d^3e^2 - 5\,bc^2d^2e^3 + 4\left(b^2c + ac^2\right)de^4 - \left(b^3 + 6\,abc\right)e^5\right)x^2 + 60\left(2\,c^3d^4e - 5\,bc^2d^3e^2 + 4\left(b^2c + ac^2\right)d^2e^3 - \left(b^3 + 6\,abc\right)de^4 + 2\left(ab^2 + a^2c\right)e^5\right)x - 60\left(2\,c^3d^5 - 5\,bc^2d^4e - a^2be^5 + 4\left(b^2c + ac^2\right)d^3e^2 - \left(b^3 + 6\,abc\right)d^2e^3 + 2\left(ab^2 + a^2c\right)de^4\right)\log\left(ex + d\right)}{60\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(24*c^3*e^5*x^5 - 15*(2*c^3*d*e^4 - 5*b*c^2*e^5)*x^4 + 20*(2*c^3*d^2*e
^3 - 5*b*c^2*d*e^4 + 4*(b^2*c + a*c^2)*e^5)*x^3 - 30*(2*c^3*d^3*e^2 - 5*b*c
^2*d^2*e^3 + 4*(b^2*c + a*c^2)*d*e^4 - (b^3 + 6*a*b*c)*e^5)*x^2 + 60*(2*c^3
*d^4*e - 5*b*c^2*d^3*e^2 + 4*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)*d*e^
4 + 2*(a*b^2 + a^2*c)*e^5)*x - 60*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 +
4*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e
^4)*log(e*x + d))/e^6
```

giac [A]   time = 0.16, size = 337, normalized size = 1.47

$$-\left(2\,c^3d^5 - 5\,bc^2d^4e + 4\,b^2cd^3e^2 + 4\,ac^2d^3e^2 - b^3d^2e^3 - 6\,abcd^2e^3 + 2\,ab^2de^4 + 2\,a^2cde^4 - a^2be^5\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{60}\left(24\,c^3x^5e^4 - 30\,c^3dx^4e^3 + 40\,c^3d^2x^3e^2 - 60\,c^3d^3x^2e + 120\,c^3d^4x + 75\,bc^2x^4e^4 - 100\,bc^2dx^3e^3 + 150\,bc^2d^2x^2e^2 - 300\,bc^2d^3xe + 80\,b^2cx^3e^4 + 80\,ac^2x^3e^4 - 120\,b^2cdx^2e^3 - 120\,ac^2dx^2e^3 + 240\,b^2cd^2xe^2 + 240\,ac^2d^2xe^2 + 30\,b^3x^2e^4 + 180\,abcx^2e^4 - 60\,b^3dxe^3 - 360\,abcdxe^3 + 120\,ab^2xe^4 + 120\,a^2cxe^4\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d^2*e
^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)*e^(-6)*lo
g(abs(x*e + d)) + 1/60*(24*c^3*x^5*e^4 - 30*c^3*d*x^4*e^3 + 40*c^3*d^2*x^3*
e^2 - 60*c^3*d^3*x^2*e + 120*c^3*d^4*x + 75*b*c^2*x^4*e^4 - 100*b*c^2*d*x^3
*e^3 + 150*b*c^2*d^2*x^2*e^2 - 300*b*c^2*d^3*x*e + 80*b^2*c*x^3*e^4 + 80*a*
c^2*x^3*e^4 - 120*b^2*c*d*x^2*e^3 - 120*a*c^2*d*x^2*e^3 + 240*b^2*c*d^2*x*e
^2 + 240*a*c^2*d^2*x*e^2 + 30*b^3*x^2*e^4 + 180*a*b*c*x^2*e^4 - 60*b^3*d*x*
e^3 - 360*a*b*c*d*x*e^3 + 120*a*b^2*x*e^4 + 120*a^2*c*x*e^4)*e^(-5)
```

maple [A]   time = 0.05, size = 406, normalized size = 1.77

$$\frac{2c^3x^5}{5e} + \frac{5b\,c^2x^4}{4e} - \frac{c^3d\,x^4}{2e^2} + \frac{4a\,c^2x^3}{3e} + \frac{4b^2c\,x^3}{3e} - \frac{5b\,c^2d\,x^3}{3e^2} + \frac{2c^3d^2x^3}{3e^3} + \frac{3abc\,x^2}{e} - \frac{2a\,c^2d\,x^2}{e^2} + \frac{b^3x^2}{2e} - \frac{2b^2cd\,x^2}{e^2} + \frac{5b\,c^2d^2x^2}{2e^3} - \frac{c^3d^3x^2}{e^4} + \frac{a^2b\ln\left(ex + d\right)}{e} - \frac{2a^2cd\ln\left(ex + d\right)}{e^2} + \frac{2a^2cx}{e} - \frac{2a\,b^2d\ln\left(ex + d\right)}{e^2} + \frac{2a\,b^2x}{e} + \frac{6abc\,d^2\ln\left(ex + d\right)}{e^3} - \frac{6abcdx}{e^2} - \frac{4a\,c^2d^3\ln\left(ex + d\right)}{e^4} + \frac{4a\,c^2d^2x}{e^3} + \frac{b^3d^2\ln\left(ex + d\right)}{e^3} - \frac{b^3dx}{e^2} - \frac{4b^2c\,d^3\ln\left(ex + d\right)}{e^4} + \frac{4b^2c\,d^2x}{e^3} + \frac{5b\,c^2d^4\ln\left(ex + d\right)}{e^5} - \frac{5b\,c^2d^3x}{e^4} - \frac{2c^3d^5\ln\left(ex + d\right)}{e^6} + \frac{2c^3d^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x)
```

```
[Out] 4/3/e*x^3*a*c^2+4/3/e*x^3*b^2*c+2/3/e^3*x^3*c^3*d^2-1/e^4*x^2*c^3*d^3+5/4/e
*x^4*b*c^2+1/e*ln(e*x+d)*a^2*b+2/e^5*x*c^3*d^4+2/e*x*a^2*c+2/e*x*a*b^2-1/e^
2*x*b^3*d-1/2/e^2*x^4*c^3*d+1/e^3*ln(e*x+d)*b^3*d^2-2/e^6*ln(e*x+d)*c^3*d^5
+6/e^3*ln(e*x+d)*a*b*c*d^2-6/e^2*x*a*b*c*d-2/e^2*x^2*b^2*c*d+5/2/e^3*x^2*b*
c^2*d^2-5/3/e^2*x^3*b*c^2*d+3/e*x^2*a*b*c-2/e^2*x^2*a*c^2*d-5/e^4*x*b*c^2*d
^3+4/e^3*x*b^2*c*d^2-4/e^4*ln(e*x+d)*a*c^2*d^3-4/e^4*ln(e*x+d)*b^2*c*d^3-2/
e^2*ln(e*x+d)*a^2*c*d+4/e^3*x*a*c^2*d^2+5/e^5*ln(e*x+d)*b*c^2*d^4-2/e^2*ln(
e*x+d)*a*b^2*d+2/5/e*c^3*x^5+1/2/e*x^2*b^3
```

maxima [A]   time = 0.50, size = 307, normalized size = 1.34

$$\frac{24\,c^3e^4x^5 - 15\left(2\,c^3de^3 - 5\,bc^2e^4\right)x^4 + 20\left(2\,c^3d^2e^2 - 5\,bc^2de^3 + 4\left(b^2c + ac^2\right)e^4\right)x^3 - 30\left(2\,c^3d^3e - 5\,bc^2d^2e^2 + 4\left(b^2c + ac^2\right)de^3 - \left(b^3 + 6\,abc\right)e^4\right)x^2 + 60\left(2\,c^3d^4 - 5\,bc^2d^3e + 4\left(b^2c + ac^2\right)d^2e^2 - \left(b^3 + 6\,abc\right)de^3 + 2\left(ab^2 + a^2c\right)e^4\right)x}{60\,e^5} - \frac{\left(2\,c^3d^5 - 5\,bc^2d^4e - a^2be^5 + 4\left(b^2c + ac^2\right)d^3e^2 - \left(b^3 + 6\,abc\right)d^2e^3 + 2\left(ab^2 + a^2c\right)de^4\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(24*c^3*e^4*x^5 - 15*(2*c^3*d*e^3 - 5*b*c^2*e^4)*x^4 + 20*(2*c^3*d^2*e
^2 - 5*b*c^2*d*e^3 + 4*(b^2*c + a*c^2)*e^4)*x^3 - 30*(2*c^3*d^3*e - 5*b*c^2
*d^2*e^2 + 4*(b^2*c + a*c^2)*d*e^3 - (b^3 + 6*a*b*c)*e^4)*x^2 + 60*(2*c^3*d
^4 - 5*b*c^2*d^3*e + 4*(b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + 2*
(a*b^2 + a^2*c)*e^4)*x)/e^5 - (2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b
^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*
log(e*x + d)/e^6
```

mupad [B] time = 1.81, size = 326, normalized size = 1.42

$$x^4\left(\frac{5\,b\,c^2}{4\,e}-\frac{c^3\,d}{2\,e^2}\right)+x^2\left(\frac{b^3+6\,a\,c\,b}{2\,e}+\frac{d\left(\frac{d\left(\frac{5\,b\,c^2}{e}-\frac{2\,c^3\,d}{e^2}\right)}{e}-\frac{4\,c\,\left(b^2+a\,c\right)}{e}\right)}{2\,e}\right)-x^3\left(\frac{d\left(\frac{5\,b\,c^2}{e}-\frac{2\,c^3\,d}{e^2}\right)}{3\,e}-\frac{4\,c\,\left(b^2+a\,c\right)}{3\,e}\right)+x\left(\frac{2\,a\,\left(b^2+a\,c\right)}{e}-\frac{d\left(\frac{b^3+6\,a\,c\,b}{e}+\frac{d\left(\frac{d\left(\frac{5\,b\,c^2}{e}-\frac{2\,c^3\,d}{e^2}\right)}{e}-\frac{4\,c\,\left(b^2+a\,c\right)}{e}\right)}{e}\right)}{e}\right)+\frac{2\,c^3\,x^5}{5\,e}-\frac{\ln\left(d+e\,x\right)\,\left(-a^2\,b\,e^5+2\,a^2\,c\,d\,e^4+2\,a\,b^2\,d\,e^4-6\,a\,b\,c\,d^2\,e^3+4\,a\,c^2\,d^3\,e^2-b^3\,d^2\,e^3+4\,b^2\,c\,d^3\,e^2-5\,b\,c^2\,d^4\,e+2\,c^3\,d^5\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x)
```

```
[Out] x^4*((5*b*c^2)/(4*e) - (c^3*d)/(2*e^2)) + x^2*((b^3 + 6*a*b*c)/(2*e) + (d*(
(d*((5*b*c^2)/e - (2*c^3*d)/e^2))/e - (4*c*(a*c + b^2))/e))/(2*e)) - x^3*((
d*((5*b*c^2)/e - (2*c^3*d)/e^2))/(3*e) - (4*c*(a*c + b^2))/(3*e)) + x*((2*a
*(a*c + b^2))/e - (d*((b^3 + 6*a*b*c)/e + (d*((d*((5*b*c^2)/e - (2*c^3*d)/e
^2))/e - (4*c*(a*c + b^2))/e))/e))/e) + (2*c^3*x^5)/(5*e) - (log(d + e*x)*(
2*c^3*d^5 - a^2*b*e^5 - b^3*d^2*e^3 + 4*a*c^2*d^3*e^2 + 4*b^2*c*d^3*e^2 + 2
*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - 5*b*c^2*d^4*e - 6*a*b*c*d^2*e^3))/e^6
```

sympy [A] time = 0.75, size = 280, normalized size = 1.22

$$\frac{2c^3x^5}{5e}+x^4\left(\frac{5bc^2}{4e}-\frac{c^3d}{2e^2}\right)+x^3\left(\frac{4ac^2}{3e}+\frac{4b^2c}{3e}-\frac{5bc^2d}{3e^2}+\frac{2c^3d^2}{3e^3}\right)+x^2\left(\frac{3abc}{e}-\frac{2ac^2d}{e^2}+\frac{b^3}{2e}-\frac{2b^2cd}{e^2}+\frac{5bc^2d^2}{2e^3}-\frac{c^3d^3}{e^4}\right)+x\left(\frac{2a^2c}{e}+\frac{2ab^2}{e}-\frac{6abcd}{e^2}+\frac{4ac^2d^2}{e^3}-\frac{b^3d}{e^2}+\frac{4b^2cd^2}{e^3}-\frac{5bc^2d^3}{e^4}+\frac{2c^3d^4}{e^5}\right)+\frac{(be-2cd)\left(ae^2-bde+cd^2\right)^2\log(d+ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d),x)
```

```
[Out] 2*c**3*x**5/(5*e) + x**4*(5*b*c**2/(4*e) - c**3*d/(2*e**2)) + x**3*(4*a*c**
2/(3*e) + 4*b**2*c/(3*e) - 5*b*c**2*d/(3*e**2) + 2*c**3*d**2/(3*e**3)) + x*
*2*(3*a*b*c/e - 2*a*c**2*d/e**2 + b**3/(2*e) - 2*b**2*c*d/e**2 + 5*b*c**2*d
**2/(2*e**3) - c**3*d**3/e**4) + x*(2*a**2*c/e + 2*a*b**2/e - 6*a*b*c*d/e**
2 + 4*a*c**2*d**2/e**3 - b**3*d/e**2 + 4*b**2*c*d**2/e**3 - 5*b*c**2*d**3/e
**4 + 2*c**3*d**4/e**5) + (b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**2*log(d
+ e*x)/e**6
```

3.1318 $\int \frac{(b+2cx)(a+bx+cx^2)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=223

$$-\frac{x\left(-c^2de(15bd-8ae)+2bce^2(4bd-3ae)-b^3e^3+8c^3d^3\right)}{e^5}+\frac{2\log(d+ex)\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b\right.}{e^6}$$

Rubi [A] time = 0.29, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{cx^2\left(-ce(5bd-2ae)+2b^2e^2+3c^2d^2\right)}{e^4}-\frac{x\left(-c^2de(15bd-8ae)+2bce^2(4bd-3ae)-b^3e^3+8c^3d^3\right)}{e^5}+\frac{2\log(d+ex)\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^2}{e^6(d+ex)}-\frac{c^2x^3(4cd-5be)}{3e^3}+\frac{c^3x^4}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -(((8*c^3*d^3 - b^3*e^3 - c^2*d*e*(15*b*d - 8*a*e) + 2*b*c*e^2*(4*b*d - 3*a
*e))*x)/e^5) + (c*(3*c^2*d^2 + 2*b^2*e^2 - c*e*(5*b*d - 2*a*e))*x^2)/e^4 -
(c^2*(4*c*d - 5*b*e)*x^3)/(3*e^3) + (c^3*x^4)/(2*e^2) + ((2*c*d - b*e)*(c*d
^2 - b*d*e + a*e^2)^2)/(e^6*(d + e*x)) + (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*
d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx = \int \left(\frac{-8c^3d^3+b^3e^3+c^2de(15bd-8ae)-2bce^2(4bd-3ae)}{e^5}+\frac{2c\left(3c^2d^2+2b^2\right.}{}\right.$$

$$= -\frac{\left(8c^3d^3-b^3e^3-c^2de(15bd-8ae)+2bce^2(4bd-3ae)\right)x}{e^5}+\frac{c\left(3c^2d^2+2b^2e^2\right.}{}$$

Mathematica [A] time = 0.18, size = 241, normalized size = 1.08

$$\frac{12\log(d+ex)\left(ce^2\left(a^2e^2-6abde+6b^2d^2\right)+b^2e^3(ae-bd)+2c^2d^2e(3ae-5bd)+5c^3d^4\right)+6ex\left(c^2de(15bd-8ae)+2bce^2(3ae-4bd)+b^3e^3-8c^3d^3\right)+6ce^2x^2\left(ce(2ae-5bd)+2b^2e^2+3c^2d^2\right)+\frac{6(2cd-be)\left(e(ae-bd)+cd^2\right)^2}{d+ex}-2c^2e^3x^3(4cd-5be)+3c^3e^4x^4}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (6*e*(-8*c^3*d^3 + b^3*e^3 + c^2*d*e*(15*b*d - 8*a*e) + 2*b*c*e^2*(-4*b*d +
 3*a*e))*x + 6*c*e^2*(3*c^2*d^2 + 2*b^2*e^2 + c*e*(-5*b*d + 2*a*e))*x^2 - 2
*c^2*e^3*(4*c*d - 5*b*e)*x^3 + 3*c^3*e^4*x^4 + (6*(2*c*d - b*e)*(c*d^2 + e*
(-(b*d) + a*e))^2)/(d + e*x) + 12*(5*c^3*d^4 + b^2*e^3*(-(b*d) + a*e) + 2*c
^2*d^2*e*(-5*b*d + 3*a*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2))*Log[d
+ e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2, x]
```

fricas [B] time = 0.41, size = 444, normalized size = 1.99

$$\frac{3\,c^3e^5x^5+12\,c^3d^5-30\,bc^2d^4e-6\,a^2be^5+24\,\left(b^2c+ac^2\right)d^3e^2-6\,\left(b^3+6\,abc\right)d^2e^3+12\,\left(ab^2+a^2c\right)de^4-5\,\left(c^3de^4-2\,bc^2e^5\right)x^4+2\,\left(5\,c^3d^2e^3-10\,bc^2de^4+6\,\left(b^2c+ac^2\right)e^5\right)x^3-6\,\left(5\,c^3d^3e^2-10\,bc^2d^2e^3+6\,\left(b^2c+ac^2\right)de^4-\left(b^3+6\,abc\right)e^5\right)x^2-6\,\left(8\,c^3d^4e-15\,bc^2d^3e^2+8\,\left(b^2c+ac^2\right)d^2e^3-\left(b^3+6\,abc\right)de^4\right)x+12\,\left(5\,c^3d^5-10\,bc^2d^4e+6\,\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3+\left(ab^2+a^2c\right)de^4+\left(5\,c^3d^4e-10\,bc^2d^3e^2+6\,\left(b^2c+ac^2\right)d^2e^3-\left(b^3+6\,abc\right)de^4+\left(ab^2+a^2c\right)e^5\right)x\right)\log\left(ex+d\right)}{6\,\left(e^7x+de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(3*c^3*e^5*x^5 + 12*c^3*d^5 - 30*b*c^2*d^4*e - 6*a^2*b*e^5 + 24*(b^2*c
+ a*c^2)*d^3*e^2 - 6*(b^3 + 6*a*b*c)*d^2*e^3 + 12*(a*b^2 + a^2*c)*d*e^4 - 5
*(c^3*d*e^4 - 2*b*c^2*e^5)*x^4 + 2*(5*c^3*d^2*e^3 - 10*b*c^2*d*e^4 + 6*(b^2
*c + a*c^2)*e^5)*x^3 - 6*(5*c^3*d^3*e^2 - 10*b*c^2*d^2*e^3 + 6*(b^2*c + a*c
^2)*d*e^4 - (b^3 + 6*a*b*c)*e^5)*x^2 - 6*(8*c^3*d^4*e - 15*b*c^2*d^3*e^2 +
8*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)*d*e^4)*x + 12*(5*c^3*d^5 - 10*b
*c^2*d^4*e + 6*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + (a*b^2 +
 a^2*c)*d*e^4 + (5*c^3*d^4*e - 10*b*c^2*d^3*e^2 + 6*(b^2*c + a*c^2)*d^2*e^3
 - (b^3 + 6*a*b*c)*d*e^4 + (a*b^2 + a^2*c)*e^5)*x)*log(e*x + d))/(e^7*x + d
*e^6)
```

giac [A] time = 0.17, size = 420, normalized size = 1.88

$$\frac{1}{6}\left(3\,c^3-\frac{10\left(2\,c^3de-bc^2e^2\right)e^{(-1)}}{xe+d}+\frac{12\left(5\,c^3d^2e^2-5\,bc^2de^3+b^2ce^4+ac^2e^4\right)e^{(-2)}}{(xe+d)^2}-\frac{6\left(20\,c^3d^3e^3-30\,bc^2d^2e^4+12\,b^2cde^5+12\,ac^2de^5-b^3e^6-6\,abce^6\right)e^{(-3)}}{(xe+d)^3}\right)(xe+d)^4e^{(-6)}-2\left(5\,c^3d^4-10\,bc^2d^3e+6\,b^2cd^2e^2+6\,ac^2d^2e^2-b^3de^3-6\,abcde^3+ab^2e^4+a^2ce^4\right)e^{(-6)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right)+\left(\frac{2\,c^3d^5e^4}{xe+d}-\frac{5\,bc^2d^4e^5}{xe+d}+\frac{4\,b^2cd^3e^6}{xe+d}+\frac{4\,ac^2d^3e^6}{xe+d}-\frac{b^3d^2e^7}{xe+d}-\frac{6\,abcd^2e^7}{xe+d}+\frac{2\,ab^2de^8}{xe+d}+\frac{2\,a^2cde^8}{xe+d}-\frac{a^2be^9}{xe+d}\right)e^{(-10)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/6*(3*c^3 - 10*(2*c^3*d*e - b*c^2*e^2)*e^(-1)/(x*e + d) + 12*(5*c^3*d^2*e^
2 - 5*b*c^2*d*e^3 + b^2*c*e^4 + a*c^2*e^4)*e^(-2)/(x*e + d)^2 - 6*(20*c^3*d
^3*e^3 - 30*b*c^2*d^2*e^4 + 12*b^2*c*d*e^5 + 12*a*c^2*d*e^5 - b^3*e^6 - 6*a
*b*c*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4*e^(-6) - 2*(5*c^3*d^4 - 10*b*c^2*
d^3*e + 6*b^2*c*d^2*e^2 + 6*a*c^2*d^2*e^2 - b^3*d*e^3 - 6*a*b*c*d*e^3 + a*b
^2*e^4 + a^2*c*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (2*c^3*d^
5*e^4/(x*e + d) - 5*b*c^2*d^4*e^5/(x*e + d) + 4*b^2*c*d^3*e^6/(x*e + d) + 4
*a*c^2*d^3*e^6/(x*e + d) - b^3*d^2*e^7/(x*e + d) - 6*a*b*c*d^2*e^7/(x*e + d
) + 2*a*b^2*d*e^8/(x*e + d) + 2*a^2*c*d*e^8/(x*e + d) - a^2*b*e^9/(x*e + d)
)*e^(-10)
```

maple [B] time = 0.06, size = 444, normalized size = 1.99

$$\frac{c^3x^4}{2e^2}+\frac{5b\,c^2x^3}{3e^2}-\frac{4c^3d\,x^3}{3e^3}+\frac{2a\,c^2x^2}{e^2}+\frac{2b^2c\,x^2}{e^2}-\frac{5b\,c^2d\,x^2}{e^3}+\frac{3c^3d^2x^2}{e^4}-\frac{a^2b}{(ex+d)\,e}+\frac{2a^2cd}{(ex+d)\,e^2}+\frac{2a^2c\ln(ex+d)}{e^2}+\frac{2a\,b^2d}{(ex+d)\,e^2}+\frac{2a\,b^2\ln(ex+d)}{e^2}-\frac{6abc\,d^2}{(ex+d)\,e^3}-\frac{12abcd\ln(ex+d)}{e^3}+\frac{6abcx}{e^2}+\frac{4a\,c^2d^3}{(ex+d)\,e^4}+\frac{12a\,c^2d^2\ln(ex+d)}{e^4}-\frac{8a\,c^2dx}{e^3}-\frac{b^3d^2}{(ex+d)\,e^3}-\frac{2b^3d\ln(ex+d)}{e^3}+\frac{b^3x}{e^2}+\frac{4b^2c\,d^3}{(ex+d)\,e^4}+\frac{12b^2c\,d^2\ln(ex+d)}{e^4}-\frac{8b^2cdx}{e^3}-\frac{5b\,c^2d^4}{(ex+d)\,e^5}-\frac{20b\,c^2d^3\ln(ex+d)}{e^5}+\frac{15b\,c^2d^2x}{e^4}+\frac{2c^3d^5}{(ex+d)\,e^6}+\frac{10c^3d^4\ln(ex+d)}{e^6}-\frac{8c^3d^3x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x)
```

```
[Out] 2/e^6/(e*x+d)*c^3*d^5+2/e^2*x^2*a*c^2+2/e^2*x^2*b^2*c+5/3/e^2*x^3*b*c^2-4/3
/e^3*x^3*c^3*d+3/e^4*x^2*c^3*d^2-8/e^5*c^3*d^3*x-1/e/(e*x+d)*a^2*b-1/e^3/(e
*x+d)*b^3*d^2+2/e^2*ln(e*x+d)*a^2*c+2/e^2*ln(e*x+d)*a*b^2+10/e^6*ln(e*x+d)*
c^3*d^4-2/e^3*ln(e*x+d)*b^3*d-12/e^3*ln(e*x+d)*a*b*c*d-6/e^3/(e*x+d)*a*b*c*
d^2+4/e^4/(e*x+d)*b^2*c*d^3-5/e^5/(e*x+d)*b*c^2*d^4+12/e^4*ln(e*x+d)*a*c^2*
d^2+12/e^4*ln(e*x+d)*b^2*c*d^2-20/e^5*ln(e*x+d)*b*c^2*d^3-8/e^3*c^2*a*d*x-8
/e^3*b^2*c*d*x+15/e^4*b*c^2*d^2*x+2/e^2/(e*x+d)*a^2*c*d-5/e^3*x^2*b*c^2*d+6
/e^2*a*b*c*x+2/e^2/(e*x+d)*d*a*b^2+4/e^4/(e*x+d)*a*c^2*d^3+1/e^2*b^3*x+1/2*
c^3*x^4/e^2
```

maxima [A] time = 0.64, size = 310, normalized size = 1.39

$$\frac{2\,c^3d^5-5\,bc^2d^4e-a^2be^5+4\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3+2\left(ab^2+a^2c\right)de^4}{e^7x+de^6}+\frac{3\,c^3e^3x^4-2\left(4\,c^3de^2-5\,bc^2e^3\right)x^3+6\left(3\,c^3d^2e-5\,bc^2de^2+2\left(b^2c+ac^2\right)e^3\right)x^2-6\left(8\,c^3d^3-15\,bc^2d^2e+8\left(b^2c+ac^2\right)de^2-\left(b^3+6\,abc\right)e^3\right)x}{6\,e^5}+\frac{2\left(5\,c^3d^4-10\,bc^2d^3e+6\left(b^2c+ac^2\right)d^2e^2-\left(b^3+6\,abc\right)de^3+\left(ab^2+a^2c\right)e^4\right)\log\left(ex+d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 - (b^3 +
 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)/(e^7*x + d*e^6) + 1/6*(3*c^3*e
^3*x^4 - 2*(4*c^3*d*e^2 - 5*b*c^2*e^3)*x^3 + 6*(3*c^3*d^2*e - 5*b*c^2*d*e^2
 + 2*(b^2*c + a*c^2)*e^3)*x^2 - 6*(8*c^3*d^3 - 15*b*c^2*d^2*e + 8*(b^2*c +
a*c^2)*d*e^2 - (b^3 + 6*a*b*c)*e^3)*x)/e^5 + 2*(5*c^3*d^4 - 10*b*c^2*d^3*e
+ 6*(b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*
log(e*x + d)/e^6
```

mupad [B] time = 1.84, size = 387, normalized size = 1.74

$$x^3\left(\frac{5\,b\,c^2}{3\,e^2}-\frac{4\,c^3\,d}{3\,e^3}\right)-x^2\left(\frac{d\left(\frac{5\,b\,c^2}{e^2}-\frac{4\,c^3\,d}{e^3}\right)}{e}+\frac{c^3\,d^2}{e^4}-\frac{2\,c\,\left(b^2+a\,c\right)}{e^2}\right)+x\left(\frac{b^3+6\,a\,c\,b}{e^2}+\frac{2\,d\left(\frac{2\,d\left(\frac{5\,b\,c^2}{e^2}-\frac{4\,c^3\,d}{e^3}\right)}{e}+\frac{2\,c^3\,d^2}{e^4}-\frac{4\,c\,\left(b^2+a\,c\right)}{e^2}\right)}{e}-\frac{d^2\left(\frac{5\,b\,c^2}{e^2}-\frac{4\,c^3\,d}{e^3}\right)}{e^2}\right)+\frac{\ln\left(d+e\,x\right)\left(2\,a^2\,c\,e^4+2\,a\,b^2\,e^4-12\,a\,b\,c\,d\,e^3+12\,a\,c^2\,d^2\,e^2-2\,b^3\,d\,e^3+12\,b^2\,c\,d^2\,e^2-20\,b\,c^2\,d^3\,e+10\,c^3\,d^4\right)}{e^6}+\frac{-a^2\,b\,e^5+2\,a^2\,c\,d\,e^4+2\,a\,b^2\,d\,e^4-6\,a\,b\,c\,d^2\,e^3+4\,a\,c^2\,d^3\,e^2-b^3\,d^2\,e^3+4\,b^2\,c\,d^3\,e^2-5\,b\,c^2\,d^4\,e+2\,c^3\,d^5}{e\left(x\,e^6+d\,e^5\right)}+\frac{c^3\,x^4}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x)
```

```
[Out] x^3*((5*b*c^2)/(3*e^2) - (4*c^3*d)/(3*e^3)) - x^2*((d*((5*b*c^2)/e^2 - (4*c
^3*d)/e^3))/e + (c^3*d^2)/e^4 - (2*c*(a*c + b^2))/e^2) + x*((b^3 + 6*a*b*c)
/e^2 + (2*d*((2*d*((5*b*c^2)/e^2 - (4*c^3*d)/e^3))/e + (2*c^3*d^2)/e^4 - (4
*c*(a*c + b^2))/e^2))/e - (d^2*((5*b*c^2)/e^2 - (4*c^3*d)/e^3))/e^2) + (log
(d + e*x)*(10*c^3*d^4 + 2*a*b^2*e^4 + 2*a^2*c*e^4 - 2*b^3*d*e^3 + 12*a*c^2*
d^2*e^2 + 12*b^2*c*d^2*e^2 - 20*b*c^2*d^3*e - 12*a*b*c*d*e^3))/e^6 + (2*c^3
*d^5 - a^2*b*e^5 - b^3*d^2*e^3 + 4*a*c^2*d^3*e^2 + 4*b^2*c*d^3*e^2 + 2*a*b^
2*d*e^4 + 2*a^2*c*d*e^4 - 5*b*c^2*d^4*e - 6*a*b*c*d^2*e^3)/(e*(d*e^5 + e^6*
x)) + (c^3*x^4)/(2*e^2)
```

sympy [A] time = 1.82, size = 325, normalized size = 1.46

$$\frac{c^3x^4}{2e^2}+x^3\left(\frac{5bc^2}{3e^2}-\frac{4c^3d}{3e^3}\right)+x^2\left(\frac{2ac^2}{e^2}+\frac{2b^2c}{e^2}-\frac{5bc^2d}{e^3}+\frac{3c^3d^2}{e^4}\right)+x\left(\frac{6abc}{e^2}-\frac{8ac^2d}{e^3}+\frac{b^3}{e^2}-\frac{8b^2cd}{e^3}+\frac{15bc^2d^2}{e^4}-\frac{8c^3d^3}{e^5}\right)+\frac{-a^2be^5+2a^2cde^4+2ab^2de^4-6abcd^2e^3+4ac^2d^3e^2-b^3d^2e^3+4b^2cd^3e^2-5bc^2d^4e+2c^3d^5}{de^6+e^7x}+\frac{2\left(ae^2-bde+cd^2\right)\left(ace^2+b^2e^2-5bcde+5c^2d^2\right)\log\left(d+ex\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**2,x)
```

```
[Out] c**3*x**4/(2*e**2) + x**3*(5*b*c**2/(3*e**2) - 4*c**3*d/(3*e**3)) + x**2*(2
*a*c**2/e**2 + 2*b**2*c/e**2 - 5*b*c**2*d/e**3 + 3*c**3*d**2/e**4) + x*(6*a
*b*c/e**2 - 8*a*c**2*d/e**3 + b**3/e**2 - 8*b**2*c*d/e**3 + 15*b*c**2*d**2/
e**4 - 8*c**3*d**3/e**5) + (-a**2*b*e**5 + 2*a**2*c*d*e**4 + 2*a*b**2*d*e**
4 - 6*a*b*c*d**2*e**3 + 4*a*c**2*d**3*e**2 - b**3*d**2*e**3 + 4*b**2*c*d**3
*e**2 - 5*b*c**2*d**4*e + 2*c**3*d**5)/(d*e**6 + e**7*x) + 2*(a*e**2 - b*d*
e + c*d**2)*(a*c*e**2 + b**2*e**2 - 5*b*c*d*e + 5*c**2*d**2)*log(d + e*x)/e
**6
```

3.1319 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=219

$$-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}-\frac{(2cd-be)\log(d+ex)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}+\cdots$$

Rubi [A] time = 0.25, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{cx\left(-ce(15bd-4ae)+4b^2e^2+12c^2d^2\right)}{e^5}-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}-\frac{(2cd-be)\log(d+ex)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^2}{2e^6(d+ex)^2}-\frac{c^2x^2(6cd-5be)}{2e^4}+\frac{2c^3x^3}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (c*(12*c^2*d^2 + 4*b^2*e^2 - c*e*(15*b*d - 4*a*e))*x)/e^5 - (c^2*(6*c*d - 5
*b*e)*x^2)/(2*e^4) + (2*c^3*x^3)/(3*e^3) + ((2*c*d - b*e)*(c*d^2 - b*d*e +
a*e^2)^2)/(2*e^6*(d + e*x)^2) - (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2
*e^2 - c*e*(5*b*d - a*e)))/(e^6*(d + e*x)) - ((2*c*d - b*e)*(10*c^2*d^2 + b
^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx &= \int \left(\frac{c\left(12c^2d^2+4b^2e^2-ce(15bd-4ae)\right)}{e^5}-\frac{c^2(6cd-5be)x}{e^4}+\frac{2c^3x^2}{e^3}+\frac{(-2cd+b\cdots}{\cdots}\right.\\ &= \frac{c\left(12c^2d^2+4b^2e^2-ce(15bd-4ae)\right)x}{e^5}-\frac{c^2(6cd-5be)x^2}{2e^4}+\frac{2c^3x^3}{3e^3}+\frac{(2cd-be)\cdots}{2e^{\cdots}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 233, normalized size = 1.06

$$\frac{-\frac{12\left(ce^2\left(a^2e^2-6abde+6b^2d^2\right)+b^2e^3(ae-bd)+2c^2d^2e(3ae-5bd)+5c^3d^4\right)}{d+ex}+6cex\left(ce(4ae-15bd)+4b^2e^2+12c^2d^2\right)-6(2cd-be)\log(d+ex)\left(2ce(3ae-5bd)+b^2e^2+10c^2d^2\right)+\frac{3(2cd-be)\left(e(ae-bd)+cd^2\right)^2}{(d+ex)^2}-3c^2e^2x^2(6cd-5be)+4c^3e^3x^3}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*c*e*(12*c^2*d^2 + 4*b^2*e^2 + c*e*(-15*b*d + 4*a*e))*x - 3*c^2*e^2*(6*c*
d - 5*b*e)*x^2 + 4*c^3*e^3*x^3 + (3*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e)
)^2)/(d + e*x)^2 - (12*(5*c^3*d^4 + b^2*e^3*(-(b*d) + a*e) + 2*c^2*d^2*e*(-
5*b*d + 3*a*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2)))/(d + e*x) - 6*(2
*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-5*b*d + 3*a*e))*Log[d + e*x])/(
6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3, x]
```

fricas [B] time = 0.42, size = 487, normalized size = 2.22

$$\frac{4\,c^{3}e^{5}x^{5} - 54\,c^{3}d^{5} + 105\,bc^{2}d^{4}e - 3\,a^{2}be^{5} - 60\,\left(b^{2}c + ac^{2}\right)d^{3}e^{2} + 9\,\left(b^{3} + 6\,abc\right)d^{2}e^{3} - 6\,\left(ab^{2} + a^{2}c\right)de^{4} - 5\,\left(2\,c^{3}de^{4} - 3\,bc^{2}e^{5}\right)x^{4} + 4\,\left(10\,c^{3}d^{2}e^{3} - 15\,bc^{2}de^{4} + 6\,\left(b^{2}c + ac^{2}\right)e^{5}\right)x^{3} + 3\,\left(42\,c^{3}d^{3}e^{2} - 55\,bc^{2}d^{2}e^{3} + 16\,\left(b^{2}c + ac^{2}\right)de^{4}\right)x^{2} + 6\,\left(2\,c^{3}d^{4}e + 5\,bc^{2}d^{3}e^{2} - 8\,\left(b^{2}c + ac^{2}\right)d^{2}e^{3} + 2\,\left(b^{3} + 6\,abc\right)de^{4} - 2\,\left(ab^{2} + a^{2}c\right)e^{5}\right)x - 6\,\left(20\,c^{3}d^{5} - 30\,bc^{2}d^{4}e + 12\,\left(b^{2}c + ac^{2}\right)d^{3}e^{2} - \left(b^{3} + 6\,abc\right)d^{2}e^{3} + \left(20\,c^{3}d^{3}e^{2} - 30\,bc^{2}d^{2}e^{3} + 12\,\left(b^{2}c + ac^{2}\right)de^{4} - \left(b^{3} + 6\,abc\right)e^{5}\right)x^{2} + 2\,\left(20\,c^{3}d^{4}e - 30\,bc^{2}d^{3}e^{2} + 12\,\left(b^{2}c + ac^{2}\right)d^{2}e^{3} - \left(b^{3} + 6\,abc\right)de^{4}\right)x\right)\log\left(ex + d\right)}{6\,\left(e^{8}x^{2} + 2\,de^{7}x + d^{2}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(4*c^3*e^5*x^5 - 54*c^3*d^5 + 105*b*c^2*d^4*e - 3*a^2*b*e^5 - 60*(b^2*c
 + a*c^2)*d^3*e^2 + 9*(b^3 + 6*a*b*c)*d^2*e^3 - 6*(a*b^2 + a^2*c)*d*e^4 - 5
*(2*c^3*d*e^4 - 3*b*c^2*e^5)*x^4 + 4*(10*c^3*d^2*e^3 - 15*b*c^2*d*e^4 + 6*(
b^2*c + a*c^2)*e^5)*x^3 + 3*(42*c^3*d^3*e^2 - 55*b*c^2*d^2*e^3 + 16*(b^2*c
+ a*c^2)*d*e^4)*x^2 + 6*(2*c^3*d^4*e + 5*b*c^2*d^3*e^2 - 8*(b^2*c + a*c^2)*
d^2*e^3 + 2*(b^3 + 6*a*b*c)*d*e^4 - 2*(a*b^2 + a^2*c)*e^5)*x - 6*(20*c^3*d^
5 - 30*b*c^2*d^4*e + 12*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 +
 (20*c^3*d^3*e^2 - 30*b*c^2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 - (b^3 + 6*a
*b*c)*e^5)*x^2 + 2*(20*c^3*d^4*e - 30*b*c^2*d^3*e^2 + 12*(b^2*c + a*c^2)*d^
2*e^3 - (b^3 + 6*a*b*c)*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7*x + d^2*
e^6)
```

giac [A] time = 0.16, size = 317, normalized size = 1.45

$$-{\left(20\,c^{3}d^{3} - 30\,bc^{2}d^{2}e + 12\,b^{2}cde^{2} + 12\,ac^{2}de^{2} - b^{3}e^{3} - 6\,abce^{3}\right)}e^{\left(-6\right)}\log\left({\left| xe + d \right|}\right) + \frac{1}{6}\,{\left(4\,c^{3}x^{3}e^{6} - 18\,c^{3}dx^{2}e^{5} + 72\,c^{3}d^{2}xe^{4} + 15\,bc^{2}x^{2}e^{6} - 90\,bc^{2}dxe^{5} + 24\,b^{2}cxe^{6} + 24\,ac^{2}xe^{6}\right)}e^{\left(-9\right)} - \frac{{\left(18\,c^{3}d^{5} - 35\,bc^{2}d^{4}e + 20\,b^{2}cd^{3}e^{2} + 20\,ac^{2}d^{3}e^{2} - 3\,b^{3}d^{2}e^{3} - 18\,abcd^{2}e^{3} + 2\,ab^{2}de^{4} + 2\,a^{2}cde^{4} + a^{2}be^{5} + 4\,{\left(5\,c^{3}d^{4}e - 10\,bc^{2}d^{3}e^{2} + 6\,b^{2}cd^{2}e^{3} + 6\,ac^{2}d^{2}e^{3} - b^{3}de^{4} - 6\,abcde^{4} + ab^{2}e^{5} + a^{2}ce^{5}\right)}x\right)}e^{\left(-6\right)}}{2\,{\left(xe + d\right)}^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*b^2*c*d*e^2 + 12*a*c^2*d*e^2 - b^3*e^3 -
 6*a*b*c*e^3)*e^(-6)*log(abs(x*e + d)) + 1/6*(4*c^3*x^3*e^6 - 18*c^3*d*x^2*
e^5 + 72*c^3*d^2*x*e^4 + 15*b*c^2*x^2*e^6 - 90*b*c^2*d*x*e^5 + 24*b^2*c*x*e
^6 + 24*a*c^2*x*e^6)*e^(-9) - 1/2*(18*c^3*d^5 - 35*b*c^2*d^4*e + 20*b^2*c*d
^3*e^2 + 20*a*c^2*d^3*e^2 - 3*b^3*d^2*e^3 - 18*a*b*c*d^2*e^3 + 2*a*b^2*d*e^
4 + 2*a^2*c*d*e^4 + a^2*b*e^5 + 4*(5*c^3*d^4*e - 10*b*c^2*d^3*e^2 + 6*b^2*c
*d^2*e^3 + 6*a*c^2*d^2*e^3 - b^3*d*e^4 - 6*a*b*c*d*e^4 + a*b^2*e^5 + a^2*c*
e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [B] time = 0.05, size = 471, normalized size = 2.15

$$\frac{2c^{3}x^{3}}{3e^{3}}-\frac{a^{2}b}{2\left(ex+d\right)^{2}e}+\frac{a^{2}cd}{\left(ex+d\right)^{2}e^{2}}+\frac{a\,b^{2}d}{\left(ex+d\right)^{2}e^{2}}-\frac{3abc\,d^{2}}{\left(ex+d\right)^{2}e^{3}}+\frac{2a\,c^{2}d^{3}}{\left(ex+d\right)^{2}e^{4}}-\frac{b^{3}d^{2}}{2\left(ex+d\right)^{2}e^{3}}+\frac{2b^{2}c\,d^{3}}{\left(ex+d\right)^{2}e^{4}}-\frac{5b\,c^{2}d^{4}}{2\left(ex+d\right)^{2}e^{5}}+\frac{5b\,c^{2}x^{2}}{2e^{3}}+\frac{c^{3}d^{5}}{\left(ex+d\right)^{2}e^{6}}-\frac{3c^{3}d\,x^{2}}{e^{4}}-\frac{2a^{2}c}{\left(ex+d\right)e^{2}}-\frac{2a\,b^{2}}{\left(ex+d\right)e^{2}}+\frac{12abcd}{\left(ex+d\right)e^{3}}+\frac{6abc\ln\left(ex+d\right)}{e^{3}}-\frac{12a\,c^{2}d^{2}}{\left(ex+d\right)e^{4}}-\frac{12a\,c^{2}d\ln\left(ex+d\right)}{e^{4}}+\frac{4a\,c^{2}x}{e^{3}}+\frac{2b^{3}d}{\left(ex+d\right)e^{3}}+\frac{b^{3}\ln\left(ex+d\right)}{e^{3}}-\frac{12b^{2}c\,d^{2}}{\left(ex+d\right)e^{4}}-\frac{12b^{2}cd\ln\left(ex+d\right)}{e^{4}}+\frac{4b^{2}cx}{e^{3}}+\frac{20b\,c^{2}d^{3}}{\left(ex+d\right)e^{5}}+\frac{30b\,c^{2}d^{2}\ln\left(ex+d\right)}{e^{5}}-\frac{15b\,c^{2}dx}{e^{4}}-\frac{10c^{3}d^{4}}{\left(ex+d\right)e^{6}}-\frac{20c^{3}d^{3}\ln\left(ex+d\right)}{e^{6}}+\frac{12c^{3}d^{2}x}{e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x)
```

```
[Out] 12/e^3/(e*x+d)*a*b*c*d-3/e^3/(e*x+d)^2*d^2*a*b*c+1/e^6/(e*x+d)^2*c^3*d^5-20
/e^6*ln(e*x+d)*c^3*d^3-3*c^3/e^4*x^2*d+4*c^2/e^3*x*a-1/2/e^3/(e*x+d)^2*d^2*
b^3+4*c/e^3*x*b^2+12*c^3/e^5*x*d^2-2/e^2/(e*x+d)*a^2*c-2/e^2/(e*x+d)*a*b^2+
2/e^3/(e*x+d)*b^3*d-10/e^6/(e*x+d)*c^3*d^4-1/2/e/(e*x+d)^2*a^2*b+5/2*c^2/e^
3*x^2*b-12/e^4/(e*x+d)*b^2*c*d^2+20/e^5/(e*x+d)*b*c^2*d^3-5/2/e^5/(e*x+d)^2
*b*c^2*d^4-12/e^4*ln(e*x+d)*b^2*c*d+1/e^2/(e*x+d)^2*a^2*c*d+1/e^2/(e*x+d)^2
*d*a*b^2+2/e^4/(e*x+d)^2*a*c^2*d^3+2/e^4/(e*x+d)^2*b^2*c*d^3-12/e^4/(e*x+d)
*a*c^2*d^2-15*c^2/e^4*x*b*d+30/e^5*ln(e*x+d)*b*c^2*d^2+6/e^3*ln(e*x+d)*a*b*
c-12/e^4*ln(e*x+d)*c^2*a*d+1/e^3*ln(e*x+d)*b^3+2/3*c^3*x^3/e^3
```

maxima [A] time = 0.68, size = 317, normalized size = 1.45

$$-\frac{18\,c^{3}d^{5} - 35\,bc^{2}d^{4}e + a^{2}be^{5} + 20\,{\left(b^{2}c + ac^{2}\right)}d^{3}e^{2} - 3\,{\left(b^{3} + 6\,abc\right)}d^{2}e^{3} + 2\,{\left(ab^{2} + a^{2}c\right)}de^{4} + 4\,{\left(5\,c^{3}d^{4}e - 10\,bc^{2}d^{3}e^{2} + 6\,{\left(b^{2}c + ac^{2}\right)}d^{2}e^{3} - {\left(b^{3} + 6\,abc\right)}de^{4} + {\left(ab^{2} + a^{2}c\right)}e^{5}\right)}x}{2\,{\left(e^{8}x^{2} + 2\,de^{7}x + d^{2}e^{6}\right)}} + \frac{4\,c^{3}e^{2}x^{3} - 3\,{\left(6\,c^{3}de - 5\,bc^{2}e^{2}\right)}x^{2} + 6\,{\left(12\,c^{3}d^{2} - 15\,bc^{2}de + 4\,{\left(b^{2}c + ac^{2}\right)}e^{2}\right)}x}{6\,e^{5}} - \frac{{\left(20\,c^{3}d^{3} - 30\,bc^{2}d^{2}e + 12\,{\left(b^{2}c + ac^{2}\right)}de^{2} - {\left(b^{3} + 6\,abc\right)}e^{3}\right)}\log\left(ex + d\right)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(18*c^3*d^5 - 35*b*c^2*d^4*e + a^2*b*e^5 + 20*(b^2*c + a*c^2)*d^3*e^2
- 3*(b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4 + 4*(5*c^3*d^4*e - 10
*b*c^2*d^3*e^2 + 6*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)*d*e^4 + (a*b^2
 + a^2*c)*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(4*c^3*e^2*x^3 - 3*
(6*c^3*d*e - 5*b*c^2*e^2)*x^2 + 6*(12*c^3*d^2 - 15*b*c^2*d*e + 4*(b^2*c + a
*c^2)*e^2)*x)/e^5 - (20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2
 - (b^3 + 6*a*b*c)*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 1.84, size = 358, normalized size = 1.63

$$x^2\left(\frac{5\,b\,c^2}{2\,e^3}-\frac{3\,c^3\,d}{e^4}\right)-x\left(\frac{3\,d\left(\frac{5\,b\,c^2}{e^3}-\frac{6\,c^3\,d}{e^4}\right)}{e}+\frac{6\,c^3\,d^2}{e^5}-\frac{4\,c\,\left(b^2+a\,c\right)}{e^3}\right)-\frac{x\,\left(2\,a^2\,c\,e^4+2\,a\,b^2\,e^4-12\,a\,b\,c\,d\,e^3+12\,a\,c^2\,d^2\,e^2-2\,b^3\,d\,e^3+12\,b^2\,c\,d^2\,e^2-20\,b\,c^2\,d^3\,e+10\,c^3\,d^4\right)+\frac{a^2\,b\,e^5+2\,a^2\,c\,d\,e^4+2\,a\,b^2\,d\,e^4-18\,a\,b\,c\,d^2\,e^3+20\,a\,c^2\,d^3\,e^2-3\,b^3\,d^2\,e^3+20\,b^2\,c\,d^3\,e^2-35\,b\,c^2\,d^4\,e+18\,c^3\,d^5}{2\,e}}{d^2\,e^5+2\,d\,e^6\,x+e^7\,x^2}+\frac{\ln\left(d+e\,x\right)\,\left(b^3\,e^3-12\,b^2\,c\,d\,e^2+30\,b\,c^2\,d^2\,e+6\,a\,b\,c\,e^3-20\,c^3\,d^3-12\,a\,c^2\,d\,e^2\right)}{e^6}+\frac{2\,c^3\,x^3}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((5*b*c^2)/(2*e^3) - (3*c^3*d)/e^4) - x*((3*d*((5*b*c^2)/e^3 - (6*c^3*d
)/e^4))/e + (6*c^3*d^2)/e^5 - (4*c*(a*c + b^2))/e^3) - (x*(10*c^3*d^4 + 2*a
*b^2*e^4 + 2*a^2*c*e^4 - 2*b^3*d*e^3 + 12*a*c^2*d^2*e^2 + 12*b^2*c*d^2*e^2
- 20*b*c^2*d^3*e - 12*a*b*c*d*e^3) + (18*c^3*d^5 + a^2*b*e^5 - 3*b^3*d^2*e^
3 + 20*a*c^2*d^3*e^2 + 20*b^2*c*d^3*e^2 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - 3
5*b*c^2*d^4*e - 18*a*b*c*d^2*e^3)/(2*e))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) +
(log(d + e*x)*(b^3*e^3 - 20*c^3*d^3 + 6*a*b*c*e^3 - 12*a*c^2*d*e^2 + 30*b*c
^2*d^2*e - 12*b^2*c*d*e^2))/e^6 + (2*c^3*x^3)/(3*e^3)
```

sympy [A] time = 6.71, size = 360, normalized size = 1.64

$$\frac{2c^3x^3}{3e^3}+x^2\left(\frac{5bc^2}{2e^3}-\frac{3c^3d}{e^4}\right)+x\left(\frac{4ac^2}{e^3}+\frac{4b^2c}{e^3}-\frac{15bc^2d}{e^4}+\frac{12c^3d^2}{e^5}\right)+\frac{-a^2be^5-2a^2cde^4-2ab^2de^4+18abcd^2e^3-20ac^2d^3e^2+3b^3d^2e^3-20b^2cd^3e^2+35bc^2d^4e-18c^3d^5+x\left(-4a^2ce^5-4ab^2e^5+24abcde^4-24ac^2d^2e^3+4b^3de^4-24b^2cd^2e^3+40bc^2d^3e^2-20c^3d^4e\right)}{2d^2e^6+4de^7x+2e^8x^2}+\frac{(be-2cd)\left(6ace^2+b^2e^2-10bcde+10c^2d^2\right)\log(d+ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**3,x)
```

```
[Out] 2*c**3*x**3/(3*e**3) + x**2*(5*b*c**2/(2*e**3) - 3*c**3*d/e**4) + x*(4*a*c*
*2/e**3 + 4*b**2*c/e**3 - 15*b*c**2*d/e**4 + 12*c**3*d**2/e**5) + (-a**2*b*
e**5 - 2*a**2*c*d*e**4 - 2*a*b**2*d*e**4 + 18*a*b*c*d**2*e**3 - 20*a*c**2*d
**3*e**2 + 3*b**3*d**2*e**3 - 20*b**2*c*d**3*e**2 + 35*b*c**2*d**4*e - 18*c
**3*d**5 + x*(-4*a**2*c*e**5 - 4*a*b**2*e**5 + 24*a*b*c*d*e**4 - 24*a*c**2*
d**2*e**3 + 4*b**3*d*e**4 - 24*b**2*c*d**2*e**3 + 40*b*c**2*d**3*e**2 - 20*
c**3*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**2) + (b*e - 2*c*d)*(6*a
*c*e**2 + b**2*e**2 - 10*b*c*d*e + 10*c**2*d**2)*log(d + e*x)/e**6
```

3.1320 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=217

$$\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}-\frac{\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)^2}+\frac{4c\log(d+e \ldots}{}$$

Rubi [A] time = 0.23, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}-\frac{\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)^2}+\frac{4c\log(d+ex)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^2}{3e^6(d+ex)^3}-\frac{c^2x(8cd-5be)}{e^5}+\frac{c^3x^2}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c^2*(8*c*d - 5*b*e)*x)/e^5) + (c^3*x^2)/e^4 + ((2*c*d - b*e)*(c*d^2 - b*
d*e + a*e^2)^2)/(3*e^6*(d + e*x)^3) - ((c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 +
 b^2*e^2 - c*e*(5*b*d - a*e)))/(e^6*(d + e*x)^2) + ((2*c*d - b*e)*(10*c^2*d
^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)))/(e^6*(d + e*x)) + (4*c*(5*c^2*d^2 +
b^2*e^2 - c*e*(5*b*d - a*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx = \int \left(-\frac{c^2(8cd-5be)}{e^5}+\frac{2c^3x}{e^4}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^4}+\frac{2\left(cd^2-bde \ldots\right.}{}\right.$$

$$= -\frac{c^2(8cd-5be)x}{e^5}+\frac{c^3x^2}{e^4}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(cd^2-bde+ae^2\right) \ldots}{}$$

Mathematica [A] time = 0.13, size = 300, normalized size = 1.38

$$\frac{-ce^2\left(a^2e^2(d+3ex)+6abe\left(d^2+3dex+3e^2x^2\right)-2b^2d\left(11d^2+27dex+18e^2x^2\right)\right)-be^3\left(a^2e^2+abe(d+3ex)+b^2\left(d^2+3dex+3e^2x^2\right)\right)+12c(d+ex)^3\log(d+ex)\left(ce(ae-5bd)+b^2e^2+5c^2d^2\right)+c^2e\left(2ade\left(11d^2+27dex+18e^2x^2\right)-5b\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)\right)+c^3\left(47d^5+81d^4ex-9d^3e^2x^2-63d^2e^3x^3-15de^4x^4+3e^5x^5\right)}{3e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (c^3*(47*d^5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 +
 3*e^5*x^5) - b*e^3*(a^2*e^2 + a*b*e*(d + 3*e*x) + b^2*(d^2 + 3*d*e*x + 3*e
^2*x^2)) - c*e^2*(a^2*e^2*(d + 3*e*x) + 6*a*b*e*(d^2 + 3*d*e*x + 3*e^2*x^2)
 - 2*b^2*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + c^2*e*(2*a*d*e*(11*d^2 + 27*
d*e*x + 18*e^2*x^2) - 5*b*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^
3 - 3*e^4*x^4)) + 12*c*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*e))*(d + e*x)
^3*Log[d + e*x])/(3*e^6*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4, x]
```

fricas [B] time = 0.41, size = 487, normalized size = 2.24

$$\frac{3c^3e^5x^5+47c^3d^5-65bc^2d^4e-a^2be^5+22\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6abc\right)d^2e^3-\left(ab^2+a^2c\right)de^4-15\left(c^3de^4-bc^2e^5\right)x^4-9\left(7c^3d^2e^3-5bc^2de^4\right)x^3-3\left(3c^3d^3e^2+15bc^2d^2e^3-12\left(b^2c+ac^2\right)de^4+\left(b^3+6abc\right)e^5\right)x^2+3\left(27c^3d^4e-45bc^2d^3e^2+18\left(b^2c+ac^2\right)d^2e^3-\left(b^3+6abc\right)de^4-\left(ab^2+a^2c\right)e^5\right)x+12\left(5c^3d^5-5bc^2d^4e+\left(b^2c+ac^2\right)d^3e^2+\left(5c^3d^2e^3-5bc^2de^4+\left(b^2c+ac^2\right)e^5\right)x^3+3\left(5c^3d^3e^2-5bc^2d^2e^3+\left(b^2c+ac^2\right)de^4\right)x^2+3\left(5c^3d^4e-5bc^2d^3e^2+\left(b^2c+ac^2\right)d^2e^3\right)x\right)\log\left(ex+d\right)}{3\left(e^9x^3+3de^8x^2+3d^2e^7x+d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/3*(3*c^3*e^5*x^5 + 47*c^3*d^5 - 65*b*c^2*d^4*e - a^2*b*e^5 + 22*(b^2*c +
a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 - (a*b^2 + a^2*c)*d*e^4 - 15*(c^3*
d*e^4 - b*c^2*e^5)*x^4 - 9*(7*c^3*d^2*e^3 - 5*b*c^2*d*e^4)*x^3 - 3*(3*c^3*d
^3*e^2 + 15*b*c^2*d^2*e^3 - 12*(b^2*c + a*c^2)*d*e^4 + (b^3 + 6*a*b*c)*e^5)
*x^2 + 3*(27*c^3*d^4*e - 45*b*c^2*d^3*e^2 + 18*(b^2*c + a*c^2)*d^2*e^3 - (b
^3 + 6*a*b*c)*d*e^4 - (a*b^2 + a^2*c)*e^5)*x + 12*(5*c^3*d^5 - 5*b*c^2*d^4*
e + (b^2*c + a*c^2)*d^3*e^2 + (5*c^3*d^2*e^3 - 5*b*c^2*d*e^4 + (b^2*c + a*c
^2)*e^5)*x^3 + 3*(5*c^3*d^3*e^2 - 5*b*c^2*d^2*e^3 + (b^2*c + a*c^2)*d*e^4)*
x^2 + 3*(5*c^3*d^4*e - 5*b*c^2*d^3*e^2 + (b^2*c + a*c^2)*d^2*e^3)*x)*log(e*
x + d))/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.16, size = 314, normalized size = 1.45

$$4\left(5c^3d^2-5bc^2de+b^2ce^2+ac^2e^2\right)e^{(-6)}\log\left(|xe+d|\right)+\left(c^3x^2e^4-8c^3dxe^3+5bc^2xe^4\right)e^{(-8)}+\frac{\left(47c^3d^5-65bc^2d^4e+22b^2cd^3e^2+22ac^2d^3e^2-b^3d^2e^3-6abcd^2e^3-ab^2de^4-a^2cde^4-a^2be^5+3\left(20c^3d^3e^2-30bc^2d^2e^3+12b^2cde^4+12ac^2de^4-b^3e^5-6abce^5\right)x^2+3\left(35c^3d^4e-50bc^2d^3e^2+18b^2cd^2e^3+18ac^2d^2e^3-b^3de^4-6abcde^4-ab^2e^5-a^2ce^5\right)x\right)e^{(-6)}}{3\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 4*(5*c^3*d^2 - 5*b*c^2*d*e + b^2*c*e^2 + a*c^2*e^2)*e^(-6)*log(abs(x*e + d)
) + (c^3*x^2*e^4 - 8*c^3*d*x*e^3 + 5*b*c^2*x*e^4)*e^(-8) + 1/3*(47*c^3*d^5
- 65*b*c^2*d^4*e + 22*b^2*c*d^3*e^2 + 22*a*c^2*d^3*e^2 - b^3*d^2*e^3 - 6*a*
b*c*d^2*e^3 - a*b^2*d*e^4 - a^2*c*d*e^4 - a^2*b*e^5 + 3*(20*c^3*d^3*e^2 - 3
0*b*c^2*d^2*e^3 + 12*b^2*c*d*e^4 + 12*a*c^2*d*e^4 - b^3*e^5 - 6*a*b*c*e^5)*
x^2 + 3*(35*c^3*d^4*e - 50*b*c^2*d^3*e^2 + 18*b^2*c*d^2*e^3 + 18*a*c^2*d^2*
e^3 - b^3*d*e^4 - 6*a*b*c*d*e^4 - a*b^2*e^5 - a^2*c*e^5)*x)*e^(-6)/(x*e + d
)^3
```

maple [B] time = 0.05, size = 495, normalized size = 2.28

$$-\frac{a^2b}{3(ex+d)^3e}+\frac{2a^2cd}{3(ex+d)^3e^2}+\frac{2ab^2d}{3(ex+d)^3e^2}-\frac{2abcd^2}{(ex+d)^3e^3}+\frac{4ac^2d^3}{3(ex+d)^3e^4}-\frac{b^3d^2}{3(ex+d)^3e^3}+\frac{4b^2cd^3}{3(ex+d)^3e^4}-\frac{5bc^2d^4}{3(ex+d)^3e^5}+\frac{2c^3d^5}{3(ex+d)^3e^6}-\frac{a^2c}{(ex+d)^2e^2}-\frac{ab^2}{(ex+d)^2e^2}+\frac{6abcd}{(ex+d)^2e^3}-\frac{6ac^2d^2}{(ex+d)^2e^4}+\frac{b^3d}{(ex+d)^2e^3}-\frac{6b^2cd^2}{(ex+d)^2e^4}+\frac{10bc^2d^3}{(ex+d)^2e^5}-\frac{5c^3d^4}{(ex+d)^2e^6}+\frac{c^3x^2}{e^4}-\frac{6abc}{(ex+d)e^3}+\frac{12ac^2d}{(ex+d)e^4}+\frac{4ac^2\ln(ex+d)}{e^4}-\frac{b^3}{(ex+d)e^3}+\frac{12b^2cd}{(ex+d)e^4}+\frac{4b^2c\ln(ex+d)}{e^4}-\frac{30bc^2d^2}{(ex+d)e^5}-\frac{20bc^2d\ln(ex+d)}{e^5}+\frac{5bc^2x}{e^4}+\frac{20c^3d^3}{(ex+d)e^6}+\frac{20c^3d^2\ln(ex+d)}{e^6}-\frac{8c^3dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x)
```

```
[Out] 6/e^3/(e*x+d)^2*a*b*c*d-2/e^3/(e*x+d)^3*d^2*a*b*c-1/e^3/(e*x+d)*b^3-1/3/e/(
e*x+d)^3*a^2*b-1/3/e^3/(e*x+d)^3*d^2*b^3+2/3/e^6/(e*x+d)^3*c^3*d^5+20/e^6/(
e*x+d)*c^3*d^3+5*c^2/e^4*b*x-8*c^3/e^5*x*d+4*c^2/e^4*ln(e*x+d)*a+4*c/e^4*ln
(e*x+d)*b^2+20*c^3/e^6*ln(e*x+d)*d^2-1/e^2/(e*x+d)^2*a*b^2+1/e^3/(e*x+d)^2*
b^3*d-5/e^6/(e*x+d)^2*c^3*d^4-1/e^2/(e*x+d)^2*a^2*c-6/e^4/(e*x+d)^2*a*c^2*d
^2-6/e^4/(e*x+d)^2*b^2*c*d^2-30/e^5/(e*x+d)*b*c^2*d^2-5/3/e^5/(e*x+d)^3*b*c
^2*d^4+10/e^5/(e*x+d)^2*b*c^2*d^3+2/3/e^2/(e*x+d)^3*a^2*c*d+2/3/e^2/(e*x+d)
```

```
^3*d*a*b^2+4/3/e^4/(e*x+d)^3*a*c^2*d^3+4/3/e^4/(e*x+d)^3*d^3*b^2*c-20*c^2/e
^5*ln(e*x+d)*b*d-6/e^3/(e*x+d)*a*b*c+12/e^4/(e*x+d)*c^2*a*d+12/e^4/(e*x+d)*
b^2*c*d+c^3*x^2/e^4
```

maxima [A] time = 0.63, size = 327, normalized size = 1.51

$$\frac{47\,c^3d^5 - 65\,bc^2d^4e - a^2be^5 + 22\left(b^2c + ac^2\right)d^3e^2 - \left(b^3 + 6\,abc\right)d^2e^3 - \left(ab^2 + a^2c\right)de^4 + 3\left(20\,c^3d^3e^2 - 30\,bc^2d^2e^3 + 12\left(b^2c + ac^2\right)de^4 - \left(b^3 + 6\,abc\right)e^5\right)x^2 + 3\left(35\,c^3d^4e - 50\,bc^2d^3e^2 + 18\left(b^2c + ac^2\right)d^2e^3 - \left(b^3 + 6\,abc\right)de^4 - \left(ab^2 + a^2c\right)e^5\right)x}{3\left(e^9x^3 + 3\,de^8x^2 + 3\,d^2e^7x + d^3e^6\right)} + \frac{c^3ex^2 - \left(8\,c^3d - 5\,bc^2e\right)x}{e^5} + \frac{4\left(5\,c^3d^2 - 5\,bc^2de + \left(b^2c + ac^2\right)e^2\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/3*(47*c^3*d^5 - 65*b*c^2*d^4*e - a^2*b*e^5 + 22*(b^2*c + a*c^2)*d^3*e^2 -
 (b^3 + 6*a*b*c)*d^2*e^3 - (a*b^2 + a^2*c)*d*e^4 + 3*(20*c^3*d^3*e^2 - 30*b
*c^2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 - (b^3 + 6*a*b*c)*e^5)*x^2 + 3*(35*
c^3*d^4*e - 50*b*c^2*d^3*e^2 + 18*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)
*d*e^4 - (a*b^2 + a^2*c)*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3
*e^6) + (c^3*e*x^2 - (8*c^3*d - 5*b*c^2*e)*x)/e^5 + 4*(5*c^3*d^2 - 5*b*c^2*
d*e + (b^2*c + a*c^2)*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.86, size = 349, normalized size = 1.61

$$x\left(\frac{5\,b\,c^2}{e^4} - \frac{8\,c^3\,d}{e^5}\right) - \frac{x\left(a^2\,c\,e^4 + a\,b^2\,e^4 + 6\,a\,b\,c\,d\,e^3 - 18\,a\,c^2\,d^2\,e^2 + b^3\,d\,e^3 - 18\,b^2\,c\,d^2\,e^2 + 50\,b\,c^2\,d^3\,e - 35\,c^3\,d^4\right) + x^2\left(b^3\,e^4 - 12\,b^2\,c\,d\,e^3 + 30\,b\,c^2\,d^2\,e^2 + 6\,a\,b\,c\,e^4 - 20\,c^3\,d^3\,e - 12\,a\,c^2\,d\,e^3\right) + \frac{a^2\,b\,e^5 + a^2\,c\,d\,e^4 + a\,b^2\,d\,e^4 + 6\,a\,b\,c\,d^2\,e^3 - 22\,a\,c^2\,d^3\,e^2 + b^3\,d^2\,e^3 - 22\,b^2\,c\,d^3\,e^2 + 65\,b\,c^2\,d^4\,e - 47\,c^3\,d^5}{3\,e}}{d^3\,e^5 + 3\,d^2\,e^6\,x + 3\,d\,e^7\,x^2 + e^8\,x^3} + \frac{\ln\left(d + e\,x\right)\left(4\,b^2\,c\,e^2 - 20\,b\,c^2\,d\,e + 20\,c^3\,d^2 + 4\,a\,c^2\,e^2\right)}{e^6} + \frac{c^3\,x^2}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x)
```

```
[Out] x*((5*b*c^2)/e^4 - (8*c^3*d)/e^5) - (x*(a*b^2*e^4 - 35*c^3*d^4 + a^2*c*e^4
+ b^3*d*e^3 - 18*a*c^2*d^2*e^2 - 18*b^2*c*d^2*e^2 + 50*b*c^2*d^3*e + 6*a*b*
c*d*e^3) + x^2*(b^3*e^4 - 20*c^3*d^3*e + 30*b*c^2*d^2*e^2 + 6*a*b*c*e^4 - 1
2*a*c^2*d*e^3 - 12*b^2*c*d*e^3) + (a^2*b*e^5 - 47*c^3*d^5 + b^3*d^2*e^3 - 2
2*a*c^2*d^3*e^2 - 22*b^2*c*d^3*e^2 + a*b^2*d*e^4 + a^2*c*d*e^4 + 65*b*c^2*d
^4*e + 6*a*b*c*d^2*e^3)/(3*e))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x
^2) + (log(d + e*x)*(20*c^3*d^2 + 4*a*c^2*e^2 + 4*b^2*c*e^2 - 20*b*c^2*d*e)
)/e^6 + (c^3*x^2)/e^4
```

sympy [A] time = 21.03, size = 379, normalized size = 1.75

$$\frac{c^3x^2}{e^4} + \frac{4c\left(ace^2 + b^2e^2 - 5bcde + 5c^2d^2\right)\log\left(d + ex\right)}{e^6} + x\left(\frac{5bc^2}{e^4} - \frac{8c^3d}{e^5}\right) + \frac{-a^2be^5 - a^2cde^4 - ab^2de^4 - 6abcd^2e^3 + 22ac^2d^3e^2 - b^3d^2e^3 + 22b^2cd^3e^2 - 65bc^2d^4e + 47c^3d^5 + x^2\left(-18abce^5 + 36ac^2de^4 - 3b^3e^5 + 36b^2cde^4 - 90bc^2d^2e^3 + 60c^3d^3e^2\right) + x\left(-3a^2ce^5 - 3ab^2e^5 - 18abcde^4 + 54ac^2d^2e^3 - 3b^3de^4 + 54b^2cd^2e^3 - 150bc^2d^3e^2 + 105c^3d^4e\right)}{3d^3e^6 + 9d^2e^7x + 9de^8x^2 + 3e^9x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**4,x)
```

```
[Out] c**3*x**2/e**4 + 4*c*(a*c*e**2 + b**2*e**2 - 5*b*c*d*e + 5*c**2*d**2)*log(d
 + e*x)/e**6 + x*(5*b*c**2/e**4 - 8*c**3*d/e**5) + (-a**2*b*e**5 - a**2*c*d
*e**4 - a*b**2*d*e**4 - 6*a*b*c*d**2*e**3 + 22*a*c**2*d**3*e**2 - b**3*d**2
*e**3 + 22*b**2*c*d**3*e**2 - 65*b*c**2*d**4*e + 47*c**3*d**5 + x**2*(-18*a
*b*c*e**5 + 36*a*c**2*d*e**4 - 3*b**3*e**5 + 36*b**2*c*d*e**4 - 90*b*c**2*d
**2*e**3 + 60*c**3*d**3*e**2) + x*(-3*a**2*c*e**5 - 3*a*b**2*e**5 - 18*a*b*
c*d*e**4 + 54*a*c**2*d**2*e**3 - 3*b**3*d*e**4 + 54*b**2*c*d**2*e**3 - 150*
b*c**2*d**3*e**2 + 105*c**3*d**4*e))/(3*d**3*e**6 + 9*d**2*e**7*x + 9*d*e**
8*x**2 + 3*e**9*x**3)
```

3.1321 $\int \frac{(b+2cx)(a+bx+cx^2)^2}{(d+ex)^5} dx$

Optimal. Leaf size=227

$$-\frac{4c\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}+\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5bd\right.}{3e^6(d+e\right.}$$

Rubi [A] time = 0.21, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{4c\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}+\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6(d+ex)^3}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^2}{4e^6(d+ex)^4}-\frac{5c^2(2cd-be)\log(d+ex)}{e^6}+\frac{2c^3x}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (2*c^3*x)/e^5 + ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2)/(4*e^6*(d + e*x)^
4) - (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/
(3*e^6*(d + e*x)^3) + ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d -
 3*a*e)))/(2*e^6*(d + e*x)^2) - (4*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*
e)))/(e^6*(d + e*x)) - (5*c^2*(2*c*d - b*e)*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx &= \int \left(\frac{2c^3}{e^5}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde\right.}{e^5(d+ex)^4}\right.\\ &= \frac{2c^3x}{e^5}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2}{4e^6(d+ex)^4}-\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5\right.}{3e^6(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.18, size = 292, normalized size = 1.29

$$-\frac{2ce^2\left(a^2e^2(d+4ex)+3abe\left(d^2+4dex+6e^2x^2\right)+6b^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+be^3\left(3a^2e^2+2abe(d+4ex)+b^2\left(d^2+4dex+6e^2x^2\right)\right)+c^2e\left(12ae\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)-5bd\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)+60c^2(d+ex)^4(2cd-be)\log(d+ex)+2c^3\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)}{12e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(2*c^3*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*
d*e^4*x^4 - 12*e^5*x^5) + b*e^3*(3*a^2*e^2 + 2*a*b*e*(d + 4*e*x) + b^2*(d^2
 + 4*d*e*x + 6*e^2*x^2)) + 2*c*e^2*(a^2*e^2*(d + 4*e*x) + 3*a*b*e*(d^2 + 4*
d*e*x + 6*e^2*x^2) + 6*b^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) + c
^2*e*(12*a*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - 5*b*d*(25*d^3 +
88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) + 60*c^2*(2*c*d - b*e)*(d + e*x)^
4*Log[d + e*x])/(e^6*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5, x]
```

fricas [B] time = 0.43, size = 458, normalized size = 2.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(24*c^3*e^5*x^5 + 96*c^3*d*e^4*x^4 - 154*c^3*d^5 + 125*b*c^2*d^4*e - 3
*a^2*b*e^5 - 12*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 - 2*(a*b^
2 + a^2*c)*d*e^4 - 48*(2*c^3*d^2*e^3 - 5*b*c^2*d*e^4 + (b^2*c + a*c^2)*e^5)
*x^3 - 6*(84*c^3*d^3*e^2 - 90*b*c^2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 + (b
^3 + 6*a*b*c)*e^5)*x^2 - 4*(124*c^3*d^4*e - 110*b*c^2*d^3*e^2 + 12*(b^2*c +
 a*c^2)*d^2*e^3 + (b^3 + 6*a*b*c)*d*e^4 + 2*(a*b^2 + a^2*c)*e^5)*x - 60*(2*
c^3*d^5 - b*c^2*d^4*e + (2*c^3*d*e^4 - b*c^2*e^5)*x^4 + 4*(2*c^3*d^2*e^3 -
b*c^2*d*e^4)*x^3 + 6*(2*c^3*d^3*e^2 - b*c^2*d^2*e^3)*x^2 + 4*(2*c^3*d^4*e -
 b*c^2*d^3*e^2)*x)*log(e*x + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 +
4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.20, size = 525, normalized size = 2.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 2*(x*e + d)*c^3*e^(-6) + 5*(2*c^3*d - b*c^2*e)*e^(-6)*log(abs(x*e + d)*e^(-
1)/(x*e + d)^2) - 1/12*(240*c^3*d^2*e^22/(x*e + d) - 120*c^3*d^3*e^22/(x*e
+ d)^2 + 40*c^3*d^4*e^22/(x*e + d)^3 - 6*c^3*d^5*e^22/(x*e + d)^4 - 240*b*c
^2*d*e^23/(x*e + d) + 180*b*c^2*d^2*e^23/(x*e + d)^2 - 80*b*c^2*d^3*e^23/(x
*e + d)^3 + 15*b*c^2*d^4*e^23/(x*e + d)^4 + 48*b^2*c*e^24/(x*e + d) + 48*a*
c^2*e^24/(x*e + d) - 72*b^2*c*d*e^24/(x*e + d)^2 - 72*a*c^2*d*e^24/(x*e + d
)^2 + 48*b^2*c*d^2*e^24/(x*e + d)^3 + 48*a*c^2*d^2*e^24/(x*e + d)^3 - 12*b^
2*c*d^3*e^24/(x*e + d)^4 - 12*a*c^2*d^3*e^24/(x*e + d)^4 + 6*b^3*e^25/(x*e
+ d)^2 + 36*a*b*c*e^25/(x*e + d)^2 - 8*b^3*d*e^25/(x*e + d)^3 - 48*a*b*c*d*
e^25/(x*e + d)^3 + 3*b^3*d^2*e^25/(x*e + d)^4 + 18*a*b*c*d^2*e^25/(x*e + d)
^4 + 8*a*b^2*e^26/(x*e + d)^3 + 8*a^2*c*e^26/(x*e + d)^3 - 6*a*b^2*d*e^26/(
x*e + d)^4 - 6*a^2*c*d*e^26/(x*e + d)^4 + 3*a^2*b*e^27/(x*e + d)^4)*e^(-28)
```

maple [B] time = 0.06, size = 507, normalized size = 2.23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x)
```

```
[Out] -3/2/e^3/(e*x+d)^4*d^2*a*b*c+4/e^3/(e*x+d)^3*a*b*c*d+1/2/e^2/(e*x+d)^4*a^2*
c*d-15/e^5/(e*x+d)^2*b*c^2*d^2-4*c/e^4/(e*x+d)*b^2-20*c^3/e^6/(e*x+d)*d^2-4
*c^2/e^4/(e*x+d)*a-2/3/e^2/(e*x+d)^3*a^2*c-2/3/e^2/(e*x+d)^3*a*b^2+2/3/e^3/
```

```
(e*x+d)^3*b^3*d-10/3/e^6/(e*x+d)^3*c^3*d^4+10/e^6/(e*x+d)^2*c^3*d^3-1/4/e/(
e*x+d)^4*a^2*b-1/4/e^3/(e*x+d)^4*d^2*b^3+5*c^2/e^5*ln(e*x+d)*b-10*c^3/e^6*l
n(e*x+d)*d+1/2/e^6/(e*x+d)^4*c^3*d^5-1/2/e^3/(e*x+d)^2*b^3-3/e^3/(e*x+d)^2*
a*b*c+6/e^4/(e*x+d)^2*c^2*a*d+6/e^4/(e*x+d)^2*b^2*c*d+20*c^2/e^5/(e*x+d)*b*
d-4/e^4/(e*x+d)^3*a*c^2*d^2-4/e^4/(e*x+d)^3*b^2*c*d^2-5/4/e^5/(e*x+d)^4*d^4
*b*c^2+20/3/e^5/(e*x+d)^3*b*c^2*d^3+1/2/e^2/(e*x+d)^4*d*a*b^2+1/e^4/(e*x+d)
^4*a*c^2*d^3+1/e^4/(e*x+d)^4*d^3*b^2*c+2*c^3*x/e^5
```

maxima [A] time = 0.66, size = 338, normalized size = 1.49

$$-\frac{154 c^3 d^5 - 125 b c^2 d^4 e + 3 a^2 b e^5 + 12 \left(b^2 c + a c^2\right) d^3 e^2 + \left(b^3 + 6 a b c\right) d^2 e^3 + 2 \left(a b^2 + a^2 c\right) d e^4 + 48 \left(5 c^3 d^2 e^3 - 5 b c^2 d e^4 + \left(b^2 c + a c^2\right) e^5\right) x^3 + 6 \left(100 c^3 d^3 e^2 - 90 b c^2 d^2 e^3 + 12 \left(b^2 c + a c^2\right) d e^4 + \left(b^3 + 6 a b c\right) e^5\right) x^2 + 4 \left(130 c^3 d^4 e - 110 b c^2 d^3 e^2 + 12 \left(b^2 c + a c^2\right) d^2 e^3 + \left(b^3 + 6 a b c\right) d e^4 + 2 \left(a b^2 + a^2 c\right) e^5\right) x}{12 \left(e^{10} x^4 + 4 d e^9 x^3 + 6 d^2 e^8 x^2 + 4 d^3 e^7 x + d^4 e^6\right)} + \frac{2 c^3 x}{e^5} - \frac{5 \left(2 c^3 d - b c^2 e\right) \log\left(e x + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(154*c^3*d^5 - 125*b*c^2*d^4*e + 3*a^2*b*e^5 + 12*(b^2*c + a*c^2)*d^3
*e^2 + (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4 + 48*(5*c^3*d^2*e^
3 - 5*b*c^2*d*e^4 + (b^2*c + a*c^2)*e^5)*x^3 + 6*(100*c^3*d^3*e^2 - 90*b*c^
2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 + (b^3 + 6*a*b*c)*e^5)*x^2 + 4*(130*c^
3*d^4*e - 110*b*c^2*d^3*e^2 + 12*(b^2*c + a*c^2)*d^2*e^3 + (b^3 + 6*a*b*c)*
d*e^4 + 2*(a*b^2 + a^2*c)*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 +
 4*d^3*e^7*x + d^4*e^6) + 2*c^3*x/e^5 - 5*(2*c^3*d - b*c^2*e)*log(e*x + d)/
e^6
```

mupad [B] time = 1.92, size = 369, normalized size = 1.63

$$\frac{2\,c^3\,x}{e^5}-\frac{x\,\left(\frac{2\,a^2\,c\,e^4}{3}+\frac{2\,a\,b^2\,e^4}{3}+2\,a\,b\,c\,d\,e^3+4\,a\,c^2\,d^2\,e^2+\frac{b^3\,d\,e^3}{3}+4\,b^2\,c\,d^2\,e^2-\frac{110\,b\,c^2\,d^3\,e}{3}+\frac{130\,c^3\,d^4}{3}\right)+x^2\,\left(\frac{b^3\,e^4}{2}+6\,b^2\,c\,d\,e^3-45\,b\,c^2\,d^2\,e^2+3\,a\,b\,c\,e^4+50\,c^3\,d^3\,e+6\,a\,c^2\,d\,e^3\right)+x^3\,\left(4\,b^2\,c\,e^4-20\,b\,c^2\,d\,e^3+20\,c^3\,d^2\,e^2+4\,a\,c^2\,e^4\right)+\frac{3\,a^2\,b\,e^5+2\,a^2\,c\,d\,e^4+2\,a\,b^2\,d\,e^4+6\,a\,b\,c\,d^2\,e^3+12\,a\,c^2\,d^3\,e^2+b^3\,d^2\,e^3+12\,b^2\,c\,d^3\,e^2-125\,b\,c^2\,d^4\,e+154\,c^3\,d^5}{12\,e}}{d^4\,e^5+4\,d^3\,e^6\,x+6\,d^2\,e^7\,x^2+4\,d\,e^8\,x^3+e^9\,x^4}-\frac{\ln\left(d+e\,x\right)\,\left(10\,c^3\,d-5\,b\,c^2\,e\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x)
```

```
[Out] (2*c^3*x)/e^5 - (x*((130*c^3*d^4)/3 + (2*a*b^2*e^4)/3 + (2*a^2*c*e^4)/3 + (
b^3*d*e^3)/3 + 4*a*c^2*d^2*e^2 + 4*b^2*c*d^2*e^2 - (110*b*c^2*d^3*e)/3 + 2*
a*b*c*d*e^3) + x^2*((b^3*e^4)/2 + 50*c^3*d^3*e - 45*b*c^2*d^2*e^2 + 3*a*b*c
*e^4 + 6*a*c^2*d*e^3 + 6*b^2*c*d*e^3) + x^3*(4*a*c^2*e^4 + 4*b^2*c*e^4 + 20
*c^3*d^2*e^2 - 20*b*c^2*d*e^3) + (154*c^3*d^5 + 3*a^2*b*e^5 + b^3*d^2*e^3 +
 12*a*c^2*d^3*e^2 + 12*b^2*c*d^3*e^2 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - 125*
b*c^2*d^4*e + 6*a*b*c*d^2*e^3)/(12*e))/(d^4*e^5 + e^9*x^4 + 4*d^3*e^6*x + 4
*d*e^8*x^3 + 6*d^2*e^7*x^2) - (log(d + e*x)*(10*c^3*d - 5*b*c^2*e))/e^6
```

sympy [A] time = 58.01, size = 401, normalized size = 1.77

$$\frac{2c^3x}{e^5} + \frac{5c^2\left(be - 2cd\right)\log\left(d + ex\right)}{e^6} + \frac{-3a^2be^5 - 2a^2cde^4 - 2ab^2de^4 - 6abcd^2e^3 - 12ac^2d^3e^2 - b^3d^2e^3 - 12b^2cd^3e^2 + 125bc^2d^4e - 154c^3d^5 + x^3\left(-48ac^2e^5 - 48b^2ce^5 + 240bc^2de^4 - 240c^3d^2e^3\right) + x^2\left(-36abce^5 - 72ac^2de^4 - 6b^3e^5 - 72b^2cde^4 + 540bc^2d^2e^3 - 600c^3d^3e^2\right) + x\left(-8a^2ce^5 - 8ab^2e^5 - 24abcde^4 - 48ac^2d^2e^3 - 4b^3de^4 - 48b^2cd^2e^3 + 440bc^2d^3e^2 - 520c^3d^4e\right)}{12d^4e^6 + 48d^3e^7x + 72d^2e^8x^2 + 48de^9x^3 + 12e^{10}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**5,x)
```

```
[Out] 2*c**3*x/e**5 + 5*c**2*(b*e - 2*c*d)*log(d + e*x)/e**6 + (-3*a**2*b*e**5 -
2*a**2*c*d*e**4 - 2*a*b**2*d*e**4 - 6*a*b*c*d**2*e**3 - 12*a*c**2*d**3*e**2
 - b**3*d**2*e**3 - 12*b**2*c*d**3*e**2 + 125*b*c**2*d**4*e - 154*c**3*d**5
 + x**3*(-48*a*c**2*e**5 - 48*b**2*c*e**5 + 240*b*c**2*d*e**4 - 240*c**3*d*
*2*e**3) + x**2*(-36*a*b*c*e**5 - 72*a*c**2*d*e**4 - 6*b**3*e**5 - 72*b**2*
c*d*e**4 + 540*b*c**2*d**2*e**3 - 600*c**3*d**3*e**2) + x*(-8*a**2*c*e**5 -
 8*a*b**2*e**5 - 24*a*b*c*d*e**4 - 48*a*c**2*d**2*e**3 - 4*b**3*d*e**4 - 48
*b**2*c*d**2*e**3 + 440*b*c**2*d**3*e**2 - 520*c**3*d**4*e))/(12*d**4*e**6
+ 48*d**3*e**7*x + 72*d**2*e**8*x**2 + 48*d*e**9*x**3 + 12*e**10*x**4)
```

3.1322 $\int(b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=411

$$\frac{(d+ex)^8\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{8e^8}+\frac{3c^2(d\ \cdots}{}$$

Rubi [A] time = 0.72, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^5)/(5*e^8) + ((c*d^2 -
b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^6
)/(6*e^8) - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 -
 c*e*(7*b*d - 3*a*e))*(d + e*x)^7)/(7*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2
*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d
^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^8)/(8*e^8) - (5*c*(2*c*d - b*e)*(7*c^
2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^9)/(9*e^8) + (3*c^2*(14*c^
2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^10)/(10*e^8) - (7*c^3*(2
*c*d - b*e)*(d + e*x)^11)/(11*e^8) + (c^4*(d + e*x)^12)/(6*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int(b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^3\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^4}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(1\ \cdots}{}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^5}{5e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2\ \cdots\right.}{}$$

Mathematica [A] time = 0.24, size = 735, normalized size = 1.79

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d^4*x + (a^2*d^3*(3*b^2*d + 2*a*c*d + 4*a*b*e)*x^2)/2 + (a*d^2*(3*b^3
*d^2 + 12*a*b^2*d*e + 8*a^2*c*d*e + 3*a*b*(3*c*d^2 + 2*a*e^2))*x^3)/3 + (d*
(b^4*d^3 + 12*a*b^3*d^2*e + 4*a^2*b*e*(9*c*d^2 + a*e^2) + 6*a^2*c*d*(c*d^2
+ 2*a*e^2) + 6*a*b^2*d*(2*c*d^2 + 3*a*e^2))*x^4)/4 + ((4*b^4*d^3*e + 8*a^2*
c*d*e*(3*c*d^2 + a*e^2) + 12*a*b^2*d*e*(4*c*d^2 + a*e^2) + b^3*(5*c*d^4 + 1
8*a*d^2*e^2) + a*b*(15*c^2*d^4 + 54*a*c*d^2*e^2 + a^2*e^4))*x^5)/5 + ((6*b^
```

```
4*d^2*e^2 + 12*a*b*c*d*e*(5*c*d^2 + 3*a*e^2) + 4*b^3*(5*c*d^3*e + 3*a*d*e^3
) + 2*a*c*(3*c^2*d^4 + 18*a*c*d^2*e^2 + a^2*e^4) + 3*b^2*(3*c^2*d^4 + 24*a*
c*d^2*e^2 + a^2*e^4))*x^6)/6 + ((4*b^4*d*e^3 + 24*a*c^2*d*e*(c*d^2 + a*e^2)
 + 12*b^2*c*d*e*(3*c*d^2 + 4*a*e^2) + 3*b^3*(10*c*d^2*e^2 + a*e^4) + b*c*(7
*c^2*d^4 + 90*a*c*d^2*e^2 + 9*a^2*e^4))*x^7)/7 + ((2*c^4*d^4 + b^4*e^4 + 4*
b^2*c*e^3*(5*b*d + 3*a*e) + 4*c^3*d^2*e*(7*b*d + 9*a*e) + 6*c^2*e^2*(9*b^2*
d^2 + 10*a*b*d*e + a^2*e^2))*x^8)/8 + (c*e*(8*c^3*d^3 + 5*b^3*e^3 + 6*c^2*d
*e*(7*b*d + 4*a*e) + 3*b*c*e^2*(12*b*d + 5*a*e))*x^9)/9 + (c^2*e^2*(12*c^2*
d^2 + 9*b^2*e^2 + 2*c*e*(14*b*d + 3*a*e))*x^10)/10 + (c^3*e^3*(8*c*d + 7*b*
e)*x^11)/11 + (c^4*e^4*x^12)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^4 \left(a+bx+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.44, size = 936, normalized size = 2.28

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/6*x^12*e^4*c^4 + 8/11*x^11*e^3*d*c^4 + 7/11*x^11*e^4*c^3*b + 6/5*x^10*e^2
*d^2*c^4 + 14/5*x^10*e^3*d*c^3*b + 9/10*x^10*e^4*c^2*b^2 + 3/5*x^10*e^4*c^3
*a + 8/9*x^9*e*d^3*c^4 + 14/3*x^9*e^2*d^2*c^3*b + 4*x^9*e^3*d*c^2*b^2 + 5/9
*x^9*e^4*c*b^3 + 8/3*x^9*e^3*d*c^3*a + 5/3*x^9*e^4*c^2*b*a + 1/4*x^8*d^4*c^
4 + 7/2*x^8*e*d^3*c^3*b + 27/4*x^8*e^2*d^2*c^2*b^2 + 5/2*x^8*e^3*d*c*b^3 +
1/8*x^8*e^4*b^4 + 9/2*x^8*e^2*d^2*c^3*a + 15/2*x^8*e^3*d*c^2*b*a + 3/2*x^8*
e^4*c*b^2*a + 3/4*x^8*e^4*c^2*a^2 + x^7*d^4*c^3*b + 36/7*x^7*e*d^3*c^2*b^2
+ 30/7*x^7*e^2*d^2*c*b^3 + 4/7*x^7*e^3*d*b^4 + 24/7*x^7*e*d^3*c^3*a + 90/7*
x^7*e^2*d^2*c^2*b*a + 48/7*x^7*e^3*d*c*b^2*a + 3/7*x^7*e^4*b^3*a + 24/7*x^7
*e^3*d*c^2*a^2 + 9/7*x^7*e^4*c*b*a^2 + 3/2*x^6*d^4*c^2*b^2 + 10/3*x^6*e*d^3
*c*b^3 + x^6*e^2*d^2*b^4 + x^6*d^4*c^3*a + 10*x^6*e*d^3*c^2*b*a + 12*x^6*e^
2*d^2*c*b^2*a + 2*x^6*e^3*d*b^3*a + 6*x^6*e^2*d^2*c^2*a^2 + 6*x^6*e^3*d*c*b
*a^2 + 1/2*x^6*e^4*b^2*a^2 + 1/3*x^6*e^4*c*a^3 + x^5*d^4*c*b^3 + 4/5*x^5*e*
d^3*b^4 + 3*x^5*d^4*c^2*b*a + 48/5*x^5*e*d^3*c*b^2*a + 18/5*x^5*e^2*d^2*b^3
*a + 24/5*x^5*e*d^3*c^2*a^2 + 54/5*x^5*e^2*d^2*c*b*a^2 + 12/5*x^5*e^3*d*b^2
*a^2 + 8/5*x^5*e^3*d*c*a^3 + 1/5*x^5*e^4*b*a^3 + 1/4*x^4*d^4*b^4 + 3*x^4*d^
4*c*b^2*a + 3*x^4*e*d^3*b^3*a + 3/2*x^4*d^4*c^2*a^2 + 9*x^4*e*d^3*c*b*a^2 +
 9/2*x^4*e^2*d^2*b^2*a^2 + 3*x^4*e^2*d^2*c*a^3 + x^4*e^3*d*b*a^3 + x^3*d^4*
b^3*a + 3*x^3*d^4*c*b*a^2 + 4*x^3*e*d^3*b^2*a^2 + 8/3*x^3*e*d^3*c*a^3 + 2*x
^3*e^2*d^2*b*a^3 + 3/2*x^2*d^4*b^2*a^2 + x^2*d^4*c*a^3 + 2*x^2*e*d^3*b*a^3
+ x*d^4*b*a^3
```

giac [B] time = 0.17, size = 908, normalized size = 2.21

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/6*c^4*x^12*e^4 + 8/11*c^4*d*x^11*e^3 + 6/5*c^4*d^2*x^10*e^2 + 8/9*c^4*d^3
*x^9*e + 1/4*c^4*d^4*x^8 + 7/11*b*c^3*x^11*e^4 + 14/5*b*c^3*d*x^10*e^3 + 14
```

```
/3*b*c^3*d^2*x^9*e^2 + 7/2*b*c^3*d^3*x^8*e + b*c^3*d^4*x^7 + 9/10*b^2*c^2*x
^10*e^4 + 3/5*a*c^3*x^10*e^4 + 4*b^2*c^2*d*x^9*e^3 + 8/3*a*c^3*d*x^9*e^3 +
27/4*b^2*c^2*d^2*x^8*e^2 + 9/2*a*c^3*d^2*x^8*e^2 + 36/7*b^2*c^2*d^3*x^7*e +
 24/7*a*c^3*d^3*x^7*e + 3/2*b^2*c^2*d^4*x^6 + a*c^3*d^4*x^6 + 5/9*b^3*c*x^9
*e^4 + 5/3*a*b*c^2*x^9*e^4 + 5/2*b^3*c*d*x^8*e^3 + 15/2*a*b*c^2*d*x^8*e^3 +
 30/7*b^3*c*d^2*x^7*e^2 + 90/7*a*b*c^2*d^2*x^7*e^2 + 10/3*b^3*c*d^3*x^6*e +
 10*a*b*c^2*d^3*x^6*e + b^3*c*d^4*x^5 + 3*a*b*c^2*d^4*x^5 + 1/8*b^4*x^8*e^4
 + 3/2*a*b^2*c*x^8*e^4 + 3/4*a^2*c^2*x^8*e^4 + 4/7*b^4*d*x^7*e^3 + 48/7*a*b
^2*c*d*x^7*e^3 + 24/7*a^2*c^2*d*x^7*e^3 + b^4*d^2*x^6*e^2 + 12*a*b^2*c*d^2*
x^6*e^2 + 6*a^2*c^2*d^2*x^6*e^2 + 4/5*b^4*d^3*x^5*e + 48/5*a*b^2*c*d^3*x^5*
e + 24/5*a^2*c^2*d^3*x^5*e + 1/4*b^4*d^4*x^4 + 3*a*b^2*c*d^4*x^4 + 3/2*a^2*
c^2*d^4*x^4 + 3/7*a*b^3*x^7*e^4 + 9/7*a^2*b*c*x^7*e^4 + 2*a*b^3*d*x^6*e^3 +
 6*a^2*b*c*d*x^6*e^3 + 18/5*a*b^3*d^2*x^5*e^2 + 54/5*a^2*b*c*d^2*x^5*e^2 +
3*a*b^3*d^3*x^4*e + 9*a^2*b*c*d^3*x^4*e + a*b^3*d^4*x^3 + 3*a^2*b*c*d^4*x^3
 + 1/2*a^2*b^2*x^6*e^4 + 1/3*a^3*c*x^6*e^4 + 12/5*a^2*b^2*d*x^5*e^3 + 8/5*a
^3*c*d*x^5*e^3 + 9/2*a^2*b^2*d^2*x^4*e^2 + 3*a^3*c*d^2*x^4*e^2 + 4*a^2*b^2*
d^3*x^3*e + 8/3*a^3*c*d^3*x^3*e + 3/2*a^2*b^2*d^4*x^2 + a^3*c*d^4*x^2 + 1/5
*a^3*b*x^5*e^4 + a^3*b*d*x^4*e^3 + 2*a^3*b*d^2*x^3*e^2 + 2*a^3*b*d^3*x^2*e
+ a^3*b*d^4*x
```

maple [B] time = 0.04, size = 1052, normalized size = 2.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/6*c^4*e^4*x^12+1/11*((b*e^4+8*c*d*e^3)*c^3+6*c^3*e^4*b)*x^11+1/10*((4*b*d
*e^3+12*c*d^2*e^2)*c^3+3*(b*e^4+8*c*d*e^3)*b*c^2+2*c*e^4*(a*c^2+2*b^2*c+(2*
a*c+b^2)*c))*x^10+1/9*((6*b*d^2*e^2+8*c*d^3*e)*c^3+3*(4*b*d*e^3+12*c*d^2*e^
2)*b*c^2+(b*e^4+8*c*d*e^3)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*e^4*(4*a*b*c+(
2*a*c+b^2)*b))*x^9+1/8*((4*b*d^3*e+2*c*d^4)*c^3+3*(6*b*d^2*e^2+8*c*d^3*e)*b
*c^2+(4*b*d*e^3+12*c*d^2*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e^4+8*c*d*e^
3)*(4*a*b*c+(2*a*c+b^2)*b)+2*c*e^4*(a*(2*a*c+b^2)+2*a*b^2+c*a^2))*x^8+1/7*(
b*d^4*c^3+3*(4*b*d^3*e+2*c*d^4)*b*c^2+(6*b*d^2*e^2+8*c*d^3*e)*(a*c^2+2*b^2*
c+(2*a*c+b^2)*c)+(4*b*d*e^3+12*c*d^2*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+(b*e^4+8*
c*d*e^3)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+6*c*e^4*a^2*b)*x^7+1/6*(3*b^2*d^4*c^
2+(4*b*d^3*e+2*c*d^4)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(6*b*d^2*e^2+8*c*d^3*e)
*(4*a*b*c+(2*a*c+b^2)*b)+(4*b*d*e^3+12*c*d^2*e^2)*(a*(2*a*c+b^2)+2*a*b^2+c*
a^2)+3*(b*e^4+8*c*d*e^3)*a^2*b+2*c*e^4*a^3)*x^6+1/5*(b*d^4*(a*c^2+2*b^2*c+(
2*a*c+b^2)*c)+(4*b*d^3*e+2*c*d^4)*(4*a*b*c+(2*a*c+b^2)*b)+(6*b*d^2*e^2+8*c*
d^3*e)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(4*b*d*e^3+12*c*d^2*e^2)*a^2*b+(b*e^
4+8*c*d*e^3)*a^3)*x^5+1/4*(b*d^4*(4*a*b*c+(2*a*c+b^2)*b)+(4*b*d^3*e+2*c*d^4
)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(6*b*d^2*e^2+8*c*d^3*e)*a^2*b+(4*b*d*e^3+
12*c*d^2*e^2)*a^3)*x^4+1/3*(b*d^4*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(4*b*d^3*
e+2*c*d^4)*a^2*b+(6*b*d^2*e^2+8*c*d^3*e)*a^3)*x^3+1/2*(3*b^2*d^4*a^2+(4*b*d
^3*e+2*c*d^4)*a^3)*x^2+b*d^4*a^3*x
```

maxima [A] time = 0.55, size = 729, normalized size = 1.77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/6*c^4*e^4*x^12 + 1/11*(8*c^4*d*e^3 + 7*b*c^3*e^4)*x^11 + 1/10*(12*c^4*d^2
*e^2 + 28*b*c^3*d*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*e^4)*x^10 + 1/9*(8*c^4*d^3*
e + 42*b*c^3*d^2*e^2 + 12*(3*b^2*c^2 + 2*a*c^3)*d*e^3 + 5*(b^3*c + 3*a*b*c^
2)*e^4)*x^9 + a^3*b*d^4*x + 1/8*(2*c^4*d^4 + 28*b*c^3*d^3*e + 18*(3*b^2*c^2
```

```
 + 2*a*c^3)*d^2*e^2 + 20*(b^3*c + 3*a*b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*
a^2*c^2)*e^4)*x^8 + 1/7*(7*b*c^3*d^4 + 12*(3*b^2*c^2 + 2*a*c^3)*d^3*e + 30*
(b^3*c + 3*a*b*c^2)*d^2*e^2 + 4*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^3 + 3*(a
*b^3 + 3*a^2*b*c)*e^4)*x^7 + 1/6*(3*(3*b^2*c^2 + 2*a*c^3)*d^4 + 20*(b^3*c +
 3*a*b*c^2)*d^3*e + 6*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^2 + 12*(a*b^3 +
3*a^2*b*c)*d*e^3 + (3*a^2*b^2 + 2*a^3*c)*e^4)*x^6 + 1/5*(a^3*b*e^4 + 5*(b^3
*c + 3*a*b*c^2)*d^4 + 4*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e + 18*(a*b^3 +
3*a^2*b*c)*d^2*e^2 + 4*(3*a^2*b^2 + 2*a^3*c)*d*e^3)*x^5 + 1/4*(4*a^3*b*d*e^
3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4 + 12*(a*b^3 + 3*a^2*b*c)*d^3*e + 6*(
3*a^2*b^2 + 2*a^3*c)*d^2*e^2)*x^4 + 1/3*(6*a^3*b*d^2*e^2 + 3*(a*b^3 + 3*a^2
*b*c)*d^4 + 4*(3*a^2*b^2 + 2*a^3*c)*d^3*e)*x^3 + 1/2*(4*a^3*b*d^3*e + (3*a^
2*b^2 + 2*a^3*c)*d^4)*x^2
```

mupad [B] time = 0.24, size = 768, normalized size = 1.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^3*(a*b^3*d^4 + 4*a^2*b^2*d^3*e + 2*a^3*b*d^2*e^2 + 3*a^2*b*c*d^4 + (8*a^3
*c*d^3*e)/3) + x^5*((a^3*b*e^4)/5 + b^3*c*d^4 + (4*b^4*d^3*e)/5 + (18*a*b^3
*d^2*e^2)/5 + (12*a^2*b^2*d*e^3)/5 + (24*a^2*c^2*d^3*e)/5 + 3*a*b*c^2*d^4 +
 (8*a^3*c*d*e^3)/5 + (48*a*b^2*c*d^3*e)/5 + (54*a^2*b*c*d^2*e^2)/5) + x^7*(
(3*a*b^3*e^4)/7 + b*c^3*d^4 + (4*b^4*d*e^3)/7 + (24*a^2*c^2*d*e^3)/7 + (36*
b^2*c^2*d^3*e)/7 + (30*b^3*c*d^2*e^2)/7 + (9*a^2*b*c*e^4)/7 + (24*a*c^3*d^3
*e)/7 + (48*a*b^2*c*d*e^3)/7 + (90*a*b*c^2*d^2*e^2)/7) + x^6*(a*c^3*d^4 + (
a^3*c*e^4)/3 + (a^2*b^2*e^4)/2 + (3*b^2*c^2*d^4)/2 + b^4*d^2*e^2 + 6*a^2*c^
2*d^2*e^2 + 2*a*b^3*d*e^3 + (10*b^3*c*d^3*e)/3 + 10*a*b*c^2*d^3*e + 6*a^2*b
*c*d*e^3 + 12*a*b^2*c*d^2*e^2) + x^8*((b^4*e^4)/8 + (c^4*d^4)/4 + (3*a^2*c^
2*e^4)/4 + (9*a*c^3*d^2*e^2)/2 + (27*b^2*c^2*d^2*e^2)/4 + (3*a*b^2*c*e^4)/2
 + (7*b*c^3*d^3*e)/2 + (5*b^3*c*d*e^3)/2 + (15*a*b*c^2*d*e^3)/2) + x^9*((5*
b^3*c*e^4)/9 + (8*c^4*d^3*e)/9 + (14*b*c^3*d^2*e^2)/3 + 4*b^2*c^2*d*e^3 + (
5*a*b*c^2*e^4)/3 + (8*a*c^3*d*e^3)/3) + x^4*((b^4*d^4)/4 + (3*a^2*c^2*d^4)/
2 + 3*a^3*c*d^2*e^2 + (9*a^2*b^2*d^2*e^2)/2 + 3*a*b^2*c*d^4 + 3*a*b^3*d^3*e
 + a^3*b*d*e^3 + 9*a^2*b*c*d^3*e) + (c^4*e^4*x^12)/6 + (c^3*e^3*x^11*(7*b*e
 + 8*c*d))/11 + (a^2*d^3*x^2*(3*b^2*d + 4*a*b*e + 2*a*c*d))/2 + (c^2*e^2*x^
10*(9*b^2*e^2 + 12*c^2*d^2 + 6*a*c*e^2 + 28*b*c*d*e))/10 + a^3*b*d^4*x
```

sympy [B] time = 0.21, size = 935, normalized size = 2.27

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**4*x + c**4*e**4*x**12/6 + x**11*(7*b*c**3*e**4/11 + 8*c**4*d*e**3
/11) + x**10*(3*a*c**3*e**4/5 + 9*b**2*c**2*e**4/10 + 14*b*c**3*d*e**3/5 +
6*c**4*d**2*e**2/5) + x**9*(5*a*b*c**2*e**4/3 + 8*a*c**3*d*e**3/3 + 5*b**3*
c*e**4/9 + 4*b**2*c**2*d*e**3 + 14*b*c**3*d**2*e**2/3 + 8*c**4*d**3*e/9) +
x**8*(3*a**2*c**2*e**4/4 + 3*a*b**2*c*e**4/2 + 15*a*b*c**2*d*e**3/2 + 9*a*c
**3*d**2*e**2/2 + b**4*e**4/8 + 5*b**3*c*d*e**3/2 + 27*b**2*c**2*d**2*e**2/
4 + 7*b*c**3*d**3*e/2 + c**4*d**4/4) + x**7*(9*a**2*b*c*e**4/7 + 24*a**2*c*
*2*d*e**3/7 + 3*a*b**3*e**4/7 + 48*a*b**2*c*d*e**3/7 + 90*a*b*c**2*d**2*e**
2/7 + 24*a*c**3*d**3*e/7 + 4*b**4*d*e**3/7 + 30*b**3*c*d**2*e**2/7 + 36*b**
2*c**2*d**3*e/7 + b*c**3*d**4) + x**6*(a**3*c*e**4/3 + a**2*b**2*e**4/2 + 6
*a**2*b*c*d*e**3 + 6*a**2*c**2*d**2*e**2 + 2*a*b**3*d*e**3 + 12*a*b**2*c*d*
*2*e**2 + 10*a*b*c**2*d**3*e + a*c**3*d**4 + b**4*d**2*e**2 + 10*b**3*c*d**
3*e/3 + 3*b**2*c**2*d**4/2) + x**5*(a**3*b*e**4/5 + 8*a**3*c*d*e**3/5 + 12*
```

```
a**2*b**2*d*e**3/5 + 54*a**2*b*c*d**2*e**2/5 + 24*a**2*c**2*d**3*e/5 + 18*a
*b**3*d**2*e**2/5 + 48*a*b**2*c*d**3*e/5 + 3*a*b*c**2*d**4 + 4*b**4*d**3*e/
5 + b**3*c*d**4) + x**4*(a**3*b*d*e**3 + 3*a**3*c*d**2*e**2 + 9*a**2*b**2*d
**2*e**2/2 + 9*a**2*b*c*d**3*e + 3*a**2*c**2*d**4/2 + 3*a*b**3*d**3*e + 3*a
*b**2*c*d**4 + b**4*d**4/4) + x**3*(2*a**3*b*d**2*e**2 + 8*a**3*c*d**3*e/3
+ 4*a**2*b**2*d**3*e + 3*a**2*b*c*d**4 + a*b**3*d**4) + x**2*(2*a**3*b*d**3
*e + a**3*c*d**4 + 3*a**2*b**2*d**4/2)
```

3.1323 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=411

$$\frac{(d+ex)^7 \left(6c^2e^2 \left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{c^2(d+ex)}{}$$

Rubi [A] time = 0.59, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{(d+ex)^7 \left(6c^2e^2 \left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{c^2(d+ex)^9 \left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{3e^8}-\frac{5c(d+ex)^8(2cd-be) \left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{8e^8}-\frac{(d+ex)^6(2cd-be) \left(ae^2-bde+cd^2\right) \left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{2e^8}+\frac{(d+ex)^5 \left(ae^2-bde+cd^2\right)^2 \left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{5e^8}-\frac{(d+ex)^4(2cd-be) \left(ae^2-bde+cd^2\right)^3}{4e^8}-\frac{7c^3(d+ex)^{10}(2cd-be)}{10e^8}+\frac{2c^4(d+ex)^{11}}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^4)/(4*e^8) + ((c*d^2 -
b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^5
)/(5*e^8) - ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c
*e*(7*b*d - 3*a*e))*(d + e*x)^6)/(2*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c
*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2
 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^7)/(7*e^8) - (5*c*(2*c*d - b*e)*(7*c^2*
d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^8)/(8*e^8) + (c^2*(14*c^2*d^
2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^9)/(3*e^8) - (7*c^3*(2*c*d -
 b*e)*(d + e*x)^10)/(10*e^8) + (2*c^4*(d + e*x)^11)/(11*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^3}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c\right.}{}\right.$$

$$= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^4}{4e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2\right.}{}$$

Mathematica [A] time = 0.20, size = 562, normalized size = 1.37

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d^3*x + (a^2*d^2*(3*b^2*d + 2*a*c*d + 3*a*b*e)*x^2)/2 + a*d*(b^3*d^2
 + 3*a*b^2*d*e + 2*a^2*c*d*e + a*b*(3*c*d^2 + a*e^2))*x^3 + ((b^4*d^3 + 9*a*
b^3*d^2*e + 6*a^2*c*d*(c*d^2 + a*e^2) + a^2*b*e*(27*c*d^2 + a*e^2) + 3*a*b^
2*d*(4*c*d^2 + 3*a*e^2))*x^4)/4 + ((3*b^4*d^2*e + 2*a^2*c*e*(9*c*d^2 + a*e^
2) + 3*a*b^2*e*(12*c*d^2 + a*e^2) + 3*a*b*c*d*(5*c*d^2 + 9*a*e^2) + b^3*(5*
c*d^3 + 9*a*d*e^2))*x^5)/5 + ((b^4*d*e^2 + 3*a*b*c*e*(5*c*d^2 + a*e^2) + 2*
```

```
a*c^2*d*(c*d^2 + 3*a*e^2) + 3*b^2*c*d*(c*d^2 + 4*a*e^2) + b^3*(5*c*d^2*e +
a*e^3))*x^6)/2 + ((15*b^3*c*d*e^2 + b^4*e^3 + 6*a*c^2*e*(3*c*d^2 + a*e^2) +
 3*b^2*c*e*(9*c*d^2 + 4*a*e^2) + b*c^2*d*(7*c*d^2 + 45*a*e^2))*x^7)/7 + (c*
(2*c^3*d^3 + 5*b^3*e^3 + 3*b*c*e^2*(9*b*d + 5*a*e) + 3*c^2*d*e*(7*b*d + 6*a
*e))*x^8)/8 + (c^2*e*(2*c^2*d^2 + 3*b^2*e^2 + c*e*(7*b*d + 2*a*e))*x^9)/3 +
 (c^3*e^2*(6*c*d + 7*b*e)*x^10)/10 + (2*c^4*e^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.39, size = 719, normalized size = 1.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/11*x^11*e^3*c^4 + 3/5*x^10*e^2*d*c^4 + 7/10*x^10*e^3*c^3*b + 2/3*x^9*e*d^
2*c^4 + 7/3*x^9*e^2*d*c^3*b + x^9*e^3*c^2*b^2 + 2/3*x^9*e^3*c^3*a + 1/4*x^8
*d^3*c^4 + 21/8*x^8*e*d^2*c^3*b + 27/8*x^8*e^2*d*c^2*b^2 + 5/8*x^8*e^3*c*b^
3 + 9/4*x^8*e^2*d*c^3*a + 15/8*x^8*e^3*c^2*b*a + x^7*d^3*c^3*b + 27/7*x^7*e
*d^2*c^2*b^2 + 15/7*x^7*e^2*d*c*b^3 + 1/7*x^7*e^3*b^4 + 18/7*x^7*e*d^2*c^3*
a + 45/7*x^7*e^2*d*c^2*b*a + 12/7*x^7*e^3*c*b^2*a + 6/7*x^7*e^3*c^2*a^2 + 3
/2*x^6*d^3*c^2*b^2 + 5/2*x^6*e*d^2*c*b^3 + 1/2*x^6*e^2*d*b^4 + x^6*d^3*c^3*
a + 15/2*x^6*e*d^2*c^2*b*a + 6*x^6*e^2*d*c*b^2*a + 1/2*x^6*e^3*b^3*a + 3*x^
6*e^2*d*c^2*a^2 + 3/2*x^6*e^3*c*b*a^2 + x^5*d^3*c*b^3 + 3/5*x^5*e*d^2*b^4 +
 3*x^5*d^3*c^2*b*a + 36/5*x^5*e*d^2*c*b^2*a + 9/5*x^5*e^2*d*b^3*a + 18/5*x^
5*e*d^2*c^2*a^2 + 27/5*x^5*e^2*d*c*b*a^2 + 3/5*x^5*e^3*b^2*a^2 + 2/5*x^5*e^
3*c*a^3 + 1/4*x^4*d^3*b^4 + 3*x^4*d^3*c*b^2*a + 9/4*x^4*e*d^2*b^3*a + 3/2*x
^4*d^3*c^2*a^2 + 27/4*x^4*e*d^2*c*b*a^2 + 9/4*x^4*e^2*d*b^2*a^2 + 3/2*x^4*e
^2*d*c*a^3 + 1/4*x^4*e^3*b*a^3 + x^3*d^3*b^3*a + 3*x^3*d^3*c*b*a^2 + 3*x^3*
e*d^2*b^2*a^2 + 2*x^3*e*d^2*c*a^3 + x^3*e^2*d*b*a^3 + 3/2*x^2*d^3*b^2*a^2 +
 x^2*d^3*c*a^3 + 3/2*x^2*e*d^2*b*a^3 + x*d^3*b*a^3
```

giac [A] time = 0.18, size = 705, normalized size = 1.72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/11*c^4*x^11*e^3 + 3/5*c^4*d*x^10*e^2 + 2/3*c^4*d^2*x^9*e + 1/4*c^4*d^3*x^
8 + 7/10*b*c^3*x^10*e^3 + 7/3*b*c^3*d*x^9*e^2 + 21/8*b*c^3*d^2*x^8*e + b*c^
3*d^3*x^7 + b^2*c^2*x^9*e^3 + 2/3*a*c^3*x^9*e^3 + 27/8*b^2*c^2*d*x^8*e^2 +
9/4*a*c^3*d*x^8*e^2 + 27/7*b^2*c^2*d^2*x^7*e + 18/7*a*c^3*d^2*x^7*e + 3/2*b
^2*c^2*d^3*x^6 + a*c^3*d^3*x^6 + 5/8*b^3*c*x^8*e^3 + 15/8*a*b*c^2*x^8*e^3 +
 15/7*b^3*c*d*x^7*e^2 + 45/7*a*b*c^2*d*x^7*e^2 + 5/2*b^3*c*d^2*x^6*e + 15/2
*a*b*c^2*d^2*x^6*e + b^3*c*d^3*x^5 + 3*a*b*c^2*d^3*x^5 + 1/7*b^4*x^7*e^3 +
12/7*a*b^2*c*x^7*e^3 + 6/7*a^2*c^2*x^7*e^3 + 1/2*b^4*d*x^6*e^2 + 6*a*b^2*c*
d*x^6*e^2 + 3*a^2*c^2*d*x^6*e^2 + 3/5*b^4*d^2*x^5*e + 36/5*a*b^2*c*d^2*x^5*
e + 18/5*a^2*c^2*d^2*x^5*e + 1/4*b^4*d^3*x^4 + 3*a*b^2*c*d^3*x^4 + 3/2*a^2*
c^2*d^3*x^4 + 1/2*a*b^3*x^6*e^3 + 3/2*a^2*b*c*x^6*e^3 + 9/5*a*b^3*d*x^5*e^2
```

```
 + 27/5*a^2*b*c*d*x^5*e^2 + 9/4*a*b^3*d^2*x^4*e + 27/4*a^2*b*c*d^2*x^4*e +
a*b^3*d^3*x^3 + 3*a^2*b*c*d^3*x^3 + 3/5*a^2*b^2*x^5*e^3 + 2/5*a^3*c*x^5*e^3
 + 9/4*a^2*b^2*d*x^4*e^2 + 3/2*a^3*c*d*x^4*e^2 + 3*a^2*b^2*d^2*x^3*e + 2*a^
3*c*d^2*x^3*e + 3/2*a^2*b^2*d^3*x^2 + a^3*c*d^3*x^2 + 1/4*a^3*b*x^4*e^3 + a
^3*b*d*x^3*e^2 + 3/2*a^3*b*d^2*x^2*e + a^3*b*d^3*x
```

maple [B] time = 0.04, size = 830, normalized size = 2.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/11*c^4*e^3*x^11+1/10*((b*e^3+6*c*d*e^2)*c^3+6*c^3*e^3*b)*x^10+1/9*((3*b*d
*e^2+6*c*d^2*e)*c^3+3*(b*e^3+6*c*d*e^2)*b*c^2+2*c*e^3*(a*c^2+2*b^2*c+(2*a*c
+b^2)*c))*x^9+1/8*((3*b*d^2*e+2*c*d^3)*c^3+3*(3*b*d*e^2+6*c*d^2*e)*b*c^2+(b
*e^3+6*c*d*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*e^3*(4*a*b*c+(2*a*c+b^2)*
b))*x^8+1/7*(b*d^3*c^3+3*(3*b*d^2*e+2*c*d^3)*b*c^2+(3*b*d*e^2+6*c*d^2*e)*(a
*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e^3+6*c*d*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+2*c*e
^3*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^7+1/6*(3*b^2*d^3*c^2+(3*b*d^2*e+2*c*d^3
)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(3*b*d*e^2+6*c*d^2*e)*(4*a*b*c+(2*a*c+b^2)*
b)+(b*e^3+6*c*d*e^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*c*e^3*a^2*b)*x^6+1/5*(
b*d^3*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(3*b*d^2*e+2*c*d^3)*(4*a*b*c+(2*a*c+b^2
)*b)+(3*b*d*e^2+6*c*d^2*e)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(b*e^3+6*c*d*e^2
)*a^2*b+2*c*e^3*a^3)*x^5+1/4*(b*d^3*(4*a*b*c+(2*a*c+b^2)*b)+(3*b*d^2*e+2*c*
d^3)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(3*b*d*e^2+6*c*d^2*e)*a^2*b+(b*e^3+6*c
*d*e^2)*a^3)*x^4+1/3*(b*d^3*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(3*b*d^2*e+2*c*
d^3)*a^2*b+(3*b*d*e^2+6*c*d^2*e)*a^3)*x^3+1/2*(3*b^2*d^3*a^2+(3*b*d^2*e+2*c
*d^3)*a^3)*x^2+b*d^3*a^3*x
```

maxima [A] time = 0.54, size = 565, normalized size = 1.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/11*c^4*e^3*x^11 + 1/10*(6*c^4*d*e^2 + 7*b*c^3*e^3)*x^10 + 1/3*(2*c^4*d^2*
e + 7*b*c^3*d*e^2 + (3*b^2*c^2 + 2*a*c^3)*e^3)*x^9 + 1/8*(2*c^4*d^3 + 21*b*
c^3*d^2*e + 9*(3*b^2*c^2 + 2*a*c^3)*d*e^2 + 5*(b^3*c + 3*a*b*c^2)*e^3)*x^8
+ a^3*b*d^3*x + 1/7*(7*b*c^3*d^3 + 9*(3*b^2*c^2 + 2*a*c^3)*d^2*e + 15*(b^3*
c + 3*a*b*c^2)*d*e^2 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^3)*x^7 + 1/2*((3*b^
2*c^2 + 2*a*c^3)*d^3 + 5*(b^3*c + 3*a*b*c^2)*d^2*e + (b^4 + 12*a*b^2*c + 6*
a^2*c^2)*d*e^2 + (a*b^3 + 3*a^2*b*c)*e^3)*x^6 + 1/5*(5*(b^3*c + 3*a*b*c^2)*
d^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e + 9*(a*b^3 + 3*a^2*b*c)*d*e^2
+ (3*a^2*b^2 + 2*a^3*c)*e^3)*x^5 + 1/4*(a^3*b*e^3 + (b^4 + 12*a*b^2*c + 6*a
^2*c^2)*d^3 + 9*(a*b^3 + 3*a^2*b*c)*d^2*e + 3*(3*a^2*b^2 + 2*a^3*c)*d*e^2)*
x^4 + (a^3*b*d*e^2 + (a*b^3 + 3*a^2*b*c)*d^3 + (3*a^2*b^2 + 2*a^3*c)*d^2*e)
*x^3 + 1/2*(3*a^3*b*d^2*e + (3*a^2*b^2 + 2*a^3*c)*d^3)*x^2
```

mupad [B] time = 0.18, size = 589, normalized size = 1.43

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((b^4*d^3)/4 + (a^3*b*e^3)/4 + (3*a^2*c^2*d^3)/2 + (9*a^2*b^2*d*e^2)/4
+ 3*a*b^2*c*d^3 + (9*a*b^3*d^2*e)/4 + (3*a^3*c*d*e^2)/2 + (27*a^2*b*c*d^2*e
```

```
)/4) + x^7*((b^4*e^3)/7 + b*c^3*d^3 + (6*a^2*c^2*e^3)/7 + (27*b^2*c^2*d^2*e
)/7 + (12*a*b^2*c*e^3)/7 + (18*a*c^3*d^2*e)/7 + (15*b^3*c*d*e^2)/7 + (45*a*
b*c^2*d*e^2)/7) + x^5*((2*a^3*c*e^3)/5 + b^3*c*d^3 + (3*b^4*d^2*e)/5 + (3*a
^2*b^2*e^3)/5 + (18*a^2*c^2*d^2*e)/5 + 3*a*b*c^2*d^3 + (9*a*b^3*d*e^2)/5 +
(36*a*b^2*c*d^2*e)/5 + (27*a^2*b*c*d*e^2)/5) + x^6*((a*b^3*e^3)/2 + a*c^3*d
^3 + (b^4*d*e^2)/2 + (3*b^2*c^2*d^3)/2 + 3*a^2*c^2*d*e^2 + (3*a^2*b*c*e^3)/
2 + (5*b^3*c*d^2*e)/2 + (15*a*b*c^2*d^2*e)/2 + 6*a*b^2*c*d*e^2) + x^8*((c^4
*d^3)/4 + (5*b^3*c*e^3)/8 + (27*b^2*c^2*d*e^2)/8 + (15*a*b*c^2*e^3)/8 + (9*
a*c^3*d*e^2)/4 + (21*b*c^3*d^2*e)/8) + x^3*(a*b^3*d^3 + 3*a^2*b^2*d^2*e + 3
*a^2*b*c*d^3 + a^3*b*d*e^2 + 2*a^3*c*d^2*e) + (2*c^4*e^3*x^11)/11 + (c^2*e*
x^9*(3*b^2*e^2 + 2*c^2*d^2 + 2*a*c*e^2 + 7*b*c*d*e))/3 + (c^3*e^2*x^10*(7*b
*e + 6*c*d))/10 + (a^2*d^2*x^2*(3*b^2*d + 3*a*b*e + 2*a*c*d))/2 + a^3*b*d^3
*x
```

sympy [A] time = 0.18, size = 726, normalized size = 1.77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**3*x + 2*c**4*e**3*x**11/11 + x**10*(7*b*c**3*e**3/10 + 3*c**4*d*e
**2/5) + x**9*(2*a*c**3*e**3/3 + b**2*c**2*e**3 + 7*b*c**3*d*e**2/3 + 2*c**
4*d**2*e/3) + x**8*(15*a*b*c**2*e**3/8 + 9*a*c**3*d*e**2/4 + 5*b**3*c*e**3/
8 + 27*b**2*c**2*d*e**2/8 + 21*b*c**3*d**2*e/8 + c**4*d**3/4) + x**7*(6*a**
2*c**2*e**3/7 + 12*a*b**2*c*e**3/7 + 45*a*b*c**2*d*e**2/7 + 18*a*c**3*d**2*
e/7 + b**4*e**3/7 + 15*b**3*c*d*e**2/7 + 27*b**2*c**2*d**2*e/7 + b*c**3*d**
3) + x**6*(3*a**2*b*c*e**3/2 + 3*a**2*c**2*d*e**2 + a*b**3*e**3/2 + 6*a*b**
2*c*d*e**2 + 15*a*b*c**2*d**2*e/2 + a*c**3*d**3 + b**4*d*e**2/2 + 5*b**3*c*
d**2*e/2 + 3*b**2*c**2*d**3/2) + x**5*(2*a**3*c*e**3/5 + 3*a**2*b**2*e**3/5
 + 27*a**2*b*c*d*e**2/5 + 18*a**2*c**2*d**2*e/5 + 9*a*b**3*d*e**2/5 + 36*a*
b**2*c*d**2*e/5 + 3*a*b*c**2*d**3 + 3*b**4*d**2*e/5 + b**3*c*d**3) + x**4*(
a**3*b*e**3/4 + 3*a**3*c*d*e**2/2 + 9*a**2*b**2*d*e**2/4 + 27*a**2*b*c*d**2
*e/4 + 3*a**2*c**2*d**3/2 + 9*a*b**3*d**2*e/4 + 3*a*b**2*c*d**3 + b**4*d**3
/4) + x**3*(a**3*b*d*e**2 + 2*a**3*c*d**2*e + 3*a**2*b**2*d**2*e + 3*a**2*b
*c*d**3 + a*b**3*d**3) + x**2*(3*a**3*b*d**2*e/2 + a**3*c*d**3 + 3*a**2*b**
2*d**3/2)
```

3.1324 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=411

$$\frac{(d+ex)^6 \left(6c^2e^2 \left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{6e^8}+\frac{3c^2(d+e\ldots}{}$$

Rubi [A] time = 0.45, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^6 \left(6c^2e^2 \left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{6e^8}+\frac{3c^2(d+ex)^8 \left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{8e^8}-\frac{5c(d+ex)^7(2cd-be) \left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{7e^8}-\frac{3(d+ex)^5(2cd-be) \left(ae^2-bde+cd^2\right) \left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{5e^8}+\frac{(d+ex)^4 \left(ae^2-bde+cd^2\right)^2 \left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{4e^8}-\frac{(d+ex)^3(2cd-be) \left(ae^2-bde+cd^2\right)^3}{3e^8}-\frac{7c^3(d+ex)^9(2cd-be)}{9e^8}+\frac{c^4(d+ex)^{10}}{5e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^3)/(3*e^8) + ((c*d^2 -
b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^4
)/(4*e^8) - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 -
 c*e*(7*b*d - 3*a*e))*(d + e*x)^5)/(5*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2
*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d
^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^6)/(6*e^8) - (5*c*(2*c*d - b*e)*(7*c^
2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^7)/(7*e^8) + (3*c^2*(14*c^
2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^8)/(8*e^8) - (7*c^3*(2*c
*d - b*e)*(d + e*x)^9)/(9*e^8) + (c^4*(d + e*x)^10)/(5*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^2}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c\ldots\right.}{}\right.$$

$$= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^3}{3e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2\ldots\right.}{}$$

Mathematica [A] time = 0.14, size = 413, normalized size = 1.00

$$a^3bd^2x+\frac{1}{2}a^2dx^2\left(2abe+2acd+3b^2d\right)+\frac{1}{3}ax^3\left(4a^2cde+6ab^2de+ab\left(ae^2+9cd^2\right)+3b^3d^2\right)+\frac{1}{5}x^5\left(12a^2c^2de+b^3\left(3ae^2+5cd^2\right)+24ab^2cde+3abc\left(3ae^2+5cd^2\right)+2b^4de\right)+\frac{1}{4}x^4\left(18a^2bcde+2a^2c\left(ae^2+3cd^2\right)+6ab^3de+3ab^2\left(ae^2+4cd^2\right)+b^4d^2\right)+\frac{1}{8}c^2x^8\left(2ce(3ae+7bd)+9b^2e^2+2c^2d^2\right)+\frac{1}{7}cx^7\left(bc\left(15ae^2+7cd^2\right)+12ac^2de+5b^3e^2+18b^2cde\right)+\frac{1}{6}x^6\left(3b^2c\left(4ae^2+3cd^2\right)+30abc^2de+6ac^2\left(ae^2+cd^2\right)+b^4e^2+10b^3cde\right)+\frac{1}{9}c^3ex^9(7be+4cd)+\frac{1}{5}c^4e^2x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d^2*x + (a^2*d*(3*b^2*d + 2*a*c*d + 2*a*b*e)*x^2)/2 + (a*(3*b^3*d^2 +
 6*a*b^2*d*e + 4*a^2*c*d*e + a*b*(9*c*d^2 + a*e^2))*x^3)/3 + ((b^4*d^2 + 6*
a*b^3*d*e + 18*a^2*b*c*d*e + 2*a^2*c*(3*c*d^2 + a*e^2) + 3*a*b^2*(4*c*d^2 +
 a*e^2))*x^4)/4 + ((2*b^4*d*e + 24*a*b^2*c*d*e + 12*a^2*c^2*d*e + b^3*(5*c*
d^2 + 3*a*e^2) + 3*a*b*c*(5*c*d^2 + 3*a*e^2))*x^5)/5 + ((10*b^3*c*d*e + 30*
a*b*c^2*d*e + b^4*e^2 + 6*a*c^2*(c*d^2 + a*e^2) + 3*b^2*c*(3*c*d^2 + 4*a*e^
```

```
2))*x^6)/6 + (c*(18*b^2*c*d*e + 12*a*c^2*d*e + 5*b^3*e^2 + b*c*(7*c*d^2 + 1
5*a*e^2))*x^7)/7 + (c^2*(2*c^2*d^2 + 9*b^2*e^2 + 2*c*e*(7*b*d + 3*a*e))*x^8
)/8 + (c^3*e*(4*c*d + 7*b*e)*x^9)/9 + (c^4*e^2*x^10)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.38, size = 502, normalized size = 1.22

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/5*x^10*e^2*c^4 + 4/9*x^9*e*d*c^4 + 7/9*x^9*e^2*c^3*b + 1/4*x^8*d^2*c^4 +
7/4*x^8*e*d*c^3*b + 9/8*x^8*e^2*c^2*b^2 + 3/4*x^8*e^2*c^3*a + x^7*d^2*c^3*b
 + 18/7*x^7*e*d*c^2*b^2 + 5/7*x^7*e^2*c*b^3 + 12/7*x^7*e*d*c^3*a + 15/7*x^7
*e^2*c^2*b*a + 3/2*x^6*d^2*c^2*b^2 + 5/3*x^6*e*d*c*b^3 + 1/6*x^6*e^2*b^4 +
x^6*d^2*c^3*a + 5*x^6*e*d*c^2*b*a + 2*x^6*e^2*c*b^2*a + x^6*e^2*c^2*a^2 + x
^5*d^2*c*b^3 + 2/5*x^5*e*d*b^4 + 3*x^5*d^2*c^2*b*a + 24/5*x^5*e*d*c*b^2*a +
 3/5*x^5*e^2*b^3*a + 12/5*x^5*e*d*c^2*a^2 + 9/5*x^5*e^2*c*b*a^2 + 1/4*x^4*d
^2*b^4 + 3*x^4*d^2*c*b^2*a + 3/2*x^4*e*d*b^3*a + 3/2*x^4*d^2*c^2*a^2 + 9/2*
x^4*e*d*c*b*a^2 + 3/4*x^4*e^2*b^2*a^2 + 1/2*x^4*e^2*c*a^3 + x^3*d^2*b^3*a +
 3*x^3*d^2*c*b*a^2 + 2*x^3*e*d*b^2*a^2 + 4/3*x^3*e*d*c*a^3 + 1/3*x^3*e^2*b*
a^3 + 3/2*x^2*d^2*b^2*a^2 + x^2*d^2*c*a^3 + x^2*e*d*b*a^3 + x*d^2*b*a^3
```

giac [A] time = 0.16, size = 502, normalized size = 1.22

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/5*c^4*x^10*e^2 + 4/9*c^4*d*x^9*e + 1/4*c^4*d^2*x^8 + 7/9*b*c^3*x^9*e^2 +
7/4*b*c^3*d*x^8*e + b*c^3*d^2*x^7 + 9/8*b^2*c^2*x^8*e^2 + 3/4*a*c^3*x^8*e^2
 + 18/7*b^2*c^2*d*x^7*e + 12/7*a*c^3*d*x^7*e + 3/2*b^2*c^2*d^2*x^6 + a*c^3*
d^2*x^6 + 5/7*b^3*c*x^7*e^2 + 15/7*a*b*c^2*x^7*e^2 + 5/3*b^3*c*d*x^6*e + 5*
a*b*c^2*d*x^6*e + b^3*c*d^2*x^5 + 3*a*b*c^2*d^2*x^5 + 1/6*b^4*x^6*e^2 + 2*a
*b^2*c*x^6*e^2 + a^2*c^2*x^6*e^2 + 2/5*b^4*d*x^5*e + 24/5*a*b^2*c*d*x^5*e +
 12/5*a^2*c^2*d*x^5*e + 1/4*b^4*d^2*x^4 + 3*a*b^2*c*d^2*x^4 + 3/2*a^2*c^2*d
^2*x^4 + 3/5*a*b^3*x^5*e^2 + 9/5*a^2*b*c*x^5*e^2 + 3/2*a*b^3*d*x^4*e + 9/2*
a^2*b*c*d*x^4*e + a*b^3*d^2*x^3 + 3*a^2*b*c*d^2*x^3 + 3/4*a^2*b^2*x^4*e^2 +
 1/2*a^3*c*x^4*e^2 + 2*a^2*b^2*d*x^3*e + 4/3*a^3*c*d*x^3*e + 3/2*a^2*b^2*d^
2*x^2 + a^3*c*d^2*x^2 + 1/3*a^3*b*x^3*e^2 + a^3*b*d*x^2*e + a^3*b*d^2*x
```

maple [A] time = 0.04, size = 608, normalized size = 1.48

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/5*c^4*e^2*x^10+1/9*((b*e^2+4*c*d*e)*c^3+6*c^3*e^2*b)*x^9+1/8*((2*b*d*e+2*
c*d^2)*c^3+3*(b*e^2+4*c*d*e)*b*c^2+2*c*e^2*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x
^8+1/7*(b*d^2*c^3+3*(2*b*d*e+2*c*d^2)*b*c^2+(b*e^2+4*c*d*e)*(a*c^2+2*b^2*c+
(2*a*c+b^2)*c)+2*c*e^2*(4*a*b*c+(2*a*c+b^2)*b))*x^7+1/6*(3*b^2*d^2*c^2+(2*b
*d*e+2*c*d^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e^2+4*c*d*e)*(4*a*b*c+(2*a*c
+b^2)*b)+2*c*e^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^6+1/5*(b*d^2*(a*c^2+2*b^2
*c+(2*a*c+b^2)*c)+(2*b*d*e+2*c*d^2)*(4*a*b*c+(2*a*c+b^2)*b)+(b*e^2+4*c*d*e)
*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*c*e^2*a^2*b)*x^5+1/4*(b*d^2*(4*a*b*c+(2*a*
c+b^2)*b)+(2*b*d*e+2*c*d^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(b*e^2+4*c*d*e)
*a^2*b+2*c*e^2*a^3)*x^4+1/3*(b*d^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(2*b*d*e
+2*c*d^2)*a^2*b+(b*e^2+4*c*d*e)*a^3)*x^3+1/2*(3*b^2*d^2*a^2+(2*b*d*e+2*c*d^
2)*a^3)*x^2+b*d^2*a^3*x
```

maxima [A] time = 0.55, size = 417, normalized size = 1.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/5*c^4*e^2*x^10 + 1/9*(4*c^4*d*e + 7*b*c^3*e^2)*x^9 + 1/8*(2*c^4*d^2 + 14*
b*c^3*d*e + 3*(3*b^2*c^2 + 2*a*c^3)*e^2)*x^8 + 1/7*(7*b*c^3*d^2 + 6*(3*b^2*
c^2 + 2*a*c^3)*d*e + 5*(b^3*c + 3*a*b*c^2)*e^2)*x^7 + a^3*b*d^2*x + 1/6*(3*
(3*b^2*c^2 + 2*a*c^3)*d^2 + 10*(b^3*c + 3*a*b*c^2)*d*e + (b^4 + 12*a*b^2*c
+ 6*a^2*c^2)*e^2)*x^6 + 1/5*(5*(b^3*c + 3*a*b*c^2)*d^2 + 2*(b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d*e + 3*(a*b^3 + 3*a^2*b*c)*e^2)*x^5 + 1/4*((b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^2 + 6*(a*b^3 + 3*a^2*b*c)*d*e + (3*a^2*b^2 + 2*a^3*c)*e^2)
*x^4 + 1/3*(a^3*b*e^2 + 3*(a*b^3 + 3*a^2*b*c)*d^2 + 2*(3*a^2*b^2 + 2*a^3*c)
*d*e)*x^3 + 1/2*(2*a^3*b*d*e + (3*a^2*b^2 + 2*a^3*c)*d^2)*x^2
```

mupad [B] time = 1.89, size = 414, normalized size = 1.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((b^4*d^2)/4 + (a^3*c*e^2)/2 + (3*a^2*b^2*e^2)/4 + (3*a^2*c^2*d^2)/2 +
(3*a*b^3*d*e)/2 + 3*a*b^2*c*d^2 + (9*a^2*b*c*d*e)/2) + x^6*((b^4*e^2)/6 + a
*c^3*d^2 + a^2*c^2*e^2 + (3*b^2*c^2*d^2)/2 + (5*b^3*c*d*e)/3 + 2*a*b^2*c*e^
2 + 5*a*b*c^2*d*e) + x^8*((c^4*d^2)/4 + (3*a*c^3*e^2)/4 + (9*b^2*c^2*e^2)/8
 + (7*b*c^3*d*e)/4) + x^5*((3*a*b^3*e^2)/5 + b^3*c*d^2 + (2*b^4*d*e)/5 + 3*
a*b*c^2*d^2 + (9*a^2*b*c*e^2)/5 + (12*a^2*c^2*d*e)/5 + (24*a*b^2*c*d*e)/5)
+ x^3*(a*b^3*d^2 + (a^3*b*e^2)/3 + (4*a^3*c*d*e)/3 + 3*a^2*b*c*d^2 + 2*a^2*
b^2*d*e) + x^7*(b*c^3*d^2 + (5*b^3*c*e^2)/7 + (12*a*c^3*d*e)/7 + (15*a*b*c^
2*e^2)/7 + (18*b^2*c^2*d*e)/7) + (c^4*e^2*x^10)/5 + (c^3*e*x^9*(7*b*e + 4*c
*d))/9 + (a^2*d*x^2*(3*b^2*d + 2*a*b*e + 2*a*c*d))/2 + a^3*b*d^2*x
```

sympy [A] time = 0.15, size = 503, normalized size = 1.22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**2*x + c**4*e**2*x**10/5 + x**9*(7*b*c**3*e**2/9 + 4*c**4*d*e/9) +
 x**8*(3*a*c**3*e**2/4 + 9*b**2*c**2*e**2/8 + 7*b*c**3*d*e/4 + c**4*d**2/4)
 + x**7*(15*a*b*c**2*e**2/7 + 12*a*c**3*d*e/7 + 5*b**3*c*e**2/7 + 18*b**2*c
**2*d*e/7 + b*c**3*d**2) + x**6*(a**2*c**2*e**2 + 2*a*b**2*c*e**2 + 5*a*b*c
```

```
**2*d*e + a*c**3*d**2 + b**4*e**2/6 + 5*b**3*c*d*e/3 + 3*b**2*c**2*d**2/2)
+ x**5*(9*a**2*b*c*e**2/5 + 12*a**2*c**2*d*e/5 + 3*a*b**3*e**2/5 + 24*a*b**
2*c*d*e/5 + 3*a*b*c**2*d**2 + 2*b**4*d*e/5 + b**3*c*d**2) + x**4*(a**3*c*e*
*2/2 + 3*a**2*b**2*e**2/4 + 9*a**2*b*c*d*e/2 + 3*a**2*c**2*d**2/2 + 3*a*b**
3*d*e/2 + 3*a*b**2*c*d**2 + b**4*d**2/4) + x**3*(a**3*b*e**2/3 + 4*a**3*c*d
*e/3 + 2*a**2*b**2*d*e + 3*a**2*b*c*d**2 + a*b**3*d**2) + x**2*(a**3*b*d*e
+ a**3*c*d**2 + 3*a**2*b**2*d**2/2)
```

3.1325 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=251

$$a^3bdx+\frac{1}{2}a^2x^2\left(abe+2acd+3b^2d\right)+\frac{1}{3}ax^3\left(2a^2ce+3ab^2e+9abcd+3b^3d\right)+\frac{1}{5}x^5\left(6a^2c^2e+12ab^2ce+15abc^2d+b^4\right.$$

Rubi [A] time = 0.23, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{5}x^5\left(6a^2c^2e+12ab^2ce+15abc^2d+5b^3cd+b^4e\right)+\frac{1}{4}x^4\left(9a^2bce+6a^2c^2d+12ab^2cd+3ab^3e+b^4d\right)+\frac{1}{3}ax^3\left(2a^2ce+3ab^2e+9abcd+3b^3d\right)+\frac{1}{2}a^2x^2\left(abe+2acd+3b^2d\right)+a^3bdx+\frac{1}{7}c^2x^7\left(6ace+9b^2e+7bcd\right)+\frac{1}{6}cx^6\left(15abce+6ac^2d+9b^2cd+5b^3e\right)+\frac{1}{8}c^3x^8(7be+2cd)+\frac{2}{9}c^4ex^9$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d*x + (a^2*(3*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + (a*(3*b^3*d + 9*a*b*c
*d + 3*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((b^4*d + 12*a*b^2*c*d + 6*a^2*c^2*d +
 3*a*b^3*e + 9*a^2*b*c*e)*x^4)/4 + ((5*b^3*c*d + 15*a*b*c^2*d + b^4*e + 12*
a*b^2*c*e + 6*a^2*c^2*e)*x^5)/5 + (c*(9*b^2*c*d + 6*a*c^2*d + 5*b^3*e + 15*
a*b*c*e)*x^6)/6 + (c^2*(7*b*c*d + 9*b^2*e + 6*a*c*e)*x^7)/7 + (c^3*(2*c*d +
 7*b*e)*x^8)/8 + (2*c^4*e*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^3 \, dx &= \int \left(a^3bd+a^2\left(3b^2d+2acd+abe\right)x+a\left(3b^3d+9abcd+3ab^2e+2a^2ce\right.\right.\\ &= a^3bdx+\frac{1}{2}a^2\left(3b^2d+2acd+abe\right)x^2+\frac{1}{3}a\left(3b^3d+9abcd+3ab^2e+2a^2\right.\end{aligned}$$

Mathematica [A] time = 0.06, size = 251, normalized size = 1.00

$$a^3bdx+\frac{1}{2}a^2x^2\left(abe+2acd+3b^2d\right)+\frac{1}{3}ax^3\left(2a^2ce+3ab^2e+9abcd+3b^3d\right)+\frac{1}{5}x^5\left(6a^2c^2e+12ab^2ce+15abc^2d+b^4e+5b^3cd\right)+\frac{1}{4}x^4\left(9a^2bce+6a^2c^2d+3ab^3e+12ab^2cd+b^4d\right)+\frac{1}{7}c^2x^7\left(6ace+9b^2e+7bcd\right)+\frac{1}{6}cx^6\left(15abce+6ac^2d+5b^3e+9b^2cd\right)+\frac{1}{8}c^3x^8(7be+2cd)+\frac{2}{9}c^4ex^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d*x + (a^2*(3*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + (a*(3*b^3*d + 9*a*b*c
*d + 3*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((b^4*d + 12*a*b^2*c*d + 6*a^2*c^2*d +
 3*a*b^3*e + 9*a^2*b*c*e)*x^4)/4 + ((5*b^3*c*d + 15*a*b*c^2*d + b^4*e + 12*
a*b^2*c*e + 6*a^2*c^2*e)*x^5)/5 + (c*(9*b^2*c*d + 6*a*c^2*d + 5*b^3*e + 15*
a*b*c*e)*x^6)/6 + (c^2*(7*b*c*d + 9*b^2*e + 6*a*c*e)*x^7)/7 + (c^3*(2*c*d +
 7*b*e)*x^8)/8 + (2*c^4*e*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.48, size = 286, normalized size = 1.14

$$\frac{2}{9}x^{9}ec^{4}+\frac{1}{4}x^{8}dc^{4}+\frac{7}{8}x^{8}ec^{3}b+x^{7}dc^{3}b+\frac{9}{7}x^{7}ec^{2}b^{2}+\frac{6}{7}x^{7}ec^{3}a+\frac{3}{2}x^{6}dc^{2}b^{2}+\frac{5}{6}x^{6}ecb^{3}+x^{6}dc^{3}a+\frac{5}{2}x^{6}ec^{2}ba+x^{5}dcb^{3}+\frac{1}{5}x^{5}eb^{4}+3x^{5}dc^{2}ba+\frac{12}{5}x^{5}ecb^{2}a+\frac{6}{5}x^{5}ec^{2}a^{2}+\frac{1}{4}x^{4}db^{4}+3x^{4}dcb^{2}a+\frac{3}{4}x^{4}eb^{3}a+\frac{3}{2}x^{4}dc^{2}a^{2}+\frac{9}{4}x^{4}ecba^{2}+x^{3}db^{3}a+3x^{3}dcba^{2}+x^{3}eb^{2}a^{2}+\frac{2}{3}x^{3}eca^{3}+\frac{3}{2}x^{2}db^{2}a^{2}+x^{2}dca^{3}+\frac{1}{2}x^{2}eba^{3}+xdba^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/9*x^9*e*c^4 + 1/4*x^8*d*c^4 + 7/8*x^8*e*c^3*b + x^7*d*c^3*b + 9/7*x^7*e*c
^2*b^2 + 6/7*x^7*e*c^3*a + 3/2*x^6*d*c^2*b^2 + 5/6*x^6*e*c*b^3 + x^6*d*c^3*
a + 5/2*x^6*e*c^2*b*a + x^5*d*c*b^3 + 1/5*x^5*e*b^4 + 3*x^5*d*c^2*b*a + 12/
5*x^5*e*c*b^2*a + 6/5*x^5*e*c^2*a^2 + 1/4*x^4*d*b^4 + 3*x^4*d*c*b^2*a + 3/4
*x^4*e*b^3*a + 3/2*x^4*d*c^2*a^2 + 9/4*x^4*e*c*b*a^2 + x^3*d*b^3*a + 3*x^3*
d*c*b*a^2 + x^3*e*b^2*a^2 + 2/3*x^3*e*c*a^3 + 3/2*x^2*d*b^2*a^2 + x^2*d*c*a
^3 + 1/2*x^2*e*b*a^3 + x*d*b*a^3
```

giac [A] time = 0.18, size = 300, normalized size = 1.20

$$\frac{2}{9}c^{4}x^{9}e+\frac{1}{4}c^{4}dx^{8}+\frac{7}{8}bc^{3}x^{8}e+bc^{3}dx^{7}+\frac{9}{7}b^{2}c^{2}x^{7}e+\frac{6}{7}ac^{3}x^{7}e+\frac{3}{2}b^{2}c^{2}dx^{6}+ac^{3}dx^{6}+\frac{5}{6}b^{3}cx^{6}e+\frac{5}{2}abc^{2}x^{6}e+b^{3}cdx^{5}+3\,abc^{2}dx^{5}+\frac{1}{5}b^{4}x^{5}e+\frac{12}{5}ab^{2}cx^{5}e+\frac{6}{5}a^{2}c^{2}x^{5}e+\frac{1}{4}b^{4}dx^{4}+3\,ab^{2}cdx^{4}+\frac{3}{2}a^{2}c^{2}dx^{4}+\frac{3}{4}ab^{3}x^{4}e+\frac{9}{4}a^{2}bcx^{4}e+ab^{3}dx^{3}+3\,a^{2}bcdx^{3}+a^{2}b^{2}x^{3}e+\frac{2}{3}a^{3}cx^{3}e+\frac{3}{2}a^{2}b^{2}dx^{2}+a^{3}cdx^{2}+\frac{1}{2}a^{3}bx^{2}e+a^{3}bdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/9*c^4*x^9*e + 1/4*c^4*d*x^8 + 7/8*b*c^3*x^8*e + b*c^3*d*x^7 + 9/7*b^2*c^2
*x^7*e + 6/7*a*c^3*x^7*e + 3/2*b^2*c^2*d*x^6 + a*c^3*d*x^6 + 5/6*b^3*c*x^6*
e + 5/2*a*b*c^2*x^6*e + b^3*c*d*x^5 + 3*a*b*c^2*d*x^5 + 1/5*b^4*x^5*e + 12/
5*a*b^2*c*x^5*e + 6/5*a^2*c^2*x^5*e + 1/4*b^4*d*x^4 + 3*a*b^2*c*d*x^4 + 3/2
*a^2*c^2*d*x^4 + 3/4*a*b^3*x^4*e + 9/4*a^2*b*c*x^4*e + a*b^3*d*x^3 + 3*a^2*
b*c*d*x^3 + a^2*b^2*x^3*e + 2/3*a^3*c*x^3*e + 3/2*a^2*b^2*d*x^2 + a^3*c*d*x
^2 + 1/2*a^3*b*x^2*e + a^3*b*d*x
```

maple [A] time = 0.04, size = 386, normalized size = 1.54

$$\frac{2c^{4}e\,x^{9}}{9}+\frac{\left(6b\,c^{3}e+\left(be+2cd\right)c^{3}\right)x^{8}}{8}+\frac{\left(b\,c^{3}d+3\left(be+2cd\right)b\,c^{2}+2\left(a\,c^{2}+2b^{2}c+\left(2ac+b^{2}\right)c\right)ce\right)x^{7}}{7}+a^{3}bdx+\frac{\left(3b^{2}c^{2}d+2\left(4abc+\left(2ac+b^{2}\right)b\right)ce+\left(be+2cd\right)\left(a\,c^{2}+2b^{2}c+\left(2ac+b^{2}\right)c\right)\right)x^{6}}{6}+\frac{\left(\left(a\,c^{2}+2b^{2}c+\left(2ac+b^{2}\right)c\right)bd+2\left(a^{2}c+2a\,b^{2}+\left(2ac+b^{2}\right)a\right)ce+\left(be+2cd\right)\left(4abc+\left(2ac+b^{2}\right)b\right)\right)x^{5}}{5}+\frac{\left(6a^{2}bce+\left(4abc+\left(2ac+b^{2}\right)b\right)bd+\left(be+2cd\right)\left(a^{2}c+2a\,b^{2}+\left(2ac+b^{2}\right)a\right)\right)x^{4}}{4}+\frac{\left(2a^{3}ce+3\left(be+2cd\right)a^{2}b+\left(a^{2}c+2a\,b^{2}+\left(2ac+b^{2}\right)a\right)bd\right)x^{3}}{3}+\frac{\left(3a^{2}b^{2}d+\left(be+2cd\right)a^{3}\right)x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/9*c^4*e*x^9+1/8*((b*e+2*c*d)*c^3+6*c^3*e*b)*x^8+1/7*(b*c^3*d+3*(b*e+2*c*d
)*b*c^2+2*c*e*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x^7+1/6*(3*b^2*d*c^2+(b*e+2*c*
d)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*e*(4*a*b*c+(2*a*c+b^2)*b))*x^6+1/5*(b*
d*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e+2*c*d)*(4*a*b*c+(2*a*c+b^2)*b)+2*c*e*(
a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^5+1/4*(b*d*(4*a*b*c+(2*a*c+b^2)*b)+(b*e+2*c
*d)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*a^2*b*c*e)*x^4+1/3*(b*d*(a^2*c+2*a*b^2+
(2*a*c+b^2)*a)+3*(b*e+2*c*d)*a^2*b+2*c*e*a^3)*x^3+1/2*(3*b^2*d*a^2+(b*e+2*c
*d)*a^3)*x^2+a^3*b*d*x
```

maxima [A] time = 0.59, size = 261, normalized size = 1.04

$$\frac{2}{9}c^{4}ex^{9}+\frac{1}{8}\left(2\,c^{4}d+7\,bc^{3}e\right)x^{8}+\frac{1}{7}\left(7\,bc^{3}d+3\left(3\,b^{2}c^{2}+2\,ac^{3}\right)e\right)x^{7}+\frac{1}{6}\left(3\left(3\,b^{2}c^{2}+2\,ac^{3}\right)d+5\left(b^{3}c+3\,abc^{2}\right)e\right)x^{6}+a^{3}bdx+\frac{1}{5}\left(5\left(b^{3}c+3\,abc^{2}\right)d+\left(b^{4}+12\,ab^{2}c+6\,a^{2}c^{2}\right)e\right)x^{5}+\frac{1}{4}\left(\left(b^{4}+12\,ab^{2}c+6\,a^{2}c^{2}\right)d+3\left(ab^{3}+3\,a^{2}bc\right)e\right)x^{4}+\frac{1}{3}\left(3\left(ab^{3}+3\,a^{2}bc\right)d+\left(3\,a^{2}b^{2}+2\,a^{3}c\right)e\right)x^{3}+\frac{1}{2}\left(a^{3}be+\left(3\,a^{2}b^{2}+2\,a^{3}c\right)d\right)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/9*c^4*e*x^9 + 1/8*(2*c^4*d + 7*b*c^3*e)*x^8 + 1/7*(7*b*c^3*d + 3*(3*b^2*c
^2 + 2*a*c^3)*e)*x^7 + 1/6*(3*(3*b^2*c^2 + 2*a*c^3)*d + 5*(b^3*c + 3*a*b*c^
2)*e)*x^6 + a^3*b*d*x + 1/5*(5*(b^3*c + 3*a*b*c^2)*d + (b^4 + 12*a*b^2*c +
```

```
6*a^2*c^2)*e)*x^5 + 1/4*((b^4 + 12*a*b^2*c + 6*a^2*c^2)*d + 3*(a*b^3 + 3*a^
2*b*c)*e)*x^4 + 1/3*(3*(a*b^3 + 3*a^2*b*c)*d + (3*a^2*b^2 + 2*a^3*c)*e)*x^3
 + 1/2*(a^3*b*e + (3*a^2*b^2 + 2*a^3*c)*d)*x^2
```

mupad [B] time = 0.11, size = 243, normalized size = 0.97

$$x^8\left(\frac{dc^4}{4}+\frac{7bec^3}{8}\right)+x^2\left(\frac{ea^3b}{2}+cda^3+\frac{3da^2b^2}{2}\right)+x^7\left(\frac{9eb^2c^2}{7}+dbc^3+\frac{6aec^3}{7}\right)+x^4\left(\frac{9ea^2bc}{4}+\frac{3da^2c^2}{2}+\frac{3eab^3}{4}+3dab^2c+\frac{db^4}{4}\right)+x^5\left(\frac{6ea^2c^2}{5}+\frac{12eab^2c}{5}+3dabc^2+\frac{eb^4}{5}+db^3c\right)+x^3\left(\frac{2cea^3}{3}+ea^2b^2+3cda^2b+dab^3\right)+x^6\left(\frac{5eb^3c}{6}+\frac{3db^2c^2}{2}+\frac{5aebc^2}{2}+adc^3\right)+\frac{2c^4ex^9}{9}+a^3bdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^8*((c^4*d)/4 + (7*b*c^3*e)/8) + x^2*((3*a^2*b^2*d)/2 + (a^3*b*e)/2 + a^3*
c*d) + x^7*((9*b^2*c^2*e)/7 + (6*a*c^3*e)/7 + b*c^3*d) + x^4*((b^4*d)/4 + (
3*a^2*c^2*d)/2 + (3*a*b^3*e)/4 + 3*a*b^2*c*d + (9*a^2*b*c*e)/4) + x^5*((b^4
*e)/5 + (6*a^2*c^2*e)/5 + b^3*c*d + 3*a*b*c^2*d + (12*a*b^2*c*e)/5) + x^3*(
a^2*b^2*e + a*b^3*d + (2*a^3*c*e)/3 + 3*a^2*b*c*d) + x^6*((3*b^2*c^2*d)/2 +
 a*c^3*d + (5*b^3*c*e)/6 + (5*a*b*c^2*e)/2) + (2*c^4*e*x^9)/9 + a^3*b*d*x
```

sympy [A] time = 0.12, size = 291, normalized size = 1.16

$$a^3bdx+\frac{2c^4ex^9}{9}+x^8\left(\frac{7bc^3e}{8}+\frac{c^4d}{4}\right)+x^7\left(\frac{6ac^3e}{7}+\frac{9b^2c^2e}{7}+bc^3d\right)+x^6\left(\frac{5abc^2e}{2}+ac^3d+\frac{5b^3ce}{6}+\frac{3b^2c^2d}{2}\right)+x^5\left(\frac{6a^2c^2e}{5}+\frac{12ab^2ce}{5}+3abc^2d+\frac{b^4e}{5}+b^3cd\right)+x^4\left(\frac{9a^2bce}{4}+\frac{3a^2c^2d}{2}+\frac{3ab^3e}{4}+3ab^2cd+\frac{b^4d}{4}\right)+x^3\left(\frac{2a^3ce}{3}+a^2b^2e+3a^2bcd+ab^3d\right)+x^2\left(\frac{a^3be}{2}+a^3cd+\frac{3a^2b^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d*x + 2*c**4*e*x**9/9 + x**8*(7*b*c**3*e/8 + c**4*d/4) + x**7*(6*a*c
**3*e/7 + 9*b**2*c**2*e/7 + b*c**3*d) + x**6*(5*a*b*c**2*e/2 + a*c**3*d + 5
*b**3*c*e/6 + 3*b**2*c**2*d/2) + x**5*(6*a**2*c**2*e/5 + 12*a*b**2*c*e/5 +
3*a*b*c**2*d + b**4*e/5 + b**3*c*d) + x**4*(9*a**2*b*c*e/4 + 3*a**2*c**2*d/
2 + 3*a*b**3*e/4 + 3*a*b**2*c*d + b**4*d/4) + x**3*(2*a**3*c*e/3 + a**2*b**
2*e + 3*a**2*b*c*d + a*b**3*d) + x**2*(a**3*b*e/2 + a**3*c*d + 3*a**2*b**2*
d/2)
```

3.1326 $\int (b+2cx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=16

$$\frac{1}{4}\left(a+bx+cx^2\right)^4$$

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$\frac{1}{4}\left(a+bx+cx^2\right)^4$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a + b*x + c*x^2)^4/4
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^3\,dx=\frac{1}{4}\left(a+bx+cx^2\right)^4$$

Mathematica [B] time = 0.02, size = 51, normalized size = 3.19

$$\frac{1}{4}x(b+cx)\left(4a^3+6a^2x(b+cx)+4ax^2(b+cx)^2+x^3(b+cx)^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (x*(b + c*x)*(4*a^3 + 6*a^2*x*(b + c*x) + 4*a*x^2*(b + c*x)^2 + x^3*(b + c*
x)^3))/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.38, size = 126, normalized size = 7.88

$$\frac{1}{4}x^8c^4+x^7c^3b+\frac{3}{2}x^6c^2b^2+x^6c^3a+x^5cb^3+3x^5c^2ba+\frac{1}{4}x^4b^4+3x^4cb^2a+\frac{3}{2}x^4c^2a^2+x^3b^3a+3x^3cba^2+\frac{3}{2}x^2b^2a^2+x^2ca^3+xba^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/4*x^8*c^4 + x^7*c^3*b + 3/2*x^6*c^2*b^2 + x^6*c^3*a + x^5*c*b^3 + 3*x^5*c
^2*b*a + 1/4*x^4*b^4 + 3*x^4*c*b^2*a + 3/2*x^4*c^2*a^2 + x^3*b^3*a + 3*x^3*
c*b*a^2 + 3/2*x^2*b^2*a^2 + x^2*c*a^3 + x*b*a^3
```

giac [B] time = 0.15, size = 56, normalized size = 3.50

$$\frac{1}{4}\left(cx^2 + bx\right)^4 + \left(cx^2 + bx\right)^3 a + \frac{3}{2}\left(cx^2 + bx\right)^2 a^2 + \left(cx^2 + bx\right)a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/4*(c*x^2 + b*x)^4 + (c*x^2 + b*x)^3*a + 3/2*(c*x^2 + b*x)^2*a^2 + (c*x^2
+ b*x)*a^3
```

maple [B] time = 0.05, size = 218, normalized size = 13.62

$$\frac{c^4x^8}{4} + b\,c^3x^7 + \frac{\left(3b^2c^2 + 2\left(a\,c^2 + 2b^2c + \left(2ac + b^2\right)c\right)c\right)x^6}{6} + a^3bx + \frac{\left(\left(a\,c^2 + 2b^2c + \left(2ac + b^2\right)c\right)b + 2\left(4abc + \left(2ac + b^2\right)b\right)c\right)x^5}{5} + \frac{\left(\left(4abc + \left(2ac + b^2\right)b\right)b + 2\left(a^2c + 2a\,b^2 + \left(2ac + b^2\right)a\right)c\right)x^4}{4} + \frac{\left(6a^2bc + \left(a^2c + 2a\,b^2 + \left(2ac + b^2\right)a\right)b\right)x^3}{3} + \frac{\left(2c\,a^3 + 3a^2b^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/4*c^4*x^8+b*c^3*x^7+1/6*(3*b^2*c^2+2*c*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x^6
+1/5*(b*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*(4*a*b*c+(2*a*c+b^2)*b))*x^5+1/4*
(b*(4*a*b*c+(2*a*c+b^2)*b)+2*c*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^4+1/3*(b*(a
^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*a^2*b*c)*x^3+1/2*(2*a^3*c+3*a^2*b^2)*x^2+b*a^
3*x
```

maxima [A] time = 0.49, size = 14, normalized size = 0.88

$$\frac{1}{4}\left(cx^2 + bx + a\right)^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x + a)^4
```

mupad [B] time = 1.89, size = 112, normalized size = 7.00

$$x^4\left(\frac{3\,a^2\,c^2}{2} + 3\,a\,b^2\,c + \frac{b^4}{4}\right) + \frac{c^4\,x^8}{4} + x^2\left(c\,a^3 + \frac{3\,a^2\,b^2}{2}\right) + x^6\left(\frac{3\,b^2\,c^2}{2} + a\,c^3\right) + b\,c^3\,x^7 + a^3\,b\,x + a\,b\,x^3\,\left(b^2 + 3\,a\,c\right) + b\,c\,x^5\,\left(b^2 + 3\,a\,c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*(b^4/4 + (3*a^2*c^2)/2 + 3*a*b^2*c) + (c^4*x^8)/4 + x^2*(a^3*c + (3*a^2
*b^2)/2) + x^6*(a*c^3 + (3*b^2*c^2)/2) + b*c^3*x^7 + a^3*b*x + a*b*x^3*(3*a
*c + b^2) + b*c*x^5*(3*a*c + b^2)
```

sympy [B] time = 0.10, size = 121, normalized size = 7.56

$$a^3bx + bc^3x^7 + \frac{c^4x^8}{4} + x^6\left(ac^3 + \frac{3b^2c^2}{2}\right) + x^5\left(3abc^2 + b^3c\right) + x^4\left(\frac{3a^2c^2}{2} + 3ab^2c + \frac{b^4}{4}\right) + x^3\left(3a^2bc + ab^3\right) + x^2\left(a^3c + \frac{3a^2b^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*x + b*c**3*x**7 + c**4*x**8/4 + x**6*(a*c**3 + 3*b**2*c**2/2) + x**5
*(3*a*b*c**2 + b**3*c) + x**4*(3*a**2*c**2/2 + 3*a*b**2*c + b**4/4) + x**3*
(3*a**2*b*c + a*b**3) + x**2*(a**3*c + 3*a**2*b**2/2)
```

3.1327 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=399

$$\frac{(d+ex)^3\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+\frac{3c^2(d \cdots}{\cdots}$$

Rubi [A] time = 0.58, antiderivative size = 399, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^3\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+\frac{3c^2(d+ex)^5\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{5e^8}-\frac{5c(d+ex)^4(2cd-be)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{4e^8}-\frac{3(d+ex)^2(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{2e^8}+\frac{x\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{e^7}-\frac{(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)^3}{e^8}-\frac{7c^3(d+ex)^6(2cd-be)}{6e^8}+\frac{2c^4(d+ex)^7}{7e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*x
)/e^7 - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e
*(7*b*d - 3*a*e))*(d + e*x)^2)/(2*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e
^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 -
 10*a*b*d*e + a^2*e^2))*(d + e*x)^3)/(3*e^8) - (5*c*(2*c*d - b*e)*(7*c^2*d^
2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^4)/(4*e^8) + (3*c^2*(14*c^2*d^
2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^5)/(5*e^8) - (7*c^3*(2*c*d -
 b*e)*(d + e*x)^6)/(6*e^8) + (2*c^4*(d + e*x)^7)/(7*e^8) - ((2*c*d - b*e)*(
c*d^2 - b*d*e + a*e^2)^3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx = \int \left(\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7bd-ae)\right)}{e^7}+\frac{(-2cd+be)\left(cd^2 \cdots\right.}{e^7(d+\cdots}\right.$$

$$= \frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7bd-ae)\right)x}{e^7}-\frac{3(2cd-be)\left(cd^2-\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.24, size = 483, normalized size = 1.21

$$\frac{ex\left(21c^2e^2\left(20a^2e^2\left(6d^2-3dex+2e^2x^2\right)+25abe\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+3b^2\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)+70b^2e^4\left(18a^2e^2+9abe(ex-2d)+b^2\left(6d^2-3dex+2e^2x^2\right)\right)+35ce^3\left(24a^3e^3+54a^2be^2(ex-2d)+24ab^2e\left(6d^2-3dex+2e^2x^2\right)-5b^3\left(12d^3-6d^2ex+4de^2x^2-3e^3x^3\right)\right)+7c^3e\left(6ae\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)-7b\left(60d^5-30d^4ex+20d^3e^2x^2-15d^2e^3x^3+12de^4x^4-10e^5x^5\right)\right)+2c^4\left(420d^6-210d^5ex+140d^4e^2x^2-105d^3e^3x^3+84d^2e^4x^4-70de^5x^5+60e^6x^6\right)\right)-420(2cd-be)\log(d+ex)\left(e(ae-bd)+cd^2\right)^3}{420e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (e*x*(2*c^4*(420*d^6 - 210*d^5*e*x + 140*d^4*e^2*x^2 - 105*d^3*e^3*x^3 + 84
*d^2*e^4*x^4 - 70*d*e^5*x^5 + 60*e^6*x^6) + 70*b^2*e^4*(18*a^2*e^2 + 9*a*b*
e*(-2*d + e*x) + b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 35*c*e^3*(24*a^3*e^3
+ 54*a^2*b*e^2*(-2*d + e*x) + 24*a*b^2*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) - 5*
b^3*(12*d^3 - 6*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3)) + 21*c^2*e^2*(20*a^2*e^
2*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + 25*a*b*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x
```

```
^2 + 3*e^3*x^3) + 3*b^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^
3 + 12*e^4*x^4)) + 7*c^3*e*(6*a*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 1
5*d*e^3*x^3 + 12*e^4*x^4) - 7*b*(60*d^5 - 30*d^4*e*x + 20*d^3*e^2*x^2 - 15*
d^2*e^3*x^3 + 12*d*e^4*x^4 - 10*e^5*x^5))) - 420*(2*c*d - b*e)*(c*d^2 + e*(
-(b*d) + a*e))^3*Log[d + e*x])/(420*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x), x]
```

fricas [A] time = 0.44, size = 645, normalized size = 1.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(120*c^4*e^7*x^7 - 70*(2*c^4*d*e^6 - 7*b*c^3*e^7)*x^6 + 84*(2*c^4*d^2
*e^5 - 7*b*c^3*d*e^6 + 3*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 105*(2*c^4*d^3*e^
4 - 7*b*c^3*d^2*e^5 + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 5*(b^3*c + 3*a*b*c^2)
*e^7)*x^4 + 140*(2*c^4*d^4*e^3 - 7*b*c^3*d^3*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*
d^2*e^5 - 5*(b^3*c + 3*a*b*c^2)*d*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)
*x^3 - 210*(2*c^4*d^5*e^2 - 7*b*c^3*d^4*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*d^3*e
^4 - 5*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 -
 3*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 420*(2*c^4*d^6*e - 7*b*c^3*d^5*e^2 + 3*(3
*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 5*(b^3*c + 3*a*b*c^2)*d^3*e^4 + (b^4 + 12*a*b
^2*c + 6*a^2*c^2)*d^2*e^5 - 3*(a*b^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2 + 2*a^
3*c)*e^7)*x - 420*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2
*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2
*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6
)*log(e*x + d))/e^8
```

giac [A] time = 0.17, size = 742, normalized size = 1.86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(2*c^4*d^7 - 7*b*c^3*d^6*e + 9*b^2*c^2*d^5*e^2 + 6*a*c^3*d^5*e^2 - 5*b^3*c
*d^4*e^3 - 15*a*b*c^2*d^4*e^3 + b^4*d^3*e^4 + 12*a*b^2*c*d^3*e^4 + 6*a^2*c^
2*d^3*e^4 - 3*a*b^3*d^2*e^5 - 9*a^2*b*c*d^2*e^5 + 3*a^2*b^2*d*e^6 + 2*a^3*c
*d*e^6 - a^3*b*e^7)*e^(-8)*log(abs(x*e + d)) + 1/420*(120*c^4*x^7*e^6 - 140
*c^4*d*x^6*e^5 + 168*c^4*d^2*x^5*e^4 - 210*c^4*d^3*x^4*e^3 + 280*c^4*d^4*x^
3*e^2 - 420*c^4*d^5*x^2*e + 840*c^4*d^6*x + 490*b*c^3*x^6*e^6 - 588*b*c^3*d
*x^5*e^5 + 735*b*c^3*d^2*x^4*e^4 - 980*b*c^3*d^3*x^3*e^3 + 1470*b*c^3*d^4*x
^2*e^2 - 2940*b*c^3*d^5*x*e + 756*b^2*c^2*x^5*e^6 + 504*a*c^3*x^5*e^6 - 945
*b^2*c^2*d*x^4*e^5 - 630*a*c^3*d*x^4*e^5 + 1260*b^2*c^2*d^2*x^3*e^4 + 840*a
*c^3*d^2*x^3*e^4 - 1890*b^2*c^2*d^3*x^2*e^3 - 1260*a*c^3*d^3*x^2*e^3 + 3780
*b^2*c^2*d^4*x*e^2 + 2520*a*c^3*d^4*x*e^2 + 525*b^3*c*x^4*e^6 + 1575*a*b*c^
2*x^4*e^6 - 700*b^3*c*d*x^3*e^5 - 2100*a*b*c^2*d*x^3*e^5 + 1050*b^3*c*d^2*x
^2*e^4 + 3150*a*b*c^2*d^2*x^2*e^4 - 2100*b^3*c*d^3*x*e^3 - 6300*a*b*c^2*d^3
*x*e^3 + 140*b^4*x^3*e^6 + 1680*a*b^2*c*x^3*e^6 + 840*a^2*c^2*x^3*e^6 - 210
```

```
*b^4*d*x^2*e^5 - 2520*a*b^2*c*d*x^2*e^5 - 1260*a^2*c^2*d*x^2*e^5 + 420*b^4*
d^2*x*e^4 + 5040*a*b^2*c*d^2*x*e^4 + 2520*a^2*c^2*d^2*x*e^4 + 630*a*b^3*x^2
*e^6 + 1890*a^2*b*c*x^2*e^6 - 1260*a*b^3*d*x*e^5 - 3780*a^2*b*c*d*x*e^5 + 1
260*a^2*b^2*x*e^6 + 840*a^3*c*x*e^6)*e^(-7)
```

maple [B] time = 0.06, size = 872, normalized size = 2.19

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x)
```

```
[Out] -15/e^4*x*a*b*c^2*d^3+12/e^3*x*a*b^2*c*d^2-9/e^2*x*a^2*b*c*d+15/2/e^3*x^2*a
*b*c^2*d^2-6/e^2*x^2*a*b^2*c*d+15/e^5*ln(e*x+d)*a*b*c^2*d^4-12/e^4*ln(e*x+d
)*a*b^2*c*d^3+9/e^3*ln(e*x+d)*a^2*b*c*d^2-5/e^2*x^3*a*b*c^2*d+2/e^7*x*c^4*d
^6+1/e*ln(e*x+d)*a^3*b-1/e^4*ln(e*x+d)*b^4*d^3-2/e^8*ln(e*x+d)*c^4*d^7+7/6/
e*x^6*b*c^3-1/3/e^2*x^6*c^4*d+1/e^3*x*b^4*d^2+2/5/e^3*x^5*c^4*d^2+6/5/e*x^5
*a*c^3+9/5/e*x^5*b^2*c^2-1/2/e^2*x^2*b^4*d+3/2/e*x^2*a*b^3+2/3/e^5*x^3*c^4*
d^4+2/e*x^3*a^2*c^2-1/2/e^4*x^4*c^4*d^3+5/4/e*x^4*b^3*c+2/e*x*a^3*c+3/e*x*a
^2*b^2-1/e^6*x^2*c^4*d^5-6/e^6*ln(e*x+d)*a*c^3*d^5+5/e^5*ln(e*x+d)*b^3*c*d^
4-9/e^6*ln(e*x+d)*b^2*c^2*d^5+7/e^7*ln(e*x+d)*b*c^3*d^6-3/e^2*x^2*a^2*c^2*d
+2/e^3*x^3*a*c^3*d^2+3/e^3*ln(e*x+d)*a*b^3*d^2-3/e^4*x^2*a*c^3*d^3+5/2/e^3*
x^2*b^3*c*d^2+6/e^3*x*a^2*c^2*d^2+7/2/e^5*x^2*b*c^3*d^4-3/e^2*x*a*b^3*d+3/e
^3*x^3*b^2*c^2*d^2-7/3/e^4*x^3*b*c^3*d^3+9/2/e*x^2*a^2*b*c+6/e^5*x*a*c^3*d^
4-5/e^4*x*b^3*c*d^3-2/e^2*ln(e*x+d)*a^3*c*d-3/e^2*ln(e*x+d)*a^2*b^2*d-6/e^4
*ln(e*x+d)*a^2*c^2*d^3-9/2/e^4*x^2*b^2*c^2*d^3+4/e*x^3*a*b^2*c-9/4/e^2*x^4*
b^2*c^2*d+7/4/e^3*x^4*b*c^3*d^2+15/4/e*x^4*a*b*c^2-3/2/e^2*x^4*a*c^3*d-7/5/
e^2*x^5*b*c^3*d-5/3/e^2*x^3*b^3*c*d-7/e^6*x*b*c^3*d^5+9/e^5*x*b^2*c^2*d^4+2
/7/e*c^4*x^7+1/3/e*x^3*b^4
```

maxima [A] time = 0.66, size = 644, normalized size = 1.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(120*c^4*e^6*x^7 - 70*(2*c^4*d*e^5 - 7*b*c^3*e^6)*x^6 + 84*(2*c^4*d^2
*e^4 - 7*b*c^3*d*e^5 + 3*(3*b^2*c^2 + 2*a*c^3)*e^6)*x^5 - 105*(2*c^4*d^3*e^
3 - 7*b*c^3*d^2*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^5 - 5*(b^3*c + 3*a*b*c^2)
*e^6)*x^4 + 140*(2*c^4*d^4*e^2 - 7*b*c^3*d^3*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*
d^2*e^4 - 5*(b^3*c + 3*a*b*c^2)*d*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^6)
*x^3 - 210*(2*c^4*d^5*e - 7*b*c^3*d^4*e^2 + 3*(3*b^2*c^2 + 2*a*c^3)*d^3*e^3
 - 5*(b^3*c + 3*a*b*c^2)*d^2*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^5 - 3
*(a*b^3 + 3*a^2*b*c)*e^6)*x^2 + 420*(2*c^4*d^6 - 7*b*c^3*d^5*e + 3*(3*b^2*c
^2 + 2*a*c^3)*d^4*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^3*e^3 + (b^4 + 12*a*b^2*c +
 6*a^2*c^2)*d^2*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e
^6)*x)/e^7 - (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2*a*c^
3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)
*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6)*log
(e*x + d)/e^8
```

mupad [B] time = 0.10, size = 697, normalized size = 1.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x)
```

```
[Out] x^3*((b^4 + 6*a^2*c^2 + 12*a*b^2*c)/(3*e) + (d*((d*((6*a*c^3 + 9*b^2*c^2)/e
 - (d*((7*b*c^3)/e - (2*c^4*d)/e^2))/e))/e - (5*b*c*(3*a*c + b^2))/e))/(3*e
)) - x^4*((d*((6*a*c^3 + 9*b^2*c^2)/e - (d*((7*b*c^3)/e - (2*c^4*d)/e^2))/e
))/(4*e) - (5*b*c*(3*a*c + b^2))/(4*e)) - x^2*((d*((b^4 + 6*a^2*c^2 + 12*a*
b^2*c)/e + (d*((d*((6*a*c^3 + 9*b^2*c^2)/e - (d*((7*b*c^3)/e - (2*c^4*d)/e^
2))/e))/e - (5*b*c*(3*a*c + b^2))/e))/e))/(2*e) - (3*a*b*(3*a*c + b^2))/(2*
e)) + x^6*((7*b*c^3)/(6*e) - (c^4*d)/(3*e^2)) + x*((2*a^3*c + 3*a^2*b^2)/e
+ (d*((d*((b^4 + 6*a^2*c^2 + 12*a*b^2*c)/e + (d*((d*((6*a*c^3 + 9*b^2*c^2)/
e - (d*((7*b*c^3)/e - (2*c^4*d)/e^2))/e))/e - (5*b*c*(3*a*c + b^2))/e))/e))
/e - (3*a*b*(3*a*c + b^2))/e))/e) + x^5*((6*a*c^3 + 9*b^2*c^2)/(5*e) - (d*(
(7*b*c^3)/e - (2*c^4*d)/e^2))/(5*e)) - (log(d + e*x)*(2*c^4*d^7 - a^3*b*e^7
 + b^4*d^3*e^4 - 3*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 + 6*a*c^3*d^5*e^2 - 5*b^
3*c*d^4*e^3 + 6*a^2*c^2*d^3*e^4 + 9*b^2*c^2*d^5*e^2 + 2*a^3*c*d*e^6 - 7*b*c
^3*d^6*e - 15*a*b*c^2*d^4*e^3 + 12*a*b^2*c*d^3*e^4 - 9*a^2*b*c*d^2*e^5))/e^
8 + (2*c^4*x^7)/(7*e)
```

<u>**sympy**</u> **[A]**   time = 1.36, size = 641, normalized size = 1.61

$$\frac{2c^4x^7}{7e} + x^6\left(\frac{7bc^3}{6e} - \frac{c^4d}{3e^2}\right) + x^5\left(\frac{6ac^3}{5e} + \frac{9b^2c^2}{5e} - \frac{7bc^3d}{5e^2} + \frac{2c^4d^2}{5e^3}\right) + x^4\left(\frac{15abc^2}{4e} - \frac{3ac^3d}{2e^2} + \frac{5b^3c}{4e} - \frac{9b^2c^2d}{4e^2} + \frac{7bc^3d^2}{4e^3} - \frac{c^4d^3}{2e^4}\right) + x^3\left(\frac{2a^2c^2}{e} + \frac{4ab^2c}{e} - \frac{5abc^2d}{e^2} + \frac{2ac^3d^2}{e^3} + \frac{b^4}{3e} - \frac{5b^3cd}{3e^2} + \frac{3b^2c^2d^2}{e^3} - \frac{7bc^3d^3}{3e^4} + \frac{2c^4d^4}{3e^5}\right) + x^2\left(\frac{9a^2bc}{2e} - \frac{3a^2c^2d}{e^2} + \frac{3ab^3}{2e} - \frac{6ab^2cd}{e^2} + \frac{15abc^2d^2}{2e^3} - \frac{3ac^3d^3}{e^4} - \frac{b^4d}{2e^2} + \frac{5b^3cd^2}{2e^3} - \frac{9b^2c^2d^3}{2e^4} + \frac{7bc^3d^4}{2e^5} - \frac{c^4d^5}{e^6}\right) + x\left(\frac{2a^3c}{e} + \frac{3a^2b^2}{e} - \frac{9a^2bcd}{e^2} + \frac{6a^2c^2d^2}{e^3} - \frac{3ab^3d}{e^2} + \frac{12ab^2cd^2}{e^3} - \frac{15abc^2d^3}{e^4} + \frac{6ac^3d^4}{e^5} + \frac{b^4d^2}{e^3} - \frac{5b^3cd^3}{e^4} + \frac{9b^2c^2d^4}{e^5} - \frac{7bc^3d^5}{e^6} + \frac{2c^4d^6}{e^7}\right) + \frac{(be-2cd)\left(ae^2-bde+cd^2\right)^3\log(d+ex)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d),x)
```

```
[Out] 2*c**4*x**7/(7*e) + x**6*(7*b*c**3/(6*e) - c**4*d/(3*e**2)) + x**5*(6*a*c**
3/(5*e) + 9*b**2*c**2/(5*e) - 7*b*c**3*d/(5*e**2) + 2*c**4*d**2/(5*e**3)) +
 x**4*(15*a*b*c**2/(4*e) - 3*a*c**3*d/(2*e**2) + 5*b**3*c/(4*e) - 9*b**2*c*
*2*d/(4*e**2) + 7*b*c**3*d**2/(4*e**3) - c**4*d**3/(2*e**4)) + x**3*(2*a**2
*c**2/e + 4*a*b**2*c/e - 5*a*b*c**2*d/e**2 + 2*a*c**3*d**2/e**3 + b**4/(3*e
) - 5*b**3*c*d/(3*e**2) + 3*b**2*c**2*d**2/e**3 - 7*b*c**3*d**3/(3*e**4) +
2*c**4*d**4/(3*e**5)) + x**2*(9*a**2*b*c/(2*e) - 3*a**2*c**2*d/e**2 + 3*a*b
**3/(2*e) - 6*a*b**2*c*d/e**2 + 15*a*b*c**2*d**2/(2*e**3) - 3*a*c**3*d**3/e
**4 - b**4*d/(2*e**2) + 5*b**3*c*d**2/(2*e**3) - 9*b**2*c**2*d**3/(2*e**4)
+ 7*b*c**3*d**4/(2*e**5) - c**4*d**5/e**6) + x*(2*a**3*c/e + 3*a**2*b**2/e
- 9*a**2*b*c*d/e**2 + 6*a**2*c**2*d**2/e**3 - 3*a*b**3*d/e**2 + 12*a*b**2*c
*d**2/e**3 - 15*a*b*c**2*d**3/e**4 + 6*a*c**3*d**4/e**5 + b**4*d**2/e**3 -
5*b**3*c*d**3/e**4 + 9*b**2*c**2*d**4/e**5 - 7*b*c**3*d**5/e**6 + 2*c**4*d*
*6/e**7) + (b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**3*log(d + e*x)/e**8
```

3.1328 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=396

$$\frac{(d+ex)^2\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{2e^8}+\frac{3c^2(d\ldots}{}$$

Rubi [A] time = 0.57, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{(d+ex)^2\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{2e^8}+\frac{3c^2(d+ex)^4\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{4e^8}-\frac{5c(d+ex)^3(2cd-be)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{3e^8}-\frac{3x(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^7}+\frac{\log(d+ex)\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{e^8}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^3}{e^8(d+ex)}-\frac{7c^3(d+ex)^5(2cd-be)}{5e^8}+\frac{c^4(d+ex)^6}{3e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (-3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d
 - 3*a*e))*x)/e^7 + ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(e^8*(d + e*x
)) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7
*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^2)
/(2*e^8) - (5*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(
d + e*x)^3)/(3*e^8) + (3*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))
*(d + e*x)^4)/(4*e^8) - (7*c^3*(2*c*d - b*e)*(d + e*x)^5)/(5*e^8) + (c^4*(d
 + e*x)^6)/(3*e^8) + ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2
*c*e*(7*b*d - a*e))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx=\int \left(\frac{3(2cd-be)\left(cd^2-bde+ae^2\right)\left(-7c^2d^2+7bcde-b^2e^2-3ace^2\right)}{e^7}+\frac{(-2cd\ldots}{}\right.$$

$$=-\frac{3(2cd-be)\left(cd^2-bde+ae^2\right)\left(7c^2d^2+b^2e^2-ce(7bd-3ae)\right)x}{e^7}+\frac{(2cd-be\ldots}{}$$

Mathematica [A] time = 0.25, size = 637, normalized size = 1.61

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (2*c^4*(60*d^7 - 360*d^6*e*x - 210*d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^
4*x^4 + 21*d^2*e^5*x^5 - 14*d*e^6*x^6 + 10*e^7*x^7) + 30*b*e^4*(6*a^2*b*d*e
^2 - 2*a^3*e^3 + 6*a*b^2*e*(-d^2 + d*e*x + e^2*x^2) + b^3*(2*d^3 - 4*d^2*e*
x - 3*d*e^2*x^2 + e^3*x^3)) + 20*c*e^3*(6*a^3*d*e^3 + 27*a^2*b*e^2*(-d^2 +
d*e*x + e^2*x^2) + 18*a*b^2*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) -
```

5*b^3*(3*d^4 - 9*d^3*e*x - 6*d^2*e^2*x^2 + 2*d*e^3*x^3 - e^4*x^4)) + 15*c^
2*e^2*(12*a^2*e^2*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 20*a*b*e*(-
3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + 3*b^2*(12*d^5
- 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5))
+ 6*c^3*e*(5*a*e*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5
*d*e^4*x^4 + 3*e^5*x^5) - 7*b*(10*d^6 - 50*d^5*e*x - 30*d^4*e^2*x^2 + 10*d^
3*e^3*x^3 - 5*d^2*e^4*x^4 + 3*d*e^5*x^5 - 2*e^6*x^6)) + 60*(14*c^2*d^2 + 3*
b^2*e^2 + 2*c*e*(-7*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)*Log[
d + e*x])/(60*e^8*(d + e*x))

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]

[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2, x]

fricas [B] time = 0.42, size = 903, normalized size = 2.28

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="fricas")

[Out] 1/60*(20*c^4*e^7*x^7 + 120*c^4*d^7 - 420*b*c^3*d^6*e - 60*a^3*b*e^7 + 180*(
3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 300*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 60*(b^4 +
12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 180*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + 60*(3*a
^2*b^2 + 2*a^3*c)*d*e^6 - 28*(c^4*d*e^6 - 3*b*c^3*e^7)*x^6 + 3*(14*c^4*d^2*
e^5 - 42*b*c^3*d*e^6 + 15*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 5*(14*c^4*d^3*e^
4 - 42*b*c^3*d^2*e^5 + 15*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 20*(b^3*c + 3*a*b*c
^2)*e^7)*x^4 + 10*(14*c^4*d^4*e^3 - 42*b*c^3*d^3*e^4 + 15*(3*b^2*c^2 + 2*a*
c^3)*d^2*e^5 - 20*(b^3*c + 3*a*b*c^2)*d*e^6 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c
^2)*e^7)*x^3 - 30*(14*c^4*d^5*e^2 - 42*b*c^3*d^4*e^3 + 15*(3*b^2*c^2 + 2*a*
c^3)*d^3*e^4 - 20*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 3*(b^4 + 12*a*b^2*c + 6*a^2
*c^2)*d*e^6 - 6*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 - 60*(12*c^4*d^6*e - 35*b*c^3*
d^5*e^2 + 12*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 15*(b^3*c + 3*a*b*c^2)*d^3*e^4
+ 2*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 3*(a*b^3 + 3*a^2*b*c)*d*e^6)*
x + 60*(14*c^4*d^7 - 42*b*c^3*d^6*e + 15*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 20
*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 6
*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6 + (14*c^4*d^6*e
- 42*b*c^3*d^5*e^2 + 15*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 20*(b^3*c + 3*a*b*c
^2)*d^3*e^4 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*b^3 + 3*a^2*b
*c)*d*e^6 + (3*a^2*b^2 + 2*a^3*c)*e^7)*x)*log(e*x + d))/(e^9*x + d*e^8)

giac [B] time = 0.20, size = 828, normalized size = 2.09

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="giac")

[Out] 1/60*(20*c^4 - 84*(2*c^4*d*e - b*c^3*e^2)*e^(-1)/(x*e + d) + 45*(14*c^4*d^2
*e^2 - 14*b*c^3*d*e^3 + 3*b^2*c^2*e^4 + 2*a*c^3*e^4)*e^(-2)/(x*e + d)^2 - 1
00*(14*c^4*d^3*e^3 - 21*b*c^3*d^2*e^4 + 9*b^2*c^2*d*e^5 + 6*a*c^3*d*e^5 - b
^3*c*e^6 - 3*a*b*c^2*e^6)*e^(-3)/(x*e + d)^3 + 30*(70*c^4*d^4*e^4 - 140*b*c
^3*d^3*e^5 + 90*b^2*c^2*d^2*e^6 + 60*a*c^3*d^2*e^6 - 20*b^3*c*d*e^7 - 60*a*

```
b*c^2*d*e^7 + b^4*e^8 + 12*a*b^2*c*e^8 + 6*a^2*c^2*e^8)*e^(-4)/(x*e + d)^4
- 180*(14*c^4*d^5*e^5 - 35*b*c^3*d^4*e^6 + 30*b^2*c^2*d^3*e^7 + 20*a*c^3*d^
3*e^7 - 10*b^3*c*d^2*e^8 - 30*a*b*c^2*d^2*e^8 + b^4*d*e^9 + 12*a*b^2*c*d*e^
9 + 6*a^2*c^2*d*e^9 - a*b^3*e^10 - 3*a^2*b*c*e^10)*e^(-5)/(x*e + d)^5)*(x*e
 + d)^6*e^(-8) - (14*c^4*d^6 - 42*b*c^3*d^5*e + 45*b^2*c^2*d^4*e^2 + 30*a*c
^3*d^4*e^2 - 20*b^3*c*d^3*e^3 - 60*a*b*c^2*d^3*e^3 + 3*b^4*d^2*e^4 + 36*a*b
^2*c*d^2*e^4 + 18*a^2*c^2*d^2*e^4 - 6*a*b^3*d*e^5 - 18*a^2*b*c*d*e^5 + 3*a^
2*b^2*e^6 + 2*a^3*c*e^6)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (2*c
^4*d^7*e^6/(x*e + d) - 7*b*c^3*d^6*e^7/(x*e + d) + 9*b^2*c^2*d^5*e^8/(x*e +
 d) + 6*a*c^3*d^5*e^8/(x*e + d) - 5*b^3*c*d^4*e^9/(x*e + d) - 15*a*b*c^2*d^
4*e^9/(x*e + d) + b^4*d^3*e^10/(x*e + d) + 12*a*b^2*c*d^3*e^10/(x*e + d) +
6*a^2*c^2*d^3*e^10/(x*e + d) - 3*a*b^3*d^2*e^11/(x*e + d) - 9*a^2*b*c*d^2*e
^11/(x*e + d) + 3*a^2*b^2*d*e^12/(x*e + d) + 2*a^3*c*d*e^12/(x*e + d) - a^3
*b*e^13/(x*e + d))*e^(-14)
```

maple [B] time = 0.06, size = 930, normalized size = 2.35

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x)
```

```
[Out] 9/4/e^2*x^4*b^2*c^2+3/2/e^4*x^4*c^4*d^2-1/e/(e*x+d)*a^3*b-12/e^7*c^4*d^5*x+
3/e^2*a*b^3*x-2/e^3*b^4*d*x-8/3/e^5*x^3*c^4*d^3+3/e^2*x^2*a^2*c^2+5/3/e^2*x
^3*b^3*c+7/5/e^2*x^5*b*c^3-4/5/e^3*x^5*c^4*d+3/2/e^2*x^4*a*c^3+5/e^6*x^2*c^
4*d^4+14/e^8*ln(e*x+d)*c^4*d^6+1/e^4/(e*x+d)*b^4*d^3+2/e^8/(e*x+d)*c^4*d^7+
2/e^2*ln(e*x+d)*a^3*c+3/e^2*ln(e*x+d)*a^2*b^2+3/e^4*ln(e*x+d)*b^4*d^2-24/e^
3*a*b^2*c*d*x+45/e^4*a*b*c^2*d^2*x-15/e^3*x^2*a*b*c^2*d-9/e^3/(e*x+d)*a^2*b
*c*d^2+12/e^4/(e*x+d)*a*b^2*c*d^3-15/e^5/(e*x+d)*a*b*c^2*d^4-18/e^3*ln(e*x+
d)*a^2*b*c*d+1/2/e^2*x^2*b^4+1/3/e^2*c^4*x^6+6/e^4/(e*x+d)*a^2*c^2*d^3-24/e
^5*a*c^3*d^3*x+15/e^4*b^3*c*d^2*x-3/e^3/(e*x+d)*a*b^3*d^2+6/e^6/(e*x+d)*a*c
^3*d^5-5/e^5/(e*x+d)*b^3*c*d^4+9/e^6/(e*x+d)*b^2*c^2*d^5-7/e^7/(e*x+d)*b*c^
3*d^6+2/e^2/(e*x+d)*a^3*c*d+3/e^2/(e*x+d)*d*a^2*b^2+36/e^4*ln(e*x+d)*a*b^2*
c*d^2-60/e^5*ln(e*x+d)*a*b*c^2*d^3+18/e^4*ln(e*x+d)*a^2*c^2*d^2-6/e^3*ln(e*
x+d)*a*b^3*d+30/e^6*ln(e*x+d)*a*c^3*d^4-20/e^5*ln(e*x+d)*b^3*c*d^3+45/e^6*l
n(e*x+d)*b^2*c^2*d^4-42/e^7*ln(e*x+d)*b*c^3*d^5-36/e^5*b^2*c^2*d^3*x+35/e^6
*b*c^3*d^4*x+9/e^2*a^2*b*c*x-12/e^3*a^2*c^2*d*x+9/e^4*x^2*a*c^3*d^2-14/e^5*
x^2*b*c^3*d^3-5/e^3*x^2*b^3*c*d+27/2/e^4*x^2*b^2*c^2*d^2-7/2/e^3*x^4*b*c^3*
d+5/e^2*x^3*a*b*c^2-4/e^3*x^3*a*c^3*d-6/e^3*x^3*b^2*c^2*d+7/e^4*x^3*b*c^3*d
^2+6/e^2*x^2*a*b^2*c
```

maxima [A] time = 0.71, size = 649, normalized size = 1.64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 -
5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*
(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6)/(e^9*x + d*e^8)
+ 1/60*(20*c^4*e^5*x^6 - 12*(4*c^4*d*e^4 - 7*b*c^3*e^5)*x^5 + 15*(6*c^4*d^2
*e^3 - 14*b*c^3*d*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*e^5)*x^4 - 20*(8*c^4*d^3*e^
2 - 21*b*c^3*d^2*e^3 + 6*(3*b^2*c^2 + 2*a*c^3)*d*e^4 - 5*(b^3*c + 3*a*b*c^2
)*e^5)*x^3 + 30*(10*c^4*d^4*e - 28*b*c^3*d^3*e^2 + 9*(3*b^2*c^2 + 2*a*c^3)*
d^2*e^3 - 10*(b^3*c + 3*a*b*c^2)*d*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^5
)*x^2 - 60*(12*c^4*d^5 - 35*b*c^3*d^4*e + 12*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2
- 15*(b^3*c + 3*a*b*c^2)*d^2*e^3 + 2*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 -
 3*(a*b^3 + 3*a^2*b*c)*e^5)*x)/e^7 + (14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b
```

```
^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*
b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a
^3*c)*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 1.82, size = 1090, normalized size = 2.75

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x)
```

```
[Out] x^5*((7*b*c^3)/(5*e^2) - (4*c^4*d)/(5*e^3)) + x^3*((2*d*((2*d*((7*b*c^3)/e^
2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/(3*e)
 - (d^2*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/(3*e^2) + (5*b*c*(3*a*c + b^2))/(3
*e^2)) - x^4*((d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/(2*e) - (6*a*c^3 + 9*b^2*
c^2)/(4*e^2) + (c^4*d^2)/(2*e^4)) - x*((2*d*((b^4 + 6*a^2*c^2 + 12*a*b^2*c)
/e^2 + (d^2*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2
)/e^2 + (2*c^4*d^2)/e^4))/e^2 - (2*d*((2*d*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)
/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/e - (d^2*((7*b*c^3
)/e^2 - (4*c^4*d)/e^3))/e^2 + (5*b*c*(3*a*c + b^2))/e^2))/e))/e + (d^2*((2*
d*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2
*c^4*d^2)/e^4))/e - (d^2*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e^2 + (5*b*c*(3*a
*c + b^2))/e^2))/e^2 - (3*a*b*(3*a*c + b^2))/e^2) + x^2*((b^4 + 6*a^2*c^2 +
 12*a*b^2*c)/(2*e^2) + (d^2*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e - (6*a
*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/(2*e^2) - (d*((2*d*((2*d*((7*b*c^
3)/e^2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/
e - (d^2*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e^2 + (5*b*c*(3*a*c + b^2))/e^2))
/e) + (log(d + e*x)*(14*c^4*d^6 + 2*a^3*c*e^6 + 3*a^2*b^2*e^6 + 3*b^4*d^2*e
^4 + 30*a*c^3*d^4*e^2 - 20*b^3*c*d^3*e^3 + 18*a^2*c^2*d^2*e^4 + 45*b^2*c^2*
d^4*e^2 - 6*a*b^3*d*e^5 - 42*b*c^3*d^5*e - 18*a^2*b*c*d*e^5 - 60*a*b*c^2*d^
3*e^3 + 36*a*b^2*c*d^2*e^4))/e^8 + (c^4*x^6)/(3*e^2) + (2*c^4*d^7 - a^3*b*e
^7 + b^4*d^3*e^4 - 3*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 + 6*a*c^3*d^5*e^2 - 5*
b^3*c*d^4*e^3 + 6*a^2*c^2*d^3*e^4 + 9*b^2*c^2*d^5*e^2 + 2*a^3*c*d*e^6 - 7*b
*c^3*d^6*e - 15*a*b*c^2*d^4*e^3 + 12*a*b^2*c*d^3*e^4 - 9*a^2*b*c*d^2*e^5)/(
e*(d*e^7 + e^8*x))
```

sympy [A] time = 4.11, size = 688, normalized size = 1.74

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**2,x)
```

```
[Out] c**4*x**6/(3*e**2) + x**5*(7*b*c**3/(5*e**2) - 4*c**4*d/(5*e**3)) + x**4*(3
*a*c**3/(2*e**2) + 9*b**2*c**2/(4*e**2) - 7*b*c**3*d/(2*e**3) + 3*c**4*d**2
/(2*e**4)) + x**3*(5*a*b*c**2/e**2 - 4*a*c**3*d/e**3 + 5*b**3*c/(3*e**2) -
6*b**2*c**2*d/e**3 + 7*b*c**3*d**2/e**4 - 8*c**4*d**3/(3*e**5)) + x**2*(3*a
**2*c**2/e**2 + 6*a*b**2*c/e**2 - 15*a*b*c**2*d/e**3 + 9*a*c**3*d**2/e**4 +
 b**4/(2*e**2) - 5*b**3*c*d/e**3 + 27*b**2*c**2*d**2/(2*e**4) - 14*b*c**3*d
**3/e**5 + 5*c**4*d**4/e**6) + x*(9*a**2*b*c/e**2 - 12*a**2*c**2*d/e**3 + 3
*a*b**3/e**2 - 24*a*b**2*c*d/e**3 + 45*a*b*c**2*d**2/e**4 - 24*a*c**3*d**3/
e**5 - 2*b**4*d/e**3 + 15*b**3*c*d**2/e**4 - 36*b**2*c**2*d**3/e**5 + 35*b*
c**3*d**4/e**6 - 12*c**4*d**5/e**7) + (-a**3*b*e**7 + 2*a**3*c*d*e**6 + 3*a
**2*b**2*d*e**6 - 9*a**2*b*c*d**2*e**5 + 6*a**2*c**2*d**3*e**4 - 3*a*b**3*d
**2*e**5 + 12*a*b**2*c*d**3*e**4 - 15*a*b*c**2*d**4*e**3 + 6*a*c**3*d**5*e*
*2 + b**4*d**3*e**4 - 5*b**3*c*d**4*e**3 + 9*b**2*c**2*d**5*e**2 - 7*b*c**3
*d**6*e + 2*c**4*d**7)/(d*e**8 + e**9*x) + (a*e**2 - b*d*e + c*d**2)**2*(2*
a*c*e**2 + 3*b**2*e**2 - 14*b*c*d*e + 14*c**2*d**2)*log(d + e*x)/e**8
```

3.1329 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=390

$$\frac{x\left(3c^2e^2\left(2a^2e^2-15abde+18b^2d^2\right)-3b^2ce^3(5bd-4ae)-2c^3d^2e(35bd-18ae)+b^4e^4+30c^4d^4\right)}{e^7}-\frac{cx^2\left(-6c^2de\right.}{}$$

Rubi [A] time = 0.51, antiderivative size = 390, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{x\left(3c^2e^2\left(2a^2e^2-15abde+18b^2d^2\right)-3b^2ce^3(5bd-4ae)-2c^3d^2e(35bd-18ae)+b^4e^4+30c^4d^4\right)}{e^7}+\frac{c^2x^3\left(-ce(7bd-2ae)+3b^2e^2+4c^2d^2\right)}{e^5}-\frac{cx^2\left(-6c^2de(7bd-3ae)+3bce^2(9bd-5ae)-5b^3e^3+20c^3d^3\right)}{2e^6}-\frac{\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{e^8(d+ex)}-\frac{3(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^3}{2e^8(d+ex)^2}-\frac{c^3x^4(6cd-7be)}{4e^4}+\frac{2c^4x^5}{5e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] ((30*c^4*d^4 + b^4*e^4 - 2*c^3*d^2*e*(35*b*d - 18*a*e) - 3*b^2*c*e^3*(5*b*d
 - 4*a*e) + 3*c^2*e^2*(18*b^2*d^2 - 15*a*b*d*e + 2*a^2*e^2))*x)/e^7 - (c*(2
0*c^3*d^3 - 5*b^3*e^3 + 3*b*c*e^2*(9*b*d - 5*a*e) - 6*c^2*d*e*(7*b*d - 3*a*
e))*x^2)/(2*e^6) + (c^2*(4*c^2*d^2 + 3*b^2*e^2 - c*e*(7*b*d - 2*a*e))*x^3)/
e^5 - (c^3*(6*c*d - 7*b*e)*x^4)/(4*e^4) + (2*c^4*x^5)/(5*e^3) + ((2*c*d - b
*e)*(c*d^2 - b*d*e + a*e^2)^3)/(2*e^8*(d + e*x)^2) - ((c*d^2 - b*d*e + a*e^
2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(e^8*(d + e*x)) - (3*(
2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*
a*e))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx = \int \left(\frac{30c^4d^4+b^4e^4-2c^3d^2e(35bd-18ae)-3b^2ce^3(5bd-4ae)+3c^2e^2\left(18b^2\right.}{e^7}\right.$$

$$= \frac{\left(30c^4d^4+b^4e^4-2c^3d^2e(35bd-18ae)-3b^2ce^3(5bd-4ae)+3c^2e^2\left(18b^2d^2\right.\right.}{e^7}$$

Mathematica [A] time = 0.16, size = 403, normalized size = 1.03

$$\frac{-60(2cd-be)\log(d+ex)\left(ce^2\left(3a^2e^2-10abde+8b^2d^2\right)+b^2e^3(ae-bd)-2c^2d^2e(7bd-5ae)+7c^3d^4\right)+20ex\left(3c^2e^2\left(2a^2e^2-15abde+18b^2d^2\right)-3b^2ce^3(5bd-4ae)+2c^3d^2e(18ae-35bd)+b^4e^4+30c^4d^4\right)-10ce^2x^2\left(-6c^2de(7bd-3ae)+3bce^2(9bd-5ae)-5b^3e^3+20c^3d^3\right)-\frac{20\left(2ce(ae-7bd)+3b^2e^2+14c^2d^2\right)\left(e(ae-bd)+cd^2\right)^2}{d+ex}+20c^2e^3x^3\left(ce(2ae-7bd)+3b^2e^2+4c^2d^2\right)+\frac{10(2cd-be)\left(e(ae-bd)+cd^2\right)^3}{(d+ex)^2}-5c^3e^4x^4(6cd-7be)+8c^4e^5x^5}{20e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (20*e*(30*c^4*d^4 + b^4*e^4 - 3*b^2*c*e^3*(5*b*d - 4*a*e) + 2*c^3*d^2*e*(-3
5*b*d + 18*a*e) + 3*c^2*e^2*(18*b^2*d^2 - 15*a*b*d*e + 2*a^2*e^2))*x - 10*c
*e^2*(20*c^3*d^3 - 5*b^3*e^3 + 3*b*c*e^2*(9*b*d - 5*a*e) - 6*c^2*d*e*(7*b*d
 - 3*a*e))*x^2 + 20*c^2*e^3*(4*c^2*d^2 + 3*b^2*e^2 + c*e*(-7*b*d + 2*a*e))*
x^3 - 5*c^3*e^4*(6*c*d - 7*b*e)*x^4 + 8*c^4*e^5*x^5 + (10*(2*c*d - b*e)*(c*
```

```
d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^2 - (20*(14*c^2*d^2 + 3*b^2*e^2 + 2*c*
e*(-7*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x) - 60*(2*c*d - b*e
)*(7*c^3*d^4 - 2*c^2*d^2*e*(7*b*d - 5*a*e) + b^2*e^3*(-(b*d) + a*e) + c*e^2
*(8*b^2*d^2 - 10*a*b*d*e + 3*a^2*e^2))*Log[d + e*x])/(20*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3, x]
```

fricas [B] time = 0.42, size = 990, normalized size = 2.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(8*c^4*e^7*x^7 - 260*c^4*d^7 + 770*b*c^3*d^6*e - 10*a^3*b*e^7 - 270*(3
*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 350*(b^3*c + 3*a*b*c^2)*d^4*e^3 - 50*(b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + 90*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - 10*(3*a^2
*b^2 + 2*a^3*c)*d*e^6 - 7*(2*c^4*d*e^6 - 5*b*c^3*e^7)*x^6 + 2*(14*c^4*d^2*e
^5 - 35*b*c^3*d*e^6 + 10*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 5*(14*c^4*d^3*e^4
 - 35*b*c^3*d^2*e^5 + 10*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 10*(b^3*c + 3*a*b*c^
2)*e^7)*x^4 + 20*(14*c^4*d^4*e^3 - 35*b*c^3*d^3*e^4 + 10*(3*b^2*c^2 + 2*a*c
^3)*d^2*e^5 - 10*(b^3*c + 3*a*b*c^2)*d*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)
*e^7)*x^3 + 10*(100*c^4*d^5*e^2 - 238*b*c^3*d^4*e^3 + 63*(3*b^2*c^2 + 2*a*c
^3)*d^3*e^4 - 55*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 4*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d*e^6)*x^2 + 20*(16*c^4*d^6*e - 28*b*c^3*d^5*e^2 + 3*(3*b^2*c^2 + 2*a*
c^3)*d^4*e^3 + 5*(b^3*c + 3*a*b*c^2)*d^3*e^4 - 2*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^2*e^5 + 6*(a*b^3 + 3*a^2*b*c)*d*e^6 - (3*a^2*b^2 + 2*a^3*c)*e^7)*x -
 60*(14*c^4*d^7 - 35*b*c^3*d^6*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 10*(b
^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - (a*b^3
 + 3*a^2*b*c)*d^2*e^5 + (14*c^4*d^5*e^2 - 35*b*c^3*d^4*e^3 + 10*(3*b^2*c^2
+ 2*a*c^3)*d^3*e^4 - 10*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d*e^6 - (a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 2*(14*c^4*d^6*e - 35*b*c^3
*d^5*e^2 + 10*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 10*(b^3*c + 3*a*b*c^2)*d^3*e^
4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - (a*b^3 + 3*a^2*b*c)*d*e^6)*x)*
log(e*x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.17, size = 694, normalized size = 1.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(14*c^4*d^5 - 35*b*c^3*d^4*e + 30*b^2*c^2*d^3*e^2 + 20*a*c^3*d^3*e^2 - 1
0*b^3*c*d^2*e^3 - 30*a*b*c^2*d^2*e^3 + b^4*d*e^4 + 12*a*b^2*c*d*e^4 + 6*a^2
*c^2*d*e^4 - a*b^3*e^5 - 3*a^2*b*c*e^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(8*
c^4*x^5*e^12 - 30*c^4*d*x^4*e^11 + 80*c^4*d^2*x^3*e^10 - 200*c^4*d^3*x^2*e^
9 + 600*c^4*d^4*x*e^8 + 35*b*c^3*x^4*e^12 - 140*b*c^3*d*x^3*e^11 + 420*b*c^
3*d^2*x^2*e^10 - 1400*b*c^3*d^3*x*e^9 + 60*b^2*c^2*x^3*e^12 + 40*a*c^3*x^3*
e^12 - 270*b^2*c^2*d*x^2*e^11 - 180*a*c^3*d*x^2*e^11 + 1080*b^2*c^2*d^2*x*e
^10 + 720*a*c^3*d^2*x*e^10 + 50*b^3*c*x^2*e^12 + 150*a*b*c^2*x^2*e^12 - 300
```

```
*b^3*c*d*x*e^11 - 900*a*b*c^2*d*x*e^11 + 20*b^4*x*e^12 + 240*a*b^2*c*x*e^12
 + 120*a^2*c^2*x*e^12)*e^(-15) - 1/2*(26*c^4*d^7 - 77*b*c^3*d^6*e + 81*b^2*
c^2*d^5*e^2 + 54*a*c^3*d^5*e^2 - 35*b^3*c*d^4*e^3 - 105*a*b*c^2*d^4*e^3 + 5
*b^4*d^3*e^4 + 60*a*b^2*c*d^3*e^4 + 30*a^2*c^2*d^3*e^4 - 9*a*b^3*d^2*e^5 -
27*a^2*b*c*d^2*e^5 + 3*a^2*b^2*d*e^6 + 2*a^3*c*d*e^6 + a^3*b*e^7 + 2*(14*c^
4*d^6*e - 42*b*c^3*d^5*e^2 + 45*b^2*c^2*d^4*e^3 + 30*a*c^3*d^4*e^3 - 20*b^3
*c*d^3*e^4 - 60*a*b*c^2*d^3*e^4 + 3*b^4*d^2*e^5 + 36*a*b^2*c*d^2*e^5 + 18*a
^2*c^2*d^2*e^5 - 6*a*b^3*d*e^6 - 18*a^2*b*c*d*e^6 + 3*a^2*b^2*e^7 + 2*a^3*c
*e^7)*x)*e^(-8)/(x*e + d)^2
```

maple [B] time = 0.07, size = 978, normalized size = 2.51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x)
```

```
[Out] 6/e^4/(e*x+d)^2*a*b^2*c*d^3+60/e^5/(e*x+d)*a*b*c^2*d^3-9/2/e^3/(e*x+d)^2*d^
2*a^2*b*c-15/2/e^5/(e*x+d)^2*a*b*c^2*d^4-45/e^4*a*b*c^2*d*x+18/e^3/(e*x+d)*
a^2*b*c*d-36/e^4/(e*x+d)*a*b^2*c*d^2+3/2/e^2/(e*x+d)^2*d*a^2*b^2+3/e^4/(e*x
+d)^2*a^2*c^2*d^3-3/2/e^3/(e*x+d)^2*d^2*a*b^3+3/e^6/(e*x+d)^2*a*c^3*d^5-5/2
/e^5/(e*x+d)^2*b^3*c*d^4+9/2/e^6/(e*x+d)^2*b^2*c^2*d^5+30/e^5*ln(e*x+d)*b^3
*c*d^2-18/e^4/(e*x+d)*a^2*c^2*d^2+6/e^3/(e*x+d)*a*b^3*d-30/e^6/(e*x+d)*a*c^
3*d^4+20/e^5/(e*x+d)*b^3*c*d^3-45/e^6/(e*x+d)*b^2*c^2*d^4+42/e^7/(e*x+d)*b*
c^3*d^5+1/e^2/(e*x+d)^2*a^3*c*d+7/4/e^3*x^4*b*c^3+2/e^3*x^3*a*c^3-3/2/e^4*x
^4*c^4*d-2/e^2/(e*x+d)*a^3*c-3/e^2/(e*x+d)*a^2*b^2-3/e^4/(e*x+d)*b^4*d^2-14
/e^8/(e*x+d)*c^4*d^6-1/2/e/(e*x+d)^2*a^3*b+1/2/e^4/(e*x+d)^2*b^4*d^3+1/e^8/
(e*x+d)^2*c^4*d^7+3/e^3*ln(e*x+d)*a*b^3-3/e^4*ln(e*x+d)*b^4*d-42/e^8*ln(e*x
+d)*c^4*d^5+3/e^3*x^3*b^2*c^2+4/e^5*x^3*c^4*d^2+5/2/e^3*x^2*b^3*c-10/e^6*x^
2*c^4*d^3-36/e^4*ln(e*x+d)*a*b^2*c*d+90/e^5*ln(e*x+d)*a*b*c^2*d^2+1/e^3*b^4
*x-7/e^4*x^3*b*c^3*d+6/e^3*c^2*a^2*x+30/e^7*c^4*d^4*x-7/2/e^7/(e*x+d)^2*b*c
^3*d^6+2/5*c^4*x^5/e^3+15/2/e^3*x^2*a*b*c^2-9/e^4*x^2*a*c^3*d-27/2/e^4*x^2*
b^2*c^2*d+21/e^5*x^2*b*c^3*d^2+12/e^3*a*b^2*c*x+36/e^5*a*c^3*d^2*x-15/e^4*b
^3*c*d*x+54/e^5*b^2*c^2*d^2*x-70/e^6*b*c^3*d^3*x-90/e^6*ln(e*x+d)*b^2*c^2*d
^3+105/e^7*ln(e*x+d)*b*c^3*d^4+9/e^3*ln(e*x+d)*a^2*b*c-18/e^4*ln(e*x+d)*a^2
*c^2*d-60/e^6*ln(e*x+d)*a*c^3*d^3
```

maxima [A] time = 0.69, size = 656, normalized size = 1.68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(26*c^4*d^7 - 77*b*c^3*d^6*e + a^3*b*e^7 + 27*(3*b^2*c^2 + 2*a*c^3)*d^
5*e^2 - 35*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 5*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d
^3*e^4 - 9*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6 + 2*(1
4*c^4*d^6*e - 42*b*c^3*d^5*e^2 + 15*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 20*(b^3
*c + 3*a*b*c^2)*d^3*e^4 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*b
^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2 + 2*a^3*c)*e^7)*x)/(e^10*x^2 + 2*d*e^9*x
 + d^2*e^8) + 1/20*(8*c^4*e^4*x^5 - 5*(6*c^4*d*e^3 - 7*b*c^3*e^4)*x^4 + 20*
(4*c^4*d^2*e^2 - 7*b*c^3*d*e^3 + (3*b^2*c^2 + 2*a*c^3)*e^4)*x^3 - 10*(20*c^
4*d^3*e - 42*b*c^3*d^2*e^2 + 9*(3*b^2*c^2 + 2*a*c^3)*d*e^3 - 5*(b^3*c + 3*a
*b*c^2)*e^4)*x^2 + 20*(30*c^4*d^4 - 70*b*c^3*d^3*e + 18*(3*b^2*c^2 + 2*a*c^
3)*d^2*e^2 - 15*(b^3*c + 3*a*b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*
e^4)*x)/e^7 - 3*(14*c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3
*e^2 - 10*(b^3*c + 3*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^
4 - (a*b^3 + 3*a^2*b*c)*e^5)*log(e*x + d)/e^8
```

mupad [B] time = 1.88, size = 936, normalized size = 2.40

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x)
```

```
[Out] x^4*((7*b*c^3)/(4*e^3) - (3*c^4*d)/(2*e^4)) - (x*(14*c^4*d^6 + 2*a^3*c*e^6
+ 3*a^2*b^2*e^6 + 3*b^4*d^2*e^4 + 30*a*c^3*d^4*e^2 - 20*b^3*c*d^3*e^3 + 18*
a^2*c^2*d^2*e^4 + 45*b^2*c^2*d^4*e^2 - 6*a*b^3*d*e^5 - 42*b*c^3*d^5*e - 18*
a^2*b*c*d*e^5 - 60*a*b*c^2*d^3*e^3 + 36*a*b^2*c*d^2*e^4) + (26*c^4*d^7 + a^
3*b*e^7 + 5*b^4*d^3*e^4 - 9*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 + 54*a*c^3*d^5*
e^2 - 35*b^3*c*d^4*e^3 + 30*a^2*c^2*d^3*e^4 + 81*b^2*c^2*d^5*e^2 + 2*a^3*c*
d*e^6 - 77*b*c^3*d^6*e - 105*a*b*c^2*d^4*e^3 + 60*a*b^2*c*d^3*e^4 - 27*a^2*
b*c*d^2*e^5)/(2*e))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) - x^2*((c^4*d^3)/e^6 +
(3*d^2*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/(2*e^2) - (3*d*((3*d*((7*b*c^3)/e^3
 - (6*c^4*d)/e^4))/e - (6*a*c^3 + 9*b^2*c^2)/e^3 + (6*c^4*d^2)/e^5))/(2*e)
- (5*b*c*(3*a*c + b^2))/(2*e^3)) - x^3*((d*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))
/e - (6*a*c^3 + 9*b^2*c^2)/(3*e^3) + (2*c^4*d^2)/e^5) + x*((b^4 + 6*a^2*c^2
 + 12*a*b^2*c)/e^3 + (3*d^2*((3*d*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/e - (6*a
*c^3 + 9*b^2*c^2)/e^3 + (6*c^4*d^2)/e^5))/e^2 + (3*d*((2*c^4*d^3)/e^6 + (3*
d^2*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/e^2 - (3*d*((3*d*((7*b*c^3)/e^3 - (6*c
^4*d)/e^4))/e - (6*a*c^3 + 9*b^2*c^2)/e^3 + (6*c^4*d^2)/e^5))/e - (5*b*c*(3
*a*c + b^2))/e^3))/e - (d^3*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/e^3) + (2*c^4*
x^5)/(5*e^3) - (log(d + e*x)*(42*c^4*d^5 - 3*a*b^3*e^5 + 3*b^4*d*e^4 + 60*a
*c^3*d^3*e^2 + 18*a^2*c^2*d*e^4 - 30*b^3*c*d^2*e^3 + 90*b^2*c^2*d^3*e^2 - 9
*a^2*b*c*e^5 - 105*b*c^3*d^4*e + 36*a*b^2*c*d*e^4 - 90*a*b*c^2*d^2*e^3))/e^
8
```

sympy [A] time = 17.28, size = 733, normalized size = 1.88

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**3,x)
```

```
[Out] 2*c**4*x**5/(5*e**3) + x**4*(7*b*c**3/(4*e**3) - 3*c**4*d/(2*e**4)) + x**3*
(2*a*c**3/e**3 + 3*b**2*c**2/e**3 - 7*b*c**3*d/e**4 + 4*c**4*d**2/e**5) + x
**2*(15*a*b*c**2/(2*e**3) - 9*a*c**3*d/e**4 + 5*b**3*c/(2*e**3) - 27*b**2*c
**2*d/(2*e**4) + 21*b*c**3*d**2/e**5 - 10*c**4*d**3/e**6) + x*(6*a**2*c**2/
e**3 + 12*a*b**2*c/e**3 - 45*a*b*c**2*d/e**4 + 36*a*c**3*d**2/e**5 + b**4/e
**3 - 15*b**3*c*d/e**4 + 54*b**2*c**2*d**2/e**5 - 70*b*c**3*d**3/e**6 + 30*
c**4*d**4/e**7) + (-a**3*b*e**7 - 2*a**3*c*d*e**6 - 3*a**2*b**2*d*e**6 + 27
*a**2*b*c*d**2*e**5 - 30*a**2*c**2*d**3*e**4 + 9*a*b**3*d**2*e**5 - 60*a*b*
*2*c*d**3*e**4 + 105*a*b*c**2*d**4*e**3 - 54*a*c**3*d**5*e**2 - 5*b**4*d**3
*e**4 + 35*b**3*c*d**4*e**3 - 81*b**2*c**2*d**5*e**2 + 77*b*c**3*d**6*e - 2
6*c**4*d**7 + x*(-4*a**3*c*e**7 - 6*a**2*b**2*e**7 + 36*a**2*b*c*d*e**6 - 3
6*a**2*c**2*d**2*e**5 + 12*a*b**3*d*e**6 - 72*a*b**2*c*d**2*e**5 + 120*a*b*
c**2*d**3*e**4 - 60*a*c**3*d**4*e**3 - 6*b**4*d**2*e**5 + 40*b**3*c*d**3*e*
*4 - 90*b**2*c**2*d**4*e**3 + 84*b*c**3*d**5*e**2 - 28*c**4*d**6*e))/(2*d**
2*e**8 + 4*d*e**9*x + 2*e**10*x**2) + 3*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d
**2)*(3*a*c*e**2 + b**2*e**2 - 7*b*c*d*e + 7*c**2*d**2)*log(d + e*x)/e**8
```

3.1330 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=396

$$\frac{\log(d+ex)\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8}-\frac{cx\left(\cdots\right.}{\cdots}$$

Rubi [A] time = 0.51, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{\log(d+ex)\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8}+\frac{c^2x^2\left(6ace^2+9b^2e^2-28bcde+20c^2d^2\right)}{2e^6}-\frac{cx\left(-2c^2de(35bd-12ae)+3bce^2(12bd-5ae)-5b^3e^3+40c^3d^3\right)}{e^7}+\frac{3(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8(d+ex)}-\frac{\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{2e^8(d+ex)^2}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^3}{3e^8(d+ex)^3}-\frac{c^3x^3(8cd-7be)}{3e^5}+\frac{c^4x^4}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] -((c*(40*c^3*d^3 - 5*b^3*e^3 - 2*c^2*d*e*(35*b*d - 12*a*e) + 3*b*c*e^2*(12*
b*d - 5*a*e))*x)/e^7) + (c^2*(20*c^2*d^2 - 28*b*c*d*e + 9*b^2*e^2 + 6*a*c*e
^2)*x^2)/(2*e^6) - (c^3*(8*c*d - 7*b*e)*x^3)/(3*e^5) + (c^4*x^4)/(2*e^4) +
((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(3*e^8*(d + e*x)^3) - ((c*d^2 - b
*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(2*e^8*(d +
 e*x)^2) + (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 -
c*e*(7*b*d - 3*a*e)))/(e^8*(d + e*x)) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^
3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 -
10*a*b*d*e + a^2*e^2))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx=\int\left(\frac{c\left(-40c^3d^3+5b^3e^3+2c^2de(35bd-12ae)-3bce^2(12bd-5ae)\right)}{e^7}+\frac{c^2\left(20\cdots\right.}{\cdots}\right.$$

$$=-\frac{c\left(40c^3d^3-5b^3e^3-2c^2de(35bd-12ae)+3bce^2(12bd-5ae)\right)x}{e^7}+\frac{c^2\left(20c^2\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.15, size = 404, normalized size = 1.02

$$\frac{\frac{18(2cd-be)\left(ce^2\left(3a^2e^2-10abde+8b^2d^2\right)+b^2e^3(ae-bd)-2c^2d^2e(7bd-5ae)+7c^3d^4\right)}{d+ex}+6\log(d+ex)\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)-6cex\left(2c^2de(12ae-35bd)+3bce^2(12bd-5ae)-5b^3e^3+40c^3d^3\right)+3c^2e^2x^2\left(6ace^2+9b^2e^2-28bcde+20c^2d^2\right)-\frac{3\left(2ce(ae-7bd)+3b^2e^2+14c^2d^2\right)\left(e(ae-bd)+cd^2\right)^2}{(d+ex)^2}+\frac{2(2cd-be)\left(e(ae-bd)+cd^2\right)^3}{(d+ex)^3}-2c^3e^3x^3(8cd-7be)+3c^4e^4x^4}{6e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (-6*c*e*(40*c^3*d^3 - 5*b^3*e^3 + 3*b*c*e^2*(12*b*d - 5*a*e) + 2*c^2*d*e*(-
35*b*d + 12*a*e))*x + 3*c^2*e^2*(20*c^2*d^2 - 28*b*c*d*e + 9*b^2*e^2 + 6*a*
c*e^2)*x^2 - 2*c^3*e^3*(8*c*d - 7*b*e)*x^3 + 3*c^4*e^4*x^4 + (2*(2*c*d - b*
e)*(c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^3 - (3*(14*c^2*d^2 + 3*b^2*e^2 +
 2*c*e*(-7*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^2 + (18*(2*c
```

```
*d - b*e)*(7*c^3*d^4 - 2*c^2*d^2*e*(7*b*d - 5*a*e) + b^2*e^3*(-(b*d) + a*e)
 + c*e^2*(8*b^2*d^2 - 10*a*b*d*e + 3*a^2*e^2)))/(d + e*x) + 6*(70*c^4*d^4 +
 b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c
^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*Log[d + e*x])/(6*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4, x]
```

fricas [B] time = 0.42, size = 1031, normalized size = 2.60

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*c^4*e^7*x^7 + 214*c^4*d^7 - 518*b*c^3*d^6*e - 2*a^3*b*e^7 + 141*(3*b
^2*c^2 + 2*a*c^3)*d^5*e^2 - 130*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 11*(b^4 + 12*
a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - (3*a^2*b^2 +
 2*a^3*c)*d*e^6 - 7*(c^4*d*e^6 - 2*b*c^3*e^7)*x^6 + 3*(7*c^4*d^2*e^5 - 14*b
*c^3*d*e^6 + 3*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 15*(7*c^4*d^3*e^4 - 14*b*c^
3*d^2*e^5 + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 2*(b^3*c + 3*a*b*c^2)*e^7)*x^4
- (556*c^4*d^4*e^3 - 1022*b*c^3*d^3*e^4 + 189*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5
 - 90*(b^3*c + 3*a*b*c^2)*d*e^6)*x^3 - 3*(136*c^4*d^5*e^2 - 182*b*c^3*d^4*e
^3 + 9*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 + 30*(b^3*c + 3*a*b*c^2)*d^2*e^5 - 6*(
b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 + 6*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 3*(7
4*c^4*d^6*e - 238*b*c^3*d^5*e^2 + 81*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 90*(b^
3*c + 3*a*b*c^2)*d^3*e^4 + 9*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*
b^3 + 3*a^2*b*c)*d*e^6 - (3*a^2*b^2 + 2*a^3*c)*e^7)*x + 6*(70*c^4*d^7 - 140
*b*c^3*d^6*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^
4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + (70*c^4*d^4*e^3 - 140*b*c^
3*d^3*e^4 + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 20*(b^3*c + 3*a*b*c^2)*d*e^6
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 + 3*(70*c^4*d^5*e^2 - 140*b*c^3*
d^4*e^3 + 30*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 20*(b^3*c + 3*a*b*c^2)*d^2*e^5
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6)*x^2 + 3*(70*c^4*d^6*e - 140*b*c^3*
d^5*e^2 + 30*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^4
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5)*x)*log(e*x + d))/(e^11*x^3 + 3*d
*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [A] time = 0.17, size = 678, normalized size = 1.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (70*c^4*d^4 - 140*b*c^3*d^3*e + 90*b^2*c^2*d^2*e^2 + 60*a*c^3*d^2*e^2 - 20*
b^3*c*d*e^3 - 60*a*b*c^2*d*e^3 + b^4*e^4 + 12*a*b^2*c*e^4 + 6*a^2*c^2*e^4)*
e^(-8)*log(abs(x*e + d)) + 1/6*(3*c^4*x^4*e^12 - 16*c^4*d*x^3*e^11 + 60*c^4
*d^2*x^2*e^10 - 240*c^4*d^3*x*e^9 + 14*b*c^3*x^3*e^12 - 84*b*c^3*d*x^2*e^11
 + 420*b*c^3*d^2*x*e^10 + 27*b^2*c^2*x^2*e^12 + 18*a*c^3*x^2*e^12 - 216*b^2
*c^2*d*x*e^11 - 144*a*c^3*d*x*e^11 + 30*b^3*c*x*e^12 + 90*a*b*c^2*x*e^12)*e
^(-16) + 1/6*(214*c^4*d^7 - 518*b*c^3*d^6*e + 423*b^2*c^2*d^5*e^2 + 282*a*c
```

```
^3*d^5*e^2 - 130*b^3*c*d^4*e^3 - 390*a*b*c^2*d^4*e^3 + 11*b^4*d^3*e^4 + 132
*a*b^2*c*d^3*e^4 + 66*a^2*c^2*d^3*e^4 - 6*a*b^3*d^2*e^5 - 18*a^2*b*c*d^2*e^
5 - 3*a^2*b^2*d*e^6 - 2*a^3*c*d*e^6 - 2*a^3*b*e^7 + 18*(14*c^4*d^5*e^2 - 35
*b*c^3*d^4*e^3 + 30*b^2*c^2*d^3*e^4 + 20*a*c^3*d^3*e^4 - 10*b^3*c*d^2*e^5 -
 30*a*b*c^2*d^2*e^5 + b^4*d*e^6 + 12*a*b^2*c*d*e^6 + 6*a^2*c^2*d*e^6 - a*b^
3*e^7 - 3*a^2*b*c*e^7)*x^2 + 3*(154*c^4*d^6*e - 378*b*c^3*d^5*e^2 + 315*b^2
*c^2*d^4*e^3 + 210*a*c^3*d^4*e^3 - 100*b^3*c*d^3*e^4 - 300*a*b*c^2*d^3*e^4
+ 9*b^4*d^2*e^5 + 108*a*b^2*c*d^2*e^5 + 54*a^2*c^2*d^2*e^5 - 6*a*b^3*d*e^6
- 18*a^2*b*c*d*e^6 - 3*a^2*b^2*e^7 - 2*a^3*c*e^7)*x)*e^(-8)/(x*e + d)^3
```

maple [B] time = 0.06, size = 1023, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x)
```

```
[Out] -5/e^5/(e*x+d)^3*a*b*c^2*d^4+9/e^3/(e*x+d)^2*a^2*b*c*d-18/e^4/(e*x+d)^2*a*b
^2*c*d^2+30/e^5/(e*x+d)^2*a*b*c^2*d^3-60/e^5*ln(e*x+d)*a*b*c^2*d+4/e^4/(e*x
+d)^3*d^3*a*b^2*c+1/2*c^4*x^4/e^4-3/e^3/(e*x+d)*a*b^3+3/e^4/(e*x+d)*b^4*d+4
2/e^8/(e*x+d)*c^4*d^5-1/3/e/(e*x+d)^3*a^3*b+1/3/e^4/(e*x+d)^3*d^3*b^4+2/3/e
^8/(e*x+d)^3*c^4*d^7-1/e^2/(e*x+d)^2*a^3*c+36/e^4/(e*x+d)*a*b^2*c*d+15*c^2/
e^4*a*b*x-14*c^3/e^5*x^2*b*d+70*c^3/e^6*b*d^2*x-9/e^3/(e*x+d)*a^2*b*c+18/e^
4/(e*x+d)*a^2*c^2*d+60/e^6/(e*x+d)*a*c^3*d^3-30/e^5/(e*x+d)*b^3*c*d^2+90/e^
6/(e*x+d)*b^2*c^2*d^3+12/e^4*ln(e*x+d)*a*b^2*c+60/e^6*ln(e*x+d)*a*c^3*d^2-2
0/e^5*ln(e*x+d)*b^3*c*d+90/e^6*ln(e*x+d)*b^2*c^2*d^2-140/e^7*ln(e*x+d)*b*c^
3*d^3-105/e^7/(e*x+d)*b*c^3*d^4+2/3/e^2/(e*x+d)^3*a^3*c*d+1/e^2/(e*x+d)^3*d
*a^2*b^2+2/e^4/(e*x+d)^3*a^2*c^2*d^3-1/e^3/(e*x+d)^3*d^2*a*b^3-90/e^5/(e*x+
d)*a*b*c^2*d^2+1/e^4*ln(e*x+d)*b^4-3/e^3/(e*x+d)^3*d^2*a^2*b*c-3/2/e^2/(e*x
+d)^2*a^2*b^2-3/2/e^4/(e*x+d)^2*b^4*d^2-7/e^8/(e*x+d)^2*c^4*d^6+6/e^4*ln(e*
x+d)*c^2*a^2+70/e^8*ln(e*x+d)*c^4*d^4-8/3*c^4/e^5*x^3*d+3*c^3/e^4*x^2*a+9/2
*c^2/e^4*x^2*b^2+10*c^4/e^6*x^2*d^2+5*c/e^4*b^3*x-40*c^4/e^7*d^3*x+7/3*c^3/
e^4*x^3*b-24*c^3/e^5*a*d*x-36*c^2/e^5*b^2*d*x-15/e^6/(e*x+d)^2*a*c^3*d^4+10
/e^5/(e*x+d)^2*b^3*c*d^3-45/2/e^6/(e*x+d)^2*b^2*c^2*d^4+21/e^7/(e*x+d)^2*b*
c^3*d^5+2/e^6/(e*x+d)^3*a*c^3*d^5-5/3/e^5/(e*x+d)^3*b^3*c*d^4+3/e^6/(e*x+d)
^3*b^2*c^2*d^5-7/3/e^7/(e*x+d)^3*b*c^3*d^6-9/e^4/(e*x+d)^2*a^2*c^2*d^2+3/e^
3/(e*x+d)^2*a*b^3*d
```

maxima [A] time = 0.65, size = 670, normalized size = 1.69

$$\frac{214\,c^4d^7 - 518\,bc^3d^6e - 2\,a^3be^7 + 141\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 - 130\left(b^3c + 3\,abc^2\right)d^4e^3 + 11\left(b^4 + 12\,ab^2c + 6\,a^2c^2\right)d^3e^4 - 6\left(ab^3 + 3\,a^2bc\right)d^2e^5 - \left(3\,a^2b^2 + 2\,a^3c\right)de^6 + 18\left(14\,c^4d^5e^2 - 35\,bc^3d^4e^3 + 10\left(3\,b^2c^2 + 2\,ac^3\right)d^3e^4 - 10\left(b^3c + 3\,abc^2\right)d^2e^5 + \left(b^4 + 12\,ab^2c + 6\,a^2c^2\right)de^6 - \left(ab^3 + 3\,a^2bc\right)e^7\right)x^2 + 3\left(154\,c^4d^6e - 378\,bc^3d^5e^2 + 105\left(3\,b^2c^2 + 2\,ac^3\right)d^4e^3 - 100\left(b^3c + 3\,abc^2\right)d^3e^4 + 9\left(b^4 + 12\,ab^2c + 6\,a^2c^2\right)d^2e^5 - 6\left(ab^3 + 3\,a^2bc\right)de^6 - \left(3\,a^2b^2 + 2\,a^3c\right)e^7\right)x}{6\left(e^{11}x^3 + 3\,de^{10}x^2 + 3\,d^2e^9x + d^3e^8\right)} + \frac{3\,c^4e^3x^4 - 2\left(8\,c^4de^2 - 7\,bc^3e^3\right)x^3 + 3\left(20\,c^4d^2e - 28\,bc^3de^2 + 3\left(3\,b^2c^2 + 2\,ac^3\right)e^3\right)x^2 - 6\left(40\,c^4d^3 - 70\,bc^3d^2e + 12\left(3\,b^2c^2 + 2\,ac^3\right)de^2 - 5\left(b^3c + 3\,abc^2\right)e^3\right)x}{6\,e^7} + \frac{\left(70\,c^4d^4 - 140\,bc^3d^3e + 30\left(3\,b^2c^2 + 2\,ac^3\right)d^2e^2 - 20\left(b^3c + 3\,abc^2\right)de^3 + \left(b^4 + 12\,ab^2c + 6\,a^2c^2\right)e^4\right)\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(214*c^4*d^7 - 518*b*c^3*d^6*e - 2*a^3*b*e^7 + 141*(3*b^2*c^2 + 2*a*c^3
)*d^5*e^2 - 130*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 11*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^3*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - (3*a^2*b^2 + 2*a^3*c)*d*e^6
+ 18*(14*c^4*d^5*e^2 - 35*b*c^3*d^4*e^3 + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4
- 10*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 - (
a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 3*(154*c^4*d^6*e - 378*b*c^3*d^5*e^2 + 105*(3
*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 100*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 9*(b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*b^3 + 3*a^2*b*c)*d*e^6 - (3*a^2*b^2 +
2*a^3*c)*e^7)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8) + 1/6*(3
*c^4*e^3*x^4 - 2*(8*c^4*d*e^2 - 7*b*c^3*e^3)*x^3 + 3*(20*c^4*d^2*e - 28*b*c
^3*d*e^2 + 3*(3*b^2*c^2 + 2*a*c^3)*e^3)*x^2 - 6*(40*c^4*d^3 - 70*b*c^3*d^2*
e + 12*(3*b^2*c^2 + 2*a*c^3)*d*e^2 - 5*(b^3*c + 3*a*b*c^2)*e^3)*x)/e^7 + (7
0*c^4*d^4 - 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c
+ 3*a*b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*log(e*x + d)/e^8
```

mupad [B] time = 1.87, size = 807, normalized size = 2.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x)
```

```
[Out] x^3*((7*b*c^3)/(3*e^4) - (8*c^4*d)/(3*e^5)) - (x*(a^3*c*e^6 - 77*c^4*d^6 +
(3*a^2*b^2*e^6)/2 - (9*b^4*d^2*e^4)/2 - 105*a*c^3*d^4*e^2 + 50*b^3*c*d^3*e^
3 - 27*a^2*c^2*d^2*e^4 - (315*b^2*c^2*d^4*e^2)/2 + 3*a*b^3*d*e^5 + 189*b*c^
3*d^5*e + 9*a^2*b*c*d*e^5 + 150*a*b*c^2*d^3*e^3 - 54*a*b^2*c*d^2*e^4) - x^2
*(3*b^4*d*e^5 - 3*a*b^3*e^6 + 42*c^4*d^5*e + 60*a*c^3*d^3*e^3 + 18*a^2*c^2*
d*e^5 - 105*b*c^3*d^4*e^2 - 30*b^3*c*d^2*e^4 + 90*b^2*c^2*d^3*e^3 - 9*a^2*b
*c*e^6 + 36*a*b^2*c*d*e^5 - 90*a*b*c^2*d^2*e^4) + (2*a^3*b*e^7 - 214*c^4*d^
7 - 11*b^4*d^3*e^4 + 6*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 - 282*a*c^3*d^5*e^2
+ 130*b^3*c*d^4*e^3 - 66*a^2*c^2*d^3*e^4 - 423*b^2*c^2*d^5*e^2 + 2*a^3*c*d*
e^6 + 518*b*c^3*d^6*e + 390*a*b*c^2*d^4*e^3 - 132*a*b^2*c*d^3*e^4 + 18*a^2*
b*c*d^2*e^5)/(6*e))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) - x^2*
((2*d*((7*b*c^3)/e^4 - (8*c^4*d)/e^5))/e - (6*a*c^3 + 9*b^2*c^2)/(2*e^4) +
(6*c^4*d^2)/e^6) - x*((8*c^4*d^3)/e^7 + (6*d^2*((7*b*c^3)/e^4 - (8*c^4*d)/e
^5))/e^2 - (4*d*((4*d*((7*b*c^3)/e^4 - (8*c^4*d)/e^5))/e - (6*a*c^3 + 9*b^2
*c^2)/e^4 + (12*c^4*d^2)/e^6))/e - (5*b*c*(3*a*c + b^2))/e^4) + (c^4*x^4)/(
2*e^4) + (log(d + e*x)*(b^4*e^4 + 70*c^4*d^4 + 6*a^2*c^2*e^4 + 60*a*c^3*d^2
*e^2 + 90*b^2*c^2*d^2*e^2 + 12*a*b^2*c*e^4 - 140*b*c^3*d^3*e - 20*b^3*c*d*e
^3 - 60*a*b*c^2*d*e^3))/e^8
```

sympy [B] time = 71.72, size = 821, normalized size = 2.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**4,x)
```

```
[Out] c**4*x**4/(2*e**4) + x**3*(7*b*c**3/(3*e**4) - 8*c**4*d/(3*e**5)) + x**2*(3
*a*c**3/e**4 + 9*b**2*c**2/(2*e**4) - 14*b*c**3*d/e**5 + 10*c**4*d**2/e**6)
 + x*(15*a*b*c**2/e**4 - 24*a*c**3*d/e**5 + 5*b**3*c/e**4 - 36*b**2*c**2*d/
e**5 + 70*b*c**3*d**2/e**6 - 40*c**4*d**3/e**7) + (-2*a**3*b*e**7 - 2*a**3*
c*d*e**6 - 3*a**2*b**2*d*e**6 - 18*a**2*b*c*d**2*e**5 + 66*a**2*c**2*d**3*e
**4 - 6*a*b**3*d**2*e**5 + 132*a*b**2*c*d**3*e**4 - 390*a*b*c**2*d**4*e**3
+ 282*a*c**3*d**5*e**2 + 11*b**4*d**3*e**4 - 130*b**3*c*d**4*e**3 + 423*b**
2*c**2*d**5*e**2 - 518*b*c**3*d**6*e + 214*c**4*d**7 + x**2*(-54*a**2*b*c*e
**7 + 108*a**2*c**2*d*e**6 - 18*a*b**3*e**7 + 216*a*b**2*c*d*e**6 - 540*a*b
*c**2*d**2*e**5 + 360*a*c**3*d**3*e**4 + 18*b**4*d*e**6 - 180*b**3*c*d**2*e
**5 + 540*b**2*c**2*d**3*e**4 - 630*b*c**3*d**4*e**3 + 252*c**4*d**5*e**2)
+ x*(-6*a**3*c*e**7 - 9*a**2*b**2*e**7 - 54*a**2*b*c*d*e**6 + 162*a**2*c**2
*d**2*e**5 - 18*a*b**3*d*e**6 + 324*a*b**2*c*d**2*e**5 - 900*a*b*c**2*d**3*
e**4 + 630*a*c**3*d**4*e**3 + 27*b**4*d**2*e**5 - 300*b**3*c*d**3*e**4 + 94
5*b**2*c**2*d**4*e**3 - 1134*b*c**3*d**5*e**2 + 462*c**4*d**6*e))/(6*d**3*e
**8 + 18*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3) + (6*a**2*c**2*e**4
+ 12*a*b**2*c*e**4 - 60*a*b*c**2*d*e**3 + 60*a*c**3*d**2*e**2 + b**4*e**4 -
 20*b**3*c*d*e**3 + 90*b**2*c**2*d**2*e**2 - 140*b*c**3*d**3*e + 70*c**4*d*
*4)*log(d + e*x)/e**8
```

3.1331 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx$

Optimal. Leaf size=389

$$-\frac{6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4}{e^8(d+ex)}+\frac{3(2cd-be)\left(ae^2\right.}{}$$

Rubi [A] time = 0.48, antiderivative size = 389, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4}{e^8(d+ex)}+\frac{c^2x\left(-ce(35bd-6ae)+9b^2e^2+30c^2d^2\right)}{e^7}+\frac{3(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{2e^8(d+ex)^2}-\frac{\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{3e^8(d+ex)^3}-\frac{5c(2cd-be)\log(d+ex)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^3}{4e^8(d+ex)^4}-\frac{c^3x^2(10cd-7be)}{2e^6}+\frac{2c^4x^3}{3e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] (c^2*(30*c^2*d^2 + 9*b^2*e^2 - c*e*(35*b*d - 6*a*e))*x)/e^7 - (c^3*(10*c*d
- 7*b*e)*x^2)/(2*e^6) + (2*c^4*x^3)/(3*e^5) + ((2*c*d - b*e)*(c*d^2 - b*d*e
 + a*e^2)^3)/(4*e^8*(d + e*x)^4) - ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 +
 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(3*e^8*(d + e*x)^3) + (3*(2*c*d - b*e)*(
c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e)))/(2*e^8*
(d + e*x)^2) - (70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3
*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))/(e^
8*(d + e*x)) - (5*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e
))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx = \int \left(\frac{c^2\left(30c^2d^2+9b^2e^2-ce(35bd-6ae)\right)}{e^7}-\frac{c^3(10cd-7be)x}{e^6}+\frac{2c^4x^2}{e^5}+\frac{(-2c}{}\right.$$
$$= \frac{c^2\left(30c^2d^2+9b^2e^2-ce(35bd-6ae)\right)x}{e^7}-\frac{c^3(10cd-7be)x^2}{2e^6}+\frac{2c^4x^3}{3e^5}+\frac{(2cd}{}$$

Mathematica [A] time = 0.30, size = 614, normalized size = 1.58

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] -1/12*(2*c^4*(319*d^7 + 856*d^6*e*x + 444*d^5*e^2*x^2 - 544*d^4*e^3*x^3 - 5
56*d^3*e^4*x^4 - 84*d^2*e^5*x^5 + 14*d*e^6*x^6 - 4*e^7*x^7) + 3*b*e^4*(a^3*
e^3 + a^2*b*e^2*(d + 4*e*x) + a*b^2*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + b^3*(d^
3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) + c*e^3*(2*a^3*e^3*(d + 4*e*x) +
9*a^2*b*e^2*(d^2 + 4*d*e*x + 6*e^2*x^2) + 36*a*b^2*e*(d^3 + 4*d^2*e*x + 6*d
```

```
*e^2*x^2 + 4*e^3*x^3) - 5*b^3*d*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e
^3*x^3)) + 3*c^2*e^2*(6*a^2*e^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)
 - 5*a*b*d*e*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) + 3*b^2*(77
*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e
^5*x^5)) - 3*c^3*e*(2*a*e*(-77*d^5 - 248*d^4*e*x - 252*d^3*e^2*x^2 - 48*d^2
*e^3*x^3 + 48*d*e^4*x^4 + 12*e^5*x^5) + 7*b*(57*d^6 + 168*d^5*e*x + 132*d^4
*e^2*x^2 - 32*d^3*e^3*x^3 - 68*d^2*e^4*x^4 - 12*d*e^5*x^5 + 2*e^6*x^6)) + 6
0*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 + c*e*(-7*b*d + 3*a*e))*(d + e*x)^4*
Log[d + e*x])/(e^8*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5, x]
```

fricas [B] time = 0.42, size = 1017, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(8*c^4*e^7*x^7 - 638*c^4*d^7 + 1197*b*c^3*d^6*e - 3*a^3*b*e^7 - 231*(3
*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 125*(b^3*c + 3*a*b*c^2)*d^4*e^3 - 3*(b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - (3*a^2*b^2
+ 2*a^3*c)*d*e^6 - 14*(2*c^4*d*e^6 - 3*b*c^3*e^7)*x^6 + 12*(14*c^4*d^2*e^5
- 21*b*c^3*d*e^6 + 3*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 + 4*(278*c^4*d^3*e^4 -
357*b*c^3*d^2*e^5 + 36*(3*b^2*c^2 + 2*a*c^3)*d*e^6)*x^4 + 4*(272*c^4*d^4*e^
3 - 168*b*c^3*d^3*e^4 - 36*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 + 60*(b^3*c + 3*a*
b*c^2)*d*e^6 - 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - 6*(148*c^4*d^5*e
^2 - 462*b*c^3*d^4*e^3 + 126*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 90*(b^3*c + 3*
a*b*c^2)*d^2*e^5 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 + 3*(a*b^3 + 3*a^
2*b*c)*e^7)*x^2 - 4*(428*c^4*d^6*e - 882*b*c^3*d^5*e^2 + 186*(3*b^2*c^2 + 2
*a*c^3)*d^4*e^3 - 110*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 3*(b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d^2*e^5 + 3*(a*b^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2 + 2*a^3*c)*e^7
)*x - 60*(14*c^4*d^7 - 21*b*c^3*d^6*e + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - (
b^3*c + 3*a*b*c^2)*d^4*e^3 + (14*c^4*d^3*e^4 - 21*b*c^3*d^2*e^5 + 3*(3*b^2*
c^2 + 2*a*c^3)*d*e^6 - (b^3*c + 3*a*b*c^2)*e^7)*x^4 + 4*(14*c^4*d^4*e^3 - 2
1*b*c^3*d^3*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - (b^3*c + 3*a*b*c^2)*d*e
^6)*x^3 + 6*(14*c^4*d^5*e^2 - 21*b*c^3*d^4*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*d^
3*e^4 - (b^3*c + 3*a*b*c^2)*d^2*e^5)*x^2 + 4*(14*c^4*d^6*e - 21*b*c^3*d^5*e
^2 + 3*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - (b^3*c + 3*a*b*c^2)*d^3*e^4)*x)*log(
e*x + d))/(e^12*x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8
)
```

giac [B] time = 0.22, size = 1057, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 1/6*(4*c^4 - 21*(2*c^4*d*e - b*c^3*e^2)*e^(-1)/(x*e + d) + 18*(14*c^4*d^2*e
^2 - 14*b*c^3*d*e^3 + 3*b^2*c^2*e^4 + 2*a*c^3*e^4)*e^(-2)/(x*e + d)^2)*(x*e
 + d)^3*e^(-8) + 5*(14*c^4*d^3 - 21*b*c^3*d^2*e + 9*b^2*c^2*d*e^2 + 6*a*c^3
```

```
*d*e^2 - b^3*c*e^3 - 3*a*b*c^2*e^3)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d
)^2) - 1/12*(840*c^4*d^4*e^36/(x*e + d) - 252*c^4*d^5*e^36/(x*e + d)^2 + 56
*c^4*d^6*e^36/(x*e + d)^3 - 6*c^4*d^7*e^36/(x*e + d)^4 - 1680*b*c^3*d^3*e^3
7/(x*e + d) + 630*b*c^3*d^4*e^37/(x*e + d)^2 - 168*b*c^3*d^5*e^37/(x*e + d)
^3 + 21*b*c^3*d^6*e^37/(x*e + d)^4 + 1080*b^2*c^2*d^2*e^38/(x*e + d) + 720*
a*c^3*d^2*e^38/(x*e + d) - 540*b^2*c^2*d^3*e^38/(x*e + d)^2 - 360*a*c^3*d^3
*e^38/(x*e + d)^2 + 180*b^2*c^2*d^4*e^38/(x*e + d)^3 + 120*a*c^3*d^4*e^38/(
x*e + d)^3 - 27*b^2*c^2*d^5*e^38/(x*e + d)^4 - 18*a*c^3*d^5*e^38/(x*e + d)^
4 - 240*b^3*c*d*e^39/(x*e + d) - 720*a*b*c^2*d*e^39/(x*e + d) + 180*b^3*c*d
^2*e^39/(x*e + d)^2 + 540*a*b*c^2*d^2*e^39/(x*e + d)^2 - 80*b^3*c*d^3*e^39/
(x*e + d)^3 - 240*a*b*c^2*d^3*e^39/(x*e + d)^3 + 15*b^3*c*d^4*e^39/(x*e + d
)^4 + 45*a*b*c^2*d^4*e^39/(x*e + d)^4 + 12*b^4*e^40/(x*e + d) + 144*a*b^2*c
*e^40/(x*e + d) + 72*a^2*c^2*e^40/(x*e + d) - 18*b^4*d*e^40/(x*e + d)^2 - 2
16*a*b^2*c*d*e^40/(x*e + d)^2 - 108*a^2*c^2*d*e^40/(x*e + d)^2 + 12*b^4*d^2
*e^40/(x*e + d)^3 + 144*a*b^2*c*d^2*e^40/(x*e + d)^3 + 72*a^2*c^2*d^2*e^40/
(x*e + d)^3 - 3*b^4*d^3*e^40/(x*e + d)^4 - 36*a*b^2*c*d^3*e^40/(x*e + d)^4
- 18*a^2*c^2*d^3*e^40/(x*e + d)^4 + 18*a*b^3*e^41/(x*e + d)^2 + 54*a^2*b*c*
e^41/(x*e + d)^2 - 24*a*b^3*d*e^41/(x*e + d)^3 - 72*a^2*b*c*d*e^41/(x*e + d
)^3 + 9*a*b^3*d^2*e^41/(x*e + d)^4 + 27*a^2*b*c*d^2*e^41/(x*e + d)^4 + 12*a
^2*b^2*e^42/(x*e + d)^3 + 8*a^3*c*e^42/(x*e + d)^3 - 9*a^2*b^2*d*e^42/(x*e
+ d)^4 - 6*a^3*c*d*e^42/(x*e + d)^4 + 3*a^3*b*e^43/(x*e + d)^4)*e^(-44)
```

maple [B] time = 0.06, size = 1056, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x)
```

```
[Out] 3/e^4/(e*x+d)^4*d^3*a*b^2*c+18/e^4/(e*x+d)^2*a*b^2*c*d-45/e^5/(e*x+d)^2*a*b
*c^2*d^2+20/e^5/(e*x+d)^3*a*b*c^2*d^3+6/e^3/(e*x+d)^3*a^2*b*c*d-12/e^4/(e*x
+d)^3*a*b^2*c*d^2+60/e^5/(e*x+d)*a*b*c^2*d-9/4/e^3/(e*x+d)^4*d^2*a^2*b*c+2/
3*c^4*x^3/e^5-15/4/e^5/(e*x+d)^4*d^4*a*b*c^2-35*c^3/e^6*x*b*d-12/e^4/(e*x+d
)*a*b^2*c+3/2/e^4/(e*x+d)^2*b^4*d+21/e^8/(e*x+d)^2*c^4*d^5-1/4/e/(e*x+d)^4*
a^3*b+1/4/e^4/(e*x+d)^4*d^3*b^4+1/2/e^8/(e*x+d)^4*c^4*d^7+5*c/e^5*ln(e*x+d)
*b^3-70*c^4/e^8*ln(e*x+d)*d^3-1/e^4/(e*x+d)*b^4+30*c^4/e^7*x*d^2-6/e^4/(e*x
+d)*c^2*a^2-70/e^8/(e*x+d)*c^4*d^4-2/3/e^2/(e*x+d)^3*a^3*c-1/e^2/(e*x+d)^3*
a^2*b^2-1/e^4/(e*x+d)^3*b^4*d^2-14/3/e^8/(e*x+d)^3*c^4*d^6+7/2*c^3/e^5*x^2*
b-5*c^4/e^6*x^2*d+6*c^3/e^5*x*a+9*c^2/e^5*x*b^2-3/2/e^3/(e*x+d)^2*a*b^3+140
/e^7/(e*x+d)*b*c^3*d^3+15*c^2/e^5*ln(e*x+d)*a*b-30*c^3/e^6*ln(e*x+d)*a*d-45
*c^2/e^6*ln(e*x+d)*b^2*d+105*c^3/e^7*ln(e*x+d)*b*d^2+14/e^7/(e*x+d)^3*b*c^3
*d^5-9/2/e^3/(e*x+d)^2*a^2*b*c-60/e^6/(e*x+d)*a*c^3*d^2+20/e^5/(e*x+d)*b^3*
c*d-90/e^6/(e*x+d)*b^2*c^2*d^2+9/e^4/(e*x+d)^2*a^2*c^2*d+30/e^6/(e*x+d)^2*a
*c^3*d^3-15/e^5/(e*x+d)^2*b^3*c*d^2+45/e^6/(e*x+d)^2*b^2*c^2*d^3-105/2/e^7/
(e*x+d)^2*b*c^3*d^4+1/2/e^2/(e*x+d)^4*a^3*c*d+3/4/e^2/(e*x+d)^4*d*a^2*b^2+3
/2/e^4/(e*x+d)^4*a^2*c^2*d^3-3/4/e^3/(e*x+d)^4*d^2*a*b^3+3/2/e^6/(e*x+d)^4*
a*c^3*d^5-5/4/e^5/(e*x+d)^4*d^4*b^3*c+9/4/e^6/(e*x+d)^4*b^2*c^2*d^5-7/4/e^7
/(e*x+d)^4*b*c^3*d^6+20/3/e^5/(e*x+d)^3*b^3*c*d^3-15/e^6/(e*x+d)^3*b^2*c^2*
d^4-6/e^4/(e*x+d)^3*a^2*c^2*d^2+2/e^3/(e*x+d)^3*a*b^3*d-10/e^6/(e*x+d)^3*a*
c^3*d^4
```

maxima [A] time = 0.66, size = 679, normalized size = 1.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(638*c^4*d^7 - 1197*b*c^3*d^6*e + 3*a^3*b*e^7 + 231*(3*b^2*c^2 + 2*a*
c^3)*d^5*e^2 - 125*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^
2*c^2)*d^3*e^4 + 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^
```

```
6 + 12*(70*c^4*d^4*e^3 - 140*b*c^3*d^3*e^4 + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e
^5 - 20*(b^3*c + 3*a*b*c^2)*d*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3
 + 18*(126*c^4*d^5*e^2 - 245*b*c^3*d^4*e^3 + 50*(3*b^2*c^2 + 2*a*c^3)*d^3*e
^4 - 30*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6
+ (a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 4*(518*c^4*d^6*e - 987*b*c^3*d^5*e^2 + 195
*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 110*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 3*(b^4 +
 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 + 3*(a*b^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2
 + 2*a^3*c)*e^7)*x)/(e^12*x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x
 + d^4*e^8) + 1/6*(4*c^4*e^2*x^3 - 3*(10*c^4*d*e - 7*b*c^3*e^2)*x^2 + 6*(30
*c^4*d^2 - 35*b*c^3*d*e + 3*(3*b^2*c^2 + 2*a*c^3)*e^2)*x)/e^7 - 5*(14*c^4*d
^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e
^3)*log(e*x + d)/e^8
```

mupad [B] time = 1.88, size = 763, normalized size = 1.96

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x)
```

```
[Out] x^2*((7*b*c^3)/(2*e^5) - (5*c^4*d)/e^6) - x*((5*d*((7*b*c^3)/e^5 - (10*c^4*
d)/e^6))/e - (6*a*c^3 + 9*b^2*c^2)/e^5 + (20*c^4*d^2)/e^7) - (x^2*((3*a*b^3
*e^6)/2 + (3*b^4*d*e^5)/2 + 189*c^4*d^5*e + 150*a*c^3*d^3*e^3 + 9*a^2*c^2*d
*e^5 - (735*b*c^3*d^4*e^2)/2 - 45*b^3*c*d^2*e^4 + 225*b^2*c^2*d^3*e^3 + (9*
a^2*b*c*e^6)/2 + 18*a*b^2*c*d*e^5 - 135*a*b*c^2*d^2*e^4) + x^3*(b^4*e^6 + 6
*a^2*c^2*e^6 + 70*c^4*d^4*e^2 + 60*a*c^3*d^2*e^4 - 140*b*c^3*d^3*e^3 + 90*b
^2*c^2*d^2*e^4 + 12*a*b^2*c*e^6 - 20*b^3*c*d*e^5 - 60*a*b*c^2*d*e^5) + x*((
518*c^4*d^6)/3 + (2*a^3*c*e^6)/3 + a^2*b^2*e^6 + b^4*d^2*e^4 + 130*a*c^3*d^
4*e^2 - (110*b^3*c*d^3*e^3)/3 + 6*a^2*c^2*d^2*e^4 + 195*b^2*c^2*d^4*e^2 + a
*b^3*d*e^5 - 329*b*c^3*d^5*e + 3*a^2*b*c*d*e^5 - 110*a*b*c^2*d^3*e^3 + 12*a
*b^2*c*d^2*e^4) + (638*c^4*d^7 + 3*a^3*b*e^7 + 3*b^4*d^3*e^4 + 3*a*b^3*d^2*
e^5 + 3*a^2*b^2*d*e^6 + 462*a*c^3*d^5*e^2 - 125*b^3*c*d^4*e^3 + 18*a^2*c^2*
d^3*e^4 + 693*b^2*c^2*d^5*e^2 + 2*a^3*c*d*e^6 - 1197*b*c^3*d^6*e - 375*a*b*
c^2*d^4*e^3 + 36*a*b^2*c*d^3*e^4 + 9*a^2*b*c*d^2*e^5)/(12*e))/(d^4*e^7 + e^
11*x^4 + 4*d^3*e^8*x + 4*d*e^10*x^3 + 6*d^2*e^9*x^2) - (log(d + e*x)*(70*c^
4*d^3 - 5*b^3*c*e^3 + 45*b^2*c^2*d*e^2 - 15*a*b*c^2*e^3 + 30*a*c^3*d*e^2 -
105*b*c^3*d^2*e))/e^8 + (2*c^4*x^3)/(3*e^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**5,x)
```

```
[Out] Timed out
```

3.1332 $\int \frac{(b+2cx)(d+ex)^4}{a+bx+cx^2} dx$

Optimal. Leaf size=299

$$\frac{\left(2c^2e^2\left(a^2e^2+6abde+3b^2d^2\right)-4b^2ce^3(ae+bd)-4c^3d^2e(3ae+bd)+b^4e^4+2c^4d^4\right)\log\left(a+bx+cx^2\right)}{2c^4}+\frac{ex\left(-\right.}{}$$

Rubi [A] time = 0.40, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(2c^2e^2\left(a^2e^2+6abde+3b^2d^2\right)-4b^2ce^3(ae+bd)-4c^3d^2e(3ae+bd)+b^4e^4+2c^4d^4\right)\log\left(a+bx+cx^2\right)}{2c^4}+\frac{e^2x^2\left(-2ce(ae+2bd)+b^2e^2+12c^2d^2\right)}{2c^2}+\frac{ex\left(-2c^2de(4ae+3bd)+bce^2(3ae+4bd)-b^3e^3+8c^3d^3\right)}{c^3}-\frac{e\sqrt{b^2-4ac}\,(2cd-be)\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4}+\frac{e^3x^3(8cd-be)}{3c}+\frac{e^4x^4}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(8*c^3*d^3 - b^3*e^3 + b*c*e^2*(4*b*d + 3*a*e) - 2*c^2*d*e*(3*b*d + 4*a*
e))*x)/c^3 + (e^2*(12*c^2*d^2 + b^2*e^2 - 2*c*e*(2*b*d + a*e))*x^2)/(2*c^2)
 + (e^3*(8*c*d - b*e)*x^3)/(3*c) + (e^4*x^4)/2 - (Sqrt[b^2 - 4*a*c]*e*(2*c*
d - b*e)*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt
[b^2 - 4*a*c]])/c^4 + ((2*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(b*d + a*e) - 4*c
^3*d^2*e*(b*d + 3*a*e) + 2*c^2*e^2*(3*b^2*d^2 + 6*a*b*d*e + a^2*e^2))*Log[a
 + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{a+bx+cx^2}\,dx = \int \left(\frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)}{c^3} + \frac{e^2\left(12c^2d^2+b^2e^2-2ce(2\cdots\right.}{c^2} \right.$$

$$= \frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3} + \frac{e^2\left(12c^2d^2+b^2e^2-2ce(2bd\cdots\right.}{2c^2}$$

$$= \frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3} + \frac{e^2\left(12c^2d^2+b^2e^2-2ce(2bd\cdots\right.}{2c^2}$$

$$= \frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3} + \frac{e^2\left(12c^2d^2+b^2e^2-2ce(2bd\cdots\right.}{2c^2}$$

$$= \frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3} + \frac{e^2\left(12c^2d^2+b^2e^2-2ce(2bd\cdots\right.}{2c^2}$$

Mathematica [A] time = 0.22, size = 297, normalized size = 0.99

$$\frac{3\left(2c^2e^2\left(a^2e^2+6abde+3b^2d^2\right)-4b^2ce^3(ae+bd)-4c^3d^2e(3ae+bd)+b^4e^4+2c^4d^4\right)\log(a+x(b+cx))+6cex\left(-2c^2de(4ae+3bd)+bce^2(3ae+4bd)-b^3e^3+8c^3d^3\right)+3c^2e^2x^2\left(-2ce(ae+2bd)+b^2e^2+12c^2d^2\right)-6e\sqrt{4ac-b^2}(2cd-be)\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)+2c^3e^3x^3(8cd-be)+3c^4e^4x^4}{6c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x]
```

```
[Out] (6*c*e*(8*c^3*d^3 - b^3*e^3 + b*c*e^2*(4*b*d + 3*a*e) - 2*c^2*d*e*(3*b*d +
4*a*e))*x + 3*c^2*e^2*(12*c^2*d^2 + b^2*e^2 - 2*c*e*(2*b*d + a*e))*x^2 + 2*
c^3*e^3*(8*c*d - b*e)*x^3 + 3*c^4*e^4*x^4 - 6*Sqrt[-b^2 + 4*a*c]*e*(2*c*d -
 b*e)*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]] + 3*(2*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(b*d + a*e) - 4*c^3*d^2*
e*(b*d + 3*a*e) + 2*c^2*e^2*(3*b^2*d^2 + 6*a*b*d*e + a^2*e^2))*Log[a + x*(b
 + c*x)])/(6*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^4}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.44, size = 709, normalized size = 2.37

$$\left[\frac{3c^4e^4x^4+2\left(8c^4de^3-bc^3e^4\right)x^3+3\left(12c^4d^2e^2-4bc^3de^3+\left(b^2c^2-2ac^3\right)e^4\right)x^2+3\left(4c^3d^3e-6bc^2d^2e^2+4\left(b^2c-ac^2\right)de^3-\left(b^3-2abc\right)e^4\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac-\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+6\left(8c^4d^3e-6bc^3d^2e^2+4\left(b^2c^2-2ac^3\right)de^3-\left(b^3c-3abc^2\right)e^4\right)x+3\left(2c^4d^4-4bc^3d^3e+6\left(b^2c^2-2ac^3\right)d^2e^2-4\left(b^3c-3abc^2\right)de^3+\left(b^4-4ab^2c+2a^2c^2\right)e^4\right)\log\left(cx^2+bx+a\right)}{6c^4}, \frac{3c^4e^4x^4+2\left(8c^4de^3-bc^3e^4\right)x^3+3\left(12c^4d^2e^2-4bc^3de^3+\left(b^2c^2-2ac^3\right)e^4\right)x^2-6\left(4c^3d^3e-6bc^2d^2e^2+4\left(b^2c-ac^2\right)de^3-\left(b^3-2abc\right)e^4\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+6\left(8c^4d^3e-6bc^3d^2e^2+4\left(b^2c^2-2ac^3\right)de^3-\left(b^3c-3abc^2\right)e^4\right)x+3\left(2c^4d^4-4bc^3d^3e+6\left(b^2c^2-2ac^3\right)d^2e^2-4\left(b^3c-3abc^2\right)de^3+\left(b^4-4ab^2c+2a^2c^2\right)e^4\right)\log\left(cx^2+bx+a\right)}{6c^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(3*c^4*e^4*x^4 + 2*(8*c^4*d*e^3 - b*c^3*e^4)*x^3 + 3*(12*c^4*d^2*e^2 -
 4*b*c^3*d*e^3 + (b^2*c^2 - 2*a*c^3)*e^4)*x^2 + 3*(4*c^3*d^3*e - 6*b*c^2*d^
2*e^2 + 4*(b^2*c - a*c^2)*d*e^3 - (b^3 - 2*a*b*c)*e^4)*sqrt(b^2 - 4*a*c)*lo
g((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^
2 + b*x + a)) + 6*(8*c^4*d^3*e - 6*b*c^3*d^2*e^2 + 4*(b^2*c^2 - 2*a*c^3)*d*
e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x + 3*(2*c^4*d^4 - 4*b*c^3*d^3*e + 6*(b^2*c^
2 - 2*a*c^3)*d^2*e^2 - 4*(b^3*c - 3*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c + 2*a
^2*c^2)*e^4)*log(c*x^2 + b*x + a))/c^4, 1/6*(3*c^4*e^4*x^4 + 2*(8*c^4*d*e^3
 - b*c^3*e^4)*x^3 + 3*(12*c^4*d^2*e^2 - 4*b*c^3*d*e^3 + (b^2*c^2 - 2*a*c^3)
```

```
*e^4)*x^2 - 6*(4*c^3*d^3*e - 6*b*c^2*d^2*e^2 + 4*(b^2*c - a*c^2)*d*e^3 - (b
^3 - 2*a*b*c)*e^4)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b
)/(b^2 - 4*a*c)) + 6*(8*c^4*d^3*e - 6*b*c^3*d^2*e^2 + 4*(b^2*c^2 - 2*a*c^3)
*d*e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x + 3*(2*c^4*d^4 - 4*b*c^3*d^3*e + 6*(b^2
*c^2 - 2*a*c^3)*d^2*e^2 - 4*(b^3*c - 3*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c +
2*a^2*c^2)*e^4)*log(c*x^2 + b*x + a))/c^4]
```

giac [**A**] time = 0.16, size = 401, normalized size = 1.34

$$\frac{\left(2c^4d^4-4bc^3d^3e+6b^2c^2d^2e^2-12ac^3d^2e^2-4b^3cde^3+12abc^2de^3+b^4e^4-4ab^2ce^4+2a^2c^2e^4\right)\log\left(cx^2+bx+a\right)}{2c^4}+\frac{\left(4b^2c^3d^3e-16ac^4d^3e-6b^3c^2d^2e^2+24abc^3d^2e^2+4b^4cde^3-20ab^2c^2de^3+16a^2c^3de^3-b^5e^4+6ab^3ce^4-8a^2bc^2e^4\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\sqrt{-b^2+4ac}\,c^4}+\frac{3c^4x^4e^4+16c^4dx^3e^3+36c^4d^2x^2e^2+48c^4d^3xe-2bc^3x^3e^4-12bc^3dx^2e^3-36bc^3d^2xe^2+3b^2c^2x^2e^4-6ac^3x^2e^4+24b^2c^2dxe^3-48ac^3dxe^3-6b^3cxe^4+18abc^2xe^4}{6c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^4*d^4 - 4*b*c^3*d^3*e + 6*b^2*c^2*d^2*e^2 - 12*a*c^3*d^2*e^2 - 4*b
^3*c*d*e^3 + 12*a*b*c^2*d*e^3 + b^4*e^4 - 4*a*b^2*c*e^4 + 2*a^2*c^2*e^4)*lo
g(c*x^2 + b*x + a)/c^4 + (4*b^2*c^3*d^3*e - 16*a*c^4*d^3*e - 6*b^3*c^2*d^2*
e^2 + 24*a*b*c^3*d^2*e^2 + 4*b^4*c*d*e^3 - 20*a*b^2*c^2*d*e^3 + 16*a^2*c^3*
d*e^3 - b^5*e^4 + 6*a*b^3*c*e^4 - 8*a^2*b*c^2*e^4)*arctan((2*c*x + b)/sqrt(
-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^4) + 1/6*(3*c^4*x^4*e^4 + 16*c^4*d*x^3
*e^3 + 36*c^4*d^2*x^2*e^2 + 48*c^4*d^3*x*e - 2*b*c^3*x^3*e^4 - 12*b*c^3*d*x
^2*e^3 - 36*b*c^3*d^2*x*e^2 + 3*b^2*c^2*x^2*e^4 - 6*a*c^3*x^2*e^4 + 24*b^2*
c^2*d*x*e^3 - 48*a*c^3*d*x*e^3 - 6*b^3*c*x*e^4 + 18*a*b*c^2*x*e^4)/c^4
```

maple [**B**] time = 0.05, size = 781, normalized size = 2.61

$$\frac{e^4x^4}{2}-\frac{be^4x^3}{3c}+\frac{8de^3x^3}{3}-\frac{8a^2be^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{16a^2de^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{6ab^3e^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3}-\frac{20ab^2de^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{24abd^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{ae^4x^2}{c}-\frac{16ad^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{b^5e^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^4}+\frac{4b^4de^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3}-\frac{6b^3d^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{4b^2d^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{b^2e^4x^2}{2c^2}-\frac{2bde^3x^2}{c}+6d^2e^2x^2+\frac{a^2e^4\ln\left(cx^2+bx+a\right)}{c^2}-\frac{2ab^2e^4\ln\left(cx^2+bx+a\right)}{c^3}+\frac{6abde^3\ln\left(cx^2+bx+a\right)}{c^2}+\frac{3abe^4x}{c^2}-\frac{6ad^2e^2\ln\left(cx^2+bx+a\right)}{c}-\frac{8ade^3x}{c}+\frac{b^4e^4\ln\left(cx^2+bx+a\right)}{2c^4}-\frac{2b^3de^3\ln\left(cx^2+bx+a\right)}{c^3}-\frac{b^3e^4x}{c^3}+\frac{3b^2d^2e^2\ln\left(cx^2+bx+a\right)}{c^2}+\frac{4b^2de^3x}{c^2}-\frac{2bd^3e\ln\left(cx^2+bx+a\right)}{c}-\frac{6bd^2e^2x}{c}+d^4\ln\left(cx^2+bx+a\right)+8d^3ex$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x)
```

```
[Out] 3*e^4/c^2*a*b*x-e^4/c^3*b^3*x-1/3*e^4/c*x^3*b-e^4/c*x^2*a+1/2*e^4/c^2*x^2*b
^2+1/c^2*ln(c*x^2+b*x+a)*a^2*e^4+1/2/c^4*ln(c*x^2+b*x+a)*b^4*e^4+4/c^3/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d*e^3-6/c^2/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d^2*e^2-8/c^2/(4*a*c-b^2)^
(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*b*e^4+16/c/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*d*e^3+6/c^3/(4*a*c-b^2)^(1/2)*arcta
n((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e^4+4/c/(4*a*c-b^2)^(1/2)*arctan((2*c*
x+b)/(4*a*c-b^2)^(1/2))*b^2*d^3*e+6/c^2*ln(c*x^2+b*x+a)*a*b*d*e^3-20/c^2/(4
*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*d*e^3+24/c/(4*a*c
-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d^2*e^2-2*e^3/c*x^2*b*d
+8*e*d^3*x+8/3*e^3*x^3*d+6*e^2*x^2*d^2+ln(c*x^2+b*x+a)*d^4+3/c^2*ln(c*x^2+b
*x+a)*b^2*d^2*e^2-2/c*ln(c*x^2+b*x+a)*b*d^3*e-16/(4*a*c-b^2)^(1/2)*arctan((
2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d^3*e-8*e^3/c*a*d*x+4*e^3/c^2*b^2*d*x-6/c*ln(
c*x^2+b*x+a)*a*d^2*e^2-2/c^3*ln(c*x^2+b*x+a)*b^3*d*e^3-6*e^2/c*b*d^2*x-1/c^
4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*e^4-2/c^3*ln(c*
x^2+b*x+a)*a*b^2*e^4+1/2*e^4*x^4
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.09, size = 726, normalized size = 2.43

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x)
```

```
[Out] x*((b*((b*((b*e^4 + 8*c*d*e^3)/c - (2*b*e^4)/c))/c + (2*a*e^4)/c - (4*d*e^2
*(b*e + 3*c*d))/c))/c - (a*((b*e^4 + 8*c*d*e^3)/c - (2*b*e^4)/c))/c + (2*d^
2*e*(3*b*e + 4*c*d))/c) + x^3*((b*e^4 + 8*c*d*e^3)/(3*c) - (2*b*e^4)/(3*c))
 - x^2*((b*((b*e^4 + 8*c*d*e^3)/c - (2*b*e^4)/c))/(2*c) + (a*e^4)/c - (2*d*
e^2*(b*e + 3*c*d))/c) + (e^4*x^4)/2 + (log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c +
b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(b^4*e^4 + 2*c^4*d^4 + b^3*e^4*(b^2 - 4*a*
c)^(1/2) + 2*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 + 6*b^2*c^2*d^2*e^2 - 4*a*b^2*c
*e^4 - 4*b*c^3*d^3*e - 4*b^3*c*d*e^3 - 4*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) + 12
*a*b*c^2*d*e^3 + 4*a*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) - 4*b^2*c*d*e^3*(b^2 - 4
*a*c)^(1/2) + 6*b*c^2*d^2*e^2*(b^2 - 4*a*c)^(1/2) - 2*a*b*c*e^4*(b^2 - 4*a*
c)^(1/2)))/(2*c^4) + (log(4*a*c + b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2
- 4*a*c)^(1/2))*(b^4*e^4 + 2*c^4*d^4 - b^3*e^4*(b^2 - 4*a*c)^(1/2) + 2*a^2*
c^2*e^4 - 12*a*c^3*d^2*e^2 + 6*b^2*c^2*d^2*e^2 - 4*a*b^2*c*e^4 - 4*b*c^3*d^
3*e - 4*b^3*c*d*e^3 + 4*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) + 12*a*b*c^2*d*e^3 -
4*a*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) + 4*b^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 6*b
*c^2*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 2*a*b*c*e^4*(b^2 - 4*a*c)^(1/2)))/(2*c^4
)
```

sympy [B] time = 12.74, size = 1056, normalized size = 3.53

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a),x)
```

```
[Out] e**4*x**4/2 + x**3*(-b*e**4/(3*c) + 8*d*e**3/3) + x**2*(-a*e**4/c + b**2*e*
*4/(2*c**2) - 2*b*d*e**3/c + 6*d**2*e**2) + x*(3*a*b*e**4/c**2 - 8*a*d*e**3
/c - b**3*e**4/c**3 + 4*b**2*d*e**3/c**2 - 6*b*d**2*e**2/c + 8*d**3*e) + (-
e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2
*c**2*d**2)/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*
e**3 - 12*a*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2
*e**2 - 4*b*c**3*d**3*e + 2*c**4*d**4)/(2*c**4))*log(x + (a**2*c*e**4 - a*b
**2*e**4 + 4*a*b*c*d*e**3 - 6*a*c**2*d**2*e**2 + c**3*d**4 - c**3*(-e*sqrt(
-4*a*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d
**2)/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*e**3 -
12*a*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2*e**2 -
 4*b*c**3*d**3*e + 2*c**4*d**4)/(2*c**4)))/(2*a*b*c*e**4 - 4*a*c**2*d*e**3
- b**3*e**4 + 4*b**2*c*d*e**3 - 6*b*c**2*d**2*e**2 + 4*c**3*d**3*e)) + (e*s
qrt(-4*a*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c*
*2*d**2)/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*e**
3 - 12*a*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2*e*
*2 - 4*b*c**3*d**3*e + 2*c**4*d**4)/(2*c**4))*log(x + (a**2*c*e**4 - a*b**2
*e**4 + 4*a*b*c*d*e**3 - 6*a*c**2*d**2*e**2 + c**3*d**4 - c**3*(e*sqrt(-4*a
*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)
/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*e**3 - 12*a
*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2*e**2 - 4*b
*c**3*d**3*e + 2*c**4*d**4)/(2*c**4)))/(2*a*b*c*e**4 - 4*a*c**2*d*e**3 - b*
*3*e**4 + 4*b**2*c*d*e**3 - 6*b*c**2*d**2*e**2 + 4*c**3*d**3*e))
```

3.1333 $\int \frac{(b+2cx)(d+ex)^3}{a+bx+cx^2}\,dx$

Optimal. Leaf size=188

$$\frac{ex\left(-ce(2ae+3bd)+b^2e^2+6c^2d^2\right)}{c^2}+\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{e\sqrt{b^2-4ac}}{}$$

Rubi [A] time = 0.24, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2c^3}+\frac{ex\left(-ce(2ae+3bd)+b^2e^2+6c^2d^2\right)}{c^2}-\frac{e\sqrt{b^2-4ac}\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3}+\frac{e^2x^2(6cd-be)}{2c}+\frac{2e^3x^3}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(6*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + 2*a*e))*x)/c^2 + (e^2*(6*c*d - b*e)*
x^2)/(2*c) + (2*e^3*x^3)/3 - (Sqrt[b^2 - 4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*
e*(3*b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/c^3 + ((2*c*d - b*
e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{a+bx+cx^2}\,dx = \int \left(\frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)}{c^2} + \frac{e^2(6cd-be)x}{c} + 2e^3x^2 + \frac{-ab^2e^3-2ace\left(3cd^2 \right.}{}\right.$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} + \int \frac{-ab^2e^3-2ace\left(3cd^2-ae^2\right)+b}{}$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} + \frac{\left(\left(b^2-4ac\right)e\left(3c^2d^2+\right.\right.}{}$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} + \frac{(2cd-be)\left(c^2d^2+b^2e^2\right.}{}$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} - \frac{\sqrt{b^2-4ac}\,e\left(3c^2d^2+b\right.}{}$$

Mathematica [A] time = 0.18, size = 177, normalized size = 0.94

$$\frac{cex\left(-3ce(4ae+6bd+bex)+6b^2e^2+2c^2\left(18d^2+9dex+2e^2x^2\right)\right)+3(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log(a+x(b+cx))-6e\sqrt{4ac-b^2}\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (c*e*x*(6*b^2*e^2 - 3*c*e*(6*b*d + 4*a*e + b*e*x) + 2*c^2*(18*d^2 + 9*d*e*x
 + 2*e^2*x^2)) - 6*Sqrt[-b^2 + 4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d +
 a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + 3*(2*c*d - b*e)*(c^2*d^2 +
b^2*e^2 - c*e*(b*d + 3*a*e))*Log[a + x*(b + c*x)])/(6*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^3}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.44, size = 458, normalized size = 2.44

$$\left[\frac{4c^3e^3x^3+3\left(6c^3de^2-bc^2e^3\right)x^2-3\left(3c^2d^2e-3bcde^2+\left(b^2-ac\right)e^3\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+6\left(6c^3d^2e-3bc^2de^2+\left(b^2c-2ac^2\right)e^3\right)x+3\left(2c^3d^3-3bc^2d^2e+3\left(b^2c-2ac^2\right)de^2-\left(b^3-3abc\right)e^3\right)\log\left(cx^2+bx+a\right)}{6c^3}, \frac{4c^3e^3x^3+3\left(6c^3de^2-bc^2e^3\right)x^2-6\left(3c^2d^2e-3bcde^2+\left(b^2-ac\right)e^3\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+6\left(6c^3d^2e-3bc^2de^2+\left(b^2c-2ac^2\right)e^3\right)x+3\left(2c^3d^3-3bc^2d^2e+3\left(b^2c-2ac^2\right)de^2-\left(b^3-3abc\right)e^3\right)\log\left(cx^2+bx+a\right)}{6c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(4*c^3*e^3*x^3 + 3*(6*c^3*d*e^2 - b*c^2*e^3)*x^2 - 3*(3*c^2*d^2*e - 3*
b*c*d*e^2 + (b^2 - a*c)*e^3)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b
^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 6*(6*c^3*d
^2*e - 3*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^3)*x + 3*(2*c^3*d^3 - 3*b*c^2*d^
2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3)*log(c*x^2 + b*x + a)
)/c^3, 1/6*(4*c^3*e^3*x^3 + 3*(6*c^3*d*e^2 - b*c^2*e^3)*x^2 - 6*(3*c^2*d^2*
e - 3*b*c*d*e^2 + (b^2 - a*c)*e^3)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4
*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 6*(6*c^3*d^2*e - 3*b*c^2*d*e^2 + (b^2*c
- 2*a*c^2)*e^3)*x + 3*(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^
2 - (b^3 - 3*a*b*c)*e^3)*log(c*x^2 + b*x + a))/c^3]
```

giac [A] time = 0.16, size = 251, normalized size = 1.34

$$\frac{\left(2\,c^3d^3-3\,bc^2d^2e+3\,b^2cde^2-6\,ac^2de^2-b^3e^3+3\,abce^3\right)\log\left(cx^2+bx+a\right)}{2\,c^3}+\frac{\left(3\,b^2c^2d^2e-12\,ac^3d^2e-3\,b^3cde^2+12\,abc^2de^2+b^4e^3-5\,ab^2ce^3+4\,a^2c^2e^3\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^3}+\frac{4\,c^3x^3e^3+18\,c^3dx^2e^2+36\,c^3d^2xe-3\,bc^2x^2e^3-18\,bc^2dxe^2+6\,b^2cxe^3-12\,ac^2xe^3}{6\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*b^2*c*d*e^2 - 6*a*c^2*d*e^2 - b^3*e^3 +
3*a*b*c*e^3)*log(c*x^2 + b*x + a)/c^3 + (3*b^2*c^2*d^2*e - 12*a*c^3*d^2*e -
 3*b^3*c*d*e^2 + 12*a*b*c^2*d*e^2 + b^4*e^3 - 5*a*b^2*c*e^3 + 4*a^2*c^2*e^3
)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^3) + 1/6*(4*
c^3*x^3*e^3 + 18*c^3*d*x^2*e^2 + 36*c^3*d^2*x*e - 3*b*c^2*x^2*e^3 - 18*b*c^
2*d*x*e^2 + 6*b^2*c*x*e^3 - 12*a*c^2*x*e^3)/c^3
```

maple [B] time = 0.05, size = 492, normalized size = 2.62

$$\frac{2e^3x^3}{3}+\frac{4a^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{5a\,b^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{12abd\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{12a\,d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{b^4e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3}-\frac{3b^3d\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{3b^2d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{b\,e^3x^2}{2c}+3d\,e^2x^2+\frac{3ab\,e^3\ln\left(c\,x^2+bx+a\right)}{2c^2}-\frac{3ad\,e^2\ln\left(c\,x^2+bx+a\right)}{c}-\frac{2a\,e^3x}{c}-\frac{b^3e^3\ln\left(c\,x^2+bx+a\right)}{2c^3}+\frac{3b^2d\,e^2\ln\left(c\,x^2+bx+a\right)}{2c^2}+\frac{b^2e^3x}{c^2}-\frac{3b\,d^2e\ln\left(c\,x^2+bx+a\right)}{2c}-\frac{3bd\,e^2x}{c}+d^3\ln\left(c\,x^2+bx+a\right)+6d^2ex$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] 2/3*e^3*x^3-1/2/c*e^3*x^2*b+3*e^2*x^2*d-2/c*e^3*x*a+1/c^2*e^3*x*b^2-3/c*e^2
*x*b*d+6*e*x*d^2+3/2/c^2*ln(c*x^2+b*x+a)*a*b*e^3-3/c*ln(c*x^2+b*x+a)*a*d*e^
2-1/2/c^3*ln(c*x^2+b*x+a)*b^3*e^3+3/2/c^2*ln(c*x^2+b*x+a)*b^2*d*e^2-3/2/c*l
n(c*x^2+b*x+a)*b*d^2*e+ln(c*x^2+b*x+a)*d^3+4/c/(4*a*c-b^2)^(1/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e^3-5/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/
(4*a*c-b^2)^(1/2))*a*b^2*e^3+12/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c
-b^2)^(1/2))*a*b*d*e^2-12/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*a*d^2*e+1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^
4*e^3-3/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d*e^2
+3/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d^2*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.00, size = 433, normalized size = 2.30

$$x^2\left(\frac{b\,e^3+6\,c\,d\,e^2}{2\,c}-\frac{b\,e^3}{c}\right)-x\left(\frac{b\left(\frac{b\,e^3+6\,c\,d\,e^2}{c}-\frac{2\,b\,e^3}{c}\right)}{c}+\frac{2\,a\,e^3}{c}-\frac{3\,d\,e\,(b\,e+2\,c\,d)}{c}\right)+\frac{2\,e^3\,x^3}{3}-\frac{\ln\left(b\,\sqrt{b^2-4\,a\,c}-4\,a\,c+b^2+2\,c\,x\,\sqrt{b^2-4\,a\,c}\right)\left(b^3\,e^3-2\,c^3\,d^3+b^2\,e^3\,\sqrt{b^2-4\,a\,c}-3\,a\,b\,c\,e^3-a\,c\,e^3\,\sqrt{b^2-4\,a\,c}+6\,a\,c^2\,d\,e^2+3\,b\,c^2\,d^2\,e-3\,b^2\,c\,d\,e^2+3\,c^2\,d^2\,e\,\sqrt{b^2-4\,a\,c}-3\,b\,c\,d\,e^2\,\sqrt{b^2-4\,a\,c}\right)}{2\,c^3}-\frac{\ln\left(4\,a\,c+b\,\sqrt{b^2-4\,a\,c}-b^2+2\,c\,x\,\sqrt{b^2-4\,a\,c}\right)\left(b^3\,e^3-2\,c^3\,d^3-b^2\,e^3\,\sqrt{b^2-4\,a\,c}-3\,a\,b\,c\,e^3+a\,c\,e^3\,\sqrt{b^2-4\,a\,c}+6\,a\,c^2\,d\,e^2+3\,b\,c^2\,d^2\,e-3\,b^2\,c\,d\,e^2-3\,c^2\,d^2\,e\,\sqrt{b^2-4\,a\,c}+3\,b\,c\,d\,e^2\,\sqrt{b^2-4\,a\,c}\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x)
```

```
[Out] x^2*((b*e^3 + 6*c*d*e^2)/(2*c) - (b*e^3)/c) - x*((b*((b*e^3 + 6*c*d*e^2)/c
- (2*b*e^3)/c))/c + (2*a*e^3)/c - (3*d*e*(b*e + 2*c*d))/c) + (2*e^3*x^3)/3
- (log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c + b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(b^
3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^
2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^
2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2)))/(2*c^3) - (log(
4*a*c + b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(b^3*e^3 -
```

```
 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2)))/(2*c^3)
```

sympy [**B**] time = 4.81, size = 561, normalized size = 2.98

$$\frac{2e^3x^3}{3} + x^2\left(-\frac{be^3}{2c} + 3de^2\right) + x\left(-\frac{2ae^3}{c} + \frac{b^2e^3}{c^2} - \frac{3bde^2}{c} + 6d^2e\right) + \left(-\frac{e\sqrt{-4ac+b^2}\left(ace^2 - b^2e^2 + 3bcde - 3c^2d^2\right)}{2c^3} + \frac{(be-2cd)\left(3ace^2 - b^2e^2 + bcde - c^2d^2\right)}{2c^3}\right)\log\left(x + \frac{-abe^3 + 3acde^2 - c^2d^3 + c^2\left(-\frac{e\sqrt{-4ac+b^2}\left(ace^2-b^2e^2+3bcde-3c^2d^2\right)}{2c^3} + \frac{(be-2cd)\left(3ace^2-b^2e^2+bcde-c^2d^2\right)}{2c^3}\right)}{ace^3 - b^2e^3 + 3bcde^2 - 3c^2d^2e}\right) + \left(\frac{e\sqrt{-4ac+b^2}\left(ace^2 - b^2e^2 + 3bcde - 3c^2d^2\right)}{2c^3} + \frac{(be-2cd)\left(3ace^2 - b^2e^2 + bcde - c^2d^2\right)}{2c^3}\right)\log\left(x + \frac{-abe^3 + 3acde^2 - c^2d^3 + c^2\left(\frac{e\sqrt{-4ac+b^2}\left(ace^2-b^2e^2+3bcde-3c^2d^2\right)}{2c^3} + \frac{(be-2cd)\left(3ace^2-b^2e^2+bcde-c^2d^2\right)}{2c^3}\right)}{ace^3 - b^2e^3 + 3bcde^2 - 3c^2d^2e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] 2*e**3*x**3/3 + x**2*(-b*e**3/(2*c) + 3*d*e**2) + x*(-2*a*e**3/c + b**2*e**
3/c**2 - 3*b*d*e**2/c + 6*d**2*e) + (-e*sqrt(-4*a*c + b**2)*(a*c*e**2 - b**
2*e**2 + 3*b*c*d*e - 3*c**2*d**2)/(2*c**3) + (b*e - 2*c*d)*(3*a*c*e**2 - b*
*2*e**2 + b*c*d*e - c**2*d**2)/(2*c**3))*log(x + (-a*b*e**3 + 3*a*c*d*e**2
- c**2*d**3 + c**2*(-e*sqrt(-4*a*c + b**2)*(a*c*e**2 - b**2*e**2 + 3*b*c*d*
e - 3*c**2*d**2)/(2*c**3) + (b*e - 2*c*d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e
 - c**2*d**2)/(2*c**3)))/(a*c*e**3 - b**2*e**3 + 3*b*c*d*e**2 - 3*c**2*d**2
*e)) + (e*sqrt(-4*a*c + b**2)*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e - 3*c**2*d*
*2)/(2*c**3) + (b*e - 2*c*d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)
/(2*c**3))*log(x + (-a*b*e**3 + 3*a*c*d*e**2 - c**2*d**3 + c**2*(e*sqrt(-4*
a*c + b**2)*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e - 3*c**2*d**2)/(2*c**3) + (b*
e - 2*c*d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)/(2*c**3)))/(a*c*e
**3 - b**2*e**3 + 3*b*c*d*e**2 - 3*c**2*d**2*e))
```

3.1334 $\int \frac{(b+2cx)(d+ex)^2}{a+bx+cx^2}\,dx$

Optimal. Leaf size=114

$$\frac{(-2ce(ae+bd)+b^2e^2+2c^2d^2)\log(a+bx+cx^2)}{2c^2}-\frac{e\sqrt{b^2-4ac}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2}+ex\left(4d-\frac{be}{c}\right)+e^2x$$

Rubi [A] time = 0.13, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{(-2ce(ae+bd)+b^2e^2+2c^2d^2)\log(a+bx+cx^2)}{2c^2}-\frac{e\sqrt{b^2-4ac}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2}+ex\left(4d-\frac{be}{c}\right)+e^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] e*(4*d - (b*e)/c)*x + e^2*x^2 - (Sqrt[b^2 - 4*a*c]*e*(2*c*d - b*e)*ArcTanh[
(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/c^2 + ((2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d +
a*e))*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{a+bx+cx^2}\,dx = \int \left(e\left(4d-\frac{be}{c}\right)+2e^2x+\frac{bcd^2-4acde+abe^2+\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)x}{c\left(a+bx+cx^2\right)}\right)dx$$
$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2+\frac{\int \frac{bcd^2-4acde+abe^2+\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)x}{a+bx+cx^2}\,dx}{c}$$
$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2+\frac{\left(\left(b^2-4ac\right)e(2cd-be)\right)\int \frac{1}{a+bx+cx^2}\,dx}{2c^2}+\frac{\left(2c^2d^2+b^2e^2-2ce(ba\right.}{2c}$$
$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2+\frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{\left(\left(b^2-4ac\right)\right.}{}$$
$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2-\frac{\sqrt{b^2-4ac}\,e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2}+\frac{\left(2c^2d^2+b^2e^2-2ce(\right.}{}$$

Mathematica [A] time = 0.09, size = 111, normalized size = 0.97

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log(a+x(b+cx))+2e\sqrt{4ac-b^2}\,(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)+2cex(-be+4cd+cex)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*e*x*(4*c*d - b*e + c*e*x) + 2*Sqrt[-b^2 + 4*a*c]*e*(-2*c*d + b*e)*ArcT
an[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + (2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*
e))*Log[a + x*(b + c*x)])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^2}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.43, size = 282, normalized size = 2.47

$$\left[\frac{2\,c^2e^2x^2-\left(2\,cde-be^2\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+2\left(4\,c^2de-bce^2\right)x+\left(2\,c^2d^2-2\,bcde+\left(b^2-2\,ac\right)e^2\right)\log\left(cx^2+bx+a\right)}{2\,c^2},\ \frac{2\,c^2e^2x^2-2\left(2\,cde-be^2\right)\sqrt{-b^2+4\,ac}\,\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right)+2\left(4\,c^2de-bce^2\right)x+\left(2\,c^2d^2-2\,bcde+\left(b^2-2\,ac\right)e^2\right)\log\left(cx^2+bx+a\right)}{2\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*c^2*e^2*x^2 - (2*c*d*e - b*e^2)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 +
2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) +
 2*(4*c^2*d*e - b*c*e^2)*x + (2*c^2*d^2 - 2*b*c*d*e + (b^2 - 2*a*c)*e^2)*lo
g(c*x^2 + b*x + a))/c^2, 1/2*(2*c^2*e^2*x^2 - 2*(2*c*d*e - b*e^2)*sqrt(-b^2
 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(4*c^2*
d*e - b*c*e^2)*x + (2*c^2*d^2 - 2*b*c*d*e + (b^2 - 2*a*c)*e^2)*log(c*x^2 +
b*x + a))/c^2]
```

giac [A] time = 0.18, size = 144, normalized size = 1.26

$$\frac{\left(2\,c^2d^2-2\,bcde+b^2e^2-2\,ace^2\right)\log\left(cx^2+bx+a\right)}{2\,c^2}+\frac{\left(2\,b^2cde-8\,ac^2de-b^3e^2+4\,abce^2\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}+\frac{c^2x^2e^2+4\,c^2dxe-bcxe^2}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^2*d^2 - 2*b*c*d*e + b^2*e^2 - 2*a*c*e^2)*log(c*x^2 + b*x + a)/c^2
+ (2*b^2*c*d*e - 8*a*c^2*d*e - b^3*e^2 + 4*a*b*c*e^2)*arctan((2*c*x + b)/sq
rt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^2) + (c^2*x^2*e^2 + 4*c^2*d*x*e - b
*c*x*e^2)/c^2
```

maple [B] time = 0.05, size = 264, normalized size = 2.32

$$\frac{4ab\,e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\,c}-\frac{8ade\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}}-\frac{b^{3}e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\,c^{2}}+\frac{2b^{2}de\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\,c}+e^{2}x^{2}-\frac{a\,e^{2}\ln\left(c\,x^{2}+bx+a\right)}{c}+\frac{b^{2}e^{2}\ln\left(c\,x^{2}+bx+a\right)}{2c^{2}}-\frac{bde\ln\left(c\,x^{2}+bx+a\right)}{c}-\frac{b\,e^{2}x}{c}+d^{2}\ln\left(c\,x^{2}+bx+a\right)+4dex$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] e^2*x^2-1/c*e^2*b*x+4*d*x*e-1/c*ln(c*x^2+b*x+a)*a*e^2+1/2/c^2*ln(c*x^2+b*x+
a)*b^2*e^2-1/c*ln(c*x^2+b*x+a)*b*d*e+ln(c*x^2+b*x+a)*d^2+4/c/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*e^2-8/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d*e-1/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*b^3*e^2+2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*b^2*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.26, size = 230, normalized size = 2.02

$$\ln\left(b\,\sqrt{b^2-4\,a\,c}-4\,a\,c+b^2+2\,c\,x\,\sqrt{b^2-4\,a\,c}\right)\,\left(\frac{\frac{b^2\,e^2}{2}-c\,\left(a\,e^2+b\,d\,e+d\,e\,\sqrt{b^2-4\,a\,c}\right)+\frac{b\,e^2\,\sqrt{b^2-4\,a\,c}}{2}}{c^2}+d^2\right)+x\,\left(\frac{b\,e^2+4\,c\,d\,e}{c}-\frac{2\,b\,e^2}{c}\right)-\ln\left(4\,a\,c+b\,\sqrt{b^2-4\,a\,c}-b^2+2\,c\,x\,\sqrt{b^2-4\,a\,c}\right)\,\left(\frac{c\,\left(a\,e^2+b\,d\,e-d\,e\,\sqrt{b^2-4\,a\,c}\right)-\frac{b^2\,e^2}{2}+\frac{b\,e^2\,\sqrt{b^2-4\,a\,c}}{2}}{c^2}-d^2\right)+e^2\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x)
```

```
[Out] log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c + b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(((b^2
*e^2)/2 - c*(a*e^2 + b*d*e + d*e*(b^2 - 4*a*c)^(1/2)) + (b*e^2*(b^2 - 4*a*c
)^(1/2))/2)/c^2 + d^2) + x*((b*e^2 + 4*c*d*e)/c - (2*b*e^2)/c) - log(4*a*c
+ b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*((c*(a*e^2 + b*d
*e - d*e*(b^2 - 4*a*c)^(1/2)) - (b^2*e^2)/2 + (b*e^2*(b^2 - 4*a*c)^(1/2))/2
)/c^2 - d^2) + e^2*x^2
```

sympy [B] time = 1.80, size = 335, normalized size = 2.94

$$e^{2}x^{2}+x\left(-\frac{be^{2}}{c}+4de\right)+\left(-\frac{e\sqrt{-4ac+b^{2}}\,(be-2cd)}{2c^{2}}-\frac{2ace^{2}-b^{2}e^{2}+2bcde-2c^{2}d^{2}}{2c^{2}}\right)\log\left(x+\frac{ae^{2}-cd^{2}+c\left(-\frac{e\sqrt{-4ac+b^{2}}\,(be-2cd)}{2c^{2}}-\frac{2ace^{2}-b^{2}e^{2}+2bcde-2c^{2}d^{2}}{2c^{2}}\right)}{be^{2}-2cde}\right)+\left(\frac{e\sqrt{-4ac+b^{2}}\,(be-2cd)}{2c^{2}}-\frac{2ace^{2}-b^{2}e^{2}+2bcde-2c^{2}d^{2}}{2c^{2}}\right)\log\left(x+\frac{ae^{2}-cd^{2}+c\left(\frac{e\sqrt{-4ac+b^{2}}\,(be-2cd)}{2c^{2}}-\frac{2ace^{2}-b^{2}e^{2}+2bcde-2c^{2}d^{2}}{2c^{2}}\right)}{be^{2}-2cde}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] e**2*x**2 + x*(-b*e**2/c + 4*d*e) + (-e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(
2*c**2) - (2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2))*log(
```

```
x + (a*e**2 - c*d**2 + c*(-e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c**2) - (
2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2)))/(b*e**2 - 2*c*
d*e)) + (e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c**2) - (2*a*c*e**2 - b**2*
e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2))*log(x + (a*e**2 - c*d**2 + c*(e*s
qrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c**2) - (2*a*c*e**2 - b**2*e**2 + 2*b*c
*d*e - 2*c**2*d**2)/(2*c**2)))/(b*e**2 - 2*c*d*e))
```

3.1335 $\int \frac{(b+2cx)(d+ex)}{a+bx+cx^2} dx$

Optimal. Leaf size=70

$$-\frac{e\sqrt{b^2-4ac}\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c}+2ex$$

Rubi [A] time = 0.09, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {773, 634, 618, 206, 628}

$$-\frac{e\sqrt{b^2-4ac}\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c}+2ex$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] 2*e*x - (Sqrt[b^2 - 4*a*c]*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/c + ((
2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*c)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)}{a+bx+cx^2}\,dx = 2ex + \frac{\int \frac{bcd-2ace+\left(2c^2d-bce\right)x}{a+bx+cx^2}\,dx}{c}$$
$$= 2ex + \frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{a+bx+cx^2}\,dx}{2c} + \frac{(2cd-be)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c}$$
$$= 2ex + \frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c} - \frac{\left(\left(b^2-4ac\right)e\right)\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx, x, b+2cx\right)}{c}$$
$$= 2ex - \frac{\sqrt{b^2-4ac}\,e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c} + \frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c}$$

Mathematica [A] time = 0.06, size = 72, normalized size = 1.03

$$\frac{-2e\sqrt{4ac-b^2}\,\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right) + (2cd-be)\log(a+x(b+cx)) + 4cex}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (4*c*e*x - 2*Sqrt[-b^2 + 4*a*c]*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + 
(2*c*d - b*e)*Log[a + x*(b + c*x)])/(2*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.42, size = 176, normalized size = 2.51

$$\left[\frac{4\,cex + \sqrt{b^2-4\,ac}\,e\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right) + (2\,cd-be)\log\left(cx^2+bx+a\right)}{2\,c}, \frac{4\,cex - 2\,\sqrt{-b^2+4\,ac}\,e\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right) + (2\,cd-be)\log\left(cx^2+bx+a\right)}{2\,c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(4*c*e*x + sqrt(b^2 - 4*a*c)*e*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c
 - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + (2*c*d - b*e)*log(c*x
^2 + b*x + a))/c, 1/2*(4*c*e*x - 2*sqrt(-b^2 + 4*a*c)*e*arctan(-sqrt(-b^2 +
 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*c*d - b*e)*log(c*x^2 + b*x + a))/c]
```

giac [A] time = 0.16, size = 81, normalized size = 1.16

$$2\,xe + \frac{(2\,cd-be)\log\left(cx^2+bx+a\right)}{2\,c} + \frac{\left(b^2e-4\,ace\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

[Out] 2*x*e + 1/2*(2*c*d - b*e)*log(c*x^2 + b*x + a)/c + (b^2*e - 4*a*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c)

maple [A] time = 0.06, size = 113, normalized size = 1.61

$$-\frac{4ae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{be\ln\left(cx^2+bx+a\right)}{2c}+d\ln\left(cx^2+bx+a\right)+2ex$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x)

[Out] 2*e*x-1/2/c*ln(c*x^2+b*x+a)*b*e+d*ln(c*x^2+b*x+a)-4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*e+1/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2/c*e

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation *may* help (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for more details)Is 4*a*c-b^2 positive or negative?

mupad [B] time = 0.32, size = 129, normalized size = 1.84

$$\ln\left(b\sqrt{b^2-4ac}-4ac+b^2+2cx\sqrt{b^2-4ac}\right)\left(d-\frac{\frac{be}{2}+\frac{e\sqrt{b^2-4ac}}{2}}{c}\right)+2ex+\ln\left(4ac+b\sqrt{b^2-4ac}-b^2+2cx\sqrt{b^2-4ac}\right)\left(d-\frac{\frac{be}{2}-\frac{e\sqrt{b^2-4ac}}{2}}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x)

[Out] log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c + b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(d - ((b*e)/2 + (e*(b^2 - 4*a*c)^(1/2))/2)/c) + 2*e*x + log(4*a*c + b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(d - ((b*e)/2 - (e*(b^2 - 4*a*c)^(1/2))/2)/c)

sympy [B] time = 0.71, size = 134, normalized size = 1.91

$$2ex+\left(-\frac{e\sqrt{-4ac+b^2}}{2c}-\frac{be-2cd}{2c}\right)\log\left(x+\frac{d+\frac{e\sqrt{-4ac+b^2}}{2c}+\frac{be-2cd}{2c}}{e}\right)+\left(\frac{e\sqrt{-4ac+b^2}}{2c}-\frac{be-2cd}{2c}\right)\log\left(x+\frac{d-\frac{e\sqrt{-4ac+b^2}}{2c}+\frac{be-2cd}{2c}}{e}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a),x)

[Out] 2*e*x + (-e*sqrt(-4*a*c + b**2)/(2*c) - (b*e - 2*c*d)/(2*c))*log(x + (d + e*sqrt(-4*a*c + b**2)/(2*c) + (b*e - 2*c*d)/(2*c))/e) + (e*sqrt(-4*a*c + b**2)/(2*c) - (b*e - 2*c*d)/(2*c))*log(x + (d - e*sqrt(-4*a*c + b**2)/(2*c) + (b*e - 2*c*d)/(2*c))/e)

3.1336 $\int \frac{b+2cx}{a+bx+cx^2} dx$

Optimal. Leaf size=11

$$\log \left(a+bx+cx^2\right)$$

Rubi [A] time = 0.00, antiderivative size = 11, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {628}

$$\log \left(a+bx+cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2),x]
```

```
[Out] Log[a + b*x + c*x^2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{b+2cx}{a+bx+cx^2} dx = \log \left(a+bx+cx^2\right)$$

Mathematica [A] time = 0.00, size = 10, normalized size = 0.91

$$\log(a+x(b+cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2),x]
```

```
[Out] Log[a + x*(b + c*x)]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{a+bx+cx^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.41, size = 11, normalized size = 1.00

$$\log \left(cx^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] log(c*x^2 + b*x + a)
```

giac [A] time = 0.15, size = 12, normalized size = 1.09

$$\log\left(\left|cx^2+bx+a\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a),x, algorithm="giac")
[Out] log(abs(c*x^2 + b*x + a))
```

maple [A] time = 0.05, size = 12, normalized size = 1.09

$$\ln\left(c\,x^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a),x)
[Out] ln(c*x^2+b*x+a)
```

maxima [A] time = 0.71, size = 11, normalized size = 1.00

$$\log\left(cx^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a),x, algorithm="maxima")
[Out] log(c*x^2 + b*x + a)
```

mupad [B] time = 0.04, size = 11, normalized size = 1.00

$$\ln\left(c\,x^2+b\,x+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2),x)
[Out] log(a + b*x + c*x^2)
```

sympy [A] time = 0.15, size = 10, normalized size = 0.91

$$\log\left(a+bx+cx^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a),x)
[Out] log(a + b*x + c*x**2)
```

3.1337 $\int \frac{b+2cx}{(d+ex)(a+bx+cx^2)}\,dx$

Optimal. Leaf size=130

$$\frac{e\sqrt{b^2-4ac}\,\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{ae^2-bde+cd^2}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(2cd-be)\log(d+ex)}{ae^2-bde+cd^2}$$

Rubi [A] time = 0.18, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{e\sqrt{b^2-4ac}\,\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{ae^2-bde+cd^2}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(2cd-be)\log(d+ex)}{ae^2-bde+cd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[b^2 - 4*a*c]*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*d^2 - b*d*e
 + a*e^2) - ((2*c*d - b*e)*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2) + ((2*c*d
- b*e)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{e(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{bcd-b^2e+2ace+c(2cd-be)x}{\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}\right)dx$$

$$= -\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2} + \frac{\int \frac{bcd-b^2e+2ace+c(2cd-be)x}{a+bx+cx^2}\,dx}{cd^2-bde+ae^2}$$

$$= -\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2} - \frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{a+bx+cx^2}\,dx}{2\left(cd^2-bde+ae^2\right)} + \frac{(2cd-be)\int \frac{b+2cx}{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)}$$

$$= -\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2} + \frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(cd^2-bde+ae^2\right)} + \frac{\left(\left(b^2-4ac\right)e\right)\text{Subs}}{cd^2}$$

$$= \frac{\sqrt{b^2-4ac}\,e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{cd^2-bde+ae^2} - \frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2} + \frac{(2cd-be)\log\left(a+b\right.}{2\left(cd^2-bde+\right.}$$

Mathematica [A] time = 0.12, size = 116, normalized size = 0.89

$$\frac{\sqrt{4ac-b^2}\,(2cd-be)(2\log(d+ex)-\log(a+x(b+cx)))+2e\left(b^2-4ac\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{2\sqrt{4ac-b^2}\,\left(e(bd-ae)-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(b^2 - 4*a*c)*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + Sqrt[-b^2 + 4*a
*c]*(2*c*d - b*e)*(2*Log[d + e*x] - Log[a + x*(b + c*x)]))/(2*Sqrt[-b^2 + 4
*a*c]*(-(c*d^2) + e*(b*d - a*e)))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)), x]
```

fricas [A] time = 0.52, size = 229, normalized size = 1.76

$$\left[\frac{\sqrt{b^2-4ac}\,e\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+(2cd-be)\log\left(cx^2+bx+a\right)-2(2cd-be)\log(ex+d)}{2\left(cd^2-bde+ae^2\right)}, \frac{2\sqrt{-b^2+4ac}\,e\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+(2cd-be)\log\left(cx^2+bx+a\right)-2(2cd-be)\log(ex+d)}{2\left(cd^2-bde+ae^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b^2 - 4*a*c)*e*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2
 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + (2*c*d - b*e)*log(c*x^2 + b*x +
 a) - 2*(2*c*d - b*e)*log(e*x + d))/(c*d^2 - b*d*e + a*e^2), 1/2*(2*sqrt(-b
^2 + 4*a*c)*e*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*c*
d - b*e)*log(c*x^2 + b*x + a) - 2*(2*c*d - b*e)*log(e*x + d))/(c*d^2 - b*d*
e + a*e^2)]
```

giac [A] time = 0.16, size = 149, normalized size = 1.15

$$\frac{(2\,cd-be)\log\left(cx^2+bx+a\right)}{2\,\left(cd^2-bde+ae^2\right)}-\frac{\left(2\,cde-be^2\right)\log\left(|xe+d|\right)}{cd^2e-bde^2+ae^3}-\frac{\left(b^2e-4\,ace\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(cd^2-bde+ae^2\right)\sqrt{-b^2+4\,ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c*d - b*e)*log(c*x^2 + b*x + a)/(c*d^2 - b*d*e + a*e^2) - (2*c*d*e -
 b*e^2)*log(abs(x*e + d))/(c*d^2*e - b*d*e^2 + a*e^3) - (b^2*e - 4*a*c*e)*a
rctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((c*d^2 - b*d*e + a*e^2)*sqrt(-b^2 +
4*a*c))
```

maple [A] time = 0.07, size = 233, normalized size = 1.79

$$\frac{4ace\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)\sqrt{4ac-b^2}}-\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)\sqrt{4ac-b^2}}+\frac{be\ln\left(ex+d\right)}{a\,e^2-bde+c\,d^2}-\frac{be\ln\left(c\,x^2+bx+a\right)}{2\left(a\,e^2-bde+c\,d^2\right)}-\frac{2cd\ln\left(ex+d\right)}{a\,e^2-bde+c\,d^2}+\frac{cd\ln\left(c\,x^2+bx+a\right)}{a\,e^2-bde+c\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*b*e-2/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*c*d-1/2
/(a*e^2-b*d*e+c*d^2)*ln(c*x^2+b*x+a)*b*e+1/(a*e^2-b*d*e+c*d^2)*c*ln(c*x^2+b
*x+a)*d+4/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*a*c*e-1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*e*b^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 4.38, size = 515, normalized size = 3.96

$$\frac{\ln\left(2bc^2e-\frac{\left(cd-\frac{be}{2}+\frac{e\sqrt{b^2-4ac}}{2}\right)\left(2ac^2e^2-b^2ce^2+bc^2de-c^2ex(be-2cd)+\frac{ce\left(cd-\frac{be}{2}+\frac{e\sqrt{b^2-4ac}}{2}\right)\left(b^2de+2xb^2e^2+bcd^2-2xbcde+abe^2+2xc^2d^2-8acde-6axce^2\right)}{cd^2-bde+ae^2}\right)}{cd^2-bde+ae^2}+4c^3ex\right)\left(cd-e\left(\frac{b}{2}-\frac{\sqrt{b^2-4ac}}{2}\right)\right)}{cd^2-bde+ae^2}+\frac{\ln\left(2bc^2e-\frac{\left(\frac{be}{2}-cd+\frac{e\sqrt{b^2-4ac}}{2}\right)\left(b^2ce^2-2ac^2e^2-bc^2de+c^2ex(be-2cd)+\frac{ce\left(\frac{be}{2}-cd+\frac{e\sqrt{b^2-4ac}}{2}\right)\left(b^2de+2xb^2e^2+bcd^2-2xbcde+abe^2+2xc^2d^2-8acde-6axce^2\right)}{cd^2-bde+ae^2}\right)}{cd^2-bde+ae^2}+4c^3ex\right)\left(cd-e\left(\frac{b}{2}+\frac{\sqrt{b^2-4ac}}{2}\right)\right)}{cd^2-bde+ae^2}+\frac{\ln\left(d+ex\right)\left(be-2cd\right)}{cd^2-bde+ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*b*c^2*e - ((c*d - (b*e)/2 + (e*(b^2 - 4*a*c)^(1/2))/2)*(2*a*c^2*e^2
 - b^2*c*e^2 + b*c^2*d*e - c^2*e*x*(b*e - 2*c*d) + (c*e*(c*d - (b*e)/2 + (e*
(b^2 - 4*a*c)^(1/2))/2)*(2*b^2*e^2*x + 2*c^2*d^2*x + a*b*e^2 + b*c*d^2 + b^
2*d*e - 6*a*c*e^2*x - 8*a*c*d*e - 2*b*c*d*e*x))/(a*e^2 + c*d^2 - b*d*e)))/(
a*e^2 + c*d^2 - b*d*e) + 4*c^3*e*x)*(c*d - e*(b/2 - (b^2 - 4*a*c)^(1/2)/2))
)/(a*e^2 + c*d^2 - b*d*e) + (log(2*b*c^2*e - (((b*e)/2 - c*d + (e*(b^2 - 4*
a*c)^(1/2))/2)*(b^2*c*e^2 - 2*a*c^2*e^2 - b*c^2*d*e + c^2*e*x*(b*e - 2*c*d)
 + (c*e*((b*e)/2 - c*d + (e*(b^2 - 4*a*c)^(1/2))/2)*(2*b^2*e^2*x + 2*c^2*d^
2*x + a*b*e^2 + b*c*d^2 + b^2*d*e - 6*a*c*e^2*x - 8*a*c*d*e - 2*b*c*d*e*x))
/(a*e^2 + c*d^2 - b*d*e)))/(a*e^2 + c*d^2 - b*d*e) + 4*c^3*e*x)*(c*d - e*(b
```

```
/2 + (b^2 - 4*a*c)^(1/2)/2)))/(a*e^2 + c*d^2 - b*d*e) + (log(d + e*x)*(b*e
- 2*c*d))/(a*e^2 + c*d^2 - b*d*e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1338 $\int \frac{b+2cx}{(d+ex)^2(a+bx+cx^2)}\,dx$

Optimal. Leaf size=210

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^2}-\frac{\log(d+ex)\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^2}+\frac{e\sqrt{b^2-4ac}\,(2cd}{\left(ae^2-\right.}$$

Rubi [A] time = 0.30, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^2}-\frac{\log(d+ex)\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^2}+\frac{e\sqrt{b^2-4ac}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(ae^2-bde+cd^2\right)^2}+\frac{2cd-be}{(d+ex)\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] (2*c*d - b*e)/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) + (Sqrt[b^2 - 4*a*c]*e*(2
*c*d - b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*d^2 - b*d*e + a*e^2)
^2 - ((2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*Log[d + e*x])/(c*d^2 - b*d*
e + a*e^2)^2 + ((2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*Log[a + b*x + c*x
^2])/(2*(c*d^2 - b*d*e + a*e^2)^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)}dx = \int \left(\frac{e(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{e\left(-2c^2d^2-b^2e^2+2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} + \frac{-2b^2cd \cdots}{\cdots}\right.$$

$$= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} + \frac{\int \cdots}{\cdots}$$

$$= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} - \frac{\left(\left(b^2 \cdots\right.\right.}{\cdots}$$

$$= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} + \frac{\left(2c \cdots\right.}{\cdots}$$

$$= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\sqrt{b^2-4ac}\,e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(cd^2-bde+ae^2\right)^2} - \frac{\left(2c^2d \cdots\right.}{\cdots}$$

Mathematica [A] time = 0.29, size = 177, normalized size = 0.84

$$\frac{\log(d+ex)\left(4ce(ae+bd)-2b^2e^2-4c^2d^2\right)+\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log(a+x(b+cx))-2e\sqrt{4ac-b^2}\,(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)+\frac{2(2cd-be)\left(e(ae-bd)+cd^2\right)}{d+ex}}{2\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((2*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e)))/(d + e*x) - 2*Sqrt[-b^2 + 4*a
*c]*e*(-2*c*d + b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + (-4*c^2*d^2 -
 2*b^2*e^2 + 4*c*e*(b*d + a*e))*Log[d + e*x] + (2*c^2*d^2 + b^2*e^2 - 2*c*e
*(b*d + a*e))*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)), x]
```

fricas [A] time = 2.26, size = 745, normalized size = 3.55

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(4*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 + 2*(b^2 + 2*a*c)*d*e^2 - (2*c*d^
2*e - b*d*e^2 + (2*c*d*e^2 - b*e^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2
*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) +
(2*c^2*d^3 - 2*b*c*d^2*e + (b^2 - 2*a*c)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2
 + (b^2 - 2*a*c)*e^3)*x)*log(c*x^2 + b*x + a) - 2*(2*c^2*d^3 - 2*b*c*d^2*e
+ (b^2 - 2*a*c)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2 + (b^2 - 2*a*c)*e^3)*x)*
log(e*x + d))/(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2
```

```
*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 +
 2*a*c)*d^2*e^3)*x), 1/2*(4*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 + 2*(b^2 + 2*
a*c)*d*e^2 + 2*(2*c*d^2*e - b*d*e^2 + (2*c*d*e^2 - b*e^3)*x)*sqrt(-b^2 + 4*
a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*c^2*d^3 - 2
*b*c*d^2*e + (b^2 - 2*a*c)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2 + (b^2 - 2*a*
c)*e^3)*x)*log(c*x^2 + b*x + a) - 2*(2*c^2*d^3 - 2*b*c*d^2*e + (b^2 - 2*a*c
)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2 + (b^2 - 2*a*c)*e^3)*x)*log(e*x + d))/
(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2
+ (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^
3)*x)]
```

giac [A] time = 0.26, size = 362, normalized size = 1.72

$$-\frac{\left(2\,b^{2}cde^{3}-8\,ac^{2}de^{3}-b^{3}e^{4}+4\,abce^{4}\right)\arctan\left(\frac{\left(2\,cd-\frac{2\,cd^{2}}{xe+d}-be+\frac{2\,bde}{xe+d}-\frac{2\,ae^{2}}{xe+d}\right)e^{(-1)}}{\sqrt{-b^{2}+4\,ac}}\right)e^{(-2)}}{\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}+2\,acd^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\sqrt{-b^{2}+4\,ac}}+\frac{\left(2\,c^{2}d^{2}-2\,bcde+b^{2}e^{2}-2\,ace^{2}\right)\log\left(c-\frac{2\,cd}{xe+d}+\frac{cd^{2}}{(xe+d)^{2}}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^{2}}+\frac{ae^{2}}{(xe+d)^{2}}\right)}{2\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}+2\,acd^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)}+\frac{\frac{2\,cde^{2}}{xe+d}-\frac{be^{3}}{xe+d}}{cd^{2}e^{2}-bde^{3}+ae^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -(2*b^2*c*d*e^3 - 8*a*c^2*d*e^3 - b^3*e^4 + 4*a*b*c*e^4)*arctan((2*c*d - 2*
c*d^2/(x*e + d) - b*e + 2*b*d*e/(x*e + d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(
-b^2 + 4*a*c))*e^(-2)/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2
 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-b^2 + 4*a*c)) + 1/2*(2*c^2*d^2 - 2*b*c*d*e
+ b^2*e^2 - 2*a*c*e^2)*log(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x
*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^2*d^4 - 2*b*c*d^3*e + b
^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4) + (2*c*d*e^2/(x*e + d)
- b*e^3/(x*e + d))/(c*d^2*e^2 - b*d*e^3 + a*e^4)
```

maple [B] time = 0.05, size = 560, normalized size = 2.67

$$-\frac{4abc\,e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}+\frac{8a\,c^{2}de\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}+\frac{b^{3}e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}-\frac{2b^{2}cde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}+\frac{2ac\,e^{2}\ln\left(ex+d\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}-\frac{ac\,e^{2}\ln\left(c\,x^{2}+bx+a\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}-\frac{b^{2}e^{2}\ln\left(ex+d\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}+\frac{b^{2}e^{2}\ln\left(c\,x^{2}+bx+a\right)}{2\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}+\frac{2bcde\ln\left(ex+d\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}-\frac{bcde\ln\left(c\,x^{2}+bx+a\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}-\frac{2c^{2}d^{2}\ln\left(ex+d\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}+\frac{c^{2}d^{2}\ln\left(c\,x^{2}+bx+a\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}}-\frac{be}{\left(a\,e^{2}-bde+c\,d^{2}\right)\left(ex+d\right)}+\frac{2cd}{\left(a\,e^{2}-bde+c\,d^{2}\right)\left(ex+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] 2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*a*c*e^2-1/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)
*b^2*e^2+2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*b*c*d*e-2/(a*e^2-b*d*e+c*d^2)^2*
ln(e*x+d)*c^2*d^2-1/(a*e^2-b*d*e+c*d^2)/(e*x+d)*b*e+2/(a*e^2-b*d*e+c*d^2)/(
e*x+d)*c*d-1/(a*e^2-b*d*e+c*d^2)^2*c*ln(c*x^2+b*x+a)*a*e^2+1/2/(a*e^2-b*d*e
+c*d^2)^2*ln(c*x^2+b*x+a)*b^2*e^2-1/(a*e^2-b*d*e+c*d^2)^2*c*ln(c*x^2+b*x+a)
*b*d*e+1/(a*e^2-b*d*e+c*d^2)^2*c^2*ln(c*x^2+b*x+a)*d^2-4/(a*e^2-b*d*e+c*d^2
)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*c*e^2+8/(a*e^
2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c^
2*d*e+1/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*b^3*e^2-2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*b^2*c*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 4.08, size = 1637, normalized size = 7.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x)
```

```
[Out] (log(d + e*x)*(e^2*(2*a*c - b^2) - 2*c^2*d^2 + 2*b*c*d*e))/(a^2*e^4 + c^2*d
^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (log(3*b^2*
c^3*d^4 - 12*a*c^4*d^4 - 2*b^5*e^4*x - 12*a^3*c^2*e^4 - 2*a*b^4*e^4 + 2*b^4
*e^4*x*(b^2 - 4*a*c)^(1/2) + 6*c^4*d^4*x*(b^2 - 4*a*c)^(1/2) + 11*a^2*b^2*c
*e^4 - 2*b^3*c^2*d^3*e + b^4*c*d^2*e^2 + 40*a^2*c^3*d^2*e^2 + 2*a*b^3*e^4*(
b^2 - 4*a*c)^(1/2) + 3*b*c^3*d^4*(b^2 - 4*a*c)^(1/2) + 8*a*b*c^3*d^3*e + 6*
a*b^3*c*d*e^3 + 12*a*b^3*c*e^4*x - 32*a*c^4*d^3*e*x + 8*b^4*c*d*e^3*x - 5*a
^2*b*c*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) - 24*a^
2*b*c^2*d*e^3 - 16*a^2*b*c^2*e^4*x + 32*a^2*c^3*d*e^3*x + 8*b^2*c^3*d^3*e*x
 + 16*a^2*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) - 2*b^2*c^2*d^3*e*(b^2 - 4*a*c)^(1/
2) + b^3*c*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 6*a^2*c^2*e^4*x*(b^2 - 4*a*c)^(1/2
) - 14*a*b^2*c^2*d^2*e^2 - 12*b^3*c^2*d^2*e^2*x + 14*a*b*c^2*d^2*e^2*(b^2 -
 4*a*c)^(1/2) - 20*a*c^3*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 14*b^2*c^2*d^2*e^2
*x*(b^2 - 4*a*c)^(1/2) - 10*a*b^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 8*a*b^2*c*e
^4*x*(b^2 - 4*a*c)^(1/2) - 12*b*c^3*d^3*e*x*(b^2 - 4*a*c)^(1/2) - 8*b^3*c*d
*e^3*x*(b^2 - 4*a*c)^(1/2) + 48*a*b*c^3*d^2*e^2*x - 40*a*b^2*c^2*d*e^3*x +
20*a*b*c^2*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(e^2*(a*c + (b*(b^2 - 4*a*c)^(1/2))
/2 - b^2/2) + e*(b*c*d - c*d*(b^2 - 4*a*c)^(1/2)) - c^2*d^2))/(a^2*e^4 + c^
2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (log(2*a
*b^4*e^4 + 12*a*c^4*d^4 + 2*b^5*e^4*x + 12*a^3*c^2*e^4 - 3*b^2*c^3*d^4 + 2*
b^4*e^4*x*(b^2 - 4*a*c)^(1/2) + 6*c^4*d^4*x*(b^2 - 4*a*c)^(1/2) - 11*a^2*b^
2*c*e^4 + 2*b^3*c^2*d^3*e - b^4*c*d^2*e^2 - 40*a^2*c^3*d^2*e^2 + 2*a*b^3*e^
4*(b^2 - 4*a*c)^(1/2) + 3*b*c^3*d^4*(b^2 - 4*a*c)^(1/2) - 8*a*b*c^3*d^3*e -
 6*a*b^3*c*d*e^3 - 12*a*b^3*c*e^4*x + 32*a*c^4*d^3*e*x - 8*b^4*c*d*e^3*x -
5*a^2*b*c*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) + 24
*a^2*b*c^2*d*e^3 + 16*a^2*b*c^2*e^4*x - 32*a^2*c^3*d*e^3*x - 8*b^2*c^3*d^3*
e*x + 16*a^2*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) - 2*b^2*c^2*d^3*e*(b^2 - 4*a*c)^
(1/2) + b^3*c*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 6*a^2*c^2*e^4*x*(b^2 - 4*a*c)^(
1/2) + 14*a*b^2*c^2*d^2*e^2 + 12*b^3*c^2*d^2*e^2*x + 14*a*b*c^2*d^2*e^2*(b^
2 - 4*a*c)^(1/2) - 20*a*c^3*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 14*b^2*c^2*d^2*
e^2*x*(b^2 - 4*a*c)^(1/2) - 10*a*b^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 8*a*b^2*
c*e^4*x*(b^2 - 4*a*c)^(1/2) - 12*b*c^3*d^3*e*x*(b^2 - 4*a*c)^(1/2) - 8*b^3*
c*d*e^3*x*(b^2 - 4*a*c)^(1/2) - 48*a*b*c^3*d^2*e^2*x + 40*a*b^2*c^2*d*e^3*x
 + 20*a*b*c^2*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(e^2*((b*(b^2 - 4*a*c)^(1/2))/2
- a*c + b^2/2) - e*(b*c*d + c*d*(b^2 - 4*a*c)^(1/2)) + c^2*d^2))/(a^2*e^4 +
 c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (b*e
- 2*c*d)/((d + e*x)*(a*e^2 + c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1339 $\int \frac{b+2cx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=303

$$\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^3}+\frac{-2ce(ae+bd)+b^2e^2+2c^2d^2}{(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{(2cd-be)\log(d+ex}{\left(ae^2\right.}$$

Rubi [A] time = 0.48, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^3}+\frac{-2ce(ae+bd)+b^2e^2+2c^2d^2}{(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{(2cd-be)\log(d+ex)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{e\sqrt{b^2-4ac}\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{2cd-be}{2(d+ex)^2\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (2*c*d - b*e)/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2) + (2*c^2*d^2 + b^2*e^
2 - 2*c*e*(b*d + a*e))/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) + (Sqrt[b^2 -
4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt
[b^2 - 4*a*c]])/(c*d^2 - b*d*e + a*e^2)^3 - ((2*c*d - b*e)*(c^2*d^2 + b^2*e
^2 - c*e*(b*d + 3*a*e))*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^3 + ((2*c*d -
 b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Log[a + b*x + c*x^2])/(2*(c*d
^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{e(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{e\left(-2c^2d^2-b^2e^2+2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)^2} + \frac{e(2cd -}{} \right.$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{(2cd-be)\left(c^2d\right.}{}$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{(2cd-be)\left(c^2d\right.}{}$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{(2cd-be)\left(c^2d\right.}{}$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} + \frac{\sqrt{b^2-4ac}\,e\left(3\right.}{}$$

Mathematica [A] time = 0.37, size = 268, normalized size = 0.88

$$\frac{\frac{2\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\left(e(ae-bd)+cd^2\right)}{d+ex} - 2(2cd-be)\log(d+ex)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right) + (2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log(a+x(b+cx)) + 2e\sqrt{4ac-b^2}\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right) + \frac{(2cd-be)\left(e(ae-bd)+cd^2\right)^2}{(d+ex)^2}}{2\left(e(ae-bd)+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (((2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^2 + (2*(c*d^2 + e*(
-(b*d) + a*e))*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e)))/(d + e*x) + 2*Sqr
t[-b^2 + 4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*ArcTan[(b + 2*c
*x)/Sqrt[-b^2 + 4*a*c]] - 2*(2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3
*a*e))*Log[d + e*x] + (2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))
*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)), x]
```

fricas [B] time = 14.97, size = 1961, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(6*c^3*d^5 - 13*b*c^2*d^4*e - a^2*b*e^5 + 2*(5*b^2*c + 2*a*c^2)*d^3*e^
2 - 3*(b^3 + 2*a*b*c)*d^2*e^3 + 2*(2*a*b^2 - a^2*c)*d*e^4 - (3*c^2*d^4*e -
3*b*c*d^3*e^2 + (b^2 - a*c)*d^2*e^3 + (3*c^2*d^2*e^3 - 3*b*c*d*e^4 + (b^2 -
 a*c)*e^5)*x^2 + 2*(3*c^2*d^3*e^2 - 3*b*c*d^2*e^3 + (b^2 - a*c)*d*e^4)*x)*s
qrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)
*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(2*c^3*d^4*e - 4*b*c^2*d^3*e^2 + 3*b^2
*c*d^2*e^3 - b^3*d*e^4 + (a*b^2 - 2*a^2*c)*e^5)*x + (2*c^3*d^5 - 3*b*c^2*d^
```

```
4*e + 3*(b^2*c - 2*a*c^2)*d^3*e^2 - (b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^
2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2
+ 2*(2*c^3*d^4*e - 3*b*c^2*d^3*e^2 + 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3
*a*b*c)*d*e^4)*x)*log(c*x^2 + b*x + a) - 2*(2*c^3*d^5 - 3*b*c^2*d^4*e + 3*(
b^2*c - 2*a*c^2)*d^3*e^2 - (b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^2 - 3*b*c
^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2 + 2*(2*c^
3*d^4*e - 3*b*c^2*d^3*e^2 + 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3*a*b*c)*d
*e^4)*x)*log(e*x + d))/(c^3*d^8 - 3*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2
*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 - (b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2
*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*
(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e
^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*
(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e
^5)*x), 1/2*(6*c^3*d^5 - 13*b*c^2*d^4*e - a^2*b*e^5 + 2*(5*b^2*c + 2*a*c^2)
*d^3*e^2 - 3*(b^3 + 2*a*b*c)*d^2*e^3 + 2*(2*a*b^2 - a^2*c)*d*e^4 + 2*(3*c^2
*d^4*e - 3*b*c*d^3*e^2 + (b^2 - a*c)*d^2*e^3 + (3*c^2*d^2*e^3 - 3*b*c*d*e^4
 + (b^2 - a*c)*e^5)*x^2 + 2*(3*c^2*d^3*e^2 - 3*b*c*d^2*e^3 + (b^2 - a*c)*d*
e^4)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*
a*c)) + 2*(2*c^3*d^4*e - 4*b*c^2*d^3*e^2 + 3*b^2*c*d^2*e^3 - b^3*d*e^4 + (a
*b^2 - 2*a^2*c)*e^5)*x + (2*c^3*d^5 - 3*b*c^2*d^4*e + 3*(b^2*c - 2*a*c^2)*d
^3*e^2 - (b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^
2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2 + 2*(2*c^3*d^4*e - 3*b*c^2*
d^3*e^2 + 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3*a*b*c)*d*e^4)*x)*log(c*x^2
 + b*x + a) - 2*(2*c^3*d^5 - 3*b*c^2*d^4*e + 3*(b^2*c - 2*a*c^2)*d^3*e^2 -
(b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a
*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2 + 2*(2*c^3*d^4*e - 3*b*c^2*d^3*e^2 +
 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3*a*b*c)*d*e^4)*x)*log(e*x + d))/(c^3
*d^8 - 3*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^
6*e^2 - (b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2
- 3*b*c^2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (
b^3 + 6*a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*
b*c^2*d^6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (
b^3 + 6*a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x)]
```

giac [B] time = 0.20, size = 710, normalized size = 2.34

$$\frac{(2c^3d^3-3bc^2d^2e+3b^2cde^2-6ac^2de^2-b^3e^3+3abce^3)\log(cx^2+bx+a)}{2(c^3d^6-3bc^2d^5e+3b^2cd^4e^2+3ac^2d^4e^2-b^3d^3e^3-6abcd^3e^3+3ab^2d^2e^4+3a^2cd^2e^4-3a^2bde^5+a^3e^6)} - \frac{(2c^3d^3e-3bc^2d^2e^2+3b^2cde^3-6ac^2de^3-b^3e^4+3abce^4)\log(|xe+d|)}{c^3d^6e-3bc^2d^5e^2+3b^2cd^4e^3+3ac^2d^4e^3-b^3d^3e^4-6abcd^3e^4+3ab^2d^2e^5+3a^2cd^2e^5-3a^2bde^6+a^3e^7} - \frac{(3b^2c^2d^2e-12ac^3d^2e-3b^3cde^2+12abc^2de^2+b^4e^3-5ab^2ce^3+4a^2c^2e^3)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{(c^3d^6-3bc^2d^5e+3b^2cd^4e^2+3ac^2d^4e^2-b^3d^3e^3-6abcd^3e^3+3ab^2d^2e^4+3a^2cd^2e^4-3a^2bde^5+a^3e^6)\sqrt{-b^2+4ac}} + \frac{6c^3d^5-13bc^2d^4e+10b^2cd^3e^2+4ac^2d^3e^2-3b^3d^2e^3-6abcd^2e^3+4ab^2de^4-2a^2cde^4-a^2be^5+2(2c^3d^4e-4bc^2d^3e^2+3b^2cd^2e^3-b^3de^4+ab^2e^5-2a^2ce^5)x}{2(cd^2-bde+ae^2)^3(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*b^2*c*d*e^2 - 6*a*c^2*d*e^2 - b^3*e^3 +
3*a*b*c*e^3)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^
2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a
^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (2*c^3*d^3*e - 3*b*c^2*d^2*e^2 +
3*b^2*c*d*e^3 - 6*a*c^2*d*e^3 - b^3*e^4 + 3*a*b*c*e^4)*log(abs(x*e + d))/(c
^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^
4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a
^3*e^7) - (3*b^2*c^2*d^2*e - 12*a*c^3*d^2*e - 3*b^3*c*d*e^2 + 12*a*b*c^2*d*
e^2 + b^4*e^3 - 5*a*b^2*c*e^3 + 4*a^2*c^2*e^3)*arctan((2*c*x + b)/sqrt(-b^2
 + 4*a*c))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 -
b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b
*d*e^5 + a^3*e^6)*sqrt(-b^2 + 4*a*c)) + 1/2*(6*c^3*d^5 - 13*b*c^2*d^4*e + 1
0*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - 3*b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 4*a*b
^2*d*e^4 - 2*a^2*c*d*e^4 - a^2*b*e^5 + 2*(2*c^3*d^4*e - 4*b*c^2*d^3*e^2 + 3
*b^2*c*d^2*e^3 - b^3*d*e^4 + a*b^2*e^5 - 2*a^2*c*e^5)*x)/((c*d^2 - b*d*e +
a*e^2)^3*(x*e + d)^2)
```

maple [B] time = 0.06, size = 1033, normalized size = 3.41

$$-\frac{4a^2c^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} + \frac{5ab^2ce^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} - \frac{12abc^2de^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} + \frac{12ac^3d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} - \frac{b^4e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} + \frac{3b^3cde^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} - \frac{3b^2c^2d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(ae^2-bde+cd^2)^3\sqrt{4ac-b^2}} - \frac{3abce^3\ln(ex+d)}{(ae^2-bde+cd^2)^3} + \frac{3abce^3\ln(cx^2+bx+a)}{2(ae^2-bde+cd^2)^3} + \frac{6ac^2de^2\ln(ex+d)}{(ae^2-bde+cd^2)^3} - \frac{3ac^2de^2\ln(cx^2+bx+a)}{(ae^2-bde+cd^2)^3} + \frac{b^3e^3\ln(ex+d)}{(ae^2-bde+cd^2)^3} - \frac{b^3e^3\ln(cx^2+bx+a)}{2(ae^2-bde+cd^2)^3} - \frac{3b^2cde^2\ln(ex+d)}{(ae^2-bde+cd^2)^3} + \frac{3b^2cde^2\ln(cx^2+bx+a)}{2(ae^2-bde+cd^2)^3} + \frac{3bc^2d^2e\ln(ex+d)}{(ae^2-bde+cd^2)^3} - \frac{3bc^2d^2e\ln(cx^2+bx+a)}{2(ae^2-bde+cd^2)^3} - \frac{2c^3d^3\ln(ex+d)}{(ae^2-bde+cd^2)^3} + \frac{c^3d^3\ln(cx^2+bx+a)}{(ae^2-bde+cd^2)^3} - \frac{2ace^2}{(ae^2-bde+cd^2)^2(ex+d)} + \frac{b^2e^2}{(ae^2-bde+cd^2)^2(ex+d)} - \frac{2bcde}{(ae^2-bde+cd^2)^2(ex+d)} + \frac{2c^2d^2}{(ae^2-bde+cd^2)^2(ex+d)} - \frac{be}{2(ae^2-bde+cd^2)(ex+d)^2} + \frac{cd}{(ae^2-bde+cd^2)(ex+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] -12/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*a*b*c^2*d*e^2+6/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*c^2*a*d*e^2-3/(a*e^2-b
*d*e+c*d^2)^3*ln(e*x+d)*a*b*c*e^3-3/2/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*
x+a)*b*d^2*e-4/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*a^2*c^2*e^3-3/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b^2*c*d*e^2+3
/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b*c^2*d^2*e-3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c
-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*c^2*d^2*e+5/(a*e^2-b*d*
e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*c*e^
3+12/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*a*c^3*d^2*e+3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*b^3*c*d*e^2-2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*b*c*d*e+3/
2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*a*b*e^3-3/(a*e^2-b*d*e+c*d^2)^3*c
^2*ln(c*x^2+b*x+a)*a*d*e^2+3/2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*b^2*
d*e^2+1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b^3*e^3-2/(a*e^2-b*d*e+c*d^2)^3*ln(
e*x+d)*c^3*d^3+1/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*b^2*e^2+2/(a*e^2-b*d*e+c*d^2
)^2/(e*x+d)*c^2*d^2-1/2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2*b*e+1/(a*e^2-b*d*e+c*
d^2)/(e*x+d)^2*c*d-1/2/(a*e^2-b*d*e+c*d^2)^3*ln(c*x^2+b*x+a)*b^3*e^3+1/(a*e
^2-b*d*e+c*d^2)^3*c^3*ln(c*x^2+b*x+a)*d^3-2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*a
*c*e^2-1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*b^4*e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 10.98, size = 2608, normalized size = 8.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*a*e^5*(b^2 - 4*a*c)^(5/2) + 32*a*b^5*e^5 - 192*a*c^5*d^5 + 32*b^6*e^
5*x + 48*b^2*c^4*d^5 + 18*b^3*e^5*x*(b^2 - 4*a*c)^(3/2) + 3*b^5*e^5*x*(b^2
- 4*a*c)^(1/2) - 96*c^5*d^5*x*(b^2 - 4*a*c)^(1/2) - 208*a^2*b^3*c*e^5 + 320
*a^3*b*c^2*e^5 - 704*a^3*c^3*d*e^4 - 48*b^3*c^3*d^4*e - 16*b^5*c*d^2*e^3 -
64*a^3*c^3*e^5*x + 1152*a^2*c^4*d^3*e^2 + 48*b^4*c^2*d^3*e^2 + 33*b*d*e^4*(
b^2 - 4*a*c)^(5/2) + 11*b*e^5*x*(b^2 - 4*a*c)^(5/2) + 24*a*b^2*e^5*(b^2 - 4
*a*c)^(3/2) + 6*a*b^4*e^5*(b^2 - 4*a*c)^(1/2) - 48*b*c^4*d^5*(b^2 - 4*a*c)^
(1/2) - 18*b^3*d*e^4*(b^2 - 4*a*c)^(3/2) - 15*b^5*d*e^4*(b^2 - 4*a*c)^(1/2)
 - 44*c*d^2*e^3*(b^2 - 4*a*c)^(5/2) - 72*c^3*d^4*e*(b^2 - 4*a*c)^(3/2) - 22
*c*d*e^4*x*(b^2 - 4*a*c)^(5/2) + 192*a*b*c^4*d^4*e - 128*a*b^4*c*d*e^4 - 12
0*b^3*c^2*d^3*e^2*(b^2 - 4*a*c)^(1/2) - 224*a*b^4*c*e^5*x - 576*a*c^5*d^4*e
*x - 160*b^5*c*d*e^4*x + 144*b^2*c^4*d^4*e*x + 72*b*c^2*d^3*e^2*(b^2 - 4*a*
c)^(3/2) + 120*b^2*c^3*d^4*e*(b^2 - 4*a*c)^(1/2) + 60*b^4*c*d^2*e^3*(b^2 -
4*a*c)^(1/2) - 144*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(3/2) - 480*a*b^2*c^3*d^3*e^
2 + 320*a*b^3*c^2*d^2*e^3 - 1024*a^2*b*c^3*d^2*e^3 + 688*a^2*b^2*c^2*d*e^4
+ 400*a^2*b^2*c^2*e^5*x + 1408*a^2*c^4*d^2*e^3*x - 288*b^3*c^3*d^3*e^2*x +
304*b^4*c^2*d^2*e^3*x + 216*b*c^2*d^2*e^3*x*(b^2 - 4*a*c)^(3/2) - 1568*a*b^
```

```
2*c^3*d^2*e^3*x - 240*b^2*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(1/2) + 120*b^3*c^2*d
^2*e^3*x*(b^2 - 4*a*c)^(1/2) + 240*b*c^4*d^4*e*x*(b^2 - 4*a*c)^(1/2) - 108*
b^2*c*d*e^4*x*(b^2 - 4*a*c)^(3/2) - 30*b^4*c*d*e^4*x*(b^2 - 4*a*c)^(1/2) +
1152*a*b*c^4*d^3*e^2*x + 992*a*b^3*c^2*d*e^4*x - 1408*a^2*b*c^3*d*e^4*x)*(e
^2*((3*b^2*c*d)/2 - 3*a*c^2*d + (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) - e^3*(b^3
/2 + (b^2*(b^2 - 4*a*c)^(1/2))/2 - (3*a*b*c)/2 - (a*c*(b^2 - 4*a*c)^(1/2))/
2) + c^3*d^3 - e*((3*b*c^2*d^2)/2 + (3*c^2*d^2*(b^2 - 4*a*c)^(1/2))/2)))/(a
^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*
c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e
^3) - (log(32*a*b^5*e^5 - 2*a*e^5*(b^2 - 4*a*c)^(5/2) - 192*a*c^5*d^5 + 32*
b^6*e^5*x + 48*b^2*c^4*d^5 - 18*b^3*e^5*x*(b^2 - 4*a*c)^(3/2) - 3*b^5*e^5*x
*(b^2 - 4*a*c)^(1/2) + 96*c^5*d^5*x*(b^2 - 4*a*c)^(1/2) - 208*a^2*b^3*c*e^5
 + 320*a^3*b*c^2*e^5 - 704*a^3*c^3*d*e^4 - 48*b^3*c^3*d^4*e - 16*b^5*c*d^2*
e^3 - 64*a^3*c^3*e^5*x + 1152*a^2*c^4*d^3*e^2 + 48*b^4*c^2*d^3*e^2 - 33*b*d
*e^4*(b^2 - 4*a*c)^(5/2) - 11*b*e^5*x*(b^2 - 4*a*c)^(5/2) - 24*a*b^2*e^5*(b
^2 - 4*a*c)^(3/2) - 6*a*b^4*e^5*(b^2 - 4*a*c)^(1/2) + 48*b*c^4*d^5*(b^2 - 4
*a*c)^(1/2) + 18*b^3*d*e^4*(b^2 - 4*a*c)^(3/2) + 15*b^5*d*e^4*(b^2 - 4*a*c)
^(1/2) + 44*c*d^2*e^3*(b^2 - 4*a*c)^(5/2) + 72*c^3*d^4*e*(b^2 - 4*a*c)^(3/2
) + 22*c*d*e^4*x*(b^2 - 4*a*c)^(5/2) + 192*a*b*c^4*d^4*e - 128*a*b^4*c*d*e^
4 + 120*b^3*c^2*d^3*e^2*(b^2 - 4*a*c)^(1/2) - 224*a*b^4*c*e^5*x - 576*a*c^5
*d^4*e*x - 160*b^5*c*d*e^4*x + 144*b^2*c^4*d^4*e*x - 72*b*c^2*d^3*e^2*(b^2
- 4*a*c)^(3/2) - 120*b^2*c^3*d^4*e*(b^2 - 4*a*c)^(1/2) - 60*b^4*c*d^2*e^3*(
b^2 - 4*a*c)^(1/2) + 144*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(3/2) - 480*a*b^2*c^3*
d^3*e^2 + 320*a*b^3*c^2*d^2*e^3 - 1024*a^2*b*c^3*d^2*e^3 + 688*a^2*b^2*c^2*
d*e^4 + 400*a^2*b^2*c^2*e^5*x + 1408*a^2*c^4*d^2*e^3*x - 288*b^3*c^3*d^3*e^
2*x + 304*b^4*c^2*d^2*e^3*x - 216*b*c^2*d^2*e^3*x*(b^2 - 4*a*c)^(3/2) - 156
8*a*b^2*c^3*d^2*e^3*x + 240*b^2*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(1/2) - 120*b^3
*c^2*d^2*e^3*x*(b^2 - 4*a*c)^(1/2) - 240*b*c^4*d^4*e*x*(b^2 - 4*a*c)^(1/2)
+ 108*b^2*c*d*e^4*x*(b^2 - 4*a*c)^(3/2) + 30*b^4*c*d*e^4*x*(b^2 - 4*a*c)^(1
/2) + 1152*a*b*c^4*d^3*e^2*x + 992*a*b^3*c^2*d*e^4*x - 1408*a^2*b*c^3*d*e^4
*x)*(e^2*(3*a*c^2*d - (3*b^2*c*d)/2 + (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) + e^
3*(b^3/2 - (b^2*(b^2 - 4*a*c)^(1/2))/2 - (3*a*b*c)/2 + (a*c*(b^2 - 4*a*c)^(
1/2))/2) - c^3*d^3 + e*((3*b*c^2*d^2)/2 - (3*c^2*d^2*(b^2 - 4*a*c)^(1/2))/2
)))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c
*d^3*e^3) - ((a*b*e^3 - 3*b^2*d*e^2 - 6*c^2*d^3 + 2*a*c*d*e^2 + 7*b*c*d^2*e
)/(2*(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d
^2*e^2)) - (x*(b^2*e^3 + 2*c^2*d^2*e - 2*a*c*e^3 - 2*b*c*d*e^2))/(a^2*e^4 +
 c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))/(d^2 +
 e^2*x^2 + 2*d*e*x) + (log(d + e*x)*(e^2*(6*a*c^2*d - 3*b^2*c*d) + e^3*(b^3
 - 3*a*b*c) - 2*c^3*d^3 + 3*b*c^2*d^2*e))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3
+ 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3
*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**3/(c*x**2+b*x+a),x)
[Out] Timed out
```

3.1340 $\int \frac{(b+2cx)(d+ex)^4}{(a+bx+cx^2)^2} dx$

Optimal. Leaf size=172

$$\frac{2e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{c^3}-\frac{4e(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}$$

Rubi [A] time = 0.22, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {768, 701, 634, 618, 206, 628}

$$\frac{2e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{c^3}-\frac{4e(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}-\frac{(d+ex)^4}{a+bx+cx^2}+\frac{4e^3x(3cd-be)}{c^2}+\frac{2e^4x^2}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (4*e^3*(3*c*d - b*e)*x)/c^2 + (2*e^4*x^2)/c - (d + e*x)^4/(a + b*x + c*x^2)
 - (4*e*(2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*ArcTanh[(b +
2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*Sqrt[b^2 - 4*a*c]) + (2*e^2*(3*c^2*d^2 + b^
2*e^2 - c*e*(3*b*d + a*e))*Log[a + b*x + c*x^2])/c^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 701

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Int[PolynomialDivide[(d + e*x)^m, a + b*x + c*x^2, x], x] /; FreeQ[{a,
 b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&
 NeQ[2*c*d - b*e, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^4}{a+bx+cx^2} + (4e)\int \frac{(d+ex)^3}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^4}{a+bx+cx^2} + (4e)\int \left(\frac{e^2(3cd-be)}{c^2} + \frac{e^3x}{c} + \frac{c^2d^3-3acde^2+abe^3+e\left(3c^2d^2+b^2e^2\right.}{c^2\left(a+bx+cx^2\right)}\right.$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} + \frac{(4e)\int \frac{c^2d^3-3acde^2+abe^3+e\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)x}{a+bx+cx^2}}{c^2}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} + \frac{\left(2e^2\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)\int \frac{b+2c}{a+bx+c}}{c^3}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} + \frac{2e^2\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\log\left(a+b\right.}{c^3}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} - \frac{4e(2cd-be)\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)\tan}{c^3\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.28, size = 241, normalized size = 1.40

$$\frac{\frac{-ce^3\left(a^2e+2ab(2d+ex)+4b^2dx\right)+b^2e^4(a+bx)+2c^2de^2(3ad+2aex+3bdx)-c^3d^3(d+4ex)}{a+x(b+cx)} + 2e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log(a+x(b+cx)) + \frac{4e(be-2cd)\left(ce(3ae+bd)-b^2e^2-c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + ce^3x(8cd-3be) + c^2e^4x^2}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (c*e^3*(8*c*d - 3*b*e)*x + c^2*e^4*x^2 + (b^2*e^4*(a + b*x) - c^3*d^3*(d +
4*e*x) + 2*c^2*d*e^2*(3*a*d + 3*b*d*x + 2*a*e*x) - c*e^3*(a^2*e + 4*b^2*d*x
 + 2*a*b*(2*d + e*x)))/(a + x*(b + c*x)) + (4*e*(-2*c*d + b*e)*(-(c^2*d^2)
- b^2*e^2 + c*e*(b*d + 3*a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt
[-b^2 + 4*a*c] + 2*e^2*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*Log[a + x*
(b + c*x)])/c^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.47, size = 1701, normalized size = 9.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [((b^2*c^3 - 4*a*c^4)*e^4*x^4 - (b^2*c^3 - 4*a*c^4)*d^4 + 6*(a*b^2*c^2 - 4*
a^2*c^3)*d^2*e^2 - 4*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a*b^4 - 5*a^2*b^2*c +
 4*a^3*c^2)*e^4 + 2*(4*(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^
4)*x^3 + (8*(b^3*c^2 - 4*a*b*c^3)*d*e^3 - (3*b^4*c - 13*a*b^2*c^2 + 4*a^2*c
^3)*e^4)*x^2 + 2*(2*a*c^3*d^3*e - 3*a*b*c^2*d^2*e^2 + 3*(a*b^2*c - 2*a^2*c^
2)*d*e^3 - (a*b^3 - 3*a^2*b*c)*e^4 + (2*c^4*d^3*e - 3*b*c^3*d^2*e^2 + 3*(b^
2*c^2 - 2*a*c^3)*d*e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x^2 + (2*b*c^3*d^3*e - 3*
b^2*c^2*d^2*e^2 + 3*(b^3*c - 2*a*b*c^2)*d*e^3 - (b^4 - 3*a*b^2*c)*e^4)*x)*s
qrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)
*(2*c*x + b))/(c*x^2 + b*x + a)) - (4*(b^2*c^3 - 4*a*c^4)*d^3*e - 6*(b^3*c^
2 - 4*a*b*c^3)*d^2*e^2 + 4*(b^4*c - 7*a*b^2*c^2 + 12*a^2*c^3)*d*e^3 - (b^5
- 9*a*b^3*c + 20*a^2*b*c^2)*e^4)*x + 2*(3*(a*b^2*c^2 - 4*a^2*c^3)*d^2*e^2 -
 3*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^4 +
(3*(b^2*c^3 - 4*a*c^4)*d^2*e^2 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^3 + (b^4*c - 5
*a*b^2*c^2 + 4*a^2*c^3)*e^4)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^2 - 3*(b^
4*c - 4*a*b^2*c^2)*d*e^3 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^4)*x)*log(c*x^
2 + b*x + a))/(a*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 -
 4*a*b*c^4)*x), ((b^2*c^3 - 4*a*c^4)*e^4*x^4 - (b^2*c^3 - 4*a*c^4)*d^4 + 6*
(a*b^2*c^2 - 4*a^2*c^3)*d^2*e^2 - 4*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a*b^4
- 5*a^2*b^2*c + 4*a^3*c^2)*e^4 + 2*(4*(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2
- 4*a*b*c^3)*e^4)*x^3 + (8*(b^3*c^2 - 4*a*b*c^3)*d*e^3 - (3*b^4*c - 13*a*b^
2*c^2 + 4*a^2*c^3)*e^4)*x^2 - 4*(2*a*c^3*d^3*e - 3*a*b*c^2*d^2*e^2 + 3*(a*b
^2*c - 2*a^2*c^2)*d*e^3 - (a*b^3 - 3*a^2*b*c)*e^4 + (2*c^4*d^3*e - 3*b*c^3*
d^2*e^2 + 3*(b^2*c^2 - 2*a*c^3)*d*e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x^2 + (2*b
*c^3*d^3*e - 3*b^2*c^2*d^2*e^2 + 3*(b^3*c - 2*a*b*c^2)*d*e^3 - (b^4 - 3*a*b
^2*c)*e^4)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^
2 - 4*a*c)) - (4*(b^2*c^3 - 4*a*c^4)*d^3*e - 6*(b^3*c^2 - 4*a*b*c^3)*d^2*e^
2 + 4*(b^4*c - 7*a*b^2*c^2 + 12*a^2*c^3)*d*e^3 - (b^5 - 9*a*b^3*c + 20*a^2*
b*c^2)*e^4)*x + 2*(3*(a*b^2*c^2 - 4*a^2*c^3)*d^2*e^2 - 3*(a*b^3*c - 4*a^2*b
*c^2)*d*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^4 + (3*(b^2*c^3 - 4*a*c^4
)*d^2*e^2 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^3 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^
3)*e^4)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^2 - 3*(b^4*c - 4*a*b^2*c^2)*d*
e^3 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^4)*x)*log(c*x^2 + b*x + a))/(a*b^2*
c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x)]
```

giac [A] time = 0.16, size = 285, normalized size = 1.66

$$\frac{2\left(3c^2d^2e^2-3bcde^3+b^2e^4-ace^4\right)\log\left(cx^2+bx+a\right)}{c^3}+\frac{4\left(2c^3d^3e-3bc^2d^2e^2+3b^2cde^3-6ac^2de^3-b^3e^4+3abce^4\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\sqrt{-b^2+4ac}\,c^3}+\frac{c^3x^2e^4+8c^3dxe^3-3bc^2xe^4}{c^4}-\frac{c^3d^4-6ac^2d^2e^2+4abcde^3-ab^2e^4+a^2ce^4+\left(4c^3d^3e-6bc^2d^2e^2+4b^2cde^3-4ac^2de^3-b^3e^4+2abce^4\right)x}{\left(cx^2+bx+a\right)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*(3*c^2*d^2*e^2 - 3*b*c*d*e^3 + b^2*e^4 - a*c*e^4)*log(c*x^2 + b*x + a)/c^
3 + 4*(2*c^3*d^3*e - 3*b*c^2*d^2*e^2 + 3*b^2*c*d*e^3 - 6*a*c^2*d*e^3 - b^3*
e^4 + 3*a*b*c*e^4)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*
c)*c^3) + (c^3*x^2*e^4 + 8*c^3*d*x*e^3 - 3*b*c^2*x*e^4)/c^4 - (c^3*d^4 - 6*
a*c^2*d^2*e^2 + 4*a*b*c*d*e^3 - a*b^2*e^4 + a^2*c*e^4 + (4*c^3*d^3*e - 6*b*
c^2*d^2*e^2 + 4*b^2*c*d*e^3 - 4*a*c^2*d*e^3 - b^3*e^4 + 2*a*b*c*e^4)*x)/((c
*x^2 + b*x + a)*c^3)
```

maple [B] time = 0.06, size = 618, normalized size = 3.59

$$-\frac{2abe^4x}{\left(cx^2+bx+a\right)c^2}+\frac{12abe^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{4ade^3x}{\left(cx^2+bx+a\right)c}-\frac{24ade^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{b^3e^4x}{\left(cx^2+bx+a\right)c^3}-\frac{4b^3e^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3}-\frac{4b^2de^3x}{\left(cx^2+bx+a\right)c^2}+\frac{12b^2de^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{6bd^2e^2x}{\left(cx^2+bx+a\right)c}-\frac{12bd^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{e^4x^2}{c}-\frac{4d^3ex}{cx^2+bx+a}+\frac{8d^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{a^2e^4}{\left(cx^2+bx+a\right)c^2}+\frac{ab^2e^4}{\left(cx^2+bx+a\right)c^3}-\frac{4abde^3}{\left(cx^2+bx+a\right)c^2}+\frac{6ad^2e^2}{\left(cx^2+bx+a\right)c}-\frac{2ae^4\ln\left(cx^2+bx+a\right)}{c^2}+\frac{2b^2e^4\ln\left(cx^2+bx+a\right)}{c^3}-\frac{6bde^3\ln\left(cx^2+bx+a\right)}{c^2}-\frac{3be^4x}{c^2}+\frac{6d^2e^2\ln\left(cx^2+bx+a\right)}{c}+\frac{8de^3x}{c}-\frac{d^4}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x)
```

```
[Out] e^4*x^2/c-3*e^4/c^2*b*x+8*e^3/c*x*d-2/c^2/(c*x^2+b*x+a)*e^4*x*a*b+4/c/(c*x^
2+b*x+a)*e^3*x*a*d+1/c^3/(c*x^2+b*x+a)*e^4*x*b^3-4/c^2/(c*x^2+b*x+a)*e^3*x*
```

```
b^2*d+6/c/(c*x^2+b*x+a)*e^2*x*b*d^2-4/(c*x^2+b*x+a)*e*x*d^3-1/c^2/(c*x^2+b*
x+a)*a^2*e^4+1/c^3/(c*x^2+b*x+a)*a*b^2*e^4-4/c^2/(c*x^2+b*x+a)*a*b*d*e^3+6/
c/(c*x^2+b*x+a)*a*d^2*e^2-1/(c*x^2+b*x+a)*d^4-2/c^2*ln(c*x^2+b*x+a)*a*e^4+2
/c^3*ln(c*x^2+b*x+a)*b^2*e^4-6/c^2*ln(c*x^2+b*x+a)*b*d*e^3+6/c*ln(c*x^2+b*x
+a)*d^2*e^2+12/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*
b*e^4-24/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d*e^3+8*
e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d^3-4/c^3/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*e^4+12/c^2/(4*a*c-b^2)^(1/
2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d*e^3-12/c/(4*a*c-b^2)^(1/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^2*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.32, size = 358, normalized size = 2.08

$$x\left(\frac{b\,e^4+8\,c\,d\,e^3}{c^2}-\frac{4\,b\,e^4}{c^2}\right)-\frac{\frac{a^2\,c\,e^4-a\,b^2\,e^4+4\,a\,b\,c\,d\,e^3-6\,a\,c^2\,d^2\,e^2+c^3\,d^4}{c}-\frac{x\,\left(b^3\,e^4-4\,b^2\,c\,d\,e^3+6\,b\,c^2\,d^2\,e^2-2\,a\,b\,c\,e^4-4\,c^3\,d^3\,e+4\,a\,c^2\,d\,e^3\right)}{c}}{c^3\,x^2+b\,c^2\,x+a\,c^2}-\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(16\,a^2\,c^2\,e^4-20\,a\,b^2\,c\,e^4+48\,a\,b\,c^2\,d\,e^3-48\,a\,c^3\,d^2\,e^2+4\,b^4\,e^4-12\,b^3\,c\,d\,e^3+12\,b^2\,c^2\,d^2\,e^2\right)}{2\,\left(4\,a\,c^4-b^2\,c^3\right)}+\frac{e^4\,x^2}{c}-\frac{4\,e\,\mathrm{atan}\left(\frac{b+2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\,\left(b\,e-2\,c\,d\right)\,\left(b^2\,e^2-b\,c\,d\,e+c^2\,d^2-3\,a\,c\,e^2\right)}{c^3\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x)
```

```
[Out] x*((b*e^4 + 8*c*d*e^3)/c^2 - (4*b*e^4)/c^2) - ((c^3*d^4 - a*b^2*e^4 + a^2*c
*e^4 - 6*a*c^2*d^2*e^2 + 4*a*b*c*d*e^3)/c - (x*(b^3*e^4 - 4*c^3*d^3*e + 6*b
*c^2*d^2*e^2 - 2*a*b*c*e^4 + 4*a*c^2*d*e^3 - 4*b^2*c*d*e^3))/c)/(a*c^2 + c^
3*x^2 + b*c^2*x) - (log(a + b*x + c*x^2)*(4*b^4*e^4 + 16*a^2*c^2*e^4 - 48*a
*c^3*d^2*e^2 + 12*b^2*c^2*d^2*e^2 - 20*a*b^2*c*e^4 - 12*b^3*c*d*e^3 + 48*a*
b*c^2*d*e^3))/(2*(4*a*c^4 - b^2*c^3)) + (e^4*x^2)/c - (4*e*atan((b + 2*c*x)
/(4*a*c - b^2)^(1/2))*(b*e - 2*c*d)*(b^2*e^2 + c^2*d^2 - 3*a*c*e^2 - b*c*d*
e))/(c^3*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 25.12, size = 1071, normalized size = 6.23

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**2,x)
```

```
[Out] x*(-3*b*e**4/c**2 + 8*d*e**3/c) + (-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*
e - 3*c**2*d**2)/c**3 - 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 -
 b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2)))*log(x + (8*a**2*c*
e**4 - 4*a*b**2*e**4 + 12*a*b*c*d*e**3 + 4*a*c**3*(-2*e**2*(a*c*e**2 - b**2
*e**2 + 3*b*c*d*e - 3*c**2*d**2)/c**3 - 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*
d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) -
24*a*c**2*d**2*e**2 - b**2*c**2*(-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e
- 3*c**2*d**2)/c**3 - 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 - b
**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) + 4*b*c**2*d**3*e)/(
12*a*b*c*e**4 - 24*a*c**2*d*e**3 - 4*b**3*e**4 + 12*b**2*c*d*e**3 - 12*b*c*
*2*d**2*e**2 + 8*c**3*d**3*e)) + (-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e
 - 3*c**2*d**2)/c**3 + 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 -
b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2)))*log(x + (8*a**2*c*e
```

```
**4 - 4*a*b**2*e**4 + 12*a*b*c*d*e**3 + 4*a*c**3*(-2*e**2*(a*c*e**2 - b**2*
e**2 + 3*b*c*d*e - 3*c**2*d**2)/c**3 + 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d
)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) - 2
4*a*c**2*d**2*e**2 - b**2*c**2*(-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e -
 3*c**2*d**2)/c**3 + 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 - b*
*2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) + 4*b*c**2*d**3*e)/(1
2*a*b*c*e**4 - 24*a*c**2*d*e**3 - 4*b**3*e**4 + 12*b**2*c*d*e**3 - 12*b*c**
2*d**2*e**2 + 8*c**3*d**3*e)) + (-a**2*c*e**4 + a*b**2*e**4 - 4*a*b*c*d*e**
3 + 6*a*c**2*d**2*e**2 - c**3*d**4 + x*(-2*a*b*c*e**4 + 4*a*c**2*d*e**3 + b
**3*e**4 - 4*b**2*c*d*e**3 + 6*b*c**2*d**2*e**2 - 4*c**3*d**3*e))/(a*c**3 +
 b*c**3*x + c**4*x**2) + e**4*x**2/c
```

3.1341 $\int \frac{(b+2cx)(d+ex)^3}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=126

$$-\frac{3e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{3e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{3e^3x}{c}$$

Rubi [A] time = 0.14, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {768, 701, 634, 618, 206, 628}

$$-\frac{3e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{3e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{3e^3x}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (3*e^3*x)/c - (d + e*x)^3/(a + b*x + c*x^2) - (3*e*(2*c^2*d^2 + b^2*e^2 - 2
*c*e*(b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^2*Sqrt[b^2 - 4
*a*c]) + (3*e^2*(2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 701

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Int[PolynomialDivide[(d + e*x)^m, a + b*x + c*x^2, x], x] /; FreeQ[{a,
 b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&
 NeQ[2*c*d - b*e, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^3}{a+bx+cx^2} + (3e)\int \frac{(d+ex)^2}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^3}{a+bx+cx^2} + (3e)\int \left(\frac{e^2}{c} + \frac{cd^2-ae^2+e(2cd-be)x}{c\left(a+bx+cx^2\right)}\right)dx$$

$$= \frac{3e^3x}{c} - \frac{(d+ex)^3}{a+bx+cx^2} + \frac{(3e)\int \frac{cd^2-ae^2+e(2cd-be)x}{a+bx+cx^2}\,dx}{c}$$

$$= \frac{3e^3x}{c} - \frac{(d+ex)^3}{a+bx+cx^2} + \frac{\left(3e^2(2cd-be)\right)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2} + \frac{\left(3e\left(2c^2d^2+b^2e^2-2ce(bd\right.\right.}{2c^2}$$

$$= \frac{3e^3x}{c} - \frac{(d+ex)^3}{a+bx+cx^2} + \frac{3e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2c^2} - \frac{\left(3e\left(2c^2d^2+b^2e^2-2ce(\right.\right.}{}$$

$$= \frac{3e^3x}{c} - \frac{(d+ex)^3}{a+bx+cx^2} - \frac{3e\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}} + \frac{3e^2(2c}{}$$

Mathematica [A] time = 0.17, size = 161, normalized size = 1.28

$$\frac{\frac{6e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} - \frac{2\left(-ce^2(3ad+aex+3bdx)+be^3(a+bx)+c^2d^2(d+3ex)\right)}{a+x(b+cx)} - 3e^2(be-2cd)\log(a+x(b+cx))+4ce^3x}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (4*c*e^3*x - (2*(b*e^3*(a + b*x) + c^2*d^2*(d + 3*e*x) - c*e^2*(3*a*d + 3*b
*d*x + a*e*x)))/(a + x*(b + c*x)) + (6*e*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d
+ a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 3*e^2*
(-2*c*d + b*e)*Log[a + x*(b + c*x)])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.45, size = 1050, normalized size = 8.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(4*(b^2*c^2 - 4*a*c^3)*e^3*x^3 + 4*(b^3*c - 4*a*b*c^2)*e^3*x^2 - 2*(b^
2*c^2 - 4*a*c^3)*d^3 + 6*(a*b^2*c - 4*a^2*c^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*c
```

```
)*e^3 - 3*(2*a*c^2*d^2*e - 2*a*b*c*d*e^2 + (a*b^2 - 2*a^2*c)*e^3 + (2*c^3*d
^2*e - 2*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^3)*x^2 + (2*b*c^2*d^2*e - 2*b^2*
c*d*e^2 + (b^3 - 2*a*b*c)*e^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*
x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - 2*(3*
(b^2*c^2 - 4*a*c^3)*d^2*e - 3*(b^3*c - 4*a*b*c^2)*d*e^2 + (b^4 - 7*a*b^2*c
+ 12*a^2*c^2)*e^3)*x + 3*(2*(a*b^2*c - 4*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*
c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(
b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2*c)*e^3)*x)*log(c*x^2 + b*x + a))/
(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)
, 1/2*(4*(b^2*c^2 - 4*a*c^3)*e^3*x^3 + 4*(b^3*c - 4*a*b*c^2)*e^3*x^2 - 2*(b
^2*c^2 - 4*a*c^3)*d^3 + 6*(a*b^2*c - 4*a^2*c^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*
c)*e^3 - 6*(2*a*c^2*d^2*e - 2*a*b*c*d*e^2 + (a*b^2 - 2*a^2*c)*e^3 + (2*c^3*
d^2*e - 2*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^3)*x^2 + (2*b*c^2*d^2*e - 2*b^2
*c*d*e^2 + (b^3 - 2*a*b*c)*e^3)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4
*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(3*(b^2*c^2 - 4*a*c^3)*d^2*e - 3*(b^3*
c - 4*a*b*c^2)*d*e^2 + (b^4 - 7*a*b^2*c + 12*a^2*c^2)*e^3)*x + 3*(2*(a*b^2*
c - 4*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e
^2 - (b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4
*a*b^2*c)*e^3)*x)*log(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 -
 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)]
```

giac [A] time = 0.16, size = 173, normalized size = 1.37

$$\frac{2\,xe^3}{c}+\frac{3\left(2\,cde^2-be^3\right)\log\left(cx^2+bx+a\right)}{2\,c^2}+\frac{3\left(2\,c^2d^2e-2\,bcde^2+b^2e^3-2\,ace^3\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}-\frac{c^2d^3-3\,acde^2+abe^3+\left(3\,c^2d^2e-3\,bcde^2+b^2e^3-ace^3\right)x}{\left(cx^2+bx+a\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*x*e^3/c + 3/2*(2*c*d*e^2 - b*e^3)*log(c*x^2 + b*x + a)/c^2 + 3*(2*c^2*d^2
*e - 2*b*c*d*e^2 + b^2*e^3 - 2*a*c*e^3)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*
c))/(sqrt(-b^2 + 4*a*c)*c^2) - (c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3 + (3*c^2*d^
2*e - 3*b*c*d*e^2 + b^2*e^3 - a*c*e^3)*x)/((c*x^2 + b*x + a)*c^2)
```

maple [B] time = 0.06, size = 363, normalized size = 2.88

$$\frac{a\,e^3x}{\left(c\,x^2+bx+a\right)c}-\frac{6a\,e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{b^2e^3x}{\left(c\,x^2+bx+a\right)c^2}+\frac{3b^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{3bd\,e^2x}{\left(c\,x^2+bx+a\right)c}-\frac{6bd\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{3d^2ex}{c\,x^2+bx+a}+\frac{6d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{ab\,e^3}{\left(c\,x^2+bx+a\right)c^2}+\frac{3ad\,e^2}{\left(c\,x^2+bx+a\right)c}-\frac{3b\,e^3\ln\left(c\,x^2+bx+a\right)}{2c^2}+\frac{3d\,e^2\ln\left(c\,x^2+bx+a\right)}{c}+\frac{2e^3x}{c}-\frac{d^3}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*e^3*x/c+1/c/(c*x^2+b*x+a)*e^3*x*a-1/c^2/(c*x^2+b*x+a)*e^3*x*b^2+3/c/(c*x^
2+b*x+a)*e^2*x*b*d-3/(c*x^2+b*x+a)*e*x*d^2-1/c^2/(c*x^2+b*x+a)*a*b*e^3+3/c/
(c*x^2+b*x+a)*a*d*e^2-1/(c*x^2+b*x+a)*d^3-3/2/c^2*ln(c*x^2+b*x+a)*b*e^3+3/c
*ln(c*x^2+b*x+a)*d*e^2-6/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*a*e^3+6*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d^2+3
/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e^3-6/c/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.95, size = 226, normalized size = 1.79

$$\frac{2\,e^3\,x}{c}-\frac{\frac{c^2\,d^3-3\,a\,c\,d\,e^2+a\,b\,e^3}{c}+\frac{x\,\left(b^2\,e^3-3\,b\,c\,d\,e^2+3\,c^2\,d^2\,e-a\,c\,e^3\right)}{c}}{c^2\,x^2+b\,c\,x+a\,c}+\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(3\,b^3\,e^3-6\,d\,b^2\,c\,e^2-12\,a\,b\,c\,e^3+24\,a\,d\,c^2\,e^2\right)}{2\,\left(4\,a\,c^3-b^2\,c^2\right)}+\frac{3\,e\,\mathrm{atan}\left(\frac{b+2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\,\left(b^2\,e^2-2\,b\,c\,d\,e+2\,c^2\,d^2-2\,a\,c\,e^2\right)}{c^2\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*e^3*x)/c - ((c^2*d^3 + a*b*e^3 - 3*a*c*d*e^2)/c + (x*(b^2*e^3 + 3*c^2*d^
2*e - a*c*e^3 - 3*b*c*d*e^2))/c)/(a*c + c^2*x^2 + b*c*x) + (log(a + b*x + c
*x^2)*(3*b^3*e^3 - 12*a*b*c*e^3 + 24*a*c^2*d*e^2 - 6*b^2*c*d*e^2))/(2*(4*a*
c^3 - b^2*c^2)) + (3*e*atan((b + 2*c*x)/(4*a*c - b^2)^(1/2))*(b^2*e^2 + 2*c
^2*d^2 - 2*a*c*e^2 - 2*b*c*d*e))/(c^2*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 11.14, size = 733, normalized size = 5.82

$$\left(-\frac{3e^2(be-2cd)}{2c^2}-\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2\left(4ac-b^2\right)}\right)\log\left(x+\frac{-3abe^3-4ac^2\left(-\frac{3e^2(be-2cd)}{2c^2}-\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2(4ac-b^2)}\right)+12acde^2+b^2c\left(-\frac{3e^2(be-2cd)}{2c^2}-\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2(4ac-b^2)}\right)-3bcd^2e}{6ace^3-3b^2e^3+6bcde^2-6c^2d^2e}\right)+\left(-\frac{3e^2(be-2cd)}{2c^2}+\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2\left(4ac-b^2\right)}\right)\log\left(x+\frac{-3abe^3-4ac^2\left(-\frac{3e^2(be-2cd)}{2c^2}+\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2(4ac-b^2)}\right)+12acde^2+b^2c\left(-\frac{3e^2(be-2cd)}{2c^2}+\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2(4ac-b^2)}\right)-3bcd^2e}{6ace^3-3b^2e^3+6bcde^2-6c^2d^2e}\right)+\frac{-abe^3+3acde^2-c^2d^3+x\left(ace^3-b^2e^3+3bcde^2-3c^2d^2e\right)}{ac^2+bc^2x+c^3x^2}+\frac{2e^3x}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**2,x)
```

```
[Out] (-3*e**2*(b*e - 2*c*d)/(2*c**2) - 3*e*sqrt(-4*a*c + b**2)*(2*a*c*e**2 - b**
2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c - b**2)))*log(x + (-3*a*b*
e**3 - 4*a*c**2*(-3*e**2*(b*e - 2*c*d)/(2*c**2) - 3*e*sqrt(-4*a*c + b**2)*(
2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c - b**2)))
+ 12*a*c*d*e**2 + b**2*c*(-3*e**2*(b*e - 2*c*d)/(2*c**2) - 3*e*sqrt(-4*a*c
+ b**2)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c -
 b**2))) - 3*b*c*d**2*e)/(6*a*c*e**3 - 3*b**2*e**3 + 6*b*c*d*e**2 - 6*c**2*
d**2*e)) + (-3*e**2*(b*e - 2*c*d)/(2*c**2) + 3*e*sqrt(-4*a*c + b**2)*(2*a*c
*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c - b**2)))*log(x
 + (-3*a*b*e**3 - 4*a*c**2*(-3*e**2*(b*e - 2*c*d)/(2*c**2) + 3*e*sqrt(-4*a*
c + b**2)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c
 - b**2))) + 12*a*c*d*e**2 + b**2*c*(-3*e**2*(b*e - 2*c*d)/(2*c**2) + 3*e*s
qrt(-4*a*c + b**2)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c*
*2*(4*a*c - b**2))) - 3*b*c*d**2*e)/(6*a*c*e**3 - 3*b**2*e**3 + 6*b*c*d*e**
2 - 6*c**2*d**2*e)) + (-a*b*e**3 + 3*a*c*d*e**2 - c**2*d**3 + x*(a*c*e**3 -
 b**2*e**3 + 3*b*c*d*e**2 - 3*c**2*d**2*e))/(a*c**2 + b*c**2*x + c**3*x**2)
 + 2*e**3*x/c
```

3.1342 $\int \frac{(b+2cx)(d+ex)^2}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=87

$$-\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{(d+ex)^2}{a+bx+cx^2}+\frac{e^2\log\left(a+bx+cx^2\right)}{c}$$

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {768, 634, 618, 206, 628}

$$-\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{(d+ex)^2}{a+bx+cx^2}+\frac{e^2\log\left(a+bx+cx^2\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^2/(a + b*x + c*x^2)) - (2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/S
qrt[b^2 - 4*a*c]])/(c*Sqrt[b^2 - 4*a*c]) + (e^2*Log[a + b*x + c*x^2])/c
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^2}{a+bx+cx^2} + (2e)\int \frac{d+ex}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^2}{a+bx+cx^2} + \frac{e^2 \int \frac{b+2cx}{a+bx+cx^2}\,dx}{c} + \frac{(e(2cd-be))\int \frac{1}{a+bx+cx^2}\,dx}{c}$$

$$= -\frac{(d+ex)^2}{a+bx+cx^2} + \frac{e^2 \log\left(a+bx+cx^2\right)}{c} - \frac{(2e(2cd-be))\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx, x, b -$$

$$= -\frac{(d+ex)^2}{a+bx+cx^2} - \frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}} + \frac{e^2\log\left(a+bx+cx^2\right)}{c}$$

Mathematica [A] time = 0.11, size = 98, normalized size = 1.13

$$\frac{-\frac{2e(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{e^2(a+bx)-cd(d+2ex)}{a+x(b+cx)} + e^2\log(a+x(b+cx))}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((e^2*(a + b*x) - c*d*(d + 2*e*x))/(a + x*(b + c*x)) - (2*e*(-2*c*d + b*e)*
ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + e^2*Log[a + x*
(b + c*x)])/c
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.44, size = 573, normalized size = 6.59

$$\left[-\frac{\left(b^2c-4ac^2\right)d^2-\left(ab^2-4a^2c\right)e^2+\left(2acde-abe^2+\left(2c^2de-bce^2\right)x^2+\left(2bcde-b^2e^2\right)x\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+2\left(\left(b^2c-4ac^2\right)de-\left(b^3-4abc\right)e^2\right)x-\left(\left(b^2c-4ac^2\right)e^2x^2+\left(b^3-4abc\right)e^2x+\left(ab^2-4a^2c\right)e^2\right)\log\left(cx^2+bx+a\right)}{ab^2c-4a^2c^2+\left(b^2c^2-4ac^3\right)x^2+\left(b^3c-4abc^2\right)x}, -\frac{\left(b^2c-4ac^2\right)d^2-\left(ab^2-4a^2c\right)e^2+2\left(2acde-abe^2+\left(2c^2de-bce^2\right)x^2+\left(2bcde-b^2e^2\right)x\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+2\left(\left(b^2c-4ac^2\right)de-\left(b^3-4abc\right)e^2\right)x-\left(\left(b^2c-4ac^2\right)e^2x^2+\left(b^3-4abc\right)e^2x+\left(ab^2-4a^2c\right)e^2\right)\log\left(cx^2+bx+a\right)}{ab^2c-4a^2c^2+\left(b^2c^2-4ac^3\right)x^2+\left(b^3c-4abc^2\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-((b^2*c - 4*a*c^2)*d^2 - (a*b^2 - 4*a^2*c)*e^2 + (2*a*c*d*e - a*b*e^2 + (
2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*x)*sqrt(b^2 - 4*a*c)*log((
2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
 b*x + a)) + (2*(b^2*c - 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*x - ((b^2*c -
4*a*c^2)*e^2*x^2 + (b^3 - 4*a*b*c)*e^2*x + (a*b^2 - 4*a^2*c)*e^2)*log(c*x^2
 + b*x + a))/(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*
b*c^2)*x), -((b^2*c - 4*a*c^2)*d^2 - (a*b^2 - 4*a^2*c)*e^2 + 2*(2*a*c*d*e -
 a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*x)*sqrt(-b^2 +
 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*(b^2*c -
 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*x - ((b^2*c - 4*a*c^2)*e^2*x^2 + (b^3
- 4*a*b*c)*e^2*x + (a*b^2 - 4*a^2*c)*e^2)*log(c*x^2 + b*x + a))/(a*b^2*c -
4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x)]
```

giac [A] time = 0.18, size = 114, normalized size = 1.31

$$\frac{e^2 \log\left(cx^2+bx+a\right)}{c} + \frac{2\left(2\,cde - be^2\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c} - \frac{\frac{\left(2\,cde-be^2\right)x}{c} + \frac{cd^2-ae^2}{c}}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] e^2*log(c*x^2 + b*x + a)/c + 2*(2*c*d*e - b*e^2)*arctan((2*c*x + b)/sqrt(-b
^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c) - ((2*c*d*e - b*e^2)*x/c + (c*d^2 - a*e
^2)/c)/(c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 141, normalized size = 1.62

$$-\frac{2b\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} + \frac{4de\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{e^2\ln\left(c\,x^2+bx+a\right)}{c} + \frac{\frac{(be-2cd)ex}{c} + \frac{a\,e^2-c\,d^2}{c}}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x)
```

```
[Out] (e*(b*e-2*c*d)/c*x+(a*e^2-c*d^2)/c)/(c*x^2+b*x+a)+e^2*ln(c*x^2+b*x+a)/c+4*e
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d-2/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b/c*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.18, size = 248, normalized size = 2.85

$$\frac{a\,e^2}{c^2\,x^2+b\,c\,x+a\,c} - \frac{d^2}{c\,x^2+b\,x+a} + \frac{b\,e^2\,x}{c^2\,x^2+b\,c\,x+a\,c} - \frac{2\,d\,e\,x}{c\,x^2+b\,x+a} - \frac{b^2\,e^2\,\ln\left(c\,x^2+b\,x+a\right)}{4\,a\,c^2-b^2\,c} + \frac{4\,d\,e\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{\sqrt{4\,a\,c-b^2}} - \frac{2\,b\,e^2\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{c\,\sqrt{4\,a\,c-b^2}} + \frac{4\,a\,c\,e^2\,\ln\left(c\,x^2+b\,x+a\right)}{4\,a\,c^2-b^2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x)
```

```
[Out] (a*e^2)/(a*c + c^2*x^2 + b*c*x) - d^2/(a + b*x + c*x^2) + (b*e^2*x)/(a*c +
c^2*x^2 + b*c*x) - (2*d*e*x)/(a + b*x + c*x^2) - (b^2*e^2*log(a + b*x + c*x
^2))/(4*a*c^2 - b^2*c) + (4*d*e*atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c
 - b^2)^(1/2)))/(4*a*c - b^2)^(1/2) - (2*b*e^2*atan(b/(4*a*c - b^2)^(1/2) +
 (2*c*x)/(4*a*c - b^2)^(1/2)))/(c*(4*a*c - b^2)^(1/2)) + (4*a*c*e^2*log(a +
 b*x + c*x^2))/(4*a*c^2 - b^2*c)
```

sympy [B] time = 4.35, size = 340, normalized size = 3.91

$$\left(\frac{e^2}{c} - \frac{e\sqrt{-4ac+b^2}\,(be-2cd)}{c\left(4ac-b^2\right)}\right)\log\left(x + \frac{-4ac\left(\frac{e^2}{c} - \frac{e\sqrt{-4ac+b^2}\,(be-2cd)}{c\left(4ac-b^2\right)}\right) + 4ae^2 + b^2\left(\frac{e^2}{c} - \frac{e\sqrt{-4ac+b^2}\,(be-2cd)}{c\left(4ac-b^2\right)}\right) - 2bde}{2be^2-4cde}\right) + \left(\frac{e^2}{c} + \frac{e\sqrt{-4ac+b^2}\,(be-2cd)}{c\left(4ac-b^2\right)}\right)\log\left(x + \frac{-4ac\left(\frac{e^2}{c} + \frac{e\sqrt{-4ac+b^2}\,(be-2cd)}{c\left(4ac-b^2\right)}\right) + 4ae^2 + b^2\left(\frac{e^2}{c} + \frac{e\sqrt{-4ac+b^2}\,(be-2cd)}{c\left(4ac-b^2\right)}\right) - 2bde}{2be^2-4cde}\right) + \frac{ae^2 - cd^2 + x\left(be^2-2cde\right)}{ac+bcx+c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**2,x)
```

```
[Out] (e**2/c - e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2)))*log(x + (
-4*a*c*(e**2/c - e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2))) +
4*a*e**2 + b**2*(e**2/c - e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b
**2))) - 2*b*d*e)/(2*b*e**2 - 4*c*d*e)) + (e**2/c + e*sqrt(-4*a*c + b**2)*(
b*e - 2*c*d)/(c*(4*a*c - b**2)))*log(x + (-4*a*c*(e**2/c + e*sqrt(-4*a*c +
b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2))) + 4*a*e**2 + b**2*(e**2/c + e*sqrt(
-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2))) - 2*b*d*e)/(2*b*e**2 - 4*c
*d*e)) + (a*e**2 - c*d**2 + x*(b*e**2 - 2*c*d*e))/(a*c + b*c*x + c**2*x**2)
```

3.1343 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=55

$$-\frac{2e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{d+ex}{a+bx+cx^2}$$

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {768, 618, 206}

$$-\frac{2e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{d+ex}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)/(a + b*x + c*x^2)) - (2*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]
])/Sqrt[b^2 - 4*a*c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx &= -\frac{d+ex}{a+bx+cx^2}+e\int \frac{1}{a+bx+cx^2}\,dx\\
&= -\frac{d+ex}{a+bx+cx^2}-(2e)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)\\
&= -\frac{d+ex}{a+bx+cx^2}-\frac{2e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 58, normalized size = 1.05

$$\frac{2e\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{d+ex}{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)/(a + x*(b + c*x))) + (2*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]
])/Sqrt[-b^2 + 4*a*c]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.44, size = 269, normalized size = 4.89

$$\left[-\frac{\left(b^2-4\,ac\right)ex-\left(cex^2+bex+ae\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+\left(b^2-4\,ac\right)d}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x},\,-\frac{\left(b^2-4\,ac\right)ex+2\left(cex^2+bex+ae\right)\sqrt{-b^2+4\,ac}\,\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right)+\left(b^2-4\,ac\right)d}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-((b^2 - 4*a*c)*e*x - (c*e*x^2 + b*e*x + a*e)*sqrt(b^2 - 4*a*c)*log((2*c^2
*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x
+ a)) + (b^2 - 4*a*c)*d)/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 -
4*a*b*c)*x), -((b^2 - 4*a*c)*e*x + 2*(c*e*x^2 + b*e*x + a*e)*sqrt(-b^2 + 4*
a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (b^2 - 4*a*c)*
d)/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)]
```

giac [A] time = 0.16, size = 57, normalized size = 1.04

$$\frac{2\,\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)e}{\sqrt{-b^2+4\,ac}}-\frac{xe+d}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))*e/sqrt(-b^2 + 4*a*c) - (x*e + d)/(
c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 58, normalized size = 1.05

$$\frac{2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{-ex-d}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (-e*x-d)/(c*x^2+b*x+a)+2*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.06, size = 73, normalized size = 1.33

$$\frac{2\,e\,\mathrm{atan}\left(\frac{\frac{b\,e}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,e\,x}{\sqrt{4\,a\,c-b^2}}}{e}\right)}{\sqrt{4\,a\,c-b^2}}-\frac{d+e\,x}{c\,x^2+b\,x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*e*atan(((b*e)/(4*a*c - b^2)^(1/2) + (2*c*e*x)/(4*a*c - b^2)^(1/2))/e))/(
4*a*c - b^2)^(1/2) - (d + e*x)/(a + b*x + c*x^2)
```

sympy [B] time = 1.20, size = 158, normalized size = 2.87

$$-e\sqrt{-\frac{1}{4ac-b^2}}\log\left(x+\frac{-4ace\sqrt{-\frac{1}{4ac-b^2}}+b^2e\sqrt{-\frac{1}{4ac-b^2}}+be}{2ce}\right)+e\sqrt{-\frac{1}{4ac-b^2}}\log\left(x+\frac{4ace\sqrt{-\frac{1}{4ac-b^2}}-b^2e\sqrt{-\frac{1}{4ac-b^2}}+be}{2ce}\right)+\frac{-d-ex}{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] -e*sqrt(-1/(4*a*c - b**2))*log(x + (-4*a*c*e*sqrt(-1/(4*a*c - b**2)) + b**2
*e*sqrt(-1/(4*a*c - b**2)) + b*e)/(2*c*e)) + e*sqrt(-1/(4*a*c - b**2))*log(
x + (4*a*c*e*sqrt(-1/(4*a*c - b**2)) - b**2*e*sqrt(-1/(4*a*c - b**2)) + b*e
)/(2*c*e)) + (-d - e*x)/(a + b*x + c*x**2)
```

3.1344 $\int \frac{b+2cx}{(a+bx+cx^2)^2} \, dx$

Optimal. Leaf size=14

$$-\frac{1}{a+bx+cx^2}$$

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$-\frac{1}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(a + b*x + c*x^2)^(-1)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{(a+bx+cx^2)^2} \, dx = -\frac{1}{a+bx+cx^2}$$

Mathematica [A] time = 0.00, size = 13, normalized size = 0.93

$$-\frac{1}{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(a + x*(b + c*x))^(-1)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(a+bx+cx^2)^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.41, size = 14, normalized size = 1.00

$$-\frac{1}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
[Out] -1/(c*x^2 + b*x + a)
```

giac [A] time = 0.17, size = 14, normalized size = 1.00

$$-\frac{1}{cx^2 + bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2,x, algorithm="giac")
[Out] -1/(c*x^2 + b*x + a)
```

maple [A] time = 0.04, size = 15, normalized size = 1.07

$$-\frac{1}{c\,x^2 + bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^2,x)
[Out] -1/(c*x^2+b*x+a)
```

maxima [A] time = 0.56, size = 14, normalized size = 1.00

$$-\frac{1}{cx^2 + bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
[Out] -1/(c*x^2 + b*x + a)
```

mupad [B] time = 0.03, size = 14, normalized size = 1.00

$$-\frac{1}{c\,x^2 + b\,x + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^2,x)
[Out] -1/(a + b*x + c*x^2)
```

sympy [A] time = 0.38, size = 12, normalized size = 0.86

$$-\frac{1}{a + bx + cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**2,x)
[Out] -1/(a + b*x + c*x**2)
```

3.1345 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=236

$$\frac{e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)^2}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{e^2(2cd-be)\,\mathrm{l}}{2\left(ae^2-\right.}$$

Rubi [A] time = 0.36, antiderivative size = 236, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)^2}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^2}-\frac{e^2(2cd-be)\log(d+ex)}{\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -(((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/((b^2 - 4*a*c)*(c*d^2 -
 b*d*e + a*e^2)*(a + b*x + c*x^2))) + (e*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d
+ a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*(c*d^2 -
 b*d*e + a*e^2)^2) - (e^2*(2*c*d - b*e)*Log[d + e*x])/(c*d^2 - b*d*e + a*e^
2)^2 + (e^2*(2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)^
2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^2}\,dx = -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{\left(b^2-4ac\right)e(cd-be)-c\left(b^2-4ac\right)e^2x}{(d+ex)\left(a+bx+cx^2\right)}\,dx}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\int \left(-\frac{\left(b^2-4ac\right)e^3(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\left(b^2-4ac\right)e(\cdots}{\cdots}\right.}{\left(b^2-4ac\right)\left(cd\cdots\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{e^2(2cd-be)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} - \frac{e\int \frac{c^2\cdots}{\cdots}}{\cdots}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{e^2(2cd-be)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} + \frac{\left(e^2(2\cdots\right.}{2\cdots}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{e^2(2cd-be)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} + \frac{e^2(2c\cdots}{\cdots}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} + \frac{e\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\mathrm{t}\cdots}{\sqrt{b^2-4ac}\left(cd^2-bde\cdots\right.}$$

Mathematica [A] time = 0.24, size = 173, normalized size = 0.73

$$\frac{\frac{2e\left(2ce(ae+bd)-b^2e^2-2c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{2\left(e(ae-bd)+cd^2\right)(be-cd+cex)}{a+x(b+cx)} - e^2(be-2cd)\log(a+x(b+cx)) + 2e^2(be-2cd)\log(d+ex)}{2\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((2*(c*d^2 + e*(-(b*d) + a*e))*(-(c*d) + b*e + c*e*x))/(a + x*(b + c*x)) +
(2*e*(-2*c^2*d^2 - b^2*e^2 + 2*c*e*(b*d + a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 2*e^2*(-2*c*d + b*e)*Log[d + e*x] - e^2*(
-2*c*d + b*e)*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2), x]
```

fricas [B] time = 3.16, size = 1834, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 4*(b^3*c - 4*a*b*c^2)*d^2*e + 2*(b^4 - 3
*a*b^2*c - 4*a^2*c^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*c)*e^3 + (2*a*c^2*d^2*e -
2*a*b*c*d*e^2 + (a*b^2 - 2*a^2*c)*e^3 + (2*c^3*d^2*e - 2*b*c^2*d*e^2 + (b^2
*c - 2*a*c^2)*e^3)*x^2 + (2*b*c^2*d^2*e - 2*b^2*c*d*e^2 + (b^3 - 2*a*b*c)*e
^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2
- 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - 2*((b^2*c^2 - 4*a*c^3)*d^2*e - (
b^3*c - 4*a*b*c^2)*d*e^2 + (a*b^2*c - 4*a^2*c^2)*e^3)*x - (2*(a*b^2*c - 4*a
^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (b
^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2*
c)*e^3)*x)*log(c*x^2 + b*x + a) + 2*(2*(a*b^2*c - 4*a^2*c^2)*d*e^2 - (a*b^3
 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (b^3*c - 4*a*b*c^2)*e^3)
*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2*c)*e^3)*x)*log(e*x + d
))/((a*b^2*c^2 - 4*a^2*c^3)*d^4 - 2*(a*b^3*c - 4*a^2*b*c^2)*d^3*e + (a*b^4
- 2*a^2*b^2*c - 8*a^3*c^2)*d^2*e^2 - 2*(a^2*b^3 - 4*a^3*b*c)*d*e^3 + (a^3*b
^2 - 4*a^4*c)*e^4 + ((b^2*c^3 - 4*a*c^4)*d^4 - 2*(b^3*c^2 - 4*a*b*c^3)*d^3*
e + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d^2*e^2 - 2*(a*b^3*c - 4*a^2*b*c^2)*d
*e^3 + (a^2*b^2*c - 4*a^3*c^2)*e^4)*x^2 + ((b^3*c^2 - 4*a*b*c^3)*d^4 - 2*(b
^4*c - 4*a*b^2*c^2)*d^3*e + (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*d^2*e^2 - 2*(a*
b^4 - 4*a^2*b^2*c)*d*e^3 + (a^2*b^3 - 4*a^3*b*c)*e^4)*x), -1/2*(2*(b^2*c^2
- 4*a*c^3)*d^3 - 4*(b^3*c - 4*a*b*c^2)*d^2*e + 2*(b^4 - 3*a*b^2*c - 4*a^2*c
^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*c)*e^3 - 2*(2*a*c^2*d^2*e - 2*a*b*c*d*e^2 +
(a*b^2 - 2*a^2*c)*e^3 + (2*c^3*d^2*e - 2*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^
3)*x^2 + (2*b*c^2*d^2*e - 2*b^2*c*d*e^2 + (b^3 - 2*a*b*c)*e^3)*x)*sqrt(-b^2
 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*((b^2*c
^2 - 4*a*c^3)*d^2*e - (b^3*c - 4*a*b*c^2)*d*e^2 + (a*b^2*c - 4*a^2*c^2)*e^3
)*x - (2*(a*b^2*c - 4*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^
2 - 4*a*c^3)*d*e^2 - (b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*
d*e^2 - (b^4 - 4*a*b^2*c)*e^3)*x)*log(c*x^2 + b*x + a) + 2*(2*(a*b^2*c - 4*
a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (
b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2
*c)*e^3)*x)*log(e*x + d))/((a*b^2*c^2 - 4*a^2*c^3)*d^4 - 2*(a*b^3*c - 4*a^2
*b*c^2)*d^3*e + (a*b^4 - 2*a^2*b^2*c - 8*a^3*c^2)*d^2*e^2 - 2*(a^2*b^3 - 4*
a^3*b*c)*d*e^3 + (a^3*b^2 - 4*a^4*c)*e^4 + ((b^2*c^3 - 4*a*c^4)*d^4 - 2*(b^
3*c^2 - 4*a*b*c^3)*d^3*e + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d^2*e^2 - 2*(a
*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a^2*b^2*c - 4*a^3*c^2)*e^4)*x^2 + ((b^3*c^2
- 4*a*b*c^3)*d^4 - 2*(b^4*c - 4*a*b^2*c^2)*d^3*e + (b^5 - 2*a*b^3*c - 8*a^2
*b*c^2)*d^2*e^2 - 2*(a*b^4 - 4*a^2*b^2*c)*d*e^3 + (a^2*b^3 - 4*a^3*b*c)*e^4
)*x)]
```

giac [A] time = 0.21, size = 357, normalized size = 1.51

$$\frac{\left(2\,cde^{2}-be^{3}\right)\log\left(cx^{2}+bx+a\right)}{2\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}+2\,acd^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)}-\frac{\left(2\,cde^{3}-be^{4}\right)\log\left(|xe+d|\right)}{c^{2}d^{4}e-2\,bcd^{3}e^{2}+b^{2}d^{2}e^{3}+2\,acd^{2}e^{3}-2\,abde^{4}+a^{2}e^{5}}-\frac{\left(2\,c^{2}d^{2}e-2\,bcde^{2}+b^{2}e^{3}-2\,ace^{3}\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}+2\,acd^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\sqrt{-b^{2}+4\,ac}}-\frac{c^{2}d^{3}-2\,bcd^{2}e+b^{2}de^{2}+acde^{2}-abe^{3}-\left(c^{2}d^{2}e-bcde^{2}+ace^{3}\right)x}{\left(cd^{2}-bde+ae^{2}\right)^{2}\left(cx^{2}+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*c*d*e^2 - b*e^3)*log(c*x^2 + b*x + a)/(c^2*d^4 - 2*b*c*d^3*e + b^2*d
^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4) - (2*c*d*e^3 - b*e^4)*log(a
bs(x*e + d))/(c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3 + 2*a*c*d^2*e^3 - 2*a
*b*d*e^4 + a^2*e^5) - (2*c^2*d^2*e - 2*b*c*d*e^2 + b^2*e^3 - 2*a*c*e^3)*arc
```

```
tan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 +
 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-b^2 + 4*a*c)) - (c^2*d^3 - 2*
b*c*d^2*e + b^2*d*e^2 + a*c*d*e^2 - a*b*e^3 - (c^2*d^2*e - b*c*d*e^2 + a*c*
e^3)*x)/((c*d^2 - b*d*e + a*e^2)^2*(c*x^2 + b*x + a))
```

maple [B] time = 0.10, size = 668, normalized size = 2.83

$$\frac{ac\,e^3x}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}+\frac{2ac\,e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(a\,e^2-bde+c\,d^2)^2\sqrt{4ac-b^2}}-\frac{b^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(a\,e^2-bde+c\,d^2)^2\sqrt{4ac-b^2}}-\frac{bcd\,e^2x}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}+\frac{2bcd\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(a\,e^2-bde+c\,d^2)^2\sqrt{4ac-b^2}}+\frac{c^2d^2ex}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}-\frac{2c^2d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{(a\,e^2-bde+c\,d^2)^2\sqrt{4ac-b^2}}+\frac{ab\,e^3}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}-\frac{acd\,e^2}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}-\frac{b^2d\,e^2}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}+\frac{2bc\,d^2e}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}+\frac{b\,e^3\ln(ex+d)}{(a\,e^2-bde+c\,d^2)^2}-\frac{b\,e^3\ln(c\,x^2+bx+a)}{2(a\,e^2-bde+c\,d^2)^2}-\frac{c^2d^3}{(a\,e^2-bde+c\,d^2)^2(c\,x^2+bx+a)}-\frac{2cd\,e^2\ln(ex+d)}{(a\,e^2-bde+c\,d^2)^2}+\frac{cd\,e^2\ln(c\,x^2+bx+a)}{(a\,e^2-bde+c\,d^2)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] e^3/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*b-2*e^2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)
*c*d+1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*x*a*c*e^3-1/(a*e^2-b*d*e+c*d^2)^
2/(c*x^2+b*x+a)*x*b*c*d*e^2+1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*x*c^2*d^2
*e+1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*a*b*e^3-1/(a*e^2-b*d*e+c*d^2)^2/(c
*x^2+b*x+a)*a*c*d*e^2-1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*b^2*d*e^2+2/(a*
e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*b*c*d^2*e-1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b
*x+a)*c^2*d^3-1/2/(a*e^2-b*d*e+c*d^2)^2*ln(c*x^2+b*x+a)*b*e^3+1/(a*e^2-b*d*
e+c*d^2)^2*c*ln(c*x^2+b*x+a)*d*e^2+2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*e^3-1/(a*e^2-b*d*e+c*d^2)^2/(4*a*
c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e^3+2/(a*e^2-b*d*e+c*d
^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d*e^2-2/(a*
e^2-b*d*e+c*d^2)^2*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*
c^2*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 7.93, size = 1833, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((b*e - c*d)/(a*e^2 + c*d^2 - b*d*e) + (c*e*x)/(a*e^2 + c*d^2 - b*d*e))/(a
+ b*x + c*x^2) + (log(d + e*x)*(b*e^3 - 2*c*d*e^2))/(a^2*e^4 + c^2*d^4 + b^
2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (log(a*e^4*(b^2 -
4*a*c)^(5/2) + 8*a*b^5*e^4 + 8*b^6*e^4*x - 4*c^3*d^4*(b^2 - 4*a*c)^(3/2) +
4*b^3*c^3*d^4 + 4*b^3*e^4*x*(b^2 - 4*a*c)^(3/2) - 60*a^2*b^3*c*e^4 + 112*a^
3*b*c^2*e^4 + 256*a^2*c^4*d^3*e - 256*a^3*c^3*d*e^3 + 8*b^4*c^2*d^3*e - 4*b
^5*c*d^2*e^2 - 32*a^3*c^3*e^4*x + 8*b^2*c^4*d^4*x + 10*b*d*e^3*(b^2 - 4*a*c
)^(5/2) + 4*b*e^4*x*(b^2 - 4*a*c)^(5/2) - 16*a*b*c^4*d^4 - 32*a*c^5*d^4*x +
 7*a*b^2*e^4*(b^2 - 4*a*c)^(3/2) - 10*b^3*d*e^3*(b^2 - 4*a*c)^(3/2) - 14*c*
d^2*e^2*(b^2 - 4*a*c)^(5/2) - 8*c*d*e^3*x*(b^2 - 4*a*c)^(5/2) - 24*a*b^4*c*
d*e^3 - 64*a*b^4*c*e^4*x - 32*b^5*c*d*e^3*x - 8*b*c^2*d^3*e*(b^2 - 4*a*c)^(
3/2) - 32*c^3*d^3*e*x*(b^2 - 4*a*c)^(3/2) - 96*a*b^2*c^3*d^3*e - 16*b^3*c^3
*d^3*e*x + 18*b^2*c*d^2*e^2*(b^2 - 4*a*c)^(3/2) + 56*a*b^3*c^2*d^2*e^2 - 16
0*a^2*b*c^3*d^2*e^2 + 160*a^2*b^2*c^2*d*e^3 + 136*a^2*b^2*c^2*e^4*x + 448*a
^2*c^4*d^2*e^2*x + 40*b^4*c^2*d^2*e^2*x + 48*b*c^2*d^2*e^2*x*(b^2 - 4*a*c)^
```

```
(3/2) - 272*a*b^2*c^3*d^2*e^2*x + 64*a*b*c^4*d^3*e*x - 24*b^2*c*d*e^3*x*(b^
2 - 4*a*c)^(3/2) + 240*a*b^3*c^2*d*e^3*x - 448*a^2*b*c^3*d*e^3*x)*(e^3*(b^3
/2 + (b^2*(b^2 - 4*a*c)^(1/2))/2) - a*(e^3*(2*b*c + c*(b^2 - 4*a*c)^(1/2))
- 4*c^2*d*e^2) - e^2*(b^2*c*d + b*c*d*(b^2 - 4*a*c)^(1/2)) + c^2*d^2*e*(b^2
 - 4*a*c)^(1/2)))/(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 -
b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2
*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2) - (log(a*e^4*(b^2 - 4*a*c)^(5
/2) - 8*a*b^5*e^4 - 8*b^6*e^4*x - 4*c^3*d^4*(b^2 - 4*a*c)^(3/2) - 4*b^3*c^3
*d^4 + 4*b^3*e^4*x*(b^2 - 4*a*c)^(3/2) + 60*a^2*b^3*c*e^4 - 112*a^3*b*c^2*e
^4 - 256*a^2*c^4*d^3*e + 256*a^3*c^3*d*e^3 - 8*b^4*c^2*d^3*e + 4*b^5*c*d^2*
e^2 + 32*a^3*c^3*e^4*x - 8*b^2*c^4*d^4*x + 10*b*d*e^3*(b^2 - 4*a*c)^(5/2) +
 4*b*e^4*x*(b^2 - 4*a*c)^(5/2) + 16*a*b*c^4*d^4 + 32*a*c^5*d^4*x + 7*a*b^2*
e^4*(b^2 - 4*a*c)^(3/2) - 10*b^3*d*e^3*(b^2 - 4*a*c)^(3/2) - 14*c*d^2*e^2*(
b^2 - 4*a*c)^(5/2) - 8*c*d*e^3*x*(b^2 - 4*a*c)^(5/2) + 24*a*b^4*c*d*e^3 + 6
4*a*b^4*c*e^4*x + 32*b^5*c*d*e^3*x - 8*b*c^2*d^3*e*(b^2 - 4*a*c)^(3/2) - 32
*c^3*d^3*e*x*(b^2 - 4*a*c)^(3/2) + 96*a*b^2*c^3*d^3*e + 16*b^3*c^3*d^3*e*x
+ 18*b^2*c*d^2*e^2*(b^2 - 4*a*c)^(3/2) - 56*a*b^3*c^2*d^2*e^2 + 160*a^2*b*c
^3*d^2*e^2 - 160*a^2*b^2*c^2*d*e^3 - 136*a^2*b^2*c^2*e^4*x - 448*a^2*c^4*d^
2*e^2*x - 40*b^4*c^2*d^2*e^2*x + 48*b*c^2*d^2*e^2*x*(b^2 - 4*a*c)^(3/2) + 2
72*a*b^2*c^3*d^2*e^2*x - 64*a*b*c^4*d^3*e*x - 24*b^2*c*d*e^3*x*(b^2 - 4*a*c
)^(3/2) - 240*a*b^3*c^2*d*e^3*x + 448*a^2*b*c^3*d*e^3*x)*(a*(e^3*(2*b*c - c
*(b^2 - 4*a*c)^(1/2)) - 4*c^2*d*e^2) - e^3*(b^3/2 - (b^2*(b^2 - 4*a*c)^(1/2
))/2) + e^2*(b^2*c*d - b*c*d*(b^2 - 4*a*c)^(1/2)) + c^2*d^2*e*(b^2 - 4*a*c)
^(1/2)))/(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e
^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e -
8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**2,x)
[Out] Timed out
```

3.1346 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=327

$$\frac{e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{\left(ae^2-bde+cd^2\right)^3}-\frac{2e^2\log(d+ex)\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{2e(2cd-b}{}$$

Rubi [A] time = 0.53, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{\left(ae^2-bde+cd^2\right)^3}-\frac{2e^2\log(d+ex)\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{2e(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)^3}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{\left(b^2-4ac\right)(d+ex)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{2e^2(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] (2*e^2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - ((b^2 - 4*a*c
)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)
*(d + e*x)*(a + b*x + c*x^2)) + (2*e*(2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e
*(b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*
(c*d^2 - b*d*e + a*e^2)^3) - (2*e^2*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e
))*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^3 + (e^2*(3*c^2*d^2 + b^2*e^2 - c*
e*(3*b*d + a*e))*Log[a + b*x + c*x^2])/(c*d^2 - b*d*e + a*e^2)^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^2}\,dx = -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)} - \frac{\int \frac{2\left(b^2-4ac\right)e(cd-be)-2c(\cdots}{(d+ex)^2\left(a+bx+c\cdots\right.}}{\left(b^2-4ac\right)\left(cd^2-b\cdots\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)} - \frac{\int\left(-\frac{2\left(b^2-4ac\right)e^3(-2cd+\cdots}{\left(cd^2-bde+ae^2\right)(d+e\cdots}\right.}{\cdots}$$

$$= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+\cdots\right.}$$

$$= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+\cdots\right.}$$

$$= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+\cdots\right.}$$

$$= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+\cdots\right.}$$

Mathematica [A] time = 0.60, size = 275, normalized size = 0.84

$$\frac{-\frac{\left(e(ae-bd)+cd^2\right)\left(ce(-ae-2bd+bex)+b^2e^2+c^2d(d-2ex)\right)}{a+x(b+cx)}-2e^2\log(d+ex)\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log(a+x(b+cx))+\frac{2e(be-2cd)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{e^2(be-2cd)\left(e(ae-bd)+cd^2\right)}{d+ex}}{\left(e(ae-bd)+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] (-((e^2*(-2*c*d + b*e)*(c*d^2 + e*(-(b*d) + a*e)))/(d + e*x)) - ((c*d^2 + e
*(-(b*d) + a*e))*(b^2*e^2 + c^2*d*(d - 2*e*x) + c*e*(-2*b*d - a*e + b*e*x))
)/(a + x*(b + c*x)) + (2*e*(-2*c*d + b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3
*a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 2*e^2*(
3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*Log[d + e*x] + e^2*(3*c^2*d^2 + b^
2*e^2 - c*e*(3*b*d + a*e))*Log[a + x*(b + c*x)])/(c*d^2 + e*(-(b*d) + a*e))
^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2), x]
```

fricas [B] time = 43.72, size = 4494, normalized size = 13.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-((b^2*c^3 - 4*a*c^4)*d^5 - 3*(b^3*c^2 - 4*a*b*c^3)*d^4*e + (3*b^4*c - 14*
a*b^2*c^2 + 8*a^2*c^3)*d^3*e^2 - (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d^2*e^3 -
3*(a^2*b^2*c - 4*a^3*c^2)*d*e^4 + (a^2*b^3 - 4*a^3*b*c)*e^5 - 2*(2*(b^2*c^3
 - 4*a*c^4)*d^3*e^2 - 3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^3 + (b^4*c - 2*a*b^2*c^
2 - 8*a^2*c^3)*d*e^4 - (a*b^3*c - 4*a^2*b*c^2)*e^5)*x^2 - (2*a*c^3*d^4*e -
3*a*b*c^2*d^3*e^2 + 3*(a*b^2*c - 2*a^2*c^2)*d^2*e^3 - (a*b^3 - 3*a^2*b*c)*d
*e^4 + (2*c^4*d^3*e^2 - 3*b*c^3*d^2*e^3 + 3*(b^2*c^2 - 2*a*c^3)*d*e^4 - (b^
3*c - 3*a*b*c^2)*e^5)*x^3 + (2*c^4*d^4*e - b*c^3*d^3*e^2 - 6*a*c^3*d^2*e^3
+ (2*b^3*c - 3*a*b*c^2)*d*e^4 - (b^4 - 3*a*b^2*c)*e^5)*x^2 + (2*b*c^3*d^4*e
 - (3*b^2*c^2 - 2*a*c^3)*d^3*e^2 + 3*(b^3*c - 3*a*b*c^2)*d^2*e^3 - (b^4 - 6
*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 - 3*a^2*b*c)*e^5)*x)*sqrt(b^2 - 4*a*c)
*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c
*x^2 + b*x + a)) - ((b^2*c^3 - 4*a*c^4)*d^4*e + 2*(b^3*c^2 - 4*a*b*c^3)*d^3
*e^2 - (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d^2*e^3 + 2*(b^5 - 3*a*b^3*c -
4*a^2*b*c^2)*d*e^4 - (2*a*b^4 - 9*a^2*b^2*c + 4*a^3*c^2)*e^5)*x - (3*(a*b^2
*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*b*c^2)*d^2*e^3 + (a*b^4 - 5*
a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*a*c^4)*d^2*e^3 - 3*(b^3*c^2
- 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e^5)*x^3 + (3*(b^2*c
^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2 - 4*a^2*c^3)*d*e^4 + (b^5 -
5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^3*e^2 - 3*(b
^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*
d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*x)*log(c*x^2 + b*x + a) + 2*
(3*(a*b^2*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*b*c^2)*d^2*e^3 + (a
*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*a*c^4)*d^2*e^3 - 3*
(b^3*c^2 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e^5)*x^3 +
(3*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2 - 4*a^2*c^3)*d*e^4
+ (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^3*e
^2 - 3*(b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5 - 8*a*b^3*c + 16*a^
2*b*c^2)*d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*x)*log(e*x + d))/((
a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3*c^2 - 4*a^2*b*c^3)*d^6*e + 3*(a*b^4*c
 - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2 - (a*b^5 + 2*a^2*b^3*c - 24*a^3*b*c^2
)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c - 4*a^4*c^2)*d^3*e^4 - 3*(a^3*b^3 - 4*
a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c)*d*e^6 + ((b^2*c^4 - 4*a*c^5)*d^6*e -
 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*(b^4*c^2 - 3*a*b^2*c^3 - 4*a^2*c^4)*d^
4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2*b*c^3)*d^3*e^4 + 3*(a*b^4*c - 3*a^2*b
^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*b^3*c - 4*a^3*b*c^2)*d*e^6 + (a^3*b^2*
c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 - 4*a*c^5)*d^7 - 2*(b^3*c^3 - 4*a*b*c^4
)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d^5*e^2 + (2*b^5*c - 11*a*b^3*c^2 + 12*
a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^3*e^4
+ 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (3*a^2*b^4 - 13*a^3*b^2*c + 4*a^4*c^2)*
d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^2 + ((b^3*c^3 - 4*a*b*c^4)*d^7 - (3*b^
4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6*e + 3*(b^5*c - 4*a*b^3*c^2)*d^5*e^2 -
```

```
(b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^4*e^3 + (2*a*b^5 - 11*a^2*
b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^3*b^2*c - 4*a^4*c^2)*d^2*e^5 - 2*(a^3*
b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4*a^5*c)*e^7)*x), -((b^2*c^3 - 4*a*c^4)
*d^5 - 3*(b^3*c^2 - 4*a*b*c^3)*d^4*e + (3*b^4*c - 14*a*b^2*c^2 + 8*a^2*c^3)
*d^3*e^2 - (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d^2*e^3 - 3*(a^2*b^2*c - 4*a^3*c
^2)*d*e^4 + (a^2*b^3 - 4*a^3*b*c)*e^5 - 2*(2*(b^2*c^3 - 4*a*c^4)*d^3*e^2 -
3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d*e^4 -
 (a*b^3*c - 4*a^2*b*c^2)*e^5)*x^2 - 2*(2*a*c^3*d^4*e - 3*a*b*c^2*d^3*e^2 +
3*(a*b^2*c - 2*a^2*c^2)*d^2*e^3 - (a*b^3 - 3*a^2*b*c)*d*e^4 + (2*c^4*d^3*e^
2 - 3*b*c^3*d^2*e^3 + 3*(b^2*c^2 - 2*a*c^3)*d*e^4 - (b^3*c - 3*a*b*c^2)*e^5
)*x^3 + (2*c^4*d^4*e - b*c^3*d^3*e^2 - 6*a*c^3*d^2*e^3 + (2*b^3*c - 3*a*b*c
^2)*d*e^4 - (b^4 - 3*a*b^2*c)*e^5)*x^2 + (2*b*c^3*d^4*e - (3*b^2*c^2 - 2*a*
c^3)*d^3*e^2 + 3*(b^3*c - 3*a*b*c^2)*d^2*e^3 - (b^4 - 6*a*b^2*c + 6*a^2*c^2
)*d*e^4 - (a*b^3 - 3*a^2*b*c)*e^5)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2
+ 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - ((b^2*c^3 - 4*a*c^4)*d^4*e + 2*(b^3*c
^2 - 4*a*b*c^3)*d^3*e^2 - (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d^2*e^3 + 2*
(b^5 - 3*a*b^3*c - 4*a^2*b*c^2)*d*e^4 - (2*a*b^4 - 9*a^2*b^2*c + 4*a^3*c^2)
*e^5)*x - (3*(a*b^2*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*b*c^2)*d^
2*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*a*c^4)*d^
2*e^3 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e
^5)*x^3 + (3*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2 - 4*a^2*c
^3)*d*e^4 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2 - 4*a*b*
c^3)*d^3*e^2 - 3*(b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5 - 8*a*b^3
*c + 16*a^2*b*c^2)*d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*x)*log(c*
x^2 + b*x + a) + 2*(3*(a*b^2*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*
b*c^2)*d^2*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*
a*c^4)*d^2*e^3 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a
^2*c^3)*e^5)*x^3 + (3*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2
- 4*a^2*c^3)*d*e^4 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2
 - 4*a*b*c^3)*d^3*e^2 - 3*(b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5
- 8*a*b^3*c + 16*a^2*b*c^2)*d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*
x)*log(e*x + d))/((a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3*c^2 - 4*a^2*b*c^3)
*d^6*e + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2 - (a*b^5 + 2*a^2*b
^3*c - 24*a^3*b*c^2)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c - 4*a^4*c^2)*d^3*e^
4 - 3*(a^3*b^3 - 4*a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c)*d*e^6 + ((b^2*c^4
 - 4*a*c^5)*d^6*e - 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*(b^4*c^2 - 3*a*b^2*
c^3 - 4*a^2*c^4)*d^4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2*b*c^3)*d^3*e^4 + 3
*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*b^3*c - 4*a^3*b*c^2
)*d*e^6 + (a^3*b^2*c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 - 4*a*c^5)*d^7 - 2*(
b^3*c^3 - 4*a*b*c^4)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d^5*e^2 + (2*b^5*c -
 11*a*b^3*c^2 + 12*a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 1
2*a^3*c^3)*d^3*e^4 + 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (3*a^2*b^4 - 13*a^3*
b^2*c + 4*a^4*c^2)*d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^2 + ((b^3*c^3 - 4*a
*b*c^4)*d^7 - (3*b^4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6*e + 3*(b^5*c - 4*a
*b^3*c^2)*d^5*e^2 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^4*e^3 +
 (2*a*b^5 - 11*a^2*b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^3*b^2*c - 4*a^4*c^2
)*d^2*e^5 - 2*(a^3*b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4*a^5*c)*e^7)*x)]
```

giac [B] time = 0.24, size = 741, normalized size = 2.27

$$-\frac{2\left(2c^3d^3e^3-3bc^2d^2e^4+3b^2cde^5-6ac^2de^5-b^3e^6+3abce^6\right)\arctan\left(\frac{\left(2cd-\frac{2cd^2}{xe+d}-be+\frac{2bde}{xe+d}-\frac{2ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{-b^2+4ac}}\right)e^{(-2)}}{\left(c^3d^6-3bc^2d^5e+3b^2cd^4e^2+3ac^2d^4e^2-b^3d^3e^3-6abcd^3e^3+3ab^2d^2e^4+3a^2cd^2e^4-3a^2bde^5+a^3e^6\right)\sqrt{-b^2+4ac}}+\frac{\left(3c^2d^2e^2-3bcde^3+b^2e^4-ace^4\right)\log\left(c-\frac{2cd}{xe+d}+\frac{cd^2}{(xe+d)^2}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^2}+\frac{ae^2}{(xe+d)^2}\right)}{c^3d^6-3bc^2d^5e+3b^2cd^4e^2+3ac^2d^4e^2-b^3d^3e^3-6abcd^3e^3+3ab^2d^2e^4+3a^2cd^2e^4-3a^2bde^5+a^3e^6}+\frac{\frac{2cde^6}{xe+d}-\frac{be^7}{xe+d}}{c^2d^4e^4-2bcd^3e^5+b^2d^2e^6+2acd^2e^6-2abde^7+a^2e^8}+\frac{\frac{3c^3d^2e^2-3bc^2de^3+b^2ce^4-ac^2e^4}{cd^2-bde+ae^2}-\frac{\left(4c^3d^3e^3-6bc^2d^2e^4+4b^2cde^5-4ac^2de^5-b^3e^6+2abce^6\right)e^{(-1)}}{\left(cd^2-bde+ae^2\right)(xe+d)}}{\left(cd^2-bde+ae^2\right)^2\left(c-\frac{2cd}{xe+d}+\frac{cd^2}{(xe+d)^2}+\frac{be}{xe+d}-\frac{bde}{(xe+d)^2}+\frac{ae^2}{(xe+d)^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -2*(2*c^3*d^3*e^3 - 3*b*c^2*d^2*e^4 + 3*b^2*c*d*e^5 - 6*a*c^2*d*e^5 - b^3*e
^6 + 3*a*b*c*e^6)*arctan((2*c*d - 2*c*d^2/(x*e + d) - b*e + 2*b*d*e/(x*e +
d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(-b^2 + 4*a*c))*e^(-2)/((c^3*d^6 - 3*b*c
^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^
```

```
3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(-b^2
+ 4*a*c)) + (3*c^2*d^2*e^2 - 3*b*c*d*e^3 + b^2*e^4 - a*c*e^4)*log(c - 2*c*d
/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/
(x*e + d)^2)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 -
 b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*
b*d*e^5 + a^3*e^6) + (2*c*d*e^6/(x*e + d) - b*e^7/(x*e + d))/(c^2*d^4*e^4 -
 2*b*c*d^3*e^5 + b^2*d^2*e^6 + 2*a*c*d^2*e^6 - 2*a*b*d*e^7 + a^2*e^8) + ((3
*c^3*d^2*e^2 - 3*b*c^2*d*e^3 + b^2*c*e^4 - a*c^2*e^4)/(c*d^2 - b*d*e + a*e^
2) - (4*c^3*d^3*e^3 - 6*b*c^2*d^2*e^4 + 4*b^2*c*d*e^5 - 4*a*c^2*d*e^5 - b^3
*e^6 + 2*a*b*c*e^6)*e^(-1)/((c*d^2 - b*d*e + a*e^2)*(x*e + d)))/((c*d^2 - b
*d*e + a*e^2)^2*(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) -
b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2))
```

maple [B] time = 0.08, size = 1177, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x)
```

```
[Out] -6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/
2))*a*b*c*e^4+12/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*c^2*a*d*e^3-6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*c*d*e^3+6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c
-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c^2*d^2*e^2+1/(a*e^2-b*d*
e+c*d^2)^3/(c*x^2+b*x+a)*x*b^2*c*d*e^3-3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a
)*x*b*c^2*d^2*e^2+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*a*b*c*d*e^3-1/(a*e^
2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*x*a*b*c*e^4+2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b
*x+a)*x*a*c^2*d*e^3-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*c^3*d^4+1/(a*e^2-
b*d*e+c*d^2)^3*ln(c*x^2+b*x+a)*b^2*e^4-e^3/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*b-
2*e^4/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b^2+6*e^3/(a*e^2-b*d*e+c*d^2)^3*ln(e*
x+d)*b*c*d+2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*x*c^3*d^3*e-3/(a*e^2-b*d*e
+c*d^2)^3/(c*x^2+b*x+a)*b^2*c*d^2*e^2+3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)
*b*c^2*d^3*e-3/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*b*d*e^3-4/(a*e^2-b*d
*e+c*d^2)^3*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^3*d^3
-1/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*a*e^4+2/(a*e^2-b*d*e+c*d^2)^3/(4
*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*e^4+1/(a*e^2-b*d*e+
c*d^2)^3/(c*x^2+b*x+a)*a^2*c*e^4-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*a*b^
2*e^4+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*b^3*d*e^3+2*e^4/(a*e^2-b*d*e+c*
d^2)^3*ln(e*x+d)*a*c-6*e^2/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*c^2*d^2+2*e^2/(a
*e^2-b*d*e+c*d^2)^2/(e*x+d)*c*d+3/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*x+a)
*d^2*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 8.68, size = 3631, normalized size = 11.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((x*(c^2*d^2*e - 2*b^2*e^3 + a*c*e^3 + 3*b*c*d*e^2))/(a^2*e^4 + c^2*d^4 + b
^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (c^2*d^3 + b^2*d*
e^2 + a*b*e^3 - 3*a*c*d*e^2 - 2*b*c*d^2*e)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2
 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*x^2*(2*c^2*d*e^2 - b*c*e
^3))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d
^2*e^2))/(a*d + x*(a*e + b*d) + x^2*(b*e + c*d) + c*e*x^3) + (log(d + e*x)*
(e^4*(2*a*c - 2*b^2) - 6*c^2*d^2*e^2 + 6*b*c*d*e^3))/(a^3*e^6 + c^3*d^6 - b
^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*
d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3) + (log((27*d*e^6
*(b^2 - 4*a*c)^(7/2))/16 + (9*e^7*x*(b^2 - 4*a*c)^(7/2))/16 + 8*a*b^6*e^7 -
 4*b*c^6*d^7 + 8*b^7*e^7*x - 8*c^7*d^7*x + 4*c^6*d^7*(b^2 - 4*a*c)^(1/2) -
72*a^4*c^3*e^7 + (57*b^2*e^7*x*(b^2 - 4*a*c)^(5/2))/16 + (51*b^4*e^7*x*(b^2
 - 4*a*c)^(3/2))/16 + (11*b^6*e^7*x*(b^2 - 4*a*c)^(1/2))/16 - 60*a^2*b^4*c*
e^7 - 8*b^2*c^5*d^6*e - 4*b^6*c*d^2*e^5 + (75*c^2*d^3*e^4*(b^2 - 4*a*c)^(5/
2))/4 + 25*c^4*d^5*e^2*(b^2 - 4*a*c)^(3/2) + 132*a^3*b^2*c^2*e^7 - 408*a^2*
c^5*d^4*e^3 + 456*a^3*c^4*d^2*e^5 + 20*b^3*c^4*d^5*e^2 - 28*b^4*c^3*d^4*e^3
 + 16*b^5*c^2*d^3*e^4 + (9*a*b*e^7*(b^2 - 4*a*c)^(5/2))/4 + 88*a*c^6*d^6*e
+ (9*a*b^3*e^7*(b^2 - 4*a*c)^(3/2))/2 + (5*a*b^5*e^7*(b^2 - 4*a*c)^(1/2))/4
 + (111*b^2*d*e^6*(b^2 - 4*a*c)^(5/2))/16 - (79*b^4*d*e^6*(b^2 - 4*a*c)^(3/
2))/16 - (59*b^6*d*e^6*(b^2 - 4*a*c)^(1/2))/16 - 40*a*b^5*c*d*e^6 + (23*b^2
*c^2*d^3*e^4*(b^2 - 4*a*c)^(3/2))/2 - 45*b^2*c^4*d^5*e^2*(b^2 - 4*a*c)^(1/2
) + 65*b^3*c^3*d^4*e^3*(b^2 - 4*a*c)^(1/2) - (185*b^4*c^2*d^3*e^4*(b^2 - 4*
a*c)^(1/2))/4 - 64*a*b^5*c*e^7*x + 28*b*c^6*d^6*e*x - 48*b^6*c*d*e^6*x - 50
4*a^2*b^2*c^3*d^2*e^5 - 21*b*c*d^2*e^5*(b^2 - 4*a*c)^(5/2) + 8*b*c^5*d^6*e*
(b^2 - 4*a*c)^(1/2) + 44*c^6*d^6*e*x*(b^2 - 4*a*c)^(1/2) - 164*a*b*c^5*d^5*
e^2 - 348*a^3*b*c^3*d*e^6 - 108*a^3*b*c^3*e^7*x + 200*a*c^6*d^5*e^2*x + 216
*a^3*c^4*d*e^6*x - 37*b*c^3*d^4*e^3*(b^2 - 4*a*c)^(3/2) + 7*b^3*c*d^2*e^5*(
b^2 - 4*a*c)^(3/2) + 18*b^5*c*d^2*e^5*(b^2 - 4*a*c)^(1/2) + (57*c^2*d^2*e^5
*x*(b^2 - 4*a*c)^(5/2))/4 + 51*c^4*d^4*e^3*x*(b^2 - 4*a*c)^(3/2) + 284*a*b^
2*c^4*d^4*e^3 - 228*a*b^3*c^3*d^3*e^4 + 124*a*b^4*c^2*d^2*e^5 + 516*a^2*b*c
^4*d^3*e^4 + 240*a^2*b^3*c^2*d*e^6 + 156*a^2*b^3*c^2*e^7*x - 600*a^2*c^5*d^
3*e^4*x - 92*b^2*c^5*d^5*e^2*x + 160*b^3*c^4*d^4*e^3*x - 180*b^4*c^3*d^3*e^
4*x + 124*b^5*c^2*d^2*e^5*x - 102*b*c^3*d^3*e^4*x*(b^2 - 4*a*c)^(3/2) - 132
*b*c^5*d^5*e^2*x*(b^2 - 4*a*c)^(1/2) + 800*a*b^2*c^4*d^3*e^4*x - 700*a*b^3*
c^3*d^2*e^5*x + 900*a^2*b*c^4*d^2*e^5*x - 612*a^2*b^2*c^3*d*e^6*x - (57*b*c
*d*e^6*x*(b^2 - 4*a*c)^(5/2))/4 + (153*b^2*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(3/2
))/2 + 165*b^2*c^4*d^4*e^3*x*(b^2 - 4*a*c)^(1/2) - 110*b^3*c^3*d^3*e^4*x*(b
^2 - 4*a*c)^(1/2) + (165*b^4*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(1/2))/4 - (51*b^3
*c*d*e^6*x*(b^2 - 4*a*c)^(3/2))/2 - (33*b^5*c*d*e^6*x*(b^2 - 4*a*c)^(1/2))/
4 - 500*a*b*c^5*d^4*e^3*x + 328*a*b^4*c^2*d*e^6*x)*(e^3*((3*c*d*(b^2 - 4*a*
c)^(3/2))/2 - 3*b*c*d*(4*a*c - b^2) + (3*b^2*c*d*(b^2 - 4*a*c)^(1/2))/2) -
e^4*((4*a*c - b^2)^2/4 + (3*b*(b^2 - 4*a*c)^(3/2))/4 - (3*b^2*(4*a*c - b^2)
)/4 + (b^3*(b^2 - 4*a*c)^(1/2))/4) + e^2*(3*c^2*d^2*(4*a*c - b^2) - 3*b*c^2
*d^2*(b^2 - 4*a*c)^(1/2)) + 2*c^3*d^3*e*(b^2 - 4*a*c)^(1/2)))/((4*a*c - b^2
)*((4*a*c - b^2)*((3*a*d^2*e^4)/4 - (3*b*d^3*e^3)/2 + (3*c*d^4*e^2)/4) + a^
3*e^6 + c^3*d^6 - (5*b^3*d^3*e^3)/2 + (15*a*b^2*d^2*e^4)/4 + (15*b^2*c*d^4*
e^2)/4 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e)) - (log((27*d*e^6*(b^2 - 4*a*c)^(7/
2))/16 + (9*e^7*x*(b^2 - 4*a*c)^(7/2))/16 - 8*a*b^6*e^7 + 4*b*c^6*d^7 - 8*b
^7*e^7*x + 8*c^7*d^7*x + 4*c^6*d^7*(b^2 - 4*a*c)^(1/2) + 72*a^4*c^3*e^7 + (
57*b^2*e^7*x*(b^2 - 4*a*c)^(5/2))/16 + (51*b^4*e^7*x*(b^2 - 4*a*c)^(3/2))/1
6 + (11*b^6*e^7*x*(b^2 - 4*a*c)^(1/2))/16 + 60*a^2*b^4*c*e^7 + 8*b^2*c^5*d^
6*e + 4*b^6*c*d^2*e^5 + (75*c^2*d^3*e^4*(b^2 - 4*a*c)^(5/2))/4 + 25*c^4*d^5
*e^2*(b^2 - 4*a*c)^(3/2) - 132*a^3*b^2*c^2*e^7 + 408*a^2*c^5*d^4*e^3 - 456*
a^3*c^4*d^2*e^5 - 20*b^3*c^4*d^5*e^2 + 28*b^4*c^3*d^4*e^3 - 16*b^5*c^2*d^3*
e^4 + (9*a*b*e^7*(b^2 - 4*a*c)^(5/2))/4 - 88*a*c^6*d^6*e + (9*a*b^3*e^7*(b^
2 - 4*a*c)^(3/2))/2 + (5*a*b^5*e^7*(b^2 - 4*a*c)^(1/2))/4 + (111*b^2*d*e^6*
(b^2 - 4*a*c)^(5/2))/16 - (79*b^4*d*e^6*(b^2 - 4*a*c)^(3/2))/16 - (59*b^6*d
*e^6*(b^2 - 4*a*c)^(1/2))/16 + 40*a*b^5*c*d*e^6 + (23*b^2*c^2*d^3*e^4*(b^2
- 4*a*c)^(3/2))/2 - 45*b^2*c^4*d^5*e^2*(b^2 - 4*a*c)^(1/2) + 65*b^3*c^3*d^4
```

```
*e^3*(b^2 - 4*a*c)^(1/2) - (185*b^4*c^2*d^3*e^4*(b^2 - 4*a*c)^(1/2))/4 + 64
*a*b^5*c*e^7*x - 28*b*c^6*d^6*e*x + 48*b^6*c*d*e^6*x + 504*a^2*b^2*c^3*d^2*
e^5 - 21*b*c*d^2*e^5*(b^2 - 4*a*c)^(5/2) + 8*b*c^5*d^6*e*(b^2 - 4*a*c)^(1/2
) + 44*c^6*d^6*e*x*(b^2 - 4*a*c)^(1/2) + 164*a*b*c^5*d^5*e^2 + 348*a^3*b*c^
3*d*e^6 + 108*a^3*b*c^3*e^7*x - 200*a*c^6*d^5*e^2*x - 216*a^3*c^4*d*e^6*x -
 37*b*c^3*d^4*e^3*(b^2 - 4*a*c)^(3/2) + 7*b^3*c*d^2*e^5*(b^2 - 4*a*c)^(3/2)
 + 18*b^5*c*d^2*e^5*(b^2 - 4*a*c)^(1/2) + (57*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(
5/2))/4 + 51*c^4*d^4*e^3*x*(b^2 - 4*a*c)^(3/2) - 284*a*b^2*c^4*d^4*e^3 + 22
8*a*b^3*c^3*d^3*e^4 - 124*a*b^4*c^2*d^2*e^5 - 516*a^2*b*c^4*d^3*e^4 - 240*a
^2*b^3*c^2*d*e^6 - 156*a^2*b^3*c^2*e^7*x + 600*a^2*c^5*d^3*e^4*x + 92*b^2*c
^5*d^5*e^2*x - 160*b^3*c^4*d^4*e^3*x + 180*b^4*c^3*d^3*e^4*x - 124*b^5*c^2*
d^2*e^5*x - 102*b*c^3*d^3*e^4*x*(b^2 - 4*a*c)^(3/2) - 132*b*c^5*d^5*e^2*x*(
b^2 - 4*a*c)^(1/2) - 800*a*b^2*c^4*d^3*e^4*x + 700*a*b^3*c^3*d^2*e^5*x - 90
0*a^2*b*c^4*d^2*e^5*x + 612*a^2*b^2*c^3*d*e^6*x - (57*b*c*d*e^6*x*(b^2 - 4*
a*c)^(5/2))/4 + (153*b^2*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(3/2))/2 + 165*b^2*c^4
*d^4*e^3*x*(b^2 - 4*a*c)^(1/2) - 110*b^3*c^3*d^3*e^4*x*(b^2 - 4*a*c)^(1/2)
+ (165*b^4*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(1/2))/4 - (51*b^3*c*d*e^6*x*(b^2 -
4*a*c)^(3/2))/2 - (33*b^5*c*d*e^6*x*(b^2 - 4*a*c)^(1/2))/4 + 500*a*b*c^5*d^
4*e^3*x - 328*a*b^4*c^2*d*e^6*x)*(e^3*((3*c*d*(b^2 - 4*a*c)^(3/2))/2 + 3*b*
c*d*(4*a*c - b^2) + (3*b^2*c*d*(b^2 - 4*a*c)^(1/2))/2) - e^4*((3*b*(b^2 - 4
*a*c)^(3/2))/4 - (4*a*c - b^2)^2/4 + (3*b^2*(4*a*c - b^2))/4 + (b^3*(b^2 -
4*a*c)^(1/2))/4) - e^2*(3*c^2*d^2*(4*a*c - b^2) + 3*b*c^2*d^2*(b^2 - 4*a*c)
^(1/2)) + 2*c^3*d^3*e*(b^2 - 4*a*c)^(1/2)))/((4*a*c - b^2)*((4*a*c - b^2)*(
(3*a*d^2*e^4)/4 - (3*b*d^3*e^3)/2 + (3*c*d^4*e^2)/4) + a^3*e^6 + c^3*d^6 -
(5*b^3*d^3*e^3)/2 + (15*a*b^2*d^2*e^4)/4 + (15*b^2*c*d^4*e^2)/4 - 3*a^2*b*d
*e^5 - 3*b*c^2*d^5*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**2,x)
[Out] Timed out
```

3.1347 $\int \frac{(b+2cx)(d+ex)^5}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=293

$$\frac{5e^3x\left(-ce(3ae+2bd)+b^2e^2+3c^2d^2\right)}{c^2\left(b^2-4ac\right)}+\frac{5e^4x^2(2cd-be)}{2c\left(b^2-4ac\right)}-\frac{5e(d+ex)^3(-2ae+x(2cd-be)+bd)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{5e\left(2b^2ce^3(3ae\right.}{}$$

Rubi [A] time = 0.68, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {768, 738, 800, 634, 618, 206, 628}

$$\frac{5e^3x\left(-ce(3ae+2bd)+b^2e^2+3c^2d^2\right)}{c^2\left(b^2-4ac\right)}+\frac{5e\left(2b^2ce^3(3ae+bd)-4c^3d^2e(bd-3ae)-6ac^2e^3(ae+2bd)-b^4e^4+2c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\left(b^2-4ac\right)^{3/2}}+\frac{5e^4x^2(2cd-be)}{2c\left(b^2-4ac\right)}-\frac{5e(d+ex)^3(-2ae+x(2cd-be)+bd)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{5e^4(2cd-be)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (5*e^3*(3*c^2*d^2 + b^2*e^2 - c*e*(2*b*d + 3*a*e))*x)/(c^2*(b^2 - 4*a*c)) +
 (5*e^4*(2*c*d - b*e)*x^2)/(2*c*(b^2 - 4*a*c)) - (d + e*x)^5/(2*(a + b*x +
c*x^2)^2) - (5*e*(d + e*x)^3*(b*d - 2*a*e + (2*c*d - b*e)*x))/(2*(b^2 - 4*a
*c)*(a + b*x + c*x^2)) + (5*e*(2*c^4*d^4 - b^4*e^4 - 4*c^3*d^2*e*(b*d - 3*a
*e) - 6*a*c^2*e^3*(2*b*d + a*e) + 2*b^2*c*e^3*(b*d + 3*a*e))*ArcTanh[(b + 2
*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*(b^2 - 4*a*c)^(3/2)) + (5*e^4*(2*c*d - b*e)*
Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
```

```
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^5}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}+\frac{1}{2}(5e)\int \frac{(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+ex)^3(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(5e)\int \frac{(d+ex)^2\left(2\left(cd^2-2bde+3ae\right.\right.}{a+bx+cx}}{2\left(b^2-4ac\right.}$$

$$= -\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+ex)^3(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(5e)\int\left(-\frac{2e^2\left(3c^2d^2+b^2e^2-ce(2\right.}{c^2}\right.}{}$$

$$= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+}{2(}$$

$$= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+}{2(}$$

$$= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+}{2(}$$

$$= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+}{2(}$$

Mathematica [A] time = 0.80, size = 480, normalized size = 1.64

$$\frac{-\frac{c^2e^3\left(a^2e(5d+ex)+10abd(d+ex)+10b^2d^2x\right)-bce^4\left(2a^2e+ab(5d+3ex)+5b^2dx\right)+b^3e^5(a+bx)-10c^3d^2e^2(a(d+ex)+bdx)+c^4d^4(d+5ex)}{(a+x(b+cx))^2}+\frac{e\left(bc^2\left(31a^2e^4-10acde^2(7d+10ex)-5c^2d^3(d-4ex)\right)-2c^3\left(a^2e^3(40d+9ex)-10acd^2e(4d+5ex)+5c^2d^4x\right)+b^3ce^2\left(10cd(d+3ex)-13ae^2\right)+2b^2c^2e\left(ae^2(25d+17ex)-5cd^2(d+4ex)\right)+b^5e^4-b^4ce^3(5d+8ex)\right)}{\left(b^2-4ac\right)(a+x(b+cx))}-\frac{10ce\left(-2b^2ce^3(3ae+bd)+4c^3d^2e(bd-3ae)+6ac^2e^3(ae+2bd)+b^4e^4-2c^4d^4\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+5ce^4(2cd-be)\log(a+x(b+cx))+4c^2e^5x}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (4*c^2*e^5*x - (b^3*e^5*(a + b*x) + c^4*d^4*(d + 5*e*x) - 10*c^3*d^2*e^2*(b
*d*x + a*(d + e*x)) + c^2*e^3*(10*b^2*d^2*x + 10*a*b*d*(d + e*x) + a^2*e*(5
*d + e*x)) - b*c*e^4*(2*a^2*e + 5*b^2*d*x + a*b*(5*d + 3*e*x)))/(a + x*(b +
```

```
c*x))^2 + (e*(b^5*e^4 - b^4*c*e^3*(5*d + 8*e*x) + b^3*c*e^2*(-13*a*e^2 + 1
0*c*d*(d + 3*e*x)) - 2*c^3*(5*c^2*d^4*x - 10*a*c*d^2*e*(4*d + 5*e*x) + a^2*
e^3*(40*d + 9*e*x)) + b*c^2*(31*a^2*e^4 - 5*c^2*d^3*(d - 4*e*x) - 10*a*c*d*
e^2*(7*d + 10*e*x)) + 2*b^2*c^2*e*(-5*c*d^2*(d + 4*e*x) + a*e^2*(25*d + 17*
e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) - (10*c*e*(-2*c^4*d^4 + b^4*e^4 +
 4*c^3*d^2*e*(b*d - 3*a*e) + 6*a*c^2*e^3*(2*b*d + a*e) - 2*b^2*c*e^3*(b*d +
 3*a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 5*c
*e^4*(2*c*d - b*e)*Log[a + x*(b + c*x)])/(2*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^5}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.52, size = 3618, normalized size = 12.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(4*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*e^5*x^5 + 8*(b^5*c^2 - 8*a*b^3
*c^3 + 16*a^2*b*c^4)*e^5*x^4 - (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^5 - 5
*(a*b^3*c^3 - 4*a^2*b*c^4)*d^4*e + 40*(a^2*b^2*c^3 - 4*a^3*c^4)*d^3*e^2 - 3
0*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e^3 + 5*(5*a^2*b^4*c - 32*a^3*b^2*c^2 + 4
8*a^4*c^3)*d*e^4 - (7*a^2*b^5 - 51*a^3*b^3*c + 92*a^4*b*c^2)*e^5 - 2*(5*(b^
2*c^5 - 4*a*c^6)*d^4*e - 10*(b^3*c^4 - 4*a*b*c^5)*d^3*e^2 + 10*(2*b^4*c^3 -
 13*a*b^2*c^4 + 20*a^2*c^5)*d^2*e^3 - 5*(3*b^5*c^2 - 22*a*b^3*c^3 + 40*a^2*
b*c^4)*d*e^4 + (2*b^6*c - 21*a*b^4*c^2 + 77*a^2*b^2*c^3 - 100*a^3*c^4)*e^5)
*x^3 - (15*(b^3*c^4 - 4*a*b*c^5)*d^4*e - 10*(b^4*c^3 + 4*a*b^2*c^4 - 32*a^2
*c^5)*d^3*e^2 + 30*(b^5*c^2 - 5*a*b^3*c^3 + 4*a^2*b*c^4)*d^2*e^3 - 5*(5*b^6
*c - 30*a*b^4*c^2 + 24*a^2*b^2*c^3 + 64*a^3*c^4)*d*e^4 + (7*b^7 - 57*a*b^5*
c + 135*a^2*b^3*c^2 - 76*a^3*b*c^3)*e^5)*x^2 + 5*(2*a^2*c^4*d^4*e - 4*a^2*b
*c^3*d^3*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^
2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*
a*c^5*d^2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*
a^2*c^4)*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e
^3 + 2*(b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*
e^5)*x^3 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e - 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 +
 12*(a*b^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3
)*d*e^4 - (b^6 - 4*a*b^4*c - 6*a^2*b^2*c^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*
b*c^4*d^4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a
^2*b^2*c^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c + 6*a^3*b*c^2)*e^5)*x)*sqrt(b^2 -
4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x +
b))/(c*x^2 + b*x + a)) - 2*(5*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 3
0*(a*b^3*c^3 - 4*a^2*b*c^4)*d^3*e^2 + 30*(a*b^4*c^2 - 5*a^2*b^2*c^3 + 4*a^3
*c^4)*d^2*e^3 - 5*(5*a*b^5*c - 34*a^2*b^3*c^2 + 56*a^3*b*c^3)*d*e^4 + (7*a*
b^6 - 56*a^2*b^4*c + 127*a^3*b^2*c^2 - 60*a^4*c^3)*e^5)*x + 5*(2*(a^2*b^4*c
 - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^
2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b^3
*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)
*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*a*
b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 + 2
*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c +
 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4
```

+ 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x), 1/2*(4*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*e^5*x^5 + 8*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5*x^4 - (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^5 - 5*(a*b^3*c^3 - 4*a^2*b*c^4)*d^4*e + 40*(a^2*b^2*c^3 - 4*a^3*c^4)*d^3*e^2 - 30*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e^3 + 5*(5*a^2*b^4*c - 32*a^3*b^2*c^2 + 48*a^4*c^3)*d*e^4 - (7*a^2*b^5 - 51*a^3*b^3*c + 92*a^4*b*c^2)*e^5 - 2*(5*(b^2*c^5 - 4*a*c^6)*d^4*e - 10*(b^3*c^4 - 4*a*b*c^5)*d^3*e^2 + 10*(2*b^4*c^3 - 13*a*b^2*c^4 + 20*a^2*c^5)*d^2*e^3 - 5*(3*b^5*c^2 - 22*a*b^3*c^3 + 40*a^2*b*c^4)*d*e^4 + (2*b^6*c - 21*a*b^4*c^2 + 77*a^2*b^2*c^3 - 100*a^3*c^4)*e^5)*x^3 - (15*(b^3*c^4 - 4*a*b*c^5)*d^4*e - 10*(b^4*c^3 + 4*a*b^2*c^4 - 32*a^2*c^5)*d^3*e^2 + 30*(b^5*c^2 - 5*a*b^3*c^3 + 4*a^2*b*c^4)*d^2*e^3 - 5*(5*b^6*c - 30*a*b^4*c^2 + 24*a^2*b^2*c^3 + 64*a^3*c^4)*d*e^4 + (7*b^7 - 57*a*b^5*c + 135*a^2*b^3*c^2 - 76*a^3*b*c^3)*e^5)*x^2 + 10*(2*a^2*c^4*d^4*e - 4*a^2*b*c^3*d^3*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*a*c^5*d^2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e^3 + 2*(b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*e^5)*x^3 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e - 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 + 12*(a*b^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3)*d*e^4 - (b^6 - 4*a*b^4*c - 6*a^2*b^2*c^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*b*c^4*d^4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a^2*b^2*c^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c + 6*a^3*b*c^2)*e^5)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(5*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 30*(a*b^3*c^3 - 4*a^2*b*c^4)*d^3*e^2 + 30*(a*b^4*c^2 - 5*a^2*b^2*c^3 + 4*a^3*c^4)*d^2*e^3 - 5*(5*a*b^5*c - 34*a^2*b^3*c^2 + 56*a^3*b*c^3)*d*e^4 + (7*a*b^6 - 56*a^2*b^4*c + 127*a^3*b^2*c^2 - 60*a^4*c^3)*e^5)*x + 5*(2*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 + 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x)]

giac [B] time = 0.21, size = 636, normalized size = 2.17

$$-\frac{5\left(2c^4d^4e - 4bc^3d^3e^2 + 12ac^3d^2e^3 + 2b^3cde^4 - 12abc^2de^4 - b^4e^5 + 6ab^2ce^5 - 6a^2c^2e^5\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\left(b^2c^3 - 4ac^4\right)\sqrt{-b^2+4ac}} + \frac{2xe^5}{c^2} + \frac{5\left(2cde^4 - be^5\right)\log\left(cx^2+bx+a\right)}{2c^3} - \text{[illegible]}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -5*(2*c^4*d^4*e - 4*b*c^3*d^3*e^2 + 12*a*c^3*d^2*e^3 + 2*b^3*c*d*e^4 - 12*a
*b*c^2*d*e^4 - b^4*e^5 + 6*a*b^2*c*e^5 - 6*a^2*c^2*e^5)*arctan((2*c*x + b)/
sqrt(-b^2 + 4*a*c))/((b^2*c^3 - 4*a*c^4)*sqrt(-b^2 + 4*a*c)) + 2*x*e^5/c^2
+ 5/2*(2*c*d*e^4 - b*e^5)*log(c*x^2 + b*x + a)/c^3 - 1/2*(b^2*c^3*d^5 - 4*a
*c^4*d^5 + 5*a*b*c^3*d^4*e - 40*a^2*c^3*d^3*e^2 + 30*a^2*b*c^2*d^2*e^3 - 25
*a^2*b^2*c*d*e^4 + 60*a^3*c^2*d*e^4 + 7*a^2*b^3*e^5 - 23*a^3*b*c*e^5 + 2*(5
*c^5*d^4*e - 10*b*c^4*d^3*e^2 + 20*b^2*c^3*d^2*e^3 - 50*a*c^4*d^2*e^3 - 15*
b^3*c^2*d*e^4 + 50*a*b*c^3*d*e^4 + 4*b^4*c*e^5 - 17*a*b^2*c^2*e^5 + 9*a^2*c
^3*e^5)*x^3 + (15*b*c^4*d^4*e - 10*b^2*c^3*d^3*e^2 - 80*a*c^4*d^3*e^2 + 30*
b^3*c^2*d^2*e^3 - 30*a*b*c^3*d^2*e^3 - 25*b^4*c*d*e^4 + 50*a*b^2*c^2*d*e^4
+ 80*a^2*c^3*d*e^4 + 7*b^5*e^5 - 21*a*b^3*c*e^5 - 13*a^2*b*c^2*e^5)*x^2 + 2
*(5*b^2*c^3*d^4*e - 5*a*c^4*d^4*e - 30*a*b*c^3*d^3*e^2 + 30*a*b^2*c^2*d^2*e
^3 - 30*a^2*c^3*d^2*e^3 - 25*a*b^3*c*d*e^4 + 70*a^2*b*c^2*d*e^4 + 7*a*b^4*e
```

```
^5 - 26*a^2*b^2*c*e^5 + 7*a^3*c^2*e^5)*x)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c
)*c^3)
```

maple [B] time = 0.09, size = 1921, normalized size = 6.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x)
```

```
[Out] 25/c/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x^2*a*b^2*d-25/c^2/(c*x^2+b*x+a)^2*e^4
/(4*a*c-b^2)*x*a*b^3*d+30/c/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a*b^2*d^2-5*c
/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*a*d^4+15/2*c/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)
*x^2*b*d^4-50*c/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x^3*a*d^2-15/c/(c*x^2+b*x+a
)^2*e^4/(4*a*c-b^2)*x^3*b^3*d+15/c/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x^2*b^3*
d^2-15/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x^2*a*b*d^2-30/(c*x^2+b*x+a)^2*e^2/(
4*a*c-b^2)*x*a*b*d^3+15/c/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b*d^2*e^3-10*c/(c
*x^2+b*x+a)^2*e^2/(4*a*c-b^2)*x^3*b*d^3-13/2/c/(c*x^2+b*x+a)^2*e^5/(4*a*c-b
^2)*x^2*a^2*b-40*c/(c*x^2+b*x+a)^2*e^2/(4*a*c-b^2)*x^2*a*d^3-21/2/c^2/(c*x^
2+b*x+a)^2*e^5/(4*a*c-b^2)*x^2*a*b^3-25/2/c^2/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^
2)*x^2*b^4*d-26/c^2/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^2*b^2-25/2/c^2/(c*x
^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^2*d*e^4-60/c*e^4/(4*a*c-b^2)^(3/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d+9/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^3*a^2-2
0/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*d^3*e^2+5/2/c^3*e^5/(4*a*c-b^2)*ln(c*x^2+
b*x+a)*b^3+2*e^5/c^2*x+70/c/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x*a^2*b*d+1/2/(
c*x^2+b*x+a)^2/(4*a*c-b^2)*b^2*d^5+50/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x^3*a
*b*d-17/c/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^3*a*b^2+7/c^3/(c*x^2+b*x+a)^2*e
^5/(4*a*c-b^2)*x*a*b^4-30/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a^2*d^2-5/(c*x^
2+b*x+a)^2*e^2/(4*a*c-b^2)*x^2*b^2*d^3+40/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x
^2*a^2*d+5/2/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*b*d^4*e+20/(c*x^2+b*x+a)^2*e^3/(
4*a*c-b^2)*x^3*b^2*d^2+5/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*b^2*d^4+30/c/(c*x^
2+b*x+a)^2/(4*a*c-b^2)*a^3*d*e^4-23/2/c^2/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^3*b
*e^5+20/c*e^4/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a*d-5/c^2*e^4/(4*a*c-b^2)*ln(c*x^
2+b*x+a)*b^2*d+7/2/c^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^3*e^5+5*c^2/(c*x^2
+b*x+a)^2*e/(4*a*c-b^2)*x^3*d^4+7/2/c^3/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^2
*b^5+7/c/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^3-20*e^2/(4*a*c-b^2)^(3/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^3+60*e^3/(4*a*c-b^2)^(3/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*a*d^2+10*c*e/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*d^4-5/c^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*b^4-30/c*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2)
)*a^2+4/c^2/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^3*b^4+10/c^2*e^4/(4*a*c-b^2)^
(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d+30/c^2*e^5/(4*a*c-b^2)^(3/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2-10/c^2*e^5/(4*a*c-b^2)*ln(c*x^2
+b*x+a)*a*b-2*c/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*d^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.02, size = 1148, normalized size = 3.92

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((x^3*(4*b^4*e^5 + 5*c^4*d^4*e + 9*a^2*c^2*e^5 - 50*a*c^3*d^2*e^3 - 10*b*c^
3*d^3*e^2 + 20*b^2*c^2*d^2*e^3 - 17*a*b^2*c*e^5 - 15*b^3*c*d*e^4 + 50*a*b*c
^2*d*e^4))/(4*a*c - b^2) + (7*a^2*b^3*e^5 - 4*a*c^4*d^5 + b^2*c^3*d^5 + 60*
a^3*c^2*d*e^4 - 40*a^2*c^3*d^3*e^2 - 23*a^3*b*c*e^5 + 5*a*b*c^3*d^4*e - 25*
a^2*b^2*c*d*e^4 + 30*a^2*b*c^2*d^2*e^3)/(2*c*(4*a*c - b^2)) - (x^2*(13*a^2*
b*c^2*e^5 - 7*b^5*e^5 + 80*a*c^4*d^3*e^2 - 80*a^2*c^3*d*e^4 + 10*b^2*c^3*d^
3*e^2 - 30*b^3*c^2*d^2*e^3 + 21*a*b^3*c*e^5 - 15*b*c^4*d^4*e + 25*b^4*c*d*e
^4 + 30*a*b*c^3*d^2*e^3 - 50*a*b^2*c^2*d*e^4))/(2*c*(4*a*c - b^2)) + (x*(7*
a*b^4*e^5 + 7*a^3*c^2*e^5 - 26*a^2*b^2*c*e^5 + 5*b^2*c^3*d^4*e - 30*a^2*c^3
*d^2*e^3 - 5*a*c^4*d^4*e - 25*a*b^3*c*d*e^4 - 30*a*b*c^3*d^3*e^2 + 70*a^2*b
*c^2*d*e^4 + 30*a*b^2*c^2*d^2*e^3))/(c*(4*a*c - b^2)))/(a^2*c^2 + c^4*x^4 +
 x^2*(2*a*c^3 + b^2*c^2) + 2*b*c^3*x^3 + 2*a*b*c^2*x) + (log(a + b*x + c*x^
2)*(5*b^7*e^5 - 320*a^3*b*c^3*e^5 + 640*a^3*c^4*d*e^4 + 240*a^2*b^3*c^2*e^5
 - 60*a*b^5*c*e^5 - 10*b^6*c*d*e^4 + 120*a*b^4*c^2*d*e^4 - 480*a^2*b^2*c^3*
d*e^4))/(2*(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5)) + (2*e^5
*x)/c^2 + (5*e*atan((c^3*(4*a*c - b^2)^(5/2)*((5*e*(b^3*c^2 - 4*a*b*c^3)*(b
^4*e^4 - 2*c^4*d^4 + 6*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 - 6*a*b^2*c*e^4 + 4*b
*c^3*d^3*e - 2*b^3*c*d*e^3 + 12*a*b*c^2*d*e^3))/(c^5*(4*a*c - b^2)^4) - (10
*e*x*(b^4*e^4 - 2*c^4*d^4 + 6*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 - 6*a*b^2*c*e^
4 + 4*b*c^3*d^3*e - 2*b^3*c*d*e^3 + 12*a*b*c^2*d*e^3))/(c^2*(4*a*c - b^2)^3
)))/(5*b^4*e^5 - 10*c^4*d^4*e + 30*a^2*c^2*e^5 - 60*a*c^3*d^2*e^3 + 20*b*c^
3*d^3*e^2 - 30*a*b^2*c*e^5 - 10*b^3*c*d*e^4 + 60*a*b*c^2*d*e^4))*(b^4*e^4 -
 2*c^4*d^4 + 6*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 - 6*a*b^2*c*e^4 + 4*b*c^3*d^3
*e - 2*b^3*c*d*e^3 + 12*a*b*c^2*d*e^3))/(c^3*(4*a*c - b^2)^(3/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**5/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1348 $\int \frac{(b+2cx)(d+ex)^4}{(a+bx+cx^2)^3} \, dx$

Optimal. Leaf size=197

$$\frac{2e(2cd-be)\left(-2ce(bd-3ae)-b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{2e^3x(2cd-be)}{c\left(b^2-4ac\right)}-\frac{2e(d+ex)^2(-2ae+x(2cd-b}{\left(b^2-4ac\right)\left(a+bx+cx\right.}$$

Rubi [A] time = 0.33, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {768, 738, 773, 634, 618, 206, 628}

$$\frac{2e(2cd-be)\left(-2ce(bd-3ae)-b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{2e^3x(2cd-be)}{c\left(b^2-4ac\right)}-\frac{2e(d+ex)^2(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e^4\log\left(a+bx+cx^2\right)}{c^2}-\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*e^3*(2*c*d - b*e)*x)/(c*(b^2 - 4*a*c)) - (d + e*x)^4/(2*(a + b*x + c*x^2
)^2) - (2*e*(d + e*x)^2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*(a
+ b*x + c*x^2)) + (2*e*(2*c*d - b*e)*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*
a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^2*(b^2 - 4*a*c)^(3/2)) + (
e^4*Log[a + b*x + c*x^2])/c^2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
```

```
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2} + (2e)\int \frac{(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2} - \frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{(2e)\int \frac{(d+ex)\left(2cd^2-e(3bd-4ae)\cdots\right.}{a+bx+cx^2}}{b^2-4ac}$$

$$= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)} - \frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2} - \frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{(2e)\int \frac{ae^2\cdots}{\cdots}}{\cdots}$$

$$= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)} - \frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2} - \frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{e^4\int \frac{b+2\cdots}{a+bx\cdots}}{c^2}$$

$$= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)} - \frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2} - \frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{e^4\log\left(a\cdots\right.}{\cdots}$$

$$= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)} - \frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2} - \frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{2e(2cd-\cdots}{\cdots}$$

Mathematica [A] time = 0.54, size = 334, normalized size = 1.70

$$\frac{\frac{-ce^3\left(a^2e+2ab(2d+ex)+4b^2dx\right)+b^2e^4(a+bx)+2c^2de^2(3ad+2aex+3bdx)-c^3d^3(d+4ex)}{(a+x(b+cx))^2} - \frac{e\left(8c^2\left(2a^2e^3-acde(6d+5ex)+c^2d^3x\right)+2b^2ce\left(cd(3d+8ex)-5ae^2\right)+4bc^2\left(ae^2(7d+5ex)+cd^2(d-3ex)\right)+b^4e^3-2b^3ce^2(2d+3ex)\right)}{\left(b^2-4ac\right)(a+x(b+cx))} + \frac{4ce(be-2cd)\left(2ce(bd-3ae)+b^2e^2-2c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} + 2ce^4\log(a+x(b+cx))}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((b^2*e^4*(a + b*x) - c^3*d^3*(d + 4*e*x) + 2*c^2*d*e^2*(3*a*d + 3*b*d*x +
2*a*e*x) - c*e^3*(a^2*e + 4*b^2*d*x + 2*a*b*(2*d + e*x))))/(a + x*(b + c*x))
^2 - (e*(b^4*e^3 - 2*b^3*c*e^2*(2*d + 3*e*x) + 8*c^2*(2*a^2*e^3 + c^2*d^3*x
 - a*c*d*e*(6*d + 5*e*x)) + 4*b*c^2*(c*d^2*(d - 3*e*x) + a*e^2*(7*d + 5*e*x
)) + 2*b^2*c*e*(-5*a*e^2 + c*d*(3*d + 8*e*x))))/((b^2 - 4*a*c)*(a + x*(b +
c*x))) + (4*c*e*(-2*c*d + b*e)*(-2*c^2*d^2 + b^2*e^2 + 2*c*e*(b*d - 3*a*e))
*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*c*e^4*Log
[a + x*(b + c*x)])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x]
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.47, size = 2400, normalized size = 12.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x, algorithm="fricas")
[Out] [-1/2*((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^4 + 4*(a*b^3*c^2 - 4*a^2*b*c^
3)*d^3*e - 24*(a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^2 + 12*(a^2*b^3*c - 4*a^3*b*c
^2)*d*e^3 - (5*a^2*b^4 - 32*a^3*b^2*c + 48*a^4*c^2)*e^4 + 2*(4*(b^2*c^4 - 4
*a*c^5)*d^3*e - 6*(b^3*c^3 - 4*a*b*c^4)*d^2*e^2 + 4*(2*b^4*c^2 - 13*a*b^2*c
^3 + 20*a^2*c^4)*d*e^3 - (3*b^5*c - 22*a*b^3*c^2 + 40*a^2*b*c^3)*e^4)*x^3 +
 (12*(b^3*c^3 - 4*a*b*c^4)*d^3*e - 6*(b^4*c^2 + 4*a*b^2*c^3 - 32*a^2*c^4)*d
^2*e^2 + 12*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^3 - (5*b^6 - 30*a*b^4*c
 + 24*a^2*b^2*c^2 + 64*a^3*c^3)*e^4)*x^2 - 2*(4*a^2*c^3*d^3*e - 6*a^2*b*c^2
*d^2*e^2 + 12*a^3*c^2*d*e^3 + (a^2*b^3 - 6*a^3*b*c)*e^4 + (4*c^5*d^3*e - 6*
b*c^4*d^2*e^2 + 12*a*c^4*d*e^3 + (b^3*c^2 - 6*a*b*c^3)*e^4)*x^4 + 2*(4*b*c^
4*d^3*e - 6*b^2*c^3*d^2*e^2 + 12*a*b*c^3*d*e^3 + (b^4*c - 6*a*b^2*c^2)*e^4)
*x^3 + (4*(b^2*c^3 + 2*a*c^4)*d^3*e - 6*(b^3*c^2 + 2*a*b*c^3)*d^2*e^2 + 12*
(a*b^2*c^2 + 2*a^2*c^3)*d*e^3 + (b^5 - 4*a*b^3*c - 12*a^2*b*c^2)*e^4)*x^2 +
 2*(4*a*b*c^3*d^3*e - 6*a*b^2*c^2*d^2*e^2 + 12*a^2*b*c^2*d*e^3 + (a*b^4 - 6
*a^2*b^2*c)*e^4)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*
c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(4*(b^4*c^2 - 5*a
*b^2*c^3 + 4*a^2*c^4)*d^3*e - 18*(a*b^3*c^2 - 4*a^2*b*c^3)*d^2*e^2 + 12*(a*
b^4*c - 5*a^2*b^2*c^2 + 4*a^3*c^3)*d*e^3 - (5*a*b^5 - 34*a^2*b^3*c + 56*a^3
*b*c^2)*e^4)*x - 2*((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*e^4*x^4 + 2*(b^5*c
 - 8*a*b^3*c^2 + 16*a^2*b*c^3)*e^4*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*e^4
*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e^4*x + (a^2*b^4 - 8*a^3*b^2*
c + 16*a^4*c^2)*e^4)*log(c*x^2 + b*x + a))/(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 1
6*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3
*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*
b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x), -1/2*((b^4*c^2 - 8*a*b^2*c^3 +
16*a^2*c^4)*d^4 + 4*(a*b^3*c^2 - 4*a^2*b*c^3)*d^3*e - 24*(a^2*b^2*c^2 - 4*a
^3*c^3)*d^2*e^2 + 12*(a^2*b^3*c - 4*a^3*b*c^2)*d*e^3 - (5*a^2*b^4 - 32*a^3*
b^2*c + 48*a^4*c^2)*e^4 + 2*(4*(b^2*c^4 - 4*a*c^5)*d^3*e - 6*(b^3*c^3 - 4*a
*b*c^4)*d^2*e^2 + 4*(2*b^4*c^2 - 13*a*b^2*c^3 + 20*a^2*c^4)*d*e^3 - (3*b^5*
c - 22*a*b^3*c^2 + 40*a^2*b*c^3)*e^4)*x^3 + (12*(b^3*c^3 - 4*a*b*c^4)*d^3*e
 - 6*(b^4*c^2 + 4*a*b^2*c^3 - 32*a^2*c^4)*d^2*e^2 + 12*(b^5*c - 5*a*b^3*c^2
 + 4*a^2*b*c^3)*d*e^3 - (5*b^6 - 30*a*b^4*c + 24*a^2*b^2*c^2 + 64*a^3*c^3)*
e^4)*x^2 - 4*(4*a^2*c^3*d^3*e - 6*a^2*b*c^2*d^2*e^2 + 12*a^3*c^2*d*e^3 + (a
^2*b^3 - 6*a^3*b*c)*e^4 + (4*c^5*d^3*e - 6*b*c^4*d^2*e^2 + 12*a*c^4*d*e^3 +
 (b^3*c^2 - 6*a*b*c^3)*e^4)*x^4 + 2*(4*b*c^4*d^3*e - 6*b^2*c^3*d^2*e^2 + 12
*a*b*c^3*d*e^3 + (b^4*c - 6*a*b^2*c^2)*e^4)*x^3 + (4*(b^2*c^3 + 2*a*c^4)*d^
3*e - 6*(b^3*c^2 + 2*a*b*c^3)*d^2*e^2 + 12*(a*b^2*c^2 + 2*a^2*c^3)*d*e^3 +
(b^5 - 4*a*b^3*c - 12*a^2*b*c^2)*e^4)*x^2 + 2*(4*a*b*c^3*d^3*e - 6*a*b^2*c^
2*d^2*e^2 + 12*a^2*b*c^2*d*e^3 + (a*b^4 - 6*a^2*b^2*c)*e^4)*x)*sqrt(-b^2 +
4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(4*(b^4*c^
2 - 5*a*b^2*c^3 + 4*a^2*c^4)*d^3*e - 18*(a*b^3*c^2 - 4*a^2*b*c^3)*d^2*e^2 +
 12*(a*b^4*c - 5*a^2*b^2*c^2 + 4*a^3*c^3)*d*e^3 - (5*a*b^5 - 34*a^2*b^3*c +
```

56*a^3*b*c^2)*e^4)*x - 2*((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*e^4*x^4 + 2
*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*e^4*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c
^3)*e^4*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e^4*x + (a^2*b^4 - 8*a
^3*b^2*c + 16*a^4*c^2)*e^4)*log(c*x^2 + b*x + a))/(a^2*b^4*c^2 - 8*a^3*b^2*
c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 -
8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2
+ 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)]

giac [**B**] time = 0.18, size = 439, normalized size = 2.23

$$-\frac{2\left(4c^{3}d^{3}e-6bc^{2}d^{2}e^{2}+12ac^{2}de^{3}+b^{3}e^{4}-6abce^{4}\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^{2}+4ac}}\right)}{\left(b^{2}c^{2}-4ac^{3}\right)\sqrt{-b^{2}+4ac}}+\frac{e^{4}\log\left(cx^{2}+bx+a\right)}{c^{2}}-\frac{b^{2}c^{2}d^{4}-4ac^{3}d^{4}+4abc^{2}d^{3}e-24a^{2}c^{2}d^{2}e^{2}+12a^{2}bcde^{3}-5a^{2}b^{2}e^{4}+12a^{3}ce^{4}+2\left(4c^{4}d^{3}e-6bc^{3}d^{2}e^{2}+8b^{2}c^{2}de^{3}-20ac^{3}de^{3}-3b^{3}ce^{4}+10abc^{2}e^{4}\right)x^{3}+\left(12bc^{3}d^{3}e-6b^{2}c^{2}d^{2}e^{2}-48ac^{3}d^{2}e^{2}+12b^{3}cde^{3}-12abc^{2}de^{3}-5b^{4}e^{4}+10ab^{2}ce^{4}+16a^{2}c^{2}e^{4}\right)x^{2}+2\left(4b^{2}c^{2}d^{3}e-4ac^{3}d^{3}e-18abc^{2}d^{2}e^{2}+12ab^{2}cde^{3}-12a^{2}c^{2}de^{3}-5ab^{3}e^{4}+14a^{2}bce^{4}\right)x}{2\left(cx^{2}+bx+a\right)^{2}\left(b^{2}-4ac\right)c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x, algorithm="giac")

[Out] -2*(4*c^3*d^3*e - 6*b*c^2*d^2*e^2 + 12*a*c^2*d*e^3 + b^3*e^4 - 6*a*b*c*e^4)
*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^2 - 4*a*c^3)*sqrt(-b^2 + 4*
a*c)) + e^4*log(c*x^2 + b*x + a)/c^2 - 1/2*(b^2*c^2*d^4 - 4*a*c^3*d^4 + 4*a
*b*c^2*d^3*e - 24*a^2*c^2*d^2*e^2 + 12*a^2*b*c*d*e^3 - 5*a^2*b^2*e^4 + 12*a
^3*c*e^4 + 2*(4*c^4*d^3*e - 6*b*c^3*d^2*e^2 + 8*b^2*c^2*d*e^3 - 20*a*c^3*d*
e^3 - 3*b^3*c*e^4 + 10*a*b*c^2*e^4)*x^3 + (12*b*c^3*d^3*e - 6*b^2*c^2*d^2*e
^2 - 48*a*c^3*d^2*e^2 + 12*b^3*c*d*e^3 - 12*a*b*c^2*d*e^3 - 5*b^4*e^4 + 10*
a*b^2*c*e^4 + 16*a^2*c^2*e^4)*x^2 + 2*(4*b^2*c^2*d^3*e - 4*a*c^3*d^3*e - 18
*a*b*c^2*d^2*e^2 + 12*a*b^2*c*d*e^3 - 12*a^2*c^2*d*e^3 - 5*a*b^3*e^4 + 14*a
^2*b*c*e^4)*x)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c)*c^2)

maple [**B**] time = 0.06, size = 649, normalized size = 3.29

$$-\frac{12ab\,e^{4}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c}+\frac{24ad\,e^{3}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{2b^{3}e^{4}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c^{2}}-\frac{12b\,d^{2}e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{8c\,d^{3}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{4a\,e^{4}\ln\left(c\,x^{2}+bx+a\right)}{\left(4ac-b^{2}\right)c}-\frac{b^{2}e^{4}\ln\left(c\,x^{2}+bx+a\right)}{\left(4ac-b^{2}\right)c^{2}}+\frac{\frac{\left(10abc\,e^{3}-20c^{2}ad\,e^{2}-3b^{3}e^{3}+8b^{2}cd\,e^{2}-6b\,c^{2}d^{2}e+4c^{3}d^{3}\right)e\,x^{3}}{\left(4ac-b^{2}\right)c}+\frac{\left(16a^{2}c^{2}e^{3}+10a\,b^{2}c\,e^{3}-12ab\,c^{2}d\,e^{2}-48a\,c^{3}d^{2}e-5b^{4}e^{3}+12b^{3}cd\,e^{2}-6b^{2}c^{2}d^{2}e+12b\,c^{3}d^{3}\right)e\,x^{2}}{2\left(4ac-b^{2}\right)c^{2}}+\frac{\left(14a^{2}bc\,e^{3}-12a^{2}c^{2}d\,e^{2}-5a\,b^{3}e^{3}+12a\,b^{2}cd\,e^{2}-18ab\,c^{2}d^{2}e-4a\,c^{3}d^{3}+4b^{2}c^{2}d^{3}\right)ex}{\left(4ac-b^{2}\right)c^{2}}+\frac{12a^{3}c\,e^{4}-5a^{2}b^{2}e^{4}+12a^{2}bcd\,e^{3}-24a^{2}c^{2}d^{2}e^{2}+4ab\,c^{2}d^{3}e-4a\,c^{3}d^{4}+b^{2}c^{2}d^{4}}{2\left(4ac-b^{2}\right)c^{2}}}{\left(c\,x^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x)

[Out] (1/c*e*(10*a*b*c*e^3-20*a*c^2*d*e^2-3*b^3*e^3+8*b^2*c*d*e^2-6*b*c^2*d^2*e+4
*c^3*d^3)/(4*a*c-b^2)*x^3+1/2*e*(16*a^2*c^2*e^3+10*a*b^2*c*e^3-12*a*b*c^2*d
*e^2-48*a*c^3*d^2*e-5*b^4*e^3+12*b^3*c*d*e^2-6*b^2*c^2*d^2*e+12*b*c^3*d^3)/
c^2/(4*a*c-b^2)*x^2+e*(14*a^2*b*c*e^3-12*a^2*c^2*d*e^2-5*a*b^3*e^3+12*a*b^2
*c*d*e^2-18*a*b*c^2*d^2*e-4*a*c^3*d^3+4*b^2*c^2*d^3)/(4*a*c-b^2)/c^2*x+1/2*
(12*a^3*c*e^4-5*a^2*b^2*e^4+12*a^2*b*c*d*e^3-24*a^2*c^2*d^2*e^2+4*a*b*c^2*d
^3*e-4*a*c^3*d^4+b^2*c^2*d^4)/c^2/(4*a*c-b^2))/(c*x^2+b*x+a)^2+4*e^4/(4*a*c
-b^2)/c*ln(c*x^2+b*x+a)*a-e^4/(4*a*c-b^2)/c^2*ln(c*x^2+b*x+a)*b^2-12*e^4/(4
*a*c-b^2)^(3/2)/c*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b+24*e^3/(4*a*c-b^2
)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d-12*e^2/(4*a*c-b^2)^(3/2)*ar
ctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^2+8*e/(4*a*c-b^2)^(3/2)*c*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*d^3+2*e^4/(4*a*c-b^2)^(3/2)/c^2*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*b^3

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?

mupad [B] time = 2.92, size = 753, normalized size = 3.82

$$\frac{2\,e\,\mathrm{atan}\left(\frac{c^2\left(\frac{2\,e\,x\,(b\,e-2\,c\,d)\,(b^2\,e^2+2\,b\,c\,d\,e-2\,c^2\,d^2-6\,a\,c\,e^2)}{c\,(4\,a\,c-b^2)^3}-\frac{e\,(b\,e-2\,c\,d)\,(b^3\,c-4\,a\,b\,c^2)\,(b^2\,e^2+2\,b\,c\,d\,e-2\,c^2\,d^2-6\,a\,c\,e^2)}{c^3\,(4\,a\,c-b^2)^4}\right)(4\,a\,c-b^2)^{5/2}}{b^3\,e^4-6\,b\,c^2\,d^2\,e^2-6\,a\,b\,c\,e^4+4\,c^3\,d^3\,e+12\,a\,c^2\,d\,e^3}\right)(b\,e-2\,c\,d)\,(b^2\,e^2+2\,b\,c\,d\,e-2\,c^2\,d^2-6\,a\,c\,e^2)}{c^2\,(4\,a\,c-b^2)^{3/2}}-\frac{\ln(c\,x^2+b\,x+a)\,(-128\,a^3\,c^3\,e^4+96\,a^2\,b^2\,c^2\,e^4-24\,a\,b^4\,c\,e^4+2\,b^6\,e^4)}{2\,(64\,a^3\,c^5-48\,a^2\,b^2\,c^4+12\,a\,b^4\,c^3-b^6\,c^2)}-\frac{\frac{x\,(-14\,a^2\,b\,c\,e^4+12\,a^2\,c^2\,d\,e^3+5\,a\,b^3\,e^4-12\,a\,b^2\,c\,d\,e^3+18\,a\,b\,c^2\,d^2\,e^2+4\,a\,c^3\,d^3\,e-4\,b^2\,c^2\,d^3\,e)}{c^2\,(4\,a\,c-b^2)}-\frac{12\,a^3\,c\,e^4-5\,a^2\,b^2\,e^4+12\,a^2\,b\,c\,d\,e^3-24\,a^2\,c^2\,d^2\,e^2+4\,a\,b\,c^2\,d^3\,e-4\,a\,c^3\,d^4+b^2\,c^2\,d^4}{2\,c^2\,(4\,a\,c-b^2)}+\frac{x^2\,(-16\,a^2\,c^2\,e^4-10\,a\,b^2\,c\,e^4+12\,a\,b\,c^2\,d\,e^3+48\,a\,c^3\,d^2\,e^2+5\,b^4\,e^4-12\,b^3\,c\,d\,e^3+6\,b^2\,c^2\,d^2\,e^2-12\,b\,c^3\,d^3\,e)}{2\,c^2\,(4\,a\,c-b^2)}+\frac{e\,x^3\,(3\,b^3\,e^3-8\,b^2\,c\,d\,e^2+6\,b\,c^2\,d^2\,e-10\,a\,b\,c\,e^3-4\,c^3\,d^3+20\,a\,c^2\,d\,e^2)}{c\,(4\,a\,c-b^2)}}{x^2\,(b^2+2\,a\,c)+a^2+c^2\,x^4+2\,a\,b\,x+2\,b\,c\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*e*atan((c^2*((2*e*x*(b*e - 2*c*d)*(b^2*e^2 - 2*c^2*d^2 - 6*a*c*e^2 + 2*b
*c*d*e))/(c*(4*a*c - b^2)^3) - (e*(b*e - 2*c*d)*(b^3*c - 4*a*b*c^2)*(b^2*e^
2 - 2*c^2*d^2 - 6*a*c*e^2 + 2*b*c*d*e))/(c^3*(4*a*c - b^2)^4))*(4*a*c - b^2
)^(5/2))/(b^3*e^4 + 4*c^3*d^3*e - 6*b*c^2*d^2*e^2 - 6*a*b*c*e^4 + 12*a*c^2*
d*e^3))*(b*e - 2*c*d)*(b^2*e^2 - 2*c^2*d^2 - 6*a*c*e^2 + 2*b*c*d*e))/(c^2*(
4*a*c - b^2)^(3/2)) - (log(a + b*x + c*x^2)*(2*b^6*e^4 - 128*a^3*c^3*e^4 +
96*a^2*b^2*c^2*e^4 - 24*a*b^4*c*e^4))/(2*(64*a^3*c^5 - b^6*c^2 + 12*a*b^4*c
^3 - 48*a^2*b^2*c^4)) - ((x*(5*a*b^3*e^4 + 12*a^2*c^2*d*e^3 - 4*b^2*c^2*d^3
*e - 14*a^2*b*c*e^4 + 4*a*c^3*d^3*e - 12*a*b^2*c*d*e^3 + 18*a*b*c^2*d^2*e^2
))/(c^2*(4*a*c - b^2)) - (12*a^3*c*e^4 - 4*a*c^3*d^4 - 5*a^2*b^2*e^4 + b^2*
c^2*d^4 - 24*a^2*c^2*d^2*e^2 + 4*a*b*c^2*d^3*e + 12*a^2*b*c*d*e^3)/(2*c^2*(
4*a*c - b^2)) + (x^2*(5*b^4*e^4 - 16*a^2*c^2*e^4 + 48*a*c^3*d^2*e^2 + 6*b^2
*c^2*d^2*e^2 - 10*a*b^2*c*e^4 - 12*b*c^3*d^3*e - 12*b^3*c*d*e^3 + 12*a*b*c^
2*d*e^3))/(2*c^2*(4*a*c - b^2)) + (e*x^3*(3*b^3*e^3 - 4*c^3*d^3 - 10*a*b*c*
e^3 + 20*a*c^2*d*e^2 + 6*b*c^2*d^2*e - 8*b^2*c*d*e^2))/(c*(4*a*c - b^2)))/(
x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [B] time = 133.50, size = 1545, normalized size = 7.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**3,x)
```

```
[Out] (e**4/c**2 - e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b**2*e*
*2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*
a*b**4*c - b**6)))*log(x + (-16*a**2*c**3*(e**4/c**2 - e*sqrt(-(4*a*c - b**
2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c*
*2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))) + 16*a**2*c*e*
*4 + 8*a*b**2*c**2*(e**4/c**2 - e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6
*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a
**2*b**2*c**2 + 12*a*b**4*c - b**6))) - 2*a*b**2*e**4 - 12*a*b*c*d*e**3 - b
**4*c*(e**4/c**2 - e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b
**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2
 + 12*a*b**4*c - b**6))) + 6*b**2*c*d**2*e**2 - 4*b*c**2*d**3*e)/(12*a*b*c*
e**4 - 24*a*c**2*d*e**3 - 2*b**3*e**4 + 12*b*c**2*d**2*e**2 - 8*c**3*d**3*e
)) + (e**4/c**2 + e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b*
*2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2
+ 12*a*b**4*c - b**6)))*log(x + (-16*a**2*c**3*(e**4/c**2 + e*sqrt(-(4*a*c
- b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2
)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))) + 16*a**2
*c*e**4 + 8*a*b**2*c**2*(e**4/c**2 + e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*
d)*(6*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 -
 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))) - 2*a*b**2*e**4 - 12*a*b*c*d*e**
3 - b**4*c*(e**4/c**2 + e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**
2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2
*c**2 + 12*a*b**4*c - b**6))) + 6*b**2*c*d**2*e**2 - 4*b*c**2*d**3*e)/(12*a
*b*c*e**4 - 24*a*c**2*d*e**3 - 2*b**3*e**4 + 12*b*c**2*d**2*e**2 - 8*c**3*d
**3*e)) + (12*a**3*c*e**4 - 5*a**2*b**2*e**4 + 12*a**2*b*c*d*e**3 - 24*a**2
*c**2*d**2*e**2 + 4*a*b*c**2*d**3*e - 4*a*c**3*d**4 + b**2*c**2*d**4 + x**3
*(20*a*b*c**2*e**4 - 40*a*c**3*d*e**3 - 6*b**3*c*e**4 + 16*b**2*c**2*d*e**3
 - 12*b*c**3*d**2*e**2 + 8*c**4*d**3*e) + x**2*(16*a**2*c**2*e**4 + 10*a*b*
*2*c*e**4 - 12*a*b*c**2*d*e**3 - 48*a*c**3*d**2*e**2 - 5*b**4*e**4 + 12*b**
```

```
3*c*d*e**3 - 6*b**2*c**2*d**2*e**2 + 12*b*c**3*d**3*e) + x*(28*a**2*b*c*e**
4 - 24*a**2*c**2*d*e**3 - 10*a*b**3*e**4 + 24*a*b**2*c*d*e**3 - 36*a*b*c**2
*d**2*e**2 - 8*a*c**3*d**3*e + 8*b**2*c**2*d**3*e))/(8*a**3*c**3 - 2*a**2*b
**2*c**2 + x**4*(8*a*c**5 - 2*b**2*c**4) + x**3*(16*a*b*c**4 - 4*b**3*c**3)
 + x**2*(16*a**2*c**4 + 4*a*b**2*c**3 - 2*b**4*c**2) + x*(16*a**2*b*c**3 -
4*a*b**3*c**2))
```

3.1349 $\int \frac{(b+2cx)(d+ex)^3}{(a+bx+cx^2)^3} dx$

Optimal. Leaf size=126

$$\frac{6e(ae^2-bde+cd^2)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)^{3/2}}-\frac{3e(d+ex)(-2ae+x(2cd-be)+bd)}{2(b^2-4ac)(a+bx+cx^2)}-\frac{(d+ex)^3}{2(a+bx+cx^2)^2}$$

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {768, 722, 618, 206}

$$\frac{6e(ae^2-bde+cd^2)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)^{3/2}}-\frac{3e(d+ex)(-2ae+x(2cd-be)+bd)}{2(b^2-4ac)(a+bx+cx^2)}-\frac{(d+ex)^3}{2(a+bx+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^3/(2*(a + b*x + c*x^2)^2) - (3*e*(d + e*x)*(b*d - 2*a*e + (2*c*d
 - b*e)*x))/(2*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (6*e*(c*d^2 - b*d*e + a*e
^2)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2} + \frac{1}{2}(3e)\int \frac{(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2} - \frac{3e(d+ex)(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\left(3e\left(cd^2-bde+ae^2\right)\right)\int \frac{\ }{a+}}{b^2-4ac}$$

$$= -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2} - \frac{3e(d+ex)(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(6e\left(cd^2-bde+ae^2\right)\right)\text{Sub}}{b^2}$$

$$= -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2} - \frac{3e(d+ex)(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{6e\left(cd^2-bde+ae^2\right)\tanh^{-}}{\left(b^2-4ac\right)^{3/2}}$$

Mathematica [A] time = 0.28, size = 216, normalized size = 1.71

$$\frac{1}{2}\left(\frac{12e\left(e(ae-bd)+cd^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+\frac{e\left(bc\left(7ae^2+3cd(d-2ex)\right)+2c^2\left(3cd^2x-ae(12d+5ex)\right)+b^3\left(-e^2\right)+b^2ce(3d+4ex)\right)}{c^2\left(4ac-b^2\right)(a+x(b+cx))}+\frac{ce^2(3ad+aex+3bdx)-be^3(a+bx)-c^2d^2(d+3ex)}{c^2(a+x(b+cx))^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((-(b*e^3*(a + b*x)) - c^2*d^2*(d + 3*e*x) + c*e^2*(3*a*d + 3*b*d*x + a*e*x
))/(c^2*(a + x*(b + c*x))^2) + (e*(-(b^3*e^2) + b^2*c*e*(3*d + 4*e*x) + b*c
*(7*a*e^2 + 3*c*d*(d - 2*e*x)) + 2*c^2*(3*c*d^2*x - a*e*(12*d + 5*e*x))))/(
c^2*(-b^2 + 4*a*c)*(a + x*(b + c*x))) + (12*e*(c*d^2 + e*(-(b*d) + a*e))*Ar
cTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2))/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.44, size = 1455, normalized size = 11.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^3 + 3*(a*b^3*c - 4*a^2*b*c^2)*d
^2*e - 12*(a^2*b^2*c - 4*a^3*c^2)*d*e^2 + 3*(a^2*b^3 - 4*a^3*b*c)*e^3 + 2*(
3*(b^2*c^3 - 4*a*c^4)*d^2*e - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^2 + (2*b^4*c - 13
*a*b^2*c^2 + 20*a^2*c^3)*e^3)*x^3 + 3*(3*(b^3*c^2 - 4*a*b*c^3)*d^2*e - (b^4
*c + 4*a*b^2*c^2 - 32*a^2*c^3)*d*e^2 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^3)
*x^2 + 6*(a^2*c^2*d^2*e - a^2*b*c*d*e^2 + a^3*c*e^3 + (c^4*d^2*e - b*c^3*d*
e^2 + a*c^3*e^3)*x^4 + 2*(b*c^3*d^2*e - b^2*c^2*d*e^2 + a*b*c^2*e^3)*x^3 +
((b^2*c^2 + 2*a*c^3)*d^2*e - (b^3*c + 2*a*b*c^2)*d*e^2 + (a*b^2*c + 2*a^2*c
^2)*e^3)*x^2 + 2*(a*b*c^2*d^2*e - a*b^2*c*d*e^2 + a^2*b*c*e^3)*x)*sqrt(b^2
- 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x
+ b))/(c*x^2 + b*x + a)) + 6*((b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e - 3*(
```

```
a*b^3*c - 4*a^2*b*c^2)*d*e^2 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^3)*x)/(a
^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5
)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2
 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x), -1/2*((
b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^3 + 3*(a*b^3*c - 4*a^2*b*c^2)*d^2*e - 1
2*(a^2*b^2*c - 4*a^3*c^2)*d*e^2 + 3*(a^2*b^3 - 4*a^3*b*c)*e^3 + 2*(3*(b^2*c
^3 - 4*a*c^4)*d^2*e - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^2 + (2*b^4*c - 13*a*b^2*c
^2 + 20*a^2*c^3)*e^3)*x^3 + 3*(3*(b^3*c^2 - 4*a*b*c^3)*d^2*e - (b^4*c + 4*a
*b^2*c^2 - 32*a^2*c^3)*d*e^2 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^3)*x^2 - 1
2*(a^2*c^2*d^2*e - a^2*b*c*d*e^2 + a^3*c*e^3 + (c^4*d^2*e - b*c^3*d*e^2 + a
*c^3*e^3)*x^4 + 2*(b*c^3*d^2*e - b^2*c^2*d*e^2 + a*b*c^2*e^3)*x^3 + ((b^2*c
^2 + 2*a*c^3)*d^2*e - (b^3*c + 2*a*b*c^2)*d*e^2 + (a*b^2*c + 2*a^2*c^2)*e^3
)*x^2 + 2*(a*b*c^2*d^2*e - a*b^2*c*d*e^2 + a^2*b*c*e^3)*x)*sqrt(-b^2 + 4*a*
c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 6*((b^4*c - 5*a*
b^2*c^2 + 4*a^2*c^3)*d^2*e - 3*(a*b^3*c - 4*a^2*b*c^2)*d*e^2 + (a*b^4 - 5*a
^2*b^2*c + 4*a^3*c^2)*e^3)*x)/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^
4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b
*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3
*c^2 + 16*a^3*b*c^3)*x)]
```

giac [**B**] time = 0.18, size = 292, normalized size = 2.32

$$-\frac{6\left(cd^{2}e-bde^{2}+ae^{3}\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^{2}+4ac}}\right)}{\left(b^{2}-4ac\right)\sqrt{-b^{2}+4ac}}-\frac{6c^{3}d^{2}x^{3}e-6bc^{2}dx^{3}e^{2}+9bc^{2}d^{2}x^{2}e+4b^{2}cx^{3}e^{3}-10ac^{2}x^{3}e^{3}-3b^{2}cdx^{2}e^{2}-24ac^{2}dx^{2}e^{2}+6b^{2}cd^{2}xe-6ac^{2}d^{2}xe+b^{2}cd^{3}-4ac^{2}d^{3}+3b^{3}x^{2}e^{3}-3abcx^{2}e^{3}-18abcdxe^{2}+3abcd^{2}e+6ab^{2}xe^{3}-6a^{2}cxe^{3}-12a^{2}cde^{2}+3a^{2}be^{3}}{2\left(b^{2}c-4ac^{2}\right)\left(cx^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -6*(c*d^2*e - b*d*e^2 + a*e^3)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2
 - 4*a*c)*sqrt(-b^2 + 4*a*c)) - 1/2*(6*c^3*d^2*x^3*e - 6*b*c^2*d*x^3*e^2 +
9*b*c^2*d^2*x^2*e + 4*b^2*c*x^3*e^3 - 10*a*c^2*x^3*e^3 - 3*b^2*c*d*x^2*e^2
- 24*a*c^2*d*x^2*e^2 + 6*b^2*c*d^2*x*e - 6*a*c^2*d^2*x*e + b^2*c*d^3 - 4*a*
c^2*d^3 + 3*b^3*x^2*e^3 - 3*a*b*c*x^2*e^3 - 18*a*b*c*d*x*e^2 + 3*a*b*c*d^2*
e + 6*a*b^2*x*e^3 - 6*a^2*c*x*e^3 - 12*a^2*c*d*e^2 + 3*a^2*b*e^3)/((b^2*c -
 4*a*c^2)*(c*x^2 + b*x + a)^2)
```

maple [**B**] time = 0.06, size = 365, normalized size = 2.90

$$\frac{6ae^{3}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}-\frac{6bde^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{6cd^{2}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{-\frac{\left(5ace^{2}-2b^{2}e^{2}+3bcde-3c^{2}d^{2}\right)ex^{3}}{4ac-b^{2}}-\frac{3\left(abce^{2}+8ac^{2}de-b^{3}e^{2}+b^{2}cde-3bc^{2}d^{2}\right)ex^{2}}{2\left(4ac-b^{2}\right)c}-\frac{3\left(a^{2}ce^{2}-ab^{2}e^{2}+3abcde+ac^{2}d^{2}-b^{2}cd^{2}\right)ex}{\left(4ac-b^{2}\right)c}+\frac{3a^{2}be^{3}-12a^{2}cde^{2}+3abcd^{2}e-4ac^{2}d^{3}+b^{2}cd^{3}}{2\left(4ac-b^{2}\right)c}}{\left(cx^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-e*(5*a*c*e^2-2*b^2*e^2+3*b*c*d*e-3*c^2*d^2)/(4*a*c-b^2)*x^3-3/2*e*(a*b*c*
e^2+8*a*c^2*d*e-b^3*e^2+b^2*c*d*e-3*b*c^2*d^2)/(4*a*c-b^2)/c*x^2-3/c*e*(a^2
*c*e^2-a*b^2*e^2+3*a*b*c*d*e+a*c^2*d^2-b^2*c*d^2)/(4*a*c-b^2)*x+1/2*(3*a^2*
b*e^3-12*a^2*c*d*e^2+3*a*b*c*d^2*e-4*a*c^2*d^3+b^2*c*d^3)/(4*a*c-b^2)/c)/(c
*x^2+b*x+a)^2+6*e^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a
-6*e^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d+6*e/(4*a*c
-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.13, size = 412, normalized size = 3.27

$$\frac{\frac{3a^2be^3-12a^2cde^2+3abcd^2e-4ac^2d^3+b^2cd^3}{2c(4ac-b^2)}+\frac{ex^3(2b^2e^2-3bcde+3c^2d^2-5ace^2)}{4ac-b^2}-\frac{3ex(a^2ce^2-ab^2e^2+3abcde+ac^2d^2-b^2cd^2)}{c(4ac-b^2)}-\frac{3ex^2(-b^3e^2+b^2cde-3bc^2d^2+abce^2+8ac^2de)}{2c(4ac-b^2)}}{x^2(b^2+2ac)+a^2+c^2x^4+2abx+2bcx^3}-\frac{6e\,\mathrm{atan}\left(\frac{\left(\frac{3e(b^3-4abc)(cd^2-bde+ae^2)}{(4ac-b^2)^{5/2}}-\frac{6cex(cd^2-bde+ae^2)}{(4ac-b^2)^{3/2}}\right)(4ac-b^2)}{3cd^2e-3bde^2+3ae^3}\right)(cd^2-bde+ae^2)}{(4ac-b^2)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((3*a^2*b*e^3 - 4*a*c^2*d^3 + b^2*c*d^3 - 12*a^2*c*d*e^2 + 3*a*b*c*d^2*e)/(
2*c*(4*a*c - b^2)) + (e*x^3*(2*b^2*e^2 + 3*c^2*d^2 - 5*a*c*e^2 - 3*b*c*d*e)
)/(4*a*c - b^2) - (3*e*x*(a*c^2*d^2 - a*b^2*e^2 + a^2*c*e^2 - b^2*c*d^2 + 3
*a*b*c*d*e))/(c*(4*a*c - b^2)) - (3*e*x^2*(a*b*c*e^2 - 3*b*c^2*d^2 - b^3*e^
2 + 8*a*c^2*d*e + b^2*c*d*e))/(2*c*(4*a*c - b^2)))/(x^2*(2*a*c + b^2) + a^2
 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) - (6*e*atan((((3*e*(b^3 - 4*a*b*c)*(a*e^2
 + c*d^2 - b*d*e))/(4*a*c - b^2)^(5/2) - (6*c*e*x*(a*e^2 + c*d^2 - b*d*e))/
(4*a*c - b^2)^(3/2))*(4*a*c - b^2))/(3*a*e^3 - 3*b*d*e^2 + 3*c*d^2*e))*(a*e
^2 + c*d^2 - b*d*e))/(4*a*c - b^2)^(3/2)
```

sympy [B] time = 40.98, size = 762, normalized size = 6.05

$$-3e\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)\log\left(x+\frac{-48a^2c^2e\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)+24ab^2ce\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)+3abe^3-3b^4e\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)-3b^2de^2+3bcd^2e}{6ace^3-6bcde^2+6c^2d^2e}\right)+3e\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)\log\left(x+\frac{48a^2c^2e\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)-24ab^2ce\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)+3abe^3+3b^4e\sqrt{-\frac{1}{(4ac-b^2)^3}}(ae^2-bde+cd^2)-3b^2de^2+3bcd^2e}{6ace^3-6bcde^2+6c^2d^2e}\right)+\frac{3a^2be^3-12a^2cde^2+3abcd^2e-4ac^2d^3+b^2cd^3+x^3(-10ac^2e^3+4b^2ce^3-6bc^2de^2+6c^3d^2e)+x^2(-3abce^3-24ac^2de^2+3b^3e^3-3b^2cde^2+9bc^2d^2e)+x(-6a^2ce^3+6ab^2e^3-18abcde^2-6ac^2d^2e+6b^2cd^2e)}{8a^3c^2-2a^2b^2c+x^4(8ac^4-2b^2c^3)+x^3(16abc^3-4b^3c^2)+x^2(16a^2c^3+4ab^2c^2-2b^4c)+x(16a^2bc^2-4ab^3c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**3,x)
```

```
[Out] -3*e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2)*log(x + (-48*a**2
*c**2*e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) + 24*a*b**2*c*
e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) + 3*a*b*e**3 - 3*b**
4*e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) - 3*b**2*d*e**2 +
3*b*c*d**2*e)/(6*a*c*e**3 - 6*b*c*d*e**2 + 6*c**2*d**2*e)) + 3*e*sqrt(-1/(4
*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2)*log(x + (48*a**2*c**2*e*sqrt(-1/
(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) - 24*a*b**2*c*e*sqrt(-1/(4*a*c
 - b**2)**3)*(a*e**2 - b*d*e + c*d**2) + 3*a*b*e**3 + 3*b**4*e*sqrt(-1/(4*a
*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) - 3*b**2*d*e**2 + 3*b*c*d**2*e)/(6
*a*c*e**3 - 6*b*c*d*e**2 + 6*c**2*d**2*e)) + (3*a**2*b*e**3 - 12*a**2*c*d*e
**2 + 3*a*b*c*d**2*e - 4*a*c**2*d**3 + b**2*c*d**3 + x**3*(-10*a*c**2*e**3
+ 4*b**2*c*e**3 - 6*b*c**2*d*e**2 + 6*c**3*d**2*e) + x**2*(-3*a*b*c*e**3 -
24*a*c**2*d*e**2 + 3*b**3*e**3 - 3*b**2*c*d*e**2 + 9*b*c**2*d**2*e) + x*(-6
*a**2*c*e**3 + 6*a*b**2*e**3 - 18*a*b*c*d*e**2 - 6*a*c**2*d**2*e + 6*b**2*c
*d**2*e))/(8*a**3*c**2 - 2*a**2*b**2*c + x**4*(8*a*c**4 - 2*b**2*c**3) + x*
*3*(16*a*b*c**3 - 4*b**3*c**2) + x**2*(16*a**2*c**3 + 4*a*b**2*c**2 - 2*b**
4*c) + x*(16*a**2*b*c**2 - 4*a*b**3*c))
```

3.1350 $\int \frac{(b+2cx)(d+ex)^2}{(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=112

$$-\frac{e(-2ae+x(2cd-be)+bd)}{(b^2-4ac)(a+bx+cx^2)}+\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)^{3/2}}-\frac{(d+ex)^2}{2(a+bx+cx^2)^2}$$

Rubi [A] time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {768, 638, 618, 206}

$$-\frac{e(-2ae+x(2cd-be)+bd)}{(b^2-4ac)(a+bx+cx^2)}+\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)^{3/2}}-\frac{(d+ex)^2}{2(a+bx+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^2/(2*(a + b*x + c*x^2)^2) - (e*(b*d - 2*a*e + (2*c*d - b*e)*x))/
((b^2 - 4*a*c)*(a + b*x + c*x^2)) + (2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/
Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} + e\int \frac{d+ex}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} - \frac{e(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{(e(2cd-be))\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac}$$

$$= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} - \frac{e(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{(2e(2cd-be))\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx\right.}{b^2-4ac}$$

$$= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} - \frac{e(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

Mathematica [**A**] time = 0.18, size = 143, normalized size = 1.28

$$\frac{1}{2}\left(\frac{e\left(4c(cdx-2ae)+b^2e+2bc(d-ex)\right)}{c\left(4ac-b^2\right)(a+x(b+cx))} - \frac{4e(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} + \frac{e^2(a+bx)-cd(d+2ex)}{c(a+x(b+cx))^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((e*(b^2*e + 4*c*(-2*a*e + c*d*x) + 2*b*c*(d - e*x)))/(c*(-b^2 + 4*a*c)*(a
+ x*(b + c*x))) + (e^2*(a + b*x) - c*d*(d + 2*e*x))/(c*(a + x*(b + c*x))^2)
 - (4*e*(-2*c*d + b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*
c)^(3/2))/2
```

IntegrateAlgebraic [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3, x]
```

fricas [**B**] time = 0.43, size = 1004, normalized size = 8.96

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(2*(b^2*c^2 - 4*a*c^3)*d*e - (b^3*c - 4*a*b*c^2)*e^2)*x^3 + (b^4 -
 8*a*b^2*c + 16*a^2*c^2)*d^2 + 2*(a*b^3 - 4*a^2*b*c)*d*e - 4*(a^2*b^2 - 4*a
^3*c)*e^2 + (6*(b^3*c - 4*a*b*c^2)*d*e - (b^4 + 4*a*b^2*c - 32*a^2*c^2)*e^2
)*x^2 - 2*(2*a^2*c*d*e - a^2*b*e^2 + (2*c^3*d*e - b*c^2*e^2)*x^4 + 2*(2*b*c
^2*d*e - b^2*c*e^2)*x^3 + (2*(b^2*c + 2*a*c^2)*d*e - (b^3 + 2*a*b*c)*e^2)*x
^2 + 2*(2*a*b*c*d*e - a*b^2*e^2)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*
c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(
2*(b^4 - 5*a*b^2*c + 4*a^2*c^2)*d*e - 3*(a*b^3 - 4*a^2*b*c)*e^2)*x)/(a^2*b^
4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2
```

```
*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*
x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x), -1/2*(2*(2*(b^2*c^2 - 4*a*
c^3)*d*e - (b^3*c - 4*a*b*c^2)*e^2)*x^3 + (b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^
2 + 2*(a*b^3 - 4*a^2*b*c)*d*e - 4*(a^2*b^2 - 4*a^3*c)*e^2 + (6*(b^3*c - 4*a
*b*c^2)*d*e - (b^4 + 4*a*b^2*c - 32*a^2*c^2)*e^2)*x^2 - 4*(2*a^2*c*d*e - a^
2*b*e^2 + (2*c^3*d*e - b*c^2*e^2)*x^4 + 2*(2*b*c^2*d*e - b^2*c*e^2)*x^3 + (
2*(b^2*c + 2*a*c^2)*d*e - (b^3 + 2*a*b*c)*e^2)*x^2 + 2*(2*a*b*c*d*e - a*b^2
*e^2)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4
*a*c)) + 2*(2*(b^4 - 5*a*b^2*c + 4*a^2*c^2)*d*e - 3*(a*b^3 - 4*a^2*b*c)*e^2
)*x)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*
c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c +
32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)]
```

giac [A] time = 0.17, size = 183, normalized size = 1.63

$$-\frac{2\left(2\,cde-be^{2}\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{2}-4\,ac\right)\sqrt{-b^{2}+4\,ac}}-\frac{4\,c^{2}dx^{3}e-2\,bcx^{3}e^{2}+6\,bcdx^{2}e-b^{2}x^{2}e^{2}-8\,acx^{2}e^{2}+4\,b^{2}dxe-4\,acdxe+b^{2}d^{2}-4\,acd^{2}-6\,abxe^{2}+2\,abde-4\,a^{2}e^{2}}{2\left(cx^{2}+bx+a\right)^{2}\left(b^{2}-4\,ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -2*(2*c*d*e - b*e^2)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2 - 4*a*c)*
sqrt(-b^2 + 4*a*c)) - 1/2*(4*c^2*d*x^3*e - 2*b*c*x^3*e^2 + 6*b*c*d*x^2*e -
b^2*x^2*e^2 - 8*a*c*x^2*e^2 + 4*b^2*d*x*e - 4*a*c*d*x*e + b^2*d^2 - 4*a*c*d
^2 - 6*a*b*x*e^2 + 2*a*b*d*e - 4*a^2*e^2)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c
))
```

maple [B] time = 0.05, size = 229, normalized size = 2.04

$$-\frac{2b\,e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{4cde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{-\frac{(be-2cd)ce\,x^{3}}{4ac-b^{2}}-\frac{\left(8ace+e\,b^{2}-6bcd\right)e\,x^{2}}{2\left(4ac-b^{2}\right)}-\frac{\left(3abe+2acd-2b^{2}d\right)ex}{4ac-b^{2}}-\frac{4a^{2}e^{2}-2abde+4ac\,d^{2}-b^{2}d^{2}}{2\left(4ac-b^{2}\right)}}{\left(c\,x^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-(b*e-2*c*d)*c*e/(4*a*c-b^2)*x^3-1/2*e*(8*a*c*e+b^2*e-6*b*c*d)/(4*a*c-b^2)
*x^2-e*(3*a*b*e+2*a*c*d-2*b^2*d)/(4*a*c-b^2)*x-1/2*(4*a^2*e^2-2*a*b*d*e+4*a
*c*d^2-b^2*d^2)/(4*a*c-b^2))/(c*x^2+b*x+a)^2-2*e^2/(4*a*c-b^2)^(3/2)*arctan
((2*c*x+b)/(4*a*c-b^2)^(1/2))*b+4*e/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a
*c-b^2)^(1/2))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.00, size = 284, normalized size = 2.54

$$\frac{2\,e\,\mathrm{atan}\left(\frac{\left(4\,a\,c-b^{2}\right)\left(\frac{e\,\left(b^{3}-4\,a\,b\,c\right)\,\left(b\,e-2\,c\,d\right)}{\left(4\,a\,c-b^{2}\right)^{5/2}}-\frac{2\,c\,e\,x\,\left(b\,e-2\,c\,d\right)}{\left(4\,a\,c-b^{2}\right)^{3/2}}\right)}{b\,e^{2}-2\,c\,d\,e}\right)\,\left(b\,e-2\,c\,d\right)}{\left(4\,a\,c-b^{2}\right)^{3/2}}-\frac{\frac{4\,a^{2}\,e^{2}-2\,a\,b\,d\,e+4\,c\,a\,d^{2}-b^{2}\,d^{2}}{2\,\left(4\,a\,c-b^{2}\right)}-\frac{e\,x^{3}\,\left(2\,c^{2}\,d-b\,c\,e\right)}{4\,a\,c-b^{2}}+\frac{e\,x\,\left(-2\,d\,b^{2}+3\,a\,e\,b+2\,a\,c\,d\right)}{4\,a\,c-b^{2}}+\frac{e\,x^{2}\,\left(e\,b^{2}-6\,c\,d\,b+8\,a\,c\,e\right)}{2\,\left(4\,a\,c-b^{2}\right)}}{x^{2}\,\left(b^{2}+2\,a\,c\right)+a^{2}+c^{2}\,x^{4}+2\,a\,b\,x+2\,b\,c\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*e*atan(((4*a*c - b^2)*((e*(b^3 - 4*a*b*c)*(b*e - 2*c*d))/(4*a*c - b^2)^(
5/2) - (2*c*e*x*(b*e - 2*c*d))/(4*a*c - b^2)^(3/2)))/(b*e^2 - 2*c*d*e))*(b*
e - 2*c*d))/(4*a*c - b^2)^(3/2) - ((4*a^2*e^2 - b^2*d^2 + 4*a*c*d^2 - 2*a*b
*d*e)/(2*(4*a*c - b^2)) - (e*x^3*(2*c^2*d - b*c*e))/(4*a*c - b^2) + (e*x*(3
*a*b*e - 2*b^2*d + 2*a*c*d))/(4*a*c - b^2) + (e*x^2*(b^2*e + 8*a*c*e - 6*b*
c*d))/(2*(4*a*c - b^2)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b
*c*x^3)
```

sympy [B] time = 12.58, size = 530, normalized size = 4.73

$$e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)\log\left(x+\frac{-16a^2c^2e\sqrt{-\frac{1}{(4ac-b^2)^3}}\,(be-2cd)+8ab^2ce\sqrt{-\frac{1}{(4ac-b^2)^3}}\,(be-2cd)-b^4e\sqrt{-\frac{1}{(4ac-b^2)^3}}\,(be-2cd)+b^2e^2-2bcde}{2bce^2-4c^2de}\right)-e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)\log\left(x+\frac{16a^2c^2e\sqrt{-\frac{1}{(4ac-b^2)^3}}\,(be-2cd)-8ab^2ce\sqrt{-\frac{1}{(4ac-b^2)^3}}\,(be-2cd)+b^4e\sqrt{-\frac{1}{(4ac-b^2)^3}}\,(be-2cd)+b^2e^2-2bcde}{2bce^2-4c^2de}\right)+\frac{-4a^2e^2+2abde-4acd^2+b^2d^2+x^3\left(-2bce^2+4c^2de\right)+x^2\left(-8ace^2-b^2e^2+6bcde\right)+x\left(-6abe^2-4acde+4b^2de\right)}{8a^3c-2a^2b^2+x^4\left(8ac^3-2b^2c^2\right)+x^3\left(16abc^2-4b^3c\right)+x^2\left(16a^2c^2+4ab^2c-2b^4\right)+x\left(16a^2bc-4ab^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**3,x)
```

```
[Out] e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d)*log(x + (-16*a**2*c**2*e*sqrt(-1
/(4*a*c - b**2)**3)*(b*e - 2*c*d) + 8*a*b**2*c*e*sqrt(-1/(4*a*c - b**2)**3)
*(b*e - 2*c*d) - b**4*e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**2*e**
2 - 2*b*c*d*e)/(2*b*c*e**2 - 4*c**2*d*e)) - e*sqrt(-1/(4*a*c - b**2)**3)*(b
*e - 2*c*d)*log(x + (16*a**2*c**2*e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d
) - 8*a*b**2*c*e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**4*e*sqrt(-1/
(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**2*e**2 - 2*b*c*d*e)/(2*b*c*e**2 - 4*c
**2*d*e)) + (-4*a**2*e**2 + 2*a*b*d*e - 4*a*c*d**2 + b**2*d**2 + x**3*(-2*b
*c*e**2 + 4*c**2*d*e) + x**2*(-8*a*c*e**2 - b**2*e**2 + 6*b*c*d*e) + x*(-6*
a*b*e**2 - 4*a*c*d*e + 4*b**2*d*e))/(8*a**3*c - 2*a**2*b**2 + x**4*(8*a*c**
3 - 2*b**2*c**2) + x**3*(16*a*b*c**2 - 4*b**3*c) + x**2*(16*a**2*c**2 + 4*a
*b**2*c - 2*b**4) + x*(16*a**2*b*c - 4*a*b**3))
```

3.1351 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=94

$$-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2ce\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}+\frac{-d-ex}{2\left(a+bx+cx^2\right)^2}$$

Rubi [A] time = 0.04, antiderivative size = 91, normalized size of antiderivative = 0.97, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {768, 614, 618, 206}

$$-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2ce\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{d+ex}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)/(2*(a + b*x + c*x^2)^2) - (e*(b + 2*c*x))/(2*(b^2 - 4*a*c)*(a +
b*x + c*x^2)) + (2*c*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c
)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}+\frac{1}{2}e\int \frac{1}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(ce)\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac}$$

$$= -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(2ce)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2$$

$$= -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2ce\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

Mathematica [**A**] time = 0.12, size = 93, normalized size = 0.99

$$\frac{1}{2}\left(-\frac{e(b+2cx)}{\left(b^2-4ac\right)(a+x(b+cx))}+\frac{4ce\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}-\frac{d+ex}{(a+x(b+cx))^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (-((d + e*x)/(a + x*(b + c*x))^2) - (e*(b + 2*c*x))/((b^2 - 4*a*c)*(a + x*(
b + c*x))) + (4*c*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^
(3/2))/2
```

IntegrateAlgebraic [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3, x]
```

fricas [**B**] time = 0.43, size = 681, normalized size = 7.24

$$\left[-\frac{2\left(b^2c^2-4ac^3\right)ex^3+3\left(b^3c-4abc^2\right)ex^2+2\left(b^4-5ab^2c+4a^2c^2\right)ex+2\left(c^3ex^4+2bc^2ex^3+2abcex+a^2ce+\left(b^2c+2ac^2\right)ex^2\right)\sqrt{b^2-4ac}\log\left(\frac{2c^2x^2+2bcx+b^2-2ac-\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+\left(b^4-8ab^2c+16a^2c^2\right)d+\left(ab^3-4a^2bc\right)e}{2\left(a^2b^4-8a^3b^2c+16a^4c^2+\left(b^4c^2-8ab^2c^3+16a^2c^4\right)x^4+2\left(b^5c-8ab^3c^2+16a^2bc^3\right)x^3+\left(b^6-6ab^4c+32a^3c^3\right)x^2+2\left(ab^5-8a^2b^3c+16a^3bc^2\right)x\right)}, -\frac{2\left(b^2c^2-4ac^3\right)ex^3+3\left(b^3c-4abc^2\right)ex^2+2\left(b^4-5ab^2c+4a^2c^2\right)ex-4\left(c^3ex^4+2bc^2ex^3+2abcex+a^2ce+\left(b^2c+2ac^2\right)ex^2\right)\sqrt{-b^2+4ac}\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+\left(b^4-8ab^2c+16a^2c^2\right)d+\left(ab^3-4a^2bc\right)e}{2\left(a^2b^4-8a^3b^2c+16a^4c^2+\left(b^4c^2-8ab^2c^3+16a^2c^4\right)x^4+2\left(b^5c-8ab^3c^2+16a^2bc^3\right)x^3+\left(b^6-6ab^4c+32a^3c^3\right)x^2+2\left(ab^5-8a^2b^3c+16a^3bc^2\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(b^2*c^2 - 4*a*c^3)*e*x^3 + 3*(b^3*c - 4*a*b*c^2)*e*x^2 + 2*(b^4 -
 5*a*b^2*c + 4*a^2*c^2)*e*x + 2*(c^3*e*x^4 + 2*b*c^2*e*x^3 + 2*a*b*c*e*x +
a^2*c*e + (b^2*c + 2*a*c^2)*e*x^2)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c
*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + (b^4
 - 8*a*b^2*c + 16*a^2*c^2)*d + (a*b^3 - 4*a^2*b*c)*e)/(a^2*b^4 - 8*a^3*b^2*
c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*
b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5
 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x), -1/2*(2*(b^2*c^2 - 4*a*c^3)*e*x^3 + 3*(b
^3*c - 4*a*b*c^2)*e*x^2 + 2*(b^4 - 5*a*b^2*c + 4*a^2*c^2)*e*x - 4*(c^3*e*x^
4 + 2*b*c^2*e*x^3 + 2*a*b*c*e*x + a^2*c*e + (b^2*c + 2*a*c^2)*e*x^2)*sqrt(-
```

```
b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (b^4 -
 8*a*b^2*c + 16*a^2*c^2)*d + (a*b^3 - 4*a^2*b*c)*e)/(a^2*b^4 - 8*a^3*b^2*c
+ 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^
3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 -
 8*a^2*b^3*c + 16*a^3*b*c^2)*x)]
```

giac [A] time = 0.16, size = 122, normalized size = 1.30

$$-\frac{2\,c\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)e}{\left(b^2-4\,ac\right)\sqrt{-b^2+4\,ac}}-\frac{2\,c^2x^3e+3\,bcx^2e+2\,b^2xe-2\,acxe+b^2d-4\,acd+abe}{2\left(cx^2+bx+a\right)^2\left(b^2-4\,ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -2*c*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))*e/((b^2 - 4*a*c)*sqrt(-b^2 + 4*
a*c)) - 1/2*(2*c^2*x^3*e + 3*b*c*x^2*e + 2*b^2*x*e - 2*a*c*x*e + b^2*d - 4*
a*c*d + a*b*e)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c))
```

maple [A] time = 0.06, size = 146, normalized size = 1.55

$$\frac{2ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{\frac{c^2e\,x^3}{4ac-b^2}+\frac{3bce\,x^2}{2\left(4ac-b^2\right)}-\frac{\left(ac-b^2\right)ex}{4ac-b^2}+\frac{abe-4acd+b^2d}{8ac-2b^2}}{\left(c\,x^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (c^2*e/(4*a*c-b^2)*x^3+3/2*b*c*e/(4*a*c-b^2)*x^2-e*(a*c-b^2)/(4*a*c-b^2)*x+
1/2*(a*b*e-4*a*c*d+b^2*d)/(4*a*c-b^2))/(c*x^2+b*x+a)^2+2*c*e/(4*a*c-b^2)^(3
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.91, size = 213, normalized size = 2.27

$$\frac{\frac{d\,b^2+a\,e\,b-4\,a\,c\,d}{2\left(4\,a\,c-b^2\right)}+\frac{c^2\,e\,x^3}{4\,a\,c-b^2}-\frac{e\,x\left(a\,c-b^2\right)}{4\,a\,c-b^2}+\frac{3\,b\,c\,e\,x^2}{2\left(4\,a\,c-b^2\right)}}{x^2\,\left(b^2+2\,a\,c\right)+a^2+c^2\,x^4+2\,a\,b\,x+2\,b\,c\,x^3}-\frac{2\,c\,e\,\mathrm{atan}\left(-\frac{\left(\frac{2\,c^2\,e\,x}{\left(4\,a\,c-b^2\right)^{3/2}}-\frac{c\,e\left(b^3-4\,a\,b\,c\right)}{\left(4\,a\,c-b^2\right)^{5/2}}\right)\left(4\,a\,c-b^2\right)}{c\,e}\right)}{\left(4\,a\,c-b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((b^2*d + a*b*e - 4*a*c*d)/(2*(4*a*c - b^2)) + (c^2*e*x^3)/(4*a*c - b^2) -
(e*x*(a*c - b^2))/(4*a*c - b^2) + (3*b*c*e*x^2)/(2*(4*a*c - b^2)))/(x^2*(2*
```

```
a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) - (2*c*e*atan(-(((2*c^2*e
*x)/(4*a*c - b^2)^(3/2) - (c*e*(b^3 - 4*a*b*c))/(4*a*c - b^2)^(5/2))*(4*a*c
 - b^2))/(c*e)))/(4*a*c - b^2)^(3/2)
```

sympy [B] time = 3.40, size = 377, normalized size = 4.01

$$-ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\log\left(x+\frac{-16a^2c^3e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}+8ab^2c^2e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}-b^4ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}+bce}{2c^2e}\right)+ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\log\left(x+\frac{16a^2c^3e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}-8ab^2c^2e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}+b^4ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}+bce}{2c^2e}\right)+\frac{abe-4acd+b^2d+3bcex^2+2c^2ex^3+x\left(-2ace+2b^2e\right)}{8a^3c-2a^2b^2+x^4\left(8ac^3-2b^2c^2\right)+x^3\left(16abc^2-4b^3c\right)+x^2\left(16a^2c^2+4ab^2c-2b^4\right)+x\left(16a^2bc-4ab^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**3,x)
```

```
[Out] -c*e*sqrt(-1/(4*a*c - b**2)**3)*log(x + (-16*a**2*c**3*e*sqrt(-1/(4*a*c - b
**2)**3) + 8*a*b**2*c**2*e*sqrt(-1/(4*a*c - b**2)**3) - b**4*c*e*sqrt(-1/(4
*a*c - b**2)**3) + b*c*e)/(2*c**2*e)) + c*e*sqrt(-1/(4*a*c - b**2)**3)*log(
x + (16*a**2*c**3*e*sqrt(-1/(4*a*c - b**2)**3) - 8*a*b**2*c**2*e*sqrt(-1/(4
*a*c - b**2)**3) + b**4*c*e*sqrt(-1/(4*a*c - b**2)**3) + b*c*e)/(2*c**2*e))
 + (a*b*e - 4*a*c*d + b**2*d + 3*b*c*e*x**2 + 2*c**2*e*x**3 + x*(-2*a*c*e +
 2*b**2*e))/(8*a**3*c - 2*a**2*b**2 + x**4*(8*a*c**3 - 2*b**2*c**2) + x**3*
(16*a*b*c**2 - 4*b**3*c) + x**2*(16*a**2*c**2 + 4*a*b**2*c - 2*b**4) + x*(1
6*a**2*b*c - 4*a*b**3))
```

3.1352 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=16

$$-\frac{1}{2\left(a+bx+cx^2\right)^2}$$

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$-\frac{1}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/(2*(a + b*x + c*x^2)^2)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^3}\,dx=-\frac{1}{2\left(a+bx+cx^2\right)^2}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 0.94

$$-\frac{1}{2(a+x(b+cx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*1/(a + x*(b + c*x))^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.41, size = 39, normalized size = 2.44

$$-\frac{1}{2\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/2/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)
```

giac [A] time = 0.16, size = 14, normalized size = 0.88

$$-\frac{1}{2\left(cx^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/2/(c*x^2 + b*x + a)^2
```

maple [A] time = 0.04, size = 15, normalized size = 0.94

$$-\frac{1}{2\left(c\,x^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -1/2/(c*x^2+b*x+a)^2
```

maxima [A] time = 0.69, size = 14, normalized size = 0.88

$$-\frac{1}{2\left(cx^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/2/(c*x^2 + b*x + a)^2
```

mupad [B] time = 0.06, size = 43, normalized size = 2.69

$$-\frac{1}{2\left(x^2\left(b^2+2\,a\,c\right)+a^2+c^2\,x^4+2\,a\,b\,x+2\,b\,c\,x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^3,x)
```

```
[Out] -1/(2*(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3))
```

sympy [B] time = 0.82, size = 44, normalized size = 2.75

$$-\frac{1}{2a^2+4abx+4bcx^3+2c^2x^4+x^2\left(4ac+2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**3,x)
```

```
[Out] -1/(2*a**2 + 4*a*b*x + 4*b*c*x**3 + 2*c**2*x**4 + x**2*(4*a*c + 2*b**2))
```

3.1353 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=397

$$\frac{cex\left(b^2-4ac\right)-\left(b^2-4ac\right)(cd-be)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2\left(ae^2-bde+cd^2\right)}-\frac{e\left(2b^2ce^3(3ae+bd)-4c^3d^2e(bd-3ae)-6ac^2e^3(ae+2bd)-b^4\right.}{\left(b^2-4ac\right)^{3/2}\left(ae^2-bde+cd^2\right)^3}$$

Rubi [A] time = 0.82, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {822, 800, 634, 618, 206, 628}

$$-\frac{e\left(-2cx\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)-bc\left(cd^2-7ae^2\right)-8ac^2de+3b^2cde-2b^3e^2\right)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)^2}-\frac{e\left(2b^2ce^3(3ae+bd)-4c^3d^2e(bd-3ae)-6ac^2e^3(ae+2bd)-b^4e^4+2c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}\left(ae^2-bde+cd^2\right)^3}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2\left(ae^2-bde+cd^2\right)}+\frac{e^4(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^3}-\frac{e^4(2cd-be)\log(d+ex)}{\left(ae^2-bde+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] -((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/(2*(b^2 - 4*a*c)*(c*d^2
- b*d*e + a*e^2)*(a + b*x + c*x^2)^2) - (e*(3*b^2*c*d*e - 8*a*c^2*d*e - 2*b
^3*e^2 - b*c*(c*d^2 - 7*a*e^2) - 2*c*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e)
)*x))/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2)) - (e*(2
*c^4*d^4 - b^4*e^4 - 4*c^3*d^2*e*(b*d - 3*a*e) - 6*a*c^2*e^3*(2*b*d + a*e)
+ 2*b^2*c*e^3*(b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/((b^2
- 4*a*c)^(3/2)*(c*d^2 - b*d*e + a*e^2)^3) - (e^4*(2*c*d - b*e)*Log[d + e*x]
)/(c*d^2 - b*d*e + a*e^2)^3 + (e^4*(2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*(
c*d^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
```

```
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx = -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\left(b^2-4ac\right)e(cd-2be)-3c\left(b^2-4ac\right)e^2x}{(d+ex)\left(a+bx+cx^2\right)^2}\,d}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2-b\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2-b\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2-b\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2-b\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2-b\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2-b\right.}{2\left(b^2-4ac\right)}$$

Mathematica [A] time = 1.11, size = 356, normalized size = 0.90

$$\frac{1}{2}\left(-\frac{2e\left(-2b^2ce^3(3ae+bd)+4c^3d^2e(bd-3ae)+6ac^2e^3(ae+2bd)+b^4e^4-2c^4d^4\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}\left(e(bd-ae)-cd^2\right)^3}+\frac{e\left(bc\left(cd(d-2ex)-7ae^2\right)+2c^2\left(ae(4d-3ex)+cd^2x\right)+2b^3e^2+b^2ce(2ex-3d)\right)}{\left(b^2-4ac\right)(a+x(b+cx))\left(e(ae-bd)+cd^2\right)^2}+\frac{2e^4(be-2cd)\log(d+ex)}{\left(e(ae-bd)+cd^2\right)^3}+\frac{e^4(2cd-be)\log(a+x(b+cx))}{\left(e(ae-bd)+cd^2\right)^3}+\frac{be-cd+cex}{(a+x(b+cx))^2\left(e(ae-bd)+cd^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((-(c*d) + b*e + c*e*x)/((c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^2) +
(e*(2*b^3*e^2 + b^2*c*e*(-3*d + 2*e*x) + 2*c^2*(c*d^2*x + a*e*(4*d - 3*e*x)
) + b*c*(-7*a*e^2 + c*d*(d - 2*e*x))))/((b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) +
```

```
a*e))^2*(a + x*(b + c*x))) - (2*e*(-2*c^4*d^4 + b^4*e^4 + 4*c^3*d^2*e*(b*d
- 3*a*e) + 6*a*c^2*e^3*(2*b*d + a*e) - 2*b^2*c*e^3*(b*d + 3*a*e))*ArcTan[(b
 + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/((-b^2 + 4*a*c)^(3/2)*(-(c*d^2) + e*(b*d - a
*e))^3) + (2*e^4*(-2*c*d + b*e)*Log[d + e*x])/(c*d^2 + e*(-(b*d) + a*e))^3
+ (e^4*(2*c*d - b*e)*Log[a + x*(b + c*x)])/(c*d^2 + e*(-(b*d) + a*e))^3)/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3), x]
```

fricas [B] time = 83.85, size = 6667, normalized size = 16.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*((b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^5 - (3*b^5*c^2 - 23*a*b^3*c^3
 + 44*a^2*b*c^4)*d^4*e + (3*b^6*c - 18*a*b^4*c^2 + 8*a^2*b^2*c^3 + 64*a^3*c
^4)*d^3*e^2 - (b^7 + a*b^5*c - 50*a^2*b^3*c^2 + 120*a^3*b*c^3)*d^2*e^3 + (4
*a*b^6 - 27*a^2*b^4*c + 32*a^3*b^2*c^2 + 48*a^4*c^3)*d*e^4 - (3*a^2*b^5 - 2
3*a^3*b^3*c + 44*a^4*b*c^2)*e^5 - 2*((b^2*c^5 - 4*a*c^6)*d^4*e - 2*(b^3*c^4
 - 4*a*b*c^5)*d^3*e^2 + 2*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^3 - (b^
5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d*e^4 + (a*b^4*c^2 - 7*a^2*b^2*c^3 + 12*
a^3*c^4)*e^5)*x^3 - (3*(b^3*c^4 - 4*a*b*c^5)*d^4*e - 8*(b^4*c^3 - 5*a*b^2*c
^4 + 4*a^2*c^5)*d^3*e^2 + 9*(b^5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^2*e^3 -
 4*(b^6*c - 6*a*b^4*c^2 + 6*a^2*b^2*c^3 + 8*a^3*c^4)*d*e^4 + (4*a*b^5*c - 2
9*a^2*b^3*c^2 + 52*a^3*b*c^3)*e^5)*x^2 - (2*a^2*c^4*d^4*e - 4*a^2*b*c^3*d^3
*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^2*b^4 -
6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*a*c^5*d^
2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)
*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e^3 + 2*(
b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*e^5)*x^3
 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e - 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 + 12*(a*b
^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3)*d*e^4
- (b^6 - 4*a*b^4*c - 6*a^2*b^2*c^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*b*c^4*d^
4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a^2*b^2*c
^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c + 6*a^3*b*c^2)*e^5)*x)*sqrt(b^2 - 4*a*c)*l
og((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x
^2 + b*x + a)) - 2*((b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 3*(b^5*c^2
- 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^3*e^2 + 3*(b^6*c - 6*a*b^4*c^2 + 6*a^2*b^2*c
^3 + 8*a^3*c^4)*d^2*e^3 - (b^7 - 4*a*b^5*c - 10*a^2*b^3*c^2 + 40*a^3*b*c^3)
*d*e^4 + (a*b^6 - 6*a^2*b^4*c + 3*a^3*b^2*c^2 + 20*a^4*c^3)*e^5)*x - (2*(a^
2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a
^4*b*c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 -
8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2
*b*c^4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c
 - 6*a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*
x^2 + 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*
b^4*c + 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a) + 2*(2*(a^2*b^4*c - 8*
a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e^
5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b^3*c^3
+ 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d*e^
4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*a*b^4*c
```

```
^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 + 2*(2*(
a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c + 16*a
^3*b^2*c^2)*e^5)*x)*log(e*x + d))/((a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^
5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^5*e + 3*(a^2*b^6*
c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4*e^2 - (a^2*b^7 - 2*a^3*
b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*(a^3*b^6 - 7*a^4*b^4*c +
 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*
c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e^6 + ((b^4*c^5 - 8*a*b^2
*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^5*e + 3
*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^6)*d^4*e^2 - (b^7*c^2 -
2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^3 + 3*(a*b^6*c^2 - 7*a^2
*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*(a^2*b^5*c^2 - 8*a^3*b^3
*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*e^6
)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^6 - 3*(b^6*c^3 - 8*a*b^
4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^5*c^3 + 8*a^2*b^3*c^4 +
16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a^2*b^4*c^3 + 96*a^3*b^2*
c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d
^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*c^3)*d*e^5 + (a^3*b^5*c
- 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^3 - 6*a*b^4*c^4 + 32*a^3
*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5)*d^5*e + 3*(b^8*c - 5*a
*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*c^5)*d^4*e^2 - (b^9 - 36
*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*e^3 + 3*(a*b^8 - 5*a^2*b
^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)*d^2*e^4 - 3*(a^2*b^7 -
6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*e^
6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^6 - 3*(a*b^6*c^2 -
 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3
*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b^6*c - 32*a^3*b^4*c^2 +
96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c + 8*a^4*b^3*c^2 + 16*a^5
*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5*b^2*c^2)*d*e^5 + (a^4*b
^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x), -1/2*((b^4*c^3 - 8*a*b^2*c^4 + 16
*a^2*c^5)*d^5 - (3*b^5*c^2 - 23*a*b^3*c^3 + 44*a^2*b*c^4)*d^4*e + (3*b^6*c
- 18*a*b^4*c^2 + 8*a^2*b^2*c^3 + 64*a^3*c^4)*d^3*e^2 - (b^7 + a*b^5*c - 50*
a^2*b^3*c^2 + 120*a^3*b*c^3)*d^2*e^3 + (4*a*b^6 - 27*a^2*b^4*c + 32*a^3*b^2
*c^2 + 48*a^4*c^3)*d*e^4 - (3*a^2*b^5 - 23*a^3*b^3*c + 44*a^4*b*c^2)*e^5 -
2*((b^2*c^5 - 4*a*c^6)*d^4*e - 2*(b^3*c^4 - 4*a*b*c^5)*d^3*e^2 + 2*(b^4*c^3
 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^3 - (b^5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)
*d*e^4 + (a*b^4*c^2 - 7*a^2*b^2*c^3 + 12*a^3*c^4)*e^5)*x^3 - (3*(b^3*c^4 -
4*a*b*c^5)*d^4*e - 8*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^3*e^2 + 9*(b^5*c
^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^2*e^3 - 4*(b^6*c - 6*a*b^4*c^2 + 6*a^2*b^
2*c^3 + 8*a^3*c^4)*d*e^4 + (4*a*b^5*c - 29*a^2*b^3*c^2 + 52*a^3*b*c^3)*e^5)
*x^2 + 2*(2*a^2*c^4*d^4*e - 4*a^2*b*c^3*d^3*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a
^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (
2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*a*c^5*d^2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*
d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4
*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e^3 + 2*(b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (
b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*e^5)*x^3 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e
- 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 + 12*(a*b^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*
(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3)*d*e^4 - (b^6 - 4*a*b^4*c - 6*a^2*b^2*c
^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*b*c^4*d^4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a
^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a^2*b^2*c^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c
 + 6*a^3*b*c^2)*e^5)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*
x + b)/(b^2 - 4*a*c)) - 2*((b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 3*(b
^5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^3*e^2 + 3*(b^6*c - 6*a*b^4*c^2 + 6*a^
2*b^2*c^3 + 8*a^3*c^4)*d^2*e^3 - (b^7 - 4*a*b^5*c - 10*a^2*b^3*c^2 + 40*a^3
*b*c^3)*d*e^4 + (a*b^6 - 6*a^2*b^4*c + 3*a^3*b^2*c^2 + 20*a^4*c^3)*e^5)*x -
 (2*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c
 + 16*a^4*b*c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5
*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 +
 16*a^2*b*c^4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2
```

```
*(b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3
)*e^5)*x^2 + 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 -
 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a) + 2*(2*(a^2*b^4
*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*
c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b
^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^
4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*
a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 +
 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c
 + 16*a^3*b^2*c^2)*e^5)*x)*log(e*x + d))/((a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16
*a^4*c^5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^5*e + 3*(a
^2*b^6*c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4*e^2 - (a^2*b^7 -
 2*a^3*b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*(a^3*b^6 - 7*a^4*
b^4*c + 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 - 8*a^5*b^3*c + 16
*a^6*b*c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e^6 + ((b^4*c^5 -
8*a*b^2*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^
5*e + 3*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^6)*d^4*e^2 - (b^7
*c^2 - 2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^3 + 3*(a*b^6*c^2
- 7*a^2*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*(a^2*b^5*c^2 - 8*
a^3*b^3*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c
^4)*e^6)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^6 - 3*(b^6*c^3 -
 8*a*b^4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^5*c^3 + 8*a^2*b^3
*c^4 + 16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a^2*b^4*c^3 + 96*a
^3*b^2*c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b
*c^4)*d^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*c^3)*d*e^5 + (a^3
*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^3 - 6*a*b^4*c^4 +
 32*a^3*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5)*d^5*e + 3*(b^8*
c - 5*a*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*c^5)*d^4*e^2 - (b
^9 - 36*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*e^3 + 3*(a*b^8 -
5*a^2*b^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)*d^2*e^4 - 3*(a^2
*b^7 - 6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*
c^3)*e^6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^6 - 3*(a*b^
6*c^2 - 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c - 7*a^2*b^5*c^2
+ 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b^6*c - 32*a^3*b^4
*c^2 + 96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c + 8*a^4*b^3*c^2 +
 16*a^5*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5*b^2*c^2)*d*e^5 +
 (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x)]
```

giac [B] time = 0.28, size = 1117, normalized size = 2.81

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*(2*c*d*e^4 - b*e^5)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b
^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^
2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (2*c*d*e^5 - b*e^6)*lo
g(abs(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^
4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 -
 3*a^2*b*d*e^6 + a^3*e^7) + (2*c^4*d^4*e - 4*b*c^3*d^3*e^2 + 12*a*c^3*d^2*e
^3 + 2*b^3*c*d*e^4 - 12*a*b*c^2*d*e^4 - b^4*e^5 + 6*a*b^2*c*e^5 - 6*a^2*c^2
*e^5)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^3*d^6 - 4*a*c^4*d^6 -
3*b^3*c^2*d^5*e + 12*a*b*c^3*d^5*e + 3*b^4*c*d^4*e^2 - 9*a*b^2*c^2*d^4*e^2
- 12*a^2*c^3*d^4*e^2 - b^5*d^3*e^3 - 2*a*b^3*c*d^3*e^3 + 24*a^2*b*c^2*d^3*e
^3 + 3*a*b^4*d^2*e^4 - 9*a^2*b^2*c*d^2*e^4 - 12*a^3*c^2*d^2*e^4 - 3*a^2*b^3
*d*e^5 + 12*a^3*b*c*d*e^5 + a^3*b^2*e^6 - 4*a^4*c*e^6)*sqrt(-b^2 + 4*a*c))
- 1/2*(b^2*c^3*d^5 - 4*a*c^4*d^5 - 3*b^3*c^2*d^4*e + 11*a*b*c^3*d^4*e + 3*b
^4*c*d^3*e^2 - 6*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 5*a
*b^3*c*d^2*e^3 + 30*a^2*b*c^2*d^2*e^3 + 4*a*b^4*d*e^4 - 11*a^2*b^2*c*d*e^4
```

```
- 12*a^3*c^2*d*e^4 - 3*a^2*b^3*e^5 + 11*a^3*b*c*e^5 - 2*(c^5*d^4*e - 2*b*c^
4*d^3*e^2 + 2*b^2*c^3*d^2*e^3 - 2*a*c^4*d^2*e^3 - b^3*c^2*d*e^4 + 2*a*b*c^3
*d*e^4 + a*b^2*c^2*e^5 - 3*a^2*c^3*e^5)*x^3 - (3*b*c^4*d^4*e - 8*b^2*c^3*d^
3*e^2 + 8*a*c^4*d^3*e^2 + 9*b^3*c^2*d^2*e^3 - 18*a*b*c^3*d^2*e^3 - 4*b^4*c*
d*e^4 + 8*a*b^2*c^2*d*e^4 + 8*a^2*c^3*d*e^4 + 4*a*b^3*c*e^5 - 13*a^2*b*c^2*
e^5)*x^2 - 2*(b^2*c^3*d^4*e - a*c^4*d^4*e - 3*b^3*c^2*d^3*e^2 + 6*a*b*c^3*d
^3*e^2 + 3*b^4*c*d^2*e^3 - 6*a*b^2*c^2*d^2*e^3 - 6*a^2*c^3*d^2*e^3 - b^5*d*
e^4 + 10*a^2*b*c^2*d*e^4 + a*b^4*e^5 - 2*a^2*b^2*c*e^5 - 5*a^3*c^2*e^5)*x)/
((c*d^2 - b*d*e + a*e^2)^3*(c*x^2 + b*x + a)^2*(b^2 - 4*a*c))
```

maple [B] time = 0.08, size = 3233, normalized size = 8.14

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 6/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^
(1/2))*c^2*a^2-2/(a*e^2-b*d*e+c*d^2)^3*e/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*c^4*d^4-2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^4
/(4*a*c-b^2)*x^3*a*b*d-6/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^2/(4*a*c-b
^2)*x*a*b*c^3*d^3-4/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^4/(4*a*c-b^
2)*x^2*a*b^2*d+9/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^3/(4*a*c-b^2)*
x^2*a*b*d^2+2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^4*e^3/(4*a*c-b^2)*x^3
*a*d^2+6/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a^2*c^3*d^
2+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*a*c^4*d^4+2/(a*e^
2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^4*e^2/(4*a*c-b^2)*x^3*b*d^3+2/(a*e^2-b*d
*e+c*d^2)^3/(c*x^2+b*x+a)^2*c*e^4/(4*a*c-b^2)*x^2*b^4*d-9/2/(a*e^2-b*d*e+c*
d^2)^3/(c*x^2+b*x+a)^2*c^2*e^3/(4*a*c-b^2)*x^2*b^3*d^2-4/(a*e^2-b*d*e+c*d^2
)^3/(c*x^2+b*x+a)^2*c^3*e^4/(4*a*c-b^2)*x^2*a^2*d-2/(a*e^2-b*d*e+c*d^2)^3/(
c*x^2+b*x+a)^2*c*e^5/(4*a*c-b^2)*x^2*a*b^3-4/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b
*x+a)^2*c^4*e^2/(4*a*c-b^2)*x^2*a*d^3+1/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+
a)^2/(4*a*c-b^2)*b^2*c^3*d^5-5/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a
*c-b^2)*a*b^3*c*d^2*e^3+13/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^5/
(4*a*c-b^2)*x^2*a^2*b+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^4/(4*a*
c-b^2)*x^3*b^3*d-2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^3/(4*a*c-b^2
)*x^3*b^2*d^2-3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*b^2*c^2
*d^3*e^2+11/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*b*c^3*d^4
*e-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^5/(4*a*c-b^2)*x^3*a*b^2+2/
(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^2*b^2*c+12/(a*e^2
-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a
*b*c^2*d-3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*b^4*c*d^
2+3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^2/(4*a*c-b^2)*x*b^3*c^2*d^3-1/(
a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*b^2*c^3*d^4-11/2/(a*e^
2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^2*c*d*e^4+15/(a*e^2-b*d*
e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b*c^2*d^2*e^3-6/(a*e^2-b*d*e+c*d
^2)^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*c-1/(
a*e^2-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*b^2*d-12/(a*e^2-b*d*
e+c*d^2)^3*e^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c^3*
d^2-2/(a*e^2-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*b^3*c*d+4/(a*e^2-b*d*e+c*d^2)^3*e^2/(4*a*c-b^2)^(3/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*b*c^3*d^3-2/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)
*c*ln(c*x^2+b*x+a)*a*b+4/(a*e^2-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)*c^2*ln(c*x^2
+b*x+a)*a*d-10/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x*a^2*
b*c^2*d+6/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a*b^2*c^2
*d^2+4/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^2/(4*a*c-b^2)*x^2*b^2*d^
3-3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^4*e/(4*a*c-b^2)*x^2*b*d^4+11/
2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^3*b*c*e^5-6/(a*e^2-b*
d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^3*c^2*d*e^4-8/(a*e^2-b*d*e+c*d^2
)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*c^3*d^3*e^2+2/(a*e^2-b*d*e+c*d^2)^3/(c*
```

```
x^2+b*x+a)^2/(4*a*c-b^2)*a*b^4*d*e^4+3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a
)^2/(4*a*c-b^2)*b^4*c*d^3*e^2-3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*
a*c-b^2)*b^3*c^2*d^4*e+3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^5/(4*a
*c-b^2)*x^3*a^2-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^5*e/(4*a*c-b^2)*x
^3*d^4-3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^3*e^5-2/
(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*c^4*d^5-1/2/(a*e^2-b*d*
e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*b^5*d^2*e^3+e^5/(a*e^2-b*d*e+c*d^2)^
3*ln(e*x+d)*b+1/2/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3
+1/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b^4-2*e^4/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*c*d+5/(a*e^2-b*d*e+c*d^2)
^3/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^3*c^2-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2
+b*x+a)^2*e^5/(4*a*c-b^2)*x*a*b^4+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e
^4/(4*a*c-b^2)*x*b^5*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 5.46, size = 2461, normalized size = 6.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x)
```

```
[Out] (log((-(4*a*c - b^2)^3)^(1/2) - b^3 + 4*a*b*c + 8*a*c^2*x - 2*b^2*c*x)*(b^7
*e^5 + b^4*e^5*(-(4*a*c - b^2)^3)^(1/2) - 64*a^3*b*c^3*e^5 + 128*a^3*c^4*d*
e^4 - 2*c^4*d^4*e*(-(4*a*c - b^2)^3)^(1/2) + 48*a^2*b^3*c^2*e^5 + 6*a^2*c^2
*e^5*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b^5*c*e^5 - 2*b^6*c*d*e^4 - 6*a*b^2*c*
e^5*(-(4*a*c - b^2)^3)^(1/2) + 24*a*b^4*c^2*d*e^4 - 2*b^3*c*d*e^4*(-(4*a*c
- b^2)^3)^(1/2) - 96*a^2*b^2*c^3*d*e^4 - 12*a*c^3*d^2*e^3*(-(4*a*c - b^2)^3
)^(1/2) + 4*b*c^3*d^3*e^2*(-(4*a*c - b^2)^3)^(1/2) + 12*a*b*c^2*d*e^4*(-(4*
a*c - b^2)^3)^(1/2)))/(2*(64*a^3*c^6*d^6 - a^3*b^6*e^6 + 64*a^6*c^3*e^6 - b
^6*c^3*d^6 + b^9*d^3*e^3 + 12*a*b^4*c^4*d^6 + 12*a^4*b^4*c*e^6 - 3*a*b^8*d^
2*e^4 + 3*a^2*b^7*d*e^5 + 3*b^7*c^2*d^5*e - 3*b^8*c*d^4*e^2 - 48*a^2*b^2*c^
5*d^6 - 48*a^5*b^2*c^2*e^6 + 192*a^4*c^5*d^4*e^2 + 192*a^5*c^4*d^2*e^4 - 10
8*a^2*b^4*c^3*d^4*e^2 - 24*a^2*b^5*c^2*d^3*e^3 + 48*a^3*b^2*c^4*d^4*e^2 + 2
24*a^3*b^3*c^3*d^3*e^3 - 108*a^3*b^4*c^2*d^2*e^4 + 48*a^4*b^2*c^3*d^2*e^4 -
 36*a*b^5*c^3*d^5*e - 6*a*b^7*c*d^3*e^3 - 192*a^3*b*c^5*d^5*e - 36*a^3*b^5*
c*d*e^5 - 192*a^5*b*c^3*d*e^5 + 33*a*b^6*c^2*d^4*e^2 + 144*a^2*b^3*c^4*d^5*
e + 33*a^2*b^6*c*d^2*e^4 - 384*a^4*b*c^4*d^3*e^3 + 144*a^4*b^3*c^2*d*e^5))
- ((3*a*b^3*e^3 + 4*a*c^3*d^3 - b^4*d*e^2 - b^2*c^2*d^3 + 12*a^2*c^2*d*e^2
- 11*a^2*b*c*e^3 + 2*b^3*c*d^2*e - 7*a*b*c^2*d^2*e)/(2*(4*a*c^3*d^4 + 4*a^3
*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*
b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d
^2*e^2)) - (x*(5*a^2*c^2*e^3 - b^4*e^3 - b^2*c^2*d^2*e + 2*a*b^2*c*e^3 + a*
c^3*d^2*e + 2*b^3*c*d*e^2 - 5*a*b*c^2*d*e^2))/(4*a*c^3*d^4 + 4*a^3*c*e^4 -
a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3
 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2) +
 (x^2*(4*b^3*c*e^3 - 5*b^2*c^2*d*e^2 - 13*a*b*c^2*e^3 + 8*a*c^3*d*e^2 + 3*b
*c^3*d^2*e))/(2*(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^
4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d
^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2)) + (e*x^3*(c^4*d^2 - 3*a*c^3*e^
```

```
2 + b^2*c^2*e^2 - b*c^3*d*e))/(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^
2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e
 - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2))/(x^2*(2*a*c + b^
2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) + (log(d + e*x)*(b*e^5 - 2*c*d*e^
4))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c
*d^3*e^3) + (log(b^3 + (-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c - 8*a*c^2*x + 2*b
^2*c*x)*((b^7*e^5)/2 - (b^4*e^5*(-(4*a*c - b^2)^3)^(1/2))/2 - 32*a^3*b*c^3*
e^5 + 64*a^3*c^4*d*e^4 + c^4*d^4*e*(-(4*a*c - b^2)^3)^(1/2) + 24*a^2*b^3*c^
2*e^5 - 3*a^2*c^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 6*a*b^5*c*e^5 - b^6*c*d*e^
4 + 3*a*b^2*c*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a*b^4*c^2*d*e^4 + b^3*c*d*e
^4*(-(4*a*c - b^2)^3)^(1/2) - 48*a^2*b^2*c^3*d*e^4 + 6*a*c^3*d^2*e^3*(-(4*a
*c - b^2)^3)^(1/2) - 2*b*c^3*d^3*e^2*(-(4*a*c - b^2)^3)^(1/2) - 6*a*b*c^2*d
*e^4*(-(4*a*c - b^2)^3)^(1/2)))/(64*a^3*c^6*d^6 - a^3*b^6*e^6 + 64*a^6*c^3*
e^6 - b^6*c^3*d^6 + b^9*d^3*e^3 + 12*a*b^4*c^4*d^6 + 12*a^4*b^4*c*e^6 - 3*a
*b^8*d^2*e^4 + 3*a^2*b^7*d*e^5 + 3*b^7*c^2*d^5*e - 3*b^8*c*d^4*e^2 - 48*a^2
*b^2*c^5*d^6 - 48*a^5*b^2*c^2*e^6 + 192*a^4*c^5*d^4*e^2 + 192*a^5*c^4*d^2*e
^4 - 108*a^2*b^4*c^3*d^4*e^2 - 24*a^2*b^5*c^2*d^3*e^3 + 48*a^3*b^2*c^4*d^4*
e^2 + 224*a^3*b^3*c^3*d^3*e^3 - 108*a^3*b^4*c^2*d^2*e^4 + 48*a^4*b^2*c^3*d^
2*e^4 - 36*a*b^5*c^3*d^5*e - 6*a*b^7*c*d^3*e^3 - 192*a^3*b*c^5*d^5*e - 36*a
^3*b^5*c*d*e^5 - 192*a^5*b*c^3*d*e^5 + 33*a*b^6*c^2*d^4*e^2 + 144*a^2*b^3*c
^4*d^5*e + 33*a^2*b^6*c*d^2*e^4 - 384*a^4*b*c^4*d^3*e^3 + 144*a^4*b^3*c^2*d
*e^5)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1354 $\int (b+2cx)(d+ex)^4\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=431

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(8c^2e^2\left(32a^2e^2+231abde+87b^2d^2\right)+6cex(2cd-be)\left(-4ce(19ae+2bd)+21b^2e^2+8c^2d^2\right)-\right.}{1680c^4}$$

Rubi [A] time = 0.79, antiderivative size = 431, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(8c^2e^2\left(32a^2e^2+231abde+87b^2d^2\right)+6cex(2cd-be)\left(-4ce(19ae+2bd)+21b^2e^2+8c^2d^2\right)-14b^2ce^3(34ae+35bd)-16c^3d^2e(144ae+13bd)+105b^4e^4+128c^4d^4\right)}{1680c^4}+\frac{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{35c^2}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}(2cd-be)\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)}{128c^5}-\frac{e\left(b^2-4ac\right)^2(2cd-be)\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{11/2}}+\frac{2}{7}(d+ex)^4\left(a+bx+cx^2\right)^{3/2}+\frac{2(d+ex)^3\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{21c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e)
)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(128*c^5) + ((4*c^2*d^2 + 3*b^2*e^2 -
4*c*e*(b*d + 2*a*e))*(d + e*x)^2*(a + b*x + c*x^2)^(3/2))/(35*c^2) + (2*(2*
c*d - b*e)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2))/(21*c) + (2*(d + e*x)^4*(a
+ b*x + c*x^2)^(3/2))/7 + ((128*c^4*d^4 + 105*b^4*e^4 - 14*b^2*c*e^3*(35*b*
d + 34*a*e) - 16*c^3*d^2*e*(13*b*d + 144*a*e) + 8*c^2*e^2*(87*b^2*d^2 + 231
*a*b*d*e + 32*a^2*e^2) + 6*c*e*(2*c*d - b*e)*(8*c^2*d^2 + 21*b^2*e^2 - 4*c*
e*(2*b*d + 19*a*e))*x)*(a + b*x + c*x^2)^(3/2))/(1680*c^4) - ((b^2 - 4*a*c)
^2*e*(2*c*d - b*e)*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^4\sqrt{a+bx+cx^2}\,dx = \frac{2}{7}(d+ex)^4\left(a+bx+cx^2\right)^{3/2} + \frac{\int (d+ex)^3(4c(bd-2ae)+4c(2cd-be)x)}{7c}$$

$$= \frac{2(2cd-be)(d+ex)^3\left(a+bx+cx^2\right)^{3/2}}{21c} + \frac{2}{7}(d+ex)^4\left(a+bx+cx^2\right)^{3/2} + $$

$$= \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{35c^2} + \frac{2(2cd-b}{}$$

$$= \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{35c^2} + \frac{2(2cd-b}{}$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)\left(8c^2d^2+3b^2e^2-4ce(2bd+ae)\right)(b+2cx)\sqrt{a+bx}}{128c^5}$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)\left(8c^2d^2+3b^2e^2-4ce(2bd+ae)\right)(b+2cx)\sqrt{a+bx}}{128c^5}$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)\left(8c^2d^2+3b^2e^2-4ce(2bd+ae)\right)(b+2cx)\sqrt{a+bx}}{128c^5}$$

Mathematica [A] time = 0.85, size = 549, normalized size = 1.27

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-315*b^6*e^4 + 2048*a^3*c^3*e^4 + 210*b^5*c*e^3*(7*
d + e*x) - 28*b^4*c^2*e^2*(90*d^2 + 35*d*e*x + 6*e^2*x^2) - 32*b^2*c^4*e*x*
(35*d^3 + 42*d^2*e*x + 21*d*e^2*x^2 + 4*e^3*x^3) + 16*b^3*c^3*e*(105*d^3 +
105*d^2*e*x + 49*d*e^2*x^2 + 9*e^3*x^3) + 256*c^6*x^2*(35*d^4 + 105*d^3*e*x
 + 126*d^2*e^2*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 128*b*c^5*x*(70*d^4 + 175
*d^3*e*x + 189*d^2*e^2*x^2 + 98*d*e^3*x^3 + 20*e^4*x^4) - 16*a^2*c^2*e^2*(3
43*b^2*e^2 - 2*b*c*e*(567*d + 73*e*x) + 4*c^2*(336*d^2 + 105*d*e*x + 16*e^2
*x^2)) + 8*a*c*(315*b^4*e^4 - 14*b^3*c*e^3*(95*d + 13*e*x) + 4*b^2*c^2*e^2*
(525*d^2 + 189*d*e*x + 31*e^2*x^2) - 8*b*c^3*e*(175*d^3 + 147*d^2*e*x + 63*
d*e^2*x^2 + 11*e^3*x^3) + 16*c^4*(70*d^4 + 105*d^3*e*x + 84*d^2*e^2*x^2 + 3
5*d*e^3*x^3 + 6*e^4*x^4))))/(13440*c^5) + ((b^2 - 4*a*c)^2*e*(-2*c*d + b*e)
*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[
c]*Sqrt[a + x*(b + c*x)])])/(256*c^(11/2))
```

IntegrateAlgebraic [A] time = 2.05, size = 827, normalized size = 1.92

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^4*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(8960*a*c^5*d^4 + 1680*b^3*c^3*d^3*e - 11200*a*b*c^4
*d^3*e - 2520*b^4*c^2*d^2*e^2 + 16800*a*b^2*c^3*d^2*e^2 - 21504*a^2*c^4*d^2
*e^2 + 1470*b^5*c*d*e^3 - 10640*a*b^3*c^2*d*e^3 + 18144*a^2*b*c^3*d*e^3 - 3
15*b^6*e^4 + 2520*a*b^4*c*e^4 - 5488*a^2*b^2*c^2*e^4 + 2048*a^3*c^3*e^4 + 8
960*b*c^5*d^4*x - 1120*b^2*c^4*d^3*e*x + 13440*a*c^5*d^3*e*x + 1680*b^3*c^3
*d^2*e^2*x - 9408*a*b*c^4*d^2*e^2*x - 980*b^4*c^2*d*e^3*x + 6048*a*b^2*c^3*
d*e^3*x - 6720*a^2*c^4*d*e^3*x + 210*b^5*c*e^4*x - 1456*a*b^3*c^2*e^4*x + 2
336*a^2*b*c^3*e^4*x + 8960*c^6*d^4*x^2 + 22400*b*c^5*d^3*e*x^2 - 1344*b^2*c
^4*d^2*e^2*x^2 + 10752*a*c^5*d^2*e^2*x^2 + 784*b^3*c^3*d*e^3*x^2 - 4032*a*b
*c^4*d*e^3*x^2 - 168*b^4*c^2*e^4*x^2 + 992*a*b^2*c^3*e^4*x^2 - 1024*a^2*c^4
*e^4*x^2 + 26880*c^6*d^3*e*x^3 + 24192*b*c^5*d^2*e^2*x^3 - 672*b^2*c^4*d*e^
3*x^3 + 4480*a*c^5*d*e^3*x^3 + 144*b^3*c^3*e^4*x^3 - 704*a*b*c^4*e^4*x^3 +
32256*c^6*d^2*e^2*x^4 + 12544*b*c^5*d*e^3*x^4 - 128*b^2*c^4*e^4*x^4 + 768*a
*c^5*e^4*x^4 + 17920*c^6*d*e^3*x^5 + 2560*b*c^5*e^4*x^5 + 3840*c^6*e^4*x^6)
)/(13440*c^5) + ((16*b^4*c^3*d^3*e - 128*a*b^2*c^4*d^3*e + 256*a^2*c^5*d^3*
e - 24*b^5*c^2*d^2*e^2 + 192*a*b^3*c^3*d^2*e^2 - 384*a^2*b*c^4*d^2*e^2 + 14
*b^6*c*d*e^3 - 120*a*b^4*c^2*d*e^3 + 288*a^2*b^2*c^3*d*e^3 - 128*a^3*c^4*d*
e^3 - 3*b^7*e^4 + 28*a*b^5*c*e^4 - 80*a^2*b^3*c^2*e^4 + 64*a^3*b*c^3*e^4)*L
og[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(256*c^(11/2))
```

fricas [A] time = 0.59, size = 1445, normalized size = 3.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/53760*(105*(16*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e - 24*(b^5*c^2
 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^2 + 2*(7*b^6*c - 60*a*b^4*c^2 + 144*a^2
*b^2*c^3 - 64*a^3*c^4)*d*e^3 - (3*b^7 - 28*a*b^5*c + 80*a^2*b^3*c^2 - 64*a^
3*b*c^3)*e^4)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x +
 a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(3840*c^7*e^4*x^6 + 8960*a*c^6*d^4 + 2
560*(7*c^7*d*e^3 + b*c^6*e^4)*x^5 + 560*(3*b^3*c^4 - 20*a*b*c^5)*d^3*e - 16
8*(15*b^4*c^3 - 100*a*b^2*c^4 + 128*a^2*c^5)*d^2*e^2 + 14*(105*b^5*c^2 - 76
0*a*b^3*c^3 + 1296*a^2*b*c^4)*d*e^3 - (315*b^6*c - 2520*a*b^4*c^2 + 5488*a^
2*b^2*c^3 - 2048*a^3*c^4)*e^4 + 128*(252*c^7*d^2*e^2 + 98*b*c^6*d*e^3 - (b^
2*c^5 - 6*a*c^6)*e^4)*x^4 + 16*(1680*c^7*d^3*e + 1512*b*c^6*d^2*e^2 - 14*(3
*b^2*c^5 - 20*a*c^6)*d*e^3 + (9*b^3*c^4 - 44*a*b*c^5)*e^4)*x^3 + 8*(1120*c^
7*d^4 + 2800*b*c^6*d^3*e - 168*(b^2*c^5 - 8*a*c^6)*d^2*e^2 + 14*(7*b^3*c^4
 - 36*a*b*c^5)*d*e^3 - (21*b^4*c^3 - 124*a*b^2*c^4 + 128*a^2*c^5)*e^4)*x^2 +
 2*(4480*b*c^6*d^4 - 560*(b^2*c^5 - 12*a*c^6)*d^3*e + 168*(5*b^3*c^4 - 28*a
*b*c^5)*d^2*e^2 - 14*(35*b^4*c^3 - 216*a*b^2*c^4 + 240*a^2*c^5)*d*e^3 + (10
5*b^5*c^2 - 728*a*b^3*c^3 + 1168*a^2*b*c^4)*e^4)*x)*sqrt(c*x^2 + b*x + a))/
c^6, 1/26880*(105*(16*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e - 24*(b^5*
c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^2 + 2*(7*b^6*c - 60*a*b^4*c^2 + 144
*a^2*b^2*c^3 - 64*a^3*c^4)*d*e^3 - (3*b^7 - 28*a*b^5*c + 80*a^2*b^3*c^2 - 6
4*a^3*b*c^3)*e^4)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(3840*c^7*e^4*x^6 + 8960*a*c^6*d^4 + 256
0*(7*c^7*d*e^3 + b*c^6*e^4)*x^5 + 560*(3*b^3*c^4 - 20*a*b*c^5)*d^3*e - 168*
(15*b^4*c^3 - 100*a*b^2*c^4 + 128*a^2*c^5)*d^2*e^2 + 14*(105*b^5*c^2 - 760*
a*b^3*c^3 + 1296*a^2*b*c^4)*d*e^3 - (315*b^6*c - 2520*a*b^4*c^2 + 5488*a^2*
b^2*c^3 - 2048*a^3*c^4)*e^4 + 128*(252*c^7*d^2*e^2 + 98*b*c^6*d*e^3 - (b^2*
c^5 - 6*a*c^6)*e^4)*x^4 + 16*(1680*c^7*d^3*e + 1512*b*c^6*d^2*e^2 - 14*(3*b
^2*c^5 - 20*a*c^6)*d*e^3 + (9*b^3*c^4 - 44*a*b*c^5)*e^4)*x^3 + 8*(1120*c^7*
d^4 + 2800*b*c^6*d^3*e - 168*(b^2*c^5 - 8*a*c^6)*d^2*e^2 + 14*(7*b^3*c^4 -
36*a*b*c^5)*d*e^3 - (21*b^4*c^3 - 124*a*b^2*c^4 + 128*a^2*c^5)*e^4)*x^2 + 2
*(4480*b*c^6*d^4 - 560*(b^2*c^5 - 12*a*c^6)*d^3*e + 168*(5*b^3*c^4 - 28*a*b
*c^5)*d^2*e^2 - 14*(35*b^4*c^3 - 216*a*b^2*c^4 + 240*a^2*c^5)*d*e^3 + (105*
b^5*c^2 - 728*a*b^3*c^3 + 1168*a^2*b*c^4)*e^4)*x)*sqrt(c*x^2 + b*x + a))/c^
```

```
6]
```

giac [A] time = 0.25, size = 759, normalized size = 1.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/13440*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(3*c*x*e^4 + 2*(7*c^7*d*e^3 +
 b*c^6*e^4)/c^6)*x + (252*c^7*d^2*e^2 + 98*b*c^6*d*e^3 - b^2*c^5*e^4 + 6*a*
c^6*e^4)/c^6)*x + (1680*c^7*d^3*e + 1512*b*c^6*d^2*e^2 - 42*b^2*c^5*d*e^3 +
 280*a*c^6*d*e^3 + 9*b^3*c^4*e^4 - 44*a*b*c^5*e^4)/c^6)*x + (1120*c^7*d^4 +
 2800*b*c^6*d^3*e - 168*b^2*c^5*d^2*e^2 + 1344*a*c^6*d^2*e^2 + 98*b^3*c^4*d
*e^3 - 504*a*b*c^5*d*e^3 - 21*b^4*c^3*e^4 + 124*a*b^2*c^4*e^4 - 128*a^2*c^5
*e^4)/c^6)*x + (4480*b*c^6*d^4 - 560*b^2*c^5*d^3*e + 6720*a*c^6*d^3*e + 840
*b^3*c^4*d^2*e^2 - 4704*a*b*c^5*d^2*e^2 - 490*b^4*c^3*d*e^3 + 3024*a*b^2*c^
4*d*e^3 - 3360*a^2*c^5*d*e^3 + 105*b^5*c^2*e^4 - 728*a*b^3*c^3*e^4 + 1168*a
^2*b*c^4*e^4)/c^6)*x + (8960*a*c^6*d^4 + 1680*b^3*c^4*d^3*e - 11200*a*b*c^5
*d^3*e - 2520*b^4*c^3*d^2*e^2 + 16800*a*b^2*c^4*d^2*e^2 - 21504*a^2*c^5*d^2
*e^2 + 1470*b^5*c^2*d*e^3 - 10640*a*b^3*c^3*d*e^3 + 18144*a^2*b*c^4*d*e^3 -
 315*b^6*c*e^4 + 2520*a*b^4*c^2*e^4 - 5488*a^2*b^2*c^3*e^4 + 2048*a^3*c^4*e
^4)/c^6) + 1/256*(16*b^4*c^3*d^3*e - 128*a*b^2*c^4*d^3*e + 256*a^2*c^5*d^3*
e - 24*b^5*c^2*d^2*e^2 + 192*a*b^3*c^3*d^2*e^2 - 384*a^2*b*c^4*d^2*e^2 + 14
*b^6*c*d*e^3 - 120*a*b^4*c^2*d*e^3 + 288*a^2*b^2*c^3*d*e^3 - 128*a^3*c^4*d*
e^3 - 3*b^7*e^4 + 28*a*b^5*c*e^4 - 80*a^2*b^3*c^2*e^4 + 64*a^3*b*c^3*e^4)*l
og(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.07, size = 1537, normalized size = 3.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/16*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^3*e-a^2/c^(
1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^3*e+12/5*x^2*(c*x^2+b*x+
a)^(3/2)*d^2*e^2+3/256/c^(11/2)*e^4*b^7*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+4/3*x^3*(c*x^2+b*x+a)^(3/2)*d*e^3+2*x*(c*x^2+b*x+a)^(3/2)*d^3*e+1/
16/c^4*e^4*b^4*(c*x^2+b*x+a)^(3/2)-3/128/c^5*e^4*b^6*(c*x^2+b*x+a)^(1/2)+16
/105/c^2*e^4*a^2*(c*x^2+b*x+a)^(3/2)+19/70/c^2*e^4*b*a*x*(c*x^2+b*x+a)^(3/2
)-1/4/c^2*e^4*b*a^2*x*(c*x^2+b*x+a)^(1/2)+1/4/c^3*e^4*b^3*a*x*(c*x^2+b*x+a)
^(1/2)+1/2*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d^3*e+
1/4*b^2/c*x*(c*x^2+b*x+a)^(1/2)*d^3*e+3/32*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))*d^2*e^2-7/128*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))*d*e^3+1/2*a^3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*d*e^3-1/4/c^(5/2)*e^4*b*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))+5/16/c^(7/2)*e^4*b^3*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
-7/64/c^(9/2)*e^4*b^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-17/60/c
^3*e^4*b^2*a*(c*x^2+b*x+a)^(3/2)-a*x*(c*x^2+b*x+a)^(1/2)*d^3*e+1/2*b^2/c^2*
(c*x^2+b*x+a)^(3/2)*d^2*e^2+3/2*b/c*a*x*(c*x^2+b*x+a)^(1/2)*d^2*e^2-b^2/c^2
*a*x*(c*x^2+b*x+a)^(1/2)*d*e^3+2/7*e^4*x^4*(c*x^2+b*x+a)^(3/2)+2/3*(c*x^2+b
*x+a)^(3/2)*d^4-1/2*a/c*(c*x^2+b*x+a)^(1/2)*b*d^3*e+3/4*b^2/c^2*a*(c*x^2+b*
x+a)^(1/2)*d^2*e^2-3/5*b/c*x*(c*x^2+b*x+a)^(3/2)*d^2*e^2-3/8*b^3/c^2*x*(c*x
^2+b*x+a)^(1/2)*d^2*e^2+3/2*b/c^(3/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*d^2*e^2-3/4*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))*a*d^2*e^2-9/8*b^2/c^(5/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*d*e^3+15/32*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*
e^3-2/5*b/c*x^2*(c*x^2+b*x+a)^(3/2)*d*e^3+7/20*b^2/c^2*x*(c*x^2+b*x+a)^(3/2
)*d*e^3+7/32*b^4/c^3*x*(c*x^2+b*x+a)^(1/2)*d*e^3+11/10*b/c^2*a*(c*x^2+b*x+a
```

```
)^(3/2)*d*e^3+1/2*a^2/c*x*(c*x^2+b*x+a)^(1/2)*d*e^3-a/c*x*(c*x^2+b*x+a)^(3/
2)*d*e^3-1/2*b^3/c^3*a*(c*x^2+b*x+a)^(1/2)*d*e^3+1/4*a^2/c^2*(c*x^2+b*x+a)^
(1/2)*b*d*e^3+1/8*b^3/c^2*(c*x^2+b*x+a)^(1/2)*d^3*e+1/8/c^4*e^4*b^4*a*(c*x^
2+b*x+a)^(1/2)-3/16*b^4/c^3*(c*x^2+b*x+a)^(1/2)*d^2*e^2-8/5*a/c*(c*x^2+b*x+
a)^(3/2)*d^2*e^2-1/3*b/c*(c*x^2+b*x+a)^(3/2)*d^3*e-8/35/c*e^4*a*x^2*(c*x^2+
b*x+a)^(3/2)-2/21/c*e^4*b*x^3*(c*x^2+b*x+a)^(3/2)+3/35/c^2*e^4*b^2*x^2*(c*x
^2+b*x+a)^(3/2)-3/40/c^3*e^4*b^3*x*(c*x^2+b*x+a)^(3/2)-1/8/c^3*e^4*b^2*a^2*
(c*x^2+b*x+a)^(1/2)-3/64/c^4*e^4*b^5*x*(c*x^2+b*x+a)^(1/2)-7/24*b^3/c^3*(c*
x^2+b*x+a)^(3/2)*d*e^3+7/64*b^5/c^4*(c*x^2+b*x+a)^(1/2)*d*e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 13.55, size = 2712, normalized size = 6.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (2*e^4*x^4*(a + b*x + c*x^2)^(3/2))/7 - 6*b*d*e^3*((7*b*((5*b*((log((b + 2*
c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + (
(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*
c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x
^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/
4))/(2*c^(3/2))))/(4*c)))/(10*c) - (2*a*((log((b + 2*c*x)/c^(1/2) + 2*(a +
b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) + (x^2*(a + b*x + c
*x^2)^(3/2))/(5*c)) + (d^4*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c
*x^2)^(1/2))/(12*c) + (33*b^7*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2)
 + 2*c*x))/(1024*c^(11/2)) + b*d^4*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2)
+ (4*d*e^3*x^3*(a + b*x + c*x^2)^(3/2))/3 - 2*a*d^3*e*((x/2 + b/(4*c))*(a +
 b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(
a*c - b^2/4))/(2*c^(3/2))) + (42*b*d^2*e^2*((5*b*((log((b + 2*c*x)/c^(1/2)
+ 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x
^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a +
b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (
log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2
))))/(4*c)))/5 + (16*a^3*e^4*(a + b*x + c*x^2)^(1/2))/(105*c^2) - (33*b^6*e
^4*(a + b*x + c*x^2)^(1/2))/(512*c^5) - 5*b*d^3*e*((log((b + 2*c*x)/c^(1/2)
 + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*
x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)) + (12*d^2*e^2*x^
2*(a + b*x + c*x^2)^(3/2))/5 - (3*b^2*e^4*((7*b*((5*b*((log((b + 2*c*x)/c^(
1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a
+ c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*
(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2
) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c
^(3/2))))/(4*c)))/(10*c) - (2*a*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*
x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b
*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) + (x^2*(a + b*x + c*x^2)^(3
/2))/(5*c)))/(4*c) + (d^4*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/
2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) + 2*d^3*e*x*(a + b*x + c*x^2)^(3/2) - (24*
```

```
a*d^2*e^2*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a
*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2
)^(1/2))/(24*c^2)))/5 + 4*a*d*e^3*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a +
b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x
^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2
+ c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c
)) - (8*a*e^4*x^2*(a + b*x + c*x^2)^(3/2))/(35*c) - (2*b*e^4*x^3*(a + b*x +
 c*x^2)^(3/2))/(21*c) - (33*b^3*e^4*x*(a + b*x + c*x^2)^(3/2))/(160*c^3) +
(11*b^5*e^4*x*(a + b*x + c*x^2)^(1/2))/(256*c^4) - (15*b^2*d^2*e^2*((log((b
 + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)
) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2))
)/(4*c) + (14*b^2*d*e^3*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^
2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c
*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))
/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(
1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(5*c)
+ (b*d^4*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/
(2*c^(3/2)) - (103*a^2*b^2*e^4*(a + b*x + c*x^2)^(1/2))/(160*c^3) + (16*a^2
*e^4*x^2*(a + b*x + c*x^2)^(1/2))/(105*c) + (33*b^2*e^4*x^2*(a + b*x + c*x^
2)^(3/2))/(140*c^2) + (11*b^4*e^4*x^2*(a + b*x + c*x^2)^(1/2))/(64*c^3) - (
5*a^3*b*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(16*c^(5/2)
) - (63*a*b^5*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(256*
c^(9/2)) + (a*b*e^4*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(
1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*
(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*
c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2)
 + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(2*c) + (3
5*a^2*b^3*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(64*c^(7/
2)) + (13*a*b^4*e^4*(a + b*x + c*x^2)^(1/2))/(32*c^4) + (111*a*b*e^4*x*(a +
 b*x + c*x^2)^(3/2))/(280*c^2) - (269*a^2*b*e^4*x*(a + b*x + c*x^2)^(1/2))/
(1680*c^2) - (3*a*b^3*e^4*x*(a + b*x + c*x^2)^(1/2))/(160*c^3) + (3*b*d^2*e
^2*x*(a + b*x + c*x^2)^(3/2))/(2*c) + (4*b*d*e^3*x^2*(a + b*x + c*x^2)^(3/2
))/(5*c) + (b*d^3*e*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b
^3 - 4*a*b*c))/(4*c^(5/2)) - (8*a*b*d*e^3*((log((b + 2*c*x)/c^(1/2) + 2*(a
+ b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3
*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) - (39*a*b^2*e^4*x
^2*(a + b*x + c*x^2)^(1/2))/(80*c^2) + (b*d^3*e*(8*c*(a + c*x^2) - 3*b^2 +
2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(6*c^2) - (3*a*b*d^2*e^2*((x/2 + b/(4*c))
*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/
2))*(a*c - b^2/4))/(2*c^(3/2))))/(2*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)(d + ex)^4 \sqrt{a + bx + cx^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**4*sqrt(a + b*x + c*x**2), x)
```

3.1355 $\int (b+2cx)(d+ex)^3\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=312

$$-\frac{e\left(b^2-4ac\right)^2\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{9/2}}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}}{25}$$

Rubi [A] time = 0.42, antiderivative size = 312, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(6cex\left(-4ce(5ae+2bd)+7b^2e^2+8c^2d^2\right)-24c^2de(16ae+3bd)+12bce^2(11ae+10bd)-35b^3e^3+64c^3d^3\right)}{480c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)}{256c^4}-\frac{e\left(b^2-4ac\right)^2\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{9/2}}+\frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2}+\frac{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{10c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*(b + 2*c*x)
*Sqrt[a + b*x + c*x^2])/(256*c^4) + ((2*c*d - b*e)*(d + e*x)^2*(a + b*x + c
*x^2)^(3/2))/(10*c) + ((d + e*x)^3*(a + b*x + c*x^2)^(3/2))/3 + ((64*c^3*d^
3 - 35*b^3*e^3 + 12*b*c*e^2*(10*b*d + 11*a*e) - 24*c^2*d*e*(3*b*d + 16*a*e)
 + 6*c*e*(8*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(2*b*d + 5*a*e))*x)*(a + b*x + c*x^
2)^(3/2))/(480*c^3) - ((b^2 - 4*a*c)^2*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6
*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(512*c
^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
```

```
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^3\sqrt{a+bx+cx^2}\,dx = \frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2} + \frac{\int (d+ex)^2(3c(bd-2ae)+3c(2cd-be)x)}{6c}$$

$$= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{10c} + \frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2} + \int$$

$$= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{10c} + \frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2} + ($$

$$= \frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4} +$$

$$= \frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4} +$$

$$= \frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4} +$$

Mathematica [A] time = 0.51, size = 270, normalized size = 0.87

$$\frac{1}{6}\left(\frac{(a+x(b+cx))^{3/2}\left(-24c^2e(ae(16d+5ex)+bd(3d+2ex))+6bce^2(22ae+20bd+7bex)-35b^3e^3+16c^3d^2(4d+3ex)\right)}{80c^3}-\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{256c^{9/2}}+2(d+ex)^3(a+x(b+cx))^{3/2}+\frac{3(d+ex)^2(a+x(b+cx))^{3/2}(2cd-be)}{5c}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((3*(2*c*d - b*e)*(d + e*x)^2*(a + x*(b + c*x))^(3/2))/(5*c) + 2*(d + e*x)^
3*(a + x*(b + c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(-35*b^3*e^3 + 16*c^3*
d^2*(4*d + 3*e*x) + 6*b*c*e^2*(20*b*d + 22*a*e + 7*b*e*x) - 24*c^2*e*(b*d*(
3*d + 2*e*x) + a*e*(16*d + 5*e*x))))/(80*c^3) - (3*(b^2 - 4*a*c)*e*(24*c^2*
d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(
b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*
x)])]))/(256*c^(9/2)))/6
```

IntegrateAlgebraic [A] time = 2.01, size = 533, normalized size = 1.71

$$\frac{\sqrt{a+bx+cx^2}\left(1296a^2bc^2e^3-3072a^2c^3de^2-480a^2c^3e^3x-760ab^3ce^3+2400ab^2c^2de^2+432ab^2c^2e^3x-2400abc^3d^2e-1344abc^3de^2x-288abc^3e^3x^2+2560ac^4d^3+2880ac^4d^2ex+1536ac^4de^2x^2+320ac^4e^3x^3+105b^5e^3-360b^4cde^2-70b^4ce^3x+360b^3c^2d^2e+240b^3c^2de^2x+56b^3c^2e^3x^2-240b^2c^3d^2ex-192b^2c^3de^2x^2-48b^2c^3e^3x^3+2560bc^4d^3x+4800bc^4d^2ex^2+3456bc^4de^2x^3+896bc^4e^3x^4+2560c^5d^3x^2+5760c^5d^2ex^3+4608c^5de^2x^4+1280c^5e^3x^5\right)}{3840c^4}+\frac{\left(-64a^3c^3e^3+144a^2b^2c^2e^3-384a^2bc^3de^2+384a^2c^4d^2e-60ab^4ce^3+192ab^3c^2de^2-192ab^2c^3d^2e+7b^6e^3-24b^5cde^2+24b^4c^2d^2e\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{512c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(2560*a*c^4*d^3 + 360*b^3*c^2*d^2*e - 2400*a*b*c^3*d
^2*e - 360*b^4*c*d*e^2 + 2400*a*b^2*c^2*d*e^2 - 3072*a^2*c^3*d*e^2 + 105*b^
5*e^3 - 760*a*b^3*c*e^3 + 1296*a^2*b*c^2*e^3 + 2560*b*c^4*d^3*x - 240*b^2*c
^3*d^2*e*x + 2880*a*c^4*d^2*e*x + 240*b^3*c^2*d*e^2*x - 1344*a*b*c^3*d*e^2*
x - 70*b^4*c*e^3*x + 432*a*b^2*c^2*e^3*x - 480*a^2*c^3*e^3*x + 2560*c^5*d^3
*x^2 + 4800*b*c^4*d^2*e*x^2 - 192*b^2*c^3*d*e^2*x^2 + 1536*a*c^4*d*e^2*x^2
+ 56*b^3*c^2*e^3*x^2 - 288*a*b*c^3*e^3*x^2 + 5760*c^5*d^2*e*x^3 + 3456*b*c^
4*d*e^2*x^3 - 48*b^2*c^3*e^3*x^3 + 320*a*c^4*e^3*x^3 + 4608*c^5*d*e^2*x^4 +
```

```
 896*b*c^4*e^3*x^4 + 1280*c^5*e^3*x^5))/(3840*c^4) + ((24*b^4*c^2*d^2*e - 1
92*a*b^2*c^3*d^2*e + 384*a^2*c^4*d^2*e - 24*b^5*c*d*e^2 + 192*a*b^3*c^2*d*e
^2 - 384*a^2*b*c^3*d*e^2 + 7*b^6*e^3 - 60*a*b^4*c*e^3 + 144*a^2*b^2*c^2*e^3
 - 64*a^3*c^3*e^3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(512*c
^(9/2))
```

fricas [A] time = 0.59, size = 985, normalized size = 3.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e - 24*(b^5*c -
8*a*b^3*c^2 + 16*a^2*b*c^3)*d*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 -
 64*a^3*c^3)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b
*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1280*c^6*e^3*x^5 + 2560*a*c^5*d^3
 + 128*(36*c^6*d*e^2 + 7*b*c^5*e^3)*x^4 + 120*(3*b^3*c^3 - 20*a*b*c^4)*d^2*
e - 24*(15*b^4*c^2 - 100*a*b^2*c^3 + 128*a^2*c^4)*d*e^2 + (105*b^5*c - 760*
a*b^3*c^2 + 1296*a^2*b*c^3)*e^3 + 16*(360*c^6*d^2*e + 216*b*c^5*d*e^2 - (3*
b^2*c^4 - 20*a*c^5)*e^3)*x^3 + 8*(320*c^6*d^3 + 600*b*c^5*d^2*e - 24*(b^2*c
^4 - 8*a*c^5)*d*e^2 + (7*b^3*c^3 - 36*a*b*c^4)*e^3)*x^2 + 2*(1280*b*c^5*d^3
 - 120*(b^2*c^4 - 12*a*c^5)*d^2*e + 24*(5*b^3*c^3 - 28*a*b*c^4)*d*e^2 - (35
*b^4*c^2 - 216*a*b^2*c^3 + 240*a^2*c^4)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^5,
 1/7680*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e - 24*(b^5*c - 8*
a*b^3*c^2 + 16*a^2*b*c^3)*d*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 6
4*a^3*c^3)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(
-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1280*c^6*e^3*x^5 + 2560*a*c^5*d^3 + 128*(
36*c^6*d*e^2 + 7*b*c^5*e^3)*x^4 + 120*(3*b^3*c^3 - 20*a*b*c^4)*d^2*e - 24*(
15*b^4*c^2 - 100*a*b^2*c^3 + 128*a^2*c^4)*d*e^2 + (105*b^5*c - 760*a*b^3*c^
2 + 1296*a^2*b*c^3)*e^3 + 16*(360*c^6*d^2*e + 216*b*c^5*d*e^2 - (3*b^2*c^4
- 20*a*c^5)*e^3)*x^3 + 8*(320*c^6*d^3 + 600*b*c^5*d^2*e - 24*(b^2*c^4 - 8*a
*c^5)*d*e^2 + (7*b^3*c^3 - 36*a*b*c^4)*e^3)*x^2 + 2*(1280*b*c^5*d^3 - 120*(
b^2*c^4 - 12*a*c^5)*d^2*e + 24*(5*b^3*c^3 - 28*a*b*c^4)*d*e^2 - (35*b^4*c^2
 - 216*a*b^2*c^3 + 240*a^2*c^4)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [A] time = 0.24, size = 506, normalized size = 1.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3840*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*c*x*e^3 + (36*c^6*d*e^2 + 7*b*
c^5*e^3)/c^5)*x + (360*c^6*d^2*e + 216*b*c^5*d*e^2 - 3*b^2*c^4*e^3 + 20*a*c
^5*e^3)/c^5)*x + (320*c^6*d^3 + 600*b*c^5*d^2*e - 24*b^2*c^4*d*e^2 + 192*a*
c^5*d*e^2 + 7*b^3*c^3*e^3 - 36*a*b*c^4*e^3)/c^5)*x + (1280*b*c^5*d^3 - 120*
b^2*c^4*d^2*e + 1440*a*c^5*d^2*e + 120*b^3*c^3*d*e^2 - 672*a*b*c^4*d*e^2 -
35*b^4*c^2*e^3 + 216*a*b^2*c^3*e^3 - 240*a^2*c^4*e^3)/c^5)*x + (2560*a*c^5*
d^3 + 360*b^3*c^3*d^2*e - 2400*a*b*c^4*d^2*e - 360*b^4*c^2*d*e^2 + 2400*a*b
^2*c^3*d*e^2 - 3072*a^2*c^4*d*e^2 + 105*b^5*c*e^3 - 760*a*b^3*c^2*e^3 + 129
6*a^2*b*c^3*e^3)/c^5) + 1/512*(24*b^4*c^2*d^2*e - 192*a*b^2*c^3*d^2*e + 384
*a^2*c^4*d^2*e - 24*b^5*c*d*e^2 + 192*a*b^3*c^2*d*e^2 - 384*a^2*b*c^3*d*e^2
 + 7*b^6*e^3 - 60*a*b^4*c*e^3 + 144*a^2*b^2*c^2*e^3 - 64*a^3*c^3*e^3)*log(a
bs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.09, size = 992, normalized size = 3.18

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -3/10*b/c*x*(c*x^2+b*x+a)^(3/2)*d*e^2-3/16*b^3/c^2*x*(c*x^2+b*x+a)^(1/2)*d*
e^2-1/4/c^2*e^3*b^2*a*x*(c*x^2+b*x+a)^(1/2)-3/8*a/c*(c*x^2+b*x+a)^(1/2)*b*d
^2*e+3/16*b^2/c*x*(c*x^2+b*x+a)^(1/2)*d^2*e+3/8*b^2/c^2*a*(c*x^2+b*x+a)^(1/
2)*d*e^2+3/4*b/c^(3/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^
2+3/8*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d^2*e-3/8*b
^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e^2+3/4*b/c*a*x*
(c*x^2+b*x+a)^(1/2)*d*e^2+3/64*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*d*e^2-9/32/c^(5/2)*e^3*b^2*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))+15/128/c^(7/2)*e^3*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))*a-1/4*b/c*(c*x^2+b*x+a)^(3/2)*d^2*e-1/10/c*e^3*b*x^2*(c*x^2+b*x+a)^(3/2
)-3/64*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e-3/4*a^
2/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+2/3*(c*x^2+b*x+
a)^(3/2)*d^3+1/3*e^3*x^3*(c*x^2+b*x+a)^(3/2)+7/256/c^4*e^3*b^5*(c*x^2+b*x+a
)^(1/2)+6/5*x^2*(c*x^2+b*x+a)^(3/2)*d*e^2-7/512/c^(9/2)*e^3*b^6*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/8/c^(3/2)*e^3*a^3*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))+3/2*x*(c*x^2+b*x+a)^(3/2)*d^2*e-7/96/c^3*e^3*b^3*(c*x
^2+b*x+a)^(3/2)+7/128/c^3*e^3*b^4*x*(c*x^2+b*x+a)^(1/2)-1/8/c^3*e^3*b^3*a*(
c*x^2+b*x+a)^(1/2)+11/40/c^2*e^3*b*a*(c*x^2+b*x+a)^(3/2)-1/4/c*e^3*a*x*(c*x
^2+b*x+a)^(3/2)+1/8/c*e^3*a^2*x*(c*x^2+b*x+a)^(1/2)+1/16/c^2*e^3*a^2*(c*x^2
+b*x+a)^(1/2)*b+3/32*b^3/c^2*(c*x^2+b*x+a)^(1/2)*d^2*e-3/4*a*x*(c*x^2+b*x+a
)^(1/2)*d^2*e+1/4*b^2/c^2*(c*x^2+b*x+a)^(3/2)*d*e^2-3/32*b^4/c^3*(c*x^2+b*x
+a)^(1/2)*d*e^2-4/5*a/c*(c*x^2+b*x+a)^(3/2)*d*e^2+7/80/c^2*e^3*b^2*x*(c*x^2
+b*x+a)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**B**] time = 5.08, size = 1679, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] a*e^3*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4
*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x
^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2
+ b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x +
c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)) - (3*b*e^3*((7*b*((5*b*((
log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c
^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24
*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a
+ b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*
(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c) - (2*a*((log((b + 2*c*x)/c^(1/2
) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c
*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) + (x^2*(
a + b*x + c*x^2)^(3/2))/(5*c)))/2 + (e^3*x^3*(a + b*x + c*x^2)^(3/2))/3 + (
d^3*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(12*c) + b
```

```
*d^3*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (6*d*e^2*x^2*(a + b*x + c*x^
2)^(3/2))/5 - (3*a*d^2*e*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b
/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/2
 - (12*a*d*e^2*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3
- 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x +
c*x^2)^(1/2))/(24*c^2)))/5 - (15*b*d^2*e*((log((b + 2*c*x)/c^(1/2) + 2*(a +
 b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*
b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/4 + (7*b^2*e^3*((5*b*((l
og((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^
(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*
c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a +
 b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(
a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c) + (d^3*log((b + 2*c*x)/c^(1/2) +
 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) + (3*d^2*e*x*(a +
b*x + c*x^2)^(3/2))/2 + (21*b*d*e^2*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a
+ b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3
*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c
*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/
2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4
*c)))/5 + (b*e^3*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) + (b*d^3*log((b/2 + c*x
)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2)) - (2*a*b*e^
3*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(
16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))
/(24*c^2)))/(5*c) - (15*b^2*d*e^2*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x +
c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2
*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) + (3*b*d*e^2*x*(a + b*x +
 c*x^2)^(3/2))/(4*c) - (3*a*b*d*e^2*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2
) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c
^(3/2))))/(4*c) + (3*b*d^2*e*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^
(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + (b*d^2*e*(8*c*(a + c*x^2) - 3*b^2 +
2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(8*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)(d + ex)^3 \sqrt{a + bx + cx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**(1/2),x)
[Out] Integral((b + 2*c*x)*(d + e*x)**3*sqrt(a + b*x + c*x**2), x)
```

3.1356 $\int (b+2cx)(d+ex)^2\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=195

$$-\frac{e\left(b^2-4ac\right)^2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{7/2}}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{32c^3}+\frac{\left(a+bx+cx^2\right)^{\cdots}}{\cdots}$$

Rubi [A] time = 0.33, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-2ce(8ae+5bd)+5b^2e^2+6cex(2cd-be)+16c^2d^2\right)}{60c^2}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{32c^3}-\frac{e\left(b^2-4ac\right)^2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{7/2}}+\frac{2}{5}(d+ex)^2\left(a+bx+cx^2\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(32*c^3)
+ (2*(d + e*x)^2*(a + b*x + c*x^2)^(3/2))/5 + ((16*c^2*d^2 + 5*b^2*e^2 - 2*
c*e*(5*b*d + 8*a*e) + 6*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(60*c
^2) - ((b^2 - 4*a*c)^2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[
a + b*x + c*x^2])])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^2\sqrt{a+bx+cx^2}\,dx = \frac{2}{5}(d+ex)^2\left(a+bx+cx^2\right)^{3/2} + \frac{\int (d+ex)(2c(bd-2ae)+2c(2cd-be)}{5c}$$

$$= \frac{2}{5}(d+ex)^2\left(a+bx+cx^2\right)^{3/2} + \frac{\left(16c^2d^2+5b^2e^2-2ce(5bd+8ae)+6c}{60c^2}$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{32c^3} + \frac{2}{5}(d+ex)^2\left(a+bx+\right.$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{32c^3} + \frac{2}{5}(d+ex)^2\left(a+bx+\right.$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{32c^3} + \frac{2}{5}(d+ex)^2\left(a+bx+\right.$$

Mathematica [A] time = 0.25, size = 177, normalized size = 0.91

$$\frac{e\left(b^2-4ac\right)(be-2cd)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{64c^{7/2}}+\frac{(a+x(b+cx))^{3/2}\left(-2ce(8ae+5bd+3bex)+5b^2e^2+4c^2d(4d+3ex)\right)}{60c^2}+\frac{2}{5}(d+ex)^2(a+x(b+cx))^{3/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(d + e*x)^2*(a + x*(b + c*x))^(3/2))/5 + ((a + x*(b + c*x))^(3/2)*(5*b^2
*e^2 + 4*c^2*d*(4*d + 3*e*x) - 2*c*e*(5*b*d + 8*a*e + 3*b*e*x)))/(60*c^2) +
 ((b^2 - 4*a*c)*e*(-2*c*d + b*e)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*
x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])
)/(64*c^(7/2))
```

IntegrateAlgebraic [A] time = 1.11, size = 307, normalized size = 1.57

$$\frac{\sqrt{a+bx+cx^2}\left(-128a^2c^2e^2+100ab^2ce^2-200abc^2de-56abc^2e^2x+320ac^3d^2+240ac^3dex+64ac^3e^2x^2-15b^4e^2+30b^3cde+10b^3ce^2x-20b^2c^2dex-8b^2c^2e^2x^2+320bc^3d^2x+400bc^3dex^2+144bc^3e^2x^3+320c^4d^2x^2+480c^4dex^3+192c^4e^2x^4\right)}{480c^3}+\frac{\left(-16a^2bc^2e^2+32a^2c^3de+8ab^3ce^2-16ab^2c^2de+b^5\left(-e^2\right)+2b^4cde\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{64c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(320*a*c^3*d^2 + 30*b^3*c*d*e - 200*a*b*c^2*d*e - 15
*b^4*e^2 + 100*a*b^2*c*e^2 - 128*a^2*c^2*e^2 + 320*b*c^3*d^2*x - 20*b^2*c^2
*d*e*x + 240*a*c^3*d*e*x + 10*b^3*c*e^2*x - 56*a*b*c^2*e^2*x + 320*c^4*d^2*
x^2 + 400*b*c^3*d*e*x^2 - 8*b^2*c^2*e^2*x^2 + 64*a*c^3*e^2*x^2 + 480*c^4*d*
e*x^3 + 144*b*c^3*e^2*x^3 + 192*c^4*e^2*x^4))/(480*c^3) + ((2*b^4*c*d*e - 1
6*a*b^2*c^2*d*e + 32*a^2*c^3*d*e - b^5*e^2 + 8*a*b^3*c*e^2 - 16*a^2*b*c^2*e
^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(64*c^(7/2))
```

fricas [A] time = 0.49, size = 617, normalized size = 3.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/1920*(15*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e - (b^5 - 8*a*b^3*c +
 16*a^2*b*c^2)*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 +
 b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(192*c^5*e^2*x^4 + 320*a*c^4*d^2
 + 48*(10*c^5*d*e + 3*b*c^4*e^2)*x^3 + 10*(3*b^3*c^2 - 20*a*b*c^3)*d*e - (1
5*b^4*c - 100*a*b^2*c^2 + 128*a^2*c^3)*e^2 + 8*(40*c^5*d^2 + 50*b*c^4*d*e -
 (b^2*c^3 - 8*a*c^4)*e^2)*x^2 + 2*(160*b*c^4*d^2 - 10*(b^2*c^3 - 12*a*c^4)*
d*e + (5*b^3*c^2 - 28*a*b*c^3)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/960*(1
5*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e - (b^5 - 8*a*b^3*c + 16*a^2*b*c
^2)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^
2*x^2 + b*c*x + a*c)) + 2*(192*c^5*e^2*x^4 + 320*a*c^4*d^2 + 48*(10*c^5*d*e
 + 3*b*c^4*e^2)*x^3 + 10*(3*b^3*c^2 - 20*a*b*c^3)*d*e - (15*b^4*c - 100*a*b
^2*c^2 + 128*a^2*c^3)*e^2 + 8*(40*c^5*d^2 + 50*b*c^4*d*e - (b^2*c^3 - 8*a*c
^4)*e^2)*x^2 + 2*(160*b*c^4*d^2 - 10*(b^2*c^3 - 12*a*c^4)*d*e + (5*b^3*c^2
- 28*a*b*c^3)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.24, size = 308, normalized size = 1.58

$$\frac{1}{480}\sqrt{cx^2+bx+a}\left(2\left(4\left(6\left(4\,cxe^2+\frac{10\,c^5de+3\,bc^4e^2}{c^4}\right)x+\frac{40\,c^5d^2+50\,bc^4de-b^2c^3e^2+8\,ac^4e^2}{c^4}\right)x+\frac{160\,bc^4d^2-10\,b^2c^3de+120\,ac^4de+5\,b^3c^2e^2-28\,abc^3e^2}{c^4}\right)x+\frac{320\,ac^4d^2+30\,b^3c^2de-200\,abc^3de-15\,b^4ce^2+100\,ab^2c^2e^2-128\,a^2c^3e^2}{c^4}\right)+\frac{\left(2\,b^4cde-16\,ab^2c^2de+32\,a^2c^3de-b^5e^2+8\,ab^3ce^2-16\,a^2bc^2e^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{64\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/480*sqrt(c*x^2 + b*x + a)*(2*(4*(6*(4*c*x*e^2 + (10*c^5*d*e + 3*b*c^4*e^2
)/c^4)*x + (40*c^5*d^2 + 50*b*c^4*d*e - b^2*c^3*e^2 + 8*a*c^4*e^2)/c^4)*x +
 (160*b*c^4*d^2 - 10*b^2*c^3*d*e + 120*a*c^4*d*e + 5*b^3*c^2*e^2 - 28*a*b*c
^3*e^2)/c^4)*x + (320*a*c^4*d^2 + 30*b^3*c^2*d*e - 200*a*b*c^3*d*e - 15*b^4
*c*e^2 + 100*a*b^2*c^2*e^2 - 128*a^2*c^3*e^2)/c^4) + 1/64*(2*b^4*c*d*e - 16
*a*b^2*c^2*d*e + 32*a^2*c^3*d*e - b^5*e^2 + 8*a*b^3*c*e^2 - 16*a^2*b*c^2*e^
2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.11, size = 535, normalized size = 2.74

$$\frac{a^2be^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{3}{2}}}-\frac{a^2de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2\sqrt{c}}-\frac{ab^3e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{5}{2}}}+\frac{ab^2de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{3}{2}}}+\frac{b^5e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{64c^{\frac{7}{2}}}-\frac{b^4de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{32c^{\frac{5}{2}}}+\frac{\sqrt{cx^2+bx+a}\,abe^2x}{4c}-\frac{\sqrt{cx^2+bx+a}\,adex}{2}-\frac{\sqrt{cx^2+bx+a}\,b^3e^2x}{16c^2}+\frac{\sqrt{cx^2+bx+a}\,b^2dex}{8c}+\frac{2\left(cx^2+bx+a\right)^{\frac{3}{2}}e^2x^2}{5}+\frac{\sqrt{cx^2+bx+a}\,ab^2e^2}{8c^2}-\frac{\sqrt{cx^2+bx+a}\,abde}{4c}-\frac{\sqrt{cx^2+bx+a}\,b^4e^2}{32c^3}+\frac{\sqrt{cx^2+bx+a}\,b^3de}{16c^2}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}be^2x}{10c}+\left(cx^2+bx+a\right)^{\frac{3}{2}}dex-\frac{4\left(cx^2+bx+a\right)^{\frac{3}{2}}ae^2}{15c}+\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}b^2e^2}{12c^2}-\frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}bde}{6c}+\frac{2\left(cx^2+bx+a\right)^{\frac{3}{2}}d^2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/4*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e-1/2*a^2/c
^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-1/4*a/c*(c*x^2+b*x+a
)^(1/2)*b*d*e+1/8*b^2/c*x*(c*x^2+b*x+a)^(1/2)*d*e-1/32*b^4/c^(5/2)*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e+1/4/c*e^2*b*a*x*(c*x^2+b*x+a)^(1/2)
+1/4/c^(3/2)*e^2*b*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/8/c^(5
/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+2/5*e^2*x^2*(c*x^
2+b*x+a)^(3/2)+x*(c*x^2+b*x+a)^(3/2)*d*e+1/12/c^2*e^2*b^2*(c*x^2+b*x+a)^(3/
2)-1/32/c^3*e^2*b^4*(c*x^2+b*x+a)^(1/2)-4/15/c*e^2*a*(c*x^2+b*x+a)^(3/2)-1/
6*b/c*(c*x^2+b*x+a)^(3/2)*d*e+1/16*b^3/c^2*(c*x^2+b*x+a)^(1/2)*d*e-1/2*a*x*
(c*x^2+b*x+a)^(1/2)*d*e+2/3*(c*x^2+b*x+a)^(3/2)*d^2-1/10/c*e^2*b*x*(c*x^2+b
*x+a)^(3/2)-1/16/c^2*e^2*b^3*x*(c*x^2+b*x+a)^(1/2)+1/64/c^(7/2)*e^2*b^5*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/8/c^2*e^2*b^2*a*(c*x^2+b*x+a)^(1
/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 3.63, size = 876, normalized size = 4.49

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (7*b*e^2*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3
- 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x +
c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x
/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x
 + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/5 - (4*a*e^2*((log((b
 + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)
) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2))
)/5 + (2*e^2*x^2*(a + b*x + c*x^2)^(3/2))/5 + (d^2*(8*c*(a + c*x^2) - 3*b^2
 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(12*c) + b*d^2*(x/2 + b/(4*c))*(a + b*
x + c*x^2)^(1/2) - (5*b*d*e*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)
^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x
)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/2 - (5*b^2*e^2*((log((b + 2*c*x)/c^(1
/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a +
 c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) + d*e*
x*(a + b*x + c*x^2)^(3/2) + (d^2*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x
^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) - a*d*e*((x/2 + b/(4*c))*(a + b*x +
 c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c -
b^2/4))/(2*c^(3/2))) - (a*b*e^2*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) +
(log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/
2))))/(4*c) + (b*d^2*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*
c - b^2/4))/(2*c^(3/2)) + (b*e^2*x*(a + b*x + c*x^2)^(3/2))/(4*c) + (b*d*e*
log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^
(5/2)) + (b*d*e*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2)
)/(12*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)\,(d + ex)^2\,\sqrt{a + bx + cx^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2*sqrt(a + b*x + c*x**2), x)
```

3.1357 $\int (b+2cx)(d+ex)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=122

$$-\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{5/2}}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}}{32c^2}+\frac{\left(a+bx+cx^2\right)^{3/2}(-be+8cd+6cex}{12c}$$

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {779, 612, 621, 206}

$$\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}}{32c^2}-\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{5/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(-be+8cd+6cex)}{12c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(32*c^2) + ((8*c*d - b*
e + 6*c*e*x)*(a + b*x + c*x^2)^(3/2))/(12*c) - ((b^2 - 4*a*c)^2*e*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(64*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)(d+ex)\sqrt{a+bx+cx^2}\,dx = \frac{(8cd-be+6cex)\left(a+bx+cx^2\right)^{3/2}}{12c} + \frac{\left(\left(b^2-4ac\right)e\right)\int \sqrt{a+bx+cx^2}}{8c}$$
$$= \frac{\left(b^2-4ac\right)e(b+2cx)\sqrt{a+bx+cx^2}}{32c^2} + \frac{(8cd-be+6cex)\left(a+bx+cx^2\right.}{12c}$$
$$= \frac{\left(b^2-4ac\right)e(b+2cx)\sqrt{a+bx+cx^2}}{32c^2} + \frac{(8cd-be+6cex)\left(a+bx+cx^2\right.}{12c}$$
$$= \frac{\left(b^2-4ac\right)e(b+2cx)\sqrt{a+bx+cx^2}}{32c^2} + \frac{(8cd-be+6cex)\left(a+bx+cx^2\right.}{12c}$$

Mathematica [A] time = 0.14, size = 134, normalized size = 1.10

$$\frac{\sqrt{a+x(b+cx)}\left(4ac(-5be+16cd+6cex)+3b^3e-2b^2cex+8bc^2x(8d+5ex)+16c^3x^2(4d+3ex)\right)}{96c^2} - \frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{64c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(3*b^3*e - 2*b^2*c*e*x + 16*c^3*x^2*(4*d + 3*e*x) +
8*b*c^2*x*(8*d + 5*e*x) + 4*a*c*(16*c*d - 5*b*e + 6*c*e*x)))/(96*c^2) - ((b
^2 - 4*a*c)^2*e*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(64
*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.63, size = 151, normalized size = 1.24

$$\frac{e\left(16a^2c^2-8ab^2c+b^4\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{64c^{5/2}} + \frac{\sqrt{a+bx+cx^2}\left(-20abce+64ac^2d+24ac^2ex+3b^3e-2b^2cex+64bc^2dx+40bc^2ex^2+64c^3dx^2+48c^3ex^3\right)}{96c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(64*a*c^2*d + 3*b^3*e - 20*a*b*c*e + 64*b*c^2*d*x -
2*b^2*c*e*x + 24*a*c^2*e*x + 64*c^3*d*x^2 + 40*b*c^2*e*x^2 + 48*c^3*e*x^3))
/(96*c^2) + ((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e*Log[b + 2*c*x - 2*Sqrt[c]*Sqr
t[a + b*x + c*x^2]])/(64*c^(5/2))
```

fricas [A] time = 0.45, size = 343, normalized size = 2.81

$$\left[\frac{3\left(b^4-8ab^2c+16a^2c^2\right)\sqrt{c}e\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4\left(48c^4ex^3+64ac^3d+8\left(8c^4d+5bc^3e\right)x^2+\left(3b^3c-20abc^2\right)e+2\left(32bc^3d-\left(b^2c^2-12ac^3\right)e\right)x\right)\sqrt{cx^2+bx+a}}{384c^3}, \frac{3\left(b^4-8ab^2c+16a^2c^2\right)\sqrt{-c}e\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+2\left(48c^4ex^3+64ac^3d+8\left(8c^4d+5bc^3e\right)x^2+\left(3b^3c-20abc^2\right)e+2\left(32bc^3d-\left(b^2c^2-12ac^3\right)e\right)x\right)\sqrt{cx^2+bx+a}}{192c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/384*(3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(c)*e*log(-8*c^2*x^2 - 8*b*c*x
 - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(48*c^4*e
*x^3 + 64*a*c^3*d + 8*(8*c^4*d + 5*b*c^3*e)*x^2 + (3*b^3*c - 20*a*b*c^2)*e
+ 2*(32*b*c^3*d - (b^2*c^2 - 12*a*c^3)*e)*x)*sqrt(c*x^2 + b*x + a))/c^3, 1/
192*(3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-c)*e*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*c^4*e*x^3 + 64
*a*c^3*d + 8*(8*c^4*d + 5*b*c^3*e)*x^2 + (3*b^3*c - 20*a*b*c^2)*e + 2*(32*b
*c^3*d - (b^2*c^2 - 12*a*c^3)*e)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [A] time = 0.22, size = 170, normalized size = 1.39

$$\frac{1}{96}\sqrt{cx^2+bx+a}\left(2\left(4\left(6cxe+\frac{8c^4d+5bc^3e}{c^3}\right)x+\frac{32bc^3d-b^2c^2e+12ac^3e}{c^3}\right)x+\frac{64ac^3d+3b^3ce-20abc^2e}{c^3}\right)+\frac{\left(b^4e-8ab^2ce+16a^2c^2e\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{64c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/96*sqrt(c*x^2 + b*x + a)*(2*(4*(6*c*x*e + (8*c^4*d + 5*b*c^3*e)/c^3)*x +
(32*b*c^3*d - b^2*c^2*e + 12*a*c^3*e)/c^3)*x + (64*a*c^3*d + 3*b^3*c*e - 20
*a*b*c^2*e)/c^3) + 1/64*(b^4*e - 8*a*b^2*c*e + 16*a^2*c^2*e)*log(abs(-2*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.05, size = 235, normalized size = 1.93

$$-\frac{a^{2} e \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{4 \sqrt{c}}+\frac{a b^{2} e \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{8 c^{\frac{3}{2}}}-\frac{b^{4} e \ln \left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{64 c^{\frac{5}{2}}}-\frac{\sqrt{c x^{2}+b x+a}\, a e x}{4}+\frac{\sqrt{c x^{2}+b x+a}\, b^{2} e x}{16 c}-\frac{\sqrt{c x^{2}+b x+a}\, a b e}{8 c}+\frac{\sqrt{c x^{2}+b x+a}\, b^{3} e}{32 c^{2}}+\frac{\left(c x^{2}+b x+a\right)^{\frac{3}{2}} e x}{2}-\frac{\left(c x^{2}+b x+a\right)^{\frac{3}{2}} b e}{12 c}+\frac{2 \left(c x^{2}+b x+a\right)^{\frac{3}{2}} d}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/2*e*x*(c*x^2+b*x+a)^(3/2)-1/12/c*e*b*(c*x^2+b*x+a)^(3/2)+1/16/c*e*b^2*x*(
c*x^2+b*x+a)^(1/2)+1/32/c^2*e*b^3*(c*x^2+b*x+a)^(1/2)+1/8/c^(3/2)*e*b^2*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/64/c^(5/2)*e*b^4*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/4*e*a*x*(c*x^2+b*x+a)^(1/2)-1/8/c*e*a*(c*x
^2+b*x+a)^(1/2)*b-1/4/c^(1/2)*e*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))+2/3*(c*x^2+b*x+a)^(3/2)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 2.79, size = 395, normalized size = 3.24

$$\frac{e\,x\,\left(c\,x^2+b\,x+a\right)^{3/2}}{2}-\frac{a\,e\,\left(\left(\frac{x}{2}+\frac{b}{4\,c}\right)\,\sqrt{c\,x^2+b\,x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)\,\left(a\,c-\frac{b^2}{4}\right)}{2\,c^{3/2}}\right)}{2}-\frac{5\,b\,e\,\left(\frac{\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right)\,\left(b^3-4\,a\,b\,c\right)}{16\,c^{5/2}}+\frac{\left(-3\,b^2+2\,c\,x\,b+8\,c\,\left(c\,x^2+a\right)\right)\,\sqrt{c\,x^2+b\,x+a}}{24\,c^2}\right)}{4}+\frac{d\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right)\,\left(b^3-4\,a\,b\,c\right)}{8\,c^{3/2}}+\frac{d\,\left(-3\,b^2+2\,c\,x\,b+8\,c\,\left(c\,x^2+a\right)\right)\,\sqrt{c\,x^2+b\,x+a}}{12\,c}+b\,d\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)\,\sqrt{c\,x^2+b\,x+a}+\frac{b\,e\,\left(-3\,b^2+2\,c\,x\,b+8\,c\,\left(c\,x^2+a\right)\right)\,\sqrt{c\,x^2+b\,x+a}}{24\,c^2}+\frac{b\,d\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)\,\left(a\,c-\frac{b^2}{4}\right)}{2\,c^{3/2}}+\frac{b\,e\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right)\,\left(b^3-4\,a\,b\,c\right)}{16\,c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (e*x*(a + b*x + c*x^2)^(3/2))/2 - (a*e*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(
1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(
2*c^(3/2))))/2 - (5*b*e*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/
2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a
 + b*x + c*x^2)^(1/2))/(24*c^2)))/4 + (d*log((b + 2*c*x)/c^(1/2) + 2*(a + b
*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) + (d*(8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(12*c) + b*d*(x/2 + b/(4*c))*(a + b*
x + c*x^2)^(1/2) + (b*e*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^
2)^(1/2))/(24*c^2) + (b*d*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)
)*(a*c - b^2/4))/(2*c^(3/2)) + (b*e*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x +
c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b + 2cx\right) \left(d + ex\right) \sqrt{a + bx + cx^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**(1/2),x)
[Out] Integral((b + 2*c*x)*(d + e*x)*sqrt(a + b*x + c*x**2), x)
```

3.1358 $\int (b+2cx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=18

$$\frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$\frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
[Out] (2*(a + b*x + c*x^2)^(3/2))/3
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\sqrt{a+bx+cx^2}\,dx = \frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$\frac{2}{3}(a+x(b+cx))^{3/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
[Out] (2*(a + x*(b + c*x))^(3/2))/3
```

IntegrateAlgebraic [A] time = 0.01, size = 18, normalized size = 1.00

$$\frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
[Out] (2*(a + b*x + c*x^2)^(3/2))/3
```

fricas [A] time = 0.43, size = 14, normalized size = 0.78

$$\frac{2}{3}\left(cx^2+bx+a\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*(c*x^2 + b*x + a)^(3/2)
```

giac [A]   time = 0.17, size = 14, normalized size = 0.78

$$\frac{2}{3}\left(cx^2+bx+a\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
[Out] 2/3*(c*x^2 + b*x + a)^(3/2)
```

maple [A]   time = 0.05, size = 15, normalized size = 0.83

$$\frac{2\left(c\,x^2+bx+a\right)^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x)
[Out] 2/3*(c*x^2+b*x+a)^(3/2)
```

maxima [A]   time = 0.62, size = 14, normalized size = 0.78

$$\frac{2}{3}\left(cx^2+bx+a\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
[Out] 2/3*(c*x^2 + b*x + a)^(3/2)
```

mupad [B]   time = 1.83, size = 14, normalized size = 0.78

$$\frac{2\left(c\,x^2+b\,x+a\right)^{3/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^(1/2),x)
[Out] (2*(a + b*x + c*x^2)^(3/2))/3
```

sympy [B]   time = 0.17, size = 60, normalized size = 3.33

$$\frac{2a\sqrt{a+bx+cx^2}}{3}+\frac{2bx\sqrt{a+bx+cx^2}}{3}+\frac{2cx^2\sqrt{a+bx+cx^2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2),x)
[Out] 2*a*sqrt(a + b*x + c*x**2)/3 + 2*b*x*sqrt(a + b*x + c*x**2)/3 + 2*c*x**2*sq
rt(a + b*x + c*x**2)/3
```

3.1359 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx$

Optimal. Leaf size=199

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^3}-\frac{(2cd-be)\sqrt{ae^2-bde+cd^2}\,\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+}}\right.}{e^3}$$

Rubi [A] time = 0.26, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {814, 843, 621, 206, 724}

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^3}-\frac{(2cd-be)\sqrt{ae^2-bde+cd^2}\,\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{e^3}-\frac{\sqrt{a+bx+cx^2}\,(-3be+4cd-2cex)}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x),x]
```

```
[Out] -((4*c*d - 3*b*e - 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(2*e^2) + ((8*c^2*d^2 +
b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x
+ c*x^2])])/(4*Sqrt[c]*e^3) - ((2*c*d - b*e)*Sqrt[c*d^2 - b*d*e + a*e^2]*Ar
cTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a
 + b*x + c*x^2])])/e^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx = -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} - \frac{\int \frac{c\left(3b^2de+4acde-4b\left(cd^2+ae^2\right)\right)-c\left(8c^2d^2+b^2e^2-4c\cdots\right.}{(d+ex)\sqrt{a+bx+cx^2}}}{4ce^2}$$

$$= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} - \frac{\left((2cd-be)\left(cd^2-bde+ae^2\right)\right)\int \frac{\cdots}{(d+ex)\sqrt{\cdots}}}{e^3}$$

$$= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} + \frac{\left(2(2cd-be)\left(cd^2-bde+ae^2\right)\right)\mathrm{Subst}\left(\cdots\right.}{\cdots}$$

$$= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} + \frac{\left(8c^2d^2+b^2e^2-4ce(2bd-ae)\right)\tanh^{-1}\left(\cdots\right.}{4\sqrt{c}\,e^3}$$

Mathematica [A] time = 0.25, size = 195, normalized size = 0.98

$$\frac{\left(4ce(ae-2bd)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)+2\sqrt{c}\left(2(2cd-be)\sqrt{e(ae-bd)+cd^2}\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)+e\sqrt{a+x(b+cx)}(3be-4cd+2cex)\right)}{4\sqrt{c}\,e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x),x]
```

```
[Out] ((8*c^2*d^2 + b^2*e^2 + 4*c*e*(-2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c
]*Sqrt[a + x*(b + c*x)])] + 2*Sqrt[c]*(e*(-4*c*d + 3*b*e + 2*c*e*x)*Sqrt[a
+ x*(b + c*x)] + 2*(2*c*d - b*e)*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*ArcTanh[(-(
b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a +
x*(b + c*x)])]))/(4*Sqrt[c]*e^3)
```

IntegrateAlgebraic [A] time = 0.83, size = 197, normalized size = 0.99

$$\frac{\left(-4ace^2-b^2e^2+8bcde-8c^2d^2\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{4\sqrt{c}\,e^3}-\frac{2(2cd-be)\sqrt{-ae^2+bde-cd^2}\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{e^3}+\frac{\sqrt{a+bx+cx^2}\,(3be-4cd+2cex)}{2e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x),x]
```

```
[Out] ((-4*c*d + 3*b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(2*e^2) - (2*(2*c*d - b*
e)*Sqrt[-(c*d^2) + b*d*e - a*e^2]*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[
a + b*x + c*x^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/e^3 + ((-8*c^2*d^2 + 8*b
*c*d*e - b^2*e^2 - 4*a*c*e^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^
2]])/(4*Sqrt[c]*e^3)
```

fricas [A] time = 12.66, size = 1196, normalized size = 6.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] [1/8*((8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2
*c^2*d - b*c*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b
^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(
c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x
) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x +
 d^2)) + 4*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sqrt(c*x^2 + b*x + a))/(c*
e^3), -1/8*(8*(2*c^2*d - b*c*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sq
rt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*
e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b
*c*d^2 - b^2*d*e + a*b*e^2)*x)) - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^
2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x
+ b)*sqrt(c) - 4*a*c) - 4*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sqrt(c*x^2
+ b*x + a))/(c*e^3), -1/4*((8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) + 2*(2*c^2*d - b*c*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e -
 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2
)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e +
(2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*
x^2 + 2*d*e*x + d^2)) - 2*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sqrt(c*x^2
+ b*x + a))/(c*e^3), -1/4*(4*(2*c^2*d - b*c*e)*sqrt(-c*d^2 + b*d*e - a*e^2)
*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*
e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*
c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + (8*c^2*d^2 - 8*b*c*d*e + (
b^2 + 4*a*c)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sq
rt(c*x^2 + b*x + a))/(c*e^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 1302, normalized size = 6.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x)
```

```
[Out] c/e*(c*x^2+b*x+a)^(1/2)*x+1/2/e*(c*x^2+b*x+a)^(1/2)*b+c^(1/2)/e*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/4/c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))*b^2+1/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*b-2/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*c*d+1/2/e*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/c^(1/2)*b^2-2/e^
2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(1/2)*b*d+2/e^3*ln(((x+d/e)*c+1/2*(b*e
-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2))*c^(3/2)*d^2-1/e/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d
*e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b+
2/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*
c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*c*d+1/e^2/((a*e^2-b*d*e
```

```
+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*d-3/e^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
))/(x+d/e))*b*d^2*c+2/e^4/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*
e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d
^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x), x)
```

3.1360 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=203

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2e^3\sqrt{ae^2-bde+cd^2}}-\frac{2\sqrt{c}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^3}+\frac{\sqrt{a+\ldots}}{}$$

Rubi [A] time = 0.21, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {812, 843, 621, 206, 724}

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2e^3\sqrt{ae^2-bde+cd^2}}+\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{e^2(d+ex)}-\frac{2\sqrt{c}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(e^2*(d + e*x)) - (2*Sqrt[c
]*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/e^3
 + ((8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh[(b*d - 2*a*e + (2*c
*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*e^3
*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx = \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)} - \frac{\int \frac{4bcd-b^2e-4ace+4c(2cd-be)x}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{2e^2}$$

$$= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)} - \frac{(2c(2cd-be))\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{e^3} + \frac{\left(8c^2d^2 + \right.}{}$$

$$= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)} - \frac{(4c(2cd-be))\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2c}{\sqrt{a+bx+}}\right.}{e^3}$$

$$= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)} - \frac{2\sqrt{c}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^3} + $$

Mathematica [A] time = 0.41, size = 280, normalized size = 1.38

$$\frac{\frac{\left(4ce(ae-2bd)+b^2e^2+8c^2d^2\right)\sqrt{e(ae-bd)+cd^2}\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)+4\sqrt{c}\,(2cd-be)\left(e(ae-bd)+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2e^3} - \frac{\sqrt{a+x(b+cx)}\left(ce(2ae-5bd+bex)+b^2e^2+2c^2d(2d-ex)\right)}{e^2} + \frac{(a+x(b+cx))^{3/2}(be-2cd)}{d+ex}}{e(bd-ae)-cd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] (((-2*c*d + b*e)*(a + x*(b + c*x))^(3/2))/(d + e*x) - (Sqrt[a + x*(b + c*x)
]*(b^2*e^2 + 2*c^2*d*(2*d - e*x) + c*e*(-5*b*d + 2*a*e + b*e*x)))/e^2 + (4*
Sqrt[c]*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + x*(b + c*x)])] + (8*c^2*d^2 + b^2*e^2 + 4*c*e*(-2*b*d + a*e))
*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/
(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*e^3))/(-(c*d^
2) + e*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 1.31, size = 282, normalized size = 1.39

$$\frac{\left(b^2e^2\sqrt{-ae^2+bde-cd^2}+8c^2d^2\sqrt{-ae^2+bde-cd^2}-8bcde\sqrt{-ae^2+bde-cd^2}+4ace^2\sqrt{-ae^2+bde-cd^2}\right)\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{e^3\left(ae^2-bde+cd^2\right)} + \frac{2\left(2c^{3/2}d-b\sqrt{c}\,e\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{e^3} + \frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{e^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(e^2*(d + e*x)) + ((8*c^2*d
^2*Sqrt[-(c*d^2) + b*d*e - a*e^2] - 8*b*c*d*e*Sqrt[-(c*d^2) + b*d*e - a*e^2
] + b^2*e^2*Sqrt[-(c*d^2) + b*d*e - a*e^2] + 4*a*c*e^2*Sqrt[-(c*d^2) + b*d*
e - a*e^2])*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[a + b*x + c*x^2])/Sqrt
[-(c*d^2) + b*d*e - a*e^2]])/(e^3*(c*d^2 - b*d*e + a*e^2)) + (2*(2*c^(3/2)*
d - b*Sqrt[c]*e)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/e^3
```

fricas [B] time = 21.08, size = 1964, normalized size = 9.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(4*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 + 2*a*c)*d^2*e^2 + (2*
c^2*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*x)*sqrt(c)*log(-
8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4
*a*c) - (8*c^2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b
*c*d*e^2 + (b^2 + 4*a*c)*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e
 - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e
^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e
+ (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^
2*x^2 + 2*d*e*x + d^2)) - 4*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 +
 4*a*c)*d*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x +
 a))/(c*d^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x), 1
/4*(8*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 + 2*a*c)*d^2*e^2 + (2*c^2
*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*x)*sqrt(-c)*arctan(
1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + (
8*c^2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b*c*d*e^2
+ (b^2 + 4*a*c)*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*
e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 -
 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d
- b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2
*d*e*x + d^2)) + 4*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 4*a*c)*d
*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c*d
^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x), 1/2*((8*c^
2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b*c*d*e^2 + (b
^2 + 4*a*c)*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 +
b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d
^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2
*d*e + a*b*e^2)*x)) - 2*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 + 2*a*c
)*d^2*e^2 + (2*c^2*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*x
)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) + 2*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 4*
a*c)*d*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x + a)
)/(c*d^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x), 1/2*
((8*c^2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b*c*d*e^
2 + (b^2 + 4*a*c)*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*
d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/
(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2
 - b^2*d*e + a*b*e^2)*x)) + 4*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 +
 2*a*c)*d^2*e^2 + (2*c^2*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*
e^3)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2
*x^2 + b*c*x + a*c)) + 2*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 4*
a*c)*d*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x + a)
)/(c*d^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep)]Unable to divide, perhaps due to rounding error%%%{%%%{32,[2,11,0,0,
2]%%%}+%%%{-16,[1,11,2,0,1]%%%}+%%%{2,[0,11,4,0,0]%%%},[4]%%%}+%%%{%%%{-64,
[2,11,0,0,3]%%%}+%%%{32,[1,11,2,0,2]%%%}+%%%{-4,[0,11,4,0,1]%%%},[2]%%%}+%%
%{%%%{32,[2,11,0,0,4]%%%}+%%%{-16,[1,11,2,0,3]%%%}+%%%{2,[0,11,4,0,2]%%%},[
0]%%%} / %%%{%%%{1,[1,2,0,0,0]%%%}+%%%{-1,[0,1,1,1,0]%%%}+%%%{1,[0,0,0,2,1]
```

```
%%%},[4]%%%}+%%%{%%%{-2,[1,2,0,0,1]%%%}+%%%{2,[0,1,1,1,1]%%%}+%%%{-2,[0,0,0
,2,2]%%%},[2]%%%}+%%%{%%%{1,[1,2,0,0,2]%%%}+%%%{-1,[0,1,1,1,2]%%%}+%%%{1,[0
,0,0,2,3]%%%},[0]%%%} Error: Bad Argument Value
```

maple [B] time = 0.06, size = 3088, normalized size = 15.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x)
```

```
[Out] -2/e^3/(a*e^2-b*d*e+c*d^2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(5/2)*d^3+2/e
^2/(a*e^2-b*d*e+c*d^2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*c^2*d^2+2*c/e^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*
d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((
x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b
*d-2/e/(a*e^2-b*d*e+c*d^2)*c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)
+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*a*d-1/e
/(a*e^2-b*d*e+c*d^2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(1/2)*d*b^2+3/e^2/(
a*e^2-b*d*e+c*d^2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b
*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(3/2)*d^2*b-2/e/(a*e^
2-b*d*e+c*d^2)*c^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*x*d+2/e/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((
b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x
+d/e))*a*b*c*d-1/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b+c^(1/2)/e^2*ln(((x+d/e)*c+1/2*(b*e-2*
c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)
^(1/2))*b-2*c^(3/2)/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2
*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*d+2*c/e^2*((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)+1/(a*e^2-b*d*e+c*
d^2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-
2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(
x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*c^2
*d^2-5/2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2
*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e)
)*b^2*d^2*c+4/e^3/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((
b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x
+d/e))*b*d^3*c^2-2/e^4/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
))/(x+d/e))*c^3*d^4+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d-3/e/(a*e^2-b*d*e+c*d^2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d+1/2/e/(
a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/
e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^3*d-1/2/(a
*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e
+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(
b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b^2+1/(a*e^
2-b*d*e+c*d^2)*c*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2
)^(1/2)*x*b+1/(a*e^2-b*d*e+c*d^2)*c^(1/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/
c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*
a*b-2*c/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*
e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*
```

```
c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a-2*c^2/e^4/((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^
2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                   +c*d^2 zero or nonze
ro?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^2,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**2,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**2, x)
```

3.1361 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=280

$$-\frac{(2cd-be)\left(-4ce(2bd-3ae)-b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8e^3\left(ae^2-bde+cd^2\right)^{3/2}}-\sqrt{a+bx+cx^2}\left(ex\left(-4ce(3bd-\right.\right.$$

Rubi [A] time = 0.32, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {810, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\left(ex\left(-4ce(3bd-2ae)+b^2e^2+12c^2d^2\right)-2cde(3bd-2ae)-be^2(bd-2ae)+8c^2d^3\right)}{4e^2(d+ex)^2\left(ae^2-bde+cd^2\right)}-\frac{(2cd-be)\left(-4ce(2bd-3ae)-b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8e^3\left(ae^2-bde+cd^2\right)^{3/2}}+\frac{2c^{3/2}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] -((8*c^2*d^3 - b*e^2*(b*d - 2*a*e) - 2*c*d*e*(3*b*d - 2*a*e) + e*(12*c^2*d^
2 + b^2*e^2 - 4*c*e*(3*b*d - 2*a*e))*x)*Sqrt[a + b*x + c*x^2])/(4*e^2*(c*d^
2 - b*d*e + a*e^2)*(d + e*x)^2) + (2*c^(3/2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/e^3 - ((2*c*d - b*e)*(8*c^2*d^2 - b^2*e^2 - 4*c*e
*(2*b*d - 3*a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b
*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(8*e^3*(c*d^2 - b*d*e + a*e^2)^(3/2)
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
```

```
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx = -\frac{\left(8c^2d^3-be^2(bd-2ae)-2cde(3bd-2ae)+e\left(12c^2d^2+b^2e^2-4ce(3bd-2ae)\right)\right.}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

$$= -\frac{\left(8c^2d^3-be^2(bd-2ae)-2cde(3bd-2ae)+e\left(12c^2d^2+b^2e^2-4ce(3bd-2ae)\right)\right.}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

$$= -\frac{\left(8c^2d^3-be^2(bd-2ae)-2cde(3bd-2ae)+e\left(12c^2d^2+b^2e^2-4ce(3bd-2ae)\right)\right.}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

$$= -\frac{\left(8c^2d^3-be^2(bd-2ae)-2cde(3bd-2ae)+e\left(12c^2d^2+b^2e^2-4ce(3bd-2ae)\right)\right.}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

Mathematica [A] time = 1.21, size = 389, normalized size = 1.39

$$\frac{\frac{2(a+x(b+cx))^{3/2}\left(4ce(bd-2ae)+b^2e^2-4c^2d^2\right)}{d+ex}+\frac{-2ce\sqrt{a+x(b+cx)}\left(-2c^2e(2ae(2ex-3d)+bd(7d-2ex))+bce^2(-10ae+5bd+bex)+b^3e^3+4c^3d^2(2d-ex)\right)+c(2cd-be)\sqrt{e(ae-bd)+cd^2}\left(4ce(3ae-2bd)-b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)+16c^{5/2}\left(e(ae-bd)+cd^2\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{ce^3}+\frac{4(a+x(b+cx))^{3/2}(2cd-be)\left(e(ae-bd)+cd^2\right)}{(d+ex)^2}}{8\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] ((4*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^(3/2))/(d +
e*x)^2 + (2*(-4*c^2*d^2 + b^2*e^2 + 4*c*e*(b*d - 2*a*e))*(a + x*(b + c*x))^
(3/2))/(d + e*x) + (-2*c*e*Sqrt[a + x*(b + c*x)]*(b^3*e^3 + 4*c^3*d^2*(2*d
- e*x) + b*c*e^2*(5*b*d - 10*a*e + b*e*x) - 2*c^2*e*(b*d*(7*d - 2*e*x) + 2*
a*e*(-3*d + 2*e*x))) + 16*c^(5/2)*(c*d^2 + e*(-(b*d) + a*e))^2*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + c*(2*c*d - b*e)*Sqrt[c*d^2 + e
*(-(b*d) + a*e)]*(8*c^2*d^2 - b^2*e^2 + 4*c*e*(-2*b*d + 3*a*e))*ArcTanh[(-(
b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a +
x*(b + c*x)])])/(c*e^3))/(8*(c*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 180.32, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.51Unable to divide, perha
ps due to rounding error%%%{1,[6,0,0,6,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]
%%%}]%%},[5,0,0,5,1]%%%}+%%%{3,[4,1,0,5,1]%%%}+%%%{-3,[4,0,1,6,0]%%%}+%%%{%
%%{12,[1]%%%},[4,0,0,4,2]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,0
,4,2]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,1,5,1]%%%}+%%%{%%{[%%%
{-8,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,0,3,3]%%%}+%%%{3,[2,2,0,4,2]%%%
}+%%%{-6,[2,1,1,5,1]%%%}+%%%{%%%{12,[1]%%%},[2,1,0,3,3]%%%}+%%%{3,[2,0,2,6,
0]%%%}+%%%{%%%{-12,[1]%%%},[2,0,1,4,2]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%
}]%%},[1,2,0,3,3]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,1,4,2]%%%}
+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,2,5,1]%%%}+%%%{1,[0,3,0,3,3]%%%
}+%%%{-3,[0,2,1,4,2]%%%}+%%%{3,[0,1,2,5,1]%%%}+%%%{-1,[0,0,3,6,0]%%%} / %%%
{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,0,3,0]%%%}+%%%{%%%{
-6,[2]%%%},[5,0,0,2,1]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%}
,[4,1,0,2,1]%%%}+%%%{%%{poly1[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,1,3,0]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,0,
1,2]%%%}+%%%{%%%{-12,[2]%%%},[3,1,0,1,2]%%%}+%%%{%%%{12,[2]%%%},[3,0,1,2,1]
%%%}+%%%{%%%{-8,[3]%%%},[3,0,0,0,3]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-
1,[1]%%%}]%%},[2,2,0,1,2]%%%}+%%%{%%{[%%%{-6,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}
]%%},[2,1,1,2,1]%%%}+%%%{%%{[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,1
,0,0,3]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,2,3,
0]%%%}+%%%{%%{poly1[%%%{-12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,1,1,2]%
%%}+%%%{%%%{-6,[2]%%%},[1,2,0,0,3]%%%}+%%%{%%%{12,[2]%%%},[1,1,1,1,2]%%%}+%
%%{%%%{-6,[2]%%%},[1,0,2,2,1]%%%}+%%%{%%{[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%
%%}]%%},[0,3,0,0,3]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[
0,2,1,1,2]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,2,2,1]
%%%}+%%%{%%{poly1[%%%{-1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,3,3,0]%%%}
 Error: Bad Argument Value
```

maple [B] time = 0.07, size = 5046, normalized size = 18.02

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                              +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^3,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**3,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**3, x)
```

3.1362 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=217

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(-2ae+x(2cd-be)+bd)}{8(d+ex)^2\left(ae^2-bde+cd^2\right)^2}+\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{(a+b}{3(d+}$$

Rubi [A] time = 0.23, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {806, 720, 724, 206}

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(-2ae+x(2cd-be)+bd)}{8(d+ex)^2\left(ae^2-bde+cd^2\right)^2}+\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{3(d+ex)^3\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] -((b^2 - 4*a*c)*e*(b*d - 2*a*e + (2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(8
*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) + ((2*c*d - b*e)*(a + b*x + c*x^2)^
(3/2))/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3) + ((b^2 - 4*a*c)^2*e*ArcTanh
[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*
x + c*x^2])])/(16*(c*d^2 - b*d*e + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx = \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} - \frac{\left(\left(b^2-4ac\right)e\right)\int \frac{\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= -\frac{\left(b^2-4ac\right)e(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{8\left(cd^2-bde+ae^2\right)^2(d+ex)^2} + \frac{(2cd-be)\left(a+bx+cx^2\right.}{3\left(cd^2-bde+ae^2\right)(d+\right.}$$

$$= -\frac{\left(b^2-4ac\right)e(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{8\left(cd^2-bde+ae^2\right)^2(d+ex)^2} + \frac{(2cd-be)\left(a+bx+cx^2\right.}{3\left(cd^2-bde+ae^2\right)(d+\right.}$$

$$= -\frac{\left(b^2-4ac\right)e(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{8\left(cd^2-bde+ae^2\right)^2(d+ex)^2} + \frac{(2cd-be)\left(a+bx+cx^2\right.}{3\left(cd^2-bde+ae^2\right)(d+\right.}$$

Mathematica [A] time = 0.47, size = 214, normalized size = 0.99

$$\frac{\frac{2(a+x(b+cx))^{3/2}(2cd-be)}{(d+ex)^3} - 3e\left(b^2-4ac\right)\left(\frac{\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{3/2}} + \frac{\sqrt{a+x(b+cx)}(-2ae+b(d-ex)+2cdx)}{4(d+ex)^2\left(e(ae-bd)+cd^2\right)}\right)}{6\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] ((2*(2*c*d - b*e)*(a + x*(b + c*x))^(3/2))/(d + e*x)^3 - 3*(b^2 - 4*a*c)*e*
((Sqrt[a + x*(b + c*x)]*(-2*a*e + 2*c*d*x + b*(d - e*x)))/(4*(c*d^2 + e*(-(
b*d) + a*e))*(d + e*x)^2) + ((b^2 - 4*a*c)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*
x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c
*d^2 + e*(-(b*d) + a*e))^(3/2))))/(6*(c*d^2 + e*(-(b*d) + a*e)))
```

IntegrateAlgebraic [F] time = 180.04, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] $Aborted
```

fricas [B] time = 3.66, size = 2040, normalized size = 9.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [1/96*(3*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^4*x^3 + 3*(b^4 - 8*a*b^2*c + 16*
a^2*c^2)*d*e^3*x^2 + 3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^2*e^2*x + (b^4 - 8*
a*b^2*c + 16*a^2*c^2)*d^3*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8
*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*
x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2
*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^
2 + 2*d*e*x + d^2)) + 4*(16*a*c^3*d^5 - 8*a^3*b*e^5 - (3*b^3*c + 28*a*b*c^2
)*d^4*e + (3*b^4 + 26*a*b^2*c + 8*a^2*c^2)*d^3*e^2 - (17*a*b^3 + 12*a^2*b*c
```

)*d^2*e^3 + 2*(11*a^2*b^2 - 4*a^3*c)*d*e^4 + (16*c^4*d^5 - 40*b*c^3*d^4*e + 2*(13*b^2*c^2 + 28*a*c^3)*d^3*e^2 + (b^3*c - 84*a*b*c^2)*d^2*e^3 - (3*b^4 - 22*a*b^2*c - 40*a^2*c^2)*d*e^4 + (3*a*b^3 - 20*a^2*b*c)*e^5)*x^2 + 2*(8*b*c^3*d^5 - (23*b^2*c^2 - 12*a*c^3)*d^4*e + (19*b^3*c + 4*a*b*c^2)*d^3*e^2 - 4*(b^4 + 6*a*b^2*c)*d^2*e^3 + 5*(a*b^3 + 4*a^2*b*c)*d*e^4 - (a^2*b^2 + 12*a^3*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^9 - 3*b*c^2*d^8*e - 3*a^2*b*d^4*e^5 + a^3*d^3*e^6 + 3*(b^2*c + a*c^2)*d^7*e^2 - (b^3 + 6*a*b*c)*d^6*e^3 + 3*(a*b^2 + a^2*c)*d^5*e^4 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 - 3*a^2*b*d*e^8 + a^3*e^9 + 3*(b^2*c + a*c^2)*d^4*e^5 - (b^3 + 6*a*b*c)*d^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^7)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 - 3*a^2*b*d^2*e^7 + a^3*d*e^8 + 3*(b^2*c + a*c^2)*d^5*e^4 - (b^3 + 6*a*b*c)*d^4*e^5 + 3*(a*b^2 + a^2*c)*d^3*e^6)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 - 3*a^2*b*d^3*e^6 + a^3*d^2*e^7 + 3*(b^2*c + a*c^2)*d^6*e^3 - (b^3 + 6*a*b*c)*d^5*e^4 + 3*(a*b^2 + a^2*c)*d^4*e^5)*x), 1/48*(3*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^4*x^3 + 3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*d*e^3*x^2 + 3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^2*e^2*x + (b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^3*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(16*a*c^3*d^5 - 8*a^3*b*e^5 - (3*b^3*c + 28*a*b*c^2)*d^4*e + (3*b^4 + 26*a*b^2*c + 8*a^2*c^2)*d^3*e^2 - (17*a*b^3 + 12*a^2*b*c)*d^2*e^3 + 2*(11*a^2*b^2 - 4*a^3*c)*d*e^4 + (16*c^4*d^5 - 40*b*c^3*d^4*e + 2*(13*b^2*c^2 + 28*a*c^3)*d^3*e^2 + (b^3*c - 84*a*b*c^2)*d^2*e^3 - (3*b^4 - 22*a*b^2*c - 40*a^2*c^2)*d*e^4 + (3*a*b^3 - 20*a^2*b*c)*e^5)*x^2 + 2*(8*b*c^3*d^5 - (23*b^2*c^2 - 12*a*c^3)*d^4*e + (19*b^3*c + 4*a*b*c^2)*d^3*e^2 - 4*(b^4 + 6*a*b^2*c)*d^2*e^3 + 5*(a*b^3 + 4*a^2*b*c)*d*e^4 - (a^2*b^2 + 12*a^3*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^9 - 3*b*c^2*d^8*e - 3*a^2*b*d^4*e^5 + a^3*d^3*e^6 + 3*(b^2*c + a*c^2)*d^7*e^2 - (b^3 + 6*a*b*c)*d^6*e^3 + 3*(a*b^2 + a^2*c)*d^5*e^4 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 - 3*a^2*b*d*e^8 + a^3*e^9 + 3*(b^2*c + a*c^2)*d^4*e^5 - (b^3 + 6*a*b*c)*d^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^7)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 - 3*a^2*b*d^2*e^7 + a^3*d*e^8 + 3*(b^2*c + a*c^2)*d^5*e^4 - (b^3 + 6*a*b*c)*d^4*e^5 + 3*(a*b^2 + a^2*c)*d^3*e^6)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 - 3*a^2*b*d^3*e^6 + a^3*d^2*e^7 + 3*(b^2*c + a*c^2)*d^6*e^3 - (b^3 + 6*a*b*c)*d^5*e^4 + 3*(a*b^2 + a^2*c)*d^4*e^5)*x)]

giac [B] time = 0.77, size = 2611, normalized size = 12.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 1/8*(b^4*e - 8*a*b^2*c*e + 16*a^2*c^2*e)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/24*(192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*c^(9/2)*d^5*e + 128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*c^5*d^6 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*c^4*d^4*e^2 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b*c^(9/2)*d^6 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b*c^(7/2)*d^4*e^2 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^2*c^(7/2)*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*c^(9/2)*d^5*e + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^2*c^4*d^6 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b*c^3*d^3*e^3 - 272*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^2*c^3*d^4*e^2 + 128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*c^4*d^4*e^2 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^3*c^3*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b*c^4*d^5*e + 16*b^3*c^(7/2)*d^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^2*c^(5/2)*d^3*e^3 + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*c^(7/2)*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^3*c^(5/2)*d^4*e^2 + 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b*c^(7/2)*d^4*e^2 - 24*b^4*c^(5/2)*d^5*e - 48*a*b^2*c^(7/2)*d^5*e + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x
```

```
+ a))^5*b^2*c^2*d^2*e^4 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*c^3*d
^2*e^4 + 32*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^3*c^2*d^3*e^3 + 512*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b*c^3*d^3*e^3 + 12*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*b^4*c^2*d^4*e^2 + 528*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*
a*b^2*c^3*d^4*e^2 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*c^4*d^4*e^2
+ 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^3*c^(3/2)*d^2*e^4 - 96*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^4*a*b*c^(5/2)*d^2*e^4 + 42*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^2*b^4*c^(3/2)*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*a*b^2*c^(5/2)*d^3*e^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a
^2*c^(7/2)*d^3*e^3 + 2*b^5*c^(3/2)*d^4*e^2 + 112*a*b^3*c^(5/2)*d^4*e^2 + 48
*a^2*b*c^(7/2)*d^4*e^2 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b*c^2*
d*e^5 + 90*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^4*c*d^2*e^4 - 240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^2*c^2*d^2*e^4 - 480*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*a^2*c^3*d^2*e^4 + 18*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*b^5*c*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^3*c^2*d^3*e^3
- 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b*c^3*d^3*e^3 - 15*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^4*b^4*sqrt(c)*d*e^5 - 168*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*a*b^2*c^(3/2)*d*e^5 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*a^2*c^(5/2)*d*e^5 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^5*sqrt(c)
*d^2*e^4 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^3*c^(3/2)*d^2*e^4 +
 3*b^6*sqrt(c)*d^3*e^3 - 26*a*b^4*c^(3/2)*d^3*e^3 - 192*a^2*b^2*c^(5/2)*d^3
*e^3 - 32*a^3*c^(7/2)*d^3*e^3 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^4
*e^6 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^2*c*e^6 + 48*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^5*a^2*c^2*e^6 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^3*b^5*d*e^5 - 160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^3*c*d*e^5
+ 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b*c^2*d*e^5 + 3*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*b^6*d^2*e^4 - 42*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*a*b^4*c*d^2*e^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^2*c^2*d^
2*e^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*c^3*d^2*e^4 + 144*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b*c^(3/2)*e^6 - 72*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2*a*b^4*sqrt(c)*d*e^5 + 144*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*a^2*b^2*c^(3/2)*d*e^5 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a
^3*c^(5/2)*d*e^5 - 6*a*b^5*sqrt(c)*d^2*e^4 + 48*a^2*b^3*c^(3/2)*d^2*e^4 + 1
92*a^3*b*c^(5/2)*d^2*e^4 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^4*e^
6 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^2*c*e^6 - 6*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*a*b^5*d*e^5 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*a^3*b*c^2*d*e^5 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^3*sqrt(c
)*e^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b*c^(3/2)*e^6 + 3*a^2*
b^4*sqrt(c)*d*e^5 - 40*a^3*b^2*c^(3/2)*d*e^5 - 80*a^4*c^(5/2)*d*e^5 + 3*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^4*e^6 + 24*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*a^3*b^2*c*e^6 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*c^2*e
^6 + 16*a^4*b*c^(3/2)*e^6)/((c^2*d^4*e^3 - 2*b*c*d^3*e^4 + b^2*d^2*e^5 + 2*
a*c*d^2*e^5 - 2*a*b*d*e^6 + a^2*e^7)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^3)
```

maple [B] time = 0.14, size = 7916, normalized size = 36.48

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{{(d+e\,x)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^4,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**4,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**4, x)
```

3.1363 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=307

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-4ce(4ae+bd)+5b^2e^2+4c^2d^2\right)}{24(d+ex)^3\left(ae^2-bde+cd^2\right)^2}-\frac{5e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(2cd-be)(-2ae+x(2cd-be)+}{64(d+ex)^2\left(ae^2-bde+cd^2\right)^3}$$

Rubi [A] time = 0.46, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {834, 806, 720, 724, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-4ce(4ae+bd)+5b^2e^2+4c^2d^2\right)}{24(d+ex)^3\left(ae^2-bde+cd^2\right)^2}-\frac{5e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(2cd-be)(-2ae+x(2cd-be)+bd)}{64(d+ex)^2\left(ae^2-bde+cd^2\right)^3}+\frac{5e\left(b^2-4ac\right)^2(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{128\left(ae^2-bde+cd^2\right)^{7/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{4(d+ex)^4\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] (-5*(b^2 - 4*a*c)*e*(2*c*d - b*e)*(b*d - 2*a*e + (2*c*d - b*e)*x)*Sqrt[a +
b*x + c*x^2])/(64*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^2) + ((2*c*d - b*e)*(
a + b*x + c*x^2)^(3/2))/(4*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4) + ((4*c^2*d
^2 + 5*b^2*e^2 - 4*c*e*(b*d + 4*a*e))*(a + b*x + c*x^2)^(3/2))/(24*(c*d^2 -
 b*d*e + a*e^2)^2*(d + e*x)^3) + (5*(b^2 - 4*a*c)^2*e*(2*c*d - b*e)*ArcTanh
[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*
x + c*x^2])])/(128*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx = \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{4\left(cd^2-bde+ae^2\right)(d+ex)^4} - \frac{\int \frac{\left(\frac{1}{2}\left(-2bcd+5b^2e-16ace\right)-c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx}{4\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{4\left(cd^2-bde+ae^2\right)(d+ex)^4} + \frac{\left(4c^2d^2+5b^2e^2-4ce(bd+4ae)\right)\left(a+bx+cx^2\right.}{24\left(cd^2-bde+ae^2\right)^2(d+ex)^3}$$

$$= -\frac{5\left(b^2-4ac\right)e(2cd-be)(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{64\left(cd^2-bde+ae^2\right)^3(d+ex)^2} + \frac{(2cd-be}{4\left(cd^2-b\right.}$$

$$= -\frac{5\left(b^2-4ac\right)e(2cd-be)(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{64\left(cd^2-bde+ae^2\right)^3(d+ex)^2} + \frac{(2cd-be}{4\left(cd^2-b\right.}$$

$$= -\frac{5\left(b^2-4ac\right)e(2cd-be)(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{64\left(cd^2-bde+ae^2\right)^3(d+ex)^2} + \frac{(2cd-be}{4\left(cd^2-b\right.}$$

Mathematica [A] time = 0.74, size = 290, normalized size = 0.94

$$\frac{\frac{(a+x(b+cx))^{3/2}\left(-4ce(4ae+bd)+5b^2e^2+4c^2d^2\right)}{(d+ex)^3}+\frac{15}{2}e\left(b^2-4ac\right)(be-2cd)\left(\frac{\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{3/2}}+\frac{\sqrt{a+x(b+cx)}\,(-2ae+b(d-ex)+2cdx)}{4(d+ex)^2\left(e(ae-bd)+cd^2\right)}\right)+\frac{6(a+x(b+cx))^{3/2}(2cd-be)\left(e(ae-bd)+cd^2\right)}{(d+ex)^4}}{24\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] ((6*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^(3/2))/(d +
e*x)^4 + ((4*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(b*d + 4*a*e))*(a + x*(b + c*x))^(
3/2))/(d + e*x)^3 + (15*(b^2 - 4*a*c)*e*(-2*c*d + b*e)*((Sqrt[a + x*(b + c*
x)]*(-2*a*e + 2*c*d*x + b*(d - e*x)))/(4*(c*d^2 + e*(-(b*d) + a*e))*(d + e*
x)^2) + ((b^2 - 4*a*c)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c
*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a
*e))^(3/2))))/2)/(24*(c*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^5,x]
```

[Out] $Aborted

fricas [B] time = 19.57, size = 3996, normalized size = 13.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [-1/768*(15*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^5*e - (b^5 - 8*a*b^3*c
+ 16*a^2*b*c^2)*d^4*e^2 + (2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^5 - (b^
5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^6)*x^4 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2
*c^3)*d^2*e^4 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*e^5)*x^3 + 6*(2*(b^4*c -
 8*a*b^2*c^2 + 16*a^2*c^3)*d^3*e^3 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d^2*e
^4)*x^2 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^4*e^2 - (b^5 - 8*a*b^3*
c + 16*a^2*b*c^2)*d^3*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e -
8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)
*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (
2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x
^2 + 2*d*e*x + d^2)) - 4*(128*a*c^4*d^7 - 48*a^4*b*e^7 - 6*(5*b^3*c^2 + 52*
a*b*c^3)*d^6*e + (45*b^4*c + 448*a*b^2*c^2 - 16*a^2*c^3)*d^5*e^2 - (15*b^5
+ 412*a*b^3*c + 112*a^2*b*c^2)*d^4*e^3 + (133*a*b^4 + 472*a^2*b^2*c - 176*a
^3*c^2)*d^3*e^4 - 2*(127*a^2*b^3 + 44*a^3*b*c)*d^2*e^5 + 8*(23*a^3*b^2 - 4*
a^4*c)*d*e^6 + (32*c^5*d^6*e - 96*b*c^4*d^5*e^2 + 4*(19*b^2*c^3 + 44*a*c^4)
*d^4*e^3 + 8*(b^3*c^2 - 44*a*b*c^3)*d^3*e^4 - (35*b^4*c - 256*a*b^2*c^2 - 1
6*a^2*c^3)*d^2*e^5 + (15*b^5 - 80*a*b^3*c - 16*a^2*b*c^2)*d*e^6 - (15*a*b^4
 - 100*a^2*b^2*c + 128*a^3*c^2)*e^7)*x^3 + (128*c^5*d^7 - 400*b*c^4*d^6*e +
 352*(b^2*c^3 + 2*a*c^4)*d^5*e^2 - 2*(3*b^3*c^2 + 748*a*b*c^3)*d^4*e^3 - (1
29*b^4*c - 1080*a*b^2*c^2 - 304*a^2*c^3)*d^3*e^4 + (55*b^5 - 268*a*b^3*c -
432*a^2*b*c^2)*d^2*e^5 - (65*a*b^4 - 408*a^2*b^2*c + 272*a^3*c^2)*d*e^6 + 2
*(5*a^2*b^3 - 28*a^3*b*c)*e^7)*x^2 + (128*b*c^4*d^7 - 4*(123*b^2*c^3 - 68*a
*c^4)*d^6*e + 4*(157*b^3*c^2 - 28*a*b*c^3)*d^5*e^2 - (337*b^4*c + 456*a*b^2
*c^2 + 304*a^2*c^3)*d^4*e^3 + (73*b^5 + 360*a*b^3*c + 912*a^2*b*c^2)*d^3*e^
4 - (109*a*b^4 + 372*a^2*b^2*c + 704*a^3*c^2)*d^2*e^5 + 4*(11*a^2*b^3 + 108
*a^3*b*c)*d*e^6 - 8*(a^3*b^2 + 16*a^4*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^
4*d^12 - 4*b*c^3*d^11*e - 4*a^3*b*d^5*e^7 + a^4*d^4*e^8 + 2*(3*b^2*c^2 + 2*
a*c^3)*d^10*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^9*e^3 + (b^4 + 12*a*b^2*c + 6*a^2
*c^2)*d^8*e^4 - 4*(a*b^3 + 3*a^2*b*c)*d^7*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^6
*e^6 + (c^4*d^8*e^4 - 4*b*c^3*d^7*e^5 - 4*a^3*b*d*e^11 + a^4*e^12 + 2*(3*b^
2*c^2 + 2*a*c^3)*d^6*e^6 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^7 + (b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^4*e^8 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^9 + 2*(3*a^2*b^2 + 2*a
^3*c)*d^2*e^10)*x^4 + 4*(c^4*d^9*e^3 - 4*b*c^3*d^8*e^4 - 4*a^3*b*d^2*e^10 +
 a^4*d*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^5 - 4*(b^3*c + 3*a*b*c^2)*d^6*e
^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^7 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^8
 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^9)*x^3 + 6*(c^4*d^10*e^2 - 4*b*c^3*d^9*e^3
 - 4*a^3*b*d^3*e^9 + a^4*d^2*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^4 - 4*(b^
3*c + 3*a*b*c^2)*d^7*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^6 - 4*(a*b^
3 + 3*a^2*b*c)*d^5*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^8)*x^2 + 4*(c^4*d^11
*e - 4*b*c^3*d^10*e^2 - 4*a^3*b*d^4*e^8 + a^4*d^3*e^9 + 2*(3*b^2*c^2 + 2*a*
c^3)*d^9*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^
2)*d^7*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^6 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^
7)*x), 1/384*(15*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^5*e - (b^5 - 8*a*b
^3*c + 16*a^2*b*c^2)*d^4*e^2 + (2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^5
- (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^6)*x^4 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 1
6*a^2*c^3)*d^2*e^4 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*e^5)*x^3 + 6*(2*(b^
4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^3*e^3 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*
d^2*e^4)*x^2 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^4*e^2 - (b^5 - 8*a
*b^3*c + 16*a^2*b*c^2)*d^3*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2
*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 +
```

```
(b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(128*a*c^4*d^7 - 48*a^4*b*e^7 - 6*(5
*b^3*c^2 + 52*a*b*c^3)*d^6*e + (45*b^4*c + 448*a*b^2*c^2 - 16*a^2*c^3)*d^5*
e^2 - (15*b^5 + 412*a*b^3*c + 112*a^2*b*c^2)*d^4*e^3 + (133*a*b^4 + 472*a^2
*b^2*c - 176*a^3*c^2)*d^3*e^4 - 2*(127*a^2*b^3 + 44*a^3*b*c)*d^2*e^5 + 8*(2
3*a^3*b^2 - 4*a^4*c)*d*e^6 + (32*c^5*d^6*e - 96*b*c^4*d^5*e^2 + 4*(19*b^2*c
^3 + 44*a*c^4)*d^4*e^3 + 8*(b^3*c^2 - 44*a*b*c^3)*d^3*e^4 - (35*b^4*c - 256
*a*b^2*c^2 - 16*a^2*c^3)*d^2*e^5 + (15*b^5 - 80*a*b^3*c - 16*a^2*b*c^2)*d*e
^6 - (15*a*b^4 - 100*a^2*b^2*c + 128*a^3*c^2)*e^7)*x^3 + (128*c^5*d^7 - 400
*b*c^4*d^6*e + 352*(b^2*c^3 + 2*a*c^4)*d^5*e^2 - 2*(3*b^3*c^2 + 748*a*b*c^3
)*d^4*e^3 - (129*b^4*c - 1080*a*b^2*c^2 - 304*a^2*c^3)*d^3*e^4 + (55*b^5 -
268*a*b^3*c - 432*a^2*b*c^2)*d^2*e^5 - (65*a*b^4 - 408*a^2*b^2*c + 272*a^3*
c^2)*d*e^6 + 2*(5*a^2*b^3 - 28*a^3*b*c)*e^7)*x^2 + (128*b*c^4*d^7 - 4*(123*
b^2*c^3 - 68*a*c^4)*d^6*e + 4*(157*b^3*c^2 - 28*a*b*c^3)*d^5*e^2 - (337*b^4
*c + 456*a*b^2*c^2 + 304*a^2*c^3)*d^4*e^3 + (73*b^5 + 360*a*b^3*c + 912*a^2
*b*c^2)*d^3*e^4 - (109*a*b^4 + 372*a^2*b^2*c + 704*a^3*c^2)*d^2*e^5 + 4*(11
*a^2*b^3 + 108*a^3*b*c)*d*e^6 - 8*(a^3*b^2 + 16*a^4*c)*e^7)*x)*sqrt(c*x^2 +
 b*x + a))/(c^4*d^12 - 4*b*c^3*d^11*e - 4*a^3*b*d^5*e^7 + a^4*d^4*e^8 + 2*(
3*b^2*c^2 + 2*a*c^3)*d^10*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^9*e^3 + (b^4 + 12*a
*b^2*c + 6*a^2*c^2)*d^8*e^4 - 4*(a*b^3 + 3*a^2*b*c)*d^7*e^5 + 2*(3*a^2*b^2
+ 2*a^3*c)*d^6*e^6 + (c^4*d^8*e^4 - 4*b*c^3*d^7*e^5 - 4*a^3*b*d*e^11 + a^4*
e^12 + 2*(3*b^2*c^2 + 2*a*c^3)*d^6*e^6 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^7 + (b
^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^8 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^9 + 2*(3
*a^2*b^2 + 2*a^3*c)*d^2*e^10)*x^4 + 4*(c^4*d^9*e^3 - 4*b*c^3*d^8*e^4 - 4*a^
3*b*d^2*e^10 + a^4*d*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^5 - 4*(b^3*c + 3*
a*b*c^2)*d^6*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^7 - 4*(a*b^3 + 3*a^
2*b*c)*d^4*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^9)*x^3 + 6*(c^4*d^10*e^2 - 4
*b*c^3*d^9*e^3 - 4*a^3*b*d^3*e^9 + a^4*d^2*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d
^8*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^7*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6
*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^5*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^8)*x^2
 + 4*(c^4*d^11*e - 4*b*c^3*d^10*e^2 - 4*a^3*b*d^4*e^8 + a^4*d^3*e^9 + 2*(3*
b^2*c^2 + 2*a*c^3)*d^9*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^4 + (b^4 + 12*a*b^
2*c + 6*a^2*c^2)*d^7*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^6 + 2*(3*a^2*b^2 + 2
*a^3*c)*d^5*e^7)*x)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x, algorithm="giac")
[Out] Timed out
```

maple [**B**] time = 0.11, size = 10723, normalized size = 34.93

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x)
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{{(d+e\,x)}^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^5,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**5,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**5, x)
```

3.1364 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=430

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)(-2ae+x(2cd-be)+bd)}{128(d+ex)^2\left(ae^2-bde+cd^2\right)^4}+\frac{\left(a+bx+cx^2\right)^{3/2}(}{2}$$

Rubi [A] time = 0.65, antiderivative size = 430, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)(-2ae+x(2cd-be)+bd)}{128(d+ex)^2\left(ae^2-bde+cd^2\right)^4}+\frac{\left(a+bx+cx^2\right)^{3/2}(2cd-be)\left(-4ce(33ae+2bd)+35b^2e^2+8c^2d^2\right)}{240(d+ex)^3\left(ae^2-bde+cd^2\right)^3}+\frac{\left(a+bx+cx^2\right)^{3/2}\left(-4ce(5ae+2bd)+7b^2e^2+8c^2d^2\right)}{40(d+ex)^4\left(ae^2-bde+cd^2\right)^2}+\frac{e\left(b^2-4ac\right)^2\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{256\left(ae^2-bde+cd^2\right)^{9/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{5(d+ex)^5\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] -((b^2 - 4*a*c)*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*(b*d - 2*a
*e + (2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(128*(c*d^2 - b*d*e + a*e^2)^4
*(d + e*x)^2) + ((2*c*d - b*e)*(a + b*x + c*x^2)^(3/2))/(5*(c*d^2 - b*d*e +
 a*e^2)*(d + e*x)^5) + ((8*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(2*b*d + 5*a*e))*(a
+ b*x + c*x^2)^(3/2))/(40*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^4) + ((2*c*d
- b*e)*(8*c^2*d^2 + 35*b^2*e^2 - 4*c*e*(2*b*d + 33*a*e))*(a + b*x + c*x^2)^
(3/2))/(240*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^3) + ((b^2 - 4*a*c)^2*e*(24
*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(256*(c*d^
2 - b*d*e + a*e^2)^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
```

```
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^6}\,dx = \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{5\left(cd^2-bde+ae^2\right)(d+ex)^5} - \frac{\int \frac{\left(\frac{1}{2}\left(-4bcd+7b^2e-20ace\right)-2c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx}{5\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{5\left(cd^2-bde+ae^2\right)(d+ex)^5} + \frac{\left(8c^2d^2+7b^2e^2-4ce(2bd+5ae)\right)\left(a+bx+cx^2\right)}{40\left(cd^2-bde+ae^2\right)^2(d+ex)^4}$$

$$= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{5\left(cd^2-bde+ae^2\right)(d+ex)^5} + \frac{\left(8c^2d^2+7b^2e^2-4ce(2bd+5ae)\right)\left(a+bx+cx^2\right)}{40\left(cd^2-bde+ae^2\right)^2(d+ex)^4}$$

$$= -\frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(bd-2ae+(2cd-be)x)\sqrt{a+bx}}{128\left(cd^2-bde+ae^2\right)^4(d+ex)^2}$$

$$= -\frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(bd-2ae+(2cd-be)x)\sqrt{a+bx}}{128\left(cd^2-bde+ae^2\right)^4(d+ex)^2}$$

$$= -\frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(bd-2ae+(2cd-be)x)\sqrt{a+bx}}{128\left(cd^2-bde+ae^2\right)^4(d+ex)^2}$$

Mathematica [A] time = 3.11, size = 401, normalized size = 0.93

$$\frac{\frac{(a+x(b+cx))^{3/2}(2cd-be)\left(-4ce(33ae+2bd)+35b^2e^2+8c^2d^2\right)}{48(d+ex)^3\left(e(ae-bd)+cd^2\right)^2}+\frac{(a+x(b+cx))^{3/2}\left(-4ce(5ae+2bd)+7b^2e^2+8c^2d^2\right)}{8(d+ex)^4\left(e(ae-bd)+cd^2\right)}-\frac{5e\left(b^2-4ac\right)\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)\left(\left(b^2-4ac\right)(d+ex)^2\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)+2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}\,(-2ae+b(d-ex)+2cdx)\right)}{256(d+ex)^2\left(e(ae-bd)+cd^2\right)^{7/2}}+\frac{(a+x(b+cx))^{3/2}(2cd-be)}{(d+ex)^5}}{5\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] (((2*c*d - b*e)*(a + x*(b + c*x))^(3/2))/(d + e*x)^5 + ((8*c^2*d^2 + 7*b^2*
e^2 - 4*c*e*(2*b*d + 5*a*e))*(a + x*(b + c*x))^(3/2))/(8*(c*d^2 + e*(-(b*d)
 + a*e))*(d + e*x)^4) + ((2*c*d - b*e)*(8*c^2*d^2 + 35*b^2*e^2 - 4*c*e*(2*b
*d + 33*a*e))*(a + x*(b + c*x))^(3/2))/(48*(c*d^2 + e*(-(b*d) + a*e))^2*(d
+ e*x)^3) - (5*(b^2 - 4*a*c)*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e
))*(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)]*(-2*a*e + 2*c*d*
x + b*(d - e*x)) + (b^2 - 4*a*c)*(d + e*x)^2*ArcTanh[(-(b*d) + 2*a*e - 2*c*
d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])]))/(2
```

```
56*(c*d^2 + e*(-(b*d) + a*e))^(7/2)*(d + e*x)^2))/(5*(c*d^2 + e*(-(b*d) + a
*e)))
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] $Aborted
```

fricas [B] time = 86.81, size = 6858, normalized size = 15.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^7*e - 24*(b^5*c - 8
*a*b^3*c^2 + 16*a^2*b*c^3)*d^6*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2
- 64*a^3*c^3)*d^5*e^3 + (24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e^6 -
24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d*e^7 + (7*b^6 - 60*a*b^4*c + 144*a
^2*b^2*c^2 - 64*a^3*c^3)*e^8)*x^5 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c
^4)*d^3*e^5 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^2*e^6 + (7*b^6 - 60
*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d*e^7)*x^4 + 10*(24*(b^4*c^2 - 8*a
*b^2*c^3 + 16*a^2*c^4)*d^4*e^4 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^
3*e^5 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^2*e^6)*x^3 +
10*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^5*e^3 - 24*(b^5*c - 8*a*b^3*c
^2 + 16*a^2*b*c^3)*d^4*e^4 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3
*c^3)*d^3*e^5)*x^2 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^6*e^2 - 2
4*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^5*e^3 + (7*b^6 - 60*a*b^4*c + 144*
a^2*b^2*c^2 - 64*a^3*c^3)*d^4*e^4)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*
b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a
*c)*e^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2
*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x
)/(e^2*x^2 + 2*d*e*x + d^2)) - 4*(1280*a*c^5*d^9 - 384*a^5*b*e^9 - 40*(9*b^
3*c^3 + 100*a*b*c^4)*d^8*e + 16*(45*b^4*c^2 + 485*a*b^2*c^3 - 92*a^2*c^4)*d
^7*e^2 - (465*b^5*c + 9520*a*b^3*c^2 - 272*a^2*b*c^3)*d^6*e^3 + (105*b^6 +
5690*a*b^4*c + 8496*a^2*b^2*c^2 - 3616*a^3*c^3)*d^5*e^4 - 5*(263*a*b^5 + 19
84*a^2*b^3*c - 48*a^3*b*c^2)*d^4*e^5 + 2*(1657*a^2*b^4 + 3024*a^3*b^2*c - 5
28*a^4*c^2)*d^3*e^6 - 8*(449*a^3*b^3 + 132*a^4*b*c)*d^2*e^7 + 48*(39*a^4*b^
2 - 4*a^5*c)*d*e^8 + (128*c^6*d^7*e^2 - 448*b*c^5*d^6*e^3 + 32*(13*b^2*c^4
+ 32*a*c^5)*d^5*e^4 + 80*(b^3*c^3 - 32*a*b*c^4)*d^4*e^5 - 2*(233*b^4*c^2 -
1704*a*b^2*c^3 + 848*a^2*c^4)*d^3*e^6 + (395*b^5*c - 2552*a*b^3*c^2 + 2544*
a^2*b*c^3)*d^2*e^7 - (105*b^6 - 470*a*b^4*c - 672*a^2*b^2*c^2 + 2592*a^3*c^
3)*d*e^8 + (105*a*b^5 - 760*a^2*b^3*c + 1296*a^3*b*c^2)*e^9)*x^4 + 2*(320*c
^6*d^8*e - 1152*b*c^5*d^7*e^2 + 128*(9*b^2*c^4 + 20*a*c^5)*d^6*e^3 + 32*(3*
b^3*c^3 - 208*a*b*c^4)*d^5*e^4 - 5*(219*b^4*c^2 - 1688*a*b^2*c^3 + 560*a^2*
c^4)*d^4*e^5 + 4*(231*b^5*c - 1448*a*b^3*c^2 + 976*a^2*b*c^3)*d^3*e^6 - (24
5*b^6 - 958*a*b^4*c - 2304*a^2*b^2*c^2 + 5280*a^3*c^3)*d^2*e^7 + 8*(35*a*b^
5 - 236*a^2*b^3*c + 336*a^3*b*c^2)*d*e^8 - (35*a^2*b^4 - 216*a^3*b^2*c + 24
0*a^4*c^2)*e^9)*x^3 + 2*(640*c^6*d^9 - 2400*b*c^5*d^8*e + 24*(111*b^2*c^4 +
 212*a*c^5)*d^7*e^2 - 12*(17*b^3*c^3 + 1164*a*b*c^4)*d^6*e^3 - 3*(649*b^4*c
^2 - 5696*a*b^2*c^3 + 752*a^2*c^4)*d^5*e^4 + 15*(113*b^5*c - 700*a*b^3*c^2
+ 96*a^2*b*c^3)*d^4*e^5 - 8*(56*b^6 - 171*a*b^4*c - 855*a^2*b^2*c^2 + 892*a
^3*c^3)*d^3*e^6 + 3*(203*a*b^5 - 1220*a^2*b^3*c + 928*a^3*b*c^2)*d^2*e^7 -
3*(63*a^2*b^4 - 352*a^3*b^2*c + 144*a^4*c^2)*d*e^8 + 4*(7*a^3*b^3 - 36*a^4*
b*c)*e^9)*x^2 + 2*(640*b*c^5*d^9 - 440*(7*b^2*c^4 - 4*a*c^5)*d^8*e + 8*(665
*b^3*c^3 - 244*a*b*c^4)*d^7*e^2 - (4565*b^4*c^2 + 1128*a*b^2*c^3 + 4880*a^2
```

*c^4)*d^6*e^3 + 8*(260*b^5*c + 337*a*b^3*c^2 + 1548*a^2*b*c^3)*d^5*e^4 - 5*(79*b^6 + 454*a*b^4*c + 1632*a^2*b^2*c^2 + 1760*a^3*c^3)*d^4*e^5 + 4*(171*a*b^5 + 622*a^2*b^3*c + 2616*a^3*b*c^2)*d^3*e^6 - 3*(139*a^2*b^4 + 1272*a^3*b^2*c + 880*a^4*c^2)*d^2*e^7 + 8*(19*a^3*b^3 + 276*a^4*b*c)*d*e^8 - 24*(a^4*b^2 + 20*a^5*c)*e^9)*x)*sqrt(c*x^2 + b*x + a))/(c^5*d^15 - 5*b*c^4*d^14*e - 5*a^4*b*d^6*e^9 + a^5*d^5*e^10 + 5*(2*b^2*c^3 + a*c^4)*d^13*e^2 - 10*(b^3*c^2 + 2*a*b*c^3)*d^12*e^3 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^11*e^4 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^10*e^5 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^9*e^6 - 10*(a^2*b^3 + 2*a^3*b*c)*d^8*e^7 + 5*(2*a^3*b^2 + a^4*c)*d^7*e^8 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 - 5*a^4*b*d*e^14 + a^5*e^15 + 5*(2*b^2*c^3 + a*c^4)*d^8*e^7 - 10*(b^3*c^2 + 2*a*b*c^3)*d^7*e^8 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^6*e^9 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^5*e^10 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^4*e^11 - 10*(a^2*b^3 + 2*a^3*b*c)*d^3*e^12 + 5*(2*a^3*b^2 + a^4*c)*d^2*e^13)*x^5 + 5*(c^5*d^11*e^4 - 5*b*c^4*d^10*e^5 - 5*a^4*b*d^2*e^13 + a^5*d*e^14 + 5*(2*b^2*c^3 + a*c^4)*d^9*e^6 - 10*(b^3*c^2 + 2*a*b*c^3)*d^8*e^7 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^7*e^8 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^6*e^9 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^5*e^10 - 10*(a^2*b^3 + 2*a^3*b*c)*d^4*e^11 + 5*(2*a^3*b^2 + a^4*c)*d^3*e^12)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^11*e^4 - 5*a^4*b*d^3*e^12 + a^5*d^2*e^13 + 5*(2*b^2*c^3 + a*c^4)*d^10*e^5 - 10*(b^3*c^2 + 2*a*b*c^3)*d^9*e^6 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^8*e^7 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^7*e^8 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^6*e^9 - 10*(a^2*b^3 + 2*a^3*b*c)*d^5*e^10 + 5*(2*a^3*b^2 + a^4*c)*d^4*e^11)*x^3 + 10*(c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 - 5*a^4*b*d^4*e^11 + a^5*d^3*e^12 + 5*(2*b^2*c^3 + a*c^4)*d^11*e^4 - 10*(b^3*c^2 + 2*a*b*c^3)*d^10*e^5 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^9*e^6 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^8*e^7 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^7*e^8 - 10*(a^2*b^3 + 2*a^3*b*c)*d^6*e^9 + 5*(2*a^3*b^2 + a^4*c)*d^5*e^10)*x^2 + 5*(c^5*d^14*e - 5*b*c^4*d^13*e^2 - 5*a^4*b*d^5*e^10 + a^5*d^4*e^11 + 5*(2*b^2*c^3 + a*c^4)*d^12*e^3 - 10*(b^3*c^2 + 2*a*b*c^3)*d^11*e^4 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^10*e^5 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^9*e^6 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^8*e^7 - 10*(a^2*b^3 + 2*a^3*b*c)*d^7*e^8 + 5*(2*a^3*b^2 + a^4*c)*d^6*e^9)*x), 1/3840*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^7*e - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^6*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^5*e^3 + (24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e^6 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d*e^7 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*e^8)*x^5 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^3*e^5 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^2*e^6 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d*e^7)*x^4 + 10*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^4*e^4 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^3*e^5 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^2*e^6)*x^3 + 10*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^5*e^3 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^4*e^4 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^3*e^5)*x^2 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^6*e^2 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^5*e^3 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^4*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(1280*a*c^5*d^9 - 384*a^5*b*e^9 - 40*(9*b^3*c^3 + 100*a*b*c^4)*d^8*e + 16*(45*b^4*c^2 + 485*a*b^2*c^3 - 92*a^2*c^4)*d^7*e^2 - (465*b^5*c + 9520*a*b^3*c^2 - 272*a^2*b*c^3)*d^6*e^3 + (105*b^6 + 5690*a*b^4*c + 8496*a^2*b^2*c^2 - 3616*a^3*c^3)*d^5*e^4 - 5*(263*a*b^5 + 1984*a^2*b^3*c - 48*a^3*b*c^2)*d^4*e^5 + 2*(1657*a^2*b^4 + 3024*a^3*b^2*c - 528*a^4*c^2)*d^3*e^6 - 8*(449*a^3*b^3 + 132*a^4*b*c)*d^2*e^7 + 48*(39*a^4*b^2 - 4*a^5*c)*d*e^8 + (128*c^6*d^7*e^2 - 448*b*c^5*d^6*e^3 + 32*(13*b^2*c^4 + 32*a*c^5)*d^5*e^4 + 80*(b^3*c^3 - 32*a*b*c^4)*d^4*e^5 - 2*(233*b^4*c^2 - 1704*a*b^2*c^3 + 848*a^2*c^4)*d^3*e^6 + (395*b^5*c - 2552*a*b^3*c^2 + 2544*a^2*b*c^3)*d^2*e^7 - (105*b^6 - 470*a*b^4*c - 672*a^2*b^2*c^2 + 2592*a^3*c^3)*d*e^8 + (105*a*b^5 - 760*a^2*b^3*c + 1296*a^3*b*

```
c^2)*e^9)*x^4 + 2*(320*c^6*d^8*e - 1152*b*c^5*d^7*e^2 + 128*(9*b^2*c^4 + 20
*a*c^5)*d^6*e^3 + 32*(3*b^3*c^3 - 208*a*b*c^4)*d^5*e^4 - 5*(219*b^4*c^2 - 1
688*a*b^2*c^3 + 560*a^2*c^4)*d^4*e^5 + 4*(231*b^5*c - 1448*a*b^3*c^2 + 976*
a^2*b*c^3)*d^3*e^6 - (245*b^6 - 958*a*b^4*c - 2304*a^2*b^2*c^2 + 5280*a^3*c
^3)*d^2*e^7 + 8*(35*a*b^5 - 236*a^2*b^3*c + 336*a^3*b*c^2)*d*e^8 - (35*a^2*
b^4 - 216*a^3*b^2*c + 240*a^4*c^2)*e^9)*x^3 + 2*(640*c^6*d^9 - 2400*b*c^5*d
^8*e + 24*(111*b^2*c^4 + 212*a*c^5)*d^7*e^2 - 12*(17*b^3*c^3 + 1164*a*b*c^4
)*d^6*e^3 - 3*(649*b^4*c^2 - 5696*a*b^2*c^3 + 752*a^2*c^4)*d^5*e^4 + 15*(11
3*b^5*c - 700*a*b^3*c^2 + 96*a^2*b*c^3)*d^4*e^5 - 8*(56*b^6 - 171*a*b^4*c -
 855*a^2*b^2*c^2 + 892*a^3*c^3)*d^3*e^6 + 3*(203*a*b^5 - 1220*a^2*b^3*c + 9
28*a^3*b*c^2)*d^2*e^7 - 3*(63*a^2*b^4 - 352*a^3*b^2*c + 144*a^4*c^2)*d*e^8
+ 4*(7*a^3*b^3 - 36*a^4*b*c)*e^9)*x^2 + 2*(640*b*c^5*d^9 - 440*(7*b^2*c^4 -
 4*a*c^5)*d^8*e + 8*(665*b^3*c^3 - 244*a*b*c^4)*d^7*e^2 - (4565*b^4*c^2 + 1
128*a*b^2*c^3 + 4880*a^2*c^4)*d^6*e^3 + 8*(260*b^5*c + 337*a*b^3*c^2 + 1548
*a^2*b*c^3)*d^5*e^4 - 5*(79*b^6 + 454*a*b^4*c + 1632*a^2*b^2*c^2 + 1760*a^3
*c^3)*d^4*e^5 + 4*(171*a*b^5 + 622*a^2*b^3*c + 2616*a^3*b*c^2)*d^3*e^6 - 3*
(139*a^2*b^4 + 1272*a^3*b^2*c + 880*a^4*c^2)*d^2*e^7 + 8*(19*a^3*b^3 + 276*
a^4*b*c)*d*e^8 - 24*(a^4*b^2 + 20*a^5*c)*e^9)*x)*sqrt(c*x^2 + b*x + a))/(c^
5*d^15 - 5*b*c^4*d^14*e - 5*a^4*b*d^6*e^9 + a^5*d^5*e^10 + 5*(2*b^2*c^3 + a
*c^4)*d^13*e^2 - 10*(b^3*c^2 + 2*a*b*c^3)*d^12*e^3 + 5*(b^4*c + 6*a*b^2*c^2
 + 2*a^2*c^3)*d^11*e^4 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^10*e^5 + 5*(a*
b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^9*e^6 - 10*(a^2*b^3 + 2*a^3*b*c)*d^8*e^7 +
 5*(2*a^3*b^2 + a^4*c)*d^7*e^8 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 - 5*a^4*b*
d*e^14 + a^5*e^15 + 5*(2*b^2*c^3 + a*c^4)*d^8*e^7 - 10*(b^3*c^2 + 2*a*b*c^3
)*d^7*e^8 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^6*e^9 - (b^5 + 20*a*b^3*c
 + 30*a^2*b*c^2)*d^5*e^10 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^4*e^11 -
10*(a^2*b^3 + 2*a^3*b*c)*d^3*e^12 + 5*(2*a^3*b^2 + a^4*c)*d^2*e^13)*x^5 + 5
*(c^5*d^11*e^4 - 5*b*c^4*d^10*e^5 - 5*a^4*b*d^2*e^13 + a^5*d*e^14 + 5*(2*b^
2*c^3 + a*c^4)*d^9*e^6 - 10*(b^3*c^2 + 2*a*b*c^3)*d^8*e^7 + 5*(b^4*c + 6*a*
b^2*c^2 + 2*a^2*c^3)*d^7*e^8 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^6*e^9 +
5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^5*e^10 - 10*(a^2*b^3 + 2*a^3*b*c)*d^4
*e^11 + 5*(2*a^3*b^2 + a^4*c)*d^3*e^12)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^
11*e^4 - 5*a^4*b*d^3*e^12 + a^5*d^2*e^13 + 5*(2*b^2*c^3 + a*c^4)*d^10*e^5 -
 10*(b^3*c^2 + 2*a*b*c^3)*d^9*e^6 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^8
*e^7 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^7*e^8 + 5*(a*b^4 + 6*a^2*b^2*c +
 2*a^3*c^2)*d^6*e^9 - 10*(a^2*b^3 + 2*a^3*b*c)*d^5*e^10 + 5*(2*a^3*b^2 + a^
4*c)*d^4*e^11)*x^3 + 10*(c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 - 5*a^4*b*d^4*e^11
 + a^5*d^3*e^12 + 5*(2*b^2*c^3 + a*c^4)*d^11*e^4 - 10*(b^3*c^2 + 2*a*b*c^3)
*d^10*e^5 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^9*e^6 - (b^5 + 20*a*b^3*c
 + 30*a^2*b*c^2)*d^8*e^7 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^7*e^8 - 10
*(a^2*b^3 + 2*a^3*b*c)*d^6*e^9 + 5*(2*a^3*b^2 + a^4*c)*d^5*e^10)*x^2 + 5*(c
^5*d^14*e - 5*b*c^4*d^13*e^2 - 5*a^4*b*d^5*e^10 + a^5*d^4*e^11 + 5*(2*b^2*c
^3 + a*c^4)*d^12*e^3 - 10*(b^3*c^2 + 2*a*b*c^3)*d^11*e^4 + 5*(b^4*c + 6*a*b
^2*c^2 + 2*a^2*c^3)*d^10*e^5 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^9*e^6 +
5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^8*e^7 - 10*(a^2*b^3 + 2*a^3*b*c)*d^7*
e^8 + 5*(2*a^3*b^2 + a^4*c)*d^6*e^9)*x)]
```

giac [B] time = 73.16, size = 10103, normalized size = 23.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 1/128*(24*b^4*c^2*d^2*e - 192*a*b^2*c^3*d^2*e + 384*a^2*c^4*d^2*e - 24*b^5*
c*d*e^2 + 192*a*b^3*c^2*d*e^2 - 384*a^2*b*c^3*d*e^2 + 7*b^6*e^3 - 60*a*b^4*
c*e^3 + 144*a^2*b^2*c^2*e^3 - 64*a^3*c^3*e^3)*arctan(-((sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^4*d^8 - 4*
b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 + 4*a*c^3*d^6*e^2 - 4*b^3*c*d^5*e^3 - 12*a*
b*c^2*d^5*e^3 + b^4*d^4*e^4 + 12*a*b^2*c*d^4*e^4 + 6*a^2*c^2*d^4*e^4 - 4*a*
```

b^3*d^3*e^5 - 12*a^2*b*c*d^3*e^5 + 6*a^2*b^2*d^2*e^6 + 4*a^3*c*d^2*e^6 - 4*
a^3*b*d*e^7 + a^4*e^8)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/1920*(10240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*c^(15/2)*d^9*e + 4096*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*c^8*d^10 + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*c^7
*d^8*e^2 + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b*c^7*d^9*e + 10240*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b*c^(15/2)*d^10 - 10240*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^6*b*c^(13/2)*d^8*e^2 - 10240*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*b^2*c^(13/2)*d^9*e - 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^4*a*c^(15/2)*d^9*e + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^2*c^7
d^10 - 40960(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b*c^6*d^7*e^3 - 40448*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^2*c^6*d^8*e^2 + 8192*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^5*a*c^7*d^8*e^2 - 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^3*b^3*c^6*d^9*e - 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b*c^7
*d^9*e + 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^3*c^(13/2)*d^10 - 614
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b^2*c^(11/2)*d^7*e^3 + 40960*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^6*a*c^(13/2)*d^7*e^3 - 29440*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^4*b^3*c^(11/2)*d^8*e^2 + 66560*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*a*b*c^(13/2)*d^8*e^2 - 12160*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2*b^4*c^(11/2)*d^9*e - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b
^2*c^(13/2)*d^9*e + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^4*c^6*d^10 +
 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^2*c^5*d^6*e^4 + 40960*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^7*a*c^6*d^6*e^4 - 22528*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*b^3*c^5*d^7*e^3 + 90112*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*a*b*c^6*d^7*e^3 - 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^4*c^5*d^
8*e^2 + 107520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^2*c^6*d^8*e^2 + 10
240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*c^7*d^8*e^2 - 3200*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*b^5*c^5*d^9*e - 5120*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*a*b^3*c^6*d^9*e + 128*b^5*c^(11/2)*d^10 + 143360*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^6*b^3*c^(9/2)*d^6*e^4 + 13440*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^4*b^4*c^(9/2)*d^7*e^3 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
4*a*b^2*c^(11/2)*d^7*e^3 - 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*
c^(13/2)*d^7*e^3 + 2240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^5*c^(9/2)*d
^8*e^2 + 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^3*c^(11/2)*d^8*e^2
 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b*c^(13/2)*d^8*e^2 - 320
*b^6*c^(9/2)*d^9*e - 640*a*b^4*c^(11/2)*d^9*e - 40960*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*b^3*c^4*d^5*e^5 - 122880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^7*a*b*c^5*d^5*e^5 + 133280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^4*c^4
*d^6*e^4 - 48384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^2*c^5*d^6*e^4 -
218624*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*c^6*d^6*e^4 + 16640*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*b^5*c^4*d^7*e^3 - 71680*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*a*b^3*c^5*d^7*e^3 - 184320*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^3*a^2*b*c^6*d^7*e^3 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^6*c^
4*d^8*e^2 + 21760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^4*c^5*d^8*e^2 + 7
680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^2*c^6*d^8*e^2 - 131120*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*b^4*c^(7/2)*d^5*e^5 - 97920*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^6*a*b^2*c^(9/2)*d^5*e^5 - 234240*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^6*a^2*c^(11/2)*d^5*e^5 + 53200*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*b^5*c^(7/2)*d^6*e^4 + 40320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*
a*b^3*c^(9/2)*d^6*e^4 - 295680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b*
c^(11/2)*d^6*e^4 + 7520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^6*c^(7/2)*d
^7*e^3 - 58240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^4*c^(9/2)*d^7*e^3
 - 161280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^2*c^(11/2)*d^7*e^3 - 1
0240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*c^(13/2)*d^7*e^3 + 96*b^7*c^
(7/2)*d^8*e^2 + 2496*a*b^5*c^(9/2)*d^8*e^2 + 1280*a^2*b^3*c^(11/2)*d^8*e^2
 - 1040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^4*c^3*d^4*e^6 + 213120*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^2*c^4*d^4*e^6 - 119040*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^7*a^2*c^5*d^4*e^6 - 155248*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^5*b^5*c^3*d^5*e^5 - 33920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*
b^3*c^4*d^5*e^5 - 46848*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b*c^5*d^5

e^5 + 240(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^6*c^3*d^6*e^4 + 93440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^4*c^4*d^6*e^4 - 42240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^2*c^5*d^6*e^4 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*c^6*d^6*e^4 + 1760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^7*c^3*d^7*e^3 - 17280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^5*c^4*d^7*e^3 - 58880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^3*c^5*d^7*e^3 - 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b*c^6*d^7*e^3 - 3240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*b^4*c^(5/2)*d^3*e^7 + 25920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a*b^2*c^(7/2)*d^3*e^7 - 51840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a^2*c^(9/2)*d^3*e^7 + 37440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b^5*c^(5/2)*d^4*e^6 + 273920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^3*c^(7/2)*d^4*e^6 + 168960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^2*b*c^(9/2)*d^4*e^6 - 85120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^6*c^(5/2)*d^5*e^5 - 74000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^4*c^(7/2)*d^5*e^5 + 90240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^2*c^(9/2)*d^5*e^5 + 392960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*c^(11/2)*d^5*e^5 - 7480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^7*c^(5/2)*d^6*e^4 + 52800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^5*c^(7/2)*d^6*e^4 + 80000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^3*c^(9/2)*d^6*e^4 + 174080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b*c^(11/2)*d^6*e^4 + 176*b^8*c^(5/2)*d^7*e^3 - 1824*a*b^6*c^(7/2)*d^7*e^3 - 7680*a^2*b^4*c^(9/2)*d^7*e^3 - 2560*a^3*b^2*c^(11/2)*d^7*e^3 - 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*b^4*c^2*d^2*e^8 + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a*b^2*c^3*d^2*e^8 - 5760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a^2*c^4*d^2*e^8 + 9600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^5*c^2*d^3*e^7 - 117760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^3*c^3*d^3*e^7 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^2*b*c^4*d^3*e^7 + 63700*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^6*c^2*d^4*e^6 + 236480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^4*c^3*d^4*e^6 - 39360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b^2*c^4*d^4*e^6 + 468480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^3*c^5*d^4*e^6 - 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^7*c^2*d^5*e^5 - 55200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^5*c^3*d^5*e^5 - 152320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^3*c^4*d^5*e^5 + 509440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b*c^5*d^5*e^5 - 2540*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^8*c^2*d^6*e^4 + 13360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^6*c^3*d^6*e^4 + 33120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^4*c^4*d^6*e^4 + 102400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^2*c^5*d^6*e^4 + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*c^6*d^6*e^4 + 3240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*b^5*c^(3/2)*d^2*e^8 - 25920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a*b^3*c^(5/2)*d^2*e^8 + 51840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a^2*b*c^(7/2)*d^2*e^8 + 6370*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b^6*c^(3/2)*d^3*e^7 - 159000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^4*c^(5/2)*d^3*e^7 - 324000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^2*b^2*c^(7/2)*d^3*e^7 + 278400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^3*c^(9/2)*d^3*e^7 + 39170*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^7*c^(3/2)*d^4*e^6 + 195720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^5*c^(5/2)*d^4*e^6 - 202400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^3*c^(7/2)*d^4*e^6 + 188800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b*c^(9/2)*d^4*e^6 - 490*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^8*c^(3/2)*d^5*e^5 - 8720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^6*c^(5/2)*d^5*e^5 - 188880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^4*c^(7/2)*d^5*e^5 + 191360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^2*c^(9/2)*d^5*e^5 - 70400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*c^(11/2)*d^5*e^5 - 290*b^9*c^(3/2)*d^6*e^4 + 1448*a*b^7*c^(5/2)*d^6*e^4 + 2928*a^2*b^5*c^(7/2)*d^6*e^4 + 19200*a^3*b^3*c^(9/2)*d^6*e^4 + 1280*a^4*b*c^(11/2)*d^6*e^4 + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*b^5*c*d*e^9 - 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a*b^3*c^2*d*e^9 + 5760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a^2*b*c^3*d*e^9 - 1610*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^6*c*d^2*e^8 + 16440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^4*c^2*d^2*e^8 + 7200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^2*b^2*c^3*d^2*e^8 + 97920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^3*c^4*d^

2*e^8 - 5426*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^7*c*d^3*e^7 - 140616*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^5*c^2*d^3*e^7 - 246880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b^3*c^3*d^3*e^7 - 101760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^3*b*c^4*d^3*e^7 + 10930*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^8*c*d^4*e^6 + 84200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^6*c^2*d^4*e^6 + 24240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^4*c^3*d^4*e^6 - 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^2*c^4*d^4*e^6 - 367360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*c^5*d^4*e^6 + 690*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^9*c*d^5*e^5 + 1840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^7*c^2*d^5*e^5 - 61680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^5*c^3*d^5*e^5 + 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^3*c^4*d^5*e^5 - 78080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b*c^5*d^5*e^5 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*b^6*sqrt(c)*d*e^9 + 8100*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a*b^4*c^(3/2)*d*e^9 - 19440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a^2*b^2*c^(5/2)*d*e^9 + 8640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*a^3*c^(7/2)*d*e^9 - 3430*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b^7*sqrt(c)*d^2*e^8 + 17640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^5*c^(3/2)*d^2*e^8 + 207840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^2*b^3*c^(5/2)*d^2*e^8 - 74880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^3*b*c^(7/2)*d^2*e^8 - 4480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^8*sqrt(c)*d^3*e^7 - 112130*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^6*c^(3/2)*d^3*e^7 - 70200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^4*c^(5/2)*d^3*e^7 + 45600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b^2*c^(7/2)*d^3*e^7 - 361600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^4*c^(9/2)*d^3*e^7 + 1470*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^9*sqrt(c)*d^4*e^6 + 8780*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^7*c^(3/2)*d^4*e^6 + 86640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^5*c^(5/2)*d^4*e^6 + 50240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^3*c^(7/2)*d^4*e^6 - 375040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b*c^(9/2)*d^4*e^6 + 105*b^10*sqrt(c)*d^5*e^5 + 330*a*b^8*c^(3/2)*d^5*e^5 - 6064*a^2*b^6*c^(5/2)*d^5*e^5 - 2160*a^3*b^4*c^(7/2)*d^5*e^5 - 21120*a^4*b^2*c^(9/2)*d^5*e^5 - 256*a^5*c^(11/2)*d^5*e^5 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*b^6*e^10 + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a*b^4*c*e^10 - 2160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a^2*b^2*c^2*e^10 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a^3*c^3*e^10 - 490*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^7*d*e^9 + 2520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^5*c*d*e^9 + 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^2*b^3*c^2*d*e^9 - 63360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^3*b*c^3*d*e^9 - 896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^8*d^2*e^8 + 10034*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^6*c*d^2*e^8 + 203640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b^4*c^2*d^2*e^8 + 119520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^3*b^2*c^3*d^2*e^8 - 155520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^4*c^4*d^2*e^8 - 790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^9*d^3*e^7 - 47420*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^7*c*d^3*e^7 - 60720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^5*c^2*d^3*e^7 + 76480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^3*c^3*d^3*e^7 + 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*b*c^4*d^3*e^7 + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^10*d^4*e^6 - 2610*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^8*c*d^4*e^6 + 25060*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^6*c^2*d^4*e^6 + 60320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^4*c^3*d^4*e^6 - 112320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^2*c^4*d^4*e^6 + 17920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*c^5*d^4*e^6 + 3430*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^6*sqrt(c)*d*e^9 - 29400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^2*b^4*c^(3/2)*d*e^9 - 52320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^3*b^2*c^(5/2)*d*e^9 - 21120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^4*c^(7/2)*d*e^9 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^7*sqrt(c)*d^2*e^8 + 130560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^5*c^(3/2)*d^2*e^8 - 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b^3*c^(5/2)*d^2*e^8 + 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^4*b*c^(7/2)*d^2*e^8 - 8250*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^8*sqrt(c)*d^3*e^7 - 22690*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^6*c^(3/2)*d^3*e^7 - 85480 *(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^4*c^(5/2)*d^3*e^7 + 178080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^2*c^(7/2)*d^3*e^7 + 164480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^5*c^(9/2)*d^3*e^7 - 420*a*b^9*sqrt(c)*d^4*e^6 + 1650*a^2*b^7*c^(3/2)*d^4*e^6 + 10760*a^3*b^5*c^(5/2)*d^4*e^6 - 9120*a^4*b^3*c^(7/2)*d^4*e^6 + 9600*a^5*b*c^(9/2)*d^4*e^6 + 490*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^6*e^10 - 4200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^2*b^4*c*e^10 + 10080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^3*b^2*c^2*e^10 + 5760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^4*c^3*e^10 + 1792*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^7*d*e^9 - 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b^5*c*d*e^9 - 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^3*b^3*c^2*d*e^9 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^4*b*c^3*d*e^9 + 2370*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^8*d^2*e^8 + 70090*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^6*c*d^2*e^8 - 45560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^4*c^2*d^2*e^8 + 8160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*b^2*c^3*d^2*e^8 + 109440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^5*c^4*d^2*e^8 - 420*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^9*d^3*e^7 + 750*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^7*c*d^3*e^7 - 52040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^5*c^2*d^3*e^7 + 27040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^3*c^3*d^3*e^7 + 128640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*b*c^4*d^3*e^7 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^4*b*c^(5/2)*e^10 - 4480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^6*sqrt(c)*d*e^9 - 89600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b^4*c^(3/2)*d*e^9 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^5*c^(7/2)*d*e^9 + 15930*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^7*sqrt(c)*d^2*e^8 + 18440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^5*c^(3/2)*d^2*e^8 - 16160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^3*c^(5/2)*d^2*e^8 - 82560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^5*b*c^(7/2)*d^2*e^8 + 630*a^2*b^8*sqrt(c)*d^3*e^7 - 5310*a^3*b^6*c^(3/2)*d^3*e^7 - 7840*a^4*b^4*c^(5/2)*d^3*e^7 + 25248*a^5*b^2*c^(7/2)*d^3*e^7 - 1792*a^6*c^(9/2)*d^3*e^7 - 896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b^6*e^10 + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^3*b^4*c*e^10 + 23040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^4*b^2*c^2*e^10 - 2370*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^7*d*e^9 - 41640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^5*c*d*e^9 + 37280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*b^3*c^2*d*e^9 - 48000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^5*b*c^3*d*e^9 + 630*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^8*d^2*e^8 + 6510*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^6*c*d^2*e^8 + 28720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^4*c^2*d^2*e^8 - 68640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*b^2*c^3*d^2*e^8 - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^6*c^4*d^2*e^8 + 32000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^4*b^3*c^(3/2)*e^10 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^5*b*c^(5/2)*e^10 - 12990*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^6*sqrt(c)*d*e^9 - 1480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^4*c^(3/2)*d*e^9 + 31200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^5*b^2*c^(5/2)*d*e^9 - 17280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^6*c^(7/2)*d*e^9 - 420*a^3*b^7*sqrt(c)*d^2*e^8 + 7080*a^4*b^5*c^(3/2)*d^2*e^8 - 3712*a^5*b^3*c^(5/2)*d^2*e^8 - 20352*a^6*b*c^(7/2)*d^2*e^8 + 790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^6*e^10 + 8040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*b^4*c*e^10 + 5280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^5*b^2*c^2*e^10 - 5760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^6*c^3*e^10 - 420*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^7*d*e^9 - 8280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^5*c*d*e^9 + 4480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*b^3*c^2*d*e^9 + 28800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^6*b*c^3*d*e^9 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^5*sqrt(c)*e^10 - 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^5*b^3*c^(3/2)*e^10 + 105*a^4*b^6*sqrt(c)*d*e^9 - 4740*a^5*b^4*c^(3/2)*d*e^9 + 8304*a^6*b^2*c^(5/2)*d*e^9 + 5184*a^7*c^(7/2)*d*e^9 + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^6*e^10 + 2940*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*b^4*c*e^10 - 5520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^6*b^2*c^2*e^10 - 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^7*c^3*e^10 + 1280*a^6*b^3*c^(3/2)*e^10 - 3072*a^7*b*c^(5/2)*e^10)/((c^4*d^8*e^3 - 4*b*

```
c^3*d^7*e^4 + 6*b^2*c^2*d^6*e^5 + 4*a*c^3*d^6*e^5 - 4*b^3*c*d^5*e^6 - 12*a*
b*c^2*d^5*e^6 + b^4*d^4*e^7 + 12*a*b^2*c*d^4*e^7 + 6*a^2*c^2*d^4*e^7 - 4*a*
b^3*d^3*e^8 - 12*a^2*b*c*d^3*e^8 + 6*a^2*b^2*d^2*e^9 + 4*a^3*c*d^2*e^9 - 4*
a^3*b*d*e^10 + a^4*e^11)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^5)
```

maple [B] time = 0.09, size = 15192, normalized size = 35.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^6,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**6,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**6, x)
```

3.1365 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^{3/2} dx$

Optimal. Leaf size=379

$$\frac{3e\left(b^2-4ac\right)^3\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{11/2}}-\frac{3e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+c}}{81}$$

Rubi [A] time = 0.51, antiderivative size = 379, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$-\frac{3e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)}{8192c^5}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)}{1024c^4}+\frac{\left(a+bx+cx^2\right)^{5/2}\left(10cex\left(-4ce(7ae+2bd)+9b^2e^2+8c^2d^2\right)-8c^2de(96ae+13bd)+4bce^2(61ae+56bd)-63b^3e^3+96c^3d^3\right)}{2240c^3}+\frac{3e\left(b^2-4ac\right)^3\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{11/2}}+\frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)^{5/2}+\frac{3(d+ex)^2\left(a+bx+cx^2\right)^{5/2}(2cd-be)}{56c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-3*(b^2 - 4*a*c)^2*e*(32*c^2*d^2 + 9*b^2*e^2 - 4*c*e*(8*b*d + a*e))*(b + 2
*c*x)*Sqrt[a + b*x + c*x^2])/(8192*c^5) + ((b^2 - 4*a*c)*e*(32*c^2*d^2 + 9*
b^2*e^2 - 4*c*e*(8*b*d + a*e))*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(1024*c
^4) + (3*(2*c*d - b*e)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2))/(56*c) + ((d +
e*x)^3*(a + b*x + c*x^2)^(5/2))/4 + ((96*c^3*d^3 - 63*b^3*e^3 + 4*b*c*e^2*(
56*b*d + 61*a*e) - 8*c^2*d*e*(13*b*d + 96*a*e) + 10*c*e*(8*c^2*d^2 + 9*b^2*
e^2 - 4*c*e*(2*b*d + 7*a*e))*x)*(a + b*x + c*x^2)^(5/2))/(2240*c^3) + (3*(b
^2 - 4*a*c)^3*e*(32*c^2*d^2 + 9*b^2*e^2 - 4*c*e*(8*b*d + a*e))*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{3/2}dx = \frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)^{5/2} + \frac{\int (d+ex)^2(3c(bd-2ae)+3c(2cd-be}{8c}$$

$$= \frac{3(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}{56c} + \frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)^{5/2}$$

$$= \frac{3(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}{56c} + \frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)^{5/2}$$

$$= \frac{\left(b^2-4ac\right)e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\left(a+bx+cx^2\right.}{1024c^4}$$

$$= -\frac{3\left(b^2-4ac\right)^2e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\sqrt{a+bx+}}{8192c^5}$$

$$= -\frac{3\left(b^2-4ac\right)^2e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\sqrt{a+bx+}}{8192c^5}$$

$$= -\frac{3\left(b^2-4ac\right)^2e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\sqrt{a+bx+}}{8192c^5}$$

Mathematica [A] time = 0.69, size = 297, normalized size = 0.78

$$\frac{1}{8}\left(\frac{(a+x(b+cx))^{5/2}\left(-8c^2e(ae(96d+35ex)+bd(13d+10ex))+2bce^2(122ae+112bd+45bex)-63b^3e^3+16c^3d^2(6d+5ex)\right)}{280c^3}+\frac{e\left(b^2-4ac\right)\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{2048c^{11/2}}+2(d+ex)^3(a+x(b+cx))^{5/2}+\frac{3(d+ex)^2(a+x(b+cx))^{5/2}(2cd-be)}{7c}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((3*(2*c*d - b*e)*(d + e*x)^2*(a + x*(b + c*x))^(5/2))/(7*c) + 2*(d + e*x)^
3*(a + x*(b + c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(-63*b^3*e^3 + 16*c^3*
d^2*(6*d + 5*e*x) + 2*b*c*e^2*(112*b*d + 122*a*e + 45*b*e*x) - 8*c^2*e*(b*d
*(13*d + 10*e*x) + a*e*(96*d + 35*e*x))))/(280*c^3) + ((b^2 - 4*a*c)*e*(32*
c^2*d^2 + 9*b^2*e^2 - 4*c*e*(8*b*d + a*e))*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a +
x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*A
rcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(2048*c^(11/2)))/8
```

IntegrateAlgebraic [B] time = 4.92, size = 928, normalized size = 2.45

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(114688*a^2*c^5*d^3 - 3360*b^5*c^2*d^2*e + 35840*a*b
^3*c^3*d^2*e - 118272*a^2*b*c^4*d^2*e + 3360*b^6*c*d*e^2 - 35840*a*b^4*c^2*
d*e^2 + 118272*a^2*b^2*c^3*d*e^2 - 98304*a^3*c^4*d*e^2 - 945*b^7*e^3 + 1050
0*a*b^5*c*e^3 - 37744*a^2*b^3*c^2*e^3 + 42432*a^3*b*c^3*e^3 + 229376*a*b*c^
```

```
5*d^3*x + 2240*b^4*c^3*d^2*e*x - 21504*a*b^2*c^4*d^2*e*x + 107520*a^2*c^5*d
^2*e*x - 2240*b^5*c^2*d*e^2*x + 21504*a*b^3*c^3*d*e^2*x - 58368*a^2*b*c^4*d
*e^2*x + 630*b^6*c*e^3*x - 6328*a*b^4*c^2*e^3*x + 19104*a^2*b^2*c^3*e^3*x -
 13440*a^3*c^4*e^3*x + 114688*b^2*c^5*d^3*x^2 + 229376*a*c^6*d^3*x^2 - 1792
*b^3*c^4*d^2*e*x^2 + 408576*a*b*c^5*d^2*e*x^2 + 1792*b^4*c^3*d*e^2*x^2 - 15
360*a*b^2*c^4*d*e^2*x^2 + 49152*a^2*c^5*d*e^2*x^2 - 504*b^5*c^2*e^3*x^2 + 4
544*a*b^3*c^3*e^3*x^2 - 11136*a^2*b*c^4*e^3*x^2 + 229376*b*c^6*d^3*x^3 + 24
7296*b^2*c^5*d^2*e*x^3 + 501760*a*c^6*d^2*e*x^3 - 1536*b^3*c^4*d*e^2*x^3 +
284672*a*b*c^5*d*e^2*x^3 + 432*b^4*c^3*e^3*x^3 - 3456*a*b^2*c^4*e^3*x^3 + 8
960*a^2*c^5*e^3*x^3 + 114688*c^7*d^3*x^4 + 544768*b*c^6*d^2*e*x^4 + 192512*
b^2*c^5*d*e^2*x^4 + 393216*a*c^6*d*e^2*x^4 - 384*b^3*c^4*e^3*x^4 + 72192*a*
b*c^5*e^3*x^4 + 286720*c^7*d^2*e*x^5 + 450560*b*c^6*d*e^2*x^5 + 52480*b^2*c
^5*e^3*x^5 + 107520*a*c^6*e^3*x^5 + 245760*c^7*d*e^2*x^6 + 128000*b*c^6*e^3
*x^6 + 71680*c^7*e^3*x^7))/(286720*c^5) - (3*(32*b^6*c^2*d^2*e - 384*a*b^4*
c^3*d^2*e + 1536*a^2*b^2*c^4*d^2*e - 2048*a^3*c^5*d^2*e - 32*b^7*c*d*e^2 +
384*a*b^5*c^2*d*e^2 - 1536*a^2*b^3*c^3*d*e^2 + 2048*a^3*b*c^4*d*e^2 + 9*b^8
*e^3 - 112*a*b^6*c*e^3 + 480*a^2*b^4*c^2*e^3 - 768*a^3*b^2*c^3*e^3 + 256*a^
4*c^4*e^3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(16384*c^(11/2
))
```

fricas [B] time = 0.63, size = 1587, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/1146880*(105*(32*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*
d^2*e - 32*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d*e^2 + (
9*b^8 - 112*a*b^6*c + 480*a^2*b^4*c^2 - 768*a^3*b^2*c^3 + 256*a^4*c^4)*e^3)
*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(c) - 4*a*c) + 4*(71680*c^8*e^3*x^7 + 114688*a^2*c^6*d^3 + 5120*(48*
c^8*d*e^2 + 25*b*c^7*e^3)*x^6 + 1280*(224*c^8*d^2*e + 352*b*c^7*d*e^2 + (41
*b^2*c^6 + 84*a*c^7)*e^3)*x^5 + 128*(896*c^8*d^3 + 4256*b*c^7*d^2*e + 32*(4
7*b^2*c^6 + 96*a*c^7)*d*e^2 - 3*(b^3*c^5 - 188*a*b*c^6)*e^3)*x^4 - 224*(15*
b^5*c^3 - 160*a*b^3*c^4 + 528*a^2*b*c^5)*d^2*e + 32*(105*b^6*c^2 - 1120*a*b
^4*c^3 + 3696*a^2*b^2*c^4 - 3072*a^3*c^5)*d*e^2 - (945*b^7*c - 10500*a*b^5*
c^2 + 37744*a^2*b^3*c^3 - 42432*a^3*b*c^4)*e^3 + 16*(14336*b*c^7*d^3 + 224*
(69*b^2*c^6 + 140*a*c^7)*d^2*e - 32*(3*b^3*c^5 - 556*a*b*c^6)*d*e^2 + (27*b
^4*c^4 - 216*a*b^2*c^5 + 560*a^2*c^6)*e^3)*x^3 + 8*(14336*(b^2*c^6 + 2*a*c^
7)*d^3 - 224*(b^3*c^5 - 228*a*b*c^6)*d^2*e + 32*(7*b^4*c^4 - 60*a*b^2*c^5 +
 192*a^2*c^6)*d*e^2 - (63*b^5*c^3 - 568*a*b^3*c^4 + 1392*a^2*b*c^5)*e^3)*x^
2 + 2*(114688*a*b*c^6*d^3 + 224*(5*b^4*c^4 - 48*a*b^2*c^5 + 240*a^2*c^6)*d^
2*e - 32*(35*b^5*c^3 - 336*a*b^3*c^4 + 912*a^2*b*c^5)*d*e^2 + (315*b^6*c^2
- 3164*a*b^4*c^3 + 9552*a^2*b^2*c^4 - 6720*a^3*c^5)*e^3)*x)*sqrt(c*x^2 + b*
x + a))/c^6, -1/573440*(105*(32*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 -
64*a^3*c^5)*d^2*e - 32*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^
4)*d*e^2 + (9*b^8 - 112*a*b^6*c + 480*a^2*b^4*c^2 - 768*a^3*b^2*c^3 + 256*a
^4*c^4)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)
/(c^2*x^2 + b*c*x + a*c)) - 2*(71680*c^8*e^3*x^7 + 114688*a^2*c^6*d^3 + 512
0*(48*c^8*d*e^2 + 25*b*c^7*e^3)*x^6 + 1280*(224*c^8*d^2*e + 352*b*c^7*d*e^2
 + (41*b^2*c^6 + 84*a*c^7)*e^3)*x^5 + 128*(896*c^8*d^3 + 4256*b*c^7*d^2*e +
 32*(47*b^2*c^6 + 96*a*c^7)*d*e^2 - 3*(b^3*c^5 - 188*a*b*c^6)*e^3)*x^4 - 22
4*(15*b^5*c^3 - 160*a*b^3*c^4 + 528*a^2*b*c^5)*d^2*e + 32*(105*b^6*c^2 - 11
20*a*b^4*c^3 + 3696*a^2*b^2*c^4 - 3072*a^3*c^5)*d*e^2 - (945*b^7*c - 10500*
a*b^5*c^2 + 37744*a^2*b^3*c^3 - 42432*a^3*b*c^4)*e^3 + 16*(14336*b*c^7*d^3
+ 224*(69*b^2*c^6 + 140*a*c^7)*d^2*e - 32*(3*b^3*c^5 - 556*a*b*c^6)*d*e^2 +
 (27*b^4*c^4 - 216*a*b^2*c^5 + 560*a^2*c^6)*e^3)*x^3 + 8*(14336*(b^2*c^6 +
2*a*c^7)*d^3 - 224*(b^3*c^5 - 228*a*b*c^6)*d^2*e + 32*(7*b^4*c^4 - 60*a*b^2
*c^5 + 192*a^2*c^6)*d*e^2 - (63*b^5*c^3 - 568*a*b^3*c^4 + 1392*a^2*b*c^5)*e
```

```
^3)*x^2 + 2*(114688*a*b*c^6*d^3 + 224*(5*b^4*c^4 - 48*a*b^2*c^5 + 240*a^2*c
^6)*d^2*e - 32*(35*b^5*c^3 - 336*a*b^3*c^4 + 912*a^2*b*c^5)*d*e^2 + (315*b^
6*c^2 - 3164*a*b^4*c^3 + 9552*a^2*b^2*c^4 - 6720*a^3*c^5)*e^3)*x)*sqrt(c*x^
2 + b*x + a))/c^6]
```

giac [B] time = 0.27, size = 856, normalized size = 2.26

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/286720*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(4*(14*c^2*x*e^3 + (48*c^9*d
*e^2 + 25*b*c^8*e^3)/c^7)*x + (224*c^9*d^2*e + 352*b*c^8*d*e^2 + 41*b^2*c^7
*e^3 + 84*a*c^8*e^3)/c^7)*x + (896*c^9*d^3 + 4256*b*c^8*d^2*e + 1504*b^2*c^
7*d*e^2 + 3072*a*c^8*d*e^2 - 3*b^3*c^6*e^3 + 564*a*b*c^7*e^3)/c^7)*x + (143
36*b*c^8*d^3 + 15456*b^2*c^7*d^2*e + 31360*a*c^8*d^2*e - 96*b^3*c^6*d*e^2 +
 17792*a*b*c^7*d*e^2 + 27*b^4*c^5*e^3 - 216*a*b^2*c^6*e^3 + 560*a^2*c^7*e^3
)/c^7)*x + (14336*b^2*c^7*d^3 + 28672*a*c^8*d^3 - 224*b^3*c^6*d^2*e + 51072
*a*b*c^7*d^2*e + 224*b^4*c^5*d*e^2 - 1920*a*b^2*c^6*d*e^2 + 6144*a^2*c^7*d*
e^2 - 63*b^5*c^4*e^3 + 568*a*b^3*c^5*e^3 - 1392*a^2*b*c^6*e^3)/c^7)*x + (11
4688*a*b*c^7*d^3 + 1120*b^4*c^5*d^2*e - 10752*a*b^2*c^6*d^2*e + 53760*a^2*c
^7*d^2*e - 1120*b^5*c^4*d*e^2 + 10752*a*b^3*c^5*d*e^2 - 29184*a^2*b*c^6*d*e
^2 + 315*b^6*c^3*e^3 - 3164*a*b^4*c^4*e^3 + 9552*a^2*b^2*c^5*e^3 - 6720*a^3
*c^6*e^3)/c^7)*x + (114688*a^2*c^7*d^3 - 3360*b^5*c^4*d^2*e + 35840*a*b^3*c
^5*d^2*e - 118272*a^2*b*c^6*d^2*e + 3360*b^6*c^3*d*e^2 - 35840*a*b^4*c^4*d*
e^2 + 118272*a^2*b^2*c^5*d*e^2 - 98304*a^3*c^6*d*e^2 - 945*b^7*c^2*e^3 + 10
500*a*b^5*c^3*e^3 - 37744*a^2*b^3*c^4*e^3 + 42432*a^3*b*c^5*e^3)/c^7) - 3/1
6384*(32*b^6*c^2*d^2*e - 384*a*b^4*c^3*d^2*e + 1536*a^2*b^2*c^4*d^2*e - 204
8*a^3*c^5*d^2*e - 32*b^7*c*d*e^2 + 384*a*b^5*c^2*d*e^2 - 1536*a^2*b^3*c^3*d
*e^2 + 2048*a^3*b*c^4*d*e^2 + 9*b^8*e^3 - 112*a*b^6*c*e^3 + 480*a^2*b^4*c^2
*e^3 - 768*a^3*b^2*c^3*e^3 + 256*a^4*c^4*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.08, size = 1607, normalized size = 4.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 9/512/c^3*e^3*b^4*x*(c*x^2+b*x+a)^(3/2)-27/4096/c^4*e^3*b^6*(c*x^2+b*x+a)^(
1/2)*x+57/2048/c^4*e^3*b^5*(c*x^2+b*x+a)^(1/2)*a-5/128/c^3*e^3*b^3*a*(c*x^2
+b*x+a)^(3/2)+2/5*(c*x^2+b*x+a)^(5/2)*d^3+9/128*b^5/c^(7/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e^2-9/32*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a^2*d*e^2+3/8*b/c^(3/2)*a^3*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))*d*e^2-3/32*b^4/c^3*(c*x^2+b*x+a)^(1/2)*a*d*e^2-1/16*b^3
/c^2*x*(c*x^2+b*x+a)^(3/2)*d*e^2-1/7*b/c*x*(c*x^2+b*x+a)^(5/2)*d*e^2+3/16*b
^2/c^2*a^2*(c*x^2+b*x+a)^(1/2)*d*e^2+1/8*b^2/c^2*a*(c*x^2+b*x+a)^(3/2)*d*e^
2+3/128*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x*d*e^2+57/1024/c^3*e^3*b^4*(c*x^2+b*x+
a)^(1/2)*x*a-33/512/c^3*e^3*b^3*a^2*(c*x^2+b*x+a)^(1/2)-1/8/c*e^3*a*x*(c*x^
2+b*x+a)^(5/2)+1/32/c*e^3*a^2*x*(c*x^2+b*x+a)^(3/2)+1/64/c^2*e^3*a^2*(c*x^2
+b*x+a)^(3/2)*b+3/64/c*e^3*a^3*(c*x^2+b*x+a)^(1/2)*x+3/128/c^2*e^3*a^3*(c*x
^2+b*x+a)^(1/2)*b+3/8*b/c*a^2*(c*x^2+b*x+a)^(1/2)*x*d*e^2+1/4*b/c*a*x*(c*x^
2+b*x+a)^(3/2)*d*e^2+3/16*b^2/c*(c*x^2+b*x+a)^(1/2)*x*a*d^2*e-3/16*b^3/c^2*
(c*x^2+b*x+a)^(1/2)*x*a*d*e^2+6/7*x^2*(c*x^2+b*x+a)^(5/2)*d*e^2+x*(c*x^2+b*
x+a)^(5/2)*d^2*e-9/320/c^3*e^3*b^3*(c*x^2+b*x+a)^(5/2)+9/1024/c^4*e^3*b^5*(
c*x^2+b*x+a)^(3/2)-27/8192/c^5*e^3*b^7*(c*x^2+b*x+a)^(1/2)+27/16384/c^(11/2
)*e^3*b^8*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/64/c^(3/2)*e^3*a^4*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-3/8*a^3/c^(1/2)*ln((c*x+1/2*b)/
```

```
c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+3/256*b^6/c^4*(c*x^2+b*x+a)^(1/2)*d*e^2-
3/8*a^2*(c*x^2+b*x+a)^(1/2)*x*d^2*e+1/4*e^3*x^3*(c*x^2+b*x+a)^(5/2)-3/128*b
^4/c^2*(c*x^2+b*x+a)^(1/2)*x*d^2*e+3/32*b^3/c^2*(c*x^2+b*x+a)^(1/2)*a*d^2*e
+1/16*b^2/c*x*(c*x^2+b*x+a)^(3/2)*d^2*e-3/16*a^2/c*(c*x^2+b*x+a)^(1/2)*b*d^
2*e-9/128*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d^2*e+9
/32*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2*d^2*e-1/8*a
/c*(c*x^2+b*x+a)^(3/2)*b*d^2*e-5/64/c^2*e^3*b^2*a*x*(c*x^2+b*x+a)^(3/2)-33/
256/c^2*e^3*b^2*a^2*(c*x^2+b*x+a)^(1/2)*x+1/32*b^3/c^2*(c*x^2+b*x+a)^(3/2)*
d^2*e-3/256*b^5/c^3*(c*x^2+b*x+a)^(1/2)*d^2*e-1/4*a*x*(c*x^2+b*x+a)^(3/2)*d
^2*e+1/10*b^2/c^2*(c*x^2+b*x+a)^(5/2)*d*e^2-1/32*b^4/c^3*(c*x^2+b*x+a)^(3/2
)*d*e^2-12/35*a/c*(c*x^2+b*x+a)^(5/2)*d*e^2-3/56/c*e^3*b*x^2*(c*x^2+b*x+a)^
(5/2)+61/560/c^2*e^3*b*a*(c*x^2+b*x+a)^(5/2)+9/224/c^2*e^3*b^2*x*(c*x^2+b*x
+a)^(5/2)-9/64/c^(5/2)*e^3*b^2*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))+45/512/c^(7/2)*e^3*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-
21/1024/c^(9/2)*e^3*b^6*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+3/512
*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e-1/10*b/c*(c*
x^2+b*x+a)^(5/2)*d^2*e-3/512*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*d*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (b + 2\,c\,x)\,\left(d + e\,x\right)^3\,\left(c\,x^2 + b\,x + a\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)\,(d + ex)^3\,\left(a + bx + cx^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3*(a + b*x + c*x**2)**(3/2), x)
```

3.1366 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=242

$$\frac{e\left(b^2-4ac\right)^3(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{9/2}}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{256c^4}+\frac{e\left(b^2-4ac\right)(b-$$

Rubi [A] time = 0.45, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(-2ce(12ae+7bd)+7b^2e^2+10cex(2cd-be)+24c^2d^2\right)}{210c^2}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{256c^4}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{96c^3}+\frac{e\left(b^2-4ac\right)^3(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{9/2}}+\frac{2}{7}(d+ex)^2\left(a+bx+cx^2\right)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((b^2 - 4*a*c)^2*e*(2*c*d - b*e)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(256*c
^4) + ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(
96*c^3) + (2*(d + e*x)^2*(a + b*x + c*x^2)^(5/2))/7 + ((24*c^2*d^2 + 7*b^2*
e^2 - 2*c*e*(7*b*d + 12*a*e) + 10*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(5
/2))/(210*c^2) + ((b^2 - 4*a*c)^3*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sq
rt[c]*Sqrt[a + b*x + c*x^2])])/(512*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}\,dx = \frac{2}{7}(d+ex)^2\left(a+bx+cx^2\right)^{5/2}+\frac{\int (d+ex)(2c(bd-2ae)+2c(2cd-\ldots}{7c}$$

$$=\frac{2}{7}(d+ex)^2\left(a+bx+cx^2\right)^{5/2}+\frac{\left(24c^2d^2+7b^2e^2-2ce(7bd+12ae)\ldots}{21\ldots}$$

$$=\frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{96c^3}+\frac{2}{7}(d+ex)^2\left(a\ldots\right.$$

$$=-\frac{\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}+\frac{\left(b^2-4ac\right)e(2c\ldots}{\ldots}$$

$$=-\frac{\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}+\frac{\left(b^2-4ac\right)e(2c\ldots}{\ldots}$$

$$=-\frac{\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}+\frac{\left(b^2-4ac\right)e(2c\ldots}{\ldots}$$

Mathematica [A] time = 0.34, size = 204, normalized size = 0.84

$$-\frac{e\left(b^2-4ac\right)(be-2cd)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{1536c^{9/2}}+\frac{(a+x(b+cx))^{5/2}\left(-2ce(12ae+7bd+5bex)+7b^2e^2+4c^2d(6d+5ex)\right)}{210c^2}+\frac{2}{7}(d+ex)^2(a+x(b+cx))^{5/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)^2*(a + x*(b + c*x))^(5/2))/7 + ((a + x*(b + c*x))^(5/2)*(7*b^2
*e^2 + 4*c^2*d*(6*d + 5*e*x) - 2*c*e*(7*b*d + 12*a*e + 5*b*e*x)))/(210*c^2)
 - ((b^2 - 4*a*c)*e*(-2*c*d + b*e)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c
*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(1536*c^(9/2))
```

IntegrateAlgebraic [B] time = 2.51, size = 549, normalized size = 2.27

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(10752*a^2*c^4*d^2 - 210*b^5*c*d*e + 2240*a*b^3*c^2*
d*e - 7392*a^2*b*c^3*d*e + 105*b^6*e^2 - 1120*a*b^4*c*e^2 + 3696*a^2*b^2*c^
2*e^2 - 3072*a^3*c^3*e^2 + 21504*a*b*c^4*d^2*x + 140*b^4*c^2*d*e*x - 1344*a
*b^2*c^3*d*e*x + 6720*a^2*c^4*d*e*x - 70*b^5*c*e^2*x + 672*a*b^3*c^2*e^2*x
- 1824*a^2*b*c^3*e^2*x + 10752*b^2*c^4*d^2*x^2 + 21504*a*c^5*d^2*x^2 - 112*
b^3*c^3*d*e*x^2 + 25536*a*b*c^4*d*e*x^2 + 56*b^4*c^2*e^2*x^2 - 480*a*b^2*c^
3*e^2*x^2 + 1536*a^2*c^4*e^2*x^2 + 21504*b*c^5*d^2*x^3 + 15456*b^2*c^4*d*e*
x^3 + 31360*a*c^5*d*e*x^3 - 48*b^3*c^3*e^2*x^3 + 8896*a*b*c^4*e^2*x^3 + 107
52*c^6*d^2*x^4 + 34048*b*c^5*d*e*x^4 + 6016*b^2*c^4*e^2*x^4 + 12288*a*c^5*e
^2*x^4 + 17920*c^6*d*e*x^5 + 14080*b*c^5*e^2*x^5 + 7680*c^6*e^2*x^6))/(2688
0*c^4) + ((-2*b^6*c*d*e + 24*a*b^4*c^2*d*e - 96*a^2*b^2*c^3*d*e + 128*a^3*c
```

```
^4*d*e + b^7*e^2 - 12*a*b^5*c*e^2 + 48*a^2*b^3*c^2*e^2 - 64*a^3*b*c^3*e^2)*
Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(512*c^(9/2))
```

fricas [B] time = 0.55, size = 1015, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/107520*(105*(2*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d*e
- (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*e^2)*sqrt(c)*log(-8*c^
2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c
) + 4*(7680*c^7*e^2*x^6 + 10752*a^2*c^5*d^2 + 1280*(14*c^7*d*e + 11*b*c^6*e
^2)*x^5 + 128*(84*c^7*d^2 + 266*b*c^6*d*e + (47*b^2*c^5 + 96*a*c^6)*e^2)*x^
4 + 16*(1344*b*c^6*d^2 + 14*(69*b^2*c^5 + 140*a*c^6)*d*e - (3*b^3*c^4 - 556
*a*b*c^5)*e^2)*x^3 - 14*(15*b^5*c^2 - 160*a*b^3*c^3 + 528*a^2*b*c^4)*d*e +
(105*b^6*c - 1120*a*b^4*c^2 + 3696*a^2*b^2*c^3 - 3072*a^3*c^4)*e^2 + 8*(134
4*(b^2*c^5 + 2*a*c^6)*d^2 - 14*(b^3*c^4 - 228*a*b*c^5)*d*e + (7*b^4*c^3 - 6
0*a*b^2*c^4 + 192*a^2*c^5)*e^2)*x^2 + 2*(10752*a*b*c^5*d^2 + 14*(5*b^4*c^3
- 48*a*b^2*c^4 + 240*a^2*c^5)*d*e - (35*b^5*c^2 - 336*a*b^3*c^3 + 912*a^2*b
*c^4)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/53760*(105*(2*(b^6*c - 12*a*b^
4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d*e - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c
^2 - 64*a^3*b*c^3)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(7680*c^7*e^2*x^6 + 10752*a^2*c^5*
d^2 + 1280*(14*c^7*d*e + 11*b*c^6*e^2)*x^5 + 128*(84*c^7*d^2 + 266*b*c^6*d*
e + (47*b^2*c^5 + 96*a*c^6)*e^2)*x^4 + 16*(1344*b*c^6*d^2 + 14*(69*b^2*c^5
+ 140*a*c^6)*d*e - (3*b^3*c^4 - 556*a*b*c^5)*e^2)*x^3 - 14*(15*b^5*c^2 - 16
0*a*b^3*c^3 + 528*a^2*b*c^4)*d*e + (105*b^6*c - 1120*a*b^4*c^2 + 3696*a^2*b
^2*c^3 - 3072*a^3*c^4)*e^2 + 8*(1344*(b^2*c^5 + 2*a*c^6)*d^2 - 14*(b^3*c^4
- 228*a*b*c^5)*d*e + (7*b^4*c^3 - 60*a*b^2*c^4 + 192*a^2*c^5)*e^2)*x^2 + 2*
(10752*a*b*c^5*d^2 + 14*(5*b^4*c^3 - 48*a*b^2*c^4 + 240*a^2*c^5)*d*e - (35*
b^5*c^2 - 336*a*b^3*c^3 + 912*a^2*b*c^4)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^5
]
```

giac [B] time = 0.25, size = 534, normalized size = 2.21

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/26880*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(6*c^2*x*e^2 + (14*c^8*d*e +
11*b*c^7*e^2)/c^6)*x + (84*c^8*d^2 + 266*b*c^7*d*e + 47*b^2*c^6*e^2 + 96*a*
c^7*e^2)/c^6)*x + (1344*b*c^7*d^2 + 966*b^2*c^6*d*e + 1960*a*c^7*d*e - 3*b^
3*c^5*e^2 + 556*a*b*c^6*e^2)/c^6)*x + (1344*b^2*c^6*d^2 + 2688*a*c^7*d^2 -
14*b^3*c^5*d*e + 3192*a*b*c^6*d*e + 7*b^4*c^4*e^2 - 60*a*b^2*c^5*e^2 + 192*
a^2*c^6*e^2)/c^6)*x + (10752*a*b*c^6*d^2 + 70*b^4*c^4*d*e - 672*a*b^2*c^5*d
*e + 3360*a^2*c^6*d*e - 35*b^5*c^3*e^2 + 336*a*b^3*c^4*e^2 - 912*a^2*b*c^5*
e^2)/c^6)*x + (10752*a^2*c^6*d^2 - 210*b^5*c^3*d*e + 2240*a*b^3*c^4*d*e - 7
392*a^2*b*c^5*d*e + 105*b^6*c^2*e^2 - 1120*a*b^4*c^3*e^2 + 3696*a^2*b^2*c^4
*e^2 - 3072*a^3*c^5*e^2)/c^6) - 1/512*(2*b^6*c*d*e - 24*a*b^4*c^2*d*e + 96*
a^2*b^2*c^3*d*e - 128*a^3*c^4*d*e - b^7*e^2 + 12*a*b^5*c*e^2 - 48*a^2*b^3*c
^2*e^2 + 64*a^3*b*c^3*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*s
qrt(c) - b))/c^(9/2)
```

maple [B] time = 0.08, size = 895, normalized size = 3.70

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 1/8/c*e^2*b*a^2*(c*x^2+b*x+a)^(1/2)*x+1/12/c*e^2*b*a*x*(c*x^2+b*x+a)^(3/2)-
1/16/c^2*e^2*b^3*(c*x^2+b*x+a)^(1/2)*x*a-1/12*a/c*(c*x^2+b*x+a)^(3/2)*b*d*e
-1/8*a^2/c*(c*x^2+b*x+a)^(1/2)*b*d*e+1/8*b^2/c*(c*x^2+b*x+a)^(1/2)*x*a*d*e-
1/512/c^(9/2)*e^2*b^7*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/96/c^3*
e^2*b^4*(c*x^2+b*x+a)^(3/2)+1/256/c^4*e^2*b^6*(c*x^2+b*x+a)^(1/2)-4/35/c*e^
2*a*(c*x^2+b*x+a)^(5/2)+1/30/c^2*e^2*b^2*(c*x^2+b*x+a)^(5/2)+2/3*x*(c*x^2+b
*x+a)^(5/2)*d*e+2/7*e^2*x^2*(c*x^2+b*x+a)^(5/2)-1/4*a^3/c^(1/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e+2/5*(c*x^2+b*x+a)^(5/2)*d^2+1/256*b^6/
c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-1/6*a*x*(c*x^2+b*x+
a)^(3/2)*d*e-1/21/c*e^2*b*x*(c*x^2+b*x+a)^(5/2)-1/48/c^2*e^2*b^3*x*(c*x^2+b
*x+a)^(3/2)+1/128/c^3*e^2*b^5*(c*x^2+b*x+a)^(1/2)*x-1/4*a^2*(c*x^2+b*x+a)^(
1/2)*x*d*e+1/16*b^3/c^2*(c*x^2+b*x+a)^(1/2)*a*d*e+1/24*b^2/c*x*(c*x^2+b*x+a
)^(3/2)*d*e+1/8/c^(3/2)*e^2*b*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))-3/32/c^(5/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+3/1
28/c^(7/2)*e^2*b^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/15*b/c*(
c*x^2+b*x+a)^(5/2)*d*e+1/48*b^3/c^2*(c*x^2+b*x+a)^(3/2)*d*e-1/128*b^5/c^3*(
c*x^2+b*x+a)^(1/2)*d*e+1/24/c^2*e^2*b^2*a*(c*x^2+b*x+a)^(3/2)+1/16/c^2*e^2*
b^2*a^2*(c*x^2+b*x+a)^(1/2)-1/32/c^3*e^2*b^4*(c*x^2+b*x+a)^(1/2)*a-1/64*b^4
/c^2*(c*x^2+b*x+a)^(1/2)*x*d*e+3/16*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))*a^2*d*e-3/64*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*a*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,\left(d+e\,x\right)^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b + 2cx\right) \left(d + ex\right)^{2} \left(a + bx + cx^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2*(a + b*x + c*x**2)**(3/2), x)
```

3.1367 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=160

$$\frac{e\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{7/2}}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}}{256c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)}{96c^2}$$

Rubi [A] time = 0.12, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {779, 612, 621, 206}

$$-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}}{256c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{96c^2}+\frac{e\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{7/2}}+\frac{\left(a+bx+cx^2\right)^{5/2}(-be+12cd+10cex)}{30c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((b^2 - 4*a*c)^2*e*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(256*c^3) + ((b^2 -
4*a*c)*e*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(96*c^2) + ((12*c*d - b*e + 1
0*c*e*x)*(a + b*x + c*x^2)^(5/2))/(30*c) + ((b^2 - 4*a*c)^3*e*ArcTanh[(b +
2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(512*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{3/2}\,dx = \frac{(12cd-be+10cex)\left(a+bx+cx^2\right)^{5/2}}{30c} + \frac{\left(\left(b^2-4ac\right)e\right)\int\left(a+bx+\right.}{12c}$$

$$= \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{96c^2} + \frac{(12cd-be+10cex)\left(a+\right.}{30c}$$

$$= -\frac{\left(b^2-4ac\right)^2 e(b+2cx)\sqrt{a+bx+cx^2}}{256c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+\right.}{96c^2}$$

$$= -\frac{\left(b^2-4ac\right)^2 e(b+2cx)\sqrt{a+bx+cx^2}}{256c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+\right.}{96c^2}$$

$$= -\frac{\left(b^2-4ac\right)^2 e(b+2cx)\sqrt{a+bx+cx^2}}{256c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+\right.}{96c^2}$$

Mathematica [A] time = 0.19, size = 147, normalized size = 0.92

$$\frac{e\left(b^2-4ac\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{1536c^{7/2}}+\frac{(a+x(b+cx))^{5/2}(2c(6d+5ex)-be)}{30c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((a + x*(b + c*x))^(5/2)*(-(b*e) + 2*c*(6*d + 5*e*x)))/(30*c) + ((b^2 - 4*a
*c)*e*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*
(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
+ x*(b + c*x)])]))/(1536*c^(7/2))
```

IntegrateAlgebraic [A] time = 1.16, size = 267, normalized size = 1.67

$$\frac{\sqrt{a+bx+cx^2}\left(-528a^2bc^2e+1536a^2c^3d+480a^2c^3ex+160ab^3ce-96ab^2c^2ex+3072abc^3dx+1824abc^3ex^2+3072ac^4dx^2+2240ac^4ex^3-15b^5e+10b^4cex-8b^3c^2ex^2+1536b^2c^3dx^2+1104b^2c^3ex^3+3072bc^4dx^3+2432bc^4ex^4+1536c^5dx^4+1280c^5ex^5\right)}{3840c^3}-\frac{e\left(-64a^3c^3+48a^2b^2c^2-12ab^4c+b^6\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{512c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(1536*a^2*c^3*d - 15*b^5*e + 160*a*b^3*c*e - 528*a^2
*b*c^2*e + 3072*a*b*c^3*d*x + 10*b^4*c*e*x - 96*a*b^2*c^2*e*x + 480*a^2*c^3
*e*x + 1536*b^2*c^3*d*x^2 + 3072*a*c^4*d*x^2 - 8*b^3*c^2*e*x^2 + 1824*a*b*c
^3*e*x^2 + 3072*b*c^4*d*x^3 + 1104*b^2*c^3*e*x^3 + 2240*a*c^4*e*x^3 + 1536*
c^5*d*x^4 + 2432*b*c^4*e*x^4 + 1280*c^5*e*x^5))/(3840*c^3) - ((b^6 - 12*a*b
^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3)*e*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*
x + c*x^2]])/(512*c^(7/2))
```

fricas [B] time = 0.48, size = 559, normalized size = 3.49

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3)*sqrt(c)*e*lo
g(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c)
- 4*a*c) - 4*(1280*c^6*e*x^5 + 1536*a^2*c^4*d + 128*(12*c^6*d + 19*b*c^5*e)
*x^4 + 16*(192*b*c^5*d + (69*b^2*c^4 + 140*a*c^5)*e)*x^3 + 8*(192*(b^2*c^4
+ 2*a*c^5)*d - (b^3*c^3 - 228*a*b*c^4)*e)*x^2 - (15*b^5*c - 160*a*b^3*c^2 +
 528*a^2*b*c^3)*e + 2*(1536*a*b*c^4*d + (5*b^4*c^2 - 48*a*b^2*c^3 + 240*a^2
```

```
*c^4)*e)*x)*sqrt(c*x^2 + b*x + a))/c^4, -1/7680*(15*(b^6 - 12*a*b^4*c + 48*
a^2*b^2*c^2 - 64*a^3*c^3)*sqrt(-c)*e*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(1280*c^6*e*x^5 + 1536*a^2*c^4
*d + 128*(12*c^6*d + 19*b*c^5*e)*x^4 + 16*(192*b*c^5*d + (69*b^2*c^4 + 140*
a*c^5)*e)*x^3 + 8*(192*(b^2*c^4 + 2*a*c^5)*d - (b^3*c^3 - 228*a*b*c^4)*e)*x
^2 - (15*b^5*c - 160*a*b^3*c^2 + 528*a^2*b*c^3)*e + 2*(1536*a*b*c^4*d + (5*
b^4*c^2 - 48*a*b^2*c^3 + 240*a^2*c^4)*e)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [**B**] time = 0.26, size = 294, normalized size = 1.84

$$\frac{1}{3840}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\,c^2xe+\frac{12\,c^7d+19\,bc^6e}{c^5}\right)x+\frac{192\,bc^6d+69\,b^2c^5e+140\,ac^6e}{c^5}\right)x+\frac{192\,b^2c^5d+384\,ac^6d-b^3c^4e+228\,abc^5e}{c^5}\right)x+\frac{1536\,abc^5d+5\,b^4c^3e-48\,ab^2c^4e+240\,a^2c^5e}{c^5}\right)x+\frac{1536\,a^2c^5d-15\,b^5c^2e+160\,ab^3c^3e-528\,a^2bc^4e}{c^5}\right)-\frac{\left(b^6e-12\,ab^4ce+48\,a^2b^2c^2e-64\,a^3c^3e\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{512\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/3840*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*c^2*x*e + (12*c^7*d + 19*b*c^6
*e)/c^5)*x + (192*b*c^6*d + 69*b^2*c^5*e + 140*a*c^6*e)/c^5)*x + (192*b^2*c
^5*d + 384*a*c^6*d - b^3*c^4*e + 228*a*b*c^5*e)/c^5)*x + (1536*a*b*c^5*d +
5*b^4*c^3*e - 48*a*b^2*c^4*e + 240*a^2*c^5*e)/c^5)*x + (1536*a^2*c^5*d - 15
*b^5*c^2*e + 160*a*b^3*c^3*e - 528*a^2*b*c^4*e)/c^5) - 1/512*(b^6*e - 12*a*
b^4*c*e + 48*a^2*b^2*c^2*e - 64*a^3*c^3*e)*log(abs(-2*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.06, size = 401, normalized size = 2.51

$$-\frac{a^3e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8\sqrt{c}}+\frac{3a^2b^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{32c^{\frac{3}{2}}}-\frac{3a\,b^4e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{128c^{\frac{5}{2}}}+\frac{b^6e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{512c^{\frac{7}{2}}}-\frac{\sqrt{c\,x^2+bx+a}\;a^2ex}{8}+\frac{\sqrt{c\,x^2+bx+a}\;a\,b^2ex}{16c}-\frac{\sqrt{c\,x^2+bx+a}\;b^4ex}{128c^2}-\frac{\sqrt{c\,x^2+bx+a}\;a^2be}{16c}+\frac{\sqrt{c\,x^2+bx+a}\;a\,b^3e}{32c^2}-\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}aex}{12}-\frac{\sqrt{c\,x^2+bx+a}\;b^5e}{256c^3}+\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}b^2ex}{48c}-\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}abe}{24c}+\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}b^3e}{96c^2}+\frac{\left(c\,x^2+bx+a\right)^{\frac{5}{2}}ex}{3}-\frac{\left(c\,x^2+bx+a\right)^{\frac{5}{2}}be}{30c}+\frac{2\left(c\,x^2+bx+a\right)^{\frac{5}{2}}d}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/8*e*a^2*(c*x^2+b*x+a)^(1/2)*x-1/12*e*a*x*(c*x^2+b*x+a)^(3/2)+1/96/c^2*e*
b^3*(c*x^2+b*x+a)^(3/2)-1/256/c^3*e*b^5*(c*x^2+b*x+a)^(1/2)-1/30/c*e*b*(c*x
^2+b*x+a)^(5/2)-3/128/c^(5/2)*e*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*a+1/16/c*e*b^2*(c*x^2+b*x+a)^(1/2)*x*a+3/32/c^(3/2)*e*b^2*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-1/16/c*e*a^2*(c*x^2+b*x+a)^(1/2)*b-1/8/
c^(1/2)*e*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/24/c*e*a*(c*x^2
+b*x+a)^(3/2)*b+1/512/c^(7/2)*e*b^6*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))-1/128/c^2*e*b^4*(c*x^2+b*x+a)^(1/2)*x+1/32/c^2*e*b^3*(c*x^2+b*x+a)^(1/
2)*a+1/48/c*e*b^2*x*(c*x^2+b*x+a)^(3/2)+2/5*(c*x^2+b*x+a)^(5/2)*d+1/3*e*x*(
c*x^2+b*x+a)^(5/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int (b+2\,c\,x)\,\left(d+e\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)(d + ex)\left(a + bx + cx^2\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.1368 $\int (b+2cx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=18

$$\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(a + b*x + c*x^2)^(5/2))/5
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^{3/2}\,dx=\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$\frac{2}{5}(a+x(b+cx))^{5/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(a + x*(b + c*x))^(5/2))/5
```

IntegrateAlgebraic [A] time = 0.02, size = 18, normalized size = 1.00

$$\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(a + b*x + c*x^2)^(5/2))/5
```

fricas [B] time = 0.42, size = 49, normalized size = 2.72

$$\frac{2}{5}\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)*sqrt(c*x^2 +
b*x + a)
```

giac [A] time = 0.19, size = 14, normalized size = 0.78

$$\frac{2}{5}\left(cx^2+bx+a\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*(c*x^2 + b*x + a)^(5/2)
```

maple [A] time = 0.04, size = 15, normalized size = 0.83

$$\frac{2\left(c\,x^2+bx+a\right)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/5*(c*x^2+b*x+a)^(5/2)
```

maxima [A] time = 0.51, size = 14, normalized size = 0.78

$$\frac{2}{5}\left(cx^2+bx+a\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(c*x^2 + b*x + a)^(5/2)
```

mupad [B] time = 1.92, size = 14, normalized size = 0.78

$$\frac{2\left(c\,x^2+b\,x+a\right)^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*(a + b*x + c*x^2)^(5/2))/5
```

sympy [B] time = 0.61, size = 136, normalized size = 7.56

$$\frac{2a^2\sqrt{a+bx+cx^2}}{5}+\frac{4abx\sqrt{a+bx+cx^2}}{5}+\frac{4acx^2\sqrt{a+bx+cx^2}}{5}+\frac{2b^2x^2\sqrt{a+bx+cx^2}}{5}+\frac{4bcx^3\sqrt{a+bx+cx^2}}{5}+\frac{2c^2x^4\sqrt{a+bx+cx^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] 2*a**2*sqrt(a + b*x + c*x**2)/5 + 4*a*b*x*sqrt(a + b*x + c*x**2)/5 + 4*a*c*
x**2*sqrt(a + b*x + c*x**2)/5 + 2*b**2*x**2*sqrt(a + b*x + c*x**2)/5 + 4*b*
c*x**3*sqrt(a + b*x + c*x**2)/5 + 2*c**2*x**4*sqrt(a + b*x + c*x**2)/5
```

3.1369 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=360

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{3/2}e^5}$$

Rubi [A] time = 0.60, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {814, 843, 621, 206, 724}

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{3/2}e^5}-\frac{\sqrt{a+bx+cx^2}\left(-2cex\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)-16c^2de(7bd-4ae)+4bce^2(12bd-11ae)-b^3e^3+64c^3d^3\right)}{32ce^4}-\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^{3/2}\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e^5}-\frac{\left(a+bx+cx^2\right)^{3/2}(-7be+8cd-6cex)}{12e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] -((64*c^3*d^3 - b^3*e^3 + 4*b*c*e^2*(12*b*d - 11*a*e) - 16*c^2*d*e*(7*b*d -
 4*a*e) - 2*c*e*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e))*x)*Sqrt[a +
b*x + c*x^2])/(32*c*e^4) - ((8*c*d - 7*b*e - 6*c*e*x)*(a + b*x + c*x^2)^(3/
2))/(12*e^2) + ((128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*a*e) - 64*c
^3*d^2*e*(4*b*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2))*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(64*c^(3/2)*e^5) - ((
2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^(3/2)*ArcTanh[(b*d - 2*a*e + (2*c*d -
b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/e^5
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
```

```
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{d+ex}\,dx = -\frac{(8cd-7be-6cex)\left(a+bx+cx^2\right)^{3/2}}{12e^2} - \frac{\int \frac{\left(c\left(7b^2de+4acde-8b\left(cd^2+ae^2\right)\right)-c\left(16c^2d^2+\right.\right.}{d+ex}}{8ce^2}$$

$$= -\frac{\left(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\left(16c^2d^2+\right.\right.}{32ce^4}$$

$$= -\frac{\left(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\left(16c^2d^2+\right.\right.}{32ce^4}$$

$$= -\frac{\left(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\left(16c^2d^2+\right.\right.}{32ce^4}$$

$$= -\frac{\left(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\left(16c^2d^2+\right.\right.}{32ce^4}$$

Mathematica [A] time = 0.74, size = 342, normalized size = 0.95

$$\frac{3\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)+2\sqrt{c}\left(e\sqrt{a+x(b+cx)}\left(8c^2e\left(ae(15ex-32d)+b\left(42d^2-20dex+13e^2x^2\right)\right)+2bce^2(94ae-72bd+31bex)+3b^3e^3-16c^3\left(12d^3-6d^2ex+4de^2x^2-3e^3x^3\right)\right)+96c(2cd-be)\left(e(ae-bd)+cd^2\right)^{3/2}\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)\right)}{192c^{3/2}e^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (3*(128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*a*e) - 64*c^3*d^2*e*(4*b
*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2))*ArcTanh[(b + 2*
c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 2*Sqrt[c]*(e*Sqrt[a + x*(b + c*x)
]*(3*b^3*e^3 + 2*b*c*e^2*(-72*b*d + 94*a*e + 31*b*e*x) - 16*c^3*(12*d^3 - 6
*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3) + 8*c^2*e*(a*e*(-32*d + 15*e*x) + b*(42
*d^2 - 20*d*e*x + 13*e^2*x^2))) + 96*c*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a
*e))^(3/2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(
b*d) + a*e)]*Sqrt[a + x*(b + c*x)])]))/(192*c^(3/2)*e^5)
```

IntegrateAlgebraic [A] time = 2.48, size = 500, normalized size = 1.39

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(-192*c^3*d^3 + 336*b*c^2*d^2*e - 144*b^2*c*d*e^2 -
256*a*c^2*d*e^2 + 3*b^3*e^3 + 188*a*b*c*e^3 + 96*c^3*d^2*e*x - 160*b*c^2*d*
e^2*x + 62*b^2*c*e^3*x + 120*a*c^2*e^3*x - 64*c^3*d*e^2*x^2 + 104*b*c^2*e^3
*x^2 + 48*c^3*e^3*x^3))/(96*c*e^4) - (2*(2*c^2*d^3*Sqrt[-(c*d^2) + b*d*e -
```

```
a*e^2] - 3*b*c*d^2*e*Sqrt[-(c*d^2) + b*d*e - a*e^2] + b^2*d*e^2*Sqrt[-(c*d^
2) + b*d*e - a*e^2] + 2*a*c*d*e^2*Sqrt[-(c*d^2) + b*d*e - a*e^2] - a*b*e^3*
Sqrt[-(c*d^2) + b*d*e - a*e^2])*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[a
+ b*x + c*x^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/e^5 + ((-128*c^4*d^4 + 256
*b*c^3*d^3*e - 144*b^2*c^2*d^2*e^2 - 192*a*c^3*d^2*e^2 + 16*b^3*c*d*e^3 + 1
92*a*b*c^2*d*e^3 + b^4*e^4 - 24*a*b^2*c*e^4 - 48*a^2*c^2*e^4)*Log[b*c + 2*c
^2*x - 2*c^(3/2)*Sqrt[a + b*x + c*x^2]])/(64*c^(3/2)*e^5)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 3119, normalized size = 8.66

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x)
```

```
[Out] -6/e^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b
*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*
(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b*d^2*c-4/e^4*ln(((x+d
/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2))*c^(3/2)*d^3*b+3/4*c/e*(c*x^2+b*x+a)^(1/2)*x*a+1/4/
e*(c*x^2+b*x+a)^(3/2)*b+1/3/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(3/2)*b+2/e^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(5/2)*d^4+3
/4*c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+3/64/c^(3/2)/e
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4-3/32/c/e*(c*x^2+b*x+a)^(1/
2)*b^3-3/16/e*(c*x^2+b*x+a)^(1/2)*x*b^2+1/2*c/e*(c*x^2+b*x+a)^(3/2)*x-1/16/
e/c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*b^4-2/e^4*((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c^2*d^3+3/8/e*(c*x^2+b*x+a)^(1/
2)*b*a+1/8/e/c*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*b^3-2/3/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(3/2)*c*d-3/2/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*b^2*d+1/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*a*b+1/4/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*x*b^2+2/e^6/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(
x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^3*d
^5+7/2/e^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*b*d^2*c+3/4/e/c^(1/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2
*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*a*b^2-1/e/((a*e^2-
```

```
b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2
+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a^2*b+1/e^3*((x+d/e)^2*c+(b*e-2*c*d)*(x
+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d^2-1/e^3/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))*b^3*d^2+3/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1
/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(3
/2)*d^2*a+9/4/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(1/2)*b^2*d^2-1/4/e^2/
c^(1/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*b^3*d-3/e^2*c^(1/2)*ln(((x+d/e)*c+
1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2))*a*b*d+4/e^4/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c
*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*
b^2*d^3*c-1/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)
^(1/2)*x*b*c*d+2/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e
)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a^2*c*d+4/
e^4/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*
e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*c^2*d^3+2/e^2/((a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b
*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b^2*d-5/e^5/((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2))/(x+d/e))*b*d^4*c^2-3/8/c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))*b^2*a-2/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*a*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x), x)
```

3.1370 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=303

$$-\frac{(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^5}+\frac{\sqrt{ae^2-bde+cd^2}\left(-4ce(4bd-ae)+3\right.}{}$$

Rubi [A] time = 0.48, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {812, 814, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(-4ce(5bd-ae)+5b^2e^2-4cex(2cd-be)+16c^2d^2\right)}{2e^4}-\frac{(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^5}+\frac{\sqrt{ae^2-bde+cd^2}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2e^5}+\frac{\left(a+bx+cx^2\right)^{3/2}(-3be+8cd+2cex)}{3e^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] ((16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(5*b*d - a*e) - 4*c*e*(2*c*d - b*e)*x)*Sqr
t[a + b*x + c*x^2])/(2*e^4) + ((8*c*d - 3*b*e + 2*c*e*x)*(a + b*x + c*x^2)^
(3/2))/(3*e^2*(d + e*x)) - ((2*c*d - b*e)*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*
b*d - 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(4*Sq
rt[c]*e^5) + (Sqrt[c*d^2 - b*d*e + a*e^2]*(16*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(
4*b*d - a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e
 + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*e^5)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{(8cd-3be+2cex)\left(a+bx+cx^2\right)^{3/2}}{3e^2(d+ex)} - \frac{\int \frac{\left(8bcd-3b^2e-4ace+8c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{d+ex}\,dx}{2e^2}$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + \frac{(8cd-3b}{}$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + \frac{(8cd-3b}{}$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + \frac{(8cd-3b}{}$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + \frac{(8cd-3b}{}$$

Mathematica [A] time = 1.06, size = 395, normalized size = 1.30

$$\frac{\frac{(a+x(b+cx))^{3/2}\left(ce(-2ae+11bd-3bex)-3b^2e^2+c^2\left(6dex-8d^2\right)\right)}{3e^2}+\frac{-2c^2e\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)\left(4ce(ae-5bd+bex)+5b^2e^2+8c^2d(2d-ex)\right)+2c^2\left(4ce(ae-4bd)+3b^2e^2+16c^2d^2\right)\left(e(ae-bd)+cd^2\right)^{3/2}\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)+c^{3/2}(2cd-be)\left(e(ae-bd)+cd^2\right)\left(4ce(3ae-4bd)+b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{4c^2e^5}+\frac{(a+x(b+cx))^{5/2}(be-2cd)}{d+ex}}{e(bd-ae)-cd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (((-2*c*d + b*e)*(a + x*(b + c*x))^(5/2))/(d + e*x) + ((a + x*(b + c*x))^(3
/2)*(-3*b^2*e^2 + c*e*(11*b*d - 2*a*e - 3*b*e*x) + c^2*(-8*d^2 + 6*d*e*x)))
/(3*e^2) + (-2*c^2*e*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)]*(5*b^
2*e^2 + 8*c^2*d*(2*d - e*x) + 4*c*e*(-5*b*d + a*e + b*e*x)) + c^(3/2)*(2*c*
d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d +
 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 2*c^2*(16
*c^2*d^2 + 3*b^2*e^2 + 4*c*e*(-4*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^(3/
2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a
*e)]*Sqrt[a + x*(b + c*x)])])/(4*c^2*e^5))/(-(c*d^2) + e*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 11.55, size = 6952, normalized size = 22.94

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] Result too large to show
```

fricas [A] time = 127.99, size = 2231, normalized size = 7.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/24*(3*(32*c^3*d^4 - 48*b*c^2*d^3*e + 6*(3*b^2*c + 4*a*c^2)*d^2*e^2 - (b
^3 + 12*a*b*c)*d*e^3 + (32*c^3*d^3*e - 48*b*c^2*d^2*e^2 + 6*(3*b^2*c + 4*a*
c^2)*d*e^3 - (b^3 + 12*a*b*c)*e^4)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^
2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 6*(16*c^3*d^3 -
16*b*c^2*d^2*e + (3*b^2*c + 4*a*c^2)*d*e^2 + (16*c^3*d^2*e - 16*b*c^2*d*e^2
 + (3*b^2*c + 4*a*c^2)*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e -
 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2
)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e +
(2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*
x^2 + 2*d*e*x + d^2)) - 4*(4*c^3*e^4*x^3 + 48*c^3*d^3*e - 60*b*c^2*d^2*e^2
- 6*a*b*c*e^4 + (15*b^2*c + 28*a*c^2)*d*e^3 - 2*(4*c^3*d*e^3 - 5*b*c^2*e^4)
*x^2 + (24*c^3*d^2*e^2 - 32*b*c^2*d*e^3 + (9*b^2*c + 16*a*c^2)*e^4)*x)*sqrt
(c*x^2 + b*x + a))/(c*e^6*x + c*d*e^5), 1/12*(3*(32*c^3*d^4 - 48*b*c^2*d^3*
e + 6*(3*b^2*c + 4*a*c^2)*d^2*e^2 - (b^3 + 12*a*b*c)*d*e^3 + (32*c^3*d^3*e
- 48*b*c^2*d^2*e^2 + 6*(3*b^2*c + 4*a*c^2)*d*e^3 - (b^3 + 12*a*b*c)*e^4)*x)
*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 +
b*c*x + a*c)) + 3*(16*c^3*d^3 - 16*b*c^2*d^2*e + (3*b^2*c + 4*a*c^2)*d*e^2
+ (16*c^3*d^2*e - 16*b*c^2*d*e^2 + (3*b^2*c + 4*a*c^2)*e^3)*x)*sqrt(c*d^2 -
 b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2
 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(
c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2
 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 2*(4*c^3*e^4*x^3 +
48*c^3*d^3*e - 60*b*c^2*d^2*e^2 - 6*a*b*c*e^4 + (15*b^2*c + 28*a*c^2)*d*e^3
 - 2*(4*c^3*d*e^3 - 5*b*c^2*e^4)*x^2 + (24*c^3*d^2*e^2 - 32*b*c^2*d*e^3 + (
9*b^2*c + 16*a*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c*e^6*x + c*d*e^5), 1/2
4*(12*(16*c^3*d^3 - 16*b*c^2*d^2*e + (3*b^2*c + 4*a*c^2)*d*e^2 + (16*c^3*d^
2*e - 16*b*c^2*d*e^2 + (3*b^2*c + 4*a*c^2)*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*
e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d -
2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e
+ a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 3*(32*c^3*d^4 - 48*b*c
^2*d^3*e + 6*(3*b^2*c + 4*a*c^2)*d^2*e^2 - (b^3 + 12*a*b*c)*d*e^3 + (32*c^3
*d^3*e - 48*b*c^2*d^2*e^2 + 6*(3*b^2*c + 4*a*c^2)*d*e^3 - (b^3 + 12*a*b*c)*
e^4)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2
*c*x + b)*sqrt(c) - 4*a*c) + 4*(4*c^3*e^4*x^3 + 48*c^3*d^3*e - 60*b*c^2*d^2
*e^2 - 6*a*b*c*e^4 + (15*b^2*c + 28*a*c^2)*d*e^3 - 2*(4*c^3*d*e^3 - 5*b*c^2
*e^4)*x^2 + (24*c^3*d^2*e^2 - 32*b*c^2*d*e^3 + (9*b^2*c + 16*a*c^2)*e^4)*x)
*sqrt(c*x^2 + b*x + a))/(c*e^6*x + c*d*e^5), 1/12*(6*(16*c^3*d^3 - 16*b*c^2
*d^2*e + (3*b^2*c + 4*a*c^2)*d*e^2 + (16*c^3*d^2*e - 16*b*c^2*d*e^2 + (3*b^
2*c + 4*a*c^2)*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2
 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*
c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 -
b^2*d*e + a*b*e^2)*x)) + 3*(32*c^3*d^4 - 48*b*c^2*d^3*e + 6*(3*b^2*c + 4*a*
c^2)*d^2*e^2 - (b^3 + 12*a*b*c)*d*e^3 + (32*c^3*d^3*e - 48*b*c^2*d^2*e^2 +
6*(3*b^2*c + 4*a*c^2)*d*e^3 - (b^3 + 12*a*b*c)*e^4)*x)*sqrt(-c)*arctan(1/2*
```

```
sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(4*
c^3*e^4*x^3 + 48*c^3*d^3*e - 60*b*c^2*d^2*e^2 - 6*a*b*c*e^4 + (15*b^2*c + 2
8*a*c^2)*d*e^3 - 2*(4*c^3*d*e^3 - 5*b*c^2*e^4)*x^2 + (24*c^3*d^2*e^2 - 32*b
*c^2*d*e^3 + (9*b^2*c + 16*a*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c*e^6*x +
 c*d*e^5)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 6898, normalized size = 22.77

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{{(d+e\,x)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{(d+ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**2, x)
```

3.1371 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=309

$$\frac{3\sqrt{c}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4e^5}-\frac{3(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right.}{8e^5\sqrt{ae^2-bde+\cdots}}$$

Rubi [A] time = 0.37, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {812, 843, 621, 206, 724}

$$-\frac{3\sqrt{a+bx+cx^2}\left(-4ce(3bd-ae)+b^2e^2+4cex(2cd-be)+16c^2d^2\right)}{4e^4(d+ex)}+\frac{3\sqrt{c}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4e^5}-\frac{3(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8e^5\sqrt{ae^2-bde+cd^2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(-be+4cd+2cex)}{2e^2(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (-3*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(3*b*d - a*e) + 4*c*e*(2*c*d - b*e)*x)*Sq
rt[a + b*x + c*x^2])/(4*e^4*(d + e*x)) + ((4*c*d - b*e + 2*c*e*x)*(a + b*x
+ c*x^2)^(3/2))/(2*e^2*(d + e*x)^2) + (3*Sqrt[c]*(16*c^2*d^2 + 3*b^2*e^2 -
4*c*e*(4*b*d - a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])]
)/(4*e^5) - (3*(2*c*d - b*e)*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e))
*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqr
t[a + b*x + c*x^2])])/(8*e^5*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx = \frac{(4cd-be+2cex)\left(a+bx+cx^2\right)^{3/2}}{2e^2(d+ex)^2} - \frac{3\int \frac{\left(2\left(4bcd-b^2e-4ace\right)+8c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{(d+ex)^2}}{8e^2}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

Mathematica [A] time = 2.31, size = 544, normalized size = 1.76

$$\frac{-\frac{(a+x(b+cx))^{5/2}\left(4ce(2ae-3bd)+b^2e^2+12c^2d^2\right)}{2(d+ex)\left(e(ae-bd)+cd^2\right)}-\frac{2e^3(a+x(b+cx))^{3/2}\left(2c^2e(2ae(2ex-3d)+3bd(5d-2ex))+bce^2(10ae-15bd+bex)+b^3e^3-4c^3d^2(4d-3ex)\right)+6e\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)\left(4c^2e(ae(ex-3d)+bd(7d-2ex))+bce^2(8ae-13bd+bex)+b^3e^3+8c^3d^2(ex-2d)\right)+6\sqrt{c}\left(4ce(ae-4bd)+3b^2e^2+16c^2d^2\right)\left(e(ae-bd)+cd^2\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)+3(2cd-be)\left(e(ae-bd)+cd^2\right)^{3/2}\left(4ce(3ae-4bd)+b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{4e^5\left(e(bd-ae)-cd^2\right)}}{2\left(e(ae-bd)+cd^2\right)}+\frac{(a+x(b+cx))^{5/2}(2cd-be)}{(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (((2*c*d - b*e)*(a + x*(b + c*x))^(5/2))/(d + e*x)^2 - ((12*c^2*d^2 + b^2*e
^2 + 4*c*e*(-3*b*d + 2*a*e))*(a + x*(b + c*x))^(5/2))/(2*(c*d^2 + e*(-(b*d)
 + a*e))*(d + e*x)) - (6*e*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)]
*(b^3*e^3 + 8*c^3*d^2*(-2*d + e*x) + b*c*e^2*(-13*b*d + 8*a*e + b*e*x) + 4*
c^2*e*(b*d*(7*d - 2*e*x) + a*e*(-3*d + e*x))) + 2*e^3*(a + x*(b + c*x))^(3/
2)*(b^3*e^3 - 4*c^3*d^2*(4*d - 3*e*x) + b*c*e^2*(-15*b*d + 10*a*e + b*e*x)
+ 2*c^2*e*(3*b*d*(5*d - 2*e*x) + 2*a*e*(-3*d + 2*e*x))) + 6*Sqrt[c]*(16*c^2
*d^2 + 3*b^2*e^2 + 4*c*e*(-4*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2*ArcTa
nh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 3*(2*c*d - b*e)*(c*d^2
+ e*(-(b*d) + a*e))^(3/2)*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d + 3*a*e))*A
rcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]
*Sqrt[a + x*(b + c*x)])])/(4*e^5*(-(c*d^2) + e*(b*d - a*e))))/(2*(c*d^2 + e
*(-(b*d) + a*e)))
```

IntegrateAlgebraic [F] time = 180.04, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.82Unable to divide, perha
ps due to rounding error%%%{1,[6,0,8,0,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]
%%%}]%%},[5,0,7,0,1]%%%}+%%%{-3,[4,1,8,0,0]%%%}+%%%{3,[4,0,7,1,1]%%%}+%%%{%
%%{12,[1]%%%},[4,0,6,0,2]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,7,
0,1]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,6,1,2]%%%}+%%%{%%{[%%%
{-8,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,5,0,3]%%%}+%%%{3,[2,2,8,0,0]%%%
}+%%%{-6,[2,1,7,1,1]%%%}+%%%{%%%{-12,[1]%%%},[2,1,6,0,2]%%%}+%%%{3,[2,0,6,2
,2]%%%}+%%%{%%%{12,[1]%%%},[2,0,5,1,3]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%
}]%%},[1,2,7,0,1]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,6,1,2]%%%}
+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,5,2,3]%%%}+%%%{-1,[0,3,8,0,0]%%
%}+%%%{3,[0,2,7,1,1]%%%}+%%%{-3,[0,1,6,2,2]%%%}+%%%{1,[0,0,5,3,3]%%%} / %%%
{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,3,0,0]%%%}+%%%{%%%{
-6,[2]%%%},[5,0,2,0,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%
},[4,1,3,0,0]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,2,1,1]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,1,
0,2]%%%}+%%%{%%%{12,[2]%%%},[3,1,2,0,1]%%%}+%%%{%%%{-12,[2]%%%},[3,0,1,1,2]
%%%}+%%%{%%%{-8,[3]%%%},[3,0,0,0,3]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-
1,[1]%%%}]%%},[2,2,3,0,0]%%%}+%%%{%%{[%%%{-6,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}
]%%},[2,1,2,1,1]%%%}+%%%{%%{[%%%{-12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,
1,1,0,2]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,1,2
,2]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,0,1,3]%
%%}+%%%{%%%{-6,[2]%%%},[1,2,2,0,1]%%%}+%%%{%%%{12,[2]%%%},[1,1,1,1,2]%%%}+%
%%{%%%{-6,[2]%%%},[1,0,0,2,3]%%%}+%%%{%%{[%%%{-1,[1]%%%},0]:[1,0,%%%{-1,[1]
%%%}]%%},[0,3,3,0,0]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[
0,2,2,1,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,1,2,2
]%%%}+%%%{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,0,3,3]%%%}
 Error: Bad Argument Value
```

maple [B] time = 0.08, size = 10362, normalized size = 33.53

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**3, x)
```

3.1372 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=462

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x}{2\sqrt{a+bx+cx}}\right.}{16e^5\left(ae^2-bde+cd^2\right)^{3/2}}$$

Rubi [A] time = 0.63, antiderivative size = 462, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16e^5\left(ae^2-bde+cd^2\right)^{3/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(3ex\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)-4cde(3bd-ae)-be^2(bd-4ae)+16c^2d^3\right)}{12e^2(d+ex)^3\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{a+bx+cx^2}\left(2cex\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)-16c^2de(5bd-4ae)+4bce^2(4bd-5ae)+b^3e^3+64c^3d^3\right)}{8e^4(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{4c^{3/2}(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] ((64*c^3*d^3 + b^3*e^3 + 4*b*c*e^2*(4*b*d - 5*a*e) - 16*c^2*d*e*(5*b*d - 4*
a*e) + 2*c*e*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e))*x)*Sqrt[a + b*x
 + c*x^2])/(8*e^4*(c*d^2 - b*d*e + a*e^2)*(d + e*x)) - ((16*c^2*d^3 - b*e^2
*(b*d - 4*a*e) - 4*c*d*e*(3*b*d - a*e) + 3*e*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(
2*b*d - a*e))*x)*(a + b*x + c*x^2)^(3/2))/(12*e^2*(c*d^2 - b*d*e + a*e^2)*(
d + e*x)^3) - (4*c^(3/2)*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[
a + b*x + c*x^2])])/e^5 + ((128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*
a*e) - 64*c^3*d^2*e*(4*b*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a
^2*e^2))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*
e^2]*Sqrt[a + b*x + c*x^2])])/(16*e^5*(c*d^2 - b*d*e + a*e^2)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
```

```
2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx = -\frac{\left(16c^2d^3-be^2(bd-4ae)-4cde(3bd-ae)+3e\left(8c^2d^2+b^2e^2-4ce(2bd-ae)\right.\right.}{12e^2\left(cd^2-bde+ae^2\right)(d+ex)^3}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2e^2-\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2e^2-\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2e^2-\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2e^2-\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

Mathematica [A] time = 2.96, size = 485, normalized size = 1.05

$$\frac{\frac{2e\sqrt{a+x(b+cx)}\left(2ce^2\left(-4a^2e^2(d+3ex)-2abe\left(9d^2+20dex+23e^2x^2\right)+b^2d\left(24d^2+63dex+55e^2x^2\right)\right)+be^3\left(-8a^2e^2+2abe(d-7ex)+b^2\left(3d^2+8dex-3e^2x^2\right)\right)-8c^2e\left(bd\left(30d^3+76d^2ex+57de^2x^2+6e^3x^3\right)-ae\left(20d^3+51d^2ex+41de^2x^2+6e^3x^3\right)\right)+16c^3d^2\left(12d^3+30d^2ex+22de^2x^2+3e^3x^3\right)\right)}{(d+ex)^3\left(e(ae-bd)+cd^2\right)}-\frac{3\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{3/2}}-192c^{3/2}(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{48e^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] ((2*e*Sqrt[a + x*(b + c*x)]*(16*c^3*d^2*(12*d^3 + 30*d^2*e*x + 22*d*e^2*x^2
 + 3*e^3*x^3) + b*e^3*(-8*a^2*e^2 + 2*a*b*e*(d - 7*e*x) + b^2*(3*d^2 + 8*d*
```

```
e*x - 3*e^2*x^2)) + 2*c*e^2*(-4*a^2*e^2*(d + 3*e*x) - 2*a*b*e*(9*d^2 + 20*d
*e*x + 23*e^2*x^2) + b^2*d*(24*d^2 + 63*d*e*x + 55*e^2*x^2)) - 8*c^2*e*(-(a
*e*(20*d^3 + 51*d^2*e*x + 41*d*e^2*x^2 + 6*e^3*x^3)) + b*d*(30*d^3 + 76*d^2
*e*x + 57*d*e^2*x^2 + 6*e^3*x^3))))/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x)^3
) - 192*c^(3/2)*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b
+ c*x)])] - (3*(128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*a*e) - 64*c^
3*d^2*e*(4*b*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2))*Arc
Tanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*S
qrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(3/2))/(48*e^5)
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 42.28Unable to divide, perh
aps due to rounding error%%%{%%{[-1,0]:[1,0,%%%{-1,[1]%%%}]%%},[8,0,9,0,0]%
%%}+%%%{%%%{8,[1]%%%},[7,0,8,1,0]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%}
,[6,1,8,1,0]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,9,0,1]%%%}+%%%{%
%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,7,2,0]%%%}+%%%{%%%{24,[1
]%%%},[5,1,7,2,0]%%%}+%%%{%%%{-24,[1]%%%},[5,0,8,1,1]%%%}+%%%{%%%{32,[2]%%%
},[5,0,6,3,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,2,7,2,0]%%%}+%%%
{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,8,1,1]%%%}+%%%{%%{[%%%{-48,[1]%%%},
0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,6,3,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%
}]%%},[4,0,9,0,2]%%%}+%%%{%%{[%%%{48,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,7,2,1]%%%}+%%%{%%{[%%%{-16,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,5,4,0]
%%%}+%%%{%%%{24,[1]%%%},[3,2,6,3,0]%%%}+%%%{%%%{-48,[1]%%%},[3,1,7,2,1]%%%}
+%%%{%%%{32,[2]%%%},[3,1,5,4,0]%%%}+%%%{%%%{24,[1]%%%},[3,0,8,1,2]%%%}+%%%{
%%%{-32,[2]%%%},[3,0,6,3,1]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,3,
6,3,0]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,7,2,1]%%%}+%%%{%%{[%%
%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,5,4,0]%%%}+%%%{%%{[-12,0]:[1,
0,%%%{-1,[1]%%%}]%%},[2,1,8,1,2]%%%}+%%%{%%{[%%%{48,[1]%%%},0]:[1,0,%%%{-1,
[1]%%%}]%%},[2,1,6,3,1]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,9,0,3
]%%%}+%%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,7,2,2]%%%}+%%
%{%%%{8,[1]%%%},[1,3,5,4,0]%%%}+%%%{%%%{-24,[1]%%%},[1,2,6,3,1]%%%}+%%%{%%%
{24,[1]%%%},[1,1,7,2,2]%%%}+%%%{%%%{-8,[1]%%%},[1,0,8,1,3]%%%}+%%%{%%{[-1,0
]:[1,0,%%%{-1,[1]%%%}]%%},[0,4,5,4,0]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]
%%},[0,3,6,3,1]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,2,7,2,2]%%%}+%
```

```
%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,8,1,3]%%%}+%%%{%%{[-1,0]:[1,0,%%%{
-1,[1]%%%}]%%},[0,0,9,0,4]%%%} / %%%{%%%{1,[2]%%%},[8,0,4,0,0]%%%}+%%%{%%{p
oly1[%%%{-8,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[7,0,3,1,0]%%%}+%%%{%%%{4,[2
]%%%},[6,1,3,1,0]%%%}+%%%{%%%{-4,[2]%%%},[6,0,4,0,1]%%%}+%%%{%%%{24,[3]%%%}
,[6,0,2,2,0]%%%}+%%%{%%{[%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[5,1,2,
2,0]%%%}+%%%{%%{poly1[%%%{24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[5,0,3,1,1]
%%%}+%%%{%%{poly1[%%%{-32,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[5,0,1,3,0]%%%
}+%%%{%%%{6,[2]%%%},[4,2,2,2,0]%%%}+%%%{%%%{-12,[2]%%%},[4,1,3,1,1]%%%}+%%%
{%%%{48,[3]%%%},[4,1,1,3,0]%%%}+%%%{%%%{6,[2]%%%},[4,0,4,0,2]%%%}+%%%{%%%{-
48,[3]%%%},[4,0,2,2,1]%%%}+%%%{%%%{16,[4]%%%},[4,0,0,4,0]%%%}+%%%{%%{poly1[
%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,2,1,3,0]%%%}+%%%{%%{[%%%{48,[
2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,2,2,1]%%%}+%%%{%%{[%%%{-32,[3]%%%},0
]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,0,4,0]%%%}+%%%{%%{poly1[%%%{-24,[2]%%%},0]:[
1,0,%%%{-1,[1]%%%}]%%},[3,0,3,1,2]%%%}+%%%{%%{poly1[%%%{32,[3]%%%},0]:[1,0,
%%%{-1,[1]%%%}]%%},[3,0,1,3,1]%%%}+%%%{%%%{4,[2]%%%},[2,3,1,3,0]%%%}+%%%{%%
%{-12,[2]%%%},[2,2,2,2,1]%%%}+%%%{%%%{24,[3]%%%},[2,2,0,4,0]%%%}+%%%{%%%{12
,[2]%%%},[2,1,3,1,2]%%%}+%%%{%%%{-48,[3]%%%},[2,1,1,3,1]%%%}+%%%{%%%{-4,[2]
%%%},[2,0,4,0,3]%%%}+%%%{%%%{24,[3]%%%},[2,0,2,2,2]%%%}+%%%{%%{[%%%{-8,[2]%
%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3,0,4,0]%%%}+%%%{%%{poly1[%%%{24,[2]%%%},
0]:[1,0,%%%{-1,[1]%%%}]%%},[1,2,1,3,1]%%%}+%%%{%%{[%%%{-24,[2]%%%},0]:[1,0,
%%%{-1,[1]%%%}]%%},[1,1,2,2,2]%%%}+%%%{%%{poly1[%%%{8,[2]%%%},0]:[1,0,%%%{-
1,[1]%%%}]%%},[1,0,3,1,3]%%%}+%%%{%%%{1,[2]%%%},[0,4,0,4,0]%%%}+%%%{%%%{-4,
[2]%%%},[0,3,1,3,1]%%%}+%%%{%%%{6,[2]%%%},[0,2,2,2,2]%%%}+%%%{%%%{-4,[2]%%%
},[0,1,3,1,3]%%%}+%%%{%%%{1,[2]%%%},[0,0,4,0,4]%%%} Error: Bad Argument Val
ue
```

maple [B] time = 0.09, size = 15982, normalized size = 34.59

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                              +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**4, x)
```

3.1373 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^{5/2} \, dx$

Optimal. Leaf size=446

$$-\frac{3e\left(b^2-4ac\right)^4\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{131072c^{13/2}}+\frac{3e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+}}{6}$$

Rubi [A] time = 0.62, antiderivative size = 446, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$\frac{3e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)}{65536c^6}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)}{8192c^5}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)}{2560c^4}+\frac{\left(a+bx+cx^2\right)^{7/2}\left(14cex\left(-4ce(9ae+2bd)+11b^2e^2+8c^2d^2\right)-8c^2de(160ae+17bd)+4bce^2(97ae+90bd)-99b^3e^3+128c^3d^3\right)}{6720c^3}-\frac{3e\left(b^2-4ac\right)^4\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{131072c^{13/2}}+\frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7/2}+\frac{(d+ex)^2\left(a+bx+cx^2\right)^{7/2}(2cd-be)}{30c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (3*(b^2 - 4*a*c)^3*e*(40*c^2*d^2 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*(b +
2*c*x)*Sqrt[a + b*x + c*x^2])/(65536*c^6) - ((b^2 - 4*a*c)^2*e*(40*c^2*d^2
+ 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(
8192*c^5) + ((b^2 - 4*a*c)*e*(40*c^2*d^2 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e
))*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(2560*c^4) + ((2*c*d - b*e)*(d + e*
x)^2*(a + b*x + c*x^2)^(7/2))/(30*c) + ((d + e*x)^3*(a + b*x + c*x^2)^(7/2)
)/5 + ((128*c^3*d^3 - 99*b^3*e^3 + 4*b*c*e^2*(90*b*d + 97*a*e) - 8*c^2*d*e*
(17*b*d + 160*a*e) + 14*c*e*(8*c^2*d^2 + 11*b^2*e^2 - 4*c*e*(2*b*d + 9*a*e)
)*x)*(a + b*x + c*x^2)^(7/2))/(6720*c^3) - (3*(b^2 - 4*a*c)^4*e*(40*c^2*d^2
 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
 + b*x + c*x^2])])/(131072*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{5/2}\,dx = \frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7/2} + \frac{\int (d+ex)^2(3c(bd-2ae)+3c(2cd-}{10c}$$

$$= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{7/2}}{30c} + \frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7}$$

$$= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{7/2}}{30c} + \frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7}$$

$$= \frac{\left(b^2-4ac\right)e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\left(a+bx\right.}{2560c^4}$$

$$= -\frac{\left(b^2-4ac\right)^2e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\left(a+b\right.}{8192c^5}$$

$$= \frac{3\left(b^2-4ac\right)^3e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\sqrt{a+}}{65536c^6}$$

$$= \frac{3\left(b^2-4ac\right)^3e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\sqrt{a+}}{65536c^6}$$

$$= \frac{3\left(b^2-4ac\right)^3e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\sqrt{a+}}{65536c^6}$$

Mathematica [A] time = 1.10, size = 345, normalized size = 0.77

$$\frac{1}{10}\left(-\frac{e\left(b^2-4ac\right)\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)\left(15\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\left(16c^2\left(33a^2+26acx^2+8c^2x^4\right)+8b^2c\left(11cx^2-20a\right)+32bc^2x\left(13a+8cx^2\right)+15b^4-40b^3cx\right)\right)}{65536c^{13/2}}+\frac{(a+x(b+cx))^{7/2}\left(-8c^2e(ae(160d+63ex)+bd(17d+14ex))+2bce^2(194ae+180bd+77bex)-99b^3e^3+16c^3d^2(8d+7ex)\right)}{672c^3}+2(d+ex)^3(a+x(b+cx))^{7/2}+\frac{(d+ex)^2(a+x(b+cx))^{7/2}(2cd-be)}{3c}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (((2*c*d - b*e)*(d + e*x)^2*(a + x*(b + c*x))^(7/2))/(3*c) + 2*(d + e*x)^3*
(a + x*(b + c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(-99*b^3*e^3 + 16*c^3*d^
2*(8*d + 7*e*x) + 2*b*c*e^2*(180*b*d + 194*a*e + 77*b*e*x) - 8*c^2*e*(b*d*(
17*d + 14*e*x) + a*e*(160*d + 63*e*x))))/(672*c^3) - ((b^2 - 4*a*c)*e*(40*c
^2*d^2 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a
+ x*(b + c*x)]*(15*b^4 - 40*b^3*c*x + 32*b*c^2*x*(13*a + 8*c*x^2) + 8*b^2*c
*(-20*a + 11*c*x^2) + 16*c^2*(33*a^2 + 26*a*c*x^2 + 8*c^2*x^4)) + 15*(b^2 -
 4*a*c)^3*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(65536*c
^(13/2)))/10
```

IntegrateAlgebraic [B] time = 10.58, size = 1446, normalized size = 3.24

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(1966080*a^3*c^6*d^3 + 12600*b^7*c^2*d^2*e - 184800*
a*b^5*c^3*d^2*e + 981120*a^2*b^3*c^4*d^2*e - 2142720*a^3*b*c^5*d^2*e - 1260
0*b^8*c*d*e^2 + 184800*a*b^6*c^2*d*e^2 - 981120*a^2*b^4*c^3*d*e^2 + 2142720
*a^3*b^2*c^4*d*e^2 - 1310720*a^4*c^5*d*e^2 + 3465*b^9*e^3 - 52080*a*b^7*c*e
^3 + 288288*a^2*b^5*c^2*e^3 - 687360*a^3*b^3*c^3*e^3 + 574720*a^4*b*c^4*e^3
 + 5898240*a^2*b*c^6*d^3*x - 8400*b^6*c^3*d^2*e*x + 114240*a*b^4*c^4*d^2*e*
x - 541440*a^2*b^2*c^5*d^2*e*x + 1612800*a^3*c^6*d^2*e*x + 8400*b^7*c^2*d*e
^2*x - 114240*a*b^5*c^3*d*e^2*x + 541440*a^2*b^3*c^4*d*e^2*x - 957440*a^3*b
*c^5*d*e^2*x - 2310*b^8*c*e^3*x + 32256*a*b^6*c^2*e^3*x - 160320*a^2*b^4*c^
3*e^3*x + 317440*a^3*b^2*c^4*e^3*x - 161280*a^4*c^5*e^3*x + 5898240*a*b^2*c
^6*d^3*x^2 + 5898240*a^2*c^7*d^3*x^2 + 6720*b^5*c^4*d^2*e*x^2 - 84480*a*b^3
*c^5*d^2*e*x^2 + 10183680*a^2*b*c^6*d^2*e*x^2 - 6720*b^6*c^3*d*e^2*x^2 + 84
480*a*b^4*c^4*d*e^2*x^2 - 353280*a^2*b^2*c^5*d*e^2*x^2 + 655360*a^3*c^6*d*e
^2*x^2 + 1848*b^7*c^2*e^3*x^2 - 23904*a*b^5*c^3*e^3*x^2 + 105600*a^2*b^3*c^
4*e^3*x^2 - 166400*a^3*b*c^5*e^3*x^2 + 1966080*b^3*c^6*d^3*x^3 + 11796480*a
*b*c^7*d^3*x^3 - 5760*b^4*c^5*d^2*e*x^3 + 12518400*a*b^2*c^6*d^2*e*x^3 + 12
687360*a^2*c^7*d^2*e*x^3 + 5760*b^5*c^4*d*e^2*x^3 - 66560*a*b^3*c^5*d*e^2*x
^3 + 6973440*a^2*b*c^6*d*e^2*x^3 - 1584*b^6*c^3*e^3*x^3 + 18880*a*b^4*c^4*e
^3*x^3 - 72960*a^2*b^2*c^5*e^3*x^3 + 107520*a^3*c^6*e^3*x^3 + 5898240*b^2*c
^7*d^3*x^4 + 5898240*a*c^8*d^3*x^4 + 4592640*b^3*c^6*d^2*e*x^4 + 27709440*a
*b*c^7*d^2*e*x^4 - 5120*b^4*c^5*d*e^2*x^4 + 9646080*a*b^2*c^6*d*e^2*x^4 + 9
830400*a^2*c^7*d*e^2*x^4 + 1408*b^5*c^4*e^3*x^4 - 15360*a*b^3*c^5*e^3*x^4 +
 1751040*a^2*b*c^6*e^3*x^4 + 5898240*b*c^8*d^3*x^5 + 14592000*b^2*c^7*d^2*e
*x^5 + 14622720*a*c^8*d^2*e*x^5 + 3758080*b^3*c^6*d*e^2*x^5 + 22732800*a*b*
c^7*d*e^2*x^5 - 1280*b^4*c^5*e^3*x^5 + 2611200*a*b^2*c^6*e^3*x^5 + 2666496*
a^2*c^7*e^3*x^5 + 1966080*c^9*d^3*x^6 + 15114240*b*c^8*d^2*e*x^6 + 12410880
*b^2*c^7*d*e^2*x^6 + 12451840*a*c^8*d*e^2*x^6 + 1059840*b^3*c^6*e^3*x^6 + 6
418432*a*b*c^7*e^3*x^6 + 5160960*c^9*d^2*e*x^7 + 13189120*b*c^8*d*e^2*x^7 +
 3598336*b^2*c^7*e^3*x^7 + 3612672*a*c^8*e^3*x^7 + 4587520*c^9*d*e^2*x^8 +
3899392*b*c^8*e^3*x^8 + 1376256*c^9*e^3*x^9))/(6881280*c^6) + (3*(40*b^8*c^
2*d^2*e - 640*a*b^6*c^3*d^2*e + 3840*a^2*b^4*c^4*d^2*e - 10240*a^3*b^2*c^5*
d^2*e + 10240*a^4*c^6*d^2*e - 40*b^9*c*d*e^2 + 640*a*b^7*c^2*d*e^2 - 3840*a
^2*b^5*c^3*d*e^2 + 10240*a^3*b^3*c^4*d*e^2 - 10240*a^4*b*c^5*d*e^2 + 11*b^1
0*e^3 - 180*a*b^8*c*e^3 + 1120*a^2*b^6*c^2*e^3 - 3200*a^3*b^4*c^3*e^3 + 384
0*a^4*b^2*c^4*e^3 - 1024*a^5*c^5*e^3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*
x + c*x^2]])/(131072*c^(13/2))
```

fricas [B] time = 0.85, size = 2343, normalized size = 5.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/27525120*(315*(40*(b^8*c^2 - 16*a*b^6*c^3 + 96*a^2*b^4*c^4 - 256*a^3*b^
2*c^5 + 256*a^4*c^6)*d^2*e - 40*(b^9*c - 16*a*b^7*c^2 + 96*a^2*b^5*c^3 - 25
6*a^3*b^3*c^4 + 256*a^4*b*c^5)*d*e^2 + (11*b^10 - 180*a*b^8*c + 1120*a^2*b^
6*c^2 - 3200*a^3*b^4*c^3 + 3840*a^4*b^2*c^4 - 1024*a^5*c^5)*e^3)*sqrt(c)*lo
g(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c)
- 4*a*c) - 4*(1376256*c^10*e^3*x^9 + 1966080*a^3*c^7*d^3 + 229376*(20*c^10*
d*e^2 + 17*b*c^9*e^3)*x^8 + 14336*(360*c^10*d^2*e + 920*b*c^9*d*e^2 + (251*
b^2*c^8 + 252*a*c^9)*e^3)*x^7 + 1024*(1920*c^10*d^3 + 14760*b*c^9*d^2*e + 4
0*(303*b^2*c^8 + 304*a*c^9)*d*e^2 + (1035*b^3*c^7 + 6268*a*b*c^8)*e^3)*x^6
+ 256*(23040*b*c^9*d^3 + 120*(475*b^2*c^8 + 476*a*c^9)*d^2*e + 40*(367*b^3*
c^7 + 2220*a*b*c^8)*d*e^2 - (5*b^4*c^6 - 10200*a*b^2*c^7 - 10416*a^2*c^8)*e
^3)*x^5 + 128*(46080*(b^2*c^8 + a*c^9)*d^3 + 120*(299*b^3*c^7 + 1804*a*b*c^
8)*d^2*e - 40*(b^4*c^6 - 1884*a*b^2*c^7 - 1920*a^2*c^8)*d*e^2 + (11*b^5*c^5
 - 120*a*b^3*c^6 + 13680*a^2*b*c^7)*e^3)*x^4 + 120*(105*b^7*c^3 - 1540*a*b^
5*c^4 + 8176*a^2*b^3*c^5 - 17856*a^3*b*c^6)*d^2*e - 40*(315*b^8*c^2 - 4620*
```

```
a*b^6*c^3 + 24528*a^2*b^4*c^4 - 53568*a^3*b^2*c^5 + 32768*a^4*c^6)*d*e^2 +
(3465*b^9*c - 52080*a*b^7*c^2 + 288288*a^2*b^5*c^3 - 687360*a^3*b^3*c^4 + 5
74720*a^4*b*c^5)*e^3 + 16*(122880*(b^3*c^7 + 6*a*b*c^8)*d^3 - 120*(3*b^4*c^
6 - 6520*a*b^2*c^7 - 6608*a^2*c^8)*d^2*e + 40*(9*b^5*c^5 - 104*a*b^3*c^6 +
10896*a^2*b*c^7)*d*e^2 - (99*b^6*c^4 - 1180*a*b^4*c^5 + 4560*a^2*b^2*c^6 -
6720*a^3*c^7)*e^3)*x^3 + 8*(737280*(a*b^2*c^7 + a^2*c^8)*d^3 + 120*(7*b^5*c
^5 - 88*a*b^3*c^6 + 10608*a^2*b*c^7)*d^2*e - 40*(21*b^6*c^4 - 264*a*b^4*c^5
 + 1104*a^2*b^2*c^6 - 2048*a^3*c^7)*d*e^2 + (231*b^7*c^3 - 2988*a*b^5*c^4 +
 13200*a^2*b^3*c^5 - 20800*a^3*b*c^6)*e^3)*x^2 + 2*(2949120*a^2*b*c^7*d^3 -
 120*(35*b^6*c^4 - 476*a*b^4*c^5 + 2256*a^2*b^2*c^6 - 6720*a^3*c^7)*d^2*e +
 40*(105*b^7*c^3 - 1428*a*b^5*c^4 + 6768*a^2*b^3*c^5 - 11968*a^3*b*c^6)*d*e
^2 - (1155*b^8*c^2 - 16128*a*b^6*c^3 + 80160*a^2*b^4*c^4 - 158720*a^3*b^2*c
^5 + 80640*a^4*c^6)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^7, 1/13762560*(315*(40
*(b^8*c^2 - 16*a*b^6*c^3 + 96*a^2*b^4*c^4 - 256*a^3*b^2*c^5 + 256*a^4*c^6)*
d^2*e - 40*(b^9*c - 16*a*b^7*c^2 + 96*a^2*b^5*c^3 - 256*a^3*b^3*c^4 + 256*a
^4*b*c^5)*d*e^2 + (11*b^10 - 180*a*b^8*c + 1120*a^2*b^6*c^2 - 3200*a^3*b^4*
c^3 + 3840*a^4*b^2*c^4 - 1024*a^5*c^5)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2
+ b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1376256*c^10*
e^3*x^9 + 1966080*a^3*c^7*d^3 + 229376*(20*c^10*d*e^2 + 17*b*c^9*e^3)*x^8 +
 14336*(360*c^10*d^2*e + 920*b*c^9*d*e^2 + (251*b^2*c^8 + 252*a*c^9)*e^3)*x
^7 + 1024*(1920*c^10*d^3 + 14760*b*c^9*d^2*e + 40*(303*b^2*c^8 + 304*a*c^9)
*d*e^2 + (1035*b^3*c^7 + 6268*a*b*c^8)*e^3)*x^6 + 256*(23040*b*c^9*d^3 + 12
0*(475*b^2*c^8 + 476*a*c^9)*d^2*e + 40*(367*b^3*c^7 + 2220*a*b*c^8)*d*e^2 -
 (5*b^4*c^6 - 10200*a*b^2*c^7 - 10416*a^2*c^8)*e^3)*x^5 + 128*(46080*(b^2*c
^8 + a*c^9)*d^3 + 120*(299*b^3*c^7 + 1804*a*b*c^8)*d^2*e - 40*(b^4*c^6 - 18
84*a*b^2*c^7 - 1920*a^2*c^8)*d*e^2 + (11*b^5*c^5 - 120*a*b^3*c^6 + 13680*a^
2*b*c^7)*e^3)*x^4 + 120*(105*b^7*c^3 - 1540*a*b^5*c^4 + 8176*a^2*b^3*c^5 -
17856*a^3*b*c^6)*d^2*e - 40*(315*b^8*c^2 - 4620*a*b^6*c^3 + 24528*a^2*b^4*c
^4 - 53568*a^3*b^2*c^5 + 32768*a^4*c^6)*d*e^2 + (3465*b^9*c - 52080*a*b^7*c
^2 + 288288*a^2*b^5*c^3 - 687360*a^3*b^3*c^4 + 574720*a^4*b*c^5)*e^3 + 16*(
122880*(b^3*c^7 + 6*a*b*c^8)*d^3 - 120*(3*b^4*c^6 - 6520*a*b^2*c^7 - 6608*a
^2*c^8)*d^2*e + 40*(9*b^5*c^5 - 104*a*b^3*c^6 + 10896*a^2*b*c^7)*d*e^2 - (9
9*b^6*c^4 - 1180*a*b^4*c^5 + 4560*a^2*b^2*c^6 - 6720*a^3*c^7)*e^3)*x^3 + 8*
(737280*(a*b^2*c^7 + a^2*c^8)*d^3 + 120*(7*b^5*c^5 - 88*a*b^3*c^6 + 10608*a
^2*b*c^7)*d^2*e - 40*(21*b^6*c^4 - 264*a*b^4*c^5 + 1104*a^2*b^2*c^6 - 2048*
a^3*c^7)*d*e^2 + (231*b^7*c^3 - 2988*a*b^5*c^4 + 13200*a^2*b^3*c^5 - 20800*
a^3*b*c^6)*e^3)*x^2 + 2*(2949120*a^2*b*c^7*d^3 - 120*(35*b^6*c^4 - 476*a*b^
4*c^5 + 2256*a^2*b^2*c^6 - 6720*a^3*c^7)*d^2*e + 40*(105*b^7*c^3 - 1428*a*b
^5*c^4 + 6768*a^2*b^3*c^5 - 11968*a^3*b*c^6)*d*e^2 - (1155*b^8*c^2 - 16128*
a*b^6*c^3 + 80160*a^2*b^4*c^4 - 158720*a^3*b^2*c^5 + 80640*a^4*c^6)*e^3)*x)
*sqrt(c*x^2 + b*x + a))/c^7]
```

giac [B] time = 0.32, size = 1302, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6881280*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*(6*c^3*x*e^3 + (2
0*c^12*d*e^2 + 17*b*c^11*e^3)/c^9)*x + (360*c^12*d^2*e + 920*b*c^11*d*e^2 +
 251*b^2*c^10*e^3 + 252*a*c^11*e^3)/c^9)*x + (1920*c^12*d^3 + 14760*b*c^11*
d^2*e + 12120*b^2*c^10*d*e^2 + 12160*a*c^11*d*e^2 + 1035*b^3*c^9*e^3 + 6268
*a*b*c^10*e^3)/c^9)*x + (23040*b*c^11*d^3 + 57000*b^2*c^10*d^2*e + 57120*a*
c^11*d^2*e + 14680*b^3*c^9*d*e^2 + 88800*a*b*c^10*d*e^2 - 5*b^4*c^8*e^3 + 1
0200*a*b^2*c^9*e^3 + 10416*a^2*c^10*e^3)/c^9)*x + (46080*b^2*c^10*d^3 + 460
80*a*c^11*d^3 + 35880*b^3*c^9*d^2*e + 216480*a*b*c^10*d^2*e - 40*b^4*c^8*d*
e^2 + 75360*a*b^2*c^9*d*e^2 + 76800*a^2*c^10*d*e^2 + 11*b^5*c^7*e^3 - 120*a
*b^3*c^8*e^3 + 13680*a^2*b*c^9*e^3)/c^9)*x + (122880*b^3*c^9*d^3 + 737280*a
*b*c^10*d^3 - 360*b^4*c^8*d^2*e + 782400*a*b^2*c^9*d^2*e + 792960*a^2*c^10*
```

```
d^2*e + 360*b^5*c^7*d*e^2 - 4160*a*b^3*c^8*d*e^2 + 435840*a^2*b*c^9*d*e^2 -
 99*b^6*c^6*e^3 + 1180*a*b^4*c^7*e^3 - 4560*a^2*b^2*c^8*e^3 + 6720*a^3*c^9*
e^3)/c^9)*x + (737280*a*b^2*c^9*d^3 + 737280*a^2*c^10*d^3 + 840*b^5*c^7*d^2
*e - 10560*a*b^3*c^8*d^2*e + 1272960*a^2*b*c^9*d^2*e - 840*b^6*c^6*d*e^2 +
10560*a*b^4*c^7*d*e^2 - 44160*a^2*b^2*c^8*d*e^2 + 81920*a^3*c^9*d*e^2 + 231
*b^7*c^5*e^3 - 2988*a*b^5*c^6*e^3 + 13200*a^2*b^3*c^7*e^3 - 20800*a^3*b*c^8
*e^3)/c^9)*x + (2949120*a^2*b*c^9*d^3 - 4200*b^6*c^6*d^2*e + 57120*a*b^4*c^
7*d^2*e - 270720*a^2*b^2*c^8*d^2*e + 806400*a^3*c^9*d^2*e + 4200*b^7*c^5*d*
e^2 - 57120*a*b^5*c^6*d*e^2 + 270720*a^2*b^3*c^7*d*e^2 - 478720*a^3*b*c^8*d
*e^2 - 1155*b^8*c^4*e^3 + 16128*a*b^6*c^5*e^3 - 80160*a^2*b^4*c^6*e^3 + 158
720*a^3*b^2*c^7*e^3 - 80640*a^4*c^8*e^3)/c^9)*x + (1966080*a^3*c^9*d^3 + 12
600*b^7*c^5*d^2*e - 184800*a*b^5*c^6*d^2*e + 981120*a^2*b^3*c^7*d^2*e - 214
2720*a^3*b*c^8*d^2*e - 12600*b^8*c^4*d*e^2 + 184800*a*b^6*c^5*d*e^2 - 98112
0*a^2*b^4*c^6*d*e^2 + 2142720*a^3*b^2*c^7*d*e^2 - 1310720*a^4*c^8*d*e^2 + 3
465*b^9*c^3*e^3 - 52080*a*b^7*c^4*e^3 + 288288*a^2*b^5*c^5*e^3 - 687360*a^3
*b^3*c^6*e^3 + 574720*a^4*b*c^7*e^3)/c^9) + 3/131072*(40*b^8*c^2*d^2*e - 64
0*a*b^6*c^3*d^2*e + 3840*a^2*b^4*c^4*d^2*e - 10240*a^3*b^2*c^5*d^2*e + 1024
0*a^4*c^6*d^2*e - 40*b^9*c*d*e^2 + 640*a*b^7*c^2*d*e^2 - 3840*a^2*b^5*c^3*d
*e^2 + 10240*a^3*b^3*c^4*d*e^2 - 10240*a^4*b*c^5*d*e^2 + 11*b^10*e^3 - 180*
a*b^8*c*e^3 + 1120*a^2*b^6*c^2*e^3 - 3200*a^3*b^4*c^3*e^3 + 3840*a^4*b^2*c^
4*e^3 - 1024*a^5*c^5*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sq
rt(c) - b))/c^(13/2)
```

maple [B] time = 0.07, size = 2387, normalized size = 5.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3*x^2*(c*x^2+b*x+a)^(7/2)*d*e^2+33/65536/c^6*e^3*b^9*(c*x^2+b*x+a)^(1/2)-
33/2240/c^3*e^3*b^3*(c*x^2+b*x+a)^(7/2)+11/2560/c^4*e^3*b^5*(c*x^2+b*x+a)^(
5/2)-11/8192/c^5*e^3*b^7*(c*x^2+b*x+a)^(3/2)+3/4*x*(c*x^2+b*x+a)^(7/2)*d^2*
e-33/131072/c^(13/2)*e^3*b^10*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3
/128/c^(3/2)*e^3*a^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/5*e^3*x^
3*(c*x^2+b*x+a)^(7/2)+1/16*b^2/c^2*a*(c*x^2+b*x+a)^(5/2)*d*e^2-1/12*b/c*x*(
c*x^2+b*x+a)^(7/2)*d*e^2+2/7*(c*x^2+b*x+a)^(7/2)*d^3-13/256/c^2*e^3*b^2*a^2
*(c*x^2+b*x+a)^(3/2)*x-3/80/c^2*e^3*b^2*a*x*(c*x^2+b*x+a)^(5/2)-51/4096/c^4
*e^3*b^6*(c*x^2+b*x+a)^(1/2)*x*a+23/1024/c^3*e^3*b^4*(c*x^2+b*x+a)^(3/2)*x*
a-21/256/c^2*e^3*b^2*a^3*(c*x^2+b*x+a)^(1/2)*x+75/1024/c^(7/2)*e^3*b^4*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3+15/16384*b^9/c^(11/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^2+15/128*b^2/c^2*a^3*(c*x^2+b*x+a)^(
1/2)*d*e^2-45/512*b^4/c^3*(c*x^2+b*x+a)^(1/2)*a^2*d*e^2+27/512/c^3*e^3*b^4*
(c*x^2+b*x+a)^(1/2)*x*a^2+15/64*b/c^(3/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*d*e^2-15/1024*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*a*d*e^2-15/128*a^3/c*(c*x^2+b*x+a)^(1/2)*b*d^2*e-5/512*b^4/c^2*(c
*x^2+b*x+a)^(3/2)*x*d^2*e+5/128*b^3/c^2*(c*x^2+b*x+a)^(3/2)*a*d^2*e+15/64*b
^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3*d^2*e-1/16*a/c*(
c*x^2+b*x+a)^(5/2)*b*d^2*e-5/64*a^2/c*(c*x^2+b*x+a)^(3/2)*b*d^2*e+1/32*b^2/
c*x*(c*x^2+b*x+a)^(5/2)*d^2*e+15/4096*b^6/c^3*(c*x^2+b*x+a)^(1/2)*x*d^2*e+4
5/512*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2*d*e^2+5/5
12*b^5/c^3*(c*x^2+b*x+a)^(3/2)*x*d*e^2-5/128*b^4/c^3*(c*x^2+b*x+a)^(3/2)*a*
d*e^2+45/2048*b^6/c^4*(c*x^2+b*x+a)^(1/2)*a*d*e^2-15/4096*b^7/c^4*(c*x^2+b*
x+a)^(1/2)*x*d*e^2-1/32*b^3/c^2*x*(c*x^2+b*x+a)^(5/2)*d*e^2+5/64*b^2/c^2*a^
2*(c*x^2+b*x+a)^(3/2)*d*e^2-15/64*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*a^3*d*e^2-45/512*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x+a)^(1/2))*a^2*d^2*e+15/1024*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*a*d^2*e+45/512*b^3/c^2*(c*x^2+b*x+a)^(1/2)*a^2*d^2*e-45/2048*b^
5/c^3*(c*x^2+b*x+a)^(1/2)*a*d^2*e-21/512/c^3*e^3*b^3*a^3*(c*x^2+b*x+a)^(1/2
)+27/1024/c^4*e^3*b^5*(c*x^2+b*x+a)^(1/2)*a^2-51/8192/c^5*e^3*b^7*(c*x^2+b*
```

```
x+a)^(1/2)*a-11/4096/c^4*e^3*b^6*(c*x^2+b*x+a)^(3/2)*x+11/1280/c^3*e^3*b^4*
x*(c*x^2+b*x+a)^(5/2)-15/64*a^4/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))*d^2*e-15/16384*b^8/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*d^2*e-15/64*a^3*(c*x^2+b*x+a)^(1/2)*x*d^2*e-5/32*a^2*(c*x^2+b*x+a)^(3/
2)*x*d^2*e-1/8*a*x*(c*x^2+b*x+a)^(5/2)*d^2*e-15/8192*b^8/c^5*(c*x^2+b*x+a)^
(1/2)*d*e^2+3/56*b^2/c^2*(c*x^2+b*x+a)^(7/2)*d*e^2-1/64*b^4/c^3*(c*x^2+b*x+
a)^(5/2)*d*e^2+5/1024*b^6/c^4*(c*x^2+b*x+a)^(3/2)*d*e^2-4/21*a/c*(c*x^2+b*x
+a)^(7/2)*d*e^2+1/64*b^3/c^2*(c*x^2+b*x+a)^(5/2)*d^2*e-5/1024*b^5/c^3*(c*x^
2+b*x+a)^(3/2)*d^2*e+15/8192*b^7/c^4*(c*x^2+b*x+a)^(1/2)*d^2*e-3/56*b/c*(c*
x^2+b*x+a)^(7/2)*d^2*e+97/1680/c^2*e^3*b*a*(c*x^2+b*x+a)^(7/2)-3/40/c*e^3*a
*x*(c*x^2+b*x+a)^(7/2)+1/80/c*e^3*a^2*x*(c*x^2+b*x+a)^(5/2)+1/160/c^2*e^3*a
^2*(c*x^2+b*x+a)^(5/2)*b+1/64/c*e^3*a^3*(c*x^2+b*x+a)^(3/2)*x+1/128/c^2*e^3
*a^3*(c*x^2+b*x+a)^(3/2)*b+3/128/c*e^3*a^4*(c*x^2+b*x+a)^(1/2)*x+3/256/c^2*
e^3*a^4*(c*x^2+b*x+a)^(1/2)*b+11/480/c^2*e^3*b^2*x*(c*x^2+b*x+a)^(7/2)-1/30
/c*e^3*b*x^2*(c*x^2+b*x+a)^(7/2)-3/160/c^3*e^3*b^3*a*(c*x^2+b*x+a)^(5/2)-13
/512/c^3*e^3*b^3*a^2*(c*x^2+b*x+a)^(3/2)+135/32768/c^(11/2)*e^3*b^8*ln((c*x
+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-105/4096/c^(9/2)*e^3*b^6*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-45/512/c^(5/2)*e^3*b^2*a^4*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+23/2048/c^4*e^3*b^5*(c*x^2+b*x+a)^(3/2)*a+
33/32768/c^5*e^3*b^8*(c*x^2+b*x+a)^(1/2)*x+5/64*b^2/c*(c*x^2+b*x+a)^(3/2)*x
*a*d^2*e+45/256*b^2/c*(c*x^2+b*x+a)^(1/2)*x*a^2*d^2*e-5/64*b^3/c^2*(c*x^2+b
*x+a)^(3/2)*x*a*d*e^2+1/8*b/c*a*x*(c*x^2+b*x+a)^(5/2)*d*e^2-45/1024*b^4/c^2
*(c*x^2+b*x+a)^(1/2)*x*a*d^2*e+15/64*b/c*a^3*(c*x^2+b*x+a)^(1/2)*x*d*e^2+5/
32*b/c*a^2*(c*x^2+b*x+a)^(3/2)*x*d*e^2-45/256*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x
*a^2*d*e^2+45/1024*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x*a*d*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,\left(d+e\,x\right)^3\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)^3\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3*(a + b*x + c*x**2)**(5/2), x)
```

3.1374 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^{5/2} dx$

Optimal. Leaf size=289

$$-\frac{5e\left(b^2-4ac\right)^4(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{11/2}}+\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{8192c^5}-\frac{5e\left(b^2-4ac\right.}{}$$

Rubi [A] time = 0.55, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(-2ce(16ae+9bd)+9b^2e^2+14cex(2cd-be)+32c^2d^2\right)}{504c^2}+\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{8192c^5}-\frac{5e\left(b^2-4ac\right)^2(b+2cx)\left(a+bx+cx^2\right)^{3/2}(2cd-be)}{3072c^4}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}(2cd-be)}{192c^3}-\frac{5e\left(b^2-4ac\right)^4(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{11/2}}+\frac{2}{9}(d+ex)^2\left(a+bx+cx^2\right)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*(b^2 - 4*a*c)^3*e*(2*c*d - b*e)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(8192
*c^5) - (5*(b^2 - 4*a*c)^2*e*(2*c*d - b*e)*(b + 2*c*x)*(a + b*x + c*x^2)^(3
/2))/(3072*c^4) + ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(b + 2*c*x)*(a + b*x + c*x
^2)^(5/2))/(192*c^3) + (2*(d + e*x)^2*(a + b*x + c*x^2)^(7/2))/9 + ((32*c^2
*d^2 + 9*b^2*e^2 - 2*c*e*(9*b*d + 16*a*e) + 14*c*e*(2*c*d - b*e)*x)*(a + b*
x + c*x^2)^(7/2))/(504*c^2) - (5*(b^2 - 4*a*c)^4*e*(2*c*d - b*e)*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
```

```
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}\,dx = \frac{2}{9}(d+ex)^2\left(a+bx+cx^2\right)^{7/2} + \frac{\int (d+ex)(2c(bd-2ae)+2c(2cd-}{9c}$$

$$= \frac{2}{9}(d+ex)^2\left(a+bx+cx^2\right)^{7/2} + \frac{\left(32c^2d^2+9b^2e^2-2ce(9bd+16ae)\right.}{50}$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{192c^3} + \frac{2}{9}(d+ex)^2\left(a\right.$$

$$= -\frac{5\left(b^2-4ac\right)^2 e(2cd-be)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{3072c^4} + \frac{\left(b^2-4ac\right)}{}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5} - \frac{5\left(b^2-4ac\right)^2 e}{}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5} - \frac{5\left(b^2-4ac\right)^2 e}{}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5} - \frac{5\left(b^2-4ac\right)^2 e}{}$$

Mathematica [A] time = 0.68, size = 252, normalized size = 0.87

$$-\frac{e\left(b^2-4ac\right)(be-2cd)\left(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(16c^{3/2}(b+2cx)(a+x(b+cx))^{3/2}-3\left(b^2-4ac\right)\left(2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)\right)\right)}{49152c^{11/2}}+\frac{(a+x(b+cx))^{7/2}\left(-2ce(16ae+9bd+7bex)+9b^2e^2+4c^2d(8d+7ex)\right)}{504c^2}+\frac{2}{9}(d+ex)^2(a+x(b+cx))^{7/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^2*(a + x*(b + c*x))^(7/2))/9 + ((a + x*(b + c*x))^(7/2)*(9*b^2
*e^2 + 4*c^2*d*(8*d + 7*e*x) - 2*c*e*(9*b*d + 16*a*e + 7*b*e*x)))/(504*c^2)
 - ((b^2 - 4*a*c)*e*(-2*c*d + b*e)*(256*c^(5/2)*(b + 2*c*x)*(a + x*(b + c*x
))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^(3/2)*(b + 2*c*x)*(a + x*(b + c*x))^(3/2)
- 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a
*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))))/(49152*c^(11
/2))
```

IntegrateAlgebraic [B] time = 4.86, size = 875, normalized size = 3.03

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(147456*a^3*c^5*d^2 + 630*b^7*c*d*e - 9240*a*b^5*c^2
*d*e + 49056*a^2*b^3*c^3*d*e - 107136*a^3*b*c^4*d*e - 315*b^8*e^2 + 4620*a*
b^6*c*e^2 - 24528*a^2*b^4*c^2*e^2 + 53568*a^3*b^2*c^3*e^2 - 32768*a^4*c^4*e
^2 + 442368*a^2*b*c^5*d^2*x - 420*b^6*c^2*d*e*x + 5712*a*b^4*c^3*d*e*x - 27
072*a^2*b^2*c^4*d*e*x + 80640*a^3*c^5*d*e*x + 210*b^7*c*e^2*x - 2856*a*b^5*
c^2*e^2*x + 13536*a^2*b^3*c^3*e^2*x - 23936*a^3*b*c^4*e^2*x + 442368*a*b^2*
```

```
c^5*d^2*x^2 + 442368*a^2*c^6*d^2*x^2 + 336*b^5*c^3*d*e*x^2 - 4224*a*b^3*c^4
*d*e*x^2 + 509184*a^2*b*c^5*d*e*x^2 - 168*b^6*c^2*e^2*x^2 + 2112*a*b^4*c^3*
e^2*x^2 - 8832*a^2*b^2*c^4*e^2*x^2 + 16384*a^3*c^5*e^2*x^2 + 147456*b^3*c^5
*d^2*x^3 + 884736*a*b*c^6*d^2*x^3 - 288*b^4*c^4*d*e*x^3 + 625920*a*b^2*c^5*
d*e*x^3 + 634368*a^2*c^6*d*e*x^3 + 144*b^5*c^3*e^2*x^3 - 1664*a*b^3*c^4*e^2
*x^3 + 174336*a^2*b*c^5*e^2*x^3 + 442368*b^2*c^6*d^2*x^4 + 442368*a*c^7*d^2
*x^4 + 229632*b^3*c^5*d*e*x^4 + 1385472*a*b*c^6*d*e*x^4 - 128*b^4*c^4*e^2*x
^4 + 241152*a*b^2*c^5*e^2*x^4 + 245760*a^2*c^6*e^2*x^4 + 442368*b*c^7*d^2*x
^5 + 729600*b^2*c^6*d*e*x^5 + 731136*a*c^7*d*e*x^5 + 93952*b^3*c^5*e^2*x^5
+ 568320*a*b*c^6*e^2*x^5 + 147456*c^8*d^2*x^6 + 755712*b*c^7*d*e*x^6 + 3102
72*b^2*c^6*e^2*x^6 + 311296*a*c^7*e^2*x^6 + 258048*c^8*d*e*x^7 + 329728*b*c
^7*e^2*x^7 + 114688*c^8*e^2*x^8))/(516096*c^5) - (5*(-2*b^8*c*d*e + 32*a*b^
6*c^2*d*e - 192*a^2*b^4*c^3*d*e + 512*a^3*b^2*c^4*d*e - 512*a^4*c^5*d*e + b
^9*e^2 - 16*a*b^7*c*e^2 + 96*a^2*b^5*c^2*e^2 - 256*a^3*b^3*c^3*e^2 + 256*a^
4*b*c^4*e^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(16384*c^(11
/2))
```

fricas [B] time = 0.76, size = 1523, normalized size = 5.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/2064384*(315*(2*(b^8*c - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^
4 + 256*a^4*c^5)*d*e - (b^9 - 16*a*b^7*c + 96*a^2*b^5*c^2 - 256*a^3*b^3*c^3
 + 256*a^4*b*c^4)*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^
2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(114688*c^9*e^2*x^8 + 147456*
a^3*c^6*d^2 + 14336*(18*c^9*d*e + 23*b*c^8*e^2)*x^7 + 1024*(144*c^9*d^2 + 7
38*b*c^8*d*e + (303*b^2*c^7 + 304*a*c^8)*e^2)*x^6 + 256*(1728*b*c^8*d^2 + 6
*(475*b^2*c^7 + 476*a*c^8)*d*e + (367*b^3*c^6 + 2220*a*b*c^7)*e^2)*x^5 + 12
8*(3456*(b^2*c^7 + a*c^8)*d^2 + 6*(299*b^3*c^6 + 1804*a*b*c^7)*d*e - (b^4*c
^5 - 1884*a*b^2*c^6 - 1920*a^2*c^7)*e^2)*x^4 + 16*(9216*(b^3*c^6 + 6*a*b*c^
7)*d^2 - 6*(3*b^4*c^5 - 6520*a*b^2*c^6 - 6608*a^2*c^7)*d*e + (9*b^5*c^4 - 1
04*a*b^3*c^5 + 10896*a^2*b*c^6)*e^2)*x^3 + 6*(105*b^7*c^2 - 1540*a*b^5*c^3
+ 8176*a^2*b^3*c^4 - 17856*a^3*b*c^5)*d*e - (315*b^8*c - 4620*a*b^6*c^2 + 2
4528*a^2*b^4*c^3 - 53568*a^3*b^2*c^4 + 32768*a^4*c^5)*e^2 + 8*(55296*(a*b^2
*c^6 + a^2*c^7)*d^2 + 6*(7*b^5*c^4 - 88*a*b^3*c^5 + 10608*a^2*b*c^6)*d*e -
(21*b^6*c^3 - 264*a*b^4*c^4 + 1104*a^2*b^2*c^5 - 2048*a^3*c^6)*e^2)*x^2 + 2
*(221184*a^2*b*c^6*d^2 - 6*(35*b^6*c^3 - 476*a*b^4*c^4 + 2256*a^2*b^2*c^5 -
 6720*a^3*c^6)*d*e + (105*b^7*c^2 - 1428*a*b^5*c^3 + 6768*a^2*b^3*c^4 - 119
68*a^3*b*c^5)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^6, 1/1032192*(315*(2*(b^8*c
- 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4 + 256*a^4*c^5)*d*e - (b^9
 - 16*a*b^7*c + 96*a^2*b^5*c^2 - 256*a^3*b^3*c^3 + 256*a^4*b*c^4)*e^2)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) + 2*(114688*c^9*e^2*x^8 + 147456*a^3*c^6*d^2 + 14336*(18*c^9*d*e +
 23*b*c^8*e^2)*x^7 + 1024*(144*c^9*d^2 + 738*b*c^8*d*e + (303*b^2*c^7 + 304
*a*c^8)*e^2)*x^6 + 256*(1728*b*c^8*d^2 + 6*(475*b^2*c^7 + 476*a*c^8)*d*e +
(367*b^3*c^6 + 2220*a*b*c^7)*e^2)*x^5 + 128*(3456*(b^2*c^7 + a*c^8)*d^2 + 6
*(299*b^3*c^6 + 1804*a*b*c^7)*d*e - (b^4*c^5 - 1884*a*b^2*c^6 - 1920*a^2*c^
7)*e^2)*x^4 + 16*(9216*(b^3*c^6 + 6*a*b*c^7)*d^2 - 6*(3*b^4*c^5 - 6520*a*b^
2*c^6 - 6608*a^2*c^7)*d*e + (9*b^5*c^4 - 104*a*b^3*c^5 + 10896*a^2*b*c^6)*e
^2)*x^3 + 6*(105*b^7*c^2 - 1540*a*b^5*c^3 + 8176*a^2*b^3*c^4 - 17856*a^3*b*
c^5)*d*e - (315*b^8*c - 4620*a*b^6*c^2 + 24528*a^2*b^4*c^3 - 53568*a^3*b^2*
c^4 + 32768*a^4*c^5)*e^2 + 8*(55296*(a*b^2*c^6 + a^2*c^7)*d^2 + 6*(7*b^5*c^
4 - 88*a*b^3*c^5 + 10608*a^2*b*c^6)*d*e - (21*b^6*c^3 - 264*a*b^4*c^4 + 110
4*a^2*b^2*c^5 - 2048*a^3*c^6)*e^2)*x^2 + 2*(221184*a^2*b*c^6*d^2 - 6*(35*b^
6*c^3 - 476*a*b^4*c^4 + 2256*a^2*b^2*c^5 - 6720*a^3*c^6)*d*e + (105*b^7*c^2
 - 1428*a*b^5*c^3 + 6768*a^2*b^3*c^4 - 11968*a^3*b*c^5)*e^2)*x)*sqrt(c*x^2
+ b*x + a))/c^6]
```

giac [B] time = 0.30, size = 824, normalized size = 2.85

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/516096*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(8*c^3*x*e^2 + (18*c^1
1*d*e + 23*b*c^10*e^2)/c^8)*x + (144*c^11*d^2 + 738*b*c^10*d*e + 303*b^2*c^
9*e^2 + 304*a*c^10*e^2)/c^8)*x + (1728*b*c^10*d^2 + 2850*b^2*c^9*d*e + 2856
*a*c^10*d*e + 367*b^3*c^8*e^2 + 2220*a*b*c^9*e^2)/c^8)*x + (3456*b^2*c^9*d^
2 + 3456*a*c^10*d^2 + 1794*b^3*c^8*d*e + 10824*a*b*c^9*d*e - b^4*c^7*e^2 +
1884*a*b^2*c^8*e^2 + 1920*a^2*c^9*e^2)/c^8)*x + (9216*b^3*c^8*d^2 + 55296*a
*b*c^9*d^2 - 18*b^4*c^7*d*e + 39120*a*b^2*c^8*d*e + 39648*a^2*c^9*d*e + 9*b
^5*c^6*e^2 - 104*a*b^3*c^7*e^2 + 10896*a^2*b*c^8*e^2)/c^8)*x + (55296*a*b^2
*c^8*d^2 + 55296*a^2*c^9*d^2 + 42*b^5*c^6*d*e - 528*a*b^3*c^7*d*e + 63648*a
^2*b*c^8*d*e - 21*b^6*c^5*e^2 + 264*a*b^4*c^6*e^2 - 1104*a^2*b^2*c^7*e^2 +
2048*a^3*c^8*e^2)/c^8)*x + (221184*a^2*b*c^8*d^2 - 210*b^6*c^5*d*e + 2856*a
*b^4*c^6*d*e - 13536*a^2*b^2*c^7*d*e + 40320*a^3*c^8*d*e + 105*b^7*c^4*e^2
- 1428*a*b^5*c^5*e^2 + 6768*a^2*b^3*c^6*e^2 - 11968*a^3*b*c^7*e^2)/c^8)*x +
 (147456*a^3*c^8*d^2 + 630*b^7*c^4*d*e - 9240*a*b^5*c^5*d*e + 49056*a^2*b^3
*c^6*d*e - 107136*a^3*b*c^7*d*e - 315*b^8*c^3*e^2 + 4620*a*b^6*c^4*e^2 - 24
528*a^2*b^4*c^5*e^2 + 53568*a^3*b^2*c^6*e^2 - 32768*a^4*c^7*e^2)/c^8) + 5/1
6384*(2*b^8*c*d*e - 32*a*b^6*c^2*d*e + 192*a^2*b^4*c^3*d*e - 512*a^3*b^2*c^
4*d*e + 512*a^4*c^5*d*e - b^9*e^2 + 16*a*b^7*c*e^2 - 96*a^2*b^5*c^2*e^2 + 2
56*a^3*b^3*c^3*e^2 - 256*a^4*b*c^4*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 1358, normalized size = 4.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -5/64*a^3/c*(c*x^2+b*x+a)^(1/2)*b*d*e-5/96*a^2/c*(c*x^2+b*x+a)^(3/2)*b*d*e+
5/32*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3*d*e+5/512*
b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e+2/9*e^2*x^2*(
c*x^2+b*x+a)^(7/2)+2/7*(c*x^2+b*x+a)^(7/2)*d^2+15/128*b^2/c*(c*x^2+b*x+a)^(
1/2)*x*a^2*d*e+5/96*b^2/c*(c*x^2+b*x+a)^(3/2)*x*a*d*e-15/512*b^4/c^2*(c*x^2
+b*x+a)^(1/2)*x*a*d*e+1/2*x*(c*x^2+b*x+a)^(7/2)*d*e+5/3072/c^4*e^2*b^6*(c*x
^2+b*x+a)^(3/2)-5/8192/c^5*e^2*b^8*(c*x^2+b*x+a)^(1/2)-1/192/c^3*e^2*b^4*(c
*x^2+b*x+a)^(5/2)+1/56/c^2*e^2*b^2*(c*x^2+b*x+a)^(7/2)-4/63/c*e^2*a*(c*x^2+
b*x+a)^(7/2)+5/16384/c^(11/2)*e^2*b^9*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))-15/256*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2*d
*e+5/64/c*e^2*b*a^3*(c*x^2+b*x+a)^(1/2)*x+5/96/c*e^2*b*a^2*(c*x^2+b*x+a)^(3
/2)*x+5/64/c^(3/2)*e^2*b*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/
1024/c^(9/2)*e^2*b^7*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+5/192*b^
3/c^2*(c*x^2+b*x+a)^(3/2)*a*d*e-1/24*a/c*(c*x^2+b*x+a)^(5/2)*b*d*e+15/256*b
^3/c^2*(c*x^2+b*x+a)^(1/2)*a^2*d*e+5/2048*b^6/c^3*(c*x^2+b*x+a)^(1/2)*x*d*e
-5/768*b^4/c^2*(c*x^2+b*x+a)^(3/2)*x*d*e+1/48*b^2/c*x*(c*x^2+b*x+a)^(5/2)*d
*e+5/128/c^2*e^2*b^2*a^3*(c*x^2+b*x+a)^(1/2)+5/1536/c^3*e^2*b^5*(c*x^2+b*x+
a)^(3/2)*x-5/384/c^3*e^2*b^4*(c*x^2+b*x+a)^(3/2)*a-5/4096/c^4*e^2*b^7*(c*x^
2+b*x+a)^(1/2)*x+15/512/c^(7/2)*e^2*b^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))*a^2-5/64/c^(5/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*a^3-5/32*a^4/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-5/8
192*b^8/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-1/12*a*x*(c
*x^2+b*x+a)^(5/2)*d*e-5/48*a^2*(c*x^2+b*x+a)^(3/2)*x*d*e-15/256/c^2*e^2*b^3
*(c*x^2+b*x+a)^(1/2)*x*a^2+15/1024/c^3*e^2*b^5*(c*x^2+b*x+a)^(1/2)*x*a+1/24
/c*e^2*b*a*x*(c*x^2+b*x+a)^(5/2)-15/1024*b^5/c^3*(c*x^2+b*x+a)^(1/2)*a*d*e-
```

```
5/192/c^2*e^2*b^3*(c*x^2+b*x+a)^(3/2)*x*a-15/512/c^3*e^2*b^4*(c*x^2+b*x+a)^
(1/2)*a^2+15/2048/c^4*e^2*b^6*(c*x^2+b*x+a)^(1/2)*a-1/96/c^2*e^2*b^3*x*(c*x
^2+b*x+a)^(5/2)-1/36/c*e^2*b*x*(c*x^2+b*x+a)^(7/2)+1/48/c^2*e^2*b^2*a*(c*x^
2+b*x+a)^(5/2)+5/192/c^2*e^2*b^2*a^2*(c*x^2+b*x+a)^(3/2)-5/32*a^3*(c*x^2+b*
x+a)^(1/2)*x*d*e-5/1536*b^5/c^3*(c*x^2+b*x+a)^(3/2)*d*e+5/4096*b^7/c^4*(c*x
^2+b*x+a)^(1/2)*d*e+1/96*b^3/c^2*(c*x^2+b*x+a)^(5/2)*d*e-1/28*b/c*(c*x^2+b*
x+a)^(7/2)*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,\left(d+e\,x\right)^2\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)^2\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2*(a + b*x + c*x**2)**(5/2), x)
```

3.1375 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=198

$$-\frac{5e\left(b^2-4ac\right)^4\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{9/2}}+\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4}-\frac{5e\left(b^2-4ac\right)^2(b+2cx)\left(a+\right.}{3072c^3}$$

Rubi [A] time = 0.17, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {779, 612, 621, 206}

$$\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4}-\frac{5e\left(b^2-4ac\right)^2(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{3072c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{192c^2}-\frac{5e\left(b^2-4ac\right)^4\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{9/2}}+\frac{\left(a+bx+cx^2\right)^{7/2}(-be+16cd+14cex)}{56c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*(b^2 - 4*a*c)^3*e*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(8192*c^4) - (5*(b^
2 - 4*a*c)^2*e*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(3072*c^3) + ((b^2 - 4*
a*c)*e*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(192*c^2) + ((16*c*d - b*e + 14
*c*e*x)*(a + b*x + c*x^2)^(7/2))/(56*c) - (5*(b^2 - 4*a*c)^4*e*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16384*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{5/2}dx = \frac{(16cd-be+14cex)\left(a+bx+cx^2\right)^{7/2}}{56c} + \frac{\left(\left(b^2-4ac\right)e\right)\int\left(a+bx+cx^2\right.}{16c}$$

$$= \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{192c^2} + \frac{(16cd-be+14cex)\left(a+bx\right.}{56c}$$

$$= -\frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{3072c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a\right.}{192c^2}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4} - \frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+\right.}{3072c^3}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4} - \frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+\right.}{3072c^3}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4} - \frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+\right.}{3072c^3}$$

Mathematica [A] time = 0.52, size = 194, normalized size = 0.98

$$\frac{\frac{7}{24}e\left(b^2-4ac\right)\left(2(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(\frac{3\left(b^2-4ac\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{128c^{5/2}}+\frac{(b+2cx)(a+x(b+cx))^{3/2}}{8c}\right)\right)+2c(a+x(b+cx))^{7/2}(2c(8d+7ex)-be)}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*c*(a + x*(b + c*x))^(7/2)*(-(b*e) + 2*c*(8*d + 7*e*x)) + (7*(b^2 - 4*a*c
)*e*(2*(b + 2*c*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*(((b + 2*c*x)*
(a + x*(b + c*x))^(3/2))/(8*c) + (3*(b^2 - 4*a*c)*(-2*Sqrt[c]*(b + 2*c*x)*S
qrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
+ x*(b + c*x)])]))/(128*c^(5/2)))))/24)/(112*c^2)
```

IntegrateAlgebraic [B] time = 1.97, size = 428, normalized size = 2.16

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(49152*a^3*c^4*d + 105*b^7*e - 1540*a*b^5*c*e + 8176
*a^2*b^3*c^2*e - 17856*a^3*b*c^3*e + 147456*a^2*b*c^4*d*x - 70*b^6*c*e*x +
952*a*b^4*c^2*e*x - 4512*a^2*b^2*c^3*e*x + 13440*a^3*c^4*e*x + 147456*a*b^2
*c^4*d*x^2 + 147456*a^2*c^5*d*x^2 + 56*b^5*c^2*e*x^2 - 704*a*b^3*c^3*e*x^2
+ 84864*a^2*b*c^4*e*x^2 + 49152*b^3*c^4*d*x^3 + 294912*a*b*c^5*d*x^3 - 48*b
^4*c^3*e*x^3 + 104320*a*b^2*c^4*e*x^3 + 105728*a^2*c^5*e*x^3 + 147456*b^2*c
^5*d*x^4 + 147456*a*c^6*d*x^4 + 38272*b^3*c^4*e*x^4 + 230912*a*b*c^5*e*x^4
+ 147456*b*c^6*d*x^5 + 121600*b^2*c^5*e*x^5 + 121856*a*c^6*e*x^5 + 49152*c^
7*d*x^6 + 125952*b*c^6*e*x^6 + 43008*c^7*e*x^7))/(172032*c^4) + (5*(b^8 - 1
6*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4)*e*Log[b + 2*c*x
 - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(16384*c^(9/2))
```

fricas [B] time = 0.53, size = 841, normalized size = 4.25

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")

[Out] [1/688128*(105*(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4)*sqrt(c)*e*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(43008*c^8*e*x^7 + 49152*a^3*c^5*d + 3072*(16*c^8*d + 41*b*c^7*e)*x^6 + 256*(576*b*c^7*d + (475*b^2*c^6 + 476*a*c^7)*e)*x^5 + 128*(1152*(b^2*c^6 + a*c^7)*d + (299*b^3*c^5 + 1804*a*b*c^6)*e)*x^4 + 16*(3072*(b^3*c^5 + 6*a*b*c^6)*d - (3*b^4*c^4 - 6520*a*b^2*c^5 - 6608*a^2*c^6)*e)*x^3 + 8*(18432*(a*b^2*c^5 + a^2*c^6)*d + (7*b^5*c^3 - 88*a*b^3*c^4 + 10608*a^2*b*c^5)*e)*x^2 + (105*b^7*c - 1540*a*b^5*c^2 + 8176*a^2*b^3*c^3 - 17856*a^3*b*c^4)*e + 2*(73728*a^2*b*c^5*d - (35*b^6*c^2 - 476*a*b^4*c^3 + 2256*a^2*b^2*c^4 - 6720*a^3*c^5)*e)*x)*sqrt(c*x^2 + b*x + a))/c^5, 1/344064*(105*(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4)*sqrt(-c)*e*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(43008*c^8*e*x^7 + 49152*a^3*c^5*d + 3072*(16*c^8*d + 41*b*c^7*e)*x^6 + 256*(576*b*c^7*d + (475*b^2*c^6 + 476*a*c^7)*e)*x^5 + 128*(1152*(b^2*c^6 + a*c^7)*d + (299*b^3*c^5 + 1804*a*b*c^6)*e)*x^4 + 16*(3072*(b^3*c^5 + 6*a*b*c^6)*d - (3*b^4*c^4 - 6520*a*b^2*c^5 - 6608*a^2*c^6)*e)*x^3 + 8*(18432*(a*b^2*c^5 + a^2*c^6)*d + (7*b^5*c^3 - 88*a*b^3*c^4 + 10608*a^2*b*c^5)*e)*x^2 + (105*b^7*c - 1540*a*b^5*c^2 + 8176*a^2*b^3*c^3 - 17856*a^3*b*c^4)*e + 2*(73728*a^2*b*c^5*d - (35*b^6*c^2 - 476*a*b^4*c^3 + 2256*a^2*b^2*c^4 - 6720*a^3*c^5)*e)*x)*sqrt(c*x^2 + b*x + a))/c^5]

giac [B] time = 0.27, size = 452, normalized size = 2.28

$$\frac{1}{172032}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(2\left(12\left(14c^3xe+\frac{16c^{10}d+41bc^9e}{c^7}\right)x+\frac{576bc^9d+475b^2c^8e+476ac^9e}{c^7}\right)x+\frac{1152b^2c^8d+1152ac^9d+299b^3c^7e+1804abc^8e}{c^7}\right)x+\frac{3072b^3c^7d+18432abc^8d-3b^4c^6e+6520ab^2c^7e+6608a^2c^8e}{c^7}\right)x+\frac{18432ab^2c^7d+18432a^2c^8d+7b^5c^5e-88ab^3c^6e+10608a^2bc^7e}{c^7}\right)x+\frac{73728a^2bc^7d-35b^6c^4e+476ab^4c^5e-2256a^2b^2c^6e+6720a^3c^7e}{c^7}\right)x+\frac{49152a^3c^7d+105b^7c^3e-1540ab^5c^4e+8176a^2b^3c^5e-17856a^3bc^6e}{c^7}\right)+\frac{5\left(b^8e-16ab^6ce+96a^2b^4c^2e-256a^3b^2c^3e+256a^4c^4e\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{16384c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")

[Out] 1/172032*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(12*(14*c^3*x*e + (16*c^10*d + 41*b*c^9*e)/c^7)*x + (576*b*c^9*d + 475*b^2*c^8*e + 476*a*c^9*e)/c^7)*x + (1152*b^2*c^8*d + 1152*a*c^9*d + 299*b^3*c^7*e + 1804*a*b*c^8*e)/c^7)*x + (3072*b^3*c^7*d + 18432*a*b*c^8*d - 3*b^4*c^6*e + 6520*a*b^2*c^7*e + 6608*a^2*c^8*e)/c^7)*x + (18432*a*b^2*c^7*d + 18432*a^2*c^8*d + 7*b^5*c^5*e - 88*a*b^3*c^6*e + 10608*a^2*b*c^7*e)/c^7)*x + (73728*a^2*b*c^7*d - 35*b^6*c^4*e + 476*a*b^4*c^5*e - 2256*a^2*b^2*c^6*e + 6720*a^3*c^7*e)/c^7)*x + (49152*a^3*c^7*d + 105*b^7*c^3*e - 1540*a*b^5*c^4*e + 8176*a^2*b^3*c^5*e - 17856*a^3*b*c^6*e)/c^7) + 5/16384*(b^8*e - 16*a*b^6*c*e + 96*a^2*b^4*c^2*e - 256*a^3*b^2*c^3*e + 256*a^4*c^4*e)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)

maple [B] time = 0.06, size = 616, normalized size = 3.11

$$-\frac{5a^4e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{64\sqrt{c}}+\frac{5a^3b^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{64c^{\frac{3}{2}}}-\frac{15a^2b^4e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{512c^{\frac{5}{2}}}+\frac{5ab^6e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{1024c^{\frac{7}{2}}}-\frac{5b^8e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16384c^{\frac{9}{2}}}-\frac{5\sqrt{cx^2+bx+a}\,a^3ex}{64}+\frac{15\sqrt{cx^2+bx+a}\,a^2b^2ex}{256c}-\frac{15\sqrt{cx^2+bx+a}\,ab^4ex}{1024c^2}+\frac{5\sqrt{cx^2+bx+a}\,b^6ex}{4096c^3}-\frac{5\sqrt{cx^2+bx+a}\,a^3be}{128c}+\frac{15\sqrt{cx^2+bx+a}\,a^2b^3e}{512c^2}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}a^2ex}{96}-\frac{15\sqrt{cx^2+bx+a}\,ab^5e}{2048c^3}+\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}ab^2ex}{192c}+\frac{5\sqrt{cx^2+bx+a}\,b^7e}{8192c^4}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}b^4ex}{1536c^2}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}a^2be}{192c}+\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}ab^3e}{384c^2}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}aex}{24}-\frac{5\left(cx^2+bx+a\right)^{\frac{3}{2}}b^5e}{3072c^3}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}b^2ex}{96c}-\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}abe}{48c}+\frac{\left(cx^2+bx+a\right)^{\frac{5}{2}}b^3e}{192c^2}+\frac{\left(cx^2+bx+a\right)^{\frac{7}{2}}ex}{4}-\frac{\left(cx^2+bx+a\right)^{\frac{7}{2}}be}{56c}+\frac{2\left(cx^2+bx+a\right)^{\frac{7}{2}}d}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x)

[Out] 5/4096/c^3*e*b^6*(c*x^2+b*x+a)^(1/2)*x-15/1024/c^2*e*b^4*(c*x^2+b*x+a)^(1/2)*x*a+5/192/c*e*b^2*(c*x^2+b*x+a)^(3/2)*x*a+15/256/c*e*b^2*(c*x^2+b*x+a)^(1/2)*x*a^2+5/64/c^(3/2)*e*b^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-5/192/c*e*a^2*(c*x^2+b*x+a)^(3/2)*b-5/1536/c^2*e*b^4*(c*x^2+b*x+a)^(3/2)*x-15/2048/c^3*e*b^5*(c*x^2+b*x+a)^(1/2)*a+1/96/c*e*b^2*x*(c*x^2+b*x+a)^(5/2)-5/128/c*e*a^3*(c*x^2+b*x+a)^(1/2)*b-1/48/c*e*a*(c*x^2+b*x+a)^(5/2)*b+15/512/c^2*e*b^3*(c*x^2+b*x+a)^(1/2)*a^2+5/384/c^2*e*b^3*(c*x^2+b*x+a)^(3/2)*a-15/512/c^(5/2)*e*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+5/1024/c^(7/2)*e*b^6*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+2/7*(c*x^2+b*x+a)^(7/2)*d+1/4*e*x*(c*x^2+b*x+a)^(7/2)-1/56/c*e*b*(c*x^2+b*x+a)^(7/2)+1/192/c^2*e*b^3*(c*x^2+b*x+a)^(5/2)+5/8192/c^4*e*b^7*(c*x^2+b*x+a)^(1/2)-5/3072

```
/c^3*e*b^5*(c*x^2+b*x+a)^(3/2)-5/96*e*a^2*(c*x^2+b*x+a)^(3/2)*x-5/64*e*a^3*
(c*x^2+b*x+a)^(1/2)*x-1/24*e*a*x*(c*x^2+b*x+a)^(5/2)-5/16384/c^(9/2)*e*b^8*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/64/c^(1/2)*e*a^4*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int (b+2\,c\,x)\,(d+e\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.1376 $\int (b+2cx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=18

$$\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(a + b*x + c*x^2)^(7/2))/7
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^{5/2}\,dx=\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$\frac{2}{7}(a+x(b+cx))^{7/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(a + x*(b + c*x))^(7/2))/7
```

IntegrateAlgebraic [A] time = 0.02, size = 18, normalized size = 1.00

$$\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(a + b*x + c*x^2)^(7/2))/7
```

fricas [B] time = 0.44, size = 86, normalized size = 4.78

$$\frac{2}{7}\left(c^3x^6+3\,bc^2x^5+3\left(b^2c+ac^2\right)x^4+3\,a^2bx+\left(b^3+6\,abc\right)x^3+a^3+3\left(ab^2+a^2c\right)x^2\right)\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(c^3*x^6 + 3*b*c^2*x^5 + 3*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a
*b*c)*x^3 + a^3 + 3*(a*b^2 + a^2*c)*x^2)*sqrt(c*x^2 + b*x + a)
```

giac [A] time = 0.15, size = 14, normalized size = 0.78

$$\frac{2}{7}\left(cx^2+bx+a\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*(c*x^2 + b*x + a)^(7/2)
```

maple [A] time = 0.05, size = 15, normalized size = 0.83

$$\frac{2\left(c\,x^2+bx+a\right)^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/7*(c*x^2+b*x+a)^(7/2)
```

maxima [A] time = 0.47, size = 14, normalized size = 0.78

$$\frac{2}{7}\left(cx^2+bx+a\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(c*x^2 + b*x + a)^(7/2)
```

mupad [B] time = 2.03, size = 14, normalized size = 0.78

$$\frac{2\left(c\,x^2+b\,x+a\right)^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(a + b*x + c*x^2)^(7/2))/7
```

sympy [B] time = 2.90, size = 243, normalized size = 13.50

$$\frac{2a^3\sqrt{a+bx+cx^2}}{7}+\frac{6a^2bx\sqrt{a+bx+cx^2}}{7}+\frac{6a^2cx^2\sqrt{a+bx+cx^2}}{7}+\frac{6ab^2x^2\sqrt{a+bx+cx^2}}{7}+\frac{12abcx^3\sqrt{a+bx+cx^2}}{7}+\frac{6ac^2x^4\sqrt{a+bx+cx^2}}{7}+\frac{2b^3x^3\sqrt{a+bx+cx^2}}{7}+\frac{6b^2cx^4\sqrt{a+bx+cx^2}}{7}+\frac{6bc^2x^5\sqrt{a+bx+cx^2}}{7}+\frac{2c^3x^6\sqrt{a+bx+cx^2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] 2*a**3*sqrt(a + b*x + c*x**2)/7 + 6*a**2*b*x*sqrt(a + b*x + c*x**2)/7 + 6*a
**2*c*x**2*sqrt(a + b*x + c*x**2)/7 + 6*a*b**2*x**2*sqrt(a + b*x + c*x**2)/
7 + 12*a*b*c*x**3*sqrt(a + b*x + c*x**2)/7 + 6*a*c**2*x**4*sqrt(a + b*x + c
*x**2)/7 + 2*b**3*x**3*sqrt(a + b*x + c*x**2)/7 + 6*b**2*c*x**4*sqrt(a + b*
x + c*x**2)/7 + 6*b*c**2*x**5*sqrt(a + b*x + c*x**2)/7 + 2*c**3*x**6*sqrt(a
 + b*x + c*x**2)/7
```

3.1377 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=627

$$\frac{\left(640c^4d^2e^2\left(3a^2e^2-8abde+5b^2d^2\right)+40b^2c^2e^4\left(6a^2e^2-8abde+3b^2d^2\right)+4b^4ce^5(2bd-5ae)-512c^5d^4e(6bd-\cdots}{512c^{5/2}e^7}$$

Rubi [A] time = 1.14, antiderivative size = 627, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {814, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\left(32c^3de^2\left(16a^2e^2-55abde+40b^2d^2\right)-8bc^2e^3\left(42a^2e^2-92abde+49b^2d^2\right)-2cex\left(-4ce(4bd-5ae)-b^2e^2+16c^2d^2\right)\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)+8b^3ce^4(bd-2ae)-128c^4d^3e(11bd-8ae)+b^5e^5+512c^5d^5\right)}{256c^2e^6}+\frac{\left(640c^4d^2e^2\left(3a^2e^2-8abde+5b^2d^2\right)+40b^2c^2e^4\left(6a^2e^2-8abde+3b^2d^2\right)+4b^4ce^5(2bd-5ae)-512c^5d^4e(6bd-5ae)-320c^3e^3(bd-ae)^2(4bd-ae)+b^6e^6+1024c^6d^6\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{5/2}e^7}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-2cex\left(-4ce(6bd-5ae)+b^2e^2+24c^2d^2\right)-8c^2de(15bd-8ae)+4bce^2(14bd-13ae)-b^3e^3+64c^3d^3\right)}{96ce^4}-\frac{(2cd-be)\left(ae^2-bde+cd^2\right)^{5/2}\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e^7}-\frac{\left(a+bx+cx^2\right)^{5/2}(-11be+12cd-10cex)}{30e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((512*c^5*d^5 + b^5*e^5 - 128*c^4*d^3*e*(11*b*d - 8*a*e) + 8*b^3*c*e^4*(b*
d - 2*a*e) + 32*c^3*d*e^2*(40*b^2*d^2 - 55*a*b*d*e + 16*a^2*e^2) - 8*b*c^2*
e^3*(49*b^2*d^2 - 92*a*b*d*e + 42*a^2*e^2) - 2*c*e*(16*c^2*d^2 - b^2*e^2 -
4*c*e*(4*b*d - 5*a*e))*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*x)*Sqrt[
a + b*x + c*x^2])/(256*c^2*e^6) - ((64*c^3*d^3 - b^3*e^3 + 4*b*c*e^2*(14*b*
d - 13*a*e) - 8*c^2*d*e*(15*b*d - 8*a*e) - 2*c*e*(24*c^2*d^2 + b^2*e^2 - 4*
c*e*(6*b*d - 5*a*e))*x)*(a + b*x + c*x^2)^(3/2))/(96*c*e^4) - ((12*c*d - 11
*b*e - 10*c*e*x)*(a + b*x + c*x^2)^(5/2))/(30*e^2) + ((1024*c^6*d^6 + b^6*e
^6 + 4*b^4*c*e^5*(2*b*d - 5*a*e) - 512*c^5*d^4*e*(6*b*d - 5*a*e) - 320*c^3*
e^3*(b*d - a*e)^2*(4*b*d - a*e) + 640*c^4*d^2*e^2*(5*b^2*d^2 - 8*a*b*d*e +
3*a^2*e^2) + 40*b^2*c^2*e^4*(3*b^2*d^2 - 8*a*b*d*e + 6*a^2*e^2))*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(512*c^(5/2)*e^7) - ((2*c*d -
 b*e)*(c*d^2 - b*d*e + a*e^2)^(5/2)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)
/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/e^7
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
```

```
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{d+ex}\,dx = -\frac{(12cd-11be-10cex)\left(a+bx+cx^2\right)^{5/2}}{30e^2} - \int \frac{\left(c\left(11b^2de+4acde-12b\left(cd^2+ae^2\right)\right)-c\left(24c^2 \ldots\right.\right.}{12 \ldots}$$

$$= -\frac{\left(64c^3d^3-b^3e^3+4bce^2(14bd-13ae)-8c^2de(15bd-8ae)-2ce\left(24c^2d^2+b^2 \ldots\right.\right.}{96ce^4}$$

$$= -\frac{\left(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2\left(40b^2 \ldots\right.\right.}{\ldots}$$

$$= -\frac{\left(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2\left(40b^2 \ldots\right.\right.}{\ldots}$$

$$= -\frac{\left(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2\left(40b^2 \ldots\right.\right.}{\ldots}$$

$$= -\frac{\left(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2\left(40b^2 \ldots\right.\right.}{\ldots}$$

Mathematica [A] time = 1.63, size = 607, normalized size = 0.97

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] ((-12*c*d + 11*b*e + 10*c*e*x)*(a + x*(b + c*x))^(5/2))/(30*e^2) + ((a + x*
(b + c*x))^(3/2)*(b^3*e^3 + 16*c^3*d^2*(-4*d + 3*e*x) + 2*b*c*e^2*(-28*b*d
+ 26*a*e + b*e*x) + 8*c^2*e*(3*b*d*(5*d - 2*e*x) + a*e*(-8*d + 5*e*x))))/(9
6*c*e^4) + (-2*c*e*Sqrt[a + x*(b + c*x)]*(b^5*e^5 + 256*c^5*d^4*(2*d - e*x)
 + 2*b^3*c*e^4*(4*b*d - 8*a*e + b*e*x) - 8*b*c^2*e^3*(42*a^2*e^2 + b^2*d*(4
9*d - 2*e*x) + 4*a*b*e*(-23*d + e*x)) - 64*c^4*d^2*e*(2*b*d*(11*d - 4*e*x)
+ a*e*(-16*d + 7*e*x)) + 16*c^3*e^2*(b^2*d^2*(80*d - 17*e*x) + 2*a^2*e^2*(1
6*d - 5*e*x) + 2*a*b*d*e*(-55*d + 14*e*x))) + Sqrt[c]*(1024*c^6*d^6 + b^6*e
^6 + 4*b^4*c*e^5*(2*b*d - 5*a*e) - 512*c^5*d^4*e*(6*b*d - 5*a*e) + 320*c^3*
e^3*(b*d - a*e)^2*(-4*b*d + a*e) + 640*c^4*d^2*e^2*(5*b^2*d^2 - 8*a*b*d*e +
 3*a^2*e^2) + 40*b^2*c^2*e^4*(3*b^2*d^2 - 8*a*b*d*e + 6*a^2*e^2))*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 512*c^3*(2*c*d - b*e)*(c*d^
```

```
2 + e*(-(b*d) + a*e))^(5/2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*S
qrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(512*c^3*e^7)
```

IntegrateAlgebraic [B] time = 85.98, size = 28910, normalized size = 46.11

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x]
[Out] Result too large to show
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x, algorithm="fricas")
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 6077, normalized size = 9.69

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x)
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x), x)
```

3.1378 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=508

$$\frac{\sqrt{a+bx+cx^2}\left(8c^2e^2\left(8a^2e^2-67abde+76b^2d^2\right)-2cex(2cd-be)\left(44ace^2+b^2e^2-48bcde+48c^2d^2\right)-2b^2ce^3 \cdots}{32ce^6}$$

Rubi [A] time = 0.75, antiderivative size = 508, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {812, 814, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(8c^2e^2\left(8a^2e^2-67abde+76b^2d^2\right)-2cex(2cd-be)\left(44ace^2+b^2e^2-48bcde+48c^2d^2\right)-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+b^4e^4+384c^4d^4\right)}{32ce^6}-\frac{(2cd-be)\left(16c^2e^2\left(15a^2e^2-40abde+26b^2d^2\right)-8b^2ce^3(4bd-5ae)-128c^3d^2e(6bd-5ae)-b^4e^4+384c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{3/2}e^7}+\frac{\left(a+bx+cx^2\right)^{3/2}\left(8ace^2+19b^2e^2-18cex(2cd-be)-66bcde+48c^2d^2\right)}{12e^4}+\frac{\left(ae^2-bde+cd^2\right)^{3/2}\left(-4ce(6bd-ae)+5b^2e^2+24c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2e^7}+\frac{\left(a+bx+cx^2\right)^{5/2}(-5be+12cd+2cex)}{5e^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] ((384*c^4*d^4 + b^4*e^4 - 2*b^2*c*e^3*(65*b*d - 62*a*e) - 32*c^3*d^2*e*(27*
b*d - 14*a*e) + 8*c^2*e^2*(76*b^2*d^2 - 67*a*b*d*e + 8*a^2*e^2) - 2*c*e*(2*
c*d - b*e)*(48*c^2*d^2 - 48*b*c*d*e + b^2*e^2 + 44*a*c*e^2)*x)*Sqrt[a + b*x
 + c*x^2])/(32*c*e^6) + ((48*c^2*d^2 - 66*b*c*d*e + 19*b^2*e^2 + 8*a*c*e^2
- 18*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(12*e^4) + ((12*c*d - 5*
b*e + 2*c*e*x)*(a + b*x + c*x^2)^(5/2))/(5*e^2*(d + e*x)) - ((2*c*d - b*e)*
(384*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(4*b*d - 5*a*e) - 128*c^3*d^2*e*(6*b*d
 - 5*a*e) + 16*c^2*e^2*(26*b^2*d^2 - 40*a*b*d*e + 15*a^2*e^2))*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(64*c^(3/2)*e^7) + ((c*d^2 - b*
d*e + a*e^2)^(3/2)*(24*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(6*b*d - a*e))*ArcTanh[(
b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x
+ c*x^2])])/(2*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
```

```
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{(12cd-5be+2cex)\left(a+bx+cx^2\right)^{5/2}}{5e^2(d+ex)} - \frac{\int \frac{\left(12bcd-5b^2e-4ace+12c(2cd-be)x\right)\left(a+bx+cx^2\right)}{d+ex}}{2e^2}$$

$$= \frac{\left(48c^2d^2-66bcde+19b^2e^2+8ace^2-18ce(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{12e^4} + \frac{(12}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(76b^2\right.\right.}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(76b^2\right.\right.}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(76b^2\right.\right.}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(76b^2\right.\right.}{}$$

Mathematica [A] time = 2.45, size = 659, normalized size = 1.30

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (((-2*c*d + b*e)*(a + x*(b + c*x))^(7/2))/(d + e*x) + ((a + x*(b + c*x))^(5
/2)*(-5*b^2*e^2 - 2*c^2*d*(6*d - 5*e*x) + c*e*(17*b*d - 2*a*e - 5*b*e*x)))/
(5*e^2) - ((c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^(3/2)*(19*b^2*e^2 +
 12*c^2*d*(4*d - 3*e*x) + 2*c*e*(-33*b*d + 4*a*e + 9*b*e*x)))/(12*e^4) + (-
2*c^2*e*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)]*(b^4*e^4 + 192*c^4
*d^3*(2*d - e*x) + 2*b^2*c*e^3*(-65*b*d + 62*a*e + b*e*x) + 4*c^2*e^2*(16*a
^2*e^2 + b^2*d*(152*d - 25*e*x) + 2*a*b*e*(-67*d + 11*e*x)) - 16*c^3*d*e*(1
8*b*d*(3*d - e*x) + a*e*(-28*d + 11*e*x))) + c^(3/2)*(2*c*d - b*e)*(384*c^5
*d^6 - 128*c^4*d^4*e*(9*b*d - 8*a*e) + b^4*e^5*(b*d - a*e) + b^2*c*e^4*(31*
b^2*d^2 - 72*a*b*d*e + 40*a^2*e^2) + 16*c^3*d^2*e^2*(74*b^2*d^2 - 128*a*b*d
*e + 55*a^2*e^2) + 8*c^2*e^3*(-56*b^3*d^3 + 137*a*b^2*d^2*e - 110*a^2*b*d*e
^2 + 30*a^3*e^3))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] +
32*c^3*(24*c^2*d^2 + 5*b^2*e^2 + 4*c*e*(-6*b*d + a*e))*(c*d^2 + e*(-(b*d) +
 a*e))^(5/2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(
-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(64*c^3*e^7))/(-(c*d^2) + e*(b*d -
a*e))
```

IntegrateAlgebraic [B] time = 55.19, size = 20827, normalized size = 41.00

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] Result too large to show
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 13167, normalized size = 25.92

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x)**2, x)
```

3.1379 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=464

$$\frac{15\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b\ldots}{2\sqrt{c}\sqrt{\ldots}}\right.}{64\sqrt{c}\,e^7}$$

Rubi [A] time = 0.85, antiderivative size = 464, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {812, 814, 843, 621, 206, 724}

$$\frac{15\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64\sqrt{c}\,e^7}-\frac{5\left(a+bx+cx^2\right)^{3/2}\left(-ce(7bd-2ae)+b^2e^2+cex(2cd-be)+8c^2d^2\right)}{4e^4(d+ex)}-\frac{15\sqrt{a+bx+cx^2}\left(-2cex\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)-16c^2de(7bd-2ae)+4bce^2(14bd-5ae)-7b^3e^3+64c^3d^3\right)}{32e^6}-\frac{15(2cd-be)\sqrt{ae^2-bde+cd^2}\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8e^7}+\frac{\left(a+bx+cx^2\right)^{5/2}(-be+3cd+cex)}{2e^2(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (-15*(64*c^3*d^3 - 7*b^3*e^3 + 4*b*c*e^2*(14*b*d - 5*a*e) - 16*c^2*d*e*(7*b
*d - 2*a*e) - 2*c*e*(16*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(4*b*d - a*e))*x)*Sqrt[
a + b*x + c*x^2])/(32*e^6) - (5*(8*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 2*a*e)
+ c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(4*e^4*(d + e*x)) + ((3*c*d
 - b*e + c*e*x)*(a + b*x + c*x^2)^(5/2))/(2*e^2*(d + e*x)^2) + (15*(128*c^4
*d^4 + b^4*e^4 - 8*b^2*c*e^3*(4*b*d - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e)
+ 16*c^2*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + b*x + c*x^2])]])/(64*Sqrt[c]*e^7) - (15*(2*c*d - b*e)*Sqrt[c*d
^2 - b*d*e + a*e^2]*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh[(b*
d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x +
c*x^2])]])/(8*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
```

```
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{(3cd-be+cex)\left(a+bx+cx^2\right)^{5/2}}{2e^2(d+ex)^2} - \frac{5\int \frac{\left(4\left(3bcd-b^2e-2ace\right)+12c(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^2}}{16e^2}$$

$$= -\frac{5\left(8c^2d^2+b^2e^2-ce(7bd-2ae)+ce(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{4e^4(d+ex)} + \frac{(3cd-}{}$$

$$= -\frac{15\left(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\left(16c^2d^2+\right.\right.}{32e^6}$$

$$= -\frac{15\left(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\left(16c^2d^2+\right.\right.}{32e^6}$$

$$= -\frac{15\left(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\left(16c^2d^2+\right.\right.}{32e^6}$$

$$= -\frac{15\left(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\left(16c^2d^2+\right.\right.}{32e^6}$$

Mathematica [A] time = 2.13, size = 535, normalized size = 1.15

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] ((-2*e*Sqrt[a + x*(b + c*x)]*(16*c^3*(60*d^5 + 90*d^4*e*x + 20*d^3*e^2*x^2
- 5*d^2*e^3*x^3 + 2*d*e^4*x^4 - e^5*x^5) + b*e^3*(16*a^2*e^2 + 8*a*b*e*(5*d
```

```
 + 9*e*x) - b^2*(105*d^2 + 170*d*e*x + 49*e^2*x^2)) + 2*c*e^2*(16*a^2*e^2*(
d + 2*e*x) - 2*a*b*e*(145*d^2 + 234*d*e*x + 65*e^2*x^2) + b^2*(420*d^3 + 65
5*d^2*e*x + 166*d*e^2*x^2 - 37*e^3*x^3)) - 8*c^2*e*(a*e*(-100*d^3 - 155*d^2
*e*x - 38*d*e^2*x^2 + 9*e^3*x^3) + b*(210*d^4 + 320*d^3*e*x + 75*d^2*e^2*x^
2 - 18*d*e^3*x^3 + 7*e^4*x^4))))/(d + e*x)^2 + (15*(128*c^4*d^4 + b^4*e^4 -
 8*b^2*c*e^3*(4*b*d - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e) + 16*c^2*e^2*(10
*b^2*d^2 - 8*a*b*d*e + a^2*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*
(b + c*x)])])/Sqrt[c] + 120*(2*c*d - b*e)*(8*c^2*d^2 + b^2*e^2 + 4*c*e*(-2*
b*d + a*e))*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*
x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(64*e
^7)
```

IntegrateAlgebraic [F] time = 180.05, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x, algorithm="fricas")
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.07Unable to divide, perha
ps due to rounding error%%%{1,[6,0,10,0,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1
]%%%}]%%},[5,0,9,0,1]%%%}+%%%{-3,[4,1,10,0,0]%%%}+%%%{3,[4,0,9,1,1]%%%}+%%%
{%%%{12,[1]%%%},[4,0,8,0,2]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,
9,0,1]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,8,1,2]%%%}+%%%{%%{[%
%%{-8,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,7,0,3]%%%}+%%%{3,[2,2,10,0,0]
%%%}+%%%{-6,[2,1,9,1,1]%%%}+%%%{%%%{-12,[1]%%%},[2,1,8,0,2]%%%}+%%%{3,[2,0,
8,2,2]%%%}+%%%{%%%{12,[1]%%%},[2,0,7,1,3]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]
%%%}]%%},[1,2,9,0,1]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,8,1,2]%
%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,7,2,3]%%%}+%%%{-1,[0,3,10,0,
0]%%%}+%%%{3,[0,2,9,1,1]%%%}+%%%{-3,[0,1,8,2,2]%%%}+%%%{1,[0,0,7,3,3]%%%} /
 %%%{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,3,0,0]%%%}+%%%{
%%%{-6,[2]%%%},[5,0,2,0,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%
}]%%},[4,1,3,0,0]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%}
,[4,0,2,1,1]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,1,0,2]%%%}+%%%{%%%{12,[2]%%%},[3,1,2,0,1]%%%}+%%%{%%%{-12,[2]%%%},[3,0,1,
1,2]%%%}+%%%{%%%{-8,[3]%%%},[3,0,0,0,3]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%
%%{-1,[1]%%%}]%%},[2,2,3,0,0]%%%}+%%%{%%{[%%%{-6,[1]%%%},0]:[1,0,%%%{-1,[1]
%%%}]%%},[2,1,2,1,1]%%%}+%%%{%%{[%%%{-12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%}
,[2,1,1,0,2]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0
,1,2,2]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,0,1
```

```
,3]%%%}+%%%{%%%{-6,[2]%%%},[1,2,2,0,1]%%%}+%%%{%%%{12,[2]%%%},[1,1,1,1,2]%%
%}+%%%{%%%{-6,[2]%%%},[1,0,0,2,3]%%%}+%%%{%%{[%%%{-1,[1]%%%},0]:[1,0,%%%{-1
,[1]%%%}]%%},[0,3,3,0,0]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%
%},[0,2,2,1,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,1
,2,2]%%%}+%%%{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,0,3,3]
%%%} Error: Bad Argument Value
```

maple [B] time = 0.08, size = 18705, normalized size = 40.31

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                 +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{(d+ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x)**3, x)
```

3.1380 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=473

$$\frac{5\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2a}{2\sqrt{a+bx}}\right.}{16e^7\sqrt{ae^2-bde+cd^2}}$$

Rubi [A] time = 0.75, antiderivative size = 473, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {812, 843, 621, 206, 724}

$$\frac{5\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16e^7\sqrt{ae^2-bde+cd^2}}-\frac{5\left(a+bx+cx^2\right)^{3/2}\left(-4ce(3bd-ae)+b^2e^2+4cex(2cd-be)+16c^2d^2\right)}{12e^4(d+ex)^2}+\frac{5\sqrt{a+bx+cx^2}\left(2cex\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)-16c^2de(5bd-2ae)+12bce^2(2bd-ae)-b^3e^3+64c^3d^3\right)}{8e^6(d+ex)}-\frac{5\sqrt{c}(2cd-be)\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2e^7}+\frac{\left(a+bx+cx^2\right)^{5/2}(-be+4cd+2cex)}{3e^2(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (5*(64*c^3*d^3 - b^3*e^3 - 16*c^2*d*e*(5*b*d - 2*a*e) + 12*b*c*e^2*(2*b*d -
 a*e) + 2*c*e*(16*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(4*b*d - a*e))*x)*Sqrt[a + b*
x + c*x^2])/(8*e^6*(d + e*x)) - (5*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(3*b*d - a
*e) + 4*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(12*e^4*(d + e*x)^2)
+ ((4*c*d - b*e + 2*c*e*x)*(a + b*x + c*x^2)^(5/2))/(3*e^2*(d + e*x)^3) - (
5*Sqrt[c]*(2*c*d - b*e)*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh
[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2*e^7) + (5*(128*c^4*d^4
+ b^4*e^4 - 8*b^2*c*e^3*(4*b*d - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e) + 16*
c^2*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2))*ArcTanh[(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(16*e^7*Sq
rt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
```

```
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx = \frac{(4cd-be+2cex)\left(a+bx+cx^2\right)^{5/2}}{3e^2(d+ex)^3} - \frac{5\int \frac{\left(3\left(4bcd-b^2e-4ace\right)+12c(2cd-be)x\right)\left(a+bx+cx^2\right)}{(d+ex)^3}}{18e^2}$$

$$= -\frac{5\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{12e^4(d+ex)^2} + \frac{(4cd}{}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3b^2e\right.\right.}{8e^6(d+ex)}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3b^2e\right.\right.}{8e^6(d+ex)}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3b^2e\right.\right.}{8e^6(d+ex)}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3b^2e\right.\right.}{8e^6(d+ex)}$$

Mathematica [A] time = 2.62, size = 823, normalized size = 1.74

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (2*e*Sqrt[a + x*(b + c*x)]*(16*c^4*d^2*(60*d^5 + 150*d^4*e*x + 110*d^3*e^2*
x^2 + 15*d^2*e^3*x^3 - 3*d*e^4*x^4 + e^5*x^5) + b*e^4*(b*d - a*e)*(8*a^2*e^
2 + 2*a*b*e*(5*d + 13*e*x) + b^2*(15*d^2 + 40*d*e*x + 33*e^2*x^2)) - c*e^3*
(8*a^3*e^3*(d + 3*e*x) + 4*a^2*b*e^2*(15*d^2 + 38*d*e*x + 41*e^2*x^2) + 5*b
^3*d*(75*d^3 + 194*d^2*e*x + 151*d*e^2*x^2 + 24*e^3*x^3) - 2*a*b^2*e*(205*d
^3 + 540*d^2*e*x + 443*d*e^2*x^2 + 60*e^3*x^3)) + 2*c^2*e^2*(4*a^2*e^2*(39*
d^3 + 102*d^2*e*x + 83*d*e^2*x^2 + 14*e^3*x^3) + b^2*d*(780*d^4 + 1985*d^3*
e*x + 1501*d^2*e^2*x^2 + 228*d*e^3*x^3 - 32*e^4*x^4) - 2*a*b*e*(395*d^4 + 1
014*d^3*e*x + 777*d^2*e^2*x^2 + 112*d*e^3*x^3 - 16*e^4*x^4)) + 8*c^3*e*(-(b
*d*(270*d^5 + 680*d^4*e*x + 505*d^3*e^2*x^2 + 72*d^2*e^3*x^3 - 14*d*e^4*x^4
 + 2*e^5*x^5)) + a*e*(160*d^5 + 405*d^4*e*x + 303*d^3*e^2*x^2 + 44*d^2*e^3*
x^3 - 6*d*e^4*x^4 + 2*e^5*x^5))) - 120*Sqrt[c]*(2*c*d - b*e)*(8*c^3*d^4 - 4
*c^2*d^2*e*(4*b*d - 3*a*e) + c*e^2*(3*b*d - 2*a*e)^2 + b^2*e^3*(-(b*d) + a*
e))*(d + e*x)^3*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] - 15
*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*(128*c^4*d^4 + b^4*e^4 - 8*b^2*c*e^3*(4*b*d
 - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e) + 16*c^2*e^2*(10*b^2*d^2 - 8*a*b*d*
```

```
e + a^2*e^2))*(d + e*x)^3*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqr
t[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(48*e^7*(c*d^2 + e*(-(
b*d) + a*e))*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 180.05, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x, algorithm="fricas")
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 42.98Unable to divide, perh
aps due to rounding error%%%{%%{[-1,0]:[1,0,%%%{-1,[1]%%%}]%%},[8,0,0,11,0]
%%%}+%%%{%%%{8,[1]%%%},[7,0,0,10,1]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%
},[6,1,0,11,0]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,1,10,1]%%%}+%
%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,0,9,2]%%%}+%%%{%%%{-
24,[1]%%%},[5,1,0,10,1]%%%}+%%%{%%%{24,[1]%%%},[5,0,1,9,2]%%%}+%%%{%%%{32,[
2]%%%},[5,0,0,8,3]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,2,0,11,0]%%
%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,1,10,1]%%%}+%%%{%%{[%%%{48,[1
]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,0,9,2]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,
[1]%%%}]%%},[4,0,2,9,2]%%%}+%%%{%%{[%%%{-48,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]
%%},[4,0,1,8,3]%%%}+%%%{%%{[%%%{-16,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0
,0,7,4]%%%}+%%%{%%%{24,[1]%%%},[3,2,0,10,1]%%%}+%%%{%%%{-48,[1]%%%},[3,1,1,
9,2]%%%}+%%%{%%%{-32,[2]%%%},[3,1,0,8,3]%%%}+%%%{%%%{24,[1]%%%},[3,0,2,8,3]
%%%}+%%%{%%%{32,[2]%%%},[3,0,1,7,4]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%
},[2,3,0,11,0]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,1,10,1]%%%}+
%%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,0,9,2]%%%}+%%%{%%{[
12,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,1,2,9,2]%%%}+%%%{%%{[%%%{48,[1]%%%},0]:[1,
0,%%%{-1,[1]%%%}]%%},[2,1,1,8,3]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%},
[2,0,3,8,3]%%%}+%%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,2,7
,4]%%%}+%%%{%%%{-8,[1]%%%},[1,3,0,10,1]%%%}+%%%{%%%{24,[1]%%%},[1,2,1,9,2]%
%%}+%%%{%%%{-24,[1]%%%},[1,1,2,8,3]%%%}+%%%{%%%{8,[1]%%%},[1,0,3,7,4]%%%}+%
%%{%%{[-1,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,4,0,11,0]%%%}+%%%{%%{[4,0]:[1,0,%%%
{-1,[1]%%%}]%%},[0,3,1,10,1]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,2
,2,9,2]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,3,8,3]%%%}+%%%{%%{[-1
,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,4,7,4]%%%} / %%%{%%%{1,[2]%%%},[8,0,0,4,0]
%%%}+%%%{%%{poly1[%%%{-8,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[7,0,0,3,1]%%%}
+%%%{%%%{-4,[2]%%%},[6,1,0,4,0]%%%}+%%%{%%%{4,[2]%%%},[6,0,1,3,1]%%%}+%%%{%
%%{24,[3]%%%},[6,0,0,2,2]%%%}+%%%{%%{[%%%{24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}
]%%},[5,1,0,3,1]%%%}+%%%{%%{poly1[%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%
```

},[5,0,1,2,2]%%%}+%%%{%%{poly1[%%%{-32,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[
5,0,0,1,3]%%%}+%%%{%%%{6,[2]%%%},[4,2,0,4,0]%%%}+%%%{%%%{-12,[2]%%%},[4,1,1
,3,1]%%%}+%%%{%%%{-48,[3]%%%},[4,1,0,2,2]%%%}+%%%{%%%{6,[2]%%%},[4,0,2,2,2]
%%%}+%%%{%%%{48,[3]%%%},[4,0,1,1,3]%%%}+%%%{%%%{16,[4]%%%},[4,0,0,0,4]%%%}+
%%%{%%{poly1[%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,2,0,3,1]%%%}+%%%
{%%{[%%%{48,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,1,2,2]%%%}+%%%{%%{[%%%{
32,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,0,1,3]%%%}+%%%{%%{poly1[%%%{-24,
[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,2,1,3]%%%}+%%%{%%{poly1[%%%{-32,[3]
%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,1,0,4]%%%}+%%%{%%%{-4,[2]%%%},[2,3,0,4
,0]%%%}+%%%{%%%{12,[2]%%%},[2,2,1,3,1]%%%}+%%%{%%%{24,[3]%%%},[2,2,0,2,2]%%
%}+%%%{%%%{-12,[2]%%%},[2,1,2,2,2]%%%}+%%%{%%%{-48,[3]%%%},[2,1,1,1,3]%%%}+
%%%{%%%{4,[2]%%%},[2,0,3,1,3]%%%}+%%%{%%%{24,[3]%%%},[2,0,2,0,4]%%%}+%%%{%%
{[%%%{8,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3,0,3,1]%%%}+%%%{%%{poly1[%%%
{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,2,1,2,2]%%%}+%%%{%%{[%%%{24,[2]%
%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,2,1,3]%%%}+%%%{%%{poly1[%%%{-8,[2]%%%},
0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,3,0,4]%%%}+%%%{%%%{1,[2]%%%},[0,4,0,4,0]%%%
}+%%%{%%%{-4,[2]%%%},[0,3,1,3,1]%%%}+%%%{%%%{6,[2]%%%},[0,2,2,2,2]%%%}+%%%{
%%%{-4,[2]%%%},[0,1,3,1,3]%%%}+%%%{%%%{1,[2]%%%},[0,0,4,0,4]%%%} Error: Bad
 Argument Value

maple [B] time = 0.32, size = 28593, normalized size = 60.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                   +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d)**4,x)
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x)**4, x)
```

3.1381 $\int \frac{(b+2cx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=245

$$\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{7/2}}+\frac{\sqrt{a+bx+cx^2}\left(2cex\left(-4ce(3ae+2bd)\right.\right.}{}$$

Rubi [A] time = 0.33, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(2cex\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)-8c^2de(16ae+5bd)+4bce^2(13ae+12bd)-15b^3e^3+32c^3d^3\right)}{32c^3}+\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{7/2}}+\frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2}+\frac{(d+ex)^2\sqrt{a+bx+cx^2}(2cd-be)}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((2*c*d - b*e)*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/(4*c) + ((d + e*x)^3*Sqrt
[a + b*x + c*x^2])/2 + ((32*c^3*d^3 - 15*b^3*e^3 + 4*b*c*e^2*(12*b*d + 13*a
*e) - 8*c^2*d*e*(5*b*d + 16*a*e) + 2*c*e*(8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*
b*d + 3*a*e))*x)*Sqrt[a + b*x + c*x^2])/(32*c^3) + (3*(b^2 - 4*a*c)*e*(16*c
^2*d^2 + 5*b^2*e^2 - 4*c*e*(4*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + b*x + c*x^2])])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx = \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\int \frac{(d+ex)^2(3c(bd-2ae)+3c(2cd-be)x)}{\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\int \frac{(d+ex)\left(\frac{3}{2}c\left(b^2de-20\right.\right.}{}}{}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\left(32c^3d^3-15b^3e^3\right.}{}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\left(32c^3d^3-15b^3e^3\right.}{}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\left(32c^3d^3-15b^3e^3\right.}{}$$

Mathematica [A] time = 0.39, size = 302, normalized size = 1.23

$$\frac{-4a^2ce^2(-13be+32cd+6cex)+a\left(-15b^3e^3+2b^2ce^2(24d+31ex)+4bc^2e\left(-12d^2-40dex+5e^2x^2\right)+8c^3\left(8d^3+12d^2ex-8de^2x^2-e^3x^3\right)\right)+x(b+cx)\left(-15b^3e^3+2b^2ce^2(24d+5ex)-8bc^2e\left(6d^2+4dex+e^2x^2\right)+16c^3\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)\right)}{32c^3\sqrt{a+x(b+cx)}}+\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{64c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (-4*a^2*c*e^2*(32*c*d - 13*b*e + 6*c*e*x) + a*(-15*b^3*e^3 + 2*b^2*c*e^2*(2
4*d + 31*e*x) + 4*b*c^2*e*(-12*d^2 - 40*d*e*x + 5*e^2*x^2) + 8*c^3*(8*d^3 +
 12*d^2*e*x - 8*d*e^2*x^2 - e^3*x^3)) + x*(b + c*x)*(-15*b^3*e^3 + 2*b^2*c*
e^2*(24*d + 5*e*x) - 8*b*c^2*e*(6*d^2 + 4*d*e*x + e^2*x^2) + 16*c^3*(4*d^3
+ 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3)))/(32*c^3*Sqrt[a + x*(b + c*x)]) + (3*
(b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(4*b*d + a*e))*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(64*c^(7/2))
```

IntegrateAlgebraic [A] time = 0.98, size = 263, normalized size = 1.07

$$\frac{\sqrt{a+bx+cx^2}\left(52abce^3-128ac^2de^2-24ac^2e^3x-15b^3e^3+48b^2cde^2+10b^2ce^3x-48bc^2d^2e-32bc^2de^2x-8bc^2e^3x^2+64c^3d^3+96c^3d^2ex+64c^3de^2x^2+16c^3e^3x^3\right)}{32c^3}-\frac{3\left(16a^2c^2e^3-24ab^2ce^3+64abc^2de^2-64ac^3d^2e+5b^4e^3-16b^3cde^2+16b^2c^2d^2e\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{64c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(64*c^3*d^3 - 48*b*c^2*d^2*e + 48*b^2*c*d*e^2 - 128*
a*c^2*d*e^2 - 15*b^3*e^3 + 52*a*b*c*e^3 + 96*c^3*d^2*e*x - 32*b*c^2*d*e^2*x
 + 10*b^2*c*e^3*x - 24*a*c^2*e^3*x + 64*c^3*d*e^2*x^2 - 8*b*c^2*e^3*x^2 + 1
6*c^3*e^3*x^3))/(32*c^3) - (3*(16*b^2*c^2*d^2*e - 64*a*c^3*d^2*e - 16*b^3*c
*d*e^2 + 64*a*b*c^2*d*e^2 + 5*b^4*e^3 - 24*a*b^2*c*e^3 + 16*a^2*c^2*e^3)*Lo
g[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(64*c^(7/2))
```

fricas [A] time = 0.72, size = 545, normalized size = 2.22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/128*(3*(16*(b^2*c^2 - 4*a*c^3)*d^2*e - 16*(b^3*c - 4*a*b*c^2)*d*e^2 + (5
*b^4 - 24*a*b^2*c + 16*a^2*c^2)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(16*c^4*e^3*x^3
```

```
 + 64*c^4*d^3 - 48*b*c^3*d^2*e + 16*(3*b^2*c^2 - 8*a*c^3)*d*e^2 - (15*b^3*c
 - 52*a*b*c^2)*e^3 + 8*(8*c^4*d*e^2 - b*c^3*e^3)*x^2 + 2*(48*c^4*d^2*e - 16
*b*c^3*d*e^2 + (5*b^2*c^2 - 12*a*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, -
1/64*(3*(16*(b^2*c^2 - 4*a*c^3)*d^2*e - 16*(b^3*c - 4*a*b*c^2)*d*e^2 + (5*b
^4 - 24*a*b^2*c + 16*a^2*c^2)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(16*c^4*e^3*x^3 + 64*c^
4*d^3 - 48*b*c^3*d^2*e + 16*(3*b^2*c^2 - 8*a*c^3)*d*e^2 - (15*b^3*c - 52*a*
b*c^2)*e^3 + 8*(8*c^4*d*e^2 - b*c^3*e^3)*x^2 + 2*(48*c^4*d^2*e - 16*b*c^3*d
*e^2 + (5*b^2*c^2 - 12*a*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A]   time = 0.26, size = 252, normalized size = 1.03

$$\frac{1}{32}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\,xe^3+\frac{8\,c^3de^2-bc^2e^3}{c^3}\right)x+\frac{48\,c^3d^2e-16\,bc^2de^2+5\,b^2ce^3-12\,ac^2e^3}{c^3}\right)x+\frac{64\,c^3d^3-48\,bc^2d^2e+48\,b^2cde^2-128\,ac^2de^2-15\,b^3e^3+52\,abce^3}{c^3}\right)-\frac{3\left(16\,b^2c^2d^2e-64\,ac^3d^2e-16\,b^3cde^2+64\,abc^2de^2+5\,b^4e^3-24\,ab^2ce^3+16\,a^2c^2e^3\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{64\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/32*sqrt(c*x^2 + b*x + a)*(2*(4*(2*x*e^3 + (8*c^3*d*e^2 - b*c^2*e^3)/c^3)*
x + (48*c^3*d^2*e - 16*b*c^2*d*e^2 + 5*b^2*c*e^3 - 12*a*c^2*e^3)/c^3)*x + (
64*c^3*d^3 - 48*b*c^2*d^2*e + 48*b^2*c*d*e^2 - 128*a*c^2*d*e^2 - 15*b^3*e^3
 + 52*a*b*c*e^3)/c^3) - 3/64*(16*b^2*c^2*d^2*e - 64*a*c^3*d^2*e - 16*b^3*c*
d*e^2 + 64*a*b*c^2*d*e^2 + 5*b^4*e^3 - 24*a*b^2*c*e^3 + 16*a^2*c^2*e^3)*log
(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B]   time = 0.07, size = 539, normalized size = 2.20

$$\frac{\sqrt{cx^2+bx+a}\,e^3x^3}{2}-\frac{\sqrt{cx^2+bx+a}\,be^3x^2}{4c}+2\sqrt{cx^2+bx+a}\,de^2x^2+\frac{3a^2e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{3}{2}}}-\frac{9ab^2e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{5}{2}}}+\frac{3abde^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{3ad^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{\sqrt{c}}+\frac{15b^4e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{64c^{\frac{7}{2}}}-\frac{3b^3de^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{5}{2}}}+\frac{3b^2d^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{3}{2}}}-\frac{3\sqrt{cx^2+bx+a}\,ae^3x}{4c}+\frac{5\sqrt{cx^2+bx+a}\,b^2e^3x}{16c^2}-\frac{\sqrt{cx^2+bx+a}\,bde^2x}{c}+3\sqrt{cx^2+bx+a}\,d^2ex+\frac{13\sqrt{cx^2+bx+a}\,abe^3}{8c^2}-\frac{4\sqrt{cx^2+bx+a}\,ade^2}{c}-\frac{15\sqrt{cx^2+bx+a}\,b^3e^3}{32c^3}+\frac{3\sqrt{cx^2+bx+a}\,b^2de^2}{2c^2}-\frac{3\sqrt{cx^2+bx+a}\,bd^2e}{2c}+2\sqrt{cx^2+bx+a}\,d^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -3*a/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+3/4*b^2/c^(3
/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+2*(c*x^2+b*x+a)^(1/2)
*d^3-3/4*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^2-b/c*
x*(c*x^2+b*x+a)^(1/2)*d*e^2-9/8/c^(5/2)*e^3*b^2*a*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))-15/32/c^3*e^3*b^3*(c*x^2+b*x+a)^(1/2)+13/8/c^2*e^3*b*a*(
c*x^2+b*x+a)^(1/2)-3/4/c*e^3*a*x*(c*x^2+b*x+a)^(1/2)+3/4/c^(3/2)*e^3*a^2*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-3/2*b/c*(c*x^2+b*x+a)^(1/2)*d^2*e
+2*x^2*(c*x^2+b*x+a)^(1/2)*d*e^2+3*x*(c*x^2+b*x+a)^(1/2)*d^2*e+5/16/c^2*e^3
*b^2*x*(c*x^2+b*x+a)^(1/2)+15/64/c^(7/2)*e^3*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))-1/4/c*e^3*b*x^2*(c*x^2+b*x+a)^(1/2)+1/2*e^3*x^3*(c*x^2+b*
x+a)^(1/2)-4*a/c*(c*x^2+b*x+a)^(1/2)*d*e^2+3/2*b^2/c^2*(c*x^2+b*x+a)^(1/2)*
d*e^2+3*b/c^(3/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^2
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{(d+e\,x)}^3}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx)(d + ex)^3}{\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3/sqrt(a + b*x + c*x**2), x)
```

3.1382 $\int \frac{(b+2cx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=148

$$\frac{e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d\right.}{6c^2}$$

Rubi [A] time = 0.20, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d^2\right)}{6c^2}+\frac{e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/3 + ((8*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(
3*b*d + 4*a*e) + 2*c*e*(2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(6*c^2) + ((
b^2 - 4*a*c)*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x +
c*x^2])])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx = \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\int \frac{(d+ex)(2c(bd-2ae)+2c(2cd-be)x)}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\left(8c^2d^2+3b^2e^2-2ce(3bd+4ae)+2ce(2cd-be)x\right)\sqrt{a}}{6c^2}$$

$$= \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\left(8c^2d^2+3b^2e^2-2ce(3bd+4ae)+2ce(2cd-be)x\right)\sqrt{a}}{6c^2}$$

$$= \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\left(8c^2d^2+3b^2e^2-2ce(3bd+4ae)+2ce(2cd-be)x\right)\sqrt{a}}{6c^2}$$

Mathematica [A] time = 0.18, size = 185, normalized size = 1.25

$$\frac{-8a^2ce^2+a\left(3b^2e^2-2bce(3d+5ex)+4c^2\left(3d^2+3dex-e^2x^2\right)\right)+x(b+cx)\left(3b^2e^2-2bce(3d+ex)+4c^2\left(3d^2+3dex+e^2x^2\right)\right)}{6c^2\sqrt{a+x(b+cx)}}-\frac{e\left(b^2-4ac\right)(be-2cd)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (-8*a^2*c*e^2 + a*(3*b^2*e^2 - 2*b*c*e*(3*d + 5*e*x) + 4*c^2*(3*d^2 + 3*d*e
*x - e^2*x^2)) + x*(b + c*x)*(3*b^2*e^2 - 2*b*c*e*(3*d + e*x) + 4*c^2*(3*d^
2 + 3*d*e*x + e^2*x^2)))/(6*c^2*Sqrt[a + x*(b + c*x)]) - ((b^2 - 4*a*c)*e*(
-2*c*d + b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^
(5/2))
```

IntegrateAlgebraic [A] time = 0.64, size = 154, normalized size = 1.04

$$\frac{\sqrt{a+bx+cx^2}\left(-8ace^2+3b^2e^2-6bcde-2bce^2x+12c^2d^2+12c^2dex+4c^2e^2x^2\right)}{6c^2}+\frac{\left(-4abce^2+8ac^2de+b^3e^2-2b^2cde\right)\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(12*c^2*d^2 - 6*b*c*d*e + 3*b^2*e^2 - 8*a*c*e^2 + 12
*c^2*d*e*x - 2*b*c*e^2*x + 4*c^2*e^2*x^2))/(6*c^2) + ((-2*b^2*c*d*e + 8*a*c
^2*d*e + b^3*e^2 - 4*a*b*c*e^2)*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*
x + c*x^2]])/(4*c^(5/2))
```

fricas [A] time = 0.81, size = 335, normalized size = 2.26

$$\left[\frac{3\left(2\left(b^2c-4ac^2\right)de-\left(b^3-4abc\right)e^2\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4\left(4c^3e^2x^2+12c^3d^2-6bc^2de+\left(3b^2c-8ac^2\right)e^2+2\left(6c^3de-bc^2e^2\right)x\right)\sqrt{cx^2+bx+a}}{24c^3}, -\frac{3\left(2\left(b^2c-4ac^2\right)de-\left(b^3-4abc\right)e^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(4c^3e^2x^2+12c^3d^2-6bc^2de+\left(3b^2c-8ac^2\right)e^2+2\left(6c^3de-bc^2e^2\right)x\right)\sqrt{cx^2+bx+a}}{12c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/24*(3*(2*(b^2*c - 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*sqrt(c)*log(-8*c^2
*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c)
 + 4*(4*c^3*e^2*x^2 + 12*c^3*d^2 - 6*b*c^2*d*e + (3*b^2*c - 8*a*c^2)*e^2 +
2*(6*c^3*d*e - b*c^2*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^3, -1/12*(3*(2*(b^2*c
 - 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(4*c^3*e^2*x^2 + 12
*c^3*d^2 - 6*b*c^2*d*e + (3*b^2*c - 8*a*c^2)*e^2 + 2*(6*c^3*d*e - b*c^2*e^2
)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [A] time = 0.28, size = 146, normalized size = 0.99

$$\frac{1}{6}\sqrt{cx^2+bx+a}\left(2\left(2\,xe^2+\frac{6\,c^2de-bce^2}{c^2}\right)x+\frac{12\,c^2d^2-6\,bcde+3\,b^2e^2-8\,ace^2}{c^2}\right)-\frac{\left(2\,b^2cde-8\,ac^2de-b^3e^2+4\,abce^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{4\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(c*x^2 + b*x + a)*(2*(2*x*e^2 + (6*c^2*d*e - b*c*e^2)/c^2)*x + (12*
c^2*d^2 - 6*b*c*d*e + 3*b^2*e^2 - 8*a*c*e^2)/c^2) - 1/4*(2*b^2*c*d*e - 8*a*
c^2*d*e - b^3*e^2 + 4*a*b*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 280, normalized size = 1.89

$$\frac{2\sqrt{c\,x^2+bx+a}\;e^2x^2}{3}+\frac{ab\,e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{2ade\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}-\frac{b^3e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{5}{2}}}+\frac{b^2de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+bx+a}\;b\,e^2x}{3c}+2\sqrt{c\,x^2+bx+a}\;dex-\frac{4\sqrt{c\,x^2+bx+a}\;a\,e^2}{3c}+\frac{\sqrt{c\,x^2+bx+a}\;b^2e^2}{2c^2}-\frac{\sqrt{c\,x^2+bx+a}\;bde}{c}+2\sqrt{c\,x^2+bx+a}\;d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2/3*e^2*x^2*(c*x^2+b*x+a)^(1/2)-1/3/c*e^2*b*x*(c*x^2+b*x+a)^(1/2)+1/2/c^2*e
^2*b^2*(c*x^2+b*x+a)^(1/2)-1/4/c^(5/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))+1/c^(3/2)*e^2*b*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))-4/3/c*e^2*a*(c*x^2+b*x+a)^(1/2)+2*x*(c*x^2+b*x+a)^(1/2)*d*e-b/c*(c*x^2+b
*x+a)^(1/2)*d*e+1/2*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
*d*e-2*a/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e+2*(c*x^2+b
*x+a)^(1/2)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^2}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2/sqrt(a + b*x + c*x**2), x)
```

3.1383 $\int \frac{(b+2cx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=84

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{2c}$$

Rubi [A] time = 0.05, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {779, 621, 206}

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(2*c) + ((b^2 - 4*a*c)*e*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(4*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx &= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{2c}+\frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{4c}\\
&= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{2c}+\frac{\left(\left(b^2-4ac\right)e\right)\operatorname{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{2c}\\
&= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{2c}+\frac{\left(b^2-4ac\right)e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 82, normalized size = 0.98

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{4c^{3/2}}+\frac{\sqrt{a+x(b+cx)}\,(-be+4cd+2cex)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + x*(b + c*x)])/(2*c) + ((b^2 - 4*a*c)*e*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.47, size = 86, normalized size = 1.02

$$\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{2c}-\frac{e\left(b^2-4ac\right)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{4c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(2*c) - ((b^2 - 4*a*c)*e*Lo
g[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[a + b*x + c*x^2]])/(4*c^(3/2))
```

fricas [A] time = 0.75, size = 197, normalized size = 2.35

$$\left[-\frac{\left(b^2-4ac\right)\sqrt{c}\,e\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{c}-4ac\right)-4\left(2c^2ex+4c^2d-bce\right)\sqrt{cx^2+bx+a}}{8c^2},\ -\frac{\left(b^2-4ac\right)\sqrt{-c}\,e\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(2c^2ex+4c^2d-bce\right)\sqrt{cx^2+bx+a}}{4c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((b^2 - 4*a*c)*sqrt(c)*e*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^
2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2*c^2*e*x + 4*c^2*d - b*c*e)
*sqrt(c*x^2 + b*x + a))/c^2, -1/4*((b^2 - 4*a*c)*sqrt(-c)*e*arctan(1/2*sqrt
(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(2*c^2*
e*x + 4*c^2*d - b*c*e)*sqrt(c*x^2 + b*x + a))/c^2]
```

giac [A] time = 0.44, size = 84, normalized size = 1.00

$$\frac{1}{2}\sqrt{cx^2+bx+a}\left(2xe+\frac{4cd-be}{c}\right)-\frac{\left(b^2e-4ace\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{4c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x + a)*(2*x*e + (4*c*d - b*e)/c) - 1/4*(b^2*e - 4*a*c*e)
*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.05, size = 117, normalized size = 1.39

$$-\frac{ae\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}+\frac{b^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{3}{2}}}+\sqrt{c\,x^2+bx+a}\,ex-\frac{\sqrt{c\,x^2+bx+a}\,be}{2c}+2\sqrt{c\,x^2+bx+a}\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] e*x*(c*x^2+b*x+a)^(1/2)-1/2/c*e*b*(c*x^2+b*x+a)^(1/2)+1/4/c^(3/2)*e*b^2*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/c^(1/2)*e*a*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))+2*(c*x^2+b*x+a)^(1/2)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)/sqrt(a + b*x + c*x**2), x)
```

3.1384 $\int \frac{b+2cx}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=16

$$2\sqrt{a+bx+cx^2}$$

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$2\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] 2*Sqrt[a + b*x + c*x^2]
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{a+bx+cx^2}}\,dx = 2\sqrt{a+bx+cx^2}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 0.94

$$2\sqrt{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] 2*Sqrt[a + x*(b + c*x)]
```

IntegrateAlgebraic [A] time = 0.01, size = 16, normalized size = 1.00

$$2\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] 2*Sqrt[a + b*x + c*x^2]
```

fricas [A] time = 0.56, size = 14, normalized size = 0.88

$$2\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)
```

giac [A] time = 0.15, size = 14, normalized size = 0.88

$$2\sqrt{cx^2 + bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
[Out] 2*sqrt(c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 15, normalized size = 0.94

$$2\sqrt{c\,x^2 + bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x)
[Out] 2*(c*x^2+b*x+a)^(1/2)
```

maxima [A] time = 0.56, size = 14, normalized size = 0.88

$$2\sqrt{cx^2 + bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
[Out] 2*sqrt(c*x^2 + b*x + a)
```

mupad [B] time = 1.89, size = 14, normalized size = 0.88

$$2\sqrt{c\,x^2 + b\,x + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^(1/2),x)
[Out] 2*(a + b*x + c*x^2)^(1/2)
```

sympy [A] time = 0.16, size = 14, normalized size = 0.88

$$2\sqrt{a + bx + cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(1/2),x)
[Out] 2*sqrt(a + b*x + c*x**2)
```

3.1385 $\int \frac{b+2cx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=133

$$\frac{2\sqrt{c}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e}-\frac{(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

Rubi [A] time = 0.09, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {843, 621, 206, 724}

$$\frac{2\sqrt{c}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e}-\frac{(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/e - ((2*
c*d - b*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e +
a*e^2]*Sqrt[a + b*x + c*x^2])])/(e*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx = \frac{(2c)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{e} + \frac{(-2cd+be)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{e}$$

$$= \frac{(4c)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{e} - \frac{(2(-2cd+be))\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4bde+4ae^2-}\right.}{e}$$

$$= \frac{2\sqrt{c}\,\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e} - \frac{(2cd-be)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bde+ae^2}\sqrt{a+bx+cx^2}}\right)}{e\sqrt{cd^2-bde+ae^2}}$$

Mathematica [A] time = 0.14, size = 127, normalized size = 0.95

$$\frac{\frac{(2cd-be)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\sqrt{e(ae-bd)+cd^2}} + 2\sqrt{c}\,\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + ((2*c*d
 - b*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d
) + a*e)]*Sqrt[a + x*(b + c*x)])])/Sqrt[c*d^2 + e*(-(b*d) + a*e)])/e
```

IntegrateAlgebraic [A] time = 0.56, size = 152, normalized size = 1.14

$$-\frac{2(2cd-be)\sqrt{-ae^2+bde-cd^2}\,\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{e\left(ae^2-bde+cd^2\right)} - \frac{2\sqrt{c}\,\log\left(-2\sqrt{c}\,e\sqrt{a+bx+cx^2}+be+2cex\right)}{e}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (-2*(2*c*d - b*e)*Sqrt[-(c*d^2) + b*d*e - a*e^2]*ArcTan[(Sqrt[c]*d + Sqrt[c
]*e*x - e*Sqrt[a + b*x + c*x^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/(e*(c*d^2
 - b*d*e + a*e^2)) - (2*Sqrt[c]*Log[b*e + 2*c*e*x - 2*Sqrt[c]*e*Sqrt[a + b*
x + c*x^2]])/e
```

fricas [B] time = 2.62, size = 1048, normalized size = 7.88

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(c*d^2 - b*d*e + a*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*
sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - sqrt(c*d^2 - b*d*e + a
*e^2)*(2*c*d - b*e)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2
*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*s
qrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b
*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)))/(c*d^2*e - b*d*e
^2 + a*e^3), -(sqrt(-c*d^2 + b*d*e - a*e^2)*(2*c*d - b*e)*arctan(-1/2*sqrt(
-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*
x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*
d^2 - b^2*d*e + a*b*e^2)*x)) - (c*d^2 - b*d*e + a*e^2)*sqrt(c)*log(-8*c^2*x
```

```
^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/
(c*d^2*e - b*d*e^2 + a*e^3), -1/2*(4*(c*d^2 - b*d*e + a*e^2)*sqrt(-c)*arcta
n(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) +
 sqrt(c*d^2 - b*d*e + a*e^2)*(2*c*d - b*e)*log((8*a*b*d*e - 8*a^2*e^2 - (b^
2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c
*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)
 - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x +
d^2)))/(c*d^2*e - b*d*e^2 + a*e^3), -(sqrt(-c*d^2 + b*d*e - a*e^2)*(2*c*d -
 b*e)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d -
 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e
 + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(c*d^2 - b*d*e + a*
e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^
2 + b*c*x + a*c)))/(c*d^2*e - b*d*e^2 + a*e^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 350, normalized size = 2.63

$$-\frac{b\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a e^2-2bde+2c d^2}{e^2}+2\sqrt{\frac{a e^2-bde+c d^2}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a e^2-bde+c d^2}{e^2}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{a e^2-bde+c d^2}{e^2}}\, e}+\frac{2cd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a e^2-2bde+2c d^2}{e^2}+2\sqrt{\frac{a e^2-bde+c d^2}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a e^2-bde+c d^2}{e^2}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{a e^2-bde+c d^2}{e^2}}\, e^2}+\frac{2\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx+a}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2*c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/e/((a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e
+c*d^2)/e^2)^(1/2))/(x+d/e))*b+2/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b
*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+
d/e))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{b+2\,c\,x}{\left(d+e\,x\right)\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b + 2cx}{(d + ex)\sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.1386 $\int \frac{b+2cx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=141

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) -
 ((b^2 - 4*a*c)*e*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b
*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a*e^2)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx = \frac{(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\left(\left(b^2-4ac\right)e\right)\text{Subst}\left(\int \frac{1}{4cd^2-4bde+4ae^2-x^2}\,dx, x, \frac{-b}{}\right.}{cd^2-bde+ae^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(b^2-4ac\right)e\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bde+ae^2}\sqrt{a+bx+cx^2}}\right)}{2\left(cd^2-bde+ae^2\right)^{3/2}}$$

Mathematica [A] time = 0.11, size = 138, normalized size = 0.98

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{3/2}} + \frac{\sqrt{a+x(b+cx)}(2cd-be)}{(d+ex)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x)
) + ((b^2 - 4*a*c)*e*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d
^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d^2 + e*(-(b*d) + a*e
))^(3/2))
```

IntegrateAlgebraic [A] time = 0.83, size = 140, normalized size = 0.99

$$\frac{\left(4ace-b^2e\right)\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{\left(-ae^2+bde-cd^2\right)^{3/2}} + \frac{\sqrt{a+bx+cx^2}(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) +
 ((-(b^2*e) + 4*a*c*e)*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[a + b*x + c
*x^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/(-(c*d^2) + b*d*e - a*e^2)^(3/2)
```

fricas [B] time = 0.64, size = 686, normalized size = 4.87

$$\left[-\frac{\left(\left(b^2-4ac\right)e^2x+\left(b^2-4ac\right)de\right)\sqrt{cd^2-bde+ae^2}\log\left(\frac{8abde-8a^2e^2-\left(b^2+4ac\right)d^2-\left(8c^2d^2-8bcde+\left(b^2+4ac\right)e^2\right)x^2-4\sqrt{cd^2-bde+ae^2}\sqrt{cx^2+bx+a}(bd-2ae+(2cd-be)x)-2\left(4bcd^2+4abe^2-\left(3b^2+4ac\right)de\right)x}{e^2x^2+2dex+d^2}\right)-4\left(2c^2d^3-3bcd^2e-abe^3+\left(b^2+2ac\right)de^2\right)\sqrt{cx^2+bx+a}}{4\left(c^2d^5-2bcd^4e-2abd^2e^3+a^2de^4+\left(b^2+2ac\right)d^3e^2+\left(c^2d^4e-2bcd^3e^2-2abde^4+a^2e^5+\left(b^2+2ac\right)d^2e^3\right)x\right)}, -\frac{\left(\left(b^2-4ac\right)e^2x+\left(b^2-4ac\right)de\right)\sqrt{-cd^2+bde-ae^2}\arctan\left(-\frac{\sqrt{-cd^2+bde-ae^2}\sqrt{cx^2+bx+a}(bd-2ae+(2cd-be)x)}{2\left(acd^2-abde+a^2e^2+\left(c^2d^2-bcde+ace^2\right)x^2+\left(bcd^2-b^2de+abe^2\right)x\right)}\right)-2\left(2c^2d^3-3bcd^2e-abe^3+\left(b^2+2ac\right)de^2\right)\sqrt{cx^2+bx+a}}{2\left(c^2d^5-2bcd^4e-2abd^2e^3+a^2de^4+\left(b^2+2ac\right)d^3e^2+\left(c^2d^4e-2bcd^3e^2-2abde^4+a^2e^5+\left(b^2+2ac\right)d^2e^3\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(((b^2 - 4*a*c)*e^2*x + (b^2 - 4*a*c)*d*e)*sqrt(c*d^2 - b*d*e + a*e^2
)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e +
 (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x +
a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*
a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) - 4*(2*c^2*d^3 - 3*b*c*d^2*e - a*b*
e^3 + (b^2 + 2*a*c)*d*e^2)*sqrt(c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e -
2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*
e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^3)*x), -1/2*(((b^2 - 4*a*
c)*e^2*x + (b^2 - 4*a*c)*d*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt
```

```
(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)
*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c
*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2
 + 2*a*c)*d*e^2)*sqrt(c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*
e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*
b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^3)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 860, normalized size = 6.10

$$\frac{b^2 \ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{2\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}}-\frac{2bcd \ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\, e}+\frac{2c^2d^2 \ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\, e^2}-\frac{\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}\, b}{\left(ae^2-bde+cd^2\right)\left(x+\frac{d}{e}\right)}+\frac{2\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}\, cd}{\left(ae^2-bde+cd^2\right)\left(x+\frac{d}{e}\right)e}-\frac{2c \ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2 c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\, e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*b+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2
*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d+1/2/(a*e^2-b*d*e+c*d^2)/
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*
d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2-2/e/(a*e^2-b*d*e+c*d^2)/((a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2
)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c*d+2/e^2/(a*e^2-b*d*e+c*d^2)/((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^
2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d^2-2*c/e^2/((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2))/(x+d/e))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                  +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^2\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**2*sqrt(a + b*x + c*x**2)), x)
```

3.1387 $\int \frac{b+2cx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=225

$$\frac{\sqrt{a+bx+cx^2}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{4(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{3e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{\sqrt{a}}{2(d}$$

Rubi [A] time = 0.27, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{4(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{3e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{\sqrt{a+bx+cx^2}(2cd-be)}{2(d+ex)^2\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^
2) + ((4*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(b*d + 2*a*e))*Sqrt[a + b*x + c*x^2])/
(4*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - (3*(b^2 - 4*a*c)*e*(2*c*d - b*e)*
ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt
[a + b*x + c*x^2])])/(8*(c*d^2 - b*d*e + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx = \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{\int \frac{\frac{1}{2}\left(-2bcd+3b^2e-8ace\right)-c(2cd-be)x}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)\sqrt{a+bx+cx}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)\sqrt{a+bx+cx}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)\sqrt{a+bx+cx}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

Mathematica [A] time = 0.32, size = 220, normalized size = 0.98

$$\frac{\sqrt{a+x(b+cx)}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)^2} - \frac{3e\left(b^2-4ac\right)(be-2cd)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{5/2}} + \frac{\sqrt{a+x(b+cx)}(2cd-be)}{2(d+ex)^2\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))*(d + e*
x)^2) + ((4*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(b*d + 2*a*e))*Sqrt[a + x*(b + c*x)
])/(4*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) - (3*(b^2 - 4*a*c)*e*(-2*c*d
+ b*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d)
 + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a*e))^(5/2))
```

IntegrateAlgebraic [F] time = 180.32, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] $Aborted
```

fricas [B] time = 1.31, size = 1500, normalized size = 6.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*(3*(2*(b^2*c - 4*a*c^2)*d^3*e - (b^3 - 4*a*b*c)*d^2*e^2 + (2*(b^2*c -
 4*a*c^2)*d*e^3 - (b^3 - 4*a*b*c)*e^4)*x^2 + 2*(2*(b^2*c - 4*a*c^2)*d^2*e^2
 - (b^3 - 4*a*b*c)*d*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8
*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*
x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2
*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^
2 + 2*d*e*x + d^2)) + 4*(8*c^3*d^5 - 18*b*c^2*d^4*e - 2*a^2*b*e^5 + (15*b^2
*c + 4*a*c^2)*d^3*e^2 - (5*b^3 + 8*a*b*c)*d^2*e^3 + (7*a*b^2 - 4*a^2*c)*d*e
^4 + (4*c^3*d^4*e - 8*b*c^2*d^3*e^2 + (7*b^2*c - 4*a*c^2)*d^2*e^3 - (3*b^3
```

```
- 4*a*b*c)*d*e^4 + (3*a*b^2 - 8*a^2*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*
d^8 - 3*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6
*e^2 - (b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 -
 3*b*c^2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b
^3 + 6*a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b
*c^2*d^6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b
^3 + 6*a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x), -1/8*(3*(2*(b^2*c -
4*a*c^2)*d^3*e - (b^3 - 4*a*b*c)*d^2*e^2 + (2*(b^2*c - 4*a*c^2)*d*e^3 - (b^
3 - 4*a*b*c)*e^4)*x^2 + 2*(2*(b^2*c - 4*a*c^2)*d^2*e^2 - (b^3 - 4*a*b*c)*d*
e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^
2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e
 + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e
^2)*x)) - 2*(8*c^3*d^5 - 18*b*c^2*d^4*e - 2*a^2*b*e^5 + (15*b^2*c + 4*a*c^2
)*d^3*e^2 - (5*b^3 + 8*a*b*c)*d^2*e^3 + (7*a*b^2 - 4*a^2*c)*d*e^4 + (4*c^3*
d^4*e - 8*b*c^2*d^3*e^2 + (7*b^2*c - 4*a*c^2)*d^2*e^3 - (3*b^3 - 4*a*b*c)*d
*e^4 + (3*a*b^2 - 8*a^2*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^8 - 3*b*c^
2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 - (b^3
+ 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^2*d^5
*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*a*b*c
)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2
 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*a*b*c
)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x)]
```

giac [B] time = 0.39, size = 1046, normalized size = 4.65

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -3/4*(2*b^2*c*d*e - 8*a*c^2*d*e - b^3*e^2 + 4*a*b*c*e^2)*arctan(-((sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c
^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)
*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/4*(16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*c^(7/2)*d^4 - 32*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b*c^(5/2)*d^3*e
+ 16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b*c^3*d^4 - 24*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*b^2*c^2*d^3*e - 32*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*c
^3*d^3*e + 4*b^2*c^(5/2)*d^4 + 34*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^2
*c^(3/2)*d^2*e^2 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*c^(5/2)*d^2*e
^2 - 4*b^3*c^(3/2)*d^3*e - 16*a*b*c^(5/2)*d^3*e + 6*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*b^2*c*d*e^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*c^2
*d*e^3 + 22*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^3*c*d^2*e^2 + 8*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*a*b*c^2*d^2*e^2 - 9*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^2*b^3*sqrt(c)*d*e^3 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b*c
^(3/2)*d*e^3 + 3*b^4*sqrt(c)*d^2*e^2 + 10*a*b^2*c^(3/2)*d^2*e^2 + 8*a^2*c^(
5/2)*d^2*e^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^3*e^4 + 12*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^3*a*b*c*e^4 - 5*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*b^4*d*e^3 - 22*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^2*c*d*e^3 + 40
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*c^2*d*e^3 + 16*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2*a^2*c^(3/2)*e^4 - 11*a*b^3*sqrt(c)*d*e^3 + 12*a^2*b*c^(3
/2)*d*e^3 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^3*e^4 - 4*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*a^2*b*c*e^4 + 8*a^2*b^2*sqrt(c)*e^4 - 16*a^3*c^(3/
2)*e^4)/((c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3 + 2*a*c*d^2*e^3 - 2*a*b*d
*e^4 + a^2*e^5)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^2)
```

maple [B] time = 0.06, size = 1588, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -2*c/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)+3/2*c/e/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2))/(x+d/e))*b-3*c^2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))*d-1/2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b+1/e^2/(a*e^2-b*d*e+c
*d^2)/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)
^(1/2)*c*d+3/4*e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-3/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d+3/e/
(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*c^2*d^2-3/8*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))*b^3+9/4/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d
^2)/e^2)^(1/2))/(x+d/e))*b^2*c*d-9/2/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c^2*d^2+3/e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^
2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^3*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^3\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b + 2cx}{\left(d + ex\right)^{3} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**3*sqrt(a + b*x + c*x**2)), x)
```

3.1388 $\int \frac{b+2cx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=328

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}+\frac{\sqrt{a+bx+cx^2}\,\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)}{12(d+ex)^2\left(ae^2-bde+cd^2\right)^2}$$

Rubi [A] time = 0.45, antiderivative size = 328, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}+\frac{\sqrt{a+bx+cx^2}\,\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)}{12(d+ex)^2\left(ae^2-bde+cd^2\right)^2}-\frac{e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16\left(ae^2-bde+cd^2\right)^{7/2}}+\frac{\sqrt{a+bx+cx^2}\,(2cd-be)}{3(d+ex)^3\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^
3) + ((8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*Sqrt[a + b*x + c*x^2]
)/(12*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) + ((2*c*d - b*e)*(8*c^2*d^2 +
15*b^2*e^2 - 4*c*e*(2*b*d + 13*a*e))*Sqrt[a + b*x + c*x^2])/(24*(c*d^2 - b*
d*e + a*e^2)^3*(d + e*x)) - ((b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*
e*(4*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*
d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(16*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
```

```
IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx = \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} - \frac{\int \frac{\frac{1}{2}\left(-4bcd+5b^2e-12ace\right)-2c(2cd-be)x}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx}{3\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

Mathematica [A] time = 0.56, size = 323, normalized size = 0.98

$$\frac{\frac{\sqrt{a+x(b+cx)}\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)}{2(d+ex)^2}+\frac{\sqrt{a+x(b+cx)}(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)}+\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{3/2}}+\frac{2\sqrt{a+x(b+cx)}(2cd-be)\left(e(ae-bd)+cd^2\right)}{(d+ex)^3}}{6\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)])/(d + e*
x)^3 + ((8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*Sqrt[a + x*(b + c*x
)])/(2*(d + e*x)^2) + ((2*c*d - b*e)*(8*c^2*d^2 + 15*b^2*e^2 - 4*c*e*(2*b*d
 + 13*a*e))*Sqrt[a + x*(b + c*x)])/(4*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x))
 + (3*(b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(4*b*d + a*e))*ArcTan
h[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt
[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a*e))^(3/2)))/(6*(c*d^2 + e*(-
(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] $Aborted
```

fricas [B] time = 5.89, size = 2998, normalized size = 9.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(16*(b^2*c^2 - 4*a*c^3)*d^5*e - 16*(b^3*c - 4*a*b*c^2)*d^4*e^2 + (
5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d^3*e^3 + (16*(b^2*c^2 - 4*a*c^3)*d^2*e^4
- 16*(b^3*c - 4*a*b*c^2)*d*e^5 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*e^6)*x^3
 + 3*(16*(b^2*c^2 - 4*a*c^3)*d^3*e^3 - 16*(b^3*c - 4*a*b*c^2)*d^2*e^4 + (5*
b^4 - 24*a*b^2*c + 16*a^2*c^2)*d*e^5)*x^2 + 3*(16*(b^2*c^2 - 4*a*c^3)*d^4*e
^2 - 16*(b^3*c - 4*a*b*c^2)*d^3*e^3 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d^2
*e^4)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*
a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c*d^2 -
 b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(
4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2))
+ 4*(48*c^4*d^7 - 144*b*c^3*d^6*e - 8*a^3*b*e^7 + 32*(6*b^2*c^2 - a*c^3)*d^
5*e^2 - (129*b^3*c + 4*a*b*c^2)*d^4*e^3 + 11*(3*b^4 + 10*a*b^2*c - 8*a^2*c^
2)*d^3*e^4 - (59*a*b^3 - 12*a^2*b*c)*d^2*e^5 + 2*(17*a^2*b^2 - 4*a^3*c)*d*e
^6 + (16*c^4*d^5*e^2 - 40*b*c^3*d^4*e^3 + 2*(31*b^2*c^2 - 44*a*c^3)*d^3*e^4
 - (53*b^3*c - 132*a*b*c^2)*d^2*e^5 + (15*b^4 - 14*a*b^2*c - 104*a^2*c^2)*d
*e^6 - (15*a*b^3 - 52*a^2*b*c)*e^7)*x^2 + 2*(24*c^4*d^6*e - 64*b*c^3*d^5*e^
2 + 7*(13*b^2*c^2 - 12*a*c^3)*d^4*e^3 - (71*b^3*c - 124*a*b*c^2)*d^3*e^4 +
20*(b^4 - 6*a^2*c^2)*d^2*e^5 - (25*a*b^3 - 68*a^2*b*c)*d*e^6 + (5*a^2*b^2 -
 12*a^3*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^4*d^11 - 4*b*c^3*d^10*e - 4*a^
3*b*d^4*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2 + 2*a*c^3)*d^9*e^2 - 4*(b^3*c + 3*
a*b*c^2)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^7*e^4 - 4*(a*b^3 + 3*a^
2*b*c)*d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^6 + (c^4*d^8*e^3 - 4*b*c^3*d
^7*e^4 - 4*a^3*b*d*e^10 + a^4*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^6*e^5 - 4*(b
^3*c + 3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^7 - 4*(a*b
^3 + 3*a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^2*e^9)*x^3 + 3*(c^4*d^9
*e^2 - 4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9 + a^4*d*e^10 + 2*(3*b^2*c^2 + 2*a*
c^3)*d^7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^
2)*d^5*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^
8)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 - 4*a^3*b*d^3*e^8 + a^4*d^2*e^9 +
2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^7*e^4 + (b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^5*e^6 + 2*(3*a^2*b^
2 + 2*a^3*c)*d^4*e^7)*x), -1/48*(3*(16*(b^2*c^2 - 4*a*c^3)*d^5*e - 16*(b^3*
c - 4*a*b*c^2)*d^4*e^2 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d^3*e^3 + (16*(b
^2*c^2 - 4*a*c^3)*d^2*e^4 - 16*(b^3*c - 4*a*b*c^2)*d*e^5 + (5*b^4 - 24*a*b^
2*c + 16*a^2*c^2)*e^6)*x^3 + 3*(16*(b^2*c^2 - 4*a*c^3)*d^3*e^3 - 16*(b^3*c
- 4*a*b*c^2)*d^2*e^4 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d*e^5)*x^2 + 3*(16
*(b^2*c^2 - 4*a*c^3)*d^4*e^2 - 16*(b^3*c - 4*a*b*c^2)*d^3*e^3 + (5*b^4 - 24
*a*b^2*c + 16*a^2*c^2)*d^2*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2
*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 +
 (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(48*c^4*d^7 - 144*b*c^3*d^6*e - 8*a^
3*b*e^7 + 32*(6*b^2*c^2 - a*c^3)*d^5*e^2 - (129*b^3*c + 4*a*b*c^2)*d^4*e^3
+ 11*(3*b^4 + 10*a*b^2*c - 8*a^2*c^2)*d^3*e^4 - (59*a*b^3 - 12*a^2*b*c)*d^2
*e^5 + 2*(17*a^2*b^2 - 4*a^3*c)*d*e^6 + (16*c^4*d^5*e^2 - 40*b*c^3*d^4*e^3
+ 2*(31*b^2*c^2 - 44*a*c^3)*d^3*e^4 - (53*b^3*c - 132*a*b*c^2)*d^2*e^5 + (1
5*b^4 - 14*a*b^2*c - 104*a^2*c^2)*d*e^6 - (15*a*b^3 - 52*a^2*b*c)*e^7)*x^2
+ 2*(24*c^4*d^6*e - 64*b*c^3*d^5*e^2 + 7*(13*b^2*c^2 - 12*a*c^3)*d^4*e^3 -
(71*b^3*c - 124*a*b*c^2)*d^3*e^4 + 20*(b^4 - 6*a^2*c^2)*d^2*e^5 - (25*a*b^3
 - 68*a^2*b*c)*d*e^6 + (5*a^2*b^2 - 12*a^3*c)*e^7)*x)*sqrt(c*x^2 + b*x + a)
)/(c^4*d^11 - 4*b*c^3*d^10*e - 4*a^3*b*d^4*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2
 + 2*a*c^3)*d^9*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d^7*e^4 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)
*d^5*e^6 + (c^4*d^8*e^3 - 4*b*c^3*d^7*e^4 - 4*a^3*b*d*e^10 + a^4*e^11 + 2*(
3*b^2*c^2 + 2*a*c^3)*d^6*e^5 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*
b^2*c + 6*a^2*c^2)*d^4*e^7 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 +
 2*a^3*c)*d^2*e^9)*x^3 + 3*(c^4*d^9*e^2 - 4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9
 + a^4*d*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6
*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e
^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^8)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2
```

```
 - 4*a^3*b*d^3*e^8 + a^4*d^2*e^9 + 2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3
*c + 3*a*b*c^2)*d^7*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3
 + 3*a^2*b*c)*d^5*e^6 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^7)*x)]
```

giac [B] time = 0.77, size = 2666, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(16*b^2*c^2*d^2*e - 64*a*c^3*d^2*e - 16*b^3*c*d*e^2 + 64*a*b*c^2*d*e^2
 + 5*b^4*e^3 - 24*a*b^2*c*e^3 + 16*a^2*c^2*e^3)*arctan(-((sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^3*d^6 -
3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d
^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(
-c*d^2 + b*d*e - a*e^2)) + 1/24*(128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
c^5*d^6 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b*c^4*d^5*e + 192*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^2*b*c^(9/2)*d^6 - 480*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*b^2*c^(7/2)*d^5*e - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*a*c^(9/2)*d^5*e + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^2*c^4*d^6 + 7
36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^2*c^3*d^4*e^2 - 1024*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*a*c^4*d^4*e^2 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*b^3*c^3*d^5*e - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b*c^4*d^5
*e + 16*b^3*c^(7/2)*d^6 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^2*c^(
5/2)*d^3*e^3 - 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*c^(7/2)*d^3*e^3
+ 864*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^3*c^(5/2)*d^4*e^2 - 576*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b*c^(7/2)*d^4*e^2 - 24*b^4*c^(5/2)*d^5*e
 - 96*a*b^2*c^(7/2)*d^5*e + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^2*c^
2*d^2*e^4 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*c^3*d^2*e^4 - 352*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^3*c^2*d^3*e^3 + 128*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^3*a*b*c^3*d^3*e^3 + 324*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*b^4*c^2*d^4*e^2 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^2*c^3*d^4
*e^2 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*c^4*d^4*e^2 - 240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^4*b^3*c^(3/2)*d^2*e^4 + 960*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^4*a*b*c^(5/2)*d^2*e^4 - 546*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^2*b^4*c^(3/2)*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a
*b^2*c^(5/2)*d^3*e^3 + 1632*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*c^(7/
2)*d^3*e^3 + 38*b^5*c^(3/2)*d^4*e^2 + 64*a*b^3*c^(5/2)*d^4*e^2 + 96*a^2*b*c
^(7/2)*d^4*e^2 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^3*c*d*e^5 + 192
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b*c^2*d*e^5 - 18*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*b^4*c*d^2*e^4 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^3*a*b^2*c^2*d^2*e^4 + 1248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*c^3*
d^2*e^4 - 186*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^5*c*d^3*e^3 - 528*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*a*b^3*c^2*d^3*e^3 + 1248*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*a^2*b*c^3*d^3*e^3 + 75*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*b^4*sqrt(c)*d*e^5 - 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^2*c^(3
/2)*d*e^5 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*c^(5/2)*d*e^5 + 1
20*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^5*sqrt(c)*d^2*e^4 + 384*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^2*a*b^3*c^(3/2)*d^2*e^4 - 576*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^2*a^2*b*c^(5/2)*d^2*e^4 - 15*b^6*sqrt(c)*d^3*e^3 - 158*a
*b^4*c^(3/2)*d^3*e^3 + 240*a^2*b^2*c^(5/2)*d^3*e^3 - 32*a^3*c^(7/2)*d^3*e^3
 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^4*e^6 - 72*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*a*b^2*c*e^6 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*
a^2*c^2*e^6 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^5*d*e^5 - 64*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^3*c*d*e^5 - 768*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*a^2*b*c^2*d*e^5 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^
6*d^2*e^4 + 402*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^4*c*d^2*e^4 - 432*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^2*c^2*d^2*e^4 - 1056*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*a^3*c^3*d^2*e^4 - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x
```

```
+ a))^2*a*b^4*sqrt(c)*d*e^5 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3
*c^(5/2)*d*e^5 + 78*a*b^5*sqrt(c)*d^2*e^4 + 48*a^2*b^3*c^(3/2)*d^2*e^4 - 48
0*a^3*b*c^(5/2)*d^2*e^4 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^4*e^
6 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^2*c*e^6 - 66*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*a*b^5*d*e^5 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*a^2*b^3*c*d*e^5 + 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b*c^2*d*
e^5 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b*c^(3/2)*e^6 - 111*a^2
*b^4*sqrt(c)*d*e^5 + 200*a^3*b^2*c^(3/2)*d*e^5 + 208*a^4*c^(5/2)*d*e^5 + 33
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^4*e^6 - 24*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*a^3*b^2*c*e^6 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*c
^2*e^6 + 48*a^3*b^3*sqrt(c)*e^6 - 128*a^4*b*c^(3/2)*e^6)/((c^3*d^6*e - 3*b*
c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3
*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a^3*e^7)*((sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*s
qrt(c)*d + b*d - a*e)^3)
```

maple [B] time = 0.08, size = 2659, normalized size = 8.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 5/e^2/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^4
*d^4-6/e^2/(a*e^2-b*d*e+c*d^2)^2*c^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b
*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+
d/e))*d^2-13/3/e/(a*e^2-b*d*e+c*d^2)^2*c^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*d+5/3/e^2/(a*e^2-b*d*e+c*d^2)^2/(
x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
c^2*d^2+5/e/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c^3*d^3+2/3/e^3/(a*e^2-b*d*e+c*d^2)/(x+d/e
)^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d-1
5/2/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^2+15/2/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*c^2*d^2+5/12/(a*e^2-b*d*e+c*d^2)^2/(x+d/
e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-
c/e^2/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)+c^2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))-3/2/(a*e^2-b*d*e+c*d^2)^2*c/((a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/
e^2)^(1/2))/(x+d/e))*b^2+13/6/(a*e^2-b*d*e+c*d^2)^2*c/(x+d/e)*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b-1/3/e^2/(a*e^2-b*d*e
+c*d^2)/(x+d/e)^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*b-5/8*e^2/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3+5/16*e^2/(a*e^2-b*d*e+c*d^2)^3/
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*
d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^4-5/2*e/(a*e^2-b*d*e+c*d^2)^3
/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c
*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^3*c*d+15/4*e/(a*e^2-b*d*e+c*
d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
```

```
(1/2)*b^2*c*d-5/3/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d-10/e/(a*e^2-b*d*e+c*d^2)^3
/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c
*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c^3*d^3+6/e/(a*e^2-b*d*e+c*d
^2)^2*c^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^
2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^4\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b + 2cx}{\left(d + ex\right)^{4} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**4/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**4*sqrt(a + b*x + c*x**2)), x)
```

3.1389 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=202

$$\frac{e(2cd-be)\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{7/2}}+\frac{e^2\sqrt{a+bx+cx^2}\left(-2ce(8ae+27bd)+15\right.}{3c^3}$$

Rubi [A] time = 0.21, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {768, 742, 779, 621, 206}

$$\frac{e^2\sqrt{a+bx+cx^2}\left(-2ce(8ae+27bd)+15b^2e^2+10cex(2cd-be)+64c^2d^2\right)}{3c^3}+\frac{e(2cd-be)\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{7/2}}+\frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c}-\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^4)/Sqrt[a + b*x + c*x^2] + (8*e^2*(d + e*x)^2*Sqrt[a + b*x +
c*x^2])/(3*c) + (e^2*(64*c^2*d^2 + 15*b^2*e^2 - 2*c*e*(27*b*d + 8*a*e) + 10
*c*e*(2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(3*c^3) + (e*(2*c*d - b*e)*(8*
c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/(2*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
```

```
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + (8e)\int \frac{(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{(8e)\int \frac{(d+ex)\left(\frac{1}{2}\left(6cd^2-e(bd+4ae)\right)+\frac{5}{2}e(2c}{\sqrt{a+bx+cx^2}}}{3c}$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{e^2\left(64c^2d^2+15b^2e^2-2ce(27bd+\right.}{}$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{e^2\left(64c^2d^2+15b^2e^2-2ce(27bd+\right.}{}$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{e^2\left(64c^2d^2+15b^2e^2-2ce(27bd+\right.}{}$$

Mathematica [A] time = 0.33, size = 248, normalized size = 1.23

$$\frac{-ce^3\left(16a^2e+ab(54d+26ex)+b^2x(54d-5ex)\right)+15b^2e^4(a+bx)+2c^2e^2\left(2a\left(18d^2+9dex-2e^2x^2\right)-bx\left(-36d^2+9dex+e^2x^2\right)\right)+c^3\left(-6d^4-24d^3ex+36d^2e^2x^2+12de^3x^3+2e^4x^4\right)}{3c^3\sqrt{a+x(b+cx)}}+\frac{e(2cd-be)\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (15*b^2*e^4*(a + b*x) + c^3*(-6*d^4 - 24*d^3*e*x + 36*d^2*e^2*x^2 + 12*d*e^
3*x^3 + 2*e^4*x^4) - c*e^3*(16*a^2*e + b^2*x*(54*d - 5*e*x) + a*b*(54*d + 2
6*e*x)) + 2*c^2*e^2*(2*a*(18*d^2 + 9*d*e*x - 2*e^2*x^2) - b*x*(-36*d^2 + 9*
d*e*x + e^2*x^2)))/(3*c^3*Sqrt[a + x*(b + c*x)]) + (e*(2*c*d - b*e)*(8*c^2*
d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqr
t[a + x*(b + c*x)])])/(2*c^(7/2))
```

IntegrateAlgebraic [A] time = 4.52, size = 314, normalized size = 1.55

$$\frac{-16a^2ce^4+15ab^2e^4-54abcde^3-26abce^4x+72ac^2d^2e^2+36ac^2de^3x-8ac^2e^4x^2+15b^3e^4x-54b^2cde^3x+5b^2ce^4x^2+72bc^2d^2e^2x-18bc^2de^3x^2-2bc^2e^4x^3-6c^3d^4-24c^3d^3ex+36c^3d^2e^2x^2+12c^3de^3x^3+2c^3e^4x^4}{3c^3\sqrt{a+bx+cx^2}}+\frac{\left(-12abce^4+24ac^2de^3+5b^3e^4-18b^2cde^3+24bc^2d^2e^2-16c^3d^3e\right)\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-6*c^3*d^4 + 72*a*c^2*d^2*e^2 - 54*a*b*c*d*e^3 + 15*a*b^2*e^4 - 16*a^2*c*e
^4 - 24*c^3*d^3*e*x + 72*b*c^2*d^2*e^2*x - 54*b^2*c*d*e^3*x + 36*a*c^2*d*e^
3*x + 15*b^3*e^4*x - 26*a*b*c*e^4*x + 36*c^3*d^2*e^2*x^2 - 18*b*c^2*d*e^3*x
^2 + 5*b^2*c*e^4*x^2 - 8*a*c^2*e^4*x^2 + 12*c^3*d*e^3*x^3 - 2*b*c^2*e^4*x^3
 + 2*c^3*e^4*x^4)/(3*c^3*Sqrt[a + b*x + c*x^2]) + ((-16*c^3*d^3*e + 24*b*c^
2*d^2*e^2 - 18*b^2*c*d*e^3 + 24*a*c^2*d*e^3 + 5*b^3*e^4 - 12*a*b*c*e^4)*Log
[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(2*c^(7/2))
```

fricas [B] time = 0.91, size = 965, normalized size = 4.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(16*a*c^3*d^3*e - 24*a*b*c^2*d^2*e^2 + 6*(3*a*b^2*c - 4*a^2*c^2)*d
*e^3 - (5*a*b^3 - 12*a^2*b*c)*e^4 + (16*c^4*d^3*e - 24*b*c^3*d^2*e^2 + 6*(3
*b^2*c^2 - 4*a*c^3)*d*e^3 - (5*b^3*c - 12*a*b*c^2)*e^4)*x^2 + (16*b*c^3*d^3
*e - 24*b^2*c^2*d^2*e^2 + 6*(3*b^3*c - 4*a*b*c^2)*d*e^3 - (5*b^4 - 12*a*b^2
*c)*e^4)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(2*c^4*e^4*x^4 - 6*c^4*d^4 + 72*a*c^3*d^
2*e^2 - 54*a*b*c^2*d*e^3 + (15*a*b^2*c - 16*a^2*c^2)*e^4 + 2*(6*c^4*d*e^3 -
 b*c^3*e^4)*x^3 + (36*c^4*d^2*e^2 - 18*b*c^3*d*e^3 + (5*b^2*c^2 - 8*a*c^3)*
e^4)*x^2 - (24*c^4*d^3*e - 72*b*c^3*d^2*e^2 + 18*(3*b^2*c^2 - 2*a*c^3)*d*e^
3 - (15*b^3*c - 26*a*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c^5*x^2 + b*c^4
*x + a*c^4), -1/6*(3*(16*a*c^3*d^3*e - 24*a*b*c^2*d^2*e^2 + 6*(3*a*b^2*c -
4*a^2*c^2)*d*e^3 - (5*a*b^3 - 12*a^2*b*c)*e^4 + (16*c^4*d^3*e - 24*b*c^3*d^
2*e^2 + 6*(3*b^2*c^2 - 4*a*c^3)*d*e^3 - (5*b^3*c - 12*a*b*c^2)*e^4)*x^2 + (
16*b*c^3*d^3*e - 24*b^2*c^2*d^2*e^2 + 6*(3*b^3*c - 4*a*b*c^2)*d*e^3 - (5*b^
4 - 12*a*b^2*c)*e^4)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(2*c^4*e^4*x^4 - 6*c^4*d^4 + 72*a*
c^3*d^2*e^2 - 54*a*b*c^2*d*e^3 + (15*a*b^2*c - 16*a^2*c^2)*e^4 + 2*(6*c^4*d
*e^3 - b*c^3*e^4)*x^3 + (36*c^4*d^2*e^2 - 18*b*c^3*d*e^3 + (5*b^2*c^2 - 8*a
*c^3)*e^4)*x^2 - (24*c^4*d^3*e - 72*b*c^3*d^2*e^2 + 18*(3*b^2*c^2 - 2*a*c^3
)*d*e^3 - (15*b^3*c - 26*a*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c^5*x^2 +
 b*c^4*x + a*c^4)]
```

giac [B] time = 0.37, size = 545, normalized size = 2.70

$$\frac{\left(\left(2\left(\frac{\left(b^2c^3e^4-4\,ac^4e^4\right)x}{b^2c^3-4\,ac^4}+\frac{6\,b^2c^3de^3-24\,ac^4de^3-b^3c^2e^4+4\,abc^3e^4}{b^2c^3-4\,ac^4}\right)x+\frac{36\,b^2c^3d^2e^2-144\,ac^4d^2e^2-18\,b^3c^2de^3+72\,abc^3de^3+5\,b^4ce^4-28\,ab^2c^2e^4+32\,a^2c^3e^4}{b^2c^3-4\,ac^4}\right)x-\frac{24\,b^2c^3d^3e-96\,ac^4d^3e-72\,b^3c^2d^2e^2+288\,abc^3d^2e^2+54\,b^4cde^3-252\,ab^2c^2de^3+144\,a^2c^3de^3-15\,b^5e^4+86\,ab^3ce^4-104\,a^2bc^2e^4}{b^2c^3-4\,ac^4}\right)x-\frac{6\,b^2c^3d^4-24\,ac^4d^4-72\,ab^2c^2d^2e^2+288\,a^2c^3d^2e^2+54\,ab^3cde^3-216\,a^2bc^2de^3-15\,ab^4e^4+76\,a^2b^2ce^4-64\,a^3c^2e^4}{b^2c^3-4\,ac^4}}{3\,\sqrt{cx^2+bx+a}}-\frac{\left(16\,c^3d^3e-24\,bc^2d^2e^2+18\,b^2cde^3-24\,ac^2de^3-5\,b^3e^4+12\,abce^4\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/3*(((2*((b^2*c^3*e^4 - 4*a*c^4*e^4)*x/(b^2*c^3 - 4*a*c^4) + (6*b^2*c^3*d*
e^3 - 24*a*c^4*d*e^3 - b^3*c^2*e^4 + 4*a*b*c^3*e^4)/(b^2*c^3 - 4*a*c^4))*x
+ (36*b^2*c^3*d^2*e^2 - 144*a*c^4*d^2*e^2 - 18*b^3*c^2*d*e^3 + 72*a*b*c^3*d
*e^3 + 5*b^4*c*e^4 - 28*a*b^2*c^2*e^4 + 32*a^2*c^3*e^4)/(b^2*c^3 - 4*a*c^4)
)*x - (24*b^2*c^3*d^3*e - 96*a*c^4*d^3*e - 72*b^3*c^2*d^2*e^2 + 288*a*b*c^3
*d^2*e^2 + 54*b^4*c*d*e^3 - 252*a*b^2*c^2*d*e^3 + 144*a^2*c^3*d*e^3 - 15*b^
5*e^4 + 86*a*b^3*c*e^4 - 104*a^2*b*c^2*e^4)/(b^2*c^3 - 4*a*c^4))*x - (6*b^2
*c^3*d^4 - 24*a*c^4*d^4 - 72*a*b^2*c^2*d^2*e^2 + 288*a^2*c^3*d^2*e^2 + 54*a
*b^3*c*d*e^3 - 216*a^2*b*c^2*d*e^3 - 15*a*b^4*e^4 + 76*a^2*b^2*c*e^4 - 64*a
^3*c^2*e^4)/(b^2*c^3 - 4*a*c^4))/sqrt(c*x^2 + b*x + a) - 1/2*(16*c^3*d^3*e
- 24*b*c^2*d^2*e^2 + 18*b^2*c*d*e^3 - 24*a*c^2*d*e^3 - 5*b^3*e^4 + 12*a*b*c
*e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.07, size = 1320, normalized size = 6.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*b*d^4*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-32/3/c*e^4*a^2*b/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*x+24*a/c*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^2*e^
2-12*b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d^2*e^2+48*a*b/(4*a*c-b^2)/(c*
x^2+b*x+a)^(1/2)*x*d^2*e^2+2/3*e^4*x^4/(c*x^2+b*x+a)^(1/2)-8*x/(c*x^2+b*x+a
)^(1/2)*d^3*e-2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^4+4*x^3/(c*x^2+b*x+a)
^(1/2)*d*e^3-5/2/c^(7/2)*e^4*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)-5/4/c^4*e^4*b^4/(c*x^2+b*x+a)^(1/2)-16/3/c^2*e^4*a^2/(c*x^2+b*x+a)^(1/2)+
12*x^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2+8/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
```

```
b*x+a)^(1/2))*d^3*e-36*b^2/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^3+5/3/
c^2*e^4*b^2*x^2/(c*x^2+b*x+a)^(1/2)-2/(c*x^2+b*x+a)^(1/2)*d^4+12*a/c*x/(c*x
^2+b*x+a)^(1/2)*d*e^3-16/3/c^2*e^4*a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-
4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*c*d^4-18*b^3/c^2*a/(4*a*c-b^2)/(c*x^2
+b*x+a)^(1/2)*d*e^3+9*b^4/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^3+38/3/
c^2*e^4*b^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-2/3/c*e^4*b*x^3/(c*x^2+b*x+
a)^(1/2)+9*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^3-12
*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e^2-12*a/c^(3/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^3+12*b/c*x/(c*x^2+b*x+a)^(
1/2)*d^2*e^2+19/3/c^3*e^4*b^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-6/c^2*e^4*b
*a*x/(c*x^2+b*x+a)^(1/2)-5/2/c^3*e^4*b^5/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-
6*b^4/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^2*e^2-6*b/c*x^2/(c*x^2+b*x+a)^(
1/2)*d*e^3-9*b^2/c^2*x/(c*x^2+b*x+a)^(1/2)*d*e^3+9/2*b^5/c^3/(4*a*c-b^2)/(c
*x^2+b*x+a)^(1/2)*d*e^3-18*b/c^2*a/(c*x^2+b*x+a)^(1/2)*d*e^3-5/4/c^4*e^4*b^
6/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+19/3/c^3*e^4*b^2*a/(c*x^2+b*x+a)^(1/2)-8/
3/c*e^4*a*x^2/(c*x^2+b*x+a)^(1/2)+6/c^(5/2)*e^4*b*a*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x+a)^(1/2))-6*b^2/c^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2+24*a/c/(c*x^2+b*
x+a)^(1/2)*d^2*e^2+9/2*b^3/c^3/(c*x^2+b*x+a)^(1/2)*d*e^3+5/2/c^3*e^4*b^3*x/
(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{(d+e\,x)}^4}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**4/(a + b*x + c*x**2)**(3/2), x)
```

3.1390 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=153

$$\frac{3e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{9e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{2c^2}+\frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c}$$

Rubi [A] time = 0.15, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 742, 640, 621, 206}

$$\frac{3e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{9e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{2c^2}+\frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c}-\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^3)/Sqrt[a + b*x + c*x^2] + (9*e^2*(2*c*d - b*e)*Sqrt[a + b*x
+ c*x^2])/(2*c^2) + (3*e^2*(d + e*x)*Sqrt[a + b*x + c*x^2])/c + (3*e*(8*c^2
*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt
[a + b*x + c*x^2])])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
```

```
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + (6e)\int \frac{(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{(3e)\int \frac{\frac{1}{2}\left(4cd^2-e(bd+2ae)\right)+\frac{3}{2}e(2cd-be)x}{\sqrt{a+bx+cx^2}}\,d}{c}$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{9e^2(2cd-be)\sqrt{a+bx+cx^2}}{2c^2} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{(3}{}$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{9e^2(2cd-be)\sqrt{a+bx+cx^2}}{2c^2} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{(3}{}$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{9e^2(2cd-be)\sqrt{a+bx+cx^2}}{2c^2} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{3e}{}$$

Mathematica [A] time = 0.22, size = 164, normalized size = 1.07

$$\frac{3e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{4c^{5/2}}+\frac{3ce^2(2a(4d+ex)+bx(8d-ex))-9be^3(a+bx)-2c^2\left(2d^3+6d^2ex-6de^2x^2-e^3x^3\right)}{2c^2\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-9*b*e^3*(a + b*x) - 2*c^2*(2*d^3 + 6*d^2*e*x - 6*d*e^2*x^2 - e^3*x^3) + 3
*c*e^2*(b*x*(8*d - e*x) + 2*a*(4*d + e*x)))/(2*c^2*Sqrt[a + x*(b + c*x)]) +
 (3*e*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*
Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^(5/2))
```

IntegrateAlgebraic [A] time = 2.35, size = 191, normalized size = 1.25

$$\frac{-9abe^3+24acde^2+6ace^3x-9b^2e^3x+24bcde^2x-3bce^3x^2-4c^2d^3-12c^2d^2ex+12c^2de^2x^2+2c^2e^3x^3}{2c^2\sqrt{a+bx+cx^2}}-\frac{3\left(-4ace^3+3b^2e^3-8bcde^2+8c^2d^2e\right)\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-4*c^2*d^3 + 24*a*c*d*e^2 - 9*a*b*e^3 - 12*c^2*d^2*e*x + 24*b*c*d*e^2*x -
9*b^2*e^3*x + 6*a*c*e^3*x + 12*c^2*d*e^2*x^2 - 3*b*c*e^3*x^2 + 2*c^2*e^3*x^
3)/(2*c^2*Sqrt[a + b*x + c*x^2]) - (3*(8*c^2*d^2*e - 8*b*c*d*e^2 + 3*b^2*e^
3 - 4*a*c*e^3)*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]])/(4*c
^(5/2))
```

fricas [B] time = 0.77, size = 615, normalized size = 4.02

$$\left[-\frac{3\left(8ac^2d^2e-8abcde^2+\left(3ab^2-4a^2c\right)e^3+\left(8c^3d^2e-8bc^2de^2+\left(3b^2c-4ac^2\right)e^3\right)x^2+\left(8bc^2d^2e-8b^2cde^2+\left(3b^3-4abc\right)e^3\right)x\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)-4\left(2c^3e^3x^3-4c^3d^3+24ac^2de^2-9abce^3+3\left(4c^3de^2-bc^2e^3\right)x^2-3\left(4c^3d^2e-8bc^2de^2+\left(3b^2c-2ac^2\right)e^3\right)x\right)\sqrt{cx^2+bx+a}}{8\left(c^4x^2+bc^3x+ac^3\right)}, -\frac{3\left(8ac^2d^2e-8abcde^2+\left(3ab^2-4a^2c\right)e^3+\left(8c^3d^2e-8bc^2de^2+\left(3b^2c-4ac^2\right)e^3\right)x^2+\left(8bc^2d^2e-8b^2cde^2+\left(3b^3-4abc\right)e^3\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left(2c^3e^3x^3-4c^3d^3+24ac^2de^2-9abce^3+3\left(4c^3de^2-bc^2e^3\right)x^2-3\left(4c^3d^2e-8bc^2de^2+\left(3b^2c-2ac^2\right)e^3\right)x\right)\sqrt{cx^2+bx+a}}{4\left(c^4x^2+bc^3x+ac^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*(8*a*c^2*d^2*e - 8*a*b*c*d*e^2 + (3*a*b^2 - 4*a^2*c)*e^3 + (8*c^3*
d^2*e - 8*b*c^2*d*e^2 + (3*b^2*c - 4*a*c^2)*e^3)*x^2 + (8*b*c^2*d^2*e - 8*b
^2*c*d*e^2 + (3*b^3 - 4*a*b*c)*e^3)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b
^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2*c^3*e^3*x^
3 - 4*c^3*d^3 + 24*a*c^2*d*e^2 - 9*a*b*c*e^3 + 3*(4*c^3*d*e^2 - b*c^2*e^3)*
x^2 - 3*(4*c^3*d^2*e - 8*b*c^2*d*e^2 + (3*b^2*c - 2*a*c^2)*e^3)*x)*sqrt(c*x
^2 + b*x + a))/(c^4*x^2 + b*c^3*x + a*c^3), -1/4*(3*(8*a*c^2*d^2*e - 8*a*b*
c*d*e^2 + (3*a*b^2 - 4*a^2*c)*e^3 + (8*c^3*d^2*e - 8*b*c^2*d*e^2 + (3*b^2*c
 - 4*a*c^2)*e^3)*x^2 + (8*b*c^2*d^2*e - 8*b^2*c*d*e^2 + (3*b^3 - 4*a*b*c)*e
^3)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*
x^2 + b*c*x + a*c)) - 2*(2*c^3*e^3*x^3 - 4*c^3*d^3 + 24*a*c^2*d*e^2 - 9*a*b
*c*e^3 + 3*(4*c^3*d*e^2 - b*c^2*e^3)*x^2 - 3*(4*c^3*d^2*e - 8*b*c^2*d*e^2 +
 (3*b^2*c - 2*a*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(c^4*x^2 + b*c^3*x + a*
c^3)]
```

giac [B]   time = 0.32, size = 347, normalized size = 2.27

$$\frac{\left(\left(\frac{2\,(b^2c^2e^3-4\,ac^3e^3)x}{b^2c^2-4\,ac^3}+\frac{3\,(4\,b^2c^2de^2-16\,ac^3de^2-b^3ce^3+4\,abc^2e^3)}{b^2c^2-4\,ac^3}\right)x-\frac{3\,(4\,b^2c^2d^2e-16\,ac^3d^2e-8\,b^3cde^2+32\,abc^2de^2+3\,b^4e^3-14\,ab^2ce^3+8\,a^2c^2e^3)}{b^2c^2-4\,ac^3}\right)x-\frac{4\,b^2c^2d^3-16\,ac^3d^3-24\,ab^2cde^2+96\,a^2c^2de^2+9\,ab^3e^3-36\,a^2bce^3}{b^2c^2-4\,ac^3}}{2\,\sqrt{cx^2+bx+a}}-\frac{3\,(8\,c^2d^2e-8\,bcde^2+3\,b^2e^3-4\,ace^3)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{4\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(((2*(b^2*c^2*e^3 - 4*a*c^3*e^3)*x/(b^2*c^2 - 4*a*c^3) + 3*(4*b^2*c^2*d
*e^2 - 16*a*c^3*d*e^2 - b^3*c*e^3 + 4*a*b*c^2*e^3)/(b^2*c^2 - 4*a*c^3))*x -
 3*(4*b^2*c^2*d^2*e - 16*a*c^3*d^2*e - 8*b^3*c*d*e^2 + 32*a*b*c^2*d*e^2 + 3
*b^4*e^3 - 14*a*b^2*c*e^3 + 8*a^2*c^2*e^3)/(b^2*c^2 - 4*a*c^3))*x - (4*b^2*
c^2*d^3 - 16*a*c^3*d^3 - 24*a*b^2*c*d*e^2 + 96*a^2*c^2*d*e^2 + 9*a*b^3*e^3
- 36*a^2*b*c*e^3)/(b^2*c^2 - 4*a*c^3))/sqrt(c*x^2 + b*x + a) - 3/4*(8*c^2*d
^2*e - 8*b*c*d*e^2 + 3*b^2*e^3 - 4*a*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B]   time = 0.06, size = 788, normalized size = 5.15

$$-\frac{9ab^2e^3x}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c}+\frac{24abde^2x}{(4ac-b^2)\sqrt{cx^2+bx+a}}+\frac{9b^4e^3x}{4(4ac-b^2)\sqrt{cx^2+bx+a}\,c^2}-\frac{6b^3de^2x}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c}-\frac{4bcd^3x}{(4ac-b^2)\sqrt{cx^2+bx+a}}+\frac{e^3x^3}{\sqrt{cx^2+bx+a}}-\frac{9ab^3e^3}{2(4ac-b^2)\sqrt{cx^2+bx+a}\,c^2}+\frac{12ab^2de^2}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c}+\frac{9b^5e^3}{8(4ac-b^2)\sqrt{cx^2+bx+a}\,c^3}-\frac{3b^4de^2}{(4ac-b^2)\sqrt{cx^2+bx+a}\,c^2}-\frac{2b^2d^3}{(4ac-b^2)\sqrt{cx^2+bx+a}}-\frac{3be^3x^2}{2\sqrt{cx^2+bx+a}\,c}+\frac{6de^2x^2}{\sqrt{cx^2+bx+a}}+\frac{3ae^3x}{\sqrt{cx^2+bx+a}\,c}-\frac{9b^2e^3x}{4\sqrt{cx^2+bx+a}\,c^2}+\frac{6bde^2x}{\sqrt{cx^2+bx+a}\,c}+\frac{2(2cx+b)bd^3}{(4ac-b^2)\sqrt{cx^2+bx+a}}-\frac{6d^2ex}{\sqrt{cx^2+bx+a}}-\frac{3ae^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}+\frac{9b^2e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{5}{2}}}-\frac{6bde^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}+\frac{6d^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{\sqrt{c}}-\frac{9abe^3}{2\sqrt{cx^2+bx+a}\,c^2}+\frac{12ade^2}{\sqrt{cx^2+bx+a}\,c}+\frac{9b^3e^3}{8\sqrt{cx^2+bx+a}\,c^3}-\frac{3b^2de^2}{\sqrt{cx^2+bx+a}\,c^2}-\frac{2d^3}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 24*a*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^2+12*a/c*b^2/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*d*e^2-6*b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^2-2/(c*x
^2+b*x+a)^(1/2)*d^3+9/4/c^(5/2)*e^3*b^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+6/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e-6*x/(c
*x^2+b*x+a)^(1/2)*d^2*e-2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^3+6*x^2/(c*
x^2+b*x+a)^(1/2)*d*e^2+9/8/c^3*e^3*b^3/(c*x^2+b*x+a)^(1/2)-3/c^(3/2)*e^3*a*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-9/2/c^2*e^3*b^3*a/(4*a*c-b^2)/(
c*x^2+b*x+a)^(1/2)-3*b^2/c^2/(c*x^2+b*x+a)^(1/2)*d*e^2-3/2/c*e^3*b*x^2/(c*x
^2+b*x+a)^(1/2)-9/4/c^2*e^3*b^2*x/(c*x^2+b*x+a)^(1/2)+e^3*x^3/(c*x^2+b*x+a)
^(1/2)-9/c*e^3*b^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+3/c*e^3*a*x/(c*x^2+b
*x+a)^(1/2)+12*a/c/(c*x^2+b*x+a)^(1/2)*d*e^2-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^
(1/2)*x*c*d^3-9/2/c^2*e^3*b*a/(c*x^2+b*x+a)^(1/2)+2*b*d^3*(2*c*x+b)/(4*a*c-
b^2)/(c*x^2+b*x+a)^(1/2)-6*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(
1/2))*d*e^2+9/8/c^3*e^3*b^5/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3*b^4/c^2/(4*a*
c-b^2)/(c*x^2+b*x+a)^(1/2)*d*e^2+6*b/c*x/(c*x^2+b*x+a)^(1/2)*d*e^2+9/4/c^2*
e^3*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^3}{\left(c\,x^2+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^3}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3/(a + b*x + c*x**2)**(3/2), x)
```

3.1391 $\int \frac{(b+2cx)(d+ex)^2}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=93

$$\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}}+\frac{4e^2\sqrt{a+bx+cx^2}}{c}$$

Rubi [A] time = 0.05, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 640, 621, 206}

$$\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}}+\frac{4e^2\sqrt{a+bx+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^2)/Sqrt[a + b*x + c*x^2] + (4*e^2*Sqrt[a + b*x + c*x^2])/c +
(2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/
c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + (4e)\int \frac{d+ex}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + \frac{4e^2\sqrt{a+bx+cx^2}}{c} + \frac{(2e(2cd-be))\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{c}$$

$$= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + \frac{4e^2\sqrt{a+bx+cx^2}}{c} + \frac{(4e(2cd-be))\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2c}{\sqrt{a+bx+}}\right.}{c}$$

$$= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + \frac{4e^2\sqrt{a+bx+cx^2}}{c} + \frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

Mathematica [A] time = 0.17, size = 95, normalized size = 1.02

$$\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{c^{3/2}} + \frac{4e^2(a+bx)-2c\left(d^2+2dex-e^2x^2\right)}{c\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (4*e^2*(a + b*x) - 2*c*(d^2 + 2*d*e*x - e^2*x^2))/(c*Sqrt[a + x*(b + c*x)])
 + (2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])
])/c^(3/2)
```

IntegrateAlgebraic [A] time = 0.80, size = 105, normalized size = 1.13

$$-\frac{2\left(2cde-be^2\right)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{c^{3/2}} - \frac{2\left(-2ae^2-2be^2x+cd^2+2cdex-ce^2x^2\right)}{c\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(c*d^2 - 2*a*e^2 + 2*c*d*e*x - 2*b*e^2*x - c*e^2*x^2))/(c*Sqrt[a + b*x
+ c*x^2]) - (2*(2*c*d*e - b*e^2)*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[a + b*x
 + c*x^2]])/c^(3/2)
```

fricas [B] time = 0.66, size = 363, normalized size = 3.90

$$\left[-\frac{\left(2acde-abe^2+\left(2c^2de-bce^2\right)x^2+\left(2bcde-b^2e^2\right)x\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)-2\left(c^2e^2x^2-c^2d^2+2ace^2-2\left(c^2de-bce^2\right)x\right)\sqrt{cx^2+bx+a}}{c^3x^2+bc^2x+ac^2}, -\frac{2\left(\left(2acde-abe^2+\left(2c^2de-bce^2\right)x^2+\left(2bcde-b^2e^2\right)x\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-\left(c^2e^2x^2-c^2d^2+2ace^2-2\left(c^2de-bce^2\right)x\right)\sqrt{cx^2+bx+a}\right)}{c^3x^2+bc^2x+ac^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-((2*a*c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)
*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x
 + b)*sqrt(c) - 4*a*c) - 2*(c^2*e^2*x^2 - c^2*d^2 + 2*a*c*e^2 - 2*(c^2*d*e
- b*c*e^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x^2 + b*c^2*x + a*c^2), -2*((2*a*
c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*x)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) - (c^2*e^2*x^2 - c^2*d^2 + 2*a*c*e^2 - 2*(c^2*d*e - b*c*e^2)*x)*sq
rt(c*x^2 + b*x + a))/(c^3*x^2 + b*c^2*x + a*c^2)]
```

giac [B] time = 0.33, size = 197, normalized size = 2.12

$$\frac{2\left(\left(\frac{\left(b^{2}ce^{2}-4\,ac^{2}e^{2}\right)x}{b^{2}c-4\,ac^{2}}-\frac{2\left(b^{2}cde-4\,ac^{2}de-b^{3}e^{2}+4\,abce^{2}\right)}{b^{2}c-4\,ac^{2}}\right)x-\frac{b^{2}cd^{2}-4\,ac^{2}d^{2}-2\,ab^{2}e^{2}+8\,a^{2}ce^{2}}{b^{2}c-4\,ac^{2}}\right)}{\sqrt{cx^{2}+bx+a}}-\frac{2\left(2\,cde-be^{2}\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^{2}+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(((b^2*c*e^2 - 4*a*c^2*e^2)*x/(b^2*c - 4*a*c^2) - 2*(b^2*c*d*e - 4*a*c^2*
d*e - b^3*e^2 + 4*a*b*c*e^2)/(b^2*c - 4*a*c^2))*x - (b^2*c*d^2 - 4*a*c^2*d^
2 - 2*a*b^2*e^2 + 8*a^2*c*e^2)/(b^2*c - 4*a*c^2))/sqrt(c*x^2 + b*x + a) - 2
*(2*c*d*e - b*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) -
 b))/c^(3/2)
```

maple [B] time = 0.06, size = 427, normalized size = 4.59

$$\frac{8ab\,e^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}-\frac{2b^{3}e^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\,c}-\frac{4bc\,d^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}+\frac{4a\,b^{2}e^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\,c}-\frac{b^{4}e^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\,c^{2}}-\frac{2b^{2}d^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}+\frac{2e^{2}x^{2}}{\sqrt{c\,x^{2}+bx+a}}+\frac{2b\,e^{2}x}{\sqrt{c\,x^{2}+bx+a}\,c}+\frac{2\left(2cx+b\right)b\,d^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}-\frac{4dex}{\sqrt{c\,x^{2}+bx+a}}-\frac{2b\,e^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{c^{\frac{3}{2}}}+\frac{4de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{\sqrt{c}}+\frac{4a\,e^{2}}{\sqrt{c\,x^{2}+bx+a}\,c}-\frac{b^{2}e^{2}}{\sqrt{c\,x^{2}+bx+a}\,c^{2}}-\frac{2d^{2}}{\sqrt{c\,x^{2}+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/c*e^2*b*x/(c*x^2+b*x+a)^(1/2)-1/c^2*e^2*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/
2)-2/c^(3/2)*e^2*b*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+4/c*e^2*a*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+8*e^2*a*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)
*x-2/c*e^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-2*b^2/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)*d^2-4*x/(c*x^2+b*x+a)^(1/2)*d*e-1/c^2*e^2*b^2/(c*x^2+b*x+a)^(1/
2)+4/c*e^2*a/(c*x^2+b*x+a)^(1/2)+2*b*d^2*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a
)^(1/2)-2/(c*x^2+b*x+a)^(1/2)*d^2-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*c*d
^2+2*e^2*x^2/(c*x^2+b*x+a)^(1/2)+4/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^2}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b + 2cx\right)\left(d + ex\right)^{2}}{\left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2/(a + b*x + c*x**2)**(3/2), x)
```

3.1392 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$\frac{2e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {768, 621, 206}

$$\frac{2e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]

[Out] (-2*(d + e*x))/Sqrt[a + b*x + c*x^2] + (2*e*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*
Sqrt[a + b*x + c*x^2])])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}+(2e)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx\\ &= -\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}+(4e)\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)\\ &= -\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}+\frac{2e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.27, size = 56, normalized size = 0.93

$$\frac{2e\log\left(2\sqrt{c}\sqrt{a+x(b+cx)}+b+2cx\right)}{\sqrt{c}}-\frac{2(d+ex)}{\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x))/Sqrt[a + x*(b + c*x)] + (2*e*Log[b + 2*c*x + 2*Sqrt[c]*Sqrt[
a + x*(b + c*x)]])/Sqrt[c]
```

IntegrateAlgebraic [A] time = 0.47, size = 58, normalized size = 0.97

$$-\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}-\frac{2e\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)}{\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x))/Sqrt[a + b*x + c*x^2] - (2*e*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[
a + b*x + c*x^2]])/Sqrt[c]
```

fricas [B] time = 0.57, size = 211, normalized size = 3.52

$$\left[\frac{\left(cex^2+bex+ae\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)-2(cex+cd)\sqrt{cx^2+bx+a}}{c^2x^2+bcx+ac}, -\frac{2\left(\left(cex^2+bex+ae\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+(cex+cd)\sqrt{cx^2+bx+a}\right)}{c^2x^2+bcx+ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [((c*e*x^2 + b*e*x + a*e)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 2*(c*e*x + c*d)*sqrt(c*x^2 +
 b*x + a))/(c^2*x^2 + b*c*x + a*c), -2*((c*e*x^2 + b*e*x + a*e)*sqrt(-c)*ar
ctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)
) + (c*e*x + c*d)*sqrt(c*x^2 + b*x + a))/(c^2*x^2 + b*c*x + a*c)]
```

giac [B] time = 0.30, size = 101, normalized size = 1.68

$$-\frac{2e\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{\sqrt{c}}-\frac{2\left(\frac{\left(b^2e-4ace\right)x}{b^2-4ac}+\frac{b^2d-4acd}{b^2-4ac}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*e*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/sqrt(c) -
 2*((b^2*e - 4*a*c*e)*x/(b^2 - 4*a*c) + (b^2*d - 4*a*c*d)/(b^2 - 4*a*c))/sq
rt(c*x^2 + b*x + a)
```

maple [B] time = 0.05, size = 158, normalized size = 2.63

$$-\frac{4bcdx}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}-\frac{2b^2d}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}+\frac{2(2cx+b)bd}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}-\frac{2ex}{\sqrt{cx^2+bx+a}}+\frac{2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{\sqrt{c}}-\frac{2d}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -2*e*x/(c*x^2+b*x+a)^(1/2)+2/c^(1/2)*e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))-2/(c*x^2+b*x+a)^(1/2)*d-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*c*d-2
*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d+2*b*d*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.62, size = 161, normalized size = 2.68

$$\frac{2\,b^2\,d-4\,a\,b\,e-2\,b^2\,e\,x+4\,b\,c\,d\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}+\frac{2\,e\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}+\frac{2\,e\,\left(\frac{a\,b}{2}-x\,\left(a\,c-\frac{b^2}{2}\right)\right)}{\left(a\,c-\frac{b^2}{4}\right)\,\sqrt{c\,x^2+b\,x+a}}-\frac{2\,c\,d\,\left(4\,a+2\,b\,x\right)}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*b^2*d - 4*a*b*e - 2*b^2*e*x + 4*b*c*d*x)/((4*a*c - b^2)*(a + b*x + c*x^2
)^(1/2)) + (2*e*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(1/2)
 + (2*e*((a*b)/2 - x*(a*c - b^2/2)))/((a*c - b^2/4)*(a + b*x + c*x^2)^(1/2)
) - (2*c*d*(4*a + 2*b*x))/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx)(d + ex)}{\left(a + bx + cx^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.1393 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=16

$$-\frac{2}{\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$-\frac{2}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -2/Sqrt[a + b*x + c*x^2]
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{3/2}} \, dx = -\frac{2}{\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 0.94

$$-\frac{2}{\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -2/Sqrt[a + x*(b + c*x)]
```

IntegrateAlgebraic [A] time = 0.02, size = 16, normalized size = 1.00

$$-\frac{2}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -2/Sqrt[a + b*x + c*x^2]
```

fricas [A] time = 0.43, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
[Out] -2/sqrt(c*x^2 + b*x + a)
```

giac [A] time = 0.21, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{cx^2 + bx + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
[Out] -2/sqrt(c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 15, normalized size = 0.94

$$-\frac{2}{\sqrt{c\,x^2 + bx + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x)
[Out] -2/(c*x^2+b*x+a)^(1/2)
```

maxima [A] time = 0.51, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{cx^2 + bx + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
[Out] -2/sqrt(c*x^2 + b*x + a)
```

mupad [B] time = 1.89, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{c\,x^2 + b\,x + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x)
[Out] -2/(a + b*x + c*x^2)^(1/2)
```

sympy [A] time = 0.92, size = 15, normalized size = 0.94

$$-\frac{2}{\sqrt{a + bx + cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(3/2),x)
[Out] -2/sqrt(a + b*x + c*x**2)
```

3.1394 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=166

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{3/2}}$$

Rubi [A] time = 0.13, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 12, 724, 206}

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2)*Sqrt[a + b*x + c*x^2]) - (e*(2*c*d - b*e)*ArcTanh[(b*d -
 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x
^2])])/(c*d^2 - b*d*e + a*e^2)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\left(b^2-4ac\right)e(2cd-be)}{2(d+ex)\sqrt{a+bx+cx^2}}\,dx}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{(e(2cd-be))\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}}{cd^2-bde+ae^2}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} + \frac{(2e(2cd-be))\,\text{Subst}\left(\int \frac{}{4cd^2-4b}\right.}{cd^2-b}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{e(2cd-be)\tanh^{-1}\left(\frac{bd-2ae+}{2\sqrt{cd^2-bde+a}}\right.}{\left(cd^2-bde+ae^2\right)^{3/}}$$

Mathematica [A] time = 0.19, size = 133, normalized size = 0.80

$$\frac{2(be-cd+cex)}{\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)} + \frac{e(2cd-be)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x))/((c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)
]) + (e*(2*c*d - b*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*
d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))
^(3/2)
```

IntegrateAlgebraic [A] time = 0.91, size = 139, normalized size = 0.84

$$-\frac{2(-be+cd-cex)}{\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)} - \frac{2\left(2cde-be^2\right)\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{\left(-ae^2+bde-cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(c*d - b*e - c*e*x))/((c*d^2 - b*d*e + a*e^2)*Sqrt[a + b*x + c*x^2]) -
(2*(2*c*d*e - b*e^2)*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[a + b*x + c*x
^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/(-(c*d^2) + b*d*e - a*e^2)^(3/2)
```

fricas [B] time = 0.92, size = 918, normalized size = 5.53

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((2*a*c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*
e^2)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a
*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 -
b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4
*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) +
```

```
4*(c^2*d^3 - 2*b*c*d^2*e - a*b*e^3 + (b^2 + a*c)*d*e^2 - (c^2*d^2*e - b*c*
d*e^2 + a*c*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*c^2*d^4 - 2*a*b*c*d^3*e - 2*a
^2*b*d*e^3 + a^3*e^4 + (a*b^2 + 2*a^2*c)*d^2*e^2 + (c^3*d^4 - 2*b*c^2*d^3*e
 - 2*a*b*c*d*e^3 + a^2*c*e^4 + (b^2*c + 2*a*c^2)*d^2*e^2)*x^2 + (b*c^2*d^4
- 2*b^2*c*d^3*e - 2*a*b^2*d*e^3 + a^2*b*e^4 + (b^3 + 2*a*b*c)*d^2*e^2)*x),
-((2*a*c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*
x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sq
rt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^
2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x
)) + 2*(c^2*d^3 - 2*b*c*d^2*e - a*b*e^3 + (b^2 + a*c)*d*e^2 - (c^2*d^2*e -
b*c*d*e^2 + a*c*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*c^2*d^4 - 2*a*b*c*d^3*e -
 2*a^2*b*d*e^3 + a^3*e^4 + (a*b^2 + 2*a^2*c)*d^2*e^2 + (c^3*d^4 - 2*b*c^2*d
^3*e - 2*a*b*c*d*e^3 + a^2*c*e^4 + (b^2*c + 2*a*c^2)*d^2*e^2)*x^2 + (b*c^2*
d^4 - 2*b^2*c*d^3*e - 2*a*b^2*d*e^3 + a^2*b*e^4 + (b^3 + 2*a*b*c)*d^2*e^2)*
x)]
```

giac [B] time = 0.31, size = 501, normalized size = 3.02

$$\frac{2\left(\frac{\left(b^2c^2d^2e-4\,ac^3d^2e-b^3cde^2+4\,abc^2de^2+ab^2ce^3-4\,a^2c^2e^3\right)x}{b^2c^2d^4-4\,ac^3d^4-2\,b^3cd^3e+8\,abc^2d^3e+b^4d^2e^2-2\,ab^2cd^2e^2-8\,a^2c^2d^2e^2-2\,ab^3de^3+8\,a^2bcde^3+a^2b^2e^4-4\,a^3ce^4}-\frac{b^2c^2d^3-4\,ac^3d^3-2\,b^3cd^2e+8\,abc^2d^2e+b^4de^2-3\,ab^2cde^2-4\,a^2c^2de^2-ab^3e^3+4\,a^2bce^3}{b^2c^2d^4-4\,ac^3d^4-2\,b^3cd^3e+8\,abc^2d^3e+b^4d^2e^2-2\,ab^2cd^2e^2-8\,a^2c^2d^2e^2-2\,ab^3de^3+8\,a^2bcde^3+a^2b^2e^4-4\,a^3ce^4}\right)}{\sqrt{cx^2+bx+a}}-\frac{2\left(2\,cde-be^2\right)\arctan\left(-\frac{\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)e+\sqrt{c}d}{\sqrt{-cd^2+bde-ae^2}}\right)}{\left(cd^2-bde+ae^2\right)\sqrt{-cd^2+bde-ae^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((b^2*c^2*d^2*e - 4*a*c^3*d^2*e - b^3*c*d*e^2 + 4*a*b*c^2*d*e^2 + a*b^2*c
*e^3 - 4*a^2*c^2*e^3)*x/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*
c^2*d^3*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d
*e^3 + 8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4) - (b^2*c^2*d^3 - 4*a*c^
3*d^3 - 2*b^3*c*d^2*e + 8*a*b*c^2*d^2*e + b^4*d*e^2 - 3*a*b^2*c*d*e^2 - 4*a
^2*c^2*d*e^2 - a*b^3*e^3 + 4*a^2*b*c*e^3)/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^
3*c*d^3*e + 8*a*b*c^2*d^3*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d
^2*e^2 - 2*a*b^3*d*e^3 + 8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4))/sqrt
(c*x^2 + b*x + a) - 2*(2*c*d*e - b*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c*d^2 - b*d*e + a*
e^2)*sqrt(-c*d^2 + b*d*e - a*e^2))
```

maple [B] time = 0.06, size = 1084, normalized size = 6.53

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 4*c/e*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+e/(a*e^2-b*d*e+c*d^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b-2/(a*e^2-b*d
*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*c*d-2*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2*c+8/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^2*d-
8/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^3*d^2-e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3+4/(a*e^2-
b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*b^2*c*d-4/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b
*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^2-e/(a*e^2-b*d*e
+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-
b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b+2/(a*e^2-b*d*e+c*d^2)
/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c
```

```
*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{b+2\,c\,x}{(d+e\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)*(a + b*x + c*x**2)**(3/2)), x)
```

3.1395 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=248

$$-\frac{e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{5/2}}-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-\right.\right.}{\left(b^2-4ac\right)(d+ex)\sqrt{a+bx+cx^2}\,\left(ae^2-\right.}$$

Rubi [A] time = 0.27, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 806, 724, 206}

$$-\frac{e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{5/2}}-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)(d+ex)\sqrt{a+bx+cx^2}\,\left(ae^2-bde+cd^2\right)}+\frac{3e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2)*(d + e*x)*Sqrt[a + b*x + c*x^2]) + (3*e^2*(2*c*d - b*e)*
Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - (e*(8*c^2*d^
2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x
)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e
 + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
```

```
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(4cd-3be)-c}{(d+ex)^2\sqrt{a+bx+}}}{\left(b^2-4ac\right)\left(cd^2-b\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} + \frac{3e^2(2cd-be)\sqrt{a+bx}}{\left(cd^2-bde+ae^2\right)^2(d}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} + \frac{3e^2(2cd-be)\sqrt{a+bx}}{\left(cd^2-bde+ae^2\right)^2(d}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} + \frac{3e^2(2cd-be)\sqrt{a+bx}}{\left(cd^2-bde+ae^2\right)^2(d}$$

Mathematica [A] time = 0.54, size = 215, normalized size = 0.87

$$\frac{e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{5/2}}+\frac{3e^2\sqrt{a+x(b+cx)}(2cd-be)}{(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{2(be-cd+cex)}{(d+ex)\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x))/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x)*Sqrt[a + x
*(b + c*x)]) + (3*e^2*(2*c*d - b*e)*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b
*d) + a*e))^2*(d + e*x)) + (e*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))
*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e
)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d^2 + e*(-(b*d) + a*e))^(5/2))
```

IntegrateAlgebraic [B] time = 22.85, size = 5483, normalized size = 22.11

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 2.55, size = 2102, normalized size = 8.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((8*a*c^2*d^3*e - 8*a*b*c*d^2*e^2 + (3*a*b^2 - 4*a^2*c)*d*e^3 + (8*c^
3*d^2*e^2 - 8*b*c^2*d*e^3 + (3*b^2*c - 4*a*c^2)*e^4)*x^3 + (8*c^3*d^3*e - (
5*b^2*c + 4*a*c^2)*d*e^3 + (3*b^3 - 4*a*b*c)*e^4)*x^2 + (8*b*c^2*d^3*e - 8*
(b^2*c - a*c^2)*d^2*e^2 + 3*(b^3 - 4*a*b*c)*d*e^3 + (3*a*b^2 - 4*a^2*c)*e^4
)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)
```

```
*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d
*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*
c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*
(2*c^3*d^5 - 6*b*c^2*d^4*e + a^2*b*e^5 + 2*(3*b^2*c - a*c^2)*d^3*e^2 - (2*b
^3 - a*b*c)*d^2*e^3 + (a*b^2 - 4*a^2*c)*d*e^4 - 3*(2*c^3*d^3*e^2 - 3*b*c^2*
d^2*e^3 - a*b*c*e^5 + (b^2*c + 2*a*c^2)*d*e^4)*x^2 - (2*c^3*d^4*e + 2*b*c^2
*d^3*e^2 - (7*b^2*c - 4*a*c^2)*d^2*e^3 + (3*b^3 + 2*a*b*c)*d*e^4 - (3*a*b^2
 - 2*a^2*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(a*c^3*d^7 - 3*a*b*c^2*d^6*e - 3
*a^3*b*d^2*e^5 + a^4*d*e^6 + 3*(a*b^2*c + a^2*c^2)*d^5*e^2 - (a*b^3 + 6*a^2
*b*c)*d^4*e^3 + 3*(a^2*b^2 + a^3*c)*d^3*e^4 + (c^4*d^6*e - 3*b*c^3*d^5*e^2
- 3*a^2*b*c*d*e^6 + a^3*c*e^7 + 3*(b^2*c^2 + a*c^3)*d^4*e^3 - (b^3*c + 6*a*
b*c^2)*d^3*e^4 + 3*(a*b^2*c + a^2*c^2)*d^2*e^5)*x^3 + (c^4*d^7 - 2*b*c^3*d^
6*e + 3*a*c^3*d^5*e^2 + 3*a*b^3*d^2*e^5 + a^3*b*e^7 + (2*b^3*c - 3*a*b*c^2)
*d^4*e^3 - (b^4 + 3*a*b^2*c - 3*a^2*c^2)*d^3*e^4 - (3*a^2*b^2 - a^3*c)*d*e^
6)*x^2 + (b*c^3*d^7 + 3*b^3*c*d^5*e^2 + 3*a^3*c*d^2*e^5 - 2*a^3*b*d*e^6 + a
^4*e^7 - (3*b^2*c^2 - a*c^3)*d^6*e - (b^4 + 3*a*b^2*c - 3*a^2*c^2)*d^4*e^3
+ (2*a*b^3 - 3*a^2*b*c)*d^3*e^4)*x), -1/2*((8*a*c^2*d^3*e - 8*a*b*c*d^2*e^2
 + (3*a*b^2 - 4*a^2*c)*d*e^3 + (8*c^3*d^2*e^2 - 8*b*c^2*d*e^3 + (3*b^2*c -
4*a*c^2)*e^4)*x^3 + (8*c^3*d^3*e - (5*b^2*c + 4*a*c^2)*d*e^3 + (3*b^3 - 4*a
*b*c)*e^4)*x^2 + (8*b*c^2*d^3*e - 8*(b^2*c - a*c^2)*d^2*e^2 + 3*(b^3 - 4*a*
b*c)*d*e^3 + (3*a*b^2 - 4*a^2*c)*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arcta
n(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2
*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)
*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(2*c^3*d^5 - 6*b*c^2*d^4*e + a
^2*b*e^5 + 2*(3*b^2*c - a*c^2)*d^3*e^2 - (2*b^3 - a*b*c)*d^2*e^3 + (a*b^2 -
 4*a^2*c)*d*e^4 - 3*(2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 - a*b*c*e^5 + (b^2*c +
 2*a*c^2)*d*e^4)*x^2 - (2*c^3*d^4*e + 2*b*c^2*d^3*e^2 - (7*b^2*c - 4*a*c^2)
*d^2*e^3 + (3*b^3 + 2*a*b*c)*d*e^4 - (3*a*b^2 - 2*a^2*c)*e^5)*x)*sqrt(c*x^2
 + b*x + a))/(a*c^3*d^7 - 3*a*b*c^2*d^6*e - 3*a^3*b*d^2*e^5 + a^4*d*e^6 + 3
*(a*b^2*c + a^2*c^2)*d^5*e^2 - (a*b^3 + 6*a^2*b*c)*d^4*e^3 + 3*(a^2*b^2 + a
^3*c)*d^3*e^4 + (c^4*d^6*e - 3*b*c^3*d^5*e^2 - 3*a^2*b*c*d*e^6 + a^3*c*e^7
+ 3*(b^2*c^2 + a*c^3)*d^4*e^3 - (b^3*c + 6*a*b*c^2)*d^3*e^4 + 3*(a*b^2*c +
a^2*c^2)*d^2*e^5)*x^3 + (c^4*d^7 - 2*b*c^3*d^6*e + 3*a*c^3*d^5*e^2 + 3*a*b^
3*d^2*e^5 + a^3*b*e^7 + (2*b^3*c - 3*a*b*c^2)*d^4*e^3 - (b^4 + 3*a*b^2*c -
3*a^2*c^2)*d^3*e^4 - (3*a^2*b^2 - a^3*c)*d*e^6)*x^2 + (b*c^3*d^7 + 3*b^3*c*
d^5*e^2 + 3*a^3*c*d^2*e^5 - 2*a^3*b*d*e^6 + a^4*e^7 - (3*b^2*c^2 - a*c^3)*d
^6*e - (b^4 + 3*a*b^2*c - 3*a^2*c^2)*d^4*e^3 + (2*a*b^3 - 3*a^2*b*c)*d^3*e^
4)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 2293, normalized size = 9.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 18/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c^2*d^2+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x
+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d+6*e/(a*e
^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*b*c*d-12*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c
```

```
*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b-18*e/(a*e^2-b*d*e+c*d^2)^2
/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*x*b^2*c^2*d-3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d
/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-1/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b-6/(a*e^2-b*
d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*c^2*d^2-2*c/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*
e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d
/e))+2*c/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)+6/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/
2))/(x+d/e))*c^2*d^2+3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^4+3/2*e^2/(a*e^2-b*
d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a
*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2
*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2-24/e/(a*e^2-b*
d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*x*c^4*d^3-9*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*c*d+24/e*c^3/(a*
e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*x*d+12/e*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2
*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d-6*c/(a*e^2-b*d*
e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*b^2+36/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^3*d^2-12/e/(a*e^2-b*d*e+c
*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*b*c^3*d^3-6*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2))/(x+d/e))*b*c*d+3*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^3*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.1396 $\int \frac{(b+2cx)(d+ex)^4}{(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=208

$$\frac{8e^2\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d^2\right)}{3c^2\left(b^2-4ac\right)}-\frac{16e(d+ex)^2(-2ae+x(2cd-be)+bd)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+$$

Rubi [A] time = 0.23, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 738, 779, 621, 206}

$$\frac{8e^2\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d^2\right)}{3c^2\left(b^2-4ac\right)}-\frac{16e(d+ex)^2(-2ae+x(2cd-be)+bd)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{4e^3(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{5/2}}-\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^4)/(3*(a + b*x + c*x^2)^(3/2)) - (16*e*(d + e*x)^2*(b*d - 2*a
*e + (2*c*d - b*e)*x))/(3*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (8*e^2*(8*
c^2*d^2 + 3*b^2*e^2 - 2*c*e*(3*b*d + 4*a*e) + 2*c*e*(2*c*d - b*e)*x)*Sqrt[a
 + b*x + c*x^2])/(3*c^2*(b^2 - 4*a*c)) + (4*e^3*(2*c*d - b*e)*ArcTanh[(b +
2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}} + \frac{1}{3}(8e)\int \frac{(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{(16e)\int \frac{(d+ex)(-2e(bd- \ldots}{\sqrt{a+ \ldots}}}{3\left(b^2- \ldots\right.}$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{8e^2\left(8c^2d^2+3b^2e^2 \ldots\right.}{\ldots}$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{8e^2\left(8c^2d^2+3b^2e^2 \ldots\right.}{\ldots}$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{8e^2\left(8c^2d^2+3b^2e^2 \ldots\right.}{\ldots}$$

Mathematica [A] time = 1.01, size = 354, normalized size = 1.70

$$\frac{2\left(\frac{\sqrt{c}\left(b^2\left(-12a^2e^4+24ace^3x(2d+ex)+c^2\left(d^4+12d^3ex-18d^2e^2x^2+28de^3x^3-3e^4x^4\right)\right)+8bce\left(3a^2e^2(d+3ex)+ac\left(d^3-9d^2ex-3de^2x^2+7e^3x^3\right)+3c^2d^2x^2(d-ex)\right)+4c\left(8a^3e^4-12a^2ce^2\left(d^2+dex-e^2x^2\right)-ac^2\left(d^4+18d^2e^2x^2+16de^3x^3-3e^4x^4\right)+4c^3d^3ex^3\right)-8b^3e^3x(3ae+cx(2ex-3d))-12b^4e^4x^2\right)}{(a+x(b+cx))^{3/2}}+6e^3\left(b^2-4ac\right)(be-2cd)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\right)}{3c^{5/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*((Sqrt[c]*(-12*b^4*e^4*x^2 - 8*b^3*e^3*x*(3*a*e + c*x*(-3*d + 2*e*x)) +
8*b*c*e*(3*c^2*d^2*x^2*(d - e*x) + 3*a^2*e^2*(d + 3*e*x) + a*c*(d^3 - 9*d^2
*e*x - 3*d*e^2*x^2 + 7*e^3*x^3)) + 4*c*(8*a^3*e^4 + 4*c^3*d^3*e*x^3 - 12*a^
2*c*e^2*(d^2 + d*e*x - e^2*x^2) - a*c^2*(d^4 + 18*d^2*e^2*x^2 + 16*d*e^3*x^
3 - 3*e^4*x^4)) + b^2*(-12*a^2*e^4 + 24*a*c*e^3*x*(2*d + e*x) + c^2*(d^4 +
12*d^3*e*x - 18*d^2*e^2*x^2 + 28*d*e^3*x^3 - 3*e^4*x^4))))/(a + x*(b + c*x)
)^(3/2) + 6*(b^2 - 4*a*c)*e^3*(-2*c*d + b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + x*(b + c*x)])]))/(3*c^(5/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [B] time = 3.97, size = 455, normalized size = 2.19

$$-\frac{2\left(-32a^3ce^4+12a^2b^2e^4-24a^2bcde^3-72a^2bce^4x+48a^2c^2d^2e^2+48a^2c^2de^3x-48a^2c^2e^4x^2+24ab^3e^4x-48ab^2cde^3x-24ab^2ce^4x^2-8abc^2d^3e+72abc^2d^2e^2x+24abc^2de^3x^2-56abc^2e^4x^3+4ac^3d^4+72ac^3d^2e^2x^2+64ac^3de^3x^3-12ac^3e^4x^4+12b^4e^4x^2-24b^3cde^3x^2+16b^3ce^4x^3-b^2c^2d^4-12b^2c^2d^3ex+18b^2c^2d^2e^2x^2-28b^2c^2de^3x^3+3b^2c^2e^4x^4-24bc^3d^3ex^2+24bc^3d^2e^2x^3-16c^4d^3ex^3\right)}{3c^2\left(4ac-b^2\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{4\left(2cde^3-be^4\right)\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(-(b^2*c^2*d^4) + 4*a*c^3*d^4 - 8*a*b*c^2*d^3*e + 48*a^2*c^2*d^2*e^2 -
24*a^2*b*c*d*e^3 + 12*a^2*b^2*e^4 - 32*a^3*c*e^4 - 12*b^2*c^2*d^3*e*x + 72*
a*b*c^2*d^2*e^2*x - 48*a*b^2*c*d*e^3*x + 48*a^2*c^2*d*e^3*x + 24*a*b^3*e^4*
x - 72*a^2*b*c*e^4*x - 24*b*c^3*d^3*e*x^2 + 18*b^2*c^2*d^2*e^2*x^2 + 72*a*c
^3*d^2*e^2*x^2 - 24*b^3*c*d*e^3*x^2 + 24*a*b*c^2*d*e^3*x^2 + 12*b^4*e^4*x^2
```

```
 - 24*a*b^2*c*e^4*x^2 - 48*a^2*c^2*e^4*x^2 - 16*c^4*d^3*e*x^3 + 24*b*c^3*d^
2*e^2*x^3 - 28*b^2*c^2*d*e^3*x^3 + 64*a*c^3*d*e^3*x^3 + 16*b^3*c*e^4*x^3 -
56*a*b*c^2*e^4*x^3 + 3*b^2*c^2*e^4*x^4 - 12*a*c^3*e^4*x^4))/(3*c^2*(-b^2 +
4*a*c)*(a + b*x + c*x^2)^(3/2)) - (4*(2*c*d*e^3 - b*e^4)*Log[b*c^2 + 2*c^3*
x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]])/c^(5/2)
```

fricas [B] time = 1.64, size = 1493, normalized size = 7.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*(3*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 - (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*
(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2
- 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c
^2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*
b^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2*b^2*c)*e^4)*x)*sqrt(c)*log(-8*c
^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*
c) + (8*a*b*c^3*d^3*e - 48*a^2*c^3*d^2*e^2 + 24*a^2*b*c^2*d*e^3 - 3*(b^2*c^
3 - 4*a*c^4)*e^4*x^4 + (b^2*c^3 - 4*a*c^4)*d^4 - 4*(3*a^2*b^2*c - 8*a^3*c^2
)*e^4 + 4*(4*c^5*d^3*e - 6*b*c^4*d^2*e^2 + (7*b^2*c^3 - 16*a*c^4)*d*e^3 - 2
*(2*b^3*c^2 - 7*a*b*c^3)*e^4)*x^3 + 6*(4*b*c^4*d^3*e - 3*(b^2*c^3 + 4*a*c^4
)*d^2*e^2 + 4*(b^3*c^2 - a*b*c^3)*d*e^3 - 2*(b^4*c - 2*a*b^2*c^2 - 4*a^2*c^
3)*e^4)*x^2 + 12*(b^2*c^3*d^3*e - 6*a*b*c^3*d^2*e^2 + 4*(a*b^2*c^2 - a^2*c^
3)*d*e^3 - 2*(a*b^3*c - 3*a^2*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^
2*c^3 - 4*a^3*c^4 + (b^2*c^5 - 4*a*c^6)*x^4 + 2*(b^3*c^4 - 4*a*b*c^5)*x^3 +
 (b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*x^2 + 2*(a*b^3*c^3 - 4*a^2*b*c^4)*x),
-2/3*(6*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 - (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*(
b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2 -
 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c^
2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*b
^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2*b^2*c)*e^4)*x)*sqrt(-c)*arctan(1
/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + (8
*a*b*c^3*d^3*e - 48*a^2*c^3*d^2*e^2 + 24*a^2*b*c^2*d*e^3 - 3*(b^2*c^3 - 4*a
*c^4)*e^4*x^4 + (b^2*c^3 - 4*a*c^4)*d^4 - 4*(3*a^2*b^2*c - 8*a^3*c^2)*e^4 +
 4*(4*c^5*d^3*e - 6*b*c^4*d^2*e^2 + (7*b^2*c^3 - 16*a*c^4)*d*e^3 - 2*(2*b^3
*c^2 - 7*a*b*c^3)*e^4)*x^3 + 6*(4*b*c^4*d^3*e - 3*(b^2*c^3 + 4*a*c^4)*d^2*e
^2 + 4*(b^3*c^2 - a*b*c^3)*d*e^3 - 2*(b^4*c - 2*a*b^2*c^2 - 4*a^2*c^3)*e^4)
*x^2 + 12*(b^2*c^3*d^3*e - 6*a*b*c^3*d^2*e^2 + 4*(a*b^2*c^2 - a^2*c^3)*d*e^
3 - 2*(a*b^3*c - 3*a^2*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^2*c^3 -
 4*a^3*c^4 + (b^2*c^5 - 4*a*c^6)*x^4 + 2*(b^3*c^4 - 4*a*b*c^5)*x^3 + (b^4*c
^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*x^2 + 2*(a*b^3*c^3 - 4*a^2*b*c^4)*x)]
```

giac [B] time = 0.38, size = 754, normalized size = 3.62

$$\frac{2\left(\left(\left(\left(\frac{3\left(b^4c^2e^4-8ab^2c^3e^4+16a^2c^4e^4\right)x}{b^4c^2-8ab^2c^3+16a^2c^4}-\frac{4\left(4b^2c^4d^3e-16ac^5d^3e-6b^3c^3d^2e^2+24abc^4d^2e^2+7b^4c^2de^3-44ab^2c^3de^3+64a^2c^4de^3-4b^5ce^4+30ab^3c^2e^4-56a^2bc^3e^4\right)}{b^4c^2-8ab^2c^3+16a^2c^4}\right)x-\frac{6\left(4b^3c^3d^3e-16abc^4d^3e-3b^4c^2d^2e^2+48a^2c^4d^2e^2+4b^5cde^3-20ab^3c^2de^3+16a^2bc^3de^3-2b^6e^4+12ab^4ce^4-8a^2b^2c^2e^4-32a^3c^3e^4\right)}{b^4c^2-8ab^2c^3+16a^2c^4}\right)x-\frac{12\left(b^4c^2d^3e-4ab^2c^3d^3e-6ab^3c^2d^2e^2+24a^2bc^3d^2e^2+4ab^4cde^3-20a^2b^2c^2de^3+16a^3c^3de^3-2ab^5e^4+14a^2b^3ce^4-24a^3bc^2e^4\right)}{b^4c^2-8ab^2c^3+16a^2c^4}\right)x-\frac{b^4c^2d^4-8ab^2c^3d^4+16a^2c^4d^4+8ab^3c^2d^3e-32a^2bc^3d^3e-48a^2b^2c^2d^2e^2+192a^3c^3d^2e^2+24a^2b^3cde^3-96a^3bc^2de^3-12a^2b^4e^4+80a^3b^2ce^4-128a^4c^2e^4}{b^4c^2-8ab^2c^3+16a^2c^4}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{4\left(2cde^3-be^4\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((3*(b^4*c^2*e^4 - 8*a*b^2*c^3*e^4 + 16*a^2*c^4*e^4)*x/(b^4*c^2 - 8*a
*b^2*c^3 + 16*a^2*c^4) - 4*(4*b^2*c^4*d^3*e - 16*a*c^5*d^3*e - 6*b^3*c^3*d^
2*e^2 + 24*a*b*c^4*d^2*e^2 + 7*b^4*c^2*d*e^3 - 44*a*b^2*c^3*d*e^3 + 64*a^2*
c^4*d*e^3 - 4*b^5*c*e^4 + 30*a*b^3*c^2*e^4 - 56*a^2*b*c^3*e^4)/(b^4*c^2 - 8
*a*b^2*c^3 + 16*a^2*c^4))*x - 6*(4*b^3*c^3*d^3*e - 16*a*b*c^4*d^3*e - 3*b^4
*c^2*d^2*e^2 + 48*a^2*c^4*d^2*e^2 + 4*b^5*c*d*e^3 - 20*a*b^3*c^2*d*e^3 + 16
*a^2*b*c^3*d*e^3 - 2*b^6*e^4 + 12*a*b^4*c*e^4 - 8*a^2*b^2*c^2*e^4 - 32*a^3*
c^3*e^4)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x - 12*(b^4*c^2*d^3*e - 4*a*
b^2*c^3*d^3*e - 6*a*b^3*c^2*d^2*e^2 + 24*a^2*b*c^3*d^2*e^2 + 4*a*b^4*c*d*e^
```

```
3 - 20*a^2*b^2*c^2*d*e^3 + 16*a^3*c^3*d*e^3 - 2*a*b^5*e^4 + 14*a^2*b^3*c*e^
4 - 24*a^3*b*c^2*e^4)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x - (b^4*c^2*d^
4 - 8*a*b^2*c^3*d^4 + 16*a^2*c^4*d^4 + 8*a*b^3*c^2*d^3*e - 32*a^2*b*c^3*d^3
*e - 48*a^2*b^2*c^2*d^2*e^2 + 192*a^3*c^3*d^2*e^2 + 24*a^2*b^3*c*d*e^3 - 96
*a^3*b*c^2*d*e^3 - 12*a^2*b^4*e^4 + 80*a^3*b^2*c*e^4 - 128*a^4*c^2*e^4)/(b^
4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))/(c*x^2 + b*x + a)^(3/2) - 4*(2*c*d*e^3 -
 b*e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2
)
```

maple [B] time = 0.07, size = 1692, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -12*x^2/(c*x^2+b*x+a)^(3/2)*d^2*e^2-4*x/(c*x^2+b*x+a)^(3/2)*d^3*e+16/3/c^2*
e^4*a^2/(c*x^2+b*x+a)^(3/2)+1/12/c^4*e^4*b^4/(c*x^2+b*x+a)^(3/2)-2/c^3*e^4*
b^2/(c*x^2+b*x+a)^(1/2)-8/3*x^3/(c*x^2+b*x+a)^(3/2)*d*e^3-4/c^(5/2)*e^4*b*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+8/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*d*e^3-2/3/(c*x^2+b*x+a)^(3/2)*d^4+2*e^4*x^4/(c*x^2+b*
x+a)^(3/2)-64*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*c*d^2*e^2+b^4/c^2/(4*
a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d^2*e^2-64/3/c*e^4*b^3*a/(4*a*c-b^2)^2/(c*x^2+
b*x+a)^(1/2)*x-8/3/c^2*e^4*b^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+16*b^3/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*d^2*e^2+2/c^2*e^4*a*b*x/(c*x^2+b*x+a)^(3
/2)+4/c^2*e^4*a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+32/c*e^4*a^2*b^2/(4*a
*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-6*b/c*x/(c*x^2+b*x+a)^(3/2)*d^2*e^2+4/c^2*b^3
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d*e^3+64*e^4*a^2*b/(4*a*c-b^2)^2/(c*x^2+b*
x+a)^(1/2)*x-1/2/c^3*e^4*b^3*x/(c*x^2+b*x+a)^(3/2)-2/c^3*e^4*b^4/(4*a*c-b^2
)/(c*x^2+b*x+a)^(1/2)-4/c^2*e^4*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-4/3*b
^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d^3*e-2/3*b^3/c/(4*a*c-b^2)/(c*x^2+b*x
+a)^(3/2)*d^3*e+8/3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b*d^3*e+1/12/c^4*e^4*
b^6/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+2/3/c^3*e^4*b^6/(4*a*c-b^2)^2/(c*x^2+b*
x+a)^(1/2)-5/3/c^3*e^4*b^2*a/(c*x^2+b*x+a)^(3/2)+4/c^2*e^4*b*x/(c*x^2+b*x+a
)^(1/2)+8/c*e^4*a*x^2/(c*x^2+b*x+a)^(3/2)+4/3/c*e^4*b*x^3/(c*x^2+b*x+a)^(3/
2)-2/c^2*e^4*b^2*x^2/(c*x^2+b*x+a)^(3/2)+b^2/c^2/(c*x^2+b*x+a)^(3/2)*d^2*e^
2-8*a/c/(c*x^2+b*x+a)^(3/2)*d^2*e^2-8/c*x/(c*x^2+b*x+a)^(1/2)*d*e^3+4/c^2*b
/(c*x^2+b*x+a)^(1/2)*d*e^3+4/3/c^2*e^4*b^5/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2
)*x-4/3/c^3*e^4*b^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-32/3/c^2*e^4*b^4*a/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/6/c^3*e^4*b^5/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)*x+8*b^4/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2-32*b^2*a/(4*a*c-b^
2)^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2-2/3*b/c/(c*x^2+b*x+a)^(3/2)*d^3*e-16/3*b^3
/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d^3*e+8/c*e^4*a^2*b/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*x-32/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*c*d^3*e+16/3*a/(
4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*c*d^3*e+128/3*a*c^2/(4*a*c-b^2)^2/(c*x^2+b
*x+a)^(1/2)*x*d^3*e+64/3*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*c*d^3*e+2*b^
3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d^2*e^2-8*b*a/(4*a*c-b^2)/(c*x^2+b*x+
a)^(3/2)*x*d^2*e^2-4*b^2/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d^2*e^2+8/c*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,(d+e\,x)^4}{\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x)
[Out] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**(5/2),x)
[Out] Timed out
```

3.1397 $\int \frac{(b+2cx)(d+ex)^3}{(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=158

$$\frac{4e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{c\left(b^2-4ac\right)}-\frac{4e(d+ex)(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2e^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)}{3\left(a+bx+c\right.}$$

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 738, 640, 621, 206}

$$\frac{4e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{c\left(b^2-4ac\right)}-\frac{4e(d+ex)(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2e^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^3)/(3*(a + b*x + c*x^2)^(3/2)) - (4*e*(d + e*x)*(b*d - 2*a*e
+ (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (4*e^2*(2*c*d -
 b*e)*Sqrt[a + b*x + c*x^2])/(c*(b^2 - 4*a*c)) + (2*e^3*ArcTanh[(b + 2*c*x)
/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}}+(2e)\int \frac{(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx\\
&= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(4e)\int \frac{-e(bd-2ae)-e(2cd-be)x}{\sqrt{a+bx+cx^2}}}{b^2-4ac}\\
&= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{4e^2(2cd-be)\sqrt{a+bx+c}}{c\left(b^2-4ac\right)}\\
&= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{4e^2(2cd-be)\sqrt{a+bx+c}}{c\left(b^2-4ac\right)}\\
&= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{4e^2(2cd-be)\sqrt{a+bx+c}}{c\left(b^2-4ac\right)}
\end{aligned}
$$

Mathematica [A] time = 0.49, size = 285, normalized size = 1.80

$$\frac{6e^3\sqrt{a+x(b+cx)}\left(4a^2c+a\left(-b^2+4bcx+4c^2x^2\right)-b^2x(b+cx)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)+2\sqrt{c}\left(6be\left(a^2e^2+ac\left(d^2-6dex-e^2x^2\right)+c^2dx^2(3d-2ex)\right)-4c\left(3a^2e^2(2d+ex)+ac\left(d^3+9de^2x^2+4e^3x^3\right)-3c^2d^2ex^3\right)+b^2\left(12ae^3x+c\left(d^3+9d^2ex-9de^2x^2+7e^3x^3\right)\right)+6b^3e^3x^2\right)}{3c^{3/2}\left(4ac-b^2\right)(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[c]*(6*b^3*e^3*x^2 + 6*b*e*(a^2*e^2 + c^2*d*x^2*(3*d - 2*e*x) + a*c*
(d^2 - 6*d*e*x - e^2*x^2)) - 4*c*(-3*c^2*d^2*e*x^3 + 3*a^2*e^2*(2*d + e*x)
+ a*c*(d^3 + 9*d*e^2*x^2 + 4*e^3*x^3)) + b^2*(12*a*e^3*x + c*(d^3 + 9*d^2*e
*x - 9*d*e^2*x^2 + 7*e^3*x^3))) + 6*e^3*Sqrt[a + x*(b + c*x)]*(4*a^2*c - b^
2*x*(b + c*x) + a*(-b^2 + 4*b*c*x + 4*c^2*x^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt
[c]*Sqrt[a + x*(b + c*x)]])])/(3*c^(3/2)*(-b^2 + 4*a*c)*(a + x*(b + c*x))^(3
/2))
```

IntegrateAlgebraic [A] time = 2.67, size = 273, normalized size = 1.73

$$\frac{2\left(6a^2be^3-24a^2cde^2-12a^2ce^3x+12ab^2e^3x+6abcd^2e-36abcde^2x-6abce^3x^2-4ac^2d^3-36ac^2de^2x^2-16ac^2e^3x^3+6b^3e^3x^2+b^2cd^3+9b^2cd^2ex-9b^2cde^2x^2+7b^2ce^3x^3+18bc^2d^2ex^2-12bc^2de^2x^3+12c^3d^2ex^3\right)}{3c\left(4ac-b^2\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2e^3\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b^2*c*d^3 - 4*a*c^2*d^3 + 6*a*b*c*d^2*e - 24*a^2*c*d*e^2 + 6*a^2*b*e^3
+ 9*b^2*c*d^2*e*x - 36*a*b*c*d*e^2*x + 12*a*b^2*e^3*x - 12*a^2*c*e^3*x + 18
*b*c^2*d^2*e*x^2 - 9*b^2*c*d*e^2*x^2 - 36*a*c^2*d*e^2*x^2 + 6*b^3*e^3*x^2 -
 6*a*b*c*e^3*x^2 + 12*c^3*d^2*e*x^3 - 12*b*c^2*d*e^2*x^3 + 7*b^2*c*e^3*x^3
- 16*a*c^2*e^3*x^3))/(3*c*(-b^2 + 4*a*c)*(a + b*x + c*x^2)^(3/2)) - (2*e^3*
Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[a + b*x + c*x^2]])/c^(3/2)
```

fricas [B] time = 1.41, size = 958, normalized size = 6.06

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*((b^2*c^2 - 4*a*c^3)*e^3*x^4 + 2*(b^3*c - 4*a*b*c^2)*e^3*x^3 + (b^4
 - 2*a*b^2*c - 8*a^2*c^2)*e^3*x^2 + 2*(a*b^3 - 4*a^2*b*c)*e^3*x + (a^2*b^2
- 4*a^3*c)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 2*(6*a*b*c^2*d^2*e - 24*a^2*c^2*d*e^2
+ 6*a^2*b*c*e^3 + (b^2*c^2 - 4*a*c^3)*d^3 + (12*c^4*d^2*e - 12*b*c^3*d*e^2
+ (7*b^2*c^2 - 16*a*c^3)*e^3)*x^3 + 3*(6*b*c^3*d^2*e - 3*(b^2*c^2 + 4*a*c^3
)*d*e^2 + 2*(b^3*c - a*b*c^2)*e^3)*x^2 + 3*(3*b^2*c^2*d^2*e - 12*a*b*c^2*d*
e^2 + 4*(a*b^2*c - a^2*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^2*c^2 - 4
*a^3*c^3 + (b^2*c^4 - 4*a*c^5)*x^4 + 2*(b^3*c^3 - 4*a*b*c^4)*x^3 + (b^4*c^2
 - 2*a*b^2*c^3 - 8*a^2*c^4)*x^2 + 2*(a*b^3*c^2 - 4*a^2*b*c^3)*x), -2/3*(3*(
(b^2*c^2 - 4*a*c^3)*e^3*x^4 + 2*(b^3*c - 4*a*b*c^2)*e^3*x^3 + (b^4 - 2*a*b^
2*c - 8*a^2*c^2)*e^3*x^2 + 2*(a*b^3 - 4*a^2*b*c)*e^3*x + (a^2*b^2 - 4*a^3*c
)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*
x^2 + b*c*x + a*c)) + (6*a*b*c^2*d^2*e - 24*a^2*c^2*d*e^2 + 6*a^2*b*c*e^3 +
 (b^2*c^2 - 4*a*c^3)*d^3 + (12*c^4*d^2*e - 12*b*c^3*d*e^2 + (7*b^2*c^2 - 16
*a*c^3)*e^3)*x^3 + 3*(6*b*c^3*d^2*e - 3*(b^2*c^2 + 4*a*c^3)*d*e^2 + 2*(b^3*
c - a*b*c^2)*e^3)*x^2 + 3*(3*b^2*c^2*d^2*e - 12*a*b*c^2*d*e^2 + 4*(a*b^2*c
- a^2*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^2*c^2 - 4*a^3*c^3 + (b^2*c
^4 - 4*a*c^5)*x^4 + 2*(b^3*c^3 - 4*a*b*c^4)*x^3 + (b^4*c^2 - 2*a*b^2*c^3 -
8*a^2*c^4)*x^2 + 2*(a*b^3*c^2 - 4*a^2*b*c^3)*x)]
```

giac [B] time = 0.35, size = 492, normalized size = 3.11

$$-\frac{2e^3\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}-\frac{2\left(\left(\left(\frac{\left(12b^2c^3d^2e-48ac^4d^2e-12b^3c^2de^2+48abc^3de^2+7b^4ce^3-44ab^2c^2e^3+64a^2c^3e^3\right)x}{b^4c-8ab^2c^2+16a^2c^3}+\frac{3\left(6b^3c^2d^2e-24abc^3d^2e-3b^4cde^2+48a^2c^3de^2+2b^5e^3-10ab^3ce^3+8a^2bc^2e^3\right)}{b^4c-8ab^2c^2+16a^2c^3}\right)x+\frac{3\left(3b^4cd^2e-12ab^2c^2d^2e-12ab^3cde^2+48a^2bc^2de^2+4ab^4e^3-20a^2b^2ce^3+16a^3c^2e^3\right)}{b^4c-8ab^2c^2+16a^2c^3}\right)x+\frac{b^4cd^3-8ab^2c^2d^3+16a^2c^3d^3+6ab^3cd^2e-24a^2bc^2d^2e-24a^2b^2cde^2+96a^3c^2de^2+6a^2b^3e^3-24a^3bce^3}{b^4c-8ab^2c^2+16a^2c^3}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2*e^3*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
 - 2/3*((((12*b^2*c^3*d^2*e - 48*a*c^4*d^2*e - 12*b^3*c^2*d*e^2 + 48*a*b*c^
3*d*e^2 + 7*b^4*c*e^3 - 44*a*b^2*c^2*e^3 + 64*a^2*c^3*e^3)*x/(b^4*c - 8*a*b
^2*c^2 + 16*a^2*c^3) + 3*(6*b^3*c^2*d^2*e - 24*a*b*c^3*d^2*e - 3*b^4*c*d*e^
2 + 48*a^2*c^3*d*e^2 + 2*b^5*e^3 - 10*a*b^3*c*e^3 + 8*a^2*b*c^2*e^3)/(b^4*c
 - 8*a*b^2*c^2 + 16*a^2*c^3))*x + 3*(3*b^4*c*d^2*e - 12*a*b^2*c^2*d^2*e - 1
2*a*b^3*c*d*e^2 + 48*a^2*b*c^2*d*e^2 + 4*a*b^4*e^3 - 20*a^2*b^2*c*e^3 + 16*
a^3*c^2*e^3)/(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3))*x + (b^4*c*d^3 - 8*a*b^2*c
^2*d^3 + 16*a^2*c^3*d^3 + 6*a*b^3*c*d^2*e - 24*a^2*b*c^2*d^2*e - 24*a^2*b^2
*c*d*e^2 + 96*a^3*c^2*d*e^2 + 6*a^2*b^3*e^3 - 24*a^3*b*c*e^3)/(b^4*c - 8*a*
b^2*c^2 + 16*a^2*c^3))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.06, size = 865, normalized size = 5.47

$$-\frac{32abcde^2x}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}+\frac{32ac^2d^2ex}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}+\frac{8b^3de^2x}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}-\frac{8b^2cd^2ex}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}-\frac{16ab^2de^2}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}+\frac{16abcd^2e}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}-\frac{4abde^2x}{\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{4acd^2ex}{\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{4b^4de^2}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}\,c}+\frac{b^3de^2x}{\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}c}-\frac{4b^3d^2e}{\left(4ac-b^2\right)^2\sqrt{cx^2+bx+a}}-\frac{b^2d^2ex}{\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{2e^3x^3}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{2ab^2de^2}{\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}c}+\frac{2abd^2e}{\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{b^4de^2}{2\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}c^2}-\frac{b^3d^2e}{2\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{\frac{3}{2}}c}+\frac{2b^2e^3x}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}-\frac{6de^2x^2}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{b^3e^3}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}-\frac{3bde^2x}{\left(cx^2+bx+a\right)^{\frac{3}{2}}c}-\frac{3d^2ex}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}-\frac{4ade^2}{\left(cx^2+bx+a\right)^{\frac{3}{2}}c}+\frac{b^2de^2}{2\left(cx^2+bx+a\right)^{\frac{3}{2}}c^2}-\frac{bd^2e}{2\left(cx^2+bx+a\right)^{\frac{3}{2}}c}-\frac{2e^3x}{\sqrt{cx^2+bx+a}\,c}-\frac{2d^3}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}+\frac{2e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}+\frac{be^3}{\sqrt{cx^2+bx+a}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 1/c^2*e^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+1/2*b^2/c^2/(c*x^2+b*x+a)^(3/
2)*d*e^2-32*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*d*e^2*c+16*a/(4*a*c-b^2
)^2/(c*x^2+b*x+a)^(1/2)*b*c*d^2*e-2/3/(c*x^2+b*x+a)^(3/2)*d^3+2/c*e^3*b^2/(
4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+4*b^4/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*
d*e^2-16*b^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d*e^2+1/c^2*e^3*b/(c*x^2+b
*x+a)^(1/2)-6*x^2/(c*x^2+b*x+a)^(3/2)*d*e^2-3*x/(c*x^2+b*x+a)^(3/2)*d^2*e-2
/3*e^3*x^3/(c*x^2+b*x+a)^(3/2)+2/c^(3/2)*e^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))-2/c*e^3*x/(c*x^2+b*x+a)^(1/2)+b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)
^(3/2)*x*d*e^2-4*b*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d*e^2-2*b^2/c*a/(4*a
```

```
*c-b^2)/(c*x^2+b*x+a)^(3/2)*d*e^2-8*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x
*c*d^2*e+4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*c*d^2*e+32*a*c^2/(4*a*c-b^2)
^2/(c*x^2+b*x+a)^(1/2)*x*d^2*e-b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d^2*e-
1/2*b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d^2*e-3*b/c*x/(c*x^2+b*x+a)^(3/2)
*d*e^2+2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b*d^2*e+8*b^3/(4*a*c-b^2)^2/(c*x
^2+b*x+a)^(1/2)*x*d*e^2+1/2*b^4/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d*e^2-1
/2*b/c/(c*x^2+b*x+a)^(3/2)*d^2*e-4*a/c/(c*x^2+b*x+a)^(3/2)*d*e^2-4*b^3/(4*a
*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d^2*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^3}{\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1398 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}} dx$

Optimal. Leaf size=74

$$-\frac{8e(-2ae+x(2cd-be)+bd)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {768, 636}

$$-\frac{8e(-2ae+x(2cd-be)+bd)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^2)/(3*(a + b*x + c*x^2)^(3/2)) - (8*e*(b*d - 2*a*e + (2*c*d -
 b*e)*x))/(3*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}} dx &= -\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}+\frac{1}{3}(4e)\int \frac{d+ex}{\left(a+bx+cx^2\right)^{3/2}} dx\\ &= -\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{8e(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.79, size = 110, normalized size = 1.49

$$\frac{2\left(8a^2e^2+4be\left(cx^2(ex-3d)-a(d-3ex)\right)+4ac\left(d^2+3e^2x^2\right)-b^2\left(d^2+6dex-3e^2x^2\right)-8c^2dex^3\right)}{3\left(b^2-4ac\right)(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(8*a^2*e^2 - 8*c^2*d*e*x^3 - b^2*(d^2 + 6*d*e*x - 3*e^2*x^2) + 4*a*c*(d^
2 + 3*e^2*x^2) + 4*b*e*(-(a*(d - 3*e*x)) + c*x^2*(-3*d + e*x))))/(3*(b^2 -
4*a*c)*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.61, size = 123, normalized size = 1.66

$$-\frac{2\left(-8a^2e^2+4abde-12abe^2x-4acd^2-12ace^2x^2+b^2d^2+6b^2dex-3b^2e^2x^2+12bcdex^2-4bce^2x^3+8c^2dex^3\right)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b^2*d^2 - 4*a*c*d^2 + 4*a*b*d*e - 8*a^2*e^2 + 6*b^2*d*e*x - 12*a*b*e^2
*x + 12*b*c*d*e*x^2 - 3*b^2*e^2*x^2 - 12*a*c*e^2*x^2 + 8*c^2*d*e*x^3 - 4*b*
c*e^2*x^3))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 1.26, size = 194, normalized size = 2.62

$$-\frac{2\left(4\,abde-8\,a^2e^2+4\left(2\,c^2de-bce^2\right)x^3+\left(b^2-4\,ac\right)d^2+3\left(4\,bcde-\left(b^2+4\,ac\right)e^2\right)x^2+6\left(b^2de-2\,abe^2\right)x\right)\sqrt{cx^2+bx+a}}{3\left(\left(b^2c^2-4\,ac^3\right)x^4+a^2b^2-4\,a^3c+2\left(b^3c-4\,abc^2\right)x^3+\left(b^4-2\,ab^2c-8\,a^2c^2\right)x^2+2\left(ab^3-4\,a^2bc\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(4*a*b*d*e - 8*a^2*e^2 + 4*(2*c^2*d*e - b*c*e^2)*x^3 + (b^2 - 4*a*c)*d
^2 + 3*(4*b*c*d*e - (b^2 + 4*a*c)*e^2)*x^2 + 6*(b^2*d*e - 2*a*b*e^2)*x)*sqr
t(c*x^2 + b*x + a)/((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c
- 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c
)*x)
```

giac [B] time = 0.32, size = 289, normalized size = 3.91

$$-\frac{2\left(\left(\left(\frac{4\left(2\,b^2c^2de-8\,ac^3de-b^3ce^2+4\,abc^2e^2\right)x}{b^4-8\,ab^2c+16\,a^2c^2}+\frac{3\left(4\,b^3cde-16\,abc^2de-b^4e^2+16\,a^2c^2e^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{6\left(b^4de-4\,ab^2cde-2\,ab^3e^2+8\,a^2bce^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{b^4d^2-8\,ab^2cd^2+16\,a^2c^2d^2+4\,ab^3de-16\,a^2bcde-8\,a^2b^2e^2+32\,a^3ce^2}{b^4-8\,ab^2c+16\,a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(((4*(2*b^2*c^2*d*e - 8*a*c^3*d*e - b^3*c*e^2 + 4*a*b*c^2*e^2)*x/(b^4
- 8*a*b^2*c + 16*a^2*c^2) + 3*(4*b^3*c*d*e - 16*a*b*c^2*d*e - b^4*e^2 + 16*
a^2*c^2*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 6*(b^4*d*e - 4*a*b^2*c*d*e
 - 2*a*b^3*e^2 + 8*a^2*b*c*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (b^4*d^
2 - 8*a*b^2*c*d^2 + 16*a^2*c^2*d^2 + 4*a*b^3*d*e - 16*a^2*b*c*d*e - 8*a^2*b
^2*e^2 + 32*a^3*c*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a)^(3
/2)
```

maple [A] time = 0.06, size = 123, normalized size = 1.66

$$-\frac{2\left(4bc\,e^2x^3-8c^2de\,x^3+12ac\,e^2x^2+3b^2e^2x^2-12bcde\,x^2+12ab\,e^2x-6b^2dex+8a^2e^2-4abde+4ac\,d^2-b^2d^2\right)}{3\left(c\,x^2+bx+a\right)^{\frac{3}{2}}\left(4ac-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)*(4*b*c*e^2*x^3-8*c^2*d*e*x^3+12*a*c*e^2*x^2+3*b^2*
e^2*x^2-12*b*c*d*e*x^2+12*a*b*e^2*x-6*b^2*d*e*x+8*a^2*e^2-4*a*b*d*e+4*a*c*d
^2-b^2*d^2)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.27, size = 122, normalized size = 1.65

$$-\frac{2\left(8a^2e^2-4abde+12abe^2x+4acd^2+12ace^2x^2-b^2d^2-6b^2dex+3b^2e^2x^2-12bcdex^2+4bce^2x^3-8c^2dex^3\right)}{3\left(4ac-b^2\right)\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(8*a^2*e^2 - b^2*d^2 + 3*b^2*e^2*x^2 + 4*a*c*d^2 + 12*a*b*e^2*x - 6*b^2
*d*e*x + 12*a*c*e^2*x^2 + 4*b*c*e^2*x^3 - 8*c^2*d*e*x^3 - 4*a*b*d*e - 12*b*
c*d*e*x^2))/(3*(4*a*c - b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1399 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}} dx$

Optimal. Leaf size=59

$$-\frac{4e(b+2cx)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {768, 613}

$$-\frac{4e(b+2cx)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x))/(3*(a + b*x + c*x^2)^(3/2)) - (4*e*(b + 2*c*x))/(3*(b^2 - 4*
a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}} dx &= -\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}+\frac{1}{3}(2e)\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}} dx \\ &= -\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{4e(b+2cx)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} \end{aligned}$$

Mathematica [A] time = 0.20, size = 64, normalized size = 1.08

$$-\frac{2\left(2be\left(a+3cx^2\right)+4c\left(cex^3-ad\right)+b^2(d+3ex)\right)}{3\left(b^2-4ac\right)(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b^2*(d + 3*e*x) + 2*b*e*(a + 3*c*x^2) + 4*c*(-(a*d) + c*e*x^3)))/(3*(b
^2 - 4*a*c)*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.05, size = 68, normalized size = 1.15

$$-\frac{2\left(2abe-4acd+b^2d+3b^2ex+6bcex^2+4c^2ex^3\right)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b^2*d - 4*a*c*d + 2*a*b*e + 3*b^2*e*x + 6*b*c*e*x^2 + 4*c^2*e*x^3))/(3
*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 1.16, size = 145, normalized size = 2.46

$$-\frac{2\left(4c^2ex^3+6bcex^2+3b^2ex+2abe+\left(b^2-4ac\right)d\right)\sqrt{cx^2+bx+a}}{3\left(\left(b^2c^2-4ac^3\right)x^4+a^2b^2-4a^3c+2\left(b^3c-4abc^2\right)x^3+\left(b^4-2ab^2c-8a^2c^2\right)x^2+2\left(ab^3-4a^2bc\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(4*c^2*e*x^3 + 6*b*c*e*x^2 + 3*b^2*e*x + 2*a*b*e + (b^2 - 4*a*c)*d)*sq
rt(c*x^2 + b*x + a)/((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c
 - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*
c)*x)
```

giac [B] time = 0.28, size = 205, normalized size = 3.47

$$-\frac{2\left(\left(2\left(\frac{2\left(b^2c^2e-4ac^3e\right)x}{b^4-8ab^2c+16a^2c^2}+\frac{3\left(b^3ce-4abc^2e\right)}{b^4-8ab^2c+16a^2c^2}\right)x+\frac{3\left(b^4e-4ab^2ce\right)}{b^4-8ab^2c+16a^2c^2}\right)x+\frac{b^4d-8ab^2cd+16a^2c^2d+2ab^3e-8a^2bce}{b^4-8ab^2c+16a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((2*(2*(b^2*c^2*e - 4*a*c^3*e)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(b
^3*c*e - 4*a*b*c^2*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(b^4*e - 4*a*b^
2*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (b^4*d - 8*a*b^2*c*d + 16*a^2*c^
2*d + 2*a*b^3*e - 8*a^2*b*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x
 + a)^(3/2)
```

maple [A] time = 0.05, size = 67, normalized size = 1.14

$$\frac{\frac{8}{3}c^2e\,x^3+4bce\,x^2+2b^2ex+\frac{4}{3}abe-\frac{8}{3}acd+\frac{2}{3}b^2d}{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}\left(4ac-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(4*c^2*e*x^3+6*b*c*e*x^2+3*b^2*e*x+2*a*b*e-4*a*c*d+
b^2*d)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.06, size = 66, normalized size = 1.12

$$\frac{2\,\left(3\,e\,b^2\,x+d\,b^2+6\,e\,b\,c\,x^2+2\,a\,e\,b+4\,e\,c^2\,x^3-4\,a\,d\,c\right)}{3\,\left(4\,a\,c-b^2\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(b^2*d + 4*c^2*e*x^3 + 2*a*b*e - 4*a*c*d + 3*b^2*e*x + 6*b*c*e*x^2))/(3*
(4*a*c - b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1400 $\int \frac{b+2cx}{(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=18

$$-\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$-\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -2/(3*(a + b*x + c*x^2)^(3/2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$-\frac{2}{3(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -2/(3*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.02, size = 18, normalized size = 1.00

$$-\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -2/(3*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 0.57, size = 51, normalized size = 2.83

$$-\frac{2\sqrt{cx^2+bx+a}}{3\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(c*x^2 + b*x + a)/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x
^2 + a^2)
```

giac [A] time = 0.28, size = 14, normalized size = 0.78

$$-\frac{2}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3/(c*x^2 + b*x + a)^(3/2)
```

maple [A] time = 0.06, size = 15, normalized size = 0.83

$$-\frac{2}{3\left(c\,x^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)
```

maxima [A] time = 0.53, size = 14, normalized size = 0.78

$$-\frac{2}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3/(c*x^2 + b*x + a)^(3/2)
```

mupad [B] time = 1.99, size = 14, normalized size = 0.78

$$-\frac{2}{3\left(c\,x^2+b\,x+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -2/(3*(a + b*x + c*x^2)^(3/2))
```

sympy [B] time = 1.70, size = 58, normalized size = 3.22

$$-\frac{2}{3a\sqrt{a+bx+cx^2}+3bx\sqrt{a+bx+cx^2}+3cx^2\sqrt{a+bx+cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] -2/(3*a*sqrt(a + b*x + c*x**2) + 3*b*x*sqrt(a + b*x + c*x**2) + 3*c*x**2*sq
rt(a + b*x + c*x**2))
```

3.1401 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=291

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}\left(ae^2-bde+cd^2\right)}-\frac{2e\left(-cx\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)-2bc\left(cd^2-5ae^2\right.\right.}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde\right.}$$

Rubi [A] time = 0.29, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 12, 724, 206}

$$-\frac{2e\left(-cx\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)-2bc\left(cd^2-5ae^2\right)-12ac^2de+5b^2cde-3b^3e^2\right)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)^2}-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}\left(ae^2-bde+cd^2\right)}-\frac{e^3(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(3*(b^2 - 4*a*c)*(c*
d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2)^(3/2)) - (2*e*(5*b^2*c*d*e - 12*a*c^
2*d*e - 3*b^3*e^2 - 2*b*c*(c*d^2 - 5*a*e^2) - c*(4*c^2*d^2 + 3*b^2*e^2 - 4*
c*e*(b*d + 2*a*e))*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[a +
b*x + c*x^2]) - (e^3*(2*c*d - b*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/
(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(c*d^2 - b*d*e + a*
e^2)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(2cd-3be)-2c\left(b^2-\cdots\right.}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}}{3\left(b^2-4ac\right)\left(cd^2-bde\cdots\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-3b^3\cdots\right.}{3\left(b^2-\cdots\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-3b^3\cdots\right.}{3\left(b^2-\cdots\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-3b^3\cdots\right.}{3\left(b^2-\cdots\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-3b^3\cdots\right.}{3\left(b^2-\cdots\right.}$$

Mathematica [A] time = 0.42, size = 249, normalized size = 0.86

$$\frac{2e\left(2bc\left(cd(d-2ex)-5ae^2\right)+4c^2\left(ae(3d-2ex)+cd^2x\right)+3b^3e^2+b^2ce(3ex-5d)\right)}{3\left(b^2-4ac\right)\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)^2}+\frac{e^3(2cd-be)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{5/2}}+\frac{2(be-cd+cex)}{3(a+x(b+cx))^{3/2}\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x))/(3*(c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^
(3/2)) + (2*e*(3*b^3*e^2 + b^2*c*e*(-5*d + 3*e*x) + 2*b*c*(-5*a*e^2 + c*d*(
d - 2*e*x)) + 4*c^2*(c*d^2*x + a*e*(3*d - 2*e*x))))/(3*(b^2 - 4*a*c)*(c*d^2
 + e*(-(b*d) + a*e))^2*Sqrt[a + x*(b + c*x)]) + (e^3*(2*c*d - b*e)*ArcTanh[
(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a
 + x*(b + c*x)]])])/(c*d^2 + e*(-(b*d) + a*e))^(5/2)
```

IntegrateAlgebraic [B] time = 95.69, size = 6882, normalized size = 23.65

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 2.79, size = 3858, normalized size = 13.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 - (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*
(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2
- 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c
^2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*
```

```
b^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2*b^2*c)*e^4)*x)*sqrt(c*d^2 - b*d
*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8
*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^
2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (
3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*((b^2*c^3 - 4*a*c^4)*
d^5 - (3*b^3*c^2 - 10*a*b*c^3)*d^4*e + (3*b^4*c - 3*a*b^2*c^2 - 20*a^2*c^3)
*d^3*e^2 - (b^5 + 8*a*b^3*c - 36*a^2*b*c^2)*d^2*e^3 + (5*a*b^4 - 12*a^2*b^2
*c - 16*a^3*c^2)*d*e^4 - 2*(2*a^2*b^3 - 7*a^3*b*c)*e^5 - (4*c^5*d^4*e - 8*b
*c^4*d^3*e^2 + (7*b^2*c^3 - 4*a*c^4)*d^2*e^3 - (3*b^3*c^2 - 4*a*b*c^3)*d*e^
4 + (3*a*b^2*c^2 - 8*a^2*c^3)*e^5)*x^3 - 3*(2*b*c^4*d^4*e - (5*b^2*c^3 - 4*
a*c^4)*d^3*e^2 + (5*b^3*c^2 - 8*a*b*c^3)*d^2*e^3 - (2*b^4*c - 3*a*b^2*c^2 -
 4*a^2*c^3)*d*e^4 + 2*(a*b^3*c - 3*a^2*b*c^2)*e^5)*x^2 - 3*(b^2*c^3*d^4*e -
 (3*b^3*c^2 - 4*a*b*c^3)*d^3*e^2 + (3*b^4*c - 5*a*b^2*c^2 - 4*a^2*c^3)*d^2*
e^3 - (b^5 - 8*a^2*b*c^2)*d*e^4 + (a*b^4 - 2*a^2*b^2*c - 4*a^3*c^2)*e^5)*x)
*sqrt(c*x^2 + b*x + a))/((a^2*b^2*c^3 - 4*a^3*c^4)*d^6 - 3*(a^2*b^3*c^2 - 4
*a^3*b*c^3)*d^5*e + 3*(a^2*b^4*c - 3*a^3*b^2*c^2 - 4*a^4*c^3)*d^4*e^2 - (a^
2*b^5 + 2*a^3*b^3*c - 24*a^4*b*c^2)*d^3*e^3 + 3*(a^3*b^4 - 3*a^4*b^2*c - 4*
a^5*c^2)*d^2*e^4 - 3*(a^4*b^3 - 4*a^5*b*c)*d*e^5 + (a^5*b^2 - 4*a^6*c)*e^6
+ ((b^2*c^5 - 4*a*c^6)*d^6 - 3*(b^3*c^4 - 4*a*b*c^5)*d^5*e + 3*(b^4*c^3 - 3
*a*b^2*c^4 - 4*a^2*c^5)*d^4*e^2 - (b^5*c^2 + 2*a*b^3*c^3 - 24*a^2*b*c^4)*d^
3*e^3 + 3*(a*b^4*c^2 - 3*a^2*b^2*c^3 - 4*a^3*c^4)*d^2*e^4 - 3*(a^2*b^3*c^2
- 4*a^3*b*c^3)*d*e^5 + (a^3*b^2*c^2 - 4*a^4*c^3)*e^6)*x^4 + 2*((b^3*c^4 - 4
*a*b*c^5)*d^6 - 3*(b^4*c^3 - 4*a*b^2*c^4)*d^5*e + 3*(b^5*c^2 - 3*a*b^3*c^3
- 4*a^2*b*c^4)*d^4*e^2 - (b^6*c + 2*a*b^4*c^2 - 24*a^2*b^2*c^3)*d^3*e^3 + 3
*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e^4 - 3*(a^2*b^4*c - 4*a^3*b^2
*c^2)*d*e^5 + (a^3*b^3*c - 4*a^4*b*c^2)*e^6)*x^3 + ((b^4*c^3 - 2*a*b^2*c^4
- 8*a^2*c^5)*d^6 - 3*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d^5*e + 3*(b^6*c
 - a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*a^3*c^4)*d^4*e^2 - (b^7 + 4*a*b^5*c - 20*
a^2*b^3*c^2 - 48*a^3*b*c^3)*d^3*e^3 + 3*(a*b^6 - a^2*b^4*c - 10*a^3*b^2*c^2
 - 8*a^4*c^3)*d^2*e^4 - 3*(a^2*b^5 - 2*a^3*b^3*c - 8*a^4*b*c^2)*d*e^5 + (a^
3*b^4 - 2*a^4*b^2*c - 8*a^5*c^2)*e^6)*x^2 + 2*((a*b^3*c^3 - 4*a^2*b*c^4)*d^
6 - 3*(a*b^4*c^2 - 4*a^2*b^2*c^3)*d^5*e + 3*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^
3*b*c^3)*d^4*e^2 - (a*b^6 + 2*a^2*b^4*c - 24*a^3*b^2*c^2)*d^3*e^3 + 3*(a^2*
b^5 - 3*a^3*b^3*c - 4*a^4*b*c^2)*d^2*e^4 - 3*(a^3*b^4 - 4*a^4*b^2*c)*d*e^5
+ (a^4*b^3 - 4*a^5*b*c)*e^6)*x), -1/3*(3*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 -
 (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*
b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2 - 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*
e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c -
8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2
*b^2*c)*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*
e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 -
 a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e
 + a*b*e^2)*x)) + 2*((b^2*c^3 - 4*a*c^4)*d^5 - (3*b^3*c^2 - 10*a*b*c^3)*d^4
*e + (3*b^4*c - 3*a*b^2*c^2 - 20*a^2*c^3)*d^3*e^2 - (b^5 + 8*a*b^3*c - 36*a
^2*b*c^2)*d^2*e^3 + (5*a*b^4 - 12*a^2*b^2*c - 16*a^3*c^2)*d*e^4 - 2*(2*a^2*
b^3 - 7*a^3*b*c)*e^5 - (4*c^5*d^4*e - 8*b*c^4*d^3*e^2 + (7*b^2*c^3 - 4*a*c^
4)*d^2*e^3 - (3*b^3*c^2 - 4*a*b*c^3)*d*e^4 + (3*a*b^2*c^2 - 8*a^2*c^3)*e^5)
*x^3 - 3*(2*b*c^4*d^4*e - (5*b^2*c^3 - 4*a*c^4)*d^3*e^2 + (5*b^3*c^2 - 8*a*
b*c^3)*d^2*e^3 - (2*b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d*e^4 + 2*(a*b^3*c - 3
*a^2*b*c^2)*e^5)*x^2 - 3*(b^2*c^3*d^4*e - (3*b^3*c^2 - 4*a*b*c^3)*d^3*e^2 +
 (3*b^4*c - 5*a*b^2*c^2 - 4*a^2*c^3)*d^2*e^3 - (b^5 - 8*a^2*b*c^2)*d*e^4 +
(a*b^4 - 2*a^2*b^2*c - 4*a^3*c^2)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^2*
c^3 - 4*a^3*c^4)*d^6 - 3*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^5*e + 3*(a^2*b^4*c -
 3*a^3*b^2*c^2 - 4*a^4*c^3)*d^4*e^2 - (a^2*b^5 + 2*a^3*b^3*c - 24*a^4*b*c^2
)*d^3*e^3 + 3*(a^3*b^4 - 3*a^4*b^2*c - 4*a^5*c^2)*d^2*e^4 - 3*(a^4*b^3 - 4*
a^5*b*c)*d*e^5 + (a^5*b^2 - 4*a^6*c)*e^6 + ((b^2*c^5 - 4*a*c^6)*d^6 - 3*(b^
3*c^4 - 4*a*b*c^5)*d^5*e + 3*(b^4*c^3 - 3*a*b^2*c^4 - 4*a^2*c^5)*d^4*e^2 -
(b^5*c^2 + 2*a*b^3*c^3 - 24*a^2*b*c^4)*d^3*e^3 + 3*(a*b^4*c^2 - 3*a^2*b^2*c
^3 - 4*a^3*c^4)*d^2*e^4 - 3*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d*e^5 + (a^3*b^2*c^
```

```
2 - 4*a^4*c^3)*e^6)*x^4 + 2*((b^3*c^4 - 4*a*b*c^5)*d^6 - 3*(b^4*c^3 - 4*a*b
^2*c^4)*d^5*e + 3*(b^5*c^2 - 3*a*b^3*c^3 - 4*a^2*b*c^4)*d^4*e^2 - (b^6*c +
2*a*b^4*c^2 - 24*a^2*b^2*c^3)*d^3*e^3 + 3*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^3*
b*c^3)*d^2*e^4 - 3*(a^2*b^4*c - 4*a^3*b^2*c^2)*d*e^5 + (a^3*b^3*c - 4*a^4*b
*c^2)*e^6)*x^3 + ((b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d^6 - 3*(b^5*c^2 - 2*
a*b^3*c^3 - 8*a^2*b*c^4)*d^5*e + 3*(b^6*c - a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*
a^3*c^4)*d^4*e^2 - (b^7 + 4*a*b^5*c - 20*a^2*b^3*c^2 - 48*a^3*b*c^3)*d^3*e^
3 + 3*(a*b^6 - a^2*b^4*c - 10*a^3*b^2*c^2 - 8*a^4*c^3)*d^2*e^4 - 3*(a^2*b^5
 - 2*a^3*b^3*c - 8*a^4*b*c^2)*d*e^5 + (a^3*b^4 - 2*a^4*b^2*c - 8*a^5*c^2)*e
^6)*x^2 + 2*((a*b^3*c^3 - 4*a^2*b*c^4)*d^6 - 3*(a*b^4*c^2 - 4*a^2*b^2*c^3)*
d^5*e + 3*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^3*b*c^3)*d^4*e^2 - (a*b^6 + 2*a^2*
b^4*c - 24*a^3*b^2*c^2)*d^3*e^3 + 3*(a^2*b^5 - 3*a^3*b^3*c - 4*a^4*b*c^2)*d
^2*e^4 - 3*(a^3*b^4 - 4*a^4*b^2*c)*d*e^5 + (a^4*b^3 - 4*a^5*b*c)*e^6)*x)]
```

giac [B] time = 2.40, size = 8417, normalized size = 28.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2*(2*c*d*e^3 - b*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqr
t(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2
 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 2
/3*((((4*b^2*c^10*d^14*e - 16*a*c^11*d^14*e - 28*b^3*c^9*d^13*e^2 + 112*a*b
*c^10*d^13*e^2 + 87*b^4*c^8*d^12*e^3 - 332*a*b^2*c^9*d^12*e^3 - 64*a^2*c^10
*d^12*e^3 - 158*b^5*c^7*d^11*e^4 + 536*a*b^3*c^8*d^11*e^4 + 384*a^2*b*c^9*d
^11*e^4 + 185*b^6*c^6*d^10*e^5 - 482*a*b^4*c^7*d^10*e^5 - 1020*a^2*b^2*c^8*
d^10*e^5 - 48*a^3*c^9*d^10*e^5 - 144*b^7*c^5*d^9*e^6 + 166*a*b^5*c^6*d^9*e^
6 + 1580*a^2*b^3*c^7*d^9*e^6 + 240*a^3*b*c^8*d^9*e^6 + 73*b^8*c^4*d^8*e^7 +
 128*a*b^6*c^5*d^8*e^7 - 1515*a^2*b^4*c^6*d^8*e^7 - 700*a^3*b^2*c^7*d^8*e^7
 + 160*a^4*c^8*d^8*e^7 - 22*b^9*c^3*d^7*e^8 - 188*a*b^7*c^4*d^7*e^8 + 804*a
^2*b^5*c^5*d^7*e^8 + 1360*a^3*b^3*c^6*d^7*e^8 - 640*a^4*b*c^7*d^7*e^8 + 3*b
^10*c^2*d^6*e^9 + 94*a*b^8*c^3*d^6*e^9 - 94*a^2*b^6*c^4*d^6*e^9 - 1500*a^3*
b^4*c^5*d^6*e^9 + 620*a^4*b^2*c^6*d^6*e^9 + 400*a^5*c^7*d^6*e^9 - 18*a*b^9*
c^2*d^5*e^10 - 120*a^2*b^7*c^3*d^5*e^10 + 748*a^3*b^5*c^4*d^5*e^10 + 380*a^
4*b^3*c^5*d^5*e^10 - 1200*a^5*b*c^6*d^5*e^10 + 45*a^2*b^8*c^2*d^4*e^11 - 40
*a^3*b^6*c^3*d^4*e^11 - 815*a^4*b^4*c^4*d^4*e^11 + 924*a^5*b^2*c^5*d^4*e^11
 + 384*a^6*c^6*d^4*e^11 - 60*a^3*b^7*c^2*d^3*e^12 + 250*a^4*b^5*c^3*d^3*e^1
2 + 152*a^5*b^3*c^4*d^3*e^12 - 768*a^6*b*c^5*d^3*e^12 + 45*a^4*b^6*c^2*d^2*
e^13 - 258*a^5*b^4*c^3*d^2*e^13 + 268*a^6*b^2*c^4*d^2*e^13 + 176*a^7*c^5*d^
2*e^13 - 18*a^5*b^5*c^2*d*e^14 + 116*a^6*b^3*c^3*d*e^14 - 176*a^7*b*c^4*d*e
^14 + 3*a^6*b^4*c^2*e^15 - 20*a^7*b^2*c^3*e^15 + 32*a^8*c^4*e^15)*x/(b^4*c^
8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*
c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^1
4*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e
^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13
*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*
e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^
5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d
^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^1
0*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^
2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^
9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c
^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 -
12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^
8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 10
4*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 -
6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 +
56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^
```

10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16) + 3*(2*b^3*c^9*d^14*e - 8*a*b*c^10*d^14*e - 15*b^4*c^8*d^13*e^2 + 64*a*b^2*c^9*d^13*e^2 - 16*a^2*c^10*d^13*e^2 + 50*b^5*c^7*d^12*e^3 - 218*a*b^3*c^8*d^12*e^3 + 72*a^2*b*c^9*d^12*e^3 - 97*b^6*c^6*d^11*e^4 + 406*a*b^4*c^7*d^11*e^4 - 48*a^2*b^2*c^8*d^11*e^4 - 96*a^3*c^9*d^11*e^4 + 120*b^7*c^5*d^10*e^5 - 428*a*b^5*c^6*d^10*e^5 - 334*a^2*b^3*c^7*d^10*e^5 + 504*a^3*b*c^8*d^10*e^5 - 97*b^8*c^4*d^9*e^6 + 208*a*b^6*c^5*d^9*e^6 + 975*a^2*b^4*c^6*d^9*e^6 - 960*a^3*b^2*c^7*d^9*e^6 - 240*a^4*c^8*d^9*e^6 + 50*b^9*c^3*d^8*e^7 + 46*a*b^7*c^4*d^8*e^7 - 1194*a^2*b^5*c^5*d^8*e^7 + 550*a^3*b^3*c^6*d^8*e^7 + 1160*a^4*b*c^7*d^8*e^7 - 15*b^10*c^2*d^7*e^8 - 122*a*b^8*c^3*d^7*e^8 + 698*a^2*b^6*c^4*d^7*e^8 + 660*a^3*b^4*c^5*d^7*e^8 - 2080*a^4*b^2*c^6*d^7*e^8 - 320*a^5*c^7*d^7*e^8 + 2*b^11*c*d^6*e^9 + 64*a*b^9*c^2*d^6*e^9 - 102*a^2*b^7*c^3*d^6*e^9 - 1184*a^3*b^5*c^4*d^6*e^9 + 1430*a^4*b^3*c^5*d^6*e^9 + 1320*a^5*b*c^6*d^6*e^9 - 12*a*b^10*c*d^5*e^10 - 81*a^2*b^8*c^2*d^5*e^10 + 596*a^3*b^6*c^3*d^5*e^10 + 175*a^4*b^4*c^4*d^5*e^10 - 1920*a^5*b^2*c^5*d^5*e^10 - 240*a^6*c^6*d^5*e^10 + 30*a^2*b^9*c*d^4*e^11 - 30*a^3*b^7*c^2*d^4*e^11 - 650*a^4*b^5*c^3*d^4*e^11 + 962*a^5*b^3*c^4*d^4*e^11 + 792*a^6*b*c^5*d^4*e^11 - 40*a^3*b^8*c*d^3*e^12 + 175*a^4*b^6*c^2*d^3*e^12 + 150*a^5*b^4*c^3*d^3*e^12 - 816*a^6*b^2*c^4*d^3*e^12 - 96*a^7*c^5*d^3*e^12 + 30*a^4*b^7*c*d^2*e^13 - 180*a^5*b^5*c^2*d^2*e^13 + 182*a^6*b^3*c^3*d^2*e^13 + 232*a^7*b*c^4*d^2*e^13 - 12*a^5*b^6*c*d*e^14 + 81*a^6*b^4*c^2*d*e^14 - 128*a^7*b^2*c^3*d*e^14 - 16*a^8*c^4*d*e^14 + 2*a^6*b^5*c*e^15 - 14*a^7*b^3*c^2*e^15 + 24*a^8*b*c^3*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x + 3*(b^4*c^8*d^14*e - 4*a*b^2*c^9*d^14*e - 8*b^5*c^7*d^13*e^2 + 36*a*b^3*c^8*d^13*e^2 - 16*a^2*b*c^9*d^13*e^2 + 28*b^6*c^6*d^12*e^3 - 132*a*b^4*c^7*d^12*e^3 + 76*a^2*b^2*c^8*d^12*e^3 + 16*a^3*c^9*d^12*e^3 - 56*b^7*c^5*d^11*e^4 + 254*a*b^5*c^6*d^11*e^4 - 72*a^2*b^3*c^7*d^11*e^4 - 192*a^3*b*c^8*d^11*e^4 + 70*b^8*c^4*d^

10*e^5 - 264*a*b^6*c^5*d^10*e^5 - 241*a^2*b^4*c^6*d^10*e^5 + 684*a^3*b^2*c^7*d^10*e^5 + 96*a^4*c^8*d^10*e^5 - 56*b^9*c^3*d^9*e^6 + 114*a*b^7*c^4*d^9*e^6 + 730*a^2*b^5*c^5*d^9*e^6 - 980*a^3*b^3*c^6*d^9*e^6 - 720*a^4*b*c^7*d^9*e^6 + 28*b^10*c^2*d^8*e^7 + 44*a*b^8*c^3*d^8*e^7 - 819*a^2*b^6*c^4*d^8*e^7 + 290*a^3*b^4*c^5*d^8*e^7 + 1900*a^4*b^2*c^6*d^8*e^7 + 240*a^5*c^7*d^8*e^7 - 8*b^11*c*d^7*e^8 - 78*a*b^9*c^2*d^7*e^8 + 404*a^2*b^7*c^3*d^7*e^8 + 764*a^3*b^5*c^4*d^7*e^8 - 2160*a^4*b^3*c^5*d^7*e^8 - 1280*a^5*b*c^6*d^7*e^8 + b^12*d^6*e^9 + 36*a*b^10*c*d^6*e^9 - 23*a^2*b^8*c^2*d^6*e^9 - 888*a^3*b^6*c^3*d^6*e^9 + 735*a^4*b^4*c^4*d^6*e^9 + 2420*a^5*b^2*c^5*d^6*e^9 + 320*a^6*c^6*d^6*e^9 - 6*a*b^11*d^5*e^10 - 54*a^2*b^9*c*d^5*e^10 + 316*a^3*b^7*c^2*d^5*e^10 + 524*a^4*b^5*c^3*d^5*e^10 - 1860*a^5*b^3*c^4*d^5*e^10 - 1200*a^6*b*c^5*d^5*e^10 + 15*a^2*b^10*d^4*e^11 + 10*a^3*b^8*c*d^4*e^11 - 450*a^4*b^6*c^2*d^4*e^11 + 296*a^5*b^4*c^3*d^4*e^11 + 1476*a^6*b^2*c^4*d^4*e^11 + 240*a^7*c^5*d^4*e^11 - 20*a^3*b^9*d^3*e^12 + 60*a^4*b^7*c*d^3*e^12 + 262*a^5*b^5*c^2*d^3*e^12 - 584*a^6*b^3*c^3*d^3*e^12 - 576*a^7*b*c^4*d^3*e^12 + 15*a^4*b^8*d^2*e^13 - 72*a^5*b^6*c*d^2*e^13 - 47*a^6*b^4*c^2*d^2*e^13 + 356*a^7*b^2*c^3*d^2*e^13 + 96*a^8*c^4*d^2*e^13 - 6*a^5*b^7*d*e^14 + 34*a^6*b^5*c*d*e^14 - 12*a^7*b^3*c^2*d*e^14 - 112*a^8*b*c^3*d*e^14 + a^6*b^6*e^15 - 6*a^7*b^4*c*e^15 + 4*a^8*b^2*c^2*e^15 + 16*a^9*c^3*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x - (b^4*c^8*d^15 - 8*a*b^2*c^9*d^15 + 16*a^2*c^10*d^15 - 8*b^5*c^7*d^14*e + 62*a*b^3*c^8*d^14*e - 120*a^2*b*c^9*d^14*e + 28*b^6*c^6*d^13*e^2 - 200*a*b^4*c^7*d^13*e^2 + 312*a^2*b^2*c^8*d^13*e^2 + 160*a^3*c^9*d^13*e^2 - 56*b^7*c^5*d^12*e^3 + 336*a*b^5*c^6*d^12*e^3 - 182*a^2*b^3*c^7*d^12*e^3 - 1064*a^3*b*c^8*d^12*e^3 + 70*b^8*c^4*d^11*e^4 - 280*a*b^6*c^5*d^11*e^4 - 717*a^2*b^4*c^6*d^11*e^4 + 2712*a^3*b^2*c^7*d^11*e^4 + 624*a^4*c^8*d^11*e^4 - 56*b^9*c^3*d^10*e^5 + 28*a*b^7*c^4*d^10*e^5 + 1740*a^2*b^5*c^5*d^10*e^5 - 2930*a^3*b^3*c^6*d^10*e^5 - 3576*a^4*b*c^7*d^10*e^5 + 28*b^10*c^2*d^9*e^6 + 168*a*b^8*c^3*d^9*e^6 - 1655*a^2*b^6*c^4*d^9*e^6 + 90*a^3*b^4*c^5*d^9*e^6 + 7880*a^4*b^2*c^6*d^9*e^6 + 1280*a^5*c^7*d^9*e^6 - 8*b^11*c*d^8*e^7 - 160*a*b^9*c^2*d^8*e^7 + 618*a^2*b^7*c^3*d^8*e^7 + 2900*a^3*b^5*c^4*d^8*e^7 - 7670*a^4*b^3*c^5*d^8*e^7 - 6120*a^5*b*c^6*d^8*e^7 + b^12*d^7*e^8 + 64*a*b^10*c*d^7*e^8 + 117*a^2*b^8*c^2*d^7*e^8 - 2676*a^3*b^6*c^3*d^7*e^8 + 1655*a^4*b^4*c^4*d^7*e^8 + 10920*a^5*b^2*c^5*d^7*e^8 + 1520*a^6*c^6*d^7*e^8 - 10*a*b^11*d^6*e^9 - 168*a^2*b^9*c*d^6*e^9 + 758*a^3*b^7*c^2*d^6*e^9 + 2696*a^4*b^5*c^3*d

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^6*e^9 - 8150*a^5*b^3*c^4*d^6*e^9 - 5800*a^6*b*c^5*d^6*e^9 + 39*a^2*b^10*d^
5*e^10 + 130*a^3*b^8*c*d^5*e^10 - 1894*a^4*b^6*c^2*d^5*e^10 + 996*a^5*b^4*c
^3*d^5*e^10 + 7752*a^6*b^2*c^4*d^5*e^10 + 1056*a^7*c^5*d^5*e^10 - 80*a^3*b^
9*d^4*e^11 + 190*a^4*b^7*c*d^4*e^11 + 1632*a^5*b^5*c^2*d^4*e^11 - 3698*a^6*
b^3*c^3*d^4*e^11 - 3000*a^7*b*c^4*d^4*e^11 + 95*a^4*b^8*d^3*e^12 - 492*a^5*
b^6*c*d^3*e^12 - 235*a^6*b^4*c^2*d^3*e^12 + 2632*a^7*b^2*c^3*d^3*e^12 + 400
*a^8*c^4*d^3*e^12 - 66*a^5*b^7*d^2*e^13 + 436*a^6*b^5*c*d^2*e^13 - 502*a^7*
b^3*c^2*d^2*e^13 - 744*a^8*b*c^3*d^2*e^13 + 25*a^6*b^6*d*e^14 - 182*a^7*b^4
*c*d*e^14 + 312*a^8*b^2*c^2*d*e^14 + 64*a^9*c^3*d*e^14 - 4*a^7*b^5*e^15 + 3
0*a^8*b^3*c*e^15 - 56*a^9*b*c^2*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16
*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^1
5*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e
^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 -
448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 3
92*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^
4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1
176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*
e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*
e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d
^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^
7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^
9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*
a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 +
 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*
b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 448
0*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a
^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10
 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 11
76*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^
11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^1
2 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13
+ 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^1
3 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14
 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*
b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))/(c*x^2
+ b*x + a)^(3/2)
```

maple [B] time = 0.07, size = 2451, normalized size = 8.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2*e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d
-8/3*e/(a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3+4/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2*c*d+32
/3/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*d+8*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^
2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^
2*d+e^3/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*b-2/3/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d+1/3*e/(a*e^2-b*d*e+c*d^2)/((x+d/e
)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b-e^3/(a*e^2-b*d
*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*
e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*
c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b-2*e^2/(a*e^2-b*d*
```

```
e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*c*d-1/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^3+32/3*c^2/e/(4*a*c-b^2)^2/(c*x^2+b*x+
a)^(1/2)*b+64/3*c^3/e/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+4/3*c/e/(4*a*c-b^
2)/(c*x^2+b*x+a)^(3/2)*b+8/3*c^2/e/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-8*e/(a
*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*x*c^3*d^2-e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3-32/3/e/(a
*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d^2-2*e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((
x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2*c-8/3
/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(3/2)*c^3*x*d^2+64/3/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2
)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*d
+8/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*
e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*x*b*d-4/3/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)
/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c^2*d^
2-16/3*e/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2-4*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*
c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*
c^2*d^2-2/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d
/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b^2-64/3/e/(a*e^2-b*d*e+c*d^2)*c^4
/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*x*d^2+4*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{(d+e\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1402 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=423

$$\frac{e^2\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{3\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^3}-\frac{e^3\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-}}{2\left(ae^2-bde+cd^2\right)^{7}}$$

Rubi [A] time = 0.57, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 806, 724, 206}

$$\frac{e^2\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{3\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^3}-\frac{2e\left(-cx\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)-4bc\left(cd^2-4ae^2\right)-20ac^2de+9b^2cde-5b^3e^2\right)}{3\left(b^2-4ac\right)(d+ex)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)^2}-\frac{e^3\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{7/2}}-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{3\left(b^2-4ac\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(3*(b^2 - 4*a*c)*(c*
d^2 - b*d*e + a*e^2)*(d + e*x)*(a + b*x + c*x^2)^(3/2)) - (2*e*(9*b^2*c*d*e
 - 20*a*c^2*d*e - 5*b^3*e^2 - 4*b*c*(c*d^2 - 4*a*e^2) - c*(8*c^2*d^2 + 5*b^
2*e^2 - 4*c*e*(2*b*d + 3*a*e))*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)
^2*(d + e*x)*Sqrt[a + b*x + c*x^2]) + (e^2*(2*c*d - b*e)*(8*c^2*d^2 + 15*b^
2*e^2 - 4*c*e*(2*b*d + 13*a*e))*Sqrt[a + b*x + c*x^2])/(3*(b^2 - 4*a*c)*(c*
d^2 - b*d*e + a*e^2)^3*(d + e*x)) - (e^3*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(4
*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e
+ a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
```

```
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(4cd-}{(d+ex)^2(a}}{3\left(b^2-4ac\right)(c}\\ &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}-\frac{2e\left(9b^2cde-20ac\right.}{}\\ &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}-\frac{2e\left(9b^2cde-20ac\right.}{}\\ &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}-\frac{2e\left(9b^2cde-20ac\right.}{}\\ &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}-\frac{2e\left(9b^2cde-20ac\right.}{}\end{aligned}$$

Mathematica [A] time = 1.35, size = 384, normalized size = 0.91

$$\frac{2\left(\frac{1}{4}e^2\left(\frac{2\sqrt{a+x(b+cx)}(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{5/2}}\right)+\frac{\left(b^2-4ac\right)(be-cd+cex)}{(d+ex)(a+x(b+cx))^{3/2}}+\frac{e\left(4bc\left(cd(d-2ex)-4ae^2\right)+4c^2\left(ae(5d-3ex)+2cd^2x\right)+5b^3e^2+b^2ce(5ex-9d)\right)}{(d+ex)\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)}\right)}{3\left(b^2-4ac\right)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(((b^2 - 4*a*c)*(-(c*d) + b*e + c*e*x))/((d + e*x)*(a + x*(b + c*x))^(3/
2)) + (e*(5*b^3*e^2 + b^2*c*e*(-9*d + 5*e*x) + 4*c^2*(2*c*d^2*x + a*e*(5*d
- 3*e*x)) + 4*b*c*(-4*a*e^2 + c*d*(d - 2*e*x))))/((c*d^2 + e*(-(b*d) + a*e)
)*(d + e*x)*Sqrt[a + x*(b + c*x)]) + (e^2*((2*(2*c*d - b*e)*(8*c^2*d^2 + 15
*b^2*e^2 - 4*c*e*(2*b*d + 13*a*e))*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b*
d) + a*e))^2*(d + e*x)) + (3*(b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*
e*(4*b*d + a*e))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 +
 e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(5/2
)))/4))/(3*(b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 10.04, size = 7442, normalized size = 17.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(3*(16*(a^2*b^2*c^2 - 4*a^3*c^3)*d^3*e^3 - 16*(a^2*b^3*c - 4*a^3*b*c
^2)*d^2*e^4 + (5*a^2*b^4 - 24*a^3*b^2*c + 16*a^4*c^2)*d*e^5 + (16*(b^2*c^4
- 4*a*c^5)*d^2*e^4 - 16*(b^3*c^3 - 4*a*b*c^4)*d*e^5 + (5*b^4*c^2 - 24*a*b^2
*c^3 + 16*a^2*c^4)*e^6)*x^5 + (16*(b^2*c^4 - 4*a*c^5)*d^3*e^3 + 16*(b^3*c^3
 - 4*a*b*c^4)*d^2*e^4 - (27*b^4*c^2 - 104*a*b^2*c^3 - 16*a^2*c^4)*d*e^5 + 2
*(5*b^5*c - 24*a*b^3*c^2 + 16*a^2*b*c^3)*e^6)*x^4 + (32*(b^3*c^3 - 4*a*b*c^
4)*d^3*e^3 - 16*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 2*(3*b^5*c +
8*a*b^3*c^2 - 80*a^2*b*c^3)*d*e^5 + (5*b^6 - 14*a*b^4*c - 32*a^2*b^2*c^2 +
32*a^3*c^3)*e^6)*x^3 + (16*(b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d^3*e^3 - 16
*(b^5*c - 4*a*b^3*c^2)*d^2*e^4 + (5*b^6 - 46*a*b^4*c + 96*a^2*b^2*c^2 + 32*
a^3*c^3)*d*e^5 + 2*(5*a*b^5 - 24*a^2*b^3*c + 16*a^3*b*c^2)*e^6)*x^2 + (32*(
a*b^3*c^2 - 4*a^2*b*c^3)*d^3*e^3 - 16*(2*a*b^4*c - 9*a^2*b^2*c^2 + 4*a^3*c^
3)*d^2*e^4 + 2*(5*a*b^5 - 32*a^2*b^3*c + 48*a^3*b*c^2)*d*e^5 + (5*a^2*b^4 -
 24*a^3*b^2*c + 16*a^4*c^2)*e^6)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*
d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c
)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a
*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/
(e^2*x^2 + 2*d*e*x + d^2)) + 4*(2*(b^2*c^4 - 4*a*c^5)*d^7 - 8*(b^3*c^3 - 3*
a*b*c^4)*d^6*e + 4*(3*b^4*c^2 - 2*a*b^2*c^3 - 20*a^2*c^4)*d^5*e^2 - 8*(b^5*
c + 5*a*b^3*c^2 - 26*a^2*b*c^3)*d^4*e^3 + 2*(b^6 + 24*a*b^4*c - 90*a^2*b^2*
c^2 - 8*a^3*c^3)*d^3*e^4 - (16*a*b^5 - 41*a^2*b^3*c - 52*a^3*b*c^2)*d^2*e^5
 + (11*a^2*b^4 - 54*a^3*b^2*c + 56*a^4*c^2)*d*e^6 + 3*(a^3*b^3 - 4*a^4*b*c)
*e^7 - (16*c^6*d^5*e^2 - 40*b*c^5*d^4*e^3 + 2*(31*b^2*c^4 - 44*a*c^5)*d^3*e
^4 - (53*b^3*c^3 - 132*a*b*c^4)*d^2*e^5 + (15*b^4*c^2 - 14*a*b^2*c^3 - 104*
a^2*c^4)*d*e^6 - (15*a*b^3*c^2 - 52*a^2*b*c^3)*e^7)*x^4 - 2*(8*c^6*d^6*e -
8*b*c^5*d^5*e^2 - (11*b^2*c^4 - 4*a*c^5)*d^4*e^3 + 4*(11*b^3*c^3 - 24*a*b*c
^4)*d^3*e^4 - 2*(24*b^4*c^2 - 73*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^5 + (15*b^5*c
 - 24*a*b^3*c^2 - 88*a^2*b*c^3)*d*e^6 - 3*(5*a*b^4*c - 19*a^2*b^2*c^2 + 4*a
^3*c^3)*e^7)*x^3 - 3*(8*b*c^5*d^6*e - 2*(11*b^2*c^4 - 12*a*c^5)*d^5*e^2 + 8
*(3*b^3*c^3 - 7*a*b*c^4)*d^4*e^3 - 4*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^
3*e^4 - (11*b^5*c - 26*a*b^3*c^2 - 32*a^2*b*c^3)*d^2*e^5 + (5*b^6 - 8*a*b^4
*c - 18*a^2*b^2*c^2 - 56*a^3*c^3)*d*e^6 - (5*a*b^5 - 14*a^2*b^3*c - 16*a^3*
b*c^2)*e^7)*x^2 - 2*((5*b^2*c^4 + 4*a*c^5)*d^6*e - 4*(5*b^3*c^3 - 6*a*b*c^4
)*d^5*e^2 + 2*(15*b^4*c^2 - 34*a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - 4*(5*b^5*c
- 17*a*b^3*c^2 + 8*a^2*b*c^3)*d^3*e^4 + (5*b^6 - 33*a*b^4*c + 69*a^2*b^2*c^
2 - 28*a^3*c^3)*d^2*e^5 + (5*a*b^5 - 4*a^2*b^3*c - 56*a^3*b*c^2)*d*e^6 - 2*
(5*a^2*b^4 - 21*a^3*b^2*c + 8*a^4*c^2)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a^2
*b^2*c^4 - 4*a^3*c^5)*d^9 - 4*(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^8*e + 2*(3*a^2*
b^4*c^2 - 10*a^3*b^2*c^3 - 8*a^4*c^4)*d^7*e^2 - 4*(a^2*b^5*c - a^3*b^3*c^2
- 12*a^4*b*c^3)*d^6*e^3 + (a^2*b^6 + 8*a^3*b^4*c - 42*a^4*b^2*c^2 - 24*a^5*
c^3)*d^5*e^4 - 4*(a^3*b^5 - a^4*b^3*c - 12*a^5*b*c^2)*d^4*e^5 + 2*(3*a^4*b^
4 - 10*a^5*b^2*c - 8*a^6*c^2)*d^3*e^6 - 4*(a^5*b^3 - 4*a^6*b*c)*d^2*e^7 + (
a^6*b^2 - 4*a^7*c)*d*e^8 + ((b^2*c^6 - 4*a*c^7)*d^8*e - 4*(b^3*c^5 - 4*a*b*
c^6)*d^7*e^2 + 2*(3*b^4*c^4 - 10*a*b^2*c^5 - 8*a^2*c^6)*d^6*e^3 - 4*(b^5*c^
3 - a*b^3*c^4 - 12*a^2*b*c^5)*d^5*e^4 + (b^6*c^2 + 8*a*b^4*c^3 - 42*a^2*b^2
*c^4 - 24*a^3*c^5)*d^4*e^5 - 4*(a*b^5*c^2 - a^2*b^3*c^3 - 12*a^3*b*c^4)*d^3
*e^6 + 2*(3*a^2*b^4*c^2 - 10*a^3*b^2*c^3 - 8*a^4*c^4)*d^2*e^7 - 4*(a^3*b^3*
c^2 - 4*a^4*b*c^3)*d*e^8 + (a^4*b^2*c^2 - 4*a^5*c^3)*e^9)*x^5 + ((b^2*c^6 -
 4*a*c^7)*d^9 - 2*(b^3*c^5 - 4*a*b*c^6)*d^8*e - 2*(b^4*c^4 - 6*a*b^2*c^5 +
8*a^2*c^6)*d^7*e^2 + 4*(2*b^5*c^3 - 9*a*b^3*c^4 + 4*a^2*b*c^5)*d^6*e^3 - (7
*b^6*c^2 - 16*a*b^4*c^3 - 54*a^2*b^2*c^4 + 24*a^3*c^5)*d^5*e^4 + 2*(b^7*c +
 6*a*b^5*c^2 - 40*a^2*b^3*c^3)*d^4*e^5 - 2*(4*a*b^6*c - 7*a^2*b^4*c^2 - 38*
a^3*b^2*c^3 + 8*a^4*c^4)*d^3*e^6 + 4*(3*a^2*b^5*c - 11*a^3*b^3*c^2 - 4*a^4*
b*c^3)*d^2*e^7 - (8*a^3*b^4*c - 33*a^4*b^2*c^2 + 4*a^5*c^3)*d*e^8 + 2*(a^4*
```

b^3*c - 4*a^5*b*c^2)*e^9)*x^4 + (2*(b^3*c^5 - 4*a*b*c^6)*d^9 - (7*b^4*c^4 - 30*a*b^2*c^5 + 8*a^2*c^6)*d^8*e + 8*(b^5*c^3 - 4*a*b^3*c^4)*d^7*e^2 - 2*(b^6*c^2 - 20*a^2*b^2*c^4 + 16*a^3*c^5)*d^6*e^3 - 2*(b^7*c - 6*a*b^5*c^2 + 14*a^2*b^3*c^3 - 24*a^3*b*c^4)*d^5*e^4 + (b^8 + 2*a*b^6*c - 18*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^4*e^5 - 4*(a*b^7 - 2*a^2*b^5*c - 4*a^3*b^3*c^2 - 16*a^4*b*c^3)*d^3*e^6 + 2*(3*a^2*b^6 - 8*a^3*b^4*c - 12*a^4*b^2*c^2 - 16*a^5*c^3)*d^2*e^7 - 2*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d*e^8 + (a^4*b^4 - 2*a^5*b^2*c - 8*a^6*c^2)*e^9)*x^3 + ((b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^9 - 2*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^8*e + 2*(3*b^6*c^2 - 8*a*b^4*c^3 - 12*a^2*b^2*c^4 - 16*a^3*c^5)*d^7*e^2 - 4*(b^7*c - 2*a*b^5*c^2 - 4*a^2*b^3*c^3 - 16*a^3*b*c^4)*d^6*e^3 + (b^8 + 2*a*b^6*c - 18*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^5*e^4 - 2*(a*b^7 - 6*a^2*b^5*c + 14*a^3*b^3*c^2 - 24*a^4*b*c^3)*d^4*e^5 - 2*(a^2*b^6 - 20*a^4*b^2*c^2 + 16*a^5*c^3)*d^3*e^6 + 8*(a^3*b^5 - 4*a^4*b^3*c)*d^2*e^7 - (7*a^4*b^4 - 30*a^5*b^2*c + 8*a^6*c^2)*d*e^8 + 2*(a^5*b^3 - 4*a^6*b*c)*e^9)*x^2 + (2*(a*b^3*c^4 - 4*a^2*b*c^5)*d^9 - (8*a*b^4*c^3 - 33*a^2*b^2*c^4 + 4*a^3*c^5)*d^8*e + 4*(3*a*b^5*c^2 - 11*a^2*b^3*c^3 - 4*a^3*b*c^4)*d^7*e^2 - 2*(4*a*b^6*c - 7*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 8*a^4*c^4)*d^6*e^3 + 2*(a*b^7 + 6*a^2*b^5*c - 40*a^3*b^3*c^2)*d^5*e^4 - (7*a^2*b^6 - 16*a^3*b^4*c - 54*a^4*b^2*c^2 + 24*a^5*c^3)*d^4*e^5 + 4*(2*a^3*b^5 - 9*a^4*b^3*c + 4*a^5*b*c^2)*d^3*e^6 - 2*(a^4*b^4 - 6*a^5*b^2*c + 8*a^6*c^2)*d^2*e^7 - 2*(a^5*b^3 - 4*a^6*b*c)*d*e^8 + (a^6*b^2 - 4*a^7*c)*e^9)*x), -1/6*(3*(16*(a^2*b^2*c^2 - 4*a^3*c^3)*d^3*e^3 - 16*(a^2*b^3*c - 4*a^3*b*c^2)*d^2*e^4 + (5*a^2*b^4 - 24*a^3*b^2*c + 16*a^4*c^2)*d*e^5 + (16*(b^2*c^4 - 4*a*c^5)*d^2*e^4 - 16*(b^3*c^3 - 4*a*b*c^4)*d*e^5 + (5*b^4*c^2 - 24*a*b^2*c^3 + 16*a^2*c^4)*e^6)*x^5 + (16*(b^2*c^4 - 4*a*c^5)*d^3*e^3 + 16*(b^3*c^3 - 4*a*b*c^4)*d^2*e^4 - (27*b^4*c^2 - 104*a*b^2*c^3 - 16*a^2*c^4)*d*e^5 + 2*(5*b^5*c - 24*a*b^3*c^2 + 16*a^2*b*c^3)*e^6)*x^4 + (32*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 - 16*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 2*(3*b^5*c + 8*a*b^3*c^2 - 80*a^2*b*c^3)*d*e^5 + (5*b^6 - 14*a*b^4*c - 32*a^2*b^2*c^2 + 32*a^3*c^3)*e^6)*x^3 + (16*(b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d^3*e^3 - 16*(b^5*c - 4*a*b^3*c^2)*d^2*e^4 + (5*b^6 - 46*a*b^4*c + 96*a^2*b^2*c^2 + 32*a^3*c^3)*d*e^5 + 2*(5*a*b^5 - 24*a^2*b^3*c + 16*a^3*b*c^2)*e^6)*x^2 + (32*(a*b^3*c^2 - 4*a^2*b*c^3)*d^3*e^3 - 16*(2*a*b^4*c - 9*a^2*b^2*c^2 + 4*a^3*c^3)*d^2*e^4 + 2*(5*a*b^5 - 32*a^2*b^3*c + 48*a^3*b*c^2)*d*e^5 + (5*a^2*b^4 - 24*a^3*b^2*c + 16*a^4*c^2)*e^6)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(2*(b^2*c^4 - 4*a*c^5)*d^7 - 8*(b^3*c^3 - 3*a*b*c^4)*d^6*e + 4*(3*b^4*c^2 - 2*a*b^2*c^3 - 20*a^2*c^4)*d^5*e^2 - 8*(b^5*c + 5*a*b^3*c^2 - 26*a^2*b*c^3)*d^4*e^3 + 2*(b^6 + 24*a*b^4*c - 90*a^2*b^2*c^2 - 8*a^3*c^3)*d^3*e^4 - (16*a*b^5 - 41*a^2*b^3*c - 52*a^3*b*c^2)*d^2*e^5 + (11*a^2*b^4 - 54*a^3*b^2*c + 56*a^4*c^2)*d*e^6 + 3*(a^3*b^3 - 4*a^4*b*c)*e^7 - (16*c^6*d^5*e^2 - 40*b*c^5*d^4*e^3 + 2*(31*b^2*c^4 - 44*a*c^5)*d^3*e^4 - (53*b^3*c^3 - 132*a*b*c^4)*d^2*e^5 + (15*b^4*c^2 - 14*a*b^2*c^3 - 104*a^2*c^4)*d*e^6 - (15*a*b^3*c^2 - 52*a^2*b*c^3)*e^7)*x^4 - 2*(8*c^6*d^6*e - 8*b*c^5*d^5*e^2 - (11*b^2*c^4 - 4*a*c^5)*d^4*e^3 + 4*(11*b^3*c^3 - 24*a*b*c^4)*d^3*e^4 - 2*(24*b^4*c^2 - 73*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^5 + (15*b^5*c - 24*a*b^3*c^2 - 88*a^2*b*c^3)*d*e^6 - 3*(5*a*b^4*c - 19*a^2*b^2*c^2 + 4*a^3*c^3)*e^7)*x^3 - 3*(8*b*c^5*d^6*e - 2*(11*b^2*c^4 - 12*a*c^5)*d^5*e^2 + 8*(3*b^3*c^3 - 7*a*b*c^4)*d^4*e^3 - 4*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^3*e^4 - (11*b^5*c - 26*a*b^3*c^2 - 32*a^2*b*c^3)*d^2*e^5 + (5*b^6 - 8*a*b^4*c - 18*a^2*b^2*c^2 - 56*a^3*c^3)*d*e^6 - (5*a*b^5 - 14*a^2*b^3*c - 16*a^3*b*c^2)*e^7)*x^2 - 2*((5*b^2*c^4 + 4*a*c^5)*d^6*e - 4*(5*b^3*c^3 - 6*a*b*c^4)*d^5*e^2 + 2*(15*b^4*c^2 - 34*a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - 4*(5*b^5*c - 17*a*b^3*c^2 + 8*a^2*b*c^3)*d^3*e^4 + (5*b^6 - 33*a*b^4*c + 69*a^2*b^2*c^2 - 28*a^3*c^3)*d^2*e^5 + (5*a*b^5 - 4*a^2*b^3*c - 56*a^3*b*c^2)*d*e^6 - 2*(5*a^2*b^4 - 21*a^3*b^2*c + 8*a^4*c^2)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^2*c^4 - 4*a^3*c^5)*d^9 - 4*(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^8*e + 2*(3*a^2*b^4*c^2 - 10*a^3*b^2*c^3 - 8*a^4*c^4)*d^7*e^

```
2 - 4*(a^2*b^5*c - a^3*b^3*c^2 - 12*a^4*b*c^3)*d^6*e^3 + (a^2*b^6 + 8*a^3*b
^4*c - 42*a^4*b^2*c^2 - 24*a^5*c^3)*d^5*e^4 - 4*(a^3*b^5 - a^4*b^3*c - 12*a
^5*b*c^2)*d^4*e^5 + 2*(3*a^4*b^4 - 10*a^5*b^2*c - 8*a^6*c^2)*d^3*e^6 - 4*(a
^5*b^3 - 4*a^6*b*c)*d^2*e^7 + (a^6*b^2 - 4*a^7*c)*d*e^8 + ((b^2*c^6 - 4*a*c
^7)*d^8*e - 4*(b^3*c^5 - 4*a*b*c^6)*d^7*e^2 + 2*(3*b^4*c^4 - 10*a*b^2*c^5 -
 8*a^2*c^6)*d^6*e^3 - 4*(b^5*c^3 - a*b^3*c^4 - 12*a^2*b*c^5)*d^5*e^4 + (b^6
*c^2 + 8*a*b^4*c^3 - 42*a^2*b^2*c^4 - 24*a^3*c^5)*d^4*e^5 - 4*(a*b^5*c^2 -
a^2*b^3*c^3 - 12*a^3*b*c^4)*d^3*e^6 + 2*(3*a^2*b^4*c^2 - 10*a^3*b^2*c^3 - 8
*a^4*c^4)*d^2*e^7 - 4*(a^3*b^3*c^2 - 4*a^4*b*c^3)*d*e^8 + (a^4*b^2*c^2 - 4*
a^5*c^3)*e^9)*x^5 + ((b^2*c^6 - 4*a*c^7)*d^9 - 2*(b^3*c^5 - 4*a*b*c^6)*d^8*
e - 2*(b^4*c^4 - 6*a*b^2*c^5 + 8*a^2*c^6)*d^7*e^2 + 4*(2*b^5*c^3 - 9*a*b^3*
c^4 + 4*a^2*b*c^5)*d^6*e^3 - (7*b^6*c^2 - 16*a*b^4*c^3 - 54*a^2*b^2*c^4 + 2
4*a^3*c^5)*d^5*e^4 + 2*(b^7*c + 6*a*b^5*c^2 - 40*a^2*b^3*c^3)*d^4*e^5 - 2*(
4*a*b^6*c - 7*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 8*a^4*c^4)*d^3*e^6 + 4*(3*a^2*
b^5*c - 11*a^3*b^3*c^2 - 4*a^4*b*c^3)*d^2*e^7 - (8*a^3*b^4*c - 33*a^4*b^2*c
^2 + 4*a^5*c^3)*d*e^8 + 2*(a^4*b^3*c - 4*a^5*b*c^2)*e^9)*x^4 + (2*(b^3*c^5
- 4*a*b*c^6)*d^9 - (7*b^4*c^4 - 30*a*b^2*c^5 + 8*a^2*c^6)*d^8*e + 8*(b^5*c^
3 - 4*a*b^3*c^4)*d^7*e^2 - 2*(b^6*c^2 - 20*a^2*b^2*c^4 + 16*a^3*c^5)*d^6*e^
3 - 2*(b^7*c - 6*a*b^5*c^2 + 14*a^2*b^3*c^3 - 24*a^3*b*c^4)*d^5*e^4 + (b^8
+ 2*a*b^6*c - 18*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^4*e^5 - 4*(a*
b^7 - 2*a^2*b^5*c - 4*a^3*b^3*c^2 - 16*a^4*b*c^3)*d^3*e^6 + 2*(3*a^2*b^6 -
8*a^3*b^4*c - 12*a^4*b^2*c^2 - 16*a^5*c^3)*d^2*e^7 - 2*(2*a^3*b^5 - 5*a^4*b
^3*c - 12*a^5*b*c^2)*d*e^8 + (a^4*b^4 - 2*a^5*b^2*c - 8*a^6*c^2)*e^9)*x^3 +
 ((b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^9 - 2*(2*b^5*c^3 - 5*a*b^3*c^4 - 12
*a^2*b*c^5)*d^8*e + 2*(3*b^6*c^2 - 8*a*b^4*c^3 - 12*a^2*b^2*c^4 - 16*a^3*c^
5)*d^7*e^2 - 4*(b^7*c - 2*a*b^5*c^2 - 4*a^2*b^3*c^3 - 16*a^3*b*c^4)*d^6*e^3
 + (b^8 + 2*a*b^6*c - 18*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^5*e^4
 - 2*(a*b^7 - 6*a^2*b^5*c + 14*a^3*b^3*c^2 - 24*a^4*b*c^3)*d^4*e^5 - 2*(a^2
*b^6 - 20*a^4*b^2*c^2 + 16*a^5*c^3)*d^3*e^6 + 8*(a^3*b^5 - 4*a^4*b^3*c)*d^2
*e^7 - (7*a^4*b^4 - 30*a^5*b^2*c + 8*a^6*c^2)*d*e^8 + 2*(a^5*b^3 - 4*a^6*b*
c)*e^9)*x^2 + (2*(a*b^3*c^4 - 4*a^2*b*c^5)*d^9 - (8*a*b^4*c^3 - 33*a^2*b^2*
c^4 + 4*a^3*c^5)*d^8*e + 4*(3*a*b^5*c^2 - 11*a^2*b^3*c^3 - 4*a^3*b*c^4)*d^7
*e^2 - 2*(4*a*b^6*c - 7*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 8*a^4*c^4)*d^6*e^3 +
 2*(a*b^7 + 6*a^2*b^5*c - 40*a^3*b^3*c^2)*d^5*e^4 - (7*a^2*b^6 - 16*a^3*b^4
*c - 54*a^4*b^2*c^2 + 24*a^5*c^3)*d^4*e^5 + 4*(2*a^3*b^5 - 9*a^4*b^3*c + 4*
a^5*b*c^2)*d^3*e^6 - 2*(a^4*b^4 - 6*a^5*b^2*c + 8*a^6*c^2)*d^2*e^7 - 2*(a^5
*b^3 - 4*a^6*b*c)*d*e^8 + (a^6*b^2 - 4*a^7*c)*e^9)*x)]
```

giac [B] time = 3.18, size = 6103, normalized size = 14.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/6*((32*sqrt(c*d^2 - b*d*e + a*e^2)*c^4*d^3*e^3 + 48*b^2*c^(5/2)*d^2*e^5*
log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 192*a*c^(7
/2)*d^2*e^5*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c)))
- 48*sqrt(c*d^2 - b*d*e + a*e^2)*b*c^3*d^2*e^4 - 48*b^3*c^(3/2)*d*e^6*log(a
bs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 192*a*b*c^(5/2)
*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 76*
sqrt(c*d^2 - b*d*e + a*e^2)*b^2*c^2*d*e^5 - 208*sqrt(c*d^2 - b*d*e + a*e^2)
*a*c^3*d*e^5 + 15*b^4*sqrt(c)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d
*e + a*e^2)*sqrt(c))) - 72*a*b^2*c^(3/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(
c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 48*a^2*c^(5/2)*e^7*log(abs(-2*c*d + b*e
+ 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 30*sqrt(c*d^2 - b*d*e + a*e^2)*
b^3*c*e^6 + 104*sqrt(c*d^2 - b*d*e + a*e^2)*a*b*c^2*e^6)*sgn(1/(x*e + d))/(
sqrt(c*d^2 - b*d*e + a*e^2)*b^2*c^(7/2)*d^6 - 4*sqrt(c*d^2 - b*d*e + a*e^2)
*a*c^(9/2)*d^6 - 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^3*c^(5/2)*d^5*e + 12*sqrt(
c*d^2 - b*d*e + a*e^2)*a*b*c^(7/2)*d^5*e + 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^
```

4*c^(3/2)*d^4*e^2 - 9*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^2*c^(5/2)*d^4*e^2 - 1
2*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*c^(7/2)*d^4*e^2 - sqrt(c*d^2 - b*d*e + a*
e^2)*b^5*sqrt(c)*d^3*e^3 - 2*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^3*c^(3/2)*d^3*
e^3 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b*c^(5/2)*d^3*e^3 + 3*sqrt(c*d^2 -
 b*d*e + a*e^2)*a*b^4*sqrt(c)*d^2*e^4 - 9*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b
^2*c^(3/2)*d^2*e^4 - 12*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*c^(5/2)*d^2*e^4 - 3
*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^3*sqrt(c)*d*e^5 + 12*sqrt(c*d^2 - b*d*e
+ a*e^2)*a^3*b*c^(3/2)*d*e^5 + sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^2*sqrt(c)*
e^6 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*a^4*c^(3/2)*e^6) + 2*((((4*(4*b^2*c^5*d
^6*e^17*sgn(1/(x*e + d)) - 16*a*c^6*d^6*e^17*sgn(1/(x*e + d)) - 12*b^3*c^4*
d^5*e^18*sgn(1/(x*e + d)) + 48*a*b*c^5*d^5*e^18*sgn(1/(x*e + d)) + 31*b^4*c
^3*d^4*e^19*sgn(1/(x*e + d)) - 188*a*b^2*c^4*d^4*e^19*sgn(1/(x*e + d)) + 25
6*a^2*c^5*d^4*e^19*sgn(1/(x*e + d)) - 42*b^5*c^2*d^3*e^20*sgn(1/(x*e + d))
+ 296*a*b^3*c^3*d^3*e^20*sgn(1/(x*e + d)) - 512*a^2*b*c^4*d^3*e^20*sgn(1/(x
*e + d)) + 24*b^6*c*d^2*e^21*sgn(1/(x*e + d)) - 162*a*b^4*c^2*d^2*e^21*sgn(
1/(x*e + d)) + 204*a^2*b^2*c^3*d^2*e^21*sgn(1/(x*e + d)) + 240*a^3*c^4*d^2*
e^21*sgn(1/(x*e + d)) - 5*b^7*d*e^22*sgn(1/(x*e + d)) + 22*a*b^5*c*d*e^22*s
gn(1/(x*e + d)) + 52*a^2*b^3*c^2*d*e^22*sgn(1/(x*e + d)) - 240*a^3*b*c^3*d*
e^22*sgn(1/(x*e + d)) + 5*a*b^6*e^23*sgn(1/(x*e + d)) - 41*a^2*b^4*c*e^23*s
gn(1/(x*e + d)) + 92*a^3*b^2*c^2*e^23*sgn(1/(x*e + d)) - 32*a^4*c^3*e^23*sg
n(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11
*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^
5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a
^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2
- 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/
(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/
(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e
^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6
*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 2
4*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e
+ d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(
x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(
x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(
x*e + d))^2) - 3*(2*b^4*c^3*d^5*e^20*sgn(1/(x*e + d)) - 16*a*b^2*c^4*d^5*e^
20*sgn(1/(x*e + d)) + 32*a^2*c^5*d^5*e^20*sgn(1/(x*e + d)) - 5*b^5*c^2*d^4*
e^21*sgn(1/(x*e + d)) + 40*a*b^3*c^3*d^4*e^21*sgn(1/(x*e + d)) - 80*a^2*b*c
^4*d^4*e^21*sgn(1/(x*e + d)) + 4*b^6*c*d^3*e^22*sgn(1/(x*e + d)) - 28*a*b^4
*c^2*d^3*e^22*sgn(1/(x*e + d)) + 32*a^2*b^2*c^3*d^3*e^22*sgn(1/(x*e + d)) +
 64*a^3*c^4*d^3*e^22*sgn(1/(x*e + d)) - b^7*d^2*e^23*sgn(1/(x*e + d)) + 2*a
*b^5*c*d^2*e^23*sgn(1/(x*e + d)) + 32*a^2*b^3*c^2*d^2*e^23*sgn(1/(x*e + d))
 - 96*a^3*b*c^3*d^2*e^23*sgn(1/(x*e + d)) + 2*a*b^6*d*e^24*sgn(1/(x*e + d))
 - 14*a^2*b^4*c*d*e^24*sgn(1/(x*e + d)) + 16*a^3*b^2*c^2*d*e^24*sgn(1/(x*e
+ d)) + 32*a^4*c^3*d*e^24*sgn(1/(x*e + d)) - a^2*b^5*e^25*sgn(1/(x*e + d))
+ 8*a^3*b^3*c*e^25*sgn(1/(x*e + d)) - 16*a^4*b*c^2*e^25*sgn(1/(x*e + d)))*e
^(-1)/((b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(1/(x
*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sg
n(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*c^4*
d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*a*b^
4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e + d)
)^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d)
)^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*sgn(1
/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*e^15
*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3*b^2
*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))^2 -
 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e + d))
^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e + d))
^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x*e + d))
^2)*(x*e + d)))*e^(-1)/(x*e + d) - 3*(16*b^2*c^5*d^5*e^16*sgn(1/(x*e + d))
- 64*a*c^6*d^5*e^16*sgn(1/(x*e + d)) - 40*b^3*c^4*d^4*e^17*sgn(1/(x*e + d))

+ 160*a*b*c^5*d^4*e^17*sgn(1/(x*e + d)) + 84*b^4*c^3*d^3*e^18*sgn(1/(x*e + d)) - 512*a*b^2*c^4*d^3*e^18*sgn(1/(x*e + d)) + 704*a^2*c^5*d^3*e^18*sgn(1/(x*e + d)) - 86*b^5*c^2*d^2*e^19*sgn(1/(x*e + d)) + 608*a*b^3*c^3*d^2*e^19*sgn(1/(x*e + d)) - 1056*a^2*b*c^4*d^2*e^19*sgn(1/(x*e + d)) + 36*b^6*c*d*e^20*sgn(1/(x*e + d)) - 260*a*b^4*c^2*d*e^20*sgn(1/(x*e + d)) + 432*a^2*b^2*c^3*d*e^20*sgn(1/(x*e + d)) + 128*a^3*c^4*d*e^20*sgn(1/(x*e + d)) - 5*b^7*e^21*sgn(1/(x*e + d)) + 34*a*b^5*c*e^21*sgn(1/(x*e + d)) - 40*a^2*b^3*c^2*e^21*sgn(1/(x*e + d)) - 64*a^3*b*c^3*e^21*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x*e + d))^2))*e^(-1)/(x*e + d) + 6*(8*b^2*c^5*d^4*e^15*sgn(1/(x*e + d)) - 32*a*c^6*d^4*e^15*sgn(1/(x*e + d)) - 16*b^3*c^4*d^3*e^16*sgn(1/(x*e + d)) + 64*a*b*c^5*d^3*e^16*sgn(1/(x*e + d)) + 29*b^4*c^3*d^2*e^17*sgn(1/(x*e + d)) - 184*a*b^2*c^4*d^2*e^17*sgn(1/(x*e + d)) + 272*a^2*c^5*d^2*e^17*sgn(1/(x*e + d)) - 21*b^5*c^2*d*e^18*sgn(1/(x*e + d)) + 152*a*b^3*c^3*d*e^18*sgn(1/(x*e + d)) - 272*a^2*b*c^4*d*e^18*sgn(1/(x*e + d)) + 5*b^6*c*e^19*sgn(1/(x*e + d)) - 39*a*b^4*c^2*e^19*sgn(1/(x*e + d)) + 80*a^2*b^2*c^3*e^19*sgn(1/(x*e + d)) - 16*a^3*c^4*e^19*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x*e + d))^2))*e^(-1)/(x*e + d) - (16*b^2*c^5*d^3*e^14*sgn(1/(x*e + d)) - 64*a*c^6*d^3*e^14*sgn(1/(x*e + d)) - 24*b^3*c^4*d^2*e^15*sgn(1/(x*e + d)) + 96*a*b*c^5*d^2*e^15*sgn(1/(x*e + d)) + 38*b^4*c^3*d*e^16*sgn(1/(x*e + d)) - 256*a*b^2*c^4*d*e^16*sgn(1/(x*e + d)) + 416*a^2*c^5*d*e^16*sgn(1/(x*e + d)) - 15*b^5*c^2*e^17*sgn(1/(x*e + d)) + 112*a*b^3*c^3*e^17*sgn(1/(x*e + d)) - 208*a^2*b*c^4*e^17*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5

```
*c^2*e^17*sgn(1/(x*e + d))^2))/(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b
*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)^(3/2) - 3*(16*c^2*d^2
*e^6 - 16*b*c*d*e^7 + 5*b^2*e^8 - 4*a*c*e^8)*log(abs(-2*c*d + b*e + 2*sqrt(
c*d^2 - b*d*e + a*e^2)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/
(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2) + sqrt(c*d^2*e^2 - b*d*e
^3 + a*e^4)*e^(-1)/(x*e + d))))/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4
*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 +
3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a^3*e^7)*sqrt(c*d^2 - b*d*e + a*e^2)*sgn(
1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.11, size = 4855, normalized size = 11.48

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2*c*e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d-160/3/(a*e^2-b*d*e+c*d^2)*c
^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2
)^(1/2)*x*b+20/3*e^2/(a*e^2-b*d*e+c*d^2)^2*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^4+10*e^2/(a*e^2-b*d*e+c
*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-
b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d^2+10*e^3/(a*e^2-b
*d*e+c*d^2)^3/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*c*d*b+10/3*e/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d*b+10/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2*c^2*d^
2+80/(a*e^2-b*d*e+c*d^2)^2*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*d^2+2/3*c/(a*e^2-b*d*e+c*d^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)-20/3/(a*e^2-b*
d*e+c*d^2)*c^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(3/2)*x*b-2*c*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-30*e^3/(a*e^2-b*
d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*x*b^2*c^2*d+60*e^2/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^3*d^2-80*
e/(a*e^2-b*d*e+c*d^2)^2*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2*d-10*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-
b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*
x*b^2*d-5/6*e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a
*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2-5/2*e^4/(a*e^2-b*d*e+c*d^2)^3/((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-1/(a*e^2-b*d*e+c*
d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3
/2)*b-10/3/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(3/2)*c^2*d^2-2*c*e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))-80/3/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-10/3/(
a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(3/2)*b^2+5/6*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^4-10*e^2/(a*
e^2-b*d*e+c*d^2)^3/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*c^2*d^2+5/2*e^4/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b
*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^4+5/2*e^4/(a*e^2-b*d*e
+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^
2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*
```

```
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2-4*c^2*e^2/(a*e^2-
b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*x*b+8*c^3*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*d+4*c^2*e/(a*e^2-b
*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*b*d+20/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e
-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^3*x*b*d^2+160/(a*e^2-b*d
*e+c*d^2)^2*c^4/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*x*b*d^2-40/3/e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^4*x*d^3-20*e
/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^3*d^3+5/3*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^
2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b^
3+40/3*e^2/(a*e^2-b*d*e+c*d^2)^2*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^3-320/3/e/(a*e^2-b*d*e+c*d^2)
^2*c^5/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*x*d^3-20/3/e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c^3*d^3-5*e/(a*e^2-b*d*
e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(3/2)*b^3*c*d+30*e^2/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c^2*d^2-15*e^3/(a
*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*b^3*c*d+160/3/e/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2)^
2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d-160
/3/e/(a*e^2-b*d*e+c*d^2)^2*c^4/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d^3+5*e^4/(a*e^2-b*d*e+c*d^2)^3/(4*a*
c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*
b^3*c-40*e/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^4*d^3+40/3/e/(a*e^2-b*d*e+c*d^2)*c^
3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(
3/2)*x*d+20/3/e/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*d+320/3/e/(a*e^2-b*d*e+c*d^2)*
c^4/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*x*d-10*e^3/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*l
n(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
)/(x+d/e))*c*d*b-40*e/(a*e^2-b*d*e+c*d^2)^2*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                   +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1403 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=132

$$\frac{2(d+ex)^{9/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{9e^4}-\frac{2(d+ex)^{7/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{7e^4}-\frac{6c(d+ex)^{11/2}(2cd-be)}{11e^4}$$

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{9/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{9e^4}-\frac{2(d+ex)^{7/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{7e^4}-\frac{6c(d+ex)^{11/2}(2cd-be)}{11e^4}+\frac{4c^2(d+ex)^{13/2}}{13e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(7/2))/(7*e^4) + (2*(6*
c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(9/2))/(9*e^4) - (6*c*(2
*c*d - b*e)*(d + e*x)^(11/2))/(11*e^4) + (4*c^2*(d + e*x)^(13/2))/(13*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^{5/2}}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce\right.}{}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{7/2}}{7e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(\right.}{9e}$$

Mathematica [A] time = 0.14, size = 111, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(13ce\left(22ae(7ex-2d)+3b\left(8d^2-28dex+63e^2x^2\right)\right)+143be^2(9ae-2bd+7bex)-6c^2\left(16d^3-56d^2ex+126de^2x^2-231e^3x^3\right)\right)}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(143*b*e^2*(-2*b*d + 9*a*e + 7*b*e*x) - 6*c^2*(16*d^3 -
56*d^2*e*x + 126*d*e^2*x^2 - 231*e^3*x^3) + 13*c*e*(22*a*e*(-2*d + 7*e*x) +
 3*b*(8*d^2 - 28*d*e*x + 63*e^2*x^2))))/(9009*e^4)
```

IntegrateAlgebraic [A] time = 0.10, size = 143, normalized size = 1.08

$$\frac{2(d+ex)^{7/2}\left(1287abe^3+2002ace^2(d+ex)-2574acde^2+1001b^2e^2(d+ex)-1287b^2de^2+3861bcd^2e-6006bcde(d+ex)+2457bce(d+ex)^2-2574c^2d^3+6006c^2d^2(d+ex)-4914c^2d(d+ex)^2+1386c^2(d+ex)^3\right)}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-2574*c^2*d^3 + 3861*b*c*d^2*e - 1287*b^2*d*e^2 - 2574*
a*c*d*e^2 + 1287*a*b*e^3 + 6006*c^2*d^2*(d + e*x) - 6006*b*c*d*e*(d + e*x)
```

```
+ 1001*b^2*e^2*(d + e*x) + 2002*a*c*e^2*(d + e*x) - 4914*c^2*d*(d + e*x)^2
+ 2457*b*c*e*(d + e*x)^2 + 1386*c^2*(d + e*x)^3))/(9009*e^4)
```

fricas [B] time = 0.40, size = 272, normalized size = 2.06

$$\frac{2\left(1386\,c^2e^6x^6-96\,c^2d^6+312\,bcd^5e+1287\,abd^3e^3-286\left(b^2+2\,ac\right)d^4e^2+189\left(18\,c^2de^5+13\,bce^6\right)x^5+7\left(318\,c^2d^2e^4+897\,bcde^5+143\left(b^2+2\,ac\right)e^6\right)x^4+\left(30\,c^2d^3e^3+4407\,bcd^2e^4+1287\,abe^6+2717\left(b^2+2\,ac\right)de^5\right)x^3-3\left(12\,c^2d^4e^2-39\,bcd^3e^3-1287\,abde^5-715\left(b^2+2\,ac\right)d^2e^4\right)x^2+\left(48\,c^2d^5e-156\,bcd^4e^2+3861\,abd^2e^4+143\left(b^2+2\,ac\right)d^3e^3\right)x\right)\sqrt{ex+d}}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/9009*(1386*c^2*e^6*x^6 - 96*c^2*d^6 + 312*b*c*d^5*e + 1287*a*b*d^3*e^3 -
286*(b^2 + 2*a*c)*d^4*e^2 + 189*(18*c^2*d*e^5 + 13*b*c*e^6)*x^5 + 7*(318*c^
2*d^2*e^4 + 897*b*c*d*e^5 + 143*(b^2 + 2*a*c)*e^6)*x^4 + (30*c^2*d^3*e^3 +
4407*b*c*d^2*e^4 + 1287*a*b*e^6 + 2717*(b^2 + 2*a*c)*d*e^5)*x^3 - 3*(12*c^2
*d^4*e^2 - 39*b*c*d^3*e^3 - 1287*a*b*d*e^5 - 715*(b^2 + 2*a*c)*d^2*e^4)*x^2
 + (48*c^2*d^5*e - 156*b*c*d^4*e^2 + 3861*a*b*d^2*e^4 + 143*(b^2 + 2*a*c)*d
^3*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.23, size = 1087, normalized size = 8.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*d^3*e^(-1) + 30030
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*c*d^3*e^(-1) + 9009*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*d^3*e^(-2) + 2574*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*c^2*d^3*e^(-3) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*b^2*d^2*e^(-1) + 18018*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*c*d^2*e^(-1) + 11583*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*b*c*d^2*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*c^
2*d^2*e^(-3) + 45045*sqrt(x*e + d)*a*b*d^3 + 45045*((x*e + d)^(3/2) - 3*sqr
t(x*e + d)*d)*a*b*d^2 + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*d*e^(-1) + 7722*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*a*c*d*e^(-1) + 1287*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378
*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c
*d*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*c^2*d*e^(-3) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)
*d + 15*sqrt(x*e + d)*d^2)*a*b*d + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*b^2*e^(-1) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*
c*e^(-1) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*b*c*e^(-2) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*c^2*e^(-3) +
 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a*b)*e^(-1)
```

maple [A] time = 0.05, size = 123, normalized size = 0.93

$$\frac{2\left(ex+d\right)^{\frac{7}{2}}\left(1386c^2x^3e^3+2457bc\,e^3x^2-756c^2d\,e^2x^2+2002ac\,e^3x+1001b^2e^3x-1092bcd\,e^2x+336c^2d^2ex+1287ab\,e^3-572acd\,e^2-286b^2d\,e^2+312bc\,d^2e-96c^2d^3\right)}{9009e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x)
```

```
[Out] 2/9009*(e*x+d)^(7/2)*(1386*c^2*e^3*x^3+2457*b*c*e^3*x^2-756*c^2*d*e^2*x^2+2
002*a*c*e^3*x+1001*b^2*e^3*x-1092*b*c*d*e^2*x+336*c^2*d^2*e*x+1287*a*b*e^3-
572*a*c*d*e^2-286*b^2*d*e^2+312*b*c*d^2*e-96*c^2*d^3)/e^4
```

maxima [A] time = 0.55, size = 121, normalized size = 0.92

$$\frac{2\left(1386\,(ex+d)^{\frac{13}{2}}c^2 - 2457\left(2\,c^2d - bce\right)(ex+d)^{\frac{11}{2}} + 1001\left(6\,c^2d^2 - 6\,bcde + \left(b^2+2\,ac\right)e^2\right)(ex+d)^{\frac{9}{2}} - 1287\left(2\,c^2d^3 - 3\,bcd^2e - abe^3 + \left(b^2+2\,ac\right)de^2\right)(ex+d)^{\frac{7}{2}}\right)}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/9009*(1386*(e*x + d)^(13/2)*c^2 - 2457*(2*c^2*d - b*c*e)*(e*x + d)^(11/2)
 + 1001*(6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(9/2) - 1287*
(2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*(e*x + d)^(7/2))/
e^4
```

mupad [B] time = 0.09, size = 118, normalized size = 0.89

$$\frac{4\,c^2\,{\left(d+e\,x\right)}^{13/2}}{13\,e^4}+\frac{{\left(d+e\,x\right)}^{9/2}\,\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{9\,e^4}-\frac{\left(12\,c^2\,d-6\,b\,c\,e\right)\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}+\frac{2\,\left(b\,e-2\,c\,d\right)\,{\left(d+e\,x\right)}^{7/2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x)
```

```
[Out] (4*c^2*(d + e*x)^(13/2))/(13*e^4) + ((d + e*x)^(9/2)*(2*b^2*e^2 + 12*c^2*d^
2 + 4*a*c*e^2 - 12*b*c*d*e))/(9*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(11/
2))/(11*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(7/2)*(a*e^2 + c*d^2 - b*d*e))/(7
*e^4)
```

sympy [A] time = 4.92, size = 643, normalized size = 4.87

$$\begin{cases} \frac{2abd^3\sqrt{d+ex}}{7e} + \frac{6abd^2x\sqrt{d+ex}}{7} + \frac{6abdex^2\sqrt{d+ex}}{7} + \frac{2abe^2x^3\sqrt{d+ex}}{7} - \frac{8acd^4\sqrt{d+ex}}{63e^2} + \frac{4acd^3x\sqrt{d+ex}}{63e} + \frac{20acd^2x^2\sqrt{d+ex}}{21} + \frac{76acdex^3\sqrt{d+ex}}{63} + \frac{4ace^2x^4\sqrt{d+ex}}{9} - \frac{4b^2d^4\sqrt{d+ex}}{63e^2} + \frac{2b^2d^3x\sqrt{d+ex}}{63e} + \frac{10b^2d^2x^2\sqrt{d+ex}}{21} + \frac{38b^2dex^3\sqrt{d+ex}}{63} + \frac{2b^2e^2x^4\sqrt{d+ex}}{9} + \frac{16bcd^5\sqrt{d+ex}}{231e^3} - \frac{8bcd^4x\sqrt{d+ex}}{231e^2} + \frac{2bcd^3x^2\sqrt{d+ex}}{77e} + \frac{226bcd^2x^3\sqrt{d+ex}}{231} + \frac{46bcdex^4\sqrt{d+ex}}{33} + \frac{6bce^2x^5\sqrt{d+ex}}{11} - \frac{64c^2d^6\sqrt{d+ex}}{3003e^4} + \frac{32c^2d^5x\sqrt{d+ex}}{3003e^3} - \frac{8c^2d^4x^2\sqrt{d+ex}}{1001e^2} + \frac{20c^2d^3x^3\sqrt{d+ex}}{3003e} + \frac{212c^2d^2x^4\sqrt{d+ex}}{429} + \frac{108c^2dex^5\sqrt{d+ex}}{143} + \frac{4c^2e^2x^6\sqrt{d+ex}}{13} & \text{for}\: e \neq 0 \\ d^{\frac{5}{2}}\left(abx + acx^2 + \frac{b^2x^2}{2} + bcx^3 + \frac{c^2x^4}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((2*a*b*d**3*sqrt(d + e*x)/(7*e) + 6*a*b*d**2*x*sqrt(d + e*x)/7 +
6*a*b*d*e*x**2*sqrt(d + e*x)/7 + 2*a*b*e**2*x**3*sqrt(d + e*x)/7 - 8*a*c*d*
*4*sqrt(d + e*x)/(63*e**2) + 4*a*c*d**3*x*sqrt(d + e*x)/(63*e) + 20*a*c*d**
2*x**2*sqrt(d + e*x)/21 + 76*a*c*d*e*x**3*sqrt(d + e*x)/63 + 4*a*c*e**2*x**
4*sqrt(d + e*x)/9 - 4*b**2*d**4*sqrt(d + e*x)/(63*e**2) + 2*b**2*d**3*x*sqr
t(d + e*x)/(63*e) + 10*b**2*d**2*x**2*sqrt(d + e*x)/21 + 38*b**2*d*e*x**3*s
qrt(d + e*x)/63 + 2*b**2*e**2*x**4*sqrt(d + e*x)/9 + 16*b*c*d**5*sqrt(d + e
*x)/(231*e**3) - 8*b*c*d**4*x*sqrt(d + e*x)/(231*e**2) + 2*b*c*d**3*x**2*sq
rt(d + e*x)/(77*e) + 226*b*c*d**2*x**3*sqrt(d + e*x)/231 + 46*b*c*d*e*x**4*
sqrt(d + e*x)/33 + 6*b*c*e**2*x**5*sqrt(d + e*x)/11 - 64*c**2*d**6*sqrt(d +
 e*x)/(3003*e**4) + 32*c**2*d**5*x*sqrt(d + e*x)/(3003*e**3) - 8*c**2*d**4*
x**2*sqrt(d + e*x)/(1001*e**2) + 20*c**2*d**3*x**3*sqrt(d + e*x)/(3003*e) +
 212*c**2*d**2*x**4*sqrt(d + e*x)/429 + 108*c**2*d*e*x**5*sqrt(d + e*x)/143
 + 4*c**2*e**2*x**6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(a*b*x + a*c*x**
2 + b**2*x**2/2 + b*c*x**3 + c**2*x**4/2), True))
```

3.1404 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=132

$$\frac{2(d+ex)^{7/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{2c(d+ex)^{9/2}(2cd-be)}{3e^4}+$$

Rubi [A] time = 0.07, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{7/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{2c(d+ex)^{9/2}(2cd-be)}{3e^4}+\frac{4c^2(d+ex)^{11/2}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(5/2))/(5*e^4) + (2*(6*
c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(7/2))/(7*e^4) - (2*c*(2
*c*d - b*e)*(d + e*x)^(9/2))/(3*e^4) + (4*c^2*(d + e*x)^(11/2))/(11*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b\right.}{e^3}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{5/2}}{5e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd\right.}{7e^4}$$

Mathematica [A] time = 0.13, size = 109, normalized size = 0.83

$$\frac{2(d+ex)^{5/2}\left(11ce\left(6ae(5ex-2d)+b\left(8d^2-20dex+35e^2x^2\right)\right)+33be^2(7ae-2bd+5bex)+c^2\left(-32d^3+80d^2ex-140de^2x^2+210e^3x^3\right)\right)}{1155e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(33*b*e^2*(-2*b*d + 7*a*e + 5*b*e*x) + c^2*(-32*d^3 + 80
*d^2*e*x - 140*d*e^2*x^2 + 210*e^3*x^3) + 11*c*e*(6*a*e*(-2*d + 5*e*x) + b*
(8*d^2 - 20*d*e*x + 35*e^2*x^2))))/(1155*e^4)
```

IntegrateAlgebraic [A] time = 0.09, size = 143, normalized size = 1.08

$$\frac{2(d+ex)^{5/2}\left(231abe^3+330ace^2(d+ex)-462acde^2+165b^2e^2(d+ex)-231b^2de^2+693bcd^2e-990bcde(d+ex)+385bce(d+ex)^2-462c^2d^3+990c^2d^2(d+ex)-770c^2d(d+ex)^2+210c^2(d+ex)^3\right)}{1155e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-462*c^2*d^3 + 693*b*c*d^2*e - 231*b^2*d*e^2 - 462*a*c*
d*e^2 + 231*a*b*e^3 + 990*c^2*d^2*(d + e*x) - 990*b*c*d*e*(d + e*x) + 165*b
```

```
^2*e^2*(d + e*x) + 330*a*c*e^2*(d + e*x) - 770*c^2*d*(d + e*x)^2 + 385*b*c*
e*(d + e*x)^2 + 210*c^2*(d + e*x)^3))/(1155*e^4)
```

fricas [A] time = 0.40, size = 220, normalized size = 1.67

$$\frac{2\left(210\,c^{2}e^{5}x^{5}-32\,c^{2}d^{5}+88\,bcd^{4}e+231\,abd^{2}e^{3}-66\left(b^{2}+2\,ac\right)d^{3}e^{2}+35\left(8\,c^{2}de^{4}+11\,bce^{5}\right)x^{4}+5\left(2\,c^{2}d^{2}e^{3}+110\,bcde^{4}+33\left(b^{2}+2\,ac\right)e^{5}\right)x^{3}-3\left(4\,c^{2}d^{3}e^{2}-11\,bcd^{2}e^{3}-77\,abe^{5}-88\left(b^{2}+2\,ac\right)de^{4}\right)x^{2}+\left(16\,c^{2}d^{4}e-44\,bcd^{3}e^{2}+462\,abde^{4}+33\left(b^{2}+2\,ac\right)d^{2}e^{3}\right)x\right)\sqrt{ex+d}}{1155\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/1155*(210*c^2*e^5*x^5 - 32*c^2*d^5 + 88*b*c*d^4*e + 231*a*b*d^2*e^3 - 66*
(b^2 + 2*a*c)*d^3*e^2 + 35*(8*c^2*d*e^4 + 11*b*c*e^5)*x^4 + 5*(2*c^2*d^2*e^
3 + 110*b*c*d*e^4 + 33*(b^2 + 2*a*c)*e^5)*x^3 - 3*(4*c^2*d^3*e^2 - 11*b*c*d
^2*e^3 - 77*a*b*e^5 - 88*(b^2 + 2*a*c)*d*e^4)*x^2 + (16*c^2*d^4*e - 44*b*c*
d^3*e^2 + 462*a*b*d*e^4 + 33*(b^2 + 2*a*c)*d^2*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.19, size = 711, normalized size = 5.39

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*d^2*e^(-1) + 2310*((
x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*c*d^2*e^(-1) + 693*(3*(x*e + d)^(5/2)
 - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*d^2*e^(-2) + 198*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*c^2*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d +
15*sqrt(x*e + d)*d^2)*b^2*d*e^(-1) + 924*(3*(x*e + d)^(5/2) - 10*(x*e + d)^
(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*c*d*e^(-1) + 594*(5*(x*e + d)^(7/2) - 21*
(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b*c*d*e^
(-2) + 44*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)
*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*c^2*d*e^(-3) + 3465
*sqrt(x*e + d)*a*b*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d +
 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*b^2*e^(-1) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*c*e^(-1) + 33*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c*e^(-2) + 10*(63*(x*e + d)^(11/2
) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*
d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*c^2*e^(-3) + 231*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b)*e^(-1)
```

maple [A] time = 0.05, size = 123, normalized size = 0.93

$$\frac{2\left(ex+d\right)^{\frac{5}{2}}\left(210c^{2}x^{3}e^{3}+385bc\,e^{3}x^{2}-140c^{2}d\,e^{2}x^{2}+330ac\,e^{3}x+165b^{2}e^{3}x-220bcd\,e^{2}x+80c^{2}d^{2}ex+231ab\,e^{3}-132acd\,e^{2}-66b^{2}d\,e^{2}+88bc\,d^{2}e-32c^{2}d^{3}\right)}{1155e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x)
```

```
[Out] 2/1155*(e*x+d)^(5/2)*(210*c^2*e^3*x^3+385*b*c*e^3*x^2-140*c^2*d*e^2*x^2+330
*a*c*e^3*x+165*b^2*e^3*x-220*b*c*d*e^2*x+80*c^2*d^2*e*x+231*a*b*e^3-132*a*c
*d*e^2-66*b^2*d*e^2+88*b*c*d^2*e-32*c^2*d^3)/e^4
```

maxima [A] time = 0.81, size = 121, normalized size = 0.92

$$\frac{2\left(210\left(ex+d\right)^{\frac{11}{2}}c^{2}-385\left(2\,c^{2}d-bce\right)\left(ex+d\right)^{\frac{9}{2}}+165\left(6\,c^{2}d^{2}-6\,bcde+\left(b^{2}+2\,ac\right)e^{2}\right)\left(ex+d\right)^{\frac{7}{2}}-231\left(2\,c^{2}d^{3}-3\,bcd^{2}e-abe^{3}+\left(b^{2}+2\,ac\right)de^{2}\right)\left(ex+d\right)^{\frac{5}{2}}\right)}{1155\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/1155*(210*(e*x + d)^(11/2)*c^2 - 385*(2*c^2*d - b*c*e)*(e*x + d)^(9/2) +
165*(6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(7/2) - 231*(2*c^
2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 1.88, size = 118, normalized size = 0.89

$$\frac{4\,c^2\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}+\frac{{\left(d+e\,x\right)}^{7/2}\,\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{7\,e^4}-\frac{\left(12\,c^2\,d-6\,b\,c\,e\right)\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}+\frac{2\,\left(b\,e-2\,c\,d\right)\,{\left(d+e\,x\right)}^{5/2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x)
```

```
[Out] (4*c^2*(d + e*x)^(11/2))/(11*e^4) + ((d + e*x)^(7/2)*(2*b^2*e^2 + 12*c^2*d^
2 + 4*a*c*e^2 - 12*b*c*d*e))/(7*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(9/2
))/(9*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(5/2)*(a*e^2 + c*d^2 - b*d*e))/(5*e
^4)
```

sympy [A] time = 20.23, size = 457, normalized size = 3.46

$$abd\left(\begin{cases}\sqrt{d}\,x & \text{for}\ e=0\\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2ab\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{4acd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{4ac\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^2}+\frac{2b^2d\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{2b^2\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^2}+\frac{6bcd\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+\frac{6bc\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^3}+\frac{4c^2d\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^4}+\frac{4c^2\left(\frac{d^4(d+ex)^{\frac{3}{2}}}{3}-\frac{4d^3(d+ex)^{\frac{5}{2}}}{5}+\frac{6d^2(d+ex)^{\frac{7}{2}}}{7}-\frac{4d(d+ex)^{\frac{9}{2}}}{9}+\frac{(d+ex)^{\frac{11}{2}}}{11}\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
2*a*b*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*a*c*d*(-d*(d + e*x
)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a*c*(d**2*(d + e*x)**(3/2)/3 - 2*
d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*b**2*d*(-d*(d + e*x)**(
3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 2*b**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(
d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*b*c*d*(d**2*(d + e*x)**(3/
2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 6*b*c*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**3 + 4*c**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x
)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 4*c**2*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1405 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)dx$

Optimal. Leaf size=132

$$\frac{2(d+ex)^{5/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{6c(d+ex)^{7/2}(2cd-be)}{7e^4}$$

Rubi [A] time = 0.07, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{5/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{6c(d+ex)^{7/2}(2cd-be)}{7e^4}+\frac{4c^2(d+ex)^{9/2}}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2),x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(3/2))/(3*e^4) + (2*(6*
c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(5/2))/(5*e^4) - (6*c*(2
*c*d - b*e)*(d + e*x)^(7/2))/(7*e^4) + (4*c^2*(d + e*x)^(9/2))/(9*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b\right.}{e^3}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}{3e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3b\right.}{5e^4}$$

Mathematica [A] time = 0.12, size = 110, normalized size = 0.83

$$\frac{2(d+ex)^{3/2}\left(3ce\left(14ae(3ex-2d)+3b\left(8d^2-12dex+15e^2x^2\right)\right)+21be^2(5ae-2bd+3bex)+c^2\left(-32d^3+48d^2ex-60de^2x^2+70e^3x^3\right)\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(21*b*e^2*(-2*b*d + 5*a*e + 3*b*e*x) + c^2*(-32*d^3 + 48
*d^2*e*x - 60*d*e^2*x^2 + 70*e^3*x^3) + 3*c*e*(14*a*e*(-2*d + 3*e*x) + 3*b*
(8*d^2 - 12*d*e*x + 15*e^2*x^2))))/(315*e^4)
```

IntegrateAlgebraic [A] time = 0.08, size = 143, normalized size = 1.08

$$\frac{2(d+ex)^{3/2}\left(105abe^3+126ace^2(d+ex)-210acde^2+63b^2e^2(d+ex)-105b^2de^2+315bcd^2e-378bcde(d+ex)+135bce(d+ex)^2-210c^2d^3+378c^2d^2(d+ex)-270c^2d(d+ex)^2+70c^2(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-210*c^2*d^3 + 315*b*c*d^2*e - 105*b^2*d*e^2 - 210*a*c*
d*e^2 + 105*a*b*e^3 + 378*c^2*d^2*(d + e*x) - 378*b*c*d*e*(d + e*x) + 63*b^
2*e^2*(d + e*x) + 126*a*c*e^2*(d + e*x) - 270*c^2*d*(d + e*x)^2 + 135*b*c*e
*(d + e*x)^2 + 70*c^2*(d + e*x)^3))/(315*e^4)
```

fricas [A] time = 0.40, size = 167, normalized size = 1.27

$$\frac{2\left(70\,c^{2}e^{4}x^{4}-32\,c^{2}d^{4}+72\,bcd^{3}e+105\,abde^{3}-42\left(b^{2}+2\,ac\right)d^{2}e^{2}+5\left(2\,c^{2}de^{3}+27\,bce^{4}\right)x^{3}-3\left(4\,c^{2}d^{2}e^{2}-9\,bcde^{3}-21\left(b^{2}+2\,ac\right)e^{4}\right)x^{2}+\left(16\,c^{2}d^{3}e-36\,bcd^{2}e^{2}+105\,abe^{4}+21\left(b^{2}+2\,ac\right)de^{3}\right)x\right)\sqrt{ex+d}}{315\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(70*c^2*e^4*x^4 - 32*c^2*d^4 + 72*b*c*d^3*e + 105*a*b*d*e^3 - 42*(b^2
 + 2*a*c)*d^2*e^2 + 5*(2*c^2*d*e^3 + 27*b*c*e^4)*x^3 - 3*(4*c^2*d^2*e^2 - 9
*b*c*d*e^3 - 21*(b^2 + 2*a*c)*e^4)*x^2 + (16*c^2*d^3*e - 36*b*c*d^2*e^2 + 1
05*a*b*e^4 + 21*(b^2 + 2*a*c)*d*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.27, size = 400, normalized size = 3.03

$$\frac{2}{315}\left(105\left(\left(xe+d\right)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)b^{2}de^{(-1)}+210\left(\left(xe+d\right)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)acde^{(-1)}+63\left(3\left(xe+d\right)^{\frac{5}{2}}-10\left(xe+d\right)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^{2}\right)bcde^{(-2)}+18\left(5\left(xe+d\right)^{\frac{7}{2}}-21\left(xe+d\right)^{\frac{5}{2}}d+35\left(xe+d\right)^{\frac{3}{2}}d^{2}-35\sqrt{xe+d}\,d^{3}\right)c^{2}de^{(-3)}+21\left(3\left(xe+d\right)^{\frac{5}{2}}-10\left(xe+d\right)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^{2}\right)b^{2}e^{(-1)}+42\left(3\left(xe+d\right)^{\frac{5}{2}}-10\left(xe+d\right)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^{2}\right)ace^{(-1)}+27\left(5\left(xe+d\right)^{\frac{7}{2}}-21\left(xe+d\right)^{\frac{5}{2}}d+35\left(xe+d\right)^{\frac{3}{2}}d^{2}-35\sqrt{xe+d}\,d^{3}\right)bce^{(-2)}+2\left(35\left(xe+d\right)^{\frac{9}{2}}-180\left(xe+d\right)^{\frac{7}{2}}d+378\left(xe+d\right)^{\frac{5}{2}}d^{2}-420\left(xe+d\right)^{\frac{3}{2}}d^{3}+315\sqrt{xe+d}\,d^{4}\right)c^{2}e^{(-3)}+315\sqrt{xe+d}\,abd+105\left(\left(xe+d\right)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)ab\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*d*e^(-1) + 210*((x*e +
 d)^(3/2) - 3*sqrt(x*e + d)*d)*a*c*d*e^(-1) + 63*(3*(x*e + d)^(5/2) - 10*(x
*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*d*e^(-2) + 18*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*c
^2*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
d)*d^2)*b^2*e^(-1) + 42*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*a*c*e^(-1) + 27*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b*c*e^(-2) + 2*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*c^2*e^(-3) + 315*sqrt(x*e + d)*a*b*d + 105
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b)*e^(-1)
```

maple [A] time = 0.05, size = 123, normalized size = 0.93

$$\frac{2\left(ex+d\right)^{\frac{3}{2}}\left(70c^{2}x^{3}e^{3}+135bc\,e^{3}x^{2}-60c^{2}d\,e^{2}x^{2}+126ac\,e^{3}x+63b^{2}e^{3}x-108bcd\,e^{2}x+48c^{2}d^{2}ex+105ab\,e^{3}-84acd\,e^{2}-42b^{2}d\,e^{2}+72bc\,d^{2}e-32c^{2}d^{3}\right)}{315e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(70*c^2*e^3*x^3+135*b*c*e^3*x^2-60*c^2*d*e^2*x^2+126*a*
c*e^3*x+63*b^2*e^3*x-108*b*c*d*e^2*x+48*c^2*d^2*e*x+105*a*b*e^3-84*a*c*d*e^
2-42*b^2*d*e^2+72*b*c*d^2*e-32*c^2*d^3)/e^4
```

maxima [A] time = 0.52, size = 121, normalized size = 0.92

$$\frac{2\left(70\left(ex+d\right)^{\frac{9}{2}}c^{2}-135\left(2\,c^{2}d-bce\right)\left(ex+d\right)^{\frac{7}{2}}+63\left(6\,c^{2}d^{2}-6\,bcde+\left(b^{2}+2\,ac\right)e^{2}\right)\left(ex+d\right)^{\frac{5}{2}}-105\left(2\,c^{2}d^{3}-3\,bcd^{2}e-abe^{3}+\left(b^{2}+2\,ac\right)de^{2}\right)\left(ex+d\right)^{\frac{3}{2}}\right)}{315\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*(70*(e*x + d)^(9/2)*c^2 - 135*(2*c^2*d - b*c*e)*(e*x + d)^(7/2) + 63*
(6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(5/2) - 105*(2*c^2*d^
3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 0.07, size = 118, normalized size = 0.89

$$\frac{4\,c^2\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}+\frac{{\left(d+e\,x\right)}^{5/2}\,\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{5\,e^4}-\frac{\left(12\,c^2\,d-6\,b\,c\,e\right)\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}+\frac{2\,\left(b\,e-2\,c\,d\right)\,{\left(d+e\,x\right)}^{3/2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2),x)
```

```
[Out] (4*c^2*(d + e*x)^(9/2))/(9*e^4) + ((d + e*x)^(5/2)*(2*b^2*e^2 + 12*c^2*d^2
+ 4*a*c*e^2 - 12*b*c*d*e))/(5*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(7/2))
/(7*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(3/2)*(a*e^2 + c*d^2 - b*d*e))/(3*e^4
)
```

sympy [A] time = 5.14, size = 155, normalized size = 1.17

$$\frac{2\left(\frac{2c^2(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}\left(3bce-6c^2d\right)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(2ace^2+b^2e^2-6bcde+6c^2d^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(abe^3-2acde^2-b^2de^2+3bcd^2e-2c^2d^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(2*c**2*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(3*b*c*e - 6*c**2*d)
/(7*e**3) + (d + e*x)**(5/2)*(2*a*c*e**2 + b**2*e**2 - 6*b*c*d*e + 6*c**2*d
**2)/(5*e**3) + (d + e*x)**(3/2)*(a*b*e**3 - 2*a*c*d*e**2 - b**2*d*e**2 + 3
*b*c*d**2*e - 2*c**2*d**3)/(3*e**3))/e
```

3.1406 $\int \frac{(b+2cx)(a+bx+cx^2)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=130

$$\frac{2(d+ex)^{3/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{6c(d+ex)^{5/2}(2cd-be)}{5e^4}+\frac{4c^{\cdots}}{}$$

Rubi [A] time = 0.06, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{2(d+ex)^{3/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{6c(d+ex)^{5/2}(2cd-be)}{5e^4}+\frac{4c^2(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x])/e^4 + (2*(6*c^2*d^
2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(3/2))/(3*e^4) - (6*c*(2*c*d -
 b*e)*(d + e*x)^(5/2))/(5*e^4) + (4*c^2*(d + e*x)^(7/2))/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{\sqrt{d+ex}}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3\sqrt{d+ex}}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)\sqrt{d+ex}}{e^3}-\cdots\right)\\ &= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}{e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)(d+\cdots}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.11, size = 109, normalized size = 0.84

$$\frac{2\sqrt{d+ex}\left(7ce\left(10ae(ex-2d)+3b\left(8d^2-4dex+3e^2x^2\right)\right)+35be^2(3ae-2bd+bex)-6c^2\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(35*b*e^2*(-2*b*d + 3*a*e + b*e*x) - 6*c^2*(16*d^3 - 8*d^2
*e*x + 6*d*e^2*x^2 - 5*e^3*x^3) + 7*c*e*(10*a*e*(-2*d + e*x) + 3*b*(8*d^2 -
 4*d*e*x + 3*e^2*x^2))))/(105*e^4)
```

IntegrateAlgebraic [A] time = 0.08, size = 143, normalized size = 1.10

$$\frac{2\sqrt{d+ex}\left(105abe^3+70ace^2(d+ex)-210acde^2+35b^2e^2(d+ex)-105b^2de^2+315bcd^2e-210bcde(d+ex)+63bce(d+ex)^2-210c^2d^3+210c^2d^2(d+ex)-126c^2d(d+ex)^2+30c^2(d+ex)^3\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-210*c^2*d^3 + 315*b*c*d^2*e - 105*b^2*d*e^2 - 210*a*c*d*
e^2 + 105*a*b*e^3 + 210*c^2*d^2*(d + e*x) - 210*b*c*d*e*(d + e*x) + 35*b^2*
e^2*(d + e*x) + 70*a*c*e^2*(d + e*x) - 126*c^2*d*(d + e*x)^2 + 63*b*c*e*(d
+ e*x)^2 + 30*c^2*(d + e*x)^3))/(105*e^4)
```

fricas [A] time = 0.39, size = 116, normalized size = 0.89

$$\frac{2\left(30\,c^2e^3x^3-96\,c^2d^3+168\,bcd^2e+105\,abe^3-70\left(b^2+2\,ac\right)de^2-9\left(4\,c^2de^2-7\,bce^3\right)x^2+\left(48\,c^2d^2e-84\,bcde^2+35\left(b^2+2\,ac\right)e^3\right)x\right)\sqrt{ex+d}}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(30*c^2*e^3*x^3 - 96*c^2*d^3 + 168*b*c*d^2*e + 105*a*b*e^3 - 70*(b^2
+ 2*a*c)*d*e^2 - 9*(4*c^2*d*e^2 - 7*b*c*e^3)*x^2 + (48*c^2*d^2*e - 84*b*c*d
*e^2 + 35*(b^2 + 2*a*c)*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.27, size = 166, normalized size = 1.28

$$\frac{2}{105}\left(35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)b^2e^{(-1)}+70\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)ace^{(-1)}+21\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)bce^{(-2)}+6\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)c^2e^{(-3)}+105\sqrt{xe+d}\,ab\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*e^(-1) + 70*((x*e + d)^
(3/2) - 3*sqrt(x*e + d)*d)*a*c*e^(-1) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*e^(-2) + 6*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*c^2*e^(-3)
 + 105*sqrt(x*e + d)*a*b)*e^(-1)
```

maple [A] time = 0.05, size = 123, normalized size = 0.95

$$\frac{2\sqrt{ex+d}\,\left(30c^2x^3e^3+63bc\,e^3x^2-36c^2d\,e^2x^2+70ac\,e^3x+35b^2e^3x-84bcd\,e^2x+48c^2d^2ex+105ab\,e^3-140acd\,e^2-70b^2d\,e^2+168bc\,d^2e-96c^2d^3\right)}{105e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(1/2)*(30*c^2*e^3*x^3+63*b*c*e^3*x^2-36*c^2*d*e^2*x^2+70*a*c*
e^3*x+35*b^2*e^3*x-84*b*c*d*e^2*x+48*c^2*d^2*e*x+105*a*b*e^3-140*a*c*d*e^2-
70*b^2*d*e^2+168*b*c*d^2*e-96*c^2*d^3)/e^4
```

maxima [A] time = 0.53, size = 121, normalized size = 0.93

$$\frac{2\left(30\,(ex+d)^{\frac{7}{2}}c^2-63\left(2\,c^2d-bce\right)(ex+d)^{\frac{5}{2}}+35\left(6\,c^2d^2-6\,bcde+\left(b^2+2\,ac\right)e^2\right)(ex+d)^{\frac{3}{2}}-105\left(2\,c^2d^3-3\,bcd^2e-abe^3+\left(b^2+2\,ac\right)de^2\right)\sqrt{ex+d}\right)}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(30*(e*x + d)^(7/2)*c^2 - 63*(2*c^2*d - b*c*e)*(e*x + d)^(5/2) + 35*(
6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(3/2) - 105*(2*c^2*d^3
 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 118, normalized size = 0.91

$$\frac{4\,c^2\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}+\frac{{\left(d+e\,x\right)}^{3/2}\,\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{3\,e^4}-\frac{\left(12\,c^2\,d-6\,b\,c\,e\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{2\,\left(b\,e-2\,c\,d\right)\,\sqrt{d+e\,x}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(1/2),x)
```

```
[Out] (4*c^2*(d + e*x)^(7/2))/(7*e^4) + ((d + e*x)^(3/2)*(2*b^2*e^2 + 12*c^2*d^2
+ 4*a*c*e^2 - 12*b*c*d*e))/(3*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(5/2))
/(5*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(1/2)*(a*e^2 + c*d^2 - b*d*e))/e^4
```

sympy [**A**] time = 45.95, size = 427, normalized size = 3.28

$$\begin{cases} \frac{-\frac{2abd}{\sqrt{d+ex}} - 2ab\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{4acd\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{4ac\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} - \frac{2b^2d\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{2b^2\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} - \frac{6bcd\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2} - \frac{6bc\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2} - \frac{4c^2d\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^3} - \frac{4c^2\left(\frac{d^4}{\sqrt{d+ex}} + 4d^3\sqrt{d+ex} - 2d^2(d+ex)^{\frac{3}{2}} + \frac{4d(d+ex)^{\frac{5}{2}}}{5} - \frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}}{e} & \text{for } e \neq 0 \\ \frac{\left(a+bx+cx^2\right)^2}{2\sqrt{d}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a*b*d/sqrt(d + e*x) - 2*a*b*(-d/sqrt(d + e*x) - sqrt(d + e*x
)) - 4*a*c*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*a*c*(d**2/sqrt(d + e*
x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 2*b**2*d*(-d/sqrt(d + e*x)
 - sqrt(d + e*x))/e - 2*b**2*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d +
 e*x)**(3/2)/3)/e - 6*b*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d +
e*x)**(3/2)/3)/e**2 - 6*b*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d
*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 4*c**2*d*(-d**3/sqrt(d + e*x
) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 -
4*c**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2)
 + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), ((a + b
*x + c*x**2)**2/(2*sqrt(d)), True))
```

3.1407 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=126

$$\frac{2\sqrt{d+ex}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(2cd-be)}{e^4}+\frac{4c^2(d+e}{5e^4}$$

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2\sqrt{d+ex}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(e^4*Sqrt[d + e*x]) + (2*(6*c^2*d
^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*Sqrt[d + e*x])/e^4 - (2*c*(2*c*d - b*e)
*(d + e*x)^(3/2))/e^4 + (4*c^2*(d + e*x)^(5/2))/(5*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{3/2}}\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^{3/2}}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3\sqrt{d+ex}}-\frac{3c(2cd-\right.$$

$$=\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)\sqrt{d+ex}}{e^4}-$$

Mathematica [A] time = 0.11, size = 106, normalized size = 0.84

$$\frac{2\left(5ce\left(2ae(2d+ex)+b\left(-8d^2-4dex+e^2x^2\right)\right)+5be^2(-ae+2bd+bex)+2c^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)}{5e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*b*e^2*(2*b*d - a*e + b*e*x) + 2*c^2*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2
 + e^3*x^3) + 5*c*e*(2*a*e*(2*d + e*x) + b*(-8*d^2 - 4*d*e*x + e^2*x^2))))/
(5*e^4*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.08, size = 143, normalized size = 1.13

$$\frac{2\left(-5abe^3+10ace^2(d+ex)+10acde^2+5b^2e^2(d+ex)+5b^2de^2-15bcd^2e-30bcde(d+ex)+5bce(d+ex)^2+10c^2d^3+30c^2d^2(d+ex)-10c^2d(d+ex)^2+2c^2(d+ex)^3\right)}{5e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(10*c^2*d^3 - 15*b*c*d^2*e + 5*b^2*d*e^2 + 10*a*c*d*e^2 - 5*a*b*e^3 + 30
*c^2*d^2*(d + e*x) - 30*b*c*d*e*(d + e*x) + 5*b^2*e^2*(d + e*x) + 10*a*c*e^
2*(d + e*x) - 10*c^2*d*(d + e*x)^2 + 5*b*c*e*(d + e*x)^2 + 2*c^2*(d + e*x)^
3))/(5*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.41, size = 126, normalized size = 1.00

$$\frac{2\left(2c^2e^3x^3+32c^2d^3-40bcd^2e-5abe^3+10\left(b^2+2ac\right)de^2-\left(4c^2de^2-5bce^3\right)x^2+\left(16c^2d^2e-20bcde^2+5\left(b^2+2ac\right)e^3\right)x\right)\sqrt{ex+d}}{5\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(2*c^2*e^3*x^3 + 32*c^2*d^3 - 40*b*c*d^2*e - 5*a*b*e^3 + 10*(b^2 + 2*a*
c)*d*e^2 - (4*c^2*d*e^2 - 5*b*c*e^3)*x^2 + (16*c^2*d^2*e - 20*b*c*d*e^2 + 5
*(b^2 + 2*a*c)*e^3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.19, size = 163, normalized size = 1.29

$$\frac{2}{5}\left(2(xe+d)^{\frac{5}{2}}c^2e^{16}-10(xe+d)^{\frac{3}{2}}c^2de^{16}+30\sqrt{xe+d}\,c^2d^2e^{16}+5(xe+d)^{\frac{3}{2}}bce^{17}-30\sqrt{xe+d}\,bcde^{17}+5\sqrt{xe+d}\,b^2e^{18}+10\sqrt{xe+d}\,ace^{18}\right)e^{(-20)}+\frac{2\left(2c^2d^3-3bcd^2e+b^2de^2+2acde^2-abe^3\right)e^{(-4)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*(2*(x*e + d)^(5/2)*c^2*e^16 - 10*(x*e + d)^(3/2)*c^2*d*e^16 + 30*sqrt(x
*e + d)*c^2*d^2*e^16 + 5*(x*e + d)^(3/2)*b*c*e^17 - 30*sqrt(x*e + d)*b*c*d*
e^17 + 5*sqrt(x*e + d)*b^2*e^18 + 10*sqrt(x*e + d)*a*c*e^18)*e^(-20) + 2*(2
*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)*e^(-4)/sqrt(x*e
 + d)
```

maple [A] time = 0.05, size = 123, normalized size = 0.98

$$-\frac{2\left(-2c^2x^3e^3-5bc\,e^3x^2+4c^2d\,e^2x^2-10ac\,e^3x-5b^2e^3x+20bcd\,e^2x-16c^2d^2ex+5ab\,e^3-20acd\,e^2-10b^2d\,e^2+40bc\,d^2e-32c^2d^3\right)}{5\sqrt{ex+d}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x)
```

```
[Out] -2/5/(e*x+d)^(1/2)*(-2*c^2*e^3*x^3-5*b*c*e^3*x^2+4*c^2*d*e^2*x^2-10*a*c*e^3
*x-5*b^2*e^3*x+20*b*c*d*e^2*x-16*c^2*d^2*e*x+5*a*b*e^3-20*a*c*d*e^2-10*b^2*
d*e^2+40*b*c*d^2*e-32*c^2*d^3)/e^4
```

maxima [A] time = 0.72, size = 129, normalized size = 1.02

$$\frac{2\left(\frac{2(ex+d)^{\frac{5}{2}}c^2-5\left(2c^2d-bce\right)(ex+d)^{\frac{3}{2}}+5\left(6c^2d^2-6bcde+\left(b^2+2ac\right)e^2\right)\sqrt{ex+d}}{e^3}+\frac{5\left(2c^2d^3-3bcd^2e-abe^3+\left(b^2+2ac\right)de^2\right)}{\sqrt{ex+d}\,e^3}\right)}{5e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*((2*(e*x + d)^(5/2)*c^2 - 5*(2*c^2*d - b*c*e)*(e*x + d)^(3/2) + 5*(6*c^
2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*sqrt(e*x + d))/e^3 + 5*(2*c^2*d^3 -
3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 0.07, size = 133, normalized size = 1.06

$$\frac{4c^2(d+ex)^{5/2}}{5e^4}+\frac{\sqrt{d+ex}\,\left(2b^2e^2-12bcde+12c^2d^2+4ace^2\right)}{e^4}+\frac{2b^2de^2-6bcd^2e-2abe^3+4c^2d^3+4acde^2}{e^4\sqrt{d+ex}}-\frac{\left(12c^2d-6bce\right)(d+ex)^{3/2}}{3e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x)
```

```
[Out] (4*c^2*(d + e*x)^(5/2))/(5*e^4) + ((d + e*x)^(1/2)*(2*b^2*e^2 + 12*c^2*d^2
+ 4*a*c*e^2 - 12*b*c*d*e))/e^4 + (4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3 + 4*a
*c*d*e^2 - 6*b*c*d^2*e)/(e^4*(d + e*x)^(1/2)) - ((12*c^2*d - 6*b*c*e)*(d +
e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 28.77, size = 128, normalized size = 1.02

$$\frac{4c^2(d+ex)^{\frac{5}{2}}}{5e^4}+\frac{(d+ex)^{\frac{3}{2}}\left(6bce-12c^2d\right)}{3e^4}+\frac{\sqrt{d+ex}\left(4ace^2+2b^2e^2-12bcde+12c^2d^2\right)}{e^4}-\frac{2(be-2cd)\left(ae^2-bde+cd^2\right)}{e^4\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**(3/2),x)
```

```
[Out] 4*c**2*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(6*b*c*e - 12*c**2*d)/(
3*e**4) + sqrt(d + e*x)*(4*a*c*e**2 + 2*b**2*e**2 - 12*b*c*d*e + 12*c**2*d*
*2)/e**4 - 2*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)/(e**4*sqrt(d + e*x))
```

3.1408 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=128

$$-\frac{2\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4\sqrt{d+ex}}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^{3/2}}-\frac{6c\sqrt{d+ex}\,(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{3/2}}{3e^4}$$

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4\sqrt{d+ex}}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^{3/2}}-\frac{6c\sqrt{d+ex}\,(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^(3/2)) - (2*(6*c
^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(e^4*Sqrt[d + e*x]) - (6*c*(2*c*d
- b*e)*Sqrt[d + e*x])/e^4 + (4*c^2*(d + e*x)^(3/2))/(3*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{5/2}}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^{5/2}}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^{3/2}}-\frac{3c(2cd-be}{e^3\sqrt{d+ex}}\right.\\ &= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^{3/2}}-\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)}{e^4\sqrt{d+ex}}-\frac{6c(2cd-be)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.12, size = 108, normalized size = 0.84

$$-\frac{2\left(ce\left(2ae(2d+3ex)-3b\left(8d^2+12dex+3e^2x^2\right)\right)+be^2(ae+2bd+3bex)+2c^2\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*e^2*(2*b*d + a*e + 3*b*e*x) + 2*c^2*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x
^2 - e^3*x^3) + c*e*(2*a*e*(2*d + 3*e*x) - 3*b*(8*d^2 + 12*d*e*x + 3*e^2*x^
2))))/(3*e^4*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.08, size = 142, normalized size = 1.11

$$\frac{2\left(-abe^3-6ace^2(d+ex)+2acde^2-3b^2e^2(d+ex)+b^2de^2-3bcd^2e+18bcde(d+ex)+9bce(d+ex)^2+2c^2d^3-18c^2d^2(d+ex)-18c^2d(d+ex)^2+2c^2(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3 - 18*c^2*d^
2*(d + e*x) + 18*b*c*d*e*(d + e*x) - 3*b^2*e^2*(d + e*x) - 6*a*c*e^2*(d + e
*x) - 18*c^2*d*(d + e*x)^2 + 9*b*c*e*(d + e*x)^2 + 2*c^2*(d + e*x)^3))/(3*e
^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.41, size = 137, normalized size = 1.07

$$\frac{2\left(2c^2e^3x^3-32c^2d^3+24bcd^2e-abe^3-2\left(b^2+2ac\right)de^2-3\left(4c^2de^2-3bce^3\right)x^2-3\left(16c^2d^2e-12bcde^2+\left(b^2+2ac\right)e^3\right)x\right)\sqrt{ex+d}}{3\left(e^6x^2+2de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(2*c^2*e^3*x^3 - 32*c^2*d^3 + 24*b*c*d^2*e - a*b*e^3 - 2*(b^2 + 2*a*c)*
d*e^2 - 3*(4*c^2*d*e^2 - 3*b*c*e^3)*x^2 - 3*(16*c^2*d^2*e - 12*b*c*d*e^2 +
(b^2 + 2*a*c)*e^3)*x)*sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.20, size = 153, normalized size = 1.20

$$\frac{2}{3}\left(2(xe+d)^{\frac{3}{2}}c^2e^8-18\sqrt{xe+d}\,c^2de^8+9\sqrt{xe+d}\,bce^9\right)e^{(-12)}-\frac{2\left(18(xe+d)c^2d^2-2c^2d^3-18(xe+d)bcde+3bcd^2e+3(xe+d)b^2e^2+6(xe+d)ace^2-b^2de^2-2acde^2+abe^3\right)e^{(-4)}}{3(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(2*(x*e + d)^(3/2)*c^2*e^8 - 18*sqrt(x*e + d)*c^2*d*e^8 + 9*sqrt(x*e +
d)*b*c*e^9)*e^(-12) - 2/3*(18*(x*e + d)*c^2*d^2 - 2*c^2*d^3 - 18*(x*e + d)*
b*c*d*e + 3*b*c*d^2*e + 3*(x*e + d)*b^2*e^2 + 6*(x*e + d)*a*c*e^2 - b^2*d*e
^2 - 2*a*c*d*e^2 + a*b*e^3)*e^(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.04, size = 122, normalized size = 0.95

$$-\frac{2\left(-2c^2x^3e^3-9bc\,e^3x^2+12c^2d\,e^2x^2+6ac\,e^3x+3b^2e^3x-36bcd\,e^2x+48c^2d^2ex+ab\,e^3+4acd\,e^2+2b^2d\,e^2-24bc\,d^2e+32c^2d^3\right)}{3\,(ex+d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-2*c^2*e^3*x^3-9*b*c*e^3*x^2+12*c^2*d*e^2*x^2+6*a*c*e^3
*x+3*b^2*e^3*x-36*b*c*d*e^2*x+48*c^2*d^2*e*x+a*b*e^3+4*a*c*d*e^2+2*b^2*d*e^
2-24*b*c*d^2*e+32*c^2*d^3)/e^4
```

maxima [A] time = 0.60, size = 126, normalized size = 0.98

$$\frac{2\left(\frac{2(ex+d)^{\frac{3}{2}}c^2-9\left(2c^2d-bce\right)\sqrt{ex+d}}{e^3}+\frac{2c^2d^3-3bcd^2e-abe^3+\left(b^2+2ac\right)de^2-3\left(6c^2d^2-6bcde+\left(b^2+2ac\right)e^2\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*((2*(e*x + d)^(3/2)*c^2 - 9*(2*c^2*d - b*c*e)*sqrt(e*x + d))/e^3 + (2*c
^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2 - 3*(6*c^2*d^2 - 6*b*c
*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 0.09, size = 139, normalized size = 1.09

$$\frac{4c^2(d+ex)^3+4c^2d^3+2b^2de^2-6b^2e^2(d+ex)-36c^2d(d+ex)^2-36c^2d^2(d+ex)-2abe^3+4acde^2-6bcd^2e-12ace^2(d+ex)+18bce(d+ex)^2+36bcde(d+ex)}{3e^4(d+ex)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x)
```

```
[Out] (4*c^2*(d + e*x)^3 + 4*c^2*d^3 + 2*b^2*d*e^2 - 6*b^2*e^2*(d + e*x) - 36*c^2
*d*(d + e*x)^2 - 36*c^2*d^2*(d + e*x) - 2*a*b*e^3 + 4*a*c*d*e^2 - 6*b*c*d^2
*e - 12*a*c*e^2*(d + e*x) + 18*b*c*e*(d + e*x)^2 + 36*b*c*d*e*(d + e*x))/(3
*e^4*(d + e*x)^(3/2))
```

sympy [A]   time = 1.65, size = 536, normalized size = 4.19

$$\begin{cases} -\frac{2abe^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{8acde^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{12ace^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{4b^2de^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{6b^2e^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{48bcd^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{72bcde^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{18bce^3x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{64c^2d^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{96c^2d^2ex}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{24c^2de^2x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{4c^2e^3x^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} & \text{for}\ e \neq 0 \\ \frac{abx+acx^2+\frac{b^2x^2}{2}+bcx^3+\frac{c^2x^4}{2}}{d^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*a*b*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) -
8*a*c*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 12*a*c*e**
3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 4*b**2*d*e**2/(3*d*
e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 6*b**2*e**3*x/(3*d*e**4*sqrt
(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 48*b*c*d**2*e/(3*d*e**4*sqrt(d + e*x)
 + 3*e**5*x*sqrt(d + e*x)) + 72*b*c*d*e**2*x/(3*d*e**4*sqrt(d + e*x) + 3*e*
*5*x*sqrt(d + e*x)) + 18*b*c*e**3*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*s
qrt(d + e*x)) - 64*c**2*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*
x)) - 96*c**2*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) -
24*c**2*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 4*c
**2*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)), Ne(e, 0)),
 ((a*b*x + a*c*x**2 + b**2*x**2/2 + b*c*x**3 + c**2*x**4/2)/d**(5/2), True)
)
```

3.1409 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=252

$$\frac{8c(d+ex)^{13/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{13e^6}-\frac{2(d+ex)^{11/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{11e^6}+\frac{4(d$$

Rubi [A] time = 0.17, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{13/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{13e^6}-\frac{2(d+ex)^{11/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{11e^6}+\frac{4(d+ex)^{9/2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{9e^6}-\frac{2(d+ex)^{7/2}(2cd-be)\left(ae^2-bde+cd^2\right)^2}{7e^6}-\frac{2c^2(d+ex)^{15/2}(2cd-be)}{3e^6}+\frac{4c^3(d+ex)^{17/2}}{17e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(7/2))/(7*e^6) + (4*(
c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^
(9/2))/(9*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*
a*e))*(d + e*x)^(11/2))/(11*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d -
 a*e))*(d + e*x)^(13/2))/(13*e^6) - (2*c^2*(2*c*d - b*e)*(d + e*x)^(15/2))/
(3*e^6) + (4*c^3*(d + e*x)^(17/2))/(17*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^2\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{5/2}}{e^5}+\frac{2\left(cd^2-bde+ae^2\right.}{}\right.$$

$$= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{7/2}}{7e^6}+\frac{4\left(cd^2-bde+ae^2\right)\left(\right.}{}$$

Mathematica [A] time = 0.41, size = 291, normalized size = 1.15

$$\frac{2(d+ex)^{7/2}\left(-34ce^2\left(143a^2e^2(2d-7ex)-39abe\left(8d^2-28dex+63e^2x^2\right)+6b^2\left(16d^3-56d^2ex+126de^2x^2-231e^3x^3\right)\right)+221be^3\left(99a^2e^2+22abe(7ex-2d)+b^2\left(8d^2-28dex+63e^2x^2\right)\right)+17c^2e\left(12ae\left(-16d^3+56d^2ex-126de^2x^2+231e^3x^3\right)+b\left(128d^4-448d^3ex+1008d^2e^2x^2-1848de^3x^3+3003e^4x^4\right)\right)-2c^3\left(256d^5-896d^4ex+2016d^3e^2x^2-3696d^2e^3x^3+6006de^4x^4-9009e^5x^5\right)\right)}{153153e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-2*c^3*(256*d^5 - 896*d^4*e*x + 2016*d^3*e^2*x^2 - 3696
*d^2*e^3*x^3 + 6006*d*e^4*x^4 - 9009*e^5*x^5) + 221*b*e^3*(99*a^2*e^2 + 22*
a*b*e*(-2*d + 7*e*x) + b^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2)) - 34*c*e^2*(143
*a^2*e^2*(2*d - 7*e*x) - 39*a*b*e*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 6*b^2*(
16*d^3 - 56*d^2*e*x + 126*d*e^2*x^2 - 231*e^3*x^3)) + 17*c^2*e*(12*a*e*(-16
*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + b*(128*d^4 - 448*d^3*e*x
 + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4))))/(153153*e^6)
```

IntegrateAlgebraic [A] time = 0.20, size = 425, normalized size = 1.69

$$\frac{2(d+ex)^{7/2}\left(21879a^2be^5+34034a^2ce^4(d+ex)-43758a^2cde^4+34034ab^2e^4(d+ex)-43758ab^2de^4+131274abcd^2e^3-204204abcde^3(d+ex)+83538abce^3(d+ex)^2-87516ac^2d^3e^2+204204ac^2d^2e^2(d+ex)-167076ac^2de^2(d+ex)^2+47124ac^2e^2(d+ex)^3+21879b^3d^2e^3-34034b^3de^3(d+ex)+13923b^3e^3(d+ex)^2-87516b^2cd^3e^2+204204b^2cd^2e^2(d+ex)-167076b^2cde^2(d+ex)^2+47124b^2ce^2(d+ex)^3+109395bc^2d^4e-340340bc^2d^3e(d+ex)+417690bc^2d^2e(d+ex)^2-235620bc^2de(d+ex)^3+51051bc^2e(d+ex)^4-43758c^3d^5+170170c^3d^4(d+ex)-278460c^3d^3(d+ex)^2+235620c^3d^2(d+ex)^3-102102c^3d(d+ex)^4+18018c^3(d+ex)^5\right)}{153153e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-43758*c^3*d^5 + 109395*b*c^2*d^4*e - 87516*b^2*c*d^3*e
^2 - 87516*a*c^2*d^3*e^2 + 21879*b^3*d^2*e^3 + 131274*a*b*c*d^2*e^3 - 43758
*a*b^2*d*e^4 - 43758*a^2*c*d*e^4 + 21879*a^2*b*e^5 + 170170*c^3*d^4*(d + e*
x) - 340340*b*c^2*d^3*e*(d + e*x) + 204204*b^2*c*d^2*e^2*(d + e*x) + 204204
*a*c^2*d^2*e^2*(d + e*x) - 34034*b^3*d*e^3*(d + e*x) - 204204*a*b*c*d*e^3*(
d + e*x) + 34034*a*b^2*e^4*(d + e*x) + 34034*a^2*c*e^4*(d + e*x) - 278460*c
^3*d^3*(d + e*x)^2 + 417690*b*c^2*d^2*e*(d + e*x)^2 - 167076*b^2*c*d*e^2*(d
 + e*x)^2 - 167076*a*c^2*d*e^2*(d + e*x)^2 + 13923*b^3*e^3*(d + e*x)^2 + 83
538*a*b*c*e^3*(d + e*x)^2 + 235620*c^3*d^2*(d + e*x)^3 - 235620*b*c^2*d*e*(
d + e*x)^3 + 47124*b^2*c*e^2*(d + e*x)^3 + 47124*a*c^2*e^2*(d + e*x)^3 - 10
2102*c^3*d*(d + e*x)^4 + 51051*b*c^2*e*(d + e*x)^4 + 18018*c^3*(d + e*x)^5)
)/(153153*e^6)
```

fricas [B] time = 0.41, size = 590, normalized size = 2.34

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/153153*(18018*c^3*e^8*x^8 - 512*c^3*d^8 + 2176*b*c^2*d^7*e + 21879*a^2*b*
d^3*e^5 - 3264*(b^2*c + a*c^2)*d^6*e^2 + 1768*(b^3 + 6*a*b*c)*d^5*e^3 - 972
4*(a*b^2 + a^2*c)*d^4*e^4 + 3003*(14*c^3*d*e^7 + 17*b*c^2*e^8)*x^7 + 231*(1
10*c^3*d^2*e^6 + 527*b*c^2*d*e^7 + 204*(b^2*c + a*c^2)*e^8)*x^6 + 63*(2*c^3
*d^3*e^5 + 1207*b*c^2*d^2*e^6 + 1836*(b^2*c + a*c^2)*d*e^7 + 221*(b^3 + 6*a
*b*c)*e^8)*x^5 - 7*(20*c^3*d^4*e^4 - 85*b*c^2*d^3*e^5 - 10812*(b^2*c + a*c^
2)*d^2*e^6 - 5083*(b^3 + 6*a*b*c)*d*e^7 - 4862*(a*b^2 + a^2*c)*e^8)*x^4 + (
160*c^3*d^5*e^3 - 680*b*c^2*d^4*e^4 + 21879*a^2*b*e^8 + 1020*(b^2*c + a*c^2
)*d^3*e^5 + 24973*(b^3 + 6*a*b*c)*d^2*e^6 + 92378*(a*b^2 + a^2*c)*d*e^7)*x^
3 - 3*(64*c^3*d^6*e^2 - 272*b*c^2*d^5*e^3 - 21879*a^2*b*d*e^7 + 408*(b^2*c
+ a*c^2)*d^4*e^4 - 221*(b^3 + 6*a*b*c)*d^3*e^5 - 24310*(a*b^2 + a^2*c)*d^2*
e^6)*x^2 + (256*c^3*d^7*e - 1088*b*c^2*d^6*e^2 + 65637*a^2*b*d^2*e^6 + 1632
*(b^2*c + a*c^2)*d^5*e^3 - 884*(b^3 + 6*a*b*c)*d^4*e^4 + 4862*(a*b^2 + a^2*
c)*d^3*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.33, size = 2447, normalized size = 9.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/765765*(510510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*d^3*e^(-1) + 5
10510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*d^3*e^(-1) + 51051*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*d^3*e^(-2)
+ 306306*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
a*b*c*d^3*e^(-2) + 87516*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*
e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*c*d^3*e^(-3) + 87516*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*a*c^2*d^3*e^(-3) + 12155*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
 + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^
4)*b*c^2*d^3*e^(-4) + 2210*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*c^3*d^3*e^(-5) + 306306*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d^2*e^(-1) + 306306*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*c*d^2*e^(-1)
 + 65637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
```

```
 - 35*sqrt(x*e + d)*d^3)*b^3*d^2*e^(-2) + 393822*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b*c*d^2*
e^(-2) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^2*c*d^2*e^(-
3) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*c^2*d^2*e^(-3) +
 16575*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*b*c^2*d^2*e^(-4) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*c^3*d^2*e^(-
5) + 765765*sqrt(x*e + d)*a^2*b*d^3 + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e
+ d)*d)*a^2*b*d^2 + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^2*d*e^(-1) + 131274*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*a^2*c*d*e^(-1) + 7293*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*b^3*d*e^(-2) + 43758*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c*d
*e^(-2) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*b^2*c*d*e^(-3) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^2*d*e^(-3) + 3825*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*b*c^2*d*e^(-4) + 714*(429*(x*e + d)^(15/2) - 3465*(x*e +
d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3217
5*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d
^6 - 6435*sqrt(x*e + d)*d^7)*c^3*d*e^(-5) + 153153*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d + 4862*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*a*b^2*e^(-1) + 4862*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*a^2*c*e^(-1) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*e^(-2) + 6630*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c*e^(-2) + 102
0*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^
2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3
/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^2*c*e^(-3) + 1020*(231*(x*e + d)^(13/2)
 - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2
)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e
 + d)*d^6)*a*c^2*e^(-3) + 595*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*b*c^2*e^(-4) + 14*(6435*(x*e + d)^(17/2) - 58344*(x*e +
 d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 +
850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^
(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*c^3*e^(-
5) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*a^2*b)*e^(-1)
```

maple [A] time = 0.06, size = 359, normalized size = 1.42

$$\frac{2 (ex+d)^{\frac{7}{2}} \left(18018c^3e^5x^5+51051b c^2e^5x^4-12012c^3d e^4x^4+47124a c^2e^5x^3+47124b^2c e^5x^3-31416b c^2d e^4x^3+7392c^3d^2e^3x^3+83538abc e^5x^2-25704a c^2d e^4x^2+13923b^3e^5x^2-25704b^2cd e^4x^2+17136b c^2d^2e^3x^2-4032c^3d^3e^2x^2+34034a^2c e^5x+34034a b^2e^5x-37128abcd e^4x+11424a c^2d^2e^3x-6188b^3d e^4x+11424b^2c d^2e^3x-7616b c^2d^3e^2x+1792c^3d^4ex+21879a^2b e^5-9724a^2cd e^4-9724a b^2d e^4+10608abc d^2e^3-3264a c^2d^3e^2+1768b^3d^2e^3-3264b^2c d^3e^2+2176b c^2d^4e-512c^3d^5\right)}{153153e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/153153*(e*x+d)^(7/2)*(18018*c^3*e^5*x^5+51051*b*c^2*e^5*x^4-12012*c^3*d*e
^4*x^4+47124*a*c^2*e^5*x^3+47124*b^2*c*e^5*x^3-31416*b*c^2*d*e^4*x^3+7392*c
^3*d^2*e^3*x^3+83538*a*b*c*e^5*x^2-25704*a*c^2*d*e^4*x^2+13923*b^3*e^5*x^2-
25704*b^2*c*d*e^4*x^2+17136*b*c^2*d^2*e^3*x^2-4032*c^3*d^3*e^2*x^2+34034*a^
2*c*e^5*x+34034*a*b^2*e^5*x-37128*a*b*c*d*e^4*x+11424*a*c^2*d^2*e^3*x-6188*
b^3*d*e^4*x+11424*b^2*c*d^2*e^3*x-7616*b*c^2*d^3*e^2*x+1792*c^3*d^4*e*x+218
79*a^2*b*e^5-9724*a^2*c*d*e^4-9724*a*b^2*d*e^4+10608*a*b*c*d^2*e^3-3264*a*c
^2*d^3*e^2+1768*b^3*d^2*e^3-3264*b^2*c*d^3*e^2+2176*b*c^2*d^4*e-512*c^3*d^5
)/e^6
```

maxima [A] time = 0.60, size = 308, normalized size = 1.22

$$\frac{2\left(18018\,(ex+d)^{\frac{17}{2}}c^3-51051\left(2\,c^3d-bc^2e\right)(ex+d)^{\frac{15}{2}}+47124\left(5\,c^3d^2-5\,bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{13}{2}}-13923\left(20\,c^3d^3-30\,bc^2d^2e+12\left(b^2c+ac^2\right)de^2-\left(b^3+6\,abc\right)e^3\right)(ex+d)^{\frac{11}{2}}+34034\left(5\,c^3d^4-10\,bc^2d^3e+6\left(b^2c+ac^2\right)d^2e^2-\left(b^3+6\,abc\right)de^3+\left(ab^2+a^2c\right)e^4\right)(ex+d)^{\frac{9}{2}}-21879\left(2\,c^3d^5-5\,bc^2d^4e-a^2be^5+4\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3+2\left(ab^2+a^2c\right)de^4\right)(ex+d)^{\frac{7}{2}}\right)}{153153\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/153153*(18018*(e*x + d)^(17/2)*c^3 - 51051*(2*c^3*d - b*c^2*e)*(e*x + d)^
(15/2) + 47124*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(1
3/2) - 13923*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3
 + 6*a*b*c)*e^3)*(e*x + d)^(11/2) + 34034*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(
b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x
+ d)^(9/2) - 21879*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^
2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*(e*x + d)^(
7/2))/e^6
```

mupad [B] time = 0.10, size = 267, normalized size = 1.06

$$\frac{(d+e\,x)^{9/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{9\,e^6}+\frac{4\,c^3\,(d+e\,x)^{17/2}}{17\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,(d+e\,x)^{15/2}}{15\,e^6}+\frac{(d+e\,x)^{13/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{13\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{11/2}\,\left(b^2\,e^2-10\,b\,c\,d\,e+10\,c^2\,d^2+6\,a\,c\,e^2\right)}{11\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{7/2}\,{\left(c\,d^2-b\,d\,e+a\,e^2\right)}^2}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^(9/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(9*e^
6) + (4*c^3*(d + e*x)^(17/2))/(17*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(15/2))/(15*e^6) + ((d + e*x)^(13/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e
^2 - 40*b*c^2*d*e))/(13*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(11/2)*(b^2*e^2 +
 10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(11*e^6) + (2*(b*e - 2*c*d)*(d + e*x
)^(7/2)*(a*e^2 + c*d^2 - b*d*e)^2)/(7*e^6)
```

sympy [A] time = 70.39, size = 1860, normalized size = 7.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*a**2*b*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**2*b*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 4*a**2*c*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*a**2*c
*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**2 + 4*a**2*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d
*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 4*a*b**2*d**2*(-d*(d + e*x
)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*a*b**2*d*(d**2*(d + e*x)**(3/2)/3
 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 4*a*b**2*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**2 + 12*a*b*c*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x
)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 24*a*b*c*d*(-d**3*(d + e*x)**(3/2)/
```

```
3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9
)/e**3 + 12*a*b*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*
d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e*
*3 + 8*a*c**2*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 -
3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 16*a*c**2*d*(d**4*(d +
e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d
*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 8*a*c**2*(-d**5*(d + e*x
)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(
d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 +
 2*b**3*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)*
*(7/2)/7)/e**3 + 4*b**3*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/
2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*b**3*(d**4*(d
+ e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4
*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 8*b**2*c*d**2*(-d**3*(
d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d
 + e*x)**(9/2)/9)/e**4 + 16*b**2*c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
 e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d +
e*x)**(11/2)/11)/e**4 + 8*b**2*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)
**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
+ e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 10*b*c**2*d**2*(d**4*(d +
e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d
*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 20*b*c**2*d*(-d**5*(d +
e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**
2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**
5 + 10*b*c**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**
4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/
2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 4*c**3*d**2
*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/
2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(
13/2)/13)/e**6 + 8*c**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2
)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d
+ e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 +
 4*c**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d +
 e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 +
21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)
/17)/e**6
```

3.1410 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=252

$$\frac{8c(d+ex)^{11/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{11e^6}-\frac{2(d+ex)^{9/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{9e^6}+\frac{4(d+e\ldots}{}$$

Rubi [A] time = 0.13, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{11/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{11e^6}-\frac{2(d+ex)^{9/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{9e^6}+\frac{4(d+ex)^{7/2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{2(d+ex)^{5/2}(2cd-be)\left(ae^2-bde+cd^2\right)^2}{5e^6}-\frac{10c^2(d+ex)^{13/2}(2cd-be)}{13e^6}+\frac{4c^3(d+ex)^{15/2}}{15e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(5/2))/(5*e^6) + (4*(
c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^
(7/2))/(7*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*
a*e))*(d + e*x)^(9/2))/(9*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a
*e))*(d + e*x)^(11/2))/(11*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(13/2))/(
13*e^6) + (4*c^3*(d + e*x)^(15/2))/(15*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^2\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{3/2}}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(\ldots\right.}{}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{5/2}}{5e^6}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2\ldots\right.}{}$$

Mathematica [A] time = 0.36, size = 291, normalized size = 1.15

$$\frac{2(d+ex)^{5/2}\left(-78ce^2\left(33a^2e^2(2d-5ex)-11abe\left(8d^2-20dex+35e^2x^2\right)+2b^2\left(16d^3-40d^2ex+70de^2x^2-105e^3x^3\right)\right)+143be^3\left(63a^2e^2+18abe(5ex-2d)+b^2\left(8d^2-20dex+35e^2x^2\right)\right)+3c^2e\left(52ae\left(-16d^3+40d^2ex-70de^2x^2+105e^3x^3\right)+5b\left(128d^4-320d^3ex+560d^2e^2x^2-840de^3x^3+1155e^4x^4\right)\right)+c^3\left(-512d^5+1280d^4ex-2240d^3e^2x^2+3360d^2e^3x^3-4620de^4x^4+6006e^5x^5\right)\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(c^3*(-512*d^5 + 1280*d^4*e*x - 2240*d^3*e^2*x^2 + 3360*
d^2*e^3*x^3 - 4620*d*e^4*x^4 + 6006*e^5*x^5) + 143*b*e^3*(63*a^2*e^2 + 18*a
*b*e*(-2*d + 5*e*x) + b^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2)) - 78*c*e^2*(33*a
^2*e^2*(2*d - 5*e*x) - 11*a*b*e*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 2*b^2*(16
*d^3 - 40*d^2*e*x + 70*d*e^2*x^2 - 105*e^3*x^3)) + 3*c^2*e*(52*a*e*(-16*d^3
 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + 5*b*(128*d^4 - 320*d^3*e*x +
560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4))))/(45045*e^6)
```

IntegrateAlgebraic [A] time = 0.19, size = 425, normalized size = 1.69

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-18018*c^3*d^5 + 45045*b*c^2*d^4*e - 36036*b^2*c*d^3*e^
2 - 36036*a*c^2*d^3*e^2 + 9009*b^3*d^2*e^3 + 54054*a*b*c*d^2*e^3 - 18018*a*
b^2*d*e^4 - 18018*a^2*c*d*e^4 + 9009*a^2*b*e^5 + 64350*c^3*d^4*(d + e*x) -
128700*b*c^2*d^3*e*(d + e*x) + 77220*b^2*c*d^2*e^2*(d + e*x) + 77220*a*c^2*
d^2*e^2*(d + e*x) - 12870*b^3*d*e^3*(d + e*x) - 77220*a*b*c*d*e^3*(d + e*x)
 + 12870*a*b^2*e^4*(d + e*x) + 12870*a^2*c*e^4*(d + e*x) - 100100*c^3*d^3*(
d + e*x)^2 + 150150*b*c^2*d^2*e*(d + e*x)^2 - 60060*b^2*c*d*e^2*(d + e*x)^2
 - 60060*a*c^2*d*e^2*(d + e*x)^2 + 5005*b^3*e^3*(d + e*x)^2 + 30030*a*b*c*e
^3*(d + e*x)^2 + 81900*c^3*d^2*(d + e*x)^3 - 81900*b*c^2*d*e*(d + e*x)^3 +
16380*b^2*c*e^2*(d + e*x)^3 + 16380*a*c^2*e^2*(d + e*x)^3 - 34650*c^3*d*(d
+ e*x)^4 + 17325*b*c^2*e*(d + e*x)^4 + 6006*c^3*(d + e*x)^5))/(45045*e^6)
```

fricas [B] time = 0.40, size = 495, normalized size = 1.96

$$\frac{2\left(6006c^3e^7x^7 - 512c^3d^7 + 1920bc^2d^6e + 9009a^2bd^2e^5 - 2496\left(b^2c + ac^2\right)d^5e^2 + 1144\left(b^3 + 6abc\right)d^4e^3 - 5148\left(ab^2 + a^2c\right)d^3e^4 + 231\left(32c^3de^6 + 75bc^2e^7\right)x^6 + 126\left(c^3d^2e^5 + 175bc^2de^6 + 130\left(b^2c + ac^2\right)e^7\right)x^5 - 35\left(4c^3d^3e^4 - 15bc^2d^2e^5 - 624\left(b^2c + ac^2\right)de^6 - 143\left(b^3 + 6abc\right)e^7\right)x^4 + 10\left(16c^3d^4e^3 - 60bc^2d^3e^4 + 78\left(b^2c + ac^2\right)d^2e^5 + 715\left(b^3 + 6abc\right)de^6 + 1287\left(ab^2 + a^2c\right)e^7\right)x^3 - 3\left(64c^3d^5e^2 - 240bc^2d^4e^3 - 3003a^2be^7 + 312\left(b^2c + ac^2\right)d^3e^4 - 143\left(b^3 + 6abc\right)d^2e^5 - 6864\left(ab^2 + a^2c\right)de^6\right)x^2 + 2\left(128c^3d^6e - 480bc^2d^5e^2 + 9009a^2bde^6 + 624\left(b^2c + ac^2\right)d^4e^3 - 286\left(b^3 + 6abc\right)d^3e^4 + 1287\left(ab^2 + a^2c\right)d^2e^5\right)x\right)\sqrt{ex + d}}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(6006*c^3*e^7*x^7 - 512*c^3*d^7 + 1920*b*c^2*d^6*e + 9009*a^2*b*d^2
*e^5 - 2496*(b^2*c + a*c^2)*d^5*e^2 + 1144*(b^3 + 6*a*b*c)*d^4*e^3 - 5148*(
a*b^2 + a^2*c)*d^3*e^4 + 231*(32*c^3*d*e^6 + 75*b*c^2*e^7)*x^6 + 126*(c^3*d
^2*e^5 + 175*b*c^2*d*e^6 + 130*(b^2*c + a*c^2)*e^7)*x^5 - 35*(4*c^3*d^3*e^4
 - 15*b*c^2*d^2*e^5 - 624*(b^2*c + a*c^2)*d*e^6 - 143*(b^3 + 6*a*b*c)*e^7)*
x^4 + 10*(16*c^3*d^4*e^3 - 60*b*c^2*d^3*e^4 + 78*(b^2*c + a*c^2)*d^2*e^5 +
715*(b^3 + 6*a*b*c)*d*e^6 + 1287*(a*b^2 + a^2*c)*e^7)*x^3 - 3*(64*c^3*d^5*e
^2 - 240*b*c^2*d^4*e^3 - 3003*a^2*b*e^7 + 312*(b^2*c + a*c^2)*d^3*e^4 - 143
*(b^3 + 6*a*b*c)*d^2*e^5 - 6864*(a*b^2 + a^2*c)*d*e^6)*x^2 + 2*(128*c^3*d^6
*e - 480*b*c^2*d^5*e^2 + 9009*a^2*b*d*e^6 + 624*(b^2*c + a*c^2)*d^4*e^3 - 2
86*(b^3 + 6*a*b*c)*d^3*e^4 + 1287*(a*b^2 + a^2*c)*d^2*e^5)*x)*sqrt(e*x + d)
/e^6
```

giac [B] time = 0.29, size = 1648, normalized size = 6.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/45045*(30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*d^2*e^(-1) + 300
30*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*d^2*e^(-1) + 3003*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*d^2*e^(-2) + 18
018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*c
*d^2*e^(-2) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)
^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*c*d^2*e^(-3) + 5148*(5*(x*e + d)^(7/
2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*
a*c^2*d^2*e^(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c^2*
d^2*e^(-4) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*c^3*d^2*e^(-5) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(
3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d*e^(-1) + 12012*(3*(x*e + d)^(5/2) -
10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*c*d*e^(-1) + 2574*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*b^3*d*e^(-2) + 15444*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b*c*d*e^(-2) + 1144*(35*(x*e
 + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
```

```
d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^2*c*d*e^(-3) + 1144*(35*(x*e + d)^(
9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2
)*d^3 + 315*sqrt(x*e + d)*d^4)*a*c^2*d*e^(-3) + 650*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b*c^2*d*e^(-4) + 60*(23
1*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8
580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d
^5 + 3003*sqrt(x*e + d)*d^6)*c^3*d*e^(-5) + 45045*sqrt(x*e + d)*a^2*b*d^2 +
 30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d + 2574*(5*(x*e + d)^(7
/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)
*a*b^2*e^(-1) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c*e^(-1) + 143*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*b^3*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*a*b*c*e^(-2) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2
)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(
3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^2*c*e^(-3) + 260*(63*(x*e + d)^(11/2) -
 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^2*e^(-3) + 75*(231
*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 85
80*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^
5 + 3003*sqrt(x*e + d)*d^6)*b*c^2*e^(-4) + 14*(429*(x*e + d)^(15/2) - 3465*
(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^
(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^3*e^(-5) + 3003*(3*(x*e + d)^(5/2) -
10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b)*e^(-1)
```

maple [A] time = 0.06, size = 359, normalized size = 1.42

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(6006c^3e^5x^5+17325b c^2e^5x^4-4620c^3d e^4x^4+16380a c^2e^5x^3+16380b^2c e^5x^3-12600b c^2d e^4x^3+3360c^3d^2e^3x^3+30030abc e^5x^2-10920a c^2d e^4x^2+5005b^3e^5x^2-10920b^2cd e^4x^2+8400b c^2d^2e^3x^2-2240c^3d^3e^2x^2+12870a^2c e^5x+12870a b^2e^5x-17160abcd e^4x+6240a c^2d^2e^3x-2860b^3d e^4x+6240b^2c d^2e^3x-4800b c^2d^3e^2x+1280c^3d^4ex+9009a^2b e^5-5148a^2cd e^4-5148a b^2d e^4+6864abc d^2e^3-2496a c^2d^3e^2+1144b^3d^2e^3-2496b^2c d^3e^2+1920b c^2d^4e-512c^3d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(6006*c^3*e^5*x^5+17325*b*c^2*e^5*x^4-4620*c^3*d*e^4*
x^4+16380*a*c^2*e^5*x^3+16380*b^2*c*e^5*x^3-12600*b*c^2*d*e^4*x^3+3360*c^3*
d^2*e^3*x^3+30030*a*b*c*e^5*x^2-10920*a*c^2*d*e^4*x^2+5005*b^3*e^5*x^2-1092
0*b^2*c*d*e^4*x^2+8400*b*c^2*d^2*e^3*x^2-2240*c^3*d^3*e^2*x^2+12870*a^2*c*e
^5*x+12870*a*b^2*e^5*x-17160*a*b*c*d*e^4*x+6240*a*c^2*d^2*e^3*x-2860*b^3*d*
e^4*x+6240*b^2*c*d^2*e^3*x-4800*b*c^2*d^3*e^2*x+1280*c^3*d^4*e*x+9009*a^2*b
*e^5-5148*a^2*c*d*e^4-5148*a*b^2*d*e^4+6864*a*b*c*d^2*e^3-2496*a*c^2*d^3*e^
2+1144*b^3*d^2*e^3-2496*b^2*c*d^3*e^2+1920*b*c^2*d^4*e-512*c^3*d^5)/e^6
```

maxima [A] time = 0.53, size = 308, normalized size = 1.22

$$\frac{2 \left(6006 (ex+d)^{\frac{15}{2}} c^3-17325 \left(2 c^3d-bc^2e\right)(ex+d)^{\frac{13}{2}}+16380 \left(5 c^3d^2-5 bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{11}{2}}-5005 \left(20 c^3d^3-30 bc^2d^2e+12 \left(b^2c+ac^2\right)de^2-\left(b^3+6 abc\right)e^3\right)(ex+d)^{\frac{9}{2}}+12870 \left(5 c^3d^4-10 bc^2d^3e+6 \left(b^2c+ac^2\right)d^2e^2-\left(b^3+6 abc\right)de^3+\left(ab^2+a^2c\right)e^4\right)(ex+d)^{\frac{7}{2}}-9009 \left(2 c^3d^5-5 bc^2d^4e-a^2be^5+4 \left(b^2c+ac^2\right)d^3e^2-\left(b^3+6 abc\right)d^2e^3+2 \left(ab^2+a^2c\right)de^4\right)(ex+d)^{\frac{5}{2}}\right)}{45045 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/45045*(6006*(e*x + d)^(15/2)*c^3 - 17325*(2*c^3*d - b*c^2*e)*(e*x + d)^(1
3/2) + 16380*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(11/
2) - 5005*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 +
6*a*b*c)*e^3)*(e*x + d)^(9/2) + 12870*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*
c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d)
^(7/2) - 9009*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^
3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*(e*x + d)^(5/2))
/e^6
```

mupad [B] time = 0.07, size = 267, normalized size = 1.06

$$\frac{(d+e\,x)^{7/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{7\,e^6}+\frac{4\,c^3\,(d+e\,x)^{15/2}}{15\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,(d+e\,x)^{13/2}}{13\,e^6}+\frac{(d+e\,x)^{11/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{11\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{9/2}\,\left(b^2\,e^2-10\,b\,c\,d\,e+10\,c^2\,d^2+6\,a\,c\,e^2\right)}{9\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{5/2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2}{5\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^(7/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(7*e^
6) + (4*c^3*(d + e*x)^(15/2))/(15*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(13/2))/(13*e^6) + ((d + e*x)^(11/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e
^2 - 40*b*c^2*d*e))/(11*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(9/2)*(b^2*e^2 +
10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(9*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^
(5/2)*(a*e^2 + c*d^2 - b*d*e)^2)/(5*e^6)
```

sympy [A] time = 43.46, size = 1093, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*a**2*b*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*a**2*c*d*(-d
*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a**2*c*(d**2*(d + e*x)**
(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 4*a*b**2*d*(-
d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a*b**2*(d**2*(d + e*x)*
*(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 12*a*b*c*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3
 + 12*a*b*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
+ e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*a*c**2*d*(-d**3*(d + e*x)**(
3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9
/2)/9)/e**4 + 8*a*c**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5
 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/1
1)/e**4 + 2*b**3*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d +
 e*x)**(7/2)/7)/e**3 + 2*b**3*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)*
*(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*b**2*c*d*(
-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)
/7 + (d + e*x)**(9/2)/9)/e**4 + 8*b**2*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*
(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (
d + e*x)**(11/2)/11)/e**4 + 10*b*c**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(
d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
 + e*x)**(11/2)/11)/e**5 + 10*b*c**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d +
e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d
*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 4*c**3*d*(-d**5*(d + e
*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2
*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6
 + 4*c**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
 + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/1
1 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1411 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=252

$$\frac{8c(d+ex)^{9/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{9e^6}-\frac{2(d+ex)^{7/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+\frac{4(d+ex\cdots}{}$$

Rubi [A] time = 0.12, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{9/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{9e^6}-\frac{2(d+ex)^{7/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+\frac{4(d+ex)^{5/2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}(2cd-be)\left(ae^2-bde+cd^2\right)^2}{3e^6}-\frac{10c^2(d+ex)^{11/2}(2cd-be)}{11e^6}+\frac{4c^3(d+ex)^{13/2}}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^2,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(3/2))/(3*e^6) + (4*(
c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^
(5/2))/(5*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*
a*e))*(d + e*x)^(7/2))/(7*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a
*e))*(d + e*x)^(9/2))/(9*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(11/2))/(11
*e^6) + (4*c^3*(d + e*x)^(13/2))/(13*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)^2\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2\cdots\right.}{\cdots}\right.\\ &= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{3/2}}{3e^6}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d\cdots\right.}{\cdots}\end{aligned}$$

Mathematica [A] time = 0.36, size = 291, normalized size = 1.15

$$\frac{2(d+ex)^{3/2}\left(-286ce^2\left(21a^2e^2(2d-3ex)-9abe\left(8d^2-12dex+15e^2x^2\right)+b^2\left(32d^3-48d^2ex+60de^2x^2-70e^3x^3\right)\right)+429be^3\left(35a^2e^2+14abe(3ex-2d)+b^2\left(8d^2-12dex+15e^2x^2\right)\right)+13c^2e\left(44ae\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)+5b\left(128d^4-192d^3ex+240d^2e^2x^2-280de^3x^3+315e^4x^4\right)\right)-10c^3\left(256d^5-384d^4ex+480d^3e^2x^2-560d^2e^3x^3+630de^4x^4-693e^5x^5\right)\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-10*c^3*(256*d^5 - 384*d^4*e*x + 480*d^3*e^2*x^2 - 560*
d^2*e^3*x^3 + 630*d*e^4*x^4 - 693*e^5*x^5) + 429*b*e^3*(35*a^2*e^2 + 14*a*b
*e*(-2*d + 3*e*x) + b^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2)) - 286*c*e^2*(21*a^
2*e^2*(2*d - 3*e*x) - 9*a*b*e*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + b^2*(32*d^3
 - 48*d^2*e*x + 60*d*e^2*x^2 - 70*e^3*x^3)) + 13*c^2*e*(44*a*e*(-16*d^3 + 2
4*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + 5*b*(128*d^4 - 192*d^3*e*x + 240*d
^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4))))/(45045*e^6)
```

IntegrateAlgebraic [A] time = 0.17, size = 425, normalized size = 1.69

$$\frac{2(d+ex)^{3/2}\left(15015a^2be^5+18018a^2ce^4(d+ex)-30030a^2cde^4+18018ab^2e^4(d+ex)-30030ab^2de^4+90090abcd^2e^3-108108abcde^3(d+ex)+38610abce^3(d+ex)^2-60060ac^2d^3e^2+108108ac^2d^2e^2(d+ex)-77220ac^2de^2(d+ex)^2+20020ac^2e^2(d+ex)^3+15015b^3d^2e^3-18018b^3de^3(d+ex)+6435b^3e^3(d+ex)^2-60060b^2cd^3e^2+108108b^2cd^2e^2(d+ex)-77220b^2cde^2(d+ex)^2+20020b^2ce^2(d+ex)^3+75075bc^2d^4e-180180bc^2d^3e(d+ex)+193050bc^2d^2e(d+ex)^2-100100bc^2de(d+ex)^3+20475bc^2e(d+ex)^4-30030c^3d^5+90090c^3d^4(d+ex)-128700c^3d^3(d+ex)^2+100100c^3d^2(d+ex)^3-40950c^3d(d+ex)^4+6930c^3(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-30030*c^3*d^5 + 75075*b*c^2*d^4*e - 60060*b^2*c*d^3*e^
2 - 60060*a*c^2*d^3*e^2 + 15015*b^3*d^2*e^3 + 90090*a*b*c*d^2*e^3 - 30030*a
*b^2*d*e^4 - 30030*a^2*c*d*e^4 + 15015*a^2*b*e^5 + 90090*c^3*d^4*(d + e*x)
- 180180*b*c^2*d^3*e*(d + e*x) + 108108*b^2*c*d^2*e^2*(d + e*x) + 108108*a*
c^2*d^2*e^2*(d + e*x) - 18018*b^3*d*e^3*(d + e*x) - 108108*a*b*c*d*e^3*(d +
 e*x) + 18018*a*b^2*e^4*(d + e*x) + 18018*a^2*c*e^4*(d + e*x) - 128700*c^3*
d^3*(d + e*x)^2 + 193050*b*c^2*d^2*e*(d + e*x)^2 - 77220*b^2*c*d*e^2*(d + e
*x)^2 - 77220*a*c^2*d*e^2*(d + e*x)^2 + 6435*b^3*e^3*(d + e*x)^2 + 38610*a*
b*c*e^3*(d + e*x)^2 + 100100*c^3*d^2*(d + e*x)^3 - 100100*b*c^2*d*e*(d + e*
x)^3 + 20020*b^2*c*e^2*(d + e*x)^3 + 20020*a*c^2*e^2*(d + e*x)^3 - 40950*c^
3*d*(d + e*x)^4 + 20475*b*c^2*e*(d + e*x)^4 + 6930*c^3*(d + e*x)^5))/(45045
*e^6)
```

fricas [A] time = 0.39, size = 399, normalized size = 1.58

$$\frac{2\left(6930\,c^3e^6x^6-2560\,c^3d^6+8320\,bc^2d^5e+15015\,a^2bde^5-9152\left(b^2c+ac^2\right)d^4e^2+3432\left(b^3+6\,abc\right)d^3e^3-12012\left(ab^2+a^2c\right)d^2e^4+315\left(2\,c^3de^5+65\,bc^2e^6\right)x^5-35\left(20\,c^3d^2e^4-65\,bc^2de^5-572\left(b^2c+ac^2\right)e^6\right)x^4+5\left(160\,c^3d^3e^3-520\,bc^2d^2e^4+572\left(b^2c+ac^2\right)de^5+1287\left(b^3+6\,abc\right)e^6\right)x^3-3\left(320\,c^3d^4e^2-1040\,bc^2d^3e^3+1144\left(b^2c+ac^2\right)d^2e^4-429\left(b^3+6\,abc\right)de^5-6006\left(ab^2+a^2c\right)e^6\right)x^2+\left(1280\,c^3d^5e-4160\,bc^2d^4e^2+15015\,a^2be^6+4576\left(b^2c+ac^2\right)d^3e^3-1716\left(b^3+6\,abc\right)d^2e^4+6006\left(ab^2+a^2c\right)de^5\right)x\right)\sqrt{ex+d}}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(6930*c^3*e^6*x^6 - 2560*c^3*d^6 + 8320*b*c^2*d^5*e + 15015*a^2*b*d
*e^5 - 9152*(b^2*c + a*c^2)*d^4*e^2 + 3432*(b^3 + 6*a*b*c)*d^3*e^3 - 12012*
(a*b^2 + a^2*c)*d^2*e^4 + 315*(2*c^3*d*e^5 + 65*b*c^2*e^6)*x^5 - 35*(20*c^3
*d^2*e^4 - 65*b*c^2*d*e^5 - 572*(b^2*c + a*c^2)*e^6)*x^4 + 5*(160*c^3*d^3*e
^3 - 520*b*c^2*d^2*e^4 + 572*(b^2*c + a*c^2)*d*e^5 + 1287*(b^3 + 6*a*b*c)*e
^6)*x^3 - 3*(320*c^3*d^4*e^2 - 1040*b*c^2*d^3*e^3 + 1144*(b^2*c + a*c^2)*d^
2*e^4 - 429*(b^3 + 6*a*b*c)*d*e^5 - 6006*(a*b^2 + a^2*c)*e^6)*x^2 + (1280*c
^3*d^5*e - 4160*b*c^2*d^4*e^2 + 15015*a^2*b*e^6 + 4576*(b^2*c + a*c^2)*d^3*
e^3 - 1716*(b^3 + 6*a*b*c)*d^2*e^4 + 6006*(a*b^2 + a^2*c)*d*e^5)*x)*sqrt(e*
x + d)/e^6
```

giac [B] time = 0.22, size = 966, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*d*e^(-1) + 30030
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*d*e^(-1) + 3003*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*d*e^(-2) + 18018*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*c*d*e^(
-2) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*b^2*c*d*e^(-3) + 5148*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*c^2*d*e^
(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c^2*d*e^(-4) + 1
30*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 -
 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^
5)*c^3*d*e^(-5) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*a*b^2*e^(-1) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*a^2*c*e^(-1) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e +
 d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^3*e^(-2) + 7
722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*a*b*c*e^(-2) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*b^2*c*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
```

```
378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*
a*c^2*e^(-3) + 325*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*b*c^2*e^(-4) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*c^3*e^
(-5) + 45045*sqrt(x*e + d)*a^2*b*d + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*a^2*b)*e^(-1)
```

maple [A] time = 0.06, size = 359, normalized size = 1.42

$$\frac{2 (ex+d)^{\frac{3}{2}} \left(6930c^3e^5x^5+20475b c^2e^5x^4-6300c^3d e^4x^4+20020a c^2e^5x^3+20020b^2c e^5x^3-18200b c^2d e^4x^3+5600c^3d^2e^3x^3+38610abc e^5x^2-17160a c^2d e^4x^2+6435b^3e^5x^2-17160b^2cd e^4x^2+15600b c^2d^2e^3x^2-4800c^3d^3e^2x^2+18018a^2c e^5x+18018a b^2e^5x-30888abcd e^4x+13728a c^2d^2e^3x-5148b^3d e^4x+13728b^2c d^2e^3x-12480b c^2d^3e^2x+3840c^3d^4ex+15015a^2b e^5-12012a^2cd e^4-12012a b^2d e^4+20592abc d^2e^3-9152a c^2d^3e^2+3432b^3d^2e^3-9152b^2c d^3e^2+8320b c^2d^4e-2560c^3d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(6930*c^3*e^5*x^5+20475*b*c^2*e^5*x^4-6300*c^3*d*e^4*
x^4+20020*a*c^2*e^5*x^3+20020*b^2*c*e^5*x^3-18200*b*c^2*d*e^4*x^3+5600*c^3*
d^2*e^3*x^3+38610*a*b*c*e^5*x^2-17160*a*c^2*d*e^4*x^2+6435*b^3*e^5*x^2-1716
0*b^2*c*d*e^4*x^2+15600*b*c^2*d^2*e^3*x^2-4800*c^3*d^3*e^2*x^2+18018*a^2*c*
e^5*x+18018*a*b^2*e^5*x-30888*a*b*c*d*e^4*x+13728*a*c^2*d^2*e^3*x-5148*b^3*
d*e^4*x+13728*b^2*c*d^2*e^3*x-12480*b*c^2*d^3*e^2*x+3840*c^3*d^4*e*x+15015*
a^2*b*e^5-12012*a^2*c*d*e^4-12012*a*b^2*d*e^4+20592*a*b*c*d^2*e^3-9152*a*c^
2*d^3*e^2+3432*b^3*d^2*e^3-9152*b^2*c*d^3*e^2+8320*b*c^2*d^4*e-2560*c^3*d^5
)/e^6
```

maxima [A] time = 0.54, size = 308, normalized size = 1.22

$$\frac{2 \left(6930 (ex+d)^{\frac{13}{2}} c^3-20475 \left(2 c^3d-bc^2e\right)(ex+d)^{\frac{11}{2}}+20020 \left(5 c^3d^2-5 bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{9}{2}}-6435 \left(20 c^3d^3-30 bc^2d^2e+12 \left(b^2c+ac^2\right)de^2-\left(b^3+6 abc\right)e^3\right)(ex+d)^{\frac{7}{2}}+18018 \left(5 c^3d^4-10 bc^2d^3e+6 \left(b^2c+ac^2\right)d^2e^2-\left(b^3+6 abc\right)de^3+\left(ab^2+a^2c\right)e^4\right)(ex+d)^{\frac{5}{2}}-15015 \left(2 c^3d^5-5 bc^2d^4e-a^2be^5+4 \left(b^2c+ac^2\right)d^3e^2-\left(b^3+6 abc\right)d^2e^3+2 \left(ab^2+a^2c\right)de^4\right)(ex+d)^{\frac{3}{2}}\right)}{45045 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(6930*(e*x + d)^(13/2)*c^3 - 20475*(2*c^3*d - b*c^2*e)*(e*x + d)^(1
1/2) + 20020*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(9/2
) - 6435*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6
*a*b*c)*e^3)*(e*x + d)^(7/2) + 18018*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c
 + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d)^
(5/2) - 15015*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^
3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*(e*x + d)^(3/2))
/e^6
```

mupad [B] time = 1.92, size = 267, normalized size = 1.06

$$\frac{(d+e\,x)^{5/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{5\,e^6}+\frac{4\,c^3\,(d+e\,x)^{13/2}}{13\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,(d+e\,x)^{11/2}}{11\,e^6}+\frac{(d+e\,x)^{9/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{9\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{7/2}\,\left(b^2\,e^2-10\,b\,c\,d\,e+10\,c^2\,d^2+6\,a\,c\,e^2\right)}{7\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{3/2}\,{\left(c\,d^2-b\,d\,e+a\,e^2\right)}^2}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^(5/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(5*e^
6) + (4*c^3*(d + e*x)^(13/2))/(13*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(11/2))/(11*e^6) + ((d + e*x)^(9/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^
2 - 40*b*c^2*d*e))/(9*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(7/2)*(b^2*e^2 + 10
*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(7*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(3
/2)*(a*e^2 + c*d^2 - b*d*e)^2)/(3*e^6)
```

sympy [A] time = 8.78, size = 405, normalized size = 1.61

$$\frac{2 \left(\frac{2c^3(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(5bc^2e-10c^3d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(4ac^2e^2+4b^2ce^2-20bc^2de+20c^3d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(6abce^3-12ac^2de^2+b^3e^3-12b^2cde^2+30bc^2d^2e-20c^3d^3\right)}{7e^5}+\frac{(d+ex)^{\frac{5}{2}}\left(2a^2ce^4+2ab^2e^4-12abcde^3+12ac^2d^2e^2-2b^3de^3+12b^2cd^2e^2-20bc^2d^3e+10c^3d^4\right)}{5e^5}+\frac{(d+ex)^{\frac{3}{2}}\left(a^2be^5-2a^2cde^4-2ab^2de^4+6abcd^2e^3-4ac^2d^3e^2+b^3d^2e^3-4b^2cd^3e^2+5bc^2d^4e-2c^3d^5\right)}{3e^5}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(2*c**3*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(5*b*c**2*e - 10*
c**3*d)/(11*e**5) + (d + e*x)**(9/2)*(4*a*c**2*e**2 + 4*b**2*c*e**2 - 20*b*
c**2*d*e + 20*c**3*d**2)/(9*e**5) + (d + e*x)**(7/2)*(6*a*b*c*e**3 - 12*a*c
**2*d*e**2 + b**3*e**3 - 12*b**2*c*d*e**2 + 30*b*c**2*d**2*e - 20*c**3*d**3
)/(7*e**5) + (d + e*x)**(5/2)*(2*a**2*c*e**4 + 2*a*b**2*e**4 - 12*a*b*c*d*e
**3 + 12*a*c**2*d**2*e**2 - 2*b**3*d*e**3 + 12*b**2*c*d**2*e**2 - 20*b*c**2
*d**3*e + 10*c**3*d**4)/(5*e**5) + (d + e*x)**(3/2)*(a**2*b*e**5 - 2*a**2*c
*d*e**4 - 2*a*b**2*d*e**4 + 6*a*b*c*d**2*e**3 - 4*a*c**2*d**3*e**2 + b**3*d
**2*e**3 - 4*b**2*c*d**3*e**2 + 5*b*c**2*d**4*e - 2*c**3*d**5)/(3*e**5))/e
```

3.1412 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=250

$$\frac{8c(d+ex)^{7/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{2(d+ex)^{5/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+\frac{4(d+ex}{}$$

Rubi [A] time = 0.13, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{8c(d+ex)^{7/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{2(d+ex)^{5/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+\frac{4(d+ex)^{3/2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{2\sqrt{d+ex}(2cd-be)\left(ae^2-bde+cd^2\right)^2}{e^6}-\frac{10c^2(d+ex)^{9/2}(2cd-be)}{9e^6}+\frac{4c^3(d+ex)^{11/2}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x])/e^6 + (4*(c*d^2
- b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^(3/2))
/(3*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*
(d + e*x)^(5/2))/(5*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(
d + e*x)^(7/2))/(7*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(9/2))/(9*e^6) +
(4*c^3*(d + e*x)^(11/2))/(11*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5\sqrt{d+ex}}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b^2e^2\right.}{e^5}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}{e^6}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-\right.}{3e^6}$$

Mathematica [A] time = 0.39, size = 290, normalized size = 1.16

$$\frac{2\sqrt{d+ex}\left(-66ce^2\left(-35a^2e^2(ex-2d)-21abe\left(8d^2-4dex+3e^2x^2\right)+6b^2\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)\right)+231be^3\left(15a^2e^2+10abe(ex-2d)+b^2\left(8d^2-4dex+3e^2x^2\right)\right)+11c^2e\left(36ae\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)+5b\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right)\right)-10c^3\left(256d^5-128d^4ex+96d^3e^2x^2-80d^2e^3x^3+70de^4x^4-63e^5x^5\right)\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-10*c^3*(256*d^5 - 128*d^4*e*x + 96*d^3*e^2*x^2 - 80*d^2*
e^3*x^3 + 70*d*e^4*x^4 - 63*e^5*x^5) + 231*b*e^3*(15*a^2*e^2 + 10*a*b*e*(-2
*d + e*x) + b^2*(8*d^2 - 4*d*e*x + 3*e^2*x^2)) - 66*c*e^2*(-35*a^2*e^2*(-2*
d + e*x) - 21*a*b*e*(8*d^2 - 4*d*e*x + 3*e^2*x^2) + 6*b^2*(16*d^3 - 8*d^2*e
*x + 6*d*e^2*x^2 - 5*e^3*x^3)) + 11*c^2*e*(36*a*e*(-16*d^3 + 8*d^2*e*x - 6*
d*e^2*x^2 + 5*e^3*x^3) + 5*b*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*
e^3*x^3 + 35*e^4*x^4))))/(3465*e^6)
```

IntegrateAlgebraic [A] time = 0.17, size = 425, normalized size = 1.70

$$\frac{2\sqrt{d+ex}\left(3465a^2be^5+2310a^2ce^4(d+ex)-6930a^2cde^4+2310ab^2e^4(d+ex)-6930ab^2de^4+20790abcd^2e^3-13860abcde^3(d+ex)+4158abce^3(d+ex)^2-13860ac^2d^3e^2+13860ac^2d^2e^2(d+ex)-8316ac^2de^2(d+ex)^2+1980ac^2e^2(d+ex)^3+3465b^3d^2e^3-2310b^3de^3(d+ex)+693b^3e^3(d+ex)^2-13860b^2cd^3e^2+13860b^2cd^2e^2(d+ex)-8316b^2cde^2(d+ex)^2+1980b^2ce^2(d+ex)^3+17325bc^2d^4e-23100bc^2d^3e(d+ex)+20790bc^2d^2e(d+ex)^2-9900bc^2de(d+ex)^3+1925bc^2e(d+ex)^4-6930c^3d^5+11550c^3d^4(d+ex)-13860c^3d^3(d+ex)^2+9900c^3d^2(d+ex)^3-3850c^3d(d+ex)^4+630c^3(d+ex)^5\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-6930*c^3*d^5 + 17325*b*c^2*d^4*e - 13860*b^2*c*d^3*e^2 -
 13860*a*c^2*d^3*e^2 + 3465*b^3*d^2*e^3 + 20790*a*b*c*d^2*e^3 - 6930*a*b^2*
d*e^4 - 6930*a^2*c*d*e^4 + 3465*a^2*b*e^5 + 11550*c^3*d^4*(d + e*x) - 23100
*b*c^2*d^3*e*(d + e*x) + 13860*b^2*c*d^2*e^2*(d + e*x) + 13860*a*c^2*d^2*e^
2*(d + e*x) - 2310*b^3*d*e^3*(d + e*x) - 13860*a*b*c*d*e^3*(d + e*x) + 2310
*a*b^2*e^4*(d + e*x) + 2310*a^2*c*e^4*(d + e*x) - 13860*c^3*d^3*(d + e*x)^2
 + 20790*b*c^2*d^2*e*(d + e*x)^2 - 8316*b^2*c*d*e^2*(d + e*x)^2 - 8316*a*c^
2*d*e^2*(d + e*x)^2 + 693*b^3*e^3*(d + e*x)^2 + 4158*a*b*c*e^3*(d + e*x)^2
+ 9900*c^3*d^2*(d + e*x)^3 - 9900*b*c^2*d*e*(d + e*x)^3 + 1980*b^2*c*e^2*(d
 + e*x)^3 + 1980*a*c^2*e^2*(d + e*x)^3 - 3850*c^3*d*(d + e*x)^4 + 1925*b*c^
2*e*(d + e*x)^4 + 630*c^3*(d + e*x)^5))/(3465*e^6)
```

fricas [A] time = 0.41, size = 306, normalized size = 1.22

$$\frac{2\left(630c^3e^5x^5-2560c^3d^5+7040bc^2d^4e+3465a^2be^5-6336\left(b^2c+ac^2\right)d^3e^2+1848\left(b^3+6abc\right)d^2e^3-4620\left(ab^2+a^2c\right)de^4-175\left(4c^3de^4-11bc^2e^5\right)x^4+20\left(40c^3d^2e^3-110bc^2de^4+99\left(b^2c+ac^2\right)e^5\right)x^3-3\left(320c^3d^3e^2-880bc^2d^2e^3+792\left(b^2c+ac^2\right)de^4-231\left(b^3+6abc\right)e^5\right)x^2+2\left(640c^3d^4e-1760bc^2d^3e^2+1584\left(b^2c+ac^2\right)d^2e^3-462\left(b^3+6abc\right)de^4+1155\left(ab^2+a^2c\right)e^5\right)x\right)\sqrt{ex+d}}{3465e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(630*c^3*e^5*x^5 - 2560*c^3*d^5 + 7040*b*c^2*d^4*e + 3465*a^2*b*e^5
- 6336*(b^2*c + a*c^2)*d^3*e^2 + 1848*(b^3 + 6*a*b*c)*d^2*e^3 - 4620*(a*b^2
 + a^2*c)*d*e^4 - 175*(4*c^3*d*e^4 - 11*b*c^2*e^5)*x^4 + 20*(40*c^3*d^2*e^3
 - 110*b*c^2*d*e^4 + 99*(b^2*c + a*c^2)*e^5)*x^3 - 3*(320*c^3*d^3*e^2 - 880
*b*c^2*d^2*e^3 + 792*(b^2*c + a*c^2)*d*e^4 - 231*(b^3 + 6*a*b*c)*e^5)*x^2 +
 2*(640*c^3*d^4*e - 1760*b*c^2*d^3*e^2 + 1584*(b^2*c + a*c^2)*d^2*e^3 - 462
*(b^3 + 6*a*b*c)*d*e^4 + 1155*(a*b^2 + a^2*c)*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [A] time = 0.18, size = 421, normalized size = 1.68

$$\frac{2}{3465}\left(2310\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)ab^2e^{(-1)}+2310\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^2ce^{(-1)}+231\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)b^3e^{(-2)}+1386\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)abce^{(-2)}+396\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)b^2ce^{(-3)}+396\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)ac^2e^{(-3)}+55\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)bc^2e^{(-4)}+10\left(63(xe+d)^{\frac{11}{2}}-385(xe+d)^{\frac{9}{2}}d+990(xe+d)^{\frac{7}{2}}d^2-1386(xe+d)^{\frac{5}{2}}d^3+1155(xe+d)^{\frac{3}{2}}d^4-693\sqrt{xe+d}\,d^5\right)c^3e^{(-5)}+3465\sqrt{xe+d}\,a^2b\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*e^(-1) + 2310*((x*
e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*e^(-1) + 231*(3*(x*e + d)^(5/2) - 1
0*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*e^(-2) + 1386*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*c*e^(-2) + 396*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*b^2*c*e^(-3) + 396*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*c^2*e^(-3) + 55*(35*(x*e
+ d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d
)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c^2*e^(-4) + 10*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*c^3*e^(-5) + 3465*sq
rt(x*e + d)*a^2*b)*e^(-1)
```

maple [A] time = 0.05, size = 359, normalized size = 1.44

$$\frac{2\sqrt{ex+d}\left(630c^3e^5x^5+1925bc^2e^5x^4-700c^3de^4x^4+1980ac^2e^5x^3+1980b^2ce^5x^3-2200bc^2de^4x^3+800c^3d^2e^3x^3+4158abce^5x^2-2376ac^2de^4x^2+693b^3e^5x^2-2376b^2cde^4x^2+2640bc^2d^2e^3x^2-960c^3d^3e^2x^2+2310a^2ce^5x+2310ab^2e^5x-5544abcde^4x+3168ac^2d^2e^3x+3168b^2cd^2e^3x-924b^3de^4x-3520bc^2d^3e^2x+1280c^3d^4ex+3465a^2be^5-4620a^2cde^4-4620ab^2de^4+11088abcd^2e^3-6336ac^2d^3e^2+1848b^3d^2e^3-6336b^2cd^3e^2+7040bc^2d^4e-2560c^3d^5\right)}{3465e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(1/2)*(630*c^3*e^5*x^5+1925*b*c^2*e^5*x^4-700*c^3*d*e^4*x^4+
1980*a*c^2*e^5*x^3+1980*b^2*c*e^5*x^3-2200*b*c^2*d*e^4*x^3+800*c^3*d^2*e^3*
x^3+4158*a*b*c*e^5*x^2-2376*a*c^2*d*e^4*x^2+693*b^3*e^5*x^2-2376*b^2*c*d*e^
4*x^2+2640*b*c^2*d^2*e^3*x^2-960*c^3*d^3*e^2*x^2+2310*a^2*c*e^5*x+2310*a*b^
2*e^5*x-5544*a*b*c*d*e^4*x+3168*a*c^2*d^2*e^3*x-924*b^3*d*e^4*x+3168*b^2*c*
d^2*e^3*x-3520*b*c^2*d^3*e^2*x+1280*c^3*d^4*e*x+3465*a^2*b*e^5-4620*a^2*c*d
*e^4-4620*a*b^2*d*e^4+11088*a*b*c*d^2*e^3-6336*a*c^2*d^3*e^2+1848*b^3*d^2*e
^3-6336*b^2*c*d^3*e^2+7040*b*c^2*d^4*e-2560*c^3*d^5)/e^6
```

maxima [A] time = 0.53, size = 308, normalized size = 1.23

$$\frac{2\left(630\,(ex+d)^{\frac{11}{2}}c^3 - 1925\left(2\,c^3d - bc^2e\right)(ex+d)^{\frac{9}{2}} + 1980\left(5\,c^3d^2 - 5\,bc^2de + \left(b^2c + ac^2\right)e^2\right)(ex+d)^{\frac{7}{2}} - 693\left(20\,c^3d^3 - 30\,bc^2d^2e + 12\left(b^2c + ac^2\right)de^2 - \left(b^3 + 6\,abc\right)e^3\right)(ex+d)^{\frac{5}{2}} + 2310\left(5\,c^3d^4 - 10\,bc^2d^3e + 6\left(b^2c + ac^2\right)d^2e^2 - \left(b^3 + 6\,abc\right)de^3 + \left(ab^2 + a^2c\right)e^4\right)(ex+d)^{\frac{3}{2}} - 3465\left(2\,c^3d^5 - 5\,bc^2d^4e - a^2be^5 + 4\left(b^2c + ac^2\right)d^3e^2 - \left(b^3 + 6\,abc\right)d^2e^3 + 2\left(ab^2 + a^2c\right)de^4\right)\sqrt{ex+d}\right)}{3465\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(630*(e*x + d)^(11/2)*c^3 - 1925*(2*c^3*d - b*c^2*e)*(e*x + d)^(9/2)
 + 1980*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(7/2) - 6
93*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6*a*b*c
)*e^3)*(e*x + d)^(5/2) + 2310*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c + a*c^
2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d)^(3/2) -
 3465*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 -
(b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*sqrt(e*x + d))/e^6
```

mupad [B] time = 1.85, size = 267, normalized size = 1.07

$$\frac{(d+e\,x)^{3/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{3\,e^6}+\frac{4\,c^3\,(d+e\,x)^{11/2}}{11\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,(d+e\,x)^{9/2}}{9\,e^6}+\frac{(d+e\,x)^{7/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{7\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{5/2}\,\left(b^2\,e^2-10\,b\,c\,d\,e+10\,c^2\,d^2+6\,a\,c\,e^2\right)}{5\,e^6}+\frac{2\,(b\,e-2\,c\,d)\,\sqrt{d+e\,x}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(3*e^
6) + (4*c^3*(d + e*x)^(11/2))/(11*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(9/2))/(9*e^6) + ((d + e*x)^(7/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^2
- 40*b*c^2*d*e))/(7*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(5/2)*(b^2*e^2 + 10*c
^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(5*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(1/2
)*(a*e^2 + c*d^2 - b*d*e)^2)/e^6
```

sympy [A] time = 121.36, size = 1025, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**2*b*d/sqrt(d + e*x) - 2*a**2*b*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 4*a**2*c*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*a**2*c*(d**2
/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 4*a*b**2*d*(-d
/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*a*b**2*(d**2/sqrt(d + e*x) + 2*d*sqrt
(d + e*x) - (d + e*x)**(3/2)/3)/e - 12*a*b*c*d*(d**2/sqrt(d + e*x) + 2*d*sq
rt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 12*a*b*c*(-d**3/sqrt(d + e*x) - 3*
d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 8*a*c*
*2*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d
+ e*x)**(5/2)/5)/e**3 - 8*a*c**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x)
 - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e
**3 - 2*b**3*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3
)/e**2 - 2*b**3*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**
(3/2) - (d + e*x)**(5/2)/5)/e**2 - 8*b**2*c*d*(-d**3/sqrt(d + e*x) - 3*d**2
```

```
*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 8*b**2*c*(
d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(
d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 10*b*c**2*d*(d**4/sqrt(d + e
*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)
/5 - (d + e*x)**(7/2)/7)/e**4 - 10*b*c**2*(-d**5/sqrt(d + e*x) - 5*d**4*sqr
t(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d
+ e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 4*c**3*d*(-d**5/sqrt(d + e*x)
- 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/
2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 4*c**3*(d**6/sqrt(
d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x
)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)*
*(11/2)/11)/e**5)/e, Ne(e, 0)), ((a + b*x + c*x**2)**3/(3*sqrt(d)), True))
```

3.1413 $\int \frac{(b+2cx)(a+bx+cx^2)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=248

$$\frac{8c(d+ex)^{5/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{3e^6}+\frac{4\sqrt{d+e\ldots}}{}$$

Rubi [A] time = 0.13, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{5/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{3e^6}+\frac{4\sqrt{d+ex}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)^2}{e^6\sqrt{d+ex}}-\frac{10c^2(d+ex)^{7/2}(2cd-be)}{7e^6}+\frac{4c^3(d+ex)^{9/2}}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2)/(e^6*Sqrt[d + e*x]) + (4*(c*d^2
 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*Sqrt[d + e*x])/
e^6 - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d +
e*x)^(3/2))/(3*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e
*x)^(5/2))/(5*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(7/2))/(7*e^6) + (4*c^
3*(d + e*x)^(9/2))/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^{3/2}}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b^2e^2\ldots\right)}{e^5\sqrt{d+ex}}\ldots\right.$$

$$=\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2}{e^6\sqrt{d+ex}}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5bd-a\ldots\right.}{e^6}$$

Mathematica [A] time = 0.34, size = 287, normalized size = 1.16

$$\frac{252ce^2\left(5a^2e^2(2d+ex)+5abe\left(-8d^2-4dex+e^2x^2\right)+2b^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)-210be^3\left(3a^2e^2-6abe(2d+ex)+b^2\left(8d^2+4dex-e^2x^2\right)\right)-18c^2e\left(5b\left(128d^4+64d^3ex-16d^2e^2x^2+8de^3x^3-5e^4x^4\right)-28ae\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)+20c^3\left(256d^5+128d^4ex-32d^3e^2x^2+16d^2e^3x^3-10de^4x^4+7e^5x^5\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (20*c^3*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4
*x^4 + 7*e^5*x^5) - 210*b*e^3*(3*a^2*e^2 - 6*a*b*e*(2*d + e*x) + b^2*(8*d^2
 + 4*d*e*x - e^2*x^2)) + 252*c*e^2*(5*a^2*e^2*(2*d + e*x) + 5*a*b*e*(-8*d^2
 - 4*d*e*x + e^2*x^2) + 2*b^2*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3))
 - 18*c^2*e*(-28*a*e*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + 5*b*(12
8*d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4)))/(315*e^6*S
qrt[d + e*x])
```

IntegrateAlgebraic [A]   time = 0.17, size = 425, normalized size = 1.71

$$\frac{2\left(630c^3d^5-1575bc^2d^4e+1260b^2cd^3e^2+1260ac^2d^3e^2-315b^3d^2e^3-1890abcd^2e^3+630ab^2de^4+630a^2cde^4-315a^2be^5+3150c^3d^4(d+ex)-6300bc^2d^3e(d+ex)+3780b^2cd^2e^2(d+ex)+3780ac^2d^2e^2(d+ex)-630b^3de^3(d+ex)-3780abcde^3(d+ex)+630ab^2e^4(d+ex)+630a^2ce^4(d+ex)-2100c^3d^3(d+ex)^2+3150bc^2d^2e(d+ex)^2-1260b^2cde^2(d+ex)^2-1260ac^2de^2(d+ex)^2+105b^3e^3(d+ex)^2+630abce^3(d+ex)^2+1260c^3d^2(d+ex)^3-1260bc^2de(d+ex)^3+252b^2ce^2(d+ex)^3+252ac^2e^2(d+ex)^3-450c^3d(d+ex)^4+225bc^2e(d+ex)^4+70c^3(d+ex)^5\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(630*c^3*d^5 - 1575*b*c^2*d^4*e + 1260*b^2*c*d^3*e^2 + 1260*a*c^2*d^3*e^
2 - 315*b^3*d^2*e^3 - 1890*a*b*c*d^2*e^3 + 630*a*b^2*d*e^4 + 630*a^2*c*d*e^
4 - 315*a^2*b*e^5 + 3150*c^3*d^4*(d + e*x) - 6300*b*c^2*d^3*e*(d + e*x) + 3
780*b^2*c*d^2*e^2*(d + e*x) + 3780*a*c^2*d^2*e^2*(d + e*x) - 630*b^3*d*e^3*
(d + e*x) - 3780*a*b*c*d*e^3*(d + e*x) + 630*a*b^2*e^4*(d + e*x) + 630*a^2*
c*e^4*(d + e*x) - 2100*c^3*d^3*(d + e*x)^2 + 3150*b*c^2*d^2*e*(d + e*x)^2 -
 1260*b^2*c*d*e^2*(d + e*x)^2 - 1260*a*c^2*d*e^2*(d + e*x)^2 + 105*b^3*e^3*
(d + e*x)^2 + 630*a*b*c*e^3*(d + e*x)^2 + 1260*c^3*d^2*(d + e*x)^3 - 1260*b
*c^2*d*e*(d + e*x)^3 + 252*b^2*c*e^2*(d + e*x)^3 + 252*a*c^2*e^2*(d + e*x)^
3 - 450*c^3*d*(d + e*x)^4 + 225*b*c^2*e*(d + e*x)^4 + 70*c^3*(d + e*x)^5))/
(315*e^6*Sqrt[d + e*x])
```

fricas [A]   time = 0.40, size = 316, normalized size = 1.27

$$\frac{2\left(70c^3e^5x^5+2560c^3d^5-5760bc^2d^4e-315a^2be^5+4032\left(b^2c+ac^2\right)d^3e^2-840\left(b^3+6abc\right)d^2e^3+1260\left(ab^2+a^2c\right)de^4-25\left(4c^3de^4-9bc^2e^5\right)x^4+4\left(40c^3d^2e^3-90bc^2de^4+63\left(b^2c+ac^2\right)e^5\right)x^3-\left(320c^3d^3e^2-720bc^2d^2e^3+504\left(b^2c+ac^2\right)de^4-105\left(b^3+6abc\right)e^5\right)x^2+2\left(640c^3d^4e-1440bc^2d^3e^2+1008\left(b^2c+ac^2\right)d^2e^3-210\left(b^3+6abc\right)de^4+315\left(ab^2+a^2c\right)e^5\right)x\right)\sqrt{ex+d}}{315\left(e^7x+de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(70*c^3*e^5*x^5 + 2560*c^3*d^5 - 5760*b*c^2*d^4*e - 315*a^2*b*e^5 + 4
032*(b^2*c + a*c^2)*d^3*e^2 - 840*(b^3 + 6*a*b*c)*d^2*e^3 + 1260*(a*b^2 + a
^2*c)*d*e^4 - 25*(4*c^3*d*e^4 - 9*b*c^2*e^5)*x^4 + 4*(40*c^3*d^2*e^3 - 90*b
*c^2*d*e^4 + 63*(b^2*c + a*c^2)*e^5)*x^3 - (320*c^3*d^3*e^2 - 720*b*c^2*d^2
*e^3 + 504*(b^2*c + a*c^2)*d*e^4 - 105*(b^3 + 6*a*b*c)*e^5)*x^2 + 2*(640*c^
3*d^4*e - 1440*b*c^2*d^3*e^2 + 1008*(b^2*c + a*c^2)*d^2*e^3 - 210*(b^3 + 6*
a*b*c)*d*e^4 + 315*(a*b^2 + a^2*c)*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [B]   time = 0.21, size = 460, normalized size = 1.85

$$\frac{2}{315}\left(70(xe+d)^{\frac{9}{2}}c^3e^{48}-450(xe+d)^{\frac{7}{2}}c^3de^{48}+1260(xe+d)^{\frac{5}{2}}c^3d^2e^{48}-2100(xe+d)^{\frac{3}{2}}c^3d^3e^{48}+3150\sqrt{xe+d}\,c^3d^4e^{48}+225(xe+d)^{\frac{7}{2}}bc^2e^{49}-1260(xe+d)^{\frac{5}{2}}bc^2de^{49}+3150(xe+d)^{\frac{3}{2}}bc^2d^2e^{49}-6300\sqrt{xe+d}\,bc^2d^3e^{49}+252(xe+d)^{\frac{5}{2}}b^2ce^{50}+252(xe+d)^{\frac{5}{2}}ac^2e^{50}-1260(xe+d)^{\frac{3}{2}}b^2cde^{50}-1260(xe+d)^{\frac{3}{2}}ac^2de^{50}+3780\sqrt{xe+d}\,b^2cd^2e^{50}+3780\sqrt{xe+d}\,ac^2d^2e^{50}+105(xe+d)^{\frac{3}{2}}b^3e^{51}+630(xe+d)^{\frac{3}{2}}abce^{51}-630\sqrt{xe+d}\,b^3de^{51}-3780\sqrt{xe+d}\,abcde^{51}+630\sqrt{xe+d}\,ab^2e^{52}+630\sqrt{xe+d}\,a^2ce^{52}\right)e^{(-54)}+\frac{2\left(2c^3d^5-5bc^2d^4e+4b^2cd^3e^2+4ac^2d^3e^2-b^3d^2e^3-6abcd^2e^3+2ab^2de^4+2a^2cde^4-a^2be^5\right)e^{(-6)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(70*(x*e + d)^(9/2)*c^3*e^48 - 450*(x*e + d)^(7/2)*c^3*d*e^48 + 1260*
(x*e + d)^(5/2)*c^3*d^2*e^48 - 2100*(x*e + d)^(3/2)*c^3*d^3*e^48 + 3150*sqr
t(x*e + d)*c^3*d^4*e^48 + 225*(x*e + d)^(7/2)*b*c^2*e^49 - 1260*(x*e + d)^(
5/2)*b*c^2*d*e^49 + 3150*(x*e + d)^(3/2)*b*c^2*d^2*e^49 - 6300*sqrt(x*e + d
)*b*c^2*d^3*e^49 + 252*(x*e + d)^(5/2)*b^2*c*e^50 + 252*(x*e + d)^(5/2)*a*c
^2*e^50 - 1260*(x*e + d)^(3/2)*b^2*c*d*e^50 - 1260*(x*e + d)^(3/2)*a*c^2*d*
e^50 + 3780*sqrt(x*e + d)*b^2*c*d^2*e^50 + 3780*sqrt(x*e + d)*a*c^2*d^2*e^5
0 + 105*(x*e + d)^(3/2)*b^3*e^51 + 630*(x*e + d)^(3/2)*a*b*c*e^51 - 630*sqr
t(x*e + d)*b^3*d*e^51 - 3780*sqrt(x*e + d)*a*b*c*d*e^51 + 630*sqrt(x*e + d)
*a*b^2*e^52 + 630*sqrt(x*e + d)*a^2*c*e^52)*e^(-54) + 2*(2*c^3*d^5 - 5*b*c^
2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3
 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [A]   time = 0.05, size = 359, normalized size = 1.45

$$-\frac{2\left(-70c^3e^5x^5-225bc^2e^5x^4+100c^3de^4x^4-252ac^2e^5x^3-252b^2ce^5x^3+360bc^2de^4x^3-160c^3d^2e^3x^3-630abce^5x^2+504ac^2de^4x^2-105b^3e^5x^2+504b^2cde^4x^2-720bc^2d^2e^3x^2+320c^3d^3e^2x^2-630a^2ce^5x-630ab^2e^5x+2520abcde^4x-2016ac^2d^2e^3x+420b^3de^4x-2016b^2cd^2e^3x+2880bc^2d^3e^2x-1280c^3d^4ex+315a^2be^5-1260a^2cde^4-1260ab^2de^4+5040abcd^2e^3-4032ac^2d^3e^2+840b^3d^2e^3-4032b^2cd^3e^2+5760bc^2d^4e-2560c^3d^5\right)}{315\sqrt{ex+d}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315/(e*x+d)^(1/2)*(-70*c^3*e^5*x^5-225*b*c^2*e^5*x^4+100*c^3*d*e^4*x^4-2
52*a*c^2*e^5*x^3-252*b^2*c*e^5*x^3+360*b*c^2*d*e^4*x^3-160*c^3*d^2*e^3*x^3-
630*a*b*c*e^5*x^2+504*a*c^2*d*e^4*x^2-105*b^3*e^5*x^2+504*b^2*c*d*e^4*x^2-7
20*b*c^2*d^2*e^3*x^2+320*c^3*d^3*e^2*x^2-630*a^2*c*e^5*x-630*a*b^2*e^5*x+25
20*a*b*c*d*e^4*x-2016*a*c^2*d^2*e^3*x+420*b^3*d*e^4*x-2016*b^2*c*d^2*e^3*x+
2880*b*c^2*d^3*e^2*x-1280*c^3*d^4*e*x+315*a^2*b*e^5-1260*a^2*c*d*e^4-1260*a
*b^2*d*e^4+5040*a*b*c*d^2*e^3-4032*a*c^2*d^3*e^2+840*b^3*d^2*e^3-4032*b^2*c
*d^3*e^2+5760*b*c^2*d^4*e-2560*c^3*d^5)/e^6
```

maxima [A] time = 0.64, size = 316, normalized size = 1.27

$$\frac{2\left(\frac{70\,(ex+d)^{\frac{9}{2}}c^3-225\left(2\,c^3d-bc^2e\right)(ex+d)^{\frac{7}{2}}+252\left(5\,c^3d^2-5\,bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{5}{2}}-105\left(20\,c^3d^3-30\,bc^2d^2e+12\left(b^2c+ac^2\right)de^2-\left(b^3+6\,abc\right)e^3\right)(ex+d)^{\frac{3}{2}}+630\left(5\,c^3d^4-10\,bc^2d^3e+6\left(b^2c+ac^2\right)d^2e^2-\left(b^3+6\,abc\right)de^3+\left(ab^2+a^2c\right)e^4\right)\sqrt{ex+d}}{e^5}+\frac{315\left(2\,c^3d^5-5\,bc^2d^4e-a^2be^5+4\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3+2\left(ab^2+a^2c\right)de^4\right)}{\sqrt{ex+d}\,e^5}\right)}{315\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((70*(e*x + d)^(9/2)*c^3 - 225*(2*c^3*d - b*c^2*e)*(e*x + d)^(7/2) +
252*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(5/2) - 105*(
20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6*a*b*c)*e^
3)*(e*x + d)^(3/2) + 630*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c + a*c^2)*d^
2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*sqrt(e*x + d))/e^5 + 3
15*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 - (b^
3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 0.07, size = 333, normalized size = 1.34

$$\frac{\sqrt{d+e\,x}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{e^6}+\frac{4\,c^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}+\frac{{\left(d+e\,x\right)}^{5/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{5\,e^6}+\frac{-2\,a^2\,b\,e^5+4\,a^2\,c\,d\,e^4+4\,a\,b^2\,d\,e^4-12\,a\,b\,c\,d^2\,e^3+8\,a\,c^2\,d^3\,e^2-2\,b^3\,d^2\,e^3+8\,b^2\,c\,d^3\,e^2-10\,b\,c^2\,d^4\,e+4\,c^3\,d^5}{e^6\,\sqrt{d+e\,x}}+\frac{2\,\left(b\,e-2\,c\,d\right)\,{\left(d+e\,x\right)}^{3/2}\,\left(b^2\,e^2-10\,b\,c\,d\,e+10\,c^2\,d^2+6\,a\,c\,e^2\right)}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/e^6 +
 (4*c^3*(d + e*x)^(9/2))/(9*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)^(7/2)
)/(7*e^6) + ((d + e*x)^(5/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^2 - 40*b
*c^2*d*e))/(5*e^6) + (4*c^3*d^5 - 2*a^2*b*e^5 - 2*b^3*d^2*e^3 + 8*a*c^2*d^3
*e^2 + 8*b^2*c*d^3*e^2 + 4*a*b^2*d*e^4 + 4*a^2*c*d*e^4 - 10*b*c^2*d^4*e - 1
2*a*b*c*d^2*e^3)/(e^6*(d + e*x)^(1/2)) + (2*(b*e - 2*c*d)*(d + e*x)^(3/2)*(
b^2*e^2 + 10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(3*e^6)
```

sympy [A] time = 90.27, size = 316, normalized size = 1.27

$$\frac{4c^3(d+ex)^{\frac{9}{2}}}{9e^6}+\frac{(d+ex)^{\frac{7}{2}}\left(10bc^2e-20c^3d\right)}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(8ac^2e^2+8b^2ce^2-40bc^2de+40c^3d^2\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(12abce^3-24ac^2de^2+2b^3e^3-24b^2cde^2+60bc^2d^2e-40c^3d^3\right)}{3e^6}+\frac{\sqrt{d+ex}\left(4a^2ce^4+4ab^2e^4-24abcde^3+24ac^2d^2e^2-4b^3de^3+24b^2cd^2e^2-40bc^2d^3e+20c^3d^4\right)}{e^6}-\frac{2(be-2cd)\left(ae^2-bde+cd^2\right)^2}{e^6\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**(3/2),x)
```

```
[Out] 4*c**3*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(10*b*c**2*e - 20*c**3*
d)/(7*e**6) + (d + e*x)**(5/2)*(8*a*c**2*e**2 + 8*b**2*c*e**2 - 40*b*c**2*d
*e + 40*c**3*d**2)/(5*e**6) + (d + e*x)**(3/2)*(12*a*b*c*e**3 - 24*a*c**2*d
*e**2 + 2*b**3*e**3 - 24*b**2*c*d*e**2 + 60*b*c**2*d**2*e - 40*c**3*d**3)/(
3*e**6) + sqrt(d + e*x)*(4*a**2*c*e**4 + 4*a*b**2*e**4 - 24*a*b*c*d*e**3 +
24*a*c**2*d**2*e**2 - 4*b**3*d*e**3 + 24*b**2*c*d**2*e**2 - 40*b*c**2*d**3*
e + 20*c**3*d**4)/e**6 - 2*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**2/(e**6
*sqrt(d + e*x))
```

3.1414 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=246

$$\frac{8c(d+ex)^{3/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}-\frac{4\left(ae^2-\right.}{}$$

Rubi [A] time = 0.13, antiderivative size = 246, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{3/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}-\frac{4\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6\sqrt{d+ex}}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)^2}{3e^6(d+ex)^{3/2}}-\frac{2c^2(d+ex)^{5/2}(2cd-be)}{e^6}+\frac{4c^3(d+ex)^{7/2}}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2)/(3*e^6*(d + e*x)^(3/2)) - (4*(c
*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(e^6*Sqrt[
d + e*x]) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))
*Sqrt[d + e*x])/e^6 + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e
*x)^(3/2))/(3*e^6) - (2*c^2*(2*c*d - b*e)*(d + e*x)^(5/2))/e^6 + (4*c^3*(d
+ e*x)^(7/2))/(7*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^{5/2}}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b\right.}{e^5(d+ex)^{3/2}}\right.$$

$$=\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2}{3e^6(d+ex)^{3/2}}-\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5bd\right.}{e^6\sqrt{d+ex}}$$

Mathematica [A] time = 0.33, size = 289, normalized size = 1.17

$$-\frac{2\left(14ce^2\left(a^2e^2(2d+3ex)-3abe\left(8d^2+12dex+3e^2x^2\right)+2b^2\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)\right)+7be^3\left(a^2e^2+2abe(2d+3ex)-\left(b^2\left(8d^2+12dex+3e^2x^2\right)\right)\right)-7c^2e\left(4ae\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)+b\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)\right)+2c^3\left(256d^5+384d^4ex+96d^3e^2x^2-16d^2e^3x^3+6de^4x^4-3e^5x^5\right)\right)}{21e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(2*c^3*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e
^4*x^4 - 3*e^5*x^5) + 7*b*e^3*(a^2*e^2 + 2*a*b*e*(2*d + 3*e*x) - b^2*(8*d^2
 + 12*d*e*x + 3*e^2*x^2)) + 14*c*e^2*(a^2*e^2*(2*d + 3*e*x) - 3*a*b*e*(8*d^
2 + 12*d*e*x + 3*e^2*x^2) + 2*b^2*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*
x^3)) - 7*c^2*e*(4*a*e*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + b*(
128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4))))/(21*e^
6*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.17, size = 425, normalized size = 1.73

$$\frac{2\left(-7a^2be^5-42a^2ce^4(d+ex)+14a^2cde^4-42ab^2e^4(d+ex)+14ab^2de^4-42abcd^2e^3+252abcde^3(d+ex)+126abce^3(d+ex)^2+28ac^2d^3e^2-252ac^2d^2e^2(d+ex)-252ac^2de^2(d+ex)^2+28ac^2e^2(d+ex)^3-7b^3d^2e^3+42b^3de^3(d+ex)+21b^3e^3(d+ex)^2+28b^2cd^3e^2-252b^2cd^2e^2(d+ex)-252b^2cde^2(d+ex)^2+28b^2ce^2(d+ex)^3-35bc^2d^4e+420bc^2d^3e(d+ex)+630bc^2d^2e(d+ex)^2-140bc^2de(d+ex)^3+21bc^2e(d+ex)^4+14c^3d^5-210c^3d^4(d+ex)-420c^3d^3(d+ex)^2+140c^3d^2(d+ex)^3-42c^3d(d+ex)^4+6c^3(d+ex)^5\right)}{21e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(14*c^3*d^5 - 35*b*c^2*d^4*e + 28*b^2*c*d^3*e^2 + 28*a*c^2*d^3*e^2 - 7*b
^3*d^2*e^3 - 42*a*b*c*d^2*e^3 + 14*a*b^2*d*e^4 + 14*a^2*c*d*e^4 - 7*a^2*b*e
^5 - 210*c^3*d^4*(d + e*x) + 420*b*c^2*d^3*e*(d + e*x) - 252*b^2*c*d^2*e^2*
(d + e*x) - 252*a*c^2*d^2*e^2*(d + e*x) + 42*b^3*d*e^3*(d + e*x) + 252*a*b*
c*d*e^3*(d + e*x) - 42*a*b^2*e^4*(d + e*x) - 42*a^2*c*e^4*(d + e*x) - 420*c
^3*d^3*(d + e*x)^2 + 630*b*c^2*d^2*e*(d + e*x)^2 - 252*b^2*c*d*e^2*(d + e*x
)^2 - 252*a*c^2*d*e^2*(d + e*x)^2 + 21*b^3*e^3*(d + e*x)^2 + 126*a*b*c*e^3*
(d + e*x)^2 + 140*c^3*d^2*(d + e*x)^3 - 140*b*c^2*d*e*(d + e*x)^3 + 28*b^2*
c*e^2*(d + e*x)^3 + 28*a*c^2*e^2*(d + e*x)^3 - 42*c^3*d*(d + e*x)^4 + 21*b*
c^2*e*(d + e*x)^4 + 6*c^3*(d + e*x)^5))/(21*e^6*(d + e*x)^(3/2))
```

fricas [A] time = 0.41, size = 327, normalized size = 1.33

$$\frac{2\left(6c^3e^5x^5-512c^3d^5+896bc^2d^4e-7a^2be^5-448\left(b^2c+ac^2\right)d^3e^2+56\left(b^3+6abc\right)d^2e^3-28\left(ab^2+a^2c\right)de^4-3\left(4c^3de^4-7bc^2e^5\right)x^4+4\left(8c^3d^2e^3-14bc^2de^4+7\left(b^2c+ac^2\right)e^5\right)x^3-3\left(64c^3d^3e^2-112bc^2d^2e^3+56\left(b^2c+ac^2\right)de^4-7\left(b^3+6abc\right)e^5\right)x^2-6\left(128c^3d^4e-224bc^2d^3e^2+112\left(b^2c+ac^2\right)d^2e^3-14\left(b^3+6abc\right)de^4+7\left(ab^2+a^2c\right)e^5\right)x\right)\sqrt{ex+d}}{21\left(e^8x^2+2de^7x+d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/21*(6*c^3*e^5*x^5 - 512*c^3*d^5 + 896*b*c^2*d^4*e - 7*a^2*b*e^5 - 448*(b^
2*c + a*c^2)*d^3*e^2 + 56*(b^3 + 6*a*b*c)*d^2*e^3 - 28*(a*b^2 + a^2*c)*d*e^
4 - 3*(4*c^3*d*e^4 - 7*b*c^2*e^5)*x^4 + 4*(8*c^3*d^2*e^3 - 14*b*c^2*d*e^4 +
 7*(b^2*c + a*c^2)*e^5)*x^3 - 3*(64*c^3*d^3*e^2 - 112*b*c^2*d^2*e^3 + 56*(b
^2*c + a*c^2)*d*e^4 - 7*(b^3 + 6*a*b*c)*e^5)*x^2 - 6*(128*c^3*d^4*e - 224*b
*c^2*d^3*e^2 + 112*(b^2*c + a*c^2)*d^2*e^3 - 14*(b^3 + 6*a*b*c)*d*e^4 + 7*(
a*b^2 + a^2*c)*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
```

giac [A] time = 0.22, size = 440, normalized size = 1.79

$$\frac{2}{21}\left(6(xe+d)^{\frac{7}{2}}c^3e^{36}-42(xe+d)^{\frac{5}{2}}c^3de^{36}+140(xe+d)^{\frac{3}{2}}c^3d^2e^{36}-420\sqrt{xe+d}\,c^3d^3e^{36}+21(xe+d)^{\frac{5}{2}}bc^2e^{37}-140(xe+d)^{\frac{3}{2}}bc^2de^{37}+630\sqrt{xe+d}\,bc^2d^2e^{37}+28(xe+d)^{\frac{3}{2}}b^2ce^{38}+28(xe+d)^{\frac{3}{2}}ac^2e^{38}-252\sqrt{xe+d}\,b^2cde^{38}-252\sqrt{xe+d}\,ac^2de^{38}+21\sqrt{xe+d}\,b^3e^{39}+126\sqrt{xe+d}\,abce^{39}\right)e^{(-42)}-\frac{2\left(30(xe+d)c^3d^4-2c^3d^5-60(xe+d)bc^2d^3e+5bc^2d^4e+36(xe+d)b^2cd^2e^2+36(xe+d)ac^2d^2e^2-4b^2cd^3e^2-4ac^2d^3e^2-6(xe+d)b^3de^3-36(xe+d)abcde^3+b^3d^2e^3+6abcd^2e^3+6(xe+d)ab^2e^4+6(xe+d)a^2ce^4-2ab^2de^4-2a^2cde^4+a^2be^5\right)e^{(-6)}}{3(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/21*(6*(x*e + d)^(7/2)*c^3*e^36 - 42*(x*e + d)^(5/2)*c^3*d*e^36 + 140*(x*e
 + d)^(3/2)*c^3*d^2*e^36 - 420*sqrt(x*e + d)*c^3*d^3*e^36 + 21*(x*e + d)^(5
/2)*b*c^2*e^37 - 140*(x*e + d)^(3/2)*b*c^2*d*e^37 + 630*sqrt(x*e + d)*b*c^2
*d^2*e^37 + 28*(x*e + d)^(3/2)*b^2*c*e^38 + 28*(x*e + d)^(3/2)*a*c^2*e^38 -
 252*sqrt(x*e + d)*b^2*c*d*e^38 - 252*sqrt(x*e + d)*a*c^2*d*e^38 + 21*sqrt(
x*e + d)*b^3*e^39 + 126*sqrt(x*e + d)*a*b*c*e^39)*e^(-42) - 2/3*(30*(x*e +
d)*c^3*d^4 - 2*c^3*d^5 - 60*(x*e + d)*b*c^2*d^3*e + 5*b*c^2*d^4*e + 36*(x*e
 + d)*b^2*c*d^2*e^2 + 36*(x*e + d)*a*c^2*d^2*e^2 - 4*b^2*c*d^3*e^2 - 4*a*c^
2*d^3*e^2 - 6*(x*e + d)*b^3*d*e^3 - 36*(x*e + d)*a*b*c*d*e^3 + b^3*d^2*e^3
+ 6*a*b*c*d^2*e^3 + 6*(x*e + d)*a*b^2*e^4 + 6*(x*e + d)*a^2*c*e^4 - 2*a*b^2
*d*e^4 - 2*a^2*c*d*e^4 + a^2*b*e^5)*e^(-6)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 359, normalized size = 1.46

$$-\frac{2\left(-6c^3e^5x^5-21bc^2e^5x^4+12c^3de^4x^4-28ac^2e^5x^3-28b^2ce^5x^3+56bc^2de^4x^3-32c^3d^2e^3x^3-126abce^5x^2+168ac^2de^4x^2-21b^3e^5x^2+168b^2cde^4x^2-336bc^2d^2e^3x^2+192c^3d^3e^2x^2+42a^2ce^5x+42ab^2e^5x-504abcde^4x+672ac^2d^2e^3x-84b^3de^4x+672b^2cd^2e^3x-1344bc^2d^3e^2x+768c^3d^4ex+7a^2be^5+28a^2cde^4+28ab^2de^4-336abcd^2e^3+448ac^2d^3e^2-56b^3d^2e^3+448b^2cd^3e^2-896bc^2d^4e+512c^3d^5\right)}{21(ex+d)^{\frac{3}{2}}e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x)
```

[Out] -2/21/(e*x+d)^(3/2)*(-6*c^3*e^5*x^5-21*b*c^2*e^5*x^4+12*c^3*d*e^4*x^4-28*a*c^2*e^5*x^3-28*b^2*c*e^5*x^3+56*b*c^2*d*e^4*x^3-32*c^3*d^2*e^3*x^3-126*a*b*c*e^5*x^2+168*a*c^2*d*e^4*x^2-21*b^3*e^5*x^2+168*b^2*c*d*e^4*x^2-336*b*c^2*d^2*e^3*x^2+192*c^3*d^3*e^2*x^2+42*a^2*c*e^5*x+42*a*b^2*e^5*x-504*a*b*c*d*e^4*x+672*a*c^2*d^2*e^3*x-84*b^3*d*e^4*x+672*b^2*c*d^2*e^3*x-1344*b*c^2*d^3*e^2*x+768*c^3*d^4*e*x+7*a^2*b*e^5+28*a^2*c*d*e^4+28*a*b^2*d*e^4-336*a*b*c*d^2*e^3+448*a*c^2*d^3*e^2-56*b^3*d^2*e^3+448*b^2*c*d^3*e^2-896*b*c^2*d^4*e+512*c^3*d^5)/e^6

maxima [A] time = 0.53, size = 314, normalized size = 1.28

$$\frac{2\left(\frac{6\,(ex+d)^{\frac{7}{2}}c^3-21\left(2\,c^3d-bc^2e\right)(ex+d)^{\frac{5}{2}}+28\left(5\,c^3d^2-5\,bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{3}{2}}-21\left(20\,c^3d^3-30\,bc^2d^2e+12\left(b^2c+ac^2\right)de^2-\left(b^3+6\,abc\right)e^3\right)\sqrt{ex+d}}{e^5}+\frac{7\left(2\,c^3d^5-5\,bc^2d^4e-a^2be^5+4\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3+2\left(ab^2+a^2c\right)de^4-6\left(5\,c^3d^4-10\,bc^2d^3e+6\left(b^2c+ac^2\right)d^2e^2-\left(b^3+6\,abc\right)de^3+\left(ab^2+a^2c\right)e^4\right)(ex+d)\right)}{(ex+d)^{\frac{3}{2}}e^5}\right)}{21\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x, algorithm="maxima")

[Out] 2/21*((6*(e*x + d)^(7/2)*c^3 - 21*(2*c^3*d - b*c^2*e)*(e*x + d)^(5/2) + 28*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(3/2) - 21*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6*a*b*c)*e^3)*sqrt(e*x + d))/e^5 + 7*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4 - 6*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e

mupad [B] time = 1.89, size = 329, normalized size = 1.34

$$\frac{4\,c^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^6}+\frac{{\left(d+e\,x\right)}^{3/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{3\,e^6}+\frac{\frac{4\,c^3\,d^5}{3}-\left(d+e\,x\right)\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)-\frac{2\,a^2\,b\,e^5}{3}-\frac{2\,b^3\,d^2\,e^3}{3}+\frac{8\,a\,c^2\,d^3\,e^2}{3}+\frac{8\,b^2\,c\,d^3\,e^2}{3}+\frac{4\,a\,b^2\,d\,e^4}{3}+\frac{4\,a^2\,c\,d\,e^4}{3}-\frac{10\,b\,c^2\,d^4\,e}{3}-4\,a\,b\,c\,d^2\,e^3}{e^6\,{\left(d+e\,x\right)}^{3/2}}+\frac{2\,\left(b\,e-2\,c\,d\right)\,\sqrt{d+e\,x}\,\left(b^2\,e^2-10\,b\,c\,d\,e+10\,c^2\,d^2+6\,a\,c\,e^2\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x)

[Out] (4*c^3*(d + e*x)^(7/2))/(7*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)^(5/2))/(5*e^6) + ((d + e*x)^(3/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^2 - 40*b*c^2*d*e))/(3*e^6) + ((4*c^3*d^5)/3 - (d + e*x)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3) - (2*a^2*b*e^5)/3 - (2*b^3*d^2*e^3)/3 + (8*a*c^2*d^3*e^2)/3 + (8*b^2*c*d^3*e^2)/3 + (4*a*b^2*d*e^4)/3 + (4*a^2*c*d*e^4)/3 - (10*b*c^2*d^4*e)/3 - 4*a*b*c*d^2*e^3)/(e^6*(d + e*x)^(3/2)) + (2*(b*e - 2*c*d)*(d + e*x)^(1/2)*(b^2*e^2 + 10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/e^6

sympy [A] time = 113.80, size = 274, normalized size = 1.11

$$\frac{4c^3\left(d+ex\right)^{\frac{7}{2}}}{7e^6}+\frac{\left(d+ex\right)^{\frac{5}{2}}\left(10bc^2e-20c^3d\right)}{5e^6}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(8ac^2e^2+8b^2ce^2-40bc^2de+40c^3d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\left(12abce^3-24ac^2de^2+2b^3e^3-24b^2cde^2+60bc^2d^2e-40c^3d^3\right)}{e^6}-\frac{4\left(ae^2-bde+cd^2\right)\left(ace^2+b^2e^2-5bcde+5c^2d^2\right)}{e^6\sqrt{d+ex}}-\frac{2\left(be-2cd\right)\left(ae^2-bde+cd^2\right)^2}{3e^6\left(d+ex\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**(5/2),x)

[Out] 4*c**3*(d + e*x)**(7/2)/(7*e**6) + (d + e*x)**(5/2)*(10*b*c**2*e - 20*c**3*d)/(5*e**6) + (d + e*x)**(3/2)*(8*a*c**2*e**2 + 8*b**2*c*e**2 - 40*b*c**2*d*e + 40*c**3*d**2)/(3*e**6) + sqrt(d + e*x)*(12*a*b*c*e**3 - 24*a*c**2*d*e**2 + 2*b**3*e**3 - 24*b**2*c*d*e**2 + 60*b*c**2*d**2*e - 40*c**3*d**3)/e**6 - 4*(a*e**2 - b*d*e + c*d**2)*(a*c*e**2 + b**2*e**2 - 5*b*c*d*e + 5*c**2*d**2)/(e**6*sqrt(d + e*x)) - 2*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**2/(3*e**6*(d + e*x)**(3/2))

3.1415 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=427

$$\frac{2(d+ex)^{13/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{13e^8}+\frac{6c^2(d}{}$$

Rubi [A] time = 0.30, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(7/2))/(7*e^8) + (2*(
c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(9/2))/(9*e^8) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2
 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(11/2))/(11*e^8) + (2*(70*c^4*d
^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) +
 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(13/2))/(13*e^8)
- (2*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^
(15/2))/(3*e^8) + (6*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(17/2))/(17*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(19/2))/(19*e^8)
+ (4*c^4*(d + e*x)^(21/2))/(21*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^3\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{5/2}}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(1}{}\right.$$

$$= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{7/2}}{7e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2(14}{}$$

Mathematica [A] time = 0.62, size = 600, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-2*c^4*(2048*d^7 - 7168*d^6*e*x + 16128*d^5*e^2*x^2 - 2
9568*d^4*e^3*x^3 + 48048*d^3*e^4*x^4 - 72072*d^2*e^5*x^5 + 102102*d*e^6*x^6
 - 138567*e^7*x^7) + 969*b*e^4*(429*a^3*e^3 + 143*a^2*b*e^2*(-2*d + 7*e*x)
+ 13*a*b^2*e*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + b^3*(-16*d^3 + 56*d^2*e*x -
126*d*e^2*x^2 + 231*e^3*x^3)) + 323*c*e^3*(286*a^3*e^3*(-2*d + 7*e*x) + 117
```

```
*a^2*b*e^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 36*a*b^2*e*(-16*d^3 + 56*d^2*e
*x - 126*d*e^2*x^2 + 231*e^3*x^3) + b^3*(128*d^4 - 448*d^3*e*x + 1008*d^2*e
^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4)) - 57*c^2*e^2*(102*a^2*e^2*(16*d^3
- 56*d^2*e*x + 126*d*e^2*x^2 - 231*e^3*x^3) - 17*a*b*e*(128*d^4 - 448*d^3*e
*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4) + 3*b^2*(256*d^5 - 8
96*d^4*e*x + 2016*d^3*e^2*x^2 - 3696*d^2*e^3*x^3 + 6006*d*e^4*x^4 - 9009*e^
5*x^5)) + 3*c^3*e*(38*a*e*(-256*d^5 + 896*d^4*e*x - 2016*d^3*e^2*x^2 + 3696
*d^2*e^3*x^3 - 6006*d*e^4*x^4 + 9009*e^5*x^5) + 7*b*(1024*d^6 - 3584*d^5*e*
x + 8064*d^4*e^2*x^2 - 14784*d^3*e^3*x^3 + 24024*d^2*e^4*x^4 - 36036*d*e^5*
x^5 + 51051*e^6*x^6))))/(2909907*e^8)
```

IntegrateAlgebraic [B] time = 0.38, size = 951, normalized size = 2.23

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-831402*c^4*d^7 + 2909907*b*c^3*d^6*e - 3741309*b^2*c^2
*d^5*e^2 - 2494206*a*c^3*d^5*e^2 + 2078505*b^3*c*d^4*e^3 + 6235515*a*b*c^2*
d^4*e^3 - 415701*b^4*d^3*e^4 - 4988412*a*b^2*c*d^3*e^4 - 2494206*a^2*c^2*d^
3*e^4 + 1247103*a*b^3*d^2*e^5 + 3741309*a^2*b*c*d^2*e^5 - 1247103*a^2*b^2*d
*e^6 - 831402*a^3*c*d*e^6 + 415701*a^3*b*e^7 + 4526522*c^4*d^6*(d + e*x) -
13579566*b*c^3*d^5*e*(d + e*x) + 14549535*b^2*c^2*d^4*e^2*(d + e*x) + 96996
90*a*c^3*d^4*e^2*(d + e*x) - 6466460*b^3*c*d^3*e^3*(d + e*x) - 19399380*a*b
*c^2*d^3*e^3*(d + e*x) + 969969*b^4*d^2*e^4*(d + e*x) + 11639628*a*b^2*c*d^
2*e^4*(d + e*x) + 5819814*a^2*c^2*d^2*e^4*(d + e*x) - 1939938*a*b^3*d*e^5*(
d + e*x) - 5819814*a^2*b*c*d*e^5*(d + e*x) + 969969*a^2*b^2*e^6*(d + e*x) +
 646646*a^3*c*e^6*(d + e*x) - 11110554*c^4*d^5*(d + e*x)^2 + 27776385*b*c^3
*d^4*e*(d + e*x)^2 - 23808330*b^2*c^2*d^3*e^2*(d + e*x)^2 - 15872220*a*c^3*
d^3*e^2*(d + e*x)^2 + 7936110*b^3*c*d^2*e^3*(d + e*x)^2 + 23808330*a*b*c^2*
d^2*e^3*(d + e*x)^2 - 793611*b^4*d*e^4*(d + e*x)^2 - 9523332*a*b^2*c*d*e^4*
(d + e*x)^2 - 4761666*a^2*c^2*d*e^4*(d + e*x)^2 + 793611*a*b^3*e^5*(d + e*x
)^2 + 2380833*a^2*b*c*e^5*(d + e*x)^2 + 15668730*c^4*d^4*(d + e*x)^3 - 3133
7460*b*c^3*d^3*e*(d + e*x)^3 + 20145510*b^2*c^2*d^2*e^2*(d + e*x)^3 + 13430
340*a*c^3*d^2*e^2*(d + e*x)^3 - 4476780*b^3*c*d*e^3*(d + e*x)^3 - 13430340*
a*b*c^2*d*e^3*(d + e*x)^3 + 223839*b^4*e^4*(d + e*x)^3 + 2686068*a*b^2*c*e^
4*(d + e*x)^3 + 1343034*a^2*c^2*e^4*(d + e*x)^3 - 13579566*c^4*d^3*(d + e*x
)^4 + 20369349*b*c^3*d^2*e*(d + e*x)^4 - 8729721*b^2*c^2*d*e^2*(d + e*x)^4
- 5819814*a*c^3*d*e^2*(d + e*x)^4 + 969969*b^3*c*e^3*(d + e*x)^4 + 2909907*
a*b*c^2*e^3*(d + e*x)^4 + 7189182*c^4*d^2*(d + e*x)^5 - 7189182*b*c^3*d*e*(
d + e*x)^5 + 1540539*b^2*c^2*e^2*(d + e*x)^5 + 1027026*a*c^3*e^2*(d + e*x)^
5 - 2144142*c^4*d*(d + e*x)^6 + 1072071*b*c^3*e*(d + e*x)^6 + 277134*c^4*(d
 + e*x)^7))/(2909907*e^8)
```

fricas [B] time = 0.42, size = 1113, normalized size = 2.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/2909907*(277134*c^4*e^10*x^10 - 4096*c^4*d^10 + 21504*b*c^3*d^9*e + 41570
1*a^3*b*d^3*e^7 - 14592*(3*b^2*c^2 + 2*a*c^3)*d^8*e^2 + 41344*(b^3*c + 3*a*
b*c^2)*d^7*e^3 - 15504*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^4 + 100776*(a*b
^3 + 3*a^2*b*c)*d^5*e^5 - 92378*(3*a^2*b^2 + 2*a^3*c)*d^4*e^6 + 7293*(86*c^
4*d*e^9 + 147*b*c^3*e^10)*x^9 + 3861*(94*c^4*d^2*e^8 + 637*b*c^3*d*e^9 + 13
3*(3*b^2*c^2 + 2*a*c^3)*e^10)*x^8 + 429*(2*c^4*d^3*e^7 + 3381*b*c^3*d^2*e^8
 + 2793*(3*b^2*c^2 + 2*a*c^3)*d*e^9 + 2261*(b^3*c + 3*a*b*c^2)*e^10)*x^7 -
231*(4*c^4*d^4*e^6 - 21*b*c^3*d^3*e^7 - 3135*(3*b^2*c^2 + 2*a*c^3)*d^2*e^8
```

```
- 10013*(b^3*c + 3*a*b*c^2)*d*e^9 - 969*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^10
)*x^6 + 63*(16*c^4*d^5*e^5 - 84*b*c^3*d^4*e^6 + 57*(3*b^2*c^2 + 2*a*c^3)*d^
3*e^7 + 22933*(b^3*c + 3*a*b*c^2)*d^2*e^8 + 8721*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d*e^9 + 12597*(a*b^3 + 3*a^2*b*c)*e^10)*x^5 - 7*(160*c^4*d^6*e^4 - 840
*b*c^3*d^5*e^5 + 570*(3*b^2*c^2 + 2*a*c^3)*d^4*e^6 - 1615*(b^3*c + 3*a*b*c^
2)*d^3*e^7 - 51357*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^8 - 289731*(a*b^3 +
 3*a^2*b*c)*d*e^9 - 46189*(3*a^2*b^2 + 2*a^3*c)*e^10)*x^4 + (1280*c^4*d^7*e
^3 - 6720*b*c^3*d^6*e^4 + 415701*a^3*b*e^10 + 4560*(3*b^2*c^2 + 2*a*c^3)*d^
5*e^5 - 12920*(b^3*c + 3*a*b*c^2)*d^4*e^6 + 4845*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^3*e^7 + 1423461*(a*b^3 + 3*a^2*b*c)*d^2*e^8 + 877591*(3*a^2*b^2 + 2*
a^3*c)*d*e^9)*x^3 - 3*(512*c^4*d^8*e^2 - 2688*b*c^3*d^7*e^3 - 415701*a^3*b*
d*e^9 + 1824*(3*b^2*c^2 + 2*a*c^3)*d^6*e^4 - 5168*(b^3*c + 3*a*b*c^2)*d^5*e
^5 + 1938*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^6 - 12597*(a*b^3 + 3*a^2*b*c
)*d^3*e^7 - 230945*(3*a^2*b^2 + 2*a^3*c)*d^2*e^8)*x^2 + (2048*c^4*d^9*e - 1
0752*b*c^3*d^8*e^2 + 1247103*a^3*b*d^2*e^8 + 7296*(3*b^2*c^2 + 2*a*c^3)*d^7
*e^3 - 20672*(b^3*c + 3*a*b*c^2)*d^6*e^4 + 7752*(b^4 + 12*a*b^2*c + 6*a^2*c
^2)*d^5*e^5 - 50388*(a*b^3 + 3*a^2*b*c)*d^4*e^6 + 46189*(3*a^2*b^2 + 2*a^3*
c)*d^3*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B]   time = 0.59, size = 4552, normalized size = 10.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/14549535*(14549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*d^3*e^(-
1) + 9699690*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*d^3*e^(-1) + 29099
07*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*
d^3*e^(-2) + 8729721*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^2*b*c*d^3*e^(-2) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^4*d^3*e^(-3) + 49
88412*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a*b^2*c*d^3*e^(-3) + 2494206*(5*(x*e + d)^(7/2) - 21*
(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c^2*
d^3*e^(-3) + 230945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*c*d^3
*e^(-4) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d
)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c^2*d^3*
e^(-4) + 188955*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*b^2*c^2*d^3*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^3*d^3*e^(-5) + 33915*(231*(
x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580
*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
+ 3003*sqrt(x*e + d)*d^6)*b*c^3*d^3*e^(-6) + 4522*(429*(x*e + d)^(15/2) - 3
465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)
*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
 d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^4*d^3*e^(-7) + 8729721*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b^2*d^2*e^(-1)
+ 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*a^3*c*d^2*e^(-1) + 3741309*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d^2*e^(-2) + 11223927*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*a^2*b*c*d^2*e^(-2) + 138567*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*b^4*d^2*e^(-3) + 1662804*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a*b^2*c*d^2*e^(-3) + 831402*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
```

2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*a^2*c^2*d^2*e^(-3) + 314925*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/
2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^
(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*c*d^2*e^(-4) + 944775*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c^2*d^2*e^
(-4) + 130815*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e +
 d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*
(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^2*c^2*d^2*e^(-5) + 87210*(2
31*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*
d^5 + 3003*sqrt(x*e + d)*d^6)*a*c^3*d^2*e^(-5) + 47481*(429*(x*e + d)^(15/2
) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^
(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(
x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b*c^3*d^2*e^(-6) + 798*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*c^4*d^2*e^(-7) + 14549535*sqrt(x*e + d)*a^3*b*d^3 + 1
4549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d^2 + 3741309*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*a^2*b^2*d*e^(-1) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*c*d*e^(-1) + 415701*(
35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*
(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^3*d*e^(-2) + 1247103*(35*(
x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
 + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b*c*d*e^(-2) + 62985*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^4*d*e^(
-3) + 755820*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(
7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x
*e + d)*d^5)*a*b^2*c*d*e^(-3) + 377910*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*c^2*d*e^(-3) + 72675*(231*(x*e +
 d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
 + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 300
3*sqrt(x*e + d)*d^6)*b^3*c*d*e^(-4) + 218025*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*a*b*c^2*d*e^(-4) + 61047*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
+ 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^
(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sq
rt(x*e + d)*d^7)*b^2*c^2*d*e^(-5) + 40698*(429*(x*e + d)^(15/2) - 3465*(x*e
 + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3
2175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2
)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*c^3*d*e^(-5) + 2793*(6435*(x*e + d)^(17/2
) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e +
d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 6
12612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e +
d)*d^8)*b*c^3*d*e^(-6) + 378*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17
/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 264537
0*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7
/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945
*sqrt(x*e + d)*d^9)*c^4*d*e^(-7) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b*d + 138567*(35*(x*e + d)^(9/2) - 18
0*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 3
15*sqrt(x*e + d)*d^4)*a^2*b^2*e^(-1) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e
 + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqr
t(x*e + d)*d^4)*a^3*c*e^(-1) + 62985*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(

```
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^3*e^(-2) + 188955*(63*(x*e + d)^(1
1/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/
2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b*c*e^(-2) +
 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2
)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d
)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^4*e^(-3) + 58140*(231*(x*e + d)^(13
/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(
7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(
x*e + d)*d^6)*a*b^2*c*e^(-3) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*c^
2*e^(-3) + 11305*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x
*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4
- 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d
)*d^7)*b^3*c*e^(-4) + 33915*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
 + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)
^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*s
qrt(x*e + d)*d^7)*a*b*c^2*e^(-4) + 1197*(6435*(x*e + d)^(17/2) - 58344*(x*e
 + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
+ 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d
)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^2*c^
2*e^(-5) + 798*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(
x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*
d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e
 + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a*c^3*e^(-5) + 441*(12155*(x*e
+ d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 149
2260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d
)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 6
92835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*b*c^3*e^(-6) + 30*(46
189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)
*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221
108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d
)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 9
69969*sqrt(x*e + d)*d^10)*c^4*e^(-7) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b)*e^(-1)
```

maple [B] time = 0.05, size = 795, normalized size = 1.86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(277134*c^4*e^7*x^7+1072071*b*c^3*e^7*x^6-204204*c^
4*d*e^6*x^6+1027026*a*c^3*e^7*x^5+1540539*b^2*c^2*e^7*x^5-756756*b*c^3*d*e^
6*x^5+144144*c^4*d^2*e^5*x^5+2909907*a*b*c^2*e^7*x^4-684684*a*c^3*d*e^6*x^4
+969969*b^3*c*e^7*x^4-1027026*b^2*c^2*d*e^6*x^4+504504*b*c^3*d^2*e^5*x^4-96
096*c^4*d^3*e^4*x^4+1343034*a^2*c^2*e^7*x^3+2686068*a*b^2*c*e^7*x^3-1790712
*a*b*c^2*d*e^6*x^3+421344*a*c^3*d^2*e^5*x^3+223839*b^4*e^7*x^3-596904*b^3*c
*d*e^6*x^3+632016*b^2*c^2*d^2*e^5*x^3-310464*b*c^3*d^3*e^4*x^3+59136*c^4*d^
4*e^3*x^3+2380833*a^2*b*c*e^7*x^2-732564*a^2*c^2*d*e^6*x^2+793611*a*b^3*e^7
*x^2-1465128*a*b^2*c*d*e^6*x^2+976752*a*b*c^2*d^2*e^5*x^2-229824*a*c^3*d^3*
e^4*x^2-122094*b^4*d*e^6*x^2+325584*b^3*c*d^2*e^5*x^2-344736*b^2*c^2*d^3*e^
4*x^2+169344*b*c^3*d^4*e^3*x^2-32256*c^4*d^5*e^2*x^2+646646*a^3*c*e^7*x+969
969*a^2*b^2*e^7*x-1058148*a^2*b*c*d*e^6*x+325584*a^2*c^2*d^2*e^5*x-352716*a
*b^3*d*e^6*x+651168*a*b^2*c*d^2*e^5*x-434112*a*b*c^2*d^3*e^4*x+102144*a*c^3
*d^4*e^3*x+54264*b^4*d^2*e^5*x-144704*b^3*c*d^3*e^4*x+153216*b^2*c^2*d^4*e^
3*x-75264*b*c^3*d^5*e^2*x+14336*c^4*d^6*e*x+415701*a^3*b*e^7-184756*a^3*c*d
*e^6-277134*a^2*b^2*d*e^6+302328*a^2*b*c*d^2*e^5-93024*a^2*c^2*d^3*e^4+1007
```

```
76*a*b^3*d^2*e^5-186048*a*b^2*c*d^3*e^4+124032*a*b*c^2*d^4*e^3-29184*a*c^3*
d^5*e^2-15504*b^4*d^3*e^4+41344*b^3*c*d^4*e^3-43776*b^2*c^2*d^5*e^2+21504*b
*c^3*d^6*e-4096*c^4*d^7)/e^8
```

maxima [A] time = 0.54, size = 645, normalized size = 1.51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/2909907*(277134*(e*x + d)^(21/2)*c^4 - 1072071*(2*c^4*d - b*c^3*e)*(e*x +
 d)^(19/2) + 513513*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)
*(e*x + d)^(17/2) - 969969*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*
a*c^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(15/2) + 223839*(70*c^4*d
^4 - 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b
*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(13/2) - 793611
*(14*c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*
c + 3*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*
a^2*b*c)*e^5)*(e*x + d)^(11/2) + 323323*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(
3*b^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 +
2*a^3*c)*e^6)*(e*x + d)^(9/2) - 415701*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e
^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4
 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2
*b^2 + 2*a^3*c)*d*e^6)*(e*x + d)^(7/2))/e^8
```

mupad [B] time = 1.96, size = 444, normalized size = 1.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^(17/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(17*e^8) + (4*c^4*(d + e*x)^(21/2))/(21*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(19/2))/(19*e^8) + ((d + e*x)^(13/2)*(2*b^4*e^4 + 140*c^4*d^4 +
12*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
 280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(13*e^8) + (2*(b*e
- 2*c*d)*(d + e*x)^(7/2)*(a*e^2 + c*d^2 - b*d*e)^3)/(7*e^8) + (6*(b*e - 2*c
*d)*(d + e*x)^(11/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*
a*c^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(11*e^8
) + (2*(d + e*x)^(9/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 +
2*a*c*e^2 - 14*b*c*d*e))/(9*e^8) + (2*c*(b*e - 2*c*d)*(d + e*x)^(15/2)*(b^2
*e^2 + 7*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(3*e^8)
```

sympy [A] time = 126.02, size = 3529, normalized size = 8.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*a**3*b*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**3*b*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 4*a**3*c*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*a**3*c
*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**2 + 4*a**3*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d
*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 6*a**2*b**2*d**2*(-d*(d +
```

e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 12*a**2*b**2*d*(d**2*(d + e*x)**
(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*a**2*b**2*(
-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)
/7 + (d + e*x)**(9/2)/9)/e**2 + 18*a**2*b*c*d**2*(d**2*(d + e*x)**(3/2)/3 -
 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 36*a**2*b*c*d*(-d**3*(
d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d
 + e*x)**(9/2)/9)/e**3 + 18*a**2*b*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
 e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d +
e*x)**(11/2)/11)/e**3 + 12*a**2*c**2*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**
2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 +
24*a**2*c**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**
2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
+ 12*a**2*c**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*
(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11
+ (d + e*x)**(13/2)/13)/e**4 + 6*a*b**3*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d
*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 12*a*b**3*d*(-d**3*(d + e*
x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x
)**(9/2)/9)/e**3 + 6*a*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5
/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11
/2)/11)/e**3 + 24*a*b**2*c*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x
)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 48*a*b**2*
c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)
(7/2)/7 - 4*d*(d + e*x)(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 24*a*b**2
c(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(
7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)*
*(13/2)/13)/e**4 + 30*a*b*c**2*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**5 + 60*a*b*c**2*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d +
e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d
*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 30*a*b*c**2*(d**6*(d +
 e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 2
0*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(
13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 12*a*c**3*d**2*(-d**5*(d + e*x)**(3
/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e
*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 24*a
*c**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d +
 e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11
- 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 12*a*c**3*(-d**7*
(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) +
35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*
x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 2*b
4*d2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e
*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 4*b**4*d*(d**4*(d + e*x)**(3/2)/3
 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(
9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 2*b**4*(-d**5*(d + e*x)**(3/2)/3 + d*
4(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)
/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 10*b**3*c*d**2
*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(
7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 20*b**3*c*d*
(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2
)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(1
3/2)/13)/e**5 + 10*b**3*c*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2
)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d
+ e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 +
 18*b**2*c**2*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d
3*(d + e*x)(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)
/11 + (d + e*x)**(13/2)/13)/e**6 + 36*b**2*c**2*d*(d**6*(d + e*x)**(3/2)/3
- 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x
)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d +

```
 e*x)**(15/2)/15)/e**6 + 18*b**2*c**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d
 + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 3
5*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)*
*(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 14*b*c**3*d**2*(d**6*(d + e*x)**(
3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(
d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13
 + (d + e*x)**(15/2)/15)/e**7 + 28*b*c**3*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d
**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)
/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d +
 e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 14*b*c**3*(d**8*(d + e*x)**
(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d
+ e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/
13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(
19/2)/19)/e**7 + 4*c**4*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**
(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d
 + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/1
5 + (d + e*x)**(17/2)/17)/e**8 + 8*c**4*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7
*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9
+ 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d
+ e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 +
 4*c**4*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d
+ e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/1
1 + 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(
d + e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8
```

3.1416 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=427

$$\frac{2(d+ex)^{11/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{11e^8}+\frac{2c^2(d}{}$$

Rubi [A] time = 0.24, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{2(d+ex)^{11/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{11e^8}+\frac{2c^2(d+ex)^{15/2}\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{5e^8}-\frac{10c(d+ex)^{13/2}(2cd-be)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{13e^8}-\frac{2(d+ex)^{9/2}(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{3e^8}+\frac{2(d+ex)^{7/2}\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{7e^8}-\frac{2(d+ex)^{5/2}(2cd-be)\left(ae^2-bde+cd^2\right)^3}{5e^8}-\frac{14c^3(d+ex)^{17/2}(2cd-be)}{17e^8}+\frac{4c^4(d+ex)^{19/2}}{19e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(5/2))/(5*e^8) + (2*(
c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(7/2))/(7*e^8) - (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2
 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(9/2))/(3*e^8) + (2*(70*c^4*d^4
 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6
*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(11/2))/(11*e^8) -
(10*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(
13/2))/(13*e^8) + (2*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(15/2))/(5*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(17/2))/(17*e^8) +
 (4*c^4*(d + e*x)^(19/2))/(19*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^3\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{3/2}}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(1}{}\right.\\ &= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{5/2}}{5e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2(14}{}\end{aligned}$$

Mathematica [A] time = 0.62, size = 600, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-14*c^4*(2048*d^7 - 5120*d^6*e*x + 8960*d^5*e^2*x^2 - 1
3440*d^4*e^3*x^3 + 18480*d^3*e^4*x^4 - 24024*d^2*e^5*x^5 + 30030*d*e^6*x^6
- 36465*e^7*x^7) + 4199*b*e^4*(231*a^3*e^3 + 99*a^2*b*e^2*(-2*d + 5*e*x) +
11*a*b^2*e*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + b^3*(-16*d^3 + 40*d^2*e*x - 70
*d*e^2*x^2 + 105*e^3*x^3)) + 323*c*e^3*(858*a^3*e^3*(-2*d + 5*e*x) + 429*a^
```

```
2*b*e^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 156*a*b^2*e*(-16*d^3 + 40*d^2*e*x
 - 70*d*e^2*x^2 + 105*e^3*x^3) + 5*b^3*(128*d^4 - 320*d^3*e*x + 560*d^2*e^2
*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4)) - 969*c^2*e^2*(26*a^2*e^2*(16*d^3 - 4
0*d^2*e*x + 70*d*e^2*x^2 - 105*e^3*x^3) - 5*a*b*e*(128*d^4 - 320*d^3*e*x +
560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4) + b^2*(256*d^5 - 640*d^4*e*
x + 1120*d^3*e^2*x^2 - 1680*d^2*e^3*x^3 + 2310*d*e^4*x^4 - 3003*e^5*x^5)) +
 19*c^3*e*(34*a*e*(-256*d^5 + 640*d^4*e*x - 1120*d^3*e^2*x^2 + 1680*d^2*e^3
*x^3 - 2310*d*e^4*x^4 + 3003*e^5*x^5) + 7*b*(1024*d^6 - 2560*d^5*e*x + 4480
*d^4*e^2*x^2 - 6720*d^3*e^3*x^3 + 9240*d^2*e^4*x^4 - 12012*d*e^5*x^5 + 1501
5*e^6*x^6))))/(4849845*e^8)
```

IntegrateAlgebraic [B] time = 0.36, size = 951, normalized size = 2.23

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-1939938*c^4*d^7 + 6789783*b*c^3*d^6*e - 8729721*b^2*c^
2*d^5*e^2 - 5819814*a*c^3*d^5*e^2 + 4849845*b^3*c*d^4*e^3 + 14549535*a*b*c^
2*d^4*e^3 - 969969*b^4*d^3*e^4 - 11639628*a*b^2*c*d^3*e^4 - 5819814*a^2*c^2
*d^3*e^4 + 2909907*a*b^3*d^2*e^5 + 8729721*a^2*b*c*d^2*e^5 - 2909907*a^2*b^
2*d*e^6 - 1939938*a^3*c*d*e^6 + 969969*a^3*b*e^7 + 9699690*c^4*d^6*(d + e*x
) - 29099070*b*c^3*d^5*e*(d + e*x) + 31177575*b^2*c^2*d^4*e^2*(d + e*x) + 2
0785050*a*c^3*d^4*e^2*(d + e*x) - 13856700*b^3*c*d^3*e^3*(d + e*x) - 415701
00*a*b*c^2*d^3*e^3*(d + e*x) + 2078505*b^4*d^2*e^4*(d + e*x) + 24942060*a*b
^2*c*d^2*e^4*(d + e*x) + 12471030*a^2*c^2*d^2*e^4*(d + e*x) - 4157010*a*b^3
*d*e^5*(d + e*x) - 12471030*a^2*b*c*d*e^5*(d + e*x) + 2078505*a^2*b^2*e^6*(
d + e*x) + 1385670*a^3*c*e^6*(d + e*x) - 22632610*c^4*d^5*(d + e*x)^2 + 565
81525*b*c^3*d^4*e*(d + e*x)^2 - 48498450*b^2*c^2*d^3*e^2*(d + e*x)^2 - 3233
2300*a*c^3*d^3*e^2*(d + e*x)^2 + 16166150*b^3*c*d^2*e^3*(d + e*x)^2 + 48498
450*a*b*c^2*d^2*e^3*(d + e*x)^2 - 1616615*b^4*d*e^4*(d + e*x)^2 - 19399380*
a*b^2*c*d*e^4*(d + e*x)^2 - 9699690*a^2*c^2*d*e^4*(d + e*x)^2 + 1616615*a*b
^3*e^5*(d + e*x)^2 + 4849845*a^2*b*c*e^5*(d + e*x)^2 + 30862650*c^4*d^4*(d
+ e*x)^3 - 61725300*b*c^3*d^3*e*(d + e*x)^3 + 39680550*b^2*c^2*d^2*e^2*(d +
 e*x)^3 + 26453700*a*c^3*d^2*e^2*(d + e*x)^3 - 8817900*b^3*c*d*e^3*(d + e*x
)^3 - 26453700*a*b*c^2*d*e^3*(d + e*x)^3 + 440895*b^4*e^4*(d + e*x)^3 + 529
0740*a*b^2*c*e^4*(d + e*x)^3 + 2645370*a^2*c^2*e^4*(d + e*x)^3 - 26114550*c
^4*d^3*(d + e*x)^4 + 39171825*b*c^3*d^2*e*(d + e*x)^4 - 16787925*b^2*c^2*d*
e^2*(d + e*x)^4 - 11191950*a*c^3*d*e^2*(d + e*x)^4 + 1865325*b^3*c*e^3*(d +
 e*x)^4 + 5595975*a*b*c^2*e^3*(d + e*x)^4 + 13579566*c^4*d^2*(d + e*x)^5 -
13579566*b*c^3*d*e*(d + e*x)^5 + 2909907*b^2*c^2*e^2*(d + e*x)^5 + 1939938*
a*c^3*e^2*(d + e*x)^5 - 3993990*c^4*d*(d + e*x)^6 + 1996995*b*c^3*e*(d + e*
x)^6 + 510510*c^4*(d + e*x)^7))/(4849845*e^8)
```

fricas [B] time = 0.42, size = 958, normalized size = 2.24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(510510*c^4*e^9*x^9 - 28672*c^4*d^9 + 136192*b*c^3*d^8*e + 969969
*a^3*b*d^2*e^7 - 82688*(3*b^2*c^2 + 2*a*c^3)*d^7*e^2 + 206720*(b^3*c + 3*a*
b*c^2)*d^6*e^3 - 67184*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^4 + 369512*(a*b
^3 + 3*a^2*b*c)*d^4*e^5 - 277134*(3*a^2*b^2 + 2*a^3*c)*d^3*e^6 + 15015*(40*
c^4*d*e^8 + 133*b*c^3*e^9)*x^8 + 3003*(2*c^4*d^2*e^7 + 798*b*c^3*d*e^8 + 32
3*(3*b^2*c^2 + 2*a*c^3)*e^9)*x^7 - 231*(28*c^4*d^3*e^6 - 133*b*c^3*d^2*e^7
- 5168*(3*b^2*c^2 + 2*a*c^3)*d*e^8 - 8075*(b^3*c + 3*a*b*c^2)*e^9)*x^6 + 21
```

```
*(336*c^4*d^4*e^5 - 1596*b*c^3*d^3*e^6 + 969*(3*b^2*c^2 + 2*a*c^3)*d^2*e^7
+ 113050*(b^3*c + 3*a*b*c^2)*d*e^8 + 20995*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e
^9)*x^5 - 35*(224*c^4*d^5*e^4 - 1064*b*c^3*d^4*e^5 + 646*(3*b^2*c^2 + 2*a*c
^3)*d^3*e^6 - 1615*(b^3*c + 3*a*b*c^2)*d^2*e^7 - 16796*(b^4 + 12*a*b^2*c +
6*a^2*c^2)*d*e^8 - 46189*(a*b^3 + 3*a^2*b*c)*e^9)*x^4 + 5*(1792*c^4*d^6*e^3
 - 8512*b*c^3*d^5*e^4 + 5168*(3*b^2*c^2 + 2*a*c^3)*d^4*e^5 - 12920*(b^3*c +
 3*a*b*c^2)*d^3*e^6 + 4199*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^7 + 461890*
(a*b^3 + 3*a^2*b*c)*d*e^8 + 138567*(3*a^2*b^2 + 2*a^3*c)*e^9)*x^3 - 3*(3584
*c^4*d^7*e^2 - 17024*b*c^3*d^6*e^3 - 323323*a^3*b*e^9 + 10336*(3*b^2*c^2 +
2*a*c^3)*d^5*e^4 - 25840*(b^3*c + 3*a*b*c^2)*d^4*e^5 + 8398*(b^4 + 12*a*b^2
*c + 6*a^2*c^2)*d^3*e^6 - 46189*(a*b^3 + 3*a^2*b*c)*d^2*e^7 - 369512*(3*a^2
*b^2 + 2*a^3*c)*d*e^8)*x^2 + (14336*c^4*d^8*e - 68096*b*c^3*d^7*e^2 + 19399
38*a^3*b*d*e^8 + 41344*(3*b^2*c^2 + 2*a*c^3)*d^6*e^3 - 103360*(b^3*c + 3*a*
b*c^2)*d^5*e^4 + 33592*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^5 - 184756*(a*b
^3 + 3*a^2*b*c)*d^3*e^6 + 138567*(3*a^2*b^2 + 2*a^3*c)*d^2*e^7)*x)*sqrt(e*x
 + d)/e^8
```

giac [B] time = 0.37, size = 3123, normalized size = 7.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x, algorithm="giac")

[Out] 2/14549535*(14549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*d^2*e^(-
1) + 9699690*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*d^2*e^(-1) + 29099
07*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*
d^2*e^(-2) + 8729721*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^2*b*c*d^2*e^(-2) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^4*d^2*e^(-3) + 49
88412*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a*b^2*c*d^2*e^(-3) + 2494206*(5*(x*e + d)^(7/2) - 21*
(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c^2*
d^2*e^(-3) + 230945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*c*d^2
*e^(-4) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d
)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c^2*d^2*
e^(-4) + 188955*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*b^2*c^2*d^2*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^3*d^2*e^(-5) + 33915*(231*(
x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580
*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
+ 3003*sqrt(x*e + d)*d^6)*b*c^3*d^2*e^(-6) + 4522*(429*(x*e + d)^(15/2) - 3
465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)
*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
 d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^4*d^2*e^(-7) + 5819814*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b^2*d*e^(-1) +
3879876*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a
^3*c*d*e^(-1) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
 + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d*e^(-2) + 7482618*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*a^2*b*c*d*e^(-2) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*b^4*d*e^(-3) + 1108536*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*
(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^
2*c*d*e^(-3) + 554268*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*c^2
*d*e^(-3) + 209950*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
```

```
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*b^3*c*d*e^(-4) + 629850*(63*(x*e + d)^(11/2) - 385*(x*e
+ d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x
*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c^2*d*e^(-4) + 87210*(231*(x
*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*
(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
 3003*sqrt(x*e + d)*d^6)*b^2*c^2*d*e^(-5) + 58140*(231*(x*e + d)^(13/2) - 1
638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^
3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d
)*d^6)*a*c^3*d*e^(-5) + 31654*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*b*c^3*d*e^(-6) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*
e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e +
d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*c^4*d
*e^(-7) + 14549535*sqrt(x*e + d)*a^3*b*d^2 + 9699690*((x*e + d)^(3/2) - 3*s
qrt(x*e + d)*d)*a^3*b*d + 1247103*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^2*e^(-1) + 831402*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*a^3*c*e^(-1) + 138567*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a*b^3*e^(-2) + 415701*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*a^2*b*c*e^(-2) + 20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*b^4*e^(-3) + 251940*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^2*c*e^(-3) + 125970*(63*(x*
e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
 + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*c^2
*e^(-3) + 24225*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
 + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 600
6*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^3*c*e^(-4) + 72675*(231*(
x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580
*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
+ 3003*sqrt(x*e + d)*d^6)*a*b*c^2*e^(-4) + 20349*(429*(x*e + d)^(15/2) - 34
65*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*
d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^2*c^2*e^(-5) + 13566*(429*(x*e + d
)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*
e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 +
15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*c^3*e^(-5) + 931*(643
5*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2
 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e +
 d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1
09395*sqrt(x*e + d)*d^8)*b*c^3*e^(-6) + 126*(12155*(x*e + d)^(19/2) - 12226
5*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/
2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 27713
40*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/
2)*d^8 - 230945*sqrt(x*e + d)*d^9)*c^4*e^(-7) + 969969*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b)*e^(-1)
```

maple [B] time = 0.05, size = 795, normalized size = 1.86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/4849845*(e*x+d)^(5/2)*(510510*c^4*e^7*x^7+1996995*b*c^3*e^7*x^6-420420*c^
4*d*e^6*x^6+1939938*a*c^3*e^7*x^5+2909907*b^2*c^2*e^7*x^5-1597596*b*c^3*d*e
^6*x^5+336336*c^4*d^2*e^5*x^5+5595975*a*b*c^2*e^7*x^4-1492260*a*c^3*d*e^6*x
^4+1865325*b^3*c*e^7*x^4-2238390*b^2*c^2*d*e^6*x^4+1228920*b*c^3*d^2*e^5*x^
4-258720*c^4*d^3*e^4*x^4+2645370*a^2*c^2*e^7*x^3+5290740*a*b^2*c*e^7*x^3-40
69800*a*b*c^2*d*e^6*x^3+1085280*a*c^3*d^2*e^5*x^3+440895*b^4*e^7*x^3-135660
0*b^3*c*d*e^6*x^3+1627920*b^2*c^2*d^2*e^5*x^3-893760*b*c^3*d^3*e^4*x^3+1881
60*c^4*d^4*e^3*x^3+4849845*a^2*b*c*e^7*x^2-1763580*a^2*c^2*d*e^6*x^2+161661
5*a*b^3*e^7*x^2-3527160*a*b^2*c*d*e^6*x^2+2713200*a*b*c^2*d^2*e^5*x^2-72352
0*a*c^3*d^3*e^4*x^2-293930*b^4*d*e^6*x^2+904400*b^3*c*d^2*e^5*x^2-1085280*b
^2*c^2*d^3*e^4*x^2+595840*b*c^3*d^4*e^3*x^2-125440*c^4*d^5*e^2*x^2+1385670*
a^3*c*e^7*x+2078505*a^2*b^2*e^7*x-2771340*a^2*b*c*d*e^6*x+1007760*a^2*c^2*d
^2*e^5*x-923780*a*b^3*d*e^6*x+2015520*a*b^2*c*d^2*e^5*x-1550400*a*b*c^2*d^3
*e^4*x+413440*a*c^3*d^4*e^3*x+167960*b^4*d^2*e^5*x-516800*b^3*c*d^3*e^4*x+6
20160*b^2*c^2*d^4*e^3*x-340480*b*c^3*d^5*e^2*x+71680*c^4*d^6*e*x+969969*a^3
*b*e^7-554268*a^3*c*d*e^6-831402*a^2*b^2*d*e^6+1108536*a^2*b*c*d^2*e^5-4031
04*a^2*c^2*d^3*e^4+369512*a*b^3*d^2*e^5-806208*a*b^2*c*d^3*e^4+620160*a*b*c
^2*d^4*e^3-165376*a*c^3*d^5*e^2-67184*b^4*d^3*e^4+206720*b^3*c*d^4*e^3-2480
64*b^2*c^2*d^5*e^2+136192*b*c^3*d^6*e-28672*c^4*d^7)/e^8
```

maxima [A] time = 0.54, size = 645, normalized size = 1.51

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/4849845*(510510*(e*x + d)^(19/2)*c^4 - 1996995*(2*c^4*d - b*c^3*e)*(e*x +
 d)^(17/2) + 969969*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)
*(e*x + d)^(15/2) - 1865325*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2
*a*c^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(13/2) + 440895*(70*c^4*
d^4 - 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*
b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(11/2) - 16166
15*(14*c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^
3*c + 3*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 +
3*a^2*b*c)*e^5)*(e*x + d)^(9/2) + 692835*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*
(3*b^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 +
 2*a^3*c)*e^6)*(e*x + d)^(7/2) - 969969*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*
e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^
4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^
2*b^2 + 2*a^3*c)*d*e^6)*(e*x + d)^(5/2))/e^8
```

mupad [B] time = 0.12, size = 444, normalized size = 1.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^(15/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(15*e^8) + (4*c^4*(d + e*x)^(19/2))/(19*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(17/2))/(17*e^8) + ((d + e*x)^(11/2)*(2*b^4*e^4 + 140*c^4*d^4 +
12*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
 280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(11*e^8) + (2*(b*e
- 2*c*d)*(d + e*x)^(5/2)*(a*e^2 + c*d^2 - b*d*e)^3)/(5*e^8) + (2*(b*e - 2*c
*d)*(d + e*x)^(9/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a
*c^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(3*e^8)
+ (2*(d + e*x)^(7/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*
```

```
a*c*e^2 - 14*b*c*d*e))/(7*e^8) + (10*c*(b*e - 2*c*d)*(d + e*x)^(13/2)*(b^2*
e^2 + 7*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(13*e^8)
```

sympy [A] time = 77.35, size = 2122, normalized size = 4.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*a**3*b*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*a**3*c*d*(-d
*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a**3*c*(d**2*(d + e*x)**
(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*a**2*b**2*d
*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 6*a**2*b**2*(d**2*(d +
 e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 18*a**
2*b*c*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2
)/7)/e**3 + 18*a**2*b*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)
/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 12*a**2*c**2*d*(-d
**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
 + (d + e*x)**(9/2)/9)/e**4 + 12*a**2*c**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**
3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 +
 (d + e*x)**(11/2)/11)/e**4 + 6*a*b**3*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d
+ e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 6*a*b**3*(-d**3*(d + e*x)**(3/
2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2
)/9)/e**3 + 24*a*b**2*c*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/
2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 24*a*b**2*c*(d**
4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/
7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 30*a*b*c**2*d*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 30*a*b*c**2*(-d*
*5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
+ 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)
/13)/e**5 + 12*a*c**3*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) -
 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(
11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 12*a*c**3*(d**6*(d + e*x)**(3/2)/3
- 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x
)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d +
 e*x)**(15/2)/15)/e**6 + 2*b**4*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e
*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*b**4*(
d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/
2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 10*b**3*c*d*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 10*b**3*c*(-d**
5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 +
 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/
13)/e**5 + 18*b**2*c**2*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2)
 - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)*
*(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 18*b**2*c**2*(d**6*(d + e*x)**(3/
2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d
+ e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 +
 (d + e*x)**(15/2)/15)/e**6 + 14*b*c**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5
*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)
/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(
15/2)/15)/e**7 + 14*b*c**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5
/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d +
 e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15
+ (d + e*x)**(17/2)/17)/e**7 + 4*c**4*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*
(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 -
 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x
```

```
)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**8 + 4*c**4*(d**8*(d + e*x)**(3/2)/3
 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)*
*(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28
*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/1
9)/e**8
```

3.1417 $\int (b+2cx)\sqrt{d+ex}\,\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=427

$$\frac{2(d+ex)^{9/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{9e^8}+\frac{6c^2(\cdots}{}$$

Rubi [A] time = 0.24, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{2(d+ex)^{9/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{9e^8}+\frac{6c^2(d+ex)^{13/2}\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{13e^8}-\frac{10c(d+ex)^{11/2}(2cd-be)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{11e^8}-\frac{6(d+ex)^{7/2}(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{7e^8}+\frac{2(d+ex)^{5/2}\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{5e^8}-\frac{2(d+ex)^{3/2}(2cd-be)\left(ae^2-bde+cd^2\right)^3}{3e^8}-\frac{14c^3(d+ex)^{15/2}(2cd-be)}{15e^8}+\frac{4c^4(d+ex)^{17/2}}{17e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^3,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(3/2))/(3*e^8) + (2*(
c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(5/2))/(5*e^8) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2
 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(7/2))/(7*e^8) + (2*(70*c^4*d^4
 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6
*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(9/2))/(9*e^8) - (1
0*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(11
/2))/(11*e^8) + (6*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d +
e*x)^(13/2))/(13*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(15/2))/(15*e^8) +
(4*c^4*(d + e*x)^(17/2))/(17*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)\sqrt{d+ex}\,\left(a+bx+cx^2\right)^3\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3\sqrt{d+ex}}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(1\cdots}{}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{3/2}}{3e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2(1\cdots}{}$$

Mathematica [A] time = 0.60, size = 601, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-14*c^4*(2048*d^7 - 3072*d^6*e*x + 3840*d^5*e^2*x^2 - 4
480*d^4*e^3*x^3 + 5040*d^3*e^4*x^4 - 5544*d^2*e^5*x^5 + 6006*d*e^6*x^6 - 64
35*e^7*x^7) + 2431*b*e^4*(105*a^3*e^3 + 63*a^2*b*e^2*(-2*d + 3*e*x) + 9*a*b
^2*e*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + b^3*(-16*d^3 + 24*d^2*e*x - 30*d*e^2
*x^2 + 35*e^3*x^3)) + 221*c*e^3*(462*a^3*e^3*(-2*d + 3*e*x) + 297*a^2*b*e^2
```

```
*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + 132*a*b^2*e*(-16*d^3 + 24*d^2*e*x - 30*d
*e^2*x^2 + 35*e^3*x^3) + 5*b^3*(128*d^4 - 192*d^3*e*x + 240*d^2*e^2*x^2 - 2
80*d*e^3*x^3 + 315*e^4*x^4)) - 51*c^2*e^2*(286*a^2*e^2*(16*d^3 - 24*d^2*e*x
 + 30*d*e^2*x^2 - 35*e^3*x^3) - 65*a*b*e*(128*d^4 - 192*d^3*e*x + 240*d^2*e
^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4) + 15*b^2*(256*d^5 - 384*d^4*e*x + 480
*d^3*e^2*x^2 - 560*d^2*e^3*x^3 + 630*d*e^4*x^4 - 693*e^5*x^5)) + 17*c^3*e*(
30*a*e*(-256*d^5 + 384*d^4*e*x - 480*d^3*e^2*x^2 + 560*d^2*e^3*x^3 - 630*d*
e^4*x^4 + 693*e^5*x^5) + 7*b*(1024*d^6 - 1536*d^5*e*x + 1920*d^4*e^2*x^2 -
2240*d^3*e^3*x^3 + 2520*d^2*e^4*x^4 - 2772*d*e^5*x^5 + 3003*e^6*x^6))))/(76
5765*e^8)
```

IntegrateAlgebraic [B] time = 0.34, size = 951, normalized size = 2.23

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-510510*c^4*d^7 + 1786785*b*c^3*d^6*e - 2297295*b^2*c^2
*d^5*e^2 - 1531530*a*c^3*d^5*e^2 + 1276275*b^3*c*d^4*e^3 + 3828825*a*b*c^2*
d^4*e^3 - 255255*b^4*d^3*e^4 - 3063060*a*b^2*c*d^3*e^4 - 1531530*a^2*c^2*d^
3*e^4 + 765765*a*b^3*d^2*e^5 + 2297295*a^2*b*c*d^2*e^5 - 765765*a^2*b^2*d*e
^6 - 510510*a^3*c*d*e^6 + 255255*a^3*b*e^7 + 2144142*c^4*d^6*(d + e*x) - 64
32426*b*c^3*d^5*e*(d + e*x) + 6891885*b^2*c^2*d^4*e^2*(d + e*x) + 4594590*a
*c^3*d^4*e^2*(d + e*x) - 3063060*b^3*c*d^3*e^3*(d + e*x) - 9189180*a*b*c^2*
d^3*e^3*(d + e*x) + 459459*b^4*d^2*e^4*(d + e*x) + 5513508*a*b^2*c*d^2*e^4*
(d + e*x) + 2756754*a^2*c^2*d^2*e^4*(d + e*x) - 918918*a*b^3*d*e^5*(d + e*x
) - 2756754*a^2*b*c*d*e^5*(d + e*x) + 459459*a^2*b^2*e^6*(d + e*x) + 306306
*a^3*c*e^6*(d + e*x) - 4594590*c^4*d^5*(d + e*x)^2 + 11486475*b*c^3*d^4*e*(
d + e*x)^2 - 9845550*b^2*c^2*d^3*e^2*(d + e*x)^2 - 6563700*a*c^3*d^3*e^2*(d
 + e*x)^2 + 3281850*b^3*c*d^2*e^3*(d + e*x)^2 + 9845550*a*b*c^2*d^2*e^3*(d
+ e*x)^2 - 328185*b^4*d*e^4*(d + e*x)^2 - 3938220*a*b^2*c*d*e^4*(d + e*x)^2
 - 1969110*a^2*c^2*d*e^4*(d + e*x)^2 + 328185*a*b^3*e^5*(d + e*x)^2 + 98455
5*a^2*b*c*e^5*(d + e*x)^2 + 5955950*c^4*d^4*(d + e*x)^3 - 11911900*b*c^3*d^
3*e*(d + e*x)^3 + 7657650*b^2*c^2*d^2*e^2*(d + e*x)^3 + 5105100*a*c^3*d^2*e
^2*(d + e*x)^3 - 1701700*b^3*c*d*e^3*(d + e*x)^3 - 5105100*a*b*c^2*d*e^3*(d
 + e*x)^3 + 85085*b^4*e^4*(d + e*x)^3 + 1021020*a*b^2*c*e^4*(d + e*x)^3 + 5
10510*a^2*c^2*e^4*(d + e*x)^3 - 4873050*c^4*d^3*(d + e*x)^4 + 7309575*b*c^3
*d^2*e*(d + e*x)^4 - 3132675*b^2*c^2*d*e^2*(d + e*x)^4 - 2088450*a*c^3*d*e^
2*(d + e*x)^4 + 348075*b^3*c*e^3*(d + e*x)^4 + 1044225*a*b*c^2*e^3*(d + e*x
)^4 + 2474010*c^4*d^2*(d + e*x)^5 - 2474010*b*c^3*d*e*(d + e*x)^5 + 530145*
b^2*c^2*e^2*(d + e*x)^5 + 353430*a*c^3*e^2*(d + e*x)^5 - 714714*c^4*d*(d +
e*x)^6 + 357357*b*c^3*e*(d + e*x)^6 + 90090*c^4*(d + e*x)^7))/(765765*e^8)
```

fricas [B] time = 0.42, size = 802, normalized size = 1.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(90090*c^4*e^8*x^8 - 28672*c^4*d^8 + 121856*b*c^3*d^7*e + 255255*a
^3*b*d*e^7 - 65280*(3*b^2*c^2 + 2*a*c^3)*d^6*e^2 + 141440*(b^3*c + 3*a*b*c^
2)*d^5*e^3 - 38896*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 175032*(a*b^3 +
 3*a^2*b*c)*d^3*e^5 - 102102*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6 + 3003*(2*c^4*d*
e^7 + 119*b*c^3*e^8)*x^7 - 231*(28*c^4*d^2*e^6 - 119*b*c^3*d*e^7 - 765*(3*b
^2*c^2 + 2*a*c^3)*e^8)*x^6 + 63*(112*c^4*d^3*e^5 - 476*b*c^3*d^2*e^6 + 255*
(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 5525*(b^3*c + 3*a*b*c^2)*e^8)*x^5 - 35*(224*c
^4*d^4*e^4 - 952*b*c^3*d^3*e^5 + 510*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 1105*(
```

```
b^3*c + 3*a*b*c^2)*d*e^7 - 2431*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*x^4 + 5
*(1792*c^4*d^5*e^3 - 7616*b*c^3*d^4*e^4 + 4080*(3*b^2*c^2 + 2*a*c^3)*d^3*e^
5 - 8840*(b^3*c + 3*a*b*c^2)*d^2*e^6 + 2431*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*
d*e^7 + 65637*(a*b^3 + 3*a^2*b*c)*e^8)*x^3 - 3*(3584*c^4*d^6*e^2 - 15232*b*
c^3*d^5*e^3 + 8160*(3*b^2*c^2 + 2*a*c^3)*d^4*e^4 - 17680*(b^3*c + 3*a*b*c^2
)*d^3*e^5 + 4862*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 21879*(a*b^3 + 3*
a^2*b*c)*d*e^7 - 51051*(3*a^2*b^2 + 2*a^3*c)*e^8)*x^2 + (14336*c^4*d^7*e -
60928*b*c^3*d^6*e^2 + 255255*a^3*b*e^8 + 32640*(3*b^2*c^2 + 2*a*c^3)*d^5*e^
3 - 70720*(b^3*c + 3*a*b*c^2)*d^4*e^4 + 19448*(b^4 + 12*a*b^2*c + 6*a^2*c^2
)*d^3*e^5 - 87516*(a*b^3 + 3*a^2*b*c)*d^2*e^6 + 51051*(3*a^2*b^2 + 2*a^3*c)
*d*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.28, size = 1876, normalized size = 4.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/765765*(765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*d*e^(-1) + 5
10510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*d*e^(-1) + 153153*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*d*e^(-2) +
 459459*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a
^2*b*c*d*e^(-2) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
 + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^4*d*e^(-3) + 262548*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*a*b^2*c*d*e^(-3) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c^2*d*e^(-3) + 12155*(35*(
x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
 + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*c*d*e^(-4) + 36465*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c^2*d*e^(-4) + 9945*(63*(x*e + d)^(1
1/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/
2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^2*c^2*d*e^(-5)
 + 6630*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*
d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
d)*d^5)*a*c^3*d*e^(-5) + 1785*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b*c^3*d*e^(-6
) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(
11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(
x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^
4*d*e^(-7) + 153153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
 + d)*d^2)*a^2*b^2*e^(-1) + 102102*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*a^3*c*e^(-1) + 65637*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*e^(-2)
 + 196911*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^
2 - 35*sqrt(x*e + d)*d^3)*a^2*b*c*e^(-2) + 2431*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*b^4*e^(-3) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*a*b^2*c*e^(-3) + 14586*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
 + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^
4)*a^2*c^2*e^(-3) + 5525*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*b^3*c*e^(-4) + 16575*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c^2*e^(-4) + 2295*(231*(x
*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*
(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
```

```
 3003*sqrt(x*e + d)*d^6)*b^2*c^2*e^(-5) + 1530*(231*(x*e + d)^(13/2) - 1638
*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 +
 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d
^6)*a*c^3*e^(-5) + 833*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12
285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2
)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x
*e + d)*d^7)*b*c^3*e^(-6) + 14*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15
/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*
(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d
^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*c^4*e^(-7) + 76
5765*sqrt(x*e + d)*a^3*b*d + 255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a
^3*b)*e^(-1)
```

maple [B] time = 0.05, size = 795, normalized size = 1.86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x)
```

```
[Out] 2/765765*(e*x+d)^(3/2)*(90090*c^4*e^7*x^7+357357*b*c^3*e^7*x^6-84084*c^4*d*
e^6*x^6+353430*a*c^3*e^7*x^5+530145*b^2*c^2*e^7*x^5-329868*b*c^3*d*e^6*x^5+
77616*c^4*d^2*e^5*x^5+1044225*a*b*c^2*e^7*x^4-321300*a*c^3*d*e^6*x^4+348075
*b^3*c*e^7*x^4-481950*b^2*c^2*d*e^6*x^4+299880*b*c^3*d^2*e^5*x^4-70560*c^4*
d^3*e^4*x^4+510510*a^2*c^2*e^7*x^3+1021020*a*b^2*c*e^7*x^3-928200*a*b*c^2*d
*e^6*x^3+285600*a*c^3*d^2*e^5*x^3+85085*b^4*e^7*x^3-309400*b^3*c*d*e^6*x^3+
428400*b^2*c^2*d^2*e^5*x^3-266560*b*c^3*d^3*e^4*x^3+62720*c^4*d^4*e^3*x^3+9
84555*a^2*b*c*e^7*x^2-437580*a^2*c^2*d*e^6*x^2+328185*a*b^3*e^7*x^2-875160*
a*b^2*c*d*e^6*x^2+795600*a*b*c^2*d^2*e^5*x^2-244800*a*c^3*d^3*e^4*x^2-72930
*b^4*d*e^6*x^2+265200*b^3*c*d^2*e^5*x^2-367200*b^2*c^2*d^3*e^4*x^2+228480*b
*c^3*d^4*e^3*x^2-53760*c^4*d^5*e^2*x^2+306306*a^3*c*e^7*x+459459*a^2*b^2*e^
7*x-787644*a^2*b*c*d*e^6*x+350064*a^2*c^2*d^2*e^5*x-262548*a*b^3*d*e^6*x+70
0128*a*b^2*c*d^2*e^5*x-636480*a*b*c^2*d^3*e^4*x+195840*a*c^3*d^4*e^3*x+5834
4*b^4*d^2*e^5*x-212160*b^3*c*d^3*e^4*x+293760*b^2*c^2*d^4*e^3*x-182784*b*c^
3*d^5*e^2*x+43008*c^4*d^6*e*x+255255*a^3*b*e^7-204204*a^3*c*d*e^6-306306*a^
2*b^2*d*e^6+525096*a^2*b*c*d^2*e^5-233376*a^2*c^2*d^3*e^4+175032*a*b^3*d^2*
e^5-466752*a*b^2*c*d^3*e^4+424320*a*b*c^2*d^4*e^3-130560*a*c^3*d^5*e^2-3889
6*b^4*d^3*e^4+141440*b^3*c*d^4*e^3-195840*b^2*c^2*d^5*e^2+121856*b*c^3*d^6*
e-28672*c^4*d^7)/e^8
```

maxima [A] time = 0.65, size = 645, normalized size = 1.51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/765765*(90090*(e*x + d)^(17/2)*c^4 - 357357*(2*c^4*d - b*c^3*e)*(e*x + d)
^(15/2) + 176715*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e
*x + d)^(13/2) - 348075*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c
^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(11/2) + 85085*(70*c^4*d^4 -
 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2
)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(9/2) - 328185*(14*
c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3
*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b
*c)*e^5)*(e*x + d)^(7/2) + 153153*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*
c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2
*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*
c)*e^6)*(e*x + d)^(5/2) - 255255*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3
```

```
*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*
a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 +
 2*a^3*c)*d*e^6)*(e*x + d)^(3/2))/e^8
```

mupad [B] time = 0.13, size = 444, normalized size = 1.04

$$\frac{(d+e\,x)^{13/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{13\,e^8}+\frac{4\,c^4\,(d+e\,x)^{17/2}}{17\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{15/2}}{15\,e^8}+\frac{(d+e\,x)^{9/2}\,\left(12\,a^2\,c^2\,e^4+24\,a\,b^2\,c\,e^4-120\,a\,b\,c^2\,d\,e^3+120\,a\,c^3\,d^2\,e^2+2\,b^4\,e^4-40\,b^3\,c\,d\,e^3+180\,b^2\,c^2\,d^2\,e^2-280\,b\,c^3\,d^3\,e+140\,c^4\,d^4\right)}{9\,e^8}+\frac{2\,(b\,e-2\,c\,d)\,(d+e\,x)^{3/2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^3}{3\,e^8}+\frac{6\,(b\,e-2\,c\,d)\,(d+e\,x)^{7/2}\,\left(3\,a^2\,c\,e^4+a\,b^2\,e^4-10\,a\,b\,c\,d\,e^3+10\,a\,c^2\,d^2\,e^2-b^3\,d\,e^3+8\,b^2\,c\,d^2\,e^2-14\,b\,c^2\,d^3\,e+7\,c^3\,d^4\right)}{7\,e^8}+\frac{2\,(d+e\,x)^{5/2}\,\left(c\,d^2-b\,d\,e+a\,e^2\right)^2\,\left(3\,b^2\,e^2-14\,b\,c\,d\,e+14\,c^2\,d^2+2\,a\,c\,e^2\right)}{5\,e^8}+\frac{10\,c\,(b\,e-2\,c\,d)\,(d+e\,x)^{11/2}\,\left(b^2\,e^2-7\,b\,c\,d\,e+7\,c^2\,d^2+3\,a\,c\,e^2\right)}{11\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^(13/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(13*e^8) + (4*c^4*(d + e*x)^(17/2))/(17*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(15/2))/(15*e^8) + ((d + e*x)^(9/2)*(2*b^4*e^4 + 140*c^4*d^4 + 1
2*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(9*e^8) + (2*(b*e -
2*c*d)*(d + e*x)^(3/2)*(a*e^2 + c*d^2 - b*d*e)^3)/(3*e^8) + (6*(b*e - 2*c*d
)*(d + e*x)^(7/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a*c
^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(7*e^8) +
(2*(d + e*x)^(5/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*a*
c*e^2 - 14*b*c*d*e))/(5*e^8) + (10*c*(b*e - 2*c*d)*(d + e*x)^(11/2)*(b^2*e^
2 + 7*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(11*e^8)
```

sympy [A] time = 13.41, size = 843, normalized size = 1.97

$$\frac{2\left(\frac{2c^4(d+ex)^{\frac{17}{2}}}{17e^7}+\frac{(d+ex)^{\frac{15}{2}}\left(7bc^3e-14c^4d\right)}{15e^7}+\frac{(d+ex)^{\frac{13}{2}}\left(6ac^3e^2+9b^2c^2e^2-42bc^3de+42c^4d^2\right)}{13e^7}+\frac{(d+ex)^{\frac{11}{2}}\left(15abc^2e^3-30ac^3de^2+5b^3ce^3-45b^2c^2de^2+105bc^3d^2e-70c^4d^3\right)}{11e^7}+\frac{(d+ex)^{\frac{9}{2}}\left(6a^2c^2e^4+12ab^2ce^4-60abc^2de^3+60ac^3d^2e^2+b^4e^4-20b^3cde^3+90b^2c^2d^2e^2-140bc^3d^3e+70c^4d^4\right)}{9e^7}+\frac{(d+ex)^{\frac{7}{2}}\left(9a^2bce^5-18a^2c^2de^4+3ab^3e^5-36ab^2cde^4+90abc^2d^2e^3-60ac^3d^3e^2-3b^4de^4+30b^3cd^2e^3-90b^2c^2d^3e^2+105bc^3d^4e-42c^4d^5\right)}{7e^7}+\frac{(d+ex)^{\frac{5}{2}}\left(2a^3ce^6+3a^2b^2e^6-18a^2bcde^5+18a^2c^2d^2e^4-6ab^3de^5+36ab^2cd^2e^4-60abc^2d^3e^3+30ac^3d^4e^2+3b^4d^2e^4-20b^3cd^3e^3+45b^2c^2d^4e^2-42bc^3d^5e+14c^4d^6\right)}{5e^7}+\frac{(d+ex)^{\frac{3}{2}}\left(a^3be^7-2a^3cde^6-3a^2b^2de^6+9a^2bcd^2e^5-6a^2c^2d^3e^4+3ab^3d^2e^5-12ab^2cd^3e^4+15abc^2d^4e^3-6ac^3d^5e^2-b^4d^3e^4+5b^3cd^4e^3-9b^2c^2d^5e^2+7bc^3d^6e-2c^4d^7\right)}{3e^7}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3*(e*x+d)**(1/2),x)
```

```
[Out] 2*(2*c**4*(d + e*x)**(17/2)/(17*e**7) + (d + e*x)**(15/2)*(7*b*c**3*e - 14*
c**4*d)/(15*e**7) + (d + e*x)**(13/2)*(6*a*c**3*e**2 + 9*b**2*c**2*e**2 - 4
2*b*c**3*d*e + 42*c**4*d**2)/(13*e**7) + (d + e*x)**(11/2)*(15*a*b*c**2*e**
3 - 30*a*c**3*d*e**2 + 5*b**3*c*e**3 - 45*b**2*c**2*d*e**2 + 105*b*c**3*d**
2*e - 70*c**4*d**3)/(11*e**7) + (d + e*x)**(9/2)*(6*a**2*c**2*e**4 + 12*a*b
**2*c*e**4 - 60*a*b*c**2*d*e**3 + 60*a*c**3*d**2*e**2 + b**4*e**4 - 20*b**3
*c*d*e**3 + 90*b**2*c**2*d**2*e**2 - 140*b*c**3*d**3*e + 70*c**4*d**4)/(9*e
**7) + (d + e*x)**(7/2)*(9*a**2*b*c*e**5 - 18*a**2*c**2*d*e**4 + 3*a*b**3*e
**5 - 36*a*b**2*c*d*e**4 + 90*a*b*c**2*d**2*e**3 - 60*a*c**3*d**3*e**2 - 3*
b**4*d*e**4 + 30*b**3*c*d**2*e**3 - 90*b**2*c**2*d**3*e**2 + 105*b*c**3*d**
4*e - 42*c**4*d**5)/(7*e**7) + (d + e*x)**(5/2)*(2*a**3*c*e**6 + 3*a**2*b**
2*e**6 - 18*a**2*b*c*d*e**5 + 18*a**2*c**2*d**2*e**4 - 6*a*b**3*d*e**5 + 36
*a*b**2*c*d**2*e**4 - 60*a*b*c**2*d**3*e**3 + 30*a*c**3*d**4*e**2 + 3*b**4*
d**2*e**4 - 20*b**3*c*d**3*e**3 + 45*b**2*c**2*d**4*e**2 - 42*b*c**3*d**5*e
 + 14*c**4*d**6)/(5*e**7) + (d + e*x)**(3/2)*(a**3*b*e**7 - 2*a**3*c*d*e**6
 - 3*a**2*b**2*d*e**6 + 9*a**2*b*c*d**2*e**5 - 6*a**2*c**2*d**3*e**4 + 3*a*
b**3*d**2*e**5 - 12*a*b**2*c*d**3*e**4 + 15*a*b*c**2*d**4*e**3 - 6*a*c**3*d
**5*e**2 - b**4*d**3*e**4 + 5*b**3*c*d**4*e**3 - 9*b**2*c**2*d**5*e**2 + 7*
b*c**3*d**6*e - 2*c**4*d**7)/(3*e**7))/e
```

3.1418 $\int \frac{(b+2cx)(a+bx+cx^2)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=425

$$\frac{2(d+ex)^{7/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{6c^2(d+\cdots}{}$$

Rubi [A] time = 0.23, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*Sqrt[d + e*x])/e^8 + (2*(c*d^2
- b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)
^(3/2))/(3*e^8) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2
*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(5/2))/(5*e^8) + (2*(70*c^4*d^4 + b^4
*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e
^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(7/2))/(7*e^8) - (10*c*(2
*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(9/2))/(9
*e^8) + (6*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(11
/2))/(11*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(13/2))/(13*e^8) + (4*c^4*(
d + e*x)^(15/2))/(15*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{\sqrt{d+ex}}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3}{e^7\sqrt{d+ex}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(\cdots\right.}{e^7}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3\sqrt{d+ex}}{e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e\cdots\right.}{3e^8}$$

Mathematica [A] time = 0.62, size = 599, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-14*c^4*(2048*d^7 - 1024*d^6*e*x + 768*d^5*e^2*x^2 - 640*
d^4*e^3*x^3 + 560*d^3*e^4*x^4 - 504*d^2*e^5*x^5 + 462*d*e^6*x^6 - 429*e^7*x
^7) + 1287*b*e^4*(35*a^3*e^3 + 35*a^2*b*e^2*(-2*d + e*x) + 7*a*b^2*e*(8*d^2
 - 4*d*e*x + 3*e^2*x^2) + b^3*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^
3)) + 143*c*e^3*(210*a^3*e^3*(-2*d + e*x) + 189*a^2*b*e^2*(8*d^2 - 4*d*e*x
```

```
+ 3*e^2*x^2) + 108*a*b^2*e*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3)
+ 5*b^3*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4)
) - 39*c^2*e^2*(198*a^2*e^2*(16*d^3 - 8*d^2*e*x + 6*d*e^2*x^2 - 5*e^3*x^3)
- 55*a*b*e*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x
^4) + 15*b^2*(256*d^5 - 128*d^4*e*x + 96*d^3*e^2*x^2 - 80*d^2*e^3*x^3 + 70*
d*e^4*x^4 - 63*e^5*x^5)) + 15*c^3*e*(26*a*e*(-256*d^5 + 128*d^4*e*x - 96*d^
3*e^2*x^2 + 80*d^2*e^3*x^3 - 70*d*e^4*x^4 + 63*e^5*x^5) + 7*b*(1024*d^6 - 5
12*d^5*e*x + 384*d^4*e^2*x^2 - 320*d^3*e^3*x^3 + 280*d^2*e^4*x^4 - 252*d*e^
5*x^5 + 231*e^6*x^6)))))/(45045*e^8)
```

IntegrateAlgebraic [B]   time = 0.37, size = 1186, normalized size = 2.79

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(90090*c^4*d^7*Sqrt[d + e*x] - 315315*b*c^3*d^6*e*Sqrt[d + e*x] + 40540
5*b^2*c^2*d^5*e^2*Sqrt[d + e*x] + 270270*a*c^3*d^5*e^2*Sqrt[d + e*x] - 2252
25*b^3*c*d^4*e^3*Sqrt[d + e*x] - 675675*a*b*c^2*d^4*e^3*Sqrt[d + e*x] + 450
45*b^4*d^3*e^4*Sqrt[d + e*x] + 540540*a*b^2*c*d^3*e^4*Sqrt[d + e*x] + 27027
0*a^2*c^2*d^3*e^4*Sqrt[d + e*x] - 135135*a*b^3*d^2*e^5*Sqrt[d + e*x] - 4054
05*a^2*b*c*d^2*e^5*Sqrt[d + e*x] + 135135*a^2*b^2*d*e^6*Sqrt[d + e*x] + 900
90*a^3*c*d*e^6*Sqrt[d + e*x] - 45045*a^3*b*e^7*Sqrt[d + e*x] - 210210*c^4*d
^6*(d + e*x)^(3/2) + 630630*b*c^3*d^5*e*(d + e*x)^(3/2) - 675675*b^2*c^2*d^
4*e^2*(d + e*x)^(3/2) - 450450*a*c^3*d^4*e^2*(d + e*x)^(3/2) + 300300*b^3*c
*d^3*e^3*(d + e*x)^(3/2) + 900900*a*b*c^2*d^3*e^3*(d + e*x)^(3/2) - 45045*b
^4*d^2*e^4*(d + e*x)^(3/2) - 540540*a*b^2*c*d^2*e^4*(d + e*x)^(3/2) - 27027
0*a^2*c^2*d^2*e^4*(d + e*x)^(3/2) + 90090*a*b^3*d*e^5*(d + e*x)^(3/2) + 270
270*a^2*b*c*d*e^5*(d + e*x)^(3/2) - 45045*a^2*b^2*e^6*(d + e*x)^(3/2) - 300
30*a^3*c*e^6*(d + e*x)^(3/2) + 378378*c^4*d^5*(d + e*x)^(5/2) - 945945*b*c^
3*d^4*e*(d + e*x)^(5/2) + 810810*b^2*c^2*d^3*e^2*(d + e*x)^(5/2) + 540540*a
*c^3*d^3*e^2*(d + e*x)^(5/2) - 270270*b^3*c*d^2*e^3*(d + e*x)^(5/2) - 81081
0*a*b*c^2*d^2*e^3*(d + e*x)^(5/2) + 27027*b^4*d*e^4*(d + e*x)^(5/2) + 32432
4*a*b^2*c*d*e^4*(d + e*x)^(5/2) + 162162*a^2*c^2*d*e^4*(d + e*x)^(5/2) - 27
027*a*b^3*e^5*(d + e*x)^(5/2) - 81081*a^2*b*c*e^5*(d + e*x)^(5/2) - 450450*
c^4*d^4*(d + e*x)^(7/2) + 900900*b*c^3*d^3*e*(d + e*x)^(7/2) - 579150*b^2*c
^2*d^2*e^2*(d + e*x)^(7/2) - 386100*a*c^3*d^2*e^2*(d + e*x)^(7/2) + 128700*
b^3*c*d*e^3*(d + e*x)^(7/2) + 386100*a*b*c^2*d*e^3*(d + e*x)^(7/2) - 6435*b
^4*e^4*(d + e*x)^(7/2) - 77220*a*b^2*c*e^4*(d + e*x)^(7/2) - 38610*a^2*c^2*
e^4*(d + e*x)^(7/2) + 350350*c^4*d^3*(d + e*x)^(9/2) - 525525*b*c^3*d^2*e*(
d + e*x)^(9/2) + 225225*b^2*c^2*d*e^2*(d + e*x)^(9/2) + 150150*a*c^3*d*e^2*
(d + e*x)^(9/2) - 25025*b^3*c*e^3*(d + e*x)^(9/2) - 75075*a*b*c^2*e^3*(d +
e*x)^(9/2) - 171990*c^4*d^2*(d + e*x)^(11/2) + 171990*b*c^3*d*e*(d + e*x)^(
11/2) - 36855*b^2*c^2*e^2*(d + e*x)^(11/2) - 24570*a*c^3*e^2*(d + e*x)^(11/
2) + 48510*c^4*d*(d + e*x)^(13/2) - 24255*b*c^3*e*(d + e*x)^(13/2) - 6006*c
^4*(d + e*x)^(15/2)))/(45045*e^8)
```

fricas [A]   time = 0.41, size = 648, normalized size = 1.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(6006*c^4*e^7*x^7 - 28672*c^4*d^7 + 107520*b*c^3*d^6*e + 45045*a^3*
b*e^7 - 49920*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 91520*(b^3*c + 3*a*b*c^2)*d^4
*e^3 - 20592*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + 72072*(a*b^3 + 3*a^2*
b*c)*d^2*e^5 - 30030*(3*a^2*b^2 + 2*a^3*c)*d*e^6 - 1617*(4*c^4*d*e^6 - 15*b
```

```
*c^3*e^7)*x^6 + 63*(112*c^4*d^2*e^5 - 420*b*c^3*d*e^6 + 195*(3*b^2*c^2 + 2*
a*c^3)*e^7)*x^5 - 35*(224*c^4*d^3*e^4 - 840*b*c^3*d^2*e^5 + 390*(3*b^2*c^2
+ 2*a*c^3)*d*e^6 - 715*(b^3*c + 3*a*b*c^2)*e^7)*x^4 + 5*(1792*c^4*d^4*e^3 -
 6720*b*c^3*d^3*e^4 + 3120*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 5720*(b^3*c + 3*
a*b*c^2)*d*e^6 + 1287*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - 3*(3584*c^4
*d^5*e^2 - 13440*b*c^3*d^4*e^3 + 6240*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 11440
*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 2574*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 -
9009*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + (14336*c^4*d^6*e - 53760*b*c^3*d^5*e^2
+ 24960*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 45760*(b^3*c + 3*a*b*c^2)*d^3*e^4 +
 10296*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 36036*(a*b^3 + 3*a^2*b*c)*d
*e^6 + 15015*(3*a^2*b^2 + 2*a^3*c)*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.23, size = 841, normalized size = 1.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*e^(-1) + 30030
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*e^(-1) + 9009*(3*(x*e + d)^(5/
2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*e^(-2) + 27027*(3*(
x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*c*e^(-2
) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*b^4*e^(-3) + 15444*(5*(x*e + d)^(7/2) - 21*(x*e +
d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^2*c*e^(-3)
+ 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*a^2*c^2*e^(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*b^3*c*e^(-4) + 2145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*a*b*c^2*e^(-4) + 585*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*b^2*c^2*e^(-5) + 390*(63*(x*e + d)^(11/2) - 385*
(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 11
55*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^3*e^(-5) + 105*(231*(x*
e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(
x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
3003*sqrt(x*e + d)*d^6)*b*c^3*e^(-6) + 14*(429*(x*e + d)^(15/2) - 3465*(x*e
 + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3
2175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2
)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^4*e^(-7) + 45045*sqrt(x*e + d)*a^3*b)*e^(
-1)
```

maple [B] time = 0.06, size = 795, normalized size = 1.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(1/2)*(6006*c^4*e^7*x^7+24255*b*c^3*e^7*x^6-6468*c^4*d*e^6*
x^6+24570*a*c^3*e^7*x^5+36855*b^2*c^2*e^7*x^5-26460*b*c^3*d*e^6*x^5+7056*c^
4*d^2*e^5*x^5+75075*a*b*c^2*e^7*x^4-27300*a*c^3*d*e^6*x^4+25025*b^3*c*e^7*x
^4-40950*b^2*c^2*d*e^6*x^4+29400*b*c^3*d^2*e^5*x^4-7840*c^4*d^3*e^4*x^4+386
10*a^2*c^2*e^7*x^3+77220*a*b^2*c*e^7*x^3-85800*a*b*c^2*d*e^6*x^3+31200*a*c^
3*d^2*e^5*x^3+6435*b^4*e^7*x^3-28600*b^3*c*d*e^6*x^3+46800*b^2*c^2*d^2*e^5*
x^3-33600*b*c^3*d^3*e^4*x^3+8960*c^4*d^4*e^3*x^3+81081*a^2*b*c*e^7*x^2-4633
2*a^2*c^2*d*e^6*x^2+27027*a*b^3*e^7*x^2-92664*a*b^2*c*d*e^6*x^2+102960*a*b*
c^2*d^2*e^5*x^2-37440*a*c^3*d^3*e^4*x^2-7722*b^4*d*e^6*x^2+34320*b^3*c*d^2*
```

```
e^5*x^2-56160*b^2*c^2*d^3*e^4*x^2+40320*b*c^3*d^4*e^3*x^2-10752*c^4*d^5*e^2
*x^2+30030*a^3*c*e^7*x+45045*a^2*b^2*e^7*x-108108*a^2*b*c*d*e^6*x+61776*a^2
*c^2*d^2*e^5*x-36036*a*b^3*d*e^6*x+123552*a*b^2*c*d^2*e^5*x-137280*a*b*c^2*
d^3*e^4*x+49920*a*c^3*d^4*e^3*x+10296*b^4*d^2*e^5*x-45760*b^3*c*d^3*e^4*x+7
4880*b^2*c^2*d^4*e^3*x-53760*b*c^3*d^5*e^2*x+14336*c^4*d^6*e*x+45045*a^3*b*
e^7-60060*a^3*c*d*e^6-90090*a^2*b^2*d*e^6+216216*a^2*b*c*d^2*e^5-123552*a^2
*c^2*d^3*e^4+72072*a*b^3*d^2*e^5-247104*a*b^2*c*d^3*e^4+274560*a*b*c^2*d^4*
e^3-99840*a*c^3*d^5*e^2-20592*b^4*d^3*e^4+91520*b^3*c*d^4*e^3-149760*b^2*c^
2*d^5*e^2+107520*b*c^3*d^6*e-28672*c^4*d^7)/e^8
```

maxima [A] time = 0.55, size = 645, normalized size = 1.52

$$\frac{2\left(6006\,(ex+d)^{\frac{15}{2}}c^4-24255\left(2c^4d-bc^3e\right)(ex+d)^{\frac{13}{2}}+12285\left(14c^4d^2-14bc^3de+\left(3b^2c^2+2ac^3\right)e^2\right)(ex+d)^{\frac{11}{2}}-25025\left(14c^4d^3-21bc^3d^2e+3\left(3b^2c^2+2ac^3\right)de^2-\left(b^3c+3abc^2\right)e^3\right)(ex+d)^{\frac{9}{2}}+6435\left(70c^4d^4-140bc^3d^3e+30\left(3b^2c^2+2ac^3\right)d^2e^2-20\left(b^3c+3abc^2\right)de^3+\left(b^4+12ab^2c+6a^2c^2\right)e^4\right)(ex+d)^{\frac{7}{2}}-27027\left(14c^4d^5-35bc^3d^4e+10\left(3b^2c^2+2ac^3\right)d^3e^2-10\left(b^3c+3abc^2\right)d^2e^3+\left(b^4+12ab^2c+6a^2c^2\right)de^4-\left(ab^3+3a^2bc\right)e^5\right)(ex+d)^{\frac{5}{2}}+15015\left(14c^4d^6-42bc^3d^5e+15\left(3b^2c^2+2ac^3\right)d^4e^2-20\left(b^3c+3abc^2\right)d^3e^3+3\left(b^4+12ab^2c+6a^2c^2\right)d^2e^4-6\left(ab^3+3a^2bc\right)de^5+\left(3a^2b^2+2a^3c\right)e^6\right)(ex+d)^{\frac{3}{2}}-45045\left(2c^4d^7-7bc^3d^6e-a^3be^7+3\left(3b^2c^2+2ac^3\right)d^5e^2-5\left(b^3c+3abc^2\right)d^4e^3+\left(b^4+12ab^2c+6a^2c^2\right)d^3e^4-3\left(ab^3+3a^2bc\right)d^2e^5+\left(3a^2b^2+2a^3c\right)de^6\right)\sqrt{ex+d}\right)}{45045\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(6006*(e*x + d)^(15/2)*c^4 - 24255*(2*c^4*d - b*c^3*e)*(e*x + d)^(1
3/2) + 12285*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e*x +
 d)^(11/2) - 25025*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d
*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(9/2) + 6435*(70*c^4*d^4 - 140*b*
c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2)*d*e^3
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(7/2) - 27027*(14*c^4*d^5
- 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3*a*b*c^2
)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b*c)*e^5)
*(e*x + d)^(5/2) + 15015*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*c^2 + 2*a
*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^
2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e^6)*(
e*x + d)^(3/2) - 45045*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^
2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c +
6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*
d*e^6)*sqrt(e*x + d))/e^8
```

mupad [B] time = 1.93, size = 444, normalized size = 1.04

$$\frac{(d+e\,x)^{11/2}\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{11\,e^8}+\frac{4\,c^4\,(d+e\,x)^{15/2}}{15\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{13/2}}{13\,e^8}+\frac{(d+e\,x)^{7/2}\left(12\,a^2\,c^2\,e^4+24\,a\,b^2\,c\,e^4-120\,a\,b\,c^2\,d\,e^3+120\,a\,c^3\,d^2\,e^2+2\,b^4\,e^4-40\,b^3\,c\,d\,e^3+180\,b^2\,c^2\,d^2\,e^2-280\,b\,c^3\,d^3\,e+140\,c^4\,d^4\right)}{7\,e^8}+\frac{2\,(b\,e-2\,c\,d)\,\sqrt{d+e\,x}\,{\left(c\,d^2-b\,d\,e+a\,e^2\right)}^3}{e^8}+\frac{6\,(b\,e-2\,c\,d)\,(d+e\,x)^{5/2}\left(3\,a^2\,c\,e^4+a\,b^2\,e^4-10\,a\,b\,c\,d\,e^3+10\,a\,c^2\,d^2\,e^2-b^3\,d\,e^3+8\,b^2\,c\,d^2\,e^2-14\,b\,c^2\,d^3\,e+7\,c^3\,d^4\right)}{5\,e^8}+\frac{2\,(d+e\,x)^{3/2}\,{\left(c\,d^2-b\,d\,e+a\,e^2\right)}^2\left(3\,b^2\,e^2-14\,b\,c\,d\,e+14\,c^2\,d^2+2\,a\,c\,e^2\right)}{3\,e^8}+\frac{10\,c\,(b\,e-2\,c\,d)\,(d+e\,x)^{9/2}\left(b^2\,e^2-7\,b\,c\,d\,e+7\,c^2\,d^2+3\,a\,c\,e^2\right)}{9\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(11*e^8) + (4*c^4*(d + e*x)^(15/2))/(15*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(13/2))/(13*e^8) + ((d + e*x)^(7/2)*(2*b^4*e^4 + 140*c^4*d^4 + 1
2*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(7*e^8) + (2*(b*e -
2*c*d)*(d + e*x)^(1/2)*(a*e^2 + c*d^2 - b*d*e)^3)/e^8 + (6*(b*e - 2*c*d)*(d
 + e*x)^(5/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a*c^2*d
^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(5*e^8) + (2*(
d + e*x)^(3/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*a*c*e^
2 - 14*b*c*d*e))/(3*e^8) + (10*c*(b*e - 2*c*d)*(d + e*x)^(9/2)*(b^2*e^2 + 7
*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(9*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1419 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=421

$$\frac{2(d+ex)^{5/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{5e^8}+\frac{2c^2(d+\cdots}{\cdots}$$

Rubi [A] time = 0.24, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(e^8*Sqrt[d + e*x]) + (2*(c*d^2
 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*Sqrt[d +
 e*x])/e^8 - (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2
- c*e*(7*b*d - 3*a*e))*(d + e*x)^(3/2))/e^8 + (2*(70*c^4*d^4 + b^4*e^4 - 4*
b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^
2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(5/2))/(5*e^8) - (10*c*(2*c*d - b*
e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(7/2))/(7*e^8) + (
2*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(9/2))/(3*e^
8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(11/2))/(11*e^8) + (4*c^4*(d + e*x)^(1
3/2))/(13*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{3/2}}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{3/2}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(\cdots\right.}{e^7\sqrt{d+ex}}\cdots\right.$$

$$= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3}{e^8\sqrt{d+ex}}+\frac{2\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7b\cdots\right.}{e^8}\cdots$$

Mathematica [A] time = 0.54, size = 594, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(70*c^4*(2048*d^7 + 1024*d^6*e*x - 256*d^5*e^2*x^2 + 128*d^4*e^3*x^3 - 8
0*d^3*e^4*x^4 + 56*d^2*e^5*x^5 - 42*d*e^6*x^6 + 33*e^7*x^7) + 3003*b*e^4*(-
5*a^3*e^3 + 15*a^2*b*e^2*(2*d + e*x) + 5*a*b^2*e*(-8*d^2 - 4*d*e*x + e^2*x^
2) + b^3*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3)) + 429*c*e^3*(70*a^3*
```

```
e^3*(2*d + e*x) + 105*a^2*b*e^2*(-8*d^2 - 4*d*e*x + e^2*x^2) + 84*a*b^2*e*(
16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) - 5*b^3*(128*d^4 + 64*d^3*e*x -
 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4)) + 429*c^2*e^2*(42*a^2*e^2*(16*d
^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + 15*a*b*e*(-128*d^4 - 64*d^3*e*x +
 16*d^2*e^2*x^2 - 8*d*e^3*x^3 + 5*e^4*x^4) + 5*b^2*(256*d^5 + 128*d^4*e*x -
 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4*x^4 + 7*e^5*x^5)) - 65*c^3*e*(-
22*a*e*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4*
x^4 + 7*e^5*x^5) + 7*b*(1024*d^6 + 512*d^5*e*x - 128*d^4*e^2*x^2 + 64*d^3*e
^3*x^3 - 40*d^2*e^4*x^4 + 28*d*e^5*x^5 - 21*e^6*x^6))))/(15015*e^8*Sqrt[d +
 e*x])
```

IntegrateAlgebraic [B] time = 0.34, size = 951, normalized size = 2.26

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(30030*c^4*d^7 - 105105*b*c^3*d^6*e + 135135*b^2*c^2*d^5*e^2 + 90090*a*c
^3*d^5*e^2 - 75075*b^3*c*d^4*e^3 - 225225*a*b*c^2*d^4*e^3 + 15015*b^4*d^3*e
^4 + 180180*a*b^2*c*d^3*e^4 + 90090*a^2*c^2*d^3*e^4 - 45045*a*b^3*d^2*e^5 -
 135135*a^2*b*c*d^2*e^5 + 45045*a^2*b^2*d*e^6 + 30030*a^3*c*d*e^6 - 15015*a
^3*b*e^7 + 210210*c^4*d^6*(d + e*x) - 630630*b*c^3*d^5*e*(d + e*x) + 675675
*b^2*c^2*d^4*e^2*(d + e*x) + 450450*a*c^3*d^4*e^2*(d + e*x) - 300300*b^3*c*
d^3*e^3*(d + e*x) - 900900*a*b*c^2*d^3*e^3*(d + e*x) + 45045*b^4*d^2*e^4*(d
 + e*x) + 540540*a*b^2*c*d^2*e^4*(d + e*x) + 270270*a^2*c^2*d^2*e^4*(d + e*
x) - 90090*a*b^3*d*e^5*(d + e*x) - 270270*a^2*b*c*d*e^5*(d + e*x) + 45045*a
^2*b^2*e^6*(d + e*x) + 30030*a^3*c*e^6*(d + e*x) - 210210*c^4*d^5*(d + e*x)
^2 + 525525*b*c^3*d^4*e*(d + e*x)^2 - 450450*b^2*c^2*d^3*e^2*(d + e*x)^2 -
300300*a*c^3*d^3*e^2*(d + e*x)^2 + 150150*b^3*c*d^2*e^3*(d + e*x)^2 + 45045
0*a*b*c^2*d^2*e^3*(d + e*x)^2 - 15015*b^4*d*e^4*(d + e*x)^2 - 180180*a*b^2*
c*d*e^4*(d + e*x)^2 - 90090*a^2*c^2*d*e^4*(d + e*x)^2 + 15015*a*b^3*e^5*(d
+ e*x)^2 + 45045*a^2*b*c*e^5*(d + e*x)^2 + 210210*c^4*d^4*(d + e*x)^3 - 420
420*b*c^3*d^3*e*(d + e*x)^3 + 270270*b^2*c^2*d^2*e^2*(d + e*x)^3 + 180180*a
*c^3*d^2*e^2*(d + e*x)^3 - 60060*b^3*c*d*e^3*(d + e*x)^3 - 180180*a*b*c^2*d
*e^3*(d + e*x)^3 + 3003*b^4*e^4*(d + e*x)^3 + 36036*a*b^2*c*e^4*(d + e*x)^3
 + 18018*a^2*c^2*e^4*(d + e*x)^3 - 150150*c^4*d^3*(d + e*x)^4 + 225225*b*c^
3*d^2*e*(d + e*x)^4 - 96525*b^2*c^2*d*e^2*(d + e*x)^4 - 64350*a*c^3*d*e^2*(
d + e*x)^4 + 10725*b^3*c*e^3*(d + e*x)^4 + 32175*a*b*c^2*e^3*(d + e*x)^4 +
70070*c^4*d^2*(d + e*x)^5 - 70070*b*c^3*d*e*(d + e*x)^5 + 15015*b^2*c^2*e^2
*(d + e*x)^5 + 10010*a*c^3*e^2*(d + e*x)^5 - 19110*c^4*d*(d + e*x)^6 + 9555
*b*c^3*e*(d + e*x)^6 + 2310*c^4*(d + e*x)^7))/(15015*e^8*Sqrt[d + e*x])
```

fricas [A] time = 0.41, size = 657, normalized size = 1.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(2310*c^4*e^7*x^7 + 143360*c^4*d^7 - 465920*b*c^3*d^6*e - 15015*a^3
*b*e^7 + 183040*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 274560*(b^3*c + 3*a*b*c^2)*
d^4*e^3 + 48048*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 120120*(a*b^3 + 3*
a^2*b*c)*d^2*e^5 + 30030*(3*a^2*b^2 + 2*a^3*c)*d*e^6 - 735*(4*c^4*d*e^6 - 1
3*b*c^3*e^7)*x^6 + 35*(112*c^4*d^2*e^5 - 364*b*c^3*d*e^6 + 143*(3*b^2*c^2 +
 2*a*c^3)*e^7)*x^5 - 25*(224*c^4*d^3*e^4 - 728*b*c^3*d^2*e^5 + 286*(3*b^2*c
^2 + 2*a*c^3)*d*e^6 - 429*(b^3*c + 3*a*b*c^2)*e^7)*x^4 + (8960*c^4*d^4*e^3
- 29120*b*c^3*d^3*e^4 + 11440*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 17160*(b^3*c
+ 3*a*b*c^2)*d*e^6 + 3003*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - (17920*
```

```
c^4*d^5*e^2 - 58240*b*c^3*d^4*e^3 + 22880*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 3
4320*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 6006*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^
6 - 15015*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + (71680*c^4*d^6*e - 232960*b*c^3*d^
5*e^2 + 91520*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 137280*(b^3*c + 3*a*b*c^2)*d^
3*e^4 + 24024*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 60060*(a*b^3 + 3*a^2
*b*c)*d*e^6 + 15015*(3*a^2*b^2 + 2*a^3*c)*e^7)*x)*sqrt(e*x + d)/(e^9*x + d*
e^8)
```

giac [B] time = 0.31, size = 1000, normalized size = 2.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15015*(2310*(x*e + d)^(13/2)*c^4*e^96 - 19110*(x*e + d)^(11/2)*c^4*d*e^96
 + 70070*(x*e + d)^(9/2)*c^4*d^2*e^96 - 150150*(x*e + d)^(7/2)*c^4*d^3*e^96
 + 210210*(x*e + d)^(5/2)*c^4*d^4*e^96 - 210210*(x*e + d)^(3/2)*c^4*d^5*e^9
6 + 210210*sqrt(x*e + d)*c^4*d^6*e^96 + 9555*(x*e + d)^(11/2)*b*c^3*e^97 -
70070*(x*e + d)^(9/2)*b*c^3*d*e^97 + 225225*(x*e + d)^(7/2)*b*c^3*d^2*e^97
- 420420*(x*e + d)^(5/2)*b*c^3*d^3*e^97 + 525525*(x*e + d)^(3/2)*b*c^3*d^4*
e^97 - 630630*sqrt(x*e + d)*b*c^3*d^5*e^97 + 15015*(x*e + d)^(9/2)*b^2*c^2*
e^98 + 10010*(x*e + d)^(9/2)*a*c^3*e^98 - 96525*(x*e + d)^(7/2)*b^2*c^2*d*e
^98 - 64350*(x*e + d)^(7/2)*a*c^3*d*e^98 + 270270*(x*e + d)^(5/2)*b^2*c^2*d
^2*e^98 + 180180*(x*e + d)^(5/2)*a*c^3*d^2*e^98 - 450450*(x*e + d)^(3/2)*b^
2*c^2*d^3*e^98 - 300300*(x*e + d)^(3/2)*a*c^3*d^3*e^98 + 675675*sqrt(x*e +
d)*b^2*c^2*d^4*e^98 + 450450*sqrt(x*e + d)*a*c^3*d^4*e^98 + 10725*(x*e + d)
^(7/2)*b^3*c*e^99 + 32175*(x*e + d)^(7/2)*a*b*c^2*e^99 - 60060*(x*e + d)^(5
/2)*b^3*c*d*e^99 - 180180*(x*e + d)^(5/2)*a*b*c^2*d*e^99 + 150150*(x*e + d)
^(3/2)*b^3*c*d^2*e^99 + 450450*(x*e + d)^(3/2)*a*b*c^2*d^2*e^99 - 300300*sq
rt(x*e + d)*b^3*c*d^3*e^99 - 900900*sqrt(x*e + d)*a*b*c^2*d^3*e^99 + 3003*(
x*e + d)^(5/2)*b^4*e^100 + 36036*(x*e + d)^(5/2)*a*b^2*c*e^100 + 18018*(x*e
 + d)^(5/2)*a^2*c^2*e^100 - 15015*(x*e + d)^(3/2)*b^4*d*e^100 - 180180*(x*e
 + d)^(3/2)*a*b^2*c*d*e^100 - 90090*(x*e + d)^(3/2)*a^2*c^2*d*e^100 + 45045
*sqrt(x*e + d)*b^4*d^2*e^100 + 540540*sqrt(x*e + d)*a*b^2*c*d^2*e^100 + 270
270*sqrt(x*e + d)*a^2*c^2*d^2*e^100 + 15015*(x*e + d)^(3/2)*a*b^3*e^101 + 4
5045*(x*e + d)^(3/2)*a^2*b*c*e^101 - 90090*sqrt(x*e + d)*a*b^3*d*e^101 - 27
0270*sqrt(x*e + d)*a^2*b*c*d*e^101 + 45045*sqrt(x*e + d)*a^2*b^2*e^102 + 30
030*sqrt(x*e + d)*a^3*c*e^102)*e^(-104) + 2*(2*c^4*d^7 - 7*b*c^3*d^6*e + 9*
b^2*c^2*d^5*e^2 + 6*a*c^3*d^5*e^2 - 5*b^3*c*d^4*e^3 - 15*a*b*c^2*d^4*e^3 +
b^4*d^3*e^4 + 12*a*b^2*c*d^3*e^4 + 6*a^2*c^2*d^3*e^4 - 3*a*b^3*d^2*e^5 - 9*
a^2*b*c*d^2*e^5 + 3*a^2*b^2*d*e^6 + 2*a^3*c*d*e^6 - a^3*b*e^7)*e^(-8)/sqrt(
x*e + d)
```

maple [B] time = 0.06, size = 795, normalized size = 1.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/15015/(e*x+d)^(1/2)*(-2310*c^4*e^7*x^7-9555*b*c^3*e^7*x^6+2940*c^4*d*e^6
*x^6-10010*a*c^3*e^7*x^5-15015*b^2*c^2*e^7*x^5+12740*b*c^3*d*e^6*x^5-3920*c
^4*d^2*e^5*x^5-32175*a*b*c^2*e^7*x^4+14300*a*c^3*d*e^6*x^4-10725*b^3*c*e^7*
x^4+21450*b^2*c^2*d*e^6*x^4-18200*b*c^3*d^2*e^5*x^4+5600*c^4*d^3*e^4*x^4-18
018*a^2*c^2*e^7*x^3-36036*a*b^2*c*e^7*x^3+51480*a*b*c^2*d*e^6*x^3-22880*a*c
^3*d^2*e^5*x^3-3003*b^4*e^7*x^3+17160*b^3*c*d*e^6*x^3-34320*b^2*c^2*d^2*e^5
*x^3+29120*b*c^3*d^3*e^4*x^3-8960*c^4*d^4*e^3*x^3-45045*a^2*b*c*e^7*x^2+360
36*a^2*c^2*d*e^6*x^2-15015*a*b^3*e^7*x^2+72072*a*b^2*c*d*e^6*x^2-102960*a*b
*c^2*d^2*e^5*x^2+45760*a*c^3*d^3*e^4*x^2+6006*b^4*d*e^6*x^2-34320*b^3*c*d^2
```

```
*e^5*x^2+68640*b^2*c^2*d^3*e^4*x^2-58240*b*c^3*d^4*e^3*x^2+17920*c^4*d^5*e^
2*x^2-30030*a^3*c*e^7*x-45045*a^2*b^2*e^7*x+180180*a^2*b*c*d*e^6*x-144144*a
^2*c^2*d^2*e^5*x+60060*a*b^3*d*e^6*x-288288*a*b^2*c*d^2*e^5*x+411840*a*b*c^
2*d^3*e^4*x-183040*a*c^3*d^4*e^3*x-24024*b^4*d^2*e^5*x+137280*b^3*c*d^3*e^4
*x-274560*b^2*c^2*d^4*e^3*x+232960*b*c^3*d^5*e^2*x-71680*c^4*d^6*e*x+15015*
a^3*b*e^7-60060*a^3*c*d*e^6-90090*a^2*b^2*d*e^6+360360*a^2*b*c*d^2*e^5-2882
88*a^2*c^2*d^3*e^4+120120*a*b^3*d^2*e^5-576576*a*b^2*c*d^3*e^4+823680*a*b*c
^2*d^4*e^3-366080*a*c^3*d^5*e^2-48048*b^4*d^3*e^4+274560*b^3*c*d^4*e^3-5491
20*b^2*c^2*d^5*e^2+465920*b*c^3*d^6*e-143360*c^4*d^7)/e^8
```

maxima [A] time = 0.54, size = 653, normalized size = 1.55

$$\frac{2\left(\frac{2310\,(ex+d)^{\frac{13}{2}}c^4-9555\,(2c^4d-bc^3e)(ex+d)^{\frac{11}{2}}+5005\,(14c^4d^2-14bc^3de+(3b^2c^2+2ac^3)e^2)(ex+d)^{\frac{9}{2}}-10725\,(14c^4d^3-21bc^3d^2e+3(3b^2c^2+2ac^3)de^2-(b^3c+3abc^2)e^3)(ex+d)^{\frac{7}{2}}+3003\,(70c^4d^4-140bc^3d^3e+30(3b^2c^2+2ac^3)d^2e^2-20(b^3c+3abc^2)de^3+(b^4+12ab^2c+6a^2c^2)e^4)(ex+d)^{\frac{5}{2}}-15015\,(14c^4d^5-35bc^3d^4e+10(3b^2c^2+2ac^3)d^3e^2-10(b^3c+3abc^2)d^2e^3+(b^4+12ab^2c+6a^2c^2)de^4-(ab^3+3a^2bc)e^5)(ex+d)^{\frac{3}{2}}+15015\,(14c^4d^6-42bc^3d^5e+15(3b^2c^2+2ac^3)d^4e^2-20(b^3c+3abc^2)d^3e^3+3(b^4+12ab^2c+6a^2c^2)d^2e^4-6(ab^3+3a^2bc)de^5+(3a^2b^2+2a^3c)e^6)\sqrt{ex+d}}{e^7}+\frac{15015\,(2c^4d^7-7bc^3d^6e-a^3be^7+3(3b^2c^2+2ac^3)d^5e^2-5(b^3c+3abc^2)d^4e^3+(b^4+12ab^2c+6a^2c^2)d^3e^4-3(ab^3+3a^2bc)d^2e^5+(3a^2b^2+2a^3c)de^6)}{\sqrt{ex+d}\,e^7}\right)}{15015\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15015*((2310*(e*x + d)^(13/2)*c^4 - 9555*(2*c^4*d - b*c^3*e)*(e*x + d)^(1
1/2) + 5005*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e*x +
d)^(9/2) - 10725*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d*e
^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(7/2) + 3003*(70*c^4*d^4 - 140*b*c^
3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2)*d*e^3 +
 (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(5/2) - 15015*(14*c^4*d^5 -
35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3*a*b*c^2)*
d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b*c)*e^5)*(
e*x + d)^(3/2) + 15015*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*c^2 + 2*a*c
^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e^6)*sqr
t(e*x + d))/e^7 + 15015*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c
^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c +
 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)
*d*e^6)/(sqrt(e*x + d)*e^7))/e
```

mupad [B] time = 1.94, size = 581, normalized size = 1.38

$$\frac{(d+ex)^{9/2}\left(18b^2c^2e^2-84bc^3de+84c^4d^2+12ac^3e^2\right)}{9e^8}+\frac{4c^4(d+ex)^{13/2}}{13e^8}-\frac{\left(28c^4d-14bc^3e\right)(d+ex)^{11/2}}{11e^8}+\frac{-2a^3be^7+4a^3cde^6+6a^2b^2de^6-18a^2bcd^2e^5+12a^2c^2d^3e^4-6ab^3d^2e^5+24ab^2cd^3e^4-30abc^2d^4e^3+12ac^3d^5e^2+2b^4d^3e^4-10b^3cd^4e^3+18b^2c^2d^5e^2-14bc^3d^6e+4c^4d^7}{e^8\sqrt{d+ex}}+\frac{(d+ex)^{5/2}\left(12a^2c^2e^4+24ab^2ce^4-120abc^2de^3+120ac^3d^2e^2+2b^4e^4-40b^3cde^3+180b^2c^2d^2e^2-280bc^3d^3e+140c^4d^4\right)}{5e^8}+\frac{2(be-2cd)(d+ex)^{3/2}\left(3a^2ce^4+ab^2e^4-10abcde^3+10ac^2d^2e^2-b^3de^3+8b^2cd^2e^2-14bc^2d^3e+7c^3d^4\right)}{e^8}+\frac{2\sqrt{d+ex}\left(cd^2-bde+ae^2\right)^2\left(3b^2e^2-14bcde+14c^2d^2+2ace^2\right)}{e^8}+\frac{10c(be-2cd)(d+ex)^{7/2}\left(b^2e^2-7bcde+7c^2d^2+3ace^2\right)}{7e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*e
))/(9*e^8) + (4*c^4*(d + e*x)^(13/2))/(13*e^8) - ((28*c^4*d - 14*b*c^3*e)*(
d + e*x)^(11/2))/(11*e^8) + (4*c^4*d^7 - 2*a^3*b*e^7 + 2*b^4*d^3*e^4 - 6*a*
b^3*d^2*e^5 + 6*a^2*b^2*d*e^6 + 12*a*c^3*d^5*e^2 - 10*b^3*c*d^4*e^3 + 12*a^
2*c^2*d^3*e^4 + 18*b^2*c^2*d^5*e^2 + 4*a^3*c*d*e^6 - 14*b*c^3*d^6*e - 30*a*
b*c^2*d^4*e^3 + 24*a*b^2*c*d^3*e^4 - 18*a^2*b*c*d^2*e^5)/(e^8*(d + e*x)^(1/
2)) + ((d + e*x)^(5/2)*(2*b^4*e^4 + 140*c^4*d^4 + 12*a^2*c^2*e^4 + 120*a*c^
3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 - 280*b*c^3*d^3*e - 40*b^3
*c*d*e^3 - 120*a*b*c^2*d*e^3))/(5*e^8) + (2*(b*e - 2*c*d)*(d + e*x)^(3/2)*(
7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a*c^2*d^2*e^2 + 8*b^2*
c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/e^8 + (2*(d + e*x)^(1/2)*(a*e
^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*a*c*e^2 - 14*b*c*d*e))/e^
8 + (10*c*(b*e - 2*c*d)*(d + e*x)^(7/2)*(b^2*e^2 + 7*c^2*d^2 + 3*a*c*e^2 -
7*b*c*d*e))/(7*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1420 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=421

$$\frac{2(d+ex)^{3/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+\frac{6c^2(\cdots}{\cdots}$$

Rubi [A] time = 0.23, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{2(d+ex)^{3/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+\frac{6c^2(d+ex)^{7/2}\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{7e^8}-\frac{2c(d+ex)^{5/2}(2cd-be)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8}-\frac{6\sqrt{d+ex}(2cd-be)\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8}-\frac{2\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{e^8\sqrt{d+ex}}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)^3}{3e^8(d+ex)^{3/2}}-\frac{14c^3(d+ex)^{9/2}(2cd-be)}{9e^8}+\frac{4c^4(d+ex)^{11/2}}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(3*e^8*(d + e*x)^(3/2)) - (2*(c
*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(e^
8*Sqrt[d + e*x]) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^
2*e^2 - c*e*(7*b*d - 3*a*e))*Sqrt[d + e*x])/e^8 + (2*(70*c^4*d^4 + b^4*e^4
 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(1
5*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(3/2))/(3*e^8) - (2*c*(2*c*d -
 b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(5/2))/e^8 + (6
*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(7/2))/(7*e^8
) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(9/2))/(9*e^8) + (4*c^4*(d + e*x)^(11/2
))/(11*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{5/2}}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{5/2}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2\cdots\right)}{e^7(d+ex)^{3/2}}\cdots\right.$$

$$=\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3}{3e^8(d+ex)^{3/2}}-\frac{2\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce\cdots\right)}{e^8\sqrt{d+ex}}\cdots$$

Mathematica [A] time = 0.59, size = 598, normalized size = 1.42

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (-28*c^4*(2048*d^7 + 3072*d^6*e*x + 768*d^5*e^2*x^2 - 128*d^4*e^3*x^3 + 48*
d^3*e^4*x^4 - 24*d^2*e^5*x^5 + 14*d*e^6*x^6 - 9*e^7*x^7) - 462*b*e^4*(a^3*e
^3 + 3*a^2*b*e^2*(2*d + 3*e*x) - 3*a*b^2*e*(8*d^2 + 12*d*e*x + 3*e^2*x^2) +
 b^3*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3)) + 462*c*e^3*(-2*a^3*e^3
```

```
*(2*d + 3*e*x) + 9*a^2*b*e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 12*a*b^2*e*(-
16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + b^3*(128*d^4 + 192*d^3*e*x +
 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)) - 198*c^2*e^2*(14*a^2*e^2*(16*d
^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3) - 7*a*b*e*(128*d^4 + 192*d^3*e*x +
 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4) + 3*b^2*(256*d^5 + 384*d^4*e*x +
 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^4*x^4 - 3*e^5*x^5)) + 22*c^3*e*(-1
8*a*e*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^4*x^
4 - 3*e^5*x^5) + 7*b*(1024*d^6 + 1536*d^5*e*x + 384*d^4*e^2*x^2 - 64*d^3*e^
3*x^3 + 24*d^2*e^4*x^4 - 12*d*e^5*x^5 + 7*e^6*x^6)))/(693*e^8*(d + e*x)^(3/
2))
```

IntegrateAlgebraic [B] time = 0.35, size = 951, normalized size = 2.26

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(462*c^4*d^7 - 1617*b*c^3*d^6*e + 2079*b^2*c^2*d^5*e^2 + 1386*a*c^3*d^5*
e^2 - 1155*b^3*c*d^4*e^3 - 3465*a*b*c^2*d^4*e^3 + 231*b^4*d^3*e^4 + 2772*a*
b^2*c*d^3*e^4 + 1386*a^2*c^2*d^3*e^4 - 693*a*b^3*d^2*e^5 - 2079*a^2*b*c*d^2
*e^5 + 693*a^2*b^2*d*e^6 + 462*a^3*c*d*e^6 - 231*a^3*b*e^7 - 9702*c^4*d^6*(
d + e*x) + 29106*b*c^3*d^5*e*(d + e*x) - 31185*b^2*c^2*d^4*e^2*(d + e*x) -
20790*a*c^3*d^4*e^2*(d + e*x) + 13860*b^3*c*d^3*e^3*(d + e*x) + 41580*a*b*c
^2*d^3*e^3*(d + e*x) - 2079*b^4*d^2*e^4*(d + e*x) - 24948*a*b^2*c*d^2*e^4*(
d + e*x) - 12474*a^2*c^2*d^2*e^4*(d + e*x) + 4158*a*b^3*d*e^5*(d + e*x) + 1
2474*a^2*b*c*d*e^5*(d + e*x) - 2079*a^2*b^2*e^6*(d + e*x) - 1386*a^3*c*e^6*
(d + e*x) - 29106*c^4*d^5*(d + e*x)^2 + 72765*b*c^3*d^4*e*(d + e*x)^2 - 623
70*b^2*c^2*d^3*e^2*(d + e*x)^2 - 41580*a*c^3*d^3*e^2*(d + e*x)^2 + 20790*b^
3*c*d^2*e^3*(d + e*x)^2 + 62370*a*b*c^2*d^2*e^3*(d + e*x)^2 - 2079*b^4*d*e^
4*(d + e*x)^2 - 24948*a*b^2*c*d*e^4*(d + e*x)^2 - 12474*a^2*c^2*d*e^4*(d +
e*x)^2 + 2079*a*b^3*e^5*(d + e*x)^2 + 6237*a^2*b*c*e^5*(d + e*x)^2 + 16170*
c^4*d^4*(d + e*x)^3 - 32340*b*c^3*d^3*e*(d + e*x)^3 + 20790*b^2*c^2*d^2*e^2
*(d + e*x)^3 + 13860*a*c^3*d^2*e^2*(d + e*x)^3 - 4620*b^3*c*d*e^3*(d + e*x)
^3 - 13860*a*b*c^2*d*e^3*(d + e*x)^3 + 231*b^4*e^4*(d + e*x)^3 + 2772*a*b^2
*c*e^4*(d + e*x)^3 + 1386*a^2*c^2*e^4*(d + e*x)^3 - 9702*c^4*d^3*(d + e*x)^
4 + 14553*b*c^3*d^2*e*(d + e*x)^4 - 6237*b^2*c^2*d*e^2*(d + e*x)^4 - 4158*a
*c^3*d*e^2*(d + e*x)^4 + 693*b^3*c*e^3*(d + e*x)^4 + 2079*a*b*c^2*e^3*(d +
e*x)^4 + 4158*c^4*d^2*(d + e*x)^5 - 4158*b*c^3*d*e*(d + e*x)^5 + 891*b^2*c^
2*e^2*(d + e*x)^5 + 594*a*c^3*e^2*(d + e*x)^5 - 1078*c^4*d*(d + e*x)^6 + 53
9*b*c^3*e*(d + e*x)^6 + 126*c^4*(d + e*x)^7))/(693*e^8*(d + e*x)^(3/2))
```

fricas [A] time = 0.42, size = 669, normalized size = 1.59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/693*(126*c^4*e^7*x^7 - 28672*c^4*d^7 + 78848*b*c^3*d^6*e - 231*a^3*b*e^7
- 25344*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 29568*(b^3*c + 3*a*b*c^2)*d^4*e^3 -
 3696*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + 5544*(a*b^3 + 3*a^2*b*c)*d^2
*e^5 - 462*(3*a^2*b^2 + 2*a^3*c)*d*e^6 - 49*(4*c^4*d*e^6 - 11*b*c^3*e^7)*x^
6 + 3*(112*c^4*d^2*e^5 - 308*b*c^3*d*e^6 + 99*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^
5 - 3*(224*c^4*d^3*e^4 - 616*b*c^3*d^2*e^5 + 198*(3*b^2*c^2 + 2*a*c^3)*d*e^
6 - 231*(b^3*c + 3*a*b*c^2)*e^7)*x^4 + (1792*c^4*d^4*e^3 - 4928*b*c^3*d^3*e
^4 + 1584*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 1848*(b^3*c + 3*a*b*c^2)*d*e^6 +
231*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - 3*(3584*c^4*d^5*e^2 - 9856*b*
c^3*d^4*e^3 + 3168*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 3696*(b^3*c + 3*a*b*c^2)
```

```
*d^2*e^5 + 462*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 - 693*(a*b^3 + 3*a^2*b*
c)*e^7)*x^2 - 3*(14336*c^4*d^6*e - 39424*b*c^3*d^5*e^2 + 12672*(3*b^2*c^2 +
 2*a*c^3)*d^4*e^3 - 14784*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 1848*(b^4 + 12*a*b^
2*c + 6*a^2*c^2)*d^2*e^5 - 2772*(a*b^3 + 3*a^2*b*c)*d*e^6 + 231*(3*a^2*b^2
+ 2*a^3*c)*e^7)*x)*sqrt(e*x + d)/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [B] time = 0.30, size = 972, normalized size = 2.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/693*(126*(x*e + d)^(11/2)*c^4*e^80 - 1078*(x*e + d)^(9/2)*c^4*d*e^80 + 41
58*(x*e + d)^(7/2)*c^4*d^2*e^80 - 9702*(x*e + d)^(5/2)*c^4*d^3*e^80 + 16170
*(x*e + d)^(3/2)*c^4*d^4*e^80 - 29106*sqrt(x*e + d)*c^4*d^5*e^80 + 539*(x*e
 + d)^(9/2)*b*c^3*e^81 - 4158*(x*e + d)^(7/2)*b*c^3*d*e^81 + 14553*(x*e + d
)^(5/2)*b*c^3*d^2*e^81 - 32340*(x*e + d)^(3/2)*b*c^3*d^3*e^81 + 72765*sqrt(
x*e + d)*b*c^3*d^4*e^81 + 891*(x*e + d)^(7/2)*b^2*c^2*e^82 + 594*(x*e + d)^
(7/2)*a*c^3*e^82 - 6237*(x*e + d)^(5/2)*b^2*c^2*d*e^82 - 4158*(x*e + d)^(5/
2)*a*c^3*d*e^82 + 20790*(x*e + d)^(3/2)*b^2*c^2*d^2*e^82 + 13860*(x*e + d)^
(3/2)*a*c^3*d^2*e^82 - 62370*sqrt(x*e + d)*b^2*c^2*d^3*e^82 - 41580*sqrt(x*
e + d)*a*c^3*d^3*e^82 + 693*(x*e + d)^(5/2)*b^3*c*e^83 + 2079*(x*e + d)^(5/
2)*a*b*c^2*e^83 - 4620*(x*e + d)^(3/2)*b^3*c*d*e^83 - 13860*(x*e + d)^(3/2)
*a*b*c^2*d*e^83 + 20790*sqrt(x*e + d)*b^3*c*d^2*e^83 + 62370*sqrt(x*e + d)*
a*b*c^2*d^2*e^83 + 231*(x*e + d)^(3/2)*b^4*e^84 + 2772*(x*e + d)^(3/2)*a*b^
2*c*e^84 + 1386*(x*e + d)^(3/2)*a^2*c^2*e^84 - 2079*sqrt(x*e + d)*b^4*d*e^8
4 - 24948*sqrt(x*e + d)*a*b^2*c*d*e^84 - 12474*sqrt(x*e + d)*a^2*c^2*d*e^84
 + 2079*sqrt(x*e + d)*a*b^3*e^85 + 6237*sqrt(x*e + d)*a^2*b*c*e^85)*e^(-88)
 - 2/3*(42*(x*e + d)*c^4*d^6 - 2*c^4*d^7 - 126*(x*e + d)*b*c^3*d^5*e + 7*b*
c^3*d^6*e + 135*(x*e + d)*b^2*c^2*d^4*e^2 + 90*(x*e + d)*a*c^3*d^4*e^2 - 9*
b^2*c^2*d^5*e^2 - 6*a*c^3*d^5*e^2 - 60*(x*e + d)*b^3*c*d^3*e^3 - 180*(x*e +
 d)*a*b*c^2*d^3*e^3 + 5*b^3*c*d^4*e^3 + 15*a*b*c^2*d^4*e^3 + 9*(x*e + d)*b^
4*d^2*e^4 + 108*(x*e + d)*a*b^2*c*d^2*e^4 + 54*(x*e + d)*a^2*c^2*d^2*e^4 -
b^4*d^3*e^4 - 12*a*b^2*c*d^3*e^4 - 6*a^2*c^2*d^3*e^4 - 18*(x*e + d)*a*b^3*d
*e^5 - 54*(x*e + d)*a^2*b*c*d*e^5 + 3*a*b^3*d^2*e^5 + 9*a^2*b*c*d^2*e^5 + 9
*(x*e + d)*a^2*b^2*e^6 + 6*(x*e + d)*a^3*c*e^6 - 3*a^2*b^2*d*e^6 - 2*a^3*c*
d*e^6 + a^3*b*e^7)*e^(-8)/(x*e + d)^(3/2)
```

maple [B] time = 0.06, size = 795, normalized size = 1.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/693/(e*x+d)^(3/2)*(-126*c^4*e^7*x^7-539*b*c^3*e^7*x^6+196*c^4*d*e^6*x^6-
594*a*c^3*e^7*x^5-891*b^2*c^2*e^7*x^5+924*b*c^3*d*e^6*x^5-336*c^4*d^2*e^5*x
^5-2079*a*b*c^2*e^7*x^4+1188*a*c^3*d*e^6*x^4-693*b^3*c*e^7*x^4+1782*b^2*c^2
*d*e^6*x^4-1848*b*c^3*d^2*e^5*x^4+672*c^4*d^3*e^4*x^4-1386*a^2*c^2*e^7*x^3-
2772*a*b^2*c*e^7*x^3+5544*a*b*c^2*d*e^6*x^3-3168*a*c^3*d^2*e^5*x^3-231*b^4*
e^7*x^3+1848*b^3*c*d*e^6*x^3-4752*b^2*c^2*d^2*e^5*x^3+4928*b*c^3*d^3*e^4*x^
3-1792*c^4*d^4*e^3*x^3-6237*a^2*b*c*e^7*x^2+8316*a^2*c^2*d*e^6*x^2-2079*a*b
^3*e^7*x^2+16632*a*b^2*c*d*e^6*x^2-33264*a*b*c^2*d^2*e^5*x^2+19008*a*c^3*d^
3*e^4*x^2+1386*b^4*d*e^6*x^2-11088*b^3*c*d^2*e^5*x^2+28512*b^2*c^2*d^3*e^4*
x^2-29568*b*c^3*d^4*e^3*x^2+10752*c^4*d^5*e^2*x^2+1386*a^3*c*e^7*x+2079*a^2
*b^2*e^7*x-24948*a^2*b*c*d*e^6*x+33264*a^2*c^2*d^2*e^5*x-8316*a*b^3*d*e^6*x
+66528*a*b^2*c*d^2*e^5*x-133056*a*b*c^2*d^3*e^4*x+76032*a*c^3*d^4*e^3*x+554
4*b^4*d^2*e^5*x-44352*b^3*c*d^3*e^4*x+114048*b^2*c^2*d^4*e^3*x-118272*b*c^3
*d^5*e^2*x+43008*c^4*d^6*e*x+231*a^3*b*e^7+924*a^3*c*d*e^6+1386*a^2*b^2*d*e
```

```
^6-16632*a^2*b*c*d^2*e^5+22176*a^2*c^2*d^3*e^4-5544*a*b^3*d^2*e^5+44352*a*b
^2*c*d^3*e^4-88704*a*b*c^2*d^4*e^3+50688*a*c^3*d^5*e^2+3696*b^4*d^3*e^4-295
68*b^3*c*d^4*e^3+76032*b^2*c^2*d^5*e^2-78848*b*c^3*d^6*e+28672*c^4*d^7)/e^8
```

maxima [A] time = 0.67, size = 651, normalized size = 1.55

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/693*((126*(e*x + d)^(11/2)*c^4 - 539*(2*c^4*d - b*c^3*e)*(e*x + d)^(9/2)
+ 297*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e*x + d)^(7/
2) - 693*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^2 - (b^
3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(5/2) + 231*(70*c^4*d^4 - 140*b*c^3*d^3*e +
 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2)*d*e^3 + (b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(3/2) - 2079*(14*c^4*d^5 - 35*b*c^3*d
^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3*a*b*c^2)*d^2*e^3 +
(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b*c)*e^5)*sqrt(e*x +
d))/e^7 + 231*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2*a*c
^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2
)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6 - 3
*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*
c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^
3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e^6)*(e*x + d))/((e*x + d)^(3/
2)*e^7))/e
```

mupad [B] time = 1.96, size = 677, normalized size = 1.61

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*e
))/(7*e^8) + (4*c^4*(d + e*x)^(11/2))/(11*e^8) - ((28*c^4*d - 14*b*c^3*e)*(
d + e*x)^(9/2))/(9*e^8) + ((4*c^4*d^7)/3 - (d + e*x)*(28*c^4*d^6 + 4*a^3*c*
e^6 + 6*a^2*b^2*e^6 + 6*b^4*d^2*e^4 + 60*a*c^3*d^4*e^2 - 40*b^3*c*d^3*e^3 +
 36*a^2*c^2*d^2*e^4 + 90*b^2*c^2*d^4*e^2 - 12*a*b^3*d*e^5 - 84*b*c^3*d^5*e
- 36*a^2*b*c*d*e^5 - 120*a*b*c^2*d^3*e^3 + 72*a*b^2*c*d^2*e^4) - (2*a^3*b*e
^7)/3 + (2*b^4*d^3*e^4)/3 - 2*a*b^3*d^2*e^5 + 2*a^2*b^2*d*e^6 + 4*a*c^3*d^5
*e^2 - (10*b^3*c*d^4*e^3)/3 + 4*a^2*c^2*d^3*e^4 + 6*b^2*c^2*d^5*e^2 + (4*a^
3*c*d*e^6)/3 - (14*b*c^3*d^6*e)/3 - 10*a*b*c^2*d^4*e^3 + 8*a*b^2*c*d^3*e^4
- 6*a^2*b*c*d^2*e^5)/(e^8*(d + e*x)^(3/2)) + ((d + e*x)^(3/2)*(2*b^4*e^4 +
140*c^4*d^4 + 12*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24
*a*b^2*c*e^4 - 280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(3*e^
8) + (6*(b*e - 2*c*d)*(d + e*x)^(1/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4
- b^3*d*e^3 + 10*a*c^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*
c*d*e^3))/e^8 + (2*c*(b*e - 2*c*d)*(d + e*x)^(5/2)*(b^2*e^2 + 7*c^2*d^2 + 3
*a*c*e^2 - 7*b*c*d*e))/e^8
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1421 $\int \frac{(b+2cx)(d+ex)^{3/2}}{a+bx+cx^2}\,dx$

Optimal. Leaf size=422

$$\frac{\sqrt{2}\left(-2c^2d\left(d\sqrt{b^2-4ac}-4ae\right)-2ce\left(-bd\sqrt{b^2-4ac}-ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(b-\sqrt{b^2-4ac}\right)\right)\text{ta}}{c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

Rubi [A] time = 2.23, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {824, 826, 1166, 208}

$$\frac{\sqrt{2}\left(-2c^2d\left(d\sqrt{b^2-4ac}-4ae\right)-2ce\left(-bd\sqrt{b^2-4ac}-ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{\sqrt{2}\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}+\frac{2\sqrt{d+ex}(2cd-be)}{c}+\frac{4}{3}(d+ex)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x]
```

```
[Out] (2*(2*c*d - b*e)*Sqrt[d + e*x])/c + (4*(d + e*x)^(3/2))/3 + (Sqrt[2]*(b^2*(
b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d - 4*a*e) - 2*c*e*
(b^2*d - b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e - a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[
(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(
c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]) - (Sqrt[
2]*(b^2*(b + Sqrt[b^2 - 4*a*c])*e^2 + 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d + 4*a*e)
 - 2*c*e*(b^2*d + b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e + a*Sqrt[b^2 - 4*a*c]*e))
*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{a+bx+cx^2}\,dx = \frac{4}{3}(d+ex)^{3/2} + \frac{\int \frac{\sqrt{d+ex}\,(c(bd-2ae)+c(2cd-be)x)}{a+bx+cx^2}\,dx}{c}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}}{c} + \frac{4}{3}(d+ex)^{3/2} + \frac{\int \frac{c\left(bcd^2-4acde+abe^2\right)+c\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{c^2}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}}{c} + \frac{4}{3}(d+ex)^{3/2} + \frac{2\,\mathrm{Subst}\left(\int \frac{ce\left(bcd^2-4acde+abe^2\right)-cd\left(2c^2d^2+b^2e^2-2ce(bd-\cdots\right.}{cd^2-bde+ae^2+(-2cd+\cdots}\right.}{c^2}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}}{c} + \frac{4}{3}(d+ex)^{3/2} - \frac{\left(b^2\left(b-\sqrt{b^2-4ac}\right)e^2-2c^2d\left(\sqrt{b^2-4ac}\,d-\cdots\right.\right.}{\cdots}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}}{c} + \frac{4}{3}(d+ex)^{3/2} + \frac{\sqrt{2}\left(b^2\left(b-\sqrt{b^2-4ac}\right)e^2-2c^2d\left(\sqrt{b^2-4ac}\,\cdots\right.\right.}{\cdots}$$

Mathematica [A] time = 2.42, size = 782, normalized size = 1.85

$$\frac{\frac{(be-2cd)\left(\frac{\sqrt{2}\left(2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}-b\right)-2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{\sqrt{2}\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}+2\sqrt{c}\,e\sqrt{d+ex}\right)}{c^{3/2}}-\frac{2\sqrt{2}\left(3c^2de\left(d\sqrt{b^2-4ac}-2ae-bd\right)+ce^2\left(-3bd\sqrt{b^2-4ac}-ae\sqrt{b^2-4ac}+3abe+3b^2d\right)+b^2e^3\left(\sqrt{b^2-4ac}-b\right)+2c^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{2\sqrt{2}\left(-3c^2de\left(d\sqrt{b^2-4ac}+2ae+bd\right)+ce^2\left(3b\left(d\sqrt{b^2-4ac}+ae\right)+ae\sqrt{b^2-4ac}+3b^2d\right)-b^2e^3\left(\sqrt{b^2-4ac}+b\right)+2c^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{4e\sqrt{d+ex}\,(be-2cd)}{c}+\frac{4}{3}e(d+ex)^{3/2}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x]
```

```
[Out] ((-4*e*(-2*c*d + b*e)*Sqrt[d + e*x])/c + (4*e*(d + e*x)^(3/2))/3 - (2*Sqrt[
2]*(2*c^3*d^3 + b^2*(-b + Sqrt[b^2 - 4*a*c])*e^3 + 3*c^2*d*e*(-(b*d) + Sqrt
[b^2 - 4*a*c]*d - 2*a*e) + c*e^2*(3*b^2*d - 3*b*Sqrt[b^2 - 4*a*c]*d + 3*a*b
*e - a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2
*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d +
 (-b + Sqrt[b^2 - 4*a*c])*e]) + (2*Sqrt[2]*(2*c^3*d^3 - b^2*(b + Sqrt[b^2 -
 4*a*c])*e^3 - 3*c^2*d*e*(b*d + Sqrt[b^2 - 4*a*c]*d + 2*a*e) + c*e^2*(3*b^2
*d + a*Sqrt[b^2 - 4*a*c]*e + 3*b*(Sqrt[b^2 - 4*a*c]*d + a*e)))*ArcTanh[(Sqr
t[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(c^(3
/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]) + ((-2*c*d +
 b*e)*(2*Sqrt[c]*e*Sqrt[d + e*x] + (Sqrt[2]*(-2*c^2*d^2 + b*(-b + Sqrt[b^2
- 4*a*c])*e^2 + 2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sqrt[2]*S
qrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[b^2 -
 4*a*c]*Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) + (Sqrt[2]*(2*c^2*d^2 + b
*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d + Sqrt[b^2 - 4*a*c]*d + a*e))*Arc
Tanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e
]])/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])))/c^(3/2))/
e
```

IntegrateAlgebraic [C] time = 1.68, size = 583, normalized size = 1.38

$$\frac{\left(2\sqrt{2}c^2d^2\sqrt{4ac-b^2}-2\sqrt{2}bcde\sqrt{4ac-b^2}+\sqrt{2}b^2e^2\sqrt{4ac-b^2}-2\sqrt{2}ace^2\sqrt{4ac-b^2}-4i\sqrt{2}abce^2+8i\sqrt{2}ac^2de+i\sqrt{2}b^3e^2-2i\sqrt{2}b^2cde\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}\right)}{c^{3/2}\sqrt{4ac-b^2}\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}+\frac{\left(2\sqrt{2}c^2d^2\sqrt{4ac-b^2}-2\sqrt{2}bcde\sqrt{4ac-b^2}+\sqrt{2}b^2e^2\sqrt{4ac-b^2}-2\sqrt{2}ace^2\sqrt{4ac-b^2}+4i\sqrt{2}abce^2-8i\sqrt{2}ac^2de-i\sqrt{2}b^3e^2+2i\sqrt{2}b^2cde\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}\right)}{c^{3/2}\sqrt{4ac-b^2}\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}+\frac{2\left(-3be\sqrt{d+ex}+2c(d+ex)^{3/2}+6cd\sqrt{d+ex}\right)}{3c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x]
```

```
[Out] (2*(6*c*d*Sqrt[d + e*x] - 3*b*e*Sqrt[d + e*x] + 2*c*(d + e*x)^(3/2)))/(3*c)
 + ((2*Sqrt[2]*c^2*Sqrt[-b^2 + 4*a*c]*d^2 - (2*I)*Sqrt[2]*b^2*c*d*e + (8*I)
*Sqrt[2]*a*c^2*d*e - 2*Sqrt[2]*b*c*Sqrt[-b^2 + 4*a*c]*d*e + I*Sqrt[2]*b^3*e
^2 - (4*I)*Sqrt[2]*a*b*c*e^2 + Sqrt[2]*b^2*Sqrt[-b^2 + 4*a*c]*e^2 - 2*Sqrt[
2]*a*c*Sqrt[-b^2 + 4*a*c]*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[
-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]])/(c^(3/2)*Sqrt[-b^2 + 4*a*c]*Sqrt[-
2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]) + ((2*Sqrt[2]*c^2*Sqrt[-b^2 + 4*a*c]
*d^2 + (2*I)*Sqrt[2]*b^2*c*d*e - (8*I)*Sqrt[2]*a*c^2*d*e - 2*Sqrt[2]*b*c*Sq
rt[-b^2 + 4*a*c]*d*e - I*Sqrt[2]*b^3*e^2 + (4*I)*Sqrt[2]*a*b*c*e^2 + Sqrt[2
]*b^2*Sqrt[-b^2 + 4*a*c]*e^2 - 2*Sqrt[2]*a*c*Sqrt[-b^2 + 4*a*c]*e^2)*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e
]])/(c^(3/2)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]
)
```

fricas [B] time = 0.54, size = 2909, normalized size = 6.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*sqrt(2)*c*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^
2 - (b^3 - 3*a*b*c)*e^3 + c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3
*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^
4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*
b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3)*log(sqrt(2)*(6*c^3*d^3 - 9*b*c^2*d^2*e
 + (5*b^2*c - 2*a*c^2)*d*e^2 - (b^3 - a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4
*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^
2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 +
(b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))*sqrt((2*c^3*d^3 -
3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + c^3*sqrt(
(9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^
4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*
b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3
) - 4*(3*c^3*d^4 - 6*b*c^2*d^3*e + 2*(2*b^2*c + a*c^2)*d^2*e^2 - (b^3 + 2*a
*b*c)*d*e^3 + (a*b^2 - a^2*c)*e^4)*sqrt(e*x + d)) - 3*sqrt(2)*c*sqrt((2*c^3
*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + c^
3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 +
3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 +
 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^
6))/c^3)*log(-sqrt(2)*(6*c^3*d^3 - 9*b*c^2*d^2*e + (5*b^2*c - 2*a*c^2)*d*e^
2 - (b^3 - a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c
^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4
- 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^
2*c^2 - 4*a^3*c^3)*e^6)/c^6))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c -
2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*
e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^
2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b
^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3) - 4*(3*c^3*d^4 - 6*b*c^2*
d^3*e + 2*(2*b^2*c + a*c^2)*d^2*e^2 - (b^3 + 2*a*b*c)*d*e^3 + (a*b^2 - a^2*
c)*e^4)*sqrt(e*x + d)) + 3*sqrt(2)*c*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b
^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^
5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3
 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6
- 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3)*log(sqrt(2)*(6*c^3
*d^3 - 9*b*c^2*d^2*e + (5*b^2*c - 2*a*c^2)*d*e^2 - (b^3 - a*b*c)*e^3 + c^3*
sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*
(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4
*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6)
)*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*
```

```
b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^
4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c -
5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3
*c^3)*e^6)/c^6))/c^3) - 4*(3*c^3*d^4 - 6*b*c^2*d^3*e + 2*(2*b^2*c + a*c^2)*
d^2*e^2 - (b^3 + 2*a*b*c)*d*e^3 + (a*b^2 - a^2*c)*e^4)*sqrt(e*x + d)) - 3*s
qrt(2)*c*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3
 - 3*a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4
*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b
^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2
- 4*a^3*c^3)*e^6)/c^6))/c^3)*log(-sqrt(2)*(6*c^3*d^3 - 9*b*c^2*d^2*e + (5*b
^2*c - 2*a*c^2)*d*e^2 - (b^3 - a*b*c)*e^3 + c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)
*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 +
 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 -
6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))*sqrt((2*c^3*d^3 - 3*b*c^2
*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - c^3*sqrt((9*(b^2
*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 -
 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*
d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3) - 4*(
3*c^3*d^4 - 6*b*c^2*d^3*e + 2*(2*b^2*c + a*c^2)*d^2*e^2 - (b^3 + 2*a*b*c)*d
*e^3 + (a*b^2 - a^2*c)*e^4)*sqrt(e*x + d)) + 4*(2*c*e*x + 8*c*d - 3*b*e)*sq
rt(e*x + d))/c
```

giac [B] time = 0.48, size = 813, normalized size = 1.93

$$\frac{\left(\left(2\sqrt{b^2-4ac}\,c^2d^2e-2\sqrt{b^2-4ac}\,bcde^2+(b^2-2ac)\sqrt{b^2-4ac}\,e^3\right)\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\,c^2-2\left(2c^4d^3-3bc^3d^2e-abc^2e^3+(b^2c^2+2ac^3)de^2\right)\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\,|c|-\left(4\sqrt{b^2-4ac}\,c^4d^2e-4\sqrt{b^2-4ac}\,bc^3de^2+\sqrt{b^2-4ac}\,b^2c^2e^3\right)\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\right)\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2c^4d-bc^3e+\sqrt{-4(c^4d^2-bc^3de+ac^3e^2)c^4+(2c^4d-bc^3e)^2}}{c^4}}}\right)}{4(c^4d^2-bc^3de+ac^3e^2)c^2}-\frac{\left(\left(2\sqrt{b^2-4ac}\,c^2d^2e-2\sqrt{b^2-4ac}\,bcde^2+(b^2-2ac)\sqrt{b^2-4ac}\,e^3\right)\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\,c^2+2\left(2c^4d^3-3bc^3d^2e-abc^2e^3+(b^2c^2+2ac^3)de^2\right)\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\,|c|-\left(4\sqrt{b^2-4ac}\,c^4d^2e-4\sqrt{b^2-4ac}\,bc^3de^2+\sqrt{b^2-4ac}\,b^2c^2e^3\right)\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\right)\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2c^4d-bc^3e-\sqrt{-4(c^4d^2-bc^3de+ac^3e^2)c^4+(2c^4d-bc^3e)^2}}{c^4}}}\right)}{4(c^4d^2-bc^3de+ac^3e^2)c^2}+\frac{2\left(2(xe+d)^{\frac{3}{2}}c^3+6\sqrt{xe+d}\,c^3d-3\sqrt{xe+d}\,bc^2e\right)}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*((2*sqrt(b^2 - 4*a*c)*c^2*d^2*e - 2*sqrt(b^2 - 4*a*c)*b*c*d*e^2 + (b^2
- 2*a*c)*sqrt(b^2 - 4*a*c)*e^3)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*
c)*e)*c^2 - 2*(2*c^4*d^3 - 3*b*c^3*d^2*e - a*b*c^2*e^3 + (b^2*c^2 + 2*a*c^3
)*d*e^2)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(c) - (4*sqrt(
b^2 - 4*a*c)*c^4*d^2*e - 4*sqrt(b^2 - 4*a*c)*b*c^3*d*e^2 + sqrt(b^2 - 4*a*c
)*b^2*c^2*e^3)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*s
qrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^4*d - b*c^3*e + sqrt(-4*(c^4*d^2 - b*c^3*
d*e + a*c^3*e^2)*c^4 + (2*c^4*d - b*c^3*e)^2))/c^4))/((c^4*d^2 - b*c^3*d*e
+ a*c^3*e^2)*c^2) - 1/4*((2*sqrt(b^2 - 4*a*c)*c^2*d^2*e - 2*sqrt(b^2 - 4*a*
c)*b*c*d*e^2 + (b^2 - 2*a*c)*sqrt(b^2 - 4*a*c)*e^3)*sqrt(-4*c^2*d + 2*(b*c
+ sqrt(b^2 - 4*a*c)*c)*e)*c^2 + 2*(2*c^4*d^3 - 3*b*c^3*d^2*e - a*b*c^2*e^3
+ (b^2*c^2 + 2*a*c^3)*d*e^2)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*
e)*abs(c) - (4*sqrt(b^2 - 4*a*c)*c^4*d^2*e - 4*sqrt(b^2 - 4*a*c)*b*c^3*d*e^
2 + sqrt(b^2 - 4*a*c)*b^2*c^2*e^3)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*
c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^4*d - b*c^3*e - sqrt(
-4*(c^4*d^2 - b*c^3*d*e + a*c^3*e^2)*c^4 + (2*c^4*d - b*c^3*e)^2))/c^4))/((
c^4*d^2 - b*c^3*d*e + a*c^3*e^2)*c^2) + 2/3*(2*(x*e + d)^(3/2)*c^3 + 6*sqrt
(x*e + d)*c^3*d - 3*sqrt(x*e + d)*b*c^2*e)/c^3
```

maple [B] time = 0.10, size = 1494, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x)
```

```
[Out] 4/3*(e*x+d)^(3/2)-2/c*b*e*(e*x+d)^(1/2)+4*(e*x+d)^(1/2)*d-4/(-(4*a*c-b^2)*e
^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((
e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b
*e^3+8*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
```

```
)^(1/2))*c)^(1/2)*c)*a*d*e^2+1/c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e
+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3-2/(-(4*a*c-b^2)*e^2)^(
1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*e^
2+2*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)
^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/c
*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2+2*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)
*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d*e-2*c*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-4/(-(4*a*c-b^2
)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan(
(e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b
*e^3+8*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*c)*a*d*e^2+1/c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3-2/(-(4*a*c-b^2)*e^2)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*e^2-2*2^(1/
2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2+1/c*2^(1/2)/((b
*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((
b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2-2*2^(1/2)/((b*e-2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d*e+2*c*2^(1/2)/((b*e-2*c*d+(-(
4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-
(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a), x)
```

mupad [B] time = 0.96, size = 6933, normalized size = 16.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x)
```

```
[Out] (4*(d + e*x)^(3/2))/3 - atan(((((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c
^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^
3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c - (8*(d + e*x)^(1/2)
*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e
^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*
c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(
1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-
(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*
(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2
*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2
) - (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*
b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 +
```

```
6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28
*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^
3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 -
4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*
(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*1i -
(((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 -
 b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3
 + 2*a*b^2*c^3*d*e^4))/c + (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*
e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c
^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2)
- 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*
d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3
*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*
d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3
*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) + (8*(d + e*x)^(1/2)*(b^6*e^
6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e
^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*
e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^
3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 -
 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 +
 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*
e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*1i)/((16*(a^2*b^4*e^8 + 8*a^4*c^2*e
^8 + b^6*d^2*e^6 - 6*a^3*b^2*c*e^8 - 8*a*c^5*d^6*e^2 - 4*b^5*c*d^3*e^5 - 8*
a^2*c^4*d^4*e^4 + 8*a^3*c^3*d^2*e^6 + 2*b^2*c^4*d^6*e^2 - 6*b^3*c^3*d^5*e^3
 + 7*b^4*c^2*d^4*e^4 - 2*a*b^5*d*e^7 - 18*a^2*b^2*c^2*d^2*e^6 + 24*a*b*c^4*
d^5*e^3 + 10*a^2*b^3*c*d*e^7 - 8*a^3*b*c^2*d*e^7 - 26*a*b^2*c^3*d^4*e^4 + 1
2*a*b^3*c^2*d^3*e^5 + 16*a^2*b*c^3*d^3*e^5))/c + (((8*(a*b^3*c^2*e^5 - 4*a^
2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4
*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c -
 (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) -
3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e -
 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c
)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*
a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a
*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*
b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(
1/2))/(2*c^3))^(1/2) - (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^
5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4
*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a
*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2
*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^
3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d
*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(
2*c^3))^(1/2) + (((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8
*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12
*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c + (8*(d + e*x)^(1/2)*(-(b^3*e^3 -
2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*
c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2
 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*
e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c
^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^
(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 -
4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) + (8*(d + e*
x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 +
48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*
e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e
^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3
+ b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) +
 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^
```

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(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)))*(-(b^3*e^3 - 2*c^
3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(
1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4
*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*2i - atan((((
(8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b
^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 +
 2*a*b^2*c^3*d*e^4))/c - (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^
3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2
*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) +
3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*
e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(
b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*
e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b
*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) - (8*(d + e*x)^(1/2)*(b^6*e^6
- 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4
 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^
6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*
d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4
*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3
*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^
2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*1i - (((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^
3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e
^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c + (8*(d
 + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*
c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2
*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2
))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*
d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e
^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*
d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/
(2*c^3))^(1/2) + (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*
e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c
^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4
*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))
/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*
c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 -
 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3)
)^(1/2)*1i)/((16*(a^2*b^4*e^8 + 8*a^4*c^2*e^8 + b^6*d^2*e^6 - 6*a^3*b^2*c*e
^8 - 8*a*c^5*d^6*e^2 - 4*b^5*c*d^3*e^5 - 8*a^2*c^4*d^4*e^4 + 8*a^3*c^3*d^2*
e^6 + 2*b^2*c^4*d^6*e^2 - 6*b^3*c^3*d^5*e^3 + 7*b^4*c^2*d^4*e^4 - 2*a*b^5*d
*e^7 - 18*a^2*b^2*c^2*d^2*e^6 + 24*a*b*c^4*d^5*e^3 + 10*a^2*b^3*c*d*e^7 - 8
*a^3*b*c^2*d*e^7 - 26*a*b^2*c^3*d^4*e^4 + 12*a*b^3*c^2*d^3*e^5 + 16*a^2*b*c
^3*d^3*e^5))/c + (((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 +
8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 1
2*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c - (8*(d + e*x)^(1/2)*(-(b^3*e^3 -
 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3
*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*
c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)
^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 -
 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) - (8*(d + e
*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 +
 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2
*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*
e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3
 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2)
+ 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)
^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) + (((8*(a*b^3*c^2*
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e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 -
 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d
*e^4))/c + (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c
)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c
^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b
^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^
4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(
1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*
d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2
- 4*a*c)^(1/2))/(2*c^3))^(1/2) + (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^
6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d
^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*
e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b
^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) -
3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e -
 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c
)^(1/2))/(2*c^3))^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1
/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d
^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 -
 4*a*c)^(1/2))/(2*c^3))^(1/2)*2i - ((4*(b*e - 2*c*d))/c - (2*b*e - 4*c*d)/c
)*(d + e*x)^(1/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1422 $\int \frac{(b+2cx)\sqrt{d+ex}}{a+bx+cx^2}\,dx$

Optimal. Leaf size=291

$$-\frac{\sqrt{2}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\left(be\left(\sqrt{b^2-4ac}+b\right)-2\cdots\right.}{\sqrt{c}\sqrt{b^2-\cdots}}$$

Rubi [A] time = 0.89, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {824, 826, 1166, 208}

$$-\frac{\sqrt{2}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(d\sqrt{b^2-4ac}+2ae\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}+4\sqrt{d+ex}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2),x]
```

```
[Out] 4*Sqrt[d + e*x] - (Sqrt[2]*(b*(b - Sqrt[b^2 - 4*a*c])*e + 2*c*(Sqrt[b^2 - 4
*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b -
 Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[
b^2 - 4*a*c])*e]) + (Sqrt[2]*(b*(b + Sqrt[b^2 - 4*a*c])*e - 2*c*(Sqrt[b^2 -
 4*a*c]*d + 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
 + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqr
t[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{a+bx+cx^2}\,dx = 4\sqrt{d+ex} + \frac{\int \frac{c(bd-2ae)+c(2cd-be)x}{\sqrt{d+ex}\,(a+bx+cx^2)}\,dx}{c}$$

$$= 4\sqrt{d+ex} + \frac{2\,\text{Subst}\left(\int \frac{ce(bd-2ae)-cd(2cd-be)+c(2cd-be)x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)}{c}$$

$$= 4\sqrt{d+ex} + \left(-b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e + c\left(2d-\frac{4ae}{\sqrt{b^2-4ac}}\right)\right)\text{Subst}\left(\int \frac{}{-\frac{1}{2}\sqrt{b^2-4ac}\,e+}\right.$$

$$= 4\sqrt{d+ex} + \frac{\sqrt{2}\left(b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e - c\left(2d-\frac{4ae}{\sqrt{b^2-4ac}}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{c}\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}} + \cdots$$

Mathematica [A] time = 0.35, size = 288, normalized size = 0.99

$$\frac{\sqrt{2}\left(c\left(4ae-2d\sqrt{b^2-4ac}\right)+be\left(\sqrt{b^2-4ac}-b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}} + \frac{\sqrt{2}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(d\sqrt{b^2-4ac}+2ae\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}} + 4\sqrt{d+ex}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2),x]
```

```
[Out] 4*Sqrt[d + e*x] + (Sqrt[2]*(b*(-b + Sqrt[b^2 - 4*a*c])*e + c*(-2*Sqrt[b^2 -
 4*a*c]*d + 4*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*
e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d + (-b + Sq
rt[b^2 - 4*a*c])*e]) + (Sqrt[2]*(b*(b + Sqrt[b^2 - 4*a*c])*e - 2*c*(Sqrt[b^
2 - 4*a*c]*d + 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d -
 (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b +
Sqrt[b^2 - 4*a*c])*e])
```

IntegrateAlgebraic [C] time = 0.88, size = 332, normalized size = 1.14

$$\frac{\sqrt{2}\left(2cd\sqrt{4ac-b^2}-be\sqrt{4ac-b^2}+4iace-ib^2e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}\right)}{\sqrt{c}\sqrt{4ac-b^2}\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}} + \frac{\sqrt{2}\left(2cd\sqrt{4ac-b^2}-be\sqrt{4ac-b^2}-4iace+ib^2e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}\right)}{\sqrt{c}\sqrt{4ac-b^2}\sqrt{ie\sqrt{4ac-b^2}+be-2cd}} + 4\sqrt{d+ex}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2),x]
```

```
[Out] 4*Sqrt[d + e*x] + (Sqrt[2]*(2*c*Sqrt[-b^2 + 4*a*c]*d - I*b^2*e + (4*I)*a*c*
e - b*Sqrt[-b^2 + 4*a*c]*e)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*
c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]])/(Sqrt[c]*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c
*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]) + (Sqrt[2]*(2*c*Sqrt[-b^2 + 4*a*c]*d +
I*b^2*e - (4*I)*a*c*e - b*Sqrt[-b^2 + 4*a*c]*e)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqr
t[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]])/(Sqrt[c]*Sqrt[-b^
2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e])
```

fricas [A] time = 0.44, size = 368, normalized size = 1.26

$$-\frac{1}{2}\sqrt{2}\sqrt{\frac{2cd-be+c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}\log\left(\sqrt{2}\sqrt{\frac{2cd-be+c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}+2\sqrt{ex+d}\right)+\frac{1}{2}\sqrt{2}\sqrt{\frac{2cd-be+c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}\log\left(-\sqrt{2}\sqrt{\frac{2cd-be+c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}+2\sqrt{ex+d}\right)-\frac{1}{2}\sqrt{2}\sqrt{\frac{2cd-be-c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}\log\left(\sqrt{2}\sqrt{\frac{2cd-be-c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}+2\sqrt{ex+d}\right)+\frac{1}{2}\sqrt{2}\sqrt{\frac{2cd-be-c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}\log\left(-\sqrt{2}\sqrt{\frac{2cd-be-c\sqrt{\frac{(b^2-4ac)e^2}{c^2}}}{c}}+2\sqrt{ex+d}\right)+4\sqrt{ex+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*log(sqrt
(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sqrt(e*x + d)
) + 1/2*sqrt(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*log(-
sqrt(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sqrt(e*x
+ d)) - 1/2*sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*l
og(sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sqrt(e
*x + d)) + 1/2*sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c
)*log(-sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sq
rt(e*x + d)) + 4*sqrt(e*x + d)
```

giac [B] time = 0.46, size = 614, normalized size = 2.11

$$4\sqrt{xe+d} + \frac{\left(\left(2\sqrt{b^2-4ac}\,cde - \sqrt{b^2-4ac}\,be^2\right)\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\,c^2 - 4\left(c^3d^2-bc^2de+ac^2e^2\right)\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\,|c| - \left(2\sqrt{b^2-4ac}\,c^3de - \sqrt{b^2-4ac}\,bc^2e^2\right)\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\right)\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2c^2d-bce+\sqrt{-4\left(c^2d^2-bcde+ace^2\right)c^2+\left(2c^2d-bce\right)^2}}{c^2}}}\right)}{4\left(c^3d^2-bc^2de+ac^2e^2\right)c^2} - \frac{\left(\left(2\sqrt{b^2-4ac}\,cde - \sqrt{b^2-4ac}\,be^2\right)\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\,c^2 + 4\left(c^3d^2-bc^2de+ac^2e^2\right)\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\,|c| - \left(2\sqrt{b^2-4ac}\,c^3de - \sqrt{b^2-4ac}\,bc^2e^2\right)\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\right)\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2c^2d-bce-\sqrt{-4\left(c^2d^2-bcde+ace^2\right)c^2+\left(2c^2d-bce\right)^2}}{c^2}}}\right)}{4\left(c^3d^2-bc^2de+ac^2e^2\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 4*sqrt(x*e + d) + 1/4*((2*sqrt(b^2 - 4*a*c)*c*d*e - sqrt(b^2 - 4*a*c)*b*e^2
)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^2 - 4*(c^3*d^2 - b*c^2
*d*e + a*c^2*e^2)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(c) -
 (2*sqrt(b^2 - 4*a*c)*c^3*d*e - sqrt(b^2 - 4*a*c)*b*c^2*e^2)*sqrt(-4*c^2*d
+ 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-
(2*c^2*d - b*c*e + sqrt(-4*(c^2*d^2 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b
*c*e)^2))/c^2))/((c^3*d^2 - b*c^2*d*e + a*c^2*e^2)*c^2) - 1/4*((2*sqrt(b^2
- 4*a*c)*c*d*e - sqrt(b^2 - 4*a*c)*b*e^2)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2
 - 4*a*c)*c)*e)*c^2 + 4*(c^3*d^2 - b*c^2*d*e + a*c^2*e^2)*sqrt(-4*c^2*d + 2
*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(c) - (2*sqrt(b^2 - 4*a*c)*c^3*d*e - sqr
t(b^2 - 4*a*c)*b*c^2*e^2)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))
*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d - b*c*e - sqrt(-4*(c^2*d^2
 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b*c*e)^2))/c^2))/((c^3*d^2 - b*c^2*d
*e + a*c^2*e^2)*c^2)
```

maple [B] time = 0.09, size = 724, normalized size = 2.49

$$\frac{4\sqrt{2}\,ace^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} + \frac{4\sqrt{2}\,ace^2\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} - \frac{\sqrt{2}\,b^2e^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} - \frac{\sqrt{2}\,b^2e^2\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} + \frac{\sqrt{2}\,be\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} - \frac{\sqrt{2}\,be\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} - \frac{2\sqrt{2}\,cd\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} + \frac{2\sqrt{2}\,cd\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} + 4\sqrt{ex+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x)
```

```
[Out] 4*(e*x+d)^(1/2)+4*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a
*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((
-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)
/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2+2^(1/2)/((-b*e+
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b
*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*e-2*c*2^(1/2)/((-b*e+2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+4*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^
(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/(-(4*a*c-b
^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arcta
n((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b
^2*e^2-2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d
)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*e+2*c*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a), x)
```

mupad [B] time = 2.14, size = 2611, normalized size = 8.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2),x)
```

```
[Out] 4*(d + e*x)^(1/2) + 2*atanh((128*a^2*c^3*e^4*(d + e*x)^(1/2)*(d - (e*(b^2 -
 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1
/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)
^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c
)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (8*b^4*c*e^4*(d + e*x)^(1
/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^
5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c
*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^
2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (8*b^3*
c*e^4*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c
) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^
2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d
*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^
2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (64*a*b^2*c^2*e^4*(d + e*x)^(1/2)*(d - (e*(b
^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c
)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*
a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4
*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (16*b^2*c^2*d*e^3*(b^
2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)
/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^
2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2
 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(
b^2 - 4*a*c)^(1/2)) + (32*a*b*c^2*e^4*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(
d - (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^
2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*
(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3
*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (64*a*c^3*d*
e^3*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c)
- (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*
e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e
^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*
d*e^4*(b^2 - 4*a*c)^(1/2)))*(-(b*e - 2*c*d + e*(b^2 - 4*a*c)^(1/2))/(2*c))^
(1/2) - 2*atanh((128*a^2*c^3*e^4*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2
))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2
*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*
b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64
*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (8*b^4*c*e^4*(d + e*x)^(1/2)*(d + (e*
(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a
*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 -
4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 -
 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (8*b^3*c*e^4*(b^2 -
 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2
*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 -
```

```
 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 -
4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2
 - 4*a*c)^(1/2)) - (64*a*b^2*c^2*e^4*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^
(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16
*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) +
 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2)
- 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (16*b^2*c^2*d*e^3*(b^2 - 4*a*c)^(
1/2)*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2
))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(
1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1
/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)
^(1/2)) - (32*a*b*c^2*e^4*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d + (e*(b^2
- 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(
1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c
)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (64*a*c^3*d*e^3*(b^2 - 4
*a*c)^(1/2)*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c
))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4
*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*
a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 -
 4*a*c)^(1/2)))*((2*c*d - b*e + e*(b^2 - 4*a*c)^(1/2))/(2*c))^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1423 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=175

$$-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}$$

Rubi [A] time = 0.18, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {826, 1166, 208}

$$-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*Sqrt[2]*Sqrt[c]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
 - Sqrt[b^2 - 4*a*c])*e]])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e] - (2*Sqr
t[2]*Sqrt[c]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt
[b^2 - 4*a*c])*e]])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{-2cd+be+2cx^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)$$
$$= (2c)\,\text{Subst}\left(\int \frac{1}{-\frac{1}{2}\sqrt{b^2-4ac}\,e+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right) + (2c)\,\text{Su}$$
$$= -\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}} - \frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}$$

Mathematica [A] time = 0.63, size = 165, normalized size = 0.94

$$2\sqrt{2}\sqrt{c}\left(-\frac{\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}} - \frac{\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)),x]
```

```
[Out] 2*Sqrt[2]*Sqrt[c]*(-(ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b
*e + Sqrt[b^2 - 4*a*c]*e]]/Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) - ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
]/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

IntegrateAlgebraic [A] time = 0.64, size = 173, normalized size = 0.99

$$\frac{2\sqrt{2}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}} + \frac{2\sqrt{2}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)),x]
```

```
[Out] (2*Sqrt[2]*Sqrt[c]*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e
 - Sqrt[b^2 - 4*a*c]*e]])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e] + (2*Sqr
t[2]*Sqrt[c]*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + Sqr
t[b^2 - 4*a*c]*e]])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]
```

fricas [B] time = 0.44, size = 1317, normalized size = 7.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(2)*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)
*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2
)))/(c*d^2 - b*d*e + a*e^2))*log(sqrt(2)*(2*c*d - b*e - (c*d^2 - b*d*e + a*
e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4
```

+ (b^2 + 2*a*c)*d^2*e^2)))*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt
((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 +
2*a*c)*d^2*e^2)))/(c*d^2 - b*d*e + a*e^2)) + 4*sqrt(e*x + d)*c) + 1/2*sqrt(
2)*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*
d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2
 - b*d*e + a*e^2))*log(-sqrt(2)*(2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt
((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 +
2*a*c)*d^2*e^2)))*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4
*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^
2*e^2)))/(c*d^2 - b*d*e + a*e^2)) + 4*sqrt(e*x + d)*c) - 1/2*sqrt(2)*sqrt((
2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b
*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2 - b*d*e
+ a*e^2))*log(sqrt(2)*(2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*
a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2
*e^2)))*sqrt((2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/
(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(
c*d^2 - b*d*e + a*e^2)) + 4*sqrt(e*x + d)*c) + 1/2*sqrt(2)*sqrt((2*c*d - b*
e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e -
 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2 - b*d*e + a*e^2))*
log(-sqrt(2)*(2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/
(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))*s
qrt((2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4
- 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2 - b
*d*e + a*e^2)) + 4*sqrt(e*x + d)*c)

giac [A] time = 0.30, size = 254, normalized size = 1.45

$$-\frac{2\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\,c\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2cd-be+\sqrt{(2cd-be)^2-4\left(cd^2-bde+ae^2\right)c}}{c}}}\right)}{\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e\right)|c|}-\frac{2\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4ac}\,c\right)e}\,c\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2cd-be-\sqrt{(2cd-be)^2-4\left(cd^2-bde+ae^2\right)c}}{c}}}\right)}{\left(2cd-\left(b+\sqrt{b^2-4ac}\right)e\right)|c|}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")

[Out] -2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(2*sqrt(1/2)*sq
rt(x*e + d)/sqrt(-(2*c*d - b*e + sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e +
a*e^2)*c))/c))/((2*c*d - (b - sqrt(b^2 - 4*a*c))*e)*abs(c)) - 2*sqrt(-4*c^2
d + 2(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sq
rt(-(2*c*d - b*e - sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e + a*e^2)*c))/c))
/((2*c*d - (b + sqrt(b^2 - 4*a*c))*e)*abs(c))

maple [A] time = 0.07, size = 158, normalized size = 0.90

$$-\frac{2\sqrt{2}\,c\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{2\sqrt{2}\,c\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x)

[Out] -2*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)+2*c*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(
1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)*sqrt(e*x + d)), x)
```

mupad [B] time = 2.37, size = 205, normalized size = 1.17

$$\mathrm{atan}\left(\sqrt{\frac{2\,c\,d-b\,e+e\,\sqrt{b^2-4\,a\,c}}{2\,c\,d^2-2\,b\,d\,e+2\,a\,e^2}}\,\sqrt{d+e\,x}\,1{}\mathrm{i}\right)\,\sqrt{\frac{2\,c\,d-b\,e+e\,\sqrt{b^2-4\,a\,c}}{2\,c\,d^2-2\,b\,d\,e+2\,a\,e^2}}\,2{}\mathrm{i}+\mathrm{atan}\left(\sqrt{-\frac{b\,e-2\,c\,d+e\,\sqrt{b^2-4\,a\,c}}{2\,c\,d^2-2\,b\,d\,e+2\,a\,e^2}}\,\sqrt{d+e\,x}\,1{}\mathrm{i}\right)\,\sqrt{-\frac{b\,e-2\,c\,d+e\,\sqrt{b^2-4\,a\,c}}{2\,c\,d^2-2\,b\,d\,e+2\,a\,e^2}}\,2{}\mathrm{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan(((2*c*d - b*e + e*(b^2 - 4*a*c)^(1/2))/(2*a*e^2 + 2*c*d^2 - 2*b*d*e))^
(1/2)*(d + e*x)^(1/2)*1i)*((2*c*d - b*e + e*(b^2 - 4*a*c)^(1/2))/(2*a*e^2 +
 2*c*d^2 - 2*b*d*e))^(1/2)*2i + atan((-(b*e - 2*c*d + e*(b^2 - 4*a*c)^(1/2)
)/(2*a*e^2 + 2*c*d^2 - 2*b*d*e))^(1/2)*(d + e*x)^(1/2)*1i)*(-(b*e - 2*c*d +
 e*(b^2 - 4*a*c)^(1/2))/(2*a*e^2 + 2*c*d^2 - 2*b*d*e))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1424 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=354

$$\frac{\sqrt{2}\sqrt{c}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(d\sqrt{b^2-4ac}+2ae\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}-2a\right.\right.}{\sqrt{b^2-4ac}\sqrt{2c}}$$

Rubi [A] time = 0.70, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {828, 826, 1166, 208}

$$\frac{\sqrt{2}\sqrt{c}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(d\sqrt{b^2-4ac}+2ae\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\left(ae^2-bde+cd^2\right)}+\frac{2(2cd-be)}{\sqrt{d+ex}\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]) + (Sqrt[2]*Sqrt[c
]*(b*(b + Sqrt[b^2 - 4*a*c])*e - 2*c*(Sqrt[b^2 - 4*a*c]*d + 2*a*e))*ArcTanh
[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/
(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e +
 a*e^2)) - (Sqrt[2]*Sqrt[c]*(b*(b - Sqrt[b^2 - 4*a*c])*e + 2*c*(Sqrt[b^2 -
4*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4
*a*c])*e]*(c*d^2 - b*d*e + a*e^2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)}\,dx = \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{\int \frac{bcd-b^2e+2ace+c(2cd-be)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{2\,\text{Subst}\left(\int \frac{-cd(2cd-be)+e\left(bcd-b^2e+2ace\right)+c(2cd-be)x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4} \cdots\right.}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{\left(2\left(\frac{1}{2}c(2cd-be) - \frac{-c(2cd-be)(-2cd+be)+2c\left(-cd(2cd- \cdots\right.}{2\sqrt{b^2-4ac}\,e \cdots}\right.\right.}{\cdots}$$

$$= \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{\sqrt{2}\sqrt{c}\left(b\left(b+\sqrt{b^2-4ac}\right)e-2c\left(\sqrt{b^2-4ac}\,\cdots\right.\right.}{\sqrt{b^2-4ac}\sqrt{2cd-\left(b-\sqrt{b^2-4\cdots}\right.}}$$

Mathematica [A] time = 0.50, size = 317, normalized size = 0.90

$$\frac{2\left(\frac{\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}+2ae\right)-be\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}+\frac{be-2cd}{\sqrt{d+ex}}\right)}{e(bd-ae)-cd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*((-2*c*d + b*e)/Sqrt[d + e*x] + (Sqrt[c]*(-(b*(b + Sqrt[b^2 - 4*a*c])*e)
 + 2*c*(Sqrt[b^2 - 4*a*c]*d + 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x
])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqr
t[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) + (Sqrt[c]*(b*(b - Sqrt[b^2 - 4*a*c]
)*e + 2*c*(Sqrt[b^2 - 4*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*
Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])))/(-(c*d^2) + e*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 1.26, size = 416, normalized size = 1.18

$$-\frac{\left(2\sqrt{2}c^{3/2}d\sqrt{b^2-4ac}-\sqrt{2}b\sqrt{c}e\sqrt{b^2-4ac}+4\sqrt{2}ac^{3/2}e-\sqrt{2}b^2\sqrt{c}e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{b^2-4ac}\sqrt{-e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)}-\frac{\left(2\sqrt{2}c^{3/2}d\sqrt{b^2-4ac}-\sqrt{2}b\sqrt{c}e\sqrt{b^2-4ac}-4\sqrt{2}ac^{3/2}e+\sqrt{2}b^2\sqrt{c}e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{b^2-4ac}\sqrt{e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)}+\frac{2(2cd-be)}{\sqrt{d+ex}\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]) - ((2*Sqrt[2]*c^(
3/2)*Sqrt[b^2 - 4*a*c]*d - Sqrt[2]*b^2*Sqrt[c]*e + 4*Sqrt[2]*a*c^(3/2)*e -
Sqrt[2]*b*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x
])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*
d + b*e - Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)) - ((2*Sqrt[2]*c^
(3/2)*Sqrt[b^2 - 4*a*c]*d + Sqrt[2]*b^2*Sqrt[c]*e - 4*Sqrt[2]*a*c^(3/2)*e -
 Sqrt[2]*b*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*
```

```
x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[-2*c
*d + b*e + Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2))
```

fricas [B] time = 0.72, size = 8557, normalized size = 24.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sq
rt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)
*e^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^
2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(
b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^
2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^
3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6
*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^
2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^
4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*
b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10
*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*
a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6
 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b
^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(sqrt(2)*(6*c^4*d^4
- 12*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d
*e^3 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 - (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3
*b*e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 +
(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3
*a^2*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^
3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 -
 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2
*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^
12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3
+ 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 +
10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^
6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a
^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4
*b^2 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*
a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e
^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b
^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*
a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^
5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 -
 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3
*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(
b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2
*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6
- 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2
*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 +
 2*a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 +
3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2
*e^4)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d))
 - sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sqrt
((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e
^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)
*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^
2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2
- 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)
*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b
```

```
*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2
- 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)
*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^
4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a
^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^
3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6 -
 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3
 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(-sqrt(2)*(6*c^4*d^4 -
 12*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d*
e^3 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 - (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*
b*e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (
b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*
a^2*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3
 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 -
6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*
c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^1
2 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 +
 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 1
0*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6
*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^
3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*
b^2 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a
*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^
5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^
2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a
*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5
*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 -
4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*
(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b
^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*
b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 -
 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*
c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 +
2*a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3
*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*
e^4)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d))
+ sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sqrt(
(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^
3 - (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*
d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2
*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 -
 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*
d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*
c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 -
 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*
d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4
*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^
3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3
*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6 -
3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3
+ 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(sqrt(2)*(6*c^4*d^4 - 1
2*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d*e^
3 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 + (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*
e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^
4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^
2*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 -
 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*
(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^
2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12
```

+ 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 1
5*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*
a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e
^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*
b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^
2 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c
^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5
+ a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2
+ a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b
*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c
 - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*
a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5
*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4
*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*
c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6
*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c
+ a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*
a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(
b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^
4)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d)) -
sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sqrt((2
*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3
- (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^
4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2*c
^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 2
2*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*
e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^
5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 1
0*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^
8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c
 + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*
b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b
^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*
b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 +
6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(-sqrt(2)*(6*c^4*d^4 - 12
*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d*e^3
 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 + (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e
^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4
 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2
*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 -
4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(
b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2
 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 +
 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15
*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a
^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^
6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b
^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2
 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^
2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 +
 a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 +
 a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*
c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c
- 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a
^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*
b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*
c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c
^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*
(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c +

```
 a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a
^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b
^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4
)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d)) + 4
*(2*c*d - b*e)*sqrt(e*x + d))/(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e
^2 + a*e^3)*x)
```

giac [B] time = 1.00, size = 1366, normalized size = 3.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2*(2*c*d - b*e)/((c*d^2 - b*d*e + a*e^2)*sqrt(x*e + d)) + 1/4*((c*d^2*e - b
*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(2*sqrt(
b^2 - 4*a*c)*c*d - sqrt(b^2 - 4*a*c)*b*e) - 2*(2*c^3*d^4 - 4*b*c^2*d^3*e +
3*b^2*c*d^2*e^2 - b^3*d*e^3 + (a*b^2 - 2*a^2*c)*e^4)*sqrt(-4*c^2*d + 2*(b*c
 - sqrt(b^2 - 4*a*c)*c)*e)*abs(c*d^2*e - b*d*e^2 + a*e^3) + (2*sqrt(b^2 - 4
*a*c)*c^3*d^5*e^2 - 5*sqrt(b^2 - 4*a*c)*b*c^2*d^4*e^3 + 4*(b^2*c + a*c^2)*s
qrt(b^2 - 4*a*c)*d^3*e^4 - sqrt(b^2 - 4*a*c)*a^2*b*e^7 - (b^3 + 6*a*b*c)*sq
rt(b^2 - 4*a*c)*d^2*e^5 + 2*(a*b^2 + a^2*c)*sqrt(b^2 - 4*a*c)*d*e^6)*sqrt(-
4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d
)/sqrt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3 + sqrt
((2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)^2 - 4*(c^2*d
^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*(c^
2*d^2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*e + a*c*e^2)))/((c^3*d^6 - 3*
b*c^2*d^5*e + 3*(b^2*c + a*c^2)*d^4*e^2 - 3*a^2*b*d*e^5 - (b^3 + 6*a*b*c)*d
^3*e^3 + a^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^4)*abs(c*d^2*e - b*d*e^2 + a*e^3
)*abs(c)) - 1/4*((c*d^2*e - b*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d + 2*(b*c + sqr
t(b^2 - 4*a*c)*c)*e)*(2*sqrt(b^2 - 4*a*c)*c*d - sqrt(b^2 - 4*a*c)*b*e) + 2*
(2*c^3*d^4 - 4*b*c^2*d^3*e + 3*b^2*c*d^2*e^2 - b^3*d*e^3 + (a*b^2 - 2*a^2*c
)*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(c*d^2*e - b*d*e
^2 + a*e^3) + (2*sqrt(b^2 - 4*a*c)*c^3*d^5*e^2 - 5*sqrt(b^2 - 4*a*c)*b*c^2*
d^4*e^3 + 4*(b^2*c + a*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^4 - sqrt(b^2 - 4*a*c)*a
^2*b*e^7 - (b^3 + 6*a*b*c)*sqrt(b^2 - 4*a*c)*d^2*e^5 + 2*(a*b^2 + a^2*c)*sq
rt(b^2 - 4*a*c)*d*e^6)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*ar
ctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 +
 2*a*c*d*e^2 - a*b*e^3 - sqrt((2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*
d*e^2 - a*b*e^3)^2 - 4*(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2
 - 2*a*b*d*e^3 + a^2*e^4)*(c^2*d^2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*
e + a*c*e^2)))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*(b^2*c + a*c^2)*d^4*e^2 - 3*a^
2*b*d*e^5 - (b^3 + 6*a*b*c)*d^3*e^3 + a^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^4)*
abs(c*d^2*e - b*d*e^2 + a*e^3)*abs(c))
```

maple [B] time = 0.11, size = 927, normalized size = 2.62

$$-\frac{4\sqrt{2}\,a c^2 e^2 \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}-\frac{4\sqrt{2}\,a c^2 e^2 \arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{\sqrt{2}\,b^2 c e^2 \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{\sqrt{2}\,b^2 c e^2 \arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{\sqrt{2}\,bce \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}-\frac{\sqrt{2}\,bce \arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}-\frac{2\sqrt{2}\,c^2 d \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{2\sqrt{2}\,c^2 d \arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}-\frac{2be}{\left(a e^2-bde+c d^2\right)\sqrt{ex+d}}+\frac{4cd}{\left(a e^2-bde+c d^2\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x)
```

```
[Out] -4/(a*e^2-b*d*e+c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-
(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2+1/(a*e^2-b*d*e+c*d^2)*c/(-(4*a
*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*b^2*e^2+1/(a*e^2-b*d*e+c*d^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*c)*b*e-2/(a*e^2-b*d*e+c*d^2)*c^2*2^(1/2)/((-b*e+2*c*d
```

```
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-4/(a*e^2-b*d*e+c*d^2)*c^2/(-(4*
a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)
*c)*a*e^2+1/(a*e^2-b*d*e+c*d^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2
*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2-1/(a*e^2-b*d*e+c*d^2)*c*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)
*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*e+2/(a*e^2-b*d
*e+c*d^2)*c^2*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-
2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)*b*e+4/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)
*c*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)*(e*x + d)^(3/2)), x)
```

mupad [B] time = 9.40, size = 33147, normalized size = 93.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x)
```

```
[Out] (4*c*d - 2*b*e + 2^(1/2)*a*e^2*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2
*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*
c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2)
 - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*
b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b
*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9
*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128
*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^
7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b
^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2
*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*
b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*
d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e
^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 -
2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*
c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2
 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3
*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^
4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d
^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*
a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d
^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 +
192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*
d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3
*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e -
3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)
^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^
2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a
*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13
```

+ 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c
^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e
^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*
b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6
*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5
*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^
3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 2
00*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 60
0*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*
b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^
4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*
b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 +
432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8
- 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*
e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 -
576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112
*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3
*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^
3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 -
4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 +
3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e
^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4
+ 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b
*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 6
4*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6
*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*
b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e
^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2
*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9
+ 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48
*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*
b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 +
b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6
*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1
/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3
*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^
2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64
*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*
e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16
*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*
d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2
^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 -
a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^
2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3
*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*
d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3
))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^
4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 +
640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*
c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*
e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1
680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9
- 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^
4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c
^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*
d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*
e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*
e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^
12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*

c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b
^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a
*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c
^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d
^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e
^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11
))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b
^8*c^2*d*e^8 - 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 19
2*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*
d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 -
56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) + 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^
(1/2) + 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 192*a^3*c^6*d^2*e^7*(b^2 -
4*a*c)^(1/2) + 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 144*b^3*c^6*d^5*e^
4*(b^2 - 4*a*c)^(1/2) + 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 128*b^5*c
^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1
536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 + 8*
a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) - 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) -
8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^
6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*
d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d
*e^8 + 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) + 16*a*b^5*c^3*d*e^8*(b^2 -
4*a*c)^(1/2) - 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) - 752*a*b^2*c^6*d^4*
e^5*(b^2 - 4*a*c)^(1/2) + 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 192*a
*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^
(1/2) + 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) - 48*a^2*b^2*c^5*d^2*e^7*
(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2)
- 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e
- 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a
*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4
*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e -
6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i + 2^(1/2)*a*e^2*atan(-((2^(1/2)*
(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^
3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c
^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 +
c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4
+ 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2
)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10
+ 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2
*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^
5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*
a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 25
6*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3
*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d
^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e
^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b
*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^
2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/
2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c
*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12
+ 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4
*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*
e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*
b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2
e^3(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*
c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2)
+ 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*
b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b
*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*

d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320
*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*
d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4
+ 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^
2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b
^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a
^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1
200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3
+ 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 2
08*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240
*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a
^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 -
1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^
10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^
2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^
11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6
+ 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768
*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^
4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 -
2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^
3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d
^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)
^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^
2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2
+ 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c
^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*
d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^
7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5
+ 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384
*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/
2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c
e^3(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 -
3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6
+ c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*
e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(
1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2
*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8
- 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^
4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*
e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 -
4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 +
3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e
^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4
+ 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b
*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 3
2*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9
*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 1
6*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^
5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 +
2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e
^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d
^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*
c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*
c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3
*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d
^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2
*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^

3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e^8 + 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 + 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) - 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) - 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 144*b^3*c^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 - 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) + 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 - 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/2) + 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) + 752*a*b^2*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) + 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i + 2^(1/2)*c*d^2*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2

)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^1
2 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^
4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^1
0*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 5
6*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2
*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a
^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 +
 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*
e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5
 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1
440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 4
0*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2
 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4
*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*
d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*
d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*
e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8
 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32
*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1
i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*
b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b
^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1
/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*
c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*
a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*
d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 8
8*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^
6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*
c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6
*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7
 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128
*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*
c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*
c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(
b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*
a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2
*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a
^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d
^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 +
 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c
^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 -
 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^
3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d
^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^
(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^
3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^
8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*
b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^
6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6
*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d
^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*
c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a
*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5
*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^
7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^
2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b

^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e^8 - 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 - 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) + 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) + 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 144*b^3*c^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) + 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 + 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) - 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 + 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) + 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/2) - 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) - 752*a*b^2*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) - 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i + 2^(1/2)*c*d^2*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^

5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b *c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c ^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e ^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^ 2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 24 0*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3 *e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9 *e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^ 8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d ^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^ 5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2 *c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7* d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5* e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 1 76*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^ 3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2 *d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2 *d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d* e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^ 8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^ 2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e ^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7* c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^ 4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c ^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4 *e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c ^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^ (1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^ 3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e ^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10 *e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2 *c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2* e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192 *b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4 *e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a* b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b ^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1 /2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b* c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7* d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6 *c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^ 7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^ 3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b ^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200* a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a *b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7 *c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b *c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2

*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432
*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 -
576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^1
0 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 57
6*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*
b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*
c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c
^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*
e^8 - 8*b^8*c^2*d*e^8 + 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3
*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48
*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d
^2*e^7 + 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) - 112*a^3*b^2*c^4*e^9*(b^2
- 4*a*c)^(1/2) - 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 192*a^3*c^6*d^2*e
^7*(b^2 - 4*a*c)^(1/2) - 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 144*b^3*c
^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) +
128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^
(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d
*e^8 - 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) + 192*a*c^8*d^6*e^3*(b^2 - 4*a*c
)^(1/2) + 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960
*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a
^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*
b^2*c^5*d*e^8 - 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*b^5*c^3*d*e^
8*(b^2 - 4*a*c)^(1/2) + 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) + 752*a*b^2
*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2
) + 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 128*a^2*b*c^6*d^3*e^6*(b^2
- 4*a*c)^(1/2) - 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) + 48*a^2*b^2*c^5
*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*
c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*
c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(
b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*
a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2
*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i - 2^(1/2)*b*d*e*atan(-(
(2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3
 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*
e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a
^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*
c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e
^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4
*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8
 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c
^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e
^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2
*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 -
256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*
b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^
3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2
) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2
*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4
*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d
^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e
- 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*
c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6
- 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3
*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*
e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*
d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/
2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a
*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e
^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2

- 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(
64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e
^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320
*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6
*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 -
8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 +
240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10
+ 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2
*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*
d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^
6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e
^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^1
2 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*
d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c
^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b
^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b
*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5
*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*
e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11
+ 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(
b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(
b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*
d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3
*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 +
3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(
(d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 +
48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^
8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 -
40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2
*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a
*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^
6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*
e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9)
- (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*
e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c
*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))
/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a
^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^
3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 4
8*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^
6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3
- 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7
*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^
3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2
*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) -
3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2
*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*
e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^1
1*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^
2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3
*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 2
40*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d
^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*
c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*
b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200
*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 7
20*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*
a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^
3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*

b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 10
56*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10
+ 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e
^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11
+ 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 9
6*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^
2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b
*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^
4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e^8 - 64*a^4*c^5*e^9*(b^2 - 4
*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^
4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^
6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 - 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2)
+ 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) + 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*
c)^(1/2) + 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 48*b^2*c^7*d^6*e^3*(b^
2 - 4*a*c)^(1/2) - 144*b^3*c^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) + 184*b^4*c^5*d^
4*e^5*(b^2 - 4*a*c)^(1/2) - 128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 48*b^
6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*
c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 + 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) - 19
2*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) +
384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 33
6*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*
a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 + 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*
c)^(1/2) + 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/2) - 192*a^3*b*c^5*d*e^8*(b^
2 - 4*a*c)^(1/2) - 752*a*b^2*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 544*a*b^3*c^
5*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) -
128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 112*a^2*b^3*c^4*d*e^8*(b^2 - 4
*a*c)^(1/2) - 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c
^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^
(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 -
4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^
3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e
^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2
)*1i - 2^(1/2)*b*d*e*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2
- 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2
+ 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d
e^2(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^
4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3
*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 -
64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d
^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 10
4*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3
*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d
^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^
9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 +
48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^
2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3
- b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) +
6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^
(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 +
3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*
a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 -
64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^
8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 -
16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^
5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 -
(2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3
+ a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*
e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a
^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*

c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a

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^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1
248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^
8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3
*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9
*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5
 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 3
2*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^
3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/
2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e
^8 + 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*
c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 +
120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 + 56*a^2*b^4
*c^3*e^9*(b^2 - 4*a*c)^(1/2) - 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) - 64
*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1
/2) - 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 144*b^3*c^6*d^5*e^4*(b^2 - 4
*a*c)^(1/2) - 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 128*b^5*c^4*d^3*e^6
*(b^2 - 4*a*c)^(1/2) - 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^
2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 - 8*a*b^6*c^2*
e^9*(b^2 - 4*a*c)^(1/2) + 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 8*b^7*c^2
*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5
+ 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 +
144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 - 576
*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/
2) + 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) + 752*a*b^2*c^6*d^4*e^5*(b^2 -
 4*a*c)^(1/2) - 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 192*a*b^4*c^4*d
^2*e^7*(b^2 - 4*a*c)^(1/2) + 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 11
2*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) + 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a
*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*
e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c
*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))
/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a
^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^
3*e^3))^(1/2)*(d + e*x)^(1/2)*1i)/((d + e*x)^(1/2)*(a*e^2 + c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(3/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1425 $\int \frac{b+2cx}{(d+ex)^{5/2}(a+bx+cx^2)}\,dx$

Optimal. Leaf size=518

$$\frac{2\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\sqrt{d+ex}\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{2}\sqrt{c}\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2ab\right.\right.}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4a\right.}}}$$

Rubi [A] time = 1.90, antiderivative size = 518, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {828, 826, 1166, 208}

$$\frac{2\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\sqrt{d+ex}\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{2}\sqrt{c}\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)^2}+\frac{\sqrt{2}\sqrt{c}\left(-2c^2d\left(d\sqrt{b^2-4ac}-4ae\right)-2ce\left(-bd\sqrt{b^2-4ac}-ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\left(ae^2-bde+cd^2\right)^2}+\frac{2(2cd-be)}{3(d+ex)^{3/2}\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(2*c*d - b*e))/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(3/2)) + (2*(2*c^2*d
^2 + b^2*e^2 - 2*c*e*(b*d + a*e)))/((c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]
) - (Sqrt[2]*Sqrt[c]*(b^2*(b + Sqrt[b^2 - 4*a*c])*e^2 + 2*c^2*d*(Sqrt[b^2 -
 4*a*c]*d + 4*a*e) - 2*c*e*(b^2*d + b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e + a*Sqr
t[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
- Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4
*a*c])*e]*(c*d^2 - b*d*e + a*e^2)^2) + (Sqrt[2]*Sqrt[c]*(b^2*(b - Sqrt[b^2
- 4*a*c])*e^2 - 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d - 4*a*e) - 2*c*e*(b^2*d - b*Sq
rt[b^2 - 4*a*c]*d + 2*a*b*e - a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt
[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 - 4*
a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
```

```
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{5/2}\left(a+bx+cx^2\right)}\,dx = \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{\int \frac{bcd-b^2e+2ace+c(2cd-be)x}{(d+ex)^{3/2}\left(a+bx+cx^2\right)}\,dx}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} + \frac{\int \frac{-2b^2cde+4\ldots}{\ldots}}{\ldots}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} + \frac{2\,\mathrm{Subst}\left(\int \ldots\right.}{\ldots}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\left(c\left(b^2\left(b-\ldots\right.\right.\right.}{\ldots}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\sqrt{2}\sqrt{c}\left(b^2\ldots\right.}{\ldots}$$

Mathematica [A] time = 1.67, size = 481, normalized size = 0.93

$$\frac{2\left(\frac{-6ce(ae+bd)+3b^2e^2+6c^2d^2}{\sqrt{d+ex}\left(e(ae-bd)+cd^2\right)}-\frac{3\sqrt{c}\left(\frac{\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}-\frac{\left(2c^2d\left(d\sqrt{b^2-4ac}-4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}-2abe+b^2(-d)\right)+b^2e^2\left(\sqrt{b^2-4ac}-b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\left(e(bd-ae)-cd^2\right)}+\frac{2cd-be}{(d+ex)^{3/2}}\right)}{3\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*((2*c*d - b*e)/(d + e*x)^(3/2) + (6*c^2*d^2 + 3*b^2*e^2 - 6*c*e*(b*d + a
*e))/((c*d^2 + e*(-(b*d) + a*e))*Sqrt[d + e*x]) - (3*Sqrt[c]*(-(((b^2*(b +
Sqrt[b^2 - 4*a*c])*e^2 + 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d + 4*a*e) - 2*c*e*(b^2
*d + b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e + a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqr
t[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/Sqrt[
2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) - ((b^2*(-b + Sqrt[b^2 - 4*a*c])*e^2 +
 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d - 4*a*e) - 2*c*e*(-(b^2*d) + b*Sqrt[b^2 - 4*a
*c]*d - 2*a*b*e + a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
 e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/Sqrt[2*c*d - (b + Sqrt[b^2
 - 4*a*c])*e]))/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*(-(c*d^2) + e*(b*d - a*e)))))/(3
*(c*d^2 + e*(-(b*d) + a*e)))
```

IntegrateAlgebraic [A] time = 2.29, size = 690, normalized size = 1.33

$$\frac{2\left(-abe^3-6ace^2(d+ex)+2acde^2+3b^2e^2(d+ex)+b^2de^2-3bcd^2e-6bcde(d+ex)+2c^2d^3+6c^2d^2(d+ex)\right)}{3(d+ex)^{3/2}\left(ae^2-bde+cd^2\right)^2}+\frac{\left(2\sqrt{2}c^{5/2}d^2\sqrt{b^2-4ac}-2\sqrt{2}bc^{3/2}de\sqrt{b^2-4ac}-2\sqrt{2}ac^{3/2}e^2\sqrt{b^2-4ac}+\sqrt{2}b^2\sqrt{c}e^2\sqrt{b^2-4ac}-4\sqrt{2}abc^{3/2}e^2+8\sqrt{2}ac^{5/2}de+\sqrt{2}b^3\sqrt{c}e^2-2\sqrt{2}b^2c^{3/2}de\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{b^2-4ac}\sqrt{-e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)^2}+\frac{\left(2\sqrt{2}c^{5/2}d^2\sqrt{b^2-4ac}-2\sqrt{2}bc^{3/2}de\sqrt{b^2-4ac}-2\sqrt{2}ac^{3/2}e^2\sqrt{b^2-4ac}+\sqrt{2}b^2\sqrt{c}e^2\sqrt{b^2-4ac}+4\sqrt{2}abc^{3/2}e^2-8\sqrt{2}ac^{5/2}de-\sqrt{2}b^3\sqrt{c}e^2+2\sqrt{2}b^2c^{3/2}de\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{b^2-4ac}\sqrt{e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3 + 6*c^2*d^2
*(d + e*x) - 6*b*c*d*e*(d + e*x) + 3*b^2*e^2*(d + e*x) - 6*a*c*e^2*(d + e*x
)))/(3*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(3/2)) + ((2*Sqrt[2]*c^(5/2)*Sqr
t[b^2 - 4*a*c]*d^2 - 2*Sqrt[2]*b^2*c^(3/2)*d*e + 8*Sqrt[2]*a*c^(5/2)*d*e -
2*Sqrt[2]*b*c^(3/2)*Sqrt[b^2 - 4*a*c]*d*e + Sqrt[2]*b^3*Sqrt[c]*e^2 - 4*Sqr
t[2]*a*b*c^(3/2)*e^2 + Sqrt[2]*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^2 - 2*Sqrt[2
]*a*c^(3/2)*Sqrt[b^2 - 4*a*c]*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/S
qrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d +
b*e - Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)^2) + ((2*Sqrt[2]*c^(5
/2)*Sqrt[b^2 - 4*a*c]*d^2 + 2*Sqrt[2]*b^2*c^(3/2)*d*e - 8*Sqrt[2]*a*c^(5/2)
*d*e - 2*Sqrt[2]*b*c^(3/2)*Sqrt[b^2 - 4*a*c]*d*e - Sqrt[2]*b^3*Sqrt[c]*e^2
+ 4*Sqrt[2]*a*b*c^(3/2)*e^2 + Sqrt[2]*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^2 - 2
*Sqrt[2]*a*c^(3/2)*Sqrt[b^2 - 4*a*c]*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d +
e*x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[-2
*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 4.00, size = 1255, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*
sqrt(x*e + d)/sqrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*
d^3*e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a
^2*b*e^5 + sqrt((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*
e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b
*e^5)^2 - 4*(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 -
b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b
*d*e^5 + a^3*e^6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^
2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 +
 2*a*c^2*d^2*e^2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/((2*c^3*d^3 - 3*(b*c^2 - sq
rt(b^2 - 4*a*c)*c^2)*d^2*e + 3*(b^2*c - 2*a*c^2 - sqrt(b^2 - 4*a*c)*b*c)*d*
e^2 - (b^3 - 3*a*b*c - (b^2 - a*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) - 2*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*sqrt(x*
e + d)/sqrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2
 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^
5 - sqrt((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b
^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)^2
 - 4*(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3
*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5
+ a^3*e^6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^2 - 2*a
*b*c*d*e^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^
2*d^2*e^2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/((2*c^3*d^3 - 3*(b*c^2 + sqrt(b^2
- 4*a*c)*c^2)*d^2*e + 3*(b^2*c - 2*a*c^2 + sqrt(b^2 - 4*a*c)*b*c)*d*e^2 - (
b^3 - 3*a*b*c + (b^2 - a*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) + 2/3*(6*(x*e +
 d)*c^2*d^2 + 2*c^2*d^3 - 6*(x*e + d)*b*c*d*e - 3*b*c*d^2*e + 3*(x*e + d)*b
^2*e^2 - 6*(x*e + d)*a*c*e^2 + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)/((c^2*d^4
```

```
 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*(x*e
+ d)^(3/2))
```

maple [B] time = 0.14, size = 1962, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x)
```

```
[Out] 4/(a*e^2-b*d*e+c*d^2)^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(
-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b*e^3-8/(a*e^2-b*d*e+c*d^2)^2*c^3
/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))
*c)^(1/2)*c)*a*d*e^2-1/(a*e^2-b*d*e+c*d^2)^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(
1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*
2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3+2/(a*e^2
-b*d*e+c*d^2)^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a
*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*e^2+2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/(a*e^2-b*d
*e+c*d^2)^2*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arcta
nh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
*b^2*e^2+2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b*d*e-2/(a*e^2-b*d*e+c*d^2)^2*c^3*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e
+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2+4/(a*e^2-b*d*e+c*d^2)^2*c^
2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*c)*a*b*e^3-8/(a*e^2-b*d*e+c*d^2)^2*c^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(
1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^
(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*d*e^2-1/(a*e^2-b*
d*e+c*d^2)^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e
^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3+2/(a*e^2-b*d*e+c*d^2)^2*c^2/(-(4*a*c-b^2)*e
^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*
x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*
e^2-2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2
))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/
2))*c)^(1/2)*c)*a*e^2+1/(a*e^2-b*d*e+c*d^2)^2*c*2^(1/2)/((b*e-2*c*d+(-(4*a*
c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a
*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2-2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/2)
/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2
)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d*e+2/(a*e^2-b*d*e+c*
d^2)^2*c^3*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e
*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-2
/3/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3/2)*b*e+4/3/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3
/2)*c*d-4/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*a*c*e^2+2/(a*e^2-b*d*e+c*d^2)
^2/(e*x+d)^(1/2)*b^2*e^2-4/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*b*c*d*e+4/(a
*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*c^2*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{\left(cx^2 + bx + a\right)(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)*(e*x + d)^(5/2)), x)
```

mupad [B] time = 11.38, size = 50695, normalized size = 97.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan((((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e
^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2)
- 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e -
 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2
- 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4
*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b
^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4
*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e
^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e
^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*
c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c
^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4
 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-
(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a
*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*
c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*
d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^
(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/
2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4
*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*
c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a
^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e
^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^
3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2
*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^1
1*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19
*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^1
3*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^
7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e
^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5
 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 +
3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 -
96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6
- 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*
c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 -
23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c
^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187
200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^
7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 1
9200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^
7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 3427
20*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5
*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a
^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^1
0*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*
a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^1
8 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*
b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 +
 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^
```

5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a
^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^
19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^
4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2
*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 652
8*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 -
 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^
11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^
12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360
*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15
 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^
22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4*e^2
1 - 64*a*c^14*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*
b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^1
1*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8
*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^1
9*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*
e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8
 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11
 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6
 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5
*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 +
 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*
d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a
^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*
e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^
8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27
104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7
*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*
a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17
 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^
6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232
*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^
14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*
c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312
*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e
^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*
c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^
3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 47
04*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10
 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*
e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*
d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^
6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160
*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 62
4*a^9*b^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^1
6*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280
*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096
*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*
c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c
^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d
^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12
 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c
^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320
*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13
 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*
c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 1136
0*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^
14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*

c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*1i - ((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^19*e^2 - (d + e*x)^(1/2)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10* e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*

b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8
*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d +
e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*
a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4
*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*
c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*
d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^
11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^1
0 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6
+ 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c
^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a
^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14
+ 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^
8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976
*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15
 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c
^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a
^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12
 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^
5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a
^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16
+ 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e
^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^
10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d
^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^1
1*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b
^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^
7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^
5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e
^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*
e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*
a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 -
4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*
a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(
b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c
^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8
 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d
^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a
^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a
^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c
*d^4*e^6)))^(1/2)*1i)/(128*a^8*c^7*e^16 - ((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5
*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^
4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e
^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a
*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4
*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a
*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b
^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^
5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8
+ 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^
6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^
4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^
3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*
d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^19
*e^2 - (d + e*x)^(1/2)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2)
 + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2
 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 +
 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c
^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*

c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b

^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - ((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4

*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(
b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2
 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^
3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d
e^4(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d
^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d
^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*
b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a
*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6
*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2
)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 +
20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*
b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^
4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a
*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)
^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 -
4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2
 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 +
5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 +
10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d
^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^
7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30
*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32
*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*
d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10
*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^
7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^
21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18
*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^
8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^1
1 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*
e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*
b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^1
1 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^
10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 -
 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^
5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13
 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^
2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 +
342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6
*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 16
80*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7
*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13
440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5
*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*
a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^
18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^
3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 9
60*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^
4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^
2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a
*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 -
 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e
^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^
4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*
b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 8
7360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*
e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*
d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4

*e^21 - 64*a*c^14*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17)

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)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 +
20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*
b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^
4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a
*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)
^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 -
4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2
 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 +
5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 +
10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d
^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^
7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30
*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - 128*a*c^14*d^14*e^2 +
16*a^6*b^4*c^5*e^16 - 96*a^7*b^2*c^6*e^16 - 640*a^2*c^13*d^12*e^4 - 1152*a^
3*c^12*d^10*e^6 - 640*a^4*c^11*d^8*e^8 + 640*a^5*c^10*d^6*e^10 + 1152*a^6*c
^9*d^4*e^12 + 640*a^7*c^8*d^2*e^14 + 32*b^2*c^13*d^14*e^2 - 224*b^3*c^12*d^
13*e^3 + 688*b^4*c^11*d^12*e^4 - 1216*b^5*c^10*d^11*e^5 + 1360*b^6*c^9*d^10
*e^6 - 992*b^7*c^8*d^9*e^7 + 464*b^8*c^7*d^8*e^8 - 128*b^9*c^6*d^7*e^9 + 16
*b^10*c^5*d^6*e^10 - 9696*a^2*b^2*c^11*d^10*e^6 + 13280*a^2*b^3*c^10*d^9*e^
7 - 10320*a^2*b^4*c^9*d^8*e^8 + 3840*a^2*b^5*c^8*d^7*e^9 + 320*a^2*b^6*c^7*
d^6*e^10 - 864*a^2*b^7*c^6*d^5*e^11 + 240*a^2*b^8*c^5*d^4*e^12 - 12320*a^3*
b^2*c^10*d^8*e^8 + 14720*a^3*b^3*c^9*d^7*e^9 - 10240*a^3*b^4*c^8*d^6*e^10 +
 3392*a^3*b^5*c^7*d^5*e^11 + 160*a^3*b^6*c^6*d^4*e^12 - 320*a^3*b^7*c^5*d^3
*e^13 - 5280*a^4*b^2*c^9*d^6*e^10 + 6880*a^4*b^3*c^8*d^5*e^11 - 4720*a^4*b^
4*c^7*d^4*e^12 + 960*a^4*b^5*c^6*d^3*e^13 + 240*a^4*b^6*c^5*d^2*e^14 + 672*
a^5*b^2*c^8*d^4*e^12 + 1856*a^5*b^3*c^7*d^3*e^13 - 1152*a^5*b^4*c^6*d^2*e^1
4 + 608*a^6*b^2*c^7*d^2*e^14 + 896*a*b*c^13*d^13*e^3 - 640*a^7*b*c^7*d*e^15
 - 2592*a*b^2*c^12*d^12*e^4 + 3904*a*b^3*c^11*d^11*e^5 - 2944*a*b^4*c^10*d^
10*e^6 + 288*a*b^5*c^9*d^9*e^7 + 1504*a*b^6*c^8*d^8*e^8 - 1408*a*b^7*c^7*d^
7*e^9 + 576*a*b^8*c^6*d^6*e^10 - 96*a*b^9*c^5*d^5*e^11 + 3840*a^2*b*c^12*d^
11*e^5 + 5760*a^3*b*c^11*d^9*e^7 + 2560*a^4*b*c^10*d^7*e^9 - 1920*a^5*b*c^9
*d^5*e^11 - 96*a^5*b^5*c^5*d*e^15 - 2304*a^6*b*c^8*d^3*e^13 + 544*a^6*b^3*c
^6*d*e^15))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*
c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(
1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^
4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*
(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^
2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e
^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*
d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*
d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*
d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10
*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*
a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^
6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*2i - ((2*(b*e
 - 2*c*d))/(3*(a*e^2 + c*d^2 - b*d*e)) - (2*(d + e*x)*(b^2*e^2 + 2*c^2*d^2 -
 2*a*c*e^2 - 2*b*c*d*e))/(a*e^2 + c*d^2 - b*d*e)^2)/(d + e*x)^(3/2) + atan(
((((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 2
0*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b
^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4
*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^
(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4
*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2
- 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5
*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 1
0*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^
8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7
*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*
```

a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*((2*c^5*
d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^
3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3
*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 +
 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) -
 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30
*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2
) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(
1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8
*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*
d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10
*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*
a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*
d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3
*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 +
2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10
+ 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16
+ 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 16
8*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320
*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^
9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12
*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160
*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^1
4*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a
^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*
e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3
*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*
e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^
3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16
+ 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*
b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^
14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*
c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13
+ 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6
*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198
240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5
*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a
^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e
^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*
c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 24
00*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e
^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d
^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5
*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*
a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12
 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18
*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*
c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 2688
0*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 96
0*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4*e^21 - 64*
a*c^14*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3
*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*
e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^
14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 -
 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3
200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704
*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b
^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 2576
0*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^

12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d

^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*
b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a
*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d
^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*1i - (((2*c^5*d^5 - b^5*e^5 + b^4*e^
5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e
^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*
e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*
a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 -
4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*
a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(
b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c
^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8
 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d
^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a
^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a
^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c
*d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^1
9*e^2 - (d + e*x)^(1/2)*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2)
 - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2
 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 -
 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c
^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*
c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*
a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) +
10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5
 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 -
10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d
^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*
d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a
*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64
*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2
*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15
*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d
^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*
e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4
 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 -
 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 +
520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 252
00*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*
d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600
*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^
10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^
3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13
*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*
a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e
^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4
*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10
*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*
b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12
 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*
b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 -
 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c
^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 20
16*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^
7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7
*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 -
 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d
^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c
^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*

a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 1
5840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*
e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2
*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^
4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 -
60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e
^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*
e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 -
256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 +
9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 147
2*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4
*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*
c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^
5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^
8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*
a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*
e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b
^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 -
8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8
*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 179
52*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e
^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b
^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13
- 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*
d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^
5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15
- 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2
*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*
a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^1
8 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c
^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*
a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 -
2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15
*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*
d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^1
0*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^
2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 -
34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*
e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d
*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d + e*x)^(1/2)
*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^
4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10
*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^
14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 -
1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1
688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^1
1*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2
*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9
- 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5
*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^
3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10
+ 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c
^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a
^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^1
2 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4
*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a
^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15
- 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6
*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*

c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*1i)/(128*a^8*c^7*e^16 - (((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^19*e^2 - (d + e*x)^(1/2)*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 17472

0*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c

^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^1
0*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d
^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^1
1 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^1
1*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*
b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 5
76*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^
10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*
b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 +
160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^
8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*
b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 1
20*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^
5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^
6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 4
80*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3
 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^
12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*
d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^
4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*
b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a
^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*
a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) -
5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 -
4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*
b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*
d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d
e^4(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c
^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*
a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 +
5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*
a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*
e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9
*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^
2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - (((2
*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c
^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^
3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*
e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1
/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2)
 + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)
^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a
c)^(1/2))/(2(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^
4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3
*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2
 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3
- 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b
*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*((2*c^5*d^5 -
 b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2
 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2
- 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^
4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*
b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*
c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 1
0*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))
/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2
+ 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e
^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*
c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3

*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e
^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23
 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*
a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 161
28*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 288
0*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3
*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*
c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6
*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*
d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*
b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9
 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^
8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14
+ 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*
c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11
+ 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8
*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184
800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c
^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 +
10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d
^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285
600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*
d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a
^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*
e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^
7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 +
 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d
^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^
8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 -
 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e
^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*
d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8
*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 84
8*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5
- 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d
^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8
*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^1
0*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4*e^21 - 64*a*c^1
4*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21
 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 +
 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 +
4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*
b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b
^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*
c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c
^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2
*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^
9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^
8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 2
24*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d
^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280
*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^
14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*
c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 +
48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*
d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*
b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 +
 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3
*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a

^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - 128*a*c^14*d^14*e^2 + 16*a^6*b^4*c^5*e^16 - 96*a^7*b^2*c^6*e^16 - 640*a^2*c^13*d^12*e^4 - 1152*a^3*c^12*d^10*e^6 - 640*a^4*c^11*d^8*e^8 + 640*a^5*c^10*d^6*e^10 + 1152*a^6*c^9*d^4*e^12 + 640*a^7*c^8*d^2*e^14 + 32*b^2*c^13*d^14*e^2 - 224*b^3*c^12*d^13*e^3 + 688*b^4*c^11*d^12*e^4 - 1216*b^5*c^10*d^11*e^5 + 1360*b^6*c^9*d^10*e^6 - 992*b^7*c^8*d^9*e^7 + 464*b^8*c^7*d^8*e^8 - 128*b^9*c^6*d^7*e^9 + 16*b^10*c^5*d^6*e^10 - 9696*a^2*b^2*c^11*d^10*e^6 + 13280*a^2*b^3*c^10*d^9*e^7 - 10320*a^2*b^4*c^9*d^8*e^8 + 3840*a^2*b^5*c^8*d^7*e^9 + 320*a^2*b^6*c^7*d^6*e^10 - 864*a^2*b^7*c^6*d^5*e^11 + 240*a^2*b^8*c^5*d^4*e^12 - 12320*a^3*b^2*c^10*d^8*e^8

```
+ 14720*a^3*b^3*c^9*d^7*e^9 - 10240*a^3*b^4*c^8*d^6*e^10 + 3392*a^3*b^5*c^7
*d^5*e^11 + 160*a^3*b^6*c^6*d^4*e^12 - 320*a^3*b^7*c^5*d^3*e^13 - 5280*a^4*
b^2*c^9*d^6*e^10 + 6880*a^4*b^3*c^8*d^5*e^11 - 4720*a^4*b^4*c^7*d^4*e^12 +
960*a^4*b^5*c^6*d^3*e^13 + 240*a^4*b^6*c^5*d^2*e^14 + 672*a^5*b^2*c^8*d^4*e
^12 + 1856*a^5*b^3*c^7*d^3*e^13 - 1152*a^5*b^4*c^6*d^2*e^14 + 608*a^6*b^2*c
^7*d^2*e^14 + 896*a*b*c^13*d^13*e^3 - 640*a^7*b*c^7*d*e^15 - 2592*a*b^2*c^1
2*d^12*e^4 + 3904*a*b^3*c^11*d^11*e^5 - 2944*a*b^4*c^10*d^10*e^6 + 288*a*b^
5*c^9*d^9*e^7 + 1504*a*b^6*c^8*d^8*e^8 - 1408*a*b^7*c^7*d^7*e^9 + 576*a*b^8
*c^6*d^6*e^10 - 96*a*b^9*c^5*d^5*e^11 + 3840*a^2*b*c^12*d^11*e^5 + 5760*a^3
*b*c^11*d^9*e^7 + 2560*a^4*b*c^10*d^7*e^9 - 1920*a^5*b*c^9*d^5*e^11 - 96*a^
5*b^5*c^5*d*e^15 - 2304*a^6*b*c^8*d^3*e^13 + 544*a^6*b^3*c^6*d*e^15))*((2*c
^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4
*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*
d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^
4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2
) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) +
 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(
1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c
)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*
d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b
^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 -
 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 -
20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c
^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(5/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1426 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=350

$$-\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{5e\left(-2ce\left(d\right.\right.}{}$$

Rubi [A] time = 1.29, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 703, 826, 1166, 208}

$$-\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{5e\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{(d+ex)^{5/2}}{a+bx+cx^2}+\frac{5e^2\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (5*e^2*Sqrt[d + e*x])/c - (d + e*x)^(5/2)/(a + b*x + c*x^2) - (5*e*(2*c^2*d
^2 + b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e
))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a
*c])*e]])/(Sqrt[2]*c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4
*a*c])*e]) + (5*e*(2*c^2*d^2 + b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d +
 Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2
*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt
[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 703

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Simp[(e*(d + e*x)^(m - 1))/(c*(m - 1)), x] + Dist[1/c, Int[((d + e*x)^
(m - 2)*Simp[c*d^2 - a*e^2 + e*(2*c*d - b*e)*x, x])/(a + b*x + c*x^2), x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && GtQ[m, 1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{5/2}}{a+bx+cx^2} + \frac{1}{2}(5e)\int \frac{(d+ex)^{3/2}}{a+bx+cx^2}\,dx$$

$$= \frac{5e^2\sqrt{d+ex}}{c} - \frac{(d+ex)^{5/2}}{a+bx+cx^2} + \frac{(5e)\int \frac{cd^2-ae^2+e(2cd-be)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{2c}$$

$$= \frac{5e^2\sqrt{d+ex}}{c} - \frac{(d+ex)^{5/2}}{a+bx+cx^2} + \frac{(5e)\,\mathrm{Subst}\left(\int \frac{-de(2cd-be)+e\left(cd^2-ae^2\right)+e(2cd-be)x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d}\right.}{c}$$

$$= \frac{5e^2\sqrt{d+ex}}{c} - \frac{(d+ex)^{5/2}}{a+bx+cx^2} + \frac{\left(5e\left(2c^2d^2+b\left(b-\sqrt{b^2-4ac}\right)e^2-2ce\left(bd-\sqrt{b^2-\right.\right.\right.}{2}$$

$$= \frac{5e^2\sqrt{d+ex}}{c} - \frac{(d+ex)^{5/2}}{a+bx+cx^2} - \frac{5e\left(2c^2d^2+b\left(b-\sqrt{b^2-4ac}\right)e^2-2ce\left(bd-\sqrt{b^2-4a\right.\right.}{\sqrt{2}\,c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-\left(b-\right.}}$$

Mathematica [A] time = 1.84, size = 297, normalized size = 0.85

$$-\frac{5e\left(-4\sqrt{c}\,e\sqrt{b^2-4ac}\sqrt{d+ex}+\sqrt{2}\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)-\sqrt{2}\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)\right)}{4c^{3/2}\sqrt{b^2-4ac}}-\frac{e^2(d+ex)^{5/2}}{e(ae-bd)+cd^2}+\frac{(d+ex)^{7/2}(be-cd+cex)}{(a+x(b+cx))\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((e^2*(d + e*x)^(5/2))/(c*d^2 + e*(-(b*d) + a*e))) + ((d + e*x)^(7/2)*(-(c
*d) + b*e + c*e*x))/((c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))) - (5*e*(
-4*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e*Sqrt[d + e*x] + Sqrt[2]*(2*c*d + (-b + Sqrt[
b^2 - 4*a*c])*e)^(3/2)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d -
 b*e + Sqrt[b^2 - 4*a*c]*e]] - Sqrt[2]*(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)^
(3/2)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 -
4*a*c])*e]]))/(4*c^(3/2)*Sqrt[b^2 - 4*a*c])
```

IntegrateAlgebraic [C] time = 6.72, size = 925, normalized size = 2.64

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(5*c*d^2 - 5*b*d*e + 5*a*e^2 - 10*c*d*(d + e*x) + 5*b*e*
(d + e*x) + 4*c*(d + e*x)^2))/(c*(c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*x) +
 b*e*(d + e*x) + c*(d + e*x)^2)) + ((12*Sqrt[2]*c^2*d^2*e - 12*Sqrt[2]*b*c*
```

```
d*e^2 + 6*Sqrt[2]*c*Sqrt[b^2 - 4*a*c]*d*e^2 + 5*Sqrt[2]*b^2*e^3 - 8*Sqrt[2]
*a*c*e^3 - 3*Sqrt[2]*b*Sqrt[b^2 - 4*a*c]*e^3)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(c^(3/2)*Sqrt[b^2 - 4*
a*c]*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]) + ((-12*Sqrt[2]*c^2*d^2*e +
12*Sqrt[2]*b*c*d*e^2 + 6*Sqrt[2]*c*Sqrt[b^2 - 4*a*c]*d*e^2 - 5*Sqrt[2]*b^2*
e^3 + 8*Sqrt[2]*a*c*e^3 - 3*Sqrt[2]*b*Sqrt[b^2 - 4*a*c]*e^3)*ArcTan[(Sqrt[2
]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/(c^(3/2
)*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]) + (((14*I)*Sq
rt[2]*c^2*d^2*e - (14*I)*Sqrt[2]*b*c*d*e^2 - 2*Sqrt[2]*c*Sqrt[-b^2 + 4*a*c]
*d*e^2 + (5*I)*Sqrt[2]*b^2*e^3 - (6*I)*Sqrt[2]*a*c*e^3 + Sqrt[2]*b*Sqrt[-b^
2 + 4*a*c]*e^3)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e -
I*Sqrt[-b^2 + 4*a*c]*e]])/(2*c^(3/2)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e -
 I*Sqrt[-b^2 + 4*a*c]*e]) + (((-14*I)*Sqrt[2]*c^2*d^2*e + (14*I)*Sqrt[2]*b*
c*d*e^2 - 2*Sqrt[2]*c*Sqrt[-b^2 + 4*a*c]*d*e^2 - (5*I)*Sqrt[2]*b^2*e^3 + (6
*I)*Sqrt[2]*a*c*e^3 + Sqrt[2]*b*Sqrt[-b^2 + 4*a*c]*e^3)*ArcTan[(Sqrt[2]*Sqr
t[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]])/(2*c^(3/2
)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e])
```

fricas [B] time = 0.52, size = 2928, normalized size = 8.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(5*sqrt(1/2)*(c^2*x^2 + b*c*x + a*c)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2
*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + (b^2*c^3 - 4*a*c^4
)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8
- 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 -
4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(125*sqrt(1/2)*(3*(b^2*c^2 - 4*a*c^3)*d^
2*e^4 - 3*(b^3*c - 4*a*b*c^2)*d*e^5 + (b^4 - 5*a*b^2*c + 4*a^2*c^2)*e^6 - (
2*(b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)*e)*sqrt((9*c^4*d^4*e^6 - 18
*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^
9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))*sqrt((2*c^3*d^3
*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 +
(b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 -
 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)
*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) - 250*(3*c^3*d^4*e^4 - 6*
b*c^2*d^3*e^5 + 2*(2*b^2*c + a*c^2)*d^2*e^6 - (b^3 + 2*a*b*c)*d*e^7 + (a*b^
2 - a^2*c)*e^8)*sqrt(e*x + d)) - 5*sqrt(1/2)*(c^2*x^2 + b*c*x + a*c)*sqrt((
2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*
c)*e^5 + (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*
b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c +
 a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-125*sqrt(1/
2)*(3*(b^2*c^2 - 4*a*c^3)*d^2*e^4 - 3*(b^3*c - 4*a*b*c^2)*d*e^5 + (b^4 - 5*
a*b^2*c + 4*a^2*c^2)*e^6 - (2*(b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)
*e)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^
8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6
- 4*a*c^7)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*
e^4 - (b^3 - 3*a*b*c)*e^5 + (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*
c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 +
 (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4
)) - 250*(3*c^3*d^4*e^4 - 6*b*c^2*d^3*e^5 + 2*(2*b^2*c + a*c^2)*d^2*e^6 - (
b^3 + 2*a*b*c)*d*e^7 + (a*b^2 - a^2*c)*e^8)*sqrt(e*x + d)) + 5*sqrt(1/2)*(c
^2*x^2 + b*c*x + a*c)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*
a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^
6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2
)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3
- 4*a*c^4))*log(125*sqrt(1/2)*(3*(b^2*c^2 - 4*a*c^3)*d^2*e^4 - 3*(b^3*c - 4
*a*b*c^2)*d*e^5 + (b^4 - 5*a*b^2*c + 4*a^2*c^2)*e^6 + (2*(b^2*c^4 - 4*a*c^5
```

)*d - (b^3*c^3 - 4*a*b*c^4)*e)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(
5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c
 + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e
^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - (b^2*c^3 - 4*a*c^4)*
sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 -
6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*
a*c^7)))/(b^2*c^3 - 4*a*c^4)) - 250*(3*c^3*d^4*e^4 - 6*b*c^2*d^3*e^5 + 2*(2
*b^2*c + a*c^2)*d^2*e^6 - (b^3 + 2*a*b*c)*d*e^7 + (a*b^2 - a^2*c)*e^8)*sqrt
(e*x + d)) - 5*sqrt(1/2)*(c^2*x^2 + b*c*x + a*c)*sqrt((2*c^3*d^3*e^2 - 3*b*
c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - (b^2*c^3 -
4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d
^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2
*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-125*sqrt(1/2)*(3*(b^2*c^2 - 4*a
*c^3)*d^2*e^4 - 3*(b^3*c - 4*a*b*c^2)*d*e^5 + (b^4 - 5*a*b^2*c + 4*a^2*c^2)
e^6 + (2(b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)*e)*sqrt((9*c^4*d^4*
e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c
^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))*sqrt((2
*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c
)*e^5 - (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b
^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c +
a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) - 250*(3*c^3*d^4*
e^4 - 6*b*c^2*d^3*e^5 + 2*(2*b^2*c + a*c^2)*d^2*e^6 - (b^3 + 2*a*b*c)*d*e^7
 + (a*b^2 - a^2*c)*e^8)*sqrt(e*x + d)) - 2*(4*c*e^2*x^2 - c*d^2 + 5*a*e^2 -
 (2*c*d*e - 5*b*e^2)*x)*sqrt(e*x + d))/(c^2*x^2 + b*c*x + a*c)

giac [B] time = 1.67, size = 772, normalized size = 2.21

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")

[Out] 4*sqrt(x*e + d)*e^2/c - (2*(x*e + d)^(3/2)*c*d*e^2 - sqrt(x*e + d)*c*d^2*e^
2 - (x*e + d)^(3/2)*b*e^3 + sqrt(x*e + d)*b*d*e^3 - sqrt(x*e + d)*a*e^4)/((
(x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)*c)
 + 5*(4*c^5*d^3*e - 6*b*c^4*d^2*e^2 - (2*(b^2*c - 4*a*c^2)*d*e^3 - (b^3 - 4
*a*b*c)*e^4)*c^2 + 4*(b^2*c^3 - a*c^4)*d*e^3 + 2*(sqrt(b^2 - 4*a*c)*c^3*d^2
*e^2 - sqrt(b^2 - 4*a*c)*b*c^2*d*e^3 + sqrt(b^2 - 4*a*c)*a*c^2*e^4)*abs(c)
- (b^3*c^2 - 2*a*b*c^3)*e^4)*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*
d - b*c*e + sqrt(-4*(c^2*d^2 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b*c*e)^2
))/c^2))/((2*sqrt(b^2 - 4*a*c)*c^2*d - (b^2*c - 4*a*c^2 + sqrt(b^2 - 4*a*c)
*b*c)*e)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^2) - 5*(4*c^5*d
^3*e - 6*b*c^4*d^2*e^2 - (2*(b^2*c - 4*a*c^2)*d*e^3 - (b^3 - 4*a*b*c)*e^4)*
c^2 + 4*(b^2*c^3 - a*c^4)*d*e^3 - 2*(sqrt(b^2 - 4*a*c)*c^3*d^2*e^2 - sqrt(b
^2 - 4*a*c)*b*c^2*d*e^3 + sqrt(b^2 - 4*a*c)*a*c^2*e^4)*abs(c) - (b^3*c^2 -
2*a*b*c^3)*e^4)*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d - b*c*e - s
qrt(-4*(c^2*d^2 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b*c*e)^2))/c^2))/((2*
sqrt(b^2 - 4*a*c)*c^2*d + (b^2*c - 4*a*c^2 - sqrt(b^2 - 4*a*c)*b*c)*e)*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c^2)

maple [B] time = 0.21, size = 1333, normalized size = 3.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x)

[Out] 4*e^2*(e*x+d)^(1/2)/c+e^3/c/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*b-2*e^2
/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*d+e^4/c/(c*e^2*x^2+b*e^2*x+a*e^2)*
(e*x+d)^(1/2)*a-e^3/c/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*b*d+e^2/(c*e^

```
2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*d^2+5*e^4/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-5/2*e^4/c/(-(4*a
*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*b^2+5*e^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d-5*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((
-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)
/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2+5/2*e^3/c*2^(1/2)/(
(-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2
)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b-5*e^2*2^(1/2)/((-b*e
+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-
b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+5*e^4/(-(4*a*c-b^2)*e^2)^
(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-5/2*e^4/
c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*c)*b^2+5*e^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c
-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d-5*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/
((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)
/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-5/2*e^3/c*2^(1/2)/((
b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/(
(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+5*e^2*2^(1/2)/((b*e-2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{5}{2}}}{\left(cx^2 + bx + a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^2, x)
```

mupad [B] time = 1.44, size = 8776, normalized size = 25.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((b*e^3 - 2*c*d*e^2)*(d + e*x)^(3/2) + (d + e*x)^(1/2)*(a*e^4 + c*d^2*e^2 -
 b*d*e^3))/(c^2*(d + e*x)^2 - (2*c^2*d - b*c*e)*(d + e*x) + c^2*d^2 + a*c*e
^2 - b*c*d*e) - atan(((((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2
*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d +
 e*x)^(1/2)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^
2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*
d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*
(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(
1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 -
 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 3
2*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a
^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b
^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a
*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^
```

2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i - (((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 + b^2*e^

5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^
3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c -
b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*
d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^
2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (2*(d + e*x
)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 -
 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^
7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2
) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e
^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c
*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*
a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*
c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (10*(50*c^3*d^5*e^6 - 25*b^3*d^2*e^9
 - 25*a^2*b*e^11 + 100*a*c^2*d^3*e^8 - 125*b*c^2*d^4*e^7 + 100*b^2*c*d^3*e^
8 + 50*a*b^2*d*e^10 + 50*a^2*c*d*e^10 - 150*a*b*c*d^2*e^9))/c))*(-(25*(b^5*
e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2
 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3
*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e
^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*2
i - atan(((((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3
*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d + e*x)^(1/2)*
(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*
c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*
c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b
^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*
b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4
)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^
2))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5
 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e
^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*
a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2)
- 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*
b^2*c^4)))^(1/2) - (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4
*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 10
0*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b
^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a
^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a
*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b
^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18
*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i - (((
5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 -
4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^
5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 -
 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(
-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2)
- 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3
 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*
b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*
(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^
3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^
2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)
^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*
d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1
/2) + (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 30
0*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8
 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a
*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4
- 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^

```
(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 +
3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*
e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((5*(16*a^2*c^3
*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2
*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 - b^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d
*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2
)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e
^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c
^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 -
 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 - b^
2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^
2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*
c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^
4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*
a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (2*(d +
 e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e
^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*
d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^
(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d
^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b
^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(
-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*
a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((5*(16*a^2*c^3*e^6 - 4*a*b^2*c
^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^
3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3
)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3
*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a
*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4
*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(1
6*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2
 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c -
 b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*
b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2
) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*
c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)
)/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (2*(d + e*x)^(1/2)*(25*
b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d
^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*
c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b
*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c
^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e
^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3
)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^
3 - 8*a*b^2*c^4)))^(1/2) - (10*(50*c^3*d^5*e^6 - 25*b^3*d^2*e^9 - 25*a^2*b*
e^11 + 100*a*c^2*d^3*e^8 - 125*b*c^2*d^4*e^7 + 100*b^2*c*d^3*e^8 + 50*a*b^2
*d*e^10 + 50*a^2*c*d*e^10 - 150*a*b*c*d^2*e^9))/c))*(-(25*(b^5*e^5 - b^2*e^
5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^
3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c -
b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*
d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^
2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*2i + (4*e^2*(
d + e*x)^(1/2))/c
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1427 $\int \frac{(b+2cx)(d+ex)^{3/2}}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=224

$$-\frac{3e\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}$$

Rubi [A] time = 0.34, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 699, 1130, 208}

$$-\frac{3e\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}-\frac{(d+ex)^{3/2}}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^(3/2)/(a + b*x + c*x^2)) - (3*e*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*
a*c])*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2
 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c]) + (3*e*Sqrt[2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 699

```
Int[Sqrt[(d_.) + (e_.)*(x_)]/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol]
 :> Dist[2*e, Subst[Int[x^2/(c*d^2 - b*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*
x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 1130

```
Int[((d_.)*(x_))^(m_)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :> Wi
th[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(d^2*(b/q + 1))/2, Int[(d*x)^(m - 2)/(b/2
 + q/2 + c*x^2), x], x] - Dist[(d^2*(b/q - 1))/2, Int[(d*x)^(m - 2)/(b/2 -
q/2 + c*x^2), x], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[b^2 - 4*a*c, 0] && G
eQ[m, 2]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{3/2}}{a+bx+cx^2}+\frac{1}{2}(3e)\int \frac{\sqrt{d+ex}}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^{3/2}}{a+bx+cx^2}+\left(3e^2\right)\text{Subst}\left(\int \frac{x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx,x,\sqrt{d}\right.$$

$$= -\frac{(d+ex)^{3/2}}{a+bx+cx^2}+\frac{1}{2}\left(3e\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\right)\text{Subst}\left(\int \frac{1}{\frac{1}{2}\sqrt{b^2-4ac}\,e+\frac{1}{2}(-2cd+be)}\right.$$

$$= -\frac{(d+ex)^{3/2}}{a+bx+cx^2}-\frac{3e\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{}}{}$$

Mathematica [A] time = 0.42, size = 221, normalized size = 0.99

$$-\frac{3e\sqrt{e\sqrt{b^2-4ac}-be+2cd}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}-\frac{(d+ex)^{3/2}}{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^(3/2)/(a + x*(b + c*x))) - (3*e*Sqrt[2*c*d - b*e + Sqrt[b^2 - 4
*a*c]*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^
2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c]) + (3*e*Sqrt[2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c])
```

IntegrateAlgebraic [C] time = 3.40, size = 597, normalized size = 2.67

$$\frac{2\sqrt{2}\left(e^2\sqrt{b^2-4ac}-2be^2+4cde\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}+\frac{2\sqrt{2}\left(e^2\sqrt{b^2-4ac}+2be^2-4cde\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{e\sqrt{b^2-4ac}+be-2cd}}-\frac{\left(e^2\sqrt{4ac-b^2}+5ibe^2-10icde\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}\right)}{\sqrt{2}\sqrt{c}\sqrt{4ac-b^2}\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}-\frac{\left(e^2\sqrt{4ac-b^2}-5ibe^2+10icde\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}\right)}{\sqrt{2}\sqrt{c}\sqrt{4ac-b^2}\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}-\frac{e^2(d+ex)^{3/2}}{ae^2+be(d+ex)-bde+cd^2-2cd(d+ex)+c(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((e^2*(d + e*x)^(3/2))/(c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*x) + b*e*(d +
 e*x) + c*(d + e*x)^2)) + (2*Sqrt[2]*(4*c*d*e - 2*b*e^2 + Sqrt[b^2 - 4*a*c]
*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b^2 -
 4*a*c]*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*
c]*e]) + (2*Sqrt[2]*(-4*c*d*e + 2*b*e^2 + Sqrt[b^2 - 4*a*c]*e^2)*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sq
rt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]) - (((-10*
I)*c*d*e + (5*I)*b*e^2 + Sqrt[-b^2 + 4*a*c]*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sq
rt[d + e*x])/Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]
*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]) - (((10*I)
*c*d*e - (5*I)*b*e^2 + Sqrt[-b^2 + 4*a*c]*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*S
qrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e])
```

fricas [B] time = 0.45, size = 828, normalized size = 3.70

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/(b^2
*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))*log(27*sqrt(e*x + d)
*e^4 + 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2)*sqrt((2
*c*d*e^2 - b*e^3 + sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c
- 4*a*c^2))) - 3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt
(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))*log(27*sqrt
(e*x + d)*e^4 - 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2
)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2)
)/(b^2*c - 4*a*c^2))) - 3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e
^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))*lo
g(27*sqrt(e*x + d)*e^4 + 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c
- 4*a*c^2)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c -
 4*a*c^2))/(b^2*c - 4*a*c^2))) + 3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*
e^2 - b*e^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a
*c^2))*log(27*sqrt(e*x + d)*e^4 - 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3)
)*(b^2*c - 4*a*c^2)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))
*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))) + 2*(e*x + d)^(3/2))/(c*x^2 + b*x +
 a)
```

giac [A] time = 1.11, size = 288, normalized size = 1.29

$$-\frac{(xe+d)^{\frac{3}{2}}e^2}{(xe+d)^2c-2\,(xe+d)cd+cd^2+(xe+d)be-bde+ae^2}-\frac{3\sqrt{-4\,c^2d+2\left(bc-\sqrt{b^2-4\,ac}\,c\right)e}\,\arctan\left(\frac{2\sqrt{\frac{1}{2}}\,\sqrt{xe+d}}{\sqrt{-\frac{2\,cd-be+\sqrt{(2\,cd-be)^2-4\,(cd^2-bde+ae^2)c}}{c}}}\right)e}{2\sqrt{b^2-4\,ac}\,|c|}+\frac{3\sqrt{-4\,c^2d+2\left(bc+\sqrt{b^2-4\,ac}\,c\right)e}\,\arctan\left(\frac{2\sqrt{\frac{1}{2}}\,\sqrt{xe+d}}{\sqrt{-\frac{2\,cd-be-\sqrt{(2\,cd-be)^2-4\,(cd^2-bde+ae^2)c}}{c}}}\right)e}{2\sqrt{b^2-4\,ac}\,|c|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^(3/2)*e^2/((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b
*e - b*d*e + a*e^2) - 3/2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*
arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c*d - b*e + sqrt((2*c*d - b*e)^2
- 4*(c*d^2 - b*d*e + a*e^2)*c))/c))*e/(sqrt(b^2 - 4*a*c)*abs(c)) + 3/2*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*arctan(2*sqrt(1/2)*sqrt(x*e +
d)/sqrt(-(2*c*d - b*e - sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e + a*e^2)*c)
)/c))*e/(sqrt(b^2 - 4*a*c)*abs(c))
```

maple [B] time = 0.09, size = 590, normalized size = 2.63

$$\frac{3\sqrt{2}\,b\,e^3\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-(4ac-b^2)e^2}\right)c}}\right)}{2\sqrt{-(4ac-b^2)\,e^2}\,\sqrt{\left(-be+2cd+\sqrt{-(4ac-b^2)\,e^2}\right)c}}+\frac{3\sqrt{2}\,b\,e^3\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-(4ac-b^2)e^2}\right)c}}\right)}{2\sqrt{-(4ac-b^2)\,e^2}\,\sqrt{\left(be-2cd+\sqrt{-(4ac-b^2)\,e^2}\right)c}}-\frac{3\sqrt{2}\,cd\,e^2\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-(4ac-b^2)e^2}\right)c}}\right)}{\sqrt{-(4ac-b^2)\,e^2}\,\sqrt{\left(-be+2cd+\sqrt{-(4ac-b^2)\,e^2}\right)c}}-\frac{3\sqrt{2}\,cd\,e^2\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-(4ac-b^2)e^2}\right)c}}\right)}{\sqrt{-(4ac-b^2)\,e^2}\,\sqrt{\left(be-2cd+\sqrt{-(4ac-b^2)\,e^2}\right)c}}-\frac{3\sqrt{2}\,e^2\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-(4ac-b^2)e^2}\right)c}}\right)}{2\sqrt{\left(-be+2cd+\sqrt{-(4ac-b^2)\,e^2}\right)c}}+\frac{3\sqrt{2}\,e^2\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-(4ac-b^2)e^2}\right)c}}\right)}{2\sqrt{\left(be-2cd+\sqrt{-(4ac-b^2)\,e^2}\right)c}}-\frac{(ex+d)^{\frac{3}{2}}e^2}{c\,e^2x^2+b\,e^2x+a\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -e^2*(e*x+d)^(3/2)/(c*e^2*x^2+b*e^2*x+a*e^2)+3/2*e^3/(-(4*a*c-b^2)*e^2)^(1/
2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^
(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2*c/
(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*
c)^(1/2)*c)*d-3/2*e^2*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*c)+3/2*e^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e
-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+3/2*e^2*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^2, x)
```

mupad [B] time = 0.47, size = 841, normalized size = 3.75

$$-2\,\mathrm{atanh}\left(\frac{2\left(\sqrt{d+e\,x}\,\left(-18\,b^2\,c\,e^6+36\,b\,c^2\,d\,e^5-36\,c^3\,d^2\,e^4+36\,a\,c^2\,e^6\right)+\frac{9\,\sqrt{d+e\,x}\,\left(8\,b^3\,c^2\,e^3-16\,d\,b^2\,c^3\,e^2-32\,a\,b\,c^3\,e^3+64\,a\,d\,c^4\,e^2\right)\left(b^3\,e^3+e^3\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}-4\,a\,b\,c\,e^3+8\,a\,c^2\,d\,e^2-2\,b^2\,c\,d\,e^2\right)}{8\,\left(16\,a^2\,c^3-8\,a\,b^2\,c^2+b^4\,c\right)}\right)\sqrt{-\frac{9\,\left(b^3\,e^3+e^3\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}-4\,a\,b\,c\,e^3+8\,a\,c^2\,d\,e^2-2\,b^2\,c\,d\,e^2\right)}{8\,\left(16\,a^2\,c^3-8\,a\,b^2\,c^2+b^4\,c\right)}}}{54\,c^2\,d^2\,e^6-54\,b\,c\,d\,e^7+54\,a\,c\,e^8}\right)\sqrt{-\frac{9\,\left(b^3\,e^3+e^3\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}-4\,a\,b\,c\,e^3+8\,a\,c^2\,d\,e^2-2\,b^2\,c\,d\,e^2\right)}{8\,\left(16\,a^2\,c^3-8\,a\,b^2\,c^2+b^4\,c\right)}}-2\,\mathrm{atanh}\left(\frac{2\left(\sqrt{d+e\,x}\,\left(-18\,b^2\,c\,e^6+36\,b\,c^2\,d\,e^5-36\,c^3\,d^2\,e^4+36\,a\,c^2\,e^6\right)-\frac{9\,\sqrt{d+e\,x}\,\left(8\,b^3\,c^2\,e^3-16\,d\,b^2\,c^3\,e^2-32\,a\,b\,c^3\,e^3+64\,a\,d\,c^4\,e^2\right)\left(e^3\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}-b^3\,e^3+4\,a\,b\,c\,e^3-8\,a\,c^2\,d\,e^2+2\,b^2\,c\,d\,e^2\right)}{8\,\left(16\,a^2\,c^3-8\,a\,b^2\,c^2+b^4\,c\right)}\right)\sqrt{\frac{9\,\left(e^3\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}-b^3\,e^3+4\,a\,b\,c\,e^3-8\,a\,c^2\,d\,e^2+2\,b^2\,c\,d\,e^2\right)}{8\,\left(16\,a^2\,c^3-8\,a\,b^2\,c^2+b^4\,c\right)}}}{54\,c^2\,d^2\,e^6-54\,b\,c\,d\,e^7+54\,a\,c\,e^8}\right)\sqrt{\frac{9\,\left(e^3\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}-b^3\,e^3+4\,a\,b\,c\,e^3-8\,a\,c^2\,d\,e^2+2\,b^2\,c\,d\,e^2\right)}{8\,\left(16\,a^2\,c^3-8\,a\,b^2\,c^2+b^4\,c\right)}}-\frac{e^2\,{\left(d+e\,x\right)}^{3/2}}{\left(b\,e-2\,c\,d\right)\,\left(d+e\,x\right)+c\,{\left(d+e\,x\right)}^2+a\,e^2+c\,d^2-b\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x)
```

```
[Out] - 2*atanh((2*((d + e*x)^(1/2)*(36*a*c^2*e^6 - 18*b^2*c*e^6 - 36*c^3*d^2*e^4
 + 36*b*c^2*d*e^5) + (9*(d + e*x)^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 -
 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2)*(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) -
 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a
*b^2*c^2)))*(-(9*(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*
a*c^2*d*e^2 - 2*b^2*c*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2)
)/(54*c^2*d^2*e^6 + 54*a*c*e^8 - 54*b*c*d*e^7))*(-(9*(b^3*e^3 + e^3*(-(4*a*
c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2))/(8*(b^4*c
 + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2) - 2*atanh((2*((d + e*x)^(1/2)*(36*a*c^
2*e^6 - 18*b^2*c*e^6 - 36*c^3*d^2*e^4 + 36*b*c^2*d*e^5) - (9*(d + e*x)^(1/2
)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2)*(e^3
*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c
*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((9*(e^3*(-(4*a*c - b^2)^3
)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2))/(8*(b^4*c
 + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2))/(54*c^2*d^2*e^6 + 54*a*c*e^8 - 54*b*c
*d*e^7))*((9*(e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^
2*d*e^2 + 2*b^2*c*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2) - (
e^2*(d + e*x)^(3/2))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 + a*e^2 + c*d
^2 - b*d*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1428 $\int \frac{(b+2cx)\sqrt{d+ex}}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=223

$$-\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{\sqrt{d+ex}}{a+bx+cx^2}$$

Rubi [A] time = 0.32, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 707, 1093, 208}

$$-\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{\sqrt{d+ex}}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(Sqrt[d + e*x]/(a + b*x + c*x^2)) - (Sqrt[2]*Sqrt[c]*e*ArcTanh[(Sqrt[2]*Sq
rt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 -
4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]) + (Sqrt[2]*Sqrt[c]*e*ArcTan
h[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])
/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 707

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)), x_Sym
bol] :> Dist[2*e, Subst[Int[1/(c*d^2 - b*d*e + a*e^2 - (2*c*d - b*e)*x^2 +
c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 1093

```
Int[((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(-1), x_Symbol] :> With[{q = Rt[b^
2 - 4*a*c, 2]}, Dist[c/q, Int[1/(b/2 - q/2 + c*x^2), x], x] - Dist[c/q, Int
[1/(b/2 + q/2 + c*x^2), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c,
0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{d+ex}}{a+bx+cx^2}+\frac{1}{2}e\int \frac{1}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx$$

$$= -\frac{\sqrt{d+ex}}{a+bx+cx^2}+e^2\,\text{Subst}\left(\int \frac{1}{cd^2-bde+ae^2-(2cd-be)x^2+cx^4}\,dx,x,\sqrt{d+ex}\right)$$

$$= -\frac{\sqrt{d+ex}}{a+bx+cx^2}+\frac{(ce)\,\text{Subst}\left(\int \frac{1}{-\frac{1}{2}\sqrt{b^2-4ac}\,e+\frac{1}{2}(-2cd+be)+cx^2}\,dx,x,\sqrt{d+ex}\right)}{\sqrt{b^2-4ac}}-\frac{(ce)\,\text{Sub}\cdots}{\cdots}$$

$$= -\frac{\sqrt{d+ex}}{a+bx+cx^2}-\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}+\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\cdots}{\sqrt{2cd-(b\cdots}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-\left(b+\cdots\right.}}$$

Mathematica [A] time = 0.75, size = 221, normalized size = 0.99

$$\frac{-\frac{\sqrt{b^2-4ac}\sqrt{d+ex}}{a+x(b+cx)}-\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^2,x]
```

```
[Out] (-((Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x])/(a + x*(b + c*x))) - (Sqrt[2]*Sqrt[c]*
e*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a
*c]*e]])/Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e] + (Sqrt[2]*Sqrt[c]*e*ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])/Sqrt[b^2 - 4*a*c]
```

IntegrateAlgebraic [C] time = 1.45, size = 283, normalized size = 1.27

$$-\frac{i\sqrt{2}\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}\right)}{\sqrt{4ac-b^2}\sqrt{-ie\sqrt{4ac-b^2}+be-2cd}}+\frac{i\sqrt{2}\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}\right)}{\sqrt{4ac-b^2}\sqrt{ie\sqrt{4ac-b^2}+be-2cd}}-\frac{e^2\sqrt{d+ex}}{ae^2+be(d+ex)-bde+cd^2-2cd(d+ex)+c(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((e^2*Sqrt[d + e*x])/(c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*x) + b*e*(d + e
*x) + c*(d + e*x)^2)) - (I*Sqrt[2]*Sqrt[c]*e*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d
 + e*x])/Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]])/(Sqrt[-b^2 + 4*a*c]*
Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]) + (I*Sqrt[2]*Sqrt[c]*e*ArcTan[
(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]
])/(Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e])
```

fricas [B] time = 0.48, size = 2750, normalized size = 12.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")

[Out] -1/2*(sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4 + sqrt(1/2)*((b^2 - 4*a*c)*e^4 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3*(b^3*c - 4*a*b*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3))*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) - sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4 - sqrt(1/2)*((b^2 - 4*a*c)*e^4 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3*(b^3*c - 4*a*b*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3))*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) + sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4 + sqrt(1/2)*((b^2 - 4*a*c)*e^4 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3*(b^3*c - 4*a*b*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3))*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) - sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4 - sqrt(1/2)*((b^2 - 4*a*c)*e^4 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3*(b^3*c - 4*a*b*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3))*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) + 2*sqrt(e*x + d))/(c*x^2 + b*x + a)

giac [A] time = 1.08, size = 351, normalized size = 1.57

$$-\frac{\sqrt{-4\,c^2d + 2\left(bc - \sqrt{b^2 - 4\,ac}\,c\right)e}\,c\arctan\left(\frac{2\,\sqrt{\frac{1}{2}}\,\sqrt{xe+d}}{\sqrt{-\frac{2\,cd-be+\sqrt{(2\,cd-be)^2-4\left(cd^2-bde+ae^2\right)c}}{c}}}\right)e}{\left(2\,\sqrt{b^2-4\,ac}\,cd + \left(b^2 - 4\,ac - \sqrt{b^2-4\,ac}\,b\right)e\right)|c|} + \frac{\sqrt{-4\,c^2d + 2\left(bc + \sqrt{b^2 - 4\,ac}\,c\right)e}\,c\arctan\left(\frac{2\,\sqrt{\frac{1}{2}}\,\sqrt{xe+d}}{\sqrt{-\frac{2\,cd-be-\sqrt{(2\,cd-be)^2-4\left(cd^2-bde+ae^2\right)c}}{c}}}\right)e}{\left(2\,\sqrt{b^2-4\,ac}\,cd - \left(b^2 - 4\,ac + \sqrt{b^2-4\,ac}\,b\right)e\right)|c|} - \frac{\sqrt{xe+d}\,e^2}{(xe+d)^2c - 2\,(xe+d)cd + cd^2 + (xe+d)be - bde + ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(2*sqrt(1/2)*sqrt
(x*e + d)/sqrt(-(2*c*d - b*e + sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e + a*
e^2)*c))/c))*e/((2*sqrt(b^2 - 4*a*c)*c*d + (b^2 - 4*a*c - sqrt(b^2 - 4*a*c)
*b)*e)*abs(c)) + sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(
2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c*d - b*e - sqrt((2*c*d - b*e)^2 - 4*(c*
d^2 - b*d*e + a*e^2)*c))/c))*e/((2*sqrt(b^2 - 4*a*c)*c*d - (b^2 - 4*a*c + s
qrt(b^2 - 4*a*c)*b)*e)*abs(c)) - sqrt(x*e + d)*e^2/((x*e + d)^2*c - 2*(x*e
+ d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)
```

maple [A] time = 0.09, size = 232, normalized size = 1.04

$$-\frac{\sqrt{2}\,c\,e^2\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} - \frac{\sqrt{2}\,c\,e^2\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}} - \frac{\sqrt{ex+d}\,e^2}{c\,e^2x^2+b\,e^2x+a\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -e^2*(e*x+d)^(1/2)/(c*e^2*x^2+b*e^2*x+a*e^2)-e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)
*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)-e^2*c/(-(4*a
*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*a
rctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^2, x)
```

mupad [B] time = 2.93, size = 4814, normalized size = 21.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^2,x)
```

```
[Out] atan((((4*b^2*c^2*e^4 - 16*a*c^3*e^4 + (d + e*x)^(1/2)*(-(b^3*e^3 + e^3*(-(
4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*
b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c
^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3
*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*(-(b^3*e^3
+ e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^
2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e -
```

8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/
2) + 4*c^3*e^4*(d + e*x)^(1/2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) -
 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 1
6*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^
2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*1i + ((16*a*c^3*e^4 - 4*b^2*c
^2*e^4 + (d + e*x)^(1/2)*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*
c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c
^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*
a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 -
32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2)
 - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 +
 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*
e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2)
)*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 -
 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2
 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3
*c*d*e)))^(1/2)*1i)/(((4*b^2*c^2*e^4 - 16*a*c^3*e^4 + (d + e*x)^(1/2)*(-(b^
3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*
c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*
d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)
))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^
2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2
 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e
^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b
^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2))*(-(b^3*e^3 + e^3*(-(4*a*c -
b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2
+ b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 -
 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) - ((16*a*c^3*e
^4 - 4*b^2*c^2*e^4 + (d + e*x)^(1/2)*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1
/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^
2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2
*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*
c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*(-(b^3*e^3 + e^3*(-(4*a*c - b
^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 +
 b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 -
8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d
+ e*x)^(1/2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a
*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16
*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d
*e + 8*a*b^3*c*d*e)))^(1/2)))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4
*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*
a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2
 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*2i + atan((((4*b^2*c^2*e^4 - 16
*a*c^3*e^4 + (d + e*x)^(1/2)*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a
*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^
2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 -
16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2
 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e
^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2
 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*
c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/
2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2
+ 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^
2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^
3*c*d*e)))^(1/2)*1i + ((16*a*c^3*e^4 - 4*b^2*c^2*e^4 + (d + e*x)^(1/2)*((e^
3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*
c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*
d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)
))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^

```
2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2
+ 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^
2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^
3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2))*((e^3*(-(4*a*c - b^2)^3)^(1/2
) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 +
b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8
*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*1i)/(((4*b^2*c^2
*e^4 - 16*a*c^3*e^4 + (d + e*x)^(1/2)*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*
e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^
2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2
*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*
c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*((e^3*(-(4*a*c - b^2)^3)^(1/2
) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 +
b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8
*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d +
 e*x)^(1/2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c
^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a
^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e
 + 8*a*b^3*c*d*e)))^(1/2) - ((16*a*c^3*e^4 - 4*b^2*c^2*e^4 + (d + e*x)^(1/2
)*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 +
2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2
- b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*
c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^
4*d*e^2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*
d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*
c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e +
8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2))*((e^3*(-(4*a*c - b^2)^3
)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*
e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d
^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)))*((e^3*(-
(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*
e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e
- 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(
1/2)*2i - (e^2*(d + e*x)^(1/2))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 +
a*e^2 + c*d^2 - b*d*e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1429 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=364

$$-\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{c}\,e\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\ldots$$

Rubi [A] time = 0.76, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {822, 826, 1166, 208}

$$-\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{c}\,e\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{c}\,e\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((Sqrt[d + e*x]*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 -
 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2))) + (Sqrt[c]*e*(2*c*d - (
b + Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*
d - (b - Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b
 - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)) - (Sqrt[c]*e*(2*c*d - (b
- Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b +
 Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(cd-be)-\frac{1}{2}c\left(b^2-4 \cdots\right.}{\sqrt{d+ex}\left(a+bx+cx^2\right)} \cdots}{\left(b^2-4ac\right)\left(cd^2-bde \cdots\right.}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}c\left(b^2-4ac\right)de^2+ \cdots}{cd^2- \cdots} \cdots\right.}{\left(b^2 \cdots\right.}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} + \frac{\left(ce\left(2cd-\left(b-\sqrt{b^2-4 \cdots}\right.\right.\right.}{\cdots}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} + \frac{\sqrt{c}\,e\left(2cd-\left(b+\sqrt{b^2- \cdots}\right.\right.}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-(\cdots}}$$

Mathematica [A] time = 1.21, size = 278, normalized size = 0.76

$$\frac{\frac{\sqrt{2}\sqrt{c}\,e\left(\frac{\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}-\frac{\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}}+\frac{2\sqrt{d+ex}\,(be-cd+cex)}{a+x(b+cx)}}{2\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x))/(a + x*(b + c*x)) + (Sqrt[2]*Sqrt
[c]*e*(((2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d
 + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/Sqrt[2*c*d + (-b + Sqrt[
b^2 - 4*a*c])*e] - ((2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*S
qrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]))/Sqrt[b^2 - 4*a*c])/(2*(c*d^2 + e*(-(b*d) + a
*e)))
```

IntegrateAlgebraic [A] time = 1.65, size = 398, normalized size = 1.09

$$-\frac{\left(\sqrt{c}\,e^2\sqrt{b^2-4ac}+b\sqrt{c}\,e^2-2c^{3/2}de\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{-e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)}-\frac{\left(\sqrt{c}\,e^2\sqrt{b^2-4ac}-b\sqrt{c}\,e^2+2c^{3/2}de\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)}+\frac{e^2\sqrt{d+ex}\,(be+c(d+ex)-2cd)}{\left(ae^2-bde+cd^2\right)\left(ae^2+be(d+ex)-bde+cd^2-2cd(d+ex)+c(d+ex)^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))/((c*d^2 - b*d*e + a*e^2)*(
c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*x) + b*e*(d + e*x) + c*(d + e*x)^2)) -
 ((-2*c^(3/2)*d*e + b*Sqrt[c]*e^2 + Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^2)*ArcTan[(
Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(
Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2
) + b*d*e - a*e^2)) - ((2*c^(3/2)*d*e - b*Sqrt[c]*e^2 + Sqrt[c]*Sqrt[b^2 -
4*a*c]*e^2)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + Sqrt
[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e + Sqrt[b^2
- 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2))
```

fricas [B] time = 0.71, size = 11482, normalized size = 31.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2
)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*
e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4
)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)
*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*
c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c
)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2
*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*
c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*
b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)
*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6
*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 3
0*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^
5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2
 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9
 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b
*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*
c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5
 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*
d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6))*log(sqr
t(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*d^2*e^5 + (
5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)
*e^7 - (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*e + (13*b^4
*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b^3*c^3 - 48
*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4*e^4 - (b^7
 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c - 16*a^3*b^
2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4*b*c^2)*d*e
^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^6 - 18*b*c^
3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (
b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4
*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(
2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*
c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3
*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80
*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)
*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^
5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a
^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^1
2)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b
^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*
e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2
*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3
```

- 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e^5 + (b^2*c^2 - a*c^3)*e^6)*sqrt(e*x + d)) - sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6))*log(-sqrt(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*d^2*e^5 + (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^7 - (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*e + (13*b^4*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b^3*c^3 - 48*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4*e^4 - (b^7 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c - 16*a^3*b^2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4*b*c^2)*d*e^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 -

6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e^5 + (b^2*c^2 - a*c^3)*e^6)*sqrt(e*x + d)) + sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6))*log(sqrt(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*d^2*e^5 + (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^7 + (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*e + (13*b^4*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b^3*c^3 - 48*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4*e^4 - (b^7 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c - 16*a^3*b^2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4*b*c^2)*d*e^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e +

3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^
3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d
^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 +
(b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6
- 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2
*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c -
12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 -
6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4
*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^
2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^
2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4
*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e^5 + (b^2*c^2 - a*c^3)*e^6)*s
qrt(e*x + d)) - sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e
+ a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*
b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3
- 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 -
4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 -
3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2
- 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*
a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^
10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c
^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*
a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*
(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a
*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7
+ 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a
^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^
2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3
- 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6
- 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*
e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4
*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6
))*log(-sqrt(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*
d^2*e^5 + (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4
*a^2*b*c^2)*e^7 + (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*
e + (13*b^4*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b
^3*c^3 - 48*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4
*e^4 - (b^7 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c
- 16*a^3*b^2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4
*b*c^2)*d*e^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^
6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2
)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(
b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10
e^2 - 10(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 -
15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c
^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b
^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40
*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 1
0*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*
b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4
*a^7*c)*e^12)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)
*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*
b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3
*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 -
3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^
6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2
)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(
b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10
e^2 - 10(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 -

```
15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c
^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b
^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40
*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 1
0*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*
b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4
*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e +
3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c
^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*
a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e
^5 + (b^2*c^2 - a*c^3)*e^6)*sqrt(e*x + d)) - 2*(c*e*x - c*d + b*e)*sqrt(e*x
 + d))/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (
b*c*d^2 - b^2*d*e + a*b*e^2)*x)
```

giac [B] time = 1.53, size = 1534, normalized size = 4.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] ((x*e + d)^(3/2)*c*e^2 - 2*sqrt(x*e + d)*c*d*e^2 + sqrt(x*e + d)*b*e^3)/(((
x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)*(c*
d^2 - b*d*e + a*e^2)) + 1/8*((c*d^2*e - b*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d +
2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(b^2 - 4*a*c)*e^2 - 2*(2*sqrt(b^2 - 4*a*c)
*c^2*d^3*e^2 - 3*sqrt(b^2 - 4*a*c)*b*c*d^2*e^3 - sqrt(b^2 - 4*a*c)*a*b*e^5
+ (b^2 + 2*a*c)*sqrt(b^2 - 4*a*c)*d*e^4)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2
- 4*a*c)*c)*e)*abs(c*d^2*e - b*d*e^2 + a*e^3) + (4*c^4*d^6*e^2 - 12*b*c^3*d
^5*e^3 + (13*b^2*c^2 + 8*a*c^3)*d^4*e^4 + a^2*b^2*e^8 - 2*(3*b^3*c + 8*a*b*
c^2)*d^3*e^5 + (b^4 + 10*a*b^2*c + 4*a^2*c^2)*d^2*e^6 - 2*(a*b^3 + 2*a^2*b*
c)*d*e^7)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1
/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2
- a*b*e^3 + sqrt((2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e
^3)^2 - 4*(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^
3 + a^2*e^4)*(c^2*d^2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*e + a*c*e^2))
)/((sqrt(b^2 - 4*a*c)*c^3*d^6 - 3*sqrt(b^2 - 4*a*c)*b*c^2*d^5*e + 3*(b^2*c
+ a*c^2)*sqrt(b^2 - 4*a*c)*d^4*e^2 - 3*sqrt(b^2 - 4*a*c)*a^2*b*d*e^5 - (b^3
 + 6*a*b*c)*sqrt(b^2 - 4*a*c)*d^3*e^3 + sqrt(b^2 - 4*a*c)*a^3*e^6 + 3*(a*b^
2 + a^2*c)*sqrt(b^2 - 4*a*c)*d^2*e^4)*abs(c*d^2*e - b*d*e^2 + a*e^3)*abs(c)
) - 1/8*((c*d^2*e - b*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 -
4*a*c)*c)*e)*(b^2 - 4*a*c)*e^2 + 2*(2*sqrt(b^2 - 4*a*c)*c^2*d^3*e^2 - 3*sqr
t(b^2 - 4*a*c)*b*c*d^2*e^3 - sqrt(b^2 - 4*a*c)*a*b*e^5 + (b^2 + 2*a*c)*sqrt
(b^2 - 4*a*c)*d*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(c
*d^2*e - b*d*e^2 + a*e^3) + (4*c^4*d^6*e^2 - 12*b*c^3*d^5*e^3 + (13*b^2*c^2
 + 8*a*c^3)*d^4*e^4 + a^2*b^2*e^8 - 2*(3*b^3*c + 8*a*b*c^2)*d^3*e^5 + (b^4
+ 10*a*b^2*c + 4*a^2*c^2)*d^2*e^6 - 2*(a*b^3 + 2*a^2*b*c)*d*e^7)*sqrt(-4*c^
2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sq
rt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3 - sqrt((2*
c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)^2 - 4*(c^2*d^4 -
 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*(c^2*d^
2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*e + a*c*e^2)))/((sqrt(b^2 - 4*a*c
)*c^3*d^6 - 3*sqrt(b^2 - 4*a*c)*b*c^2*d^5*e + 3*(b^2*c + a*c^2)*sqrt(b^2 -
4*a*c)*d^4*e^2 - 3*sqrt(b^2 - 4*a*c)*a^2*b*d*e^5 - (b^3 + 6*a*b*c)*sqrt(b^2
 - 4*a*c)*d^3*e^3 + sqrt(b^2 - 4*a*c)*a^3*e^6 + 3*(a*b^2 + a^2*c)*sqrt(b^2
- 4*a*c)*d^2*e^4)*abs(c*d^2*e - b*d*e^2 + a*e^3)*abs(c))
```

maple [A] time = 0.08, size = 469, normalized size = 1.29

$$-\frac{2\sqrt{-\left(4ac-b^{2}\right)e^{2}}\,\sqrt{2}\,c^{2}\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)c}}\right)}{\left(4ac-b^{2}\right)\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)c}}+\frac{2\sqrt{-\left(4ac-b^{2}\right)e^{2}}\,\sqrt{2}\,c^{2}\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)c}}\right)}{\left(4ac-b^{2}\right)\left(be-2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)c}}-\frac{4\sqrt{-\left(4ac-b^{2}\right)e^{2}}\,\sqrt{ex+d}\,c^{2}}{\left(4ac-b^{2}\right)\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)\left(-2cex-be+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)}+\frac{4\sqrt{-\left(4ac-b^{2}\right)e^{2}}\,\sqrt{ex+d}\,c^{2}}{\left(4ac-b^{2}\right)\left(be-2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)\left(2cex+be+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x)
```

```
[Out] -4*c^2/(4*a*c-b^2)*(-(4*a*c-b^2)*e^2)^(1/2)*(e*x+d)^(1/2)/(-b*e+2*c*d+(-(4*
a*c-b^2)*e^2)^(1/2))/(-2*c*e*x-b*e+(-(4*a*c-b^2)*e^2)^(1/2))-2*c^2/(4*a*c-b
^2)*(-(4*a*c-b^2)*e^2)^(1/2)/(-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*2^(1/2)/
((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)+4*c^2/(4*a*c-b^2)*(-(
4*a*c-b^2)*e^2)^(1/2)*(e*x+d)^(1/2)/(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))/(2
*c*e*x+b*e+(-(4*a*c-b^2)*e^2)^(1/2))+2*c^2/(4*a*c-b^2)*(-(4*a*c-b^2)*e^2)^(
1/2)/(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^2\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^2*sqrt(e*x + d)), x)
```

mupad [B] time = 5.32, size = 18615, normalized size = 51.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((c*e^2*(d + e*x)^(3/2))/(a*e^2 + c*d^2 - b*d*e) + (e^2*(b*e - 2*c*d)*(d +
e*x)^(1/2))/(a*e^2 + c*d^2 - b*d*e))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)
^2 + a*e^2 + c*d^2 - b*d*e) - atan(((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 +
 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4
+ 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c
^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d +
 e*x)^(1/2)*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^
5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*
e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4
*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2)
 - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^
6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^
2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4
*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 3
2*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b
^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5
 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1
/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2
*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4
*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 +
 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2
*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3
*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2
*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3
*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c
*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)
^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a
^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 -
 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*
b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^
```

4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*1i - (((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 -

21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)
*1i)/((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4
*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*
c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d
*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d + e*x)^(1/2)*(-(b^5*e^5 - b^2*e
^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c
^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c -
 b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c
*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b
^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d
^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*
a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48
*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3
*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^
5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a
^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3
*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*
b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e
^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^
3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^
2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^
5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 -
 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(
-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2)
- 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3
 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 +
b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2
*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4
*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3
 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2
*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e
^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (2*(d + e*x)^(1
/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 +
 c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5
*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^
2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^
3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/
2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*
e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6
 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*
d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*
d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*
e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*
a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^
4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (((4*a*b^3*c
^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2
*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*
b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e
 + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)
^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c
^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7
*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e
^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(
16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 -
 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*
b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 +
 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 +
 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c
*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 -

96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*c^4*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*2i - atan(((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d + e*x)^(1/2)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5* d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*1i - (((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b* d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*1i)/((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d + e*x)^(1/2)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(b^5*

```
e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2
 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3
*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e
^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6
+ b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d
^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d
^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e
^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a
^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4
*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e
^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d
^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^
5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e
^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a
^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)
)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^
4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^
2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2
)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*
c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5
*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 +
3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*
a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*
c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e
^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^
4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(
d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))
/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e
^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a
*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3
*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c -
b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a
*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*
a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6
 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 +
48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b
^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^
3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a
*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (
2*c^4*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2
*a*c*d^2*e^2)))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^
2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*
d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*
(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(
1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^
4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^
4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c
*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2
 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2
*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d
*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3))
)^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**2/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1430 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=469

$$\frac{3\sqrt{c}\,e\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)^2}-\frac{3\sqrt{c}\,e\left(-2ce\right.}{}$$

Rubi [A] time = 1.72, antiderivative size = 469, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {822, 828, 826, 1166, 208}

$$\frac{3\sqrt{c}\,e\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)^2}-\frac{3\sqrt{c}\,e\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\left(ae^2-bde+cd^2\right)^2}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{\left(b^2-4ac\right)\sqrt{d+ex}\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{3e^2(2cd-be)}{\sqrt{d+ex}\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] (3*e^2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - ((b^2 - 4
*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*
e^2)*Sqrt[d + e*x]*(a + b*x + c*x^2)) + (3*Sqrt[c]*e*(2*c^2*d^2 + b*(b + Sq
rt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d + Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sq
rt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(Sqr
t[2]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d
*e + a*e^2)^2) - (3*Sqrt[c]*e*(2*c^2*d^2 + b*(b - Sqrt[b^2 - 4*a*c])*e^2 -
2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*
Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^2}\,dx = -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{3}{2}\left(b^2-4ac\right)e(cd-be)-\frac{3}{2}c(\ldots}{(d+ex)^{3/2}\left(a+bx+c\ldots\right.}}{\left(b^2-4ac\right)\left(cd^2-b\ldots\right.}$$

$$= \frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\ldots\right.}$$

$$= \frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\ldots\right.}$$

$$= \frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\ldots\right.}$$

$$= \frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\ldots\right.}$$

Mathematica [A] time = 2.63, size = 381, normalized size = 0.81

$$\frac{\frac{3\sqrt{2}\sqrt{c}\,e\left(\frac{\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}-\frac{\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}}+\frac{2\left(e(ae-bd)+cd^2\right)(be-cd+cex)}{\sqrt{d+ex}\,(a+x(b+cx))}-\frac{6e^2(be-2cd)}{\sqrt{d+ex}}}{2\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-6*e^2*(-2*c*d + b*e))/Sqrt[d + e*x] + (2*(c*d^2 + e*(-(b*d) + a*e))*(-(c
*d) + b*e + c*e*x))/(Sqrt[d + e*x]*(a + x*(b + c*x))) + (3*Sqrt[2]*Sqrt[c]*
e*(((2*c^2*d^2 + b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d + Sqrt[b^2 - 4*
```

```
a*c]*d + a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + S
qrt[b^2 - 4*a*c]*e]])/Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e] - ((2*c^2*d^
2 + b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e)
)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*
c])*e]])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]))/Sqrt[b^2 - 4*a*c])/(2*(c
*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [A] time = 5.02, size = 655, normalized size = 1.40

$$-\frac{3\left(-2\sqrt{2}c^{3/2}de^2\sqrt{b^2-4ac}+\sqrt{2}b\sqrt{c}e^3\sqrt{b^2-4ac}-2\sqrt{2}ac^{3/2}e^3+\sqrt{2}b^2\sqrt{c}e^3-2\sqrt{2}bc^{3/2}de^2+2\sqrt{2}c^{5/2}d^2e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-e\sqrt{b^2-4ac}+be-2cd}}\right)}{2\sqrt{b^2-4ac}\sqrt{-e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)^2}-\frac{3\left(-2\sqrt{2}c^{3/2}de^2\sqrt{b^2-4ac}+\sqrt{2}b\sqrt{c}e^3\sqrt{b^2-4ac}+2\sqrt{2}ac^{3/2}e^3-\sqrt{2}b^2\sqrt{c}e^3+2\sqrt{2}bc^{3/2}de^2-2\sqrt{2}c^{5/2}d^2e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}+be-2cd}}\right)}{2\sqrt{b^2-4ac}\sqrt{e\sqrt{b^2-4ac}+be-2cd}\left(-ae^2+bde-cd^2\right)^2}-\frac{e^2\left(2abe^3-ace^2(d+ex)-4acde^2+3b^2e^2(d+ex)-2b^2de^2+6bcd^2e-11bcde(d+ex)+3bce(d+ex)^2-4c^2d^3+11c^2d^2(d+ex)-6c^2d(d+ex)^2\right)}{\sqrt{d+ex}\left(ae^2-bde+cd^2\right)^2\left(ae^2+be(d+ex)-bde+cd^2-2cd(d+ex)+c(d+ex)^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((e^2*(-4*c^2*d^3 + 6*b*c*d^2*e - 2*b^2*d*e^2 - 4*a*c*d*e^2 + 2*a*b*e^3 +
11*c^2*d^2*(d + e*x) - 11*b*c*d*e*(d + e*x) + 3*b^2*e^2*(d + e*x) - a*c*e^2
*(d + e*x) - 6*c^2*d*(d + e*x)^2 + 3*b*c*e*(d + e*x)^2))/((c*d^2 - b*d*e +
a*e^2)^2*Sqrt[d + e*x]*(c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*x) + b*e*(d +
e*x) + c*(d + e*x)^2))) - (3*(2*Sqrt[2]*c^(5/2)*d^2*e - 2*Sqrt[2]*b*c^(3/2)
*d*e^2 - 2*Sqrt[2]*c^(3/2)*Sqrt[b^2 - 4*a*c]*d*e^2 + Sqrt[2]*b^2*Sqrt[c]*e^
3 - 2*Sqrt[2]*a*c^(3/2)*e^3 + Sqrt[2]*b*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^3)*ArcT
an[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]
])/(2*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2)
+ b*d*e - a*e^2)^2) - (3*(-2*Sqrt[2]*c^(5/2)*d^2*e + 2*Sqrt[2]*b*c^(3/2)*d*
e^2 - 2*Sqrt[2]*c^(3/2)*Sqrt[b^2 - 4*a*c]*d*e^2 - Sqrt[2]*b^2*Sqrt[c]*e^3 +
 2*Sqrt[2]*a*c^(3/2)*e^3 + Sqrt[2]*b*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^3)*ArcTan[
(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/
(2*Sqrt[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b
*d*e - a*e^2)^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 8.04, size = 1441, normalized size = 3.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 3*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*s
qrt(x*e + d)/sqrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d
^3*e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^
2*b*e^5 + sqrt((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e
^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*
e^5)^2 - 4*(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b
^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*
d*e^5 + a^3*e^6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^2
 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 +
2*a*c^2*d^2*e^2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))*e/((2*sqrt(b^2 - 4*a*c)*c^3*
d^3 + 3*(b^2*c^2 - 4*a*c^3 - sqrt(b^2 - 4*a*c)*b*c^2)*d^2*e - 3*(b^3*c - 4*
a*b*c^2 - (b^2*c - 2*a*c^2)*sqrt(b^2 - 4*a*c))*d*e^2 + (b^4 - 5*a*b^2*c + 4
*a^2*c^2 - (b^3 - 3*a*b*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) - 3*sqrt(-4*c^2*
d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*sqrt(x*e + d)/s
```

```
qrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d
^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5 - sqrt
((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d^2*e
^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)^2 - 4*(c^
3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6
*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^
6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^2 - 2*a*b*c*d*e
^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^
2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))*e/((2*sqrt(b^2 - 4*a*c)*c^3*d^3 - 3*(b^2*c
^2 - 4*a*c^3 + sqrt(b^2 - 4*a*c)*b*c^2)*d^2*e + 3*(b^3*c - 4*a*b*c^2 + (b^2
*c - 2*a*c^2)*sqrt(b^2 - 4*a*c))*d*e^2 - (b^4 - 5*a*b^2*c + 4*a^2*c^2 + (b^
3 - 3*a*b*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) + (6*(x*e + d)^2*c^2*d*e^2 - 1
1*(x*e + d)*c^2*d^2*e^2 + 4*c^2*d^3*e^2 - 3*(x*e + d)^2*b*c*e^3 + 11*(x*e +
 d)*b*c*d*e^3 - 6*b*c*d^2*e^3 - 3*(x*e + d)*b^2*e^4 + (x*e + d)*a*c*e^4 + 2
*b^2*d*e^4 + 4*a*c*d*e^4 - 2*a*b*e^5)/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2
 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*((x*e + d)^(5/2)*c - 2*(x*e + d)^
(3/2)*c*d + sqrt(x*e + d)*c*d^2 + (x*e + d)^(3/2)*b*e - sqrt(x*e + d)*b*d*e
 + sqrt(x*e + d)*a*e^2))
```

maple [B] time = 0.14, size = 1758, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -e^3/(a*e^2-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*b*c+2*e^
2/(a*e^2-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*c^2*d+e^4/(
a*e^2-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*a*c-e^4/(a*e^2
-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*b^2+3*e^3/(a*e^2-b*
d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*b*c*d-3*e^2/(a*e^2-b*d
*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*c^2*d^2-3*e^4/(a*e^2-b*
d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*c)*a*c^2+3/2*e^4/(a*e^2-b*d*e+c*d^2)^2*c/(-(4*a*c-b^2
)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan
h((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*
b^2-3*e^3/(a*e^2-b*d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*c^2*d+3*e^2/(a*e^2-b*d*e+c*d^
2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2)
)*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*c)*c^3*d^2+3/2*e^3/(a*e^2-b*d*e+c*d^2)^2*c*2^(1/2)/((-b*e+2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2/(a*e^2-b*d*e+c*d^2)^2*2
^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2
)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*c^2*d-3*e^4/(a
*e^2-b*d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*c^2+3/2*e^4/(a*e^2-b*d*e+c*d^2)^2*c/(-(4*a*c
-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arc
tan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
*b^2-3*e^3/(a*e^2-b*d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*c^2*d+3*e^2/(a*e^2-b*d*e+c*d^2)
^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*
c)^(1/2)*c)*c^3*d^2-3/2*e^3/(a*e^2-b*d*e+c*d^2)^2*c*2^(1/2)/((b*e-2*c*d+(-(
4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-
(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+3*e^2/(a*e^2-b*d*e+c*d^2)^2*2^(1/2)/(
```

```
(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/
((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*c^2*d-2*e^3/(a*e^2-b*d*e+
c*d^2)^2/(e*x+d)^(1/2)*b+4*e^2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*c*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^2(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^2*(e*x + d)^(3/2)), x)
```

mupad [B] time = 10.41, size = 58573, normalized size = 124.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] - atan((((-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^
7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(
-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^
4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*
c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4
*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*
d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*
a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b
^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4
*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*
(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*
e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e
^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^
2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80
*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^
5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2
*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b
^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*
d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75
*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b
^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4
*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)
^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7
+ 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(
4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*
d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c
- b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a
*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^
4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*
b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2
*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(
-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(1
6*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^
5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9
 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*
e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a
^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*
d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c
^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2
```

*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 48*a^10*c^4*e^22 + 144*a*c^13*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5* e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i - ((-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b

^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 - 48*a^10*c^4*e^22 - (d + e*x)^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^

7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) + (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 +

2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^
11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*
e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*
d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5
*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(b^7*
e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2
 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(
1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*
c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) -
 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*
c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 -
 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a
*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)
^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 +
a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d
^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*
e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*
d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 +
10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2
*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a
^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 12
0*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*
c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2
+ 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*
a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b
^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i)/(108*c^12*d^13*e^6 - ((-(
9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*
d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^
2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 -
10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^
(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^
3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40
*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^
3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6
 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c -
b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*
d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^
2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c
^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a
^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2
*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 -
150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4
 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e
^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80
*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d
^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6
 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 7
5*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 -
 48*a^10*c^4*e^22 - (d + e*x)^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)
^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*
b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2
*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*
e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^
6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c -
b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(
4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a
^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^
3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(

4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^1
0 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*
b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*
b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4
 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c
^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^
5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*
b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*
b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^
9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a
*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^
5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*
d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e
^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6
+ 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^
12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18
 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 8
00*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 571
2*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b
^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13
*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7
+ 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c
^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 +
12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2
*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235
200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^
6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 72
00*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^
13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203
280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*
d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a
^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^
9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^
5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^1
4 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b
^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 1
05600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4
*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^
8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20
 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*
d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^
11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*
b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 1
0400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*
e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11
*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a
^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 -
7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 +
 304*a^10*b^2*c^3*d*e^22) - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 110
4*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 73
92*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*
a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^
11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8
*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d
^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8
*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^
2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e
^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*
c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 12

5664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) + (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a

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^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2) - ((-(9*(b^7*e^7 + b^4*e^
7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^
4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^
2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4
+ 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e
^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*
c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 -
5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^
3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5
*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*
a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10
 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*
b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*
d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 16
0*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d
^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6
*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d
^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^
2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e +
40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c
^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^
7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8
 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*
(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*
d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*
c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 +
10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7
 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*
e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*
b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*
d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*
b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 +
 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^
2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^
6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*
a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8
*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e
^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5
*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*
d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40
*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3
*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*
e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 -
 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 +
64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3
*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*
a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a
^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^
12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9
*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^
14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^1
1*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3
*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 +
23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c
^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 3
60*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9
*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 6
0480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^
```

4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 48*a^10*c^4*e^22 + 144*a*c^13*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5* d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2) - 54*a^6*b*c^5*e^19 + 648*a*c^11*d^11*e^8 + 108*a^6*c^6*d*e^18 - 702*b*c^11*d^12*e^7 + 1620*a^2*c^10*d^9*e^10 + 2160*a^3*c^9*d^7*e^12 + 1620*a^4*c^8*d^5*e^14 + 648*a^5*c^7*d^3*e^16 + 1944*b^2*c^10*d^11*e^8 - 2970*b^3*c^9*d^10*e^9 + 2700*b^4*c^8*d^9*e^10 - 1458*b^5*c^7*d^8*e^11 + 432*b^6*c^6*d^7*e^12 - 54*b^7*c^5*d^6*e^13 + 12960*a^2*b^2*c^8*d^7*e^12 - 11340*a^2*b^3*c^7*d^6*e^13 + 4860*a^2*b^4*c^6*d^5*e^14 - 810*a^2*b^5*c^5*d^4*e^15 + 9720*a^3*b^2*c^7*d^5*e^14 - 5400*a^3*b^3*c^6*d^4*e^15 + 1080*a^3*b^4*c^5*d^3*e^16 + 3240*a^4*b^2*c^6*d^3*e^16 - 810*a^4*b^3*c^5*d^2*e^17 - 3564*a*b*c^10*d^10*e^9 + 8100*a*b^2*c^9*d^9*e^10 - 9720*a*b^3*c^8*d^8*e^11 + 6480*a*b^4*c^7*d^7*e^12 - 2268*a*b^5*c^6*d^6*e^13 + 324*a*b^6*c^5*d^5*e^14 - 7290*a^2*b*c^9*d^8*e^11 - 7560*a^3*b*c^8*d^6*e^13 - 4050*a^4*b*c^7*d^4*e^15 - 972*a^5*b*c^6*d^2*e^17 + 324*a^5*b^2*c^5*d*e^18))*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 +

10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2
*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a
^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 12
0*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*
c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2
+ 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*
a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b
^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*2i - atan(((((9*(b^4*e^7*(-(4
*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^
3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 8
0*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*
e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5
*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*
b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^
6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^
3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2
e^5(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) +
10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*
e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*
a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^
8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2
+ 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c
^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3
*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c
^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^
2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*
e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b
^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^
5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2
*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)^(1/2)*((9*(b^4*e^7*(-(4*a*
c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c
^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a
^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4
- 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*
e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2
*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 -
5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c
^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^
5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10
*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^1
0 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6
*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c
*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 1
60*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*
d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^
6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*
d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c
^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e +
40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*
c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d
^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^
8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23
+ 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*
a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 161
28*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 288
0*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3
*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*
c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6
*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*

d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 48*a^10*c^4*e^22 + 144*a*c^13*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36* a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^1 2*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6* e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e ^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18 *b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^ 11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c ^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680* a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^ 14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3 *d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050* a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d ^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3* c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a* b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a *b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 1 2960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4 *d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2 *c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^ 7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c *e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5 *b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3 *d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5* (-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a *b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b ^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d ^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160 *a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^ 8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6* e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^ 5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2 *d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 4 0*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^ 3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7 *e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i - (((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^ 2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^ 2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d* e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120 *a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e ^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5* a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^ 2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e ^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7 *c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2* b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^ 3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40* a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d* e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 - 48*a^10*c^4*e^22 - (d + e*x)^(1/2)*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e

^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) + (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2* b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i)/(108*c^12*d^13*e^6 - (((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 - 48*a^10*c^4*e^22 - (d + e*x)^(1/2)*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e

^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 1166

4*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) + (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2) - (((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4 *b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)^(1/2)*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2

*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^1
3*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*
b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 158
40*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^
11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d
^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*
b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 6
0480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^1
9 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^
22) - 48*a^10*c^4*e^22 + 144*a*c^13*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9
*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*
c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*
c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^
18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15
*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^
10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^1
3 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*
d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392
*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e
^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2
*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^1
2 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*
c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 10164
0*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*
d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^
4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14
- 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c
^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a
^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^
18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^
5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^
8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a
*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 -
4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*
e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*
d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*
c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 1881
6*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 38
4*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^1
2*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*
a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a
^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c
^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^
8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d
^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d
^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^
2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15
- 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7
*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3
*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 -
14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d
^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b
^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 36
0*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10
+ 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^
13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11
*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7
*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*
c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3

```
*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^
7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3
*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4
*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c
^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) -
60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^
2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*
e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/
(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d
^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*
d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6
*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 +
 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2
*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*
b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^
4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7
*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 -
 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^
2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*
c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2) - 54*a^
6*b*c^5*e^19 + 648*a*c^11*d^11*e^8 + 108*a^6*c^6*d*e^18 - 702*b*c^11*d^12*e
^7 + 1620*a^2*c^10*d^9*e^10 + 2160*a^3*c^9*d^7*e^12 + 1620*a^4*c^8*d^5*e^14
 + 648*a^5*c^7*d^3*e^16 + 1944*b^2*c^10*d^11*e^8 - 2970*b^3*c^9*d^10*e^9 +
2700*b^4*c^8*d^9*e^10 - 1458*b^5*c^7*d^8*e^11 + 432*b^6*c^6*d^7*e^12 - 54*b
^7*c^5*d^6*e^13 + 12960*a^2*b^2*c^8*d^7*e^12 - 11340*a^2*b^3*c^7*d^6*e^13 +
 4860*a^2*b^4*c^6*d^5*e^14 - 810*a^2*b^5*c^5*d^4*e^15 + 9720*a^3*b^2*c^7*d^
5*e^14 - 5400*a^3*b^3*c^6*d^4*e^15 + 1080*a^3*b^4*c^5*d^3*e^16 + 3240*a^4*b
^2*c^6*d^3*e^16 - 810*a^4*b^3*c^5*d^2*e^17 - 3564*a*b*c^10*d^10*e^9 + 8100*
a*b^2*c^9*d^9*e^10 - 9720*a*b^3*c^8*d^8*e^11 + 6480*a*b^4*c^7*d^7*e^12 - 22
68*a*b^5*c^6*d^6*e^13 + 324*a*b^6*c^5*d^5*e^14 - 7290*a^2*b*c^9*d^8*e^11 -
7560*a^3*b*c^8*d^6*e^13 - 4050*a^4*b*c^7*d^4*e^15 - 972*a^5*b*c^6*d^2*e^17
+ 324*a^5*b^2*c^5*d*e^18))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7
+ 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^
7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d
^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^
4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2
*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1
/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^
2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d
^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) -
 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^
2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^
5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^
6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^
7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5
*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3
 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*
e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^
4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^
9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6
*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d
^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^
7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))
^(1/2)*2i - ((2*(b*e^3 - 2*c*d*e^2))/(a*e^2 + c*d^2 - b*d*e) - (3*(2*c^2*d*
e^2 - b*c*e^3)*(d + e*x)^2)/(a*e^2 + c*d^2 - b*d*e)^2 + ((d + e*x)*(3*b^2*e
^4 + 11*c^2*d^2*e^2 - a*c*e^4 - 11*b*c*d*e^3))/(a*e^2 + c*d^2 - b*d*e)^2)/(
c*(d + e*x)^(5/2) + (b*e - 2*c*d)*(d + e*x)^(3/2) + (d + e*x)^(1/2)*(a*e^2
+ c*d^2 - b*d*e))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(3/2)/(c*x**2+b*x+a)**2,x)
[Out] Timed out
```

3.1431 $\int \frac{(b+2cx)(d+ex)^{7/2}}{(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=543

$$\frac{7e\left(-2c^2de\left(-d\sqrt{b^2-4ac}-8ae+6bd\right)+2ce^2\left(-bd\sqrt{b^2-4ac}+3ae\sqrt{b^2-4ac}-4abe+b^2d\right)+b^2e^3\left(b-\sqrt{b^2-4\right.\right.}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

Rubi [A] time = 5.72, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {768, 738, 824, 826, 1166, 208}

$$\frac{7e\left(-2c^2de\left(-d\sqrt{b^2-4ac}-8ae+6bd\right)+2ce^2\left(-bd\sqrt{b^2-4ac}+3ae\sqrt{b^2-4ac}-4abe+b^2d\right)+b^2e^3\left(b-\sqrt{b^2-4ac}\right)+8c^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{7e\left(-2c^2de\left(d\sqrt{b^2-4ac}-8ae+6bd\right)+2ce^2\left(bd\sqrt{b^2-4ac}-3ae\sqrt{b^2-4ac}-4abe+b^2d\right)+b^2e^3\left(\sqrt{b^2-4ac}+b\right)+8c^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}+\frac{7e^2\sqrt{d+ex}\,(2cd-be)}{4c\left(b^2-4ac\right)}-\frac{7e(d+ex)^{3/2}(-2ae+x(2cd-be)+bd)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (7*e^2*(2*c*d - b*e)*Sqrt[d + e*x])/(4*c*(b^2 - 4*a*c)) - (d + e*x)^(7/2)/(
2*(a + b*x + c*x^2)^2) - (7*e*(d + e*x)^(3/2)*(b*d - 2*a*e + (2*c*d - b*e)*
x))/(4*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (7*e*(8*c^3*d^3 + b^2*(b - Sqrt[b
^2 - 4*a*c])*e^3 - 2*c^2*d*e*(6*b*d - Sqrt[b^2 - 4*a*c]*d - 8*a*e) + 2*c*e^
2*(b^2*d - b*Sqrt[b^2 - 4*a*c]*d - 4*a*b*e + 3*a*Sqrt[b^2 - 4*a*c]*e))*ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]
])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*
c])*e]) - (7*e*(8*c^3*d^3 + b^2*(b + Sqrt[b^2 - 4*a*c])*e^3 - 2*c^2*d*e*(6*
b*d + Sqrt[b^2 - 4*a*c]*d - 8*a*e) + 2*c*e^2*(b^2*d + b*Sqrt[b^2 - 4*a*c]*d
 - 4*a*b*e - 3*a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*
x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a
*c)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}+\frac{1}{4}(7e)\int \frac{(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(7e)\int \frac{\sqrt{d+ex}\left(\frac{1}{2}\left(4cd^2-\right.\right.}{}}{4\left(b\right.}$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Mathematica [B] time = 6.75, size = 1403, normalized size = 2.58

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(9/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(9/2)*((-3*a*c*(b^2 - 4*a*c)
*e^2*(2*c*d - b*e))/2 - ((b^2 - 4*a*c)*e*(7*c*d - 5*b*e)*(b*c*d - b^2*e + 2
*a*c*e))/2 + c*((-3*c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 - ((b^2 - 4*a*c)*e
*(7*c*d - 5*b*e)*(2*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^
2)*(a + b*x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(14*c^2*d^2 + 5*b^2*e^2 - 2*c*
e*(7*b*d + 3*a*e))*(d + e*x)^(7/2))/2 + (2*((49*c*(b^2 - 4*a*c)*e^2*(2*c*d
- b*e)*(c*d^2 - e*(b*d - a*e))*(d + e*x)^(5/2))/4 + (2*((245*c^2*(b^2 - 4*a
*c)*e^2*(c*d^2 - e*(b*d - a*e))^2*(d + e*x)^(3/2))/4 + (2*((735*c^2*(b^2 -
4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2*Sqrt[d + e*x])/16 + (4*(
(Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*((-735*c^3*(b^2 - 4*a*c)*e^2*(2*c^
2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 - ((73
5*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d -
3*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 + 2*c*((-735*c^3*(b^2 - 4*a*c)*e^2*(4
*c^2*d^3 - a*b*e^3 - c*d*e*(5*b*d - 8*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 +
 (735*c^3*(b^2 - 4*a*c)*d*e^2*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(
c*d^2 - e*(b*d - a*e))^2)/64))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt
[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[
c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e + Sqrt[b^2 - 4
*a*c]*e]*((-735*c^3*(b^2 - 4*a*c)*e^2*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3
*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 + ((735*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d
+ b*e)*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(c*d^2 - e*(b*d - a*e))^
2)/64 + 2*c*((-735*c^3*(b^2 - 4*a*c)*e^2*(4*c^2*d^3 - a*b*e^3 - c*d*e*(5*b*
d - 8*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 + (735*c^3*(b^2 - 4*a*c)*d*e^2*(2
*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64))/(
Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d -
b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*
a*c]*e))))/c))/(3*c)))/(5*c)))/(7*c))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2
)))/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2))
```

IntegrateAlgebraic [C] time = 84.88, size = 1354, normalized size = 2.49

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-14*c^3*d^5 + 35*b*c^2*d^4*e - 28*b^2*c*d^3*e^2 - 28*a*
c^2*d^3*e^2 + 7*b^3*d^2*e^3 + 42*a*b*c*d^2*e^3 - 14*a*b^2*d*e^4 - 14*a^2*c*
d*e^4 + 7*a^2*b*e^5 + 42*c^3*d^4*(d + e*x) - 84*b*c^2*d^3*e*(d + e*x) + 56*
b^2*c*d^2*e^2*(d + e*x) + 28*a*c^2*d^2*e^2*(d + e*x) - 14*b^3*d*e^3*(d + e*
x) - 28*a*b*c*d*e^3*(d + e*x) + 14*a*b^2*e^4*(d + e*x) - 14*a^2*c*e^4*(d +
e*x) - 42*c^3*d^3*(d + e*x)^2 + 63*b*c^2*d^2*e*(d + e*x)^2 - 35*b^2*c*d*e^2
*(d + e*x)^2 + 14*a*c^2*d*e^2*(d + e*x)^2 + 7*b^3*e^3*(d + e*x)^2 - 7*a*b*c
*e^3*(d + e*x)^2 + 14*c^3*d^2*(d + e*x)^3 - 14*b*c^2*d*e*(d + e*x)^3 + 9*b^
2*c*e^2*(d + e*x)^3 - 22*a*c^2*e^2*(d + e*x)^3))/(4*c*(-b^2 + 4*a*c)*(c*d^2
 - b*d*e + a*e^2 - 2*c*d*(d + e*x) + b*e*(d + e*x) + c*(d + e*x)^2)^2) + (2
*Sqrt[2]*(8*c*d*e^3 - 4*b*e^4 + Sqrt[b^2 - 4*a*c]*e^4)*ArcTan[(Sqrt[2]*Sqrt
[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(c^(3/2)*Sqrt
[b^2 - 4*a*c]*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]) + (2*Sqrt[2]*(-8*c*
d*e^3 + 4*b*e^4 + Sqrt[b^2 - 4*a*c]*e^4)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e
*x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*
Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]) + (((56*I)*Sqrt[2]*c^3*d^3*e - (8
4*I)*Sqrt[2]*b*c^2*d^2*e^2 - 14*Sqrt[2]*c^2*Sqrt[-b^2 + 4*a*c]*d^2*e^2 + (1
42*I)*Sqrt[2]*b^2*c*d*e^3 - (400*I)*Sqrt[2]*a*c^2*d*e^3 + 14*Sqrt[2]*b*c*Sq
```

```
rt[-b^2 + 4*a*c]*d*e^3 - (57*I)*Sqrt[2]*b^3*e^4 + (200*I)*Sqrt[2]*a*b*c*e^4
 - 9*Sqrt[2]*b^2*Sqrt[-b^2 + 4*a*c]*e^4 + 22*Sqrt[2]*a*c*Sqrt[-b^2 + 4*a*c]
*e^4)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - I*Sqrt[-b^
2 + 4*a*c]*e]])/(8*c^(3/2)*(b^2 - 4*a*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b
*e - I*Sqrt[-b^2 + 4*a*c]*e]) + (((-56*I)*Sqrt[2]*c^3*d^3*e + (84*I)*Sqrt[2
]*b*c^2*d^2*e^2 - 14*Sqrt[2]*c^2*Sqrt[-b^2 + 4*a*c]*d^2*e^2 - (142*I)*Sqrt[
2]*b^2*c*d*e^3 + (400*I)*Sqrt[2]*a*c^2*d*e^3 + 14*Sqrt[2]*b*c*Sqrt[-b^2 + 4
*a*c]*d*e^3 + (57*I)*Sqrt[2]*b^3*e^4 - (200*I)*Sqrt[2]*a*b*c*e^4 - 9*Sqrt[2
]*b^2*Sqrt[-b^2 + 4*a*c]*e^4 + 22*Sqrt[2]*a*c*Sqrt[-b^2 + 4*a*c]*e^4)*ArcTa
n[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*
e]])/(8*c^(3/2)*(b^2 - 4*a*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt
[-b^2 + 4*a*c]*e])
```

fricas [B] time = 0.89, size = 5701, normalized size = 10.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(7*sqrt(1/2)*(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3 - 4*a*c^4)*x^4 + 2*(b^3*
c^2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*x^2 + 2*(a*b^3*c -
 4*a^2*b*c^2)*x)*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 +
12*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c
^2 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 + (b^6*c^3 -
 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c
^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^
13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2
*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*
c^6))*log(343/2*sqrt(1/2)*(10*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e^6
- 15*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^7 + 3*(b^6*c - 2*a*b^4*c^
2 - 32*a^2*b^2*c^3 + 96*a^3*c^4)*d*e^8 + (b^7 - 17*a*b^5*c + 88*a^2*b^3*c^2
 - 144*a^3*b*c^3)*e^9 - (8*(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^
3*c^8)*d^2 - 8*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^3*c^6 - 64*a^3*b*c^7)*d*e
 - (b^8*c^3 - 24*a*b^6*c^4 + 192*a^2*b^4*c^5 - 640*a^3*b^2*c^6 + 768*a^4*c^
7)*e^2)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*
d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*
e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt((32*c^5
*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^
2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5
 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^
5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6
*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a
^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6
*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) + 343*(80*c^5*d^6*e^6 -
 240*b*c^4*d^5*e^7 + (199*b^2*c^3 + 404*a*c^4)*d^4*e^8 + 2*(b^3*c^2 - 404*a
*b*c^3)*d^3*e^9 - 6*(6*b^4*c - 47*a*b^2*c^2 - 108*a^2*c^3)*d^2*e^10 - (5*b^
5 - 122*a*b^3*c + 648*a^2*b*c^2)*d*e^11 + (5*a*b^4 - 81*a^2*b^2*c + 324*a^3
*c^2)*e^12)*sqrt(e*x + d)) - 7*sqrt(1/2)*(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3
- 4*a*c^4)*x^4 + 2*(b^3*c^2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2
*c^3)*x^2 + 2*(a*b^3*c - 4*a^2*b*c^2)*x)*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^
4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^
5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2
*b*c^2)*e^7 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((
25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*
(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6
 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 +
48*a^2*b^2*c^5 - 64*a^3*c^6))*log(-343/2*sqrt(1/2)*(10*(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5)*d^3*e^6 - 15*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^
7 + 3*(b^6*c - 2*a*b^4*c^2 - 32*a^2*b^2*c^3 + 96*a^3*c^4)*d*e^8 + (b^7 - 17
```

*a*b^5*c + 88*a^2*b^3*c^2 - 144*a^3*b*c^3)*e^9 - (8*(b^6*c^5 - 12*a*b^4*c^6
 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*d^2 - 8*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^
3*c^6 - 64*a^3*b*c^7)*d*e - (b^8*c^3 - 24*a*b^6*c^4 + 192*a^2*b^4*c^5 - 640
*a^3*b^2*c^6 + 768*a^4*c^7)*e^2)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11
 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 -
18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 6
4*a^3*c^9)))*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a
*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 -
 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 + (b^6*c^3 - 12*
a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d
^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 +
 (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2
*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)
) + 343*(80*c^5*d^6*e^6 - 240*b*c^4*d^5*e^7 + (199*b^2*c^3 + 404*a*c^4)*d^4
e^8 + 2(b^3*c^2 - 404*a*b*c^3)*d^3*e^9 - 6*(6*b^4*c - 47*a*b^2*c^2 - 108*
a^2*c^3)*d^2*e^10 - (5*b^5 - 122*a*b^3*c + 648*a^2*b*c^2)*d*e^11 + (5*a*b^4
 - 81*a^2*b^2*c + 324*a^3*c^2)*e^12)*sqrt(e*x + d)) + 7*sqrt(1/2)*(a^2*b^2*
c - 4*a^3*c^2 + (b^2*c^3 - 4*a*c^4)*x^4 + 2*(b^3*c^2 - 4*a*b*c^3)*x^3 + (b^
4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*x^2 + 2*(a*b^3*c - 4*a^2*b*c^2)*x)*sqrt((32*
c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3
*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (
b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2
*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2
 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 8
1*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(
b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*log(343/2*sqrt(1/2)*
(10*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e^6 - 15*(b^5*c^2 - 8*a*b^3*c^
3 + 16*a^2*b*c^4)*d^2*e^7 + 3*(b^6*c - 2*a*b^4*c^2 - 32*a^2*b^2*c^3 + 96*a^
3*c^4)*d*e^8 + (b^7 - 17*a*b^5*c + 88*a^2*b^3*c^2 - 144*a^3*b*c^3)*e^9 + (8
*(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*d^2 - 8*(b^7*c^4 -
12*a*b^5*c^5 + 48*a^2*b^3*c^6 - 64*a^3*b*c^7)*d*e - (b^8*c^3 - 24*a*b^6*c^4
 + 192*a^2*b^4*c^5 - 640*a^3*b^2*c^6 + 768*a^4*c^7)*e^2)*sqrt((25*c^4*d^4*e
^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a
*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*
c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^
3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 -
5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c
^2)*e^7 - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c
^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3
*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 1
2*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a
^2*b^2*c^5 - 64*a^3*c^6)) + 343*(80*c^5*d^6*e^6 - 240*b*c^4*d^5*e^7 + (199*
b^2*c^3 + 404*a*c^4)*d^4*e^8 + 2*(b^3*c^2 - 404*a*b*c^3)*d^3*e^9 - 6*(6*b^4
*c - 47*a*b^2*c^2 - 108*a^2*c^3)*d^2*e^10 - (5*b^5 - 122*a*b^3*c + 648*a^2*
b*c^2)*d*e^11 + (5*a*b^4 - 81*a^2*b^2*c + 324*a^3*c^2)*e^12)*sqrt(e*x + d))
 - 7*sqrt(1/2)*(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3 - 4*a*c^4)*x^4 + 2*(b^3*c^
2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*x^2 + 2*(a*b^3*c - 4
*a^2*b*c^2)*x)*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12
*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2
 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 - (b^6*c^3 - 1
2*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3
*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13
 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b
^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^
6))*log(-343/2*sqrt(1/2)*(10*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e^6 -
 15*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^7 + 3*(b^6*c - 2*a*b^4*c^2
 - 32*a^2*b^2*c^3 + 96*a^3*c^4)*d*e^8 + (b^7 - 17*a*b^5*c + 88*a^2*b^3*c^2
 - 144*a^3*b*c^3)*e^9 + (8*(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3
*c^8)*d^2 - 8*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^3*c^6 - 64*a^3*b*c^7)*d*e

```
- (b^8*c^3 - 24*a*b^6*c^4 + 192*a^2*b^4*c^5 - 640*a^3*b^2*c^6 + 768*a^4*c^7
)*e^2)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d
^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e
^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt((32*c^5*
d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^2
 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5
- 15*a*b^3*c + 60*a^2*b*c^2)*e^7 - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5
 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*
a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^
2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*
c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) + 343*(80*c^5*d^6*e^6 -
240*b*c^4*d^5*e^7 + (199*b^2*c^3 + 404*a*c^4)*d^4*e^8 + 2*(b^3*c^2 - 404*a*
b*c^3)*d^3*e^9 - 6*(6*b^4*c - 47*a*b^2*c^2 - 108*a^2*c^3)*d^2*e^10 - (5*b^5
 - 122*a*b^3*c + 648*a^2*b*c^2)*d*e^11 + (5*a*b^4 - 81*a^2*b^2*c + 324*a^3*
c^2)*e^12)*sqrt(e*x + d)) - 2*(7*a*b*c*d^2*e - 28*a^2*c*d*e^2 + 7*a^2*b*e^3
 + 2*(b^2*c - 4*a*c^2)*d^3 + (14*c^3*d^2*e - 14*b*c^2*d*e^2 + (9*b^2*c - 22
*a*c^2)*e^3)*x^3 + (21*b*c^2*d^2*e - 4*(2*b^2*c + 13*a*c^2)*d*e^2 + 7*(b^3
- a*b*c)*e^3)*x^2 - (42*a*b*c*d*e^2 - (13*b^2*c - 10*a*c^2)*d^2*e - 14*(a*b
^2 - a^2*c)*e^3)*x)*sqrt(e*x + d))/(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3 - 4*a*
c^4)*x^4 + 2*(b^3*c^2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*
x^2 + 2*(a*b^3*c - 4*a^2*b*c^2)*x)
```

giac [B] time = 6.05, size = 1749, normalized size = 3.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -7/4*(16*(b^2*c^6 - 4*a*c^7)*d^4*e^2 - 32*(b^3*c^5 - 4*a*b*c^6)*d^3*e^3 + 1
6*(b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^2*e^4 - (2*c^2*d^2*e^2 - 2*b*c*d*e^
3 - (b^2 - 6*a*c)*e^4)*(b^2*c*e - 4*a*c^2*e)^2 - 32*(a*b^3*c^4 - 4*a^2*b*c^
5)*d*e^5 - 2*(2*sqrt(b^2 - 4*a*c)*c^4*d^3*e^2 - 3*sqrt(b^2 - 4*a*c)*b*c^3*d
^2*e^3 - sqrt(b^2 - 4*a*c)*a*b*c^2*e^5 + (b^2*c^2 + 2*a*c^3)*sqrt(b^2 - 4*a
*c)*d*e^4)*abs(-b^2*c*e + 4*a*c^2*e) - (b^6*c^2 - 12*a*b^4*c^3 + 32*a^2*b^2
*c^4)*e^6)*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^2*d - 8*a*c^3*d
- b^3*c*e + 4*a*b*c^2*e + sqrt((2*b^2*c^2*d - 8*a*c^3*d - b^3*c*e + 4*a*b*c
^2*e)^2 - 4*(b^2*c^2*d^2 - 4*a*c^3*d^2 - b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*
c*e^2 - 4*a^2*c^2*e^2)*(b^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/(sqrt(-4
*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(2*(b^2*c^2 - 4*a*c^3)*sqrt(b^2 -
 4*a*c)*d + (b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3 - (b^3*c - 4*a*b*c^2)*sqrt(b^
2 - 4*a*c))*e)*abs(-b^2*c*e + 4*a*c^2*e)*abs(c)) + 7/4*(16*(b^2*c^6 - 4*a*c
^7)*d^4*e^2 - 32*(b^3*c^5 - 4*a*b*c^6)*d^3*e^3 + 16*(b^4*c^4 - 2*a*b^2*c^5
- 8*a^2*c^6)*d^2*e^4 - (2*c^2*d^2*e^2 - 2*b*c*d*e^3 - (b^2 - 6*a*c)*e^4)*(b
^2*c*e - 4*a*c^2*e)^2 - 32*(a*b^3*c^4 - 4*a^2*b*c^5)*d*e^5 + 2*(2*sqrt(b^2
- 4*a*c)*c^4*d^3*e^2 - 3*sqrt(b^2 - 4*a*c)*b*c^3*d^2*e^3 - sqrt(b^2 - 4*a*c
)*a*b*c^2*e^5 + (b^2*c^2 + 2*a*c^3)*sqrt(b^2 - 4*a*c)*d*e^4)*abs(-b^2*c*e +
 4*a*c^2*e) - (b^6*c^2 - 12*a*b^4*c^3 + 32*a^2*b^2*c^4)*e^6)*arctan(2*sqrt(
1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^2*d - 8*a*c^3*d - b^3*c*e + 4*a*b*c^2*e -
 sqrt((2*b^2*c^2*d - 8*a*c^3*d - b^3*c*e + 4*a*b*c^2*e)^2 - 4*(b^2*c^2*d^2
- 4*a*c^3*d^2 - b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)*(b
^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/(sqrt(-4*c^2*d + 2*(b*c - sqrt(b^
2 - 4*a*c)*c)*e)*(2*(b^2*c^2 - 4*a*c^3)*sqrt(b^2 - 4*a*c)*d - (b^4*c - 8*a*
b^2*c^2 + 16*a^2*c^3 + (b^3*c - 4*a*b*c^2)*sqrt(b^2 - 4*a*c))*e)*abs(-b^2*c
*e + 4*a*c^2*e)*abs(c)) - 1/4*(14*(x*e + d)^(7/2)*c^3*d^2*e^2 - 42*(x*e + d
)^(5/2)*c^3*d^3*e^2 + 42*(x*e + d)^(3/2)*c^3*d^4*e^2 - 14*sqrt(x*e + d)*c^3
*d^5*e^2 - 14*(x*e + d)^(7/2)*b*c^2*d*e^3 + 63*(x*e + d)^(5/2)*b*c^2*d^2*e^
3 - 84*(x*e + d)^(3/2)*b*c^2*d^3*e^3 + 35*sqrt(x*e + d)*b*c^2*d^4*e^3 + 9*(
x*e + d)^(7/2)*b^2*c*e^4 - 22*(x*e + d)^(7/2)*a*c^2*e^4 - 35*(x*e + d)^(5/2
)*b^2*c*d*e^4 + 14*(x*e + d)^(5/2)*a*c^2*d*e^4 + 56*(x*e + d)^(3/2)*b^2*c*d
```

```
^2*e^4 + 28*(x*e + d)^(3/2)*a*c^2*d^2*e^4 - 28*sqrt(x*e + d)*b^2*c*d^3*e^4
- 28*sqrt(x*e + d)*a*c^2*d^3*e^4 + 7*(x*e + d)^(5/2)*b^3*e^5 - 7*(x*e + d)^
(5/2)*a*b*c*e^5 - 14*(x*e + d)^(3/2)*b^3*d*e^5 - 28*(x*e + d)^(3/2)*a*b*c*d
*e^5 + 7*sqrt(x*e + d)*b^3*d^2*e^5 + 42*sqrt(x*e + d)*a*b*c*d^2*e^5 + 14*(x
*e + d)^(3/2)*a*b^2*e^6 - 14*(x*e + d)^(3/2)*a^2*c*e^6 - 14*sqrt(x*e + d)*a
*b^2*d*e^6 - 14*sqrt(x*e + d)*a^2*c*d*e^6 + 7*sqrt(x*e + d)*a^2*b*e^7)/(((x
*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)^2*(b
^2*c - 4*a*c^2))
```

maple [B] time = 0.15, size = 3503, normalized size = 6.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -14*e^4/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c
-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*
c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*d+21/2*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2
)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+
d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d^2-14
*e^4/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*
c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*d+21/2*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*
x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d^2
+21/4*e^4/(4*a*c-b^2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2
)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*a-35/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*b^2*
d-11/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*a*c+14*e^4
/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*b^2*d^2-7/8*e^5/(4*a
*c-b^2)/c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^
(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*c)*b^3-7/4*e^4/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(
1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d-7/2*e^6/(c*e^2
*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(e*x+d)^(1/2)*a*b^2*d-7*e^2/(4*a*c-b^2)
*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2)
)*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*c)*d^3+7*e^5/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b
*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((
b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b-7/8*e^5/(4*a*c-b^2)/c/(
-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1
/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(
1/2)*c)*b^3-7*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2
*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^3-7/4*e^4/(4*a*c-b^2)/(-(4*a*c
-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*ar
ctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)
*c)*b^2*d+7*e^5/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(
-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b+9/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^
2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*b^2-7/2*e^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a
*c-b^2)*(e*x+d)^(3/2)*a^2-7*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*
x+d)^(1/2)*b^2*d^3+21/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*
x+d)^(3/2)*d^4-7/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^
(1/2)*d^5-7/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*a*b
+7/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*c^2*d^2+7/4*
e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)/c*(e*x+d)^(5/2)*b^3-21/4*e^4/(4
*a*c-b^2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((
```

```
e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-2
1/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*c^2*(e*x+d)^(5/2)*d^3-7/2*e
^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a^2*d-7/4*e^3/(4*a
*c-b^2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+
d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d+7/8*
e^4/(4*a*c-b^2)/c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*a
rctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2
)*c)*b^2+7/4*e^3/(4*a*c-b^2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))
*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/
2))*c)^(1/2)*c)*b*d-7/4*e^2/(4*a*c-b^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2+63/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*
c-b^2)*c*(e*x+d)^(5/2)*b*d^2+7/2*e^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b
^2)*(e*x+d)^(3/2)*a*b^2-7/2*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(
e*x+d)^(3/2)*b^3*d+7/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*c*(e*x+d
)^(5/2)*a*d-21*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(3/2)*
b*d^3+7/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(e*x+d)^(1/2)*b^3*d
^2+21/2*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*b*d^2-7
*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*b*d+7/4*e^2/(4
*a*c-b^2)*c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((
e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-
7/8*e^4/(4*a*c-b^2)/c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2
)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*b^2+7/4*e^7/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(e*x+d)^(1/2)*a
^2*b+7*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(3/2)*a*d^2-7*
e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(1/2)*a*d^3+35/4*e^3/
(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(1/2)*b*d^4-7/2*e^3/(c*e^
2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*b*c*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(7/2)/(c*x^2 + b*x + a)^3, x)
```

mupad [B] time = 6.07, size = 22151, normalized size = 40.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(7/2)*(9*b^2*e^4 + 14*c^2*d^2*e^2 - 22*a*c*e^4 - 14*b*c*d*e^3))
/(4*(4*a*c - b^2)) - (7*(d + e*x)^(1/2)*(2*c^3*d^5*e^2 - b^3*d^2*e^5 - a^2*
b*e^7 + 4*a*c^2*d^3*e^4 - 5*b*c^2*d^4*e^3 + 4*b^2*c*d^3*e^4 + 2*a*b^2*d*e^6
 + 2*a^2*c*d*e^6 - 6*a*b*c*d^2*e^5))/(4*c*(4*a*c - b^2)) + (7*(d + e*x)^(3/
2)*(a*b^2*e^6 - a^2*c*e^6 - b^3*d*e^5 + 3*c^3*d^4*e^2 + 2*a*c^2*d^2*e^4 - 6
*b*c^2*d^3*e^3 + 4*b^2*c*d^2*e^4 - 2*a*b*c*d*e^5))/(2*c*(4*a*c - b^2)) + (7
*(b*e - 2*c*d)*(d + e*x)^(5/2)*(b^2*e^4 + 3*c^2*d^2*e^2 - a*c*e^4 - 3*b*c*d
*e^3))/(4*c*(4*a*c - b^2)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2
*d*e^2 - 2*a*b*e^3 + 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d +
e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^
4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + at
an(((((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b
^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^
```

3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) - ((d + e*x)^(1/2)*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i - (((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a

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^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^
4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 -
80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5
*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(
1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2
*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^
2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 9
0*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b
^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b
*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b
^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*
c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b
^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 -
128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*
b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 -
288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^
3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*
e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2
)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c
*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 -
3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e
^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e
^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4
- 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 +
320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/
(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*
b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(
49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4
704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2
*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10
 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2
*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^
2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7
 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a
^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d
^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^
2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c -
b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 153
6*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4
+ 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^
2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3
- 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5
120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3
840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240
*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1
/2)*1i)/((((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 +
 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c
^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d
^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^
3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d
^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 +
48*a^2*b^2*c^3)) - ((d + e*x)^(1/2)*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2)
- b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7
+ 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680
*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3
*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^
9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6
*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4
```

*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^

8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (7*(245*a^2*b^4*e^14 + 10584*a^4*c^2*e^14 + 245*b^6*d^2*e^12 + 1568*c^6*d^8*e^6 - 3234*a^3*b^2*c*e^14 + 11368*a*c^5*d^6*e^8 - 6272*b*c^5*d^7*e^7 + 784*b^5*c*d^3*e^11 + 28616*a^2*c^4*d^4*e^10 + 29400*a^3*c^3*d^2*e^12 + 8134*b^2*c^4*d^6*e^8 - 2450*b^3*c^3*d^5*e^9 - 2009*b^4*c^2*d^4*e^10 - 490*a*b^5*d*e^13 + 20874*a^2*b^2*c^2*d^2*e^12 - 34104*a*b*c^4*d^5*e^9 - 5292*a*b^4*c*d^2*e^12 + 7742*a^2*b^3*c*d*e^13 - 29400*a^3*b*c^2*d*e^13 + 28322*a*b^2*c^3*d^4*e^10 + 196*a*b^3*c^2*d^3*e^11 - 57232*a^2*b*c^3*d^3*e^11))/(32*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3))))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*2i + atan(((((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b

^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*
c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b
^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) -
((d + e*x)^(1/2)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2
) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*
e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 +
32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^
2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7
*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)
^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*
c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^
3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*
c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c
^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6
*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^
10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b
^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 +
8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*
c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))
)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 -
7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*
b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*
e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d
^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2
)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a
^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2
400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e
^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 4
80*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120
*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840
*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^
2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)
 - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5
880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c
^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e
^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3
*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16
*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2
)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3
*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d
^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b
^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 +
9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c
- b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960
*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4
- 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 9
60*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*
a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*
a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3
- 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6
144*a^5*b^2*c^8)))^(1/2)*1i - (((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 -
 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3
*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5
 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^
6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^
6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*
c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49*(3840*a^5*b*c
^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 -
 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a

^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4
*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^
2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*
c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 -
 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*
e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*
e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4
 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 +
 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))
/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3
*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 7
68*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*
e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2)
)/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^
7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^
2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2
- 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c
^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 2
7*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c
*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c
^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*
b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4
*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^
3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^
4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6
*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840
*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(49*b^6*e^10 -
3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*
e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 -
 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d
*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 +
 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(384
0*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^
6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7
 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^
7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4
*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2)
- 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*
d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5
*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b
^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^
4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*
d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^
5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 -
 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i)/((((7*
(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*
e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 1
28*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*
a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a
*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*
a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3
)) - ((d + e*x)^(1/2)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)
^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5
*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e
^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c
^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*
c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^
2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2
*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 89

60*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 -

```
768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*
d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^
2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*
e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*
c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^
2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8
*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) +
 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b
*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3
*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^
3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b
^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*
c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*
c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a
^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 38
40*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(49*b^6*e^10
- 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^
5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6
 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c
*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9
 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3
840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*
c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e
^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*
b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-
(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2
) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^
7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b
^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a
*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*
c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^
7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*
c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5
 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (7*(24
5*a^2*b^4*e^14 + 10584*a^4*c^2*e^14 + 245*b^6*d^2*e^12 + 1568*c^6*d^8*e^6 -
 3234*a^3*b^2*c*e^14 + 11368*a*c^5*d^6*e^8 - 6272*b*c^5*d^7*e^7 + 784*b^5*c
*d^3*e^11 + 28616*a^2*c^4*d^4*e^10 + 29400*a^3*c^3*d^2*e^12 + 8134*b^2*c^4*
d^6*e^8 - 2450*b^3*c^3*d^5*e^9 - 2009*b^4*c^2*d^4*e^10 - 490*a*b^5*d*e^13 +
 20874*a^2*b^2*c^2*d^2*e^12 - 34104*a*b*c^4*d^5*e^9 - 5292*a*b^4*c*d^2*e^12
 + 7742*a^2*b^3*c*d*e^13 - 29400*a^3*b*c^2*d*e^13 + 28322*a*b^2*c^3*d^4*e^1
0 + 196*a*b^3*c^2*d^3*e^11 - 57232*a^2*b*c^3*d^3*e^11))/(32*(b^6*c - 64*a^3
*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3))))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7
*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2
*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 -
 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^
3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27
*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*
d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^
6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b
^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*
c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3
*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4
*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*
c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*
a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(7/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1432 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=398

$$\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}-2ae+4bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{5e\left(-2ce\left(d\right.\right.\cdots}{\cdots}$$

Rubi [A] time = 1.70, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 738, 826, 1166, 208}

$$\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}-2ae+4bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{5e\left(-2ce\left(d\sqrt{b^2-4ac}-2ae+4bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{5e\sqrt{d+ex}\left(-2ae+x(2cd-be)+bd\right)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^(5/2)/(2*(a + b*x + c*x^2)^2) - (5*e*Sqrt[d + e*x]*(b*d - 2*a*e
+ (2*c*d - b*e)*x))/(4*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (5*e*(8*c^2*d^2 +
 b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(4*b*d - Sqrt[b^2 - 4*a*c]*d - 2*a*e
))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a
*c])*e]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2
 - 4*a*c])*e]) - (5*e*(8*c^2*d^2 + b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(4
*b*d + Sqrt[b^2 - 4*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x]
)/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c
)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
```

```
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2} + \frac{1}{4}(5e)\int \frac{(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2} - \frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{(5e)\int \frac{\frac{1}{2}\left(4cd^2-3bde+2ae^2\right)+\frac{1}{2}}{\sqrt{d+ex}\left(a+bx+c\right.}}{4\left(b^2-4ac\right)}$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2} - \frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{(5e)\,\text{Subst}\left(\int \frac{-\frac{1}{2}de(2cd-be}{cd^2}\right.}{}$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2} - \frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\left(5e\left(8c^2d^2+b\left(b-\sqrt{b^2}\right.\right.\right.}{}$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2} - \frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{5e\left(8c^2d^2+b\left(b-\sqrt{b^2-}\right.\right.}{4}$$

Mathematica [B] time = 6.59, size = 1197, normalized size = 3.01

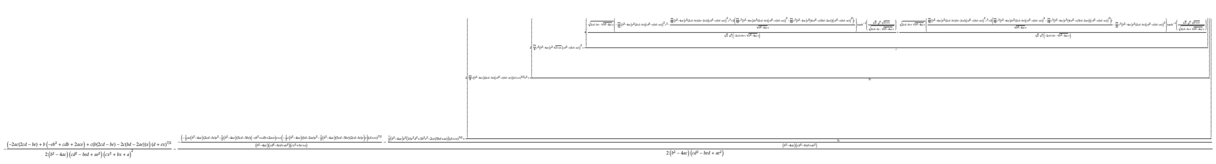

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(7/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(7/2)*(-1/2*(a*c*(b^2 - 4*a*
c)*e^2*(2*c*d - b*e)) - ((b^2 - 4*a*c)*e*(5*c*d - 3*b*e)*(b*c*d - b^2*e + 2
*a*c*e))/2 + c*(-1/2*(c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e)) - ((b^2 - 4*a*c)*e
*(5*c*d - 3*b*e)*(2*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^
2)*(a + b*x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(10*c^2*d^2 + 3*b^2*e^2 - 2*c*
e*(5*b*d + a*e))*(d + e*x)^(5/2))/2 + (2*((25*c*(b^2 - 4*a*c)*e^2*(2*c*d -
b*e)*(c*d^2 - e*(b*d - a*e))*(d + e*x)^(3/2))/4 + (2*((75*c^2*(b^2 - 4*a*c)
*e^2*(c*d^2 - e*(b*d - a*e))^2*Sqrt[d + e*x]])/4 + (4*((Sqrt[2*c*d - b*e - S
```

```
qrt[b^2 - 4*a*c]*e]*((-75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b
*d - a*e))^2)/32 - ((75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d + b*e)*
(c*d^2 - e*(b*d - a*e))^2)/32 + 2*c*((75*c^3*(b^2 - 4*a*c)*d*e^2*(2*c*d - b
*e)*(c*d^2 - e*(b*d - a*e))^2)/32 - (75*c^3*(b^2 - 4*a*c)*e^2*(4*c*d^2 - e*
(3*b*d - 2*a*e))*(c*d^2 - e*(b*d - a*e))^2)/32))/(Sqrt[b^2 - 4*a*c]*e))*Arc
Tanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e
]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d -
b*e + Sqrt[b^2 - 4*a*c]*e]*((-75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2
 - e*(b*d - a*e))^2)/32 + ((75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d
+ b*e)*(c*d^2 - e*(b*d - a*e))^2)/32 + 2*c*((75*c^3*(b^2 - 4*a*c)*d*e^2*(2*
c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2)/32 - (75*c^3*(b^2 - 4*a*c)*e^2*(4*c*d
^2 - e*(3*b*d - 2*a*e))*(c*d^2 - e*(b*d - a*e))^2)/32))/(Sqrt[b^2 - 4*a*c]*
e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4
*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e))))/c))/(3*
c)))/(5*c))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/(2*(b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2))
```

IntegrateAlgebraic [C]   time = 177.00, size = 2045, normalized size = 5.14

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(10*c^2*d^4 - 20*b*c*d^3*e + 10*b^2*d^2*e^2 + 20*a*c*d^2
*e^2 - 20*a*b*d*e^3 + 10*a^2*e^4 - 30*c^2*d^3*(d + e*x) + 45*b*c*d^2*e*(d +
 e*x) - 15*b^2*d*e^2*(d + e*x) - 30*a*c*d*e^2*(d + e*x) + 15*a*b*e^3*(d + e
*x) + 30*c^2*d^2*(d + e*x)^2 - 30*b*c*d*e*(d + e*x)^2 + 3*b^2*e^2*(d + e*x)
^2 + 18*a*c*e^2*(d + e*x)^2 - 10*c^2*d*(d + e*x)^3 + 5*b*c*e*(d + e*x)^3))/
(4*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*x) + b*e*(d + e*x) +
 c*(d + e*x)^2)^2) + ((48*Sqrt[2]*c^4*d^4*e - 96*Sqrt[2]*b*c^3*d^3*e^2 + 12
*Sqrt[2]*c^3*Sqrt[b^2 - 4*a*c]*d^3*e^2 + 68*Sqrt[2]*b^2*c^2*d^2*e^3 + 16*Sq
rt[2]*a*c^3*d^2*e^3 - 18*Sqrt[2]*b*c^2*Sqrt[b^2 - 4*a*c]*d^2*e^3 - 20*Sqrt[
2]*b^3*c*d*e^4 - 16*Sqrt[2]*a*b*c^2*d*e^4 + 8*Sqrt[2]*b^2*c*Sqrt[b^2 - 4*a*
c]*d*e^4 + 4*Sqrt[2]*a*c^2*Sqrt[b^2 - 4*a*c]*d*e^4 - Sqrt[2]*b^4*e^5 + 28*S
qrt[2]*a*b^2*c*e^5 - 48*Sqrt[2]*a^2*c^2*e^5 - Sqrt[2]*b^3*Sqrt[b^2 - 4*a*c]
*e^5 - 2*Sqrt[2]*a*b*c*Sqrt[b^2 - 4*a*c]*e^5)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(2*c^(3/2)*(b^2 - 4*a*
c)^(3/2)*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2
)) + ((-48*Sqrt[2]*c^4*d^4*e + 96*Sqrt[2]*b*c^3*d^3*e^2 + 12*Sqrt[2]*c^3*Sq
rt[b^2 - 4*a*c]*d^3*e^2 - 68*Sqrt[2]*b^2*c^2*d^2*e^3 - 16*Sqrt[2]*a*c^3*d^2
*e^3 - 18*Sqrt[2]*b*c^2*Sqrt[b^2 - 4*a*c]*d^2*e^3 + 20*Sqrt[2]*b^3*c*d*e^4
+ 16*Sqrt[2]*a*b*c^2*d*e^4 + 8*Sqrt[2]*b^2*c*Sqrt[b^2 - 4*a*c]*d*e^4 + 4*Sq
rt[2]*a*c^2*Sqrt[b^2 - 4*a*c]*d*e^4 + Sqrt[2]*b^4*e^5 - 28*Sqrt[2]*a*b^2*c*
e^5 + 48*Sqrt[2]*a^2*c^2*e^5 - Sqrt[2]*b^3*Sqrt[b^2 - 4*a*c]*e^5 - 2*Sqrt[2
]*a*b*c*Sqrt[b^2 - 4*a*c]*e^5)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[
-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]])/(2*c^(3/2)*(b^2 - 4*a*c)^(3/2)*Sqrt[-
2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)) + (((152*I)*
Sqrt[2]*c^4*d^4*e - (304*I)*Sqrt[2]*b*c^3*d^3*e^2 - 38*Sqrt[2]*c^3*Sqrt[-b^
2 + 4*a*c]*d^3*e^2 + (227*I)*Sqrt[2]*b^2*c^2*d^2*e^3 + (4*I)*Sqrt[2]*a*c^3*
d^2*e^3 + 57*Sqrt[2]*b*c^2*Sqrt[-b^2 + 4*a*c]*d^2*e^3 - (75*I)*Sqrt[2]*b^3*
c*d*e^4 - (4*I)*Sqrt[2]*a*b*c^2*d*e^4 - 27*Sqrt[2]*b^2*c*Sqrt[-b^2 + 4*a*c]
*d*e^4 - 6*Sqrt[2]*a*c^2*Sqrt[-b^2 + 4*a*c]*d*e^4 - (4*I)*Sqrt[2]*b^4*e^5 +
 (107*I)*Sqrt[2]*a*b^2*c*e^5 - (212*I)*Sqrt[2]*a^2*c^2*e^5 + 4*Sqrt[2]*b^3*
Sqrt[-b^2 + 4*a*c]*e^5 + 3*Sqrt[2]*a*b*c*Sqrt[-b^2 + 4*a*c]*e^5)*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]])/
(8*c^(3/2)*(b^2 - 4*a*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e - I*Sqrt[-b^2
 + 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)) + (((-152*I)*Sqrt[2]*c^4*d^4*e + (
304*I)*Sqrt[2]*b*c^3*d^3*e^2 - 38*Sqrt[2]*c^3*Sqrt[-b^2 + 4*a*c]*d^3*e^2 -
(227*I)*Sqrt[2]*b^2*c^2*d^2*e^3 - (4*I)*Sqrt[2]*a*c^3*d^2*e^3 + 57*Sqrt[2]*
```

```
b*c^2*Sqrt[-b^2 + 4*a*c]*d^2*e^3 + (75*I)*Sqrt[2]*b^3*c*d*e^4 + (4*I)*Sqrt[
2]*a*b*c^2*d*e^4 - 27*Sqrt[2]*b^2*c*Sqrt[-b^2 + 4*a*c]*d*e^4 - 6*Sqrt[2]*a*
c^2*Sqrt[-b^2 + 4*a*c]*d*e^4 + (4*I)*Sqrt[2]*b^4*e^5 - (107*I)*Sqrt[2]*a*b^
2*c*e^5 + (212*I)*Sqrt[2]*a^2*c^2*e^5 + 4*Sqrt[2]*b^3*Sqrt[-b^2 + 4*a*c]*e^
5 + 3*Sqrt[2]*a*b*c*Sqrt[-b^2 + 4*a*c]*e^5)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d
+ e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]])/(8*c^(3/2)*(b^2 - 4*a
*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]*(-(c*d^2
) + b*d*e - a*e^2))
```

fricas [B] time = 0.53, size = 2773, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(5*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c -
4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*
x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 -
(b^3 + 12*a*b*c)*e^5 + sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 -
 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c
- 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))*log(125*sqrt(1/2)*((b^4 - 8*
a*b^2*c + 16*a^2*c^2)*e^6 + 2*sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^
2*c^4 - 64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c
^5)*d - (b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e))*sqrt((32
*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a
*b*c)*e^5 + sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5
))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*
c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)) + 125*(16*c^2*d^2*e^6 - 16*b*c*d*e^7 +
(3*b^2 + 4*a*c)*e^8)*sqrt(e*x + d)) - 5*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4
+ a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*
c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3
 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/(b^6*c^2
- 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a
^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c
^4))*log(-125*sqrt(1/2)*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^6 + 2*sqrt(e^10/(
b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b
^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d - (b^7*c - 12*a*b^5*c^2 + 48*a^2*b^
3*c^3 - 64*a^3*b*c^4)*e))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^
2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/(b^6*c^2 - 12*a*b^4
*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3
 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)) + 125
*(16*c^2*d^2*e^6 - 16*b*c*d*e^7 + (3*b^2 + 4*a*c)*e^8)*sqrt(e*x + d)) + 5*s
qrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^
2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt(
(32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 1
2*a*b*c)*e^5 - sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*
c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b
^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))*log(125*sqrt(1/2)*((b^4 - 8*a*b^2*c
+ 16*a^2*c^2)*e^6 - 2*sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 -
64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d -
(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e))*sqrt((32*c^3*d^3
*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^
5 - sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*
c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48
*a^2*b^2*c^3 - 64*a^3*c^4)) + 125*(16*c^2*d^2*e^6 - 16*b*c*d*e^7 + (3*b^2 +
 4*a*c)*e^8)*sqrt(e*x + d)) - 5*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^
2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2
 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*
b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(e^10/(b^6*c^2 - 12*a*b
```

```
^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c
^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))*log
(-125*sqrt(1/2)*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^6 - 2*sqrt(e^10/(b^6*c^2
- 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b^4*c^3 +
 48*a^2*b^2*c^4 - 64*a^3*c^5)*d - (b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 -
64*a^3*b*c^4)*e))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*
a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 4
8*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^
3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)) + 125*(16*c^2
*d^2*e^6 - 16*b*c*d*e^7 + (3*b^2 + 4*a*c)*e^8)*sqrt(e*x + d)) - 2*(5*a*b*d*
e - 10*a^2*e^2 + 5*(2*c^2*d*e - b*c*e^2)*x^3 + 2*(b^2 - 4*a*c)*d^2 + 3*(5*b
*c*d*e - (b^2 + 6*a*c)*e^2)*x^2 - 3*(5*a*b*e^2 - (3*b^2 - 2*a*c)*d*e)*x)*sq
rt(e*x + d))/((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*
b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)
```

giac [B] time = 3.66, size = 1425, normalized size = 3.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -5/32*(sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(2*c*d*e^2 - b*e^3)
*(b^2*e - 4*a*c*e)^2 + 4*(sqrt(b^2 - 4*a*c)*c^2*d^2*e^2 - sqrt(b^2 - 4*a*c)
*b*c*d*e^3 + sqrt(b^2 - 4*a*c)*a*c*e^4)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 -
 4*a*c)*c)*e)*abs(b^2*e - 4*a*c*e) - (16*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - 24*(
b^3*c^2 - 4*a*b*c^3)*d^2*e^3 + 2*(5*b^4*c - 16*a*b^2*c^2 - 16*a^2*c^3)*d*e^
4 - (b^5 - 16*a^2*b*c^2)*e^5)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)
*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e
+ 4*a*b*c*e + sqrt((2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c
*d^2 - 4*a*c^2*d^2 - b^3*d*e + 4*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*
c - 4*a*c^2)))/(b^2*c - 4*a*c^2)))/(((b^2*c^2 - 4*a*c^3)*sqrt(b^2 - 4*a*c)*
d^2 - (b^3*c - 4*a*b*c^2)*sqrt(b^2 - 4*a*c)*d*e + (a*b^2*c - 4*a^2*c^2)*sqr
t(b^2 - 4*a*c)*e^2)*abs(b^2*e - 4*a*c*e)*abs(c)) + 5/32*(sqrt(-4*c^2*d + 2*
(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(2*c*d*e^2 - b*e^3)*(b^2*e - 4*a*c*e)^2 - 4*
(sqrt(b^2 - 4*a*c)*c^2*d^2*e^2 - sqrt(b^2 - 4*a*c)*b*c*d*e^3 + sqrt(b^2 - 4
*a*c)*a*c*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*e -
 4*a*c*e) - (16*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - 24*(b^3*c^2 - 4*a*b*c^3)*d^2*
e^3 + 2*(5*b^4*c - 16*a*b^2*c^2 - 16*a^2*c^3)*d*e^4 - (b^5 - 16*a^2*b*c^2)*
e^5)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*s
qrt(x*e + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e - sqrt((2*b^2
*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c*d^2 - 4*a*c^2*d^2 - b^3*
d*e + 4*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*c - 4*a*c^2)))/(b^2*c - 4
*a*c^2)))/(((b^2*c^2 - 4*a*c^3)*sqrt(b^2 - 4*a*c)*d^2 - (b^3*c - 4*a*b*c^2)
*sqrt(b^2 - 4*a*c)*d*e + (a*b^2*c - 4*a^2*c^2)*sqrt(b^2 - 4*a*c)*e^2)*abs(b
^2*e - 4*a*c*e)*abs(c)) - 1/4*(10*(x*e + d)^(7/2)*c^2*d*e^2 - 30*(x*e + d)^
(5/2)*c^2*d^2*e^2 + 30*(x*e + d)^(3/2)*c^2*d^3*e^2 - 10*sqrt(x*e + d)*c^2*d
^4*e^2 - 5*(x*e + d)^(7/2)*b*c*e^3 + 30*(x*e + d)^(5/2)*b*c*d*e^3 - 45*(x*e
 + d)^(3/2)*b*c*d^2*e^3 + 20*sqrt(x*e + d)*b*c*d^3*e^3 - 3*(x*e + d)^(5/2)*
b^2*e^4 - 18*(x*e + d)^(5/2)*a*c*e^4 + 15*(x*e + d)^(3/2)*b^2*d*e^4 + 30*(x
*e + d)^(3/2)*a*c*d*e^4 - 10*sqrt(x*e + d)*b^2*d^2*e^4 - 20*sqrt(x*e + d)*a
*c*d^2*e^4 - 15*(x*e + d)^(3/2)*a*b*e^5 + 20*sqrt(x*e + d)*a*b*d*e^5 - 10*s
qrt(x*e + d)*a^2*e^6)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)
*b*e - b*d*e + a*e^2)^2*(b^2 - 4*a*c))
```

maple [B] time = 0.15, size = 2126, normalized size = 5.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 5*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d+5*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/
2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^
(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d-5/2*e^
4/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*c)*a-5*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-5/2*e^4/(4*a*
c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*c)*a-5*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-5/8*e^3/(4*a*c
-b^2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+5/8*e^3/
(4*a*c-b^2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh
((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b
-5/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(7/2)*b+5/2*e^2/
(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^(7/2)*d-15/2*e^2/(c*e^2
*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*c^2*d^2-15/4*e^5/(c*e^2*x^2
+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*b+15/2*e^2/(c*e^2*x^2+b*e^2*x
+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*c^2*d^3-5/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^
2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*c^2*d^4-9/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/
(4*a*c-b^2)*(e*x+d)^(5/2)*a*c+15/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b
^2)*(e*x+d)^(3/2)*b^2*d-5/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*
x+d)^(1/2)*b^2*d^2-5/2*e^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^
(1/2)*a^2-3/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*b^2
-45/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*b*c*d^2-5/8
*e^4/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2+5*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b
^2)*(e*x+d)^(1/2)*b*c*d^3+5*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*
x+d)^(1/2)*a*b*d+15/2*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(
5/2)*b*c*d-5/4*e^2/(4*a*c-b^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)
^(1/2))*c)^(1/2)*c)*d+5/4*e^2/(4*a*c-b^2)*c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^
2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*c)*d-5/8*e^4/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)
*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2+15/2*e^4/(c*
e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*c*d-5*e^4/(c*e^2*x^2+b
*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*c*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{5}{2}}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^3, x)
```

mupad [B] time = 7.65, size = 12750, normalized size = 32.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x)

[Out] - atan(((((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i - (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c

^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d
^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^
3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^
6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c
^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i)/((5*(800*c^5*d^5*e^6 - 100*a^2*b*c^2*e^1
1 + 1000*a*c^4*d^3*e^8 + 200*a^2*c^3*d*e^10 - 2000*b*c^4*d^4*e^7 + 1750*b^2
*c^3*d^3*e^8 - 625*b^3*c^2*d^2*e^9 - 75*a*b^3*c*e^11 + 75*b^4*c*d*e^10 - 15
00*a*b*c^3*d^2*e^9 + 650*a*b^2*c^2*d*e^10))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*
b^2*c^2 - 12*a*b^4*c)) + (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b
^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d
^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*
e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^
5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2
)*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*
a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3
*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*
b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^
4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*
c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3
 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*
c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128
*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2
*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*
a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c
^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 +
48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b
^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^
3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c +
 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a
^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 2
00*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1
600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*
d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c -
 b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^
5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^
7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^
4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2
*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096
*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^
4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*
e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 819
2*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a
*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b
^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d
+ e*x)^(1/2)*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*
e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*
a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4
- 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4
 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 -
3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*
a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/
2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*
d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6
144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5
+ e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 9
6*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3
*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 +
 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 5
76*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(12

8*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*2i - atan(((((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i - (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 57

6*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i)/((5*(800*c^5*d^5*e^6 - 100*a^2*b*c^2*e^11 + 1000*a*c^4*d^3*e^8 + 200*a^2*c^3*d*e^10 - 2000*b*c^4*d^4*e^7 + 1750*b^2*c^3*d^3*e^8 - 625*b^3*c^2*d^2*e^9 - 75*a*b^3*c*e^11 + 75*b^4*c*d*e^10 - 1500*a*b*c^3*d^2*e^9 + 650*a*b^2*c^2*d*e^10))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 61

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44*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536
*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^
2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1
/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5
 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7
*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4
*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*
e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*
a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4
*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096
*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*
e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2
- 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4
*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048
*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4
 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^
4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 +
 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240
*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1
/2) + ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 +
50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e
^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*
b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 -
 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c
^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 153
6*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 38
4*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*
a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b
^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)))*
((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4
*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^
2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2
*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c
^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5
*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 -
1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*2i - ((3*(d
 + e*x)^(5/2)*(b^2*e^4 + 10*c^2*d^2*e^2 + 6*a*c*e^4 - 10*b*c*d*e^3))/(4*(4*
a*c - b^2)) - (15*(d + e*x)^(3/2)*(b^2*d*e^4 + 2*c^2*d^3*e^2 - a*b*e^5 + 2*
a*c*d*e^4 - 3*b*c*d^2*e^3))/(4*(4*a*c - b^2)) + (5*(d + e*x)^(1/2)*(a^2*e^6
 + b^2*d^2*e^4 + c^2*d^4*e^2 - 2*a*b*d*e^5 + 2*a*c*d^2*e^4 - 2*b*c*d^3*e^3)
)/(2*(4*a*c - b^2)) + (5*c*(b*e^3 - 2*c*d*e^2)*(d + e*x)^(7/2))/(4*(4*a*c -
 b^2)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3 +
 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2
*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^4 + c^2*d^4 + b^2*d^
2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1433 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=322

$$-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{3\sqrt{c}\,e\left(4cd-e\left(2b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{2\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{3\sqrt{c}\,e\left(4cd-e\left(\sqrt{b^2\cdots\right.\right.}{2\sqrt{2}\left(b^2-\cdots\right.}$$

Rubi [A] time = 0.79, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 736, 826, 1166, 208}

$$-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{3\sqrt{c}\,e\left(4cd-e\left(2b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{2\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{3\sqrt{c}\,e\left(4cd-e\left(\sqrt{b^2-4ac}+2b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{2\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^(3/2)/(2*(a + b*x + c*x^2)^2) - (3*e*(b + 2*c*x)*Sqrt[d + e*x])/
(4*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (3*Sqrt[c]*e*(4*c*d - (2*b - Sqrt[b^2
 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqr
t[b^2 - 4*a*c])*e]])/(2*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[
b^2 - 4*a*c])*e]) - (3*Sqrt[c]*e*(4*c*d - (2*b + Sqrt[b^2 - 4*a*c])*e)*ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
])/(2*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 736

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^m*(b + 2*c*x)*(a + b*x + c*x^2)^(p + 1))/((p + 1)
*(b^2 - 4*a*c)), x] - Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)
*(b*e*m + 2*c*d*(2*p + 3) + 2*c*e*(m + 2*p + 3)*x)*(a + b*x + c*x^2)^(p + 1
), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 0] && (L
tQ[m, 1] || (ILtQ[m + 2*p + 3, 0] && NeQ[m, 2])) && IntQuadraticQ[a, b, c,
d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2 + c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2} + \frac{1}{4}(3e)\int \frac{\sqrt{d+ex}}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2} - \frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{(3e)\int \frac{-2cd+\frac{be}{2}-cex}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{4\left(b^2-4ac\right)}$$

$$= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2} - \frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{(3e)\,\mathrm{Subst}\left(\int \frac{cde+e\left(-2cd+\frac{be}{2}\right.}{cd^2-bde+ae^2+(-2cd\ldots}\right.}{2\left(b^2-\ldots\right.}$$

$$= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2} - \frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\left(3ce\left(4cd-\left(2b-\sqrt{b^2-4ac}\right)\ldots\right.\right.}{\ldots}$$

$$= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2} - \frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{3\sqrt{c}\,e\left(4cd-\left(2b-\sqrt{b^2-4ac}\ldots\right.\right.}{2\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{\ldots}}$$

Mathematica [B] time = 6.46, size = 1069, normalized size = 3.32

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(5/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) + c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(5/2)*((a*c*(b^2 - 4*a*c)*e^2*(2*c*d - b*e))/2 - ((b^2 - 4*a*c)*e*(3*c*d - b*e)*(b*c*d - b^2*e + 2*a*c*e))/2 + c*((c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 - ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(3*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(3/2))/2 + (2*((9*c*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))*Sqrt[d + e*x]])/4 + (4*((Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*((-9*c^3*(b^2 - 4*a*c)*e^2*(c*d^2 - e*(b*d - a*e))^2)/8 - ((9*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e))^2)/8 + 2*c*((9*c^3*(b^2 - 4*a*c)*d*e^2*(c*d^2 - e*(b*d - a*e))^2)/8 - (9*c^2*(b^2 - 4*a*c)*e^2*(4*
```

```
c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2)/16))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(
Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(S
qrt[2]*Sqrt[c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e +
Sqrt[b^2 - 4*a*c]*e]*((-9*c^3*(b^2 - 4*a*c)*e^2*(c*d^2 - e*(b*d - a*e))^2)/
8 + ((9*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e))^2)/8 +
 2*c*((9*c^3*(b^2 - 4*a*c)*d*e^2*(c*d^2 - e*(b*d - a*e))^2)/8 - (9*c^2*(b^2
 - 4*a*c)*e^2*(4*c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2)/16))/(Sqrt[b^2 - 4*a
*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2
 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e))))/c))
/(3*c))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/(2*(b^2 - 4*a*c)*(c*d^2 -
b*d*e + a*e^2))
```

IntegrateAlgebraic [C]   time = 113.32, size = 1493, normalized size = 4.64

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(e^2*Sqrt[d + e*x]*(-6*c^2*d^3 + 9*b*c*d^2*e - 3*b^2*d*e^2 - 6*a*c*d*e
^2 + 3*a*b*e^3 + 18*c^2*d^2*(d + e*x) - 18*b*c*d*e*(d + e*x) + 5*b^2*e^2*(d
 + e*x) - 2*a*c*e^2*(d + e*x) - 18*c^2*d*(d + e*x)^2 + 9*b*c*e*(d + e*x)^2
+ 6*c^2*(d + e*x)^3))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2 - 2*c*d*(d + e*
x) + b*e*(d + e*x) + c*(d + e*x)^2)^2) + ((32*Sqrt[2]*c^3*d^3*e - 48*Sqrt[2
]*b*c^2*d^2*e^2 + 8*Sqrt[2]*c^2*Sqrt[b^2 - 4*a*c]*d^2*e^2 + 14*Sqrt[2]*b^2*
c*d*e^3 + 40*Sqrt[2]*a*c^2*d*e^3 - 8*Sqrt[2]*b*c*Sqrt[b^2 - 4*a*c]*d*e^3 +
Sqrt[2]*b^3*e^4 - 20*Sqrt[2]*a*b*c*e^4 + Sqrt[2]*b^2*Sqrt[b^2 - 4*a*c]*e^4
+ 4*Sqrt[2]*a*c*Sqrt[b^2 - 4*a*c]*e^4)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x
])/Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]])/(2*Sqrt[c]*(b^2 - 4*a*c)^(3/2
)*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)) + ((
-32*Sqrt[2]*c^3*d^3*e + 48*Sqrt[2]*b*c^2*d^2*e^2 + 8*Sqrt[2]*c^2*Sqrt[b^2 -
 4*a*c]*d^2*e^2 - 14*Sqrt[2]*b^2*c*d*e^3 - 40*Sqrt[2]*a*c^2*d*e^3 - 8*Sqrt[
2]*b*c*Sqrt[b^2 - 4*a*c]*d*e^3 - Sqrt[2]*b^3*e^4 + 20*Sqrt[2]*a*b*c*e^4 + S
qrt[2]*b^2*Sqrt[b^2 - 4*a*c]*e^4 + 4*Sqrt[2]*a*c*Sqrt[b^2 - 4*a*c]*e^4)*Arc
Tan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e
]])/(2*Sqrt[c]*(b^2 - 4*a*c)^(3/2)*Sqrt[-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e]
*(-(c*d^2) + b*d*e - a*e^2)) + (((52*I)*Sqrt[2]*c^3*d^3*e - (78*I)*Sqrt[2]*
b*c^2*d^2*e^2 - 13*Sqrt[2]*c^2*Sqrt[-b^2 + 4*a*c]*d^2*e^2 + (22*I)*Sqrt[2]*
b^2*c*d*e^3 + (68*I)*Sqrt[2]*a*c^2*d*e^3 + 13*Sqrt[2]*b*c*Sqrt[-b^2 + 4*a*c
]*d*e^3 + (2*I)*Sqrt[2]*b^3*e^4 - (34*I)*Sqrt[2]*a*b*c*e^4 - 2*Sqrt[2]*b^2*
Sqrt[-b^2 + 4*a*c]*e^4 - 5*Sqrt[2]*a*c*Sqrt[-b^2 + 4*a*c]*e^4)*ArcTan[(Sqrt
[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 + 4*a*c]*e]])/(4
*Sqrt[c]*(b^2 - 4*a*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e - I*Sqrt[-b^2 +
 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)) + (((-52*I)*Sqrt[2]*c^3*d^3*e + (78*
I)*Sqrt[2]*b*c^2*d^2*e^2 - 13*Sqrt[2]*c^2*Sqrt[-b^2 + 4*a*c]*d^2*e^2 - (22*
I)*Sqrt[2]*b^2*c*d*e^3 - (68*I)*Sqrt[2]*a*c^2*d*e^3 + 13*Sqrt[2]*b*c*Sqrt[-
b^2 + 4*a*c]*d*e^3 - (2*I)*Sqrt[2]*b^3*e^4 + (34*I)*Sqrt[2]*a*b*c*e^4 - 2*S
qrt[2]*b^2*Sqrt[-b^2 + 4*a*c]*e^4 - 5*Sqrt[2]*a*c*Sqrt[-b^2 + 4*a*c]*e^4)*A
rcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a
*c]*e]])/(4*Sqrt[c]*(b^2 - 4*a*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*
Sqrt[-b^2 + 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2))
```

fricas [B]   time = 0.65, size = 6728, normalized size = 20.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(3*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c -
4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*
```

```
x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 -
(b^3 + 12*a*b*c)*e^5 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4
- 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4
)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4
)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3
+ (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12
*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*
b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a
^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (
b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4
*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))*log(27/2*sqrt(1/2)*(2*(b^4*c - 8*a*
b^2*c^2 + 16*a^2*c^3)*d*e^6 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^7 - sqrt(e
^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c
- 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c +
 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2
*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 4
8*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*(8*(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c
^5 - 64*a^3*c^6)*d^4 - 16*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3
*b*c^5)*d^3*e + 3*(3*b^8*c - 32*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^4*c^5)*d
^2*e^2 - (b^9 - 96*a^2*b^5*c^2 + 512*a^3*b^3*c^3 - 768*a^4*b*c^4)*d*e^3 + (
a*b^8 - 8*a^2*b^6*c + 128*a^4*b^2*c^3 - 256*a^5*c^4)*e^4))*sqrt((32*c^3*d^3
*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^
5 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 -
 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10
*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^
7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3
*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2
*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*
c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6
*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c +
48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2
 - 64*a^4*c^3)*e^2)) + 27*(16*c^3*d^2*e^6 - 16*b*c^2*d*e^7 + (3*b^2*c + 4*a
*c^2)*e^8)*sqrt(e*x + d)) - 3*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2
- 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 +
 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^
2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/((b^6*c^2 - 12*a*b^
4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2
*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^
3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2
 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*
c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7
 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c
+ 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^
3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*
e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))*log(-27/2*sq
rt(1/2)*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^6 - (b^5 - 8*a*b^3*c + 16
*a^2*b*c^2)*e^7 - sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*
a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3
*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2
*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^
2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*(8*(b^6*c^3 - 12*
a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*d^4 - 16*(b^7*c^2 - 12*a*b^5*c^3 +
 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*d^3*e + 3*(3*b^8*c - 32*a*b^6*c^2 + 96*a^2*
b^4*c^3 - 256*a^4*c^5)*d^2*e^2 - (b^9 - 96*a^2*b^5*c^2 + 512*a^3*b^3*c^3 -
768*a^4*b*c^4)*d*e^3 + (a*b^8 - 8*a^2*b^6*c + 128*a^4*b^2*c^3 - 256*a^5*c^4
)*e^4))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e
^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2
*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*
b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^
```

```
4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d
*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c
 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48
*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 -
 64*a^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^
2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^
2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2)) + 27*(16*c^3*d^2*e^6 - 16*b*c^
2*d*e^7 + (3*b^2*c + 4*a*c^2)*e^8)*sqrt(e*x + d)) + 3*sqrt(1/2)*((b^2*c^2 -
 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*
b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48
*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(
e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c
 - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c
+ 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^
2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c +
48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3
- 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e
+ (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c - 12*a
*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^
3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4
*c^3)*e^2))*log(27/2*sqrt(1/2)*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^6
- (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^7 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3
 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*
c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2
*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64
*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*
e^4))*(8*(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*d^4 - 16*(b
^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*d^3*e + 3*(3*b^8*c -
 32*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^4*c^5)*d^2*e^2 - (b^9 - 96*a^2*b^5*c
^2 + 512*a^3*b^3*c^3 - 768*a^4*b*c^4)*d*e^3 + (a*b^8 - 8*a^2*b^6*c + 128*a^
4*b^2*c^3 - 256*a^5*c^4)*e^4))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*
(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(e^10/((b^6*c^2 - 12
*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 4
8*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 +
32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^
3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64
*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 -
 (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b
^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b
^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^
3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2)) + 27*(1
6*c^3*d^2*e^6 - 16*b*c^2*d*e^7 + (3*b^2*c + 4*a*c^2)*e^8)*sqrt(e*x + d)) -
3*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b
*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sq
rt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3
+ 12*a*b*c)*e^5 - sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*
a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3
*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2
*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^
2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^
4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c
^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^
3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 -
 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c +
48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))*log(-27/2*sqrt(1/2)*(2*(b^4*c - 8*a*b^2*
c^2 + 16*a^2*c^3)*d*e^6 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^7 + sqrt(e^10/
((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12
*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*
a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5
```

```
*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^
4*b^2*c^2 - 64*a^5*c^3)*e^4))*(8*(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 -
 64*a^3*c^6)*d^4 - 16*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c
^5)*d^3*e + 3*(3*b^8*c - 32*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^4*c^5)*d^2*e
^2 - (b^9 - 96*a^2*b^5*c^2 + 512*a^3*b^3*c^3 - 768*a^4*b*c^4)*d*e^3 + (a*b^
8 - 8*a^2*b^6*c + 128*a^4*b^2*c^3 - 256*a^5*c^4)*e^4))*sqrt((32*c^3*d^3*e^2
 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 -
sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(
b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b
^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 -
12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4
*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2
*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)
*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c -
 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a
^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 6
4*a^4*c^3)*e^2)) + 27*(16*c^3*d^2*e^6 - 16*b*c^2*d*e^7 + (3*b^2*c + 4*a*c^2
)*e^8)*sqrt(e*x + d)) - 2*(6*c^2*e*x^3 + 9*b*c*e*x^2 + 3*a*b*e + (5*b^2 - 2
*a*c)*e*x + 2*(b^2 - 4*a*c)*d)*sqrt(e*x + d))/((b^2*c^2 - 4*a*c^3)*x^4 + a^
2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)
*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)
```

giac [B] time = 3.70, size = 1189, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -3/16*(sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(b^2*e - 4*a*c*e)^2
*e^2 + (2*sqrt(b^2 - 4*a*c)*c*d*e^2 - sqrt(b^2 - 4*a*c)*b*e^3)*sqrt(-4*c^2*
d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*e - 4*a*c*e) - 2*(4*(b^2*c^2 -
 4*a*c^3)*d^2*e^2 - 4*(b^3*c - 4*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c)*e^4)*sq
rt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e
 + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e + sqrt((2*b^2*c*d -
8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c*d^2 - 4*a*c^2*d^2 - b^3*d*e + 4
*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*c - 4*a*c^2)))/(b^2*c - 4*a*c^2)
))/(((b^2*c - 4*a*c^2)*sqrt(b^2 - 4*a*c)*d^2 - (b^3 - 4*a*b*c)*sqrt(b^2 - 4
*a*c)*d*e + (a*b^2 - 4*a^2*c)*sqrt(b^2 - 4*a*c)*e^2)*abs(b^2*e - 4*a*c*e)*a
bs(c)) + 3/16*(sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(b^2*e - 4*
a*c*e)^2*e^2 - (2*sqrt(b^2 - 4*a*c)*c*d*e^2 - sqrt(b^2 - 4*a*c)*b*e^3)*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*e - 4*a*c*e) - 2*(4*(b
^2*c^2 - 4*a*c^3)*d^2*e^2 - 4*(b^3*c - 4*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c)
*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*
sqrt(x*e + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e - sqrt((2*b^
2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c*d^2 - 4*a*c^2*d^2 - b^3
*d*e + 4*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*c - 4*a*c^2)))/(b^2*c -
4*a*c^2)))/(((b^2*c - 4*a*c^2)*sqrt(b^2 - 4*a*c)*d^2 - (b^3 - 4*a*b*c)*sqrt
(b^2 - 4*a*c)*d*e + (a*b^2 - 4*a^2*c)*sqrt(b^2 - 4*a*c)*e^2)*abs(b^2*e - 4*
a*c*e)*abs(c)) - 1/4*(6*(x*e + d)^(7/2)*c^2*e^2 - 18*(x*e + d)^(5/2)*c^2*d*
e^2 + 18*(x*e + d)^(3/2)*c^2*d^2*e^2 - 6*sqrt(x*e + d)*c^2*d^3*e^2 + 9*(x*e
 + d)^(5/2)*b*c*e^3 - 18*(x*e + d)^(3/2)*b*c*d*e^3 + 9*sqrt(x*e + d)*b*c*d^
2*e^3 + 5*(x*e + d)^(3/2)*b^2*e^4 - 2*(x*e + d)^(3/2)*a*c*e^4 - 3*sqrt(x*e
+ d)*b^2*d*e^4 - 6*sqrt(x*e + d)*a*c*d*e^4 + 3*sqrt(x*e + d)*a*b*e^5)/(((x*
e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)^2*(b^
2 - 4*a*c))
```

maple [B] time = 0.18, size = 1231, normalized size = 3.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 3/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^(7/2)+9/4*e^3/(
c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(5/2)*b-9/2*e^2/(c*e^2*x^2
+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^(5/2)*d-1/2*e^4/(c*e^2*x^2+b*e^2*
x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*c+5/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^
2/(4*a*c-b^2)*(e*x+d)^(3/2)*b^2-9/2*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-
b^2)*(e*x+d)^(3/2)*b*c*d+9/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e
*x+d)^(3/2)*c^2*d^2+3/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)
^(1/2)*a*b-3/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*
c*d-3/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b^2*d+9/4
*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b*c*d^2-3/2*e^2/
(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*c^2*d^3+3/2*e^3/(4*a*
c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*c)*b-3*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-3/4*e^2/(4*a*c-b
^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+
d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)+3/2*e^3
/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e
^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^
(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+3/4*e^2/(4*a*c-b
^2)*c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^3, x)
```

mupad [B] time = 7.15, size = 16393, normalized size = 50.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(3/2)*(5*b^2*e^4 + 18*c^2*d^2*e^2 - 2*a*c*e^4 - 18*b*c*d*e^3))/
(4*(4*a*c - b^2)) - (3*(d + e*x)^(1/2)*(b^2*d*e^4 + 2*c^2*d^3*e^2 - a*b*e^5
 + 2*a*c*d*e^4 - 3*b*c*d^2*e^3))/(4*(4*a*c - b^2)) + (3*c^2*e^2*(d + e*x)^(
7/2))/(2*(4*a*c - b^2)) + (9*c*e^2*(b*e - 2*c*d)*(d + e*x)^(5/2))/(4*(4*a*c
 - b^2)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3
 + 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)
^2*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^4 + c^2*d^4 + b^2*
d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - atan(((((3*(32*b^7*c
^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b
^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^
5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x
)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1
536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6
*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*
a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*
```

a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*1i - (((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6 *c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) - ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*1i)/((((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4* c)) + ((d + e*x)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) - ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (3*(36*a*c^4*e^8 + 27*b^2*c^3*e^8 + 144*c^5*d^2*e^6 - 144*b*c^4*d*e^7))/(16*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c))))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*2i - atan(((((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))

/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13
*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a
^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*
c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^
2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*
a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c
^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b
^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^
5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c
 - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e
^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b
^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c
^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^
2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 +
 b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^
2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 38
40*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*
b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*
d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6
144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4
*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^
2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4
*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5
+ 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c
*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^
2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d
*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^
7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2
 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144
*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^
4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e
 + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*
a*b^11*c*d*e)))^(1/2)*1i - (((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*
a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^
5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 +
48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a
*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^
2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 4
8*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^
3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3
*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^
2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10
*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 +
 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a
^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c
^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e
+ 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b
^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1
536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^
4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2)
- 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3
*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 -
 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192
*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*
b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 40
96*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b
^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d
^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 38
40*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^

9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) - ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*1i)/((((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*

```
e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*
a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4
- 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4
 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 -
3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 +
 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*
a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^
2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e
^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280
*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*
c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4
096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4
*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*
(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*
d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 3
2*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*
d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^
3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*
e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 -
 b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1
280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3
*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c
^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e -
3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) - ((
d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4
*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c -
 b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^
5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^
7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^
4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2
*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 +
b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2
*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 384
0*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b
^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d
*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 61
44*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (3*(36*a*c^4*e^8 + 27*b^2*c
^3*e^8 + 144*c^5*d^2*e^6 - 144*b*c^4*d*e^7))/(16*(b^6 - 64*a^3*c^3 + 48*a^2
*b^2*c^2 - 12*a*b^4*c))))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 76
8*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3
*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*
b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b
^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*
c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a
^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*
c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 -
 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a
^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^
2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e
+ 24*a*b^11*c*d*e)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**3,x)
[Out] Timed out
```

3.1434 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=463

$$\frac{\sqrt{c}\,e\left(-2ce\left(-d\sqrt{b^2-4ac}-6ae+4bd\right)-be^2\left(\sqrt{b^2-4ac}+b\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{c}\,e\left(-2c\right.}{}$$

Rubi [A] time = 1.89, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {768, 740, 826, 1166, 208}

$$\frac{\sqrt{c}\,e\left(-2ce\left(-d\sqrt{b^2-4ac}-6ae+4bd\right)-be^2\left(\sqrt{b^2-4ac}+b\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{c}\,e\left(-2ce\left(d\sqrt{b^2-4ac}-6ae+4bd\right)-be^2\left(b-\sqrt{b^2-4ac}\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\left(ae^2-bde+cd^2\right)}-\frac{e\sqrt{d+ex}\left(2ace+b^2(-e)+cx(2cd-be)+bcd\right)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^3,x]
```

```
[Out] -Sqrt[d + e*x]/(2*(a + b*x + c*x^2)^2) - (e*Sqrt[d + e*x]*(b*c*d - b^2*e +
2*a*c*e + c*(2*c*d - b*e)*x))/(4*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a +
 b*x + c*x^2)) + (Sqrt[c]*e*(8*c^2*d^2 - b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*
c*e*(4*b*d - Sqrt[b^2 - 4*a*c]*d - 6*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d
+ e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*(b^2 - 4*a*c)^
(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)) - (S
qrt[c]*e*(8*c^2*d^2 - b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(4*b*d + Sqrt[b
^2 - 4*a*c]*d - 6*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d -
(b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 740

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(b*c*d - b^2*e + 2*a*c*e + c*(2*c*d - b*e
)*x)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e
^2)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d +
 e*x)^m*Simp[b*c*d*e*(2*p - m + 2) + b^2*e^2*(m + p + 2) - 2*c^2*d^2*(2*p +
 3) - 2*a*c*e^2*(m + 2*p + 3) - c*e*(2*c*d - b*e)*(m + 2*p + 4)*x, x]*(a +
b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4
*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p,
-1] && IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}+\frac{1}{4}e\int \frac{1}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e\int \frac{\frac{1}{2}\left(4c^2d^2-b^2e^2-3\right.}{\sqrt{d+}}}{4\left(b^2-4ac\right.}$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e\,\text{Subst}\left(\int \frac{-\frac{1}{2}cde(}{}\right.}{}$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{\left(ce\left(8c^2d^2-b\left(b\right.\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\,e\left(8c^2d^2-b\left(\right.\right.}{}$$

Mathematica [B] time = 6.41, size = 1080, normalized size = 2.33

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(3/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(3/2)*((3*a*c*(b^2 - 4*a*c)*
e^2*(2*c*d - b*e))/2 - ((b^2 - 4*a*c)*e*(c*d + b*e)*(b*c*d - b^2*e + 2*a*c*
e))/2 + c*((3*c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 - ((b^2 - 4*a*c)*e*(2*c*
d - b*e)*(c*d + b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*
x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*
e))*Sqrt[d + e*x])/2 + (4*((Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*(-1/8*(
c^2*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))) - ((c^2*(b^2 -
 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e)))/8 + 2*c*(
```

```
-1/8*(c*(b^2 - 4*a*c)*e^2*(c*d^2 - b*d*e + a*e^2)*(4*c^2*d^2 - 3*b*c*d*e -
b^2*e^2 + 6*a*c*e^2)) + (c^2*(b^2 - 4*a*c)*d*e^2*(2*c*d - b*e)*(c*d^2 - e*(
b*d - a*e)))/8))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e
*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b
*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]*(-1/8
*(c^2*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))) + ((c^2*(b^2
 - 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e)))/8 + 2*c
*(-1/8*(c*(b^2 - 4*a*c)*e^2*(c*d^2 - b*d*e + a*e^2)*(4*c^2*d^2 - 3*b*c*d*e
- b^2*e^2 + 6*a*c*e^2)) + (c^2*(b^2 - 4*a*c)*d*e^2*(2*c*d - b*e)*(c*d^2 - e
*(b*d - a*e)))/8))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
 e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d +
 b*e - Sqrt[b^2 - 4*a*c]*e))))/c)/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/
(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2))
```

IntegrateAlgebraic [C] time = 17.62, size = 873, normalized size = 1.89

$$-\frac{\sqrt{d+ex}\left(2c^3d^4-4bc^2ed^3-6c^3(d+ex)d^3+8ac^2e^2d^2+b^2ce^2d^2+6c^3(d+ex)^2d^2+9bc^2e(d+ex)d^2+b^3e^3d-8abce^3d-2c^3(d+ex)^3d-6bc^2e(d+ex)^2d+2ac^2e^2(d+ex)d-5b^2ce^2(d+ex)d-ab^2e^4+6a^2ce^4+bc^2e(d+ex)^3-2ac^2e^2(d+ex)^2+2b^2ce^2(d+ex)^2+b^3e^3(d+ex)-abce^3(d+ex)\right)e^2}{4\left(b^2-4ac\right)\left(-cd^2+bed-ae^2\right)\left(-cd^2+bed+2c(d+ex)d-ae^2-c(d+ex)^2-be(d+ex)\right)^2}+\frac{\left(-12i\sqrt{2}ac^{3/2}e^3+i\sqrt{2}b^2\sqrt{c}e^3-\sqrt{2}b\sqrt{c}\sqrt{4ac-b^2}e^3+8i\sqrt{2}bc^{3/2}de^2+2\sqrt{2}c^{3/2}\sqrt{4ac-b^2}de^2-8i\sqrt{2}c^{5/2}d^2e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-2cd+be-i\sqrt{4ac-b^2}e}}\right)}{8\left(b^2-4ac\right)\sqrt{4ac-b^2}\sqrt{-2cd+be-i\sqrt{4ac-b^2}e}\left(-cd^2+bed-ae^2\right)}+\frac{\left(12i\sqrt{2}ac^{3/2}e^3-i\sqrt{2}b^2\sqrt{c}e^3-\sqrt{2}b\sqrt{c}\sqrt{4ac-b^2}e^3-8i\sqrt{2}bc^{3/2}de^2+2\sqrt{2}c^{3/2}\sqrt{4ac-b^2}de^2+8i\sqrt{2}c^{5/2}d^2e\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{-2cd+be+i\sqrt{4ac-b^2}e}}\right)}{8\left(b^2-4ac\right)\sqrt{4ac-b^2}\sqrt{-2cd+be+i\sqrt{4ac-b^2}e}\left(-cd^2+bed-ae^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/4*(e^2*Sqrt[d + e*x]*(2*c^3*d^4 - 4*b*c^2*d^3*e + b^2*c*d^2*e^2 + 8*a*c^
2*d^2*e^2 + b^3*d*e^3 - 8*a*b*c*d*e^3 - a*b^2*e^4 + 6*a^2*c*e^4 - 6*c^3*d^3
*(d + e*x) + 9*b*c^2*d^2*e*(d + e*x) - 5*b^2*c*d*e^2*(d + e*x) + 2*a*c^2*d*
e^2*(d + e*x) + b^3*e^3*(d + e*x) - a*b*c*e^3*(d + e*x) + 6*c^3*d^2*(d + e*
x)^2 - 6*b*c^2*d*e*(d + e*x)^2 + 2*b^2*c*e^2*(d + e*x)^2 - 2*a*c^2*e^2*(d +
 e*x)^2 - 2*c^3*d*(d + e*x)^3 + b*c^2*e*(d + e*x)^3))/((b^2 - 4*a*c)*(-(c*d
^2) + b*d*e - a*e^2)*(-(c*d^2) + b*d*e - a*e^2 + 2*c*d*(d + e*x) - b*e*(d +
 e*x) - c*(d + e*x)^2)^2) + (((-8*I)*Sqrt[2]*c^(5/2)*d^2*e + (8*I)*Sqrt[2]*
b*c^(3/2)*d*e^2 + 2*Sqrt[2]*c^(3/2)*Sqrt[-b^2 + 4*a*c]*d*e^2 + I*Sqrt[2]*b^
2*Sqrt[c]*e^3 - (12*I)*Sqrt[2]*a*c^(3/2)*e^3 - Sqrt[2]*b*Sqrt[c]*Sqrt[-b^2
+ 4*a*c]*e^3)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - I*
Sqrt[-b^2 + 4*a*c]*e]])/(8*(b^2 - 4*a*c)*Sqrt[-b^2 + 4*a*c]*Sqrt[-2*c*d + b
*e - I*Sqrt[-b^2 + 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)) + (((8*I)*Sqrt[2]*
c^(5/2)*d^2*e - (8*I)*Sqrt[2]*b*c^(3/2)*d*e^2 + 2*Sqrt[2]*c^(3/2)*Sqrt[-b^2
 + 4*a*c]*d*e^2 - I*Sqrt[2]*b^2*Sqrt[c]*e^3 + (12*I)*Sqrt[2]*a*c^(3/2)*e^3
- Sqrt[2]*b*Sqrt[c]*Sqrt[-b^2 + 4*a*c]*e^3)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d
+ e*x])/Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]])/(8*(b^2 - 4*a*c)*Sqrt
[-b^2 + 4*a*c]*Sqrt[-2*c*d + b*e + I*Sqrt[-b^2 + 4*a*c]*e]*(-(c*d^2) + b*d*
e - a*e^2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 5.53, size = 3071, normalized size = 6.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/32*((b^2*c*d^2*e - 4*a*c^2*d^2*e - b^3*d*e^2 + 4*a*b*c*d*e^2 + a*b^2*e^3
 - 4*a^2*c*e^3)^2*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(2*c*d*e
^2 - b*e^3) + 2*(2*sqrt(b^2 - 4*a*c)*c^3*d^4*e^2 - 4*sqrt(b^2 - 4*a*c)*b*c^
```

```
2*d^3*e^3 + (b^2*c + 8*a*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 + (b^3 - 8*a*b*c)*s
qrt(b^2 - 4*a*c)*d*e^5 - (a*b^2 - 6*a^2*c)*sqrt(b^2 - 4*a*c)*e^6)*sqrt(-4*c
^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(-b^2*c*d^2*e + 4*a*c^2*d^2*e +
b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 + 4*a^2*c*e^3) - (16*(b^2*c^5 - 4*a*c
^6)*d^7*e^2 - 56*(b^3*c^4 - 4*a*b*c^5)*d^6*e^3 + 14*(5*b^4*c^3 - 16*a*b^2*c
^4 - 16*a^2*c^5)*d^5*e^4 - 35*(b^5*c^2 - 16*a^2*b*c^4)*d^4*e^5 + 4*(b^6*c +
 23*a*b^4*c^2 - 92*a^2*b^2*c^3 - 64*a^3*c^4)*d^3*e^6 + (b^7 - 26*a*b^5*c -
8*a^2*b^3*c^2 + 384*a^3*b*c^3)*d^2*e^7 - 2*(a*b^6 - 19*a^2*b^4*c + 48*a^3*b
^2*c^2 + 48*a^4*c^3)*d*e^8 + (a^2*b^5 - 16*a^3*b^3*c + 48*a^4*b*c^2)*e^9)*s
qrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*
e + d)/sqrt(-(2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a*b*c^2*d^2*
e + b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 + 4*a^2*b*c*e
^3 + sqrt((2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a*b*c^2*d^2*e +
 b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 + 4*a^2*b*c*e^3)
^2 - 4*(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3*e + b^4*d
^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 + 8*a^2*b*c*
d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4)*(b^2*c^2*d^2 - 4*a*c^3*d^2 - b^3*c*d*e +
 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(b^2*c^2*d^2 - 4*a*c^3*d^2
- b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(((b^2*c^3 - 4
*a*c^4)*sqrt(b^2 - 4*a*c)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*sqrt(b^2 - 4*a*c)*d
^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^2 - (b^5
 + 2*a*b^3*c - 24*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b
^2*c - 4*a^3*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*sqrt(
b^2 - 4*a*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*sqrt(b^2 - 4*a*c)*e^6)*abs(-b^2*c*
d^2*e + 4*a*c^2*d^2*e + b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 + 4*a^2*c*e^3
)*abs(c)) + 1/32*((b^2*c*d^2*e - 4*a*c^2*d^2*e - b^3*d*e^2 + 4*a*b*c*d*e^2
+ a*b^2*e^3 - 4*a^2*c*e^3)^2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*
e)*(2*c*d*e^2 - b*e^3) - 2*(2*sqrt(b^2 - 4*a*c)*c^3*d^4*e^2 - 4*sqrt(b^2 -
4*a*c)*b*c^2*d^3*e^3 + (b^2*c + 8*a*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 + (b^3 -
 8*a*b*c)*sqrt(b^2 - 4*a*c)*d*e^5 - (a*b^2 - 6*a^2*c)*sqrt(b^2 - 4*a*c)*e^6
)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(-b^2*c*d^2*e + 4*a*c
^2*d^2*e + b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 + 4*a^2*c*e^3) - (16*(b^2*
c^5 - 4*a*c^6)*d^7*e^2 - 56*(b^3*c^4 - 4*a*b*c^5)*d^6*e^3 + 14*(5*b^4*c^3 -
 16*a*b^2*c^4 - 16*a^2*c^5)*d^5*e^4 - 35*(b^5*c^2 - 16*a^2*b*c^4)*d^4*e^5 +
 4*(b^6*c + 23*a*b^4*c^2 - 92*a^2*b^2*c^3 - 64*a^3*c^4)*d^3*e^6 + (b^7 - 26
*a*b^5*c - 8*a^2*b^3*c^2 + 384*a^3*b*c^3)*d^2*e^7 - 2*(a*b^6 - 19*a^2*b^4*c
 + 48*a^3*b^2*c^2 + 48*a^4*c^3)*d*e^8 + (a^2*b^5 - 16*a^3*b^3*c + 48*a^4*b*
c^2)*e^9)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1
/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a
*b*c^2*d^2*e + b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 +
4*a^2*b*c*e^3 - sqrt((2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a*b*
c^2*d^2*e + b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 + 4*a
^2*b*c*e^3)^2 - 4*(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^
3*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 +
 8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4)*(b^2*c^2*d^2 - 4*a*c^3*d^2 -
b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(b^2*c^2*d^2 - 4
*a*c^3*d^2 - b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(((
b^2*c^3 - 4*a*c^4)*sqrt(b^2 - 4*a*c)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*sqrt(b^2
 - 4*a*c)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^4
*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^3 + 3*(a*b^
4 - 3*a^2*b^2*c - 4*a^3*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3
*b*c)*sqrt(b^2 - 4*a*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*sqrt(b^2 - 4*a*c)*e^6)*
abs(-b^2*c*d^2*e + 4*a*c^2*d^2*e + b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 +
4*a^2*c*e^3)*abs(c)) - 1/4*(2*(x*e + d)^(7/2)*c^3*d*e^2 - 6*(x*e + d)^(5/2)
*c^3*d^2*e^2 + 6*(x*e + d)^(3/2)*c^3*d^3*e^2 - 2*sqrt(x*e + d)*c^3*d^4*e^2
- (x*e + d)^(7/2)*b*c^2*e^3 + 6*(x*e + d)^(5/2)*b*c^2*d*e^3 - 9*(x*e + d)^(
3/2)*b*c^2*d^2*e^3 + 4*sqrt(x*e + d)*b*c^2*d^3*e^3 - 2*(x*e + d)^(5/2)*b^2*
c*e^4 + 2*(x*e + d)^(5/2)*a*c^2*e^4 + 5*(x*e + d)^(3/2)*b^2*c*d*e^4 - 2*(x*
e + d)^(3/2)*a*c^2*d*e^4 - sqrt(x*e + d)*b^2*c*d^2*e^4 - 8*sqrt(x*e + d)*a*
```

```
c^2*d^2*e^4 - (x*e + d)^(3/2)*b^3*e^5 + (x*e + d)^(3/2)*a*b*c*e^5 - sqrt(x*
e + d)*b^3*d*e^5 + 8*sqrt(x*e + d)*a*b*c*d*e^5 + sqrt(x*e + d)*a*b^2*e^6 -
6*sqrt(x*e + d)*a^2*c*e^6)/((b^2*c*d^2 - 4*a*c^2*d^2 - b^3*d*e + 4*a*b*c*d*
e + a*b^2*e^2 - 4*a^2*c*e^2)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*
e + d)*b*e - b*d*e + a*e^2)^2)
```

maple [B] time = 0.12, size = 3056, normalized size = 6.60

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/8*e^4/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c
/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*c)*b^2-e^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^
2*c*d^2)*c^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*c)*d^2-3/2*e^4/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^
2*d^2+b^3*d*e-b^2*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-1/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2
)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+
d)^(3/2)*b^3+e^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2
*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b*d-3/2*e^4/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*
c^2*d^2+b^3*d*e-b^2*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a+e^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*
c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/(
(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/
((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d+1/8*e^4/(4*a^2*c*e^2-
a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c/(-(4*a*c-b^2)*e^2)^(
1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2-e^2/
(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c^3/(-(4*
a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)
*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1
/2)*c)*d^2+1/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b^
2-3/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*
e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(5/2)*d^2+3/2*e^2/(c*e^2*x^2+b*e^2
*x+a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^
2)*(e*x+d)^(3/2)*c^3*d^3-1/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e
*x+d)^(1/2)*c^2*d^2-1/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a^2*c*e^2-a*
b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(7/2)*b+1/2*e^4/
(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*
d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(5/2)*a-1/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2*
c/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)
^(5/2)*b^2-3/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*
c+1/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*
e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(7/2)*d+1/2*e^3/(c*e^2*x^2+b*e^2*x
+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b*c*d+3/2*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)
^2*c^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e
*x+d)^(5/2)*b*d+1/4*e^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*
d*e-b^2*c*d^2)*c^2*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*a
rctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
c)*d-1/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e
+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(3/2)*c^2*a*d-1/8*e^3/(4*a^2*c*e^2-
```

```
a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+1/8*e^3/(4*a^2*c*e^2-a*b^2*e^2-4*a
*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+5/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a^2*c
*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(3/2)*b^2
*c*d-9/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e
+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(3/2)*b*c^2*d^2-1/4*e^2/(4*a^2*c*e^
2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c^2*2^(1/2)/((-b*e+2
*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*
e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+1/4*e^5/(c*e^2*x^2+b*e^2*x+
a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*
(e*x+d)^(3/2)*a*b*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)\sqrt{ex + d}}{\left(cx^2 + bx + a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^3, x)
```

mupad [B] time = 9.03, size = 46559, normalized size = 100.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(1/2)*(b^2*e^4 - 2*c^2*d^2*e^2 - 6*a*c*e^4 + 2*b*c*d*e^3))/(4*(
4*a*c - b^2)) + ((d + e*x)^(5/2)*(a*c^2*e^4 - b^2*c*e^4 - 3*c^3*d^2*e^2 + 3
*b*c^2*d*e^3))/(2*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)) - ((d + e*x)^(3/2)
*(b^3*e^5 - 6*c^3*d^3*e^2 + 9*b*c^2*d^2*e^3 - a*b*c*e^5 + 2*a*c^2*d*e^4 - 5
*b^2*c*d*e^4))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)) + (c*(2*c^2*d*e^2
- b*c*e^3)*(d + e*x)^(7/2))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)))/(c^2
*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3 + 4*a*c*d*e^2
 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 +
6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*
b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - atan(((((24576*a^5*c^6*e^8 + 64*a*
b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^
8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 -
128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b
^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 204
80*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 153
6*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216
*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64
*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2
 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^
2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^
2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^
2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2
*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) - ((d + e*x)^(1/2)*(-(b^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 -
288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^
3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*
e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2
)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c
```

*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^

4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*1i - (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)^(1/2)*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c

^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a

^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3 *d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3 *c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11 *e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504 *a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c ^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^ 7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4* a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3* e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11 520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a ^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4 *d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2 *d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 38 40*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6* b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d ^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2 *d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^1 0*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120* a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d ^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^ 3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*1i)/((5*b^3*c^4*e^9 + 32*c^7*d^3*e^6 - 48*b*c^6*d^2*e^7 + 6*b^2*c ^5*d*e^8 - 36*a*b*c^5*e^9 + 72*a*c^6*d*e^8)/(32*(a^2*b^6*e^4 - 64*a^3*c^5*d ^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3 *b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d ^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128 *a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3* c^2*d*e^3)) + (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192* a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4 *d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^ 6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b ^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5* c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b* c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4* c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a *b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^ 2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3* b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d *e^3)) - ((d + e*x)^(1/2)*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^ 5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3* e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9* c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a

*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b
^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^
2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8
960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*
a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2
*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4
*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*
d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 +
24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e
- 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*
b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3
*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2
- 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^
3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d
^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8
*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*
a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3
+ 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e
- 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 1228
8*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*
b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4
*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a
^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/
2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*
b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d
^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 +
64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 -
9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3
*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5
*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*
e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d
*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 +
16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*
d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e
+ 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*
c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*
e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*
a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^
7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 +
5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7
- 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a
*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 +
960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e
^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2
+ 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 4
80*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 115
20*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^
6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*
d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*
d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 384
0*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b
^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^
4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*
d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10
*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a
^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 -
7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^
3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3
*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e

+ 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 6
9*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 7
20*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 1
1520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)
))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4
- 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7
+ 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4
+ 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*
c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d
^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3
*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b
*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7
- 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b
^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^
5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(
4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/
2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*
d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^
3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*
d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d
*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2
*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096
*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^1
0*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c
*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^
6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 384
0*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^
8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a
^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7
680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e
^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^
4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6
*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^
13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^
6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2
*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d
*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4
*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + (((24
576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^
8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 3
2768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c
^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^
2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 3276
8*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a
*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672
*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^
6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*
c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*
c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^
3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a
^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)
^(1/2)*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7
- 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^
4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^
5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2
*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b
^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536
*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 +
2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2

*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d* e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^

2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*2i - atan(((((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) - ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*

c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^
3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^
9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d
*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 38
40*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5
 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6
 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 -
240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 32
0*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(12
8*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*
b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2
*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1
280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5
*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c
^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d
^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c
^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4
*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16
896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e
^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^
6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5
 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 +
720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11
520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3
840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 -
 18432*a^7*b^3*c^5*d*e^5)))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*
c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d
^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*
b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a
*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5
*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16
*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-
(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^
7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 76
80*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d
^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*
b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e
^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d
^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*
c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6
*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^
2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*
e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3
 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*
b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*
b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*
d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1
280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a
^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*
b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648
*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3
 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*
d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b
^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a
*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c
^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*
d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*
d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*
d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c

^5*d*e^5)))^(1/2)*1i - (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e

^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*1i)/((5*b^3*c^4*e^9 + 32*c^7*d^3*e^6 - 48*b*c^6*d^2*e^7 + 6*b^2*c^5*d*e^8 - 36*a*b*c^5*e^9 + 72*a*c^6*d*e^8)/(32*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e

^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) - ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5* c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 +

24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2

)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 -

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7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3
*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*
a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d
*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6
*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^
2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c
^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*
d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*
d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^
3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*
a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 +
3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^
6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 +
 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288
*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^
2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 6
48*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e
^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^
5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6
*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72
*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b
*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^
4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^
6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^
3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3
*c^5*d*e^5)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1435 $\int \frac{b+2cx}{\sqrt{d+ex}\,(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=673

$$\frac{e\sqrt{d+ex}\left(cx\left(-2ce(5ae+bd)+3b^2e^2+2c^2d^2\right)+(cd-3be)\left(2ace+b^2(-e)+bcd\right)+5ace(2cd-be)\right)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{c}\,e\left(-2c^2\right.}{}$$

Rubi [A] time = 5.26, antiderivative size = 673, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {822, 826, 1166, 208}

$$\frac{e\sqrt{d+ex}\left(cx\left(-2ce(5ae+bd)+3b^2e^2+2c^2d^2\right)+(cd-3be)\left(2ace+b^2(-e)+bcd\right)+5ace(2cd-be)\right)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{c}\,e\left(-2c^2de\left(-d\sqrt{b^2-4ac}-16ae+6bd\right)-2ce^2\left(bd\sqrt{b^2-4ac}+5ae\sqrt{b^2-4ac}+8abe+b^2d\right)+3b^2e^3\left(\sqrt{b^2-4ac}+b\right)+8c^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)^2}+\frac{\sqrt{c}\,e\left(-2c^2de\left(d\sqrt{b^2-4ac}-16ae+6bd\right)-2ce^2\left(-bd\sqrt{b^2-4ac}-5ae\sqrt{b^2-4ac}+8abe+b^2d\right)+3b^2e^3\left(b-\sqrt{b^2-4ac}\right)+8c^3d^3\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] -(Sqrt[d + e*x]*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(2*(b^2
 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2)^2) + (e*Sqrt[d + e*x]*(5
*a*c*e*(2*c*d - b*e) + (c*d - 3*b*e)*(b*c*d - b^2*e + 2*a*c*e) + c*(2*c^2*d
^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e))*x))/(4*(b^2 - 4*a*c)*(c*d^2 - b*d*e +
 a*e^2)^2*(a + b*x + c*x^2)) - (Sqrt[c]*e*(8*c^3*d^3 + 3*b^2*(b + Sqrt[b^2
 - 4*a*c])*e^3 - 2*c^2*d*e*(6*b*d - Sqrt[b^2 - 4*a*c]*d - 16*a*e) - 2*c*e^2*
(b^2*d + b*Sqrt[b^2 - 4*a*c]*d + 8*a*b*e + 5*a*Sqrt[b^2 - 4*a*c]*e))*ArcTan
h[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])
/(4*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*
d^2 - b*d*e + a*e^2)^2) + (Sqrt[c]*e*(8*c^3*d^3 + 3*b^2*(b - Sqrt[b^2 - 4*a
*c])*e^3 - 2*c^2*d*e*(6*b*d + Sqrt[b^2 - 4*a*c]*d - 16*a*e) - 2*c*e^2*(b^2*
d - b*Sqrt[b^2 - 4*a*c]*d + 8*a*b*e - 5*a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sq
rt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(4*S
qrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 -
 b*d*e + a*e^2)^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
```

```
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(cd-3be)-\frac{5}{2}c\left(b^2-\right.}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}}{2\left(b^2-4ac\right)\left(cd^2-bde\right.}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\left(5ace(2cd-b\right.}{}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\left(5ace(2cd-b\right.}{}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\left(5ace(2cd-b\right.}{}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\left(5ace(2cd-b\right.}{}$$

Mathematica [A] time = 6.20, size = 1033, normalized size = 1.53

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] -1/2*(Sqrt[d + e*x]*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) + c
*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e +
 a*e^2)*(a + b*x + c*x^2)^2) - (-((Sqrt[d + e*x]*((5*a*c*(b^2 - 4*a*c)*e^2*
(2*c*d - b*e))/2 + ((b^2 - 4*a*c)*e*(c*d - 3*b*e)*(b*c*d - b^2*e + 2*a*c*e)
)/2 + c*((5*c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 + ((b^2 - 4*a*c)*e*(c*d -
3*b*e)*(2*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*
x + c*x^2))) - (2*((Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*((c*(b^2 - 4*a*
c)*e^2*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e)))/4 - (-1/4*(c*(b^2 - 4
*a*c)*e^2*(-2*c*d + b*e)*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e))) + 2
*c*(-1/4*(c*(b^2 - 4*a*c)*d*e^2*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e
))) + ((b^2 - 4*a*c)*e^2*(4*c^3*d^3 + 3*b^3*e^3 - c^2*d*e*(5*b*d - 16*a*e)
```

```
- b*c*e^2*(2*b*d + 13*a*e)))/4))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sq
rt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqr
t[c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e + Sqrt[b^2 -
 4*a*c]*e]*((c*(b^2 - 4*a*c)*e^2*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*
e)))/4 + (-1/4*(c*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(2*c^2*d^2 + 3*b^2*e^2 -
 2*c*e*(b*d + 5*a*e))) + 2*c*(-1/4*(c*(b^2 - 4*a*c)*d*e^2*(2*c^2*d^2 + 3*b^
2*e^2 - 2*c*e*(b*d + 5*a*e))) + ((b^2 - 4*a*c)*e^2*(4*c^3*d^3 + 3*b^3*e^3 -
 c^2*d*e*(5*b*d - 16*a*e) - b*c*e^2*(2*b*d + 13*a*e)))/4))/(Sqrt[b^2 - 4*a*
c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2
- 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e))))/((b^
2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^
2))
```

IntegrateAlgebraic [A] time = 16.08, size = 1184, normalized size = 1.76

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] -1/4*(e^2*Sqrt[d + e*x]*(2*c^4*d^5 - 5*b*c^3*d^4*e + 14*b^2*c^2*d^3*e^2 - 3
6*a*c^3*d^3*e^2 - 16*b^3*c*d^2*e^3 + 54*a*b*c^2*d^2*e^3 + 5*b^4*d*e^4 - 8*a
*b^2*c*d*e^4 - 38*a^2*c^2*d*e^4 - 5*a*b^3*e^5 + 19*a^2*b*c*e^5 - 6*c^4*d^4*
(d + e*x) + 12*b*c^3*d^3*e*(d + e*x) - 24*b^2*c^2*d^2*e^2*(d + e*x) + 60*a*
c^3*d^2*e^2*(d + e*x) + 18*b^3*c*d*e^3*(d + e*x) - 60*a*b*c^2*d*e^3*(d + e*
x) - 3*b^4*e^4*(d + e*x) + 6*a*b^2*c*e^4*(d + e*x) + 18*a^2*c^2*e^4*(d + e*
x) + 6*c^4*d^3*(d + e*x)^2 - 9*b*c^3*d^2*e*(d + e*x)^2 + 15*b^2*c^2*d*e^2*(
d + e*x)^2 - 42*a*c^3*d*e^2*(d + e*x)^2 - 6*b^3*c*e^3*(d + e*x)^2 + 21*a*b*
c^2*e^3*(d + e*x)^2 - 2*c^4*d^2*(d + e*x)^3 + 2*b*c^3*d*e*(d + e*x)^3 - 3*b
^2*c^2*e^2*(d + e*x)^3 + 10*a*c^3*e^2*(d + e*x)^3))/((b^2 - 4*a*c)*(-(c*d^2
) + b*d*e - a*e^2)^2*(-(c*d^2) + b*d*e - a*e^2 + 2*c*d*(d + e*x) - b*e*(d +
 e*x) - c*(d + e*x)^2)^2) + ((8*Sqrt[2]*c^(7/2)*d^3*e - 12*Sqrt[2]*b*c^(5/2
)*d^2*e^2 + 2*Sqrt[2]*c^(5/2)*Sqrt[b^2 - 4*a*c]*d^2*e^2 - 2*Sqrt[2]*b^2*c^(
3/2)*d*e^3 + 32*Sqrt[2]*a*c^(5/2)*d*e^3 - 2*Sqrt[2]*b*c^(3/2)*Sqrt[b^2 - 4*
a*c]*d*e^3 + 3*Sqrt[2]*b^3*Sqrt[c]*e^4 - 16*Sqrt[2]*a*b*c^(3/2)*e^4 + 3*Sqr
t[2]*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^4 - 10*Sqrt[2]*a*c^(3/2)*Sqrt[b^2 - 4*
a*c]*e^4)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b*e - Sqrt[b
^2 - 4*a*c]*e]])/(8*(b^2 - 4*a*c)^(3/2)*Sqrt[-2*c*d + b*e - Sqrt[b^2 - 4*a*
c]*e]*(-(c*d^2) + b*d*e - a*e^2)^2) + ((-8*Sqrt[2]*c^(7/2)*d^3*e + 12*Sqrt[
2]*b*c^(5/2)*d^2*e^2 + 2*Sqrt[2]*c^(5/2)*Sqrt[b^2 - 4*a*c]*d^2*e^2 + 2*Sqrt
[2]*b^2*c^(3/2)*d*e^3 - 32*Sqrt[2]*a*c^(5/2)*d*e^3 - 2*Sqrt[2]*b*c^(3/2)*Sq
rt[b^2 - 4*a*c]*d*e^3 - 3*Sqrt[2]*b^3*Sqrt[c]*e^4 + 16*Sqrt[2]*a*b*c^(3/2)*
e^4 + 3*Sqrt[2]*b^2*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e^4 - 10*Sqrt[2]*a*c^(3/2)*Sq
rt[b^2 - 4*a*c]*e^4)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[-2*c*d + b
*e + Sqrt[b^2 - 4*a*c]*e]])/(8*(b^2 - 4*a*c)^(3/2)*Sqrt[-2*c*d + b*e + Sqrt
[b^2 - 4*a*c]*e]*(-(c*d^2) + b*d*e - a*e^2)^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 10.02, size = 5779, normalized size = 8.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="giac")

[Out] 1/32*((b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)^2*(2*c^2*d^2*e^2 - 2*b*c*d*e^3 + (3*b^2 - 10*a*c)*e^4)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e) + 2*(2*sqrt(b^2 - 4*a*c)*c^5*d^7*e^2 - 7*sqrt(b^2 - 4*a*c)*b*c^4*d^6*e^3 + 3*(b^2*c^3 + 10*a*c^4)*sqrt(b^2 - 4*a*c)*d^5*e^4 + 5*(2*b^3*c^2 - 15*a*b*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^5 - (11*b^4*c - 48*a*b^2*c^2 - 54*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^3*e^6 + 3*(b^5 + a*b^3*c - 27*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^7 - (6*a*b^4 - 21*a^2*b^2*c - 26*a^3*c^2)*sqrt(b^2 - 4*a*c)*d*e^8 + (3*a^2*b^3 - 13*a^3*b*c)*sqrt(b^2 - 4*a*c)*e^9)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5) - (16*(b^2*c^8 - 4*a*c^9)*d^12*e^2 - 96*(b^3*c^7 - 4*a*b*c^8)*d^11*e^3 + 8*(29*b^4*c^6 - 100*a*b^2*c^7 - 64*a^2*c^8)*d^10*e^4 - 40*(7*b^5*c^5 - 12*a*b^3*c^6 - 64*a^2*b*c^7)*d^9*e^5 + (157*b^6*c^4 + 636*a*b^4*c^5 - 4704*a^2*b^2*c^6 - 1408*a^3*c^7)*d^8*e^6 - 4*(b^7*c^3 + 300*a*b^5*c^4 - 864*a^2*b^3*c^5 - 1408*a^3*b*c^6)*d^7*e^7 - 14*(3*b^8*c^2 - 50*a*b^6*c^3 + 576*a^3*b^2*c^5 + 128*a^4*c^6)*d^6*e^8 + 4*(5*b^9*c - 27*a*b^7*c^2 - 336*a^2*b^5*c^3 + 1120*a^3*b^3*c^4 + 1344*a^4*b*c^5)*d^5*e^9 - (3*b^10 + 40*a*b^8*c - 590*a^2*b^6*c^2 + 120*a^3*b^4*c^3 + 5360*a^4*b^2*c^4 + 1088*a^5*c^5)*d^4*e^10 + 4*(3*a*b^9 - 7*a^2*b^7*c - 164*a^3*b^5*c^2 + 440*a^4*b^3*c^3 + 544*a^5*b*c^4)*d^3*e^11 - 2*(9*a^2*b^8 - 62*a^3*b^6*c - 60*a^4*b^4*c^2 + 624*a^5*b^2*c^3 + 128*a^6*c^4)*d^2*e^12 + 4*(3*a^3*b^7 - 26*a^4*b^5*c + 40*a^5*b^3*c^2 + 64*a^6*b*c^3)*d*e^13 - (3*a^4*b^6 - 28*a^5*b^4*c + 64*a^6*b^2*c^2)*e^14)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5 + sqrt((2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5)^2 - 4*(b^2*c^3*d^6 - 4*a*c^4*d^6 - 3*b^3*c^2*d^5*e + 12*a*b*c^3*d^5*e + 3*b^4*c*d^4*e^2 - 9*a*b^2*c^2*d^4*e^2 - 12*a^2*c^3*d^4*e^2 - b^5*d^3*e^3 - 2*a*b^3*c*d^3*e^3 + 24*a^2*b*c^2*d^3*e^3 + 3*a*b^4*d^2*e^4 - 9*a^2*b^2*c*d^2*e^4 - 12*a^3*c^2*d^2*e^4 - 3*a^2*b^3*d*e^5 + 12*a^3*b*c*d*e^5 + a^3*b^2*e^6 - 4*a^4*c*e^6)*(b^2*c^3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(b^2*c^3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(((b^2*c^5 - 4*a*c^6)*sqrt(b^2 - 4*a*c)*d^10 - 5*(b^3*c^4 - 4*a*b*c^5)*sqrt(b^2 - 4*a*c)*d^9*e + 5*(2*b^4*c^3 - 7*a*b^2*c^4 - 4*a^2*c^5)*sqrt(b^2 - 4*a*c)*d^8*e^2 - 10*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*sqrt(b^2 - 4*a*c)*d^7*e^3 + 5*(b^6*c + 2*a*b^4*c^2 - 22*a^2*b^2*c^3 - 8*a^3*c^4)*sqrt(b^2 - 4*a*c)*d^6*e^4 - (b^7 + 16*a*b^5*c - 50*a^2*b^3*c^2 - 120*a^3*b*c^3)*sqrt(b^2 - 4*a*c)*d^5*e^5 + 5*(a*b^6 + 2*a^2*b^4*c - 22*a^3*b^2*c^2 - 8*a^4*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^6 - 10*(a^2*b^5 - 2*a^3*b^3*c - 8*a^4*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^7 + 5*(2*a^3*b^4 - 7*a^4*b^2*c - 4*a^5*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^8 - 5*(a^4*b^3 - 4*a^5*b*c)*sqrt(b^2 - 4*a*c)*d*e^9 + (a^5*b^2 - 4*a^6*c)*sqrt(b^2 - 4*a*c)*e^10)*abs(b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)*abs(c)) - 1/32*((b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)^2*(2*c^2*d^2*e^2 - 2*b*c*d*e^3 + (3*b^2 - 10*a*c)*e^4)*sqrt(-4*c^

2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e) - 2*(2*sqrt(b^2 - 4*a*c)*c^5*d^7*e^2 - 7*sqrt(b^2 - 4*a*c)*b*c^4*d^6*e^3 + 3*(b^2*c^3 + 10*a*c^4)*sqrt(b^2 - 4*a*c)*d^5*e^4 + 5*(2*b^3*c^2 - 15*a*b*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^5 - (11*b^4*c - 48*a*b^2*c^2 - 54*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^3*e^6 + 3*(b^5 + a*b^3*c - 27*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^7 - (6*a*b^4 - 21*a^2*b^2*c - 26*a^3*c^2)*sqrt(b^2 - 4*a*c)*d*e^8 + (3*a^2*b^3 - 13*a^3*b*c)*sqrt(b^2 - 4*a*c)*e^9)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5) - (16*(b^2*c^8 - 4*a*c^9)*d^12*e^2 - 96*(b^3*c^7 - 4*a*b*c^8)*d^11*e^3 + 8*(29*b^4*c^6 - 100*a*b^2*c^7 - 64*a^2*c^8)*d^10*e^4 - 40*(7*b^5*c^5 - 12*a*b^3*c^6 - 64*a^2*b*c^7)*d^9*e^5 + (157*b^6*c^4 + 636*a*b^4*c^5 - 4704*a^2*b^2*c^6 - 1408*a^3*c^7)*d^8*e^6 - 4*(b^7*c^3 + 300*a*b^5*c^4 - 864*a^2*b^3*c^5 - 1408*a^3*b*c^6)*d^7*e^7 - 14*(3*b^8*c^2 - 50*a*b^6*c^3 + 576*a^3*b^2*c^5 + 128*a^4*c^6)*d^6*e^8 + 4*(5*b^9*c - 27*a*b^7*c^2 - 336*a^2*b^5*c^3 + 1120*a^3*b^3*c^4 + 1344*a^4*b*c^5)*d^5*e^9 - (3*b^10 + 40*a*b^8*c - 590*a^2*b^6*c^2 + 120*a^3*b^4*c^3 + 5360*a^4*b^2*c^4 + 1088*a^5*c^5)*d^4*e^10 + 4*(3*a*b^9 - 7*a^2*b^7*c - 164*a^3*b^5*c^2 + 440*a^4*b^3*c^3 + 544*a^5*b*c^4)*d^3*e^11 - 2*(9*a^2*b^8 - 62*a^3*b^6*c - 60*a^4*b^4*c^2 + 624*a^5*b^2*c^3 + 128*a^6*c^4)*d^2*e^12 + 4*(3*a^3*b^7 - 26*a^4*b^5*c + 40*a^5*b^3*c^2 + 64*a^6*b*c^3)*d*e^13 - (3*a^4*b^6 - 28*a^5*b^4*c + 64*a^6*b^2*c^2)*e^14)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5 - sqrt((2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5)^2 - 4*(b^2*c^3*d^6 - 4*a*c^4*d^6 - 3*b^3*c^2*d^5*e + 12*a*b*c^3*d^5*e + 3*b^4*c*d^4*e^2 - 9*a*b^2*c^2*d^4*e^2 - 12*a^2*c^3*d^4*e^2 - b^5*d^3*e^3 - 2*a*b^3*c*d^3*e^3 + 24*a^2*b*c^2*d^3*e^3 + 3*a*b^4*d^2*e^4 - 9*a^2*b^2*c*d^2*e^4 - 12*a^3*c^2*d^2*e^4 - 3*a^2*b^3*d*e^5 + 12*a^3*b*c*d*e^5 + a^3*b^2*e^6 - 4*a^4*c*e^6)*(b^2*c^3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(b^2*c^3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(((b^2*c^5 - 4*a*c^6)*sqrt(b^2 - 4*a*c)*d^10 - 5*(b^3*c^4 - 4*a*b*c^5)*sqrt(b^2 - 4*a*c)*d^9*e + 5*(2*b^4*c^3 - 7*a*b^2*c^4 - 4*a^2*c^5)*sqrt(b^2 - 4*a*c)*d^8*e^2 - 10*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*sqrt(b^2 - 4*a*c)*d^7*e^3 + 5*(b^6*c + 2*a*b^4*c^2 - 22*a^2*b^2*c^3 - 8*a^3*c^4)*sqrt(b^2 - 4*a*c)*d^6*e^4 - (b^7 + 16*a*b^5*c - 50*a^2*b^3*c^2 - 120*a^3*b*c^3)*sqrt(b^2 - 4*a*c)*d^5*e^5 + 5*(a*b^6 + 2*a^2*b^4*c - 22*a^3*b^2*c^2 - 8*a^4*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^6 - 10*(a^2*b^5 - 2*a^3*b^3*c - 8*a^4*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^7 + 5*(2*a^3*b^4 - 7*a^4*b^2*c - 4*a^5*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^8 - 5*(a^4*b^3 - 4*a^5*b*c)*sqrt(b^2 - 4*a*c)*d*e^9 + (a^5*b^2 - 4*a^6*c)*sqrt(b^2 - 4*a*c)*e^10)*abs(b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)*abs(c)) + 1/4*(2*(x*e + d)^(7/2)*c^4*d^2*e^2 - 6*(x*e + d)^(5/2)*c^4*d^3*e^2 + 6*(x*e + d)^(3/2)*c^4*d^4*e^2 - 2*sqrt(x*e + d)*c^4*d^5*e^2 - 2*(x*e + d)^(7/2)*b*c^3*d*e^3 + 9*(x*e + d)^(5/2)*b*c^3*d^2*e^3 - 12*(x*e + d)^(3/2)*b*c^3*d^3*e^3 + 5*sqrt(x*e + d)*b*c^3*d^4*e^3 + 3*(x*e + d)^(7/2)*b^2*c^2*e^4 - 10*(x*e + d)^(7/2)*a*c^3*e^4 - 15*(x*e + d)^(5/2)*b^2*c^2*d*e^4 + 42*(x*e + d)^(5/2)*a*c^3*d*e^4 + 24*(x*e + d)^(3/2)*b^2*c^2*d^2*e^4 - 60*(x*e + d)^(3/2)*a*c^3*d^2*e^4 - 14*sqrt(x*e + d)*b^2*c^2*d^3*e^4 + 36*sqrt(x*e + d)*a*c^3*d^3*e^4 + 6*(x*e + d)^(5/2)*b^3*c*e^5 - 21*(x*e + d)^(5/2)*a*b*c

```
^2*e^5 - 18*(x*e + d)^(3/2)*b^3*c*d*e^5 + 60*(x*e + d)^(3/2)*a*b*c^2*d*e^5
+ 16*sqrt(x*e + d)*b^3*c*d^2*e^5 - 54*sqrt(x*e + d)*a*b*c^2*d^2*e^5 + 3*(x*
e + d)^(3/2)*b^4*e^6 - 6*(x*e + d)^(3/2)*a*b^2*c*e^6 - 18*(x*e + d)^(3/2)*a
^2*c^2*e^6 - 5*sqrt(x*e + d)*b^4*d*e^6 + 8*sqrt(x*e + d)*a*b^2*c*d*e^6 + 38
*sqrt(x*e + d)*a^2*c^2*d*e^6 + 5*sqrt(x*e + d)*a*b^3*e^7 - 19*sqrt(x*e + d)
*a^2*b*c*e^7)/((b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3*e
 + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 + 8*
a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4)*((x*e + d)^2*c - 2*(x*e + d)*c*d
 + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)^2)
```

maple [B] time = 0.62, size = 2743, normalized size = 4.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x)
```

```
[Out] e^3*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+
b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^2*d^2-b*e*(-4*a*c*e^2+
b^2*e^2)^(1/2)+2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x+d)^(3/2)*b-2*e^2*c^3/
(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+b^2)*e^2
)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^2*d^2-b*e*(-4*a*c*e^2+b^2*e^2)
^(1/2)+2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x+d)^(3/2)*d-5/2*e^2*c^2/(-(4*a
*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+b^2)*e^2)^(1/2
))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^2*d^2-b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)
+2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x+d)^(3/2)*(-4*a*c*e^2+b^2*e^2)^(1/2)
-e^3*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+b
^2)*e^2)^(1/2))^2/(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*b+2
*e^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c
+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*d
+7/2*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a
*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)
*(-4*a*c*e^2+b^2*e^2)^(1/2)+4*e^3*c^3/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/
(8*a*c*e^2-4*b^2*e^2+8*b*c*d*e-8*c^2*d^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8
*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)
^(1/2))*c)^(1/2)*c)*b-8*e^2*c^4/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(8*a*c
*e^2-4*b^2*e^2+8*b*c*d*e-8*c^2*d^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4
*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2)
)*c)^(1/2)*c)*d-10*e^2*c^3/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(8*a*c*e^2-
4*b^2*e^2+8*b*c*d*e-8*c^2*d^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*
e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*c)*(-4*a*c*e^2+b^2*e^2)^(1/2)-e^3*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c
-b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-
2*b*c*d*e+2*c^2*d^2+b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-2*d*(-4*a*c*e^2+b^2*e^2)
^(1/2)*c)*(e*x+d)^(3/2)*b+2*e^2*c^3/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e
*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*
e+2*c^2*d^2+b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c
)*(e*x+d)^(3/2)*d-5/2*e^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2
*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^
2*d^2+b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x
+d)^(3/2)*(-4*a*c*e^2+b^2*e^2)^(1/2)+e^3*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-
b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d-(-4*a*c*e
^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*b-2*e^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*
c-b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d-(-4*a*c
*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*d+7/2*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*
a*c-b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d-(-4*a
*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*(-4*a*c*e^2+b^2*e^2)^(1/2)-4*e^3*c^3/(
```

```
-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(-8*a*c*e^2+4*b^2*e^2-8*b*c*d*e+8*c^2*d
^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/
2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+8*e^2*c^4/(-(4*a*c-
b^2)*e^2)^(1/2)/(4*a*c-b^2)/(-8*a*c*e^2+4*b^2*e^2-8*b*c*d*e+8*c^2*d^2+4*b*e
*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((b*e
-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*
e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-10*e^2*c^3/(-(4*a*c-b^2)*e^
2)^(1/2)/(4*a*c-b^2)/(-8*a*c*e^2+4*b^2*e^2-8*b*c*d*e+8*c^2*d^2+4*b*e*(-4*a*
c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*(-4*a*c*e^2+b^2*e^2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^3\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^3*sqrt(e*x + d)), x)
```

mupad [B] time = 11.82, size = 84064, normalized size = 124.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^3),x)
```

```
[Out] ((3*(d + e*x)^(3/2)*(6*a^2*c^2*e^6 - b^4*e^6 - 2*c^4*d^4*e^2 + 20*a*c^3*d^2
*e^4 + 4*b*c^3*d^3*e^3 - 8*b^2*c^2*d^2*e^4 + 2*a*b^2*c*e^6 + 6*b^3*c*d*e^5
- 20*a*b*c^2*d*e^5))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)^2) - ((d + e*
x)^(1/2)*(5*b^3*e^5 - 2*c^3*d^3*e^2 + 3*b*c^2*d^2*e^3 - 19*a*b*c*e^5 + 38*a
*c^2*d*e^4 - 11*b^2*c*d*e^4))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)) + (
3*(b*e - 2*c*d)*(d + e*x)^(5/2)*(7*a*c^2*e^4 - 2*b^2*c*e^4 - c^3*d^2*e^2 +
b*c^2*d*e^3))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)^2) + (c*(d + e*x)^(7
/2)*(10*a*c^2*e^4 - 3*b^2*c*e^4 - 2*c^3*d^2*e^2 + 2*b*c^2*d*e^3))/(4*(4*a*c
 - b^2)*(a*e^2 + c*d^2 - b*d*e)^2))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3
 + 2*b^2*d*e^2 - 2*a*b*e^3 + 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*
e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e)
+ a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e
^2) - atan(((((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c
^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^
5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^
3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 6
40*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2
*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 -
88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^
2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3
*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 +
261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4
 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7
 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^
10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*
d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^
2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*
d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5
+ 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8
- 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^
```

5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) - ((d + e*x)^(1/2)*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 +

49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2 *d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^

5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^
8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a
^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 +
 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*
d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6
*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 +
61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6
*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^
8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 +
 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 12
0*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*
a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*
a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^
3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720
*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 640
0*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 -
81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*1i - (((106496*a
^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*
c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*
d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7
*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 70
4*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 2150
4*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e
^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c
^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 5913
6*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*
e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e
^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*
e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^
6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4
*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a
^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12
*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b
^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 -
6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4
*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5
*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d
^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4
*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*
c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7
 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*
a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b
*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + ((d + e*x)
^(1/2)*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a
^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 -
30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b
^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^
8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 +
 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^
4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*
a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 +
 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^
2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^
4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*
b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9
)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) -
384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 11
20*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418
*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 448

00*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7

*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*
e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9
+ 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^
3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7
*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 -
70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^
9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 -
5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4
*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c
^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*
a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a
*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c
^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2
+ 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 +
1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7
168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 +
78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e
^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c
- b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^
12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^
5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*
b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1
280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240
*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^
10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^1
0*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*
d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8
*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*
c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^
3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 +
32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*
d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b
^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 7
1680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^
4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^
2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 35
84*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*
e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^
3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32
000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3
*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c
^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9
*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e
^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6
+ 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*
e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e
^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^
5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c
^5*d*e^9)))^(1/2) + ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 3
2*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 -
12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*
d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 1
72*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^
2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*
b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c
^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^
4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6
*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^
4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*

e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*1i)/((((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3 *b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) - ((d + e*x)^(1/2)*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3* e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^

2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c
^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d
^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^
4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3
*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 28
00*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*
e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9
*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240
*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^
4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^
3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a
^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5
 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3
*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*
a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8
 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^
5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d
^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d
*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*
e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9
*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*
e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^
7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c
^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d
 + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^
4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*
a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^
3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 59
2*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8
 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2
*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*
e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*
c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d
^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*
d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 -
 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^
3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5
*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^
8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 -
 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 448
00*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^1
0*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*
e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^
10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1
/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*
a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5
 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^
5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b
^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c -
b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*
e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 134
4*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260
*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a
^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 7840
0*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 +
154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^
2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^
10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5
 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*

d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - (1000*a^2*c^7*e^10 + 63*b^4*c^5*e^10 - 32*c^9*d^4*e^6 - 510*a*b^2*c^6*e^10 - 40*a*c^8*d^2*e^8 + 64*b*c^8*d^3*e^7 + 6*b^3*c^6*d*e^9 - 38*b^2*c^7*d^2*e^8 + 40*a*b*c^7*d*e^9)/(32*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + (((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*

c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2
 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^
4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4
*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d
^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d
^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*
a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b
^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4
*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + ((d + e*x)^(1/2)*((53760*a^6*c^7*d*e^8
 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 -
2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 4480
0*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10
*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e
^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^1
0*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/
2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a
^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 -
 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5
*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^
5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b
^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e
^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344
*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*
a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^
3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400
*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 1
54*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2
)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^1
0 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5
 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d
*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^
3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b
^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2
*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*
e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^
8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 -
 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^
5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10
*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000
*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^
4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^
2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a
^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6
 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*
d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6
*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 -
11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*
d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^
7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 -
 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9
*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 2
0480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 9
0*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 640
0*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 23
5*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 8
1920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5
 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e
^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^1
1 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 +

32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128
*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4
*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^
9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b
^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 153
6*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4
 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^
5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^
4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 +
 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d
^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*
d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d
^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2
*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b
*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a
^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4
*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^
5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6
 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2
*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2
*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^
2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 3
2*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^
2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2
*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c
 - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 +
 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25
*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c
^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e
^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^1
1*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9
 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1
344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*
e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c
^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*
a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^
2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-
(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 8
96*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98
*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 2822
4*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 5
3760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c
^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*
e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*
a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8
*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^1
5*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^
6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^
2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7
*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*
c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^
3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 -
 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*
d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*
b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 3
2256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3

*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) + ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 +

14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e

^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e
^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*
e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7
 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9
*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*
e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*
d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*2i - atan(((((106496*a^6*c^7*d*e
^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 -
 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 +
122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448
*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3
*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*
c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200
*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6
 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*
c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*
a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a
*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112
*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32
896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^1
0 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8
 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5
*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7
*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*
d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 -
 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*
a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 4
40*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 +
 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^
6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6
*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^
5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e
^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) - ((d + e*x)^(1/2)*(-(
9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 537
60*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4
*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1
/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6
 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c
^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(
4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c
^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^
2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7
168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3
*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d
^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) +
 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4
*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*
c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*
c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*
c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^
5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3
e^6(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))
/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d
^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4
*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8
*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^
10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e
^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 +
20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20

480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2
*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 +
210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7
*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*
c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800
*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6
 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^
7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a
^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 +
 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7
*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6
*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 +
102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5
*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^
8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 +
 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a
^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b
^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b
^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4
*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^
6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880
*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30
720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 +
 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*
a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^
6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^
7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 -
6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^
7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^
7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*
a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6
 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*
d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^
4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 +
12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3
 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^
6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^
3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*
e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^
6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 1
6*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e
^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3
+ 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*
d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e
^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*
e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*
a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^
6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3
 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^
9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 20
77*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*
a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d
^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2
 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*
c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2)
 - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2
*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7
840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e
^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*

c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9 *d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*1i - (((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^

6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + ((d + e*x)^(1/2)*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 3

2768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*
b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*
d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9
*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^
5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536
*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4
+ 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5
*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4
*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 +
9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^
2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d
^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^
4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*
d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*
c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^
6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*
c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5
 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6
+ 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*
d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*
d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2
*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32
*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2
*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*
e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)
^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 -
 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25
*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c
^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e
^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^1
1*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9
- 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1
344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*
e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c
^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*
a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^
2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-
(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 8
96*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98
*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 2822
4*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 5
3760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c
^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*
e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*
a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8
*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^1
5*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^
6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^
2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7
*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*
c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^
3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 -
 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*
d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*
b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 3
2256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3

*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) + ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 +

14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d
^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*
b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8
000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8
*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^
5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 116
00*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5
*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b
^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42
240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e
+ 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 2048
0*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a
*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a
^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a
^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 8192
0*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 1
9200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)
))^(1/2)*1i)/((((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9
*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*
c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*
d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 -
640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a
^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6
- 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*
d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a
^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8
+ 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e
^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e
^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*
e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^
8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*
b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^
4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^
5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^
8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*
c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6
*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^
6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*
d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c
^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d
^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36
*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*
b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3
*c^2*d*e^7)) - ((d + e*x)^(1/2)*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9
)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9
- 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 2
5*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*
c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*
e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^
11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9
- 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 -
1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3
*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*
c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800
*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b
^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(
-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 +
896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 9
8*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 282

24*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 -
53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4
*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*
c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^1
0 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10
- 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9
*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840
*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^
8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^
15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d
^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e
^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^
7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8
*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a
^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2
- 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4
*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5
*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 -
32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^
3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b
^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71
680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2
*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*
b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 6
1440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^
2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e
^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9
- 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4
- 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e +
220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8
+ 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^
3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d
*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7
*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e
^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4
+ 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 57
6*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c
^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3
*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448
*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8
+ 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*
d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*
b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 1
0240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2
*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c
^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*
c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c
^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*
b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*
a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(
8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^
4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 -
4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2
+ 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2
*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^
2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*
c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 6
4*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^
5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*

d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b
*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e
^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*
c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a
^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*
e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c
^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 -
1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*
e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c
^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a
^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7
+ 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b
^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/
2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4
+ 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 -
5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8
- 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e
^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2)
- 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c -
b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^1
0 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10
+ 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4
+ 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6
144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840
*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b
^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^
8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*
e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*
c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a
^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 +
490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d
^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^
10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15
360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5
*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10
*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 1254
40*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e
^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*
c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 153
60*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*
e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2
*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d
*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8
*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^
9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e
^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d
^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*
d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^
7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d + e*x)^(1/2)*(9*b^6*c^3*
e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^
4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^
2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^
8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*
b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c
^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5
- 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 +
64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d
^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d
^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*

d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - (1000*a^2*c^7*e^10 + 63*b^4*c^5*e^10 - 32*c^9*d^4*e^6 - 510*a*b^2*c^6*e^10 - 40*a*c^8*d^2*e^8 + 64*b*c^8*d^3*e^7 + 6*b^3*c^6*d*e^9 - 38*b^2*c^7*d^2*e^8 + 40*a*b*c^7*d*e^9)/(32*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^

2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e
^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3
*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*
d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*
e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*
b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6
*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^
2*d*e^7)) + (((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c
^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^
5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^
3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 6
40*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2
*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 -
88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^
2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3
*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 +
261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4
 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7
 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^
10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*
d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^
2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*
d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5
+ 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8
- 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^
5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e
^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*
e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^
3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2
*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7
*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a
*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^
6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c
^2*d*e^7)) + ((d + e*x)^(1/2)*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^
(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 -
10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*
a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^
9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^
3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11
*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 -
 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 13
44*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e
^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^
7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a
^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2
*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(
4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 89
6*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*
a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224
*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53
760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a
*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^
2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
+ 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e
 + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a
^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*
b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15
*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6

*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3 *b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5 418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^ 2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 614 4*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a ^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^1 4*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8* d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^ 3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^ 3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3 *b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 4 90*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7 *e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10 *c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 1536 0*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e ^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c ^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440 *a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^ 8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360 *a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^ 6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c ^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e ^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e ^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9* e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9 *e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d* e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7* d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) + ((d + e*x)^(1/2)*(9*b^6*c^3*e^ 10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4* e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2* c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^ 2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4 *d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 6 4*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6 *e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4 *e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^ 2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^ 4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^ 5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1 /2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10 656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^ 2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9* d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c ^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 2

1*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^

```
6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(
4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a
^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^
17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5
*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^1
0 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10
+ 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 61
44*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^
7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10
*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^
5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*
b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 5
60*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*
e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8
*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*
a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^
3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c
^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a
^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4
 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4
*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a
^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7
 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^
6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b
^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^1
0*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*
d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^
4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8
*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^
2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c
^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*
b^3*c^5*d*e^9)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1436 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=449

$$\frac{(d+ex)^{m+4}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8(m+4)}+\frac{(d+ex}{}$$

Rubi [A] time = 0.34, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^{m+4}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8(m+4)}+\frac{(d+ex)^{m+2}\left(ae^2-bde+cd^2\right)^2\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{e^8(m+2)}-\frac{3(2cd-be)(d+ex)^{m+3}\left(ae^2-bde+cd^2\right)\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8(m+3)}-\frac{5c(2cd-be)(d+ex)^{m+5}\left(-ce(7bd-3ae)+b^2e^2+7c^2d^2\right)}{e^8(m+5)}+\frac{3c^2(d+ex)^{m+6}\left(-2ce(7bd-ae)+3b^2e^2+14c^2d^2\right)}{e^8(m+6)}-\frac{(2cd-be)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)^3}{e^8(m+1)}-\frac{7c^3(2cd-be)(d+ex)^{m+7}}{e^8(m+7)}+\frac{2c^4(d+ex)^{m+8}}{e^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] -(((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(1 + m))/(e^8*(1 + m))
) + ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e
))*(d + e*x)^(2 + m))/(e^8*(2 + m)) - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e
^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(3 + m))/(e^8*(3
+ m)) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e
*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)
^(4 + m))/(e^8*(4 + m)) - (5*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*
b*d - 3*a*e))*(d + e*x)^(5 + m))/(e^8*(5 + m)) + (3*c^2*(14*c^2*d^2 + 3*b^2
*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(6 + m))/(e^8*(6 + m)) - (7*c^3*(2*c*
d - b*e)*(d + e*x)^(7 + m))/(e^8*(7 + m)) + (2*c^4*(d + e*x)^(8 + m))/(e^8*
(8 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned} \int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3 (d+ex)^m}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2 (14}{} \right. \\ &= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3 (d+ex)^{1+m}}{e^8(1+m)}+\frac{\left(cd^2-bde+ae^2\right)^2 \left(14c^2\right.}{} \end{aligned}$$

Mathematica [B] time = 3.37, size = 1226, normalized size = 2.73

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(c^2*(14*c*d - b*e*(14 + m) - 2*c*e*(7 + m)*x)*(a + x*
(b + c*x))^3) + (3*(-2*((2*c*d - b*e)*(2 + m)*(840*c^5*d^6 + b^4*e^5*(b*d -
 a*e)*m*(3 + 4*m + m^2) - b^2*c*e^4*m*(1 + m)*(b^2*d^2*(-17 + m) + 8*a*b*d*
e*(8 + m) - 4*a^2*e^2*(11 + 2*m)) - 40*c^4*d^4*e*(63*b*d + a*e*(-63 + 2*m +
```

```
2*m^2)) + 4*c^3*d^2*e^2*(5*b^2*d^2*(126 + m + m^2) + 20*a*b*d*e*(-63 + 2*m
 + 2*m^2) - 2*a^2*e^2*(-315 + 26*m + 28*m^2 + 2*m^3)) - 8*c^2*e^3*(5*b^3*d^
3*(21 + m + m^2) + a*b^2*d^2*e*(-315 + 2*m + m^2 - m^3) + a^3*e^3*(-105 + 1
6*m + 18*m^2 + 2*m^3) - a^2*b*d*e^2*(-315 + 26*m + 28*m^2 + 2*m^3))) + (1 +
 m)*(-1680*c^6*d^6 + b^6*e^6*m*(6 + 5*m + m^2) - b^4*c*e^5*m*(2 + m)*(b*d*(
-11 + 3*m) + a*e*(47 + 9*m)) + 80*c^5*d^4*e*(63*b*d + a*e*(-63 - 5*m + 2*m^
2)) + b^2*c^2*e^4*m*(3*b^2*d^2*(26 - 15*m + m^2) + 12*a^2*e^2*(47 + 20*m +
2*m^2) + 8*a*b*d*e*(-47 + 5*m + 3*m^2)) - 4*c^4*d^2*e^2*(40*a*b*d*e*(-63 -
5*m + 2*m^2) + 5*b^2*d^2*(252 - 5*m + 2*m^2) - 12*a^2*e^2*(-105 - 24*m + 5*
m^2 + m^3)) - 8*c^3*e^3*(-5*b^3*d^3*(42 - 5*m + 2*m^2) + 3*a*b^2*d^2*e*(210
 + m - 5*m^2 + m^3) + 6*a^2*b*d*e^2*(-105 - 24*m + 5*m^2 + m^3) + 2*a^3*e^3
*(105 + 71*m + 15*m^2 + m^3)))*(d + e*x) + e^2*(1 + m)*(2 + m)*(c*e*(4 + m)
*(c*e*(b*d - 2*a*e)*(6 + m)*(14*b*(c*d^2 + a*e^2) + 4*a*c*d*e*m - b^2*d*e*(
14 + m)) - (b*d*(5*c*d - 2*b*e) + a*e*(2*c*d*m - b*e*(1 + m)))*(28*c^2*d^2
- b^2*e^2*m + 4*c*e*(-7*b*d + a*e*(7 + m)))) - (3*c*d - b*e)*(c*e*(2*c*d -
b*e)*(6 + m)*(14*b*(c*d^2 + a*e^2) + 4*a*c*d*e*m - b^2*d*e*(14 + m)) - (10*
c^2*d^2 - b^2*e^2*(3 + m) + c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(28*c^2*d^2
 - b^2*e^2*m + 4*c*e*(-7*b*d + a*e*(7 + m)))) + c*e*(3 + m)*(c*e*(2*c*d - b
*e)*(6 + m)*(14*b*(c*d^2 + a*e^2) + 4*a*c*d*e*m - b^2*d*e*(14 + m)) - (10*c
^2*d^2 - b^2*e^2*(3 + m) + c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(28*c^2*d^2
- b^2*e^2*m + 4*c*e*(-7*b*d + a*e*(7 + m))))*x)*(a + x*(b + c*x))) + c*e^4*
(1 + m)*(2 + m)*(3 + m)*(4 + m)*(a + x*(b + c*x))^2*(-2*b^3*e^3*m - 28*c^3*
d^2*(5*d - e*(5 + m)*x) - b*c*e^2*(-2*a*e*(70 + 11*m) + b*d*(140 + 15*m + m
^2) + b*e*m*(5 + m)*x) + 2*c^2*e*(7*b*d*(d*(20 + m) - 2*e*(5 + m)*x) + 2*a*
e*(d*(-35 + m + m^2) + e*(35 + 12*m + m^2)*x)))))/(e^6*(1 + m)*(2 + m)*(3 +
 m)*(4 + m)*(5 + m)*(6 + m))))/(c^2*e^2*(7 + m)*(8 + m))
```

IntegrateAlgebraic [F] time = 0.18, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.54, size = 4607, normalized size = 10.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] (a^3*b*d*e^7*m^7 - 10080*c^4*d^8 + 40320*b*c^3*d^7*e + 40320*a^3*b*d*e^7 -
20160*(3*b^2*c^2 + 2*a*c^3)*d^6*e^2 + 40320*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 1
0080*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 40320*(a*b^3 + 3*a^2*b*c)*d^3
*e^5 - 20160*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6 + 2*(c^4*e^8*m^7 + 28*c^4*e^8*m^
6 + 322*c^4*e^8*m^5 + 1960*c^4*e^8*m^4 + 6769*c^4*e^8*m^3 + 13132*c^4*e^8*m
^2 + 13068*c^4*e^8*m + 5040*c^4*e^8)*x^8 + (40320*b*c^3*e^8 + (2*c^4*d*e^7
+ 7*b*c^3*e^8)*m^7 + 7*(6*c^4*d*e^7 + 29*b*c^3*e^8)*m^6 + 7*(50*c^4*d*e^7 +
 343*b*c^3*e^8)*m^5 + 245*(6*c^4*d*e^7 + 61*b*c^3*e^8)*m^4 + 112*(29*c^4*d*
e^7 + 469*b*c^3*e^8)*m^3 + 196*(18*c^4*d*e^7 + 527*b*c^3*e^8)*m^2 + 144*(10
*c^4*d*e^7 + 721*b*c^3*e^8)*m)*x^7 + (35*a^3*b*d*e^7 - (3*a^2*b^2 + 2*a^3*c
)*d^2*e^6)*m^6 + (20160*(3*b^2*c^2 + 2*a*c^3)*e^8 + (7*b*c^3*d*e^7 + 3*(3*b
^2*c^2 + 2*a*c^3)*e^8)*m^7 - (14*c^4*d^2*e^6 - 161*b*c^3*d*e^7 - 90*(3*b^2*
c^2 + 2*a*c^3)*e^8)*m^6 - (210*c^4*d^2*e^6 - 1435*b*c^3*d*e^7 - 1098*(3*b^2
*c^2 + 2*a*c^3)*e^8)*m^5 - 5*(238*c^4*d^2*e^6 - 1267*b*c^3*d*e^7 - 1404*(3*
b^2*c^2 + 2*a*c^3)*e^8)*m^4 - (3150*c^4*d^2*e^6 - 14518*b*c^3*d*e^7 - 25227
*(3*b^2*c^2 + 2*a*c^3)*e^8)*m^3 - 2*(1918*c^4*d^2*e^6 - 8092*b*c^3*d*e^7 -
25245*(3*b^2*c^2 + 2*a*c^3)*e^8)*m^2 - 24*(70*c^4*d^2*e^6 - 280*b*c^3*d*e^7
```

- 2143*(3*b^2*c^2 + 2*a*c^3)*e^8)*m)*x^6 + (511*a^3*b*d*e^7 + 6*(a*b^3 + 3 *a^2*b*c)*d^3*e^5 - 33*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m^5 + (40320*(b^3*c + 3*a*b*c^2)*e^8 + (3*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 5*(b^3*c + 3*a*b*c^2)*e^ 8)*m^7 - (42*b*c^3*d^2*e^6 - 75*(3*b^2*c^2 + 2*a*c^3)*d*e^7 - 155*(b^3*c + 3*a*b*c^2)*e^8)*m^6 + (84*c^4*d^3*e^5 - 756*b*c^3*d^2*e^6 + 723*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 1955*(b^3*c + 3*a*b*c^2)*e^8)*m^5 + 5*(168*c^4*d^3*e^5 - 966*b*c^3*d^2*e^6 + 681*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 2581*(b^3*c + 3*a*b* c^2)*e^8)*m^4 + 2*(1470*c^4*d^3*e^5 - 6930*b*c^3*d^2*e^6 + 4101*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 23860*(b^3*c + 3*a*b*c^2)*e^8)*m^3 + 4*(1050*c^4*d^3*e^5 - 4452*b*c^3*d^2*e^6 + 2370*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 24455*(b^3*c + 3 *a*b*c^2)*e^8)*m^2 + 144*(14*c^4*d^3*e^5 - 56*b*c^3*d^2*e^6 + 28*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 705*(b^3*c + 3*a*b*c^2)*e^8)*m)*x^5 + (4025*a^3*b*d*e^7 - 6*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 180*(a*b^3 + 3*a^2*b*c)*d^3*e ^5 - 445*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m^4 + (10080*(b^4 + 12*a*b^2*c + 6* a^2*c^2)*e^8 + (5*(b^3*c + 3*a*b*c^2)*d*e^7 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^7 - (15*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 135*(b^3*c + 3*a*b*c^2)*d* e^7 - 32*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^6 + (210*b*c^3*d^3*e^5 - 315 *(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 + 1415*(b^3*c + 3*a*b*c^2)*d*e^7 + 418*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^5 - (420*c^4*d^4*e^4 - 2940*b*c^3*d^3*e^5 + 2355*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 7245*(b^3*c + 3*a*b*c^2)*d*e^7 - 286 4*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^4 - (2520*c^4*d^4*e^4 - 12390*b*c^3 *d^3*e^5 + 7605*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 18740*(b^3*c + 3*a*b*c^2)*d *e^7 - 10993*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^3 - 2*(2310*c^4*d^4*e^4 - 9870*b*c^3*d^3*e^5 + 5295*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 11430*(b^3*c + 3*a*b*c^2)*d*e^7 - 11656*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^2 - 36*(70*c ^4*d^4*e^4 - 280*b*c^3*d^3*e^5 + 140*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 280*(b ^3*c + 3*a*b*c^2)*d*e^7 - 691*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m)*x^4 + (18424*a^3*b*d*e^7 + 120*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 156*(b^4 + 12*a*b^2* c + 6*a^2*c^2)*d^4*e^4 + 2130*(a*b^3 + 3*a^2*b*c)*d^3*e^5 - 3135*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m^3 + (40320*(a*b^3 + 3*a^2*b*c)*e^8 + ((b^4 + 12*a*b^ 2*c + 6*a^2*c^2)*d*e^7 + 3*(a*b^3 + 3*a^2*b*c)*e^8)*m^7 - (20*(b^3*c + 3*a* b*c^2)*d^2*e^6 - 29*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 - 99*(a*b^3 + 3*a^ 2*b*c)*e^8)*m^6 + (60*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 - 480*(b^3*c + 3*a*b*c^ 2)*d^2*e^6 + 331*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 + 1341*(a*b^3 + 3*a^2 *b*c)*e^8)*m^5 - (840*b*c^3*d^4*e^4 - 1080*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 + 4220*(b^3*c + 3*a*b*c^2)*d^2*e^6 - 1871*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^ 7 - 9585*(a*b^3 + 3*a^2*b*c)*e^8)*m^4 + 4*(420*c^4*d^5*e^3 - 2310*b*c^3*d^4 *e^4 + 1545*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 - 4080*(b^3*c + 3*a*b*c^2)*d^2*e^ 6 + 1345*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 + 9648*(a*b^3 + 3*a^2*b*c)*e^ 8)*m^3 + 4*(1260*c^4*d^5*e^3 - 5460*b*c^3*d^4*e^4 + 2970*(3*b^2*c^2 + 2*a*c ^3)*d^3*e^5 - 6500*(b^3*c + 3*a*b*c^2)*d^2*e^6 + 1793*(b^4 + 12*a*b^2*c + 6 *a^2*c^2)*d*e^7 + 21519*(a*b^3 + 3*a^2*b*c)*e^8)*m^2 + 48*(70*c^4*d^5*e^3 - 280*b*c^3*d^4*e^4 + 140*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 - 280*(b^3*c + 3*a*b *c^2)*d^2*e^6 + 70*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 + 2003*(a*b^3 + 3*a ^2*b*c)*e^8)*m)*x^3 + 2*(24430*a^3*b*d*e^7 - 180*(3*b^2*c^2 + 2*a*c^3)*d^6* e^2 + 1260*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 753*(b^4 + 12*a*b^2*c + 6*a^2*c^2) *d^4*e^4 + 6210*(a*b^3 + 3*a^2*b*c)*d^3*e^5 - 6077*(3*a^2*b^2 + 2*a^3*c)*d^ 2*e^6)*m^2 + (20160*(3*a^2*b^2 + 2*a^3*c)*e^8 + (3*(a*b^3 + 3*a^2*b*c)*d*e^ 7 + (3*a^2*b^2 + 2*a^3*c)*e^8)*m^7 - (3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2* e^6 - 93*(a*b^3 + 3*a^2*b*c)*d*e^7 - 34*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^6 + (6 0*(b^3*c + 3*a*b*c^2)*d^3*e^5 - 81*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 + 1155*(a*b^3 + 3*a^2*b*c)*d*e^7 + 478*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^5 - (180 *(3*b^2*c^2 + 2*a*c^3)*d^4*e^4 - 1320*(b^3*c + 3*a*b*c^2)*d^3*e^5 + 831*(b^ 4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 7275*(a*b^3 + 3*a^2*b*c)*d*e^7 - 3580 *(3*a^2*b^2 + 2*a^3*c)*e^8)*m^4 + (2520*b*c^3*d^5*e^3 - 2880*(3*b^2*c^2 + 2 *a*c^3)*d^4*e^4 + 10020*(b^3*c + 3*a*b*c^2)*d^3*e^5 - 3951*(b^4 + 12*a*b^2* c + 6*a^2*c^2)*d^2*e^6 + 24042*(a*b^3 + 3*a^2*b*c)*d*e^7 + 15289*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^3 - 2*(2520*c^4*d^6*e^2 - 11340*b*c^3*d^5*e^3 + 6390*(3* b^2*c^2 + 2*a*c^3)*d^4*e^4 - 14460*(b^3*c + 3*a*b*c^2)*d^3*e^5 + 4119*(b^4

```
+ 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 18996*(a*b^3 + 3*a^2*b*c)*d*e^7 - 18353
*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^2 - 72*(70*c^4*d^6*e^2 - 280*b*c^3*d^5*e^3 +
140*(3*b^2*c^2 + 2*a*c^3)*d^4*e^4 - 280*(b^3*c + 3*a*b*c^2)*d^3*e^5 + 70*(b
^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 280*(a*b^3 + 3*a^2*b*c)*d*e^7 - 621*
(3*a^2*b^2 + 2*a^3*c)*e^8)*m)*x^2 + 12*(420*b*c^3*d^7*e + 5772*a^3*b*d*e^7
- 450*(3*b^2*c^2 + 2*a*c^3)*d^6*e^2 + 1460*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 53
3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 2972*(a*b^3 + 3*a^2*b*c)*d^3*e^5
 - 2046*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m + (40320*a^3*b*e^8 + (a^3*b*e^8 +
(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^7 + (35*a^3*b*e^8 - 6*(a*b^3 + 3*a^2*b*c)*d^
2*e^6 + 33*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^6 + (511*a^3*b*e^8 + 6*(b^4 + 12*
a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 180*(a*b^3 + 3*a^2*b*c)*d^2*e^6 + 445*(3*a^2
*b^2 + 2*a^3*c)*d*e^7)*m^5 + (4025*a^3*b*e^8 - 120*(b^3*c + 3*a*b*c^2)*d^4*
e^4 + 156*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 2130*(a*b^3 + 3*a^2*b*c)
*d^2*e^6 + 3135*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^4 + 2*(9212*a^3*b*e^8 + 180*
(3*b^2*c^2 + 2*a*c^3)*d^5*e^3 - 1260*(b^3*c + 3*a*b*c^2)*d^4*e^4 + 753*(b^4
 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 6210*(a*b^3 + 3*a^2*b*c)*d^2*e^6 + 607
7*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^3 - 4*(1260*b*c^3*d^6*e^2 - 12215*a^3*b*e^
8 - 1350*(3*b^2*c^2 + 2*a*c^3)*d^5*e^3 + 4380*(b^3*c + 3*a*b*c^2)*d^4*e^4 -
 1599*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 + 8916*(a*b^3 + 3*a^2*b*c)*d^2
*e^6 - 6138*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^2 + 144*(70*c^4*d^7*e - 280*b*c^
3*d^6*e^2 + 481*a^3*b*e^8 + 140*(3*b^2*c^2 + 2*a*c^3)*d^5*e^3 - 280*(b^3*c
+ 3*a*b*c^2)*d^4*e^4 + 70*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 280*(a*b
^3 + 3*a^2*b*c)*d^2*e^6 + 140*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m)*x)*(e*x + d)^
m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*e^8*m^5 + 22449*e^8*m^4 + 6728
4*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 40320*e^8)
```

giac [B] time = 0.50, size = 9689, normalized size = 21.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (2*(x*e + d)^m*c^4*m^7*x^8*e^8 + 2*(x*e + d)^m*c^4*d*m^7*x^7*e^7 + 7*(x*e +
 d)^m*b*c^3*m^7*x^7*e^8 + 56*(x*e + d)^m*c^4*m^6*x^8*e^8 + 7*(x*e + d)^m*b*
c^3*d*m^7*x^6*e^7 + 42*(x*e + d)^m*c^4*d*m^6*x^7*e^7 - 14*(x*e + d)^m*c^4*d
^2*m^6*x^6*e^6 + 9*(x*e + d)^m*b^2*c^2*m^7*x^6*e^8 + 6*(x*e + d)^m*a*c^3*m^
7*x^6*e^8 + 203*(x*e + d)^m*b*c^3*m^6*x^7*e^8 + 644*(x*e + d)^m*c^4*m^5*x^8
*e^8 + 9*(x*e + d)^m*b^2*c^2*d*m^7*x^5*e^7 + 6*(x*e + d)^m*a*c^3*d*m^7*x^5*
e^7 + 161*(x*e + d)^m*b*c^3*d*m^6*x^6*e^7 + 350*(x*e + d)^m*c^4*d*m^5*x^7*e
^7 - 42*(x*e + d)^m*b*c^3*d^2*m^6*x^5*e^6 - 210*(x*e + d)^m*c^4*d^2*m^5*x^6
*e^6 + 84*(x*e + d)^m*c^4*d^3*m^5*x^5*e^5 + 5*(x*e + d)^m*b^3*c*m^7*x^5*e^8
 + 15*(x*e + d)^m*a*b*c^2*m^7*x^5*e^8 + 270*(x*e + d)^m*b^2*c^2*m^6*x^6*e^8
 + 180*(x*e + d)^m*a*c^3*m^6*x^6*e^8 + 2401*(x*e + d)^m*b*c^3*m^5*x^7*e^8 +
 3920*(x*e + d)^m*c^4*m^4*x^8*e^8 + 5*(x*e + d)^m*b^3*c*d*m^7*x^4*e^7 + 15*
(x*e + d)^m*a*b*c^2*d*m^7*x^4*e^7 + 225*(x*e + d)^m*b^2*c^2*d*m^6*x^5*e^7 +
 150*(x*e + d)^m*a*c^3*d*m^6*x^5*e^7 + 1435*(x*e + d)^m*b*c^3*d*m^5*x^6*e^7
 + 1470*(x*e + d)^m*c^4*d*m^4*x^7*e^7 - 45*(x*e + d)^m*b^2*c^2*d^2*m^6*x^4*
e^6 - 30*(x*e + d)^m*a*c^3*d^2*m^6*x^4*e^6 - 756*(x*e + d)^m*b*c^3*d^2*m^5*
x^5*e^6 - 1190*(x*e + d)^m*c^4*d^2*m^4*x^6*e^6 + 210*(x*e + d)^m*b*c^3*d^3*
m^5*x^4*e^5 + 840*(x*e + d)^m*c^4*d^3*m^4*x^5*e^5 - 420*(x*e + d)^m*c^4*d^4
*m^4*x^4*e^4 + (x*e + d)^m*b^4*m^7*x^4*e^8 + 12*(x*e + d)^m*a*b^2*c*m^7*x^4
*e^8 + 6*(x*e + d)^m*a^2*c^2*m^7*x^4*e^8 + 155*(x*e + d)^m*b^3*c*m^6*x^5*e^
8 + 465*(x*e + d)^m*a*b*c^2*m^6*x^5*e^8 + 3294*(x*e + d)^m*b^2*c^2*m^5*x^6*
e^8 + 2196*(x*e + d)^m*a*c^3*m^5*x^6*e^8 + 14945*(x*e + d)^m*b*c^3*m^4*x^7*
e^8 + 13538*(x*e + d)^m*c^4*m^3*x^8*e^8 + (x*e + d)^m*b^4*d*m^7*x^3*e^7 + 1
2*(x*e + d)^m*a*b^2*c*d*m^7*x^3*e^7 + 6*(x*e + d)^m*a^2*c^2*d*m^7*x^3*e^7 +
 135*(x*e + d)^m*b^3*c*d*m^6*x^4*e^7 + 405*(x*e + d)^m*a*b*c^2*d*m^6*x^4*e^
7 + 2169*(x*e + d)^m*b^2*c^2*d*m^5*x^5*e^7 + 1446*(x*e + d)^m*a*c^3*d*m^5*x
^5*e^7 + 6335*(x*e + d)^m*b*c^3*d*m^4*x^6*e^7 + 3248*(x*e + d)^m*c^4*d*m^3*
```

x^7*e^7 - 20*(x*e + d)^m*b^3*c*d^2*m^6*x^3*e^6 - 60*(x*e + d)^m*a*b*c^2*d^2
*m^6*x^3*e^6 - 945*(x*e + d)^m*b^2*c^2*d^2*m^5*x^4*e^6 - 630*(x*e + d)^m*a*
c^3*d^2*m^5*x^4*e^6 - 4830*(x*e + d)^m*b*c^3*d^2*m^4*x^5*e^6 - 3150*(x*e +
d)^m*c^4*d^2*m^3*x^6*e^6 + 180*(x*e + d)^m*b^2*c^2*d^3*m^5*x^3*e^5 + 120*(x
*e + d)^m*a*c^3*d^3*m^5*x^3*e^5 + 2940*(x*e + d)^m*b*c^3*d^3*m^4*x^4*e^5 +
2940*(x*e + d)^m*c^4*d^3*m^3*x^5*e^5 - 840*(x*e + d)^m*b*c^3*d^4*m^4*x^3*e^
4 - 2520*(x*e + d)^m*c^4*d^4*m^3*x^4*e^4 + 1680*(x*e + d)^m*c^4*d^5*m^3*x^3
e^3 + 3(x*e + d)^m*a*b^3*m^7*x^3*e^8 + 9*(x*e + d)^m*a^2*b*c*m^7*x^3*e^8
+ 32*(x*e + d)^m*b^4*m^6*x^4*e^8 + 384*(x*e + d)^m*a*b^2*c*m^6*x^4*e^8 + 19
2*(x*e + d)^m*a^2*c^2*m^6*x^4*e^8 + 1955*(x*e + d)^m*b^3*c*m^5*x^5*e^8 + 58
65*(x*e + d)^m*a*b*c^2*m^5*x^5*e^8 + 21060*(x*e + d)^m*b^2*c^2*m^4*x^6*e^8
+ 14040*(x*e + d)^m*a*c^3*m^4*x^6*e^8 + 52528*(x*e + d)^m*b*c^3*m^3*x^7*e^8
 + 26264*(x*e + d)^m*c^4*m^2*x^8*e^8 + 3*(x*e + d)^m*a*b^3*d*m^7*x^2*e^7 +
9*(x*e + d)^m*a^2*b*c*d*m^7*x^2*e^7 + 29*(x*e + d)^m*b^4*d*m^6*x^3*e^7 + 34
8*(x*e + d)^m*a*b^2*c*d*m^6*x^3*e^7 + 174*(x*e + d)^m*a^2*c^2*d*m^6*x^3*e^7
 + 1415*(x*e + d)^m*b^3*c*d*m^5*x^4*e^7 + 4245*(x*e + d)^m*a*b*c^2*d*m^5*x^
4*e^7 + 10215*(x*e + d)^m*b^2*c^2*d*m^4*x^5*e^7 + 6810*(x*e + d)^m*a*c^3*d*
m^4*x^5*e^7 + 14518*(x*e + d)^m*b*c^3*d*m^3*x^6*e^7 + 3528*(x*e + d)^m*c^4*
d*m^2*x^7*e^7 - 3*(x*e + d)^m*b^4*d^2*m^6*x^2*e^6 - 36*(x*e + d)^m*a*b^2*c*
d^2*m^6*x^2*e^6 - 18*(x*e + d)^m*a^2*c^2*d^2*m^6*x^2*e^6 - 480*(x*e + d)^m*
b^3*c*d^2*m^5*x^3*e^6 - 1440*(x*e + d)^m*a*b*c^2*d^2*m^5*x^3*e^6 - 7065*(x*
e + d)^m*b^2*c^2*d^2*m^4*x^4*e^6 - 4710*(x*e + d)^m*a*c^3*d^2*m^4*x^4*e^6 -
 13860*(x*e + d)^m*b*c^3*d^2*m^3*x^5*e^6 - 3836*(x*e + d)^m*c^4*d^2*m^2*x^6
e^6 + 60(x*e + d)^m*b^3*c*d^3*m^5*x^2*e^5 + 180*(x*e + d)^m*a*b*c^2*d^3*m
^5*x^2*e^5 + 3240*(x*e + d)^m*b^2*c^2*d^3*m^4*x^3*e^5 + 2160*(x*e + d)^m*a*
c^3*d^3*m^4*x^3*e^5 + 12390*(x*e + d)^m*b*c^3*d^3*m^3*x^4*e^5 + 4200*(x*e +
 d)^m*c^4*d^3*m^2*x^5*e^5 - 540*(x*e + d)^m*b^2*c^2*d^4*m^4*x^2*e^4 - 360*(
x*e + d)^m*a*c^3*d^4*m^4*x^2*e^4 - 9240*(x*e + d)^m*b*c^3*d^4*m^3*x^3*e^4 -
 4620*(x*e + d)^m*c^4*d^4*m^2*x^4*e^4 + 2520*(x*e + d)^m*b*c^3*d^5*m^3*x^2*
e^3 + 5040*(x*e + d)^m*c^4*d^5*m^2*x^3*e^3 - 5040*(x*e + d)^m*c^4*d^6*m^2*x
^2*e^2 + 3*(x*e + d)^m*a^2*b^2*m^7*x^2*e^8 + 2*(x*e + d)^m*a^3*c*m^7*x^2*e^
8 + 99*(x*e + d)^m*a*b^3*m^6*x^3*e^8 + 297*(x*e + d)^m*a^2*b*c*m^6*x^3*e^8
+ 418*(x*e + d)^m*b^4*m^5*x^4*e^8 + 5016*(x*e + d)^m*a*b^2*c*m^5*x^4*e^8 +
2508*(x*e + d)^m*a^2*c^2*m^5*x^4*e^8 + 12905*(x*e + d)^m*b^3*c*m^4*x^5*e^8
+ 38715*(x*e + d)^m*a*b*c^2*m^4*x^5*e^8 + 75681*(x*e + d)^m*b^2*c^2*m^3*x^6
e^8 + 50454(x*e + d)^m*a*c^3*m^3*x^6*e^8 + 103292*(x*e + d)^m*b*c^3*m^2*x
^7*e^8 + 26136*(x*e + d)^m*c^4*m*x^8*e^8 + 3*(x*e + d)^m*a^2*b^2*d*m^7*x*e^
7 + 2*(x*e + d)^m*a^3*c*d*m^7*x*e^7 + 93*(x*e + d)^m*a*b^3*d*m^6*x^2*e^7 +
279*(x*e + d)^m*a^2*b*c*d*m^6*x^2*e^7 + 331*(x*e + d)^m*b^4*d*m^5*x^3*e^7 +
 3972*(x*e + d)^m*a*b^2*c*d*m^5*x^3*e^7 + 1986*(x*e + d)^m*a^2*c^2*d*m^5*x^
3*e^7 + 7245*(x*e + d)^m*b^3*c*d*m^4*x^4*e^7 + 21735*(x*e + d)^m*a*b*c^2*d*
m^4*x^4*e^7 + 24606*(x*e + d)^m*b^2*c^2*d*m^3*x^5*e^7 + 16404*(x*e + d)^m*a
*c^3*d*m^3*x^5*e^7 + 16184*(x*e + d)^m*b*c^3*d*m^2*x^6*e^7 + 1440*(x*e + d)
^m*c^4*d*m*x^7*e^7 - 6*(x*e + d)^m*a*b^3*d^2*m^6*x*e^6 - 18*(x*e + d)^m*a^2
*b*c*d^2*m^6*x*e^6 - 81*(x*e + d)^m*b^4*d^2*m^5*x^2*e^6 - 972*(x*e + d)^m*a
*b^2*c*d^2*m^5*x^2*e^6 - 486*(x*e + d)^m*a^2*c^2*d^2*m^5*x^2*e^6 - 4220*(x*
e + d)^m*b^3*c*d^2*m^4*x^3*e^6 - 12660*(x*e + d)^m*a*b*c^2*d^2*m^4*x^3*e^6
- 22815*(x*e + d)^m*b^2*c^2*d^2*m^3*x^4*e^6 - 15210*(x*e + d)^m*a*c^3*d^2*m
^3*x^4*e^6 - 17808*(x*e + d)^m*b*c^3*d^2*m^2*x^5*e^6 - 1680*(x*e + d)^m*c^4
*d^2*m*x^6*e^6 + 6*(x*e + d)^m*b^4*d^3*m^5*x*e^5 + 72*(x*e + d)^m*a*b^2*c*d
^3*m^5*x*e^5 + 36*(x*e + d)^m*a^2*c^2*d^3*m^5*x*e^5 + 1320*(x*e + d)^m*b^3*
c*d^3*m^4*x^2*e^5 + 3960*(x*e + d)^m*a*b*c^2*d^3*m^4*x^2*e^5 + 18540*(x*e +
 d)^m*b^2*c^2*d^3*m^3*x^3*e^5 + 12360*(x*e + d)^m*a*c^3*d^3*m^3*x^3*e^5 + 1
9740*(x*e + d)^m*b*c^3*d^3*m^2*x^4*e^5 + 2016*(x*e + d)^m*c^4*d^3*m*x^5*e^5
 - 120*(x*e + d)^m*b^3*c*d^4*m^4*x*e^4 - 360*(x*e + d)^m*a*b*c^2*d^4*m^4*x*
e^4 - 8640*(x*e + d)^m*b^2*c^2*d^4*m^3*x^2*e^4 - 5760*(x*e + d)^m*a*c^3*d^4
*m^3*x^2*e^4 - 21840*(x*e + d)^m*b*c^3*d^4*m^2*x^3*e^4 - 2520*(x*e + d)^m*c
^4*d^4*m*x^4*e^4 + 1080*(x*e + d)^m*b^2*c^2*d^5*m^3*x*e^3 + 720*(x*e + d)^m
*a*c^3*d^5*m^3*x*e^3 + 22680*(x*e + d)^m*b*c^3*d^5*m^2*x^2*e^3 + 3360*(x*e

+ d)^m*c^4*d^5*m*x^3*e^3 - 5040*(x*e + d)^m*b*c^3*d^6*m^2*x*e^2 - 5040*(x*e + d)^m*c^4*d^6*m*x^2*e^2 + 10080*(x*e + d)^m*c^4*d^7*m*x*e + (x*e + d)^m*a^3*b*m^7*x*e^8 + 102*(x*e + d)^m*a^2*b^2*m^6*x^2*e^8 + 68*(x*e + d)^m*a^3*c*m^6*x^2*e^8 + 1341*(x*e + d)^m*a*b^3*m^5*x^3*e^8 + 4023*(x*e + d)^m*a^2*b*c*m^5*x^3*e^8 + 2864*(x*e + d)^m*b^4*m^4*x^4*e^8 + 34368*(x*e + d)^m*a*b^2*c*m^4*x^4*e^8 + 17184*(x*e + d)^m*a^2*c^2*m^4*x^4*e^8 + 47720*(x*e + d)^m*b^3*c*m^3*x^5*e^8 + 143160*(x*e + d)^m*a*b*c^2*m^3*x^5*e^8 + 151470*(x*e + d)^m*b^2*c^2*m^2*x^6*e^8 + 100980*(x*e + d)^m*a*c^3*m^2*x^6*e^8 + 103824*(x*e + d)^m*b*c^3*m*x^7*e^8 + 10080*(x*e + d)^m*c^4*x^8*e^8 + (x*e + d)^m*a^3*b*d*m^7*e^7 + 99*(x*e + d)^m*a^2*b^2*d*m^6*x*e^7 + 66*(x*e + d)^m*a^3*c*d*m^6*x*e^7 + 1155*(x*e + d)^m*a*b^3*d*m^5*x^2*e^7 + 3465*(x*e + d)^m*a^2*b*c*d*m^5*x^2*e^7 + 1871*(x*e + d)^m*b^4*d*m^4*x^3*e^7 + 22452*(x*e + d)^m*a*b^2*c*d*m^4*x^3*e^7 + 11226*(x*e + d)^m*a^2*c^2*d*m^4*x^3*e^7 + 18740*(x*e + d)^m*b^3*c*d*m^3*x^4*e^7 + 56220*(x*e + d)^m*a*b*c^2*d*m^3*x^4*e^7 + 28440*(x*e + d)^m*b^2*c^2*d*m^2*x^5*e^7 + 18960*(x*e + d)^m*a*c^3*d*m^2*x^5*e^7 + 6720*(x*e + d)^m*b*c^3*d*m*x^6*e^7 - 3*(x*e + d)^m*a^2*b^2*d^2*m^6*e^6 - 2*(x*e + d)^m*a^3*c*d^2*m^6*e^6 - 180*(x*e + d)^m*a*b^3*d^2*m^5*x*e^6 - 540*(x*e + d)^m*a^2*b*c*d^2*m^5*x*e^6 - 831*(x*e + d)^m*b^4*d^2*m^4*x^2*e^6 - 9972*(x*e + d)^m*a*b^2*c*d^2*m^4*x^2*e^6 - 4986*(x*e + d)^m*a^2*c^2*d^2*m^4*x^2*e^6 - 16320*(x*e + d)^m*b^3*c*d^2*m^3*x^3*e^6 - 48960*(x*e + d)^m*a*b*c^2*d^2*m^3*x^3*e^6 - 31770*(x*e + d)^m*b^2*c^2*d^2*m^2*x^4*e^6 - 21180*(x*e + d)^m*a*c^3*d^2*m^2*x^4*e^6 - 8064*(x*e + d)^m*b*c^3*d^2*m*x^5*e^6 + 6*(x*e + d)^m*a*b^3*d^3*m^5*e^5 + 18*(x*e + d)^m*a^2*b*c*d^3*m^5*e^5 + 156*(x*e + d)^m*b^4*d^3*m^4*x*e^5 + 1872*(x*e + d)^m*a*b^2*c*d^3*m^4*x*e^5 + 936*(x*e + d)^m*a^2*c^2*d^3*m^4*x*e^5 + 10020*(x*e + d)^m*b^3*c*d^3*m^3*x^2*e^5 + 30060*(x*e + d)^m*a*b*c^2*d^3*m^3*x^2*e^5 + 35640*(x*e + d)^m*b^2*c^2*d^3*m^2*x^3*e^5 + 23760*(x*e + d)^m*a*c^3*d^3*m^2*x^3*e^5 + 10080*(x*e + d)^m*b*c^3*d^3*m*x^4*e^5 - 6*(x*e + d)^m*b^4*d^4*m^4*e^4 - 72*(x*e + d)^m*a*b^2*c*d^4*m^4*e^4 - 36*(x*e + d)^m*a^2*c^2*d^4*m^4*e^4 - 2520*(x*e + d)^m*b^3*c*d^4*m^3*x*e^4 - 7560*(x*e + d)^m*a*b*c^2*d^4*m^3*x*e^4 - 38340*(x*e + d)^m*b^2*c^2*d^4*m^2*x^2*e^4 - 25560*(x*e + d)^m*a*c^3*d^4*m^2*x^2*e^4 - 13440*(x*e + d)^m*b*c^3*d^4*m*x^3*e^4 + 120*(x*e + d)^m*b^3*c*d^5*m^3*e^3 + 360*(x*e + d)^m*a*b*c^2*d^5*m^3*e^3 + 16200*(x*e + d)^m*b^2*c^2*d^5*m^2*x*e^3 + 10800*(x*e + d)^m*a*c^3*d^5*m^2*x*e^3 + 20160*(x*e + d)^m*b*c^3*d^5*m*x^2*e^3 - 1080*(x*e + d)^m*b^2*c^2*d^6*m^2*e^2 - 720*(x*e + d)^m*a*c^3*d^6*m^2*e^2 - 40320*(x*e + d)^m*b*c^3*d^6*m*x*e^2 + 5040*(x*e + d)^m*b*c^3*d^7*m*e - 10080*(x*e + d)^m*c^4*d^8 + 35*(x*e + d)^m*a^3*b*m^6*x*e^8 + 1434*(x*e + d)^m*a^2*b^2*m^5*x^2*e^8 + 956*(x*e + d)^m*a^3*c*m^5*x^2*e^8 + 9585*(x*e + d)^m*a*b^3*m^4*x^3*e^8 + 28755*(x*e + d)^m*a^2*b*c*m^4*x^3*e^8 + 10993*(x*e + d)^m*b^4*m^3*x^4*e^8 + 131916*(x*e + d)^m*a*b^2*c*m^3*x^4*e^8 + 65958*(x*e + d)^m*a^2*c^2*m^3*x^4*e^8 + 97820*(x*e + d)^m*b^3*c*m^2*x^5*e^8 + 293460*(x*e + d)^m*a*b*c^2*m^2*x^5*e^8 + 154296*(x*e + d)^m*b^2*c^2*m*x^6*e^8 + 102864*(x*e + d)^m*a*c^3*m*x^6*e^8 + 40320*(x*e + d)^m*b*c^3*x^7*e^8 + 35*(x*e + d)^m*a^3*b*d*m^6*e^7 + 1335*(x*e + d)^m*a^2*b^2*d*m^5*x*e^7 + 890*(x*e + d)^m*a^3*c*d*m^5*x*e^7 + 7275*(x*e + d)^m*a*b^3*d*m^4*x^2*e^7 + 21825*(x*e + d)^m*a^2*b*c*d*m^4*x^2*e^7 + 5380*(x*e + d)^m*b^4*d*m^3*x^3*e^7 + 64560*(x*e + d)^m*a*b^2*c*d*m^3*x^3*e^7 + 32280*(x*e + d)^m*a^2*c^2*d*m^3*x^3*e^7 + 22860*(x*e + d)^m*b^3*c*d*m^2*x^4*e^7 + 68580*(x*e + d)^m*a*b*c^2*d*m^2*x^4*e^7 + 12096*(x*e + d)^m*b^2*c^2*d*m*x^5*e^7 + 8064*(x*e + d)^m*a*c^3*d*m*x^5*e^7 - 99*(x*e + d)^m*a^2*b^2*d^2*m^5*e^6 - 66*(x*e + d)^m*a^3*c*d^2*m^5*e^6 - 2130*(x*e + d)^m*a*b^3*d^2*m^4*x*e^6 - 6390*(x*e + d)^m*a^2*b*c*d^2*m^4*x*e^6 - 3951*(x*e + d)^m*b^4*d^2*m^3*x^2*e^6 - 47412*(x*e + d)^m*a*b^2*c*d^2*m^3*x^2*e^6 - 23706*(x*e + d)^m*a^2*c^2*d^2*m^3*x^2*e^6 - 26000*(x*e + d)^m*b^3*c*d^2*m^2*x^3*e^6 - 78000*(x*e + d)^m*a*b*c^2*d^2*m^2*x^3*e^6 - 15120*(x*e + d)^m*b^2*c^2*d^2*m*x^4*e^6 - 10080*(x*e + d)^m*a*c^3*d^2*m*x^4*e^6 + 180*(x*e + d)^m*a*b^3*d^3*m^4*e^5 + 540*(x*e + d)^m*a^2*b*c*d^3*m^4*e^5 + 1506*(x*e + d)^m*b^4*d^3*m^3*x*e^5 + 18072*(x*e + d)^m*a*b^2*c*d^3*m^3*x*e^5 + 9036*(x*e + d)^m*a^2*c^2*d^3*m^3*x*e^5 + 28920*(x*e + d)^m*b^3*c*d^3*m^2*x^2*e^5 + 86760*(x*e + d)^m*a*b*c^2*d^3*m^2*x^2*e^5 + 20160*(x*e

+ d)^m*b^2*c^2*d^3*m*x^3*e^5 + 13440*(x*e + d)^m*a*c^3*d^3*m*x^3*e^5 - 156
*(x*e + d)^m*b^4*d^4*m^3*e^4 - 1872*(x*e + d)^m*a*b^2*c*d^4*m^3*e^4 - 936*(
x*e + d)^m*a^2*c^2*d^4*m^3*e^4 - 17520*(x*e + d)^m*b^3*c*d^4*m^2*x*e^4 - 52
560*(x*e + d)^m*a*b*c^2*d^4*m^2*x*e^4 - 30240*(x*e + d)^m*b^2*c^2*d^4*m*x^2
e^4 - 20160(x*e + d)^m*a*c^3*d^4*m*x^2*e^4 + 2520*(x*e + d)^m*b^3*c*d^5*m
^2*e^3 + 7560*(x*e + d)^m*a*b*c^2*d^5*m^2*e^3 + 60480*(x*e + d)^m*b^2*c^2*d
^5*m*x*e^3 + 40320*(x*e + d)^m*a*c^3*d^5*m*x*e^3 - 16200*(x*e + d)^m*b^2*c^
2*d^6*m*e^2 - 10800*(x*e + d)^m*a*c^3*d^6*m*e^2 + 40320*(x*e + d)^m*b*c^3*d
^7*e + 511*(x*e + d)^m*a^3*b*m^5*x*e^8 + 10740*(x*e + d)^m*a^2*b^2*m^4*x^2*
e^8 + 7160*(x*e + d)^m*a^3*c*m^4*x^2*e^8 + 38592*(x*e + d)^m*a*b^3*m^3*x^3*
e^8 + 115776*(x*e + d)^m*a^2*b*c*m^3*x^3*e^8 + 23312*(x*e + d)^m*b^4*m^2*x^
4*e^8 + 279744*(x*e + d)^m*a*b^2*c*m^2*x^4*e^8 + 139872*(x*e + d)^m*a^2*c^2
*m^2*x^4*e^8 + 101520*(x*e + d)^m*b^3*c*m*x^5*e^8 + 304560*(x*e + d)^m*a*b*
c^2*m*x^5*e^8 + 60480*(x*e + d)^m*b^2*c^2*x^6*e^8 + 40320*(x*e + d)^m*a*c^3
*x^6*e^8 + 511*(x*e + d)^m*a^3*b*d*m^5*e^7 + 9405*(x*e + d)^m*a^2*b^2*d*m^4
*x*e^7 + 6270*(x*e + d)^m*a^3*c*d*m^4*x*e^7 + 24042*(x*e + d)^m*a*b^3*d*m^3
*x^2*e^7 + 72126*(x*e + d)^m*a^2*b*c*d*m^3*x^2*e^7 + 7172*(x*e + d)^m*b^4*d
*m^2*x^3*e^7 + 86064*(x*e + d)^m*a*b^2*c*d*m^2*x^3*e^7 + 43032*(x*e + d)^m*
a^2*c^2*d*m^2*x^3*e^7 + 10080*(x*e + d)^m*b^3*c*d*m*x^4*e^7 + 30240*(x*e +
d)^m*a*b*c^2*d*m*x^4*e^7 - 1335*(x*e + d)^m*a^2*b^2*d^2*m^4*e^6 - 890*(x*e
+ d)^m*a^3*c*d^2*m^4*e^6 - 12420*(x*e + d)^m*a*b^3*d^2*m^3*x*e^6 - 37260*(x
*e + d)^m*a^2*b*c*d^2*m^3*x*e^6 - 8238*(x*e + d)^m*b^4*d^2*m^2*x^2*e^6 - 98
856*(x*e + d)^m*a*b^2*c*d^2*m^2*x^2*e^6 - 49428*(x*e + d)^m*a^2*c^2*d^2*m^2
*x^2*e^6 - 13440*(x*e + d)^m*b^3*c*d^2*m*x^3*e^6 - 40320*(x*e + d)^m*a*b*c^
2*d^2*m*x^3*e^6 + 2130*(x*e + d)^m*a*b^3*d^3*m^3*e^5 + 6390*(x*e + d)^m*a^2
*b*c*d^3*m^3*e^5 + 6396*(x*e + d)^m*b^4*d^3*m^2*x*e^5 + 76752*(x*e + d)^m*a
*b^2*c*d^3*m^2*x*e^5 + 38376*(x*e + d)^m*a^2*c^2*d^3*m^2*x*e^5 + 20160*(x*e
+ d)^m*b^3*c*d^3*m*x^2*e^5 + 60480*(x*e + d)^m*a*b*c^2*d^3*m*x^2*e^5 - 150
6*(x*e + d)^m*b^4*d^4*m^2*e^4 - 18072*(x*e + d)^m*a*b^2*c*d^4*m^2*e^4 - 903
6*(x*e + d)^m*a^2*c^2*d^4*m^2*e^4 - 40320*(x*e + d)^m*b^3*c*d^4*m*x*e^4 - 1
20960*(x*e + d)^m*a*b*c^2*d^4*m*x*e^4 + 17520*(x*e + d)^m*b^3*c*d^5*m*e^3 +
52560*(x*e + d)^m*a*b*c^2*d^5*m*e^3 - 60480*(x*e + d)^m*b^2*c^2*d^6*e^2 -
40320*(x*e + d)^m*a*c^3*d^6*e^2 + 4025*(x*e + d)^m*a^3*b*m^4*x*e^8 + 45867*
(x*e + d)^m*a^2*b^2*m^3*x^2*e^8 + 30578*(x*e + d)^m*a^3*c*m^3*x^2*e^8 + 860
76*(x*e + d)^m*a*b^3*m^2*x^3*e^8 + 258228*(x*e + d)^m*a^2*b*c*m^2*x^3*e^8 +
24876*(x*e + d)^m*b^4*m*x^4*e^8 + 298512*(x*e + d)^m*a*b^2*c*m*x^4*e^8 + 1
49256*(x*e + d)^m*a^2*c^2*m*x^4*e^8 + 40320*(x*e + d)^m*b^3*c*x^5*e^8 + 120
960*(x*e + d)^m*a*b*c^2*x^5*e^8 + 4025*(x*e + d)^m*a^3*b*d*m^4*e^7 + 36462*
(x*e + d)^m*a^2*b^2*d*m^3*x*e^7 + 24308*(x*e + d)^m*a^3*c*d*m^3*x*e^7 + 379
92*(x*e + d)^m*a*b^3*d*m^2*x^2*e^7 + 113976*(x*e + d)^m*a^2*b*c*d*m^2*x^2*e
^7 + 3360*(x*e + d)^m*b^4*d*m*x^3*e^7 + 40320*(x*e + d)^m*a*b^2*c*d*m*x^3*e
^7 + 20160*(x*e + d)^m*a^2*c^2*d*m*x^3*e^7 - 9405*(x*e + d)^m*a^2*b^2*d^2*m
^3*e^6 - 6270*(x*e + d)^m*a^3*c*d^2*m^3*e^6 - 35664*(x*e + d)^m*a*b^3*d^2*m
^2*x*e^6 - 106992*(x*e + d)^m*a^2*b*c*d^2*m^2*x*e^6 - 5040*(x*e + d)^m*b^4*
d^2*m*x^2*e^6 - 60480*(x*e + d)^m*a*b^2*c*d^2*m*x^2*e^6 - 30240*(x*e + d)^m
*a^2*c^2*d^2*m*x^2*e^6 + 12420*(x*e + d)^m*a*b^3*d^3*m^2*e^5 + 37260*(x*e +
d)^m*a^2*b*c*d^3*m^2*e^5 + 10080*(x*e + d)^m*b^4*d^3*m*x*e^5 + 120960*(x*e
+ d)^m*a*b^2*c*d^3*m*x*e^5 + 60480*(x*e + d)^m*a^2*c^2*d^3*m*x*e^5 - 6396*
(x*e + d)^m*b^4*d^4*m*e^4 - 76752*(x*e + d)^m*a*b^2*c*d^4*m*e^4 - 38376*(x*
e + d)^m*a^2*c^2*d^4*m*e^4 + 40320*(x*e + d)^m*b^3*c*d^5*e^3 + 120960*(x*e
+ d)^m*a*b*c^2*d^5*e^3 + 18424*(x*e + d)^m*a^3*b*m^3*x*e^8 + 110118*(x*e +
d)^m*a^2*b^2*m^2*x^2*e^8 + 73412*(x*e + d)^m*a^3*c*m^2*x^2*e^8 + 96144*(x*e
+ d)^m*a*b^3*m*x^3*e^8 + 288432*(x*e + d)^m*a^2*b*c*m*x^3*e^8 + 10080*(x*e
+ d)^m*b^4*x^4*e^8 + 120960*(x*e + d)^m*a*b^2*c*x^4*e^8 + 60480*(x*e + d)^
m*a^2*c^2*x^4*e^8 + 18424*(x*e + d)^m*a^3*b*d*m^3*e^7 + 73656*(x*e + d)^m*a
^2*b^2*d*m^2*x*e^7 + 49104*(x*e + d)^m*a^3*c*d*m^2*x*e^7 + 20160*(x*e + d)^
m*a*b^3*d*m*x^2*e^7 + 60480*(x*e + d)^m*a^2*b*c*d*m*x^2*e^7 - 36462*(x*e +
d)^m*a^2*b^2*d^2*m^2*e^6 - 24308*(x*e + d)^m*a^3*c*d^2*m^2*e^6 - 40320*(x*e
+ d)^m*a*b^3*d^2*m*x*e^6 - 120960*(x*e + d)^m*a^2*b*c*d^2*m*x*e^6 + 35664*

```
(x*e + d)^m*a*b^3*d^3*m*e^5 + 106992*(x*e + d)^m*a^2*b*c*d^3*m*e^5 - 10080*
(x*e + d)^m*b^4*d^4*e^4 - 120960*(x*e + d)^m*a*b^2*c*d^4*e^4 - 60480*(x*e +
 d)^m*a^2*c^2*d^4*e^4 + 48860*(x*e + d)^m*a^3*b*m^2*x*e^8 + 134136*(x*e + d
)^m*a^2*b^2*m*x^2*e^8 + 89424*(x*e + d)^m*a^3*c*m*x^2*e^8 + 40320*(x*e + d)
^m*a*b^3*x^3*e^8 + 120960*(x*e + d)^m*a^2*b*c*x^3*e^8 + 48860*(x*e + d)^m*a
^3*b*d*m^2*e^7 + 60480*(x*e + d)^m*a^2*b^2*d*m*x*e^7 + 40320*(x*e + d)^m*a^
3*c*d*m*x*e^7 - 73656*(x*e + d)^m*a^2*b^2*d^2*m*e^6 - 49104*(x*e + d)^m*a^3
*c*d^2*m*e^6 + 40320*(x*e + d)^m*a*b^3*d^3*e^5 + 120960*(x*e + d)^m*a^2*b*c
*d^3*e^5 + 69264*(x*e + d)^m*a^3*b*m*x*e^8 + 60480*(x*e + d)^m*a^2*b^2*x^2*
e^8 + 40320*(x*e + d)^m*a^3*c*x^2*e^8 + 69264*(x*e + d)^m*a^3*b*d*m*e^7 - 6
0480*(x*e + d)^m*a^2*b^2*d^2*e^6 - 40320*(x*e + d)^m*a^3*c*d^2*e^6 + 40320*
(x*e + d)^m*a^3*b*x*e^8 + 40320*(x*e + d)^m*a^3*b*d*e^7)/(m^8*e^8 + 36*m^7*
e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 22449*m^4*e^8 + 67284*m^3*e^8 + 118124*m
^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.08, size = 5439, normalized size = 12.11

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.03, size = 1772, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 3*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^2*b^2/((m^2 + 3*m + 2)*e^
2) + 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^3*c/((m^2 + 3*m + 2)
*e^2) + (e*x + d)^(m + 1)*a^3*b/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 +
(m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a*b^3/((m^3 + 6*m^2
+ 11*m + 6)*e^3) + 9*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2
*e*m*x + 2*d^3)*(e*x + d)^m*a^2*b*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3
+ 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d
^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*b^4/((m^4 + 10*m^3 + 35*m^2 +
 50*m + 24)*e^4) + 12*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*
m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a
*b^2*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 6*((m^3 + 6*m^2 + 11*m +
 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d
^3*e*m*x - 6*d^4)*(e*x + d)^m*a^2*c^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*
e^4) + 5*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m
^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*
e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*b^3*c/((m^5 + 15*m^4 + 85*m^3
+ 225*m^2 + 274*m + 120)*e^5) + 15*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5
*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e
^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*a*b*
c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 9*((m^5 + 15*m^
4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m
^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3
 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 12
0*d^6)*(e*x + d)^m*b^2*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 +
1764*m + 720)*e^6) + 6*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6
*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 +
 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 +
 m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*a*c^3/((m^6 + 21*m^5
 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 7*((m^6 + 21*m^5 + 1
```

```
75*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*m^
4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^
2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120*(
m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*x
+ 720*d^7)*(e*x + d)^m*b*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3
 + 13132*m^2 + 13068*m + 5040)*e^7) + 2*((m^7 + 28*m^6 + 322*m^5 + 1960*m^4
 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5
 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*
m^4 + 225*m^3 + 274*m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 +
50*m^2 + 24*m)*d^3*e^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 +
 840*(m^3 + 3*m^2 + 2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^
7*e*m*x - 5040*d^8)*(e*x + d)^m*c^4/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 2
2449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 4.20, size = 4573, normalized size = 10.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x)
```

```
[Out] (x*(d + e*x)^m*(40320*a^3*b*e^8 + 48860*a^3*b*e^8*m^2 + 18424*a^3*b*e^8*m^3
 + 4025*a^3*b*e^8*m^4 + 511*a^3*b*e^8*m^5 + 35*a^3*b*e^8*m^6 + a^3*b*e^8*m^
7 + 10080*b^4*d^3*e^5*m + 6396*b^4*d^3*e^5*m^2 + 1506*b^4*d^3*e^5*m^3 + 156
*b^4*d^3*e^5*m^4 + 6*b^4*d^3*e^5*m^5 + 69264*a^3*b*e^8*m + 10080*c^4*d^7*e*
m + 40320*a^3*c*d*e^7*m + 38376*a^2*c^2*d^3*e^5*m^2 + 9036*a^2*c^2*d^3*e^5*
m^3 + 936*a^2*c^2*d^3*e^5*m^4 + 36*a^2*c^2*d^3*e^5*m^5 + 16200*b^2*c^2*d^5*
e^3*m^2 + 1080*b^2*c^2*d^5*e^3*m^3 - 40320*a*b^3*d^2*e^6*m + 60480*a^2*b^2*
d*e^7*m + 40320*a*c^3*d^5*e^3*m + 49104*a^3*c*d*e^7*m^2 + 24308*a^3*c*d*e^7
*m^3 + 6270*a^3*c*d*e^7*m^4 + 890*a^3*c*d*e^7*m^5 + 66*a^3*c*d*e^7*m^6 + 2*
a^3*c*d*e^7*m^7 - 40320*b*c^3*d^6*e^2*m - 40320*b^3*c*d^4*e^4*m - 35664*a*b
^3*d^2*e^6*m^2 + 73656*a^2*b^2*d*e^7*m^2 - 12420*a*b^3*d^2*e^6*m^3 + 36462*
a^2*b^2*d*e^7*m^3 - 2130*a*b^3*d^2*e^6*m^4 + 9405*a^2*b^2*d*e^7*m^4 - 180*a
*b^3*d^2*e^6*m^5 + 1335*a^2*b^2*d*e^7*m^5 - 6*a*b^3*d^2*e^6*m^6 + 99*a^2*b^
2*d*e^7*m^6 + 3*a^2*b^2*d*e^7*m^7 + 60480*a^2*c^2*d^3*e^5*m + 10800*a*c^3*d
^5*e^3*m^2 + 720*a*c^3*d^5*e^3*m^3 + 60480*b^2*c^2*d^5*e^3*m - 5040*b*c^3*d
^6*e^2*m^2 - 17520*b^3*c*d^4*e^4*m^2 - 2520*b^3*c*d^4*e^4*m^3 - 120*b^3*c*d
^4*e^4*m^4 - 52560*a*b*c^2*d^4*e^4*m^2 + 76752*a*b^2*c*d^3*e^5*m^2 - 106992
*a^2*b*c*d^2*e^6*m^2 - 7560*a*b*c^2*d^4*e^4*m^3 + 18072*a*b^2*c*d^3*e^5*m^3
 - 37260*a^2*b*c*d^2*e^6*m^3 - 360*a*b*c^2*d^4*e^4*m^4 + 1872*a*b^2*c*d^3*e
^5*m^4 - 6390*a^2*b*c*d^2*e^6*m^4 + 72*a*b^2*c*d^3*e^5*m^5 - 540*a^2*b*c*d^
2*e^6*m^5 - 18*a^2*b*c*d^2*e^6*m^6 - 120960*a*b*c^2*d^4*e^4*m + 120960*a*b^
2*c*d^3*e^5*m - 120960*a^2*b*c*d^2*e^6*m))/(e^8*(109584*m + 118124*m^2 + 67
284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) - ((d + e
*x)^m*(10080*c^4*d^8 + 10080*b^4*d^4*e^4 - 40320*a*b^3*d^3*e^5 + 40320*a*c^
3*d^6*e^2 + 40320*a^3*c*d^2*e^6 - 40320*b^3*c*d^5*e^3 + 6396*b^4*d^4*e^4*m
+ 60480*a^2*b^2*d^2*e^6 + 60480*a^2*c^2*d^4*e^4 + 60480*b^2*c^2*d^6*e^2 + 1
506*b^4*d^4*e^4*m^2 + 156*b^4*d^4*e^4*m^3 + 6*b^4*d^4*e^4*m^4 - 40320*a^3*b
*d*e^7 - 40320*b*c^3*d^7*e - 69264*a^3*b*d*e^7*m - 5040*b*c^3*d^7*e*m + 364
62*a^2*b^2*d^2*e^6*m^2 + 9405*a^2*b^2*d^2*e^6*m^3 + 1335*a^2*b^2*d^2*e^6*m^
4 + 99*a^2*b^2*d^2*e^6*m^5 + 3*a^2*b^2*d^2*e^6*m^6 + 9036*a^2*c^2*d^4*e^4*m
^2 + 936*a^2*c^2*d^4*e^4*m^3 + 36*a^2*c^2*d^4*e^4*m^4 + 1080*b^2*c^2*d^6*e^
2*m^2 - 120960*a*b*c^2*d^5*e^3 + 120960*a*b^2*c*d^4*e^4 - 120960*a^2*b*c*d^
3*e^5 - 35664*a*b^3*d^3*e^5*m - 48860*a^3*b*d*e^7*m^2 - 18424*a^3*b*d*e^7*m
^3 - 4025*a^3*b*d*e^7*m^4 - 511*a^3*b*d*e^7*m^5 - 35*a^3*b*d*e^7*m^6 - a^3*
b*d*e^7*m^7 + 10800*a*c^3*d^6*e^2*m + 49104*a^3*c*d^2*e^6*m - 17520*b^3*c*d
^5*e^3*m + 73656*a^2*b^2*d^2*e^6*m - 12420*a*b^3*d^3*e^5*m^2 - 2130*a*b^3*d
^3*e^5*m^3 - 180*a*b^3*d^3*e^5*m^4 - 6*a*b^3*d^3*e^5*m^5 + 38376*a^2*c^2*d^
4*e^4*m + 720*a*c^3*d^6*e^2*m^2 + 24308*a^3*c*d^2*e^6*m^2 + 6270*a^3*c*d^2*
e^6*m^3 + 890*a^3*c*d^2*e^6*m^4 + 66*a^3*c*d^2*e^6*m^5 + 2*a^3*c*d^2*e^6*m^
```

6 + 16200*b^2*c^2*d^6*e^2*m - 2520*b^3*c*d^5*e^3*m^2 - 120*b^3*c*d^5*e^3*m^
3 - 7560*a*b*c^2*d^5*e^3*m^2 + 18072*a*b^2*c*d^4*e^4*m^2 - 37260*a^2*b*c*d^
3*e^5*m^2 - 360*a*b*c^2*d^5*e^3*m^3 + 1872*a*b^2*c*d^4*e^4*m^3 - 6390*a^2*b
*c*d^3*e^5*m^3 + 72*a*b^2*c*d^4*e^4*m^4 - 540*a^2*b*c*d^3*e^5*m^4 - 18*a^2*
b*c*d^3*e^5*m^5 - 52560*a*b*c^2*d^5*e^3*m + 76752*a*b^2*c*d^4*e^4*m - 10699
2*a^2*b*c*d^3*e^5*m))/(e^8*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 +
 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (2*c^4*x^8*(d + e*x)^m*(1306
8*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(10
9584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 +
 m^8 + 40320) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(1680*b^4*e^4 + 1
066*b^4*e^4*m - 420*c^4*d^4*m + 10080*a^2*c^2*e^4 + 251*b^4*e^4*m^2 + 26*b^
4*e^4*m^3 + b^4*e^4*m^4 + 6396*a^2*c^2*e^4*m + 1506*a^2*c^2*e^4*m^2 + 156*a
^2*c^2*e^4*m^3 + 6*a^2*c^2*e^4*m^4 + 20160*a*b^2*c*e^4 + 12792*a*b^2*c*e^4*
m + 1680*b*c^3*d^3*e*m + 1680*b^3*c*d*e^3*m - 675*b^2*c^2*d^2*e^2*m^2 - 45*
b^2*c^2*d^2*e^2*m^3 + 3012*a*b^2*c*e^4*m^2 + 312*a*b^2*c*e^4*m^3 + 12*a*b^2
*c*e^4*m^4 - 1680*a*c^3*d^2*e^2*m + 210*b*c^3*d^3*e*m^2 + 730*b^3*c*d*e^3*m
^2 + 105*b^3*c*d*e^3*m^3 + 5*b^3*c*d*e^3*m^4 - 450*a*c^3*d^2*e^2*m^2 - 30*a
*c^3*d^2*e^2*m^3 - 2520*b^2*c^2*d^2*e^2*m + 5040*a*b*c^2*d*e^3*m + 2190*a*b
*c^2*d*e^3*m^2 + 315*a*b*c^2*d*e^3*m^3 + 15*a*b*c^2*d*e^3*m^4))/(e^4*(10958
4*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^
8 + 40320)) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(20160*a*b^3*e^5 + 1680*c^4*
d^5*m + 6210*a*b^3*e^5*m^2 + 1065*a*b^3*e^5*m^3 + 90*a*b^3*e^5*m^4 + 3*a*b^
3*e^5*m^5 + 1066*b^4*d*e^4*m^2 + 251*b^4*d*e^4*m^3 + 26*b^4*d*e^4*m^4 + b^4
*d*e^4*m^5 + 60480*a^2*b*c*e^5 + 17832*a*b^3*e^5*m + 1680*b^4*d*e^4*m + 534
96*a^2*b*c*e^5*m - 6720*b*c^3*d^4*e*m + 2700*b^2*c^2*d^3*e^2*m^2 + 180*b^2*
c^2*d^3*e^2*m^3 + 18630*a^2*b*c*e^5*m^2 + 3195*a^2*b*c*e^5*m^3 + 270*a^2*b*
c*e^5*m^4 + 9*a^2*b*c*e^5*m^5 + 6720*a*c^3*d^3*e^2*m + 10080*a^2*c^2*d*e^4*
m - 6720*b^3*c*d^2*e^3*m - 840*b*c^3*d^4*e*m^2 + 1800*a*c^3*d^3*e^2*m^2 + 6
396*a^2*c^2*d*e^4*m^2 + 120*a*c^3*d^3*e^2*m^3 + 1506*a^2*c^2*d*e^4*m^3 + 15
6*a^2*c^2*d*e^4*m^4 + 6*a^2*c^2*d*e^4*m^5 + 10080*b^2*c^2*d^3*e^2*m - 2920*
b^3*c*d^2*e^3*m^2 - 420*b^3*c*d^2*e^3*m^3 - 20*b^3*c*d^2*e^3*m^4 - 8760*a*b
*c^2*d^2*e^3*m^2 - 1260*a*b*c^2*d^2*e^3*m^3 - 60*a*b*c^2*d^2*e^3*m^4 + 2016
0*a*b^2*c*d*e^4*m - 20160*a*b*c^2*d^2*e^3*m + 12792*a*b^2*c*d*e^4*m^2 + 301
2*a*b^2*c*d*e^4*m^3 + 312*a*b^2*c*d*e^4*m^4 + 12*a*b^2*c*d*e^4*m^5))/(e^5*(
109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7
 + m^8 + 40320)) + (x^2*(m + 1)*(d + e*x)^m*(40320*a^3*c*e^6 - 5040*c^4*d^6
*m + 60480*a^2*b^2*e^6 + 73656*a^2*b^2*e^6*m + 24308*a^3*c*e^6*m^2 + 6270*a
^3*c*e^6*m^3 + 890*a^3*c*e^6*m^4 + 66*a^3*c*e^6*m^5 + 2*a^3*c*e^6*m^6 - 504
0*b^4*d^2*e^4*m + 36462*a^2*b^2*e^6*m^2 + 9405*a^2*b^2*e^6*m^3 + 1335*a^2*b
^2*e^6*m^4 + 99*a^2*b^2*e^6*m^5 + 3*a^2*b^2*e^6*m^6 - 3198*b^4*d^2*e^4*m^2
 - 753*b^4*d^2*e^4*m^3 - 78*b^4*d^2*e^4*m^4 - 3*b^4*d^2*e^4*m^5 + 49104*a^3*
c*e^6*m + 20160*a*b^3*d*e^5*m + 20160*b*c^3*d^5*e*m - 19188*a^2*c^2*d^2*e^4
*m^2 - 4518*a^2*c^2*d^2*e^4*m^3 - 468*a^2*c^2*d^2*e^4*m^4 - 18*a^2*c^2*d^2*
e^4*m^5 - 8100*b^2*c^2*d^4*e^2*m^2 - 540*b^2*c^2*d^4*e^2*m^3 + 17832*a*b^3*
d*e^5*m^2 + 6210*a*b^3*d*e^5*m^3 + 1065*a*b^3*d*e^5*m^4 + 90*a*b^3*d*e^5*m^
5 + 3*a*b^3*d*e^5*m^6 - 20160*a*c^3*d^4*e^2*m + 20160*b^3*c*d^3*e^3*m + 252
0*b*c^3*d^5*e*m^2 - 30240*a^2*c^2*d^2*e^4*m - 5400*a*c^3*d^4*e^2*m^2 - 360*
a*c^3*d^4*e^2*m^3 - 30240*b^2*c^2*d^4*e^2*m + 8760*b^3*c*d^3*e^3*m^2 + 1260
*b^3*c*d^3*e^3*m^3 + 60*b^3*c*d^3*e^3*m^4 + 26280*a*b*c^2*d^3*e^3*m^2 - 383
76*a*b^2*c*d^2*e^4*m^2 + 3780*a*b*c^2*d^3*e^3*m^3 - 9036*a*b^2*c*d^2*e^4*m^
3 + 180*a*b*c^2*d^3*e^3*m^4 - 936*a*b^2*c*d^2*e^4*m^4 - 36*a*b^2*c*d^2*e^4*
m^5 + 60480*a^2*b*c*d*e^5*m + 60480*a*b*c^2*d^3*e^3*m - 60480*a*b^2*c*d^2*e
^4*m + 53496*a^2*b*c*d*e^5*m^2 + 18630*a^2*b*c*d*e^5*m^3 + 3195*a^2*b*c*d*e
^5*m^4 + 270*a^2*b*c*d*e^5*m^5 + 9*a^2*b*c*d*e^5*m^6))/(e^6*(109584*m + 118
124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320
)) + (c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(
504*b^2*e^2 + 135*b^2*e^2*m - 14*c^2*d^2*m + 9*b^2*e^2*m^2 + 336*a*c*e^2 +
90*a*c*e^2*m + 6*a*c*e^2*m^2 + 56*b*c*d*e*m + 7*b*c*d*e*m^2))/(e^2*(109584*
m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8

```
+ 40320)) + (c^3*x^7*(d + e*x)^m*(56*b*e + 7*b*e*m + 2*c*d*m)*(1764*m + 162
4*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/(e*(109584*m + 118124*m^2
+ 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c*
x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(1680*b^3*e^3 + 730*b^3
*e^3*m + 84*c^3*d^3*m + 105*b^3*e^3*m^2 + 5*b^3*e^3*m^3 + 5040*a*b*c*e^3 +
315*a*b*c*e^3*m^2 + 15*a*b*c*e^3*m^3 + 336*a*c^2*d*e^2*m - 336*b*c^2*d^2*e*
m + 504*b^2*c*d*e^2*m + 90*a*c^2*d*e^2*m^2 + 6*a*c^2*d*e^2*m^3 - 42*b*c^2*d
^2*e*m^2 + 135*b^2*c*d*e^2*m^2 + 9*b^2*c*d*e^2*m^3 + 2190*a*b*c*e^3*m))/(e^
3*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*
m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m*(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1437 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=270

$$\frac{2(d+ex)^{m+2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(m+2)}-\frac{(2cd-be)(d+ex)^{m+3}\left(-2ce(5bd-3ae)+b^2e^2\right.}{e^6(m+3)}$$

Rubi [A] time = 0.19, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{2(d+ex)^{m+2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(m+2)}-\frac{(2cd-be)(d+ex)^{m+3}\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6(m+3)}+\frac{4c(d+ex)^{m+4}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(m+4)}-\frac{(2cd-be)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)^2}{e^6(m+1)}-\frac{5c^2(2cd-be)(d+ex)^{m+5}}{e^6(m+5)}+\frac{2c^3(d+ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(1 + m))/(e^6*(1 + m))
) + (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d
 + e*x)^(2 + m))/(e^6*(2 + m)) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c
*e*(5*b*d - 3*a*e))*(d + e*x)^(3 + m))/(e^6*(3 + m)) + (4*c*(5*c^2*d^2 + b^
2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^(4 + m))/(e^6*(4 + m)) - (5*c^2*(2*c*d
 - b*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (2*c^3*(d + e*x)^(6 + m))/(e^6*(
6 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^m\left(a+bx+cx^2\right)^2\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^m}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)}{}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{1+m}}{e^6(1+m)}+\frac{2\left(cd^2-bde+ae^2\right)(5}{}$$

Mathematica [A] time = 1.08, size = 408, normalized size = 1.51

$$\frac{(d+ex)^{m+1}\left(\frac{2\left(\frac{(d+ex)\left(2c^2e^2\left(4a^2e^2\left(m^2+8m+15\right)+4abde\left(m^2-4m-30\right)+b^2d^2\left(m^2-4m+60\right)\right)-2b^2ce^3m(3ae(m+4)+bd(m-4))-8c^3d^2e\left(ae\left(m^2-4m-30\right)+30bd\right)+b^4e^4m(m+2)+120c^4d^4\right)}{e^2(m+2)}-(a+x(b+cx))\left(-2c^2e\left(2ae\left(d\left(m^2+m-15\right)+e\left(m^2+8m+15\right)x\right)+5bd(d(m+12)-2e(m+3)x)\right)+bce^2\left(-2ae(7m+30)+bd\left(m^2+11m+60\right)+bem(m+3)x\right)+b^3e^3m+20c^3d^2(3d-e(m+3)x)\right)-\frac{(2cd-be)\left(e(ae-bd)+cd^2\right)\left(-4ce\left(ae\left(m^2+m-15\right)+15bd\right)+b^2e^2m(m+1)+60c^2d^2\right)}{e^2(m+1)}\right)}{e^2(m+3)(m+4)}+c(a+x(b+cx))^2(be(m+10)+2c(e(m+5)x-5d))\right)}{ce^2(m+5)(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(c*(a + x*(b + c*x))^2*(b*e*(10 + m) + 2*c*(-5*d + e*(5
+ m)*x)) + (2*(-(((2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(60*c^2*d^2 + b^
2*e^2*m*(1 + m) - 4*c*e*(15*b*d + a*e*(-15 + m + m^2))))/(e^2*(1 + m))) + (
(120*c^4*d^4 + b^4*e^4*m*(2 + m) - 2*b^2*c*e^3*m*(b*d*(-4 + m) + 3*a*e*(4 +
 m)) - 8*c^3*d^2*e*(30*b*d + a*e*(-30 - 4*m + m^2)) + 2*c^2*e^2*(4*a*b*d*e*
(-30 - 4*m + m^2) + b^2*d^2*(60 - 4*m + m^2) + 4*a^2*e^2*(15 + 8*m + m^2)))
*(d + e*x))/(e^2*(2 + m)) - (a + x*(b + c*x))*(b^3*e^3*m + 20*c^3*d^2*(3*d
- e*(3 + m)*x) + b*c*e^2*(-2*a*e*(30 + 7*m) + b*d*(60 + 11*m + m^2) + b*e*m
```

```
*(3 + m)*x) - 2*c^2*e*(5*b*d*(d*(12 + m) - 2*e*(3 + m)*x) + 2*a*e*(d*(-15 +
 m + m^2) + e*(15 + 8*m + m^2)*x)))))/(e^2*(3 + m)*(4 + m))))/(c*e^2*(5 + m
)*(6 + m))
```

IntegrateAlgebraic [F] time = 0.11, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.50, size = 1750, normalized size = 6.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] (a^2*b*d*e^5*m^5 - 240*c^3*d^6 + 720*b*c^2*d^5*e + 720*a^2*b*d*e^5 - 720*(b
^2*c + a*c^2)*d^4*e^2 + 240*(b^3 + 6*a*b*c)*d^3*e^3 - 720*(a*b^2 + a^2*c)*d
^2*e^4 + 2*(c^3*e^6*m^5 + 15*c^3*e^6*m^4 + 85*c^3*e^6*m^3 + 225*c^3*e^6*m^2
 + 274*c^3*e^6*m + 120*c^3*e^6)*x^6 + (720*b*c^2*e^6 + (2*c^3*d*e^5 + 5*b*c
^2*e^6)*m^5 + 20*(c^3*d*e^5 + 4*b*c^2*e^6)*m^4 + 5*(14*c^3*d*e^5 + 95*b*c^2
*e^6)*m^3 + 100*(c^3*d*e^5 + 13*b*c^2*e^6)*m^2 + 12*(4*c^3*d*e^5 + 135*b*c^
2*e^6)*m)*x^5 + 2*(10*a^2*b*d*e^5 - (a*b^2 + a^2*c)*d^2*e^4)*m^4 + (720*(b^
2*c + a*c^2)*e^6 + (5*b*c^2*d*e^5 + 4*(b^2*c + a*c^2)*e^6)*m^5 - 2*(5*c^3*d
^2*e^4 - 30*b*c^2*d*e^5 - 34*(b^2*c + a*c^2)*e^6)*m^4 - (60*c^3*d^2*e^4 - 2
35*b*c^2*d*e^5 - 428*(b^2*c + a*c^2)*e^6)*m^3 - 2*(55*c^3*d^2*e^4 - 180*b*c
^2*d*e^5 - 614*(b^2*c + a*c^2)*e^6)*m^2 - 12*(5*c^3*d^2*e^4 - 15*b*c^2*d*e^
5 - 132*(b^2*c + a*c^2)*e^6)*m)*x^4 + (155*a^2*b*d*e^5 + 2*(b^3 + 6*a*b*c)*
d^3*e^3 - 36*(a*b^2 + a^2*c)*d^2*e^4)*m^3 + (240*(b^3 + 6*a*b*c)*e^6 + (4*(
b^2*c + a*c^2)*d*e^5 + (b^3 + 6*a*b*c)*e^6)*m^5 - 2*(10*b*c^2*d^2*e^4 - 28*
(b^2*c + a*c^2)*d*e^5 - 9*(b^3 + 6*a*b*c)*e^6)*m^4 + (40*c^3*d^3*e^3 - 180*
b*c^2*d^2*e^4 + 260*(b^2*c + a*c^2)*d*e^5 + 121*(b^3 + 6*a*b*c)*e^6)*m^3 +
4*(30*c^3*d^3*e^3 - 100*b*c^2*d^2*e^4 + 112*(b^2*c + a*c^2)*d*e^5 + 93*(b^3
 + 6*a*b*c)*e^6)*m^2 + 4*(20*c^3*d^3*e^3 - 60*b*c^2*d^2*e^4 + 60*(b^2*c + a
*c^2)*d*e^5 + 127*(b^3 + 6*a*b*c)*e^6)*m)*x^3 + 2*(290*a^2*b*d*e^5 - 12*(b^
2*c + a*c^2)*d^4*e^2 + 15*(b^3 + 6*a*b*c)*d^3*e^3 - 119*(a*b^2 + a^2*c)*d^2
*e^4)*m^2 + (720*(a*b^2 + a^2*c)*e^6 + ((b^3 + 6*a*b*c)*d*e^5 + 2*(a*b^2 +
a^2*c)*e^6)*m^5 - 2*(6*(b^2*c + a*c^2)*d^2*e^4 - 8*(b^3 + 6*a*b*c)*d*e^5 -
19*(a*b^2 + a^2*c)*e^6)*m^4 + (60*b*c^2*d^3*e^3 - 144*(b^2*c + a*c^2)*d^2*e
^4 + 89*(b^3 + 6*a*b*c)*d*e^5 + 274*(a*b^2 + a^2*c)*e^6)*m^3 - 2*(60*c^3*d^
4*e^2 - 210*b*c^2*d^3*e^3 + 246*(b^2*c + a*c^2)*d^2*e^4 - 97*(b^3 + 6*a*b*c
)*d*e^5 - 461*(a*b^2 + a^2*c)*e^6)*m^2 - 12*(10*c^3*d^4*e^2 - 30*b*c^2*d^3*
e^3 + 30*(b^2*c + a*c^2)*d^2*e^4 - 10*(b^3 + 6*a*b*c)*d*e^5 - 117*(a*b^2 +
a^2*c)*e^6)*m)*x^2 + 4*(30*b*c^2*d^5*e + 261*a^2*b*d*e^5 - 66*(b^2*c + a*c^
2)*d^4*e^2 + 37*(b^3 + 6*a*b*c)*d^3*e^3 - 171*(a*b^2 + a^2*c)*d^2*e^4)*m +
(720*a^2*b*e^6 + (a^2*b*e^6 + 2*(a*b^2 + a^2*c)*d*e^5)*m^5 + 2*(10*a^2*b*e^
6 - (b^3 + 6*a*b*c)*d^2*e^4 + 18*(a*b^2 + a^2*c)*d*e^5)*m^4 + (155*a^2*b*e^
6 + 24*(b^2*c + a*c^2)*d^3*e^3 - 30*(b^3 + 6*a*b*c)*d^2*e^4 + 238*(a*b^2 +
a^2*c)*d*e^5)*m^3 - 4*(30*b*c^2*d^4*e^2 - 145*a^2*b*e^6 - 66*(b^2*c + a*c^2
)*d^3*e^3 + 37*(b^3 + 6*a*b*c)*d^2*e^4 - 171*(a*b^2 + a^2*c)*d*e^5)*m^2 + 1
2*(20*c^3*d^5*e - 60*b*c^2*d^4*e^2 + 87*a^2*b*e^6 + 60*(b^2*c + a*c^2)*d^3*
e^3 - 20*(b^3 + 6*a*b*c)*d^2*e^4 + 60*(a*b^2 + a^2*c)*d*e^5)*m)*x)*(e*x + d
)^m/(e^6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764
*e^6*m + 720*e^6)
```

giac [B] time = 0.32, size = 3633, normalized size = 13.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (2*(x*e + d)^m*c^3*m^5*x^6*e^6 + 2*(x*e + d)^m*c^3*d*m^5*x^5*e^5 + 5*(x*e +
 d)^m*b*c^2*m^5*x^5*e^6 + 30*(x*e + d)^m*c^3*m^4*x^6*e^6 + 5*(x*e + d)^m*b*
c^2*d*m^5*x^4*e^5 + 20*(x*e + d)^m*c^3*d*m^4*x^5*e^5 - 10*(x*e + d)^m*c^3*d
^2*m^4*x^4*e^4 + 4*(x*e + d)^m*b^2*c*m^5*x^4*e^6 + 4*(x*e + d)^m*a*c^2*m^5*
x^4*e^6 + 80*(x*e + d)^m*b*c^2*m^4*x^5*e^6 + 170*(x*e + d)^m*c^3*m^3*x^6*e^
6 + 4*(x*e + d)^m*b^2*c*d*m^5*x^3*e^5 + 4*(x*e + d)^m*a*c^2*d*m^5*x^3*e^5 +
 60*(x*e + d)^m*b*c^2*d*m^4*x^4*e^5 + 70*(x*e + d)^m*c^3*d*m^3*x^5*e^5 - 20
*(x*e + d)^m*b*c^2*d^2*m^4*x^3*e^4 - 60*(x*e + d)^m*c^3*d^2*m^3*x^4*e^4 + 4
0*(x*e + d)^m*c^3*d^3*m^3*x^3*e^3 + (x*e + d)^m*b^3*m^5*x^3*e^6 + 6*(x*e +
d)^m*a*b*c*m^5*x^3*e^6 + 68*(x*e + d)^m*b^2*c*m^4*x^4*e^6 + 68*(x*e + d)^m*
a*c^2*m^4*x^4*e^6 + 475*(x*e + d)^m*b*c^2*m^3*x^5*e^6 + 450*(x*e + d)^m*c^3
*m^2*x^6*e^6 + (x*e + d)^m*b^3*d*m^5*x^2*e^5 + 6*(x*e + d)^m*a*b*c*d*m^5*x^
2*e^5 + 56*(x*e + d)^m*b^2*c*d*m^4*x^3*e^5 + 56*(x*e + d)^m*a*c^2*d*m^4*x^3
*e^5 + 235*(x*e + d)^m*b*c^2*d*m^3*x^4*e^5 + 100*(x*e + d)^m*c^3*d*m^2*x^5*
e^5 - 12*(x*e + d)^m*b^2*c*d^2*m^4*x^2*e^4 - 12*(x*e + d)^m*a*c^2*d^2*m^4*x
^2*e^4 - 180*(x*e + d)^m*b*c^2*d^2*m^3*x^3*e^4 - 110*(x*e + d)^m*c^3*d^2*m^
2*x^4*e^4 + 60*(x*e + d)^m*b*c^2*d^3*m^3*x^2*e^3 + 120*(x*e + d)^m*c^3*d^3*
m^2*x^3*e^3 - 120*(x*e + d)^m*c^3*d^4*m^2*x^2*e^2 + 2*(x*e + d)^m*a*b^2*m^5
*x^2*e^6 + 2*(x*e + d)^m*a^2*c*m^5*x^2*e^6 + 18*(x*e + d)^m*b^3*m^4*x^3*e^6
 + 108*(x*e + d)^m*a*b*c*m^4*x^3*e^6 + 428*(x*e + d)^m*b^2*c*m^3*x^4*e^6 +
428*(x*e + d)^m*a*c^2*m^3*x^4*e^6 + 1300*(x*e + d)^m*b*c^2*m^2*x^5*e^6 + 54
8*(x*e + d)^m*c^3*m*x^6*e^6 + 2*(x*e + d)^m*a*b^2*d*m^5*x*e^5 + 2*(x*e + d)
^m*a^2*c*d*m^5*x*e^5 + 16*(x*e + d)^m*b^3*d*m^4*x^2*e^5 + 96*(x*e + d)^m*a*
b*c*d*m^4*x^2*e^5 + 260*(x*e + d)^m*b^2*c*d*m^3*x^3*e^5 + 260*(x*e + d)^m*a
*c^2*d*m^3*x^3*e^5 + 360*(x*e + d)^m*b*c^2*d*m^2*x^4*e^5 + 48*(x*e + d)^m*c
^3*d*m*x^5*e^5 - 2*(x*e + d)^m*b^3*d^2*m^4*x*e^4 - 12*(x*e + d)^m*a*b*c*d^2
*m^4*x*e^4 - 144*(x*e + d)^m*b^2*c*d^2*m^3*x^2*e^4 - 144*(x*e + d)^m*a*c^2*
d^2*m^3*x^2*e^4 - 400*(x*e + d)^m*b*c^2*d^2*m^2*x^3*e^4 - 60*(x*e + d)^m*c^
3*d^2*m*x^4*e^4 + 24*(x*e + d)^m*b^2*c*d^3*m^3*x*e^3 + 24*(x*e + d)^m*a*c^2
*d^3*m^3*x*e^3 + 420*(x*e + d)^m*b*c^2*d^3*m^2*x^2*e^3 + 80*(x*e + d)^m*c^3
*d^3*m*x^3*e^3 - 120*(x*e + d)^m*b*c^2*d^4*m^2*x*e^2 - 120*(x*e + d)^m*c^3*
d^4*m*x^2*e^2 + 240*(x*e + d)^m*c^3*d^5*m*x*e + (x*e + d)^m*a^2*b*m^5*x*e^6
 + 38*(x*e + d)^m*a*b^2*m^4*x^2*e^6 + 38*(x*e + d)^m*a^2*c*m^4*x^2*e^6 + 12
1*(x*e + d)^m*b^3*m^3*x^3*e^6 + 726*(x*e + d)^m*a*b*c*m^3*x^3*e^6 + 1228*(x
*e + d)^m*b^2*c*m^2*x^4*e^6 + 1228*(x*e + d)^m*a*c^2*m^2*x^4*e^6 + 1620*(x*
e + d)^m*b*c^2*m*x^5*e^6 + 240*(x*e + d)^m*c^3*x^6*e^6 + (x*e + d)^m*a^2*b*
d*m^5*e^5 + 36*(x*e + d)^m*a*b^2*d*m^4*x*e^5 + 36*(x*e + d)^m*a^2*c*d*m^4*x
*e^5 + 89*(x*e + d)^m*b^3*d*m^3*x^2*e^5 + 534*(x*e + d)^m*a*b*c*d*m^3*x^2*e
^5 + 448*(x*e + d)^m*b^2*c*d*m^2*x^3*e^5 + 448*(x*e + d)^m*a*c^2*d*m^2*x^3*
e^5 + 180*(x*e + d)^m*b*c^2*d*m*x^4*e^5 - 2*(x*e + d)^m*a*b^2*d^2*m^4*e^4 -
 2*(x*e + d)^m*a^2*c*d^2*m^4*e^4 - 30*(x*e + d)^m*b^3*d^2*m^3*x*e^4 - 180*(
x*e + d)^m*a*b*c*d^2*m^3*x*e^4 - 492*(x*e + d)^m*b^2*c*d^2*m^2*x^2*e^4 - 49
2*(x*e + d)^m*a*c^2*d^2*m^2*x^2*e^4 - 240*(x*e + d)^m*b*c^2*d^2*m*x^3*e^4 +
 2*(x*e + d)^m*b^3*d^3*m^3*e^3 + 12*(x*e + d)^m*a*b*c*d^3*m^3*e^3 + 264*(x*
e + d)^m*b^2*c*d^3*m^2*x*e^3 + 264*(x*e + d)^m*a*c^2*d^3*m^2*x*e^3 + 360*(x
*e + d)^m*b*c^2*d^3*m*x^2*e^3 - 24*(x*e + d)^m*b^2*c*d^4*m^2*e^2 - 24*(x*e
+ d)^m*a*c^2*d^4*m^2*e^2 - 720*(x*e + d)^m*b*c^2*d^4*m*x*e^2 + 120*(x*e + d
)^m*b*c^2*d^5*m*e - 240*(x*e + d)^m*c^3*d^6 + 20*(x*e + d)^m*a^2*b*m^4*x*e^
6 + 274*(x*e + d)^m*a*b^2*m^3*x^2*e^6 + 274*(x*e + d)^m*a^2*c*m^3*x^2*e^6 +
 372*(x*e + d)^m*b^3*m^2*x^3*e^6 + 2232*(x*e + d)^m*a*b*c*m^2*x^3*e^6 + 158
4*(x*e + d)^m*b^2*c*m*x^4*e^6 + 1584*(x*e + d)^m*a*c^2*m*x^4*e^6 + 720*(x*e
 + d)^m*b*c^2*x^5*e^6 + 20*(x*e + d)^m*a^2*b*d*m^4*e^5 + 238*(x*e + d)^m*a*
b^2*d*m^3*x*e^5 + 238*(x*e + d)^m*a^2*c*d*m^3*x*e^5 + 194*(x*e + d)^m*b^3*d
*m^2*x^2*e^5 + 1164*(x*e + d)^m*a*b*c*d*m^2*x^2*e^5 + 240*(x*e + d)^m*b^2*c
```

```
*d*m*x^3*e^5 + 240*(x*e + d)^m*a*c^2*d*m*x^3*e^5 - 36*(x*e + d)^m*a*b^2*d^2
*m^3*e^4 - 36*(x*e + d)^m*a^2*c*d^2*m^3*e^4 - 148*(x*e + d)^m*b^3*d^2*m^2*x
*e^4 - 888*(x*e + d)^m*a*b*c*d^2*m^2*x*e^4 - 360*(x*e + d)^m*b^2*c*d^2*m*x^
2*e^4 - 360*(x*e + d)^m*a*c^2*d^2*m*x^2*e^4 + 30*(x*e + d)^m*b^3*d^3*m^2*e^
3 + 180*(x*e + d)^m*a*b*c*d^3*m^2*e^3 + 720*(x*e + d)^m*b^2*c*d^3*m*x*e^3 +
 720*(x*e + d)^m*a*c^2*d^3*m*x*e^3 - 264*(x*e + d)^m*b^2*c*d^4*m*e^2 - 264*
(x*e + d)^m*a*c^2*d^4*m*e^2 + 720*(x*e + d)^m*b*c^2*d^5*e + 155*(x*e + d)^m
*a^2*b*m^3*x*e^6 + 922*(x*e + d)^m*a*b^2*m^2*x^2*e^6 + 922*(x*e + d)^m*a^2*
c*m^2*x^2*e^6 + 508*(x*e + d)^m*b^3*m*x^3*e^6 + 3048*(x*e + d)^m*a*b*c*m*x^
3*e^6 + 720*(x*e + d)^m*b^2*c*x^4*e^6 + 720*(x*e + d)^m*a*c^2*x^4*e^6 + 155
*(x*e + d)^m*a^2*b*d*m^3*e^5 + 684*(x*e + d)^m*a*b^2*d*m^2*x*e^5 + 684*(x*e
 + d)^m*a^2*c*d*m^2*x*e^5 + 120*(x*e + d)^m*b^3*d*m*x^2*e^5 + 720*(x*e + d)
^m*a*b*c*d*m*x^2*e^5 - 238*(x*e + d)^m*a*b^2*d^2*m^2*e^4 - 238*(x*e + d)^m*
a^2*c*d^2*m^2*e^4 - 240*(x*e + d)^m*b^3*d^2*m*x*e^4 - 1440*(x*e + d)^m*a*b*
c*d^2*m*x*e^4 + 148*(x*e + d)^m*b^3*d^3*m*e^3 + 888*(x*e + d)^m*a*b*c*d^3*m
*e^3 - 720*(x*e + d)^m*b^2*c*d^4*e^2 - 720*(x*e + d)^m*a*c^2*d^4*e^2 + 580*
(x*e + d)^m*a^2*b*m^2*x*e^6 + 1404*(x*e + d)^m*a*b^2*m*x^2*e^6 + 1404*(x*e
+ d)^m*a^2*c*m*x^2*e^6 + 240*(x*e + d)^m*b^3*x^3*e^6 + 1440*(x*e + d)^m*a*b
*c*x^3*e^6 + 580*(x*e + d)^m*a^2*b*d*m^2*e^5 + 720*(x*e + d)^m*a*b^2*d*m*x*
e^5 + 720*(x*e + d)^m*a^2*c*d*m*x*e^5 - 684*(x*e + d)^m*a*b^2*d^2*m*e^4 - 6
84*(x*e + d)^m*a^2*c*d^2*m*e^4 + 240*(x*e + d)^m*b^3*d^3*e^3 + 1440*(x*e +
d)^m*a*b*c*d^3*e^3 + 1044*(x*e + d)^m*a^2*b*m*x*e^6 + 720*(x*e + d)^m*a*b^2
*x^2*e^6 + 720*(x*e + d)^m*a^2*c*x^2*e^6 + 1044*(x*e + d)^m*a^2*b*d*m*e^5 -
 720*(x*e + d)^m*a*b^2*d^2*e^4 - 720*(x*e + d)^m*a^2*c*d^2*e^4 + 720*(x*e +
 d)^m*a^2*b*x*e^6 + 720*(x*e + d)^m*a^2*b*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 17
5*m^4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1852, normalized size = 6.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(2*c^3*e^5*m^5*x^5+5*b*c^2*e^5*m^5*x^4+30*c^3*e^5*m^4*x^5+4*a
*c^2*e^5*m^5*x^3+4*b^2*c*e^5*m^5*x^3+80*b*c^2*e^5*m^4*x^4-10*c^3*d*e^4*m^4*
x^4+170*c^3*e^5*m^3*x^5+6*a*b*c*e^5*m^5*x^2+68*a*c^2*e^5*m^4*x^3+b^3*e^5*m^
5*x^2+68*b^2*c*e^5*m^4*x^3-20*b*c^2*d*e^4*m^4*x^3+475*b*c^2*e^5*m^3*x^4-100
*c^3*d*e^4*m^3*x^4+450*c^3*e^5*m^2*x^5+2*a^2*c*e^5*m^5*x+2*a*b^2*e^5*m^5*x+
108*a*b*c*e^5*m^4*x^2-12*a*c^2*d*e^4*m^4*x^2+428*a*c^2*e^5*m^3*x^3+18*b^3*e
^5*m^4*x^2-12*b^2*c*d*e^4*m^4*x^2+428*b^2*c*e^5*m^3*x^3-240*b*c^2*d*e^4*m^3
*x^3+1300*b*c^2*e^5*m^2*x^4+40*c^3*d^2*e^3*m^3*x^3-350*c^3*d*e^4*m^2*x^4+54
8*c^3*e^5*m*x^5+a^2*b*e^5*m^5+38*a^2*c*e^5*m^4*x+38*a*b^2*e^5*m^4*x-12*a*b*
c*d*e^4*m^4*x+726*a*b*c*e^5*m^3*x^2-168*a*c^2*d*e^4*m^3*x^2+1228*a*c^2*e^5*
m^2*x^3-2*b^3*d*e^4*m^4*x+121*b^3*e^5*m^3*x^2-168*b^2*c*d*e^4*m^3*x^2+1228*
b^2*c*e^5*m^2*x^3+60*b*c^2*d^2*e^3*m^3*x^2-940*b*c^2*d*e^4*m^2*x^3+1620*b*c
^2*e^5*m*x^4+240*c^3*d^2*e^3*m^2*x^3-500*c^3*d*e^4*m*x^4+240*c^3*e^5*x^5+20
*a^2*b*e^5*m^4-2*a^2*c*d*e^4*m^4+274*a^2*c*e^5*m^3*x-2*a*b^2*d*e^4*m^4+274*
a*b^2*e^5*m^3*x-192*a*b*c*d*e^4*m^3*x+2232*a*b*c*e^5*m^2*x^2+24*a*c^2*d^2*e
^3*m^3*x-780*a*c^2*d*e^4*m^2*x^2+1584*a*c^2*e^5*m*x^3-32*b^3*d*e^4*m^3*x+37
2*b^3*e^5*m^2*x^2+24*b^2*c*d^2*e^3*m^3*x-780*b^2*c*d*e^4*m^2*x^2+1584*b^2*c
*e^5*m*x^3+540*b*c^2*d^2*e^3*m^2*x^2-1440*b*c^2*d*e^4*m*x^3+720*b*c^2*e^5*x
^4-120*c^3*d^3*e^2*m^2*x^2+440*c^3*d^2*e^3*m*x^3-240*c^3*d*e^4*x^4+155*a^2*
b*e^5*m^3-36*a^2*c*d*e^4*m^3+922*a^2*c*e^5*m^2*x-36*a*b^2*d*e^4*m^3+922*a*b
^2*e^5*m^2*x+12*a*b*c*d^2*e^3*m^3-1068*a*b*c*d*e^4*m^2*x+3048*a*b*c*e^5*m*x
^2+288*a*c^2*d^2*e^3*m^2*x-1344*a*c^2*d*e^4*m*x^2+720*a*c^2*e^5*x^3+2*b^3*d
^2*e^3*m^3-178*b^3*d*e^4*m^2*x+508*b^3*e^5*m*x^2+288*b^2*c*d^2*e^3*m^2*x-13
44*b^2*c*d*e^4*m*x^2+720*b^2*c*e^5*x^3-120*b*c^2*d^3*e^2*m^2*x+1200*b*c^2*d
^2*e^3*m*x^2-720*b*c^2*d*e^4*x^3-360*c^3*d^3*e^2*m*x^2+240*c^3*d^2*e^3*x^3+
580*a^2*b*e^5*m^2-238*a^2*c*d*e^4*m^2+1404*a^2*c*e^5*m*x-238*a*b^2*d*e^4*m^
```

```
2+1404*a*b^2*e^5*m*x+180*a*b*c*d^2*e^3*m^2-2328*a*b*c*d*e^4*m*x+1440*a*b*c*
e^5*x^2-24*a*c^2*d^3*e^2*m^2+984*a*c^2*d^2*e^3*m*x-720*a*c^2*d*e^4*x^2+30*b
^3*d^2*e^3*m^2-388*b^3*d*e^4*m*x+240*b^3*e^5*x^2-24*b^2*c*d^3*e^2*m^2+984*b
^2*c*d^2*e^3*m*x-720*b^2*c*d*e^4*x^2-840*b*c^2*d^3*e^2*m*x+720*b*c^2*d^2*e^
3*x^2+240*c^3*d^4*e*m*x-240*c^3*d^3*e^2*x^2+1044*a^2*b*e^5*m-684*a^2*c*d*e^
4*m+720*a^2*c*e^5*x-684*a*b^2*d*e^4*m+720*a*b^2*e^5*x+888*a*b*c*d^2*e^3*m-1
440*a*b*c*d*e^4*x-264*a*c^2*d^3*e^2*m+720*a*c^2*d^2*e^3*x+148*b^3*d^2*e^3*m
-240*b^3*d*e^4*x-264*b^2*c*d^3*e^2*m+720*b^2*c*d^2*e^3*x+120*b*c^2*d^4*e*m-
720*b*c^2*d^3*e^2*x+240*c^3*d^4*e*x+720*a^2*b*e^5-720*a^2*c*d*e^4-720*a*b^2
*d*e^4+1440*a*b*c*d^2*e^3-720*a*c^2*d^3*e^2+240*b^3*d^2*e^3-720*b^2*c*d^3*e
^2+720*b*c^2*d^4*e-240*c^3*d^5)/e^6/(m^6+21*m^5+175*m^4+735*m^3+1624*m^2+17
64*m+720)
```

maxima [B] time = 0.75, size = 802, normalized size = 2.97

$$\frac{2\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m ab^2}{(m^2+3m+2)e^2}+\frac{2\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m a^2c}{(m^2+3m+2)e^2}+\frac{(ex+d)^{m+1}a^2b}{e(m+1)}+\frac{\left((m^2+3m+2)e^3x^3+(m^2+m)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m b^3}{(m^3+6m^2+11m+6)e^3}+\frac{6\left((m^2+3m+2)e^3x^3+(m^2+m)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m abc}{(m^3+6m^2+11m+6)e^3}+\frac{4\left((m^3+6m^2+11m+6)e^4x^4+(m^3+3m^2+2m)de^3x^3-3(m^2+m)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m b^2c}{(m^4+10m^3+35m^2+50m+24)e^4}+\frac{4\left((m^3+6m^2+11m+6)e^4x^4+(m^3+3m^2+2m)de^3x^3-3(m^2+m)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m ac^2}{(m^4+10m^3+35m^2+50m+24)e^4}+\frac{5\left((m^4+10m^3+35m^2+50m+24)e^5x^5+(m^4+6m^3+11m^2+6m)de^4x^4-4(m^3+3m^2+2m)d^2e^3x^3+12(m^2+m)d^3e^2x^2-24d^4emx+24d^5\right)(ex+d)^m bc^2}{(m^5+15m^4+85m^3+225m^2+274m+120)e^5}+\frac{2\left((m^5+15m^4+85m^3+225m^2+274m+120)e^6x^6+(m^5+10m^4+35m^3+50m^2+24m)de^5x^5-5(m^4+6m^3+11m^2+6m)d^2e^4x^4+20(m^3+3m^2+2m)d^3e^3x^3-60(m^2+m)d^4e^2x^2+120d^5emx-120d^6\right)(ex+d)^m c^3}{(m^6+21m^5+175m^4+735m^3+1624m^2+1764m+720)e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a*b^2/((m^2 + 3*m + 2)*e^2)
 + 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^2*c/((m^2 + 3*m + 2)*e
^2) + (e*x + d)^(m + 1)*a^2*b/(e*(m + 1)) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2
 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*b^3/((m^3 + 6*m^2 + 11*m
 + 6)*e^3) + 6*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x
 + 2*d^3)*(e*x + d)^m*a*b*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 4*((m^3 + 6*m^
2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2
*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*b^2*c/((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^4) + 4*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*
e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a*c^2/
((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 5*((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 +
 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x
+ d)^m*b*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 2*((m^
5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m
^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4
+ 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e
*m*x - 120*d^6)*(e*x + d)^m*c^3/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m
^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 2.82, size = 1825, normalized size = 6.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*c^3*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(17
64*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) - ((d + e*x)^m*(2
40*c^3*d^6 - 240*b^3*d^3*e^3 + 720*a*b^2*d^2*e^4 + 720*a*c^2*d^4*e^2 + 720*
a^2*c*d^2*e^4 + 720*b^2*c*d^4*e^2 - 148*b^3*d^3*e^3*m - 30*b^3*d^3*e^3*m^2
- 2*b^3*d^3*e^3*m^3 - 720*a^2*b*d*e^5 - 720*b*c^2*d^5*e - 1440*a*b*c*d^3*e^
3 - 1044*a^2*b*d*e^5*m - 120*b*c^2*d^5*e*m + 684*a*b^2*d^2*e^4*m - 580*a^2*
b*d*e^5*m^2 - 155*a^2*b*d*e^5*m^3 - 20*a^2*b*d*e^5*m^4 - a^2*b*d*e^5*m^5 +
264*a*c^2*d^4*e^2*m + 684*a^2*c*d^2*e^4*m + 264*b^2*c*d^4*e^2*m + 238*a*b^2
*d^2*e^4*m^2 + 36*a*b^2*d^2*e^4*m^3 + 2*a*b^2*d^2*e^4*m^4 + 24*a*c^2*d^4*e^
2*m^2 + 238*a^2*c*d^2*e^4*m^2 + 36*a^2*c*d^2*e^4*m^3 + 2*a^2*c*d^2*e^4*m^4
+ 24*b^2*c*d^4*e^2*m^2 - 888*a*b*c*d^3*e^3*m - 180*a*b*c*d^3*e^3*m^2 - 12*a
*b*c*d^3*e^3*m^3))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m
^6 + 720)) + (x*(d + e*x)^m*(720*a^2*b*e^6 + 580*a^2*b*e^6*m^2 + 155*a^2*b*
e^6*m^3 + 20*a^2*b*e^6*m^4 + a^2*b*e^6*m^5 - 240*b^3*d^2*e^4*m - 148*b^3*d^
```

```
2*e^4*m^2 - 30*b^3*d^2*e^4*m^3 - 2*b^3*d^2*e^4*m^4 + 1044*a^2*b*e^6*m + 240
*c^3*d^5*e*m + 720*a*b^2*d*e^5*m + 720*a^2*c*d*e^5*m + 684*a*b^2*d*e^5*m^2
+ 238*a*b^2*d*e^5*m^3 + 36*a*b^2*d*e^5*m^4 + 2*a*b^2*d*e^5*m^5 + 720*a*c^2*
d^3*e^3*m + 684*a^2*c*d*e^5*m^2 + 238*a^2*c*d*e^5*m^3 + 36*a^2*c*d*e^5*m^4
+ 2*a^2*c*d*e^5*m^5 - 720*b*c^2*d^4*e^2*m + 720*b^2*c*d^3*e^3*m + 264*a*c^2
*d^3*e^3*m^2 + 24*a*c^2*d^3*e^3*m^3 - 120*b*c^2*d^4*e^2*m^2 + 264*b^2*c*d^3
*e^3*m^2 + 24*b^2*c*d^3*e^3*m^3 - 1440*a*b*c*d^2*e^4*m - 888*a*b*c*d^2*e^4*
m^2 - 180*a*b*c*d^2*e^4*m^3 - 12*a*b*c*d^2*e^4*m^4))/(e^6*(1764*m + 1624*m^
2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^2*(m + 1)*(d + e*x)^m*(72
0*a*b^2*e^4 + 720*a^2*c*e^4 - 120*c^3*d^4*m + 238*a*b^2*e^4*m^2 + 36*a*b^2*
e^4*m^3 + 2*a*b^2*e^4*m^4 + 238*a^2*c*e^4*m^2 + 36*a^2*c*e^4*m^3 + 2*a^2*c*
e^4*m^4 + 74*b^3*d*e^3*m^2 + 15*b^3*d*e^3*m^3 + b^3*d*e^3*m^4 + 684*a*b^2*e
^4*m + 684*a^2*c*e^4*m + 120*b^3*d*e^3*m + 360*b*c^2*d^3*e*m - 360*a*c^2*d^
2*e^2*m - 360*b^2*c*d^2*e^2*m + 60*b*c^2*d^3*e*m^2 - 132*a*c^2*d^2*e^2*m^2
- 12*a*c^2*d^2*e^2*m^3 - 132*b^2*c*d^2*e^2*m^2 - 12*b^2*c*d^2*e^2*m^3 + 720
*a*b*c*d*e^3*m + 444*a*b*c*d*e^3*m^2 + 90*a*b*c*d*e^3*m^3 + 6*a*b*c*d*e^3*m
^4))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (
x^3*(d + e*x)^m*(3*m + m^2 + 2)*(120*b^3*e^3 + 74*b^3*e^3*m + 40*c^3*d^3*m
+ 15*b^3*e^3*m^2 + b^3*e^3*m^3 + 720*a*b*c*e^3 + 90*a*b*c*e^3*m^2 + 6*a*b*c
*e^3*m^3 + 120*a*c^2*d*e^2*m - 120*b*c^2*d^2*e*m + 120*b^2*c*d*e^2*m + 44*a
*c^2*d*e^2*m^2 + 4*a*c^2*d*e^2*m^3 - 20*b*c^2*d^2*e*m^2 + 44*b^2*c*d*e^2*m^
2 + 4*b^2*c*d*e^2*m^3 + 444*a*b*c*e^3*m))/(e^3*(1764*m + 1624*m^2 + 735*m^3
 + 175*m^4 + 21*m^5 + m^6 + 720)) + (c^2*x^5*(d + e*x)^m*(30*b*e + 5*b*e*m
+ 2*c*d*m)*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))/(e*(1764*m + 1624*m^2 + 735
*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (c*x^4*(d + e*x)^m*(11*m + 6*m^2 +
m^3 + 6)*(120*b^2*e^2 + 44*b^2*e^2*m - 10*c^2*d^2*m + 4*b^2*e^2*m^2 + 120*a
*c*e^2 + 44*a*c*e^2*m + 4*a*c*e^2*m^2 + 30*b*c*d*e*m + 5*b*c*d*e*m^2))/(e^2
*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m*(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1438 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=143

$$\frac{(d+ex)^{m+2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4(m+2)}-\frac{(2cd-be)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{3c(2cd-be)(d+ex)^{m+}}{e^4(m+3)}$$

Rubi [A] time = 0.09, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^{m+2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4(m+2)}-\frac{(2cd-be)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{3c(2cd-be)(d+ex)^{m+3}}{e^4(m+3)}+\frac{2c^2(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] -(((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m)))
+ ((6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(2 + m))/(e^4*(2 +
 m)) - (3*c*(2*c*d - b*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (2*c^2*(d + e*
x)^(4 + m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right) dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3\right.}{e}\right.$$
$$= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bc\right.}{e^4(2+}$$

Mathematica [A] time = 0.20, size = 134, normalized size = 0.94

$$\frac{(d+ex)^{m+1}\left(\frac{(d+ex)\left(4ce(ae(m+3)-3bd)-b^2e^2m+12c^2d^2\right)}{e^2(m+2)}+\frac{6(be-2cd)\left(e(ae-bd)+cd^2\right)}{e^2(m+1)}+(a+x(b+cx))(be(m+6)-6cd+2ce(m+3)x)\right)}{e^2(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*((6*(-2*c*d + b*e)*(c*d^2 + e*(-(b*d) + a*e)))/(e^2*(1 +
 m)) + ((12*c^2*d^2 - b^2*e^2*m + 4*c*e*(-3*b*d + a*e*(3 + m)))*(d + e*x))/
(e^2*(2 + m)) + (-6*c*d + b*e*(6 + m) + 2*c*e*(3 + m)*x)*(a + x*(b + c*x)))
)/(e^2*(3 + m)*(4 + m))
```

IntegrateAlgebraic [F] time = 0.08, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right) dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x]

[Out] Defer[IntegrateAlgebraic][(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2), x]

fricas [B] time = 0.44, size = 511, normalized size = 3.57

$$\frac{\left(abde^3m^3 - 12c^2d^4 + 24bcd^3e + 24abde^3 - 12\left(b^2+2ac\right)d^2e^2 + 2\left(c^2e^4m^3 + 6c^2e^4m^2 + 11c^2e^4m + 6c^2e^4\right)x^4 + \left(24bce^4 + \left(2c^2de^3 + 3bce^4\right)m^3 + 3\left(2c^2de^3 + 7bce^4\right)m^2 + 2\left(2c^2de^3 + 21bce^4\right)m\right)x^3 + \left(9abde^3 - \left(b^2+2ac\right)d^2e^2\right)m^2 + \left(12\left(b^2+2ac\right)e^4 + \left(3bcde^3 + \left(b^2+2ac\right)e^4\right)m^3 - \left(6c^2d^2e^2 - 15bcde^3 - 8\left(b^2+2ac\right)e^4\right)m^2 - \left(6c^2d^2e^2 - 12bcde^3 - 19\left(b^2+2ac\right)e^4\right)m\right)x^2 + \left(6bcd^3e + 26abde^3 - 7\left(b^2+2ac\right)d^2e^2\right)m + \left(24abe^4 + \left(abe^4 + \left(b^2+2ac\right)de^3\right)m^3 - \left(6bcd^2e^2 - 9abe^4 - 7\left(b^2+2ac\right)de^3\right)m^2 + 2\left(6c^2d^3e - 12bcd^2e^2 + 13abe^4 + 6\left(b^2+2ac\right)de^3\right)m\right)x\right)(ex+d)^m}{e^4m^4 + 10e^4m^3 + 35e^4m^2 + 50e^4m + 24e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="fricas")

[Out] (a*b*d*e^3*m^3 - 12*c^2*d^4 + 24*b*c*d^3*e + 24*a*b*d*e^3 - 12*(b^2 + 2*a*c)*d^2*e^2 + 2*(c^2*e^4*m^3 + 6*c^2*e^4*m^2 + 11*c^2*e^4*m + 6*c^2*e^4)*x^4 + (24*b*c*e^4 + (2*c^2*d*e^3 + 3*b*c*e^4)*m^3 + 3*(2*c^2*d*e^3 + 7*b*c*e^4)*m^2 + 2*(2*c^2*d*e^3 + 21*b*c*e^4)*m)*x^3 + (9*a*b*d*e^3 - (b^2 + 2*a*c)*d^2*e^2)*m^2 + (12*(b^2 + 2*a*c)*e^4 + (3*b*c*d*e^3 + (b^2 + 2*a*c)*e^4)*m^3 - (6*c^2*d^2*e^2 - 15*b*c*d*e^3 - 8*(b^2 + 2*a*c)*e^4)*m^2 - (6*c^2*d^2*e^2 - 12*b*c*d*e^3 - 19*(b^2 + 2*a*c)*e^4)*m)*x^2 + (6*b*c*d^3*e + 26*a*b*d*e^3 - 7*(b^2 + 2*a*c)*d^2*e^2)*m + (24*a*b*e^4 + (a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*m^3 - (6*b*c*d^2*e^2 - 9*a*b*e^4 - 7*(b^2 + 2*a*c)*d*e^3)*m^2 + 2*(6*c^2*d^3*e - 12*b*c*d^2*e^2 + 13*a*b*e^4 + 6*(b^2 + 2*a*c)*d*e^3)*m)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)

giac [B] time = 0.19, size = 980, normalized size = 6.85

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="giac")

[Out] (2*(x*e + d)^m*c^2*m^3*x^4*e^4 + 2*(x*e + d)^m*c^2*d*m^3*x^3*e^3 + 3*(x*e + d)^m*b*c*m^3*x^3*e^4 + 12*(x*e + d)^m*c^2*m^2*x^4*e^4 + 3*(x*e + d)^m*b*c*d*m^3*x^2*e^3 + 6*(x*e + d)^m*c^2*d*m^2*x^3*e^3 - 6*(x*e + d)^m*c^2*d^2*m^2*x^2*e^2 + (x*e + d)^m*b^2*m^3*x^2*e^4 + 2*(x*e + d)^m*a*c*m^3*x^2*e^4 + 21*(x*e + d)^m*b*c*m^2*x^3*e^4 + 22*(x*e + d)^m*c^2*m*x^4*e^4 + (x*e + d)^m*b^2*d*m^3*x*e^3 + 2*(x*e + d)^m*a*c*d*m^3*x*e^3 + 15*(x*e + d)^m*b*c*d*m^2*x^2*e^3 + 4*(x*e + d)^m*c^2*d*m*x^3*e^3 - 6*(x*e + d)^m*b*c*d^2*m^2*x*e^2 - 6*(x*e + d)^m*c^2*d^2*m*x^2*e^2 + 12*(x*e + d)^m*c^2*d^3*m*x*e + (x*e + d)^m*a*b*m^3*x*e^4 + 8*(x*e + d)^m*b^2*m^2*x^2*e^4 + 16*(x*e + d)^m*a*c*m^2*x^2*e^4 + 42*(x*e + d)^m*b*c*m*x^3*e^4 + 12*(x*e + d)^m*c^2*x^4*e^4 + (x*e + d)^m*a*b*d*m^3*e^3 + 7*(x*e + d)^m*b^2*d*m^2*x*e^3 + 14*(x*e + d)^m*a*c*d*m^2*x*e^3 + 12*(x*e + d)^m*b*c*d*m*x^2*e^3 - (x*e + d)^m*b^2*d^2*m^2*e^2 - 2*(x*e + d)^m*a*c*d^2*m^2*e^2 - 24*(x*e + d)^m*b*c*d^2*m*x*e^2 + 6*(x*e + d)^m*b*c*d^3*m*e - 12*(x*e + d)^m*c^2*d^4 + 9*(x*e + d)^m*a*b*m^2*x*e^4 + 19*(x*e + d)^m*b^2*m*x^2*e^4 + 38*(x*e + d)^m*a*c*m*x^2*e^4 + 24*(x*e + d)^m*b*c*x^3*e^4 + 9*(x*e + d)^m*a*b*d*m^2*e^3 + 12*(x*e + d)^m*b^2*d*m*x*e^3 + 24*(x*e + d)^m*a*c*d*m*x*e^3 - 7*(x*e + d)^m*b^2*d^2*m*e^2 - 14*(x*e + d)^m*a*c*d^2*m*e^2 + 24*(x*e + d)^m*b*c*d^3*e + 26*(x*e + d)^m*a*b*m*x*e^4 + 12*(x*e + d)^m*b^2*x^2*e^4 + 24*(x*e + d)^m*a*c*x^2*e^4 + 26*(x*e + d)^m*a*b*d*m*e^3 - 12*(x*e + d)^m*b^2*d^2*e^2 - 24*(x*e + d)^m*a*c*d^2*e^2 + 24*(x*e + d)^m*a*b*x*e^4 + 24*(x*e + d)^m*a*b*d*e^3)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)

maple [B] time = 0.05, size = 424, normalized size = 2.97

$$\frac{\left(2c^2e^3m^3x^3 + 3bce^3m^3x^2 + 12c^2e^3m^2x^3 + 2ace^3m^3x + b^2e^3m^3x + 21bce^3m^2x^2 - 6c^2de^2m^2x^2 + 22c^2e^3mx^3 + abe^3m^3 + 16ace^3m^2x + 8b^2e^3m^2x - 6bcde^2m^2x + 42bce^3mx^2 - 18c^2de^2mx^2 + 12c^2e^3x^3 + 9abe^3m^2 - 2acde^2m^2 + 38ace^3mx - b^2de^2m^2 + 19b^2e^3mx - 30bcde^2mx + 24bce^3x^2 + 12c^2d^2emx - 12c^2de^2x^2 + 26abe^3m - 14acde^2m + 24ace^3x - 7b^2de^2m + 12b^2e^3x + 6bcd^2em - 24bcde^2x + 12c^2d^2ex + 24abe^3 - 24acde^2 - 12b^2de^2 + 24bcd^2e - 12c^2d^3\right)(ex+d)^{m+1}}{\left(m^4 + 10m^3 + 35m^2 + 50m + 24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x)

```
[Out] (e*x+d)^(m+1)*(2*c^2*e^3*m^3*x^3+3*b*c*e^3*m^3*x^2+12*c^2*e^3*m^2*x^3+2*a*c
*e^3*m^3*x+b^2*e^3*m^3*x+21*b*c*e^3*m^2*x^2-6*c^2*d*e^2*m^2*x^2+22*c^2*e^3*
m*x^3+a*b*e^3*m^3+16*a*c*e^3*m^2*x+8*b^2*e^3*m^2*x-6*b*c*d*e^2*m^2*x+42*b*c
*e^3*m*x^2-18*c^2*d*e^2*m*x^2+12*c^2*e^3*x^3+9*a*b*e^3*m^2-2*a*c*d*e^2*m^2+
38*a*c*e^3*m*x-b^2*d*e^2*m^2+19*b^2*e^3*m*x-30*b*c*d*e^2*m*x+24*b*c*e^3*x^2
+12*c^2*d^2*e*m*x-12*c^2*d*e^2*x^2+26*a*b*e^3*m-14*a*c*d*e^2*m+24*a*c*e^3*x
-7*b^2*d*e^2*m+12*b^2*e^3*x+6*b*c*d^2*e*m-24*b*c*d*e^2*x+12*c^2*d^2*e*x+24*
a*b*e^3-24*a*c*d*e^2-12*b^2*d*e^2+24*b*c*d^2*e-12*c^2*d^3)/e^4/(m^4+10*m^3+
35*m^2+50*m+24)
```

maxima [B] time = 0.55, size = 287, normalized size = 2.01

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m b^2}{\left(m^2+3m+2\right)e^2}+\frac{2\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m ac}{\left(m^2+3m+2\right)e^2}+\frac{(ex+d)^{m+1}ab}{e(m+1)}+\frac{3\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m bc}{\left(m^3+6m^2+11m+6\right)e^3}+\frac{2\left(\left(m^3+6m^2+11m+6\right)e^4x^4+\left(m^3+3m^2+2m\right)de^3x^3-3\left(m^2+m\right)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m c^2}{\left(m^4+10m^3+35m^2+50m+24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*b^2/((m^2 + 3*m + 2)*e^2) + 2
*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a*c/((m^2 + 3*m + 2)*e^2) +
(e*x + d)^(m + 1)*a*b/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*
d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*b*c/((m^3 + 6*m^2 + 11*m + 6)*
e^3) + 2*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3
- 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*c^2/((m^4 + 10
*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.25, size = 554, normalized size = 3.87

$$\frac{x\,(d+e\,x)^m\,\left(b^2\,d\,e^3\,m^3+7\,b^2\,d\,e^3\,m^2+12\,b^2\,d\,e^3\,m-6\,b\,c\,d^2\,e^2\,m^2-24\,b\,c\,d^2\,e^2\,m+a\,b\,e^4\,m^3+9\,a\,b\,e^4\,m^2+26\,a\,b\,e^4\,m+24\,a\,b\,e^4+12\,c^2\,d^3\,e\,m+2\,a\,c\,d\,e^3\,m^3+14\,a\,c\,d\,e^3\,m^2+24\,a\,c\,d\,e^3\,m\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}-\frac{(d+e\,x)^m\,\left(b^2\,d^2\,e^2\,m^2+7\,b^2\,d^2\,e^2\,m+12\,b^2\,d^2\,e^2-6\,b\,c\,d^3\,e\,m-24\,b\,c\,d^3\,e-a\,b\,d\,e^3\,m^3-9\,a\,b\,d\,e^3\,m^2-26\,a\,b\,d\,e^3\,m-24\,a\,b\,d\,e^3+12\,c^2\,d^4+2\,a\,c\,d^2\,e^2\,m^2+14\,a\,c\,d^2\,e^2\,m+24\,a\,c\,d^2\,e^2\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{2\,c^2\,x^4\,(d+e\,x)^m\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{x^2\,(m+1)\,(d+e\,x)^m\,\left(b^2\,e^2\,m^2+7\,b^2\,e^2\,m+12\,b^2\,e^2+3\,b\,c\,d\,e\,m^2+12\,b\,c\,d\,e\,m-6\,c^2\,d^2\,m+2\,a\,c\,e^2\,m^2+14\,a\,c\,e^2\,m+24\,a\,c\,e^2\right)}{e^2\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{c\,x^3\,(d+e\,x)^m\,(12\,b\,e+3\,b\,e\,m+2\,c\,d\,m)\,\left(m^2+3\,m+2\right)}{e\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x)
```

```
[Out] (x*(d + e*x)^m*(24*a*b*e^4 + 7*b^2*d*e^3*m^2 + b^2*d*e^3*m^3 + 26*a*b*e^4*m
 + 9*a*b*e^4*m^2 + a*b*e^4*m^3 + 12*b^2*d*e^3*m + 12*c^2*d^3*e*m + 14*a*c*d
*e^3*m^2 + 2*a*c*d*e^3*m^3 - 24*b*c*d^2*e^2*m - 6*b*c*d^2*e^2*m^2 + 24*a*c*
d*e^3*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) - ((d + e*x)^m*(12*c^2*
d^4 + 12*b^2*d^2*e^2 + 7*b^2*d^2*e^2*m - 24*a*b*d*e^3 - 24*b*c*d^3*e + b^2*
d^2*e^2*m^2 + 24*a*c*d^2*e^2 - 9*a*b*d*e^3*m^2 - a*b*d*e^3*m^3 + 14*a*c*d^2
*e^2*m + 2*a*c*d^2*e^2*m^2 - 26*a*b*d*e^3*m - 6*b*c*d^3*e*m))/(e^4*(50*m +
35*m^2 + 10*m^3 + m^4 + 24)) + (2*c^2*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 +
 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24) + (x^2*(m + 1)*(d + e*x)^m*(12*b^2
*e^2 + 7*b^2*e^2*m - 6*c^2*d^2*m + b^2*e^2*m^2 + 24*a*c*e^2 + 14*a*c*e^2*m
+ 2*a*c*e^2*m^2 + 12*b*c*d*e*m + 3*b*c*d*e*m^2))/(e^2*(50*m + 35*m^2 + 10*m
^3 + m^4 + 24)) + (c*x^3*(d + e*x)^m*(12*b*e + 3*b*e*m + 2*c*d*m)*(3*m + m^
2 + 2))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.71, size = 4760, normalized size = 33.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((d**m*(a*b*x + a*c*x**2 + b**2*x**2/2 + b*c*x**3 + c**2*x**4/2),
Eq(e, 0)), (-2*a*b*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*
e**7*x**3) - 2*a*c*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
6*e**7*x**3) - 6*a*c*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2
+ 6*e**7*x**3) - b**2*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2
 + 6*e**7*x**3) - 3*b**2*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x
**2 + 6*e**7*x**3) - 6*b*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6
```

```
*x**2 + 6*e**7*x**3) - 18*b*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) - 18*b*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x
+ 18*d*e**6*x**2 + 6*e**7*x**3) + 12*c**2*d**3*log(d/e + x)/(6*d**3*e**4 +
18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 22*c**2*d**3/(6*d**3*e**4
+ 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 36*c**2*d**2*e*x*log(d/e
 + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 54*c*
*2*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) +
 36*c**2*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6
*x**2 + 6*e**7*x**3) + 36*c**2*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*x +
18*d*e**6*x**2 + 6*e**7*x**3) + 12*c**2*e**3*x**3*log(d/e + x)/(6*d**3*e**4
 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-a*b*e**3/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*a*c*d*e**2/(2*d**2*e**4 + 4*d*e
**5*x + 2*e**6*x**2) - 4*a*c*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2
) - b**2*d*e**2/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*b**2*e**3*x/(2
*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 6*b*c*d**2*e*log(d/e + x)/(2*d**2*
e**4 + 4*d*e**5*x + 2*e**6*x**2) + 9*b*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x +
 2*e**6*x**2) + 12*b*c*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 12*b*c*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 6*b
*c*e**3*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*c**
2*d**3*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 18*c**2*d**3
/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 24*c**2*d**2*e*x*log(d/e + x)/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 24*c**2*d**2*e*x/(2*d**2*e**4 + 4
*d*e**5*x + 2*e**6*x**2) - 12*c**2*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 +
4*d*e**5*x + 2*e**6*x**2) + 4*c**2*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2), Eq(m, -3)), (-a*b*e**3/(d*e**4 + e**5*x) + 2*a*c*d*e**2*log(d/e
 + x)/(d*e**4 + e**5*x) + 2*a*c*d*e**2/(d*e**4 + e**5*x) + 2*a*c*e**3*x*log
(d/e + x)/(d*e**4 + e**5*x) + b**2*d*e**2*log(d/e + x)/(d*e**4 + e**5*x) +
b**2*d*e**2/(d*e**4 + e**5*x) + b**2*e**3*x*log(d/e + x)/(d*e**4 + e**5*x)
- 6*b*c*d**2*e*log(d/e + x)/(d*e**4 + e**5*x) - 6*b*c*d**2*e/(d*e**4 + e**5
*x) - 6*b*c*d*e**2*x*log(d/e + x)/(d*e**4 + e**5*x) + 3*b*c*e**3*x**2/(d*e*
*4 + e**5*x) + 6*c**2*d**3*log(d/e + x)/(d*e**4 + e**5*x) + 6*c**2*d**3/(d*
e**4 + e**5*x) + 6*c**2*d**2*e*x*log(d/e + x)/(d*e**4 + e**5*x) - 3*c**2*d*
e**2*x**2/(d*e**4 + e**5*x) + c**2*e**3*x**3/(d*e**4 + e**5*x), Eq(m, -2)),
 (a*b*log(d/e + x)/e - 2*a*c*d*log(d/e + x)/e**2 + 2*a*c*x/e - b**2*d*log(d
/e + x)/e**2 + b**2*x/e + 3*b*c*d**2*log(d/e + x)/e**3 - 3*b*c*d*x/e**2 + 3
*b*c*x**2/(2*e) - 2*c**2*d**3*log(d/e + x)/e**4 + 2*c**2*d**2*x/e**3 - c**2
*d*x**2/e**2 + 2*c**2*x**3/(3*e), Eq(m, -1)), (a*b*d*e**3*m**3*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9*a*b*d*
e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
 + 24*e**4) + 26*a*b*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*b*d*e**3*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a*b*e**4*m**3*x*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9*a
*b*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + 26*a*b*e**4*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*b*e**4*x*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*a*c*d**2*e**2*m*
*2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) - 14*a*c*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) - 24*a*c*d**2*e**2*(d + e*x)**m/(e**4*m**4 + 10
*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*a*c*d*e**3*m**3*x*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
14*a*c*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 24*a*c*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*a*c*e**4*m**3*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 16*
a*c*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 38*a*c*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*c*e**4*x**2*(d + e*x)**m
```

```
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - b**2*d**
2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) - 7*b**2*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*b**2*d**2*e**2*(d + e*x)**m/(e**4
*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**2*d*e**3*m*
*3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) + 7*b**2*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 12*b**2*d*e**3*m*x*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**2*e**4*m**3*x**
2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e*
*4) + 8*b**2*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**
4*m**2 + 50*e**4*m + 24*e**4) + 19*b**2*e**4*m*x**2*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*b**2*e**4*x**2*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
 + 6*b*c*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 24*b*c*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*b*c*d**2*e**2*m**2*x*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 24*b*c*d
**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 3*b*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 15*b*c*d*e**3*m**2*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*
b*c*d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 3*b*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 21*b*c*e**4*m**2*x**3*(d + e
*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 42
*b*c*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4) + 24*b*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*c**2*d**4*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*c**2*d**3*e*m
*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) - 6*c**2*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*c**2*d**2*e**2*m*x**2*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*c**2*d*
e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + 6*c**2*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*c**2*d*e**3*m*x**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*c
**2*e**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 12*c**2*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 22*c**2*e**4*m*x**4*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 1
2*c**2*e**4*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4), True))
```

3.1439 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=120

$$-\frac{b(d+ex)^8(-2aBe-Abe+3bBd)}{8e^4}+\frac{(d+ex)^7(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{(d+ex)^6(bd-ae)^2(Bd-Ae)}{6e^4}+\frac{b^2B}{}$$

Rubi [A] time = 0.29, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$-\frac{b(d+ex)^8(-2aBe-Abe+3bBd)}{8e^4}+\frac{(d+ex)^7(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{(d+ex)^6(bd-ae)^2(Bd-Ae)}{6e^4}+\frac{b^2B(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^6)/(6*e^4) + ((b*d - a*e)*(3*b*B*d -
2*A*b*e - a*B*e)*(d + e*x)^7)/(7*e^4) - (b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
 e*x)^8)/(8*e^4) + (b^2*B*(d + e*x)^9)/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)dx &= \int (a+bx)^2(A+Bx)(d+ex)^5\,dx\\
&= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^5}{e^3}+\frac{(-bd+ae)(-3bBd+2Abe}{e^3}\right.\\
&= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^6}{6e^4}+\frac{(bd-ae)(3bBd-2Abe-aBe)(d}{7e^4}
\end{aligned}$$

Mathematica [B] time = 0.11, size = 330, normalized size = 2.75

$$\frac{1}{6}e^2x^6\left(a^2e^2(Ae+5Bd)+10abde(Ae+2Bd)+10b^2d^2(Ae+Bd)\right)+dex^5\left(a^2e^2(Ae+2Bd)+4abde(Ae+Bd)+b^2d^2(2Ae+Bd)\right)+\frac{1}{4}d^2x^4\left(10a^2e^2(Ae+Bd)+10abde(2Ae+Bd)+b^2d^2(5Ae+Bd)\right)+\frac{1}{3}d^3x^3\left(A\left(10a^2e^2+10abde+b^2d^2\right)+aBd(5ae+2bd)\right)+\frac{1}{7}e^3x^7\left(a^2Be^2+2abe(Ae+5Bd)+5b^2d(Ae+2Bd)\right)+a^2Ad^5x+\frac{1}{2}ad^4x^2(5aAe+aBd+2Abd)+\frac{1}{8}be^4x^8(2aBe+Abe+5bBd)+\frac{1}{9}b^2Be^5x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^5*x + (a*d^4*(2*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (d^3*(a*B*d*(2*b*
d + 5*a*e) + A*(b^2*d^2 + 10*a*b*d*e + 10*a^2*e^2))*x^3)/3 + (d^2*(10*a^2*e
^2*(B*d + A*e) + 10*a*b*d*e*(B*d + 2*A*e) + b^2*d^2*(B*d + 5*A*e))*x^4)/4 +
 d*e*(4*a*b*d*e*(B*d + A*e) + a^2*e^2*(2*B*d + A*e) + b^2*d^2*(B*d + 2*A*e)
```

```
)*x^5 + (e^2*(10*b^2*d^2*(B*d + A*e) + 10*a*b*d*e*(2*B*d + A*e) + a^2*e^2*(
5*B*d + A*e))*x^6)/6 + (e^3*(a^2*B*e^2 + 5*b^2*d*(2*B*d + A*e) + 2*a*b*e*(5
*B*d + A*e))*x^7)/7 + (b*e^4*(5*b*B*d + A*b*e + 2*a*B*e)*x^8)/8 + (b^2*B*e^
5*x^9)/9
```

IntegrateAlgebraic [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B]   time = 0.36, size = 463, normalized size = 3.86

$$\frac{1}{9}x^9e^5b^2B+\frac{5}{8}x^8e^4db^2B+\frac{1}{4}x^8e^5baB+\frac{1}{8}x^8e^5b^2A+\frac{10}{7}x^7e^3d^2b^2B+\frac{10}{7}x^7e^4dbaB+\frac{1}{7}x^7e^5a^2B+\frac{5}{7}x^7e^4db^2A+\frac{2}{7}x^7e^5baA+\frac{5}{3}x^6e^2d^3b^2B+\frac{10}{3}x^6e^3d^2baB+\frac{5}{6}x^6e^4da^2B+\frac{5}{3}x^6e^3d^2b^2A+\frac{5}{3}x^6e^4dbaA+\frac{1}{6}x^6e^5a^2A+x^5ed^4b^2B+4x^5e^2d^3baB+2x^5e^3d^2a^2B+2x^5e^2d^3b^2A+4x^5e^3d^2baA+x^5e^4da^2A+\frac{1}{4}x^4d^5b^2B+\frac{5}{2}x^4ed^4baB+\frac{5}{2}x^4e^2d^3a^2B+\frac{5}{4}x^4ed^4b^2A+5x^4e^2d^3baA+\frac{5}{2}x^4e^3d^2a^2A+\frac{2}{3}x^3d^5baB+\frac{5}{3}x^3ed^4a^2B+\frac{1}{3}x^3d^5b^2A+\frac{10}{3}x^3ed^4baA+\frac{10}{3}x^3e^2d^3a^2A+\frac{1}{2}x^2d^5a^2B+x^2d^5baA+\frac{5}{2}x^2ed^4a^2A+xd^5a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*b^2*B + 5/8*x^8*e^4*d*b^2*B + 1/4*x^8*e^5*b*a*B + 1/8*x^8*e^5*b
^2*A + 10/7*x^7*e^3*d^2*b^2*B + 10/7*x^7*e^4*d*b*a*B + 1/7*x^7*e^5*a^2*B +
5/7*x^7*e^4*d*b^2*A + 2/7*x^7*e^5*b*a*A + 5/3*x^6*e^2*d^3*b^2*B + 10/3*x^6*
e^3*d^2*b*a*B + 5/6*x^6*e^4*d*a^2*B + 5/3*x^6*e^3*d^2*b^2*A + 5/3*x^6*e^4*d
*b*a*A + 1/6*x^6*e^5*a^2*A + x^5*e*d^4*b^2*B + 4*x^5*e^2*d^3*b*a*B + 2*x^5*
e^3*d^2*a^2*B + 2*x^5*e^2*d^3*b^2*A + 4*x^5*e^3*d^2*b*a*A + x^5*e^4*d*a^2*A
 + 1/4*x^4*d^5*b^2*B + 5/2*x^4*e*d^4*b*a*B + 5/2*x^4*e^2*d^3*a^2*B + 5/4*x^
4*e*d^4*b^2*A + 5*x^4*e^2*d^3*b*a*A + 5/2*x^4*e^3*d^2*a^2*A + 2/3*x^3*d^5*b
*a*B + 5/3*x^3*e*d^4*a^2*B + 1/3*x^3*d^5*b^2*A + 10/3*x^3*e*d^4*b*a*A + 10/
3*x^3*e^2*d^3*a^2*A + 1/2*x^2*d^5*a^2*B + x^2*d^5*b*a*A + 5/2*x^2*e*d^4*a^2
*A + x*d^5*a^2*A
```

giac [B]   time = 0.15, size = 445, normalized size = 3.71

$$\frac{1}{9}Bb^2x^9e^5+\frac{5}{8}Bb^2dx^8e^4+\frac{10}{7}Bb^2d^2x^7e^3+\frac{5}{3}Bb^2d^3x^6e^2+Bb^2d^4x^5e+\frac{1}{4}Bb^2d^5x^4+\frac{1}{4}Babx^8e^5+\frac{1}{8}Ab^2x^8e^5+\frac{10}{7}Babdx^7e^4+\frac{5}{7}Ab^2dx^7e^4+\frac{10}{3}Babd^2x^6e^3+\frac{5}{3}Ab^2d^2x^6e^3+4Babd^3x^5e^2+2Ab^2d^3x^5e^2+\frac{5}{2}Babd^4x^4e+\frac{5}{4}Ab^2d^4x^4e+\frac{2}{3}Babd^5x^3+\frac{1}{3}Ab^2d^5x^3+\frac{1}{7}Ba^2x^7e^5+\frac{2}{7}Aabx^7e^5+\frac{5}{6}Ba^2dx^6e^4+\frac{5}{3}Aabdx^6e^4+2Ba^2d^2x^5e^3+4Aabd^2x^5e^3+\frac{5}{2}Ba^2d^3x^4e^2+5Aabd^3x^4e^2+\frac{5}{3}Ba^2d^4x^3e+\frac{10}{3}Aabd^4x^3e+\frac{1}{2}Ba^2d^5x^2+Aabd^5x^2+\frac{1}{6}Aa^2x^6e^5+Aa^2dx^5e^4+\frac{5}{2}Aa^2d^2x^4e^3+\frac{10}{3}Aa^2d^3x^3e^2+\frac{5}{2}Aa^2d^4x^2e+Aa^2d^5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/9*B*b^2*x^9*e^5 + 5/8*B*b^2*d*x^8*e^4 + 10/7*B*b^2*d^2*x^7*e^3 + 5/3*B*b^
2*d^3*x^6*e^2 + B*b^2*d^4*x^5*e + 1/4*B*b^2*d^5*x^4 + 1/4*B*a*b*x^8*e^5 + 1
/8*A*b^2*x^8*e^5 + 10/7*B*a*b*d*x^7*e^4 + 5/7*A*b^2*d*x^7*e^4 + 10/3*B*a*b*
d^2*x^6*e^3 + 5/3*A*b^2*d^2*x^6*e^3 + 4*B*a*b*d^3*x^5*e^2 + 2*A*b^2*d^3*x^5
*e^2 + 5/2*B*a*b*d^4*x^4*e + 5/4*A*b^2*d^4*x^4*e + 2/3*B*a*b*d^5*x^3 + 1/3*
A*b^2*d^5*x^3 + 1/7*B*a^2*x^7*e^5 + 2/7*A*a*b*x^7*e^5 + 5/6*B*a^2*d*x^6*e^4
 + 5/3*A*a*b*d*x^6*e^4 + 2*B*a^2*d^2*x^5*e^3 + 4*A*a*b*d^2*x^5*e^3 + 5/2*B*
a^2*d^3*x^4*e^2 + 5*A*a*b*d^3*x^4*e^2 + 5/3*B*a^2*d^4*x^3*e + 10/3*A*a*b*d^
4*x^3*e + 1/2*B*a^2*d^5*x^2 + A*a*b*d^5*x^2 + 1/6*A*a^2*x^6*e^5 + A*a^2*d*x
^5*e^4 + 5/2*A*a^2*d^2*x^4*e^3 + 10/3*A*a^2*d^3*x^3*e^2 + 5/2*A*a^2*d^4*x^2
*e + A*a^2*d^5*x
```

maple [B]   time = 0.05, size = 394, normalized size = 3.28

$$\frac{Bb^2e^5x^9}{9}+Aa^2d^5x+\frac{\left(2Babe^5+\left(Ae^5+5Bde^4\right)b^2\right)x^8}{8}+\frac{\left(Ba^2e^5+2\left(Ae^5+5Bde^4\right)ab+\left(5Ade^4+10Bd^2e^3\right)b^2\right)x^7}{7}+\frac{\left(\left(Ae^5+5Bde^4\right)a^2+2\left(5Ade^4+10Bd^2e^3\right)ab+\left(10Ad^2e^3+10Bd^3e^2\right)b^2\right)x^6}{6}+\frac{\left(\left(5Ade^4+10Bd^2e^3\right)a^2+2\left(10Ad^2e^3+10Bd^3e^2\right)ab+\left(10Ad^3e^2+5Bd^4e\right)b^2\right)x^5}{5}+\frac{\left(\left(10Ad^2e^3+10Bd^3e^2\right)a^2+2\left(10Ad^3e^2+5Bd^4e\right)ab+\left(5Ad^4e+Bd^5\right)b^2\right)x^4}{4}+\frac{\left(Ab^2d^5+\left(10Ad^3e^2+5Bd^4e\right)a^2+2\left(5Ad^4e+Bd^5\right)ab\right)x^3}{3}+\frac{\left(2Aabd^5+\left(5Ad^4e+Bd^5\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/9*B*e^5*b^2*x^9+1/8*((A*e^5+5*B*d*e^4)*b^2+2*B*e^5*a*b)*x^8+1/7*((5*A*d*e
^4+10*B*d^2*e^3)*b^2+2*(A*e^5+5*B*d*e^4)*a*b+B*e^5*a^2)*x^7+1/6*((10*A*d^2*
e^3+10*B*d^3*e^2)*b^2+2*(5*A*d*e^4+10*B*d^2*e^3)*a*b+(A*e^5+5*B*d*e^4)*a^2)
*x^6+1/5*((10*A*d^3*e^2+5*B*d^4*e)*b^2+2*(10*A*d^2*e^3+10*B*d^3*e^2)*a*b+(5
*A*d*e^4+10*B*d^2*e^3)*a^2)*x^5+1/4*((5*A*d^4*e+B*d^5)*b^2+2*(10*A*d^3*e^2+
5*B*d^4*e)*a*b+(10*A*d^2*e^3+10*B*d^3*e^2)*a^2)*x^4+1/3*(A*d^5*b^2+2*(5*A*d
^4*e+B*d^5)*a*b+(10*A*d^3*e^2+5*B*d^4*e)*a^2)*x^3+1/2*(2*A*d^5*a*b+(5*A*d^4
*e+B*d^5)*a^2)*x^2+A*d^5*a^2*x
```

maxima [**B**] time = 0.58, size = 369, normalized size = 3.08

$$\frac{1}{9}Bb^2e^5x^9 + Aa^2d^5x + \frac{1}{8}\left(5Bb^2de^4 + \left(2Bab + Ab^2\right)e^5\right)x^8 + \frac{1}{7}\left(10Bb^2d^2e^3 + 5\left(2Bab + Ab^2\right)de^4 + \left(Ba^2 + 2Aab\right)e^5\right)x^7 + \frac{1}{6}\left(10Bb^2d^3e^2 + Aa^2e^5 + 10\left(2Bab + Ab^2\right)d^2e^3 + 5\left(Ba^2 + 2Aab\right)de^4\right)x^6 + \left(Bb^2d^4e + Aa^2de^4 + 2\left(2Bab + Ab^2\right)d^3e^2 + 2\left(Ba^2 + 2Aab\right)d^2e^3\right)x^5 + \frac{1}{4}\left(Bb^2d^5 + 10Aa^2d^2e^3 + 5\left(2Bab + Ab^2\right)d^4e + 10\left(Ba^2 + 2Aab\right)d^3e^2\right)x^4 + \frac{1}{3}\left(10Aa^2d^3e^2 + \left(2Bab + Ab^2\right)d^5 + 5\left(Ba^2 + 2Aab\right)d^4e\right)x^3 + \frac{1}{2}\left(5Aa^2d^4e + \left(Ba^2 + 2Aab\right)d^5\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/9*B*b^2*e^5*x^9 + A*a^2*d^5*x + 1/8*(5*B*b^2*d*e^4 + (2*B*a*b + A*b^2)*e^
5)*x^8 + 1/7*(10*B*b^2*d^2*e^3 + 5*(2*B*a*b + A*b^2)*d*e^4 + (B*a^2 + 2*A*a
*b)*e^5)*x^7 + 1/6*(10*B*b^2*d^3*e^2 + A*a^2*e^5 + 10*(2*B*a*b + A*b^2)*d^2
*e^3 + 5*(B*a^2 + 2*A*a*b)*d*e^4)*x^6 + (B*b^2*d^4*e + A*a^2*d*e^4 + 2*(2*B
*a*b + A*b^2)*d^3*e^2 + 2*(B*a^2 + 2*A*a*b)*d^2*e^3)*x^5 + 1/4*(B*b^2*d^5 +
 10*A*a^2*d^2*e^3 + 5*(2*B*a*b + A*b^2)*d^4*e + 10*(B*a^2 + 2*A*a*b)*d^3*e^
2)*x^4 + 1/3*(10*A*a^2*d^3*e^2 + (2*B*a*b + A*b^2)*d^5 + 5*(B*a^2 + 2*A*a*b
)*d^4*e)*x^3 + 1/2*(5*A*a^2*d^4*e + (B*a^2 + 2*A*a*b)*d^5)*x^2
```

mupad [**B**] time = 0.17, size = 381, normalized size = 3.18

$$x^5\left(2Ba^2d^2e^3 + Aa^2de^4 + 4Babd^3e^2 + 4Aabd^2e^3 + Bb^2d^4e + 2Ab^2d^3e^2\right) + x^4\left(\frac{5Ba^2d^3e^2}{2} + \frac{5Aa^2d^2e^3}{2} + \frac{5Babd^4e}{2} + 5Aabd^3e^2 + \frac{Bb^2d^5}{4} + \frac{5Ab^2d^4e}{4}\right) + x^6\left(\frac{5Ba^2de^4}{6} + \frac{Aa^2e^5}{6} + \frac{10Babd^2e^3}{3} + \frac{5Aabde^4}{3} + \frac{5Bb^2d^3e^2}{3} + \frac{5Ab^2d^2e^3}{3}\right) + x^3\left(\frac{5Ba^2d^4e}{3} + \frac{10Aa^2d^3e^2}{3} + \frac{2Babd^5}{3} + \frac{10Aabd^4e}{3} + \frac{Ab^2d^5}{3}\right) + x^7\left(\frac{Ba^2e^5}{7} + \frac{10Babde^4}{7} + \frac{2Aabe^5}{7} + \frac{10Bb^2d^2e^3}{7} + \frac{5Ab^2de^4}{7}\right) + Aa^2d^5x + \frac{ad^4x^2\left(5Aae + 2Abd + Bad\right)}{2} + \frac{be^4x^8\left(Abe + 2Bae + 5Bbd\right)}{8} + \frac{Bb^2e^5x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^5*(A*a^2*d*e^4 + B*b^2*d^4*e + 2*A*b^2*d^3*e^2 + 2*B*a^2*d^2*e^3 + 4*A*a*
b*d^2*e^3 + 4*B*a*b*d^3*e^2) + x^4*((B*b^2*d^5)/4 + (5*A*b^2*d^4*e)/4 + (5*
A*a^2*d^2*e^3)/2 + (5*B*a^2*d^3*e^2)/2 + (5*B*a*b*d^4*e)/2 + 5*A*a*b*d^3*e^
2) + x^6*((A*a^2*e^5)/6 + (5*B*a^2*d*e^4)/6 + (5*A*b^2*d^2*e^3)/3 + (5*B*b^
2*d^3*e^2)/3 + (5*A*a*b*d*e^4)/3 + (10*B*a*b*d^2*e^3)/3) + x^3*((A*b^2*d^5)
/3 + (2*B*a*b*d^5)/3 + (5*B*a^2*d^4*e)/3 + (10*A*a^2*d^3*e^2)/3 + (10*A*a*b
*d^4*e)/3) + x^7*((B*a^2*e^5)/7 + (2*A*a*b*e^5)/7 + (5*A*b^2*d*e^4)/7 + (10
*B*b^2*d^2*e^3)/7 + (10*B*a*b*d*e^4)/7) + A*a^2*d^5*x + (a*d^4*x^2*(5*A*a*e
 + 2*A*b*d + B*a*d))/2 + (b*e^4*x^8*(A*b*e + 2*B*a*e + 5*B*b*d))/8 + (B*b^2
*e^5*x^9)/9
```

sympy [**B**] time = 0.13, size = 481, normalized size = 4.01

$$Aa^2d^5x + \frac{Bb^2e^5x^9}{9} + x^8\left(\frac{Ab^2e^5}{8} + \frac{Babe^5}{4} + \frac{5Bb^2de^4}{8}\right) + x^7\left(\frac{2Aabe^5}{7} + \frac{5Ab^2de^4}{7} + \frac{Ba^2e^5}{7} + \frac{10Babde^4}{7} + \frac{10Bb^2d^2e^3}{7}\right) + x^6\left(\frac{Aa^2e^5}{6} + \frac{5Aabde^4}{3} + \frac{5Ab^2d^2e^3}{3} + \frac{5Ba^2de^4}{6} + \frac{10Babd^2e^3}{3} + \frac{5Bb^2d^3e^2}{3}\right) + x^5\left(Aa^2de^4 + 4Aabd^2e^3 + 2Ab^2d^3e^2 + 2Ba^2d^2e^3 + 4Babd^3e^2 + Bb^2d^4e\right) + x^4\left(\frac{5Aa^2d^2e^3}{2} + 5Aabd^3e^2 + \frac{5Ab^2d^4e}{4} + \frac{5Ba^2d^3e^2}{2} + \frac{5Babd^4e}{2} + \frac{Bb^2d^5}{4}\right) + x^3\left(\frac{10Aa^2d^3e^2}{3} + \frac{10Aabd^4e}{3} + \frac{Ab^2d^5}{3} + \frac{5Ba^2d^4e}{3} + \frac{2Babd^5}{3}\right) + x^2\left(\frac{5Aa^2d^4e}{2} + Aabd^5 + \frac{Ba^2d^5}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**5*x + B*b**2*e**5*x**9/9 + x**8*(A*b**2*e**5/8 + B*a*b*e**5/4 + 5
*B*b**2*d*e**4/8) + x**7*(2*A*a*b*e**5/7 + 5*A*b**2*d*e**4/7 + B*a**2*e**5/
7 + 10*B*a*b*d*e**4/7 + 10*B*b**2*d**2*e**3/7) + x**6*(A*a**2*e**5/6 + 5*A*
a*b*d*e**4/3 + 5*A*b**2*d**2*e**3/3 + 5*B*a**2*d*e**4/6 + 10*B*a*b*d**2*e**
3/3 + 5*B*b**2*d**3*e**2/3) + x**5*(A*a**2*d*e**4 + 4*A*a*b*d**2*e**3 + 2*A
*b**2*d**3*e**2 + 2*B*a**2*d**2*e**3 + 4*B*a*b*d**3*e**2 + B*b**2*d**4*e) +
 x**4*(5*A*a**2*d**2*e**3/2 + 5*A*a*b*d**3*e**2 + 5*A*b**2*d**4*e/4 + 5*B*a
**2*d**3*e**2/2 + 5*B*a*b*d**4*e/2 + B*b**2*d**5/4) + x**3*(10*A*a**2*d**3*
e**2/3 + 10*A*a*b*d**4*e/3 + A*b**2*d**5/3 + 5*B*a**2*d**4*e/3 + 2*B*a*b*d*
*5/3) + x**2*(5*A*a**2*d**4*e/2 + A*a*b*d**5 + B*a**2*d**5/2)
```

3.1440 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) \, dx$

Optimal. Leaf size=120

$$-\frac{b(d+ex)^7(-2aBe-Abe+3bBd)}{7e^4}+\frac{(d+ex)^6(bd-ae)(-aBe-2Abe+3bBd)}{6e^4}-\frac{(d+ex)^5(bd-ae)^2(Bd-Ae)}{5e^4}+$$

Rubi [A] time = 0.21, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$-\frac{b(d+ex)^7(-2aBe-Abe+3bBd)}{7e^4}+\frac{(d+ex)^6(bd-ae)(-aBe-2Abe+3bBd)}{6e^4}-\frac{(d+ex)^5(bd-ae)^2(Bd-Ae)}{5e^4}+\frac{b^2B(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^5)/(5*e^4) + ((b*d - a*e)*(3*b*B*d -
2*A*b*e - a*B*e)*(d + e*x)^6)/(6*e^4) - (b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
 e*x)^7)/(7*e^4) + (b^2*B*(d + e*x)^8)/(8*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) \, dx &= \int (a+bx)^2(A+Bx)(d+ex)^4 \, dx \\
&= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^4}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right. \\
&= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^5}{5e^4}+\frac{(bd-ae)(3bBd-2Abe-aBe)}{6e^4}
\end{aligned}$$

Mathematica [B] time = 0.10, size = 283, normalized size = 2.36

$$\frac{1}{5}ex^5\left(a^2e^2(Ae+4Bd)+4abde(2Ae+3Bd)+2b^2d^2(3Ae+2Bd)\right)+\frac{1}{4}dx^4\left(2a^2e^2(2Ae+3Bd)+4abde(3Ae+2Bd)+b^2d^2(4Ae+Bd)\right)+\frac{1}{3}d^2x^3\left(A\left(6a^2e^2+8abde+b^2d^2\right)+2aBd(2ae+bd)\right)+\frac{1}{6}e^2x^6\left(a^2Be^2+2abe(Ae+4Bd)+2b^2d(2Ae+3Bd)\right)+a^2Ad^4x+\frac{1}{2}ad^3x^2(4aAe+aBd+2Abd)+\frac{1}{7}be^3x^7(2aBe+Abe+4bBd)+\frac{1}{8}b^2Be^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^4*x + (a*d^3*(2*A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (d^2*(2*a*B*d*(b*
d + 2*a*e) + A*(b^2*d^2 + 8*a*b*d*e + 6*a^2*e^2))*x^3)/3 + (d*(2*a^2*e^2*(3
*B*d + 2*A*e) + 4*a*b*d*e*(2*B*d + 3*A*e) + b^2*d^2*(B*d + 4*A*e))*x^4)/4 +
 (e*(a^2*e^2*(4*B*d + A*e) + 4*a*b*d*e*(3*B*d + 2*A*e) + 2*b^2*d^2*(2*B*d +
```

```
3*A*e))*x^5)/5 + (e^2*(a^2*B*e^2 + 2*a*b*e*(4*B*d + A*e) + 2*b^2*d*(3*B*d
+ 2*A*e))*x^6)/6 + (b*e^3*(4*b*B*d + A*b*e + 2*a*B*e)*x^7)/7 + (b^2*B*e^4*x
^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.37, size = 374, normalized size = 3.12

$$\frac{1}{8}x^8e^4b^2B+\frac{4}{7}x^7e^3db^2B+\frac{2}{7}x^7e^4baB+\frac{1}{7}x^7e^4b^2A+x^6e^2d^2b^2B+\frac{4}{3}x^6e^3dbaB+\frac{1}{6}x^6e^4a^2B+\frac{2}{3}x^6e^3db^2A+\frac{1}{3}x^6e^4baA+\frac{4}{5}x^5ed^3b^2B+\frac{12}{5}x^5e^2d^2baB+\frac{4}{5}x^5e^3da^2B+\frac{6}{5}x^5e^2d^2b^2A+\frac{8}{5}x^5e^3dbaA+\frac{1}{5}x^5e^4a^2A+\frac{1}{4}x^4d^4b^2B+2x^4ed^3baB+\frac{3}{2}x^4e^2d^2a^2B+x^4ed^3b^2A+3x^4e^2d^2baA+x^4e^3da^2A+\frac{2}{3}x^3d^4baB+\frac{4}{3}x^3ed^3a^2B+\frac{1}{3}x^3d^4b^2A+\frac{8}{3}x^3ed^3baA+2x^3e^2d^2a^2A+\frac{1}{2}x^2d^4a^2B+x^2d^4baA+2x^2ed^3a^2A+xd^4a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*b^2*B + 4/7*x^7*e^3*d*b^2*B + 2/7*x^7*e^4*b*a*B + 1/7*x^7*e^4*b
^2*A + x^6*e^2*d^2*b^2*B + 4/3*x^6*e^3*d*b*a*B + 1/6*x^6*e^4*a^2*B + 2/3*x^
6*e^3*d*b^2*A + 1/3*x^6*e^4*b*a*A + 4/5*x^5*e*d^3*b^2*B + 12/5*x^5*e^2*d^2*
b*a*B + 4/5*x^5*e^3*d*a^2*B + 6/5*x^5*e^2*d^2*b^2*A + 8/5*x^5*e^3*d*b*a*A +
 1/5*x^5*e^4*a^2*A + 1/4*x^4*d^4*b^2*B + 2*x^4*e*d^3*b*a*B + 3/2*x^4*e^2*d^
2*a^2*B + x^4*e*d^3*b^2*A + 3*x^4*e^2*d^2*b*a*A + x^4*e^3*d*a^2*A + 2/3*x^3
*d^4*b*a*B + 4/3*x^3*e*d^3*a^2*B + 1/3*x^3*d^4*b^2*A + 8/3*x^3*e*d^3*b*a*A
+ 2*x^3*e^2*d^2*a^2*A + 1/2*x^2*d^4*a^2*B + x^2*d^4*b*a*A + 2*x^2*e*d^3*a^2
*A + x*d^4*a^2*A
```

giac [B] time = 0.16, size = 362, normalized size = 3.02

$$\frac{1}{8}Bb^2x^8e^4+\frac{4}{7}Bb^2dx^7e^3+Bb^2d^2x^6e^2+\frac{4}{5}Bb^2d^3x^5e+\frac{1}{4}Bb^2d^4x^4+\frac{2}{7}Babx^7e^4+\frac{1}{7}Ab^2x^7e^4+\frac{4}{3}Babdx^6e^3+\frac{2}{3}Ab^2dx^6e^3+\frac{12}{5}Babd^2x^5e^2+\frac{6}{5}Ab^2d^2x^5e^2+2Babd^3x^4e+Ab^2d^3x^4e+\frac{2}{3}Babd^4x^3+\frac{1}{3}Ab^2d^4x^3+\frac{1}{6}Ba^2x^6e^4+\frac{1}{3}Aabx^6e^4+\frac{4}{5}Ba^2dx^5e^3+\frac{8}{5}Aabdx^5e^3+\frac{3}{2}Ba^2d^2x^4e^2+3Aabd^2x^4e^2+\frac{4}{3}Ba^2d^3x^3e+\frac{8}{3}Aabd^3x^3e+\frac{1}{2}Ba^2d^4x^2+Aabd^4x^2+\frac{1}{5}Aa^2x^5e^4+Aa^2dx^4e^3+2Aa^2d^2x^3e^2+2Aa^2d^3x^2e+Aa^2d^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^2*x^8*e^4 + 4/7*B*b^2*d*x^7*e^3 + B*b^2*d^2*x^6*e^2 + 4/5*B*b^2*d^3
*x^5*e + 1/4*B*b^2*d^4*x^4 + 2/7*B*a*b*x^7*e^4 + 1/7*A*b^2*x^7*e^4 + 4/3*B*
a*b*d*x^6*e^3 + 2/3*A*b^2*d*x^6*e^3 + 12/5*B*a*b*d^2*x^5*e^2 + 6/5*A*b^2*d^
2*x^5*e^2 + 2*B*a*b*d^3*x^4*e + A*b^2*d^3*x^4*e + 2/3*B*a*b*d^4*x^3 + 1/3*A
*b^2*d^4*x^3 + 1/6*B*a^2*x^6*e^4 + 1/3*A*a*b*x^6*e^4 + 4/5*B*a^2*d*x^5*e^3
+ 8/5*A*a*b*d*x^5*e^3 + 3/2*B*a^2*d^2*x^4*e^2 + 3*A*a*b*d^2*x^4*e^2 + 4/3*B
*a^2*d^3*x^3*e + 8/3*A*a*b*d^3*x^3*e + 1/2*B*a^2*d^4*x^2 + A*a*b*d^4*x^2 +
1/5*A*a^2*x^5*e^4 + A*a^2*d*x^4*e^3 + 2*A*a^2*d^2*x^3*e^2 + 2*A*a^2*d^3*x^2
*e + A*a^2*d^4*x
```

maple [B] time = 0.05, size = 319, normalized size = 2.66

$$\frac{Bb^2e^4x^8}{8}+Aa^2d^4x+\frac{\left(2Babe^4+\left(Ae^4+4Bde^3\right)b^2\right)x^7}{7}+\frac{\left(Ba^2e^4+2\left(Ae^4+4Bde^3\right)ab+\left(4Ade^3+6Bd^2e^2\right)b^2\right)x^6}{6}+\frac{\left(\left(Ae^4+4Bde^3\right)a^2+2\left(4Ade^3+6Bd^2e^2\right)ab+\left(6Ad^2e^2+4Bd^3e\right)b^2\right)x^5}{5}+\frac{\left(\left(4Ade^3+6Bd^2e^2\right)a^2+2\left(6Ad^2e^2+4Bd^3e\right)ab+\left(4Ad^3e+Bd^4\right)b^2\right)x^4}{4}+\frac{\left(Ab^2d^4+\left(6Ad^2e^2+4Bd^3e\right)a^2+2\left(4Ad^3e+Bd^4\right)ab\right)x^3}{3}+\frac{\left(2Aabd^4+\left(4Ad^3e+Bd^4\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/8*B*e^4*b^2*x^8+1/7*((A*e^4+4*B*d*e^3)*b^2+2*B*e^4*a*b)*x^7+1/6*((4*A*d*e
^3+6*B*d^2*e^2)*b^2+2*(A*e^4+4*B*d*e^3)*a*b+B*a^2*e^4)*x^6+1/5*((6*A*d^2*e^
2+4*B*d^3*e)*b^2+2*(4*A*d*e^3+6*B*d^2*e^2)*a*b+(A*e^4+4*B*d*e^3)*a^2)*x^5+1
/4*((4*A*d^3*e+B*d^4)*b^2+2*(6*A*d^2*e^2+4*B*d^3*e)*a*b+(4*A*d*e^3+6*B*d^2*
```

```
e^2)*a^2)*x^4+1/3*(A*d^4*b^2+2*(4*A*d^3*e+B*d^4)*a*b+(6*A*d^2*e^2+4*B*d^3*e
)*a^2)*x^3+1/2*(2*A*d^4*a*b+(4*A*d^3*e+B*d^4)*a^2)*x^2+A*d^4*a^2*x
```

maxima [B] time = 0.50, size = 304, normalized size = 2.53

$$\frac{1}{8}Bb^2e^4x^8 + Aa^2d^4x + \frac{1}{7}\left(4Bb^2de^3 + \left(2Bab + Ab^2\right)e^4\right)x^7 + \frac{1}{6}\left(6Bb^2d^2e^2 + 4\left(2Bab + Ab^2\right)de^3 + \left(Ba^2 + 2Aab\right)e^4\right)x^6 + \frac{1}{5}\left(4Bb^2d^3e + Aa^2e^4 + 6\left(2Bab + Ab^2\right)d^2e^2 + 4\left(Ba^2 + 2Aab\right)de^3\right)x^5 + \frac{1}{4}\left(Bb^2d^4 + 4Aa^2de^3 + 4\left(2Bab + Ab^2\right)d^3e + 6\left(Ba^2 + 2Aab\right)d^2e^2\right)x^4 + \frac{1}{3}\left(6Aa^2d^2e^2 + \left(2Bab + Ab^2\right)d^4 + 4\left(Ba^2 + 2Aab\right)d^3e\right)x^3 + \frac{1}{2}\left(4Aa^2d^3e + \left(Ba^2 + 2Aab\right)d^4\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/8*B*b^2*e^4*x^8 + A*a^2*d^4*x + 1/7*(4*B*b^2*d*e^3 + (2*B*a*b + A*b^2)*e^
4)*x^7 + 1/6*(6*B*b^2*d^2*e^2 + 4*(2*B*a*b + A*b^2)*d*e^3 + (B*a^2 + 2*A*a*
b)*e^4)*x^6 + 1/5*(4*B*b^2*d^3*e + A*a^2*e^4 + 6*(2*B*a*b + A*b^2)*d^2*e^2
+ 4*(B*a^2 + 2*A*a*b)*d*e^3)*x^5 + 1/4*(B*b^2*d^4 + 4*A*a^2*d*e^3 + 4*(2*B*
a*b + A*b^2)*d^3*e + 6*(B*a^2 + 2*A*a*b)*d^2*e^2)*x^4 + 1/3*(6*A*a^2*d^2*e^
2 + (2*B*a*b + A*b^2)*d^4 + 4*(B*a^2 + 2*A*a*b)*d^3*e)*x^3 + 1/2*(4*A*a^2*d
^3*e + (B*a^2 + 2*A*a*b)*d^4)*x^2
```

mupad [B] time = 2.05, size = 305, normalized size = 2.54

$$x^4\left(\frac{3Ba^2d^2e^2}{2} + Aa^2de^3 + 2Babd^3e + 3Aabd^2e^2 + \frac{Bb^2d^4}{4} + Ab^2d^3e\right) + x^5\left(\frac{4Ba^2de^3}{5} + \frac{Aa^2e^4}{5} + \frac{12Babd^2e^2}{5} + \frac{8Aabde^3}{5} + \frac{4Bb^2d^3e}{5} + \frac{6Ab^2d^2e^2}{5}\right) + x^3\left(\frac{4Ba^2d^3e}{3} + 2Aa^2d^2e^2 + \frac{2Babd^4}{3} + \frac{8Aabd^3e}{3} + \frac{Ab^2d^4}{3}\right) + x^6\left(\frac{Ba^2e^4}{6} + \frac{4Babde^3}{3} + \frac{Aabe^4}{3} + Bb^2d^2e^2 + \frac{2Ab^2de^3}{3}\right) + Aa^2d^4x + \frac{ad^3x^2\,(4Aae + 2Abd + Bad)}{2} + \frac{be^3x^7\,(Abe + 2Bae + 4Bbd)}{7} + \frac{Bb^2e^4x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((B*b^2*d^4)/4 + A*a^2*d*e^3 + A*b^2*d^3*e + (3*B*a^2*d^2*e^2)/2 + 2*B*
a*b*d^3*e + 3*A*a*b*d^2*e^2) + x^5*((A*a^2*e^4)/5 + (4*B*a^2*d*e^3)/5 + (4*
B*b^2*d^3*e)/5 + (6*A*b^2*d^2*e^2)/5 + (8*A*a*b*d*e^3)/5 + (12*B*a*b*d^2*e^
2)/5) + x^3*((A*b^2*d^4)/3 + (2*B*a*b*d^4)/3 + (4*B*a^2*d^3*e)/3 + 2*A*a^2*
d^2*e^2 + (8*A*a*b*d^3*e)/3) + x^6*((B*a^2*e^4)/6 + (A*a*b*e^4)/3 + (2*A*b^
2*d*e^3)/3 + B*b^2*d^2*e^2 + (4*B*a*b*d*e^3)/3) + A*a^2*d^4*x + (a*d^3*x^2*
(4*A*a*e + 2*A*b*d + B*a*d))/2 + (b*e^3*x^7*(A*b*e + 2*B*a*e + 4*B*b*d))/7
+ (B*b^2*e^4*x^8)/8
```

sympy [B] time = 0.12, size = 384, normalized size = 3.20

$$Aa^2d^4x + \frac{Bb^2e^4x^8}{8} + x^7\left(\frac{Ab^2e^4}{7} + \frac{2Babe^4}{7} + \frac{4Bb^2de^3}{7}\right) + x^6\left(\frac{Aabe^4}{3} + \frac{2Ab^2de^3}{3} + \frac{Ba^2e^4}{6} + \frac{4Babde^3}{3} + Bb^2d^2e^2\right) + x^5\left(\frac{Aa^2e^4}{5} + \frac{8Aabde^3}{5} + \frac{6Ab^2d^2e^2}{5} + \frac{4Ba^2de^3}{5} + \frac{12Babd^2e^2}{5} + \frac{4Bb^2d^3e}{5}\right) + x^4\left(Aa^2de^3 + 3Aabd^2e^2 + Ab^2d^3e + \frac{3Ba^2d^2e^2}{2} + 2Babd^3e + \frac{Bb^2d^4}{4}\right) + x^3\left(2Aa^2d^2e^2 + \frac{8Aabd^3e}{3} + \frac{Ab^2d^4}{3} + \frac{4Ba^2d^3e}{3} + \frac{2Babd^4}{3}\right) + x^2\left(2Aa^2d^3e + Aabd^4 + \frac{Ba^2d^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**4*x + B*b**2*e**4*x**8/8 + x**7*(A*b**2*e**4/7 + 2*B*a*b*e**4/7 +
 4*B*b**2*d*e**3/7) + x**6*(A*a*b*e**4/3 + 2*A*b**2*d*e**3/3 + B*a**2*e**4/
6 + 4*B*a*b*d*e**3/3 + B*b**2*d**2*e**2) + x**5*(A*a**2*e**4/5 + 8*A*a*b*d*
e**3/5 + 6*A*b**2*d**2*e**2/5 + 4*B*a**2*d*e**3/5 + 12*B*a*b*d**2*e**2/5 +
4*B*b**2*d**3*e/5) + x**4*(A*a**2*d*e**3 + 3*A*a*b*d**2*e**2 + A*b**2*d**3*
e + 3*B*a**2*d**2*e**2/2 + 2*B*a*b*d**3*e + B*b**2*d**4/4) + x**3*(2*A*a**2
*d**2*e**2 + 8*A*a*b*d**3*e/3 + A*b**2*d**4/3 + 4*B*a**2*d**3*e/3 + 2*B*a*b
*d**4/3) + x**2*(2*A*a**2*d**3*e + A*a*b*d**4 + B*a**2*d**4/2)
```

3.1441 $\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=120

$$-\frac{b(d+ex)^6(-2aBe-Abe+3bBd)}{6e^4}+\frac{(d+ex)^5(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{(d+ex)^4(bd-ae)^2(Bd-Ae)}{4e^4}+\frac{b^2I}{}$$

Rubi [A] time = 0.16, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$-\frac{b(d+ex)^6(-2aBe-Abe+3bBd)}{6e^4}+\frac{(d+ex)^5(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{(d+ex)^4(bd-ae)^2(Bd-Ae)}{4e^4}+\frac{b^2B(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^4)/(4*e^4) + ((b*d - a*e)*(3*b*B*d -
2*A*b*e - a*B*e)*(d + e*x)^5)/(5*e^4) - (b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
 e*x)^6)/(6*e^4) + (b^2*B*(d + e*x)^7)/(7*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^2(A+Bx)(d+ex)^3\, dx \\
&= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^3}{e^3}+\frac{(-bd+ae)(-3bBd+2Abe}{e^3}\right. \\
&= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^4}{4e^4}+\frac{(bd-ae)(3bBd-2Abe-aBe)(d}{5e^4}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 216, normalized size = 1.80

$$\frac{1}{4}x^4\left(a^2e^2(Ae+3Bd)+6abde(Ae+Bd)+b^2d^2(3Ae+Bd)\right)+\frac{1}{3}dx^3\left(A\left(3a^2e^2+6abde+b^2d^2\right)+aBd(3ae+2bd)\right)+\frac{1}{5}ex^5\left(a^2Be^2+2abe(Ae+3Bd)+3b^2d(Ae+Bd)\right)+a^2Ad^3x+\frac{1}{2}ad^2x^2(3aAe+aBd+2Abd)+\frac{1}{6}be^2x^6(2aBe+Abe+3bBd)+\frac{1}{7}b^2Be^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^3*x + (a*d^2*(2*A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (d*(a*B*d*(2*b*d
+ 3*a*e) + A*(b^2*d^2 + 6*a*b*d*e + 3*a^2*e^2))*x^3)/3 + ((6*a*b*d*e*(B*d +
 A*e) + a^2*e^2*(3*B*d + A*e) + b^2*d^2*(B*d + 3*A*e))*x^4)/4 + (e*(a^2*B*e
^2 + 3*b^2*d*(B*d + A*e) + 2*a*b*e*(3*B*d + A*e))*x^5)/5 + (b*e^2*(3*b*B*d
+ A*b*e + 2*a*B*e)*x^6)/6 + (b^2*B*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.37, size = 287, normalized size = 2.39

$$\frac{1}{7}x^7e^3b^2B+\frac{1}{2}x^6e^2db^2B+\frac{1}{3}x^6e^3baB+\frac{1}{6}x^6e^3b^2A+\frac{3}{5}x^5ed^2b^2B+\frac{6}{5}x^5e^2dbaB+\frac{1}{5}x^5e^3a^2B+\frac{3}{5}x^5e^2db^2A+\frac{2}{5}x^5e^3baA+\frac{1}{4}x^4d^3b^2B+\frac{3}{2}x^4ed^2baB+\frac{3}{4}x^4e^2da^2B+\frac{3}{4}x^4ed^2b^2A+\frac{3}{2}x^4e^2dbaA+\frac{1}{4}x^4e^3a^2A+\frac{2}{3}x^3d^3baB+x^3ed^2a^2B+\frac{1}{3}x^3d^3b^2A+2x^3ed^2baA+x^3e^2da^2A+\frac{1}{2}x^2d^3a^2B+x^2d^3baA+\frac{3}{2}x^2ed^2a^2A+xd^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*b^2*B + 1/2*x^6*e^2*d*b^2*B + 1/3*x^6*e^3*b*a*B + 1/6*x^6*e^3*b
^2*A + 3/5*x^5*e*d^2*b^2*B + 6/5*x^5*e^2*d*b*a*B + 1/5*x^5*e^3*a^2*B + 3/5*
x^5*e^2*d*b^2*A + 2/5*x^5*e^3*b*a*A + 1/4*x^4*d^3*b^2*B + 3/2*x^4*e*d^2*b*a
*B + 3/4*x^4*e^2*d*a^2*B + 3/4*x^4*e*d^2*b^2*A + 3/2*x^4*e^2*d*b*a*A + 1/4*
x^4*e^3*a^2*A + 2/3*x^3*d^3*b*a*B + x^3*e*d^2*a^2*B + 1/3*x^3*d^3*b^2*A + 2
*x^3*e*d^2*b*a*A + x^3*e^2*d*a^2*A + 1/2*x^2*d^3*a^2*B + x^2*d^3*b*a*A + 3/
2*x^2*e*d^2*a^2*A + x*d^3*a^2*A
```

giac [B] time = 0.17, size = 281, normalized size = 2.34

$$\frac{1}{7}Bb^2x^7e^3+\frac{1}{2}Bb^2dx^6e^2+\frac{3}{5}Bb^2d^2x^5e+\frac{1}{4}Bb^2d^3x^4+\frac{1}{3}Babx^6e^3+\frac{1}{6}Ab^2x^6e^3+\frac{6}{5}Babdx^5e^2+\frac{3}{5}Ab^2dx^5e^2+\frac{3}{2}Babd^2x^4e+\frac{3}{4}Ab^2d^2x^4e+\frac{2}{3}Babd^3x^3+\frac{1}{3}Ab^2d^3x^3+\frac{1}{5}Ba^2x^5e^3+\frac{2}{5}Aabx^5e^3+\frac{3}{4}Ba^2dx^4e^2+\frac{3}{2}Aabdx^4e^2+Ba^2d^2x^3e+2\,Aabd^2x^3e+\frac{1}{2}Ba^2d^3x^2+Aabd^3x^2+\frac{1}{4}Aa^2x^4e^3+Aa^2dx^3e^2+\frac{3}{2}Aa^2d^2x^2e+Aa^2d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^2*x^7*e^3 + 1/2*B*b^2*d*x^6*e^2 + 3/5*B*b^2*d^2*x^5*e + 1/4*B*b^2*d
^3*x^4 + 1/3*B*a*b*x^6*e^3 + 1/6*A*b^2*x^6*e^3 + 6/5*B*a*b*d*x^5*e^2 + 3/5*
A*b^2*d*x^5*e^2 + 3/2*B*a*b*d^2*x^4*e + 3/4*A*b^2*d^2*x^4*e + 2/3*B*a*b*d^3
*x^3 + 1/3*A*b^2*d^3*x^3 + 1/5*B*a^2*x^5*e^3 + 2/5*A*a*b*x^5*e^3 + 3/4*B*a^
2*d*x^4*e^2 + 3/2*A*a*b*d*x^4*e^2 + B*a^2*d^2*x^3*e + 2*A*a*b*d^2*x^3*e + 1
/2*B*a^2*d^3*x^2 + A*a*b*d^3*x^2 + 1/4*A*a^2*x^4*e^3 + A*a^2*d*x^3*e^2 + 3/
2*A*a^2*d^2*x^2*e + A*a^2*d^3*x
```

maple [B] time = 0.05, size = 244, normalized size = 2.03

$$\frac{Bb^2e^3x^7}{7}+Aa^2d^3x+\frac{\left(2Babe^3+\left(Ae^3+3Bde^2\right)b^2\right)x^6}{6}+\frac{\left(Ba^2e^3+2\left(Ae^3+3Bde^2\right)ab+\left(3Ade^2+3Bd^2e\right)b^2\right)x^5}{5}+\frac{\left(\left(Ae^3+3Bde^2\right)a^2+2\left(3Ade^2+3Bd^2e\right)ab+\left(3Ad^2e+Bd^3\right)b^2\right)x^4}{4}+\frac{\left(Ab^2d^3+\left(3Ade^2+3Bd^2e\right)a^2+2\left(3Ad^2e+Bd^3\right)ab\right)x^3}{3}+\frac{\left(2Aabd^3+\left(3Ad^2e+Bd^3\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/7*B*e^3*b^2*x^7+1/6*((A*e^3+3*B*d*e^2)*b^2+2*B*e^3*a*b)*x^6+1/5*((3*A*d*e
^2+3*B*d^2*e)*b^2+2*(A*e^3+3*B*d*e^2)*a*b+B*a^2*e^3)*x^5+1/4*((3*A*d^2*e+B*
d^3)*b^2+2*(3*A*d*e^2+3*B*d^2*e)*a*b+(A*e^3+3*B*d*e^2)*a^2)*x^4+1/3*(A*d^3*
b^2+2*(3*A*d^2*e+B*d^3)*a*b+(3*A*d*e^2+3*B*d^2*e)*a^2)*x^3+1/2*(2*A*d^3*a*b
+(3*A*d^2*e+B*d^3)*a^2)*x^2+A*d^3*a^2*x
```

maxima [B] time = 0.49, size = 236, normalized size = 1.97

$$\frac{1}{7}Bb^2e^3x^7+Aa^2d^3x+\frac{1}{6}\left(3Bb^2de^2+\left(2Bab+Ab^2\right)e^3\right)x^6+\frac{1}{5}\left(3Bb^2d^2e+3\left(2Bab+Ab^2\right)de^2+\left(Ba^2+2Aab\right)e^3\right)x^5+\frac{1}{4}\left(Bb^2d^3+Aa^2e^3+3\left(2Bab+Ab^2\right)d^2e+3\left(Ba^2+2Aab\right)de^2\right)x^4+\frac{1}{3}\left(3Aa^2de^2+\left(2Bab+Ab^2\right)d^3+3\left(Ba^2+2Aab\right)d^2e\right)x^3+\frac{1}{2}\left(3Aa^2d^2e+\left(Ba^2+2Aab\right)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/7*B*b^2*e^3*x^7 + A*a^2*d^3*x + 1/6*(3*B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^
3)*x^6 + 1/5*(3*B*b^2*d^2*e + 3*(2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)
*e^3)*x^5 + 1/4*(B*b^2*d^3 + A*a^2*e^3 + 3*(2*B*a*b + A*b^2)*d^2*e + 3*(B*a
^2 + 2*A*a*b)*d*e^2)*x^4 + 1/3*(3*A*a^2*d*e^2 + (2*B*a*b + A*b^2)*d^3 + 3*(
B*a^2 + 2*A*a*b)*d^2*e)*x^3 + 1/2*(3*A*a^2*d^2*e + (B*a^2 + 2*A*a*b)*d^3)*x
^2
```

mupad [**B**] time = 0.09, size = 231, normalized size = 1.92

$$x^4\left(\frac{3Ba^2de^2}{4}+\frac{Aa^2e^3}{4}+\frac{3Babd^2e}{2}+\frac{3Aabde^2}{2}+\frac{Bb^2d^3}{4}+\frac{3Ab^2d^2e}{4}\right)+x^3\left(Ba^2d^2e+Aa^2de^2+\frac{2Babd^3}{3}+2Aabd^2e+\frac{Ab^2d^3}{3}\right)+x^5\left(\frac{Ba^2e^3}{5}+\frac{6Babde^2}{5}+\frac{2Aabe^3}{5}+\frac{3Bb^2d^2e}{5}+\frac{3Ab^2de^2}{5}\right)+Aa^2d^3x+\frac{ad^2x^2(3Aae+2Abd+Bad)}{2}+\frac{be^2x^6(Abe+2Bae+3Bbd)}{6}+\frac{Bb^2e^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((A*a^2*e^3)/4 + (B*b^2*d^3)/4 + (3*A*b^2*d^2*e)/4 + (3*B*a^2*d*e^2)/4
+ (3*A*a*b*d*e^2)/2 + (3*B*a*b*d^2*e)/2) + x^3*((A*b^2*d^3)/3 + (2*B*a*b*d^
3)/3 + A*a^2*d*e^2 + B*a^2*d^2*e + 2*A*a*b*d^2*e) + x^5*((B*a^2*e^3)/5 + (2
*A*a*b*e^3)/5 + (3*A*b^2*d*e^2)/5 + (3*B*b^2*d^2*e)/5 + (6*B*a*b*d*e^2)/5)
+ A*a^2*d^3*x + (a*d^2*x^2*(3*A*a*e + 2*A*b*d + B*a*d))/2 + (b*e^2*x^6*(A*b
*e + 2*B*a*e + 3*B*b*d))/6 + (B*b^2*e^3*x^7)/7
```

sympy [**B**] time = 0.11, size = 296, normalized size = 2.47

$$Aa^2d^3x+\frac{Bb^2e^3x^7}{7}+x^6\left(\frac{Ab^2e^3}{6}+\frac{Babe^3}{3}+\frac{Bb^2de^2}{2}\right)+x^5\left(\frac{2Aabe^3}{5}+\frac{3Ab^2de^2}{5}+\frac{Ba^2e^3}{5}+\frac{6Babde^2}{5}+\frac{3Bb^2d^2e}{5}\right)+x^4\left(\frac{Aa^2e^3}{4}+\frac{3Aabde^2}{2}+\frac{3Ab^2d^2e}{4}+\frac{3Ba^2de^2}{4}+\frac{3Babd^2e}{2}+\frac{Bb^2d^3}{4}\right)+x^3\left(Aa^2de^2+2Aabd^2e+\frac{Ab^2d^3}{3}+Ba^2d^2e+\frac{2Babd^3}{3}\right)+x^2\left(\frac{3Aa^2d^2e}{2}+Aabd^3+\frac{Ba^2d^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**3*x + B*b**2*e**3*x**7/7 + x**6*(A*b**2*e**3/6 + B*a*b*e**3/3 + B
*b**2*d*e**2/2) + x**5*(2*A*a*b*e**3/5 + 3*A*b**2*d*e**2/5 + B*a**2*e**3/5
+ 6*B*a*b*d*e**2/5 + 3*B*b**2*d**2*e/5) + x**4*(A*a**2*e**3/4 + 3*A*a*b*d*e
**2/2 + 3*A*b**2*d**2*e/4 + 3*B*a**2*d*e**2/4 + 3*B*a*b*d**2*e/2 + B*b**2*d
**3/4) + x**3*(A*a**2*d*e**2 + 2*A*a*b*d**2*e + A*b**2*d**3/3 + B*a**2*d**2
*e + 2*B*a*b*d**3/3) + x**2*(3*A*a**2*d**2*e/2 + A*a*b*d**3 + B*a**2*d**3/2
)
```

3.1442 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right) \, dx$

Optimal. Leaf size=118

$$\frac{e(a+bx)^5(-3aBe+Abe+2bBd)}{5b^4}+\frac{(a+bx)^4(bd-ae)(-3aBe+2Abe+bBd)}{4b^4}+\frac{(a+bx)^3(Ab-aB)(bd-ae)^2}{3b^4}+$$

Rubi [A] time = 0.13, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$\frac{e(a+bx)^5(-3aBe+Abe+2bBd)}{5b^4}+\frac{(a+bx)^4(bd-ae)(-3aBe+2Abe+bBd)}{4b^4}+\frac{(a+bx)^3(Ab-aB)(bd-ae)^2}{3b^4}+\frac{Be^2(a+bx)^6}{6b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^3)/(3*b^4) + ((b*d - a*e)*(b*B*d + 2*A
*b*e - 3*a*B*e)*(a + b*x)^4)/(4*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a +
b*x)^5)/(5*b^4) + (B*e^2*(a + b*x)^6)/(6*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^2\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)^2(a+bx)^2}{b^3}+\frac{(bd-ae)(bBd+2Abe-3a}{b^3}\right.\\ &= \frac{(Ab-aB)(bd-ae)^2(a+bx)^3}{3b^4}+\frac{(bd-ae)(bBd+2Abe-3aBe)(}{4b^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 157, normalized size = 1.33

$$\frac{1}{3}x^3\left(A\left(a^2e^2+4abde+b^2d^2\right)+2aBd(ae+bd)\right)+\frac{1}{4}x^4\left(a^2Be^2+2abe(Ae+2Bd)+b^2d(2Ae+Bd)\right)+a^2Ad^2x+\frac{1}{5}bex^5(2aBe+Abe+2bBd)+\frac{1}{2}adx^2(2A(ae+bd)+aBd)+\frac{1}{6}b^2Be^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^2*x + (a*d*(a*B*d + 2*A*(b*d + a*e))*x^2)/2 + ((2*a*B*d*(b*d + a*e)
 + A*(b^2*d^2 + 4*a*b*d*e + a^2*e^2))*x^3)/3 + ((a^2*B*e^2 + 2*a*b*e*(2*B*d
 + A*e) + b^2*d*(B*d + 2*A*e))*x^4)/4 + (b*e*(2*b*B*d + A*b*e + 2*a*B*e)*x^
5)/5 + (b^2*B*e^2*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.36, size = 199, normalized size = 1.69

$$\frac{1}{6}x^6e^2b^2B+\frac{2}{5}x^5edb^2B+\frac{2}{5}x^5e^2baB+\frac{1}{5}x^5e^2b^2A+\frac{1}{4}x^4d^2b^2B+x^4edbaB+\frac{1}{4}x^4e^2a^2B+\frac{1}{2}x^4edb^2A+\frac{1}{2}x^4e^2baA+\frac{2}{3}x^3d^2baB+\frac{2}{3}x^3eda^2B+\frac{1}{3}x^3d^2b^2A+\frac{4}{3}x^3edbaA+\frac{1}{3}x^3e^2a^2A+\frac{1}{2}x^2d^2a^2B+x^2d^2baA+x^2eda^2A+xd^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*b^2*B + 2/5*x^5*e*d*b^2*B + 2/5*x^5*e^2*b*a*B + 1/5*x^5*e^2*b^2
*A + 1/4*x^4*d^2*b^2*B + x^4*e*d*b*a*B + 1/4*x^4*e^2*a^2*B + 1/2*x^4*e*d*b^
2*A + 1/2*x^4*e^2*b*a*A + 2/3*x^3*d^2*b*a*B + 2/3*x^3*e*d*a^2*B + 1/3*x^3*d
^2*b^2*A + 4/3*x^3*e*d*b*a*A + 1/3*x^3*e^2*a^2*A + 1/2*x^2*d^2*a^2*B + x^2*
d^2*b*a*A + x^2*e*d*a^2*A + x*d^2*a^2*A
```

giac [A] time = 0.16, size = 199, normalized size = 1.69

$$\frac{1}{6}Bb^2x^6e^2+\frac{2}{5}Bb^2dx^5e+\frac{1}{4}Bb^2d^2x^4+\frac{2}{5}Babx^5e^2+\frac{1}{5}Ab^2x^5e^2+Babdx^4e+\frac{1}{2}Ab^2dx^4e+\frac{2}{3}Babd^2x^3+\frac{1}{3}Ab^2d^2x^3+\frac{1}{4}Ba^2x^4e^2+\frac{1}{2}Aabx^4e^2+\frac{2}{3}Ba^2dx^3e+\frac{4}{3}Aabdx^3e+\frac{1}{2}Ba^2d^2x^2+Aabd^2x^2+\frac{1}{3}Aa^2x^3e^2+Aa^2dx^2e+Aa^2d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^2*x^6*e^2 + 2/5*B*b^2*d*x^5*e + 1/4*B*b^2*d^2*x^4 + 2/5*B*a*b*x^5*e
^2 + 1/5*A*b^2*x^5*e^2 + B*a*b*d*x^4*e + 1/2*A*b^2*d*x^4*e + 2/3*B*a*b*d^2*
x^3 + 1/3*A*b^2*d^2*x^3 + 1/4*B*a^2*x^4*e^2 + 1/2*A*a*b*x^4*e^2 + 2/3*B*a^2
*d*x^3*e + 4/3*A*a*b*d*x^3*e + 1/2*B*a^2*d^2*x^2 + A*a*b*d^2*x^2 + 1/3*A*a^
2*x^3*e^2 + A*a^2*d*x^2*e + A*a^2*d^2*x
```

maple [A] time = 0.05, size = 169, normalized size = 1.43

$$\frac{B\,b^2e^2x^6}{6}+A\,a^2d^2x+\frac{\left(2Bab\,e^2+\left(A\,e^2+2Bde\right)b^2\right)x^5}{5}+\frac{\left(B\,a^2e^2+2\left(A\,e^2+2Bde\right)ab+\left(2Ade+B\,d^2\right)b^2\right)x^4}{4}+\frac{\left(A\,b^2d^2+\left(A\,e^2+2Bde\right)a^2+2\left(2Ade+B\,d^2\right)ab\right)x^3}{3}+\frac{\left(2Aab\,d^2+\left(2Ade+B\,d^2\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/6*B*e^2*b^2*x^6+1/5*((A*e^2+2*B*d*e)*b^2+2*B*e^2*a*b)*x^5+1/4*((2*A*d*e+B
*d^2)*b^2+2*(A*e^2+2*B*d*e)*a*b+B*a^2*e^2)*x^4+1/3*(A*d^2*b^2+2*(2*A*d*e+B*
d^2)*a*b+(A*e^2+2*B*d*e)*a^2)*x^3+1/2*(2*A*d^2*a*b+(2*A*d*e+B*d^2)*a^2)*x^2
+A*d^2*a^2*x
```

maxima [A] time = 0.59, size = 168, normalized size = 1.42

$$\frac{1}{6}Bb^2e^2x^6+Aa^2d^2x+\frac{1}{5}\left(2\,Bb^2de+\left(2\,Bab+Ab^2\right)e^2\right)x^5+\frac{1}{4}\left(Bb^2d^2+2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)x^4+\frac{1}{3}\left(Aa^2e^2+\left(2\,Bab+Ab^2\right)d^2+2\left(Ba^2+2\,Aab\right)de\right)x^3+\frac{1}{2}\left(2\,Aa^2de+\left(Ba^2+2\,Aab\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*B*b^2*e^2*x^6 + A*a^2*d^2*x + 1/5*(2*B*b^2*d*e + (2*B*a*b + A*b^2)*e^2)
*x^5 + 1/4*(B*b^2*d^2 + 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e^2)*x^
4 + 1/3*(A*a^2*e^2 + (2*B*a*b + A*b^2)*d^2 + 2*(B*a^2 + 2*A*a*b)*d*e)*x^3 +
 1/2*(2*A*a^2*d*e + (B*a^2 + 2*A*a*b)*d^2)*x^2
```

mupad [B] time = 0.07, size = 157, normalized size = 1.33

$$x^3\left(\frac{2Ba^2de}{3}+\frac{Aa^2e^2}{3}+\frac{2Babd^2}{3}+\frac{4Aabde}{3}+\frac{Ab^2d^2}{3}\right)+x^4\left(\frac{Ba^2e^2}{4}+Babde+\frac{Aabe^2}{2}+\frac{Bb^2d^2}{4}+\frac{Ab^2de}{2}\right)+\frac{adx^2\left(2Aae+2Abd+Bad\right)}{2}+\frac{bex^5\left(Abe+2Bae+2Bbd\right)}{5}+Aa^2d^2x+\frac{Bb^2e^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((A*a^2*e^2)/3 + (A*b^2*d^2)/3 + (2*B*a*b*d^2)/3 + (2*B*a^2*d*e)/3 + (4
*A*a*b*d*e)/3) + x^4*((B*a^2*e^2)/4 + (B*b^2*d^2)/4 + (A*a*b*e^2)/2 + (A*b^
2*d*e)/2 + B*a*b*d*e) + (a*d*x^2*(2*A*a*e + 2*A*b*d + B*a*d))/2 + (b*e*x^5*
(A*b*e + 2*B*a*e + 2*B*b*d))/5 + A*a^2*d^2*x + (B*b^2*e^2*x^6)/6
```

sympy [A] time = 0.09, size = 202, normalized size = 1.71

$$Aa^2d^2x+\frac{Bb^2e^2x^6}{6}+x^5\left(\frac{Ab^2e^2}{5}+\frac{2Babe^2}{5}+\frac{2Bb^2de}{5}\right)+x^4\left(\frac{Aabe^2}{2}+\frac{Ab^2de}{2}+\frac{Ba^2e^2}{4}+Babde+\frac{Bb^2d^2}{4}\right)+x^3\left(\frac{Aa^2e^2}{3}+\frac{4Aabde}{3}+\frac{Ab^2d^2}{3}+\frac{2Ba^2de}{3}+\frac{2Babd^2}{3}\right)+x^2\left(Aa^2de+Aabd^2+\frac{Ba^2d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**2*x + B*b**2*e**2*x**6/6 + x**5*(A*b**2*e**2/5 + 2*B*a*b*e**2/5 +
 2*B*b**2*d*e/5) + x**4*(A*a*b*e**2/2 + A*b**2*d*e/2 + B*a**2*e**2/4 + B*a*
b*d*e + B*b**2*d**2/4) + x**3*(A*a**2*e**2/3 + 4*A*a*b*d*e/3 + A*b**2*d**2/
3 + 2*B*a**2*d*e/3 + 2*B*a*b*d**2/3) + x**2*(A*a**2*d*e + A*a*b*d**2 + B*a*
*2*d**2/2)
```

3.1443 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^4(-2aBe+Abe+bBd)}{4b^3}+\frac{(a+bx)^3(Ab-aB)(bd-ae)}{3b^3}+\frac{Be(a+bx)^5}{5b^3}$$

Rubi [A] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{(a+bx)^4(-2aBe+Abe+bBd)}{4b^3}+\frac{(a+bx)^3(Ab-aB)(bd-ae)}{3b^3}+\frac{Be(a+bx)^5}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^3)/(3*b^3) + ((b*B*d + A*b*e - 2*a*B*e)*
(a + b*x)^4)/(4*b^3) + (B*e*(a + b*x)^5)/(5*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)(a+bx)^2}{b^2}+\frac{(bBd+Abe-2aBe)(a+bx)^3}{b^2}+\right.\\ &= \frac{(Ab-aB)(bd-ae)(a+bx)^3}{3b^3}+\frac{(bBd+Abe-2aBe)(a+bx)^4}{4b^3}+\frac{Be(a\end{aligned}$$

Mathematica [A] time = 0.03, size = 96, normalized size = 1.28

$$\frac{1}{3}x^3\left(a^2Be+2aAbe+2abBd+Ab^2d\right)+a^2Adx+\frac{1}{4}bx^4(2aBe+Abe+bBd)+\frac{1}{2}ax^2(aAe+aBd+2Abd)+\frac{1}{5}b^2Bex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d*x + (a*(2*A*b*d + a*B*d + a*A*e)*x^2)/2 + ((A*b^2*d + 2*a*b*B*d + 2
*a*A*b*e + a^2*B*e)*x^3)/3 + (b*(b*B*d + A*b*e + 2*a*B*e)*x^4)/4 + (b^2*B*e
*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)\left(a^2 + 2abx + b^2x^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.36, size = 113, normalized size = 1.51

$$\frac{1}{5}x^5eb^2B + \frac{1}{4}x^4db^2B + \frac{1}{2}x^4ebaB + \frac{1}{4}x^4eb^2A + \frac{2}{3}x^3dbaB + \frac{1}{3}x^3ea^2B + \frac{1}{3}x^3db^2A + \frac{2}{3}x^3ebaA + \frac{1}{2}x^2da^2B + x^2dbaA + \frac{1}{2}x^2ea^2A + xda^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*b^2*B + 1/4*x^4*d*b^2*B + 1/2*x^4*e*b*a*B + 1/4*x^4*e*b^2*A + 2/3
*x^3*d*b*a*B + 1/3*x^3*e*a^2*B + 1/3*x^3*d*b^2*A + 2/3*x^3*e*b*a*A + 1/2*x^
2*d*a^2*B + x^2*d*b*a*A + 1/2*x^2*e*a^2*A + x*d*a^2*A
```

giac [A] time = 0.17, size = 119, normalized size = 1.59

$$\frac{1}{5}Bb^2x^5e + \frac{1}{4}Bb^2dx^4 + \frac{1}{2}Babx^4e + \frac{1}{4}Ab^2x^4e + \frac{2}{3}Babdx^3 + \frac{1}{3}Ab^2dx^3 + \frac{1}{3}Ba^2x^3e + \frac{2}{3}Aabx^3e + \frac{1}{2}Ba^2dx^2 + Aabdx^2 + \frac{1}{2}Aa^2x^2e + Aa^2dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^2*x^5*e + 1/4*B*b^2*d*x^4 + 1/2*B*a*b*x^4*e + 1/4*A*b^2*x^4*e + 2/3
*B*a*b*d*x^3 + 1/3*A*b^2*d*x^3 + 1/3*B*a^2*x^3*e + 2/3*A*a*b*x^3*e + 1/2*B*
a^2*d*x^2 + A*a*b*d*x^2 + 1/2*A*a^2*x^2*e + A*a^2*d*x
```

maple [A] time = 0.04, size = 94, normalized size = 1.25

$$\frac{B\,b^2e\,x^5}{5} + A\,a^2dx + \frac{\left(2Babe + (Ae + Bd)\,b^2\right)x^4}{4} + \frac{\left(A\,b^2d + B\,a^2e + 2\,(Ae + Bd)\,ab\right)x^3}{3} + \frac{\left(2Aabd + (Ae + Bd)\,a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*B*b^2*e*x^5+1/4*((A*e+B*d)*b^2+2*B*e*a*b)*x^4+1/3*(A*d*b^2+2*(A*e+B*d)*
a*b+B*e*a^2)*x^3+1/2*(2*A*d*a*b+(A*e+B*d)*a^2)*x^2+A*a^2*d*x
```

maxima [A] time = 0.52, size = 100, normalized size = 1.33

$$\frac{1}{5}Bb^2ex^5 + Aa^2dx + \frac{1}{4}\left(Bb^2d + \left(2\,Bab + Ab^2\right)e\right)x^4 + \frac{1}{3}\left(\left(2\,Bab + Ab^2\right)d + \left(Ba^2 + 2\,Aab\right)e\right)x^3 + \frac{1}{2}\left(Aa^2e + \left(Ba^2 + 2\,Aab\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/5*B*b^2*e*x^5 + A*a^2*d*x + 1/4*(B*b^2*d + (2*B*a*b + A*b^2)*e)*x^4 + 1/3
*((2*B*a*b + A*b^2)*d + (B*a^2 + 2*A*a*b)*e)*x^3 + 1/2*(A*a^2*e + (B*a^2 +
2*A*a*b)*d)*x^2
```

mupad [B] time = 0.04, size = 98, normalized size = 1.31

$$x^3\left(\frac{A\,b^2\,d}{3} + \frac{B\,a^2\,e}{3} + \frac{2\,A\,a\,b\,e}{3} + \frac{2\,B\,a\,b\,d}{3}\right) + x^2\left(\frac{A\,a^2\,e}{2} + \frac{B\,a^2\,d}{2} + A\,a\,b\,d\right) + x^4\left(\frac{A\,b^2\,e}{4} + \frac{B\,b^2\,d}{4} + \frac{B\,a\,b\,e}{2}\right) + A\,a^2\,d\,x + \frac{B\,b^2\,e\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((A*b^2*d)/3 + (B*a^2*e)/3 + (2*A*a*b*e)/3 + (2*B*a*b*d)/3) + x^2*((A*a
^2*e)/2 + (B*a^2*d)/2 + A*a*b*d) + x^4*((A*b^2*e)/4 + (B*b^2*d)/4 + (B*a*b*
e)/2) + A*a^2*d*x + (B*b^2*e*x^5)/5
```

sympy [A] time = 0.08, size = 116, normalized size = 1.55

$$Aa^2dx + \frac{Bb^2ex^5}{5} + x^4\left(\frac{Ab^2e}{4} + \frac{Babe}{2} + \frac{Bb^2d}{4}\right) + x^3\left(\frac{2Aabe}{3} + \frac{Ab^2d}{3} + \frac{Ba^2e}{3} + \frac{2Babd}{3}\right) + x^2\left(\frac{Aa^2e}{2} + Aabd + \frac{Ba^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d*x + B*b**2*e*x**5/5 + x**4*(A*b**2*e/4 + B*a*b*e/2 + B*b**2*d/4) +
 x**3*(2*A*a*b*e/3 + A*b**2*d/3 + B*a**2*e/3 + 2*B*a*b*d/3) + x**2*(A*a**2*
e/2 + A*a*b*d + B*a**2*d/2)
```

3.1444 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {27, 43}

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3)/(3*b^2) + (B*(a + b*x)^4)/(4*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)\,dx\\
&= \int \left(\frac{(Ab-aB)(a+bx)^2}{b}+\frac{B(a+bx)^3}{b}\right)dx\\
&= \frac{(Ab-aB)(a+bx)^3}{3b^2}+\frac{B(a+bx)^4}{4b^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 46, normalized size = 1.21

$$\frac{1}{12}x\left(6a^2(2A+Bx)+4abx(3A+2Bx)+b^2x^2(4A+3Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x*(6*a^2*(2*A + B*x) + 4*a*b*x*(3*A + 2*B*x) + b^2*x^2*(4*A + 3*B*x)))/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.36, size = 49, normalized size = 1.29

$$\frac{1}{4}x^4b^2B+\frac{2}{3}x^3baB+\frac{1}{3}x^3b^2A+\frac{1}{2}x^2a^2B+x^2baA+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] 1/4*x^4*b^2*B + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 1/2*x^2*a^2*B + x^2*b*a*A +
x*a^2*A
```

giac [A] time = 0.15, size = 49, normalized size = 1.29

$$\frac{1}{4}Bb^2x^4+\frac{2}{3}Babx^3+\frac{1}{3}Ab^2x^3+\frac{1}{2}Ba^2x^2+Aabx^2+Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] 1/4*B*b^2*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 1/2*B*a^2*x^2 + A*a*b*x^2 +
A*a^2*x
```

maple [A] time = 0.04, size = 49, normalized size = 1.29

$$\frac{B\,b^2x^4}{4}+A\,a^2x+\frac{\left(A\,b^2+2Bab\right)x^3}{3}+\frac{\left(2Aab+B\,a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/4*B*b^2*x^4+1/3*(A*b^2+2*B*a*b)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.56, size = 48, normalized size = 1.26

$$\frac{1}{4}Bb^2x^4+Aa^2x+\frac{1}{3}\left(2\,Bab+Ab^2\right)x^3+\frac{1}{2}\left(Ba^2+2\,Aab\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] 1/4*B*b^2*x^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2)*x^3 + 1/2*(B*a^2 + 2*A*a*b)
*x^2
```

mupad [B] time = 1.95, size = 47, normalized size = 1.24

$$x^2\left(\frac{B\,a^2}{2}+A\,b\,a\right)+x^3\left(\frac{A\,b^2}{3}+\frac{2\,B\,a\,b}{3}\right)+\frac{B\,b^2\,x^4}{4}+A\,a^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] x^2*((B*a^2)/2 + A*a*b) + x^3*((A*b^2)/3 + (2*B*a*b)/3) + (B*b^2*x^4)/4 + A
*a^2*x
```

sympy [A] time = 0.07, size = 49, normalized size = 1.29

$$Aa^2x + \frac{Bb^2x^4}{4} + x^3\left(\frac{Ab^2}{3} + \frac{2Bab}{3}\right) + x^2\left(Aab + \frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x + B*b**2*x**4/4 + x**3*(A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b + B*a*
*2/2)
```

3.1445 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)}{d+ex}\,dx$

Optimal. Leaf size=92

$$-\frac{(bd-ae)^2(Bd-Ae)\log(d+ex)}{e^4}+\frac{bx(bd-ae)(Bd-Ae)}{e^3}-\frac{(a+bx)^2(Bd-Ae)}{2e^2}+\frac{B(a+bx)^3}{3be}$$

Rubi [A] time = 0.06, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {27, 77}

$$-\frac{(a+bx)^2(Bd-Ae)}{2e^2}+\frac{bx(bd-ae)(Bd-Ae)}{e^3}-\frac{(bd-ae)^2(Bd-Ae)\log(d+ex)}{e^4}+\frac{B(a+bx)^3}{3be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)*(B*d - A*e)*x)/e^3 - ((B*d - A*e)*(a + b*x)^2)/(2*e^2) + (B*
(a + b*x)^3)/(3*b*e) - ((b*d - a*e)^2*(B*d - A*e)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{d+ex}\,dx\\ &= \int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^3}+\frac{b(-Bd+Ae)(a+bx)}{e^2}+\frac{B(a+bx)^2}{e}+\frac{(-bd+\right.\\ &= \frac{b(bd-ae)(Bd-Ae)x}{e^3}-\frac{(Bd-Ae)(a+bx)^2}{2e^2}+\frac{B(a+bx)^3}{3be}-\frac{(bd-ae)^2(Bd-\end{aligned}$$

Mathematica [A] time = 0.06, size = 102, normalized size = 1.11

$$\frac{ex\left(6a^2Be^2+6abe(2Ae-2Bd+Bex)+b^2\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)\right)-6(bd-ae)^2(Bd-Ae)\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(6*a^2*B*e^2 + 6*a*b*e*(-2*B*d + 2*A*e + B*e*x) + b^2*(3*A*e*(-2*d + e
*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2))) - 6*(b*d - a*e)^2*(B*d - A*e)*Log[d
 + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x), x]
```

fricas [A] time = 0.42, size = 153, normalized size = 1.66

$$\frac{2\,Bb^2e^3x^3-3\left(Bb^2de^2-\left(2\,Bab+Ab^2\right)e^3\right)x^2+6\left(Bb^2d^2e-\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x-6\left(Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2\right)\log\left(ex+d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="fricas")
[Out] 1/6*(2*B*b^2*e^3*x^3 - 3*(B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 6*(B*b
^2*d^2*e - (2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x - 6*(B*b^2*d^
3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*log(e*x
+ d))/e^4
```

giac [A] time = 0.19, size = 162, normalized size = 1.76

$$-\left(Bb^2d^3-2\,Babd^2e-Ab^2d^2e+Ba^2de^2+2\,Aabde^2-Aa^2e^3\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,Bb^2x^3e^2-3\,Bb^2dx^2e+6\,Bb^2d^2x+6\,Babx^2e^2+3\,Ab^2x^2e^2-12\,Babdxe-6\,Ab^2dxe+6\,Ba^2xe^2+12\,Aabxe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="giac")
[Out] -(B*b^2*d^3 - 2*B*a*b*d^2*e - A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 - A
*a^2*e^3)*e^(-4)*log(abs(x*e + d)) + 1/6*(2*B*b^2*x^3*e^2 - 3*B*b^2*d*x^2*e
 + 6*B*b^2*d^2*x + 6*B*a*b*x^2*e^2 + 3*A*b^2*x^2*e^2 - 12*B*a*b*d*x*e - 6*A
*b^2*d*x*e + 6*B*a^2*x*e^2 + 12*A*a*b*x*e^2)*e^(-3)
```

maple [B] time = 0.05, size = 197, normalized size = 2.14

$$\frac{B\,b^2x^3}{3e}+\frac{A\,b^2x^2}{2e}+\frac{Bab\,x^2}{e}-\frac{B\,b^2d\,x^2}{2e^2}+\frac{A\,a^2\ln\left(ex+d\right)}{e}-\frac{2Aabd\ln\left(ex+d\right)}{e^2}+\frac{2Aabx}{e}+\frac{A\,b^2d^2\ln\left(ex+d\right)}{e^3}-\frac{A\,b^2dx}{e^2}-\frac{B\,a^2d\ln\left(ex+d\right)}{e^2}+\frac{B\,a^2x}{e}+\frac{2Bab\,d^2\ln\left(ex+d\right)}{e^3}-\frac{2Babdx}{e^2}-\frac{B\,b^2d^3\ln\left(ex+d\right)}{e^4}+\frac{B\,b^2d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x)
[Out] 1/3/e*b^2*B*x^3+1/2/e*A*x^2*b^2+1/e*B*x^2*a*b-1/2/e^2*B*x^2*b^2*d+2/e*A*x*a
*b-1/e^2*A*x*b^2*d+B*a^2/e*x-2/e^2*B*x*a*b*d+1/e^3*B*x*b^2*d^2+A*a^2/e*ln(e
*x+d)-2/e^2*ln(e*x+d)*A*a*b*d+1/e^3*ln(e*x+d)*A*b^2*d^2-B*a^2*d/e^2*ln(e*x+
d)+2/e^3*ln(e*x+d)*B*a*b*d^2-1/e^4*ln(e*x+d)*B*b^2*d^3
```

maxima [A] time = 0.54, size = 152, normalized size = 1.65

$$\frac{2\,Bb^2e^2x^3-3\left(Bb^2de-\left(2\,Bab+Ab^2\right)e^2\right)x^2+6\left(Bb^2d^2-\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)x}{6\,e^3}-\frac{\left(Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="maxima")
[Out] 1/6*(2*B*b^2*e^2*x^3 - 3*(B*b^2*d*e - (2*B*a*b + A*b^2)*e^2)*x^2 + 6*(B*b^2
*d^2 - (2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e^2)*x)/e^3 - (B*b^2*d^3 -
 A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*log(e*x + d
)/e^4
```

mupad [**B**] time = 1.97, size = 159, normalized size = 1.73

$$x\left(\frac{B\,a^2+2\,A\,b\,a}{e}-\frac{d\,\left(\frac{A\,b^2+2\,B\,a\,b}{e}-\frac{B\,b^2\,d}{e^2}\right)}{e}\right)+x^2\,\left(\frac{A\,b^2+2\,B\,a\,b}{2\,e}-\frac{B\,b^2\,d}{2\,e^2}\right)+\frac{\ln\left(d+e\,x\right)\,\left(-B\,a^2\,d\,e^2+A\,a^2\,e^3+2\,B\,a\,b\,d^2\,e-2\,A\,a\,b\,d\,e^2-B\,b^2\,d^3+A\,b^2\,d^2\,e\right)}{e^4}+\frac{B\,b^2\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x),x)
```

```
[Out] x*((B*a^2 + 2*A*a*b)/e - (d*((A*b^2 + 2*B*a*b)/e - (B*b^2*d)/e^2))/e) + x^2
*((A*b^2 + 2*B*a*b)/(2*e) - (B*b^2*d)/(2*e^2)) + (log(d + e*x)*(A*a^2*e^3 -
 B*b^2*d^3 + A*b^2*d^2*e - B*a^2*d*e^2 - 2*A*a*b*d*e^2 + 2*B*a*b*d^2*e))/e^
4 + (B*b^2*x^3)/(3*e)
```

sympy [**A**] time = 0.43, size = 117, normalized size = 1.27

$$\frac{Bb^2x^3}{3e}+x^2\left(\frac{Ab^2}{2e}+\frac{Bab}{e}-\frac{Bb^2d}{2e^2}\right)+x\left(\frac{2Aab}{e}-\frac{Ab^2d}{e^2}+\frac{Ba^2}{e}-\frac{2Babd}{e^2}+\frac{Bb^2d^2}{e^3}\right)-\frac{(-Ae+Bd)\,(ae-bd)^2\log{(d+ex)}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d),x)
```

```
[Out] B*b**2*x**3/(3*e) + x**2*(A*b**2/(2*e) + B*a*b/e - B*b**2*d/(2*e**2)) + x*(
2*A*a*b/e - A*b**2*d/e**2 + B*a**2/e - 2*B*a*b*d/e**2 + B*b**2*d**2/e**3) -
 (-A*e + B*d)*(a*e - b*d)**2*log(d + e*x)/e**4
```

3.1446 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=101

$$\frac{(bd-ae)^2(Bd-Ae)}{e^4(d+ex)}+\frac{(bd-ae)\log(d+ex)(-aBe-2Abe+3bBd)}{e^4}-\frac{bx(-2aBe-Abe+2bBd)}{e^3}+\frac{b^2Bx^2}{2e^2}$$

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$\frac{(bd-ae)^2(Bd-Ae)}{e^4(d+ex)}-\frac{bx(-2aBe-Abe+2bBd)}{e^3}+\frac{(bd-ae)\log(d+ex)(-aBe-2Abe+3bBd)}{e^4}+\frac{b^2Bx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] -((b*(2*b*B*d - A*b*e - 2*a*B*e)*x)/e^3) + (b^2*B*x^2)/(2*e^2) + ((b*d - a*
e)^2*(B*d - A*e))/(e^4*(d + e*x)) + ((b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e
)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^2}\,dx\\ &= \int \left(\frac{b(-2bBd+Abe+2aBe)}{e^3}+\frac{b^2Bx}{e^2}+\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^2}+\frac{(-bd\right.\\ &= -\frac{b(2bBd-Abe-2aBe)x}{e^3}+\frac{b^2Bx^2}{2e^2}+\frac{(bd-ae)^2(Bd-Ae)}{e^4(d+ex)}+\frac{(bd-ae)(3\end{aligned}$$

Mathematica [A] time = 0.10, size = 98, normalized size = 0.97

$$\frac{\frac{2(bd-ae)^2(Bd-Ae)}{d+ex}+2bex(2aBe+Abe-2bBd)+2(bd-ae)\log(d+ex)(-aBe-2Abe+3bBd)+b^2Be^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*b*e*(-2*b*B*d + A*b*e + 2*a*B*e)*x + b^2*B*e^2*x^2 + (2*(b*d - a*e)^2*(B
*d - A*e))/(d + e*x) + 2*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e)*Log[d + e*
x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2, x]
```

fricas [B] time = 0.42, size = 238, normalized size = 2.36

$$\frac{Bb^2e^3x^3+2\,Bb^2d^3-2\,Aa^2e^3-2\left(2\,Bab+Ab^2\right)d^2e+2\left(Ba^2+2\,Aab\right)de^2-\left(3\,Bb^2de^2-2\left(2\,Bab+Ab^2\right)e^3\right)x^2-2\left(2\,Bb^2d^2e-\left(2\,Bab+Ab^2\right)de^2\right)x+2\left(3\,Bb^2d^3-2\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2+\left(3\,Bb^2d^2e-2\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x\right)\log\left(ex+d\right)}{2\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*e^3*x^3 + 2*B*b^2*d^3 - 2*A*a^2*e^3 - 2*(2*B*a*b + A*b^2)*d^2*e
+ 2*(B*a^2 + 2*A*a*b)*d*e^2 - (3*B*b^2*d*e^2 - 2*(2*B*a*b + A*b^2)*e^3)*x^2
 - 2*(2*B*b^2*d^2*e - (2*B*a*b + A*b^2)*d*e^2)*x + 2*(3*B*b^2*d^3 - 2*(2*B*
a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2 + (3*B*b^2*d^2*e - 2*(2*B*a*b
+ A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [B] time = 0.16, size = 227, normalized size = 2.25

$$\frac{1}{2}\left(Bb^2-\frac{2\left(3\,Bb^2de-2\,Babe^2-Ab^2e^2\right)e^{(-1)}}{xe+d}\right)(xe+d)^2e^{(-4)}-\left(3\,Bb^2d^2-4\,Babde-2\,Ab^2de+Ba^2e^2+2\,Aabe^2\right)e^{(-4)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right)+\left(\frac{Bb^2d^3e^2}{xe+d}-\frac{2\,Babd^2e^3}{xe+d}-\frac{Ab^2d^2e^3}{xe+d}+\frac{Ba^2de^4}{xe+d}+\frac{2\,Aabde^4}{xe+d}-\frac{Aa^2e^5}{xe+d}\right)e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*b^2 - 2*(3*B*b^2*d*e - 2*B*a*b*e^2 - A*b^2*e^2)*e^(-1)/(x*e + d))*(x
*e + d)^2*e^(-4) - (3*B*b^2*d^2 - 4*B*a*b*d*e - 2*A*b^2*d*e + B*a^2*e^2 + 2
*A*a*b*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*b^2*d^3*e^2/(x
*e + d) - 2*B*a*b*d^2*e^3/(x*e + d) - A*b^2*d^2*e^3/(x*e + d) + B*a^2*d*e^4
/(x*e + d) + 2*A*a*b*d*e^4/(x*e + d) - A*a^2*e^5/(x*e + d))*e^(-6)
```

maple [B] time = 0.05, size = 223, normalized size = 2.21

$$\frac{B\,b^2x^2}{2e^2}-\frac{A\,a^2}{(ex+d)\,e}+\frac{2Aabd}{(ex+d)\,e^2}+\frac{2Aab\ln(ex+d)}{e^2}-\frac{A\,b^2d^2}{(ex+d)\,e^3}-\frac{2A\,b^2d\ln(ex+d)}{e^3}+\frac{A\,b^2x}{e^2}+\frac{B\,a^2d}{(ex+d)\,e^2}+\frac{B\,a^2\ln(ex+d)}{e^2}-\frac{2Bab\,d^2}{(ex+d)\,e^3}-\frac{4Babd\ln(ex+d)}{e^3}+\frac{2Babx}{e^2}+\frac{B\,b^2d^3}{(ex+d)\,e^4}+\frac{3B\,b^2d^2\ln(ex+d)}{e^4}-\frac{2B\,b^2dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*b^2/e^2*x^2+b^2/e^2*A*x+2*b/e^2*a*B*x-2*b^2/e^3*B*d*x-1/e/(e*x+d)*A*a
^2+2/e^2/(e*x+d)*A*d*a*b-1/e^3/(e*x+d)*A*b^2*d^2+1/e^2/(e*x+d)*B*d*a^2-2/e^
3/(e*x+d)*B*a*b*d^2+1/e^4/(e*x+d)*B*b^2*d^3+2/e^2*ln(e*x+d)*A*a*b-2/e^3*ln(
e*x+d)*A*b^2*d+1/e^2*ln(e*x+d)*B*a^2-4/e^3*ln(e*x+d)*B*a*b*d+3/e^4*ln(e*x+d
)*B*b^2*d^2
```

maxima [A] time = 0.46, size = 156, normalized size = 1.54

$$\frac{Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2}{e^5x+de^4}+\frac{Bb^2ex^2-2\left(2\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)x}{2\,e^3}+\frac{\left(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)
/(e^5*x + d*e^4) + 1/2*(B*b^2*e*x^2 - 2*(2*B*b^2*d - (2*B*a*b + A*b^2)*e)*x
)/e^3 + (3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e^2)*log
(e*x + d)/e^4
```

mupad [B] time = 0.10, size = 165, normalized size = 1.63

$$x\left(\frac{A\,b^2+2\,B\,a\,b}{e^2}-\frac{2\,B\,b^2\,d}{e^3}\right)+\frac{\ln\left(d+e\,x\right)\,\left(B\,a^2\,e^2-4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+3\,B\,b^2\,d^2-2\,A\,b^2\,d\,e\right)}{e^4}-\frac{-B\,a^2\,d\,e^2+A\,a^2\,e^3+2\,B\,a\,b\,d^2\,e-2\,A\,a\,b\,d\,e^2-B\,b^2\,d^3+A\,b^2\,d^2\,e}{e\,\left(x\,e^4+d\,e^3\right)}+\frac{B\,b^2\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*b^2 + 2*B*a*b)/e^2 - (2*B*b^2*d)/e^3) + (log(d + e*x)*(B*a^2*e^2 + 3*
B*b^2*d^2 + 2*A*a*b*e^2 - 2*A*b^2*d*e - 4*B*a*b*d*e))/e^4 - (A*a^2*e^3 - B*
b^2*d^3 + A*b^2*d^2*e - B*a^2*d*e^2 - 2*A*a*b*d*e^2 + 2*B*a*b*d^2*e)/(e*(d*
e^3 + e^4*x)) + (B*b^2*x^2)/(2*e^2)
```

sympy [A] time = 0.88, size = 151, normalized size = 1.50

$$\frac{Bb^2x^2}{2e^2}+x\left(\frac{Ab^2}{e^2}+\frac{2Bab}{e^2}-\frac{2Bb^2d}{e^3}\right)+\frac{-Aa^2e^3+2Aabde^2-Ab^2d^2e+Ba^2de^2-2Babd^2e+Bb^2d^3}{de^4+e^5x}+\frac{(ae-bd)\,(2Abe+Bae-3Bbd)\log{(d+ex)}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**2,x)
```

```
[Out] B*b**2*x**2/(2*e**2) + x*(A*b**2/e**2 + 2*B*a*b/e**2 - 2*B*b**2*d/e**3) + (
-A*a**2*e**3 + 2*A*a*b*d*e**2 - A*b**2*d**2*e + B*a**2*d*e**2 - 2*B*a*b*d**
2*e + B*b**2*d**3)/(d*e**4 + e**5*x) + (a*e - b*d)*(2*A*b*e + B*a*e - 3*B*b
*d)*log(d + e*x)/e**4
```

3.1447 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=106

$$-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{e^4(d+ex)}+\frac{(bd-ae)^2(Bd-Ae)}{2e^4(d+ex)^2}-\frac{b\log(d+ex)(-2aBe-Abe+3bBd)}{e^4}+\frac{b^2Bx}{e^3}$$

Rubi [A] time = 0.09, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {27, 77}

$$-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{e^4(d+ex)}+\frac{(bd-ae)^2(Bd-Ae)}{2e^4(d+ex)^2}-\frac{b\log(d+ex)(-2aBe-Abe+3bBd)}{e^4}+\frac{b^2Bx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] (b^2*B*x)/e^3 + ((b*d - a*e)^2*(B*d - A*e))/(2*e^4*(d + e*x)^2) - ((b*d - a
*e)*(3*b*B*d - 2*A*b*e - a*B*e))/(e^4*(d + e*x)) - (b*(3*b*B*d - A*b*e - 2*
a*B*e)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^3}\,dx \\
&= \int \left(\frac{b^2B}{e^3}+\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^3}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^2}+ \ldots\right. \\
&= \frac{b^2Bx}{e^3}+\frac{(bd-ae)^2(Bd-Ae)}{2e^4(d+ex)^2}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{e^4(d+ex)}-\frac{b(3bBd- \ldots
\end{aligned}$$

Mathematica [A] time = 0.08, size = 143, normalized size = 1.35

$$-\frac{a^2e^2(Ae+B(d+2ex))+2abe(Ae(d+2ex)-Bd(3d+4ex))+2b(d+ex)^2\log(d+ex)(-2aBe-Abe+3bBd)-\left(b^2\left(Ade(3d+4ex)+B\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)\right)\right)}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] -1/2*(a^2*e^2*(A*e + B*(d + 2*e*x)) + 2*a*b*e*(A*e*(d + 2*e*x) - B*d*(3*d +
 4*e*x)) - b^2*(A*d*e*(3*d + 4*e*x) + B*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 +
```

```
2*e^3*x^3)) + 2*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2*Log[d + e*x])/(e
^4*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3, x]
```

fricas [B] time = 0.40, size = 247, normalized size = 2.33

$$\frac{2\,Bb^2e^3x^3+4\,Bb^2de^2x^2-5\,Bb^2d^3-Aa^2e^3+3\left(2\,Bab+Ab^2\right)d^2e-\left(Ba^2+2\,Aab\right)de^2-2\left(2\,Bb^2d^2e-2\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x-2\left(3\,Bb^2d^3-\left(2\,Bab+Ab^2\right)d^2e+\left(3\,Bb^2de^2-\left(2\,Bab+Ab^2\right)e^3\right)x^2+2\left(3\,Bb^2d^2e-\left(2\,Bab+Ab^2\right)de^2\right)x\right)\log\left(ex+d\right)}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="fricas")
[Out] 1/2*(2*B*b^2*e^3*x^3 + 4*B*b^2*d*e^2*x^2 - 5*B*b^2*d^3 - A*a^2*e^3 + 3*(2*B
*a*b + A*b^2)*d^2*e - (B*a^2 + 2*A*a*b)*d*e^2 - 2*(2*B*b^2*d^2*e - 2*(2*B*a
*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x - 2*(3*B*b^2*d^3 - (2*B*a*b +
A*b^2)*d^2*e + (3*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 2*(3*B*b^2*d^2
*e - (2*B*a*b + A*b^2)*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e
^4)
```

giac [A] time = 0.15, size = 156, normalized size = 1.47

$$Bb^2xe^{(-3)}-\left(3\,Bb^2d-2\,Babe-Ab^2e\right)e^{(-4)}\log\left(|xe+d|\right)-\frac{\left(5\,Bb^2d^3-6\,Babd^2e-3\,Ab^2d^2e+Ba^2de^2+2\,Aabde^2+Aa^2e^3+2\left(3\,Bb^2d^2e-4\,Babde^2-2\,Ab^2de^2+Ba^2e^3+2\,Aabe^3\right)x\right)e^{(-4)}}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="giac")
[Out] B*b^2*x*e^(-3) - (3*B*b^2*d - 2*B*a*b*e - A*b^2*e)*e^(-4)*log(abs(x*e + d))
 - 1/2*(5*B*b^2*d^3 - 6*B*a*b*d^2*e - 3*A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b
*d*e^2 + A*a^2*e^3 + 2*(3*B*b^2*d^2*e - 4*B*a*b*d*e^2 - 2*A*b^2*d*e^2 + B*a
^2*e^3 + 2*A*a*b*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [B] time = 0.05, size = 242, normalized size = 2.28

$$-\frac{A\,a^2}{2\left(ex+d\right)^2e}+\frac{Aabd}{\left(ex+d\right)^2e^2}-\frac{A\,b^2d^2}{2\left(ex+d\right)^2e^3}+\frac{B\,a^2d}{2\left(ex+d\right)^2e^2}-\frac{Bab\,d^2}{\left(ex+d\right)^2e^3}+\frac{B\,b^2d^3}{2\left(ex+d\right)^2e^4}-\frac{2Aab}{\left(ex+d\right)e^2}+\frac{2A\,b^2d}{\left(ex+d\right)e^3}+\frac{A\,b^2\ln\left(ex+d\right)}{e^3}-\frac{B\,a^2}{\left(ex+d\right)e^2}+\frac{4Babd}{\left(ex+d\right)e^3}+\frac{2Bab\ln\left(ex+d\right)}{e^3}-\frac{3B\,b^2d^2}{\left(ex+d\right)e^4}-\frac{3B\,b^2d\ln\left(ex+d\right)}{e^4}+\frac{B\,b^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x)
[Out] B*b^2/e^3*x-2/e^2/(e*x+d)*A*a*b+2/e^3/(e*x+d)*A*b^2*d-1/e^2/(e*x+d)*B*a^2+4
/e^3/(e*x+d)*B*a*b*d-3/e^4/(e*x+d)*B*b^2*d^2-1/2/e/(e*x+d)^2*A*a^2+1/e^2/(e
*x+d)^2*A*d*a*b-1/2/e^3/(e*x+d)^2*A*d^2*b^2+1/2/e^2/(e*x+d)^2*B*d*a^2-1/e^3
/(e*x+d)^2*B*d^2*a*b+1/2/e^4/(e*x+d)^2*B*b^2*d^3+b^2/e^3*ln(e*x+d)*A+2*b/e^
3*ln(e*x+d)*a*B-3*b^2/e^4*ln(e*x+d)*B*d
```

maxima [A] time = 0.48, size = 166, normalized size = 1.57

$$\frac{Bb^2x}{e^3}-\frac{5\,Bb^2d^3+Aa^2e^3-3\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2+2\left(3\,Bb^2d^2e-2\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}-\frac{\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] B*b^2*x/e^3 - 1/2*(5*B*b^2*d^3 + A*a^2*e^3 - 3*(2*B*a*b + A*b^2)*d^2*e + (B
*a^2 + 2*A*a*b)*d*e^2 + 2*(3*B*b^2*d^2*e - 2*(2*B*a*b + A*b^2)*d*e^2 + (B*a
^2 + 2*A*a*b)*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) - (3*B*b^2*d - (2*B*a
*b + A*b^2)*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.14, size = 170, normalized size = 1.60

$$\frac{\ln(d+e\,x)\,\left(A\,b^2\,e-3\,B\,b^2\,d+2\,B\,a\,b\,e\right)}{e^4}-\frac{x\,\left(B\,a^2\,e^2-4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+3\,B\,b^2\,d^2-2\,A\,b^2\,d\,e\right)+\frac{B\,a^2\,d\,e^2+A\,a^2\,e^3-6\,B\,a\,b\,d^2\,e+2\,A\,a\,b\,d\,e^2+5\,B\,b^2\,d^3-3\,A\,b^2\,d^2\,e}{2\,e}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}+\frac{B\,b^2\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*b^2*e - 3*B*b^2*d + 2*B*a*b*e))/e^4 - (x*(B*a^2*e^2 + 3*B*
b^2*d^2 + 2*A*a*b*e^2 - 2*A*b^2*d*e - 4*B*a*b*d*e) + (A*a^2*e^3 + 5*B*b^2*d
^3 - 3*A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 - 6*B*a*b*d^2*e)/(2*e))/(d
^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (B*b^2*x)/e^3
```

sympy [A] time = 2.41, size = 187, normalized size = 1.76

$$\frac{Bb^2x}{e^3}+\frac{b\left(Abe+2Bae-3Bbd\right)\log\left(d+ex\right)}{e^4}+\frac{-Aa^2e^3-2Aabde^2+3Ab^2d^2e-Ba^2de^2+6Babd^2e-5Bb^2d^3+x\left(-4Aabe^3+4Ab^2de^2-2Ba^2e^3+8Babde^2-6Bb^2d^2e\right)}{2d^2e^4+4de^5x+2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**3,x)
```

```
[Out] B*b**2*x/e**3 + b*(A*b*e + 2*B*a*e - 3*B*b*d)*log(d + e*x)/e**4 + (-A*a**2*
e**3 - 2*A*a*b*d*e**2 + 3*A*b**2*d**2*e - B*a**2*d*e**2 + 6*B*a*b*d**2*e -
5*B*b**2*d**3 + x*(-4*A*a*b*e**3 + 4*A*b**2*d*e**2 - 2*B*a**2*e**3 + 8*B*a*
b*d*e**2 - 6*B*b**2*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
```

3.1448 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=101

$$-\frac{(a+bx)^3(Bd-Ae)}{3e(d+ex)^3(bd-ae)}+\frac{2bB(bd-ae)}{e^4(d+ex)}-\frac{B(bd-ae)^2}{2e^4(d+ex)^2}+\frac{b^2B\log(d+ex)}{e^4}$$

Rubi [A] time = 0.08, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {27, 78, 43}

$$-\frac{(a+bx)^3(Bd-Ae)}{3e(d+ex)^3(bd-ae)}+\frac{2bB(bd-ae)}{e^4(d+ex)}-\frac{B(bd-ae)^2}{2e^4(d+ex)^2}+\frac{b^2B\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3)/(3*e*(b*d - a*e)*(d + e*x)^3) - (B*(b*d - a*e)^2
)/(2*e^4*(d + e*x)^2) + (2*b*B*(b*d - a*e))/(e^4*(d + e*x)) + (b^2*B*Log[d
+ e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^4}\,dx\\
&= -\frac{(Bd-Ae)(a+bx)^3}{3e(bd-ae)(d+ex)^3}+\frac{B\int \frac{(a+bx)^2}{(d+ex)^3}\,dx}{e}\\
&= -\frac{(Bd-Ae)(a+bx)^3}{3e(bd-ae)(d+ex)^3}+\frac{B\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^3}-\frac{2b(bd-ae)}{e^2(d+ex)^2}+\frac{b^2}{e^2(d+ex)}\right)dx}{e}\\
&= -\frac{(Bd-Ae)(a+bx)^3}{3e(bd-ae)(d+ex)^3}-\frac{B(bd-ae)^2}{2e^4(d+ex)^2}+\frac{2bB(bd-ae)}{e^4(d+ex)}+\frac{b^2B\log(d+ex)}{e^4}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 138, normalized size = 1.37

$$\frac{-a^2e^2(2Ae+B(d+3ex))-2abe\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)+b^2\left(Bd\left(11d^2+27dex+18e^2x^2\right)-2Ae\left(d^2+3dex+3e^2x^2\right)\right)+6b^2B(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] (-(a^2*e^2*(2*A*e + B*(d + 3*e*x))) - 2*a*b*e*(A*e*(d + 3*e*x) + 2*B*(d^2 +
 3*d*e*x + 3*e^2*x^2)) + b^2*(-2*A*e*(d^2 + 3*d*e*x + 3*e^2*x^2) + B*d*(11*
d^2 + 27*d*e*x + 18*e^2*x^2)) + 6*b^2*B*(d + e*x)^3*Log[d + e*x])/(6*e^4*(d
 + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4, x]
```

fricas [B] time = 0.41, size = 221, normalized size = 2.19

$$\frac{11\,Bb^2d^3-2\,Aa^2e^3-2\left(2\,Bab+Ab^2\right)d^2e-\left(Ba^2+2\,Aab\right)de^2+6\left(3\,Bb^2de^2-\left(2\,Bab+Ab^2\right)e^3\right)x^2+3\left(9\,Bb^2d^2e-2\left(2\,Bab+Ab^2\right)de^2-\left(Ba^2+2\,Aab\right)e^3\right)x+6\left(Bb^2e^3x^3+3\,Bb^2de^2x^2+3\,Bb^2d^2ex+Bb^2d^3\right)\log\left(ex+d\right)}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*b^2*d^3 - 2*A*a^2*e^3 - 2*(2*B*a*b + A*b^2)*d^2*e - (B*a^2 + 2*A*
a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 3*(9*B*b^2*d^2
*e - 2*(2*B*a*b + A*b^2)*d*e^2 - (B*a^2 + 2*A*a*b)*e^3)*x + 6*(B*b^2*e^3*x^
3 + 3*B*b^2*d*e^2*x^2 + 3*B*b^2*d^2*e*x + B*b^2*d^3)*log(e*x + d))/(e^7*x^3
 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.16, size = 163, normalized size = 1.61

$$Bb^2e^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,Bb^2de-2\,Babe^2-Ab^2e^2\right)x^2+3\left(9\,Bb^2d^2-4\,Babde-2\,Ab^2de-Ba^2e^2-2\,Aabe^2\right)x+\left(11\,Bb^2d^3-4\,Babd^2e-2\,Ab^2d^2e-Ba^2de^2-2\,Aabde^2-2\,Aa^2e^3\right)e^{(-1)}\right)e^{(-3)}}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*b^2*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*b^2*d*e - 2*B*a*b*e^2 - A*b^2*
e^2)*x^2 + 3*(9*B*b^2*d^2 - 4*B*a*b*d*e - 2*A*b^2*d*e - B*a^2*e^2 - 2*A*a*b
*e^2)*x + (11*B*b^2*d^3 - 4*B*a*b*d^2*e - 2*A*b^2*d^2*e - B*a^2*d*e^2 - 2*A
*a*b*d*e^2 - 2*A*a^2*e^3)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [B] time = 0.06, size = 251, normalized size = 2.49

$$-\frac{A\,a^2}{3\left(ex+d\right)^3e}+\frac{2Aabd}{3\left(ex+d\right)^3e^2}-\frac{A\,b^2d^2}{3\left(ex+d\right)^3e^3}+\frac{B\,a^2d}{3\left(ex+d\right)^3e^2}-\frac{2Bab\,d^2}{3\left(ex+d\right)^3e^3}+\frac{B\,b^2d^3}{3\left(ex+d\right)^3e^4}-\frac{Aab}{\left(ex+d\right)^2e^2}+\frac{A\,b^2d}{\left(ex+d\right)^2e^3}-\frac{B\,a^2}{2\left(ex+d\right)^2e^2}+\frac{2Babd}{\left(ex+d\right)^2e^3}-\frac{3B\,b^2d^2}{2\left(ex+d\right)^2e^4}-\frac{A\,b^2}{\left(ex+d\right)e^3}-\frac{2Bab}{\left(ex+d\right)e^3}+\frac{3B\,b^2d}{\left(ex+d\right)e^4}+\frac{B\,b^2\ln\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x)
```

```
[Out] -b^2/e^3/(e*x+d)*A-2*b/e^3/(e*x+d)*a*B+3*b^2/e^4/(e*x+d)*B*d-1/3/(e*x+d)^3*
A*a^2/e+2/3/e^2/(e*x+d)^3*A*a*b*d-1/3/e^3/(e*x+d)^3*A*b^2*d^2+1/3/(e*x+d)^3
*B*a^2*d/e^2-2/3/e^3/(e*x+d)^3*B*d^2*a*b+1/3/e^4/(e*x+d)^3*B*b^2*d^3-1/e^2/
```

```
(e*x+d)^2*A*a*b+1/e^3/(e*x+d)^2*A*b^2*d-1/2/(e*x+d)^2*B*a^2/e^2+2/e^3/(e*x+
d)^2*B*d*a*b-3/2/e^4/(e*x+d)^2*B*d^2*b^2+B*b^2/e^4*ln(e*x+d)
```

maxima [A] time = 0.53, size = 184, normalized size = 1.82

$$\frac{11\,Bb^2d^3 - 2\,Aa^2e^3 - 2\left(2\,Bab + Ab^2\right)d^2e - \left(Ba^2 + 2\,Aab\right)de^2 + 6\left(3\,Bb^2de^2 - \left(2\,Bab + Ab^2\right)e^3\right)x^2 + 3\left(9\,Bb^2d^2e - 2\left(2\,Bab + Ab^2\right)de^2 - \left(Ba^2 + 2\,Aab\right)e^3\right)x}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)} + \frac{Bb^2\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*b^2*d^3 - 2*A*a^2*e^3 - 2*(2*B*a*b + A*b^2)*d^2*e - (B*a^2 + 2*A*
a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 3*(9*B*b^2*d^2
*e - 2*(2*B*a*b + A*b^2)*d*e^2 - (B*a^2 + 2*A*a*b)*e^3)*x)/(e^7*x^3 + 3*d*e
^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*b^2*log(e*x + d)/e^4
```

mupad [B] time = 0.12, size = 178, normalized size = 1.76

$$\frac{B\,b^2\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{B\,a^2\,d\,e^2+2\,A\,a^2\,e^3+4\,B\,a\,b\,d^2\,e+2\,A\,a\,b\,d\,e^2-11\,B\,b^2\,d^3+2\,A\,b^2\,d^2\,e}{6\,e^4}+\frac{x\,\left(B\,a^2\,e^2+4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2-9\,B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{2\,e^3}+\frac{b\,x^2\,\left(A\,b\,e+2\,B\,a\,e-3\,B\,b\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^4,x)
```

```
[Out] (B*b^2*log(d + e*x))/e^4 - ((2*A*a^2*e^3 - 11*B*b^2*d^3 + 2*A*b^2*d^2*e + B
*a^2*d*e^2 + 2*A*a*b*d*e^2 + 4*B*a*b*d^2*e)/(6*e^4) + (x*(B*a^2*e^2 - 9*B*b
^2*d^2 + 2*A*a*b*e^2 + 2*A*b^2*d*e + 4*B*a*b*d*e))/(2*e^3) + (b*x^2*(A*b*e
+ 2*B*a*e - 3*B*b*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [B] time = 5.76, size = 211, normalized size = 2.09

$$\frac{Bb^2\log\left(d + ex\right)}{e^4} + \frac{-2Aa^2e^3 - 2Aabde^2 - 2Ab^2d^2e - Ba^2de^2 - 4Babd^2e + 11Bb^2d^3 + x^2\left(-6Ab^2e^3 - 12Babe^3 + 18Bb^2de^2\right) + x\left(-6Aabe^3 - 6Ab^2de^2 - 3Ba^2e^3 - 12Babde^2 + 27Bb^2d^2e\right)}{6d^3e^4 + 18d^2e^5x + 18de^6x^2 + 6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**4,x)
```

```
[Out] B*b**2*log(d + e*x)/e**4 + (-2*A*a**2*e**3 - 2*A*a*b*d*e**2 - 2*A*b**2*d**2
*e - B*a**2*d*e**2 - 4*B*a*b*d**2*e + 11*B*b**2*d**3 + x**2*(-6*A*b**2*e**3
 - 12*B*a*b*e**3 + 18*B*b**2*d*e**2) + x*(-6*A*a*b*e**3 - 6*A*b**2*d*e**2 -
 3*B*a**2*e**3 - 12*B*a*b*d*e**2 + 27*B*b**2*d**2*e))/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.1449 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^5}\,dx$

Optimal. Leaf size=86

$$\frac{(a+bx)^3(-4aBe+Abe+3bBd)}{12e(d+ex)^3(bd-ae)^2}-\frac{(a+bx)^3(Bd-Ae)}{4e(d+ex)^4(bd-ae)}$$

Rubi [A] time = 0.03, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {27, 78, 37}

$$\frac{(a+bx)^3(-4aBe+Abe+3bBd)}{12e(d+ex)^3(bd-ae)^2}-\frac{(a+bx)^3(Bd-Ae)}{4e(d+ex)^4(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^5,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3)/(4*e*(b*d - a*e)*(d + e*x)^4) + ((3*b*B*d + A*b*
e - 4*a*B*e)*(a + b*x)^3)/(12*e*(b*d - a*e)^2*(d + e*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^5}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^5}\,dx\\
&= -\frac{(Bd-Ae)(a+bx)^3}{4e(bd-ae)(d+ex)^4}+\frac{(3bBd+Abe-4aBe)\int \frac{(a+bx)^2}{(d+ex)^4}\,dx}{4e(bd-ae)}\\
&= -\frac{(Bd-Ae)(a+bx)^3}{4e(bd-ae)(d+ex)^4}+\frac{(3bBd+Abe-4aBe)(a+bx)^3}{12e(bd-ae)^2(d+ex)^3}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 125, normalized size = 1.45

$$-\frac{a^2e^2(3Ae+B(d+4ex))+2abe\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)+b^2\left(Ae\left(d^2+4dex+6e^2x^2\right)+3B\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(a^2*e^2*(3*A*e + B*(d + 4*e*x)) + 2*a*b*e*(A*e*(d + 4*e*x) + B*(d^2
+ 4*d*e*x + 6*e^2*x^2)) + b^2*(A*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + 3*B*(d^3 +
 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)))/(e^4*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^5, x]
```

fricas [B] time = 0.41, size = 187, normalized size = 2.17

$$-\frac{12\,Bb^2e^3x^3+3\,Bb^2d^3+3\,Aa^2e^3+\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2+6\left(3\,Bb^2de^2+\left(2\,Bab+Ab^2\right)e^3\right)x^2+4\left(3\,Bb^2d^2e+\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 3*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2
*e + (B*a^2 + 2*A*a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 4*(3*B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)/
(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [B] time = 0.20, size = 245, normalized size = 2.85

$$-\frac{1}{12}\left(\frac{12\,Bb^2e^{(-1)}}{xe+d}-\frac{18\,Bb^2de^{(-1)}}{(xe+d)^2}+\frac{12\,Bb^2d^2e^{(-1)}}{(xe+d)^3}-\frac{3\,Bb^2d^3e^{(-1)}}{(xe+d)^4}+\frac{12\,Bab}{(xe+d)^2}+\frac{6\,Ab^2}{(xe+d)^2}-\frac{16\,Babd}{(xe+d)^3}-\frac{8\,Ab^2d}{(xe+d)^3}+\frac{6\,Babd^2}{(xe+d)^4}+\frac{3\,Ab^2d^2}{(xe+d)^4}+\frac{4\,Ba^2e}{(xe+d)^3}+\frac{8\,Aabe}{(xe+d)^3}-\frac{3\,Ba^2de}{(xe+d)^4}-\frac{6\,Aabde}{(xe+d)^4}+\frac{3\,Aa^2e^2}{(xe+d)^4}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*b^2*e^(-1)/(x*e + d) - 18*B*b^2*d*e^(-1)/(x*e + d)^2 + 12*B*b^2
*d^2*e^(-1)/(x*e + d)^3 - 3*B*b^2*d^3*e^(-1)/(x*e + d)^4 + 12*B*a*b/(x*e +
d)^2 + 6*A*b^2/(x*e + d)^2 - 16*B*a*b*d/(x*e + d)^3 - 8*A*b^2*d/(x*e + d)^3
 + 6*B*a*b*d^2/(x*e + d)^4 + 3*A*b^2*d^2/(x*e + d)^4 + 4*B*a^2*e/(x*e + d)^
3 + 8*A*a*b*e/(x*e + d)^3 - 3*B*a^2*d*e/(x*e + d)^4 - 6*A*a*b*d*e/(x*e + d)
^4 + 3*A*a^2*e^2/(x*e + d)^4)*e^(-3)
```

maple [B] time = 0.06, size = 166, normalized size = 1.93

$$-\frac{B\,b^2}{(ex+d)\,e^4}-\frac{(Abe+2aBe-3Bbd)\,b}{2\,(ex+d)^2\,e^4}-\frac{2Aab\,e^2-2A\,b^2de+B\,a^2e^2-4Bdabe+3b^2B\,d^2}{3\,(ex+d)^3\,e^4}-\frac{A\,a^2e^3-2Aabd\,e^2+A\,b^2d^2e-Bd\,a^2e^2+2B\,d^2abe-b^2B\,d^3}{4\,(ex+d)^4\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x)
```

```
[Out] -b^2*B/e^4/(e*x+d)-1/3*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b
^2*d^2)/e^4/(e*x+d)^3-1/2*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^2-1/4*(A*a^
2*e^3-2*A*a*b*d*e^2+A*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d^3)/e^4/(e
*x+d)^4
```

maxima [B] time = 0.58, size = 187, normalized size = 2.17

$$-\frac{12\,Bb^2e^3x^3+3\,Bb^2d^3+3\,Aa^2e^3+\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2+6\left(3\,Bb^2de^2+\left(2\,Bab+Ab^2\right)e^3\right)x^2+4\left(3\,Bb^2d^2e+\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 3*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2
*e + (B*a^2 + 2*A*a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 4*(3*B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)/
(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.09, size = 184, normalized size = 2.14

$$-\frac{\frac{B\,a^2\,d\,e^2+3\,A\,a^2\,e^3+2\,B\,a\,b\,d^2\,e+2\,A\,a\,b\,d\,e^2+3\,B\,b^2\,d^3+A\,b^2\,d^2\,e}{12\,e^4}+\frac{x\,\left(B\,a^2\,e^2+2\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+3\,B\,b^2\,d^2+A\,b^2\,d\,e\right)}{3\,e^3}+\frac{b\,x^2\,\left(A\,b\,e+2\,B\,a\,e+3\,B\,b\,d\right)}{2\,e^2}+\frac{B\,b^2\,x^3}{e}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^5,x)
```

```
[Out] -((3*A*a^2*e^3 + 3*B*b^2*d^3 + A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 +
2*B*a*b*d^2*e)/(12*e^4) + (x*(B*a^2*e^2 + 3*B*b^2*d^2 + 2*A*a*b*e^2 + A*b^2
*d*e + 2*B*a*b*d*e))/(3*e^3) + (b*x^2*(A*b*e + 2*B*a*e + 3*B*b*d))/(2*e^2)
+ (B*b^2*x^3)/e)/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [B] time = 11.67, size = 223, normalized size = 2.59

$$\frac{-3Aa^2e^3-2Aabde^2-Ab^2d^2e-Ba^2de^2-2Babd^2e-3Bb^2d^3-12Bb^2e^3x^3+x^2\left(-6Ab^2e^3-12Babe^3-18Bb^2de^2\right)+x\left(-8Aabe^3-4Ab^2de^2-4Ba^2e^3-8Babde^2-12Bb^2d^2e\right)}{12d^4e^4+48d^3e^5x+72d^2e^6x^2+48de^7x^3+12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a**2*e**3 - 2*A*a*b*d*e**2 - A*b**2*d**2*e - B*a**2*d*e**2 - 2*B*a*b*
d**2*e - 3*B*b**2*d**3 - 12*B*b**2*e**3*x**3 + x**2*(-6*A*b**2*e**3 - 12*B*
a*b*e**3 - 18*B*b**2*d*e**2) + x*(-8*A*a*b*e**3 - 4*A*b**2*d*e**2 - 4*B*a**
2*e**3 - 8*B*a*b*d*e**2 - 12*B*b**2*d**2*e))/(12*d**4*e**4 + 48*d**3*e**5*x
 + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.1450 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^6} dx$

Optimal. Leaf size=120

$$\frac{b(-2aBe-Abe+3bBd)}{3e^4(d+ex)^3}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{4e^4(d+ex)^4}+\frac{(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^5}-\frac{b^2B}{2e^4(d+ex)^2}$$

Rubi [A] time = 0.10, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 77\}$

$$\frac{b(-2aBe-Abe+3bBd)}{3e^4(d+ex)^3}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{4e^4(d+ex)^4}+\frac{(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^5}-\frac{b^2B}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^6,x]
```

```
[Out] ((b*d - a*e)^2*(B*d - A*e))/(5*e^4*(d + e*x)^5) - ((b*d - a*e)*(3*b*B*d - 2
*A*b*e - a*B*e))/(4*e^4*(d + e*x)^4) + (b*(3*b*B*d - A*b*e - 2*a*B*e))/(3*e
^4*(d + e*x)^3) - (b^2*B)/(2*e^4*(d + e*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^6} dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^6} dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^6}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^5}+\frac{b(-3\right.\\ &= \frac{(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^5}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{4e^4(d+ex)^4}+\frac{b(3bBd-Abe-}{3e^4(d+ex}\end{aligned}$$

Mathematica [A] time = 0.06, size = 129, normalized size = 1.08

$$-\frac{3a^2e^2(4Ae+B(d+5ex))+2abe\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)+b^2\left(2Ae\left(d^2+5dex+10e^2x^2\right)+3B\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(3*a^2*e^2*(4*A*e + B*(d + 5*e*x)) + 2*a*b*e*(3*A*e*(d + 5*e*x) + 2*B
*(d^2 + 5*d*e*x + 10*e^2*x^2)) + b^2*(2*A*e*(d^2 + 5*d*e*x + 10*e^2*x^2) +
3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)))/(e^4*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^6, x]
```

fricas [A] time = 0.40, size = 203, normalized size = 1.69

$$-\frac{30\,Bb^2e^3x^3+3\,Bb^2d^3+12\,Aa^2e^3+2\left(2\,Bab+Ab^2\right)d^2e+3\left(Ba^2+2\,Aab\right)de^2+10\left(3\,Bb^2de^2+2\left(2\,Bab+Ab^2\right)e^3\right)x^2+5\left(3\,Bb^2d^2e+2\left(2\,Bab+Ab^2\right)de^2+3\left(Ba^2+2\,Aab\right)e^3\right)x}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 12*A*a^2*e^3 + 2*(2*B*a*b + A*b^2)*
d^2*e + 3*(B*a^2 + 2*A*a*b)*d*e^2 + 10*(3*B*b^2*d*e^2 + 2*(2*B*a*b + A*b^2)
*e^3)*x^2 + 5*(3*B*b^2*d^2*e + 2*(2*B*a*b + A*b^2)*d*e^2 + 3*(B*a^2 + 2*A*a
*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^
4*e^5*x + d^5*e^4)
```

giac [A] time = 0.15, size = 160, normalized size = 1.33

$$-\frac{\left(30\,Bb^2x^3e^3+30\,Bb^2dx^2e^2+15\,Bb^2d^2xe+3\,Bb^2d^3+40\,Babx^2e^3+20\,Ab^2x^2e^3+20\,Babdxe^2+10\,Ab^2dxe^2+4\,Babd^2e+2\,Ab^2d^2e+15\,Ba^2xe^3+30\,Aabxe^3+3\,Ba^2de^2+6\,Aabde^2+12\,Aa^2e^3\right)e^{(-4)}}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*b^2*x^3*e^3 + 30*B*b^2*d*x^2*e^2 + 15*B*b^2*d^2*x*e + 3*B*b^2*d
^3 + 40*B*a*b*x^2*e^3 + 20*A*b^2*x^2*e^3 + 20*B*a*b*d*x*e^2 + 10*A*b^2*d*x*
e^2 + 4*B*a*b*d^2*e + 2*A*b^2*d^2*e + 15*B*a^2*x*e^3 + 30*A*a*b*x*e^3 + 3*B
*a^2*d*e^2 + 6*A*a*b*d*e^2 + 12*A*a^2*e^3)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.05, size = 166, normalized size = 1.38

$$-\frac{B\,b^2}{2\,(ex+d)^2\,e^4}-\frac{(Abe+2aBe-3Bbd)\,b}{3\,(ex+d)^3\,e^4}-\frac{A\,a^2e^3-2Aabd\,e^2+A\,b^2d^2e-Bd\,a^2e^2+2B\,d^2abe-b^2B\,d^3}{5\,(ex+d)^5\,e^4}-\frac{2Aab\,e^2-2A\,b^2de+B\,a^2e^2-4Bdabe+3b^2B\,d^2}{4\,(ex+d)^4\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x)
```

```
[Out] -1/5*(A*a^2*e^3-2*A*a*b*d*e^2+A*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d
^3)/e^4/(e*x+d)^5-1/3*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^3-1/2/(e*x+d)^2
*B*b^2/e^4-1/4*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b^2*d^2)/
e^4/(e*x+d)^4
```

maxima [A] time = 0.61, size = 203, normalized size = 1.69

$$-\frac{30\,Bb^2e^3x^3+3\,Bb^2d^3+12\,Aa^2e^3+2\left(2\,Bab+Ab^2\right)d^2e+3\left(Ba^2+2\,Aab\right)de^2+10\left(3\,Bb^2de^2+2\left(2\,Bab+Ab^2\right)e^3\right)x^2+5\left(3\,Bb^2d^2e+2\left(2\,Bab+Ab^2\right)de^2+3\left(Ba^2+2\,Aab\right)e^3\right)x}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 12*A*a^2*e^3 + 2*(2*B*a*b + A*b^2)*
d^2*e + 3*(B*a^2 + 2*A*a*b)*d*e^2 + 10*(3*B*b^2*d*e^2 + 2*(2*B*a*b + A*b^2)
*e^3)*x^2 + 5*(3*B*b^2*d^2*e + 2*(2*B*a*b + A*b^2)*d*e^2 + 3*(B*a^2 + 2*A*a
*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^
4*e^5*x + d^5*e^4)
```

mupad [B] time = 2.23, size = 201, normalized size = 1.68

$$-\frac{\frac{3\,B\,a^2\,d\,e^2+12\,A\,a^2\,e^3+4\,B\,a\,b\,d^2\,e+6\,A\,a\,b\,d\,e^2+3\,B\,b^2\,d^3+2\,A\,b^2\,d^2\,e}{60\,e^4}+\frac{x\,\left(3\,B\,a^2\,e^2+4\,B\,a\,b\,d\,e+6\,A\,a\,b\,e^2+3\,B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{12\,e^3}+\frac{b\,x^2\,\left(2\,A\,b\,e+4\,B\,a\,e+3\,B\,b\,d\right)}{6\,e^2}+\frac{B\,b^2\,x^3}{2\,e}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^6,x)
```

```
[Out] -((12*A*a^2*e^3 + 3*B*b^2*d^3 + 2*A*b^2*d^2*e + 3*B*a^2*d*e^2 + 6*A*a*b*d*e
^2 + 4*B*a*b*d^2*e)/(60*e^4) + (x*(3*B*a^2*e^2 + 3*B*b^2*d^2 + 6*A*a*b*e^2
+ 2*A*b^2*d*e + 4*B*a*b*d*e))/(12*e^3) + (b*x^2*(2*A*b*e + 4*B*a*e + 3*B*b*
d))/(6*e^2) + (B*b^2*x^3)/(2*e))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*
x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [B] time = 21.11, size = 238, normalized size = 1.98

$$\frac{-12Aa^2e^3 - 6Aabde^2 - 2Ab^2d^2e - 3Ba^2de^2 - 4Babd^2e - 3Bb^2d^3 - 30Bb^2e^3x^3 + x^2\left(-20Ab^2e^3 - 40Babe^3 - 30Bb^2de^2\right) + x\left(-30Aabe^3 - 10Ab^2de^2 - 15Ba^2e^3 - 20Babde^2 - 15Bb^2d^2e\right)}{60d^5e^4 + 300d^4e^5x + 600d^3e^6x^2 + 600d^2e^7x^3 + 300de^8x^4 + 60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a**2*e**3 - 6*A*a*b*d*e**2 - 2*A*b**2*d**2*e - 3*B*a**2*d*e**2 - 4*B
*a*b*d**2*e - 3*B*b**2*d**3 - 30*B*b**2*e**3*x**3 + x**2*(-20*A*b**2*e**3 -
 40*B*a*b*e**3 - 30*B*b**2*d*e**2) + x*(-30*A*a*b*e**3 - 10*A*b**2*d*e**2 -
 15*B*a**2*e**3 - 20*B*a*b*d*e**2 - 15*B*b**2*d**2*e))/(60*d**5*e**4 + 300*
d**4*e**5*x + 600*d**3*e**6*x**2 + 600*d**2*e**7*x**3 + 300*d*e**8*x**4 + 6
0*e**9*x**5)
```

3.1451 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^7}\,dx$

Optimal. Leaf size=120

$$\frac{b(-2aBe-Abe+3bBd)}{4e^4(d+ex)^4}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{5e^4(d+ex)^5}+\frac{(bd-ae)^2(Bd-Ae)}{6e^4(d+ex)^6}-\frac{b^2B}{3e^4(d+ex)^3}$$

Rubi [A] time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$\frac{b(-2aBe-Abe+3bBd)}{4e^4(d+ex)^4}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{5e^4(d+ex)^5}+\frac{(bd-ae)^2(Bd-Ae)}{6e^4(d+ex)^6}-\frac{b^2B}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^7,x]
```

```
[Out] ((b*d - a*e)^2*(B*d - A*e))/(6*e^4*(d + e*x)^6) - ((b*d - a*e)*(3*b*B*d - 2
*A*b*e - a*B*e))/(5*e^4*(d + e*x)^5) + (b*(3*b*B*d - A*b*e - 2*a*B*e))/(4*e
^4*(d + e*x)^4) - (b^2*B)/(3*e^4*(d + e*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^7}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^7}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^7}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^6}+\frac{b(-3bB\ldots}{e\ldots}\right.\\ &= \frac{(bd-ae)^2(Bd-Ae)}{6e^4(d+ex)^6}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{5e^4(d+ex)^5}+\frac{b(3bBd-Abe-2a\ldots}{4e^4(d+ex)^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 126, normalized size = 1.05

$$-\frac{2a^2e^2(5Ae+B(d+6ex))+2abe\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)+b^2\left(Ae\left(d^2+6dex+15e^2x^2\right)+B\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)\right)}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(2*a^2*e^2*(5*A*e + B*(d + 6*e*x)) + 2*a*b*e*(2*A*e*(d + 6*e*x) + B*(
d^2 + 6*d*e*x + 15*e^2*x^2)) + b^2*(A*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + B*(d
^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3)))/(e^4*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^7, x]
```

fricas [A] time = 0.41, size = 208, normalized size = 1.73

$$-\frac{20\,Bb^2e^3x^3+Bb^2d^3+10\,Aa^2e^3+\left(2\,Bab+Ab^2\right)d^2e+2\left(Ba^2+2\,Aab\right)de^2+15\left(Bb^2de^2+\left(2\,Bab+Ab^2\right)e^3\right)x^2+6\left(Bb^2d^2e+\left(2\,Bab+Ab^2\right)de^2+2\left(Ba^2+2\,Aab\right)e^3\right)x}{60\left(e^{10}x^6+6\,de^9x^5+15\,d^2e^8x^4+20\,d^3e^7x^3+15\,d^4e^6x^2+6\,d^5e^5x+d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b^2*e^3*x^3 + B*b^2*d^3 + 10*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2*
e + 2*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 6*(B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + 2*(B*a^2 + 2*A*a*b)*e^3)*x)/
(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2
+ 6*d^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.15, size = 158, normalized size = 1.32

$$-\frac{\left(20\,Bb^2x^3e^3+15\,Bb^2dx^2e^2+6\,Bb^2d^2xe+Bb^2d^3+30\,Babx^2e^3+15\,Ab^2x^2e^3+12\,Babdxe^2+6\,Ab^2dxe^2+2\,Babd^2e+Ab^2d^2e+12\,Ba^2xe^3+24\,Aabxe^3+2\,Ba^2de^2+4\,Aabde^2+10\,Aa^2e^3\right)e^{(-4)}}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b^2*x^3*e^3 + 15*B*b^2*d*x^2*e^2 + 6*B*b^2*d^2*x*e + B*b^2*d^3
+ 30*B*a*b*x^2*e^3 + 15*A*b^2*x^2*e^3 + 12*B*a*b*d*x*e^2 + 6*A*b^2*d*x*e^2
+ 2*B*a*b*d^2*e + A*b^2*d^2*e + 12*B*a^2*x*e^3 + 24*A*a*b*x*e^3 + 2*B*a^2*d
*e^2 + 4*A*a*b*d*e^2 + 10*A*a^2*e^3)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 166, normalized size = 1.38

$$-\frac{B\,b^2}{3\,(ex+d)^3\,e^4}-\frac{(Abe+2aBe-3Bbd)\,b}{4\,(ex+d)^4\,e^4}-\frac{2Aab\,e^2-2A\,b^2de+B\,a^2e^2-4Bdabe+3b^2B\,d^2}{5\,(ex+d)^5\,e^4}-\frac{A\,a^2e^3-2Aabd\,e^2+A\,b^2d^2e-Bd\,a^2e^2+2B\,d^2abe-b^2B\,d^3}{6\,(ex+d)^6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x)
```

```
[Out] -1/5*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b^2*d^2)/e^4/(e*x+d
)^5-1/3*b^2*B/e^4/(e*x+d)^3-1/4*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^4-1/6
*(A*a^2*e^3-2*A*a*b*d*e^2+A*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d^3)/
e^4/(e*x+d)^6
```

maxima [A] time = 0.57, size = 208, normalized size = 1.73

$$-\frac{20\,Bb^2e^3x^3+Bb^2d^3+10\,Aa^2e^3+\left(2\,Bab+Ab^2\right)d^2e+2\left(Ba^2+2\,Aab\right)de^2+15\left(Bb^2de^2+\left(2\,Bab+Ab^2\right)e^3\right)x^2+6\left(Bb^2d^2e+\left(2\,Bab+Ab^2\right)de^2+2\left(Ba^2+2\,Aab\right)e^3\right)x}{60\left(e^{10}x^6+6\,de^9x^5+15\,d^2e^8x^4+20\,d^3e^7x^3+15\,d^4e^6x^2+6\,d^5e^5x+d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*b^2*e^3*x^3 + B*b^2*d^3 + 10*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2*
e + 2*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 6*(B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + 2*(B*a^2 + 2*A*a*b)*e^3)*x)/
(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2
+ 6*d^5*e^5*x + d^6*e^4)
```

mupad [**B**] time = 0.11, size = 206, normalized size = 1.72

$$-\frac{\frac{2\,B\,a^2\,d\,e^2+10\,A\,a^2\,e^3+2\,B\,a\,b\,d^2\,e+4\,A\,a\,b\,d\,e^2+B\,b^2\,d^3+A\,b^2\,d^2\,e}{60\,e^4}+\frac{x\,\left(2\,B\,a^2\,e^2+2\,B\,a\,b\,d\,e+4\,A\,a\,b\,e^2+B\,b^2\,d^2+A\,b^2\,d\,e\right)}{10\,e^3}+\frac{b\,x^2\,\left(A\,b\,e+2\,B\,a\,e+B\,b\,d\right)}{4\,e^2}+\frac{B\,b^2\,x^3}{3\,e}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^7,x)
```

```
[Out] -((10*A*a^2*e^3 + B*b^2*d^3 + A*b^2*d^2*e + 2*B*a^2*d*e^2 + 4*A*a*b*d*e^2 +
 2*B*a*b*d^2*e)/(60*e^4) + (x*(2*B*a^2*e^2 + B*b^2*d^2 + 4*A*a*b*e^2 + A*b^
2*d*e + 2*B*a*b*d*e))/(10*e^3) + (b*x^2*(A*b*e + 2*B*a*e + B*b*d))/(4*e^2)
+ (B*b^2*x^3)/(3*e))/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3
*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [**B**] time = 36.79, size = 246, normalized size = 2.05

$$\frac{-10Aa^2e^3-4Aabde^2-Ab^2d^2e-2Ba^2de^2-2Babd^2e-Bb^2d^3-20Bb^2e^3x^3+x^2\left(-15Ab^2e^3-30Babe^3-15Bb^2de^2\right)+x\left(-24Aabe^3-6Ab^2de^2-12Ba^2e^3-12Babde^2-6Bb^2d^2e\right)}{60d^6e^4+360d^5e^5x+900d^4e^6x^2+1200d^3e^7x^3+900d^2e^8x^4+360de^9x^5+60e^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**7,x)
```

```
[Out] (-10*A*a**2*e**3 - 4*A*a*b*d*e**2 - A*b**2*d**2*e - 2*B*a**2*d*e**2 - 2*B*a
*b*d**2*e - B*b**2*d**3 - 20*B*b**2*e**3*x**3 + x**2*(-15*A*b**2*e**3 - 30*
B*a*b*e**3 - 15*B*b**2*d*e**2) + x*(-24*A*a*b*e**3 - 6*A*b**2*d*e**2 - 12*B
*a**2*e**3 - 12*B*a*b*d*e**2 - 6*B*b**2*d**2*e))/(60*d**6*e**4 + 360*d**5*e
**5*x + 900*d**4*e**6*x**2 + 1200*d**3*e**7*x**3 + 900*d**2*e**8*x**4 + 360
*d*e**9*x**5 + 60*e**10*x**6)
```

3.1452 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^8}\,dx$

Optimal. Leaf size=120

$$\frac{b(-2aBe-Abe+3bBd)}{5e^4(d+ex)^5}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{6e^4(d+ex)^6}+\frac{(bd-ae)^2(Bd-Ae)}{7e^4(d+ex)^7}-\frac{b^2B}{4e^4(d+ex)^4}$$

Rubi [A] time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$\frac{b(-2aBe-Abe+3bBd)}{5e^4(d+ex)^5}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{6e^4(d+ex)^6}+\frac{(bd-ae)^2(Bd-Ae)}{7e^4(d+ex)^7}-\frac{b^2B}{4e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^8,x]
```

```
[Out] ((b*d - a*e)^2*(B*d - A*e))/(7*e^4*(d + e*x)^7) - ((b*d - a*e)*(3*b*B*d - 2
*A*b*e - a*B*e))/(6*e^4*(d + e*x)^6) + (b*(3*b*B*d - A*b*e - 2*a*B*e))/(5*e
^4*(d + e*x)^5) - (b^2*B)/(4*e^4*(d + e*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^8}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^8}\,dx \\
&= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^8}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^7}+\frac{b(-3\ldots \\
&= \frac{(bd-ae)^2(Bd-Ae)}{7e^4(d+ex)^7}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{6e^4(d+ex)^6}+\frac{b(3bBd-Abe-\ldots}{5e^4(d+ex\ldots}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 129, normalized size = 1.08

$$-\frac{10a^2e^2(6Ae+B(d+7ex))+4abe\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+b^2\left(4Ae\left(d^2+7dex+21e^2x^2\right)+3B\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)\right)}{420e^4(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^8,x]
```

```
[Out] -1/420*(10*a^2*e^2*(6*A*e + B*(d + 7*e*x)) + 4*a*b*e*(5*A*e*(d + 7*e*x) + 2
*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + b^2*(4*A*e*(d^2 + 7*d*e*x + 21*e^2*x^2)
+ 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3)))/(e^4*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^8, x]
```

fricas [B] time = 0.42, size = 225, normalized size = 1.88

$$-\frac{105\,Bb^2e^3x^3+3\,Bb^2d^3+60\,Aa^2e^3+4\left(2\,Bab+Ab^2\right)d^2e+10\left(Ba^2+2\,Aab\right)de^2+21\left(3\,Bb^2de^2+4\left(2\,Bab+Ab^2\right)e^3\right)x^2+7\left(3\,Bb^2d^2e+4\left(2\,Bab+Ab^2\right)de^2+10\left(Ba^2+2\,Aab\right)e^3\right)x}{420\left(e^{11}x^7+7\,de^{10}x^6+21\,d^2e^9x^5+35\,d^3e^8x^4+35\,d^4e^7x^3+21\,d^5e^6x^2+7\,d^6e^5x+d^7e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/420*(105*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 60*A*a^2*e^3 + 4*(2*B*a*b + A*b^2
)*d^2*e + 10*(B*a^2 + 2*A*a*b)*d*e^2 + 21*(3*B*b^2*d*e^2 + 4*(2*B*a*b + A*b
^2)*e^3)*x^2 + 7*(3*B*b^2*d^2*e + 4*(2*B*a*b + A*b^2)*d*e^2 + 10*(B*a^2 + 2
*A*a*b)*e^3)*x)/(e^11*x^7 + 7*d*e^10*x^6 + 21*d^2*e^9*x^5 + 35*d^3*e^8*x^4
+ 35*d^4*e^7*x^3 + 21*d^5*e^6*x^2 + 7*d^6*e^5*x + d^7*e^4)
```

giac [A] time = 0.15, size = 160, normalized size = 1.33

$$-\frac{\left(105\,Bb^2x^3e^3+63\,Bb^2dx^2e^2+21\,Bb^2d^2xe+3\,Bb^2d^3+168\,Babx^2e^3+84\,Ab^2x^2e^3+56\,Babdxe^2+28\,Ab^2dxe^2+8\,Babd^2e+4\,Ab^2d^2e+70\,Ba^2xe^3+140\,Aabxe^3+10\,Ba^2de^2+20\,Aabde^2+60\,Aa^2e^3\right)e^{(-4)}}{420\,(xe+d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/420*(105*B*b^2*x^3*e^3 + 63*B*b^2*d*x^2*e^2 + 21*B*b^2*d^2*x*e + 3*B*b^2
*d^3 + 168*B*a*b*x^2*e^3 + 84*A*b^2*x^2*e^3 + 56*B*a*b*d*x*e^2 + 28*A*b^2*d
*x*e^2 + 8*B*a*b*d^2*e + 4*A*b^2*d^2*e + 70*B*a^2*x*e^3 + 140*A*a*b*x*e^3 +
 10*B*a^2*d*e^2 + 20*A*a*b*d*e^2 + 60*A*a^2*e^3)*e^(-4)/(x*e + d)^7
```

maple [A] time = 0.05, size = 166, normalized size = 1.38

$$-\frac{B\,b^2}{4\,(ex+d)^4\,e^4}-\frac{(Abe+2aBe-3Bbd)\,b}{5\,(ex+d)^5\,e^4}-\frac{A\,a^2e^3-2Aabd\,e^2+A\,b^2d^2e-Bd\,a^2e^2+2B\,d^2abe-b^2B\,d^3}{7\,(ex+d)^7\,e^4}-\frac{2Aab\,e^2-2A\,b^2de+B\,a^2e^2-4Bdabe+3b^2B\,d^2}{6\,(ex+d)^6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x)
```

```
[Out] -1/5*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^5-1/7*(A*a^2*e^3-2*A*a*b*d*e^2+A
*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d^3)/e^4/(e*x+d)^7-1/4*b^2*B/e^4
/(e*x+d)^4-1/6*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b^2*d^2)/
e^4/(e*x+d)^6
```

maxima [B] time = 0.60, size = 225, normalized size = 1.88

$$-\frac{105\,Bb^2e^3x^3+3\,Bb^2d^3+60\,Aa^2e^3+4\left(2\,Bab+Ab^2\right)d^2e+10\left(Ba^2+2\,Aab\right)de^2+21\left(3\,Bb^2de^2+4\left(2\,Bab+Ab^2\right)e^3\right)x^2+7\left(3\,Bb^2d^2e+4\left(2\,Bab+Ab^2\right)de^2+10\left(Ba^2+2\,Aab\right)e^3\right)x}{420\left(e^{11}x^7+7\,de^{10}x^6+21\,d^2e^9x^5+35\,d^3e^8x^4+35\,d^4e^7x^3+21\,d^5e^6x^2+7\,d^6e^5x+d^7e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(105*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 60*A*a^2*e^3 + 4*(2*B*a*b + A*b^2
)*d^2*e + 10*(B*a^2 + 2*A*a*b)*d*e^2 + 21*(3*B*b^2*d*e^2 + 4*(2*B*a*b + A*b
^2)*e^3)*x^2 + 7*(3*B*b^2*d^2*e + 4*(2*B*a*b + A*b^2)*d*e^2 + 10*(B*a^2 + 2
*A*a*b)*e^3)*x)/(e^11*x^7 + 7*d*e^10*x^6 + 21*d^2*e^9*x^5 + 35*d^3*e^8*x^4
+ 35*d^4*e^7*x^3 + 21*d^5*e^6*x^2 + 7*d^6*e^5*x + d^7*e^4)
```

mupad [**B**] time = 0.10, size = 223, normalized size = 1.86

$$-\frac{\frac{10\,B\,a^2\,d\,e^2+60\,A\,a^2\,e^3+8\,B\,a\,b\,d^2\,e+20\,A\,a\,b\,d\,e^2+3\,B\,b^2\,d^3+4\,A\,b^2\,d^2\,e}{420\,e^4}+\frac{x\,\left(10\,B\,a^2\,e^2+8\,B\,a\,b\,d\,e+20\,A\,a\,b\,e^2+3\,B\,b^2\,d^2+4\,A\,b^2\,d\,e\right)}{60\,e^3}+\frac{b\,x^2\,\left(4\,A\,b\,e+8\,B\,a\,e+3\,B\,b\,d\right)}{20\,e^2}+\frac{B\,b^2\,x^3}{4\,e}}{d^7+7\,d^6\,e\,x+21\,d^5\,e^2\,x^2+35\,d^4\,e^3\,x^3+35\,d^3\,e^4\,x^4+21\,d^2\,e^5\,x^5+7\,d\,e^6\,x^6+e^7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^8,x)
```

```
[Out] -((60*A*a^2*e^3 + 3*B*b^2*d^3 + 4*A*b^2*d^2*e + 10*B*a^2*d*e^2 + 20*A*a*b*d
*e^2 + 8*B*a*b*d^2*e)/(420*e^4) + (x*(10*B*a^2*e^2 + 3*B*b^2*d^2 + 20*A*a*b
*e^2 + 4*A*b^2*d*e + 8*B*a*b*d*e))/(60*e^3) + (b*x^2*(4*A*b*e + 8*B*a*e + 3
*B*b*d))/(20*e^2) + (B*b^2*x^3)/(4*e))/(d^7 + e^7*x^7 + 7*d*e^6*x^6 + 21*d^
5*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [**B**] time = 60.72, size = 262, normalized size = 2.18

$$\frac{-60Aa^2e^3-20Aabde^2-4Ab^2d^2e-10Ba^2de^2-8Babd^2e-3Bb^2d^3-105Bb^2e^3x^3+x^2\left(-84Ab^2e^3-168Babe^3-63Bb^2de^2\right)+x\left(-140Aabe^3-28Ab^2de^2-70Ba^2e^3-56Babde^2-21Bb^2d^2e\right)}{420d^7e^4+2940d^6e^5x+8820d^5e^6x^2+14700d^4e^7x^3+14700d^3e^8x^4+8820d^2e^9x^5+2940de^{10}x^6+420e^{11}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**8,x)
```

```
[Out] (-60*A*a**2*e**3 - 20*A*a*b*d*e**2 - 4*A*b**2*d**2*e - 10*B*a**2*d*e**2 - 8
*B*a*b*d**2*e - 3*B*b**2*d**3 - 105*B*b**2*e**3*x**3 + x**2*(-84*A*b**2*e**
3 - 168*B*a*b*e**3 - 63*B*b**2*d*e**2) + x*(-140*A*a*b*e**3 - 28*A*b**2*d*e
**2 - 70*B*a**2*e**3 - 56*B*a*b*d*e**2 - 21*B*b**2*d**2*e))/(420*d**7*e**4
+ 2940*d**6*e**5*x + 8820*d**5*e**6*x**2 + 14700*d**4*e**7*x**3 + 14700*d**
3*e**8*x**4 + 8820*d**2*e**9*x**5 + 2940*d*e**10*x**6 + 420*e**11*x**7)
```

3.1453 $\int (A+Bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=206

$$-\frac{b^3(d+ex)^{12}(-4aBe-Abe+5bBd)}{12e^6}+\frac{2b^2(d+ex)^{11}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{b(d+ex)^{10}(bd-ae)^2(-2a\ldots}{5e^6}$$

Rubi [A] time = 0.80, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{b^3(d+ex)^{12}(-4aBe-Abe+5bBd)}{12e^6}+\frac{2b^2(d+ex)^{11}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{b(d+ex)^{10}(bd-ae)^2(-2aBe-3Abe+5bBd)}{5e^6}+\frac{(d+ex)^9(bd-ae)^3(-aBe-4Abe+5bBd)}{9e^6}-\frac{(d+ex)^8(bd-ae)^4(Bd-Ae)}{8e^6}+\frac{b^4B(d+ex)^{13}}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^8)/(8*e^6) + ((b*d - a*e)^3*(5*b*B*d
- 4*A*b*e - a*B*e)*(d + e*x)^9)/(9*e^6) - (b*(b*d - a*e)^2*(5*b*B*d - 3*A*b
*e - 2*a*B*e)*(d + e*x)^10)/(5*e^6) + (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
 - 3*a*B*e)*(d + e*x)^11)/(11*e^6) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d +
e*x)^12)/(12*e^6) + (b^4*B*(d + e*x)^13)/(13*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^7\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^7}{e^5}+\frac{(-bd+ae)^3(-5bBd+4Ab\ldots}{e^5}\right.\\ &= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^8}{8e^6}+\frac{(bd-ae)^3(5bBd-4Abe-aBe)(\ldots}{9e^6}\end{aligned}$$

Mathematica [B] time = 0.28, size = 823, normalized size = 4.00

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^7*x + (a^3*d^6*(4*A*b*d + a*B*d + 7*a*A*e)*x^2)/2 + (a^2*d^5*(a*B*d
*(4*b*d + 7*a*e) + A*(6*b^2*d^2 + 28*a*b*d*e + 21*a^2*e^2))*x^3)/3 + (a*d^4
```

```
*(a*B*d*(6*b^2*d^2 + 28*a*b*d*e + 21*a^2*e^2) + A*(4*b^3*d^3 + 42*a*b^2*d^2
*e + 84*a^2*b*d*e^2 + 35*a^3*e^3))*x^4)/4 + (d^3*(a*B*d*(4*b^3*d^3 + 42*a*b
^2*d^2*e + 84*a^2*b*d*e^2 + 35*a^3*e^3) + A*(b^4*d^4 + 28*a*b^3*d^3*e + 126
*a^2*b^2*d^2*e^2 + 140*a^3*b*d*e^3 + 35*a^4*e^4))*x^5)/5 + (d^2*(140*a^3*b*
d*e^3*(B*d + A*e) + 28*a*b^3*d^3*e*(B*d + 3*A*e) + 7*a^4*e^4*(5*B*d + 3*A*e
) + 42*a^2*b^2*d^2*e^2*(3*B*d + 5*A*e) + b^4*d^4*(B*d + 7*A*e))*x^6)/6 + d*
e*(30*a^2*b^2*d^2*e^2*(B*d + A*e) + a^4*e^4*(3*B*d + A*e) + b^4*d^4*(B*d +
3*A*e) + 4*a^3*b*d*e^3*(5*B*d + 3*A*e) + 4*a*b^3*d^3*e*(3*B*d + 5*A*e))*x^7
 + (e^2*(140*a*b^3*d^3*e*(B*d + A*e) + 28*a^3*b*d*e^3*(3*B*d + A*e) + a^4*e
^4*(7*B*d + A*e) + 42*a^2*b^2*d^2*e^2*(5*B*d + 3*A*e) + 7*b^4*d^4*(3*B*d +
5*A*e))*x^8)/8 + (e^3*(a^4*B*e^4 + 35*b^4*d^3*(B*d + A*e) + 42*a^2*b^2*d*e^
2*(3*B*d + A*e) + 4*a^3*b*e^3*(7*B*d + A*e) + 28*a*b^3*d^2*e*(5*B*d + 3*A*e
))*x^9)/9 + (b*e^4*(4*a^3*B*e^3 + 28*a*b^2*d*e*(3*B*d + A*e) + 6*a^2*b*e^2*
(7*B*d + A*e) + 7*b^3*d^2*(5*B*d + 3*A*e))*x^10)/10 + (b^2*e^5*(6*a^2*B*e^2
 + 7*b^2*d*(3*B*d + A*e) + 4*a*b*e*(7*B*d + A*e))*x^11)/11 + (b^3*e^6*(7*b*
B*d + A*b*e + 4*a*B*e)*x^12)/12 + (b^4*B*e^7*x^13)/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.36, size = 1175, normalized size = 5.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] 1/13*x^13*e^7*b^4*B + 7/12*x^12*e^6*d*b^4*B + 1/3*x^12*e^7*b^3*a*B + 1/12*x
^12*e^7*b^4*A + 21/11*x^11*e^5*d^2*b^4*B + 28/11*x^11*e^6*d*b^3*a*B + 6/11*
x^11*e^7*b^2*a^2*B + 7/11*x^11*e^6*d*b^4*A + 4/11*x^11*e^7*b^3*a*A + 7/2*x^
10*e^4*d^3*b^4*B + 42/5*x^10*e^5*d^2*b^3*a*B + 21/5*x^10*e^6*d*b^2*a^2*B +
2/5*x^10*e^7*b*a^3*B + 21/10*x^10*e^5*d^2*b^4*A + 14/5*x^10*e^6*d*b^3*a*A +
 3/5*x^10*e^7*b^2*a^2*A + 35/9*x^9*e^3*d^4*b^4*B + 140/9*x^9*e^4*d^3*b^3*a*
B + 14*x^9*e^5*d^2*b^2*a^2*B + 28/9*x^9*e^6*d*b*a^3*B + 1/9*x^9*e^7*a^4*B +
 35/9*x^9*e^4*d^3*b^4*A + 28/3*x^9*e^5*d^2*b^3*a*A + 14/3*x^9*e^6*d*b^2*a^2
*A + 4/9*x^9*e^7*b*a^3*A + 21/8*x^8*e^2*d^5*b^4*B + 35/2*x^8*e^3*d^4*b^3*a*
B + 105/4*x^8*e^4*d^3*b^2*a^2*B + 21/2*x^8*e^5*d^2*b*a^3*B + 7/8*x^8*e^6*d*
a^4*B + 35/8*x^8*e^3*d^4*b^4*A + 35/2*x^8*e^4*d^3*b^3*a*A + 63/4*x^8*e^5*d^
2*b^2*a^2*A + 7/2*x^8*e^6*d*b*a^3*A + 1/8*x^8*e^7*a^4*A + x^7*e*d^6*b^4*B +
 12*x^7*e^2*d^5*b^3*a*B + 30*x^7*e^3*d^4*b^2*a^2*B + 20*x^7*e^4*d^3*b*a^3*B
 + 3*x^7*e^5*d^2*a^4*B + 3*x^7*e^2*d^5*b^4*A + 20*x^7*e^3*d^4*b^3*a*A + 30*
x^7*e^4*d^3*b^2*a^2*A + 12*x^7*e^5*d^2*b*a^3*A + x^7*e^6*d*a^4*A + 1/6*x^6*
d^7*b^4*B + 14/3*x^6*e*d^6*b^3*a*B + 21*x^6*e^2*d^5*b^2*a^2*B + 70/3*x^6*e^
3*d^4*b*a^3*B + 35/6*x^6*e^4*d^3*a^4*B + 7/6*x^6*e*d^6*b^4*A + 14*x^6*e^2*d
^5*b^3*a*A + 35*x^6*e^3*d^4*b^2*a^2*A + 70/3*x^6*e^4*d^3*b*a^3*A + 7/2*x^6*
e^5*d^2*a^4*A + 4/5*x^5*d^7*b^3*a*B + 42/5*x^5*e*d^6*b^2*a^2*B + 84/5*x^5*e
^2*d^5*b*a^3*B + 7*x^5*e^3*d^4*a^4*B + 1/5*x^5*d^7*b^4*A + 28/5*x^5*e*d^6*b
^3*a*A + 126/5*x^5*e^2*d^5*b^2*a^2*A + 28*x^5*e^3*d^4*b*a^3*A + 7*x^5*e^4*d
^3*a^4*A + 3/2*x^4*d^7*b^2*a^2*B + 7*x^4*e*d^6*b*a^3*B + 21/4*x^4*e^2*d^5*a
^4*B + x^4*d^7*b^3*a*A + 21/2*x^4*e*d^6*b^2*a^2*A + 21*x^4*e^2*d^5*b*a^3*A
+ 35/4*x^4*e^3*d^4*a^4*A + 4/3*x^3*d^7*b*a^3*B + 7/3*x^3*e*d^6*a^4*B + 2*x^
3*d^7*b^2*a^2*A + 28/3*x^3*e*d^6*b*a^3*A + 7*x^3*e^2*d^5*a^4*A + 1/2*x^2*d^
7*a^4*B + 2*x^2*d^7*b*a^3*A + 7/2*x^2*e*d^6*a^4*A + x*d^7*a^4*A
```

giac [B] time = 0.17, size = 1125, normalized size = 5.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/13*B*b^4*x^13*e^7 + 7/12*B*b^4*d*x^12*e^6 + 21/11*B*b^4*d^2*x^11*e^5 + 7/
2*B*b^4*d^3*x^10*e^4 + 35/9*B*b^4*d^4*x^9*e^3 + 21/8*B*b^4*d^5*x^8*e^2 + B*
b^4*d^6*x^7*e + 1/6*B*b^4*d^7*x^6 + 1/3*B*a*b^3*x^12*e^7 + 1/12*A*b^4*x^12*
e^7 + 28/11*B*a*b^3*d*x^11*e^6 + 7/11*A*b^4*d*x^11*e^6 + 42/5*B*a*b^3*d^2*x
^10*e^5 + 21/10*A*b^4*d^2*x^10*e^5 + 140/9*B*a*b^3*d^3*x^9*e^4 + 35/9*A*b^4
*d^3*x^9*e^4 + 35/2*B*a*b^3*d^4*x^8*e^3 + 35/8*A*b^4*d^4*x^8*e^3 + 12*B*a*b
^3*d^5*x^7*e^2 + 3*A*b^4*d^5*x^7*e^2 + 14/3*B*a*b^3*d^6*x^6*e + 7/6*A*b^4*d
^6*x^6*e + 4/5*B*a*b^3*d^7*x^5 + 1/5*A*b^4*d^7*x^5 + 6/11*B*a^2*b^2*x^11*e^
7 + 4/11*A*a*b^3*x^11*e^7 + 21/5*B*a^2*b^2*d*x^10*e^6 + 14/5*A*a*b^3*d*x^10
*e^6 + 14*B*a^2*b^2*d^2*x^9*e^5 + 28/3*A*a*b^3*d^2*x^9*e^5 + 105/4*B*a^2*b^
2*d^3*x^8*e^4 + 35/2*A*a*b^3*d^3*x^8*e^4 + 30*B*a^2*b^2*d^4*x^7*e^3 + 20*A*
a*b^3*d^4*x^7*e^3 + 21*B*a^2*b^2*d^5*x^6*e^2 + 14*A*a*b^3*d^5*x^6*e^2 + 42/
5*B*a^2*b^2*d^6*x^5*e + 28/5*A*a*b^3*d^6*x^5*e + 3/2*B*a^2*b^2*d^7*x^4 + A*
a*b^3*d^7*x^4 + 2/5*B*a^3*b*x^10*e^7 + 3/5*A*a^2*b^2*x^10*e^7 + 28/9*B*a^3*
b*d*x^9*e^6 + 14/3*A*a^2*b^2*d*x^9*e^6 + 21/2*B*a^3*b*d^2*x^8*e^5 + 63/4*A*
a^2*b^2*d^2*x^8*e^5 + 20*B*a^3*b*d^3*x^7*e^4 + 30*A*a^2*b^2*d^3*x^7*e^4 + 7
0/3*B*a^3*b*d^4*x^6*e^3 + 35*A*a^2*b^2*d^4*x^6*e^3 + 84/5*B*a^3*b*d^5*x^5*e
^2 + 126/5*A*a^2*b^2*d^5*x^5*e^2 + 7*B*a^3*b*d^6*x^4*e + 21/2*A*a^2*b^2*d^6
*x^4*e + 4/3*B*a^3*b*d^7*x^3 + 2*A*a^2*b^2*d^7*x^3 + 1/9*B*a^4*x^9*e^7 + 4/
9*A*a^3*b*x^9*e^7 + 7/8*B*a^4*d*x^8*e^6 + 7/2*A*a^3*b*d*x^8*e^6 + 3*B*a^4*d
^2*x^7*e^5 + 12*A*a^3*b*d^2*x^7*e^5 + 35/6*B*a^4*d^3*x^6*e^4 + 70/3*A*a^3*b
*d^3*x^6*e^4 + 7*B*a^4*d^4*x^5*e^3 + 28*A*a^3*b*d^4*x^5*e^3 + 21/4*B*a^4*d^
5*x^4*e^2 + 21*A*a^3*b*d^5*x^4*e^2 + 7/3*B*a^4*d^6*x^3*e + 28/3*A*a^3*b*d^6
*x^3*e + 1/2*B*a^4*d^7*x^2 + 2*A*a^3*b*d^7*x^2 + 1/8*A*a^4*x^8*e^7 + A*a^4*
d*x^7*e^6 + 7/2*A*a^4*d^2*x^6*e^5 + 7*A*a^4*d^3*x^5*e^4 + 35/4*A*a^4*d^4*x^
4*e^3 + 7*A*a^4*d^5*x^3*e^2 + 7/2*A*a^4*d^6*x^2*e + A*a^4*d^7*x
```

maple [B] time = 0.04, size = 950, normalized size = 4.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/13*B*e^7*b^4*x^13+1/12*((A*e^7+7*B*d*e^6)*b^4+4*B*e^7*a*b^3)*x^12+1/11*((
7*A*d*e^6+21*B*d^2*e^5)*b^4+4*(A*e^7+7*B*d*e^6)*a*b^3+6*B*e^7*a^2*b^2)*x^11
+1/10*((21*A*d^2*e^5+35*B*d^3*e^4)*b^4+4*(7*A*d*e^6+21*B*d^2*e^5)*a*b^3+6*(
A*e^7+7*B*d*e^6)*a^2*b^2+4*B*e^7*a^3*b)*x^10+1/9*((35*A*d^3*e^4+35*B*d^4*e^
3)*b^4+4*(21*A*d^2*e^5+35*B*d^3*e^4)*a*b^3+6*(7*A*d*e^6+21*B*d^2*e^5)*a^2*b
^2+4*(A*e^7+7*B*d*e^6)*a^3*b+B*e^7*a^4)*x^9+1/8*((35*A*d^4*e^3+21*B*d^5*e^2
)*b^4+4*(35*A*d^3*e^4+35*B*d^4*e^3)*a*b^3+6*(21*A*d^2*e^5+35*B*d^3*e^4)*a^2
*b^2+4*(7*A*d*e^6+21*B*d^2*e^5)*a^3*b+(A*e^7+7*B*d*e^6)*a^4)*x^8+1/7*((21*A
*d^5*e^2+7*B*d^6*e)*b^4+4*(35*A*d^4*e^3+21*B*d^5*e^2)*a*b^3+6*(35*A*d^3*e^4
+35*B*d^4*e^3)*a^2*b^2+4*(21*A*d^2*e^5+35*B*d^3*e^4)*a^3*b+(7*A*d*e^6+21*B*
d^2*e^5)*a^4)*x^7+1/6*((7*A*d^6*e+B*d^7)*b^4+4*(21*A*d^5*e^2+7*B*d^6*e)*a*b
^3+6*(35*A*d^4*e^3+21*B*d^5*e^2)*a^2*b^2+4*(35*A*d^3*e^4+35*B*d^4*e^3)*a^3*
b+(21*A*d^2*e^5+35*B*d^3*e^4)*a^4)*x^6+1/5*(A*d^7*b^4+4*(7*A*d^6*e+B*d^7)*a
*b^3+6*(21*A*d^5*e^2+7*B*d^6*e)*a^2*b^2+4*(35*A*d^4*e^3+21*B*d^5*e^2)*a^3*b
+(35*A*d^3*e^4+35*B*d^4*e^3)*a^4)*x^5+1/4*(4*A*d^7*a*b^3+6*(7*A*d^6*e+B*d^7
)*a^2*b^2+4*(21*A*d^5*e^2+7*B*d^6*e)*a^3*b+(35*A*d^4*e^3+21*B*d^5*e^2)*a^4)
*x^4+1/3*(6*A*d^7*a^2*b^2+4*(7*A*d^6*e+B*d^7)*a^3*b+(21*A*d^5*e^2+7*B*d^6*e
)*a^4)*x^3+1/2*(4*A*d^7*a^3*b+(7*A*d^6*e+B*d^7)*a^4)*x^2+A*d^7*a^4*x
```

maxima [B] time = 0.65, size = 929, normalized size = 4.51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/13*B*b^4*e^7*x^13 + A*a^4*d^7*x + 1/12*(7*B*b^4*d*e^6 + (4*B*a*b^3 + A*b^
4)*e^7)*x^12 + 1/11*(21*B*b^4*d^2*e^5 + 7*(4*B*a*b^3 + A*b^4)*d*e^6 + 2*(3*
B*a^2*b^2 + 2*A*a*b^3)*e^7)*x^11 + 1/10*(35*B*b^4*d^3*e^4 + 21*(4*B*a*b^3 +
 A*b^4)*d^2*e^5 + 14*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^6 + 2*(2*B*a^3*b + 3*A*a
^2*b^2)*e^7)*x^10 + 1/9*(35*B*b^4*d^4*e^3 + 35*(4*B*a*b^3 + A*b^4)*d^3*e^4
+ 42*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^5 + 14*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^6
 + (B*a^4 + 4*A*a^3*b)*e^7)*x^9 + 1/8*(21*B*b^4*d^5*e^2 + A*a^4*e^7 + 35*(4
*B*a*b^3 + A*b^4)*d^4*e^3 + 70*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^4 + 42*(2*B*
a^3*b + 3*A*a^2*b^2)*d^2*e^5 + 7*(B*a^4 + 4*A*a^3*b)*d*e^6)*x^8 + (B*b^4*d^
6*e + A*a^4*d*e^6 + 3*(4*B*a*b^3 + A*b^4)*d^5*e^2 + 10*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^4*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^4 + 3*(B*a^4 + 4*A*a^3*b
)*d^2*e^5)*x^7 + 1/6*(B*b^4*d^7 + 21*A*a^4*d^2*e^5 + 7*(4*B*a*b^3 + A*b^4)*
d^6*e + 42*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e^2 + 70*(2*B*a^3*b + 3*A*a^2*b^2)
*d^4*e^3 + 35*(B*a^4 + 4*A*a^3*b)*d^3*e^4)*x^6 + 1/5*(35*A*a^4*d^3*e^4 + (4
*B*a*b^3 + A*b^4)*d^7 + 14*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6*e + 42*(2*B*a^3*b
+ 3*A*a^2*b^2)*d^5*e^2 + 35*(B*a^4 + 4*A*a^3*b)*d^4*e^3)*x^5 + 1/4*(35*A*a^
4*d^4*e^3 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^7 + 14*(2*B*a^3*b + 3*A*a^2*b^2)*
d^6*e + 21*(B*a^4 + 4*A*a^3*b)*d^5*e^2)*x^4 + 1/3*(21*A*a^4*d^5*e^2 + 2*(2*
B*a^3*b + 3*A*a^2*b^2)*d^7 + 7*(B*a^4 + 4*A*a^3*b)*d^6*e)*x^3 + 1/2*(7*A*a^
4*d^6*e + (B*a^4 + 4*A*a^3*b)*d^7)*x^2
```

mupad [B] time = 2.30, size = 980, normalized size = 4.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^7*(A*a^4*d*e^6 + B*b^4*d^6*e + 3*A*b^4*d^5*e^2 + 3*B*a^4*d^2*e^5 + 20*A*a
*b^3*d^4*e^3 + 12*A*a^3*b*d^2*e^5 + 12*B*a*b^3*d^5*e^2 + 20*B*a^3*b*d^3*e^4
 + 30*A*a^2*b^2*d^3*e^4 + 30*B*a^2*b^2*d^4*e^3) + x^6*((B*b^4*d^7)/6 + (7*A
*b^4*d^6*e)/6 + (7*A*a^4*d^2*e^5)/2 + (35*B*a^4*d^3*e^4)/6 + 14*A*a*b^3*d^5
*e^2 + (70*A*a^3*b*d^3*e^4)/3 + (70*B*a^3*b*d^4*e^3)/3 + 35*A*a^2*b^2*d^4*e
^3 + 21*B*a^2*b^2*d^5*e^2 + (14*B*a*b^3*d^6*e)/3) + x^8*((A*a^4*e^7)/8 + (7
*B*a^4*d*e^6)/8 + (35*A*b^4*d^4*e^3)/8 + (21*B*b^4*d^5*e^2)/8 + (35*A*a*b^3
*d^3*e^4)/2 + (35*B*a*b^3*d^4*e^3)/2 + (21*B*a^3*b*d^2*e^5)/2 + (63*A*a^2*b
^2*d^2*e^5)/4 + (105*B*a^2*b^2*d^3*e^4)/4 + (7*A*a^3*b*d*e^6)/2) + x^4*(A*a
*b^3*d^7 + (3*B*a^2*b^2*d^7)/2 + (35*A*a^4*d^4*e^3)/4 + (21*B*a^4*d^5*e^2)/
4 + (21*A*a^2*b^2*d^6*e)/2 + 21*A*a^3*b*d^5*e^2 + 7*B*a^3*b*d^6*e) + x^10*(
(2*B*a^3*b*e^7)/5 + (3*A*a^2*b^2*e^7)/5 + (21*A*b^4*d^2*e^5)/10 + (7*B*b^4*
d^3*e^4)/2 + (42*B*a*b^3*d^2*e^5)/5 + (21*B*a^2*b^2*d*e^6)/5 + (14*A*a*b^3*
d*e^6)/5) + x^3*((4*B*a^3*b*d^7)/3 + (7*B*a^4*d^6*e)/3 + 2*A*a^2*b^2*d^7 +
7*A*a^4*d^5*e^2 + (28*A*a^3*b*d^6*e)/3) + x^11*((4*A*a*b^3*e^7)/11 + (7*A*b
^4*d*e^6)/11 + (6*B*a^2*b^2*e^7)/11 + (21*B*b^4*d^2*e^5)/11 + (28*B*a*b^3*d
*e^6)/11) + x^5*((A*b^4*d^7)/5 + (4*B*a*b^3*d^7)/5 + 7*A*a^4*d^3*e^4 + 7*B*
a^4*d^4*e^3 + 28*A*a^3*b*d^4*e^3 + (42*B*a^2*b^2*d^6*e)/5 + (84*B*a^3*b*d^5
*e^2)/5 + (126*A*a^2*b^2*d^5*e^2)/5 + (28*A*a*b^3*d^6*e)/5) + x^9*((B*a^4*e
^7)/9 + (4*A*a^3*b*e^7)/9 + (35*A*b^4*d^3*e^4)/9 + (35*B*b^4*d^4*e^3)/9 + (
28*A*a*b^3*d^2*e^5)/3 + (14*A*a^2*b^2*d*e^6)/3 + (140*B*a*b^3*d^3*e^4)/9 +
14*B*a^2*b^2*d^2*e^5 + (28*B*a^3*b*d*e^6)/9) + (a^3*d^6*x^2*(7*A*a*e + 4*A*
b*d + B*a*d))/2 + (b^3*e^6*x^12*(A*b*e + 4*B*a*e + 7*B*b*d))/12 + A*a^4*d^7
*x + (B*b^4*e^7*x^13)/13
```

sympy [B] time = 0.22, size = 1210, normalized size = 5.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**7*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**7*x + B*b**4*e**7*x**13/13 + x**12*(A*b**4*e**7/12 + B*a*b**3*e**
7/3 + 7*B*b**4*d*e**6/12) + x**11*(4*A*a*b**3*e**7/11 + 7*A*b**4*d*e**6/11
+ 6*B*a**2*b**2*e**7/11 + 28*B*a*b**3*d*e**6/11 + 21*B*b**4*d**2*e**5/11) +
 x**10*(3*A*a**2*b**2*e**7/5 + 14*A*a*b**3*d*e**6/5 + 21*A*b**4*d**2*e**5/1
0 + 2*B*a**3*b*e**7/5 + 21*B*a**2*b**2*d*e**6/5 + 42*B*a*b**3*d**2*e**5/5 +
 7*B*b**4*d**3*e**4/2) + x**9*(4*A*a**3*b*e**7/9 + 14*A*a**2*b**2*d*e**6/3
+ 28*A*a*b**3*d**2*e**5/3 + 35*A*b**4*d**3*e**4/9 + B*a**4*e**7/9 + 28*B*a*
*3*b*d*e**6/9 + 14*B*a**2*b**2*d**2*e**5 + 140*B*a*b**3*d**3*e**4/9 + 35*B*
b**4*d**4*e**3/9) + x**8*(A*a**4*e**7/8 + 7*A*a**3*b*d*e**6/2 + 63*A*a**2*b
**2*d**2*e**5/4 + 35*A*a*b**3*d**3*e**4/2 + 35*A*b**4*d**4*e**3/8 + 7*B*a**
4*d*e**6/8 + 21*B*a**3*b*d**2*e**5/2 + 105*B*a**2*b**2*d**3*e**4/4 + 35*B*a
*b**3*d**4*e**3/2 + 21*B*b**4*d**5*e**2/8) + x**7*(A*a**4*d*e**6 + 12*A*a**
3*b*d**2*e**5 + 30*A*a**2*b**2*d**3*e**4 + 20*A*a*b**3*d**4*e**3 + 3*A*b**4
*d**5*e**2 + 3*B*a**4*d**2*e**5 + 20*B*a**3*b*d**3*e**4 + 30*B*a**2*b**2*d*
*4*e**3 + 12*B*a*b**3*d**5*e**2 + B*b**4*d**6*e) + x**6*(7*A*a**4*d**2*e**5
/2 + 70*A*a**3*b*d**3*e**4/3 + 35*A*a**2*b**2*d**4*e**3 + 14*A*a*b**3*d**5*
e**2 + 7*A*b**4*d**6*e/6 + 35*B*a**4*d**3*e**4/6 + 70*B*a**3*b*d**4*e**3/3
+ 21*B*a**2*b**2*d**5*e**2 + 14*B*a*b**3*d**6*e/3 + B*b**4*d**7/6) + x**5*(
7*A*a**4*d**3*e**4 + 28*A*a**3*b*d**4*e**3 + 126*A*a**2*b**2*d**5*e**2/5 +
28*A*a*b**3*d**6*e/5 + A*b**4*d**7/5 + 7*B*a**4*d**4*e**3 + 84*B*a**3*b*d**
5*e**2/5 + 42*B*a**2*b**2*d**6*e/5 + 4*B*a*b**3*d**7/5) + x**4*(35*A*a**4*d
**4*e**3/4 + 21*A*a**3*b*d**5*e**2 + 21*A*a**2*b**2*d**6*e/2 + A*a*b**3*d**
7 + 21*B*a**4*d**5*e**2/4 + 7*B*a**3*b*d**6*e + 3*B*a**2*b**2*d**7/2) + x**
3*(7*A*a**4*d**5*e**2 + 28*A*a**3*b*d**6*e/3 + 2*A*a**2*b**2*d**7 + 7*B*a**
4*d**6*e/3 + 4*B*a**3*b*d**7/3) + x**2*(7*A*a**4*d**6*e/2 + 2*A*a**3*b*d**7
 + B*a**4*d**7/2)
```

3.1454 $\int (A+Bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=206

$$-\frac{b^3(d+ex)^{11}(-4aBe-Abe+5bBd)}{11e^6}+\frac{b^2(d+ex)^{10}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{2b(d+ex)^9(bd-ae)^2(-2}{9e^6}$$

Rubi [A] time = 0.66, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b^3(d+ex)^{11}(-4aBe-Abe+5bBd)}{11e^6}+\frac{b^2(d+ex)^{10}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{2b(d+ex)^9(bd-ae)^2(-2aBe-3Abe+5bBd)}{9e^6}+\frac{(d+ex)^8(bd-ae)^3(-aBe-4Abe+5bBd)}{8e^6}-\frac{(d+ex)^7(bd-ae)^4(Bd-Ae)}{7e^6}+\frac{b^4B(d+ex)^{12}}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^7)/(7*e^6) + ((b*d - a*e)^3*(5*b*B*d
- 4*A*b*e - a*B*e)*(d + e*x)^8)/(8*e^6) - (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A
*b*e - 2*a*B*e)*(d + e*x)^9)/(9*e^6) + (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
- 3*a*B*e)*(d + e*x)^10)/(5*e^6) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*
x)^11)/(11*e^6) + (b^4*B*(d + e*x)^12)/(12*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^4(A+Bx)(d+ex)^6 \, dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^6}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.\\
&= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^7}{7e^6}+\frac{(bd-ae)^3(5bBd-4Abe-aB}{8e^6}
\end{aligned}$$

Mathematica [B] time = 0.25, size = 737, normalized size = 3.58

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^6*x + (a^3*d^5*(4*A*b*d + a*B*d + 6*a*A*e)*x^2)/2 + (a^2*d^4*(2*a*B
*d*(2*b*d + 3*a*e) + 3*A*(2*b^2*d^2 + 8*a*b*d*e + 5*a^2*e^2))*x^3)/3 + (a*d
```

```
^3*(3*a*B*d*(2*b^2*d^2 + 8*a*b*d*e + 5*a^2*e^2) + 4*A*(b^3*d^3 + 9*a*b^2*d^
2*e + 15*a^2*b*d*e^2 + 5*a^3*e^3))*x^4)/4 + (d^2*(4*a*B*d*(b^3*d^3 + 9*a*b^
2*d^2*e + 15*a^2*b*d*e^2 + 5*a^3*e^3) + A*(b^4*d^4 + 24*a*b^3*d^3*e + 90*a^
2*b^2*d^2*e^2 + 80*a^3*b*d*e^3 + 15*a^4*e^4))*x^5)/5 + (d*(3*a^4*e^4*(5*B*d
 + 2*A*e) + 20*a^3*b*d*e^3*(4*B*d + 3*A*e) + 30*a^2*b^2*d^2*e^2*(3*B*d + 4*
A*e) + 12*a*b^3*d^3*e*(2*B*d + 5*A*e) + b^4*d^4*(B*d + 6*A*e))*x^6)/6 + (e*
(a^4*e^4*(6*B*d + A*e) + 12*a^3*b*d*e^3*(5*B*d + 2*A*e) + 30*a^2*b^2*d^2*e^
2*(4*B*d + 3*A*e) + 20*a*b^3*d^3*e*(3*B*d + 4*A*e) + 3*b^4*d^4*(2*B*d + 5*A
*e))*x^7)/7 + (e^2*(a^4*B*e^4 + 4*a^3*b*e^3*(6*B*d + A*e) + 18*a^2*b^2*d*e^
2*(5*B*d + 2*A*e) + 20*a*b^3*d^2*e*(4*B*d + 3*A*e) + 5*b^4*d^3*(3*B*d + 4*A
*e))*x^8)/8 + (b*e^3*(4*a^3*B*e^3 + 6*a^2*b*e^2*(6*B*d + A*e) + 12*a*b^2*d*
e*(5*B*d + 2*A*e) + 5*b^3*d^2*(4*B*d + 3*A*e))*x^9)/9 + (b^2*e^4*(6*a^2*B*e
^2 + 4*a*b*e*(6*B*d + A*e) + 3*b^2*d*(5*B*d + 2*A*e))*x^10)/10 + (b^3*e^5*(
6*b*B*d + A*b*e + 4*a*B*e)*x^11)/11 + (b^4*B*e^6*x^12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.38, size = 1015, normalized size = 4.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^6*b^4*B + 6/11*x^11*e^5*d*b^4*B + 4/11*x^11*e^6*b^3*a*B + 1/11*
x^11*e^6*b^4*A + 3/2*x^10*e^4*d^2*b^4*B + 12/5*x^10*e^5*d*b^3*a*B + 3/5*x^1
0*e^6*b^2*a^2*B + 3/5*x^10*e^5*d*b^4*A + 2/5*x^10*e^6*b^3*a*A + 20/9*x^9*e^
3*d^3*b^4*B + 20/3*x^9*e^4*d^2*b^3*a*B + 4*x^9*e^5*d*b^2*a^2*B + 4/9*x^9*e^
6*b*a^3*B + 5/3*x^9*e^4*d^2*b^4*A + 8/3*x^9*e^5*d*b^3*a*A + 2/3*x^9*e^6*b^2
*a^2*A + 15/8*x^8*e^2*d^4*b^4*B + 10*x^8*e^3*d^3*b^3*a*B + 45/4*x^8*e^4*d^2
*b^2*a^2*B + 3*x^8*e^5*d*b*a^3*B + 1/8*x^8*e^6*a^4*B + 5/2*x^8*e^3*d^3*b^4*
A + 15/2*x^8*e^4*d^2*b^3*a*A + 9/2*x^8*e^5*d*b^2*a^2*A + 1/2*x^8*e^6*b*a^3*
A + 6/7*x^7*e*d^5*b^4*B + 60/7*x^7*e^2*d^4*b^3*a*B + 120/7*x^7*e^3*d^3*b^2*
a^2*B + 60/7*x^7*e^4*d^2*b*a^3*B + 6/7*x^7*e^5*d*a^4*B + 15/7*x^7*e^2*d^4*b
^4*A + 80/7*x^7*e^3*d^3*b^3*a*A + 90/7*x^7*e^4*d^2*b^2*a^2*A + 24/7*x^7*e^5
*d*b*a^3*A + 1/7*x^7*e^6*a^4*A + 1/6*x^6*d^6*b^4*B + 4*x^6*e*d^5*b^3*a*B +
15*x^6*e^2*d^4*b^2*a^2*B + 40/3*x^6*e^3*d^3*b*a^3*B + 5/2*x^6*e^4*d^2*a^4*B
 + x^6*e*d^5*b^4*A + 10*x^6*e^2*d^4*b^3*a*A + 20*x^6*e^3*d^3*b^2*a^2*A + 10
*x^6*e^4*d^2*b*a^3*A + x^6*e^5*d*a^4*A + 4/5*x^5*d^6*b^3*a*B + 36/5*x^5*e*d
^5*b^2*a^2*B + 12*x^5*e^2*d^4*b*a^3*B + 4*x^5*e^3*d^3*a^4*B + 1/5*x^5*d^6*b
^4*A + 24/5*x^5*e*d^5*b^3*a*A + 18*x^5*e^2*d^4*b^2*a^2*A + 16*x^5*e^3*d^3*b
*a^3*A + 3*x^5*e^4*d^2*a^4*A + 3/2*x^4*d^6*b^2*a^2*B + 6*x^4*e*d^5*b*a^3*B
+ 15/4*x^4*e^2*d^4*a^4*B + x^4*d^6*b^3*a*A + 9*x^4*e*d^5*b^2*a^2*A + 15*x^4
*e^2*d^4*b*a^3*A + 5*x^4*e^3*d^3*a^4*A + 4/3*x^3*d^6*b*a^3*B + 2*x^3*e*d^5*
a^4*B + 2*x^3*d^6*b^2*a^2*A + 8*x^3*e*d^5*b*a^3*A + 5*x^3*e^2*d^4*a^4*A + 1
/2*x^2*d^6*a^4*B + 2*x^2*d^6*b*a^3*A + 3*x^2*e*d^5*a^4*A + x*d^6*a^4*A
```

giac [B] time = 0.16, size = 975, normalized size = 4.73

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/12*B*b^4*x^12*e^6 + 6/11*B*b^4*d*x^11*e^5 + 3/2*B*b^4*d^2*x^10*e^4 + 20/9
*B*b^4*d^3*x^9*e^3 + 15/8*B*b^4*d^4*x^8*e^2 + 6/7*B*b^4*d^5*x^7*e + 1/6*B*b
^4*d^6*x^6 + 4/11*B*a*b^3*x^11*e^6 + 1/11*A*b^4*x^11*e^6 + 12/5*B*a*b^3*d*x
^10*e^5 + 3/5*A*b^4*d*x^10*e^5 + 20/3*B*a*b^3*d^2*x^9*e^4 + 5/3*A*b^4*d^2*x
^9*e^4 + 10*B*a*b^3*d^3*x^8*e^3 + 5/2*A*b^4*d^3*x^8*e^3 + 60/7*B*a*b^3*d^4*
x^7*e^2 + 15/7*A*b^4*d^4*x^7*e^2 + 4*B*a*b^3*d^5*x^6*e + A*b^4*d^5*x^6*e +
4/5*B*a*b^3*d^6*x^5 + 1/5*A*b^4*d^6*x^5 + 3/5*B*a^2*b^2*x^10*e^6 + 2/5*A*a*
b^3*x^10*e^6 + 4*B*a^2*b^2*d*x^9*e^5 + 8/3*A*a*b^3*d*x^9*e^5 + 45/4*B*a^2*b
^2*d^2*x^8*e^4 + 15/2*A*a*b^3*d^2*x^8*e^4 + 120/7*B*a^2*b^2*d^3*x^7*e^3 + 8
0/7*A*a*b^3*d^3*x^7*e^3 + 15*B*a^2*b^2*d^4*x^6*e^2 + 10*A*a*b^3*d^4*x^6*e^2
 + 36/5*B*a^2*b^2*d^5*x^5*e + 24/5*A*a*b^3*d^5*x^5*e + 3/2*B*a^2*b^2*d^6*x^
4 + A*a*b^3*d^6*x^4 + 4/9*B*a^3*b*x^9*e^6 + 2/3*A*a^2*b^2*x^9*e^6 + 3*B*a^3
*b*d*x^8*e^5 + 9/2*A*a^2*b^2*d*x^8*e^5 + 60/7*B*a^3*b*d^2*x^7*e^4 + 90/7*A*
a^2*b^2*d^2*x^7*e^4 + 40/3*B*a^3*b*d^3*x^6*e^3 + 20*A*a^2*b^2*d^3*x^6*e^3 +
 12*B*a^3*b*d^4*x^5*e^2 + 18*A*a^2*b^2*d^4*x^5*e^2 + 6*B*a^3*b*d^5*x^4*e +
9*A*a^2*b^2*d^5*x^4*e + 4/3*B*a^3*b*d^6*x^3 + 2*A*a^2*b^2*d^6*x^3 + 1/8*B*a
^4*x^8*e^6 + 1/2*A*a^3*b*x^8*e^6 + 6/7*B*a^4*d*x^7*e^5 + 24/7*A*a^3*b*d*x^7
*e^5 + 5/2*B*a^4*d^2*x^6*e^4 + 10*A*a^3*b*d^2*x^6*e^4 + 4*B*a^4*d^3*x^5*e^3
 + 16*A*a^3*b*d^3*x^5*e^3 + 15/4*B*a^4*d^4*x^4*e^2 + 15*A*a^3*b*d^4*x^4*e^2
 + 2*B*a^4*d^5*x^3*e + 8*A*a^3*b*d^5*x^3*e + 1/2*B*a^4*d^6*x^2 + 2*A*a^3*b*
d^6*x^2 + 1/7*A*a^4*x^7*e^6 + A*a^4*d*x^6*e^5 + 3*A*a^4*d^2*x^5*e^4 + 5*A*a
^4*d^3*x^4*e^3 + 5*A*a^4*d^4*x^3*e^2 + 3*A*a^4*d^5*x^2*e + A*a^4*d^6*x
```

maple [B] time = 0.04, size = 821, normalized size = 3.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/12*B*e^6*b^4*x^12+1/11*((A*e^6+6*B*d*e^5)*b^4+4*B*e^6*a*b^3)*x^11+1/10*((
6*A*d*e^5+15*B*d^2*e^4)*b^4+4*(A*e^6+6*B*d*e^5)*a*b^3+6*B*e^6*a^2*b^2)*x^10
+1/9*((15*A*d^2*e^4+20*B*d^3*e^3)*b^4+4*(6*A*d*e^5+15*B*d^2*e^4)*a*b^3+6*(A
*e^6+6*B*d*e^5)*a^2*b^2+4*B*e^6*a^3*b)*x^9+1/8*((20*A*d^3*e^3+15*B*d^4*e^2)
*b^4+4*(15*A*d^2*e^4+20*B*d^3*e^3)*a*b^3+6*(6*A*d*e^5+15*B*d^2*e^4)*a^2*b^2
+4*(A*e^6+6*B*d*e^5)*a^3*b+B*e^6*a^4)*x^8+1/7*((15*A*d^4*e^2+6*B*d^5*e)*b^4
+4*(20*A*d^3*e^3+15*B*d^4*e^2)*a*b^3+6*(15*A*d^2*e^4+20*B*d^3*e^3)*a^2*b^2+
4*(6*A*d*e^5+15*B*d^2*e^4)*a^3*b+(A*e^6+6*B*d*e^5)*a^4)*x^7+1/6*((6*A*d^5*e
+B*d^6)*b^4+4*(15*A*d^4*e^2+6*B*d^5*e)*a*b^3+6*(20*A*d^3*e^3+15*B*d^4*e^2)*
a^2*b^2+4*(15*A*d^2*e^4+20*B*d^3*e^3)*a^3*b+(6*A*d*e^5+15*B*d^2*e^4)*a^4)*x
^6+1/5*(A*d^6*b^4+4*(6*A*d^5*e+B*d^6)*a*b^3+6*(15*A*d^4*e^2+6*B*d^5*e)*a^2*
b^2+4*(20*A*d^3*e^3+15*B*d^4*e^2)*a^3*b+(15*A*d^2*e^4+20*B*d^3*e^3)*a^4)*x^
5+1/4*(4*A*d^6*a*b^3+6*(6*A*d^5*e+B*d^6)*a^2*b^2+4*(15*A*d^4*e^2+6*B*d^5*e)
*a^3*b+(20*A*d^3*e^3+15*B*d^4*e^2)*a^4)*x^4+1/3*(6*A*d^6*a^2*b^2+4*(6*A*d^5
*e+B*d^6)*a^3*b+(15*A*d^4*e^2+6*B*d^5*e)*a^4)*x^3+1/2*(4*A*d^6*a^3*b+(6*A*d
^5*e+B*d^6)*a^4)*x^2+A*d^6*a^4*x
```

maxima [B] time = 0.78, size = 810, normalized size = 3.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/12*B*b^4*e^6*x^12 + A*a^4*d^6*x + 1/11*(6*B*b^4*d*e^5 + (4*B*a*b^3 + A*b^
4)*e^6)*x^11 + 1/10*(15*B*b^4*d^2*e^4 + 6*(4*B*a*b^3 + A*b^4)*d*e^5 + 2*(3*
B*a^2*b^2 + 2*A*a*b^3)*e^6)*x^10 + 1/9*(20*B*b^4*d^3*e^3 + 15*(4*B*a*b^3 +
A*b^4)*d^2*e^4 + 12*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 + 2*(2*B*a^3*b + 3*A*a^
```

2*b^2)*e^6)*x^9 + 1/8*(15*B*b^4*d^4*e^2 + 20*(4*B*a*b^3 + A*b^4)*d^3*e^3 + 30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^4 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 + (B*a^4 + 4*A*a^3*b)*e^6)*x^8 + 1/7*(6*B*b^4*d^5*e + A*a^4*e^6 + 15*(4*B*a*b^3 + A*b^4)*d^4*e^2 + 40*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 + 30*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 6*(B*a^4 + 4*A*a^3*b)*d*e^5)*x^7 + 1/6*(B*b^4*d^6 + 6*A*a^4*d*e^5 + 6*(4*B*a*b^3 + A*b^4)*d^5*e + 30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 40*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^3 + 15*(B*a^4 + 4*A*a^3*b)*d^2*e^4)*x^6 + 1/5*(15*A*a^4*d^2*e^4 + (4*B*a*b^3 + A*b^4)*d^6 + 12*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e + 30*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e^2 + 20*(B*a^4 + 4*A*a^3*b)*d^3*e^3)*x^5 + 1/4*(20*A*a^4*d^3*e^3 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*d^5*e + 15*(B*a^4 + 4*A*a^3*b)*d^4*e^2)*x^4 + 1/3*(15*A*a^4*d^4*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^6 + 6*(B*a^4 + 4*A*a^3*b)*d^5*e)*x^3 + 1/2*(6*A*a^4*d^5*e + (B*a^4 + 4*A*a^3*b)*d^6)*x^2

mupad [B] time = 2.22, size = 845, normalized size = 4.10

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)

[Out] x^4*(A*a*b^3*d^6 + (3*B*a^2*b^2*d^6)/2 + 5*A*a^4*d^3*e^3 + (15*B*a^4*d^4*e^2)/4 + 9*A*a^2*b^2*d^5*e + 15*A*a^3*b*d^4*e^2 + 6*B*a^3*b*d^5*e) + x^9*((4*B*a^3*b*e^6)/9 + (2*A*a^2*b^2*e^6)/3 + (5*A*b^4*d^2*e^4)/3 + (20*B*b^4*d^3*e^3)/9 + (20*B*a*b^3*d^2*e^4)/3 + 4*B*a^2*b^2*d*e^5 + (8*A*a*b^3*d*e^5)/3) + x^3*((4*B*a^3*b*d^6)/3 + 2*B*a^4*d^5*e + 2*A*a^2*b^2*d^6 + 5*A*a^4*d^4*e^2 + 8*A*a^3*b*d^5*e) + x^10*((2*A*a*b^3*e^6)/5 + (3*A*b^4*d*e^5)/5 + (3*B*a^2*b^2*e^6)/5 + (3*B*b^4*d^2*e^4)/2 + (12*B*a*b^3*d*e^5)/5) + x^5*((A*b^4*d^6)/5 + (4*B*a*b^3*d^6)/5 + 3*A*a^4*d^2*e^4 + 4*B*a^4*d^3*e^3 + 16*A*a^3*b*d^3*e^3 + (36*B*a^2*b^2*d^5*e)/5 + 12*B*a^3*b*d^4*e^2 + 18*A*a^2*b^2*d^4*e^2 + (24*A*a*b^3*d^5*e)/5) + x^8*((B*a^4*e^6)/8 + (A*a^3*b*e^6)/2 + (5*A*b^4*d^3*e^3)/2 + (15*B*b^4*d^4*e^2)/8 + (15*A*a*b^3*d^2*e^4)/2 + (9*A*a^2*b^2*d*e^5)/2 + 10*B*a*b^3*d^3*e^3 + (45*B*a^2*b^2*d^2*e^4)/4 + 3*B*a^3*b*d*e^5) + x^6*((B*b^4*d^6)/6 + A*a^4*d*e^5 + A*b^4*d^5*e + (5*B*a^4*d^2*e^4)/2 + 10*A*a*b^3*d^4*e^2 + 10*A*a^3*b*d^2*e^4 + (40*B*a^3*b*d^3*e^3)/3 + 20*A*a^2*b^2*d^3*e^3 + 15*B*a^2*b^2*d^4*e^2 + 4*B*a*b^3*d^5*e) + x^7*((A*a^4*e^6)/7 + (6*B*a^4*d*e^5)/7 + (6*B*b^4*d^5*e)/7 + (15*A*b^4*d^4*e^2)/7 + (80*A*a*b^3*d^3*e^3)/7 + (60*B*a*b^3*d^4*e^2)/7 + (60*B*a^3*b*d^2*e^4)/7 + (90*A*a^2*b^2*d^2*e^4)/7 + (120*B*a^2*b^2*d^3*e^3)/7 + (24*A*a^3*b*d*e^5)/7) + (a^3*d^5*x^2*(6*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e^5*x^11*(A*b*e + 4*B*a*e + 6*B*b*d))/11 + A*a^4*d^6*x + (B*b^4*e^6*x^12)/12

sympy [B] time = 0.20, size = 1035, normalized size = 5.02

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**2,x)

[Out] A*a**4*d**6*x + B*b**4*e**6*x**12/12 + x**11*(A*b**4*e**6/11 + 4*B*a*b**3*e**6/11 + 6*B*b**4*d*e**5/11) + x**10*(2*A*a*b**3*e**6/5 + 3*A*b**4*d*e**5/5 + 3*B*a**2*b**2*e**6/5 + 12*B*a*b**3*d*e**5/5 + 3*B*b**4*d**2*e**4/2) + x**9*(2*A*a**2*b**2*e**6/3 + 8*A*a*b**3*d*e**5/3 + 5*A*b**4*d**2*e**4/3 + 4*B*a**3*b*e**6/9 + 4*B*a**2*b**2*d*e**5 + 20*B*a*b**3*d**2*e**4/3 + 20*B*b**4*d**3*e**3/9) + x**8*(A*a**3*b*e**6/2 + 9*A*a**2*b**2*d*e**5/2 + 15*A*a*b**3*d**2*e**4/2 + 5*A*b**4*d**3*e**3/2 + B*a**4*e**6/8 + 3*B*a**3*b*d*e**5 + 45*B*a**2*b**2*d**2*e**4/4 + 10*B*a*b**3*d**3*e**3 + 15*B*b**4*d**4*e**2/8) + x**7*(A*a**4*e**6/7 + 24*A*a**3*b*d*e**5/7 + 90*A*a**2*b**2*d**2*e**4/7

```
+ 80*A*a*b**3*d**3*e**3/7 + 15*A*b**4*d**4*e**2/7 + 6*B*a**4*d*e**5/7 + 60*
B*a**3*b*d**2*e**4/7 + 120*B*a**2*b**2*d**3*e**3/7 + 60*B*a*b**3*d**4*e**2/
7 + 6*B*b**4*d**5*e/7) + x**6*(A*a**4*d*e**5 + 10*A*a**3*b*d**2*e**4 + 20*A
*a**2*b**2*d**3*e**3 + 10*A*a*b**3*d**4*e**2 + A*b**4*d**5*e + 5*B*a**4*d**
2*e**4/2 + 40*B*a**3*b*d**3*e**3/3 + 15*B*a**2*b**2*d**4*e**2 + 4*B*a*b**3*
d**5*e + B*b**4*d**6/6) + x**5*(3*A*a**4*d**2*e**4 + 16*A*a**3*b*d**3*e**3
+ 18*A*a**2*b**2*d**4*e**2 + 24*A*a*b**3*d**5*e/5 + A*b**4*d**6/5 + 4*B*a**
4*d**3*e**3 + 12*B*a**3*b*d**4*e**2 + 36*B*a**2*b**2*d**5*e/5 + 4*B*a*b**3*
d**6/5) + x**4*(5*A*a**4*d**3*e**3 + 15*A*a**3*b*d**4*e**2 + 9*A*a**2*b**2*
d**5*e + A*a*b**3*d**6 + 15*B*a**4*d**4*e**2/4 + 6*B*a**3*b*d**5*e + 3*B*a*
*2*b**2*d**6/2) + x**3*(5*A*a**4*d**4*e**2 + 8*A*a**3*b*d**5*e + 2*A*a**2*b
**2*d**6 + 2*B*a**4*d**5*e + 4*B*a**3*b*d**6/3) + x**2*(3*A*a**4*d**5*e + 2
*A*a**3*b*d**6 + B*a**4*d**6/2)
```

3.1455 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=206

$$-\frac{b^3(d+ex)^{10}(-4aBe-Abe+5bBd)}{10e^6}+\frac{2b^2(d+ex)^9(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{b(d+ex)^8(bd-ae)^2(-2aBe}{4e^6}$$

Rubi [A] time = 0.54, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$-\frac{b^3(d+ex)^{10}(-4aBe-Abe+5bBd)}{10e^6}+\frac{2b^2(d+ex)^9(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{b(d+ex)^8(bd-ae)^2(-2aBe-3Abe+5bBd)}{4e^6}+\frac{(d+ex)^7(bd-ae)^3(-aBe-4Abe+5bBd)}{7e^6}-\frac{(d+ex)^6(bd-ae)^4(Bd-Ae)}{6e^6}+\frac{b^4B(d+ex)^{11}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^6)/(6*e^6) + ((b*d - a*e)^3*(5*b*B*d
- 4*A*b*e - a*B*e)*(d + e*x)^7)/(7*e^6) - (b*(b*d - a*e)^2*(5*b*B*d - 3*A*b
*e - 2*a*B*e)*(d + e*x)^8)/(4*e^6) + (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
- 3*a*B*e)*(d + e*x)^9)/(9*e^6) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x
)^10)/(10*e^6) + (b^4*B*(d + e*x)^11)/(11*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^5\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^5}{e^5}+\frac{(-bd+ae)^3(-5bBd+4Ab}{e^5}\right.\\ &= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^6}{6e^6}+\frac{(bd-ae)^3(5bBd-4Abe-aBe)(}{7e^6}\end{aligned}$$

Mathematica [B] time = 0.20, size = 615, normalized size = 2.99

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^5*x + (a^3*d^4*(4*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (a^2*d^3*(a*B*d
*(4*b*d + 5*a*e) + 2*A*(3*b^2*d^2 + 10*a*b*d*e + 5*a^2*e^2))*x^3)/3 + (a*d^
```

```
2*(a*B*d*(3*b^2*d^2 + 10*a*b*d*e + 5*a^2*e^2) + A*(2*b^3*d^3 + 15*a*b^2*d^2
*e + 20*a^2*b*d*e^2 + 5*a^3*e^3))*x^4)/2 + (d*(2*a*B*d*(2*b^3*d^3 + 15*a*b^
2*d^2*e + 20*a^2*b*d*e^2 + 5*a^3*e^3) + A*(b^4*d^4 + 20*a*b^3*d^3*e + 60*a^
2*b^2*d^2*e^2 + 40*a^3*b*d*e^3 + 5*a^4*e^4))*x^5)/5 + ((60*a^2*b^2*d^2*e^2*
(B*d + A*e) + 20*a^3*b*d*e^3*(2*B*d + A*e) + a^4*e^4*(5*B*d + A*e) + 20*a*b
^3*d^3*e*(B*d + 2*A*e) + b^4*d^4*(B*d + 5*A*e))*x^6)/6 + (e*(a^4*B*e^4 + 40
*a*b^3*d^2*e*(B*d + A*e) + 30*a^2*b^2*d*e^2*(2*B*d + A*e) + 4*a^3*b*e^3*(5*
B*d + A*e) + 5*b^4*d^3*(B*d + 2*A*e))*x^7)/7 + (b*e^2*(2*a^3*B*e^3 + 5*b^3*
d^2*(B*d + A*e) + 10*a*b^2*d*e*(2*B*d + A*e) + 3*a^2*b*e^2*(5*B*d + A*e))*x
^8)/4 + (b^2*e^3*(6*a^2*B*e^2 + 5*b^2*d*(2*B*d + A*e) + 4*a*b*e*(5*B*d + A*
e))*x^9)/9 + (b^3*e^4*(5*b*B*d + A*b*e + 4*a*B*e)*x^10)/10 + (b^4*B*e^5*x^1
1)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.37, size = 856, normalized size = 4.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] 1/11*x^11*e^5*b^4*B + 1/2*x^10*e^4*d*b^4*B + 2/5*x^10*e^5*b^3*a*B + 1/10*x^
10*e^5*b^4*A + 10/9*x^9*e^3*d^2*b^4*B + 20/9*x^9*e^4*d*b^3*a*B + 2/3*x^9*e^
5*b^2*a^2*B + 5/9*x^9*e^4*d*b^4*A + 4/9*x^9*e^5*b^3*a*A + 5/4*x^8*e^2*d^3*b
^4*B + 5*x^8*e^3*d^2*b^3*a*B + 15/4*x^8*e^4*d*b^2*a^2*B + 1/2*x^8*e^5*b*a^3
*B + 5/4*x^8*e^3*d^2*b^4*A + 5/2*x^8*e^4*d*b^3*a*A + 3/4*x^8*e^5*b^2*a^2*A
+ 5/7*x^7*e*d^4*b^4*B + 40/7*x^7*e^2*d^3*b^3*a*B + 60/7*x^7*e^3*d^2*b^2*a^2
*B + 20/7*x^7*e^4*d*b*a^3*B + 1/7*x^7*e^5*a^4*B + 10/7*x^7*e^2*d^3*b^4*A +
40/7*x^7*e^3*d^2*b^3*a*A + 30/7*x^7*e^4*d*b^2*a^2*A + 4/7*x^7*e^5*b*a^3*A +
 1/6*x^6*d^5*b^4*B + 10/3*x^6*e*d^4*b^3*a*B + 10*x^6*e^2*d^3*b^2*a^2*B + 20
/3*x^6*e^3*d^2*b*a^3*B + 5/6*x^6*e^4*d*a^4*B + 5/6*x^6*e*d^4*b^4*A + 20/3*x
^6*e^2*d^3*b^3*a*A + 10*x^6*e^3*d^2*b^2*a^2*A + 10/3*x^6*e^4*d*b*a^3*A + 1/
6*x^6*e^5*a^4*A + 4/5*x^5*d^5*b^3*a*B + 6*x^5*e*d^4*b^2*a^2*B + 8*x^5*e^2*d
^3*b*a^3*B + 2*x^5*e^3*d^2*a^4*B + 1/5*x^5*d^5*b^4*A + 4*x^5*e*d^4*b^3*a*A
+ 12*x^5*e^2*d^3*b^2*a^2*A + 8*x^5*e^3*d^2*b*a^3*A + x^5*e^4*d*a^4*A + 3/2*
x^4*d^5*b^2*a^2*B + 5*x^4*e*d^4*b*a^3*B + 5/2*x^4*e^2*d^3*a^4*B + x^4*d^5*b
^3*a*A + 15/2*x^4*e*d^4*b^2*a^2*A + 10*x^4*e^2*d^3*b*a^3*A + 5/2*x^4*e^3*d^
2*a^4*A + 4/3*x^3*d^5*b*a^3*B + 5/3*x^3*e*d^4*a^4*B + 2*x^3*d^5*b^2*a^2*A +
 20/3*x^3*e*d^4*b*a^3*A + 10/3*x^3*e^2*d^3*a^4*A + 1/2*x^2*d^5*a^4*B + 2*x^
2*d^5*b*a^3*A + 5/2*x^2*e*d^4*a^4*A + x*d^5*a^4*A
```

giac [B] time = 0.20, size = 826, normalized size = 4.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
[Out] 1/11*B*b^4*x^11*e^5 + 1/2*B*b^4*d*x^10*e^4 + 10/9*B*b^4*d^2*x^9*e^3 + 5/4*B
*b^4*d^3*x^8*e^2 + 5/7*B*b^4*d^4*x^7*e + 1/6*B*b^4*d^5*x^6 + 2/5*B*a*b^3*x^
```

```
10*e^5 + 1/10*A*b^4*x^10*e^5 + 20/9*B*a*b^3*d*x^9*e^4 + 5/9*A*b^4*d*x^9*e^4
 + 5*B*a*b^3*d^2*x^8*e^3 + 5/4*A*b^4*d^2*x^8*e^3 + 40/7*B*a*b^3*d^3*x^7*e^2
 + 10/7*A*b^4*d^3*x^7*e^2 + 10/3*B*a*b^3*d^4*x^6*e + 5/6*A*b^4*d^4*x^6*e +
4/5*B*a*b^3*d^5*x^5 + 1/5*A*b^4*d^5*x^5 + 2/3*B*a^2*b^2*x^9*e^5 + 4/9*A*a*b
^3*x^9*e^5 + 15/4*B*a^2*b^2*d*x^8*e^4 + 5/2*A*a*b^3*d*x^8*e^4 + 60/7*B*a^2*
b^2*d^2*x^7*e^3 + 40/7*A*a*b^3*d^2*x^7*e^3 + 10*B*a^2*b^2*d^3*x^6*e^2 + 20/
3*A*a*b^3*d^3*x^6*e^2 + 6*B*a^2*b^2*d^4*x^5*e + 4*A*a*b^3*d^4*x^5*e + 3/2*B
*a^2*b^2*d^5*x^4 + A*a*b^3*d^5*x^4 + 1/2*B*a^3*b*x^8*e^5 + 3/4*A*a^2*b^2*x^
8*e^5 + 20/7*B*a^3*b*d*x^7*e^4 + 30/7*A*a^2*b^2*d*x^7*e^4 + 20/3*B*a^3*b*d^
2*x^6*e^3 + 10*A*a^2*b^2*d^2*x^6*e^3 + 8*B*a^3*b*d^3*x^5*e^2 + 12*A*a^2*b^2
*d^3*x^5*e^2 + 5*B*a^3*b*d^4*x^4*e + 15/2*A*a^2*b^2*d^4*x^4*e + 4/3*B*a^3*b
*d^5*x^3 + 2*A*a^2*b^2*d^5*x^3 + 1/7*B*a^4*x^7*e^5 + 4/7*A*a^3*b*x^7*e^5 +
5/6*B*a^4*d*x^6*e^4 + 10/3*A*a^3*b*d*x^6*e^4 + 2*B*a^4*d^2*x^5*e^3 + 8*A*a^
3*b*d^2*x^5*e^3 + 5/2*B*a^4*d^3*x^4*e^2 + 10*A*a^3*b*d^3*x^4*e^2 + 5/3*B*a^
4*d^4*x^3*e + 20/3*A*a^3*b*d^4*x^3*e + 1/2*B*a^4*d^5*x^2 + 2*A*a^3*b*d^5*x^
2 + 1/6*A*a^4*x^6*e^5 + A*a^4*d*x^5*e^4 + 5/2*A*a^4*d^2*x^4*e^3 + 10/3*A*a^
4*d^3*x^3*e^2 + 5/2*A*a^4*d^4*x^2*e + A*a^4*d^5*x
```

maple [B] time = 0.04, size = 692, normalized size = 3.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/11*B*e^5*b^4*x^11+1/10*((A*e^5+5*B*d*e^4)*b^4+4*B*e^5*a*b^3)*x^10+1/9*((5
*A*d*e^4+10*B*d^2*e^3)*b^4+4*(A*e^5+5*B*d*e^4)*a*b^3+6*B*e^5*a^2*b^2)*x^9+1
/8*((10*A*d^2*e^3+10*B*d^3*e^2)*b^4+4*(5*A*d*e^4+10*B*d^2*e^3)*a*b^3+6*(A*e
^5+5*B*d*e^4)*a^2*b^2+4*B*e^5*a^3*b)*x^8+1/7*((10*A*d^3*e^2+5*B*d^4*e)*b^4+
4*(10*A*d^2*e^3+10*B*d^3*e^2)*a*b^3+6*(5*A*d*e^4+10*B*d^2*e^3)*a^2*b^2+4*(A
*e^5+5*B*d*e^4)*a^3*b+B*e^5*a^4)*x^7+1/6*((5*A*d^4*e+B*d^5)*b^4+4*(10*A*d^3
*e^2+5*B*d^4*e)*a*b^3+6*(10*A*d^2*e^3+10*B*d^3*e^2)*a^2*b^2+4*(5*A*d*e^4+10
*B*d^2*e^3)*a^3*b+(A*e^5+5*B*d*e^4)*a^4)*x^6+1/5*(A*d^5*b^4+4*(5*A*d^4*e+B*
d^5)*a*b^3+6*(10*A*d^3*e^2+5*B*d^4*e)*a^2*b^2+4*(10*A*d^2*e^3+10*B*d^3*e^2)
*a^3*b+(5*A*d*e^4+10*B*d^2*e^3)*a^4)*x^5+1/4*(4*A*d^5*a*b^3+6*(5*A*d^4*e+B*
d^5)*a^2*b^2+4*(10*A*d^3*e^2+5*B*d^4*e)*a^3*b+(10*A*d^2*e^3+10*B*d^3*e^2)*a
^4)*x^4+1/3*(6*A*d^5*a^2*b^2+4*(5*A*d^4*e+B*d^5)*a^3*b+(10*A*d^3*e^2+5*B*d^
4*e)*a^4)*x^3+1/2*(4*A*d^5*a^3*b+(5*A*d^4*e+B*d^5)*a^4)*x^2+A*d^5*a^4*x
```

maxima [B] time = 0.66, size = 686, normalized size = 3.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/11*B*b^4*e^5*x^11 + A*a^4*d^5*x + 1/10*(5*B*b^4*d*e^4 + (4*B*a*b^3 + A*b^
4)*e^5)*x^10 + 1/9*(10*B*b^4*d^2*e^3 + 5*(4*B*a*b^3 + A*b^4)*d*e^4 + 2*(3*B
*a^2*b^2 + 2*A*a*b^3)*e^5)*x^9 + 1/4*(5*B*b^4*d^3*e^2 + 5*(4*B*a*b^3 + A*b^
4)*d^2*e^3 + 5*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*
e^5)*x^8 + 1/7*(5*B*b^4*d^4*e + 10*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 20*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^2*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 +
4*A*a^3*b)*e^5)*x^7 + 1/6*(B*b^4*d^5 + A*a^4*e^5 + 5*(4*B*a*b^3 + A*b^4)*d^
4*e + 20*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 20*(2*B*a^3*b + 3*A*a^2*b^2)*d
^2*e^3 + 5*(B*a^4 + 4*A*a^3*b)*d*e^4)*x^6 + 1/5*(5*A*a^4*d*e^4 + (4*B*a*b^3
 + A*b^4)*d^5 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e + 20*(2*B*a^3*b + 3*A*a^
2*b^2)*d^3*e^2 + 10*(B*a^4 + 4*A*a^3*b)*d^2*e^3)*x^5 + 1/2*(5*A*a^4*d^2*e^3
 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^5 + 5*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e + 5*(B
*a^4 + 4*A*a^3*b)*d^3*e^2)*x^4 + 1/3*(10*A*a^4*d^3*e^2 + 2*(2*B*a^3*b + 3*A
```

```
*a^2*b^2)*d^5 + 5*(B*a^4 + 4*A*a^3*b)*d^4*e)*x^3 + 1/2*(5*A*a^4*d^4*e + (B*
a^4 + 4*A*a^3*b)*d^5)*x^2
```

mupad [B] time = 0.25, size = 711, normalized size = 3.45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*((A*b^4*d^5)/5 + (4*B*a*b^3*d^5)/5 + A*a^4*d*e^4 + 2*B*a^4*d^2*e^3 + 8*
A*a^3*b*d^2*e^3 + 6*B*a^2*b^2*d^4*e + 8*B*a^3*b*d^3*e^2 + 12*A*a^2*b^2*d^3*
e^2 + 4*A*a*b^3*d^4*e) + x^7*((B*a^4*e^5)/7 + (4*A*a^3*b*e^5)/7 + (5*B*b^4*
d^4*e)/7 + (10*A*b^4*d^3*e^2)/7 + (40*A*a*b^3*d^2*e^3)/7 + (30*A*a^2*b^2*d*
e^4)/7 + (40*B*a*b^3*d^3*e^2)/7 + (60*B*a^2*b^2*d^2*e^3)/7 + (20*B*a^3*b*d*
e^4)/7) + x^4*(A*a*b^3*d^5 + (3*B*a^2*b^2*d^5)/2 + (5*A*a^4*d^2*e^3)/2 + (5
*B*a^4*d^3*e^2)/2 + (15*A*a^2*b^2*d^4*e)/2 + 10*A*a^3*b*d^3*e^2 + 5*B*a^3*b
*d^4*e) + x^8*((B*a^3*b*e^5)/2 + (3*A*a^2*b^2*e^5)/4 + (5*A*b^4*d^2*e^3)/4
+ (5*B*b^4*d^3*e^2)/4 + 5*B*a*b^3*d^2*e^3 + (15*B*a^2*b^2*d*e^4)/4 + (5*A*a
*b^3*d*e^4)/2) + x^3*((4*B*a^3*b*d^5)/3 + (5*B*a^4*d^4*e)/3 + 2*A*a^2*b^2*d
^5 + (10*A*a^4*d^3*e^2)/3 + (20*A*a^3*b*d^4*e)/3) + x^9*((4*A*a*b^3*e^5)/9
+ (5*A*b^4*d*e^4)/9 + (2*B*a^2*b^2*e^5)/3 + (10*B*b^4*d^2*e^3)/9 + (20*B*a*
b^3*d*e^4)/9) + x^6*((A*a^4*e^5)/6 + (B*b^4*d^5)/6 + (5*A*b^4*d^4*e)/6 + (5
*B*a^4*d*e^4)/6 + (20*A*a*b^3*d^3*e^2)/3 + (20*B*a^3*b*d^2*e^3)/3 + 10*A*a^
2*b^2*d^2*e^3 + 10*B*a^2*b^2*d^3*e^2 + (10*A*a^3*b*d*e^4)/3 + (10*B*a*b^3*d
^4*e)/3) + (a^3*d^4*x^2*(5*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e^4*x^10*(A*b
*e + 4*B*a*e + 5*B*b*d))/10 + A*a^4*d^5*x + (B*b^4*e^5*x^11)/11
```

sympy [B] time = 0.18, size = 884, normalized size = 4.29

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**5*x + B*b**4*e**5*x**11/11 + x**10*(A*b**4*e**5/10 + 2*B*a*b**3*e
**5/5 + B*b**4*d*e**4/2) + x**9*(4*A*a*b**3*e**5/9 + 5*A*b**4*d*e**4/9 + 2*
B*a**2*b**2*e**5/3 + 20*B*a*b**3*d*e**4/9 + 10*B*b**4*d**2*e**3/9) + x**8*(
3*A*a**2*b**2*e**5/4 + 5*A*a*b**3*d*e**4/2 + 5*A*b**4*d**2*e**3/4 + B*a**3*
b*e**5/2 + 15*B*a**2*b**2*d*e**4/4 + 5*B*a*b**3*d**2*e**3 + 5*B*b**4*d**3*e
**2/4) + x**7*(4*A*a**3*b*e**5/7 + 30*A*a**2*b**2*d*e**4/7 + 40*A*a*b**3*d*
*2*e**3/7 + 10*A*b**4*d**3*e**2/7 + B*a**4*e**5/7 + 20*B*a**3*b*d*e**4/7 +
60*B*a**2*b**2*d**2*e**3/7 + 40*B*a*b**3*d**3*e**2/7 + 5*B*b**4*d**4*e/7) +
 x**6*(A*a**4*e**5/6 + 10*A*a**3*b*d*e**4/3 + 10*A*a**2*b**2*d**2*e**3 + 20
*A*a*b**3*d**3*e**2/3 + 5*A*b**4*d**4*e/6 + 5*B*a**4*d*e**4/6 + 20*B*a**3*b
*d**2*e**3/3 + 10*B*a**2*b**2*d**3*e**2 + 10*B*a*b**3*d**4*e/3 + B*b**4*d**
5/6) + x**5*(A*a**4*d*e**4 + 8*A*a**3*b*d**2*e**3 + 12*A*a**2*b**2*d**3*e**
2 + 4*A*a*b**3*d**4*e + A*b**4*d**5/5 + 2*B*a**4*d**2*e**3 + 8*B*a**3*b*d**
3*e**2 + 6*B*a**2*b**2*d**4*e + 4*B*a*b**3*d**5/5) + x**4*(5*A*a**4*d**2*e*
*3/2 + 10*A*a**3*b*d**3*e**2 + 15*A*a**2*b**2*d**4*e/2 + A*a*b**3*d**5 + 5*
B*a**4*d**3*e**2/2 + 5*B*a**3*b*d**4*e + 3*B*a**2*b**2*d**5/2) + x**3*(10*A
*a**4*d**3*e**2/3 + 20*A*a**3*b*d**4*e/3 + 2*A*a**2*b**2*d**5 + 5*B*a**4*d*
*4*e/3 + 4*B*a**3*b*d**5/3) + x**2*(5*A*a**4*d**4*e/2 + 2*A*a**3*b*d**5 + B
*a**4*d**5/2)
```

3.1456 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=204

$$\frac{e^3(a+bx)^9(-5aBe+Abe+4bBd)}{9b^6}+\frac{e^2(a+bx)^8(bd-ae)(-5aBe+2Abe+3bBd)}{4b^6}+\frac{2e(a+bx)^7(bd-ae)^2(-5aBe+}{7b^6}$$

Rubi [A] time = 0.46, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$\frac{e^3(a+bx)^9(-5aBe+Abe+4bBd)}{9b^6}+\frac{e^2(a+bx)^8(bd-ae)(-5aBe+2Abe+3bBd)}{4b^6}+\frac{2e(a+bx)^7(bd-ae)^2(-5aBe+3Abe+2bBd)}{7b^6}+\frac{(a+bx)^6(bd-ae)^3(-5aBe+4Abe+bBd)}{6b^6}+\frac{(a+bx)^5(Ab-aB)(bd-ae)^4}{5b^6}+\frac{Be^4(a+bx)^{10}}{10b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^4*(a + b*x)^5)/(5*b^6) + ((b*d - a*e)^3*(b*B*d + 4
*A*b*e - 5*a*B*e)*(a + b*x)^6)/(6*b^6) + (2*e*(b*d - a*e)^2*(2*b*B*d + 3*A*
b*e - 5*a*B*e)*(a + b*x)^7)/(7*b^6) + (e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e -
 5*a*B*e)*(a + b*x)^8)/(4*b^6) + (e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)
^9)/(9*b^6) + (B*e^4*(a + b*x)^10)/(10*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^4(A+Bx)(d+ex)^4 \, dx \\
&= \int \left(\frac{(Ab-aB)(bd-ae)^4(a+bx)^4}{b^5}+\frac{(bd-ae)^3(bBd+4Abe-5aB}{b^5}\right. \\
&= \frac{(Ab-aB)(bd-ae)^4(a+bx)^5}{5b^6}+\frac{(bd-ae)^3(bBd+4Abe-5aBe)(a}{6b^6}
\end{aligned}$$

Mathematica [B] time = 0.16, size = 512, normalized size = 2.51

$$a^4Ad^4x+\frac{1}{2}a^3d^3x^2(4A(ae+bd)+aBd)+\frac{2}{3}a^2d^2x^3\left(A\left(3a^2e^2+8abde+3b^2d^2\right)+2aBd(ae+bd)\right)+\frac{1}{4}b^2e^2x^8\left(3a^2Be^2+2abe(Ae+4Bd)+b^2d(2Ae+3Bd)\right)+\frac{2}{7}bex^7\left(2a^3Be^3+3a^2be^2(Ae+4Bd)+4ab^2de(2Ae+3Bd)+b^3d^2(3Ae+2Bd)\right)+\frac{1}{2}adx^4\left(aBd\left(3a^2e^2+8abde+3b^2d^2\right)+2A\left(a^3e^3+6a^2bde^2+6ab^2d^2e+b^3d^3\right)\right)+\frac{1}{6}x^6\left(a^4Be^4+4a^3be^3(Ae+4Bd)+12a^2b^2de^2(2Ae+3Bd)+8ab^3d^2e(3Ae+2Bd)+b^4d^3(4Ae+Bd)\right)+\frac{1}{5}x^5\left(4aBd\left(a^3e^3+6a^2bde^2+6ab^2d^2e+b^3d^3\right)+A\left(a^4e^4+16a^3bde^3+36a^2b^2d^2e^2+16ab^3d^3e+b^4d^4\right)\right)+\frac{1}{9}b^3e^3x^9(4aBe+Abe+4bBd)+\frac{1}{10}b^4Be^4x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^4*x + (a^3*d^3*(a*B*d + 4*A*(b*d + a*e))*x^2)/2 + (2*a^2*d^2*(2*a*B
*d*(b*d + a*e) + A*(3*b^2*d^2 + 8*a*b*d*e + 3*a^2*e^2))*x^3)/3 + (a*d*(a*B*
```

```
d*(3*b^2*d^2 + 8*a*b*d*e + 3*a^2*e^2) + 2*A*(b^3*d^3 + 6*a*b^2*d^2*e + 6*a^
2*b*d*e^2 + a^3*e^3))*x^4)/2 + ((4*a*B*d*(b^3*d^3 + 6*a*b^2*d^2*e + 6*a^2*b
*d*e^2 + a^3*e^3) + A*(b^4*d^4 + 16*a*b^3*d^3*e + 36*a^2*b^2*d^2*e^2 + 16*a
^3*b*d*e^3 + a^4*e^4))*x^5)/5 + ((a^4*B*e^4 + 4*a^3*b*e^3*(4*B*d + A*e) + 1
2*a^2*b^2*d*e^2*(3*B*d + 2*A*e) + 8*a*b^3*d^2*e*(2*B*d + 3*A*e) + b^4*d^3*(
B*d + 4*A*e))*x^6)/6 + (2*b*e*(2*a^3*B*e^3 + 3*a^2*b*e^2*(4*B*d + A*e) + 4*
a*b^2*d*e*(3*B*d + 2*A*e) + b^3*d^2*(2*B*d + 3*A*e))*x^7)/7 + (b^2*e^2*(3*a
^2*B*e^2 + 2*a*b*e*(4*B*d + A*e) + b^2*d*(3*B*d + 2*A*e))*x^8)/4 + (b^3*e^3
*(4*b*B*d + A*b*e + 4*a*B*e)*x^9)/9 + (b^4*B*e^4*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.37, size = 696, normalized size = 3.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*b^4*B + 4/9*x^9*e^3*d*b^4*B + 4/9*x^9*e^4*b^3*a*B + 1/9*x^9*e
^4*b^4*A + 3/4*x^8*e^2*d^2*b^4*B + 2*x^8*e^3*d*b^3*a*B + 3/4*x^8*e^4*b^2*a^
2*B + 1/2*x^8*e^3*d*b^4*A + 1/2*x^8*e^4*b^3*a*A + 4/7*x^7*e*d^3*b^4*B + 24/
7*x^7*e^2*d^2*b^3*a*B + 24/7*x^7*e^3*d*b^2*a^2*B + 4/7*x^7*e^4*b*a^3*B + 6/
7*x^7*e^2*d^2*b^4*A + 16/7*x^7*e^3*d*b^3*a*A + 6/7*x^7*e^4*b^2*a^2*A + 1/6*
x^6*d^4*b^4*B + 8/3*x^6*e*d^3*b^3*a*B + 6*x^6*e^2*d^2*b^2*a^2*B + 8/3*x^6*e
^3*d*b*a^3*B + 1/6*x^6*e^4*a^4*B + 2/3*x^6*e*d^3*b^4*A + 4*x^6*e^2*d^2*b^3*
a*A + 4*x^6*e^3*d*b^2*a^2*A + 2/3*x^6*e^4*b*a^3*A + 4/5*x^5*d^4*b^3*a*B + 2
4/5*x^5*e*d^3*b^2*a^2*B + 24/5*x^5*e^2*d^2*b*a^3*B + 4/5*x^5*e^3*d*a^4*B +
1/5*x^5*d^4*b^4*A + 16/5*x^5*e*d^3*b^3*a*A + 36/5*x^5*e^2*d^2*b^2*a^2*A + 1
6/5*x^5*e^3*d*b*a^3*A + 1/5*x^5*e^4*a^4*A + 3/2*x^4*d^4*b^2*a^2*B + 4*x^4*e
*d^3*b*a^3*B + 3/2*x^4*e^2*d^2*a^4*B + x^4*d^4*b^3*a*A + 6*x^4*e*d^3*b^2*a^
2*A + 6*x^4*e^2*d^2*b*a^3*A + x^4*e^3*d*a^4*A + 4/3*x^3*d^4*b*a^3*B + 4/3*x
^3*e*d^3*a^4*B + 2*x^3*d^4*b^2*a^2*A + 16/3*x^3*e*d^3*b*a^3*A + 2*x^3*e^2*d
^2*a^4*A + 1/2*x^2*d^4*a^4*B + 2*x^2*d^4*b*a^3*A + 2*x^2*e*d^3*a^4*A + x*d^
4*a^4*A
```

giac [B] time = 0.16, size = 676, normalized size = 3.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*b^4*x^10*e^4 + 4/9*B*b^4*d*x^9*e^3 + 3/4*B*b^4*d^2*x^8*e^2 + 4/7*B*b
^4*d^3*x^7*e + 1/6*B*b^4*d^4*x^6 + 4/9*B*a*b^3*x^9*e^4 + 1/9*A*b^4*x^9*e^4
+ 2*B*a*b^3*d*x^8*e^3 + 1/2*A*b^4*d*x^8*e^3 + 24/7*B*a*b^3*d^2*x^7*e^2 + 6/
7*A*b^4*d^2*x^7*e^2 + 8/3*B*a*b^3*d^3*x^6*e + 2/3*A*b^4*d^3*x^6*e + 4/5*B*a
*b^3*d^4*x^5 + 1/5*A*b^4*d^4*x^5 + 3/4*B*a^2*b^2*x^8*e^4 + 1/2*A*a*b^3*x^8*
e^4 + 24/7*B*a^2*b^2*d*x^7*e^3 + 16/7*A*a*b^3*d*x^7*e^3 + 6*B*a^2*b^2*d^2*x
^6*e^2 + 4*A*a*b^3*d^2*x^6*e^2 + 24/5*B*a^2*b^2*d^3*x^5*e + 16/5*A*a*b^3*d^
3*x^5*e + 3/2*B*a^2*b^2*d^4*x^4 + A*a*b^3*d^4*x^4 + 4/7*B*a^3*b*x^7*e^4 + 6
```

```
/7*A*a^2*b^2*x^7*e^4 + 8/3*B*a^3*b*d*x^6*e^3 + 4*A*a^2*b^2*d*x^6*e^3 + 24/5
*B*a^3*b*d^2*x^5*e^2 + 36/5*A*a^2*b^2*d^2*x^5*e^2 + 4*B*a^3*b*d^3*x^4*e + 6
*A*a^2*b^2*d^3*x^4*e + 4/3*B*a^3*b*d^4*x^3 + 2*A*a^2*b^2*d^4*x^3 + 1/6*B*a^
4*x^6*e^4 + 2/3*A*a^3*b*x^6*e^4 + 4/5*B*a^4*d*x^5*e^3 + 16/5*A*a^3*b*d*x^5*
e^3 + 3/2*B*a^4*d^2*x^4*e^2 + 6*A*a^3*b*d^2*x^4*e^2 + 4/3*B*a^4*d^3*x^3*e +
 16/3*A*a^3*b*d^3*x^3*e + 1/2*B*a^4*d^4*x^2 + 2*A*a^3*b*d^4*x^2 + 1/5*A*a^4
*x^5*e^4 + A*a^4*d*x^4*e^3 + 2*A*a^4*d^2*x^3*e^2 + 2*A*a^4*d^3*x^2*e + A*a^
4*d^4*x
```

maple [B] time = 0.05, size = 563, normalized size = 2.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/10*B*e^4*b^4*x^10+1/9*((A*e^4+4*B*d*e^3)*b^4+4*B*e^4*a*b^3)*x^9+1/8*((4*A
*d*e^3+6*B*d^2*e^2)*b^4+4*(A*e^4+4*B*d*e^3)*a*b^3+6*B*e^4*a^2*b^2)*x^8+1/7*
((6*A*d^2*e^2+4*B*d^3*e)*b^4+4*(4*A*d*e^3+6*B*d^2*e^2)*a*b^3+6*(A*e^4+4*B*d
*e^3)*a^2*b^2+4*B*e^4*a^3*b)*x^7+1/6*((4*A*d^3*e+B*d^4)*b^4+4*(6*A*d^2*e^2+
4*B*d^3*e)*a*b^3+6*(4*A*d*e^3+6*B*d^2*e^2)*a^2*b^2+4*(A*e^4+4*B*d*e^3)*a^3*
b+B*e^4*a^4)*x^6+1/5*(A*d^4*b^4+4*(4*A*d^3*e+B*d^4)*a*b^3+6*(6*A*d^2*e^2+4*
B*d^3*e)*a^2*b^2+4*(4*A*d*e^3+6*B*d^2*e^2)*a^3*b+(A*e^4+4*B*d*e^3)*a^4)*x^5
+1/4*(4*A*d^4*a*b^3+6*(4*A*d^3*e+B*d^4)*a^2*b^2+4*(6*A*d^2*e^2+4*B*d^3*e)*a
^3*b+(4*A*d*e^3+6*B*d^2*e^2)*a^4)*x^4+1/3*(6*A*d^4*a^2*b^2+4*(4*A*d^3*e+B*d
^4)*a^3*b+(6*A*d^2*e^2+4*B*d^3*e)*a^4)*x^3+1/2*(4*A*d^4*a^3*b+(4*A*d^3*e+B*
d^4)*a^4)*x^2+A*d^4*a^4*x
```

maxima [B] time = 0.56, size = 562, normalized size = 2.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*b^4*e^4*x^10 + A*a^4*d^4*x + 1/9*(4*B*b^4*d*e^3 + (4*B*a*b^3 + A*b^4
)*e^4)*x^9 + 1/4*(3*B*b^4*d^2*e^2 + 2*(4*B*a*b^3 + A*b^4)*d*e^3 + (3*B*a^2*
b^2 + 2*A*a*b^3)*e^4)*x^8 + 2/7*(2*B*b^4*d^3*e + 3*(4*B*a*b^3 + A*b^4)*d^2*
e^2 + 4*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^3 + (2*B*a^3*b + 3*A*a^2*b^2)*e^4)*x^
7 + 1/6*(B*b^4*d^4 + 4*(4*B*a*b^3 + A*b^4)*d^3*e + 12*(3*B*a^2*b^2 + 2*A*a*
b^3)*d^2*e^2 + 8*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)
*x^6 + 1/5*(A*a^4*e^4 + (4*B*a*b^3 + A*b^4)*d^4 + 8*(3*B*a^2*b^2 + 2*A*a*b^
3)*d^3*e + 12*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^2 + 4*(B*a^4 + 4*A*a^3*b)*d*e
^3)*x^5 + 1/2*(2*A*a^4*d*e^3 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^4 + 4*(2*B*a^3*b
 + 3*A*a^2*b^2)*d^3*e + 3*(B*a^4 + 4*A*a^3*b)*d^2*e^2)*x^4 + 2/3*(3*A*a^4*d
^2*e^2 + (2*B*a^3*b + 3*A*a^2*b^2)*d^4 + 2*(B*a^4 + 4*A*a^3*b)*d^3*e)*x^3 +
 1/2*(4*A*a^4*d^3*e + (B*a^4 + 4*A*a^3*b)*d^4)*x^2
```

mupad [B] time = 2.17, size = 576, normalized size = 2.82

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*((A*a^4*e^4)/5 + (A*b^4*d^4)/5 + (4*B*a*b^3*d^4)/5 + (4*B*a^4*d*e^3)/5
+ (24*B*a^2*b^2*d^3*e)/5 + (24*B*a^3*b*d^2*e^2)/5 + (36*A*a^2*b^2*d^2*e^2)/
5 + (16*A*a*b^3*d^3*e)/5 + (16*A*a^3*b*d*e^3)/5) + x^6*((B*a^4*e^4)/6 + (B*
b^4*d^4)/6 + (2*A*a^3*b*e^4)/3 + (2*A*b^4*d^3*e)/3 + 4*A*a*b^3*d^2*e^2 + 4*
```

```
A*a^2*b^2*d*e^3 + 6*B*a^2*b^2*d^2*e^2 + (8*B*a*b^3*d^3*e)/3 + (8*B*a^3*b*d*
e^3)/3) + x^3*((4*B*a^3*b*d^4)/3 + (4*B*a^4*d^3*e)/3 + 2*A*a^2*b^2*d^4 + 2*
A*a^4*d^2*e^2 + (16*A*a^3*b*d^3*e)/3) + x^8*((A*a*b^3*e^4)/2 + (A*b^4*d*e^3
)/2 + (3*B*a^2*b^2*e^4)/4 + (3*B*b^4*d^2*e^2)/4 + 2*B*a*b^3*d*e^3) + x^4*(A
*a*b^3*d^4 + A*a^4*d*e^3 + (3*B*a^2*b^2*d^4)/2 + (3*B*a^4*d^2*e^2)/2 + 6*A*
a^2*b^2*d^3*e + 6*A*a^3*b*d^2*e^2 + 4*B*a^3*b*d^3*e) + x^7*((4*B*a^3*b*e^4)
/7 + (4*B*b^4*d^3*e)/7 + (6*A*a^2*b^2*e^4)/7 + (6*A*b^4*d^2*e^2)/7 + (24*B*
a*b^3*d^2*e^2)/7 + (24*B*a^2*b^2*d*e^3)/7 + (16*A*a*b^3*d*e^3)/7) + (a^3*d^
3*x^2*(4*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e^3*x^9*(A*b*e + 4*B*a*e + 4*B*
b*d))/9 + A*a^4*d^4*x + (B*b^4*e^4*x^10)/10
```

sympy [B] time = 0.16, size = 717, normalized size = 3.51

$$Aa^4d^4x + \frac{Bb^4e^4x^{10}}{10} + x^9\left(\frac{Ab^4e^4}{9} + \frac{4Bab^3e^4}{9} + \frac{4Bb^4de^3}{9}\right) + x^8\left(\frac{Aab^3e^4}{2} + \frac{Ab^4de^3}{2} + \frac{3Ba^2b^2e^4}{4} + 2Bab^3de^3 + \frac{3Bb^4d^2e^2}{4}\right) + x^7\left(\frac{6Aa^2b^2e^4}{7} + \frac{16Aab^3de^3}{7} + \frac{6Ab^4d^2e^2}{7} + \frac{4Ba^3be^4}{7} + \frac{24Ba^2b^2de^3}{7} + \frac{24Bab^3d^2e^2}{7} + \frac{4Bb^4d^3e}{7}\right) + x^6\left(\frac{2Aa^3be^4}{3} + 4Aa^2b^2de^3 + 4Aab^3d^2e^2 + \frac{2Ab^4d^3e}{3} + \frac{Ba^4e^4}{6} + \frac{8Ba^3bde^3}{3} + 6Ba^2b^2d^2e^2 + \frac{8Bab^3d^3e}{3} + \frac{Bb^4d^4}{6}\right) + x^5\left(\frac{Aa^4e^4}{5} + \frac{16Aa^3bde^3}{5} + \frac{36Aa^2b^2d^2e^2}{5} + \frac{16Aab^3d^3e}{5} + \frac{Ab^4d^4}{5} + \frac{4Ba^4de^3}{5} + \frac{24Ba^3bd^2e^2}{5} + \frac{24Ba^2b^2d^3e}{5} + \frac{4Bab^3d^4}{5}\right) + x^4\left(Aa^4de^3 + 6Aa^3bd^2e^2 + 6Aa^2b^2d^3e + Aab^3d^4 + \frac{3Ba^4d^2e^2}{2} + 4Ba^3bd^3e + \frac{3Ba^2b^2d^4}{2}\right) + x^3\left(2Aa^4d^2e^2 + \frac{16Aa^3bd^3e}{3} + 2Aa^2b^2d^4 + \frac{4Ba^4d^3e}{3} + \frac{4Ba^3bd^4}{3}\right) + x^2\left(2Aa^4d^3e + 2Aa^3bd^4 + \frac{Ba^4d^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**4*x + B*b**4*e**4*x**10/10 + x**9*(A*b**4*e**4/9 + 4*B*a*b**3*e**
4/9 + 4*B*b**4*d*e**3/9) + x**8*(A*a*b**3*e**4/2 + A*b**4*d*e**3/2 + 3*B*a*
*2*b**2*e**4/4 + 2*B*a*b**3*d*e**3 + 3*B*b**4*d**2*e**2/4) + x**7*(6*A*a**2
*b**2*e**4/7 + 16*A*a*b**3*d*e**3/7 + 6*A*b**4*d**2*e**2/7 + 4*B*a**3*b*e**
4/7 + 24*B*a**2*b**2*d*e**3/7 + 24*B*a*b**3*d**2*e**2/7 + 4*B*b**4*d**3*e/7
) + x**6*(2*A*a**3*b*e**4/3 + 4*A*a**2*b**2*d*e**3 + 4*A*a*b**3*d**2*e**2 +
 2*A*b**4*d**3*e/3 + B*a**4*e**4/6 + 8*B*a**3*b*d*e**3/3 + 6*B*a**2*b**2*d*
*2*e**2 + 8*B*a*b**3*d**3*e/3 + B*b**4*d**4/6) + x**5*(A*a**4*e**4/5 + 16*A
*a**3*b*d*e**3/5 + 36*A*a**2*b**2*d**2*e**2/5 + 16*A*a*b**3*d**3*e/5 + A*b*
*4*d**4/5 + 4*B*a**4*d*e**3/5 + 24*B*a**3*b*d**2*e**2/5 + 24*B*a**2*b**2*d*
*3*e/5 + 4*B*a*b**3*d**4/5) + x**4*(A*a**4*d*e**3 + 6*A*a**3*b*d**2*e**2 +
6*A*a**2*b**2*d**3*e + A*a*b**3*d**4 + 3*B*a**4*d**2*e**2/2 + 4*B*a**3*b*d*
*3*e + 3*B*a**2*b**2*d**4/2) + x**3*(2*A*a**4*d**2*e**2 + 16*A*a**3*b*d**3*
e/3 + 2*A*a**2*b**2*d**4 + 4*B*a**4*d**3*e/3 + 4*B*a**3*b*d**4/3) + x**2*(2
*A*a**4*d**3*e + 2*A*a**3*b*d**4 + B*a**4*d**4/2)
```

3.1457 $\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=159

$$\frac{e^2(a+bx)^8(-4aBe+Abe+3bBd)}{8b^5}+\frac{3e(a+bx)^7(bd-ae)(-2aBe+Abe+bBd)}{7b^5}+\frac{(a+bx)^6(bd-ae)^2(-4aBe+3Ab}{6b^5}$$

Rubi [A] time = 0.31, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$\frac{e^2(a+bx)^8(-4aBe+Abe+3bBd)}{8b^5}+\frac{3e(a+bx)^7(bd-ae)(-2aBe+Abe+bBd)}{7b^5}+\frac{(a+bx)^6(bd-ae)^2(-4aBe+3Abe+bBd)}{6b^5}+\frac{(a+bx)^5(Ab-aB)(bd-ae)^3}{5b^5}+\frac{Be^3(a+bx)^9}{9b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)^5)/(5*b^5) + ((b*d - a*e)^2*(b*B*d + 3
*A*b*e - 4*a*B*e)*(a + b*x)^6)/(6*b^5) + (3*e*(b*d - a*e)*(b*B*d + A*b*e -
2*a*B*e)*(a + b*x)^7)/(7*b^5) + (e^2*(3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^
8)/(8*b^5) + (B*e^3*(a + b*x)^9)/(9*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^3\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)^3(a+bx)^4}{b^4}+\frac{(bd-ae)^2(bBd+3Abe-4aB}{b^4}\right.\\ &= \frac{(Ab-aB)(bd-ae)^3(a+bx)^5}{5b^5}+\frac{(bd-ae)^2(bBd+3Abe-4aBe)(a}{6b^5}\end{aligned}$$

Mathematica [B] time = 0.14, size = 402, normalized size = 2.53

$$a^4Ad^3x+\frac{1}{2}a^3d^2x^2(3aAe+aBd+4Abd)+\frac{1}{3}a^2dx^3\left(3A\left(a^2e^2+4abde+2b^2d^2\right)+aBd(3ae+4bd)\right)+\frac{1}{7}b^2ex^7\left(6a^2Be^2+4abe(Ae+3Bd)+3b^2d(Ae+Bd)\right)+\frac{1}{6}bx^6\left(4a^3Be^3+6a^2be^2(Ae+3Bd)+12ab^2de(Ae+Bd)+b^3d^2(3Ae+Bd)\right)+\frac{1}{5}x^5\left(Ab\left(4a^3e^3+18a^2bde^2+12ab^2d^2e+b^3d^3\right)+aB\left(a^3e^3+12a^2bde^2+18ab^2d^2e+4b^3d^3\right)\right)+\frac{1}{4}ax^4\left(3aBd\left(a^2e^2+4abde+2b^2d^2\right)+A\left(a^3e^3+12a^2bde^2+18ab^2d^2e+4b^3d^3\right)\right)+\frac{1}{8}b^3e^2x^8(4aBe+Abe+3bBd)+\frac{1}{9}b^4Be^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^3*x + (a^3*d^2*(4*A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (a^2*d*(a*B*d*(
4*b*d + 3*a*e) + 3*A*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2))*x^3)/3 + (a*(3*a*B*
d*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2) + A*(4*b^3*d^3 + 18*a*b^2*d^2*e + 12*a^
```

```
2*b*d*e^2 + a^3*e^3))*x^4)/4 + ((a*B*(4*b^3*d^3 + 18*a*b^2*d^2*e + 12*a^2*b
*d*e^2 + a^3*e^3) + A*b*(b^3*d^3 + 12*a*b^2*d^2*e + 18*a^2*b*d*e^2 + 4*a^3*
e^3))*x^5)/5 + (b*(4*a^3*B*e^3 + 12*a*b^2*d*e*(B*d + A*e) + 6*a^2*b*e^2*(3*
B*d + A*e) + b^3*d^2*(B*d + 3*A*e))*x^6)/6 + (b^2*e*(6*a^2*B*e^2 + 3*b^2*d*
(B*d + A*e) + 4*a*b*e*(3*B*d + A*e))*x^7)/7 + (b^3*e^2*(3*b*B*d + A*b*e + 4
*a*B*e)*x^8)/8 + (b^4*B*e^3*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.37, size = 534, normalized size = 3.36

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*b^4*B + 3/8*x^8*e^2*d*b^4*B + 1/2*x^8*e^3*b^3*a*B + 1/8*x^8*e^3
*b^4*A + 3/7*x^7*e*d^2*b^4*B + 12/7*x^7*e^2*d*b^3*a*B + 6/7*x^7*e^3*b^2*a^2
*B + 3/7*x^7*e^2*d*b^4*A + 4/7*x^7*e^3*b^3*a*A + 1/6*x^6*d^3*b^4*B + 2*x^6*
e*d^2*b^3*a*B + 3*x^6*e^2*d*b^2*a^2*B + 2/3*x^6*e^3*b*a^3*B + 1/2*x^6*e*d^2
*b^4*A + 2*x^6*e^2*d*b^3*a*A + x^6*e^3*b^2*a^2*A + 4/5*x^5*d^3*b^3*a*B + 18
/5*x^5*e*d^2*b^2*a^2*B + 12/5*x^5*e^2*d*b*a^3*B + 1/5*x^5*e^3*a^4*B + 1/5*x
^5*d^3*b^4*A + 12/5*x^5*e*d^2*b^3*a*A + 18/5*x^5*e^2*d*b^2*a^2*A + 4/5*x^5*
e^3*b*a^3*A + 3/2*x^4*d^3*b^2*a^2*B + 3*x^4*e*d^2*b*a^3*B + 3/4*x^4*e^2*d*a
^4*B + x^4*d^3*b^3*a*A + 9/2*x^4*e*d^2*b^2*a^2*A + 3*x^4*e^2*d*b*a^3*A + 1/
4*x^4*e^3*a^4*A + 4/3*x^3*d^3*b*a^3*B + x^3*e*d^2*a^4*B + 2*x^3*d^3*b^2*a^2
*A + 4*x^3*e*d^2*b*a^3*A + x^3*e^2*d*a^4*A + 1/2*x^2*d^3*a^4*B + 2*x^2*d^3*
b*a^3*A + 3/2*x^2*e*d^2*a^4*A + x*d^3*a^4*A
```

giac [B] time = 0.17, size = 524, normalized size = 3.30

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*b^4*x^9*e^3 + 3/8*B*b^4*d*x^8*e^2 + 3/7*B*b^4*d^2*x^7*e + 1/6*B*b^4*d
^3*x^6 + 1/2*B*a*b^3*x^8*e^3 + 1/8*A*b^4*x^8*e^3 + 12/7*B*a*b^3*d*x^7*e^2 +
 3/7*A*b^4*d*x^7*e^2 + 2*B*a*b^3*d^2*x^6*e + 1/2*A*b^4*d^2*x^6*e + 4/5*B*a*
b^3*d^3*x^5 + 1/5*A*b^4*d^3*x^5 + 6/7*B*a^2*b^2*x^7*e^3 + 4/7*A*a*b^3*x^7*e
^3 + 3*B*a^2*b^2*d*x^6*e^2 + 2*A*a*b^3*d*x^6*e^2 + 18/5*B*a^2*b^2*d^2*x^5*e
 + 12/5*A*a*b^3*d^2*x^5*e + 3/2*B*a^2*b^2*d^3*x^4 + A*a*b^3*d^3*x^4 + 2/3*B
*a^3*b*x^6*e^3 + A*a^2*b^2*x^6*e^3 + 12/5*B*a^3*b*d*x^5*e^2 + 18/5*A*a^2*b^
2*d*x^5*e^2 + 3*B*a^3*b*d^2*x^4*e + 9/2*A*a^2*b^2*d^2*x^4*e + 4/3*B*a^3*b*d
^3*x^3 + 2*A*a^2*b^2*d^3*x^3 + 1/5*B*a^4*x^5*e^3 + 4/5*A*a^3*b*x^5*e^3 + 3/
4*B*a^4*d*x^4*e^2 + 3*A*a^3*b*d*x^4*e^2 + B*a^4*d^2*x^3*e + 4*A*a^3*b*d^2*x
^3*e + 1/2*B*a^4*d^3*x^2 + 2*A*a^3*b*d^3*x^2 + 1/4*A*a^4*x^4*e^3 + A*a^4*d*
x^3*e^2 + 3/2*A*a^4*d^2*x^2*e + A*a^4*d^3*x
```

maple [B] time = 0.04, size = 434, normalized size = 2.73

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/9*b^4*B*e^3*x^9+1/8*((A*e^3+3*B*d*e^2)*b^4+4*B*e^3*a*b^3)*x^8+1/7*((3*A*d
*e^2+3*B*d^2*e)*b^4+4*(A*e^3+3*B*d*e^2)*a*b^3+6*B*e^3*a^2*b^2)*x^7+1/6*((3*
A*d^2*e+B*d^3)*b^4+4*(3*A*d*e^2+3*B*d^2*e)*a*b^3+6*(A*e^3+3*B*d*e^2)*a^2*b^
2+4*B*e^3*a^3*b)*x^6+1/5*(A*d^3*b^4+4*(3*A*d^2*e+B*d^3)*a*b^3+6*(3*A*d*e^2+
3*B*d^2*e)*a^2*b^2+4*(A*e^3+3*B*d*e^2)*a^3*b+B*e^3*a^4)*x^5+1/4*(4*A*d^3*a*
b^3+6*(3*A*d^2*e+B*d^3)*a^2*b^2+4*(3*A*d*e^2+3*B*d^2*e)*a^3*b+(A*e^3+3*B*d*
e^2)*a^4)*x^4+1/3*(6*A*d^3*a^2*b^2+4*(3*A*d^2*e+B*d^3)*a^3*b+(3*A*d*e^2+3*B
*d^2*e)*a^4)*x^3+1/2*(4*A*d^3*a^3*b+(3*A*d^2*e+B*d^3)*a^4)*x^2+A*d^3*a^4*x
```

maxima [B] time = 0.50, size = 444, normalized size = 2.79

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*b^4*e^3*x^9 + A*a^4*d^3*x + 1/8*(3*B*b^4*d*e^2 + (4*B*a*b^3 + A*b^4)*
e^3)*x^8 + 1/7*(3*B*b^4*d^2*e + 3*(4*B*a*b^3 + A*b^4)*d*e^2 + 2*(3*B*a^2*b^
2 + 2*A*a*b^3)*e^3)*x^7 + 1/6*(B*b^4*d^3 + 3*(4*B*a*b^3 + A*b^4)*d^2*e + 6*
(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^3)*x^6 + 1/
5*((4*B*a*b^3 + A*b^4)*d^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e + 6*(2*B*a^3
*b + 3*A*a^2*b^2)*d*e^2 + (B*a^4 + 4*A*a^3*b)*e^3)*x^5 + 1/4*(A*a^4*e^3 + 2
*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3 + 6*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e + 3*(B*a
^4 + 4*A*a^3*b)*d*e^2)*x^4 + 1/3*(3*A*a^4*d*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^
2)*d^3 + 3*(B*a^4 + 4*A*a^3*b)*d^2*e)*x^3 + 1/2*(3*A*a^4*d^2*e + (B*a^4 + 4
*A*a^3*b)*d^3)*x^2
```

mupad [B] time = 0.15, size = 439, normalized size = 2.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((4*B*a^3*b*d^3)/3 + A*a^4*d*e^2 + B*a^4*d^2*e + 2*A*a^2*b^2*d^3 + 4*A*
a^3*b*d^2*e) + x^7*((4*A*a*b^3*e^3)/7 + (3*A*b^4*d*e^2)/7 + (3*B*b^4*d^2*e)
/7 + (6*B*a^2*b^2*e^3)/7 + (12*B*a*b^3*d*e^2)/7) + x^5*((A*b^4*d^3)/5 + (B*
a^4*e^3)/5 + (4*A*a^3*b*e^3)/5 + (4*B*a*b^3*d^3)/5 + (18*A*a^2*b^2*d*e^2)/5
 + (18*B*a^2*b^2*d^2*e)/5 + (12*A*a*b^3*d^2*e)/5 + (12*B*a^3*b*d*e^2)/5) +
x^4*((A*a^4*e^3)/4 + A*a*b^3*d^3 + (3*B*a^4*d*e^2)/4 + (3*B*a^2*b^2*d^3)/2
+ (9*A*a^2*b^2*d^2*e)/2 + 3*A*a^3*b*d*e^2 + 3*B*a^3*b*d^2*e) + x^6*((B*b^4*
d^3)/6 + (2*B*a^3*b*e^3)/3 + (A*b^4*d^2*e)/2 + A*a^2*b^2*e^3 + 3*B*a^2*b^2*
d*e^2 + 2*A*a*b^3*d*e^2 + 2*B*a*b^3*d^2*e) + (a^3*d^2*x^2*(3*A*a*e + 4*A*b*
d + B*a*d))/2 + (b^3*e^2*x^8*(A*b*e + 4*B*a*e + 3*B*b*d))/8 + A*a^4*d^3*x +
 (B*b^4*e^3*x^9)/9
```

sympy [B] time = 0.14, size = 546, normalized size = 3.43

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**3*x + B*b**4*e**3*x**9/9 + x**8*(A*b**4*e**3/8 + B*a*b**3*e**3/2
+ 3*B*b**4*d*e**2/8) + x**7*(4*A*a*b**3*e**3/7 + 3*A*b**4*d*e**2/7 + 6*B*a*
*2*b**2*e**3/7 + 12*B*a*b**3*d*e**2/7 + 3*B*b**4*d**2*e/7) + x**6*(A*a**2*b
```

```
**2*e**3 + 2*A*a*b**3*d*e**2 + A*b**4*d**2*e/2 + 2*B*a**3*b*e**3/3 + 3*B*a*
*2*b**2*d*e**2 + 2*B*a*b**3*d**2*e + B*b**4*d**3/6) + x**5*(4*A*a**3*b*e**3
/5 + 18*A*a**2*b**2*d*e**2/5 + 12*A*a*b**3*d**2*e/5 + A*b**4*d**3/5 + B*a**
4*e**3/5 + 12*B*a**3*b*d*e**2/5 + 18*B*a**2*b**2*d**2*e/5 + 4*B*a*b**3*d**3
/5) + x**4*(A*a**4*e**3/4 + 3*A*a**3*b*d*e**2 + 9*A*a**2*b**2*d**2*e/2 + A*
a*b**3*d**3 + 3*B*a**4*d*e**2/4 + 3*B*a**3*b*d**2*e + 3*B*a**2*b**2*d**3/2)
 + x**3*(A*a**4*d*e**2 + 4*A*a**3*b*d**2*e + 2*A*a**2*b**2*d**3 + B*a**4*d*
*2*e + 4*B*a**3*b*d**3/3) + x**2*(3*A*a**4*d**2*e/2 + 2*A*a**3*b*d**3 + B*a
**4*d**3/2)
```

3.1458 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=118

$$\frac{e(a+bx)^7(-3aBe+Abe+2bBd)}{7b^4}+\frac{(a+bx)^6(bd-ae)(-3aBe+2Abe+bBd)}{6b^4}+\frac{(a+bx)^5(Ab-aB)(bd-ae)^2}{5b^4}+\frac{Be^2}{}$$

Rubi [A] time = 0.22, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 77\}$

$$\frac{e(a+bx)^7(-3aBe+Abe+2bBd)}{7b^4}+\frac{(a+bx)^6(bd-ae)(-3aBe+2Abe+bBd)}{6b^4}+\frac{(a+bx)^5(Ab-aB)(bd-ae)^2}{5b^4}+\frac{Be^2(a+bx)^8}{8b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^5)/(5*b^4) + ((b*d - a*e)*(b*B*d + 2*A
*b*e - 3*a*B*e)*(a + b*x)^6)/(6*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a +
b*x)^7)/(7*b^4) + (B*e^2*(a + b*x)^8)/(8*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^2\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)^2(a+bx)^4}{b^3}+\frac{(bd-ae)(bBd+2Abe-3aBe}{b^3}\right.\\ &= \frac{(Ab-aB)(bd-ae)^2(a+bx)^5}{5b^4}+\frac{(bd-ae)(bBd+2Abe-3aBe)(a}{6b^4}\end{aligned}$$

Mathematica [B] time = 0.09, size = 288, normalized size = 2.44

$$a^4Ad^2x+\frac{1}{2}a^3dx^2(2aAe+aBd+4Abd)+\frac{1}{5}bx^5\left(Ab\left(6a^2e^2+8abde+b^2d^2\right)+4aB\left(a^2e^2+3abde+b^2d^2\right)\right)+\frac{1}{4}ax^4\left(4Ab\left(a^2e^2+3abde+b^2d^2\right)+aB\left(a^2e^2+8abde+6b^2d^2\right)\right)+\frac{1}{3}a^2x^3\left(A\left(a^2e^2+8abde+6b^2d^2\right)+2aBd(ae+2bd)\right)+\frac{1}{6}b^2x^6\left(6a^2Be^2+4abe(Ae+2Bd)+b^2d(2Ae+Bd)\right)+\frac{1}{7}b^3ex^7(4aBe+Abe+2bBd)+\frac{1}{8}b^4Be^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^2*x + (a^3*d*(4*A*b*d + a*B*d + 2*a*A*e)*x^2)/2 + (a^2*(2*a*B*d*(2*
b*d + a*e) + A*(6*b^2*d^2 + 8*a*b*d*e + a^2*e^2))*x^3)/3 + (a*(4*A*b*(b^2*d
^2 + 3*a*b*d*e + a^2*e^2) + a*B*(6*b^2*d^2 + 8*a*b*d*e + a^2*e^2))*x^4)/4 +
 (b*(4*a*B*(b^2*d^2 + 3*a*b*d*e + a^2*e^2) + A*b*(b^2*d^2 + 8*a*b*d*e + 6*a
```

```
^2*e^2))*x^5)/5 + (b^2*(6*a^2*B*e^2 + 4*a*b*e*(2*B*d + A*e) + b^2*d*(B*d +
2*A*e))*x^6)/6 + (b^3*e*(2*b*B*d + A*b*e + 4*a*B*e)*x^7)/7 + (b^4*B*e^2*x^8
)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.37, size = 374, normalized size = 3.17

$$\frac{1}{8}x^8e^2b^4B+\frac{2}{7}x^7edb^4B+\frac{4}{7}x^7e^2b^3aB+\frac{1}{7}x^7e^2b^4A+\frac{1}{6}x^6d^2b^4B+\frac{4}{3}x^6edb^3aB+x^6e^2b^2a^2B+\frac{1}{3}x^6edb^4A+\frac{2}{3}x^6e^2b^3aA+\frac{4}{5}x^5d^2b^3aB+\frac{12}{5}x^5edb^2a^2B+\frac{4}{5}x^5e^2ba^3B+\frac{1}{5}x^5d^2b^4A+\frac{8}{5}x^5edb^3aA+\frac{6}{5}x^5e^2b^2a^2A+\frac{3}{2}x^4d^2b^2a^2B+2x^4edba^3B+\frac{1}{4}x^4e^2a^4B+x^4d^2b^3aA+3x^4edb^2a^2A+x^4e^2ba^3A+\frac{4}{3}x^3d^2ba^3B+\frac{2}{3}x^3eda^4B+2x^3d^2b^2a^2A+\frac{8}{3}x^3edba^3A+\frac{1}{3}x^3e^2a^4A+\frac{1}{2}x^2d^2a^4B+2x^2d^2ba^3A+x^2eda^4A+xd^2a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*b^4*B + 2/7*x^7*e*d*b^4*B + 4/7*x^7*e^2*b^3*a*B + 1/7*x^7*e^2*b
^4*A + 1/6*x^6*d^2*b^4*B + 4/3*x^6*e*d*b^3*a*B + x^6*e^2*b^2*a^2*B + 1/3*x^
6*e*d*b^4*A + 2/3*x^6*e^2*b^3*a*A + 4/5*x^5*d^2*b^3*a*B + 12/5*x^5*e*d*b^2*
a^2*B + 4/5*x^5*e^2*b*a^3*B + 1/5*x^5*d^2*b^4*A + 8/5*x^5*e*d*b^3*a*A + 6/5
*x^5*e^2*b^2*a^2*A + 3/2*x^4*d^2*b^2*a^2*B + 2*x^4*e*d*b*a^3*B + 1/4*x^4*e^
2*a^4*B + x^4*d^2*b^3*a*A + 3*x^4*e*d*b^2*a^2*A + x^4*e^2*b*a^3*A + 4/3*x^3
*d^2*b*a^3*B + 2/3*x^3*e*d*a^4*B + 2*x^3*d^2*b^2*a^2*A + 8/3*x^3*e*d*b*a^3*
A + 1/3*x^3*e^2*a^4*A + 1/2*x^2*d^2*a^4*B + 2*x^2*d^2*b*a^3*A + x^2*e*d*a^4
*A + x*d^2*a^4*A
```

giac [B] time = 0.17, size = 374, normalized size = 3.17

$$\frac{1}{8}Bb^4x^8e^2+\frac{2}{7}Bb^4dx^7e+\frac{1}{6}Bb^4d^2x^6+\frac{4}{7}Bab^3x^7e^2+\frac{1}{7}Ab^4x^7e^2+\frac{4}{3}Bab^3dx^6e+\frac{1}{3}Ab^4dx^6e+\frac{4}{5}Bab^3d^2x^5+\frac{1}{5}Ab^4d^2x^5+Ba^2b^2x^6e^2+\frac{2}{3}Aab^3x^6e^2+\frac{12}{5}Ba^2b^2dx^5e+\frac{8}{5}Aab^3dx^5e+\frac{3}{2}Ba^2b^2d^2x^4+Aab^3d^2x^4+\frac{4}{5}Ba^3bx^5e^2+\frac{6}{5}Aa^2b^2x^5e^2+2\,Ba^3bdx^4e+3\,Aa^2b^2dx^4e+\frac{4}{3}Ba^3bd^2x^3+2\,Aa^2b^2d^2x^3+\frac{1}{4}Ba^4x^4e^2+Aa^3bx^4e^2+\frac{2}{3}Ba^4dx^3e+\frac{8}{3}Aa^3bdx^3e+\frac{1}{2}Ba^4d^2x^2+2\,Aa^3bd^2x^2+\frac{1}{3}Aa^4x^3e^2+Aa^4dx^2e+Aa^4d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*b^4*x^8*e^2 + 2/7*B*b^4*d*x^7*e + 1/6*B*b^4*d^2*x^6 + 4/7*B*a*b^3*x^7
*e^2 + 1/7*A*b^4*x^7*e^2 + 4/3*B*a*b^3*d*x^6*e + 1/3*A*b^4*d*x^6*e + 4/5*B*
a*b^3*d^2*x^5 + 1/5*A*b^4*d^2*x^5 + B*a^2*b^2*x^6*e^2 + 2/3*A*a*b^3*x^6*e^2
 + 12/5*B*a^2*b^2*d*x^5*e + 8/5*A*a*b^3*d*x^5*e + 3/2*B*a^2*b^2*d^2*x^4 + A
*a*b^3*d^2*x^4 + 4/5*B*a^3*b*x^5*e^2 + 6/5*A*a^2*b^2*x^5*e^2 + 2*B*a^3*b*d*
x^4*e + 3*A*a^2*b^2*d*x^4*e + 4/3*B*a^3*b*d^2*x^3 + 2*A*a^2*b^2*d^2*x^3 + 1
/4*B*a^4*x^4*e^2 + A*a^3*b*x^4*e^2 + 2/3*B*a^4*d*x^3*e + 8/3*A*a^3*b*d*x^3*
e + 1/2*B*a^4*d^2*x^2 + 2*A*a^3*b*d^2*x^2 + 1/3*A*a^4*x^3*e^2 + A*a^4*d*x^2
*e + A*a^4*d^2*x
```

maple [B] time = 0.05, size = 305, normalized size = 2.58

$$\frac{Bb^4e^2x^8}{8}+Aa^4d^2x+\frac{\left(4Bab^3e^2+\left(Ae^2+2Bde\right)b^4\right)x^7}{7}+\frac{\left(6Ba^2b^2e^2+4\left(Ae^2+2Bde\right)ab^3+\left(2Ade+Bd^2\right)b^4\right)x^6}{6}+\frac{\left(Ab^4d^2+4Ba^3be^2+6\left(Ae^2+2Bde\right)a^2b^2+4\left(2Ade+Bd^2\right)ab^3\right)x^5}{5}+\frac{\left(4Aab^3d^2+Ba^4e^2+4\left(Ae^2+2Bde\right)a^3b+6\left(2Ade+Bd^2\right)a^2b^2\right)x^4}{4}+\frac{\left(6Aa^2b^2d^2+\left(Ae^2+2Bde\right)a^4+4\left(2Ade+Bd^2\right)a^3b\right)x^3}{3}+\frac{\left(4Aa^3bd^2+\left(2Ade+Bd^2\right)a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*B*e^2*b^4*x^8+1/7*((A*e^2+2*B*d*e)*b^4+4*B*e^2*a*b^3)*x^7+1/6*((2*A*d*e
+B*d^2)*b^4+4*(A*e^2+2*B*d*e)*a*b^3+6*B*e^2*a^2*b^2)*x^6+1/5*(A*d^2*b^4+4*(
2*A*d*e+B*d^2)*a*b^3+6*(A*e^2+2*B*d*e)*a^2*b^2+4*B*e^2*a^3*b)*x^5+1/4*(4*A*
d^2*a*b^3+6*(2*A*d*e+B*d^2)*a^2*b^2+4*(A*e^2+2*B*d*e)*a^3*b+B*e^2*a^4)*x^4+
```

```
1/3*(6*A*d^2*a^2*b^2+4*(2*A*d*e+B*d^2)*a^3*b+(A*e^2+2*B*d*e)*a^4)*x^3+1/2*(
4*A*d^2*a^3*b+(2*A*d*e+B*d^2)*a^4)*x^2+A*d^2*a^4*x
```

maxima [B] time = 0.52, size = 322, normalized size = 2.73

$$\frac{1}{8}Bb^4e^2x^8 + Aa^4d^2x + \frac{1}{7}\left(2Bb^4de + \left(4Bab^3 + Ab^4\right)e^2\right)x^7 + \frac{1}{6}\left(Bb^4d^2 + 2\left(4Bab^3 + Ab^4\right)de + 2\left(3Ba^2b^2 + 2Aab^3\right)e^2\right)x^6 + \frac{1}{5}\left(\left(4Bab^3 + Ab^4\right)d^2 + 4\left(3Ba^2b^2 + 2Aab^3\right)de + 2\left(2Ba^3b + 3Aa^2b^2\right)e^2\right)x^5 + \frac{1}{4}\left(2\left(3Ba^2b^2 + 2Aab^3\right)d^2 + 4\left(2Ba^3b + 3Aa^2b^2\right)de + \left(Ba^4 + 4Aa^3b\right)e^2\right)x^4 + \frac{1}{3}\left(Aa^4e^2 + 2\left(2Ba^3b + 3Aa^2b^2\right)d^2 + 2\left(Ba^4 + 4Aa^3b\right)de\right)x^3 + \frac{1}{2}\left(2Aa^4de + \left(Ba^4 + 4Aa^3b\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*b^4*e^2*x^8 + A*a^4*d^2*x + 1/7*(2*B*b^4*d*e + (4*B*a*b^3 + A*b^4)*e^
2)*x^7 + 1/6*(B*b^4*d^2 + 2*(4*B*a*b^3 + A*b^4)*d*e + 2*(3*B*a^2*b^2 + 2*A*
a*b^3)*e^2)*x^6 + 1/5*((4*B*a*b^3 + A*b^4)*d^2 + 4*(3*B*a^2*b^2 + 2*A*a*b^3
)*d*e + 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^2)*x^5 + 1/4*(2*(3*B*a^2*b^2 + 2*A*a*
b^3)*d^2 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e + (B*a^4 + 4*A*a^3*b)*e^2)*x^4 +
 1/3*(A*a^4*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2 + 2*(B*a^4 + 4*A*a^3*b)*d
*e)*x^3 + 1/2*(2*A*a^4*d*e + (B*a^4 + 4*A*a^3*b)*d^2)*x^2
```

mupad [B] time = 2.06, size = 305, normalized size = 2.58

$$x^4\left(\frac{Ba^4e^2}{4} + 2Ba^3bde + Aa^3be^2 + \frac{3Ba^2b^2d^2}{2} + 3Aa^2b^2de + Aab^3d^2\right) + x^5\left(\frac{4Ba^3be^2}{5} + \frac{12Ba^2b^2de}{5} + \frac{6Aa^2b^2e^2}{5} + \frac{4Bab^3d^2}{5} + \frac{8Aab^3de}{5} + \frac{Ab^4d^2}{5}\right) + x^3\left(\frac{2Ba^4de}{3} + \frac{Aa^4e^2}{3} + \frac{4Ba^3bd^2}{3} + \frac{8Aa^3bde}{3} + 2Aa^2b^2d^2\right) + x^6\left(Ba^2b^2e^2 + \frac{4Bab^3de}{3} + \frac{2Aab^3e^2}{3} + \frac{Bb^4d^2}{6} + \frac{Ab^4de}{3}\right) + Aa^4d^2x + \frac{a^3dx^2\,(2Aae + 4Abd + Bad)}{2} + \frac{b^3ex^7\,(Abe + 4Bae + 2Bbd)}{7} + \frac{Bb^4e^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*((B*a^4*e^2)/4 + A*a*b^3*d^2 + A*a^3*b*e^2 + (3*B*a^2*b^2*d^2)/2 + 2*B*
a^3*b*d*e + 3*A*a^2*b^2*d*e) + x^5*((A*b^4*d^2)/5 + (4*B*a*b^3*d^2)/5 + (4*
B*a^3*b*e^2)/5 + (6*A*a^2*b^2*e^2)/5 + (8*A*a*b^3*d*e)/5 + (12*B*a^2*b^2*d*
e)/5) + x^3*((A*a^4*e^2)/3 + (2*B*a^4*d*e)/3 + (4*B*a^3*b*d^2)/3 + 2*A*a^2*
b^2*d^2 + (8*A*a^3*b*d*e)/3) + x^6*((B*b^4*d^2)/6 + (A*b^4*d*e)/3 + (2*A*a*
b^3*e^2)/3 + B*a^2*b^2*e^2 + (4*B*a*b^3*d*e)/3) + A*a^4*d^2*x + (a^3*d*x^2*
(2*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e*x^7*(A*b*e + 4*B*a*e + 2*B*b*d))/7
+ (B*b^4*e^2*x^8)/8
```

sympy [B] time = 0.12, size = 384, normalized size = 3.25

$$Aa^4d^2x + \frac{Bb^4e^2x^8}{8} + x^7\left(\frac{Ab^4e^2}{7} + \frac{4Bab^3e^2}{7} + \frac{2Bb^4de}{7}\right) + x^6\left(\frac{2Aab^3e^2}{3} + \frac{Ab^4de}{3} + Ba^2b^2e^2 + \frac{4Bab^3de}{3} + \frac{Bb^4d^2}{6}\right) + x^5\left(\frac{6Aa^2b^2e^2}{5} + \frac{8Aab^3de}{5} + \frac{Ab^4d^2}{5} + \frac{4Ba^3be^2}{5} + \frac{12Ba^2b^2de}{5} + \frac{4Bab^3d^2}{5}\right) + x^4\left(Aa^3be^2 + 3Aa^2b^2de + Aab^3d^2 + \frac{Ba^4e^2}{4} + 2Ba^3bde + \frac{3Ba^2b^2d^2}{2}\right) + x^3\left(\frac{Aa^4e^2}{3} + \frac{8Aa^3bde}{3} + 2Aa^2b^2d^2 + \frac{2Ba^4de}{3} + \frac{4Ba^3bd^2}{3}\right) + x^2\left(Aa^4de + 2Aa^3bd^2 + \frac{Ba^4d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**2*x + B*b**4*e**2*x**8/8 + x**7*(A*b**4*e**2/7 + 4*B*a*b**3*e**2/
7 + 2*B*b**4*d*e/7) + x**6*(2*A*a*b**3*e**2/3 + A*b**4*d*e/3 + B*a**2*b**2*
e**2 + 4*B*a*b**3*d*e/3 + B*b**4*d**2/6) + x**5*(6*A*a**2*b**2*e**2/5 + 8*A
*a*b**3*d*e/5 + A*b**4*d**2/5 + 4*B*a**3*b*e**2/5 + 12*B*a**2*b**2*d*e/5 +
4*B*a*b**3*d**2/5) + x**4*(A*a**3*b*e**2 + 3*A*a**2*b**2*d*e + A*a*b**3*d**
2 + B*a**4*e**2/4 + 2*B*a**3*b*d*e + 3*B*a**2*b**2*d**2/2) + x**3*(A*a**4*e
**2/3 + 8*A*a**3*b*d*e/3 + 2*A*a**2*b**2*d**2 + 2*B*a**4*d*e/3 + 4*B*a**3*b
*d**2/3) + x**2*(A*a**4*d*e + 2*A*a**3*b*d**2 + B*a**4*d**2/2)
```

3.1459 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^6(-2aBe+Abe+bBd)}{6b^3}+\frac{(a+bx)^5(Ab-aB)(bd-ae)}{5b^3}+\frac{Be(a+bx)^7}{7b^3}$$

Rubi [A] time = 0.14, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$\frac{(a+bx)^6(-2aBe+Abe+bBd)}{6b^3}+\frac{(a+bx)^5(Ab-aB)(bd-ae)}{5b^3}+\frac{Be(a+bx)^7}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^5)/(5*b^3) + ((b*B*d + A*b*e - 2*a*B*e)*
(a + b*x)^6)/(6*b^3) + (B*e*(a + b*x)^7)/(7*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)\,dx\\
&= \int \left(\frac{(Ab-aB)(bd-ae)(a+bx)^4}{b^2}+\frac{(bBd+Abe-2aBe)(a+bx)}{b^2}\right.\\
&= \frac{(Ab-aB)(bd-ae)(a+bx)^5}{5b^3}+\frac{(bBd+Abe-2aBe)(a+bx)^6}{6b^3}+
\end{aligned}$$

Mathematica [B] time = 0.05, size = 172, normalized size = 2.29

$$a^4Adx+\frac{1}{2}a^3x^2(aAe+aBd+4Abd)+\frac{1}{3}a^2x^3(2Ab(2ae+3bd)+aB(ae+4bd))+\frac{1}{6}b^3x^6(4aBe+Abe+bBd)+\frac{1}{5}b^2x^5(Ab(4ae+bd)+2aB(3ae+2bd))+\frac{1}{2}abx^4(Ab(3ae+2bd)+aB(2ae+3bd))+\frac{1}{7}b^4Bex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d*x + (a^3*(4*A*b*d + a*B*d + a*A*e)*x^2)/2 + (a^2*(a*B*(4*b*d + a*e)
 + 2*A*b*(3*b*d + 2*a*e))*x^3)/3 + (a*b*(a*B*(3*b*d + 2*a*e) + A*b*(2*b*d +
 3*a*e))*x^4)/2 + (b^2*(2*a*B*(2*b*d + 3*a*e) + A*b*(b*d + 4*a*e))*x^5)/5 +
 (b^3*(b*B*d + A*b*e + 4*a*B*e)*x^6)/6 + (b^4*B*e*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.36, size = 216, normalized size = 2.88

$$\frac{1}{7}x^7eb^4B+\frac{1}{6}x^6db^4B+\frac{2}{3}x^6eb^3aB+\frac{1}{6}x^6eb^4A+\frac{4}{5}x^5db^3aB+\frac{6}{5}x^5eb^2a^2B+\frac{1}{5}x^5db^4A+\frac{4}{5}x^5eb^3aA+\frac{3}{2}x^4db^2a^2B+x^4eba^3B+x^4db^3aA+\frac{3}{2}x^4eb^2a^2A+\frac{4}{3}x^3dba^3B+\frac{1}{3}x^3ea^4B+2x^3db^2a^2A+\frac{4}{3}x^3eba^3A+\frac{1}{2}x^2da^4B+2x^2dba^3A+\frac{1}{2}x^2ea^4A+xda^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*b^4*B + 1/6*x^6*d*b^4*B + 2/3*x^6*e*b^3*a*B + 1/6*x^6*e*b^4*A + 4
/5*x^5*d*b^3*a*B + 6/5*x^5*e*b^2*a^2*B + 1/5*x^5*d*b^4*A + 4/5*x^5*e*b^3*a*
A + 3/2*x^4*d*b^2*a^2*B + x^4*e*b*a^3*B + x^4*d*b^3*a*A + 3/2*x^4*e*b^2*a^2
*A + 4/3*x^3*d*b*a^3*B + 1/3*x^3*e*a^4*B + 2*x^3*d*b^2*a^2*A + 4/3*x^3*e*b*
a^3*A + 1/2*x^2*d*a^4*B + 2*x^2*d*b*a^3*A + 1/2*x^2*e*a^4*A + x*d*a^4*A
```

giac [B] time = 0.19, size = 226, normalized size = 3.01

$$\frac{1}{7}Bb^4x^7e+\frac{1}{6}Bb^4dx^6+\frac{2}{3}Bab^3x^6e+\frac{1}{6}Ab^4x^6e+\frac{4}{5}Bab^3dx^5+\frac{1}{5}Ab^4dx^5+\frac{6}{5}Ba^2b^2x^5e+\frac{4}{5}Aab^3x^5e+\frac{3}{2}Ba^2b^2dx^4+Aab^3dx^4+Ba^3bx^4e+\frac{3}{2}Aa^2b^2x^4e+\frac{4}{3}Ba^3bdx^3+2\,Aa^2b^2dx^3+\frac{1}{3}Ba^4x^3e+\frac{4}{3}Aa^3bx^3e+\frac{1}{2}Ba^4dx^2+2\,Aa^3bdx^2+\frac{1}{2}Aa^4x^2e+Aa^4dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*b^4*x^7*e + 1/6*B*b^4*d*x^6 + 2/3*B*a*b^3*x^6*e + 1/6*A*b^4*x^6*e + 4
/5*B*a*b^3*d*x^5 + 1/5*A*b^4*d*x^5 + 6/5*B*a^2*b^2*x^5*e + 4/5*A*a*b^3*x^5*
e + 3/2*B*a^2*b^2*d*x^4 + A*a*b^3*d*x^4 + B*a^3*b*x^4*e + 3/2*A*a^2*b^2*x^4
*e + 4/3*B*a^3*b*d*x^3 + 2*A*a^2*b^2*d*x^3 + 1/3*B*a^4*x^3*e + 4/3*A*a^3*b*
x^3*e + 1/2*B*a^4*d*x^2 + 2*A*a^3*b*d*x^2 + 1/2*A*a^4*x^2*e + A*a^4*d*x
```

maple [B] time = 0.04, size = 176, normalized size = 2.35

$$\frac{Bb^4ex^7}{7}+Aa^4dx+\frac{\left(4Bab^3e+(Ae+Bd)b^4\right)x^6}{6}+\frac{\left(Ab^4d+6Ba^2b^2e+4(Ae+Bd)ab^3\right)x^5}{5}+\frac{\left(4Aab^3d+4Ba^3be+6(Ae+Bd)a^2b^2\right)x^4}{4}+\frac{\left(6Aa^2b^2d+Ba^4e+4(Ae+Bd)a^3b\right)x^3}{3}+\frac{\left(4Aa^3bd+(Ae+Bd)a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/7*B*e*b^4*x^7+1/6*((A*e+B*d)*b^4+4*B*e*a*b^3)*x^6+1/5*(A*d*b^4+4*(A*e+B*d
)*a*b^3+6*B*e*a^2*b^2)*x^5+1/4*(4*A*d*a*b^3+6*(A*e+B*d)*a^2*b^2+4*B*e*a^3*b
)*x^4+1/3*(6*A*d*a^2*b^2+4*(A*e+B*d)*a^3*b+B*e*a^4)*x^3+1/2*(4*A*d*a^3*b+(A
*e+B*d)*a^4)*x^2+A*d*a^4*x
```

maxima [B] time = 0.52, size = 198, normalized size = 2.64

$$\frac{1}{7}Bb^4ex^7+Aa^4dx+\frac{1}{6}\left(Bb^4d+\left(4\,Bab^3+Ab^4\right)e\right)x^6+\frac{1}{5}\left(\left(4\,Bab^3+Ab^4\right)d+2\left(3\,Ba^2b^2+2\,Aab^3\right)e\right)x^5+\frac{1}{2}\left(\left(3\,Ba^2b^2+2\,Aab^3\right)d+\left(2\,Ba^3b+3\,Aa^2b^2\right)e\right)x^4+\frac{1}{3}\left(2\left(2\,Ba^3b+3\,Aa^2b^2\right)d+\left(Ba^4+4\,Aa^3b\right)e\right)x^3+\frac{1}{2}\left(Aa^4e+\left(Ba^4+4\,Aa^3b\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*b^4*e*x^7 + A*a^4*d*x + 1/6*(B*b^4*d + (4*B*a*b^3 + A*b^4)*e)*x^6 + 1
/5*((4*B*a*b^3 + A*b^4)*d + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*e)*x^5 + 1/2*((3*B*
a^2*b^2 + 2*A*a*b^3)*d + (2*B*a^3*b + 3*A*a^2*b^2)*e)*x^4 + 1/3*(2*(2*B*a^3
```

```
*b + 3*A*a^2*b^2)*d + (B*a^4 + 4*A*a^3*b)*e)*x^3 + 1/2*(A*a^4*e + (B*a^4 +
4*A*a^3*b)*d)*x^2
```

mupad [B] time = 0.09, size = 182, normalized size = 2.43

$$x^3\left(\frac{B\,a^4\,e}{3}+\frac{4\,A\,a^3\,b\,e}{3}+\frac{4\,B\,a^3\,b\,d}{3}+2\,A\,a^2\,b^2\,d\right)+x^5\left(\frac{A\,b^4\,d}{5}+\frac{4\,A\,a\,b^3\,e}{5}+\frac{4\,B\,a\,b^3\,d}{5}+\frac{6\,B\,a^2\,b^2\,e}{5}\right)+x^2\left(\frac{A\,a^4\,e}{2}+\frac{B\,a^4\,d}{2}+2\,A\,a^3\,b\,d\right)+x^6\left(\frac{A\,b^4\,e}{6}+\frac{B\,b^4\,d}{6}+\frac{2\,B\,a\,b^3\,e}{3}\right)+A\,a^4\,d\,x+\frac{a\,b\,x^4\,\left(2\,A\,b^2\,d+2\,B\,a^2\,e+3\,A\,a\,b\,e+3\,B\,a\,b\,d\right)}{2}+\frac{B\,b^4\,e\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((B*a^4*e)/3 + (4*A*a^3*b*e)/3 + (4*B*a^3*b*d)/3 + 2*A*a^2*b^2*d) + x^5
*((A*b^4*d)/5 + (4*A*a*b^3*e)/5 + (4*B*a*b^3*d)/5 + (6*B*a^2*b^2*e)/5) + x^
2*((A*a^4*e)/2 + (B*a^4*d)/2 + 2*A*a^3*b*d) + x^6*((A*b^4*e)/6 + (B*b^4*d)/
6 + (2*B*a*b^3*e)/3) + A*a^4*d*x + (a*b*x^4*(2*A*b^2*d + 2*B*a^2*e + 3*A*a*
b*e + 3*B*a*b*d))/2 + (B*b^4*e*x^7)/7
```

sympy [B] time = 0.10, size = 226, normalized size = 3.01

$$Aa^4dx+\frac{Bb^4ex^7}{7}+x^6\left(\frac{Ab^4e}{6}+\frac{2Bab^3e}{3}+\frac{Bb^4d}{6}\right)+x^5\left(\frac{4Aab^3e}{5}+\frac{Ab^4d}{5}+\frac{6Ba^2b^2e}{5}+\frac{4Bab^3d}{5}\right)+x^4\left(\frac{3Aa^2b^2e}{2}+Aab^3d+Ba^3be+\frac{3Ba^2b^2d}{2}\right)+x^3\left(\frac{4Aa^3be}{3}+2Aa^2b^2d+\frac{Ba^4e}{3}+\frac{4Ba^3bd}{3}\right)+x^2\left(\frac{Aa^4e}{2}+2Aa^3bd+\frac{Ba^4d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d*x + B*b**4*e*x**7/7 + x**6*(A*b**4*e/6 + 2*B*a*b**3*e/3 + B*b**4*d
/6) + x**5*(4*A*a*b**3*e/5 + A*b**4*d/5 + 6*B*a**2*b**2*e/5 + 4*B*a*b**3*d/
5) + x**4*(3*A*a**2*b**2*e/2 + A*a*b**3*d + B*a**3*b*e + 3*B*a**2*b**2*d/2)
 + x**3*(4*A*a**3*b*e/3 + 2*A*a**2*b**2*d + B*a**4*e/3 + 4*B*a**3*b*d/3) +
x**2*(A*a**4*e/2 + 2*A*a**3*b*d + B*a**4*d/2)
```

3.1460 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5)/(5*b^2) + (B*(a + b*x)^6)/(6*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)\,dx\\
&= \int \left(\frac{(Ab-aB)(a+bx)^4}{b}+\frac{B(a+bx)^5}{b}\right)dx\\
&= \frac{(Ab-aB)(a+bx)^5}{5b^2}+\frac{B(a+bx)^6}{6b^2}
\end{aligned}$$

Mathematica [B] time = 0.02, size = 84, normalized size = 2.21

$$\frac{1}{30}x\left(15a^4(2A+Bx)+20a^3bx(3A+2Bx)+15a^2b^2x^2(4A+3Bx)+6ab^3x^3(5A+4Bx)+b^4x^4(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(15*a^4*(2*A + B*x) + 20*a^3*b*x*(3*A + 2*B*x) + 15*a^2*b^2*x^2*(4*A + 3
*B*x) + 6*a*b^3*x^3*(5*A + 4*B*x) + b^4*x^4*(6*A + 5*B*x)))/30
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.35, size = 97, normalized size = 2.55

$$\frac{1}{6}x^6b^4B + \frac{4}{5}x^5b^3aB + \frac{1}{5}x^5b^4A + \frac{3}{2}x^4b^2a^2B + x^4b^3aA + \frac{4}{3}x^3ba^3B + 2x^3b^2a^2A + \frac{1}{2}x^2a^4B + 2x^2ba^3A + xa^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^4*B + 4/5*x^5*b^3*a*B + 1/5*x^5*b^4*A + 3/2*x^4*b^2*a^2*B + x^4*b
^3*a*A + 4/3*x^3*b*a^3*B + 2*x^3*b^2*a^2*A + 1/2*x^2*a^4*B + 2*x^2*b*a^3*A
+ x*a^4*A
```

giac [B] time = 0.17, size = 97, normalized size = 2.55

$$\frac{1}{6}Bb^4x^6 + \frac{4}{5}Bab^3x^5 + \frac{1}{5}Ab^4x^5 + \frac{3}{2}Ba^2b^2x^4 + Aab^3x^4 + \frac{4}{3}Ba^3bx^3 + 2Aa^2b^2x^3 + \frac{1}{2}Ba^4x^2 + 2Aa^3bx^2 + Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*b^4*x^6 + 4/5*B*a*b^3*x^5 + 1/5*A*b^4*x^5 + 3/2*B*a^2*b^2*x^4 + A*a*b
^3*x^4 + 4/3*B*a^3*b*x^3 + 2*A*a^2*b^2*x^3 + 1/2*B*a^4*x^2 + 2*A*a^3*b*x^2
+ A*a^4*x
```

maple [B] time = 0.05, size = 97, normalized size = 2.55

$$\frac{Bb^4x^6}{6} + Aa^4x + \frac{(Ab^4 + 4Bab^3)x^5}{5} + \frac{(4Aab^3 + 6b^2Ba^2)x^4}{4} + \frac{(6Ab^2a^2 + 4a^3bB)x^3}{3} + \frac{(4Aa^3b + Ba^4)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/6*b^4*B*x^6+1/5*(A*b^4+4*B*a*b^3)*x^5+1/4*(4*A*a*b^3+6*B*a^2*b^2)*x^4+1/3
*(6*A*a^2*b^2+4*B*a^3*b)*x^3+1/2*(4*A*a^3*b+B*a^4)*x^2+A*a^4*x
```

maxima [B] time = 0.62, size = 96, normalized size = 2.53

$$\frac{1}{6}Bb^4x^6 + Aa^4x + \frac{1}{5}(4Bab^3 + Ab^4)x^5 + \frac{1}{2}(3Ba^2b^2 + 2Aab^3)x^4 + \frac{2}{3}(2Ba^3b + 3Aa^2b^2)x^3 + \frac{1}{2}(Ba^4 + 4Aa^3b)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*b^4*x^6 + A*a^4*x + 1/5*(4*B*a*b^3 + A*b^4)*x^5 + 1/2*(3*B*a^2*b^2 +
2*A*a*b^3)*x^4 + 2/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^3 + 1/2*(B*a^4 + 4*A*a^3*b
)*x^2
```

mupad [B] time = 2.00, size = 88, normalized size = 2.32

$$x^2\left(\frac{Ba^4}{2} + 2Aba^3\right) + x^5\left(\frac{Ab^4}{5} + \frac{4Bab^3}{5}\right) + \frac{Bb^4x^6}{6} + Aa^4x + \frac{2a^2bx^3(3Ab + 2Ba)}{3} + \frac{ab^2x^4(2Ab + 3Ba)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*((B*a^4)/2 + 2*A*a^3*b) + x^5*((A*b^4)/5 + (4*B*a*b^3)/5) + (B*b^4*x^6)
/6 + A*a^4*x + (2*a^2*b*x^3*(3*A*b + 2*B*a))/3 + (a*b^2*x^4*(2*A*b + 3*B*a)
)/2
```

sympy [B] time = 0.08, size = 100, normalized size = 2.63

$$Aa^4x + \frac{Bb^4x^6}{6} + x^5\left(\frac{Ab^4}{5} + \frac{4Bab^3}{5}\right) + x^4\left(Aab^3 + \frac{3Ba^2b^2}{2}\right) + x^3\left(2Aa^2b^2 + \frac{4Ba^3b}{3}\right) + x^2\left(2Aa^3b + \frac{Ba^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x + B*b**4*x**6/6 + x**5*(A*b**4/5 + 4*B*a*b**3/5) + x**4*(A*a*b**3
+ 3*B*a**2*b**2/2) + x**3*(2*A*a**2*b**2 + 4*B*a**3*b/3) + x**2*(2*A*a**3*b
 + B*a**4/2)
```

3.1461 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=156

$$-\frac{(bd-ae)^4(Bd-Ae)\log(d+ex)}{e^6}+\frac{bx(bd-ae)^3(Bd-Ae)}{e^5}-\frac{(a+bx)^2(bd-ae)^2(Bd-Ae)}{2e^4}+\frac{(a+bx)^3(bd-ae)(\text{}}{3e^3}$$

Rubi [A] time = 0.12, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$-\frac{(a+bx)^4(Bd-Ae)}{4e^2}+\frac{(a+bx)^3(bd-ae)(Bd-Ae)}{3e^3}-\frac{(a+bx)^2(bd-ae)^2(Bd-Ae)}{2e^4}+\frac{bx(bd-ae)^3(Bd-Ae)}{e^5}-\frac{(bd-ae)^4(Bd-Ae)\log(d+ex)}{e^6}+\frac{B(a+bx)^5}{5be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^3*(B*d - A*e)*x)/e^5 - ((b*d - a*e)^2*(B*d - A*e)*(a + b*x)^
2)/(2*e^4) + ((b*d - a*e)*(B*d - A*e)*(a + b*x)^3)/(3*e^3) - ((B*d - A*e)*(
a + b*x)^4)/(4*e^2) + (B*(a + b*x)^5)/(5*b*e) - ((b*d - a*e)^4*(B*d - A*e)*
Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{d+ex}\,dx \\
&= \int \left(-\frac{b(bd-ae)^3(-Bd+Ae)}{e^5}+\frac{b(bd-ae)^2(-Bd+Ae)(a+bx)}{e^4}-\frac{b(bd\text{}}{}\right. \\
&= \frac{b(bd-ae)^3(Bd-Ae)x}{e^5}-\frac{(bd-ae)^2(Bd-Ae)(a+bx)^2}{2e^4}+\frac{(bd-ae)(Bd\text{}}{3}
\end{aligned}$$

Mathematica [A] time = 0.13, size = 258, normalized size = 1.65

$$\frac{ex\left(60a^4Be^4+120a^3be^3(2Ae-2Bd+Bex)+60a^2b^2e^2\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)+20ab^3e\left(2Ae\left(6d^2-3dex+2e^2x^2\right)+B\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)+b^4\left(5Ae\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+B\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)\right)-60(bd-ae)^4(Bd-Ae)\log(d+ex)}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(60*a^4*B*e^4 + 120*a^3*b*e^3*(-2*B*d + 2*A*e + B*e*x) + 60*a^2*b^2*e^
2*(3*A*e*(-2*d + e*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 20*a*b^3*e*(2*A*
```

```
e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + B*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*
e^3*x^3)) + b^4*(5*A*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + B*
(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4))) - 60*(
b*d - a*e)^4*(B*d - A*e)*Log[d + e*x])/(60*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x), x]
```

fricas [B] time = 0.41, size = 404, normalized size = 2.59

$$\frac{12\,Bb^4e^5x^5 - 15\left(Bb^4de^4 - \left(4\,Bab^3 + Ab^4\right)e^5\right)x^4 + 20\left(Bb^4d^2e^3 - \left(4\,Bab^3 + Ab^4\right)de^4 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)e^5\right)x^3 - 30\left(Bb^4d^3e^2 - \left(4\,Bab^3 + Ab^4\right)d^2e^3 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)de^4 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)e^5\right)x^2 + 60\left(Bb^4d^4e - \left(4\,Bab^3 + Ab^4\right)d^3e^2 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^2e^3 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)de^4 + \left(Ba^4 + 4\,Aa^3b\right)e^5\right)x - 60\left(Bb^4d^5 - Aa^4e^5 - \left(4\,Bab^3 + Ab^4\right)d^4e + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 + \left(Ba^4 + 4\,Aa^3b\right)de^4\right)\log\left(ex + d\right)}{60\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^4*e^5*x^5 - 15*(B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4 + 2
0*(B*b^4*d^2*e^3 - (4*B*a*b^3 + A*b^4)*d*e^4 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*
e^5)*x^3 - 30*(B*b^4*d^3*e^2 - (4*B*a*b^3 + A*b^4)*d^2*e^3 + 2*(3*B*a^2*b^2
 + 2*A*a*b^3)*d*e^4 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 60*(B*b^4*d^4*
e - (4*B*a*b^3 + A*b^4)*d^3*e^2 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 2*(
2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x - 60*(B*b^4*d^5
 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*
e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*log(
e*x + d))/e^6
```

giac [B] time = 0.20, size = 442, normalized size = 2.83

$$-\left(Bb^4d^5 - 4\,Bab^3d^4e - Ab^4d^4e + 6\,Ba^2b^2d^3e^2 + 4\,Aab^3d^3e^2 - 4\,Ba^3bd^2e^3 - 6\,Aa^2b^2d^2e^3 + Ba^4de^4 + 4\,Aa^3bde^4 - Aa^4e^5\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{60}\left(12\,Bb^4x^5e^4 - 15\,Bb^4dx^4e^3 + 20\,Bb^4d^2x^3e^2 - 30\,Bb^4d^3x^2e + 60\,Bb^4d^4x + 60\,Bab^3x^4e^4 + 15\,Ab^4x^4e^4 - 80\,Bab^3dx^3e^3 - 20\,Ab^4dx^3e^3 + 120\,Bab^3d^2x^2e^2 + 30\,Ab^4d^2x^2e^2 - 240\,Bab^3d^3xe - 60\,Ab^4d^3xe + 120\,Ba^2b^2x^3e^4 + 80\,Aab^3x^3e^4 - 180\,Ba^2b^2dx^2e^3 - 120\,Aab^3dx^2e^3 + 360\,Ba^2b^2d^2xe^2 + 240\,Aab^3d^2xe^2 + 120\,Ba^3bx^2e^4 + 180\,Aa^2b^2x^2e^4 - 240\,Ba^3bdxe^3 - 360\,Aa^2b^2dxe^3 + 60\,Ba^4xe^4 + 240\,Aa^3bxe^4\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*b^4*d^5 - 4*B*a*b^3*d^4*e - A*b^4*d^4*e + 6*B*a^2*b^2*d^3*e^2 + 4*A*a*b
^3*d^3*e^2 - 4*B*a^3*b*d^2*e^3 - 6*A*a^2*b^2*d^2*e^3 + B*a^4*d*e^4 + 4*A*a^
3*b*d*e^4 - A*a^4*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*B*b^4*x^5*e^4 -
15*B*b^4*d*x^4*e^3 + 20*B*b^4*d^2*x^3*e^2 - 30*B*b^4*d^3*x^2*e + 60*B*b^4*d
^4*x + 60*B*a*b^3*x^4*e^4 + 15*A*b^4*x^4*e^4 - 80*B*a*b^3*d*x^3*e^3 - 20*A*
b^4*d*x^3*e^3 + 120*B*a*b^3*d^2*x^2*e^2 + 30*A*b^4*d^2*x^2*e^2 - 240*B*a*b^
3*d^3*x*e - 60*A*b^4*d^3*x*e + 120*B*a^2*b^2*x^3*e^4 + 80*A*a*b^3*x^3*e^4 -
 180*B*a^2*b^2*d*x^2*e^3 - 120*A*a*b^3*d*x^2*e^3 + 360*B*a^2*b^2*d^2*x*e^2
+ 240*A*a*b^3*d^2*x*e^2 + 120*B*a^3*b*x^2*e^4 + 180*A*a^2*b^2*x^2*e^4 - 240
*B*a^3*b*d*x*e^3 - 360*A*a^2*b^2*d*x*e^3 + 60*B*a^4*x*e^4 + 240*A*a^3*b*x*e
^4)*e^(-5)
```

maple [B] time = 0.05, size = 521, normalized size = 3.34

$$\frac{Bb^4x^5}{5e} + \frac{Ab^4x^4}{4e} + \frac{Bab^3x^4}{e} - \frac{Bb^4dx^4}{4e^2} + \frac{4Aab^3x^3}{3e} - \frac{Ab^4dx^3}{3e^2} + \frac{2Ba^2b^2x^3}{e} - \frac{4Bab^3dx^3}{3e^2} + \frac{Bb^4d^2x^3}{3e^3} + \frac{3Aa^2b^2x^2}{e} - \frac{2Aab^3dx^2}{e^2} + \frac{Ab^4d^2x^2}{2e^3} + \frac{2Ba^3bx^2}{e} - \frac{3Ba^2b^2dx^2}{e^2} + \frac{2Bab^3d^2x^2}{e^3} - \frac{Bb^4d^3x^2}{2e^4} + \frac{Aa^4\ln(ex+d)}{e} - \frac{4Aa^3bd\ln(ex+d)}{e^2} + \frac{4Aa^3bx}{e} + \frac{6Aa^2b^2d^2\ln(ex+d)}{e^3} - \frac{6Aa^2b^2dx}{e^2} - \frac{4Aab^3d^3\ln(ex+d)}{e^4} + \frac{4Aab^3d^2x}{e^3} + \frac{Ab^4d^4\ln(ex+d)}{e^5} - \frac{Ab^4d^3x}{e^4} - \frac{Ba^4d\ln(ex+d)}{e^2} + \frac{Ba^4x}{e} + \frac{4Ba^3bd^2\ln(ex+d)}{e^3} - \frac{4Ba^3bdx}{e^2} - \frac{6Ba^2b^2d^3\ln(ex+d)}{e^4} + \frac{6Ba^2b^2d^2x}{e^3} + \frac{4Bab^3d^4\ln(ex+d)}{e^5} - \frac{4Bab^3d^3x}{e^4} - \frac{Bb^4d^5\ln(ex+d)}{e^6} + \frac{Bb^4d^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x)
```

[Out] 1/2/e^3*A*x^2*b^4*d^2+2/e*B*x^2*a^3*b-4/3/e^2*B*x^3*a*b^3*d+4/e^3*A*x*a*b^3*d^2-4/e^2*B*x*a^3*b*d-4/e^4*B*x*a*b^3*d^3-6/e^2*A*x*a^2*b^2*d-3/e^2*B*x^2*a^2*b^2*d+2/e^3*B*x^2*a*b^3*d^2-2/e^2*A*x^2*a*b^3*d-4/e^2*ln(e*x+d)*A*a^3*b*d+6/e^3*B*x*a^2*b^2*d^2-6/e^4*ln(e*x+d)*B*a^2*b^2*d^3+6/e^3*ln(e*x+d)*A*a^2*b^2*d^2+4/e^5*ln(e*x+d)*B*a*b^3*d^4-4/e^4*ln(e*x+d)*A*a*b^3*d^3+4/e^3*ln(e*x+d)*B*a^3*b*d^2+1/5/e*b^4*B*x^5+1/4/e*A*x^4*b^4+1/e*B*x*a^4+1/e*ln(e*x+d)*A*a^4+1/e^5*ln(e*x+d)*A*b^4*d^4+2/e*B*x^3*a^2*b^2+4/e*A*x*a^3*b-1/e^2*ln(e*x+d)*B*a^4*d-1/e^6*ln(e*x+d)*B*b^4*d^5-1/2/e^4*B*x^2*b^4*d^3+4/3/e*A*x^3*a*b^3-1/4/e^2*B*x^4*b^4*d+1/e*B*x^4*a*b^3-1/e^4*A*x*b^4*d^3+1/e^5*B*x*b^4*d^4+1/3/e^3*B*x^3*b^4*d^2+3/e*A*x^2*a^2*b^2-1/3/e^2*A*x^3*b^4*d

maxima [B] time = 0.72, size = 403, normalized size = 2.58

$$\frac{12\,Bb^4e^4x^5 - 15\left(Bb^4de^3 - \left(4\,Bab^3 + Ab^4\right)e^4\right)x^4 + 20\left(Bb^4d^2e^2 - \left(4\,Bab^3 + Ab^4\right)de^3 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)e^4\right)x^3 - 30\left(Bb^4d^3e - \left(4\,Bab^3 + Ab^4\right)d^2e^2 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)de^3 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)e^4\right)x^2 + 60\left(Bb^4d^4 - \left(4\,Bab^3 + Ab^4\right)d^3e + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^2e^2 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)de^3 + \left(Ba^4 + 4\,Aa^3b\right)e^4\right)x}{60\,e^5} - \frac{\left(Bb^4d^5 - Aa^4e^5 - \left(4\,Bab^3 + Ab^4\right)d^4e + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 + \left(Ba^4 + 4\,Aa^3b\right)de^4\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="maxima")

[Out] 1/60*(12*B*b^4*e^4*x^5 - 15*(B*b^4*d*e^3 - (4*B*a*b^3 + A*b^4)*e^4)*x^4 + 20*(B*b^4*d^2*e^2 - (4*B*a*b^3 + A*b^4)*d*e^3 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*e^4)*x^3 - 30*(B*b^4*d^3*e - (4*B*a*b^3 + A*b^4)*d^2*e^2 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^3 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^4)*x^2 + 60*(B*b^4*d^4 - (4*B*a*b^3 + A*b^4)*d^3*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*x)/e^5 - (B*b^4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*log(e*x + d)/e^6

mupad [B] time = 0.08, size = 411, normalized size = 2.63

$$x\left(\frac{B\,a^4+4\,A\,b\,a^3}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{A\,b^4+4\,B\,a\,b^3}{e}-\frac{B\,b^4\,d}{e^2}\right)}{e}-\frac{2\,a\,b^2\,(2\,A\,b+3\,B\,a)}{e}\right)}{e}+\frac{2\,a^2\,b\,(3\,A\,b+2\,B\,a)}{e}\right)}{e}\right)-x^3\left(\frac{d\left(\frac{A\,b^4+4\,B\,a\,b^3}{e}-\frac{B\,b^4\,d}{e^2}\right)}{3\,e}-\frac{2\,a\,b^2\,(2\,A\,b+3\,B\,a)}{3\,e}\right)+x^4\left(\frac{A\,b^4+4\,B\,a\,b^3}{4\,e}-\frac{B\,b^4\,d}{4\,e^2}\right)+x^2\left(\frac{d\left(\frac{d\left(\frac{A\,b^4+4\,B\,a\,b^3}{e}-\frac{B\,b^4\,d}{e^2}\right)}{e}-\frac{2\,a\,b^2\,(2\,A\,b+3\,B\,a)}{e}\right)}{2\,e}+\frac{a^2\,b\,(3\,A\,b+2\,B\,a)}{e}\right)+\frac{\ln(d+e\,x)\,\left(-B\,a^4\,d\,e^4+A\,a^4\,e^5+4\,B\,a^3\,b\,d^2\,e^3-4\,A\,a^3\,b\,d\,e^4-6\,B\,a^2\,b^2\,d^3\,e^2+6\,A\,a^2\,b^2\,d^2\,e^3+4\,B\,a\,b^3\,d^4\,e-4\,A\,a\,b^3\,d^3\,e^2-B\,b^4\,d^5+A\,b^4\,d^4\,e\right)}{e^6}+\frac{B\,b^4\,x^5}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x),x)

[Out] x*((B*a^4 + 4*A*a^3*b)/e - (d*((d*((d*((A*b^4 + 4*B*a*b^3)/e - (B*b^4*d)/e^2))/e - (2*a*b^2*(2*A*b + 3*B*a))/e))/e + (2*a^2*b*(3*A*b + 2*B*a))/e))/e) - x^3*((d*((A*b^4 + 4*B*a*b^3)/e - (B*b^4*d)/e^2))/(3*e) - (2*a*b^2*(2*A*b + 3*B*a))/(3*e)) + x^4*((A*b^4 + 4*B*a*b^3)/(4*e) - (B*b^4*d)/(4*e^2)) + x^2*((d*((d*((A*b^4 + 4*B*a*b^3)/e - (B*b^4*d)/e^2))/e - (2*a*b^2*(2*A*b + 3*B*a))/e))/(2*e) + (a^2*b*(3*A*b + 2*B*a))/e) + (log(d + e*x)*(A*a^4*e^5 - B*b^4*d^5 + A*b^4*d^4*e - B*a^4*d*e^4 - 4*A*a*b^3*d^3*e^2 + 4*B*a^3*b*d^2*e^3 + 6*A*a^2*b^2*d^2*e^3 - 6*B*a^2*b^2*d^3*e^2 - 4*A*a^3*b*d*e^4 + 4*B*a*b^3*d^4*e))/e^6 + (B*b^4*x^5)/(5*e)

sympy [B] time = 0.92, size = 352, normalized size = 2.26

$$\frac{Bb^4x^5}{5e} + x^4\left(\frac{Ab^4}{4e} + \frac{Bab^3}{e} - \frac{Bb^4d}{4e^2}\right) + x^3\left(\frac{4Aab^3}{3e} - \frac{Ab^4d}{3e^2} + \frac{2Ba^2b^2}{e} - \frac{4Bab^3d}{3e^2} + \frac{Bb^4d^2}{3e^3}\right) + x^2\left(\frac{3Aa^2b^2}{e} - \frac{2Aab^3d}{e^2} + \frac{Ab^4d^2}{2e^3} + \frac{2Ba^3b}{e} - \frac{3Ba^2b^2d}{e^2} + \frac{2Bab^3d^2}{e^3} - \frac{Bb^4d^3}{2e^4}\right) + x\left(\frac{4Aa^3b}{e} - \frac{6Aa^2b^2d}{e^2} + \frac{4Aab^3d^2}{e^3} - \frac{Ab^4d^3}{e^4} + \frac{Ba^4}{e} - \frac{4Ba^3bd}{e^2} + \frac{6Ba^2b^2d^2}{e^3} - \frac{4Bab^3d^3}{e^4} + \frac{Bb^4d^4}{e^5}\right) - \frac{(-Ae + Bd)(ae - bd)^4\log(d + ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d),x)

[Out] B*b**4*x**5/(5*e) + x**4*(A*b**4/(4*e) + B*a*b**3/e - B*b**4*d/(4*e**2)) + x**3*(4*A*a*b**3/(3*e) - A*b**4*d/(3*e**2) + 2*B*a**2*b**2/e - 4*B*a*b**3*d/(3*e**2) + B*b**4*d**2/(3*e**3)) + x**2*(3*A*a**2*b**2/e - 2*A*a*b**3*d/e**2 + A*b**4*d**2/(2*e**3) + 2*B*a**3*b/e - 3*B*a**2*b**2*d/e**2 + 2*B*a*b**3*d**2/e**3 - B*b**4*d**3/(2*e**4)) + x*(4*A*a**3*b/e - 6*A*a**2*b**2*d/e**2 + 4*A*a*b**3*d**2/e**3 - A*b**4*d**3/e**4 + B*a**4/e - 4*B*a**3*b*d/e**2 + 6*B*a**2*b**2*d**2/e**3 - 4*B*a*b**3*d**3/e**4 + B*b**4*d**4/e**5) - (-A*e + B*d)*(a*e - b*d)**4*log(d + e*x)/e**6

3.1462 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=188

$$-\frac{b^3(d+ex)^3(-4aBe-Abe+5bBd)}{3e^6}+\frac{b^2(d+ex)^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}+\frac{(bd-ae)^4(Bd-Ae)}{e^6(d+ex)}+\frac{(bd-a\ldots}{}$$

Rubi [A] time = 0.32, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{b^2(d+ex)^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}-\frac{b^3(d+ex)^3(-4aBe-Abe+5bBd)}{3e^6}+\frac{(bd-ae)^4(Bd-Ae)}{e^6(d+ex)}-\frac{2bx(bd-ae)^2(-2aBe-3Abe+5bBd)}{e^5}+\frac{(bd-ae)^3\log(d+ex)(-aBe-4Abe+5bBd)}{e^6}+\frac{b^4B(d+ex)^4}{4e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (-2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*x)/e^5 + ((b*d - a*e)^4*(
B*d - A*e))/(e^6*(d + e*x)) + (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e
)*(d + e*x)^2)/e^6 - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^3)/(3*e^6)
+ (b^4*B*(d + e*x)^4)/(4*e^6) + ((b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*e)*
Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^2}\,dx\\
&= \int \left(\frac{2b(bd-ae)^2(-5bBd+3Abe+2aBe)}{e^5}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^2}+\frac{(-b\ldots}{}\right.\\
&= -\frac{2b(bd-ae)^2(5bBd-3Abe-2aBe)x}{e^5}+\frac{(bd-ae)^4(Bd-Ae)}{e^6(d+ex)}+\frac{b^2(bd-ae\ldots}{}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 354, normalized size = 1.88

$$\frac{12a^4e^4(Bd-Ae)+48a^3be^3\left(Ade+B\left(-d^2+dex+e^2x^2\right)\right)+36a^2b^2e^2\left(2Ae\left(-d^2+dex+e^2x^2\right)+B\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)\right)+8ab^3e\left(3Ae\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+2B\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)\right)+12(d+ex)(bd-ae)^3\log(d+ex)(-aBe-4Abe+5bBd)+b^4\left(4Ae\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+B\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)\right)}{12e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*a^4*e^4*(B*d - A*e) + 48*a^3*b*e^3*(A*d*e + B*(-d^2 + d*e*x + e^2*x^2))
 + 36*a^2*b^2*e^2*(2*A*e*(-d^2 + d*e*x + e^2*x^2) + B*(2*d^3 - 4*d^2*e*x -
3*d*e^2*x^2 + e^3*x^3)) + 8*a*b^3*e*(3*A*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2
 + e^3*x^3) + 2*B*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x
^4)) + b^4*(4*A*e*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x
^4) + B*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^
4 + 3*e^5*x^5)) + 12*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)*Lo
g[d + e*x])/(12*e^6*(d + e*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2, x]
```

fricas [B] time = 0.42, size = 598, normalized size = 3.18

$$\frac{3Bb^4e^5x^5 + 12Bb^4d^5 - 12Aa^4e^5 - 12\left(4Bab^3 + Ab^4\right)d^4e + 24\left(3Ba^2b^2 + 2Aab^3\right)d^3e^2 - 24\left(2Ba^3b + 3Aa^2b^2\right)d^2e^3 + 12\left(Ba^4 + 4Aa^3b\right)de^4 - \left(5Bb^4de^4 - 4\left(4Bab^3 + Ab^4\right)e^5\right)x^4 + 2\left(5Bb^4d^2e^3 - 4\left(4Bab^3 + Ab^4\right)de^4 + 6\left(3Ba^2b^2 + 2Aab^3\right)e^5\right)x^3 - 6\left(5Bb^4d^3e^2 - 4\left(4Bab^3 + Ab^4\right)d^2e^3 + 6\left(3Ba^2b^2 + 2Aab^3\right)de^4 - 4\left(2Ba^3b + 3Aa^2b^2\right)e^5\right)x^2 - 12\left(4Bb^4d^4e - 3\left(4Bab^3 + Ab^4\right)d^3e^2 + 4\left(3Ba^2b^2 + 2Aab^3\right)d^2e^3 - 2\left(2Ba^3b + 3Aa^2b^2\right)de^4\right)x + 12\left(5Bb^4d^5 - 4\left(4Bab^3 + Ab^4\right)d^4e + 6\left(3Ba^2b^2 + 2Aab^3\right)d^3e^2 - 4\left(2Ba^3b + 3Aa^2b^2\right)d^2e^3 + \left(Ba^4 + 4Aa^3b\right)de^4 + \left(5Bb^4d^4e - 4\left(4Bab^3 + Ab^4\right)d^3e^2 + 6\left(3Ba^2b^2 + 2Aab^3\right)d^2e^3 - 4\left(2Ba^3b + 3Aa^2b^2\right)de^4 + \left(Ba^4 + 4Aa^3b\right)e^5\right)x\right)\log\left(ex + d\right)}{12\left(e^7x + de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*e^5*x^5 + 12*B*b^4*d^5 - 12*A*a^4*e^5 - 12*(4*B*a*b^3 + A*b^4
)*d^4*e + 24*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 24*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^3 + 12*(B*a^4 + 4*A*a^3*b)*d*e^4 - (5*B*b^4*d*e^4 - 4*(4*B*a*b^3 +
 A*b^4)*e^5)*x^4 + 2*(5*B*b^4*d^2*e^3 - 4*(4*B*a*b^3 + A*b^4)*d*e^4 + 6*(3*
B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 6*(5*B*b^4*d^3*e^2 - 4*(4*B*a*b^3 + A*b^4
)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 4*(2*B*a^3*b + 3*A*a^2*b^2)
*e^5)*x^2 - 12*(4*B*b^4*d^4*e - 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 4*(3*B*a^2*
b^2 + 2*A*a*b^3)*d^2*e^3 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4)*x + 12*(5*B*b
^4*d^5 - 4*(4*B*a*b^3 + A*b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2
- 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + (5*B*b^
4*d^4*e - 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e
^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x)*log(e*
x + d))/(e^7*x + d*e^6)
```

giac [B] time = 0.19, size = 526, normalized size = 2.80

$$\frac{1}{12}\left(3Bb^4 - \frac{4\left(5Bb^4de - 4Bab^3e^2 - Ab^4e^2\right)e^{(-1)}}{xe + d} + \frac{12\left(5Bb^4d^2e^2 - 8Bab^3de^3 - 2Ab^4de^3 + 3Ba^2b^2e^4 + 2Aab^3e^4\right)e^{(-2)}}{(xe + d)^2} - \frac{24\left(5Bb^4d^3e^3 - 12Bab^3d^2e^4 - 3Ab^4d^2e^4 + 9Ba^2b^2de^5 + 6Aab^3de^5 - 2Ba^3be^6 - 3Aa^2b^2e^6\right)e^{(-3)}}{(xe + d)^3}\right)(xe + d)^4e^{(-6)} - \left(5Bb^4d^4 - 16Bab^3d^3e - 4Ab^4d^3e + 18Ba^2b^2d^2e^2 + 12Aab^3d^2e^2 - 8Ba^3bde^3 - 12Aa^2b^2de^3 + Ba^4e^4 + 4Aa^3be^4\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{Bb^4d^5e^4}{xe + d} - \frac{4Bab^3d^4e^5}{xe + d} - \frac{Ab^4d^4e^5}{xe + d} + \frac{6Ba^2b^2d^3e^6}{xe + d} + \frac{4Aab^3d^3e^6}{xe + d} - \frac{4Ba^3bd^2e^7}{xe + d} - \frac{6Aa^2b^2d^2e^7}{xe + d} + \frac{Ba^4de^8}{xe + d} + \frac{4Aa^3bde^8}{xe + d} - \frac{Aa^4e^9}{xe + d}\right)e^{(-10)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*b^4 - 4*(5*B*b^4*d*e - 4*B*a*b^3*e^2 - A*b^4*e^2)*e^(-1)/(x*e + d
) + 12*(5*B*b^4*d^2*e^2 - 8*B*a*b^3*d*e^3 - 2*A*b^4*d*e^3 + 3*B*a^2*b^2*e^4
 + 2*A*a*b^3*e^4)*e^(-2)/(x*e + d)^2 - 24*(5*B*b^4*d^3*e^3 - 12*B*a*b^3*d^2
*e^4 - 3*A*b^4*d^2*e^4 + 9*B*a^2*b^2*d*e^5 + 6*A*a*b^3*d*e^5 - 2*B*a^3*b*e^
6 - 3*A*a^2*b^2*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4*e^(-6) - (5*B*b^4*d^4
- 16*B*a*b^3*d^3*e - 4*A*b^4*d^3*e + 18*B*a^2*b^2*d^2*e^2 + 12*A*a*b^3*d^2*
e^2 - 8*B*a^3*b*d*e^3 - 12*A*a^2*b^2*d*e^3 + B*a^4*e^4 + 4*A*a^3*b*e^4)*e^(
-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*b^4*d^5*e^4/(x*e + d) - 4*B*a
*b^3*d^4*e^5/(x*e + d) - A*b^4*d^4*e^5/(x*e + d) + 6*B*a^2*b^2*d^3*e^6/(x*e
 + d) + 4*A*a*b^3*d^3*e^6/(x*e + d) - 4*B*a^3*b*d^2*e^7/(x*e + d) - 6*A*a^2
*b^2*d^2*e^7/(x*e + d) + B*a^4*d*e^8/(x*e + d) + 4*A*a^3*b*d*e^8/(x*e + d)
- A*a^4*e^9/(x*e + d))*e^(-10)
```

maple [B] time = 0.06, size = 564, normalized size = 3.00

$$\frac{Bb^4x^4}{4e^2}+\frac{Ab^4x^3}{3e^2}+\frac{4Bab^3x^3}{3e^2}-\frac{2Bb^4dx^3}{3e^3}+\frac{2Aab^3x^2}{e^2}-\frac{Ab^4dx^2}{e^3}+\frac{3Ba^2b^2x^2}{e^2}-\frac{4Bab^3dx^2}{e^3}+\frac{3Bb^4d^2x^2}{2e^4}-\frac{Aa^4}{(ex+d)e}+\frac{4Aa^3bd}{(ex+d)e^2}+\frac{4Aa^3b\ln(ex+d)}{e^2}-\frac{6Aa^2b^2d^2}{(ex+d)e^3}-\frac{12Aa^2b^2d\ln(ex+d)}{e^3}+\frac{6Aa^2b^2x}{e^2}+\frac{4Aab^3d^3}{(ex+d)e^4}+\frac{12Aab^3d^2\ln(ex+d)}{e^4}-\frac{8Aab^3dx}{e^3}-\frac{Ab^4d^4}{(ex+d)e^5}-\frac{4Ab^4d^3\ln(ex+d)}{e^5}+\frac{3Ab^4d^2x}{e^4}+\frac{Ba^4d}{(ex+d)e^2}+\frac{Ba^4\ln(ex+d)}{e^2}-\frac{4Ba^3bd^2}{(ex+d)e^3}-\frac{8Ba^3bd\ln(ex+d)}{e^3}+\frac{4Ba^3bx}{e^2}+\frac{6Ba^2b^2d^3}{(ex+d)e^4}+\frac{18Ba^2b^2d^2\ln(ex+d)}{e^4}-\frac{12Ba^2b^2dx}{e^3}-\frac{4Bab^3d^4}{(ex+d)e^5}-\frac{16Bab^3d^3\ln(ex+d)}{e^5}+\frac{12Bab^3d^2x}{e^4}+\frac{Bb^4d^5}{(ex+d)e^6}+\frac{5Bb^4d^4\ln(ex+d)}{e^6}-\frac{4Bb^4d^3x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x)
```

```
[Out] -1/e/(e*x+d)*A*a^4+1/4*b^4/e^2*B*x^4+1/3*b^4/e^2*A*x^3+1/e^2*ln(e*x+d)*B*a^
4-4*b^3/e^3*B*x^2*a*d+18/e^4*ln(e*x+d)*B*a^2*b^2*d^2-16/e^5*ln(e*x+d)*B*a*b
^3*d^3+4/e^2/(e*x+d)*A*d*a^3*b-6/e^3/(e*x+d)*A*a^2*b^2*d^2+4/e^4/(e*x+d)*A*
a*b^3*d^3-8/e^3*ln(e*x+d)*B*a^3*b*d-4/e^3/(e*x+d)*B*a^3*b*d^2+6/e^4/(e*x+d)
*B*a^2*b^2*d^3-4/e^5/(e*x+d)*B*a*b^3*d^4-12/e^3*ln(e*x+d)*A*a^2*b^2*d+12/e^
4*ln(e*x+d)*A*a*b^3*d^2+2*b^3/e^2*A*x^2*a-b^4/e^3*A*x^2*d+1/e^6/(e*x+d)*B*b
^4*d^5+4/3*b^3/e^2*B*x^3*a-2/3*b^4/e^3*B*x^3*d+4/e^2*ln(e*x+d)*A*a^3*b-4/e^
5*ln(e*x+d)*A*b^4*d^3+5/e^6*ln(e*x+d)*B*b^4*d^4-8*b^3/e^3*A*a*d*x-12*b^2/e^
3*B*a^2*d*x+12*b^3/e^4*B*a*d^2*x+6*b^2/e^2*A*a^2*x+3*b^4/e^4*A*d^2*x+4*b/e^
2*B*a^3*x-4*b^4/e^5*B*d^3*x-1/e^5/(e*x+d)*A*b^4*d^4+1/e^2/(e*x+d)*B*d*a^4+3
*b^2/e^2*B*x^2*a^2+3/2*b^4/e^4*B*x^2*d^2
```

maxima [B] time = 0.51, size = 410, normalized size = 2.18

$$\frac{Bb^4d^5-Aa^4e^5-\left(4Bab^3+Ab^4\right)d^4e+2\left(3Ba^2b^2+2Aab^3\right)d^3e^2-2\left(2Ba^3b+3Aa^2b^2\right)d^2e^3+\left(Ba^4+4Aa^3b\right)de^4}{e^7x+de^6}+\frac{3Bb^4e^3x^4-4\left(2Bb^4de^2-\left(4Bab^3+Ab^4\right)e^3\right)x^3+6\left(3Bb^4d^2e-2\left(4Bab^3+Ab^4\right)de^2+2\left(3Ba^2b^2+2Aab^3\right)e^3\right)x^2-12\left(4Bb^4d^3-3\left(4Bab^3+Ab^4\right)d^2e+4\left(3Ba^2b^2+2Aab^3\right)de^2-2\left(2Ba^3b+3Aa^2b^2\right)e^3\right)x}{12e^5}+\frac{\left(5Bb^4d^4-4\left(4Bab^3+Ab^4\right)d^3e+6\left(3Ba^2b^2+2Aab^3\right)d^2e^2-4\left(2Ba^3b+3Aa^2b^2\right)de^3+\left(Ba^4+4Aa^3b\right)e^4\right)\log(ex+d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*b^4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d
*e^4)/(e^7*x + d*e^6) + 1/12*(3*B*b^4*e^3*x^4 - 4*(2*B*b^4*d*e^2 - (4*B*a*b
^3 + A*b^4)*e^3)*x^3 + 6*(3*B*b^4*d^2*e - 2*(4*B*a*b^3 + A*b^4)*d*e^2 + 2*(
3*B*a^2*b^2 + 2*A*a*b^3)*e^3)*x^2 - 12*(4*B*b^4*d^3 - 3*(4*B*a*b^3 + A*b^4)
*d^2*e + 4*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^
3)*x)/e^5 + (5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e + 6*(3*B*a^2*b^2 + 2
*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)
*e^4)*log(e*x + d)/e^6
```

mupad [B] time = 0.10, size = 486, normalized size = 2.59

$$x^3\left(\frac{Ab^4+4Bab^3}{3e^2}-\frac{2Bb^4d}{3e^3}\right)-x^2\left(\frac{d\left(\frac{Ab^4+4Bab^3}{e^2}-\frac{2Bb^4d}{e^3}\right)}{e}-\frac{ab^2(2Ab+3Ba)}{e^2}+\frac{Bb^4d^2}{2e^4}\right)+x\left(\frac{2d\left(\frac{2d\left(\frac{Ab^4+4Bab^3}{e^2}-\frac{2Bb^4d}{e^3}\right)}{e}-\frac{2ab^2(2Ab+3Ba)}{e^2}+\frac{Bb^4d^2}{e^4}\right)}{e}-\frac{d^2\left(\frac{Ab^4+4Bab^3}{e^2}-\frac{2Bb^4d}{e^3}\right)}{e^2}+\frac{2a^2b(3Ab+2Ba)}{e^2}\right)+\frac{\ln(d+ex)\left(Ba^4e^4-8Ba^3bde^3+4Aa^3be^4+18Ba^2b^2d^2e^2-12Aa^2b^2de^3-16Bab^3d^3e+12Aab^3d^2e^2+5Bb^4d^4-4Ab^4d^3e\right)}{e^6}-\frac{-Ba^4de^4+Aa^4e^5+4Ba^3bd^2e^3-4Aa^3bde^4-6Ba^2b^2d^3e^2+6Aa^2b^2d^2e^3+4Bab^3d^4e-4Aab^3d^3e^2-Bb^4d^5+Ab^4d^4e}{e\left(xe^6+de^5\right)}+\frac{Bb^4x^4}{4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^2,x)
```

```
[Out] x^3*((A*b^4 + 4*B*a*b^3)/(3*e^2) - (2*B*b^4*d)/(3*e^3)) - x^2*((d*((A*b^4 +
 4*B*a*b^3)/e^2 - (2*B*b^4*d)/e^3))/e - (a*b^2*(2*A*b + 3*B*a))/e^2 + (B*b^
4*d^2)/(2*e^4)) + x*((2*d*((2*d*((A*b^4 + 4*B*a*b^3)/e^2 - (2*B*b^4*d)/e^3)
)/e - (2*a*b^2*(2*A*b + 3*B*a))/e^2 + (B*b^4*d^2)/e^4))/e - (d^2*((A*b^4 +
4*B*a*b^3)/e^2 - (2*B*b^4*d)/e^3))/e^2 + (2*a^2*b*(3*A*b + 2*B*a))/e^2) + (
log(d + e*x)*(B*a^4*e^4 + 5*B*b^4*d^4 + 4*A*a^3*b*e^4 - 4*A*b^4*d^3*e + 12*
A*a*b^3*d^2*e^2 - 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 - 16*B*a*b^3*d^
3*e - 8*B*a^3*b*d*e^3))/e^6 - (A*a^4*e^5 - B*b^4*d^5 + A*b^4*d^4*e - B*a^4*
d*e^4 - 4*A*a*b^3*d^3*e^2 + 4*B*a^3*b*d^2*e^3 + 6*A*a^2*b^2*d^2*e^3 - 6*B*a
^2*b^2*d^3*e^2 - 4*A*a^3*b*d*e^4 + 4*B*a*b^3*d^4*e)/(e*(d*e^5 + e^6*x)) + (
B*b^4*x^4)/(4*e^2)
```

sympy [B] time = 2.09, size = 396, normalized size = 2.11

$$\frac{Bb^4x^4}{4e^2}+x^3\left(\frac{Ab^4}{3e^2}+\frac{4Bab^3}{3e^2}-\frac{2Bb^4d}{3e^3}\right)+x^2\left(\frac{2Aab^3}{e^2}-\frac{Ab^4d}{e^3}+\frac{3Ba^2b^2}{e^2}-\frac{4Bab^3d}{e^3}+\frac{3Bb^4d^2}{2e^4}\right)+x\left(\frac{6Aa^2b^2}{e^2}-\frac{8Aab^3d}{e^3}+\frac{3Ab^4d^2}{e^4}+\frac{4Ba^3b}{e^2}-\frac{12Ba^2b^2d}{e^3}+\frac{12Bab^3d^2}{e^4}-\frac{4Bb^4d^3}{e^5}\right)+\frac{-Aa^4e^5+4Aa^3bde^4-6Aa^2b^2d^2e^3+4Aab^3d^3e^2-Ab^4d^4e+Ba^4de^4-4Ba^3bd^2e^3+6Ba^2b^2d^3e^2-4Bab^3d^4e+Bb^4d^5}{de^6+e^7x}+\frac{(ae-bd)^3(4Abe+Bae-5Bbd)\log(d+ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**2,x)
```

```
[Out] B*b**4*x**4/(4*e**2) + x**3*(A*b**4/(3*e**2) + 4*B*a*b**3/(3*e**2) - 2*B*b*
*4*d/(3*e**3)) + x**2*(2*A*a*b**3/e**2 - A*b**4*d/e**3 + 3*B*a**2*b**2/e**2
 - 4*B*a*b**3*d/e**3 + 3*B*b**4*d**2/(2*e**4)) + x*(6*A*a**2*b**2/e**2 - 8*
A*a*b**3*d/e**3 + 3*A*b**4*d**2/e**4 + 4*B*a**3*b/e**2 - 12*B*a**2*b**2*d/e
**3 + 12*B*a*b**3*d**2/e**4 - 4*B*b**4*d**3/e**5) + (-A*a**4*e**5 + 4*A*a**
3*b*d*e**4 - 6*A*a**2*b**2*d**2*e**3 + 4*A*a*b**3*d**3*e**2 - A*b**4*d**4*e
 + B*a**4*d*e**4 - 4*B*a**3*b*d**2*e**3 + 6*B*a**2*b**2*d**3*e**2 - 4*B*a*b
**3*d**4*e + B*b**4*d**5)/(d*e**6 + e**7*x) + (a*e - b*d)**3*(4*A*b*e + B*a
*e - 5*B*b*d)*log(d + e*x)/e**6
```

3.1463 $\int \frac{(A+Bx)(a^2+2abx+b^2x^2)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=193

$$-\frac{b^3(d+ex)^2(-4aBe-Abe+5bBd)}{2e^6}+\frac{2b^2x(bd-ae)(-3aBe-2Abe+5bBd)}{e^5}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{e^6(d+ex)}+\frac{(\ldots}{}$$

Rubi [A] time = 0.25, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{b^3(d+ex)^2(-4aBe-Abe+5bBd)}{2e^6}+\frac{2b^2x(bd-ae)(-3aBe-2Abe+5bBd)}{e^5}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{e^6(d+ex)}+\frac{(bd-ae)^4(Bd-Ae)}{2e^6(d+ex)^2}-\frac{2b(bd-ae)^2\log(d+ex)(-2aBe-3Abe+5bBd)}{e^6}+\frac{b^4B(d+ex)^3}{3e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*x)/e^5 + ((b*d - a*e)^4*(B
*d - A*e))/(2*e^6*(d + e*x)^2) - ((b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*e)
)/(e^6*(d + e*x)) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^2)/(2*e^6) +
 (b^4*B*(d + e*x)^3)/(3*e^6) - (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*
B*e)*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^3}\,dx\\
&= \int \left(-\frac{2b^2(bd-ae)(-5bBd+2Abe+3aBe)}{e^5}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^3}+\frac{(-\ldots}{}\right.\\
&= \frac{2b^2(bd-ae)(5bBd-2Abe-3aBe)x}{e^5}+\frac{(bd-ae)^4(Bd-Ae)}{2e^6(d+ex)^2}-\frac{(bd-ae)^3(5\ldots}{e^{\ldots}}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 187, normalized size = 0.97

$$\frac{-6b^2ex\left(-6a^2Be^2-4abe(Ae-3Bd)+3b^2d(Ae-2Bd)\right)+3b^3e^2x^2(4aBe+Abe-3bBd)-\frac{6(bd-ae)^3(-aBe-4Abe+5bBd)}{d+ex}+\frac{3(bd-ae)^4(Bd-Ae)}{(d+ex)^2}-12b(bd-ae)^2\log(d+ex)(-2aBe-3Abe+5bBd)+2b^4Be^3x^3}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (-6*b^2*e*(-6*a^2*B*e^2 - 4*a*b*e*(-3*B*d + A*e) + 3*b^2*d*(-2*B*d + A*e))*
x + 3*b^3*e^2*(-3*b*B*d + A*b*e + 4*a*B*e)*x^2 + 2*b^4*B*e^3*x^3 + (3*(b*d
- a*e)^4*(B*d - A*e))/(d + e*x)^2 - (6*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a
*B*e))/(d + e*x) - 12*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*Log[d +
 e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3, x]
```

fricas [B] time = 0.41, size = 652, normalized size = 3.38

$$\frac{2 Bb^4e^5x^5 - 27 Bb^4d^5 - 3 Aa^4e^5 + 21 \left(4 Bab^3 + Ab^4\right)d^4e - 30 \left(3 Ba^2b^2 + 2 Aab^3\right)d^3e^2 + 18 \left(2 Ba^3b + 3 Aa^2b^2\right)d^2e^3 - 3 \left(Ba^4 + 4 Aa^3b\right)de^4 - \left(5 Bb^4de^4 - 3 \left(4 Bab^3 + Ab^4\right)e^5\right)x^4 + 4 \left(5 Bb^4d^2e^3 - 3 \left(4 Bab^3 + Ab^4\right)de^4 + 3 \left(3 Ba^2b^2 + 2 Aab^3\right)e^5\right)x^3 + 3 \left(21 Bb^4d^3e^2 - 11 \left(4 Bab^3 + Ab^4\right)d^2e^3 + 8 \left(3 Ba^2b^2 + 2 Aab^3\right)de^4\right)x^2 + 6 \left(Bb^4d^4e + \left(4 Bab^3 + Ab^4\right)d^3e^2 - 4 \left(3 Ba^2b^2 + 2 Aab^3\right)d^2e^3 + 4 \left(2 Ba^3b + 3 Aa^2b^2\right)de^4 - \left(Ba^4 + 4 Aa^3b\right)e^5\right)x - 12 \left(5 Bb^4d^5 - 3 \left(4 Bab^3 + Ab^4\right)d^4e + 3 \left(3 Ba^2b^2 + 2 Aab^3\right)d^3e^2 - \left(2 Ba^3b + 3 Aa^2b^2\right)d^2e^3 + \left(5 Bb^4d^3e^2 - 3 \left(4 Bab^3 + Ab^4\right)d^2e^3 + 3 \left(3 Ba^2b^2 + 2 Aab^3\right)de^4 - \left(2 Ba^3b + 3 Aa^2b^2\right)e^5\right)x^2 + 2 \left(5 Bb^4d^4e - 3 \left(4 Bab^3 + Ab^4\right)d^3e^2 + 3 \left(3 Ba^2b^2 + 2 Aab^3\right)d^2e^3 - \left(2 Ba^3b + 3 Aa^2b^2\right)de^4\right)x\right)\log\left(ex + d\right)}{6 \left(e^8x^2 + 2 de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*e^5*x^5 - 27*B*b^4*d^5 - 3*A*a^4*e^5 + 21*(4*B*a*b^3 + A*b^4)*
d^4*e - 30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 18*(2*B*a^3*b + 3*A*a^2*b^2)
*d^2*e^3 - 3*(B*a^4 + 4*A*a^3*b)*d*e^4 - (5*B*b^4*d*e^4 - 3*(4*B*a*b^3 + A*
b^4)*e^5)*x^4 + 4*(5*B*b^4*d^2*e^3 - 3*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3*B*a
^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 3*(21*B*b^4*d^3*e^2 - 11*(4*B*a*b^3 + A*b^4)
*d^2*e^3 + 8*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4)*x^2 + 6*(B*b^4*d^4*e + (4*B*a
*b^3 + A*b^4)*d^3*e^2 - 4*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 4*(2*B*a^3*b
+ 3*A*a^2*b^2)*d*e^4 - (B*a^4 + 4*A*a^3*b)*e^5)*x - 12*(5*B*b^4*d^5 - 3*(4*
B*a*b^3 + A*b^4)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - (2*B*a^3*b +
 3*A*a^2*b^2)*d^2*e^3 + (5*B*b^4*d^3*e^2 - 3*(4*B*a*b^3 + A*b^4)*d^2*e^3 +
3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 2*
(5*B*b^4*d^4*e - 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a^2*b^2 + 2*A*a*b^3
)*d^2*e^3 - (2*B*a^3*b + 3*A*a^2*b^2)*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*
d*e^7*x + d^2*e^6)
```

giac [B] time = 0.17, size = 418, normalized size = 2.17

$$-2 \left(5 Bb^4d^3 - 12 Bab^3d^2e - 3 Ab^4d^2e + 9 Ba^2b^2de^2 + 6 Aab^3de^2 - 2 Ba^3be^3 - 3 Aa^2b^2e^3\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2 Bb^4x^3e^6 - 9 Bb^4dx^2e^5 + 36 Bb^4d^2xe^4 + 12 Bab^3x^2e^6 + 3 Ab^4x^2e^6 - 72 Bab^3dxe^5 - 18 Ab^4dxe^5 + 36 Ba^2b^2xe^6 + 24 Aab^3xe^6\right)e^{(-9)} - \frac{\left(9 Bb^4d^5 - 28 Bab^3d^4e - 7 Ab^4d^4e + 30 Ba^2b^2d^3e^2 + 20 Aab^3d^3e^2 - 12 Ba^3bd^2e^3 - 18 Aa^2b^2d^2e^3 + Ba^4de^4 + 4 Aa^3bde^4 + Aa^4e^5 + 2\left(5 Bb^4d^4e - 16 Bab^3d^3e^2 - 4 Ab^4d^3e^2 + 18 Ba^2b^2d^2e^3 + 12 Aab^3d^2e^3 - 8 Ba^3bde^4 - 12 Aa^2b^2de^4 + Ba^4e^5 + 4 Aa^3be^5\right)x\right)e^{(-6)}}{2 \left(xe + d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -2*(5*B*b^4*d^3 - 12*B*a*b^3*d^2*e - 3*A*b^4*d^2*e + 9*B*a^2*b^2*d*e^2 + 6*
A*a*b^3*d*e^2 - 2*B*a^3*b*e^3 - 3*A*a^2*b^2*e^3)*e^(-6)*log(abs(x*e + d)) +
 1/6*(2*B*b^4*x^3*e^6 - 9*B*b^4*d*x^2*e^5 + 36*B*b^4*d^2*x*e^4 + 12*B*a*b^3
*x^2*e^6 + 3*A*b^4*x^2*e^6 - 72*B*a*b^3*d*x*e^5 - 18*A*b^4*d*x*e^5 + 36*B*a
^2*b^2*x*e^6 + 24*A*a*b^3*x*e^6)*e^(-9) - 1/2*(9*B*b^4*d^5 - 28*B*a*b^3*d^4
*e - 7*A*b^4*d^4*e + 30*B*a^2*b^2*d^3*e^2 + 20*A*a*b^3*d^3*e^2 - 12*B*a^3*b
*d^2*e^3 - 18*A*a^2*b^2*d^2*e^3 + B*a^4*d*e^4 + 4*A*a^3*b*d*e^4 + A*a^4*e^5
 + 2*(5*B*b^4*d^4*e - 16*B*a*b^3*d^3*e^2 - 4*A*b^4*d^3*e^2 + 18*B*a^2*b^2*d
^2*e^3 + 12*A*a*b^3*d^2*e^3 - 8*B*a^3*b*d*e^4 - 12*A*a^2*b^2*d*e^4 + B*a^4*
e^5 + 4*A*a^3*b*e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [B] time = 0.06, size = 601, normalized size = 3.11

$$\frac{B b^4x^3}{3e^3} - \frac{A a^4}{2\left(ex+d\right)^2 e} + \frac{2A a^3bd}{\left(ex+d\right)^2 e^2} - \frac{3A a^2b^2d^2}{\left(ex+d\right)^2 e^3} + \frac{2Aa b^3d^3}{\left(ex+d\right)^2 e^4} - \frac{A b^4d^4}{2\left(ex+d\right)^2 e^5} + \frac{A b^4x^2}{2e^3} + \frac{B a^4d}{2\left(ex+d\right)^2 e^2} - \frac{2B a^3bd^2}{\left(ex+d\right)^2 e^3} + \frac{3B a^2b^2d^3}{\left(ex+d\right)^2 e^4} - \frac{2Ba b^3d^4}{\left(ex+d\right)^2 e^5} + \frac{2Ba b^3x^2}{e^3} + \frac{B b^4d^5}{2\left(ex+d\right)^2 e^6} - \frac{3B b^4dx^2}{2e^4} - \frac{4A a^3b}{\left(ex+d\right)e^2} + \frac{12A a^2b^2d}{\left(ex+d\right)e^3} + \frac{6A a^2b^2\ln\left(ex+d\right)}{e^3} - \frac{12Aa b^3d^2}{\left(ex+d\right)e^4} - \frac{12Aa b^3d\ln\left(ex+d\right)}{e^4} + \frac{4Aa b^3x}{e^3} + \frac{4A b^4d^3}{\left(ex+d\right)e^5} + \frac{6A b^4d^2\ln\left(ex+d\right)}{e^5} - \frac{3A b^4dx}{e^4} - \frac{B a^4}{\left(ex+d\right)e^2} + \frac{8B a^3bd}{\left(ex+d\right)e^3} + \frac{4B a^3b\ln\left(ex+d\right)}{e^3} - \frac{18B a^2b^2d^2}{\left(ex+d\right)e^4} - \frac{18B a^2b^2d\ln\left(ex+d\right)}{e^4} + \frac{6B a^2b^2x}{e^3} + \frac{16Ba b^3d^3}{\left(ex+d\right)e^5} + \frac{24Ba b^3d^2\ln\left(ex+d\right)}{e^5} - \frac{12Ba b^3dx}{e^4} - \frac{5B b^4d^4}{\left(ex+d\right)e^6} - \frac{10B b^4d^3\ln\left(ex+d\right)}{e^6} + \frac{6B b^4d^2x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x)
```

```
[Out] 1/3*b^4/e^3*B*x^3+1/2*b^4/e^3*A*x^2-1/e^2/(e*x+d)*B*a^4-1/2/e/(e*x+d)^2*A*a
^4-5/e^6/(e*x+d)*B*b^4*d^4-4/e^2/(e*x+d)*A*a^3*b+6*b^2/e^3*ln(e*x+d)*A*a^2-
12*b^3/e^4*B*x*a*d-3/e^3/(e*x+d)^2*A*d^2*a^2*b^2+2/e^4/(e*x+d)^2*A*a*b^3*d^
3-2/e^3/(e*x+d)^2*B*d^2*a^3*b+3/e^4/(e*x+d)^2*B*a^2*b^2*d^3-2/e^5/(e*x+d)^2
*B*a*b^3*d^4+24*b^3/e^5*ln(e*x+d)*B*a*d^2+12/e^3/(e*x+d)*A*a^2*b^2*d-12/e^4
/(e*x+d)*A*a*b^3*d^2+8/e^3/(e*x+d)*B*a^3*b*d-18/e^4/(e*x+d)*B*a^2*b^2*d^2+1
6/e^5/(e*x+d)*B*a*b^3*d^3+2/e^2/(e*x+d)^2*A*d*a^3*b-12*b^3/e^4*ln(e*x+d)*A*
a*d-18*b^2/e^4*ln(e*x+d)*B*a^2*d+1/2/e^6/(e*x+d)^2*B*b^4*d^5+4/e^5/(e*x+d)*
A*b^4*d^3+6*b^4/e^5*ln(e*x+d)*A*d^2+4*b/e^3*ln(e*x+d)*B*a^3-10*b^4/e^6*ln(e
*x+d)*B*d^3+4*b^3/e^3*A*x*a-3*b^4/e^4*A*x*d+6*b^2/e^3*B*x*a^2+6*b^4/e^5*B*x
*d^2+2*b^3/e^3*B*x^2*a-3/2*b^4/e^4*B*x^2*d-1/2/e^5/(e*x+d)^2*A*b^4*d^4+1/2/
e^2/(e*x+d)^2*B*d*a^4
```

maxima [B] time = 0.69, size = 419, normalized size = 2.17

$$-\frac{9\,Bb^4d^5 + Aa^4e^5 - 7\left(4\,Bab^3 + Ab^4\right)d^4e + 10\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 6\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 + \left(Ba^4 + 4\,Aa^3b\right)de^4 + 2\left(5\,Bb^4d^4e - 4\left(4\,Bab^3 + Ab^4\right)d^3e^2 + 6\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^2e^3 - 4\left(2\,Ba^3b + 3\,Aa^2b^2\right)de^4 + \left(Ba^4 + 4\,Aa^3b\right)e^5\right)x}{2\left(e^8x^2 + 2\,de^7x + d^2e^6\right)} + \frac{2\,Bb^4e^2x^3 - 3\left(3\,Bb^4de - \left(4\,Bab^3 + Ab^4\right)e^2\right)x^2 + 6\left(6\,Bb^4d^2 - 3\left(4\,Bab^3 + Ab^4\right)de + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)e^2\right)x}{6\,e^5} - \frac{2\left(5\,Bb^4d^3 - 3\left(4\,Bab^3 + Ab^4\right)d^2e + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)de^2 - \left(2\,Ba^3b + 3\,Aa^2b^2\right)e^3\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*b^4*d^5 + A*a^4*e^5 - 7*(4*B*a*b^3 + A*b^4)*d^4*e + 10*(3*B*a^2*b
^2 + 2*A*a*b^3)*d^3*e^2 - 6*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*
A*a^3*b)*d*e^4 + 2*(5*B*b^4*d^4*e - 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 +
 4*A*a^3*b)*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(2*B*b^4*e^2*x^3
- 3*(3*B*b^4*d*e - (4*B*a*b^3 + A*b^4)*e^2)*x^2 + 6*(6*B*b^4*d^2 - 3*(4*B*a
*b^3 + A*b^4)*d*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*x)/e^5 - 2*(5*B*b^4*d^
3 - 3*(4*B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*
a^3*b + 3*A*a^2*b^2)*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 2.05, size = 451, normalized size = 2.34

$$x^2\left(\frac{A\,b^4+4\,B\,a\,b^3}{2\,e^3}-\frac{3\,B\,b^4\,d}{2\,e^4}\right)-\frac{\frac{B\,a^4\,d\,e^4+A\,a^4\,e^5-12\,B\,a^3\,b\,d^2\,e^3+4\,A\,a^3\,b\,d\,e^4+30\,B\,a^2\,b^2\,d^3\,e^2-18\,A\,a^2\,b^2\,d^2\,e^3-28\,B\,a\,b^3\,d^4\,e+20\,A\,a\,b^3\,d^3\,e^2+9\,B\,b^4\,d^5-7\,A\,b^4\,d^4\,e}{2\,e}+x\,\left(B\,a^4\,e^4-8\,B\,a^3\,b\,d\,e^3+4\,A\,a^3\,b\,e^4+18\,B\,a^2\,b^2\,d^2\,e^2-12\,A\,a^2\,b^2\,d\,e^3-16\,B\,a\,b^3\,d^3\,e+12\,A\,a\,b^3\,d^2\,e^2+5\,B\,b^4\,d^4-4\,A\,b^4\,d^3\,e\right)}{d^2\,e^5+2\,d\,e^6\,x+e^7\,x^2}-x\,\left(\frac{3\,d\,\left(\frac{A\,b^4+4\,B\,a\,b^3}{e^3}-\frac{3\,B\,b^4\,d}{e^4}\right)}{e}-\frac{2\,a\,b^2\,\left(2\,A\,b+3\,B\,a\right)}{e^3}+\frac{3\,B\,b^4\,d^2}{e^5}\right)+\frac{\ln\left(d+e\,x\right)\,\left(4\,B\,a^3\,b\,e^3-18\,B\,a^2\,b^2\,d\,e^2+6\,A\,a^2\,b^2\,e^3+24\,B\,a\,b^3\,d^2\,e-12\,A\,a\,b^3\,d\,e^2-10\,B\,b^4\,d^3+6\,A\,b^4\,d^2\,e\right)}{e^6}+\frac{B\,b^4\,x^3}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((A*b^4 + 4*B*a*b^3)/(2*e^3) - (3*B*b^4*d)/(2*e^4)) - ((A*a^4*e^5 + 9*B
*b^4*d^5 - 7*A*b^4*d^4*e + B*a^4*d*e^4 + 20*A*a*b^3*d^3*e^2 - 12*B*a^3*b*d^
2*e^3 - 18*A*a^2*b^2*d^2*e^3 + 30*B*a^2*b^2*d^3*e^2 + 4*A*a^3*b*d*e^4 - 28*
B*a*b^3*d^4*e)/(2*e) + x*(B*a^4*e^4 + 5*B*b^4*d^4 + 4*A*a^3*b*e^4 - 4*A*b^4
*d^3*e + 12*A*a*b^3*d^2*e^2 - 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 - 1
6*B*a*b^3*d^3*e - 8*B*a^3*b*d*e^3))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3
*d*((A*b^4 + 4*B*a*b^3)/e^3 - (3*B*b^4*d)/e^4))/e - (2*a*b^2*(2*A*b + 3*B*a
))/e^3 + (3*B*b^4*d^2)/e^5) + (log(d + e*x)*(4*B*a^3*b*e^3 - 10*B*b^4*d^3 +
 6*A*b^4*d^2*e + 6*A*a^2*b^2*e^3 - 18*B*a^2*b^2*d*e^2 - 12*A*a*b^3*d*e^2 +
24*B*a*b^3*d^2*e))/e^6 + (B*b^4*x^3)/(3*e^3)
```

sympy [B] time = 7.27, size = 444, normalized size = 2.30

$$\frac{Bb^4x^3}{3e^3} + \frac{2b\left(ae - bd\right)^2\left(3Abe + 2Bae - 5Bbd\right)\log\left(d + ex\right)}{e^6} + x^2\left(\frac{Ab^4}{2e^3} + \frac{2Bab^3}{e^3} - \frac{3Bb^4d}{2e^4}\right) + x\left(\frac{4Aab^3}{e^3} - \frac{3Ab^4d}{e^4} + \frac{6Ba^2b^2}{e^3} - \frac{12Bab^3d}{e^4} + \frac{6Bb^4d^2}{e^5}\right) + \frac{-Aa^4e^5 - 4Aa^3bde^4 + 18Aa^2b^2d^2e^3 - 20Aab^3d^3e^2 + 7Ab^4d^4e - Ba^4de^4 + 12Ba^3bd^2e^3 - 30Ba^2b^2d^3e^2 + 28Bab^3d^4e - 9Bb^4d^5 + x\left(-8Aa^3be^5 + 24Aa^2b^2de^4 - 24Aab^3d^2e^3 + 8Ab^4d^3e^2 - 2Ba^4e^5 + 16Ba^3bde^4 - 36Ba^2b^2d^2e^3 + 32Bab^3d^3e^2 - 10Bb^4d^4e\right)}{2d^2e^6 + 4de^7x + 2e^8x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**3,x)
```

```
[Out] B*b**4*x**3/(3*e**3) + 2*b*(a*e - b*d)**2*(3*A*b*e + 2*B*a*e - 5*B*b*d)*log
(d + e*x)/e**6 + x**2*(A*b**4/(2*e**3) + 2*B*a*b**3/e**3 - 3*B*b**4*d/(2*e*
*4)) + x*(4*A*a*b**3/e**3 - 3*A*b**4*d/e**4 + 6*B*a**2*b**2/e**3 - 12*B*a*b
**3*d/e**4 + 6*B*b**4*d**2/e**5) + (-A*a**4*e**5 - 4*A*a**3*b*d*e**4 + 18*A
*a**2*b**2*d**2*e**3 - 20*A*a*b**3*d**3*e**2 + 7*A*b**4*d**4*e - B*a**4*d*e
**4 + 12*B*a**3*b*d**2*e**3 - 30*B*a**2*b**2*d**3*e**2 + 28*B*a*b**3*d**4*e
 - 9*B*b**4*d**5 + x*(-8*A*a**3*b*e**5 + 24*A*a**2*b**2*d*e**4 - 24*A*a*b**
3*d**2*e**3 + 8*A*b**4*d**3*e**2 - 2*B*a**4*e**5 + 16*B*a**3*b*d*e**4 - 36*
B*a**2*b**2*d**2*e**3 + 32*B*a*b**3*d**3*e**2 - 10*B*b**4*d**4*e))/(2*d**2*
e**6 + 4*d*e**7*x + 2*e**8*x**2)
```

3.1464 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=189

$$-\frac{b^3x(-4aBe-Abe+4bBd)}{e^5}+\frac{2b^2(bd-ae)\log(d+ex)(-3aBe-2Abe+5bBd)}{e^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5b}{e^6(d+ex)}$$

Rubi [A] time = 0.22, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{b^3x(-4aBe-Abe+4bBd)}{e^5}+\frac{2b^2(bd-ae)\log(d+ex)(-3aBe-2Abe+5bBd)}{e^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{e^6(d+ex)}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{2e^6(d+ex)^2}+\frac{(bd-ae)^4(Bd-Ae)}{3e^6(d+ex)^3}+\frac{b^4Bx^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((b^3*(4*b*B*d - A*b*e - 4*a*B*e)*x)/e^5) + (b^4*B*x^2)/(2*e^4) + ((b*d -
a*e)^4*(B*d - A*e))/(3*e^6*(d + e*x)^3) - ((b*d - a*e)^3*(5*b*B*d - 4*A*b*e
 - a*B*e))/(2*e^6*(d + e*x)^2) + (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*
a*B*e))/(e^6*(d + e*x)) + (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*
Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^4}\,dx\\
&= \int \left(\frac{b^3(-4bBd+Abe+4aBe)}{e^5}+\frac{b^4Bx}{e^4}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^4}+\frac{(-bd+\right.\\
&= -\frac{b^3(4bBd-Abe-4aBe)x}{e^5}+\frac{b^4Bx^2}{2e^4}+\frac{(bd-ae)^4(Bd-Ae)}{3e^6(d+ex)^3}-\frac{(bd-ae)^3(5b}{2e^6}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 351, normalized size = 1.86

$$\frac{-a^4e^4(2Ae+B(d+3ex))-4a^3be^3\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)+6a^2b^2e^2\left(Bd\left(11d^2+27dex+18e^2x^2\right)-2Ae\left(d^2+3dex+3e^2x^2\right)\right)+4ab^3e\left(Ade\left(11d^2+27dex+18e^2x^2\right)-2B\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)\right)+12b^2(d+ex)^3(bd-ae)\log(d+ex)(-3aBe-2Abe+5bBd)+b^4\left(2Ae\left(-13d^4-27d^3ex-9d^2e^2x^2+9de^3x^3+3e^4x^4\right)+B\left(47d^5+81d^4ex-9d^3e^2x^2-63d^2e^3x^3-15de^4x^4+3e^5x^5\right)\right)}{6e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

[Out] (-(a^4*e^4*(2*A*e + B*(d + 3*e*x))) - 4*a^3*b*e^3*(A*e*(d + 3*e*x) + 2*B*(d
^2 + 3*d*e*x + 3*e^2*x^2)) + 6*a^2*b^2*e^2*(-2*A*e*(d^2 + 3*d*e*x + 3*e^2*x
^2) + B*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 4*a*b^3*e*(A*d*e*(11*d^2 + 27
*d*e*x + 18*e^2*x^2) - 2*B*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x
^3 - 3*e^4*x^4)) + b^4*(2*A*e*(-13*d^4 - 27*d^3*e*x - 9*d^2*e^2*x^2 + 9*d*e
^3*x^3 + 3*e^4*x^4) + B*(47*d^5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x
^3 - 15*d*e^4*x^4 + 3*e^5*x^5)) + 12*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3
*a*B*e)*(d + e*x)^3*Log[d + e*x])/(6*e^6*(d + e*x)^3)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4, x]

fricas [B] time = 0.41, size = 650, normalized size = 3.44

$$\frac{3 B b^4 e^5 x^5 + 47 B b^4 d^5 - 2 A a^4 e^5 - 26 \left(4 B a b^3 + A b^4\right) d^4 e + 22 \left(3 B a^2 b^2 + 2 A a b^3\right) d^3 e^2 - 4 \left(2 B a^3 b + 3 A a^2 b^2\right) d^2 e^3 - \left(B a^4 + 4 A a^3 b\right) d e^4 - 3 \left(5 B b^4 d e^4 - 2 \left(4 B a b^3 + A b^4\right) e^5\right) x^4 - 9 \left(7 B b^4 d^2 e^3 - 2 \left(4 B a b^3 + A b^4\right) d e^4\right) x^3 - 3 \left(3 B b^4 d^3 e^2 + 6 \left(4 B a b^3 + A b^4\right) d^2 e^3 - 12 \left(3 B a^2 b^2 + 2 A a b^3\right) d e^4 + 4 \left(2 B a^3 b + 3 A a^2 b^2\right) e^5\right) x^2 + 3 \left(27 B b^4 d^4 e - 18 \left(4 B a b^3 + A b^4\right) d^3 e^2 + 18 \left(3 B a^2 b^2 + 2 A a b^3\right) d^2 e^3 - 4 \left(2 B a^3 b + 3 A a^2 b^2\right) d e^4 - \left(B a^4 + 4 A a^3 b\right) e^5\right) x + 12 \left(5 B b^4 d^5 - 2 \left(4 B a b^3 + A b^4\right) d^4 e + \left(3 B a^2 b^2 + 2 A a b^3\right) d^3 e^2 + \left(5 B b^4 d^2 e^3 - 2 \left(4 B a b^3 + A b^4\right) d e^4 + \left(3 B a^2 b^2 + 2 A a b^3\right) e^5\right) x^3 + 3 \left(5 B b^4 d^3 e^2 - 2 \left(4 B a b^3 + A b^4\right) d^2 e^3 + \left(3 B a^2 b^2 + 2 A a b^3\right) d e^4\right) x^2 + 3 \left(5 B b^4 d^4 e - 2 \left(4 B a b^3 + A b^4\right) d^3 e^2 + \left(3 B a^2 b^2 + 2 A a b^3\right) d^2 e^3\right) x\right) \log\left(e x + d\right)}{6 \left(e^9 x^3 + 3 d e^8 x^2 + 3 d^2 e^7 x + d^3 e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="fricas")

[Out] 1/6*(3*B*b^4*e^5*x^5 + 47*B*b^4*d^5 - 2*A*a^4*e^5 - 26*(4*B*a*b^3 + A*b^4)*
d^4*e + 22*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*
d^2*e^3 - (B*a^4 + 4*A*a^3*b)*d*e^4 - 3*(5*B*b^4*d*e^4 - 2*(4*B*a*b^3 + A*b
^4)*e^5)*x^4 - 9*(7*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4)*x^3 - 3*(3
*B*b^4*d^3*e^2 + 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 - 12*(3*B*a^2*b^2 + 2*A*a*b^
3)*d*e^4 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 3*(27*B*b^4*d^4*e - 18*(4
*B*a*b^3 + A*b^4)*d^3*e^2 + 18*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 4*(2*B*a
^3*b + 3*A*a^2*b^2)*d*e^4 - (B*a^4 + 4*A*a^3*b)*e^5)*x + 12*(5*B*b^4*d^5 -
2*(4*B*a*b^3 + A*b^4)*d^4*e + (3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + (5*B*b^4*
d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3
+ 3*(5*B*b^4*d^3*e^2 - 2*(4*B*a*b^3 + A*b^4)*d^2*e^3 + (3*B*a^2*b^2 + 2*A*a
*b^3)*d*e^4)*x^2 + 3*(5*B*b^4*d^4*e - 2*(4*B*a*b^3 + A*b^4)*d^3*e^2 + (3*B*
a^2*b^2 + 2*A*a*b^3)*d^2*e^3)*x)*log(e*x + d))/(e^9*x^3 + 3*d*e^8*x^2 + 3*d
^2*e^7*x + d^3*e^6)

giac [B] time = 0.16, size = 415, normalized size = 2.20

$$2 \left(5 B b^4 d^2 - 8 B a b^3 d e - 2 A b^4 d e + 3 B a^2 b^2 e^2 + 2 A a b^3 e^2\right) e^{-6} \log\left(|x e + d|\right) + \frac{1}{2} \left(B b^4 x^2 e^4 - 8 B b^4 d x e^3 + 8 B a b^3 x e^4 + 2 A b^4 x e^4\right) e^{-8} + \frac{\left(47 B b^4 d^5 - 104 B a b^3 d^4 e - 26 A b^4 d^4 e + 66 B a^2 b^2 d^3 e^2 + 44 A a b^3 d^3 e^2 - 8 B a^3 b d^2 e^3 - 12 A a^2 b^2 d^2 e^3 - B a^4 d e^4 - 4 A a^3 b d e^4 - 2 A a^4 e^5 + 12 \left(5 B b^4 d^3 e^2 - 12 B a b^3 d^2 e^3 - 3 A b^4 d^2 e^3 + 9 B a^2 b^2 d e^4 + 6 A a b^3 d e^4 - 2 B a^3 b e^5 - 3 A a^2 b^2 e^5\right) x^2 + 3 \left(35 B b^4 d^4 e - 80 B a b^3 d^3 e^2 - 20 A b^4 d^3 e^2 + 54 B a^2 b^2 d^2 e^3 + 36 A a b^3 d^2 e^3 - 8 B a^3 b d e^4 - 12 A a^2 b^2 d e^4 - B a^4 e^5 - 4 A a^3 b e^5\right) x\right) e^{-6}}{6 \left(x e + d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="giac")

[Out] 2*(5*B*b^4*d^2 - 8*B*a*b^3*d*e - 2*A*b^4*d*e + 3*B*a^2*b^2*e^2 + 2*A*a*b^3*
e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(B*b^4*x^2*e^4 - 8*B*b^4*d*x*e^3 + 8*B*
a*b^3*x*e^4 + 2*A*b^4*x*e^4)*e^(-8) + 1/6*(47*B*b^4*d^5 - 104*B*a*b^3*d^4*e
 - 26*A*b^4*d^4*e + 66*B*a^2*b^2*d^3*e^2 + 44*A*a*b^3*d^3*e^2 - 8*B*a^3*b*d
^2*e^3 - 12*A*a^2*b^2*d^2*e^3 - B*a^4*d*e^4 - 4*A*a^3*b*d*e^4 - 2*A*a^4*e^5
 + 12*(5*B*b^4*d^3*e^2 - 12*B*a*b^3*d^2*e^3 - 3*A*b^4*d^2*e^3 + 9*B*a^2*b^2
*d*e^4 + 6*A*a*b^3*d*e^4 - 2*B*a^3*b*e^5 - 3*A*a^2*b^2*e^5)*x^2 + 3*(35*B*b
^4*d^4*e - 80*B*a*b^3*d^3*e^2 - 20*A*b^4*d^3*e^2 + 54*B*a^2*b^2*d^2*e^3 + 3
6*A*a*b^3*d^2*e^3 - 8*B*a^3*b*d*e^4 - 12*A*a^2*b^2*d*e^4 - B*a^4*e^5 - 4*A*
a^3*b*e^5)*x)*e^(-6)/(x*e + d)^3

maple [B] time = 0.06, size = 626, normalized size = 3.31

$$-\frac{6Aab^3d^2}{e^4(ex+d)^2}+\frac{4Ba^3bd}{e^3(ex+d)^2}-\frac{9Ba^2b^2d^2}{e^4(ex+d)^2}+\frac{6Aa^2b^2d}{e^3(ex+d)^2}-\frac{16b^3\ln(ex+d)Bda}{e^5}+\frac{b^4Ax}{e^4}-\frac{Aa^4}{3e(ex+d)^3}-\frac{Ba^4}{2e^2(ex+d)^2}+\frac{2Bd^3a^2b^2}{e^4(ex+d)^3}-\frac{2Ad^2a^2b^2}{e^3(ex+d)^3}+\frac{6b^2\ln(ex+d)Ba^2}{e^4}+\frac{4Ad^3ab^3}{3e^4(ex+d)^3}-\frac{24b^3Bad^2}{e^5(ex+d)}+\frac{4Ada^3b}{3e^2(ex+d)^3}+\frac{12b^3Aad}{e^4(ex+d)}+\frac{18b^2Ba^2d}{e^4(ex+d)}+\frac{8Bab^3d^3}{e^5(ex+d)^2}+\frac{Bb^4d^5}{3e^6(ex+d)^3}-\frac{6b^2Aa^2}{e^3(ex+d)}-\frac{6b^4Ad^2}{e^5(ex+d)}-\frac{4bBa^3}{e^3(ex+d)}+\frac{10b^4Bd^3}{e^6(ex+d)}-\frac{Ab^4d^4}{3e^5(ex+d)^3}+\frac{Bda^4}{3e^2(ex+d)^3}-\frac{2Aa^3b}{e^2(ex+d)^2}+\frac{2Ab^4d^3}{e^5(ex+d)^2}-\frac{5Bb^4d^4}{2e^6(ex+d)^2}-\frac{4b^4Bdx}{e^5}+\frac{10b^4\ln(ex+d)Bd^2}{e^6}-\frac{4Bab^3d^4}{3e^5(ex+d)^3}-\frac{4Bd^2a^3b}{3e^3(ex+d)^3}-\frac{4b^4\ln(ex+d)Ad}{e^5}+\frac{4b^3aBx}{e^4}+\frac{4b^3\ln(ex+d)Aa}{e^4}+\frac{b^4Bx^2}{2e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x)
```

```
[Out] -6/e^4/(e*x+d)^2*A*a*b^3*d^2+4/e^3/(e*x+d)^2*B*a^3*b*d-9/e^4/(e*x+d)^2*B*a^
2*b^2*d^2+6/e^3/(e*x+d)^2*A*a^2*b^2*d-16*b^3/e^5*ln(e*x+d)*B*d*a+b^4/e^4*A*
x-1/3/e/(e*x+d)^3*A*a^4-1/2/e^2/(e*x+d)^2*B*a^4+2/e^4/(e*x+d)^3*B*d^3*a^2*b
^2-2/e^3/(e*x+d)^3*A*d^2*a^2*b^2+6*b^2/e^4*ln(e*x+d)*B*a^2+4/3/e^4/(e*x+d)^
3*A*d^3*a*b^3-24*b^3/e^5/(e*x+d)*B*a*d^2+4/3/e^2/(e*x+d)^3*A*d*a^3*b+12*b^3
/e^4/(e*x+d)*A*a*d+18*b^2/e^4/(e*x+d)*B*a^2*d+8/e^5/(e*x+d)^2*B*a*b^3*d^3+1
/3/e^6/(e*x+d)^3*B*b^4*d^5-6*b^2/e^3/(e*x+d)*A*a^2-6*b^4/e^5/(e*x+d)*A*d^2-
4*b/e^3/(e*x+d)*B*a^3+10*b^4/e^6/(e*x+d)*B*d^3-1/3/e^5/(e*x+d)^3*A*b^4*d^4+
1/3/e^2/(e*x+d)^3*B*d*a^4-2/e^2/(e*x+d)^2*A*a^3*b+2/e^5/(e*x+d)^2*A*b^4*d^3
-5/2/e^6/(e*x+d)^2*B*b^4*d^4-4*b^4/e^5*B*d*x+10*b^4/e^6*ln(e*x+d)*B*d^2-4/3
/e^5/(e*x+d)^3*B*a*b^3*d^4-4/3/e^3/(e*x+d)^3*B*d^2*a^3*b-4*b^4/e^5*ln(e*x+d
)*A*d+4*b^3/e^4*a*B*x+4*b^3/e^4*ln(e*x+d)*A*a+1/2*b^4*B*x^2/e^4
```

maxima [B] time = 0.64, size = 431, normalized size = 2.28

$$\frac{47Bb^4d^5-2Aa^4e^5-26(4Bab^3+Ab^4)d^4e+22(3Ba^2b^2+2Aab^3)d^3e^2-4(2Ba^3b+3Aa^2b^2)d^2e^3-(Ba^4+4Aa^3b)de^4+12\left(5Bb^4d^3e^2-3(4Bab^3+Ab^4)d^2e^3+3(3Ba^2b^2+2Aab^3)de^4-(2Ba^3b+3Aa^2b^2)e^5\right)x^2+3\left(35Bb^4d^4e-20(4Bab^3+Ab^4)d^3e^2+18(3Ba^2b^2+2Aab^3)d^2e^3-4(2Ba^3b+3Aa^2b^2)de^4-(Ba^4+4Aa^3b)e^5\right)x}{6(e^9x^3+3de^8x^2+3d^2e^7x+d^3e^6)}+\frac{Bb^4ex^2-2\left(4Bb^4d-(4Bab^3+Ab^4)e\right)x}{2e^5}+\frac{2\left(5Bb^4d^2-2(4Bab^3+Ab^4)de+(3Ba^2b^2+2Aab^3)e^2\right)\log(ex+d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*b^4*d^5 - 2*A*a^4*e^5 - 26*(4*B*a*b^3 + A*b^4)*d^4*e + 22*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - (B*a^4 +
 4*A*a^3*b)*d*e^4 + 12*(5*B*b^4*d^3*e^2 - 3*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 3
*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 3*(
35*B*b^4*d^4*e - 20*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 18*(3*B*a^2*b^2 + 2*A*a*b
^3)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - (B*a^4 + 4*A*a^3*b)*e^5)*
x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6) + 1/2*(B*b^4*e*x^2 - 2*(
4*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*x)/e^5 + 2*(5*B*b^4*d^2 - 2*(4*B*a*b^3 +
 A*b^4)*d*e + (3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 0.17, size = 451, normalized size = 2.39

$$x\left(\frac{A\,b^4+4\,B\,a\,b^3}{e^4}-\frac{4\,B\,b^4\,d}{e^5}\right)-\frac{\frac{B\,a^4\,d\,e^4+2\,A\,a^4\,e^5+8\,B\,a^3\,b\,d^2\,e^3+4\,A\,a^3\,b\,d\,e^4-66\,B\,a^2\,b^2\,d^3\,e^2+12\,A\,a^2\,b^2\,d^2\,e^3+104\,B\,a\,b^3\,d^4\,e-44\,A\,a\,b^3\,d^3\,e^2-47\,B\,b^4\,d^5+26\,A\,b^4\,d^4\,e}{6\,e}+x\,\left(\frac{B\,a^4\,e^4}{2}+4\,B\,a^3\,b\,d\,e^3+2\,A\,a^3\,b\,e^4-27\,B\,a^2\,b^2\,d^2\,e^2+6\,A\,a^2\,b^2\,d\,e^3+40\,B\,a\,b^3\,d^3\,e-18\,A\,a\,b^3\,d^2\,e^2-\frac{35\,B\,b^4\,d^4}{2}+10\,A\,b^4\,d^3\,e\right)+x^2\,\left(4\,B\,a^3\,b\,e^4-18\,B\,a^2\,b^2\,d\,e^3+6\,A\,a^2\,b^2\,e^4+24\,B\,a\,b^3\,d^2\,e^2-12\,A\,a\,b^3\,d\,e^3-10\,B\,b^4\,d^3\,e+6\,A\,b^4\,d^2\,e^2\right)}{d^3\,e^5+3\,d^2\,e^6\,x+3\,d\,e^7\,x^2+e^8\,x^3}+\frac{\ln\left(d+e\,x\right)\,\left(6\,B\,a^2\,b^2\,e^2-16\,B\,a\,b^3\,d\,e+4\,A\,a\,b^3\,e^2+10\,B\,b^4\,d^2-4\,A\,b^4\,d\,e\right)}{e^6}+\frac{B\,b^4\,x^2}{2\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^4,x)
```

```
[Out] x*((A*b^4 + 4*B*a*b^3)/e^4 - (4*B*b^4*d)/e^5) - ((2*A*a^4*e^5 - 47*B*b^4*d^
5 + 26*A*b^4*d^4*e + B*a^4*d*e^4 - 44*A*a*b^3*d^3*e^2 + 8*B*a^3*b*d^2*e^3 +
 12*A*a^2*b^2*d^2*e^3 - 66*B*a^2*b^2*d^3*e^2 + 4*A*a^3*b*d*e^4 + 104*B*a*b^
3*d^4*e)/(6*e) + x*((B*a^4*e^4)/2 - (35*B*b^4*d^4)/2 + 2*A*a^3*b*e^4 + 10*A
*b^4*d^3*e - 18*A*a*b^3*d^2*e^2 + 6*A*a^2*b^2*d*e^3 - 27*B*a^2*b^2*d^2*e^2
+ 40*B*a*b^3*d^3*e + 4*B*a^3*b*d*e^3) + x^2*(4*B*a^3*b*e^4 - 10*B*b^4*d^3*e
 + 6*A*a^2*b^2*e^4 + 6*A*b^4*d^2*e^2 + 24*B*a*b^3*d^2*e^2 - 18*B*a^2*b^2*d*
e^3 - 12*A*a*b^3*d*e^3))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) +
(log(d + e*x)*(10*B*b^4*d^2 - 4*A*b^4*d*e + 4*A*a*b^3*e^2 + 6*B*a^2*b^2*e^2
 - 16*B*a*b^3*d*e))/e^6 + (B*b^4*x^2)/(2*e^4)
```

sympy [B] time = 21.58, size = 486, normalized size = 2.57

$$\frac{Bb^4x^2}{2e^4}+\frac{2b^2(ae-bd)(2Abe+3Bae-5Bbd)\log(d+ex)}{e^6}+x\left(\frac{Ab^4}{e^4}+\frac{4Bab^3}{e^4}-\frac{4Bb^4d}{e^5}\right)+\frac{-2Aa^4e^5-4Aa^3bde^4-12Aa^2b^2d^2e^3+44Aab^3d^3e^2-26Ab^4d^4e-Ba^4de^4-8Ba^3bd^2e^3+66Ba^2b^2d^3e^2-104Bab^3d^4e+47Bb^4d^5+x^2\left(-36Aa^2b^2e^5+72Aab^3de^4-36Ab^4d^2e^3-24Ba^3be^5+108Ba^2b^2de^4-144Bab^3d^2e^3+60Bb^4d^3e^2\right)+x\left(-12Aa^3be^5-36Aa^2b^2de^4+108Aab^3d^2e^3-60Ab^4d^3e^2-3Ba^4e^5-24Ba^3bde^4+162Ba^2b^2d^2e^3-240Bab^3d^3e^2+105Bb^4d^4e\right)}{6d^3e^6+18d^2e^7x+18de^8x^2+6e^9x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**4,x)
```

```
[Out] B*b**4*x**2/(2*e**4) + 2*b**2*(a*e - b*d)*(2*A*b*e + 3*B*a*e - 5*B*b*d)*log
(d + e*x)/e**6 + x*(A*b**4/e**4 + 4*B*a*b**3/e**4 - 4*B*b**4*d/e**5) + (-2*
A*a**4*e**5 - 4*A*a**3*b*d*e**4 - 12*A*a**2*b**2*d**2*e**3 + 44*A*a*b**3*d*
*3*e**2 - 26*A*b**4*d**4*e - B*a**4*d*e**4 - 8*B*a**3*b*d**2*e**3 + 66*B*a*
*2*b**2*d**3*e**2 - 104*B*a*b**3*d**4*e + 47*B*b**4*d**5 + x**2*(-36*A*a**2
*b**2*e**5 + 72*A*a*b**3*d*e**4 - 36*A*b**4*d**2*e**3 - 24*B*a**3*b*e**5 +
108*B*a**2*b**2*d*e**4 - 144*B*a*b**3*d**2*e**3 + 60*B*b**4*d**3*e**2) + x*
(-12*A*a**3*b*e**5 - 36*A*a**2*b**2*d*e**4 + 108*A*a*b**3*d**2*e**3 - 60*A*
b**4*d**3*e**2 - 3*B*a**4*e**5 - 24*B*a**3*b*d*e**4 + 162*B*a**2*b**2*d**2*
e**3 - 240*B*a*b**3*d**3*e**2 + 105*B*b**4*d**4*e))/(6*d**3*e**6 + 18*d**2*
e**7*x + 18*d*e**8*x**2 + 6*e**9*x**3)
```

3.1465 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^5} \, dx$

Optimal. Leaf size=189

$$-\frac{b^3 \log(d+ex)(-4aBe-Abe+5bBd)}{e^6}-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6(d+ex)}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd}{e^6(d+ex)^2}$$

Rubi [A] time = 0.20, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6(d+ex)}-\frac{b^3 \log(d+ex)(-4aBe-Abe+5bBd)}{e^6}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd)}{e^6(d+ex)^2}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{3e^6(d+ex)^3}+\frac{(bd-ae)^4(Bd-Ae)}{4e^6(d+ex)^4}+\frac{b^4Bx}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (b^4*B*x)/e^5 + ((b*d - a*e)^4*(B*d - A*e))/(4*e^6*(d + e*x)^4) - ((b*d - a
*e)^3*(5*b*B*d - 4*A*b*e - a*B*e))/(3*e^6*(d + e*x)^3) + (b*(b*d - a*e)^2*(
5*b*B*d - 3*A*b*e - 2*a*B*e))/(e^6*(d + e*x)^2) - (2*b^2*(b*d - a*e)*(5*b*B
*d - 2*A*b*e - 3*a*B*e))/(e^6*(d + e*x)) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)
*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^5} \, dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^5} \, dx \\
&= \int \left(\frac{b^4B}{e^5}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^5}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^4}+\right. \\
&= \frac{b^4Bx}{e^5}+\frac{(bd-ae)^4(Bd-Ae)}{4e^6(d+ex)^4}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{3e^6(d+ex)^3}+\frac{b(bd-a}{}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 338, normalized size = 1.79

$$-\frac{a^4e^4(3Ae+B(d+4ex))+4a^3be^3\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)+6a^2b^2e^2\left(Ae\left(d^2+4dex+6e^2x^2\right)+3B\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)-4ab^3e\left(Bd\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)-3Ae\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+12b^3(d+ex)^4\log(d+ex)(-4aBe-Abe+5bBd)-\left(b^4\left(Ade\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)-B\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)\right)\right)}{12e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(a^4*e^4*(3*A*e + B*(d + 4*e*x)) + 4*a^3*b*e^3*(A*e*(d + 4*e*x) + B*(
d^2 + 4*d*e*x + 6*e^2*x^2)) + 6*a^2*b^2*e^2*(A*e*(d^2 + 4*d*e*x + 6*e^2*x^2
) + 3*B*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) - 4*a*b^3*e*(-3*A*e*(d
^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + B*d*(25*d^3 + 88*d^2*e*x + 108*
d*e^2*x^2 + 48*e^3*x^3)) - b^4*(A*d*e*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2
+ 48*e^3*x^3) - B*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3
- 48*d*e^4*x^4 - 12*e^5*x^5)) + 12*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x
)^4*Log[d + e*x])/(e^6*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left(a^2 + 2abx + b^2x^2\right)^2}{(d + ex)^5}\, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^5, x]
```

fricas [B] time = 0.41, size = 602, normalized size = 3.19

$$\frac{12\,Bb^4e^5x^5 + 48\,Bb^4de^4x^4 - 77\,Bb^4d^5 - 3\,Aa^4e^5 + 25\left(4\,Bab^3 + Ab^4\right)d^4e - 6\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 - \left(Ba^4 + 4\,Aa^3b\right)de^4 - 24\left(2\,Bb^4d^2e^3 - 2\left(4\,Bab^3 + Ab^4\right)de^4 + \left(3\,Ba^2b^2 + 2\,Aab^3\right)e^5\right)x^3 - 12\left(21\,Bb^4d^3e^2 - 9\left(4\,Bab^3 + Ab^4\right)d^2e^3 + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)de^4 + \left(2\,Ba^3b + 3\,Aa^2b^2\right)e^5\right)x^2 - 4\left(62\,Bb^4d^4e - 22\left(4\,Bab^3 + Ab^4\right)d^3e^2 + 6\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^2e^3 + 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)de^4 + \left(Ba^4 + 4\,Aa^3b\right)e^5\right)x - 12\left(5\,Bb^4d^5 - \left(4\,Bab^3 + Ab^4\right)d^4e + \left(5\,Bb^4de^4 - \left(4\,Bab^3 + Ab^4\right)e^5\right)x^4 + 4\left(5\,Bb^4d^2e^3 - \left(4\,Bab^3 + Ab^4\right)de^4\right)x^3 + 6\left(5\,Bb^4d^3e^2 - \left(4\,Bab^3 + Ab^4\right)d^2e^3\right)x^2 + 4\left(5\,Bb^4d^4e - \left(4\,Bab^3 + Ab^4\right)d^3e^2\right)x\right)\log\left(ex + d\right)}{12\left(e^{10}x^4 + 4\,de^9x^3 + 6\,d^2e^8x^2 + 4\,d^3e^7x + d^4e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^4*e^5*x^5 + 48*B*b^4*d*e^4*x^4 - 77*B*b^4*d^5 - 3*A*a^4*e^5 +
25*(4*B*a*b^3 + A*b^4)*d^4*e - 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B
*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - (B*a^4 + 4*A*a^3*b)*d*e^4 - 24*(2*B*b^4*d^2
*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 1
2*(21*B*b^4*d^3*e^2 - 9*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*
a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 - 4*(62*B*b^4*d^4*e - 22*
(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 2*(2*B*
a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x - 12*(5*B*b^4*d^5 -
 (4*B*a*b^3 + A*b^4)*d^4*e + (5*B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4
+ 4*(5*B*b^4*d^2*e^3 - (4*B*a*b^3 + A*b^4)*d*e^4)*x^3 + 6*(5*B*b^4*d^3*e^2
- (4*B*a*b^3 + A*b^4)*d^2*e^3)*x^2 + 4*(5*B*b^4*d^4*e - (4*B*a*b^3 + A*b^4)
*d^3*e^2)*x)*log(e*x + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*
e^7*x + d^4*e^6)
```

giac [B] time = 0.18, size = 652, normalized size = 3.45

$$(xe + d)Bb^4e^{(-6)} + \left(5\,Bb^4d - 4\,Bab^3e - Ab^4e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) - \frac{1}{12}\left(\frac{120\,Bb^4d^2e^{22}}{xe + d} - \frac{60\,Bb^4d^3e^{22}}{(xe + d)^2} + \frac{20\,Bb^4d^4e^{22}}{(xe + d)^3} - \frac{3\,Bb^4d^5e^{22}}{(xe + d)^4} - \frac{192\,Bab^3de^{23}}{xe + d} - \frac{48\,Ab^4de^{23}}{xe + d} + \frac{144\,Bab^3d^2e^{23}}{(xe + d)^2} + \frac{36\,Ab^4d^2e^{23}}{(xe + d)^2} - \frac{64\,Bab^3d^3e^{23}}{(xe + d)^3} - \frac{16\,Ab^4d^3e^{23}}{(xe + d)^3} + \frac{12\,Bab^3d^4e^{23}}{(xe + d)^4} + \frac{3\,Ab^4d^4e^{23}}{(xe + d)^4} + \frac{72\,Ba^2b^2e^{24}}{xe + d} + \frac{48\,Aab^3e^{24}}{xe + d} - \frac{108\,Ba^2b^2de^{24}}{(xe + d)^2} - \frac{72\,Aab^3de^{24}}{(xe + d)^2} + \frac{72\,Ba^2b^2d^2e^{24}}{(xe + d)^3} + \frac{48\,Aab^3d^2e^{24}}{(xe + d)^3} - \frac{18\,Ba^2b^2d^3e^{24}}{(xe + d)^4} - \frac{12\,Aab^3d^3e^{24}}{(xe + d)^4} + \frac{24\,Ba^3be^{25}}{(xe + d)^2} + \frac{36\,Aa^2b^2e^{25}}{(xe + d)^2} - \frac{32\,Ba^3bde^{25}}{(xe + d)^3} - \frac{48\,Aa^2b^2de^{25}}{(xe + d)^3} + \frac{12\,Ba^3bd^2e^{25}}{(xe + d)^4} + \frac{18\,Aa^2b^2d^2e^{25}}{(xe + d)^4} + \frac{4\,Ba^4e^{26}}{(xe + d)^3} + \frac{16\,Aa^3be^{26}}{(xe + d)^3} - \frac{3\,Ba^4de^{26}}{(xe + d)^4} - \frac{12\,Aa^3bde^{26}}{(xe + d)^4} + \frac{3\,Aa^4e^{27}}{(xe + d)^4}\right)e^{(-28)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*b^4*e^(-6) + (5*B*b^4*d - 4*B*a*b^3*e - A*b^4*e)*e^(-6)*log(abs
(x*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(120*B*b^4*d^2*e^22/(x*e + d) - 60*B*b
^4*d^3*e^22/(x*e + d)^2 + 20*B*b^4*d^4*e^22/(x*e + d)^3 - 3*B*b^4*d^5*e^22/
(x*e + d)^4 - 192*B*a*b^3*d*e^23/(x*e + d) - 48*A*b^4*d*e^23/(x*e + d) + 14
4*B*a*b^3*d^2*e^23/(x*e + d)^2 + 36*A*b^4*d^2*e^23/(x*e + d)^2 - 64*B*a*b^3
*d^3*e^23/(x*e + d)^3 - 16*A*b^4*d^3*e^23/(x*e + d)^3 + 12*B*a*b^3*d^4*e^23
/(x*e + d)^4 + 3*A*b^4*d^4*e^23/(x*e + d)^4 + 72*B*a^2*b^2*e^24/(x*e + d) +
 48*A*a*b^3*e^24/(x*e + d) - 108*B*a^2*b^2*d*e^24/(x*e + d)^2 - 72*A*a*b^3*
d*e^24/(x*e + d)^2 + 72*B*a^2*b^2*d^2*e^24/(x*e + d)^3 + 48*A*a*b^3*d^2*e^2
4/(x*e + d)^3 - 18*B*a^2*b^2*d^3*e^24/(x*e + d)^4 - 12*A*a*b^3*d^3*e^24/(x*
e + d)^4 + 24*B*a^3*b*e^25/(x*e + d)^2 + 36*A*a^2*b^2*e^25/(x*e + d)^2 - 32
*B*a^3*b*d*e^25/(x*e + d)^3 - 48*A*a^2*b^2*d*e^25/(x*e + d)^3 + 12*B*a^3*b*
```

```
d^2*e^25/(x*e + d)^4 + 18*A*a^2*b^2*d^2*e^25/(x*e + d)^4 + 4*B*a^4*e^26/(x*
e + d)^3 + 16*A*a^3*b*e^26/(x*e + d)^3 - 3*B*a^4*d*e^26/(x*e + d)^4 - 12*A*
a^3*b*d*e^26/(x*e + d)^4 + 3*A*a^4*e^27/(x*e + d)^4)*e^(-28)
```

maple [B] time = 0.06, size = 641, normalized size = 3.39

$$-\frac{A a^4}{4(ex+d)^4 e}+\frac{A a^3bd}{(ex+d)^4 e^2}-\frac{3A a^2b^2d^2}{2(ex+d)^4 e^3}+\frac{Aa b^3d^3}{(ex+d)^4 e^4}-\frac{A b^4d^4}{4(ex+d)^4 e^5}+\frac{B a^4d}{4(ex+d)^4 e^2}-\frac{B a^3b d^2}{(ex+d)^4 e^3}+\frac{3B a^2b^2d^3}{2(ex+d)^4 e^4}-\frac{Ba b^3d^4}{(ex+d)^4 e^5}+\frac{B b^4d^5}{4(ex+d)^4 e^6}-\frac{4A a^3b}{3(ex+d)^3 e^2}+\frac{4A a^2b^2d}{(ex+d)^3 e^3}-\frac{4Aa b^3d^2}{(ex+d)^3 e^4}+\frac{4A b^4d^3}{3(ex+d)^3 e^5}-\frac{B a^4}{3(ex+d)^3 e^2}+\frac{8B a^3bd}{3(ex+d)^3 e^3}-\frac{6B a^2b^2d^2}{(ex+d)^3 e^4}+\frac{16Ba b^3d^3}{3(ex+d)^3 e^5}-\frac{5B b^4d^4}{3(ex+d)^3 e^6}-\frac{3A a^2b^2}{(ex+d)^2 e^3}+\frac{6Aa b^3d}{(ex+d)^2 e^4}-\frac{3A b^4d^2}{(ex+d)^2 e^5}-\frac{2B a^3b}{(ex+d)^2 e^3}+\frac{9B a^2b^2d}{(ex+d)^2 e^4}-\frac{12Ba b^3d^2}{(ex+d)^2 e^5}+\frac{5B b^4d^3}{(ex+d)^2 e^6}-\frac{4Aa b^3}{(ex+d) e^4}+\frac{4A b^4d}{(ex+d) e^5}+\frac{A b^4 \ln(ex+d)}{e^5}-\frac{6B a^2b^2}{(ex+d) e^4}+\frac{16Ba b^3d}{(ex+d) e^5}+\frac{4Ba b^3 \ln(ex+d)}{e^5}-\frac{10B b^4d^2}{(ex+d) e^6}-\frac{5B b^4d \ln(ex+d)}{e^6}+\frac{B b^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x)
```

```
[Out] 8/3/e^3/(e*x+d)^3*B*a^3*b*d+9*b^2/e^4/(e*x+d)^2*B*a^2*d+6*b^3/e^4/(e*x+d)^2
*A*a*d-12*b^3/e^5/(e*x+d)^2*B*a*d^2+4*b^3/e^5*ln(e*x+d)*a*B-5*b^4/e^6*ln(e*
x+d)*B*d-3*b^2/e^3/(e*x+d)^2*A*a^2-3/2/e^3/(e*x+d)^4*A*d^2*a^2*b^2+1/e^4/(e
*x+d)^4*A*d^3*a*b^3-1/e^3/(e*x+d)^4*B*d^2*a^3*b+16*b^3/e^5/(e*x+d)*B*d*a+1/
e^2/(e*x+d)^4*A*d*a^3*b-1/4/e/(e*x+d)^4*A*a^4+b^4/e^5*ln(e*x+d)*A-1/3/e^2/(
e*x+d)^3*B*a^4+16/3/e^5/(e*x+d)^3*B*a*b^3*d^3+4/e^3/(e*x+d)^3*A*a^2*b^2*d-4
/e^4/(e*x+d)^3*A*a*b^3*d^2+3/2/e^4/(e*x+d)^4*B*d^3*a^2*b^2-1/e^5/(e*x+d)^4*
B*d^4*a*b^3+5*b^4/e^6/(e*x+d)^2*B*d^3-6/e^4/(e*x+d)^3*B*a^2*b^2*d^2-5/3/e^6
/(e*x+d)^3*B*b^4*d^4-3*b^4/e^5/(e*x+d)^2*A*d^2-2*b/e^3/(e*x+d)^2*B*a^3-1/4/
e^5/(e*x+d)^4*A*d^4*b^4+1/4/e^2/(e*x+d)^4*B*d*a^4+1/4/e^6/(e*x+d)^4*B*b^4*d
^5-4/3/e^2/(e*x+d)^3*A*a^3*b+4/3/e^5/(e*x+d)^3*A*b^4*d^3-6*b^2/e^4/(e*x+d)*
B*a^2-4*b^3/e^4/(e*x+d)*A*a+4*b^4/e^5/(e*x+d)*A*d-10*b^4/e^6/(e*x+d)*B*d^2+
b^4*B*x/e^5
```

maxima [B] time = 0.62, size = 440, normalized size = 2.33

$$\frac{Bb^4x}{e^5}-\frac{77Bb^4d^5+3Aa^4e^5-25(4Bab^3+Ab^4)d^4e+6(3Ba^2b^2+2Aab^3)d^3e^2+2(2Ba^3b+3Aa^2b^2)d^2e^3+(Ba^4+4Aa^3b)de^4+24(5Bb^4d^2e^3-2(4Bab^3+Ab^4)de^4+(3Ba^2b^2+2Aab^3)e^5)x^3+12(25Bb^4d^3e^2-9(4Bab^3+Ab^4)d^2e^3+3(3Ba^2b^2+2Aab^3)de^4+(2Ba^3b+3Aa^2b^2)e^5)x^2+4(65Bb^4d^4e-22(4Bab^3+Ab^4)d^3e^2+6(3Ba^2b^2+2Aab^3)d^2e^3+2(2Ba^3b+3Aa^2b^2)de^4+(Ba^4+4Aa^3b)e^5)x}{12(e^{10}x^4+4de^9x^3+6d^2e^8x^2+4d^3e^7x+d^4e^6)}-\frac{(5Bb^4d-(4Bab^3+Ab^4)e)\log(ex+d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] B*b^4*x/e^5 - 1/12*(77*B*b^4*d^5 + 3*A*a^4*e^5 - 25*(4*B*a*b^3 + A*b^4)*d^4
*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*
e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + 24*(5*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^
4)*d*e^4 + (3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 12*(25*B*b^4*d^3*e^2 - 9*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b
+ 3*A*a^2*b^2)*e^5)*x^2 + 4*(65*B*b^4*d^4*e - 22*(4*B*a*b^3 + A*b^4)*d^3*e^
2 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4
 + (B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*
d^3*e^7*x + d^4*e^6) - (5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*log(e*x + d)/e^6
```

mupad [B] time = 2.40, size = 462, normalized size = 2.44

$$\frac{\ln(d+ex)(Ab^4e-5Bb^4d+4Bab^3e)}{e^6}-\frac{x^3(6Ba^2b^2e^4-16Bab^3de^3+4Aab^3e^4+10Bb^4d^2e^2-4Ab^4de^3)+\frac{3Aa^4e^5+77Bb^4d^5-25Ab^4d^4e+Ba^4de^4+12Aab^3d^3e^2+4Ba^3bd^2e^3+6Aa^2b^2d^2e^3+18Ba^2b^2d^3e^2+4Aa^3bde^4-100Bab^3d^4e}{12e}+x\left(\frac{Ba^4e^4}{3}+\frac{65Bb^4d^4}{3}+\frac{4Aa^3be^4}{3}-\frac{22Ab^4d^3e}{3}+4Aab^3d^2e^2+2Aa^2b^2de^3+6Ba^2b^2d^2e^2-\frac{88Bab^3d^3e}{3}+\frac{4Ba^3bde^3}{3}\right)+x^2(2Ba^3be^4+25Bb^4d^3e+3Aa^2b^2e^4-9Ab^4d^2e^2-36Bab^3d^2e^2+9Ba^2b^2de^3+6Aab^3de^3)}{d^4e^5+4d^3e^6x+6d^2e^7x^2+4de^8x^3+e^9x^4}+\frac{Bb^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*b^4*e - 5*B*b^4*d + 4*B*a*b^3*e))/e^6 - (x^3*(4*A*a*b^3*e^
4 - 4*A*b^4*d*e^3 + 6*B*a^2*b^2*e^4 + 10*B*b^4*d^2*e^2 - 16*B*a*b^3*d*e^3)
+ (3*A*a^4*e^5 + 77*B*b^4*d^5 - 25*A*b^4*d^4*e + B*a^4*d*e^4 + 12*A*a*b^3*d
^3*e^2 + 4*B*a^3*b*d^2*e^3 + 6*A*a^2*b^2*d^2*e^3 + 18*B*a^2*b^2*d^3*e^2 + 4
*A*a^3*b*d*e^4 - 100*B*a*b^3*d^4*e)/(12*e) + x*((B*a^4*e^4)/3 + (65*B*b^4*d
^4)/3 + (4*A*a^3*b*e^4)/3 - (22*A*b^4*d^3*e)/3 + 4*A*a*b^3*d^2*e^2 + 2*A*a^
2*b^2*d*e^3 + 6*B*a^2*b^2*d^2*e^2 - (88*B*a*b^3*d^3*e)/3 + (4*B*a^3*b*d*e^3
)/3) + x^2*(2*B*a^3*b*e^4 + 25*B*b^4*d^3*e + 3*A*a^2*b^2*e^4 - 9*A*b^4*d^2*
e^2 - 36*B*a*b^3*d^2*e^2 + 9*B*a^2*b^2*d*e^3 + 6*A*a*b^3*d*e^3))/(d^4*e^5 +
 e^9*x^4 + 4*d^3*e^6*x + 4*d*e^8*x^3 + 6*d^2*e^7*x^2) + (B*b^4*x)/e^5
```

sympy [B] time = 62.24, size = 518, normalized size = 2.74

$$\frac{Bb^4x}{e^5} + \frac{b^3(Abe + 4Bae - 5Bbd)\log(d + ex)}{e^6} + \frac{-3Aa^4e^5 - 4Aa^3bde^4 - 6Aa^2b^2d^2e^3 - 12Aab^3d^3e^2 + 25Ab^4d^4e - Ba^4de^4 - 4Ba^3bd^2e^3 - 18Ba^2b^2d^3e^2 + 100Bab^3d^4e - 77Bb^4d^5 + x^3\left(-48Aab^3e^5 + 48Ab^4de^4 - 72Ba^2b^2e^5 + 192Bab^3de^4 - 120Bb^4d^2e^3\right) + x^2\left(-36Aa^2b^2e^5 - 72Aab^3de^4 + 108Ab^4d^2e^3 - 24Ba^3be^5 - 108Ba^2b^2de^4 + 432Bab^3d^2e^3 - 300Bb^4d^3e^2\right) + x\left(-16Aa^3be^5 - 24Aa^2b^2de^4 - 48Aab^3d^2e^3 + 88Ab^4d^3e^2 - 4Ba^4e^5 - 16Ba^3bde^4 - 72Ba^2b^2d^2e^3 + 352Bab^3d^3e^2 - 260Bb^4d^4e\right)}{12d^4e^6 + 48d^3e^7x + 72d^2e^8x^2 + 48de^9x^3 + 12e^{10}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**5,x)
```

```
[Out] B*b**4*x/e**5 + b**3*(A*b*e + 4*B*a*e - 5*B*b*d)*log(d + e*x)/e**6 + (-3*A*
a**4*e**5 - 4*A*a**3*b*d*e**4 - 6*A*a**2*b**2*d**2*e**3 - 12*A*a*b**3*d**3*
e**2 + 25*A*b**4*d**4*e - B*a**4*d*e**4 - 4*B*a**3*b*d**2*e**3 - 18*B*a**2*
b**2*d**3*e**2 + 100*B*a*b**3*d**4*e - 77*B*b**4*d**5 + x**3*(-48*A*a*b**3*
e**5 + 48*A*b**4*d*e**4 - 72*B*a**2*b**2*e**5 + 192*B*a*b**3*d*e**4 - 120*B
*b**4*d**2*e**3) + x**2*(-36*A*a**2*b**2*e**5 - 72*A*a*b**3*d*e**4 + 108*A*
b**4*d**2*e**3 - 24*B*a**3*b*e**5 - 108*B*a**2*b**2*d*e**4 + 432*B*a*b**3*d
**2*e**3 - 300*B*b**4*d**3*e**2) + x*(-16*A*a**3*b*e**5 - 24*A*a**2*b**2*d*
e**4 - 48*A*a*b**3*d**2*e**3 + 88*A*b**4*d**3*e**2 - 4*B*a**4*e**5 - 16*B*a
**3*b*d*e**4 - 72*B*a**2*b**2*d**2*e**3 + 352*B*a*b**3*d**3*e**2 - 260*B*b*
*4*d**4*e))/(12*d**4*e**6 + 48*d**3*e**7*x + 72*d**2*e**8*x**2 + 48*d*e**9*
x**3 + 12*e**10*x**4)
```

3.1466 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^6}\,dx$

Optimal. Leaf size=155

$$-\frac{(a+bx)^5(Bd-Ae)}{5e(d+ex)^5(bd-ae)}+\frac{4b^3B(bd-ae)}{e^6(d+ex)}-\frac{3b^2B(bd-ae)^2}{e^6(d+ex)^2}+\frac{4bB(bd-ae)^3}{3e^6(d+ex)^3}-\frac{B(bd-ae)^4}{4e^6(d+ex)^4}+\frac{b^4B\log(d+ex)}{e^6}$$

Rubi [A] time = 0.15, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = {27, 78, 43}

$$-\frac{(a+bx)^5(Bd-Ae)}{5e(d+ex)^5(bd-ae)}+\frac{4b^3B(bd-ae)}{e^6(d+ex)}-\frac{3b^2B(bd-ae)^2}{e^6(d+ex)^2}+\frac{4bB(bd-ae)^3}{3e^6(d+ex)^3}-\frac{B(bd-ae)^4}{4e^6(d+ex)^4}+\frac{b^4B\log(d+ex)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(5*e*(b*d - a*e)*(d + e*x)^5) - (B*(b*d - a*e)^4
)/(4*e^6*(d + e*x)^4) + (4*b*B*(b*d - a*e)^3)/(3*e^6*(d + e*x)^3) - (3*b^2*
B*(b*d - a*e)^2)/(e^6*(d + e*x)^2) + (4*b^3*B*(b*d - a*e))/(e^6*(d + e*x))
+ (b^4*B*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^6}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^6}\,dx \\
&= -\frac{(Bd-Ae)(a+bx)^5}{5e(bd-ae)(d+ex)^5}+\frac{B\int \frac{(a+bx)^4}{(d+ex)^5}\,dx}{e} \\
&= -\frac{(Bd-Ae)(a+bx)^5}{5e(bd-ae)(d+ex)^5}+\frac{B\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^5}-\frac{4b(bd-ae)^3}{e^4(d+ex)^4}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^3}-\frac{4b^3(bd-ae)}{e^4(d+ex)^2}\right.}{e} \\
&= -\frac{(Bd-Ae)(a+bx)^5}{5e(bd-ae)(d+ex)^5}-\frac{B(bd-ae)^4}{4e^6(d+ex)^4}+\frac{4bB(bd-ae)^3}{3e^6(d+ex)^3}-\frac{3b^2B(bd-ae)^2}{e^6(d+ex)^2}+
\end{aligned}$$

Mathematica [B] time = 0.15, size = 332, normalized size = 2.14

$$\frac{-3a^4e^4(4Ae+B(d+5ex))-4a^3be^3\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)-6a^2b^2e^2\left(2Ae\left(d^2+5dex+10e^2x^2\right)+3B\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)-12ab^3e\left(Ae\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+4B\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+b^4\left(Bd\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)-12Ae\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+60b^4B(d+ex)^5\log(d+ex)}{60e^6(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-3*a^4*e^4*(4*A*e + B*(d + 5*e*x)) - 4*a^3*b*e^3*(3*A*e*(d + 5*e*x) + 2*B*
(d^2 + 5*d*e*x + 10*e^2*x^2)) - 6*a^2*b^2*e^2*(2*A*e*(d^2 + 5*d*e*x + 10*e^
2*x^2) + 3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)) - 12*a*b^3*e*(A
*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 4*B*(d^4 + 5*d^3*e*x + 1
0*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + b^4*(-12*A*e*(d^4 + 5*d^3*e*x
+ 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4) + B*d*(137*d^4 + 625*d^3*e*x +
 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4)) + 60*b^4*B*(d + e*x)^5*Lo
g[d + e*x])/(60*e^6*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^6, x]
```

fricas [B] time = 0.40, size = 526, normalized size = 3.39

$$\frac{137Bb^4d^5-12Aa^4e^5-12\left(4Bab^3+Ab^4\right)d^4e-6\left(3Ba^2b^2+2Aab^3\right)d^3e^2-4\left(2Ba^3b+3Aa^2b^2\right)d^2e^3-3\left(Ba^4+4Aa^3b\right)de^4+60\left(5Bb^4de^4-\left(4Bab^3+Ab^4\right)e^5\right)x^4+60\left(15Bb^4d^2e^3-2\left(4Bab^3+Ab^4\right)de^4-\left(3Ba^2b^2+2Aab^3\right)e^5\right)x^3+20\left(55Bb^4d^3e^2-6\left(4Bab^3+Ab^4\right)d^2e^3-3\left(3Ba^2b^2+2Aab^3\right)de^4-2\left(2Ba^3b+3Aa^2b^2\right)e^5\right)x^2+5\left(125Bb^4d^4e-12\left(4Bab^3+Ab^4\right)d^3e^2-6\left(3Ba^2b^2+2Aab^3\right)d^2e^3-4\left(2Ba^3b+3Aa^2b^2\right)de^4-3\left(Ba^4+4Aa^3b\right)e^5\right)x+60\left(Bb^4e^5x^5+5Bb^4de^4x^4+10Bb^4d^2e^3x^3+10Bb^4d^3e^2x^2+5Bb^4d^4ex+Bb^4d^5\right)\log(ex+d)}{60\left(e^{11}x^5+5de^{10}x^4+10d^2e^9x^3+10d^3e^8x^2+5d^4e^7x+d^5e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*b^4*d^5 - 12*A*a^4*e^5 - 12*(4*B*a*b^3 + A*b^4)*d^4*e - 6*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - 3*(B*a
^4 + 4*A*a^3*b)*d*e^4 + 60*(5*B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4 +
60*(15*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 - (3*B*a^2*b^2 + 2*A*a*b
^3)*e^5)*x^3 + 20*(55*B*b^4*d^3*e^2 - 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 - 3*(3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 5*(12
5*B*b^4*d^4*e - 12*(4*B*a*b^3 + A*b^4)*d^3*e^2 - 6*(3*B*a^2*b^2 + 2*A*a*b^3
)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - 3*(B*a^4 + 4*A*a^3*b)*e^5)*
x + 60*(B*b^4*e^5*x^5 + 5*B*b^4*d*e^4*x^4 + 10*B*b^4*d^2*e^3*x^3 + 10*B*b^4
*d^3*e^2*x^2 + 5*B*b^4*d^4*e*x + B*b^4*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e
^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [B] time = 0.16, size = 415, normalized size = 2.68

$$Bb^4e^{(-6)}\log\left(|xe+d|\right)+\frac{\left(60\left(5Bb^4de^3-4Bab^3e^4-Ab^4e^4\right)x^4+60\left(15Bb^4d^2e^2-8Bab^3de^3-2Ab^4de^3-3Ba^2b^2e^4-2Aab^3e^4\right)x^3+20\left(55Bb^4d^3e-24Bab^3d^2e^2-6Ab^4d^2e^2-9Ba^2b^2de^3-6Aab^3de^3-4Ba^3be^4-6Aa^2b^2e^4\right)x^2+5\left(125Bb^4d^4-48Bab^3d^3e-12Ab^4d^3e-18Ba^2b^2d^2e^2-12Aab^3d^2e^2-8Ba^3bde^3-12Aa^2b^2de^3-3Ba^4e^4-12Aa^3be^4\right)x+\left(137Bb^4d^5-48Bab^3d^4e-12Ab^4d^4e-18Ba^2b^2d^3e^2-12Aab^3d^3e^2-8Ba^3bd^2e^3-12Aa^2b^2d^2e^3-3Ba^4de^4-12Aa^3bde^4-12Aa^4e^5\right)e^{(-1)}\right)e^{(-5)}}{60(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*b^4*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*b^4*d*e^3 - 4*B*a*b^3*e^4 -
A*b^4*e^4)*x^4 + 60*(15*B*b^4*d^2*e^2 - 8*B*a*b^3*d*e^3 - 2*A*b^4*d*e^3 - 3
*B*a^2*b^2*e^4 - 2*A*a*b^3*e^4)*x^3 + 20*(55*B*b^4*d^3*e - 24*B*a*b^3*d^2*e
^2 - 6*A*b^4*d^2*e^2 - 9*B*a^2*b^2*d*e^3 - 6*A*a*b^3*d*e^3 - 4*B*a^3*b*e^4
- 6*A*a^2*b^2*e^4)*x^2 + 5*(125*B*b^4*d^4 - 48*B*a*b^3*d^3*e - 12*A*b^4*d^3
*e - 18*B*a^2*b^2*d^2*e^2 - 12*A*a*b^3*d^2*e^2 - 8*B*a^3*b*d*e^3 - 12*A*a^2
```

```
*b^2*d*e^3 - 3*B*a^4*e^4 - 12*A*a^3*b*e^4)*x + (137*B*b^4*d^5 - 48*B*a*b^3*
d^4*e - 12*A*b^4*d^4*e - 18*B*a^2*b^2*d^3*e^2 - 12*A*a*b^3*d^3*e^2 - 8*B*a^
3*b*d^2*e^3 - 12*A*a^2*b^2*d^2*e^3 - 3*B*a^4*d*e^4 - 12*A*a^3*b*d*e^4 - 12*
A*a^4*e^5)*e^(-1))*e^(-5)/(x*e + d)^5
```

maple [B] time = 0.06, size = 651, normalized size = 4.20

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x)
```

```
[Out] 10/3*b^4/e^6/(e*x+d)^3*B*d^3+1/e^5/(e*x+d)^4*A*b^4*d^3-5/4/e^6/(e*x+d)^4*B*
d^4*b^4-1/5/e^5/(e*x+d)^5*A*b^4*d^4+1/5/e^2/(e*x+d)^5*B*d*a^4+1/5/e^6/(e*x+
d)^5*B*b^4*d^5-b^4/e^5/(e*x+d)*A-1/4/e^2/(e*x+d)^4*B*a^4-1/5/e/(e*x+d)^5*A*
a^4-6/5/e^3/(e*x+d)^5*A*a^2*b^2*d^2+4/e^5/(e*x+d)^4*B*d^3*a*b^3+4*b^3/e^4/(
e*x+d)^3*A*a*d+6*b^2/e^4/(e*x+d)^3*B*a^2*d-8*b^3/e^5/(e*x+d)^3*B*a*d^2+8*b^
3/e^5/(e*x+d)^2*B*d*a-2*b^3/e^4/(e*x+d)^2*A*a+2*b^4/e^5/(e*x+d)^2*A*d-9/2/e
^4/(e*x+d)^4*B*d^2*a^2*b^2+2/e^3/(e*x+d)^4*B*d*a^3*b+3/e^3/(e*x+d)^4*A*a^2*
b^2*d-3/e^4/(e*x+d)^4*A*d^2*a*b^3+4/5/e^4/(e*x+d)^5*A*a*b^3*d^3-4/5/e^3/(e*
x+d)^5*B*d^2*a^3*b+6/5/e^4/(e*x+d)^5*B*d^3*a^2*b^2-4/5/e^5/(e*x+d)^5*B*d^4*
a*b^3+4/5/e^2/(e*x+d)^5*A*a^3*b*d-4*b^3/e^5/(e*x+d)*a*B-2*b^2/e^3/(e*x+d)^3
*A*a^2-2*b^4/e^5/(e*x+d)^3*A*d^2-4/3*b/e^3/(e*x+d)^3*B*a^3-3*b^2/e^4/(e*x+d
)^2*B*a^2-5*b^4/e^6/(e*x+d)^2*B*d^2+5*b^4/e^6/(e*x+d)*B*d-1/e^2/(e*x+d)^4*A
*a^3*b+b^4*B*ln(e*x+d)/e^6
```

maxima [B] time = 0.61, size = 459, normalized size = 2.96

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*b^4*d^5 - 12*A*a^4*e^5 - 12*(4*B*a*b^3 + A*b^4)*d^4*e - 6*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - 3*(B*a
^4 + 4*A*a^3*b)*d*e^4 + 60*(5*B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4 +
60*(15*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 - (3*B*a^2*b^2 + 2*A*a*b
^3)*e^5)*x^3 + 20*(55*B*b^4*d^3*e^2 - 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 - 3*(3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 5*(12
5*B*b^4*d^4*e - 12*(4*B*a*b^3 + A*b^4)*d^3*e^2 - 6*(3*B*a^2*b^2 + 2*A*a*b^3
)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - 3*(B*a^4 + 4*A*a^3*b)*e^5)*
x)/(e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x
 + d^5*e^6) + B*b^4*log(e*x + d)/e^6
```

mupad [B] time = 0.20, size = 465, normalized size = 3.00

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^6,x)
```

```
[Out] (B*b^4*log(d + e*x))/e^6 - ((12*A*a^4*e^5 - 137*B*b^4*d^5 + 12*A*b^4*d^4*e
+ 3*B*a^4*d*e^4 + 12*A*a*b^3*d^3*e^2 + 8*B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2
*e^3 + 18*B*a^2*b^2*d^3*e^2 + 12*A*a^3*b*d*e^4 + 48*B*a*b^3*d^4*e)/(60*e^6)
 + (x*(3*B*a^4*e^4 - 125*B*b^4*d^4 + 12*A*a^3*b*e^4 + 12*A*b^4*d^3*e + 12*A
*a*b^3*d^2*e^2 + 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 + 48*B*a*b^3*d^3
*e + 8*B*a^3*b*d*e^3))/(12*e^5) + (x^2*(4*B*a^3*b*e^3 - 55*B*b^4*d^3 + 6*A*
b^4*d^2*e + 6*A*a^2*b^2*e^3 + 9*B*a^2*b^2*d*e^2 + 6*A*a*b^3*d*e^2 + 24*B*a*
b^3*d^2*e))/(3*e^4) + (x^3*(2*A*b^4*d*e - 15*B*b^4*d^2 + 2*A*a*b^3*e^2 + 3*
```

```
B*a^2*b^2*e^2 + 8*B*a*b^3*d*e))/e^3 + (b^3*x^4*(A*b*e + 4*B*a*e - 5*B*b*d))
/e^2)/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^
4*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.1467 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^7}\,dx$

Optimal. Leaf size=86

$$\frac{(a+bx)^5(-6aBe+Abe+5bBd)}{30e(d+ex)^5(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{6e(d+ex)^6(bd-ae)}$$

Rubi [A] time = 0.03, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {27, 78, 37}

$$\frac{(a+bx)^5(-6aBe+Abe+5bBd)}{30e(d+ex)^5(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{6e(d+ex)^6(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(6*e*(b*d - a*e)*(d + e*x)^6) + ((5*b*B*d + A*b*
e - 6*a*B*e)*(a + b*x)^5)/(30*e*(b*d - a*e)^2*(d + e*x)^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^7}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^7}\,dx\\
&= -\frac{(Bd-Ae)(a+bx)^5}{6e(bd-ae)(d+ex)^6}+\frac{(5bBd+Abe-6aBe)\int \frac{(a+bx)^4}{(d+ex)^6}\,dx}{6e(bd-ae)}\\
&= -\frac{(Bd-Ae)(a+bx)^5}{6e(bd-ae)(d+ex)^6}+\frac{(5bBd+Abe-6aBe)(a+bx)^5}{30e(bd-ae)^2(d+ex)^5}
\end{aligned}$$

Mathematica [B] time = 0.13, size = 317, normalized size = 3.69

$$-\frac{a^4e^4(5Ae+B(d+6ex))+2a^3be^3\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)+3a^2b^2e^2\left(Ae\left(d^2+6dex+15e^2x^2\right)+B\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)\right)+2ab^3e\left(Ae\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+2B\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)+b^4\left(Ae\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)+5B\left(d^5+6d^4ex+15d^3e^2x^2+20d^2e^3x^3+15de^4x^4+6e^5x^5\right)\right)}{30e^6(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/30*(a^4*e^4*(5*A*e + B*(d + 6*e*x)) + 2*a^3*b*e^3*(2*A*e*(d + 6*e*x) + B
*(d^2 + 6*d*e*x + 15*e^2*x^2)) + 3*a^2*b^2*e^2*(A*e*(d^2 + 6*d*e*x + 15*e^2
*x^2) + B*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3)) + 2*a*b^3*e*(A*e*(
d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*B*(d^4 + 6*d^3*e*x + 15*d^
2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + b^4*(A*e*(d^4 + 6*d^3*e*x + 15*d^
2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) + 5*B*(d^5 + 6*d^4*e*x + 15*d^3*e^2*
x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5)))/(e^6*(d + e*x)^6)
```

IntegrateAlgebraic [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^7, x]
```

fricas [**B**] time = 0.39, size = 453, normalized size = 5.27

$$-\frac{30\,Bb^4e^5x^5+5\,Bb^4d^5+5\,Aa^4e^5+\left(4\,Bab^3+Ab^4\right)d^4e+\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+\left(Ba^4+4\,Aa^3b\right)de^4+15\left(5\,Bb^4de^4+\left(4\,Bab^3+Ab^4\right)e^5\right)x^4+20\left(5\,Bb^4d^2e^3+\left(4\,Bab^3+Ab^4\right)de^4+\left(3\,Ba^2b^2+2\,Aab^3\right)e^5\right)x^3+15\left(5\,Bb^4d^3e^2+\left(4\,Bab^3+Ab^4\right)d^2e^3+\left(3\,Ba^2b^2+2\,Aab^3\right)de^4+\left(2\,Ba^3b+3\,Aa^2b^2\right)e^5\right)x^2+6\left(5\,Bb^4d^4e+\left(4\,Bab^3+Ab^4\right)d^3e^2+\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^3+\left(2\,Ba^3b+3\,Aa^2b^2\right)de^4+\left(Ba^4+4\,Aa^3b\right)e^5\right)x}{30\left(e^{12}x^6+6\,de^{11}x^5+15\,d^2e^{10}x^4+20\,d^3e^9x^3+15\,d^4e^8x^2+6\,d^5e^7x+d^6e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/30*(30*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 5*A*a^4*e^5 + (4*B*a*b^3 + A*b^4)*d
^4*e + (3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + (2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^
3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + 15*(5*B*b^4*d*e^4 + (4*B*a*b^3 + A*b^4)*e^5
)*x^4 + 20*(5*B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*
A*a*b^3)*e^5)*x^3 + 15*(5*B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e^3 + (3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 6*(5*B*
b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3
 + (2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^12*x^6
+ 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*
e^7*x + d^6*e^6)
```

giac [**B**] time = 0.16, size = 438, normalized size = 5.09

$$-\frac{\left(30\,Bb^4x^5e^5+75\,Bb^4dx^4e^4+100\,Bb^4d^2x^3e^3+75\,Bb^4d^3x^2e^2+30\,Bb^4d^4xe+5\,Bb^4d^5+60\,Bab^3x^4e^5+15\,Ab^4x^4e^5+80\,Bab^3dx^3e^4+20\,Ab^4dx^3e^4+60\,Bab^3d^2x^2e^3+15\,Ab^4d^2x^2e^3+24\,Bab^3d^3xe^2+6\,Ab^4d^3xe^2+4\,Bab^3d^4e+Ab^4d^4e+60\,Ba^2b^2x^3e^5+40\,Aab^3x^3e^5+45\,Ba^2b^2dx^2e^4+30\,Aab^3dx^2e^4+18\,Ba^2b^2d^2xe^3+12\,Aab^3d^2xe^3+3\,Ba^2b^2d^3e^2+2\,Aab^3d^3e^2+30\,Ba^3bx^2e^5+45\,Aa^2b^2x^2e^5+12\,Ba^3bdxe^4+18\,Aa^2b^2dxe^4+2\,Ba^3bd^2e^3+3\,Aa^2b^2d^2e^3+6\,Ba^4xe^5+24\,Aa^3bxe^5+Ba^4de^4+4\,Aa^3bde^4+5\,Aa^4e^5\right)e^{(-6)}}{30\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/30*(30*B*b^4*x^5*e^5 + 75*B*b^4*d*x^4*e^4 + 100*B*b^4*d^2*x^3*e^3 + 75*B
*b^4*d^3*x^2*e^2 + 30*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 60*B*a*b^3*x^4*e^5 + 15
*A*b^4*x^4*e^5 + 80*B*a*b^3*d*x^3*e^4 + 20*A*b^4*d*x^3*e^4 + 60*B*a*b^3*d^2
*x^2*e^3 + 15*A*b^4*d^2*x^2*e^3 + 24*B*a*b^3*d^3*x*e^2 + 6*A*b^4*d^3*x*e^2
+ 4*B*a*b^3*d^4*e + A*b^4*d^4*e + 60*B*a^2*b^2*x^3*e^5 + 40*A*a*b^3*x^3*e^5
 + 45*B*a^2*b^2*d*x^2*e^4 + 30*A*a*b^3*d*x^2*e^4 + 18*B*a^2*b^2*d^2*x*e^3 +
 12*A*a*b^3*d^2*x*e^3 + 3*B*a^2*b^2*d^3*e^2 + 2*A*a*b^3*d^3*e^2 + 30*B*a^3*
b*x^2*e^5 + 45*A*a^2*b^2*x^2*e^5 + 12*B*a^3*b*d*x*e^4 + 18*A*a^2*b^2*d*x*e^
4 + 2*B*a^3*b*d^2*e^3 + 3*A*a^2*b^2*d^2*e^3 + 6*B*a^4*x*e^5 + 24*A*a^3*b*x*
e^5 + B*a^4*d*e^4 + 4*A*a^3*b*d*e^4 + 5*A*a^4*e^5)*e^(-6)/(x*e + d)^6
```

maple [**B**] time = 0.06, size = 430, normalized size = 5.00

$$-\frac{Bb^4}{(ex+d)e^6}-\frac{(Abe+4aBe-5Bbd)b^3}{2(ex+d)^2e^6}-\frac{2\left(2Aabe^2-2Ab^2de+3Ba^2e^2-8Bdabe+5Bb^2d^2\right)b^2}{3(ex+d)^3e^6}-\frac{\left(3Aa^2be^3-6Aab^2de^2+3Ab^3d^2e+2Ba^3e^3-9Ba^2bde^2+12Bab^2d^2e-5Bb^3d^3\right)b}{2(ex+d)^4e^6}-\frac{4Aa^3be^4-12Aa^2b^2de^3+12Ad^2ab^3e^2-4Ab^4d^3e+Ba^4e^4-8Bda^3be^3+18Bd^2a^2b^2e^2-16Bd^3ab^3e+5b^4Bd^4}{5(ex+d)^5e^6}-\frac{Aa^4e^5-4Aa^3bde^4+6Aa^2b^2d^2e^3-4Aab^3d^3e^2+Ab^4d^4e-Bda^4e^4+4Bd^2a^3be^3-6Bd^3a^2b^2e^2+4Bd^4ab^3e-b^4Bd^5}{6(ex+d)^6e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x)
```

```
[Out] -1/5*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a
^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^4)/e
^6/(e*x+d)^5-b^4*B/e^6/(e*x+d)-1/2*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3
*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d
)^4-2/3*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e
^6/(e*x+d)^3-1/2*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/(e*x+d)^2-1/6*(A*a^4*e^5-4
*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^
4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x
+d)^6
```

maxima [B] time = 0.80, size = 453, normalized size = 5.27

$$-\frac{30\,Bb^4e^5x^5 + 5\,Bb^4d^5 + 5\,Aa^4e^5 + \left(4\,Bab^3 + Ab^4\right)d^4e + \left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + \left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 + \left(Ba^4 + 4\,Aa^3b\right)de^4 + 15\left(5\,Bb^4de^4 + \left(4\,Bab^3 + Ab^4\right)e^5\right)x^4 + 20\left(5\,Bb^4d^2e^3 + \left(4\,Bab^3 + Ab^4\right)de^4 + \left(3\,Ba^2b^2 + 2\,Aab^3\right)e^5\right)x^3 + 15\left(5\,Bb^4d^3e^2 + \left(4\,Bab^3 + Ab^4\right)d^2e^3 + \left(3\,Ba^2b^2 + 2\,Aab^3\right)de^4 + \left(2\,Ba^3b + 3\,Aa^2b^2\right)e^5\right)x^2 + 6\left(5\,Bb^4d^4e + \left(4\,Bab^3 + Ab^4\right)d^3e^2 + \left(3\,Ba^2b^2 + 2\,Aab^3\right)d^2e^3 + \left(2\,Ba^3b + 3\,Aa^2b^2\right)de^4 + \left(Ba^4 + 4\,Aa^3b\right)e^5\right)x}{30\left(e^{12}x^6 + 6\,de^{11}x^5 + 15\,d^2e^{10}x^4 + 20\,d^3e^9x^3 + 15\,d^4e^8x^2 + 6\,d^5e^7x + d^6e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/30*(30*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 5*A*a^4*e^5 + (4*B*a*b^3 + A*b^4)*d
^4*e + (3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + (2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^
3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + 15*(5*B*b^4*d*e^4 + (4*B*a*b^3 + A*b^4)*e^5
)*x^4 + 20*(5*B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*
A*a*b^3)*e^5)*x^3 + 15*(5*B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e^3 + (3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 6*(5*B*
b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3
 + (2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^12*x^6
+ 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*
e^7*x + d^6*e^6)
```

mupad [B] time = 2.22, size = 460, normalized size = 5.35

$$-\frac{\frac{B\,a^4\,d\,e^4+5\,A\,a^4\,e^5+2\,B\,a^3\,b\,d^2\,e^3+4\,A\,a^3\,b\,d\,e^4+3\,B\,a^2\,b^2\,d^3\,e^2+3\,A\,a^2\,b^2\,d^2\,e^3+4\,B\,a\,b^3\,d^4\,e+2\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+A\,b^4\,d^4\,e}{30\,e^6}+\frac{x\,\left(B\,a^4\,e^4+2\,B\,a^3\,b\,d\,e^3+4\,A\,a^3\,b\,e^4+3\,B\,a^2\,b^2\,d^2\,e^2+3\,A\,a^2\,b^2\,d\,e^3+4\,B\,a\,b^3\,d^3\,e+2\,A\,a\,b^3\,d^2\,e^2+5\,B\,b^4\,d^4+A\,b^4\,d^3\,e\right)}{5\,e^5}+\frac{b^3\,x^4\,\left(A\,b\,e+4\,B\,a\,e+5\,B\,b\,d\right)}{2\,e^2}+\frac{b\,x^2\,\left(2\,B\,a^3\,e^3+3\,B\,a^2\,b\,d\,e^2+3\,A\,a^2\,b\,e^3+4\,B\,a\,b^2\,d^2\,e+2\,A\,a\,b^2\,d\,e^2+5\,B\,b^3\,d^3+A\,b^3\,d^2\,e\right)}{2\,e^4}+\frac{2\,b^2\,x^3\,\left(3\,B\,a^2\,e^2+4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+5\,B\,b^2\,d^2+A\,b^2\,d\,e\right)}{3\,e^3}+\frac{B\,b^4\,x^5}{e}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^7,x)
```

```
[Out] -((5*A*a^4*e^5 + 5*B*b^4*d^5 + A*b^4*d^4*e + B*a^4*d*e^4 + 2*A*a*b^3*d^3*e^
2 + 2*B*a^3*b*d^2*e^3 + 3*A*a^2*b^2*d^2*e^3 + 3*B*a^2*b^2*d^3*e^2 + 4*A*a^3
*b*d*e^4 + 4*B*a*b^3*d^4*e)/(30*e^6) + (x*(B*a^4*e^4 + 5*B*b^4*d^4 + 4*A*a^
3*b*e^4 + A*b^4*d^3*e + 2*A*a*b^3*d^2*e^2 + 3*A*a^2*b^2*d*e^3 + 3*B*a^2*b^2
*d^2*e^2 + 4*B*a*b^3*d^3*e + 2*B*a^3*b*d*e^3))/(5*e^5) + (b^3*x^4*(A*b*e +
4*B*a*e + 5*B*b*d))/(2*e^2) + (b*x^2*(2*B*a^3*e^3 + 5*B*b^3*d^3 + 3*A*a^2*b
*e^3 + A*b^3*d^2*e + 2*A*a*b^2*d*e^2 + 4*B*a*b^2*d^2*e + 3*B*a^2*b*d*e^2))/
(2*e^4) + (2*b^2*x^3*(3*B*a^2*e^2 + 5*B*b^2*d^2 + 2*A*a*b*e^2 + A*b^2*d*e +
 4*B*a*b*d*e))/(3*e^3) + (B*b^4*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d
^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.1468 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^8}\,dx$

Optimal. Leaf size=135

$$\frac{b(a+bx)^5(-7aBe+2Abe+5bBd)}{210e(d+ex)^5(bd-ae)^3}+\frac{(a+bx)^5(-7aBe+2Abe+5bBd)}{42e(d+ex)^6(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{7e(d+ex)^7(bd-ae)}$$

Rubi [A] time = 0.06, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {27, 78, 45, 37}

$$\frac{b(a+bx)^5(-7aBe+2Abe+5bBd)}{210e(d+ex)^5(bd-ae)^3}+\frac{(a+bx)^5(-7aBe+2Abe+5bBd)}{42e(d+ex)^6(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{7e(d+ex)^7(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(7*e*(b*d - a*e)*(d + e*x)^7) + ((5*b*B*d + 2*A*
b*e - 7*a*B*e)*(a + b*x)^5)/(42*e*(b*d - a*e)^2*(d + e*x)^6) + (b*(5*b*B*d
+ 2*A*b*e - 7*a*B*e)*(a + b*x)^5)/(210*e*(b*d - a*e)^3*(d + e*x)^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^8}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^8}\,dx \\
&= -\frac{(Bd-Ae)(a+bx)^5}{7e(bd-ae)(d+ex)^7} + \frac{(5bBd+2Abe-7aBe)\int \frac{(a+bx)^4}{(d+ex)^7}\,dx}{7e(bd-ae)} \\
&= -\frac{(Bd-Ae)(a+bx)^5}{7e(bd-ae)(d+ex)^7} + \frac{(5bBd+2Abe-7aBe)(a+bx)^5}{42e(bd-ae)^2(d+ex)^6} + \frac{(b(5bBd+2A\ldots}{42\ldots} \\
&= -\frac{(Bd-Ae)(a+bx)^5}{7e(bd-ae)(d+ex)^7} + \frac{(5bBd+2Abe-7aBe)(a+bx)^5}{42e(bd-ae)^2(d+ex)^6} + \frac{b(5bBd+2Ab\ldots}{210e(bd-\ldots}
\end{aligned}
$$

Mathematica [B] time = 0.13, size = 323, normalized size = 2.39

$$
-\frac{5a^4e^4(6Ae+B(d+7ex))+4a^3be^3\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+3a^2b^2e^2\left(4Ae\left(d^2+7dex+21e^2x^2\right)+3B\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)\right)+2ab^3e\left(3Ae\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+4B\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+b^4\left(2Ae\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)+5B\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)\right)}{210e^6(d+ex)^7}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/210*(5*a^4*e^4*(6*A*e + B*(d + 7*e*x)) + 4*a^3*b*e^3*(5*A*e*(d + 7*e*x)
+ 2*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + 3*a^2*b^2*e^2*(4*A*e*(d^2 + 7*d*e*x +
 21*e^2*x^2) + 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3)) + 2*a*b^3
*e*(3*A*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*B*(d^4 + 7*d^3*
e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + b^4*(2*A*e*(d^4 + 7*d^
3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*B*(d^5 + 7*d^4*e*x
+ 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5)))/(e^6*(d +
e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^8}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^8, x]
```

fricas [B] time = 0.40, size = 478, normalized size = 3.54

$$
-\frac{105\,Bb^4e^5x^5+5\,Bb^4d^5+30\,Aa^4e^5+2\left(4\,Bab^3+Ab^4\right)d^4e+3\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+4\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+5\left(Ba^4+4\,Aa^3b\right)de^4+35\left(5\,Bb^4de^4+2\left(4\,Bab^3+Ab^4\right)e^5\right)x^4+35\left(5\,Bb^4d^2e^3+2\left(4\,Bab^3+Ab^4\right)de^4+3\left(3\,Ba^2b^2+2\,Aab^3\right)e^5\right)x^3+21\left(5\,Bb^4d^3e^2+2\left(4\,Bab^3+Ab^4\right)d^2e^3+3\left(3\,Ba^2b^2+2\,Aab^3\right)de^4+4\left(2\,Ba^3b+3\,Aa^2b^2\right)e^5\right)x^2+7\left(5\,Bb^4d^4e+2\left(4\,Bab^3+Ab^4\right)d^3e^2+3\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^3+4\left(2\,Ba^3b+3\,Aa^2b^2\right)de^4+5\left(Ba^4+4\,Aa^3b\right)e^5\right)x}{210\left(e^{13}x^7+7\,de^{12}x^6+21\,d^2e^{11}x^5+35\,d^3e^{10}x^4+35\,d^4e^9x^3+21\,d^5e^8x^2+7\,d^6e^7x+d^7e^6\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/210*(105*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 30*A*a^4*e^5 + 2*(4*B*a*b^3 + A*b
^4)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 4*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^3 + 5*(B*a^4 + 4*A*a^3*b)*d*e^4 + 35*(5*B*b^4*d*e^4 + 2*(4*B*a*b^3
 + A*b^4)*e^5)*x^4 + 35*(5*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*
(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 21*(5*B*b^4*d^3*e^2 + 2*(4*B*a*b^3 + A
*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 4*(2*B*a^3*b + 3*A*a^2*
b^2)*e^5)*x^2 + 7*(5*B*b^4*d^4*e + 2*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a
^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 5*(B*a^4
+ 4*A*a^3*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^
10*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [**B**]   time = 0.16, size = 440, normalized size = 3.26

$$-\frac{105\,Bb^4x^5e^5 + 175\,Bb^4dx^4e^4 + 175\,Bb^4d^2x^3e^3 + 105\,Bb^4d^3x^2e^2 + 35\,Bb^4d^4xe + 5\,Bb^4d^5 + 280\,Bab^3x^4e^5 + 70\,Ab^4x^4e^5 + 280\,Bab^3dx^3e^4 + 70\,Ab^4dx^3e^4 + 168\,Bab^3d^2x^2e^3 + 42\,Ab^4d^2x^2e^3 + 56\,Bab^3d^3xe^2 + 14\,Ab^4d^3xe^2 + 8\,Bab^3d^4e + 2\,Ab^4d^4e + 315\,Ba^2b^2x^3e^5 + 210\,Aab^3x^3e^5 + 189\,Ba^2b^2dx^2e^4 + 126\,Aab^3dx^2e^4 + 63\,Ba^2b^2d^2xe^3 + 42\,Aab^3d^2xe^3 + 9\,Ba^2b^2d^3e^2 + 6\,Aab^3d^3e^2 + 168\,Ba^3bx^2e^5 + 252\,Aa^2b^2x^2e^5 + 56\,Ba^3bdxe^4 + 84\,Aa^2b^2dxe^4 + 8\,Ba^3bd^2e^3 + 12\,Aa^2b^2d^2e^3 + 35\,Ba^4xe^5 + 140\,Aa^3bxe^5 + 5\,Ba^4de^4 + 20\,Aa^3bde^4 + 30\,Aa^4e^5\right)e^{(-6)}}{210\,(xe + d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/210*(105*B*b^4*x^5*e^5 + 175*B*b^4*d*x^4*e^4 + 175*B*b^4*d^2*x^3*e^3 + 1
05*B*b^4*d^3*x^2*e^2 + 35*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 280*B*a*b^3*x^4*e^5
 + 70*A*b^4*x^4*e^5 + 280*B*a*b^3*d*x^3*e^4 + 70*A*b^4*d*x^3*e^4 + 168*B*a*
b^3*d^2*x^2*e^3 + 42*A*b^4*d^2*x^2*e^3 + 56*B*a*b^3*d^3*x*e^2 + 14*A*b^4*d^
3*x*e^2 + 8*B*a*b^3*d^4*e + 2*A*b^4*d^4*e + 315*B*a^2*b^2*x^3*e^5 + 210*A*a
*b^3*x^3*e^5 + 189*B*a^2*b^2*d*x^2*e^4 + 126*A*a*b^3*d*x^2*e^4 + 63*B*a^2*b
^2*d^2*x*e^3 + 42*A*a*b^3*d^2*x*e^3 + 9*B*a^2*b^2*d^3*e^2 + 6*A*a*b^3*d^3*e
^2 + 168*B*a^3*b*x^2*e^5 + 252*A*a^2*b^2*x^2*e^5 + 56*B*a^3*b*d*x*e^4 + 84*
A*a^2*b^2*d*x*e^4 + 8*B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2*e^3 + 35*B*a^4*x*e
^5 + 140*A*a^3*b*x*e^5 + 5*B*a^4*d*e^4 + 20*A*a^3*b*d*e^4 + 30*A*a^4*e^5)*e
^(-6)/(x*e + d)^7
```

maple [**B**]   time = 0.06, size = 430, normalized size = 3.19

$$-\frac{B\,b^4}{2\,(ex+d)^2\,e^6}-\frac{(Abe+4aBe-5Bbd)\,b^3}{3\,(ex+d)^3\,e^6}-\frac{\left(2Aab\,e^2-2A\,b^2de+3B\,a^2e^2-8Bdabe+5B\,b^2d^2\right)b^2}{2\,(ex+d)^4\,e^6}-\frac{2\left(3A\,a^2b\,e^3-6Aa\,b^2d\,e^2+3A\,b^3d^2e+2B\,a^3e^3-9B\,a^2bd\,e^2+12Ba\,b^2d^2e-5B\,b^3d^3\right)b}{5\,(ex+d)^5\,e^6}-\frac{A\,a^4e^5-4A\,a^3bd\,e^4+6A\,a^2b^2d^2e^3-4Aa\,b^3d^3e^2+A\,b^4d^4e-B\,a^4de^4+4B\,a^3bd^2e^3-6B\,a^2b^2d^3e^2+4Ba\,b^3d^4e-B\,b^4d^5}{7\,(ex+d)^7\,e^6}-\frac{4A\,a^3be^4-12A\,a^2b^2de^3+12Aa\,b^3d^2e^2-4A\,b^4d^3e+B\,a^4e^4-8B\,a^3bd\,e^3+18B\,a^2b^2d^2e^2-16Ba\,b^3d^3e+5B\,b^4d^4}{6\,(ex+d)^6\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x)
```

```
[Out] -2/5*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d
*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d)^5-1/2*b^2*(2*A*a*b*e^2-2*A*b
^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^6/(e*x+d)^4-1/3*b^3*(A*b*e+4*
B*a*e-5*B*b*d)/e^6/(e*x+d)^3-1/2*b^4*B/e^6/(e*x+d)^2-1/7*(A*a^4*e^5-4*A*a^3
*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4*B*
a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)^7-
1/6*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a^
4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^4)/e^
6/(e*x+d)^6
```

maxima [**B**]   time = 0.74, size = 478, normalized size = 3.54

$$-\frac{105\,Bb^4e^5x^5 + 5\,Bb^4d^5 + 30\,Aa^4e^5 + 2\,(4\,Bab^3 + Ab^4)d^4e + 3\,(3\,Ba^2b^2 + 2\,Aab^3)d^3e^2 + 4\,(2\,Ba^3b + 3\,Aa^2b^2)d^2e^3 + 5\,(Ba^4 + 4\,Aa^3b)de^4 + 35\,(5\,Bb^4de^4 + 2\,(4\,Bab^3 + Ab^4)e^5)x^4 + 35\,(5\,Bb^4d^2e^3 + 2\,(4\,Bab^3 + Ab^4)de^4 + 3\,(3\,Ba^2b^2 + 2\,Aab^3)e^5)x^3 + 21\,(5\,Bb^4d^3e^2 + 2\,(4\,Bab^3 + Ab^4)d^2e^3 + 3\,(3\,Ba^2b^2 + 2\,Aab^3)de^4 + 4\,(2\,Ba^3b + 3\,Aa^2b^2)e^5)x^2 + 7\,(5\,Bb^4d^4e + 2\,(4\,Bab^3 + Ab^4)d^3e^2 + 3\,(3\,Ba^2b^2 + 2\,Aab^3)d^2e^3 + 4\,(2\,Ba^3b + 3\,Aa^2b^2)de^4 + 5\,(Ba^4 + 4\,Aa^3b)e^5)x}{210\,(e^{13}x^7 + 7\,de^{12}x^6 + 21\,d^2e^{11}x^5 + 35\,d^3e^{10}x^4 + 35\,d^4e^9x^3 + 21\,d^5e^8x^2 + 7\,d^6e^7x + d^7e^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/210*(105*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 30*A*a^4*e^5 + 2*(4*B*a*b^3 + A*b
^4)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 4*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^3 + 5*(B*a^4 + 4*A*a^3*b)*d*e^4 + 35*(5*B*b^4*d*e^4 + 2*(4*B*a*b^3
 + A*b^4)*e^5)*x^4 + 35*(5*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*
(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 21*(5*B*b^4*d^3*e^2 + 2*(4*B*a*b^3 + A
*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 4*(2*B*a^3*b + 3*A*a^2*
b^2)*e^5)*x^2 + 7*(5*B*b^4*d^4*e + 2*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a
^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 5*(B*a^4
+ 4*A*a^3*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^
10*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [**B**]   time = 2.36, size = 479, normalized size = 3.55

$$-\frac{\frac{5\,B\,a^4\,d\,e^4+30\,A\,a^4\,e^5+8\,B\,a^3\,b\,d^2\,e^3+20\,A\,a^3\,b\,d\,e^4+9\,B\,a^2\,b^2\,d^3\,e^2+12\,A\,a^2\,b^2\,d^2\,e^3+8\,B\,a\,b^3\,d^4\,e+6\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+2\,A\,b^4\,d^4\,e}{210\,e^6}+\frac{x\,\left(5\,B\,a^4\,e^4+8\,B\,a^3\,b\,d\,e^3+20\,A\,a^3\,b\,e^4+9\,B\,a^2\,b^2\,d^2\,e^2+12\,A\,a^2\,b^2\,d\,e^3+8\,B\,a\,b^3\,d^3\,e+6\,A\,a\,b^3\,d^2\,e^2+5\,B\,b^4\,d^4+2\,A\,b^4\,d^3\,e\right)}{30\,e^5}+\frac{b^3\,x^4\,\left(2\,A\,b\,e+8\,B\,a\,e+5\,B\,b\,d\right)}{6\,e^2}+\frac{b\,x^2\,\left(8\,B\,a^3\,e^3+9\,B\,a^2\,b\,d\,e^2+12\,A\,a^2\,b\,e^3+8\,B\,a\,b^2\,d^2\,e+6\,A\,a\,b^2\,d\,e^2+5\,B\,b^3\,d^3+2\,A\,b^3\,d^2\,e\right)}{10\,e^4}+\frac{b^2\,x^3\,\left(9\,B\,a^2\,e^2+8\,B\,a\,b\,d\,e+6\,A\,a\,b\,e^2+5\,B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{6\,e^3}+\frac{B\,b^4\,x^5}{2\,e}}{d^7+7\,d^6\,e\,x+21\,d^5\,e^2\,x^2+35\,d^4\,e^3\,x^3+35\,d^3\,e^4\,x^4+21\,d^2\,e^5\,x^5+7\,d\,e^6\,x^6+e^7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^8,x)
```

```
[Out] -((30*A*a^4*e^5 + 5*B*b^4*d^5 + 2*A*b^4*d^4*e + 5*B*a^4*d*e^4 + 6*A*a*b^3*d
^3*e^2 + 8*B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2*e^3 + 9*B*a^2*b^2*d^3*e^2 + 2
0*A*a^3*b*d*e^4 + 8*B*a*b^3*d^4*e)/(210*e^6) + (x*(5*B*a^4*e^4 + 5*B*b^4*d^
4 + 20*A*a^3*b*e^4 + 2*A*b^4*d^3*e + 6*A*a*b^3*d^2*e^2 + 12*A*a^2*b^2*d*e^3
 + 9*B*a^2*b^2*d^2*e^2 + 8*B*a*b^3*d^3*e + 8*B*a^3*b*d*e^3))/(30*e^5) + (b^
3*x^4*(2*A*b*e + 8*B*a*e + 5*B*b*d))/(6*e^2) + (b*x^2*(8*B*a^3*e^3 + 5*B*b^
3*d^3 + 12*A*a^2*b*e^3 + 2*A*b^3*d^2*e + 6*A*a*b^2*d*e^2 + 8*B*a*b^2*d^2*e
+ 9*B*a^2*b*d*e^2))/(10*e^4) + (b^2*x^3*(9*B*a^2*e^2 + 5*B*b^2*d^2 + 6*A*a*
b*e^2 + 2*A*b^2*d*e + 8*B*a*b*d*e))/(6*e^3) + (B*b^4*x^5)/(2*e))/(d^7 + e^7
*x^7 + 7*d*e^6*x^6 + 21*d^5*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*
d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1469 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^9}\,dx$

Optimal. Leaf size=185

$$\frac{b^2(a+bx)^5(-8aBe+3Abe+5bBd)}{840e(d+ex)^5(bd-ae)^4}+\frac{b(a+bx)^5(-8aBe+3Abe+5bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{(a+bx)^5(-8aBe+3Abe+5bBd)}{56e(d+ex)^7(bd-ae)^2}-$$

Rubi [A] time = 0.09, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {27, 78, 45, 37}

$$\frac{b^2(a+bx)^5(-8aBe+3Abe+5bBd)}{840e(d+ex)^5(bd-ae)^4}+\frac{b(a+bx)^5(-8aBe+3Abe+5bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{(a+bx)^5(-8aBe+3Abe+5bBd)}{56e(d+ex)^7(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{8e(d+ex)^8(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(8*e*(b*d - a*e)*(d + e*x)^8) + ((5*b*B*d + 3*A*
b*e - 8*a*B*e)*(a + b*x)^5)/(56*e*(b*d - a*e)^2*(d + e*x)^7) + (b*(5*b*B*d
+ 3*A*b*e - 8*a*B*e)*(a + b*x)^5)/(168*e*(b*d - a*e)^3*(d + e*x)^6) + (b^2*
(5*b*B*d + 3*A*b*e - 8*a*B*e)*(a + b*x)^5)/(840*e*(b*d - a*e)^4*(d + e*x)^5
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^9}\,dx = \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^9}\,dx$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)\int \frac{(a+bx)^4}{(d+ex)^8}\,dx}{8e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)(a+bx)^5}{56e(bd-ae)^2(d+ex)^7} + \frac{(b(5bBd+3A\ldots}{28\ldots}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)(a+bx)^5}{56e(bd-ae)^2(d+ex)^7} + \frac{b(5bBd+3Ab\ldots}{168e(bd-\ldots}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)(a+bx)^5}{56e(bd-ae)^2(d+ex)^7} + \frac{b(5bBd+3Ab\ldots}{168e(bd-\ldots}$$

Mathematica [A] time = 0.13, size = 320, normalized size = 1.73

$$-\frac{15a^4e^4(7Ae+B(d+8ex))+20a^3be^3\left(3Ae(d+8ex)+B\left(d^2+8dex+28e^2x^2\right)\right)+6a^2b^2e^2\left(5Ae\left(d^2+8dex+28e^2x^2\right)+3B\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)\right)+12ab^3e\left(Ae\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+B\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)+b^4\left(3Ae\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)+5B\left(d^5+8d^4ex+28d^3e^2x^2+56d^2e^3x^3+70de^4x^4+56e^5x^5\right)\right)}{840e^6(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -1/840*(15*a^4*e^4*(7*A*e + B*(d + 8*e*x)) + 20*a^3*b*e^3*(3*A*e*(d + 8*e*x
) + B*(d^2 + 8*d*e*x + 28*e^2*x^2)) + 6*a^2*b^2*e^2*(5*A*e*(d^2 + 8*d*e*x +
 28*e^2*x^2) + 3*B*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)) + 12*a*b^
3*e*(A*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + B*(d^4 + 8*d^3*e*x
 + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + b^4*(3*A*e*(d^4 + 8*d^3*e
*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) + 5*B*(d^5 + 8*d^4*e*x + 2
8*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5)))/(e^6*(d + e*x
)^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^9, x]
```

fricas [B] time = 0.40, size = 489, normalized size = 2.64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 105*A*a^4*e^5 + 3*(4*B*a*b^3 + A*
b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 10*(2*B*a^3*b + 3*A*a^2*
b^2)*d^2*e^3 + 15*(B*a^4 + 4*A*a^3*b)*d*e^4 + 70*(5*B*b^4*d*e^4 + 3*(4*B*a*
b^3 + A*b^4)*e^5)*x^4 + 56*(5*B*b^4*d^2*e^3 + 3*(4*B*a*b^3 + A*b^4)*d*e^4 +
 6*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 28*(5*B*b^4*d^3*e^2 + 3*(4*B*a*b^3
+ A*b^4)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 10*(2*B*a^3*b + 3*A*
a^2*b^2)*e^5)*x^2 + 8*(5*B*b^4*d^4*e + 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3
```

```
*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 15*(
B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*
d^3*e^11*x^5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^
7*x + d^8*e^6)
```

giac [**B**] time = 0.16, size = 440, normalized size = 2.38

$$-\frac{280\,Bb^4x^5e^5+350\,Bb^4dx^4e^4+280\,Bb^4d^2x^3e^3+140\,Bb^4d^3x^2e^2+40\,Bb^4d^4xe+5\,Bb^4d^5+840\,Bab^3x^4e^5+210\,Ab^4x^4e^5+672\,Bab^3dx^3e^4+168\,Ab^4dx^3e^4+336\,Bab^3d^2x^2e^3+84\,Ab^4d^2x^2e^3+96\,Bab^3d^3xe^2+24\,Ab^4d^3xe^2+12\,Bab^3d^4e+3\,Ab^4d^4e+1008\,Ba^2b^2x^3e^5+672\,Aab^3x^3e^5+504\,Ba^2b^2dx^2e^4+336\,Aab^3dx^2e^4+144\,Ba^2b^2d^2xe^3+96\,Aab^3d^2xe^3+18\,Ba^2b^2d^3e^2+12\,Aab^3d^3e^2+560\,Ba^3bx^2e^5+840\,Aa^2b^2x^2e^5+160\,Ba^3bdxe^4+240\,Aa^2b^2dxe^4+20\,Ba^3bd^2e^3+30\,Aa^2b^2d^2e^3+120\,Ba^4xe^5+480\,Aa^3bxe^5+15\,Ba^4de^4+60\,Aa^3bde^4+105\,Aa^4e^5}{840\,(xe+d)^8}e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*b^4*x^5*e^5 + 350*B*b^4*d*x^4*e^4 + 280*B*b^4*d^2*x^3*e^3 + 1
40*B*b^4*d^3*x^2*e^2 + 40*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 840*B*a*b^3*x^4*e^5
 + 210*A*b^4*x^4*e^5 + 672*B*a*b^3*d*x^3*e^4 + 168*A*b^4*d*x^3*e^4 + 336*B*
a*b^3*d^2*x^2*e^3 + 84*A*b^4*d^2*x^2*e^3 + 96*B*a*b^3*d^3*x*e^2 + 24*A*b^4*
d^3*x*e^2 + 12*B*a*b^3*d^4*e + 3*A*b^4*d^4*e + 1008*B*a^2*b^2*x^3*e^5 + 672
*A*a*b^3*x^3*e^5 + 504*B*a^2*b^2*d*x^2*e^4 + 336*A*a*b^3*d*x^2*e^4 + 144*B*
a^2*b^2*d^2*x*e^3 + 96*A*a*b^3*d^2*x*e^3 + 18*B*a^2*b^2*d^3*e^2 + 12*A*a*b^
3*d^3*e^2 + 560*B*a^3*b*x^2*e^5 + 840*A*a^2*b^2*x^2*e^5 + 160*B*a^3*b*d*x*e
^4 + 240*A*a^2*b^2*d*x*e^4 + 20*B*a^3*b*d^2*e^3 + 30*A*a^2*b^2*d^2*e^3 + 12
0*B*a^4*x*e^5 + 480*A*a^3*b*x*e^5 + 15*B*a^4*d*e^4 + 60*A*a^3*b*d*e^4 + 105
*A*a^4*e^5)*e^(-6)/(x*e + d)^8
```

maple [**B**] time = 0.05, size = 430, normalized size = 2.32

$$-\frac{Bb^4}{3(ex+d)^3e^6}-\frac{(Abe+4aBe-5Bbd)b^3}{4(ex+d)^4e^6}-\frac{2\left(2Aabe^2-2Ab^2de+3Ba^2e^2-8Babde+5Bb^2d^2\right)b^2}{5(ex+d)^5e^6}-\frac{\left(3Aa^2be^3-6Aab^2de^2+3Ab^3d^2e+2Ba^3e^3-9Ba^2bde^2+12Bab^2d^2e-5Bb^3d^3\right)b}{3(ex+d)^6e^6}-\frac{4Aa^3be^4-12Aa^2b^2de^3+12Aab^3d^2e^2-4Ab^4d^3e+Ba^4e^4-8Ba^3bde^3+18Ba^2b^2d^2e^2-16Bab^3d^3e+5Bb^4d^4}{7(ex+d)^7e^6}-\frac{Aa^4e^5-4Aa^3bde^4+6Aa^2b^2d^2e^3-4Aab^3d^3e^2+Ab^4d^4e-Ba^4de^4+4Ba^3bd^2e^3-6Ba^2b^2d^3e^2+4Bab^3d^4e-Bb^4d^5}{8(ex+d)^8e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x)
```

```
[Out] -2/5*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^6/
(e*x+d)^5-1/4*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/(e*x+d)^4-1/3*b^4*B/e^6/(e*x+
d)^3-1/7*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e
+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^
4)/e^6/(e*x+d)^7-1/8*(A*a^4*e^5-4*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b
^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*
B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)^8-1/3*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2
+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^
6/(e*x+d)^6
```

maxima [**B**] time = 0.77, size = 489, normalized size = 2.64

$$-\frac{280\,Bb^4e^5x^5+5\,Bb^4d^5+105\,Aa^4e^5+3\left(4\,Bab^3+Ab^4\right)d^4e+6\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+10\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+15\left(Ba^4+4\,Aa^3b\right)de^4+70\left(5\,Bb^4de^4+3\left(4\,Bab^3+Ab^4\right)e^5\right)x^4+56\left(5\,Bb^4d^2e^3+3\left(4\,Bab^3+Ab^4\right)de^4+6\left(3\,Ba^2b^2+2\,Aab^3\right)e^5\right)x^3+28\left(5\,Bb^4d^3e^2+3\left(4\,Bab^3+Ab^4\right)d^2e^3+6\left(3\,Ba^2b^2+2\,Aab^3\right)de^4+10\left(2\,Ba^3b+3\,Aa^2b^2\right)e^5\right)x^2+8\left(5\,Bb^4d^4e+3\left(4\,Bab^3+Ab^4\right)d^3e^2+6\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^3+10\left(2\,Ba^3b+3\,Aa^2b^2\right)de^4+15\left(Ba^4+4\,Aa^3b\right)e^5\right)x}{840\left(e^{14}x^8+8\,de^{13}x^7+28\,d^2e^{12}x^6+56\,d^3e^{11}x^5+70\,d^4e^{10}x^4+56\,d^5e^9x^3+28\,d^6e^8x^2+8\,d^7e^7x+d^8e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 105*A*a^4*e^5 + 3*(4*B*a*b^3 + A*
b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 10*(2*B*a^3*b + 3*A*a^2*
b^2)*d^2*e^3 + 15*(B*a^4 + 4*A*a^3*b)*d*e^4 + 70*(5*B*b^4*d*e^4 + 3*(4*B*a*
b^3 + A*b^4)*e^5)*x^4 + 56*(5*B*b^4*d^2*e^3 + 3*(4*B*a*b^3 + A*b^4)*d*e^4 +
 6*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 28*(5*B*b^4*d^3*e^2 + 3*(4*B*a*b^3
+ A*b^4)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 10*(2*B*a^3*b + 3*A*
a^2*b^2)*e^5)*x^2 + 8*(5*B*b^4*d^4*e + 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 15*(
B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*
d^3*e^11*x^5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^
7*x + d^8*e^6)
```

mupad [B] time = 2.26, size = 490, normalized size = 2.65

$$-\frac{\frac{15\,B\,a^4\,d\,e^4+105\,A\,a^4\,e^5+20\,B\,a^3\,b\,d^2\,e^3+60\,A\,a^3\,b\,d\,e^4+18\,B\,a^2\,b^2\,d^3\,e^2+30\,A\,a^2\,b^2\,d^2\,e^3+12\,B\,a\,b^3\,d^4\,e+12\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+3\,A\,b^4\,d^4\,e}{840\,e^6}+\frac{x\,\left(15\,B\,a^4\,e^4+20\,B\,a^3\,b\,d\,e^3+60\,A\,a^3\,b\,e^4+18\,B\,a^2\,b^2\,d^2\,e^2+30\,A\,a^2\,b^2\,d\,e^3+12\,B\,a\,b^3\,d^3\,e+12\,A\,a\,b^3\,d^2\,e^2+5\,B\,b^4\,d^4+3\,A\,b^4\,d^3\,e\right)}{105\,e^5}+\frac{b^3\,x^4\,\left(3\,A\,b\,e+12\,B\,a\,e+5\,B\,b\,d\right)}{12\,e^2}+\frac{b\,x^2\,\left(20\,B\,a^3\,e^3+18\,B\,a^2\,b\,d\,e^2+30\,A\,a^2\,b\,e^3+12\,B\,a\,b^2\,d^2\,e+12\,A\,a\,b^2\,d\,e^2+5\,B\,b^3\,d^3+3\,A\,b^3\,d^2\,e\right)}{30\,e^4}+\frac{b^2\,x^3\,\left(18\,B\,a^2\,e^2+12\,B\,a\,b\,d\,e+12\,A\,a\,b\,e^2+5\,B\,b^2\,d^2+3\,A\,b^2\,d\,e\right)}{15\,e^3}+\frac{B\,b^4\,x^5}{3\,e}}{d^8+8\,d^7\,e\,x+28\,d^6\,e^2\,x^2+56\,d^5\,e^3\,x^3+70\,d^4\,e^4\,x^4+56\,d^3\,e^5\,x^5+28\,d^2\,e^6\,x^6+8\,d\,e^7\,x^7+e^8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^9,x)
```

```
[Out] -((105*A*a^4*e^5 + 5*B*b^4*d^5 + 3*A*b^4*d^4*e + 15*B*a^4*d*e^4 + 12*A*a*b^
3*d^3*e^2 + 20*B*a^3*b*d^2*e^3 + 30*A*a^2*b^2*d^2*e^3 + 18*B*a^2*b^2*d^3*e^
2 + 60*A*a^3*b*d*e^4 + 12*B*a*b^3*d^4*e)/(840*e^6) + (x*(15*B*a^4*e^4 + 5*B
*b^4*d^4 + 60*A*a^3*b*e^4 + 3*A*b^4*d^3*e + 12*A*a*b^3*d^2*e^2 + 30*A*a^2*b
^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 + 12*B*a*b^3*d^3*e + 20*B*a^3*b*d*e^3))/(10
5*e^5) + (b^3*x^4*(3*A*b*e + 12*B*a*e + 5*B*b*d))/(12*e^2) + (b*x^2*(20*B*a
^3*e^3 + 5*B*b^3*d^3 + 30*A*a^2*b*e^3 + 3*A*b^3*d^2*e + 12*A*a*b^2*d*e^2 +
12*B*a*b^2*d^2*e + 18*B*a^2*b*d*e^2))/(30*e^4) + (b^2*x^3*(18*B*a^2*e^2 + 5
*B*b^2*d^2 + 12*A*a*b*e^2 + 3*A*b^2*d*e + 12*B*a*b*d*e))/(15*e^3) + (B*b^4*
x^5)/(3*e))/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^3*x^3
+ 70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1470 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=206

$$\frac{b^3(-4aBe-Abe+5bBd)}{5e^6(d+ex)^5}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6(d+ex)^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{7e^6(d+ex)^7}-\frac{(bd-ae}{}$$

Rubi [A] time = 0.20, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{b^3(-4aBe-Abe+5bBd)}{5e^6(d+ex)^5}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6(d+ex)^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{7e^6(d+ex)^7}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{8e^6(d+ex)^8}+\frac{(bd-ae)^4(Bd-Ae)}{9e^6(d+ex)^9}-\frac{b^4B}{4e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] ((b*d - a*e)^4*(B*d - A*e))/(9*e^6*(d + e*x)^9) - ((b*d - a*e)^3*(5*b*B*d -
 4*A*b*e - a*B*e))/(8*e^6*(d + e*x)^8) + (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*
b*e - 2*a*B*e))/(7*e^6*(d + e*x)^7) - (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e -
 3*a*B*e))/(3*e^6*(d + e*x)^6) + (b^3*(5*b*B*d - A*b*e - 4*a*B*e))/(5*e^6*(
d + e*x)^5) - (b^4*B)/(4*e^6*(d + e*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{10}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{10}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{10}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^9}+\frac{2b}{}\right.\\ &= \frac{(bd-ae)^4(Bd-Ae)}{9e^6(d+ex)^9}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{8e^6(d+ex)^8}+\frac{2b(bd-ae)^2(5}{7e}\end{aligned}$$

Mathematica [A] time = 0.14, size = 322, normalized size = 1.56

$$-\frac{35a^4e^4(8Ae+B(d+9ex))+20a^3be^3\left(7Ae(d+9ex)+2B\left(d^2+9dex+36e^2x^2\right)\right)+30a^2b^2e^2\left(2Ae\left(d^2+9dex+36e^2x^2\right)+B\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)\right)+4ab^3e\left(5Ae\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)+4B\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)\right)+b^4\left(4Ae\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)+5B\left(d^5+9d^4ex+36d^3e^2x^2+84d^2e^3x^3+126de^4x^4+126e^5x^5\right)\right)}{2520e^6(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(35*a^4*e^4*(8*A*e + B*(d + 9*e*x)) + 20*a^3*b*e^3*(7*A*e*(d + 9*e*
x) + 2*B*(d^2 + 9*d*e*x + 36*e^2*x^2)) + 30*a^2*b^2*e^2*(2*A*e*(d^2 + 9*d*e
*x + 36*e^2*x^2) + B*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3)) + 4*a*b
^3*e*(5*A*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 4*B*(d^4 + 9*d^
3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + b^4*(4*A*e*(d^4 + 9
*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4) + 5*B*(d^5 + 9*d^4*
e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5)))/(e^6
*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^10, x]
```

fricas [B] time = 0.41, size = 500, normalized size = 2.43

$$-\frac{630\,Bb^4e^5x^5+5\,Bb^4d^5+280\,Aa^4e^5+4\left(4\,Bab^3+Ab^4\right)d^4e+10\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+20\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+35\left(Ba^4+4\,Aa^3b\right)de^4+126\left(5\,Bb^4de^4+4\left(4\,Bab^3+Ab^4\right)e^5\right)x^4+84\left(5\,Bb^4d^2e^3+4\left(4\,Bab^3+Ab^4\right)de^4+10\left(3\,Ba^2b^2+2\,Aab^3\right)e^5\right)x^3+36\left(5\,Bb^4d^3e^2+4\left(4\,Bab^3+Ab^4\right)d^2e^3+10\left(3\,Ba^2b^2+2\,Aab^3\right)de^4+20\left(2\,Ba^3b+3\,Aa^2b^2\right)e^5\right)x^2+9\left(5\,Bb^4d^4e+4\left(4\,Bab^3+Ab^4\right)d^3e^2+10\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^3+20\left(2\,Ba^3b+3\,Aa^2b^2\right)de^4+35\left(Ba^4+4\,Aa^3b\right)e^5\right)x}{2520\left(e^{15}x^9+9\,de^{14}x^8+36\,d^2e^{13}x^7+84\,d^3e^{12}x^6+126\,d^4e^{11}x^5+126\,d^5e^{10}x^4+84\,d^6e^9x^3+36\,d^7e^8x^2+9\,d^8e^7x+d^9e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 280*A*a^4*e^5 + 4*(4*B*a*b^3 + A
*b^4)*d^4*e + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 20*(2*B*a^3*b + 3*A*a^
2*b^2)*d^2*e^3 + 35*(B*a^4 + 4*A*a^3*b)*d*e^4 + 126*(5*B*b^4*d*e^4 + 4*(4*B
*a*b^3 + A*b^4)*e^5)*x^4 + 84*(5*B*b^4*d^2*e^3 + 4*(4*B*a*b^3 + A*b^4)*d*e^
4 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 36*(5*B*b^4*d^3*e^2 + 4*(4*B*a*
b^3 + A*b^4)*d^2*e^3 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 20*(2*B*a^3*b +
 3*A*a^2*b^2)*e^5)*x^2 + 9*(5*B*b^4*d^4*e + 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 +
 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 20*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4
+ 35*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7
 + 84*d^3*e^12*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 +
 36*d^7*e^8*x^2 + 9*d^8*e^7*x + d^9*e^6)
```

giac [B] time = 0.16, size = 440, normalized size = 2.14

$$-\frac{\left(630\,Bb^4x^5e^5+630\,Bb^4dx^4e^4+420\,Bb^4d^2x^3e^3+180\,Bb^4d^3x^2e^2+45\,Bb^4d^4xe+5\,Bb^4d^5+2016\,Bab^3x^4e^5+504\,Ab^4x^4e^5+1344\,Bab^3dx^3e^4+336\,Ab^4dx^3e^4+576\,Bab^3d^2x^2e^3+144\,Ab^4d^2x^2e^3+144\,Bab^3d^3xe^2+36\,Ab^4d^3xe^2+16\,Bab^3d^4e+4\,Ab^4d^4e+2520\,Ba^2b^2x^3e^5+1680\,Aab^3x^3e^5+1080\,Ba^2b^2dx^2e^4+720\,Aab^3dx^2e^4+270\,Ba^2b^2d^2xe^3+180\,Aab^3d^2xe^3+30\,Ba^2b^2d^3e^2+20\,Aab^3d^3e^2+1440\,Ba^3bx^2e^5+2160\,Aa^2b^2x^2e^5+360\,Ba^3bdxe^4+540\,Aa^2b^2dxe^4+40\,Ba^3bd^2e^3+60\,Aa^2b^2d^2e^3+315\,Ba^4xe^5+1260\,Aa^3bxe^5+35\,Ba^4de^4+140\,Aa^3bde^4+280\,Aa^4e^5\right)e^{(-6)}}{2520\,(xe+d)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(630*B*b^4*x^5*e^5 + 630*B*b^4*d*x^4*e^4 + 420*B*b^4*d^2*x^3*e^3 +
180*B*b^4*d^3*x^2*e^2 + 45*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 2016*B*a*b^3*x^4*e
^5 + 504*A*b^4*x^4*e^5 + 1344*B*a*b^3*d*x^3*e^4 + 336*A*b^4*d*x^3*e^4 + 576
*B*a*b^3*d^2*x^2*e^3 + 144*A*b^4*d^2*x^2*e^3 + 144*B*a*b^3*d^3*x*e^2 + 36*A
*b^4*d^3*x*e^2 + 16*B*a*b^3*d^4*e + 4*A*b^4*d^4*e + 2520*B*a^2*b^2*x^3*e^5
+ 1680*A*a*b^3*x^3*e^5 + 1080*B*a^2*b^2*d*x^2*e^4 + 720*A*a*b^3*d*x^2*e^4 +
 270*B*a^2*b^2*d^2*x*e^3 + 180*A*a*b^3*d^2*x*e^3 + 30*B*a^2*b^2*d^3*e^2 + 2
0*A*a*b^3*d^3*e^2 + 1440*B*a^3*b*x^2*e^5 + 2160*A*a^2*b^2*x^2*e^5 + 360*B*a
^3*b*d*x*e^4 + 540*A*a^2*b^2*d*x*e^4 + 40*B*a^3*b*d^2*e^3 + 60*A*a^2*b^2*d^
2*e^3 + 315*B*a^4*x*e^5 + 1260*A*a^3*b*x*e^5 + 35*B*a^4*d*e^4 + 140*A*a^3*b
*d*e^4 + 280*A*a^4*e^5)*e^(-6)/(x*e + d)^9
```

maple [B] time = 0.05, size = 430, normalized size = 2.09

$$-\frac{B\,b^4}{4\,(ex+d)^4\,e^6}-\frac{(Abe+4aBe-5Bbd)\,b^3}{5\,(ex+d)^5\,e^6}-\frac{\left(2Aab\,e^2-2A\,b^2de+3B\,a^2e^2-8Bdabe+5B\,b^2d^2\right)b^2}{3\,(ex+d)^6\,e^6}-\frac{2\left(3A\,a^2b\,e^3-6Aa\,b^2d\,e^2+3A\,b^3d^2e+2B\,a^3e^3-9B\,a^2bd\,e^2+12Ba\,b^2d^2e-5B\,b^3d^3\right)b}{7\,(ex+d)^7\,e^6}-\frac{4A\,a^3b\,e^4-12A\,a^2b^2d\,e^3+12A\,d^2a\,b^3e^2-4A\,b^4d^3e+B\,a^4e^4-8Bd\,a^3b\,e^3+18B\,d^2a^2b^2e^2-16B\,d^3a\,b^3e+5b^4B\,d^4}{8\,(ex+d)^8\,e^6}-\frac{A\,a^4e^5-4A\,a^3bd\,e^4+6A\,a^2b^2d^2e^3-4Aa\,b^3d^3e^2+A\,b^4d^4e-Bd\,a^4e^4+4B\,d^2a^3b\,e^3-6B\,d^3a^2b^2e^2+4B\,d^4a\,b^3e-b^4B\,d^5}{9\,(ex+d)^9\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x)
```

```
[Out] -1/5*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/(e*x+d)^5-1/4*b^4*B/e^6/(e*x+d)^4-2/7*
b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+
12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d)^7-1/8*(4*A*a^3*b*e^4-12*A*a^2*b^2
*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*
b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^4)/e^6/(e*x+d)^8-1/9*(A*a^4*e^5-4*A*
a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4
*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)
^9-1/3*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^
6/(e*x+d)^6
```

maxima [B] time = 0.69, size = 500, normalized size = 2.43

$$-\frac{630\,Bb^4e^5x^5+5\,Bb^4d^5+280\,Aa^4e^5+4\left(4\,Bab^3+Ab^4\right)d^4e+10\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+20\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+35\left(Ba^4+4\,Aa^3b\right)de^4+126\left(5\,Bb^4de^4+4\left(4\,Bab^3+Ab^4\right)e^5\right)x^4+84\left(5\,Bb^4d^2e^3+4\left(4\,Bab^3+Ab^4\right)de^4+10\left(3\,Ba^2b^2+2\,Aab^3\right)e^5\right)x^3+36\left(5\,Bb^4d^3e^2+4\left(4\,Bab^3+Ab^4\right)d^2e^3+10\left(3\,Ba^2b^2+2\,Aab^3\right)de^4+20\left(2\,Ba^3b+3\,Aa^2b^2\right)e^5\right)x^2+9\left(5\,Bb^4d^4e+4\left(4\,Bab^3+Ab^4\right)d^3e^2+10\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^3+20\left(2\,Ba^3b+3\,Aa^2b^2\right)de^4+35\left(Ba^4+4\,Aa^3b\right)e^5\right)x}{2520\left(e^{15}x^9+9\,de^{14}x^8+36\,d^2e^{13}x^7+84\,d^3e^{12}x^6+126\,d^4e^{11}x^5+126\,d^5e^{10}x^4+84\,d^6e^9x^3+36\,d^7e^8x^2+9\,d^8e^7x+d^9e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(630*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 280*A*a^4*e^5 + 4*(4*B*a*b^3 + A
*b^4)*d^4*e + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 20*(2*B*a^3*b + 3*A*a^
2*b^2)*d^2*e^3 + 35*(B*a^4 + 4*A*a^3*b)*d*e^4 + 126*(5*B*b^4*d*e^4 + 4*(4*B
*a*b^3 + A*b^4)*e^5)*x^4 + 84*(5*B*b^4*d^2*e^3 + 4*(4*B*a*b^3 + A*b^4)*d*e^
4 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 36*(5*B*b^4*d^3*e^2 + 4*(4*B*a*
b^3 + A*b^4)*d^2*e^3 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 20*(2*B*a^3*b +
 3*A*a^2*b^2)*e^5)*x^2 + 9*(5*B*b^4*d^4*e + 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 +
 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 20*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4
+ 35*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7
 + 84*d^3*e^12*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 +
 36*d^7*e^8*x^2 + 9*d^8*e^7*x + d^9*e^6)
```

mupad [B] time = 0.19, size = 501, normalized size = 2.43

$$-\frac{\frac{35\,B\,a^4\,d\,e^4+280\,A\,a^4\,e^5+40\,B\,a^3\,b\,d^2\,e^3+140\,A\,a^3\,b\,d\,e^4+30\,B\,a^2\,b^2\,d^3\,e^2+60\,A\,a^2\,b^2\,d^2\,e^3+16\,B\,a\,b^3\,d^4\,e+20\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+4\,A\,b^4\,d^4\,e}{2520\,e^6}+\frac{x\,\left(35\,B\,a^4\,e^4+40\,B\,a^3\,b\,d\,e^3+140\,A\,a^3\,b\,e^4+30\,B\,a^2\,b^2\,d^2\,e^2+60\,A\,a^2\,b^2\,d\,e^3+16\,B\,a\,b^3\,d^3\,e+20\,A\,a\,b^3\,d^2\,e^2+5\,B\,b^4\,d^4+4\,A\,b^4\,d^3\,e\right)}{280\,e^5}+\frac{b^3\,x^4\,\left(4\,A\,b\,e+16\,B\,a\,e+5\,B\,b\,d\right)}{20\,e^2}+\frac{b\,x^2\,\left(40\,B\,a^3\,e^3+30\,B\,a^2\,b\,d\,e^2+60\,A\,a^2\,b\,e^3+16\,B\,a\,b^2\,d^2\,e+20\,A\,a\,b^2\,d\,e^2+5\,B\,b^3\,d^3+4\,A\,b^3\,d^2\,e\right)}{70\,e^4}+\frac{b^2\,x^3\,\left(30\,B\,a^2\,e^2+16\,B\,a\,b\,d\,e+20\,A\,a\,b\,e^2+5\,B\,b^2\,d^2+4\,A\,b^2\,d\,e\right)}{30\,e^3}+\frac{B\,b^4\,x^5}{4\,e}}{d^9+9\,d^8\,e\,x+36\,d^7\,e^2\,x^2+84\,d^6\,e^3\,x^3+126\,d^5\,e^4\,x^4+126\,d^4\,e^5\,x^5+84\,d^3\,e^6\,x^6+36\,d^2\,e^7\,x^7+9\,d\,e^8\,x^8+e^9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^4*e^5 + 5*B*b^4*d^5 + 4*A*b^4*d^4*e + 35*B*a^4*d*e^4 + 20*A*a*b^
3*d^3*e^2 + 40*B*a^3*b*d^2*e^3 + 60*A*a^2*b^2*d^2*e^3 + 30*B*a^2*b^2*d^3*e^
2 + 140*A*a^3*b*d*e^4 + 16*B*a*b^3*d^4*e)/(2520*e^6) + (x*(35*B*a^4*e^4 + 5
*B*b^4*d^4 + 140*A*a^3*b*e^4 + 4*A*b^4*d^3*e + 20*A*a*b^3*d^2*e^2 + 60*A*a^
2*b^2*d*e^3 + 30*B*a^2*b^2*d^2*e^2 + 16*B*a*b^3*d^3*e + 40*B*a^3*b*d*e^3))/
(280*e^5) + (b^3*x^4*(4*A*b*e + 16*B*a*e + 5*B*b*d))/(20*e^2) + (b*x^2*(40*
B*a^3*e^3 + 5*B*b^3*d^3 + 60*A*a^2*b*e^3 + 4*A*b^3*d^2*e + 20*A*a*b^2*d*e^2
 + 16*B*a*b^2*d^2*e + 30*B*a^2*b*d*e^2))/(70*e^4) + (b^2*x^3*(30*B*a^2*e^2
+ 5*B*b^2*d^2 + 20*A*a*b*e^2 + 4*A*b^2*d*e + 16*B*a*b*d*e))/(30*e^3) + (B*b
^4*x^5)/(4*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 + 36*d^7*e^2*x^2 + 84*d^6*e^3*x
^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d^3*e^6*x^6 + 36*d^2*e^7*x^7 +
9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1471 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=206

$$\frac{b^3(-4aBe-Abe+5bBd)}{6e^6(d+ex)^6}-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6(d+ex)^7}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd)}{4e^6(d+ex)^8}-\frac{(bd-ae)^3(\cdots}{9\cdots}$$

Rubi [A] time = 0.16, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{b^3(-4aBe-Abe+5bBd)}{6e^6(d+ex)^6}-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6(d+ex)^7}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd)}{4e^6(d+ex)^8}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{9e^6(d+ex)^9}+\frac{(bd-ae)^4(Bd-Ae)}{10e^6(d+ex)^{10}}-\frac{b^4B}{5e^6(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^11,x]
```

```
[Out] ((b*d - a*e)^4*(B*d - A*e))/(10*e^6*(d + e*x)^10) - ((b*d - a*e)^3*(5*b*B*d
 - 4*A*b*e - a*B*e))/(9*e^6*(d + e*x)^9) + (b*(b*d - a*e)^2*(5*b*B*d - 3*A*
b*e - 2*a*B*e))/(4*e^6*(d + e*x)^8) - (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
 - 3*a*B*e))/(7*e^6*(d + e*x)^7) + (b^3*(5*b*B*d - A*b*e - 4*a*B*e))/(6*e^6
*(d + e*x)^6) - (b^4*B)/(5*e^6*(d + e*x)^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{11}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{11}}\,dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{11}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{10}}+\frac{2b(bd\cdots}{\cdots}\right.\\
&= \frac{(bd-ae)^4(Bd-Ae)}{10e^6(d+ex)^{10}}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{9e^6(d+ex)^9}+\frac{b(bd-ae)^2(5bBd\cdots}{4e^6(d\cdots}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 320, normalized size = 1.55

$$-\frac{14a^4e^4(9Ae+B(d+10ex))+14a^3be^3\left(4Ae(d+10ex)+B\left(d^2+10dex+45e^2x^2\right)\right)+3a^2b^2e^2\left(7Ae\left(d^2+10dex+45e^2x^2\right)+3B\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)\right)+2ab^3e\left(3Ae\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)+2B\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)\right)+b^4\left(Ae\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)+B\left(d^5+10d^4ex+45d^3e^2x^2+120d^2e^3x^3+210de^4x^4+252e^5x^5\right)\right)}{1260e^6(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^11,x]
```

```
[Out] -1/1260*(14*a^4*e^4*(9*A*e + B*(d + 10*e*x)) + 14*a^3*b*e^3*(4*A*e*(d + 10*
e*x) + B*(d^2 + 10*d*e*x + 45*e^2*x^2)) + 3*a^2*b^2*e^2*(7*A*e*(d^2 + 10*d*
e*x + 45*e^2*x^2) + 3*B*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3)) +
2*a*b^3*e*(3*A*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 2*B*(d^4
 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)) + b^4*(A*e*(
d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4) + B*(d^5 +
 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^
5)))/(e^6*(d + e*x)^10)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^11, x]
```

fricas [B] time = 0.40, size = 501, normalized size = 2.43

$$-\frac{252 Bb^4e^5x^5 + Bb^4d^5 + 126 Aa^4e^5 + \left(4 Bab^3 + Ab^4\right)d^4e + 3\left(3 Ba^2b^2 + 2 Aab^3\right)d^3e^2 + 7\left(2 Ba^3b + 3 Aa^2b^2\right)d^2e^3 + 14\left(Ba^4 + 4 Aa^3b\right)de^4 + 210\left(Bb^4de^4 + \left(4 Bab^3 + Ab^4\right)e^5\right)x^4 + 120\left(Bb^4d^2e^3 + \left(4 Bab^3 + Ab^4\right)de^4 + 3\left(3 Ba^2b^2 + 2 Aab^3\right)e^5\right)x^3 + 45\left(Bb^4d^3e^2 + \left(4 Bab^3 + Ab^4\right)d^2e^3 + 3\left(3 Ba^2b^2 + 2 Aab^3\right)de^4 + 7\left(2 Ba^3b + 3 Aa^2b^2\right)e^5\right)x^2 + 10\left(Bb^4d^4e + \left(4 Bab^3 + Ab^4\right)d^3e^2 + 3\left(3 Ba^2b^2 + 2 Aab^3\right)d^2e^3 + 7\left(2 Ba^3b + 3 Aa^2b^2\right)de^4 + 14\left(Ba^4 + 4 Aa^3b\right)e^5\right)x}{1260\left(e^{16}x^{10} + 10 de^{15}x^9 + 45 d^2e^{14}x^8 + 120 d^3e^{13}x^7 + 210 d^4e^{12}x^6 + 252 d^5e^{11}x^5 + 210 d^6e^{10}x^4 + 120 d^7e^9x^3 + 45 d^8e^8x^2 + 10 d^9e^7x + d^{10}e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x, algorithm="fricas")
```

```
[Out] -1/1260*(252*B*b^4*e^5*x^5 + B*b^4*d^5 + 126*A*a^4*e^5 + (4*B*a*b^3 + A*b^4
)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 7*(2*B*a^3*b + 3*A*a^2*b^2)
*d^2*e^3 + 14*(B*a^4 + 4*A*a^3*b)*d*e^4 + 210*(B*b^4*d*e^4 + (4*B*a*b^3 + A
*b^4)*e^5)*x^4 + 120*(B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3*B*a^
2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 45*(B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e
^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x
^2 + 10*(B*b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^2*e^3 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 14*(B*a^4 + 4*A*a^3*b)*
e^5)*x)/(e^16*x^10 + 10*d*e^15*x^9 + 45*d^2*e^14*x^8 + 120*d^3*e^13*x^7 + 2
10*d^4*e^12*x^6 + 252*d^5*e^11*x^5 + 210*d^6*e^10*x^4 + 120*d^7*e^9*x^3 + 4
5*d^8*e^8*x^2 + 10*d^9*e^7*x + d^10*e^6)
```

giac [B] time = 0.17, size = 438, normalized size = 2.13

$$-\frac{\left(252 Bb^4x^5e^5 + 210 Bb^4dx^4e^4 + 120 Bb^4d^2x^3e^3 + 45 Bb^4d^3x^2e^2 + 10 Bb^4d^4xe + Bb^4d^5 + 840 Bab^3x^4e^5 + 210 Ab^4x^4e^5 + 480 Bab^3dx^3e^4 + 120 Ab^4dx^3e^4 + 180 Bab^3d^2x^2e^3 + 45 Ab^4d^2x^2e^3 + 40 Bab^3d^3xe^2 + 10 Ab^4d^3xe^2 + 4 Bab^3d^4e + Ab^4d^4e + 1080 Ba^2b^2x^3e^5 + 720 Aab^3x^3e^5 + 405 Ba^2b^2dx^2e^4 + 270 Aab^3dx^2e^4 + 90 Ba^2b^2d^2xe^3 + 60 Aab^3d^2xe^3 + 9 Ba^2b^2d^3e^2 + 6 Aab^3d^3e^2 + 630 Ba^3bx^2e^5 + 945 Aa^2b^2x^2e^5 + 140 Ba^3bdxe^4 + 210 Aa^2b^2dxe^4 + 14 Ba^3bd^2e^3 + 21 Aa^2b^2d^2e^3 + 140 Ba^4xe^5 + 560 Aa^3bxe^5 + 14 Ba^4de^4 + 56 Aa^3bde^4 + 126 Aa^4e^5\right)e^{(-6)}}{1260\,(xe+d)^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x, algorithm="giac")
```

```
[Out] -1/1260*(252*B*b^4*x^5*e^5 + 210*B*b^4*d*x^4*e^4 + 120*B*b^4*d^2*x^3*e^3 +
45*B*b^4*d^3*x^2*e^2 + 10*B*b^4*d^4*x*e + B*b^4*d^5 + 840*B*a*b^3*x^4*e^5 +
 210*A*b^4*x^4*e^5 + 480*B*a*b^3*d*x^3*e^4 + 120*A*b^4*d*x^3*e^4 + 180*B*a*
b^3*d^2*x^2*e^3 + 45*A*b^4*d^2*x^2*e^3 + 40*B*a*b^3*d^3*x*e^2 + 10*A*b^4*d^
3*x*e^2 + 4*B*a*b^3*d^4*e + A*b^4*d^4*e + 1080*B*a^2*b^2*x^3*e^5 + 720*A*a*
b^3*x^3*e^5 + 405*B*a^2*b^2*d*x^2*e^4 + 270*A*a*b^3*d*x^2*e^4 + 90*B*a^2*b^
2*d^2*x*e^3 + 60*A*a*b^3*d^2*x*e^3 + 9*B*a^2*b^2*d^3*e^2 + 6*A*a*b^3*d^3*e^
2 + 630*B*a^3*b*x^2*e^5 + 945*A*a^2*b^2*x^2*e^5 + 140*B*a^3*b*d*x*e^4 + 210
*A*a^2*b^2*d*x*e^4 + 14*B*a^3*b*d^2*e^3 + 21*A*a^2*b^2*d^2*e^3 + 140*B*a^4*
x*e^5 + 560*A*a^3*b*x*e^5 + 14*B*a^4*d*e^4 + 56*A*a^3*b*d*e^4 + 126*A*a^4*e
^5)*e^(-6)/(x*e + d)^10
```

maple [B] time = 0.05, size = 430, normalized size = 2.09

$$-\frac{B b^4}{5(ex+d)^5 e^6}-\frac{(Abe+4aBe-5Bbd)b^3}{6(ex+d)^6 e^6}-\frac{2\left(2Aab e^2-2Ab^2de+3Ba^2e^2-8Bdabe+5Bb^2d^2\right)b^2}{7(ex+d)^7 e^6}-\frac{\left(3Aa^2be^3-6Aab^2de^2+3Ab^3d^2e+2Ba^3e^3-9Ba^2bde^2+12Bab^2d^2e-5Bb^3d^3\right)b}{4(ex+d)^8 e^6}-\frac{Aa^4e^5-4Aa^3bde^4+6Aa^2b^2d^2e^3-4Aab^3d^3e^2+Ab^4d^4e-Bda^4e^4+4Bd^2a^3be^3-6Bd^3a^2b^2e^2+4Bd^4ab^3e-b^4Bd^5}{10(ex+d)^{10} e^6}-\frac{4Aa^3be^4-12Aa^2b^2de^3+12Ad^2ab^3e^2-4Ab^4d^3e+Ba^4e^4-8Bda^3be^3+18Bd^2a^2b^2e^2-16Bd^3ab^3e+5b^4Bd^4}{9(ex+d)^9 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x)
```

```
[Out] -1/5*b^4*B/e^6/(e*x+d)^5-1/10*(A*a^4*e^5-4*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^
3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d
^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)^10-2/7*b^2*(2*A*a*b*e^2-2*A*b
^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^6/(e*x+d)^7-1/4*b*(3*A*a^2*b*
e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^
2*e-5*B*b^3*d^3)/e^6/(e*x+d)^8-1/9*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a
*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-1
6*B*a*b^3*d^3*e+5*B*b^4*d^4)/e^6/(e*x+d)^9-1/6*b^3*(A*b*e+4*B*a*e-5*B*b*d)/
e^6/(e*x+d)^6
```

maxima [B] time = 0.64, size = 501, normalized size = 2.43

$$-\frac{252\,Bb^4e^5x^5 + Bb^4d^5 + 126\,Aa^4e^5 + \left(4\,Bab^3 + Ab^4\right)d^4e + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + 7\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 + 14\left(Ba^4 + 4\,Aa^3b\right)de^4 + 210\left(Bb^4de^4 + \left(4\,Bab^3 + Ab^4\right)e^5\right)x^4 + 120\left(Bb^4d^2e^3 + \left(4\,Bab^3 + Ab^4\right)de^4 + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)e^5\right)x^3 + 45\left(Bb^4d^3e^2 + \left(4\,Bab^3 + Ab^4\right)d^2e^3 + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)de^4 + 7\left(2\,Ba^3b + 3\,Aa^2b^2\right)e^5\right)x^2 + 10\left(Bb^4d^4e + \left(4\,Bab^3 + Ab^4\right)d^3e^2 + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^2e^3 + 7\left(2\,Ba^3b + 3\,Aa^2b^2\right)de^4 + 14\left(Ba^4 + 4\,Aa^3b\right)e^5\right)x}{1260\left(e^{16}x^{10} + 10\,de^{15}x^9 + 45\,d^2e^{14}x^8 + 120\,d^3e^{13}x^7 + 210\,d^4e^{12}x^6 + 252\,d^5e^{11}x^5 + 210\,d^6e^{10}x^4 + 120\,d^7e^9x^3 + 45\,d^8e^8x^2 + 10\,d^9e^7x + d^{10}e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x, algorithm="maxima")
```

```
[Out] -1/1260*(252*B*b^4*e^5*x^5 + B*b^4*d^5 + 126*A*a^4*e^5 + (4*B*a*b^3 + A*b^4
)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 7*(2*B*a^3*b + 3*A*a^2*b^2)
*d^2*e^3 + 14*(B*a^4 + 4*A*a^3*b)*d*e^4 + 210*(B*b^4*d*e^4 + (4*B*a*b^3 + A
*b^4)*e^5)*x^4 + 120*(B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3*B*a^
2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 45*(B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e
^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x
^2 + 10*(B*b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^2*e^3 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 14*(B*a^4 + 4*A*a^3*b)*
e^5)*x)/(e^16*x^10 + 10*d*e^15*x^9 + 45*d^2*e^14*x^8 + 120*d^3*e^13*x^7 + 2
10*d^4*e^12*x^6 + 252*d^5*e^11*x^5 + 210*d^6*e^10*x^4 + 120*d^7*e^9*x^3 + 4
5*d^8*e^8*x^2 + 10*d^9*e^7*x + d^10*e^6)
```

mupad [B] time = 0.31, size = 502, normalized size = 2.44

$$-\frac{\frac{14\,B\,a^4\,d\,e^4+126\,A\,a^4\,e^5+14\,B\,a^3\,b\,d^2\,e^3+56\,A\,a^3\,b\,d\,e^4+9\,B\,a^2\,b^2\,d^3\,e^2+21\,A\,a^2\,b^2\,d^2\,e^3+4\,B\,a\,b^3\,d^4\,e+6\,A\,a\,b^3\,d^3\,e^2+B\,b^4\,d^5+A\,b^4\,d^4\,e}{1260\,e^6}+\frac{x\,\left(14\,B\,a^4\,e^4+14\,B\,a^3\,b\,d\,e^3+56\,A\,a^3\,b\,e^4+9\,B\,a^2\,b^2\,d^2\,e^2+21\,A\,a^2\,b^2\,d\,e^3+4\,B\,a\,b^3\,d^3\,e+6\,A\,a\,b^3\,d^2\,e^2+B\,b^4\,d^4+A\,b^4\,d^3\,e\right)}{126\,e^5}+\frac{b^3\,x^4\,\left(A\,b\,e+4\,B\,a\,e+B\,b\,d\right)}{6\,e^2}+\frac{b\,x^2\,\left(14\,B\,a^3\,e^3+9\,B\,a^2\,b\,d\,e^2+21\,A\,a^2\,b\,e^3+4\,B\,a\,b^2\,d^2\,e+6\,A\,a\,b^2\,d\,e^2+B\,b^3\,d^3+A\,b^3\,d^2\,e\right)}{28\,e^4}+\frac{2\,b^2\,x^3\,\left(9\,B\,a^2\,e^2+4\,B\,a\,b\,d\,e+6\,A\,a\,b\,e^2+B\,b^2\,d^2+A\,b^2\,d\,e\right)}{21\,e^3}+\frac{B\,b^4\,x^5}{5\,e}}{d^{10}+10\,d^9\,e\,x+45\,d^8\,e^2\,x^2+120\,d^7\,e^3\,x^3+210\,d^6\,e^4\,x^4+252\,d^5\,e^5\,x^5+210\,d^4\,e^6\,x^6+120\,d^3\,e^7\,x^7+45\,d^2\,e^8\,x^8+10\,d\,e^9\,x^9+e^{10}\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^11,x)
```

```
[Out] -((126*A*a^4*e^5 + B*b^4*d^5 + A*b^4*d^4*e + 14*B*a^4*d*e^4 + 6*A*a*b^3*d^3
*e^2 + 14*B*a^3*b*d^2*e^3 + 21*A*a^2*b^2*d^2*e^3 + 9*B*a^2*b^2*d^3*e^2 + 56
*A*a^3*b*d*e^4 + 4*B*a*b^3*d^4*e)/(1260*e^6) + (x*(14*B*a^4*e^4 + B*b^4*d^4
 + 56*A*a^3*b*e^4 + A*b^4*d^3*e + 6*A*a*b^3*d^2*e^2 + 21*A*a^2*b^2*d*e^3 +
9*B*a^2*b^2*d^2*e^2 + 4*B*a*b^3*d^3*e + 14*B*a^3*b*d*e^3))/(126*e^5) + (b^3
*x^4*(A*b*e + 4*B*a*e + B*b*d))/(6*e^2) + (b*x^2*(14*B*a^3*e^3 + B*b^3*d^3
+ 21*A*a^2*b*e^3 + A*b^3*d^2*e + 6*A*a*b^2*d*e^2 + 4*B*a*b^2*d^2*e + 9*B*a^
2*b*d*e^2))/(28*e^4) + (2*b^2*x^3*(9*B*a^2*e^2 + B*b^2*d^2 + 6*A*a*b*e^2 +
A*b^2*d*e + 4*B*a*b*d*e))/(21*e^3) + (B*b^4*x^5)/(5*e))/(d^10 + e^10*x^10 +
 10*d*e^9*x^9 + 45*d^8*e^2*x^2 + 120*d^7*e^3*x^3 + 210*d^6*e^4*x^4 + 252*d^
5*e^5*x^5 + 210*d^4*e^6*x^6 + 120*d^3*e^7*x^7 + 45*d^2*e^8*x^8 + 10*d^9*e*x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1472 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=206

$$\frac{b^3(-4aBe-Abe+5bBd)}{7e^6(d+ex)^7}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{4e^6(d+ex)^8}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{9e^6(d+ex)^9}-\frac{(bd-ae)}{}$$

Rubi [A] time = 0.17, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{b^3(-4aBe-Abe+5bBd)}{7e^6(d+ex)^7}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{4e^6(d+ex)^8}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{9e^6(d+ex)^9}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{10e^6(d+ex)^{10}}+\frac{(bd-ae)^4(Bd-Ae)}{11e^6(d+ex)^{11}}-\frac{b^4B}{6e^6(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^12,x]
```

```
[Out] ((b*d - a*e)^4*(B*d - A*e))/(11*e^6*(d + e*x)^11) - ((b*d - a*e)^3*(5*b*B*d
 - 4*A*b*e - a*B*e))/(10*e^6*(d + e*x)^10) + (2*b*(b*d - a*e)^2*(5*b*B*d -
3*A*b*e - 2*a*B*e))/(9*e^6*(d + e*x)^9) - (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b
*e - 3*a*B*e))/(4*e^6*(d + e*x)^8) + (b^3*(5*b*B*d - A*b*e - 4*a*B*e))/(7*e
^6*(d + e*x)^7) - (b^4*B)/(6*e^6*(d + e*x)^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{12}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{12}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{12}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{11}}+\frac{2b}{}\right.\\ &= \frac{(bd-ae)^4(Bd-Ae)}{11e^6(d+ex)^{11}}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{10e^6(d+ex)^{10}}+\frac{2b(bd-ae)^2(5}{9e^6}\end{aligned}$$

Mathematica [A] time = 0.14, size = 323, normalized size = 1.57

$$-\frac{126a^4e^4(10Ae+B(d+11ex))+56a^3be^3\left(9Ae(d+11ex)+2B\left(d^2+11dex+55e^2x^2\right)\right)+21a^2b^2e^2\left(8Ae\left(d^2+11dex+55e^2x^2\right)+3B\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)\right)+6ab^3e\left(7Ae\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)+4B\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)\right)+b^4\left(6Ae\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)+5B\left(d^5+11d^4ex+55d^3e^2x^2+165d^2e^3x^3+330de^4x^4+462e^5x^5\right)\right)}{13860e^6(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^12,x]
```

[Out] -1/13860*(126*a^4*e^4*(10*A*e + B*(d + 11*e*x)) + 56*a^3*b*e^3*(9*A*e*(d + 11*e*x) + 2*B*(d^2 + 11*d*e*x + 55*e^2*x^2)) + 21*a^2*b^2*e^2*(8*A*e*(d^2 + 11*d*e*x + 55*e^2*x^2) + 3*B*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2 + 165*e^3*x^3)) + 6*a*b^3*e*(7*A*e*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2 + 165*e^3*x^3) + 4*B*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4)) + b^4*(6*A*e*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4) + 5*B*(d^5 + 11*d^4*e*x + 55*d^3*e^2*x^2 + 165*d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5)))/(e^6*(d + e*x)^11)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{12}}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^12,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^12, x]

fricas [B] time = 0.40, size = 522, normalized size = 2.53

$$-\frac{2310\,Bb^4e^5x^5+5\,Bb^4d^5+1260\,Aa^4e^5+6\left(4\,Bab^3+Ab^4\right)d^4e+21\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+56\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+126\left(Ba^4+4\,Aa^3b\right)de^4+330\left(5\,Bb^4de^4+6\left(4\,Bab^3+Ab^4\right)e^5\right)x^4+165\left(5\,Bb^4d^2e^3+6\left(4\,Bab^3+Ab^4\right)de^4+21\left(3\,Ba^2b^2+2\,Aab^3\right)e^5\right)x^3+55\left(5\,Bb^4d^3e^2+6\left(4\,Bab^3+Ab^4\right)d^2e^3+21\left(3\,Ba^2b^2+2\,Aab^3\right)de^4+56\left(2\,Ba^3b+3\,Aa^2b^2\right)e^5\right)x^2+11\left(5\,Bb^4d^4e+6\left(4\,Bab^3+Ab^4\right)d^3e^2+21\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^3+56\left(2\,Ba^3b+3\,Aa^2b^2\right)de^4+126\left(Ba^4+4\,Aa^3b\right)e^5\right)x}{13860\left(e^{17}x^{11}+11\,de^{16}x^{10}+55\,d^2e^{15}x^9+165\,d^3e^{14}x^8+330\,d^4e^{13}x^7+462\,d^5e^{12}x^6+462\,d^6e^{11}x^5+330\,d^7e^{10}x^4+165\,d^8e^9x^3+55\,d^9e^8x^2+11\,d^{10}e^7x+d^{11}e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x, algorithm="fricas")

[Out] -1/13860*(2310*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 1260*A*a^4*e^5 + 6*(4*B*a*b^3 + A*b^4)*d^4*e + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 56*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + 126*(B*a^4 + 4*A*a^3*b)*d*e^4 + 330*(5*B*b^4*d*e^4 + 6*(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 165*(5*B*b^4*d^2*e^3 + 6*(4*B*a*b^3 + A*b^4)*d*e^4 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 55*(5*B*b^4*d^3*e^2 + 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 56*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 11*(5*B*b^4*d^4*e + 6*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 56*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 126*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^17*x^11 + 11*d*e^16*x^10 + 55*d^2*e^15*x^9 + 165*d^3*e^14*x^8 + 330*d^4*e^13*x^7 + 462*d^5*e^12*x^6 + 462*d^6*e^11*x^5 + 330*d^7*e^10*x^4 + 165*d^8*e^9*x^3 + 55*d^9*e^8*x^2 + 11*d^10*e^7*x + d^11*e^6)

giac [B] time = 0.16, size = 440, normalized size = 2.14

$$-\frac{\left(2310\,Bb^4x^5e^5+1650\,Bb^4dx^4e^4+825\,Bb^4d^2x^3e^3+275\,Bb^4d^3x^2e^2+55\,Bb^4d^4xe+5\,Bb^4d^5+7920\,Bab^3x^4e^5+1980\,Ab^4x^4e^5+3960\,Bab^3dx^3e^4+990\,Ab^4dx^3e^4+1320\,Bab^3d^2x^2e^3+330\,Ab^4d^2x^2e^3+264\,Bab^3d^3xe^2+66\,Ab^4d^3xe^2+24\,Bab^3d^4e+6\,Ab^4d^4e+10395\,Ba^2b^2x^3e^5+6930\,Aab^3x^3e^5+3465\,Ba^2b^2dx^2e^4+2310\,Aab^3dx^2e^4+693\,Ba^2b^2d^2xe^3+462\,Aab^3d^2xe^3+63\,Ba^2b^2d^3e^2+42\,Aab^3d^3e^2+6160\,Ba^3bx^2e^5+9240\,Aa^2b^2x^2e^5+1232\,Ba^3bdxe^4+1848\,Aa^2b^2dxe^4+112\,Ba^3bd^2e^3+168\,Aa^2b^2d^2e^3+1386\,Ba^4xe^5+5544\,Aa^3bxe^5+126\,Ba^4de^4+504\,Aa^3bde^4+1260\,Aa^4e^5\right)e^{(-6)}}{13860\,(xe+d)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x, algorithm="giac")

[Out] -1/13860*(2310*B*b^4*x^5*e^5 + 1650*B*b^4*d*x^4*e^4 + 825*B*b^4*d^2*x^3*e^3 + 275*B*b^4*d^3*x^2*e^2 + 55*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 7920*B*a*b^3*x^4*e^5 + 1980*A*b^4*x^4*e^5 + 3960*B*a*b^3*d*x^3*e^4 + 990*A*b^4*d*x^3*e^4 + 1320*B*a*b^3*d^2*x^2*e^3 + 330*A*b^4*d^2*x^2*e^3 + 264*B*a*b^3*d^3*x*e^2 + 66*A*b^4*d^3*x*e^2 + 24*B*a*b^3*d^4*e + 6*A*b^4*d^4*e + 10395*B*a^2*b^2*x^3*e^5 + 6930*A*a*b^3*x^3*e^5 + 3465*B*a^2*b^2*d*x^2*e^4 + 2310*A*a*b^3*d*x^2*e^4 + 693*B*a^2*b^2*d^2*x*e^3 + 462*A*a*b^3*d^2*x*e^3 + 63*B*a^2*b^2*d^3*e^2 + 42*A*a*b^3*d^3*e^2 + 6160*B*a^3*b*x^2*e^5 + 9240*A*a^2*b^2*x^2*e^5 + 1232*B*a^3*b*d*x*e^4 + 1848*A*a^2*b^2*d*x*e^4 + 112*B*a^3*b*d^2*e^3 + 168*A*a^2*b^2*d^2*e^3 + 1386*B*a^4*x*e^5 + 5544*A*a^3*b*x*e^5 + 126*B*a^4*d*e^4 + 504*A*a^3*b*d*e^4 + 1260*A*a^4*e^5)*e^(-6)/(x*e + d)^11

maple [B] time = 0.05, size = 430, normalized size = 2.09

$$-\frac{B b^4}{6 (ex+d)^6 e^6}-\frac{(Abe+4Bae-5Bbd) b^3}{7 (ex+d)^7 e^6}-\frac{\left(2Aab e^2-2Ab^2de+3Ba^2e^2-8Babde+5Bb^2d^2\right) b^2}{4 (ex+d)^8 e^6}-\frac{2\left(3Aa^2be^3-6Aab^2de^2+3Ab^3d^2e+2Ba^3e^3-9Ba^2bde^2+12Bab^2d^2e-5Bb^3d^3\right) b}{9 (ex+d)^9 e^6}-\frac{Aa^4e^5-4Aa^3bde^4+6Aa^2b^2d^2e^3-4Aab^3d^3e^2+Ab^4d^4e-Ba^4de^4+4Ba^3bd^2e^3-6Ba^2b^2d^3e^2+4Bab^3d^4e-Bb^4d^5}{11 (ex+d)^{11} e^6}-\frac{4Aa^3be^4-12Aa^2b^2de^3+12Aab^3d^2e^2-4Ab^4d^3e+Ba^4e^4-8Ba^3bde^3+18Ba^2b^2d^2e^2-16Bab^3d^3e+5Bb^4d^4}{10 (ex+d)^{10} e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x)
```

```
[Out] -1/11*(A*a^4*e^5-4*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^
4*d^4*e-B*a^4*d*e^4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B
*b^4*d^5)/e^6/(e*x+d)^11-1/10*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*
d^2*e^2-4*A*b^4*d^3*e+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a
*b^3*d^3*e+5*B*b^4*d^4)/e^6/(e*x+d)^10-1/7*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/
(e*x+d)^7-1/4*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*
d^2)/e^6/(e*x+d)^8-2/9*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a
^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d)^9-1/6*b^4*
B/e^6/(e*x+d)^6
```

maxima [B] time = 0.70, size = 522, normalized size = 2.53

$$-\frac{2310 Bb^4e^5x^5+5 Bb^4d^5+1260 Aa^4e^5+6\left(4 Bab^3+Ab^4\right)d^4e+21\left(3 Ba^2b^2+2 Aab^3\right)d^3e^2+56\left(2 Ba^3b+3 Aa^2b^2\right)d^2e^3+126\left(Ba^4+4 Aa^3b\right)de^4+330\left(5 Bb^4de^4+6\left(4 Bab^3+Ab^4\right)e^5\right)x^4+165\left(5 Bb^4d^2e^3+6\left(4 Bab^3+Ab^4\right)de^4+21\left(3 Ba^2b^2+2 Aab^3\right)e^5\right)x^3+55\left(5 Bb^4d^3e^2+6\left(4 Bab^3+Ab^4\right)d^2e^3+21\left(3 Ba^2b^2+2 Aab^3\right)de^4+56\left(2 Ba^3b+3 Aa^2b^2\right)e^5\right)x^2+11\left(5 Bb^4d^4e+6\left(4 Bab^3+Ab^4\right)d^3e^2+21\left(3 Ba^2b^2+2 Aab^3\right)d^2e^3+56\left(2 Ba^3b+3 Aa^2b^2\right)de^4+126\left(Ba^4+4 Aa^3b\right)e^5\right)x}{13860\left(e^{17}x^{11}+11 de^{16}x^{10}+55 d^2e^{15}x^9+165 d^3e^{14}x^8+330 d^4e^{13}x^7+462 d^5e^{12}x^6+462 d^6e^{11}x^5+330 d^7e^{10}x^4+165 d^8e^9x^3+55 d^9e^8x^2+11 d^{10}e^7x+d^{11}e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x, algorithm="maxima")
```

```
[Out] -1/13860*(2310*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 1260*A*a^4*e^5 + 6*(4*B*a*b^3
+ A*b^4)*d^4*e + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 56*(2*B*a^3*b + 3*A
*a^2*b^2)*d^2*e^3 + 126*(B*a^4 + 4*A*a^3*b)*d*e^4 + 330*(5*B*b^4*d*e^4 + 6*
(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 165*(5*B*b^4*d^2*e^3 + 6*(4*B*a*b^3 + A*b^4)
*d*e^4 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 55*(5*B*b^4*d^3*e^2 + 6*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 56*(2*B*a^
3*b + 3*A*a^2*b^2)*e^5)*x^2 + 11*(5*B*b^4*d^4*e + 6*(4*B*a*b^3 + A*b^4)*d^3
*e^2 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 56*(2*B*a^3*b + 3*A*a^2*b^2)*
d*e^4 + 126*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^17*x^11 + 11*d*e^16*x^10 + 55*d^
2*e^15*x^9 + 165*d^3*e^14*x^8 + 330*d^4*e^13*x^7 + 462*d^5*e^12*x^6 + 462*d
^6*e^11*x^5 + 330*d^7*e^10*x^4 + 165*d^8*e^9*x^3 + 55*d^9*e^8*x^2 + 11*d^10
*e^7*x + d^11*e^6)
```

mupad [B] time = 0.27, size = 523, normalized size = 2.54

$$-\frac{\frac{126 B a^4 d e^4+1260 A a^4 e^5+112 B a^3 b d^2 e^3+504 A a^3 b d e^4+63 B a^2 b^2 d^3 e^2+168 A a^2 b^2 d^2 e^3+24 B a b^3 d^4 e+42 A a b^3 d^3 e^2+5 B b^4 d^5+6 A b^4 d^4 e}{13860 e^6}+\frac{x\left(126 B a^4 e^4+112 B a^3 b d e^3+504 A a^3 b e^4+63 B a^2 b^2 d^2 e^2+168 A a^2 b^2 d e^3+24 B a b^3 d^3 e+42 A a b^3 d^2 e^2+5 B b^4 d^4+6 A b^4 d^3 e\right)}{1260 e^5}+\frac{b^3 x^4 (6 A b e+24 B a e+5 B b d)}{42 e^2}+\frac{b x^2\left(112 B a^3 e^3+63 B a^2 b d e^2+168 A a^2 b e^3+24 B a b^2 d^2 e+42 A a b^2 d e^2+5 B b^3 d^3+6 A b^3 d^2 e\right)}{252 e^4}+\frac{b^2 x^3\left(63 B a^2 e^2+24 B a b d e+42 A a b e^2+5 B b^2 d^2+6 A b^2 d e\right)}{84 e^3}+\frac{B b^4 x^5}{6 e}}{d^{11}+11 d^{10} e x+55 d^9 e^2 x^2+165 d^8 e^3 x^3+330 d^7 e^4 x^4+462 d^6 e^5 x^5+462 d^5 e^6 x^6+330 d^4 e^7 x^7+165 d^3 e^8 x^8+55 d^2 e^9 x^9+11 d e^{10} x^{10}+e^{11} x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^12,x)
```

```
[Out] -((1260*A*a^4*e^5 + 5*B*b^4*d^5 + 6*A*b^4*d^4*e + 126*B*a^4*d*e^4 + 42*A*a*
b^3*d^3*e^2 + 112*B*a^3*b*d^2*e^3 + 168*A*a^2*b^2*d^2*e^3 + 63*B*a^2*b^2*d^
3*e^2 + 504*A*a^3*b*d*e^4 + 24*B*a*b^3*d^4*e)/(13860*e^6) + (x*(126*B*a^4*e
^4 + 5*B*b^4*d^4 + 504*A*a^3*b*e^4 + 6*A*b^4*d^3*e + 42*A*a*b^3*d^2*e^2 + 1
68*A*a^2*b^2*d*e^3 + 63*B*a^2*b^2*d^2*e^2 + 24*B*a*b^3*d^3*e + 112*B*a^3*b*
d*e^3))/(1260*e^5) + (b^3*x^4*(6*A*b*e + 24*B*a*e + 5*B*b*d))/(42*e^2) + (b
*x^2*(112*B*a^3*e^3 + 5*B*b^3*d^3 + 168*A*a^2*b*e^3 + 6*A*b^3*d^2*e + 42*A*
a*b^2*d*e^2 + 24*B*a*b^2*d^2*e + 63*B*a^2*b*d*e^2))/(252*e^4) + (b^2*x^3*(6
3*B*a^2*e^2 + 5*B*b^2*d^2 + 42*A*a*b*e^2 + 6*A*b^2*d*e + 24*B*a*b*d*e))/(84
*e^3) + (B*b^4*x^5)/(6*e))/(d^11 + e^11*x^11 + 11*d*e^10*x^10 + 55*d^9*e^2*
x^2 + 165*d^8*e^3*x^3 + 330*d^7*e^4*x^4 + 462*d^6*e^5*x^5 + 462*d^5*e^6*x^6
 + 330*d^4*e^7*x^7 + 165*d^3*e^8*x^8 + 55*d^2*e^9*x^9 + 11*d^10*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**12,x)
```

```
[Out] Timed out
```

3.1473 $\int \frac{(A+Bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=187

$$\frac{e^3(a+bx)^3(-5aBe+Abe+4bBd)}{3b^6}+\frac{e^2(a+bx)^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6}-\frac{(Ab-aB)(bd-ae)^4}{b^6(a+bx)}+\frac{(bd-$$

Rubi [A] time = 0.27, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$\frac{e^2(a+bx)^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6}+\frac{e^3(a+bx)^3(-5aBe+Abe+4bBd)}{3b^6}-\frac{(Ab-aB)(bd-ae)^4}{b^6(a+bx)}+\frac{2ex(bd-ae)^2(-5aBe+3Abe+2bBd)}{b^5}+\frac{(bd-ae)^3\log(a+bx)(-5aBe+4Abe+bBd)}{b^6}+\frac{Be^4(a+bx)^4}{4b^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e - 5*a*B*e)*x)/b^5 - ((A*b - a*B)*(b*d
 - a*e)^4)/(b^6*(a + b*x)) + (e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e - 5*a*B*e)
*(a + b*x)^2)/b^6 + (e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)^3)/(3*b^6) +
 (B*e^4*(a + b*x)^4)/(4*b^6) + ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e)*L
og[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^4}{(a+bx)^2}\,dx\\ &= \int \left(\frac{2e(bd-ae)^2(2bBd+3Abe-5aBe)}{b^5}+\frac{(Ab-aB)(bd-ae)^4}{b^5(a+bx)^2}+\frac{(bd-ae)^3(bBd+}{b^5(a+}\right.\\ &= \frac{2e(bd-ae)^2(2bBd+3Abe-5aBe)x}{b^5}-\frac{(Ab-aB)(bd-ae)^4}{b^6(a+bx)}+\frac{e^2(bd-ae)(3bBd+2}{}\end{aligned}$$

Mathematica [A] time = 0.17, size = 365, normalized size = 1.95

$$\frac{-4Ab\left(3a^4e^4-3a^3be^3(4d+3ex)+6a^2b^2e^2\left(3d^2+4dex-e^2x^2\right)+2ab^3e\left(-6d^3-9d^2ex+9de^2x^2+e^3x^3\right)+b^4\left(3d^4-18d^2e^2x^2-6de^3x^3-e^4x^4\right)\right)+B\left(12a^5e^4-48a^4be^3(d+ex)+6a^3b^2e^2\left(12d^2+24dex-5e^2x^2\right)+2a^2b^3e\left(-24d^3-72d^2ex+48de^2x^2+5e^3x^3\right)+ab^4\left(12d^4+48d^3ex-108d^2e^2x^2-32de^3x^3-5e^4x^4\right)+b^5ex^2\left(48d^3+36d^2ex+16de^2x^2+3e^3x^3\right)\right)+12(a+bx)(bd-ae)^3\log(a+bx)(-5aBe+4Abe+bBd)}{12b^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*(12*a^5*e^4 - 48*a^4*b*e^3*(d + e*x) + 6*a^3*b^2*e^2*(12*d^2 + 24*d*e*x
- 5*e^2*x^2) + b^5*e*x^2*(48*d^3 + 36*d^2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3) +
```

```
2*a^2*b^3*e*(-24*d^3 - 72*d^2*e*x + 48*d*e^2*x^2 + 5*e^3*x^3) + a*b^4*(12*
d^4 + 48*d^3*e*x - 108*d^2*e^2*x^2 - 32*d*e^3*x^3 - 5*e^4*x^4)) - 4*A*b*(3*
a^4*e^4 - 3*a^3*b*e^3*(4*d + 3*e*x) + 6*a^2*b^2*e^2*(3*d^2 + 4*d*e*x - e^2*
x^2) + 2*a*b^3*e*(-6*d^3 - 9*d^2*e*x + 9*d*e^2*x^2 + e^3*x^3) + b^4*(3*d^4
- 18*d^2*e^2*x^2 - 6*d*e^3*x^3 - e^4*x^4)) + 12*(b*d - a*e)^3*(b*B*d + 4*A*
b*e - 5*a*B*e)*(a + b*x)*Log[a + b*x])/(12*b^6*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.43, size = 610, normalized size = 3.26

$$\frac{3 Bb^5e^4x^5 + 12 \left(Bab^4 - Ab^5\right)d^4 - 48 \left(Ba^2b^3 - Aab^4\right)d^3e + 72 \left(Ba^3b^2 - Aa^2b^3\right)d^2e^2 - 48 \left(Ba^4b - Aa^3b^2\right)de^3 + 12 \left(Ba^5 - Aa^4b\right)e^4 + \left(16 Bb^5de^3 - \left(5 Bab^4 - 4 Ab^5\right)e^4\right)x^4 + 2 \left(18 Bb^5d^2e^2 - 4 \left(4 Bab^4 - 3 Ab^5\right)de^3 + \left(5 Ba^2b^3 - 4 Aab^4\right)e^4\right)x^3 + 6 \left(8 Bb^5d^3e - 6 \left(3 Bab^4 - 2 Ab^5\right)d^2e^2 + 4 \left(4 Ba^2b^3 - 3 Aab^4\right)de^3 - \left(5 Ba^3b^2 - 4 Aa^2b^3\right)e^4\right)x^2 + 12 \left(4 Bab^4d^3e - 6 \left(2 Ba^2b^3 - Aab^4\right)d^2e^2 + 4 \left(3 Ba^3b^2 - 2 Aa^2b^3\right)de^3 - \left(4 Ba^4b - 3 Aa^3b^2\right)e^4\right)x + 12 \left(Bab^4d^4 - 4 \left(2 Ba^2b^3 - Aab^4\right)d^3e + 6 \left(3 Ba^3b^2 - 2 Aa^2b^3\right)d^2e^2 - 4 \left(4 Ba^4b - 3 Aa^3b^2\right)de^3 + \left(5 Ba^5 - 4 Aa^4b\right)e^4 + \left(Bb^5d^4 - 4 \left(2 Bab^4 - Ab^5\right)d^3e + 6 \left(3 Ba^2b^3 - 2 Aab^4\right)d^2e^2 - 4 \left(4 Ba^3b^2 - 3 Aa^2b^3\right)de^3 + \left(5 Ba^4b - 4 Aa^3b^2\right)e^4\right)x\right)\log\left(bx + a\right)}{12 \left(b^7x + ab^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^5*e^4*x^5 + 12*(B*a*b^4 - A*b^5)*d^4 - 48*(B*a^2*b^3 - A*a*b^4)
*d^3*e + 72*(B*a^3*b^2 - A*a^2*b^3)*d^2*e^2 - 48*(B*a^4*b - A*a^3*b^2)*d*e^
3 + 12*(B*a^5 - A*a^4*b)*e^4 + (16*B*b^5*d*e^3 - (5*B*a*b^4 - 4*A*b^5)*e^4)
*x^4 + 2*(18*B*b^5*d^2*e^2 - 4*(4*B*a*b^4 - 3*A*b^5)*d*e^3 + (5*B*a^2*b^3 -
 4*A*a*b^4)*e^4)*x^3 + 6*(8*B*b^5*d^3*e - 6*(3*B*a*b^4 - 2*A*b^5)*d^2*e^2 +
 4*(4*B*a^2*b^3 - 3*A*a*b^4)*d*e^3 - (5*B*a^3*b^2 - 4*A*a^2*b^3)*e^4)*x^2 +
 12*(4*B*a*b^4*d^3*e - 6*(2*B*a^2*b^3 - A*a*b^4)*d^2*e^2 + 4*(3*B*a^3*b^2 -
 2*A*a^2*b^3)*d*e^3 - (4*B*a^4*b - 3*A*a^3*b^2)*e^4)*x + 12*(B*a*b^4*d^4 -
4*(2*B*a^2*b^3 - A*a*b^4)*d^3*e + 6*(3*B*a^3*b^2 - 2*A*a^2*b^3)*d^2*e^2 - 4
*(4*B*a^4*b - 3*A*a^3*b^2)*d*e^3 + (5*B*a^5 - 4*A*a^4*b)*e^4 + (B*b^5*d^4 -
 4*(2*B*a*b^4 - A*b^5)*d^3*e + 6*(3*B*a^2*b^3 - 2*A*a*b^4)*d^2*e^2 - 4*(4*B
*a^3*b^2 - 3*A*a^2*b^3)*d*e^3 + (5*B*a^4*b - 4*A*a^3*b^2)*e^4)*x)*log(b*x +
 a))/(b^7*x + a*b^6)
```

giac [B] time = 0.17, size = 433, normalized size = 2.32

$$\frac{\left(Bb^4d^4 - 8 Bab^3d^3e + 4 Ab^4d^3e + 18 Ba^2b^2d^2e^2 - 12 Aab^3d^2e^2 - 16 Ba^3bde^3 + 12 Aa^2b^2de^3 + 5 Ba^4e^4 - 4 Aa^3be^4\right)\log\left(|bx + a|\right)}{b^6} + \frac{Bab^4d^4 - Ab^5d^4 - 4 Ba^2b^3d^3e + 4 Aab^4d^3e + 6 Ba^3b^2d^2e^2 - 6 Aa^2b^3d^2e^2 - 4 Ba^4bde^3 + 4 Aa^3b^2de^3 + Ba^5e^4 - Aa^4be^4}{(bx + a)b^6} + \frac{3 Bb^6e^4x^4 + 16 Bb^6dx^3e^3 + 36 Bb^6d^2x^2e^2 + 48 Bb^6d^3xe - 8 Bab^5x^3e^4 + 4 Ab^6x^3e^4 - 48 Bab^5dx^2e^3 + 24 Ab^6dx^2e^3 - 144 Bab^5d^2xe^2 + 72 Ab^6d^2xe^2 + 18 Ba^2b^4x^2e^4 - 12 Aab^5x^2e^4 + 144 Ba^2b^4dxe^3 - 96 Aab^5dxe^3 - 48 Ba^3b^3xe^4 + 36 Aa^2b^4xe^4}{12 b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^4*d^4 - 8*B*a*b^3*d^3*e + 4*A*b^4*d^3*e + 18*B*a^2*b^2*d^2*e^2 - 12*A*
a*b^3*d^2*e^2 - 16*B*a^3*b*d*e^3 + 12*A*a^2*b^2*d*e^3 + 5*B*a^4*e^4 - 4*A*a
^3*b*e^4)*log(abs(b*x + a))/b^6 + (B*a*b^4*d^4 - A*b^5*d^4 - 4*B*a^2*b^3*d^
3*e + 4*A*a*b^4*d^3*e + 6*B*a^3*b^2*d^2*e^2 - 6*A*a^2*b^3*d^2*e^2 - 4*B*a^4
*b*d*e^3 + 4*A*a^3*b^2*d*e^3 + B*a^5*e^4 - A*a^4*b*e^4)/((b*x + a)*b^6) + 1
/12*(3*B*b^6*x^4*e^4 + 16*B*b^6*d*x^3*e^3 + 36*B*b^6*d^2*x^2*e^2 + 48*B*b^6
*d^3*x*e - 8*B*a*b^5*x^3*e^4 + 4*A*b^6*x^3*e^4 - 48*B*a*b^5*d*x^2*e^3 + 24*
A*b^6*d*x^2*e^3 - 144*B*a*b^5*d^2*x*e^2 + 72*A*b^6*d^2*x*e^2 + 18*B*a^2*b^4
*x^2*e^4 - 12*A*a*b^5*x^2*e^4 + 144*B*a^2*b^4*d*x*e^3 - 96*A*a*b^5*d*x*e^3
- 48*B*a^3*b^3*x*e^4 + 36*A*a^2*b^4*x*e^4)/b^8
```

maple [B] time = 0.06, size = 564, normalized size = 3.02

$$\frac{Be^4x^4}{4b^2} + \frac{Ae^4x^3}{3b^2} - \frac{2Bae^4x^3}{3b^3} + \frac{4Bde^3x^3}{3b^2} - \frac{Aae^4x^2}{b^3} + \frac{2Ade^3x^2}{b^2} + \frac{3Ba^2e^4x^2}{2b^4} - \frac{4Bade^3x^2}{b^3} + \frac{3Bd^2e^2x^2}{b^2} - \frac{Aa^4e^4}{(bx+a)b^5} + \frac{4Aa^3de^3}{(bx+a)b^4} - \frac{4Aa^3e^4\ln(bx+a)}{b^5} - \frac{6Aa^2d^2e^2}{(bx+a)b^3} + \frac{12Aa^2de^3\ln(bx+a)}{b^4} + \frac{3Aa^2e^4x}{b^4} + \frac{4Aad^3e}{(bx+a)b^2} - \frac{12Aad^2e^2\ln(bx+a)}{b^3} - \frac{8Aade^3x}{b^3} - \frac{Ad^4}{(bx+a)b} + \frac{4Ad^3e\ln(bx+a)}{b^2} + \frac{6Ad^2e^2x}{b^2} + \frac{Ba^5e^4}{(bx+a)b^6} - \frac{4Ba^4de^3}{(bx+a)b^5} + \frac{5Ba^4e^4\ln(bx+a)}{b^6} + \frac{6Ba^3d^2e^2}{(bx+a)b^4} - \frac{16Ba^3de^3\ln(bx+a)}{b^5} - \frac{4Ba^3e^4x}{b^5} - \frac{4Ba^2d^3e}{(bx+a)b^3} + \frac{18Ba^2d^2e^2\ln(bx+a)}{b^4} + \frac{12Ba^2de^3x}{b^4} + \frac{Bad^4}{(bx+a)b^2} - \frac{8Bad^3e\ln(bx+a)}{b^3} - \frac{12Bad^2e^2x}{b^3} + \frac{Bd^4\ln(bx+a)}{b^2} + \frac{4Bd^3ex}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 4/3*e^3/b^2*B*x^3*d-4/b^5*ln(b*x+a)*A*a^3*e^4+4/b^2*ln(b*x+a)*A*d^3*e+5/b^6
*ln(b*x+a)*B*a^4*e^4-1/b^5/(b*x+a)*A*a^4*e^4+1/b^6/(b*x+a)*B*a^5*e^4-4*e^4/
b^5*B*a^3*x-e^4/b^3*A*x^2*a+2*e^3/b^2*A*x^2*d+6/b^4/(b*x+a)*B*a^3*d^2*e^2-4
/b^3/(b*x+a)*B*a^2*d^3*e-12*e^2/b^3*B*a*d^2*x-4*e^3/b^3*B*x^2*a*d-8*e^3/b^3
*A*a*d*x-4/b^5/(b*x+a)*B*a^4*d*e^3+12*e^3/b^4*B*a^2*d*x-8/b^3*ln(b*x+a)*B*d
^3*a*e+4/b^4/(b*x+a)*A*a^3*d*e^3+3/2*e^4/b^4*B*x^2*a^2+1/b^2*ln(b*x+a)*B*d^
4-1/b/(b*x+a)*A*d^4+1/4*e^4/b^2*B*x^4+1/3*e^4/b^2*A*x^3+3*e^2/b^2*B*x^2*d^2
+3*e^4/b^4*A*a^2*x+6*e^2/b^2*A*d^2*x+1/b^2/(b*x+a)*B*a*d^4-2/3*e^4/b^3*B*x^
3*a-6/b^3/(b*x+a)*A*a^2*d^2*e^2+4/b^2/(b*x+a)*A*a*d^3*e+12/b^4*ln(b*x+a)*A*
a^2*d*e^3-12/b^3*ln(b*x+a)*A*d^2*a*e^2-16/b^5*ln(b*x+a)*B*d*a^3*e^3+18/b^4*
ln(b*x+a)*B*d^2*a^2*e^2+4*e/b^2*B*d^3*x
```

maxima [B] time = 0.60, size = 411, normalized size = 2.20

$$\frac{(Bab^4 - Ab^5)d^4 - 4(Ba^2b^3 - Aab^4)d^3e + 6(Ba^3b^2 - Aa^2b^3)d^2e^2 - 4(Ba^4b - Aa^3b^2)de^3 + (Ba^5 - Aa^4b)e^4}{b^7x + ab^6} + \frac{3Bb^3e^4x^4 + 4(4Bb^3de^3 - (2Bab^2 - Ab^3)e^4)x^3 + 6(6Bb^3d^2e^2 - 4(2Bab^2 - Ab^3)de^3 + (3Ba^2b - 2Aab^2)e^4)x^2 + 12(4Bb^3d^3e - 6(2Bab^2 - Ab^3)d^2e^2 + 4(3Ba^2b - 2Aab^2)de^3 - (4Ba^3 - 3Aa^2b)e^4)x}{12b^5} + \frac{(Bb^4d^4 - 4(2Bab^3 - Ab^4)d^3e + 6(3Ba^2b^2 - 2Aab^3)d^2e^2 - 4(4Ba^3b - 3Aa^2b^2)de^3 + (5Ba^4 - 4Aa^3b)e^4)\log(bx + a)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] ((B*a*b^4 - A*b^5)*d^4 - 4*(B*a^2*b^3 - A*a*b^4)*d^3*e + 6*(B*a^3*b^2 - A*a
^2*b^3)*d^2*e^2 - 4*(B*a^4*b - A*a^3*b^2)*d*e^3 + (B*a^5 - A*a^4*b)*e^4)/(b
^7*x + a*b^6) + 1/12*(3*B*b^3*e^4*x^4 + 4*(4*B*b^3*d*e^3 - (2*B*a*b^2 - A*b
^3)*e^4)*x^3 + 6*(6*B*b^3*d^2*e^2 - 4*(2*B*a*b^2 - A*b^3)*d*e^3 + (3*B*a^2*
b - 2*A*a*b^2)*e^4)*x^2 + 12*(4*B*b^3*d^3*e - 6*(2*B*a*b^2 - A*b^3)*d^2*e^2
 + 4*(3*B*a^2*b - 2*A*a*b^2)*d*e^3 - (4*B*a^3 - 3*A*a^2*b)*e^4)*x)/b^5 + (B
*b^4*d^4 - 4*(2*B*a*b^3 - A*b^4)*d^3*e + 6*(3*B*a^2*b^2 - 2*A*a*b^3)*d^2*e^
2 - 4*(4*B*a^3*b - 3*A*a^2*b^2)*d*e^3 + (5*B*a^4 - 4*A*a^3*b)*e^4)*log(b*x
+ a)/b^6
```

mupad [B] time = 2.15, size = 486, normalized size = 2.60

$$x^3\left(\frac{Ae^4+4Bde^3}{3b^2}-\frac{2Bae^4}{3b^3}\right)-x^2\left(\frac{a\left(\frac{Ae^4+4Bde^3}{b^2}-\frac{2Bae^4}{b^3}\right)}{b}-\frac{de^2(2Ae+3Bd)}{b^2}+\frac{Ba^2e^4}{2b^4}\right)+x\left(\frac{2a\left(\frac{2a\left(\frac{Ae^4+4Bde^3}{b^2}-\frac{2Bae^4}{b^3}\right)}{b}-\frac{2de^2(2Ae+3Bd)}{b^2}+\frac{Ba^2e^4}{b^4}\right)}{b}-\frac{a^2\left(\frac{Ae^4+4Bde^3}{b^2}-\frac{2Bae^4}{b^3}\right)}{b^2}+\frac{2d^2e(3Ae+2Bd)}{b^2}\right)+\frac{\ln(a+bx)\left(5Ba^4e^4-16Ba^3bde^3-4Aa^3be^4+18Ba^2b^2d^2e^2+12Aa^2b^2de^3-8Bab^3d^3e-12Aab^3d^2e^2+Bb^4d^4+4Ab^4d^3e\right)}{b^6}-\frac{-Ba^5e^4+4Ba^4bde^3+Aa^4be^4-6Ba^3b^2d^2e^2-4Aa^3b^2de^3+4Ba^2b^3d^3e+6Aa^2b^3d^2e^2-Bab^4d^4-4Aab^4d^3e+Ab^5d^4}{b\left(xb^6+ab^5\right)}+\frac{Be^4x^4}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((A*e^4 + 4*B*d*e^3)/(3*b^2) - (2*B*a*e^4)/(3*b^3)) - x^2*((a*((A*e^4 +
 4*B*d*e^3)/b^2 - (2*B*a*e^4)/b^3))/b - (d*e^2*(2*A*e + 3*B*d))/b^2 + (B*a^
2*e^4)/(2*b^4)) + x*((2*a*((2*a*((A*e^4 + 4*B*d*e^3)/b^2 - (2*B*a*e^4)/b^3)
)/b - (2*d*e^2*(2*A*e + 3*B*d))/b^2 + (B*a^2*e^4)/b^4))/b - (a^2*((A*e^4 +
4*B*d*e^3)/b^2 - (2*B*a*e^4)/b^3))/b^2 + (2*d^2*e*(3*A*e + 2*B*d))/b^2) + (
log(a + b*x)*(5*B*a^4*e^4 + B*b^4*d^4 - 4*A*a^3*b*e^4 + 4*A*b^4*d^3*e - 12*
A*a*b^3*d^2*e^2 + 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 - 8*B*a*b^3*d^3
*e - 16*B*a^3*b*d*e^3))/b^6 - (A*b^5*d^4 - B*a^5*e^4 + A*a^4*b*e^4 - B*a*b^
4*d^4 - 4*A*a^3*b^2*d*e^3 + 4*B*a^2*b^3*d^3*e + 6*A*a^2*b^3*d^2*e^2 - 6*B*a
^3*b^2*d^2*e^2 - 4*A*a*b^4*d^3*e + 4*B*a^4*b*d*e^3)/(b*(a*b^5 + b^6*x)) + (
B*e^4*x^4)/(4*b^2)
```

sympy [B] time = 2.08, size = 396, normalized size = 2.12

$$\frac{Be^4x^4}{4b^2} + x^3\left(\frac{Ae^4}{3b^2} - \frac{2Bae^4}{3b^3} + \frac{4Bde^3}{3b^2}\right) + x^2\left(-\frac{Aae^4}{b^3} + \frac{2Ade^3}{b^2} + \frac{3Ba^2e^4}{2b^4} - \frac{4Bade^3}{b^3} + \frac{3Bd^2e^2}{b^2}\right) + x\left(\frac{3Aa^2e^4}{b^4} - \frac{8Aade^3}{b^3} + \frac{6Ad^2e^2}{b^2} - \frac{4Ba^3e^4}{b^5} + \frac{12Ba^2de^3}{b^4} - \frac{12Bad^2e^2}{b^3} + \frac{4Bd^3e}{b^2}\right) + \frac{-Aa^4be^4 + 4Aa^3b^2de^3 - 6Aa^2b^3d^2e^2 + 4Aab^4d^3e - Ab^5d^4 + Ba^5e^4 - 4Ba^4bde^3 + 6Ba^3b^2d^2e^2 - 4Ba^2b^3d^3e + Bab^4d^4}{ab^6 + b^7x} + \frac{(ae - bd)^3(-4Abe + 5Bae - Bbd)\log(a + bx)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e**4*x**4/(4*b**2) + x**3*(A*e**4/(3*b**2) - 2*B*a*e**4/(3*b**3) + 4*B*d*
e**3/(3*b**2)) + x**2*(-A*a*e**4/b**3 + 2*A*d*e**3/b**2 + 3*B*a**2*e**4/(2*
b**4) - 4*B*a*d*e**3/b**3 + 3*B*d**2*e**2/b**2) + x*(3*A*a**2*e**4/b**4 - 8
*A*a*d*e**3/b**3 + 6*A*d**2*e**2/b**2 - 4*B*a**3*e**4/b**5 + 12*B*a**2*d*e*
*3/b**4 - 12*B*a*d**2*e**2/b**3 + 4*B*d**3*e/b**2) + (-A*a**4*b*e**4 + 4*A*
a**3*b**2*d*e**3 - 6*A*a**2*b**3*d**2*e**2 + 4*A*a*b**4*d**3*e - A*b**5*d**
4 + B*a**5*e**4 - 4*B*a**4*b*d*e**3 + 6*B*a**3*b**2*d**2*e**2 - 4*B*a**2*b*
*3*d**3*e + B*a*b**4*d**4)/(a*b**6 + b**7*x) + (a*e - b*d)**3*(-4*A*b*e + 5
*B*a*e - B*b*d)*log(a + b*x)/b**6
```

3.1474 $\int \frac{(A+Bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=145

$$\frac{e^2(a+bx)^2(-4aBe+Abe+3bBd)}{2b^5}-\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{(bd-ae)^2\log(a+bx)(-4aBe+3Abe+bBd)}{b^5}+\frac{3ex(b$$

Rubi [A] time = 0.18, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{e^2(a+bx)^2(-4aBe+Abe+3bBd)}{2b^5}-\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{3ex(bd-ae)(-2aBe+Abe+bBd)}{b^4}+\frac{(bd-ae)^2\log(a+bx)(-4aBe+3Abe+bBd)}{b^5}+\frac{Be^3(a+bx)^3}{3b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (3*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*x)/b^4 - ((A*b - a*B)*(b*d - a*e
)^3)/(b^5*(a + b*x)) + (e^2*(3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^2)/(2*b^5
) + (B*e^3*(a + b*x)^3)/(3*b^5) + ((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e
)*Log[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^3}{(a+bx)^2}\,dx\\ &= \int \left(\frac{3e(bd-ae)(bBd+Abe-2aBe)}{b^4}+\frac{(Ab-aB)(bd-ae)^3}{b^4(a+bx)^2}+\frac{(bd-ae)^2(bBd+3A}{b^4(a+bx)}\right.\\ &= \frac{3e(bd-ae)(bBd+Abe-2aBe)x}{b^4}-\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{e^2(3bBd+Abe-4aBe)(}{2b^5}\end{aligned}$$

Mathematica [A] time = 0.12, size = 250, normalized size = 1.72

$$\frac{-3Ab\left(-2a^3e^3+2a^2be^2(3d+2ex)+3ab^2e\left(-2d^2-2dex+e^2x^2\right)+b^3\left(2d^3-6de^2x^2-e^3x^3\right)\right)+B\left(-6a^4e^3+18a^3be^2(d+ex)+6a^2b^2e\left(-3d^2-6dex+2e^2x^2\right)+ab^3\left(6d^3+18d^2ex-27de^2x^2-4e^3x^3\right)+b^4ex^2\left(18d^2+9dex+2e^2x^2\right)\right)+6(a+bx)(bd-ae)^2\log(a+bx)(-4aBe+3Abe+bBd)}{6b^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*(-6*a^4*e^3 + 18*a^3*b*e^2*(d + e*x) + 6*a^2*b^2*e*(-3*d^2 - 6*d*e*x + 2
*e^2*x^2) + b^4*e*x^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2) + a*b^3*(6*d^3 + 18*d^
```

```
2*e*x - 27*d*e^2*x^2 - 4*e^3*x^3)) - 3*A*b*(-2*a^3*e^3 + 2*a^2*b*e^2*(3*d +
 2*e*x) + 3*a*b^2*e*(-2*d^2 - 2*d*e*x + e^2*x^2) + b^3*(2*d^3 - 6*d*e^2*x^2
 - e^3*x^3)) + 6*(b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e)*(a + b*x)*Log[a
+ b*x])/(6*b^5*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.43, size = 417, normalized size = 2.88

$$\frac{2\,Bb^4e^3x^4+6\left(Bab^3-Ab^4\right)d^3-18\left(Ba^2b^2-Aab^3\right)d^2e+18\left(Ba^3b-Aa^2b^2\right)de^2-6\left(Ba^4-Aa^3b\right)e^3+\left(9\,Bb^4de^2-\left(4\,Bab^3-3\,Ab^4\right)e^3\right)x^3+3\left(6\,Bb^4d^2e-3\left(3\,Bab^3-2\,Ab^4\right)de^2+\left(4\,Ba^2b^2-3\,Aab^3\right)e^3\right)x^2+6\left(3\,Bab^3d^2e-3\left(2\,Ba^2b^2-Aab^3\right)de^2+\left(3\,Ba^3b-2\,Aa^2b^2\right)e^3\right)x+6\left(Bab^3d^3-3\left(2\,Ba^2b^2-Aab^3\right)d^2e+3\left(3\,Ba^3b-2\,Aa^2b^2\right)de^2-\left(4\,Ba^4-3\,Aa^3b\right)e^3+\left(Bb^4d^3-3\left(2\,Bab^3-Ab^4\right)d^2e+3\left(3\,Ba^2b^2-2\,Aab^3\right)de^2-\left(4\,Ba^3b-3\,Aa^2b^2\right)e^3\right)x\right)\log\left(bx+a\right)}{6\left(b^6x+ab^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*e^3*x^4 + 6*(B*a*b^3 - A*b^4)*d^3 - 18*(B*a^2*b^2 - A*a*b^3)*d
^2*e + 18*(B*a^3*b - A*a^2*b^2)*d*e^2 - 6*(B*a^4 - A*a^3*b)*e^3 + (9*B*b^4*
d*e^2 - (4*B*a*b^3 - 3*A*b^4)*e^3)*x^3 + 3*(6*B*b^4*d^2*e - 3*(3*B*a*b^3 -
2*A*b^4)*d*e^2 + (4*B*a^2*b^2 - 3*A*a*b^3)*e^3)*x^2 + 6*(3*B*a*b^3*d^2*e -
3*(2*B*a^2*b^2 - A*a*b^3)*d*e^2 + (3*B*a^3*b - 2*A*a^2*b^2)*e^3)*x + 6*(B*a
*b^3*d^3 - 3*(2*B*a^2*b^2 - A*a*b^3)*d^2*e + 3*(3*B*a^3*b - 2*A*a^2*b^2)*d*
e^2 - (4*B*a^4 - 3*A*a^3*b)*e^3 + (B*b^4*d^3 - 3*(2*B*a*b^3 - A*b^4)*d^2*e
+ 3*(3*B*a^2*b^2 - 2*A*a*b^3)*d*e^2 - (4*B*a^3*b - 3*A*a^2*b^2)*e^3)*x)*log
(b*x + a))/(b^6*x + a*b^5)
```

giac [B] time = 0.16, size = 282, normalized size = 1.94

$$\frac{\left(Bb^3d^3-6\,Bab^2d^2e+3\,Ab^3d^2e+9\,Ba^2bde^2-6\,Aab^2de^2-4\,Ba^3e^3+3\,Aa^2be^3\right)\log\left(|bx+a|\right)}{b^5}+\frac{2\,Bb^4x^3e^3+9\,Bb^4dx^2e^2+18\,Bb^4d^2xe-6\,Bab^3x^2e^3+3\,Ab^4x^2e^3-36\,Bab^3dxe^2+18\,Ab^4dxe^2+18\,Ba^2b^2xe^3-12\,Aab^3xe^3}{6\,b^6}+\frac{Bab^3d^3-Ab^4d^3-3\,Ba^2b^2d^2e+3\,Aab^3d^2e+3\,Ba^3bde^2-3\,Aa^2b^2de^2-Ba^4e^3+Aa^3be^3}{(bx+a)b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^3*d^3 - 6*B*a*b^2*d^2*e + 3*A*b^3*d^2*e + 9*B*a^2*b*d*e^2 - 6*A*a*b^2*
d*e^2 - 4*B*a^3*e^3 + 3*A*a^2*b*e^3)*log(abs(b*x + a))/b^5 + 1/6*(2*B*b^4*x
^3*e^3 + 9*B*b^4*d*x^2*e^2 + 18*B*b^4*d^2*x*e - 6*B*a*b^3*x^2*e^3 + 3*A*b^4
*x^2*e^3 - 36*B*a*b^3*d*x*e^2 + 18*A*b^4*d*x*e^2 + 18*B*a^2*b^2*x*e^3 - 12*
A*a*b^3*x*e^3)/b^6 + (B*a*b^3*d^3 - A*b^4*d^3 - 3*B*a^2*b^2*d^2*e + 3*A*a*b
^3*d^2*e + 3*B*a^3*b*d*e^2 - 3*A*a^2*b^2*d*e^2 - B*a^4*e^3 + A*a^3*b*e^3)/(
(b*x + a)*b^5)
```

maple [B] time = 0.06, size = 376, normalized size = 2.59

$$\frac{Be^3x^3}{3b^2}+\frac{Ae^3x^2}{2b^2}-\frac{Bae^3x^2}{b^3}+\frac{3Bde^2x^2}{2b^2}+\frac{Aa^3e^3}{(bx+a)\,b^4}-\frac{3Aa^2de^2}{(bx+a)\,b^3}+\frac{3Aa^2e^3\ln(bx+a)}{b^4}+\frac{3Aad^2e}{(bx+a)\,b^2}-\frac{6Aade^2\ln(bx+a)}{b^3}-\frac{2Aae^3x}{b^3}-\frac{Ad^3}{(bx+a)\,b}+\frac{3Ad^2e\ln(bx+a)}{b^2}+\frac{3Ade^2x}{b^2}-\frac{Ba^4e^3}{(bx+a)\,b^5}+\frac{3Ba^3de^2}{(bx+a)\,b^4}-\frac{4Ba^3e^3\ln(bx+a)}{b^5}-\frac{3Ba^2d^2e}{(bx+a)\,b^3}+\frac{9Ba^2de^2\ln(bx+a)}{b^4}+\frac{3Ba^2e^3x}{b^4}+\frac{Bad^3}{(bx+a)\,b^2}-\frac{6Bad^2e\ln(bx+a)}{b^3}-\frac{6Bade^2x}{b^3}+\frac{Bd^3\ln(bx+a)}{b^2}+\frac{3Bd^2ex}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/3*e^3/b^2*B*x^3+1/2*e^3/b^2*A*x^2-e^3/b^3*B*x^2*a+3/2*e^2/b^2*B*x^2*d-2*e
^3/b^3*A*x*a+3*e^2/b^2*A*x*d+3*e^3/b^4*B*x*a^2-6*e^2/b^3*B*x*a*d+3*e/b^2*B*
x*d^2+3/b^4*ln(b*x+a)*A*a^2*e^3-6/b^3*ln(b*x+a)*A*a*d*e^2+3/b^2*ln(b*x+a)*A
*d^2*e-4/b^5*ln(b*x+a)*B*a^3*e^3+9/b^4*ln(b*x+a)*B*a^2*d*e^2-6/b^3*ln(b*x+a
)*B*a*d^2*e+1/b^2*ln(b*x+a)*B*d^3+1/b^4/(b*x+a)*A*a^3*e^3-3/b^3/(b*x+a)*A*a
```

```
^2*d*e^2+3/b^2/(b*x+a)*A*a*d^2*e-1/b/(b*x+a)*A*d^3-1/b^5/(b*x+a)*B*a^4*e^3+
3/b^4/(b*x+a)*B*a^3*d*e^2-3/b^3/(b*x+a)*B*a^2*d^2*e+1/b^2/(b*x+a)*B*a*d^3
```

maxima [A] time = 0.53, size = 273, normalized size = 1.88

$$\frac{\left(Bab^3 - Ab^4\right)d^3 - 3\left(Ba^2b^2 - Aab^3\right)d^2e + 3\left(Ba^3b - Aa^2b^2\right)de^2 - \left(Ba^4 - Aa^3b\right)e^3}{b^6x + ab^5} + \frac{2Bb^2e^3x^3 + 3\left(3Bb^2de^2 - \left(2Bab - Ab^2\right)e^3\right)x^2 + 6\left(3Bb^2d^2e - 3\left(2Bab - Ab^2\right)de^2 + \left(3Ba^2 - 2Aab\right)e^3\right)x}{6b^4} + \frac{\left(Bb^3d^3 - 3\left(2Bab^2 - Ab^3\right)d^2e + 3\left(3Ba^2b - 2Aab^2\right)de^2 - \left(4Ba^3 - 3Aa^2b\right)e^3\right)\log\left(bx + a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] ((B*a*b^3 - A*b^4)*d^3 - 3*(B*a^2*b^2 - A*a*b^3)*d^2*e + 3*(B*a^3*b - A*a^2
*b^2)*d*e^2 - (B*a^4 - A*a^3*b)*e^3)/(b^6*x + a*b^5) + 1/6*(2*B*b^2*e^3*x^3
 + 3*(3*B*b^2*d*e^2 - (2*B*a*b - A*b^2)*e^3)*x^2 + 6*(3*B*b^2*d^2*e - 3*(2*
B*a*b - A*b^2)*d*e^2 + (3*B*a^2 - 2*A*a*b)*e^3)*x)/b^4 + (B*b^3*d^3 - 3*(2*
B*a*b^2 - A*b^3)*d^2*e + 3*(3*B*a^2*b - 2*A*a*b^2)*d*e^2 - (4*B*a^3 - 3*A*a
^2*b)*e^3)*log(b*x + a)/b^5
```

mupad [B] time = 0.10, size = 293, normalized size = 2.02

$$x^2\left(\frac{Ae^3 + 3Bde^2}{2b^2} - \frac{Bae^3}{b^3}\right) - x\left(\frac{2a\left(\frac{Ae^3+3Bde^2}{b^2} - \frac{2Bae^3}{b^3}\right)}{b} - \frac{3de\left(Ae + Bd\right)}{b^2} + \frac{Ba^2e^3}{b^4}\right) + \frac{\ln\left(a + bx\right)\left(-4Ba^3e^3 + 9Ba^2bde^2 + 3Aa^2be^3 - 6Bab^2d^2e - 6Aab^2de^2 + Bb^3d^3 + 3Ab^3d^2e\right)}{b^5} - \frac{Ba^4e^3 - 3Ba^3bde^2 - Aa^3be^3 + 3Ba^2b^2d^2e + 3Aa^2b^2de^2 - Bab^3d^3 - 3Aab^3d^2e + Ab^4d^3}{b\left(xb^5 + ab^4\right)} + \frac{Be^3x^3}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((A*e^3 + 3*B*d*e^2)/(2*b^2) - (B*a*e^3)/b^3) - x*((2*a*((A*e^3 + 3*B*d
*e^2)/b^2 - (2*B*a*e^3)/b^3))/b - (3*d*e*(A*e + B*d))/b^2 + (B*a^2*e^3)/b^4
) + (log(a + b*x)*(B*b^3*d^3 - 4*B*a^3*e^3 + 3*A*a^2*b*e^3 + 3*A*b^3*d^2*e
- 6*A*a*b^2*d*e^2 - 6*B*a*b^2*d^2*e + 9*B*a^2*b*d*e^2))/b^5 - (A*b^4*d^3 +
B*a^4*e^3 - A*a^3*b*e^3 - B*a*b^3*d^3 + 3*A*a^2*b^2*d*e^2 + 3*B*a^2*b^2*d^2
*e - 3*A*a*b^3*d^2*e - 3*B*a^3*b*d*e^2)/(b*(a*b^4 + b^5*x)) + (B*e^3*x^3)/(
3*b^2)
```

sympy [A] time = 1.43, size = 257, normalized size = 1.77

$$\frac{Be^3x^3}{3b^2} + x^2\left(\frac{Ae^3}{2b^2} - \frac{Bae^3}{b^3} + \frac{3Bde^2}{2b^2}\right) + x\left(-\frac{2Aae^3}{b^3} + \frac{3Ade^2}{b^2} + \frac{3Ba^2e^3}{b^4} - \frac{6Bade^2}{b^3} + \frac{3Bd^2e}{b^2}\right) + \frac{Aa^3be^3 - 3Aa^2b^2de^2 + 3Aab^3d^2e - Ab^4d^3 - Ba^4e^3 + 3Ba^3bde^2 - 3Ba^2b^2d^2e + Bab^3d^3}{ab^5 + b^6x} - \frac{\left(ae - bd\right)^2\left(-3Abe + 4Bae - Bbd\right)\log\left(a + bx\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e**3*x**3/(3*b**2) + x**2*(A*e**3/(2*b**2) - B*a*e**3/b**3 + 3*B*d*e**2/(
2*b**2)) + x*(-2*A*a*e**3/b**3 + 3*A*d*e**2/b**2 + 3*B*a**2*e**3/b**4 - 6*B
*a*d*e**2/b**3 + 3*B*d**2*e/b**2) + (A*a**3*b*e**3 - 3*A*a**2*b**2*d*e**2 +
 3*A*a*b**3*d**2*e - A*b**4*d**3 - B*a**4*e**3 + 3*B*a**3*b*d*e**2 - 3*B*a*
*2*b**2*d**2*e + B*a*b**3*d**3)/(a*b**5 + b**6*x) - (a*e - b*d)**2*(-3*A*b*
e + 4*B*a*e - B*b*d)*log(a + b*x)/b**5
```

3.1475 $\int \frac{(A+Bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=99

$$-\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{(bd-ae)\log(a+bx)(-3aBe+2Abe+bBd)}{b^4}+\frac{ex(-2aBe+Abe+2bBd)}{b^3}+\frac{Be^2x^2}{2b^2}$$

Rubi [A] time = 0.10, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{ex(-2aBe+Abe+2bBd)}{b^3}+\frac{(bd-ae)\log(a+bx)(-3aBe+2Abe+bBd)}{b^4}+\frac{Be^2x^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(2*b*B*d + A*b*e - 2*a*B*e)*x)/b^3 + (B*e^2*x^2)/(2*b^2) - ((A*b - a*B)*
(b*d - a*e)^2)/(b^4*(a + b*x)) + ((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e)*L
og[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^2}{(a+bx)^2}\,dx\\ &= \int \left(\frac{e(2bBd+Abe-2aBe)}{b^3}+\frac{Be^2x}{b^2}+\frac{(Ab-aB)(bd-ae)^2}{b^3(a+bx)^2}+\frac{(bd-ae)(bBd+2Abe-3}{b^3(a+bx)}\right.\\ &= \frac{e(2bBd+Abe-2aBe)x}{b^3}+\frac{Be^2x^2}{2b^2}-\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{(bd-ae)(bBd+2Abe-3a}{b^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 153, normalized size = 1.55

$$\frac{\log(a+bx)\left(3a^2Be^2-2aAbe^2-4abBde+2Ab^2de+b^2Bd^2\right)}{b^4}+\frac{a^3Be^2-a^2Abe^2-2a^2bBde+2aAb^2de+ab^2Bd^2-Ab^3d^2}{b^4(a+bx)}+\frac{ex(-2aBe+Abe+2bBd)}{b^3}+\frac{Be^2x^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(2*b*B*d + A*b*e - 2*a*B*e)*x)/b^3 + (B*e^2*x^2)/(2*b^2) + (-(A*b^3*d^2)
 + a*b^2*B*d^2 + 2*a*A*b^2*d*e - 2*a^2*b*B*d*e - a^2*A*b*e^2 + a^3*B*e^2)/(
```

```
b^4*(a + b*x)) + ((b^2*B*d^2 + 2*A*b^2*d*e - 4*a*b*B*d*e - 2*a*A*b*e^2 + 3*
a^2*B*e^2)*Log[a + b*x])/b^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.42, size = 249, normalized size = 2.52

$$\frac{Bb^3e^2x^3+2\left(Bab^2-Ab^3\right)d^2-4\left(Ba^2b-Aab^2\right)de+2\left(Ba^3-Aa^2b\right)e^2+\left(4\,Bb^3de-\left(3\,Bab^2-2\,Ab^3\right)e^2\right)x^2+2\left(2\,Bab^2de-\left(2\,Ba^2b-Aab^2\right)e^2\right)x+2\left(Bab^2d^2-2\left(2\,Ba^2b-Aab^2\right)de+\left(3\,Ba^3-2\,Aa^2b\right)e^2+\left(Bb^3d^2-2\left(2\,Bab^2-Ab^3\right)de+\left(3\,Ba^2b-2\,Aab^2\right)e^2\right)x\right)\log\left(bx+a\right)}{2\left(b^5x+ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*e^2*x^3 + 2*(B*a*b^2 - A*b^3)*d^2 - 4*(B*a^2*b - A*a*b^2)*d*e +
2*(B*a^3 - A*a^2*b)*e^2 + (4*B*b^3*d*e - (3*B*a*b^2 - 2*A*b^3)*e^2)*x^2 + 2
*(2*B*a*b^2*d*e - (2*B*a^2*b - A*a*b^2)*e^2)*x + 2*(B*a*b^2*d^2 - 2*(2*B*a^
2*b - A*a*b^2)*d*e + (3*B*a^3 - 2*A*a^2*b)*e^2 + (B*b^3*d^2 - 2*(2*B*a*b^2
- A*b^3)*d*e + (3*B*a^2*b - 2*A*a*b^2)*e^2)*x)*log(b*x + a))/(b^5*x + a*b^4
)
```

giac [A] time = 0.15, size = 162, normalized size = 1.64

$$\frac{\left(Bb^2d^2-4\,Babde+2\,Ab^2de+3\,Ba^2e^2-2\,Aabe^2\right)\log\left(|bx+a|\right)}{b^4}+\frac{Bb^2x^2e^2+4\,Bb^2dxe-4\,Babxe^2+2\,Ab^2xe^2}{2\,b^4}+\frac{Bab^2d^2-Ab^3d^2-2\,Ba^2bde+2\,Aab^2de+Ba^3e^2-Aa^2be^2}{(bx+a)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^2*d^2 - 4*B*a*b*d*e + 2*A*b^2*d*e + 3*B*a^2*e^2 - 2*A*a*b*e^2)*log(abs
(b*x + a))/b^4 + 1/2*(B*b^2*x^2*e^2 + 4*B*b^2*d*x*e - 4*B*a*b*x*e^2 + 2*A*b
^2*x*e^2)/b^4 + (B*a*b^2*d^2 - A*b^3*d^2 - 2*B*a^2*b*d*e + 2*A*a*b^2*d*e +
B*a^3*e^2 - A*a^2*b*e^2)/((b*x + a)*b^4)
```

maple [B] time = 0.06, size = 223, normalized size = 2.25

$$\frac{B\,e^2x^2}{2b^2}-\frac{A\,a^2e^2}{(bx+a)\,b^3}+\frac{2Aade}{(bx+a)\,b^2}-\frac{2Aa\,e^2\ln(bx+a)}{b^3}-\frac{A\,d^2}{(bx+a)\,b}+\frac{2Ade\ln(bx+a)}{b^2}+\frac{A\,e^2x}{b^2}+\frac{B\,a^3e^2}{(bx+a)\,b^4}-\frac{2B\,a^2de}{(bx+a)\,b^3}+\frac{3B\,a^2e^2\ln(bx+a)}{b^4}+\frac{Ba\,d^2}{(bx+a)\,b^2}-\frac{4Bade\ln(bx+a)}{b^3}-\frac{2Ba\,e^2x}{b^3}+\frac{B\,d^2\ln(bx+a)}{b^2}+\frac{2Bdex}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/2*B*e^2*x^2/b^2+e^2/b^2*A*x-2*e^2/b^3*a*B*x+2*e/b^2*B*d*x-2/b^3*ln(b*x+a)
*A*a*e^2+2/b^2*ln(b*x+a)*A*d*e+3/b^4*ln(b*x+a)*B*a^2*e^2-4/b^3*ln(b*x+a)*B*
d*a*e+1/b^2*ln(b*x+a)*B*d^2-1/b^3/(b*x+a)*A*a^2*e^2+2/b^2/(b*x+a)*A*a*d*e-1
/b/(b*x+a)*A*d^2+1/b^4/(b*x+a)*B*a^3*e^2-2/b^3/(b*x+a)*B*a^2*d*e+1/b^2/(b*x
+a)*B*a*d^2
```

maxima [A] time = 0.46, size = 158, normalized size = 1.60

$$\frac{\left(Bab^2-Ab^3\right)d^2-2\left(Ba^2b-Aab^2\right)de+\left(Ba^3-Aa^2b\right)e^2}{b^5x+ab^4}+\frac{Bbe^2x^2+2\left(2\,Bbde-(2\,Ba-Ab)e^2\right)x}{2\,b^3}+\frac{\left(Bb^2d^2-2\left(2\,Bab-Ab^2\right)de+\left(3\,Ba^2-2\,Aab\right)e^2\right)\log\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] ((B*a*b^2 - A*b^3)*d^2 - 2*(B*a^2*b - A*a*b^2)*d*e + (B*a^3 - A*a^2*b)*e^2)
/(b^5*x + a*b^4) + 1/2*(B*b*e^2*x^2 + 2*(2*B*b*d*e - (2*B*a - A*b)*e^2)*x)/
b^3 + (B*b^2*d^2 - 2*(2*B*a*b - A*b^2)*d*e + (3*B*a^2 - 2*A*a*b)*e^2)*log(b
*x + a)/b^4
```

mupad [B] time = 2.11, size = 165, normalized size = 1.67

$$x\left(\frac{A\,e^2+2\,B\,d\,e}{b^2}-\frac{2\,B\,a\,e^2}{b^3}\right)+\frac{\ln\left(a+b\,x\right)\,\left(3\,B\,a^2\,e^2-4\,B\,a\,b\,d\,e-2\,A\,a\,b\,e^2+B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{b^4}-\frac{-B\,a^3\,e^2+2\,B\,a^2\,b\,d\,e+A\,a^2\,b\,e^2-B\,a\,b^2\,d^2-2\,A\,a\,b^2\,d\,e+A\,b^3\,d^2}{b\,\left(x\,b^4+a\,b^3\right)}+\frac{B\,e^2\,x^2}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((A*e^2 + 2*B*d*e)/b^2 - (2*B*a*e^2)/b^3) + (log(a + b*x)*(3*B*a^2*e^2 +
B*b^2*d^2 - 2*A*a*b*e^2 + 2*A*b^2*d*e - 4*B*a*b*d*e))/b^4 - (A*b^3*d^2 - B*
a^3*e^2 + A*a^2*b*e^2 - B*a*b^2*d^2 - 2*A*a*b^2*d*e + 2*B*a^2*b*d*e)/(b*(a*
b^3 + b^4*x)) + (B*e^2*x^2)/(2*b^2)
```

sympy [A] time = 0.88, size = 151, normalized size = 1.53

$$\frac{Be^2x^2}{2b^2}+x\left(\frac{Ae^2}{b^2}-\frac{2Bae^2}{b^3}+\frac{2Bde}{b^2}\right)+\frac{-Aa^2be^2+2Aab^2de-Ab^3d^2+Ba^3e^2-2Ba^2bde+Bab^2d^2}{ab^4+b^5x}+\frac{(ae-bd)\,(-2Abe+3Bae-Bbd)\log{(a+bx)}}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e**2*x**2/(2*b**2) + x*(A*e**2/b**2 - 2*B*a*e**2/b**3 + 2*B*d*e/b**2) + (
-A*a**2*b*e**2 + 2*A*a*b**2*d*e - A*b**3*d**2 + B*a**3*e**2 - 2*B*a**2*b*d*
e + B*a*b**2*d**2)/(a*b**4 + b**5*x) + (a*e - b*d)*(-2*A*b*e + 3*B*a*e - B*
b*d)*log(a + b*x)/b**4
```

3.1476 $\int \frac{(A+Bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=60

$$-\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{\log(a+bx)(-2aBe+Abe+bBd)}{b^3}+\frac{Bex}{b^2}$$

Rubi [A] time = 0.06, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$-\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{\log(a+bx)(-2aBe+Abe+bBd)}{b^3}+\frac{Bex}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*e*x)/b^2 - ((A*b - a*B)*(b*d - a*e))/(b^3*(a + b*x)) + ((b*B*d + A*b*e -
 2*a*B*e)*Log[a + b*x])/b^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)}{(a+bx)^2}\,dx\\
&= \int \left(\frac{Be}{b^2}+\frac{(Ab-aB)(bd-ae)}{b^2(a+bx)^2}+\frac{bBd+Abe-2aBe}{b^2(a+bx)}\right)dx\\
&= \frac{Bex}{b^2}-\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{(bBd+Abe-2aBe)\log(a+bx)}{b^3}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 56, normalized size = 0.93

$$\frac{-\frac{(Ab-aB)(bd-ae)}{a+bx}+\log(a+bx)(-2aBe+Abe+bBd)+bBex}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*B*e*x - ((A*b - a*B)*(b*d - a*e))/(a + b*x) + (b*B*d + A*b*e - 2*a*B*e)*
Log[a + b*x])/b^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.41, size = 109, normalized size = 1.82

$$\frac{Bb^2ex^2+Babex+\left(Bab-Ab^2\right)d-\left(Ba^2-Aab\right)e+\left(Babd-\left(2\,Ba^2-Aab\right)e+\left(Bb^2d-\left(2\,Bab-Ab^2\right)e\right)x\right)\log\left(bx+a\right)}{b^4x+ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (B*b^2*e*x^2 + B*a*b*e*x + (B*a*b - A*b^2)*d - (B*a^2 - A*a*b)*e + (B*a*b*d
 - (2*B*a^2 - A*a*b)*e + (B*b^2*d - (2*B*a*b - A*b^2)*e)*x)*log(b*x + a))/(
b^4*x + a*b^3)
```

giac [A] time = 0.16, size = 74, normalized size = 1.23

$$\frac{Bxe}{b^2}+\frac{(Bbd-2\,Bae+Abe)\log\left(|bx+a|\right)}{b^3}+\frac{Babd-Ab^2d-Ba^2e+Aabe}{(bx+a)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] B*x*e/b^2 + (B*b*d - 2*B*a*e + A*b*e)*log(abs(b*x + a))/b^3 + (B*a*b*d - A*
b^2*d - B*a^2*e + A*a*b*e)/((b*x + a)*b^3)
```

maple [A] time = 0.05, size = 106, normalized size = 1.77

$$\frac{Aae}{(bx+a)\,b^2}-\frac{Ad}{(bx+a)\,b}+\frac{Ae\ln(bx+a)}{b^2}-\frac{B\,a^2e}{(bx+a)\,b^3}+\frac{Bad}{(bx+a)\,b^2}-\frac{2Bae\ln(bx+a)}{b^3}+\frac{Bd\ln(bx+a)}{b^2}+\frac{Bex}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] B*e*x/b^2+1/b^2*ln(b*x+a)*A*e-2/b^3*ln(b*x+a)*a*B*e+1/b^2*ln(b*x+a)*B*d+1/b
^2/(b*x+a)*A*a*e-1/b/(b*x+a)*A*d-1/b^3/(b*x+a)*B*a^2*e+1/b^2/(b*x+a)*B*a*d
```

maxima [A] time = 0.56, size = 77, normalized size = 1.28

$$\frac{Bex}{b^2}+\frac{\left(Bab-Ab^2\right)d-\left(Ba^2-Aab\right)e}{b^4x+ab^3}+\frac{(Bbd-(2\,Ba-Ab)e)\log\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] B*e*x/b^2 + ((B*a*b - A*b^2)*d - (B*a^2 - A*a*b)*e)/(b^4*x + a*b^3) + (B*b*
d - (2*B*a - A*b)*e)*log(b*x + a)/b^3
```

mupad [B] time = 0.10, size = 75, normalized size = 1.25

$$\frac{\ln\left(a+b\,x\right)\,\left(A\,b\,e-2\,B\,a\,e+B\,b\,d\right)}{b^3}-\frac{A\,b^2\,d+B\,a^2\,e-A\,a\,b\,e-B\,a\,b\,d}{b\,\left(x\,b^3+a\,b^2\right)}+\frac{B\,e\,x}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (log(a + b*x)*(A*b*e - 2*B*a*e + B*b*d))/b^3 - (A*b^2*d + B*a^2*e - A*a*b*e
 - B*a*b*d)/(b*(a*b^2 + b^3*x)) + (B*e*x)/b^2
```

sympy [A] time = 0.43, size = 71, normalized size = 1.18

$$\frac{Bex}{b^2} + \frac{Aabe - Ab^2d - Ba^2e + Babd}{ab^3 + b^4x} - \frac{(-Abe + 2Bae - Bbd)\log(a + bx)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e*x/b**2 + (A*a*b*e - A*b**2*d - B*a**2*e + B*a*b*d)/(a*b**3 + b**4*x) -
(-A*b*e + 2*B*a*e - B*b*d)*log(a + b*x)/b**3
```

3.1477 $\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=32

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

Rubi [A] time = 0.02, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] -((A*b - a*B)/(b^2*(a + b*x))) + (B*Log[a + b*x])/b^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx &= \int \frac{A+Bx}{(a+bx)^2}\,dx\\ &= \int \left(\frac{Ab-aB}{b(a+bx)^2}+\frac{B}{b(a+bx)}\right)dx\\ &= -\frac{Ab-aB}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.97

$$\frac{aB-Ab}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] (-(A*b) + a*B)/(b^2*(a + b*x)) + (B*Log[a + b*x])/b^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.40, size = 37, normalized size = 1.16

$$\frac{Ba - Ab + (Bbx + Ba)\log(bx + a)}{b^3x + ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] (B*a - A*b + (B*b*x + B*a)*log(b*x + a))/(b^3*x + a*b^2)
```

giac [A] time = 0.15, size = 32, normalized size = 1.00

$$\frac{B\log(|bx + a|)}{b^2} + \frac{Ba - Ab}{(bx + a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] B*log(abs(b*x + a))/b^2 + (B*a - A*b)/((b*x + a)*b^2)
```

maple [A] time = 0.05, size = 39, normalized size = 1.22

$$-\frac{A}{(bx + a)\,b} + \frac{Ba}{(bx + a)\,b^2} + \frac{B\ln(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] B/b^2*ln(b*x+a)-1/b/(b*x+a)*A+1/b^2/(b*x+a)*B*a
```

maxima [A] time = 0.52, size = 34, normalized size = 1.06

$$\frac{Ba - Ab}{b^3x + ab^2} + \frac{B\log(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] (B*a - A*b)/(b^3*x + a*b^2) + B*log(b*x + a)/b^2
```

mupad [B] time = 2.05, size = 32, normalized size = 1.00

$$\frac{B\,\ln(a + b\,x)}{b^2} - \frac{A\,b - B\,a}{b^2\,(a + b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] (B*log(a + b*x))/b^2 - (A*b - B*a)/(b^2*(a + b*x))
```

sympy [A] time = 0.18, size = 27, normalized size = 0.84

$$\frac{B\log(a + bx)}{b^2} + \frac{-Ab + Ba}{ab^2 + b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] B*log(a + b*x)/b**2 + (-A*b + B*a)/(a*b**2 + b**3*x)
```

3.1478 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=82

$$-\frac{Ab-aB}{b(a+bx)(bd-ae)}+\frac{\log(a+bx)(Bd-Ae)}{(bd-ae)^2}-\frac{(Bd-Ae)\log(d+ex)}{(bd-ae)^2}$$

Rubi [A] time = 0.06, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{Ab-aB}{b(a+bx)(bd-ae)}+\frac{\log(a+bx)(Bd-Ae)}{(bd-ae)^2}-\frac{(Bd-Ae)\log(d+ex)}{(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((A*b - a*B)/(b*(b*d - a*e)*(a + b*x))) + ((B*d - A*e)*Log[a + b*x])/(b*d
 - a*e)^2 - ((B*d - A*e)*Log[d + e*x])/(b*d - a*e)^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2(d+ex)}\,dx\\ &= \int \left(\frac{Ab-aB}{(bd-ae)(a+bx)^2}+\frac{b(Bd-Ae)}{(bd-ae)^2(a+bx)}+\frac{e(-Bd+Ae)}{(bd-ae)^2(d+ex)}\right)dx\\ &= -\frac{Ab-aB}{b(bd-ae)(a+bx)}+\frac{(Bd-Ae)\log(a+bx)}{(bd-ae)^2}-\frac{(Bd-Ae)\log(d+ex)}{(bd-ae)^2}\end{aligned}$$

Mathematica [A] time = 0.06, size = 69, normalized size = 0.84

$$\frac{\frac{(aB-Ab)(bd-ae)}{b(a+bx)}+\log(a+bx)(Bd-Ae)+(Ae-Bd)\log(d+ex)}{(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (((-(A*b) + a*B)*(b*d - a*e))/(b*(a + b*x)) + (B*d - A*e)*Log[a + b*x] + (-
(B*d) + A*e)*Log[d + e*x])/(b*d - a*e)^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.42, size = 157, normalized size = 1.91

$$\frac{\left(Bab-Ab^2\right)d-\left(Ba^2-Aab\right)e+\left(Babd-Aabe+\left(Bb^2d-Ab^2e\right)x\right)\log\left(bx+a\right)-\left(Babd-Aabe+\left(Bb^2d-Ab^2e\right)x\right)\log\left(ex+d\right)}{ab^3d^2-2\,a^2b^2de+a^3be^2+\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] ((B*a*b - A*b^2)*d - (B*a^2 - A*a*b)*e + (B*a*b*d - A*a*b*e + (B*b^2*d - A*
b^2*e)*x)*log(b*x + a) - (B*a*b*d - A*a*b*e + (B*b^2*d - A*b^2*e)*x)*log(e*
x + d))/(a*b^3*d^2 - 2*a^2*b^2*d*e + a^3*b*e^2 + (b^4*d^2 - 2*a*b^3*d*e + a
^2*b^2*e^2)*x)
```

giac [A] time = 0.16, size = 141, normalized size = 1.72

$$\frac{(Bbd-Abe)\log\left(|bx+a|\right)}{b^3d^2-2\,ab^2de+a^2be^2}-\frac{\left(Bde-Ae^2\right)\log\left(|xe+d|\right)}{b^2d^2e-2\,abde^2+a^2e^3}+\frac{Babd-Ab^2d-Ba^2e+Aabe}{(bd-ae)^2(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b*d - A*b*e)*log(abs(b*x + a))/(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2) - (B*
d*e - A*e^2)*log(abs(x*e + d))/(b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3) + (B*a*b
*d - A*b^2*d - B*a^2*e + A*a*b*e)/((b*d - a*e)^2*(b*x + a)*b)
```

maple [A] time = 0.05, size = 123, normalized size = 1.50

$$-\frac{Ae\ln\left(bx+a\right)}{\left(ae-bd\right)^2}+\frac{Ae\ln\left(ex+d\right)}{\left(ae-bd\right)^2}+\frac{Bd\ln\left(bx+a\right)}{\left(ae-bd\right)^2}-\frac{Bd\ln\left(ex+d\right)}{\left(ae-bd\right)^2}+\frac{A}{\left(ae-bd\right)\left(bx+a\right)}-\frac{Ba}{\left(ae-bd\right)\left(bx+a\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/(a*e-b*d)/(b*x+a)*A-1/(a*e-b*d)/b/(b*x+a)*B*a-1/(a*e-b*d)^2*ln(b*x+a)*A*e
+1/(a*e-b*d)^2*ln(b*x+a)*B*d+1/(a*e-b*d)^2*ln(e*x+d)*A*e-1/(a*e-b*d)^2*ln(e
*x+d)*B*d
```

maxima [A] time = 0.49, size = 118, normalized size = 1.44

$$\frac{(Bd-Ae)\log\left(bx+a\right)}{b^2d^2-2\,abde+a^2e^2}-\frac{(Bd-Ae)\log\left(ex+d\right)}{b^2d^2-2\,abde+a^2e^2}+\frac{Ba-Ab}{ab^2d-a^2be+\left(b^3d-ab^2e\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*d - A*e)*log(b*x + a)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2) - (B*d - A*e)*log(
e*x + d)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2) + (B*a - A*b)/(a*b^2*d - a^2*b*e +
 (b^3*d - a*b^2*e)*x)
```

mupad [B] time = 2.14, size = 94, normalized size = 1.15

$$\frac{A\,b-B\,a}{b\,\left(a\,e-b\,d\right)\,\left(a+b\,x\right)}-\frac{2\,\mathrm{atanh}\left(\frac{a^2\,e^2-b^2\,d^2}{{\left(a\,e-b\,d\right)}^2}+\frac{2\,b\,e\,x}{a\,e-b\,d}\right)\,\left(A\,e-B\,d\right)}{{\left(a\,e-b\,d\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (A*b - B*a)/(b*(a*e - b*d)*(a + b*x)) - (2*atanh((a^2*e^2 - b^2*d^2)/(a*e -
 b*d)^2 + (2*b*e*x)/(a*e - b*d))*(A*e - B*d))/(a*e - b*d)^2
```

sympy [B] time = 1.19, size = 355, normalized size = 4.33

$$\frac{Ab-Ba}{a^2be-ab^2d+x\left(ab^2e-b^3d\right)}-\frac{(-Ae+Bd)\log\left(x+\frac{-Aae^2-Abde+Bade+Bbd^2-\frac{a^3e^3(-Ae+Bd)}{(ae-bd)^2}+\frac{3a^2bde^2(-Ae+Bd)}{(ae-bd)^2}-\frac{3ab^2d^2e(-Ae+Bd)}{(ae-bd)^2}+\frac{b^3d^3(-Ae+Bd)}{(ae-bd)^2}}{-2Abe^2+2Bbde}\right)}{(ae-bd)^2}+\frac{(-Ae+Bd)\log\left(x+\frac{-Aae^2-Abde+Bade+Bbd^2+\frac{a^3e^3(-Ae+Bd)}{(ae-bd)^2}-\frac{3a^2bde^2(-Ae+Bd)}{(ae-bd)^2}+\frac{3ab^2d^2e(-Ae+Bd)}{(ae-bd)^2}-\frac{b^3d^3(-Ae+Bd)}{(ae-bd)^2}}{-2Abe^2+2Bbde}\right)}{(ae-bd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (A*b - B*a)/(a**2*b*e - a*b**2*d + x*(a*b**2*e - b**3*d)) - (-A*e + B*d)*lo
g(x + (-A*a*e**2 - A*b*d*e + B*a*d*e + B*b*d**2 - a**3*e**3*(-A*e + B*d)/(a
*e - b*d)**2 + 3*a**2*b*d*e**2*(-A*e + B*d)/(a*e - b*d)**2 - 3*a*b**2*d**2*
e*(-A*e + B*d)/(a*e - b*d)**2 + b**3*d**3*(-A*e + B*d)/(a*e - b*d)**2)/(-2*
A*b*e**2 + 2*B*b*d*e))/(a*e - b*d)**2 + (-A*e + B*d)*log(x + (-A*a*e**2 - A
*b*d*e + B*a*d*e + B*b*d**2 + a**3*e**3*(-A*e + B*d)/(a*e - b*d)**2 - 3*a**
2*b*d*e**2*(-A*e + B*d)/(a*e - b*d)**2 + 3*a*b**2*d**2*e*(-A*e + B*d)/(a*e
- b*d)**2 - b**3*d**3*(-A*e + B*d)/(a*e - b*d)**2)/(-2*A*b*e**2 + 2*B*b*d*e
))/(a*e - b*d)**2
```

3.1479 $\int \frac{A+Bx}{(d+ex)^2(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=117

$$-\frac{Ab-aB}{(a+bx)(bd-ae)^2}+\frac{Bd-Ae}{(d+ex)(bd-ae)^2}+\frac{\log(a+bx)(aBe-2Abe+bBd)}{(bd-ae)^3}-\frac{\log(d+ex)(aBe-2Abe+bBd)}{(bd-ae)^3}$$

Rubi [A] time = 0.10, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{Ab-aB}{(a+bx)(bd-ae)^2}+\frac{Bd-Ae}{(d+ex)(bd-ae)^2}+\frac{\log(a+bx)(aBe-2Abe+bBd)}{(bd-ae)^3}-\frac{\log(d+ex)(aBe-2Abe+bBd)}{(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((A*b - a*B)/((b*d - a*e)^2*(a + b*x))) + (B*d - A*e)/((b*d - a*e)^2*(d +
e*x)) + ((b*B*d - 2*A*b*e + a*B*e)*Log[a + b*x])/(b*d - a*e)^3 - ((b*B*d -
2*A*b*e + a*B*e)*Log[d + e*x])/(b*d - a*e)^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2(d+ex)^2}\,dx\\ &= \int \left(\frac{b(Ab-aB)}{(bd-ae)^2(a+bx)^2}+\frac{b(bBd-2Abe+aBe)}{(bd-ae)^3(a+bx)}+\frac{e(-Bd+Ae)}{(bd-ae)^2(d+ex)^2}+\right.\\ &= -\frac{Ab-aB}{(bd-ae)^2(a+bx)}+\frac{Bd-Ae}{(bd-ae)^2(d+ex)}+\frac{(bBd-2Abe+aBe)\log(a+}{(bd-ae)^3}\end{aligned}$$

Mathematica [A] time = 0.11, size = 103, normalized size = 0.88

$$\frac{\frac{(aB-Ab)(bd-ae)}{a+bx}+\frac{(bd-ae)(Bd-Ae)}{d+ex}+\log(a+bx)(aBe-2Abe+bBd)-\log(d+ex)(aBe-2Abe+bBd)}{(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (((-(A*b) + a*B)*(b*d - a*e))/(a + b*x) + ((b*d - a*e)*(B*d - A*e))/(d + e*
x) + (b*B*d - 2*A*b*e + a*B*e)*Log[a + b*x] - (b*B*d - 2*A*b*e + a*B*e)*Log
[d + e*x])/(b*d - a*e)^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [B] time = 0.44, size = 396, normalized size = 3.38

$$-\frac{2\,Ba^2de - Aa^2e^2 - \left(2\,Bab - Ab^2\right)d^2 - \left(Bb^2d^2 - 2\,Ab^2de - \left(Ba^2 - 2\,Aab\right)e^2\right)x - \left(Babd^2 + \left(Ba^2 - 2\,Aab\right)de + \left(Bb^2de + \left(Bab - 2\,Ab^2\right)e^2\right)x^2 + \left(Bb^2d^2 + 2\left(Bab - Ab^2\right)de + \left(Ba^2 - 2\,Aab\right)e^2\right)x\right)\log\left(bx + a\right) + \left(Babd^2 + \left(Ba^2 - 2\,Aab\right)de + \left(Bb^2de + \left(Bab - 2\,Ab^2\right)e^2\right)x^2 + \left(Bb^2d^2 + 2\left(Bab - Ab^2\right)de + \left(Ba^2 - 2\,Aab\right)e^2\right)x\right)\log\left(ex + d\right)}{ab^3d^4 - 3\,a^2b^2d^3e + 3\,a^3bd^2e^2 - a^4de^3 + \left(b^4d^3e - 3\,ab^3d^2e^2 + 3\,a^2b^2de^3 - a^3be^4\right)x^2 + \left(b^4d^4 - 2\,ab^3d^3e + 2\,a^3bde^3 - a^4e^4\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -(2*B*a^2*d*e - A*a^2*e^2 - (2*B*a*b - A*b^2)*d^2 - (B*b^2*d^2 - 2*A*b^2*d*
e - (B*a^2 - 2*A*a*b)*e^2)*x - (B*a*b*d^2 + (B*a^2 - 2*A*a*b)*d*e + (B*b^2*
d*e + (B*a*b - 2*A*b^2)*e^2)*x^2 + (B*b^2*d^2 + 2*(B*a*b - A*b^2)*d*e + (B*
a^2 - 2*A*a*b)*e^2)*x)*log(b*x + a) + (B*a*b*d^2 + (B*a^2 - 2*A*a*b)*d*e +
(B*b^2*d*e + (B*a*b - 2*A*b^2)*e^2)*x^2 + (B*b^2*d^2 + 2*(B*a*b - A*b^2)*d*
e + (B*a^2 - 2*A*a*b)*e^2)*x)*log(e*x + d))/(a*b^3*d^4 - 3*a^2*b^2*d^3*e +
3*a^3*b*d^2*e^2 - a^4*d*e^3 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^
3 - a^3*b*e^4)*x^2 + (b^4*d^4 - 2*a*b^3*d^3*e + 2*a^3*b*d*e^3 - a^4*e^4)*x)
```

giac [A] time = 0.22, size = 195, normalized size = 1.67

$$\frac{\left(Bbde + Bae^2 - 2\,Abe^2\right)\log\left(\left|b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right|\right)}{b^3d^3e - 3\,ab^2d^2e^2 + 3\,a^2bde^3 - a^3e^4} + \frac{\frac{Bde^2}{xe+d} - \frac{Ae^3}{xe+d}}{b^2d^2e^2 - 2\,abde^3 + a^2e^4} + \frac{Babe - Ab^2e}{(bd - ae)^3\left(b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b*d*e + B*a*e^2 - 2*A*b*e^2)*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))
/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 - a^3*e^4) + (B*d*e^2/(x*e +
d) - A*e^3/(x*e + d))/(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4) + (B*a*b*e - A*
b^2*e)/((b*d - a*e)^3*(b - b*d/(x*e + d) + a*e/(x*e + d)))
```

maple [A] time = 0.06, size = 208, normalized size = 1.78

$$\frac{2Abe\ln\left(bx+a\right)}{\left(ae-bd\right)^3} - \frac{2Abe\ln\left(ex+d\right)}{\left(ae-bd\right)^3} - \frac{Bae\ln\left(bx+a\right)}{\left(ae-bd\right)^3} + \frac{Bae\ln\left(ex+d\right)}{\left(ae-bd\right)^3} - \frac{Bbd\ln\left(bx+a\right)}{\left(ae-bd\right)^3} + \frac{Bbd\ln\left(ex+d\right)}{\left(ae-bd\right)^3} - \frac{Ab}{\left(ae-bd\right)^2\left(bx+a\right)} - \frac{Ae}{\left(ae-bd\right)^2\left(ex+d\right)} + \frac{Ba}{\left(ae-bd\right)^2\left(bx+a\right)} + \frac{Bd}{\left(ae-bd\right)^2\left(ex+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^2/(b*x+a)*A*b+1/(a*e-b*d)^2/(b*x+a)*B*a+2/(a*e-b*d)^3*ln(b*x+a
)*A*b*e-1/(a*e-b*d)^3*ln(b*x+a)*a*B*e-1/(a*e-b*d)^3*ln(b*x+a)*B*b*d-1/(a*e-
b*d)^2/(e*x+d)*A*e+1/(a*e-b*d)^2/(e*x+d)*B*d-2/(a*e-b*d)^3*ln(e*x+d)*A*b*e+
1/(a*e-b*d)^3*ln(e*x+d)*a*B*e+1/(a*e-b*d)^3*ln(e*x+d)*B*b*d
```

maxima [B] time = 0.54, size = 256, normalized size = 2.19

$$\frac{\left(Bbd + (Ba - 2\,Ab)e\right)\log\left(bx+a\right)}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} - \frac{\left(Bbd + (Ba - 2\,Ab)e\right)\log\left(ex+d\right)}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} - \frac{Aae - (2\,Ba - Ab)d - \left(Bbd + (Ba - 2\,Ab)e\right)x}{ab^2d^3 - 2\,a^2bd^2e + a^3de^2 + \left(b^3d^2e - 2\,ab^2de^2 + a^2be^3\right)x^2 + \left(b^3d^3 - ab^2d^2e - a^2bde^2 + a^3e^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*b*d + (B*a - 2*A*b)*e)*log(b*x + a)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d
*e^2 - a^3*e^3) - (B*b*d + (B*a - 2*A*b)*e)*log(e*x + d)/(b^3*d^3 - 3*a*b^2
*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) - (A*a*e - (2*B*a - A*b)*d - (B*b*d + (B*
a - 2*A*b)*e)*x)/(a*b^2*d^3 - 2*a^2*b*d^2*e + a^3*d*e^2 + (b^3*d^2*e - 2*a*
b^2*d*e^2 + a^2*b*e^3)*x^2 + (b^3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2 + a^3*e^3
)*x)
```

mupad [B] time = 2.24, size = 263, normalized size = 2.25

$$-\frac{\frac{A\,a\,e+A\,b\,d-2\,B\,a\,d}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}-\frac{x\,\left(B\,a\,e-2\,A\,b\,e+B\,b\,d\right)}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}}{b\,e\,x^2+\left(a\,e+b\,d\right)\,x+a\,d}-\frac{2\,\mathrm{atanh}\left(\frac{\left(\frac{a^3\,e^3-a^2\,b\,d\,e^2-a\,b^2\,d^2\,e+b^3\,d^3}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}+2\,b\,e\,x\right)\,\left(e\,\left(2\,A\,b-B\,a\right)-B\,b\,d\right)\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^3\,\left(B\,a\,e-2\,A\,b\,e+B\,b\,d\right)}\right)\,\left(e\,\left(2\,A\,b-B\,a\right)-B\,b\,d\right)}{{\left(a\,e-b\,d\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((A*a*e + A*b*d - 2*B*a*d)/(a^2*e^2 + b^2*d^2 - 2*a*b*d*e) - (x*(B*a*e -
2*A*b*e + B*b*d))/(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(a*d + x*(a*e + b*d) + b
*e*x^2) - (2*atanh((((a^3*e^3 + b^3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2)/(a^2*e
^2 + b^2*d^2 - 2*a*b*d*e) + 2*b*e*x)*(e*(2*A*b - B*a) - B*b*d)*(a^2*e^2 + b
^2*d^2 - 2*a*b*d*e))/((a*e - b*d)^3*(B*a*e - 2*A*b*e + B*b*d)))*(e*(2*A*b -
 B*a) - B*b*d))/(a*e - b*d)^3
```

sympy [B] time = 2.29, size = 706, normalized size = 6.03

$$\frac{-Aae - Abd + 2Bad + x\left(-2Abe + Bae + Bbd\right)}{a^3de^2 - 2a^2bd^2e + ab^2d^3 + x^2\left(a^2be^3 - 2ab^2de^2 + b^3d^2e\right) + x\left(a^3e^3 - a^2bde^2 - ab^2d^2e + b^3d^3\right)} + \frac{\left(-2Abe + Bae + Bbd\right)\log{\left(x + \frac{-2Aabe^2 - 2Ab^2de + Ba^2e^2 + 2Babde + Bb^2d^2 - \frac{a^4e^4\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} + \frac{4a^3bde^3\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} - \frac{6a^2b^2d^2e^2\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} + \frac{4ab^3d^3e\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} - \frac{b^4d^4\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3}}{-4Ab^2e^2 + 2Babe^2 + 2Bb^2de} \right)}}{\left(ae - bd\right)^3} - \frac{\left(-2Abe + Bae + Bbd\right)\log{\left(x + \frac{-2Aabe^2 - 2Ab^2de + Ba^2e^2 + 2Babde + Bb^2d^2 + \frac{a^4e^4\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} - \frac{4a^3bde^3\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} + \frac{6a^2b^2d^2e^2\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} - \frac{4ab^3d^3e\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3} + \frac{b^4d^4\left(-2Abe + Bae + Bbd\right)}{\left(ae - bd\right)^3}}{-4Ab^2e^2 + 2Babe^2 + 2Bb^2de} \right)}}{\left(ae - bd\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-A*a*e - A*b*d + 2*B*a*d + x*(-2*A*b*e + B*a*e + B*b*d))/(a**3*d*e**2 - 2*
a**2*b*d**2*e + a*b**2*d**3 + x**2*(a**2*b*e**3 - 2*a*b**2*d*e**2 + b**3*d*
*2*e) + x*(a**3*e**3 - a**2*b*d*e**2 - a*b**2*d**2*e + b**3*d**3)) + (-2*A*
b*e + B*a*e + B*b*d)*log(x + (-2*A*a*b*e**2 - 2*A*b**2*d*e + B*a**2*e**2 +
2*B*a*b*d*e + B*b**2*d**2 - a**4*e**4*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d
)**3 + 4*a**3*b*d*e**3*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 - 6*a**2*b
**2*d**2*e**2*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 + 4*a*b**3*d**3*e*(
-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 - b**4*d**4*(-2*A*b*e + B*a*e + B*
b*d)/(a*e - b*d)**3)/(-4*A*b**2*e**2 + 2*B*a*b*e**2 + 2*B*b**2*d*e))/(a*e -
 b*d)**3 - (-2*A*b*e + B*a*e + B*b*d)*log(x + (-2*A*a*b*e**2 - 2*A*b**2*d*e
 + B*a**2*e**2 + 2*B*a*b*d*e + B*b**2*d**2 + a**4*e**4*(-2*A*b*e + B*a*e +
B*b*d)/(a*e - b*d)**3 - 4*a**3*b*d*e**3*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b
*d)**3 + 6*a**2*b**2*d**2*e**2*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 -
4*a*b**3*d**3*e*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 + b**4*d**4*(-2*A
*b*e + B*a*e + B*b*d)/(a*e - b*d)**3)/(-4*A*b**2*e**2 + 2*B*a*b*e**2 + 2*B*
b**2*d*e))/(a*e - b*d)**3
```

3.1480 $\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=157

$$-\frac{b(Ab-aB)}{(a+bx)(bd-ae)^3}+\frac{aBe-2Abe+bBd}{(d+ex)(bd-ae)^3}+\frac{Bd-Ae}{2(d+ex)^2(bd-ae)^2}+\frac{b\log(a+bx)(2aBe-3Abe+bBd)}{(bd-ae)^4}-\frac{b\log(d+ex}{}$$

Rubi [A] time = 0.15, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{b(Ab-aB)}{(a+bx)(bd-ae)^3}+\frac{aBe-2Abe+bBd}{(d+ex)(bd-ae)^3}+\frac{Bd-Ae}{2(d+ex)^2(bd-ae)^2}+\frac{b\log(a+bx)(2aBe-3Abe+bBd)}{(bd-ae)^4}-\frac{b\log(d+ex)(2aBe-3Abe+bBd)}{(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((b*(A*b - a*B))/((b*d - a*e)^3*(a + b*x))) + (B*d - A*e)/(2*(b*d - a*e)^2
*(d + e*x)^2) + (b*B*d - 2*A*b*e + a*B*e)/((b*d - a*e)^3*(d + e*x)) + (b*(b
*B*d - 3*A*b*e + 2*a*B*e)*Log[a + b*x])/(b*d - a*e)^4 - (b*(b*B*d - 3*A*b*e
 + 2*a*B*e)*Log[d + e*x])/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2(d+ex)^3}\,dx\\
&= \int \left(\frac{b^2(Ab-aB)}{(bd-ae)^3(a+bx)^2}+\frac{b^2(bBd-3Abe+2aBe)}{(bd-ae)^4(a+bx)}+\frac{e(-Bd+Ae)}{(bd-ae)^2(d+ex)^3}+\right.\\
&= -\frac{b(Ab-aB)}{(bd-ae)^3(a+bx)}+\frac{Bd-Ae}{2(bd-ae)^2(d+ex)^2}+\frac{bBd-2Abe+aBe}{(bd-ae)^3(d+ex)}+\frac{b(bBd-}{}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 146, normalized size = 0.93

$$\frac{\frac{(bd-ae)^2(Bd-Ae)}{(d+ex)^2}-\frac{2b(Ab-aB)(bd-ae)}{a+bx}+\frac{2(bd-ae)(aBe-2Abe+bBd)}{d+ex}+2b\log(a+bx)(2aBe-3Abe+bBd)-2b\log(d+ex)(2aBe-3Abe+bBd)}{2(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-2*b*(A*b - a*B)*(b*d - a*e))/(a + b*x) + ((b*d - a*e)^2*(B*d - A*e))/(d
+ e*x)^2 + (2*(b*d - a*e)*(b*B*d - 2*A*b*e + a*B*e))/(d + e*x) + 2*b*(b*B*d
```

```
 - 3*A*b*e + 2*a*B*e)*Log[a + b*x] - 2*b*(b*B*d - 3*A*b*e + 2*a*B*e)*Log[d
+ e*x])/(2*(b*d - a*e)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [B] time = 0.44, size = 801, normalized size = 5.10

$$-\frac{Aa^3e^3 - \left(5\,Bab^2 - 2\,Ab^3\right)d^3 + \left(4\,Ba^2b + 3\,Aab^2\right)d^2e + \left(Ba^3 - 6\,Aa^2b\right)de^2 - 2\left(Bb^3d^2e + \left(Bab^2 - 3\,Ab^3\right)de^2 - \left(2\,Ba^2b - 3\,Aab^2\right)e^3\right)x^2 - \left(3\,Bb^3d^3 + \left(4\,Bab^2 - 9\,Ab^3\right)d^2e - \left(5\,Ba^2b - 6\,Aab^2\right)de^2 - \left(2\,Ba^3 - 3\,Aa^2b\right)e^3\right)x - 2\left(Bab^2d^3 + \left(2\,Ba^2b - 3\,Aab^2\right)d^2e + \left(Bb^3de^2 + \left(2\,Bab^2 - 3\,Ab^3\right)e^3\right)x^3 + \left(2\,Bb^3d^2e + \left(5\,Bab^2 - 6\,Ab^3\right)de^2 + \left(2\,Ba^2b - 3\,Aab^2\right)e^3\right)x^2 + \left(Bb^3d^3 + \left(4\,Bab^2 - 3\,Ab^3\right)d^2e + 2\left(2\,Ba^2b - 3\,Aab^2\right)de^2\right)x\right)\log\left(bx + a\right) + 2\left(Bab^2d^3 + \left(2\,Ba^2b - 3\,Aab^2\right)d^2e + \left(Bb^3de^2 + \left(2\,Bab^2 - 3\,Ab^3\right)e^3\right)x^3 + \left(2\,Bb^3d^2e + \left(5\,Bab^2 - 6\,Ab^3\right)de^2 + \left(2\,Ba^2b - 3\,Aab^2\right)e^3\right)x^2 + \left(Bb^3d^3 + \left(4\,Bab^2 - 3\,Ab^3\right)d^2e + 2\left(2\,Ba^2b - 3\,Aab^2\right)de^2\right)x\right)\log\left(ex + d\right)}{2\left(ab^4d^6 - 4\,a^2b^3d^5e + 6\,a^3b^2d^4e^2 - 4\,a^4bd^3e^3 + a^5d^2e^4 + \left(b^5d^4e^2 - 4\,ab^4d^3e^3 + 6\,a^2b^3d^2e^4 - 4\,a^3b^2de^5 + a^4be^6\right)x^3 + \left(2\,b^5d^5e - 7\,ab^4d^4e^2 + 8\,a^2b^3d^3e^3 - 2\,a^3b^2d^2e^4 - 2\,a^4bde^5 + a^5e^6\right)x^2 + \left(b^5d^6 - 2\,ab^4d^5e - 2\,a^2b^3d^4e^2 + 8\,a^3b^2d^3e^3 - 7\,a^4bd^2e^4 + 2\,a^5de^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(A*a^3*e^3 - (5*B*a*b^2 - 2*A*b^3)*d^3 + (4*B*a^2*b + 3*A*a*b^2)*d^2*e
 + (B*a^3 - 6*A*a^2*b)*d*e^2 - 2*(B*b^3*d^2*e + (B*a*b^2 - 3*A*b^3)*d*e^2 -
 (2*B*a^2*b - 3*A*a*b^2)*e^3)*x^2 - (3*B*b^3*d^3 + (4*B*a*b^2 - 9*A*b^3)*d^
2*e - (5*B*a^2*b - 6*A*a*b^2)*d*e^2 - (2*B*a^3 - 3*A*a^2*b)*e^3)*x - 2*(B*a
*b^2*d^3 + (2*B*a^2*b - 3*A*a*b^2)*d^2*e + (B*b^3*d*e^2 + (2*B*a*b^2 - 3*A*
b^3)*e^3)*x^3 + (2*B*b^3*d^2*e + (5*B*a*b^2 - 6*A*b^3)*d*e^2 + (2*B*a^2*b -
 3*A*a*b^2)*e^3)*x^2 + (B*b^3*d^3 + (4*B*a*b^2 - 3*A*b^3)*d^2*e + 2*(2*B*a^
2*b - 3*A*a*b^2)*d*e^2)*x)*log(b*x + a) + 2*(B*a*b^2*d^3 + (2*B*a^2*b - 3*A
*a*b^2)*d^2*e + (B*b^3*d*e^2 + (2*B*a*b^2 - 3*A*b^3)*e^3)*x^3 + (2*B*b^3*d^
2*e + (5*B*a*b^2 - 6*A*b^3)*d*e^2 + (2*B*a^2*b - 3*A*a*b^2)*e^3)*x^2 + (B*b
^3*d^3 + (4*B*a*b^2 - 3*A*b^3)*d^2*e + 2*(2*B*a^2*b - 3*A*a*b^2)*d*e^2)*x)*
log(e*x + d))/(a*b^4*d^6 - 4*a^2*b^3*d^5*e + 6*a^3*b^2*d^4*e^2 - 4*a^4*b*d^
3*e^3 + a^5*d^2*e^4 + (b^5*d^4*e^2 - 4*a*b^4*d^3*e^3 + 6*a^2*b^3*d^2*e^4 -
4*a^3*b^2*d*e^5 + a^4*b*e^6)*x^3 + (2*b^5*d^5*e - 7*a*b^4*d^4*e^2 + 8*a^2*b
^3*d^3*e^3 - 2*a^3*b^2*d^2*e^4 - 2*a^4*b*d*e^5 + a^5*e^6)*x^2 + (b^5*d^6 -
2*a*b^4*d^5*e - 2*a^2*b^3*d^4*e^2 + 8*a^3*b^2*d^3*e^3 - 7*a^4*b*d^2*e^4 + 2
*a^5*d*e^5)*x)
```

giac [B] time = 0.16, size = 393, normalized size = 2.50

$$\frac{\left(Bb^3d + 2\,Bab^2e - 3\,Ab^3e\right)\log\left(|bx + a|\right)}{b^5d^4 - 4\,ab^4d^3e + 6\,a^2b^3d^2e^2 - 4\,a^3b^2de^3 + a^4be^4} - \frac{\left(Bb^2de + 2\,Babe^2 - 3\,Ab^2e^2\right)\log\left(|xe + d|\right)}{b^4d^4e - 4\,ab^3d^3e^2 + 6\,a^2b^2d^2e^3 - 4\,a^3bde^4 + a^4e^5} + \frac{5\,Bab^2d^3 - 2\,Ab^3d^3 - 4\,Ba^2bd^2e - 3\,Aab^2d^2e - Ba^3de^2 + 6\,Aa^2bde^2 - Aa^3e^3 + 2\left(Bb^3d^2e + Bab^2de^2 - 3\,Ab^3de^2 - 2\,Ba^2be^3 + 3\,Aab^2e^3\right)x^2 + \left(3\,Bb^3d^3 + 4\,Bab^2d^2e - 9\,Ab^3d^2e - 5\,Ba^2bde^2 + 6\,Aab^2de^2 - 2\,Ba^3e^3 + 3\,Aa^2be^3\right)x}{2\,(bd - ae)^4(bx + a)(xe + d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^3*d + 2*B*a*b^2*e - 3*A*b^3*e)*log(abs(b*x + a))/(b^5*d^4 - 4*a*b^4*d^
3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4) - (B*b^2*d*e + 2*B*a
*b*e^2 - 3*A*b^2*e^2)*log(abs(x*e + d))/(b^4*d^4*e - 4*a*b^3*d^3*e^2 + 6*a^
2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) + 1/2*(5*B*a*b^2*d^3 - 2*A*b^3*d^3
 - 4*B*a^2*b*d^2*e - 3*A*a*b^2*d^2*e - B*a^3*d*e^2 + 6*A*a^2*b*d*e^2 - A*a^
3*e^3 + 2*(B*b^3*d^2*e + B*a*b^2*d*e^2 - 3*A*b^3*d*e^2 - 2*B*a^2*b*e^3 + 3*
A*a*b^2*e^3)*x^2 + (3*B*b^3*d^3 + 4*B*a*b^2*d^2*e - 9*A*b^3*d^2*e - 5*B*a^2
*b*d*e^2 + 6*A*a*b^2*d*e^2 - 2*B*a^3*e^3 + 3*A*a^2*b*e^3)*x)/((b*d - a*e)^4
*(b*x + a)*(x*e + d)^2)
```

maple [A] time = 0.06, size = 289, normalized size = 1.84

$$-\frac{3A\,b^2e\ln\left(bx + a\right)}{\left(ae - bd\right)^4} + \frac{3A\,b^2e\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{2Babe\ln\left(bx + a\right)}{\left(ae - bd\right)^4} - \frac{2Babe\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{B\,b^2d\ln\left(bx + a\right)}{\left(ae - bd\right)^4} - \frac{B\,b^2d\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{A\,b^2}{\left(ae - bd\right)^3\left(bx + a\right)} + \frac{2Abe}{\left(ae - bd\right)^3\left(ex + d\right)} - \frac{Bab}{\left(ae - bd\right)^3\left(bx + a\right)} - \frac{Bae}{\left(ae - bd\right)^3\left(ex + d\right)} - \frac{Bbd}{\left(ae - bd\right)^3\left(ex + d\right)} - \frac{Ae}{2\left(ae - bd\right)^2\left(ex + d\right)^2} + \frac{Bd}{2\left(ae - bd\right)^2\left(ex + d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)

[Out] b^2/(a*e-b*d)^3/(b*x+a)*A-b/(a*e-b*d)^3/(b*x+a)*B*a-3*b^2/(a*e-b*d)^4*ln(b*x+a)*A*e+2*b/(a*e-b*d)^4*ln(b*x+a)*a*B*e+b^2/(a*e-b*d)^4*ln(b*x+a)*B*d-1/2/(a*e-b*d)^2/(e*x+d)^2*A*e+1/2/(a*e-b*d)^2/(e*x+d)^2*B*d+3*b^2/(a*e-b*d)^4*ln(e*x+d)*A*e-2*b/(a*e-b*d)^4*ln(e*x+d)*a*B*e-b^2/(a*e-b*d)^4*ln(e*x+d)*B*d+2/(a*e-b*d)^3/(e*x+d)*A*b*e-1/(a*e-b*d)^3/(e*x+d)*a*B*e-1/(a*e-b*d)^3/(e*x+d)*B*b*d

maxima [B] time = 0.80, size = 479, normalized size = 3.05

$$\frac{\left(Bb^2d+\left(2\,Bab-3\,Ab^2\right)e\right)\log\left(bx+a\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}-\frac{\left(Bb^2d+\left(2\,Bab-3\,Ab^2\right)e\right)\log\left(ex+d\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}+\frac{Aa^2e^2+\left(5\,Bab-2\,Ab^2\right)d^2+\left(Ba^2-5\,Aab\right)de+2\left(Bb^2de+\left(2\,Bab-3\,Ab^2\right)e^2\right)x^2+\left(3\,Bb^2d^2+\left(7\,Bab-9\,Ab^2\right)de+\left(2\,Ba^2-3\,Aab\right)e^2\right)x}{2\left(ab^3d^5-3\,a^2b^2d^4e+3\,a^3bd^3e^2-a^4d^2e^3+\left(b^4d^3e^2-3\,ab^3d^2e^3+3\,a^2b^2de^4-a^3be^5\right)x^3+\left(2\,b^4d^4e-5\,ab^3d^3e^2+3\,a^2b^2d^2e^3+a^3bde^4-a^4e^5\right)x^2+\left(b^4d^5-ab^3d^4e-3\,a^2b^2d^3e^2+5\,a^3bd^2e^3-2\,a^4de^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")

[Out] (B*b^2*d + (2*B*a*b - 3*A*b^2)*e)*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) - (B*b^2*d + (2*B*a*b - 3*A*b^2)*e)*log(e*x + d)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) + 1/2*(A*a^2*e^2 + (5*B*a*b - 2*A*b^2)*d^2 + (B*a^2 - 5*A*a*b)*d*e + 2*(B*b^2*d*e + (2*B*a*b - 3*A*b^2)*e^2)*x^2 + (3*B*b^2*d^2 + (7*B*a*b - 9*A*b^2)*d*e + (2*B*a^2 - 3*A*a*b)*e^2)*x)/(a*b^3*d^5 - 3*a^2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d^2*e^3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e - 3*a^2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x)

mupad [B] time = 2.66, size = 454, normalized size = 2.89

$$\frac{2\,\mathrm{atanh}\left(\frac{\left(b^2\,\left(3\,A\,e-B\,d\right)-2\,B\,a\,b\,e\right)\left(\frac{a^4\,e^4-2\,a^3\,b\,d\,e^3+2\,a\,b^3\,d^3\,e-b^4\,d^4}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}+2\,b\,e\,x\right)\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{\left(a\,e-b\,d\right)^4\,\left(B\,b^2\,d-3\,A\,b^2\,e+2\,B\,a\,b\,e\right)}\right)\left(b^2\,\left(3\,A\,e-B\,d\right)-2\,B\,a\,b\,e\right)}{\left(a\,e-b\,d\right)^4}-\frac{\frac{B\,a^2\,d\,e+A\,a^2\,e^2+5\,B\,a\,b\,d^2-5\,A\,a\,b\,d\,e-2\,A\,b^2\,d^2}{2\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}+\frac{x\,\left(a\,e+3\,b\,d\right)\,\left(2\,B\,a\,e-3\,A\,b\,e+B\,b\,d\right)}{2\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}+\frac{b\,e\,x^2\,\left(2\,B\,a\,e-3\,A\,b\,e+B\,b\,d\right)}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}}{x\,\left(b\,d^2+2\,a\,e\,d\right)+a\,d^2+x^2\,\left(a\,e^2+2\,b\,d\,e\right)+b\,e^2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)),x)

[Out] (2*atanh(((b^2*(3*A*e - B*d) - 2*B*a*b*e)*((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + 2*b*e*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/((a*e - b*d)^4*(B*b^2*d - 3*A*b^2*e + 2*B*a*b*e)))*(b^2*(3*A*e - B*d) - 2*B*a*b*e))/(a*e - b*d)^4 - ((A*a^2*e^2 - 2*A*b^2*d^2 + 5*B*a*b*d^2 + B*a^2*d*e - 5*A*a*b*d*e)/(2*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (x*(a*e + 3*b*d)*(2*B*a*e - 3*A*b*e + B*b*d))/(2*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (b*e*x^2*(2*B*a*e - 3*A*b*e + B*b*d))/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(x*(b*d^2 + 2*a*d*e) + a*d^2 + x^2*(a*e^2 + 2*b*d*e) + b*e^2*x^3)

sympy [B] time = 3.58, size = 1066, normalized size = 6.79

$$-\frac{b\left(-3Abe+2Bae+Bbd\right)\log\left(x+\frac{-3Aab^2e^2-3Ab^3de+2Ba^2be^2+3Bab^2de+Bb^3d^2-\frac{a^5be^5\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}+\frac{5a^4b^2de^4\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}-\frac{10a^3b^3d^2e^3\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}+\frac{10a^2b^4d^3e^2\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}-\frac{5ab^5d^4e\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}+\frac{b^6d^5\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}}{-6Ab^3e^2+4Bab^2e^2+2Bb^3de}\right)}{\left(ae-bd\right)^4}+\frac{b\left(-3Abe+2Bae+Bbd\right)\log\left(x+\frac{-3Aab^2e^2-3Ab^3de+2Ba^2be^2+3Bab^2de+Bb^3d^2+\frac{a^5be^5\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}-\frac{5a^4b^2de^4\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}+\frac{10a^3b^3d^2e^3\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}-\frac{10a^2b^4d^3e^2\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}+\frac{5ab^5d^4e\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}-\frac{b^6d^5\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}}{-6Ab^3e^2+4Bab^2e^2+2Bb^3de}\right)}{\left(ae-bd\right)^4}+\frac{-Aa^2e^2+5Aabde+2Ab^2d^2-Ba^2de-5Babd^2+x^2\left(6Ab^2e^2-4Babe^2-2Bb^2de\right)+x\left(3Aabe^2+9Ab^2de-2Ba^2e^2-7Babde-3Bb^2d^2\right)}{2a^4d^2e^3-6a^3bd^3e^2+6a^2b^2d^4e-2ab^3d^5+x^3\left(2a^3be^5-6a^2b^2de^4+6ab^3d^2e^3-2b^4d^3e^2\right)+x^2\left(2a^4e^5-2a^3bde^4-6a^2b^2d^2e^3+10ab^3d^3e^2-4b^4d^4e\right)+x\left(4a^4de^4-10a^3bd^2e^3+6a^2b^2d^3e^2+2ab^3d^4e-2b^4d^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)

[Out] -b*(-3*A*b*e + 2*B*a*e + B*b*d)*log(x + (-3*A*a*b**2*e**2 - 3*A*b**3*d*e + 2*B*a**2*b*e**2 + 3*B*a*b**2*d*e + B*b**3*d**2 - a**5*b*e**5*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + 5*a**4*b**2*d*e**4*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 - 10*a**3*b**3*d**2*e**3*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + 10*a**2*b**4*d**3*e**2*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 - 5*a*b**5*d**4*e*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + b**

```
6*d**5*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4)/(-6*A*b**3*e**2 + 4*B*a
*b**2*e**2 + 2*B*b**3*d*e))/(a*e - b*d)**4 + b*(-3*A*b*e + 2*B*a*e + B*b*d)
*log(x + (-3*A*a*b**2*e**2 - 3*A*b**3*d*e + 2*B*a**2*b*e**2 + 3*B*a*b**2*d*
e + B*b**3*d**2 + a**5*b*e**5*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 -
 5*a**4*b**2*d*e**4*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + 10*a**3*b
**3*d**2*e**3*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 - 10*a**2*b**4*d*
*3*e**2*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + 5*a*b**5*d**4*e*(-3*A
*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 - b**6*d**5*(-3*A*b*e + 2*B*a*e + B*
b*d)/(a*e - b*d)**4)/(-6*A*b**3*e**2 + 4*B*a*b**2*e**2 + 2*B*b**3*d*e))/(a*
e - b*d)**4 + (-A*a**2*e**2 + 5*A*a*b*d*e + 2*A*b**2*d**2 - B*a**2*d*e - 5*
B*a*b*d**2 + x**2*(6*A*b**2*e**2 - 4*B*a*b*e**2 - 2*B*b**2*d*e) + x*(3*A*a*
b*e**2 + 9*A*b**2*d*e - 2*B*a**2*e**2 - 7*B*a*b*d*e - 3*B*b**2*d**2))/(2*a*
*4*d**2*e**3 - 6*a**3*b*d**3*e**2 + 6*a**2*b**2*d**4*e - 2*a*b**3*d**5 + x*
*3*(2*a**3*b*e**5 - 6*a**2*b**2*d*e**4 + 6*a*b**3*d**2*e**3 - 2*b**4*d**3*e
**2) + x**2*(2*a**4*e**5 - 2*a**3*b*d*e**4 - 6*a**2*b**2*d**2*e**3 + 10*a*b
**3*d**3*e**2 - 4*b**4*d**4*e) + x*(4*a**4*d*e**4 - 10*a**3*b*d**2*e**3 + 6
*a**2*b**2*d**3*e**2 + 2*a*b**3*d**4*e - 2*b**4*d**5))
```

3.1481 $\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2} \, dx$

Optimal. Leaf size=186

$$\frac{2e^2(bd-ae)\log(a+bx)(-5aBe+2Abe+3bBd)}{b^6}-\frac{2e(bd-ae)^2(-5aBe+3Abe+2bBd)}{b^6(a+bx)}-\frac{(bd-ae)^3(-5aBe+4Ab}{2b^6(a+bx)^2}$$

Rubi [A] time = 0.23, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{e^3x(-4aBe+Abe+4bBd)}{b^5}+\frac{2e^2(bd-ae)\log(a+bx)(-5aBe+2Abe+3bBd)}{b^6}-\frac{2e(bd-ae)^2(-5aBe+3Abe+2bBd)}{b^6(a+bx)}-\frac{(bd-ae)^3(-5aBe+4Abe+bBd)}{2b^6(a+bx)^2}-\frac{(Ab-aB)(bd-ae)^4}{3b^6(a+bx)^3}+\frac{Be^4x^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^3*(4*b*B*d + A*b*e - 4*a*B*e)*x)/b^5 + (B*e^4*x^2)/(2*b^4) - ((A*b - a*B
)*(b*d - a*e)^4)/(3*b^6*(a + b*x)^3) - ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*
a*B*e))/(2*b^6*(a + b*x)^2) - (2*e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e - 5*a*B
*e))/(b^6*(a + b*x)) + (2*e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e - 5*a*B*e)*Log
[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2} \, dx &= \int \frac{(A+Bx)(d+ex)^4}{(a+bx)^4} \, dx \\
&= \int \left(\frac{e^3(4bBd+Abe-4aBe)}{b^5}+\frac{Be^4x}{b^4}+\frac{(Ab-aB)(bd-ae)^4}{b^5(a+bx)^4}+\frac{(bd-ae)^3(bBd+4Ab}{b^5(a+bx)^3}\right. \\
&= \frac{e^3(4bBd+Abe-4aBe)x}{b^5}+\frac{Be^4x^2}{2b^4}-\frac{(Ab-aB)(bd-ae)^4}{3b^6(a+bx)^3}-\frac{(bd-ae)^3(bBd+4Abe}{2b^6(a+bx)^2}
\end{aligned}$$

Mathematica [A] time = 0.19, size = 362, normalized size = 1.95

$$\frac{-2Ab\left(13a^4e^4+a^3be^3(27ex-22d)+3a^2b^2e^2\left(2d^2-18dex+3e^2x^2\right)+ab^3e\left(2d^3+18d^2ex-36de^2x^2-9e^3x^3\right)+b^4\left(d^4+6d^3ex+18d^2e^2x^2-3e^4x^4\right)\right)+B\left(47a^5e^4+a^4be^3(81ex-104d)-3a^3b^2e^2\left(-22d^2+72dex+3e^2x^2\right)-a^2b^3e\left(8d^3-162d^2ex+72de^2x^2+63e^3x^3\right)-ab^4\left(d^4+24d^3ex-108d^2e^2x^2-72de^3x^3+15e^4x^4\right)+3b^5x\left(-d^4-8d^3ex+8de^3x^3+e^4x^4\right)\right)+12e^2(a+bx)^3(bd-ae)\log(a+bx)(-5aBe+2Abe+3bBd)}{6b^6(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*A*b*(13*a^4*e^4 + a^3*b*e^3*(-22*d + 27*e*x) + 3*a^2*b^2*e^2*(2*d^2 - 1
8*d*e*x + 3*e^2*x^2) + a*b^3*e*(2*d^3 + 18*d^2*e*x - 36*d*e^2*x^2 - 9*e^3*x
^3) + b^4*(d^4 + 6*d^3*e*x + 18*d^2*e^2*x^2 - 3*e^4*x^4)) + B*(47*a^5*e^4 +
 a^4*b*e^3*(-104*d + 81*e*x) - 3*a^3*b^2*e^2*(-22*d^2 + 72*d*e*x + 3*e^2*x^
2) - a^2*b^3*e*(8*d^3 - 162*d^2*e*x + 72*d*e^2*x^2 + 63*e^3*x^3) + 3*b^5*x*
(-d^4 - 8*d^3*e*x + 8*d*e^3*x^3 + e^4*x^4) - a*b^4*(d^4 + 24*d^3*e*x - 108*
d^2*e^2*x^2 - 72*d*e^3*x^3 + 15*e^4*x^4)) + 12*e^2*(b*d - a*e)*(3*b*B*d + 2
*A*b*e - 5*a*B*e)*(a + b*x)^3*Log[a + b*x])/(6*b^6*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.43, size = 671, normalized size = 3.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*b^5*e^4*x^5 - (B*a*b^4 + 2*A*b^5)*d^4 - 4*(2*B*a^2*b^3 + A*a*b^4)*
d^3*e + 6*(11*B*a^3*b^2 - 2*A*a^2*b^3)*d^2*e^2 - 4*(26*B*a^4*b - 11*A*a^3*b
^2)*d*e^3 + (47*B*a^5 - 26*A*a^4*b)*e^4 + 3*(8*B*b^5*d*e^3 - (5*B*a*b^4 - 2
*A*b^5)*e^4)*x^4 + 9*(8*B*a*b^4*d*e^3 - (7*B*a^2*b^3 - 2*A*a*b^4)*e^4)*x^3
- 3*(8*B*b^5*d^3*e - 12*(3*B*a*b^4 - A*b^5)*d^2*e^2 + 24*(B*a^2*b^3 - A*a*b
^4)*d*e^3 + 3*(B*a^3*b^2 + 2*A*a^2*b^3)*e^4)*x^2 - 3*(B*b^5*d^4 + 4*(2*B*a*
b^4 + A*b^5)*d^3*e - 6*(9*B*a^2*b^3 - 2*A*a*b^4)*d^2*e^2 + 36*(2*B*a^3*b^2
- A*a^2*b^3)*d*e^3 - 9*(3*B*a^4*b - 2*A*a^3*b^2)*e^4)*x + 12*(3*B*a^3*b^2*d
^2*e^2 - 2*(4*B*a^4*b - A*a^3*b^2)*d*e^3 + (5*B*a^5 - 2*A*a^4*b)*e^4 + (3*B
*b^5*d^2*e^2 - 2*(4*B*a*b^4 - A*b^5)*d*e^3 + (5*B*a^2*b^3 - 2*A*a*b^4)*e^4)
*x^3 + 3*(3*B*a*b^4*d^2*e^2 - 2*(4*B*a^2*b^3 - A*a*b^4)*d*e^3 + (5*B*a^3*b^
2 - 2*A*a^2*b^3)*e^4)*x^2 + 3*(3*B*a^2*b^3*d^2*e^2 - 2*(4*B*a^3*b^2 - A*a^2
*b^3)*d*e^3 + (5*B*a^4*b - 2*A*a^3*b^2)*e^4)*x)*log(b*x + a))/(b^9*x^3 + 3*
a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6)
```

giac [B] time = 0.18, size = 415, normalized size = 2.23

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*(3*B*b^2*d^2*e^2 - 8*B*a*b*d*e^3 + 2*A*b^2*d*e^3 + 5*B*a^2*e^4 - 2*A*a*b*
e^4)*log(abs(b*x + a))/b^6 + 1/2*(B*b^4*x^2*e^4 + 8*B*b^4*d*x*e^3 - 8*B*a*b
^3*x*e^4 + 2*A*b^4*x*e^4)/b^8 - 1/6*(B*a*b^4*d^4 + 2*A*b^5*d^4 + 8*B*a^2*b^
3*d^3*e + 4*A*a*b^4*d^3*e - 66*B*a^3*b^2*d^2*e^2 + 12*A*a^2*b^3*d^2*e^2 + 1
04*B*a^4*b*d*e^3 - 44*A*a^3*b^2*d*e^3 - 47*B*a^5*e^4 + 26*A*a^4*b*e^4 + 12*
(2*B*b^5*d^3*e - 9*B*a*b^4*d^2*e^2 + 3*A*b^5*d^2*e^2 + 12*B*a^2*b^3*d*e^3 -
 6*A*a*b^4*d*e^3 - 5*B*a^3*b^2*e^4 + 3*A*a^2*b^3*e^4)*x^2 + 3*(B*b^5*d^4 +
8*B*a*b^4*d^3*e + 4*A*b^5*d^3*e - 54*B*a^2*b^3*d^2*e^2 + 12*A*a*b^4*d^2*e^2
 + 80*B*a^3*b^2*d*e^3 - 36*A*a^2*b^3*d*e^3 - 35*B*a^4*b*e^4 + 20*A*a^3*b^2*
e^4)*x)/((b*x + a)^3*b^6)
```

maple [B] time = 0.06, size = 626, normalized size = 3.37

$$6\frac{A d^{2} a e^{2}}{b^{3}(bx+a)^{2}}+8\frac{B d a^{3} e^{3}}{b^{5}(bx+a)^{2}}-\frac{4}{3}\frac{B a^{2} d^{3} e}{b^{3}(bx+a)^{3}}-6\frac{A a^{2} d e^{3}}{b^{4}(bx+a)^{2}}+2\frac{B a^{3} d^{2} e^{2}}{b^{4}(bx+a)^{3}}-9\frac{B a^{2} d^{2} e^{2}}{b^{4}(bx+a)^{2}}+4\frac{B d^{3} a e}{b^{3}(bx+a)^{2}}+12\frac{e^{3} A a d}{b^{4}(bx+a)}-16\frac{e^{3}\ln(bx+a) B d a}{b^{5}}-24\frac{e^{3} B a^{2} d}{b^{5}(bx+a)}+18\frac{e^{2} B a d^{2}}{b^{4}(bx+a)}-\frac{4}{3}\frac{B a^{4} d e^{3}}{b^{5}(bx+a)^{3}}+\frac{4}{3}\frac{A a^{3} d e^{3}}{b^{4}(bx+a)^{3}}-\frac{1}{2}\frac{B d^{4}}{b^{2}(bx+a)^{2}}-\frac{1}{3}\frac{A d^{4}}{b(bx+a)^{3}}+\frac{e^{4} A x}{b^{4}}+\frac{4}{3}\frac{A a d^{3} e}{b^{2}(bx+a)^{3}}-2\frac{A a^{2} d^{2} e^{2}}{b^{3}(bx+a)^{3}}+10\frac{e^{4} B a^{3}}{b^{6}(bx+a)}-4\frac{e B d^{3}}{b^{3}(bx+a)}+\frac{1}{3}\frac{B a d^{4}}{b^{2}(bx+a)^{3}}+2\frac{A a^{3} e^{4}}{b^{5}(bx+a)^{2}}-2\frac{A d^{3} e}{b^{2}(bx+a)^{2}}-\frac{5}{2}\frac{B a^{4} e^{4}}{b^{6}(bx+a)^{2}}-4\frac{e^{4} a B x}{b^{5}}+4\frac{e^{3} B d x}{b^{4}}-\frac{1}{3}\frac{A a^{4} e^{4}}{b^{5}(bx+a)^{3}}+\frac{1}{3}\frac{B a^{5} e^{4}}{b^{6}(bx+a)^{3}}+10\frac{e^{4}\ln(bx+a) B a^{2}}{b^{6}}+6\frac{e^{2}\ln(bx+a) B d^{2}}{b^{4}}-6\frac{e^{4} A a^{2}}{b^{5}(bx+a)}-6\frac{e^{2} A d^{2}}{b^{3}(bx+a)}-4\frac{e^{4}\ln(bx+a) A a}{b^{5}}+4\frac{e^{3}\ln(bx+a) A d}{b^{4}}+\frac{1}{2}\frac{B e^{4} x^{2}}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 6/b^3/(b*x+a)^2*A*d^2*a*e^2+8/b^5/(b*x+a)^2*B*d*a^3*e^3-4/3/b^3/(b*x+a)^3*B
*a^2*d^3*e-6/b^4/(b*x+a)^2*A*a^2*d*e^3+2/b^4/(b*x+a)^3*B*a^3*d^2*e^2-9/b^4/
(b*x+a)^2*B*a^2*d^2*e^2+4/b^3/(b*x+a)^2*B*d^3*a*e+12*e^3/b^4/(b*x+a)*A*a*d-
16/b^5*e^3*ln(b*x+a)*B*d*a-24*e^3/b^5/(b*x+a)*B*a^2*d+18*e^2/b^4/(b*x+a)*B*
a*d^2-4/3/b^5/(b*x+a)^3*B*a^4*d*e^3+4/3/b^4/(b*x+a)^3*A*a^3*d*e^3-1/2/b^2/(
b*x+a)^2*B*d^4-1/3/b/(b*x+a)^3*A*d^4+e^4/b^4*A*x+4/3/b^2/(b*x+a)^3*A*a*d^3*
e-2/b^3/(b*x+a)^3*A*a^2*d^2*e^2+10*e^4/b^6/(b*x+a)*B*a^3-4*e/b^3/(b*x+a)*B*
d^3+1/3/b^2/(b*x+a)^3*B*a*d^4+2/b^5/(b*x+a)^2*A*a^3*e^4-2/b^2/(b*x+a)^2*A*d
^3*e-5/2/b^6/(b*x+a)^2*B*a^4*e^4-4*e^4/b^5*a*B*x+4*e^3/b^4*B*d*x-1/3/b^5/(b
*x+a)^3*A*a^4*e^4+1/3/b^6/(b*x+a)^3*B*a^5*e^4+10/b^6*e^4*ln(b*x+a)*B*a^2+6/
b^4*e^2*ln(b*x+a)*B*d^2-6*e^4/b^5/(b*x+a)*A*a^2-6*e^2/b^3/(b*x+a)*A*d^2-4/b
^5*e^4*ln(b*x+a)*A*a+4/b^4*e^3*ln(b*x+a)*A*d+1/2*B*e^4*x^2/b^4
```

maxima [B] time = 0.61, size = 434, normalized size = 2.33

$$-\frac{(Bab^{4}+2Ab^{5})d^{4}+4(2Ba^{2}b^{3}+Aab^{4})d^{3}e-6(11Ba^{3}b^{2}-2Aa^{2}b^{3})d^{2}e^{2}+4(26Ba^{4}b-11Aa^{3}b^{2})de^{3}-(47Ba^{5}-26Aa^{4}b)e^{4}+12\left(2Bb^{5}d^{3}e-3(3Bab^{4}-Ab^{5})d^{2}e^{2}+6(2Ba^{2}b^{3}-Aab^{4})de^{3}-(5Ba^{3}b^{2}-3Aa^{2}b^{3})e^{4}\right)x^{2}+3\left(Bb^{5}d^{4}+4(2Bab^{4}+Ab^{5})d^{3}e-6(9Ba^{2}b^{3}-2Aab^{4})d^{2}e^{2}+4(20Ba^{3}b^{2}-9Aa^{2}b^{3})de^{3}-5(7Ba^{4}b-4Aa^{3}b^{2})e^{4}\right)x}{6\,(b^{9}x^{3}+3ab^{8}x^{2}+3a^{2}b^{7}x+a^{3}b^{6})}+\frac{Bbe^{4}x^{2}+2\left(4Bbde^{3}-(4Ba-Ab)e^{4}\right)x}{2b^{5}}+\frac{2\left(3Bb^{2}d^{2}e^{2}-2(4Bab-Ab^{2})de^{3}+(5Ba^{2}-2Aab)e^{4}\right)\log(bx+a)}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*((B*a*b^4 + 2*A*b^5)*d^4 + 4*(2*B*a^2*b^3 + A*a*b^4)*d^3*e - 6*(11*B*a
^3*b^2 - 2*A*a^2*b^3)*d^2*e^2 + 4*(26*B*a^4*b - 11*A*a^3*b^2)*d*e^3 - (47*B
*a^5 - 26*A*a^4*b)*e^4 + 12*(2*B*b^5*d^3*e - 3*(3*B*a*b^4 - A*b^5)*d^2*e^2
+ 6*(2*B*a^2*b^3 - A*a*b^4)*d*e^3 - (5*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 +
3*(B*b^5*d^4 + 4*(2*B*a*b^4 + A*b^5)*d^3*e - 6*(9*B*a^2*b^3 - 2*A*a*b^4)*d^
2*e^2 + 4*(20*B*a^3*b^2 - 9*A*a^2*b^3)*d*e^3 - 5*(7*B*a^4*b - 4*A*a^3*b^2)*
e^4)*x)/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6) + 1/2*(B*b*e^4*x^2
+ 2*(4*B*b*d*e^3 - (4*B*a - A*b)*e^4)*x)/b^5 + 2*(3*B*b^2*d^2*e^2 - 2*(4*B*
a*b - A*b^2)*d*e^3 + (5*B*a^2 - 2*A*a*b)*e^4)*log(b*x + a)/b^6
```

mupad [B] time = 0.19, size = 451, normalized size = 2.42

$$x\left(\frac{A e^{4}+4 B d e^{3}}{b^{4}}-\frac{4 B a e^{4}}{b^{5}}\right)-\frac{\frac{-47 B a^{5} e^{4}+104 B a^{4} b d e^{3}+26 A a^{4} b e^{4}-66 B a^{3} b^{2} d^{2} e^{2}-44 A a^{3} b^{2} d e^{3}+8 B a^{2} b^{3} d^{3} e+12 A a^{2} b^{3} d^{2} e^{2}+B a b^{4} d^{4}+4 A a b^{4} d^{3} e+2 A b^{5} d^{4}}{6 b}+x\left(-\frac{35 B a^{4} e^{4}}{2}+40 B a^{3} b d e^{3}+10 A a^{3} b e^{4}-27 B a^{2} b^{2} d^{2} e^{2}-18 A a^{2} b^{2} d e^{3}+4 B a b^{3} d^{3} e+6 A a b^{3} d^{2} e^{2}+\frac{B b^{4} d^{4}}{2}+2 A b^{4} d^{3} e\right)+x^{2}\left(-10 B a^{3} b e^{4}+24 B a^{2} b^{2} d e^{3}+6 A a^{2} b^{2} e^{4}-18 B a b^{3} d^{2} e^{2}-12 A a b^{3} d e^{3}+4 B b^{4} d^{3} e+6 A b^{4} d^{2} e^{2}\right)}{a^{3} b^{5}+3 a^{2} b^{6} x+3 a b^{7} x^{2}+b^{8} x^{3}}+\frac{\ln(a+b x)\left(10 B a^{2} e^{4}-16 B a b d e^{3}-4 A a b e^{4}+6 B b^{2} d^{2} e^{2}+4 A b^{2} d e^{3}\right)}{b^{6}}+\frac{B e^{4} x^{2}}{2 b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x*((A*e^4 + 4*B*d*e^3)/b^4 - (4*B*a*e^4)/b^5) - ((2*A*b^5*d^4 - 47*B*a^5*e^
4 + 26*A*a^4*b*e^4 + B*a*b^4*d^4 - 44*A*a^3*b^2*d*e^3 + 8*B*a^2*b^3*d^3*e +
 12*A*a^2*b^3*d^2*e^2 - 66*B*a^3*b^2*d^2*e^2 + 4*A*a*b^4*d^3*e + 104*B*a^4*
b*d*e^3)/(6*b) + x*((B*b^4*d^4)/2 - (35*B*a^4*e^4)/2 + 10*A*a^3*b*e^4 + 2*A
*b^4*d^3*e + 6*A*a*b^3*d^2*e^2 - 18*A*a^2*b^2*d*e^3 - 27*B*a^2*b^2*d^2*e^2
+ 4*B*a*b^3*d^3*e + 40*B*a^3*b*d*e^3) + x^2*(4*B*b^4*d^3*e - 10*B*a^3*b*e^4
 + 6*A*a^2*b^2*e^4 + 6*A*b^4*d^2*e^2 - 18*B*a*b^3*d^2*e^2 + 24*B*a^2*b^2*d*
e^3 - 12*A*a*b^3*d*e^3))/(a^3*b^5 + b^8*x^3 + 3*a^2*b^6*x + 3*a*b^7*x^2) +
(log(a + b*x)*(10*B*a^2*e^4 - 4*A*a*b*e^4 + 4*A*b^2*d*e^3 + 6*B*b^2*d^2*e^2
 - 16*B*a*b*d*e^3))/b^6 + (B*e^4*x^2)/(2*b^4)
```

sympy [B] time = 21.38, size = 486, normalized size = 2.61

$$\frac{Be^{4}x^{2}}{2b^{4}}+x\left(\frac{Ae^{4}}{b^{4}}-\frac{4Bae^{4}}{b^{5}}+\frac{4Bde^{3}}{b^{4}}\right)+\frac{-26Aa^{4}be^{4}+44Aa^{3}b^{2}de^{3}-12Aa^{2}b^{3}d^{2}e^{2}-4Aab^{4}d^{3}e-2Ab^{5}d^{4}+47Ba^{5}e^{4}-104Ba^{4}bde^{3}+66Ba^{3}b^{2}d^{2}e^{2}-8Ba^{2}b^{3}d^{3}e-Bab^{4}d^{4}+x^{2}\left(-36Aa^{2}b^{3}e^{4}+72Aab^{4}de^{3}-36Ab^{5}d^{2}e^{2}+60Ba^{3}b^{2}e^{4}-144Ba^{2}b^{3}de^{3}+108Bab^{4}d^{2}e^{2}-24Bb^{5}d^{3}e\right)+x\left(-60Aa^{3}b^{2}e^{4}+108Aa^{2}b^{3}de^{3}-36Aab^{4}d^{2}e^{2}-12Ab^{5}d^{3}e+105Ba^{4}be^{4}-240Ba^{3}b^{2}de^{3}+162Ba^{2}b^{3}d^{2}e^{2}-24Bab^{4}d^{3}e-3Bb^{5}d^{4}\right)}{6a^{3}b^{6}+18a^{2}b^{7}x+18ab^{8}x^{2}+6b^{9}x^{3}}+\frac{2e^{2}(ae-bd)(-2Abe+5Bae-3Bbd)\log(a+bx)}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*e**4*x**2/(2*b**4) + x*(A*e**4/b**4 - 4*B*a*e**4/b**5 + 4*B*d*e**3/b**4)
+ (-26*A*a**4*b*e**4 + 44*A*a**3*b**2*d*e**3 - 12*A*a**2*b**3*d**2*e**2 - 4
*A*a*b**4*d**3*e - 2*A*b**5*d**4 + 47*B*a**5*e**4 - 104*B*a**4*b*d*e**3 + 6
6*B*a**3*b**2*d**2*e**2 - 8*B*a**2*b**3*d**3*e - B*a*b**4*d**4 + x**2*(-36*
A*a**2*b**3*e**4 + 72*A*a*b**4*d*e**3 - 36*A*b**5*d**2*e**2 + 60*B*a**3*b**
2*e**4 - 144*B*a**2*b**3*d*e**3 + 108*B*a*b**4*d**2*e**2 - 24*B*b**5*d**3*e
) + x*(-60*A*a**3*b**2*e**4 + 108*A*a**2*b**3*d*e**3 - 36*A*a*b**4*d**2*e**
2 - 12*A*b**5*d**3*e + 105*B*a**4*b*e**4 - 240*B*a**3*b**2*d*e**3 + 162*B*a
**2*b**3*d**2*e**2 - 24*B*a*b**4*d**3*e - 3*B*b**5*d**4))/(6*a**3*b**6 + 18
*a**2*b**7*x + 18*a*b**8*x**2 + 6*b**9*x**3) + 2*e**2*(a*e - b*d)*(-2*A*b*e
 + 5*B*a*e - 3*B*b*d)*log(a + b*x)/b**6
```

3.1482 $\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=144

$$\frac{e^2\log(a+bx)(-4aBe+Abe+3bBd)}{b^5}-\frac{3e(bd-ae)(-2aBe+Abe+bBd)}{b^5(a+bx)}-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{2b^5(a+bx)^2}-\frac{(Ab$$

Rubi [A] time = 0.15, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2\log(a+bx)(-4aBe+Abe+3bBd)}{b^5}-\frac{3e(bd-ae)(-2aBe+Abe+bBd)}{b^5(a+bx)}-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{2b^5(a+bx)^2}-\frac{(Ab-aB)(bd-ae)^3}{3b^5(a+bx)^3}+\frac{Be^3x}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (B*e^3*x)/b^4 - ((A*b - a*B)*(b*d - a*e)^3)/(3*b^5*(a + b*x)^3) - ((b*d - a
*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e))/(2*b^5*(a + b*x)^2) - (3*e*(b*d - a*e)*(
b*B*d + A*b*e - 2*a*B*e))/(b^5*(a + b*x)) + (e^2*(3*b*B*d + A*b*e - 4*a*B*e
)*Log[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)^3}{(a+bx)^4}\,dx\\
&= \int \left(\frac{Be^3}{b^4}+\frac{(Ab-aB)(bd-ae)^3}{b^4(a+bx)^4}+\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{b^4(a+bx)^3}+\frac{3e(bd-ae)(bBd}{b^4(a}\right.\\
&= \frac{Be^3x}{b^4}-\frac{(Ab-aB)(bd-ae)^3}{3b^5(a+bx)^3}-\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{2b^5(a+bx)^2}-\frac{3e(bd-ae)(bBd+}{b^5(a+b}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 217, normalized size = 1.51

$$-\frac{Ab(bd-ae)\left(11a^2e^2+abe(5d+27ex)+b^2\left(2d^2+9dex+18e^2x^2\right)\right)+B\left(26a^4e^3+3a^3be^2(18ex-11d)+3a^2b^2e\left(2d^2-27dex+6e^2x^2\right)+ab^3\left(d^3+18d^2ex-54de^2x^2-18e^3x^3\right)+3b^4x\left(d^3+6d^2ex-2e^3x^3\right)\right)-6e^2(a+bx)^3\log(a+bx)(-4aBe+Abe+3bBd)}{6b^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

[Out] -1/6*(A*b*(b*d - a*e)*(11*a^2*e^2 + a*b*e*(5*d + 27*e*x) + b^2*(2*d^2 + 9*d*e*x + 18*e^2*x^2)) + B*(26*a^4*e^3 + 3*a^3*b*e^2*(-11*d + 18*e*x) + 3*a^2*b^2*e*(2*d^2 - 27*d*e*x + 6*e^2*x^2) + a*b^3*(d^3 + 18*d^2*e*x - 54*d*e^2*x^2 - 18*e^3*x^3) + 3*b^4*x*(d^3 + 6*d^2*e*x - 2*e^3*x^3)) - 6*e^2*(3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^3*Log[a + b*x])/(b^5*(a + b*x)^3)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]

[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]

fricas [B] time = 0.41, size = 427, normalized size = 2.97

$$\frac{6\,Bb^4e^3x^4 + 18\,Bab^3e^3x^3 - \left(Bab^3 + 2\,Ab^4\right)d^3 - 3\left(2\,Ba^2b^2 + Aab^3\right)d^2e + 3\left(11\,Ba^3b - 2\,Aa^2b^2\right)de^2 - \left(26\,Ba^4 - 11\,Aa^3b\right)e^3 - 18\left(Bb^4d^2e - \left(3\,Bab^3 - Ab^4\right)de^2 + \left(Ba^2b^2 - Aab^3\right)e^3\right)x^2 - 3\left(Bb^4d^3 + 3\left(2\,Bab^3 + Ab^4\right)d^2e - 3\left(9\,Ba^2b^2 - 2\,Aab^3\right)de^2 + 9\left(2\,Ba^3b - Aa^2b^2\right)e^3\right)x + 6\left(3\,Ba^3bde^2 - \left(4\,Ba^4 - Aa^3b\right)e^3 + \left(3\,Bb^4de^2 - \left(4\,Bab^3 - Ab^4\right)e^3\right)x^3 + 3\left(3\,Bab^3de^2 - \left(4\,Ba^2b^2 - Aab^3\right)e^3\right)x^2 + 3\left(3\,Ba^2b^2de^2 - \left(4\,Ba^3b - Aa^2b^2\right)e^3\right)x\right)\log\left(bx+a\right)}{6\left(b^8x^3 + 3\,ab^7x^2 + 3\,a^2b^6x + a^3b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")

[Out] 1/6*(6*B*b^4*e^3*x^4 + 18*B*a*b^3*e^3*x^3 - (B*a*b^3 + 2*A*b^4)*d^3 - 3*(2*B*a^2*b^2 + A*a*b^3)*d^2*e + 3*(11*B*a^3*b - 2*A*a^2*b^2)*d*e^2 - (26*B*a^4 - 11*A*a^3*b)*e^3 - 18*(B*b^4*d^2*e - (3*B*a*b^3 - A*b^4)*d*e^2 + (B*a^2*b^2 - A*a*b^3)*e^3)*x^2 - 3*(B*b^4*d^3 + 3*(2*B*a*b^3 + A*b^4)*d^2*e - 3*(9*B*a^2*b^2 - 2*A*a*b^3)*d*e^2 + 9*(2*B*a^3*b - A*a^2*b^2)*e^3)*x + 6*(3*B*a^3*b*d*e^2 - (4*B*a^4 - A*a^3*b)*e^3 + (3*B*b^4*d*e^2 - (4*B*a*b^3 - A*b^4)*e^3)*x^3 + 3*(3*B*a*b^3*d*e^2 - (4*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 3*(3*B*a^2*b^2*d*e^2 - (4*B*a^3*b - A*a^2*b^2)*e^3)*x)*log(b*x + a))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)

giac [A] time = 0.19, size = 266, normalized size = 1.85

$$\frac{Bxe^3}{b^4} + \frac{\left(3\,Bbde^2 - 4\,Bae^3 + Abe^3\right)\log\left(|bx+a|\right)}{b^5} - \frac{Bab^3d^3 + 2\,Ab^4d^3 + 6\,Ba^2b^2d^2e + 3\,Aab^3d^2e - 33\,Ba^3bde^2 + 6\,Aa^2b^2de^2 + 26\,Ba^4e^3 - 11\,Aa^3be^3 + 18\left(Bb^4d^2e - 3\,Bab^3de^2 + Ab^4de^2 + 2\,Ba^2b^2e^3 - Aab^3e^3\right)x^2 + 3\left(Bb^4d^3 + 6\,Bab^3d^2e + 3\,Ab^4d^2e - 27\,Ba^2b^2de^2 + 6\,Aab^3de^2 + 20\,Ba^3be^3 - 9\,Aa^2b^2e^3\right)x}{6\left(bx+a\right)^3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")

[Out] B*x*e^3/b^4 + (3*B*b*d*e^2 - 4*B*a*e^3 + A*b*e^3)*log(abs(b*x + a))/b^5 - 1/6*(B*a*b^3*d^3 + 2*A*b^4*d^3 + 6*B*a^2*b^2*d^2*e + 3*A*a*b^3*d^2*e - 33*B*a^3*b*d*e^2 + 6*A*a^2*b^2*d*e^2 + 26*B*a^4*e^3 - 11*A*a^3*b*e^3 + 18*(B*b^4*d^2*e - 3*B*a*b^3*d*e^2 + A*b^4*d*e^2 + 2*B*a^2*b^2*e^3 - A*a*b^3*e^3)*x^2 + 3*(B*b^4*d^3 + 6*B*a*b^3*d^2*e + 3*A*b^4*d^2*e - 27*B*a^2*b^2*d*e^2 + 6*A*a*b^3*d*e^2 + 20*B*a^3*b*e^3 - 9*A*a^2*b^2*e^3)*x)/((b*x + a)^3*b^5)

maple [B] time = 0.06, size = 419, normalized size = 2.91

$$\frac{Aa^3e^3}{3\left(bx+a\right)^3b^4} - \frac{Aa^2de^2}{\left(bx+a\right)^3b^3} + \frac{Aad^2e}{\left(bx+a\right)^3b^2} - \frac{Ad^3}{3\left(bx+a\right)^3b} - \frac{Ba^4e^3}{3\left(bx+a\right)^3b^5} + \frac{Ba^3de^2}{\left(bx+a\right)^3b^4} - \frac{Ba^2d^2e}{\left(bx+a\right)^3b^3} + \frac{Bad^3}{3\left(bx+a\right)^3b^2} - \frac{3Aa^2e^3}{2\left(bx+a\right)^2b^4} + \frac{3Aade^2}{\left(bx+a\right)^2b^3} - \frac{3Ad^2e}{2\left(bx+a\right)^2b^2} + \frac{2Ba^3e^3}{\left(bx+a\right)^2b^5} - \frac{9Ba^2de^2}{2\left(bx+a\right)^2b^4} + \frac{3Bad^2e}{\left(bx+a\right)^2b^3} - \frac{Bd^3}{2\left(bx+a\right)^2b^2} + \frac{3Aae^3}{\left(bx+a\right)b^4} - \frac{3Ade^2}{\left(bx+a\right)b^3} + \frac{Ae^3\ln\left(bx+a\right)}{b^4} - \frac{6Ba^2e^3}{\left(bx+a\right)b^5} + \frac{9Bade^2}{\left(bx+a\right)b^4} - \frac{4Bae^3\ln\left(bx+a\right)}{b^5} - \frac{3Bd^2e}{\left(bx+a\right)b^3} + \frac{3Bde^2\ln\left(bx+a\right)}{b^4} + \frac{Be^3x}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x)

[Out] B*e^3*x/b^4+1/3/b^4/(b*x+a)^3*A*a^3*e^3-1/b^3/(b*x+a)^3*A*a^2*d*e^2+1/b^2/(b*x+a)^3*A*a*d^2*e-1/3/b/(b*x+a)^3*A*d^3-1/3/b^5/(b*x+a)^3*B*a^4*e^3+1/b^4/(b*x+a)^3*a^3*B*d*e^2-1/b^3/(b*x+a)^3*B*a^2*d^2*e+1/3/b^2/(b*x+a)^3*B*a*d^3-3/2/b^4/(b*x+a)^2*A*a^2*e^3+3/b^3/(b*x+a)^2*A*a*d*e^2-3/2/b^2/(b*x+a)^2*A*

```
d^2*e+2/b^5/(b*x+a)^2*B*a^3*e^3-9/2/b^4/(b*x+a)^2*B*a^2*d*e^2+3/b^3/(b*x+a)
^2*B*a*d^2*e-1/2/b^2/(b*x+a)^2*B*d^3+1/b^4*e^3*ln(b*x+a)*A-4/b^5*e^3*ln(b*x
+a)*a*B+3/b^4*e^2*ln(b*x+a)*B*d+3*e^3/b^4/(b*x+a)*A*a-3*e^2/b^3/(b*x+a)*A*d
-6*e^3/b^5/(b*x+a)*B*a^2+9*e^2/b^4/(b*x+a)*B*d*a-3*e/b^3/(b*x+a)*B*d^2
```

maxima [**B**] time = 0.64, size = 292, normalized size = 2.03

$$\frac{Be^3x}{b^4} - \frac{(Bab^3 + 2\,Ab^4)d^3 + 3\left(2\,Ba^2b^2 + Aab^3\right)d^2e - 3\left(11\,Ba^3b - 2\,Aa^2b^2\right)de^2 + \left(26\,Ba^4 - 11\,Aa^3b\right)e^3 + 18\left(Bb^4d^2e - \left(3\,Bab^3 - Ab^4\right)de^2 + \left(2\,Ba^2b^2 - Aab^3\right)e^3\right)x^2 + 3\left(Bb^4d^3 + 3\left(2\,Bab^3 + Ab^4\right)d^2e - 3\left(9\,Ba^2b^2 - 2\,Aab^3\right)de^2 + \left(20\,Ba^3b - 9\,Aa^2b^2\right)e^3\right)x}{6\left(b^8x^3 + 3\,ab^7x^2 + 3\,a^2b^6x + a^3b^5\right)} + \frac{\left(3\,Bbde^2 - (4\,Ba - Ab)e^3\right)\log\left(bx + a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] B*e^3*x/b^4 - 1/6*((B*a*b^3 + 2*A*b^4)*d^3 + 3*(2*B*a^2*b^2 + A*a*b^3)*d^2*
e - 3*(11*B*a^3*b - 2*A*a^2*b^2)*d*e^2 + (26*B*a^4 - 11*A*a^3*b)*e^3 + 18*(
B*b^4*d^2*e - (3*B*a*b^3 - A*b^4)*d*e^2 + (2*B*a^2*b^2 - A*a*b^3)*e^3)*x^2
+ 3*(B*b^4*d^3 + 3*(2*B*a*b^3 + A*b^4)*d^2*e - 3*(9*B*a^2*b^2 - 2*A*a*b^3)*
d*e^2 + (20*B*a^3*b - 9*A*a^2*b^2)*e^3)*x)/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b
^6*x + a^3*b^5) + (3*B*b*d*e^2 - (4*B*a - A*b)*e^3)*log(b*x + a)/b^5
```

mupad [**B**] time = 2.34, size = 301, normalized size = 2.09

$$\frac{\ln\left(a + b\,x\right)\,\left(A\,b\,e^3 - 4\,B\,a\,e^3 + 3\,B\,b\,d\,e^2\right)}{b^5} - \frac{\frac{26\,B\,a^4\,e^3 - 33\,B\,a^3\,b\,d\,e^2 - 11\,A\,a^3\,b\,e^3 + 6\,B\,a^2\,b^2\,d^2\,e + 6\,A\,a^2\,b^2\,d\,e^2 + B\,a\,b^3\,d^3 + 3\,A\,a\,b^3\,d^2\,e + 2\,A\,b^4\,d^3}{6\,b} + x\,\left(10\,B\,a^3\,e^3 - \frac{27\,B\,a^2\,b\,d\,e^2}{2} - \frac{9\,A\,a^2\,b\,e^3}{2} + 3\,B\,a\,b^2\,d^2\,e + 3\,A\,a\,b^2\,d\,e^2 + \frac{B\,b^3\,d^3}{2} + \frac{3\,A\,b^3\,d^2\,e}{2}\right) + x^2\,\left(6\,B\,a^2\,b\,e^3 - 9\,B\,a\,b^2\,d\,e^2 - 3\,A\,a\,b^2\,e^3 + 3\,B\,b^3\,d^2\,e + 3\,A\,b^3\,d\,e^2\right)}{a^3\,b^4 + 3\,a^2\,b^5\,x + 3\,a\,b^6\,x^2 + b^7\,x^3} + \frac{B\,e^3\,x}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (log(a + b*x)*(A*b*e^3 - 4*B*a*e^3 + 3*B*b*d*e^2))/b^5 - ((2*A*b^4*d^3 + 26
*B*a^4*e^3 - 11*A*a^3*b*e^3 + B*a*b^3*d^3 + 6*A*a^2*b^2*d*e^2 + 6*B*a^2*b^2
*d^2*e + 3*A*a*b^3*d^2*e - 33*B*a^3*b*d*e^2)/(6*b) + x*(10*B*a^3*e^3 + (B*b
^3*d^3)/2 - (9*A*a^2*b*e^3)/2 + (3*A*b^3*d^2*e)/2 + 3*A*a*b^2*d*e^2 + 3*B*a
*b^2*d^2*e - (27*B*a^2*b*d*e^2)/2) + x^2*(6*B*a^2*b*e^3 - 3*A*a*b^2*e^3 + 3
*A*b^3*d*e^2 + 3*B*b^3*d^2*e - 9*B*a*b^2*d*e^2))/(a^3*b^4 + b^7*x^3 + 3*a^2
*b^5*x + 3*a*b^6*x^2) + (B*e^3*x)/b^4
```

sympy [**B**] time = 12.68, size = 337, normalized size = 2.34

$$\frac{Be^3x}{b^4} + \frac{11Aa^3be^3 - 6Aa^2b^2de^2 - 3Aab^3d^2e - 2Ab^4d^3 - 26Ba^4e^3 + 33Ba^3bde^2 - 6Ba^2b^2d^2e - Bab^3d^3 + x^2\left(18Aab^3e^3 - 18Ab^4de^2 - 36Ba^2b^2e^3 + 54Bab^3de^2 - 18Bb^4d^2e\right) + x\left(27Aa^2b^2e^3 - 18Aab^3de^2 - 9Ab^4d^2e - 60Ba^3be^3 + 81Ba^2b^2de^2 - 18Bab^3d^2e - 3Bb^4d^3\right)}{6a^3b^5 + 18a^2b^6x + 18ab^7x^2 + 6b^8x^3} - \frac{e^2\left(-Abe + 4Bae - 3Bbd\right)\log\left(a + bx\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*e**3*x/b**4 + (11*A*a**3*b*e**3 - 6*A*a**2*b**2*d*e**2 - 3*A*a*b**3*d**2*
e - 2*A*b**4*d**3 - 26*B*a**4*e**3 + 33*B*a**3*b*d*e**2 - 6*B*a**2*b**2*d**
2*e - B*a*b**3*d**3 + x**2*(18*A*a*b**3*e**3 - 18*A*b**4*d*e**2 - 36*B*a**2
*b**2*e**3 + 54*B*a*b**3*d*e**2 - 18*B*b**4*d**2*e) + x*(27*A*a**2*b**2*e**
3 - 18*A*a*b**3*d*e**2 - 9*A*b**4*d**2*e - 60*B*a**3*b*e**3 + 81*B*a**2*b**
2*d*e**2 - 18*B*a*b**3*d**2*e - 3*B*b**4*d**3))/(6*a**3*b**5 + 18*a**2*b**6
*x + 18*a*b**7*x**2 + 6*b**8*x**3) - e**2*(-A*b*e + 4*B*a*e - 3*B*b*d)*log(
a + b*x)/b**5
```

3.1483 $\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=101

$$-\frac{(d+ex)^3(Ab-aB)}{3b(a+bx)^3(bd-ae)}-\frac{2Be(bd-ae)}{b^4(a+bx)}-\frac{B(bd-ae)^2}{2b^4(a+bx)^2}+\frac{Be^2\log(a+bx)}{b^4}$$

Rubi [A] time = 0.08, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {27, 78, 43}

$$-\frac{(d+ex)^3(Ab-aB)}{3b(a+bx)^3(bd-ae)}-\frac{2Be(bd-ae)}{b^4(a+bx)}-\frac{B(bd-ae)^2}{2b^4(a+bx)^2}+\frac{Be^2\log(a+bx)}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(B*(b*d - a*e)^2)/(2*b^4*(a + b*x)^2) - (2*B*e*(b*d - a*e))/(b^4*(a + b*x)
) - ((A*b - a*B)*(d + e*x)^3)/(3*b*(b*d - a*e)*(a + b*x)^3) + (B*e^2*Log[a
+ b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)^2}{(a+bx)^4}\,dx\\
&= -\frac{(Ab-aB)(d+ex)^3}{3b(bd-ae)(a+bx)^3}+\frac{B\int \frac{(d+ex)^2}{(a+bx)^3}\,dx}{b}\\
&= -\frac{(Ab-aB)(d+ex)^3}{3b(bd-ae)(a+bx)^3}+\frac{B\int \left(\frac{(bd-ae)^2}{b^2(a+bx)^3}+\frac{2e(bd-ae)}{b^2(a+bx)^2}+\frac{e^2}{b^2(a+bx)}\right)dx}{b}\\
&= -\frac{B(bd-ae)^2}{2b^4(a+bx)^2}-\frac{2Be(bd-ae)}{b^4(a+bx)}-\frac{(Ab-aB)(d+ex)^3}{3b(bd-ae)(a+bx)^3}+\frac{Be^2\log(a+bx)}{b^4}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 138, normalized size = 1.37

$$\frac{-2Ab\left(a^2e^2+abe(d+3ex)+b^2\left(d^2+3dex+3e^2x^2\right)\right)+B\left(11a^3e^2+a^2be(27ex-4d)-ab^2\left(d^2+12dex-18e^2x^2\right)-3b^3dx(d+4ex)\right)+6Be^2(a+bx)^3\log(a+bx)}{6b^4(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (B*(11*a^3*e^2 - 3*b^3*d*x*(d + 4*e*x) + a^2*b*e*(-4*d + 27*e*x) - a*b^2*(d
^2 + 12*d*e*x - 18*e^2*x^2)) - 2*A*b*(a^2*e^2 + a*b*e*(d + 3*e*x) + b^2*(d^
2 + 3*d*e*x + 3*e^2*x^2)) + 6*B*e^2*(a + b*x)^3*Log[a + b*x])/(6*b^4*(a + b
*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.42, size = 226, normalized size = 2.24

$$-\frac{(Bab^2+2\,Ab^3)d^2+2\left(2\,Ba^2b+Aab^2\right)de-\left(11\,Ba^3-2\,Aa^2b\right)e^2+6\left(2\,Bb^3de-\left(3\,Bab^2-Ab^3\right)e^2\right)x^2+3\left(Bb^3d^2+2\left(2\,Bab^2+Ab^3\right)de-\left(9\,Ba^2b-2\,Aab^2\right)e^2\right)x-6\left(Bb^3e^2x^3+3\,Bab^2e^2x^2+3\,Ba^2be^2x+Ba^3e^2\right)\log(bx+a)}{6\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*((B*a*b^2 + 2*A*b^3)*d^2 + 2*(2*B*a^2*b + A*a*b^2)*d*e - (11*B*a^3 - 2
*A*a^2*b)*e^2 + 6*(2*B*b^3*d*e - (3*B*a*b^2 - A*b^3)*e^2)*x^2 + 3*(B*b^3*d^
2 + 2*(2*B*a*b^2 + A*b^3)*d*e - (9*B*a^2*b - 2*A*a*b^2)*e^2)*x - 6*(B*b^3*e
^2*x^3 + 3*B*a*b^2*e^2*x^2 + 3*B*a^2*b*e^2*x + B*a^3*e^2)*log(b*x + a))/(b^
7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)
```

giac [A] time = 0.16, size = 161, normalized size = 1.59

$$\frac{Be^2\log\left(|bx+a|\right)}{b^4}-\frac{6\left(2\,Bb^2de-3\,Babe^2+Ab^2e^2\right)x^2+3\left(Bb^2d^2+4\,Babde+2\,Ab^2de-9\,Ba^2e^2+2\,Aabe^2\right)x+\frac{Bab^2d^2+2\,Ab^3d^2+4\,Ba^2bde+2\,Aab^2de-11\,Ba^3e^2+2\,Aa^2be^2}{b}}{6\,(bx+a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*e^2*log(abs(b*x + a))/b^4 - 1/6*(6*(2*B*b^2*d*e - 3*B*a*b*e^2 + A*b^2*e^2
)*x^2 + 3*(B*b^2*d^2 + 4*B*a*b*d*e + 2*A*b^2*d*e - 9*B*a^2*e^2 + 2*A*a*b*e^
2)*x + (B*a*b^2*d^2 + 2*A*b^3*d^2 + 4*B*a^2*b*d*e + 2*A*a*b^2*d*e - 11*B*a^
3*e^2 + 2*A*a^2*b*e^2)/b)/((b*x + a)^3*b^3)
```

maple [B] time = 0.05, size = 251, normalized size = 2.49

$$-\frac{Aa^2e^2}{3(bx+a)^3b^3}+\frac{2Aade}{3(bx+a)^3b^2}-\frac{Ad^2}{3(bx+a)^3b}+\frac{Ba^3e^2}{3(bx+a)^3b^4}-\frac{2Ba^2de}{3(bx+a)^3b^3}+\frac{Bad^2}{3(bx+a)^3b^2}+\frac{Aae^2}{(bx+a)^2b^3}-\frac{Ade}{(bx+a)^2b^2}-\frac{3Ba^2e^2}{2(bx+a)^2b^4}+\frac{2Bade}{(bx+a)^2b^3}-\frac{Bd^2}{2(bx+a)^2b^2}-\frac{Ae^2}{(bx+a)b^3}+\frac{3Bae^2}{(bx+a)b^4}-\frac{2Bde}{(bx+a)b^3}+\frac{Be^2\ln(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3/b^3/(b*x+a)^3*A*a^2*e^2+2/3/b^2/(b*x+a)^3*A*a*d*e-1/3/b/(b*x+a)^3*A*d^
2+1/3/b^4/(b*x+a)^3*B*a^3*e^2-2/3/b^3/(b*x+a)^3*B*a^2*d*e+1/3/b^2/(b*x+a)^3
*B*a*d^2+B*e^2*ln(b*x+a)/b^4+1/b^3/(b*x+a)^2*A*a*e^2-1/b^2/(b*x+a)^2*A*d*e-
```

```
3/2/b^4/(b*x+a)^2*B*a^2*e^2+2/b^3/(b*x+a)^2*B*d*a*e-1/2/b^2/(b*x+a)^2*B*d^2
-e^2/b^3/(b*x+a)*A+3*e^2/b^4/(b*x+a)*a*B-2*e/b^3/(b*x+a)*B*d
```

maxima [A] time = 0.64, size = 189, normalized size = 1.87

$$-\frac{\left(Bab^2 + 2\,Ab^3\right)d^2 + 2\left(2\,Ba^2b + Aab^2\right)de - \left(11\,Ba^3 - 2\,Aa^2b\right)e^2 + 6\left(2\,Bb^3de - \left(3\,Bab^2 - Ab^3\right)e^2\right)x^2 + 3\left(Bb^3d^2 + 2\left(2\,Bab^2 + Ab^3\right)de - \left(9\,Ba^2b - 2\,Aab^2\right)e^2\right)x}{6\left(b^7x^3 + 3\,ab^6x^2 + 3\,a^2b^5x + a^3b^4\right)} + \frac{Be^2\log\left(bx + a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*((B*a*b^2 + 2*A*b^3)*d^2 + 2*(2*B*a^2*b + A*a*b^2)*d*e - (11*B*a^3 - 2
*A*a^2*b)*e^2 + 6*(2*B*b^3*d*e - (3*B*a*b^2 - A*b^3)*e^2)*x^2 + 3*(B*b^3*d^
2 + 2*(2*B*a*b^2 + A*b^3)*d*e - (9*B*a^2*b - 2*A*a*b^2)*e^2)*x)/(b^7*x^3 +
3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4) + B*e^2*log(b*x + a)/b^4
```

mupad [B] time = 2.25, size = 178, normalized size = 1.76

$$\frac{B\,e^2\,\ln\left(a+b\,x\right)}{b^4}-\frac{\frac{-11\,B\,a^3\,e^2+4\,B\,a^2\,b\,d\,e+2\,A\,a^2\,b\,e^2+B\,a\,b^2\,d^2+2\,A\,a\,b^2\,d\,e+2\,A\,b^3\,d^2}{6\,b^4}+\frac{x\,\left(-9\,B\,a^2\,e^2+4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{2\,b^3}+\frac{e\,x^2\,\left(A\,b\,e-3\,B\,a\,e+2\,B\,b\,d\right)}{b^2}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (B*e^2*log(a + b*x))/b^4 - ((2*A*b^3*d^2 - 11*B*a^3*e^2 + 2*A*a^2*b*e^2 + B
*a*b^2*d^2 + 2*A*a*b^2*d*e + 4*B*a^2*b*d*e)/(6*b^4) + (x*(B*b^2*d^2 - 9*B*a
^2*e^2 + 2*A*a*b*e^2 + 2*A*b^2*d*e + 4*B*a*b*d*e))/(2*b^3) + (e*x^2*(A*b*e
- 3*B*a*e + 2*B*b*d))/b^2)/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [B] time = 5.77, size = 211, normalized size = 2.09

$$\frac{Be^2\log\left(a + bx\right)}{b^4} + \frac{-2Aa^2be^2 - 2Aab^2de - 2Ab^3d^2 + 11Ba^3e^2 - 4Ba^2bde - Bab^2d^2 + x^2\left(-6Ab^3e^2 + 18Bab^2e^2 - 12Bb^3de\right) + x\left(-6Aab^2e^2 - 6Ab^3de + 27Ba^2be^2 - 12Bab^2de - 3Bb^3d^2\right)}{6a^3b^4 + 18a^2b^5x + 18ab^6x^2 + 6b^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*e**2*log(a + b*x)/b**4 + (-2*A*a**2*b*e**2 - 2*A*a*b**2*d*e - 2*A*b**3*d*
*2 + 11*B*a**3*e**2 - 4*B*a**2*b*d*e - B*a*b**2*d**2 + x**2*(-6*A*b**3*e**2
 + 18*B*a*b**2*e**2 - 12*B*b**3*d*e) + x*(-6*A*a*b**2*e**2 - 6*A*b**3*d*e +
 27*B*a**2*b*e**2 - 12*B*a*b**2*d*e - 3*B*b**3*d**2))/(6*a**3*b**4 + 18*a**
2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3)
```

3.1484 $\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{-2aBe+Abe+bBd}{2b^3(a+bx)^2}-\frac{(Ab-aB)(bd-ae)}{3b^3(a+bx)^3}-\frac{Be}{b^3(a+bx)}$$

Rubi [A] time = 0.06, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 77\}$

$$-\frac{-2aBe+Abe+bBd}{2b^3(a+bx)^2}-\frac{(Ab-aB)(bd-ae)}{3b^3(a+bx)^3}-\frac{Be}{b^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((A*b - a*B)*(b*d - a*e))/(3*b^3*(a + b*x)^3) - (b*B*d + A*b*e - 2*a*B*e)/
(2*b^3*(a + b*x)^2) - (B*e)/(b^3*(a + b*x))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)}{(a+bx)^4}\,dx\\
&= \int \left(\frac{(Ab-aB)(bd-ae)}{b^2(a+bx)^4}+\frac{bBd+Abe-2aBe}{b^2(a+bx)^3}+\frac{Be}{b^2(a+bx)^2}\right)dx\\
&= -\frac{(Ab-aB)(bd-ae)}{3b^3(a+bx)^3}-\frac{bBd+Abe-2aBe}{2b^3(a+bx)^2}-\frac{Be}{b^3(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 61, normalized size = 0.84

$$-\frac{B\left(2a^2e+ab(d+6ex)+3b^2x(d+2ex)\right)+Ab(ae+2bd+3bex)}{6b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(A*b*(2*b*d + a*e + 3*b*e*x) + B*(2*a^2*e + 3*b^2*x*(d + 2*e*x) + a*b*
(d + 6*e*x)))/(b^3*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.42, size = 97, normalized size = 1.33

$$-\frac{6\,Bb^2ex^2+\left(Bab+2\,Ab^2\right)d+\left(2\,Ba^2+Aab\right)e+3\left(Bb^2d+\left(2\,Bab+Ab^2\right)e\right)x}{6\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b^2*e*x^2 + (B*a*b + 2*A*b^2)*d + (2*B*a^2 + A*a*b)*e + 3*(B*b^2*
d + (2*B*a*b + A*b^2)*e)*x)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

giac [A] time = 0.16, size = 75, normalized size = 1.03

$$-\frac{6\,Bb^2x^2e+3\,Bb^2dx+6\,Babxe+3\,Ab^2xe+Babd+2\,Ab^2d+2\,Ba^2e+Aabe}{6\,(bx+a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/6*(6*B*b^2*x^2*e + 3*B*b^2*d*x + 6*B*a*b*x*e + 3*A*b^2*x*e + B*a*b*d + 2
*A*b^2*d + 2*B*a^2*e + A*a*b*e)/((b*x + a)^3*b^3)
```

maple [A] time = 0.05, size = 79, normalized size = 1.08

$$-\frac{Be}{(bx+a)\,b^3}-\frac{-aAeb+Ad\,b^2+Be\,a^2-aBdb}{3\,(bx+a)^3\,b^3}-\frac{Abe-2aBe+Bbd}{2\,(bx+a)^2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*(-A*a*b*e+A*b^2*d+B*a^2*e-B*a*b*d)/b^3/(b*x+a)^3-1/2*(A*b*e-2*B*a*e+B*
b*d)/b^3/(b*x+a)^2-B*e/b^3/(b*x+a)
```

maxima [A] time = 0.56, size = 97, normalized size = 1.33

$$-\frac{6\,Bb^2ex^2+\left(Bab+2\,Ab^2\right)d+\left(2\,Ba^2+Aab\right)e+3\left(Bb^2d+\left(2\,Bab+Ab^2\right)e\right)x}{6\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(6*B*b^2*e*x^2 + (B*a*b + 2*A*b^2)*d + (2*B*a^2 + A*a*b)*e + 3*(B*b^2*
d + (2*B*a*b + A*b^2)*e)*x)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

mupad [B] time = 0.05, size = 91, normalized size = 1.25

$$-\frac{\frac{2\,A\,b^2\,d+2\,B\,a^2\,e+A\,a\,b\,e+B\,a\,b\,d}{6\,b^3}+\frac{x\,\left(A\,b\,e+2\,B\,a\,e+B\,b\,d\right)}{2\,b^2}+\frac{B\,e\,x^2}{b}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((2*A*b^2*d + 2*B*a^2*e + A*a*b*e + B*a*b*d)/(6*b^3) + (x*(A*b*e + 2*B*a*e
 + B*b*d))/(2*b^2) + (B*e*x^2)/b)/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [A] time = 1.49, size = 107, normalized size = 1.47

$$\frac{-Aabe-2Ab^2d-2Ba^2e-Babd-6Bb^2ex^2+x\left(-3Ab^2e-6Babe-3Bb^2d\right)}{6a^3b^3+18a^2b^4x+18ab^5x^2+6b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-A*a*b*e - 2*A*b**2*d - 2*B*a**2*e - B*a*b*d - 6*B*b**2*e*x**2 + x*(-3*A*b
**2*e - 6*B*a*b*e - 3*B*b**2*d))/(6*a**3*b**3 + 18*a**2*b**4*x + 18*a*b**5*
x**2 + 6*b**6*x**3)
```

3.1485 $\int \frac{A+Bx}{(a^2+2abx+b^2x^2)^2} dx$

Optimal. Leaf size=38

$$-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(A*b - a*B)/(3*b^2*(a + b*x)^3) - B/(2*b^2*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(a^2+2abx+b^2x^2)^2} dx &= \int \frac{A+Bx}{(a+bx)^4} dx \\
&= \int \left(\frac{Ab-aB}{b(a+bx)^4}+\frac{B}{b(a+bx)^3}\right) dx \\
&= -\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{B(a+3bx)+2Ab}{6b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(2*A*b + B*(a + 3*b*x))/(b^2*(a + b*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(a^2+2abx+b^2x^2)^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.39, size = 50, normalized size = 1.32

$$-\frac{3\,Bbx + Ba + 2\,Ab}{6\,\left(b^{5}x^{3} + 3\,ab^{4}x^{2} + 3\,a^{2}b^{3}x + a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

giac [A] time = 0.15, size = 25, normalized size = 0.66

$$-\frac{3\,Bbx + Ba + 2\,Ab}{6\,(bx + a)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/((b*x + a)^3*b^2)
```

maple [A] time = 0.06, size = 35, normalized size = 0.92

$$-\frac{B}{2\,(bx + a)^{2}\,b^{2}} - \frac{Ab - Ba}{3\,(bx + a)^{3}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*(A*b-B*a)/b^2/(b*x+a)^3-1/2/(b*x+a)^2*B/b^2
```

maxima [A] time = 0.52, size = 50, normalized size = 1.32

$$-\frac{3\,Bbx + Ba + 2\,Ab}{6\,\left(b^{5}x^{3} + 3\,ab^{4}x^{2} + 3\,a^{2}b^{3}x + a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

mupad [B] time = 0.03, size = 52, normalized size = 1.37

$$-\frac{\frac{2\,A\,b+B\,a}{6\,b^2}+\frac{B\,x}{2\,b}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((2*A*b + B*a)/(6*b^2) + (B*x)/(2*b))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2
*b*x)
```

sympy [A] time = 0.33, size = 53, normalized size = 1.39

$$\frac{-2Ab - Ba - 3Bbx}{6a^3b^2 + 18a^2b^3x + 18ab^4x^2 + 6b^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-2*A*b - B*a - 3*B*b*x)/(6*a**3*b**2 + 18*a**2*b**3*x + 18*a*b**4*x**2 + 6
*b**5*x**3)
```

3.1486 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=146

$$\frac{e^2\log(a+bx)(Bd-Ae)}{(bd-ae)^4}-\frac{e^2(Bd-Ae)\log(d+ex)}{(bd-ae)^4}+\frac{e(Bd-Ae)}{(a+bx)(bd-ae)^3}-\frac{Bd-Ae}{2(a+bx)^2(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3(bd-ae)}$$

Rubi [A] time = 0.13, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2\log(a+bx)(Bd-Ae)}{(bd-ae)^4}-\frac{e^2(Bd-Ae)\log(d+ex)}{(bd-ae)^4}+\frac{e(Bd-Ae)}{(a+bx)(bd-ae)^3}-\frac{Bd-Ae}{2(a+bx)^2(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -(A*b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3) - (B*d - A*e)/(2*(b*d - a*e)^2*(
a + b*x)^2) + (e*(B*d - A*e))/((b*d - a*e)^3*(a + b*x)) + (e^2*(B*d - A*e)*
Log[a + b*x])/(b*d - a*e)^4 - (e^2*(B*d - A*e)*Log[d + e*x])/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{(a+bx)^4(d+ex)}\,dx\\ &= \int \left(\frac{Ab-aB}{(bd-ae)(a+bx)^4}+\frac{b(Bd-Ae)}{(bd-ae)^2(a+bx)^3}+\frac{be(-Bd+Ae)}{(bd-ae)^3(a+bx)^2}-\frac{be^2(\ldots}{(bd-\ldots}\right.\\ &= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3}-\frac{Bd-Ae}{2(bd-ae)^2(a+bx)^2}+\frac{e(Bd-Ae)}{(bd-ae)^3(a+bx)}+\frac{e^2(Bd\ldots}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 136, normalized size = 0.93

$$\frac{6e^2\log(a+bx)(Bd-Ae)+\frac{2(aB-Ab)(bd-ae)^3}{b(a+bx)^3}+\frac{3(bd-ae)^2(Ae-Bd)}{(a+bx)^2}+\frac{6e(ae-bd)(Ae-Bd)}{a+bx}+6e^2(Ae-Bd)\log(d+ex)}{6(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((2*(-(A*b) + a*B)*(b*d - a*e)^3)/(b*(a + b*x)^3) + (3*(b*d - a*e)^2*(-(B*d
) + A*e))/(a + b*x)^2 + (6*e*(-(b*d) + a*e)*(-(B*d) + A*e))/(a + b*x) + 6*e
^2*(B*d - A*e)*Log[a + b*x] + 6*e^2*(-(B*d) + A*e)*Log[d + e*x])/(6*(b*d -
a*e)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.45, size = 643, normalized size = 4.40

$$-\frac{\left(Bab^3+2\,Ab^4\right)d^3-3\left(2\,Ba^2b^2+3\,Aab^3\right)d^2e+3\left(Ba^3b+6\,Aa^2b^2\right)de^2+\left(2\,Ba^4-11\,Aa^3b\right)e^3-6\left(Bb^4d^2e+Aab^3e^3-\left(Bab^3+Ab^4\right)de^2\right)x^2+3\left(Bb^4d^3-5\,Aa^2b^2e^3-\left(6\,Bab^3+Ab^4\right)d^2e+\left(5\,Ba^2b^2+6\,Aab^3\right)de^2\right)x-6\left(Ba^3bde^2-Aa^3be^3+\left(Bb^4de^2-Ab^4e^3\right)x^3+3\left(Bab^3de^2-Aab^3e^3\right)x^2+3\left(Ba^2b^2de^2-Aa^2b^2e^3\right)x\right)\log\left(bx+a\right)+6\left(Ba^3bde^2-Aa^3be^3+\left(Bb^4de^2-Ab^4e^3\right)x^3+3\left(Bab^3de^2-Aab^3e^3\right)x^2+3\left(Ba^2b^2de^2-Aa^2b^2e^3\right)x\right)\log\left(ex+d\right)}{6\left(a^3b^5d^4-4\,a^4b^4d^3e+6\,a^5b^3d^2e^2-4\,a^6b^2de^3+a^7be^4+\left(b^8d^4-4\,ab^7d^3e+6\,a^2b^6d^2e^2-4\,a^3b^5de^3+a^4b^4e^4\right)x^3+3\left(ab^7d^4-4\,a^2b^6d^3e+6\,a^3b^5d^2e^2-4\,a^4b^4de^3+a^5b^3e^4\right)x^2+3\left(a^2b^6d^4-4\,a^3b^5d^3e+6\,a^4b^4d^2e^2-4\,a^5b^3de^3+a^6b^2e^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*((B*a*b^3 + 2*A*b^4)*d^3 - 3*(2*B*a^2*b^2 + 3*A*a*b^3)*d^2*e + 3*(B*a^
3*b + 6*A*a^2*b^2)*d*e^2 + (2*B*a^4 - 11*A*a^3*b)*e^3 - 6*(B*b^4*d^2*e + A*
a*b^3*e^3 - (B*a*b^3 + A*b^4)*d*e^2)*x^2 + 3*(B*b^4*d^3 - 5*A*a^2*b^2*e^3 -
 (6*B*a*b^3 + A*b^4)*d^2*e + (5*B*a^2*b^2 + 6*A*a*b^3)*d*e^2)*x - 6*(B*a^3*
b*d*e^2 - A*a^3*b*e^3 + (B*b^4*d*e^2 - A*b^4*e^3)*x^3 + 3*(B*a*b^3*d*e^2 -
A*a*b^3*e^3)*x^2 + 3*(B*a^2*b^2*d*e^2 - A*a^2*b^2*e^3)*x)*log(b*x + a) + 6*
(B*a^3*b*d*e^2 - A*a^3*b*e^3 + (B*b^4*d*e^2 - A*b^4*e^3)*x^3 + 3*(B*a*b^3*d
*e^2 - A*a*b^3*e^3)*x^2 + 3*(B*a^2*b^2*d*e^2 - A*a^2*b^2*e^3)*x)*log(e*x +
d))/(a^3*b^5*d^4 - 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^2*e^2 - 4*a^6*b^2*d*e^3 +
a^7*b*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*d^2*e^2 - 4*a^3*b^5*d*e^3
+ a^4*b^4*e^4)*x^3 + 3*(a*b^7*d^4 - 4*a^2*b^6*d^3*e + 6*a^3*b^5*d^2*e^2 - 4
*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^2 + 3*(a^2*b^6*d^4 - 4*a^3*b^5*d^3*e + 6*a^
4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x)
```

giac [B] time = 0.19, size = 364, normalized size = 2.49

$$\frac{\left(Bbde^2-Abe^3\right)\log\left(|bx+a|\right)}{b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4}-\frac{\left(Bde^3-Ae^4\right)\log\left(|xe+d|\right)}{b^4d^4e-4\,ab^3d^3e^2+6\,a^2b^2d^2e^3-4\,a^3bde^4+a^4e^5}-\frac{Bab^3d^3+2\,Ab^4d^3-6\,Ba^2b^2d^2e-9\,Aab^3d^2e+3\,Ba^3bde^2+18\,Aa^2b^2de^2+2\,Ba^4e^3-11\,Aa^3be^3-6\left(Bb^4d^2e-Bab^3de^2-Ab^4de^2+Aab^3e^3\right)x^2+3\left(Bb^4d^3-6\,Bab^3d^2e-Ab^4d^2e+5\,Ba^2b^2de^2+6\,Aab^3de^2-5\,Aa^2b^2e^3\right)x}{6\,(bd-ae)^4(bx+a)^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (B*b*d*e^2 - A*b*e^3)*log(abs(b*x + a))/(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^
3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4) - (B*d*e^3 - A*e^4)*log(abs(x*e +
d))/(b^4*d^4*e - 4*a*b^3*d^3*e^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*
e^5) - 1/6*(B*a*b^3*d^3 + 2*A*b^4*d^3 - 6*B*a^2*b^2*d^2*e - 9*A*a*b^3*d^2*e
 + 3*B*a^3*b*d*e^2 + 18*A*a^2*b^2*d*e^2 + 2*B*a^4*e^3 - 11*A*a^3*b*e^3 - 6*
(B*b^4*d^2*e - B*a*b^3*d*e^2 - A*b^4*d*e^2 + A*a*b^3*e^3)*x^2 + 3*(B*b^4*d^
3 - 6*B*a*b^3*d^2*e - A*b^4*d^2*e + 5*B*a^2*b^2*d*e^2 + 6*A*a*b^3*d*e^2 - 5
*A*a^2*b^2*e^3)*x)/((b*d - a*e)^4*(b*x + a)^3*b)
```

maple [A] time = 0.06, size = 220, normalized size = 1.51

$$-\frac{A\,e^3\ln\left(bx+a\right)}{\left(ae-bd\right)^4}+\frac{A\,e^3\ln\left(ex+d\right)}{\left(ae-bd\right)^4}+\frac{B\,d\,e^2\ln\left(bx+a\right)}{\left(ae-bd\right)^4}-\frac{B\,d\,e^2\ln\left(ex+d\right)}{\left(ae-bd\right)^4}+\frac{A\,e^2}{\left(ae-bd\right)^3\left(bx+a\right)}-\frac{Bde}{\left(ae-bd\right)^3\left(bx+a\right)}+\frac{Ae}{2\left(ae-bd\right)^2\left(bx+a\right)^2}-\frac{Bd}{2\left(ae-bd\right)^2\left(bx+a\right)^2}+\frac{A}{3\left(ae-bd\right)\left(bx+a\right)^3}-\frac{Ba}{3\left(ae-bd\right)\left(bx+a\right)^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/3/(a*e-b*d)/(b*x+a)^3*A-1/3/(a*e-b*d)/b/(b*x+a)^3*B*a+1/2/(a*e-b*d)^2/(b*
x+a)^2*A*e-1/2/(a*e-b*d)^2/(b*x+a)^2*B*d+e^2/(a*e-b*d)^3/(b*x+a)*A-e/(a*e-b
*d)^3/(b*x+a)*B*d-e^3/(a*e-b*d)^4*ln(b*x+a)*A+e^2/(a*e-b*d)^4*ln(b*x+a)*B*d
+e^3/(a*e-b*d)^4*ln(e*x+d)*A-e^2/(a*e-b*d)^4*ln(e*x+d)*B*d
```

maxima [B] time = 0.71, size = 452, normalized size = 3.10

$$\frac{(Bde^2 - Ae^3)\log(bx+a)}{b^4d^4 - 4ab^3d^3e + 6a^2b^2d^2e^2 - 4a^3bde^3 + a^4e^4} - \frac{(Bde^2 - Ae^3)\log(ex+d)}{b^4d^4 - 4ab^3d^3e + 6a^2b^2d^2e^2 - 4a^3bde^3 + a^4e^4} - \frac{(Bab^2 + 2Ab^3)d^2 - (5Ba^2b + 7Aab^2)de - (2Ba^3 - 11Aa^2b)e^2 - 6(Bb^3de - Ab^3e^2)x^2 + 3(Bb^3d^2 + 5Aab^2e^2 - (5Bab^2 + Ab^3)de)x}{6\left(a^3b^4d^3 - 3a^4b^3d^2e + 3a^5b^2de^2 - a^6be^3 + (b^7d^3 - 3ab^6d^2e + 3a^2b^5de^2 - a^3b^4e^3)x^3 + 3(ab^6d^3 - 3a^2b^5d^2e + 3a^3b^4de^2 - a^4b^3e^3)x^2 + 3(a^2b^5d^3 - 3a^3b^4d^2e + 3a^4b^3de^2 - a^5b^2e^3)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] (B*d*e^2 - A*e^3)*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2
 - 4*a^3*b*d*e^3 + a^4*e^4) - (B*d*e^2 - A*e^3)*log(e*x + d)/(b^4*d^4 - 4*a
*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) - 1/6*((B*a*b^2 +
 2*A*b^3)*d^2 - (5*B*a^2*b + 7*A*a*b^2)*d*e - (2*B*a^3 - 11*A*a^2*b)*e^2 -
6*(B*b^3*d*e - A*b^3*e^2)*x^2 + 3*(B*b^3*d^2 + 5*A*a*b^2*e^2 - (5*B*a*b^2 +
 A*b^3)*d*e)*x)/(a^3*b^4*d^3 - 3*a^4*b^3*d^2*e + 3*a^5*b^2*d*e^2 - a^6*b*e^
3 + (b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*x^3 + 3*(a*b^
6*d^3 - 3*a^2*b^5*d^2*e + 3*a^3*b^4*d*e^2 - a^4*b^3*e^3)*x^2 + 3*(a^2*b^5*d
^3 - 3*a^3*b^4*d^2*e + 3*a^4*b^3*d*e^2 - a^5*b^2*e^3)*x)
```

mupad [B] time = 2.54, size = 398, normalized size = 2.73

$$\frac{\frac{-2Ba^3e^2 - 5Ba^2bde + 11Aa^2be^2 + Bab^2d^2 - 7Aab^2de + 2Ab^3d^2}{6b\left(a^3e^3 - 3a^2bde^2 + 3ab^2d^2e - b^3d^3\right)} - \frac{x(Ae - Bd)(b^2d - 5abe)}{2\left(a^3e^3 - 3a^2bde^2 + 3ab^2d^2e - b^3d^3\right)} + \frac{b^2ex^2(Ae - Bd)}{a^3e^3 - 3a^2bde^2 + 3ab^2d^2e - b^3d^3}}{a^3 + 3a^2bx + 3ab^2x^2 + b^3x^3} - \frac{2e^2\,\mathrm{atanh}\left(\frac{\left(\frac{a^4e^4 - 2a^3bde^3 + 2ab^3d^3e - b^4d^4}{a^3e^3 - 3a^2bde^2 + 3ab^2d^2e - b^3d^3} + 2bex\right)\left(a^3e^3 - 3a^2bde^2 + 3ab^2d^2e - b^3d^3\right)}{(ae - bd)^4}\right)(Ae - Bd)}{(ae - bd)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((2*A*b^3*d^2 - 2*B*a^3*e^2 + 11*A*a^2*b*e^2 + B*a*b^2*d^2 - 7*A*a*b^2*d*e
- 5*B*a^2*b*d*e)/(6*b*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))
- (x*(A*e - B*d)*(b^2*d - 5*a*b*e))/(2*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e -
 3*a^2*b*d*e^2)) + (b^2*e*x^2*(A*e - B*d))/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2
*e - 3*a^2*b*d*e^2))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) - (2*e^2*ata
nh((((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a^3*e^3 - b^3*d^3
 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + 2*b*e*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d
^2*e - 3*a^2*b*d*e^2))/(a*e - b*d)^4)*(A*e - B*d))/(a*e - b*d)^4
```

sympy [B] time = 2.81, size = 818, normalized size = 5.60

$$- \frac{e^2(-Ae + Bd)\log\left(x + \frac{-Aae^4 - Abde^3 + Bade^3 + Bbd^2e^2 - \frac{a^5e^7(-Ae+Bd)}{(ae-bd)^4} + \frac{5a^4bde^6(-Ae+Bd)}{(ae-bd)^4} - \frac{10a^3b^2d^2e^5(-Ae+Bd)}{(ae-bd)^4} + \frac{10a^2b^3d^3e^4(-Ae+Bd)}{(ae-bd)^4} - \frac{5ab^4d^4e^3(-Ae+Bd)}{(ae-bd)^4} + \frac{b^5d^5e^2(-Ae+Bd)}{(ae-bd)^4}}{-2Abe^4 + 2Bbde^3}\right)}{(ae-bd)^4} + \frac{e^2(-Ae + Bd)\log\left(x + \frac{-Aae^4 - Abde^3 + Bade^3 + Bbd^2e^2 + \frac{a^5e^7(-Ae+Bd)}{(ae-bd)^4} - \frac{5a^4bde^6(-Ae+Bd)}{(ae-bd)^4} + \frac{10a^3b^2d^2e^5(-Ae+Bd)}{(ae-bd)^4} - \frac{10a^2b^3d^3e^4(-Ae+Bd)}{(ae-bd)^4} + \frac{5ab^4d^4e^3(-Ae+Bd)}{(ae-bd)^4} - \frac{b^5d^5e^2(-Ae+Bd)}{(ae-bd)^4}}{-2Abe^4 + 2Bbde^3}\right)}{(ae-bd)^4} + \frac{11Aa^2be^2 - 7Aab^2de + 2Ab^3d^2 - 2Ba^3e^2 - 5Ba^2bde + Bab^2d^2 + x^2(6Ab^3e^2 - 6Bb^3de) + x(15Aab^2e^2 - 3Ab^3de - 15Bab^2de + 3Bb^3d^2)}{6a^6be^3 - 18a^5b^2de^2 + 18a^4b^3d^2e - 6a^3b^4d^3 + x^3(6a^3b^4e^3 - 18a^2b^5de^2 + 18ab^6d^2e - 6b^7d^3) + x^2(18a^4b^3e^3 - 54a^3b^4de^2 + 54a^2b^5d^2e - 18ab^6d^3) + x(18a^5b^2e^3 - 54a^4b^3de^2 + 54a^3b^4d^2e - 18a^2b^5d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -e**2*(-A*e + B*d)*log(x + (-A*a*e**4 - A*b*d*e**3 + B*a*d*e**3 + B*b*d**2*
e**2 - a**5*e**7*(-A*e + B*d)/(a*e - b*d)**4 + 5*a**4*b*d*e**6*(-A*e + B*d)
/(a*e - b*d)**4 - 10*a**3*b**2*d**2*e**5*(-A*e + B*d)/(a*e - b*d)**4 + 10*a
**2*b**3*d**3*e**4*(-A*e + B*d)/(a*e - b*d)**4 - 5*a*b**4*d**4*e**3*(-A*e +
 B*d)/(a*e - b*d)**4 + b**5*d**5*e**2*(-A*e + B*d)/(a*e - b*d)**4)/(-2*A*b*
e**4 + 2*B*b*d*e**3))/(a*e - b*d)**4 + e**2*(-A*e + B*d)*log(x + (-A*a*e**4
 - A*b*d*e**3 + B*a*d*e**3 + B*b*d**2*e**2 + a**5*e**7*(-A*e + B*d)/(a*e -
b*d)**4 - 5*a**4*b*d*e**6*(-A*e + B*d)/(a*e - b*d)**4 + 10*a**3*b**2*d**2*e
**5*(-A*e + B*d)/(a*e - b*d)**4 - 10*a**2*b**3*d**3*e**4*(-A*e + B*d)/(a*e
- b*d)**4 + 5*a*b**4*d**4*e**3*(-A*e + B*d)/(a*e - b*d)**4 - b**5*d**5*e**2
*(-A*e + B*d)/(a*e - b*d)**4)/(-2*A*b*e**4 + 2*B*b*d*e**3))/(a*e - b*d)**4
+ (11*A*a**2*b*e**2 - 7*A*a*b**2*d*e + 2*A*b**3*d**2 - 2*B*a**3*e**2 - 5*B*
a**2*b*d*e + B*a*b**2*d**2 + x**2*(6*A*b**3*e**2 - 6*B*b**3*d*e) + x*(15*A*
```

```
a*b**2*e**2 - 3*A*b**3*d*e - 15*B*a*b**2*d*e + 3*B*b**3*d**2))/(6*a**6*b*e*
*3 - 18*a**5*b**2*d*e**2 + 18*a**4*b**3*d**2*e - 6*a**3*b**4*d**3 + x**3*(6
*a**3*b**4*e**3 - 18*a**2*b**5*d*e**2 + 18*a*b**6*d**2*e - 6*b**7*d**3) + x
**2*(18*a**4*b**3*e**3 - 54*a**3*b**4*d*e**2 + 54*a**2*b**5*d**2*e - 18*a*b
**6*d**3) + x*(18*a**5*b**2*e**3 - 54*a**4*b**3*d*e**2 + 54*a**3*b**4*d**2*
e - 18*a**2*b**5*d**3))
```

3.1487 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=199

$$\frac{e^2(Bd-Ae)}{(d+ex)(bd-ae)^4}+\frac{e^2\log(a+bx)(aBe-4Abe+3bBd)}{(bd-ae)^5}-\frac{e^2\log(d+ex)(aBe-4Abe+3bBd)}{(bd-ae)^5}+\frac{e(aBe-3Abe+2b}{(a+bx)(bd-ae}$$

Rubi [A] time = 0.25, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2(Bd-Ae)}{(d+ex)(bd-ae)^4}+\frac{e^2\log(a+bx)(aBe-4Abe+3bBd)}{(bd-ae)^5}-\frac{e^2\log(d+ex)(aBe-4Abe+3bBd)}{(bd-ae)^5}+\frac{e(aBe-3Abe+2bBd)}{(a+bx)(bd-ae)^4}-\frac{aBe-2Abe+bBd}{2(a+bx)^2(bd-ae)^3}-\frac{Ab-aB}{3(a+bx)^3(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -(A*b - a*B)/(3*(b*d - a*e)^2*(a + b*x)^3) - (b*B*d - 2*A*b*e + a*B*e)/(2*(
b*d - a*e)^3*(a + b*x)^2) + (e*(2*b*B*d - 3*A*b*e + a*B*e))/((b*d - a*e)^4*
(a + b*x)) + (e^2*(B*d - A*e))/((b*d - a*e)^4*(d + e*x)) + (e^2*(3*b*B*d -
4*A*b*e + a*B*e)*Log[a + b*x])/(b*d - a*e)^5 - (e^2*(3*b*B*d - 4*A*b*e + a*
B*e)*Log[d + e*x])/(b*d - a*e)^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{(a+bx)^4(d+ex)^2}\,dx\\
&= \int \left(\frac{b(Ab-aB)}{(bd-ae)^2(a+bx)^4}+\frac{b(bBd-2Abe+aBe)}{(bd-ae)^3(a+bx)^3}+\frac{be(-2bBd+3Abe-aB}{(bd-ae)^4(a+bx)^2}\right.\\
&= -\frac{Ab-aB}{3(bd-ae)^2(a+bx)^3}-\frac{bBd-2Abe+aBe}{2(bd-ae)^3(a+bx)^2}+\frac{e(2bBd-3Abe+aBe)}{(bd-ae)^4(a+bx)}+
\end{aligned}$$

Mathematica [A] time = 0.13, size = 189, normalized size = 0.95

$$\frac{\frac{6e^2(ae-bd)(Ae-Bd)}{d+ex}+6e^2\log(a+bx)(aBe-4Abe+3bBd)-6e^2\log(d+ex)(aBe-4Abe+3bBd)+\frac{2(aB-Ab)(bd-ae)^3}{(a+bx)^3}-\frac{3(bd-ae)^2(aBe-2Abe+bBd)}{(a+bx)^2}+\frac{6e(ae-bd)(-aBe+3Abe-2bBd)}{a+bx}}{6(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

[Out] ((2*(-(A*b) + a*B)*(b*d - a*e)^3)/(a + b*x)^3 - (3*(b*d - a*e)^2*(b*B*d - 2*A*b*e + a*B*e))/(a + b*x)^2 + (6*e*(-(b*d) + a*e)*(-2*b*B*d + 3*A*b*e - a*B*e))/(a + b*x) + (6*e^2*(-(b*d) + a*e)*(-(B*d) + A*e))/(d + e*x) + 6*e^2*(3*b*B*d - 4*A*b*e + a*B*e)*Log[a + b*x] - 6*e^2*(3*b*B*d - 4*A*b*e + a*B*e)*Log[d + e*x])/(6*(b*d - a*e)^5)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]

[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2), x]

fricas [B] time = 0.44, size = 1228, normalized size = 6.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")

[Out] 1/6*(6*A*a^4*e^4 - (B*a*b^3 + 2*A*b^4)*d^4 + 3*(3*B*a^2*b^2 + 4*A*a*b^3)*d^3*e + 9*(B*a^3*b - 4*A*a^2*b^2)*d^2*e^2 - (17*B*a^4 - 20*A*a^3*b)*d*e^3 + 6*(3*B*b^4*d^2*e^2 - 2*(B*a*b^3 + 2*A*b^4)*d*e^3 - (B*a^2*b^2 - 4*A*a*b^3)*e^4)*x^3 + 3*(3*B*b^4*d^3*e + (13*B*a*b^3 - 4*A*b^4)*d^2*e^2 - (11*B*a^2*b^2 + 16*A*a*b^3)*d*e^3 - 5*(B*a^3*b - 4*A*a^2*b^2)*e^4)*x^2 - (3*B*b^4*d^4 - 2*(13*B*a*b^3 + 2*A*b^4)*d^3*e - 18*(B*a^2*b^2 - 2*A*a*b^3)*d^2*e^2 + 6*(5*B*a^3*b + 2*A*a^2*b^2)*d*e^3 + 11*(B*a^4 - 4*A*a^3*b)*e^4)*x + 6*(3*B*a^3*b*d^2*e^2 + (B*a^4 - 4*A*a^3*b)*d*e^3 + (3*B*b^4*d*e^3 + (B*a*b^3 - 4*A*b^4)*e^4)*x^4 + (3*B*b^4*d^2*e^2 + 2*(5*B*a*b^3 - 2*A*b^4)*d*e^3 + 3*(B*a^2*b^2 - 4*A*a*b^3)*e^4)*x^3 + 3*(3*B*a*b^3*d^2*e^2 + 4*(B*a^2*b^2 - A*a*b^3)*d*e^3 + (B*a^3*b - 4*A*a^2*b^2)*e^4)*x^2 + (9*B*a^2*b^2*d^2*e^2 + 6*(B*a^3*b - 2*A*a^2*b^2)*d*e^3 + (B*a^4 - 4*A*a^3*b)*e^4)*x)*log(b*x + a) - 6*(3*B*a^3*b*d^2*e^2 + (B*a^4 - 4*A*a^3*b)*d*e^3 + (3*B*b^4*d*e^3 + (B*a*b^3 - 4*A*b^4)*e^4)*x^4 + (3*B*b^4*d^2*e^2 + 2*(5*B*a*b^3 - 2*A*b^4)*d*e^3 + 3*(B*a^2*b^2 - 4*A*a*b^3)*e^4)*x^3 + 3*(3*B*a*b^3*d^2*e^2 + 4*(B*a^2*b^2 - A*a*b^3)*d*e^3 + (B*a^3*b - 4*A*a^2*b^2)*e^4)*x^2 + (9*B*a^2*b^2*d^2*e^2 + 6*(B*a^3*b - 2*A*a^2*b^2)*d*e^3 + (B*a^4 - 4*A*a^3*b)*e^4)*x)*log(e*x + d))/(a^3*b^5*d^6 - 5*a^4*b^4*d^5*e + 10*a^5*b^3*d^4*e^2 - 10*a^6*b^2*d^3*e^3 + 5*a^7*b*d^2*e^4 - a^8*d*e^5 + (b^8*d^5*e - 5*a*b^7*d^4*e^2 + 10*a^2*b^6*d^3*e^3 - 10*a^3*b^5*d^2*e^4 + 5*a^4*b^4*d*e^5 - a^5*b^3*e^6)*x^4 + (b^8*d^6 - 2*a*b^7*d^5*e - 5*a^2*b^6*d^4*e^2 + 20*a^3*b^5*d^3*e^3 - 25*a^4*b^4*d^2*e^4 + 14*a^5*b^3*d*e^5 - 3*a^6*b^2*e^6)*x^3 + 3*(a*b^7*d^6 - 4*a^2*b^6*d^5*e + 5*a^3*b^5*d^4*e^2 - 5*a^5*b^3*d^2*e^4 + 4*a^6*b^2*d*e^5 - a^7*b*e^6)*x^2 + (3*a^2*b^6*d^6 - 14*a^3*b^5*d^5*e + 25*a^4*b^4*d^4*e^2 - 20*a^5*b^3*d^3*e^3 + 5*a^6*b^2*d^2*e^4 + 2*a^7*b*d*e^5 - a^8*e^6)*x)

giac [B] time = 0.22, size = 411, normalized size = 2.07

$$\frac{\left(3\,Bbde^3+Bae^4-4\,Abe^4\right)\log\left(\left|b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right|\right)}{b^5d^5e-5\,ab^4d^4e^2+10\,a^2b^3d^3e^3-10\,a^3b^2d^2e^4+5\,a^4bde^5-a^5e^6}+\frac{\frac{Bde^6}{xe+d}-\frac{Ae^7}{xe+d}}{b^4d^4e^4-4\,ab^3d^3e^5+6\,a^2b^2d^2e^6-4\,a^3bde^7+a^4e^8}+\frac{15\,Bb^4de^2+11\,Bab^3e^3-26\,Ab^4e^3-\frac{3\left(11\,Bb^4d^2e^3-2\,Bab^3de^4-20\,Ab^4de^4-9\,Ba^2b^2e^5+20\,Aab^3e^5\right)e^{(-1)}}{xe+d}+\frac{18\left(Bb^4d^3e^4-Bab^3d^2e^5-2\,Ab^4d^2e^5-Ba^2b^2de^6+4\,Aab^3de^6+Ba^3be^7-2\,Aa^2b^2e^7\right)e^{(-2)}}{(xe+d)^2}}{6\,(bd-ae)^5\left(b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")

[Out] (3*B*b*d*e^3 + B*a*e^4 - 4*A*b*e^4)*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^5*d^5*e - 5*a*b^4*d^4*e^2 + 10*a^2*b^3*d^3*e^3 - 10*a^3*b^2*d^2*e^4 + 5*a^4*b*d*e^5 - a^5*e^6) + (B*d*e^6/(x*e + d) - A*e^7/(x*e + d))/(b^4*d^

```
4*e^4 - 4*a*b^3*d^3*e^5 + 6*a^2*b^2*d^2*e^6 - 4*a^3*b*d*e^7 + a^4*e^8) + 1/
6*(15*B*b^4*d*e^2 + 11*B*a*b^3*e^3 - 26*A*b^4*e^3 - 3*(11*B*b^4*d^2*e^3 - 2
*B*a*b^3*d*e^4 - 20*A*b^4*d*e^4 - 9*B*a^2*b^2*e^5 + 20*A*a*b^3*e^5)*e^(-1)/
(x*e + d) + 18*(B*b^4*d^3*e^4 - B*a*b^3*d^2*e^5 - 2*A*b^4*d^2*e^5 - B*a^2*b
^2*d*e^6 + 4*A*a*b^3*d*e^6 + B*a^3*b*e^7 - 2*A*a^2*b^2*e^7)*e^(-2)/(x*e + d
)^2)/((b*d - a*e)^5*(b - b*d/(x*e + d) + a*e/(x*e + d))^3)
```

maple [A] time = 0.06, size = 365, normalized size = 1.83

$$\frac{4Abe^3\ln(bx+a)}{(ae-bd)^5}-\frac{4Abe^3\ln(ex+d)}{(ae-bd)^5}-\frac{Bae^3\ln(bx+a)}{(ae-bd)^5}+\frac{Bae^3\ln(ex+d)}{(ae-bd)^5}-\frac{3Bbde^2\ln(bx+a)}{(ae-bd)^5}+\frac{3Bbde^2\ln(ex+d)}{(ae-bd)^5}-\frac{3Abe^2}{(ae-bd)^4(bx+a)}-\frac{Ae^3}{(ae-bd)^4(ex+d)}+\frac{Bae^2}{(ae-bd)^4(bx+a)}+\frac{2Bbde}{(ae-bd)^4(bx+a)}+\frac{Bde^2}{(ae-bd)^4(ex+d)}-\frac{Abe}{(ae-bd)^3(bx+a)^2}+\frac{Bae}{2(ae-bd)^3(bx+a)^2}+\frac{Bbd}{2(ae-bd)^3(bx+a)^2}-\frac{Ab}{3(ae-bd)^2(bx+a)^3}+\frac{Ba}{3(ae-bd)^2(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3/(a*e-b*d)^2/(b*x+a)^3*A*b+1/3/(a*e-b*d)^2/(b*x+a)^3*B*a-1/(a*e-b*d)^3/
(b*x+a)^2*A*b*e+1/2/(a*e-b*d)^3/(b*x+a)^2*a*B*e+1/2/(a*e-b*d)^3/(b*x+a)^2*B
*b*d-3*e^2/(a*e-b*d)^4/(b*x+a)*A*b+e^2/(a*e-b*d)^4/(b*x+a)*a*B+2*e/(a*e-b*d
)^4/(b*x+a)*B*b*d+4*e^3/(a*e-b*d)^5*ln(b*x+a)*A*b-e^3/(a*e-b*d)^5*ln(b*x+a)
*a*B-3*e^2/(a*e-b*d)^5*ln(b*x+a)*B*b*d-e^3/(a*e-b*d)^4/(e*x+d)*A+e^2/(a*e-b
*d)^4/(e*x+d)*B*d-4*e^3/(a*e-b*d)^5*ln(e*x+d)*A*b+e^3/(a*e-b*d)^5*ln(e*x+d)
*a*B+3*e^2/(a*e-b*d)^5*ln(e*x+d)*B*b*d
```

maxima [B] time = 0.76, size = 757, normalized size = 3.80

$$\frac{\left(3Bbde^2+(Ba-4Ab)e^3\right)\log(bx+a)}{b^5d^5-5ab^4d^4e+10a^2b^3d^3e^2-10a^3b^2d^2e^3+5a^4bde^4-a^5e^5}-\frac{\left(3Bbde^2+(Ba-4Ab)e^3\right)\log(ex+d)}{b^5d^5-5ab^4d^4e+10a^2b^3d^3e^2-10a^3b^2d^2e^3+5a^4bde^4-a^5e^5}-\frac{6Aa^3e^3+(Bab^2+2Ab^3)d^3-2(4Ba^2b+5Aab^2)d^2e-(17Ba^3-26Aa^2b)de^2-6(3Bb^3de^2+(Bab^2-4Ab^3)e^3)x^3-3(3Bb^3d^2e+4(4Bab^2-Ab^3)de^2+5(Ba^2b-4Aab^2)e^3)x^2+(3Bb^3d^3-(23Bab^2+4Ab^3)d^2e-(41Ba^2b-32Aa^2b)de^2-11(Ba^3-4Aa^2b)e^3)x}{6\left(a^3b^4d^5-4a^4b^3d^4e+6a^5b^2d^3e^2-4a^6bd^2e^3+a^7de^4+(b^7d^4e-4ab^6d^3e^2+6a^2b^5d^2e^3-4a^3b^4de^4+a^4b^3e^5)x^4+(b^7d^5-ab^6d^4e-6a^2b^5d^3e^2+14a^3b^4d^2e^3-11a^4b^3de^4+3a^5b^2e^5)x^3+3(ab^6d^5-3a^2b^5d^4e+2a^3b^4d^3e^2+2a^4b^3d^2e^3-3a^5b^2de^4+a^6be^5)x^2+(3a^2b^5d^5-11a^3b^4d^4e+14a^4b^3d^3e^2-6a^5b^2d^2e^3-a^6bde^4+a^7e^5)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] (3*B*b*d*e^2 + (B*a - 4*A*b)*e^3)*log(b*x + a)/(b^5*d^5 - 5*a*b^4*d^4*e + 1
0*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - (3*B*b*
d*e^2 + (B*a - 4*A*b)*e^3)*log(e*x + d)/(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b
^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - 1/6*(6*A*a^3*e
^3 + (B*a*b^2 + 2*A*b^3)*d^3 - 2*(4*B*a^2*b + 5*A*a*b^2)*d^2*e - (17*B*a^3
- 26*A*a^2*b)*d*e^2 - 6*(3*B*b^3*d*e^2 + (B*a*b^2 - 4*A*b^3)*e^3)*x^3 - 3*(
3*B*b^3*d^2*e + 4*(4*B*a*b^2 - A*b^3)*d*e^2 + 5*(B*a^2*b - 4*A*a*b^2)*e^3)*
x^2 + (3*B*b^3*d^3 - (23*B*a*b^2 + 4*A*b^3)*d^2*e - (41*B*a^2*b - 32*A*a*b^
2)*d*e^2 - 11*(B*a^3 - 4*A*a^2*b)*e^3)*x)/(a^3*b^4*d^5 - 4*a^4*b^3*d^4*e +
6*a^5*b^2*d^3*e^2 - 4*a^6*b*d^2*e^3 + a^7*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*
e^2 + 6*a^2*b^5*d^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^4 + (b^7*d^5 - a
*b^6*d^4*e - 6*a^2*b^5*d^3*e^2 + 14*a^3*b^4*d^2*e^3 - 11*a^4*b^3*d*e^4 + 3*
a^5*b^2*e^5)*x^3 + 3*(a*b^6*d^5 - 3*a^2*b^5*d^4*e + 2*a^3*b^4*d^3*e^2 + 2*a
^4*b^3*d^2*e^3 - 3*a^5*b^2*d*e^4 + a^6*b*e^5)*x^2 + (3*a^2*b^5*d^5 - 11*a^3
*b^4*d^4*e + 14*a^4*b^3*d^3*e^2 - 6*a^5*b^2*d^2*e^3 - a^6*b*d*e^4 + a^7*e^5
)*x)
```

mupad [B] time = 2.81, size = 711, normalized size = 3.57

$$\frac{\frac{x\left(11a^2e^2+8abde-b^2d^2\right)(Bae-4Abe+3Bbd)}{6\left(a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4\right)}-\frac{-17Ba^3de^2+6Aa^3e^3-8Ba^2bd^2e+26Aa^2bde^2+Bab^2d^3-10Aab^2d^2e+2Ab^3d^3}{6\left(a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4\right)}+\frac{b^2e^2x^3(Bae-4Abe+3Bbd)}{a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4}+\frac{ex^2\left(db^2+5aeb\right)(Bae-4Abe+3Bbd)}{2\left(a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4\right)}}{x^3\left(db^3+3aeb^2\right)+x^2\left(3ea^2b+3dab^2\right)+a^3d+x\left(ea^3+3bda^2\right)+b^3ex^4}-\frac{2\,\mathrm{atanh}\left(\frac{\left(e^3(4Ab-Ba)-3Bbde^2\right)\left(\frac{a^5e^5-3a^4bde^4+2a^3b^2d^2e^3+2a^2b^3d^3e^2-3ab^4d^4e+b^5d^5}{a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4}+2bex\right)\left(a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4\right)}{(ae-bd)^5\left(Bae^3-4Abe^3+3Bbde^2\right)}\right)\left(e^3(4Ab-Ba)-3Bbde^2\right)}{(ae-bd)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((x*(11*a^2*e^2 - b^2*d^2 + 8*a*b*d*e)*(B*a*e - 4*A*b*e + 3*B*b*d))/(6*(a^4
*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) - (6*A
*a^3*e^3 + 2*A*b^3*d^3 + B*a*b^2*d^3 - 17*B*a^3*d*e^2 - 10*A*a*b^2*d^2*e +
26*A*a^2*b*d*e^2 - 8*B*a^2*b*d^2*e)/(6*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e
^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (b^2*e^2*x^3*(B*a*e - 4*A*b*e + 3*B*
b*d))/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^
```

```
3) + (e*x^2*(b^2*d + 5*a*b*e)*(B*a*e - 4*A*b*e + 3*B*b*d))/(2*(a^4*e^4 + b^
4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)))/(x^3*(b^3*d +
3*a*b^2*e) + x^2*(3*a*b^2*d + 3*a^2*b*e) + a^3*d + x*(a^3*e + 3*a^2*b*d) +
b^3*e*x^4) - (2*atanh(((e^3*(4*A*b - B*a) - 3*B*b*d*e^2)*((a^5*e^5 + b^5*d^
5 + 2*a^2*b^3*d^3*e^2 + 2*a^3*b^2*d^2*e^3 - 3*a*b^4*d^4*e - 3*a^4*b*d*e^4)/
(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + 2
*b*e*x)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*
e^3))/((a*e - b*d)^5*(B*a*e^3 - 4*A*b*e^3 + 3*B*b*d*e^2)))*(e^3*(4*A*b - B*
a) - 3*B*b*d*e^2))/(a*e - b*d)^5
```

sympy [B] time = 5.35, size = 1445, normalized size = 7.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] e**2*(-4*A*b*e + B*a*e + 3*B*b*d)*log(x + (-4*A*a*b*e**4 - 4*A*b**2*d*e**3
+ B*a**2*e**4 + 4*B*a*b*d*e**3 + 3*B*b**2*d**2*e**2 - a**6*e**8*(-4*A*b*e +
 B*a*e + 3*B*b*d)/(a*e - b*d)**5 + 6*a**5*b*d*e**7*(-4*A*b*e + B*a*e + 3*B*
b*d)/(a*e - b*d)**5 - 15*a**4*b**2*d**2*e**6*(-4*A*b*e + B*a*e + 3*B*b*d)/(
a*e - b*d)**5 + 20*a**3*b**3*d**3*e**5*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e -
b*d)**5 - 15*a**2*b**4*d**4*e**4*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**
5 + 6*a*b**5*d**5*e**3*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 - b**6*d
**6*e**2*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5)/(-8*A*b**2*e**4 + 2*B
*a*b*e**4 + 6*B*b**2*d*e**3))/(a*e - b*d)**5 - e**2*(-4*A*b*e + B*a*e + 3*B
*b*d)*log(x + (-4*A*a*b*e**4 - 4*A*b**2*d*e**3 + B*a**2*e**4 + 4*B*a*b*d*e*
*3 + 3*B*b**2*d**2*e**2 + a**6*e**8*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d
)**5 - 6*a**5*b*d*e**7*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 + 15*a**
4*b**2*d**2*e**6*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 - 20*a**3*b**3
*d**3*e**5*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 + 15*a**2*b**4*d**4*
e**4*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 - 6*a*b**5*d**5*e**3*(-4*A
*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 + b**6*d**6*e**2*(-4*A*b*e + B*a*e +
 3*B*b*d)/(a*e - b*d)**5)/(-8*A*b**2*e**4 + 2*B*a*b*e**4 + 6*B*b**2*d*e**3)
)/(a*e - b*d)**5 + (-6*A*a**3*e**3 - 26*A*a**2*b*d*e**2 + 10*A*a*b**2*d**2*
e - 2*A*b**3*d**3 + 17*B*a**3*d*e**2 + 8*B*a**2*b*d**2*e - B*a*b**2*d**3 +
x**3*(-24*A*b**3*e**3 + 6*B*a*b**2*e**3 + 18*B*b**3*d*e**2) + x**2*(-60*A*a
*b**2*e**3 - 12*A*b**3*d*e**2 + 15*B*a**2*b*e**3 + 48*B*a*b**2*d*e**2 + 9*B
*b**3*d**2*e) + x*(-44*A*a**2*b*e**3 - 32*A*a*b**2*d*e**2 + 4*A*b**3*d**2*e
 + 11*B*a**3*e**3 + 41*B*a**2*b*d*e**2 + 23*B*a*b**2*d**2*e - 3*B*b**3*d**3
))/(6*a**7*d*e**4 - 24*a**6*b*d**2*e**3 + 36*a**5*b**2*d**3*e**2 - 24*a**4*
b**3*d**4*e + 6*a**3*b**4*d**5 + x**4*(6*a**4*b**3*e**5 - 24*a**3*b**4*d*e*
*4 + 36*a**2*b**5*d**2*e**3 - 24*a*b**6*d**3*e**2 + 6*b**7*d**4*e) + x**3*(
18*a**5*b**2*e**5 - 66*a**4*b**3*d*e**4 + 84*a**3*b**4*d**2*e**3 - 36*a**2*
b**5*d**3*e**2 - 6*a*b**6*d**4*e + 6*b**7*d**5) + x**2*(18*a**6*b*e**5 - 54
*a**5*b**2*d*e**4 + 36*a**4*b**3*d**2*e**3 + 36*a**3*b**4*d**3*e**2 - 54*a*
*2*b**5*d**4*e + 18*a*b**6*d**5) + x*(6*a**7*e**5 - 6*a**6*b*d*e**4 - 36*a*
*5*b**2*d**2*e**3 + 84*a**4*b**3*d**3*e**2 - 66*a**3*b**4*d**4*e + 18*a**2*
b**5*d**5))
```

3.1488 $\int (A+Bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(-aBe-Abe+2bBd)}{6e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{bB\sqrt{a^2+2}}{}$$

Rubi [A] time = 0.19, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(-aBe-Abe+2bBd)}{6e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7}{7e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*
(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(6*e^3*(a + b*x)) + (b*B*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^4\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^4}{e^2}+\frac{b(-2bBd+Abe+aBe)(d+e}{e^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)(Bd-Ae)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{(2bBd-Abe-a}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 208, normalized size = 1.32

$$\frac{x\sqrt{(a+bx)^2}\left(7a\left(6A\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+Bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)\right)+bx\left(7A\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)+2Bx\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)\right)\right)}{210(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(7*a*(6*A*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e
^3*x^3 + e^4*x^4) + B*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*x^
3 + 5*e^4*x^4)) + b*x*(7*A*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3
*x^3 + 5*e^4*x^4) + 2*B*x*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e^
3*x^3 + 15*e^4*x^4))))/(210*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.95, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.41, size = 175, normalized size = 1.11

$$\frac{1}{7}Bbe^4x^7+Aad^4x+\frac{1}{6}\left(4Bbde^3+(Ba+Ab)e^4\right)x^6+\frac{1}{5}\left(6Bbd^2e^2+Aae^4+4(Ba+Ab)de^3\right)x^5+\frac{1}{2}\left(2Bbd^3e+2Aade^3+3(Ba+Ab)d^2e^2\right)x^4+\frac{1}{3}\left(Bbd^4+6Aad^2e^2+4(Ba+Ab)d^3e\right)x^3+\frac{1}{2}\left(4Aad^3e+(Ba+Ab)d^4\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b*e^4*x^7 + A*a*d^4*x + 1/6*(4*B*b*d*e^3 + (B*a + A*b)*e^4)*x^6 + 1/5
*(6*B*b*d^2*e^2 + A*a*e^4 + 4*(B*a + A*b)*d*e^3)*x^5 + 1/2*(2*B*b*d^3*e + 2
*A*a*d*e^3 + 3*(B*a + A*b)*d^2*e^2)*x^4 + 1/3*(B*b*d^4 + 6*A*a*d^2*e^2 + 4*
(B*a + A*b)*d^3*e)*x^3 + 1/2*(4*A*a*d^3*e + (B*a + A*b)*d^4)*x^2
```

giac [B] time = 0.17, size = 328, normalized size = 2.08

$$\frac{1}{7}Bbx^7e^4\mathrm{sgn}(bx+a)+\frac{2}{3}Bbdx^6e^3\mathrm{sgn}(bx+a)+\frac{6}{5}Bbd^2x^5e^2\mathrm{sgn}(bx+a)+Bbd^3x^4e\,\mathrm{sgn}(bx+a)+\frac{1}{3}Bbd^4x^3\mathrm{sgn}(bx+a)+\frac{1}{6}Bax^6e^4\mathrm{sgn}(bx+a)+\frac{1}{6}Abx^6e^4\mathrm{sgn}(bx+a)+\frac{4}{5}Badx^5e^3\mathrm{sgn}(bx+a)+\frac{4}{5}Abdx^5e^3\mathrm{sgn}(bx+a)+\frac{3}{2}Bad^2x^4e^2\mathrm{sgn}(bx+a)+\frac{3}{2}Abd^2x^4e^2\mathrm{sgn}(bx+a)+\frac{4}{3}Bad^3x^3e\,\mathrm{sgn}(bx+a)+\frac{4}{3}Abd^3x^3e\,\mathrm{sgn}(bx+a)+\frac{1}{2}Bad^4x^2\mathrm{sgn}(bx+a)+\frac{1}{2}Abd^4x^2\mathrm{sgn}(bx+a)+\frac{1}{5}Aax^5e^4\mathrm{sgn}(bx+a)+Aadx^4e^3\mathrm{sgn}(bx+a)+2Aad^2x^3e^2\mathrm{sgn}(bx+a)+2Aad^3x^2e\,\mathrm{sgn}(bx+a)+Aad^4x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b*x^7*e^4*sgn(b*x + a) + 2/3*B*b*d*x^6*e^3*sgn(b*x + a) + 6/5*B*b*d^2
*x^5*e^2*sgn(b*x + a) + B*b*d^3*x^4*e*sgn(b*x + a) + 1/3*B*b*d^4*x^3*sgn(b*
x + a) + 1/6*B*a*x^6*e^4*sgn(b*x + a) + 1/6*A*b*x^6*e^4*sgn(b*x + a) + 4/5*
B*a*d*x^5*e^3*sgn(b*x + a) + 4/5*A*b*d*x^5*e^3*sgn(b*x + a) + 3/2*B*a*d^2*x
^4*e^2*sgn(b*x + a) + 3/2*A*b*d^2*x^4*e^2*sgn(b*x + a) + 4/3*B*a*d^3*x^3*e*
sgn(b*x + a) + 4/3*A*b*d^3*x^3*e*sgn(b*x + a) + 1/2*B*a*d^4*x^2*sgn(b*x + a
) + 1/2*A*b*d^4*x^2*sgn(b*x + a) + 1/5*A*a*x^5*e^4*sgn(b*x + a) + A*a*d*x^4
*e^3*sgn(b*x + a) + 2*A*a*d^2*x^3*e^2*sgn(b*x + a) + 2*A*a*d^3*x^2*e*sgn(b*
x + a) + A*a*d^4*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 232, normalized size = 1.47

$$\frac{\left(30bBe^4x^6+35x^5Abe^4+35x^5Bae^4+140x^5bBde^3+42x^4Aae^4+168x^4Abde^3+168x^4Bade^3+252x^4bBd^2e^2+210x^3Aade^3+315x^3Abd^2e^2+315x^3Bad^2e^2+210x^3bBd^3e+420x^2Aad^2e^2+280x^2Abd^3e+280x^2Bad^3e+70x^2bBd^4+420xAad^3e+105xAbd^4+105xBad^4+210Aad^4\right)\sqrt{(bx+a)^2}\,x}{210bx+210a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/210*x*(30*B*b*e^4*x^6+35*A*b*e^4*x^5+35*B*a*e^4*x^5+140*B*b*d*e^3*x^5+42*
A*a*e^4*x^4+168*A*b*d*e^3*x^4+168*B*a*d*e^3*x^4+252*B*b*d^2*e^2*x^4+210*A*a
*d*e^3*x^3+315*A*b*d^2*e^2*x^3+315*B*a*d^2*e^2*x^3+210*B*b*d^3*e*x^3+420*A*
a*d^2*e^2*x^2+280*A*b*d^3*e*x^2+280*B*a*d^3*e*x^2+70*B*b*d^4*x^2+420*A*a*d^
3*e*x+105*A*b*d^4*x+105*B*a*d^4*x+210*A*a*d^4)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.59, size = 1002, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e^4*x^4/b^2 - 11/42*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*B*a*e^4*x^3/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*d^4*x
- 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5*e^4*x/b^5 + 5/14*(b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*B*a^2*e^4*x^2/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*d
^4/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^6*e^4/b^6 - 3/7*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*B*a^3*e^4*x/b^5 + 10/21*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B
*a^4*e^4/b^6 + 1/6*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^3/
b^2 + 1/2*(4*B*d*e^3 + A*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*x/b^4 - (3*
B*d^2*e^2 + 2*A*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3*x/b^3 + (2*B*d^3*e
 + 3*A*d^2*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x/b^2 - 1/2*(B*d^4 + 4*A*
d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b - 3/10*(4*B*d*e^3 + A*e^4)*(b^2*
x^2 + 2*a*b*x + a^2)^(3/2)*a*x^2/b^3 + 2/5*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 + 1/2*(4*B*d*e^3 + A*e^4)*sqrt(b^2*x^2 +
2*a*b*x + a^2)*a^5/b^5 - (3*B*d^2*e^2 + 2*A*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*a^4/b^4 + (2*B*d^3*e + 3*A*d^2*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3
/b^3 - 1/2*(B*d^4 + 4*A*d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^2 + 2/5*
(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^4 - 7/10*(3*B*d
^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b^3 + 1/2*(2*B*d^3*
e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 - 7/15*(4*B*d*e^3 +
A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^5 + 9/10*(3*B*d^2*e^2 + 2*A*d*
e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^4 - 5/6*(2*B*d^3*e + 3*A*d^2*e^2
)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(B*d^4 + 4*A*d^3*e)*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 4.25, size = 1400, normalized size = 8.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] A*d^4*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (A*e^4*x^3*(a^2 + b
^2*x^2 + 2*a*b*x)^(3/2))/(6*b^2) + (B*e^4*x^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(7*b^2) + (B*d^4*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4) + (A*d^3*e*(8*b^2*(a^2 + b^2*x^2) - 12
*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^4) + (B*d^3*e*x
*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/b^2 - (B*a^2*e^4*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*
b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(35*b^6) - (A*a^2*e^4*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) -
 4*a^2*b*x))/(24*b^5) + (3*A*d^2*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(2*
b^2) + (4*A*d*e^3*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (2*B*d*e^3
*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(3*b^2) - (3*A*a*e^4*(a^2 + b^2*x^2 +
 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2
+ 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(40*b^5) - (11*B*a*e^4*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) -
14*a^3*b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^
2*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(210*b^6) + (6*B*d^2*e^2*x^2*(a^2 + b^2*x
^2 + 2*a*b*x)^(3/2))/(5*b^2) - (B*a^2*d^3*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2
+ 2*a*b*x)^(1/2))/b^2 - (3*B*a*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2
*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*
(a^2 + b^2*x^2 + 2*a*b*x)))/(10*b^5) - (B*a^2*d^2*e^2*(8*b^2*(a^2 + b^2*x^2
) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(10*b^6) - (7*
A*a*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 +
 b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(15*b^4) - (5*B*a*d^3*e*(8*b^2*(a^2 + b^2
```

```
*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^5) -
 (3*A*a^2*d^2*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*b^2)
- (7*B*a*d^2*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x
*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(10*b^4) - (B*a^2*d*e^3*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x)
- 4*a^2*b*x))/(6*b^5) - (5*A*a*d^2*e^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2
+ 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(16*b^5) - (A*a^2*d*e^3*(8*b^
2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/(15*b^6)
```

sympy [**A**] time = 0.15, size = 226, normalized size = 1.43

$$Aad^4x + \frac{Bbe^4x^7}{7} + x^6\left(\frac{Abe^4}{6} + \frac{Bae^4}{6} + \frac{2Bbde^3}{3}\right) + x^5\left(\frac{Aae^4}{5} + \frac{4Abde^3}{5} + \frac{4Bade^3}{5} + \frac{6Bbd^2e^2}{5}\right) + x^4\left(Aade^3 + \frac{3Abd^2e^2}{2} + \frac{3Bad^2e^2}{2} + Bbd^3e\right) + x^3\left(2Aad^2e^2 + \frac{4Abd^3e}{3} + \frac{4Bad^3e}{3} + \frac{Bbd^4}{3}\right) + x^2\left(2Aad^3e + \frac{Abd^4}{2} + \frac{Bad^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d**4*x + B*b*e**4*x**7/7 + x**6*(A*b*e**4/6 + B*a*e**4/6 + 2*B*b*d*e**3
/3) + x**5*(A*a*e**4/5 + 4*A*b*d*e**3/5 + 4*B*a*d*e**3/5 + 6*B*b*d**2*e**2/
5) + x**4*(A*a*d*e**3 + 3*A*b*d**2*e**2/2 + 3*B*a*d**2*e**2/2 + B*b*d**3*e)
 + x**3*(2*A*a*d**2*e**2 + 4*A*b*d**3*e/3 + 4*B*a*d**3*e/3 + B*b*d**4/3) +
x**2*(2*A*a*d**3*e + A*b*d**4/2 + B*a*d**4/2)
```

3.1489 $\int (A+Bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)(Bd-Ae)}{4e^3(a+bx)}+\frac{bB\sqrt{a^2+2}}{6}$$

Rubi [A] time = 0.14, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)(Bd-Ae)}{4e^3(a+bx)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6}{6e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*
(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(5*e^3*(a + b*x)) + (b*B*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(6*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^3\,dx}{ab+b^2x}$$
$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^3}{e^2}+\frac{b(-2bBd+Abe+aBe)(d+ex}{e^2}\right.}{ab+b^2x}$$
$$=\frac{(bd-ae)(Bd-Ae)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)}-\frac{(2bBd-Abe-a}{}$$

Mathematica [A] time = 0.06, size = 163, normalized size = 1.03

$$\frac{x\sqrt{(a+bx)^2}\left(3a\left(5A\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+Bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)\right)+bx\left(3A\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+Bx\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)\right)\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3*a*(5*A*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3)
+ B*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3)) + b*x*(3*A*(10*d^3
+ 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B*x*(20*d^3 + 45*d^2*e*x + 36*d*
e^2*x^2 + 10*e^3*x^3))))/(60*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.11, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.41, size = 134, normalized size = 0.85

$$\frac{1}{6}Bbe^3x^6 + Aad^3x + \frac{1}{5}\left(3Bbde^2 + (Ba+Ab)e^3\right)x^5 + \frac{1}{4}\left(3Bbd^2e + Aae^3 + 3(Ba+Ab)de^2\right)x^4 + \frac{1}{3}\left(Bbd^3 + 3Aade^2 + 3(Ba+Ab)d^2e\right)x^3 + \frac{1}{2}\left(3Aad^2e + (Ba+Ab)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*B*b*e^3*x^6 + A*a*d^3*x + 1/5*(3*B*b*d*e^2 + (B*a + A*b)*e^3)*x^5 + 1/4
*(3*B*b*d^2*e + A*a*e^3 + 3*(B*a + A*b)*d*e^2)*x^4 + 1/3*(B*b*d^3 + 3*A*a*d
*e^2 + 3*(B*a + A*b)*d^2*e)*x^3 + 1/2*(3*A*a*d^2*e + (B*a + A*b)*d^3)*x^2
```

giac [B] time = 0.18, size = 255, normalized size = 1.61

$$\frac{1}{6}Bbx^6e^3\mathrm{sgn}(bx+a) + \frac{3}{5}Bbdx^5e^2\mathrm{sgn}(bx+a) + \frac{3}{4}Bbd^2x^4e\,\mathrm{sgn}(bx+a) + \frac{1}{3}Bbd^3x^3\mathrm{sgn}(bx+a) + \frac{1}{5}Bax^5e^3\mathrm{sgn}(bx+a) + \frac{1}{5}Abx^5e^3\mathrm{sgn}(bx+a) + \frac{3}{4}Badx^4e^2\mathrm{sgn}(bx+a) + \frac{3}{4}Abdx^4e^2\mathrm{sgn}(bx+a) + Bad^2x^3e\,\mathrm{sgn}(bx+a) + Abd^2x^3e\,\mathrm{sgn}(bx+a) + \frac{1}{2}Bad^3x^2\mathrm{sgn}(bx+a) + \frac{1}{2}Abd^3x^2\mathrm{sgn}(bx+a) + \frac{1}{4}Aax^4e^3\mathrm{sgn}(bx+a) + Aadx^3e^2\mathrm{sgn}(bx+a) + \frac{3}{2}Aad^2x^2e\,\mathrm{sgn}(bx+a) + Aad^3x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b*x^6*e^3*sgn(b*x + a) + 3/5*B*b*d*x^5*e^2*sgn(b*x + a) + 3/4*B*b*d^2
*x^4*e*sgn(b*x + a) + 1/3*B*b*d^3*x^3*sgn(b*x + a) + 1/5*B*a*x^5*e^3*sgn(b*
x + a) + 1/5*A*b*x^5*e^3*sgn(b*x + a) + 3/4*B*a*d*x^4*e^2*sgn(b*x + a) + 3/
4*A*b*d*x^4*e^2*sgn(b*x + a) + B*a*d^2*x^3*e*sgn(b*x + a) + A*b*d^2*x^3*e*s
gn(b*x + a) + 1/2*B*a*d^3*x^2*sgn(b*x + a) + 1/2*A*b*d^3*x^2*sgn(b*x + a) +
 1/4*A*a*x^4*e^3*sgn(b*x + a) + A*a*d*x^3*e^2*sgn(b*x + a) + 3/2*A*a*d^2*x^
2*e*sgn(b*x + a) + A*a*d^3*x*sgn(b*x + a)
```

maple [A] time = 0.04, size = 180, normalized size = 1.14

$$\frac{\left(10bBe^3x^5 + 12x^4Abe^3 + 12x^4Bae^3 + 36x^4bBde^2 + 15x^3aAe^3 + 45x^3Abde^2 + 45x^3aBde^2 + 45x^3bBd^2e + 60x^2Aade^2 + 60x^2Abd^2e + 60x^2Bad^2e + 20x^2bBd^3 + 90xAad^2e + 30xAbd^3 + 30xBad^3 + 60Aad^3\right)\sqrt{(bx+a)^2}\,x}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x*(10*B*b*e^3*x^5+12*A*b*e^3*x^4+12*B*a*e^3*x^4+36*B*b*d*e^2*x^4+15*A*
a*e^3*x^3+45*A*b*d*e^2*x^3+45*B*a*d*e^2*x^3+45*B*b*d^2*e*x^3+60*A*a*d*e^2*x
^2+60*A*b*d^2*e*x^2+60*B*a*d^2*e*x^2+20*B*b*d^3*x^2+90*A*a*d^2*e*x+30*A*b*d
^3*x+30*B*a*d^3*x+60*A*a*d^3)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.62, size = 698, normalized size = 4.42

$$\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Be^3x^3}{6b^2} + \frac{1}{2}\sqrt{b^2x^2+2abx+a^2}Ad^3x + \frac{\sqrt{b^2x^2+2abx+a^2}Ba^4e^3x}{2b^4} - \frac{3\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bae^3x^2}{10b^3} + \frac{\sqrt{b^2x^2+2abx+a^2}Aad^3}{2b} + \frac{\sqrt{b^2x^2+2abx+a^2}Ba^5e^3}{2b^5} + \frac{2\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^2e^3x}{5b^4} - \frac{7\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^3e^3}{15b^5} - \frac{\left(3Bde^2+Ae^3\right)\sqrt{b^2x^2+2abx+a^2}a^3x}{2b^3} + \frac{3\left(Bd^2e+Ade^2\right)\sqrt{b^2x^2+2abx+a^2}a^2x}{2b^2} - \frac{\left(Bd^3+3Ad^2e\right)\sqrt{b^2x^2+2abx+a^2}ax}{2b} + \frac{\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}x^2}{5b^2} - \frac{\left(3Bde^2+Ae^3\right)\sqrt{b^2x^2+2abx+a^2}a^4}{2b^4} + \frac{3\left(Bd^2e+Ade^2\right)\sqrt{b^2x^2+2abx+a^2}a^3}{2b^3} - \frac{\left(Bd^3+3Ad^2e\right)\sqrt{b^2x^2+2abx+a^2}a^2}{2b^2} - \frac{7\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}ax}{20b^3} + \frac{3\left(Bd^2e+Ade^2\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}x}{4b^2} + \frac{9\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2}{20b^4} - \frac{5\left(Bd^2e+Ade^2\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a}{4b^3} + \frac{\left(Bd^3+3Ad^2e\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e^3*x^3/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*
b*x + a^2)*A*d^3*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^4*e^3*x/b^4 - 3/
10*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*e^3*x^2/b^3 + 1/2*sqrt(b^2*x^2 + 2*a
*b*x + a^2)*A*a*d^3/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5*e^3/b^5 + 2
/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*e^3*x/b^4 - 7/15*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*B*a^3*e^3/b^5 - 1/2*(3*B*d*e^2 + A*e^3)*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*a^3*x/b^3 + 3/2*(B*d^2*e + A*d*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*a^2*x/b^2 - 1/2*(B*d^3 + 3*A*d^2*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b +
1/5*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 - 1/2*(3*B*
d*e^2 + A*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4/b^4 + 3/2*(B*d^2*e + A*d*e
^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3/b^3 - 1/2*(B*d^3 + 3*A*d^2*e)*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*a^2/b^2 - 7/20*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*a*x/b^3 + 3/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*x/b^2 + 9/20*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/
b^4 - 5/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(
B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 3.32, size = 935, normalized size = 5.92

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] A*d^3*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (A*e^3*x^2*(a^2 + b
^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (B*e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(6*b^2) + (B*d^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4) + (A*d^2*e*(8*b^2*(a^2 + b^2*x^2) - 12
*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*b^4) + (3*A*d*e^2
*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) + (3*B*d^2*e*x*(a^2 + b^2*x^2 +
 2*a*b*x)^(3/2))/(4*b^2) - (B*a^2*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3
- 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(24*b^5) - (A
*a^2*e^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2))/(60*b^6) + (3*B*d*e^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/
(5*b^2) - (3*B*a*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*
x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 +
 2*a*b*x)))/(40*b^5) - (7*A*a*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*
a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (3*A*a
^2*d*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) - (3*B*a^
2*d^2*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) - (7*B*a*d
*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*
x^2 + 2*a*b*x) - 4*a^2*b*x))/(20*b^4) - (5*A*a*d*e^2*(8*b^2*(a^2 + b^2*x^2)
 - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(32*b^5) - (5*B
*a*d^2*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2))/(32*b^5) - (B*a^2*d*e^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2
 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(20*b^6)
```

sympy [A] time = 0.14, size = 168, normalized size = 1.06

$$Aad^3x + \frac{Bbe^3x^6}{6} + x^5\left(\frac{Abe^3}{5} + \frac{Bae^3}{5} + \frac{3Bbde^2}{5}\right) + x^4\left(\frac{Aae^3}{4} + \frac{3Abde^2}{4} + \frac{3Bade^2}{4} + \frac{3Bbd^2e}{4}\right) + x^3\left(Aade^2 + Abd^2e + Bad^2e + \frac{Bbd^3}{3}\right) + x^2\left(\frac{3Aad^2e}{2} + \frac{Abd^3}{2} + \frac{Bad^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d**3*x + B*b*e**3*x**6/6 + x**5*(A*b*e**3/5 + B*a*e**3/5 + 3*B*b*d*e**2
/5) + x**4*(A*a*e**3/4 + 3*A*b*d*e**2/4 + 3*B*a*d*e**2/4 + 3*B*b*d**2*e/4)
+ x**3*(A*a*d*e**2 + A*b*d**2*e + B*a*d**2*e + B*b*d**3/3) + x**2*(3*A*a*d*
*2*e/2 + A*b*d**3/2 + B*a*d**3/2)
```

3.1490 $\int (A+Bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(-aBe-Abe+2bBd)}{4e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+\frac{bB\sqrt{a^2 \ldots}}{}$$

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(-aBe-Abe+2bBd)}{4e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5}{5e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*
(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(4*e^3*(a + b*x)) + (b*B*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^2\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^2}{e^2}+\frac{b(-2bBd+Abe+aBe)(\ldots}{e^2}\ldots\right.}{ab+b^2x}\\
&= \frac{(bd-ae)(Bd-Ae)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)}-\frac{(2bBd-Abe \ldots}{}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 120, normalized size = 0.76

$$\frac{x\sqrt{(a+bx)^2}\left(5a\left(4A\left(3d^2+3dex+e^2x^2\right)+Bx\left(6d^2+8dex+3e^2x^2\right)\right)+bx\left(5A\left(6d^2+8dex+3e^2x^2\right)+2Bx\left(10d^2+15dex+6e^2x^2\right)\right)\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(5*a*(4*A*(3*d^2 + 3*d*e*x + e^2*x^2) + B*x*(6*d^2 + 8
*d*e*x + 3*e^2*x^2)) + b*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2*B*x*(10*d
^2 + 15*d*e*x + 6*e^2*x^2))))/(60*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.55, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.41, size = 93, normalized size = 0.59

$$\frac{1}{5}Bbe^2x^5 + Aad^2x + \frac{1}{4}\left(2\,Bbde + (Ba+Ab)e^2\right)x^4 + \frac{1}{3}\left(Bbd^2 + Aae^2 + 2\,(Ba+Ab)de\right)x^3 + \frac{1}{2}\left(2\,Aade + (Ba+Ab)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b*e^2*x^5 + A*a*d^2*x + 1/4*(2*B*b*d*e + (B*a + A*b)*e^2)*x^4 + 1/3*(
B*b*d^2 + A*a*e^2 + 2*(B*a + A*b)*d*e)*x^3 + 1/2*(2*A*a*d*e + (B*a + A*b)*d
^2)*x^2
```

giac [A] time = 0.16, size = 185, normalized size = 1.17

$$\frac{1}{5}Bbx^5e^2\mathrm{sgn}\left(bx+a\right) + \frac{1}{2}Bbdx^4e\mathrm{sgn}\left(bx+a\right) + \frac{1}{3}Bbd^2x^3\mathrm{sgn}\left(bx+a\right) + \frac{1}{4}Bax^4e^2\mathrm{sgn}\left(bx+a\right) + \frac{1}{4}Abx^4e^2\mathrm{sgn}\left(bx+a\right) + \frac{2}{3}Badx^3e\mathrm{sgn}\left(bx+a\right) + \frac{2}{3}Abdx^3e\mathrm{sgn}\left(bx+a\right) + \frac{1}{2}Bad^2x^2\mathrm{sgn}\left(bx+a\right) + \frac{1}{2}Abd^2x^2\mathrm{sgn}\left(bx+a\right) + \frac{1}{3}Aax^3e^2\mathrm{sgn}\left(bx+a\right) + Aadx^2e\mathrm{sgn}\left(bx+a\right) + Aad^2x\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b*x^5*e^2*sgn(b*x + a) + 1/2*B*b*d*x^4*e*sgn(b*x + a) + 1/3*B*b*d^2*x
^3*sgn(b*x + a) + 1/4*B*a*x^4*e^2*sgn(b*x + a) + 1/4*A*b*x^4*e^2*sgn(b*x +
a) + 2/3*B*a*d*x^3*e*sgn(b*x + a) + 2/3*A*b*d*x^3*e*sgn(b*x + a) + 1/2*B*a*
d^2*x^2*sgn(b*x + a) + 1/2*A*b*d^2*x^2*sgn(b*x + a) + 1/3*A*a*x^3*e^2*sgn(b
*x + a) + A*a*d*x^2*e*sgn(b*x + a) + A*a*d^2*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 128, normalized size = 0.81

$$\frac{\left(12bB\,e^2x^4 + 15x^3Ab\,e^2 + 15x^3Ba\,e^2 + 30x^3bBde + 20x^2Aa\,e^2 + 40x^2Abde + 40x^2aBde + 20x^2bB\,d^2 + 60xAade + 30xAb\,d^2 + 30xBa\,d^2 + 60Aa\,d^2\right)\sqrt{(bx+a)^2}\;x}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x*(12*B*b*e^2*x^4+15*A*b*e^2*x^3+15*B*a*e^2*x^3+30*B*b*d*e*x^3+20*A*a*
e^2*x^2+40*A*b*d*e*x^2+40*B*a*d*e*x^2+20*B*b*d^2*x^2+60*A*a*d*e*x+30*A*b*d^
2*x+30*B*a*d^2*x+60*A*a*d^2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.60, size = 456, normalized size = 2.89

$$\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Ad^2x - \frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3e^2x}{2\,b^3} + \frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Be^2x^2}{5\,b^2} + \frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aad^2}{2\,b} - \frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^4e^2}{2\,b^4} - \frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bae^2x}{20\,b^3} + \frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^2e^2}{20\,b^4} + \frac{\sqrt{b^2x^2+2\,abx+a^2}\left(2\,Bde+Ae^2\right)a^2x}{2\,b^2} - \frac{\sqrt{b^2x^2+2\,abx+a^2}\left(Bd^2+2\,Ade\right)ax}{2\,b} + \frac{\sqrt{b^2x^2+2\,abx+a^2}\left(2\,Bde+Ae^2\right)a^3}{2\,b^3} - \frac{\sqrt{b^2x^2+2\,abx+a^2}\left(Bd^2+2\,Ade\right)a^2}{2\,b^2} + \frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,Bde+Ae^2\right)x}{4\,b^2} - \frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,Bde+Ae^2\right)a}{12\,b^3} + \frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(Bd^2+2\,Ade\right)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*d^2*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^
2)*B*a^3*e^2*x/b^3 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e^2*x^2/b^2 + 1/
```

```
2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*d^2/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^
2)*B*a^4*e^2/b^4 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*e^2*x/b^3 + 9/2
0*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*e^2/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*
x + a^2)*(2*B*d*e + A*e^2)*a^2*x/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B
*d^2 + 2*A*d*e)*a*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(2*B*d*e + A*e^2)
*a^3/b^3 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d^2 + 2*A*d*e)*a^2/b^2 + 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(2*B*d*e + A*e^2)*x/b^2 - 5/12*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*(2*B*d*e + A*e^2)*a/b^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*(B*d^2 + 2*A*d*e)/b^2
```

mupad [B] time = 3.02, size = 564, normalized size = 3.57

$$A d^2 \left(\frac{x}{2}+\frac{a}{2 b}\right) \sqrt{a^2+2 a b x+b^2 x^2}+\frac{B e^2 x^2 \left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{5 b^2}+\frac{B d^2 \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{24 b^4}+\frac{A e^2 x \left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{4 b^2}-\frac{5 A a e^2 \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{96 b^5}-\frac{B a^2 e^2 \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{60 b^6}+\frac{A d e \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{12 b^4}-\frac{A a^2 e^2 \left(\frac{x}{2}+\frac{a}{2 b}\right) \sqrt{a^2+2 a b x+b^2 x^2}}{4 b^2}+\frac{B d e x \left(a^2+2 a b x+b^2 x^2\right)^{3/2}}{2 b^2}-\frac{7 B a e^2 \sqrt{a^2+2 a b x+b^2 x^2} \left(a^3-5 a b^2 x^2+3 b x \left(a^2+2 a b x+b^2 x^2\right)-4 a^2 b x\right)}{60 b^4}-\frac{5 B a d e \left(8 b^2 \left(a^2+b^2 x^2\right)-12 a^2 b^2+4 a b^3 x\right) \sqrt{a^2+2 a b x+b^2 x^2}}{48 b^5}-\frac{B a^2 d e \left(\frac{x}{2}+\frac{a}{2 b}\right) \sqrt{a^2+2 a b x+b^2 x^2}}{2 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] A*d^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (B*e^2*x^2*(a^2 + b
^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (B*d^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b
^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4) + (A*e^2*x*(a^2 +
 b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (5*A*a*e^2*(8*b^2*(a^2 + b^2*x^2) - 12
*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(96*b^5) - (B*a^2*e^
2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/(60*b^6) + (A*d*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(12*b^4) - (A*a^2*e^2*(x/2 + a/(2*b))*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) + (B*d*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^
(3/2))/(2*b^2) - (7*B*a*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*
x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (5*B*a*d*e*(
8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/(48*b^5) - (B*a^2*d*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/(2*b^2)
```

sympy [A] time = 0.12, size = 116, normalized size = 0.73

$$A a d^2 x+\frac{B b e^2 x^5}{5}+x^4 \left(\frac{A b e^2}{4}+\frac{B a e^2}{4}+\frac{B b d e}{2}\right)+x^3 \left(\frac{A a e^2}{3}+\frac{2 A b d e}{3}+\frac{2 B a d e}{3}+\frac{B b d^2}{3}\right)+x^2 \left(A a d e+\frac{A b d^2}{2}+\frac{B a d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d**2*x + B*b*e**2*x**5/5 + x**4*(A*b*e**2/4 + B*a*e**2/4 + B*b*d*e/2) +
 x**3*(A*a*e**2/3 + 2*A*b*d*e/3 + 2*B*a*d*e/3 + B*b*d**2/3) + x**2*(A*a*d*e
 + A*b*d**2/2 + B*a*d**2/2)
```

3.1491 $\int (A+Bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$\frac{x^2\sqrt{a^2+2abx+b^2x^2}\,(aAe+aBd+Abd)}{2(a+bx)}+\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aBe+Abe+bBd)}{3(a+bx)}+\frac{aAdx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+$$

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 77}

$$\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aBe+Abe+bBd)}{3(a+bx)}+\frac{x^2\sqrt{a^2+2abx+b^2x^2}\,(aAe+aBd+Abd)}{2(a+bx)}+\frac{aAdx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBex^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*d*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + ((A*b*d + a*B*d + a*A*e
)*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + ((b*B*d + A*b*e + a*B*
e)*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b*B*e*x^4*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(4*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(aAbd+b(Abd+aBd+aAe)x+b(bBd+Ab\right.}{ab+b^2x}\\ &= \frac{aAdx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{(Abd+aBd+aAe)x^2\sqrt{a^2+2abx+b^2x}}{2(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.45

$$\frac{x\sqrt{(a+bx)^2}\,(2a(3A(2d+ex)+Bx(3d+2ex))+bx(A(6d+4ex)+Bx(4d+3ex)))}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

[Out] (x*Sqrt[(a + b*x)^2]*(2*a*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + b*x*(B*x*
(4*d + 3*e*x) + A*(6*d + 4*e*x))))/(12*(a + b*x))

IntegrateAlgebraic [F] time = 1.12, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
, x]

fricas [A] time = 0.41, size = 52, normalized size = 0.32

$$\frac{1}{4}Bbex^4+Aadx+\frac{1}{3}(Bbd+(Ba+Ab)e)x^3+\frac{1}{2}(Aae+(Ba+Ab)d)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] 1/4*B*b*e*x^4 + A*a*d*x + 1/3*(B*b*d + (B*a + A*b)*e)*x^3 + 1/2*(A*a*e + (B
*a + A*b)*d)*x^2

giac [A] time = 0.16, size = 114, normalized size = 0.70

$$\frac{1}{4}Bbx^4e\,\mathrm{sgn}(bx+a)+\frac{1}{3}Bbdx^3\mathrm{sgn}(bx+a)+\frac{1}{3}Bax^3e\,\mathrm{sgn}(bx+a)+\frac{1}{3}Abx^3e\,\mathrm{sgn}(bx+a)+\frac{1}{2}Badx^2\mathrm{sgn}(bx+a)+\frac{1}{2}Abdx^2\mathrm{sgn}(bx+a)+\frac{1}{2}Aax^2e\,\mathrm{sgn}(bx+a)+Aadx\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] 1/4*B*b*x^4*e*sgn(b*x + a) + 1/3*B*b*d*x^3*sgn(b*x + a) + 1/3*B*a*x^3*e*sgn
(b*x + a) + 1/3*A*b*x^3*e*sgn(b*x + a) + 1/2*B*a*d*x^2*sgn(b*x + a) + 1/2*A
*b*d*x^2*sgn(b*x + a) + 1/2*A*a*x^2*e*sgn(b*x + a) + A*a*d*x*sgn(b*x + a)

maple [A] time = 0.05, size = 76, normalized size = 0.46

$$\frac{\left(3Bbe\,x^3+4x^2Abe+4x^2aBe+4bBd\,x^2+6xaAe+6xAbd+6xaBd+12Aad\right)\sqrt{(bx+a)^2}\;x}{12bx+12a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x)

[Out] 1/12*x*(3*B*b*e*x^3+4*A*b*e*x^2+4*B*a*e*x^2+4*B*b*d*x^2+6*A*a*e*x+6*A*b*d*x
+6*B*a*d*x+12*A*a*d)*((b*x+a)^2)^(1/2)/(b*x+a)

maxima [B] time = 0.64, size = 254, normalized size = 1.55

$$\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\,Adx+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2ex}{2\,b^2}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aad}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3e}{2\,b^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(Bd+Ae)ax}{2\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bex}{4\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(Bd+Ae)a^2}{2\,b^2}-\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bae}{12\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(Bd+Ae)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="maxima")

[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*d*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*B*a^2*e*x/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*d/b + 1/2*sqrt(b^2*x
^2 + 2*a*b*x + a^2)*B*a^3*e/b^3 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d +
A*e)*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e*x/b^2 - 1/2*sqrt(b^2*x

```
^2 + 2*a*b*x + a^2)*(B*d + A*e)*a^2/b^2 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*B*a*e/b^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(B*d + A*e)/b^2
```

mupad [**B**] time = 2.92, size = 223, normalized size = 1.36

$$\frac{B\,d\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^4}+\frac{B\,e\,x\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{4\,b^2}+\frac{A\,\left(a+b\,x\right)\,\left(3\,b\,d-a\,e+2\,b\,e\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,b^2}-\frac{B\,a^2\,e\,\left(\frac{x}{2}+\frac{a}{2\,b}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,b^2}-\frac{5\,B\,a\,e\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{96\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] (B*d*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*
b*x)^(1/2))/(24*b^4) + (B*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) + (A
*(a + b*x)*(3*b*d - a*e + 2*b*e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^2)
 - (B*a^2*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) - (5*B
*a*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*
b*x)^(1/2))/(96*b^5)
```

sympy [**A**] time = 0.10, size = 63, normalized size = 0.38

$$Aadx + \frac{Bbex^4}{4} + x^3\left(\frac{Abe}{3} + \frac{Bae}{3} + \frac{Bbd}{3}\right) + x^2\left(\frac{Aae}{2} + \frac{Abd}{2} + \frac{Bad}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d*x + B*b*e*x**4/4 + x**3*(A*b*e/3 + B*a*e/3 + B*b*d/3) + x**2*(A*a*e/2
 + A*b*d/2 + B*a*d/2)
```

3.1492 $\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^2) + (B*(a^2 + 2
*a*b*x + b^2*x^2)^(3/2))/(3*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}+\frac{\left(2Ab^2-2abB\right)\int \sqrt{a^2+2abx+b^2x^2}\,dx}{2b^2}\\ &= \frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 45, normalized size = 0.65

$$\frac{x\sqrt{(a+bx)^2}\,(3a(2A+Bx)+bx(3A+2Bx))}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3*a*(2*A + B*x) + b*x*(3*A + 2*B*x)))/(6*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]
```

fricas [A] time = 0.42, size = 24, normalized size = 0.35

$$\frac{1}{3}Bbx^3 + Aax + \frac{1}{2}(Ba + Ab)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*B*b*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

giac [A] time = 0.21, size = 74, normalized size = 1.07

$$\frac{1}{3}Bbx^3\mathrm{sgn}(bx+a) + \frac{1}{2}Bax^2\mathrm{sgn}(bx+a) + \frac{1}{2}Abx^2\mathrm{sgn}(bx+a) + Aax\mathrm{sgn}(bx+a) - \frac{(Ba^3 - 3Aa^2b)\mathrm{sgn}(bx+a)}{6b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*B*b*x^3*sgn(b*x + a) + 1/2*B*a*x^2*sgn(b*x + a) + 1/2*A*b*x^2*sgn(b*x +
 a) + A*a*x*sgn(b*x + a) - 1/6*(B*a^3 - 3*A*a^2*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.04, size = 42, normalized size = 0.61

$$\frac{(2Bbx^2 + 3Abx + 3Bax + 6Aa)\sqrt{(bx+a)^2}\,x}{6bx+6a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*x*(2*B*b*x^2+3*A*b*x+3*B*a*x+6*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.56, size = 125, normalized size = 1.81

$$\frac{1}{2}\sqrt{b^2x^2 + 2abx + a^2}\,Ax - \frac{\sqrt{b^2x^2 + 2abx + a^2}\,Bax}{2b} - \frac{\sqrt{b^2x^2 + 2abx + a^2}\,Ba^2}{2b^2} + \frac{\sqrt{b^2x^2 + 2abx + a^2}\,Aa}{2b} + \frac{(b^2x^2 + 2abx + a^2)^{\frac{3}{2}}B}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B
*a*x/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2/b^2 + 1/2*sqrt(b^2*x^2 + 2
*a*b*x + a^2)*A*a/b + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/b^2
```

mupad [B] time = 2.42, size = 77, normalized size = 1.12

$$\frac{A\sqrt{(a+b\,x)^2}\,(a+b\,x)}{2\,b} + \frac{B\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right) - 12\,a^2\,b^2 + 4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*((a + b*x)^2)^(1/2)*(a + b*x))/(2*b) + (B*(8*b^2*(a^2 + b^2*x^2) - 12*a^
2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4)
```

sympy [A] time = 0.09, size = 26, normalized size = 0.38

$$Aax + \frac{Bbx^3}{3} + x^2\left(\frac{Ab}{2} + \frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x + B*b*x**3/3 + x**2*(A*b/2 + B*a/2)
```

3.1493 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$

Optimal. Leaf size=132

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)\log(d+ex)}{e^3(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{e^2(a+bx)}+\frac{B(a+bx)\sqrt{a^2+2abx+b^2x}}{2be}$$

Rubi [A] time = 0.09, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{e^2(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)\log(d+ex)}{e^3(a+bx)}+\frac{B(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] -((b*(B*d - A*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x))) + (B*(a
 + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*e) + ((b*d - a*e)*(B*d - A*e)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^2(-Bd+Ae)}{e^2}+\frac{B(ab+b^2x)}{e}-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= -\frac{b(Bd-Ae)x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}+\frac{B(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2be}+\frac{(bd-}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.56

$$\frac{\sqrt{(a+bx)^2}\,(ex(2aBe+b(2Ae-2Bd+Bex))+2(bd-ae)(Bd-Ae)\log(d+ex))}{2e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(e*x*(2*a*B*e + b*(-2*B*d + 2*A*e + B*e*x)) + 2*(b*d - a
*e)*(B*d - A*e)*Log[d + e*x]))/(2*e^3*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.54, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x), x]
```

fricas [A] time = 0.42, size = 68, normalized size = 0.52

$$\frac{Bbe^2x^2 - 2\left(Bbde - (Ba+Ab)e^2\right)x + 2\left(Bbd^2 + Aae^2 - (Ba+Ab)de\right)\log(ex+d)}{2\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b*e^2*x^2 - 2*(B*b*d*e - (B*a + A*b)*e^2)*x + 2*(B*b*d^2 + A*a*e^2 -
 (B*a + A*b)*d*e)*log(e*x + d))/e^3
```

giac [A] time = 0.16, size = 119, normalized size = 0.90

$$\left(Bbd^2\operatorname{sgn}(bx+a) - Bade\operatorname{sgn}(bx+a) - Abde\operatorname{sgn}(bx+a) + Aae^2\operatorname{sgn}(bx+a)\right)e^{(-3)}\log(|xe+d|) + \frac{1}{2}\left(Bbx^2e\operatorname{sgn}(bx+a) - 2\,Bbdx\operatorname{sgn}(bx+a) + 2\,Baxe\operatorname{sgn}(bx+a) + 2\,Abxe\operatorname{sgn}(bx+a)\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (B*b*d^2*sgn(b*x + a) - B*a*d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e
^2*sgn(b*x + a))*e^(-3)*log(abs(x*e + d)) + 1/2*(B*b*x^2*e*sgn(b*x + a) - 2
*B*b*d*x*sgn(b*x + a) + 2*B*a*x*e*sgn(b*x + a) + 2*A*b*x*e*sgn(b*x + a))*e^
(-2)
```

maple [C] time = 0.07, size = 146, normalized size = 1.11

$$\frac{\left(B\,b^2e^2x^2 + 2Aab\,e^2\ln(bex+bd) - 2A\,b^2de\ln(bex+bd) + 2A\,b^2e^2x - 2Babde\ln(bex+bd) + 2Bab\,e^2x + 2B\,b^2d^2\ln(bex+bd) - 2B\,b^2dex + 2Aab\,e^2 + B\,a^2e^2 - 2Babde\right)\operatorname{csgn}(bx+a)}{2b\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*csgn(b*x+a)*(B*x^2*b^2*e^2+2*A*ln(b*e*x+b*d)*a*b*e^2-2*A*ln(b*e*x+b*d)*
b^2*d*e+2*A*x*b^2*e^2-2*B*ln(b*e*x+b*d)*a*b*d*e+2*B*ln(b*e*x+b*d)*b^2*d^2+2
*B*x*a*b*e^2-2*B*x*b^2*d*e+2*A*a*b*e^2+B*a^2*e^2-2*B*d*a*b*e)/b/e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+bx)^2}\,(A+Bx)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x), x)
```

sympy [A] time = 0.28, size = 53, normalized size = 0.40

$$\frac{Bbx^2}{2e}+x\left(\frac{Ab}{e}+\frac{Ba}{e}-\frac{Bbd}{e^2}\right)-\frac{(-Ae+Bd)\,(ae-bd)\log{(d+ex)}}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d),x)
```

```
[Out] B*b*x**2/(2*e) + x*(A*b/e + B*a/e - B*b*d/e**2) - (-A*e + B*d)*(a*e - b*d)*
log(d + e*x)/e**3
```

3.1494 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2} dx$

Optimal. Leaf size=144

$$-\frac{\sqrt{a^2+2abx+b^2x^2}(bd-ae)(Bd-Ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\log(d+ex)(-aBe-Abe+2bBd)}{e^3(a+bx)}+\frac{bBx\sqrt{a^2+2a}}{e^2(a+}$$

Rubi [A] time = 0.10, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}(bd-ae)(Bd-Ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\log(d+ex)(-aBe-Abe+2bBd)}{e^3(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (b*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x)) - ((b*d - a*e)*(B*d -
 A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*(d + e*x)) - ((2*b*B*d
- A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x)
)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2} dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^2} dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^2B}{e^2}-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^2}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)}\right) dx}{ab+b^2x}\\ &= \frac{bBx\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}-\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)(d+ex)}-(2bE\end{aligned}$$

Mathematica [A] time = 0.05, size = 96, normalized size = 0.67

$$\frac{\sqrt{(a+bx)^2}\left(-(d+ex)\log(d+ex)(-aBe-Abe+2bBd)+ae(Bd-Ae)+b\left(Ade-Bd^2+Bdex+Be^2x^2\right)\right)}{e^3(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(a*e*(B*d - A*e) + b*(-(B*d^2) + A*d*e + B*d*e*x + B*e^2
*x^2) - (2*b*B*d - A*b*e - a*B*e)*(d + e*x)*Log[d + e*x]))/(e^3*(a + b*x)*(
d + e*x))
```

IntegrateAlgebraic [F] time = 2.42, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x)^2, x]
```

fricas [A] time = 0.42, size = 102, normalized size = 0.71

$$\frac{Bbe^2x^2 + Bbdex - Bbd^2 - Aae^2 + (Ba+Ab)de - \left(2\,Bbd^2 - (Ba+Ab)de + \left(2\,Bbde - (Ba+Ab)e^2\right)x\right)\log\left(ex+d\right)}{e^4x + de^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] (B*b*e^2*x^2 + B*b*d*e*x - B*b*d^2 - A*a*e^2 + (B*a + A*b)*d*e - (2*B*b*d^2
 - (B*a + A*b)*d*e + (2*B*b*d*e - (B*a + A*b)*e^2)*x)*log(e*x + d))/(e^4*x
+ d*e^3)
```

giac [A] time = 0.18, size = 123, normalized size = 0.85

$$Bbxe^{(-2)}\mathrm{sgn}\left(bx+a\right) - \left(2\,Bbd\mathrm{sgn}\left(bx+a\right) - Bae\mathrm{sgn}\left(bx+a\right) - Abe\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}\log\left(|xe+d|\right) - \frac{\left(Bbd^2\mathrm{sgn}\left(bx+a\right) - Bade\mathrm{sgn}\left(bx+a\right) - Abde\mathrm{sgn}\left(bx+a\right) + Aae^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] B*b*x*e^(-2)*sgn(b*x + a) - (2*B*b*d*sgn(b*x + a) - B*a*e*sgn(b*x + a) - A*
b*e*sgn(b*x + a))*e^(-3)*log(abs(x*e + d)) - (B*b*d^2*sgn(b*x + a) - B*a*d*
e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e^2*sgn(b*x + a))*e^(-3)/(x*e +
 d)
```

maple [C] time = 0.07, size = 158, normalized size = 1.10

$$\frac{\left(Ab\,e^2x\ln\left(bex+bd\right) + Ba\,e^2x\ln\left(bex+bd\right) - 2Bbdex\ln\left(bex+bd\right) + Bb\,e^2x^2 + Abde\ln\left(bex+bd\right) + Bade\ln\left(bex+bd\right) + Ba\,e^2x - 2Bb\,d^2\ln\left(bex+bd\right) + Bbdex - Aa\,e^2 + Abde + 2Bade - Bb\,d^2\right)\mathrm{csgn}\left(bx+a\right)}{\left(ex+d\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x)
```

```
[Out] csgn(b*x+a)*(A*ln(b*e*x+b*d)*x*b*e^2+B*ln(b*e*x+b*d)*x*a*e^2-2*B*ln(b*e*x+b
*d)*x*b*d*e+B*x^2*b*e^2+A*ln(b*e*x+b*d)*b*d*e+B*ln(b*e*x+b*d)*a*d*e-2*B*ln(
b*e*x+b*d)*b*d^2+B*x*a*e^2+B*x*b*d*e-A*a*e^2+A*b*d*e+2*a*B*d*e-b*B*d^2)/e^3
/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+bx)^2}\ (A+Bx)}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [A] time = 0.46, size = 71, normalized size = 0.49

$$\frac{Bbx}{e^2} + \frac{-Aae^2 + Abde + Bade - Bbd^2}{de^3 + e^4x} + \frac{(Abe + Bae - 2Bbd)\log(d + ex)}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**2,x)
```

```
[Out] B*b*x/e**2 + (-A*a*e**2 + A*b*d*e + B*a*d*e - B*b*d**2)/(d*e**3 + e**4*x) +
 (A*b*e + B*a*e - 2*B*b*d)*log(d + e*x)/e**3
```

3.1495 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=151

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{2e^3(a+bx)(d+ex)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)(d+ex)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\,\log(d}{e^3(a+bx)}$$

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{2e^3(a+bx)(d+ex)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)(d+ex)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(
d + e*x)^2) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
3*(a + b*x)*(d + e*x)) + (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(
e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^3}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^3}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^2}+\frac{b^2B}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2abx}}{e^3(a+bx)(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 89, normalized size = 0.59

$$-\frac{\sqrt{(a+bx)^2}\,\left(ae(Ae+B(d+2ex))+b(Ae(d+2ex)-Bd(3d+4ex))-2bB(d+ex)^2\log(d+ex)\right)}{2e^3(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] -1/2*(Sqrt[(a + b*x)^2]*(a*e*(A*e + B*(d + 2*e*x)) + b*(A*e*(d + 2*e*x) - B
*d*(3*d + 4*e*x)) - 2*b*B*(d + e*x)^2*Log[d + e*x]))/(e^3*(a + b*x)*(d + e*
x)^2)
```

IntegrateAlgebraic [F] time = 3.21, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x)^3, x]
```

fricas [A] time = 0.44, size = 105, normalized size = 0.70

$$\frac{3\,Bbd^2-Aae^2-(Ba+Ab)de+2\left(2\,Bbde-(Ba+Ab)e^2\right)x+2\left(Bbe^2x^2+2\,Bbdex+Bbd^2\right)\log\left(ex+d\right)}{2\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(3*B*b*d^2 - A*a*e^2 - (B*a + A*b)*d*e + 2*(2*B*b*d*e - (B*a + A*b)*e^2
)*x + 2*(B*b*e^2*x^2 + 2*B*b*d*e*x + B*b*d^2)*log(e*x + d))/(e^5*x^2 + 2*d*
e^4*x + d^2*e^3)
```

giac [A] time = 0.18, size = 127, normalized size = 0.84

$$Bbe^{(-3)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(2\left(2\,Bbd\mathrm{sgn}\left(bx+a\right)-Bae\mathrm{sgn}\left(bx+a\right)-Abe\mathrm{sgn}\left(bx+a\right)\right)x+\left(3\,Bbd^2\mathrm{sgn}\left(bx+a\right)-Bade\mathrm{sgn}\left(bx+a\right)-Abde\mathrm{sgn}\left(bx+a\right)-Aae^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}\right)e^{(-2)}}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*b*e^(-3)*log(abs(x*e + d))*sgn(b*x + a) + 1/2*(2*(2*B*b*d*sgn(b*x + a) -
B*a*e*sgn(b*x + a) - A*b*e*sgn(b*x + a))*x + (3*B*b*d^2*sgn(b*x + a) - B*a*
d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) - A*a*e^2*sgn(b*x + a))*e^(-1))*e^(
-2)/(x*e + d)^2
```

maple [C] time = 0.09, size = 117, normalized size = 0.77

$$-\frac{\left(-2Bb\,e^2x^2\ln\left(bex+bd\right)-4Bbdex\ln\left(bex+bd\right)+2Ab\,e^2x+2Ba\,e^2x-2Bb\,d^2\ln\left(bex+bd\right)-4Bbdex+Aa\,e^2+Abde+Bade-3Bb\,d^2\right)\mathrm{csgn}\left(bx+a\right)}{2\left(ex+d\right)^2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x)
```

```
[Out] -1/2*csgn(b*x+a)*(-2*B*ln(b*e*x+b*d)*x^2*b*e^2-4*B*b*d*e*x*ln(b*e*x+b*d)+2*
A*x*b*e^2-2*B*b*d^2*ln(b*e*x+b*d)+2*B*a*e^2*x-4*B*b*d*e*x+A*a*e^2+A*b*d*e+B
*a*d*e-3*B*b*d^2)/e^3/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\,\,(A+B\,x)}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [A] time = 0.84, size = 94, normalized size = 0.62

$$\frac{Bb\log{(d+ex)}}{e^3}+\frac{-Aae^2-Abde-Bade+3Bbd^2+x\left(-2Abe^2-2Bae^2+4Bbde\right)}{2d^2e^3+4de^4x+2e^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**3,x)
```

```
[Out] B*b*log(d + e*x)/e**3 + (-A*a*e**2 - A*b*d*e - B*a*d*e + 3*B*b*d**2 + x*(-2
*A*b*e**2 - 2*B*a*e**2 + 4*B*b*d*e))/(2*d**2*e**3 + 4*d*e**4*x + 2*e**5*x**
2)
```

3.1496 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=104

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}(Bd-Ae)}{3(d+ex)^3(bd-ae)^2}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2(d+ex)^2(bd-ae)^2}$$

Rubi [A] time = 0.06, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}(Bd-Ae)}{3(d+ex)^3(bd-ae)^2}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2(d+ex)^2(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(b*d - a*e)^2*(d +
 e*x)^2) + ((B*d - A*e)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(3*(b*d - a*e)^2*(
d + e*x)^3)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(bd-ae)^2(d+ex)^3}+\frac{(Ab-aB)\int \frac{\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx}{bd-ae}\\ &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(bd-ae)^2(d+ex)^3}+\frac{\left((Ab-aB)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{ab-}{(d+}}{(bd-ae)\left(ab+b^2x\right)}\\ &= \frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2(bd-ae)^2(d+ex)^2}+\frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{3/}}{3(bd-ae)^2(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 81, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(ae(2Ae+B(d+3ex))+b\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)\right)}{6e^3(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(a*e*(2*A*e + B*(d + 3*e*x)) + b*(A*e*(d + 3*e*x) +
 2*B*(d^2 + 3*d*e*x + 3*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 2.25, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x)^4, x]
```

fricas [A] time = 0.41, size = 93, normalized size = 0.89

$$-\frac{6\,Bbe^2x^2+2\,Bbd^2+2\,Aae^2+(Ba+Ab)de+3\left(2\,Bbde+(Ba+Ab)e^2\right)x}{6\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b*e^2*x^2 + 2*B*b*d^2 + 2*A*a*e^2 + (B*a + A*b)*d*e + 3*(2*B*b*d*
e + (B*a + A*b)*e^2)*x)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

giac [A] time = 0.16, size = 117, normalized size = 1.12

$$-\frac{\left(6\,Bbx^2e^2\mathrm{sgn}\,(bx+a)+6\,Bbdxe\mathrm{sgn}\,(bx+a)+2\,Bbd^2\mathrm{sgn}\,(bx+a)+3\,Baxe^2\mathrm{sgn}\,(bx+a)+3\,Abxe^2\mathrm{sgn}\,(bx+a)+Bade\mathrm{sgn}\,(bx+a)+Abde\mathrm{sgn}\,(bx+a)+2\,Aae^2\mathrm{sgn}\,(bx+a)\right)e^{(-3)}}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] -1/6*(6*B*b*x^2*e^2*sgn(b*x + a) + 6*B*b*d*x*e*sgn(b*x + a) + 2*B*b*d^2*sgn
(b*x + a) + 3*B*a*x*e^2*sgn(b*x + a) + 3*A*b*x*e^2*sgn(b*x + a) + B*a*d*e*s
gn(b*x + a) + A*b*d*e*sgn(b*x + a) + 2*A*a*e^2*sgn(b*x + a))*e^(-3)/(x*e +
d)^3
```

maple [A] time = 0.05, size = 87, normalized size = 0.84

$$-\frac{\left(6Bb\,e^2x^2+3Ab\,e^2x+3Ba\,e^2x+6Bbdex+2Aa\,e^2+Abde+Bade+2Bb\,d^2\right)\sqrt{(bx+a)^2}}{6\,(ex+d)^3\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x)
```

```
[Out] -1/6*(6*B*b*e^2*x^2+3*A*b*e^2*x+3*B*a*e^2*x+6*B*b*d*e*x+2*A*a*e^2+A*b*d*e+B
*a*d*e+2*B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^3/e^3/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.13, size = 86, normalized size = 0.83

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(2\,A\,a\,e^2+2\,B\,b\,d^2+3\,A\,b\,e^2\,x+3\,B\,a\,e^2\,x+6\,B\,b\,e^2\,x^2+A\,b\,d\,e+B\,a\,d\,e+6\,B\,b\,d\,e\,x\right)}{6\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(2*A*a*e^2 + 2*B*b*d^2 + 3*A*b*e^2*x + 3*B*a*e^2*x +
6*B*b*e^2*x^2 + A*b*d*e + B*a*d*e + 6*B*b*d*e*x))/(6*e^3*(a + b*x)*(d + e*x
)^3)
```

sympy [A] time = 1.51, size = 107, normalized size = 1.03

$$\frac{-2Aae^2-Abde-Bade-2Bbd^2-6Bbe^2x^2+x\left(-3Abe^2-3Bae^2-6Bbde\right)}{6d^3e^3+18d^2e^4x+18de^5x^2+6e^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**4,x)
```

```
[Out] (-2*A*a*e**2 - A*b*d*e - B*a*d*e - 2*B*b*d**2 - 6*B*b*e**2*x**2 + x*(-3*A*b
*e**2 - 3*B*a*e**2 - 6*B*b*d*e))/(6*d**3*e**3 + 18*d**2*e**4*x + 18*d*e**5*
x**2 + 6*e**6*x**3)
```

3.1497 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{4e^3(a+bx)(d+ex)^4}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}$$

Rubi [A] time = 0.10, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{4e^3(a+bx)(d+ex)^4}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x)*(
d + e*x)^4) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*
e^3*(a + b*x)*(d + e*x)^3) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a
+ b*x)*(d + e*x)^2)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^5}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^5}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^4}+\frac{b^2B}{e^2(d+ex)^3}\right)dx}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2abx}}{3e^3(a+bx)(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.51

$$-\frac{\sqrt{(a+bx)^2}\left(ae(3Ae+B(d+4ex))+b\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)\right)}{12e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(a*e*(3*A*e + B*(d + 4*e*x)) + b*(A*e*(d + 4*e*x)
+ B*(d^2 + 4*d*e*x + 6*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 181.13, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 102, normalized size = 0.65

$$-\frac{6\,Bbe^{2}x^{2} + Bbd^{2} + 3\,Aae^{2} + (Ba + Ab)de + 4\left(Bbde + (Ba + Ab)e^{2}\right)x}{12\left(e^{7}x^{4} + 4\,de^{6}x^{3} + 6\,d^{2}e^{5}x^{2} + 4\,d^{3}e^{4}x + d^{4}e^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*b*e^2*x^2 + B*b*d^2 + 3*A*a*e^2 + (B*a + A*b)*d*e + 4*(B*b*d*e +
 (B*a + A*b)*e^2)*x)/(e^7*x^4 + 4*d*e^6*x^3 + 6*d^2*e^5*x^2 + 4*d^3*e^4*x +
 d^4*e^3)
```

giac [A] time = 0.20, size = 116, normalized size = 0.73

$$-\frac{\left(6\,Bbx^{2}e^{2}\mathrm{sgn}\left(bx + a\right) + 4\,Bbdxe\mathrm{sgn}\left(bx + a\right) + Bbd^{2}\mathrm{sgn}\left(bx + a\right) + 4\,Baxe^{2}\mathrm{sgn}\left(bx + a\right) + 4\,Abxe^{2}\mathrm{sgn}\left(bx + a\right) + Bade\mathrm{sgn}\left(bx + a\right) + Abde\mathrm{sgn}\left(bx + a\right) + 3\,Aae^{2}\mathrm{sgn}\left(bx + a\right)\right)e^{(-3)}}{12\,(xe + d)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(6*B*b*x^2*e^2*sgn(b*x + a) + 4*B*b*d*x*e*sgn(b*x + a) + B*b*d^2*sgn(
b*x + a) + 4*B*a*x*e^2*sgn(b*x + a) + 4*A*b*x*e^2*sgn(b*x + a) + B*a*d*e*sg
n(b*x + a) + A*b*d*e*sgn(b*x + a) + 3*A*a*e^2*sgn(b*x + a))*e^(-3)/(x*e + d
)^4
```

maple [A] time = 0.05, size = 86, normalized size = 0.54

$$-\frac{\left(6Bb\,e^{2}x^{2} + 4Ab\,e^{2}x + 4Ba\,e^{2}x + 4Bbdex + 3Aa\,e^{2} + Abde + Bade + Bb\,d^{2}\right)\sqrt{(bx + a)^{2}}}{12\,(ex + d)^{4}\,(bx + a)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x)
```

```
[Out] -1/12/e^3*(6*B*b*e^2*x^2+4*A*b*e^2*x+4*B*a*e^2*x+4*B*b*d*e*x+3*A*a*e^2+A*b*
d*e+B*a*d*e+B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^4/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.15, size = 85, normalized size = 0.54

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(3\,A\,a\,e^2+B\,b\,d^2+4\,A\,b\,e^2\,x+4\,B\,a\,e^2\,x+6\,B\,b\,e^2\,x^2+A\,b\,d\,e+B\,a\,d\,e+4\,B\,b\,d\,e\,x\right)}{12\,e^3\,(a+b\,x)\,(d+e\,x)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(3*A*a*e^2 + B*b*d^2 + 4*A*b*e^2*x + 4*B*a*e^2*x + 6*
B*b*e^2*x^2 + A*b*d*e + B*a*d*e + 4*B*b*d*e*x))/(12*e^3*(a + b*x)*(d + e*x)
^4)
```

sympy [A] time = 2.62, size = 117, normalized size = 0.74

$$\frac{-3Aae^2-Abde-Bade-Bbd^2-6Bbe^2x^2+x\left(-4Abe^2-4Bae^2-4Bbde\right)}{12d^4e^3+48d^3e^4x+72d^2e^5x^2+48de^6x^3+12e^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a*e**2 - A*b*d*e - B*a*d*e - B*b*d**2 - 6*B*b*e**2*x**2 + x*(-4*A*b*e
**2 - 4*B*a*e**2 - 4*B*b*d*e))/(12*d**4*e**3 + 48*d**3*e**4*x + 72*d**2*e**
5*x**2 + 48*d*e**6*x**3 + 12*e**7*x**4)
```

3.1498 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{4e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^5}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}$$

Rubi [A] time = 0.09, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{4e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^5}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(
d + e*x)^5) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
e^3*(a + b*x)*(d + e*x)^4) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a
+ b*x)*(d + e*x)^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^6}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^6}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^5}+\frac{b^2B}{e^2(d+ex)^4}\right) dx}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2a}}{4e^3(a+bx)(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.53

$$-\frac{\sqrt{(a+bx)^2}\left(3ae(4Ae+B(d+5ex))+b\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)\right)}{60e^3(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(3*a*e*(4*A*e + B*(d + 5*e*x)) + b*(3*A*e*(d + 5*e
*x) + 2*B*(d^2 + 5*d*e*x + 10*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.42, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 117, normalized size = 0.74

$$-\frac{20\,Bbe^2x^2 + 2\,Bbd^2 + 12\,Aae^2 + 3\,(Ba + Ab)de + 5\left(2\,Bbde + 3\,(Ba + Ab)e^2\right)x}{60\left(e^8x^5 + 5\,de^7x^4 + 10\,d^2e^6x^3 + 10\,d^3e^5x^2 + 5\,d^4e^4x + d^5e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b*e^2*x^2 + 2*B*b*d^2 + 12*A*a*e^2 + 3*(B*a + A*b)*d*e + 5*(2*B
*b*d*e + 3*(B*a + A*b)*e^2)*x)/(e^8*x^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10
*d^3*e^5*x^2 + 5*d^4*e^4*x + d^5*e^3)
```

giac [A] time = 0.16, size = 119, normalized size = 0.75

$$-\frac{\left(20\,Bbx^2e^2\mathrm{sgn}\left(bx+a\right) + 10\,Bbdxe\mathrm{sgn}\left(bx+a\right) + 2\,Bbd^2\mathrm{sgn}\left(bx+a\right) + 15\,Baxe^2\mathrm{sgn}\left(bx+a\right) + 15\,Abxe^2\mathrm{sgn}\left(bx+a\right) + 3\,Bade\mathrm{sgn}\left(bx+a\right) + 3\,Abde\mathrm{sgn}\left(bx+a\right) + 12\,Aae^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b*x^2*e^2*sgn(b*x + a) + 10*B*b*d*x*e*sgn(b*x + a) + 2*B*b*d^2*
sgn(b*x + a) + 15*B*a*x*e^2*sgn(b*x + a) + 15*A*b*x*e^2*sgn(b*x + a) + 3*B*
a*d*e*sgn(b*x + a) + 3*A*b*d*e*sgn(b*x + a) + 12*A*a*e^2*sgn(b*x + a))*e^(-
3)/(x*e + d)^5
```

maple [A] time = 0.05, size = 89, normalized size = 0.56

$$-\frac{\left(20Bb\,e^2x^2 + 15Ab\,e^2x + 15Ba\,e^2x + 10Bbdex + 12Aa\,e^2 + 3Abde + 3Bade + 2Bb\,d^2\right)\sqrt{(bx+a)^2}}{60\,(ex+d)^5\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x)
```

```
[Out] -1/60/e^3*(20*B*b*e^2*x^2+15*A*b*e^2*x+15*B*a*e^2*x+10*B*b*d*e*x+12*A*a*e^2
+3*A*b*d*e+3*B*a*d*e+2*B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^5/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 88, normalized size = 0.56

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(12\,A\,a\,e^2+2\,B\,b\,d^2+15\,A\,b\,e^2\,x+15\,B\,a\,e^2\,x+20\,B\,b\,e^2\,x^2+3\,A\,b\,d\,e+3\,B\,a\,d\,e+10\,B\,b\,d\,e\,x\right)}{60\,e^3\,(a+b\,x)\,(d+e\,x)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(12*A*a*e^2 + 2*B*b*d^2 + 15*A*b*e^2*x + 15*B*a*e^2*x
 + 20*B*b*e^2*x^2 + 3*A*b*d*e + 3*B*a*d*e + 10*B*b*d*e*x))/(60*e^3*(a + b*x
)*(d + e*x)^5)
```

sympy [A] time = 4.36, size = 134, normalized size = 0.85

$$\frac{-12Aae^2-3Abde-3Bade-2Bbd^2-20Bbe^2x^2+x\left(-15Abe^2-15Bae^2-10Bbde\right)}{60d^5e^3+300d^4e^4x+600d^3e^5x^2+600d^2e^6x^3+300de^7x^4+60e^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a*e**2 - 3*A*b*d*e - 3*B*a*d*e - 2*B*b*d**2 - 20*B*b*e**2*x**2 + x*(
-15*A*b*e**2 - 15*B*a*e**2 - 10*B*b*d*e))/(60*d**5*e**3 + 300*d**4*e**4*x +
 600*d**3*e**5*x**2 + 600*d**2*e**6*x**3 + 300*d*e**7*x**4 + 60*e**8*x**5)
```

3.1499 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{6e^3(a+bx)(d+ex)^6}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}$$

Rubi [A] time = 0.10, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{6e^3(a+bx)(d+ex)^6}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x)*(
d + e*x)^6) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*
e^3*(a + b*x)*(d + e*x)^5) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a
+ b*x)*(d + e*x)^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^7}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^7}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^6}+\frac{b^2B}{e^2(d+ex)^5}\right)dx}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{6e^3(a+bx)(d+ex)^6}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2abx}}{5e^3(a+bx)(d+ex)^5}\end{aligned}$$

Mathematica [A] time = 0.04, size = 82, normalized size = 0.52

$$-\frac{\sqrt{(a+bx)^2}\left(2ae(5Ae+B(d+6ex))+b\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)\right)}{60e^3(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(2*a*e*(5*A*e + B*(d + 6*e*x)) + b*(2*A*e*(d + 6*e
*x) + B*(d^2 + 6*d*e*x + 15*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 180.55, size = 0, normalized size = 0.00

$$\text{\$Aborted}$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 126, normalized size = 0.80

$$-\frac{15\,Bbe^{2}x^{2} + Bbd^{2} + 10\,Aae^{2} + 2\,(Ba + Ab)de + 6\left(Bbde + 2\,(Ba + Ab)e^{2}\right)x}{60\left(e^{9}x^{6} + 6\,de^{8}x^{5} + 15\,d^{2}e^{7}x^{4} + 20\,d^{3}e^{6}x^{3} + 15\,d^{4}e^{5}x^{2} + 6\,d^{5}e^{4}x + d^{6}e^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*B*b*e^2*x^2 + B*b*d^2 + 10*A*a*e^2 + 2*(B*a + A*b)*d*e + 6*(B*b*d
*e + 2*(B*a + A*b)*e^2)*x)/(e^9*x^6 + 6*d*e^8*x^5 + 15*d^2*e^7*x^4 + 20*d^3
*e^6*x^3 + 15*d^4*e^5*x^2 + 6*d^5*e^4*x + d^6*e^3)
```

giac [A] time = 0.16, size = 118, normalized size = 0.75

$$-\frac{\left(15\,Bbx^{2}e^{2}\mathrm{sgn}\left(bx + a\right) + 6\,Bbdxe\mathrm{sgn}\left(bx + a\right) + Bbd^{2}\mathrm{sgn}\left(bx + a\right) + 12\,Baxe^{2}\mathrm{sgn}\left(bx + a\right) + 12\,Abxe^{2}\mathrm{sgn}\left(bx + a\right) + 2\,Bade\mathrm{sgn}\left(bx + a\right) + 2\,Abde\mathrm{sgn}\left(bx + a\right) + 10\,Aae^{2}\mathrm{sgn}\left(bx + a\right)\right)e^{(-3)}}{60\,(xe + d)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(15*B*b*x^2*e^2*sgn(b*x + a) + 6*B*b*d*x*e*sgn(b*x + a) + B*b*d^2*sgn
(b*x + a) + 12*B*a*x*e^2*sgn(b*x + a) + 12*A*b*x*e^2*sgn(b*x + a) + 2*B*a*d
*e*sgn(b*x + a) + 2*A*b*d*e*sgn(b*x + a) + 10*A*a*e^2*sgn(b*x + a))*e^(-3)/
(x*e + d)^6
```

maple [A] time = 0.05, size = 88, normalized size = 0.56

$$-\frac{\left(15Bb\,e^{2}x^{2} + 12Ab\,e^{2}x + 12Ba\,e^{2}x + 6Bbdex + 10Aa\,e^{2} + 2Abde + 2Bade + Bb\,d^{2}\right)\sqrt{(bx + a)^{2}}}{60\,(ex + d)^{6}\,(bx + a)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x)
```

```
[Out] -1/60/e^3*(15*B*b*e^2*x^2+12*A*b*e^2*x+12*B*a*e^2*x+6*B*b*d*e*x+10*A*a*e^2+
2*A*b*d*e+2*B*a*d*e+B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^6/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.16, size = 87, normalized size = 0.55

$$-\frac{\sqrt{(a+bx)^2}\,\left(10\,A\,a\,e^2+B\,b\,d^2+12\,A\,b\,e^2\,x+12\,B\,a\,e^2\,x+15\,B\,b\,e^2\,x^2+2\,A\,b\,d\,e+2\,B\,a\,d\,e+6\,B\,b\,d\,e\,x\right)}{60\,e^3\,(a+b\,x)\,(d+e\,x)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(10*A*a*e^2 + B*b*d^2 + 12*A*b*e^2*x + 12*B*a*e^2*x +
 15*B*b*e^2*x^2 + 2*A*b*d*e + 2*B*a*d*e + 6*B*b*d*e*x))/(60*e^3*(a + b*x)*(
d + e*x)^6)
```

sympy [A] time = 6.57, size = 144, normalized size = 0.91

$$\frac{-10Aae^2-2Abde-2Bade-Bbd^2-15Bbe^2x^2+x\left(-12Abe^2-12Bae^2-6Bbde\right)}{60d^6e^3+360d^5e^4x+900d^4e^5x^2+1200d^3e^6x^3+900d^2e^7x^4+360de^8x^5+60e^9x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**7,x)
```

```
[Out] (-10*A*a*e**2 - 2*A*b*d*e - 2*B*a*d*e - B*b*d**2 - 15*B*b*e**2*x**2 + x*(-1
2*A*b*e**2 - 12*B*a*e**2 - 6*B*b*d*e))/(60*d**6*e**3 + 360*d**5*e**4*x + 90
0*d**4*e**5*x**2 + 1200*d**3*e**6*x**3 + 900*d**2*e**7*x**4 + 360*d*e**8*x*
*5 + 60*e**9*x**6)
```

3.1500 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=298

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)(-aBe-Abe$$

Rubi [A] time = 0.51, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)(-aBe-Abe+2bBd)}{8e^5(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)^2(-aBe-3Abe+4bBd)}{7e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^3(Bd-Ae)}{6e^5(a+bx)}+\frac{b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}}{10e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(B*d - A*e)*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^
5*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)^7*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (3*b*(b*d - a*e)*(2*b*B*d - A
*b*e - a*B*e)*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x))
- (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(9*e^5*(a + b*x)) + (b^3*B*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
10*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^5\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^5}{e^4}+\frac{b^3(bd-ae)^2(-4b}{}\right.}{}$$

$$=\frac{(bd-ae)^3(Bd-Ae)(d+ex)^6\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)}-\frac{(bd-ae)^2}{}$$

Mathematica [A] time = 0.20, size = 496, normalized size = 1.66

$$\frac{x\sqrt{(a+bx)^2}\left(60a^3\left(7A\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+Bx\left(21d^5+70d^4ex+105d^3e^2x^2+84d^2e^3x^3+35de^4x^4+6e^5x^5\right)\right)+45a^2bx\left(4A\left(21d^5+70d^4ex+105d^3e^2x^2+84d^2e^3x^3+35de^4x^4+6e^5x^5\right)+Bx\left(56d^5+210d^4ex+336d^3e^2x^2+280d^2e^3x^3+120de^4x^4+21e^5x^5\right)\right)+15ab^2x^2\left(3A\left(56d^5+210d^4ex+336d^3e^2x^2+280d^2e^3x^3+120de^4x^4+21e^5x^5\right)+Bx\left(126d^5+504d^4ex+840d^3e^2x^2+720d^2e^3x^3+315de^4x^4+56e^5x^5\right)\right)+b^3x^3\left(5A\left(126d^5+504d^4ex+840d^3e^2x^2+720d^2e^3x^3+315de^4x^4+56e^5x^5\right)+2Bx\left(252d^5+1050d^4ex+1800d^3e^2x^2+1575d^2e^3x^3+700de^4x^4+126e^5x^5\right)\right)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(60*a^3*(7*A*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15
*d^2*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + B*x*(21*d^5 + 70*d^4*e*x + 105*d^3*
e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5)) + 45*a^2*b*x*(4*A*(21
*d^5 + 70*d^4*e*x + 105*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5
*x^5) + B*x*(56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120
*d*e^4*x^4 + 21*e^5*x^5)) + 15*a*b^2*x^2*(3*A*(56*d^5 + 210*d^4*e*x + 336*d
^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5) + B*x*(126*d^5 +
 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x
^5)) + b^3*x^3*(5*A*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*
x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + 2*B*x*(252*d^5 + 1050*d^4*e*x + 1800*d^
3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5))))/(2520*(a + b
*x))
```

IntegrateAlgebraic [F] time = 6.65, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [B] time = 0.44, size = 518, normalized size = 1.74

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/10*B*b^3*e^5*x^10 + A*a^3*d^5*x + 1/9*(5*B*b^3*d*e^4 + (3*B*a*b^2 + A*b^3
)*e^5)*x^9 + 1/8*(10*B*b^3*d^2*e^3 + 5*(3*B*a*b^2 + A*b^3)*d*e^4 + 3*(B*a^2
*b + A*a*b^2)*e^5)*x^8 + 1/7*(10*B*b^3*d^3*e^2 + 10*(3*B*a*b^2 + A*b^3)*d^2
*e^3 + 15*(B*a^2*b + A*a*b^2)*d*e^4 + (B*a^3 + 3*A*a^2*b)*e^5)*x^7 + 1/6*(5
*B*b^3*d^4*e + A*a^3*e^5 + 10*(3*B*a*b^2 + A*b^3)*d^3*e^2 + 30*(B*a^2*b + A
*a*b^2)*d^2*e^3 + 5*(B*a^3 + 3*A*a^2*b)*d*e^4)*x^6 + 1/5*(B*b^3*d^5 + 5*A*a
^3*d*e^4 + 5*(3*B*a*b^2 + A*b^3)*d^4*e + 30*(B*a^2*b + A*a*b^2)*d^3*e^2 + 1
0*(B*a^3 + 3*A*a^2*b)*d^2*e^3)*x^5 + 1/4*(10*A*a^3*d^2*e^3 + (3*B*a*b^2 + A
*b^3)*d^5 + 15*(B*a^2*b + A*a*b^2)*d^4*e + 10*(B*a^3 + 3*A*a^2*b)*d^3*e^2)*
x^4 + 1/3*(10*A*a^3*d^3*e^2 + 3*(B*a^2*b + A*a*b^2)*d^5 + 5*(B*a^3 + 3*A*a^
2*b)*d^4*e)*x^3 + 1/2*(5*A*a^3*d^4*e + (B*a^3 + 3*A*a^2*b)*d^5)*x^2
```

giac [B] time = 0.22, size = 922, normalized size = 3.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/10*B*b^3*x^10*e^5*sgn(b*x + a) + 5/9*B*b^3*d*x^9*e^4*sgn(b*x + a) + 5/4*B
*b^3*d^2*x^8*e^3*sgn(b*x + a) + 10/7*B*b^3*d^3*x^7*e^2*sgn(b*x + a) + 5/6*B
*b^3*d^4*x^6*e*sgn(b*x + a) + 1/5*B*b^3*d^5*x^5*sgn(b*x + a) + 1/3*B*a*b^2*
x^9*e^5*sgn(b*x + a) + 1/9*A*b^3*x^9*e^5*sgn(b*x + a) + 15/8*B*a*b^2*d*x^8*
e^4*sgn(b*x + a) + 5/8*A*b^3*d*x^8*e^4*sgn(b*x + a) + 30/7*B*a*b^2*d^2*x^7*
```

```
e^3*sgn(b*x + a) + 10/7*A*b^3*d^2*x^7*e^3*sgn(b*x + a) + 5*B*a*b^2*d^3*x^6*
e^2*sgn(b*x + a) + 5/3*A*b^3*d^3*x^6*e^2*sgn(b*x + a) + 3*B*a*b^2*d^4*x^5*e
*sgn(b*x + a) + A*b^3*d^4*x^5*e*sgn(b*x + a) + 3/4*B*a*b^2*d^5*x^4*sgn(b*x
+ a) + 1/4*A*b^3*d^5*x^4*sgn(b*x + a) + 3/8*B*a^2*b*x^8*e^5*sgn(b*x + a) +
3/8*A*a*b^2*x^8*e^5*sgn(b*x + a) + 15/7*B*a^2*b*d*x^7*e^4*sgn(b*x + a) + 15
/7*A*a*b^2*d*x^7*e^4*sgn(b*x + a) + 5*B*a^2*b*d^2*x^6*e^3*sgn(b*x + a) + 5*
A*a*b^2*d^2*x^6*e^3*sgn(b*x + a) + 6*B*a^2*b*d^3*x^5*e^2*sgn(b*x + a) + 6*A
*a*b^2*d^3*x^5*e^2*sgn(b*x + a) + 15/4*B*a^2*b*d^4*x^4*e*sgn(b*x + a) + 15/
4*A*a*b^2*d^4*x^4*e*sgn(b*x + a) + B*a^2*b*d^5*x^3*sgn(b*x + a) + A*a*b^2*d
^5*x^3*sgn(b*x + a) + 1/7*B*a^3*x^7*e^5*sgn(b*x + a) + 3/7*A*a^2*b*x^7*e^5*
sgn(b*x + a) + 5/6*B*a^3*d*x^6*e^4*sgn(b*x + a) + 5/2*A*a^2*b*d*x^6*e^4*sgn
(b*x + a) + 2*B*a^3*d^2*x^5*e^3*sgn(b*x + a) + 6*A*a^2*b*d^2*x^5*e^3*sgn(b*
x + a) + 5/2*B*a^3*d^3*x^4*e^2*sgn(b*x + a) + 15/2*A*a^2*b*d^3*x^4*e^2*sgn(
b*x + a) + 5/3*B*a^3*d^4*x^3*e*sgn(b*x + a) + 5*A*a^2*b*d^4*x^3*e*sgn(b*x +
 a) + 1/2*B*a^3*d^5*x^2*sgn(b*x + a) + 3/2*A*a^2*b*d^5*x^2*sgn(b*x + a) + 1
/6*A*a^3*x^6*e^5*sgn(b*x + a) + A*a^3*d*x^5*e^4*sgn(b*x + a) + 5/2*A*a^3*d^
2*x^4*e^3*sgn(b*x + a) + 10/3*A*a^3*d^3*x^3*e^2*sgn(b*x + a) + 5/2*A*a^3*d^
4*x^2*e*sgn(b*x + a) + A*a^3*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 676, normalized size = 2.27

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x*(252*B*b^3*e^5*x^9+280*A*b^3*e^5*x^8+840*B*a*b^2*e^5*x^8+1400*B*b^
3*d*e^4*x^8+945*A*a*b^2*e^5*x^7+1575*A*b^3*d*e^4*x^7+945*B*a^2*b*e^5*x^7+47
25*B*a*b^2*d*e^4*x^7+3150*B*b^3*d^2*e^3*x^7+1080*A*a^2*b*e^5*x^6+5400*A*a*b
^2*d*e^4*x^6+3600*A*b^3*d^2*e^3*x^6+360*B*a^3*e^5*x^6+5400*B*a^2*b*d*e^4*x^
6+10800*B*a*b^2*d^2*e^3*x^6+3600*B*b^3*d^3*e^2*x^6+420*A*a^3*e^5*x^5+6300*A
*a^2*b*d*e^4*x^5+12600*A*a*b^2*d^2*e^3*x^5+4200*A*b^3*d^3*e^2*x^5+2100*B*a^
3*d*e^4*x^5+12600*B*a^2*b*d^2*e^3*x^5+12600*B*a*b^2*d^3*e^2*x^5+2100*B*b^3*
d^4*e*x^5+2520*A*a^3*d*e^4*x^4+15120*A*a^2*b*d^2*e^3*x^4+15120*A*a*b^2*d^3*
e^2*x^4+2520*A*b^3*d^4*e*x^4+5040*B*a^3*d^2*e^3*x^4+15120*B*a^2*b*d^3*e^2*x
^4+7560*B*a*b^2*d^4*e*x^4+504*B*b^3*d^5*x^4+6300*A*a^3*d^2*e^3*x^3+18900*A*
a^2*b*d^3*e^2*x^3+9450*A*a*b^2*d^4*e*x^3+630*A*b^3*d^5*x^3+6300*B*a^3*d^3*e
^2*x^3+9450*B*a^2*b*d^4*e*x^3+1890*B*a*b^2*d^5*x^3+8400*A*a^3*d^3*e^2*x^2+1
2600*A*a^2*b*d^4*e*x^2+2520*A*a*b^2*d^5*x^2+4200*B*a^3*d^4*e*x^2+2520*B*a^2
*b*d^5*x^2+6300*A*a^3*d^4*e*x+3780*A*a^2*b*d^5*x+1260*B*a^3*d^5*x+2520*A*a^
3*d^5)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.63, size = 1330, normalized size = 4.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^5*x^5/b^2 - 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*B*a*e^5*x^4/b^3 + 5/24*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*
e^5*x^3/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d^5*x + 1/4*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*a^6*e^5*x/b^6 - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*a^3*e^5*x^2/b^5 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*d^5/b + 1/4*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^7*e^5/b^7 + 41/168*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*a^4*e^5*x/b^6 - 209/840*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*
e^5/b^7 + 1/9*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^4/b^2 -
 13/72*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^3/b^3 + 5/8*
(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^3/b^2 - 1/4*(5*B*
```

```
d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*x/b^5 + 5/4*(2*B*d^2*e^3
 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 5/2*(B*d^3*e^2 + A*
d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 5/4*(B*d^4*e + 2*A*d^3
*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*(B*d^5 + 5*A*d^4*e)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b + 37/168*(5*B*d*e^4 + A*e^5)*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*a^2*x^2/b^4 - 55/56*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + 10/7*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*x^2/b^2 - 1/4*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^6/b^6 + 5/4*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*a^5/b^5 - 5/2*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*a^4/b^4 + 5/4*(B*d^4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^
3/b^3 - 1/4*(B*d^5 + 5*A*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 1
21/504*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^5 + 65/5
6*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 15/7*
(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 5/6*(B*d^
4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 + 125/504*(5*B*d*e
^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^6 - 69/56*(2*B*d^2*e^3 +
A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^5 + 17/7*(B*d^3*e^2 + A*d^2*
e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^4 - 7/6*(B*d^4*e + 2*A*d^3*e^2)*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b^3 + 1/5*(B*d^5 + 5*A*d^4*e)*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(d + e\,x\right)^5\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^5\,\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)*(d + e*x)**5*((a + b*x)**2)**(3/2), x)
```

3.1501 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} dx$

Optimal. Leaf size=298

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(-3aBe-Abe+4bBd)}{8e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)(-aBe-Abe$$

Rubi [A] time = 0.40, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(-3aBe-Abe+4bBd)}{8e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)(-aBe-Abe+2bBd)}{7e^5(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^2(-aBe-3Abe+4bBd)}{6e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)^3(Bd-Ae)}{5e^5(a+bx)}+\frac{b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9}{9e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(B*d - A*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^
5*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)^6*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a + b*x)) + (3*b*(b*d - a*e)*(2*b*B*d - A
*b*e - a*B*e)*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x))
- (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(8*e^5*(a + b*x)) + (b^3*B*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9
*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3 (A+Bx)(d+ex)^4\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^4}{e^4}+\frac{b^3(bd-ae)^2(-4b$$

$$= \frac{(bd-ae)^3(Bd-Ae)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)}-\frac{(bd-ae)^2$$

Mathematica [A] time = 0.16, size = 410, normalized size = 1.38

$$\frac{x\sqrt{(a+bx)^2}\left(84a^3\left(6A\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+Bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)\right)+36a^2bx\left(7A\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)+2Bx\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)\right)+9ab^2x^2\left(8A\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)+3Bx\left(70d^4+224d^3ex+280d^2e^2x^2+160de^3x^3+35e^4x^4\right)\right)+b^3x^3\left(9A\left(70d^4+224d^3ex+280d^2e^2x^2+160de^3x^3+35e^4x^4\right)+4Bx\left(126d^4+420d^3ex+540d^2e^2x^2+315de^3x^3+70e^4x^4\right)\right)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(84*a^3*(6*A*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*
d*e^3*x^3 + e^4*x^4) + B*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3
*x^3 + 5*e^4*x^4)) + 36*a^2*b*x*(7*A*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2
+ 24*d*e^3*x^3 + 5*e^4*x^4) + 2*B*x*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2
 + 70*d*e^3*x^3 + 15*e^4*x^4)) + 9*a*b^2*x^2*(8*A*(35*d^4 + 105*d^3*e*x + 1
26*d^2*e^2*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 3*B*x*(70*d^4 + 224*d^3*e*x +
 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4)) + b^3*x^3*(9*A*(70*d^4 + 22
4*d^3*e*x + 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + 4*B*x*(126*d^4
+ 420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4))))/(2520*(a +
 b*x))
```

IntegrateAlgebraic [F] time = 5.33, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.42, size = 425, normalized size = 1.43

$$\frac{1}{9}Bb^3e^4x^9 + Aa^3d^4x + \frac{1}{8}\left(4Bb^3de^3 + \left(3Bab^2+Ab^3\right)e^4\right)x^8 + \frac{1}{7}\left(6Bb^3d^2e^2 + 4\left(3Bab^2+Ab^3\right)de^3 + 3\left(Ba^2b+Aab^2\right)e^4\right)x^7 + \frac{1}{6}\left(4Bb^3d^3e + 6\left(3Bab^2+Ab^3\right)d^2e^2 + 12\left(Ba^2b+Aab^2\right)de^3 + \left(Ba^3+3Aa^2b\right)e^4\right)x^6 + \frac{1}{5}\left(Bb^3d^4 + Aa^3e^4 + 4\left(3Bab^2+Ab^3\right)d^3e + 18\left(Ba^2b+Aab^2\right)d^2e^2 + 4\left(Ba^3+3Aa^2b\right)de^3\right)x^5 + \frac{1}{4}\left(4Aa^3de^3 + \left(3Bab^2+Ab^3\right)d^4 + 12\left(Ba^2b+Aab^2\right)d^3e + 6\left(Ba^3+3Aa^2b\right)d^2e^2\right)x^4 + \frac{1}{3}\left(6Aa^3d^2e^2 + 3\left(Ba^2b+Aab^2\right)d^4 + 4\left(Ba^3+3Aa^2b\right)d^3e\right)x^3 + \frac{1}{2}\left(4Aa^3d^3e + \left(Ba^3+3Aa^2b\right)d^4\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/9*B*b^3*e^4*x^9 + A*a^3*d^4*x + 1/8*(4*B*b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*
e^4)*x^8 + 1/7*(6*B*b^3*d^2*e^2 + 4*(3*B*a*b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b
+ A*a*b^2)*e^4)*x^7 + 1/6*(4*B*b^3*d^3*e + 6*(3*B*a*b^2 + A*b^3)*d^2*e^2 +
12*(B*a^2*b + A*a*b^2)*d*e^3 + (B*a^3 + 3*A*a^2*b)*e^4)*x^6 + 1/5*(B*b^3*d^
4 + A*a^3*e^4 + 4*(3*B*a*b^2 + A*b^3)*d^3*e + 18*(B*a^2*b + A*a*b^2)*d^2*e^
2 + 4*(B*a^3 + 3*A*a^2*b)*d*e^3)*x^5 + 1/4*(4*A*a^3*d*e^3 + (3*B*a*b^2 + A*
b^3)*d^4 + 12*(B*a^2*b + A*a*b^2)*d^3*e + 6*(B*a^3 + 3*A*a^2*b)*d^2*e^2)*x^
4 + 1/3*(6*A*a^3*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d^4 + 4*(B*a^3 + 3*A*a^2*b
)*d^3*e)*x^3 + 1/2*(4*A*a^3*d^3*e + (B*a^3 + 3*A*a^2*b)*d^4)*x^2
```

giac [B] time = 0.20, size = 758, normalized size = 2.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/9*B*b^3*x^9*e^4*sgn(b*x + a) + 1/2*B*b^3*d*x^8*e^3*sgn(b*x + a) + 6/7*B*b
^3*d^2*x^7*e^2*sgn(b*x + a) + 2/3*B*b^3*d^3*x^6*e*sgn(b*x + a) + 1/5*B*b^3*
d^4*x^5*sgn(b*x + a) + 3/8*B*a*b^2*x^8*e^4*sgn(b*x + a) + 1/8*A*b^3*x^8*e^4
*sgn(b*x + a) + 12/7*B*a*b^2*d*x^7*e^3*sgn(b*x + a) + 4/7*A*b^3*d*x^7*e^3*s
gn(b*x + a) + 3*B*a*b^2*d^2*x^6*e^2*sgn(b*x + a) + A*b^3*d^2*x^6*e^2*sgn(b*
x + a) + 12/5*B*a*b^2*d^3*x^5*e*sgn(b*x + a) + 4/5*A*b^3*d^3*x^5*e*sgn(b*x
+ a) + 3/4*B*a*b^2*d^4*x^4*sgn(b*x + a) + 1/4*A*b^3*d^4*x^4*sgn(b*x + a) +
3/7*B*a^2*b*x^7*e^4*sgn(b*x + a) + 3/7*A*a*b^2*x^7*e^4*sgn(b*x + a) + 2*B*a
```

```
^2*b*d*x^6*e^3*sgn(b*x + a) + 2*A*a*b^2*d*x^6*e^3*sgn(b*x + a) + 18/5*B*a^2
*b*d^2*x^5*e^2*sgn(b*x + a) + 18/5*A*a*b^2*d^2*x^5*e^2*sgn(b*x + a) + 3*B*a
^2*b*d^3*x^4*e*sgn(b*x + a) + 3*A*a*b^2*d^3*x^4*e*sgn(b*x + a) + B*a^2*b*d^
4*x^3*sgn(b*x + a) + A*a*b^2*d^4*x^3*sgn(b*x + a) + 1/6*B*a^3*x^6*e^4*sgn(b
*x + a) + 1/2*A*a^2*b*x^6*e^4*sgn(b*x + a) + 4/5*B*a^3*d*x^5*e^3*sgn(b*x +
a) + 12/5*A*a^2*b*d*x^5*e^3*sgn(b*x + a) + 3/2*B*a^3*d^2*x^4*e^2*sgn(b*x +
a) + 9/2*A*a^2*b*d^2*x^4*e^2*sgn(b*x + a) + 4/3*B*a^3*d^3*x^3*e*sgn(b*x + a
) + 4*A*a^2*b*d^3*x^3*e*sgn(b*x + a) + 1/2*B*a^3*d^4*x^2*sgn(b*x + a) + 3/2
*A*a^2*b*d^4*x^2*sgn(b*x + a) + 1/5*A*a^3*x^5*e^4*sgn(b*x + a) + A*a^3*d*x^
4*e^3*sgn(b*x + a) + 2*A*a^3*d^2*x^3*e^2*sgn(b*x + a) + 2*A*a^3*d^3*x^2*e*s
gn(b*x + a) + A*a^3*d^4*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 552, normalized size = 1.85

$$\frac{\left(280x^8Bb^3e^4+315x^7Ab^3e^4+945x^7Bab^2e^4+1260x^7Bb^3de^3+1080x^6Aab^2e^4+1440x^6Ab^3de^3+1080x^6Ba^2be^4+4320x^6Bab^2de^3+2160x^6Bb^3d^2e^2+1260x^5Aa^2be^4+5040x^5Aab^2de^3+2520x^5Ab^3d^2e^2+420x^5Ba^3e^4+5040x^5Ba^2bde^3+7560x^5Bab^2d^2e^2+1680x^5Bb^3d^3e+504x^4Aa^3e^4+6048x^4Aa^2bde^3+9072x^4Aab^2d^2e^2+2016x^4Ab^3d^3e+2016x^4Ba^3de^3+9072x^4Ba^2bd^2e^2+6048x^4Bab^2d^3e+504x^4b^3Bd^4+2520x^3Aa^3de^3+11340x^3Aa^2bd^2e^2+7560x^3Aab^2d^3e+630x^3Ab^3d^4+3780x^3Ba^3d^2e^2+7560x^3Ba^2bd^3e+1890x^3Bab^2d^4+5040x^2Aa^3d^2e^2+10080x^2Aa^2bd^3e+2520x^2Aab^2d^4+3360x^2Ba^3d^3e+2520x^2Ba^2bd^4+5040xAa^3d^3e+3780xAa^2bd^4+1260xBa^3d^4+2520Aa^3d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{2520\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x*(280*B*b^3*e^4*x^8+315*A*b^3*e^4*x^7+945*B*a*b^2*e^4*x^7+1260*B*b^
3*d*e^3*x^7+1080*A*a*b^2*e^4*x^6+1440*A*b^3*d*e^3*x^6+1080*B*a^2*b*e^4*x^6+
4320*B*a*b^2*d*e^3*x^6+2160*B*b^3*d^2*e^2*x^6+1260*A*a^2*b*e^4*x^5+5040*A*a
*b^2*d*e^3*x^5+2520*A*b^3*d^2*e^2*x^5+420*B*a^3*e^4*x^5+5040*B*a^2*b*d*e^3*
x^5+7560*B*a*b^2*d^2*e^2*x^5+1680*B*b^3*d^3*e*x^5+504*A*a^3*e^4*x^4+6048*A*
a^2*b*d*e^3*x^4+9072*A*a*b^2*d^2*e^2*x^4+2016*A*b^3*d^3*e*x^4+2016*B*a^3*d*
e^3*x^4+9072*B*a^2*b*d^2*e^2*x^4+6048*B*a*b^2*d^3*e*x^4+504*B*b^3*d^4*x^4+2
520*A*a^3*d*e^3*x^3+11340*A*a^2*b*d^2*e^2*x^3+7560*A*a*b^2*d^3*e*x^3+630*A*
b^3*d^4*x^3+3780*B*a^3*d^2*e^2*x^3+7560*B*a^2*b*d^3*e*x^3+1890*B*a*b^2*d^4*
x^3+5040*A*a^3*d^2*e^2*x^2+10080*A*a^2*b*d^3*e*x^2+2520*A*a*b^2*d^4*x^2+336
0*B*a^3*d^3*e*x^2+2520*B*a^2*b*d^4*x^2+5040*A*a^3*d^3*e*x+3780*A*a^2*b*d^4*
x+1260*B*a^3*d^4*x+2520*A*a^3*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.79, size = 1004, normalized size = 3.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^4*x^4/b^2 - 13/72*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*B*a*e^4*x^3/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d^4*
x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5*e^4*x/b^5 + 37/168*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*B*a^2*e^4*x^2/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*A*a*d^4/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^6*e^4/b^6 - 121/504*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*e^4*x/b^5 + 125/504*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*B*a^4*e^4/b^6 + 1/8*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*x^3/b^2 + 1/4*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*a^4*x/b^4 - 1/2*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2
)*a^3*x/b^3 + 1/2*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)
*a^2*x/b^2 - 1/4*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b
- 11/56*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + 2/7
*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 + 1/4*(4
*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 - 1/2*(3*B*d^2*e^
2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 1/2*(2*B*d^3*e + 3
*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(B*d^4 + 4*A*d^3*
e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 + 13/56*(4*B*d*e^3 + A*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 3/7*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/3*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*x/b^2 - 69/280*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b
```

```
*x + a^2)^(5/2)*a^3/b^5 + 17/35*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a^2/b^4 - 7/15*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a/b^3 + 1/5*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(d + e\,x\right)^4\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^4\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)*(d + e*x)**4*((a + b*x)**2)**(3/2), x)
```

3.1502 $\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=259

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-4aBe+Abe+3bBd)}{7b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)(-2aBe+Abe+\cdots}{2b^5}$$

Rubi [A] time = 0.32, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-4aBe+Abe+3bBd)}{7b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)(-2aBe+Abe+bBd)}{2b^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^2(-4aBe+3Abe+bBd)}{5b^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)(bd-ae)^3}{4b^5}+\frac{Be^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^
5) + ((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(5*b^5) + (e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b*x
)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^5) + (e^2*(3*b*B*d + A*b*e - 4*a*B*
e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) + (B*e^3*(a + b*x)^7*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^3\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)^3\left(ab+b^2x\right)^3}{b^4}+\frac{(bd-ae)^2(bBd+3A\cdots}{\cdots}\right.}{\cdots}$$

$$=\frac{(Ab-aB)(bd-ae)^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^5}+\frac{(bd-ae)^2\cdots}{\cdots}$$

Mathematica [A] time = 0.14, size = 320, normalized size = 1.24

$$\frac{x\sqrt{(a+bx)^2}\left(14a^3\left(5A\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+Bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)\right)+14a^2bx\left(3A\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+Bx\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)\right)+2ab^2x^2\left(7A\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)+3Bx\left(35d^3+84d^2ex+70de^2x^2+20e^3x^3\right)\right)+b^3x^3\left(2A\left(35d^3+84d^2ex+70de^2x^2+20e^3x^3\right)+Bx\left(56d^3+140d^2ex+120de^2x^2+35e^3x^3\right)\right)\right)}{280(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(14*a^3*(5*A*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^
3) + B*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3)) + 14*a^2*b*x*(3*
A*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B*x*(20*d^3 + 45*d^2*e
*x + 36*d*e^2*x^2 + 10*e^3*x^3)) + 2*a*b^2*x^2*(7*A*(20*d^3 + 45*d^2*e*x +
36*d*e^2*x^2 + 10*e^3*x^3) + 3*B*x*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 + 20
*e^3*x^3)) + b^3*x^3*(2*A*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 + 20*e^3*x^3)
 + B*x*(56*d^3 + 140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3))))/(280*(a + b*x
))
```

IntegrateAlgebraic [F] time = 3.91, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^3 \left(a^2 + 2abx + b^2x^2\right)^{3/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.43, size = 325, normalized size = 1.25

$$\frac{1}{8} Bb^3e^3x^8 + Aa^3d^3x + \frac{1}{7}\left(3Bb^3de^2 + (3Bab^2 + Ab^3)e^3\right)x^7 + \frac{1}{2}\left(Bb^3d^2e + (3Bab^2 + Ab^3)de^2 + (Ba^2b + Aab^2)e^3\right)x^6 + \frac{1}{5}\left(Bb^3d^3 + 3(3Bab^2 + Ab^3)d^2e + 9(Ba^2b + Aab^2)de^2 + (Ba^3 + 3Aa^2b)e^3\right)x^5 + \frac{1}{4}\left(Aa^3e^3 + (3Bab^2 + Ab^3)d^3 + 9(Ba^2b + Aab^2)d^2e + 3(Ba^3 + 3Aa^2b)de^2\right)x^4 + \left(Aa^3de^2 + (Ba^2b + Aab^2)d^3 + (Ba^3 + 3Aa^2b)d^2e\right)x^3 + \frac{1}{2}\left(3Aa^3d^2e + (Ba^3 + 3Aa^2b)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/8*B*b^3*e^3*x^8 + A*a^3*d^3*x + 1/7*(3*B*b^3*d*e^2 + (3*B*a*b^2 + A*b^3)*
e^3)*x^7 + 1/2*(B*b^3*d^2*e + (3*B*a*b^2 + A*b^3)*d*e^2 + (B*a^2*b + A*a*b^
2)*e^3)*x^6 + 1/5*(B*b^3*d^3 + 3*(3*B*a*b^2 + A*b^3)*d^2*e + 9*(B*a^2*b + A
*a*b^2)*d*e^2 + (B*a^3 + 3*A*a^2*b)*e^3)*x^5 + 1/4*(A*a^3*e^3 + (3*B*a*b^2
+ A*b^3)*d^3 + 9*(B*a^2*b + A*a*b^2)*d^2*e + 3*(B*a^3 + 3*A*a^2*b)*d*e^2)*x
^4 + (A*a^3*d*e^2 + (B*a^2*b + A*a*b^2)*d^3 + (B*a^3 + 3*A*a^2*b)*d^2*e)*x^
3 + 1/2*(3*A*a^3*d^2*e + (B*a^3 + 3*A*a^2*b)*d^3)*x^2
```

giac [B] time = 0.21, size = 594, normalized size = 2.29

$$\frac{1}{8} Bb^3x^8e^3\mathrm{sgn}(bx + a) + \frac{3}{7} Bb^3dx^7e^2\mathrm{sgn}(bx + a) + \frac{1}{2} Bb^3d^2x^6e\mathrm{sgn}(bx + a) + \frac{1}{5} Bb^3d^3x^5\mathrm{sgn}(bx + a) + \frac{3}{7} Bab^2x^7e^3\mathrm{sgn}(bx + a) + \frac{1}{7} Ab^3x^7e^3\mathrm{sgn}(bx + a) + \frac{3}{2} Bab^2dx^6e^2\mathrm{sgn}(bx + a) + \frac{1}{2} Ab^3dx^6e^2\mathrm{sgn}(bx + a) + \frac{9}{5} Bab^2d^2x^5e\mathrm{sgn}(bx + a) + \frac{3}{5} Ab^3d^2x^5e\mathrm{sgn}(bx + a) + \frac{3}{4} Bab^2d^3x^4\mathrm{sgn}(bx + a) + \frac{1}{4} Ab^3d^3x^4\mathrm{sgn}(bx + a) + \frac{1}{2} Ba^2bx^6e^3\mathrm{sgn}(bx + a) + \frac{1}{2} Aab^2x^6e^3\mathrm{sgn}(bx + a) + \frac{9}{5} Ba^2bdx^5e^2\mathrm{sgn}(bx + a) + \frac{9}{5} Aab^2dx^5e^2\mathrm{sgn}(bx + a) + \frac{9}{4} Ba^2bd^2x^4e\mathrm{sgn}(bx + a) + \frac{9}{4} Aab^2d^2x^4e\mathrm{sgn}(bx + a) + Ba^2bd^3x^3\mathrm{sgn}(bx + a) + Aab^2d^3x^3\mathrm{sgn}(bx + a) + \frac{1}{5} Ba^3x^5e^3\mathrm{sgn}(bx + a) + \frac{3}{5} Aa^2bx^5e^3\mathrm{sgn}(bx + a) + \frac{3}{4} Ba^3dx^4e^2\mathrm{sgn}(bx + a) + \frac{9}{4} Aa^2bdx^4e^2\mathrm{sgn}(bx + a) + Ba^3d^2x^3e\mathrm{sgn}(bx + a) + 3Aa^2bd^2x^3e\mathrm{sgn}(bx + a) + \frac{1}{2} Ba^3d^3x^2\mathrm{sgn}(bx + a) + \frac{3}{2} Aa^2bd^3x^2\mathrm{sgn}(bx + a) + \frac{1}{4} Aa^3x^4e^3\mathrm{sgn}(bx + a) + Aa^3dx^3e^2\mathrm{sgn}(bx + a) + \frac{3}{2} Aa^3d^2x^2e\mathrm{sgn}(bx + a) + Aa^3d^3x\mathrm{sgn}(bx + a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/8*B*b^3*x^8*e^3*sgn(b*x + a) + 3/7*B*b^3*d*x^7*e^2*sgn(b*x + a) + 1/2*B*b
^3*d^2*x^6*e*sgn(b*x + a) + 1/5*B*b^3*d^3*x^5*sgn(b*x + a) + 3/7*B*a*b^2*x^
7*e^3*sgn(b*x + a) + 1/7*A*b^3*x^7*e^3*sgn(b*x + a) + 3/2*B*a*b^2*d*x^6*e^2
*sgn(b*x + a) + 1/2*A*b^3*d*x^6*e^2*sgn(b*x + a) + 9/5*B*a*b^2*d^2*x^5*e*sg
n(b*x + a) + 3/5*A*b^3*d^2*x^5*e*sgn(b*x + a) + 3/4*B*a*b^2*d^3*x^4*sgn(b*x
 + a) + 1/4*A*b^3*d^3*x^4*sgn(b*x + a) + 1/2*B*a^2*b*x^6*e^3*sgn(b*x + a) +
 1/2*A*a*b^2*x^6*e^3*sgn(b*x + a) + 9/5*B*a^2*b*d*x^5*e^2*sgn(b*x + a) + 9/
5*A*a*b^2*d*x^5*e^2*sgn(b*x + a) + 9/4*B*a^2*b*d^2*x^4*e*sgn(b*x + a) + 9/4
*A*a*b^2*d^2*x^4*e*sgn(b*x + a) + B*a^2*b*d^3*x^3*sgn(b*x + a) + A*a*b^2*d^
3*x^3*sgn(b*x + a) + 1/5*B*a^3*x^5*e^3*sgn(b*x + a) + 3/5*A*a^2*b*x^5*e^3*s
gn(b*x + a) + 3/4*B*a^3*d*x^4*e^2*sgn(b*x + a) + 9/4*A*a^2*b*d*x^4*e^2*sgn(
b*x + a) + B*a^3*d^2*x^3*e*sgn(b*x + a) + 3*A*a^2*b*d^2*x^3*e*sgn(b*x + a)
+ 1/2*B*a^3*d^3*x^2*sgn(b*x + a) + 3/2*A*a^2*b*d^3*x^2*sgn(b*x + a) + 1/4*A
```

```
*a^3*x^4*e^3*sgn(b*x + a) + A*a^3*d*x^3*e^2*sgn(b*x + a) + 3/2*A*a^3*d^2*x^
2*e*sgn(b*x + a) + A*a^3*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 428, normalized size = 1.65

$$\frac{\left(35Be^3b^3x^7+40x^6Ab^3e^3+120x^6Be^3ab^2+120x^6Bb^3de^2+140x^5Aab^2e^3+140x^5Ab^3de^2+140x^5Be^3a^2b+420x^5Bab^2de^2+140x^5Bb^3d^2e+168x^4Aa^2be^3+504x^4Aab^2de^2+168x^4Ab^3d^2e+56x^4Ba^3e^3+504x^4Ba^2bde^2+504x^4Bab^2d^2e+56x^4Bb^3d^3+70x^3Aa^3e^3+630x^3Aa^2bde^2+630x^3Aab^2d^2e+70x^3Ad^3b^3+210x^3Ba^3de^2+630x^3Ba^2bd^2e+210x^3Bab^2d^3+280Aa^3de^2x^2+840Aa^2bd^2ex^2+280Aab^2d^3x^2+280Ba^3d^2ex^2+280Ba^2bd^3x^2+420xAa^3d^2e+420xAd^3a^2b+140xa^3Bd^3+280Ad^3a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{280\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/280*x*(35*B*b^3*e^3*x^7+40*A*b^3*e^3*x^6+120*B*a*b^2*e^3*x^6+120*B*b^3*d*
e^2*x^6+140*A*a*b^2*e^3*x^5+140*A*b^3*d*e^2*x^5+140*B*a^2*b*e^3*x^5+420*B*a
*b^2*d*e^2*x^5+140*B*b^3*d^2*e*x^5+168*A*a^2*b*e^3*x^4+504*A*a*b^2*d*e^2*x^
4+168*A*b^3*d^2*e*x^4+56*B*a^3*e^3*x^4+504*B*a^2*b*d*e^2*x^4+504*B*a*b^2*d^
2*e*x^4+56*B*b^3*d^3*x^4+70*A*a^3*e^3*x^3+630*A*a^2*b*d*e^2*x^3+630*A*a*b^2
*d^2*e*x^3+70*A*b^3*d^3*x^3+210*B*a^3*d*e^2*x^3+630*B*a^2*b*d^2*e*x^3+210*B
*a*b^2*d^3*x^3+280*A*a^3*d*e^2*x^2+840*A*a^2*b*d^2*e*x^2+280*A*a*b^2*d^3*x^
2+280*B*a^3*d^2*e*x^2+280*B*a^2*b*d^3*x^2+420*A*a^3*d^2*e*x+420*A*a^2*b*d^3
*x+140*B*a^3*d^3*x+280*A*a^3*d^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.56, size = 698, normalized size = 2.69

$$\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Be^3x^3}{8b^2}+\frac{1}{4}\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ad^3x+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^4e^3x}{4b^4}-\frac{11\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bae^3x^2}{56b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aad^3}{4b}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^5e^3}{4b^5}+\frac{13\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^2e^3x}{56b^4}-\frac{69\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^3e^3}{280b^5}-\frac{\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^3x}{4b^3}+\frac{3\left(Bd^2e+Ade^2\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2x}{4b^2}-\frac{\left(Bd^3+3Ad^2e\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}ax}{4b}+\frac{\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}x^2}{7b^2}-\frac{\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^4}{4b^4}+\frac{3\left(Bd^2e+Ade^2\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^3}{4b^3}-\frac{\left(Bd^3+3Ad^2e\right)\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2}{4b^2}-\frac{3\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}ax}{14b^3}+\frac{\left(Bd^2e+Ade^2\right)\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}x}{2b^2}+\frac{17\left(3Bde^2+Ae^3\right)\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}a^2}{70b^4}-\frac{7\left(Bd^2e+Ade^2\right)\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}a}{10b^3}+\frac{\left(Bd^3+3Ad^2e\right)\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^3*x^3/b^2 + 1/4*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*A*d^3*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^4*e^3*x/b^4
- 11/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*e^3*x^2/b^3 + 1/4*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*A*a*d^3/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5*e^
3/b^5 + 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*e^3*x/b^4 - 69/280*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*e^3/b^5 - 1/4*(3*B*d*e^2 + A*e^3)*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 3/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*x/b + 1/7*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
x^2/b^2 - 1/4*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 +
 3/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(B*d
^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 3/14*(3*B*d*e^2 +
 A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/2*(B*d^2*e + A*d*e^2)*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 + 17/70*(3*B*d*e^2 + A*e^3)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^2/b^4 - 7/10*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*a/b^3 + 1/5*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,{(d+e\,x)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + Bx\right) \left(d + ex\right)^{3} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3*((a + b*x)**2)**(3/2), x)
```

3.1503 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=198

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{6b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)(-3aBe+2Abe+}{5b^4}$$

Rubi [A] time = 0.24, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{6b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)(-3aBe+2Abe+bBd)}{5b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)(bd-ae)^2}{4b^4}+\frac{Be^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{7b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^
4) + ((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(5*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^5*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(6*b^4) + (B*e^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(7*b^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^2\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)^2\left(ab+b^2x\right)^3}{b^3}+\frac{(bd-ae)(bBd+2Ab}{b}\right.}{b^2\left(ab+\right.}$$

$$= \frac{(Ab-aB)(bd-ae)^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^4}+\frac{(bd-ae)(}{}$$

Mathematica [A] time = 0.09, size = 233, normalized size = 1.18

$$\frac{x\sqrt{(a+bx)^2}\left(35a^3\left(4A\left(3d^2+3dex+e^2x^2\right)+Bx\left(6d^2+8dex+3e^2x^2\right)\right)+21a^2bx\left(5A\left(6d^2+8dex+3e^2x^2\right)+2Bx\left(10d^2+15dex+6e^2x^2\right)\right)+21ab^2x^2\left(2A\left(10d^2+15dex+6e^2x^2\right)+Bx\left(15d^2+24dex+10e^2x^2\right)\right)+b^3x^3\left(7A\left(15d^2+24dex+10e^2x^2\right)+4Bx\left(21d^2+35dex+15e^2x^2\right)\right)\right)}{420(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(35*a^3*(4*A*(3*d^2 + 3*d*e*x + e^2*x^2) + B*x*(6*d^2
+ 8*d*e*x + 3*e^2*x^2)) + 21*a^2*b*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2
*B*x*(10*d^2 + 15*d*e*x + 6*e^2*x^2)) + 21*a*b^2*x^2*(2*A*(10*d^2 + 15*d*e*
x + 6*e^2*x^2) + B*x*(15*d^2 + 24*d*e*x + 10*e^2*x^2)) + b^3*x^3*(7*A*(15*d
^2 + 24*d*e*x + 10*e^2*x^2) + 4*B*x*(21*d^2 + 35*d*e*x + 15*e^2*x^2))))/(42
0*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.81, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.41, size = 239, normalized size = 1.21

$$\frac{1}{7}Bb^3e^2x^7 + Aa^3d^2x + \frac{1}{6}\left(2Bb^3de + \left(3Bab^2 + Ab^3\right)e^2\right)x^6 + \frac{1}{5}\left(Bb^3d^2 + 2\left(3Bab^2 + Ab^3\right)de + 3\left(Ba^2b + Aab^2\right)e^2\right)x^5 + \frac{1}{4}\left(\left(3Bab^2 + Ab^3\right)d^2 + 6\left(Ba^2b + Aab^2\right)de + \left(Ba^3 + 3Aa^2b\right)e^2\right)x^4 + \frac{1}{3}\left(Aa^3e^2 + 3\left(Ba^2b + Aab^2\right)d^2 + 2\left(Ba^3 + 3Aa^2b\right)de\right)x^3 + \frac{1}{2}\left(2Aa^3de + \left(Ba^3 + 3Aa^2b\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/7*B*b^3*e^2*x^7 + A*a^3*d^2*x + 1/6*(2*B*b^3*d*e + (3*B*a*b^2 + A*b^3)*e^
2)*x^6 + 1/5*(B*b^3*d^2 + 2*(3*B*a*b^2 + A*b^3)*d*e + 3*(B*a^2*b + A*a*b^2)
*e^2)*x^5 + 1/4*((3*B*a*b^2 + A*b^3)*d^2 + 6*(B*a^2*b + A*a*b^2)*d*e + (B*a
^3 + 3*A*a^2*b)*e^2)*x^4 + 1/3*(A*a^3*e^2 + 3*(B*a^2*b + A*a*b^2)*d^2 + 2*(
B*a^3 + 3*A*a^2*b)*d*e)*x^3 + 1/2*(2*A*a^3*d*e + (B*a^3 + 3*A*a^2*b)*d^2)*x
^2
```

giac [B] time = 0.18, size = 431, normalized size = 2.18

$$\frac{1}{7}Bb^3x^7e^2\mathrm{sgn}(bx+a) + \frac{1}{3}Bb^3dx^6e\,\mathrm{sgn}(bx+a) + \frac{1}{5}Bb^3d^2x^5\mathrm{sgn}(bx+a) + \frac{1}{2}Bab^2x^6e^2\mathrm{sgn}(bx+a) + \frac{1}{6}Ab^3x^6e^2\mathrm{sgn}(bx+a) + \frac{6}{5}Bab^2dx^5e\,\mathrm{sgn}(bx+a) + \frac{2}{5}Ab^3dx^5e\,\mathrm{sgn}(bx+a) + \frac{3}{4}Bab^2d^2x^4\mathrm{sgn}(bx+a) + \frac{1}{4}Ab^3d^2x^4\mathrm{sgn}(bx+a) + \frac{3}{5}Ba^2bx^5e^2\mathrm{sgn}(bx+a) + \frac{3}{5}Aab^2x^5e^2\mathrm{sgn}(bx+a) + \frac{3}{2}Ba^2bdx^4e\,\mathrm{sgn}(bx+a) + \frac{3}{2}Aab^2dx^4e\,\mathrm{sgn}(bx+a) + Ba^2bd^2x^3\mathrm{sgn}(bx+a) + Aab^2d^2x^3\mathrm{sgn}(bx+a) + \frac{1}{4}Ba^3x^4e^2\mathrm{sgn}(bx+a) + \frac{3}{4}Aa^2bx^4e^2\mathrm{sgn}(bx+a) + \frac{2}{3}Ba^3dx^3e\,\mathrm{sgn}(bx+a) + 2Aa^2bdx^3e\,\mathrm{sgn}(bx+a) + \frac{1}{2}Ba^3d^2x^2\mathrm{sgn}(bx+a) + \frac{3}{2}Aa^2bd^2x^2\mathrm{sgn}(bx+a) + \frac{1}{3}Aa^3x^3e^2\mathrm{sgn}(bx+a) + Aa^3dx^2e\,\mathrm{sgn}(bx+a) + Aa^3d^2x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/7*B*b^3*x^7*e^2*sgn(b*x + a) + 1/3*B*b^3*d*x^6*e*sgn(b*x + a) + 1/5*B*b^3
*d^2*x^5*sgn(b*x + a) + 1/2*B*a*b^2*x^6*e^2*sgn(b*x + a) + 1/6*A*b^3*x^6*e^
2*sgn(b*x + a) + 6/5*B*a*b^2*d*x^5*e*sgn(b*x + a) + 2/5*A*b^3*d*x^5*e*sgn(b
*x + a) + 3/4*B*a*b^2*d^2*x^4*sgn(b*x + a) + 1/4*A*b^3*d^2*x^4*sgn(b*x + a)
 + 3/5*B*a^2*b*x^5*e^2*sgn(b*x + a) + 3/5*A*a*b^2*x^5*e^2*sgn(b*x + a) + 3/
2*B*a^2*b*d*x^4*e*sgn(b*x + a) + 3/2*A*a*b^2*d*x^4*e*sgn(b*x + a) + B*a^2*b
*d^2*x^3*sgn(b*x + a) + A*a*b^2*d^2*x^3*sgn(b*x + a) + 1/4*B*a^3*x^4*e^2*sg
n(b*x + a) + 3/4*A*a^2*b*x^4*e^2*sgn(b*x + a) + 2/3*B*a^3*d*x^3*e*sgn(b*x +
 a) + 2*A*a^2*b*d*x^3*e*sgn(b*x + a) + 1/2*B*a^3*d^2*x^2*sgn(b*x + a) + 3/2
*A*a^2*b*d^2*x^2*sgn(b*x + a) + 1/3*A*a^3*x^3*e^2*sgn(b*x + a) + A*a^3*d*x^
2*e*sgn(b*x + a) + A*a^3*d^2*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 304, normalized size = 1.54

$$\frac{\left(60Bb^3e^2x^6 + 70x^5Ab^3e^2 + 210x^5Be^2ab^2 + 140x^5Bb^3de + 252x^4Aab^2e^2 + 168x^4Ab^3de + 252x^4Be^2a^2b + 504x^4Bab^2de + 84x^4Bb^3d^2 + 315x^3Aa^2be^2 + 630x^3Aab^2de + 105x^3Ad^2b^3 + 105x^3Be^2a^3 + 630x^3Ba^2bde + 315x^3Bab^2d^2 + 140x^2Aa^3e^2 + 840x^2Aa^2bde + 420x^2Ad^2ab^2 + 280x^2Ba^3de + 420x^2Ba^2bd^2 + 420xAa^3de + 630xAd^2a^2b + 210xBa^3d^2 + 420Ad^2a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{420\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/420*x*(60*B*b^3*e^2*x^6+70*A*b^3*e^2*x^5+210*B*a*b^2*e^2*x^5+140*B*b^3*d*
e*x^5+252*A*a*b^2*e^2*x^4+168*A*b^3*d*e*x^4+252*B*a^2*b*e^2*x^4+504*B*a*b^2
*d*e*x^4+84*B*b^3*d^2*x^4+315*A*a^2*b*e^2*x^3+630*A*a*b^2*d*e*x^3+105*A*b^3
*d^2*x^3+105*B*a^3*e^2*x^3+630*B*a^2*b*d*e*x^3+315*B*a*b^2*d^2*x^3+140*A*a^
3*e^2*x^2+840*A*a^2*b*d*e*x^2+420*A*a*b^2*d^2*x^2+280*B*a^3*d*e*x^2+420*B*a
^2*b*d^2*x^2+420*A*a^3*d*e*x+630*A*a^2*b*d^2*x+210*B*a^3*d^2*x+420*A*a^3*d^
2)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.57, size = 456, normalized size = 2.30

$$\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^3e^2x}{4\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Be^2x^2}{7\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aad^2}{4\,b}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^4e^2}{4\,b^4}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bae^2x}{14\,b^3}+\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2e^2}{70\,b^4}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,Bde+Ae^2\right)a^2x}{4\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(Bd^2+2\,Ade\right)ax}{4\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,Bde+Ae^2\right)a^3}{4\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(Bd^2+2\,Ade\right)a^2}{4\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(2\,Bde+Ae^2\right)x}{6\,b^2}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(2\,Bde+Ae^2\right)a}{30\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(Bd^2+2\,Ade\right)}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d^2*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)
^(3/2)*B*a^3*e^2*x/b^3 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^2*x^2/b^2
+ 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*d^2/b - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*a^4*e^2/b^4 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*e^2*x/b
^3 + 17/70*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*e^2/b^4 + 1/4*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*(2*B*d*e + A*e^2)*a^2*x/b^2 - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*(B*d^2 + 2*A*d*e)*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(2
*B*d*e + A*e^2)*a^3/b^3 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(B*d^2 + 2*A*
d*e)*a^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*B*d*e + A*e^2)*x/b^2
- 7/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*B*d*e + A*e^2)*a/b^3 + 1/5*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*(B*d^2 + 2*A*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,\left(d+e\,x\right)^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\,(d+ex)^2\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2*((a + b*x)**2)**(3/2), x)
```

3.1504 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=135

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(-2aBe+Abe+bBd)}{5b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)(bd-ae)}{4b^3}+\frac{Be\sqrt{a^2+2a}}{}$$

Rubi [A] time = 0.14, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(-2aBe+Abe+bBd)}{5b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)(bd-ae)}{4b^3}+\frac{Be\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{6b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3)
 + ((b*B*d + A*b*e - 2*a*B*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5
*b^3) + (B*e*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)\left(ab+b^2x\right)^3}{b^2}+\frac{(bBd+Abe-2aBe)\left(ab+b^2\right.}{b^3}\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{(Ab-aB)(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^3}+\frac{(bBd+Abe-}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 144, normalized size = 1.07

$$\frac{x\sqrt{(a+bx)^2}\left(10a^3(3A(2d+ex)+Bx(3d+2ex))+15a^2bx(A(6d+4ex)+Bx(4d+3ex))+3ab^2x^2(5A(4d+3ex)+3Bx(5d+4ex))+b^3x^3(3A(5d+4ex)+2Bx(6d+5ex))\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^3*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + 3*a*b^
2*x^2*(5*A*(4*d + 3*e*x) + 3*B*x*(5*d + 4*e*x)) + 15*a^2*b*x*(B*x*(4*d + 3*
e*x) + A*(6*d + 4*e*x)) + b^3*x^3*(3*A*(5*d + 4*e*x) + 2*B*x*(6*d + 5*e*x))
))/(60*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.95, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2), x]
```

fricas [A] time = 0.41, size = 146, normalized size = 1.08

$$\frac{1}{6}Bb^3ex^6+Aa^3dx+\frac{1}{5}\left(Bb^3d+\left(3Bab^2+Ab^3\right)e\right)x^5+\frac{1}{4}\left(\left(3Bab^2+Ab^3\right)d+3\left(Ba^2b+Aab^2\right)e\right)x^4+\frac{1}{3}\left(3\left(Ba^2b+Aab^2\right)d+\left(Ba^3+3Aa^2b\right)e\right)x^3+\frac{1}{2}\left(Aa^3e+\left(Ba^3+3Aa^2b\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 1/6*B*b^3*e*x^6 + A*a^3*d*x + 1/5*(B*b^3*d + (3*B*a*b^2 + A*b^3)*e)*x^5 + 1
/4*((3*B*a*b^2 + A*b^3)*d + 3*(B*a^2*b + A*a*b^2)*e)*x^4 + 1/3*(3*(B*a^2*b
+ A*a*b^2)*d + (B*a^3 + 3*A*a^2*b)*e)*x^3 + 1/2*(A*a^3*e + (B*a^3 + 3*A*a^2
*b)*d)*x^2
```

giac [B] time = 0.17, size = 267, normalized size = 1.98

$$\frac{1}{6}Bb^3x^6e\,\mathrm{sgn}(bx+a)+\frac{1}{5}Bb^3dx^5\mathrm{sgn}(bx+a)+\frac{3}{5}Bab^2x^5e\,\mathrm{sgn}(bx+a)+\frac{1}{5}Ab^3x^5e\,\mathrm{sgn}(bx+a)+\frac{3}{4}Bab^2dx^4\mathrm{sgn}(bx+a)+\frac{1}{4}Ab^3dx^4\mathrm{sgn}(bx+a)+\frac{3}{4}Ba^2bx^4e\,\mathrm{sgn}(bx+a)+\frac{3}{4}Aab^2x^4e\,\mathrm{sgn}(bx+a)+Ba^2bdx^3\mathrm{sgn}(bx+a)+Aab^2dx^3\mathrm{sgn}(bx+a)+\frac{1}{3}Ba^3x^3e\,\mathrm{sgn}(bx+a)+Aa^2bx^3e\,\mathrm{sgn}(bx+a)+\frac{1}{2}Ba^3dx^2\mathrm{sgn}(bx+a)+\frac{3}{2}Aa^2bdx^2\mathrm{sgn}(bx+a)+\frac{1}{2}Aa^3x^2e\,\mathrm{sgn}(bx+a)+Aa^3dx\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^3*x^6*e*sgn(b*x + a) + 1/5*B*b^3*d*x^5*sgn(b*x + a) + 3/5*B*a*b^2*x
^5*e*sgn(b*x + a) + 1/5*A*b^3*x^5*e*sgn(b*x + a) + 3/4*B*a*b^2*d*x^4*sgn(b*
x + a) + 1/4*A*b^3*d*x^4*sgn(b*x + a) + 3/4*B*a^2*b*x^4*e*sgn(b*x + a) + 3/
4*A*a*b^2*x^4*e*sgn(b*x + a) + B*a^2*b*d*x^3*sgn(b*x + a) + A*a*b^2*d*x^3*s
gn(b*x + a) + 1/3*B*a^3*x^3*e*sgn(b*x + a) + A*a^2*b*x^3*e*sgn(b*x + a) + 1
/2*B*a^3*d*x^2*sgn(b*x + a) + 3/2*A*a^2*b*d*x^2*sgn(b*x + a) + 1/2*A*a^3*x^
2*e*sgn(b*x + a) + A*a^3*d*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 180, normalized size = 1.33

$$\frac{\left(10Bb^3e\,x^5+12x^4Ab^3e+36x^4Bea\,b^2+12x^4Bb^3d+45x^3Aa\,b^2e+15x^3Ad\,b^3+45x^3Be\,a^2b+45x^3Ba\,b^2d+60x^2A\,a^2be+60x^2Ada\,b^2+20x^2Be\,a^3+60x^2B\,a^2bd+30xA\,a^3e+90xAd\,a^2b+30xB\,a^3d+60Ad\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{60\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*x*(10*B*b^3*e*x^5+12*A*b^3*e*x^4+36*B*a*b^2*e*x^4+12*B*b^3*d*x^4+45*A*
a*b^2*e*x^3+15*A*b^3*d*x^3+45*B*a^2*b*e*x^3+45*B*a*b^2*d*x^3+60*A*a^2*b*e*x
^2+60*A*a*b^2*d*x^2+20*B*a^3*e*x^2+60*B*a^2*b*d*x^2+30*A*a^3*e*x+90*A*a^2*b
*d*x+30*B*a^3*d*x+60*A*a^3*d)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.54, size = 254, normalized size = 1.88

$$\frac{1}{4}\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Adx+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^2ex}{4b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aad}{4b}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^3e}{4b^3}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}(Bd+Ae)ax}{4b}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bex}{6b^2}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}(Bd+Ae)a^2}{4b^2}-\frac{7\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bae}{30b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}(Bd+Ae)}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*B*a^2*e*x/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*d/b + 1/4*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^3*e/b^3 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*(B*d + A*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e*x/b^2 - 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(B*d + A*e)*a^2/b^2 - 7/30*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*B*a*e/b^3 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(B*d + A*e)
/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,(d+e\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + B x\right) \left(d + e x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1505 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(4*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(5/2))/(5*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}+\frac{\left(2Ab^2-2abB\right)\int\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx}{2b^2}\\&=\frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 83, normalized size = 1.20

$$\frac{x\sqrt{(a+bx)^2}\left(10a^3(2A+Bx)+10a^2bx(3A+2Bx)+5ab^2x^2(4A+3Bx)+b^3x^3(5A+4Bx)\right)}{20(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^3*(2*A + B*x) + 10*a^2*b*x*(3*A + 2*B*x) + 5*a*b
^2*x^2*(4*A + 3*B*x) + b^3*x^3*(5*A + 4*B*x)))/(20*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2), x]
```

fricas [A] time = 0.41, size = 69, normalized size = 1.00

$$\frac{1}{5}\,Bb^3x^5 + Aa^3x + \frac{1}{4}\left(3\,Bab^2 + Ab^3\right)x^4 + \left(Ba^2b + Aab^2\right)x^3 + \frac{1}{2}\left(Ba^3 + 3\,Aa^2b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b^3*x^5 + A*a^3*x + 1/4*(3*B*a*b^2 + A*b^3)*x^4 + (B*a^2*b + A*a*b^2)
*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

giac [B] time = 0.19, size = 144, normalized size = 2.09

$$\frac{1}{5}\,Bb^3x^5\mathrm{sgn}\left(bx+a\right) + \frac{3}{4}\,Bab^2x^4\mathrm{sgn}\left(bx+a\right) + \frac{1}{4}\,Ab^3x^4\mathrm{sgn}\left(bx+a\right) + Ba^2bx^3\mathrm{sgn}\left(bx+a\right) + Aab^2x^3\mathrm{sgn}\left(bx+a\right) + \frac{1}{2}\,Ba^3x^2\mathrm{sgn}\left(bx+a\right) + \frac{3}{2}\,Aa^2bx^2\mathrm{sgn}\left(bx+a\right) + Aa^3x\mathrm{sgn}\left(bx+a\right) - \frac{\left(Ba^5 - 5\,Aa^4b\right)\mathrm{sgn}\left(bx+a\right)}{20\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^3*x^5*sgn(b*x + a) + 3/4*B*a*b^2*x^4*sgn(b*x + a) + 1/4*A*b^3*x^4*s
gn(b*x + a) + B*a^2*b*x^3*sgn(b*x + a) + A*a*b^2*x^3*sgn(b*x + a) + 1/2*B*a
^3*x^2*sgn(b*x + a) + 3/2*A*a^2*b*x^2*sgn(b*x + a) + A*a^3*x*sgn(b*x + a) -
 1/20*(B*a^5 - 5*A*a^4*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.04, size = 90, normalized size = 1.30

$$\frac{\left(4b^3B\,x^4 + 5A\,b^3x^3 + 15x^3Ba\,b^2 + 20Aa\,b^2x^2 + 20B\,a^2b\,x^2 + 30xA\,a^2b + 10B\,a^3x + 20A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x}{20\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/20*x*(4*B*b^3*x^4+5*A*b^3*x^3+15*B*a*b^2*x^3+20*A*a*b^2*x^2+20*B*a^2*b*x^
2+30*A*a^2*b*x+10*B*a^3*x+20*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.53, size = 125, normalized size = 1.81

$$\frac{1}{4}\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Ax - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Bax}{4\,b} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Ba^2}{4\,b^2} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Aa}{4\,b} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}B}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*B*a*x/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2/b^2 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A*a/b + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/b^2
```

mupad [B] time = 2.21, size = 42, normalized size = 0.61

$$\frac{\left(a+b\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,\left(5\,A\,b-B\,a+4\,B\,b\,x\right)}{20\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] ((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)*(5*A*b - B*a + 4*B*b*x))/(20*b^2
)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx) \left((a + bx)^2\right)^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.1506 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=236

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)\log(d+ex)}{e^5(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(Bd-Ae)}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2}}{}$$

Rubi [A] time = 0.17, antiderivative size = 236, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(Bd-Ae)}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{2e^3}-\frac{(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{3e^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)\log(d+ex)}{e^5(a+bx)}+\frac{B(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^2*(B*d - A*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b
*x))) + ((b*d - a*e)*(B*d - A*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
2*e^3) - ((B*d - A*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^2) +
(B*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b*e) + ((b*d - a*e)^3*(B*d
 - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{d+ex}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^4(bd-ae)^2(-Bd+Ae)}{e^4}-\frac{b^4(bd-ae)(-Bd+Ae)(a+bx)}{e^3}+\frac{b^4(-Bd+}{}\right.}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{b(bd-ae)^2(Bd-Ae)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{(bd-ae)(Bd-Ae)(a+bx}{2e^3}$$

Mathematica [A] time = 0.12, size = 187, normalized size = 0.79

$$\frac{\sqrt{(a+bx)^2}\left(ex\left(12a^3Be^3+18a^2be^2(2Ae-2Bd+Bex)+6ab^2e\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)+b^3\left(2Ae\left(6d^2-3dex+2e^2x^2\right)+B\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)\right)+12(bd-ae)^3(Bd-Ae)\log(d+ex)\right)}{12e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(e*x*(12*a^3*B*e^3 + 18*a^2*b*e^2*(-2*B*d + 2*A*e + B*e*
x) + 6*a*b^2*e*(3*A*e*(-2*d + e*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + b^3
*(2*A*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + B*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^
2 + 3*e^3*x^3))) + 12*(b*d - a*e)^3*(B*d - A*e)*Log[d + e*x]))/(12*e^5*(a +
 b*x))
```

IntegrateAlgebraic [F] time = 3.05, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x), x]
```

fricas [A] time = 0.43, size = 260, normalized size = 1.10

$$\frac{3 \, B b^{3} e^{4} x^{4} - 4 \, {\left(B b^{3} d e^{3} - {\left(3 \, B a b^{2} + A b^{3}\right)} e^{4}\right)} x^{3} + 6 \, {\left(B b^{3} d^{2} e^{2} - {\left(3 \, B a b^{2} + A b^{3}\right)} d e^{3} + 3 \, {\left(B a^{2} b + A a b^{2}\right)} e^{4}\right)} x^{2} - 12 \, {\left(B b^{3} d^{3} e - {\left(3 \, B a b^{2} + A b^{3}\right)} d^{2} e^{2} + 3 \, {\left(B a^{2} b + A a b^{2}\right)} d e^{3} - {\left(B a^{3} + 3 \, A a^{2} b\right)} e^{4}\right)} x + 12 \, {\left(B b^{3} d^{4} + A a^{3} e^{4} - {\left(3 \, B a b^{2} + A b^{3}\right)} d^{3} e + 3 \, {\left(B a^{2} b + A a b^{2}\right)} d^{2} e^{2} - {\left(B a^{3} + 3 \, A a^{2} b\right)} d e^{3}\right)} \log\left(e x + d\right)}{12 \, e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/12*(3*B*b^3*e^4*x^4 - 4*(B*b^3*d*e^3 - (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 6*(
B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b + A*a*b^2)*e^4)*x^2
- 12*(B*b^3*d^3*e - (3*B*a*b^2 + A*b^3)*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d*e
^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x + 12*(B*b^3*d^4 + A*a^3*e^4 - (3*B*a*b^2 +
A*b^3)*d^3*e + 3*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a^2*b)*d*e^3)*l
og(e*x + d))/e^5
```

giac [B] time = 0.18, size = 428, normalized size = 1.81

$${\left(B b^{3} d^{4} \mathrm{sgn}\left(b x + a\right) - 3 \, B a b^{2} d^{3} e \mathrm{sgn}\left(b x + a\right) - A b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) + 3 \, B a^{2} b d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 3 \, A a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) - B a^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) - 3 \, A a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + A a^{3} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-5\right)} \log\left({\left| x e + d \right|}\right) + \frac{1}{12} \, {\left(3 \, B b^{3} x^{4} e^{3} \mathrm{sgn}\left(b x + a\right) - 4 \, B b^{3} d x^{3} e^{2} \mathrm{sgn}\left(b x + a\right) + 6 \, B b^{3} d^{2} x^{2} e \mathrm{sgn}\left(b x + a\right) - 12 \, B b^{3} d^{3} x \mathrm{sgn}\left(b x + a\right) + 12 \, B a b^{2} x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 4 \, A b^{3} x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) - 18 \, B a b^{2} d x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) - 6 \, A b^{3} d x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 36 \, B a b^{2} d^{2} x e \mathrm{sgn}\left(b x + a\right) + 12 \, A b^{3} d^{2} x e \mathrm{sgn}\left(b x + a\right) + 18 \, B a^{2} b x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 18 \, A a b^{2} x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) - 36 \, B a^{2} b d x e^{2} \mathrm{sgn}\left(b x + a\right) - 36 \, A a b^{2} d x e^{2} \mathrm{sgn}\left(b x + a\right) + 12 \, B a^{3} x e^{3} \mathrm{sgn}\left(b x + a\right) + 36 \, A a^{2} b x e^{3} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (B*b^3*d^4*sgn(b*x + a) - 3*B*a*b^2*d^3*e*sgn(b*x + a) - A*b^3*d^3*e*sgn(b*
x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) + 3*A*a*b^2*d^2*e^2*sgn(b*x + a) -
B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) + A*a^3*e^4*sgn(b*x
 + a))*e^(-5)*log(abs(x*e + d)) + 1/12*(3*B*b^3*x^4*e^3*sgn(b*x + a) - 4*B*
b^3*d*x^3*e^2*sgn(b*x + a) + 6*B*b^3*d^2*x^2*e*sgn(b*x + a) - 12*B*b^3*d^3*
x*sgn(b*x + a) + 12*B*a*b^2*x^3*e^3*sgn(b*x + a) + 4*A*b^3*x^3*e^3*sgn(b*x
+ a) - 18*B*a*b^2*d*x^2*e^2*sgn(b*x + a) - 6*A*b^3*d*x^2*e^2*sgn(b*x + a) +
 36*B*a*b^2*d^2*x*e*sgn(b*x + a) + 12*A*b^3*d^2*x*e*sgn(b*x + a) + 18*B*a^2
*b*x^2*e^3*sgn(b*x + a) + 18*A*a*b^2*x^2*e^3*sgn(b*x + a) - 36*B*a^2*b*d*x*
e^2*sgn(b*x + a) - 36*A*a*b^2*d*x*e^2*sgn(b*x + a) + 12*B*a^3*x*e^3*sgn(b*x
 + a) + 36*A*a^2*b*x*e^3*sgn(b*x + a))*e^(-4)
```

maple [B] time = 0.06, size = 358, normalized size = 1.52

$$\frac{\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}\left(3B\,b^{3}e^{4}x^{4}+4A\,b^{3}e^{4}x^{3}+12Ba\,b^{2}e^{4}x^{3}-4B\,b^{3}d\,e^{3}x^{3}+18Aa\,b^{2}e^{4}x^{2}-6A\,b^{3}d\,e^{3}x^{2}+18B\,a^{2}b\,e^{4}x^{2}-18Ba\,b^{2}d\,e^{3}x^{2}+6B\,b^{3}d^{2}e^{2}x^{2}+12A\,a^{3}e^{4}\ln\left(ex+d\right)-36A\,a^{2}bd\,e^{3}\ln\left(ex+d\right)+36A\,a^{2}b\,e^{4}x+36Aa\,b^{2}d^{2}e^{2}\ln\left(ex+d\right)-36Aa\,b^{2}d\,e^{3}x-12A\,b^{3}d^{3}e\ln\left(ex+d\right)+12A\,b^{3}d^{2}e^{2}x-12B\,a^{3}d\,e^{3}\ln\left(ex+d\right)+12B\,a^{3}e^{4}x+36B\,a^{2}b\,d^{2}e^{2}\ln\left(ex+d\right)-36B\,a^{2}bd\,e^{3}x-36Ba\,b^{2}d^{3}e\ln\left(ex+d\right)+36Ba\,b^{2}d^{2}e^{2}x+12B\,b^{3}d^{4}\ln\left(ex+d\right)-12B\,b^{3}d^{3}ex\right)}{12\left(bx+a\right)^{3}e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(3*B*x^4*b^3*e^4+4*A*x^3*b^3*e^4+12*B*x^3*a*b^2*e^4-
4*B*x^3*b^3*d*e^3+18*A*x^2*a*b^2*e^4-6*A*x^2*b^3*d*e^3+18*B*x^2*a^2*b*e^4-1
8*B*x^2*a*b^2*d*e^3+6*B*x^2*b^3*d^2*e^2+12*A*ln(e*x+d)*a^3*e^4-36*A*ln(e*x+
d)*a^2*b*d*e^3+36*A*ln(e*x+d)*a*b^2*d^2*e^2-12*A*ln(e*x+d)*b^3*d^3*e+36*A*x
*a^2*b*e^4-36*A*x*a*b^2*d*e^3+12*A*x*b^3*d^2*e^2-12*B*ln(e*x+d)*a^3*d*e^3+3
6*B*ln(e*x+d)*a^2*b*d^2*e^2-36*B*ln(e*x+d)*a*b^2*d^3*e+12*B*ln(e*x+d)*b^3*d
^4+12*B*x*a^3*e^4-36*B*x*a^2*b*d*e^3+36*B*x*a*b^2*d^2*e^2-12*B*x*b^3*d^3*e)
/(b*x+a)^3/e^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{d+ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x), x)
```

3.1507 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=285

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{e^5(a+bx)(d+ex)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(-3aBe-Abe+4bBd)}{2e^5(a+bx)}-\frac{\sqrt{a^2+2abx}}{}$$

Rubi [A] time = 0.27, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{e^5(a+bx)(d+ex)}+\frac{3bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^4(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(-3aBe-Abe+4bBd)}{2e^5(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)(-aBe-3Abe+4bBd)}{e^5(a+bx)}+\frac{b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}{3e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (3*b*(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^4*(a + b*x)) - ((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(e^5*(a + b*x)*(d + e*x)) - (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^2*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)) + (b^3*B*(d + e*x)^3*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A
*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^2}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{3b^4(bd-ae)(-2bBd+Abe+aBe)}{e^4}-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^2}+\right.}{b^2\left(ab+\right.}\\ &= \frac{3b(bd-ae)(2bBd-Abe-aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^3(Bd-}{e^5(a}\end{aligned}$$

Mathematica [A] time = 0.14, size = 262, normalized size = 0.92

$$\frac{\sqrt{(a+bx)^2}\left(6a^3e^3(Bd-Ae)+18a^2be^2\left(Ade+B\left(-d^2+dex+e^2x^2\right)\right)+9ab^2e\left(2Ae\left(-d^2+dex+e^2x^2\right)+B\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)\right)-6(d+ex)(bd-ae)^2\log(d+ex)(-aBe-3Abe+4bBd)+b^3\left(3Ae\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+2B\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)\right)\right)}{6e^5(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(6*a^3*e^3*(B*d - A*e) + 18*a^2*b*e^2*(A*d*e + B*(-d^2 +
 d*e*x + e^2*x^2)) + 9*a*b^2*e*(2*A*e*(-d^2 + d*e*x + e^2*x^2) + B*(2*d^3 -
 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3)) + b^3*(3*A*e*(2*d^3 - 4*d^2*e*x - 3*d*
e^2*x^2 + e^3*x^3) + 2*B*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3
+ e^4*x^4)) - 6*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)*Log[d +
 e*x]))/(6*e^5*(a + b*x)*(d + e*x))
```

IntegrateAlgebraic [F] time = 5.64, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x)^2, x]
```

fricas [A] time = 0.42, size = 396, normalized size = 1.39

$$\frac{2\,Bb^3e^4x^4-6\,Bb^3d^4-6\,Aa^3e^4+6\left(3\,Bab^2+Ab^3\right)d^3e-18\left(Ba^2b+Aab^2\right)d^2e^2+6\left(Ba^3+3\,Aa^2b\right)de^3-\left(4\,Bb^3de^3-3\left(3\,Bab^2+Ab^3\right)e^4\right)x^3+3\left(4\,Bb^3d^2e^2-3\left(3\,Bab^2+Ab^3\right)de^3+6\left(Ba^2b+Aab^2\right)e^4\right)x^2+6\left(3\,Bb^3d^3e-2\left(3\,Bab^2+Ab^3\right)d^2e^2+3\left(Ba^2b+Aab^2\right)de^3\right)x-6\left(4\,Bb^3d^4-3\left(3\,Bab^2+Ab^3\right)d^3e+6\left(Ba^2b+Aab^2\right)d^2e^2-\left(Ba^3+3\,Aa^2b\right)de^3+\left(4\,Bb^3d^3e-3\left(3\,Bab^2+Ab^3\right)d^2e^2+6\left(Ba^2b+Aab^2\right)de^3-\left(Ba^3+3\,Aa^2b\right)e^4\right)x\right)\log\left(ex+d\right)}{6\left(e^6x+de^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/6*(2*B*b^3*e^4*x^4 - 6*B*b^3*d^4 - 6*A*a^3*e^4 + 6*(3*B*a*b^2 + A*b^3)*d^
3*e - 18*(B*a^2*b + A*a*b^2)*d^2*e^2 + 6*(B*a^3 + 3*A*a^2*b)*d*e^3 - (4*B*b
^3*d*e^3 - 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(4*B*b^3*d^2*e^2 - 3*(3*B*a*b
^2 + A*b^3)*d*e^3 + 6*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 6*(3*B*b^3*d^3*e - 2*(
3*B*a*b^2 + A*b^3)*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d*e^3)*x - 6*(4*B*b^3*d^
4 - 3*(3*B*a*b^2 + A*b^3)*d^3*e + 6*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 +
3*A*a^2*b)*d*e^3 + (4*B*b^3*d^3*e - 3*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 6*(B*a^
2*b + A*a*b^2)*d*e^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x)*log(e*x + d))/(e^6*x + d
*e^5)
```

giac [A] time = 0.19, size = 425, normalized size = 1.49

$$-\left(4\,Bb^3d^3\mathrm{sgn}\left(bx+a\right)-9\,Bab^2d^2e\mathrm{sgn}\left(bx+a\right)-3\,Ab^3d^2e\mathrm{sgn}\left(bx+a\right)+6\,Ba^2bde^2\mathrm{sgn}\left(bx+a\right)+6\,Aab^2de^2\mathrm{sgn}\left(bx+a\right)-Ba^3e^3\mathrm{sgn}\left(bx+a\right)-3\,Aa^2be^3\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,Bb^3x^3e^4\mathrm{sgn}\left(bx+a\right)-6\,Bb^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+18\,Bb^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+9\,Bab^2x^2e^4\mathrm{sgn}\left(bx+a\right)+3\,Ab^3x^2e^4\mathrm{sgn}\left(bx+a\right)-36\,Bab^2dxe^3\mathrm{sgn}\left(bx+a\right)-12\,Ab^3dxe^3\mathrm{sgn}\left(bx+a\right)+18\,Ba^2bxe^4\mathrm{sgn}\left(bx+a\right)+18\,Aab^2xe^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-6)}-\frac{\left(Bb^3d^4\mathrm{sgn}\left(bx+a\right)-3\,Bab^2d^3e\mathrm{sgn}\left(bx+a\right)-Ab^3d^3e\mathrm{sgn}\left(bx+a\right)+3\,Ba^2bd^2e^2\mathrm{sgn}\left(bx+a\right)+3\,Aab^2d^2e^2\mathrm{sgn}\left(bx+a\right)-Ba^3de^3\mathrm{sgn}\left(bx+a\right)-3\,Aa^2bde^3\mathrm{sgn}\left(bx+a\right)+Aa^3e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -(4*B*b^3*d^3*sgn(b*x + a) - 9*B*a*b^2*d^2*e*sgn(b*x + a) - 3*A*b^3*d^2*e*s
gn(b*x + a) + 6*B*a^2*b*d*e^2*sgn(b*x + a) + 6*A*a*b^2*d*e^2*sgn(b*x + a) -
 B*a^3*e^3*sgn(b*x + a) - 3*A*a^2*b*e^3*sgn(b*x + a))*e^(-5)*log(abs(x*e +
d)) + 1/6*(2*B*b^3*x^3*e^4*sgn(b*x + a) - 6*B*b^3*d*x^2*e^3*sgn(b*x + a) +
18*B*b^3*d^2*x*e^2*sgn(b*x + a) + 9*B*a*b^2*x^2*e^4*sgn(b*x + a) + 3*A*b^3*
x^2*e^4*sgn(b*x + a) - 36*B*a*b^2*d*x*e^3*sgn(b*x + a) - 12*A*b^3*d*x*e^3*s
gn(b*x + a) + 18*B*a^2*b*x*e^4*sgn(b*x + a) + 18*A*a*b^2*x*e^4*sgn(b*x + a)
)*e^(-6) - (B*b^3*d^4*sgn(b*x + a) - 3*B*a*b^2*d^3*e*sgn(b*x + a) - A*b^3*d
^3*e*sgn(b*x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) + 3*A*a*b^2*d^2*e^2*sgn(
```

```
b*x + a) - B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) + A*a^3*
e^4*sgn(b*x + a))*e^(-5)/(x*e + d)
```

maple [B] time = 0.07, size = 540, normalized size = 1.89

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(2Bb^3e^4x^4+3Ab^3e^4x^3+9Bab^2e^4x^3-4Bb^3de^3x^3+18Aa^2be^4x\ln(ex+d)-36Aab^2de^3x\ln(ex+d)+18Aab^2e^4x^2+18Ab^3d^2e^2x\ln(ex+d)-9Ab^3de^3x^2+6Ba^3e^4x\ln(ex+d)-36Ba^2bde^3x\ln(ex+d)+18Ba^2be^4x^2+54Bab^2d^2e^2x\ln(ex+d)-27Bab^2de^3x^2-24Bb^3d^3ex\ln(ex+d)+12Bb^3d^2e^2x^2+18Aa^2bde^3\ln(ex+d)-36Aab^2d^2e^2\ln(ex+d)+18Aab^2de^3x+18Ab^3d^3e\ln(ex+d)-12Ab^3d^2e^2x+6Ba^3de^3\ln(ex+d)-36Ba^2bd^2e^2\ln(ex+d)+18Ba^2bde^3x+54Bab^2d^3e\ln(ex+d)-36Bab^2d^2e^2x-24Bb^3d^4\ln(ex+d)+18Bb^3d^3ex-6Aa^3e^4+18Aa^2bde^3-18Aab^2d^2e^2+6Ab^3d^3e+6Ba^3de^3-18Ba^2bd^2e^2+18Bab^2d^3e-6Bb^3d^4\right)}{6(bx+a)^3(ex+d)e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(18*B*a^2*b*d*e^3*x-36*B*a*b^2*d^2*e^2*x+54*B*a*b^2*d
^3*e*ln(e*x+d)+18*A*a^2*b*d*e^3*ln(e*x+d)-36*A*a*b^2*d^2*e^2*ln(e*x+d)+18*A
*a*b^2*d*e^3*x-36*B*a^2*b*d^2*e^2*ln(e*x+d)-27*B*a*b^2*d*e^3*x^2+6*A*b^3*d^
3*e-6*A*a^3*e^4-6*B*b^3*d^4+9*B*a*b^2*e^4*x^3-4*B*b^3*d*e^3*x^3+18*A*a*b^2*
e^4*x^2-9*A*b^3*d*e^3*x^2+18*B*a^2*b*e^4*x^2+12*B*b^3*d^2*e^2*x^2+18*A*b^3*
d^3*e*ln(e*x+d)+6*B*d*e^3*a^3+2*B*b^3*e^4*x^4+3*A*b^3*e^4*x^3+18*B*a*b^2*d^
3*e-36*A*ln(e*x+d)*x*a*b^2*d*e^3-36*B*ln(e*x+d)*x*a^2*b*d*e^3+54*B*ln(e*x+d
)*x*a*b^2*d^2*e^2-18*B*a^2*b*d^2*e^2-18*A*a*b^2*d^2*e^2+18*A*d*e^3*a^2*b+18
*A*ln(e*x+d)*x*a^2*b*e^4+18*A*ln(e*x+d)*x*b^3*d^2*e^2-24*B*ln(e*x+d)*x*b^3*
d^3*e-12*A*b^3*d^2*e^2*x+6*B*a^3*d*e^3*ln(e*x+d)+18*B*b^3*d^3*e*x+6*B*ln(e*
x+d)*x*a^3*e^4-24*B*b^3*d^4*ln(e*x+d))/(b*x+a)^3/e^5/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**2, x)
```

3.1508 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=280

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{2e^5(a+bx)(d+ex)^2}+\frac{3b\sqrt{a^2+2abx+b}}{}$$

Rubi [A] time = 0.23, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{b^2x\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+3bBd)}{e^4(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{2e^5(a+bx)(d+ex)^2}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)(-aBe-Abe+2bBd)}{e^5(a+bx)}+\frac{b^3Bx^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] -((b^2*(3*b*B*d - A*b*e - 3*a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a
 + b*x))) + (b^3*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)) - (
(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(
d + e*x)^2) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) + (3*b*(b*d - a*e)*(2*b*B*d - A*b*e
- a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^3}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^5(-3bBd+Abe+3aBe)}{e^4}+\frac{b^6Bx}{e^3}-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^3}+\frac{b^3(b}{}\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{b^2(3bBd-Abe-3aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{b^3Bx^2\sqrt{a^2+2abx+b^2x}}{2e^3(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 256, normalized size = 0.91

$$\frac{\sqrt{(a+bx)^2}\left(-a^3e^3(Ae+B(d+2ex))-3a^2be^2(Ae(d+2ex)-Bd(3d+4ex))+3ab^2e\left(Ade(3d+4ex)+B\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)\right)+6b(d+ex)^2(bd-ae)\log(d+ex)(-aBe-Abe+2bBd)+b^3\left(Ae\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+B\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)\right)\right)}{2e^5(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-(a^3*e^3*(A*e + B*(d + 2*e*x))) - 3*a^2*b*e^2*(A*e*(d
+ 2*e*x) - B*d*(3*d + 4*e*x)) + 3*a*b^2*e*(A*d*e*(3*d + 4*e*x) + B*(-5*d^3
- 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3)) + b^3*(A*e*(-5*d^3 - 4*d^2*e*x + 4*
d*e^2*x^2 + 2*e^3*x^3) + B*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^
3 + e^4*x^4)) + 6*b*(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2*Log[d
 + e*x]))/(2*e^5*(a + b*x)*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 6.36, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x)^3, x]
```

fricas [A] time = 0.43, size = 420, normalized size = 1.50

$$\frac{Bb^3e^4x^4 + 7Bb^3d^4 - Aa^3e^4 - 5\left(3Bab^2 + Ab^3\right)d^3e + 9\left(Ba^2b + Aab^2\right)d^2e^2 - \left(Ba^3 + 3Aa^2b\right)de^3 - 2\left(2Bb^3de^3 - \left(3Bab^2 + Ab^3\right)e^4\right)x^3 - \left(11Bb^3d^2e^2 - 4\left(3Bab^2 + Ab^3\right)de^3\right)x^2 + 2\left(Bb^3d^3e - 2\left(3Bab^2 + Ab^3\right)d^2e^2 + 6\left(Ba^2b + Aab^2\right)de^3 - \left(Ba^3 + 3Aa^2b\right)e^4\right)x + 6\left(2Bb^3d^4 - \left(3Bab^2 + Ab^3\right)d^3e + \left(Ba^2b + Aab^2\right)d^2e^2 + \left(2Bb^3d^2e^2 - \left(3Bab^2 + Ab^3\right)de^3 + \left(Ba^2b + Aab^2\right)e^4\right)x^2 + 2\left(2Bb^3d^3e - \left(3Bab^2 + Ab^3\right)d^2e^2 + \left(Ba^2b + Aab^2\right)de^3\right)x\right)\log\left(ex + d\right)}{2\left(e^7x^2 + 2de^6x + d^2e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/2*(B*b^3*e^4*x^4 + 7*B*b^3*d^4 - A*a^3*e^4 - 5*(3*B*a*b^2 + A*b^3)*d^3*e
+ 9*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a^2*b)*d*e^3 - 2*(2*B*b^3*d*
e^3 - (3*B*a*b^2 + A*b^3)*e^4)*x^3 - (11*B*b^3*d^2*e^2 - 4*(3*B*a*b^2 + A*b
^3)*d*e^3)*x^2 + 2*(B*b^3*d^3*e - 2*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 6*(B*a^2*
b + A*a*b^2)*d*e^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x + 6*(2*B*b^3*d^4 - (3*B*a*b
^2 + A*b^3)*d^3*e + (B*a^2*b + A*a*b^2)*d^2*e^2 + (2*B*b^3*d^2*e^2 - (3*B*a
*b^2 + A*b^3)*d*e^3 + (B*a^2*b + A*a*b^2)*e^4)*x^2 + 2*(2*B*b^3*d^3*e - (3*
B*a*b^2 + A*b^3)*d^2*e^2 + (B*a^2*b + A*a*b^2)*d*e^3)*x)*log(e*x + d))/(e^7
*x^2 + 2*d*e^6*x + d^2*e^5)
```

giac [A] time = 0.24, size = 417, normalized size = 1.49

$$3\left(2Bb^3d^2\mathrm{sgn}\left(bx+a\right) - 3Bab^2de\,\mathrm{sgn}\left(bx+a\right) - Ab^3de\,\mathrm{sgn}\left(bx+a\right) + Ba^2be^2\mathrm{sgn}\left(bx+a\right) + Aab^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right) + \frac{1}{2}\left(Bb^3x^2e^3\mathrm{sgn}\left(bx+a\right) - 6Bb^3dxe^2\mathrm{sgn}\left(bx+a\right) + 6Bab^2xe^3\mathrm{sgn}\left(bx+a\right) + 2Ab^3xe^3\mathrm{sgn}\left(bx+a\right)\right)e^{(-6)} + \frac{\left(7Bb^3d^4\mathrm{sgn}\left(bx+a\right) - 15Bab^2d^3e\,\mathrm{sgn}\left(bx+a\right) - 5Ab^3d^3e\,\mathrm{sgn}\left(bx+a\right) + 9Ba^2bd^2e^2\mathrm{sgn}\left(bx+a\right) + 9Aab^2d^2e^2\mathrm{sgn}\left(bx+a\right) - Ba^3de^3\mathrm{sgn}\left(bx+a\right) - 3Aa^2bde^3\mathrm{sgn}\left(bx+a\right) - Aa^3e^4\mathrm{sgn}\left(bx+a\right) + 2\left(4Bb^3d^3e\,\mathrm{sgn}\left(bx+a\right) - 9Bab^2d^2e^2\mathrm{sgn}\left(bx+a\right) - 3Ab^3d^2e^2\mathrm{sgn}\left(bx+a\right) + 6Ba^2bde^3\mathrm{sgn}\left(bx+a\right) + 6Aab^2de^3\mathrm{sgn}\left(bx+a\right) - Ba^3e^4\mathrm{sgn}\left(bx+a\right) - 3Aa^2be^4\mathrm{sgn}\left(bx+a\right)\right)x\right)e^{(-5)}}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 3*(2*B*b^3*d^2*sgn(b*x + a) - 3*B*a*b^2*d*e*sgn(b*x + a) - A*b^3*d*e*sgn(b*
x + a) + B*a^2*b*e^2*sgn(b*x + a) + A*a*b^2*e^2*sgn(b*x + a))*e^(-5)*log(ab
s(x*e + d)) + 1/2*(B*b^3*x^2*e^3*sgn(b*x + a) - 6*B*b^3*d*x*e^2*sgn(b*x + a
) + 6*B*a*b^2*x*e^3*sgn(b*x + a) + 2*A*b^3*x*e^3*sgn(b*x + a))*e^(-6) + 1/2
*(7*B*b^3*d^4*sgn(b*x + a) - 15*B*a*b^2*d^3*e*sgn(b*x + a) - 5*A*b^3*d^3*e*
sgn(b*x + a) + 9*B*a^2*b*d^2*e^2*sgn(b*x + a) + 9*A*a*b^2*d^2*e^2*sgn(b*x +
 a) - B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) - A*a^3*e^4*s
gn(b*x + a) + 2*(4*B*b^3*d^3*e*sgn(b*x + a) - 9*B*a*b^2*d^2*e^2*sgn(b*x + a
) - 3*A*b^3*d^2*e^2*sgn(b*x + a) + 6*B*a^2*b*d*e^3*sgn(b*x + a) + 6*A*a*b^2
```

```
*d*e^3*sgn(b*x + a) - B*a^3*e^4*sgn(b*x + a) - 3*A*a^2*b*e^4*sgn(b*x + a))*
x)*e^(-5)/(x*e + d)^2
```

maple [B] time = 0.07, size = 566, normalized size = 2.02

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}} \left(B b^3 e^4 x^4+6 A a b^2 e^4 x^2 \ln (ex+d)-6 A b^3 d e^3 x^2 \ln (ex+d)+2 A b^3 e^4 x^3+6 B a^2 b e^4 x^2 \ln (ex+d)-18 B a b^2 d e^3 x^2 \ln (ex+d)+6 B a b^2 e^4 x^3+12 B b^3 d^2 e^2 x^2 \ln (ex+d)-4 B b^3 d e^3 x^3+12 A a b^2 d e^3 x \ln (ex+d)-12 A b^3 d^2 e^2 x \ln (ex+d)+4 A b^3 d e^3 x^2+12 B a^2 b d e^3 x \ln (ex+d)-36 B a b^2 d^2 e^2 x \ln (ex+d)+12 B a b^2 d e^3 x^2+24 B b^3 d^3 e x \ln (ex+d)-11 B b^3 d^2 e^2 x^2-6 A a^2 b e^4 x+6 A a b^2 d^2 e^2 \ln (ex+d)+12 A a b^2 d e^3 x-6 A b^3 d^3 e \ln (ex+d)-4 A b^3 d^2 e^2 x-2 B a^3 e^4 x+6 B a^2 b d^2 e^2 \ln (ex+d)+12 B a^2 b d e^3 x-18 B a b^2 d^3 e \ln (ex+d)-12 B a b^2 d^2 e^2 x+12 B b^3 d^4 \ln (ex+d)+2 B b^3 d^3 e x-A a^3 e^4-3 A a^2 b d e^3+9 A a b^2 d^2 e^2-5 A b^3 d^3 e-B a^3 d e^3+9 B a^2 b d^2 e^2-15 B a b^2 d^3 e+7 B b^3 d^4\right)}{2 (bx+a)^3 (ex+d)^2 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x)
```

```
[Out] 1/2*((b*x+a)^2)^(3/2)*(12*B*a^2*b*d*e^3*x-12*B*a*b^2*d^2*e^2*x-18*B*a*b^2*d
^3*e*ln(e*x+d)+6*A*a*b^2*d^2*e^2*ln(e*x+d)+12*A*a*b^2*d*e^3*x+6*B*a^2*b*d^2
*e^2*ln(e*x+d)-18*B*ln(e*x+d)*x^2*a*b^2*d*e^3+12*B*a*b^2*d*e^3*x^2-5*A*b^3*
d^3*e-A*a^3*e^4+7*B*b^3*d^4+6*B*a*b^2*e^4*x^3-4*B*b^3*d*e^3*x^3+4*A*b^3*d*e
^3*x^2-11*B*b^3*d^2*e^2*x^2-6*A*b^3*d^3*e*ln(e*x+d)-B*a^3*d*e^3+B*b^3*e^4*x
^4+2*A*b^3*e^4*x^3-15*B*a*b^2*d^3*e+12*A*a*b^2*d*e^3*x*ln(e*x+d)+12*B*a^2*b
*d*e^3*x*ln(e*x+d)-36*B*a*b^2*d^2*e^2*x*ln(e*x+d)+9*B*a^2*b*d^2*e^2+9*A*a*b
^2*d^2*e^2-3*A*a^2*b*d*e^3-12*A*b^3*d^2*e^2*x*ln(e*x+d)+24*B*b^3*d^3*e*x*ln
(e*x+d)-6*A*a^2*b*e^4*x-4*A*b^3*d^2*e^2*x+2*B*b^3*d^3*e*x-6*A*ln(e*x+d)*x^2
*b^3*d*e^3+12*B*b^3*d^4*ln(e*x+d)-2*B*a^3*e^4*x+6*B*ln(e*x+d)*x^2*a^2*b*e^4
+12*B*ln(e*x+d)*x^2*b^3*d^2*e^2+6*A*ln(e*x+d)*x^2*a*b^2*e^4)/(b*x+a)^3/e^5/
(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{(d+e\,x)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**3, x)
```

3.1509 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=284

$$-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{2e^5(a+bx)(d+ex)^2}-$$

Rubi [A] time = 0.21, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{2e^5(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{3e^5(a+bx)(d+ex)^3}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)(-3aBe-Abe+4bBd)}{e^5(a+bx)}+\frac{b^3Bx\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] (b^3*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x)) - ((b*d - a*e)^3*(B
*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^3) + ((
b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*
e^5*(a + b*x)*(d + e*x)^2) - (3*b*(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) - (b^2*(4*b*B*d - A*b
*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^4}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^6B}{e^4}-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^4}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+a}{e^4(d+ex)^3}\right.}{b^2\left(ab+b^2x\right)}\\
&= \frac{b^3Bx\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3}+
\end{aligned}$$

Mathematica [A] time = 0.15, size = 251, normalized size = 0.88

$$-\frac{\sqrt{(a+bx)^2}\left(a^3e^3(2Ae+B(d+3ex))+3a^2be^2\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)+3ab^2e\left(2Ae\left(d^2+3dex+3e^2x^2\right)-Bd\left(11d^2+27dex+18e^2x^2\right)\right)+6b^2(d+ex)^3\log(d+ex)(-3aBe-Abe+4bBd)+b^3\left(2B\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)-Ade\left(11d^2+27dex+18e^2x^2\right)\right)\right)}{6e^5(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(a^3*e^3*(2*A*e + B*(d + 3*e*x)) + 3*a^2*b*e^2*(A*e
*(d + 3*e*x) + 2*B*(d^2 + 3*d*e*x + 3*e^2*x^2)) + 3*a*b^2*e*(2*A*e*(d^2 + 3
*d*e*x + 3*e^2*x^2) - B*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + b^3*(-(A*d*e*
(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 2*B*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^
2 - 9*d*e^3*x^3 - 3*e^4*x^4)) + 6*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)
^3*Log[d + e*x]))/(e^5*(a + b*x)*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 6.51, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x)^4, x]
```

fricas [A] time = 0.42, size = 406, normalized size = 1.43

$$\frac{6\,Bb^3e^4x^4 + 18\,Bb^3de^3x^3 - 26\,Bb^3d^4 - 2\,Aa^3e^4 + 11\left(3\,Bab^2 + Ab^3\right)d^3e - 6\left(Ba^2b + Aab^2\right)d^2e^2 - \left(Ba^3 + 3\,Aa^2b\right)de^3 - 18\left(Bb^3d^2e^2 - \left(3\,Bab^2 + Ab^3\right)de^3 + \left(Ba^2b + Aab^2\right)e^4\right)x^2 - 3\left(18\,Bb^3d^3e - 9\left(3\,Bab^2 + Ab^3\right)d^2e^2 + 6\left(Ba^2b + Aab^2\right)de^3 + \left(Ba^3 + 3\,Aa^2b\right)e^4\right)x - 6\left(4\,Bb^3d^4 - \left(3\,Bab^2 + Ab^3\right)d^3e + \left(4\,Bb^3de^3 - \left(3\,Bab^2 + Ab^3\right)e^4\right)x^3 + 3\left(4\,Bb^3d^2e^2 - \left(3\,Bab^2 + Ab^3\right)de^3\right)x^2 + 3\left(4\,Bb^3d^3e - \left(3\,Bab^2 + Ab^3\right)d^2e^2\right)x\right)\log\left(ex + d\right)}{6\left(e^8x^3 + 3\,de^7x^2 + 3\,d^2e^6x + d^3e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/6*(6*B*b^3*e^4*x^4 + 18*B*b^3*d*e^3*x^3 - 26*B*b^3*d^4 - 2*A*a^3*e^4 + 11
*(3*B*a*b^2 + A*b^3)*d^3*e - 6*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a
^2*b)*d*e^3 - 18*(B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3 + (B*a^2*b + A*
a*b^2)*e^4)*x^2 - 3*(18*B*b^3*d^3*e - 9*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 6*(B*
a^2*b + A*a*b^2)*d*e^3 + (B*a^3 + 3*A*a^2*b)*e^4)*x - 6*(4*B*b^3*d^4 - (3*B
*a*b^2 + A*b^3)*d^3*e + (4*B*b^3*d*e^3 - (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(
4*B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3)*x^2 + 3*(4*B*b^3*d^3*e - (3*B*
a*b^2 + A*b^3)*d^2*e^2)*x)*log(e*x + d))/(e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6
*x + d^3*e^5)
```

giac [A] time = 0.19, size = 411, normalized size = 1.45

$$Bb^3xe^{(-4)}\mathrm{sgn}\left(bx+a\right) - \left(4\,Bb^3d\,\mathrm{sgn}\left(bx+a\right) - 3\,Bab^2e\,\mathrm{sgn}\left(bx+a\right) - Ab^3e\,\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right) - \frac{\left(26\,Bb^3d^4\mathrm{sgn}\left(bx+a\right) - 33\,Bab^2d^3e\,\mathrm{sgn}\left(bx+a\right) - 11\,Ab^3d^3e\,\mathrm{sgn}\left(bx+a\right) + 6\,Ba^2bd^2e^2\mathrm{sgn}\left(bx+a\right) + 6\,Aab^2d^2e^2\mathrm{sgn}\left(bx+a\right) + Ba^3de^3\mathrm{sgn}\left(bx+a\right) + 3\,Aa^2bde^3\mathrm{sgn}\left(bx+a\right) + 2\,Aa^3e^4\mathrm{sgn}\left(bx+a\right) + 18\left(2\,Bb^3d^2e^2\mathrm{sgn}\left(bx+a\right) - 3\,Bab^2de^3\mathrm{sgn}\left(bx+a\right) - Ab^3de^3\mathrm{sgn}\left(bx+a\right) + Ba^2be^4\mathrm{sgn}\left(bx+a\right) + Aab^2e^4\mathrm{sgn}\left(bx+a\right)\right)x^2 + 3\left(20\,Bb^3d^3e\,\mathrm{sgn}\left(bx+a\right) - 27\,Bab^2d^2e^2\mathrm{sgn}\left(bx+a\right) - 9\,Ab^3d^2e^2\mathrm{sgn}\left(bx+a\right) + 6\,Ba^2bde^3\mathrm{sgn}\left(bx+a\right) + 6\,Aab^2de^3\mathrm{sgn}\left(bx+a\right) + Ba^3e^4\mathrm{sgn}\left(bx+a\right) + 3\,Aa^2be^4\mathrm{sgn}\left(bx+a\right)\right)x\right)e^{(-5)}}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] B*b^3*x*e^(-4)*sgn(b*x + a) - (4*B*b^3*d*sgn(b*x + a) - 3*B*a*b^2*e*sgn(b*x
 + a) - A*b^3*e*sgn(b*x + a))*e^(-5)*log(abs(x*e + d)) - 1/6*(26*B*b^3*d^4*
sgn(b*x + a) - 33*B*a*b^2*d^3*e*sgn(b*x + a) - 11*A*b^3*d^3*e*sgn(b*x + a)
+ 6*B*a^2*b*d^2*e^2*sgn(b*x + a) + 6*A*a*b^2*d^2*e^2*sgn(b*x + a) + B*a^3*d
*e^3*sgn(b*x + a) + 3*A*a^2*b*d*e^3*sgn(b*x + a) + 2*A*a^3*e^4*sgn(b*x + a)
 + 18*(2*B*b^3*d^2*e^2*sgn(b*x + a) - 3*B*a*b^2*d*e^3*sgn(b*x + a) - A*b^3*
d*e^3*sgn(b*x + a) + B*a^2*b*e^4*sgn(b*x + a) + A*a*b^2*e^4*sgn(b*x + a))*x
^2 + 3*(20*B*b^3*d^3*e*sgn(b*x + a) - 27*B*a*b^2*d^2*e^2*sgn(b*x + a) - 9*A
*b^3*d^2*e^2*sgn(b*x + a) + 6*B*a^2*b*d*e^3*sgn(b*x + a) + 6*A*a*b^2*d*e^3*
```

```
sgn(b*x + a) + B*a^3*e^4*sgn(b*x + a) + 3*A*a^2*b*e^4*sgn(b*x + a))*x)*e^(-
5)/(x*e + d)^3
```

maple [B] time = 0.06, size = 512, normalized size = 1.80

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(6Ab^3e^4x^3\ln(ex+d)+18Bab^2e^4x^3\ln(ex+d)-24Bb^3de^3x^3\ln(ex+d)+6Bb^3e^4x^4+18Ab^3de^3x^2\ln(ex+d)+54Bab^2de^3x^2\ln(ex+d)-72Bb^3d^2e^2x^2\ln(ex+d)+18Bb^3de^3x^3-18Aab^2e^4x^2+18Ab^3d^2e^2x\ln(ex+d)+18Ab^3de^3x^2-18Ba^2be^4x^2+54Bab^2d^2e^2x\ln(ex+d)+54Bab^2de^3x^2-72Bb^3d^3ex\ln(ex+d)-18Bb^3d^2e^2x^2-9Aa^2be^4x-18Aab^2de^3x+6Ab^3d^3e\ln(ex+d)+27Ab^3d^2e^2x-3Ba^3e^4x-18Ba^2bde^3x+18Bab^2d^3e\ln(ex+d)+81Bab^2d^2e^2x-24Bb^3d^4\ln(ex+d)-54Bb^3d^3ex-2Aa^3e^4-3Aa^2bde^3-6Aab^2d^2e^2+11Ab^3d^3e-Ba^3de^3-6Ba^2bd^2e^2+33Bab^2d^3e-26Bb^3d^4\right)}{6\,(bx+a)^3\,(ex+d)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(-18*B*a^2*b*d*e^3*x+81*B*a*b^2*d^2*e^2*x+18*B*a*b^2*
d^3*e*ln(e*x+d)-18*A*a*b^2*d*e^3*x+54*B*a*b^2*d*e^3*x^2*ln(e*x+d)+54*B*a*b^
2*d*e^3*x^2+11*A*b^3*d^3*e-2*A*a^3*e^4-26*B*b^3*d^4+18*B*b^3*d*e^3*x^3-18*A
*a*b^2*e^4*x^2+18*A*b^3*d*e^3*x^2-18*B*a^2*b*e^4*x^2-18*B*b^3*d^2*e^2*x^2+6
*A*b^3*d^3*e*ln(e*x+d)-B*a^3*d*e^3+6*B*b^3*e^4*x^4+33*B*a*b^2*d^3*e+54*B*a*
b^2*d^2*e^2*x*ln(e*x+d)-6*B*a^2*b*d^2*e^2-6*A*a*b^2*d^2*e^2-3*A*a^2*b*d*e^3
+18*A*b^3*d^2*e^2*x*ln(e*x+d)-72*B*b^3*d^3*e*x*ln(e*x+d)-9*A*a^2*b*e^4*x+27
*A*b^3*d^2*e^2*x-54*B*b^3*d^3*e*x+18*A*b^3*d*e^3*x^2*ln(e*x+d)-24*B*b^3*d^4
*ln(e*x+d)-3*B*a^3*e^4*x+18*B*ln(e*x+d)*x^3*a*b^2*e^4-24*B*ln(e*x+d)*x^3*b^
3*d*e^3-72*B*b^3*d^2*e^2*x^2*ln(e*x+d)+6*A*ln(e*x+d)*x^3*b^3*e^4)/(b*x+a)^3
/e^5/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**4, x)
```

3.1510 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5} dx$

Optimal. Leaf size=257

$$-\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{4e(d+ex)^4(bd-ae)}+\frac{3b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)(d+ex)}-\frac{3bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^5(a+bx)(d+ex)^2}+$$

Rubi [A] time = 0.18, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 78, 43}

$$-\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{4e(d+ex)^4(bd-ae)}+\frac{3b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)(d+ex)}-\frac{3bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^5(a+bx)(d+ex)^2}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^3}+\frac{b^3B\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e*(b*d - a*e)*(
d + e*x)^4) + (B*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b
*x)*(d + e*x)^3) - (3*b*B*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e
^5*(a + b*x)*(d + e*x)^2) + (3*b^2*B*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^5*(a + b*x)*(d + e*x)) + (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d
 + e*x])/(e^5*(a + b*x))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^5}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e(bd-ae)(d+ex)^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{b^2e\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e(bd-ae)(d+ex)^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e(bd-ae)(d+ex)^4} + \frac{B(bd-ae)^3\sqrt{a^2+2abx+}}{3e^5(a+bx)(d+ex)^3}$$

Mathematica [A] time = 0.14, size = 240, normalized size = 0.93

$$-\frac{\sqrt{(a+bx)^2}\left(a^3e^3(3Ae+B(d+4ex))+3a^2be^2\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)+3ab^2e\left(Ae\left(d^2+4dex+6e^2x^2\right)+3B\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+b^3\left(3Ae\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)-Bd\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)-12b^3B(d+ex)^4\log(d+ex)\right)}{12e^5(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(a^3*e^3*(3*A*e + B*(d + 4*e*x)) + 3*a^2*b*e^2*(A*
e*(d + 4*e*x) + B*(d^2 + 4*d*e*x + 6*e^2*x^2)) + 3*a*b^2*e*(A*e*(d^2 + 4*d*
e*x + 6*e^2*x^2) + 3*B*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) + b^3*(
3*A*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - B*d*(25*d^3 + 88*d^2*e*
x + 108*d*e^2*x^2 + 48*e^3*x^3)) - 12*b^3*B*(d + e*x)^4*Log[d + e*x]))/(e^5
*(a + b*x)*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 180.31, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,
x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.43, size = 354, normalized size = 1.38

$$\frac{25Bb^3d^4-3Aa^3e^4-3\left(3Bab^2+Ab^3\right)d^3e-3\left(Ba^2b+Aab^2\right)d^2e^2-\left(Ba^3+3Aa^2b\right)de^3+12\left(4Bb^3de^3-\left(3Bab^2+Ab^3\right)e^4\right)x^3+18\left(6Bb^3d^2e^2-\left(3Bab^2+Ab^3\right)de^3-\left(Ba^2b+Aab^2\right)e^4\right)x^2+4\left(22Bb^3d^3e-3\left(3Bab^2+Ab^3\right)d^2e^2-3\left(Ba^2b+Aab^2\right)de^3-\left(Ba^3+3Aa^2b\right)e^4\right)x+12\left(Bb^3e^4x^4+4Bb^3de^3x^3+6Bb^3d^2e^2x^2+4Bb^3d^3ex+Bb^3d^4\right)\log(ex+d)}{12\left(e^9x^4+4de^8x^3+6d^2e^7x^2+4d^3e^6x+d^4e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/12*(25*B*b^3*d^4 - 3*A*a^3*e^4 - 3*(3*B*a*b^2 + A*b^3)*d^3*e - 3*(B*a^2*b
 + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a^2*b)*d*e^3 + 12*(4*B*b^3*d*e^3 - (3*B*
a*b^2 + A*b^3)*e^4)*x^3 + 18*(6*B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3 -
 (B*a^2*b + A*a*b^2)*e^4)*x^2 + 4*(22*B*b^3*d^3*e - 3*(3*B*a*b^2 + A*b^3)*d
^2*e^2 - 3*(B*a^2*b + A*a*b^2)*d*e^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x + 12*(B*b
^3*e^4*x^4 + 4*B*b^3*d*e^3*x^3 + 6*B*b^3*d^2*e^2*x^2 + 4*B*b^3*d^3*e*x + B*
b^3*d^4)*log(e*x + d))/(e^9*x^4 + 4*d*e^8*x^3 + 6*d^2*e^7*x^2 + 4*d^3*e^6*x
 + d^4*e^5)
```

giac [B] time = 0.23, size = 419, normalized size = 1.63

$$Bb^3e^{(-5)}\log\left(|xe+d|\right)\operatorname{sgn}\left(bx+a\right)+\frac{\left(12\left(4\,Bb^3de^2\operatorname{sgn}\left(bx+a\right)-3\,Bab^2e^3\operatorname{sgn}\left(bx+a\right)-Ab^3e^3\operatorname{sgn}\left(bx+a\right)\right)x^3+18\left(6\,Bb^3d^2e\operatorname{sgn}\left(bx+a\right)-3\,Bab^2de^2\operatorname{sgn}\left(bx+a\right)-Ab^3de^2\operatorname{sgn}\left(bx+a\right)-Ba^2be^3\operatorname{sgn}\left(bx+a\right)-Aab^2e^3\operatorname{sgn}\left(bx+a\right)\right)x^2+4\left(22\,Bb^3d^3\operatorname{sgn}\left(bx+a\right)-9\,Bab^2d^2e\operatorname{sgn}\left(bx+a\right)-3\,Ab^3d^2e\operatorname{sgn}\left(bx+a\right)-3\,Ba^2bde^2\operatorname{sgn}\left(bx+a\right)-3\,Aab^2de^2\operatorname{sgn}\left(bx+a\right)-Ba^3e^3\operatorname{sgn}\left(bx+a\right)-3\,Aa^2be^3\operatorname{sgn}\left(bx+a\right)\right)x+\left(25\,Bb^3d^4\operatorname{sgn}\left(bx+a\right)-9\,Bab^2d^3e\operatorname{sgn}\left(bx+a\right)-3\,Ab^3d^3e\operatorname{sgn}\left(bx+a\right)-3\,Ba^2bd^2e^2\operatorname{sgn}\left(bx+a\right)-3\,Aab^2d^2e^2\operatorname{sgn}\left(bx+a\right)-Ba^3de^3\operatorname{sgn}\left(bx+a\right)-3\,Aa^2bde^3\operatorname{sgn}\left(bx+a\right)-3\,Aa^3e^4\operatorname{sgn}\left(bx+a\right)\right)e^{(-1)}\right)e^{(-4)}}{12\,(xe+d)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] B*b^3*e^(-5)*log(abs(x*e + d))*sgn(b*x + a) + 1/12*(12*(4*B*b^3*d*e^2*sgn(b
*x + a) - 3*B*a*b^2*e^3*sgn(b*x + a) - A*b^3*e^3*sgn(b*x + a))*x^3 + 18*(6*
B*b^3*d^2*e*sgn(b*x + a) - 3*B*a*b^2*d*e^2*sgn(b*x + a) - A*b^3*d*e^2*sgn(b
*x + a) - B*a^2*b*e^3*sgn(b*x + a) - A*a*b^2*e^3*sgn(b*x + a))*x^2 + 4*(22*
B*b^3*d^3*sgn(b*x + a) - 9*B*a*b^2*d^2*e*sgn(b*x + a) - 3*A*b^3*d^2*e*sgn(b
*x + a) - 3*B*a^2*b*d*e^2*sgn(b*x + a) - 3*A*a*b^2*d*e^2*sgn(b*x + a) - B*a
^3*e^3*sgn(b*x + a) - 3*A*a^2*b*e^3*sgn(b*x + a))*x + (25*B*b^3*d^4*sgn(b*x
 + a) - 9*B*a*b^2*d^3*e*sgn(b*x + a) - 3*A*b^3*d^3*e*sgn(b*x + a) - 3*B*a^2
*b*d^2*e^2*sgn(b*x + a) - 3*A*a*b^2*d^2*e^2*sgn(b*x + a) - B*a^3*d*e^3*sgn(
b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) - 3*A*a^3*e^4*sgn(b*x + a))*e^(-1))
*e^(-4)/(x*e + d)^4
```

maple [B] time = 0.06, size = 394, normalized size = 1.53

$$-\frac{\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}\left(-12B\,b^3e^4x^4\ln\left(ex+d\right)-48B\,b^3d\,e^3x^3\ln\left(ex+d\right)+12A\,b^3e^4x^3+36Ba\,b^2e^4x^3-72B\,b^3d^2e^2x^2\ln\left(ex+d\right)-48B\,b^3d\,e^3x^3+18Aa\,b^2e^4x^2+18A\,b^3d\,e^3x^2+18B\,a^2b\,e^4x^2+54Ba\,b^2d\,e^3x^2-48B\,b^3d^3ex\ln\left(ex+d\right)-108B\,b^3d^2e^2x^2+12A\,a^2b\,e^4x+12Aa\,b^2d\,e^3x+12A\,b^3d^2e^2x+4B\,a^3e^4x+12B\,a^2bd\,e^3x+36Ba\,b^2d^2e^2x-12B\,b^3d^4\ln\left(ex+d\right)-88B\,b^3d^3ex+3A\,a^3e^4+3A\,a^2bd\,e^3+3Aa\,b^2d^2e^2+3A\,b^3d^3e+B\,a^3d\,e^3+3B\,a^2b\,d^2e^2+9Ba\,b^2d^3e-25B\,b^3d^4\right)}{12\left(bx+a\right)^3\left(ex+d\right)^4e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x)
```

```
[Out] -1/12*((b*x+a)^2)^(3/2)*(12*B*a^2*b*d*e^3*x+36*B*a*b^2*d^2*e^2*x+12*A*a*b^2
*d*e^3*x+54*B*a*b^2*d*e^3*x^2+3*A*b^3*d^3*e+3*A*a^3*e^4-25*B*b^3*d^4+36*B*a
*b^2*e^4*x^3-48*B*b^3*d*e^3*x^3+18*A*a*b^2*e^4*x^2+18*A*b^3*d*e^3*x^2+18*B*
a^2*b*e^4*x^2-108*B*b^3*d^2*e^2*x^2+B*a^3*d*e^3+12*A*b^3*e^4*x^3+9*B*a*b^2*
d^3*e+3*B*a^2*b*d^2*e^2+3*A*a*b^2*d^2*e^2-12*B*ln(e*x+d)*x^4*b^3*e^4+3*A*a^
2*b*d*e^3-48*B*b^3*d^3*e*x*ln(e*x+d)+12*A*a^2*b*e^4*x+12*A*b^3*d^2*e^2*x-88
*B*b^3*d^3*e*x-12*B*b^3*d^4*ln(e*x+d)+4*B*a^3*e^4*x-48*B*b^3*d*e^3*x^3*ln(e
*x+d)-72*B*b^3*d^2*e^2*x^2*ln(e*x+d))/(b*x+a)^3/e^5/(e*x+d)^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**5, x)
```

3.1511 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=106

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4(d+ex)^4(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}(Bd-Ae)}{5(d+ex)^5(bd-ae)^2}$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4(d+ex)^4(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}(Bd-Ae)}{5(d+ex)^5(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(b*d - a*e)^2*(d
 + e*x)^4) + ((B*d - A*e)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(5*(b*d - a*e)^2
*(d + e*x)^5)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(bd-ae)^2(d+ex)^5}+\frac{(Ab-aB)\int \frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx}{bd-ae}\\ &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(bd-ae)^2(d+ex)^5}+\frac{\left((Ab-aB)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(ab\cdots}{(d\cdots}}{b^2(bd-ae)\left(ab+b^2x\right)}\\ &= \frac{(Ab-aB)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4(bd-ae)^2(d+ex)^4}+\frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{5/\cdots}}{5(bd-ae)^2(d+ex)^5}\end{aligned}$$

Mathematica [B] time = 0.10, size = 229, normalized size = 2.16

$$-\frac{\sqrt{(a+bx)^2}\left(a^3e^3(4Ae+B(d+5ex))+a^2be^2\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)+ab^2e\left(2Ae\left(d^2+5dex+10e^2x^2\right)+3B\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)+b^3\left(Ae\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+4B\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)\right)}{20e^5(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] -1/20*(Sqrt[(a + b*x)^2]*(a^3*e^3*(4*A*e + B*(d + 5*e*x)) + a^2*b*e^2*(3*A*
e*(d + 5*e*x) + 2*B*(d^2 + 5*d*e*x + 10*e^2*x^2)) + a*b^2*e*(2*A*e*(d^2 + 5
*d*e*x + 10*e^2*x^2) + 3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)) +
 b^3*(A*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 4*B*(d^4 + 5*d^3*
e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4))))/(e^5*(a + b*x)*(d + e*x
)^5)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.41, size = 304, normalized size = 2.87

$$-\frac{20\,Bb^3e^4x^4+4\,Bb^3d^4+4\,Aa^3e^4+\left(3\,Bab^2+Ab^3\right)d^3e+2\left(Ba^2b+Aab^2\right)d^2e^2+\left(Ba^3+3\,Aa^2b\right)de^3+10\left(4\,Bb^3de^3+\left(3\,Bab^2+Ab^3\right)e^4\right)x^3+10\left(4\,Bb^3d^2e^2+\left(3\,Bab^2+Ab^3\right)de^3+2\left(Ba^2b+Aab^2\right)e^4\right)x^2+5\left(4\,Bb^3d^3e+\left(3\,Bab^2+Ab^3\right)d^2e^2+2\left(Ba^2b+Aab^2\right)de^3+\left(Ba^3+3\,Aa^2b\right)e^4\right)x}{20\left(e^{10}x^5+5\,de^9x^4+10\,d^2e^8x^3+10\,d^3e^7x^2+5\,d^4e^6x+d^5e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] -1/20*(20*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 4*A*a^3*e^4 + (3*B*a*b^2 + A*b^3)*d
^3*e + 2*(B*a^2*b + A*a*b^2)*d^2*e^2 + (B*a^3 + 3*A*a^2*b)*d*e^3 + 10*(4*B*
b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 10*(4*B*b^3*d^2*e^2 + (3*B*a*b^2
 + A*b^3)*d*e^3 + 2*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 5*(4*B*b^3*d^3*e + (3*B*
a*b^2 + A*b^3)*d^2*e^2 + 2*(B*a^2*b + A*a*b^2)*d*e^3 + (B*a^3 + 3*A*a^2*b)*
e^4)*x)/(e^10*x^5 + 5*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2 + 5*d^4*e
^6*x + d^5*e^5)
```

giac [B] time = 0.19, size = 425, normalized size = 4.01

$$-\frac{\left(20\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+40\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+40\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+20\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)+4\,Bb^3d^4\mathrm{sgn}\left(bx+a\right)+30\,Bab^2x^3e^4\mathrm{sgn}\left(bx+a\right)+10\,Ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+30\,Bab^2dx^2e^3\mathrm{sgn}\left(bx+a\right)+10\,Ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+15\,Bab^2d^2xe^2\mathrm{sgn}\left(bx+a\right)+5\,Ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+3\,Bab^2d^3e\mathrm{sgn}\left(bx+a\right)+Ab^3d^3e\mathrm{sgn}\left(bx+a\right)+20\,Ba^2bx^2e^4\mathrm{sgn}\left(bx+a\right)+20\,Aab^2x^2e^4\mathrm{sgn}\left(bx+a\right)+10\,Ba^2bdxe^3\mathrm{sgn}\left(bx+a\right)+10\,Aab^2dxe^3\mathrm{sgn}\left(bx+a\right)+2\,Ba^2bd^2e^2\mathrm{sgn}\left(bx+a\right)+2\,Aab^2d^2e^2\mathrm{sgn}\left(bx+a\right)+5\,Ba^3xe^4\mathrm{sgn}\left(bx+a\right)+15\,Aa^2bxe^4\mathrm{sgn}\left(bx+a\right)+Ba^3de^3\mathrm{sgn}\left(bx+a\right)+3\,Aa^2bde^3\mathrm{sgn}\left(bx+a\right)+4\,Aa^3e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{20\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] -1/20*(20*B*b^3*x^4*e^4*sgn(b*x + a) + 40*B*b^3*d*x^3*e^3*sgn(b*x + a) + 40
*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 20*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B*b^3*d
^4*sgn(b*x + a) + 30*B*a*b^2*x^3*e^4*sgn(b*x + a) + 10*A*b^3*x^3*e^4*sgn(b*
x + a) + 30*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 10*A*b^3*d*x^2*e^3*sgn(b*x + a
) + 15*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 5*A*b^3*d^2*x*e^2*sgn(b*x + a) + 3*
B*a*b^2*d^3*e*sgn(b*x + a) + A*b^3*d^3*e*sgn(b*x + a) + 20*B*a^2*b*x^2*e^4*
sgn(b*x + a) + 20*A*a*b^2*x^2*e^4*sgn(b*x + a) + 10*B*a^2*b*d*x*e^3*sgn(b*x
 + a) + 10*A*a*b^2*d*x*e^3*sgn(b*x + a) + 2*B*a^2*b*d^2*e^2*sgn(b*x + a) +
2*A*a*b^2*d^2*e^2*sgn(b*x + a) + 5*B*a^3*x*e^4*sgn(b*x + a) + 15*A*a^2*b*x*
e^4*sgn(b*x + a) + B*a^3*d*e^3*sgn(b*x + a) + 3*A*a^2*b*d*e^3*sgn(b*x + a)
+ 4*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^5
```

maple [B] time = 0.06, size = 315, normalized size = 2.97

$$-\frac{\left(20 B b^3 e^4 x^4+10 A b^3 e^4 x^3+30 B a b^2 e^4 x^3+40 B b^3 d e^3 x^3+20 A a b^2 e^4 x^2+10 A b^3 d e^3 x^2+20 B a^2 b e^4 x^2+30 B a b^2 d e^3 x^2+40 B b^3 d^2 e^2 x^2+15 A a^2 b e^4 x+10 A a b^2 d e^3 x+5 A b^3 d^2 e^2 x+5 B a^3 e^4 x+10 B a^2 b d e^3 x+15 B a b^2 d^2 e^2 x+20 B b^3 d^3 e x+4 A a^3 e^4+3 A a^2 b d e^3+2 A a b^2 d^2 e^2+A b^3 d^3 e+B a^3 d e^3+2 B a^2 b d^2 e^2+3 B a b^2 d^3 e+4 B b^3 d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{20\,(ex+d)^5\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x)
```

```
[Out] -1/20*(20*B*b^3*e^4*x^4+10*A*b^3*e^4*x^3+30*B*a*b^2*e^4*x^3+40*B*b^3*d*e^3*
x^3+20*A*a*b^2*e^4*x^2+10*A*b^3*d*e^3*x^2+20*B*a^2*b*e^4*x^2+30*B*a*b^2*d*e
^3*x^2+40*B*b^3*d^2*e^2*x^2+15*A*a^2*b*e^4*x+10*A*a*b^2*d*e^3*x+5*A*b^3*d^2
*e^2*x+5*B*a^3*e^4*x+10*B*a^2*b*d*e^3*x+15*B*a*b^2*d^2*e^2*x+20*B*b^3*d^3*e
*x+4*A*a^3*e^4+3*A*a^2*b*d*e^3+2*A*a*b^2*d^2*e^2+A*b^3*d^3*e+B*a^3*d*e^3+2*
B*a^2*b*d^2*e^2+3*B*a*b^2*d^3*e+4*B*b^3*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^5/e^
5/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.20, size = 577, normalized size = 5.44

$$-\frac{\left(\frac{A b^3 e-3 B b^3 d+3 B a b^2 e}{2 e^5}-\frac{B b^3 d}{2 e^5}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^2}-\frac{\left(\frac{A a^3}{5e}-\frac{d\left(\frac{B a^3+3 A a^2 b}{5e}+\frac{d\left(\frac{d\left(\frac{A b^3+3 B a b^2}{5e}-\frac{B b^3 d}{5e^2}\right)}{e}-\frac{3ab(Ab+Ba)}{5e}\right)}{e}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^5}-\frac{\left(\frac{B a^3 e^3-B b^3 d^3+3 A a^2 b e^3+A b^3 d^2 e-3 A a b^2 d e^2+3 B a b^2 d^2 e-3 B a^2 b d e^2}{4e^5}-\frac{d\left(\frac{3 A a b^2 e^3+3 B a^2 b e^3-A b^3 d e^2+B b^3 d^2 e-3 B a b^2 d e^2}{4e^5}-\frac{d\left(\frac{b^2(Abe+3Bae-Bbd)}{4e^3}-\frac{B b^3 d}{4e^3}\right)}{e}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^4}-\frac{\left(\frac{3 B b^3 d^2-2 A b^3 d e+3 A a b^2 e^2+3 B a^2 b e^2-6 B a b^2 d e}{3e^5}-\frac{d\left(\frac{b^2(Abe+3Bae-2Bbd)}{3e^4}-\frac{B b^3 d}{3e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^3}-\frac{B b^3\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)(d+ex)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^6,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(2*e^5) - (B*b^3*d)/(2*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^2) - (((A*a^3)/(5*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(5*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(5*e) - (B*b^3*d)/(
5*e^2)))/e - (3*a*b*(A*b + B*a))/(5*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/((a + b*x)*(d + e*x)^5) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 +
A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(4*e^5)
- (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^
2*d*e^2)/(4*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(4*e^3) - (B*b^3*d)/
(4*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) -
 (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d
*e)/(3*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(3*e^4) - (B*b^3*d)/(3*
e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - (B*b^3
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(e^5*(a + b*x)*(d + e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**6, x)
```

3.1512 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=193

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{60e(d+ex)^4(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{15e(d+ex)^5(bd-ae)^2}-\sqrt{}$$

Rubi [A] time = 0.15, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{770, 78, 45, 37\}$

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{60e(d+ex)^4(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{15e(d+ex)^5(bd-ae)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Bd-Ae)}{6e(d+ex)^6(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e*(b*d - a*e)*(
d + e*x)^6) + ((2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(15*e*(b*d - a*e)^2*(d + e*x)^5) + (b*(2*b*B*d + A*b*e - 3*a*B*e
)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(60*e*(b*d - a*e)^3*(d + e*x)^
4)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^7}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{\left((2bBd+Abe-3aBe)\sqrt{a^2+\right.}{3b^2e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{(2bBd+Abe-3aBe)(a+bx)}{15e(bd-ae)^2(d}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{(2bBd+Abe-3aBe)(a+bx)}{15e(bd-ae)^2(d}$$

Mathematica [A] time = 0.10, size = 229, normalized size = 1.19

$$-\frac{\sqrt{(a+bx)^2}\left(2a^3e^3(5Ae+B(d+6ex))+3a^2be^2\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)+3ab^2e\left(Ae\left(d^2+6dex+15e^2x^2\right)+B\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)\right)+b^3\left(Ae\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+2B\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)\right)}{60e^5(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(2*a^3*e^3*(5*A*e + B*(d + 6*e*x)) + 3*a^2*b*e^2*(
2*A*e*(d + 6*e*x) + B*(d^2 + 6*d*e*x + 15*e^2*x^2)) + 3*a*b^2*e*(A*e*(d^2 +
 6*d*e*x + 15*e^2*x^2) + B*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3)) +
 b^3*(A*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*B*(d^4 + 6*d^3*
e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4))))/(e^5*(a + b*x)*(d + e*
x)^6)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.42, size = 317, normalized size = 1.64

$$-\frac{30\,Bb^3e^4x^4+2\,Bb^3d^4+10\,Aa^3e^4+\left(3\,Bab^2+Ab^3\right)d^3e+3\left(Ba^2b+Aab^2\right)d^2e^2+2\left(Ba^3+3\,Aa^2b\right)de^3+20\left(2\,Bb^3de^3+\left(3\,Bab^2+Ab^3\right)e^4\right)x^3+15\left(2\,Bb^3d^2e^2+\left(3\,Bab^2+Ab^3\right)de^3+3\left(Ba^2b+Aab^2\right)e^4\right)x^2+6\left(2\,Bb^3d^3e+\left(3\,Bab^2+Ab^3\right)d^2e^2+3\left(Ba^2b+Aab^2\right)de^3+2\left(Ba^3+3\,Aa^2b\right)e^4\right)x}{60\left(e^{11}x^6+6\,de^{10}x^5+15\,d^2e^9x^4+20\,d^3e^8x^3+15\,d^4e^7x^2+6\,d^5e^6x+d^6e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] -1/60*(30*B*b^3*e^4*x^4 + 2*B*b^3*d^4 + 10*A*a^3*e^4 + (3*B*a*b^2 + A*b^3)*
d^3*e + 3*(B*a^2*b + A*a*b^2)*d^2*e^2 + 2*(B*a^3 + 3*A*a^2*b)*d*e^3 + 20*(2
*B*b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 15*(2*B*b^3*d^2*e^2 + (3*B*a*
b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 6*(2*B*b^3*d^3*e + (3
*B*a*b^2 + A*b^3)*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d*e^3 + 2*(B*a^3 + 3*A*a^
2*b)*e^4)*x)/(e^11*x^6 + 6*d*e^10*x^5 + 15*d^2*e^9*x^4 + 20*d^3*e^8*x^3 + 1
5*d^4*e^7*x^2 + 6*d^5*e^6*x + d^6*e^5)
```

giac [B] time = 0.18, size = 426, normalized size = 2.21

$$-\frac{\left(30\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+40\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+30\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+12\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)+2\,Bb^3d^4\mathrm{sgn}\left(bx+a\right)+60\,Bab^2x^3e^4\mathrm{sgn}\left(bx+a\right)+20\,Ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+45\,Bab^2dx^2e^3\mathrm{sgn}\left(bx+a\right)+15\,Ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+18\,Bab^2d^2xe^2\mathrm{sgn}\left(bx+a\right)+6\,Ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+3\,Bab^2d^3e\mathrm{sgn}\left(bx+a\right)+Ab^3d^3e\mathrm{sgn}\left(bx+a\right)+45\,Ba^2bx^2e^4\mathrm{sgn}\left(bx+a\right)+45\,Aab^2x^2e^4\mathrm{sgn}\left(bx+a\right)+18\,Ba^2bdxe^3\mathrm{sgn}\left(bx+a\right)+18\,Aab^2dxe^3\mathrm{sgn}\left(bx+a\right)+3\,Ba^2bd^2e^2\mathrm{sgn}\left(bx+a\right)+3\,Aab^2d^2e^2\mathrm{sgn}\left(bx+a\right)+12\,Ba^3xe^4\mathrm{sgn}\left(bx+a\right)+36\,Aa^2bxe^4\mathrm{sgn}\left(bx+a\right)+2\,Ba^3de^3\mathrm{sgn}\left(bx+a\right)+6\,Aa^2bde^3\mathrm{sgn}\left(bx+a\right)+10\,Aa^3e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] -1/60*(30*B*b^3*x^4*e^4*sgn(b*x + a) + 40*B*b^3*d*x^3*e^3*sgn(b*x + a) + 30
*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 12*B*b^3*d^3*x*e*sgn(b*x + a) + 2*B*b^3*d
^4*sgn(b*x + a) + 60*B*a*b^2*x^3*e^4*sgn(b*x + a) + 20*A*b^3*x^3*e^4*sgn(b*
x + a) + 45*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 15*A*b^3*d*x^2*e^3*sgn(b*x + a
) + 18*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 6*A*b^3*d^2*x*e^2*sgn(b*x + a) + 3*
B*a*b^2*d^3*e*sgn(b*x + a) + A*b^3*d^3*e*sgn(b*x + a) + 45*B*a^2*b*x^2*e^4*
sgn(b*x + a) + 45*A*a*b^2*x^2*e^4*sgn(b*x + a) + 18*B*a^2*b*d*x*e^3*sgn(b*x
 + a) + 18*A*a*b^2*d*x*e^3*sgn(b*x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) +
3*A*a*b^2*d^2*e^2*sgn(b*x + a) + 12*B*a^3*x*e^4*sgn(b*x + a) + 36*A*a^2*b*x
*e^4*sgn(b*x + a) + 2*B*a^3*d*e^3*sgn(b*x + a) + 6*A*a^2*b*d*e^3*sgn(b*x +
a) + 10*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^6
```

maple [B] time = 0.05, size = 316, normalized size = 1.64

$$-\frac{\left(30B\,b^3e^4x^4+20A\,b^3e^4x^3+60Ba\,b^2e^4x^3+40B\,b^3d\,e^3x^3+45Aa\,b^2e^4x^2+15A\,b^3d\,e^3x^2+45B\,a^2b\,e^4x^2+45Ba\,b^2d\,e^3x^2+30B\,b^3d^2e^2x^2+36A\,a^2b\,e^4x+18Aa\,b^2d\,e^3x+6A\,b^3d^2e^2x+12B\,a^3e^4x+18B\,a^2bd\,e^3x+18Ba\,b^2d^2e^2x+12B\,b^3d^3ex+10A\,a^3e^4+6A\,a^2bd\,e^3+3Aa\,b^2d^2e^2+A\,b^3d^3e+2B\,a^3d\,e^3+3B\,a^2b\,d^2e^2+3Ba\,b^2d^3e+2B\,b^3d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{60\,(ex+d)^6\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x)
```

```
[Out] -1/60/e^5*(30*B*b^3*e^4*x^4+20*A*b^3*e^4*x^3+60*B*a*b^2*e^4*x^3+40*B*b^3*d*
e^3*x^3+45*A*a*b^2*e^4*x^2+15*A*b^3*d*e^3*x^2+45*B*a^2*b*e^4*x^2+45*B*a*b^2
*d*e^3*x^2+30*B*b^3*d^2*e^2*x^2+36*A*a^2*b*e^4*x+18*A*a*b^2*d*e^3*x+6*A*b^3
*d^2*e^2*x+12*B*a^3*e^4*x+18*B*a^2*b*d*e^3*x+18*B*a*b^2*d^2*e^2*x+12*B*b^3*
d^3*e*x+10*A*a^3*e^4+6*A*a^2*b*d*e^3+3*A*a*b^2*d^2*e^2+A*b^3*d^3*e+2*B*a^3*
d*e^3+3*B*a^2*b*d^2*e^2+3*B*a*b^2*d^3*e+2*B*b^3*d^4)*((b*x+a)^2)^(3/2)/(e*x
+d)^6/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 577, normalized size = 2.99

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{3\,e^5}-\frac{B\,b^3\,d}{3\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,\left(d+e\,x\right)^3}-\frac{\left(\frac{A\,a^3}{6\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{6\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{6\,e}-\frac{B\,b^3\,d}{6\,e^2}\right)}{e}-\frac{a\,b\,\left(A\,b+B\,a\right)}{2\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,\left(d+e\,x\right)^6}-\frac{\left(\frac{B\,a^3\,e^3-3\,B\,a^2\,b\,d\,e^2+3\,A\,a^2\,b\,e^3+3\,B\,a\,b^2\,d^2\,e-3\,A\,a\,b^2\,d\,e^2-B\,b^3\,d^3+A\,b^3\,d^2\,e}{5\,e^5}-\frac{d\,\left(\frac{3\,B\,a^2\,b\,e^3-3\,B\,a\,b^2\,d\,e^2+3\,A\,a\,b^2\,e^3+B\,b^3\,d^2\,e-A\,b^3\,d\,e^2}{5\,e^5}-\frac{d\,\left(\frac{b^2\,\left(A\,b\,e+3\,B\,a\,e-B\,b\,d\right)}{5\,e^3}-\frac{B\,b^3\,d}{5\,e^3}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,\left(d+e\,x\right)^5}-\frac{\left(\frac{3\,B\,a^2\,b\,e^2-6\,B\,a\,b^2\,d\,e+3\,A\,a\,b^2\,e^2+3\,B\,b^3\,d^2-2\,A\,b^3\,d\,e}{4\,e^5}-\frac{d\,\left(\frac{b^2\,\left(A\,b\,e+3\,B\,a\,e-2\,B\,b\,d\right)}{4\,e^4}-\frac{B\,b^3\,d}{4\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,\left(d+e\,x\right)^4}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{2\,e^5\,\left(a+b\,x\right)\,\left(d+e\,x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^7,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(3*e^5) - (B*b^3*d)/(3*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - (((A*a^3)/(6*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(6*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(6*e) - (B*b^3*d)/(
6*e^2)))/e - (a*b*(A*b + B*a))/(2*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/
2))/((a + b*x)*(d + e*x)^6) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 + A*
b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(5*e^5) -
```

```
(d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^2*
d*e^2)/(5*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(5*e^3) - (B*b^3*d)/(5
*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (
((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d*e
)/(4*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(4*e^4) - (B*b^3*d)/(4*e^
4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (B*b^3*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*e^5*(a + b*x)*(d + e*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**7, x)
```

3.1513 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8} \, dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{4e^5(a+bx)(d+ex)^4}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{5e^5(a+bx)(d+ex)^5}+\frac{\sqrt{a^2+2a}}{}$$

Rubi [A] time = 0.22, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{4e^5(a+bx)(d+ex)^4}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{5e^5(a+bx)(d+ex)^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{6e^5(a+bx)(d+ex)^6}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{7e^5(a+bx)(d+ex)^7}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)
*(d + e*x)^7) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(6*e^5*(a + b*x)*(d + e*x)^6) - (3*b*(b*d - a*e)*(2*b*B*d -
A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)*(d + e*x)^5)
 + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(
a + b*x)*(d + e*x)^4) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b
*x)*(d + e*x)^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^8}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^8}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^7}-\right.}{b^2\left(ab+b^2x\right.}\\
&= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}+\frac{(bd-ae)^2(4bBd-3Abe-}{6e^5(a+bx}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 233, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(10a^3e^3(6Ae+B(d+7ex))+6a^2be^2\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+3ab^2e\left(4Ae\left(d^2+7dex+21e^2x^2\right)+3B\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)\right)+b^3\left(3Ae\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+4B\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)\right)}{420e^5(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -1/420*(Sqrt[(a + b*x)^2]*(10*a^3*e^3*(6*A*e + B*(d + 7*e*x)) + 6*a^2*b*e^2
*(5*A*e*(d + 7*e*x) + 2*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + 3*a*b^2*e*(4*A*e*
(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3
*x^3)) + b^3*(3*A*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*B*(d^
4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4))))/(e^5*(a + b*
x)*(d + e*x)^7)
```

IntegrateAlgebraic [F]   time = 180.02, size = 0, normalized size = 0.00

$$\text{\$Aborted}$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,
x]
```

```
[Out] $Aborted
```

fricas [A]   time = 0.41, size = 332, normalized size = 1.11

$$-\frac{140\,Bb^3e^4x^4 + 4\,Bb^3d^4 + 60\,Aa^3e^4 + 3\,(3\,Bab^2 + Ab^3)d^3e + 12\,(Ba^2b + Aab^2)d^2e^2 + 10\,(Ba^3 + 3\,Aa^2b)de^3 + 35\,(4\,Bb^3de^3 + 3\,(3\,Bab^2 + Ab^3)e^4)x^3 + 21\,(4\,Bb^3d^2e^2 + 3\,(3\,Bab^2 + Ab^3)de^3 + 12\,(Ba^2b + Aab^2)e^4)x^2 + 7\,(4\,Bb^3d^3e + 3\,(3\,Bab^2 + Ab^3)d^2e^2 + 12\,(Ba^2b + Aab^2)de^3 + 10\,(Ba^3 + 3\,Aa^2b)e^4)x}{420\,(e^{12}x^7 + 7\,de^{11}x^6 + 21\,d^2e^{10}x^5 + 35\,d^3e^9x^4 + 35\,d^4e^8x^3 + 21\,d^5e^7x^2 + 7\,d^6e^6x + d^7e^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/420*(140*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 60*A*a^3*e^4 + 3*(3*B*a*b^2 + A*b
^3)*d^3*e + 12*(B*a^2*b + A*a*b^2)*d^2*e^2 + 10*(B*a^3 + 3*A*a^2*b)*d*e^3 +
 35*(4*B*b^3*d*e^3 + 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 21*(4*B*b^3*d^2*e^2 +
 3*(3*B*a*b^2 + A*b^3)*d*e^3 + 12*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 7*(4*B*b^3
*d^3*e + 3*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 12*(B*a^2*b + A*a*b^2)*d*e^3 + 10*
(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^12*x^7 + 7*d*e^11*x^6 + 21*d^2*e^10*x^5 + 35
*d^3*e^9*x^4 + 35*d^4*e^8*x^3 + 21*d^5*e^7*x^2 + 7*d^6*e^6*x + d^7*e^5)
```

giac [A]   time = 0.23, size = 427, normalized size = 1.43

$$-\frac{(140\,Bb^3x^4e^4\mathrm{sgn}(bx+a) + 140\,Bb^3dx^3e^3\mathrm{sgn}(bx+a) + 84\,Bb^3d^2x^2e^2\mathrm{sgn}(bx+a) + 28\,Bb^3d^3xe\mathrm{sgn}(bx+a) + 4\,Bb^3d^4\mathrm{sgn}(bx+a) + 315\,Bab^2x^3e^4\mathrm{sgn}(bx+a) + 105\,Ab^3x^3e^4\mathrm{sgn}(bx+a) + 189\,Bab^2dx^2e^3\mathrm{sgn}(bx+a) + 63\,Ab^3dx^2e^3\mathrm{sgn}(bx+a) + 63\,Bab^2d^2xe^2\mathrm{sgn}(bx+a) + 21\,Ab^3d^2xe^2\mathrm{sgn}(bx+a) + 9\,Bab^2d^3e\mathrm{sgn}(bx+a) + 3\,Ab^3d^3e\mathrm{sgn}(bx+a) + 252\,Ba^2bx^2e^4\mathrm{sgn}(bx+a) + 252\,Aab^2x^2e^4\mathrm{sgn}(bx+a) + 84\,Ba^2bdxe^3\mathrm{sgn}(bx+a) + 84\,Aab^2dxe^3\mathrm{sgn}(bx+a) + 12\,Ba^2bd^2e^2\mathrm{sgn}(bx+a) + 12\,Aab^2d^2e^2\mathrm{sgn}(bx+a) + 70\,Ba^3xe^4\mathrm{sgn}(bx+a) + 210\,Aa^2bxe^4\mathrm{sgn}(bx+a) + 10\,Ba^3de^3\mathrm{sgn}(bx+a) + 30\,Aa^2bde^3\mathrm{sgn}(bx+a) + 60\,Aa^3e^4\mathrm{sgn}(bx+a))e^{(-5)}}{420\,(xe+d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/420*(140*B*b^3*x^4*e^4*sgn(b*x + a) + 140*B*b^3*d*x^3*e^3*sgn(b*x + a) +
 84*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 28*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B*b^
3*d^4*sgn(b*x + a) + 315*B*a*b^2*x^3*e^4*sgn(b*x + a) + 105*A*b^3*x^3*e^4*s
gn(b*x + a) + 189*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 63*A*b^3*d*x^2*e^3*sgn(b
*x + a) + 63*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 21*A*b^3*d^2*x*e^2*sgn(b*x +
a) + 9*B*a*b^2*d^3*e*sgn(b*x + a) + 3*A*b^3*d^3*e*sgn(b*x + a) + 252*B*a^2*
b*x^2*e^4*sgn(b*x + a) + 252*A*a*b^2*x^2*e^4*sgn(b*x + a) + 84*B*a^2*b*d*x*
e^3*sgn(b*x + a) + 84*A*a*b^2*d*x*e^3*sgn(b*x + a) + 12*B*a^2*b*d^2*e^2*sgn
(b*x + a) + 12*A*a*b^2*d^2*e^2*sgn(b*x + a) + 70*B*a^3*x*e^4*sgn(b*x + a) +
 210*A*a^2*b*x*e^4*sgn(b*x + a) + 10*B*a^3*d*e^3*sgn(b*x + a) + 30*A*a^2*b*
d*e^3*sgn(b*x + a) + 60*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^7
```

maple [A]   time = 0.07, size = 317, normalized size = 1.06

$$-\frac{(140B\,b^3e^4x^4 + 105A\,b^3e^4x^3 + 315Ba\,b^2e^4x^3 + 140B\,b^3d\,e^3x^3 + 252Aa\,b^2e^4x^2 + 63A\,b^3d\,e^3x^2 + 252B\,a^2b\,e^4x^2 + 189Ba\,b^2d\,e^3x^2 + 84B\,b^3d^2e^2x^2 + 210A\,a^2b\,e^4x + 84Aa\,b^2d\,e^3x + 21A\,b^3d^2e^2x + 70B\,a^3e^4x + 84B\,a^2bd\,e^3x + 63Ba\,b^2d^2e^2x + 28B\,b^3d^3ex + 60A\,a^3e^4 + 30A\,a^2bd\,e^3 + 12Aa\,b^2d^2e^2 + 3A\,b^3d^3e + 10B\,a^3d\,e^3 + 12B\,a^2b\,d^2e^2 + 9Ba\,b^2d^3e + 4B\,b^3d^4)\left((bx+a)^2\right)^{\frac{3}{2}}}{420\,(ex+d)^7\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x)
```

```
[Out] -1/420/e^5*(140*B*b^3*e^4*x^4+105*A*b^3*e^4*x^3+315*B*a*b^2*e^4*x^3+140*B*b
^3*d*e^3*x^3+252*A*a*b^2*e^4*x^2+63*A*b^3*d*e^3*x^2+252*B*a^2*b*e^4*x^2+189
*B*a*b^2*d*e^3*x^2+84*B*b^3*d^2*e^2*x^2+210*A*a^2*b*e^4*x+84*A*a*b^2*d*e^3*
x+21*A*b^3*d^2*e^2*x+70*B*a^3*e^4*x+84*B*a^2*b*d*e^3*x+63*B*a*b^2*d^2*e^2*x
+28*B*b^3*d^3*e*x+60*A*a^3*e^4+30*A*a^2*b*d*e^3+12*A*a*b^2*d^2*e^2+3*A*b^3*
d^3*e+10*B*a^3*d*e^3+12*B*a^2*b*d^2*e^2+9*B*a*b^2*d^3*e+4*B*b^3*d^4)*((b*x+
a)^2)^(3/2)/(e*x+d)^7/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.22, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{4\,e^5}-\frac{B\,b^3\,d}{4\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}-\frac{\left(\frac{A\,a^3}{7\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{7\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{7\,e}-\frac{B\,b^3\,d}{7\,e^2}\right)}{e}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)}{7\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^7}-\frac{\left(\frac{B\,a^3\,e^3-3\,B\,a^2\,b\,d\,e^2+3\,A\,a^2\,b\,e^3+3\,B\,a\,b^2\,d^2\,e-3\,A\,a\,b^2\,d\,e^2-B\,b^3\,d^3+A\,b^3\,d^2\,e}{6\,e^5}-\frac{d\,\left(\frac{3\,B\,a^2\,b\,e^3-3\,B\,a\,b^2\,d\,e^2+3\,A\,a\,b^2\,e^3+B\,b^3\,d^2\,e-A\,b^3\,d\,e^2}{6\,e^5}-\frac{d\,\left(\frac{b^2\,\left(A\,b\,e+3\,B\,a\,e-B\,b\,d\right)}{6\,e^3}-\frac{B\,b^3\,d}{6\,e^3}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^6}-\frac{\left(\frac{3\,B\,a^2\,b\,e^2-6\,B\,a\,b^2\,d\,e+3\,A\,a\,b^2\,e^2+3\,B\,b^3\,d^2-2\,A\,b^3\,d\,e}{5\,e^5}-\frac{d\,\left(\frac{b^2\,\left(A\,b\,e+3\,B\,a\,e-2\,B\,b\,d\right)}{5\,e^4}-\frac{B\,b^3\,d}{5\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,e^5\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^8,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(4*e^5) - (B*b^3*d)/(4*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (((A*a^3)/(7*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(7*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(7*e) - (B*b^3*d)/(
7*e^2)))/e - (3*a*b*(A*b + B*a))/(7*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/((a + b*x)*(d + e*x)^7) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 +
A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(6*e^5)
- (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^
2*d*e^2)/(6*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(6*e^3) - (B*b^3*d)/
(6*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) -
 (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d
*e)/(5*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(5*e^4) - (B*b^3*d)/(5*
e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (B*b^3
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*e^5*(a + b*x)*(d + e*x)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1514 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{5e^5(a+bx)(d+ex)^5}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{2e^5(a+bx)(d+ex)^6}+\frac{\sqrt{a^2+2abx+}}{}$$

Rubi [A] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{5e^5(a+bx)(d+ex)^5}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{2e^5(a+bx)(d+ex)^6}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{7e^5(a+bx)(d+ex)^7}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{8e^5(a+bx)(d+ex)^8}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{4e^5(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x)
*(d + e*x)^8) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(7*e^5*(a + b*x)*(d + e*x)^7) - (b*(b*d - a*e)*(2*b*B*d - A*
b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(d + e*x)^6) +
 (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a
+ b*x)*(d + e*x)^5) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a + b*x
)*(d + e*x)^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^9}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^9}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^8}-\frac{3b^4}{}\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{8e^5(a+bx)(d+ex)^8}+\frac{(bd-ae)^2(4bBd-3Abe-aB}{7e^5(a+bx)(d}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 229, normalized size = 0.77

$$-\frac{\sqrt{(a+bx)^2}\left(5a^3e^3(7Ae+B(d+8ex))+5a^2be^2\left(3Ae(d+8ex)+B\left(d^2+8dex+28e^2x^2\right)\right)+ab^2e\left(5Ae\left(d^2+8dex+28e^2x^2\right)+3B\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)\right)+b^3\left(Ae\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+B\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)\right)}{280e^5(a+bx)(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -1/280*(Sqrt[(a + b*x)^2]*(5*a^3*e^3*(7*A*e + B*(d + 8*e*x)) + 5*a^2*b*e^2*
(3*A*e*(d + 8*e*x) + B*(d^2 + 8*d*e*x + 28*e^2*x^2)) + a*b^2*e*(5*A*e*(d^2
+ 8*d*e*x + 28*e^2*x^2) + 3*B*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)
) + b^3*(A*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + B*(d^4 + 8*d^3
*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4))))/(e^5*(a + b*x)*(d + e
*x)^8)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,
x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 335, normalized size = 1.12

$$-\frac{70 \, B b^{3} e^{4} x^{4} + B b^{3} d^{4} + 35 \, A a^{3} e^{4} + {\left(3 \, B a b^{2} + A b^{3}\right)} d^{3} e + 5 \, {\left(B a^{2} b + A a b^{2}\right)} d^{2} e^{2} + 5 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} d e^{3} + 56 \, {\left(B b^{3} d e^{3} + {\left(3 \, B a b^{2} + A b^{3}\right)} e^{4}\right)} x^{3} + 28 \, {\left(B b^{3} d^{2} e^{2} + {\left(3 \, B a b^{2} + A b^{3}\right)} d e^{3} + 5 \, {\left(B a^{2} b + A a b^{2}\right)} e^{4}\right)} x^{2} + 8 \, {\left(B b^{3} d^{3} e + {\left(3 \, B a b^{2} + A b^{3}\right)} d^{2} e^{2} + 5 \, {\left(B a^{2} b + A a b^{2}\right)} d e^{3} + 5 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} e^{4}\right)} x}{280 \, {\left(e^{13} x^{8} + 8 \, d e^{12} x^{7} + 28 \, d^{2} e^{11} x^{6} + 56 \, d^{3} e^{10} x^{5} + 70 \, d^{4} e^{9} x^{4} + 56 \, d^{5} e^{8} x^{3} + 28 \, d^{6} e^{7} x^{2} + 8 \, d^{7} e^{6} x + d^{8} e^{5}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/280*(70*B*b^3*e^4*x^4 + B*b^3*d^4 + 35*A*a^3*e^4 + (3*B*a*b^2 + A*b^3)*d
^3*e + 5*(B*a^2*b + A*a*b^2)*d^2*e^2 + 5*(B*a^3 + 3*A*a^2*b)*d*e^3 + 56*(B*
b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 28*(B*b^3*d^2*e^2 + (3*B*a*b^2 +
 A*b^3)*d*e^3 + 5*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 8*(B*b^3*d^3*e + (3*B*a*b^
2 + A*b^3)*d^2*e^2 + 5*(B*a^2*b + A*a*b^2)*d*e^3 + 5*(B*a^3 + 3*A*a^2*b)*e^
4)*x)/(e^13*x^8 + 8*d*e^12*x^7 + 28*d^2*e^11*x^6 + 56*d^3*e^10*x^5 + 70*d^4
*e^9*x^4 + 56*d^5*e^8*x^3 + 28*d^6*e^7*x^2 + 8*d^7*e^6*x + d^8*e^5)
```

giac [A] time = 0.19, size = 425, normalized size = 1.43

$$-\frac{{\left(70 \, B b^{3} x^{4} e^{4} \mathrm{sgn}\left(b x + a\right) + 56 \, B b^{3} d x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 28 \, B b^{3} d^{2} x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 8 \, B b^{3} d^{3} x e \mathrm{sgn}\left(b x + a\right) + B b^{3} d^{4} \mathrm{sgn}\left(b x + a\right) + 168 \, B a b^{2} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 56 \, A b^{3} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 84 \, B a b^{2} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 28 \, A b^{3} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 24 \, B a b^{2} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 8 \, A b^{3} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 3 \, B a b^{2} d^{3} e \mathrm{sgn}\left(b x + a\right) + A b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) + 140 \, B a^{2} b x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 140 \, A a b^{2} x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 40 \, B a^{2} b d x e^{3} \mathrm{sgn}\left(b x + a\right) + 40 \, A a b^{2} d x e^{3} \mathrm{sgn}\left(b x + a\right) + 5 \, B a^{2} b d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 5 \, A a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 40 \, B a^{3} x e^{4} \mathrm{sgn}\left(b x + a\right) + 120 \, A a^{2} b x e^{4} \mathrm{sgn}\left(b x + a\right) + 5 \, B a^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) + 15 \, A a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + 35 \, A a^{3} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-5\right)}}{280 \, {\left(x e + d\right)}^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/280*(70*B*b^3*x^4*e^4*sgn(b*x + a) + 56*B*b^3*d*x^3*e^3*sgn(b*x + a) + 2
8*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 8*B*b^3*d^3*x*e*sgn(b*x + a) + B*b^3*d^4
*sgn(b*x + a) + 168*B*a*b^2*x^3*e^4*sgn(b*x + a) + 56*A*b^3*x^3*e^4*sgn(b*x
 + a) + 84*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 28*A*b^3*d*x^2*e^3*sgn(b*x + a)
 + 24*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 8*A*b^3*d^2*x*e^2*sgn(b*x + a) + 3*B
*a*b^2*d^3*e*sgn(b*x + a) + A*b^3*d^3*e*sgn(b*x + a) + 140*B*a^2*b*x^2*e^4*
sgn(b*x + a) + 140*A*a*b^2*x^2*e^4*sgn(b*x + a) + 40*B*a^2*b*d*x*e^3*sgn(b*
x + a) + 40*A*a*b^2*d*x*e^3*sgn(b*x + a) + 5*B*a^2*b*d^2*e^2*sgn(b*x + a) +
 5*A*a*b^2*d^2*e^2*sgn(b*x + a) + 40*B*a^3*x*e^4*sgn(b*x + a) + 120*A*a^2*b
*x*e^4*sgn(b*x + a) + 5*B*a^3*d*e^3*sgn(b*x + a) + 15*A*a^2*b*d*e^3*sgn(b*x
 + a) + 35*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^8
```

maple [A] time = 0.06, size = 315, normalized size = 1.06

$$-\frac{\left(70 B \,b^{3} e^{4} x^{4}+56 A \,b^{3} e^{4} x^{3}+168 B a \,b^{2} e^{4} x^{3}+56 B \,b^{3} d \,e^{3} x^{3}+140 A a \,b^{2} e^{4} x^{2}+28 A \,b^{3} d \,e^{3} x^{2}+140 B \,a^{2} b \,e^{4} x^{2}+84 B a \,b^{2} d \,e^{3} x^{2}+28 B \,b^{3} d^{2} e^{2} x^{2}+120 A \,a^{2} b \,e^{4} x +40 A a \,b^{2} d \,e^{3} x +8 A \,b^{3} d^{2} e^{2} x +40 B \,a^{3} e^{4} x +40 B \,a^{2} b d \,e^{3} x +24 B a \,b^{2} d^{2} e^{2} x +8 B \,b^{3} d^{3} e x +35 A \,a^{3} e^{4}+15 A \,a^{2} b d \,e^{3}+5 A a \,b^{2} d^{2} e^{2}+A \,b^{3} d^{3} e +5 B \,a^{3} d \,e^{3}+5 B \,a^{2} b \,d^{2} e^{2}+3 B a \,b^{2} d^{3} e +B \,b^{3} d^{4}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}}}{280 \left(e x +d \right)^{8} \left(b x +a \right)^{3} e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x)
```

```
[Out] -1/280/e^5*(70*B*b^3*e^4*x^4+56*A*b^3*e^4*x^3+168*B*a*b^2*e^4*x^3+56*B*b^3*
d*e^3*x^3+140*A*a*b^2*e^4*x^2+28*A*b^3*d*e^3*x^2+140*B*a^2*b*e^4*x^2+84*B*a
*b^2*d*e^3*x^2+28*B*b^3*d^2*e^2*x^2+120*A*a^2*b*e^4*x+40*A*a*b^2*d*e^3*x+8*
A*b^3*d^2*e^2*x+40*B*a^3*e^4*x+40*B*a^2*b*d*e^3*x+24*B*a*b^2*d^2*e^2*x+8*B*
b^3*d^3*e*x+35*A*a^3*e^4+15*A*a^2*b*d*e^3+5*A*a*b^2*d^2*e^2+A*b^3*d^3*e+5*B
*a^3*d*e^3+5*B*a^2*b*d^2*e^2+3*B*a*b^2*d^3*e+B*b^3*d^4)*((b*x+a)^2)^(3/2)/(
e*x+d)^8/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.27, size = 577, normalized size = 1.94

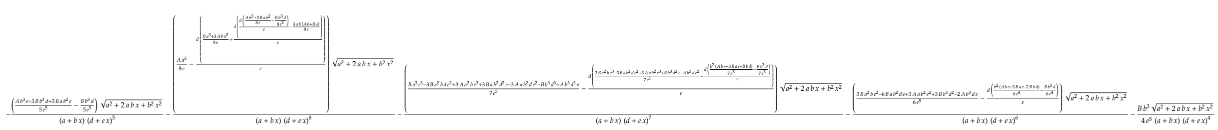

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^9,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(5*e^5) - (B*b^3*d)/(5*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((A*a^3)/(8*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(8*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(8*e) - (B*b^3*d)/(
8*e^2)))/e - (3*a*b*(A*b + B*a))/(8*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/((a + b*x)*(d + e*x)^8) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 +
A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(7*e^5)
- (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^
2*d*e^2)/(7*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(7*e^3) - (B*b^3*d)/
(7*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) -
 (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d
*e)/(6*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(6*e^4) - (B*b^3*d)/(6*
e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (B*b^3
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^5*(a + b*x)*(d + e*x)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1515 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{6e^5(a+bx)(d+ex)^6}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{7e^5(a+bx)(d+ex)^7}+\frac{\sqrt{a^2+2a}}{}$$

Rubi [A] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{6e^5(a+bx)(d+ex)^6}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{7e^5(a+bx)(d+ex)^7}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{8e^5(a+bx)(d+ex)^8}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{9e^5(a+bx)(d+ex)^9}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)
*(d + e*x)^9) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(8*e^5*(a + b*x)*(d + e*x)^8) - (3*b*(b*d - a*e)*(2*b*B*d -
A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)*(d + e*x)^7)
 + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(
a + b*x)*(d + e*x)^6) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b
*x)*(d + e*x)^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{10}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{10}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^9}-\right.}{b^2\left(ab+b^2x\right.}$$

$$= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^9}+\frac{(bd-ae)^2(4bBd-3Abe-}{8e^5(a+bx}$$

Mathematica [A] time = 0.11, size = 232, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(35a^3e^3(8Ae+B(d+9ex))+15a^2be^2\left(7Ae(d+9ex)+2B\left(d^2+9dex+36e^2x^2\right)\right)+15ab^2e\left(2Ae\left(d^2+9dex+36e^2x^2\right)+B\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)\right)+b^3\left(5Ae\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)+4B\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)\right)\right)}{2520e^5(a+bx)(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(35*a^3*e^3*(8*A*e + B*(d + 9*e*x)) + 15*a^2*b*e
^2*(7*A*e*(d + 9*e*x) + 2*B*(d^2 + 9*d*e*x + 36*e^2*x^2)) + 15*a*b^2*e*(2*A
*e*(d^2 + 9*d*e*x + 36*e^2*x^2) + B*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^
3*x^3)) + b^3*(5*A*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 4*B*(d
^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4))))/(e^5*(a +
b*x)*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 180.21, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 354, normalized size = 1.19

$$-\frac{504 \, B b^{3} e^{4} x^{4} + 4 \, B b^{3} d^{4} + 280 \, A a^{3} e^{4} + 5 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d^{3} e + 30 \, {\left(B a^{2} b + A a b^{2}\right)} d^{2} e^{2} + 35 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} d e^{3} + 84 \, {\left(4 \, B b^{3} d e^{3} + 5 \, {\left(3 \, B a b^{2} + A b^{3}\right)} e^{4}\right)} x^{3} + 36 \, {\left(4 \, B b^{3} d^{2} e^{2} + 5 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d e^{3} + 30 \, {\left(B a^{2} b + A a b^{2}\right)} e^{4}\right)} x^{2} + 9 \, {\left(4 \, B b^{3} d^{3} e + 5 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d^{2} e^{2} + 30 \, {\left(B a^{2} b + A a b^{2}\right)} d e^{3} + 35 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} e^{4}\right)} x}{2520 \, {\left(e^{14} x^{9} + 9 \, d e^{13} x^{8} + 36 \, d^{2} e^{12} x^{7} + 84 \, d^{3} e^{11} x^{6} + 126 \, d^{4} e^{10} x^{5} + 126 \, d^{5} e^{9} x^{4} + 84 \, d^{6} e^{8} x^{3} + 36 \, d^{7} e^{7} x^{2} + 9 \, d^{8} e^{6} x + d^{9} e^{5}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/2520*(504*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 280*A*a^3*e^4 + 5*(3*B*a*b^2 + A
*b^3)*d^3*e + 30*(B*a^2*b + A*a*b^2)*d^2*e^2 + 35*(B*a^3 + 3*A*a^2*b)*d*e^3
 + 84*(4*B*b^3*d*e^3 + 5*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 36*(4*B*b^3*d^2*e^2
 + 5*(3*B*a*b^2 + A*b^3)*d*e^3 + 30*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 9*(4*B*b
^3*d^3*e + 5*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 30*(B*a^2*b + A*a*b^2)*d*e^3 + 3
5*(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^14*x^9 + 9*d*e^13*x^8 + 36*d^2*e^12*x^7 +
84*d^3*e^11*x^6 + 126*d^4*e^10*x^5 + 126*d^5*e^9*x^4 + 84*d^6*e^8*x^3 + 36*
d^7*e^7*x^2 + 9*d^8*e^6*x + d^9*e^5)
```

giac [A] time = 0.19, size = 427, normalized size = 1.43

$$-\frac{{\left(504 \, B b^{3} x^{4} e^{4} \mathrm{sgn}\left(b x + a\right) + 336 \, B b^{3} d x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 144 \, B b^{3} d^{2} x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 36 \, B b^{3} d^{3} x e \mathrm{sgn}\left(b x + a\right) + 4 \, B b^{3} d^{4} \mathrm{sgn}\left(b x + a\right) + 1260 \, B a b^{2} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 420 \, A b^{3} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 540 \, B a b^{2} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 180 \, A b^{3} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 135 \, B a b^{2} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 45 \, A b^{3} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 15 \, B a b^{2} d^{3} e \mathrm{sgn}\left(b x + a\right) + 5 \, A b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) + 1080 \, B a^{2} b x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 1080 \, A a b^{2} x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 270 \, B a^{2} b d x e^{3} \mathrm{sgn}\left(b x + a\right) + 270 \, A a b^{2} d x e^{3} \mathrm{sgn}\left(b x + a\right) + 30 \, B a^{2} b d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 30 \, A a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 315 \, B a^{3} x e^{4} \mathrm{sgn}\left(b x + a\right) + 945 \, A a^{2} b x e^{4} \mathrm{sgn}\left(b x + a\right) + 35 \, B a^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) + 105 \, A a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + 280 \, A a^{3} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-5\right)}}{2520 \, {\left(x e + d\right)}^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/2520*(504*B*b^3*x^4*e^4*sgn(b*x + a) + 336*B*b^3*d*x^3*e^3*sgn(b*x + a)
+ 144*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 36*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B*
b^3*d^4*sgn(b*x + a) + 1260*B*a*b^2*x^3*e^4*sgn(b*x + a) + 420*A*b^3*x^3*e^
4*sgn(b*x + a) + 540*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 180*A*b^3*d*x^2*e^3*s
gn(b*x + a) + 135*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 45*A*b^3*d^2*x*e^2*sgn(b
*x + a) + 15*B*a*b^2*d^3*e*sgn(b*x + a) + 5*A*b^3*d^3*e*sgn(b*x + a) + 1080
*B*a^2*b*x^2*e^4*sgn(b*x + a) + 1080*A*a*b^2*x^2*e^4*sgn(b*x + a) + 270*B*a
^2*b*d*x*e^3*sgn(b*x + a) + 270*A*a*b^2*d*x*e^3*sgn(b*x + a) + 30*B*a^2*b*d
^2*e^2*sgn(b*x + a) + 30*A*a*b^2*d^2*e^2*sgn(b*x + a) + 315*B*a^3*x*e^4*sgn
(b*x + a) + 945*A*a^2*b*x*e^4*sgn(b*x + a) + 35*B*a^3*d*e^3*sgn(b*x + a) +
105*A*a^2*b*d*e^3*sgn(b*x + a) + 280*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e +
d)^9
```

maple [A] time = 0.06, size = 317, normalized size = 1.06

$$-\frac{\left(504 B b^{3} e^{4} x^{4}+420 A b^{3} e^{4} x^{3}+1260 B a b^{2} e^{4} x^{3}+336 B b^{3} d e^{3} x^{3}+1080 A a b^{2} e^{4} x^{2}+180 A b^{3} d e^{3} x^{2}+1080 B a^{2} b e^{4} x^{2}+540 B a b^{2} d e^{3} x^{2}+144 B b^{3} d^{2} e^{2} x^{2}+945 A a^{2} b e^{4} x+270 A a b^{2} d e^{3} x+45 A b^{3} d^{2} e^{2} x+315 B a^{3} e^{4} x+270 B a^{2} b d e^{3} x+135 B a b^{2} d^{2} e^{2} x+36 B b^{3} d^{3} e x+280 A a^{3} e^{4}+105 A a^{2} b d e^{3}+30 A a b^{2} d^{2} e^{2}+5 A b^{3} d^{3} e+35 B a^{3} d e^{3}+30 B a^{2} b d^{2} e^{2}+15 B a b^{2} d^{3} e+4 B b^{3} d^{4}\right)\left((b x+a)^{2}\right)^{\frac{3}{2}}}{2520 (e x+d)^{9} (b x+a)^{3} e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x)
```

```
[Out] -1/2520/e^5*(504*B*b^3*e^4*x^4+420*A*b^3*e^4*x^3+1260*B*a*b^2*e^4*x^3+336*B
*b^3*d*e^3*x^3+1080*A*a*b^2*e^4*x^2+180*A*b^3*d*e^3*x^2+1080*B*a^2*b*e^4*x^
2+540*B*a*b^2*d*e^3*x^2+144*B*b^3*d^2*e^2*x^2+945*A*a^2*b*e^4*x+270*A*a*b^2
*d*e^3*x+45*A*b^3*d^2*e^2*x+315*B*a^3*e^4*x+270*B*a^2*b*d*e^3*x+135*B*a*b^2
*d^2*e^2*x+36*B*b^3*d^3*e*x+280*A*a^3*e^4+105*A*a^2*b*d*e^3+30*A*a*b^2*d^2*
e^2+5*A*b^3*d^3*e+35*B*a^3*d*e^3+30*B*a^2*b*d^2*e^2+15*B*a*b^2*d^3*e+4*B*b^
3*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^9/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.58, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A b^{3} e-3 B b^{3} d+3 B a b^{2} e}{6 e^{5}}-\frac{B b^{3} d}{6 e^{5}}\right)\sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{(a+b x)(d+e x)^{6}}-\frac{\left(\frac{A a^{3}}{9 e}-\frac{d\left(\frac{B a^{3}+3 A b a^{2}}{9 e}+\frac{d\left(\frac{d\left(\frac{A b^{3}+3 B a b^{2}}{9 e}-\frac{B b^{3} d}{9 e^{2}}\right)}{e}-\frac{a b (A b+B a)}{3 e}\right)}{e}\right)}{e}\right)\sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{(a+b x)(d+e x)^{9}}-\frac{\left(\frac{B a^{3} e^{3}-3 B a^{2} b d e^{2}+3 A a^{2} b e^{3}+3 B a b^{2} d^{2} e-3 A a b^{2} d e^{2}-B b^{3} d^{3}+A b^{3} d^{2} e}{8 e^{5}}-\frac{d\left(\frac{3 B a^{2} b e^{3}-3 B a b^{2} d e^{2}+3 A a b^{2} e^{3}+B b^{3} d^{2} e-A b^{3} d e^{2}}{8 e^{5}}-\frac{d\left(\frac{b^{2}(A b e+3 B a e-B b d)}{8 e^{3}}-\frac{B b^{3} d}{8 e^{3}}\right)}{e}\right)}{e}\right)\sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{(a+b x)(d+e x)^{8}}-\frac{\left(\frac{3 B a^{2} b e^{2}-6 B a b^{2} d e+3 A a b^{2} e^{2}+3 B b^{3} d^{2}-2 A b^{3} d e}{7 e^{5}}-\frac{d\left(\frac{b^{2}(A b e+3 B a e-2 B b d)}{7 e^{4}}-\frac{B b^{3} d}{7 e^{4}}\right)}{e}\right)\sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{(a+b x)(d+e x)^{7}}-\frac{B b^{3}\sqrt{a^{2}+2 a b x+b^{2} x^{2}}}{5 e^{5}(a+b x)(d+e x)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^10,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(6*e^5) - (B*b^3*d)/(6*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((A*a^3)/(9*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(9*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(9*e) - (B*b^3*d)/(
9*e^2)))/e - (a*b*(A*b + B*a))/(3*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/
2))/((a + b*x)*(d + e*x)^9) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 + A*
b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(8*e^5) -
(d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^2*
d*e^2)/(8*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(8*e^3) - (B*b^3*d)/(8
*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (
((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d*e
)/(7*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(7*e^4) - (B*b^3*d)/(7*e^
4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (B*b^3*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*e^5*(a + b*x)*(d + e*x)^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1516 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{7e^5(a+bx)(d+ex)^7}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{8e^5(a+bx)(d+ex)^8}+\frac{\sqrt{a^2+2abx}}{}$$

Rubi [A] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{7e^5(a+bx)(d+ex)^7}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{8e^5(a+bx)(d+ex)^8}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{9e^5(a+bx)(d+ex)^9}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{10e^5(a+bx)(d+ex)^{10}}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^5*(a + b*x
)*(d + e*x)^10) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d + e*x)^9) - (3*b*(b*d - a*e)*(2*b*B*d
- A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x)*(d + e*x)^
8) + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5
*(a + b*x)*(d + e*x)^7) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a +
 b*x)*(d + e*x)^6)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{11}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{11}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{10}}-\frac{3b^4}{}\right.}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{10e^5(a+bx)(d+ex)^{10}}+\frac{(bd-ae)^2(4bBd-3Abe-aB}{9e^5(a+bx)(d}$$

Mathematica [A] time = 0.10, size = 232, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(28a^3e^3(9Ae+B(d+10ex))+21a^2be^2\left(4Ae(d+10ex)+B\left(d^2+10dex+45e^2x^2\right)\right)+3ab^2e\left(7Ae\left(d^2+10dex+45e^2x^2\right)+3B\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)\right)+b^3\left(3Ae\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)+2B\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)\right)\right)}{2520e^5(a+bx)(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(28*a^3*e^3*(9*A*e + B*(d + 10*e*x)) + 21*a^2*b*
e^2*(4*A*e*(d + 10*e*x) + B*(d^2 + 10*d*e*x + 45*e^2*x^2)) + 3*a*b^2*e*(7*A
*e*(d^2 + 10*d*e*x + 45*e^2*x^2) + 3*B*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 1
20*e^3*x^3)) + b^3*(3*A*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) +
 2*B*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4))))/(
e^5*(a + b*x)*(d + e*x)^10)
```

IntegrateAlgebraic [F] time = 180.07, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.43, size = 365, normalized size = 1.22

$$-\frac{420 \, B b^{3} e^{4} x^{4} + 2 \, B b^{3} d^{4} + 252 \, A a^{3} e^{4} + 3 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d^{3} e + 21 \, {\left(B a^{2} b + A a b^{2}\right)} d^{2} e^{2} + 28 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} d e^{3} + 120 \, {\left(2 \, B b^{3} d e^{3} + 3 \, {\left(3 \, B a b^{2} + A b^{3}\right)} e^{4}\right)} x^{3} + 45 \, {\left(2 \, B b^{3} d^{2} e^{2} + 3 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d e^{3} + 21 \, {\left(B a^{2} b + A a b^{2}\right)} e^{4}\right)} x^{2} + 10 \, {\left(2 \, B b^{3} d^{3} e + 3 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d^{2} e^{2} + 21 \, {\left(B a^{2} b + A a b^{2}\right)} d e^{3} + 28 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} e^{4}\right)} x}{2520 \, {\left(e^{15} x^{10} + 10 \, d e^{14} x^{9} + 45 \, d^{2} e^{13} x^{8} + 120 \, d^{3} e^{12} x^{7} + 210 \, d^{4} e^{11} x^{6} + 252 \, d^{5} e^{10} x^{5} + 210 \, d^{6} e^{9} x^{4} + 120 \, d^{7} e^{8} x^{3} + 45 \, d^{8} e^{7} x^{2} + 10 \, d^{9} e^{6} x + d^{10} e^{5}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/2520*(420*B*b^3*e^4*x^4 + 2*B*b^3*d^4 + 252*A*a^3*e^4 + 3*(3*B*a*b^2 + A
*b^3)*d^3*e + 21*(B*a^2*b + A*a*b^2)*d^2*e^2 + 28*(B*a^3 + 3*A*a^2*b)*d*e^3
 + 120*(2*B*b^3*d*e^3 + 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 45*(2*B*b^3*d^2*e^
2 + 3*(3*B*a*b^2 + A*b^3)*d*e^3 + 21*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 10*(2*B
*b^3*d^3*e + 3*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 21*(B*a^2*b + A*a*b^2)*d*e^3 +
 28*(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^15*x^10 + 10*d*e^14*x^9 + 45*d^2*e^13*x^
8 + 120*d^3*e^12*x^7 + 210*d^4*e^11*x^6 + 252*d^5*e^10*x^5 + 210*d^6*e^9*x^
4 + 120*d^7*e^8*x^3 + 45*d^8*e^7*x^2 + 10*d^9*e^6*x + d^10*e^5)
```

giac [A] time = 0.24, size = 427, normalized size = 1.43

$$-\frac{{\left(420 \, B b^{3} x^{4} e^{4} \mathrm{sgn}\left(b x + a\right) + 240 \, B b^{3} d x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 90 \, B b^{3} d^{2} x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 20 \, B b^{3} d^{3} x e \mathrm{sgn}\left(b x + a\right) + 2 \, B b^{3} d^{4} \mathrm{sgn}\left(b x + a\right) + 1080 \, B a b^{2} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 360 \, A b^{3} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 405 \, B a b^{2} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 135 \, A b^{3} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 90 \, B a b^{2} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 30 \, A b^{3} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 9 \, B a b^{2} d^{3} e \mathrm{sgn}\left(b x + a\right) + 3 \, A b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) + 945 \, B a^{2} b x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 945 \, A a b^{2} x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 210 \, B a^{2} b d x e^{3} \mathrm{sgn}\left(b x + a\right) + 210 \, A a b^{2} d x e^{3} \mathrm{sgn}\left(b x + a\right) + 21 \, B a^{2} b d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 21 \, A a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 280 \, B a^{3} x e^{4} \mathrm{sgn}\left(b x + a\right) + 840 \, A a^{2} b x e^{4} \mathrm{sgn}\left(b x + a\right) + 28 \, B a^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) + 84 \, A a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + 252 \, A a^{3} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-5\right)}}{2520 \, {\left(x e + d\right)}^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/2520*(420*B*b^3*x^4*e^4*sgn(b*x + a) + 240*B*b^3*d*x^3*e^3*sgn(b*x + a)
+ 90*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 20*B*b^3*d^3*x*e*sgn(b*x + a) + 2*B*b
^3*d^4*sgn(b*x + a) + 1080*B*a*b^2*x^3*e^4*sgn(b*x + a) + 360*A*b^3*x^3*e^4
*sgn(b*x + a) + 405*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 135*A*b^3*d*x^2*e^3*sg
n(b*x + a) + 90*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 30*A*b^3*d^2*x*e^2*sgn(b*x
 + a) + 9*B*a*b^2*d^3*e*sgn(b*x + a) + 3*A*b^3*d^3*e*sgn(b*x + a) + 945*B*a
^2*b*x^2*e^4*sgn(b*x + a) + 945*A*a*b^2*x^2*e^4*sgn(b*x + a) + 210*B*a^2*b*
d*x*e^3*sgn(b*x + a) + 210*A*a*b^2*d*x*e^3*sgn(b*x + a) + 21*B*a^2*b*d^2*e^
2*sgn(b*x + a) + 21*A*a*b^2*d^2*e^2*sgn(b*x + a) + 280*B*a^3*x*e^4*sgn(b*x
+ a) + 840*A*a^2*b*x*e^4*sgn(b*x + a) + 28*B*a^3*d*e^3*sgn(b*x + a) + 84*A*
a^2*b*d*e^3*sgn(b*x + a) + 252*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^10
```

maple [A] time = 0.05, size = 317, normalized size = 1.06

$$-\frac{\left(420 B \,b^{3} e^{4} x^{4}+360 A \,b^{3} e^{4} x^{3}+1080 B a \,b^{2} e^{4} x^{3}+240 B \,b^{3} d \,e^{3} x^{3}+945 A a \,b^{2} e^{4} x^{2}+135 A \,b^{3} d \,e^{3} x^{2}+945 B \,a^{2} b \,e^{4} x^{2}+405 B a \,b^{2} d \,e^{3} x^{2}+90 B \,b^{3} d^{2} e^{2} x^{2}+840 A \,a^{2} b \,e^{4} x +210 A a \,b^{2} d \,e^{3} x +30 A \,b^{3} d^{2} e^{2} x +280 B \,a^{3} e^{4} x +210 B \,a^{2} b d \,e^{3} x +90 B a \,b^{2} d^{2} e^{2} x +20 B \,b^{3} d^{3} e x +252 A \,a^{3} e^{4}+84 A \,a^{2} b d \,e^{3}+21 A a \,b^{2} d^{2} e^{2}+3 A \,b^{3} d^{3} e +28 B \,a^{3} d \,e^{3}+21 B \,a^{2} b \,d^{2} e^{2}+9 B a \,b^{2} d^{3} e +2 B \,b^{3} d^{4}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}}}{2520 \left(e x +d \right)^{10} \left(b x +a \right)^{3} e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x)
```

```
[Out] -1/2520/e^5*(420*B*b^3*e^4*x^4+360*A*b^3*e^4*x^3+1080*B*a*b^2*e^4*x^3+240*B
*b^3*d*e^3*x^3+945*A*a*b^2*e^4*x^2+135*A*b^3*d*e^3*x^2+945*B*a^2*b*e^4*x^2+
405*B*a*b^2*d*e^3*x^2+90*B*b^3*d^2*e^2*x^2+840*A*a^2*b*e^4*x+210*A*a*b^2*d*
e^3*x+30*A*b^3*d^2*e^2*x+280*B*a^3*e^4*x+210*B*a^2*b*d*e^3*x+90*B*a*b^2*d^2
*e^2*x+20*B*b^3*d^3*e*x+252*A*a^3*e^4+84*A*a^2*b*d*e^3+21*A*a*b^2*d^2*e^2+3
*A*b^3*d^3*e+28*B*a^3*d*e^3+21*B*a^2*b*d^2*e^2+9*B*a*b^2*d^3*e+2*B*b^3*d^4)
*((b*x+a)^2)^(3/2)/(e*x+d)^10/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.39, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A b^3 e-3 B b^3 d+3 B a b^2 e}{7 e^5}-\frac{B b^3 d}{7 e^5}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)\,(d+e x)^7}-\frac{\left(\frac{A a^3}{10 e}-\frac{d\left(\frac{B a^3+3 A b a^2}{10 e}+\frac{d\left(\frac{d\left(\frac{A b^3+3 B a b^2}{10 e}-\frac{B b^3 d}{10 e^2}\right)}{e}-\frac{3 a b (A b+B a)}{10 e}\right)}{e}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)\,(d+e x)^{10}}-\frac{\left(\frac{B a^3 e^3-3 B a^2 b d e^2+3 A a^2 b e^3+3 B a b^2 d^2 e-3 A a b^2 d e^2-B b^3 d^3+A b^3 d^2 e}{9 e^5}-\frac{d\left(\frac{3 B a^2 b e^3-3 B a b^2 d e^2+3 A a b^2 e^3+B b^3 d^2 e-A b^3 d e^2}{9 e^5}-\frac{d\left(\frac{b^2 (A b e+3 B a e-B b d)}{9 e^3}-\frac{B b^3 d}{9 e^3}\right)}{e}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)\,(d+e x)^9}-\frac{\left(\frac{3 B a^2 b e^2-6 B a b^2 d e+3 A a b^2 e^2+3 B b^3 d^2-2 A b^3 d e}{8 e^5}-\frac{d\left(\frac{b^2 (A b e+3 B a e-2 B b d)}{8 e^4}-\frac{B b^3 d}{8 e^4}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)\,(d+e x)^8}-\frac{B b^3 \sqrt{a^2+2 a b x+b^2 x^2}}{6 e^5 (a+b x)\,(d+e x)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^11,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(7*e^5) - (B*b^3*d)/(7*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((A*a^3)/(10*e) - (d*
((B*a^3 + 3*A*a^2*b)/(10*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(10*e) - (B*b^3*d
)/(10*e^2)))/e - (3*a*b*(A*b + B*a))/(10*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*
e^3 + A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(9
*e^5) - (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*
B*a*b^2*d*e^2)/(9*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(9*e^3) - (B*b
^3*d)/(9*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x
)^9) - (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a
*b^2*d*e)/(8*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(8*e^4) - (B*b^3*
d)/(8*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) -
(B*b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*e^5*(a + b*x)*(d + e*x)^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1517 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{8e^5(a+bx)(d+ex)^8}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{3e^5(a+bx)(d+ex)^9}+\frac{\sqrt{a^2+2ab}}{}$$

Rubi [A] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{8e^5(a+bx)(d+ex)^8}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{3e^5(a+bx)(d+ex)^9}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{10e^5(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{11e^5(a+bx)(d+ex)^{11}}-\frac{b^3B\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x
)*(d + e*x)^11) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(10*e^5*(a + b*x)*(d + e*x)^10) - (b*(b*d - a*e)*(2*b*B*d
- A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^
9) + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5
*(a + b*x)*(d + e*x)^8) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a +
 b*x)*(d + e*x)^7)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{12}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{12}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{11}}-\right.}{b^2\left(ab+b^2x\right.}\\ &= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{11e^5(a+bx)(d+ex)^{11}}+\frac{(bd-ae)^2(4bBd-3Abe-}{10e^5(a+bx}\end{aligned}$$

Mathematica [A] time = 0.11, size = 233, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(84a^3e^3(10Ae+B(d+11ex))+28a^2be^2\left(9Ae(d+11ex)+2B\left(d^2+11dex+55e^2x^2\right)\right)+7ab^2e\left(8Ae\left(d^2+11dex+55e^2x^2\right)+3B\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)\right)+b^3\left(7Ae\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)+4B\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)\right)\right)}{9240e^5(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -1/9240*(Sqrt[(a + b*x)^2]*(84*a^3*e^3*(10*A*e + B*(d + 11*e*x)) + 28*a^2*b
*e^2*(9*A*e*(d + 11*e*x) + 2*B*(d^2 + 11*d*e*x + 55*e^2*x^2)) + 7*a*b^2*e*(
8*A*e*(d^2 + 11*d*e*x + 55*e^2*x^2) + 3*B*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2
+ 165*e^3*x^3)) + b^3*(7*A*e*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2 + 165*e^3*x^3
) + 4*B*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4)))
)/(e^5*(a + b*x)*(d + e*x)^11)
```

IntegrateAlgebraic [F] time = 180.09, size = 0, normalized size = 0.00

$$\text{\$Aborted}$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.41, size = 376, normalized size = 1.26

$$-\frac{1320 \, B b^{3} e^{4} x^{4} + 4 \, B b^{3} d^{4} + 840 \, A a^{3} e^{4} + 7 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d^{3} e + 56 \, {\left(B a^{2} b + A a b^{2}\right)} d^{2} e^{2} + 84 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} d e^{3} + 165 \, {\left(4 \, B b^{3} d e^{3} + 7 \, {\left(3 \, B a b^{2} + A b^{3}\right)} e^{4}\right)} x^{3} + 55 \, {\left(4 \, B b^{3} d^{2} e^{2} + 7 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d e^{3} + 56 \, {\left(B a^{2} b + A a b^{2}\right)} e^{4}\right)} x^{2} + 11 \, {\left(4 \, B b^{3} d^{3} e + 7 \, {\left(3 \, B a b^{2} + A b^{3}\right)} d^{2} e^{2} + 56 \, {\left(B a^{2} b + A a b^{2}\right)} d e^{3} + 84 \, {\left(B a^{3} + 3 \, A a^{2} b\right)} e^{4}\right)} x}{9240 \, {\left(e^{16} x^{11} + 11 \, d e^{15} x^{10} + 55 \, d^{2} e^{14} x^{9} + 165 \, d^{3} e^{13} x^{8} + 330 \, d^{4} e^{12} x^{7} + 462 \, d^{5} e^{11} x^{6} + 462 \, d^{6} e^{10} x^{5} + 330 \, d^{7} e^{9} x^{4} + 165 \, d^{8} e^{8} x^{3} + 55 \, d^{9} e^{7} x^{2} + 11 \, d^{10} e^{6} x + d^{11} e^{5}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/9240*(1320*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 840*A*a^3*e^4 + 7*(3*B*a*b^2 +
A*b^3)*d^3*e + 56*(B*a^2*b + A*a*b^2)*d^2*e^2 + 84*(B*a^3 + 3*A*a^2*b)*d*e^
3 + 165*(4*B*b^3*d*e^3 + 7*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 55*(4*B*b^3*d^2*e
^2 + 7*(3*B*a*b^2 + A*b^3)*d*e^3 + 56*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 11*(4*
B*b^3*d^3*e + 7*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 56*(B*a^2*b + A*a*b^2)*d*e^3
+ 84*(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^16*x^11 + 11*d*e^15*x^10 + 55*d^2*e^14*
x^9 + 165*d^3*e^13*x^8 + 330*d^4*e^12*x^7 + 462*d^5*e^11*x^6 + 462*d^6*e^10
*x^5 + 330*d^7*e^9*x^4 + 165*d^8*e^8*x^3 + 55*d^9*e^7*x^2 + 11*d^10*e^6*x +
 d^11*e^5)
```

giac [A] time = 0.20, size = 427, normalized size = 1.43

$$-\frac{{\left(1320 \, B b^{3} x^{4} e^{4} \mathrm{sgn}\left(b x + a\right) + 660 \, B b^{3} d x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 220 \, B b^{3} d^{2} x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 44 \, B b^{3} d^{3} x e \mathrm{sgn}\left(b x + a\right) + 4 \, B b^{3} d^{4} \mathrm{sgn}\left(b x + a\right) + 3465 \, B a b^{2} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 1155 \, A b^{3} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 1155 \, B a b^{2} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 385 \, A b^{3} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 231 \, B a b^{2} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 77 \, A b^{3} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + 21 \, B a b^{2} d^{3} e \mathrm{sgn}\left(b x + a\right) + 7 \, A b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) + 3080 \, B a^{2} b x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 3080 \, A a b^{2} x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 616 \, B a^{2} b d x e^{3} \mathrm{sgn}\left(b x + a\right) + 616 \, A a b^{2} d x e^{3} \mathrm{sgn}\left(b x + a\right) + 56 \, B a^{2} b d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 56 \, A a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 924 \, B a^{3} x e^{4} \mathrm{sgn}\left(b x + a\right) + 2772 \, A a^{2} b x e^{4} \mathrm{sgn}\left(b x + a\right) + 84 \, B a^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) + 252 \, A a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + 840 \, A a^{3} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-5\right)}}{9240 \, {\left(x e + d\right)}^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/9240*(1320*B*b^3*x^4*e^4*sgn(b*x + a) + 660*B*b^3*d*x^3*e^3*sgn(b*x + a)
 + 220*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 44*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B
*b^3*d^4*sgn(b*x + a) + 3465*B*a*b^2*x^3*e^4*sgn(b*x + a) + 1155*A*b^3*x^3*
e^4*sgn(b*x + a) + 1155*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 385*A*b^3*d*x^2*e^
3*sgn(b*x + a) + 231*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 77*A*b^3*d^2*x*e^2*sg
n(b*x + a) + 21*B*a*b^2*d^3*e*sgn(b*x + a) + 7*A*b^3*d^3*e*sgn(b*x + a) + 3
080*B*a^2*b*x^2*e^4*sgn(b*x + a) + 3080*A*a*b^2*x^2*e^4*sgn(b*x + a) + 616*
B*a^2*b*d*x*e^3*sgn(b*x + a) + 616*A*a*b^2*d*x*e^3*sgn(b*x + a) + 56*B*a^2*
b*d^2*e^2*sgn(b*x + a) + 56*A*a*b^2*d^2*e^2*sgn(b*x + a) + 924*B*a^3*x*e^4*
sgn(b*x + a) + 2772*A*a^2*b*x*e^4*sgn(b*x + a) + 84*B*a^3*d*e^3*sgn(b*x + a
) + 252*A*a^2*b*d*e^3*sgn(b*x + a) + 840*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*
e + d)^11
```

maple [A] time = 0.06, size = 317, normalized size = 1.06

$$-\frac{\left(1320 B \,b^{3} e^{4} x^{4}+1155 A \,b^{3} e^{4} x^{3}+3465 B a \,b^{2} e^{4} x^{3}+660 B \,b^{3} d \,e^{3} x^{3}+3080 A a \,b^{2} e^{4} x^{2}+385 A \,b^{3} d \,e^{3} x^{2}+3080 B \,a^{2} b \,e^{4} x^{2}+1155 B a \,b^{2} d \,e^{3} x^{2}+220 B \,b^{3} d^{2} e^{2} x^{2}+2772 A \,a^{2} b \,e^{4} x+616 A a \,b^{2} d \,e^{3} x+77 A \,b^{3} d^{2} e^{2} x+924 B \,a^{3} e^{4} x+616 B \,a^{2} b d \,e^{3} x+231 B a \,b^{2} d^{2} e^{2} x+44 B \,b^{3} d^{3} e x+840 A \,a^{3} e^{4}+252 A \,a^{2} b d \,e^{3}+56 A a \,b^{2} d^{2} e^{2}+7 A \,b^{3} d^{3} e+84 B \,a^{3} d \,e^{3}+56 B \,a^{2} b \,d^{2} e^{2}+21 B a \,b^{2} d^{3} e+4 B \,b^{3} d^{4}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}}}{9240 \left(e x +d \right)^{11} \left(b x +a \right)^{3} e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x)
```

```
[Out] -1/9240/e^5*(1320*B*b^3*e^4*x^4+1155*A*b^3*e^4*x^3+3465*B*a*b^2*e^4*x^3+660
*B*b^3*d*e^3*x^3+3080*A*a*b^2*e^4*x^2+385*A*b^3*d*e^3*x^2+3080*B*a^2*b*e^4*
x^2+1155*B*a*b^2*d*e^3*x^2+220*B*b^3*d^2*e^2*x^2+2772*A*a^2*b*e^4*x+616*A*a
*b^2*d*e^3*x+77*A*b^3*d^2*e^2*x+924*B*a^3*e^4*x+616*B*a^2*b*d*e^3*x+231*B*a
*b^2*d^2*e^2*x+44*B*b^3*d^3*e*x+840*A*a^3*e^4+252*A*a^2*b*d*e^3+56*A*a*b^2*
d^2*e^2+7*A*b^3*d^3*e+84*B*a^3*d*e^3+56*B*a^2*b*d^2*e^2+21*B*a*b^2*d^3*e+4*
B*b^3*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^11/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.36, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{8\,e^5}-\frac{B\,b^3\,d}{8\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^8}-\frac{\left(\frac{A\,a^3}{11\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{11\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{11\,e}-\frac{B\,b^3\,d}{11\,e^2}\right)}{e}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)}{11\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{11}}-\frac{\left(\frac{B\,a^3\,e^3-3\,B\,a^2\,b\,d\,e^2+3\,A\,a^2\,b\,e^3+3\,B\,a\,b^2\,d^2\,e-3\,A\,a\,b^2\,d\,e^2-B\,b^3\,d^3+A\,b^3\,d^2\,e}{10\,e^5}-\frac{d\,\left(\frac{3\,B\,a^2\,b\,e^3-3\,B\,a\,b^2\,d\,e^2+3\,A\,a\,b^2\,e^3+B\,b^3\,d^2\,e-A\,b^3\,d\,e^2}{10\,e^5}-\frac{d\,\left(\frac{b^2\,\left(A\,b\,e+3\,B\,a\,e-B\,b\,d\right)}{10\,e^3}-\frac{B\,b^3\,d}{10\,e^3}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{10}}-\frac{\left(\frac{3\,B\,a^2\,b\,e^2-6\,B\,a\,b^2\,d\,e+3\,A\,a\,b^2\,e^2+3\,B\,b^3\,d^2-2\,A\,b^3\,d\,e}{9\,e^5}-\frac{d\,\left(\frac{b^2\,\left(A\,b\,e+3\,B\,a\,e-2\,B\,b\,d\right)}{9\,e^4}-\frac{B\,b^3\,d}{9\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^9}-\frac{B\,b^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,e^5\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^12,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(8*e^5) - (B*b^3*d)/(8*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((A*a^3)/(11*e) - (d*
((B*a^3 + 3*A*a^2*b)/(11*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(11*e) - (B*b^3*d
)/(11*e^2)))/e - (3*a*b*(A*b + B*a))/(11*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*
e^3 + A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(1
0*e^5) - (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3
*B*a*b^2*d*e^2)/(10*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(10*e^3) - (
B*b^3*d)/(10*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d +
 e*x)^10) - (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 -
6*B*a*b^2*d*e)/(9*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(9*e^4) - (B
*b^3*d)/(9*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^
9) - (B*b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*e^5*(a + b*x)*(d + e*x)^7)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1518 $\int (A+Bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=436

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^3(-aBe\cdots}{9e^7(a+bx)}$$

Rubi [A] time = 1.01, antiderivative size = 436, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(-5aBe-Abe+6bBd)}{12e^7(a+bx)}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)(-2aBe-Abe+3bBd)}{11e^7(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^3(-aBe-2Abe+3bBd)}{9e^7(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^4(-aBe-5Abe+6bBd)}{8e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)^5(Bd-Ae)}{7e^7(a+bx)}+\frac{b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13}}{13e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^5*(B*d - A*e)*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^
7*(a + b*x)) - ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)^8*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x)) + (5*b*(b*d - a*e)^3*(3*b*B*d -
 2*A*b*e - a*B*e)*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*
x)) - (b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^10*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) -
(b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(12*e^7*(a + b*x)) + (b^5*B*(d + e*x)^13*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
13*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^6\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^6}{e^6}+\frac{b^5(bd-ae)^4(-6bBd+\cdots}{e\cdots}\right.}{}\\ &= \frac{(bd-ae)^5(Bd-Ae)(d+ex)^7\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)}-\frac{(bd-ae)^4(6b\cdots}{}\end{aligned}$$

Mathematica [B] time = 0.37, size = 876, normalized size = 2.01

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(1287*a^5*(8*A*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 +
35*d^3*e^3*x^3 + 21*d^2*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + B*x*(28*d^6 + 11
2*d^5*e*x + 210*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^5*
x^5 + 7*e^6*x^6)) + 715*a^4*b*x*(9*A*(28*d^6 + 112*d^5*e*x + 210*d^4*e^2*x^
2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^5*x^5 + 7*e^6*x^6) + 2*B*x*(
84*d^6 + 378*d^5*e*x + 756*d^4*e^2*x^2 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4
+ 189*d*e^5*x^5 + 28*e^6*x^6)) + 286*a^3*b^2*x^2*(10*A*(84*d^6 + 378*d^5*e*
x + 756*d^4*e^2*x^2 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 2
8*e^6*x^6) + 3*B*x*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^
3*x^3 + 1575*d^2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6)) + 78*a^2*b^3*x^3*(1
1*A*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3 + 1575*d^
2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + 4*B*x*(462*d^6 + 2310*d^5*e*x + 4
950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5 + 21
0*e^6*x^6)) + 13*a*b^4*x^4*(12*A*(462*d^6 + 2310*d^5*e*x + 4950*d^4*e^2*x^2
 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5 + 210*e^6*x^6) + 5*
B*x*(924*d^6 + 4752*d^5*e*x + 10395*d^4*e^2*x^2 + 12320*d^3*e^3*x^3 + 8316*
d^2*e^4*x^4 + 3024*d*e^5*x^5 + 462*e^6*x^6)) + b^5*x^5*(13*A*(924*d^6 + 475
2*d^5*e*x + 10395*d^4*e^2*x^2 + 12320*d^3*e^3*x^3 + 8316*d^2*e^4*x^4 + 3024
*d*e^5*x^5 + 462*e^6*x^6) + 6*B*x*(1716*d^6 + 9009*d^5*e*x + 20020*d^4*e^2*
x^2 + 24024*d^3*e^3*x^3 + 16380*d^2*e^4*x^4 + 6006*d*e^5*x^5 + 924*e^6*x^6)
)))/(72072*(a + b*x))
```

IntegrateAlgebraic [F] time = 13.75, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.43, size = 964, normalized size = 2.21

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/13*B*b^5*e^6*x^13 + A*a^5*d^6*x + 1/12*(6*B*b^5*d*e^5 + (5*B*a*b^4 + A*b^
5)*e^6)*x^12 + 1/11*(15*B*b^5*d^2*e^4 + 6*(5*B*a*b^4 + A*b^5)*d*e^5 + 5*(2*
B*a^2*b^3 + A*a*b^4)*e^6)*x^11 + 1/2*(4*B*b^5*d^3*e^3 + 3*(5*B*a*b^4 + A*b^
5)*d^2*e^4 + 6*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 2*(B*a^3*b^2 + A*a^2*b^3)*e^
6)*x^10 + 5/9*(3*B*b^5*d^4*e^2 + 4*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 15*(2*B*a^
2*b^3 + A*a*b^4)*d^2*e^4 + 12*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + (B*a^4*b + 2*
A*a^3*b^2)*e^6)*x^9 + 1/8*(6*B*b^5*d^5*e + 15*(5*B*a*b^4 + A*b^5)*d^4*e^2 +
 100*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 150*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4
+ 30*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x^8 + 1/7*(B*
b^5*d^6 + A*a^5*e^6 + 6*(5*B*a*b^4 + A*b^5)*d^5*e + 75*(2*B*a^2*b^3 + A*a*b
^4)*d^4*e^2 + 200*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 + 75*(B*a^4*b + 2*A*a^3*b
^2)*d^2*e^4 + 6*(B*a^5 + 5*A*a^4*b)*d*e^5)*x^7 + 1/6*(6*A*a^5*d*e^5 + (5*B*
a*b^4 + A*b^5)*d^6 + 30*(2*B*a^2*b^3 + A*a*b^4)*d^5*e + 150*(B*a^3*b^2 + A*
a^2*b^3)*d^4*e^2 + 100*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^3 + 15*(B*a^5 + 5*A*a^
4*b)*d^2*e^4)*x^6 + (3*A*a^5*d^2*e^4 + (2*B*a^2*b^3 + A*a*b^4)*d^6 + 12*(B*
```

```
a^3*b^2 + A*a^2*b^3)*d^5*e + 15*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^2 + 4*(B*a^5
+ 5*A*a^4*b)*d^3*e^3)*x^5 + 5/4*(4*A*a^5*d^3*e^3 + 2*(B*a^3*b^2 + A*a^2*b^3
)*d^6 + 6*(B*a^4*b + 2*A*a^3*b^2)*d^5*e + 3*(B*a^5 + 5*A*a^4*b)*d^4*e^2)*x^
4 + 1/3*(15*A*a^5*d^4*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^6 + 6*(B*a^5 + 5*A*
a^4*b)*d^5*e)*x^3 + 1/2*(6*A*a^5*d^5*e + (B*a^5 + 5*A*a^4*b)*d^6)*x^2
```

giac [B] time = 0.27, size = 1702, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/13*B*b^5*x^13*e^6*sgn(b*x + a) + 1/2*B*b^5*d*x^12*e^5*sgn(b*x + a) + 15/1
1*B*b^5*d^2*x^11*e^4*sgn(b*x + a) + 2*B*b^5*d^3*x^10*e^3*sgn(b*x + a) + 5/3
*B*b^5*d^4*x^9*e^2*sgn(b*x + a) + 3/4*B*b^5*d^5*x^8*e*sgn(b*x + a) + 1/7*B*
b^5*d^6*x^7*sgn(b*x + a) + 5/12*B*a*b^4*x^12*e^6*sgn(b*x + a) + 1/12*A*b^5*
x^12*e^6*sgn(b*x + a) + 30/11*B*a*b^4*d*x^11*e^5*sgn(b*x + a) + 6/11*A*b^5*
d*x^11*e^5*sgn(b*x + a) + 15/2*B*a*b^4*d^2*x^10*e^4*sgn(b*x + a) + 3/2*A*b^
5*d^2*x^10*e^4*sgn(b*x + a) + 100/9*B*a*b^4*d^3*x^9*e^3*sgn(b*x + a) + 20/9
*A*b^5*d^3*x^9*e^3*sgn(b*x + a) + 75/8*B*a*b^4*d^4*x^8*e^2*sgn(b*x + a) + 1
5/8*A*b^5*d^4*x^8*e^2*sgn(b*x + a) + 30/7*B*a*b^4*d^5*x^7*e*sgn(b*x + a) +
6/7*A*b^5*d^5*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^6*x^6*sgn(b*x + a) + 1/6*A
*b^5*d^6*x^6*sgn(b*x + a) + 10/11*B*a^2*b^3*x^11*e^6*sgn(b*x + a) + 5/11*A*
a*b^4*x^11*e^6*sgn(b*x + a) + 6*B*a^2*b^3*d*x^10*e^5*sgn(b*x + a) + 3*A*a*b
^4*d*x^10*e^5*sgn(b*x + a) + 50/3*B*a^2*b^3*d^2*x^9*e^4*sgn(b*x + a) + 25/3
*A*a*b^4*d^2*x^9*e^4*sgn(b*x + a) + 25*B*a^2*b^3*d^3*x^8*e^3*sgn(b*x + a) +
 25/2*A*a*b^4*d^3*x^8*e^3*sgn(b*x + a) + 150/7*B*a^2*b^3*d^4*x^7*e^2*sgn(b*
x + a) + 75/7*A*a*b^4*d^4*x^7*e^2*sgn(b*x + a) + 10*B*a^2*b^3*d^5*x^6*e*sgn
(b*x + a) + 5*A*a*b^4*d^5*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^6*x^5*sgn(b*x
+ a) + A*a*b^4*d^6*x^5*sgn(b*x + a) + B*a^3*b^2*x^10*e^6*sgn(b*x + a) + A*a
^2*b^3*x^10*e^6*sgn(b*x + a) + 20/3*B*a^3*b^2*d*x^9*e^5*sgn(b*x + a) + 20/3
*A*a^2*b^3*d*x^9*e^5*sgn(b*x + a) + 75/4*B*a^3*b^2*d^2*x^8*e^4*sgn(b*x + a)
 + 75/4*A*a^2*b^3*d^2*x^8*e^4*sgn(b*x + a) + 200/7*B*a^3*b^2*d^3*x^7*e^3*sg
n(b*x + a) + 200/7*A*a^2*b^3*d^3*x^7*e^3*sgn(b*x + a) + 25*B*a^3*b^2*d^4*x^
6*e^2*sgn(b*x + a) + 25*A*a^2*b^3*d^4*x^6*e^2*sgn(b*x + a) + 12*B*a^3*b^2*d
^5*x^5*e*sgn(b*x + a) + 12*A*a^2*b^3*d^5*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2
*d^6*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^6*x^4*sgn(b*x + a) + 5/9*B*a^4*b*x^
9*e^6*sgn(b*x + a) + 10/9*A*a^3*b^2*x^9*e^6*sgn(b*x + a) + 15/4*B*a^4*b*d*x
^8*e^5*sgn(b*x + a) + 15/2*A*a^3*b^2*d*x^8*e^5*sgn(b*x + a) + 75/7*B*a^4*b*
d^2*x^7*e^4*sgn(b*x + a) + 150/7*A*a^3*b^2*d^2*x^7*e^4*sgn(b*x + a) + 50/3*
B*a^4*b*d^3*x^6*e^3*sgn(b*x + a) + 100/3*A*a^3*b^2*d^3*x^6*e^3*sgn(b*x + a)
 + 15*B*a^4*b*d^4*x^5*e^2*sgn(b*x + a) + 30*A*a^3*b^2*d^4*x^5*e^2*sgn(b*x +
 a) + 15/2*B*a^4*b*d^5*x^4*e*sgn(b*x + a) + 15*A*a^3*b^2*d^5*x^4*e*sgn(b*x
+ a) + 5/3*B*a^4*b*d^6*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d^6*x^3*sgn(b*x +
a) + 1/8*B*a^5*x^8*e^6*sgn(b*x + a) + 5/8*A*a^4*b*x^8*e^6*sgn(b*x + a) + 6/
7*B*a^5*d*x^7*e^5*sgn(b*x + a) + 30/7*A*a^4*b*d*x^7*e^5*sgn(b*x + a) + 5/2*
B*a^5*d^2*x^6*e^4*sgn(b*x + a) + 25/2*A*a^4*b*d^2*x^6*e^4*sgn(b*x + a) + 4*
B*a^5*d^3*x^5*e^3*sgn(b*x + a) + 20*A*a^4*b*d^3*x^5*e^3*sgn(b*x + a) + 15/4
*B*a^5*d^4*x^4*e^2*sgn(b*x + a) + 75/4*A*a^4*b*d^4*x^4*e^2*sgn(b*x + a) + 2
*B*a^5*d^5*x^3*e*sgn(b*x + a) + 10*A*a^4*b*d^5*x^3*e*sgn(b*x + a) + 1/2*B*a
^5*d^6*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^6*x^2*sgn(b*x + a) + 1/7*A*a^5*x^7*
e^6*sgn(b*x + a) + A*a^5*d*x^6*e^5*sgn(b*x + a) + 3*A*a^5*d^2*x^5*e^4*sgn(b
*x + a) + 5*A*a^5*d^3*x^4*e^3*sgn(b*x + a) + 5*A*a^5*d^4*x^3*e^2*sgn(b*x +
a) + 3*A*a^5*d^5*x^2*e*sgn(b*x + a) + A*a^5*d^6*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 1264, normalized size = 2.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/72072*x*(5544*B*b^5*e^6*x^12+6006*A*b^5*e^6*x^11+30030*B*a*b^4*e^6*x^11+3
6036*B*b^5*d*e^5*x^11+32760*A*a*b^4*e^6*x^10+39312*A*b^5*d*e^5*x^10+65520*B
*a^2*b^3*e^6*x^10+196560*B*a*b^4*d*e^5*x^10+98280*B*b^5*d^2*e^4*x^10+72072*
A*a^2*b^3*e^6*x^9+216216*A*a*b^4*d*e^5*x^9+108108*A*b^5*d^2*e^4*x^9+72072*B
*a^3*b^2*e^6*x^9+432432*B*a^2*b^3*d*e^5*x^9+540540*B*a*b^4*d^2*e^4*x^9+1441
44*B*b^5*d^3*e^3*x^9+80080*A*a^3*b^2*e^6*x^8+480480*A*a^2*b^3*d*e^5*x^8+600
600*A*a*b^4*d^2*e^4*x^8+160160*A*b^5*d^3*e^3*x^8+40040*B*a^4*b*e^6*x^8+4804
80*B*a^3*b^2*d*e^5*x^8+1201200*B*a^2*b^3*d^2*e^4*x^8+800800*B*a*b^4*d^3*e^3
*x^8+120120*B*b^5*d^4*e^2*x^8+45045*A*a^4*b*e^6*x^7+540540*A*a^3*b^2*d*e^5*
x^7+1351350*A*a^2*b^3*d^2*e^4*x^7+900900*A*a*b^4*d^3*e^3*x^7+135135*A*b^5*d
^4*e^2*x^7+9009*B*a^5*e^6*x^7+270270*B*a^4*b*d*e^5*x^7+1351350*B*a^3*b^2*d^
2*e^4*x^7+1801800*B*a^2*b^3*d^3*e^3*x^7+675675*B*a*b^4*d^4*e^2*x^7+54054*B*
b^5*d^5*e*x^7+10296*A*a^5*e^6*x^6+308880*A*a^4*b*d*e^5*x^6+1544400*A*a^3*b^
2*d^2*e^4*x^6+2059200*A*a^2*b^3*d^3*e^3*x^6+772200*A*a*b^4*d^4*e^2*x^6+6177
6*A*b^5*d^5*e*x^6+61776*B*a^5*d*e^5*x^6+772200*B*a^4*b*d^2*e^4*x^6+2059200*
B*a^3*b^2*d^3*e^3*x^6+1544400*B*a^2*b^3*d^4*e^2*x^6+308880*B*a*b^4*d^5*e*x^
6+10296*B*b^5*d^6*x^6+72072*A*a^5*d*e^5*x^5+900900*A*a^4*b*d^2*e^4*x^5+2402
400*A*a^3*b^2*d^3*e^3*x^5+1801800*A*a^2*b^3*d^4*e^2*x^5+360360*A*a*b^4*d^5*
e*x^5+12012*A*b^5*d^6*x^5+180180*B*a^5*d^2*e^4*x^5+1201200*B*a^4*b*d^3*e^3*
x^5+1801800*B*a^3*b^2*d^4*e^2*x^5+720720*B*a^2*b^3*d^5*e*x^5+60060*B*a*b^4*
d^6*x^5+216216*A*a^5*d^2*e^4*x^4+1441440*A*a^4*b*d^3*e^3*x^4+2162160*A*a^3*
b^2*d^4*e^2*x^4+864864*A*a^2*b^3*d^5*e*x^4+72072*A*a*b^4*d^6*x^4+288288*B*a
^5*d^3*e^3*x^4+1081080*B*a^4*b*d^4*e^2*x^4+864864*B*a^3*b^2*d^5*e*x^4+14414
4*B*a^2*b^3*d^6*x^4+360360*A*a^5*d^3*e^3*x^3+1351350*A*a^4*b*d^4*e^2*x^3+10
81080*A*a^3*b^2*d^5*e*x^3+180180*A*a^2*b^3*d^6*x^3+270270*B*a^5*d^4*e^2*x^3
+540540*B*a^4*b*d^5*e*x^3+180180*B*a^3*b^2*d^6*x^3+360360*A*a^5*d^4*e^2*x^2
+720720*A*a^4*b*d^5*e*x^2+240240*A*a^3*b^2*d^6*x^2+144144*B*a^5*d^5*e*x^2+1
20120*B*a^4*b*d^6*x^2+216216*A*a^5*d^5*e*x+180180*A*a^4*b*d^6*x+36036*B*a^5
*d^6*x+72072*A*a^5*d^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.70, size = 1744, normalized size = 4.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^6*x^6/b^2 - 19/156*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*a*e^6*x^5/b^3 + 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*B*a^2*e^6*x^4/b^4 - 68/429*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*e^6*x^3/b
^5 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^6*x - 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*a^7*e^6*x/b^7 + 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^
4*e^6*x^2/b^6 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d^6/b - 1/6*(b^2*x^
2 + 2*a*b*x + a^2)^(5/2)*B*a^8*e^6/b^8 - 1709/10296*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*B*a^5*e^6*x/b^7 + 1715/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^6
*e^6/b^8 + 1/12*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/b^2
 - 17/132*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^4/b^3 + 3
/11*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b^2 + 5/3
3*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^3/b^4 - 9/22*(5
*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 + 1/2*(4*
B*d^3*e^3 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 + 1/6*(6*B
*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*x/b^6 - 1/2*(5*B*d^2*e^
4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(4*B*d^3*e^3
 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/6*(3*B*d^4*e^
2 + 4*A*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(2*B*d^5*e
 + 5*A*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(B*d^6 + 6*
A*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b - 16/99*(6*B*d*e^5 + A*e^6)*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^2/b^5 + 31/66*(5*B*d^2*e^4 + 2*A*d*e^
```

```
5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^2/b^4 - 13/18*(4*B*d^3*e^3 + 3*A*d
^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 5/9*(3*B*d^4*e^2 + 4*A*
d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(6*B*d*e^5 + A*e^6)*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7/b^7 - 1/2*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/b^6 + 5/6*(4*B*d^3*e^3 + 3*A*d^2*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 5/6*(3*B*d^4*e^2 + 4*A*d^3*e^3)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/2*(2*B*d^5*e + 5*A*d^4*e^2)*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(B*d^6 + 6*A*d^5*e)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a^2/b^2 + 131/792*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*a^4*x/b^6 - 65/132*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^3*x/b^5 + 29/36*(4*B*d^3*e^3 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a^2*x/b^4 - 55/72*(3*B*d^4*e^2 + 4*A*d^3*e^3)*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*a*x/b^3 + 3/8*(2*B*d^5*e + 5*A*d^4*e^2)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*x/b^2 - 923/5544*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*a^5/b^7 + 461/924*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*a^4/b^6 - 209/252*(4*B*d^3*e^3 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a^3/b^5 + 415/504*(3*B*d^4*e^2 + 4*A*d^3*e^3)*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*a^2/b^4 - 27/56*(2*B*d^5*e + 5*A*d^4*e^2)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^6 + 6*A*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(d + e\,x\right)^6\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((A + B*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^6\,\left((a + bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((A + B*x)*(d + e*x)**6*((a + b*x)**2)**(5/2), x)
```

3.1519 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=383

$$\frac{e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(-6aBe+Abe+5bBd)}{11b^7}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)(-3aBe+Abe$$

Rubi [A] time = 0.79, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(-6aBe+Abe+5bBd)}{11b^7}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)(-3aBe+Abe+2bBd)}{2b^7}+\frac{10e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^2(-2aBe+Abe+bBd)}{9b^7}+\frac{5e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^3(-3aBe+2Abe+bBd)}{8b^7}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^4(-6aBe+5Abe+bBd)}{7b^7}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)^5}{6b^7}+\frac{Be^5\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{11}}{12b^7}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^5*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
7) + ((b*d - a*e)^4*(b*B*d + 5*A*b*e - 6*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(7*b^7) + (5*e*(b*d - a*e)^3*(b*B*d + 2*A*b*e - 3*a*B*e)*(a
 + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^7) + (10*e^2*(b*d - a*e)^2*(b
*B*d + A*b*e - 2*a*B*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^7)
+ (e^3*(b*d - a*e)*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^9*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(2*b^7) + (e^4*(5*b*B*d + A*b*e - 6*a*B*e)*(a + b*x)^10*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(11*b^7) + (B*e^5*(a + b*x)^11*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(12*b^7)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^5\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)^5\left(ab+b^2x\right)^5}{b^6}+\frac{(bd-ae)^4(bBd+5A}{b}\right.}{}$$

$$=\frac{(Ab-aB)(bd-ae)^5(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^7}+\frac{(bd-ae)^4}{}$$

Mathematica [A] time = 0.31, size = 740, normalized size = 1.93

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(132*a^5*(7*A*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 1
5*d^2*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + B*x*(21*d^5 + 70*d^4*e*x + 105*d^3
*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5)) + 165*a^4*b*x*(4*A*(
21*d^5 + 70*d^4*e*x + 105*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e
^5*x^5) + B*x*(56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 1
20*d*e^4*x^4 + 21*e^5*x^5)) + 110*a^3*b^2*x^2*(3*A*(56*d^5 + 210*d^4*e*x +
336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5) + B*x*(126*
d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*
e^5*x^5)) + 22*a^2*b^3*x^3*(5*A*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 +
720*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + 2*B*x*(252*d^5 + 1050*d^4*e
*x + 1800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5)) +
2*a*b^4*x^4*(11*A*(252*d^5 + 1050*d^4*e*x + 1800*d^3*e^2*x^2 + 1575*d^2*e^3
*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5) + 5*B*x*(462*d^5 + 1980*d^4*e*x + 3465*
d^3*e^2*x^2 + 3080*d^2*e^3*x^3 + 1386*d*e^4*x^4 + 252*e^5*x^5)) + b^5*x^5*(
B*x*(792*d^5 + 3465*d^4*e*x + 6160*d^3*e^2*x^2 + 5544*d^2*e^3*x^3 + 2520*d*
e^4*x^4 + 462*e^5*x^5) + A*(924*d^5 + 3960*d^4*e*x + 6930*d^3*e^2*x^2 + 616
0*d^2*e^3*x^3 + 2772*d*e^4*x^4 + 504*e^5*x^5))))/(5544*(a + b*x))
```

IntegrateAlgebraic [F] time = 10.37, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^5 \left(a^2 + 2abx + b^2x^2\right)^{5/2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.42, size = 813, normalized size = 2.12

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*B*b^5*e^5*x^12 + A*a^5*d^5*x + 1/11*(5*B*b^5*d*e^4 + (5*B*a*b^4 + A*b^
5)*e^5)*x^11 + 1/2*(2*B*b^5*d^2*e^3 + (5*B*a*b^4 + A*b^5)*d*e^4 + (2*B*a^2*
b^3 + A*a*b^4)*e^5)*x^10 + 5/9*(2*B*b^5*d^3*e^2 + 2*(5*B*a*b^4 + A*b^5)*d^2
*e^3 + 5*(2*B*a^2*b^3 + A*a*b^4)*d*e^4 + 2*(B*a^3*b^2 + A*a^2*b^3)*e^5)*x^9
 + 5/8*(B*b^5*d^4*e + 2*(5*B*a*b^4 + A*b^5)*d^3*e^2 + 10*(2*B*a^2*b^3 + A*a
*b^4)*d^2*e^3 + 10*(B*a^3*b^2 + A*a^2*b^3)*d*e^4 + (B*a^4*b + 2*A*a^3*b^2)*
e^5)*x^8 + 1/7*(B*b^5*d^5 + 5*(5*B*a*b^4 + A*b^5)*d^4*e + 50*(2*B*a^2*b^3 +
 A*a*b^4)*d^3*e^2 + 100*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^3 + 25*(B*a^4*b + 2*A
*a^3*b^2)*d*e^4 + (B*a^5 + 5*A*a^4*b)*e^5)*x^7 + 1/6*(A*a^5*e^5 + (5*B*a*b^
4 + A*b^5)*d^5 + 25*(2*B*a^2*b^3 + A*a*b^4)*d^4*e + 100*(B*a^3*b^2 + A*a^2*
b^3)*d^3*e^2 + 50*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^3 + 5*(B*a^5 + 5*A*a^4*b)*d
*e^4)*x^6 + (A*a^5*d*e^4 + (2*B*a^2*b^3 + A*a*b^4)*d^5 + 10*(B*a^3*b^2 + A*
a^2*b^3)*d^4*e + 10*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^2 + 2*(B*a^5 + 5*A*a^4*b)
*d^2*e^3)*x^5 + 5/4*(2*A*a^5*d^2*e^3 + 2*(B*a^3*b^2 + A*a^2*b^3)*d^5 + 5*(B
*a^4*b + 2*A*a^3*b^2)*d^4*e + 2*(B*a^5 + 5*A*a^4*b)*d^3*e^2)*x^4 + 5/3*(2*A
*a^5*d^3*e^2 + (B*a^4*b + 2*A*a^3*b^2)*d^5 + (B*a^5 + 5*A*a^4*b)*d^4*e)*x^3
 + 1/2*(5*A*a^5*d^4*e + (B*a^5 + 5*A*a^4*b)*d^5)*x^2
```

giac [B] time = 0.28, size = 1446, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")

[Out] 1/12*B*b^5*x^12*e^5*sgn(b*x + a) + 5/11*B*b^5*d*x^11*e^4*sgn(b*x + a) + B*b^5*d^2*x^10*e^3*sgn(b*x + a) + 10/9*B*b^5*d^3*x^9*e^2*sgn(b*x + a) + 5/8*B*b^5*d^4*x^8*e*sgn(b*x + a) + 1/7*B*b^5*d^5*x^7*sgn(b*x + a) + 5/11*B*a*b^4*x^11*e^5*sgn(b*x + a) + 1/11*A*b^5*x^11*e^5*sgn(b*x + a) + 5/2*B*a*b^4*d*x^10*e^4*sgn(b*x + a) + 1/2*A*b^5*d*x^10*e^4*sgn(b*x + a) + 50/9*B*a*b^4*d^2*x^9*e^3*sgn(b*x + a) + 10/9*A*b^5*d^2*x^9*e^3*sgn(b*x + a) + 25/4*B*a*b^4*d^3*x^8*e^2*sgn(b*x + a) + 5/4*A*b^5*d^3*x^8*e^2*sgn(b*x + a) + 25/7*B*a*b^4*d^4*x^7*e*sgn(b*x + a) + 5/7*A*b^5*d^4*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^5*x^6*sgn(b*x + a) + 1/6*A*b^5*d^5*x^6*sgn(b*x + a) + B*a^2*b^3*x^10*e^5*sgn(b*x + a) + 1/2*A*a*b^4*x^10*e^5*sgn(b*x + a) + 50/9*B*a^2*b^3*d*x^9*e^4*sgn(b*x + a) + 25/9*A*a*b^4*d*x^9*e^4*sgn(b*x + a) + 25/2*B*a^2*b^3*d^2*x^8*e^3*sgn(b*x + a) + 25/4*A*a*b^4*d^2*x^8*e^3*sgn(b*x + a) + 100/7*B*a^2*b^3*d^3*x^7*e^2*sgn(b*x + a) + 50/7*A*a*b^4*d^3*x^7*e^2*sgn(b*x + a) + 25/3*B*a^2*b^3*d^4*x^6*e*sgn(b*x + a) + 25/6*A*a*b^4*d^4*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^5*x^5*sgn(b*x + a) + A*a*b^4*d^5*x^5*sgn(b*x + a) + 10/9*B*a^3*b^2*x^9*e^5*sgn(b*x + a) + 10/9*A*a^2*b^3*x^9*e^5*sgn(b*x + a) + 25/4*B*a^3*b^2*d*x^8*e^4*sgn(b*x + a) + 25/4*A*a^2*b^3*d*x^8*e^4*sgn(b*x + a) + 100/7*B*a^3*b^2*d^2*x^7*e^3*sgn(b*x + a) + 100/7*A*a^2*b^3*d^2*x^7*e^3*sgn(b*x + a) + 50/3*B*a^3*b^2*d^3*x^6*e^2*sgn(b*x + a) + 50/3*A*a^2*b^3*d^3*x^6*e^2*sgn(b*x + a) + 10*B*a^3*b^2*d^4*x^5*e*sgn(b*x + a) + 10*A*a^2*b^3*d^4*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d^5*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^5*x^4*sgn(b*x + a) + 5/8*B*a^4*b*x^8*e^5*sgn(b*x + a) + 5/4*A*a^3*b^2*x^8*e^5*sgn(b*x + a) + 25/7*B*a^4*b*d*x^7*e^4*sgn(b*x + a) + 50/7*A*a^3*b^2*d*x^7*e^4*sgn(b*x + a) + 25/3*B*a^4*b*d^2*x^6*e^3*sgn(b*x + a) + 50/3*A*a^3*b^2*d^2*x^6*e^3*sgn(b*x + a) + 10*B*a^4*b*d^3*x^5*e^2*sgn(b*x + a) + 20*A*a^3*b^2*d^3*x^5*e^2*sgn(b*x + a) + 25/4*B*a^4*b*d^4*x^4*e*sgn(b*x + a) + 25/2*A*a^3*b^2*d^4*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^5*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d^5*x^3*sgn(b*x + a) + 1/7*B*a^5*x^7*e^5*sgn(b*x + a) + 5/7*A*a^4*b*x^7*e^5*sgn(b*x + a) + 5/6*B*a^5*d*x^6*e^4*sgn(b*x + a) + 25/6*A*a^4*b*d*x^6*e^4*sgn(b*x + a) + 2*B*a^5*d^2*x^5*e^3*sgn(b*x + a) + 10*A*a^4*b*d^2*x^5*e^3*sgn(b*x + a) + 5/2*B*a^5*d^3*x^4*e^2*sgn(b*x + a) + 25/2*A*a^4*b*d^3*x^4*e^2*sgn(b*x + a) + 5/3*B*a^5*d^4*x^3*e*sgn(b*x + a) + 25/3*A*a^4*b*d^4*x^3*e*sgn(b*x + a) + 1/2*B*a^5*d^5*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^5*x^2*sgn(b*x + a) + 1/6*A*a^5*x^6*e^5*sgn(b*x + a) + A*a^5*d*x^5*e^4*sgn(b*x + a) + 5/2*A*a^5*d^2*x^4*e^3*sgn(b*x + a) + 10/3*A*a^5*d^3*x^3*e^2*sgn(b*x + a) + 5/2*A*a^5*d^4*x^2*e*sgn(b*x + a) + A*a^5*d^5*x*sgn(b*x + a)

maple [B] time = 0.05, size = 1068, normalized size = 2.79

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)

[Out] 1/5544*x*(462*B*b^5*e^5*x^11+504*A*b^5*e^5*x^10+2520*B*a*b^4*e^5*x^10+2520*B*b^5*d*e^4*x^10+2772*A*a*b^4*e^5*x^9+2772*A*b^5*d*e^4*x^9+5544*B*a^2*b^3*e^5*x^9+13860*B*a*b^4*d*e^4*x^9+5544*B*b^5*d^2*e^3*x^9+6160*A*a^2*b^3*e^5*x^8+15400*A*a*b^4*d*e^4*x^8+6160*A*b^5*d^2*e^3*x^8+6160*B*a^3*b^2*e^5*x^8+30800*B*a^2*b^3*d*e^4*x^8+30800*B*a*b^4*d^2*e^3*x^8+6160*B*b^5*d^3*e^2*x^8+6930*A*a^3*b^2*e^5*x^7+34650*A*a^2*b^3*d*e^4*x^7+34650*A*a*b^4*d^2*e^3*x^7+6930*A*b^5*d^3*e^2*x^7+3465*B*a^4*b*e^5*x^7+34650*B*a^3*b^2*d*e^4*x^7+69300*B*a^2*b^3*d^2*e^3*x^7+34650*B*a*b^4*d^3*e^2*x^7+3465*B*b^5*d^4*e*x^7+3960*A*a^4*b*e^5*x^6+39600*A*a^3*b^2*d*e^4*x^6+79200*A*a^2*b^3*d^2*e^3*x^6+39600*A*a*b^4*d^3*e^2*x^6+3960*A*b^5*d^4*e*x^6+792*B*a^5*e^5*x^6+19800*B*a^4*b*d*e^

```
4*x^6+79200*B*a^3*b^2*d^2*e^3*x^6+79200*B*a^2*b^3*d^3*e^2*x^6+19800*B*a*b^4
*d^4*e*x^6+792*B*b^5*d^5*x^6+924*A*a^5*e^5*x^5+23100*A*a^4*b*d*e^4*x^5+9240
0*A*a^3*b^2*d^2*e^3*x^5+92400*A*a^2*b^3*d^3*e^2*x^5+23100*A*a*b^4*d^4*e*x^5
+924*A*b^5*d^5*x^5+4620*B*a^5*d*e^4*x^5+46200*B*a^4*b*d^2*e^3*x^5+92400*B*a
^3*b^2*d^3*e^2*x^5+46200*B*a^2*b^3*d^4*e*x^5+4620*B*a*b^4*d^5*x^5+5544*A*a^
5*d*e^4*x^4+55440*A*a^4*b*d^2*e^3*x^4+110880*A*a^3*b^2*d^3*e^2*x^4+55440*A*
a^2*b^3*d^4*e*x^4+5544*A*a*b^4*d^5*x^4+11088*B*a^5*d^2*e^3*x^4+55440*B*a^4*
b*d^3*e^2*x^4+55440*B*a^3*b^2*d^4*e*x^4+11088*B*a^2*b^3*d^5*x^4+13860*A*a^5
*d^2*e^3*x^3+69300*A*a^4*b*d^3*e^2*x^3+69300*A*a^3*b^2*d^4*e*x^3+13860*A*a^
2*b^3*d^5*x^3+13860*B*a^5*d^3*e^2*x^3+34650*B*a^4*b*d^4*e*x^3+13860*B*a^3*b
^2*d^5*x^3+18480*A*a^5*d^3*e^2*x^2+46200*A*a^4*b*d^4*e*x^2+18480*A*a^3*b^2*
d^5*x^2+9240*B*a^5*d^4*e*x^2+9240*B*a^4*b*d^5*x^2+13860*A*a^5*d^4*e*x+13860
*A*a^4*b*d^5*x+2772*B*a^5*d^5*x+5544*A*a^5*d^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.81, size = 1330, normalized size = 3.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^5*x^5/b^2 - 17/132*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*a*e^5*x^4/b^3 + 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a
^2*e^5*x^3/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^5*x + 1/6*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*B*a^6*e^5*x/b^6 - 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*B*a^3*e^5*x^2/b^5 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d^5/b + 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^7*e^5/b^7 + 131/792*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*B*a^4*e^5*x/b^6 - 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B
*a^5*e^5/b^7 + 1/11*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4
/b^2 - 3/22*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 +
 1/2*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 - 1/6*
(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(2*B*d^
2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/3*(B*d^3*e^2
 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 5/6*(B*d^4*e + 2*
A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(B*d^5 + 5*A*d^4
*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b + 31/198*(5*B*d*e^4 + A*e^5)*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^2/b^4 - 13/18*(2*B*d^2*e^3 + A*d*e^4)*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 10/9*(B*d^3*e^2 + A*d^2*e^3)*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 - 1/6*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*a^6/b^6 + 5/6*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a^5/b^5 - 5/3*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^4/b^4 + 5/6*(B*d^4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^3/b^3 - 1/6*(B*d^5 + 5*A*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^
2 - 65/396*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 +
29/36*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 5
5/36*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 5/8*
(B*d^4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 461/2772*(5
*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/252*(2*B*d^
2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 415/252*(B*d^3*e
^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 45/56*(B*d^4*e +
2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^5 + 5*A*d^4*e
)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,(d+e\,x)^5\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((A + B*x)*(d + e*x)**5*((a + b*x)**2)**(5/2), x)
```

3.1520 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=324

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(-5aBe+Abe+4bBd)}{10b^6}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)(-5aBe+2Abe+$$

Rubi [A] time = 0.62, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(-5aBe+Abe+4bBd)}{10b^6}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)(-5aBe+2Abe+3bBd)}{9b^6}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^2(-5aBe+3Abe+2bBd)}{4b^6}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^3(-5aBe+4Abe+bBd)}{7b^6}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)^4}{6b^6}+\frac{Be^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}}{11b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^4*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
6) + ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(7*b^6) + (e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e - 5*a*B*e)*(a
 + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^6) + (2*e^2*(b*d - a*e)*(3*b*
B*d + 2*A*b*e - 5*a*B*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^6)
 + (e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(10*b^6) + (B*e^4*(a + b*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^6)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5 (A+Bx)(d+ex)^4\, dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)^4\left(ab+b^2x\right)^5}{b^5}+\frac{(bd-ae)^3(bBd+4Abe-5}{b^6}$$

$$= \frac{(Ab-aB)(bd-ae)^4(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^6}+\frac{(bd-ae)^3(b}{}$$

Mathematica [A] time = 0.24, size = 611, normalized size = 1.89

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(462*a^5*(6*A*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5
*d*e^3*x^3 + e^4*x^4) + B*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^
3*x^3 + 5*e^4*x^4)) + 330*a^4*b*x*(7*A*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^
2 + 24*d*e^3*x^3 + 5*e^4*x^4) + 2*B*x*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x
^2 + 70*d*e^3*x^3 + 15*e^4*x^4)) + 165*a^3*b^2*x^2*(8*A*(35*d^4 + 105*d^3*e
*x + 126*d^2*e^2*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 3*B*x*(70*d^4 + 224*d^3
*e*x + 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4)) + 55*a^2*b^3*x^3*(9*A
*(70*d^4 + 224*d^3*e*x + 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + 4*
B*x*(126*d^4 + 420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4))
 + 55*a*b^4*x^4*(2*A*(126*d^4 + 420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x
^3 + 70*e^4*x^4) + B*x*(210*d^4 + 720*d^3*e*x + 945*d^2*e^2*x^2 + 560*d*e^3
*x^3 + 126*e^4*x^4)) + b^5*x^5*(11*A*(210*d^4 + 720*d^3*e*x + 945*d^2*e^2*x
^2 + 560*d*e^3*x^3 + 126*e^4*x^4) + 6*B*x*(330*d^4 + 1155*d^3*e*x + 1540*d^
2*e^2*x^2 + 924*d*e^3*x^3 + 210*e^4*x^4))))/(13860*(a + b*x))
```

IntegrateAlgebraic [F] time = 7.91, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.44, size = 677, normalized size = 2.09

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/11*B*b^5*e^4*x^11 + A*a^5*d^4*x + 1/10*(4*B*b^5*d*e^3 + (5*B*a*b^4 + A*b^
5)*e^4)*x^10 + 1/9*(6*B*b^5*d^2*e^2 + 4*(5*B*a*b^4 + A*b^5)*d*e^3 + 5*(2*B*
a^2*b^3 + A*a*b^4)*e^4)*x^9 + 1/4*(2*B*b^5*d^3*e + 3*(5*B*a*b^4 + A*b^5)*d^
2*e^2 + 10*(2*B*a^2*b^3 + A*a*b^4)*d*e^3 + 5*(B*a^3*b^2 + A*a^2*b^3)*e^4)*x
^8 + 1/7*(B*b^5*d^4 + 4*(5*B*a*b^4 + A*b^5)*d^3*e + 30*(2*B*a^2*b^3 + A*a*b
^4)*d^2*e^2 + 40*(B*a^3*b^2 + A*a^2*b^3)*d*e^3 + 5*(B*a^4*b + 2*A*a^3*b^2)*
e^4)*x^7 + 1/6*((5*B*a*b^4 + A*b^5)*d^4 + 20*(2*B*a^2*b^3 + A*a*b^4)*d^3*e
+ 60*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 20*(B*a^4*b + 2*A*a^3*b^2)*d*e^3 + (
B*a^5 + 5*A*a^4*b)*e^4)*x^6 + 1/5*(A*a^5*e^4 + 5*(2*B*a^2*b^3 + A*a*b^4)*d^
4 + 40*(B*a^3*b^2 + A*a^2*b^3)*d^3*e + 30*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^2 +
 4*(B*a^5 + 5*A*a^4*b)*d*e^3)*x^5 + 1/2*(2*A*a^5*d*e^3 + 5*(B*a^3*b^2 + A*a
^2*b^3)*d^4 + 10*(B*a^4*b + 2*A*a^3*b^2)*d^3*e + 3*(B*a^5 + 5*A*a^4*b)*d^2*
e^2)*x^4 + 1/3*(6*A*a^5*d^2*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^4 + 4*(B*a^5
+ 5*A*a^4*b)*d^3*e)*x^3 + 1/2*(4*A*a^5*d^3*e + (B*a^5 + 5*A*a^4*b)*d^4)*x^2
```

giac [B] time = 0.25, size = 1192, normalized size = 3.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/11*B*b^5*x^11*e^4*sgn(b*x + a) + 2/5*B*b^5*d*x^10*e^3*sgn(b*x + a) + 2/3*
B*b^5*d^2*x^9*e^2*sgn(b*x + a) + 1/2*B*b^5*d^3*x^8*e*sgn(b*x + a) + 1/7*B*b
^5*d^4*x^7*sgn(b*x + a) + 1/2*B*a*b^4*x^10*e^4*sgn(b*x + a) + 1/10*A*b^5*x^
10*e^4*sgn(b*x + a) + 20/9*B*a*b^4*d*x^9*e^3*sgn(b*x + a) + 4/9*A*b^5*d*x^9
*e^3*sgn(b*x + a) + 15/4*B*a*b^4*d^2*x^8*e^2*sgn(b*x + a) + 3/4*A*b^5*d^2*x
^8*e^2*sgn(b*x + a) + 20/7*B*a*b^4*d^3*x^7*e*sgn(b*x + a) + 4/7*A*b^5*d^3*x
^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^4*x^6*sgn(b*x + a) + 1/6*A*b^5*d^4*x^6*sg
n(b*x + a) + 10/9*B*a^2*b^3*x^9*e^4*sgn(b*x + a) + 5/9*A*a*b^4*x^9*e^4*sgn(
b*x + a) + 5*B*a^2*b^3*d*x^8*e^3*sgn(b*x + a) + 5/2*A*a*b^4*d*x^8*e^3*sgn(b
*x + a) + 60/7*B*a^2*b^3*d^2*x^7*e^2*sgn(b*x + a) + 30/7*A*a*b^4*d^2*x^7*e^
2*sgn(b*x + a) + 20/3*B*a^2*b^3*d^3*x^6*e*sgn(b*x + a) + 10/3*A*a*b^4*d^3*x
^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^4*x^5*sgn(b*x + a) + A*a*b^4*d^4*x^5*sgn(
b*x + a) + 5/4*B*a^3*b^2*x^8*e^4*sgn(b*x + a) + 5/4*A*a^2*b^3*x^8*e^4*sgn(b
*x + a) + 40/7*B*a^3*b^2*d*x^7*e^3*sgn(b*x + a) + 40/7*A*a^2*b^3*d*x^7*e^3*
sgn(b*x + a) + 10*B*a^3*b^2*d^2*x^6*e^2*sgn(b*x + a) + 10*A*a^2*b^3*d^2*x^6
*e^2*sgn(b*x + a) + 8*B*a^3*b^2*d^3*x^5*e*sgn(b*x + a) + 8*A*a^2*b^3*d^3*x^
5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d^4*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^4*x
^4*sgn(b*x + a) + 5/7*B*a^4*b*x^7*e^4*sgn(b*x + a) + 10/7*A*a^3*b^2*x^7*e^4
*sgn(b*x + a) + 10/3*B*a^4*b*d*x^6*e^3*sgn(b*x + a) + 20/3*A*a^3*b^2*d*x^6*
e^3*sgn(b*x + a) + 6*B*a^4*b*d^2*x^5*e^2*sgn(b*x + a) + 12*A*a^3*b^2*d^2*x^
5*e^2*sgn(b*x + a) + 5*B*a^4*b*d^3*x^4*e*sgn(b*x + a) + 10*A*a^3*b^2*d^3*x^
4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^4*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d^4*x^
3*sgn(b*x + a) + 1/6*B*a^5*x^6*e^4*sgn(b*x + a) + 5/6*A*a^4*b*x^6*e^4*sgn(b
*x + a) + 4/5*B*a^5*d*x^5*e^3*sgn(b*x + a) + 4*A*a^4*b*d*x^5*e^3*sgn(b*x +
a) + 3/2*B*a^5*d^2*x^4*e^2*sgn(b*x + a) + 15/2*A*a^4*b*d^2*x^4*e^2*sgn(b*x
+ a) + 4/3*B*a^5*d^3*x^3*e*sgn(b*x + a) + 20/3*A*a^4*b*d^3*x^3*e*sgn(b*x +
a) + 1/2*B*a^5*d^4*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^4*x^2*sgn(b*x + a) + 1/
5*A*a^5*x^5*e^4*sgn(b*x + a) + A*a^5*d*x^4*e^3*sgn(b*x + a) + 2*A*a^5*d^2*x
^3*e^2*sgn(b*x + a) + 2*A*a^5*d^3*x^2*e*sgn(b*x + a) + A*a^5*d^4*x*sgn(b*x
+ a)
```

maple [B] time = 0.05, size = 872, normalized size = 2.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/13860*x*(1260*B*b^5*e^4*x^10+1386*A*b^5*e^4*x^9+6930*B*a*b^4*e^4*x^9+5544
*B*b^5*d*e^3*x^9+7700*A*a*b^4*e^4*x^8+6160*A*b^5*d*e^3*x^8+15400*B*a^2*b^3*
e^4*x^8+30800*B*a*b^4*d*e^3*x^8+9240*B*b^5*d^2*e^2*x^8+17325*A*a^2*b^3*e^4*
x^7+34650*A*a*b^4*d*e^3*x^7+10395*A*b^5*d^2*e^2*x^7+17325*B*a^3*b^2*e^4*x^7
+69300*B*a^2*b^3*d*e^3*x^7+51975*B*a*b^4*d^2*e^2*x^7+6930*B*b^5*d^3*e*x^7+1
9800*A*a^3*b^2*e^4*x^6+79200*A*a^2*b^3*d*e^3*x^6+59400*A*a*b^4*d^2*e^2*x^6+
7920*A*b^5*d^3*e*x^6+9900*B*a^4*b*e^4*x^6+79200*B*a^3*b^2*d*e^3*x^6+118800*
B*a^2*b^3*d^2*e^2*x^6+39600*B*a*b^4*d^3*e*x^6+1980*B*b^5*d^4*x^6+11550*A*a^
4*b*e^4*x^5+92400*A*a^3*b^2*d*e^3*x^5+138600*A*a^2*b^3*d^2*e^2*x^5+46200*A*
a*b^4*d^3*e*x^5+2310*A*b^5*d^4*x^5+2310*B*a^5*e^4*x^5+46200*B*a^4*b*d*e^3*x
^5+138600*B*a^3*b^2*d^2*e^2*x^5+92400*B*a^2*b^3*d^3*e*x^5+11550*B*a*b^4*d^4
*x^5+2772*A*a^5*e^4*x^4+55440*A*a^4*b*d*e^3*x^4+166320*A*a^3*b^2*d^2*e^2*x^
4+110880*A*a^2*b^3*d^3*e*x^4+13860*A*a*b^4*d^4*x^4+11088*B*a^5*d*e^3*x^4+83
160*B*a^4*b*d^2*e^2*x^4+110880*B*a^3*b^2*d^3*e*x^4+27720*B*a^2*b^3*d^4*x^4+
13860*A*a^5*d*e^3*x^3+103950*A*a^4*b*d^2*e^2*x^3+138600*A*a^3*b^2*d^3*e*x^3
+34650*A*a^2*b^3*d^4*x^3+20790*B*a^5*d^2*e^2*x^3+69300*B*a^4*b*d^3*e*x^3+34
650*B*a^3*b^2*d^4*x^3+27720*A*a^5*d^2*e^2*x^2+92400*A*a^4*b*d^3*e*x^2+46200
*A*a^3*b^2*d^4*x^2+18480*B*a^5*d^3*e*x^2+23100*B*a^4*b*d^4*x^2+27720*A*a^5*
d^3*e*x+34650*A*a^4*b*d^4*x+6930*B*a^5*d^4*x+13860*A*a^5*d^4)*((b*x+a)^2)^(
5/2)/(b*x+a)^5
```

maxima [B] time = 0.65, size = 1004, normalized size = 3.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^4*x^4/b^2 - 3/22*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*B*a*e^4*x^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^4*
x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*e^4*x/b^5 + 31/198*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*B*a^2*e^4*x^2/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*A*a*d^4/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^6*e^4/b^6 - 65/396*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*e^4*x/b^5 + 461/2772*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*B*a^4*e^4/b^6 + 1/10*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*x^3/b^2 + 1/6*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^4*x/b^4 - 1/3*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^3*x/b^3 + 1/3*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^2*x/b^2 - 1/6*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b
 - 13/90*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 2/
9*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(
4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 1/3*(3*B*d^2*e
^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/3*(2*B*d^3*e +
3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(B*d^4 + 4*A*d^3
*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 + 29/180*(4*B*d*e^3 + A*e^4)*(b
^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 11/36*(3*B*d^2*e^2 + 2*A*d*e^3)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 1/4*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 - 209/1260*(4*B*d*e^3 + A*e^4)*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 83/252*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 9/28*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(d + e\,x\right)^4\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^4\,\left((a + bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4*((a + b*x)**2)**(5/2), x)
```

3.1521 $\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=259

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(-4aBe+Abe+3bBd)}{9b^5}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)(-2aBe+Abe+b}{8b^5}$$

Rubi [A] time = 0.46, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(-4aBe+Abe+3bBd)}{9b^5}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)(-2aBe+Abe+bBd)}{8b^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2(-4aBe+3Abe+bBd)}{7b^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)^3}{6b^5}+\frac{Be^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9}{10b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
5) + ((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(7*b^5) + (3*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b
*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^5) + (e^2*(3*b*B*d + A*b*e - 4*a*
B*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^5) + (B*e^3*(a + b*x)^
9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*b^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5 (A+Bx)(d+ex)^3\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)^3\left(ab+b^2x\right)^5}{b^4}+\frac{(bd-ae)^2(bBd+3Abe-4}{b^5}\right.}{}$$

$$= \frac{(Ab-aB)(bd-ae)^3(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^5}+\frac{(bd-ae)^2(b}{}$$

Mathematica [A] time = 0.20, size = 478, normalized size = 1.85

$$\frac{x\sqrt{(a+bx)^2}\left(126a^5\left(5A\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+Bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)\right)+210a^4bx\left(3A\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+Bx\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)\right)+60a^3b^2x^2\left(7A\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)+3Bx\left(35d^3+84d^2ex+70de^2x^2+20e^3x^3\right)\right)+90a^2b^3x^3\left(2A\left(35d^3+84d^2ex+70de^2x^2+20e^3x^3\right)+Bx\left(56d^3+140d^2ex+120de^2x^2+35e^3x^3\right)\right)+5ab^4x^4\left(9A\left(56d^3+140d^2ex+120de^2x^2+35e^3x^3\right)+5Bx\left(84d^3+216d^2ex+189de^2x^2+56e^3x^3\right)\right)+b^5x^5\left(5A\left(84d^3+216d^2ex+189de^2x^2+56e^3x^3\right)+3Bx\left(120d^3+315d^2ex+280de^2x^2+84e^3x^3\right)\right)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(126*a^5*(5*A*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x
^3) + B*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3)) + 210*a^4*b*x*(
3*A*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B*x*(20*d^3 + 45*d^2
*e*x + 36*d*e^2*x^2 + 10*e^3*x^3)) + 60*a^3*b^2*x^2*(7*A*(20*d^3 + 45*d^2*e
*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 3*B*x*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2
 + 20*e^3*x^3)) + 90*a^2*b^3*x^3*(2*A*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 +
 20*e^3*x^3) + B*x*(56*d^3 + 140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3)) + 5
*a*b^4*x^4*(9*A*(56*d^3 + 140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3) + 5*B*x
*(84*d^3 + 216*d^2*e*x + 189*d*e^2*x^2 + 56*e^3*x^3)) + b^5*x^5*(5*A*(84*d^
3 + 216*d^2*e*x + 189*d*e^2*x^2 + 56*e^3*x^3) + 3*B*x*(120*d^3 + 315*d^2*e*
x + 280*d*e^2*x^2 + 84*e^3*x^3))))/(2520*(a + b*x))
```

IntegrateAlgebraic [F] time = 7.16, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^3 \left(a^2 + 2abx + b^2x^2\right)^{5/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.44, size = 532, normalized size = 2.05

$$\frac{1}{10}Bb^5e^3x^{10} + Aa^5d^3x + \frac{1}{9}\left(3Bb^5de^2 + \left(5Bab^4 + Ab^5\right)e^3\right)x^9 + \frac{1}{8}\left(3Bb^5d^2e + 3\left(5Bab^4 + Ab^5\right)de^2 + 5\left(2Ba^2b^3 + Aab^4\right)e^3\right)x^8 + \frac{1}{7}\left(Bb^5d^3 + 3\left(5Bab^4 + Ab^5\right)d^2e + 15\left(2Ba^2b^3 + Aab^4\right)de^2 + 10\left(Ba^3b^2 + Aa^2b^3\right)e^3\right)x^7 + \frac{1}{6}\left(\left(5Bab^4 + Ab^5\right)d^3 + 15\left(2Ba^2b^3 + Aab^4\right)d^2e + 30\left(Ba^3b^2 + Aa^2b^3\right)de^2 + 5\left(Ba^4b + 2Aa^3b^2\right)e^3\right)x^6 + \frac{1}{5}\left(5\left(2Ba^2b^3 + Aab^4\right)d^3 + 30\left(Ba^3b^2 + Aa^2b^3\right)d^2e + 15\left(Ba^4b + 2Aa^3b^2\right)de^2 + \left(Ba^5 + 5Aa^4b\right)e^3\right)x^5 + \frac{1}{4}\left(Aa^5e^3 + 10\left(Ba^3b^2 + Aa^2b^3\right)d^3 + 15\left(Ba^4b + 2Aa^3b^2\right)d^2e + 3\left(Ba^5 + 5Aa^4b\right)de^2\right)x^4 + \frac{1}{3}\left(3Aa^5de^2 + 5\left(Ba^4b + 2Aa^3b^2\right)d^3 + 3\left(Ba^5 + 5Aa^4b\right)d^2e\right)x^3 + \frac{1}{2}\left(3Aa^5d^2e + \left(Ba^5 + 5Aa^4b\right)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/10*B*b^5*e^3*x^10 + A*a^5*d^3*x + 1/9*(3*B*b^5*d*e^2 + (5*B*a*b^4 + A*b^5
)*e^3)*x^9 + 1/8*(3*B*b^5*d^2*e + 3*(5*B*a*b^4 + A*b^5)*d*e^2 + 5*(2*B*a^2*
b^3 + A*a*b^4)*e^3)*x^8 + 1/7*(B*b^5*d^3 + 3*(5*B*a*b^4 + A*b^5)*d^2*e + 15
*(2*B*a^2*b^3 + A*a*b^4)*d*e^2 + 10*(B*a^3*b^2 + A*a^2*b^3)*e^3)*x^7 + 1/6*
((5*B*a*b^4 + A*b^5)*d^3 + 15*(2*B*a^2*b^3 + A*a*b^4)*d^2*e + 30*(B*a^3*b^2
 + A*a^2*b^3)*d*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*e^3)*x^6 + 1/5*(5*(2*B*a^2*
b^3 + A*a*b^4)*d^3 + 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e + 15*(B*a^4*b + 2*A*a
^3*b^2)*d*e^2 + (B*a^5 + 5*A*a^4*b)*e^3)*x^5 + 1/4*(A*a^5*e^3 + 10*(B*a^3*b
^2 + A*a^2*b^3)*d^3 + 15*(B*a^4*b + 2*A*a^3*b^2)*d^2*e + 3*(B*a^5 + 5*A*a^4
*b)*d*e^2)*x^4 + 1/3*(3*A*a^5*d*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^3 + 3*(B*
a^5 + 5*A*a^4*b)*d^2*e)*x^3 + 1/2*(3*A*a^5*d^2*e + (B*a^5 + 5*A*a^4*b)*d^3)
*x^2
```

giac [B] time = 0.22, size = 934, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/10*B*b^5*x^10*e^3*sgn(b*x + a) + 1/3*B*b^5*d*x^9*e^2*sgn(b*x + a) + 3/8*B
*b^5*d^2*x^8*e*sgn(b*x + a) + 1/7*B*b^5*d^3*x^7*sgn(b*x + a) + 5/9*B*a*b^4*
x^9*e^3*sgn(b*x + a) + 1/9*A*b^5*x^9*e^3*sgn(b*x + a) + 15/8*B*a*b^4*d*x^8*
e^2*sgn(b*x + a) + 3/8*A*b^5*d*x^8*e^2*sgn(b*x + a) + 15/7*B*a*b^4*d^2*x^7*
e*sgn(b*x + a) + 3/7*A*b^5*d^2*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^3*x^6*sgn
(b*x + a) + 1/6*A*b^5*d^3*x^6*sgn(b*x + a) + 5/4*B*a^2*b^3*x^8*e^3*sgn(b*x
+ a) + 5/8*A*a*b^4*x^8*e^3*sgn(b*x + a) + 30/7*B*a^2*b^3*d*x^7*e^2*sgn(b*x
```

```
+ a) + 15/7*A*a*b^4*d*x^7*e^2*sgn(b*x + a) + 5*B*a^2*b^3*d^2*x^6*e*sgn(b*x
+ a) + 5/2*A*a*b^4*d^2*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^3*x^5*sgn(b*x + a
) + A*a*b^4*d^3*x^5*sgn(b*x + a) + 10/7*B*a^3*b^2*x^7*e^3*sgn(b*x + a) + 10
/7*A*a^2*b^3*x^7*e^3*sgn(b*x + a) + 5*B*a^3*b^2*d*x^6*e^2*sgn(b*x + a) + 5*
A*a^2*b^3*d*x^6*e^2*sgn(b*x + a) + 6*B*a^3*b^2*d^2*x^5*e*sgn(b*x + a) + 6*A
*a^2*b^3*d^2*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d^3*x^4*sgn(b*x + a) + 5/2*
A*a^2*b^3*d^3*x^4*sgn(b*x + a) + 5/6*B*a^4*b*x^6*e^3*sgn(b*x + a) + 5/3*A*a
^3*b^2*x^6*e^3*sgn(b*x + a) + 3*B*a^4*b*d*x^5*e^2*sgn(b*x + a) + 6*A*a^3*b^
2*d*x^5*e^2*sgn(b*x + a) + 15/4*B*a^4*b*d^2*x^4*e*sgn(b*x + a) + 15/2*A*a^3
*b^2*d^2*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^3*x^3*sgn(b*x + a) + 10/3*A*a^3
*b^2*d^3*x^3*sgn(b*x + a) + 1/5*B*a^5*x^5*e^3*sgn(b*x + a) + A*a^4*b*x^5*e^
3*sgn(b*x + a) + 3/4*B*a^5*d*x^4*e^2*sgn(b*x + a) + 15/4*A*a^4*b*d*x^4*e^2*
sgn(b*x + a) + B*a^5*d^2*x^3*e*sgn(b*x + a) + 5*A*a^4*b*d^2*x^3*e*sgn(b*x +
 a) + 1/2*B*a^5*d^3*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^3*x^2*sgn(b*x + a) + 1
/4*A*a^5*x^4*e^3*sgn(b*x + a) + A*a^5*d*x^3*e^2*sgn(b*x + a) + 3/2*A*a^5*d^
2*x^2*e*sgn(b*x + a) + A*a^5*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 676, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/2520*x*(252*B*b^5*e^3*x^9+280*A*b^5*e^3*x^8+1400*B*a*b^4*e^3*x^8+840*B*b^
5*d*e^2*x^8+1575*A*a*b^4*e^3*x^7+945*A*b^5*d*e^2*x^7+3150*B*a^2*b^3*e^3*x^7
+4725*B*a*b^4*d*e^2*x^7+945*B*b^5*d^2*e*x^7+3600*A*a^2*b^3*e^3*x^6+5400*A*a
*b^4*d*e^2*x^6+1080*A*b^5*d^2*e*x^6+3600*B*a^3*b^2*e^3*x^6+10800*B*a^2*b^3*
d*e^2*x^6+5400*B*a*b^4*d^2*e*x^6+360*B*b^5*d^3*x^6+4200*A*a^3*b^2*e^3*x^5+1
2600*A*a^2*b^3*d*e^2*x^5+6300*A*a*b^4*d^2*e*x^5+420*A*b^5*d^3*x^5+2100*B*a^
4*b*e^3*x^5+12600*B*a^3*b^2*d*e^2*x^5+12600*B*a^2*b^3*d^2*e*x^5+2100*B*a*b^
4*d^3*x^5+2520*A*a^4*b*e^3*x^4+15120*A*a^3*b^2*d*e^2*x^4+15120*A*a^2*b^3*d^
2*e*x^4+2520*A*a*b^4*d^3*x^4+504*B*a^5*e^3*x^4+7560*B*a^4*b*d*e^2*x^4+15120
*B*a^3*b^2*d^2*e*x^4+5040*B*a^2*b^3*d^3*x^4+630*A*a^5*e^3*x^3+9450*A*a^4*b*
d*e^2*x^3+18900*A*a^3*b^2*d^2*e*x^3+6300*A*a^2*b^3*d^3*x^3+1890*B*a^5*d*e^2
*x^3+9450*B*a^4*b*d^2*e*x^3+6300*B*a^3*b^2*d^3*x^3+2520*A*a^5*d*e^2*x^2+126
00*A*a^4*b*d^2*e*x^2+8400*A*a^3*b^2*d^3*x^2+2520*B*a^5*d^2*e*x^2+4200*B*a^4
*b*d^3*x^2+3780*A*a^5*d^2*e*x+6300*A*a^4*b*d^3*x+1260*B*a^5*d^3*x+2520*A*a^
5*d^3)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.54, size = 698, normalized size = 2.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^3*x^3/b^2 + 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*A*d^3*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^4*e^3*x/b^4
 - 13/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*e^3*x^2/b^3 + 1/6*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*A*a*d^3/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*e
^3/b^5 + 29/180*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*e^3*x/b^4 - 209/1260*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*e^3/b^5 - 1/6*(3*B*d*e^2 + A*e^3)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(B*d^2*e + A*d*e^2)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a*x/b + 1/9*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*x^2/b^2 - 1/6*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b
^4 + 1/2*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*
```

```
(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 11/72*(3*B*d*
e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 3/8*(B*d^2*e + A*d*e
^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 83/504*(3*B*d*e^2 + A*e^3)*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 27/56*(B*d^2*e + A*d*e^2)*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(d + e\,x\right)^3\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^3\left((a + bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((A + B*x)*(d + e*x)**3*((a + b*x)**2)**(5/2), x)
```

3.1522 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=198

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(-3aBe+Abe+2bBd)}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)(-3aBe+2Abe+bB\cdots}{7b^4}$$

Rubi [A] time = 0.34, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(-3aBe+Abe+2bBd)}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)(-3aBe+2Abe+bBd)}{7b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)^2}{6b^4}+\frac{Be^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
4) + ((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(7*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^7*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(8*b^4) + (B*e^2*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(9*b^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^2\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)^2\left(ab+b^2x\right)^5}{b^3}+\frac{(bd-ae)(bBd+2Abe-3a\cdots}{b^4}\cdots\right.}{b^4\left(ab+b^2\cdots\right.}\\ &= \frac{(Ab-aB)(bd-ae)^2(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^4}+\frac{(bd-ae)(bB\cdots}{\cdots}\end{aligned}$$

Mathematica [A] time = 0.14, size = 347, normalized size = 1.75

$$\frac{x\sqrt{(a+bx)^2}\left(42a^5\left(4A\left(3d^2+3dex+e^2x^2\right)+Bx\left(6d^2+8dex+3e^2x^2\right)\right)+42a^4bx\left(5A\left(6d^2+8dex+3e^2x^2\right)+2Bx\left(10d^2+15dex+6e^2x^2\right)\right)+84a^3b^2x^2\left(2A\left(10d^2+15dex+6e^2x^2\right)+Bx\left(15d^2+24dex+10e^2x^2\right)\right)+12a^2b^3x^3\left(7A\left(15d^2+24dex+10e^2x^2\right)+4Bx\left(21d^2+35dex+15e^2x^2\right)\right)+3ab^4x^4\left(8A\left(21d^2+35dex+15e^2x^2\right)+5Bx\left(28d^2+48dex+21e^2x^2\right)\right)+b^5x^5\left(3A\left(28d^2+48dex+21e^2x^2\right)+2Bx\left(36d^2+63dex+28e^2x^2\right)\right)\right)}{504(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(42*a^5*(4*A*(3*d^2 + 3*d*e*x + e^2*x^2) + B*x*(6*d^2
+ 8*d*e*x + 3*e^2*x^2)) + 42*a^4*b*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2
*B*x*(10*d^2 + 15*d*e*x + 6*e^2*x^2)) + 84*a^3*b^2*x^2*(2*A*(10*d^2 + 15*d*
e*x + 6*e^2*x^2) + B*x*(15*d^2 + 24*d*e*x + 10*e^2*x^2)) + 12*a^2*b^3*x^3*(
7*A*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + 4*B*x*(21*d^2 + 35*d*e*x + 15*e^2*x^
2)) + 3*a*b^4*x^4*(8*A*(21*d^2 + 35*d*e*x + 15*e^2*x^2) + 5*B*x*(28*d^2 + 4
8*d*e*x + 21*e^2*x^2)) + b^5*x^5*(3*A*(28*d^2 + 48*d*e*x + 21*e^2*x^2) + 2*
B*x*(36*d^2 + 63*d*e*x + 28*e^2*x^2))))/(504*(a + b*x))
```

IntegrateAlgebraic [F] time = 4.57, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.41, size = 384, normalized size = 1.94

$$\frac{1}{9}Bb^5e^2x^9+Aa^5d^2x+\frac{1}{8}\left(2Bb^5de+\left(5Bab^4+Ab^5\right)e^2\right)x^8+\frac{1}{7}\left(Bb^5d^2+2\left(5Bab^4+Ab^5\right)de+5\left(2Ba^2b^3+Aab^4\right)e^2\right)x^7+\frac{1}{6}\left(\left(5Bab^4+Ab^5\right)d^2+10\left(2Ba^2b^3+Aab^4\right)de+10\left(Ba^3b^2+Aa^2b^3\right)e^2\right)x^6+\left(\left(2Ba^2b^3+Aab^4\right)d^2+4\left(Ba^3b^2+Aa^2b^3\right)de+\left(Ba^4b+2Aa^3b^2\right)e^2\right)x^5+\frac{1}{4}\left(10\left(Ba^3b^2+Aa^2b^3\right)d^2+10\left(Ba^4b+2Aa^3b^2\right)de+\left(Ba^5+5Aa^4b\right)e^2\right)x^4+\frac{1}{3}\left(Aa^5e^2+5\left(Ba^4b+2Aa^3b^2\right)d^2+2\left(Ba^5+5Aa^4b\right)de\right)x^3+\frac{1}{2}\left(2Aa^5de+\left(Ba^5+5Aa^4b\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/9*B*b^5*e^2*x^9 + A*a^5*d^2*x + 1/8*(2*B*b^5*d*e + (5*B*a*b^4 + A*b^5)*e^
2)*x^8 + 1/7*(B*b^5*d^2 + 2*(5*B*a*b^4 + A*b^5)*d*e + 5*(2*B*a^2*b^3 + A*a*
b^4)*e^2)*x^7 + 1/6*((5*B*a*b^4 + A*b^5)*d^2 + 10*(2*B*a^2*b^3 + A*a*b^4)*d
*e + 10*(B*a^3*b^2 + A*a^2*b^3)*e^2)*x^6 + ((2*B*a^2*b^3 + A*a*b^4)*d^2 + 4
*(B*a^3*b^2 + A*a^2*b^3)*d*e + (B*a^4*b + 2*A*a^3*b^2)*e^2)*x^5 + 1/4*(10*(
B*a^3*b^2 + A*a^2*b^3)*d^2 + 10*(B*a^4*b + 2*A*a^3*b^2)*d*e + (B*a^5 + 5*A*
a^4*b)*e^2)*x^4 + 1/3*(A*a^5*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^2 + 2*(B*a^5
 + 5*A*a^4*b)*d*e)*x^3 + 1/2*(2*A*a^5*d*e + (B*a^5 + 5*A*a^4*b)*d^2)*x^2
```

giac [B] time = 0.20, size = 679, normalized size = 3.43

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/9*B*b^5*x^9*e^2*sgn(b*x + a) + 1/4*B*b^5*d*x^8*e*sgn(b*x + a) + 1/7*B*b^5
*d^2*x^7*sgn(b*x + a) + 5/8*B*a*b^4*x^8*e^2*sgn(b*x + a) + 1/8*A*b^5*x^8*e^
2*sgn(b*x + a) + 10/7*B*a*b^4*d*x^7*e*sgn(b*x + a) + 2/7*A*b^5*d*x^7*e*sgn(
b*x + a) + 5/6*B*a*b^4*d^2*x^6*sgn(b*x + a) + 1/6*A*b^5*d^2*x^6*sgn(b*x + a
) + 10/7*B*a^2*b^3*x^7*e^2*sgn(b*x + a) + 5/7*A*a*b^4*x^7*e^2*sgn(b*x + a)
+ 10/3*B*a^2*b^3*d*x^6*e*sgn(b*x + a) + 5/3*A*a*b^4*d*x^6*e*sgn(b*x + a) +
2*B*a^2*b^3*d^2*x^5*sgn(b*x + a) + A*a*b^4*d^2*x^5*sgn(b*x + a) + 5/3*B*a^3
*b^2*x^6*e^2*sgn(b*x + a) + 5/3*A*a^2*b^3*x^6*e^2*sgn(b*x + a) + 4*B*a^3*b^
2*d*x^5*e*sgn(b*x + a) + 4*A*a^2*b^3*d*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d
^2*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^2*x^4*sgn(b*x + a) + B*a^4*b*x^5*e^2*
sgn(b*x + a) + 2*A*a^3*b^2*x^5*e^2*sgn(b*x + a) + 5/2*B*a^4*b*d*x^4*e*sgn(b
*x + a) + 5*A*a^3*b^2*d*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^2*x^3*sgn(b*x +
a) + 10/3*A*a^3*b^2*d^2*x^3*sgn(b*x + a) + 1/4*B*a^5*x^4*e^2*sgn(b*x + a) +
```

```
 5/4*A*a^4*b*x^4*e^2*sgn(b*x + a) + 2/3*B*a^5*d*x^3*e*sgn(b*x + a) + 10/3*A
*a^4*b*d*x^3*e*sgn(b*x + a) + 1/2*B*a^5*d^2*x^2*sgn(b*x + a) + 5/2*A*a^4*b*
d^2*x^2*sgn(b*x + a) + 1/3*A*a^5*x^3*e^2*sgn(b*x + a) + A*a^5*d*x^2*e*sgn(b
*x + a) + A*a^5*d^2*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 480, normalized size = 2.42

$$\frac{\left(56Be^{2}b^{5}x^{8}+63x^{7}Ab^{5}e^{2}+315x^{7}Be^{2}ab^{4}+126x^{7}Bb^{5}de+360x^{6}Aab^{4}e^{2}+144x^{6}Ab^{5}de+720x^{6}Be^{2}a^{2}b^{3}+720x^{6}Bab^{4}de+72x^{6}Bb^{5}d^{2}+840x^{5}Aa^{2}b^{3}e^{2}+840x^{5}Aab^{4}de+84x^{5}Ad^{2}b^{5}+840x^{5}Be^{2}a^{3}b^{2}+1680x^{5}Ba^{2}b^{3}de+420x^{5}Bab^{4}d^{2}+1008Aa^{3}b^{2}e^{2}x^{4}+2016Aa^{2}b^{3}dex^{4}+504Aab^{4}d^{2}x^{4}+504Ba^{4}be^{2}x^{4}+2016Ba^{3}b^{2}dex^{4}+1008Ba^{2}b^{3}d^{2}x^{4}+630x^{3}Aa^{4}be^{2}+2520x^{3}Aa^{3}b^{2}de+1260x^{3}Ad^{2}a^{2}b^{3}+126x^{3}Be^{2}a^{5}+1260x^{3}Ba^{4}bde+1260x^{3}Ba^{3}b^{2}d^{2}+168x^{2}Aa^{5}e^{2}+1680x^{2}Aa^{4}bde+1680x^{2}Ad^{2}a^{3}b^{2}+336x^{2}Ba^{5}de+840x^{2}Ba^{4}bd^{2}+504xAa^{5}de+1260xAd^{2}a^{4}b+252xBa^{5}d^{2}+504Ad^{2}a^{5}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}x}{504\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/504*x*(56*B*b^5*e^2*x^8+63*A*b^5*e^2*x^7+315*B*a*b^4*e^2*x^7+126*B*b^5*d*
e*x^7+360*A*a*b^4*e^2*x^6+144*A*b^5*d*e*x^6+720*B*a^2*b^3*e^2*x^6+720*B*a*b
^4*d*e*x^6+72*B*b^5*d^2*x^6+840*A*a^2*b^3*e^2*x^5+840*A*a*b^4*d*e*x^5+84*A*
b^5*d^2*x^5+840*B*a^3*b^2*e^2*x^5+1680*B*a^2*b^3*d*e*x^5+420*B*a*b^4*d^2*x^
5+1008*A*a^3*b^2*e^2*x^4+2016*A*a^2*b^3*d*e*x^4+504*A*a*b^4*d^2*x^4+504*B*a
^4*b*e^2*x^4+2016*B*a^3*b^2*d*e*x^4+1008*B*a^2*b^3*d^2*x^4+630*A*a^4*b*e^2*
x^3+2520*A*a^3*b^2*d*e*x^3+1260*A*a^2*b^3*d^2*x^3+126*B*a^5*e^2*x^3+1260*B*
a^4*b*d*e*x^3+1260*B*a^3*b^2*d^2*x^3+168*A*a^5*e^2*x^2+1680*A*a^4*b*d*e*x^2
+1680*A*a^3*b^2*d^2*x^2+336*B*a^5*d*e*x^2+840*B*a^4*b*d^2*x^2+504*A*a^5*d*e
*x+1260*A*a^4*b*d^2*x+252*B*a^5*d^2*x+504*A*a^5*d^2)*((b*x+a)^2)^(5/2)/(b*x
+a)^5
```

maxima [B] time = 0.61, size = 456, normalized size = 2.30

$$\frac{1}{6}\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ad^{2}x-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ba^{3}e^{2}x}{6b^{3}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{7}{2}}Be^{2}x^{2}}{9b^{2}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Aad^{2}}{6b}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}Ba^{4}e^{2}}{6b^{4}}-\frac{11\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{7}{2}}Bae^{2}x}{72b^{3}}+\frac{83\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{7}{2}}Ba^{2}e^{2}}{504b^{4}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}\left(2Bde+Ae^{2}\right)a^{2}x}{6b^{2}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}\left(Bd^{2}+2Ade\right)ax}{6b}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}\left(2Bde+Ae^{2}\right)a^{3}}{6b^{3}}-\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{5}{2}}\left(Bd^{2}+2Ade\right)a^{2}}{6b^{2}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{7}{2}}\left(2Bde+Ae^{2}\right)x}{8b^{2}}-\frac{9\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{7}{2}}\left(2Bde+Ae^{2}\right)a}{56b^{3}}+\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{7}{2}}\left(Bd^{2}+2Ade\right)}{7b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^2*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*B*a^3*e^2*x/b^3 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^2*x^2/b^2
+ 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d^2/b - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*a^4*e^2/b^4 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*e^2*x/
b^3 + 83/504*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*e^2/b^4 + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*(2*B*d*e + A*e^2)*a^2*x/b^2 - 1/6*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*(B*d^2 + 2*A*d*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
(2*B*d*e + A*e^2)*a^3/b^3 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(B*d^2 + 2*
A*d*e)*a^2/b^2 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*B*d*e + A*e^2)*x/b^
2 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*B*d*e + A*e^2)*a/b^3 + 1/7*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*(B*d^2 + 2*A*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + B x\right) \left(d + e x\right)^{2} \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((A + B*x)*(d + e*x)**2*((a + b*x)**2)**(5/2), x)
```

3.1523 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=135

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-2aBe+Abe+bBd)}{7b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)}{6b^3}+\frac{Be\sqrt{a^2+2a\cdots}}{\cdots}$$

Rubi [A] time = 0.20, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-2aBe+Abe+bBd)}{7b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)}{6b^3}+\frac{Be\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3)
 + ((b*B*d + A*b*e - 2*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*b^3) + (B*e*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)\left(ab+b^2x\right)^5}{b^2}+\frac{(bBd+Abe-2aBe)\left(ab+b^2\cdots\right.}{b^3}\cdots\right.}{b^4\left(ab+b^2x\right)}$$

$$=\frac{(Ab-aB)(bd-ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^3}+\frac{(bBd+Abe-\cdots}{\cdots}$$

Mathematica [A] time = 0.10, size = 214, normalized size = 1.59

$$\frac{x\sqrt{(a+bx)^2}\left(28a^5(3A(2d+ex)+Bx(3d+2ex))+70a^4bx(A(6d+4ex)+Bx(4d+3ex))+28a^3b^2x^2(5A(4d+3ex)+3Bx(5d+4ex))+28a^2b^3x^3(3A(5d+4ex)+2Bx(6d+5ex))+4ab^4x^4(7A(6d+5ex)+5Bx(7d+6ex))+b^5x^5(4A(7d+6ex)+3Bx(8d+7ex))\right)}{168(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

[Out] (x*Sqrt[(a + b*x)^2]*(28*a^5*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + 28*a^3*b^2*x^2*(5*A*(4*d + 3*e*x) + 3*B*x*(5*d + 4*e*x)) + 70*a^4*b*x*(B*x*(4*d + 3*e*x) + A*(6*d + 4*e*x)) + 28*a^2*b^3*x^3*(3*A*(5*d + 4*e*x) + 2*B*x*(6*d + 5*e*x)) + 4*a*b^4*x^4*(7*A*(6*d + 5*e*x) + 5*B*x*(7*d + 6*e*x)) + b^5*x^5*(4*A*(7*d + 6*e*x) + 3*B*x*(8*d + 7*e*x))))/(168*(a + b*x))

IntegrateAlgebraic [F] time = 2.92, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]

[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]

fricas [B] time = 0.41, size = 239, normalized size = 1.77

$$\frac{1}{8}Bb^5ex^8+Aa^5dx+\frac{1}{7}\left(Bb^5d+\left(5Bab^4+Ab^5\right)e\right)x^7+\frac{1}{6}\left(\left(5Bab^4+Ab^5\right)d+5\left(2Ba^2b^3+Aab^4\right)e\right)x^6+\left(\left(2Ba^2b^3+Aab^4\right)d+2\left(Ba^3b^2+Aa^2b^3\right)e\right)x^5+\frac{5}{4}\left(2\left(Ba^3b^2+Aa^2b^3\right)d+\left(Ba^4b+2Aa^3b^2\right)e\right)x^4+\frac{1}{3}\left(5\left(Ba^4b+2Aa^3b^2\right)d+\left(Ba^5+5Aa^4b\right)e\right)x^3+\frac{1}{2}\left(Aa^5e+\left(Ba^5+5Aa^4b\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")

[Out] 1/8*B*b^5*e*x^8 + A*a^5*d*x + 1/7*(B*b^5*d + (5*B*a*b^4 + A*b^5)*e)*x^7 + 1/6*((5*B*a*b^4 + A*b^5)*d + 5*(2*B*a^2*b^3 + A*a*b^4)*e)*x^6 + ((2*B*a^2*b^3 + A*a*b^4)*d + 2*(B*a^3*b^2 + A*a^2*b^3)*e)*x^5 + 5/4*(2*(B*a^3*b^2 + A*a^2*b^3)*d + (B*a^4*b + 2*A*a^3*b^2)*e)*x^4 + 1/3*(5*(B*a^4*b + 2*A*a^3*b^2)*d + (B*a^5 + 5*A*a^4*b)*e)*x^3 + 1/2*(A*a^5*e + (B*a^5 + 5*A*a^4*b)*d)*x^2

giac [B] time = 0.18, size = 425, normalized size = 3.15

$$\frac{1}{8}Bb^5ex^8\mathrm{sgn}(bx+a)+\frac{1}{7}Bb^5dx^7\mathrm{sgn}(bx+a)+\frac{5}{7}Bab^4x^7e\,\mathrm{sgn}(bx+a)+\frac{1}{7}Ab^5x^7e\,\mathrm{sgn}(bx+a)+\frac{5}{6}Bab^4dx^6\mathrm{sgn}(bx+a)+\frac{1}{6}Ab^5dx^6\mathrm{sgn}(bx+a)+\frac{5}{3}Ba^2b^3x^6e\,\mathrm{sgn}(bx+a)+\frac{5}{6}Aab^4x^6e\,\mathrm{sgn}(bx+a)+2Ba^2b^3dx^5\mathrm{sgn}(bx+a)+Aab^4dx^5\mathrm{sgn}(bx+a)+2Ba^3b^2x^5e\,\mathrm{sgn}(bx+a)+2Aa^2b^3x^5e\,\mathrm{sgn}(bx+a)+\frac{5}{2}Ba^3b^2dx^4\mathrm{sgn}(bx+a)+\frac{5}{2}Aa^2b^3dx^4\mathrm{sgn}(bx+a)+\frac{5}{4}Ba^4bx^4e\,\mathrm{sgn}(bx+a)+\frac{5}{2}Aa^3b^2x^4e\,\mathrm{sgn}(bx+a)+\frac{5}{3}Ba^4bdx^3\mathrm{sgn}(bx+a)+\frac{10}{3}Aa^3b^2dx^3\mathrm{sgn}(bx+a)+\frac{1}{3}Ba^5x^3e\,\mathrm{sgn}(bx+a)+\frac{5}{3}Aa^4bx^3e\,\mathrm{sgn}(bx+a)+\frac{1}{2}Ba^5dx^2\mathrm{sgn}(bx+a)+\frac{5}{2}Aa^4bdx^2\mathrm{sgn}(bx+a)+\frac{1}{2}Aa^5x^2e\,\mathrm{sgn}(bx+a)+Aa^5dx\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")

[Out] 1/8*B*b^5*x^8*e*sgn(b*x + a) + 1/7*B*b^5*d*x^7*sgn(b*x + a) + 5/7*B*a*b^4*x^7*e*sgn(b*x + a) + 1/7*A*b^5*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d*x^6*sgn(b*x + a) + 1/6*A*b^5*d*x^6*sgn(b*x + a) + 5/3*B*a^2*b^3*x^6*e*sgn(b*x + a) + 5/6*A*a*b^4*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d*x^5*sgn(b*x + a) + A*a*b^4*d*x^5*sgn(b*x + a) + 2*B*a^3*b^2*x^5*e*sgn(b*x + a) + 2*A*a^2*b^3*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d*x^4*sgn(b*x + a) + 5/4*B*a^4*b*x^4*e*sgn(b*x + a) + 5/2*A*a^3*b^2*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d*x^3*sgn(b*x + a) + 1/3*B*a^5*x^3*e*sgn(b*x + a) + 5/3*A*a^4*b*x^3*e*sgn(b*x + a) + 1/2*B*a^5*d*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d*x^2*sgn(b*x + a) + 1/2*A*a^5*x^2*e*sgn(b*x + a) + A*a^5*d*x*sgn(b*x + a)

maple [B] time = 0.05, size = 284, normalized size = 2.10

$$\frac{\left(21Beb^5x^7+24x^6Ab^5e+120x^6Beab^4+24x^6Bb^5d+140x^5Aab^4e+28x^5Adb^5+280x^5Bea^2b^3+140x^5Bab^4d+336Aa^2b^3ex^4+168Aab^4dx^4+336Ba^3b^2ex^4+336Ba^2b^3dx^4+420x^3Aa^3b^2e+420x^3Ada^2b^3+210x^3Bea^4b+420x^3Ba^3b^2d+280x^2Aa^4be+560x^2Ada^3b^2+56x^2Bea^5+280x^2Ba^4bd+84xAa^5e+420xAda^4b+84xBa^5d+168Ada^5\right)\left((bx+a)^2\right)^{\frac{5}{2}}x}{168\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)

[Out] 1/168*x*(21*B*b^5*e*x^7+24*A*b^5*e*x^6+120*B*a*b^4*e*x^6+24*B*b^5*d*x^6+140*A*a*b^4*e*x^5+28*A*b^5*d*x^5+280*B*a^2*b^3*e*x^5+140*B*a*b^4*d*x^5+336*A*a

```
^2*b^3*e*x^4+168*A*a*b^4*d*x^4+336*B*a^3*b^2*e*x^4+336*B*a^2*b^3*d*x^4+420*
A*a^3*b^2*e*x^3+420*A*a^2*b^3*d*x^3+210*B*a^4*b*e*x^3+420*B*a^3*b^2*d*x^3+2
80*A*a^4*b*e*x^2+560*A*a^3*b^2*d*x^2+56*B*a^5*e*x^2+280*B*a^4*b*d*x^2+84*A*
a^5*e*x+420*A*a^4*b*d*x+84*B*a^5*d*x+168*A*a^5*d)*((b*x+a)^2)^(5/2)/(b*x+a)
^5
```

maxima [**B**] time = 0.57, size = 254, normalized size = 1.88

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Adx+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2ex}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aad}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3e}{6\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(Bd+Ae)ax}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bex}{8\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(Bd+Ae)a^2}{6\,b^2}-\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bae}{56\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}(Bd+Ae)}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*B*a^2*e*x/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d/b + 1/6*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*e/b^3 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*(B*d + A*e)*a*x/b + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e*x/b^2 - 1/6*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(B*d + A*e)*a^2/b^2 - 9/56*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*B*a*e/b^3 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(B*d + A*e)
/b^2
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\,(d+ex)\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1524 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(6*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(7/2))/(7*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}+\frac{\left(2Ab^2-2abB\right)\int \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx}{2b^2}\\ &= \frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 121, normalized size = 1.75

$$\frac{x\sqrt{(a+bx)^2}\left(21a^5(2A+Bx)+35a^4bx(3A+2Bx)+35a^3b^2x^2(4A+3Bx)+21a^2b^3x^3(5A+4Bx)+7ab^4x^4(6A+5Bx)+b^5x^5(7A+6Bx)\right)}{42(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(21*a^5*(2*A + B*x) + 35*a^4*b*x*(3*A + 2*B*x) + 35*a^
3*b^2*x^2*(4*A + 3*B*x) + 21*a^2*b^3*x^3*(5*A + 4*B*x) + 7*a*b^4*x^4*(6*A +
 5*B*x) + b^5*x^5*(7*A + 6*B*x)))/(42*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]
```

fricas [A] time = 0.42, size = 115, normalized size = 1.67

$$\frac{1}{7} Bb^5x^7 + Aa^5x + \frac{1}{6}\left(5 Bab^4 + Ab^5\right)x^6 + \left(2 Ba^2b^3 + Aab^4\right)x^5 + \frac{5}{2}\left(Ba^3b^2 + Aa^2b^3\right)x^4 + \frac{5}{3}\left(Ba^4b + 2 Aa^3b^2\right)x^3 + \frac{1}{2}\left(Ba^5 + 5 Aa^4b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b^5*x^7 + A*a^5*x + 1/6*(5*B*a*b^4 + A*b^5)*x^6 + (2*B*a^2*b^3 + A*a*
b^4)*x^5 + 5/2*(B*a^3*b^2 + A*a^2*b^3)*x^4 + 5/3*(B*a^4*b + 2*A*a^3*b^2)*x^
3 + 1/2*(B*a^5 + 5*A*a^4*b)*x^2
```

giac [B] time = 0.21, size = 217, normalized size = 3.14

$$\frac{1}{7} Bb^5x^7\mathrm{sgn}(bx+a) + \frac{5}{6} Bab^4x^6\mathrm{sgn}(bx+a) + \frac{1}{6} Ab^5x^6\mathrm{sgn}(bx+a) + 2 Ba^2b^3x^5\mathrm{sgn}(bx+a) + Aab^4x^5\mathrm{sgn}(bx+a) + \frac{5}{2} Ba^3b^2x^4\mathrm{sgn}(bx+a) + \frac{5}{2} Aa^2b^3x^4\mathrm{sgn}(bx+a) + \frac{5}{3} Ba^4bx^3\mathrm{sgn}(bx+a) + \frac{10}{3} Aa^3b^2x^3\mathrm{sgn}(bx+a) + \frac{1}{2} Ba^5x^2\mathrm{sgn}(bx+a) + \frac{5}{2} Aa^4bx^2\mathrm{sgn}(bx+a) + Aa^5x\mathrm{sgn}(bx+a) - \frac{\left(Ba^7 - 7 Aa^6b\right)\mathrm{sgn}(bx+a)}{42 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^5*x^7*sgn(b*x + a) + 5/6*B*a*b^4*x^6*sgn(b*x + a) + 1/6*A*b^5*x^6*s
gn(b*x + a) + 2*B*a^2*b^3*x^5*sgn(b*x + a) + A*a*b^4*x^5*sgn(b*x + a) + 5/2
*B*a^3*b^2*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*x^4*sgn(b*x + a) + 5/3*B*a^4*b*
x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*x^3*sgn(b*x + a) + 1/2*B*a^5*x^2*sgn(b*x
+ a) + 5/2*A*a^4*b*x^2*sgn(b*x + a) + A*a^5*x*sgn(b*x + a) - 1/42*(B*a^7 -
7*A*a^6*b)*sgn(b*x + a)/b^2
```

maple [B] time = 0.06, size = 138, normalized size = 2.00

$$\frac{\left(6B\,b^5x^6 + 7A\,b^5x^5 + 35Ba\,b^4x^5 + 42Aa\,b^4x^4 + 84B\,a^2b^3x^4 + 105A\,a^2b^3x^3 + 105B\,a^3b^2x^3 + 140A\,a^3b^2x^2 + 70B\,a^4b\,x^2 + 105A\,a^4bx + 21B\,a^5x + 42A\,a^5\right)\left((bx+a)^2\right)^{\frac{5}{2}} x}{42\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/42*x*(6*B*b^5*x^6+7*A*b^5*x^5+35*B*a*b^4*x^5+42*A*a*b^4*x^4+84*B*a^2*b^3*
x^4+105*A*a^2*b^3*x^3+105*B*a^3*b^2*x^3+140*A*a^3*b^2*x^2+70*B*a^4*b*x^2+10
5*A*a^4*b*x+21*B*a^5*x+42*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.57, size = 125, normalized size = 1.81

$$\frac{1}{6}\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Ax - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Bax}{6\,b} - \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Ba^2}{6\,b^2} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} Aa}{6\,b} + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}} B}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*a*x/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2/b^2 + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*A*a/b + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A + B\,x)\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx) \left((a + bx)^2\right)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.1525 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=340

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)\log(d+ex)}{e^7(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(Bd-Ae)}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2}\cdots}{\cdots}$$

Rubi [A] time = 0.25, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(Bd-Ae)}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{2e^5}-\frac{(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(Bd-Ae)}{3e^4}+\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{4e^3}-\frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{5e^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)\log(d+ex)}{e^7(a+bx)}+\frac{B(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^4*(B*d - A*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b
*x))) + ((b*d - a*e)^3*(B*d - A*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(2*e^5) - ((b*d - a*e)^2*(B*d - A*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(3*e^4) + ((b*d - a*e)*(B*d - A*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(4*e^3) - ((B*d - A*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(5*e^2) + (B*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b*e) + ((b*d - a
*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x
))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^6(bd-ae)^4(-Bd+Ae)}{e^6}-\frac{b^6(bd-ae)^3(-Bd+Ae)(a+bx)}{e^5}+\frac{b^6(bd-a\cdots}{\cdots}\right.}{\cdots}$$

$$= -\frac{b(bd-ae)^4(Bd-Ae)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{(bd-ae)^3(Bd-Ae)(a+b\cdots}{2e^5}$$

Mathematica [A] time = 0.24, size = 386, normalized size = 1.14

$$\frac{\sqrt{(a+bx)^2}\left(ex\left(60a^5Be^5+150a^4be^4(2Ae-2Bd+Bex)+100a^3b^2e^3\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)+50a^2b^3e^2\left(2Ae\left(6d^2-3dex+2e^2x^2\right)+B\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)+5ab^4e\left(5Ae\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+B\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)+b^5\left(Ae\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)+B\left(-60d^5+30d^4ex-20d^3e^2x^2+15d^2e^3x^3-12de^4x^4+10e^5x^5\right)\right)\right)+60(bd-ae)^5(Bd-Ae)\log(d+ex)\right)}{60e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(e*x*(60*a^5*B*e^5 + 150*a^4*b*e^4*(-2*B*d + 2*A*e + B*e
*x) + 100*a^3*b^2*e^3*(3*A*e*(-2*d + e*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2)
) + 50*a^2*b^3*e^2*(2*A*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + B*(-12*d^3 + 6*d^
2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)) + 5*a*b^4*e*(5*A*e*(-12*d^3 + 6*d^2*e*x -
 4*d*e^2*x^2 + 3*e^3*x^3) + B*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*
e^3*x^3 + 12*e^4*x^4)) + b^5*(A*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 1
5*d*e^3*x^3 + 12*e^4*x^4) + B*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*d
^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5))) + 60*(b*d - a*e)^5*(B*d - A*e)*Lo
g[d + e*x]))/(60*e^7*(a + b*x))
```

IntegrateAlgebraic [F] time = 5.50, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x), x]
```

fricas [B] time = 0.42, size = 555, normalized size = 1.63

$$\frac{10\,Bb^5e^6x^6-12\left(Bb^5de^5-\left(5\,Bab^4+Ab^5\right)e^6\right)x^5+15\left(Bb^5d^2e^4-\left(5\,Bab^4+Ab^5\right)de^5+5\left(2\,Ba^2b^3+Aab^4\right)e^6\right)x^4-20\left(Bb^5d^3e^3-\left(5\,Bab^4+Ab^5\right)d^2e^4+5\left(2\,Ba^2b^3+Aab^4\right)de^5-10\left(Ba^3b^2+Aa^2b^3\right)e^6\right)x^3+30\left(Bb^5d^4e^2-\left(5\,Bab^4+Ab^5\right)d^3e^3+5\left(2\,Ba^2b^3+Aab^4\right)d^2e^4-10\left(Ba^3b^2+Aa^2b^3\right)de^5+5\left(Ba^4b+2\,Aa^3b^2\right)e^6\right)x^2-60\left(Bb^5d^5e-\left(5\,Bab^4+Ab^5\right)d^4e^2+5\left(2\,Ba^2b^3+Aab^4\right)d^3e^3-10\left(Ba^3b^2+Aa^2b^3\right)d^2e^4+5\left(Ba^4b+2\,Aa^3b^2\right)de^5-\left(Ba^5+5\,Aa^4b\right)e^6\right)x+60\left(Bb^5d^6+Aa^5e^6-\left(5\,Bab^4+Ab^5\right)d^5e+5\left(2\,Ba^2b^3+Aab^4\right)d^4e^2-10\left(Ba^3b^2+Aa^2b^3\right)d^3e^3+5\left(Ba^4b+2\,Aa^3b^2\right)d^2e^4-\left(Ba^5+5\,Aa^4b\right)de^5\right)\log\left(ex+d\right)}{60\,e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/60*(10*B*b^5*e^6*x^6 - 12*(B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 1
5*(B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5 + 5*(2*B*a^2*b^3 + A*a*b^4)*e^
6)*x^4 - 20*(B*b^5*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4 + 5*(2*B*a^2*b^3 +
 A*a*b^4)*d*e^5 - 10*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 30*(B*b^5*d^4*e^2 -
 (5*B*a*b^4 + A*b^5)*d^3*e^3 + 5*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 10*(B*a^
3*b^2 + A*a^2*b^3)*d*e^5 + 5*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 - 60*(B*b^5*d
^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^2 + 5*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 10
*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - (B*a^5
 + 5*A*a^4*b)*e^6)*x + 60*(B*b^5*d^6 + A*a^5*e^6 - (5*B*a*b^4 + A*b^5)*d^5*
e + 5*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 10*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3
+ 5*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5)*log(e*x +
d))/e^7
```

giac [B] time = 0.24, size = 920, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (B*b^5*d^6*sgn(b*x + a) - 5*B*a*b^4*d^5*e*sgn(b*x + a) - A*b^5*d^5*e*sgn(b*
x + a) + 10*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 5*A*a*b^4*d^4*e^2*sgn(b*x + a)
 - 10*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) +
5*B*a^4*b*d^2*e^4*sgn(b*x + a) + 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - B*a^5*
d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) + A*a^5*e^6*sgn(b*x + a))
*e^(-7)*log(abs(x*e + d)) + 1/60*(10*B*b^5*x^6*e^5*sgn(b*x + a) - 12*B*b^5*
d*x^5*e^4*sgn(b*x + a) + 15*B*b^5*d^2*x^4*e^3*sgn(b*x + a) - 20*B*b^5*d^3*x
```

```
^3*e^2*sgn(b*x + a) + 30*B*b^5*d^4*x^2*e*sgn(b*x + a) - 60*B*b^5*d^5*x*sgn(
b*x + a) + 60*B*a*b^4*x^5*e^5*sgn(b*x + a) + 12*A*b^5*x^5*e^5*sgn(b*x + a)
- 75*B*a*b^4*d*x^4*e^4*sgn(b*x + a) - 15*A*b^5*d*x^4*e^4*sgn(b*x + a) + 100
*B*a*b^4*d^2*x^3*e^3*sgn(b*x + a) + 20*A*b^5*d^2*x^3*e^3*sgn(b*x + a) - 150
*B*a*b^4*d^3*x^2*e^2*sgn(b*x + a) - 30*A*b^5*d^3*x^2*e^2*sgn(b*x + a) + 300
*B*a*b^4*d^4*x*e*sgn(b*x + a) + 60*A*b^5*d^4*x*e*sgn(b*x + a) + 150*B*a^2*b
^3*x^4*e^5*sgn(b*x + a) + 75*A*a*b^4*x^4*e^5*sgn(b*x + a) - 200*B*a^2*b^3*d
*x^3*e^4*sgn(b*x + a) - 100*A*a*b^4*d*x^3*e^4*sgn(b*x + a) + 300*B*a^2*b^3*
d^2*x^2*e^3*sgn(b*x + a) + 150*A*a*b^4*d^2*x^2*e^3*sgn(b*x + a) - 600*B*a^2
*b^3*d^3*x*e^2*sgn(b*x + a) - 300*A*a*b^4*d^3*x*e^2*sgn(b*x + a) + 200*B*a^
3*b^2*x^3*e^5*sgn(b*x + a) + 200*A*a^2*b^3*x^3*e^5*sgn(b*x + a) - 300*B*a^3
*b^2*d*x^2*e^4*sgn(b*x + a) - 300*A*a^2*b^3*d*x^2*e^4*sgn(b*x + a) + 600*B*
a^3*b^2*d^2*x*e^3*sgn(b*x + a) + 600*A*a^2*b^3*d^2*x*e^3*sgn(b*x + a) + 150
*B*a^4*b*x^2*e^5*sgn(b*x + a) + 300*A*a^3*b^2*x^2*e^5*sgn(b*x + a) - 300*B*
a^4*b*d*x*e^4*sgn(b*x + a) - 600*A*a^3*b^2*d*x*e^4*sgn(b*x + a) + 60*B*a^5*
x*e^5*sgn(b*x + a) + 300*A*a^4*b*x*e^5*sgn(b*x + a))*e^(-6)
```

maple [B] time = 0.07, size = 754, normalized size = 2.22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(300*A*ln(e*x+d)*a*b^4*d^4*e^2-300*B*x*a^4*b*d*e^5+6
00*B*x*a^3*b^2*d^2*e^4-600*B*x*a^2*b^3*d^3*e^3+300*B*x*a*b^4*d^4*e^2+600*B*
ln(e*x+d)*a^2*b^3*d^4*e^2-300*B*ln(e*x+d)*a*b^4*d^5*e-300*A*ln(e*x+d)*a^4*b
*d*e^5-300*A*x^2*a^2*b^3*d*e^5+150*A*x^2*a*b^4*d^2*e^4-60*A*ln(e*x+d)*b^5*d
^5*e-60*B*ln(e*x+d)*a^5*d*e^5+300*A*x*a^4*b*e^6+60*A*x*b^5*d^4*e^2+200*A*x^
3*a^2*b^3*e^6+300*B*ln(e*x+d)*a^4*b*d^2*e^4-600*B*ln(e*x+d)*a^3*b^2*d^3*e^3
+600*A*ln(e*x+d)*a^3*b^2*d^2*e^4-600*A*ln(e*x+d)*a^2*b^3*d^3*e^3-75*B*x^4*a
*b^4*d*e^5-200*B*x^3*a^2*b^3*d*e^5+100*B*x^3*a*b^4*d^2*e^4-600*A*x*a^3*b^2*
d*e^5+600*A*x*a^2*b^3*d^2*e^4-300*A*x*a*b^4*d^3*e^3-300*B*x^2*a^3*b^2*d*e^5
+20*A*x^3*b^5*d^2*e^4+200*B*x^3*a^3*b^2*e^6-20*B*x^3*b^5*d^3*e^3+300*A*x^2*
a^3*b^2*e^6-30*A*x^2*b^5*d^3*e^3+150*B*x^2*a^4*b*e^6+30*B*x^2*b^5*d^4*e^2+6
0*B*x^5*a*b^4*e^6+10*B*x^6*b^5*e^6+12*A*x^5*b^5*e^6+60*B*x*a^5*e^6+60*A*ln(
e*x+d)*a^5*e^6+60*B*ln(e*x+d)*b^5*d^6-100*A*x^3*a*b^4*d*e^5-150*B*x^2*a*b^4
*d^3*e^3+300*B*x^2*a^2*b^3*d^2*e^4-60*B*x*b^5*d^5*e-12*B*x^5*b^5*d*e^5+75*A
*x^4*a*b^4*e^6-15*A*x^4*b^5*d*e^5+150*B*x^4*a^2*b^3*e^6+15*B*x^4*b^5*d^2*e^
4)/(b*x+a)^5/e^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x), x)
```

3.1526 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=423

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{e^7(a+bx)(d+ex)}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}-\frac{\sqrt{a^2 \cdots}}{}$$

Rubi [A] time = 0.56, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{e^7(a+bx)(d+ex)}+\frac{5bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^6(a+bx)}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)(-2aBe-Abe+3bBd)}{3e^7(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(-5aBe-Abe+6bBd)}{4e^7(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)(-aBe-5Abe+6bBd)}{e^7(a+bx)}+\frac{b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5}{5e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (5*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(e^7*(a + b*x)*(d + e*x)) - (5*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a
*B*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (5*b^3*(
b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(3*e^7*(a + b*x)) - (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^4*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)) + (b^5*B*(d + e*x)^5*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) - ((b*d - a*e)^4*(6*b*B*d - 5*A*b*
e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^2}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{5b^6(bd-ae)^3(-3bBd+2Abe+aBe)}{e^6}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^2}+\frac{b^5 \cdots}{} \right.}{}\\
&= \frac{5b(bd-ae)^3(3bBd-2Abe-aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^5(Bd-\cdots}{e^7(a\cdots}
\end{aligned}$$

Mathematica [A] time = 0.31, size = 506, normalized size = 1.20

$$\frac{\sqrt{(a+bx)^2}\left(60a^5e^5(Bd-Ae)+300a^4be^4\left(Ade+B\left(-d^2+dex+e^2x^2\right)\right)+300a^3b^2e^3\left(2Ae\left(-d^2+dex+e^2x^2\right)+B\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)\right)+100a^2b^3e^2\left(3Ae\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+2B\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)\right)+25ab^4e\left(4Ae\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+B\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)\right)-60(d+ex)(bd-ae)^4\log(d+ex)(-aBe-5Abe+6bBd)+b^5\left(5Ae\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)-6B\left(10d^6-50d^5ex-30d^4e^2x^2+10d^3e^3x^3-5d^2e^4x^4+3de^5x^5-2e^6x^6\right)\right)\right)}{60e^7(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(60*a^5*e^5*(B*d - A*e) + 300*a^4*b*e^4*(A*d*e + B*(-d^2
 + d*e*x + e^2*x^2)) + 300*a^3*b^2*e^3*(2*A*e*(-d^2 + d*e*x + e^2*x^2) + B*
(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3)) + 100*a^2*b^3*e^2*(3*A*e*(2*d^
3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 2*B*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^
2*x^2 - 2*d*e^3*x^3 + e^4*x^4)) + 25*a*b^4*e*(4*A*e*(-3*d^4 + 9*d^3*e*x + 6
*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + B*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2
*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5)) + b^5*(5*A*e*(12*d^5 - 48
*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5) - 6*B
*(10*d^6 - 50*d^5*e*x - 30*d^4*e^2*x^2 + 10*d^3*e^3*x^3 - 5*d^2*e^4*x^4 + 3
*d*e^5*x^5 - 2*e^6*x^6)) - 60*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d
+ e*x)*Log[d + e*x]))/(60*e^7*(a + b*x)*(d + e*x))
```

IntegrateAlgebraic [F] time = 10.80, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x)^2, x]
```

fricas [B] time = 0.44, size = 797, normalized size = 1.88

$$\frac{12Bb^5e^6x^6-60Bb^5d^6-60Aa^5e^6+60\left(5Bab^4+Ab^5\right)d^5e-300\left(2Ba^2b^3+Aab^4\right)d^4e^2+600\left(Ba^3b^2+Aa^2b^3\right)d^3e^3-300\left(Ba^4b+2Aa^3b^2\right)d^2e^4+60\left(Ba^5+5Aa^4b\right)de^5-3\left(6Bb^5de^5-5\left(5Bab^4+Ab^5\right)e^6\right)x^5+5\left(6Bb^5d^2e^4-5\left(5Bab^4+Ab^5\right)de^5+20\left(2Ba^2b^3+Aab^4\right)e^6\right)x^4-10\left(6Bb^5d^3e^3-5\left(5Bab^4+Ab^5\right)d^2e^4+20\left(2Ba^2b^3+Aab^4\right)de^5-30\left(Ba^3b^2+Aa^2b^3\right)e^6\right)x^3+30\left(6Bb^5d^4e^2-5\left(5Bab^4+Ab^5\right)d^3e^3+20\left(2Ba^2b^3+Aab^4\right)d^2e^4-30\left(Ba^3b^2+Aa^2b^3\right)de^5+10\left(Ba^4b+2Aa^3b^2\right)e^6\right)x^2+60\left(5Bb^5d^5e-4\left(5Bab^4+Ab^5\right)d^4e^2+15\left(2Ba^2b^3+Aab^4\right)d^3e^3-20\left(Ba^3b^2+Aa^2b^3\right)d^2e^4+5\left(Ba^4b+2Aa^3b^2\right)de^5\right)x-60\left(6Bb^5d^6-5\left(5Bab^4+Ab^5\right)d^5e+20\left(2Ba^2b^3+Aab^4\right)d^4e^2-30\left(Ba^3b^2+Aa^2b^3\right)d^3e^3+10\left(Ba^4b+2Aa^3b^2\right)d^2e^4-\left(Ba^5+5Aa^4b\right)de^5+\left(6Bb^5d^5e-5\left(5Bab^4+Ab^5\right)d^4e^2+20\left(2Ba^2b^3+Aab^4\right)d^3e^3-30\left(Ba^3b^2+Aa^2b^3\right)d^2e^4+10\left(Ba^4b+2Aa^3b^2\right)de^5-\left(Ba^5+5Aa^4b\right)e^6\right)x\right)\log(ex+d)}{60\left(e^8x+de^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/60*(12*B*b^5*e^6*x^6 - 60*B*b^5*d^6 - 60*A*a^5*e^6 + 60*(5*B*a*b^4 + A*b^
5)*d^5*e - 300*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 600*(B*a^3*b^2 + A*a^2*b^3
)*d^3*e^3 - 300*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 60*(B*a^5 + 5*A*a^4*b)*d*
e^5 - 3*(6*B*b^5*d*e^5 - 5*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*(6*B*b^5*d^2*e^
4 - 5*(5*B*a*b^4 + A*b^5)*d*e^5 + 20*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 - 10*
(6*B*b^5*d^3*e^3 - 5*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 20*(2*B*a^2*b^3 + A*a*b^
4)*d*e^5 - 30*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 30*(6*B*b^5*d^4*e^2 - 5*(5
*B*a*b^4 + A*b^5)*d^3*e^3 + 20*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 30*(B*a^3*
b^2 + A*a^2*b^3)*d*e^5 + 10*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 60*(5*B*b^5*
d^5*e - 4*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 15*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3
- 20*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5)*x -
 60*(6*B*b^5*d^6 - 5*(5*B*a*b^4 + A*b^5)*d^5*e + 20*(2*B*a^2*b^3 + A*a*b^4)
*d^4*e^2 - 30*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 + 10*(B*a^4*b + 2*A*a^3*b^2)*
d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5 + (6*B*b^5*d^5*e - 5*(5*B*a*b^4 + A*b^5
)*d^4*e^2 + 20*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 30*(B*a^3*b^2 + A*a^2*b^3)
*d^2*e^4 + 10*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - (B*a^5 + 5*A*a^4*b)*e^6)*x)*l
og(e*x + d))/(e^8*x + d*e^7)
```

giac [B] time = 0.22, size = 905, normalized size = 2.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -(6*B*b^5*d^5*sgn(b*x + a) - 25*B*a*b^4*d^4*e*sgn(b*x + a) - 5*A*b^5*d^4*e*
sgn(b*x + a) + 40*B*a^2*b^3*d^3*e^2*sgn(b*x + a) + 20*A*a*b^4*d^3*e^2*sgn(b
*x + a) - 30*B*a^3*b^2*d^2*e^3*sgn(b*x + a) - 30*A*a^2*b^3*d^2*e^3*sgn(b*x
+ a) + 10*B*a^4*b*d*e^4*sgn(b*x + a) + 20*A*a^3*b^2*d*e^4*sgn(b*x + a) - B*
a^5*e^5*sgn(b*x + a) - 5*A*a^4*b*e^5*sgn(b*x + a))*e^(-7)*log(abs(x*e + d))
 + 1/60*(12*B*b^5*x^5*e^8*sgn(b*x + a) - 30*B*b^5*d*x^4*e^7*sgn(b*x + a) +
60*B*b^5*d^2*x^3*e^6*sgn(b*x + a) - 120*B*b^5*d^3*x^2*e^5*sgn(b*x + a) + 30
0*B*b^5*d^4*x*e^4*sgn(b*x + a) + 75*B*a*b^4*x^4*e^8*sgn(b*x + a) + 15*A*b^5
*x^4*e^8*sgn(b*x + a) - 200*B*a*b^4*d*x^3*e^7*sgn(b*x + a) - 40*A*b^5*d*x^3
*e^7*sgn(b*x + a) + 450*B*a*b^4*d^2*x^2*e^6*sgn(b*x + a) + 90*A*b^5*d^2*x^2
*e^6*sgn(b*x + a) - 1200*B*a*b^4*d^3*x*e^5*sgn(b*x + a) - 240*A*b^5*d^3*x*e
^5*sgn(b*x + a) + 200*B*a^2*b^3*x^3*e^8*sgn(b*x + a) + 100*A*a*b^4*x^3*e^8*
sgn(b*x + a) - 600*B*a^2*b^3*d*x^2*e^7*sgn(b*x + a) - 300*A*a*b^4*d*x^2*e^7
*sgn(b*x + a) + 1800*B*a^2*b^3*d^2*x*e^6*sgn(b*x + a) + 900*A*a*b^4*d^2*x*e
^6*sgn(b*x + a) + 300*B*a^3*b^2*x^2*e^8*sgn(b*x + a) + 300*A*a^2*b^3*x^2*e^
8*sgn(b*x + a) - 1200*B*a^3*b^2*d*x*e^7*sgn(b*x + a) - 1200*A*a^2*b^3*d*x*e
^7*sgn(b*x + a) + 300*B*a^4*b*x*e^8*sgn(b*x + a) + 600*A*a^3*b^2*x*e^8*sgn(
b*x + a))*e^(-10) - (B*b^5*d^6*sgn(b*x + a) - 5*B*a*b^4*d^5*e*sgn(b*x + a)
- A*b^5*d^5*e*sgn(b*x + a) + 10*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 5*A*a*b^4*
d^4*e^2*sgn(b*x + a) - 10*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^3
*e^3*sgn(b*x + a) + 5*B*a^4*b*d^2*e^4*sgn(b*x + a) + 10*A*a^3*b^2*d^2*e^4*s
gn(b*x + a) - B*a^5*d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) + A*a
^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)
```

maple [B] time = 0.07, size = 1084, normalized size = 2.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(-1200*A*a*b^4*d^4*e^2*ln(e*x+d)+300*B*a^4*b*d*e^5*x
-1200*B*a^3*b^2*d^2*e^4*x+1800*B*a^2*b^3*d^3*e^3*x-1200*B*a*b^4*d^4*e^2*x+6
0*A*b^5*d^5*e-2400*B*a^2*b^3*d^4*e^2*ln(e*x+d)+1500*B*a*b^4*d^5*e*ln(e*x+d)
+300*A*a^4*b*d*e^5*ln(e*x+d)-300*A*a*b^4*d^4*e^2-300*B*a^4*b*d^2*e^4-600*A*
a^3*b^2*d^2*e^4+600*A*a^2*b^3*d^3*e^3+60*B*d*e^5*a^5+600*B*a^3*b^2*d^3*e^3-
600*B*a^2*b^3*d^4*e^2+300*B*a*b^4*d^5*e-600*B*ln(e*x+d)*x*a^4*b*d*e^5+1800*
B*ln(e*x+d)*x*a^3*b^2*d^2*e^4-2400*B*ln(e*x+d)*x*a^2*b^3*d^3*e^3+1500*B*ln(
e*x+d)*x*a*b^4*d^4*e^2-900*A*a^2*b^3*d*e^5*x^2+600*A*a*b^4*d^2*e^4*x^2+300*
A*b^5*d^5*e*ln(e*x+d)+60*B*a^5*d*e^5*ln(e*x+d)-240*A*b^5*d^4*e^2*x+300*A*a^
2*b^3*e^6*x^3-1200*A*ln(e*x+d)*x*a^3*b^2*d*e^5+1800*A*ln(e*x+d)*x*a^2*b^3*d
^2*e^4-1200*A*ln(e*x+d)*x*a*b^4*d^3*e^3-600*B*a^4*b*d^2*e^4*ln(e*x+d)+1800*
B*a^3*b^2*d^3*e^3*ln(e*x+d)+300*A*ln(e*x+d)*x*a^4*b*e^6+300*A*ln(e*x+d)*x*b
^5*d^4*e^2-360*B*ln(e*x+d)*x*b^5*d^5*e-60*A*a^5*e^6-60*B*b^5*d^6-1200*A*a^3
*b^2*d^2*e^4*ln(e*x+d)+1800*A*a^2*b^3*d^3*e^3*ln(e*x+d)-125*B*a*b^4*d*e^5*x
^4+300*A*d*e^5*a^4*b-400*B*a^2*b^3*d*e^5*x^3+250*B*a*b^4*d^2*e^4*x^3+600*A*
a^3*b^2*d*e^5*x-1200*A*a^2*b^3*d^2*e^4*x+900*A*a*b^4*d^3*e^3*x-900*B*a^3*b^
2*d*e^5*x^2+50*A*b^5*d^2*e^4*x^3+300*B*a^3*b^2*e^6*x^3-60*B*b^5*d^3*e^3*x^3
+600*A*a^3*b^2*e^6*x^2-150*A*b^5*d^3*e^3*x^2+300*B*a^4*b*e^6*x^2+180*B*b^5*
d^4*e^2*x^2+75*B*a*b^4*e^6*x^5+12*B*b^5*e^6*x^6+15*A*b^5*e^6*x^5-360*B*b^5*
d^6*ln(e*x+d)-200*A*a*b^4*d*e^5*x^3-750*B*a*b^4*d^3*e^3*x^2+1200*B*a^2*b^3*
d^2*e^4*x^2+300*B*b^5*d^5*e*x-18*B*b^5*d*e^5*x^5+100*A*a*b^4*e^6*x^4-25*A*b
^5*d*e^5*x^4+200*B*a^2*b^3*e^6*x^4+30*B*b^5*d^2*e^4*x^4+60*B*ln(e*x+d)*x*a^
5*e^6)/(b*x+a)^5/e^7/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**2, x)
```

3.1527 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3} dx$

Optimal. Leaf size=424

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{e^7(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{2e^7(a+bx)(d+ex)^2}+\frac{5b\sqrt{a^2+2abx+b}}{}$$

Rubi [A] time = 0.48, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(-5aBe-Abe+6bBd)}{3e^7(a+bx)}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)(-2aBe-Abe+3bBd)}{2e^7(a+bx)}-\frac{10b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^6(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{e^7(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{2e^7(a+bx)(d+ex)^2}+\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3\log(d+ex)(-aBe-2Abe+3bBd)}{e^7(a+bx)}+\frac{b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}{4e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (-10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e -
 a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (5*b^3*(
b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*e^7*(a + b*x)) - (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (b^5*B*(d + e*x)^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)) + (5*b*(b*d - a*e)^3*(3*b*B*d - 2*
A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^3}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{10b^7(bd-ae)^2(-2bBd+Abe+aBe)}{e^6}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^3}+\frac{b^5(\ldots}{}\right.}{}$$

$$= -\frac{10b^2(bd-ae)^2(2bBd-Abe-aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^5(B\ldots}{2e^7\ldots}$$

Mathematica [A] time = 0.29, size = 501, normalized size = 1.18

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-6*a^5*e^5*(A*e + B*(d + 2*e*x)) - 30*a^4*b*e^4*(A*e*(d
 + 2*e*x) - B*d*(3*d + 4*e*x)) + 60*a^3*b^2*e^3*(A*d*e*(3*d + 4*e*x) + B*(-
5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3)) + 60*a^2*b^3*e^2*(A*e*(-5*d^3
 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) + B*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2
*x^2 - 4*d*e^3*x^3 + e^4*x^4)) + 10*a*b^4*e*(3*A*e*(7*d^4 + 2*d^3*e*x - 11*
d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + B*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*
x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5)) + b^5*(2*A*e*(-27*d^5 + 6*
d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) + 3*B*
(22*d^6 - 16*d^5*e*x - 68*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*
d*e^5*x^5 + e^6*x^6)) + 60*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d +
 e*x)^2*Log[d + e*x]))/(12*e^7*(a + b*x)*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 13.13, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x)^3, x]
```

fricas [B] time = 0.45, size = 871, normalized size = 2.05

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/12*(3*B*b^5*e^6*x^6 + 66*B*b^5*d^6 - 6*A*a^5*e^6 - 54*(5*B*a*b^4 + A*b^5)
*d^5*e + 210*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 300*(B*a^3*b^2 + A*a^2*b^3)*
d^3*e^3 + 90*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 6*(B*a^5 + 5*A*a^4*b)*d*e^5
- 2*(3*B*b^5*d*e^5 - 2*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*(3*B*b^5*d^2*e^4 -
2*(5*B*a*b^4 + A*b^5)*d*e^5 + 6*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 - 20*(3*B*
b^5*d^3*e^3 - 2*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 6*(2*B*a^2*b^3 + A*a*b^4)*d*e
^5 - 6*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 - 6*(34*B*b^5*d^4*e^2 - 21*(5*B*a*b
^4 + A*b^5)*d^3*e^3 + 55*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 40*(B*a^3*b^2 +
A*a^2*b^3)*d*e^5)*x^2 - 12*(4*B*b^5*d^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^2 - 5
*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 20*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 - 10*
(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x + 60*(3*B*b^5*d^
6 - 2*(5*B*a*b^4 + A*b^5)*d^5*e + 6*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 6*(B*
a^3*b^2 + A*a^2*b^3)*d^3*e^3 + (B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + (3*B*b^5*d
^4*e^2 - 2*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 6*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4
- 6*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + (B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 2*(3
*B*b^5*d^5*e - 2*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 6*(2*B*a^2*b^3 + A*a*b^4)*d^
3*e^3 - 6*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + (B*a^4*b + 2*A*a^3*b^2)*d*e^5)*
x)*log(e*x + d))/(e^9*x^2 + 2*d*e^8*x + d^2*e^7)
```

giac [B] time = 0.26, size = 887, normalized size = 2.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 5*(3*B*b^5*d^4*sgn(b*x + a) - 10*B*a*b^4*d^3*e*sgn(b*x + a) - 2*A*b^5*d^3*e
*sgn(b*x + a) + 12*B*a^2*b^3*d^2*e^2*sgn(b*x + a) + 6*A*a*b^4*d^2*e^2*sgn(b
*x + a) - 6*B*a^3*b^2*d*e^3*sgn(b*x + a) - 6*A*a^2*b^3*d*e^3*sgn(b*x + a) +
 B*a^4*b*e^4*sgn(b*x + a) + 2*A*a^3*b^2*e^4*sgn(b*x + a))*e^(-7)*log(abs(x*
e + d)) + 1/12*(3*B*b^5*x^4*e^9*sgn(b*x + a) - 12*B*b^5*d*x^3*e^8*sgn(b*x +
 a) + 36*B*b^5*d^2*x^2*e^7*sgn(b*x + a) - 120*B*b^5*d^3*x*e^6*sgn(b*x + a)
+ 20*B*a*b^4*x^3*e^9*sgn(b*x + a) + 4*A*b^5*x^3*e^9*sgn(b*x + a) - 90*B*a*b
^4*d*x^2*e^8*sgn(b*x + a) - 18*A*b^5*d*x^2*e^8*sgn(b*x + a) + 360*B*a*b^4*d
^2*x*e^7*sgn(b*x + a) + 72*A*b^5*d^2*x*e^7*sgn(b*x + a) + 60*B*a^2*b^3*x^2*
e^9*sgn(b*x + a) + 30*A*a*b^4*x^2*e^9*sgn(b*x + a) - 360*B*a^2*b^3*d*x*e^8*
sgn(b*x + a) - 180*A*a*b^4*d*x*e^8*sgn(b*x + a) + 120*B*a^3*b^2*x*e^9*sgn(b
*x + a) + 120*A*a^2*b^3*x*e^9*sgn(b*x + a))*e^(-12) + 1/2*(11*B*b^5*d^6*sgn
(b*x + a) - 45*B*a*b^4*d^5*e*sgn(b*x + a) - 9*A*b^5*d^5*e*sgn(b*x + a) + 70
*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 35*A*a*b^4*d^4*e^2*sgn(b*x + a) - 50*B*a^
3*b^2*d^3*e^3*sgn(b*x + a) - 50*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 15*B*a^4*b
*d^2*e^4*sgn(b*x + a) + 30*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - B*a^5*d*e^5*sgn
(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) - A*a^5*e^6*sgn(b*x + a) + 2*(6*B*
b^5*d^5*e*sgn(b*x + a) - 25*B*a*b^4*d^4*e^2*sgn(b*x + a) - 5*A*b^5*d^4*e^2*
sgn(b*x + a) + 40*B*a^2*b^3*d^3*e^3*sgn(b*x + a) + 20*A*a*b^4*d^3*e^3*sgn(b
*x + a) - 30*B*a^3*b^2*d^2*e^4*sgn(b*x + a) - 30*A*a^2*b^3*d^2*e^4*sgn(b*x
+ a) + 10*B*a^4*b*d*e^5*sgn(b*x + a) + 20*A*a^3*b^2*d*e^5*sgn(b*x + a) - B*
a^5*e^6*sgn(b*x + a) - 5*A*a^4*b*e^6*sgn(b*x + a))*x)*e^(-7)/(x*e + d)^2
```

maple [B] time = 0.07, size = 1205, normalized size = 2.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(360*A*a*b^4*d^4*e^2*ln(e*x+d)+120*B*a^4*b*d*e^5*x-2
40*B*a^3*b^2*d^2*e^4*x+120*B*a^2*b^3*d^3*e^3*x+60*B*a*b^4*d^4*e^2*x-54*A*b^
5*d^5*e+720*B*a^2*b^3*d^4*e^2*ln(e*x+d)-600*B*a*b^4*d^5*e*ln(e*x+d)+210*A*a
*b^4*d^4*e^2+90*B*a^4*b*d^2*e^4+180*A*a^3*b^2*d^2*e^4-300*A*a^2*b^3*d^3*e^3
-6*B*a^5*d*e^5-300*B*a^3*b^2*d^3*e^3+420*B*a^2*b^3*d^4*e^2-270*B*a*b^4*d^5*
e+120*B*a^4*b*d*e^5*x*ln(e*x+d)-720*B*a^3*b^2*d^2*e^4*x*ln(e*x+d)+1440*B*a^
2*b^3*d^3*e^3*x*ln(e*x+d)-1200*B*a*b^4*d^4*e^2*x*ln(e*x+d)+240*A*a^2*b^3*d*
e^5*x^2-330*A*a*b^4*d^2*e^4*x^2-120*A*b^5*d^5*e*ln(e*x+d)-60*A*a^4*b*e^6*x+
12*A*b^5*d^4*e^2*x+120*A*a^2*b^3*e^6*x^3+240*A*a^3*b^2*d*e^5*x*ln(e*x+d)-72
0*A*a^2*b^3*d^2*e^4*x*ln(e*x+d)+720*A*a*b^4*d^3*e^3*x*ln(e*x+d)+60*B*a^4*b*
d^2*e^4*ln(e*x+d)-360*B*a^3*b^2*d^3*e^3*ln(e*x+d)-240*A*b^5*d^4*e^2*x*ln(e*
x+d)+360*B*b^5*d^5*e*x*ln(e*x+d)-6*A*a^5*e^6+66*B*b^5*d^6+120*A*a^3*b^2*d^2
*e^4*ln(e*x+d)-360*A*a^2*b^3*d^3*e^3*ln(e*x+d)-50*B*a*b^4*d*e^5*x^4-360*A*l
n(e*x+d)*x^2*a^2*b^3*d*e^5+360*A*ln(e*x+d)*x^2*a*b^4*d^2*e^4-360*B*ln(e*x+d
)*x^2*a^3*b^2*d*e^5-30*A*a^4*b*d*e^5-240*B*a^2*b^3*d*e^5*x^3+200*B*a*b^4*d^
2*e^4*x^3+240*A*a^3*b^2*d*e^5*x-240*A*a^2*b^3*d^2*e^4*x+60*A*a*b^4*d^3*e^3*
x+240*B*a^3*b^2*d*e^5*x^2+40*A*b^5*d^2*e^4*x^3+120*B*a^3*b^2*e^6*x^3-60*B*b
^5*d^3*e^3*x^3+126*A*b^5*d^3*e^3*x^2-204*B*b^5*d^4*e^2*x^2+20*B*a*b^4*e^6*x
^5+3*B*b^5*e^6*x^6+4*A*b^5*e^6*x^5-12*B*a^5*e^6*x+180*B*b^5*d^6*ln(e*x+d)-1
20*A*a*b^4*d*e^5*x^3+120*A*ln(e*x+d)*x^2*a^3*b^2*e^6-120*A*ln(e*x+d)*x^2*b^
5*d^3*e^3+60*B*ln(e*x+d)*x^2*a^4*b*e^6+180*B*ln(e*x+d)*x^2*b^5*d^4*e^2+630*
B*a*b^4*d^3*e^3*x^2-660*B*a^2*b^3*d^2*e^4*x^2+720*B*ln(e*x+d)*x^2*a^2*b^3*d
^2*e^4-600*B*ln(e*x+d)*x^2*a*b^4*d^3*e^3-48*B*b^5*d^5*e*x-6*B*b^5*d*e^5*x^5
+30*A*a*b^4*e^6*x^4-10*A*b^5*d*e^5*x^4+60*B*a^2*b^3*e^6*x^4+15*B*b^5*d^2*e^
```

```
4*x^4)/(b*x+a)^5/e^7/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx) \left((a + bx)^{2}\right)^{\frac{5}{2}}}{(d + ex)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**3, x)
```

3.1528 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=425

$$-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^7(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{2e^7(a+bx)(d+ex)^2}-\cdots$$

Rubi [A] time = 0.43, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(-5aBe-Abe+6bBd)}{2e^7(a+bx)}+\frac{5b^3x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{e^6(a+bx)}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^7(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{2e^7(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{3e^7(a+bx)(d+ex)^3}-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}{3e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a
*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2) - (5*b*(
b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
7*(a + b*x)*(d + e*x)) - (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)) + (b^5*B*(d + e*x)^3*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) - (10*b^2*(b*d - a*e)^2*(2*b*B*d - A
*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^4}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{5b^8(bd-ae)(-3bBd+Abe+2aBe)}{e^6}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^4}+\cdots\right.}{\cdots}$$

$$=\frac{5b^3(bd-ae)(3bBd-Abe-2aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^5(Bd-\cdots}{3e^7(a\cdots}$$

Mathematica [A] time = 0.32, size = 504, normalized size = 1.19

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(a^5*e^5*(2*A*e + B*(d + 3*e*x)) + 5*a^4*b*e^4*(A*e
*(d + 3*e*x) + 2*B*(d^2 + 3*d*e*x + 3*e^2*x^2)) + 10*a^3*b^2*e^3*(2*A*e*(d^
2 + 3*d*e*x + 3*e^2*x^2) - B*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) - 10*a^2*b
^3*e^2*(A*d*e*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - 2*B*(13*d^4 + 27*d^3*e*x +
 9*d^2*e^2*x^2 - 9*d*e^3*x^3 - 3*e^4*x^4)) - 5*a*b^4*e*(2*A*e*(-13*d^4 - 27
*d^3*e*x - 9*d^2*e^2*x^2 + 9*d*e^3*x^3 + 3*e^4*x^4) + B*(47*d^5 + 81*d^4*e*
x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 + 3*e^5*x^5)) + b^5*(A*e*
(-47*d^5 - 81*d^4*e*x + 9*d^3*e^2*x^2 + 63*d^2*e^3*x^3 + 15*d*e^4*x^4 - 3*e
^5*x^5) + 2*B*(37*d^6 + 51*d^5*e*x - 39*d^4*e^2*x^2 - 73*d^3*e^3*x^3 - 15*d
^2*e^4*x^4 + 3*d*e^5*x^5 - e^6*x^6)) + 60*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*
e - a*B*e)*(d + e*x)^3*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 13.34, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x)^4, x]
```

fricas [B] time = 0.43, size = 899, normalized size = 2.12

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/6*(2*B*b^5*e^6*x^6 - 74*B*b^5*d^6 - 2*A*a^5*e^6 + 47*(5*B*a*b^4 + A*b^5)*
d^5*e - 130*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 110*(B*a^3*b^2 + A*a^2*b^3)*d
^3*e^3 - 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5 - 3
*(2*B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 15*(2*B*b^5*d^2*e^4 - (5*B
*a*b^4 + A*b^5)*d*e^5 + 2*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + (146*B*b^5*d^3
*e^3 - 63*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 90*(2*B*a^2*b^3 + A*a*b^4)*d*e^5)*x
^3 + 3*(26*B*b^5*d^4*e^2 - 3*(5*B*a*b^4 + A*b^5)*d^3*e^3 - 30*(2*B*a^2*b^3
+ A*a*b^4)*d^2*e^4 + 60*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 - 10*(B*a^4*b + 2*A*a
^3*b^2)*e^6)*x^2 - 3*(34*B*b^5*d^5*e - 27*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 90*
(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 90*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 10*(
B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x - 60*(2*B*b^5*d^6
 - (5*B*a*b^4 + A*b^5)*d^5*e + 2*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - (B*a^3*b
^2 + A*a^2*b^3)*d^3*e^3 + (2*B*b^5*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4 +
2*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 - (B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 3*(2*B
*b^5*d^4*e^2 - (5*B*a*b^4 + A*b^5)*d^3*e^3 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^2*
e^4 - (B*a^3*b^2 + A*a^2*b^3)*d*e^5)*x^2 + 3*(2*B*b^5*d^5*e - (5*B*a*b^4 +
A*b^5)*d^4*e^2 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - (B*a^3*b^2 + A*a^2*b^3
)*d^2*e^4)*x)*log(e*x + d))/(e^10*x^3 + 3*d*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7
)
```

giac [B] time = 0.22, size = 874, normalized size = 2.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] -10*(2*B*b^5*d^3*sgn(b*x + a) - 5*B*a*b^4*d^2*e*sgn(b*x + a) - A*b^5*d^2*e*
sgn(b*x + a) + 4*B*a^2*b^3*d*e^2*sgn(b*x + a) + 2*A*a*b^4*d*e^2*sgn(b*x + a
) - B*a^3*b^2*e^3*sgn(b*x + a) - A*a^2*b^3*e^3*sgn(b*x + a))*e^(-7)*log(abs
(x*e + d)) + 1/6*(2*B*b^5*x^3*e^8*sgn(b*x + a) - 12*B*b^5*d*x^2*e^7*sgn(b*x
 + a) + 60*B*b^5*d^2*x*e^6*sgn(b*x + a) + 15*B*a*b^4*x^2*e^8*sgn(b*x + a) +
 3*A*b^5*x^2*e^8*sgn(b*x + a) - 120*B*a*b^4*d*x*e^7*sgn(b*x + a) - 24*A*b^5
*d*x*e^7*sgn(b*x + a) + 60*B*a^2*b^3*x*e^8*sgn(b*x + a) + 30*A*a*b^4*x*e^8*
sgn(b*x + a))*e^(-12) - 1/6*(74*B*b^5*d^6*sgn(b*x + a) - 235*B*a*b^4*d^5*e*
sgn(b*x + a) - 47*A*b^5*d^5*e*sgn(b*x + a) + 260*B*a^2*b^3*d^4*e^2*sgn(b*x
+ a) + 130*A*a*b^4*d^4*e^2*sgn(b*x + a) - 110*B*a^3*b^2*d^3*e^3*sgn(b*x + a
) - 110*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 10*B*a^4*b*d^2*e^4*sgn(b*x + a) +
20*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + B*a^5*d*e^5*sgn(b*x + a) + 5*A*a^4*b*d*
e^5*sgn(b*x + a) + 2*A*a^5*e^6*sgn(b*x + a) + 30*(3*B*b^5*d^4*e^2*sgn(b*x +
 a) - 10*B*a*b^4*d^3*e^3*sgn(b*x + a) - 2*A*b^5*d^3*e^3*sgn(b*x + a) + 12*B
*a^2*b^3*d^2*e^4*sgn(b*x + a) + 6*A*a*b^4*d^2*e^4*sgn(b*x + a) - 6*B*a^3*b^
2*d*e^5*sgn(b*x + a) - 6*A*a^2*b^3*d*e^5*sgn(b*x + a) + B*a^4*b*e^6*sgn(b*x
 + a) + 2*A*a^3*b^2*e^6*sgn(b*x + a))*x^2 + 3*(54*B*b^5*d^5*e*sgn(b*x + a)
- 175*B*a*b^4*d^4*e^2*sgn(b*x + a) - 35*A*b^5*d^4*e^2*sgn(b*x + a) + 200*B*
a^2*b^3*d^3*e^3*sgn(b*x + a) + 100*A*a*b^4*d^3*e^3*sgn(b*x + a) - 90*B*a^3*
b^2*d^2*e^4*sgn(b*x + a) - 90*A*a^2*b^3*d^2*e^4*sgn(b*x + a) + 10*B*a^4*b*d
*e^5*sgn(b*x + a) + 20*A*a^3*b^2*d*e^5*sgn(b*x + a) + B*a^5*e^6*sgn(b*x + a
) + 5*A*a^4*b*e^6*sgn(b*x + a))*x)*e^(-7)/(x*e + d)^3
```

maple [B] time = 0.07, size = 1233, normalized size = 2.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(5/2)*(-120*A*a*b^4*d^4*e^2*ln(e*x+d)-30*B*a^4*b*d*e^5*x+27
0*B*a^3*b^2*d^2*e^4*x-540*B*a^2*b^3*d^3*e^3*x+405*B*a*b^4*d^4*e^2*x+47*A*b^
5*d^5*e-240*B*a^2*b^3*d^4*e^2*ln(e*x+d)+300*B*a*b^4*d^5*e*ln(e*x+d)-130*A*a
*b^4*d^4*e^2-10*B*a^4*b*d^2*e^4-20*A*a^3*b^2*d^2*e^4+110*A*a^2*b^3*d^3*e^3-
B*a^5*d*e^5+110*B*a^3*b^2*d^3*e^3-260*B*a^2*b^3*d^4*e^2+235*B*a*b^4*d^5*e+1
80*B*a^3*b^2*d^2*e^4*x*ln(e*x+d)-720*B*a^2*b^3*d^3*e^3*x*ln(e*x+d)+900*B*a*
b^4*d^4*e^2*x*ln(e*x+d)+180*A*a^2*b^3*d*e^5*x^2-90*A*a*b^4*d^2*e^4*x^2+60*A
*b^5*d^5*e*ln(e*x+d)-15*A*a^4*b*e^6*x+81*A*b^5*d^4*e^2*x+180*A*a^2*b^3*d^2*
e^4*x*ln(e*x+d)-360*A*a*b^4*d^3*e^3*x*ln(e*x+d)+60*B*a^3*b^2*d^3*e^3*ln(e*x
+d)+60*B*ln(e*x+d)*x^3*a^3*b^2*e^6-120*B*ln(e*x+d)*x^3*b^5*d^3*e^3+180*A*b^
5*d^4*e^2*x*ln(e*x+d)-360*B*b^5*d^5*e*x*ln(e*x+d)-2*A*a^5*e^6-74*B*b^5*d^6+
60*A*a^2*b^3*d^3*e^3*ln(e*x+d)-75*B*a*b^4*d*e^5*x^4+180*A*a^2*b^3*d*e^5*x^2
*ln(e*x+d)-360*A*a*b^4*d^2*e^4*x^2*ln(e*x+d)+180*B*a^3*b^2*d*e^5*x^2*ln(e*x
+d)-5*A*a^4*b*d*e^5+180*B*a^2*b^3*d*e^5*x^3-315*B*a*b^4*d^2*e^4*x^3-60*A*a^
3*b^2*d*e^5*x+270*A*a^2*b^3*d^2*e^4*x-270*A*a*b^4*d^3*e^3*x+180*B*a^3*b^2*d
*e^5*x^2-63*A*b^5*d^2*e^4*x^3+146*B*b^5*d^3*e^3*x^3-60*A*a^3*b^2*e^6*x^2-9*
A*b^5*d^3*e^3*x^2-30*B*a^4*b*e^6*x^2+78*B*b^5*d^4*e^2*x^2+15*B*a*b^4*e^6*x^
5+2*B*b^5*e^6*x^6+3*A*b^5*e^6*x^5-3*B*a^5*e^6*x-120*B*b^5*d^6*ln(e*x+d)+90*
A*a*b^4*d*e^5*x^3-120*A*ln(e*x+d)*x^3*a*b^4*d*e^5-240*B*ln(e*x+d)*x^3*a^2*b
^3*d*e^5+300*B*ln(e*x+d)*x^3*a*b^4*d^2*e^4+180*A*b^5*d^3*e^3*x^2*ln(e*x+d)-
360*B*b^5*d^4*e^2*x^2*ln(e*x+d)+60*A*ln(e*x+d)*x^3*a^2*b^3*e^6+60*A*ln(e*x+
d)*x^3*b^5*d^2*e^4-45*B*a*b^4*d^3*e^3*x^2-180*B*a^2*b^3*d^2*e^4*x^2-720*B*a
^2*b^3*d^2*e^4*x^2*ln(e*x+d)+900*B*a*b^4*d^3*e^3*x^2*ln(e*x+d)-102*B*b^5*d^
```

```
5*e*x-6*B*b^5*d*e^5*x^5+30*A*a*b^4*e^6*x^4-15*A*b^5*d*e^5*x^4+60*B*a^2*b^3*
e^6*x^4+30*B*b^5*d^2*e^4*x^4)/(b*x+a)^5/e^7/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{(d+e\,x)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**4, x)
```

3.1529 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=421

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{2e^7(a+bx)(d+ex)^2}+$$

Rubi [A] time = 0.39, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{b^4x\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+5bBd)}{e^6(a+bx)}+\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{2e^7(a+bx)(d+ex)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{3e^7(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{4e^7(a+bx)(d+ex)^4}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)(-2aBe-Abe+3bBd)}{e^7(a+bx)}+\frac{b^5Bx^2\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -((b^4*(5*b*B*d - A*b*e - 5*a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a
 + b*x))) + (b^5*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)) - (
(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)*(
d + e*x)^4) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) - (5*b*(b*d - a*e)^3*(3*b*B*d -
2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^
2) + (10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e -
2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^5}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^9(-5bBd+Abe+5aBe)}{e^6}+\frac{b^{10}Bx}{e^5}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^5}+\frac{b^5(\cdots}{\cdots}\right.}{\cdots}$$

$$=-\frac{b^4(5bBd-Abe-5aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{b^5Bx^2\sqrt{a^2+2abx+b^2x\cdots}}{2e^5(a+bx)}$$

Mathematica [A] time = 0.30, size = 497, normalized size = 1.18

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(a^5*e^5*(3*A*e + B*(d + 4*e*x)) + 5*a^4*b*e^4*(A*
e*(d + 4*e*x) + B*(d^2 + 4*d*e*x + 6*e^2*x^2)) + 10*a^3*b^2*e^3*(A*e*(d^2 +
 4*d*e*x + 6*e^2*x^2) + 3*B*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) +
10*a^2*b^3*e^2*(3*A*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - B*d*(25
*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) - 5*a*b^4*e*(A*d*e*(25*d^3
 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) - B*(77*d^5 + 248*d^4*e*x + 252
*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5)) + b^5*(A*e*(77*
d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^
5*x^5) - 3*B*(57*d^6 + 168*d^5*e*x + 132*d^4*e^2*x^2 - 32*d^3*e^3*x^3 - 68*
d^2*e^4*x^4 - 12*d*e^5*x^5 + 2*e^6*x^6)) - 60*b^3*(b*d - a*e)*(3*b*B*d - A*
b*e - 2*a*B*e)*(d + e*x)^4*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 180.42, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.46, size = 871, normalized size = 2.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/12*(6*B*b^5*e^6*x^6 + 171*B*b^5*d^6 - 3*A*a^5*e^6 - 77*(5*B*a*b^4 + A*b^5
)*d^5*e + 125*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 30*(B*a^3*b^2 + A*a^2*b^3)*
d^3*e^3 - 5*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5 - 1
2*(3*B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 - 12*(17*B*b^5*d^2*e^4 - 4*
(5*B*a*b^4 + A*b^5)*d*e^5)*x^4 - 24*(4*B*b^5*d^3*e^3 + 2*(5*B*a*b^4 + A*b^5
)*d^2*e^4 - 10*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 5*(B*a^3*b^2 + A*a^2*b^3)*e^
6)*x^3 + 6*(66*B*b^5*d^4*e^2 - 42*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 90*(2*B*a^2
*b^3 + A*a*b^4)*d^2*e^4 - 30*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 - 5*(B*a^4*b + 2
*A*a^3*b^2)*e^6)*x^2 + 4*(126*B*b^5*d^5*e - 62*(5*B*a*b^4 + A*b^5)*d^4*e^2
+ 110*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4
- 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - (B*a^5 + 5*A*a^4*b)*e^6)*x + 60*(3*B*b^
5*d^6 - (5*B*a*b^4 + A*b^5)*d^5*e + (2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + (3*B*
b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5 + (2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4
+ 4*(3*B*b^5*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4 + (2*B*a^2*b^3 + A*a*b^4
)*d*e^5)*x^3 + 6*(3*B*b^5*d^4*e^2 - (5*B*a*b^4 + A*b^5)*d^3*e^3 + (2*B*a^2*
b^3 + A*a*b^4)*d^2*e^4)*x^2 + 4*(3*B*b^5*d^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^
2 + (2*B*a^2*b^3 + A*a*b^4)*d^3*e^3)*x)*log(e*x + d))/(e^11*x^4 + 4*d*e^10*
x^3 + 6*d^2*e^9*x^2 + 4*d^3*e^8*x + d^4*e^7)
```

giac [B] time = 0.23, size = 870, normalized size = 2.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] 5*(3*B*b^5*d^2*sgn(b*x + a) - 5*B*a*b^4*d*e*sgn(b*x + a) - A*b^5*d*e*sgn(b*
x + a) + 2*B*a^2*b^3*e^2*sgn(b*x + a) + A*a*b^4*e^2*sgn(b*x + a))*e^(-7)*lo
g(abs(x*e + d)) + 1/2*(B*b^5*x^2*e^5*sgn(b*x + a) - 10*B*b^5*d*x*e^4*sgn(b*
x + a) + 10*B*a*b^4*x*e^5*sgn(b*x + a) + 2*A*b^5*x*e^5*sgn(b*x + a))*e^(-10
) + 1/12*(171*B*b^5*d^6*sgn(b*x + a) - 385*B*a*b^4*d^5*e*sgn(b*x + a) - 77*
A*b^5*d^5*e*sgn(b*x + a) + 250*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 125*A*a*b^4
*d^4*e^2*sgn(b*x + a) - 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 30*A*a^2*b^3*d^
3*e^3*sgn(b*x + a) - 5*B*a^4*b*d^2*e^4*sgn(b*x + a) - 10*A*a^3*b^2*d^2*e^4*
sgn(b*x + a) - B*a^5*d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) - 3*
A*a^5*e^6*sgn(b*x + a) + 120*(2*B*b^5*d^3*e^3*sgn(b*x + a) - 5*B*a*b^4*d^2*
e^4*sgn(b*x + a) - A*b^5*d^2*e^4*sgn(b*x + a) + 4*B*a^2*b^3*d*e^5*sgn(b*x +
 a) + 2*A*a*b^4*d*e^5*sgn(b*x + a) - B*a^3*b^2*e^6*sgn(b*x + a) - A*a^2*b^3
*e^6*sgn(b*x + a))*x^3 + 30*(21*B*b^5*d^4*e^2*sgn(b*x + a) - 50*B*a*b^4*d^3
*e^3*sgn(b*x + a) - 10*A*b^5*d^3*e^3*sgn(b*x + a) + 36*B*a^2*b^3*d^2*e^4*sg
n(b*x + a) + 18*A*a*b^4*d^2*e^4*sgn(b*x + a) - 6*B*a^3*b^2*d*e^5*sgn(b*x +
a) - 6*A*a^2*b^3*d*e^5*sgn(b*x + a) - B*a^4*b*e^6*sgn(b*x + a) - 2*A*a^3*b^
2*e^6*sgn(b*x + a))*x^2 + 4*(141*B*b^5*d^5*e*sgn(b*x + a) - 325*B*a*b^4*d^4
*e^2*sgn(b*x + a) - 65*A*b^5*d^4*e^2*sgn(b*x + a) + 220*B*a^2*b^3*d^3*e^3*s
gn(b*x + a) + 110*A*a*b^4*d^3*e^3*sgn(b*x + a) - 30*B*a^3*b^2*d^2*e^4*sgn(b
*x + a) - 30*A*a^2*b^3*d^2*e^4*sgn(b*x + a) - 5*B*a^4*b*d*e^5*sgn(b*x + a)
- 10*A*a^3*b^2*d*e^5*sgn(b*x + a) - B*a^5*e^6*sgn(b*x + a) - 5*A*a^4*b*e^6*
sgn(b*x + a))*x)*e^(-7)/(x*e + d)^4
```

maple [B] time = 0.07, size = 1163, normalized size = 2.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(60*A*a*b^4*d^4*e^2*ln(e*x+d)-300*B*ln(e*x+d)*x^4*a*
b^4*d*e^5-20*B*a^4*b*d*e^5*x-120*B*a^3*b^2*d^2*e^4*x+880*B*a^2*b^3*d^3*e^3*
x-1240*B*a*b^4*d^4*e^2*x-77*A*b^5*d^5*e+120*B*a^2*b^3*d^4*e^2*ln(e*x+d)-300
*B*a*b^4*d^5*e*ln(e*x+d)+125*A*a*b^4*d^4*e^2-5*B*a^4*b*d^2*e^4-10*A*a^3*b^2
*d^2*e^4-30*A*a^2*b^3*d^3*e^3-B*a^5*d*e^5-30*B*a^3*b^2*d^3*e^3+250*B*a^2*b^
3*d^4*e^2-385*B*a*b^4*d^5*e+480*B*a^2*b^3*d^3*e^3*x*ln(e*x+d)-1200*B*a*b^4*
d^4*e^2*x*ln(e*x+d)-180*A*a^2*b^3*d*e^5*x^2+540*A*a*b^4*d^2*e^4*x^2-60*A*b^
5*d^5*e*ln(e*x+d)-20*A*a^4*b*e^6*x-248*A*b^5*d^4*e^2*x-120*A*a^2*b^3*e^6*x^
3+240*A*a*b^4*d^3*e^3*x*ln(e*x+d)+720*B*b^5*d^3*e^3*x^3*ln(e*x+d)-240*A*b^5
*d^4*e^2*x*ln(e*x+d)+720*B*b^5*d^5*e*x*ln(e*x+d)+60*A*ln(e*x+d)*x^4*a*b^4*e
^6-60*A*ln(e*x+d)*x^4*b^5*d*e^5+120*B*ln(e*x+d)*x^4*a^2*b^3*e^6+180*B*ln(e*
x+d)*x^4*b^5*d^2*e^4-3*A*a^5*e^6+171*B*b^5*d^6+240*B*a*b^4*d*e^5*x^4+360*A*
a*b^4*d^2*e^4*x^2*ln(e*x+d)-5*A*a^4*b*d*e^5+480*B*a^2*b^3*d*e^5*x^3-240*B*a
*b^4*d^2*e^4*x^3-40*A*a^3*b^2*d*e^5*x-120*A*a^2*b^3*d^2*e^4*x+440*A*a*b^4*d
^3*e^3*x-180*B*a^3*b^2*d*e^5*x^2-48*A*b^5*d^2*e^4*x^3-120*B*a^3*b^2*e^6*x^3
-96*B*b^5*d^3*e^3*x^3-60*A*a^3*b^2*e^6*x^2-252*A*b^5*d^3*e^3*x^2-30*B*a^4*b
*e^6*x^2+396*B*b^5*d^4*e^2*x^2+60*B*a*b^4*e^6*x^5+6*B*b^5*e^6*x^6+12*A*b^5*
e^6*x^5-4*B*a^5*e^6*x+180*B*b^5*d^6*ln(e*x+d)+240*A*a*b^4*d*e^5*x^3+240*A*a
*b^4*d*e^5*x^3*ln(e*x+d)+480*B*a^2*b^3*d*e^5*x^3*ln(e*x+d)-1200*B*a*b^4*d^2
*e^4*x^3*ln(e*x+d)-360*A*b^5*d^3*e^3*x^2*ln(e*x+d)+1080*B*b^5*d^4*e^2*x^2*l
n(e*x+d)-240*A*b^5*d^2*e^4*x^3*ln(e*x+d)-1260*B*a*b^4*d^3*e^3*x^2+1080*B*a^
2*b^3*d^2*e^4*x^2+720*B*a^2*b^3*d^2*e^4*x^2*ln(e*x+d)-1800*B*a*b^4*d^3*e^3*
x^2*ln(e*x+d)+504*B*b^5*d^5*e*x-36*B*b^5*d*e^5*x^5+48*A*b^5*d*e^5*x^4-204*B
*b^5*d^2*e^4*x^4)/(b*x+a)^5/e^7/(e*x+d)^4
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**5, x)
```

3.1530 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=422

$$\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^2}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{3e^7(a+bx)(d+ex)^3}+\cdots$$

Rubi [A] time = 0.36, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{e^7(a+bx)(d+ex)}+\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^2}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{3e^7(a+bx)(d+ex)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{4e^7(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{5e^7(a+bx)(d+ex)^5}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)(-5aBe-Abe+6bBd)}{e^7(a+bx)}+\frac{b^5Bx\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] (b^5*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B
*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^5) + ((
b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
e^7*(a + b*x)*(d + e*x)^4) - (5*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) + (5*b^2*(b*d
 - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a
+ b*x)*(d + e*x)^2) - (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) - (b^4*(6*b*B*d - A*b*e
- 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^6}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^{10}B}{e^6}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^6}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^5}\cdots\right.}{\cdots}\\
&= \frac{b^5Bx\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5}+\cdots
\end{aligned}$$

Mathematica [A] time = 0.29, size = 490, normalized size = 1.16

$$-\frac{\sqrt{(a+bx)^2}\left(3a^5e^5(4Ae+B(d+5ex))+5a^4be^4\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)+10a^3b^2e^3\left(2Ae\left(d^2+5dex+10e^2x^2\right)+3B\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)+30a^2b^3e^2\left(Ae\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+4B\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+5ab^4e\left(12Ae\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)-Bd\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)\right)+60b^4(d+ex)^5\log(d+ex)(-5aBe-Abe+6bBd)+b^5\left(6B\left(87d^6+375d^5ex+600d^4e^2x^2+400d^3e^3x^3+50d^2e^4x^4-50de^5x^5-10e^6x^6\right)-Ade\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)\right)\right)}{60e^7(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(3*a^5*e^5*(4*A*e + B*(d + 5*e*x)) + 5*a^4*b*e^4*(
3*A*e*(d + 5*e*x) + 2*B*(d^2 + 5*d*e*x + 10*e^2*x^2)) + 10*a^3*b^2*e^3*(2*A
*e*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*
e^3*x^3)) + 30*a^2*b^3*e^2*(A*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^
3) + 4*B*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + 5
*a*b^4*e*(12*A*e*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x
^4) - B*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e
^4*x^4)) + b^5*(-(A*d*e*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e
^3*x^3 + 300*e^4*x^4)) + 6*B*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2*x^2 + 400*
d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6)) + 60*b^4*(6*b*B*
d - A*b*e - 5*a*B*e)*(d + e*x)^5*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.07, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.44, size = 802, normalized size = 1.90

$$\frac{60Bb^5e^6x^6+300Bb^5de^5x^5-522Bb^5d^6-12Aa^5e^6+137\left(5Bab^4+Ab^5\right)d^5e-60\left(2Ba^2b^3+Aab^4\right)d^4e^2-30\left(Ba^3b^2+Aa^2b^3\right)d^3e^3-10\left(Ba^4b+2Aa^3b^2\right)d^2e^4-3\left(Ba^5+5Aa^4b\right)de^5-300\left(Bb^5d^2e^4-\left(5Bab^4+Ab^5\right)de^5+\left(2Ba^2b^3+Aab^4\right)e^6\right)x^4-300\left(8Bb^5d^3e^3-3\left(5Bab^4+Ab^5\right)d^2e^4+2\left(2Ba^2b^3+Aab^4\right)de^5+\left(Ba^3b^2+Aa^2b^3\right)e^6\right)x^3-100\left(36Bb^5d^4e^2-11\left(5Bab^4+Ab^5\right)d^3e^3+6\left(2Ba^2b^3+Aab^4\right)d^2e^4+3\left(Ba^3b^2+Aa^2b^3\right)de^5+\left(Ba^4b+2Aa^3b^2\right)e^6\right)x^2-5\left(450Bb^5d^5e-125\left(5Bab^4+Ab^5\right)d^4e^2+60\left(2Ba^2b^3+Aab^4\right)d^3e^3+30\left(Ba^3b^2+Aa^2b^3\right)d^2e^4+10\left(Ba^4b+2Aa^3b^2\right)de^5+3\left(Ba^5+5Aa^4b\right)e^6\right)x-60\left(6Bb^5d^6-\left(5Bab^4+Ab^5\right)d^5e+\left(6Bb^5de^5-\left(5Bab^4+Ab^5\right)e^6\right)x^5+5\left(6Bb^5d^2e^4-\left(5Bab^4+Ab^5\right)de^5\right)x^4+10\left(6Bb^5d^3e^3-\left(5Bab^4+Ab^5\right)d^2e^4\right)x^3+10\left(6Bb^5d^4e^2-\left(5Bab^4+Ab^5\right)d^3e^3\right)x^2+5\left(6Bb^5d^5e-\left(5Bab^4+Ab^5\right)d^4e^2\right)x\right)\log\left(ex+d\right)}{60\left(e^{12}x^5+5de^{11}x^4+10d^2e^{10}x^3+10d^3e^9x^2+5d^4e^8x+d^5e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] 1/60*(60*B*b^5*e^6*x^6 + 300*B*b^5*d*e^5*x^5 - 522*B*b^5*d^6 - 12*A*a^5*e^6
 + 137*(5*B*a*b^4 + A*b^5)*d^5*e - 60*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 30*
(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 - 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 3*(B
*a^5 + 5*A*a^4*b)*d*e^5 - 300*(B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5 +
(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 - 300*(8*B*b^5*d^3*e^3 - 3*(5*B*a*b^4 + A*
b^5)*d^2*e^4 + 2*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + (B*a^3*b^2 + A*a^2*b^3)*e^
6)*x^3 - 100*(36*B*b^5*d^4*e^2 - 11*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 6*(2*B*a^
2*b^3 + A*a*b^4)*d^2*e^4 + 3*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + (B*a^4*b + 2*A
*a^3*b^2)*e^6)*x^2 - 5*(450*B*b^5*d^5*e - 125*(5*B*a*b^4 + A*b^5)*d^4*e^2 +
 60*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 +
10*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 3*(B*a^5 + 5*A*a^4*b)*e^6)*x - 60*(6*B*b
^5*d^6 - (5*B*a*b^4 + A*b^5)*d^5*e + (6*B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e
^6)*x^5 + 5*(6*B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5)*x^4 + 10*(6*B*b^5
*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4)*x^3 + 10*(6*B*b^5*d^4*e^2 - (5*B*a*
b^4 + A*b^5)*d^3*e^3)*x^2 + 5*(6*B*b^5*d^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^2)
*x)*log(e*x + d))/(e^12*x^5 + 5*d*e^11*x^4 + 10*d^2*e^10*x^3 + 10*d^3*e^9*x
^2 + 5*d^4*e^8*x + d^5*e^7)
```

giac [B] time = 0.27, size = 863, normalized size = 2.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] B*b^5*x*e^(-6)*sgn(b*x + a) - (6*B*b^5*d*sgn(b*x + a) - 5*B*a*b^4*e*sgn(b*x
 + a) - A*b^5*e*sgn(b*x + a))*e^(-7)*log(abs(x*e + d)) - 1/60*(522*B*b^5*d^
6*sgn(b*x + a) - 685*B*a*b^4*d^5*e*sgn(b*x + a) - 137*A*b^5*d^5*e*sgn(b*x +
 a) + 120*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 60*A*a*b^4*d^4*e^2*sgn(b*x + a)
+ 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 30*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 1
0*B*a^4*b*d^2*e^4*sgn(b*x + a) + 20*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 3*B*a^
5*d*e^5*sgn(b*x + a) + 15*A*a^4*b*d*e^5*sgn(b*x + a) + 12*A*a^5*e^6*sgn(b*x
 + a) + 300*(3*B*b^5*d^2*e^4*sgn(b*x + a) - 5*B*a*b^4*d*e^5*sgn(b*x + a) -
A*b^5*d*e^5*sgn(b*x + a) + 2*B*a^2*b^3*e^6*sgn(b*x + a) + A*a*b^4*e^6*sgn(b
*x + a))*x^4 + 300*(10*B*b^5*d^3*e^3*sgn(b*x + a) - 15*B*a*b^4*d^2*e^4*sgn(
b*x + a) - 3*A*b^5*d^2*e^4*sgn(b*x + a) + 4*B*a^2*b^3*d*e^5*sgn(b*x + a) +
2*A*a*b^4*d*e^5*sgn(b*x + a) + B*a^3*b^2*e^6*sgn(b*x + a) + A*a^2*b^3*e^6*s
gn(b*x + a))*x^3 + 100*(39*B*b^5*d^4*e^2*sgn(b*x + a) - 55*B*a*b^4*d^3*e^3*
sgn(b*x + a) - 11*A*b^5*d^3*e^3*sgn(b*x + a) + 12*B*a^2*b^3*d^2*e^4*sgn(b*x
 + a) + 6*A*a*b^4*d^2*e^4*sgn(b*x + a) + 3*B*a^3*b^2*d*e^5*sgn(b*x + a) + 3
*A*a^2*b^3*d*e^5*sgn(b*x + a) + B*a^4*b*e^6*sgn(b*x + a) + 2*A*a^3*b^2*e^6*
sgn(b*x + a))*x^2 + 5*(462*B*b^5*d^5*e*sgn(b*x + a) - 625*B*a*b^4*d^4*e^2*s
gn(b*x + a) - 125*A*b^5*d^4*e^2*sgn(b*x + a) + 120*B*a^2*b^3*d^3*e^3*sgn(b*
x + a) + 60*A*a*b^4*d^3*e^3*sgn(b*x + a) + 30*B*a^3*b^2*d^2*e^4*sgn(b*x + a
) + 30*A*a^2*b^3*d^2*e^4*sgn(b*x + a) + 10*B*a^4*b*d*e^5*sgn(b*x + a) + 20*
A*a^3*b^2*d*e^5*sgn(b*x + a) + 3*B*a^5*e^6*sgn(b*x + a) + 15*A*a^4*b*e^6*sg
n(b*x + a))*x)*e^(-7)/(x*e + d)^5
```

maple [B] time = 0.07, size = 1012, normalized size = 2.40

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(1500*B*a*b^4*d*e^5*x^4*ln(e*x+d)-50*B*a^4*b*d*e^5*x
-150*B*a^3*b^2*d^2*e^4*x-600*B*a^2*b^3*d^3*e^3*x+3125*B*a*b^4*d^4*e^2*x+300
*B*ln(e*x+d)*x^5*a*b^4*e^6+137*A*b^5*d^5*e+300*B*a*b^4*d^5*e*ln(e*x+d)-60*A
*a*b^4*d^4*e^2-10*B*a^4*b*d^2*e^4-20*A*a^3*b^2*d^2*e^4-30*A*a^2*b^3*d^3*e^3
-3*B*a^5*d*e^5-30*B*a^3*b^2*d^3*e^3-120*B*a^2*b^3*d^4*e^2+685*B*a*b^4*d^5*e
+1500*B*a*b^4*d^4*e^2*x*ln(e*x+d)-300*A*a^2*b^3*d*e^5*x^2-600*A*a*b^4*d^2*e
^4*x^2+60*A*b^5*d^5*e*ln(e*x+d)-75*A*a^4*b*e^6*x+625*A*b^5*d^4*e^2*x-300*A*
a^2*b^3*e^6*x^3-360*B*ln(e*x+d)*x^5*b^5*d*e^5-3600*B*b^5*d^3*e^3*x^3*ln(e*x
+d)+300*A*b^5*d^4*e^2*x*ln(e*x+d)-1800*B*b^5*d^5*e*x*ln(e*x+d)+300*A*b^5*d*
e^5*x^4*ln(e*x+d)-1800*B*b^5*d^2*e^4*x^4*ln(e*x+d)-12*A*a^5*e^6-522*B*b^5*d
^6+1500*B*a*b^4*d*e^5*x^4-15*A*a^4*b*d*e^5-1200*B*a^2*b^3*d*e^5*x^3+4500*B*
a*b^4*d^2*e^4*x^3-100*A*a^3*b^2*d*e^5*x-150*A*a^2*b^3*d^2*e^4*x-300*A*a*b^4
*d^3*e^3*x-300*B*a^3*b^2*d*e^5*x^2+900*A*b^5*d^2*e^4*x^3-300*B*a^3*b^2*e^6*
x^3-2400*B*b^5*d^3*e^3*x^3-200*A*a^3*b^2*e^6*x^2+1100*A*b^5*d^3*e^3*x^2-100
*B*a^4*b*e^6*x^2-3600*B*b^5*d^4*e^2*x^2+60*B*b^5*e^6*x^6-15*B*a^5*e^6*x-360
*B*b^5*d^6*ln(e*x+d)-600*A*a*b^4*d*e^5*x^3+3000*B*a*b^4*d^2*e^4*x^3*ln(e*x+
d)+600*A*b^5*d^3*e^3*x^2*ln(e*x+d)-3600*B*b^5*d^4*e^2*x^2*ln(e*x+d)+600*A*b
^5*d^2*e^4*x^3*ln(e*x+d)+5500*B*a*b^4*d^3*e^3*x^2-1200*B*a^2*b^3*d^2*e^4*x^
2+3000*B*a*b^4*d^3*e^3*x^2*ln(e*x+d)-2250*B*b^5*d^5*e*x+300*B*b^5*d*e^5*x^5
-300*A*a*b^4*e^6*x^4+300*A*b^5*d*e^5*x^4-600*B*a^2*b^3*e^6*x^4-300*B*b^5*d^
2*e^4*x^4+60*A*ln(e*x+d)*x^5*b^5*e^6)/(b*x+a)^5/e^7/(e*x+d)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**6, x)
```

3.1531 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=365

$$-\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{6e(d+ex)^6(bd-ae)}+\frac{10b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^3}-\frac{5bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^4}$$

Rubi [A] time = 0.29, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 78, 43}

$$-\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{6e(d+ex)^6(bd-ae)}+\frac{5b^4B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)}-\frac{5b^3B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)^2}+\frac{10b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^3}-\frac{5bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^4}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^5}+\frac{b^5B\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e*(b*d - a*e)*(
d + e*x)^6) + (B*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b
*x)*(d + e*x)^5) - (5*b*B*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e
^7*(a + b*x)*(d + e*x)^4) + (10*b^2*B*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) - (5*b^3*B*(b*d - a*e)^2*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^2) + (5*b^4*B*(b*d - a*e)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (b^5*B*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^7}dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{b^4e\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{B(bd-ae)^5\sqrt{a^2+2abx+}}{5e^7(a+bx)(d+ex)^5}$$

Mathematica [A] time = 0.29, size = 477, normalized size = 1.31

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(2*a^5*e^5*(5*A*e + B*(d + 6*e*x)) + 5*a^4*b*e^4*(
2*A*e*(d + 6*e*x) + B*(d^2 + 6*d*e*x + 15*e^2*x^2)) + 10*a^3*b^2*e^3*(A*e*(
d^2 + 6*d*e*x + 15*e^2*x^2) + B*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^
3)) + 10*a^2*b^3*e^2*(A*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2
*B*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + 10*a*b
^4*e*(A*e*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) +
5*B*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e
^5*x^5)) + b^5*(10*A*e*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 +
 15*d*e^4*x^4 + 6*e^5*x^5) - B*d*(147*d^5 + 822*d^4*e*x + 1875*d^3*e^2*x^2
+ 2200*d^2*e^3*x^3 + 1350*d*e^4*x^4 + 360*e^5*x^5)) - 60*b^5*B*(d + e*x)^6*
Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.42, size = 703, normalized size = 1.93

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] 1/60*(147*B*b^5*d^6 - 10*A*a^5*e^6 - 10*(5*B*a*b^4 + A*b^5)*d^5*e - 10*(2*B
*a^2*b^3 + A*a*b^4)*d^4*e^2 - 10*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 - 5*(B*a^4
*b + 2*A*a^3*b^2)*d^2*e^4 - 2*(B*a^5 + 5*A*a^4*b)*d*e^5 + 60*(6*B*b^5*d*e^5
 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 150*(9*B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5
)*d*e^5 - (2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 200*(11*B*b^5*d^3*e^3 - (5*B*a
```

```
*b^4 + A*b^5)*d^2*e^4 - (2*B*a^2*b^3 + A*a*b^4)*d*e^5 - (B*a^3*b^2 + A*a^2*
b^3)*e^6)*x^3 + 75*(25*B*b^5*d^4*e^2 - 2*(5*B*a*b^4 + A*b^5)*d^3*e^3 - 2*(2
*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 2*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 - (B*a^4*b
+ 2*A*a^3*b^2)*e^6)*x^2 + 6*(137*B*b^5*d^5*e - 10*(5*B*a*b^4 + A*b^5)*d^4*e
^2 - 10*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 10*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^
4 - 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - 2*(B*a^5 + 5*A*a^4*b)*e^6)*x + 60*(B*
b^5*e^6*x^6 + 6*B*b^5*d*e^5*x^5 + 15*B*b^5*d^2*e^4*x^4 + 20*B*b^5*d^3*e^3*x
^3 + 15*B*b^5*d^4*e^2*x^2 + 6*B*b^5*d^5*e*x + B*b^5*d^6)*log(e*x + d))/(e^1
3*x^6 + 6*d*e^12*x^5 + 15*d^2*e^11*x^4 + 20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 +
 6*d^5*e^8*x + d^6*e^7)
```

giac [B] time = 0.30, size = 871, normalized size = 2.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] B*b^5*e^(-7)*log(abs(x*e + d))*sgn(b*x + a) + 1/60*(60*(6*B*b^5*d*e^4*sgn(b
*x + a) - 5*B*a*b^4*e^5*sgn(b*x + a) - A*b^5*e^5*sgn(b*x + a))*x^5 + 150*(9
*B*b^5*d^2*e^3*sgn(b*x + a) - 5*B*a*b^4*d*e^4*sgn(b*x + a) - A*b^5*d*e^4*sg
n(b*x + a) - 2*B*a^2*b^3*e^5*sgn(b*x + a) - A*a*b^4*e^5*sgn(b*x + a))*x^4 +
 200*(11*B*b^5*d^3*e^2*sgn(b*x + a) - 5*B*a*b^4*d^2*e^3*sgn(b*x + a) - A*b^
5*d^2*e^3*sgn(b*x + a) - 2*B*a^2*b^3*d*e^4*sgn(b*x + a) - A*a*b^4*d*e^4*sgn
(b*x + a) - B*a^3*b^2*e^5*sgn(b*x + a) - A*a^2*b^3*e^5*sgn(b*x + a))*x^3 +
75*(25*B*b^5*d^4*e*sgn(b*x + a) - 10*B*a*b^4*d^3*e^2*sgn(b*x + a) - 2*A*b^5
*d^3*e^2*sgn(b*x + a) - 4*B*a^2*b^3*d^2*e^3*sgn(b*x + a) - 2*A*a*b^4*d^2*e^
3*sgn(b*x + a) - 2*B*a^3*b^2*d*e^4*sgn(b*x + a) - 2*A*a^2*b^3*d*e^4*sgn(b*x
 + a) - B*a^4*b*e^5*sgn(b*x + a) - 2*A*a^3*b^2*e^5*sgn(b*x + a))*x^2 + 6*(1
37*B*b^5*d^5*sgn(b*x + a) - 50*B*a*b^4*d^4*e*sgn(b*x + a) - 10*A*b^5*d^4*e*
sgn(b*x + a) - 20*B*a^2*b^3*d^3*e^2*sgn(b*x + a) - 10*A*a*b^4*d^3*e^2*sgn(b
*x + a) - 10*B*a^3*b^2*d^2*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^2*e^3*sgn(b*x
+ a) - 5*B*a^4*b*d*e^4*sgn(b*x + a) - 10*A*a^3*b^2*d*e^4*sgn(b*x + a) - 2*B
*a^5*e^5*sgn(b*x + a) - 10*A*a^4*b*e^5*sgn(b*x + a))*x + (147*B*b^5*d^6*sgn
(b*x + a) - 50*B*a*b^4*d^5*e*sgn(b*x + a) - 10*A*b^5*d^5*e*sgn(b*x + a) - 2
0*B*a^2*b^3*d^4*e^2*sgn(b*x + a) - 10*A*a*b^4*d^4*e^2*sgn(b*x + a) - 10*B*a
^3*b^2*d^3*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) - 5*B*a^4*b
*d^2*e^4*sgn(b*x + a) - 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - 2*B*a^5*d*e^5*s
gn(b*x + a) - 10*A*a^4*b*d*e^5*sgn(b*x + a) - 10*A*a^5*e^6*sgn(b*x + a))*e^
(-1))*e^(-6)/(x*e + d)^6
```

maple [B] time = 0.07, size = 809, normalized size = 2.22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x)
```

```
[Out] -1/60*((b*x+a)^2)^(5/2)*(30*B*a^4*b*d*e^5*x+60*B*a^3*b^2*d^2*e^4*x+120*B*a^
2*b^3*d^3*e^3*x+300*B*a*b^4*d^4*e^2*x+10*A*b^5*d^5*e+10*A*a*b^4*d^4*e^2+5*B
*a^4*b*d^2*e^4+10*A*a^3*b^2*d^2*e^4+10*A*a^2*b^3*d^3*e^3+2*B*a^5*d*e^5+10*B
*a^3*b^2*d^3*e^3+20*B*a^2*b^3*d^4*e^2+50*B*a*b^4*d^5*e+150*A*a^2*b^3*d*e^5*
x^2+150*A*a*b^4*d^2*e^4*x^2+60*A*a^4*b*e^6*x+60*A*b^5*d^4*e^2*x+200*A*a^2*b
^3*e^6*x^3-360*B*b^5*d*e^5*x^5*ln(e*x+d)-1200*B*b^5*d^3*e^3*x^3*ln(e*x+d)-3
60*B*b^5*d^5*e*x*ln(e*x+d)-900*B*b^5*d^2*e^4*x^4*ln(e*x+d)+10*A*a^5*e^6-147
*B*b^5*d^6+750*B*a*b^4*d*e^5*x^4+10*A*a^4*b*d*e^5+400*B*a^2*b^3*d*e^5*x^3+1
000*B*a*b^4*d^2*e^4*x^3+60*A*a^3*b^2*d*e^5*x+60*A*a^2*b^3*d^2*e^4*x+60*A*a*
b^4*d^3*e^3*x+150*B*a^3*b^2*d*e^5*x^2+200*A*b^5*d^2*e^4*x^3+200*B*a^3*b^2*e
^6*x^3-2200*B*b^5*d^3*e^3*x^3+150*A*a^3*b^2*e^6*x^2+150*A*b^5*d^3*e^3*x^2+7
```

```
5*B*a^4*b*e^6*x^2-1875*B*b^5*d^4*e^2*x^2+300*B*a*b^4*e^6*x^5-60*B*ln(e*x+d)
*x^6*b^5*e^6+60*A*b^5*e^6*x^5+12*B*a^5*e^6*x-60*B*b^5*d^6*ln(e*x+d)+200*A*a
*b^4*d*e^5*x^3-900*B*b^5*d^4*e^2*x^2*ln(e*x+d)+750*B*a*b^4*d^3*e^3*x^2+300*
B*a^2*b^3*d^2*e^4*x^2-822*B*b^5*d^5*e*x-360*B*b^5*d*e^5*x^5+150*A*a*b^4*e^6
*x^4+150*A*b^5*d*e^5*x^4+300*B*a^2*b^3*e^6*x^4-1350*B*b^5*d^2*e^4*x^4)/(b*x
+a)^5/e^7/(e*x+d)^6
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**7,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1532 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=106

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6(d+ex)^6(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}(Bd-Ae)}{7(d+ex)^7(bd-ae)^2}$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6(d+ex)^6(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}(Bd-Ae)}{7(d+ex)^7(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(b*d - a*e)^2*(d
 + e*x)^6) + ((B*d - A*e)*(a^2 + 2*a*b*x + b^2*x^2)^(7/2))/(7*(b*d - a*e)^2
*(d + e*x)^7)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(bd-ae)^2(d+ex)^7}+\frac{(Ab-aB)\int \frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx}{bd-ae}\\
&= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(bd-ae)^2(d+ex)^7}+\frac{\left((Ab-aB)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(ab\cdots}{(d\cdots}}{b^4(bd-ae)\left(ab+b^2x\right)}\\
&= \frac{(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6(bd-ae)^2(d+ex)^6}+\frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{7/\cdots}}{7(bd-ae)^2(d+ex)^7}
\end{aligned}$$

Mathematica [B] time = 0.20, size = 465, normalized size = 4.39

$$-\frac{\sqrt{(a+bx)^2}\left(a^5e^5(6Ae+B(d+7ex))+a^4be^4\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+a^3b^2e^3\left(4Ae\left(d^2+7dex+21e^2x^2\right)+3B\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)\right)+a^2b^3e^2\left(3Ae\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+4B\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+ab^4e\left(2Ae\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)+5B\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)\right)+b^5\left(Ae\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)+6B\left(d^6+7d^5ex+21d^4e^2x^2+35d^3e^3x^3+35d^2e^4x^4+21de^5x^5+7e^6x^6\right)\right)\right)}{42e^7(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] -1/42*(Sqrt[(a + b*x)^2]*(a^5*e^5*(6*A*e + B*(d + 7*e*x)) + a^4*b*e^4*(5*A*
e*(d + 7*e*x) + 2*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + a^3*b^2*e^3*(4*A*e*(d^2
 + 7*d*e*x + 21*e^2*x^2) + 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3
)) + a^2*b^3*e^2*(3*A*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*B
*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + a*b^4*e*
(2*A*e*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*B
*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5
*x^5)) + b^5*(A*e*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d
*e^4*x^4 + 21*e^5*x^5) + 6*B*(d^6 + 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3
*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^5 + 7*e^6*x^6))))/(e^7*(a + b*x)*(d + e*
x)^7)
```

IntegrateAlgebraic [F] time = 180.04, size = 0, normalized size = 0.00

$$\text{\$Aborted}$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.43, size = 621, normalized size = 5.86

$$-\frac{42Bb^5e^6x^6+6Bb^5d^6+6Aa^5e^6+(5Bab^4+Ab^5)d^5e+2(2Ba^2b^3+Aab^4)d^4e^2+3(Ba^3b^2+Aa^2b^3)d^3e^3+2(Ba^4b+2Aa^3b^2)d^2e^4+(Ba^5+5Aa^4b)de^5+21(6Bb^5de^5+(5Bab^4+Ab^5)e^6)x^5+35(6Bb^5d^2e^4+(5Bab^4+Ab^5)de^5+2(2Ba^2b^3+Aab^4)e^6)x^4+35(6Bb^5d^3e^3+(5Bab^4+Ab^5)d^2e^4+2(2Ba^2b^3+Aab^4)de^5+3(Ba^3b^2+Aa^2b^3)e^6)x^3+21(6Bb^5d^4e^2+(5Bab^4+Ab^5)d^3e^3+2(2Ba^2b^3+Aab^4)d^2e^4+3(Ba^3b^2+Aa^2b^3)de^5+2(Ba^4b+2Aa^3b^2)e^6)x^2+7(6Bb^5d^5e+(5Bab^4+Ab^5)d^4e^2+2(2Ba^2b^3+Aab^4)d^3e^3+3(Ba^3b^2+Aa^2b^3)d^2e^4+2(Ba^4b+2Aa^3b^2)de^5+(Ba^5+5Aa^4b)e^6)x}{42\left(e^{14}x^7+7de^{13}x^6+21d^2e^{12}x^5+35d^3e^{11}x^4+35d^4e^{10}x^3+21d^5e^9x^2+7d^6e^8x+d^7e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/42*(42*B*b^5*e^6*x^6 + 6*B*b^5*d^6 + 6*A*a^5*e^6 + (5*B*a*b^4 + A*b^5)*d
^5*e + 2*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 3*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^
3 + 2*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + (B*a^5 + 5*A*a^4*b)*d*e^5 + 21*(6*B
*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 35*(6*B*b^5*d^2*e^4 + (5*B*a*b^
4 + A*b^5)*d*e^5 + 2*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 35*(6*B*b^5*d^3*e^3
 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 2*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 3*(B*a^3
*b^2 + A*a^2*b^3)*e^6)*x^3 + 21*(6*B*b^5*d^4*e^2 + (5*B*a*b^4 + A*b^5)*d^3*
e^3 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 3*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 +
 2*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 7*(6*B*b^5*d^5*e + (5*B*a*b^4 + A*b^5
)*d^4*e^2 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 3*(B*a^3*b^2 + A*a^2*b^3)*d
^2*e^4 + 2*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^1
4*x^7 + 7*d*e^13*x^6 + 21*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 35*d^4*e^10*x^3
+ 21*d^5*e^9*x^2 + 7*d^6*e^8*x + d^7*e^7)
```

giac [B] time = 0.22, size = 917, normalized size = 8.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/42*(42*B*b^5*x^6*e^6*sgn(b*x + a) + 126*B*b^5*d*x^5*e^5*sgn(b*x + a) + 2
10*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 210*B*b^5*d^3*x^3*e^3*sgn(b*x + a) + 12
6*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 42*B*b^5*d^5*x*e*sgn(b*x + a) + 6*B*b^5*
d^6*sgn(b*x + a) + 105*B*a*b^4*x^5*e^6*sgn(b*x + a) + 21*A*b^5*x^5*e^6*sgn(
b*x + a) + 175*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 35*A*b^5*d*x^4*e^5*sgn(b*x
+ a) + 175*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 35*A*b^5*d^2*x^3*e^4*sgn(b*x
+ a) + 105*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 21*A*b^5*d^3*x^2*e^3*sgn(b*x
+ a) + 35*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 7*A*b^5*d^4*x*e^2*sgn(b*x + a) +
 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 140*B*a^2*b^3*x^
4*e^6*sgn(b*x + a) + 70*A*a*b^4*x^4*e^6*sgn(b*x + a) + 140*B*a^2*b^3*d*x^3*
e^5*sgn(b*x + a) + 70*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 84*B*a^2*b^3*d^2*x^2
*e^4*sgn(b*x + a) + 42*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 28*B*a^2*b^3*d^3*
x*e^3*sgn(b*x + a) + 14*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 4*B*a^2*b^3*d^4*e^
2*sgn(b*x + a) + 2*A*a*b^4*d^4*e^2*sgn(b*x + a) + 105*B*a^3*b^2*x^3*e^6*sgn
(b*x + a) + 105*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 63*B*a^3*b^2*d*x^2*e^5*sgn
(b*x + a) + 63*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 21*B*a^3*b^2*d^2*x*e^4*sg
n(b*x + a) + 21*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 3*B*a^3*b^2*d^3*e^3*sgn(
b*x + a) + 3*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 42*B*a^4*b*x^2*e^6*sgn(b*x +
a) + 84*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 14*B*a^4*b*d*x*e^5*sgn(b*x + a) +
28*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 2*B*a^4*b*d^2*e^4*sgn(b*x + a) + 4*A*a^
3*b^2*d^2*e^4*sgn(b*x + a) + 7*B*a^5*x*e^6*sgn(b*x + a) + 35*A*a^4*b*x*e^6*
sgn(b*x + a) + B*a^5*d*e^5*sgn(b*x + a) + 5*A*a^4*b*d*e^5*sgn(b*x + a) + 6*
A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^7
```

maple [B] time = 0.06, size = 687, normalized size = 6.48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x)
```

```
[Out] -1/42*(42*B*b^5*e^6*x^6+21*A*b^5*e^6*x^5+105*B*a*b^4*e^6*x^5+126*B*b^5*d*e^
5*x^5+70*A*a*b^4*e^6*x^4+35*A*b^5*d*e^5*x^4+140*B*a^2*b^3*e^6*x^4+175*B*a*b
^4*d*e^5*x^4+210*B*b^5*d^2*e^4*x^4+105*A*a^2*b^3*e^6*x^3+70*A*a*b^4*d*e^5*x
^3+35*A*b^5*d^2*e^4*x^3+105*B*a^3*b^2*e^6*x^3+140*B*a^2*b^3*d*e^5*x^3+175*B
*a*b^4*d^2*e^4*x^3+210*B*b^5*d^3*e^3*x^3+84*A*a^3*b^2*e^6*x^2+63*A*a^2*b^3*
d*e^5*x^2+42*A*a*b^4*d^2*e^4*x^2+21*A*b^5*d^3*e^3*x^2+42*B*a^4*b*e^6*x^2+63
*B*a^3*b^2*d*e^5*x^2+84*B*a^2*b^3*d^2*e^4*x^2+105*B*a*b^4*d^3*e^3*x^2+126*B
*b^5*d^4*e^2*x^2+35*A*a^4*b*e^6*x+28*A*a^3*b^2*d*e^5*x+21*A*a^2*b^3*d^2*e^4
*x+14*A*a*b^4*d^3*e^3*x+7*A*b^5*d^4*e^2*x+7*B*a^5*e^6*x+14*B*a^4*b*d*e^5*x+
21*B*a^3*b^2*d^2*e^4*x+28*B*a^2*b^3*d^3*e^3*x+35*B*a*b^4*d^4*e^2*x+42*B*b^5
*d^5*e*x+6*A*a^5*e^6+5*A*a^4*b*d*e^5+4*A*a^3*b^2*d^2*e^4+3*A*a^2*b^3*d^3*e^
3+2*A*a*b^4*d^4*e^2+A*b^5*d^5*e+B*a^5*d*e^5+2*B*a^4*b*d^2*e^4+3*B*a^3*b^2*d
^3*e^3+4*B*a^2*b^3*d^4*e^2+5*B*a*b^4*d^5*e+6*B*b^5*d^6)*((b*x+a)^2)^(5/2)/(
e*x+d)^7/e^7/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.59, size = 1489, normalized size = 14.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^8,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(3*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(3*e^6) - (B*b^5*
d)/(3*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(2*e^7) - (B*b^5*d)/(2*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^2) - (((A*a^5)/(7*e) - (d*((B
*a^5 + 5*A*a^4*b)/(7*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(7*e) - (B*b^
5*d)/(7*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(7*e)))/e + (10*a^2*b^2*(A*b + B
*a))/(7*e)))/e - (5*a^3*b*(2*A*b + B*a))/(7*e)))/e))/e)*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 1
0*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2
+ 30*B*a*b^4*d^2*e)/(4*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*
d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(4*e^7) - (d*((b^4*(A*b*e + 5*
B*a*e - 3*B*b*d))/(4*e^5) - (B*b^5*d)/(4*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b
*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*
d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5
*B*a^4*b*d*e^4)/(6*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e
^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3
*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(6*e^7) - (d*((10*A*a^2*b
^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e
^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(6*e^7) - (d*((5*A*a*b^4*e^5 - A
*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(6*e^7) -
(d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(6*e^3) - (B*b^5*d)/(6*e^3)))/e))/e))/e
))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((5*B*b^5
*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^
2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a
*b^4*d^3*e)/(5*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*
e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^
4*d*e^3)/(5*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 +
3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(5*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2
*B*b*d))/(5*e^4) - (B*b^5*d)/(5*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/((a + b*x)*(d + e*x)^5) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
e^7*(a + b*x)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1533 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=193

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{28e(d+ex)^7(bd-ae)^2}-\frac{\sqrt{a^2}}{}$$

Rubi [A] time = 0.14, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 78, 45, 37}

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{28e(d+ex)^7(bd-ae)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Bd-Ae)}{8e(d+ex)^8(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e*(b*d - a*e)*(
d + e*x)^8) + ((3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(28*e*(b*d - a*e)^2*(d + e*x)^7) + (b*(3*b*B*d + A*b*e - 4*a*B*e
)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(168*e*(b*d - a*e)^3*(d + e*x)
^6)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^9}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8e(bd-ae)(d+ex)^8} + \frac{\left((3bBd+Abe-4aBe)\sqrt{a^2\right.}{4b^4e(bd-}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8e(bd-ae)(d+ex)^8} + \frac{(3bBd+Abe-4aBe)(a+}{28e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8e(bd-ae)(d+ex)^8} + \frac{(3bBd+Abe-4aBe)(a+}{28e(bd-ae)}$$

Mathematica [B] time = 0.21, size = 466, normalized size = 2.41

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] -1/168*(Sqrt[(a + b*x)^2]*(3*a^5*e^5*(7*A*e + B*(d + 8*e*x)) + 5*a^4*b*e^4*
(3*A*e*(d + 8*e*x) + B*(d^2 + 8*d*e*x + 28*e^2*x^2)) + 2*a^3*b^2*e^3*(5*A*e
*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*B*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^
3*x^3)) + 6*a^2*b^3*e^2*(A*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)
+ B*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + a*b^4
*e*(3*A*e*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) +
5*B*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*
e^5*x^5)) + b^5*(A*e*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 7
0*d*e^4*x^4 + 56*e^5*x^5) + 3*B*(d^6 + 8*d^5*e*x + 28*d^4*e^2*x^2 + 56*d^3*
e^3*x^3 + 70*d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6))))/(e^7*(a + b*x)*(d
+ e*x)^8)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.43, size = 634, normalized size = 3.28

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/168*(84*B*b^5*e^6*x^6 + 3*B*b^5*d^6 + 21*A*a^5*e^6 + (5*B*a*b^4 + A*b^5)
*d^5*e + 3*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 6*(B*a^3*b^2 + A*a^2*b^3)*d^3*
e^3 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 3*(B*a^5 + 5*A*a^4*b)*d*e^5 + 56*
(3*B*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 70*(3*B*b^5*d^2*e^4 + (5*B*
```

```
a*b^4 + A*b^5)*d*e^5 + 3*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 56*(3*B*b^5*d^3
*e^3 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 3*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 6*(B
*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 28*(3*B*b^5*d^4*e^2 + (5*B*a*b^4 + A*b^5)*
d^3*e^3 + 3*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 6*(B*a^3*b^2 + A*a^2*b^3)*d*e
^5 + 5*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 8*(3*B*b^5*d^5*e + (5*B*a*b^4 + A
*b^5)*d^4*e^2 + 3*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 6*(B*a^3*b^2 + A*a^2*b^
3)*d^2*e^4 + 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 3*(B*a^5 + 5*A*a^4*b)*e^6)*x
)/(e^15*x^8 + 8*d*e^14*x^7 + 28*d^2*e^13*x^6 + 56*d^3*e^12*x^5 + 70*d^4*e^1
1*x^4 + 56*d^5*e^10*x^3 + 28*d^6*e^9*x^2 + 8*d^7*e^8*x + d^8*e^7)
```

giac [B] time = 0.22, size = 918, normalized size = 4.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/168*(84*B*b^5*x^6*e^6*sgn(b*x + a) + 168*B*b^5*d*x^5*e^5*sgn(b*x + a) +
210*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 168*B*b^5*d^3*x^3*e^3*sgn(b*x + a) + 8
4*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 24*B*b^5*d^5*x*e*sgn(b*x + a) + 3*B*b^5*
d^6*sgn(b*x + a) + 280*B*a*b^4*x^5*e^6*sgn(b*x + a) + 56*A*b^5*x^5*e^6*sgn(
b*x + a) + 350*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 70*A*b^5*d*x^4*e^5*sgn(b*x
+ a) + 280*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 56*A*b^5*d^2*x^3*e^4*sgn(b*x
+ a) + 140*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 28*A*b^5*d^3*x^2*e^3*sgn(b*x
+ a) + 40*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 8*A*b^5*d^4*x*e^2*sgn(b*x + a) +
 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 420*B*a^2*b^3*x^
4*e^6*sgn(b*x + a) + 210*A*a*b^4*x^4*e^6*sgn(b*x + a) + 336*B*a^2*b^3*d*x^3
*e^5*sgn(b*x + a) + 168*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 168*B*a^2*b^3*d^2*
x^2*e^4*sgn(b*x + a) + 84*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 48*B*a^2*b^3*d
^3*x*e^3*sgn(b*x + a) + 24*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 6*B*a^2*b^3*d^4
*e^2*sgn(b*x + a) + 3*A*a*b^4*d^4*e^2*sgn(b*x + a) + 336*B*a^3*b^2*x^3*e^6*
sgn(b*x + a) + 336*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 168*B*a^3*b^2*d*x^2*e^5
*sgn(b*x + a) + 168*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 48*B*a^3*b^2*d^2*x*e
^4*sgn(b*x + a) + 48*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 6*B*a^3*b^2*d^3*e^3
*sgn(b*x + a) + 6*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 140*B*a^4*b*x^2*e^6*sgn(
b*x + a) + 280*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 40*B*a^4*b*d*x*e^5*sgn(b*x
+ a) + 80*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 5*B*a^4*b*d^2*e^4*sgn(b*x + a) +
 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 24*B*a^5*x*e^6*sgn(b*x + a) + 120*A*a^
4*b*x*e^6*sgn(b*x + a) + 3*B*a^5*d*e^5*sgn(b*x + a) + 15*A*a^4*b*d*e^5*sgn(
b*x + a) + 21*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^8
```

maple [B] time = 0.05, size = 688, normalized size = 3.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x)
```

```
[Out] -1/168/e^7*(84*B*b^5*e^6*x^6+56*A*b^5*e^6*x^5+280*B*a*b^4*e^6*x^5+168*B*b^5
*d*e^5*x^5+210*A*a*b^4*e^6*x^4+70*A*b^5*d*e^5*x^4+420*B*a^2*b^3*e^6*x^4+350
*B*a*b^4*d*e^5*x^4+210*B*b^5*d^2*e^4*x^4+336*A*a^2*b^3*e^6*x^3+168*A*a*b^4*
d*e^5*x^3+56*A*b^5*d^2*e^4*x^3+336*B*a^3*b^2*e^6*x^3+336*B*a^2*b^3*d*e^5*x^
3+280*B*a*b^4*d^2*e^4*x^3+168*B*b^5*d^3*e^3*x^3+280*A*a^3*b^2*e^6*x^2+168*A
*a^2*b^3*d*e^5*x^2+84*A*a*b^4*d^2*e^4*x^2+28*A*b^5*d^3*e^3*x^2+140*B*a^4*b*
e^6*x^2+168*B*a^3*b^2*d*e^5*x^2+168*B*a^2*b^3*d^2*e^4*x^2+140*B*a*b^4*d^3*e
^3*x^2+84*B*b^5*d^4*e^2*x^2+120*A*a^4*b*e^6*x+80*A*a^3*b^2*d*e^5*x+48*A*a^2
*b^3*d^2*e^4*x+24*A*a*b^4*d^3*e^3*x+8*A*b^5*d^4*e^2*x+24*B*a^5*e^6*x+40*B*a
^4*b*d*e^5*x+48*B*a^3*b^2*d^2*e^4*x+48*B*a^2*b^3*d^3*e^3*x+40*B*a*b^4*d^4*e
^2*x+24*B*b^5*d^5*e*x+21*A*a^5*e^6+15*A*a^4*b*d*e^5+10*A*a^3*b^2*d^2*e^4+6*
```

```
A*a^2*b^3*d^3*e^3+3*A*a*b^4*d^4*e^2+A*b^5*d^5*e+3*B*a^5*d*e^5+5*B*a^4*b*d^2
*e^4+6*B*a^3*b^2*d^3*e^3+6*B*a^2*b^3*d^4*e^2+5*B*a*b^4*d^5*e+3*B*b^5*d^6)*(
(b*x+a)^2)^(5/2)/(e*x+d)^8/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.54, size = 1489, normalized size = 7.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^9,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(4*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(4*e^6) - (B*b^5*
d)/(4*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(3*e^7) - (B*b^5*d)/(3*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - (((A*a^5)/(8*e) - (d*((B
*a^5 + 5*A*a^4*b)/(8*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(8*e) - (B*b^
5*d)/(8*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(8*e)))/e + (5*a^2*b^2*(A*b + B*
a))/(4*e)))/e - (5*a^3*b*(2*A*b + B*a))/(8*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 10
*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2 +
 30*B*a*b^4*d^2*e)/(5*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*d
^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(5*e^7) - (d*((b^4*(A*b*e + 5*B
*a*e - 3*B*b*d))/(5*e^5) - (B*b^5*d)/(5*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*
b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b*
e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*d
^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5*
B*a^4*b*d*e^4)/(7*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e^
5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3*
e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(7*e^7) - (d*((10*A*a^2*b^
3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e^
3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(7*e^7) - (d*((5*A*a*b^4*e^5 - A*
b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(7*e^7) - (
d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(7*e^3) - (B*b^5*d)/(7*e^3)))/e))/e))/e)
)/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((5*B*b^5*
d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^2
 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a*
b^4*d^3*e)/(6*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*e
^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^4
*d*e^3)/(6*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 + 3
*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(6*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2*
B*b*d))/(6*e^4) - (B*b^5*d)/(6*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^6) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2
*e^7*(a + b*x)*(d + e*x)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1534 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=262

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{504e(d+ex)^6(bd-ae)^4}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{84e(d+ex)^7(bd-ae)^3}+$$

Rubi [A] time = 0.19, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {770, 78, 45, 37}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{504e(d+ex)^6(bd-ae)^4}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{84e(d+ex)^7(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{24e(d+ex)^8(bd-ae)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Bd-Ae)}{9e(d+ex)^9(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e*(b*d - a*e)*(
d + e*x)^9) + ((2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(24*e*(b*d - a*e)^2*(d + e*x)^8) + (b*(2*b*B*d + A*b*e - 3*a*B*e
)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(84*e*(b*d - a*e)^3*(d + e*x)^
7) + (b^2*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(504*e*(b*d - a*e)^4*(d + e*x)^6)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{10}}dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9} + \frac{\left((2bBd+Abe-3aBe)\sqrt{a^2+\right.}{3b^4e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9} + \frac{(2bBd+Abe-3aBe)(a+bx)}{24e(bd-ae)^2(d}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9} + \frac{(2bBd+Abe-3aBe)(a+bx)}{24e(bd-ae)^2(d}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9} + \frac{(2bBd+Abe-3aBe)(a+bx)}{24e(bd-ae)^2(d}$$

Mathematica [A] time = 0.21, size = 468, normalized size = 1.79

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] -1/504*(Sqrt[(a + b*x)^2]*(7*a^5*e^5*(8*A*e + B*(d + 9*e*x)) + 5*a^4*b*e^4*
(7*A*e*(d + 9*e*x) + 2*B*(d^2 + 9*d*e*x + 36*e^2*x^2)) + 10*a^3*b^2*e^3*(2*
A*e*(d^2 + 9*d*e*x + 36*e^2*x^2) + B*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e
^3*x^3)) + 2*a^2*b^3*e^2*(5*A*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^
3) + 4*B*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) +
 a*b^4*e*(4*A*e*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*
x^4) + 5*B*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x
^4 + 126*e^5*x^5)) + b^5*(A*e*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^
3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5) + 2*B*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^
2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^4 + 126*d*e^5*x^5 + 84*e^6*x^6))))/(e^7*
(a + b*x)*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 180.14, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10
,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.43, size = 645, normalized size = 2.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/504*(168*B*b^5*e^6*x^6 + 2*B*b^5*d^6 + 56*A*a^5*e^6 + (5*B*a*b^4 + A*b^5
)*d^5*e + 4*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 10*(B*a^3*b^2 + A*a^2*b^3)*d^
3*e^3 + 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 7*(B*a^5 + 5*A*a^4*b)*d*e^5 +
126*(2*B*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 126*(2*B*b^5*d^2*e^4 +
(5*B*a*b^4 + A*b^5)*d*e^5 + 4*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 84*(2*B*b^
5*d^3*e^3 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 4*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 +
 10*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 36*(2*B*b^5*d^4*e^2 + (5*B*a*b^4 + A
*b^5)*d^3*e^3 + 4*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 10*(B*a^3*b^2 + A*a^2*b
^3)*d*e^5 + 10*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 9*(2*B*b^5*d^5*e + (5*B*a
*b^4 + A*b^5)*d^4*e^2 + 4*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 10*(B*a^3*b^2 +
 A*a^2*b^3)*d^2*e^4 + 10*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 7*(B*a^5 + 5*A*a^4
*b)*e^6)*x)/(e^16*x^9 + 9*d*e^15*x^8 + 36*d^2*e^14*x^7 + 84*d^3*e^13*x^6 +
126*d^4*e^12*x^5 + 126*d^5*e^11*x^4 + 84*d^6*e^10*x^3 + 36*d^7*e^9*x^2 + 9*
d^8*e^8*x + d^9*e^7)
```

giac [B] time = 0.24, size = 918, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/504*(168*B*b^5*x^6*e^6*sgn(b*x + a) + 252*B*b^5*d*x^5*e^5*sgn(b*x + a) +
 252*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 168*B*b^5*d^3*x^3*e^3*sgn(b*x + a) +
72*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 18*B*b^5*d^5*x*e*sgn(b*x + a) + 2*B*b^5
*d^6*sgn(b*x + a) + 630*B*a*b^4*x^5*e^6*sgn(b*x + a) + 126*A*b^5*x^5*e^6*sg
n(b*x + a) + 630*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 126*A*b^5*d*x^4*e^5*sgn(b
*x + a) + 420*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 84*A*b^5*d^2*x^3*e^4*sgn(b
*x + a) + 180*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 36*A*b^5*d^3*x^2*e^3*sgn(b
*x + a) + 45*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 9*A*b^5*d^4*x*e^2*sgn(b*x + a
) + 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 1008*B*a^2*b^
3*x^4*e^6*sgn(b*x + a) + 504*A*a*b^4*x^4*e^6*sgn(b*x + a) + 672*B*a^2*b^3*d
*x^3*e^5*sgn(b*x + a) + 336*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 288*B*a^2*b^3*
d^2*x^2*e^4*sgn(b*x + a) + 144*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 72*B*a^2*
b^3*d^3*x*e^3*sgn(b*x + a) + 36*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 8*B*a^2*b^
3*d^4*e^2*sgn(b*x + a) + 4*A*a*b^4*d^4*e^2*sgn(b*x + a) + 840*B*a^3*b^2*x^3
*e^6*sgn(b*x + a) + 840*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 360*B*a^3*b^2*d*x^
2*e^5*sgn(b*x + a) + 360*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 90*B*a^3*b^2*d^
2*x*e^4*sgn(b*x + a) + 90*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 10*B*a^3*b^2*d
^3*e^3*sgn(b*x + a) + 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 360*B*a^4*b*x^2*e
^6*sgn(b*x + a) + 720*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 90*B*a^4*b*d*x*e^5*s
gn(b*x + a) + 180*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 10*B*a^4*b*d^2*e^4*sgn(b
*x + a) + 20*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 63*B*a^5*x*e^6*sgn(b*x + a) +
 315*A*a^4*b*x*e^6*sgn(b*x + a) + 7*B*a^5*d*e^5*sgn(b*x + a) + 35*A*a^4*b*d
*e^5*sgn(b*x + a) + 56*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^9
```

maple [B] time = 0.05, size = 688, normalized size = 2.63

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x)
```

```
[Out] -1/504/e^7*(168*B*b^5*e^6*x^6+126*A*b^5*e^6*x^5+630*B*a*b^4*e^6*x^5+252*B*b
^5*d*e^5*x^5+504*A*a*b^4*e^6*x^4+126*A*b^5*d*e^5*x^4+1008*B*a^2*b^3*e^6*x^4
+630*B*a*b^4*d*e^5*x^4+252*B*b^5*d^2*e^4*x^4+840*A*a^2*b^3*e^6*x^3+336*A*a*
b^4*d*e^5*x^3+84*A*b^5*d^2*e^4*x^3+840*B*a^3*b^2*e^6*x^3+672*B*a^2*b^3*d*e^
5*x^3+420*B*a*b^4*d^2*e^4*x^3+168*B*b^5*d^3*e^3*x^3+720*A*a^3*b^2*e^6*x^2+3
60*A*a^2*b^3*d*e^5*x^2+144*A*a*b^4*d^2*e^4*x^2+36*A*b^5*d^3*e^3*x^2+360*B*a
```

```
^4*b*e^6*x^2+360*B*a^3*b^2*d*e^5*x^2+288*B*a^2*b^3*d^2*e^4*x^2+180*B*a*b^4*
d^3*e^3*x^2+72*B*b^5*d^4*e^2*x^2+315*A*a^4*b*e^6*x+180*A*a^3*b^2*d*e^5*x+90
*A*a^2*b^3*d^2*e^4*x+36*A*a*b^4*d^3*e^3*x+9*A*b^5*d^4*e^2*x+63*B*a^5*e^6*x+
90*B*a^4*b*d*e^5*x+90*B*a^3*b^2*d^2*e^4*x+72*B*a^2*b^3*d^3*e^3*x+45*B*a*b^4
*d^4*e^2*x+18*B*b^5*d^5*e*x+56*A*a^5*e^6+35*A*a^4*b*d*e^5+20*A*a^3*b^2*d^2*
e^4+10*A*a^2*b^3*d^3*e^3+4*A*a*b^4*d^4*e^2+A*b^5*d^5*e+7*B*a^5*d*e^5+10*B*a
^4*b*d^2*e^4+10*B*a^3*b^2*d^3*e^3+8*B*a^2*b^3*d^4*e^2+5*B*a*b^4*d^5*e+2*B*b
^5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^9/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.64, size = 1489, normalized size = 5.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^10,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(5*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(5*e^6) - (B*b^5*
d)/(5*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(4*e^7) - (B*b^5*d)/(4*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (((A*a^5)/(9*e) - (d*((B
*a^5 + 5*A*a^4*b)/(9*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(9*e) - (B*b^
5*d)/(9*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(9*e)))/e + (10*a^2*b^2*(A*b + B
*a))/(9*e)))/e - (5*a^3*b*(2*A*b + B*a))/(9*e)))/e))/e)*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 1
0*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2
+ 30*B*a*b^4*d^2*e)/(6*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*
d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(6*e^7) - (d*((b^4*(A*b*e + 5*
B*a*e - 3*B*b*d))/(6*e^5) - (B*b^5*d)/(6*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b
*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*
d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5
*B*a^4*b*d*e^4)/(8*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e
^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3
*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(8*e^7) - (d*((10*A*a^2*b
^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e
^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(8*e^7) - (d*((5*A*a*b^4*e^5 - A
*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(8*e^7) -
(d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(8*e^3) - (B*b^5*d)/(8*e^3)))/e))/e))/e
))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((5*B*b^5
*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^
2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a
*b^4*d^3*e)/(7*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*
e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^
4*d*e^3)/(7*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 +
3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(7*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2
*B*b*d))/(7*e^4) - (B*b^5*d)/(7*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)
```

```
^(1/2))/((a + b*x)*(d + e*x)^7) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
3*e^7*(a + b*x)*(d + e*x)^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1535 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=438

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{7e^7(a+bx)(d+ex)^7}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{8e^7(a+bx)(d+ex)^8}+$$

Rubi [A] time = 0.39, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{5e^7(a+bx)(d+ex)^5}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{6e^7(a+bx)(d+ex)^6}+\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{7e^7(a+bx)(d+ex)^7}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{8e^7(a+bx)(d+ex)^8}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{9e^7(a+bx)(d+ex)^9}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{10e^7(a+bx)(d+ex)^{10}}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{4e^7(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^7*(a + b*x
)*(d + e*x)^10) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^9) - (5*b*(b*d - a*e)^3*(3*b*B*
d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x)*(d + e
*x)^8) + (10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7) - (5*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^7*(a + b*x)*(d + e*x)^
6) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7
*(a + b*x)*(d + e*x)^5) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a +
 b*x)*(d + e*x)^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{11}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{11}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{10}}-\frac{5b^6\cdots}{\cdots}\right.}{\cdots}$$

$$=-\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{10e^7(a+bx)(d+ex)^{10}}+\frac{(bd-ae)^4(6bBd-5Abe-a\cdots}{9e^7(a+bx)(d\cdots}$$

Mathematica [A] time = 0.21, size = 468, normalized size = 1.07

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(28*a^5*e^5*(9*A*e + B*(d + 10*e*x)) + 35*a^4*b*
e^4*(4*A*e*(d + 10*e*x) + B*(d^2 + 10*d*e*x + 45*e^2*x^2)) + 10*a^3*b^2*e^3
*(7*A*e*(d^2 + 10*d*e*x + 45*e^2*x^2) + 3*B*(d^3 + 10*d^2*e*x + 45*d*e^2*x^
2 + 120*e^3*x^3)) + 10*a^2*b^3*e^2*(3*A*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2
+ 120*e^3*x^3) + 2*B*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 2
10*e^4*x^4)) + 10*a*b^4*e*(A*e*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e
^3*x^3 + 210*e^4*x^4) + B*(d^5 + 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*
x^3 + 210*d*e^4*x^4 + 252*e^5*x^5)) + b^5*(2*A*e*(d^5 + 10*d^4*e*x + 45*d^3
*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5) + 3*B*(d^6 + 10*d
^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 + 210*d^2*e^4*x^4 + 252*d*e^5*x^5
 + 210*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^10)
```

IntegrateAlgebraic [F] time = 180.07, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 662, normalized size = 1.51

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/2520*(630*B*b^5*e^6*x^6 + 3*B*b^5*d^6 + 252*A*a^5*e^6 + 2*(5*B*a*b^4 + A
*b^5)*d^5*e + 10*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 30*(B*a^3*b^2 + A*a^2*b^
3)*d^3*e^3 + 35*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 28*(B*a^5 + 5*A*a^4*b)*d*
e^5 + 252*(3*B*b^5*d*e^5 + 2*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 210*(3*B*b^5*d^
2*e^4 + 2*(5*B*a*b^4 + A*b^5)*d*e^5 + 10*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 +
 120*(3*B*b^5*d^3*e^3 + 2*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 10*(2*B*a^2*b^3 + A
*a*b^4)*d*e^5 + 30*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 45*(3*B*b^5*d^4*e^2 +
 2*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 10*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 30*(B
*a^3*b^2 + A*a^2*b^3)*d*e^5 + 35*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 10*(3*B
*b^5*d^5*e + 2*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 10*(2*B*a^2*b^3 + A*a*b^4)*d^3
*e^3 + 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 35*(B*a^4*b + 2*A*a^3*b^2)*d*e^
5 + 28*(B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^17*x^10 + 10*d*e^16*x^9 + 45*d^2*e^15
*x^8 + 120*d^3*e^14*x^7 + 210*d^4*e^13*x^6 + 252*d^5*e^12*x^5 + 210*d^6*e^1
1*x^4 + 120*d^7*e^10*x^3 + 45*d^8*e^9*x^2 + 10*d^9*e^8*x + d^10*e^7)
```

giac [B] time = 0.22, size = 919, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/2520*(630*B*b^5*x^6*e^6*sgn(b*x + a) + 756*B*b^5*d*x^5*e^5*sgn(b*x + a)
+ 630*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 360*B*b^5*d^3*x^3*e^3*sgn(b*x + a) +
 135*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 30*B*b^5*d^5*x*e*sgn(b*x + a) + 3*B*b
^5*d^6*sgn(b*x + a) + 2520*B*a*b^4*x^5*e^6*sgn(b*x + a) + 504*A*b^5*x^5*e^6
*sgn(b*x + a) + 2100*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 420*A*b^5*d*x^4*e^5*s
gn(b*x + a) + 1200*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 240*A*b^5*d^2*x^3*e^4
*sgn(b*x + a) + 450*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 90*A*b^5*d^3*x^2*e^3
*sgn(b*x + a) + 100*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 20*A*b^5*d^4*x*e^2*sgn
(b*x + a) + 10*B*a*b^4*d^5*e*sgn(b*x + a) + 2*A*b^5*d^5*e*sgn(b*x + a) + 42
00*B*a^2*b^3*x^4*e^6*sgn(b*x + a) + 2100*A*a*b^4*x^4*e^6*sgn(b*x + a) + 240
0*B*a^2*b^3*d*x^3*e^5*sgn(b*x + a) + 1200*A*a*b^4*d*x^3*e^5*sgn(b*x + a) +
900*B*a^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 450*A*a*b^4*d^2*x^2*e^4*sgn(b*x +
a) + 200*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 100*A*a*b^4*d^3*x*e^3*sgn(b*x +
 a) + 20*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 10*A*a*b^4*d^4*e^2*sgn(b*x + a) +
 3600*B*a^3*b^2*x^3*e^6*sgn(b*x + a) + 3600*A*a^2*b^3*x^3*e^6*sgn(b*x + a)
+ 1350*B*a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 1350*A*a^2*b^3*d*x^2*e^5*sgn(b*x
+ a) + 300*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 300*A*a^2*b^3*d^2*x*e^4*sgn(b
*x + a) + 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 30*A*a^2*b^3*d^3*e^3*sgn(b*x
+ a) + 1575*B*a^4*b*x^2*e^6*sgn(b*x + a) + 3150*A*a^3*b^2*x^2*e^6*sgn(b*x +
 a) + 350*B*a^4*b*d*x*e^5*sgn(b*x + a) + 700*A*a^3*b^2*d*x*e^5*sgn(b*x + a)
 + 35*B*a^4*b*d^2*e^4*sgn(b*x + a) + 70*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 28
0*B*a^5*x*e^6*sgn(b*x + a) + 1400*A*a^4*b*x*e^6*sgn(b*x + a) + 28*B*a^5*d*e
^5*sgn(b*x + a) + 140*A*a^4*b*d*e^5*sgn(b*x + a) + 252*A*a^5*e^6*sgn(b*x +
a))*e^(-7)/(x*e + d)^10
```

maple [A] time = 0.06, size = 689, normalized size = 1.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x)
```

```
[Out] -1/2520/e^7*(630*B*b^5*e^6*x^6+504*A*b^5*e^6*x^5+2520*B*a*b^4*e^6*x^5+756*B
*b^5*d*e^5*x^5+2100*A*a*b^4*e^6*x^4+420*A*b^5*d*e^5*x^4+4200*B*a^2*b^3*e^6*
x^4+2100*B*a*b^4*d*e^5*x^4+630*B*b^5*d^2*e^4*x^4+3600*A*a^2*b^3*e^6*x^3+120
0*A*a*b^4*d*e^5*x^3+240*A*b^5*d^2*e^4*x^3+3600*B*a^3*b^2*e^6*x^3+2400*B*a^2
*b^3*d*e^5*x^3+1200*B*a*b^4*d^2*e^4*x^3+360*B*b^5*d^3*e^3*x^3+3150*A*a^3*b^
2*e^6*x^2+1350*A*a^2*b^3*d*e^5*x^2+450*A*a*b^4*d^2*e^4*x^2+90*A*b^5*d^3*e^3
*x^2+1575*B*a^4*b*e^6*x^2+1350*B*a^3*b^2*d*e^5*x^2+900*B*a^2*b^3*d^2*e^4*x^
2+450*B*a*b^4*d^3*e^3*x^2+135*B*b^5*d^4*e^2*x^2+1400*A*a^4*b*e^6*x+700*A*a^
3*b^2*d*e^5*x+300*A*a^2*b^3*d^2*e^4*x+100*A*a*b^4*d^3*e^3*x+20*A*b^5*d^4*e^
2*x+280*B*a^5*e^6*x+350*B*a^4*b*d*e^5*x+300*B*a^3*b^2*d^2*e^4*x+200*B*a^2*b
^3*d^3*e^3*x+100*B*a*b^4*d^4*e^2*x+30*B*b^5*d^5*e*x+252*A*a^5*e^6+140*A*a^4
*b*d*e^5+70*A*a^3*b^2*d^2*e^4+30*A*a^2*b^3*d^3*e^3+10*A*a*b^4*d^4*e^2+2*A*b
^5*d^5*e+28*B*a^5*d*e^5+35*B*a^4*b*d^2*e^4+30*B*a^3*b^2*d^3*e^3+20*B*a^2*b^
3*d^4*e^2+10*B*a*b^4*d^5*e+3*B*b^5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^10/(b*x+a
)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.57, size = 1488, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^11,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(6*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(6*e^6) - (B*b^5*
d)/(6*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(5*e^7) - (B*b^5*d)/(5*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((A*a^5)/(10*e) - (d*((
B*a^5 + 5*A*a^4*b)/(10*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(10*e) - (B
*b^5*d)/(10*e^2)))/e - (a*b^3*(A*b + 2*B*a))/(2*e)))/e + (a^2*b^2*(A*b + B*
a))/e))/e - (a^3*b*(2*A*b + B*a))/(2*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^10) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 10*A*a^
2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2 + 30*B
*a*b^4*d^2*e)/(7*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*d^2*e
+ 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(7*e^7) - (d*((b^4*(A*b*e + 5*B*a*e
- 3*B*b*d))/(7*e^5) - (B*b^5*d)/(7*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^7) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b*e^5 +
 A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*d^2*e^
3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5*B*a^4
*b*d*e^4)/(9*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e^5 - A
*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3*e^2 -
 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(9*e^7) - (d*((10*A*a^2*b^3*e^5
 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e^3 - 1
0*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(9*e^7) - (d*((5*A*a*b^4*e^5 - A*b^5*d
*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(9*e^7) - (d*((b
^4*(A*b*e + 5*B*a*e - B*b*d))/(9*e^3) - (B*b^5*d)/(9*e^3)))/e))/e))/e))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((5*B*b^5*d^4 +
 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^2 - 20
*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a*b^4*d
^3*e)/(8*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*e^4 +
3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^4*d*e^
3)/(8*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 + 3*B*b^
5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(8*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2*B*b*d
))/(8*e^4) - (B*b^5*d)/(8*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/((a + b*x)*(d + e*x)^8) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^7*
(a + b*x)*(d + e*x)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1536 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=438

$$\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{4e^7(a+bx)(d+ex)^8}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{9e^7(a+bx)(d+ex)^9}+\cdots$$

Rubi [A] time = 0.32, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{6e^7(a+bx)(d+ex)^6}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{7e^7(a+bx)(d+ex)^7}+\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{4e^7(a+bx)(d+ex)^8}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{9e^7(a+bx)(d+ex)^9}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{10e^7(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{11e^7(a+bx)(d+ex)^{11}}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x
)*(d + e*x)^11) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(10*e^7*(a + b*x)*(d + e*x)^10) - (5*b*(b*d - a*e)^3*(3*b*
B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d +
 e*x)^9) + (5*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^8) - (5*b^3*(b*d - a*e)*(3*b*B*d -
 A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)
^7) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^
7*(a + b*x)*(d + e*x)^6) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a
+ b*x)*(d + e*x)^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{12}}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{12}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{11}}-\frac{5b^6\cdots}{\cdots}\right.}{\cdots}\\
&= -\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11}}+\frac{(bd-ae)^4(6bBd-5Abe-aB\cdots}{10e^7(a+bx)(d\cdots}
\end{aligned}$$

Mathematica [**A**] time = 0.23, size = 471, normalized size = 1.08

$$-\frac{\sqrt{(a+bx)^2}\left(126a^5e^5(10Ae+B(d+11ex))+70a^4be^4\left(9Ae(d+11ex)+2B\left(d^2+11dex+55e^2x^2\right)\right)+35a^3b^2e^3\left(8Ae\left(d^2+11dex+55e^2x^2\right)+3B\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)\right)+15a^2b^3e^2\left(7Ae\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)+4B\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)\right)+5ab^4e\left(6Ae\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)+5B\left(d^5+11d^4ex+55d^3e^2x^2+165d^2e^3x^3+330de^4x^4+462e^5x^5\right)\right)+b^5\left(5Ae\left(d^5+11d^4ex+55d^3e^2x^2+165d^2e^3x^3+330de^4x^4+462e^5x^5\right)+6B\left(d^6+11d^5ex+55d^4e^2x^2+165d^3e^3x^3+330d^2e^4x^4+462de^5x^5+462e^6x^6\right)\right)\right)}{13860e^7(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -1/13860*(Sqrt[(a + b*x)^2]*(126*a^5*e^5*(10*A*e + B*(d + 11*e*x)) + 70*a^4
*b*e^4*(9*A*e*(d + 11*e*x) + 2*B*(d^2 + 11*d*e*x + 55*e^2*x^2)) + 35*a^3*b^
2*e^3*(8*A*e*(d^2 + 11*d*e*x + 55*e^2*x^2) + 3*B*(d^3 + 11*d^2*e*x + 55*d*e
^2*x^2 + 165*e^3*x^3)) + 15*a^2*b^3*e^2*(7*A*e*(d^3 + 11*d^2*e*x + 55*d*e^2
*x^2 + 165*e^3*x^3) + 4*B*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^
3 + 330*e^4*x^4)) + 5*a*b^4*e*(6*A*e*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 1
65*d*e^3*x^3 + 330*e^4*x^4) + 5*B*(d^5 + 11*d^4*e*x + 55*d^3*e^2*x^2 + 165*
d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5)) + b^5*(5*A*e*(d^5 + 11*d^4*e*x
+ 55*d^3*e^2*x^2 + 165*d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5) + 6*B*(d^
6 + 11*d^5*e*x + 55*d^4*e^2*x^2 + 165*d^3*e^3*x^3 + 330*d^2*e^4*x^4 + 462*d
*e^5*x^5 + 462*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^11)
```

IntegrateAlgebraic [**F**] time = 180.10, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12
,x]
```

```
[Out] $Aborted
```

fricas [**A**] time = 0.45, size = 673, normalized size = 1.54

$$-\frac{2772Bb^5e^6x^6+6Bb^5d^6+1260Aa^5e^6+5\left(5Bab^4+Ab^5\right)d^5e+30\left(2Ba^2b^3+Aab^4\right)d^4e^2+105\left(Ba^3b^2+Aa^2b^3\right)d^3e^3+140\left(Ba^4b+2Aa^3b^2\right)d^2e^4+126\left(Ba^5+5Aa^4b\right)de^5+462\left(6Bb^5de^5+5\left(5Bab^4+Ab^5\right)e^6\right)x^5+330\left(6Bb^5d^2e^4+5\left(5Bab^4+Ab^5\right)de^5+30\left(2Ba^2b^3+Aab^4\right)e^6\right)x^4+165\left(6Bb^5d^3e^3+5\left(5Bab^4+Ab^5\right)d^2e^4+30\left(2Ba^2b^3+Aab^4\right)de^5+105\left(Ba^3b^2+Aa^2b^3\right)e^6\right)x^3+55\left(6Bb^5d^4e^2+5\left(5Bab^4+Ab^5\right)d^3e^3+30\left(2Ba^2b^3+Aab^4\right)d^2e^4+105\left(Ba^3b^2+Aa^2b^3\right)de^5+140\left(Ba^4b+2Aa^3b^2\right)e^6\right)x^2+11\left(6Bb^5d^5e+5\left(5Bab^4+Ab^5\right)d^4e^2+30\left(2Ba^2b^3+Aab^4\right)d^3e^3+105\left(Ba^3b^2+Aa^2b^3\right)d^2e^4+140\left(Ba^4b+2Aa^3b^2\right)de^5+126\left(Ba^5+5Aa^4b\right)e^6\right)x}{13860\left(e^{18}x^{11}+11de^{17}x^{10}+55d^2e^{16}x^9+165d^3e^{15}x^8+330d^4e^{14}x^7+462d^5e^{13}x^6+462d^6e^{12}x^5+330d^7e^{11}x^4+165d^8e^{10}x^3+55d^9e^9x^2+11d^{10}e^8x+d^{11}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/13860*(2772*B*b^5*e^6*x^6 + 6*B*b^5*d^6 + 1260*A*a^5*e^6 + 5*(5*B*a*b^4
+ A*b^5)*d^5*e + 30*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 105*(B*a^3*b^2 + A*a^
2*b^3)*d^3*e^3 + 140*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 126*(B*a^5 + 5*A*a^4
*b)*d*e^5 + 462*(6*B*b^5*d*e^5 + 5*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 330*(6*B*
b^5*d^2*e^4 + 5*(5*B*a*b^4 + A*b^5)*d*e^5 + 30*(2*B*a^2*b^3 + A*a*b^4)*e^6)
*x^4 + 165*(6*B*b^5*d^3*e^3 + 5*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 30*(2*B*a^2*b
^3 + A*a*b^4)*d*e^5 + 105*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 55*(6*B*b^5*d^
4*e^2 + 5*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 30*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4
+ 105*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 140*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2
+ 11*(6*B*b^5*d^5*e + 5*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 30*(2*B*a^2*b^3 + A*a
*b^4)*d^3*e^3 + 105*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 140*(B*a^4*b + 2*A*a^
3*b^2)*d*e^5 + 126*(B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^18*x^11 + 11*d*e^17*x^10
+ 55*d^2*e^16*x^9 + 165*d^3*e^15*x^8 + 330*d^4*e^14*x^7 + 462*d^5*e^13*x^6
+ 462*d^6*e^12*x^5 + 330*d^7*e^11*x^4 + 165*d^8*e^10*x^3 + 55*d^9*e^9*x^2 +
 11*d^10*e^8*x + d^11*e^7)
```

giac [**B**] time = 0.36, size = 919, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/13860*(2772*B*b^5*x^6*e^6*sgn(b*x + a) + 2772*B*b^5*d*x^5*e^5*sgn(b*x +
a) + 1980*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 990*B*b^5*d^3*x^3*e^3*sgn(b*x +
a) + 330*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 66*B*b^5*d^5*x*e*sgn(b*x + a) + 6
*B*b^5*d^6*sgn(b*x + a) + 11550*B*a*b^4*x^5*e^6*sgn(b*x + a) + 2310*A*b^5*x
^5*e^6*sgn(b*x + a) + 8250*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 1650*A*b^5*d*x^
4*e^5*sgn(b*x + a) + 4125*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 825*A*b^5*d^2*
x^3*e^4*sgn(b*x + a) + 1375*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 275*A*b^5*d^
3*x^2*e^3*sgn(b*x + a) + 275*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 55*A*b^5*d^4*
x*e^2*sgn(b*x + a) + 25*B*a*b^4*d^5*e*sgn(b*x + a) + 5*A*b^5*d^5*e*sgn(b*x
+ a) + 19800*B*a^2*b^3*x^4*e^6*sgn(b*x + a) + 9900*A*a*b^4*x^4*e^6*sgn(b*x
+ a) + 9900*B*a^2*b^3*d*x^3*e^5*sgn(b*x + a) + 4950*A*a*b^4*d*x^3*e^5*sgn(b
*x + a) + 3300*B*a^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 1650*A*a*b^4*d^2*x^2*e^
4*sgn(b*x + a) + 660*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 330*A*a*b^4*d^3*x*e
^3*sgn(b*x + a) + 60*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 30*A*a*b^4*d^4*e^2*sg
n(b*x + a) + 17325*B*a^3*b^2*x^3*e^6*sgn(b*x + a) + 17325*A*a^2*b^3*x^3*e^6
*sgn(b*x + a) + 5775*B*a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 5775*A*a^2*b^3*d*x^
2*e^5*sgn(b*x + a) + 1155*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 1155*A*a^2*b^3
*d^2*x*e^4*sgn(b*x + a) + 105*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 105*A*a^2*b^
3*d^3*e^3*sgn(b*x + a) + 7700*B*a^4*b*x^2*e^6*sgn(b*x + a) + 15400*A*a^3*b^
2*x^2*e^6*sgn(b*x + a) + 1540*B*a^4*b*d*x*e^5*sgn(b*x + a) + 3080*A*a^3*b^2
*d*x*e^5*sgn(b*x + a) + 140*B*a^4*b*d^2*e^4*sgn(b*x + a) + 280*A*a^3*b^2*d^
2*e^4*sgn(b*x + a) + 1386*B*a^5*x*e^6*sgn(b*x + a) + 6930*A*a^4*b*x*e^6*sgn
(b*x + a) + 126*B*a^5*d*e^5*sgn(b*x + a) + 630*A*a^4*b*d*e^5*sgn(b*x + a) +
 1260*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^11
```

maple [A] time = 0.05, size = 689, normalized size = 1.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x)
```

```
[Out] -1/13860/e^7*(2772*B*b^5*e^6*x^6+2310*A*b^5*e^6*x^5+11550*B*a*b^4*e^6*x^5+2
772*B*b^5*d*e^5*x^5+9900*A*a*b^4*e^6*x^4+1650*A*b^5*d*e^5*x^4+19800*B*a^2*b
^3*e^6*x^4+8250*B*a*b^4*d*e^5*x^4+1980*B*b^5*d^2*e^4*x^4+17325*A*a^2*b^3*e^
6*x^3+4950*A*a*b^4*d*e^5*x^3+825*A*b^5*d^2*e^4*x^3+17325*B*a^3*b^2*e^6*x^3+
9900*B*a^2*b^3*d*e^5*x^3+4125*B*a*b^4*d^2*e^4*x^3+990*B*b^5*d^3*e^3*x^3+154
00*A*a^3*b^2*e^6*x^2+5775*A*a^2*b^3*d*e^5*x^2+1650*A*a*b^4*d^2*e^4*x^2+275*
A*b^5*d^3*e^3*x^2+7700*B*a^4*b*e^6*x^2+5775*B*a^3*b^2*d*e^5*x^2+3300*B*a^2*
b^3*d^2*e^4*x^2+1375*B*a*b^4*d^3*e^3*x^2+330*B*b^5*d^4*e^2*x^2+6930*A*a^4*b
*e^6*x+3080*A*a^3*b^2*d*e^5*x+1155*A*a^2*b^3*d^2*e^4*x+330*A*a*b^4*d^3*e^3*
x+55*A*b^5*d^4*e^2*x+1386*B*a^5*e^6*x+1540*B*a^4*b*d*e^5*x+1155*B*a^3*b^2*d
^2*e^4*x+660*B*a^2*b^3*d^3*e^3*x+275*B*a*b^4*d^4*e^2*x+66*B*b^5*d^5*e*x+126
0*A*a^5*e^6+630*A*a^4*b*d*e^5+280*A*a^3*b^2*d^2*e^4+105*A*a^2*b^3*d^3*e^3+3
0*A*a*b^4*d^4*e^2+5*A*b^5*d^5*e+126*B*a^5*d*e^5+140*B*a^4*b*d^2*e^4+105*B*a
^3*b^2*d^3*e^3+60*B*a^2*b^3*d^4*e^2+25*B*a*b^4*d^5*e+6*B*b^5*d^6)*((b*x+a)^
2)^(5/2)/(e*x+d)^11/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.60, size = 1489, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^12,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(7*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(7*e^6) - (B*b^5*
d)/(7*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(6*e^7) - (B*b^5*d)/(6*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((A*a^5)/(11*e) - (d*((
B*a^5 + 5*A*a^4*b)/(11*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(11*e) - (B
*b^5*d)/(11*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(11*e)))/e + (10*a^2*b^2*(A*
b + B*a))/(11*e)))/e - (5*a^3*b*(2*A*b + B*a))/(11*e)))/e))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((6*A*b^5*d^2*e - 10*B*b^5
*d^3 + 10*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^
4*d*e^2 + 30*B*a*b^4*d^2*e)/(8*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 +
6*B*b^5*d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(8*e^7) - (d*((b^4*(A*
b*e + 5*B*a*e - 3*B*b*d))/(8*e^5) - (B*b^5*d)/(8*e^5)))/e))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((B*a^5*e^5 - B*b^5*d^5 + 5
*A*a^4*b*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*
a^2*b^3*d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d
^4*e - 5*B*a^4*b*d*e^4)/(10*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*
a^3*b^2*e^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*
a*b^4*d^3*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(10*e^7) - (d*((
10*A*a^2*b^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a
*b^4*d^2*e^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(10*e^7) - (d*((5*A*a*
b^4*e^5 - A*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)
/(10*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(10*e^3) - (B*b^5*d)/(10*e^
3)))/e))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^1
0) - (((5*B*b^5*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15
*A*a*b^4*d^2*e^2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d
^2*e^2 - 20*B*a*b^4*d^3*e)/(9*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e
+ 10*B*a^3*b^2*e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*
e^3 - 10*A*a*b^4*d*e^3)/(9*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B
*a^2*b^3*e^4 + 3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(9*e^7) - (d*((b^4*(A*b*
e + 5*B*a*e - 2*B*b*d))/(9*e^4) - (B*b^5*d)/(9*e^4)))/e))/e))/e)*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (B*b^5*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/(5*e^7*(a + b*x)*(d + e*x)^5)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1537 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx$

Optimal. Leaf size=438

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{9e^7(a+bx)(d+ex)^9}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{2e^7(a+bx)(d+ex)^{10}}+\cdots$$

Rubi [A] time = 0.30, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{7e^7(a+bx)(d+ex)^7}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{8e^7(a+bx)(d+ex)^8}+\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{9e^7(a+bx)(d+ex)^9}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{2e^7(a+bx)(d+ex)^{10}}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{11e^7(a+bx)(d+ex)^{11}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{12e^7(a+bx)(d+ex)^{12}}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{6e^7(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*e^7*(a + b*x
)*(d + e*x)^12) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^11) - (b*(b*d - a*e)^3*(3*b*B*
d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e
*x)^10) + (10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^9) - (5*b^3*(b*d - a*e)*(3*b*B*d -
 A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x)*(d + e*x)
^8) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^
7*(a + b*x)*(d + e*x)^7) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^7*(a
+ b*x)*(d + e*x)^6)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{13}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{13}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{12}}-\frac{5b^6\cdots}{\cdots}\right.}{\cdots}$$

$$=-\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{12e^7(a+bx)(d+ex)^{12}}+\frac{(bd-ae)^4(6bBd-5Abe-a\cdots}{11e^7(a+bx)(d\cdots}$$

Mathematica [A] time = 0.21, size = 465, normalized size = 1.06

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -1/5544*(Sqrt[(a + b*x)^2]*(42*a^5*e^5*(11*A*e + B*(d + 12*e*x)) + 42*a^4*b
*e^4*(5*A*e*(d + 12*e*x) + B*(d^2 + 12*d*e*x + 66*e^2*x^2)) + 28*a^3*b^2*e^
3*(3*A*e*(d^2 + 12*d*e*x + 66*e^2*x^2) + B*(d^3 + 12*d^2*e*x + 66*d*e^2*x^2
 + 220*e^3*x^3)) + 14*a^2*b^3*e^2*(2*A*e*(d^3 + 12*d^2*e*x + 66*d*e^2*x^2 +
 220*e^3*x^3) + B*(d^4 + 12*d^3*e*x + 66*d^2*e^2*x^2 + 220*d*e^3*x^3 + 495*
e^4*x^4)) + a*b^4*e*(7*A*e*(d^4 + 12*d^3*e*x + 66*d^2*e^2*x^2 + 220*d*e^3*x
^3 + 495*e^4*x^4) + 5*B*(d^5 + 12*d^4*e*x + 66*d^3*e^2*x^2 + 220*d^2*e^3*x^
3 + 495*d*e^4*x^4 + 792*e^5*x^5)) + b^5*(A*e*(d^5 + 12*d^4*e*x + 66*d^3*e^2
*x^2 + 220*d^2*e^3*x^3 + 495*d*e^4*x^4 + 792*e^5*x^5) + B*(d^6 + 12*d^5*e*x
 + 66*d^4*e^2*x^2 + 220*d^3*e^3*x^3 + 495*d^2*e^4*x^4 + 792*d*e^5*x^5 + 924
*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^12)
```

IntegrateAlgebraic [F] time = 180.13, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 672, normalized size = 1.53

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="fric
as")
```

```
[Out] -1/5544*(924*B*b^5*e^6*x^6 + B*b^5*d^6 + 462*A*a^5*e^6 + (5*B*a*b^4 + A*b^5
)*d^5*e + 7*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 28*(B*a^3*b^2 + A*a^2*b^3)*d^
3*e^3 + 42*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 42*(B*a^5 + 5*A*a^4*b)*d*e^5 +
 792*(B*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 495*(B*b^5*d^2*e^4 + (5*
B*a*b^4 + A*b^5)*d*e^5 + 7*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 220*(B*b^5*d^
3*e^3 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 7*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 28*
(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 66*(B*b^5*d^4*e^2 + (5*B*a*b^4 + A*b^5)*
d^3*e^3 + 7*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 28*(B*a^3*b^2 + A*a^2*b^3)*d*
e^5 + 42*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 12*(B*b^5*d^5*e + (5*B*a*b^4 +
A*b^5)*d^4*e^2 + 7*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 28*(B*a^3*b^2 + A*a^2*
b^3)*d^2*e^4 + 42*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 42*(B*a^5 + 5*A*a^4*b)*e^
6)*x)/(e^19*x^12 + 12*d*e^18*x^11 + 66*d^2*e^17*x^10 + 220*d^3*e^16*x^9 + 4
95*d^4*e^15*x^8 + 792*d^5*e^14*x^7 + 924*d^6*e^13*x^6 + 792*d^7*e^12*x^5 +
495*d^8*e^11*x^4 + 220*d^9*e^10*x^3 + 66*d^10*e^9*x^2 + 12*d^11*e^8*x + d^1
2*e^7)
```

giac [B] time = 0.22, size = 917, normalized size = 2.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="giac
")
```

```
[Out] -1/5544*(924*B*b^5*x^6*e^6*sgn(b*x + a) + 792*B*b^5*d*x^5*e^5*sgn(b*x + a)
+ 495*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 220*B*b^5*d^3*x^3*e^3*sgn(b*x + a) +
 66*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 12*B*b^5*d^5*x*e*sgn(b*x + a) + B*b^5*
d^6*sgn(b*x + a) + 3960*B*a*b^4*x^5*e^6*sgn(b*x + a) + 792*A*b^5*x^5*e^6*sg
n(b*x + a) + 2475*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 495*A*b^5*d*x^4*e^5*sgn(
b*x + a) + 1100*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 220*A*b^5*d^2*x^3*e^4*sg
n(b*x + a) + 330*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 66*A*b^5*d^3*x^2*e^3*sg
n(b*x + a) + 60*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 12*A*b^5*d^4*x*e^2*sgn(b*x
 + a) + 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 6930*B*a^
2*b^3*x^4*e^6*sgn(b*x + a) + 3465*A*a*b^4*x^4*e^6*sgn(b*x + a) + 3080*B*a^2
*b^3*d*x^3*e^5*sgn(b*x + a) + 1540*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 924*B*a
^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 462*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 16
8*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 84*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 14
*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 7*A*a*b^4*d^4*e^2*sgn(b*x + a) + 6160*B*a
^3*b^2*x^3*e^6*sgn(b*x + a) + 6160*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 1848*B*
a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 1848*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 33
6*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 336*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) +
 28*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 28*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 27
72*B*a^4*b*x^2*e^6*sgn(b*x + a) + 5544*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 504
*B*a^4*b*d*x*e^5*sgn(b*x + a) + 1008*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 42*B*
a^4*b*d^2*e^4*sgn(b*x + a) + 84*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 504*B*a^5*
x*e^6*sgn(b*x + a) + 2520*A*a^4*b*x*e^6*sgn(b*x + a) + 42*B*a^5*d*e^5*sgn(b
*x + a) + 210*A*a^4*b*d*e^5*sgn(b*x + a) + 462*A*a^5*e^6*sgn(b*x + a))*e^(-
7)/(x*e + d)^12
```

maple [A] time = 0.06, size = 687, normalized size = 1.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x)
```

```
[Out] -1/5544/e^7*(924*B*b^5*e^6*x^6+792*A*b^5*e^6*x^5+3960*B*a*b^4*e^6*x^5+792*B
*b^5*d*e^5*x^5+3465*A*a*b^4*e^6*x^4+495*A*b^5*d*e^5*x^4+6930*B*a^2*b^3*e^6*
x^4+2475*B*a*b^4*d*e^5*x^4+495*B*b^5*d^2*e^4*x^4+6160*A*a^2*b^3*e^6*x^3+154
0*A*a*b^4*d*e^5*x^3+220*A*b^5*d^2*e^4*x^3+6160*B*a^3*b^2*e^6*x^3+3080*B*a^2
*b^3*d*e^5*x^3+1100*B*a*b^4*d^2*e^4*x^3+220*B*b^5*d^3*e^3*x^3+5544*A*a^3*b^
2*e^6*x^2+1848*A*a^2*b^3*d*e^5*x^2+462*A*a*b^4*d^2*e^4*x^2+66*A*b^5*d^3*e^3
*x^2+2772*B*a^4*b*e^6*x^2+1848*B*a^3*b^2*d*e^5*x^2+924*B*a^2*b^3*d^2*e^4*x^
2+330*B*a*b^4*d^3*e^3*x^2+66*B*b^5*d^4*e^2*x^2+2520*A*a^4*b*e^6*x+1008*A*a^
3*b^2*d*e^5*x+336*A*a^2*b^3*d^2*e^4*x+84*A*a*b^4*d^3*e^3*x+12*A*b^5*d^4*e^2
*x+504*B*a^5*e^6*x+504*B*a^4*b*d*e^5*x+336*B*a^3*b^2*d^2*e^4*x+168*B*a^2*b^
3*d^3*e^3*x+60*B*a*b^4*d^4*e^2*x+12*B*b^5*d^5*e*x+462*A*a^5*e^6+210*A*a^4*b
*d*e^5+84*A*a^3*b^2*d^2*e^4+28*A*a^2*b^3*d^3*e^3+7*A*a*b^4*d^4*e^2+A*b^5*d^
5*e+42*B*a^5*d*e^5+42*B*a^4*b*d^2*e^4+28*B*a^3*b^2*d^3*e^3+14*B*a^2*b^3*d^4
*e^2+5*B*a*b^4*d^5*e+B*b^5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^12/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.63, size = 1489, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^13,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(8*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(8*e^6) - (B*b^5*
d)/(8*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(7*e^7) - (B*b^5*d)/(7*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((A*a^5)/(12*e) - (d*((
B*a^5 + 5*A*a^4*b)/(12*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(12*e) - (B
*b^5*d)/(12*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(12*e)))/e + (5*a^2*b^2*(A*b
 + B*a))/(6*e)))/e - (5*a^3*b*(2*A*b + B*a))/(12*e)))/e))/e)*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - (((6*A*b^5*d^2*e - 10*B*b^5*d
^3 + 10*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*
d*e^2 + 30*B*a*b^4*d^2*e)/(9*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*
B*b^5*d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(9*e^7) - (d*((b^4*(A*b*
e + 5*B*a*e - 3*B*b*d))/(9*e^5) - (B*b^5*d)/(9*e^5)))/e))/e)*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A
*a^4*b*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^
2*b^3*d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4
*e - 5*B*a^4*b*d*e^4)/(11*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^
3*b^2*e^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*
b^4*d^3*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(11*e^7) - (d*((10
*A*a^2*b^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b
^4*d^2*e^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(11*e^7) - (d*((5*A*a*b^
4*e^5 - A*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(
11*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(11*e^3) - (B*b^5*d)/(11*e^3)
))/e))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11)
 - (((5*B*b^5*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A
*a*b^4*d^2*e^2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2
*e^2 - 20*B*a*b^4*d^3*e)/(10*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e +
 10*B*a^3*b^2*e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e
^3 - 10*A*a*b^4*d*e^3)/(10*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B
*a^2*b^3*e^4 + 3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(10*e^7) - (d*((b^4*(A*b
*e + 5*B*a*e - 2*B*b*d))/(10*e^4) - (B*b^5*d)/(10*e^4)))/e))/e))/e)*(a^2 +
b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (B*b^5*(a^2 + b^2*x^2
+ 2*a*b*x)^(1/2))/(6*e^7*(a + b*x)*(d + e*x)^6)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**13,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1538 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx$

Optimal. Leaf size=435

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^{10}}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{11e^7(a+bx)(d+ex)^{11}}+\ldots$$

Rubi [A] time = 0.29, antiderivative size = 435, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{8e^7(a+bx)(d+ex)^8}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{9e^7(a+bx)(d+ex)^9}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^{10}}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{11e^7(a+bx)(d+ex)^{11}}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{12e^7(a+bx)(d+ex)^{12}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{13e^7(a+bx)(d+ex)^{13}}-\frac{b^5B\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x
)*(d + e*x)^13) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(12*e^7*(a + b*x)*(d + e*x)^12) - (5*b*(b*d - a*e)^3*(3*b*
B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d
+ e*x)^11) + (b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^10) - (5*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^
9) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7
*(a + b*x)*(d + e*x)^8) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a +
 b*x)*(d + e*x)^7)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{14}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{14}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{13}}-\ldots\right)}{\ldots}$$

$$=-\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13}}+\frac{(bd-ae)^4(6bBd-5Abe-a\ldots}{12e^7(a+bx)(d\ldots}$$

Mathematica [A] time = 0.21, size = 471, normalized size = 1.08

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -1/72072*(Sqrt[(a + b*x)^2]*(462*a^5*e^5*(12*A*e + B*(d + 13*e*x)) + 210*a^
4*b*e^4*(11*A*e*(d + 13*e*x) + 2*B*(d^2 + 13*d*e*x + 78*e^2*x^2)) + 84*a^3*
b^2*e^3*(10*A*e*(d^2 + 13*d*e*x + 78*e^2*x^2) + 3*B*(d^3 + 13*d^2*e*x + 78*
d*e^2*x^2 + 286*e^3*x^3)) + 28*a^2*b^3*e^2*(9*A*e*(d^3 + 13*d^2*e*x + 78*d*
e^2*x^2 + 286*e^3*x^3) + 4*B*(d^4 + 13*d^3*e*x + 78*d^2*e^2*x^2 + 286*d*e^3
*x^3 + 715*e^4*x^4)) + 7*a*b^4*e*(8*A*e*(d^4 + 13*d^3*e*x + 78*d^2*e^2*x^2
+ 286*d*e^3*x^3 + 715*e^4*x^4) + 5*B*(d^5 + 13*d^4*e*x + 78*d^3*e^2*x^2 + 2
86*d^2*e^3*x^3 + 715*d*e^4*x^4 + 1287*e^5*x^5)) + b^5*(7*A*e*(d^5 + 13*d^4*
e*x + 78*d^3*e^2*x^2 + 286*d^2*e^3*x^3 + 715*d*e^4*x^4 + 1287*e^5*x^5) + 6*
B*(d^6 + 13*d^5*e*x + 78*d^4*e^2*x^2 + 286*d^3*e^3*x^3 + 715*d^2*e^4*x^4 +
1287*d*e^5*x^5 + 1716*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^13)
```

IntegrateAlgebraic [F] time = 180.17, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14
,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.45, size = 695, normalized size = 1.60

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="fric
as")
```

```
[Out] -1/72072*(10296*B*b^5*e^6*x^6 + 6*B*b^5*d^6 + 5544*A*a^5*e^6 + 7*(5*B*a*b^4
 + A*b^5)*d^5*e + 56*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 252*(B*a^3*b^2 + A*a
^2*b^3)*d^3*e^3 + 420*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 462*(B*a^5 + 5*A*a^
4*b)*d*e^5 + 1287*(6*B*b^5*d*e^5 + 7*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 715*(6*
B*b^5*d^2*e^4 + 7*(5*B*a*b^4 + A*b^5)*d*e^5 + 56*(2*B*a^2*b^3 + A*a*b^4)*e^
6)*x^4 + 286*(6*B*b^5*d^3*e^3 + 7*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 56*(2*B*a^2
*b^3 + A*a*b^4)*d*e^5 + 252*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 78*(6*B*b^5*
d^4*e^2 + 7*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 56*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^
4 + 252*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 420*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^
2 + 13*(6*B*b^5*d^5*e + 7*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 56*(2*B*a^2*b^3 + A
*a*b^4)*d^3*e^3 + 252*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 420*(B*a^4*b + 2*A*
a^3*b^2)*d*e^5 + 462*(B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^20*x^13 + 13*d*e^19*x^1
2 + 78*d^2*e^18*x^11 + 286*d^3*e^17*x^10 + 715*d^4*e^16*x^9 + 1287*d^5*e^15
*x^8 + 1716*d^6*e^14*x^7 + 1716*d^7*e^13*x^6 + 1287*d^8*e^12*x^5 + 715*d^9*
e^11*x^4 + 286*d^10*e^10*x^3 + 78*d^11*e^9*x^2 + 13*d^12*e^8*x + d^13*e^7)
```

giac [B] time = 0.22, size = 919, normalized size = 2.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="giac
")
```

```
[Out] -1/72072*(10296*B*b^5*x^6*e^6*sgn(b*x + a) + 7722*B*b^5*d*x^5*e^5*sgn(b*x +
 a) + 4290*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 1716*B*b^5*d^3*x^3*e^3*sgn(b*x
+ a) + 468*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 78*B*b^5*d^5*x*e*sgn(b*x + a) +
 6*B*b^5*d^6*sgn(b*x + a) + 45045*B*a*b^4*x^5*e^6*sgn(b*x + a) + 9009*A*b^5
*x^5*e^6*sgn(b*x + a) + 25025*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 5005*A*b^5*d
*x^4*e^5*sgn(b*x + a) + 10010*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 2002*A*b^5
*d^2*x^3*e^4*sgn(b*x + a) + 2730*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 546*A*b
^5*d^3*x^2*e^3*sgn(b*x + a) + 455*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 91*A*b^5
*d^4*x*e^2*sgn(b*x + a) + 35*B*a*b^4*d^5*e*sgn(b*x + a) + 7*A*b^5*d^5*e*sgn
(b*x + a) + 80080*B*a^2*b^3*x^4*e^6*sgn(b*x + a) + 40040*A*a*b^4*x^4*e^6*sg
n(b*x + a) + 32032*B*a^2*b^3*d*x^3*e^5*sgn(b*x + a) + 16016*A*a*b^4*d*x^3*e
^5*sgn(b*x + a) + 8736*B*a^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 4368*A*a*b^4*d^
2*x^2*e^4*sgn(b*x + a) + 1456*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 728*A*a*b^
4*d^3*x*e^3*sgn(b*x + a) + 112*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 56*A*a*b^4*
d^4*e^2*sgn(b*x + a) + 72072*B*a^3*b^2*x^3*e^6*sgn(b*x + a) + 72072*A*a^2*b
^3*x^3*e^6*sgn(b*x + a) + 19656*B*a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 19656*A*
a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 3276*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 32
76*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 252*B*a^3*b^2*d^3*e^3*sgn(b*x + a) +
252*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 32760*B*a^4*b*x^2*e^6*sgn(b*x + a) + 6
5520*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 5460*B*a^4*b*d*x*e^5*sgn(b*x + a) + 1
0920*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 420*B*a^4*b*d^2*e^4*sgn(b*x + a) + 84
0*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 6006*B*a^5*x*e^6*sgn(b*x + a) + 30030*A*
a^4*b*x*e^6*sgn(b*x + a) + 462*B*a^5*d*e^5*sgn(b*x + a) + 2310*A*a^4*b*d*e^
5*sgn(b*x + a) + 5544*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^13
```

maple [A] time = 0.06, size = 689, normalized size = 1.58

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x)
```

```
[Out] -1/72072/e^7*(10296*B*b^5*e^6*x^6+9009*A*b^5*e^6*x^5+45045*B*a*b^4*e^6*x^5+
7722*B*b^5*d*e^5*x^5+40040*A*a*b^4*e^6*x^4+5005*A*b^5*d*e^5*x^4+80080*B*a^2
*b^3*e^6*x^4+25025*B*a*b^4*d*e^5*x^4+4290*B*b^5*d^2*e^4*x^4+72072*A*a^2*b^3
*e^6*x^3+16016*A*a*b^4*d*e^5*x^3+2002*A*b^5*d^2*e^4*x^3+72072*B*a^3*b^2*e^6
*x^3+32032*B*a^2*b^3*d*e^5*x^3+10010*B*a*b^4*d^2*e^4*x^3+1716*B*b^5*d^3*e^3
*x^3+65520*A*a^3*b^2*e^6*x^2+19656*A*a^2*b^3*d*e^5*x^2+4368*A*a*b^4*d^2*e^4
*x^2+546*A*b^5*d^3*e^3*x^2+32760*B*a^4*b*e^6*x^2+19656*B*a^3*b^2*d*e^5*x^2+
8736*B*a^2*b^3*d^2*e^4*x^2+2730*B*a*b^4*d^3*e^3*x^2+468*B*b^5*d^4*e^2*x^2+3
0030*A*a^4*b*e^6*x+10920*A*a^3*b^2*d*e^5*x+3276*A*a^2*b^3*d^2*e^4*x+728*A*a
*b^4*d^3*e^3*x+91*A*b^5*d^4*e^2*x+6006*B*a^5*e^6*x+5460*B*a^4*b*d*e^5*x+327
6*B*a^3*b^2*d^2*e^4*x+1456*B*a^2*b^3*d^3*e^3*x+455*B*a*b^4*d^4*e^2*x+78*B*b
^5*d^5*e*x+5544*A*a^5*e^6+2310*A*a^4*b*d*e^5+840*A*a^3*b^2*d^2*e^4+252*A*a^
2*b^3*d^3*e^3+56*A*a*b^4*d^4*e^2+7*A*b^5*d^5*e+462*B*a^5*d*e^5+420*B*a^4*b*
d^2*e^4+252*B*a^3*b^2*d^3*e^3+112*B*a^2*b^3*d^4*e^2+35*B*a*b^4*d^5*e+6*B*b^
5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^13/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.62, size = 1489, normalized size = 3.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^14,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(9*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(9*e^6) - (B*b^5*
d)/(9*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(8*e^7) - (B*b^5*d)/(8*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((A*a^5)/(13*e) - (d*((
B*a^5 + 5*A*a^4*b)/(13*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(13*e) - (B
*b^5*d)/(13*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(13*e)))/e + (10*a^2*b^2*(A*
b + B*a))/(13*e)))/e - (5*a^3*b*(2*A*b + B*a))/(13*e)))/e))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) - (((6*A*b^5*d^2*e - 10*B*b^5
*d^3 + 10*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^
4*d*e^2 + 30*B*a*b^4*d^2*e)/(10*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 +
 6*B*b^5*d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(10*e^7) - (d*((b^4*(
A*b*e + 5*B*a*e - 3*B*b*d))/(10*e^5) - (B*b^5*d)/(10*e^5)))/e))/e)*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((B*a^5*e^5 - B*b^5*d^
5 + 5*A*a^4*b*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 +
10*A*a^2*b^3*d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*
b^4*d^4*e - 5*B*a^4*b*d*e^4)/(12*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e +
10*A*a^3*b^2*e^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 -
 5*B*a*b^4*d^3*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(12*e^7) -
(d*((10*A*a^2*b^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 +
5*B*a*b^4*d^2*e^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(12*e^7) - (d*((5
*A*a*b^4*e^5 - A*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d
*e^4)/(12*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(12*e^3) - (B*b^5*d)/(
12*e^3)))/e))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e
*x)^12) - (((5*B*b^5*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4
 + 15*A*a*b^4*d^2*e^2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*
b^3*d^2*e^2 - 20*B*a*b^4*d^3*e)/(11*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*
d^3*e + 10*B*a^3*b^2*e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*
b^3*d*e^3 - 10*A*a*b^4*d*e^3)/(11*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3
 + 10*B*a^2*b^3*e^4 + 3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(11*e^7) - (d*((b
^4*(A*b*e + 5*B*a*e - 2*B*b*d))/(11*e^4) - (B*b^5*d)/(11*e^4)))/e))/e))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (B*b^5*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/(7*e^7*(a + b*x)*(d + e*x)^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**14,x)
```

```
[Out] Timed out
```

3.1539 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=248

$$\frac{(a+bx)(d+ex)^3(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^3\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(\cdots}{2b\cdots}$$

Rubi [A] time = 0.14, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{(a+bx)(d+ex)^3(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(d+ex)^2(Ab-aB)(bd-ae)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^3\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)(d+ex)^4}{4be\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*e*(b*d - a*e)^2*x*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + ((A*b - a*B)*(b*d - a*e)*(a + b*x)*(d + e*x)^2)/(2*b^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + ((A*b - a*B)*(a + b*x)*(d + e*x)^3)/(3*b^2*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) + (B*(a + b*x)*(d + e*x)^4)/(4*b*e*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]) + ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^3}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{(Ab-aB)e(bd-ae)^2}{b^5}+\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{(Ab-aB)e(bd-ae)(d+ex)}{b^4}+\frac{(Ab-aB)e(d+ex)^2}{b^3}+\cdots\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(Ab-aB)e(bd-ae)^2x(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(bd-ae)(a+bx)(d+ex)^2}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(\cdots}{3b^2\sqrt{a^2+\cdots}}\end{aligned}$$

Mathematica [A] time = 0.13, size = 185, normalized size = 0.75

$$\frac{(a+bx)\left(bx\left(-12a^3Be^3+6a^2be^2(2Ae+6Bd+Bex)-2ab^2e\left(3Ae(6d+ex)+B\left(18d^2+9dex+2e^2x^2\right)\right)+b^3\left(2Ae\left(18d^2+9dex+2e^2x^2\right)+3B\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)\right)\right)+12(Ab-aB)(bd-ae)^3\log(a+bx)\right)}{12b^5\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(-12*a^3*B*e^3 + 6*a^2*b*e^2*(6*B*d + 2*A*e + B*e*x) - 2*a*
b^2*e*(3*A*e*(6*d + e*x) + B*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) + b^3*(2*A*e*(
18*d^2 + 9*d*e*x + 2*e^2*x^2) + 3*B*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*
x^3))) + 12*(A*b - a*B)*(b*d - a*e)^3*Log[a + b*x]))/(12*b^5*Sqrt[(a + b*x)
^2])
```

IntegrateAlgebraic [**B**] time = 1.83, size = 959, normalized size = 3.87

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(12*b^3*B*d^3 + 36*A*b^3*d^2*e - 54*a*b^2*B*
d^2*e - 54*a*A*b^2*d*e^2 + 66*a^2*b*B*d*e^2 + 22*a^2*A*b*e^3 - 25*a^3*B*e^3
 + 18*b^3*B*d^2*e*x + 18*A*b^3*d*e^2*x - 30*a*b^2*B*d*e^2*x - 10*a*A*b^2*e^
3*x + 13*a^2*b*B*e^3*x + 12*b^3*B*d*e^2*x^2 + 4*A*b^3*e^3*x^2 - 7*a*b^2*B*e
^3*x^2 + 3*b^3*B*e^3*x^3))/(24*b^5) + (-12*b^3*B*d^3*x - 36*A*b^3*d^2*e*x +
 36*a*b^2*B*d^2*e*x + 36*a*A*b^2*d*e^2*x - 36*a^2*b*B*d*e^2*x - 12*a^2*A*b*
e^3*x + 12*a^3*B*e^3*x - 18*b^3*B*d^2*e*x^2 - 18*A*b^3*d*e^2*x^2 + 18*a*b^2
*B*d*e^2*x^2 + 6*a*A*b^2*e^3*x^2 - 6*a^2*b*B*e^3*x^2 - 12*b^3*B*d*e^2*x^3 -
 4*A*b^3*e^3*x^3 + 4*a*b^2*B*e^3*x^3 - 3*b^3*B*e^3*x^4)/(24*b^3*Sqrt[b^2])
+ ((-(A*b^5*d^3) - A*b^4*Sqrt[b^2]*d^3 + a*b^4*B*d^3 + a*b^3*Sqrt[b^2]*B*d^
3 + 3*a*A*b^4*d^2*e + 3*a*A*b^3*Sqrt[b^2]*d^2*e - 3*a^2*b^3*B*d^2*e - 3*a^2
*(b^2)^(3/2)*B*d^2*e - 3*a^2*A*b^3*d*e^2 - 3*a^2*A*(b^2)^(3/2)*d*e^2 + 3*a^
3*b^2*B*d*e^2 + 3*a^3*b*Sqrt[b^2]*B*d*e^2 + a^3*A*b^2*e^3 + a^3*A*b*Sqrt[b^
2]*e^3 - a^4*b*B*e^3 - a^4*Sqrt[b^2]*B*e^3)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/(2*b^5*Sqrt[b^2]) + ((-(A*b^5*d^3) + A*b^4*Sqrt[b^2
]*d^3 + a*b^4*B*d^3 - a*b^3*Sqrt[b^2]*B*d^3 + 3*a*A*b^4*d^2*e - 3*a*A*b^3*S
qrt[b^2]*d^2*e - 3*a^2*b^3*B*d^2*e + 3*a^2*(b^2)^(3/2)*B*d^2*e - 3*a^2*A*b^
3*d*e^2 + 3*a^2*A*(b^2)^(3/2)*d*e^2 + 3*a^3*b^2*B*d*e^2 - 3*a^3*b*Sqrt[b^2]
*B*d*e^2 + a^3*A*b^2*e^3 - a^3*A*b*Sqrt[b^2]*e^3 - a^4*b*B*e^3 + a^4*Sqrt[b
^2]*B*e^3)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^5*Sqr
t[b^2])
```

fricas [**A**] time = 0.42, size = 269, normalized size = 1.08

$$\frac{3 \, B b^{4} e^{3} x^{4} + 4 \, {\left(3 \, B b^{4} d e^{2} - {\left(B a b^{3} - A b^{4}\right)} e^{3}\right)} x^{3} + 6 \, {\left(3 \, B b^{4} d^{2} e - 3 \, {\left(B a b^{3} - A b^{4}\right)} d e^{2} + {\left(B a^{2} b^{2} - A a b^{3}\right)} e^{3}\right)} x^{2} + 12 \, {\left(B b^{4} d^{3} - 3 \, {\left(B a b^{3} - A b^{4}\right)} d^{2} e + 3 \, {\left(B a^{2} b^{2} - A a b^{3}\right)} d e^{2} - {\left(B a^{3} b - A a^{2} b^{2}\right)} e^{3}\right)} x - 12 \, {\left({\left(B a b^{3} - A b^{4}\right)} d^{3} - 3 \, {\left(B a^{2} b^{2} - A a b^{3}\right)} d^{2} e + 3 \, {\left(B a^{3} b - A a^{2} b^{2}\right)} d e^{2} - {\left(B a^{4} - A a^{3} b\right)} e^{3}\right)} \log\left(b x + a\right)}{12 \, b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*e^3*x^4 + 4*(3*B*b^4*d*e^2 - (B*a*b^3 - A*b^4)*e^3)*x^3 + 6*(
3*B*b^4*d^2*e - 3*(B*a*b^3 - A*b^4)*d*e^2 + (B*a^2*b^2 - A*a*b^3)*e^3)*x^2
+ 12*(B*b^4*d^3 - 3*(B*a*b^3 - A*b^4)*d^2*e + 3*(B*a^2*b^2 - A*a*b^3)*d*e^2
 - (B*a^3*b - A*a^2*b^2)*e^3)*x - 12*((B*a*b^3 - A*b^4)*d^3 - 3*(B*a^2*b^2
- A*a*b^3)*d^2*e + 3*(B*a^3*b - A*a^2*b^2)*d*e^2 - (B*a^4 - A*a^3*b)*e^3)*l
og(b*x + a))/b^5
```

giac [**B**] time = 0.19, size = 431, normalized size = 1.74

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/12*(3*B*b^3*x^4*e^3*sgn(b*x + a) + 12*B*b^3*d*x^3*e^2*sgn(b*x + a) + 18*B
*b^3*d^2*x^2*e*sgn(b*x + a) + 12*B*b^3*d^3*x*sgn(b*x + a) - 4*B*a*b^2*x^3*e
```

```
^3*sgn(b*x + a) + 4*A*b^3*x^3*e^3*sgn(b*x + a) - 18*B*a*b^2*d*x^2*e^2*sgn(b
*x + a) + 18*A*b^3*d*x^2*e^2*sgn(b*x + a) - 36*B*a*b^2*d^2*x*e*sgn(b*x + a)
 + 36*A*b^3*d^2*x*e*sgn(b*x + a) + 6*B*a^2*b*x^2*e^3*sgn(b*x + a) - 6*A*a*b
^2*x^2*e^3*sgn(b*x + a) + 36*B*a^2*b*d*x*e^2*sgn(b*x + a) - 36*A*a*b^2*d*x*
e^2*sgn(b*x + a) - 12*B*a^3*x*e^3*sgn(b*x + a) + 12*A*a^2*b*x*e^3*sgn(b*x +
 a))/b^4 - (B*a*b^3*d^3*sgn(b*x + a) - A*b^4*d^3*sgn(b*x + a) - 3*B*a^2*b^2
*d^2*e*sgn(b*x + a) + 3*A*a*b^3*d^2*e*sgn(b*x + a) + 3*B*a^3*b*d*e^2*sgn(b*
x + a) - 3*A*a^2*b^2*d*e^2*sgn(b*x + a) - B*a^4*e^3*sgn(b*x + a) + A*a^3*b*
e^3*sgn(b*x + a))*log(abs(b*x + a))/b^5
```

maple [A] time = 0.06, size = 356, normalized size = 1.44

$$-\frac{(bx+a)\left(-3B b^4e^3x^4-4A b^4e^3x^3+4Ba b^3e^3x^3-12B b^4d e^2x^3+6Aa b^3e^3x^2-18A b^4d e^2x^2-6B a^2b^2e^3x^2+18Ba b^3d e^2x^2-18B b^4d^2e x^2+12A a^3b e^3\ln(bx+a)-36A a^2b^2d e^2\ln(bx+a)-12A a^2b^2e^3x+36Aa b^3d^2e\ln(bx+a)+36Aa b^3d e^2x-12A b^4d^3\ln(bx+a)-36A b^4d^2ex-12B a^4e^3\ln(bx+a)+36B a^3bd e^2\ln(bx+a)+12B a^3b e^3x-36B a^2b^2d^2e\ln(bx+a)-36B a^2b^2d e^2x+12Ba b^3d^3\ln(bx+a)+36Ba b^3d^2ex-12B b^4d^3x\right)}{12\sqrt{(bx+a)^2}\, b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/12*(b*x+a)*(-3*B*x^4*b^4*e^3-4*A*x^3*b^4*e^3+4*B*x^3*a*b^3*e^3-12*B*x^3*
b^4*d*e^2+6*A*x^2*a*b^3*e^3-18*A*x^2*b^4*d*e^2-6*B*x^2*a^2*b^2*e^3+18*B*x^2
*a*b^3*d*e^2-18*B*x^2*b^4*d^2*e+12*A*ln(b*x+a)*a^3*b*e^3-36*A*ln(b*x+a)*a^2
*b^2*d*e^2+36*A*ln(b*x+a)*a*b^3*d^2*e-12*A*ln(b*x+a)*b^4*d^3-12*A*x*a^2*b^2
*e^3+36*A*x*a*b^3*d*e^2-36*A*x*b^4*d^2*e-12*B*ln(b*x+a)*a^4*e^3+36*B*ln(b*x
+a)*a^3*b*d*e^2-36*B*ln(b*x+a)*a^2*b^2*d^2*e+12*B*ln(b*x+a)*a*b^3*d^3+12*B*
x*a^3*b*e^3-36*B*x*a^2*b^2*d*e^2+36*B*x*a*b^3*d^2*e-12*B*x*b^4*d^3)/((b*x+a
)^2)^(1/2)/b^5
```

maxima [B] time = 0.58, size = 438, normalized size = 1.77

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Be^3x^3}{4\,b^2}+\frac{13\,Ba^2e^3x^2}{12\,b^3}-\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Bae^3x^2}{12\,b^3}-\frac{13\,Ba^3e^3x}{6\,b^4}+\frac{Ad^3\log\left(x+\frac{a}{b}\right)}{b}+\frac{Ba^4e^3\log\left(x+\frac{a}{b}\right)}{b^5}+\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3e^3}{6\,b^5}-\frac{5\left(3\,Bde^2+Ae^3\right)ax^2}{6\,b^2}+\frac{3\left(Bd^2e+Ade^2\right)x^2}{2\,b}+\frac{\left(3\,Bde^2+Ae^3\right)\sqrt{b^2x^2+2\,abx+a^2}\,x^2}{3\,b^2}+\frac{5\left(3\,Bde^2+Ae^3\right)a^2x}{3\,b^3}-\frac{3\left(Bd^2e+Ade^2\right)ax}{b^2}-\frac{\left(3\,Bde^2+Ae^3\right)a^3\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{3\left(Bd^2e+Ade^2\right)a^2\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{\left(Bd^3+3\,Ad^2e\right)a\log\left(x+\frac{a}{b}\right)}{b^2}-\frac{2\left(3\,Bde^2+Ae^3\right)\sqrt{b^2x^2+2\,abx+a^2}\,a^2}{3\,b^4}+\frac{\left(Bd^3+3\,Ad^2e\right)\sqrt{b^2x^2+2\,abx+a^2}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*e^3*x^3/b^2 + 13/12*B*a^2*e^3*x^2/b^3 -
 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*e^3*x^2/b^3 - 13/6*B*a^3*e^3*x/b^4
+ A*d^3*log(x + a/b)/b + B*a^4*e^3*log(x + a/b)/b^5 + 7/6*sqrt(b^2*x^2 + 2*
a*b*x + a^2)*B*a^3*e^3/b^5 - 5/6*(3*B*d*e^2 + A*e^3)*a*x^2/b^2 + 3/2*(B*d^2
*e + A*d*e^2)*x^2/b + 1/3*(3*B*d*e^2 + A*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*x^2/b^2 + 5/3*(3*B*d*e^2 + A*e^3)*a^2*x/b^3 - 3*(B*d^2*e + A*d*e^2)*a*x/b^
2 - (3*B*d*e^2 + A*e^3)*a^3*log(x + a/b)/b^4 + 3*(B*d^2*e + A*d*e^2)*a^2*lo
g(x + a/b)/b^3 - (B*d^3 + 3*A*d^2*e)*a*log(x + a/b)/b^2 - 2/3*(3*B*d*e^2 +
A*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^4 + (B*d^3 + 3*A*d^2*e)*sqrt(b^2
*x^2 + 2*a*b*x + a^2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^3}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.71, size = 221, normalized size = 0.89

$$\frac{Be^3x^4}{4b}+x^3\left(\frac{Ae^3}{3b}-\frac{Bae^3}{3b^2}+\frac{Bde^2}{b}\right)+x^2\left(-\frac{Aae^3}{2b^2}+\frac{3Ade^2}{2b}+\frac{Ba^2e^3}{2b^3}-\frac{3Bade^2}{2b^2}+\frac{3Bd^2e}{2b}\right)+x\left(\frac{Aa^2e^3}{b^3}-\frac{3Aade^2}{b^2}+\frac{3Ad^2e}{b}-\frac{Ba^3e^3}{b^4}+\frac{3Ba^2de^2}{b^3}-\frac{3Bad^2e}{b^2}+\frac{Bd^3}{b}\right)+\frac{(-Ab+Ba)\,(ae-bd)^3\log(a+bx)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*e**3*x**4/(4*b) + x**3*(A*e**3/(3*b) - B*a*e**3/(3*b**2) + B*d*e**2/b) +
x**2*(-A*a*e**3/(2*b**2) + 3*A*d*e**2/(2*b) + B*a**2*e**3/(2*b**3) - 3*B*a*
d*e**2/(2*b**2) + 3*B*d**2*e/(2*b)) + x*(A*a**2*e**3/b**3 - 3*A*a*d*e**2/b*
*2 + 3*A*d**2*e/b - B*a**3*e**3/b**4 + 3*B*a**2*d*e**2/b**3 - 3*B*a*d**2*e/
b**2 + B*d**3/b) + (-A*b + B*a)*(a*e - b*d)**3*log(a + b*x)/b**5
```

3.1540 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=191

$$\frac{(a+bx)(d+ex)^2(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx}{3be\sqrt{a^2+}}$$

Rubi [A] time = 0.11, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{(a+bx)(d+ex)^2(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)(d+ex)^3}{3be\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*e*(b*d - a*e)*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + ((A*b - a*B)*(a + b*x)*(d + e*x)^2)/(2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (B*(a + b*x)*(d + e*x)^3)/(3*b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
 - a*B)*(b*d - a*e)^2*(a + b*x)*Log[a + b*x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^2}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{(Ab-aB)e(bd-ae)}{b^4}+\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{(Ab-aB)e(d+ex)}{b^3}+\frac{B(d+ex)^2}{b^2}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)e(bd-ae)x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)(d+ex)^3}{3be\sqrt{a^2+2abx+b^2x}}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 118, normalized size = 0.62

$$\frac{(a+bx)\left(bx\left(6a^2Be^2-3abe(2Ae+4Bd+Bex)+b^2\left(3Ae(4d+ex)+2B\left(3d^2+3dex+e^2x^2\right)\right)\right)+6(Ab-aB)(bd-ae)^2\log(a+bx)\right)}{6b^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

[In] Integrate[((A + B*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] ((a + b*x)*(b*x*(6*a^2*B*e^2 - 3*a*b*e*(4*B*d + 2*A*e + B*e*x) + b^2*(3*A*e*(4*d + e*x) + 2*B*(3*d^2 + 3*d*e*x + e^2*x^2))) + 6*(A*b - a*B)*(b*d - a*e)^2*Log[a + b*x]))/(6*b^4*Sqrt[(a + b*x)^2])

IntegrateAlgebraic [B] time = 1.11, size = 610, normalized size = 3.19

$$\frac{-6a^2Be^2x+6aAbe^2x+12abBdex+3abBe^2x^2-12Ab^2dex-3Ab^2e^2x^2-6b^2Bd^2x-6b^2Bdex^2-2b^2Be^2x^3}{12\left(b^2\right)^{3/2}}+\frac{\sqrt{a^2+2abx+b^2x^2}\left(11a^2Be^2-9aAbe^2-18abBde-5abBe^2x+12Ab^2de+3Ab^2e^2x+6b^2Bd^2+6b^2Bdex+2b^2Be^2x^2\right)}{12b^4}+\frac{\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)\left(a^3\sqrt{b^2}Be^2+a^3bBe^2-a^2Ab^2e^2-a^2A\sqrt{b^2}be^2-2a^2b^2Bde-2a^2\sqrt{b^2}bBde+2aAb^3de+2aA\left(b^2\right)^{3/2}de+ab^3Bd^2+a\left(b^2\right)^{3/2}Bd^2-Ab^4d^2-A\sqrt{b^2}b^3d^2\right)}{2b^4\sqrt{b^2}}+\frac{\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)\left(-a^3\sqrt{b^2}Be^2+a^3bBe^2-a^2Ab^2e^2+a^2A\sqrt{b^2}be^2-2a^2b^2Bde+2a^2\sqrt{b^2}bBde+2aAb^3de-2aA\left(b^2\right)^{3/2}de+ab^3Bd^2-a\left(b^2\right)^{3/2}Bd^2-Ab^4d^2+A\sqrt{b^2}b^3d^2\right)}{2b^4\sqrt{b^2}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] (Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(6*b^2*B*d^2 + 12*A*b^2*d*e - 18*a*b*B*d*e - 9*a*A*b*e^2 + 11*a^2*B*e^2 + 6*b^2*B*d*e*x + 3*A*b^2*e^2*x - 5*a*b*B*e^2*x + 2*b^2*B*e^2*x^2))/(12*b^4) + (-6*b^2*B*d^2*x - 12*A*b^2*d*e*x + 12*a*b*B*d*e*x + 6*a*A*b*e^2*x - 6*a^2*B*e^2*x - 6*b^2*B*d*e*x^2 - 3*A*b^2*e^2*x^2 + 3*a*b*B*e^2*x^2 - 2*b^2*B*e^2*x^3)/(12*(b^2)^(3/2)) + ((-(A*b^4*d^2) - A*b^3*Sqrt[b^2]*d^2 + a*b^3*B*d^2 + a*(b^2)^(3/2)*B*d^2 + 2*a*A*b^3*d*e + 2*a*A*(b^2)^(3/2)*d*e - 2*a^2*b^2*B*d*e - 2*a^2*b*Sqrt[b^2]*B*d*e - a^2*A*b^2*e^2 - a^2*A*b*Sqrt[b^2]*e^2 + a^3*b*B*e^2 + a^3*Sqrt[b^2]*B*e^2)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^4*Sqrt[b^2]) + ((-(A*b^4*d^2) + A*b^3*Sqrt[b^2]*d^2 + a*b^3*B*d^2 - a*(b^2)^(3/2)*B*d^2 + 2*a*A*b^3*d*e - 2*a*A*(b^2)^(3/2)*d*e - 2*a^2*b^2*B*d*e + 2*a^2*b*Sqrt[b^2]*B*d*e - a^2*A*b^2*e^2 + a^2*A*b*Sqrt[b^2]*e^2 + a^3*b*B*e^2 - a^3*Sqrt[b^2]*B*e^2)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^4*Sqrt[b^2])

fricas [A] time = 0.43, size = 158, normalized size = 0.83

$$\frac{2\,Bb^3e^2x^3+3\left(2\,Bb^3de-\left(Bab^2-Ab^3\right)e^2\right)x^2+6\left(Bb^3d^2-2\left(Bab^2-Ab^3\right)de+\left(Ba^2b-Aab^2\right)e^2\right)x-6\left(\left(Bab^2-Ab^3\right)d^2-2\left(Ba^2b-Aab^2\right)de+\left(Ba^3-Aa^2b\right)e^2\right)\log\left(bx+a\right)}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] 1/6*(2*B*b^3*e^2*x^3 + 3*(2*B*b^3*d*e - (B*a*b^2 - A*b^3)*e^2)*x^2 + 6*(B*b^3*d^2 - 2*(B*a*b^2 - A*b^3)*d*e + (B*a^2*b - A*a*b^2)*e^2)*x - 6*((B*a*b^2 - A*b^3)*d^2 - 2*(B*a^2*b - A*a*b^2)*d*e + (B*a^3 - A*a^2*b)*e^2)*log(b*x + a))/b^4

giac [A] time = 0.22, size = 254, normalized size = 1.33

$$\frac{2\,Bb^2x^3e^2\mathrm{sgn}\left(bx+a\right)+6\,Bb^2dx^2e\mathrm{sgn}\left(bx+a\right)+6\,Bb^2d^2x\mathrm{sgn}\left(bx+a\right)-3\,Babx^2e^2\mathrm{sgn}\left(bx+a\right)+3\,Ab^2x^2e^2\mathrm{sgn}\left(bx+a\right)-12\,Babdxe\mathrm{sgn}\left(bx+a\right)+12\,Ab^2dxe\mathrm{sgn}\left(bx+a\right)+6\,Ba^2xe^2\mathrm{sgn}\left(bx+a\right)-6\,Aabxe^2\mathrm{sgn}\left(bx+a\right)}{6\,b^3}-\frac{\left(Bab^2d^2\mathrm{sgn}\left(bx+a\right)-Ab^3d^2\mathrm{sgn}\left(bx+a\right)-2\,Ba^2bde\mathrm{sgn}\left(bx+a\right)+2\,Aab^2de\mathrm{sgn}\left(bx+a\right)+Ba^3e^2\mathrm{sgn}\left(bx+a\right)-Aa^2be^2\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] 1/6*(2*B*b^2*x^3*e^2*sgn(b*x + a) + 6*B*b^2*d*x^2*e*sgn(b*x + a) + 6*B*b^2*d^2*x*sgn(b*x + a) - 3*B*a*b*x^2*e^2*sgn(b*x + a) + 3*A*b^2*x^2*e^2*sgn(b*x + a) - 12*B*a*b*d*x*e*sgn(b*x + a) + 12*A*b^2*d*x*e*sgn(b*x + a) + 6*B*a^2*x*e^2*sgn(b*x + a) - 6*A*a*b*x*e^2*sgn(b*x + a))/b^3 - (B*a*b^2*d^2*sgn(b*x + a) - A*b^3*d^2*sgn(b*x + a) - 2*B*a^2*b*d*e*sgn(b*x + a) + 2*A*a*b^2*d*e*sgn(b*x + a) + B*a^3*e^2*sgn(b*x + a) - A*a^2*b*e^2*sgn(b*x + a))*log(abs(b*x + a))/b^4

maple [A] time = 0.06, size = 212, normalized size = 1.11

$$\frac{\left(bx+a\right)\left(2B\,b^3e^2x^3+3A\,b^3e^2x^2-3Ba\,b^2e^2x^2+6B\,b^3de\,x^2+6A\,a^2b\,e^2\ln\left(bx+a\right)-12Aa\,b^2de\ln\left(bx+a\right)-6Aa\,b^2e^2x+6A\,b^3d^2\ln\left(bx+a\right)+12A\,b^3dex-6B\,a^3e^2\ln\left(bx+a\right)+12B\,a^2bde\ln\left(bx+a\right)+6B\,a^2b\,e^2x-6Ba\,b^2d^2\ln\left(bx+a\right)-12Ba\,b^2dex+6B\,b^3d^2x\right)}{6\sqrt{\left(bx+a\right)^2}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(2*B*x^3*b^3*e^2+3*A*x^2*b^3*e^2-3*B*x^2*a*b^2*e^2+6*B*x^2*b^3*
d*e+6*A*ln(b*x+a)*a^2*b*e^2-12*A*ln(b*x+a)*a*b^2*d*e+6*A*ln(b*x+a)*b^3*d^2-
6*A*x*a*b^2*e^2+12*A*x*b^3*d*e-6*B*ln(b*x+a)*a^3*e^2+12*B*ln(b*x+a)*a^2*b*d
*e-6*B*ln(b*x+a)*a*b^2*d^2+6*B*x*a^2*b*e^2-12*B*x*a*b^2*d*e+6*B*x*b^3*d^2)/
((b*x+a)^2)^(1/2)/b^4
```

maxima [A] time = 0.62, size = 244, normalized size = 1.28

$$-\frac{5\,Bae^2x^2}{6\,b^2} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Be^2x^2}{3\,b^2} + \frac{5\,Ba^2e^2x}{3\,b^3} + \frac{Ad^2\log\left(x + \frac{a}{b}\right)}{b} - \frac{Ba^3e^2\log\left(x + \frac{a}{b}\right)}{b^4} + \frac{\left(2\,Bde + Ae^2\right)x^2}{2\,b} - \frac{2\,\sqrt{b^2x^2 + 2\,abx + a^2}\,Ba^2e^2}{3\,b^4} - \frac{\left(2\,Bde + Ae^2\right)ax}{b^2} + \frac{\left(2\,Bde + Ae^2\right)a^2\log\left(x + \frac{a}{b}\right)}{b^3} - \frac{\left(Bd^2 + 2\,Ade\right)a\log\left(x + \frac{a}{b}\right)}{b^2} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\left(Bd^2 + 2\,Ade\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5/6*B*a*e^2*x^2/b^2 + 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*e^2*x^2/b^2 + 5/
3*B*a^2*e^2*x/b^3 + A*d^2*log(x + a/b)/b - B*a^3*e^2*log(x + a/b)/b^4 + 1/2
*(2*B*d*e + A*e^2)*x^2/b - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2*e^2/b^4
- (2*B*d*e + A*e^2)*a*x/b^2 + (2*B*d*e + A*e^2)*a^2*log(x + a/b)/b^3 - (B*d
^2 + 2*A*d*e)*a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d^2 + 2
*A*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^2}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.49, size = 117, normalized size = 0.61

$$\frac{Be^2x^3}{3b} + x^2\left(\frac{Ae^2}{2b} - \frac{Bae^2}{2b^2} + \frac{Bde}{b}\right) + x\left(-\frac{Aae^2}{b^2} + \frac{2Ade}{b} + \frac{Ba^2e^2}{b^3} - \frac{2Bade}{b^2} + \frac{Bd^2}{b}\right) - \frac{(-Ab+Ba)\,(ae-bd)^2\log\,(a+bx)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*e**2*x**3/(3*b) + x**2*(A*e**2/(2*b) - B*a*e**2/(2*b**2) + B*d*e/b) + x*(
-A*a*e**2/b**2 + 2*A*d*e/b + B*a**2*e**2/b**3 - 2*B*a*d*e/b**2 + B*d**2/b)
- (-A*b + B*a)*(a*e - b*d)**2*log(a + b*x)/b**4
```

3.1541 $\int \frac{(A+Bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=134

$$\frac{e(a+bx)(A+Bx)^2}{2bB\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)(bd-ae)}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.08, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 77}

$$\frac{(a+bx)(Ab-aB)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)(A+Bx)^2}{2bB\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)(bd-ae)}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*(b*d - a*e)*x*(a + b*x))/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(a + b
*x)*(A + B*x)^2)/(2*b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(b*d
- a*e)*(a + b*x)*Log[a + b*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{B(bd-ae)}{b^3}+\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{e(A+Bx)}{b^2}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{B(bd-ae)x(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)(A+Bx)^2}{2bB\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(bd-ae)(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 72, normalized size = 0.54

$$\frac{(a+bx)(bx(b(2Ae+2Bd+Bex)-2aBe)+2(Ab-aB)(bd-ae)\log(a+bx))}{2b^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(-2*a*B*e + b*(2*B*d + 2*A*e + B*e*x)) + 2*(A*b - a*B)*(b*d
 - a*e)*Log[a + b*x]))/(2*b^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.72, size = 344, normalized size = 2.57

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-3aBe+2Abe+2bBd+bBex)}{4b^3}+\frac{\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)\left(-a^2\sqrt{b^2}\,Be-a^2bBe+aAb^2e+aA\sqrt{b^2}\,be+ab^2Bd+a\sqrt{b^2}\,bBd-Ab^3d-A\left(b^2\right)^{3/2}d\right)}{2b^3\sqrt{b^2}}+\frac{\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)\left(a^2\sqrt{b^2}\,Be-a^2bBe+aAb^2e-aA\sqrt{b^2}\,be+ab^2Bd-a\sqrt{b^2}\,bBd-Ab^3d+A\left(b^2\right)^{3/2}d\right)}{2b^3\sqrt{b^2}}+\frac{2aBex-2Abex-2bBdx-bBex^2}{4b\sqrt{b^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((2*b*B*d + 2*A*b*e - 3*a*B*e + b*B*e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
b^3) + (-2*b*B*d*x - 2*A*b*e*x + 2*a*B*e*x - b*B*e*x^2)/(4*b*Sqrt[b^2]) + (
(-(A*b^3*d) - A*(b^2)^(3/2)*d + a*b^2*B*d + a*b*Sqrt[b^2]*B*d + a*A*b^2*e +
 a*A*b*Sqrt[b^2]*e - a^2*b*B*e - a^2*Sqrt[b^2]*B*e)*Log[-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b^3*Sqrt[b^2]) + ((-(A*b^3*d) + A*(b^2)^
(3/2)*d + a*b^2*B*d - a*b*Sqrt[b^2]*B*d + a*A*b^2*e - a*A*b*Sqrt[b^2]*e - a
^2*b*B*e + a^2*Sqrt[b^2]*B*e)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^
2*x^2]])/(2*b^3*Sqrt[b^2])
```

fricas [A] time = 0.43, size = 75, normalized size = 0.56

$$\frac{Bb^2ex^2+2\left(Bb^2d-\left(Bab-Ab^2\right)e\right)x-2\left(\left(Bab-Ab^2\right)d-\left(Ba^2-Aab\right)e\right)\log\left(bx+a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*e*x^2 + 2*(B*b^2*d - (B*a*b - A*b^2)*e)*x - 2*((B*a*b - A*b^2)*d
 - (B*a^2 - A*a*b)*e)*log(b*x + a))/b^3
```

giac [A] time = 0.17, size = 122, normalized size = 0.91

$$\frac{Bbx^2e\mathrm{sgn}\left(bx+a\right)+2\,Bbdx\mathrm{sgn}\left(bx+a\right)-2\,Baxe\mathrm{sgn}\left(bx+a\right)+2\,Abxe\mathrm{sgn}\left(bx+a\right)}{2\,b^2}-\frac{\left(Babd\mathrm{sgn}\left(bx+a\right)-Ab^2d\mathrm{sgn}\left(bx+a\right)-Ba^2e\mathrm{sgn}\left(bx+a\right)+Aabe\mathrm{sgn}\left(bx+a\right)\right)\log\left(\left|bx+a\right|\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(B*b*x^2*e*sgn(b*x + a) + 2*B*b*d*x*sgn(b*x + a) - 2*B*a*x*e*sgn(b*x +
a) + 2*A*b*x*e*sgn(b*x + a))/b^2 - (B*a*b*d*sgn(b*x + a) - A*b^2*d*sgn(b*x
+ a) - B*a^2*e*sgn(b*x + a) + A*a*b*e*sgn(b*x + a))*log(abs(b*x + a))/b^3
```

maple [A] time = 0.06, size = 104, normalized size = 0.78

$$-\frac{\left(bx+a\right)\left(-B\,b^2e\,x^2+2Aabe\ln\left(bx+a\right)-2A\,b^2d\ln\left(bx+a\right)-2A\,b^2ex-2B\,a^2e\ln\left(bx+a\right)+2Babd\ln\left(bx+a\right)+2Babex-2B\,b^2dx\right)}{2\sqrt{\left(bx+a\right)^2}\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(-B*x^2*b^2*e+2*A*ln(b*x+a)*a*b*e-2*A*ln(b*x+a)*b^2*d-2*A*x*b^
2*e-2*B*ln(b*x+a)*a^2*e+2*B*ln(b*x+a)*a*b*d+2*B*x*a*b*e-2*B*x*b^2*d)/((b*x+
a)^2)^(1/2)/b^3
```

maxima [A] time = 0.49, size = 101, normalized size = 0.75

$$\frac{Bex^2}{2\,b}-\frac{Baex}{b^2}+\frac{Ad\log\left(x+\frac{a}{b}\right)}{b}+\frac{Ba^2e\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{(Bd+Ae)a\log\left(x+\frac{a}{b}\right)}{b^2}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(Bd+Ae)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*e*x^2/b - B*a*e*x/b^2 + A*d*log(x + a/b)/b + B*a^2*e*log(x + a/b)/b^3
 - (B*d + A*e)*a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d + A*
e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.29, size = 53, normalized size = 0.40

$$\frac{Bex^2}{2b} + x\left(\frac{Ae}{b} - \frac{Bae}{b^2} + \frac{Bd}{b}\right) + \frac{(-Ab+Ba)\,(ae-bd)\log{(a+bx)}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*e*x**2/(2*b) + x*(A*e/b - B*a*e/b**2 + B*d/b) + (-A*b + B*a)*(a*e - b*d)*
log(a + b*x)/b**3
```

3.1542 $\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

Rubi [A] time = 0.03, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {640, 608, 31}

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + ((A*b - a*B)*(a + b*x)*Log[a + b*x]
)/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx&=\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b^2}\\&=\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{2b^2\sqrt{a^2+2abx+b^2x^2}}\\&=\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{(Ab-aB)(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.58

$$\frac{(a+bx)((Ab-aB)\log(a+bx)+bBx)}{b^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*B*x + (A*b - a*B)*Log[a + b*x]))/(b^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.00, size = 196, normalized size = 2.84

$$\frac{\left(a\sqrt{b^2}\,B+abB-Ab^2-A\sqrt{b^2}\,b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2\left(b^2\right)^{3/2}}+\frac{\left(-a\sqrt{b^2}\,B+abB-Ab^2+A\sqrt{b^2}\,b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2\left(b^2\right)^{3/2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{2b^2}-\frac{Bx}{2\sqrt{b^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -1/2*(B*x)/Sqrt[b^2] + (B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^2) + ((-(A*b^
2) - A*b*Sqrt[b^2] + a*b*B + a*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/(2*(b^2)^(3/2)) + ((-(A*b^2) + A*b*Sqrt[b^2] + a*b*
B - a*Sqrt[b^2]*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2
*(b^2)^(3/2))
```

fricas [A] time = 0.41, size = 25, normalized size = 0.36

$$\frac{Bbx-(Ba-Ab)\log\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] (B*b*x - (B*a - A*b)*log(b*x + a))/b^2
```

giac [A] time = 0.15, size = 45, normalized size = 0.65

$$\frac{Bx\mathrm{sgn}\left(bx+a\right)}{b}-\frac{\left(Ba\mathrm{sgn}\left(bx+a\right)-Ab\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] B*x*sgn(b*x + a)/b - (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(b*x + a)
)/b^2
```

maple [A] time = 0.05, size = 43, normalized size = 0.62

$$\frac{\left(bx+a\right)\left(Ab\ln\left(bx+a\right)-Ba\ln\left(bx+a\right)+Bbx\right)}{\sqrt{\left(bx+a\right)^2}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*b-B*ln(b*x+a)*a+B*b*x)/((b*x+a)^2)^(1/2)/b^2
```

maxima [A] time = 0.56, size = 52, normalized size = 0.75

$$-\frac{Ba\log\left(x+\frac{a}{b}\right)}{b^2}+\frac{A\log\left(x+\frac{a}{b}\right)}{b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -B*a*log(x + a/b)/b^2 + A*log(x + a/b)/b + sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/
b^2
```

mupad [B] time = 2.47, size = 79, normalized size = 1.14

$$\frac{B\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b^2}+\frac{A\,\ln\left(a+b\,x+\sqrt{{\left(a+b\,x\right)}^2}\right)}{b}-\frac{B\,a\,b\,\ln\left(a\,b+\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{b^2}+b^2\,x\right)}{{\left(b^2\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + b*x)^2)^(1/2),x)
```

```
[Out] (B*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/b^2 + (A*log(a + b*x + ((a + b*x)^2)^(1
/2)))/b - (B*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^
(3/2)
```

sympy [A] time = 0.17, size = 20, normalized size = 0.29

$$\frac{Bx}{b}-\frac{\left(-Ab+Ba\right)\log\left(a+bx\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x/b - (-A*b + B*a)*log(a + b*x)/b**2
```

3.1543 $\int \frac{A+Bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=107

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{(a+bx)(Bd-Ae)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Rubi [A] time = 0.08, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 72}

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{(a+bx)(Bd-Ae)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Log[a + b*x])/(b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]) + ((B*d - A*e)*(a + b*x)*Log[d + e*x])/(e*(b*d - a*e)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{Ab-aB}{b(bd-ae)(a+bx)}+\frac{Bd-Ae}{b(bd-ae)(d+ex)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)(a+bx)\log(a+bx)}{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}+\frac{(Bd-Ae)(a+bx)\log(d+ex)}{e(bd-ae)\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 66, normalized size = 0.62

$$\frac{(a+bx)(e(Ab-aB)\log(a+bx)+b(Bd-Ae)\log(d+ex))}{be\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((A*b - a*B)*e*Log[a + b*x] + b*(B*d - A*e)*Log[d + e*x]))/(b*e*
(b*d - a*e)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.81, size = 352, normalized size = 3.29

$$-\frac{\left(\sqrt{b^2}+b\right)\left(A\sqrt{b^2}-aB\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2b\sqrt{b^2}\,(bd-ae)}+\frac{\left(b-\sqrt{b^2}\right)\left(aB+A\sqrt{b^2}\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2b\sqrt{b^2}\,(bd-ae)}+\frac{\left(A\sqrt{b^2}\,e+Abe-\sqrt{b^2}\,Bd-bBd\right)\log\left(-e\sqrt{a^2+2abx+b^2x^2}-ae+\sqrt{b^2}\,ex+2bd\right)}{2be(bd-ae)}+\frac{\left(A\sqrt{b^2}\,e-Abe-\sqrt{b^2}\,Bd+bBd\right)\log\left(e\sqrt{a^2+2abx+b^2x^2}-ae-\sqrt{b^2}\,ex+2bd\right)}{2be(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/2*((b + Sqrt[b^2])*(A*Sqrt[b^2] - a*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]*(b*d - a*e)) + ((b - Sqrt[b^2])*(A*Sqrt[
b^2] + a*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b*Sqrt
[b^2]*(b*d - a*e)) + ((-(b*B*d) - Sqrt[b^2]*B*d + A*b*e + A*Sqrt[b^2]*e)*Lo
g[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b*e*(b
*d - a*e)) + ((b*B*d - Sqrt[b^2]*B*d - A*b*e + A*Sqrt[b^2]*e)*Log[2*b*d - a
*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b*e*(b*d - a*e))
```

fricas [A] time = 0.42, size = 53, normalized size = 0.50

$$-\frac{(Ba-Ab)e\log(bx+a)-(Bbd-Abe)\log(ex+d)}{b^2de-abe^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -((B*a - A*b)*e*log(b*x + a) - (B*b*d - A*b*e)*log(e*x + d))/(b^2*d*e - a*b
*e^2)
```

giac [A] time = 0.17, size = 87, normalized size = 0.81

$$-\frac{\left(B a\operatorname{sgn}(bx+a)-A b\operatorname{sgn}(bx+a)\right)\log(|bx+a|)}{b^2d-abe}+\frac{\left(B d\operatorname{sgn}(bx+a)-A e\operatorname{sgn}(bx+a)\right)\log(|xe+d|)}{bde-ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(b*x + a))/(b^2*d - a*b*e) +
(B*d*sgn(b*x + a) - A*e*sgn(b*x + a))*log(abs(x*e + d))/(b*d*e - a*e^2)
```

maple [A] time = 0.06, size = 76, normalized size = 0.71

$$-\frac{(bx+a)\left(Abe\ln(bx+a)-Abe\ln(ex+d)-Bae\ln(bx+a)+Bbd\ln(ex+d)\right)}{\sqrt{(bx+a)^2}\;(ae-bd)\,be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -(b*x+a)*(A*ln(b*x+a)*b*e-A*ln(e*x+d)*b*e-B*ln(b*x+a)*a*e+B*ln(e*x+d)*b*d)/
((b*x+a)^2)^(1/2)/(a*e-b*d)/b/e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
```

```
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)       +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+Bx}{\sqrt{(a+bx)^2}\ (d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)), x)
```

sympy [B] time = 1.45, size = 226, normalized size = 2.11

$$-\frac{(-Ae+Bd)\log\left(x+\frac{-Aae-Abd+2Bad-\frac{a^2e(-Ae+Bd)}{ae-bd}+\frac{2abd(-Ae+Bd)}{ae-bd}-\frac{b^2d^2(-Ae+Bd)}{e(ae-bd)}}{-2Abe+Bae+Bbd}\right)}{e\,(ae-bd)}+\frac{(-Ab+Ba)\log\left(x+\frac{-Aae-Abd+2Bad+\frac{a^2e^2(-Ab+Ba)}{b(ae-bd)}-\frac{2ade(-Ab+Ba)}{ae-bd}+\frac{bd^2(-Ab+Ba)}{ae-bd}}{-2Abe+Bae+Bbd}\right)}{b\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)**2)**(1/2),x)
```

```
[Out] -(-A*e + B*d)*log(x + (-A*a*e - A*b*d + 2*B*a*d - a**2*e*(-A*e + B*d)/(a*e
- b*d) + 2*a*b*d*(-A*e + B*d)/(a*e - b*d) - b**2*d**2*(-A*e + B*d)/(e*(a*e
- b*d)))/(-2*A*b*e + B*a*e + B*b*d))/(e*(a*e - b*d)) + (-A*b + B*a)*log(x +
 (-A*a*e - A*b*d + 2*B*a*d + a**2*e**2*(-A*b + B*a)/(b*(a*e - b*d)) - 2*a*d
*e*(-A*b + B*a)/(a*e - b*d) + b*d**2*(-A*b + B*a)/(a*e - b*d))/(-2*A*b*e +
B*a*e + B*b*d))/(b*(a*e - b*d))
```

3.1544 $\int \frac{A+Bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=148

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{(d+ex)(bd-ae)^2}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(a+bx)(Ab-aB)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Rubi [A] time = 0.08, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {769, 646, 36, 31}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{(d+ex)(bd-ae)^2}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(a+bx)(Ab-aB)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/((b*d - a*e)^2*(d + e*x)) + ((A
*b - a*B)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - ((A*b - a*B)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{(Ab-aB)\int \frac{1}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx}{bd-ae}$$

$$= \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)(d+ex)}\,d}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{\left(b(Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \Big($$

$$= \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{(Ab-aB)(a+bx)\log(a+bx)}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-}{(bd-}$$

Mathematica [A] time = 0.12, size = 97, normalized size = 0.66

$$\frac{(a+bx)\left(\frac{Bd-Ae}{e(d+ex)(ae-bd)}+\frac{(Ab-aB)\log(a+bx)}{(bd-ae)^2}+\frac{(aB-Ab)\log(d+ex)}{(bd-ae)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((B*d - A*e)/(e*(-(b*d) + a*e)*(d + e*x)) + ((A*b - a*B)*Log[a +
 b*x])/(b*d - a*e)^2 + ((-(A*b) + a*B)*Log[d + e*x])/(b*d - a*e)^2))/Sqrt[(
a + b*x)^2]
```

IntegrateAlgebraic [B] time = 2.08, size = 449, normalized size = 3.03

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{2(d+ex)(bd-ae)^2}+\frac{\left(a\sqrt{b^2}B+abB-Ab^2-A\sqrt{b^2}b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}x\right)}{2b(bd-ae)^2}+\frac{\left(a\sqrt{b^2}B-abB+Ab^2-A\sqrt{b^2}b\right)\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}x\right)}{2b(bd-ae)^2}+\frac{\left(-a\sqrt{b^2}B-abB+Ab^2+A\sqrt{b^2}b\right)\log\left(-e\sqrt{a^2+2abx+b^2x^2}-ae+\sqrt{b^2}ex+2bd\right)}{2b(bd-ae)^2}+\frac{\left(-a\sqrt{b^2}B+abB-Ab^2+A\sqrt{b^2}b\right)\log\left(e\sqrt{a^2+2abx+b^2x^2}-ae-\sqrt{b^2}ex+2bd\right)}{2b(bd-ae)^2}+\frac{\sqrt{b^2}Bd-A\sqrt{b^2}e}{2be(d+ex)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (Sqrt[b^2]*B*d - A*Sqrt[b^2]*e)/(2*b*e*(b*d - a*e)*(d + e*x)) + ((B*d - A*e
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(b*d - a*e)^2*(d + e*x)) + ((-(A*b^2) -
 A*b*Sqrt[b^2] + a*b*B + a*Sqrt[b^2]*B)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]])/(2*b*(b*d - a*e)^2) + ((A*b^2 - A*b*Sqrt[b^2] - a*b*B +
 a*Sqrt[b^2]*B)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b*
(b*d - a*e)^2) + ((A*b^2 + A*b*Sqrt[b^2] - a*b*B - a*Sqrt[b^2]*B)*Log[2*b*d
 - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b*(b*d - a*e)
^2) + ((-(A*b^2) + A*b*Sqrt[b^2] + a*b*B - a*Sqrt[b^2]*B)*Log[2*b*d - a*e -
 Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*b*(b*d - a*e)^2)
```

fricas [A] time = 0.44, size = 148, normalized size = 1.00

$$-\frac{Bbd^2+Aae^2-(Ba+Ab)de+\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\log(bx+a)-\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\log(ex+d)}{b^2d^3e-2\,abd^2e^2+a^2de^3+\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -(B*b*d^2 + A*a*e^2 - (B*a + A*b)*d*e + ((B*a - A*b)*e^2*x + (B*a - A*b)*d*
e)*log(b*x + a) - ((B*a - A*b)*e^2*x + (B*a - A*b)*d*e)*log(e*x + d))/(b^2*
d^3*e - 2*a*b*d^2*e^2 + a^2*d*e^3 + (b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*x
)
```

giac [A] time = 0.17, size = 190, normalized size = 1.28

$$-\frac{\left(Babsgn\left(bx+a\right)-Ab^{2}sgn\left(bx+a\right)\right)\log\left(\left|bx+a\right|\right)}{b^{3}d^{2}-2\,ab^{2}de+a^{2}be^{2}}+\frac{\left(Baesgn\left(bx+a\right)-Abesgn\left(bx+a\right)\right)\log\left(\left|xe+d\right|\right)}{b^{2}d^{2}e-2\,abde^{2}+a^{2}e^{3}}-\frac{\left(Bbd^{2}sgn\left(bx+a\right)-Badesgn\left(bx+a\right)-Abdesgn\left(bx+a\right)+Aae^{2}sgn\left(bx+a\right)\right)e^{\left(-1\right)}}{\left(bd-ae\right)^{2}\left(xe+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*log(abs(b*x + a))/(b^3*d^2 - 2*a
*b^2*d*e + a^2*b*e^2) + (B*a*e*sgn(b*x + a) - A*b*e*sgn(b*x + a))*log(abs(x
*e + d))/(b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3) - (B*b*d^2*sgn(b*x + a) - B*a*
d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e^2*sgn(b*x + a))*e^(-1)/((b*
d - a*e)^2*(x*e + d))
```

maple [A] time = 0.06, size = 161, normalized size = 1.09

$$\frac{\left(bx+a\right)\left(Ab\,e^{2}x\ln\left(bx+a\right)-Ab\,e^{2}x\ln\left(ex+d\right)-Ba\,e^{2}x\ln\left(bx+a\right)+Ba\,e^{2}x\ln\left(ex+d\right)+Abde\ln\left(bx+a\right)-Abde\ln\left(ex+d\right)-Bade\ln\left(bx+a\right)+Bade\ln\left(ex+d\right)-Aa\,e^{2}+Abde+Bade-Bb\,d^{2}\right)}{\sqrt{\left(bx+a\right)^{2}}\,\left(ae-bd\right)^{2}\left(ex+d\right)e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*x*b*e^2-A*ln(e*x+d)*x*b*e^2-B*ln(b*x+a)*x*a*e^2+B*ln(e
*x+d)*x*a*e^2+A*ln(b*x+a)*b*d*e-A*ln(e*x+d)*b*d*e-B*ln(b*x+a)*a*d*e+B*ln(e*
x+d)*a*d*e-A*a*e^2+A*b*d*e+B*a*d*e-B*b*d^2)/((b*x+a)^2)^(1/2)/(a*e-b*d)^2/e
/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^2), x)
```

sympy [B] time = 1.22, size = 355, normalized size = 2.40

$$\frac{\left(-Ab+Ba\right)\log\left(x+\frac{-Aabe-Ab^{2}d+Ba^{2}e+Babd-\frac{a^{3}e^{3}(-Ab+Ba)}{(ae-bd)^{2}}+\frac{3a^{2}bde^{2}(-Ab+Ba)}{(ae-bd)^{2}}-\frac{3ab^{2}d^{2}e(-Ab+Ba)}{(ae-bd)^{2}}+\frac{b^{3}d^{3}(-Ab+Ba)}{(ae-bd)^{2}}}{-2Ab^{2}e+2Babe}\right)}{\left(ae-bd\right)^{2}}-\frac{\left(-Ab+Ba\right)\log\left(x+\frac{-Aabe-Ab^{2}d+Ba^{2}e+Babd+\frac{a^{3}e^{3}(-Ab+Ba)}{(ae-bd)^{2}}-\frac{3a^{2}bde^{2}(-Ab+Ba)}{(ae-bd)^{2}}+\frac{3ab^{2}d^{2}e(-Ab+Ba)}{(ae-bd)^{2}}-\frac{b^{3}d^{3}(-Ab+Ba)}{(ae-bd)^{2}}}{-2Ab^{2}e+2Babe}\right)}{\left(ae-bd\right)^{2}}+\frac{-Ae+Bd}{ade^{2}-bd^{2}e+x\left(ae^{3}-bde^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-A*b + B*a)*log(x + (-A*a*b*e - A*b**2*d + B*a**2*e + B*a*b*d - a**3*e**3*
(-A*b + B*a)/(a*e - b*d)**2 + 3*a**2*b*d*e**2*(-A*b + B*a)/(a*e - b*d)**2 -
```

```
 3*a*b**2*d**2*e*(-A*b + B*a)/(a*e - b*d)**2 + b**3*d**3*(-A*b + B*a)/(a*e
- b*d)**2)/(-2*A*b**2*e + 2*B*a*b*e))/(a*e - b*d)**2 - (-A*b + B*a)*log(x +
 (-A*a*b*e - A*b**2*d + B*a**2*e + B*a*b*d + a**3*e**3*(-A*b + B*a)/(a*e -
b*d)**2 - 3*a**2*b*d*e**2*(-A*b + B*a)/(a*e - b*d)**2 + 3*a*b**2*d**2*e*(-A
*b + B*a)/(a*e - b*d)**2 - b**3*d**3*(-A*b + B*a)/(a*e - b*d)**2)/(-2*A*b**
2*e + 2*B*a*b*e))/(a*e - b*d)**2 + (-A*e + B*d)/(a*d*e**2 - b*d**2*e + x*(a
*e**3 - b*d*e**2))
```

3.1545 $\int \frac{A+Bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=212

$$\frac{(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}+\frac{b(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-$$

Rubi [A] time = 0.15, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}+\frac{b(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{b(a+bx)(Ab-aB)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((B*d - A*e)*(a + b*x))/(2*e*(b*d - a*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + ((A*b - a*B)*(a + b*x))/((b*d - a*e)^2*(d + e*x)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) + (b*(A*b - a*B)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^3*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x)*Log[d + e*x])/((b*d
 - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{b(Ab-aB)}{(bd-ae)^3(a+bx)}+\frac{Bd-Ae}{b(bd-ae)(d+ex)^3}+\frac{(-Ab+aB)e}{b(bd-ae)^2(d+ex)^2}+\frac{(-Ab+aB)e}{(bd-ae)^3(d+ex)}\right)}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Bd-Ae)(a+bx)}{2e(bd-ae)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{(bd-ae)^2(d+ex)\sqrt{a^2+2abx+}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 131, normalized size = 0.62

$$\frac{(a+bx)\left(\frac{2(Ab-aB)}{(d+ex)(bd-ae)^2}+\frac{Bd-Ae}{e(d+ex)^2(ae-bd)}+\frac{2b(Ab-aB)\log(a+bx)}{(bd-ae)^3}-\frac{2b(Ab-aB)\log(d+ex)}{(bd-ae)^3}\right)}{2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((B*d - A*e)/(e*(-(b*d) + a*e)*(d + e*x)^2) + (2*(A*b - a*B))/((
b*d - a*e)^2*(d + e*x)) + (2*b*(A*b - a*B)*Log[a + b*x])/(b*d - a*e)^3 - (2
*b*(A*b - a*B)*Log[d + e*x])/(b*d - a*e)^3))/(2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 85.09, size = 8976, normalized size = 42.34

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.44, size = 343, normalized size = 1.62

$$-\frac{Bb^2d^3 - 3\,Ab^2d^2e - Aa^2e^3 - \left(Ba^2 - 4\,Aab\right)de^2 + 2\left(\left(Bab - Ab^2\right)de^2 - \left(Ba^2 - Aab\right)e^3\right)x + 2\left(\left(Bab - Ab^2\right)e^3x^2 + 2\left(Bab - Ab^2\right)de^2x + \left(Bab - Ab^2\right)d^2e\right)\log\left(bx + a\right) - 2\left(\left(Bab - Ab^2\right)e^3x^2 + 2\left(Bab - Ab^2\right)de^2x + \left(Bab - Ab^2\right)d^2e\right)\log\left(ex + d\right)}{2\left(b^3d^5e - 3\,ab^2d^4e^2 + 3\,a^2bd^3e^3 - a^3d^2e^4 + \left(b^3d^3e^3 - 3\,ab^2d^2e^4 + 3\,a^2bde^5 - a^3e^6\right)x^2 + 2\left(b^3d^4e^2 - 3\,ab^2d^3e^3 + 3\,a^2bd^2e^4 - a^3de^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(B*b^2*d^3 - 3*A*b^2*d^2*e - A*a^2*e^3 - (B*a^2 - 4*A*a*b)*d*e^2 + 2*(
(B*a*b - A*b^2)*d*e^2 - (B*a^2 - A*a*b)*e^3)*x + 2*((B*a*b - A*b^2)*e^3*x^2
 + 2*(B*a*b - A*b^2)*d*e^2*x + (B*a*b - A*b^2)*d^2*e)*log(b*x + a) - 2*((B*
a*b - A*b^2)*e^3*x^2 + 2*(B*a*b - A*b^2)*d*e^2*x + (B*a*b - A*b^2)*d^2*e)*l
og(e*x + d))/(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3*d^2*e^4 +
 (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2*b*d*e^5 - a^3*e^6)*x^2 + 2*(b^3*d^4
*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^4 - a^3*d*e^5)*x)
```

giac [A] time = 0.18, size = 306, normalized size = 1.44

$$-\frac{\left(Bab^2\mathrm{sgn}\left(bx + a\right) - Ab^3\mathrm{sgn}\left(bx + a\right)\right)\log\left(|bx + a|\right)}{b^4d^3 - 3\,ab^3d^2e + 3\,a^2b^2de^2 - a^3be^3} + \frac{\left(Babe\mathrm{sgn}\left(bx + a\right) - Ab^2e\mathrm{sgn}\left(bx + a\right)\right)\log\left(|xe + d|\right)}{b^3d^3e - 3\,ab^2d^2e^2 + 3\,a^2bde^3 - a^3e^4} - \frac{\left(Bb^2d^3\mathrm{sgn}\left(bx + a\right) - 3\,Ab^2d^2e\mathrm{sgn}\left(bx + a\right) - Ba^2de^2\mathrm{sgn}\left(bx + a\right) + 4\,Aabde^2\mathrm{sgn}\left(bx + a\right) - Aa^2e^3\mathrm{sgn}\left(bx + a\right) + 2\left(Babde^2\mathrm{sgn}\left(bx + a\right) - Ab^2de^2\mathrm{sgn}\left(bx + a\right) - Ba^2e^3\mathrm{sgn}\left(bx + a\right) + Aabe^3\mathrm{sgn}\left(bx + a\right)\right)x\right)e^{\left(-1\right)}}{2\left(bd - ae\right)^3\left(xe + d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*log(abs(b*x + a))/(b^4*d^3 - 3
*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3) + (B*a*b*e*sgn(b*x + a) - A*b^2
*e*sgn(b*x + a))*log(abs(x*e + d))/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d
*e^3 - a^3*e^4) - 1/2*(B*b^2*d^3*sgn(b*x + a) - 3*A*b^2*d^2*e*sgn(b*x + a)
- B*a^2*d*e^2*sgn(b*x + a) + 4*A*a*b*d*e^2*sgn(b*x + a) - A*a^2*e^3*sgn(b*x
 + a) + 2*(B*a*b*d*e^2*sgn(b*x + a) - A*b^2*d*e^2*sgn(b*x + a) - B*a^2*e^3*
sgn(b*x + a) + A*a*b*e^3*sgn(b*x + a))*x)*e^(-1)/((b*d - a*e)^3*(x*e + d)^2
)
```

maple [A] time = 0.07, size = 321, normalized size = 1.51

$$-\frac{\left(bx + a\right)\left(2A\,b^2e^3x^2\ln\left(bx + a\right) - 2A\,b^2e^3x^2\ln\left(ex + d\right) - 2Bab\,e^3x^2\ln\left(bx + a\right) + 2Bab\,e^3x^2\ln\left(ex + d\right) + 4A\,b^2d\,e^2x\ln\left(bx + a\right) - 4A\,b^2d\,e^2x\ln\left(ex + d\right) - 4Babd\,e^2x\ln\left(bx + a\right) + 4Babd\,e^2x\ln\left(ex + d\right) - 2Aab\,e^3x + 2A\,b^2d^2e\ln\left(bx + a\right) - 2A\,b^2d^2e\ln\left(ex + d\right) + 2A\,b^2d\,e^2x + 2B\,a^2e^3x - 2Bab\,d^2e\ln\left(bx + a\right) + 2Bab\,d^2e\ln\left(ex + d\right) - 2Babd\,e^2x + A\,a^2e^3 - 4Aabd\,e^2 + 3A\,b^2d^2e + B\,a^2d\,e^2 - B\,b^2d^3\right)}{2\sqrt{\left(bx + a\right)^2}\,\left(ae - bd\right)^3\left(ex + d\right)^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*A*ln(b*x+a)*x^2*b^2*e^3-2*A*ln(e*x+d)*x^2*b^2*e^3-2*B*ln(b*
x+a)*x^2*a*b*e^3+2*B*ln(e*x+d)*x^2*a*b*e^3+4*A*ln(b*x+a)*x*b^2*d*e^2-4*A*ln
(e*x+d)*x*b^2*d*e^2-4*B*ln(b*x+a)*x*a*b*d*e^2+4*B*ln(e*x+d)*x*a*b*d*e^2+2*A
*ln(b*x+a)*b^2*d^2*e-2*A*ln(e*x+d)*b^2*d^2*e-2*A*x*a*b*e^3+2*A*x*b^2*d*e^2-
```

```
2*B*ln(b*x+a)*a*b*d^2*e+2*B*ln(e*x+d)*a*b*d^2*e+2*B*x*a^2*e^3-2*B*x*a*b*d*e
^2+A*a^2*e^3-4*A*a*b*d*e^2+3*A*b^2*d^2*e+B*d*a^2*e^2-B*b^2*d^3)/((b*x+a)^2)
^(1/2)/(a*e-b*d)^3/e/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^3),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^3), x)
```

sympy [B] time = 1.99, size = 558, normalized size = 2.63

$$- \frac{b \left(- A b + B a\right) \log{\left(x + \frac{- A a b^{2} e - A b^{3} d + B a^{2} b e + B a b^{2} d - \frac{a^{4} b e^{4} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} + \frac{4 a^{3} b^{2} d e^{3} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} - \frac{6 a^{2} b^{3} d^{2} e^{2} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} + \frac{4 a b^{4} d^{3} e \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} - \frac{b^{5} d^{4} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}}}{- 2 A b^{3} e + 2 B a b^{2} e} \right)}}{\left(a e - b d\right)^{3}} + \frac{b \left(- A b + B a\right) \log{\left(x + \frac{- A a b^{2} e - A b^{3} d + B a^{2} b e + B a b^{2} d + \frac{a^{4} b e^{4} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} - \frac{4 a^{3} b^{2} d e^{3} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} + \frac{6 a^{2} b^{3} d^{2} e^{2} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} - \frac{4 a b^{4} d^{3} e \left(- A b + B a\right)}{\left(a e - b d\right)^{3}} + \frac{b^{5} d^{4} \left(- A b + B a\right)}{\left(a e - b d\right)^{3}}}{- 2 A b^{3} e + 2 B a b^{2} e} \right)}}{\left(a e - b d\right)^{3}} + \frac{- A a e^{2} + 3 A b d e - B a d e - B b d^{2} + x \left(2 A b e^{2} - 2 B a e^{2}\right)}{2 a^{2} d^{2} e^{3} - 4 a b d^{3} e^{2} + 2 b^{2} d^{4} e + x^{2} \left(2 a^{2} e^{5} - 4 a b d e^{4} + 2 b^{2} d^{2} e^{3}\right) + x \left(4 a^{2} d e^{4} - 8 a b d^{2} e^{3} + 4 b^{2} d^{3} e^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] -b*(-A*b + B*a)*log(x + (-A*a*b**2*e - A*b**3*d + B*a**2*b*e + B*a*b**2*d -
 a**4*b*e**4*(-A*b + B*a)/(a*e - b*d)**3 + 4*a**3*b**2*d*e**3*(-A*b + B*a)/
(a*e - b*d)**3 - 6*a**2*b**3*d**2*e**2*(-A*b + B*a)/(a*e - b*d)**3 + 4*a*b*
*4*d**3*e*(-A*b + B*a)/(a*e - b*d)**3 - b**5*d**4*(-A*b + B*a)/(a*e - b*d)*
*3)/(-2*A*b**3*e + 2*B*a*b**2*e))/(a*e - b*d)**3 + b*(-A*b + B*a)*log(x + (
-A*a*b**2*e - A*b**3*d + B*a**2*b*e + B*a*b**2*d + a**4*b*e**4*(-A*b + B*a)
/(a*e - b*d)**3 - 4*a**3*b**2*d*e**3*(-A*b + B*a)/(a*e - b*d)**3 + 6*a**2*b
**3*d**2*e**2*(-A*b + B*a)/(a*e - b*d)**3 - 4*a*b**4*d**3*e*(-A*b + B*a)/(a
*e - b*d)**3 + b**5*d**4*(-A*b + B*a)/(a*e - b*d)**3)/(-2*A*b**3*e + 2*B*a*
b**2*e))/(a*e - b*d)**3 + (-A*a*e**2 + 3*A*b*d*e - B*a*d*e - B*b*d**2 + x*(
2*A*b*e**2 - 2*B*a*e**2))/(2*a**2*d**2*e**3 - 4*a*b*d**3*e**2 + 2*b**2*d**4
*e + x**2*(2*a**2*e**5 - 4*a*b*d*e**4 + 2*b**2*d**2*e**3) + x*(4*a**2*d*e**
4 - 8*a*b*d**2*e**3 + 4*b**2*d**3*e**2))
```

3.1546 $\int \frac{A+Bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=271

$$\frac{b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}+\frac{(a+bx)(Ab-aB)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex}$$

Rubi [A] time = 0.18, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}+\frac{(a+bx)(Ab-aB)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)}+\frac{b^2(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{b^2(a+bx)(Ab-aB)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((B*d - A*e)*(a + b*x))/(3*e*(b*d - a*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + ((A*b - a*B)*(a + b*x))/(2*(b*d - a*e)^2*(d + e*x)^2*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) + (b*(A*b - a*B)*(a + b*x))/((b*d - a*e)^3*(d + e*x)*S
qrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^2*(A*b - a*B)*(a + b*x)*Log[a + b*x])/((
b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b^2*(A*b - a*B)*(a + b*x)*Lo
g[d + e*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{b^2(Ab-aB)}{(bd-ae)^4(a+bx)}+\frac{Bd-Ae}{b(bd-ae)(d+ex)^4}+\frac{(-Ab+aB)e}{b(bd-ae)^2(d+ex)^3}+\frac{(-Ab+aB)e}{(bd-ae)^3(d+ex}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx}{2(bd-ae)^2(d+ex)^2\sqrt{a^2+2}}\end{aligned}$$

Mathematica [A] time = 0.16, size = 168, normalized size = 0.62

$$\frac{(a+bx)\left(6b^2e(d+ex)^3(Ab-aB)\log(a+bx)-6b^2e(d+ex)^3(Ab-aB)\log(d+ex)+3e(d+ex)(Ab-aB)(bd-ae)^2+6be(d+ex)^2(Ab-aB)(bd-ae)-2(bd-ae)^3(Bd-Ae)\right)}{6e\sqrt{(a+bx)^2}\,(d+ex)^3(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*(-2*(b*d - a*e)^3*(B*d - A*e) + 3*(A*b - a*B)*e*(b*d - a*e)^2*(d
 + e*x) + 6*b*(A*b - a*B)*e*(b*d - a*e)*(d + e*x)^2 + 6*b^2*(A*b - a*B)*e*(
d + e*x)^3*Log[a + b*x] - 6*b^2*(A*b - a*B)*e*(d + e*x)^3*Log[d + e*x]))/(6
*e*(b*d - a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^3)
```

IntegrateAlgebraic [B] time = 119.53, size = 3774, normalized size = 13.93

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-32*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*b^6*B*d^6 + 11*A*b^6*d^5*e + a*b
^5*B*d^5*e - 40*a*A*b^5*d^4*e^2 + 10*a^2*b^4*B*d^4*e^2 + 56*a^2*A*b^4*d^3*e
^3 - 16*a^3*b^3*B*d^3*e^3 - 38*a^3*A*b^3*d^2*e^4 + 8*a^4*b^2*B*d^2*e^4 + 13
*a^4*A*b^2*d*e^5 - a^5*b*B*d*e^5 - 2*a^5*A*b*e^6 + 6*b^6*B*d^5*e*x - 18*A*b
^6*d^4*e^2*x - 12*a*b^5*B*d^4*e^2*x + 39*a*A*b^5*d^3*e^3*x + 21*a^2*b^4*B*d
^3*e^3*x - 27*a^2*A*b^4*d^2*e^4*x - 33*a^3*b^3*B*d^2*e^4*x + 9*a^3*A*b^3*d*
e^5*x + 21*a^4*b^2*B*d*e^5*x - 3*a^4*A*b^2*e^6*x - 3*a^5*b*B*e^6*x - 6*b^6*
B*d^4*e^2*x^2 - 6*A*b^6*d^3*e^3*x^2 + 30*a*b^5*B*d^3*e^3*x^2 + 27*a*A*b^5*d
^2*e^4*x^2 - 63*a^2*b^4*B*d^2*e^4*x^2 - 18*a^2*A*b^4*d*e^5*x^2 + 42*a^3*b^3
*B*d*e^5*x^2 - 3*a^3*A*b^3*e^6*x^2 - 3*a^4*b^2*B*e^6*x^2 + 2*b^6*B*d^3*e^3*
x^3 + 16*A*b^6*d^2*e^4*x^3 - 22*a*b^5*B*d^2*e^4*x^3 - 11*a*A*b^5*d*e^5*x^3
+ 17*a^2*b^4*B*d*e^5*x^3 - 11*a^2*A*b^4*e^6*x^3 + 9*a^3*b^3*B*e^6*x^3 + 3*A
*b^6*d*e^5*x^4 - 3*a*b^5*B*d*e^5*x^4 - 15*a*A*b^5*e^6*x^4 + 15*a^2*b^4*B*e^
6*x^4 - 6*A*b^6*e^6*x^5 + 6*a*b^5*B*e^6*x^5) - 32*b^3*Sqrt[b^2]*(2*a*b^5*B*
d^6 - 11*a*A*b^5*d^5*e - a^2*b^4*B*d^5*e + 40*a^2*A*b^4*d^4*e^2 - 10*a^3*b^
3*B*d^4*e^2 - 56*a^3*A*b^3*d^3*e^3 + 16*a^4*b^2*B*d^3*e^3 + 38*a^4*A*b^2*d^
2*e^4 - 8*a^5*b*B*d^2*e^4 - 13*a^5*A*b*d*e^5 + a^6*B*d*e^5 + 2*a^6*A*e^6 +
2*b^6*B*d^6*x - 11*A*b^6*d^5*e*x - 7*a*b^5*B*d^5*e*x + 58*a*A*b^5*d^4*e^2*x
 + 2*a^2*b^4*B*d^4*e^2*x - 95*a^2*A*b^4*d^3*e^3*x - 5*a^3*b^3*B*d^3*e^3*x +
 65*a^3*A*b^3*d^2*e^4*x + 25*a^4*b^2*B*d^2*e^4*x - 22*a^4*A*b^2*d*e^5*x - 2
0*a^5*b*B*d*e^5*x + 5*a^5*A*b*e^6*x + 3*a^6*B*e^6*x - 6*b^6*B*d^5*e*x^2 + 1
8*A*b^6*d^4*e^2*x^2 + 18*a*b^5*B*d^4*e^2*x^2 - 33*a*A*b^5*d^3*e^3*x^2 - 51*
a^2*b^4*B*d^3*e^3*x^2 + 96*a^3*b^3*B*d^2*e^4*x^2 + 9*a^3*A*b^3*d*e^5*x^2 -
63*a^4*b^2*B*d*e^5*x^2 + 6*a^4*A*b^2*e^6*x^2 + 6*a^5*b*B*e^6*x^2 + 6*b^6*B*
d^4*e^2*x^3 + 6*A*b^6*d^3*e^3*x^3 - 32*a*b^5*B*d^3*e^3*x^3 - 43*a*A*b^5*d^2
*e^4*x^3 + 85*a^2*b^4*B*d^2*e^4*x^3 + 29*a^2*A*b^4*d*e^5*x^3 - 59*a^3*b^3*B
*d*e^5*x^3 + 14*a^3*A*b^3*e^6*x^3 - 6*a^4*b^2*B*e^6*x^3 - 2*b^6*B*d^3*e^3*x
^4 - 16*A*b^6*d^2*e^4*x^4 + 22*a*b^5*B*d^2*e^4*x^4 + 8*a*A*b^5*d*e^5*x^4 -
14*a^2*b^4*B*d*e^5*x^4 + 26*a^2*A*b^4*e^6*x^4 - 24*a^3*b^3*B*e^6*x^4 - 3*A*
b^6*d*e^5*x^5 + 3*a*b^5*B*d*e^5*x^5 + 21*a*A*b^5*e^6*x^5 - 21*a^2*b^4*B*e^6
*x^5 + 6*A*b^6*e^6*x^6 - 6*a*b^5*B*e^6*x^6))/(3*Sqrt[b^2]*e*(-(b*d) + a*e)^
3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-64*b^6*d^6 + 192*a*b^5*d^5*e - 192*a^2*b^
4*d^4*e^2 + 64*a^3*b^3*d^3*e^3 + 192*a*b^5*d^4*e^2*x - 384*a^2*b^4*d^3*e^3*
x + 192*a^3*b^3*d^2*e^4*x + 192*b^6*d^4*e^2*x^2 - 384*a*b^5*d^3*e^3*x^2 + 1
92*a^3*b^3*d*e^5*x^2 - 384*a*b^5*d^2*e^4*x^3 + 384*a^2*b^4*d*e^5*x^3 + 64*a
^3*b^3*e^6*x^3 - 192*b^6*d^2*e^4*x^4 + 192*a*b^5*d*e^5*x^4 + 192*a^2*b^4*e^
6*x^4 + 192*a*b^5*e^6*x^5 + 64*b^6*e^6*x^6) + 3*e*(-(b*d) + a*e)^3*(64*a*b^
7*d^6 - 192*a^2*b^6*d^5*e + 192*a^3*b^5*d^4*e^2 - 64*a^4*b^4*d^3*e^3 + 64*b
^8*d^6*x - 192*a*b^7*d^5*e*x + 320*a^3*b^5*d^3*e^3*x - 192*a^4*b^4*d^2*e^4*
x - 384*a*b^7*d^4*e^2*x^2 + 768*a^2*b^6*d^3*e^3*x^2 - 192*a^3*b^5*d^2*e^4*x
^2 - 192*a^4*b^4*d*e^5*x^2 - 192*b^8*d^4*e^2*x^3 + 384*a*b^7*d^3*e^3*x^3 +
384*a^2*b^6*d^2*e^4*x^3 - 576*a^3*b^5*d*e^5*x^3 - 64*a^4*b^4*e^6*x^3 + 576*
a*b^7*d^2*e^4*x^4 - 576*a^2*b^6*d*e^5*x^4 - 256*a^3*b^5*e^6*x^4 + 192*b^8*d
^2*e^4*x^5 - 192*a*b^7*d*e^5*x^5 - 384*a^2*b^6*e^6*x^5 - 256*a*b^7*e^6*x^6
```

```
- 64*b^8*e^6*x^7)) - (2*a^2*B*e*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/a])/(d^2*(b*d - a*e)^3) + (3*a^2*A*e^2*ArcTanh[(-(Sqrt[b^2]*x
) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(d^3*(b*d - a*e)^3) - (a*B*ArcTanh[(
-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(d^2*(b*d - a*e)^2) + (
3*a*A*e*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(d^3*(
b*d - a*e)^2) + (A*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/a])/(d^3*(b*d - a*e)) + (a^3*B*e^2*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*
a*b*x + b^2*x^2]/a])/(d^2*(b*d - a*e)^4) - (a^3*A*e^3*ArcTanh[(Sqrt[b^2]*x)
/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/(d^3*(b*d - a*e)^4) + (2*a^2*B*e*Arc
Tanh[(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(
d^2*(b*d - a*e)^3) - (3*a^2*A*e^2*ArcTanh[(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(d^3*(b*d - a*e)^3) + (a*B*ArcTanh[(-(S
qrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(d^2*(b*d
- a*e)^2) - (3*a*A*e*ArcTanh[(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*b*d - a*e)])/(d^3*(b*d - a*e)^2) - (A*ArcTanh[(-(Sqrt[b^2]*e*x) +
 e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(d^3*(b*d - a*e)) - (a^3*
B*e^2*ArcTanh[(Sqrt[b^2]*e*x)/(2*b*d - a*e) - (e*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(2*b*d - a*e)])/(d^2*(b*d - a*e)^4) + (a^3*A*e^3*ArcTanh[(Sqrt[b^2]*e*
x)/(2*b*d - a*e) - (e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(d^3*(
b*d - a*e)^4) - (A*(b^2)^(3/2)*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]])/(2*(b*d - a*e)^4) + (a^2*Sqrt[b^2]*B*e*Log[-a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/(2*d*(b*d - a*e)^4) + (a*Sqrt[b^2]*B*Log[-a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*d*(b*d - a*e)^3) - (A*(b^
2)^(3/2)*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(b*d - a*
e)^4) + (a^2*Sqrt[b^2]*B*e*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2]])/(2*d*(b*d - a*e)^4) + (a*Sqrt[b^2]*B*Log[a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/(2*d*(b*d - a*e)^3) + (A*(b^2)^(3/2)*Log[2*b*d - a*e
+ Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(b*d - a*e)^4) - (a^
2*Sqrt[b^2]*B*e*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]])/(2*d*(b*d - a*e)^4) - (a*Sqrt[b^2]*B*Log[2*b*d - a*e + Sqrt[b^2]*e
*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*d*(b*d - a*e)^3) + (A*(b^2)^(3/2)
*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*(b*
d - a*e)^4) - (a^2*Sqrt[b^2]*B*e*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a
^2 + 2*a*b*x + b^2*x^2]])/(2*d*(b*d - a*e)^4) - (a*Sqrt[b^2]*B*Log[2*b*d -
a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*d*(b*d - a*e)^3)
```

fricas [B] time = 0.46, size = 608, normalized size = 2.24

$$-\frac{2 \, B b^{3} d^{4} + 2 \, A a^{3} e^{4} + {\left(3 \, B a b^{2} - 11 \, A b^{3}\right)} d^{3} e - 6 \, {\left(B a^{2} b - 3 \, A a b^{2}\right)} d^{2} e^{2} + {\left(B a^{3} - 9 \, A a^{2} b\right)} d e^{3} + 6 \, {\left({\left(B a b^{2} - A b^{3}\right)} d e^{3} - {\left(B a^{2} b - A a b^{2}\right)} e^{4}\right)} x^{2} + 3 \, {\left(5 \, {\left(B a b^{2} - A b^{3}\right)} d^{2} e^{2} - 6 \, {\left(B a^{2} b - A a b^{2}\right)} d e^{3} + {\left(B a^{3} - A a^{2} b\right)} e^{4}\right)} x + 6 \, {\left({\left(B a b^{2} - A b^{3}\right)} e^{4} x^{3} + 3 \, {\left(B a b^{2} - A b^{3}\right)} d e^{3} x^{2} + 3 \, {\left(B a b^{2} - A b^{3}\right)} d^{2} e^{2} x + {\left(B a b^{2} - A b^{3}\right)} d^{3} e\right)} \log\left(b x + a\right) - 6 \, {\left({\left(B a b^{2} - A b^{3}\right)} e^{4} x^{3} + 3 \, {\left(B a b^{2} - A b^{3}\right)} d e^{3} x^{2} + 3 \, {\left(B a b^{2} - A b^{3}\right)} d^{2} e^{2} x + {\left(B a b^{2} - A b^{3}\right)} d^{3} e\right)} \log\left(e x + d\right)}{6 \, {\left(b^{4} d^{7} e - 4 \, a b^{3} d^{6} e^{2} + 6 \, a^{2} b^{2} d^{5} e^{3} - 4 \, a^{3} b d^{4} e^{4} + a^{4} d^{3} e^{5} + {\left(b^{4} d^{4} e^{4} - 4 \, a b^{3} d^{3} e^{5} + 6 \, a^{2} b^{2} d^{2} e^{6} - 4 \, a^{3} b d e^{7} + a^{4} e^{8}\right)} x^{3} + 3 \, {\left(b^{4} d^{5} e^{3} - 4 \, a b^{3} d^{4} e^{4} + 6 \, a^{2} b^{2} d^{3} e^{5} - 4 \, a^{3} b d^{2} e^{6} + a^{4} d e^{7}\right)} x^{2} + 3 \, {\left(b^{4} d^{6} e^{2} - 4 \, a b^{3} d^{5} e^{3} + 6 \, a^{2} b^{2} d^{4} e^{4} - 4 \, a^{3} b d^{3} e^{5} + a^{4} d^{2} e^{6}\right)} x\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*B*b^3*d^4 + 2*A*a^3*e^4 + (3*B*a*b^2 - 11*A*b^3)*d^3*e - 6*(B*a^2*b
 - 3*A*a*b^2)*d^2*e^2 + (B*a^3 - 9*A*a^2*b)*d*e^3 + 6*((B*a*b^2 - A*b^3)*d*
e^3 - (B*a^2*b - A*a*b^2)*e^4)*x^2 + 3*(5*(B*a*b^2 - A*b^3)*d^2*e^2 - 6*(B*
a^2*b - A*a*b^2)*d*e^3 + (B*a^3 - A*a^2*b)*e^4)*x + 6*((B*a*b^2 - A*b^3)*e^
4*x^3 + 3*(B*a*b^2 - A*b^3)*d*e^3*x^2 + 3*(B*a*b^2 - A*b^3)*d^2*e^2*x + (B*
a*b^2 - A*b^3)*d^3*e)*log(b*x + a) - 6*((B*a*b^2 - A*b^3)*e^4*x^3 + 3*(B*a*
b^2 - A*b^3)*d*e^3*x^2 + 3*(B*a*b^2 - A*b^3)*d^2*e^2*x + (B*a*b^2 - A*b^3)*
d^3*e)*log(e*x + d))/(b^4*d^7*e - 4*a*b^3*d^6*e^2 + 6*a^2*b^2*d^5*e^3 - 4*a
^3*b*d^4*e^4 + a^4*d^3*e^5 + (b^4*d^4*e^4 - 4*a*b^3*d^3*e^5 + 6*a^2*b^2*d^2
*e^6 - 4*a^3*b*d*e^7 + a^4*e^8)*x^3 + 3*(b^4*d^5*e^3 - 4*a*b^3*d^4*e^4 + 6*
a^2*b^2*d^3*e^5 - 4*a^3*b*d^2*e^6 + a^4*d*e^7)*x^2 + 3*(b^4*d^6*e^2 - 4*a*b
^3*d^5*e^3 + 6*a^2*b^2*d^4*e^4 - 4*a^3*b*d^3*e^5 + a^4*d^2*e^6)*x)
```

giac [B] time = 0.23, size = 494, normalized size = 1.82

$$-\frac{{\left(B a b^{3} \mathrm{sgn}\left(b x + a\right) - A b^{4} \mathrm{sgn}\left(b x + a\right)\right)} \log\left({\left| b x + a \right|}\right)}{b^{5} d^{4} - 4 \, a b^{4} d^{3} e + 6 \, a^{2} b^{3} d^{2} e^{2} - 4 \, a^{3} b^{2} d e^{3} + a^{4} b e^{4}} + \frac{{\left(B a b^{2} e \mathrm{sgn}\left(b x + a\right) - A b^{3} e \mathrm{sgn}\left(b x + a\right)\right)} \log\left({\left| x e + d \right|}\right)}{b^{4} d^{4} e - 4 \, a b^{3} d^{3} e^{2} + 6 \, a^{2} b^{2} d^{2} e^{3} - 4 \, a^{3} b d e^{4} + a^{4} e^{5}} - \frac{{\left(2 \, B b^{3} d^{4} \mathrm{sgn}\left(b x + a\right) + 3 \, B a b^{2} d^{3} e \mathrm{sgn}\left(b x + a\right) - 11 \, A b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) - 6 \, B a^{2} b d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 18 \, A a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + B a^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) - 9 \, A a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + 2 \, A a^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 6 \, {\left(B a b^{2} d e^{3} \mathrm{sgn}\left(b x + a\right) - A b^{3} d e^{3} \mathrm{sgn}\left(b x + a\right) - B a^{2} b e^{4} \mathrm{sgn}\left(b x + a\right) + A a b^{2} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} x^{2} + 3 \, {\left(5 \, B a b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) - 5 \, A b^{3} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) - 6 \, B a^{2} b d e^{3} \mathrm{sgn}\left(b x + a\right) + 6 \, A a b^{2} d e^{3} \mathrm{sgn}\left(b x + a\right) + B a^{3} e^{4} \mathrm{sgn}\left(b x + a\right) - A a^{2} b e^{4} \mathrm{sgn}\left(b x + a\right)\right)} x\right)} e^{\left(-1\right)}}{6 \, {\left(b d - a e\right)}^{4} {\left(x e + d\right)}^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b^3*sgn(b*x + a) - A*b^4*sgn(b*x + a))*log(abs(b*x + a))/(b^5*d^4 - 4
*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4) + (B*a*b^2*
e*sgn(b*x + a) - A*b^3*e*sgn(b*x + a))*log(abs(x*e + d))/(b^4*d^4*e - 4*a*b
^3*d^3*e^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) - 1/6*(2*B*b^3*d^
4*sgn(b*x + a) + 3*B*a*b^2*d^3*e*sgn(b*x + a) - 11*A*b^3*d^3*e*sgn(b*x + a)
 - 6*B*a^2*b*d^2*e^2*sgn(b*x + a) + 18*A*a*b^2*d^2*e^2*sgn(b*x + a) + B*a^3
*d*e^3*sgn(b*x + a) - 9*A*a^2*b*d*e^3*sgn(b*x + a) + 2*A*a^3*e^4*sgn(b*x +
a) + 6*(B*a*b^2*d*e^3*sgn(b*x + a) - A*b^3*d*e^3*sgn(b*x + a) - B*a^2*b*e^4
*sgn(b*x + a) + A*a*b^2*e^4*sgn(b*x + a))*x^2 + 3*(5*B*a*b^2*d^2*e^2*sgn(b*
x + a) - 5*A*b^3*d^2*e^2*sgn(b*x + a) - 6*B*a^2*b*d*e^3*sgn(b*x + a) + 6*A*
a*b^2*d*e^3*sgn(b*x + a) + B*a^3*e^4*sgn(b*x + a) - A*a^2*b*e^4*sgn(b*x + a
))*x)*e^(-1)/((b*d - a*e)^4*(x*e + d)^3)
```

maple [B] time = 0.06, size = 545, normalized size = 2.01

$$\frac{(bx+a)\left(6Ab^3e^4x^3\ln(bx+a)-6Ab^3e^4x^3\ln(ex+d)-6Bab^2e^4x^3\ln(bx+a)+6Bab^2e^4x^3\ln(ex+d)+18Ab^3de^3x^2\ln(bx+a)-18Ab^3de^3x^2\ln(ex+d)-18Bab^2de^3x^2\ln(bx+a)+18Bab^2de^3x^2\ln(ex+d)-6Aab^2e^4x^2+18Ab^3d^2e^2x\ln(bx+a)-18Ab^3d^2e^2x\ln(ex+d)+6Ab^3de^3x^2+6Ba^2be^4x^2-18Bab^2d^2e^2x\ln(bx+a)+18Bab^2d^2e^2x\ln(ex+d)-6Bab^2de^3x^2+3Aa^2be^4x-18Aab^2de^3x+6Ab^3d^3e\ln(bx+a)-6Ab^3d^3e\ln(ex+d)+15Ab^3d^2e^2x-3Ba^3e^4x+18Ba^2bde^3x-6Bab^2d^3e\ln(bx+a)+6Bab^2d^3e\ln(ex+d)-15Bab^2d^2e^2x-2Aa^3e^4+9Aa^2bde^3-18Aab^2d^2e^2+11Ab^3d^3e-Ba^3de^3+6Ba^2bd^2e^2-3Bab^2d^3e-2Bb^3d^4\right)}{6\sqrt{(bx+a)^2}\,(ae-bd)^4(ex+d)^3 e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(18*B*a^2*b*d*e^3*x-15*B*a*b^2*d^2*e^2*x+6*B*a*b^2*d^3*e*ln(e*x
+d)-18*A*a*b^2*d*e^3*x+18*B*a*b^2*d*e^3*x^2*ln(e*x+d)+18*A*ln(b*x+a)*x*b^3*
d^2*e^2-6*B*ln(b*x+a)*a*b^2*d^3*e-6*B*a*b^2*d*e^3*x^2-18*B*ln(b*x+a)*x^2*a*
b^2*d*e^3-18*B*ln(b*x+a)*x*a*b^2*d^2*e^2+18*A*ln(b*x+a)*x^2*b^3*d*e^3-6*B*l
n(b*x+a)*x^3*a*b^2*e^4+11*A*b^3*d^3*e-2*A*a^3*e^4-2*B*b^3*d^4-6*A*a*b^2*e^4
*x^2+6*A*b^3*d*e^3*x^2+6*B*a^2*b*e^4*x^2-6*A*b^3*d^3*e*ln(e*x+d)-B*a^3*d*e^
3-3*B*a*b^2*d^3*e+18*B*a*b^2*d^2*e^2*x*ln(e*x+d)+6*B*a^2*b*d^2*e^2-18*A*a*b
^2*d^2*e^2+6*A*ln(b*x+a)*x^3*b^3*e^4+9*A*a^2*b*d*e^3-18*A*b^3*d^2*e^2*x*ln(
e*x+d)+3*A*a^2*b*e^4*x+15*A*b^3*d^2*e^2*x-18*A*b^3*d*e^3*x^2*ln(e*x+d)-3*B*
a^3*e^4*x+6*B*a*b^2*e^4*x^3*ln(e*x+d)-6*A*b^3*e^4*x^3*ln(e*x+d)+6*A*ln(b*x+
a)*b^3*d^3*e)/((b*x+a)^2)^(1/2)/(a*e-b*d)^4/e/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^4),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^4), x)
```

sympy [B] time = 2.86, size = 818, normalized size = 3.02

$$\frac{b^2(-Ab+Ba)\log\left(x+\frac{-Aab^3e-Ab^4d+Ba^2b^2e+Bab^3d-\frac{a^5b^2e^5(-Ab+Ba)}{(ae-bd)^4}+\frac{5a^4b^3de^4(-Ab+Ba)}{(ae-bd)^4}-\frac{10a^3b^4d^2e^3(-Ab+Ba)}{(ae-bd)^4}+\frac{10a^2b^5d^3e^2(-Ab+Ba)}{(ae-bd)^4}-\frac{5ab^6d^4e(-Ab+Ba)}{(ae-bd)^4}+\frac{b^7d^5(-Ab+Ba)}{(ae-bd)^4}}{-2Ab^4e+2Bab^3e}\right)}{(ae-bd)^4}-\frac{b^2(-Ab+Ba)\log\left(x+\frac{-Aab^3e-Ab^4d+Ba^2b^2e+Bab^3d+\frac{a^5b^2e^5(-Ab+Ba)}{(ae-bd)^4}-\frac{5a^4b^3de^4(-Ab+Ba)}{(ae-bd)^4}+\frac{10a^3b^4d^2e^3(-Ab+Ba)}{(ae-bd)^4}-\frac{10a^2b^5d^3e^2(-Ab+Ba)}{(ae-bd)^4}+\frac{5ab^6d^4e(-Ab+Ba)}{(ae-bd)^4}-\frac{b^7d^5(-Ab+Ba)}{(ae-bd)^4}}{-2Ab^4e+2Bab^3e}\right)}{(ae-bd)^4}+\frac{-2Aa^2e^3+7Aabde^2-11Ab^2d^2e-Ba^2de^2+5Babd^2e+2Bb^2d^3+x^2\left(-6Ab^2e^3+6Babe^3\right)+x\left(3Aabe^3-15Ab^2de^2-3Ba^2e^3+15Babde^2\right)}{6a^3d^3e^4-18a^2bd^4e^3+18ab^2d^5e^2-6b^3d^6e+x^3\left(6a^3e^7-18a^2bde^6+18ab^2d^2e^5-6b^3d^3e^4\right)+x^2\left(18a^3de^6-54a^2bd^2e^5+54ab^2d^3e^4-18b^3d^4e^3\right)+x\left(18a^3d^2e^5-54a^2bd^3e^4+54ab^2d^4e^3-18b^3d^5e^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] b**2*(-A*b + B*a)*log(x + (-A*a*b**3*e - A*b**4*d + B*a**2*b**2*e + B*a*b**
3*d - a**5*b**2*e**5*(-A*b + B*a)/(a*e - b*d)**4 + 5*a**4*b**3*d*e**4*(-A*b
 + B*a)/(a*e - b*d)**4 - 10*a**3*b**4*d**2*e**3*(-A*b + B*a)/(a*e - b*d)**4
 + 10*a**2*b**5*d**3*e**2*(-A*b + B*a)/(a*e - b*d)**4 - 5*a*b**6*d**4*e*(-A
*b + B*a)/(a*e - b*d)**4 + b**7*d**5*(-A*b + B*a)/(a*e - b*d)**4)/(-2*A*b**
4*e + 2*B*a*b**3*e))/(a*e - b*d)**4 - b**2*(-A*b + B*a)*log(x + (-A*a*b**3*
e - A*b**4*d + B*a**2*b**2*e + B*a*b**3*d + a**5*b**2*e**5*(-A*b + B*a)/(a*
e - b*d)**4 - 5*a**4*b**3*d*e**4*(-A*b + B*a)/(a*e - b*d)**4 + 10*a**3*b**4
*d**2*e**3*(-A*b + B*a)/(a*e - b*d)**4 - 10*a**2*b**5*d**3*e**2*(-A*b + B*a
)/(a*e - b*d)**4 + 5*a*b**6*d**4*e*(-A*b + B*a)/(a*e - b*d)**4 - b**7*d**5*
(-A*b + B*a)/(a*e - b*d)**4)/(-2*A*b**4*e + 2*B*a*b**3*e))/(a*e - b*d)**4 +
 (-2*A*a**2*e**3 + 7*A*a*b*d*e**2 - 11*A*b**2*d**2*e - B*a**2*d*e**2 + 5*B*
a*b*d**2*e + 2*B*b**2*d**3 + x**2*(-6*A*b**2*e**3 + 6*B*a*b*e**3) + x*(3*A*
a*b*e**3 - 15*A*b**2*d*e**2 - 3*B*a**2*e**3 + 15*B*a*b*d*e**2))/(6*a**3*d**
3*e**4 - 18*a**2*b*d**4*e**3 + 18*a*b**2*d**5*e**2 - 6*b**3*d**6*e + x**3*(
6*a**3*e**7 - 18*a**2*b*d*e**6 + 18*a*b**2*d**2*e**5 - 6*b**3*d**3*e**4) +
x**2*(18*a**3*d*e**6 - 54*a**2*b*d**2*e**5 + 54*a*b**2*d**3*e**4 - 18*b**3*
d**4*e**3) + x*(18*a**3*d**2*e**5 - 54*a**2*b*d**3*e**4 + 54*a*b**2*d**4*e*
*3 - 18*b**3*d**5*e**2))
```

3.1547 $\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=329

$$-\frac{(bd-ae)^3(-5aBe+4Abe+bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^4}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)^2\log(a+bx)(-5aBe+3$$

Rubi [A] time = 0.37, antiderivative size = 329, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{e^3x^2(a+bx)(-3aBe+Abe+4bBd)}{2b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{e^2x(a+bx)\left(6a^2Be^2-3abe(Ae+4Bd)+2b^2d(2Ae+3Bd)\right)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae)^3(-5aBe+4Abe+bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^4}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)^2\log(a+bx)(-5aBe+3Abe+2bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^4x^3(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])) - ((A*b - a*B)*(b*d - a*e)^4)/(2*b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) + (e^2*(6*a^2*B*e^2 - 3*a*b*e*(4*B*d + A*e) + 2*b^2*d*(3*B*d + 2
*A*e))*x*(a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(4*b*B*d + A
*b*e - 3*a*B*e)*x^2*(a + b*x))/(2*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e
^4*x^3*(a + b*x))/(3*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*e*(b*d - a*e)^
2*(2*b*B*d + 3*A*b*e - 5*a*B*e)*(a + b*x)*Log[a + b*x])/(b^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^4}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{e^2\left(6a^2Be^2-3abe(4Bd+Ae)+2b^2d(3Bd+2Ae)\right)}{b^8}+\frac{e^3(4bBd+Abe-3aBe)x}{b^7}+\frac{Be^4x^2}{b^6}+\right.}{\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(bd-ae)^3(bBd+4Abe-5aBe)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^4}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e^2\left(6a^2Be^2-\right.}{}$$

Mathematica [A] time = 0.23, size = 373, normalized size = 1.13

$$\frac{-3Ab\left(-7a^4e^4-2a^3be^3(ex-10d)+a^2b^2e^2\left(-18d^2+16dex+11e^2x^2\right)+4ab^3e\left(d^3-6d^2ex-4de^2x^2+e^3x^3\right)+b^4\left(d^4+8d^3ex-8de^3x^3-e^4x^4\right)\right)+B\left(-27a^5e^4+6a^4be^3(14d+ex)+3a^3b^2e^2\left(-30d^2+8dex+21e^2x^2\right)+4a^2b^3e\left(9d^3-18d^2ex-33de^2x^2+5e^3x^3\right)+ab^4\left(-3d^4+48d^3ex+72d^2e^2x^2-48de^3x^3-5e^4x^4\right)+2b^5x\left(-3d^4+18d^2e^2x^2+6de^3x^3+e^4x^4\right)\right)+12e(a+bx)^2(bd-ae)^2\log(a+bx)(-5aBe+3Abe+2bBd)}{6b^6(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-3*A*b*(-7*a^4*e^4 - 2*a^3*b*e^3*(-10*d + e*x) + a^2*b^2*e^2*(-18*d^2 + 16
*d*e*x + 11*e^2*x^2) + 4*a*b^3*e*(d^3 - 6*d^2*e*x - 4*d*e^2*x^2 + e^3*x^3)
+ b^4*(d^4 + 8*d^3*e*x - 8*d*e^3*x^3 - e^4*x^4)) + B*(-27*a^5*e^4 + 6*a^4*b
*e^3*(14*d + e*x) + 3*a^3*b^2*e^2*(-30*d^2 + 8*d*e*x + 21*e^2*x^2) + 4*a^2*
b^3*e*(9*d^3 - 18*d^2*e*x - 33*d*e^2*x^2 + 5*e^3*x^3) + a*b^4*(-3*d^4 + 48*
d^3*e*x + 72*d^2*e^2*x^2 - 48*d*e^3*x^3 - 5*e^4*x^4) + 2*b^5*x*(-3*d^4 + 18
*d^2*e^2*x^2 + 6*d*e^3*x^3 + e^4*x^4)) + 12*e*(b*d - a*e)^2*(2*b*B*d + 3*A*
b*e - 5*a*B*e)*(a + b*x)^2*Log[a + b*x])/(6*b^6*(a + b*x)*Sqrt[(a + b*x)^2]
)
```

IntegrateAlgebraic [B] time = 16.69, size = 10330, normalized size = 31.40

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.43, size = 668, normalized size = 2.03

$$\frac{2Bb^5e^4x^5-3\left(Bab^4+Ab^5\right)d^4+12\left(3Ba^2b^3-Aab^4\right)d^3e-18\left(5Ba^3b^2-3Aa^2b^3\right)d^2e^2+12\left(7Ba^4b-5Aa^3b^2\right)de^3-3\left(9Ba^5-7Aa^4b\right)e^4+\left(12Bb^5de^3-\left(5Bab^4-3Ab^5\right)e^4\right)x^4+4\left(9Bb^5d^2e^2-6\left(2Bab^4-Ab^5\right)de^3+\left(5Ba^2b^3-3Aab^4\right)e^4\right)x^3+3\left(24Bab^4d^2e^2-4\left(11Ba^2b^3-4Aab^4\right)de^3+\left(21Ba^3b^2-11Aa^2b^3\right)e^4\right)x^2-6\left(Bb^5d^4-4\left(2Bab^4-Ab^5\right)d^3e+12\left(Ba^2b^3-Aab^4\right)d^2e^2-4\left(Ba^3b^2-2Aa^2b^3\right)de^3-\left(Ba^4b+Aa^3b^2\right)e^4\right)x+12\left(2Ba^2b^3d^3e-3\left(3Ba^3b^2-Aa^2b^3\right)d^2e^2+6\left(2Ba^4b-Aa^3b^2\right)de^3-\left(5Ba^5-3Aa^4b\right)e^4+\left(2Bb^5d^3e-3\left(3Bab^4-Ab^5\right)d^2e^2+6\left(2Ba^2b^3-Aab^4\right)de^3-\left(5Ba^3b^2-3Aa^2b^3\right)e^4\right)x^2+2\left(2Bab^4d^3e-3\left(3Ba^2b^3-Aab^4\right)d^2e^2+6\left(2Ba^3b^2-Aa^2b^3\right)de^3-\left(5Ba^4b-3Aa^3b^2\right)e^4\right)x\right)\log(bx+a)}{6\left(b^8x^2+2ab^7x+a^2b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/6*(2*B*b^5*e^4*x^5 - 3*(B*a*b^4 + A*b^5)*d^4 + 12*(3*B*a^2*b^3 - A*a*b^4)
*d^3*e - 18*(5*B*a^3*b^2 - 3*A*a^2*b^3)*d^2*e^2 + 12*(7*B*a^4*b - 5*A*a^3*b
^2)*d*e^3 - 3*(9*B*a^5 - 7*A*a^4*b)*e^4 + (12*B*b^5*d*e^3 - (5*B*a*b^4 - 3*
A*b^5)*e^4)*x^4 + 4*(9*B*b^5*d^2*e^2 - 6*(2*B*a*b^4 - A*b^5)*d*e^3 + (5*B*a
^2*b^3 - 3*A*a*b^4)*e^4)*x^3 + 3*(24*B*a*b^4*d^2*e^2 - 4*(11*B*a^2*b^3 - 4*
A*a*b^4)*d*e^3 + (21*B*a^3*b^2 - 11*A*a^2*b^3)*e^4)*x^2 - 6*(B*b^5*d^4 - 4*
(2*B*a*b^4 - A*b^5)*d^3*e + 12*(B*a^2*b^3 - A*a*b^4)*d^2*e^2 - 4*(B*a^3*b^2
 - 2*A*a^2*b^3)*d*e^3 - (B*a^4*b + A*a^3*b^2)*e^4)*x + 12*(2*B*a^2*b^3*d^3*
e - 3*(3*B*a^3*b^2 - A*a^2*b^3)*d^2*e^2 + 6*(2*B*a^4*b - A*a^3*b^2)*d*e^3 -
 (5*B*a^5 - 3*A*a^4*b)*e^4 + (2*B*b^5*d^3*e - 3*(3*B*a*b^4 - A*b^5)*d^2*e^2
 + 6*(2*B*a^2*b^3 - A*a*b^4)*d*e^3 - (5*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 +
 2*(2*B*a*b^4*d^3*e - 3*(3*B*a^2*b^3 - A*a*b^4)*d^2*e^2 + 6*(2*B*a^3*b^2 -
A*a^2*b^3)*d*e^3 - (5*B*a^4*b - 3*A*a^3*b^2)*e^4)*x)*log(b*x + a))/(b^8*x^2
 + 2*a*b^7*x + a^2*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 858, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/6*(-12*A*a*b^4*d^3*e-48*B*x^3*a*b^4*d*e^3+84*B*a^4*b*d*e^3-90*B*a^3*b^2*d
^2*e^2+36*b^3*B*a^2*d^3*e-60*B*ln(b*x+a)*a^5*e^4-6*B*x*b^5*d^4+2*B*x^5*b^5*
e^4+3*A*x^4*b^5*e^4-12*A*x^3*a*b^4*e^4+24*A*x^3*b^5*d*e^3+20*B*x^3*a^2*b^3*
e^4-60*A*a^3*b^2*d*e^3-108*B*ln(b*x+a)*a^3*b^2*d^2*e^2+24*B*ln(b*x+a)*a^2*b
^3*d^3*e-72*B*x*a^2*b^3*d^2*e^2-48*A*x*a^2*b^3*d*e^3+24*B*x*a^3*b^2*d*e^3+2
1*A*a^4*b*e^4-3*B*a*b^4*d^4-3*A*b^5*d^4-27*B*a^5*e^4+48*A*x^2*a*b^4*d*e^3+1
44*B*ln(b*x+a)*a^4*b*d*e^3+36*A*ln(b*x+a)*a^2*b^3*d^2*e^2-72*A*ln(b*x+a)*a^
3*b^2*d*e^3+24*B*ln(b*x+a)*x^2*b^5*d^3*e+72*A*ln(b*x+a)*x*a^3*b^2*e^4-120*B
*ln(b*x+a)*x*a^4*b*e^4+36*A*ln(b*x+a)*x^2*a^2*b^3*e^4+36*A*ln(b*x+a)*x^2*b^
5*d^2*e^2-60*B*ln(b*x+a)*x^2*a^3*b^2*e^4+72*A*x*a*b^4*d^2*e^2+48*B*x*a*b^4*
d^3*e+54*A*a^2*b^3*d^2*e^2-108*B*ln(b*x+a)*x^2*a*b^4*d^2*e^2-144*A*ln(b*x+a
)*x*a^2*b^3*d*e^3-72*A*ln(b*x+a)*x^2*a*b^4*d*e^3+288*B*ln(b*x+a)*x*a^3*b^2*
d*e^3-216*B*ln(b*x+a)*x*a^2*b^3*d^2*e^2+72*A*ln(b*x+a)*x*a*b^4*d^2*e^2+48*B
*ln(b*x+a)*x*a*b^4*d^3*e+144*B*ln(b*x+a)*x^2*a^2*b^3*d*e^3+72*B*x^2*a*b^4*d
^2*e^2-132*B*x^2*a^2*b^3*d*e^3-5*B*x^4*a*b^4*e^4+36*B*x^3*b^5*d^2*e^2+36*A*
ln(b*x+a)*a^4*b*e^4+12*B*x^4*b^5*d*e^3+6*B*x*a^4*b*e^4-33*A*x^2*a^2*b^3*e^4
+63*B*x^2*a^3*b^2*e^4+6*A*x*a^3*b^2*e^4-24*A*x*b^5*d^3*e)*(b*x+a)/b^6/((b*x
+a)^2)^(3/2)
```

maxima [B] time = 0.53, size = 761, normalized size = 2.31

$$\frac{Be^4x^4}{3\sqrt{b^2x^2+2abx+a^2}\,b^2}-\frac{7Bae^4x^3}{6\sqrt{b^2x^2+2abx+a^2}\,b^3}+\frac{9Ba^2e^4x^2}{2\sqrt{b^2x^2+2abx+a^2}\,b^4}-\frac{10Ba^3e^4\log\left(x+\frac{a}{b}\right)}{b^6}+\frac{9Ba^4e^4}{\sqrt{b^2x^2+2abx+a^2}\,b^6}+\frac{(4Bde^3+Ae^4)x^3}{2\sqrt{b^2x^2+2abx+a^2}\,b^2}-\frac{20Ba^4e^4x}{b^7\left(x+\frac{a}{b}\right)^2}-\frac{5(4Bde^3+Ae^4)ax^2}{2\sqrt{b^2x^2+2abx+a^2}\,b^3}+\frac{2(3Bd^2e^2+2Ade^3)x^2}{\sqrt{b^2x^2+2abx+a^2}\,b^2}-\frac{Ad^4}{2b^3\left(x+\frac{a}{b}\right)^2}-\frac{39Ba^5e^4}{2b^8\left(x+\frac{a}{b}\right)^2}+\frac{6(4Bde^3+Ae^4)a^2\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{6(3Bd^2e^2+2Ade^3)a\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{2(2Bd^3e+3Ad^2e^2)\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{5(4Bde^3+Ae^4)a^3}{\sqrt{b^2x^2+2abx+a^2}\,b^5}+\frac{4(3Bd^2e^2+2Ade^3)a^2}{\sqrt{b^2x^2+2abx+a^2}\,b^4}-\frac{Bd^4+4Ad^3e}{\sqrt{b^2x^2+2abx+a^2}\,b^2}+\frac{12(4Bde^3+Ae^4)a^3x}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{12(3Bd^2e^2+2Ade^3)a^2x}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{4(2Bd^3e+3Ad^2e^2)ax}{b^4\left(x+\frac{a}{b}\right)^2}+\frac{23(4Bde^3+Ae^4)a^4}{2b^7\left(x+\frac{a}{b}\right)^2}-\frac{11(3Bd^2e^2+2Ade^3)a^3}{b^6\left(x+\frac{a}{b}\right)^2}+\frac{3(2Bd^3e+3Ad^2e^2)a^2}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{(Bd^4+4Ad^3e)a}{2b^4\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/3*B*e^4*x^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 7/6*B*a*e^4*x^3/(sqrt(b
^2*x^2 + 2*a*b*x + a^2)*b^3) + 9/2*B*a^2*e^4*x^2/(sqrt(b^2*x^2 + 2*a*b*x +
a^2)*b^4) - 10*B*a^3*e^4*log(x + a/b)/b^6 + 9*B*a^4*e^4/(sqrt(b^2*x^2 + 2*a
*b*x + a^2)*b^6) + 1/2*(4*B*d*e^3 + A*e^4)*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^
2)*b^2) - 20*B*a^4*e^4*x/(b^7*(x + a/b)^2) - 5/2*(4*B*d*e^3 + A*e^4)*a*x^2/
(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^3) + 2*(3*B*d^2*e^2 + 2*A*d*e^3)*x^2/(sqrt
(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 1/2*A*d^4/(b^3*(x + a/b)^2) - 39/2*B*a^5*e
^4/(b^8*(x + a/b)^2) + 6*(4*B*d*e^3 + A*e^4)*a^2*log(x + a/b)/b^5 - 6*(3*B*
d^2*e^2 + 2*A*d*e^3)*a*log(x + a/b)/b^4 + 2*(2*B*d^3*e + 3*A*d^2*e^2)*log(x
 + a/b)/b^3 - 5*(4*B*d*e^3 + A*e^4)*a^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^5)
 + 4*(3*B*d^2*e^2 + 2*A*d*e^3)*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (B
*d^4 + 4*A*d^3*e)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 12*(4*B*d*e^3 + A*e
^4)*a^3*x/(b^6*(x + a/b)^2) - 12*(3*B*d^2*e^2 + 2*A*d*e^3)*a^2*x/(b^5*(x +
a/b)^2) + 4*(2*B*d^3*e + 3*A*d^2*e^2)*a*x/(b^4*(x + a/b)^2) + 23/2*(4*B*d*e
^3 + A*e^4)*a^4/(b^7*(x + a/b)^2) - 11*(3*B*d^2*e^2 + 2*A*d*e^3)*a^3/(b^6*(
x + a/b)^2) + 3*(2*B*d^3*e + 3*A*d^2*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(B*d^
4 + 4*A*d^3*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^4}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)(d + ex)^4}{\left((a + bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)*(d + e*x)**4/((a + b*x)**2)**(3/2), x)
```

3.1548 $\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=249

$$-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^3}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)\log(a+bx)(-2aBe+Ab}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.22, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{e^2x(a+bx)(-3aBe+Abe+3bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^3}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)\log(a+bx)(-2aBe+Abe+bBd)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^3x^2(a+bx)}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])) - ((A*b - a*B)*(b*d - a*e)^3)/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) + (e^2*(3*b*B*d + A*b*e - 3*a*B*e)*x*(a + b*x))/(b^4*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (B*e^3*x^2*(a + b*x))/(2*b^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]) + (3*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b*x)*Log[a + b*x])
/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^3}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{e^2(3bBd+Abe-3aBe)}{b^7}+\frac{Be^3x}{b^6}+\frac{(Ab-aB)(bd-ae)^3}{b^7(a+bx)^3}+\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{b^7(a+bx)^2}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^3}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e^2(3bBd+A}{b^4\sqrt{a^2}}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 256, normalized size = 1.03

$$\frac{-Ab\left(5a^3e^3+a^2be^2(4ex-9d)+ab^2e\left(3d^2-12dex-4e^2x^2\right)+b^3\left(d^3+6d^2ex-2e^3x^3\right)\right)+B\left(7a^4e^3+a^3be^2(2ex-15d)+a^2b^2e\left(9d^2-12dex-11e^2x^2\right)-ab^3\left(d^3-12d^2ex-12de^2x^2+4e^3x^3\right)+b^4x\left(-2d^3+6de^2x^2+e^3x^3\right)\right)+6e(a+bx)^2(bd-ae)\log(a+bx)(-2aBe+Abe+bBd)}{2b^5(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b*(5*a^3*e^3 + a^2*b*e^2*(-9*d + 4*e*x) + a*b^2*e*(3*d^2 - 12*d*e*x -
4*e^2*x^2) + b^3*(d^3 + 6*d^2*e*x - 2*e^3*x^3))) + B*(7*a^4*e^3 + a^3*b*e^2
*(-15*d + 2*e*x) + a^2*b^2*e*(9*d^2 - 12*d*e*x - 11*e^2*x^2) + b^4*x*(-2*d^
3 + 6*d*e^2*x^2 + e^3*x^3) - a*b^3*(d^3 - 12*d^2*e*x - 12*d*e^2*x^2 + 4*e^3
*x^3)) + 6*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b*x)^2*Log[a + b*x]
)/(2*b^5*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 9.48, size = 7046, normalized size = 28.30

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.43, size = 442, normalized size = 1.78

$$\frac{Bb^{4}e^{3}x^{4} - (Bab^{3} + Ab^{4})d^{3} + 3(3Ba^{2}b^{2} - Aab^{3})d^{2}e - 3(5Ba^{3}b - 3Aa^{2}b^{2})de^{2} + (7Ba^{4} - 5Aa^{3}b)e^{3} + 2(3Bb^{4}de^{2} - (2Bab^{3} - Ab^{4})e^{3})x^{3} + (12Bab^{3}de^{2} - (11Ba^{2}b^{2} - 4Aab^{3})e^{3})x^{2} - 2(Bb^{4}d^{3} - 3(2Bab^{3} - Ab^{4})d^{2}e + 6(Ba^{2}b^{2} - Aab^{3})de^{2} - (Ba^{3}b - 2Aa^{2}b^{2})e^{3})x + 6(Ba^{2}b^{2}d^{2}e - (3Ba^{3}b - Aa^{2}b^{2})de^{2} + (2Ba^{4} - Aa^{3}b)e^{3} + (Bb^{4}d^{2}e - (3Bab^{3} - Ab^{4})de^{2} + (2Ba^{2}b^{2} - Aab^{3})e^{3})x^{2} + 2(Bab^{3}d^{2}e - (3Ba^{2}b^{2} - Aab^{3})de^{2} + (2Ba^{3}b - Aa^{2}b^{2})e^{3})x)\log(bx + a)}{2(b^{7}x^{2} + 2ab^{6}x + a^{2}b^{5})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(B*b^4*e^3*x^4 - (B*a*b^3 + A*b^4)*d^3 + 3*(3*B*a^2*b^2 - A*a*b^3)*d^2*
e - 3*(5*B*a^3*b - 3*A*a^2*b^2)*d*e^2 + (7*B*a^4 - 5*A*a^3*b)*e^3 + 2*(3*B*
b^4*d*e^2 - (2*B*a*b^3 - A*b^4)*e^3)*x^3 + (12*B*a*b^3*d*e^2 - (11*B*a^2*b^
2 - 4*A*a*b^3)*e^3)*x^2 - 2*(B*b^4*d^3 - 3*(2*B*a*b^3 - A*b^4)*d^2*e + 6*(B
*a^2*b^2 - A*a*b^3)*d*e^2 - (B*a^3*b - 2*A*a^2*b^2)*e^3)*x + 6*(B*a^2*b^2*d
^2*e - (3*B*a^3*b - A*a^2*b^2)*d*e^2 + (2*B*a^4 - A*a^3*b)*e^3 + (B*b^4*d^2
*e - (3*B*a*b^3 - A*b^4)*d*e^2 + (2*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 2*(B*a*
b^3*d^2*e - (3*B*a^2*b^2 - A*a*b^3)*d*e^2 + (2*B*a^3*b - A*a^2*b^2)*e^3)*x)
*log(b*x + a))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.14, size = 556, normalized size = 2.23

$$-\frac{\left(-Bb^{4}e^{3}x^{4} + 6Aab^{3}e^{3}x^{2}\ln(bx+a) - 6Ab^{4}de^{2}x^{2}\ln(bx+a) - 2Ab^{4}e^{3}x^{3} - 12Ba^{2}b^{2}e^{3}x^{2}\ln(bx+a) + 18Bab^{3}de^{2}x^{2}\ln(bx+a) + 4Bab^{3}e^{3}x^{3} - 6Bb^{4}d^{2}ex^{2}\ln(bx+a) - 6Bb^{4}de^{2}x^{3} + 12Aa^{2}b^{2}e^{3}x\ln(bx+a) - 12Aab^{3}de^{2}x\ln(bx+a) - 4Aab^{3}e^{3}x^{2} - 24Ba^{3}be^{3}x\ln(bx+a) + 36Ba^{2}b^{2}de^{2}x\ln(bx+a) + 11Ba^{2}b^{2}e^{3}x^{2} - 12Bab^{3}d^{2}ex\ln(bx+a) - 12Bab^{3}de^{2}x^{2} + 6Aa^{3}be^{3}\ln(bx+a) - 6Aa^{2}b^{2}de^{2}\ln(bx+a) + 4Aa^{2}b^{2}e^{3}x - 12Aab^{3}de^{2}x + 6Ab^{4}d^{2}ex - 12Ba^{4}e^{3}\ln(bx+a) + 18Ba^{3}bde^{2}\ln(bx+a) - 2Ba^{3}be^{3}x - 6Ba^{2}b^{2}d^{2}e\ln(bx+a) + 12Ba^{2}b^{2}de^{2}x - 12Bab^{3}d^{2}ex + 2Bb^{4}d^{3}x + 5Aa^{3}be^{3} - 9Aa^{2}b^{2}de^{2} + 3Aab^{3}d^{2}e + Ab^{4}d^{3} - 7Ba^{4}e^{3} + 15Ba^{3}bde^{2} - 9Ba^{2}b^{2}d^{2}e + Bab^{3}d^{3}\right)(bx+a)}{2\left((bx+a)^{2}\right)^{\frac{3}{2}}b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(12*A*ln(b*x+a)*x*a^2*b^2*e^3-24*B*ln(b*x+a)*x*a^3*b*e^3+6*A*ln(b*x+a)
*x^2*a*b^3*e^3-6*A*ln(b*x+a)*x^2*b^4*d*e^2-12*B*ln(b*x+a)*x^2*a^2*b^2*e^3-6
*B*ln(b*x+a)*x^2*b^4*d^2*e+18*B*ln(b*x+a)*x^2*a*b^3*d*e^2-12*A*ln(b*x+a)*x*
```

```
a*b^3*d*e^2+36*B*ln(b*x+a)*x*a^2*b^2*d*e^2-12*B*ln(b*x+a)*x*a*b^3*d^2*e-12*
B*a*b^3*d^2*e*x+5*A*a^3*b*e^3+12*B*a^2*b^2*d*e^2*x+18*B*a^3*b*d*e^2*ln(b*x+
a)-6*B*a^2*b^2*d^2*e*ln(b*x+a)-12*A*a*b^3*d*e^2*x-6*A*a^2*b^2*d*e^2*ln(b*x+
a)-12*B*a*b^3*d*e^2*x^2+A*b^4*d^3-7*B*a^4*e^3+15*B*a^3*b*d*e^2+B*a*b^3*d^3-
2*A*b^4*e^3*x^3-12*B*a^4*e^3*ln(b*x+a)+2*B*b^4*d^3*x-B*b^4*e^3*x^4+6*A*a^3*
b*e^3*ln(b*x+a)+4*A*a^2*b^2*e^3*x-9*b^2*B*a^2*d^2*e+3*A*a*b^3*d^2*e-2*B*a^3
*b*e^3*x+11*B*a^2*b^2*e^3*x^2+4*B*a*b^3*e^3*x^3-6*B*b^4*d*e^2*x^3-4*A*a*b^3
*e^3*x^2-9*A*b^2*a^2*d*e^2+6*A*b^4*d^2*e*x)*(b*x+a)/b^5/((b*x+a)^2)^(3/2)
```

maxima [B] time = 0.51, size = 487, normalized size = 1.96

$$\frac{Be^3x^3}{2\sqrt{b^2x^2+2abx+a^2}\,b^2}-\frac{5\,Bae^3x^2}{2\sqrt{b^2x^2+2abx+a^2}\,b^3}+\frac{6\,Ba^2e^3\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{5\,Ba^3e^3}{\sqrt{b^2x^2+2abx+a^2}\,b^5}+\frac{\left(3\,Bde^2+Ae^3\right)x^2}{\sqrt{b^2x^2+2abx+a^2}\,b^2}+\frac{12\,Ba^3e^3x}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{Ad^3}{2\,b^3\left(x+\frac{a}{b}\right)^2}+\frac{23\,Ba^4e^3}{2\,b^7\left(x+\frac{a}{b}\right)^2}-\frac{3\left(3\,Bde^2+Ae^3\right)a\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{3\left(Bd^2e+Ade^2\right)\log\left(x+\frac{a}{b}\right)}{b^3}+\frac{2\left(3\,Bde^2+Ae^3\right)a^2}{\sqrt{b^2x^2+2abx+a^2}\,b^4}-\frac{Bd^3+3\,Ad^2e}{\sqrt{b^2x^2+2abx+a^2}\,b^2}-\frac{6\left(3\,Bde^2+Ae^3\right)a^2x}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{6\left(Bd^2e+Ade^2\right)ax}{b^4\left(x+\frac{a}{b}\right)^2}-\frac{11\left(3\,Bde^2+Ae^3\right)a^3}{2\,b^6\left(x+\frac{a}{b}\right)^2}+\frac{9\left(Bd^2e+Ade^2\right)a^2}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{\left(Bd^3+3\,Ad^2e\right)a}{2\,b^4\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/2*B*e^3*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 5/2*B*a*e^3*x^2/(sqrt(b
^2*x^2 + 2*a*b*x + a^2)*b^3) + 6*B*a^2*e^3*log(x + a/b)/b^5 - 5*B*a^3*e^3/(
sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^5) + (3*B*d*e^2 + A*e^3)*x^2/(sqrt(b^2*x^2
+ 2*a*b*x + a^2)*b^2) + 12*B*a^3*e^3*x/(b^6*(x + a/b)^2) - 1/2*A*d^3/(b^3*(
x + a/b)^2) + 23/2*B*a^4*e^3/(b^7*(x + a/b)^2) - 3*(3*B*d*e^2 + A*e^3)*a*lo
g(x + a/b)/b^4 + 3*(B*d^2*e + A*d*e^2)*log(x + a/b)/b^3 + 2*(3*B*d*e^2 + A*
e^3)*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (B*d^3 + 3*A*d^2*e)/(sqrt(b^
2*x^2 + 2*a*b*x + a^2)*b^2) - 6*(3*B*d*e^2 + A*e^3)*a^2*x/(b^5*(x + a/b)^2)
 + 6*(B*d^2*e + A*d*e^2)*a*x/(b^4*(x + a/b)^2) - 11/2*(3*B*d*e^2 + A*e^3)*a
^3/(b^6*(x + a/b)^2) + 9/2*(B*d^2*e + A*d*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*
(B*d^3 + 3*A*d^2*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^3}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/((a + b*x)**2)**(3/2), x)
```

3.1549 $\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=186

$$-\frac{(bd-ae)(-3aBe+2Abe+bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\log(a+bx)(-3aBe+Abe+2bB}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.15, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{(bd-ae)(-3aBe+2Abe+bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\log(a+bx)(-3aBe+Abe+2bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^2x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])) - ((A*b - a*B)*(b*d - a*e)^2)/(2*b^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) + (B*e^2*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(2*
b*B*d + A*b*e - 3*a*B*e)*(a + b*x)*Log[a + b*x])/(b^4*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^2}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Be^2}{b^6}+\frac{(Ab-aB)(bd-ae)^2}{b^6(a+bx)^3}+\frac{(bd-ae)(bBd+2Abe-3aBe)}{b^6(a+bx)^2}+\frac{e(2bBd+Abe-3aBe)}{b^6(a+bx)}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(bd-ae)(bBd+2Abe-3aBe)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^2x(}{b^3\sqrt{a^2+2}}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 151, normalized size = 0.81

$$\frac{B\left(-5a^3e^2+2a^2be(3d-2ex)+ab^2\left(-d^2+8dex+4e^2x^2\right)+2b^3x\left(e^2x^2-d^2\right)\right)+2e(a+bx)^2\log(a+bx)(-3aBe+Abe+2bBd)-Ab(bd-ae)(3ae+b(d+4ex))}{2b^4(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b*(b*d - a*e)*(3*a*e + b*(d + 4*e*x))) + B*(-5*a^3*e^2 + 2*a^2*b*e*(3*
d - 2*e*x) + 2*b^3*x*(-d^2 + e^2*x^2) + a*b^2*(-d^2 + 8*d*e*x + 4*e^2*x^2))
 + 2*e*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^2*Log[a + b*x])/(2*b^4*(a + b*
x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 5.25, size = 4158, normalized size = 22.35

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] (-(Sqrt[b^2]*d*(-(a*A*d) + A*b*d*x - 2*a*B*d*x - 4*a*A*e*x)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) - d*(-(a^2*A*b*d) + a^3*B*d + 2*a^3*A*e + 2*a^2*b*B*d*x + 4
*a^2*A*b*e*x - A*b^3*d*x^2 + 2*a*b^2*B*d*x^2 + 4*a*A*b^2*e*x^2))/(b*x^2*(-2
*a*b^3 - 2*b^4*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + b*Sqrt[b^2]*x^2*(2*a^2*b^
2 + 4*a*b^3*x + 2*b^4*x^2)) + ((8*a^2*(b^2)^(3/2)*B*d^2*x)/b^4 + (16*a^2*A*
(b^2)^(3/2)*d*e*x)/b^4 + (16*a^4*Sqrt[b^2]*B*e^2*x)/b^4 + (12*a*Sqrt[b^2]*B
*d^2*x^2)/b + (24*a*A*Sqrt[b^2]*d*e*x^2)/b + (32*a^3*Sqrt[b^2]*B*e^2*x^2)/b
^3 + 8*Sqrt[b^2]*B*d^2*x^3 + 16*A*Sqrt[b^2]*d*e*x^3 + (8*a^2*(b^2)^(3/2)*B*
e^2*x^3)/b^4 - (20*a*Sqrt[b^2]*B*e^2*x^4)/b - 8*Sqrt[b^2]*B*e^2*x^5 - (4*a^
2*B*d^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (8*a^2*A*d*e*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/b^2 - (4*a^4*B*e^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 - (4*a*
B*d^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (8*a*A*d*e*x*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/b - (12*a^3*B*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - 8*B*d^
2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 16*A*d*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2
*x^2] - (20*a^2*B*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (12*a*B*e^2*
x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + 8*B*e^2*x^4*Sqrt[a^2 + 2*a*b*x + b^2
*x^2] - (24*a^3*B*e^2*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/a])/b^2 - (48*a^2*B*e^2*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/a])/b - 24*a*B*e^2*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/a] + (24*a^2*Sqrt[b^2]*B*e^2*x^2*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^3
 + (24*a*(b^2)^(3/2)*B*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqr
t[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^4)/((-a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2])^2) + ((8*a^4*B*d*e)/(b^2)^(3/2) + (4*a^4*A*e^2)/(b^2)^(3/2) + (24*a^3
*b*B*d*e*x)/(b^2)^(3/2) + (12*a^3*A*b*e^2*x)/(b^2)^(3/2) + (24*a^2*B*d*e*x^
2)/Sqrt[b^2] + (12*a^2*A*e^2*x^2)/Sqrt[b^2] - (24*a^2*B*d*e*x*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/b^2 - (12*a^2*A*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2
 - (8*a^2*B*d*e*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/S
qrt[b^2] - (4*a^2*A*e^2*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2
*x^2]])/Sqrt[b^2] - (16*a*b^3*B*d*e*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (8*a*A*b^3*e^2*x^3*Log[-a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (8*b^4*B*d*e*x^4*Log[-a - Sq
rt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (4*A*b^4*e^2*x^4*
Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) + (8*a*B
*d*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/b + (4*a*A*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a
 - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 8*B*d*e*x^3*Sqrt[a^2 +
2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] +
4*A*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]] - (8*a^2*B*d*e*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/Sqrt[b^2] - (4*a^2*A*e^2*x^2*Log[a - Sqrt[b^2]*x + Sqrt[
a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (16*a*b^3*B*d*e*x^3*Log[a - Sqrt[b^2
```

```
]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (8*a*A*b^3*e^2*x^3*Log[
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (8*b^4*B*d*
e*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (
4*A*b^4*e^2*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)
^(3/2) + (8*a*B*d*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + (4*a*A*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 8*B*d*e*x^
3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]] + 4*A*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2) + ((-4*a^5
*B*e^2)/(b^3*Sqrt[b^2]) - (24*a^3*B*d*e*x)/(b*Sqrt[b^2]) - (12*a^3*A*e^2*x)
/(b*Sqrt[b^2]) - (16*a^4*B*e^2*x)/(b^2)^(3/2) - (48*a^2*B*d*e*x^2)/Sqrt[b^2
] - (24*a^2*A*e^2*x^2)/Sqrt[b^2] - (16*a^3*B*e^2*x^2)/(b*Sqrt[b^2]) - (32*a
*b*B*d*e*x^3)/Sqrt[b^2] - (16*a*A*b*e^2*x^3)/Sqrt[b^2] + (8*a^3*B*d*e*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/b^3 + (4*a^3*A*e^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/b^3 + (16*a^2*B*d*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (8*a^2*A*e^2*x*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (16*a^3*B*e^2*x*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/b^3 + (32*a*B*d*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (16*a*A*e
^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (16*a^2*B*d*e*x^2*ArcTanh[(-(Sqrt
[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + (8*a^2*A*e^2*x^2*ArcTanh[
(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 32*a*B*d*e*x^3*Arc
Tanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 16*a*A*e^2*x^3*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 16*b*B*d*e*x^4
*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 8*A*b*e^2*x^
4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (16*a*B*d*e
*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/a])/Sqrt[b^2] - (8*a*A*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^
2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] -
 (16*b*B*d*e*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - (8*A*b*e^2*x^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])
/Sqrt[b^2] + (12*a^3*B*e^2*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]])/(b*Sqrt[b^2]) + (24*a^2*B*e^2*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (12*a*b*B*e^2*x^4*Log[-a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (12*a^2*B*e^2*x^2*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/
b^2 - (12*a*B*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + (12*a^3*B*e^2*x^2*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (24*a^2*B*e^2*x^3*Log[a -
Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (12*a*b*B*e^2*x^4
*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (12*a^2*
B*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/b^2 - (12*a*B*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b)/((-a - Sqrt[b^2]*x + S
qrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2
*x^2])^2)
```

fricas [A] time = 0.44, size = 258, normalized size = 1.39

$$\frac{2\,Bb^3e^2x^3 + 4\,Bab^2e^2x^2 - \left(Bab^2 + Ab^3\right)d^2 + 2\left(3\,Ba^2b - Aab^2\right)de - \left(5\,Ba^3 - 3\,Aa^2b\right)e^2 - 2\left(Bb^3d^2 - 2\left(2\,Bab^2 - Ab^3\right)de + 2\left(Ba^2b - Aab^2\right)e^2\right)x + 2\left(2\,Ba^2bde - \left(3\,Ba^3 - Aa^2b\right)e^2 + \left(2\,Bb^3de - \left(3\,Bab^2 - Ab^3\right)e^2\right)x^2 + 2\left(2\,Bab^2de - \left(3\,Ba^2b - Aab^2\right)e^2\right)x\right)\log\left(bx + a\right)}{2\left(b^6x^2 + 2\,ab^5x + a^2b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(2*B*b^3*e^2*x^3 + 4*B*a*b^2*e^2*x^2 - (B*a*b^2 + A*b^3)*d^2 + 2*(3*B*a
^2*b - A*a*b^2)*d*e - (5*B*a^3 - 3*A*a^2*b)*e^2 - 2*(B*b^3*d^2 - 2*(2*B*a*b
^2 - A*b^3)*d*e + 2*(B*a^2*b - A*a*b^2)*e^2)*x + 2*(2*B*a^2*b*d*e - (3*B*a^
3 - A*a^2*b)*e^2 + (2*B*b^3*d*e - (3*B*a*b^2 - A*b^3)*e^2)*x^2 + 2*(2*B*a*b
```

```
^2*d*e - (3*B*a^2*b - A*a*b^2)*e^2)*x)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x +
 a^2*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.07, size = 303, normalized size = 1.63

$$\frac{\left(2A\,b^3e^2x^2\ln\left(bx+a\right)-6Ba\,b^2e^2x^2\ln\left(bx+a\right)+4B\,b^3de\,x^2\ln\left(bx+a\right)+2B\,b^3e^2x^3+4Aa\,b^2e^2x\ln\left(bx+a\right)-12B\,a^2b\,e^2x\ln\left(bx+a\right)+8Ba\,b^2dex\ln\left(bx+a\right)+4Ba\,b^2e^2x^2+2A\,a^2b\,e^2\ln\left(bx+a\right)+4Aa\,b^2e^2x-4A\,b^3dex-6B\,a^3e^2\ln\left(bx+a\right)+4B\,a^2bde\ln\left(bx+a\right)-4B\,a^2b\,e^2x+8Ba\,b^2dex-2B\,b^3d^2x+3A\,a^2b\,e^2-2Aa\,b^2de-A\,b^3d^2-5B\,a^3e^2+6B\,a^2bde-Ba\,b^2d^2\right)\left(bx+a\right)}{2\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(2*A*ln(b*x+a)*x^2*b^3*e^2-6*B*ln(b*x+a)*x^2*a*b^2*e^2+4*B*ln(b*x+a)*x^
2*b^3*d*e+2*B*b^3*e^2*x^3+4*A*ln(b*x+a)*x*a*b^2*e^2-12*B*ln(b*x+a)*x*a^2*b*
e^2+8*B*ln(b*x+a)*x*a*b^2*d*e+4*B*a*b^2*e^2*x^2+2*A*a^2*b*e^2*ln(b*x+a)+4*A
*a*b^2*e^2*x-4*A*b^3*d*e*x-6*B*a^3*e^2*ln(b*x+a)+4*B*a^2*b*d*e*ln(b*x+a)-4*
B*a^2*b*e^2*x+8*B*a*b^2*d*e*x-2*B*b^3*d^2*x+3*A*a^2*b*e^2-2*A*a*b^2*d*e-A*b
^3*d^2-5*B*a^3*e^2+6*B*a^2*b*d*e-B*a*b^2*d^2)*(b*x+a)/b^4/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.60, size = 277, normalized size = 1.49

$$\frac{Be^2x^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{3\,Bae^2\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{2\,Ba^2e^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^4}-\frac{6\,Ba^2e^2x}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{\left(2\,Bde+Ae^2\right)\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{Bd^2+2\,Ade}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{Ad^2}{2\,b^3\left(x+\frac{a}{b}\right)^2}-\frac{11\,Ba^3e^2}{2\,b^6\left(x+\frac{a}{b}\right)^2}+\frac{2\left(2\,Bde+Ae^2\right)ax}{b^4\left(x+\frac{a}{b}\right)^2}+\frac{3\left(2\,Bde+Ae^2\right)a^2}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{\left(Bd^2+2\,Ade\right)a}{2\,b^4\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] B*e^2*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 3*B*a*e^2*log(x + a/b)/b^4
+ 2*B*a^2*e^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - 6*B*a^2*e^2*x/(b^5*(x +
 a/b)^2) + (2*B*d*e + A*e^2)*log(x + a/b)/b^3 - (B*d^2 + 2*A*d*e)/(sqrt(b^2
*x^2 + 2*a*b*x + a^2)*b^2) - 1/2*A*d^2/(b^3*(x + a/b)^2) - 11/2*B*a^3*e^2/(
b^6*(x + a/b)^2) + 2*(2*B*d*e + A*e^2)*a*x/(b^4*(x + a/b)^2) + 3/2*(2*B*d*e
 + A*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(B*d^2 + 2*A*d*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^2}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/((a + b*x)**2)**(3/2), x)
```

3.1550 $\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=127

$$-\frac{(Ab-aB)(bd-ae)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{-2aBe+Abe+bBd}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Be(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.10, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 77}

$$-\frac{(Ab-aB)(bd-ae)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{-2aBe+Abe+bBd}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Be(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((b*B*d + A*b*e - 2*a*B*e)/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - ((A*b -
a*B)*(b*d - a*e))/(2*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e*(a
 + b*x)*Log[a + b*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{(Ab-aB)(bd-ae)}{b^5(a+bx)^3}+\frac{bBd+Abe-2aBe}{b^5(a+bx)^2}+\frac{Be}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{bBd+Abe-2aBe}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{Be(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.68

$$\frac{B\left(3a^2e-abd+4abex-2b^2dx\right)-Ab(ae+bd+2bex)+2Be(a+bx)^2\log(a+bx)}{2b^3(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b*(b*d + a*e + 2*b*e*x)) + B*(-(a*b*d) + 3*a^2*e - 2*b^2*d*x + 4*a*b*e
*x) + 2*B*e*(a + b*x)^2*Log[a + b*x])/(2*b^3*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 2.14, size = 1723, normalized size = 13.57

result too large to display

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^2*A*b*d - a^3*B*d - a^3*A*e + a*A*b^2*d*x - 2*a^2*b*B*d*x - 2*a^2*A*b*e*
x + A*b^3*d*x^2 - 2*a*b^2*B*d*x^2 - 2*a*A*b^2*e*x^2 + Sqrt[b^2]*(-(A*b*d*x)
 + 2*a*B*d*x + 2*a*A*e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(b*x^2*(-2*a*b^3 -
 2*b^4*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + b*Sqrt[b^2]*x^2*(2*a^2*b^2 + 4*a*
b^3*x + 2*b^4*x^2)) + ((-4*a*A*b*d*x)/Sqrt[b^2] - (12*a^3*B*e*x)/(b*Sqrt[b^
2]) - (24*a^2*B*e*x^2)/Sqrt[b^2] - (16*a*b*B*e*x^3)/Sqrt[b^2] + (4*a*A*d*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/b + (4*a^3*B*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
b^3 + (8*a^2*B*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (16*a*B*e*x^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/b + (8*a^2*B*e*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 16*a*B*e*x^3*ArcTanh[(-(Sqrt[b^2]*x) + S
qrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 8*b*B*e*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/a] - (8*a*B*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] -
(8*b*B*e*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a
*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2) + (
(4*a^4*B*e)/(b^2)^(3/2) + (8*a^2*B*d*x)/Sqrt[b^2] + (8*a^2*A*e*x)/Sqrt[b^2]
 + (12*a^3*b*B*e*x)/(b^2)^(3/2) + (12*a*b^3*B*d*x^2)/(b^2)^(3/2) + (12*a*A*
b^3*e*x^2)/(b^2)^(3/2) + (12*a^2*B*e*x^2)/Sqrt[b^2] + (8*b^4*B*d*x^3)/(b^2)
^(3/2) + (8*A*b^4*e*x^3)/(b^2)^(3/2) - (4*a^2*B*d*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/b^2 - (4*a^2*A*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (4*a*B*d*x*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/b - (4*a*A*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b
- (12*a^2*B*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - 8*B*d*x^2*Sqrt[a^2 + 2
*a*b*x + b^2*x^2] - 8*A*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (4*a^2*B*e*x^
2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (8*a*b
^3*B*e*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/
2) - (4*b^4*B*e*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/
(b^2)^(3/2) + (4*a*B*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]
*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 4*B*e*x^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (4*a^2*B*e*x^
2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (8*a*b^
3*B*e*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2)
 - (4*b^4*B*e*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^
2)^(3/2) + (4*a*B*e*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 4*B*e*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x
+ Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2])^2)
```

fricas [A] time = 0.43, size = 110, normalized size = 0.87

$$-\frac{\left(Bab + Ab^2\right)d - \left(3\,Ba^2 - Aab\right)e + 2\left(Bb^2d - \left(2\,Bab - Ab^2\right)e\right)x - 2\left(Bb^2ex^2 + 2\,Babex + Ba^2e\right)\log\left(bx + a\right)}{2\left(b^5x^2 + 2\,ab^4x + a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] -1/2*((B*a*b + A*b^2)*d - (3*B*a^2 - A*a*b)*e + 2*(B*b^2*d - (2*B*a*b - A*b
^2)*e)*x - 2*(B*b^2*e*x^2 + 2*B*a*b*e*x + B*a^2*e)*log(b*x + a))/(b^5*x^2 +
 2*a*b^4*x + a^2*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 109, normalized size = 0.86

$$-\frac{\left(-2B\,b^{2}e\,x^{2}\ln \left(bx+a\right)-4Babex\ln \left(bx+a\right)+2A\,b^{2}ex-2B\,a^{2}e\ln \left(bx+a\right)-4Babex+2B\,b^{2}dx+Aabe+A\,b^{2}d-3B\,a^{2}e+Babd\right)\left(bx+a\right)}{2\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-2*B*ln(b*x+a)*x^2*b^2*e-4*B*ln(b*x+a)*x*a*b*e+2*A*b^2*e*x-2*B*a^2*e*
ln(b*x+a)-4*B*a*b*e*x+2*B*b^2*d*x+a*A*e*b+A*b^2*d-3*B*e*a^2+a*B*d*b)*(b*x+a
)/b^3/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.57, size = 120, normalized size = 0.94

$$\frac{Be\log\left(x+\frac{a}{b}\right)}{b^{3}}-\frac{Bd+Ae}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b^{2}}+\frac{2\,Baex}{b^{4}\left(x+\frac{a}{b}\right)^{2}}-\frac{Ad}{2\,b^{3}\left(x+\frac{a}{b}\right)^{2}}+\frac{3\,Ba^{2}e}{2\,b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{(Bd+Ae)a}{2\,b^{4}\left(x+\frac{a}{b}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] B*e*log(x + a/b)/b^3 - (B*d + A*e)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 2*
B*a*e*x/(b^4*(x + a/b)^2) - 1/2*A*d/(b^3*(x + a/b)^2) + 3/2*B*a^2*e/(b^5*(x
 + a/b)^2) + 1/2*(B*d + A*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)}{\left((a+bx)^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.1551 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=69

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]

[Out] -(B/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(2*b^2*(a + b*x)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= -\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{2b^2}\\ &= -\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 0.57

$$\frac{-B(a+2bx)-Ab}{2b^2(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]

[Out] (-(A*b) - B*(a + 2*b*x))/(2*b^2*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.00, size = 178, normalized size = 2.58

$$\frac{-a^3bB+\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(a^2(-B)+aAb+abBx-Ab^2x-2b^2Bx^2\right)+a^2Ab^2+ab^3Bx^2+Ab^4x^2+2b^4Bx^3}{x^2\left(-2ab^5-2b^6x\right)\sqrt{a^2+2abx+b^2x^2}+\sqrt{b^2}\,x^2\left(2a^2b^4+4ab^5x+2b^6x^2\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^2*A*b^2 - a^3*b*B + A*b^4*x^2 + a*b^3*B*x^2 + 2*b^4*B*x^3 + Sqrt[b^2]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*(a*A*b - a^2*B - A*b^2*x + a*b*B*x - 2*b^2*B*x^
2))/(x^2*(-2*a*b^5 - 2*b^6*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^2]*x^2
*(2*a^2*b^4 + 4*a*b^5*x + 2*b^6*x^2))
```

fricas [A] time = 0.42, size = 38, normalized size = 0.55

$$-\frac{2\,Bbx + Ba + Ab}{2\left(b^4x^2 + 2\,ab^3x + a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*B*b*x + B*a + A*b)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.04, size = 32, normalized size = 0.46

$$-\frac{(bx + a)\,(2Bbx + Ab + Ba)}{2\left((bx + a)^2\right)^{\frac{3}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*B*b*x+A*b+B*a)/b^2/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.59, size = 56, normalized size = 0.81

$$-\frac{B}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^2} + \frac{Ba}{2\,b^4\left(x + \frac{a}{b}\right)^2} - \frac{A}{2\,b^3\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 1/2*B*a/(b^4*(x + a/b)^2) - 1/2*A/
(b^3*(x + a/b)^2)
```

mupad [B] time = 2.05, size = 42, normalized size = 0.61

$$-\frac{\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}\;\left(A\,b + B\,a + 2\,B\,b\,x\right)}{2\,b^2\,{\left(a + b\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(A*b + B*a + 2*B*b*x))/(2*b^2*(a + b*x)^3
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.1552 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=196

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{Bd-Ae}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{e(a+b}{\sqrt{a^2+}}$$

Rubi [A] time = 0.16, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{Bd-Ae}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{e(a+bx)(Bd-Ae)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((B*d - A*e)/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/
(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(B*d - A*e)*
(a + b*x)*Log[a + b*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*
(B*d - A*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^3(bd-ae)(a+bx)^3}+\frac{Bd-Ae}{b^2(bd-ae)^2(a+bx)^2}+\frac{e(-Bd+Ae)}{b^2(bd-ae)^3(a+bx)}-\frac{e^2(}{b^3(bd}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{Bd-Ae}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.11, size = 132, normalized size = 0.67

$$\frac{-(bd-ae)\left(B\left(a^2e+abd+2b^2dx\right)+Ab(b(d-2ex)-3ae)\right)+2be(a+bx)^2\log(a+bx)(Ae-Bd)+2be(a+bx)^2(Bd-Ae)\log(d+ex)}{2b(a+bx)\sqrt{(a+bx)^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-((b*d - a*e)*(B*(a*b*d + a^2*e + 2*b^2*d*x) + A*b*(-3*a*e + b*(d - 2*e*x)
))) + 2*b*e*(-(B*d) + A*e)*(a + b*x)^2*Log[a + b*x] + 2*b*e*(B*d - A*e)*(a
+ b*x)^2*Log[d + e*x])/(2*b*(b*d - a*e)^3*(a + b*x)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [**B**] time = 16.34, size = 6129, normalized size = 31.27

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] Result too large to show
```

fricas [**B**] time = 0.43, size = 361, normalized size = 1.84

$$\frac{4 \, A a b^{2} d e - \left(B a b^{2} + A b^{3}\right) d^{2} + \left(B a^{3} - 3 \, A a^{2} b\right) e^{2} - 2 \, \left(B b^{3} d^{2} + A a b^{2} e^{2} - \left(B a b^{2} + A b^{3}\right) d e\right) x - 2 \, \left(B a^{2} b d e - A a^{2} b e^{2} + \left(B b^{3} d e - A b^{3} e^{2}\right) x^{2} + 2 \, \left(B a b^{2} d e - A a b^{2} e^{2}\right) x\right) \log\left(b x + a\right) + 2 \, \left(B a^{2} b d e - A a^{2} b e^{2} + \left(B b^{3} d e - A b^{3} e^{2}\right) x^{2} + 2 \, \left(B a b^{2} d e - A a b^{2} e^{2}\right) x\right) \log\left(e x + d\right)}{2 \, \left(a^{2} b^{4} d^{3} - 3 \, a^{3} b^{3} d^{2} e + 3 \, a^{4} b^{2} d e^{2} - a^{5} b e^{3} + \left(b^{6} d^{3} - 3 \, a b^{5} d^{2} e + 3 \, a^{2} b^{4} d e^{2} - a^{3} b^{3} e^{3}\right) x^{2} + 2 \, \left(a b^{5} d^{3} - 3 \, a^{2} b^{4} d^{2} e + 3 \, a^{3} b^{3} d e^{2} - a^{4} b^{2} e^{3}\right) x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 1/2*(4*A*a*b^2*d*e - (B*a*b^2 + A*b^3)*d^2 + (B*a^3 - 3*A*a^2*b)*e^2 - 2*(B
*b^3*d^2 + A*a*b^2*e^2 - (B*a*b^2 + A*b^3)*d*e)*x - 2*(B*a^2*b*d*e - A*a^2*
b*e^2 + (B*b^3*d*e - A*b^3*e^2)*x^2 + 2*(B*a*b^2*d*e - A*a*b^2*e^2)*x)*log(
b*x + a) + 2*(B*a^2*b*d*e - A*a^2*b*e^2 + (B*b^3*d*e - A*b^3*e^2)*x^2 + 2*(
B*a*b^2*d*e - A*a*b^2*e^2)*x)*log(e*x + d))/(a^2*b^4*d^3 - 3*a^3*b^3*d^2*e
+ 3*a^4*b^2*d*e^2 - a^5*b*e^3 + (b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2
- a^3*b^3*e^3)*x^2 + 2*(a*b^5*d^3 - 3*a^2*b^4*d^2*e + 3*a^3*b^3*d*e^2 - a^4
*b^2*e^3)*x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [**B**] time = 0.07, size = 315, normalized size = 1.61

$$-\frac{\left(2 A \,b^{3} e^{2} x^{2} \ln \left(b x +a \right)-2 A \,b^{3} e^{2} x^{2} \ln \left(e x +d \right)-2 B \,b^{3} d e \,x^{2} \ln \left(b x +a \right)+2 B \,b^{3} d e \,x^{2} \ln \left(e x +d \right)+4 A a \,b^{2} e^{2} x \ln \left(b x +a \right)-4 A a \,b^{2} e^{2} x \ln \left(e x +d \right)-4 B a \,b^{2} d e x \ln \left(b x +a \right)+4 B a \,b^{2} d e x \ln \left(e x +d \right)+2 A \,a^{2} b \,e^{2} \ln \left(b x +a \right)-2 A \,a^{2} b \,e^{2} \ln \left(e x +d \right)-2 A a \,b^{2} e^{2} x +2 A \,b^{3} d e x -2 B \,a^{2} b d e \ln \left(b x +a \right)+2 B \,a^{2} b d e \ln \left(e x +d \right)+2 B a \,b^{2} d e x -2 B \,b^{3} d^{2} x -3 A \,a^{2} b \,e^{2}+4 A a \,b^{2} d e -A \,b^{3} d^{2}+B \,a^{3} e^{2}-B a \,b^{2} d^{2}\right) \left(b x +a \right)}{2 \left(a e -b d \right)^{3} \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}} b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(2*A*b^3*e^2*x^2*ln(b*x+a)-2*A*ln(e*x+d)*x^2*b^3*e^2-2*B*b^3*d*e*x^2*l
n(b*x+a)+2*B*ln(e*x+d)*x^2*b^3*d*e+4*A*a*b^2*e^2*x*ln(b*x+a)-4*A*ln(e*x+d)*
x*a*b^2*e^2-4*B*a*b^2*d*e*x*ln(b*x+a)+4*B*ln(e*x+d)*x*a*b^2*d*e+2*A*a^2*b*e
^2*ln(b*x+a)-2*A*ln(e*x+d)*a^2*b*e^2-2*A*a*b^2*e^2*x+2*A*b^3*d*e*x-2*B*a^2*
b*d*e*ln(b*x+a)+2*B*ln(e*x+d)*a^2*b*d*e+2*B*a*b^2*d*e*x-2*B*b^3*d^2*x-3*A*a
^2*b*e^2+4*A*a*b^2*d*e-A*b^3*d^2+B*a^3*e^2-B*a*b^2*d^2)*(b*x+a)/b/(a*e-b*d)
^3/((b*x+a)^2)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*((a + b*x)**2)**(3/2)), x)
```

3.1553 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=266

$$-\frac{Ab-aB}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{aBe-2Abe+bBd}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}$$

Rubi [A] time = 0.25, antiderivative size = 266, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{Ab-aB}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{aBe-2Abe+bBd}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}-\frac{e(a+bx)\log(a+bx)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{e(a+bx)\log(d+ex)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((b*B*d - 2*A*b*e + a*B*e)/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
- (A*b - a*B)/(2*(b*d - a*e)^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
e*(B*d - A*e)*(a + b*x))/((b*d - a*e)^3*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) - (e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)
^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x
)*Log[d + e*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^2(bd-ae)^2(a+bx)^3}+\frac{bBd-2Abe+aBe}{b^2(bd-ae)^3(a+bx)^2}+\frac{e(-2bBd+3Abe-aBe)}{b^2(bd-ae)^4(a+bx)}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{bBd-2Abe+aBe}{(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2(bd-ae)^2(a+bx)\sqrt{a^2+2abx+b^2}}\end{aligned}$$

Mathematica [A] time = 0.18, size = 174, normalized size = 0.65

$$\frac{(a+bx)\left(-2(a+bx)(bd-ae)(aBe-2Abe+bBd)+\frac{2e(a+bx)^2(bd-ae)(Ae-Bd)}{d+ex}-2e(a+bx)^2\log(a+bx)(aBe-3Abe+2bBd)+2e(a+bx)^2\log(d+ex)(aBe-3Abe+2bBd)+(aB-Ab)(bd-ae)^2\right)}{2\left((a+bx)^2\right)^{3/2}(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*((-(A*b) + a*B)*(b*d - a*e)^2 - 2*(b*d - a*e)*(b*B*d - 2*A*b*e +
 a*B*e)*(a + b*x) + (2*e*(b*d - a*e)*(-(B*d) + A*e)*(a + b*x)^2)/(d + e*x)
- 2*e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)^2*Log[a + b*x] + 2*e*(2*b*B*d -
 3*A*b*e + a*B*e)*(a + b*x)^2*Log[d + e*x]))/(2*(b*d - a*e)^4*((a + b*x)^2)
^(3/2))
```

IntegrateAlgebraic [F] time = 180.25, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.44, size = 803, normalized size = 3.02

$$-\frac{2\,Aa^3e^3 + \left(Bab^2 + Ab^3\right)d^3 + 2\left(2\,Ba^2b - 3\,Aab^2\right)d^2e - \left(5\,Ba^3 - 3\,Aa^2b\right)de^2 + 2\left(2\,Bb^3d^2e - \left(Bab^2 + 3\,Ab^3\right)de^2 - \left(Ba^2b - 3\,Aab^2\right)e^3\right)x^2 + \left(2\,Bb^3d^3 + \left(5\,Bab^2 - 3\,Ab^3\right)d^2e - 2\left(2\,Ba^2b + 3\,Aab^2\right)de^2 - 3\left(Ba^3 - 3\,Aa^2b\right)e^3\right)x + 2\left(2\,Ba^2bd^2e + \left(Ba^3 - 3\,Aa^2b\right)de^2 + \left(2\,Bb^3de^2 + \left(Bab^2 - 3\,Ab^3\right)e^3\right)x^3 + \left(2\,Bb^3d^2e + \left(5\,Bab^2 - 3\,Ab^3\right)de^2 + 2\left(Ba^2b - 3\,Aab^2\right)e^3\right)x^2 + \left(4\,Bab^2d^2e + 2\left(2\,Ba^2b - 3\,Aab^2\right)de^2 + \left(Ba^3 - 3\,Aa^2b\right)e^3\right)x\right)\log\left(bx + a\right) - 2\left(2\,Ba^2bd^2e + \left(Ba^3 - 3\,Aa^2b\right)de^2 + \left(2\,Bb^3de^2 + \left(Bab^2 - 3\,Ab^3\right)e^3\right)x^3 + \left(2\,Bb^3d^2e + \left(5\,Bab^2 - 3\,Ab^3\right)de^2 + 2\left(Ba^2b - 3\,Aab^2\right)e^3\right)x^2 + \left(4\,Bab^2d^2e + 2\left(2\,Ba^2b - 3\,Aab^2\right)de^2 + \left(Ba^3 - 3\,Aa^2b\right)e^3\right)x\right)\log\left(ex + d\right)}{2\left(a^2b^4d^5 - 4\,a^3b^3d^4e + 6\,a^4b^2d^3e^2 - 4\,a^5bd^2e^3 + a^6de^4 + \left(b^6d^4e - 4\,ab^5d^3e^2 + 6\,a^2b^4d^2e^3 - 4\,a^3b^3de^4 + a^4b^2e^5\right)x^3 + \left(b^6d^5 - 2\,ab^5d^4e - 2\,a^2b^4d^3e^2 + 8\,a^3b^3d^2e^3 - 7\,a^4b^2de^4 + 2\,a^5be^5\right)x^2 + \left(2\,ab^5d^5 - 7\,a^2b^4d^4e + 8\,a^3b^3d^3e^2 - 2\,a^4b^2d^2e^3 - 2\,a^5bde^4 + a^6e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] -1/2*(2*A*a^3*e^3 + (B*a*b^2 + A*b^3)*d^3 + 2*(2*B*a^2*b - 3*A*a*b^2)*d^2*e
 - (5*B*a^3 - 3*A*a^2*b)*d*e^2 + 2*(2*B*b^3*d^2*e - (B*a*b^2 + 3*A*b^3)*d*e
^2 - (B*a^2*b - 3*A*a*b^2)*e^3)*x^2 + (2*B*b^3*d^3 + (5*B*a*b^2 - 3*A*b^3)*
d^2*e - 2*(2*B*a^2*b + 3*A*a*b^2)*d*e^2 - 3*(B*a^3 - 3*A*a^2*b)*e^3)*x + 2*
(2*B*a^2*b*d^2*e + (B*a^3 - 3*A*a^2*b)*d*e^2 + (2*B*b^3*d*e^2 + (B*a*b^2 -
3*A*b^3)*e^3)*x^3 + (2*B*b^3*d^2*e + (5*B*a*b^2 - 3*A*b^3)*d*e^2 + 2*(B*a^2
*b - 3*A*a*b^2)*e^3)*x^2 + (4*B*a*b^2*d^2*e + 2*(2*B*a^2*b - 3*A*a*b^2)*d*e
^2 + (B*a^3 - 3*A*a^2*b)*e^3)*x)*log(b*x + a) - 2*(2*B*a^2*b*d^2*e + (B*a^3
 - 3*A*a^2*b)*d*e^2 + (2*B*b^3*d*e^2 + (B*a*b^2 - 3*A*b^3)*e^3)*x^3 + (2*B*
b^3*d^2*e + (5*B*a*b^2 - 3*A*b^3)*d*e^2 + 2*(B*a^2*b - 3*A*a*b^2)*e^3)*x^2
+ (4*B*a*b^2*d^2*e + 2*(2*B*a^2*b - 3*A*a*b^2)*d*e^2 + (B*a^3 - 3*A*a^2*b)*
e^3)*x)*log(e*x + d))/(a^2*b^4*d^5 - 4*a^3*b^3*d^4*e + 6*a^4*b^2*d^3*e^2 -
4*a^5*b*d^2*e^3 + a^6*d*e^4 + (b^6*d^4*e - 4*a*b^5*d^3*e^2 + 6*a^2*b^4*d^2*
e^3 - 4*a^3*b^3*d*e^4 + a^4*b^2*e^5)*x^3 + (b^6*d^5 - 2*a*b^5*d^4*e - 2*a^2
*b^4*d^3*e^2 + 8*a^3*b^3*d^2*e^3 - 7*a^4*b^2*d*e^4 + 2*a^5*b*e^5)*x^2 + (2*
a*b^5*d^5 - 7*a^2*b^4*d^4*e + 8*a^3*b^3*d^3*e^2 - 2*a^4*b^2*d^2*e^3 - 2*a^5
*b*d*e^4 + a^6*e^5)*x)
```

giac [B] time = 0.53, size = 708, normalized size = 2.66

$$\frac{\left(2\,Bbde^2 + Bae^3 - 3\,Abe^3\right)\log\left(\left|-b + \frac{bd}{xe+d} - \frac{ae}{xe+d}\right|\right)}{b^4d^4e\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) - 4\,ab^3d^3e^2\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) + 6\,a^2b^2d^2e^3\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) - 4\,a^3bde^4\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) + a^4e^5\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right)} + \frac{\frac{Bde^4}{xe+d} - \frac{Ae^5}{xe+d}}{b^3d^3e^3\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) - 3\,ab^2d^2e^4\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) + 3\,a^2bde^5\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) - a^3e^6\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right)} + \frac{2\,Bb^3de + 3\,Bab^2e^2 - 5\,Ab^3e^2 - \frac{2\left(Bb^3d^2e^2 + Bab^2de^3 - 3\,Ab^3de^3 - 2\,Ba^2be^4 + 3\,Aab^2e^4\right)e^{(-1)}}{xe+d}}{2\left(bd - ae\right)^4\left(b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right)^2\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] (2*B*b*d*e^2 + B*a*e^3 - 3*A*b*e^3)*log(abs(-b + b*d/(x*e + d) - a*e/(x*e +
 d)))/(b^4*d^4*e*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2
) - 4*a*b^3*d^3*e^2*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d
)^2) + 6*a^2*b^2*d^2*e^3*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*
e + d)^2) - 4*a^3*b*d*e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x
```

```
*e + d)^2) + a^4*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e +
d)^2)) + (B*d*e^4/(x*e + d) - A*e^5/(x*e + d))/(b^3*d^3*e^3*sgn(-b*e/(x*e +
 d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 3*a*b^2*d^2*e^4*sgn(-b*e/(x*
e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 3*a^2*b*d*e^5*sgn(-b*e/(x
*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - a^3*e^6*sgn(-b*e/(x*e +
d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + 1/2*(2*B*b^3*d*e + 3*B*a*b^2
*e^2 - 5*A*b^3*e^2 - 2*(B*b^3*d^2*e^2 + B*a*b^2*d*e^3 - 3*A*b^3*d*e^3 - 2*B
*a^2*b*e^4 + 3*A*a*b^2*e^4)*e^(-1)/(x*e + d))/((b*d - a*e)^4*(b - b*d/(x*e
+ d) + a*e/(x*e + d))^2*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e
 + d)^2))
```

maple [B] time = 0.07, size = 828, normalized size = 3.11

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(-A*b^3*d^3-2*A*a^3*e^3-3*A*a^2*b*d*e^2+6*A*a*b^2*d^2*e+4*B*ln(e*x+d)*x
^3*b^3*d*e^2+12*A*ln(b*x+a)*x^2*a*b^2*e^3+6*A*ln(b*x+a)*x^2*b^3*d*e^2-4*B*a
^2*b*d^2*e+3*B*a^3*e^3*x-2*B*b^3*d^3*x+5*B*a^3*d*e^2-B*a*b^2*d^3-12*A*ln(e*
x+d)*x^2*a*b^2*e^3-6*A*ln(e*x+d)*x^2*b^3*d*e^2-4*B*ln(b*x+a)*x^2*a^2*b*e^3-
4*B*ln(b*x+a)*x^2*b^3*d^2*e+4*B*ln(e*x+d)*a^2*b*d^2*e-2*B*ln(b*x+a)*x^3*a*b
^2*e^3+4*B*ln(e*x+d)*x^2*a^2*b*e^3+4*B*ln(e*x+d)*x^2*b^3*d^2*e-6*A*ln(e*x+d
)*x^3*b^3*e^3-2*B*ln(b*x+a)*x*a^3*e^3+2*B*ln(e*x+d)*x*a^3*e^3-2*B*ln(b*x+a)
*a^3*d*e^2+3*A*b^3*d^2*e*x+6*A*x^2*b^3*d*e^2+2*B*x^2*a^2*b*e^3-4*B*x^2*b^3*
d^2*e-9*A*a^2*b*e^3*x-6*A*x^2*a*b^2*e^3+2*B*ln(e*x+d)*a^3*d*e^2+6*A*ln(b*x+
a)*x^3*b^3*e^3-5*B*a*b^2*d^2*e*x+4*B*a^2*b*d*e^2*x+6*A*a*b^2*d*e^2*x+2*B*x^
2*a*b^2*d*e^2-4*B*ln(b*x+a)*x^3*b^3*d*e^2+2*B*ln(e*x+d)*x^3*a*b^2*e^3-8*B*l
n(b*x+a)*x*a*b^2*d^2*e+8*B*ln(e*x+d)*x*a^2*b*d*e^2+8*B*ln(e*x+d)*x*a*b^2*d^
2*e+12*A*ln(b*x+a)*x*a*b^2*d*e^2-12*A*ln(e*x+d)*x*a*b^2*d*e^2-8*B*ln(b*x+a)
*x*a^2*b*d*e^2-10*B*ln(b*x+a)*x^2*a*b^2*d*e^2+10*B*ln(e*x+d)*x^2*a*b^2*d*e^
2+6*A*ln(b*x+a)*x*a^2*b*e^3-6*A*ln(e*x+d)*x*a^2*b*e^3+6*A*ln(b*x+a)*a^2*b*d
*e^2-6*A*ln(e*x+d)*a^2*b*d*e^2-4*B*ln(b*x+a)*a^2*b*d^2*e)*(b*x+a)/(e*x+d)/(
a*e-b*d)^4/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)/((d + e*x)**2*((a + b*x)**2)**(3/2)), x)
```

3.1554 $\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=332

$$-\frac{b(Ab-aB)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{b(2aBe-3Abe+bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e(a+bx)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^4}$$

Rubi [A] time = 0.32, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{b(Ab-aB)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{b(2aBe-3Abe+bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e(a+bx)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^4}-\frac{e(a+bx)(Bd-Ae)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^3}-\frac{3be(a+bx)\log(a+bx)(aBe-2Abe+bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{3be(a+bx)\log(d+ex)(aBe-2Abe+bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((b*(b*B*d - 3*A*b*e + 2*a*B*e))/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])) - (b*(A*b - a*B))/(2*(b*d - a*e)^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]) - (e*(B*d - A*e)*(a + b*x))/(2*(b*d - a*e)^3*(d + e*x)^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - (e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x))/((b*d - a*e
)^4*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*b*e*(b*B*d - 2*A*b*e + a*
B*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (3*b*e*(b*B*d - 2*A*b*e + a*B*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^5*S
qrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b(bd-ae)^3(a+bx)^3}+\frac{bBd-3Abe+2aBe}{b(bd-ae)^4(a+bx)^2}+\frac{3e(-bBd+2Abe-aBe)}{b(bd-ae)^5(a+bx)}-\right.}{\sqrt{a^2+2abx+}}$$

$$= -\frac{b(bBd-3Abe+2aBe)}{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)}{2(bd-ae)^3(a+bx)\sqrt{a^2+2abx+b^2}}$$

Mathematica [A] time = 0.27, size = 220, normalized size = 0.66

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(bd-ae)^2(Ae-Bd)}{(d+ex)^2}-2b(a+bx)(bd-ae)(2aBe-3Abe+bBd)+\frac{2e(a+bx)^2(bd-ae)(-aBe+3Abe-2bBd)}{d+ex}-6be(a+bx)^2\log(a+bx)(aBe-2Abe+bBd)+6be(a+bx)^2\log(d+ex)(aBe-2Abe+bBd)-b(Ab-aB)(bd-ae)^2\right)}{2\left((a+bx)^2\right)^{3/2}(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-(b*(A*b - a*B)*(b*d - a*e)^2) - 2*b*(b*d - a*e)*(b*B*d - 3*A*b
*e + 2*a*B*e)*(a + b*x) + (e*(b*d - a*e)^2*(-(B*d) + A*e)*(a + b*x)^2)/(d +
 e*x)^2 + (2*e*(b*d - a*e)*(-2*b*B*d + 3*A*b*e - a*B*e)*(a + b*x)^2)/(d + e
*x) - 6*b*e*(b*B*d - 2*A*b*e + a*B*e)*(a + b*x)^2*Log[a + b*x] + 6*b*e*(b*B
*d - 2*A*b*e + a*B*e)*(a + b*x)^2*Log[d + e*x]))/(2*(b*d - a*e)^5*((a + b*x
)^2)^(3/2))
```

IntegrateAlgebraic [F] time = 180.01, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.47, size = 1215, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(9*B*a^3*b*d^2*e^2 + A*a^4*e^4 - (B*a*b^3 + A*b^4)*d^4 - (9*B*a^2*b^2 -
 8*A*a*b^3)*d^3*e + (B*a^4 - 8*A*a^3*b)*d*e^3 - 6*(B*b^4*d^2*e^2 - 2*A*b^4*
d*e^3 - (B*a^2*b^2 - 2*A*a*b^3)*e^4)*x^3 - 9*(B*b^4*d^3*e - B*a^2*b^2*d*e^3
 + (B*a*b^3 - 2*A*b^4)*d^2*e^2 - (B*a^3*b - 2*A*a^2*b^2)*e^4)*x^2 - 2*(B*b^
4*d^4 - 12*A*a*b^3*d^2*e^2 + (7*B*a*b^3 - 2*A*b^4)*d^3*e - (7*B*a^3*b - 12*
A*a^2*b^2)*d*e^3 - (B*a^4 - 2*A*a^3*b)*e^4)*x - 6*(B*a^2*b^2*d^3*e + (B*a^3
*b - 2*A*a^2*b^2)*d^2*e^2 + (B*b^4*d*e^3 + (B*a*b^3 - 2*A*b^4)*e^4)*x^4 + 2
*(B*b^4*d^2*e^2 + 2*(B*a*b^3 - A*b^4)*d*e^3 + (B*a^2*b^2 - 2*A*a*b^3)*e^4)*
x^3 + (B*b^4*d^3*e + (5*B*a*b^3 - 2*A*b^4)*d^2*e^2 + (5*B*a^2*b^2 - 8*A*a*b
^3)*d*e^3 + (B*a^3*b - 2*A*a^2*b^2)*e^4)*x^2 + 2*(B*a*b^3*d^3*e + 2*(B*a^2*
b^2 - A*a*b^3)*d^2*e^2 + (B*a^3*b - 2*A*a^2*b^2)*d*e^3)*x)*log(b*x + a) + 6
*(B*a^2*b^2*d^3*e + (B*a^3*b - 2*A*a^2*b^2)*d^2*e^2 + (B*b^4*d*e^3 + (B*a*b
^3 - 2*A*b^4)*e^4)*x^4 + 2*(B*b^4*d^2*e^2 + 2*(B*a*b^3 - A*b^4)*d*e^3 + (B*
a^2*b^2 - 2*A*a*b^3)*e^4)*x^3 + (B*b^4*d^3*e + (5*B*a*b^3 - 2*A*b^4)*d^2*e^
2 + (5*B*a^2*b^2 - 8*A*a*b^3)*d*e^3 + (B*a^3*b - 2*A*a^2*b^2)*e^4)*x^2 + 2*
(B*a*b^3*d^3*e + 2*(B*a^2*b^2 - A*a*b^3)*d^2*e^2 + (B*a^3*b - 2*A*a^2*b^2)*
d*e^3)*x)*log(e*x + d))/(a^2*b^5*d^7 - 5*a^3*b^4*d^6*e + 10*a^4*b^3*d^5*e^2
 - 10*a^5*b^2*d^4*e^3 + 5*a^6*b*d^3*e^4 - a^7*d^2*e^5 + (b^7*d^5*e^2 - 5*a*
b^6*d^4*e^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a
^5*b^2*e^7)*x^4 + 2*(b^7*d^6*e - 4*a*b^6*d^5*e^2 + 5*a^2*b^5*d^4*e^3 - 5*a^
4*b^3*d^2*e^5 + 4*a^5*b^2*d*e^6 - a^6*b*e^7)*x^3 + (b^7*d^7 - a*b^6*d^6*e -
 9*a^2*b^5*d^5*e^2 + 25*a^3*b^4*d^4*e^3 - 25*a^4*b^3*d^3*e^4 + 9*a^5*b^2*d^
2*e^5 + a^6*b*d*e^6 - a^7*e^7)*x^2 + 2*(a*b^6*d^7 - 4*a^2*b^5*d^6*e + 5*a^3
*b^4*d^5*e^2 - 5*a^5*b^2*d^3*e^4 + 4*a^6*b*d^2*e^5 - a^7*d*e^6)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.07, size = 1271, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-2*B*x*b^4*d^4+2*B*x*a^4*e^4-A*b^4*d^4+A*a^4*e^4-B*a*b^3*d^4+B*a^4*d*
e^3+8*A*a*b^3*d^3*e+9*B*a^3*b*d^2*e^2-9*B*a^2*b^2*d^3*e-8*A*a^3*b*d*e^3+12*
B*ln(e*x+d)*x^3*a^2*b^2*e^4+12*B*ln(e*x+d)*x^3*b^4*d^2*e^2+12*A*ln(b*x+a)*x
^2*a^2*b^2*e^4+12*A*ln(b*x+a)*x^2*b^4*d^2*e^2-12*A*ln(e*x+d)*x^2*a^2*b^2*e^
4-12*A*ln(e*x+d)*x^2*b^4*d^2*e^2-6*B*ln(b*x+a)*x^2*a^3*b*e^4-6*B*ln(b*x+a)*
x^2*b^4*d^3*e+6*B*ln(e*x+d)*x^2*a^3*b*e^4+6*B*ln(e*x+d)*x^2*b^4*d^3*e-12*B*
ln(b*x+a)*x^3*b^4*d^2*e^2+12*A*ln(b*x+a)*a^2*b^2*d^2*e^2-12*A*ln(e*x+d)*a^2
*b^2*d^2*e^2-6*B*ln(b*x+a)*a^3*b*d^2*e^2-6*B*ln(b*x+a)*a^2*b^2*d^3*e+6*B*ln
(e*x+d)*a^3*b*d^2*e^2+6*B*ln(e*x+d)*a^2*b^2*d^3*e+9*B*x^2*a^2*b^2*d*e^3-9*B
*x^2*a*b^3*d^2*e^2-24*A*x*a^2*b^2*d*e^3+24*A*x*a*b^3*d^2*e^2+14*B*x*a^3*b*d
*e^3-14*B*x*a*b^3*d^3*e-6*B*ln(b*x+a)*x^4*a*b^3*e^4-6*B*ln(b*x+a)*x^4*b^4*d
*e^3+6*B*ln(e*x+d)*x^4*a*b^3*e^4+6*B*ln(e*x+d)*x^4*b^4*d*e^3+24*A*ln(b*x+a)
*x^3*a*b^3*e^4+24*A*ln(b*x+a)*x^3*b^4*d*e^3-24*A*ln(e*x+d)*x^3*a*b^3*e^4-24
*A*ln(e*x+d)*x^3*b^4*d*e^3-12*B*ln(b*x+a)*x^3*a^2*b^2*e^4-12*A*x^3*a*b^3*e^
4+12*A*x^3*b^4*d*e^3+6*B*x^3*a^2*b^2*e^4-6*B*x^3*b^4*d^2*e^2-18*A*x^2*a^2*b
^2*e^4+18*A*x^2*b^4*d^2*e^2+9*B*x^2*a^3*b*e^4-9*B*x^2*b^4*d^3*e+4*A*x*b^4*d
^3*e-4*A*x*a^3*b*e^4+12*A*ln(b*x+a)*x^4*b^4*e^4-12*A*ln(e*x+d)*x^4*b^4*e^4-
12*B*ln(b*x+a)*x*a*b^3*d^3*e+12*B*ln(e*x+d)*x*a^3*b*d*e^3+24*B*ln(e*x+d)*x*
a^2*b^2*d^2*e^2+12*B*ln(e*x+d)*x*a*b^3*d^3*e+30*B*ln(e*x+d)*x^2*a^2*b^2*d*e
^3+30*B*ln(e*x+d)*x^2*a*b^3*d^2*e^2+24*A*ln(b*x+a)*x*a^2*b^2*d*e^3+24*A*ln(
b*x+a)*x*a*b^3*d^2*e^2-24*A*ln(e*x+d)*x*a^2*b^2*d*e^3-24*A*ln(e*x+d)*x*a*b^
3*d^2*e^2-12*B*ln(b*x+a)*x*a^3*b*d*e^3-24*B*ln(b*x+a)*x^3*a*b^3*d*e^3+24*B*
ln(e*x+d)*x^3*a*b^3*d*e^3-24*B*ln(b*x+a)*x*a^2*b^2*d^2*e^2-48*A*ln(e*x+d)*x
^2*a*b^3*d*e^3-30*B*ln(b*x+a)*x^2*a^2*b^2*d*e^3-30*B*ln(b*x+a)*x^2*a*b^3*d^
2*e^2+48*A*ln(b*x+a)*x^2*a*b^3*d*e^3)*(b*x+a)/(e*x+d)^2/(a*e-b*d)^5/((b*x+a
)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^3 \left((a + bx)^2\right)^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**3*((a + b*x)**2)**(3/2)), x)
```

3.1555 $\int \frac{(A+Bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=373

$$\frac{5e^3(a+bx)(bd-ae)\log(a+bx)(-3aBe+Abe+2bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{10e^2(bd-ae)^2(-2aBe+Abe+bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^3(-3}{2b^7(a+bx)\sqrt{}}$$

Rubi [A] time = 0.43, antiderivative size = 373, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{e^4x(a+bx)(-5aBe+Abe+5bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{10e^2(bd-ae)^2(-2aBe+Abe+bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}+\frac{5e^3(a+bx)(bd-ae)\log(a+bx)(-3aBe+Abe+2bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^3(-3aBe+2Abe+bBd)}{2b^7(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae)^4(-6aBe+5Abe+bBd)}{3b^7(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^5}{4b^7(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^5x^2(a+bx)}{2b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-10*e^2*(b*d - a*e)^2*(b*B*d + A*b*e - 2*a*B*e))/(b^7*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) - ((A*b - a*B)*(b*d - a*e)^5)/(4*b^7*(a + b*x)^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) - ((b*d - a*e)^4*(b*B*d + 5*A*b*e - 6*a*B*e))/(3*b^7*(a + b
*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(b*d - a*e)^3*(b*B*d + 2*A*b*e
- 3*a*B*e))/(2*b^7*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^4*(5*b*B*d
 + A*b*e - 5*a*B*e)*x*(a + b*x))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e
^5*x^2*(a + b*x))/(2*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^3*(b*d - a*e
)*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)*Log[a + b*x])/(b^7*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^5}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{e^4(5bBd+Abe-5aBe)}{b^{11}}+\frac{Be^5x}{b^{10}}+\frac{(Ab-aB)(bd-ae)^5}{b^{11}(a+bx)^5}+\frac{(bd-ae)^4(bBd+5Abe-6a}{b^{11}(a+bx)^4}\right.}{\sqrt{a^2+2}}$$

$$=-\frac{10e^2(bd-ae)^2(bBd+Abe-2aBe)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^5}{4b^7(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-}{3b^7(a}$$

Mathematica [A] time = 0.32, size = 513, normalized size = 1.38

$$-\frac{Ab\left(77a^5e^5+a^4be^4(248ex-125d)+2a^3b^2e^3\left(15d^2-220dex+126e^2x^2\right)+2a^2b^3e^2\left(5d^3+60d^2ex-270de^2x^2+24e^3x^3\right)+ab^4e\left(5d^4+40d^3ex+180d^2e^2x^2-240de^3x^3-48e^4x^4\right)+b^5\left(3d^5+20d^4ex+60d^3e^2x^2+120d^2e^3x^3-12e^5x^5\right)\right)+B\left(171a^6e^5+7a^5be^4(72ex-55d)+2a^4b^2e^3\left(125d^2-620dex+198e^2x^2\right)-2a^3b^3e^2\left(15d^3-440d^2ex+630de^2x^2+48e^3x^3\right)-a^2b^4e\left(5d^4+120d^3ex-1080d^2e^2x^2+240de^3x^3+204e^4x^4\right)-ab^5\left(d^5+20d^4ex+180d^3e^2x^2-480d^2e^3x^3-240de^4x^4+36e^5x^5\right)+2b^6x\left(-2d^5-15d^4ex-60d^3e^2x^2+30de^4x^4+3e^5x^5\right)\right)+60e^3(a+bx)^4(bd-ae)\log(a+bx)(-3aBe+Abe+2bBd)}{12b^7(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(77*a^5*e^5 + a^4*b*e^4*(-125*d + 248*e*x) + 2*a^3*b^2*e^3*(15*d^2 -
 220*d*e*x + 126*e^2*x^2) + 2*a^2*b^3*e^2*(5*d^3 + 60*d^2*e*x - 270*d*e^2*x
^2 + 24*e^3*x^3) + a*b^4*e*(5*d^4 + 40*d^3*e*x + 180*d^2*e^2*x^2 - 240*d*e^
3*x^3 - 48*e^4*x^4) + b^5*(3*d^5 + 20*d^4*e*x + 60*d^3*e^2*x^2 + 120*d^2*e^
3*x^3 - 12*e^5*x^5))) + B*(171*a^6*e^5 + 7*a^5*b*e^4*(-55*d + 72*e*x) + 2*a
^4*b^2*e^3*(125*d^2 - 620*d*e*x + 198*e^2*x^2) - 2*a^3*b^3*e^2*(15*d^3 - 44
0*d^2*e*x + 630*d*e^2*x^2 + 48*e^3*x^3) - a^2*b^4*e*(5*d^4 + 120*d^3*e*x -
1080*d^2*e^2*x^2 + 240*d*e^3*x^3 + 204*e^4*x^4) + 2*b^6*x*(-2*d^5 - 15*d^4*
e*x - 60*d^3*e^2*x^2 + 30*d*e^4*x^4 + 3*e^5*x^5) - a*b^5*(d^5 + 20*d^4*e*x
+ 180*d^3*e^2*x^2 - 480*d^2*e^3*x^3 - 240*d*e^4*x^4 + 36*e^5*x^5)) + 60*e^3
*(b*d - a*e)*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^4*Log[a + b*x])/(12*b^7*
(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 48.39, size = 14568, normalized size = 39.06

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.45, size = 914, normalized size = 2.45

$$\frac{6Bb^6e^5x^6-\left(Bab^5+3Ab^6\right)d^5-5\left(Ba^2b^4+Aab^5\right)d^4e-10\left(3Ba^3b^3+Aa^2b^4\right)d^3e^2+10\left(25Ba^4b^2-3Aa^3b^3\right)d^2e^3-5\left(77Ba^5b-25Aa^4b^2\right)de^4+\left(171Ba^6-77Aa^5b\right)e^5+12\left(5Bb^6de^4-\left(3Bab^5-Ab^6\right)e^5\right)x^5+12\left(20Bab^5de^4-\left(17Ba^2b^4-4Aab^5\right)e^5\right)x^4-24\left(5Bb^6d^3e^2-5\left(4Bab^5-Ab^6\right)d^2e^3+10\left(Ba^2b^4-Aab^5\right)de^4+2\left(2Ba^3b^3+Aa^2b^4\right)e^5\right)x^3-6\left(5Bb^6d^4e+10\left(3Bab^5+Ab^6\right)d^3e^2-30\left(6Ba^2b^4-Aab^5\right)d^2e^3+30\left(7Ba^3b^3-3Aa^2b^4\right)de^4-6\left(11Ba^4b^2-7Aa^3b^3\right)e^5\right)x^2-4\left(Bb^6d^5+5\left(Bab^5+Ab^6\right)d^4e+10\left(3Ba^2b^4+Aab^5\right)d^3e^2-10\left(22Ba^3b^3-3Aa^2b^4\right)d^2e^3+10\left(31Ba^4b^2-11Aa^3b^3\right)de^4-2\left(63Ba^5b-31Aa^4b^2\right)e^5\right)x+60\left(2Ba^4b^2d^2e^3-\left(5Ba^5b-Aa^4b^2\right)de^4+\left(3Ba^6-Aa^5b\right)e^5+\left(2Bb^6d^2e^3-\left(5Bab^5-Ab^6\right)de^4+\left(3Ba^2b^4-Aab^5\right)e^5\right)x^4+4\left(2Bab^5d^2e^3-\left(5Ba^2b^4-Aab^5\right)de^4+\left(3Ba^3b^3-Aa^2b^4\right)e^5\right)x^3+6\left(2Ba^2b^4d^2e^3-\left(5Ba^3b^3-Aa^2b^4\right)de^4+\left(3Ba^4b^2-Aa^3b^3\right)e^5\right)x^2+4\left(2Ba^3b^3d^2e^3-\left(5Ba^4b^2-Aa^3b^3\right)de^4+\left(3Ba^5b-Aa^4b^2\right)e^5\right)x\right)\log\left(bx+a\right)}{12\left(b^{11}x^4+4ab^{10}x^3+6a^2b^9x^2+4a^3b^8x+a^4b^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*(6*B*b^6*e^5*x^6 - (B*a*b^5 + 3*A*b^6)*d^5 - 5*(B*a^2*b^4 + A*a*b^5)*d
^4*e - 10*(3*B*a^3*b^3 + A*a^2*b^4)*d^3*e^2 + 10*(25*B*a^4*b^2 - 3*A*a^3*b^
3)*d^2*e^3 - 5*(77*B*a^5*b - 25*A*a^4*b^2)*d*e^4 + (171*B*a^6 - 77*A*a^5*b)
*e^5 + 12*(5*B*b^6*d*e^4 - (3*B*a*b^5 - A*b^6)*e^5)*x^5 + 12*(20*B*a*b^5*d*
e^4 - (17*B*a^2*b^4 - 4*A*a*b^5)*e^5)*x^4 - 24*(5*B*b^6*d^3*e^2 - 5*(4*B*a*
b^5 - A*b^6)*d^2*e^3 + 10*(B*a^2*b^4 - A*a*b^5)*d*e^4 + 2*(2*B*a^3*b^3 + A*
a^2*b^4)*e^5)*x^3 - 6*(5*B*b^6*d^4*e + 10*(3*B*a*b^5 + A*b^6)*d^3*e^2 - 30*
(6*B*a^2*b^4 - A*a*b^5)*d^2*e^3 + 30*(7*B*a^3*b^3 - 3*A*a^2*b^4)*d*e^4 - 6*
(11*B*a^4*b^2 - 7*A*a^3*b^3)*e^5)*x^2 - 4*(B*b^6*d^5 + 5*(B*a*b^5 + A*b^6)*
d^4*e + 10*(3*B*a^2*b^4 + A*a*b^5)*d^3*e^2 - 10*(22*B*a^3*b^3 - 3*A*a^2*b^4
)*d^2*e^3 + 10*(31*B*a^4*b^2 - 11*A*a^3*b^3)*d*e^4 - 2*(63*B*a^5*b - 31*A*a
^4*b^2)*e^5)*x + 60*(2*B*a^4*b^2*d^2*e^3 - (5*B*a^5*b - A*a^4*b^2)*d*e^4 +
(3*B*a^6 - A*a^5*b)*e^5 + (2*B*b^6*d^2*e^3 - (5*B*a*b^5 - A*b^6)*d*e^4 + (3
*B*a^2*b^4 - A*a*b^5)*e^5)*x^4 + 4*(2*B*a*b^5*d^2*e^3 - (5*B*a^2*b^4 - A*a*
b^5)*d*e^4 + (3*B*a^3*b^3 - A*a^2*b^4)*e^5)*x^3 + 6*(2*B*a^2*b^4*d^2*e^3 -
(5*B*a^3*b^3 - A*a^2*b^4)*d*e^4 + (3*B*a^4*b^2 - A*a^3*b^3)*e^5)*x^2 + 4*(2
*B*a^3*b^3*d^2*e^3 - (5*B*a^4*b^2 - A*a^3*b^3)*d*e^4 + (3*B*a^5*b - A*a^4*b
^2)*e^5)*x)*log(b*x + a))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*x^2 + 4*a^3*
b^8*x + a^4*b^7)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.07, size = 1153, normalized size = 3.09

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(77*A*a^5*b*e^5-250*B*a^4*b^2*d^2*e^3+120*B*x*a^2*b^4*d^3*e^2+385*B*a
^5*b*d*e^4+3*A*b^6*d^5-171*B*a^6*e^5-12*A*x^5*b^6*e^5-180*B*ln(b*x+a)*a^6*e
^5-125*A*a^4*b^2*d*e^4+30*B*a^3*b^3*d^3*e^2+5*a^2*B*b^4*d^4*e+B*a*b^5*d^5+3
0*A*a^3*b^3*d^2*e^3-480*B*ln(b*x+a)*x^3*a*b^5*d^2*e^3-240*A*ln(b*x+a)*x^3*a
*b^5*d*e^4-240*A*ln(b*x+a)*x*a^3*b^3*d*e^4+300*B*ln(b*x+a)*x^4*a*b^5*d*e^4+
1200*B*ln(b*x+a)*x*a^4*b^2*d*e^4-480*B*ln(b*x+a)*x*a^3*b^3*d^2*e^3+4*B*x*b^
6*d^5-6*B*x^6*b^6*e^5+10*A*a^2*b^4*d^3*e^2-360*A*ln(b*x+a)*x^2*a^2*b^4*d*e^
4+1800*B*ln(b*x+a)*x^2*a^3*b^3*d*e^4-720*B*ln(b*x+a)*x^2*a^2*b^4*d^2*e^3+12
00*B*ln(b*x+a)*x^3*a^2*b^4*d*e^4+5*A*a*b^5*d^4*e-120*B*ln(b*x+a)*x^4*b^6*d^
2*e^3+240*A*ln(b*x+a)*x^3*a^2*b^4*e^5-60*A*ln(b*x+a)*a^4*b^2*d*e^4+300*B*ln
(b*x+a)*a^5*b*d*e^4-120*B*ln(b*x+a)*a^4*b^2*d^2*e^3+60*A*ln(b*x+a)*x^4*a*b^
5*e^5-60*A*ln(b*x+a)*x^4*b^6*d*e^4-180*B*ln(b*x+a)*x^4*a^2*b^4*e^5+1240*B*x
*a^4*b^2*d*e^4-240*B*x^4*a*b^5*d*e^4+240*B*x^3*a^2*b^4*d*e^4+1260*B*x^2*a^3
*b^3*d*e^4+120*A*x*a^2*b^4*d^2*e^3+40*A*x*a*b^5*d^3*e^2-880*B*x*a^3*b^3*d^2
*e^3-48*A*x^4*a*b^5*e^5+60*A*ln(b*x+a)*a^5*b*e^5+36*B*x^5*a*b^5*e^5-60*B*x^
5*b^6*d*e^4-504*B*x*a^5*b*e^5+20*A*x*b^6*d^4*e+60*A*x^2*b^6*d^3*e^2-396*B*x
^2*a^4*b^2*e^5+30*B*x^2*b^6*d^4*e+248*A*x*a^4*b^2*e^5+96*B*x^3*a^3*b^3*e^5+
120*B*x^3*b^6*d^3*e^2+252*A*x^2*a^3*b^3*e^5+120*A*x^3*b^6*d^2*e^3+204*B*x^4
*a^2*b^4*e^5+48*A*x^3*a^2*b^4*e^5-540*A*x^2*a^2*b^4*d*e^4+180*A*x^2*a*b^5*d
^2*e^3-240*A*x^3*a*b^5*d*e^4-1080*B*x^2*a^2*b^4*d^2*e^3+180*B*x^2*a*b^5*d^3
*e^2-480*B*x^3*a*b^5*d^2*e^3-440*A*x*a^3*b^3*d*e^4-720*B*ln(b*x+a)*x^3*a^3*
b^3*e^5+360*A*ln(b*x+a)*x^2*a^3*b^3*e^5-1080*B*ln(b*x+a)*x^2*a^4*b^2*e^5+24
0*A*ln(b*x+a)*x*a^4*b^2*e^5-720*B*ln(b*x+a)*x*a^5*b*e^5+20*B*x*a*b^5*d^4*e)
*(b*x+a)/b^7/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.19, size = 1010, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*B*e^5*((2*b^6*x^6 - 12*a*b^5*x^5 - 68*a^2*b^4*x^4 - 32*a^3*b^3*x^3 + 13
2*a^4*b^2*x^2 + 168*a^5*b*x + 57*a^6)/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*
x^2 + 4*a^3*b^8*x + a^4*b^7) + 60*a^2*log(b*x + a)/b^7) + 5/12*B*d*e^4*((12
*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x -
77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) -
60*a*log(b*x + a)/b^6) + 1/12*A*e^5*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^
3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6
*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 5/6*B*d^2*
e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*
b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 5
/12*A*d*e^4*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^
4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/
b^5) - 5/6*B*d^3*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*
```

```
(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 5/6*A*d^2*e^3*(12*x^2/((b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) +
6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4))
- 1/12*B*d^5*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^
4)) - 5/12*A*d^4*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x +
 a/b)^4)) - 5/12*B*d^4*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a
^2/(b^7*(x + a/b)^4)) - 5/6*A*d^3*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x +
a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/4*A*d^5/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^5}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^5}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**5/((a + b*x)**2)**(5/2), x)
```

3.1556 $\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=310

$$\frac{e^3(a+bx)\log(a+bx)(-5aBe+Abe+4bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{2e^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2(-5aBe+3Ab}{b^6(a+bx)\sqrt{a^2+2abx}}$$

Rubi [A] time = 0.30, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{2e^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{e^3(a+bx)\log(a+bx)(-5aBe+Abe+4bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2(-5aBe+3Abe+2bBd)}{b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae)^3(-5aBe+4Abe+bBd)}{3b^6(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^4}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^4x(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e - 5*a*B*e))/(b^6*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - ((A*b - a*B)*(b*d - a*e)^4)/(4*b^6*(a + b*x)^3*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) - ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e))/(3*b^6*(a +
b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e
 - 5*a*B*e))/(b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e^4*x*(a +
b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(4*b*B*d + A*b*e - 5*a*B*e
)*(a + b*x)*Log[a + b*x])/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^4}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Be^4}{b^{10}}+\frac{(Ab-aB)(bd-ae)^4}{b^{10}(a+bx)^5}+\frac{(bd-ae)^3(bBd+4Abe-5aBe)}{b^{10}(a+bx)^4}+\frac{2e(bd-ae)^2(2bBd+3}{b^{10}(a+bx}\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=-\frac{2e^2(bd-ae)(3bBd+2Abe-5aBe)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^4}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-}{3b^6(}$$

Mathematica [A] time = 0.22, size = 331, normalized size = 1.07

$$\frac{-Ab(bd-ae)\left(25a^3e^3+a^2be^2(13d+88ex)+ab^2e\left(7d^2+40dex+108e^2x^2\right)+b^3\left(3d^3+16d^2ex+36de^2x^2+48e^3x^3\right)\right)-B\left(77a^5e^4+4a^4be^3(62ex-25d)+2a^3b^2e^2\left(9d^2-176dex+126e^2x^2\right)+4a^2b^3e\left(d^3+18d^2ex-108de^2x^2+12e^3x^3\right)+ab^4\left(d^4+16d^3ex+108d^2e^2x^2-192de^3x^3-48e^4x^4\right)+4b^5x\left(d^4+6d^3ex+18d^2e^2x^2-3e^4x^4\right)\right)+12e^3(a+bx)^4\log(a+bx)(-5aBe+Abe+4bBd)}{12b^6(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(b*d - a*e)*(25*a^3*e^3 + a^2*b*e^2*(13*d + 88*e*x) + a*b^2*e*(7*d^2
 + 40*d*e*x + 108*e^2*x^2) + b^3*(3*d^3 + 16*d^2*e*x + 36*d*e^2*x^2 + 48*e^
3*x^3))) - B*(77*a^5*e^4 + 4*a^4*b*e^3*(-25*d + 62*e*x) + 2*a^3*b^2*e^2*(9*
d^2 - 176*d*e*x + 126*e^2*x^2) + 4*a^2*b^3*e*(d^3 + 18*d^2*e*x - 108*d*e^2*
x^2 + 12*e^3*x^3) + a*b^4*(d^4 + 16*d^3*e*x + 108*d^2*e^2*x^2 - 192*d*e^3*x
^3 - 48*e^4*x^4) + 4*b^5*x*(d^4 + 6*d^3*e*x + 18*d^2*e^2*x^2 - 3*e^4*x^4))
+ 12*e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)^4*Log[a + b*x])/(12*b^6*(a +
 b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B]   time = 36.52, size = 8741, normalized size = 28.20

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] Result too large to show
```

fricas [B]   time = 0.42, size = 619, normalized size = 2.00

$$\frac{12 \, B b^{5} e^{4} x^{5} + 48 \, B a b^{4} e^{4} x^{4} - {\left(B a b^{4} + 3 \, A b^{5}\right)} d^{4} - 4 \, {\left(B a^{2} b^{3} + A a b^{4}\right)} d^{3} e - 6 \, {\left(3 \, B a^{3} b^{2} + A a^{2} b^{3}\right)} d^{2} e^{2} + 4 \, {\left(25 \, B a^{4} b - 3 \, A a^{3} b^{2}\right)} d e^{3} - {\left(77 \, B a^{5} - 25 \, A a^{4} b\right)} e^{4} - 24 \, {\left(3 \, B b^{5} d^{2} e^{2} - 2 \, {\left(4 \, B a b^{4} - A b^{5}\right)} d e^{3} + 2 \, {\left(B a^{2} b^{3} - A a b^{4}\right)} e^{4}\right)} x^{3} - 12 \, {\left(2 \, B b^{5} d^{3} e + 3 \, {\left(3 \, B a b^{4} + A b^{5}\right)} d^{2} e^{2} - 6 \, {\left(6 \, B a^{2} b^{3} - A a b^{4}\right)} d e^{3} + 3 \, {\left(7 \, B a^{3} b^{2} - 3 \, A a^{2} b^{3}\right)} e^{4}\right)} x^{2} - 4 \, {\left(B b^{5} d^{4} + 4 \, {\left(B a b^{4} + A b^{5}\right)} d^{3} e + 6 \, {\left(3 \, B a^{2} b^{3} + A a b^{4}\right)} d^{2} e^{2} - 4 \, {\left(22 \, B a^{3} b^{2} - 3 \, A a^{2} b^{3}\right)} d e^{3} + 2 \, {\left(31 \, B a^{4} b - 11 \, A a^{3} b^{2}\right)} e^{4}\right)} x + 12 \, {\left(4 \, B a^{4} b d e^{3} - {\left(5 \, B a^{5} - A a^{4} b\right)} e^{4} + {\left(4 \, B b^{5} d e^{3} - {\left(5 \, B a b^{4} - A b^{5}\right)} e^{4}\right)} x^{4} + 4 \, {\left(4 \, B a b^{4} d e^{3} - {\left(5 \, B a^{2} b^{3} - A a b^{4}\right)} e^{4}\right)} x^{3} + 6 \, {\left(4 \, B a^{2} b^{3} d e^{3} - {\left(5 \, B a^{3} b^{2} - A a^{2} b^{3}\right)} e^{4}\right)} x^{2} + 4 \, {\left(4 \, B a^{3} b^{2} d e^{3} - {\left(5 \, B a^{4} b - A a^{3} b^{2}\right)} e^{4}\right)} x\right)} \log\left(b x + a\right)}{12 \, {\left(b^{10} x^{4} + 4 \, a b^{9} x^{3} + 6 \, a^{2} b^{8} x^{2} + 4 \, a^{3} b^{7} x + a^{4} b^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*(12*B*b^5*e^4*x^5 + 48*B*a*b^4*e^4*x^4 - (B*a*b^4 + 3*A*b^5)*d^4 - 4*(
B*a^2*b^3 + A*a*b^4)*d^3*e - 6*(3*B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 4*(25*B*
a^4*b - 3*A*a^3*b^2)*d*e^3 - (77*B*a^5 - 25*A*a^4*b)*e^4 - 24*(3*B*b^5*d^2*
e^2 - 2*(4*B*a*b^4 - A*b^5)*d*e^3 + 2*(B*a^2*b^3 - A*a*b^4)*e^4)*x^3 - 12*(
2*B*b^5*d^3*e + 3*(3*B*a*b^4 + A*b^5)*d^2*e^2 - 6*(6*B*a^2*b^3 - A*a*b^4)*d
*e^3 + 3*(7*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 - 4*(B*b^5*d^4 + 4*(B*a*b^4 +
 A*b^5)*d^3*e + 6*(3*B*a^2*b^3 + A*a*b^4)*d^2*e^2 - 4*(22*B*a^3*b^2 - 3*A*a
^2*b^3)*d*e^3 + 2*(31*B*a^4*b - 11*A*a^3*b^2)*e^4)*x + 12*(4*B*a^4*b*d*e^3
- (5*B*a^5 - A*a^4*b)*e^4 + (4*B*b^5*d*e^3 - (5*B*a*b^4 - A*b^5)*e^4)*x^4 +
 4*(4*B*a*b^4*d*e^3 - (5*B*a^2*b^3 - A*a*b^4)*e^4)*x^3 + 6*(4*B*a^2*b^3*d*e
^3 - (5*B*a^3*b^2 - A*a^2*b^3)*e^4)*x^2 + 4*(4*B*a^3*b^2*d*e^3 - (5*B*a^4*b
 - A*a^3*b^2)*e^4)*x)*log(b*x + a))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2
 + 4*a^3*b^7*x + a^4*b^6)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$sage_{0} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B]   time = 0.08, size = 735, normalized size = 2.37

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(-4*A*a*b^4*d^3*e+192*B*a*b^4*d*e^3*x^3+100*B*a^4*b*d*e^3-18*B*a^3*b^2
*d^2*e^2+192*B*ln(b*x+a)*x^3*a*b^4*d*e^3-4*B*a^2*b^3*d^3*e-60*B*a^5*e^4*ln(
b*x+a)-4*B*b^5*d^4*x+12*B*b^5*e^4*x^5+48*A*a*b^4*e^4*x^3-48*A*b^5*d*e^3*x^3
-48*B*a^2*b^3*e^4*x^3-12*A*a^3*b^2*d*e^3-72*B*a^2*b^3*d^2*e^2*x-48*A*a^2*b^
3*d*e^3*x+352*B*a^3*b^2*d*e^3*x+25*A*a^4*b*e^4-B*a*b^4*d^4-3*A*b^5*d^4-77*B
*a^5*e^4-72*A*a*b^4*d*e^3*x^2+48*B*a^4*b*d*e^3*ln(b*x+a)+48*A*a^3*b^2*e^4*x
*ln(b*x+a)-240*B*a^4*b*e^4*x*ln(b*x+a)+72*A*a^2*b^3*e^4*x^2*ln(b*x+a)-360*B
*a^3*b^2*e^4*x^2*ln(b*x+a)-24*A*a*b^4*d^2*e^2*x-16*B*a*b^4*d^3*e*x-6*A*a^2*
b^3*d^2*e^2-24*B*x^2*b^5*d^3*e+12*A*ln(b*x+a)*x^4*b^5*e^4+192*B*a^3*b^2*d*e
^3*x*ln(b*x+a)+288*B*a^2*b^3*d*e^3*x^2*ln(b*x+a)-36*A*x^2*b^5*d^2*e^2-108*B
*a*b^4*d^2*e^2*x^2+432*B*a^2*b^3*d*e^3*x^2-240*B*ln(b*x+a)*x^3*a^2*b^3*e^4-
60*B*ln(b*x+a)*x^4*a*b^4*e^4+48*B*ln(b*x+a)*x^4*b^5*d*e^3+48*A*ln(b*x+a)*x^
3*a*b^4*e^4+48*B*a*b^4*e^4*x^4-72*B*b^5*d^2*e^2*x^3+12*A*a^4*b*e^4*ln(b*x+a
)-248*B*a^4*b*e^4*x+108*A*a^2*b^3*e^4*x^2-252*B*a^3*b^2*e^4*x^2+88*A*a^3*b^
2*e^4*x-16*A*b^5*d^3*e*x)*(b*x+a)/b^6/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.95, size = 755, normalized size = 2.44

$$\frac{1}{12}Be^4\left(\frac{12b^5x^5+48ab^4x^4-48a^2b^3x^3-252a^3b^2x^2-248a^4bx-77a^5}{b^{10}x^4+4ab^9x^3+6a^2b^8x^2+4a^3b^7x+a^4b^6}-\frac{60a\log(bx+a)}{b^6}\right)+\frac{1}{3}Bde^3\left(\frac{48ab^3x^3+108a^2b^2x^2+88a^3bx+25a^4}{b^9x^4+4ab^8x^3+6a^2b^7x^2+4a^3b^6x+a^4b^5}+\frac{12\log(bx+a)}{b^5}\right)+\frac{1}{12}Ae^4\left(\frac{48ab^3x^3+108a^2b^2x^2+88a^3bx+25a^4}{b^9x^4+4ab^8x^3+6a^2b^7x^2+4a^3b^6x+a^4b^5}+\frac{12\log(bx+a)}{b^5}\right)-\frac{1}{2}Bd^2e^2\left(\frac{12x^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}+\frac{8a^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^4}+\frac{6a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{3}Ade^3\left(\frac{12x^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}+\frac{8a^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^4}+\frac{6a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{12}Bd^4\left(\frac{4}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}-\frac{3a}{b^6\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{3}Ad^3e\left(\frac{4}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}-\frac{3a}{b^6\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{3}Bd^3e\left(\frac{6}{b^5\left(x+\frac{a}{b}\right)^2}-\frac{8a}{b^6\left(x+\frac{a}{b}\right)^3}+\frac{3a^2}{b^7\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{2}Ad^2e^2\left(\frac{6}{b^5\left(x+\frac{a}{b}\right)^2}-\frac{8a}{b^6\left(x+\frac{a}{b}\right)^3}+\frac{3a^2}{b^7\left(x+\frac{a}{b}\right)^4}\right)-\frac{Ad^4}{4b^5\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*B*e^4*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 -
 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*
x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 1/3*B*d*e^3*((48*a*b^3*x^3 + 108*a^
2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4
*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 1/12*A*e^4*((48*a*b^3*x^3 +
108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x
^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) - 1/2*B*d^2*e^2*(12*x^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x
+ a/b)^4)) - 1/3*A*d*e^3*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*
a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(
b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*B*d^4*(4/((b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*A*d^3*e*(4/((b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*B*d^3*e*(6/(b^5*
(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/2*A*d^2
*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)
) - 1/4*A*d^4/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^4}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4/((a + b*x)**2)**(5/2), x)
```

3.1557 $\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=227

$$-\frac{(d+ex)^4(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3Be^2(bd-ae)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3Be(bd-ae)^2}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\quad}{3b^5(a+bx}$$

Rubi [A] time = 0.17, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 78, 43}

$$-\frac{(d+ex)^4(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3Be^2(bd-ae)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3Be(bd-ae)^2}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B(bd-ae)^3}{3b^5(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^3(a+bx)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*B*e^2*(b*d - a*e))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (B*(b*d - a*e)
^3)/(3*b^5*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*B*e*(b*d - a*e)^
2)/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)
^4)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e^3*(a
 + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^3}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^4}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{\left(ab+b^2x\right)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^4}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \left(\frac{(bd-ae)^3}{b^7(a+bx)^4} + \frac{3e(bd-a}{b^7(a+bx}\right.}{\sqrt{a^2+2abx+}}$$

$$= -\frac{3Be^2(bd-ae)}{b^5\sqrt{a^2+2abx+b^2x^2}} - \frac{B(bd-ae)^3}{3b^5(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{3Be(bd-ae}{2b^5(a+bx)\sqrt{a^2+2a}}$$

Mathematica [A] time = 0.13, size = 239, normalized size = 1.05

$$\frac{-3Ab\left(a^3e^3+a^2be^2(d+4ex)+ab^2e\left(d^2+4dex+6e^2x^2\right)+b^3\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+B\left(25a^4e^3+a^3be^2(88ex-9d)-3a^2b^2e\left(d^2+12dex-36e^2x^2\right)-ab^3\left(d^3+12d^2ex+54de^2x^2-48e^3x^3\right)-2b^4dx\left(2d^2+9dex+18e^2x^2\right)\right)+12Be^3(a+bx)^4\log(a+bx)}{12b^5(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (B*(25*a^4*e^3 + a^3*b*e^2*(-9*d + 88*e*x) - 3*a^2*b^2*e*(d^2 + 12*d*e*x -
36*e^2*x^2) - 2*b^4*d*x*(2*d^2 + 9*d*e*x + 18*e^2*x^2) - a*b^3*(d^3 + 12*d^
2*e*x + 54*d*e^2*x^2 - 48*e^3*x^3)) - 3*A*b*(a^3*e^3 + a^2*b*e^2*(d + 4*e*x
) + a*b^2*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + b^3*(d^3 + 4*d^2*e*x + 6*d*e^2*x^
2 + 4*e^3*x^3)) + 12*B*e^3*(a + b*x)^4*Log[a + b*x])/(12*b^5*(a + b*x)^3*Sq
rt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 9.66, size = 4832, normalized size = 21.29

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (24*a^4*A*b^3*d^3 - 24*a^5*b^2*B*d^3 - 72*a^5*A*b^2*d^2*e + 72*a^6*b*B*d^2*
e + 72*a^6*A*b*d*e^2 - 72*a^7*B*d*e^2 - 24*a^7*A*e^3 - 64*a^4*b^3*B*d^3*x +
 231*a^5*A*b^2*d*e^2*x - 288*a^6*b*B*d*e^2*x - 96*a^6*A*b*e^3*x - 136*a^3*b
^4*B*d^3*x^2 + 672*a^4*A*b^3*d*e^2*x^2 - 1008*a^5*b^2*B*d*e^2*x^2 - 336*a^5
*A*b^2*e^3*x^2 - 144*a^2*b^5*B*d^3*x^3 + 1008*a^3*A*b^4*d*e^2*x^3 - 2016*a^
4*b^3*B*d*e^2*x^3 - 672*a^4*A*b^3*e^3*x^3 + 24*A*b^7*d^3*x^4 - 72*a*b^6*B*d
^3*x^4 + 24*a*A*b^6*d^2*e*x^4 + 24*a^2*b^5*B*d^2*e*x^4 + 864*a^2*A*b^5*d*e^
2*x^4 - 2448*a^3*b^4*B*d*e^2*x^4 - 816*a^3*A*b^4*e^3*x^4 + 96*A*b^7*d^2*e*x
^5 + 96*a*b^6*B*d^2*e*x^5 + 432*a*A*b^6*d*e^2*x^5 - 1728*a^2*b^5*B*d*e^2*x^
5 - 576*a^2*A*b^5*e^3*x^5 + 144*b^7*B*d^2*e*x^6 + 144*A*b^7*d*e^2*x^6 - 576
*a*b^6*B*d*e^2*x^6 - 192*a*A*b^6*e^3*x^6 + Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]*(24*a^3*A*b^2*d^3 - 72*a^4*A*b*d^2*e + 72*a^5*B*d^2*e + 9*a^5*A*d*e
^2 - 24*a^2*A*b^3*d^3*x + 64*a^3*b^2*B*d^3*x + 72*a^3*A*b^2*d^2*e*x - 72*a^
4*b*B*d^2*e*x - 240*a^4*A*b*d*e^2*x + 288*a^5*B*d*e^2*x + 96*a^5*A*e^3*x +
24*a*A*b^4*d^3*x^2 + 72*a^2*b^3*B*d^3*x^2 - 72*a^2*A*b^3*d^2*e*x^2 + 72*a^3
*b^2*B*d^2*e*x^2 - 432*a^3*A*b^2*d*e^2*x^2 + 720*a^4*b*B*d*e^2*x^2 + 240*a^
4*A*b*e^3*x^2 - 24*A*b^5*d^3*x^3 + 72*a*b^4*B*d^3*x^3 + 72*a*A*b^4*d^2*e*x^
3 - 72*a^2*b^3*B*d^2*e*x^3 - 576*a^2*A*b^3*d*e^2*x^3 + 1296*a^3*b^2*B*d*e^2
*x^3 + 432*a^3*A*b^2*e^3*x^3 - 96*A*b^5*d^2*e*x^4 + 48*a*b^4*B*d^2*e*x^4 -
288*a*A*b^4*d*e^2*x^4 + 1152*a^2*b^3*B*d*e^2*x^4 + 384*a^2*A*b^3*e^3*x^4 -
```

```
144*b^5*B*d^2*e*x^5 - 144*A*b^5*d*e^2*x^5 + 576*a*b^4*B*d*e^2*x^5 + 192*a*A
*b^4*e^3*x^5))/(12*b^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^5 - 24*a
^2*b^6*x - 24*a*b^7*x^2 - 8*b^8*x^3) + 12*b^3*Sqrt[b^2]*x^4*(8*a^4*b^4 + 32
*a^3*b^5*x + 48*a^2*b^6*x^2 + 32*a*b^7*x^3 + 8*b^8*x^4)) + ((-308*a^5*A*d*e
^2*x)/(b*Sqrt[b^2]) - (448*a^7*B*e^3*x)/(3*b^3*Sqrt[b^2]) - (896*a^4*A*d*e^
2*x^2)/Sqrt[b^2] - (1888*a^6*B*e^3*x^2)/(3*(b^2)^(3/2)) - (1344*a^3*A*b*d*e
^2*x^3)/Sqrt[b^2] - (1600*a^5*B*e^3*x^3)/(b*Sqrt[b^2]) - 1120*a^2*A*Sqrt[b^
2]*d*e^2*x^4 - (8000*a^4*B*e^3*x^4)/(3*Sqrt[b^2]) - (448*a*A*b^3*d*e^2*x^5)
/Sqrt[b^2] - (8576*a^3*b*B*e^3*x^5)/(3*Sqrt[b^2]) - 1792*a^2*Sqrt[b^2]*B*e^
3*x^6 - (512*a*b^3*B*e^3*x^7)/Sqrt[b^2] + (84*a^5*A*d*e^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/b^3 + (32*a^7*B*e^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^5 + (224
*a^4*A*d*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (352*a^6*B*e^3*x*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (672*a^3*A*d*e^2*x^2*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/b + (512*a^5*B*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + 672
*a^2*A*d*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (1088*a^4*B*e^3*x^3*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/b^2 + 448*a*A*b*d*e^2*x^4*Sqrt[a^2 + 2*a*b*x + b^2
*x^2] + (4736*a^3*B*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b) + 1280*a^2
*B*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 512*a*b*B*e^3*x^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2] + (128*a^4*B*e^3*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/a])/b + 512*a^3*B*e^3*x^5*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/a] + 768*a^2*b*B*e^3*x^6*ArcTanh[(-(Sqrt[b^2]*x)
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 512*a*b^2*B*e^3*x^7*ArcTanh[(-(Sqrt[
b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 128*b^3*B*e^3*x^8*ArcTanh[(-(
Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128*a^3*B*e^3*x^4*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/a])/Sqrt[b^2] - (384*a^2*b*B*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - 384
*a*Sqrt[b^2]*B*e^3*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x
) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128*b^3*B*e^3*x^7*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/
Sqrt[b^2])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4) + ((32*a^8*B*e^3)/(b^4*Sqrt[b^2]
) + (256*a^4*B*d^3*x)/(3*Sqrt[b^2]) + (384*a^6*B*d*e^2*x)/(b^2)^(3/2) + (12
8*a^6*A*e^3*x)/(b^2)^(3/2) + (448*a^7*B*e^3*x)/(3*b^3*Sqrt[b^2]) + (544*a^3
*b*B*d^3*x^2)/(3*Sqrt[b^2]) + (1344*a^5*B*d*e^2*x^2)/(b*Sqrt[b^2]) + (448*a
^5*A*e^3*x^2)/(b*Sqrt[b^2]) + (1888*a^6*B*e^3*x^2)/(3*(b^2)^(3/2)) + 192*a^
2*Sqrt[b^2]*B*d^3*x^3 + (2688*a^4*B*d*e^2*x^3)/Sqrt[b^2] + (896*a^4*A*e^3*x
^3)/Sqrt[b^2] + (1600*a^5*B*e^3*x^3)/(b*Sqrt[b^2]) + (320*a*b^3*B*d^3*x^4)/
(3*Sqrt[b^2]) + (3360*a^3*b*B*d*e^2*x^4)/Sqrt[b^2] + (1120*a^3*A*b*e^3*x^4)
/Sqrt[b^2] + (2400*a^4*B*e^3*x^4)/Sqrt[b^2] + (128*b^4*B*d^3*x^5)/(3*Sqrt[b
^2]) + 2688*a^2*Sqrt[b^2]*B*d*e^2*x^5 + 896*a^2*A*Sqrt[b^2]*e^3*x^5 + (1920
*a^3*b*B*e^3*x^5)/Sqrt[b^2] + (1344*a*b^3*B*d*e^2*x^6)/Sqrt[b^2] + (448*a*A
*b^3*e^3*x^6)/Sqrt[b^2] + 640*a^2*Sqrt[b^2]*B*e^3*x^6 + (384*b^4*B*d*e^2*x^
7)/Sqrt[b^2] + (128*A*b^4*e^3*x^7)/Sqrt[b^2] - (32*a^4*B*d^3*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/b^2 - (96*a^6*B*d*e^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 -
 (32*a^6*A*e^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 - (160*a^3*B*d^3*x*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(3*b) - (288*a^5*B*d*e^2*x*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/b^3 - (96*a^5*A*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (448*a^6
*B*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) - 128*a^2*B*d^3*x^2*Sqrt[a^
2 + 2*a*b*x + b^2*x^2] - (1056*a^4*B*d*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/b^2 - (352*a^4*A*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (480*a^5*B
*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - 64*a*b*B*d^3*x^3*Sqrt[a^2 + 2
*a*b*x + b^2*x^2] - (1632*a^3*B*d*e^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b
- (544*a^3*A*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (1120*a^4*B*e^3*x^3
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (128*b^2*B*d^3*x^4*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/3 - 1728*a^2*B*d*e^2*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 576*a
^2*A*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (1280*a^3*B*e^3*x^4*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/b - 960*a*b*B*d*e^2*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
- 320*a*A*b*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 640*a^2*B*e^3*x^5*Sqrt[
```

```
a^2 + 2*a*b*x + b^2*x^2] - 384*b^2*B*d*e^2*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2
] - 128*A*b^2*e^3*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (64*a^4*B*e^3*x^4*Log
[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (256*a^3*b*
B*e^3*x^5*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2]
- 384*a^2*Sqrt[b^2]*B*e^3*x^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b
^2*x^2]] - (256*a*b^3*B*e^3*x^7*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]])/Sqrt[b^2] - (64*b^4*B*e^3*x^8*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (64*a^3*B*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 192*a^2*B
*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*
a*b*x + b^2*x^2]] + 192*a*b*B*e^3*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 64*b^2*B*e^3*x^7*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]]
- (64*a^4*B*e^3*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/S
qrt[b^2] - (256*a^3*b*B*e^3*x^5*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]])/Sqrt[b^2] - 384*a^2*Sqrt[b^2]*B*e^3*x^6*Log[a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]] - (256*a*b^3*B*e^3*x^7*Log[a - Sqrt[b^2]*x + S
qrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (64*b^4*B*e^3*x^8*Log[a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (64*a^3*B*e^3*x^4*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2
]])/b + 192*a^2*B*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 192*a*b*B*e^3*x^6*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 64*b^2*B*e^
3*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*
x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(a - S
qrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4)
```

fricas [B] time = 0.42, size = 359, normalized size = 1.58

$$-\frac{\left(Bab^3 + 3\,Ab^4\right)d^3 + 3\left(Ba^2b^2 + Aab^3\right)d^2e + 3\left(3\,Ba^3b + Aa^2b^2\right)de^2 - \left(25\,Ba^4 - 3\,Aa^3b\right)e^3 + 12\left(3\,Bb^4de^2 - \left(4\,Bab^3 - Ab^4\right)e^3\right)x^3 + 18\left(Bb^4d^2e + \left(3\,Bab^3 + Ab^4\right)de^2 - \left(6\,Ba^2b^2 - Aab^3\right)e^3\right)x^2 + 4\left(Bb^4d^3 + 3\left(Bab^3 + Ab^4\right)d^2e + 3\left(3\,Ba^2b^2 + Aab^3\right)de^2 - \left(22\,Ba^3b - 3\,Aa^2b^2\right)e^3\right)x - 12\left(Bb^4e^3x^4 + 4\,Bab^3e^3x^3 + 6\,Ba^2b^2e^3x^2 + 4\,Ba^3be^3x + Ba^4e^3\right)\log\left(bx + a\right)}{12\left(b^9x^4 + 4\,ab^8x^3 + 6\,a^2b^7x^2 + 4\,a^3b^6x + a^4b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/12*((B*a*b^3 + 3*A*b^4)*d^3 + 3*(B*a^2*b^2 + A*a*b^3)*d^2*e + 3*(3*B*a^3
*b + A*a^2*b^2)*d*e^2 - (25*B*a^4 - 3*A*a^3*b)*e^3 + 12*(3*B*b^4*d*e^2 - (4
*B*a*b^3 - A*b^4)*e^3)*x^3 + 18*(B*b^4*d^2*e + (3*B*a*b^3 + A*b^4)*d*e^2 -
(6*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 4*(B*b^4*d^3 + 3*(B*a*b^3 + A*b^4)*d^2*e
 + 3*(3*B*a^2*b^2 + A*a*b^3)*d*e^2 - (22*B*a^3*b - 3*A*a^2*b^2)*e^3)*x - 12
*(B*b^4*e^3*x^4 + 4*B*a*b^3*e^3*x^3 + 6*B*a^2*b^2*e^3*x^2 + 4*B*a^3*b*e^3*x
 + B*a^4*e^3)*log(b*x + a))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*
b^6*x + a^4*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.06, size = 385, normalized size = 1.70

$$-\frac{\left(-12B\,b^4e^3x^4\ln\left(bx+a\right) - 48Ba\,b^3e^3x^3\ln\left(bx+a\right) + 12A\,b^4e^3x^3 - 72B\,a^2b^2e^3x^2\ln\left(bx+a\right) - 48Ba\,b^3e^3x^3 + 36B\,b^4d\,e^2x^3 + 18Aa\,b^3e^3x^2 + 18A\,b^4d\,e^2x^2 - 48B\,a^3b\,e^3x\ln\left(bx+a\right) - 108B\,a^2b^2e^3x^2 + 54Ba\,b^3d\,e^2x^2 + 18B\,b^4d^2e\,x^2 + 12A\,a^2b^2e^3x + 12Aa\,b^3d\,e^2x + 12A\,b^4d^2ex - 12B\,a^4e^3\ln\left(bx+a\right) - 88B\,a^3b\,e^3x + 36B\,a^2b^2d\,e^2x + 12Ba\,b^3d^2ex + 4B\,b^4d^3x + 3A\,a^3b\,e^3 + 3A\,a^2b^2d\,e^2 + 3Aa\,b^3d^2e + 3A\,b^4d^3 - 25B\,a^4e^3 + 9B\,a^3bd\,e^2 + 3B\,a^2b^2d^2e + Ba\,b^3d^3\right)\left(bx+a\right)}{12\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(-48*B*a^3*b*e^3*x*ln(b*x+a)-72*B*a^2*b^2*e^3*x^2*ln(b*x+a)-48*B*ln(b
*x+a)*x^3*a*b^3*e^3+12*B*a*b^3*d^2*e*x+3*A*a^3*b*e^3+36*B*a^2*b^2*d*e^2*x+1
2*A*a*b^3*d*e^2*x+54*B*a*b^3*d*e^2*x^2+3*A*b^4*d^3-25*B*a^4*e^3+9*B*a^3*b*d
*e^2+B*a*b^3*d^3+12*A*b^4*e^3*x^3-12*B*a^4*e^3*ln(b*x+a)+4*B*b^4*d^3*x+18*A
*b^4*d*e^2*x^2+12*A*a^2*b^2*e^3*x+3*B*a^2*b^2*d^2*e+3*A*a*b^3*d^2*e-88*B*a^
3*b*e^3*x-108*B*a^2*b^2*e^3*x^2+18*B*b^4*d^2*e*x^2-48*B*a*b^3*e^3*x^3+36*B*
b^4*d*e^2*x^3+18*A*a*b^3*e^3*x^2+3*A*a^2*b^2*d*e^2+12*A*b^4*d^2*e*x-12*B*ln
(b*x+a)*x^4*b^4*e^3)*(b*x+a)/b^5/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.67, size = 533, normalized size = 2.35

$$\frac{1}{12}Be^3\left(\frac{48ab^3x^3+108a^2b^2x^2+88a^3bx+25a^4}{b^9x^4+4ab^8x^3+6a^2b^7x^2+4a^3b^6x+a^4b^5}+\frac{12\log(bx+a)}{b^5}\right)-\frac{1}{4}Bde^2\left(\frac{12x^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}+\frac{8a^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^4}+\frac{6a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{12}Ae^3\left(\frac{12x^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}+\frac{8a^2}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^4}+\frac{6a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{12}Bd^3\left(\frac{4}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}-\frac{3a}{b^6\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{4}Ad^2e\left(\frac{4}{(b^2x^2+2abx+a^2)^{\frac{3}{2}}b^2}-\frac{3a}{b^6\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{4}Bd^2e\left(\frac{6}{b^5\left(x+\frac{a}{b}\right)^2}-\frac{8a}{b^6\left(x+\frac{a}{b}\right)^3}+\frac{3a^2}{b^7\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{4}Ade^2\left(\frac{6}{b^5\left(x+\frac{a}{b}\right)^2}-\frac{8a}{b^6\left(x+\frac{a}{b}\right)^3}+\frac{3a^2}{b^7\left(x+\frac{a}{b}\right)^4}\right)-\frac{Ad^3}{4b^5\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*B*e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4
 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b
^5) - 1/4*B*d*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x
+ a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*A*e^3*(12*x^2/((b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b
^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12
*B*d^3*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) -
1/4*A*d^2*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4
)) - 1/4*B*d^2*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*
(x + a/b)^4)) - 1/4*A*d*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) +
3*a^2/(b^7*(x + a/b)^4)) - 1/4*A*d^3/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^3}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/((a + b*x)**2)**(5/2), x)
```

3.1558 $\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=106

$$-\frac{(d+ex)^4(Ab-aB)}{4(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^3(Bd-Ae)}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)^2}$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$-\frac{(d+ex)^4(Ab-aB)}{4(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^3(Bd-Ae)}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -((B*d - A*e)*(d + e*x)^3)/(3*(b*d - a*e)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)
) - ((A*b - a*B)*(d + e*x)^4)/(4*(b*d - a*e)^2*(a + b*x)^3*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(Bd-Ae)(d+ex)^3}{3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{(Ab-aB)\int \frac{(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{bd-ae}$$

$$= -\frac{(Bd-Ae)(d+ex)^3}{3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(b^4(Ab-aB)\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{\left(ab+b^2x\right)^5}\,dx}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Bd-Ae)(d+ex)^3}{3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{(Ab-aB)(d+ex)^4}{4(bd-ae)^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.08, size = 142, normalized size = 1.34

$$\frac{-Ab\left(a^2e^2+2abe(d+2ex)+b^2\left(3d^2+8dex+6e^2x^2\right)\right)-B\left(3a^3e^2+2a^2be(d+6ex)+ab^2\left(d^2+8dex+18e^2x^2\right)+4b^3x\left(d^2+3dex+3e^2x^2\right)\right)}{12b^4(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(a^2*e^2 + 2*a*b*e*(d + 2*e*x) + b^2*(3*d^2 + 8*d*e*x + 6*e^2*x^2)))
 - B*(3*a^3*e^2 + 2*a^2*b*e*(d + 6*e*x) + 4*b^3*x*(d^2 + 3*d*e*x + 3*e^2*x^
2) + a*b^2*(d^2 + 8*d*e*x + 18*e^2*x^2)))/(12*b^4*(a + b*x)^3*Sqrt[(a + b*x
)^2])
```

IntegrateAlgebraic [B] time = 2.58, size = 837, normalized size = 7.90

$$\frac{-2\sqrt{b^2}\sqrt{a^2+2bxa+b^2x^2}\left(3Be^2a^6-3Abe^2a^5-6bBdea^5-3bBe^2xa^5+3b^2Bd^2a^4+3b^2Be^2x^2a^4+6Ab^2dea^4+3Ab^2e^2xa^4+6b^2Bdexa^4-3b^3Be^2x^3a^3-3Ab^3d^2a^3-3Ab^3e^2x^2a^3-6b^3Bdex^2a^3-3b^3Bd^2xa^3-6Ab^3dexa^3+6b^4Be^2x^4a^2+3Ab^4e^2x^3a^2+6b^4Bdex^3a^2+3b^4Bd^2x^2a^2+6Ab^4dex^2a^2+3Ab^4d^2xa^2+6b^5Be^2x^5a-2Ab^5e^2x^4a-4b^5Bdex^4a-3b^5Bd^2x^3a-6Ab^5dex^3a-3Ab^5d^2x^2a+12b^6Be^2x^6+6Ab^6e^2x^5+12b^6Bdex^5+4b^6Bd^2x^4+8Ab^6dex^4+3Ab^6d^2x^3\right)-2\left(-12Be^2x^7b^8-6Ae^2x^6b^8-12Bdex^6b^8-4Bd^2x^5b^8-8Adex^5b^8-3Ad^2x^4b^8-18aBe^2x^6b^7-4aAe^2x^5b^7-8aBdex^5b^7-aBd^2x^4b^7-2aAdex^4b^7-12a^2Be^2x^5b^6-a^2Ae^2x^4b^6-2a^2Bdex^4b^6-3a^3Be^2x^4b^5-3a^4Ad^2b^4+3a^5Bd^2b^3+6a^5Adeb^3-3a^6Ae^2b^2-6a^6Bdeb^2+3a^7Be^2b\right)}{3b^4\sqrt{a^2+2bxa+b^2x^2}\left(-8x^3b^8-24ax^2b^7-24a^2xb^6-8a^3b^5\right)x^4+3b^4\sqrt{b^2}\left(8x^4b^8+32ax^3b^7+48a^2x^2b^6+32a^3xb^5+8a^4b^4\right)x^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (-2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^3*A*b^3*d^2 + 3*a^4*b^2*B
*d^2 + 6*a^4*A*b^2*d*e - 6*a^5*b*B*d*e - 3*a^5*A*b*e^2 + 3*a^6*B*e^2 + 3*a^
2*A*b^4*d^2*x - 3*a^3*b^3*B*d^2*x - 6*a^3*A*b^3*d*e*x + 6*a^4*b^2*B*d*e*x +
 3*a^4*A*b^2*e^2*x - 3*a^5*b*B*e^2*x - 3*a*A*b^5*d^2*x^2 + 3*a^2*b^4*B*d^2*
x^2 + 6*a^2*A*b^4*d*e*x^2 - 6*a^3*b^3*B*d*e*x^2 - 3*a^3*A*b^3*e^2*x^2 + 3*a
^4*b^2*B*e^2*x^2 + 3*A*b^6*d^2*x^3 - 3*a*b^5*B*d^2*x^3 - 6*a*A*b^5*d*e*x^3
+ 6*a^2*b^4*B*d*e*x^3 + 3*a^2*A*b^4*e^2*x^3 - 3*a^3*b^3*B*e^2*x^3 + 4*b^6*B
*d^2*x^4 + 8*A*b^6*d*e*x^4 - 4*a*b^5*B*d*e*x^4 - 2*a*A*b^5*e^2*x^4 + 6*a^2*
b^4*B*e^2*x^4 + 12*b^6*B*d*e*x^5 + 6*A*b^6*e^2*x^5 + 6*a*b^5*B*e^2*x^5 + 12
*b^6*B*e^2*x^6) - 2*(-3*a^4*A*b^4*d^2 + 3*a^5*b^3*B*d^2 + 6*a^5*A*b^3*d*e -
 6*a^6*b^2*B*d*e - 3*a^6*A*b^2*e^2 + 3*a^7*b*B*e^2 - 3*A*b^8*d^2*x^4 - a*b^
7*B*d^2*x^4 - 2*a*A*b^7*d*e*x^4 - 2*a^2*b^6*B*d*e*x^4 - a^2*A*b^6*e^2*x^4 -
 3*a^3*b^5*B*e^2*x^4 - 4*b^8*B*d^2*x^5 - 8*A*b^8*d*e*x^5 - 8*a*b^7*B*d*e*x^
5 - 4*a*A*b^7*e^2*x^5 - 12*a^2*b^6*B*e^2*x^5 - 12*b^8*B*d*e*x^6 - 6*A*b^8*e
^2*x^6 - 18*a*b^7*B*e^2*x^6 - 12*b^8*B*e^2*x^7))/(3*b^4*x^4*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]*(-8*a^3*b^5 - 24*a^2*b^6*x - 24*a*b^7*x^2 - 8*b^8*x^3) + 3*b
^4*Sqrt[b^2]*x^4*(8*a^4*b^4 + 32*a^3*b^5*x + 48*a^2*b^6*x^2 + 32*a*b^7*x^3
+ 8*b^8*x^4))
```

fricas [B] time = 0.46, size = 189, normalized size = 1.78

$$-\frac{12\,Bb^3e^2x^3+\left(Bab^2+3\,Ab^3\right)d^2+2\left(Ba^2b+Aab^2\right)de+\left(3\,Ba^3+Aa^2b\right)e^2+6\left(2\,Bb^3de+\left(3\,Bab^2+Ab^3\right)e^2\right)x^2+4\left(Bb^3d^2+2\left(Bab^2+Ab^3\right)de+\left(3\,Ba^2b+Aab^2\right)e^2\right)x}{12\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/12*(12*B*b^3*e^2*x^3 + (B*a*b^2 + 3*A*b^3)*d^2 + 2*(B*a^2*b + A*a*b^2)*d
*e + (3*B*a^3 + A*a^2*b)*e^2 + 6*(2*B*b^3*d*e + (3*B*a*b^2 + A*b^3)*e^2)*x^
2 + 4*(B*b^3*d^2 + 2*(B*a*b^2 + A*b^3)*d*e + (3*B*a^2*b + A*a*b^2)*e^2)*x)/
(b^8*x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 174, normalized size = 1.64

$$-\frac{(bx+a)\left(12B\,b^3e^2x^3+6A\,b^3e^2x^2+18Ba\,b^2e^2x^2+12B\,b^3de\,x^2+4Aa\,b^2e^2x+8A\,b^3dex+12B\,a^2b\,e^2x+8Ba\,b^2dex+4B\,b^3d^2x+A\,a^2b\,e^2+2Aa\,b^2de+3A\,b^3d^2+3B\,a^3e^2+2B\,a^2bde+Ba\,b^2d^2\right)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)*(12*B*b^3*e^2*x^3+6*A*b^3*e^2*x^2+18*B*a*b^2*e^2*x^2+12*B*b^3
*d*e*x^2+4*A*a*b^2*e^2*x+8*A*b^3*d*e*x+12*B*a^2*b*e^2*x+8*B*a*b^2*d*e*x+4*B
*b^3*d^2*x+A*a^2*b*e^2+2*A*a*b^2*d*e+3*A*b^3*d^2+3*B*a^3*e^2+2*B*a^2*b*d*e+
B*a*b^2*d^2)/b^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.63, size = 279, normalized size = 2.63

$$-\frac{Be^2x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{2\,Ba^2e^2}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}-\frac{Bd^2+2\,Ade}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{Bae^2}{2\,b^6\left(x+\frac{a}{b}\right)^2}+\frac{2\,Ba^2e^2}{3\,b^7\left(x+\frac{a}{b}\right)^3}-\frac{Ad^2}{4\,b^5\left(x+\frac{a}{b}\right)^4}+\frac{Ba^3e^2}{4\,b^8\left(x+\frac{a}{b}\right)^4}-\frac{2\,Bde+Ae^2}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\left(2\,Bde+Ae^2\right)a}{3\,b^6\left(x+\frac{a}{b}\right)^3}-\frac{\left(2\,Bde+Ae^2\right)a^2}{4\,b^7\left(x+\frac{a}{b}\right)^4}+\frac{\left(Bd^2+2\,Ade\right)a}{4\,b^6\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] -B*e^2*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 2/3*B*a^2*e^2/((b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*b^4) - 1/3*(B*d^2 + 2*A*d*e)/((b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*b^2) - 1/2*B*a*e^2/(b^6*(x + a/b)^2) + 2/3*B*a^2*e^2/(b^7*(x + a/
b)^3) - 1/4*A*d^2/(b^5*(x + a/b)^4) + 1/4*B*a^3*e^2/(b^8*(x + a/b)^4) - 1/2
*(2*B*d*e + A*e^2)/(b^5*(x + a/b)^2) + 2/3*(2*B*d*e + A*e^2)*a/(b^6*(x + a/
b)^3) - 1/4*(2*B*d*e + A*e^2)*a^2/(b^7*(x + a/b)^4) + 1/4*(B*d^2 + 2*A*d*e)
*a/(b^6*(x + a/b)^4)
```

mupad [B] time = 2.36, size = 302, normalized size = 2.85

$$-\frac{\left(\frac{A\,d^2}{4\,b}-\frac{a\left(\frac{B\,d^2+2\,A\,e\,d}{4\,b}-\frac{a\left(\frac{A\,e^2+2\,B\,d\,e}{4\,b}-\frac{B\,a\,e^2}{4\,b^2}\right)}{b}\right)}{b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^5}-\frac{\left(\frac{A\,b\,e^2-2\,B\,a\,e^2+2\,B\,b\,d\,e}{2\,b^4}-\frac{B\,a\,e^2}{2\,b^4}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^3}-\frac{\left(\frac{B\,a^2\,e^2-2\,B\,a\,b\,d\,e-A\,a\,b\,e^2+B\,b^2\,d^2+2\,A\,b^2\,d\,e}{3\,b^4}-\frac{a\left(\frac{e\,(A\,b\,e-B\,a\,e+2\,B\,b\,d)}{3\,b^3}-\frac{B\,a\,e^2}{3\,b^3}\right)}{b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^4}-\frac{B\,e^2\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b^4\,{\left(a+b\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] - (((A*d^2)/(4*b) - (a*((B*d^2 + 2*A*d*e)/(4*b) - (a*((A*e^2 + 2*B*d*e)/(4*
b) - (B*a*e^2)/(4*b^2)))/b))/b)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^
5 - (((A*b*e^2 - 2*B*a*e^2 + 2*B*b*d*e)/(2*b^4) - (B*a*e^2)/(2*b^4))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^3 - (((B*a^2*e^2 + B*b^2*d^2 - A*a*b*e
```

```
^2 + 2*A*b^2*d*e - 2*B*a*b*d*e)/(3*b^4) - (a*((e*(A*b*e - B*a*e + 2*B*b*d))
/(3*b^3) - (B*a*e^2)/(3*b^3)))/b)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x
)^4 - (B*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(b^4*(a + b*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/((a + b*x)**2)**(5/2), x)
```

3.1559 $\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=135

$$-\frac{-2aBe+Abe+bBd}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Be}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.10, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 77}

$$-\frac{-2aBe+Abe+bBd}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Be}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -((A*b - a*B)*(b*d - a*e))/(4*b^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) - (b*B*d + A*b*e - 2*a*B*e)/(3*b^3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - (B*e)/(2*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{(Ab-aB)(bd-ae)}{b^7(a+bx)^5}+\frac{bBd+Abe-2aBe}{b^7(a+bx)^4}+\frac{Be}{b^7(a+bx)^3}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(Ab-aB)(bd-ae)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{bBd+Abe-2aBe}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b^3(a+bx}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 75, normalized size = 0.56

$$\frac{-B\left(a^2e+ab(d+4ex)+2b^2x(2d+3ex)\right)-Ab(ae+3bd+4bex)}{12b^3(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(3*b*d + a*e + 4*b*e*x)) - B*(a^2*e + 2*b^2*x*(2*d + 3*e*x) + a*b*(d
 + 4*e*x)))/(12*b^3*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.59, size = 497, normalized size = 3.68

$$\frac{-2\left(-3a^6bBe+3a^5Ab^2e+3a^5b^2Bd-3a^4Ab^3d-a^2b^5Bex^4-aAb^6ex^4-ab^6Bdx^4-4ab^6Bex^5-3Ab^7dx^4-4Ab^7ex^5-4b^7Bdx^5-6b^7Bex^6\right)-2\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(-3a^5Be+3a^4Abe+3a^4bBd+3a^4bBex-3a^3Ab^2d-3a^3Ab^2ex-3a^3b^2Bdx-3a^3b^2Bex^2+3a^2Ab^3dx+3a^2Ab^3ex^2+3a^2b^3Bdx^2+3a^2b^3Bex^3-3aAb^4dx^2-3aAb^4ex^3-3ab^4Bdx^3-2ab^4Bex^4+3Ab^5dx^3+4Ab^5ex^4+4b^5Bdx^4+6b^5Bex^5\right)}{3b^3x^4\sqrt{a^2+2abx+b^2x^2}\left(-8a^3b^5-24a^2b^6x-24ab^7x^2-8b^8x^3\right)+3b^3\sqrt{b^2}x^4\left(8a^4b^4+32a^3b^5x+48a^2b^6x^2+32ab^7x^3+8b^8x^4\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^3*A*b^2*d + 3*a^4*b*B*d +
 3*a^4*A*b*e - 3*a^5*B*e + 3*a^2*A*b^3*d*x - 3*a^3*b^2*B*d*x - 3*a^3*A*b^2*
e*x + 3*a^4*b*B*e*x - 3*a*A*b^4*d*x^2 + 3*a^2*b^3*B*d*x^2 + 3*a^2*A*b^3*e*x
^2 - 3*a^3*b^2*B*e*x^2 + 3*A*b^5*d*x^3 - 3*a*b^4*B*d*x^3 - 3*a*A*b^4*e*x^3
+ 3*a^2*b^3*B*e*x^3 + 4*b^5*B*d*x^4 + 4*A*b^5*e*x^4 - 2*a*b^4*B*e*x^4 + 6*b
^5*B*e*x^5) - 2*(-3*a^4*A*b^3*d + 3*a^5*b^2*B*d + 3*a^5*A*b^2*e - 3*a^6*b*B
*e - 3*A*b^7*d*x^4 - a*b^6*B*d*x^4 - a*A*b^6*e*x^4 - a^2*b^5*B*e*x^4 - 4*b^
7*B*d*x^5 - 4*A*b^7*e*x^5 - 4*a*b^6*B*e*x^5 - 6*b^7*B*e*x^6))/(3*b^3*x^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^5 - 24*a^2*b^6*x - 24*a*b^7*x^2 - 8*b
^8*x^3) + 3*b^3*Sqrt[b^2]*x^4*(8*a^4*b^4 + 32*a^3*b^5*x + 48*a^2*b^6*x^2 +
32*a*b^7*x^3 + 8*b^8*x^4))
```

fricas [A] time = 0.44, size = 106, normalized size = 0.79

$$-\frac{6\,Bb^2ex^2+\left(Bab+3\,Ab^2\right)d+\left(Ba^2+Aab\right)e+4\left(Bb^2d+\left(Bab+Ab^2\right)e\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/12*(6*B*b^2*e*x^2 + (B*a*b + 3*A*b^2)*d + (B*a^2 + A*a*b)*e + 4*(B*b^2*d
 + (B*a*b + A*b^2)*e)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4
*x + a^4*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 77, normalized size = 0.57

$$-\frac{(bx+a)\left(6B\,b^2e\,x^2+4A\,b^2ex+4Babex+4B\,b^2dx+Aabe+3A\,b^2d+B\,a^2e+Babd\right)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^3*(6*B*b^2*e*x^2+4*A*b^2*e*x+4*B*a*b*e*x+4*B*b^2*d*x+A*a*b*
e+3*A*b^2*d+B*a^2*e+B*a*b*d)/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.68, size = 121, normalized size = 0.90

$$-\frac{Bd+Ae}{3\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}b^{2}}-\frac{Be}{2\,b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{2\,Bae}{3\,b^{6}\left(x+\frac{a}{b}\right)^{3}}-\frac{Ad}{4\,b^{5}\left(x+\frac{a}{b}\right)^{4}}-\frac{Ba^{2}e}{4\,b^{7}\left(x+\frac{a}{b}\right)^{4}}+\frac{(Bd+Ae)a}{4\,b^{6}\left(x+\frac{a}{b}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/3*(B*d + A*e)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 1/2*B*e/(b^5*(x +
a/b)^2) + 2/3*B*a*e/(b^6*(x + a/b)^3) - 1/4*A*d/(b^5*(x + a/b)^4) - 1/4*B*a
^2*e/(b^7*(x + a/b)^4) + 1/4*(B*d + A*e)*a/(b^6*(x + a/b)^4)
```

mupad [B] time = 2.24, size = 87, normalized size = 0.64

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(3\,A\,b^2\,d+B\,a^2\,e+4\,A\,b^2\,e\,x+4\,B\,b^2\,d\,x+6\,B\,b^2\,e\,x^2+A\,a\,b\,e+B\,a\,b\,d+4\,B\,a\,b\,e\,x\right)}{12\,b^3\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(3*A*b^2*d + B*a^2*e + 4*A*b^2*e*x + 4*B*
b^2*d*x + 6*B*b^2*e*x^2 + A*a*b*e + B*a*b*d + 4*B*a*b*e*x))/(12*b^3*(a + b*
x)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/((a + b*x)**2)**(5/2), x)
```

3.1560 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -B/(3*b^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (A*b - a*B)/(4*b^2*(a + b*x)*(
a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{2b^2}\\
&= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 0.55

$$\frac{-B(a+4bx)-3Ab}{12b^2(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*A*b - B*(a + 4*b*x))/(12*b^2*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.00, size = 281, normalized size = 3.96

$$\frac{-2\left(3a^5bB-3a^4Ab^2-ab^5Bx^4-3Ab^6x^4-4b^6Bx^5\right)-2\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(3a^4B-3a^3Ab-3a^3bBx+3a^2Ab^2x+3a^2b^2Bx^2-3aAb^3x^2-3ab^3Bx^3+3Ab^4x^3+4b^4Bx^4\right)}{3x^4\sqrt{a^2+2abx+b^2x^2}\left(-8a^3b^7-24a^2b^8x-24ab^9x^2-8b^{10}x^3\right)+3\sqrt{b^2}x^4\left(8a^4b^6+32a^3b^7x+48a^2b^8x^2+32ab^9x^3+8b^{10}x^4\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-3*a^3*A*b + 3*a^4*B + 3*a^2*A
*b^2*x - 3*a^3*b*B*x - 3*a*A*b^3*x^2 + 3*a^2*b^2*B*x^2 + 3*A*b^4*x^3 - 3*a*
b^3*B*x^3 + 4*b^4*B*x^4) - 2*(-3*a^4*A*b^2 + 3*a^5*b*B - 3*A*b^6*x^4 - a*b^
5*B*x^4 - 4*b^6*B*x^5))/(3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a^3*b^7 -
24*a^2*b^8*x - 24*a*b^9*x^2 - 8*b^10*x^3) + 3*Sqrt[b^2]*x^4*(8*a^4*b^6 + 32
*a^3*b^7*x + 48*a^2*b^8*x^2 + 32*a*b^9*x^3 + 8*b^10*x^4))
```

fricas [A] time = 0.43, size = 61, normalized size = 0.86

$$-\frac{4\,Bbx+Ba+3\,Ab}{12\,\left(b^6x^4+4\,ab^5x^3+6\,a^2b^4x^2+4\,a^3b^3x+a^4b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(4*B*b*x + B*a + 3*A*b)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 33, normalized size = 0.46

$$-\frac{(bx+a)\,(4Bbx+3Ab+Ba)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^2*(4*B*b*x+3*A*b+B*a)/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.56, size = 56, normalized size = 0.79

$$-\frac{B}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\frac{Ba}{4\,b^6\left(x+\frac{a}{b}\right)^4}-\frac{A}{4\,b^5\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 1/4*B*a/(b^6*(x + a/b)^4) -
1/4*A/(b^5*(x + a/b)^4)
```

mupad [B] time = 2.12, size = 43, normalized size = 0.61

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(3\,A\,b+B\,a+4\,B\,b\,x\right)}{12\,b^2\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(3*A*b + B*a + 4*B*b*x))/(12*b^2*(a + b*x
)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(\left(a+bx\right)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.1561 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=302

$$-\frac{e^3(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{e^3(a+bx)(Bd-Ae)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{e^2(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{}{2(a+bx)\sqrt{a}}$$

Rubi [A] time = 0.26, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{e^2(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e^3(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{e^3(a+bx)(Bd-Ae)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{e(Bd-Ae)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{Bd-Ae}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{Ab-aB}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -((e^2*(B*d - A*e))/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b -
 a*B)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (B*d -
A*e)/(3*(b*d - a*e)^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(B*d
- A*e))/(2*(b*d - a*e)^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(B
*d - A*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + (e^3*(B*d - A*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^5*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^5(bd-ae)(a+bx)^5}+\frac{Bd-Ae}{b^4(bd-ae)^2(a+bx)^4}+\frac{e(-Bd+Ae)}{b^4(bd-ae)^3(a+bx)^3}-\frac{e^2}{b^4(bd}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{e^2(Bd-Ae)}{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 182, normalized size = 0.60

$$\frac{12e^3(a+bx)^3\log(a+bx)(Ae-Bd)+12e^3(a+bx)^3(Bd-Ae)\log(d+ex)+12e^2(a+bx)^2(bd-ae)(Ae-Bd)+\frac{3(aB-Ab)(bd-ae)^4}{b(a+bx)}-6e(a+bx)(bd-ae)^2(Ae-Bd)+4(bd-ae)^3(Ae-Bd)}{12\left((a+bx)^2\right)^{3/2}(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (4*(b*d - a*e)^3*(-(B*d) + A*e) + (3*(-(A*b) + a*B)*(b*d - a*e)^4)/(b*(a +
b*x)) - 6*e*(b*d - a*e)^2*(-(B*d) + A*e)*(a + b*x) + 12*e^2*(b*d - a*e)*(-(
B*d) + A*e)*(a + b*x)^2 + 12*e^3*(-(B*d) + A*e)*(a + b*x)^3*Log[a + b*x] +
12*e^3*(B*d - A*e)*(a + b*x)^3*Log[d + e*x])/(12*(b*d - a*e)^5*((a + b*x)^2
)^(3/2))
```

IntegrateAlgebraic [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.45, size = 969, normalized size = 3.21

$$-\frac{(Bab^4+3Ab^5)d^4-2(3Ba^2b^3+8Aab^4)d^3e+18(Ba^3b^2+2Aa^2b^3)d^2e^2-2(5Ba^4b+24Aa^3b^2)de^3-(3Ba^5-25Aa^4b)e^4+12(Bb^5d^2e^2+Aab^4e^4-(Bab^4+Ab^5)de^3)x^3-6(Bb^5d^3e-7Aa^2b^3e^4-(8Bab^4+Ab^5)d^2e^2+(7Ba^2b^3+8Aab^4)de^3)x^2+4(Bb^5d^4+13Aa^3b^2e^4-(6Bab^4+Ab^5)d^3e+6(3Ba^2b^3+Aab^4)d^2e^2-(13Ba^3b^2+18Aa^2b^3)de^3)x+12(Ba^4bde^3-Aa^4be^4+(Bb^5de^3-Ab^5e^4)x^4+4(Bab^4de^3-Aab^4e^4)x^3+6(Ba^2b^3de^3-Aa^2b^3e^4)x^2+4(Ba^3b^2de^3-Aa^3b^2e^4)x)\log(bx+a)-12(Ba^4bde^3-Aa^4be^4+(Bb^5de^3-Ab^5e^4)x^4+4(Bab^4de^3-Aab^4e^4)x^3+6(Ba^2b^3de^3-Aa^2b^3e^4)x^2+4(Ba^3b^2de^3-Aa^3b^2e^4)x)\log(ex+d)}{12(a^4b^6d^5-5a^5b^5d^4e+10a^6b^4d^3e^2-10a^7b^3d^2e^3+5a^8b^2de^4-a^9be^5+(b^{10}d^5-5ab^9d^4e+10a^2b^8d^3e^2-10a^3b^7d^2e^3+5a^4b^6de^4-a^5b^5e^5)x^4+4(ab^9d^5-5a^2b^8d^4e+10a^3b^7d^3e^2-10a^4b^6d^2e^3+5a^5b^5de^4-a^6b^4e^5)x^3+6(a^2b^8d^5-5a^3b^7d^4e+10a^4b^6d^3e^2-10a^5b^5d^2e^3+5a^6b^4de^4-a^7b^3e^5)x^2+4(a^3b^7d^5-5a^4b^6d^4e+10a^5b^5d^3e^2-10a^6b^4d^2e^3+5a^7b^3de^4-a^8b^2e^5)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/12*((B*a*b^4 + 3*A*b^5)*d^4 - 2*(3*B*a^2*b^3 + 8*A*a*b^4)*d^3*e + 18*(B*
a^3*b^2 + 2*A*a^2*b^3)*d^2*e^2 - 2*(5*B*a^4*b + 24*A*a^3*b^2)*d*e^3 - (3*B*
a^5 - 25*A*a^4*b)*e^4 + 12*(B*b^5*d^2*e^2 + A*a*b^4*e^4 - (B*a*b^4 + A*b^5)
*d*e^3)*x^3 - 6*(B*b^5*d^3*e - 7*A*a^2*b^3*e^4 - (8*B*a*b^4 + A*b^5)*d^2*e^
2 + (7*B*a^2*b^3 + 8*A*a*b^4)*d*e^3)*x^2 + 4*(B*b^5*d^4 + 13*A*a^3*b^2*e^4
- (6*B*a*b^4 + A*b^5)*d^3*e + 6*(3*B*a^2*b^3 + A*a*b^4)*d^2*e^2 - (13*B*a^3
*b^2 + 18*A*a^2*b^3)*d*e^3)*x + 12*(B*a^4*b*d*e^3 - A*a^4*b*e^4 + (B*b^5*d*
e^3 - A*b^5*e^4)*x^4 + 4*(B*a*b^4*d*e^3 - A*a*b^4*e^4)*x^3 + 6*(B*a^2*b^3*d
*e^3 - A*a^2*b^3*e^4)*x^2 + 4*(B*a^3*b^2*d*e^3 - A*a^3*b^2*e^4)*x)*log(b*x
+ a) - 12*(B*a^4*b*d*e^3 - A*a^4*b*e^4 + (B*b^5*d*e^3 - A*b^5*e^4)*x^4 + 4*
(B*a*b^4*d*e^3 - A*a*b^4*e^4)*x^3 + 6*(B*a^2*b^3*d*e^3 - A*a^2*b^3*e^4)*x^2
 + 4*(B*a^3*b^2*d*e^3 - A*a^3*b^2*e^4)*x)*log(e*x + d))/(a^4*b^6*d^5 - 5*a^
5*b^5*d^4*e + 10*a^6*b^4*d^3*e^2 - 10*a^7*b^3*d^2*e^3 + 5*a^8*b^2*d*e^4 - a
^9*b*e^5 + (b^10*d^5 - 5*a*b^9*d^4*e + 10*a^2*b^8*d^3*e^2 - 10*a^3*b^7*d^2*
e^3 + 5*a^4*b^6*d*e^4 - a^5*b^5*e^5)*x^4 + 4*(a*b^9*d^5 - 5*a^2*b^8*d^4*e +
 10*a^3*b^7*d^3*e^2 - 10*a^4*b^6*d^2*e^3 + 5*a^5*b^5*d*e^4 - a^6*b^4*e^5)*x
^3 + 6*(a^2*b^8*d^5 - 5*a^3*b^7*d^4*e + 10*a^4*b^6*d^3*e^2 - 10*a^5*b^5*d^2
*e^3 + 5*a^6*b^4*d*e^4 - a^7*b^3*e^5)*x^2 + 4*(a^3*b^7*d^5 - 5*a^4*b^6*d^4*
e + 10*a^5*b^5*d^3*e^2 - 10*a^6*b^4*d^2*e^3 + 5*a^7*b^3*d*e^4 - a^8*b^2*e^5
)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 777, normalized size = 2.57

$$-\frac{\left(12Ab^5e^4x^4\ln(bx+a)-12Ab^5e^4x^4\ln(ex+d)-12Bb^5de^3x^4\ln(bx+a)+12Bb^5de^3x^4\ln(ex+d)+48Aab^4e^4x^3\ln(bx+a)-48Aab^4e^4x^3\ln(ex+d)-48Bab^4de^3x^3\ln(bx+a)+48Bab^4de^3x^3\ln(ex+d)+72Aa^2b^3e^4x^2\ln(bx+a)-72Aa^2b^3e^4x^2\ln(ex+d)-12Aab^4e^4x^3+12Ab^5de^3x^3-72Ba^2b^3de^3x^2\ln(bx+a)+72Ba^2b^3de^3x^2\ln(ex+d)+12Bab^4de^3x^3-12Bb^5d^2e^2x^3+48Aa^3b^2e^4x\ln(bx+a)-48Aa^3b^2e^4x\ln(ex+d)-42Aa^2b^3e^4x^2+48Aab^4de^3x^2-6Ab^5d^2e^2x^2-48Ba^3b^2de^3x\ln(bx+a)+48Ba^3b^2de^3x\ln(ex+d)+42Ba^2b^3de^3x^2-48Bab^4d^2e^2x^2+6Bb^5d^3ex^2+12Aa^4be^4\ln(bx+a)-12Aa^4be^4\ln(ex+d)-52Aa^3b^2e^4x+72Aa^2b^3de^3x-24Aab^4d^2e^2x+4Ab^5d^3ex-12Ba^4bde^3\ln(bx+a)+12Ba^4bde^3\ln(ex+d)+52Ba^3b^2de^3x-72Ba^2b^3d^2e^2x+24Bab^4d^3ex-4Bb^5d^4x-25Aa^4be^4+48Aa^3b^2de^3-36Aa^2b^3d^2e^2+16Aab^4d^3e-3Ab^5d^4+3Ba^5e^4+10Ba^4bde^3-18Ba^3b^2d^2e^2+6Ba^2b^3d^3e-Bab^4d^4\right)(bx+a)}{12(ae-bd)^5\left((bx+a)^2\right)^{\frac{5}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(16*A*a*b^4*d^3*e+12*B*a*b^4*d*e^3*x^3+10*B*a^4*b*d*e^3-18*B*a^3*b^2*
d^2*e^2-48*B*a*b^4*d*e^3*x^3*ln(b*x+a)+6*B*a^2*b^3*d^3*e-4*B*b^5*d^4*x-12*A
*a*b^4*e^4*x^3+12*A*b^5*d*e^3*x^3+48*A*a^3*b^2*d*e^3-72*B*a^2*b^3*d^2*e^2*x
+72*A*a^2*b^3*d*e^3*x+52*B*a^3*b^2*d*e^3*x-25*A*a^4*b*e^4-B*a*b^4*d^4-3*A*b
^5*d^4+3*B*a^5*e^4+48*A*a*b^4*d*e^3*x^2-12*B*a^4*b*d*e^3*ln(b*x+a)+48*A*a^3
*b^2*e^4*x*ln(b*x+a)+72*A*a^2*b^3*e^4*x^2*ln(b*x+a)-24*A*a*b^4*d^2*e^2*x+24
*B*a*b^4*d^3*e*x-36*A*a^2*b^3*d^2*e^2+6*B*b^5*d^3*e*x^2+12*A*b^5*e^4*x^4*ln
(b*x+a)-48*B*a^3*b^2*d*e^3*x*ln(b*x+a)-72*B*a^2*b^3*d*e^3*x^2*ln(b*x+a)-12*
A*ln(e*x+d)*x^4*b^5*e^4-12*A*ln(e*x+d)*a^4*b*e^4-6*A*b^5*d^2*e^2*x^2-48*B*a
*b^4*d^2*e^2*x^2+42*B*a^2*b^3*d*e^3*x^2-12*B*b^5*d*e^3*x^4*ln(b*x+a)+48*A*a
*b^4*e^4*x^3*ln(b*x+a)-12*B*b^5*d^2*e^2*x^3+12*A*a^4*b*e^4*ln(b*x+a)-42*A*a
^2*b^3*e^4*x^2-52*A*a^3*b^2*e^4*x+4*A*b^5*d^3*e*x+72*B*ln(e*x+d)*x^2*a^2*b^
3*d*e^3+48*B*ln(e*x+d)*x*a^3*b^2*d*e^3+48*B*ln(e*x+d)*x^3*a*b^4*d*e^3+12*B*
ln(e*x+d)*x^4*b^5*d*e^3-48*A*ln(e*x+d)*x^3*a*b^4*e^4-72*A*ln(e*x+d)*x^2*a^2
*b^3*e^4-48*A*ln(e*x+d)*x*a^3*b^2*e^4+12*B*ln(e*x+d)*a^4*b*d*e^3)*(b*x+a)/b
/(a*e-b*d)^5/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\left(d+e\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left((a+bx)^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*((a + b*x)**2)**(5/2)), x)
```

3.1562 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=388

$$-\frac{e^3(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^3(a+bx)\log(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+\frac{e^3(a+bx)\log(d+ex)(a}{\sqrt{a^2+2abx+b^2}}$$

Rubi [A] time = 0.46, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{e^3(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^2(aBe-4Abe+3bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{e^3(a+bx)\log(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+\frac{e^3(a+bx)\log(d+ex)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+\frac{e(aBe-3Abe+2bBd)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{aBe-2Abe+bBd}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{Ab-aB}{4(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -((e^2*(3*b*B*d - 4*A*b*e + a*B*e))/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])) - (A*b - a*B)/(4*(b*d - a*e)^2*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]) - (b*B*d - 2*A*b*e + a*B*e)/(3*(b*d - a*e)^3*(a + b*x)^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (e*(2*b*B*d - 3*A*b*e + a*B*e))/(2*(b*d - a*e)^4*(a +
 b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(B*d - A*e)*(a + b*x))/((b*d -
a*e)^5*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(4*b*B*d - 5*A*b*e +
 a*B*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (e^3*(4*b*B*d - 5*A*b*e + a*B*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^
6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^4(bd-ae)^2(a+bx)^5}+\frac{bBd-2Abe+aBe}{b^4(bd-ae)^3(a+bx)^4}+\frac{e(-2bBd+3Abe-aBe)}{b^4(bd-ae)^4(a+bx)^3}\right.}{\sqrt{a^2}}$$

$$=-\frac{e^2(3bBd-4Abe+aBe)}{(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{4(bd-ae)^2(a+bx)^3\sqrt{a^2+2abx+b}}$$

Mathematica [A] time = 0.27, size = 250, normalized size = 0.64

$$\frac{\frac{12e^3(a+bx)^3(bd-ae)(Ae-Bd)}{d+ex}-12e^3(a+bx)^3\log(a+bx)(aBe-5Abe+4bBd)+12e^3(a+bx)^3\log(d+ex)(aBe-5Abe+4bBd)+12e^2(a+bx)^2(bd-ae)(-aBe+4Abe-3bBd)+\frac{3(aB-Ab)(bd-ae)^4}{a+bx}-6e(a+bx)(bd-ae)^2(-aBe+3Abe-2bBd)-4(bd-ae)^3(aBe-2Abe+bBd)}{12\left((a+bx)^2\right)^{3/2}(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-4*(b*d - a*e)^3*(b*B*d - 2*A*b*e + a*B*e) + (3*(-(A*b) + a*B)*(b*d - a*e)
^4)/(a + b*x) - 6*e*(b*d - a*e)^2*(-2*b*B*d + 3*A*b*e - a*B*e)*(a + b*x) +
12*e^2*(b*d - a*e)*(-3*b*B*d + 4*A*b*e - a*B*e)*(a + b*x)^2 + (12*e^3*(b*d
- a*e)*(-(B*d) + A*e)*(a + b*x)^3)/(d + e*x) - 12*e^3*(4*b*B*d - 5*A*b*e +
a*B*e)*(a + b*x)^3*Log[a + b*x] + 12*e^3*(4*b*B*d - 5*A*b*e + a*B*e)*(a + b
*x)^3*Log[d + e*x])/(12*(b*d - a*e)^6*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [B] time = 74.78, size = 11295, normalized size = 29.11

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.46, size = 1724, normalized size = 4.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/12*(12*A*a^5*e^5 + (B*a*b^4 + 3*A*b^5)*d^5 - 4*(2*B*a^2*b^3 + 5*A*a*b^4)
*d^4*e + 12*(3*B*a^3*b^2 + 5*A*a^2*b^3)*d^3*e^2 + 8*(B*a^4*b - 15*A*a^3*b^2
)*d^2*e^3 - (37*B*a^5 - 65*A*a^4*b)*d*e^4 + 12*(4*B*b^5*d^2*e^3 - (3*B*a*b^
4 + 5*A*b^5)*d*e^4 - (B*a^2*b^3 - 5*A*a*b^4)*e^5)*x^4 + 6*(4*B*b^5*d^3*e^2
+ 5*(5*B*a*b^4 - A*b^5)*d^2*e^3 - 2*(11*B*a^2*b^3 + 15*A*a*b^4)*d*e^4 - 7*(
B*a^3*b^2 - 5*A*a^2*b^3)*e^5)*x^3 - 2*(4*B*b^5*d^4*e - (47*B*a*b^4 + 5*A*b^
5)*d^3*e^2 - 12*(6*B*a^2*b^3 - 5*A*a*b^4)*d^2*e^3 + (89*B*a^3*b^2 + 75*A*a^
2*b^3)*d*e^4 + 26*(B*a^4*b - 5*A*a^3*b^2)*e^5)*x^2 + (4*B*b^5*d^5 - (31*B*a
*b^4 + 5*A*b^5)*d^4*e + 8*(17*B*a^2*b^3 + 5*A*a*b^4)*d^3*e^2 + 20*(B*a^3*b^
2 - 9*A*a^2*b^3)*d^2*e^3 - 4*(26*B*a^4*b - 5*A*a^3*b^2)*d*e^4 - 25*(B*a^5 -
 5*A*a^4*b)*e^5)*x + 12*(4*B*a^4*b*d^2*e^3 + (B*a^5 - 5*A*a^4*b)*d*e^4 + (4
*B*b^5*d*e^4 + (B*a*b^4 - 5*A*b^5)*e^5)*x^5 + (4*B*b^5*d^2*e^3 + (17*B*a*b^
4 - 5*A*b^5)*d*e^4 + 4*(B*a^2*b^3 - 5*A*a*b^4)*e^5)*x^4 + 2*(8*B*a*b^4*d^2*
e^3 + 2*(7*B*a^2*b^3 - 5*A*a*b^4)*d*e^4 + 3*(B*a^3*b^2 - 5*A*a^2*b^3)*e^5)*
x^3 + 2*(12*B*a^2*b^3*d^2*e^3 + (11*B*a^3*b^2 - 15*A*a^2*b^3)*d*e^4 + 2*(B*
a^4*b - 5*A*a^3*b^2)*e^5)*x^2 + (16*B*a^3*b^2*d^2*e^3 + 4*(2*B*a^4*b - 5*A*
a^3*b^2)*d*e^4 + (B*a^5 - 5*A*a^4*b)*e^5)*x)*log(b*x + a) - 12*(4*B*a^4*b*d
^2*e^3 + (B*a^5 - 5*A*a^4*b)*d*e^4 + (4*B*b^5*d*e^4 + (B*a*b^4 - 5*A*b^5)*e
^5)*x^5 + (4*B*b^5*d^2*e^3 + (17*B*a*b^4 - 5*A*b^5)*d*e^4 + 4*(B*a^2*b^3 -
5*A*a*b^4)*e^5)*x^4 + 2*(8*B*a*b^4*d^2*e^3 + 2*(7*B*a^2*b^3 - 5*A*a*b^4)*d*
e^4 + 3*(B*a^3*b^2 - 5*A*a^2*b^3)*e^5)*x^3 + 2*(12*B*a^2*b^3*d^2*e^3 + (11*
B*a^3*b^2 - 15*A*a^2*b^3)*d*e^4 + 2*(B*a^4*b - 5*A*a^3*b^2)*e^5)*x^2 + (16*
B*a^3*b^2*d^2*e^3 + 4*(2*B*a^4*b - 5*A*a^3*b^2)*d*e^4 + (B*a^5 - 5*A*a^4*b)
*e^5)*x)*log(e*x + d))/(a^4*b^6*d^7 - 6*a^5*b^5*d^6*e + 15*a^6*b^4*d^5*e^2
- 20*a^7*b^3*d^4*e^3 + 15*a^8*b^2*d^3*e^4 - 6*a^9*b*d^2*e^5 + a^10*d*e^6 +
(b^10*d^6*e - 6*a*b^9*d^5*e^2 + 15*a^2*b^8*d^4*e^3 - 20*a^3*b^7*d^3*e^4 + 1
5*a^4*b^6*d^2*e^5 - 6*a^5*b^5*d*e^6 + a^6*b^4*e^7)*x^5 + (b^10*d^7 - 2*a*b^
9*d^6*e - 9*a^2*b^8*d^5*e^2 + 40*a^3*b^7*d^4*e^3 - 65*a^4*b^6*d^3*e^4 + 54*
```

```
a^5*b^5*d^2*e^5 - 23*a^6*b^4*d*e^6 + 4*a^7*b^3*e^7)*x^4 + 2*(2*a*b^9*d^7 -
9*a^2*b^8*d^6*e + 12*a^3*b^7*d^5*e^2 + 5*a^4*b^6*d^4*e^3 - 30*a^5*b^5*d^3*e
^4 + 33*a^6*b^4*d^2*e^5 - 16*a^7*b^3*d*e^6 + 3*a^8*b^2*e^7)*x^3 + 2*(3*a^2*
b^8*d^7 - 16*a^3*b^7*d^6*e + 33*a^4*b^6*d^5*e^2 - 30*a^5*b^5*d^4*e^3 + 5*a^
6*b^4*d^3*e^4 + 12*a^7*b^3*d^2*e^5 - 9*a^8*b^2*d*e^6 + 2*a^9*b*e^7)*x^2 + (
4*a^3*b^7*d^7 - 23*a^4*b^6*d^6*e + 54*a^5*b^5*d^5*e^2 - 65*a^6*b^4*d^4*e^3
+ 40*a^7*b^3*d^3*e^4 - 9*a^8*b^2*d^2*e^5 - 2*a^9*b*d*e^6 + a^10*e^7)*x)
```

giac [B] time = 0.60, size = 1136, normalized size = 2.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] (4*B*b*d*e^4 + B*a*e^5 - 5*A*b*e^5)*log(abs(-b + b*d/(x*e + d) - a*e/(x*e +
 d)))/(b^6*d^6*e*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2
) - 6*a*b^5*d^5*e^2*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d
)^2) + 15*a^2*b^4*d^4*e^3*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x
*e + d)^2) - 20*a^3*b^3*d^3*e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*
e^2/(x*e + d)^2) + 15*a^4*b^2*d^2*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^
2 - a*e^2/(x*e + d)^2) - 6*a^5*b*d*e^6*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)
^2 - a*e^2/(x*e + d)^2) + a^6*e^7*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 -
a*e^2/(x*e + d)^2)) + (B*d*e^8/(x*e + d) - A*e^9/(x*e + d))/(b^5*d^5*e^5*sg
n(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 5*a*b^4*d^4*e^6
*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 10*a^2*b^3*d
^3*e^7*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 10*a^3
*b^2*d^2*e^8*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) +
5*a^4*b*d*e^9*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) -
 a^5*e^10*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + 1/
12*(52*B*b^5*d*e^3 + 25*B*a*b^4*e^4 - 77*A*b^5*e^4 - 4*(43*B*b^5*d^2*e^4 -
21*B*a*b^4*d*e^5 - 65*A*b^5*d*e^5 - 22*B*a^2*b^3*e^6 + 65*A*a*b^4*e^6)*e^(-
1)/(x*e + d) + 12*(16*B*b^5*d^3*e^5 - 23*B*a*b^4*d^2*e^6 - 25*A*b^5*d^2*e^6
 - 2*B*a^2*b^3*d*e^7 + 50*A*a*b^4*d*e^7 + 9*B*a^3*b^2*e^8 - 25*A*a^2*b^3*e^
8)*e^(-2)/(x*e + d)^2 - 24*(3*B*b^5*d^4*e^6 - 7*B*a*b^4*d^3*e^7 - 5*A*b^5*d
^3*e^7 + 3*B*a^2*b^3*d^2*e^8 + 15*A*a*b^4*d^2*e^8 + 3*B*a^3*b^2*d*e^9 - 15*
A*a^2*b^3*d*e^9 - 2*B*a^4*b*e^10 + 5*A*a^3*b^2*e^10)*e^(-3)/(x*e + d)^3)/((
b*d - a*e)^6*(b - b*d/(x*e + d) + a*e/(x*e + d))^4*sgn(-b*e/(x*e + d) + b*d
*e/(x*e + d)^2 - a*e^2/(x*e + d)^2))
```

maple [B] time = 0.08, size = 1652, normalized size = 4.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(37*B*a^5*d*e^4-B*a*b^4*d^5+25*B*x*a^5*e^5-4*B*x*b^5*d^5-3*A*b^5*d^5-1
2*A*a^5*e^5-48*B*x^4*b^5*d^2*e^3-210*A*x^3*a^2*b^3*e^5+60*A*ln(b*x+a)*x^5*b
^5*e^5-60*A*ln(e*x+d)*x^5*b^5*e^5-12*B*ln(b*x+a)*x*a^5*e^5+12*B*ln(e*x+d)*x
*a^5*e^5+42*B*x^3*a^3*b^2*e^5-65*A*a^4*b*d*e^4+120*A*a^3*b^2*d^2*e^3-60*A*a
^2*b^3*d^3*e^2+20*A*a*b^4*d^4*e-8*B*a^4*b*d^2*e^3+8*B*a^2*b^3*d^4*e-36*B*a^
3*b^2*d^3*e^2-12*B*ln(b*x+a)*a^5*d*e^4+12*B*ln(e*x+d)*a^5*d*e^4-24*B*x^3*b^
5*d^3*e^2-260*A*x^2*a^3*b^2*e^5-10*A*x^2*b^5*d^3*e^2+52*B*x^2*a^4*b*e^5+8*B
*x^2*b^5*d^4*e-125*A*x*a^4*b*e^5+5*A*x*b^5*d^4*e+30*A*x^3*b^5*d^2*e^3+12*B*
x^4*a^2*b^3*e^5-60*A*x^4*a*b^4*e^5+60*A*x^4*b^5*d*e^4-288*B*ln(b*x+a)*x^2*a
^2*b^3*d^2*e^3+264*B*ln(e*x+d)*x^2*a^3*b^2*d*e^4-264*B*ln(b*x+a)*x^2*a^3*b^
2*d*e^4-240*A*ln(e*x+d)*x^3*a*b^4*d*e^4-336*B*ln(b*x+a)*x^3*a^2*b^3*d*e^4-1
92*B*ln(b*x+a)*x^3*a*b^4*d^2*e^3+336*B*ln(e*x+d)*x^3*a^2*b^3*d*e^4+192*B*ln
(e*x+d)*x^3*a*b^4*d^2*e^3+360*A*ln(b*x+a)*x^2*a^2*b^3*d*e^4-360*A*ln(e*x+d)
```

```
*x^2*a^2*b^3*d*e^4-240*A*ln(e*x+d)*x*a^3*b^2*d*e^4-96*B*ln(b*x+a)*x*a^4*b*d
*e^4-192*B*ln(b*x+a)*x*a^3*b^2*d^2*e^3+96*B*ln(e*x+d)*x*a^4*b*d*e^4+192*B*l
n(e*x+d)*x*a^3*b^2*d^2*e^3-204*B*ln(b*x+a)*x^4*a*b^4*d*e^4+204*B*ln(e*x+d)*
x^4*a*b^4*d*e^4+240*A*ln(b*x+a)*x^3*a*b^4*d*e^4+288*B*ln(e*x+d)*x^2*a^2*b^3
*d^2*e^3+240*A*ln(b*x+a)*x*a^3*b^2*d*e^4+60*A*ln(b*x+a)*a^4*b*d*e^4-60*A*ln
(e*x+d)*a^4*b*d*e^4-48*B*ln(b*x+a)*a^4*b*d^2*e^3+48*B*ln(e*x+d)*a^4*b*d^2*e
^3-12*B*ln(b*x+a)*x^5*a*b^4*e^5-48*B*ln(b*x+a)*x^5*b^5*d*e^4+12*B*ln(e*x+d)
*x^5*a*b^4*e^5+48*B*ln(e*x+d)*x^5*b^5*d*e^4+240*A*ln(b*x+a)*x^4*a*b^4*e^5+6
0*A*ln(b*x+a)*x^4*b^5*d*e^4-240*A*ln(e*x+d)*x^4*a*b^4*e^5-60*A*ln(e*x+d)*x^
4*b^5*d*e^4-48*B*ln(b*x+a)*x^4*a^2*b^3*e^5-48*B*ln(b*x+a)*x^4*b^5*d^2*e^3+4
8*B*ln(e*x+d)*x^4*a^2*b^3*e^5+48*B*ln(e*x+d)*x^4*b^5*d^2*e^3+360*A*ln(b*x+a
)*x^3*a^2*b^3*e^5-360*A*ln(e*x+d)*x^3*a^2*b^3*e^5-72*B*ln(b*x+a)*x^3*a^3*b^
2*e^5+72*B*ln(e*x+d)*x^3*a^3*b^2*e^5-150*B*x^3*a*b^4*d^2*e^3+180*A*x^3*a*b^
4*d*e^4-136*B*x*a^2*b^3*d^3*e^2+31*B*x*a*b^4*d^4*e-40*A*x*a*b^4*d^3*e^2+104
*B*x*a^4*b*d*e^4-20*B*x*a^3*b^2*d^2*e^3+180*A*x*a^2*b^3*d^2*e^3-20*A*x*a^3*
b^2*d*e^4+36*B*x^4*a*b^4*d*e^4+150*A*x^2*a^2*b^3*d*e^4+120*A*x^2*a*b^4*d^2*
e^3+178*B*x^2*a^3*b^2*d*e^4-144*B*x^2*a^2*b^3*d^2*e^3-94*B*x^2*a*b^4*d^3*e^
2+240*A*ln(b*x+a)*x^2*a^3*b^2*e^5-240*A*ln(e*x+d)*x^2*a^3*b^2*e^5-48*B*ln(b
*x+a)*x^2*a^4*b*e^5+48*B*ln(e*x+d)*x^2*a^4*b*e^5+60*A*ln(b*x+a)*x*a^4*b*e^5
-60*A*ln(e*x+d)*x*a^4*b*e^5+132*B*x^3*a^2*b^3*d*e^4)*(b*x+a)/(e*x+d)/(a*e-b
*d)^6/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1563 $\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=460

$$-\frac{e^3(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^6}-\frac{e^3(a+bx)(Bd-Ae)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^5}-\frac{5be^3(a+bx)\log(a+bx)(aB}{\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.56, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{e^3(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^6}-\frac{e^3(a+bx)(Bd-Ae)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^5}-\frac{2be^2(2aBe-5Abe+3bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}-\frac{5be^3(a+bx)\log(a+bx)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^7}+\frac{5be^3(a+bx)\log(d+ex)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^7}+\frac{3be(aBe-2Abe+bBd)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{b(2aBe-3Abe+bBd)}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{b(Ab-aB)}{4(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*b*e^2*(3*b*B*d - 5*A*b*e + 2*a*B*e))/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - (b*(A*b - a*B))/(4*(b*d - a*e)^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]) - (b*(b*B*d - 3*A*b*e + 2*a*B*e))/(3*(b*d - a*e)^4*(a + b*x)
^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*b*e*(b*B*d - 2*A*b*e + a*B*e))/(2*(b
*d - a*e)^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(B*d - A*e)*(a
+ b*x))/(2*(b*d - a*e)^5*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*
(4*b*B*d - 5*A*b*e + a*B*e)*(a + b*x))/((b*d - a*e)^6*(d + e*x)*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - (5*b*e^3*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)*Log[a
+ b*x])/((b*d - a*e)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*b*e^3*(2*b*B*d -
 3*A*b*e + a*B*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^7*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^3(bd-ae)^3(a+bx)^5}+\frac{bBd-3Abe+2aBe}{b^3(bd-ae)^4(a+bx)^4}+\frac{3e(-bBd+2Abe-aBe)}{b^3(bd-ae)^5(a+bx)^3}\right.}{}$$

$$=-\frac{2be^2(3bBd-5Abe+2aBe)}{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)}{4(bd-ae)^3(a+bx)^3\sqrt{a^2+2abx+b}}$$

Mathematica [A] time = 0.39, size = 302, normalized size = 0.66

$$\frac{\frac{6e^3(a+bx)^3(bd-ae)^2(Ae-Bd)}{(d+ex)^2}+\frac{12e^3(a+bx)^3(bd-ae)(-aBe+5Abe-4bBd)}{d+ex}-60be^3(a+bx)^3\log(a+bx)(aBe-3Abe+2bBd)+60be^3(a+bx)^3\log(d+ex)(aBe-3Abe+2bBd)+24be^2(a+bx)^2(bd-ae)(-2aBe+5Abe-3bBd)-\frac{3b(Ab-aB)(bd-ae)^4}{a+bx}-18be(a+bx)(bd-ae)^2(-aBe+2Abe-bBd)-4b(bd-ae)^3(2aBe-3Abe+bBd)}{12\left((a+bx)^2\right)^{3/2}(bd-ae)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-4*b*(b*d - a*e)^3*(b*B*d - 3*A*b*e + 2*a*B*e) - (3*b*(A*b - a*B)*(b*d - a
*e)^4)/(a + b*x) - 18*b*e*(b*d - a*e)^2*(-(b*B*d) + 2*A*b*e - a*B*e)*(a + b
*x) + 24*b*e^2*(b*d - a*e)*(-3*b*B*d + 5*A*b*e - 2*a*B*e)*(a + b*x)^2 + (6*
e^3*(b*d - a*e)^2*(-(B*d) + A*e)*(a + b*x)^3)/(d + e*x)^2 + (12*e^3*(b*d -
a*e)*(-4*b*B*d + 5*A*b*e - a*B*e)*(a + b*x)^3)/(d + e*x) - 60*b*e^3*(2*b*B*
d - 3*A*b*e + a*B*e)*(a + b*x)^3*Log[a + b*x] + 60*b*e^3*(2*b*B*d - 3*A*b*e
 + a*B*e)*(a + b*x)^3*Log[d + e*x])/(12*(b*d - a*e)^7*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.52, size = 2466, normalized size = 5.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*(6*A*a^6*e^6 - (B*a*b^5 + 3*A*b^6)*d^6 + 2*(5*B*a^2*b^4 + 12*A*a*b^5)*
d^5*e - 30*(2*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^2 - 80*(B*a^4*b^2 - 3*A*a^3*b^
3)*d^3*e^3 + 5*(25*B*a^5*b - 21*A*a^4*b^2)*d^2*e^4 + 6*(B*a^6 - 12*A*a^5*b)
*d*e^5 - 60*(2*B*b^6*d^2*e^4 - (B*a*b^5 + 3*A*b^6)*d*e^5 - (B*a^2*b^4 - 3*A
*a*b^5)*e^6)*x^5 - 30*(6*B*b^6*d^3*e^3 + (11*B*a*b^5 - 9*A*b^6)*d^2*e^4 - 2
*(5*B*a^2*b^4 + 6*A*a*b^5)*d*e^5 - 7*(B*a^3*b^3 - 3*A*a^2*b^4)*e^6)*x^4 - 2
0*(2*B*b^6*d^4*e^2 + (31*B*a*b^5 - 3*A*b^6)*d^3*e^3 + 9*(B*a^2*b^4 - 5*A*a*
b^5)*d^2*e^4 - (29*B*a^3*b^3 - 9*A*a^2*b^4)*d*e^5 - 13*(B*a^4*b^2 - 3*A*a^3
*b^3)*e^6)*x^3 + 5*(2*B*b^6*d^5*e - (31*B*a*b^5 + 3*A*b^6)*d^4*e^2 - 4*(37*
B*a^2*b^4 - 12*A*a*b^5)*d^3*e^3 + 2*(23*B*a^3*b^3 + 99*A*a^2*b^4)*d^2*e^4 +
 2*(53*B*a^4*b^2 - 84*A*a^3*b^3)*d*e^5 + 25*(B*a^5*b - 3*A*a^4*b^2)*e^6)*x^
2 - 2*(2*B*b^6*d^6 - (19*B*a*b^5 + 3*A*b^6)*d^5*e + 10*(11*B*a^2*b^4 + 3*A*
a*b^5)*d^4*e^2 + 20*(8*B*a^3*b^3 - 9*A*a^2*b^4)*d^3*e^3 - 10*(14*B*a^4*b^2
+ 15*A*a^3*b^3)*d^2*e^4 - (107*B*a^5*b - 285*A*a^4*b^2)*d*e^5 - 6*(B*a^6 -
3*A*a^5*b)*e^6)*x - 60*(2*B*a^4*b^2*d^3*e^3 + (B*a^5*b - 3*A*a^4*b^2)*d^2*e
^4 + (2*B*b^6*d*e^5 + (B*a*b^5 - 3*A*b^6)*e^6)*x^6 + 2*(2*B*b^6*d^2*e^4 + (
5*B*a*b^5 - 3*A*b^6)*d*e^5 + 2*(B*a^2*b^4 - 3*A*a*b^5)*e^6)*x^5 + (2*B*b^6*
d^3*e^3 + (17*B*a*b^5 - 3*A*b^6)*d^2*e^4 + 4*(5*B*a^2*b^4 - 6*A*a*b^5)*d*e^
5 + 6*(B*a^3*b^3 - 3*A*a^2*b^4)*e^6)*x^4 + 4*(2*B*a*b^5*d^3*e^3 + (7*B*a^2*
b^4 - 3*A*a*b^5)*d^2*e^4 + (5*B*a^3*b^3 - 9*A*a^2*b^4)*d*e^5 + (B*a^4*b^2 -
 3*A*a^3*b^3)*e^6)*x^3 + (12*B*a^2*b^4*d^3*e^3 + 2*(11*B*a^3*b^3 - 9*A*a^2*
b^4)*d^2*e^4 + 2*(5*B*a^4*b^2 - 12*A*a^3*b^3)*d*e^5 + (B*a^5*b - 3*A*a^4*b^
2)*e^6)*x^2 + 2*(4*B*a^3*b^3*d^3*e^3 + 2*(2*B*a^4*b^2 - 3*A*a^3*b^3)*d^2*e^
4 + (B*a^5*b - 3*A*a^4*b^2)*d*e^5)*x)*log(b*x + a) + 60*(2*B*a^4*b^2*d^3*e^
3 + (B*a^5*b - 3*A*a^4*b^2)*d^2*e^4 + (2*B*b^6*d*e^5 + (B*a*b^5 - 3*A*b^6)*
e^6)*x^6 + 2*(2*B*b^6*d^2*e^4 + (5*B*a*b^5 - 3*A*b^6)*d*e^5 + 2*(B*a^2*b^4
- 3*A*a*b^5)*e^6)*x^5 + (2*B*b^6*d^3*e^3 + (17*B*a*b^5 - 3*A*b^6)*d^2*e^4 +
```

```
 4*(5*B*a^2*b^4 - 6*A*a*b^5)*d*e^5 + 6*(B*a^3*b^3 - 3*A*a^2*b^4)*e^6)*x^4 +
 4*(2*B*a*b^5*d^3*e^3 + (7*B*a^2*b^4 - 3*A*a*b^5)*d^2*e^4 + (5*B*a^3*b^3 -
9*A*a^2*b^4)*d*e^5 + (B*a^4*b^2 - 3*A*a^3*b^3)*e^6)*x^3 + (12*B*a^2*b^4*d^3
*e^3 + 2*(11*B*a^3*b^3 - 9*A*a^2*b^4)*d^2*e^4 + 2*(5*B*a^4*b^2 - 12*A*a^3*b
^3)*d*e^5 + (B*a^5*b - 3*A*a^4*b^2)*e^6)*x^2 + 2*(4*B*a^3*b^3*d^3*e^3 + 2*(
2*B*a^4*b^2 - 3*A*a^3*b^3)*d^2*e^4 + (B*a^5*b - 3*A*a^4*b^2)*d*e^5)*x)*log(
e*x + d))/(a^4*b^7*d^9 - 7*a^5*b^6*d^8*e + 21*a^6*b^5*d^7*e^2 - 35*a^7*b^4*
d^6*e^3 + 35*a^8*b^3*d^5*e^4 - 21*a^9*b^2*d^4*e^5 + 7*a^10*b*d^3*e^6 - a^11
*d^2*e^7 + (b^11*d^7*e^2 - 7*a*b^10*d^6*e^3 + 21*a^2*b^9*d^5*e^4 - 35*a^3*b
^8*d^4*e^5 + 35*a^4*b^7*d^3*e^6 - 21*a^5*b^6*d^2*e^7 + 7*a^6*b^5*d*e^8 - a^
7*b^4*e^9)*x^6 + 2*(b^11*d^8*e - 5*a*b^10*d^7*e^2 + 7*a^2*b^9*d^6*e^3 + 7*a
^3*b^8*d^5*e^4 - 35*a^4*b^7*d^4*e^5 + 49*a^5*b^6*d^3*e^6 - 35*a^6*b^5*d^2*e
^7 + 13*a^7*b^4*d*e^8 - 2*a^8*b^3*e^9)*x^5 + (b^11*d^9 + a*b^10*d^8*e - 29*
a^2*b^9*d^7*e^2 + 91*a^3*b^8*d^6*e^3 - 119*a^4*b^7*d^5*e^4 + 49*a^5*b^6*d^4
*e^5 + 49*a^6*b^5*d^3*e^6 - 71*a^7*b^4*d^2*e^7 + 34*a^8*b^3*d*e^8 - 6*a^9*b
^2*e^9)*x^4 + 4*(a*b^10*d^9 - 4*a^2*b^9*d^8*e + a^3*b^8*d^7*e^2 + 21*a^4*b^
7*d^6*e^3 - 49*a^5*b^6*d^5*e^4 + 49*a^6*b^5*d^4*e^5 - 21*a^7*b^4*d^3*e^6 -
a^8*b^3*d^2*e^7 + 4*a^9*b^2*d*e^8 - a^10*b*e^9)*x^3 + (6*a^2*b^9*d^9 - 34*a
^3*b^8*d^8*e + 71*a^4*b^7*d^7*e^2 - 49*a^5*b^6*d^6*e^3 - 49*a^6*b^5*d^5*e^4
 + 119*a^7*b^4*d^4*e^5 - 91*a^8*b^3*d^3*e^6 + 29*a^9*b^2*d^2*e^7 - a^10*b*d
*e^8 - a^11*e^9)*x^2 + 2*(2*a^3*b^8*d^9 - 13*a^4*b^7*d^8*e + 35*a^5*b^6*d^7
*e^2 - 49*a^6*b^5*d^6*e^3 + 35*a^7*b^4*d^5*e^4 - 7*a^8*b^3*d^4*e^5 - 7*a^9*
b^2*d^3*e^6 + 5*a^10*b*d^2*e^7 - a^11*d*e^8)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 2420, normalized size = 5.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(-3*A*b^6*d^6+6*A*a^6*e^6-B*a*b^5*d^6+6*B*a^6*d*e^5-4*B*x*b^6*d^6+12*
B*x*a^6*e^6+180*A*ln(b*x+a)*x^6*b^6*e^6-180*A*ln(e*x+d)*x^6*b^6*e^6-780*A*x
^3*a^3*b^3*e^6+60*A*x^3*b^6*d^3*e^3-105*A*a^4*b^2*d^2*e^4+240*A*a^3*b^3*d^3
*e^3-90*A*a^2*b^4*d^4*e^2+24*A*a*b^5*d^5*e+125*B*a^5*b*d^2*e^4-80*B*a^4*b^2
*d^3*e^3-60*B*a^3*b^3*d^4*e^2+10*B*a^2*b^4*d^5*e-72*A*a^5*b*d*e^5+260*B*x^3
*a^4*b^2*e^6-40*B*x^3*b^6*d^4*e^2-375*A*x^2*a^4*b^2*e^6-15*A*x^2*b^6*d^4*e^
2+125*B*x^2*a^5*b*e^6+10*B*x^2*b^6*d^5*e+6*A*x*b^6*d^5*e-630*A*x^4*a^2*b^4*
e^6+270*A*x^4*b^6*d^2*e^4+210*B*x^4*a^3*b^3*e^6-180*B*x^4*b^6*d^3*e^3-180*A
*x^5*a*b^5*e^6+180*A*x^5*b^6*d*e^5+60*B*x^5*a^2*b^4*e^6-120*B*x^5*b^6*d^2*e
^4-36*A*x*a^5*b*e^6-600*B*ln(b*x+a)*x^5*a*b^5*d*e^5+600*B*ln(e*x+d)*x^5*a*b
^5*d*e^5+1200*B*ln(e*x+d)*x^3*a^3*b^3*d*e^5+1680*B*ln(e*x+d)*x^3*a^2*b^4*d^
2*e^4+480*B*ln(e*x+d)*x^3*a*b^5*d^3*e^3+1440*A*ln(b*x+a)*x^2*a^3*b^3*d*e^5+
1080*A*ln(b*x+a)*x^2*a^2*b^4*d^2*e^4-1440*A*ln(e*x+d)*x^2*a^3*b^3*d*e^5-108
0*A*ln(e*x+d)*x^2*a^2*b^4*d^2*e^4-600*B*ln(b*x+a)*x^2*a^4*b^2*d*e^5-1320*B*
ln(b*x+a)*x^2*a^3*b^3*d^2*e^4-720*B*ln(b*x+a)*x^2*a^2*b^4*d^3*e^3+600*B*ln(
e*x+d)*x^2*a^4*b^2*d*e^5+1440*A*ln(b*x+a)*x^4*a*b^5*d*e^5+480*B*ln(e*x+d)*x
*a^4*b^2*d^2*e^4+480*B*ln(e*x+d)*x*a^3*b^3*d^3*e^3-1440*A*ln(e*x+d)*x^4*a*b
^5*d*e^5-1200*B*ln(b*x+a)*x^4*a^2*b^4*d*e^5-1020*B*ln(b*x+a)*x^4*a*b^5*d^2*
e^4+1200*B*ln(e*x+d)*x^4*a^2*b^4*d*e^5+1020*B*ln(e*x+d)*x^4*a*b^5*d^2*e^4+2
```

```
160*A*ln(b*x+a)*x^3*a^2*b^4*d*e^5+720*A*ln(b*x+a)*x^3*a*b^5*d^2*e^4-2160*A*
ln(e*x+d)*x^3*a^2*b^4*d*e^5-720*A*ln(e*x+d)*x^3*a*b^5*d^2*e^4-1200*B*ln(b*x
+a)*x^3*a^3*b^3*d*e^5-1680*B*ln(b*x+a)*x^3*a^2*b^4*d^2*e^4-480*B*ln(b*x+a)*
x^3*a*b^5*d^3*e^3+1320*B*ln(e*x+d)*x^2*a^3*b^3*d^2*e^4+720*B*ln(e*x+d)*x^2*
a^2*b^4*d^3*e^3+360*A*ln(b*x+a)*x*a^4*b^2*d*e^5+720*A*ln(b*x+a)*x*a^3*b^3*d
^2*e^4-360*A*ln(e*x+d)*x*a^4*b^2*d*e^5-720*A*ln(e*x+d)*x*a^3*b^3*d^2*e^4-12
0*B*ln(b*x+a)*x*a^5*b*d*e^5-480*B*ln(b*x+a)*x*a^4*b^2*d^2*e^4-480*B*ln(b*x+
a)*x*a^3*b^3*d^3*e^3+120*B*ln(e*x+d)*x*a^5*b*d*e^5-180*A*x^3*a^2*b^4*d*e^5+
900*A*x^3*a*b^5*d^2*e^4+580*B*x^3*a^3*b^3*d*e^5-180*B*x^3*a^2*b^4*d^2*e^4-6
20*B*x^3*a*b^5*d^3*e^3-840*A*x^2*a^3*b^3*d*e^5+990*A*x^2*a^2*b^4*d^2*e^4+24
0*A*x^2*a*b^5*d^3*e^3+530*B*x^2*a^4*b^2*d*e^5+230*B*x^2*a^3*b^3*d^2*e^4-740
*B*x^2*a^2*b^4*d^3*e^3-155*B*x^2*a*b^5*d^4*e^2-570*A*x*a^4*b^2*d*e^5+300*A*
x*a^3*b^3*d^2*e^4+360*A*x*a^2*b^4*d^3*e^3-60*A*x*a*b^5*d^4*e^2+214*B*x*a^5*
b*d*e^5+280*B*x*a^4*b^2*d^2*e^4-320*B*x*a^3*b^3*d^3*e^3-220*B*x*a^2*b^4*d^4
*e^2+38*B*x*a*b^5*d^5*e+360*A*x^4*a*b^5*d*e^5+300*B*x^4*a^2*b^4*d*e^5-330*B
*x^4*a*b^5*d^2*e^4+60*B*x^5*a*b^5*d*e^5+180*A*ln(b*x+a)*a^4*b^2*d^2*e^4-180
*A*ln(e*x+d)*a^4*b^2*d^2*e^4-60*B*ln(b*x+a)*a^5*b*d^2*e^4-120*B*ln(b*x+a)*a
^4*b^2*d^3*e^3+60*B*ln(e*x+d)*a^5*b*d^2*e^4+120*B*ln(e*x+d)*a^4*b^2*d^3*e^3
-720*A*ln(e*x+d)*x^5*a*b^5*e^6-360*A*ln(e*x+d)*x^5*b^6*d*e^5-240*B*ln(b*x+a
)*x^5*a^2*b^4*e^6-240*B*ln(b*x+a)*x^5*b^6*d^2*e^4+240*B*ln(e*x+d)*x^5*a^2*b
^4*e^6+240*B*ln(e*x+d)*x^5*b^6*d^2*e^4+1080*A*ln(b*x+a)*x^4*a^2*b^4*e^6+180
*A*ln(b*x+a)*x^4*b^6*d^2*e^4-1080*A*ln(e*x+d)*x^4*a^2*b^4*e^6-180*A*ln(e*x+
d)*x^4*b^6*d^2*e^4-360*B*ln(b*x+a)*x^4*a^3*b^3*e^6-120*B*ln(b*x+a)*x^4*b^6*
d^3*e^3+360*B*ln(e*x+d)*x^4*a^3*b^3*e^6+120*B*ln(e*x+d)*x^4*b^6*d^3*e^3+720
*A*ln(b*x+a)*x^3*a^3*b^3*e^6-720*A*ln(e*x+d)*x^3*a^3*b^3*e^6-240*B*ln(b*x+a
)*x^3*a^4*b^2*e^6+240*B*ln(e*x+d)*x^3*a^4*b^2*e^6-60*B*ln(b*x+a)*x^6*a*b^5*
e^6-120*B*ln(b*x+a)*x^6*b^6*d*e^5+60*B*ln(e*x+d)*x^6*a*b^5*e^6+120*B*ln(e*x
+d)*x^6*b^6*d*e^5+720*A*ln(b*x+a)*x^5*a*b^5*e^6+360*A*ln(b*x+a)*x^5*b^6*d*e
^5+180*A*ln(b*x+a)*x^2*a^4*b^2*e^6-180*A*ln(e*x+d)*x^2*a^4*b^2*e^6-60*B*ln(
b*x+a)*x^2*a^5*b*e^6+60*B*ln(e*x+d)*x^2*a^5*b*e^6)*(b*x+a)/(e*x+d)^2/(a*e-b
*d)^7/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1564 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{13/2}(-2aBe-Abe+3bBd)}{13e^4}+\frac{2(d+ex)^{11/2}(bd-ae)(-aBe-2Abe+3bBd)}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^2(Bd-}{9e^4}$$

Rubi [A] time = 0.07, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{13/2}(-2aBe-Abe+3bBd)}{13e^4}+\frac{2(d+ex)^{11/2}(bd-ae)(-aBe-2Abe+3bBd)}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^2(Bd-Ae)}{9e^4}+\frac{2b^2B(d+ex)^{15/2}}{15e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(9/2))/(9*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(11/2))/(11*e^4) - (2*b*(3*b*B*d - A*b*e
 - 2*a*B*e)*(d + e*x)^(13/2))/(13*e^4) + (2*b^2*B*(d + e*x)^(15/2))/(15*e^4
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^{7/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^{7/2}}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\
&= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{9/2}}{9e^4}+\frac{2(bd-ae)(3bBd-2Abe-aB}{11e^4}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{9/2}\left(-495b(d+ex)^2(-2aBe-Abe+3bBd)+585(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-715(bd-ae)^2(Bd-Ae)+429b^2B(d+ex)^3\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*(b*d - a*e)^2*(B*d - A*e) + 585*(b*d - a*e)*(3*b*B
*d - 2*A*b*e - a*B*e)*(d + e*x) - 495*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*
x)^2 + 429*b^2*B*(d + e*x)^3))/(6435*e^4)
```

IntegrateAlgebraic [A] time = 0.11, size = 193, normalized size = 1.51

$$\frac{2(d+ex)^{9/2}\left(715a^2Ae^3+585a^2Be^2(d+ex)-715a^2Bde^2+1170aAbe^2(d+ex)-1430aAbde^2+1430abBd^2e-2340abBde(d+ex)+990abBe(d+ex)^2+715Ab^2d^2e-1170Ab^2de(d+ex)+495Ab^2e(d+ex)^2-715b^2Bd^3+1755b^2Bd^2(d+ex)-1485b^2Bd(d+ex)^2+429b^2B(d+ex)^3\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*b^2*B*d^3 + 715*A*b^2*d^2*e + 1430*a*b*B*d^2*e - 1
430*a*A*b*d*e^2 - 715*a^2*B*d*e^2 + 715*a^2*A*e^3 + 1755*b^2*B*d^2*(d + e*x
) - 1170*A*b^2*d*e*(d + e*x) - 2340*a*b*B*d*e*(d + e*x) + 1170*a*A*b*e^2*(d
 + e*x) + 585*a^2*B*e^2*(d + e*x) - 1485*b^2*B*d*(d + e*x)^2 + 495*A*b^2*e*
(d + e*x)^2 + 990*a*b*B*e*(d + e*x)^2 + 429*b^2*B*(d + e*x)^3))/(6435*e^4)
```

fricas [B] time = 0.43, size = 424, normalized size = 3.31

$$\frac{2\left(429\,Bb^2e^7x^7-16\,Bb^2d^7+715\,Aa^2d^4e^3+40\left(2\,Bab+Ab^2\right)d^6e-130\left(Ba^2+2\,Aab\right)d^5e^2+33\left(46\,Bb^2de^6+15\left(2\,Bab+Ab^2\right)e^7\right)x^6+9\left(206\,Bb^2d^2e^5+200\left(2\,Bab+Ab^2\right)de^6+65\left(Ba^2+2\,Aab\right)e^7\right)x^5+5\left(160\,Bb^2d^3e^4+143\,Aa^2e^7+458\left(2\,Bab+Ab^2\right)d^2e^5+442\left(Ba^2+2\,Aab\right)de^6\right)x^4+5\left(Bb^2d^4e^3+572\,Aa^2de^6+212\left(2\,Bab+Ab^2\right)d^3e^4+598\left(Ba^2+2\,Aab\right)d^2e^5\right)x^3-3\left(2\,Bb^2d^5e^2-1430\,Aa^2d^2e^5-5\left(2\,Bab+Ab^2\right)d^4e^3-520\left(Ba^2+2\,Aab\right)d^3e^4\right)x^2+\left(8\,Bb^2d^6e+2860\,Aa^2d^3e^4-20\left(2\,Bab+Ab^2\right)d^5e^2+65\left(Ba^2+2\,Aab\right)d^4e^3\right)x\right)\sqrt{ex+d}}{6435\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/6435*(429*B*b^2*e^7*x^7 - 16*B*b^2*d^7 + 715*A*a^2*d^4*e^3 + 40*(2*B*a*b
+ A*b^2)*d^6*e - 130*(B*a^2 + 2*A*a*b)*d^5*e^2 + 33*(46*B*b^2*d*e^6 + 15*(2
*B*a*b + A*b^2)*e^7)*x^6 + 9*(206*B*b^2*d^2*e^5 + 200*(2*B*a*b + A*b^2)*d*e
^6 + 65*(B*a^2 + 2*A*a*b)*e^7)*x^5 + 5*(160*B*b^2*d^3*e^4 + 143*A*a^2*e^7 +
 458*(2*B*a*b + A*b^2)*d^2*e^5 + 442*(B*a^2 + 2*A*a*b)*d*e^6)*x^4 + 5*(B*b^
2*d^4*e^3 + 572*A*a^2*d*e^6 + 212*(2*B*a*b + A*b^2)*d^3*e^4 + 598*(B*a^2 +
2*A*a*b)*d^2*e^5)*x^3 - 3*(2*B*b^2*d^5*e^2 - 1430*A*a^2*d^2*e^5 - 5*(2*B*a*
b + A*b^2)*d^4*e^3 - 520*(B*a^2 + 2*A*a*b)*d^3*e^4)*x^2 + (8*B*b^2*d^6*e +
2860*A*a^2*d^3*e^4 - 20*(2*B*a*b + A*b^2)*d^5*e^2 + 65*(B*a^2 + 2*A*a*b)*d^
4*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.29, size = 1913, normalized size = 14.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d^4*e^(-1) + 300
30*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d^4*e^(-1) + 6006*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d^4*e^(-2) +
3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^
2*d^4*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d
)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^4*e^(-3) + 12012*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*d^3*e^(-1) + 2402
4*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*d
^3*e^(-1) + 10296*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b*d^3*e^(-2) + 5148*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*b^2*d^3*e^(-2) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d
^3*e^(-3) + 45045*sqrt(x*e + d)*A*a^2*d^4 + 60060*((x*e + d)^(3/2) - 3*sqrt
(x*e + d)*d)*A*a^2*d^3 + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*d^2*e^(-1) + 15444*(5*(
x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*
e + d)*d^3)*A*a*b*d^2*e^(-1) + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*a*b*d^2*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
```

```
*A*b^2*d^2*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*B*b^2*d^2*e^(-3) + 18018*(3*(x*e + d)^(5/2) - 10*(x
*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*d^2 + 572*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*B*a^2*d*e^(-1) + 1144*(35*(x*e + d)^(9/2) - 180*
(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315
*sqrt(x*e + d)*d^4)*A*a*b*d*e^(-1) + 520*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
 + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b*d*e^(-2) + 260*(63*(x*e + d)
^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^
(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*d*e^(-2
) + 60*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/
2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^2*d*e^(-3) + 5148*(5*(x*e + d)^(
7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3
)*A*a^2*d + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*B*a^2*e^(-1) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2
)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(
3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b*e^(-1) + 30*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*B*a*b*e^(-2) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d
+ 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2
)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^2*e^(-2) + 7
*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d
^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d
)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^2*e^(
-3) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)
*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2)*e^(-1)
```

maple [A] time = 0.06, size = 169, normalized size = 1.32

$$\frac{2 (ex+d)^{\frac{9}{2}} \left(429B\, b^2x^3e^3+495A\, b^2e^3x^2+990Bab\, e^3x^2-198B\, b^2d\, e^2x^2+1170Aab\, e^3x-180A\, b^2d\, e^2x+585B\, a^2e^3x-360Babd\, e^2x+72B\, b^2d^2ex+715A\, a^2e^3-260Aabd\, e^2+40A\, b^2d^2e-130B\, a^2d\, e^2+80Bab\, d^2e-16B\, b^2d^3\right)}{6435e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/6435*(e*x+d)^(9/2)*(429*B*b^2*e^3*x^3+495*A*b^2*e^3*x^2+990*B*a*b*e^3*x^2
-198*B*b^2*d*e^2*x^2+1170*A*a*b*e^3*x-180*A*b^2*d*e^2*x+585*B*a^2*e^3*x-360
*B*a*b*d*e^2*x+72*B*b^2*d^2*e*x+715*A*a^2*e^3-260*A*a*b*d*e^2+40*A*b^2*d^2*
e-130*B*a^2*d*e^2+80*B*a*b*d^2*e-16*B*b^2*d^3)/e^4
```

maxima [A] time = 0.54, size = 159, normalized size = 1.24

$$\frac{2 \left(429 (ex+d)^{\frac{15}{2}} Bb^2 - 495 \left(3 Bb^2d - \left(2 Bab + Ab^2\right)e\right)(ex+d)^{\frac{13}{2}} + 585 \left(3 Bb^2d^2 - 2 \left(2 Bab + Ab^2\right)de + \left(Ba^2 + 2 Aab\right)e^2\right)(ex+d)^{\frac{11}{2}} - 715 \left(Bb^2d^3 - Aa^2e^3 - \left(2 Bab + Ab^2\right)d^2e + \left(Ba^2 + 2 Aab\right)de^2\right)(ex+d)^{\frac{9}{2}}\right)}{6435 e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*B*b^2 - 495*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*
(e*x + d)^(13/2) + 585*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*
A*a*b)*e^2)*(e*x + d)^(11/2) - 715*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^
2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(9/2))/e^4
```

mupad [B] time = 2.04, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{13/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{13\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{15/2}}{15\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{11/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d)}{11\,e^4}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^2\,(d+e\,x)^{9/2}}{9\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(13*e^4) + (2*B*b^2*
(d + e*x)^(15/2))/(15*e^4) + (2*(a*e - b*d)*(d + e*x)^(11/2)*(2*A*b*e + B*a
*e - 3*B*b*d))/(11*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(9/2))/(9*
e^4)
```

<u>**sympy**</u> **[A]** time = 9.10, size = 1020, normalized size = 7.97

$$\begin{cases} \frac{2Aa^2d^4\sqrt{d+ex}}{9e} + \frac{8Aa^2d^3x\sqrt{d+ex}}{9} + \frac{4Aa^2d^2ex^2\sqrt{d+ex}}{3} + \frac{8Aa^2de^2x^3\sqrt{d+ex}}{9} + \frac{2Aa^2e^3x^4\sqrt{d+ex}}{9} - \frac{8Aabd^5\sqrt{d+ex}}{99e^2} + \frac{4Aabd^4x\sqrt{d+ex}}{99e} + \frac{32Aabd^3x^2\sqrt{d+ex}}{33} + \frac{184Aabd^2ex^3\sqrt{d+ex}}{99} + \frac{136Aabde^2x^4\sqrt{d+ex}}{99} + \frac{4Aabe^3x^5\sqrt{d+ex}}{11} + \frac{16Ab^2d^6\sqrt{d+ex}}{1287e^3} - \frac{8Ab^2d^5x\sqrt{d+ex}}{1287e^2} + \frac{2Ab^2d^4x^2\sqrt{d+ex}}{429e} + \frac{424Ab^2d^3x^3\sqrt{d+ex}}{1287} + \frac{916Ab^2d^2ex^4\sqrt{d+ex}}{1287} + \frac{80Ab^2de^2x^5\sqrt{d+ex}}{143} + \frac{2Ab^2e^3x^6\sqrt{d+ex}}{13} - \frac{4Ba^2d^5\sqrt{d+ex}}{99e^2} + \frac{2Ba^2d^4x\sqrt{d+ex}}{99e} + \frac{16Ba^2d^3x^2\sqrt{d+ex}}{33} + \frac{92Ba^2d^2ex^3\sqrt{d+ex}}{99} + \frac{68Ba^2de^2x^4\sqrt{d+ex}}{99} + \frac{2Ba^2e^3x^5\sqrt{d+ex}}{11} + \frac{32Babd^6\sqrt{d+ex}}{1287e^3} - \frac{16Babd^5x\sqrt{d+ex}}{1287e^2} + \frac{4Babd^4x^2\sqrt{d+ex}}{429e} + \frac{848Babd^3x^3\sqrt{d+ex}}{1287} + \frac{1832Babd^2ex^4\sqrt{d+ex}}{1287} + \frac{160Babde^2x^5\sqrt{d+ex}}{143} + \frac{4Babe^3x^6\sqrt{d+ex}}{13} - \frac{32Bb^2d^7\sqrt{d+ex}}{6435e^4} + \frac{16Bb^2d^6x\sqrt{d+ex}}{6435e^3} - \frac{4Bb^2d^5x^2\sqrt{d+ex}}{2145e^2} + \frac{2Bb^2d^4x^3\sqrt{d+ex}}{1287e} + \frac{320Bb^2d^3x^4\sqrt{d+ex}}{1287} + \frac{412Bb^2d^2ex^5\sqrt{d+ex}}{715} + \frac{92Bb^2de^2x^6\sqrt{d+ex}}{195} + \frac{2Bb^2e^3x^7\sqrt{d+ex}}{15} & \text{for}\: e \neq 0 \\ d^{\frac{7}{2}} \left(Aa^2x + Aabx^2 + \frac{Ab^2x^3}{3} + \frac{Ba^2x^2}{2} + \frac{2Babx^3}{3} + \frac{Bb^2x^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*A*a**2*d**4*sqrt(d + e*x)/(9*e) + 8*A*a**2*d**3*x*sqrt(d + e*x
)/9 + 4*A*a**2*d**2*e*x**2*sqrt(d + e*x)/3 + 8*A*a**2*d*e**2*x**3*sqrt(d +
e*x)/9 + 2*A*a**2*e**3*x**4*sqrt(d + e*x)/9 - 8*A*a*b*d**5*sqrt(d + e*x)/(9
9*e**2) + 4*A*a*b*d**4*x*sqrt(d + e*x)/(99*e) + 32*A*a*b*d**3*x**2*sqrt(d +
 e*x)/33 + 184*A*a*b*d**2*e*x**3*sqrt(d + e*x)/99 + 136*A*a*b*d*e**2*x**4*s
qrt(d + e*x)/99 + 4*A*a*b*e**3*x**5*sqrt(d + e*x)/11 + 16*A*b**2*d**6*sqrt(
d + e*x)/(1287*e**3) - 8*A*b**2*d**5*x*sqrt(d + e*x)/(1287*e**2) + 2*A*b**2
*d**4*x**2*sqrt(d + e*x)/(429*e) + 424*A*b**2*d**3*x**3*sqrt(d + e*x)/1287
+ 916*A*b**2*d**2*e*x**4*sqrt(d + e*x)/1287 + 80*A*b**2*d*e**2*x**5*sqrt(d
+ e*x)/143 + 2*A*b**2*e**3*x**6*sqrt(d + e*x)/13 - 4*B*a**2*d**5*sqrt(d + e
*x)/(99*e**2) + 2*B*a**2*d**4*x*sqrt(d + e*x)/(99*e) + 16*B*a**2*d**3*x**2*
sqrt(d + e*x)/33 + 92*B*a**2*d**2*e*x**3*sqrt(d + e*x)/99 + 68*B*a**2*d*e**
2*x**4*sqrt(d + e*x)/99 + 2*B*a**2*e**3*x**5*sqrt(d + e*x)/11 + 32*B*a*b*d*
*6*sqrt(d + e*x)/(1287*e**3) - 16*B*a*b*d**5*x*sqrt(d + e*x)/(1287*e**2) +
4*B*a*b*d**4*x**2*sqrt(d + e*x)/(429*e) + 848*B*a*b*d**3*x**3*sqrt(d + e*x)
/1287 + 1832*B*a*b*d**2*e*x**4*sqrt(d + e*x)/1287 + 160*B*a*b*d*e**2*x**5*s
qrt(d + e*x)/143 + 4*B*a*b*e**3*x**6*sqrt(d + e*x)/13 - 32*B*b**2*d**7*sqrt
(d + e*x)/(6435*e**4) + 16*B*b**2*d**6*x*sqrt(d + e*x)/(6435*e**3) - 4*B*b*
*2*d**5*x**2*sqrt(d + e*x)/(2145*e**2) + 2*B*b**2*d**4*x**3*sqrt(d + e*x)/(
1287*e) + 320*B*b**2*d**3*x**4*sqrt(d + e*x)/1287 + 412*B*b**2*d**2*e*x**5*
sqrt(d + e*x)/715 + 92*B*b**2*d*e**2*x**6*sqrt(d + e*x)/195 + 2*B*b**2*e**3
*x**7*sqrt(d + e*x)/15, Ne(e, 0)), (d**(7/2)*(A*a**2*x + A*a*b*x**2 + A*b**
2*x**3/3 + B*a**2*x**2/2 + 2*B*a*b*x**3/3 + B*b**2*x**4/4), True))
```

3.1565 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{11/2}(-2aBe-Abe+3bBd)}{11e^4}+\frac{2(d+ex)^{9/2}(bd-ae)(-aBe-2Abe+3bBd)}{9e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^2(Bd-$$

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{11/2}(-2aBe-Abe+3bBd)}{11e^4}+\frac{2(d+ex)^{9/2}(bd-ae)(-aBe-2Abe+3bBd)}{9e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^2(Bd-Ae)}{7e^4}+\frac{2b^2B(d+ex)^{13/2}}{13e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(7/2))/(7*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(9/2))/(9*e^4) - (2*b*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^(11/2))/(11*e^4) + (2*b^2*B*(d + e*x)^(13/2))/(13*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^{5/2}}{e^3}+\frac{(-bd+ae)(-3bBd+2A\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{7/2}}{7e^4}+\frac{2(bd-ae)(3bBd-2Abe-aB}{9e^4}\end{aligned}$$

Mathematica [A] time = 0.12, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(-819b(d+ex)^2(-2aBe-Abe+3bBd)+1001(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-1287(bd-ae)^2(Bd-Ae)+693b^2B(d+ex)^3\right)}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-1287*(b*d - a*e)^2*(B*d - A*e) + 1001*(b*d - a*e)*(3*b
*B*d - 2*A*b*e - a*B*e)*(d + e*x) - 819*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
e*x)^2 + 693*b^2*B*(d + e*x)^3))/(9009*e^4)
```

IntegrateAlgebraic [A] time = 0.11, size = 193, normalized size = 1.51

$$\frac{2(d+ex)^{7/2}\left(1287a^2Ae^3+1001a^2Be^2(d+ex)-1287a^2Bde^2+2002aAbe^2(d+ex)-2574aAbde^2+2574abBd^2e-4004abBde(d+ex)+1638abBe(d+ex)^2+1287Ab^2d^2e-2002Ab^2de(d+ex)+819Ab^2e(d+ex)^2-1287b^2Bd^3+3003b^2Bd^2(d+ex)-2457b^2Bd(d+ex)^2+693b^2B(d+ex)^3\right)}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-1287*b^2*B*d^3 + 1287*A*b^2*d^2*e + 2574*a*b*B*d^2*e -
 2574*a*A*b*d*e^2 - 1287*a^2*B*d*e^2 + 1287*a^2*A*e^3 + 3003*b^2*B*d^2*(d +
 e*x) - 2002*A*b^2*d*e*(d + e*x) - 4004*a*b*B*d*e*(d + e*x) + 2002*a*A*b*e^
2*(d + e*x) + 1001*a^2*B*e^2*(d + e*x) - 2457*b^2*B*d*(d + e*x)^2 + 819*A*b
^2*e*(d + e*x)^2 + 1638*a*b*B*e*(d + e*x)^2 + 693*b^2*B*(d + e*x)^3))/(9009
*e^4)
```

fricas [B] time = 0.43, size = 356, normalized size = 2.78

$$\frac{2\left(693\,Bb^2e^6x^6-48\,Bb^2d^6+1287\,Aa^2d^3e^3+104\left(2\,Bab+Ab^2\right)d^5e-286\left(Ba^2+2\,Aab\right)d^4e^2+63\left(27\,Bb^2de^5+13\left(2\,Bab+Ab^2\right)e^6\right)x^5+7\left(159\,Bb^2d^2e^4+299\left(2\,Bab+Ab^2\right)de^5+143\left(Ba^2+2\,Aab\right)e^6\right)x^4+\left(15\,Bb^2d^3e^3+1287\,Aa^2e^6+1469\left(2\,Bab+Ab^2\right)d^2e^4+2717\left(Ba^2+2\,Aab\right)de^5\right)x^3-3\left(6\,Bb^2d^4e^2-1287\,Aa^2de^5-13\left(2\,Bab+Ab^2\right)d^3e^3-715\left(Ba^2+2\,Aab\right)d^2e^4\right)x^2+\left(24\,Bb^2d^5e+3861\,Aa^2d^2e^4-52\left(2\,Bab+Ab^2\right)d^4e^2+143\left(Ba^2+2\,Aab\right)d^3e^3\right)x\right)\sqrt{ex+d}}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/9009*(693*B*b^2*e^6*x^6 - 48*B*b^2*d^6 + 1287*A*a^2*d^3*e^3 + 104*(2*B*a*
b + A*b^2)*d^5*e - 286*(B*a^2 + 2*A*a*b)*d^4*e^2 + 63*(27*B*b^2*d*e^5 + 13*
(2*B*a*b + A*b^2)*e^6)*x^5 + 7*(159*B*b^2*d^2*e^4 + 299*(2*B*a*b + A*b^2)*d
*e^5 + 143*(B*a^2 + 2*A*a*b)*e^6)*x^4 + (15*B*b^2*d^3*e^3 + 1287*A*a^2*e^6
+ 1469*(2*B*a*b + A*b^2)*d^2*e^4 + 2717*(B*a^2 + 2*A*a*b)*d*e^5)*x^3 - 3*(6
*B*b^2*d^4*e^2 - 1287*A*a^2*d*e^5 - 13*(2*B*a*b + A*b^2)*d^3*e^3 - 715*(B*a
^2 + 2*A*a*b)*d^2*e^4)*x^2 + (24*B*b^2*d^5*e + 3861*A*a^2*d^2*e^4 - 52*(2*B
*a*b + A*b^2)*d^4*e^2 + 143*(B*a^2 + 2*A*a*b)*d^3*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.26, size = 1368, normalized size = 10.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d^3*e^(-1) + 300
30*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d^3*e^(-1) + 6006*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d^3*e^(-2) +
3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^
2*d^3*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d
)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^3*e^(-3) + 9009*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*d^2*e^(-1) + 18018
*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*d^
2*e^(-1) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b*d^2*e^(-2) + 3861*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b
^2*d^2*e^(-2) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d^2
*e^(-3) + 45045*sqrt(x*e + d)*A*a^2*d^3 + 45045*((x*e + d)^(3/2) - 3*sqrt(x
*e + d)*d)*A*a^2*d^2 + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*d*e^(-1) + 7722*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*A*a*b*d*e^(-1) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B
*a*b*d*e^(-2) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*d*e
^(-2) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
```

```
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*B*b^2*d*e^(-3) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*A*a^2*d + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*B*a^2*e^(-1) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*
A*a*b*e^(-1) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*B*a*b*e^(-2) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*e^(-2) + 15*(231*(x*e + d)^(13/2
) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/
2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*
e + d)*d^6)*B*b^2*e^(-3) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 169, normalized size = 1.32

$$\frac{2 (ex+d)^{\frac{7}{2}} \left(693 B b^2 x^3 e^3 + 819 A b^2 e^3 x^2 + 1638 Bab e^3 x^2 - 378 B b^2 d e^2 x^2 + 2002 Aab e^3 x - 364 A b^2 d e^2 x + 1001 B a^2 e^3 x - 728 Babd e^2 x + 168 B b^2 d^2 e x + 1287 A a^2 e^3 - 572 Aabd e^2 + 104 A b^2 d^2 e - 286 B a^2 d e^2 + 208 Bab d^2 e - 48 B b^2 d^3\right)}{9009 e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/9009*(e*x+d)^(7/2)*(693*B*b^2*e^3*x^3+819*A*b^2*e^3*x^2+1638*B*a*b*e^3*x^
2-378*B*b^2*d*e^2*x^2+2002*A*a*b*e^3*x-364*A*b^2*d*e^2*x+1001*B*a^2*e^3*x-7
28*B*a*b*d*e^2*x+168*B*b^2*d^2*e*x+1287*A*a^2*e^3-572*A*a*b*d*e^2+104*A*b^2
*d^2*e-286*B*a^2*d*e^2+208*B*a*b*d^2*e-48*B*b^2*d^3)/e^4
```

maxima [A] time = 0.55, size = 159, normalized size = 1.24

$$\frac{2 \left(693 (ex+d)^{\frac{13}{2}} B b^2 - 819 \left(3 B b^2 d - \left(2 Bab + A b^2\right) e\right) (ex+d)^{\frac{11}{2}} + 1001 \left(3 B b^2 d^2 - 2 \left(2 Bab + A b^2\right) d e + \left(B a^2 + 2 Aab\right) e^2\right) (ex+d)^{\frac{9}{2}} - 1287 \left(B b^2 d^3 - A a^2 e^3 - \left(2 Bab + A b^2\right) d^2 e + \left(B a^2 + 2 Aab\right) d e^2\right) (ex+d)^{\frac{7}{2}}\right)}{9009 e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/9009*(693*(e*x + d)^(13/2)*B*b^2 - 819*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*
(e*x + d)^(11/2) + 1001*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2
*A*a*b)*e^2)*(e*x + d)^(9/2) - 1287*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b
^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(7/2))/e^4
```

mupad [B] time = 2.11, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{11/2} \left(2\,A\,b^2\,e - 6\,B\,b^2\,d + 4\,B\,a\,b\,e\right)}{11\,e^4} + \frac{2\,B\,b^2\,(d+e\,x)^{13/2}}{13\,e^4} + \frac{2\,(a\,e-b\,d)\,(d+e\,x)^{9/2}\,(2\,A\,b\,e + B\,a\,e - 3\,B\,b\,d)}{9\,e^4} + \frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^2\,(d+e\,x)^{7/2}}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(11*e^4) + (2*B*b^2*
(d + e*x)^(13/2))/(13*e^4) + (2*(a*e - b*d)*(d + e*x)^(9/2)*(2*A*b*e + B*a*
e - 3*B*b*d))/(9*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(7/2))/(7*e^
4)
```

sympy [A] time = 4.63, size = 857, normalized size = 6.70

$$\begin{cases} \frac{2 A a^{2} d^{3} \sqrt{d + e x}}{7 e} + \frac{6 A a^{2} d^{2} x \sqrt{d + e x}}{7} + \frac{6 A a^{2} d e x^{2} \sqrt{d + e x}}{7} + \frac{2 A a^{2} e^{2} x^{3} \sqrt{d + e x}}{7} - \frac{8 A a b d^{4} \sqrt{d + e x}}{63 e^{2}} + \frac{4 A a b d^{3} x \sqrt{d + e x}}{63 e} + \frac{20 A a b d^{2} x^{2} \sqrt{d + e x}}{21} + \frac{76 A a b d e x^{3} \sqrt{d + e x}}{63} + \frac{4 A a b e^{2} x^{4} \sqrt{d + e x}}{9} + \frac{16 A b^{2} d^{5} \sqrt{d + e x}}{693 e^{3}} - \frac{8 A b^{2} d^{4} x \sqrt{d + e x}}{693 e^{2}} + \frac{2 A b^{2} d^{3} x^{2} \sqrt{d + e x}}{231 e} + \frac{226 A b^{2} d^{2} x^{3} \sqrt{d + e x}}{693} + \frac{46 A b^{2} d e x^{4} \sqrt{d + e x}}{99} + \frac{2 A b^{2} e^{2} x^{5} \sqrt{d + e x}}{11} - \frac{4 B a^{2} d^{4} \sqrt{d + e x}}{63 e^{2}} + \frac{2 B a^{2} d^{3} x \sqrt{d + e x}}{63 e} + \frac{10 B a^{2} d^{2} x^{2} \sqrt{d + e x}}{21} + \frac{38 B a^{2} d e x^{3} \sqrt{d + e x}}{63} + \frac{2 B a^{2} e^{2} x^{4} \sqrt{d + e x}}{9} + \frac{32 B a b d^{5} \sqrt{d + e x}}{693 e^{3}} - \frac{16 B a b d^{4} x \sqrt{d + e x}}{693 e^{2}} + \frac{4 B a b d^{3} x^{2} \sqrt{d + e x}}{231 e} + \frac{452 B a b d^{2} x^{3} \sqrt{d + e x}}{693} + \frac{92 B a b d e x^{4} \sqrt{d + e x}}{99} + \frac{4 B a b e^{2} x^{5} \sqrt{d + e x}}{11} - \frac{32 B b^{2} d^{6} \sqrt{d + e x}}{3003 e^{4}} + \frac{16 B b^{2} d^{5} x \sqrt{d + e x}}{3003 e^{3}} - \frac{4 B b^{2} d^{4} x^{2} \sqrt{d + e x}}{1001 e^{2}} + \frac{10 B b^{2} d^{3} x^{3} \sqrt{d + e x}}{3003 e} + \frac{106 B b^{2} d^{2} x^{4} \sqrt{d + e x}}{429} + \frac{54 B b^{2} d e x^{5} \sqrt{d + e x}}{143} + \frac{2 B b^{2} e^{2} x^{6} \sqrt{d + e x}}{13} & \text{for}\: e \neq 0 \\ d^{\frac{5}{2}} \left(A a^{2} x + A a b x^{2} + \frac{A b^{2} x^{3}}{3} + \frac{B a^{2} x^{2}}{2} + \frac{2 B a b x^{3}}{3} + \frac{B b^{2} x^{4}}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*A*a**2*d**3*sqrt(d + e*x)/(7*e) + 6*A*a**2*d**2*x*sqrt(d + e*x
)/7 + 6*A*a**2*d*e*x**2*sqrt(d + e*x)/7 + 2*A*a**2*e**2*x**3*sqrt(d + e*x)/
7 - 8*A*a*b*d**4*sqrt(d + e*x)/(63*e**2) + 4*A*a*b*d**3*x*sqrt(d + e*x)/(63
*e) + 20*A*a*b*d**2*x**2*sqrt(d + e*x)/21 + 76*A*a*b*d*e*x**3*sqrt(d + e*x)
/63 + 4*A*a*b*e**2*x**4*sqrt(d + e*x)/9 + 16*A*b**2*d**5*sqrt(d + e*x)/(693
*e**3) - 8*A*b**2*d**4*x*sqrt(d + e*x)/(693*e**2) + 2*A*b**2*d**3*x**2*sqrt
(d + e*x)/(231*e) + 226*A*b**2*d**2*x**3*sqrt(d + e*x)/693 + 46*A*b**2*d*e*
x**4*sqrt(d + e*x)/99 + 2*A*b**2*e**2*x**5*sqrt(d + e*x)/11 - 4*B*a**2*d**4
*sqrt(d + e*x)/(63*e**2) + 2*B*a**2*d**3*x*sqrt(d + e*x)/(63*e) + 10*B*a**2
*d**2*x**2*sqrt(d + e*x)/21 + 38*B*a**2*d*e*x**3*sqrt(d + e*x)/63 + 2*B*a**
2*e**2*x**4*sqrt(d + e*x)/9 + 32*B*a*b*d**5*sqrt(d + e*x)/(693*e**3) - 16*B
*a*b*d**4*x*sqrt(d + e*x)/(693*e**2) + 4*B*a*b*d**3*x**2*sqrt(d + e*x)/(231
*e) + 452*B*a*b*d**2*x**3*sqrt(d + e*x)/693 + 92*B*a*b*d*e*x**4*sqrt(d + e*
x)/99 + 4*B*a*b*e**2*x**5*sqrt(d + e*x)/11 - 32*B*b**2*d**6*sqrt(d + e*x)/(
3003*e**4) + 16*B*b**2*d**5*x*sqrt(d + e*x)/(3003*e**3) - 4*B*b**2*d**4*x**
2*sqrt(d + e*x)/(1001*e**2) + 10*B*b**2*d**3*x**3*sqrt(d + e*x)/(3003*e) +
106*B*b**2*d**2*x**4*sqrt(d + e*x)/429 + 54*B*b**2*d*e*x**5*sqrt(d + e*x)/1
43 + 2*B*b**2*e**2*x**6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(A*a**2*x +
A*a*b*x**2 + A*b**2*x**3/3 + B*a**2*x**2/2 + 2*B*a*b*x**3/3 + B*b**2*x**4/4
), True))
```

3.1566 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{9/2}(-2aBe-Abe+3bBd)}{9e^4}+\frac{2(d+ex)^{7/2}(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^2(Bd-A$$

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{9/2}(-2aBe-Abe+3bBd)}{9e^4}+\frac{2(d+ex)^{7/2}(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^2(Bd-Ae)}{5e^4}+\frac{2b^2B(d+ex)^{11/2}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(5/2))/(5*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(7/2))/(7*e^4) - (2*b*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^(9/2))/(9*e^4) + (2*b^2*B*(d + e*x)^(11/2))/(11*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^{3/2}}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{5/2}}{5e^4}+\frac{2(bd-ae)(3bBd-2Abe-aB}{7e^4}\end{aligned}$$

Mathematica [A] time = 0.11, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{5/2}\left(-385b(d+ex)^2(-2aBe-Abe+3bBd)+495(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-693(bd-ae)^2(Bd-Ae)+315b^2B(d+ex)^3\right)}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-693*(b*d - a*e)^2*(B*d - A*e) + 495*(b*d - a*e)*(3*b*B
*d - 2*A*b*e - a*B*e)*(d + e*x) - 385*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*
x)^2 + 315*b^2*B*(d + e*x)^3))/(3465*e^4)
```

IntegrateAlgebraic [A] time = 0.11, size = 193, normalized size = 1.51

$$\frac{2(d+ex)^{5/2}\left(693a^2Ae^3+495a^2Be^2(d+ex)-693a^2Bde^2+990aAbe^2(d+ex)-1386aAbde^2+1386abBd^2e-1980abBde(d+ex)+770abBe(d+ex)^2+693Ab^2d^2e-990Ab^2de(d+ex)+385Ab^2e(d+ex)^2-693b^2Bd^3+1485b^2Bd^2(d+ex)-1155b^2Bd(d+ex)^2+315b^2B(d+ex)^3\right)}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-693*b^2*B*d^3 + 693*A*b^2*d^2*e + 1386*a*b*B*d^2*e - 1
386*a*A*b*d*e^2 - 693*a^2*B*d*e^2 + 693*a^2*A*e^3 + 1485*b^2*B*d^2*(d + e*x
) - 990*A*b^2*d*e*(d + e*x) - 1980*a*b*B*d*e*(d + e*x) + 990*a*A*b*e^2*(d +
 e*x) + 495*a^2*B*e^2*(d + e*x) - 1155*b^2*B*d*(d + e*x)^2 + 385*A*b^2*e*(d
 + e*x)^2 + 770*a*b*B*e*(d + e*x)^2 + 315*b^2*B*(d + e*x)^3))/(3465*e^4)
```

fricas [B] time = 0.40, size = 289, normalized size = 2.26

$$\frac{2\left(315Bb^2e^5x^5-48Bb^2d^5+693Aa^2d^2e^3+88\left(2Bab+Ab^2\right)d^4e-198\left(Ba^2+2Aab\right)d^3e^2+35\left(12Bb^2de^4+11\left(2Bab+Ab^2\right)e^5\right)x^4+5\left(3Bb^2d^2e^3+110\left(2Bab+Ab^2\right)de^4+99\left(Ba^2+2Aab\right)e^5\right)x^3-3\left(6Bb^2d^3e^2-231Aa^2e^5-11\left(2Bab+Ab^2\right)d^2e^3-264\left(Ba^2+2Aab\right)de^4\right)x^2+\left(24Bb^2d^4e+1386Aa^2de^4-44\left(2Bab+Ab^2\right)d^3e^2+99\left(Ba^2+2Aab\right)d^2e^3\right)x\right)\sqrt{ex+d}}{3465e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/3465*(315*B*b^2*e^5*x^5 - 48*B*b^2*d^5 + 693*A*a^2*d^2*e^3 + 88*(2*B*a*b
+ A*b^2)*d^4*e - 198*(B*a^2 + 2*A*a*b)*d^3*e^2 + 35*(12*B*b^2*d*e^4 + 11*(2
*B*a*b + A*b^2)*e^5)*x^4 + 5*(3*B*b^2*d^2*e^3 + 110*(2*B*a*b + A*b^2)*d*e^4
 + 99*(B*a^2 + 2*A*a*b)*e^5)*x^3 - 3*(6*B*b^2*d^3*e^2 - 231*A*a^2*e^5 - 11*
(2*B*a*b + A*b^2)*d^2*e^3 - 264*(B*a^2 + 2*A*a*b)*d*e^4)*x^2 + (24*B*b^2*d^
4*e + 1386*A*a^2*d*e^4 - 44*(2*B*a*b + A*b^2)*d^3*e^2 + 99*(B*a^2 + 2*A*a*b
)*d^2*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.23, size = 901, normalized size = 7.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d^2*e^(-1) + 2310*
((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d^2*e^(-1) + 462*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d^2*e^(-2) + 231*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^2*d^2
*e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)
*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2) - 10
*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*d*e^(-1) + 924*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*d*e^(-1) + 396
*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sq
rt(x*e + d)*d^3)*B*a*b*d*e^(-2) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*d*e^(-2) + 22*(
35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*
(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d*e^(-3) + 3465*sqrt(x*e
 + d)*A*a^2*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*d + 99*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*B*a^2*e^(-1) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b*e^(-1) + 22*(35*(x*
e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
 d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b*e^(-2) + 11*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*e^(-2) + 5*(63*(x*e + d)^(11/2) - 385*(x*
e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*
(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^2*e^(-3) + 231*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 169, normalized size = 1.32

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(315B\,b^{2}x^{3}e^{3}+385A\,b^{2}e^{3}x^{2}+770Bab\,e^{3}x^{2}-210B\,b^{2}d\,e^{2}x^{2}+990Aab\,e^{3}x-220A\,b^{2}d\,e^{2}x+495B\,a^{2}e^{3}x-440Babd\,e^{2}x+120B\,b^{2}d^{2}ex+693A\,a^{2}e^{3}-396Aabd\,e^{2}+88A\,b^{2}d^{2}e-198B\,a^{2}d\,e^{2}+176Bab\,d^{2}e-48B\,b^{2}d^{3}\right)}{3465e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3465*(e*x+d)^(5/2)*(315*B*b^2*e^3*x^3+385*A*b^2*e^3*x^2+770*B*a*b*e^3*x^2
-210*B*b^2*d*e^2*x^2+990*A*a*b*e^3*x-220*A*b^2*d*e^2*x+495*B*a^2*e^3*x-440*
B*a*b*d*e^2*x+120*B*b^2*d^2*e*x+693*A*a^2*e^3-396*A*a*b*d*e^2+88*A*b^2*d^2*
e-198*B*a^2*d*e^2+176*B*a*b*d^2*e-48*B*b^2*d^3)/e^4
```

maxima [A] time = 0.56, size = 159, normalized size = 1.24

$$\frac{2 \left(315 (ex+d)^{\frac{11}{2}} Bb^{2}-385 \left(3 Bb^{2}d-\left(2 Bab+Ab^{2}\right)e\right)(ex+d)^{\frac{9}{2}}+495 \left(3 Bb^{2}d^{2}-2 \left(2 Bab+Ab^{2}\right)de+\left(Ba^{2}+2 Aab\right)e^{2}\right)(ex+d)^{\frac{7}{2}}-693 \left(Bb^{2}d^{3}-Aa^{2}e^{3}-\left(2 Bab+Ab^{2}\right)d^{2}e+\left(Ba^{2}+2 Aab\right)de^{2}\right)(ex+d)^{\frac{5}{2}}\right)}{3465 e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*b^2 - 385*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*
(e*x + d)^(9/2) + 495*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A
*a*b)*e^2)*(e*x + d)^(7/2) - 693*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)
*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 0.07, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{9\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{11/2}}{11\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{7/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d)}{7\,e^4}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^2\,(d+e\,x)^{5/2}}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(9*e^4) + (2*B*b^2*(d
 + e*x)^(11/2))/(11*e^4) + (2*(a*e - b*d)*(d + e*x)^(7/2)*(2*A*b*e + B*a*e
- 3*B*b*d))/(7*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(5/2))/(5*e^4)
```

sympy [A] time = 22.38, size = 586, normalized size = 4.58

$$Aa^{2}d\left(\begin{cases}\sqrt{d}\,x & \text{for}\ e=0\\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2Aa^{2}\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{4Aabd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^{2}}+\frac{4Aab\left(\frac{d^{2}(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^{2}}+\frac{2Ab^{2}d\left(\frac{d^{2}(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^{3}}+\frac{2Ab^{2}\left(-\frac{d^{3}(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^{2}(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^{3}}+\frac{2Ba^{2}d\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^{2}}+\frac{2Ba^{2}\left(\frac{d^{2}(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^{2}}+\frac{4Babd\left(\frac{d^{2}(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^{3}}+\frac{4Bab\left(-\frac{d^{3}(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^{2}(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^{3}}+\frac{2Bb^{2}d\left(-\frac{d^{3}(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^{2}(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^{4}}+\frac{2Bb^{2}\left(\frac{d^{4}(d+ex)^{\frac{3}{2}}}{3}-\frac{4d^{3}(d+ex)^{\frac{5}{2}}}{5}+\frac{6d^{2}(d+ex)^{\frac{7}{2}}}{7}-\frac{4d(d+ex)^{\frac{9}{2}}}{9}+\frac{(d+ex)^{\frac{11}{2}}}{11}\right)}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*A*a**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*A*a*b*d*(-d*
(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*A*a*b*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*A*b**2*d*(d**
2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 +
2*A*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e
*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*B*a**2*d*(-d*(d + e*x)**(3/2)/3
 + (d + e*x)**(5/2)/5)/e**2 + 2*B*a**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d +
e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 4*B*a*b*d*(d**2*(d + e*x)**(3/2)
/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 4*B*a*b*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**3 + 2*B*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e
*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*B*b**2
*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(
7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1567 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{7/2}(-2aBe-Abe+3bBd)}{7e^4}+\frac{2(d+ex)^{5/2}(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^2(Bd}{3e^4}$$

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{7/2}(-2aBe-Abe+3bBd)}{7e^4}+\frac{2(d+ex)^{5/2}(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^2(Bd-Ae)}{3e^4}+\frac{2b^2B(d+ex)^{9/2}}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(3/2))/(3*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(5/2))/(5*e^4) - (2*b*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^(7/2))/(7*e^4) + (2*b^2*B*(d + e*x)^(9/2))/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)dx &= \int (a+bx)^2(A+Bx)\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)\sqrt{d+ex}}{e^3}+\frac{(-bd+ae)(-3bBd+2Ab}{e^3}\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{3/2}}{3e^4}+\frac{2(bd-ae)(3bBd-2Abe-a}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.10, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{3/2}\left(-45b(d+ex)^2(-2aBe-Abe+3bBd)+63(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-105(bd-ae)^2(Bd-Ae)+35b^2B(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*(b*d - a*e)^2*(B*d - A*e) + 63*(b*d - a*e)*(3*b*B*
d - 2*A*b*e - a*B*e)*(d + e*x) - 45*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)
^2 + 35*b^2*B*(d + e*x)^3))/(315*e^4)
```

IntegrateAlgebraic [A] time = 0.10, size = 193, normalized size = 1.51

$$\frac{2(d+ex)^{3/2}\left(105a^2Ae^3+63a^2Be^2(d+ex)-105a^2Bde^2+126aAbe^2(d+ex)-210aAbde^2+210abBd^2e-252abBde(d+ex)+90abBe(d+ex)^2+105Ab^2d^2e-126Ab^2de(d+ex)+45Ab^2e(d+ex)^2-105b^2Bd^3+189b^2Bd^2(d+ex)-135b^2Bd(d+ex)^2+35b^2B(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*b^2*B*d^3 + 105*A*b^2*d^2*e + 210*a*b*B*d^2*e - 21
0*a*A*b*d*e^2 - 105*a^2*B*d*e^2 + 105*a^2*A*e^3 + 189*b^2*B*d^2*(d + e*x) -
 126*A*b^2*d*e*(d + e*x) - 252*a*b*B*d*e*(d + e*x) + 126*a*A*b*e^2*(d + e*x
) + 63*a^2*B*e^2*(d + e*x) - 135*b^2*B*d*(d + e*x)^2 + 45*A*b^2*e*(d + e*x)
^2 + 90*a*b*B*e*(d + e*x)^2 + 35*b^2*B*(d + e*x)^3))/(315*e^4)
```

fricas [A] time = 0.41, size = 220, normalized size = 1.72

$$\frac{2\left(35\,Bb^2e^4x^4-16\,Bb^2d^4+105\,Aa^2de^3+24\left(2\,Bab+Ab^2\right)d^3e-42\left(Ba^2+2\,Aab\right)d^2e^2+5\left(Bb^2de^3+9\left(2\,Bab+Ab^2\right)e^4\right)x^3-3\left(2\,Bb^2d^2e^2-3\left(2\,Bab+Ab^2\right)de^3-21\left(Ba^2+2\,Aab\right)e^4\right)x^2+\left(8\,Bb^2d^3e+105\,Aa^2e^4-12\left(2\,Bab+Ab^2\right)d^2e^2+21\left(Ba^2+2\,Aab\right)de^3\right)x\right)\sqrt{ex+d}}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/315*(35*B*b^2*e^4*x^4 - 16*B*b^2*d^4 + 105*A*a^2*d*e^3 + 24*(2*B*a*b + A*
b^2)*d^3*e - 42*(B*a^2 + 2*A*a*b)*d^2*e^2 + 5*(B*b^2*d*e^3 + 9*(2*B*a*b + A
*b^2)*e^4)*x^3 - 3*(2*B*b^2*d^2*e^2 - 3*(2*B*a*b + A*b^2)*d*e^3 - 21*(B*a^2
 + 2*A*a*b)*e^4)*x^2 + (8*B*b^2*d^3*e + 105*A*a^2*e^4 - 12*(2*B*a*b + A*b^2
)*d^2*e^2 + 21*(B*a^2 + 2*A*a*b)*d*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.18, size = 511, normalized size = 3.99

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Ba^2de^{(-1)}+210\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aabde^{(-1)}+42\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Babde^{(-2)}+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Ab^2de^{(-2)}+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bb^2de^{(-3)}+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Ba^2e^{(-1)}+42\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Aabe^{(-1)}+18\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Babe^{(-2)}+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Ab^2e^{(-2)}+\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)Bb^2e^{(-3)}+315\sqrt{xe+d}\,Aa^2d+105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aa^2\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d*e^(-1) + 210*((x*e
 + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d*e^(-1) + 42*(3*(x*e + d)^(5/2) - 1
0*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d*e^(-2) + 21*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^2*d*e^(-2) + 9*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*B*b^2*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*B*a^2*e^(-1) + 42*(3*(x*e + d)^(5/2) - 10*(x*e +
d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*e^(-1) + 18*(5*(x*e + d)^(7/2) - 2
1*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b*
e^(-2) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*e^(-2) + (35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*B*b^2*e^(-3) + 315*sqrt(x*e + d)*A*a^2*d + 105*((x*e + d)^(3/2
) - 3*sqrt(x*e + d)*d)*A*a^2)*e^(-1)
```

maple [A] time = 0.06, size = 169, normalized size = 1.32

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(35B\,b^2x^3e^3+45A\,b^2e^3x^2+90Bab\,e^3x^2-30B\,b^2d\,e^2x^2+126Aab\,e^3x-36A\,b^2d\,e^2x+63B\,a^2e^3x-72Babd\,e^2x+24B\,b^2d^2ex+105A\,a^2e^3-84Aabd\,e^2+24A\,b^2d^2e-42B\,a^2d\,e^2+48Bab\,d^2e-16B\,b^2d^3\right)}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(35*B*b^2*e^3*x^3+45*A*b^2*e^3*x^2+90*B*a*b*e^3*x^2-30*
B*b^2*d*e^2*x^2+126*A*a*b*e^3*x-36*A*b^2*d*e^2*x+63*B*a^2*e^3*x-72*B*a*b*d*
```

```
e^2*x+24*B*b^2*d^2*e*x+105*A*a^2*e^3-84*A*a*b*d*e^2+24*A*b^2*d^2*e-42*B*a^2
*d*e^2+48*B*a*b*d^2*e-16*B*b^2*d^3)/e^4
```

maxima [A] time = 0.47, size = 159, normalized size = 1.24

$$\frac{2\left(35\,(ex+d)^{\frac{9}{2}}Bb^2-45\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)(ex+d)^{\frac{7}{2}}+63\left(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)(ex+d)^{\frac{5}{2}}-105\left(Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2\right)(ex+d)^{\frac{3}{2}}\right)}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*B*b^2 - 45*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*(e*x
 + d)^(7/2) + 63*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)
*e^2)*(e*x + d)^(5/2) - 105*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*
e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 0.07, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{7/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{7\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{9/2}}{9\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{5/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d)}{5\,e^4}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^2\,(d+e\,x)^{3/2}}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(7*e^4) + (2*B*b^2*(d
 + e*x)^(9/2))/(9*e^4) + (2*(a*e - b*d)*(d + e*x)^(5/2)*(2*A*b*e + B*a*e -
3*B*b*d))/(5*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 4.91, size = 201, normalized size = 1.57

$$\frac{2\left(\frac{Bb^2(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}\left(Ab^2e+2Babe-3Bb^2d\right)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(2Aabe^2-2Ab^2de+Ba^2e^2-4Babde+3Bb^2d^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(Aa^2e^3-2Aabde^2+Ab^2d^2e-Ba^2de^2+2Babd^2e-Bb^2d^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*b**2*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(A*b**2*e + 2*B*a*b*
e - 3*B*b**2*d)/(7*e**3) + (d + e*x)**(5/2)*(2*A*a*b*e**2 - 2*A*b**2*d*e +
B*a**2*e**2 - 4*B*a*b*d*e + 3*B*b**2*d**2)/(5*e**3) + (d + e*x)**(3/2)*(A*a
**2*e**3 - 2*A*a*b*d*e**2 + A*b**2*d**2*e - B*a**2*d*e**2 + 2*B*a*b*d**2*e
- B*b**2*d**3)/(3*e**3))/e
```

3.1568 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=126

$$-\frac{2b(d+ex)^{5/2}(-2aBe-Abe+3bBd)}{5e^4}+\frac{2(d+ex)^{3/2}(bd-ae)(-aBe-2Abe+3bBd)}{3e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^2(Bd-Ae}{e^4}$$

Rubi [A] time = 0.05, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{5/2}(-2aBe-Abe+3bBd)}{5e^4}+\frac{2(d+ex)^{3/2}(bd-ae)(-aBe-2Abe+3bBd)}{3e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^2(Bd-Ae)}{e^4}+\frac{2b^2B(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*Sqrt[d + e*x])/e^4 + (2*(b*d - a*e)*(3*b*B*d
- 2*A*b*e - a*B*e)*(d + e*x)^(3/2))/(3*e^4) - (2*b*(3*b*B*d - A*b*e - 2*a*B
*e)*(d + e*x)^(5/2))/(5*e^4) + (2*b^2*B*(d + e*x)^(7/2))/(7*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3\sqrt{d+ex}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)\sqrt{d+ex}}{e^3}+\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)\sqrt{d+ex}}{e^4}+\frac{2(bd-ae)(3bBd-2Abe-aBe)(d+ex)^{3/}}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 107, normalized size = 0.85

$$\frac{2\sqrt{d+ex}\left(-21b(d+ex)^2(-2aBe-Abe+3bBd)+35(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-105(bd-ae)^2(Bd-Ae)+15b^2B(d+ex)^3\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-105*(b*d - a*e)^2*(B*d - A*e) + 35*(b*d - a*e)*(3*b*B*d
- 2*A*b*e - a*B*e)*(d + e*x) - 21*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2
 + 15*b^2*B*(d + e*x)^3))/(105*e^4)
```

IntegrateAlgebraic [A] time = 0.10, size = 193, normalized size = 1.53

$$\frac{2\sqrt{d+ex}\left(105a^2Ae^3+35a^2Be^2(d+ex)-105a^2Bde^2+70aAbe^2(d+ex)-210aAbde^2+210abBd^2e-140abBde(d+ex)+42abBe(d+ex)^2+105Ab^2d^2e-70Ab^2de(d+ex)+21Ab^2e(d+ex)^2-105b^2Bd^3+105b^2Bd^2(d+ex)-63b^2Bd(d+ex)^2+15b^2B(d+ex)^3\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-105*b^2*B*d^3 + 105*A*b^2*d^2*e + 210*a*b*B*d^2*e - 210*
a*A*b*d*e^2 - 105*a^2*B*d*e^2 + 105*a^2*A*e^3 + 105*b^2*B*d^2*(d + e*x) - 7
0*A*b^2*d*e*(d + e*x) - 140*a*b*B*d*e*(d + e*x) + 70*a*A*b*e^2*(d + e*x) +
35*a^2*B*e^2*(d + e*x) - 63*b^2*B*d*(d + e*x)^2 + 21*A*b^2*e*(d + e*x)^2 +
42*a*b*B*e*(d + e*x)^2 + 15*b^2*B*(d + e*x)^3))/(105*e^4)
```

fricas [A] time = 0.42, size = 155, normalized size = 1.23

$$\frac{2\left(15\,Bb^2e^3x^3-48\,Bb^2d^3+105\,Aa^2e^3+56\left(2\,Bab+Ab^2\right)d^2e-70\left(Ba^2+2\,Aab\right)de^2-3\left(6\,Bb^2de^2-7\left(2\,Bab+Ab^2\right)e^3\right)x^2+\left(24\,Bb^2d^2e-28\left(2\,Bab+Ab^2\right)de^2+35\left(Ba^2+2\,Aab\right)e^3\right)x\right)\sqrt{ex+d}}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/105*(15*B*b^2*e^3*x^3 - 48*B*b^2*d^3 + 105*A*a^2*e^3 + 56*(2*B*a*b + A*b^
2)*d^2*e - 70*(B*a^2 + 2*A*a*b)*d*e^2 - 3*(6*B*b^2*d*e^2 - 7*(2*B*a*b + A*b
^2)*e^3)*x^2 + (24*B*b^2*d^2*e - 28*(2*B*a*b + A*b^2)*d*e^2 + 35*(B*a^2 + 2
*A*a*b)*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.17, size = 215, normalized size = 1.71

$$\frac{2}{105}\left(35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Ba^2e^{(-1)}+70\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aabe^{(-1)}+14\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Babe^{(-2)}+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Ab^2e^{(-2)}+3\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bb^2e^{(-3)}+105\sqrt{xe+d}\,Aa^2\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*e^(-1) + 70*((x*e + d
)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*e^(-1) + 14*(3*(x*e + d)^(5/2) - 10*(x*e
 + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*e^(-2) + 7*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^2*e^(-2) + 3*(5*(x*e + d)
^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d
^3)*B*b^2*e^(-3) + 105*sqrt(x*e + d)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 169, normalized size = 1.34

$$\frac{2\left(15Bb^2x^3e^3+21Ab^2e^3x^2+42Babe^3x^2-18Bb^2de^2x^2+70Aabe^3x-28Ab^2de^2x+35Ba^2e^3x-56Babde^2x+24Bb^2d^2ex+105Aa^2e^3-140Aabde^2+56Ab^2d^2e-70Ba^2de^2+112Babd^2e-48Bb^2d^3\right)\sqrt{ex+d}}{105e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/105*(15*B*b^2*e^3*x^3+21*A*b^2*e^3*x^2+42*B*a*b*e^3*x^2-18*B*b^2*d*e^2*x^
2+70*A*a*b*e^3*x-28*A*b^2*d*e^2*x+35*B*a^2*e^3*x-56*B*a*b*d*e^2*x+24*B*b^2*
d^2*e*x+105*A*a^2*e^3-140*A*a*b*d*e^2+56*A*b^2*d^2*e-70*B*a^2*d*e^2+112*B*a
*b*d^2*e-48*B*b^2*d^3)*(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.54, size = 159, normalized size = 1.26

$$\frac{2\left(15\,(ex+d)^{\frac{7}{2}}Bb^2-21\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)(ex+d)^{\frac{5}{2}}+35\left(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)(ex+d)^{\frac{3}{2}}-105\left(Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2\right)\sqrt{ex+d}\right)}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/105*(15*(e*x + d)^(7/2)*B*b^2 - 21*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*(e*x
 + d)^(5/2) + 35*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)
*e^2)*(e*x + d)^(3/2) - 105*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*
e + (B*a^2 + 2*A*a*b)*d*e^2)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 115, normalized size = 0.91

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{5\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{7/2}}{7\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{3/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d)}{3\,e^4}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^2\,\sqrt{d+e\,x}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(5*e^4) + (2*B*b^2*(d
 + e*x)^(7/2))/(7*e^4) + (2*(a*e - b*d)*(d + e*x)^(3/2)*(2*A*b*e + B*a*e -
3*B*b*d))/(3*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 53.77, size = 583, normalized size = 4.63

$$\begin{cases} \frac{-\frac{2Aa^2d}{\sqrt{d+ex}}-2Aa^2\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)-\frac{4Aabd\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{4Aab\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{2Ab^2d\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{2Ab^2\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Ba^2d\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{2Ba^2\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{4Babd\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{4Bab\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Bb^2d\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^3}-\frac{2Bb^2\left(\frac{d^4}{\sqrt{d+ex}}+4d^3\sqrt{d+ex}-2d^2(d+ex)^{\frac{3}{2}}+\frac{4d(d+ex)^{\frac{5}{2}}}{5}-\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}}{e} & \text{for}\ e \neq 0 \\ \frac{Aa^2x+\frac{Bb^2x^4}{4}+\frac{x^3\left(Ab^2+2Bab\right)}{3}+\frac{x^2\left(2Aab+Ba^2\right)}{2}}{\sqrt{d}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**2*d/sqrt(d + e*x) - 2*A*a**2*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 4*A*a*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*A*a*b*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 2*A*b**2*d*(d**2
/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 2*A*b**2*(-
d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)*
*(5/2)/5)/e**2 - 2*B*a**2*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 2*B*a**2
*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 4*B*a*b*
d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 4*B*
a*b*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d +
 e*x)**(5/2)/5)/e**2 - 2*B*b**2*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*
x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 2*B*b**2*(d**4/sqrt(d
+ e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5
/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), ((A*a**2*x + B*b**2*x**4/4
+ x**3*(A*b**2 + 2*B*a*b)/3 + x**2*(2*A*a*b + B*a**2)/2)/sqrt(d), True))
```

3.1569 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}} dx$

Optimal. Leaf size=124

$$-\frac{2b(d+ex)^{3/2}(-2aBe-Abe+3bBd)}{3e^4}+\frac{2\sqrt{d+ex}\,(bd-ae)(-aBe-2Abe+3bBd)}{e^4}+\frac{2(bd-ae)^2(Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2b^2 I}{}$$

Rubi [A] time = 0.05, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{3/2}(-2aBe-Abe+3bBd)}{3e^4}+\frac{2\sqrt{d+ex}\,(bd-ae)(-aBe-2Abe+3bBd)}{e^4}+\frac{2(bd-ae)^2(Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2b^2B(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^2*(B*d - A*e))/(e^4*Sqrt[d + e*x]) + (2*(b*d - a*e)*(3*b*B*d
 - 2*A*b*e - a*B*e)*Sqrt[d + e*x])/e^4 - (2*b*(3*b*B*d - A*b*e - 2*a*B*e)*(
d + e*x)^(3/2))/(3*e^4) + (2*b^2*B*(d + e*x)^(5/2))/(5*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^{3/2}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3\sqrt{d+ex}}+\frac{b(-3}{}\right.\\ &= \frac{2(bd-ae)^2(Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)(3bBd-2Abe-aBe)\sqrt{d+ex}}{e^4}-\frac{2b(3}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 107, normalized size = 0.86

$$\frac{2\left(-5b(d+ex)^2(-2aBe-Abe+3bBd)+15(d+ex)(bd-ae)(-aBe-2Abe+3bBd)+15(bd-ae)^2(Bd-Ae)+3b^2B(d+ex)^3\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(15*(b*d - a*e)^2*(B*d - A*e) + 15*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*
e)*(d + e*x) - 5*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2 + 3*b^2*B*(d + e
*x)^3))/(15*e^4*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.11, size = 193, normalized size = 1.56

$$\frac{2\left(-15a^2Ae^3+15a^2Be^2(d+ex)+15a^2Bde^2+30aAbe^2(d+ex)+30aAbde^2-30abBd^2e-60abBde(d+ex)+10abBe(d+ex)^2-15Ab^2d^2e-30Ab^2de(d+ex)+5Ab^2e(d+ex)^2+15b^2Bd^3+45b^2Bd^2(d+ex)-15b^2Bd(d+ex)^2+3b^2B(d+ex)^3\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(15*b^2*B*d^3 - 15*A*b^2*d^2*e - 30*a*b*B*d^2*e + 30*a*A*b*d*e^2 + 15*a^
2*B*d*e^2 - 15*a^2*A*e^3 + 45*b^2*B*d^2*(d + e*x) - 30*A*b^2*d*e*(d + e*x)
- 60*a*b*B*d*e*(d + e*x) + 30*a*A*b*e^2*(d + e*x) + 15*a^2*B*e^2*(d + e*x)
- 15*b^2*B*d*(d + e*x)^2 + 5*A*b^2*e*(d + e*x)^2 + 10*a*b*B*e*(d + e*x)^2 +
 3*b^2*B*(d + e*x)^3))/(15*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.41, size = 165, normalized size = 1.33

$$\frac{2\left(3Bb^2e^3x^3+48Bb^2d^3-15Aa^2e^3-40\left(2Bab+Ab^2\right)d^2e+30\left(Ba^2+2Aab\right)de^2-\left(6Bb^2de^2-5\left(2Bab+Ab^2\right)e^3\right)x^2+\left(24Bb^2d^2e-20\left(2Bab+Ab^2\right)de^2+15\left(Ba^2+2Aab\right)e^3\right)x\right)\sqrt{ex+d}}{15\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(3*B*b^2*e^3*x^3 + 48*B*b^2*d^3 - 15*A*a^2*e^3 - 40*(2*B*a*b + A*b^2)*
d^2*e + 30*(B*a^2 + 2*A*a*b)*d*e^2 - (6*B*b^2*d*e^2 - 5*(2*B*a*b + A*b^2)*e
^3)*x^2 + (24*B*b^2*d^2*e - 20*(2*B*a*b + A*b^2)*d*e^2 + 15*(B*a^2 + 2*A*a*
b)*e^3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.21, size = 219, normalized size = 1.77

$$\frac{2}{15}\left(3(xe+d)^{\frac{5}{2}}Bb^2e^{16}-15(xe+d)^{\frac{3}{2}}Bb^2de^{16}+45\sqrt{xe+d}\,Bb^2d^2e^{16}+10(xe+d)^{\frac{3}{2}}Babe^{17}+5(xe+d)^{\frac{3}{2}}Ab^2e^{17}-60\sqrt{xe+d}\,Babde^{17}-30\sqrt{xe+d}\,Ab^2de^{17}+15\sqrt{xe+d}\,Ba^2e^{18}+30\sqrt{xe+d}\,Aabe^{18}\right)e^{(-20)}+\frac{2\left(Bb^2d^3-2Babd^2e-Ab^2d^2e+Ba^2de^2+2Aabde^2-Aa^2e^3\right)e^{(-4)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*b^2*e^16 - 15*(x*e + d)^(3/2)*B*b^2*d*e^16 + 45*s
qrt(x*e + d)*B*b^2*d^2*e^16 + 10*(x*e + d)^(3/2)*B*a*b*e^17 + 5*(x*e + d)^(
3/2)*A*b^2*e^17 - 60*sqrt(x*e + d)*B*a*b*d*e^17 - 30*sqrt(x*e + d)*A*b^2*d*
e^17 + 15*sqrt(x*e + d)*B*a^2*e^18 + 30*sqrt(x*e + d)*A*a*b*e^18)*e^(-20) +
 2*(B*b^2*d^3 - 2*B*a*b*d^2*e - A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 -
 A*a^2*e^3)*e^(-4)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 169, normalized size = 1.36

$$-\frac{2\left(-3B\,b^2x^3e^3-5A\,b^2e^3x^2-10Bab\,e^3x^2+6B\,b^2d\,e^2x^2-30Aab\,e^3x+20A\,b^2d\,e^2x-15B\,a^2e^3x+40Babd\,e^2x-24B\,b^2d^2ex+15A\,a^2e^3-60Aabd\,e^2+40A\,b^2d^2e-30B\,a^2d\,e^2+80Bab\,d^2e-48B\,b^2d^3\right)}{15\sqrt{ex+d}\;e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/15*(-3*B*b^2*e^3*x^3-5*A*b^2*e^3*x^2-10*B*a*b*e^3*x^2+6*B*b^2*d*e^2*x^2-
30*A*a*b*e^3*x+20*A*b^2*d*e^2*x-15*B*a^2*e^3*x+40*B*a*b*d*e^2*x-24*B*b^2*d^
2*e*x+15*A*a^2*e^3-60*A*a*b*d*e^2+40*A*b^2*d^2*e-30*B*a^2*d*e^2+80*B*a*b*d^
2*e-48*B*b^2*d^3)/(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.53, size = 167, normalized size = 1.35

$$\frac{2\left(\frac{3(ex+d)^{\frac{5}{2}}Bb^2-5\left(3Bb^2d-\left(2Bab+Ab^2\right)e\right)(ex+d)^{\frac{3}{2}}+15\left(3Bb^2d^2-2\left(2Bab+Ab^2\right)de+\left(Ba^2+2Aab\right)e^2\right)\sqrt{ex+d}}{e^3}+\frac{15\left(Bb^2d^3-Aa^2e^3-\left(2Bab+Ab^2\right)d^2e+\left(Ba^2+2Aab\right)de^2\right)}{\sqrt{ex+d}\,e^3}\right)}{15e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*b^2 - 5*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*(e*x +
 d)^(3/2) + 15*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e
^2)*sqrt(e*x + d))/e^3 + 15*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*
e + (B*a^2 + 2*A*a*b)*d*e^2)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 0.08, size = 154, normalized size = 1.24

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{3\,e^4}-\frac{-2\,B\,a^2\,d\,e^2+2\,A\,a^2\,e^3+4\,B\,a\,b\,d^2\,e-4\,A\,a\,b\,d\,e^2-2\,B\,b^2\,d^3+2\,A\,b^2\,d^2\,e}{e^4\,\sqrt{d+e\,x}}+\frac{2\,B\,b^2\,(d+e\,x)^{5/2}}{5\,e^4}+\frac{2\,(a\,e-b\,d)\,\sqrt{d+e\,x}\,\left(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(3*e^4) - (2*A*a^2*e^
3 - 2*B*b^2*d^3 + 2*A*b^2*d^2*e - 2*B*a^2*d*e^2 - 4*A*a*b*d*e^2 + 4*B*a*b*d
^2*e)/(e^4*(d + e*x)^(1/2)) + (2*B*b^2*(d + e*x)^(5/2))/(5*e^4) + (2*(a*e -
 b*d)*(d + e*x)^(1/2)*(2*A*b*e + B*a*e - 3*B*b*d))/e^4
```

sympy [A] time = 33.87, size = 150, normalized size = 1.21

$$\frac{2Bb^2\,(d+ex)^{\frac{5}{2}}}{5e^4}+\frac{(d+ex)^{\frac{3}{2}}\left(2Ab^2e+4Babe-6Bb^2d\right)}{3e^4}+\frac{\sqrt{d+ex}\left(4Aabe^2-4Ab^2de+2Ba^2e^2-8Babde+6Bb^2d^2\right)}{e^4}+\frac{2\,(-Ae+Bd)\,(ae-bd)^2}{e^4\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*b**2*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(2*A*b**2*e + 4*B*a*b
*e - 6*B*b**2*d)/(3*e**4) + sqrt(d + e*x)*(4*A*a*b*e**2 - 4*A*b**2*d*e + 2*
B*a**2*e**2 - 8*B*a*b*d*e + 6*B*b**2*d**2)/e**4 + 2*(-A*e + B*d)*(a*e - b*d
)**2/(e**4*sqrt(d + e*x))
```

3.1570 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=124

$$-\frac{2b\sqrt{d+ex}\,(-2aBe-Abe+3bBd)}{e^4}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^2(Bd-Ae)}{3e^4(d+ex)^{3/2}}+\frac{2b^2B(d+ex)^{3/2}}{3e^4}$$

Rubi [A] time = 0.05, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$-\frac{2b\sqrt{d+ex}\,(-2aBe-Abe+3bBd)}{e^4}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^2(Bd-Ae)}{3e^4(d+ex)^{3/2}}+\frac{2b^2B(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^2*(B*d - A*e))/(3*e^4*(d + e*x)^(3/2)) - (2*(b*d - a*e)*(3*b
*B*d - 2*A*b*e - a*B*e))/(e^4*Sqrt[d + e*x]) - (2*b*(3*b*B*d - A*b*e - 2*a*
B*e)*Sqrt[d + e*x])/e^4 + (2*b^2*B*(d + e*x)^(3/2))/(3*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^{5/2}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^{3/2}}+\frac{b(-3bB\ldots}{e\ldots}\right.\\ &= \frac{2(bd-ae)^2(Bd-Ae)}{3e^4(d+ex)^{3/2}}-\frac{2(bd-ae)(3bBd-2Abe-aBe)}{e^4\sqrt{d+ex}}-\frac{2b(3bBd-Abe-\ldots}{e^{\ldots}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 105, normalized size = 0.85

$$\frac{2\left(-3b(d+ex)^2(-2aBe-Abe+3bBd)-3(d+ex)(bd-ae)(-aBe-2Abe+3bBd)+(bd-ae)^2(Bd-Ae)+b^2B(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*((b*d - a*e)^2*(B*d - A*e) - 3*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e)*(
d + e*x) - 3*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2 + b^2*B*(d + e*x)^3)
)/(3*e^4*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.13, size = 190, normalized size = 1.53

$$\frac{2\left(-a^2Ae^3-3a^2Be^2(d+ex)+a^2Bde^2-6aAbe^2(d+ex)+2aAbde^2-2abBd^2e+12abBde(d+ex)+6abBe(d+ex)^2-Ab^2d^2e+6Ab^2de(d+ex)+3Ab^2e(d+ex)^2+b^2Bd^3-9b^2Bd^2(d+ex)-9b^2Bd(d+ex)^2+b^2B(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b^2*B*d^3 - A*b^2*d^2*e - 2*a*b*B*d^2*e + 2*a*A*b*d*e^2 + a^2*B*d*e^2 -
 a^2*A*e^3 - 9*b^2*B*d^2*(d + e*x) + 6*A*b^2*d*e*(d + e*x) + 12*a*b*B*d*e*(
d + e*x) - 6*a*A*b*e^2*(d + e*x) - 3*a^2*B*e^2*(d + e*x) - 9*b^2*B*d*(d + e
*x)^2 + 3*A*b^2*e*(d + e*x)^2 + 6*a*b*B*e*(d + e*x)^2 + b^2*B*(d + e*x)^3))
/(3*e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.41, size = 175, normalized size = 1.41

$$\frac{2\left(Bb^2e^3x^3-16\,Bb^2d^3-Aa^2e^3+8\left(2\,Bab+Ab^2\right)d^2e-2\left(Ba^2+2\,Aab\right)de^2-3\left(2\,Bb^2de^2-\left(2\,Bab+Ab^2\right)e^3\right)x^2-3\left(8\,Bb^2d^2e-4\left(2\,Bab+Ab^2\right)de^2+\left(Ba^2+2\,Aab\right)e^3\right)x\right)\sqrt{ex+d}}{3\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/3*(B*b^2*e^3*x^3 - 16*B*b^2*d^3 - A*a^2*e^3 + 8*(2*B*a*b + A*b^2)*d^2*e -
 2*(B*a^2 + 2*A*a*b)*d*e^2 - 3*(2*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2
- 3*(8*B*b^2*d^2*e - 4*(2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)*
sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.21, size = 206, normalized size = 1.66

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bb^2e^8-9\sqrt{xe+d}\,Bb^2de^8+6\sqrt{xe+d}\,Babe^9+3\sqrt{xe+d}\,Ab^2e^9\right)e^{(-12)}-\frac{2\left(9\,(xe+d)Bb^2d^2-Bb^2d^3-12\,(xe+d)Babde-6\,(xe+d)Ab^2de+2\,Babd^2e+Ab^2d^2e+3\,(xe+d)Ba^2e^2+6\,(xe+d)Aabe^2-Ba^2de^2-2\,Aabde^2+Aa^2e^3\right)e^{(-4)}}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*b^2*e^8 - 9*sqrt(x*e + d)*B*b^2*d*e^8 + 6*sqrt(x*e +
 d)*B*a*b*e^9 + 3*sqrt(x*e + d)*A*b^2*e^9)*e^(-12) - 2/3*(9*(x*e + d)*B*b^2
*d^2 - B*b^2*d^3 - 12*(x*e + d)*B*a*b*d*e - 6*(x*e + d)*A*b^2*d*e + 2*B*a*b
*d^2*e + A*b^2*d^2*e + 3*(x*e + d)*B*a^2*e^2 + 6*(x*e + d)*A*a*b*e^2 - B*a^
2*d*e^2 - 2*A*a*b*d*e^2 + A*a^2*e^3)*e^(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 168, normalized size = 1.35

$$-\frac{2\left(-B\,b^2x^3e^3-3A\,b^2e^3x^2-6Bab\,e^3x^2+6B\,b^2d\,e^2x^2+6Aab\,e^3x-12A\,b^2d\,e^2x+3B\,a^2e^3x-24Babd\,e^2x+24B\,b^2d^2ex+A\,a^2e^3+4Aabd\,e^2-8A\,b^2d^2e+2B\,a^2d\,e^2-16Bab\,d^2e+16B\,b^2d^3\right)}{3\,(ex+d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3*(-B*b^2*e^3*x^3-3*A*b^2*e^3*x^2-6*B*a*b*e^3*x^2+6*B*b^2*d*e^2*x^2+6*A*
a*b*e^3*x-12*A*b^2*d*e^2*x+3*B*a^2*e^3*x-24*B*a*b*d*e^2*x+24*B*b^2*d^2*e*x+
A*a^2*e^3+4*A*a*b*d*e^2-8*A*b^2*d^2*e+2*B*a^2*d*e^2-16*B*a*b*d^2*e+16*B*b^2
*d^3)/(e*x+d)^(3/2)/e^4
```

maxima [A] time = 0.57, size = 163, normalized size = 1.31

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}}Bb^2-3\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)\sqrt{ex+d}}{e^3}+\frac{Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2-3\left(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/3*(((e*x + d)^(3/2)*B*b^2 - 3*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*sqrt(e*x
+ d))/e^3 + (B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A
*a*b)*d*e^2 - 3*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*
e^2)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 1.99, size = 189, normalized size = 1.52

$$\frac{2\,B\,b^2\,d^3-2\,A\,a^2\,e^3+2\,B\,b^2\,{\left(d+e\,x\right)}^3+6\,A\,b^2\,e\,{\left(d+e\,x\right)}^2-6\,B\,a^2\,e^2\,\left(d+e\,x\right)-18\,B\,b^2\,d\,{\left(d+e\,x\right)}^2-18\,B\,b^2\,d^2\,\left(d+e\,x\right)-2\,A\,b^2\,d^2\,e+2\,B\,a^2\,d\,e^2-12\,A\,a\,b\,e^2\,\left(d+e\,x\right)+12\,B\,a\,b\,e\,{\left(d+e\,x\right)}^2+12\,A\,b^2\,d\,e\,\left(d+e\,x\right)+4\,A\,a\,b\,d\,e^2-4\,B\,a\,b\,d^2\,e+24\,B\,a\,b\,d\,e\,\left(d+e\,x\right)}{3\,e^4\,{\left(d+e\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*B*b^2*d^3 - 2*A*a^2*e^3 + 2*B*b^2*(d + e*x)^3 + 6*A*b^2*e*(d + e*x)^2 -
6*B*a^2*e^2*(d + e*x) - 18*B*b^2*d*(d + e*x)^2 - 18*B*b^2*d^2*(d + e*x) - 2
*A*b^2*d^2*e + 2*B*a^2*d*e^2 - 12*A*a*b*e^2*(d + e*x) + 12*B*a*b*e*(d + e*x
)^2 + 12*A*b^2*d*e*(d + e*x) + 4*A*a*b*d*e^2 - 4*B*a*b*d^2*e + 24*B*a*b*d*e
*(d + e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.71, size = 709, normalized size = 5.72

$$\begin{cases} - \frac{2 A a^{2} e^{3}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{8 A a b d e^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{12 A a b e^{3} x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{16 A b^{2} d^{2} e}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{24 A b^{2} d e^{2} x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{6 A b^{2} e^{3} x^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{4 B a^{2} d e^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{6 B a^{2} e^{3} x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{32 B a b d^{2} e}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{48 B a b d e^{2} x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{12 B a b e^{3} x^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{32 B b^{2} d^{3}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{48 B b^{2} d^{2} e x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{12 B b^{2} d e^{2} x^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{2 B b^{2} e^{3} x^{3}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} & \text{for}\: e \neq 0 \\\frac{A a^{2} x + A a b x^{2} + \frac{A b^{2} x^{3}}{3} + \frac{B a^{2} x^{2}}{2} + \frac{2 B a b x^{3}}{3} + \frac{B b^{2} x^{4}}{4}}{d^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*A*a**2*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
 - 8*A*a*b*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 12*A*
a*b*e**3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 16*A*b**2*d*
*2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*A*b**2*d*e**2*x
/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 6*A*b**2*e**3*x**2/(3*
d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 4*B*a**2*d*e**2/(3*d*e**4*
sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 6*B*a**2*e**3*x/(3*d*e**4*sqrt(d
+ e*x) + 3*e**5*x*sqrt(d + e*x)) + 32*B*a*b*d**2*e/(3*d*e**4*sqrt(d + e*x)
+ 3*e**5*x*sqrt(d + e*x)) + 48*B*a*b*d*e**2*x/(3*d*e**4*sqrt(d + e*x) + 3*e
**5*x*sqrt(d + e*x)) + 12*B*a*b*e**3*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*
x*sqrt(d + e*x)) - 32*B*b**2*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d
 + e*x)) - 48*B*b**2*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e
*x)) - 12*B*b**2*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*
x)) + 2*B*b**2*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)),
 Ne(e, 0)), ((A*a**2*x + A*a*b*x**2 + A*b**2*x**3/3 + B*a**2*x**2/2 + 2*B*a
*b*x**3/3 + B*b**2*x**4/4)/d**(5/2), True))
```

3.1571 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=124

$$\frac{2b(-2aBe-Abe+3bBd)}{e^4\sqrt{d+ex}}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{3e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2b^2B\sqrt{d+ex}}{e^4}$$

Rubi [A] time = 0.06, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{2b(-2aBe-Abe+3bBd)}{e^4\sqrt{d+ex}}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{3e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2b^2B\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^2*(B*d - A*e))/(5*e^4*(d + e*x)^(5/2)) - (2*(b*d - a*e)*(3*b
*B*d - 2*A*b*e - a*B*e))/(3*e^4*(d + e*x)^(3/2)) + (2*b*(3*b*B*d - A*b*e -
2*a*B*e))/(e^4*Sqrt[d + e*x]) + (2*b^2*B*Sqrt[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^{7/2}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^{5/2}}+\frac{b(-3\\ &= \frac{2(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^{5/2}}-\frac{2(bd-ae)(3bBd-2Abe-aBe)}{3e^4(d+ex)^{3/2}}+\frac{2b(3bBd-A}{e^4\sqrt{d+}\end{aligned}$$

Mathematica [A] time = 0.09, size = 107, normalized size = 0.86

$$\frac{2\left(15b(d+ex)^2(-2aBe-Abe+3bBd)-5(d+ex)(bd-ae)(-aBe-2Abe+3bBd)+3(bd-ae)^2(Bd-Ae)+15b^2B(d+ex)^3\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*(b*d - a*e)^2*(B*d - A*e) - 5*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e)
*(d + e*x) + 15*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2 + 15*b^2*B*(d + e
*x)^3))/(15*e^4*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.12, size = 193, normalized size = 1.56

$$\frac{2\left(-3a^2Ae^3-5a^2Be^2(d+ex)+3a^2Bde^2-10aAbe^2(d+ex)+6aAbde^2-6abBd^2e+20abBde(d+ex)-30abBe(d+ex)^2-3Ab^2d^2e+10Ab^2de(d+ex)-15Ab^2e(d+ex)^2+3b^2Bd^3-15b^2Bd^2(d+ex)+45b^2Bd(d+ex)^2+15b^2B(d+ex)^3\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*b^2*B*d^3 - 3*A*b^2*d^2*e - 6*a*b*B*d^2*e + 6*a*A*b*d*e^2 + 3*a^2*B*d
*e^2 - 3*a^2*A*e^3 - 15*b^2*B*d^2*(d + e*x) + 10*A*b^2*d*e*(d + e*x) + 20*a
*b*B*d*e*(d + e*x) - 10*a*A*b*e^2*(d + e*x) - 5*a^2*B*e^2*(d + e*x) + 45*b^
2*B*d*(d + e*x)^2 - 15*A*b^2*e*(d + e*x)^2 - 30*a*b*B*e*(d + e*x)^2 + 15*b^
2*B*(d + e*x)^3))/(15*e^4*(d + e*x)^(5/2))
```

fricas [A] time = 0.40, size = 188, normalized size = 1.52

$$\frac{2\left(15\,Bb^2e^3x^3+48\,Bb^2d^3-3\,Aa^2e^3-8\left(2\,Bab+Ab^2\right)d^2e-2\left(Ba^2+2\,Aab\right)de^2+15\left(6\,Bb^2de^2-\left(2\,Bab+Ab^2\right)e^3\right)x^2+5\left(24\,Bb^2d^2e-4\left(2\,Bab+Ab^2\right)de^2-\left(Ba^2+2\,Aab\right)e^3\right)x\right)\sqrt{ex+d}}{15\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(15*B*b^2*e^3*x^3 + 48*B*b^2*d^3 - 3*A*a^2*e^3 - 8*(2*B*a*b + A*b^2)*d
^2*e - 2*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(6*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^
3)*x^2 + 5*(24*B*b^2*d^2*e - 4*(2*B*a*b + A*b^2)*d*e^2 - (B*a^2 + 2*A*a*b)*
e^3)*x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.21, size = 202, normalized size = 1.63

$$2\sqrt{xe+d}\,Bb^2e^{(-4)}+\frac{2\left(45\,(xe+d)^2Bb^2d-15\,(xe+d)Bb^2d^2+3\,Bb^2d^3-30\,(xe+d)^2Babe-15\,(xe+d)^2Ab^2e+20\,(xe+d)Babde+10\,(xe+d)Ab^2de-6\,Babd^2e-3\,Ab^2d^2e-5\,(xe+d)Ba^2e^2-10\,(xe+d)Aabe^2+3\,Ba^2de^2+6\,Aabde^2-3\,Aa^2e^3\right)e^{(-4)}}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*b^2*e^(-4) + 2/15*(45*(x*e + d)^2*B*b^2*d - 15*(x*e + d)*
B*b^2*d^2 + 3*B*b^2*d^3 - 30*(x*e + d)^2*B*a*b*e - 15*(x*e + d)^2*A*b^2*e +
 20*(x*e + d)*B*a*b*d*e + 10*(x*e + d)*A*b^2*d*e - 6*B*a*b*d^2*e - 3*A*b^2*
d^2*e - 5*(x*e + d)*B*a^2*e^2 - 10*(x*e + d)*A*a*b*e^2 + 3*B*a^2*d*e^2 + 6*
A*a*b*d*e^2 - 3*A*a^2*e^3)*e^(-4)/(x*e + d)^(5/2)
```

maple [A] time = 0.06, size = 169, normalized size = 1.36

$$-\frac{2\left(-15Bb^2x^3e^3+15Ab^2e^3x^2+30Babe^3x^2-90Bb^2de^2x^2+10Aabe^3x+20Ab^2de^2x+5Ba^2e^3x+40Babde^2x-120Bb^2d^2ex+3Aa^2e^3+4Aabde^2+8Ab^2d^2e+2Ba^2de^2+16Babd^2e-48Bb^2d^3\right)}{15\,(ex+d)^{\frac{5}{2}}e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-15*B*b^2*e^3*x^3+15*A*b^2*e^3*x^2+30*B*a*b*e^3*x^2-90*B*b^2*d*e^2*x
^2+10*A*a*b*e^3*x+20*A*b^2*d*e^2*x+5*B*a^2*e^3*x+40*B*a*b*d*e^2*x-120*B*b^2
*d^2*e*x+3*A*a^2*e^3+4*A*a*b*d*e^2+8*A*b^2*d^2*e+2*B*a^2*d*e^2+16*B*a*b*d^2
*e-48*B*b^2*d^3)/(e*x+d)^(5/2)/e^4
```

maxima [A] time = 0.64, size = 164, normalized size = 1.32

$$\frac{2\left(\frac{15\sqrt{ex+d}\,Bb^2}{e^3}+\frac{3\,Bb^2d^3-3\,Aa^2e^3-3\left(2\,Bab+Ab^2\right)d^2e+3\left(Ba^2+2\,Aab\right)de^2+15\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)(ex+d)^2-5\left(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*(15*sqrt(e*x + d)*B*b^2/e^3 + (3*B*b^2*d^3 - 3*A*a^2*e^3 - 3*(2*B*a*b
+ A*b^2)*d^2*e + 3*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(3*B*b^2*d - (2*B*a*b + A*b
^2)*e)*(e*x + d)^2 - 5*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*
A*a*b)*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 0.10, size = 168, normalized size = 1.35

$$-\frac{2\,\left(2\,B\,a^2\,d\,e^2+5\,B\,a^2\,e^3\,x+3\,A\,a^2\,e^3+16\,B\,a\,b\,d^2\,e+40\,B\,a\,b\,d\,e^2\,x+4\,A\,a\,b\,d\,e^2+30\,B\,a\,b\,e^3\,x^2+10\,A\,a\,b\,e^3\,x-48\,B\,b^2\,d^3-120\,B\,b^2\,d^2\,e\,x+8\,A\,b^2\,d^2\,e-90\,B\,b^2\,d\,e^2\,x^2+20\,A\,b^2\,d\,e^2\,x-15\,B\,b^2\,e^3\,x^3+15\,A\,b^2\,e^3\,x^2\right)}{15\,e^4\,{\left(d+e\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(3*A*a^2*e^3 - 48*B*b^2*d^3 + 8*A*b^2*d^2*e + 2*B*a^2*d*e^2 + 5*B*a^2*e
^3*x + 15*A*b^2*e^3*x^2 - 15*B*b^2*e^3*x^3 + 30*B*a*b*e^3*x^2 + 20*A*b^2*d*
e^2*x - 120*B*b^2*d^2*e*x - 90*B*b^2*d*e^2*x^2 + 4*A*a*b*d*e^2 + 16*B*a*b*d
^2*e + 10*A*a*b*e^3*x + 40*B*a*b*d*e^2*x))/(15*e^4*(d + e*x)^(5/2))
```

sympy [A] time = 3.64, size = 1015, normalized size = 8.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a**2*e**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d
+ e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 8*A*a*b*d*e**2/(15*d**2*e**4*sqrt(d
+ e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 20*A*a*b
*e**3*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x
**2*sqrt(d + e*x)) - 16*A*b**2*d**2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e*
*5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 40*A*b**2*d*e**2*x/(15*d
**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d +
e*x)) - 30*A*b**2*e**3*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(
d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 4*B*a**2*d*e**2/(15*d**2*e**4*sqrt
(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 10*B*
a**2*e**3*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e*
*6*x**2*sqrt(d + e*x)) - 32*B*a*b*d**2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d
*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 80*B*a*b*d*e**2*x/(15
*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d
+ e*x)) - 60*B*a*b*e**3*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt
(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 96*B*b**2*d**3/(15*d**2*e**4*sqrt
(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 240*B
*b**2*d**2*e*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15
*e**6*x**2*sqrt(d + e*x)) + 180*B*b**2*d*e**2*x**2/(15*d**2*e**4*sqrt(d + e
*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 30*B*b**2*e
**3*x**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*
x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*a**2*x + A*a*b*x**2 + A*b**2*x**3/3 + B
*a**2*x**2/2 + 2*B*a*b*x**3/3 + B*b**2*x**4/4)/d**(7/2), True))
```

3.1572 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{17/2}(-4aBe-Abe+5bBd)}{17e^6}+\frac{4b^2(d+ex)^{15/2}(bd-ae)(-3aBe-2Abe+5bBd)}{15e^6}-\frac{4b(d+ex)^{13/2}(bd-ae)}{1}$$

Rubi [A] time = 0.14, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^3(d+ex)^{17/2}(-4aBe-Abe+5bBd)}{17e^6}+\frac{4b^2(d+ex)^{15/2}(bd-ae)(-3aBe-2Abe+5bBd)}{15e^6}-\frac{4b(d+ex)^{13/2}(bd-ae)^2(-2aBe-3Abe+5bBd)}{13e^6}+\frac{2(d+ex)^{11/2}(bd-ae)^3(-aBe-4Abe+5bBd)}{11e^6}-\frac{2(d+ex)^{9/2}(bd-ae)^4(Bd-Ae)}{9e^6}+\frac{2b^4B(d+ex)^{19/2}}{19e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(9/2))/(9*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(11/2))/(11*e^6) - (4*b*(b*d - a*e)^2*
(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(13/2))/(13*e^6) + (4*b^2*(b*d - a*
e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(15/2))/(15*e^6) - (2*b^3*(5*b*B
*d - A*b*e - 4*a*B*e)*(d + e*x)^(17/2))/(17*e^6) + (2*b^4*B*(d + e*x)^(19/2
))/(19*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^{7/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^{7/2}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.\\
&= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{9/2}}{9e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{11e^6}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 183, normalized size = 0.84

$$\frac{2(d+ex)^{9/2}\left(-122265b^3(d+ex)^4(-4aBe-Abe+5bBd)+277134b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-319770b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)+188955(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)-230945(bd-ae)^4(Bd-Ae)+109395b^4B(d+ex)^5\right)}{2078505e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-230945*(b*d - a*e)^4*(B*d - A*e) + 188955*(b*d - a*e)^
3*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 319770*b*(b*d - a*e)^2*(5*b*B*d -
```

```
3*A*b*e - 2*a*B*e)*(d + e*x)^2 + 277134*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
 - 3*a*B*e)*(d + e*x)^3 - 122265*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^
4 + 109395*b^4*B*(d + e*x)^5))/(2078505*e^6)
```

IntegrateAlgebraic [B] time = 0.26, size = 543, normalized size = 2.49

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-230945*b^4*B*d^5 + 230945*A*b^4*d^4*e + 923780*a*b^3*B
*d^4*e - 923780*a*A*b^3*d^3*e^2 - 1385670*a^2*b^2*B*d^3*e^2 + 1385670*a^2*A
*b^2*d^2*e^3 + 923780*a^3*b*B*d^2*e^3 - 923780*a^3*A*b*d*e^4 - 230945*a^4*B
*d*e^4 + 230945*a^4*A*e^5 + 944775*b^4*B*d^4*(d + e*x) - 755820*A*b^4*d^3*e
*(d + e*x) - 3023280*a*b^3*B*d^3*e*(d + e*x) + 2267460*a*A*b^3*d^2*e^2*(d +
 e*x) + 3401190*a^2*b^2*B*d^2*e^2*(d + e*x) - 2267460*a^2*A*b^2*d*e^3*(d +
e*x) - 1511640*a^3*b*B*d*e^3*(d + e*x) + 755820*a^3*A*b*e^4*(d + e*x) + 188
955*a^4*B*e^4*(d + e*x) - 1598850*b^4*B*d^3*(d + e*x)^2 + 959310*A*b^4*d^2*
e*(d + e*x)^2 + 3837240*a*b^3*B*d^2*e*(d + e*x)^2 - 1918620*a*A*b^3*d*e^2*(
d + e*x)^2 - 2877930*a^2*b^2*B*d*e^2*(d + e*x)^2 + 959310*a^2*A*b^2*e^3*(d
+ e*x)^2 + 639540*a^3*b*B*e^3*(d + e*x)^2 + 1385670*b^4*B*d^2*(d + e*x)^3 -
 554268*A*b^4*d*e*(d + e*x)^3 - 2217072*a*b^3*B*d*e*(d + e*x)^3 + 554268*a*
A*b^3*e^2*(d + e*x)^3 + 831402*a^2*b^2*B*e^2*(d + e*x)^3 - 611325*b^4*B*d*(
d + e*x)^4 + 122265*A*b^4*e*(d + e*x)^4 + 489060*a*b^3*B*e*(d + e*x)^4 + 10
9395*b^4*B*(d + e*x)^5))/(2078505*e^6)
```

fricas [B] time = 0.42, size = 894, normalized size = 4.10

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/2078505*(109395*B*b^4*e^9*x^9 - 1280*B*b^4*d^9 + 230945*A*a^4*d^4*e^5 + 2
432*(4*B*a*b^3 + A*b^4)*d^8*e - 10336*(3*B*a^2*b^2 + 2*A*a*b^3)*d^7*e^2 + 2
5840*(2*B*a^3*b + 3*A*a^2*b^2)*d^6*e^3 - 41990*(B*a^4 + 4*A*a^3*b)*d^5*e^4
+ 6435*(58*B*b^4*d*e^8 + 19*(4*B*a*b^3 + A*b^4)*e^9)*x^8 + 858*(505*B*b^4*d
^2*e^7 + 494*(4*B*a*b^3 + A*b^4)*d*e^8 + 323*(3*B*a^2*b^2 + 2*A*a*b^3)*e^9)
*x^7 + 66*(2620*B*b^4*d^3*e^6 + 7619*(4*B*a*b^3 + A*b^4)*d^2*e^7 + 14858*(3
*B*a^2*b^2 + 2*A*a*b^3)*d*e^8 + 4845*(2*B*a^3*b + 3*A*a^2*b^2)*e^9)*x^6 + 9
*(35*B*b^4*d^4*e^5 + 23028*(4*B*a*b^3 + A*b^4)*d^3*e^6 + 133076*(3*B*a^2*b^
2 + 2*A*a*b^3)*d^2*e^7 + 129200*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^8 + 20995*(B*
a^4 + 4*A*a^3*b)*e^9)*x^5 - 5*(70*B*b^4*d^5*e^4 - 46189*A*a^4*e^9 - 133*(4*
B*a*b^3 + A*b^4)*d^4*e^5 - 103360*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^6 - 29586
8*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^7 - 142766*(B*a^4 + 4*A*a^3*b)*d*e^8)*x^4
 + 10*(40*B*b^4*d^6*e^3 + 92378*A*a^4*d*e^8 - 76*(4*B*a*b^3 + A*b^4)*d^5*e^
4 + 323*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^5 + 68476*(2*B*a^3*b + 3*A*a^2*b^2)
*d^3*e^6 + 96577*(B*a^4 + 4*A*a^3*b)*d^2*e^7)*x^3 - 6*(80*B*b^4*d^7*e^2 - 2
30945*A*a^4*d^2*e^7 - 152*(4*B*a*b^3 + A*b^4)*d^6*e^3 + 646*(3*B*a^2*b^2 +
2*A*a*b^3)*d^5*e^4 - 1615*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e^5 - 83980*(B*a^4
+ 4*A*a^3*b)*d^3*e^6)*x^2 + (640*B*b^4*d^8*e + 923780*A*a^4*d^3*e^6 - 1216*
(4*B*a*b^3 + A*b^4)*d^7*e^2 + 5168*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6*e^3 - 1292
0*(2*B*a^3*b + 3*A*a^2*b^2)*d^5*e^4 + 20995*(B*a^4 + 4*A*a^3*b)*d^4*e^5)*x)
*sqrt(e*x + d)/e^6
```

giac [B] time = 0.46, size = 3913, normalized size = 17.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d^4*e^(-1)
+ 19399380*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d^4*e^(-1) + 38798
76*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*
b*d^4*e^(-2) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*A*a^2*b^2*d^4*e^(-2) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e +
 d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d^4*
e^(-3) + 1662804*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^3*d^4*e^(-3) + 184756*(35*(x*e + d)^
(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/
2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^3*d^4*e^(-4) + 46189*(35*(x*e + d)^(9
/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)
*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^4*d^4*e^(-4) + 20995*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*d^4*e^(-5) + 3
879876*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*
a^4*d^3*e^(-1) + 15519504*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*A*a^3*b*d^3*e^(-1) + 6651216*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b*d^3*e
^(-2) + 9976824*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^2*d^3*e^(-2) + 1108536*(35*(x*e + d
)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(
3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^2*d^3*e^(-3) + 739024*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^3*d^3*e^(-3) + 335920*(63*(x*e + d
)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)
^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^3*d^3*
e^(-4) + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*A*b^4*d^3*e^(-4) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b
^4*d^3*e^(-5) + 14549535*sqrt(x*e + d)*A*a^4*d^4 + 19399380*((x*e + d)^(3/2
) - 3*sqrt(x*e + d)*d)*A*a^4*d^3 + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*d^2*e^(-1)
 + 9976824*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b*d^2*e^(-1) + 1108536*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b*d^2*e^(-2) + 1662804*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^2*d^2*e^(-2) + 755820*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^2*d^2*e^(-
3) + 503880*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*A*a*b^3*d^2*e^(-3) + 116280*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a
*b^3*d^2*e^(-4) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5
005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d
^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^4*d^2*e^(-4) +
13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11
/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*
e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^
4*d^2*e^(-5) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*A*a^4*d^2 + 184756*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
```

```
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*B*a^4*d*e^(-1) + 739024*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A
*a^3*b*d*e^(-1) + 335920*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*B*a^3*b*d*e^(-2) + 503880*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^2*d*e^(-2) + 116
280*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*
d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^
(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^2*d*e^(-3) + 77520*(231*(x*e +
d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
+ d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003
*sqrt(x*e + d)*d^6)*A*a*b^3*d*e^(-3) + 36176*(429*(x*e + d)^(15/2) - 3465*(
x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
+ 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(
3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^3*d*e^(-4) + 9044*(429*(x*e + d)^(
15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e +
 d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 150
15*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^4*d*e^(-4) + 532*(6435
*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2
- 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e +
d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 10
9395*sqrt(x*e + d)*d^8)*B*b^4*d*e^(-5) + 1662804*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*d +
20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^
2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)
*d^5)*B*a^4*e^(-1) + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b*e^(-1) + 19380*(231*(x*e + d)^(13/2) - 1
638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^
3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d
)*d^6)*B*a^3*b*e^(-2) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^2*e^(
-2) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*B*a^2*b^2*e^(-3) + 9044*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d +
 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(
7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqr
t(x*e + d)*d^7)*A*a*b^3*e^(-3) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*e +
d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 8
50850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(
5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^3*e
^(-4) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e
 + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4
 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e +
d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^4*e^(-4) + 63*(12155*(x*e + d)
^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260
*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9
/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 69283
5*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*b^4*e^(-5) + 46189*(35*
(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*
e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.15

$$\frac{2 (e x + d)^{\frac{9}{2}} \left(109395 b^{4} B x^{5} e^{5} + 122265 A b^{4} e^{5} x^{4} + 489060 B a b^{3} e^{5} x^{4} - 64350 B b^{4} d e^{4} x^{4} + 554268 A a b^{3} e^{5} x^{3} - 65208 A b^{4} d e^{4} x^{3} + 831402 B a^{2} b^{2} e^{5} x^{3} - 260832 B a b^{3} d e^{4} x^{3} + 34320 B b^{4} d^{2} e^{3} x^{3} + 959310 A a^{2} b^{2} e^{5} x^{2} - 255816 A a b^{3} d e^{4} x^{2} + 30096 A b^{4} d^{2} e^{3} x^{2} + 639540 B a^{3} b e^{5} x^{2} - 383724 B a^{2} b^{2} d e^{4} x^{2} + 120384 B a b^{3} d^{2} e^{3} x^{2} - 15840 B b^{4} d^{3} e^{2} x^{2} + 755820 A a^{3} b e^{5} x - 348840 A a^{2} b^{2} d e^{4} x + 93024 A a b^{3} d^{2} e^{3} x - 10944 A b^{4} d^{3} e^{2} x + 188955 B a^{4} e^{5} x - 232560 B a^{3} b d e^{4} x + 139536 B a^{2} b^{2} d^{2} e^{3} x - 43776 B a b^{3} d^{3} e^{2} x + 5760 B b^{4} d^{4} e x + 230945 A a^{4} e^{5} - 167960 A a^{3} b d e^{4} + 77520 A a^{2} b^{2} d^{2} e^{3} - 20672 A a b^{3} d^{3} e^{2} + 2432 A b^{4} d^{4} e - 41990 B a^{4} d e^{4} + 51680 B d^{2} a^{3} b e^{3} - 31008 B d^{3} a^{2} b^{2} e^{2} + 9728 B a b^{3} d^{4} e - 1280 B b^{4} d^{5}\right)}{2078505 e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/2078505*(e*x+d)^(9/2)*(109395*B*b^4*e^5*x^5+122265*A*b^4*e^5*x^4+489060*B
*a*b^3*e^5*x^4-64350*B*b^4*d*e^4*x^4+554268*A*a*b^3*e^5*x^3-65208*A*b^4*d*e
^4*x^3+831402*B*a^2*b^2*e^5*x^3-260832*B*a*b^3*d*e^4*x^3+34320*B*b^4*d^2*e^
3*x^3+959310*A*a^2*b^2*e^5*x^2-255816*A*a*b^3*d*e^4*x^2+30096*A*b^4*d^2*e^3
*x^2+639540*B*a^3*b*e^5*x^2-383724*B*a^2*b^2*d*e^4*x^2+120384*B*a*b^3*d^2*e
^3*x^2-15840*B*b^4*d^3*e^2*x^2+755820*A*a^3*b*e^5*x-348840*A*a^2*b^2*d*e^4*
x+93024*A*a*b^3*d^2*e^3*x-10944*A*b^4*d^3*e^2*x+188955*B*a^4*e^5*x-232560*B
*a^3*b*d*e^4*x+139536*B*a^2*b^2*d^2*e^3*x-43776*B*a*b^3*d^3*e^2*x+5760*B*b^
4*d^4*e*x+230945*A*a^4*e^5-167960*A*a^3*b*d*e^4+77520*A*a^2*b^2*d^2*e^3-206
72*A*a*b^3*d^3*e^2+2432*A*b^4*d^4*e-41990*B*a^4*d*e^4+51680*B*a^3*b*d^2*e^3
-31008*B*a^2*b^2*d^3*e^2+9728*B*a*b^3*d^4*e-1280*B*b^4*d^5)/e^6
```

maxima [B] time = 0.74, size = 409, normalized size = 1.88

$$\frac{2\left(109395\,(ex+d)^{\frac{19}{2}}Bb^4-122265\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{17}{2}}+277134\left(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de+\left(3\,Ba^2b^2+2\,Aab^3\right)e^2\right)(ex+d)^{\frac{15}{2}}-319770\left(5\,Bb^4d^3-3\left(4\,Bab^3+Ab^4\right)d^2e+3\left(3\,Ba^2b^2+2\,Aab^3\right)de^2-\left(2\,Ba^3b+3\,Aa^2b^2\right)e^3\right)(ex+d)^{\frac{13}{2}}+188955\left(5\,Bb^4d^4-4\left(4\,Bab^3+Ab^4\right)d^3e+6\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^2-4\left(2\,Ba^3b+3\,Aa^2b^2\right)de^3+\left(Ba^4+4\,Aa^3b\right)e^4\right)(ex+d)^{\frac{11}{2}}-230945\left(Bb^4d^5-Aa^4e^5-\left(4\,Bab^3+Ab^4\right)d^4e+2\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2-2\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+\left(Ba^4+4\,Aa^3b\right)de^4\right)(ex+d)^{\frac{9}{2}}\right)}{2078505\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/2078505*(109395*(e*x + d)^(19/2)*B*b^4 - 122265*(5*B*b^4*d - (4*B*a*b^3 +
 A*b^4)*e)*(e*x + d)^(17/2) + 277134*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d
*e + (3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(15/2) - 319770*(5*B*b^4*d^3
- 3*(4*B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^
3*b + 3*A*a^2*b^2)*e^3)*(e*x + d)^(13/2) + 188955*(5*B*b^4*d^4 - 4*(4*B*a*b
^3 + A*b^4)*d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*
A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(11/2) - 230945*(B*b^
4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)
*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)
*(e*x + d)^(9/2))/e^6
```

mupad [B] time = 1.98, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{17/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{17\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{11/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{11\,e^6}+\frac{2\,B\,b^4\,(d+e\,x)^{19/2}}{19\,e^6}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^4\,(d+e\,x)^{9/2}}{9\,e^6}+\frac{4\,b\,(a\,e-b\,d)^2\,(d+e\,x)^{13/2}\,(3\,A\,b\,e+2\,B\,a\,e-5\,B\,b\,d)}{13\,e^6}+\frac{4\,b^2\,(a\,e-b\,d)\,(d+e\,x)^{15/2}\,(2\,A\,b\,e+3\,B\,a\,e-5\,B\,b\,d)}{15\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(17/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(17*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(11/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(11*e^6) + (2*B*b^
4*(d + e*x)^(19/2))/(19*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(9/2)
)/(9*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(13/2)*(3*A*b*e + 2*B*a*e - 5*B*b*
d))/(13*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(15/2)*(2*A*b*e + 3*B*a*e - 5*B
*b*d))/(15*e^6)
```

sympy [A] time = 16.31, size = 2091, normalized size = 9.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((2*A*a**4*d**4*sqrt(d + e*x)/(9*e) + 8*A*a**4*d**3*x*sqrt(d + e*x
)/9 + 4*A*a**4*d**2*e*x**2*sqrt(d + e*x)/3 + 8*A*a**4*d*e**2*x**3*sqrt(d +
e*x)/9 + 2*A*a**4*e**3*x**4*sqrt(d + e*x)/9 - 16*A*a**3*b*d**5*sqrt(d + e*x
)/(99*e**2) + 8*A*a**3*b*d**4*x*sqrt(d + e*x)/(99*e) + 64*A*a**3*b*d**3*x**
2*sqrt(d + e*x)/33 + 368*A*a**3*b*d**2*e*x**3*sqrt(d + e*x)/99 + 272*A*a**3
*b*d*e**2*x**4*sqrt(d + e*x)/99 + 8*A*a**3*b*e**3*x**5*sqrt(d + e*x)/11 + 3
2*A*a**2*b**2*d**6*sqrt(d + e*x)/(429*e**3) - 16*A*a**2*b**2*d**5*x*sqrt(d
```

```
+ e*x)/(429*e**2) + 4*A*a**2*b**2*d**4*x**2*sqrt(d + e*x)/(143*e) + 848*A*a
**2*b**2*d**3*x**3*sqrt(d + e*x)/429 + 1832*A*a**2*b**2*d**2*e*x**4*sqrt(d
+ e*x)/429 + 480*A*a**2*b**2*d*e**2*x**5*sqrt(d + e*x)/143 + 12*A*a**2*b**2
*e**3*x**6*sqrt(d + e*x)/13 - 128*A*a*b**3*d**7*sqrt(d + e*x)/(6435*e**4) +
 64*A*a*b**3*d**6*x*sqrt(d + e*x)/(6435*e**3) - 16*A*a*b**3*d**5*x**2*sqrt(
d + e*x)/(2145*e**2) + 8*A*a*b**3*d**4*x**3*sqrt(d + e*x)/(1287*e) + 1280*A
*a*b**3*d**3*x**4*sqrt(d + e*x)/1287 + 1648*A*a*b**3*d**2*e*x**5*sqrt(d + e
*x)/715 + 368*A*a*b**3*d*e**2*x**6*sqrt(d + e*x)/195 + 8*A*a*b**3*e**3*x**7
*sqrt(d + e*x)/15 + 256*A*b**4*d**8*sqrt(d + e*x)/(109395*e**5) - 128*A*b**
4*d**7*x*sqrt(d + e*x)/(109395*e**4) + 32*A*b**4*d**6*x**2*sqrt(d + e*x)/(3
6465*e**3) - 16*A*b**4*d**5*x**3*sqrt(d + e*x)/(21879*e**2) + 14*A*b**4*d**
4*x**4*sqrt(d + e*x)/(21879*e) + 2424*A*b**4*d**3*x**5*sqrt(d + e*x)/12155
+ 1604*A*b**4*d**2*e*x**6*sqrt(d + e*x)/3315 + 104*A*b**4*d*e**2*x**7*sqrt(
d + e*x)/255 + 2*A*b**4*e**3*x**8*sqrt(d + e*x)/17 - 4*B*a**4*d**5*sqrt(d +
 e*x)/(99*e**2) + 2*B*a**4*d**4*x*sqrt(d + e*x)/(99*e) + 16*B*a**4*d**3*x**
2*sqrt(d + e*x)/33 + 92*B*a**4*d**2*e*x**3*sqrt(d + e*x)/99 + 68*B*a**4*d*e
**2*x**4*sqrt(d + e*x)/99 + 2*B*a**4*e**3*x**5*sqrt(d + e*x)/11 + 64*B*a**3
*b*d**6*sqrt(d + e*x)/(1287*e**3) - 32*B*a**3*b*d**5*x*sqrt(d + e*x)/(1287*
e**2) + 8*B*a**3*b*d**4*x**2*sqrt(d + e*x)/(429*e) + 1696*B*a**3*b*d**3*x**
3*sqrt(d + e*x)/1287 + 3664*B*a**3*b*d**2*e*x**4*sqrt(d + e*x)/1287 + 320*B
*a**3*b*d*e**2*x**5*sqrt(d + e*x)/143 + 8*B*a**3*b*e**3*x**6*sqrt(d + e*x)/
13 - 64*B*a**2*b**2*d**7*sqrt(d + e*x)/(2145*e**4) + 32*B*a**2*b**2*d**6*x*
sqrt(d + e*x)/(2145*e**3) - 8*B*a**2*b**2*d**5*x**2*sqrt(d + e*x)/(715*e**2
) + 4*B*a**2*b**2*d**4*x**3*sqrt(d + e*x)/(429*e) + 640*B*a**2*b**2*d**3*x*
*4*sqrt(d + e*x)/429 + 2472*B*a**2*b**2*d**2*e*x**5*sqrt(d + e*x)/715 + 184
*B*a**2*b**2*d*e**2*x**6*sqrt(d + e*x)/65 + 4*B*a**2*b**2*e**3*x**7*sqrt(d
+ e*x)/5 + 1024*B*a*b**3*d**8*sqrt(d + e*x)/(109395*e**5) - 512*B*a*b**3*d*
*7*x*sqrt(d + e*x)/(109395*e**4) + 128*B*a*b**3*d**6*x**2*sqrt(d + e*x)/(36
465*e**3) - 64*B*a*b**3*d**5*x**3*sqrt(d + e*x)/(21879*e**2) + 56*B*a*b**3*
d**4*x**4*sqrt(d + e*x)/(21879*e) + 9696*B*a*b**3*d**3*x**5*sqrt(d + e*x)/1
2155 + 6416*B*a*b**3*d**2*e*x**6*sqrt(d + e*x)/3315 + 416*B*a*b**3*d*e**2*x
**7*sqrt(d + e*x)/255 + 8*B*a*b**3*e**3*x**8*sqrt(d + e*x)/17 - 512*B*b**4*
d**9*sqrt(d + e*x)/(415701*e**6) + 256*B*b**4*d**8*x*sqrt(d + e*x)/(415701*
e**5) - 64*B*b**4*d**7*x**2*sqrt(d + e*x)/(138567*e**4) + 160*B*b**4*d**6*x
**3*sqrt(d + e*x)/(415701*e**3) - 140*B*b**4*d**5*x**4*sqrt(d + e*x)/(41570
1*e**2) + 14*B*b**4*d**4*x**5*sqrt(d + e*x)/(46189*e) + 2096*B*b**4*d**3*x*
*6*sqrt(d + e*x)/12597 + 404*B*b**4*d**2*e*x**7*sqrt(d + e*x)/969 + 116*B*b
**4*d*e**2*x**8*sqrt(d + e*x)/323 + 2*B*b**4*e**3*x**9*sqrt(d + e*x)/19, Ne
(e, 0)), (d**(7/2)*(A*a**4*x + 2*A*a**3*b*x**2 + 2*A*a**2*b**2*x**3 + A*a*b
**3*x**4 + A*b**4*x**5/5 + B*a**4*x**2/2 + 4*B*a**3*b*x**3/3 + 3*B*a**2*b**
2*x**4/2 + 4*B*a*b**3*x**5/5 + B*b**4*x**6/6), True))
```

3.1573 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{15/2}(-4aBe-Abe+5bBd)}{15e^6}+\frac{4b^2(d+ex)^{13/2}(bd-ae)(-3aBe-2Abe+5bBd)}{13e^6}-\frac{4b(d+ex)^{11/2}(bd-ae)}{1}$$

Rubi [A] time = 0.10, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^3(d+ex)^{15/2}(-4aBe-Abe+5bBd)}{15e^6}+\frac{4b^2(d+ex)^{13/2}(bd-ae)(-3aBe-2Abe+5bBd)}{13e^6}-\frac{4b(d+ex)^{11/2}(bd-ae)^2(-2aBe-3Abe+5bBd)}{11e^6}+\frac{2(d+ex)^{9/2}(bd-ae)^3(-aBe-4Abe+5bBd)}{9e^6}-\frac{2(d+ex)^{7/2}(bd-ae)^4(Bd-Ae)}{7e^6}+\frac{2b^4B(d+ex)^{17/2}}{17e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(7/2))/(7*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(9/2))/(9*e^6) - (4*b*(b*d - a*e)^2*(5
*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(11/2))/(11*e^6) + (4*b^2*(b*d - a*e)
*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(13/2))/(13*e^6) - (2*b^3*(5*b*B*d
 - A*b*e - 4*a*B*e)*(d + e*x)^(15/2))/(15*e^6) + (2*b^4*B*(d + e*x)^(17/2))
/(17*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^{5/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^{5/2}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.\\
&= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{7/2}}{7e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{9e^6}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 183, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(-51051b^3(d+ex)^4(-4aBe-Abe+5bBd)+117810b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-139230b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)+85085(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)-109395(bd-ae)^4(Bd-Ae)+45045b^4B(d+ex)^5\right)}{765765e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-109395*(b*d - a*e)^4*(B*d - A*e) + 85085*(b*d - a*e)^3
*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 139230*b*(b*d - a*e)^2*(5*b*B*d -
```

```
3*A*b*e - 2*a*B*e)*(d + e*x)^2 + 117810*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
- 3*a*B*e)*(d + e*x)^3 - 51051*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4
+ 45045*b^4*B*(d + e*x)^5))/(765765*e^6)
```

IntegrateAlgebraic [B] time = 0.24, size = 543, normalized size = 2.49

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-109395*b^4*B*d^5 + 109395*A*b^4*d^4*e + 437580*a*b^3*B
*d^4*e - 437580*a*A*b^3*d^3*e^2 - 656370*a^2*b^2*B*d^3*e^2 + 656370*a^2*A*b
^2*d^2*e^3 + 437580*a^3*b*B*d^2*e^3 - 437580*a^3*A*b*d*e^4 - 109395*a^4*B*d
*e^4 + 109395*a^4*A*e^5 + 425425*b^4*B*d^4*(d + e*x) - 340340*A*b^4*d^3*e*(
d + e*x) - 1361360*a*b^3*B*d^3*e*(d + e*x) + 1021020*a*A*b^3*d^2*e^2*(d + e
*x) + 1531530*a^2*b^2*B*d^2*e^2*(d + e*x) - 1021020*a^2*A*b^2*d*e^3*(d + e*
x) - 680680*a^3*b*B*d*e^3*(d + e*x) + 340340*a^3*A*b*e^4*(d + e*x) + 85085*
a^4*B*e^4*(d + e*x) - 696150*b^4*B*d^3*(d + e*x)^2 + 417690*A*b^4*d^2*e*(d
+ e*x)^2 + 1670760*a*b^3*B*d^2*e*(d + e*x)^2 - 835380*a*A*b^3*d*e^2*(d + e*
x)^2 - 1253070*a^2*b^2*B*d*e^2*(d + e*x)^2 + 417690*a^2*A*b^2*e^3*(d + e*x)
^2 + 278460*a^3*b*B*e^3*(d + e*x)^2 + 589050*b^4*B*d^2*(d + e*x)^3 - 235620
*A*b^4*d*e*(d + e*x)^3 - 942480*a*b^3*B*d*e*(d + e*x)^3 + 235620*a*A*b^3*e^
2*(d + e*x)^3 + 353430*a^2*b^2*B*e^2*(d + e*x)^3 - 255255*b^4*B*d*(d + e*x)
^4 + 51051*A*b^4*e*(d + e*x)^4 + 204204*a*b^3*B*e*(d + e*x)^4 + 45045*b^4*B
*(d + e*x)^5))/(765765*e^6)
```

fricas [B] time = 0.43, size = 772, normalized size = 3.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/765765*(45045*B*b^4*e^8*x^8 - 1280*B*b^4*d^8 + 109395*A*a^4*d^3*e^5 + 217
6*(4*B*a*b^3 + A*b^4)*d^7*e - 8160*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6*e^2 + 1768
0*(2*B*a^3*b + 3*A*a^2*b^2)*d^5*e^3 - 24310*(B*a^4 + 4*A*a^3*b)*d^4*e^4 + 3
003*(35*B*b^4*d*e^7 + 17*(4*B*a*b^3 + A*b^4)*e^8)*x^7 + 231*(275*B*b^4*d^2*
e^6 + 527*(4*B*a*b^3 + A*b^4)*d*e^7 + 510*(3*B*a^2*b^2 + 2*A*a*b^3)*e^8)*x^
6 + 63*(5*B*b^4*d^3*e^5 + 1207*(4*B*a*b^3 + A*b^4)*d^2*e^6 + 4590*(3*B*a^2*
b^2 + 2*A*a*b^3)*d*e^7 + 2210*(2*B*a^3*b + 3*A*a^2*b^2)*e^8)*x^5 - 35*(10*B
*b^4*d^4*e^4 - 17*(4*B*a*b^3 + A*b^4)*d^3*e^5 - 5406*(3*B*a^2*b^2 + 2*A*a*b
^3)*d^2*e^6 - 10166*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^7 - 2431*(B*a^4 + 4*A*a^3
*b)*e^8)*x^4 + 5*(80*B*b^4*d^5*e^3 + 21879*A*a^4*e^8 - 136*(4*B*a*b^3 + A*b
^4)*d^4*e^4 + 510*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^5 + 49946*(2*B*a^3*b + 3*
A*a^2*b^2)*d^2*e^6 + 46189*(B*a^4 + 4*A*a^3*b)*d*e^7)*x^3 - 3*(160*B*b^4*d^
6*e^2 - 109395*A*a^4*d*e^7 - 272*(4*B*a*b^3 + A*b^4)*d^5*e^3 + 1020*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^4*e^4 - 2210*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^5 - 60775
*(B*a^4 + 4*A*a^3*b)*d^2*e^6)*x^2 + (640*B*b^4*d^7*e + 328185*A*a^4*d^2*e^6
 - 1088*(4*B*a*b^3 + A*b^4)*d^6*e^2 + 4080*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e^
3 - 8840*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e^4 + 12155*(B*a^4 + 4*A*a^3*b)*d^3*
e^5)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.52, size = 2860, normalized size = 13.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d^3*e^(-1) + 1
021020*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d^3*e^(-1) + 204204*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*d^3
*e^(-2) + 306306*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
d)*d^2)*A*a^2*b^2*d^3*e^(-2) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d^3*e^(-3)
+ 87516*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*A*a*b^3*d^3*e^(-3) + 9724*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*B*a*b^3*d^3*e^(-4) + 2431*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*A*b^4*d^3*e^(-4) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e +
 d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*
e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*d^3*e^(-5) + 153153*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^4*d^2*e^(-1)
 + 612612*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*A*a^3*b*d^2*e^(-1) + 262548*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b*d^2*e^(-2) + 393822*(5
*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(
x*e + d)*d^3)*A*a^2*b^2*d^2*e^(-2) + 43758*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*B*a^2*b^2*d^2*e^(-3) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*A*a*b^3*d^2*e^(-3) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
 + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^3*d^2*e^(-4) + 3315*(63*(x*e
 + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
+ d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^4*d^
2*e^(-4) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
+ d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006
*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^4*d^2*e^(-5) + 765765*sq
rt(x*e + d)*A*a^4*d^3 + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*
d^2 + 65637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*d*e^(-1) + 262548*(5*(x*e + d)^(7/2) - 21
*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b
*d*e^(-1) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b*d*e
^(-2) + 43758*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^2*d*e^(
-2) + 19890*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*B*a^2*b^2*d*e^(-3) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^3*d*e^(-3) + 3060*(231*(x*e +
d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
+ d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003
*sqrt(x*e + d)*d^6)*B*a*b^3*d*e^(-4) + 765*(231*(x*e + d)^(13/2) - 1638*(x*
e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 900
9*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*
A*b^4*d*e^(-4) + 357*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1228
5*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*
d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e
 + d)*d^7)*B*b^4*d*e^(-5) + 153153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*A*a^4*d + 2431*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*B*a^4*e^(-1) + 9724*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
 + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^
4)*A*a^3*b*e^(-1) + 4420*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
```

```
- 693*sqrt(x*e + d)*d^5)*B*a^3*b*e^(-2) + 6630*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^2*e^(-2) + 1530*(231
*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 85
80*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^
5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^2*e^(-3) + 1020*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*A*a*b^3*e^(-3) + 476*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*B*a*b^3*e^(-4) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e
+ d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32
175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)
*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^4*e^(-4) + 7*(6435*(x*e + d)^(17/2) - 58
344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11
/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*
(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8
)*B*b^4*e^(-5) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.15

$$\frac{2(ex+d)^{\frac{7}{2}}\left(45045 b^4 B x^5 e^5 + 51051 A b^4 e^5 x^4 + 204204 B a b^3 e^5 x^4 - 30030 B b^4 d e^4 x^4 + 235620 A a b^3 e^5 x^3 - 31416 A b^4 d e^4 x^3 + 353430 B a^2 b^2 e^5 x^3 - 125664 B a b^3 d e^4 x^3 + 18480 B b^4 d^2 e^3 x^3 + 417690 A a^2 b^2 e^5 x^2 - 128520 A a b^3 d e^4 x^2 + 17136 A b^4 d^2 e^3 x^2 + 278460 B a^3 b e^5 x^2 - 192780 B a^2 b^2 d e^4 x^2 + 68544 B a b^3 d^2 e^3 x^2 - 10080 B b^4 d^3 e^2 x^2 + 340340 A a^3 b e^5 x - 185640 A a^2 b^2 d e^4 x + 57120 A a b^3 d^2 e^3 x - 7616 A b^4 d^3 e^2 x + 85085 B a^4 e^5 x - 123760 B a^3 b d e^4 x + 85680 B a^2 b^2 d^2 e^3 x - 30464 B a b^3 d^3 e^2 x + 4480 B b^4 d^4 e x + 109395 A a^4 e^5 - 97240 A a^3 b d e^4 + 53040 A a^2 b^2 d^2 e^3 - 16320 A a b^3 d^3 e^2 + 2176 A b^4 d^4 e - 24310 B a^4 d e^4 + 35360 B a^3 b d^2 e^3 - 24480 B a^2 b^2 d^3 e^2 + 8704 B a b^3 d^4 e - 1280 B b^4 d^5\right)}{765765 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/765765*(e*x+d)^(7/2)*(45045*B*b^4*e^5*x^5+51051*A*b^4*e^5*x^4+204204*B*a*
b^3*e^5*x^4-30030*B*b^4*d*e^4*x^4+235620*A*a*b^3*e^5*x^3-31416*A*b^4*d*e^4*
x^3+353430*B*a^2*b^2*e^5*x^3-125664*B*a*b^3*d*e^4*x^3+18480*B*b^4*d^2*e^3*x
^3+417690*A*a^2*b^2*e^5*x^2-128520*A*a*b^3*d*e^4*x^2+17136*A*b^4*d^2*e^3*x^
2+278460*B*a^3*b*e^5*x^2-192780*B*a^2*b^2*d*e^4*x^2+68544*B*a*b^3*d^2*e^3*x
^2-10080*B*b^4*d^3*e^2*x^2+340340*A*a^3*b*e^5*x-185640*A*a^2*b^2*d*e^4*x+57
120*A*a*b^3*d^2*e^3*x-7616*A*b^4*d^3*e^2*x+85085*B*a^4*e^5*x-123760*B*a^3*b
*d*e^4*x+85680*B*a^2*b^2*d^2*e^3*x-30464*B*a*b^3*d^3*e^2*x+4480*B*b^4*d^4*e
*x+109395*A*a^4*e^5-97240*A*a^3*b*d*e^4+53040*A*a^2*b^2*d^2*e^3-16320*A*a*b
^3*d^3*e^2+2176*A*b^4*d^4*e-24310*B*a^4*d*e^4+35360*B*a^3*b*d^2*e^3-24480*B
*a^2*b^2*d^3*e^2+8704*B*a*b^3*d^4*e-1280*B*b^4*d^5)/e^6
```

maxima [B] time = 0.60, size = 409, normalized size = 1.88

$$\frac{2\left(45045 (ex+d)^{\frac{17}{2}} B b^4 - 51051 \left(5 B b^4 d - (4 B a b^3 + A b^4) e\right)(ex+d)^{\frac{15}{2}} + 117810 \left(5 B b^4 d^2 - 2 (4 B a b^3 + A b^4) d e + (3 B a^2 b^2 + 2 A a b^3) e^2\right)(ex+d)^{\frac{13}{2}} - 139230 \left(5 B b^4 d^3 - 3 (4 B a b^3 + A b^4) d^2 e + 3 (3 B a^2 b^2 + 2 A a b^3) d e^2 - (2 B a^3 b + 3 A a^2 b^2) e^3\right)(ex+d)^{\frac{11}{2}} + 85085 \left(5 B b^4 d^4 - 4 (4 B a b^3 + A b^4) d^3 e + 6 (3 B a^2 b^2 + 2 A a b^3) d^2 e^2 - 4 (2 B a^3 b + 3 A a^2 b^2) d e^3 + (B a^4 + 4 A a^3 b) e^4\right)(ex+d)^{\frac{9}{2}} - 109395 \left(B b^4 d^5 - A a^4 e^5 - (4 B a b^3 + A b^4) d^4 e + 2 (3 B a^2 b^2 + 2 A a b^3) d^3 e^2 - 2 (2 B a^3 b + 3 A a^2 b^2) d^2 e^3 + (B a^4 + 4 A a^3 b) d e^4\right)(ex+d)^{\frac{7}{2}}\right)}{765765 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/765765*(45045*(e*x + d)^(17/2)*B*b^4 - 51051*(5*B*b^4*d - (4*B*a*b^3 + A*
b^4)*e)*(e*x + d)^(15/2) + 117810*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e
+ (3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(13/2) - 139230*(5*B*b^4*d^3 - 3
*(4*B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b
 + 3*A*a^2*b^2)*e^3)*(e*x + d)^(11/2) + 85085*(5*B*b^4*d^4 - 4*(4*B*a*b^3 +
 A*b^4)*d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^
2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(9/2) - 109395*(B*b^4*d^5
 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*
e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*(e*x
 + d)^(7/2))/e^6
```

mupad [B] time = 1.92, size = 197, normalized size = 0.90

$$\frac{(d+ex)^{15/2}\left(2Ab^4e-10Bb^4d+8Bab^3e\right)}{15e^6}+\frac{2(ae-bd)^3(d+ex)^{9/2}(4Abe+Bae-5Bbd)}{9e^6}+\frac{2Bb^4(d+ex)^{17/2}}{17e^6}+\frac{2(Ae-Bd)(ae-bd)^4(d+ex)^{7/2}}{7e^6}+\frac{4b(ae-bd)^2(d+ex)^{11/2}(3Abe+2Bae-5Bbd)}{11e^6}+\frac{4b^2(ae-bd)(d+ex)^{13/2}(2Abe+3Bae-5Bbd)}{13e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(15/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(15*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(9/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(9*e^6) + (2*B*b^4*
(d + e*x)^(17/2))/(17*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(7/2))/
(7*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(11/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d)
)/(11*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(13/2)*(2*A*b*e + 3*B*a*e - 5*B*b
*d))/(13*e^6)
```

sympy [A] time = 74.12, size = 2193, normalized size = 10.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*A*a**4*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*A*a**4*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 8*A*a**3*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 16*A*a
**3*b*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2
)/7)/e**2 + 8*A*a**3*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/
5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 12*A*a**2*b**2*d**2
*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e*
*3 + 24*A*a**2*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5
 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 12*A*a**2*b**2*(d**4
*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 8*A*a*b**3*d**2*(-
d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/
7 + (d + e*x)**(9/2)/9)/e**4 + 16*A*a*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d
**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9
 + (d + e*x)**(11/2)/11)/e**4 + 8*A*a*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4
*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9
 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 2*A*b**4*d**2*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 4*A*b**4*d*(-d*
*5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
+ 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)
/13)/e**5 + 2*A*b**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 +
 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x
)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*
a**4*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*B*a**4*d*(d
**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2
+ 2*B*a**4*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d +
 e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 8*B*a**3*b*d**2*(d**2*(d + e*x)
**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 16*B*a**3*b
*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(
7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*B*a**3*b*(d**4*(d + e*x)**(3/2)/3 - 4
*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)
/9 + (d + e*x)**(11/2)/11)/e**3 + 12*B*a**2*b**2*d**2*(-d**3*(d + e*x)**(3/
2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2
)/9)/e**4 + 24*B*a**2*b**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(
5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(1
1/2)/11)/e**4 + 12*B*a**2*b**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**
(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d +
```

```
e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 8*B*a*b**3*d**2*(d**4*(d + e
*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*
(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 16*B*a*b**3*d*(-d**5*(d +
 e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d*
*2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e*
*5 + 8*B*a*b**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d
**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(1
1/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*b**4*
d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)*
*(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x
)**(13/2)/13)/e**6 + 4*B*b**4*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)
**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d*
*2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/
e**6 + 2*B*b**4*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d
**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/
2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)
**(17/2)/17)/e**6
```

3.1574 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{13/2}(-4aBe-Abe+5bBd)}{13e^6}+\frac{4b^2(d+ex)^{11/2}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{4b(d+ex)^{9/2}(bd-ae)^2}{9\cdots}$$

Rubi [A] time = 0.10, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{13/2}(-4aBe-Abe+5bBd)}{13e^6}+\frac{4b^2(d+ex)^{11/2}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{4b(d+ex)^{9/2}(bd-ae)^2(-2aBe-3Abe+5bBd)}{9e^6}+\frac{2(d+ex)^{7/2}(bd-ae)^3(-aBe-4Abe+5bBd)}{7e^6}-\frac{2(d+ex)^{5/2}(bd-ae)^4(Bd-Ae)}{5e^6}+\frac{2b^4B(d+ex)^{15/2}}{15e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(5/2))/(5*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(7/2))/(7*e^6) - (4*b*(b*d - a*e)^2*(5
*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(9/2))/(9*e^6) + (4*b^2*(b*d - a*e)*(
5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(11/2))/(11*e^6) - (2*b^3*(5*b*B*d -
 A*b*e - 4*a*B*e)*(d + e*x)^(13/2))/(13*e^6) + (2*b^4*B*(d + e*x)^(15/2))/(
15*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^{3/2}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4\cdots}{e^5}\cdots\right.\\ &= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{5/2}}{5e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-\cdots}{7e^6}\cdots\end{aligned}$$

Mathematica [A] time = 0.16, size = 183, normalized size = 0.84

$$\frac{2(d+ex)^{5/2}\left(-3465b^3(d+ex)^4(-4aBe-Abe+5bBd)+8190b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-10010b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)+6435(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)-9009(bd-ae)^4(Bd-Ae)+3003b^4B(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*(b*d - a*e)^4*(B*d - A*e) + 6435*(b*d - a*e)^3*(5
*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 10010*b*(b*d - a*e)^2*(5*b*B*d - 3*A*
```

```
b*e - 2*a*B*e)*(d + e*x)^2 + 8190*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*
B*e)*(d + e*x)^3 - 3465*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 3003*
b^4*B*(d + e*x)^5))/(45045*e^6)
```

IntegrateAlgebraic [B] time = 0.25, size = 543, normalized size = 2.49

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*b^4*B*d^5 + 9009*A*b^4*d^4*e + 36036*a*b^3*B*d^4*
e - 36036*a*A*b^3*d^3*e^2 - 54054*a^2*b^2*B*d^3*e^2 + 54054*a^2*A*b^2*d^2*e
^3 + 36036*a^3*b*B*d^2*e^3 - 36036*a^3*A*b*d*e^4 - 9009*a^4*B*d*e^4 + 9009*
a^4*A*e^5 + 32175*b^4*B*d^4*(d + e*x) - 25740*A*b^4*d^3*e*(d + e*x) - 10296
0*a*b^3*B*d^3*e*(d + e*x) + 77220*a*A*b^3*d^2*e^2*(d + e*x) + 115830*a^2*b^
2*B*d^2*e^2*(d + e*x) - 77220*a^2*A*b^2*d*e^3*(d + e*x) - 51480*a^3*b*B*d*e
^3*(d + e*x) + 25740*a^3*A*b*e^4*(d + e*x) + 6435*a^4*B*e^4*(d + e*x) - 500
50*b^4*B*d^3*(d + e*x)^2 + 30030*A*b^4*d^2*e*(d + e*x)^2 + 120120*a*b^3*B*d
^2*e*(d + e*x)^2 - 60060*a*A*b^3*d*e^2*(d + e*x)^2 - 90090*a^2*b^2*B*d*e^2*
(d + e*x)^2 + 30030*a^2*A*b^2*e^3*(d + e*x)^2 + 20020*a^3*b*B*e^3*(d + e*x)
^2 + 40950*b^4*B*d^2*(d + e*x)^3 - 16380*A*b^4*d*e*(d + e*x)^3 - 65520*a*b^
3*B*d*e*(d + e*x)^3 + 16380*a*A*b^3*e^2*(d + e*x)^3 + 24570*a^2*b^2*B*e^2*(
d + e*x)^3 - 17325*b^4*B*d*(d + e*x)^4 + 3465*A*b^4*e*(d + e*x)^4 + 13860*a
*b^3*B*e*(d + e*x)^4 + 3003*b^4*B*(d + e*x)^5))/(45045*e^6)
```

fricas [B] time = 0.42, size = 649, normalized size = 2.98

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/45045*(3003*B*b^4*e^7*x^7 - 256*B*b^4*d^7 + 9009*A*a^4*d^2*e^5 + 384*(4*B
*a*b^3 + A*b^4)*d^6*e - 1248*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e^2 + 2288*(2*B*
a^3*b + 3*A*a^2*b^2)*d^4*e^3 - 2574*(B*a^4 + 4*A*a^3*b)*d^3*e^4 + 231*(16*B
*b^4*d*e^6 + 15*(4*B*a*b^3 + A*b^4)*e^7)*x^6 + 63*(B*b^4*d^2*e^5 + 70*(4*B*
a*b^3 + A*b^4)*d*e^6 + 130*(3*B*a^2*b^2 + 2*A*a*b^3)*e^7)*x^5 - 35*(2*B*b^4
*d^3*e^4 - 3*(4*B*a*b^3 + A*b^4)*d^2*e^5 - 312*(3*B*a^2*b^2 + 2*A*a*b^3)*d*
e^6 - 286*(2*B*a^3*b + 3*A*a^2*b^2)*e^7)*x^4 + 5*(16*B*b^4*d^4*e^3 - 24*(4*
B*a*b^3 + A*b^4)*d^3*e^4 + 78*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^5 + 2860*(2*B
*a^3*b + 3*A*a^2*b^2)*d*e^6 + 1287*(B*a^4 + 4*A*a^3*b)*e^7)*x^3 - 3*(32*B*b
^4*d^5*e^2 - 3003*A*a^4*e^7 - 48*(4*B*a*b^3 + A*b^4)*d^4*e^3 + 156*(3*B*a^2
*b^2 + 2*A*a*b^3)*d^3*e^4 - 286*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^5 - 3432*(B
*a^4 + 4*A*a^3*b)*d*e^6)*x^2 + (128*B*b^4*d^6*e + 18018*A*a^4*d*e^6 - 192*(
4*B*a*b^3 + A*b^4)*d^5*e^2 + 624*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^3 - 1144*(
2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^4 + 1287*(B*a^4 + 4*A*a^3*b)*d^2*e^5)*x)*sqr
t(e*x + d)/e^6
```

giac [B] time = 0.31, size = 1937, normalized size = 8.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d^2*e^(-1) + 600
60*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d^2*e^(-1) + 12012*(3*(x*e
```

```
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*d^2*e^(-
2) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*A*a^2*b^2*d^2*e^(-2) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d^2*e^(-3) + 5148*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a*b^3*d^2*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*B*a*b^3*d^2*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*A*b^4*d^2*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*d^2*e^(-5) + 6006*(3*(x*e + d)^(5/2) - 1
0*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^4*d*e^(-1) + 24024*(3*(x*e
+ d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b*d*e^(-1)
+ 10296*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*a^3*b*d*e^(-2) + 15444*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^2*
d*e^(-2) + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^2*d*e
^(-3) + 1144*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5
/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^3*d*e^(-3)
 + 520*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*B*a*b^3*d*e^(-4) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^4*d*e^(-4) + 30*(231*(x*e + d)^(13/2) - 1
638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^
3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d
)*d^6)*B*b^4*d*e^(-5) + 45045*sqrt(x*e + d)*A*a^4*d^2 + 30030*((x*e + d)^(3
/2) - 3*sqrt(x*e + d)*d)*A*a^4*d + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*e^(-1) + 5148
*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sq
rt(x*e + d)*d^3)*A*a^3*b*e^(-1) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*B*a^3*b*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*A*a^2*b^2*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*B*a^2*b^2*e^(-3) + 260*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^3*e^(-3) + 60*(231*(x*
e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(
x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
3003*sqrt(x*e + d)*d^6)*B*a*b^3*e^(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*A*b^4*e^(-4) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(
x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4
 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e +
d)*d^7)*B*b^4*e^(-5) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*A*a^4)*e^(-1)
```

maple [**B**] time = 0.05, size = 469, normalized size = 2.15

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(3003b^4B x^5e^5 + 3465A b^4e^5x^4 + 13860Ba b^3e^5x^4 - 2310B b^4d e^4x^4 + 16380Aa b^3e^5x^3 - 2520A b^4d e^4x^3 + 24570B a^2b^2e^5x^3 - 10080Ba b^3d e^4x^3 + 1680B b^4d^2e^3x^3 + 30030A a^2b^2e^5x^2 - 10920Aa b^3d e^4x^2 + 1680A b^4d^2e^3x^2 + 20020B a^3b e^5x^2 - 16380B a^2b^2d e^4x^2 + 6720Ba b^3d^2e^3x^2 - 1120B b^4d^3e^2x^2 + 25740A a^3b e^5x - 17160A a^2b^2d e^4x + 6240Aa b^3d^2e^3x - 960A b^4d^3e^2x + 6435B a^4e^5x - 11440B a^3bd e^4x + 9360B a^2b^2d^2e^3x - 3840Ba b^3d^3e^2x + 640B b^4d^4ex + 9009A a^4e^5 - 10296A a^3bd e^4 + 6864A a^2b^2d^2e^3 - 2496Aa b^3d^3e^2 + 384A b^4d^4e - 2574B a^4d e^4 + 4576B d^2a^3b e^3 - 3744B d^3a^2b^2e^2 + 1536Ba b^3d^4e - 256B b^4d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(3003*B*b^4*e^5*x^5+3465*A*b^4*e^5*x^4+13860*B*a*b^3*
```

```
e^5*x^4-2310*B*b^4*d*e^4*x^4+16380*A*a*b^3*e^5*x^3-2520*A*b^4*d*e^4*x^3+245
70*B*a^2*b^2*e^5*x^3-10080*B*a*b^3*d*e^4*x^3+1680*B*b^4*d^2*e^3*x^3+30030*A
*a^2*b^2*e^5*x^2-10920*A*a*b^3*d*e^4*x^2+1680*A*b^4*d^2*e^3*x^2+20020*B*a^3
*b*e^5*x^2-16380*B*a^2*b^2*d*e^4*x^2+6720*B*a*b^3*d^2*e^3*x^2-1120*B*b^4*d^
3*e^2*x^2+25740*A*a^3*b*e^5*x-17160*A*a^2*b^2*d*e^4*x+6240*A*a*b^3*d^2*e^3*
x-960*A*b^4*d^3*e^2*x+6435*B*a^4*e^5*x-11440*B*a^3*b*d*e^4*x+9360*B*a^2*b^2
*d^2*e^3*x-3840*B*a*b^3*d^3*e^2*x+640*B*b^4*d^4*e*x+9009*A*a^4*e^5-10296*A*
a^3*b*d*e^4+6864*A*a^2*b^2*d^2*e^3-2496*A*a*b^3*d^3*e^2+384*A*b^4*d^4*e-257
4*B*a^4*d*e^4+4576*B*a^3*b*d^2*e^3-3744*B*a^2*b^2*d^3*e^2+1536*B*a*b^3*d^4*
e-256*B*b^4*d^5)/e^6
```

maxima [**B**] time = 0.50, size = 409, normalized size = 1.88

$$\frac{2\left(3003\,(ex+d)^{\frac{15}{2}}Bb^4-3465\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{13}{2}}+8190\left(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de+\left(3\,Ba^2b^2+2\,Aab^3\right)e^2\right)(ex+d)^{\frac{11}{2}}-10010\left(5\,Bb^4d^3-3\left(4\,Bab^3+Ab^4\right)d^2e+3\left(3\,Ba^2b^2+2\,Aab^3\right)de^2-\left(2\,Ba^3b+3\,Aa^2b^2\right)e^3\right)(ex+d)^{\frac{9}{2}}+6435\left(5\,Bb^4d^4-4\left(4\,Bab^3+Ab^4\right)d^3e+6\left(3\,Ba^2b^2+2\,Aab^3\right)d^2e^2-4\left(2\,Ba^3b+3\,Aa^2b^2\right)de^3+\left(Ba^4+4\,Aa^3b\right)e^4\right)(ex+d)^{\frac{7}{2}}-9009\left(Bb^4d^5-Aa^4e^5-\left(4\,Bab^3+Ab^4\right)d^4e+2\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2-2\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+\left(Ba^4+4\,Aa^3b\right)de^4\right)(ex+d)^{\frac{5}{2}}\right)}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*b^4 - 3465*(5*B*b^4*d - (4*B*a*b^3 + A*b^4
)*e)*(e*x + d)^(13/2) + 8190*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*
B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(11/2) - 10010*(5*B*b^4*d^3 - 3*(4*B*
a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A
*a^2*b^2)*e^3)*(e*x + d)^(9/2) + 6435*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*
d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d
*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(7/2) - 9009*(B*b^4*d^5 - A*a^4*e
^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2
*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*(e*x + d)^(5/2
))/e^6
```

mupad [**B**] time = 0.06, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{13/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{13\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{7/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{7\,e^6}+\frac{2\,B\,b^4\,(d+e\,x)^{15/2}}{15\,e^6}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^4\,(d+e\,x)^{5/2}}{5\,e^6}+\frac{4\,b\,(a\,e-b\,d)^2\,(d+e\,x)^{9/2}\,(3\,A\,b\,e+2\,B\,a\,e-5\,B\,b\,d)}{9\,e^6}+\frac{4\,b^2\,(a\,e-b\,d)\,(d+e\,x)^{11/2}\,(2\,A\,b\,e+3\,B\,a\,e-5\,B\,b\,d)}{11\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(13*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(7/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(7*e^6) + (2*B*b^4*
(d + e*x)^(15/2))/(15*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(5/2))/
(5*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(9/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))
/(9*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(11/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d
))/(11*e^6)
```

sympy [**A**] time = 45.22, size = 1297, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*A*a**4*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 8*A*a**3*b*d*(
-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*A*a**3*b*(d**2*(d + e*
x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 12*A*a**2
*b**2*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2
)/7)/e**3 + 12*A*a**2*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5
/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*A*a*b**3*d*(-
d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/
7 + (d + e*x)**(9/2)/9)/e**4 + 8*A*a*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3
```

```
*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 +
(d + e*x)**(11/2)/11)/e**4 + 2*A*b**4*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(
d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
 + e*x)**(11/2)/11)/e**5 + 2*A*b**4*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e
*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*
(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*B*a**4*d*(-d*(d + e*x
)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 2*B*a**4*(d**2*(d + e*x)**(3/2)/3 -
 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 8*B*a**3*b*d*(d**2*(d
+ e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 8*B*a
**3*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)
**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 12*B*a**2*b**2*d*(-d**3*(d + e*x)**(
3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9
/2)/9)/e**4 + 12*B*a**2*b**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(
5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(1
1/2)/11)/e**4 + 8*B*a*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(
5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(1
1/2)/11)/e**5 + 8*B*a*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2
) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)
**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*B*b**4*d*(-d**5*(d + e*x)**(3/
2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*
x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 2*B*b
**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x
)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*
d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1575 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{11/2}(-4aBe-Abe+5bBd)}{11e^6}+\frac{4b^2(d+ex)^{9/2}(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{4b(d+ex)^{7/2}(bd-a$$

Rubi [A] time = 0.10, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 77}

$$-\frac{2b^3(d+ex)^{11/2}(-4aBe-Abe+5bBd)}{11e^6}+\frac{4b^2(d+ex)^{9/2}(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{4b(d+ex)^{7/2}(bd-ae)^2(-2aBe-3Abe+5bBd)}{7e^6}+\frac{2(d+ex)^{5/2}(bd-ae)^3(-aBe-4Abe+5bBd)}{5e^6}-\frac{2(d+ex)^{3/2}(bd-ae)^4(Bd-Ae)}{3e^6}+\frac{2b^4B(d+ex)^{13/2}}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(3/2))/(3*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(5/2))/(5*e^6) - (4*b*(b*d - a*e)^2*(5
*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(7/2))/(7*e^6) + (4*b^2*(b*d - a*e)*(
5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(9/2))/(9*e^6) - (2*b^3*(5*b*B*d - A
*b*e - 4*a*B*e)*(d + e*x)^(11/2))/(11*e^6) + (2*b^4*B*(d + e*x)^(13/2))/(13
*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)\sqrt{d+ex}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4A}{e^5}\right.\\ &= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{3/2}}{3e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{5e^6}\end{aligned}$$

Mathematica [A] time = 0.14, size = 183, normalized size = 0.84

$$\frac{2(d+ex)^{3/2}\left(-4095b^3(d+ex)^4(-4aBe-Abe+5bBd)+10010b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-12870b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)+9009(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)-15015(bd-ae)^4(Bd-Ae)+3465b^4B(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-15015*(b*d - a*e)^4*(B*d - A*e) + 9009*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 12870*b*(b*d - a*e)^2*(5*b*B*d - 3*A
```

*b*e - 2*a*B*e)*(d + e*x)^2 + 10010*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*
a*B*e)*(d + e*x)^3 - 4095*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 346
5*b^4*B*(d + e*x)^5))/(45045*e^6)

IntegrateAlgebraic [B] time = 0.23, size = 543, normalized size = 2.49

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]

[Out] (2*(d + e*x)^(3/2)*(-15015*b^4*B*d^5 + 15015*A*b^4*d^4*e + 60060*a*b^3*B*d^
4*e - 60060*a*A*b^3*d^3*e^2 - 90090*a^2*b^2*B*d^3*e^2 + 90090*a^2*A*b^2*d^2
*e^3 + 60060*a^3*b*B*d^2*e^3 - 60060*a^3*A*b*d*e^4 - 15015*a^4*B*d*e^4 + 15
015*a^4*A*e^5 + 45045*b^4*B*d^4*(d + e*x) - 36036*A*b^4*d^3*e*(d + e*x) - 1
44144*a*b^3*B*d^3*e*(d + e*x) + 108108*a*A*b^3*d^2*e^2*(d + e*x) + 162162*a
^2*b^2*B*d^2*e^2*(d + e*x) - 108108*a^2*A*b^2*d*e^3*(d + e*x) - 72072*a^3*b
*B*d*e^3*(d + e*x) + 36036*a^3*A*b*e^4*(d + e*x) + 9009*a^4*B*e^4*(d + e*x)
 - 64350*b^4*B*d^3*(d + e*x)^2 + 38610*A*b^4*d^2*e*(d + e*x)^2 + 154440*a*b
^3*B*d^2*e*(d + e*x)^2 - 77220*a*A*b^3*d*e^2*(d + e*x)^2 - 115830*a^2*b^2*B
*d*e^2*(d + e*x)^2 + 38610*a^2*A*b^2*e^3*(d + e*x)^2 + 25740*a^3*b*B*e^3*(d
 + e*x)^2 + 50050*b^4*B*d^2*(d + e*x)^3 - 20020*A*b^4*d*e*(d + e*x)^3 - 800
80*a*b^3*B*d*e*(d + e*x)^3 + 20020*a*A*b^3*e^2*(d + e*x)^3 + 30030*a^2*b^2*
B*e^2*(d + e*x)^3 - 20475*b^4*B*d*(d + e*x)^4 + 4095*A*b^4*e*(d + e*x)^4 +
16380*a*b^3*B*e*(d + e*x)^4 + 3465*b^4*B*(d + e*x)^5))/(45045*e^6)

fricas [B] time = 0.41, size = 527, normalized size = 2.42

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="frica
s")

[Out] 2/45045*(3465*B*b^4*e^6*x^6 - 1280*B*b^4*d^6 + 15015*A*a^4*d*e^5 + 1664*(4*
B*a*b^3 + A*b^4)*d^5*e - 4576*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 6864*(2*B
*a^3*b + 3*A*a^2*b^2)*d^3*e^3 - 6006*(B*a^4 + 4*A*a^3*b)*d^2*e^4 + 315*(B*b
^4*d*e^5 + 13*(4*B*a*b^3 + A*b^4)*e^6)*x^5 - 35*(10*B*b^4*d^2*e^4 - 13*(4*B
*a*b^3 + A*b^4)*d*e^5 - 286*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*x^4 + 10*(40*B*b
^4*d^3*e^3 - 52*(4*B*a*b^3 + A*b^4)*d^2*e^4 + 143*(3*B*a^2*b^2 + 2*A*a*b^3)
*d*e^5 + 1287*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*x^3 - 3*(160*B*b^4*d^4*e^2 - 2
08*(4*B*a*b^3 + A*b^4)*d^3*e^3 + 572*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^4 - 85
8*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 - 3003*(B*a^4 + 4*A*a^3*b)*e^6)*x^2 + (64
0*B*b^4*d^5*e + 15015*A*a^4*e^6 - 832*(4*B*a*b^3 + A*b^4)*d^4*e^2 + 2288*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 - 3432*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 +
3003*(B*a^4 + 4*A*a^3*b)*d*e^5)*x)*sqrt(e*x + d)/e^6

giac [B] time = 0.23, size = 1144, normalized size = 5.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="giac"
)

[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d*e^(-1) + 60060
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d*e^(-1) + 12012*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*d*e^(-2) + 1
8018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^
2*b^2*d*e^(-2) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +

```
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d*e^(-3) + 5148*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*A*a*b^3*d*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B
*a*b^3*d*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^4*d
*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(
7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x
*e + d)*d^5)*B*b^4*d*e^(-5) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*B*a^4*e^(-1) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e
 + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b*e^(-1) + 5148*(5*(x*e + d)^(7
/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)
*B*a^3*b*e^(-2) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^2*e^(-2) + 858*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^2*e^(-3) + 572*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*A*a*b^3*e^(-3) + 260*(63*(x*e + d)^(11/2) - 385*
(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 11
55*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^3*e^(-4) + 65*(63*(x*
e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
 + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^4*e
^(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)
^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*
e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^4*e^(-5) + 45045*sqrt(x*e +
d)*A*a^4*d + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4)*e^(-1)
```

maple [B]   time = 0.07, size = 469, normalized size = 2.15

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(3465b^4Bx^5e^5+4095Ab^4e^5x^4+16380Bab^3e^5x^4-3150Bb^4de^4x^4+20020Aab^3e^5x^3-3640Ab^4de^4x^3+30030Ba^2b^2e^5x^3-14560Bab^3de^4x^3+2800Bb^4d^2e^3x^3+38610Aa^2b^2e^5x^2-17160Aab^3de^4x^2+3120Ab^4d^2e^3x^2+25740Ba^3be^5x^2-25740Ba^2b^2de^4x^2+12480Bab^3d^2e^3x^2-2400Bb^4d^3e^2x^2+36036Aa^3be^5x-30888Aa^2b^2de^4x+13728Aab^3d^2e^3x-2496Ab^4d^3e^2x+9009Ba^4e^5x-20592Ba^3bde^4x+20592Ba^2b^2d^2e^3x-9984Bab^3d^3e^2x+1920Bb^4d^4ex+15015Aa^4e^5-24024Aa^3bde^4+20592Aa^2b^2d^2e^3-9152Aab^3d^3e^2+1664Ab^4d^4e-6006Ba^4de^4+13728Bd^2a^3be^3-13728Bd^3a^2b^2e^2+6656Bab^3d^4e-1280Bb^4d^5\right)}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3465*B*b^4*e^5*x^5+4095*A*b^4*e^5*x^4+16380*B*a*b^3*
e^5*x^4-3150*B*b^4*d*e^4*x^4+20020*A*a*b^3*e^5*x^3-3640*A*b^4*d*e^4*x^3+300
30*B*a^2*b^2*e^5*x^3-14560*B*a*b^3*d*e^4*x^3+2800*B*b^4*d^2*e^3*x^3+38610*A
*a^2*b^2*e^5*x^2-17160*A*a*b^3*d*e^4*x^2+3120*A*b^4*d^2*e^3*x^2+25740*B*a^3
*b*e^5*x^2-25740*B*a^2*b^2*d*e^4*x^2+12480*B*a*b^3*d^2*e^3*x^2-2400*B*b^4*d
^3*e^2*x^2+36036*A*a^3*b*e^5*x-30888*A*a^2*b^2*d*e^4*x+13728*A*a*b^3*d^2*e^
3*x-2496*A*b^4*d^3*e^2*x+9009*B*a^4*e^5*x-20592*B*a^3*b*d*e^4*x+20592*B*a^2
*b^2*d^2*e^3*x-9984*B*a*b^3*d^3*e^2*x+1920*B*b^4*d^4*e*x+15015*A*a^4*e^5-24
024*A*a^3*b*d*e^4+20592*A*a^2*b^2*d^2*e^3-9152*A*a*b^3*d^3*e^2+1664*A*b^4*d
^4*e-6006*B*a^4*d*e^4+13728*B*a^3*b*d^2*e^3-13728*B*a^2*b^2*d^3*e^2+6656*B*
a*b^3*d^4*e-1280*B*b^4*d^5)/e^6
```

maxima [B]   time = 0.53, size = 409, normalized size = 1.88

$$\frac{2\left(3465\,(ex+d)^{\frac{13}{2}}Bb^4-4095\left(5Bb^4d-\left(4Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{11}{2}}+10010\left(5Bb^4d^2-2\left(4Bab^3+Ab^4\right)de+\left(3Ba^2b^2+2Aab^3\right)e^2\right)(ex+d)^{\frac{9}{2}}-12870\left(5Bb^4d^3-3\left(4Bab^3+Ab^4\right)d^2e+3\left(3Ba^2b^2+2Aab^3\right)de^2-\left(2Ba^3b+3Aa^2b^2\right)e^3\right)(ex+d)^{\frac{7}{2}}+9009\left(5Bb^4d^4-4\left(4Bab^3+Ab^4\right)d^3e+6\left(3Ba^2b^2+2Aab^3\right)d^2e^2-4\left(2Ba^3b+3Aa^2b^2\right)de^3+\left(Ba^4+4Aa^3b\right)e^4\right)(ex+d)^{\frac{5}{2}}-15015\left(Bb^4d^5-Aa^4e^5-\left(4Bab^3+Ab^4\right)d^4e+2\left(3Ba^2b^2+2Aab^3\right)d^3e^2-2\left(2Ba^3b+3Aa^2b^2\right)d^2e^3+\left(Ba^4+4Aa^3b\right)de^4\right)(ex+d)^{\frac{3}{2}}\right)}{45045\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3465*(e*x + d)^(13/2)*B*b^4 - 4095*(5*B*b^4*d - (4*B*a*b^3 + A*b^4
)*e)*(e*x + d)^(11/2) + 10010*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3
*B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(9/2) - 12870*(5*B*b^4*d^3 - 3*(4*B*
a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A
*a^2*b^2)*e^3)*(e*x + d)^(7/2) + 9009*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*
```

```
d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d
*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(5/2) - 15015*(B*b^4*d^5 - A*a^4*
e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(
2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*(e*x + d)^(3/
2))/e^6
```

mupad [B] time = 1.93, size = 197, normalized size = 0.90

$$\frac{(d+ex)^{11/2}\left(2Ab^4e-10Bb^4d+8Bab^3e\right)}{11e^6}+\frac{2(ae-bd)^3(d+ex)^{5/2}(4Abe+Bae-5Bbd)}{5e^6}+\frac{2Bb^4(d+ex)^{13/2}}{13e^6}+\frac{2(Ae-Bd)(ae-bd)^4(d+ex)^{3/2}}{3e^6}+\frac{4b(ae-bd)^2(d+ex)^{7/2}(3Abe+2Bae-5Bbd)}{7e^6}+\frac{4b^2(ae-bd)(d+ex)^{9/2}(2Abe+3Bae-5Bbd)}{9e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(11*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(5/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(5*e^6) + (2*B*b^4*
(d + e*x)^(13/2))/(13*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(3/2))/
(3*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(7/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))
/(7*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(9/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d)
)/(9*e^6)
```

sympy [B] time = 9.12, size = 517, normalized size = 2.37

$$\frac{2\left(\frac{Bb^4(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(Ab^4e+4Bab^3e-5Bb^4d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(4Aab^3e^2-4Ab^4de+6Ba^2b^2e^2-16Bab^3de+10Bb^4d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(6Aa^2b^2e^3-12Aab^3de^2+6Ab^4d^2e+4Ba^3be^3-18Ba^2b^2de^2+24Bab^3d^2e-10Bb^4d^3\right)}{7e^5}+\frac{(d+ex)^{\frac{5}{2}}\left(4Aa^3be^4-12Aa^2b^2de^3+12Aab^3d^2e^2-4Ab^4d^3e+Ba^4e^4-8Ba^3bde^3+18Ba^2b^2d^2e^2-16Bab^3d^3e+5Bb^4d^4\right)}{5e^5}+\frac{(d+ex)^{\frac{3}{2}}\left(Aa^4e^5-4Aa^3bde^4+6Aa^2b^2d^2e^3-4Aab^3d^3e^2+Ab^4d^4e-Ba^4de^4+4Ba^3bd^2e^3-6Ba^2b^2d^3e^2+4Bab^3d^4e-Bb^4d^5\right)}{3e^5}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*b**4*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(A*b**4*e + 4*B*a
*b**3*e - 5*B*b**4*d)/(11*e**5) + (d + e*x)**(9/2)*(4*A*a*b**3*e**2 - 4*A*b
**4*d*e + 6*B*a**2*b**2*e**2 - 16*B*a*b**3*d*e + 10*B*b**4*d**2)/(9*e**5) +
 (d + e*x)**(7/2)*(6*A*a**2*b**2*e**3 - 12*A*a*b**3*d*e**2 + 6*A*b**4*d**2*
e + 4*B*a**3*b*e**3 - 18*B*a**2*b**2*d*e**2 + 24*B*a*b**3*d**2*e - 10*B*b**
4*d**3)/(7*e**5) + (d + e*x)**(5/2)*(4*A*a**3*b*e**4 - 12*A*a**2*b**2*d*e**
3 + 12*A*a*b**3*d**2*e**2 - 4*A*b**4*d**3*e + B*a**4*e**4 - 8*B*a**3*b*d*e*
*3 + 18*B*a**2*b**2*d**2*e**2 - 16*B*a*b**3*d**3*e + 5*B*b**4*d**4)/(5*e**5
) + (d + e*x)**(3/2)*(A*a**4*e**5 - 4*A*a**3*b*d*e**4 + 6*A*a**2*b**2*d**2*
e**3 - 4*A*a*b**3*d**3*e**2 + A*b**4*d**4*e - B*a**4*d*e**4 + 4*B*a**3*b*d*
*2*e**3 - 6*B*a**2*b**2*d**3*e**2 + 4*B*a*b**3*d**4*e - B*b**4*d**5)/(3*e**
5))/e
```

3.1576 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=216

$$-\frac{2b^3(d+ex)^{9/2}(-4aBe-Abe+5bBd)}{9e^6}+\frac{4b^2(d+ex)^{7/2}(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6}-\frac{4b(d+ex)^{5/2}(bd-ae}{}$$

Rubi [A] time = 0.09, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{9/2}(-4aBe-Abe+5bBd)}{9e^6}+\frac{4b^2(d+ex)^{7/2}(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6}-\frac{4b(d+ex)^{5/2}(bd-ae)^2(-2aBe-3Abe+5bBd)}{5e^6}+\frac{2(d+ex)^{3/2}(bd-ae)^3(-aBe-4Abe+5bBd)}{3e^6}-\frac{2\sqrt{d+ex}(bd-ae)^4(Bd-Ae)}{e^6}+\frac{2b^4B(d+ex)^{11/2}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*Sqrt[d + e*x])/e^6 + (2*(b*d - a*e)^3*(5*b*B*
d - 4*A*b*e - a*B*e)*(d + e*x)^(3/2))/(3*e^6) - (4*b*(b*d - a*e)^2*(5*b*B*d
 - 3*A*b*e - 2*a*B*e)*(d + e*x)^(5/2))/(5*e^6) + (4*b^2*(b*d - a*e)*(5*b*B*
d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(7/2))/(7*e^6) - (2*b^3*(5*b*B*d - A*b*e -
 4*a*B*e)*(d + e*x)^(9/2))/(9*e^6) + (2*b^4*B*(d + e*x)^(11/2))/(11*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{\sqrt{d+ex}}\,dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5\sqrt{d+ex}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)\sqrt{d+}}{e^5}\right.\\
&= -\frac{2(bd-ae)^4(Bd-Ae)\sqrt{d+ex}}{e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-aBe)(d+}{3e^6}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 183, normalized size = 0.85

$$\frac{2\sqrt{d+ex}\left(-385b^3(d+ex)^4(-4aBe-Abe+5bBd)+990b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-1386b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)+1155(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)-3465(bd-ae)^4(Bd-Ae)+315b^4B(d+ex)^5\right)}{3465e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-3465*(b*d - a*e)^4*(B*d - A*e) + 1155*(b*d - a*e)^3*(5*b
*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 1386*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e
 - 2*a*B*e)*(d + e*x)^2 + 990*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)
*(d + e*x)^3 - 385*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 315*b^4*B*
(d + e*x)^5))/(3465*e^6)
```

IntegrateAlgebraic [B] time = 0.23, size = 543, normalized size = 2.51

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-3465*b^4*B*d^5 + 3465*A*b^4*d^4*e + 13860*a*b^3*B*d^4*e
- 13860*a*A*b^3*d^3*e^2 - 20790*a^2*b^2*B*d^3*e^2 + 20790*a^2*A*b^2*d^2*e^3
 + 13860*a^3*b*B*d^2*e^3 - 13860*a^3*A*b*d*e^4 - 3465*a^4*B*d*e^4 + 3465*a^
4*A*e^5 + 5775*b^4*B*d^4*(d + e*x) - 4620*A*b^4*d^3*e*(d + e*x) - 18480*a*b
^3*B*d^3*e*(d + e*x) + 13860*a*A*b^3*d^2*e^2*(d + e*x) + 20790*a^2*b^2*B*d^
2*e^2*(d + e*x) - 13860*a^2*A*b^2*d*e^3*(d + e*x) - 9240*a^3*b*B*d*e^3*(d +
 e*x) + 4620*a^3*A*b*e^4*(d + e*x) + 1155*a^4*B*e^4*(d + e*x) - 6930*b^4*B*
d^3*(d + e*x)^2 + 4158*A*b^4*d^2*e*(d + e*x)^2 + 16632*a*b^3*B*d^2*e*(d + e
*x)^2 - 8316*a*A*b^3*d*e^2*(d + e*x)^2 - 12474*a^2*b^2*B*d*e^2*(d + e*x)^2
+ 4158*a^2*A*b^2*e^3*(d + e*x)^2 + 2772*a^3*b*B*e^3*(d + e*x)^2 + 4950*b^4*
B*d^2*(d + e*x)^3 - 1980*A*b^4*d*e*(d + e*x)^3 - 7920*a*b^3*B*d*e*(d + e*x)
^3 + 1980*a*A*b^3*e^2*(d + e*x)^3 + 2970*a^2*b^2*B*e^2*(d + e*x)^3 - 1925*b
^4*B*d*(d + e*x)^4 + 385*A*b^4*e*(d + e*x)^4 + 1540*a*b^3*B*e*(d + e*x)^4 +
 315*b^4*B*(d + e*x)^5))/(3465*e^6)
```

fricas [B] time = 0.41, size = 408, normalized size = 1.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/3465*(315*B*b^4*e^5*x^5 - 1280*B*b^4*d^5 + 3465*A*a^4*e^5 + 1408*(4*B*a*b
^3 + A*b^4)*d^4*e - 3168*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 3696*(2*B*a^3*
b + 3*A*a^2*b^2)*d^2*e^3 - 2310*(B*a^4 + 4*A*a^3*b)*d*e^4 - 35*(10*B*b^4*d*
e^4 - 11*(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 10*(40*B*b^4*d^2*e^3 - 44*(4*B*a*b^
3 + A*b^4)*d*e^4 + 99*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 6*(80*B*b^4*d^3*
e^2 - 88*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 198*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4
- 231*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + (640*B*b^4*d^4*e - 704*(4*B*a*b^
3 + A*b^4)*d^3*e^2 + 1584*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 1848*(2*B*a^3
*b + 3*A*a^2*b^2)*d*e^4 + 1155*(B*a^4 + 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/e^
6
```

giac [B] time = 0.20, size = 503, normalized size = 2.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*e^(-1) + 4620*((x*
e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*e^(-1) + 924*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*e^(-2) + 1386*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b^2*e^(-2)
```

```
 + 594*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*e^(-3) + 396*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^3*e^(-3
) + 44*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^3*e^(-4) + 11*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^4*e^(-4) + 5*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*e^(-5) +
 3465*sqrt(x*e + d)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.17

$$\frac{2\left(315b^4Bx^5e^5+385Ab^4e^5x^4+1540Bab^3e^5x^4-350Bb^4de^4x^4+1980Aab^3e^5x^3-440Ab^4de^4x^3+2970Ba^2b^2e^5x^3-1760Bab^3de^4x^3+400Bb^4d^2e^3x^3+4158Aa^2b^2e^5x^2-2376Aab^3de^4x^2+528Ab^4d^2e^3x^2+2772Ba^3be^5x^2-3564Ba^2b^2de^4x^2+2112Bab^3d^2e^3x^2-480Bb^4d^3e^2x^2+4620Aa^3be^5x-5544Aa^2b^2de^4x+3168Aab^3d^2e^3x-704Ab^4d^3e^2x+1155Ba^4e^5x-3696Ba^3bde^4x+4752Ba^2b^2d^2e^3x-2816Bab^3d^3e^2x+640Bb^4d^4ex+3465Aa^4e^5-9240Aa^3bde^4+11088Aa^2b^2d^2e^3-6336Aab^3d^3e^2+1408Ab^4d^4e-2310Ba^4de^4+7392Bd^2a^3be^3-9504Bd^3a^2b^2e^2+5632Bab^3d^4e-1280Bb^4d^5\right)\sqrt{ex+d}}{3465e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(315*B*b^4*e^5*x^5+385*A*b^4*e^5*x^4+1540*B*a*b^3*e^5*x^4-350*B*b^4*
d*e^4*x^4+1980*A*a*b^3*e^5*x^3-440*A*b^4*d*e^4*x^3+2970*B*a^2*b^2*e^5*x^3-1
760*B*a*b^3*d*e^4*x^3+400*B*b^4*d^2*e^3*x^3+4158*A*a^2*b^2*e^5*x^2-2376*A*a
*b^3*d*e^4*x^2+528*A*b^4*d^2*e^3*x^2+2772*B*a^3*b*e^5*x^2-3564*B*a^2*b^2*d*
e^4*x^2+2112*B*a*b^3*d^2*e^3*x^2-480*B*b^4*d^3*e^2*x^2+4620*A*a^3*b*e^5*x-5
544*A*a^2*b^2*d*e^4*x+3168*A*a*b^3*d^2*e^3*x-704*A*b^4*d^3*e^2*x+1155*B*a^4
*e^5*x-3696*B*a^3*b*d*e^4*x+4752*B*a^2*b^2*d^2*e^3*x-2816*B*a*b^3*d^3*e^2*x
+640*B*b^4*d^4*e*x+3465*A*a^4*e^5-9240*A*a^3*b*d*e^4+11088*A*a^2*b^2*d^2*e^
3-6336*A*a*b^3*d^3*e^2+1408*A*b^4*d^4*e-2310*B*a^4*d*e^4+7392*B*a^3*b*d^2*e
^3-9504*B*a^2*b^2*d^3*e^2+5632*B*a*b^3*d^4*e-1280*B*b^4*d^5)*(e*x+d)^(1/2)/
e^6
```

maxima [B] time = 0.60, size = 409, normalized size = 1.89

$$\frac{2\left(315(ex+d)^{\frac{11}{2}}Bb^4-385\left(5Bb^4d-\left(4Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{9}{2}}+990\left(5Bb^4d^2-2\left(4Bab^3+Ab^4\right)de+\left(3Ba^2b^2+2Aab^3\right)e^2\right)(ex+d)^{\frac{7}{2}}-1386\left(5Bb^4d^3-3\left(4Bab^3+Ab^4\right)d^2e+3\left(3Ba^2b^2+2Aab^3\right)de^2-\left(2Ba^3b+3Aa^2b^2\right)e^3\right)(ex+d)^{\frac{5}{2}}+1155\left(5Bb^4d^4-4\left(4Bab^3+Ab^4\right)d^3e+6\left(3Ba^2b^2+2Aab^3\right)d^2e^2-4\left(2Ba^3b+3Aa^2b^2\right)de^3+\left(Ba^4+4Aa^3b\right)e^4\right)(ex+d)^{\frac{3}{2}}-3465\left(Bb^4d^5-Aa^4e^5-\left(4Bab^3+Ab^4\right)d^4e+2\left(3Ba^2b^2+2Aab^3\right)d^3e^2-2\left(2Ba^3b+3Aa^2b^2\right)d^2e^3+\left(Ba^4+4Aa^3b\right)de^4\right)\sqrt{ex+d}\right)}{3465\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*b^4 - 385*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e
)*(e*x + d)^(9/2) + 990*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2
*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(7/2) - 1386*(5*B*b^4*d^3 - 3*(4*B*a*b^3 +
 A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A*a^2*b^
2)*e^3)*(e*x + d)^(5/2) + 1155*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e +
 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 +
(B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(3/2) - 3465*(B*b^4*d^5 - A*a^4*e^5 - (4
*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*
b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*sqrt(e*x + d))/e^6
```

mupad [B] time = 0.06, size = 197, normalized size = 0.91

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{9\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{3/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{3\,e^6}+\frac{2\,B\,b^4\,(d+e\,x)^{11/2}}{11\,e^6}+\frac{2\,(A\,e-B\,d)\,(a\,e-b\,d)^4\,\sqrt{d+e\,x}}{e^6}+\frac{4\,b\,(a\,e-b\,d)^2\,(d+e\,x)^{5/2}\,(3\,A\,b\,e+2\,B\,a\,e-5\,B\,b\,d)}{5\,e^6}+\frac{4\,b^2\,(a\,e-b\,d)\,(d+e\,x)^{7/2}\,(2\,A\,b\,e+3\,B\,a\,e-5\,B\,b\,d)}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(9*e^6) + (2*(a*e
- b*d)^3*(d + e*x)^(3/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(3*e^6) + (2*B*b^4*(d
 + e*x)^(11/2))/(11*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(1/2))/e^
6 + (4*b*(a*e - b*d)^2*(d + e*x)^(5/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))/(5*e^
```

```
6) + (4*b^2*(a*e - b*d)*(d + e*x)^(7/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d))/(7*e
^6)
```

sympy [A] time = 127.18, size = 1311, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**4*d/sqrt(d + e*x) - 2*A*a**4*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 8*A*a**3*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 8*A*a**3*b*(
d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 12*A*a**2*
b**2*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 -
 12*A*a**2*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**
(3/2) - (d + e*x)**(5/2)/5)/e**2 - 8*A*a*b**3*d*(-d**3/sqrt(d + e*x) - 3*d*
*2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 8*A*a*b*
*3*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4
*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 2*A*b**4*d*(d**4/sqrt(d
+ e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5
/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 2*A*b**4*(-d**5/sqrt(d + e*x) - 5*d**4*s
qrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(
d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*a**4*d*(-d/sqrt(d + e*x)
 - sqrt(d + e*x))/e - 2*B*a**4*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d
 + e*x)**(3/2)/3)/e - 8*B*a**3*b*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x)
- (d + e*x)**(3/2)/3)/e**2 - 8*B*a**3*b*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(
d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 12*B*a**2*b**2*d
*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*
x)**(5/2)/5)/e**3 - 12*B*a**2*b**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*
x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)
/e**3 - 8*B*a*b**3*d*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d
 + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 8*B*a*
b**3*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)
/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)
/e**4 - 2*B*b**4*d*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d
 + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d +
e*x)**(9/2)/9)/e**5 - 2*B*b**4*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) -
 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/
2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**5)/e, Ne(e, 0)), (
(A*a**4*x + B*b**4*x**6/6 + x**5*(A*b**4 + 4*B*a*b**3)/5 + x**4*(4*A*a*b**3
 + 6*B*a**2*b**2)/4 + x**3*(6*A*a**2*b**2 + 4*B*a**3*b)/3 + x**2*(4*A*a**3*
b + B*a**4)/2)/sqrt(d), True))
```

3.1577 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{2b^3(d+ex)^{7/2}(-4aBe-Abe+5bBd)}{7e^6}+\frac{4b^2(d+ex)^{5/2}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{4b(d+ex)^{3/2}(bd-ae)}{}$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^3(d+ex)^{7/2}(-4aBe-Abe+5bBd)}{7e^6}+\frac{4b^2(d+ex)^{5/2}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{4b(d+ex)^{3/2}(bd-ae)^2(-2aBe-3Abe+5bBd)}{3e^6}+\frac{2\sqrt{d+ex}(bd-ae)^3(-aBe-4Abe+5bBd)}{e^6}+\frac{2(bd-ae)^4(Bd-Ae)}{e^6\sqrt{d+ex}}+\frac{2b^4B(d+ex)^{9/2}}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(B*d - A*e))/(e^6*Sqrt[d + e*x]) + (2*(b*d - a*e)^3*(5*b*B
*d - 4*A*b*e - a*B*e)*Sqrt[d + e*x])/e^6 - (4*b*(b*d - a*e)^2*(5*b*B*d - 3*
A*b*e - 2*a*B*e)*(d + e*x)^(3/2))/(3*e^6) + (4*b^2*(b*d - a*e)*(5*b*B*d - 2
*A*b*e - 3*a*B*e)*(d + e*x)^(5/2))/(5*e^6) - (2*b^3*(5*b*B*d - A*b*e - 4*a*
B*e)*(d + e*x)^(7/2))/(7*e^6) + (2*b^4*B*(d + e*x)^(9/2))/(9*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{3/2}}\,dx \\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{3/2}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5\sqrt{d+ex}}+\frac{2b}{} \right. \\
&= \frac{2(bd-ae)^4(Bd-Ae)}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^3(5bBd-4Abe-aBe)\sqrt{d+ex}}{e^6}-\frac{4b}{}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 183, normalized size = 0.86

$$\frac{2\left(-45b^3(d+ex)^4(-4aBe-Abe+5bBd)+126b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-210b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)+315(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)+315(bd-ae)^4(Bd-Ae)+35b^4B(d+ex)^5\right)}{315e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(315*(b*d - a*e)^4*(B*d - A*e) + 315*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e -
a*B*e)*(d + e*x) - 210*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e
*x)^2 + 126*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^3 - 45*
b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 35*b^4*B*(d + e*x)^5))/(315*e
^6*Sqrt[d + e*x])
```

IntegrateAlgebraic [B] time = 0.23, size = 543, normalized size = 2.54

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),
x]
```

```
[Out] (2*(315*b^4*B*d^5 - 315*A*b^4*d^4*e - 1260*a*b^3*B*d^4*e + 1260*a*A*b^3*d^3
*e^2 + 1890*a^2*b^2*B*d^3*e^2 - 1890*a^2*A*b^2*d^2*e^3 - 1260*a^3*b*B*d^2*e
^3 + 1260*a^3*A*b*d*e^4 + 315*a^4*B*d*e^4 - 315*a^4*A*e^5 + 1575*b^4*B*d^4*
(d + e*x) - 1260*A*b^4*d^3*e*(d + e*x) - 5040*a*b^3*B*d^3*e*(d + e*x) + 378
0*a*A*b^3*d^2*e^2*(d + e*x) + 5670*a^2*b^2*B*d^2*e^2*(d + e*x) - 3780*a^2*A
*b^2*d*e^3*(d + e*x) - 2520*a^3*b*B*d*e^3*(d + e*x) + 1260*a^3*A*b*e^4*(d +
 e*x) + 315*a^4*B*e^4*(d + e*x) - 1050*b^4*B*d^3*(d + e*x)^2 + 630*A*b^4*d^
2*e*(d + e*x)^2 + 2520*a*b^3*B*d^2*e*(d + e*x)^2 - 1260*a*A*b^3*d*e^2*(d +
e*x)^2 - 1890*a^2*b^2*B*d*e^2*(d + e*x)^2 + 630*a^2*A*b^2*e^3*(d + e*x)^2 +
 420*a^3*b*B*e^3*(d + e*x)^2 + 630*b^4*B*d^2*(d + e*x)^3 - 252*A*b^4*d*e*(d
 + e*x)^3 - 1008*a*b^3*B*d*e*(d + e*x)^3 + 252*a*A*b^3*e^2*(d + e*x)^3 + 37
8*a^2*b^2*B*e^2*(d + e*x)^3 - 225*b^4*B*d*(d + e*x)^4 + 45*A*b^4*e*(d + e*x
)^4 + 180*a*b^3*B*e*(d + e*x)^4 + 35*b^4*B*(d + e*x)^5))/(315*e^6*Sqrt[d +
e*x])
```

fricas [B] time = 0.41, size = 418, normalized size = 1.95

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/315*(35*B*b^4*e^5*x^5 + 1280*B*b^4*d^5 - 315*A*a^4*e^5 - 1152*(4*B*a*b^3
+ A*b^4)*d^4*e + 2016*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 1680*(2*B*a^3*b +
 3*A*a^2*b^2)*d^2*e^3 + 630*(B*a^4 + 4*A*a^3*b)*d*e^4 - 5*(10*B*b^4*d*e^4 -
 9*(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 2*(40*B*b^4*d^2*e^3 - 36*(4*B*a*b^3 + A*b
^4)*d*e^4 + 63*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 2*(80*B*b^4*d^3*e^2 - 7
2*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 126*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 105*(
2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + (640*B*b^4*d^4*e - 576*(4*B*a*b^3 + A*b
^4)*d^3*e^2 + 1008*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 840*(2*B*a^3*b + 3*A
*a^2*b^2)*d*e^4 + 315*(B*a^4 + 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*
e^6)
```

giac [B] time = 0.25, size = 587, normalized size = 2.74

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*b^4*e^48 - 225*(x*e + d)^(7/2)*B*b^4*d*e^48 + 6
30*(x*e + d)^(5/2)*B*b^4*d^2*e^48 - 1050*(x*e + d)^(3/2)*B*b^4*d^3*e^48 + 1
575*sqrt(x*e + d)*B*b^4*d^4*e^48 + 180*(x*e + d)^(7/2)*B*a*b^3*e^49 + 45*(x
```

```
*e + d)^(7/2)*A*b^4*e^49 - 1008*(x*e + d)^(5/2)*B*a*b^3*d*e^49 - 252*(x*e +
 d)^(5/2)*A*b^4*d*e^49 + 2520*(x*e + d)^(3/2)*B*a*b^3*d^2*e^49 + 630*(x*e +
 d)^(3/2)*A*b^4*d^2*e^49 - 5040*sqrt(x*e + d)*B*a*b^3*d^3*e^49 - 1260*sqrt(
x*e + d)*A*b^4*d^3*e^49 + 378*(x*e + d)^(5/2)*B*a^2*b^2*e^50 + 252*(x*e + d
)^(5/2)*A*a*b^3*e^50 - 1890*(x*e + d)^(3/2)*B*a^2*b^2*d*e^50 - 1260*(x*e +
d)^(3/2)*A*a*b^3*d*e^50 + 5670*sqrt(x*e + d)*B*a^2*b^2*d^2*e^50 + 3780*sqrt
(x*e + d)*A*a*b^3*d^2*e^50 + 420*(x*e + d)^(3/2)*B*a^3*b*e^51 + 630*(x*e +
d)^(3/2)*A*a^2*b^2*e^51 - 2520*sqrt(x*e + d)*B*a^3*b*d*e^51 - 3780*sqrt(x*e
 + d)*A*a^2*b^2*d*e^51 + 315*sqrt(x*e + d)*B*a^4*e^52 + 1260*sqrt(x*e + d)*
A*a^3*b*e^52)*e^(-54) + 2*(B*b^4*d^5 - 4*B*a*b^3*d^4*e - A*b^4*d^4*e + 6*B*
a^2*b^2*d^3*e^2 + 4*A*a*b^3*d^3*e^2 - 4*B*a^3*b*d^2*e^3 - 6*A*a^2*b^2*d^2*e
^3 + B*a^4*d*e^4 + 4*A*a^3*b*d*e^4 - A*a^4*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [B] time = 0.07, size = 469, normalized size = 2.19

$$-\frac{2\left(-35b^4Bx^5e^5-45Ab^4e^5x^4-180Bab^3e^5x^4+50Bb^4de^4x^4-252Aab^3e^5x^3+72Ab^4de^4x^3-378Ba^2b^2e^5x^3+288Bab^3de^4x^3-80Bb^4d^2e^3x^3-630Aa^2b^2e^5x^2+504Aab^3de^4x^2-144Ab^4d^2e^3x^2-420Ba^3be^5x^2+756Ba^2b^2de^4x^2-576Bab^3d^2e^3x^2+160Bb^4d^3e^2x^2-1260Aa^3be^5x+2520Aa^2b^2de^4x-2016Aab^3d^2e^3x+576Ab^4d^3e^2x-315Ba^4e^5x+1680Ba^3bde^4x-3024Ba^2b^2d^2e^3x+2304Bab^3d^3e^2x-640Bb^4d^4ex+315Aa^4e^5-2520Aa^3bde^4+5040Aa^2b^2d^2e^3-4032Aab^3d^3e^2+1152Ab^4d^4e-630Ba^4de^4+3360Bd^2a^3be^3-6048Bd^3a^2b^2e^2+4608Bab^3d^4e-1280Bb^4d^5\right)}{315\sqrt{ex+d}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315*(-35*B*b^4*e^5*x^5-45*A*b^4*e^5*x^4-180*B*a*b^3*e^5*x^4+50*B*b^4*d*e
^4*x^4-252*A*a*b^3*e^5*x^3+72*A*b^4*d*e^4*x^3-378*B*a^2*b^2*e^5*x^3+288*B*a
*b^3*d*e^4*x^3-80*B*b^4*d^2*e^3*x^3-630*A*a^2*b^2*e^5*x^2+504*A*a*b^3*d*e^4
*x^2-144*A*b^4*d^2*e^3*x^2-420*B*a^3*b*e^5*x^2+756*B*a^2*b^2*d*e^4*x^2-576*
B*a*b^3*d^2*e^3*x^2+160*B*b^4*d^3*e^2*x^2-1260*A*a^3*b*e^5*x+2520*A*a^2*b^2
*d*e^4*x-2016*A*a*b^3*d^2*e^3*x+576*A*b^4*d^3*e^2*x-315*B*a^4*e^5*x+1680*B*
a^3*b*d*e^4*x-3024*B*a^2*b^2*d^2*e^3*x+2304*B*a*b^3*d^3*e^2*x-640*B*b^4*d^4
*e*x+315*A*a^4*e^5-2520*A*a^3*b*d*e^4+5040*A*a^2*b^2*d^2*e^3-4032*A*a*b^3*d
^3*e^2+1152*A*b^4*d^4*e-630*B*a^4*d*e^4+3360*B*a^3*b*d^2*e^3-6048*B*a^2*b^2
*d^3*e^2+4608*B*a*b^3*d^4*e-1280*B*b^4*d^5)/(e*x+d)^(1/2)/e^6
```

maxima [B] time = 0.62, size = 417, normalized size = 1.95

$$\frac{2\left(\frac{35(ex+d)^{9/2}Bb^4-45\left(5Bb^4d-(4Bab^3+Ab^4)e\right)(ex+d)^{7/2}+126\left(5Bb^4d^2-2(4Bab^3+Ab^4)de+(3Ba^2b^2+2Aab^3)e^2\right)(ex+d)^{5/2}-210\left(5Bb^4d^3-3(4Bab^3+Ab^4)d^2e+3(3Ba^2b^2+2Aab^3)de^2-(2Ba^3b+3Aa^2b^2)e^3\right)(ex+d)^{3/2}+315\left(5Bb^4d^4-4(4Bab^3+Ab^4)d^3e+6(3Ba^2b^2+2Aab^3)d^2e^2-4(2Ba^3b+3Aa^2b^2)de^3+(Ba^4+4Aa^3b)e^4\right)\sqrt{ex+d}}{e^5}+\frac{315\left(Bb^4d^5-Aa^4e^5-(4Bab^3+Ab^4)d^4e+2(3Ba^2b^2+2Aab^3)d^3e^2-2(2Ba^3b+3Aa^2b^2)d^2e^3+(Ba^4+4Aa^3b)de^4\right)}{\sqrt{ex+d}\,e^5}\right)}{315e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*b^4 - 45*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*(
e*x + d)^(7/2) + 126*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2*b^
2 + 2*A*a*b^3)*e^2)*(e*x + d)^(5/2) - 210*(5*B*b^4*d^3 - 3*(4*B*a*b^3 + A*b
^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A*a^2*b^2)*e
^3)*(e*x + d)^(3/2) + 315*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e + 6*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^
4 + 4*A*a^3*b)*e^4)*sqrt(e*x + d))/e^5 + 315*(B*b^4*d^5 - A*a^4*e^5 - (4*B*
a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*b +
 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 1.95, size = 296, normalized size = 1.38

$$\frac{(d+ex)^{7/2}\left(2Ab^4e-10Bb^4d+8Bab^3e\right)}{7e^6}-\frac{-2Ba^4de^4+2Aa^4e^5+8Ba^3bd^2e^3-8Aa^3bde^4-12Ba^2b^2d^3e^2+12Aa^2b^2d^2e^3+8Bab^3d^4e-8Aab^3d^3e^2-2Bb^4d^5+2Ab^4d^4e}{e^6\sqrt{d+ex}}+\frac{2(ae-bd)^3\sqrt{d+ex}\,(4Abe+Bae-5Bbd)}{e^6}+\frac{2Bb^4(d+ex)^{9/2}}{9e^6}+\frac{4b(ae-bd)^2(d+ex)^{3/2}(3Abe+2Bae-5Bbd)}{3e^6}+\frac{4b^2(ae-bd)(d+ex)^{5/2}(2Abe+3Bae-5Bbd)}{5e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(7*e^6) - (2*A*a^4
*e^5 - 2*B*b^4*d^5 + 2*A*b^4*d^4*e - 2*B*a^4*d*e^4 - 8*A*a*b^3*d^3*e^2 + 8*
B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2*e^3 - 12*B*a^2*b^2*d^3*e^2 - 8*A*a^3*b*d
```

```
*e^4 + 8*B*a*b^3*d^4*e)/(e^6*(d + e*x)^(1/2)) + (2*(a*e - b*d)^3*(d + e*x)^
(1/2)*(4*A*b*e + B*a*e - 5*B*b*d))/e^6 + (2*B*b^4*(d + e*x)^(9/2))/(9*e^6)
+ (4*b*(a*e - b*d)^2*(d + e*x)^(3/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))/(3*e^6)
 + (4*b^2*(a*e - b*d)*(d + e*x)^(5/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d))/(5*e^6
)
```

sympy [A] time = 120.61, size = 394, normalized size = 1.84

$$\frac{2Bb^4(d+ex)^{\frac{9}{2}}}{9e^6}+\frac{(d+ex)^{\frac{7}{2}}\left(2Ab^4e+8Bab^3e-10Bb^4d\right)}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(8Aab^3e^2-8Ab^4de+12Ba^2b^2e^2-32Bab^3de+20Bb^4d^2\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(12Aa^2b^2e^3-24Aab^3de^2+12Ab^4d^2e+8Ba^3be^3-36Ba^2b^2de^2+48Bab^3d^2e-20Bb^4d^3\right)}{3e^6}+\frac{\sqrt{d+ex}\left(8Aa^3be^4-24Aa^2b^2de^3+24Aab^3d^2e^2-8Ab^4d^3e+2Ba^4e^4-16Ba^3bde^3+36Ba^2b^2d^2e^2-32Bab^3d^3e+10Bb^4d^4\right)}{e^6}+\frac{2(-Ae+Bd)(ae-bd)^4}{e^6\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*b**4*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(2*A*b**4*e + 8*B*a*b
**3*e - 10*B*b**4*d)/(7*e**6) + (d + e*x)**(5/2)*(8*A*a*b**3*e**2 - 8*A*b**
4*d*e + 12*B*a**2*b**2*e**2 - 32*B*a*b**3*d*e + 20*B*b**4*d**2)/(5*e**6) +
(d + e*x)**(3/2)*(12*A*a**2*b**2*e**3 - 24*A*a*b**3*d*e**2 + 12*A*b**4*d**2
*e + 8*B*a**3*b*e**3 - 36*B*a**2*b**2*d*e**2 + 48*B*a*b**3*d**2*e - 20*B*b*
*4*d**3)/(3*e**6) + sqrt(d + e*x)*(8*A*a**3*b*e**4 - 24*A*a**2*b**2*d*e**3
+ 24*A*a*b**3*d**2*e**2 - 8*A*b**4*d**3*e + 2*B*a**4*e**4 - 16*B*a**3*b*d*e
**3 + 36*B*a**2*b**2*d**2*e**2 - 32*B*a*b**3*d**3*e + 10*B*b**4*d**4)/e**6
+ 2*(-A*e + B*d)*(a*e - b*d)**4/(e**6*sqrt(d + e*x))
```

3.1578 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{2b^3(d+ex)^{5/2}(-4aBe-Abe+5bBd)}{5e^6}+\frac{4b^2(d+ex)^{3/2}(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6}-\frac{4b\sqrt{d+ex}\,(bd-ae)^2}{}$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^3(d+ex)^{5/2}(-4aBe-Abe+5bBd)}{5e^6}+\frac{4b^2(d+ex)^{3/2}(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6}-\frac{4b\sqrt{d+ex}\,(bd-ae)^2(-2aBe-3Abe+5bBd)}{e^6}-\frac{2(bd-ae)^3(-aBe-4Abe+5bBd)}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^4(Bd-Ae)}{3e^6(d+ex)^{3/2}}+\frac{2b^4B(d+ex)^{7/2}}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(B*d - A*e))/(3*e^6*(d + e*x)^(3/2)) - (2*(b*d - a*e)^3*(5
*b*B*d - 4*A*b*e - a*B*e))/(e^6*Sqrt[d + e*x]) - (4*b*(b*d - a*e)^2*(5*b*B*
d - 3*A*b*e - 2*a*B*e)*Sqrt[d + e*x])/e^6 + (4*b^2*(b*d - a*e)*(5*b*B*d - 2
*A*b*e - 3*a*B*e)*(d + e*x)^(3/2))/(3*e^6) - (2*b^3*(5*b*B*d - A*b*e - 4*a*
B*e)*(d + e*x)^(5/2))/(5*e^6) + (2*b^4*B*(d + e*x)^(7/2))/(7*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{5/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{5/2}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{3/2}}+\frac{2b}{}\right.\\
&= \frac{2(bd-ae)^4(Bd-Ae)}{3e^6(d+ex)^{3/2}}-\frac{2(bd-ae)^3(5bBd-4Abe-aBe)}{e^6\sqrt{d+ex}}-\frac{4b(bd-ae)}{}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 183, normalized size = 0.86

$$\frac{2\left(-21b^3(d+ex)^4(-4aBe-Abe+5bBd)+70b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-210b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)-105(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)+35(bd-ae)^4(Bd-Ae)+15b^4B(d+ex)^5\right)}{105e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(35*(b*d - a*e)^4*(B*d - A*e) - 105*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a
*B*e)*(d + e*x) - 210*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*
x)^2 + 70*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^3 - 21*b^
3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 15*b^4*B*(d + e*x)^5))/(105*e^6
*(d + e*x)^(3/2))
```

IntegrateAlgebraic [B] time = 0.23, size = 543, normalized size = 2.54

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),
x]
```

```
[Out] (2*(35*b^4*B*d^5 - 35*A*b^4*d^4*e - 140*a*b^3*B*d^4*e + 140*a*A*b^3*d^3*e^2
 + 210*a^2*b^2*B*d^3*e^2 - 210*a^2*A*b^2*d^2*e^3 - 140*a^3*b*B*d^2*e^3 + 14
0*a^3*A*b*d*e^4 + 35*a^4*B*d*e^4 - 35*a^4*A*e^5 - 525*b^4*B*d^4*(d + e*x) +
 420*A*b^4*d^3*e*(d + e*x) + 1680*a*b^3*B*d^3*e*(d + e*x) - 1260*a*A*b^3*d^
2*e^2*(d + e*x) - 1890*a^2*b^2*B*d^2*e^2*(d + e*x) + 1260*a^2*A*b^2*d*e^3*(
d + e*x) + 840*a^3*b*B*d*e^3*(d + e*x) - 420*a^3*A*b*e^4*(d + e*x) - 105*a^
4*B*e^4*(d + e*x) - 1050*b^4*B*d^3*(d + e*x)^2 + 630*A*b^4*d^2*e*(d + e*x)^
2 + 2520*a*b^3*B*d^2*e*(d + e*x)^2 - 1260*a*A*b^3*d*e^2*(d + e*x)^2 - 1890*
a^2*b^2*B*d*e^2*(d + e*x)^2 + 630*a^2*A*b^2*e^3*(d + e*x)^2 + 420*a^3*b*B*e
^3*(d + e*x)^2 + 350*b^4*B*d^2*(d + e*x)^3 - 140*A*b^4*d*e*(d + e*x)^3 - 56
0*a*b^3*B*d*e*(d + e*x)^3 + 140*a*A*b^3*e^2*(d + e*x)^3 + 210*a^2*b^2*B*e^2
*(d + e*x)^3 - 105*b^4*B*d*(d + e*x)^4 + 21*A*b^4*e*(d + e*x)^4 + 84*a*b^3*
B*e*(d + e*x)^4 + 15*b^4*B*(d + e*x)^5))/(105*e^6*(d + e*x)^(3/2))
```

fricas [B] time = 0.41, size = 430, normalized size = 2.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/105*(15*B*b^4*e^5*x^5 - 1280*B*b^4*d^5 - 35*A*a^4*e^5 + 896*(4*B*a*b^3 +
A*b^4)*d^4*e - 1120*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 560*(2*B*a^3*b + 3*
A*a^2*b^2)*d^2*e^3 - 70*(B*a^4 + 4*A*a^3*b)*d*e^4 - 3*(10*B*b^4*d*e^4 - 7*(
4*B*a*b^3 + A*b^4)*e^5)*x^4 + 2*(40*B*b^4*d^2*e^3 - 28*(4*B*a*b^3 + A*b^4)*
d*e^4 + 35*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 6*(80*B*b^4*d^3*e^2 - 56*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 70*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 35*(2*B*a^
3*b + 3*A*a^2*b^2)*e^5)*x^2 - 3*(640*B*b^4*d^4*e - 448*(4*B*a*b^3 + A*b^4)*
d^3*e^2 + 560*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 280*(2*B*a^3*b + 3*A*a^2*
b^2)*d*e^4 + 35*(B*a^4 + 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^
7*x + d^2*e^6)
```

giac [B] time = 0.24, size = 567, normalized size = 2.65

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*b^4*e^36 - 105*(x*e + d)^(5/2)*B*b^4*d*e^36 + 3
50*(x*e + d)^(3/2)*B*b^4*d^2*e^36 - 1050*sqrt(x*e + d)*B*b^4*d^3*e^36 + 84*
(x*e + d)^(5/2)*B*a*b^3*e^37 + 21*(x*e + d)^(5/2)*A*b^4*e^37 - 560*(x*e + d
)^(3/2)*B*a*b^3*d*e^37 - 140*(x*e + d)^(3/2)*A*b^4*d*e^37 + 2520*sqrt(x*e +
```

```
 d)*B*a*b^3*d^2*e^37 + 630*sqrt(x*e + d)*A*b^4*d^2*e^37 + 210*(x*e + d)^(3/
2)*B*a^2*b^2*e^38 + 140*(x*e + d)^(3/2)*A*a*b^3*e^38 - 1890*sqrt(x*e + d)*B
*a^2*b^2*d*e^38 - 1260*sqrt(x*e + d)*A*a*b^3*d*e^38 + 420*sqrt(x*e + d)*B*a
^3*b*e^39 + 630*sqrt(x*e + d)*A*a^2*b^2*e^39)*e^(-42) - 2/3*(15*(x*e + d)*B
*b^4*d^4 - B*b^4*d^5 - 48*(x*e + d)*B*a*b^3*d^3*e - 12*(x*e + d)*A*b^4*d^3*
e + 4*B*a*b^3*d^4*e + A*b^4*d^4*e + 54*(x*e + d)*B*a^2*b^2*d^2*e^2 + 36*(x*
e + d)*A*a*b^3*d^2*e^2 - 6*B*a^2*b^2*d^3*e^2 - 4*A*a*b^3*d^3*e^2 - 24*(x*e
+ d)*B*a^3*b*d*e^3 - 36*(x*e + d)*A*a^2*b^2*d*e^3 + 4*B*a^3*b*d^2*e^3 + 6*A
*a^2*b^2*d^2*e^3 + 3*(x*e + d)*B*a^4*e^4 + 12*(x*e + d)*A*a^3*b*e^4 - B*a^4
*d*e^4 - 4*A*a^3*b*d*e^4 + A*a^4*e^5)*e^(-6)/(x*e + d)^(3/2)
```

maple [B] time = 0.05, size = 469, normalized size = 2.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/105*(-15*B*b^4*e^5*x^5-21*A*b^4*e^5*x^4-84*B*a*b^3*e^5*x^4+30*B*b^4*d*e^
4*x^4-140*A*a*b^3*e^5*x^3+56*A*b^4*d*e^4*x^3-210*B*a^2*b^2*e^5*x^3+224*B*a*
b^3*d*e^4*x^3-80*B*b^4*d^2*e^3*x^3-630*A*a^2*b^2*e^5*x^2+840*A*a*b^3*d*e^4*
x^2-336*A*b^4*d^2*e^3*x^2-420*B*a^3*b*e^5*x^2+1260*B*a^2*b^2*d*e^4*x^2-1344
*B*a*b^3*d^2*e^3*x^2+480*B*b^4*d^3*e^2*x^2+420*A*a^3*b*e^5*x-2520*A*a^2*b^2
*d*e^4*x+3360*A*a*b^3*d^2*e^3*x-1344*A*b^4*d^3*e^2*x+105*B*a^4*e^5*x-1680*B
*a^3*b*d*e^4*x+5040*B*a^2*b^2*d^2*e^3*x-5376*B*a*b^3*d^3*e^2*x+1920*B*b^4*d
^4*e*x+35*A*a^4*e^5+280*A*a^3*b*d*e^4-1680*A*a^2*b^2*d^2*e^3+2240*A*a*b^3*d
^3*e^2-896*A*b^4*d^4*e+70*B*a^4*d*e^4-1120*B*a^3*b*d^2*e^3+3360*B*a^2*b^2*d
^3*e^2-3584*B*a*b^3*d^4*e+1280*B*b^4*d^5)/(e*x+d)^(3/2)/e^6
```

maxima [B] time = 0.61, size = 415, normalized size = 1.94

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/105*((15*(e*x + d)^(7/2)*B*b^4 - 21*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*(
e*x + d)^(5/2) + 70*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2*b^2
 + 2*A*a*b^3)*e^2)*(e*x + d)^(3/2) - 210*(5*B*b^4*d^3 - 3*(4*B*a*b^3 + A*b^
4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A*a^2*b^2)*e^
3)*sqrt(e*x + d))/e^5 + 35*(B*b^4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4
*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*
e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4 - 3*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^
3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e
^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 1.94, size = 367, normalized size = 1.71

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(5*e^6) - ((d + e*
x)*(2*B*a^4*e^4 + 10*B*b^4*d^4 + 8*A*a^3*b*e^4 - 8*A*b^4*d^3*e + 24*A*a*b^3
*d^2*e^2 - 24*A*a^2*b^2*d*e^3 + 36*B*a^2*b^2*d^2*e^2 - 32*B*a*b^3*d^3*e - 1
6*B*a^3*b*d*e^3) + (2*A*a^4*e^5)/3 - (2*B*b^4*d^5)/3 + (2*A*b^4*d^4*e)/3 -
(2*B*a^4*d*e^4)/3 - (8*A*a*b^3*d^3*e^2)/3 + (8*B*a^3*b*d^2*e^3)/3 + 4*A*a^2
```

```
*b^2*d^2*e^3 - 4*B*a^2*b^2*d^3*e^2 - (8*A*a^3*b*d*e^4)/3 + (8*B*a*b^3*d^4*e
)/3)/(e^6*(d + e*x)^(3/2)) + (2*B*b^4*(d + e*x)^(7/2))/(7*e^6) + (4*b*(a*e
- b*d)^2*(d + e*x)^(1/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))/e^6 + (4*b^2*(a*e -
 b*d)*(d + e*x)^(3/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d))/(3*e^6)
```

sympy [A] time = 139.12, size = 304, normalized size = 1.42

$$\frac{2Bb^4(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(2Ab^4e+8Bab^3e-10Bb^4d\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(8Aab^3e^2-8Ab^4de+12Ba^2b^2e^2-32Bab^3de+20Bb^4d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\left(12Aa^2b^2e^3-24Aab^3de^2+12Ab^4d^2e+8Ba^3be^3-36Ba^2b^2de^2+48Bab^3d^2e-20Bb^4d^3\right)}{e^6}-\frac{2(ae-bd)^3(4Abe+Bae-5Bbd)}{e^6\sqrt{d+ex}}+\frac{2(-Ae+Bd)(ae-bd)^4}{3e^6(d+ex)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*b**4*(d + e*x)**(7/2)/(7*e**6) + (d + e*x)**(5/2)*(2*A*b**4*e + 8*B*a*b
**3*e - 10*B*b**4*d)/(5*e**6) + (d + e*x)**(3/2)*(8*A*a*b**3*e**2 - 8*A*b**
4*d*e + 12*B*a**2*b**2*e**2 - 32*B*a*b**3*d*e + 20*B*b**4*d**2)/(3*e**6) +
sqrt(d + e*x)*(12*A*a**2*b**2*e**3 - 24*A*a*b**3*d*e**2 + 12*A*b**4*d**2*e
+ 8*B*a**3*b*e**3 - 36*B*a**2*b**2*d*e**2 + 48*B*a*b**3*d**2*e - 20*B*b**4*
d**3)/e**6 - 2*(a*e - b*d)**3*(4*A*b*e + B*a*e - 5*B*b*d)/(e**6*sqrt(d + e*
x)) + 2*(-A*e + B*d)*(a*e - b*d)**4/(3*e**6*(d + e*x)**(3/2))
```

3.1579 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}} dx$

Optimal. Leaf size=214

$$-\frac{2b^3(d+ex)^{3/2}(-4aBe-Abe+5bBd)}{3e^6}+\frac{4b^2\sqrt{d+ex}\,(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}+\frac{4b(bd-ae)^2(-2aBe-3}{e^6\sqrt{d+ex}}$$

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 77}

$$-\frac{2b^3(d+ex)^{3/2}(-4aBe-Abe+5bBd)}{3e^6}+\frac{4b^2\sqrt{d+ex}\,(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}+\frac{4b(bd-ae)^2(-2aBe-3Abe+5bBd)}{e^6\sqrt{d+ex}}-\frac{2(bd-ae)^3(-aBe-4Abe+5bBd)}{3e^6(d+ex)^{3/2}}+\frac{2(bd-ae)^4(Bd-Ae)}{5e^6(d+ex)^{5/2}}+\frac{2b^4B(d+ex)^{5/2}}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(B*d - A*e))/(5*e^6*(d + e*x)^(5/2)) - (2*(b*d - a*e)^3*(5
*b*B*d - 4*A*b*e - a*B*e))/(3*e^6*(d + e*x)^(3/2)) + (4*b*(b*d - a*e)^2*(5*
b*B*d - 3*A*b*e - 2*a*B*e))/(e^6*Sqrt[d + e*x]) + (4*b^2*(b*d - a*e)*(5*b*B
*d - 2*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/e^6 - (2*b^3*(5*b*B*d - A*b*e - 4*a*
B*e)*(d + e*x)^(3/2))/(3*e^6) + (2*b^4*B*(d + e*x)^(5/2))/(5*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{7/2}}\,dx \\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{7/2}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{5/2}}+2b\right. \\
&= \frac{2(bd-ae)^4(Bd-Ae)}{5e^6(d+ex)^{5/2}}-\frac{2(bd-ae)^3(5bBd-4Abe-aBe)}{3e^6(d+ex)^{3/2}}+4b(bd-ae)
\end{aligned}$$

Mathematica [A] time = 0.11, size = 183, normalized size = 0.86

$$\frac{2\left(-5b^3(d+ex)^4(-4aBe-Abe+5bBd)+30b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)+30b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)-5(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)+3(bd-ae)^4(Bd-Ae)+3b^4B(d+ex)^5\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*(b*d - a*e)^4*(B*d - A*e) - 5*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*
e)*(d + e*x) + 30*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^2
 + 30*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^3 - 5*b^3*(5*
b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 3*b^4*B*(d + e*x)^5))/(15*e^6*(d + e
*x)^(5/2))
```

IntegrateAlgebraic [B] time = 0.14, size = 543, normalized size = 2.54

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),
x]
```

```
[Out] (2*(3*b^4*B*d^5 - 3*A*b^4*d^4*e - 12*a*b^3*B*d^4*e + 12*a*A*b^3*d^3*e^2 + 1
8*a^2*b^2*B*d^3*e^2 - 18*a^2*A*b^2*d^2*e^3 - 12*a^3*b*B*d^2*e^3 + 12*a^3*A*
b*d*e^4 + 3*a^4*B*d*e^4 - 3*a^4*A*e^5 - 25*b^4*B*d^4*(d + e*x) + 20*A*b^4*d
^3*e*(d + e*x) + 80*a*b^3*B*d^3*e*(d + e*x) - 60*a*A*b^3*d^2*e^2*(d + e*x)
- 90*a^2*b^2*B*d^2*e^2*(d + e*x) + 60*a^2*A*b^2*d*e^3*(d + e*x) + 40*a^3*b*
B*d*e^3*(d + e*x) - 20*a^3*A*b*e^4*(d + e*x) - 5*a^4*B*e^4*(d + e*x) + 150*
b^4*B*d^3*(d + e*x)^2 - 90*A*b^4*d^2*e*(d + e*x)^2 - 360*a*b^3*B*d^2*e*(d +
 e*x)^2 + 180*a*A*b^3*d*e^2*(d + e*x)^2 + 270*a^2*b^2*B*d*e^2*(d + e*x)^2 -
 90*a^2*A*b^2*e^3*(d + e*x)^2 - 60*a^3*b*B*e^3*(d + e*x)^2 + 150*b^4*B*d^2*
(d + e*x)^3 - 60*A*b^4*d*e*(d + e*x)^3 - 240*a*b^3*B*d*e*(d + e*x)^3 + 60*a
*A*b^3*e^2*(d + e*x)^3 + 90*a^2*b^2*B*e^2*(d + e*x)^3 - 25*b^4*B*d*(d + e*x
)^4 + 5*A*b^4*e*(d + e*x)^4 + 20*a*b^3*B*e*(d + e*x)^4 + 3*b^4*B*(d + e*x)^
5))/(15*e^6*(d + e*x)^(5/2))
```

fricas [B] time = 0.41, size = 441, normalized size = 2.06

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/15*(3*B*b^4*e^5*x^5 + 256*B*b^4*d^5 - 3*A*a^4*e^5 - 128*(4*B*a*b^3 + A*b^
4)*d^4*e + 96*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 16*(2*B*a^3*b + 3*A*a^2*b
^2)*d^2*e^3 - 2*(B*a^4 + 4*A*a^3*b)*d*e^4 - 5*(2*B*b^4*d*e^4 - (4*B*a*b^3 +
 A*b^4)*e^5)*x^4 + 10*(8*B*b^4*d^2*e^3 - 4*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3
*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 30*(16*B*b^4*d^3*e^2 - 8*(4*B*a*b^3 + A*
b^4)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - (2*B*a^3*b + 3*A*a^2*b^2
)*e^5)*x^2 + 5*(128*B*b^4*d^4*e - 64*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 48*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 8*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - (B*a^4 +
 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^
3*e^6)
```

giac [B] time = 0.25, size = 567, normalized size = 2.65

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*b^4*e^24 - 25*(x*e + d)^(3/2)*B*b^4*d*e^24 + 150*
sqrt(x*e + d)*B*b^4*d^2*e^24 + 20*(x*e + d)^(3/2)*B*a*b^3*e^25 + 5*(x*e + d
)^(3/2)*A*b^4*e^25 - 240*sqrt(x*e + d)*B*a*b^3*d*e^25 - 60*sqrt(x*e + d)*A*
b^4*d*e^25 + 90*sqrt(x*e + d)*B*a^2*b^2*e^26 + 60*sqrt(x*e + d)*A*a*b^3*e^2
```

```
6)*e^(-30) + 2/15*(150*(x*e + d)^2*B*b^4*d^3 - 25*(x*e + d)*B*b^4*d^4 + 3*B
*b^4*d^5 - 360*(x*e + d)^2*B*a*b^3*d^2*e - 90*(x*e + d)^2*A*b^4*d^2*e + 80*
(x*e + d)*B*a*b^3*d^3*e + 20*(x*e + d)*A*b^4*d^3*e - 12*B*a*b^3*d^4*e - 3*A
*b^4*d^4*e + 270*(x*e + d)^2*B*a^2*b^2*d*e^2 + 180*(x*e + d)^2*A*a*b^3*d*e^
2 - 90*(x*e + d)*B*a^2*b^2*d^2*e^2 - 60*(x*e + d)*A*a*b^3*d^2*e^2 + 18*B*a^
2*b^2*d^3*e^2 + 12*A*a*b^3*d^3*e^2 - 60*(x*e + d)^2*B*a^3*b*e^3 - 90*(x*e +
 d)^2*A*a^2*b^2*e^3 + 40*(x*e + d)*B*a^3*b*d*e^3 + 60*(x*e + d)*A*a^2*b^2*d
*e^3 - 12*B*a^3*b*d^2*e^3 - 18*A*a^2*b^2*d^2*e^3 - 5*(x*e + d)*B*a^4*e^4 -
20*(x*e + d)*A*a^3*b*e^4 + 3*B*a^4*d*e^4 + 12*A*a^3*b*d*e^4 - 3*A*a^4*e^5)*
e^(-6)/(x*e + d)^(5/2)
```

maple [B] time = 0.05, size = 469, normalized size = 2.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-3*B*b^4*e^5*x^5-5*A*b^4*e^5*x^4-20*B*a*b^3*e^5*x^4+10*B*b^4*d*e^4*x
^4-60*A*a*b^3*e^5*x^3+40*A*b^4*d*e^4*x^3-90*B*a^2*b^2*e^5*x^3+160*B*a*b^3*d
*e^4*x^3-80*B*b^4*d^2*e^3*x^3+90*A*a^2*b^2*e^5*x^2-360*A*a*b^3*d*e^4*x^2+24
0*A*b^4*d^2*e^3*x^2+60*B*a^3*b*e^5*x^2-540*B*a^2*b^2*d*e^4*x^2+960*B*a*b^3*
d^2*e^3*x^2-480*B*b^4*d^3*e^2*x^2+20*A*a^3*b*e^5*x+120*A*a^2*b^2*d*e^4*x-48
0*A*a*b^3*d^2*e^3*x+320*A*b^4*d^3*e^2*x+5*B*a^4*e^5*x+80*B*a^3*b*d*e^4*x-72
0*B*a^2*b^2*d^2*e^3*x+1280*B*a*b^3*d^3*e^2*x-640*B*b^4*d^4*e*x+3*A*a^4*e^5+
8*A*a^3*b*d*e^4+48*A*a^2*b^2*d^2*e^3-192*A*a*b^3*d^3*e^2+128*A*b^4*d^4*e+2*
B*a^4*d*e^4+32*B*a^3*b*d^2*e^3-288*B*a^2*b^2*d^3*e^2+512*B*a*b^3*d^4*e-256*
B*b^4*d^5)/(e*x+d)^(5/2)/e^6
```

maxima [B] time = 0.65, size = 416, normalized size = 1.94

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*b^4 - 5*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*(e*x
 + d)^(3/2) + 30*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2*b^2 +
2*A*a*b^3)*e^2)*sqrt(e*x + d))/e^5 + (3*B*b^4*d^5 - 3*A*a^4*e^5 - 3*(4*B*a*
b^3 + A*b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 6*(2*B*a^3*b + 3
*A*a^2*b^2)*d^2*e^3 + 3*(B*a^4 + 4*A*a^3*b)*d*e^4 + 30*(5*B*b^4*d^3 - 3*(4*
B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3
*A*a^2*b^2)*e^3)*(e*x + d)^2 - 5*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e
 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3
+ (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [B] time = 2.00, size = 413, normalized size = 1.93

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(3*e^6) - ((d + e*
x)*((2*B*a^4*e^4)/3 + (10*B*b^4*d^4)/3 + (8*A*a^3*b*e^4)/3 - (8*A*b^4*d^3*e
)/3 + 8*A*a*b^3*d^2*e^2 - 8*A*a^2*b^2*d*e^3 + 12*B*a^2*b^2*d^2*e^2 - (32*B*
a*b^3*d^3*e)/3 - (16*B*a^3*b*d*e^3)/3) + (d + e*x)^2*(8*B*a^3*b*e^3 - 20*B*
b^4*d^3 + 12*A*b^4*d^2*e + 12*A*a^2*b^2*e^3 - 36*B*a^2*b^2*d*e^2 - 24*A*a*b
```

```
^3*d*e^2 + 48*B*a*b^3*d^2*e) + (2*A*a^4*e^5)/5 - (2*B*b^4*d^5)/5 + (2*A*b^4
*d^4*e)/5 - (2*B*a^4*d*e^4)/5 - (8*A*a*b^3*d^3*e^2)/5 + (8*B*a^3*b*d^2*e^3)
/5 + (12*A*a^2*b^2*d^2*e^3)/5 - (12*B*a^2*b^2*d^3*e^2)/5 - (8*A*a^3*b*d*e^4
)/5 + (8*B*a*b^3*d^4*e)/5)/(e^6*(d + e*x)^(5/2)) + (2*B*b^4*(d + e*x)^(5/2)
)/(5*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(1/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d
))/e^6
```

sympy [A] time = 5.28, size = 2440, normalized size = 11.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a**4*e**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d
+ e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 16*A*a**3*b*d*e**4/(15*d**2*e**6*sqr
t(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 40*A
*a**3*b*e**5*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15
*e**8*x**2*sqrt(d + e*x)) - 96*A*a**2*b**2*d**2*e**3/(15*d**2*e**6*sqrt(d +
 e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 240*A*a**
2*b**2*d*e**4*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 1
5*e**8*x**2*sqrt(d + e*x)) - 180*A*a**2*b**2*e**5*x**2/(15*d**2*e**6*sqrt(d
 + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 384*A*a
*b**3*d**3*e**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 1
5*e**8*x**2*sqrt(d + e*x)) + 960*A*a*b**3*d**2*e**3*x/(15*d**2*e**6*sqrt(d
+ e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 720*A*a*
b**3*d*e**4*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
15*e**8*x**2*sqrt(d + e*x)) + 120*A*a*b**3*e**5*x**3/(15*d**2*e**6*sqrt(d +
 e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 256*A*b**
4*d**4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*
x**2*sqrt(d + e*x)) - 640*A*b**4*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) +
30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 480*A*b**4*d**2*e
**3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*
x**2*sqrt(d + e*x)) - 80*A*b**4*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 3
0*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 10*A*b**4*e**5*x**
4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sq
rt(d + e*x)) - 4*B*a**4*d*e**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sq
rt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 10*B*a**4*e**5*x/(15*d**2*e**6*
sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 6
4*B*a**3*b*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x
) + 15*e**8*x**2*sqrt(d + e*x)) - 160*B*a**3*b*d*e**4*x/(15*d**2*e**6*sqrt(
d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 120*B*
a**3*b*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
15*e**8*x**2*sqrt(d + e*x)) + 576*B*a**2*b**2*d**3*e**2/(15*d**2*e**6*sqrt(
d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1440*B
*a**2*b**2*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e
*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1080*B*a**2*b**2*d*e**4*x**2/(15*d**2*e
**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
 + 180*B*a**2*b**2*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt
(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1024*B*a*b**3*d**4*e/(15*d**2*e**
6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) -
 2560*B*a*b**3*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d
 + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1920*B*a*b**3*d**2*e**3*x**2/(15*d*
*2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e
*x)) - 320*B*a*b**3*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*s
qrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 40*B*a*b**3*e**5*x**4/(15*d**2
*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x
)) + 512*B*b**4*d**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x
) + 15*e**8*x**2*sqrt(d + e*x)) + 1280*B*b**4*d**4*e*x/(15*d**2*e**6*sqrt(d
 + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*B*b
```

```
**4*d**3*e**2*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x)
+ 15*e**8*x**2*sqrt(d + e*x)) + 160*B*b**4*d**2*e**3*x**3/(15*d**2*e**6*sqr
t(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*B
*b**4*d*e**4*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
 15*e**8*x**2*sqrt(d + e*x)) + 6*B*b**4*e**5*x**5/(15*d**2*e**6*sqrt(d + e*
x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((
A*a**4*x + 2*A*a**3*b*x**2 + 2*A*a**2*b**2*x**3 + A*a*b**3*x**4 + A*b**4*x*
*5/5 + B*a**4*x**2/2 + 4*B*a**3*b*x**3/3 + 3*B*a**2*b**2*x**4/2 + 4*B*a*b**
3*x**5/5 + B*b**4*x**6/6)/d**(7/2), True))
```

3.1580 $\int (A+Bx)(d+ex)^{7/2} \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{21/2}(-6aBe-Abe+7bBd)}{21e^8}+\frac{6b^4(d+ex)^{19/2}(bd-ae)(-5aBe-2Abe+7bBd)}{19e^8}-\frac{10b^3(d+ex)^{17/2}(bd-a$$

Rubi [A] time = 0.21, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{21/2}(-6aBe-Abe+7bBd)}{21e^8}+\frac{6b^4(d+ex)^{19/2}(bd-ae)(-5aBe-2Abe+7bBd)}{19e^8}-\frac{10b^3(d+ex)^{17/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{17e^8}+\frac{2b^2(d+ex)^{15/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{3e^8}-\frac{6b(d+ex)^{13/2}(bd-ae)^4(-2aBe-5Abe+7bBd)}{13e^8}+\frac{2(d+ex)^{11/2}(bd-ae)^5(-aBe-6Abe+7bBd)}{11e^8}-\frac{2(d+ex)^{9/2}(bd-ae)^6(Bd-Ae)}{9e^8}+\frac{2b^6B(d+ex)^{23/2}}{23e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(9/2))/(9*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(11/2))/(11*e^8) - (6*b*(b*d - a*e)^4*
(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(13/2))/(13*e^8) + (2*b^2*(b*d - a*
e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(15/2))/(3*e^8) - (10*b^3*(b*d
 - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(17/2))/(17*e^8) + (6*b^4
*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(19/2))/(19*e^8) - (2*
b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(21/2))/(21*e^8) + (2*b^6*B*(d +
e*x)^(23/2))/(23*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)(d+ex)^{7/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)(d+ex)^{7/2}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6}{e^7}\right.\\ &= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{9/2}}{9e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{11e^8}\end{aligned}$$

Mathematica [A] time = 0.35, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{9/2}\left(-3187041b^5(d+ex)^6(-6aBe-Abe+7bBd)+10567557b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-19684665b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+22309287b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-15444891b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)+6084351(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)-7436429(bd-ae)^6(Bd-Ae)+2909907b^6B(d+ex)^7\right)}{66927861e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-7436429*(b*d - a*e)^6*(B*d - A*e) + 6084351*(b*d - a*e
)^5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 15444891*b*(b*d - a*e)^4*(7*b*B
*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 22309287*b^2*(b*d - a*e)^3*(7*b*B*d -
 4*A*b*e - 3*a*B*e)*(d + e*x)^3 - 19684665*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A
*b*e - 4*a*B*e)*(d + e*x)^4 + 10567557*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e -
 5*a*B*e)*(d + e*x)^5 - 3187041*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6
 + 2909907*b^6*B*(d + e*x)^7))/(66927861*e^8)
```

IntegrateAlgebraic [B] time = 0.47, size = 1069, normalized size = 3.47

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-7436429*b^6*B*d^7 + 7436429*A*b^6*d^6*e + 44618574*a*b
^5*B*d^6*e - 44618574*a*A*b^5*d^5*e^2 - 111546435*a^2*b^4*B*d^5*e^2 + 11154
6435*a^2*A*b^4*d^4*e^3 + 148728580*a^3*b^3*B*d^4*e^3 - 148728580*a^3*A*b^3*
d^3*e^4 - 111546435*a^4*b^2*B*d^3*e^4 + 111546435*a^4*A*b^2*d^2*e^5 + 44618
574*a^5*b*B*d^2*e^5 - 44618574*a^5*A*b*d*e^6 - 7436429*a^6*B*d*e^6 + 743642
9*a^6*A*e^7 + 42590457*b^6*B*d^6*(d + e*x) - 36506106*A*b^6*d^5*e*(d + e*x)
 - 219036636*a*b^5*B*d^5*e*(d + e*x) + 182530530*a*A*b^5*d^4*e^2*(d + e*x)
+ 456326325*a^2*b^4*B*d^4*e^2*(d + e*x) - 365061060*a^2*A*b^4*d^3*e^3*(d +
e*x) - 486748080*a^3*b^3*B*d^3*e^3*(d + e*x) + 365061060*a^3*A*b^3*d^2*e^4*
(d + e*x) + 273795795*a^4*b^2*B*d^2*e^4*(d + e*x) - 182530530*a^4*A*b^2*d*e
^5*(d + e*x) - 73012212*a^5*b*B*d*e^5*(d + e*x) + 36506106*a^5*A*b*e^6*(d +
 e*x) + 6084351*a^6*B*e^6*(d + e*x) - 108114237*b^6*B*d^5*(d + e*x)^2 + 772
24455*A*b^6*d^4*e*(d + e*x)^2 + 463346730*a*b^5*B*d^4*e*(d + e*x)^2 - 30889
7820*a*A*b^5*d^3*e^2*(d + e*x)^2 - 772244550*a^2*b^4*B*d^3*e^2*(d + e*x)^2
+ 463346730*a^2*A*b^4*d^2*e^3*(d + e*x)^2 + 617795640*a^3*b^3*B*d^2*e^3*(d
+ e*x)^2 - 308897820*a^3*A*b^3*d*e^4*(d + e*x)^2 - 231673365*a^4*b^2*B*d*e^
4*(d + e*x)^2 + 77224455*a^4*A*b^2*e^5*(d + e*x)^2 + 30889782*a^5*b*B*e^5*(
d + e*x)^2 + 156165009*b^6*B*d^4*(d + e*x)^3 - 89237148*A*b^6*d^3*e*(d + e*
x)^3 - 535422888*a*b^5*B*d^3*e*(d + e*x)^3 + 267711444*a*A*b^5*d^2*e^2*(d +
 e*x)^3 + 669278610*a^2*b^4*B*d^2*e^2*(d + e*x)^3 - 267711444*a^2*A*b^4*d*e
^3*(d + e*x)^3 - 356948592*a^3*b^3*B*d*e^3*(d + e*x)^3 + 89237148*a^3*A*b^3
*e^4*(d + e*x)^3 + 66927861*a^4*b^2*B*e^4*(d + e*x)^3 - 137792655*b^6*B*d^3
*(d + e*x)^4 + 59053995*A*b^6*d^2*e*(d + e*x)^4 + 354323970*a*b^5*B*d^2*e*(
d + e*x)^4 - 118107990*a*A*b^5*d*e^2*(d + e*x)^4 - 295269975*a^2*b^4*B*d*e^
2*(d + e*x)^4 + 59053995*a^2*A*b^4*e^3*(d + e*x)^4 + 78738660*a^3*b^3*B*e^3
*(d + e*x)^4 + 73972899*b^6*B*d^2*(d + e*x)^5 - 21135114*A*b^6*d*e*(d + e*x
)^5 - 126810684*a*b^5*B*d*e*(d + e*x)^5 + 21135114*a*A*b^5*e^2*(d + e*x)^5
+ 52837785*a^2*b^4*B*e^2*(d + e*x)^5 - 22309287*b^6*B*d*(d + e*x)^6 + 31870
41*A*b^6*e*(d + e*x)^6 + 19122246*a*b^5*B*e*(d + e*x)^6 + 2909907*b^6*B*(d
+ e*x)^7))/(66927861*e^8)
```

fricas [B] time = 0.44, size = 1470, normalized size = 4.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/66927861*(2909907*B*b^6*e^11*x^11 - 14336*B*b^6*d^11 + 7436429*A*a^6*d^4*
e^7 + 23552*(6*B*a*b^5 + A*b^6)*d^10*e - 123648*(5*B*a^2*b^4 + 2*A*a*b^5)*d
^9*e^2 + 391552*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^8*e^3 - 832048*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*d^7*e^4 + 1248072*(2*B*a^5*b + 5*A*a^4*b^2)*d^6*e^5 - 1352078
*(B*a^6 + 6*A*a^5*b)*d^5*e^6 + 138567*(70*B*b^6*d*e^10 + 23*(6*B*a*b^5 + A*
b^6)*e^11)*x^10 + 7293*(1498*B*b^6*d^2*e^9 + 1472*(6*B*a*b^5 + A*b^6)*d*e^1
```

```
0 + 1449*(5*B*a^2*b^4 + 2*A*a*b^5)*e^11)*x^9 + 1287*(3248*B*b^6*d^3*e^8 + 9
522*(6*B*a*b^5 + A*b^6)*d^2*e^9 + 28014*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^10 +
15295*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^11)*x^8 + 429*(7*B*b^6*d^4*e^7 + 11132*
(6*B*a*b^5 + A*b^6)*d^3*e^8 + 97566*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^9 + 159
068*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^10 + 52003*(3*B*a^4*b^2 + 4*A*a^3*b^3)*
e^11)*x^7 - 231*(14*B*b^6*d^5*e^6 - 23*(6*B*a*b^5 + A*b^6)*d^4*e^7 - 72312*
(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^8 - 350474*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*
e^9 - 341734*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^10 - 66861*(2*B*a^5*b + 5*A*a^
4*b^2)*e^11)*x^6 + 63*(56*B*b^6*d^6*e^5 - 92*(6*B*a*b^5 + A*b^6)*d^5*e^6 +
483*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^7 + 529644*(4*B*a^3*b^3 + 3*A*a^2*b^4)*
d^3*e^8 + 1530374*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^9 + 891480*(2*B*a^5*b +
 5*A*a^4*b^2)*d*e^10 + 96577*(B*a^6 + 6*A*a^5*b)*e^11)*x^5 - 7*(560*B*b^6*d
^7*e^4 - 1062347*A*a^6*e^11 - 920*(6*B*a*b^5 + A*b^6)*d^6*e^5 + 4830*(5*B*a
^2*b^4 + 2*A*a*b^5)*d^5*e^6 - 15295*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^7 - 5
943200*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^8 - 10207446*(2*B*a^5*b + 5*A*a^4*
b^2)*d^2*e^9 - 3283618*(B*a^6 + 6*A*a^5*b)*d*e^10)*x^4 + (4480*B*b^6*d^8*e^
3 + 29745716*A*a^6*d*e^10 - 7360*(6*B*a*b^5 + A*b^6)*d^7*e^4 + 38640*(5*B*a
^2*b^4 + 2*A*a*b^5)*d^6*e^5 - 122360*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^5*e^6 +
260015*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^4*e^7 + 33073908*(2*B*a^5*b + 5*A*a^4*
b^2)*d^3*e^8 + 31097794*(B*a^6 + 6*A*a^5*b)*d^2*e^9)*x^3 - 3*(1792*B*b^6*d^
9*e^2 - 14872858*A*a^6*d^2*e^9 - 2944*(6*B*a*b^5 + A*b^6)*d^8*e^3 + 15456*(
5*B*a^2*b^4 + 2*A*a*b^5)*d^7*e^4 - 48944*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^6*e^
5 + 104006*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^5*e^6 - 156009*(2*B*a^5*b + 5*A*a^
4*b^2)*d^4*e^7 - 5408312*(B*a^6 + 6*A*a^5*b)*d^3*e^8)*x^2 + (7168*B*b^6*d^1
0*e + 29745716*A*a^6*d^3*e^8 - 11776*(6*B*a*b^5 + A*b^6)*d^9*e^2 + 61824*(5
*B*a^2*b^4 + 2*A*a*b^5)*d^8*e^3 - 195776*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^7*e^
4 + 416024*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^6*e^5 - 624036*(2*B*a^5*b + 5*A*a^
4*b^2)*d^5*e^6 + 676039*(B*a^6 + 6*A*a^5*b)*d^4*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.74, size = 6433, normalized size = 20.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/334639305*(111546435*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d^4*e^(-
1) + 669278610*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d^4*e^(-1) + 1
33855722*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
B*a^5*b*d^4*e^(-2) + 334639305*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d +
15*sqrt(x*e + d)*d^2)*A*a^4*b^2*d^4*e^(-2) + 143416845*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^
4*b^2*d^4*e^(-3) + 191222460*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^3*d^4*e^(-3) + 2124694
0*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 4
20*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^3*d^4*e^(-4) + 1593
5205*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*d^4*e^(-4) + 7
243275*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*B*a^2*b^4*d^4*e^(-5) + 2897310*(63*(x*e + d)^(11/2) - 385*(x*e + d)^
(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^5*d^4*e^(-5) + 668610*(231*(x*e
 + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x
*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3
003*sqrt(x*e + d)*d^6)*B*a*b^5*d^4*e^(-6) + 111435*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d
^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*A*b^6*d^4*e^(-6) + 52003*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13
```

/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^6*d^4*e^(-7) + 89237148*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^6*d^3*e^(-1) + 535422888*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*d^3*e^(-1) + 229466952*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*b*d^3*e^(-2) + 573667380*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b^2*d^3*e^(-2) + 63740820*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*d^3*e^(-3) + 84987760*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*d^3*e^(-3) + 38630800*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^3*d^3*e^(-4) + 28973100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*d^3*e^(-4) + 6686100*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^4*d^3*e^(-5) + 2674440*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a*b^5*d^3*e^(-5) + 1248072*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^5*d^3*e^(-6) + 208012*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^6*d^3*e^(-6) + 12236*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^6*d^3*e^(-7) + 334639305*sqrt(x*e + d)*A*a^6*d^4 + 446185740*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^6*d^3 + 57366738*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^6*d^2*e^(-1) + 344200428*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*b*d^2*e^(-1) + 38244492*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^5*b*d^2*e^(-2) + 95611230*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4*b^2*d^2*e^(-2) + 43459650*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b^2*d^2*e^(-3) + 57946200*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^3*d^2*e^(-3) + 13372200*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^3*b^3*d^2*e^(-4) + 10029150*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^4*d^2*e^(-4) + 4680270*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^2*b^4*d^2*e^(-5) + 1872108*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^5*d^2*e^(-5) + 110124*(6435*(x

e + d)^(17/2) - 58344(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 5
56920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^
(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 10939
5*sqrt(x*e + d)*d^8)*B*a*b^5*d^2*e^(-6) + 18354*(6435*(x*e + d)^(17/2) - 58
344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11
/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*
(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8
)*A*b^6*d^2*e^(-6) + 8694*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)
d + 554268(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(
x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)
d^6 - 1662804(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sq
rt(x*e + d)*d^9)*B*b^6*d^2*e^(-7) + 133855722*(3*(x*e + d)^(5/2) - 10*(x*e
+ d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^6*d^2 + 4249388*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*B*a^6*d*e^(-1) + 25496328*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*A*a^5*b*d*e^(-1) + 11589240*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^5*b*d*e^(-2) + 289
73100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^
2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)
*d^5)*A*a^4*b^2*d*e^(-2) + 6686100*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^4*b^
2*d*e^(-3) + 8914800*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005
*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4
- 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^3*b^3*d*e^(-3) + 4
160240*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(1
1/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x
*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a
^3*b^3*d*e^(-4) + 3120180*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d +
12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(
7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqr
t(x*e + d)*d^7)*A*a^2*b^4*d*e^(-4) + 183540*(6435*(x*e + d)^(17/2) - 58344*
(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*
d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e
+ d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*
a^2*b^4*d*e^(-5) + 73416*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d
+ 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e +
d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 2
91720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*a*b^5*d*e^(-5) + 34
776*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^
(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 -
3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e +
d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*a*b
^5*d*e^(-6) + 5796*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 55
4268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d
)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 -
1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e
+ d)*d^9)*A*b^6*d*e^(-6) + 1380*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^
(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15
668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e
+ d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^
8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*B*b^6*d*e^(-7)
+ 38244492*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*A*a^6*d + 482885*(63*(x*e + d)^(11/2) - 385*(x*
e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*
(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^6*e^(-1) + 2897310*(63*(x*
e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e

```
 + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^5*b
*e^(-1) + 668610*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*
e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 60
06*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^5*b*e^(-2) + 1671525*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^4*b^2*e^(-2) + 780045*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^4*b^2*e^(-3) + 1040060*(
429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2
 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^
(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a^3*b^3*e
^(-3) + 61180*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x
*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d
^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e
+ d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a^3*b^3*e^(-4) + 45885*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*A*a^2*b^4*e^(-4) + 21735*(12155*(x*e + d)^(19/2) - 12
2265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(
13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 27
71340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^
(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*a^2*b^4*e^(-5) + 8694*(12155*(x*e +
 d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492
260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)
^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 69
2835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*A*a*b^5*e^(-5) + 2070*
(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17
/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22
221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e
+ d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9
+ 969969*sqrt(x*e + d)*d^10)*B*a*b^5*e^(-6) + 345*(46189*(x*e + d)^(21/2) -
 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e +
d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d
^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*
(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^
10)*A*b^6*e^(-6) + 165*(88179*(x*e + d)^(23/2) - 1062347*(x*e + d)^(21/2)*d
 + 5870865*(x*e + d)^(19/2)*d^2 - 19684665*(x*e + d)^(17/2)*d^3 + 44618574*
(x*e + d)^(15/2)*d^4 - 72076158*(x*e + d)^(13/2)*d^5 + 85180914*(x*e + d)^(
11/2)*d^6 - 74364290*(x*e + d)^(9/2)*d^7 + 47805615*(x*e + d)^(7/2)*d^8 - 2
2309287*(x*e + d)^(5/2)*d^9 + 7436429*(x*e + d)^(3/2)*d^10 - 2028117*sqrt(x
*e + d)*d^11)*B*b^6*e^(-7) + 1062347*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*A*a^6)*e^(-1)
```

maple [B] time = 0.05, size = 913, normalized size = 2.96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/66927861*(e*x+d)^(9/2)*(2909907*B*b^6*e^7*x^7+3187041*A*b^6*e^7*x^6+19122
246*B*a*b^5*e^7*x^6-1939938*B*b^6*d*e^6*x^6+21135114*A*a*b^5*e^7*x^5-201286
8*A*b^6*d*e^6*x^5+52837785*B*a^2*b^4*e^7*x^5-12077208*B*a*b^5*d*e^6*x^5+122
5224*B*b^6*d^2*e^5*x^5+59053995*A*a^2*b^4*e^7*x^4-12432420*A*a*b^5*d*e^6*x^
4+1184040*A*b^6*d^2*e^5*x^4+78738660*B*a^3*b^3*e^7*x^4-31081050*B*a^2*b^4*d
*e^6*x^4+7104240*B*a*b^5*d^2*e^5*x^4-720720*B*b^6*d^3*e^4*x^4+89237148*A*a^
```

```
3*b^3*e^7*x^3-31495464*A*a^2*b^4*d*e^6*x^3+6630624*A*a*b^5*d^2*e^5*x^3-6314
88*A*b^6*d^3*e^4*x^3+66927861*B*a^4*b^2*e^7*x^3-41993952*B*a^3*b^3*d*e^6*x^
3+16576560*B*a^2*b^4*d^2*e^5*x^3-3788928*B*a*b^5*d^3*e^4*x^3+384384*B*b^6*d
^4*e^3*x^3+77224455*A*a^4*b^2*e^7*x^2-41186376*A*a^3*b^3*d*e^6*x^2+14536368
*A*a^2*b^4*d^2*e^5*x^2-3060288*A*a*b^5*d^3*e^4*x^2+291456*A*b^6*d^4*e^3*x^2
+30889782*B*a^5*b*e^7*x^2-30889782*B*a^4*b^2*d*e^6*x^2+19381824*B*a^3*b^3*d
^2*e^5*x^2-7650720*B*a^2*b^4*d^3*e^4*x^2+1748736*B*a*b^5*d^4*e^3*x^2-177408
*B*b^6*d^5*e^2*x^2+36506106*A*a^5*b*e^7*x-28081620*A*a^4*b^2*d*e^6*x+149768
64*A*a^3*b^3*d^2*e^5*x-5285952*A*a^2*b^4*d^3*e^4*x+1112832*A*a*b^5*d^4*e^3*
x-105984*A*b^6*d^5*e^2*x+6084351*B*a^6*e^7*x-11232648*B*a^5*b*d*e^6*x+11232
648*B*a^4*b^2*d^2*e^5*x-7047936*B*a^3*b^3*d^3*e^4*x+2782080*B*a^2*b^4*d^4*e
^3*x-635904*B*a*b^5*d^5*e^2*x+64512*B*b^6*d^6*e*x+7436429*A*a^6*e^7-8112468
*A*a^5*b*d*e^6+6240360*A*a^4*b^2*d^2*e^5-3328192*A*a^3*b^3*d^3*e^4+1174656*
A*a^2*b^4*d^4*e^3-247296*A*a*b^5*d^5*e^2+23552*A*b^6*d^6*e-1352078*B*a^6*d*
e^6+2496144*B*a^5*b*d^2*e^5-2496144*B*a^4*b^2*d^3*e^4+1566208*B*a^3*b^3*d^4
*e^3-618240*B*a^2*b^4*d^5*e^2+141312*B*a*b^5*d^6*e-14336*B*b^6*d^7)/e^8
```

maxima [B] time = 0.64, size = 767, normalized size = 2.49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/66927861*(2909907*(e*x + d)^(23/2)*B*b^6 - 3187041*(7*B*b^6*d - (6*B*a*b^
5 + A*b^6)*e)*(e*x + d)^(21/2) + 10567557*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b
^6)*d*e + (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(19/2) - 19684665*(7*B*b
^6*d^3 - 3*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 -
(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(17/2) + 22309287*(7*B*b^6*d^4 -
 4*(6*B*a*b^5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B
*a^3*b^3 + 3*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^
(15/2) - 15444891*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*
b^4 + 2*A*a*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*
a^4*b^2 + 4*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(13
/2) + 6084351*(7*B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4
+ 2*A*a*b^5)*d^4*e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 +
6*A*a^5*b)*e^6)*(e*x + d)^(11/2) - 7436429*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*
b^5 + A*b^6)*d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 +
 3*A*a^2*b^4)*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*
b + 5*A*a^4*b^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(9/2))/e^8
```

mupad [B] time = 2.02, size = 279, normalized size = 0.91

$$\frac{(d+ex)^{21/2}\left(2Ab^6e-14Bb^6d+12Bab^5e\right)}{21e^8}+\frac{2(ae-bd)^5(d+ex)^{11/2}(6Abe+Bae-7Bbd)}{11e^8}+\frac{2Bb^6(d+ex)^{23/2}}{23e^8}+\frac{2(Ae-Bd)(ae-bd)^6(d+ex)^{9/2}}{9e^8}+\frac{6b(ae-bd)^4(d+ex)^{13/2}(5Abe+2Bae-7Bbd)}{13e^8}+\frac{6b^4(ae-bd)(d+ex)^{19/2}(2Abe+5Bae-7Bbd)}{19e^8}+\frac{2b^2(ae-bd)^3(d+ex)^{15/2}(4Abe+3Bae-7Bbd)}{3e^8}+\frac{10b^3(ae-bd)^2(d+ex)^{17/2}(3Abe+4Bae-7Bbd)}{17e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(21/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(21*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(11/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(11*e^8) + (2*B*b
^6*(d + e*x)^(23/2))/(23*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(9/2
))/(9*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(13/2)*(5*A*b*e + 2*B*a*e - 7*B*b
*d))/(13*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(19/2)*(2*A*b*e + 5*B*a*e - 7*
B*b*d))/(19*e^8) + (2*b^2*(a*e - b*d)^3*(d + e*x)^(15/2)*(4*A*b*e + 3*B*a*e
 - 7*B*b*d))/(3*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(17/2)*(3*A*b*e + 4*
B*a*e - 7*B*b*d))/(17*e^8)
```

sympy [A] time = 163.18, size = 5414, normalized size = 17.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*d**3*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 6*A*a**6*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 6*A*a*
*6*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7
)/e + 2*A*a**6*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*
(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e + 12*A*a**5*b*d**3*(-d*(d + e*x)
**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 36*A*a**5*b*d**2*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 36*A*a**5*b*d*(
-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)
/7 + (d + e*x)**(9/2)/9)/e**2 + 12*A*a**5*b*(d**4*(d + e*x)**(3/2)/3 - 4*d*
*3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9
+ (d + e*x)**(11/2)/11)/e**2 + 30*A*a**4*b**2*d**3*(d**2*(d + e*x)**(3/2)/3
 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 90*A*a**4*b**2*d**2*
(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2
)/7 + (d + e*x)**(9/2)/9)/e**3 + 90*A*a**4*b**2*d*(d**4*(d + e*x)**(3/2)/3
- 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9
/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 30*A*a**4*b**2*(-d**5*(d + e*x)**(3/2)
/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)
**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**3 + 40*A*a*
*3*b**3*d**3*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 120*A*a**3*b**3*d**2*(d**4*(d
 + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 -
4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 120*A*a**3*b**3*d*(-d
**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2
)/13)/e**4 + 40*A*a**3*b**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5
/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(
d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**4
 + 30*A*a**2*b**4*d**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5
 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/1
1)/e**5 + 90*A*a**2*b**4*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(
5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e
*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 90*A*a**2*b**4*d*(d**6*(d + e
*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*
d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13
/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 30*A*a**2*b**4*(-d**7*(d + e*x)**(3/2
)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*
x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 -
 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**5 + 12*A*a*b**5*d**3*(
-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)
/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13
/2)/13)/e**6 + 36*A*a*b**5*d**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)
**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d*
*2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/
e**6 + 36*A*a*b**5*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5
- 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)*
*(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d +
 e*x)**(17/2)/17)/e**6 + 12*A*a*b**5*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d +
 e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*
d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x
)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**6 + 2*A*
b**6*d**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
 + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/1
1 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 6*A*b**6*d**2*(
-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7
```

```
/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(
d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7
 + 6*A*b**6*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6
*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/
11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d +
 e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**7 + 2*A*b**6*(-d**9*(d + e*x)**
(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d**6*
(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e*x)**(1
3/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17 - 9*d*
(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**7 + 2*B*a**6*d**3*(-d*(d +
e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 6*B*a**6*d**2*(d**2*(d + e*x)**(
3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*B*a**6*d*(-d
**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
 + (d + e*x)**(9/2)/9)/e**2 + 2*B*a**6*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d
 + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
+ e*x)**(11/2)/11)/e**2 + 12*B*a**5*b*d**3*(d**2*(d + e*x)**(3/2)/3 - 2*d*(
d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 36*B*a**5*b*d**2*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**3 + 36*B*a**5*b*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**3 + 12*B*a**5*b*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*
x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(
d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**3 + 30*B*a**4*b**2*d**3*(-d*
*3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
+ (d + e*x)**(9/2)/9)/e**4 + 90*B*a**4*b**2*d**2*(d**4*(d + e*x)**(3/2)/3 -
 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/
2)/9 + (d + e*x)**(11/2)/11)/e**4 + 90*B*a**4*b**2*d*(-d**5*(d + e*x)**(3/2
)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x
)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 30*B*a
**4*b**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
+ e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11
 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**4 + 40*B*a**3*b**3*d
**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)
**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 120*B*a**
3*b**3*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d
+ e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (
d + e*x)**(13/2)/13)/e**5 + 120*B*a**3*b**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*
d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(
9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x
)**(15/2)/15)/e**5 + 40*B*a**3*b**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d +
 e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*
d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(
15/2)/15 + (d + e*x)**(17/2)/17)/e**5 + 30*B*a**2*b**4*d**3*(-d**5*(d + e*x
)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(
d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 +
 90*B*a**2*b**4*d**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 +
 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x
)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 90*B
*a**2*b**4*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5
*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/
11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(
17/2)/17)/e**6 + 30*B*a**2*b**4*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)
**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*
(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(1
5/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**6 + 12*B*a*b*
*5*d**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d +
 e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11
- 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 36*B*a*b**5*d**2*
(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(
```

```
7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*
(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**
7 + 36*B*a*b**5*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*
d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11
/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*
(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**7 + 12*B*a*b**5*(-d**9*(d +
 e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 2
8*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e
*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17
 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**7 + 2*B*b**6*d**3*(-
d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/
2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d
 + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**8
+ 6*B*b**6*d**2*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d*
*6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2
)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d
 + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 + 6*B*b**6*d*(-d**9*(d + e*
x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d
**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e*x)
**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17 -
9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8 + 2*B*b**6*(d**10*(d
+ e*x)**(3/2)/3 - 2*d**9*(d + e*x)**(5/2) + 45*d**8*(d + e*x)**(7/2)/7 - 40
*d**7*(d + e*x)**(9/2)/3 + 210*d**6*(d + e*x)**(11/2)/11 - 252*d**5*(d + e*
x)**(13/2)/13 + 14*d**4*(d + e*x)**(15/2) - 120*d**3*(d + e*x)**(17/2)/17 +
 45*d**2*(d + e*x)**(19/2)/19 - 10*d*(d + e*x)**(21/2)/21 + (d + e*x)**(23/
2)/23)/e**8
```

3.1581 $\int (A+Bx)(d+ex)^{5/2} \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{19/2}(-6aBe-Abe+7bBd)}{19e^8}+\frac{6b^4(d+ex)^{17/2}(bd-ae)(-5aBe-2Abe+7bBd)}{17e^8}-\frac{2b^3(d+ex)^{15/2}(bd-ae}{}$$

Rubi [A] time = 0.15, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{19/2}(-6aBe-Abe+7bBd)}{19e^8}+\frac{6b^4(d+ex)^{17/2}(bd-ae)(-5aBe-2Abe+7bBd)}{17e^8}-\frac{2b^3(d+ex)^{15/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{3e^8}+\frac{10b^2(d+ex)^{13/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{13e^8}-\frac{6b(d+ex)^{11/2}(bd-ae)^4(-2aBe-5Abe+7bBd)}{11e^8}+\frac{2(d+ex)^{9/2}(bd-ae)^5(-aBe-6Abe+7bBd)}{9e^8}-\frac{2(d+ex)^{7/2}(bd-ae)^6(Bd-Ae)}{7e^8}+\frac{2b^6B(d+ex)^{21/2}}{21e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(7/2))/(7*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(9/2))/(9*e^8) - (6*b*(b*d - a*e)^4*(7
*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(11/2))/(11*e^8) + (10*b^2*(b*d - a*e
)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(13/2))/(13*e^8) - (2*b^3*(b*d
- a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(15/2))/(3*e^8) + (6*b^4*(
b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(17/2))/(17*e^8) - (2*b^
5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(19/2))/(19*e^8) + (2*b^6*B*(d + e*
x)^(21/2))/(21*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^6(A+Bx)(d+ex)^{5/2} \, dx \\
&= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)(d+ex)^{5/2}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6}{e^7}\right. \\
&= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{7/2}}{7e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{9e^8}
\end{aligned}$$

Mathematica [A] time = 0.26, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(-153153b^5(d+ex)^6(-6aBe-Abe+7bBd)+513513b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-969969b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+1119195b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-793611b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)+323323(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)-415701(bd-ae)^6(Bd-Ae)+138567b^6B(d+ex)^7\right)}{2909907e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-415701*(b*d - a*e)^6*(B*d - A*e) + 323323*(b*d - a*e)^
5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 793611*b*(b*d - a*e)^4*(7*b*B*d -
 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 1119195*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*
b*e - 3*a*B*e)*(d + e*x)^3 - 969969*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e -
4*a*B*e)*(d + e*x)^4 + 513513*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)
*(d + e*x)^5 - 153153*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 138567*
b^6*B*(d + e*x)^7))/(2909907*e^8)
```

IntegrateAlgebraic [B] time = 0.44, size = 1069, normalized size = 3.47

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-415701*b^6*B*d^7 + 415701*A*b^6*d^6*e + 2494206*a*b^5*
B*d^6*e - 2494206*a*A*b^5*d^5*e^2 - 6235515*a^2*b^4*B*d^5*e^2 + 6235515*a^2
*A*b^4*d^4*e^3 + 8314020*a^3*b^3*B*d^4*e^3 - 8314020*a^3*A*b^3*d^3*e^4 - 62
35515*a^4*b^2*B*d^3*e^4 + 6235515*a^4*A*b^2*d^2*e^5 + 2494206*a^5*b*B*d^2*e
^5 - 2494206*a^5*A*b*d*e^6 - 415701*a^6*B*d*e^6 + 415701*a^6*A*e^7 + 226326
1*b^6*B*d^6*(d + e*x) - 1939938*A*b^6*d^5*e*(d + e*x) - 11639628*a*b^5*B*d^
5*e*(d + e*x) + 9699690*a*A*b^5*d^4*e^2*(d + e*x) + 24249225*a^2*b^4*B*d^4*
e^2*(d + e*x) - 19399380*a^2*A*b^4*d^3*e^3*(d + e*x) - 25865840*a^3*b^3*B*d
^3*e^3*(d + e*x) + 19399380*a^3*A*b^3*d^2*e^4*(d + e*x) + 14549535*a^4*b^2*
B*d^2*e^4*(d + e*x) - 9699690*a^4*A*b^2*d*e^5*(d + e*x) - 3879876*a^5*b*B*d
*e^5*(d + e*x) + 1939938*a^5*A*b*e^6*(d + e*x) + 323323*a^6*B*e^6*(d + e*x)
 - 5555277*b^6*B*d^5*(d + e*x)^2 + 3968055*A*b^6*d^4*e*(d + e*x)^2 + 238083
30*a*b^5*B*d^4*e*(d + e*x)^2 - 15872220*a*A*b^5*d^3*e^2*(d + e*x)^2 - 39680
550*a^2*b^4*B*d^3*e^2*(d + e*x)^2 + 23808330*a^2*A*b^4*d^2*e^3*(d + e*x)^2
+ 31744440*a^3*b^3*B*d^2*e^3*(d + e*x)^2 - 15872220*a^3*A*b^3*d*e^4*(d + e*
x)^2 - 11904165*a^4*b^2*B*d*e^4*(d + e*x)^2 + 3968055*a^4*A*b^2*e^5*(d + e*
x)^2 + 1587222*a^5*b*B*e^5*(d + e*x)^2 + 7834365*b^6*B*d^4*(d + e*x)^3 - 44
76780*A*b^6*d^3*e*(d + e*x)^3 - 26860680*a*b^5*B*d^3*e*(d + e*x)^3 + 134303
40*a*A*b^5*d^2*e^2*(d + e*x)^3 + 33575850*a^2*b^4*B*d^2*e^2*(d + e*x)^3 - 1
3430340*a^2*A*b^4*d*e^3*(d + e*x)^3 - 17907120*a^3*b^3*B*d*e^3*(d + e*x)^3
+ 4476780*a^3*A*b^3*e^4*(d + e*x)^3 + 3357585*a^4*b^2*B*e^4*(d + e*x)^3 - 6
789783*b^6*B*d^3*(d + e*x)^4 + 2909907*A*b^6*d^2*e*(d + e*x)^4 + 17459442*a
*b^5*B*d^2*e*(d + e*x)^4 - 5819814*a*A*b^5*d*e^2*(d + e*x)^4 - 14549535*a^2
*b^4*B*d*e^2*(d + e*x)^4 + 2909907*a^2*A*b^4*e^3*(d + e*x)^4 + 3879876*a^3*
b^3*B*e^3*(d + e*x)^4 + 3594591*b^6*B*d^2*(d + e*x)^5 - 1027026*A*b^6*d*e*(
d + e*x)^5 - 6162156*a*b^5*B*d*e*(d + e*x)^5 + 1027026*a*A*b^5*e^2*(d + e*x
)^5 + 2567565*a^2*b^4*B*e^2*(d + e*x)^5 - 1072071*b^6*B*d*(d + e*x)^6 + 153
153*A*b^6*e*(d + e*x)^6 + 918918*a*b^5*B*e*(d + e*x)^6 + 138567*b^6*B*(d +
e*x)^7))/(2909907*e^8)
```

fricas [B] time = 0.43, size = 1293, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/2909907*(138567*B*b^6*e^10*x^10 - 2048*B*b^6*d^10 + 415701*A*a^6*d^3*e^7
+ 3072*(6*B*a*b^5 + A*b^6)*d^9*e - 14592*(5*B*a^2*b^4 + 2*A*a*b^5)*d^8*e^2
+ 41344*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^7*e^3 - 77520*(3*B*a^4*b^2 + 4*A*a^3*
b^3)*d^6*e^4 + 100776*(2*B*a^5*b + 5*A*a^4*b^2)*d^5*e^5 - 92378*(B*a^6 + 6*
A*a^5*b)*d^4*e^6 + 7293*(43*B*b^6*d*e^9 + 21*(6*B*a*b^5 + A*b^6)*e^10)*x^9
+ 3861*(47*B*b^6*d^2*e^8 + 91*(6*B*a*b^5 + A*b^6)*d*e^9 + 133*(5*B*a^2*b^4
+ 2*A*a*b^5)*e^10)*x^8 + 429*(B*b^6*d^3*e^7 + 483*(6*B*a*b^5 + A*b^6)*d^2*e
```

```
^8 + 2793*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^9 + 2261*(4*B*a^3*b^3 + 3*A*a^2*b^4
)*e^10)*x^7 - 231*(2*B*b^6*d^4*e^6 - 3*(6*B*a*b^5 + A*b^6)*d^3*e^7 - 3135*(
5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^8 - 10013*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^9
- 4845*(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^10)*x^6 + 63*(8*B*b^6*d^5*e^5 - 12*(6*
B*a*b^5 + A*b^6)*d^4*e^6 + 57*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^7 + 22933*(4*
B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^8 + 43605*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^9
+ 12597*(2*B*a^5*b + 5*A*a^4*b^2)*e^10)*x^5 - 7*(80*B*b^6*d^6*e^4 - 120*(6*
B*a*b^5 + A*b^6)*d^5*e^5 + 570*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^6 - 1615*(4*
B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^7 - 256785*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e
^8 - 289731*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^9 - 46189*(B*a^6 + 6*A*a^5*b)*e^1
0)*x^4 + (640*B*b^6*d^7*e^3 + 415701*A*a^6*e^10 - 960*(6*B*a*b^5 + A*b^6)*d
^6*e^4 + 4560*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^5 - 12920*(4*B*a^3*b^3 + 3*A*
a^2*b^4)*d^4*e^6 + 24225*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^7 + 1423461*(2*B
*a^5*b + 5*A*a^4*b^2)*d^2*e^8 + 877591*(B*a^6 + 6*A*a^5*b)*d*e^9)*x^3 - 3*(
256*B*b^6*d^8*e^2 - 415701*A*a^6*d*e^9 - 384*(6*B*a*b^5 + A*b^6)*d^7*e^3 +
1824*(5*B*a^2*b^4 + 2*A*a*b^5)*d^6*e^4 - 5168*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d
^5*e^5 + 9690*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^4*e^6 - 12597*(2*B*a^5*b + 5*A*
a^4*b^2)*d^3*e^7 - 230945*(B*a^6 + 6*A*a^5*b)*d^2*e^8)*x^2 + (1024*B*b^6*d^
9*e + 1247103*A*a^6*d^2*e^8 - 1536*(6*B*a*b^5 + A*b^6)*d^8*e^2 + 7296*(5*B*
a^2*b^4 + 2*A*a*b^5)*d^7*e^3 - 20672*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^6*e^4 +
38760*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^5*e^5 - 50388*(2*B*a^5*b + 5*A*a^4*b^2)
*d^4*e^6 + 46189*(B*a^6 + 6*A*a^5*b)*d^3*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.51, size = 4768, normalized size = 15.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d^3*e^(-1)
+ 29099070*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d^3*e^(-1) + 58198
14*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*
b*d^3*e^(-2) + 14549535*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*A*a^4*b^2*d^3*e^(-2) + 6235515*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*d^3
*e^(-3) + 8314020*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^3*d^3*e^(-3) + 923780*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^3*d^3*e^(-4) + 692835*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*d^3*e^(-4) + 314925*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^4
*d^3*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*A*a*b^5*d^3*e^(-5) + 29070*(231*(x*e + d)^(13/2) - 163
8*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3
+ 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*
d^6)*B*a*b^5*d^3*e^(-6) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^6*d^3*e^
(-6) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*B*b^6*d^3*e^(-7) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^6*d^2*e^(-1) + 17459442*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*d^2*e^(-1) + 7482618*(5*(x*e
 + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
```

d)*d^3)*B*a^5*b*d^2*e^(-2) + 18706545*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5
/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b^2*d^2*e^(-2)
 + 2078505*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*d^2*e^(-
3) + 2771340*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5
/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*d^2*e^
(-3) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*B*a^3*b^3*d^2*e^(-4) + 944775*(63*(x*e + d)^(11/2) - 385*(x*
e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*
(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*d^2*e^(-4) + 218025*
(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2
 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2
)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^4*d^2*e^(-5) + 87210*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*A*a*b^5*d^2*e^(-5) + 40698*(429*(x*e + d)^(15/2) - 3465*(
x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(
3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^5*d^2*e^(-6) + 6783*(429*(x*e + d)
^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e
 + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 1
5015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^6*d^2*e^(-6) + 399*(
6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*
d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*
e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7
 + 109395*sqrt(x*e + d)*d^8)*B*b^6*d^2*e^(-7) + 14549535*sqrt(x*e + d)*A*a^6
d^3 + 14549535((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^6*d^2 + 1247103*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*B*a^6*d*e^(-1) + 7482618*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*b*d*e^(-1) +
831402*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^5*b*d*e^(-2) + 207
8505*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4*b^2*d*e^(-2) + 944
775*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d
^5)*B*a^4*b^2*d*e^(-3) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
d + 990(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^3*d*e^(-3) + 290700*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*B*a^3*b^3*d*e^(-4) + 218025*(231*(x*e + d)^(13/2) - 1638*
(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 +
9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^
6)*A*a^2*b^4*d*e^(-4) + 101745*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2
)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
 d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 643
5*sqrt(x*e + d)*d^7)*B*a^2*b^4*d*e^(-5) + 40698*(429*(x*e + d)^(15/2) - 346
5*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d
^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d
)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^5*d*e^(-5) + 2394*(6435*(x*e +
d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920
*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)
d^5 + 612612(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqr
t(x*e + d)*d^8)*B*a*b^5*d*e^(-6) + 399*(6435*(x*e + d)^(17/2) - 58344*(x*e
+ d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 +
 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)
^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^6*d

```
*e^(-6) + 189*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*
(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11
/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 16628
04*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*
d^9)*B*b^6*d*e^(-7) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 1
5*sqrt(x*e + d)*d^2)*A*a^6*d + 46189*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*B*a^6*e^(-1) + 277134*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*A*a^5*b*e^(-1) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*B*a^5*b*e^(-2) + 314925*(63*(x*e + d)^(11/2) - 385
*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1
155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^4*b^2*e^(-2) + 72675*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^4*b^2*e^(-3) + 96900*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*A*a^3*b^3*e^(-3) + 45220*(429*(x*e + d)^(15/2) - 3465*(x*e + d
)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175
*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^
6 - 6435*sqrt(x*e + d)*d^7)*B*a^3*b^3*e^(-4) + 33915*(429*(x*e + d)^(15/2)
- 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9
/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*
e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a^2*b^4*e^(-4) + 1995*(6435*(x
*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 5
56920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^
(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 10939
5*sqrt(x*e + d)*d^8)*B*a^2*b^4*e^(-5) + 798*(6435*(x*e + d)^(17/2) - 58344*
(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*
d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e
 + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*
a*b^5*e^(-5) + 378*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 55
4268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d
)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 -
1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e
+ d)*d^9)*B*a*b^5*e^(-6) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(1
7/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 26453
70*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(
7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 23094
5*sqrt(x*e + d)*d^9)*A*b^6*e^(-6) + 15*(46189*(x*e + d)^(21/2) - 510510*(x*
e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d
^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 226326
10*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(
5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*B*b^6*e
^(-7) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/
2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(138567*B*b^6*e^7*x^7+153153*A*b^6*e^7*x^6+918918*B
*a*b^5*e^7*x^6-102102*B*b^6*d*e^6*x^6+1027026*A*a*b^5*e^7*x^5-108108*A*b^6*
d*e^6*x^5+2567565*B*a^2*b^4*e^7*x^5-648648*B*a*b^5*d*e^6*x^5+72072*B*b^6*d^
2*e^5*x^5+2909907*A*a^2*b^4*e^7*x^4-684684*A*a*b^5*d*e^6*x^4+72072*A*b^6*d^
```

```
2*e^5*x^4+3879876*B*a^3*b^3*e^7*x^4-1711710*B*a^2*b^4*d*e^6*x^4+432432*B*a*
b^5*d^2*e^5*x^4-48048*B*b^6*d^3*e^4*x^4+4476780*A*a^3*b^3*e^7*x^3-1790712*A
*a^2*b^4*d*e^6*x^3+421344*A*a*b^5*d^2*e^5*x^3-44352*A*b^6*d^3*e^4*x^3+33575
85*B*a^4*b^2*e^7*x^3-2387616*B*a^3*b^3*d*e^6*x^3+1053360*B*a^2*b^4*d^2*e^5*
x^3-266112*B*a*b^5*d^3*e^4*x^3+29568*B*b^6*d^4*e^3*x^3+3968055*A*a^4*b^2*e^
7*x^2-2441880*A*a^3*b^3*d*e^6*x^2+976752*A*a^2*b^4*d^2*e^5*x^2-229824*A*a*b
^5*d^3*e^4*x^2+24192*A*b^6*d^4*e^3*x^2+1587222*B*a^5*b*e^7*x^2-1831410*B*a^
4*b^2*d*e^6*x^2+1302336*B*a^3*b^3*d^2*e^5*x^2-574560*B*a^2*b^4*d^3*e^4*x^2+
145152*B*a*b^5*d^4*e^3*x^2-16128*B*b^6*d^5*e^2*x^2+1939938*A*a^5*b*e^7*x-17
63580*A*a^4*b^2*d*e^6*x+1085280*A*a^3*b^3*d^2*e^5*x-434112*A*a^2*b^4*d^3*e^
4*x+102144*A*a*b^5*d^4*e^3*x-10752*A*b^6*d^5*e^2*x+323323*B*a^6*e^7*x-70543
2*B*a^5*b*d*e^6*x+813960*B*a^4*b^2*d^2*e^5*x-578816*B*a^3*b^3*d^3*e^4*x+255
360*B*a^2*b^4*d^4*e^3*x-64512*B*a*b^5*d^5*e^2*x+7168*B*b^6*d^6*e*x+415701*A
*a^6*e^7-554268*A*a^5*b*d*e^6+503880*A*a^4*b^2*d^2*e^5-310080*A*a^3*b^3*d^3
*e^4+124032*A*a^2*b^4*d^4*e^3-29184*A*a*b^5*d^5*e^2+3072*A*b^6*d^6*e-92378*
B*a^6*d*e^6+201552*B*a^5*b*d^2*e^5-232560*B*a^4*b^2*d^3*e^4+165376*B*a^3*b^
3*d^4*e^3-72960*B*a^2*b^4*d^5*e^2+18432*B*a*b^5*d^6*e-2048*B*b^6*d^7)/e^8
```

maxima [B] time = 0.55, size = 767, normalized size = 2.49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/2909907*(138567*(e*x + d)^(21/2)*B*b^6 - 153153*(7*B*b^6*d - (6*B*a*b^5 +
 A*b^6)*e)*(e*x + d)^(19/2) + 513513*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d
*e + (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(17/2) - 969969*(7*B*b^6*d^3
- 3*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^
3*b^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(15/2) + 1119195*(7*B*b^6*d^4 - 4*(6*B*
a*b^5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3
 + 3*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(13/2) -
 793611*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*
a*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 +
4*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(11/2) + 3233
23*(7*B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5
)*d^4*e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*
a^3*b^3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*
e^6)*(e*x + d)^(9/2) - 415701*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*
d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b
^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(7/2))/e^8
```

mupad [B] time = 1.93, size = 279, normalized size = 0.91

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(19/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(19*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(9/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(9*e^8) + (2*B*b^6
*(d + e*x)^(21/2))/(21*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(7/2))
/(7*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(11/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d
))/(11*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(17/2)*(2*A*b*e + 5*B*a*e - 7*B*
b*d))/(17*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(13/2)*(4*A*b*e + 3*B*a*e
- 7*B*b*d))/(13*e^8) + (2*b^3*(a*e - b*d)^2*(d + e*x)^(15/2)*(3*A*b*e + 4*B
*a*e - 7*B*b*d))/(3*e^8)
```

sympy [A] time = 113.73, size = 3728, normalized size = 12.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*A*a**6*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*A*a**6*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 12*A*a**5*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 24*A*
a**5*b*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/
2)/7)/e**2 + 12*A*a**5*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2
)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 30*A*a**4*b**2*d*
*2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**3 + 60*A*a**4*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)
/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 30*A*a**4*b**2*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 40*A*a**3*b**3*d
**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**
(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 80*A*a**3*b**3*d*(d**4*(d + e*x)**(3/2
)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)
**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 40*A*a**3*b**3*(-d**5*(d + e*x)**(
3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d +
e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 30*
A*a**2*b**4*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d
**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**
5 + 60*A*a**2*b**4*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10
*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/
2)/11 + (d + e*x)**(13/2)/13)/e**5 + 30*A*a**2*b**4*(d**6*(d + e*x)**(3/2)/
3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e
*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d
 + e*x)**(15/2)/15)/e**5 + 12*A*a*b**5*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**
4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/
9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 24*A*a*b**5*d*(
d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7
/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d
+ e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 12*A*a*b**5*(-d**7*(d + e*
x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4
*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13
/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 2*A*b**6*d
**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x
)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*
d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 4*A*b**6*d*(-d**7*(d
+ e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*
d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)*
*(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 2*A*b*
*6*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)*
*(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**
3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/
2)/17 + (d + e*x)**(19/2)/19)/e**7 + 2*B*a**6*d**2*(-d*(d + e*x)**(3/2)/3 +
 (d + e*x)**(5/2)/5)/e**2 + 4*B*a**6*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d +
e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*B*a**6*(-d**3*(d + e*x)**(3/2)
/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/
9)/e**2 + 12*B*a**5*b*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/
5 + (d + e*x)**(7/2)/7)/e**3 + 24*B*a**5*b*d*(-d**3*(d + e*x)**(3/2)/3 + 3*
d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3
 + 12*B*a**5*b*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**
2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3
+ 30*B*a**4*b**2*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5
```

```
 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 60*B*a**4*b**2*d*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 30*B*a**4*b**2*(
-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)
/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13
/2)/13)/e**4 + 40*B*a**3*b**3*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e
*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*
x)**(11/2)/11)/e**5 + 80*B*a**3*b**3*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d
 + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5
*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 40*B*a**3*b**3*(d**6
*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/
7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*
x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 30*B*a**2*b**4*d**2*(-d**5*(d
 + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d
**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e
**6 + 60*B*a**2*b**4*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5
 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e
*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 30
*B*a**2*b**4*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5
*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/
11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(
17/2)/17)/e**6 + 12*B*a*b**5*d**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*
x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*
d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15
)/e**7 + 24*B*a*b**5*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/
5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x
)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d
 + e*x)**(17/2)/17)/e**7 + 12*B*a*b**5*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d
 + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 7
0*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e
*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**7 + 2*
B*b**6*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*
(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/1
1 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(1
7/2)/17)/e**8 + 4*B*b**6*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/
2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d +
e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/
15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 + 2*B*b**6*(-d**
9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)
/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*
(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17
/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8
```

3.1582 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{17/2}(-6aBe-Abe+7bBd)}{17e^8}+\frac{2b^4(d+ex)^{15/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{13/2}(bd-a$$

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^5(d+ex)^{17/2}(-6aBe-Abe+7bBd)}{17e^8}+\frac{2b^4(d+ex)^{15/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{13/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{13e^8}+\frac{10b^2(d+ex)^{11/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{11e^8}-\frac{2b(d+ex)^{9/2}(bd-ae)^4(-2aBe-5Abe+7bBd)}{3e^8}+\frac{2(d+ex)^{7/2}(bd-ae)^5(-aBe-6Abe+7bBd)}{7e^8}-\frac{2(d+ex)^{5/2}(bd-ae)^6(Bd-Ae)}{5e^8}+\frac{2b^6B(d+ex)^{19/2}}{19e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(5/2))/(5*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(7/2))/(7*e^8) - (2*b*(b*d - a*e)^4*(7
*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(9/2))/(3*e^8) + (10*b^2*(b*d - a*e)^
3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(11/2))/(11*e^8) - (10*b^3*(b*d -
 a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(13/2))/(13*e^8) + (2*b^4*(
b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(15/2))/(5*e^8) - (2*b^5
*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(17/2))/(17*e^8) + (2*b^6*B*(d + e*x
)^(19/2))/(19*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)(d+ex)^{3/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)(d+ex)^{3/2}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6\right.\\
&= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{5/2}}{5e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{7e^8}
\end{aligned}$$

Mathematica [A] time = 0.24, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{5/2}\left(-285285b^5(d+ex)^6(-6aBe-Abe+7bBd)+969969b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-1865325b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+2204475b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-1616615b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)+692835(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)-969969(bd-ae)^6(Bd-Ae)+255255b^6B(d+ex)^7\right)}{4849845e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-969969*(b*d - a*e)^6*(B*d - A*e) + 692835*(b*d - a*e)^
5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 1616615*b*(b*d - a*e)^4*(7*b*B*d
- 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 2204475*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A
*b*e - 3*a*B*e)*(d + e*x)^3 - 1865325*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e
- 4*a*B*e)*(d + e*x)^4 + 969969*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*
e)*(d + e*x)^5 - 285285*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 25525
5*b^6*B*(d + e*x)^7))/(4849845*e^8)
```

IntegrateAlgebraic [B] time = 0.46, size = 1069, normalized size = 3.47

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-969969*b^6*B*d^7 + 969969*A*b^6*d^6*e + 5819814*a*b^5*
B*d^6*e - 5819814*a*A*b^5*d^5*e^2 - 14549535*a^2*b^4*B*d^5*e^2 + 14549535*a
^2*A*b^4*d^4*e^3 + 19399380*a^3*b^3*B*d^4*e^3 - 19399380*a^3*A*b^3*d^3*e^4
- 14549535*a^4*b^2*B*d^3*e^4 + 14549535*a^4*A*b^2*d^2*e^5 + 5819814*a^5*b*B
*d^2*e^5 - 5819814*a^5*A*b*d*e^6 - 969969*a^6*B*d*e^6 + 969969*a^6*A*e^7 +
4849845*b^6*B*d^6*(d + e*x) - 4157010*A*b^6*d^5*e*(d + e*x) - 24942060*a*b^
5*B*d^5*e*(d + e*x) + 20785050*a*A*b^5*d^4*e^2*(d + e*x) + 51962625*a^2*b^4
*B*d^4*e^2*(d + e*x) - 41570100*a^2*A*b^4*d^3*e^3*(d + e*x) - 55426800*a^3*
b^3*B*d^3*e^3*(d + e*x) + 41570100*a^3*A*b^3*d^2*e^4*(d + e*x) + 31177575*a
^4*b^2*B*d^2*e^4*(d + e*x) - 20785050*a^4*A*b^2*d*e^5*(d + e*x) - 8314020*a
^5*b*B*d*e^5*(d + e*x) + 4157010*a^5*A*b*e^6*(d + e*x) + 692835*a^6*B*e^6*(
d + e*x) - 11316305*b^6*B*d^5*(d + e*x)^2 + 8083075*A*b^6*d^4*e*(d + e*x)^2
 + 48498450*a*b^5*B*d^4*e*(d + e*x)^2 - 32332300*a*A*b^5*d^3*e^2*(d + e*x)^
2 - 80830750*a^2*b^4*B*d^3*e^2*(d + e*x)^2 + 48498450*a^2*A*b^4*d^2*e^3*(d
+ e*x)^2 + 64664600*a^3*b^3*B*d^2*e^3*(d + e*x)^2 - 32332300*a^3*A*b^3*d*e^
4*(d + e*x)^2 - 24249225*a^4*b^2*B*d*e^4*(d + e*x)^2 + 8083075*a^4*A*b^2*e^
5*(d + e*x)^2 + 3233230*a^5*b*B*e^5*(d + e*x)^2 + 15431325*b^6*B*d^4*(d + e
*x)^3 - 8817900*A*b^6*d^3*e*(d + e*x)^3 - 52907400*a*b^5*B*d^3*e*(d + e*x)^
3 + 26453700*a*A*b^5*d^2*e^2*(d + e*x)^3 + 66134250*a^2*b^4*B*d^2*e^2*(d +
e*x)^3 - 26453700*a^2*A*b^4*d*e^3*(d + e*x)^3 - 35271600*a^3*b^3*B*d*e^3*(d
 + e*x)^3 + 8817900*a^3*A*b^3*e^4*(d + e*x)^3 + 6613425*a^4*b^2*B*e^4*(d +
e*x)^3 - 13057275*b^6*B*d^3*(d + e*x)^4 + 5595975*A*b^6*d^2*e*(d + e*x)^4 +
 33575850*a*b^5*B*d^2*e*(d + e*x)^4 - 11191950*a*A*b^5*d*e^2*(d + e*x)^4 -
27979875*a^2*b^4*B*d*e^2*(d + e*x)^4 + 5595975*a^2*A*b^4*e^3*(d + e*x)^4 +
7461300*a^3*b^3*B*e^3*(d + e*x)^4 + 6789783*b^6*B*d^2*(d + e*x)^5 - 1939938
*A*b^6*d*e*(d + e*x)^5 - 11639628*a*b^5*B*d*e*(d + e*x)^5 + 1939938*a*A*b^5
*e^2*(d + e*x)^5 + 4849845*a^2*b^4*B*e^2*(d + e*x)^5 - 1996995*b^6*B*d*(d +
 e*x)^6 + 285285*A*b^6*e*(d + e*x)^6 + 1711710*a*b^5*B*e*(d + e*x)^6 + 2552
55*b^6*B*(d + e*x)^7))/(4849845*e^8)
```

fricas [B] time = 0.45, size = 1118, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/4849845*(255255*B*b^6*e^9*x^9 - 14336*B*b^6*d^9 + 969969*A*a^6*d^2*e^7 +
19456*(6*B*a*b^5 + A*b^6)*d^8*e - 82688*(5*B*a^2*b^4 + 2*A*a*b^5)*d^7*e^2 +
 206720*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^6*e^3 - 335920*(3*B*a^4*b^2 + 4*A*a^3
*b^3)*d^5*e^4 + 369512*(2*B*a^5*b + 5*A*a^4*b^2)*d^4*e^5 - 277134*(B*a^6 +
6*A*a^5*b)*d^3*e^6 + 15015*(20*B*b^6*d*e^8 + 19*(6*B*a*b^5 + A*b^6)*e^9)*x^
8 + 3003*(B*b^6*d^2*e^7 + 114*(6*B*a*b^5 + A*b^6)*d*e^8 + 323*(5*B*a^2*b^4
+ 2*A*a*b^5)*e^9)*x^7 - 231*(14*B*b^6*d^3*e^6 - 19*(6*B*a*b^5 + A*b^6)*d^2*
```

```
e^7 - 5168*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^8 - 8075*(4*B*a^3*b^3 + 3*A*a^2*b^
4)*e^9)*x^6 + 21*(168*B*b^6*d^4*e^5 - 228*(6*B*a*b^5 + A*b^6)*d^3*e^6 + 969
*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^7 + 113050*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e
^8 + 104975*(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^9)*x^5 - 35*(112*B*b^6*d^5*e^4 -
152*(6*B*a*b^5 + A*b^6)*d^4*e^5 + 646*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^6 - 1
615*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^7 - 83980*(3*B*a^4*b^2 + 4*A*a^3*b^3)
*d*e^8 - 46189*(2*B*a^5*b + 5*A*a^4*b^2)*e^9)*x^4 + 5*(896*B*b^6*d^6*e^3 -
1216*(6*B*a*b^5 + A*b^6)*d^5*e^4 + 5168*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^5 -
 12920*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^6 + 20995*(3*B*a^4*b^2 + 4*A*a^3*b
^3)*d^2*e^7 + 461890*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^8 + 138567*(B*a^6 + 6*A*
a^5*b)*e^9)*x^3 - 3*(1792*B*b^6*d^7*e^2 - 323323*A*a^6*e^9 - 2432*(6*B*a*b^
5 + A*b^6)*d^6*e^3 + 10336*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^4 - 25840*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*d^4*e^5 + 41990*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^6 -
 46189*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^7 - 369512*(B*a^6 + 6*A*a^5*b)*d*e^8
)*x^2 + (7168*B*b^6*d^8*e + 1939938*A*a^6*d*e^8 - 9728*(6*B*a*b^5 + A*b^6)*
d^7*e^2 + 41344*(5*B*a^2*b^4 + 2*A*a*b^5)*d^6*e^3 - 103360*(4*B*a^3*b^3 + 3
*A*a^2*b^4)*d^5*e^4 + 167960*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^4*e^5 - 184756*(
2*B*a^5*b + 5*A*a^4*b^2)*d^3*e^6 + 138567*(B*a^6 + 6*A*a^5*b)*d^2*e^7)*x)*s
qrt(e*x + d)/e^8
```

giac [B] time = 0.41, size = 3285, normalized size = 10.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d^2*e^(-1)
+ 29099070*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d^2*e^(-1) + 58198
14*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*
b*d^2*e^(-2) + 14549535*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*A*a^4*b^2*d^2*e^(-2) + 6235515*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*d^2
*e^(-3) + 8314020*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^3*d^2*e^(-3) + 923780*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^3*d^2*e^(-4) + 692835*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*d^2*e^(-4) + 314925*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^4
*d^2*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*A*a*b^5*d^2*e^(-5) + 29070*(231*(x*e + d)^(13/2) - 163
8*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3
+ 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*
d^6)*B*a*b^5*d^2*e^(-6) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^6*d^2*e^
(-6) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*B*b^6*d^2*e^(-7) + 1939938*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^6*d*e^(-1) + 11639628*(3*(x*e + d)^(5/2) - 10*(x*e
+ d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*d*e^(-1) + 4988412*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*B*a^5*b*d*e^(-2) + 12471030*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b^2*d*e^(-2) + 13856
70*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
```

420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*d*e^(-3) + 18475
60*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*d*e^(-3) + 83980
0*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 -
1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5
)*B*a^3*b^3*d*e^(-4) + 629850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*d*e^(-4) + 145350*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*B*a^2*b^4*d*e^(-5) + 58140*(231*(x*e + d)^(13/2) - 1638*(x*e
 + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009
*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A
*a*b^5*d*e^(-5) + 27132*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1
2285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/
2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(
x*e + d)*d^7)*B*a*b^5*d*e^(-6) + 4522*(429*(x*e + d)^(15/2) - 3465*(x*e + d
)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175
*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^
6 - 6435*sqrt(x*e + d)*d^7)*A*b^6*d*e^(-6) + 266*(6435*(x*e + d)^(17/2) - 5
8344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(1
1/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612
*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^
8)*B*b^6*d*e^(-7) + 14549535*sqrt(x*e + d)*A*a^6*d^2 + 9699690*((x*e + d)^(
3/2) - 3*sqrt(x*e + d)*d)*A*a^6*d + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^6*e^(-1) + 2
494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a^5*b*e^(-1) + 277134*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*B*a^5*b*e^(-2) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*A*a^4*b^2*e^(-2) + 314925*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b^2*e^(-3) + 419900*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^3*
e^(-3) + 96900*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
+ d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006
*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^3*b^3*e^(-4) + 72675*(23
1*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8
580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d
^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^4*e^(-4) + 33915*(429*(x*e + d)^(15/2)
 - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(
9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x
*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^2*b^4*e^(-5) + 13566*(429*(
x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25
025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)
d^5 + 15015(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^5*e^(-5) +
 798*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(
13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 8751
60*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2
)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^5*e^(-6) + 133*(6435*(x*e + d)^(17/
2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e +
 d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 +
612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e +
 d)*d^8)*A*b^6*e^(-6) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2
)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*
(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2
)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*s

```
qrt(x*e + d)*d^9)*B*b^6*e^(-7) + 969969*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(
3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/4849845*(e*x+d)^(5/2)*(255255*B*b^6*e^7*x^7+285285*A*b^6*e^7*x^6+1711710*
B*a*b^5*e^7*x^6-210210*B*b^6*d*e^6*x^6+1939938*A*a*b^5*e^7*x^5-228228*A*b^6
*d*e^6*x^5+4849845*B*a^2*b^4*e^7*x^5-1369368*B*a*b^5*d*e^6*x^5+168168*B*b^6
*d^2*e^5*x^5+5595975*A*a^2*b^4*e^7*x^4-1492260*A*a*b^5*d*e^6*x^4+175560*A*b
^6*d^2*e^5*x^4+7461300*B*a^3*b^3*e^7*x^4-3730650*B*a^2*b^4*d*e^6*x^4+105336
0*B*a*b^5*d^2*e^5*x^4-129360*B*b^6*d^3*e^4*x^4+8817900*A*a^3*b^3*e^7*x^3-40
69800*A*a^2*b^4*d*e^6*x^3+1085280*A*a*b^5*d^2*e^5*x^3-127680*A*b^6*d^3*e^4*
x^3+6613425*B*a^4*b^2*e^7*x^3-5426400*B*a^3*b^3*d*e^6*x^3+2713200*B*a^2*b^4
*d^2*e^5*x^3-766080*B*a*b^5*d^3*e^4*x^3+94080*B*b^6*d^4*e^3*x^3+8083075*A*a
^4*b^2*e^7*x^2-5878600*A*a^3*b^3*d*e^6*x^2+2713200*A*a^2*b^4*d^2*e^5*x^2-72
3520*A*a*b^5*d^3*e^4*x^2+85120*A*b^6*d^4*e^3*x^2+3233230*B*a^5*b*e^7*x^2-44
08950*B*a^4*b^2*d*e^6*x^2+3617600*B*a^3*b^3*d^2*e^5*x^2-1808800*B*a^2*b^4*d
^3*e^4*x^2+510720*B*a*b^5*d^4*e^3*x^2-62720*B*b^6*d^5*e^2*x^2+4157010*A*a^5
*b*e^7*x-4618900*A*a^4*b^2*d*e^6*x+3359200*A*a^3*b^3*d^2*e^5*x-1550400*A*a^
2*b^4*d^3*e^4*x+413440*A*a*b^5*d^4*e^3*x-48640*A*b^6*d^5*e^2*x+692835*B*a^6
*e^7*x-1847560*B*a^5*b*d*e^6*x+2519400*B*a^4*b^2*d^2*e^5*x-2067200*B*a^3*b^
3*d^3*e^4*x+1033600*B*a^2*b^4*d^4*e^3*x-291840*B*a*b^5*d^5*e^2*x+35840*B*b^
6*d^6*e*x+969969*A*a^6*e^7-1662804*A*a^5*b*d*e^6+1847560*A*a^4*b^2*d^2*e^5-
1343680*A*a^3*b^3*d^3*e^4+620160*A*a^2*b^4*d^4*e^3-165376*A*a*b^5*d^5*e^2+1
9456*A*b^6*d^6*e-277134*B*a^6*d*e^6+739024*B*a^5*b*d^2*e^5-1007760*B*a^4*b^
2*d^3*e^4+826880*B*a^3*b^3*d^4*e^3-413440*B*a^2*b^4*d^5*e^2+116736*B*a*b^5*
d^6*e-14336*B*b^6*d^7)/e^8
```

maxima [B] time = 0.53, size = 767, normalized size = 2.49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/4849845*(255255*(e*x + d)^(19/2)*B*b^6 - 285285*(7*B*b^6*d - (6*B*a*b^5 +
 A*b^6)*e)*(e*x + d)^(17/2) + 969969*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d
*e + (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(15/2) - 1865325*(7*B*b^6*d^3
 - 3*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a
^3*b^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(13/2) + 2204475*(7*B*b^6*d^4 - 4*(6*B
*a*b^5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^
3 + 3*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(11/2)
- 1616615*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*
A*a*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2
+ 4*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(9/2) + 692
835*(7*B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^
5)*d^4*e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A
*a^3*b^3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)
*e^6)*(e*x + d)^(7/2) - 969969*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)
*d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4
)*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*
b^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(5/2))/e^8
```

mupad [B] time = 1.93, size = 279, normalized size = 0.91

$$\frac{(d+ex)^{17/2}\left(2Ab^6e-14Bb^6d+12Bab^5e\right)}{17e^8}+\frac{2(ae-bd)^5(d+ex)^{7/2}(6Abe+Bae-7Bbd)}{7e^8}+\frac{2Bb^6(d+ex)^{19/2}}{19e^8}+\frac{2(Ae-Bd)(ae-bd)^6(d+ex)^{5/2}}{5e^8}+\frac{2b(ae-bd)^4(d+ex)^{9/2}(5Abe+2Bae-7Bbd)}{3e^8}+\frac{2b^4(ae-bd)(d+ex)^{15/2}(2Abe+5Bae-7Bbd)}{5e^8}+\frac{10b^2(ae-bd)^3(d+ex)^{11/2}(4Abe+3Bae-7Bbd)}{11e^8}+\frac{10b^3(ae-bd)^2(d+ex)^{13/2}(3Abe+4Bae-7Bbd)}{13e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(17/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(17*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(7/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(7*e^8) + (2*B*b^6
*(d + e*x)^(19/2))/(19*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(5/2))
/(5*e^8) + (2*b*(a*e - b*d)^4*(d + e*x)^(9/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d)
)/(3*e^8) + (2*b^4*(a*e - b*d)*(d + e*x)^(15/2)*(2*A*b*e + 5*B*a*e - 7*B*b*
d))/(5*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(11/2)*(4*A*b*e + 3*B*a*e - 7
*B*b*d))/(11*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(13/2)*(3*A*b*e + 4*B*a
*e - 7*B*b*d))/(13*e^8)
```

sympy [A] time = 69.78, size = 2252, normalized size = 7.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*A*a**6*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 12*A*a**5*b*d*
(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 12*A*a**5*b*(d**2*(d +
e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 30*A*a*
*4*b**2*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7
/2)/7)/e**3 + 30*A*a**4*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**
(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 40*A*a**3*b**
3*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**
(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 40*A*a**3*b**3*(d**4*(d + e*x)**(3/2)/
3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**
(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 30*A*a**2*b**4*d*(d**4*(d + e*x)**(3
/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*
x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 30*A*a**2*b**4*(-d**5*(d + e*x)*
*(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d
+ e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 1
2*A*a*b**5*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d
 + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 +
(d + e*x)**(13/2)/13)/e**6 + 12*A*a*b**5*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*
(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/
9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(1
5/2)/15)/e**6 + 2*A*b**6*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/
2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d
 + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7
+ 2*A*b**6*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(
d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11
 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17
/2)/17)/e**7 + 2*B*a**6*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2
 + 2*B*a**6*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**
(7/2)/7)/e**2 + 12*B*a**5*b*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/
2)/5 + (d + e*x)**(7/2)/7)/e**3 + 12*B*a**5*b*(-d**3*(d + e*x)**(3/2)/3 + 3
*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**
3 + 30*B*a**4*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5
- 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 30*B*a**4*b**2*(d**4*
(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
- 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 40*B*a**3*b**3*d*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 40*B*a**3*b**3*
```

```
(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2
)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(1
3/2)/13)/e**5 + 30*B*a**2*b**4*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)
**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
+ e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 30*B*a**2*b**4*(d**6*(d +
e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20
*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(1
3/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 12*B*a*b**5*d*(d**6*(d + e*x)**(3/2)
/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d +
e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (
d + e*x)**(15/2)/15)/e**7 + 12*B*a*b**5*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*
(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 -
 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x
)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 2*B*b**6*d*(-d**7*(d + e*x)**(3
/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d +
e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13
 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**8 + 2*B*b**6*(d**8*(
d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 5
6*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x
)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d
 + e*x)**(19/2)/19)/e**8
```

3.1583 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{15/2}(-6aBe-Abe+7bBd)}{15e^8}+\frac{6b^4(d+ex)^{13/2}(bd-ae)(-5aBe-2Abe+7bBd)}{13e^8}-\frac{10b^3(d+ex)^{11/2}(bd$$

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^5(d+ex)^{15/2}(-6aBe-Abe+7bBd)}{15e^8}+\frac{6b^4(d+ex)^{13/2}(bd-ae)(-5aBe-2Abe+7bBd)}{13e^8}-\frac{10b^3(d+ex)^{11/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{11e^8}+\frac{10b^2(d+ex)^{9/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{9e^8}-\frac{6b(d+ex)^{7/2}(bd-ae)^4(-2aBe-5Abe+7bBd)}{7e^8}+\frac{2(d+ex)^{5/2}(bd-ae)^5(-aBe-6Abe+7bBd)}{5e^8}-\frac{2(d+ex)^{3/2}(bd-ae)^6(Bd-Ae)}{3e^8}+\frac{2b^6B(d+ex)^{17/2}}{17e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(3/2))/(3*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(5/2))/(5*e^8) - (6*b*(b*d - a*e)^4*(7
*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(7/2))/(7*e^8) + (10*b^2*(b*d - a*e)^
3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(9/2))/(9*e^8) - (10*b^3*(b*d - a
*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(11/2))/(11*e^8) + (6*b^4*(b*
d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(13/2))/(13*e^8) - (2*b^5*
(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(15/2))/(15*e^8) + (2*b^6*B*(d + e*x)
^(17/2))/(17*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)\sqrt{d+ex}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6A}{e^7}\right.\\ &= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{3/2}}{3e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{5e^8}\end{aligned}$$

Mathematica [A] time = 0.24, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{3/2}\left(-51051b^5(d+ex)^6(-6aBe-Abe+7bBd)+176715b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-348075b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+425425b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-328185b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)+153153(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)-255255(bd-ae)^6(Bd-Ae)+45045b^6B(d+ex)^7\right)}{765765e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-255255*(b*d - a*e)^6*(B*d - A*e) + 153153*(b*d - a*e)^
5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 328185*b*(b*d - a*e)^4*(7*b*B*d -
 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 425425*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b
*e - 3*a*B*e)*(d + e*x)^3 - 348075*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4
*a*B*e)*(d + e*x)^4 + 176715*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*
(d + e*x)^5 - 51051*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 45045*b^6
*B*(d + e*x)^7))/(765765*e^8)
```

IntegrateAlgebraic [B] time = 0.40, size = 1069, normalized size = 3.47

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-255255*b^6*B*d^7 + 255255*A*b^6*d^6*e + 1531530*a*b^5*
B*d^6*e - 1531530*a*A*b^5*d^5*e^2 - 3828825*a^2*b^4*B*d^5*e^2 + 3828825*a^2
*A*b^4*d^4*e^3 + 5105100*a^3*b^3*B*d^4*e^3 - 5105100*a^3*A*b^3*d^3*e^4 - 38
28825*a^4*b^2*B*d^3*e^4 + 3828825*a^4*A*b^2*d^2*e^5 + 1531530*a^5*b*B*d^2*e
^5 - 1531530*a^5*A*b*d*e^6 - 255255*a^6*B*d*e^6 + 255255*a^6*A*e^7 + 107207
1*b^6*B*d^6*(d + e*x) - 918918*A*b^6*d^5*e*(d + e*x) - 5513508*a*b^5*B*d^5*
e*(d + e*x) + 4594590*a*A*b^5*d^4*e^2*(d + e*x) + 11486475*a^2*b^4*B*d^4*e^
2*(d + e*x) - 9189180*a^2*A*b^4*d^3*e^3*(d + e*x) - 12252240*a^3*b^3*B*d^3*
e^3*(d + e*x) + 9189180*a^3*A*b^3*d^2*e^4*(d + e*x) + 6891885*a^4*b^2*B*d^2
*e^4*(d + e*x) - 4594590*a^4*A*b^2*d*e^5*(d + e*x) - 1837836*a^5*b*B*d*e^5*
(d + e*x) + 918918*a^5*A*b*e^6*(d + e*x) + 153153*a^6*B*e^6*(d + e*x) - 229
7295*b^6*B*d^5*(d + e*x)^2 + 1640925*A*b^6*d^4*e*(d + e*x)^2 + 9845550*a*b^
5*B*d^4*e*(d + e*x)^2 - 6563700*a*A*b^5*d^3*e^2*(d + e*x)^2 - 16409250*a^2*
b^4*B*d^3*e^2*(d + e*x)^2 + 9845550*a^2*A*b^4*d^2*e^3*(d + e*x)^2 + 1312740
0*a^3*b^3*B*d^2*e^3*(d + e*x)^2 - 6563700*a^3*A*b^3*d*e^4*(d + e*x)^2 - 492
2775*a^4*b^2*B*d*e^4*(d + e*x)^2 + 1640925*a^4*A*b^2*e^5*(d + e*x)^2 + 6563
70*a^5*b*B*e^5*(d + e*x)^2 + 2977975*b^6*B*d^4*(d + e*x)^3 - 1701700*A*b^6*
d^3*e*(d + e*x)^3 - 10210200*a*b^5*B*d^3*e*(d + e*x)^3 + 5105100*a*A*b^5*d^
2*e^2*(d + e*x)^3 + 12762750*a^2*b^4*B*d^2*e^2*(d + e*x)^3 - 5105100*a^2*A*
b^4*d*e^3*(d + e*x)^3 - 6806800*a^3*b^3*B*d*e^3*(d + e*x)^3 + 1701700*a^3*A
*b^3*e^4*(d + e*x)^3 + 1276275*a^4*b^2*B*e^4*(d + e*x)^3 - 2436525*b^6*B*d^
3*(d + e*x)^4 + 1044225*A*b^6*d^2*e*(d + e*x)^4 + 6265350*a*b^5*B*d^2*e*(d
+ e*x)^4 - 2088450*a*A*b^5*d*e^2*(d + e*x)^4 - 5221125*a^2*b^4*B*d*e^2*(d +
 e*x)^4 + 1044225*a^2*A*b^4*e^3*(d + e*x)^4 + 1392300*a^3*b^3*B*e^3*(d + e*
x)^4 + 1237005*b^6*B*d^2*(d + e*x)^5 - 353430*A*b^6*d*e*(d + e*x)^5 - 21205
80*a*b^5*B*d*e*(d + e*x)^5 + 353430*a*A*b^5*e^2*(d + e*x)^5 + 883575*a^2*b^
4*B*e^2*(d + e*x)^5 - 357357*b^6*B*d*(d + e*x)^6 + 51051*A*b^6*e*(d + e*x)^
6 + 306306*a*b^5*B*e*(d + e*x)^6 + 45045*b^6*B*(d + e*x)^7))/(765765*e^8)
```

fricas [B] time = 0.43, size = 942, normalized size = 3.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/765765*(45045*B*b^6*e^8*x^8 - 14336*B*b^6*d^8 + 255255*A*a^6*d*e^7 + 1740
8*(6*B*a*b^5 + A*b^6)*d^7*e - 65280*(5*B*a^2*b^4 + 2*A*a*b^5)*d^6*e^2 + 141
440*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^5*e^3 - 194480*(3*B*a^4*b^2 + 4*A*a^3*b^3
)*d^4*e^4 + 175032*(2*B*a^5*b + 5*A*a^4*b^2)*d^3*e^5 - 102102*(B*a^6 + 6*A*
a^5*b)*d^2*e^6 + 3003*(B*b^6*d*e^7 + 17*(6*B*a*b^5 + A*b^6)*e^8)*x^7 - 231*
(14*B*b^6*d^2*e^6 - 17*(6*B*a*b^5 + A*b^6)*d*e^7 - 765*(5*B*a^2*b^4 + 2*A*a
*b^5)*e^8)*x^6 + 63*(56*B*b^6*d^3*e^5 - 68*(6*B*a*b^5 + A*b^6)*d^2*e^6 + 25
```

```
5*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^7 + 5525*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^8)*x
^5 - 35*(112*B*b^6*d^4*e^4 - 136*(6*B*a*b^5 + A*b^6)*d^3*e^5 + 510*(5*B*a^2
*b^4 + 2*A*a*b^5)*d^2*e^6 - 1105*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^7 - 12155*
(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^8)*x^4 + 5*(896*B*b^6*d^5*e^3 - 1088*(6*B*a*b
^5 + A*b^6)*d^4*e^4 + 4080*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^5 - 8840*(4*B*a^
3*b^3 + 3*A*a^2*b^4)*d^2*e^6 + 12155*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^7 + 65
637*(2*B*a^5*b + 5*A*a^4*b^2)*e^8)*x^3 - 3*(1792*B*b^6*d^6*e^2 - 2176*(6*B*
a*b^5 + A*b^6)*d^5*e^3 + 8160*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^4 - 17680*(4*
B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^5 + 24310*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^
6 - 21879*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^7 - 51051*(B*a^6 + 6*A*a^5*b)*e^8)*
x^2 + (7168*B*b^6*d^7*e + 255255*A*a^6*e^8 - 8704*(6*B*a*b^5 + A*b^6)*d^6*e
^2 + 32640*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^3 - 70720*(4*B*a^3*b^3 + 3*A*a^2
*b^4)*d^4*e^4 + 97240*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^5 - 87516*(2*B*a^5*
b + 5*A*a^4*b^2)*d^2*e^6 + 51051*(B*a^6 + 6*A*a^5*b)*d*e^7)*x)*sqrt(e*x + d
)/e^8
```

giac [B] time = 0.29, size = 1984, normalized size = 6.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d*e^(-1) + 153
1530*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d*e^(-1) + 306306*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*b*d*e^(-2
) + 765765*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*A*a^4*b^2*d*e^(-2) + 328185*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*d*e^(-3) + 437580*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a^3*b^3*d*e^(-3) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*B*a^3*b^3*d*e^(-4) + 36465*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*A*a^2*b^4*d*e^(-4) + 16575*(63*(x*e + d)^(11/2) - 385*(x*e + d)^
(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^4*d*e^(-5) + 6630*(63*(x*e +
d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d
)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^5*d*e
^(-5) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e +
d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(
x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a*b^5*d*e^(-6) + 255*(231*(x
*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*
(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
 3003*sqrt(x*e + d)*d^6)*A*b^6*d*e^(-6) + 119*(429*(x*e + d)^(15/2) - 3465*
(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^
(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^6*d*e^(-7) + 51051*(3*(x*e + d)^(5/
2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^6*e^(-1) + 306306*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*e^(-
1) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*b*e^(-2) + 328185*(5*(x*e + d)^(7/2) - 21
*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b
^2*e^(-2) + 36465*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*e
^(-3) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*e^(-3
) + 22100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
```

```
+ d)*d^5)*B*a^3*b^3*e^(-4) + 16575*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/
2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^
(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*e^(-4) + 3825*(231*(x*e + d)^(
13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)
^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqr
t(x*e + d)*d^6)*B*a^2*b^4*e^(-5) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a
*b^5*e^(-5) + 714*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(
x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4
 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e +
d)*d^7)*B*a*b^5*e^(-6) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*
d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d
)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*
sqrt(x*e + d)*d^7)*A*b^6*e^(-6) + 7*(6435*(x*e + d)^(17/2) - 58344*(x*e + d
)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 85
0850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5
/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^6*e^(-
7) + 765765*sqrt(x*e + d)*A*a^6*d + 255255*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x)
```

```
[Out] 2/765765*(e*x+d)^(3/2)*(45045*B*b^6*e^7*x^7+51051*A*b^6*e^7*x^6+306306*B*a*
b^5*e^7*x^6-42042*B*b^6*d*e^6*x^6+353430*A*a*b^5*e^7*x^5-47124*A*b^6*d*e^6*
x^5+883575*B*a^2*b^4*e^7*x^5-282744*B*a*b^5*d*e^6*x^5+38808*B*b^6*d^2*e^5*x
^5+1044225*A*a^2*b^4*e^7*x^4-321300*A*a*b^5*d*e^6*x^4+42840*A*b^6*d^2*e^5*x
^4+1392300*B*a^3*b^3*e^7*x^4-803250*B*a^2*b^4*d*e^6*x^4+257040*B*a*b^5*d^2*
e^5*x^4-35280*B*b^6*d^3*e^4*x^4+1701700*A*a^3*b^3*e^7*x^3-928200*A*a^2*b^4*
d*e^6*x^3+285600*A*a*b^5*d^2*e^5*x^3-38080*A*b^6*d^3*e^4*x^3+1276275*B*a^4*
b^2*e^7*x^3-1237600*B*a^3*b^3*d*e^6*x^3+714000*B*a^2*b^4*d^2*e^5*x^3-228480
*B*a*b^5*d^3*e^4*x^3+31360*B*b^6*d^4*e^3*x^3+1640925*A*a^4*b^2*e^7*x^2-1458
600*A*a^3*b^3*d*e^6*x^2+795600*A*a^2*b^4*d^2*e^5*x^2-244800*A*a*b^5*d^3*e^4
*x^2+32640*A*b^6*d^4*e^3*x^2+656370*B*a^5*b*e^7*x^2-1093950*B*a^4*b^2*d*e^6
*x^2+1060800*B*a^3*b^3*d^2*e^5*x^2-612000*B*a^2*b^4*d^3*e^4*x^2+195840*B*a*
b^5*d^4*e^3*x^2-26880*B*b^6*d^5*e^2*x^2+918918*A*a^5*b*e^7*x-1312740*A*a^4*
b^2*d*e^6*x+1166880*A*a^3*b^3*d^2*e^5*x-636480*A*a^2*b^4*d^3*e^4*x+195840*A
*a*b^5*d^4*e^3*x-26112*A*b^6*d^5*e^2*x+153153*B*a^6*e^7*x-525096*B*a^5*b*d*
e^6*x+875160*B*a^4*b^2*d^2*e^5*x-848640*B*a^3*b^3*d^3*e^4*x+489600*B*a^2*b^
4*d^4*e^3*x-156672*B*a*b^5*d^5*e^2*x+21504*B*b^6*d^6*e*x+255255*A*a^6*e^7-6
12612*A*a^5*b*d*e^6+875160*A*a^4*b^2*d^2*e^5-777920*A*a^3*b^3*d^3*e^4+42432
0*A*a^2*b^4*d^4*e^3-130560*A*a*b^5*d^5*e^2+17408*A*b^6*d^6*e-102102*B*a^6*d
*e^6+350064*B*a^5*b*d^2*e^5-583440*B*a^4*b^2*d^3*e^4+565760*B*a^3*b^3*d^4*e
^3-326400*B*a^2*b^4*d^5*e^2+104448*B*a*b^5*d^6*e-14336*B*b^6*d^7)/e^8
```

maxima [B] time = 0.65, size = 767, normalized size = 2.49

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/765765*(45045*(e*x + d)^(17/2)*B*b^6 - 51051*(7*B*b^6*d - (6*B*a*b^5 + A*
b^6)*e)*(e*x + d)^(15/2) + 176715*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e
```

```
+ (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(13/2) - 348075*(7*B*b^6*d^3 - 3
*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b
^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(11/2) + 425425*(7*B*b^6*d^4 - 4*(6*B*a*b^
5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3
*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(9/2) - 3281
85*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5
)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a
^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(7/2) + 153153*(7*
B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*
e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^
3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(
e*x + d)^(5/2) - 255255*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*d^6*e
+ 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e
^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b^2)*d^
2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(3/2))/e^8
```

mupad [B] time = 1.93, size = 279, normalized size = 0.91

$$\frac{(d+ex)^{15/2}\left(2Ab^6e-14Bb^6d+12Bab^5e\right)}{15e^8}+\frac{2(ae-bd)^5(d+ex)^{5/2}(6Abe+Bae-7Bbd)}{5e^8}+\frac{2Bb^6(d+ex)^{17/2}}{17e^8}+\frac{2(Ae-Bd)(ae-bd)^6(d+ex)^{3/2}}{3e^8}+\frac{6b(ae-bd)^4(d+ex)^{7/2}(5Abe+2Bae-7Bbd)}{7e^8}+\frac{6b^4(ae-bd)(d+ex)^{13/2}(2Abe+5Bae-7Bbd)}{13e^8}+\frac{10b^2(ae-bd)^3(d+ex)^{9/2}(4Abe+3Bae-7Bbd)}{9e^8}+\frac{10b^3(ae-bd)^2(d+ex)^{11/2}(3Abe+4Bae-7Bbd)}{11e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(15/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(15*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(5/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(5*e^8) + (2*B*b^6
*(d + e*x)^(17/2))/(17*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(3/2))
/(3*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(7/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d)
)/(7*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(13/2)*(2*A*b*e + 5*B*a*e - 7*B*b*
d))/(13*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(9/2)*(4*A*b*e + 3*B*a*e - 7
*B*b*d))/(9*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(11/2)*(3*A*b*e + 4*B*a*
e - 7*B*b*d))/(11*e^8)
```

sympy [B] time = 13.35, size = 969, normalized size = 3.15

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*b**6*(d + e*x)**(17/2)/(17*e**7) + (d + e*x)**(15/2)*(A*b**6*e + 6*B*a
*b**5*e - 7*B*b**6*d)/(15*e**7) + (d + e*x)**(13/2)*(6*A*a*b**5*e**2 - 6*A*
b**6*d*e + 15*B*a**2*b**4*e**2 - 36*B*a*b**5*d*e + 21*B*b**6*d**2)/(13*e**7
) + (d + e*x)**(11/2)*(15*A*a**2*b**4*e**3 - 30*A*a*b**5*d*e**2 + 15*A*b**6
*d**2*e + 20*B*a**3*b**3*e**3 - 75*B*a**2*b**4*d*e**2 + 90*B*a*b**5*d**2*e
- 35*B*b**6*d**3)/(11*e**7) + (d + e*x)**(9/2)*(20*A*a**3*b**3*e**4 - 60*A*
a**2*b**4*d*e**3 + 60*A*a*b**5*d**2*e**2 - 20*A*b**6*d**3*e + 15*B*a**4*b**
2*e**4 - 80*B*a**3*b**3*d*e**3 + 150*B*a**2*b**4*d**2*e**2 - 120*B*a*b**5*d
**3*e + 35*B*b**6*d**4)/(9*e**7) + (d + e*x)**(7/2)*(15*A*a**4*b**2*e**5 -
60*A*a**3*b**3*d*e**4 + 90*A*a**2*b**4*d**2*e**3 - 60*A*a*b**5*d**3*e**2 +
15*A*b**6*d**4*e + 6*B*a**5*b*e**5 - 45*B*a**4*b**2*d*e**4 + 120*B*a**3*b**
3*d**2*e**3 - 150*B*a**2*b**4*d**3*e**2 + 90*B*a*b**5*d**4*e - 21*B*b**6*d*
*5)/(7*e**7) + (d + e*x)**(5/2)*(6*A*a**5*b*e**6 - 30*A*a**4*b**2*d*e**5 +
60*A*a**3*b**3*d**2*e**4 - 60*A*a**2*b**4*d**3*e**3 + 30*A*a*b**5*d**4*e**2
 - 6*A*b**6*d**5*e + B*a**6*e**6 - 12*B*a**5*b*d*e**5 + 45*B*a**4*b**2*d**2
*e**4 - 80*B*a**3*b**3*d**3*e**3 + 75*B*a**2*b**4*d**4*e**2 - 36*B*a*b**5*d
**5*e + 7*B*b**6*d**6)/(5*e**7) + (d + e*x)**(3/2)*(A*a**6*e**7 - 6*A*a**5*
b*d*e**6 + 15*A*a**4*b**2*d**2*e**5 - 20*A*a**3*b**3*d**3*e**4 + 15*A*a**2*
b**4*d**4*e**3 - 6*A*a*b**5*d**5*e**2 + A*b**6*d**6*e - B*a**6*d*e**6 + 6*B
*a**5*b*d**2*e**5 - 15*B*a**4*b**2*d**3*e**4 + 20*B*a**3*b**3*d**4*e**3 - 1
5*B*a**2*b**4*d**5*e**2 + 6*B*a*b**5*d**6*e - B*b**6*d**7)/(3*e**7))/e
```

3.1584 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=306

$$-\frac{2b^5(d+ex)^{13/2}(-6aBe-Abe+7bBd)}{13e^8}+\frac{6b^4(d+ex)^{11/2}(bd-ae)(-5aBe-2Abe+7bBd)}{11e^8}-\frac{10b^3(d+ex)^{9/2}(bd-ae)$$

Rubi [A] time = 0.15, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{13/2}(-6aBe-Abe+7bBd)}{13e^8}+\frac{6b^4(d+ex)^{11/2}(bd-ae)(-5aBe-2Abe+7bBd)}{11e^8}-\frac{10b^3(d+ex)^{9/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{9e^8}+\frac{10b^2(d+ex)^{7/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{7e^8}-\frac{6b(d+ex)^{5/2}(bd-ae)^4(-2aBe-5Abe+7bBd)}{5e^8}+\frac{2(d+ex)^{3/2}(bd-ae)^5(-aBe-6Abe+7bBd)}{3e^8}-\frac{2\sqrt{d+ex}(bd-ae)^6(Bd-Ae)}{e^8}+\frac{2b^6B(d+ex)^{15/2}}{15e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*Sqrt[d + e*x])/e^8 + (2*(b*d - a*e)^5*(7*b*B*
d - 6*A*b*e - a*B*e)*(d + e*x)^(3/2))/(3*e^8) - (6*b*(b*d - a*e)^4*(7*b*B*d
 - 5*A*b*e - 2*a*B*e)*(d + e*x)^(5/2))/(5*e^8) + (10*b^2*(b*d - a*e)^3*(7*b
*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(7/2))/(7*e^8) - (10*b^3*(b*d - a*e)^2*
(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(9/2))/(9*e^8) + (6*b^4*(b*d - a*e)
*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(11/2))/(11*e^8) - (2*b^5*(7*b*B*d
 - A*b*e - 6*a*B*e)*(d + e*x)^(13/2))/(13*e^8) + (2*b^6*B*(d + e*x)^(15/2))
/(15*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{\sqrt{d+ex}}\,dx\\
&= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7\sqrt{d+ex}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)\sqrt{d+ex}}{e^7}\right.\\
&= -\frac{2(bd-ae)^6(Bd-Ae)\sqrt{d+ex}}{e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-aBe)(d+ex)}{3e^8}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 259, normalized size = 0.85

$$\frac{2\sqrt{d+ex}\left(-3465b^5(d+ex)^6(-6aBe-Abe+7bBd)+12285b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-25025b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+32175b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-27027b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)+15015(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)-45045(bd-ae)^6(Bd-Ae)+3003b^6B(d+ex)^7\right)}{45045e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-45045*(b*d - a*e)^6*(B*d - A*e) + 15015*(b*d - a*e)^5*(7
*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 27027*b*(b*d - a*e)^4*(7*b*B*d - 5*A*
b*e - 2*a*B*e)*(d + e*x)^2 + 32175*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3
*a*B*e)*(d + e*x)^3 - 25025*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)
*(d + e*x)^4 + 12285*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x
)^5 - 3465*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 3003*b^6*B*(d + e*
x)^7))/(45045*e^8)
```

IntegrateAlgebraic [B] time = 0.41, size = 1310, normalized size = 4.28

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(45045*b^6*B*d^7*Sqrt[d + e*x] - 45045*A*b^6*d^6*e*Sqrt[d + e*x] - 2702
70*a*b^5*B*d^6*e*Sqrt[d + e*x] + 270270*a*A*b^5*d^5*e^2*Sqrt[d + e*x] + 675
675*a^2*b^4*B*d^5*e^2*Sqrt[d + e*x] - 675675*a^2*A*b^4*d^4*e^3*Sqrt[d + e*x
] - 900900*a^3*b^3*B*d^4*e^3*Sqrt[d + e*x] + 900900*a^3*A*b^3*d^3*e^4*Sqrt[
d + e*x] + 675675*a^4*b^2*B*d^3*e^4*Sqrt[d + e*x] - 675675*a^4*A*b^2*d^2*e^
5*Sqrt[d + e*x] - 270270*a^5*b*B*d^2*e^5*Sqrt[d + e*x] + 270270*a^5*A*b*d*e
^6*Sqrt[d + e*x] + 45045*a^6*B*d*e^6*Sqrt[d + e*x] - 45045*a^6*A*e^7*Sqrt[d
 + e*x] - 105105*b^6*B*d^6*(d + e*x)^(3/2) + 90090*A*b^6*d^5*e*(d + e*x)^(3
/2) + 540540*a*b^5*B*d^5*e*(d + e*x)^(3/2) - 450450*a*A*b^5*d^4*e^2*(d + e*
x)^(3/2) - 1126125*a^2*b^4*B*d^4*e^2*(d + e*x)^(3/2) + 900900*a^2*A*b^4*d^3
*e^3*(d + e*x)^(3/2) + 1201200*a^3*b^3*B*d^3*e^3*(d + e*x)^(3/2) - 900900*a
^3*A*b^3*d^2*e^4*(d + e*x)^(3/2) - 675675*a^4*b^2*B*d^2*e^4*(d + e*x)^(3/2)
 + 450450*a^4*A*b^2*d*e^5*(d + e*x)^(3/2) + 180180*a^5*b*B*d*e^5*(d + e*x)^
(3/2) - 90090*a^5*A*b*e^6*(d + e*x)^(3/2) - 15015*a^6*B*e^6*(d + e*x)^(3/2)
 + 189189*b^6*B*d^5*(d + e*x)^(5/2) - 135135*A*b^6*d^4*e*(d + e*x)^(5/2) -
810810*a*b^5*B*d^4*e*(d + e*x)^(5/2) + 540540*a*A*b^5*d^3*e^2*(d + e*x)^(5/
2) + 1351350*a^2*b^4*B*d^3*e^2*(d + e*x)^(5/2) - 810810*a^2*A*b^4*d^2*e^3*(
d + e*x)^(5/2) - 1081080*a^3*b^3*B*d^2*e^3*(d + e*x)^(5/2) + 540540*a^3*A*b
^3*d*e^4*(d + e*x)^(5/2) + 405405*a^4*b^2*B*d*e^4*(d + e*x)^(5/2) - 135135*
a^4*A*b^2*e^5*(d + e*x)^(5/2) - 54054*a^5*b*B*e^5*(d + e*x)^(5/2) - 225225*
b^6*B*d^4*(d + e*x)^(7/2) + 128700*A*b^6*d^3*e*(d + e*x)^(7/2) + 772200*a*b
^5*B*d^3*e*(d + e*x)^(7/2) - 386100*a*A*b^5*d^2*e^2*(d + e*x)^(7/2) - 96525
0*a^2*b^4*B*d^2*e^2*(d + e*x)^(7/2) + 386100*a^2*A*b^4*d*e^3*(d + e*x)^(7/2
) + 514800*a^3*b^3*B*d*e^3*(d + e*x)^(7/2) - 128700*a^3*A*b^3*e^4*(d + e*x)
^(7/2) - 96525*a^4*b^2*B*e^4*(d + e*x)^(7/2) + 175175*b^6*B*d^3*(d + e*x)^(
9/2) - 75075*A*b^6*d^2*e*(d + e*x)^(9/2) - 450450*a*b^5*B*d^2*e*(d + e*x)^(
9/2) + 150150*a*A*b^5*d*e^2*(d + e*x)^(9/2) + 375375*a^2*b^4*B*d*e^2*(d + e
*x)^(9/2) - 75075*a^2*A*b^4*e^3*(d + e*x)^(9/2) - 100100*a^3*b^3*B*e^3*(d +
 e*x)^(9/2) - 85995*b^6*B*d^2*(d + e*x)^(11/2) + 24570*A*b^6*d*e*(d + e*x)^
(11/2) + 147420*a*b^5*B*d*e*(d + e*x)^(11/2) - 24570*a*A*b^5*e^2*(d + e*x)^
(11/2) - 61425*a^2*b^4*B*e^2*(d + e*x)^(11/2) + 24255*b^6*B*d*(d + e*x)^(13
/2) - 3465*A*b^6*e*(d + e*x)^(13/2) - 20790*a*b^5*B*e*(d + e*x)^(13/2) - 30
03*b^6*B*(d + e*x)^(15/2)))/(45045*e^8)
```

fricas [B] time = 0.48, size = 769, normalized size = 2.51

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/45045*(3003*B*b^6*e^7*x^7 - 14336*B*b^6*d^7 + 45045*A*a^6*e^7 + 15360*(6*
B*a*b^5 + A*b^6)*d^6*e - 49920*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 + 91520*(4
```

```
*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 - 102960*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*
e^4 + 72072*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 - 30030*(B*a^6 + 6*A*a^5*b)*d
*e^6 - 231*(14*B*b^6*d*e^6 - 15*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 63*(56*B*b^6
*d^2*e^5 - 60*(6*B*a*b^5 + A*b^6)*d*e^6 + 195*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7
)*x^5 - 35*(112*B*b^6*d^3*e^4 - 120*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 390*(5*B*
a^2*b^4 + 2*A*a*b^5)*d*e^6 - 715*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + 5*(
896*B*b^6*d^4*e^3 - 960*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 3120*(5*B*a^2*b^4 + 2
*A*a*b^5)*d^2*e^5 - 5720*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 6435*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*e^7)*x^3 - 3*(1792*B*b^6*d^5*e^2 - 1920*(6*B*a*b^5 + A*b
^6)*d^4*e^3 + 6240*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 11440*(4*B*a^3*b^3 +
 3*A*a^2*b^4)*d^2*e^5 + 12870*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 9009*(2*B
*a^5*b + 5*A*a^4*b^2)*e^7)*x^2 + (7168*B*b^6*d^6*e - 7680*(6*B*a*b^5 + A*b^
6)*d^5*e^2 + 24960*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^3 - 45760*(4*B*a^3*b^3 +
 3*A*a^2*b^4)*d^3*e^4 + 51480*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 36036*(
2*B*a^5*b + 5*A*a^4*b^2)*d*e^6 + 15015*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x
 + d)/e^8
```

giac [B] time = 0.24, size = 895, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*e^(-1) + 90090*(
(x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*e^(-1) + 18018*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*b*e^(-2) + 45045*(
3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b^2*
e^(-2) + 19305*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/
2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*e^(-3) + 25740*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a
^3*b^3*e^(-3) + 2860*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
 + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^
3*e^(-4) + 2145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*e^(
-4) + 975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*a^2*b^4*e^(-5) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^5*e^(-5) + 90*(231*(x*e + d)^(13/2)
- 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)
*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e
+ d)*d^6)*B*a*b^5*e^(-6) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^6*e^(-6)
+ 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2
)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e
+ d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^6*
e^(-7) + 45045*sqrt(x*e + d)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.98

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(3003*B*b^6*e^7*x^7+3465*A*b^6*e^7*x^6+20790*B*a*b^5*e^7*x^6-3234*B
*b^6*d*e^6*x^6+24570*A*a*b^5*e^7*x^5-3780*A*b^6*d*e^6*x^5+61425*B*a^2*b^4*e
```

```
^7*x^5-22680*B*a*b^5*d*e^6*x^5+3528*B*b^6*d^2*e^5*x^5+75075*A*a^2*b^4*e^7*x
^4-27300*A*a*b^5*d*e^6*x^4+4200*A*b^6*d^2*e^5*x^4+100100*B*a^3*b^3*e^7*x^4-
68250*B*a^2*b^4*d*e^6*x^4+25200*B*a*b^5*d^2*e^5*x^4-3920*B*b^6*d^3*e^4*x^4+
128700*A*a^3*b^3*e^7*x^3-85800*A*a^2*b^4*d*e^6*x^3+31200*A*a*b^5*d^2*e^5*x^
3-4800*A*b^6*d^3*e^4*x^3+96525*B*a^4*b^2*e^7*x^3-114400*B*a^3*b^3*d*e^6*x^3
+78000*B*a^2*b^4*d^2*e^5*x^3-28800*B*a*b^5*d^3*e^4*x^3+4480*B*b^6*d^4*e^3*x
^3+135135*A*a^4*b^2*e^7*x^2-154440*A*a^3*b^3*d*e^6*x^2+102960*A*a^2*b^4*d^2
*e^5*x^2-37440*A*a*b^5*d^3*e^4*x^2+5760*A*b^6*d^4*e^3*x^2+54054*B*a^5*b*e^7
*x^2-115830*B*a^4*b^2*d*e^6*x^2+137280*B*a^3*b^3*d^2*e^5*x^2-93600*B*a^2*b^
4*d^3*e^4*x^2+34560*B*a*b^5*d^4*e^3*x^2-5376*B*b^6*d^5*e^2*x^2+90090*A*a^5*
b*e^7*x-180180*A*a^4*b^2*d*e^6*x+205920*A*a^3*b^3*d^2*e^5*x-137280*A*a^2*b^
4*d^3*e^4*x+49920*A*a*b^5*d^4*e^3*x-7680*A*b^6*d^5*e^2*x+15015*B*a^6*e^7*x-
72072*B*a^5*b*d*e^6*x+154440*B*a^4*b^2*d^2*e^5*x-183040*B*a^3*b^3*d^3*e^4*x
+124800*B*a^2*b^4*d^4*e^3*x-46080*B*a*b^5*d^5*e^2*x+7168*B*b^6*d^6*e*x+4504
5*A*a^6*e^7-180180*A*a^5*b*d*e^6+360360*A*a^4*b^2*d^2*e^5-411840*A*a^3*b^3*
d^3*e^4+274560*A*a^2*b^4*d^4*e^3-99840*A*a*b^5*d^5*e^2+15360*A*b^6*d^6*e-30
030*B*a^6*d*e^6+144144*B*a^5*b*d^2*e^5-308880*B*a^4*b^2*d^3*e^4+366080*B*a^
3*b^3*d^4*e^3-249600*B*a^2*b^4*d^5*e^2+92160*B*a*b^5*d^6*e-14336*B*b^6*d^7)
*(e*x+d)^(1/2)/e^8
```

maxima [**B**] time = 0.61, size = 767, normalized size = 2.51

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*b^6 - 3465*(7*B*b^6*d - (6*B*a*b^5 + A*b^6
)*e)*(e*x + d)^(13/2) + 12285*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5
*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(11/2) - 25025*(7*B*b^6*d^3 - 3*(6*B
*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 +
3*A*a^2*b^4)*e^3)*(e*x + d)^(9/2) + 32175*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b
^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*
b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(7/2) - 27027*(7*B*
b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^
2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*
d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(5/2) + 15015*(7*B*b^6*d^6
 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 - 20*
(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^
4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(e*x + d)^
(3/2) - 45045*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*d^6*e + 3*(5*B*a
^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 5*(3*
B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + (B
*a^6 + 6*A*a^5*b)*d*e^6)*sqrt(e*x + d))/e^8
```

mupad [**B**] time = 0.08, size = 279, normalized size = 0.91

$$\frac{(d+e x)^{13/2}\left(2 A b^6 e-14 B b^6 d+12 B a b^5 e\right)}{13 e^8}+\frac{2 (a e-b d)^5 (d+e x)^{3/2} (6 A b e+B a e-7 B b d)}{3 e^8}+\frac{2 B b^6 (d+e x)^{15/2}}{15 e^8}+\frac{2 (A e-B d) (a e-b d)^6 \sqrt{d+e x}}{e^8}+\frac{6 b (a e-b d)^4 (d+e x)^{5/2} (5 A b e+2 B a e-7 B b d)}{5 e^8}+\frac{6 b^4 (a e-b d) (d+e x)^{11/2} (2 A b e+5 B a e-7 B b d)}{11 e^8}+\frac{10 b^2 (a e-b d)^3 (d+e x)^{7/2} (4 A b e+3 B a e-7 B b d)}{7 e^8}+\frac{10 b^3 (a e-b d)^2 (d+e x)^{9/2} (3 A b e+4 B a e-7 B b d)}{9 e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(13*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(3/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(3*e^8) + (2*B*b^6
*(d + e*x)^(15/2))/(15*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(1/2))
/e^8 + (6*b*(a*e - b*d)^4*(d + e*x)^(5/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d))/(5
*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(11/2)*(2*A*b*e + 5*B*a*e - 7*B*b*d))/
(11*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(7/2)*(4*A*b*e + 3*B*a*e - 7*B*b
```

```
*d))/(7*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(9/2)*(3*A*b*e + 4*B*a*e - 7
*B*b*d))/(9*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1585 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=300

$$-\frac{2b^5(d+ex)^{11/2}(-6aBe-Abe+7bBd)}{11e^8}+\frac{2b^4(d+ex)^{9/2}(bd-ae)(-5aBe-2Abe+7bBd)}{3e^8}-\frac{10b^3(d+ex)^{7/2}(bd-}{}$$

Rubi [A] time = 0.15, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{11/2}(-6aBe-Abe+7bBd)}{11e^8}+\frac{2b^4(d+ex)^{9/2}(bd-ae)(-5aBe-2Abe+7bBd)}{3e^8}-\frac{10b^3(d+ex)^{7/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{7e^8}+\frac{2b^2(d+ex)^{5/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{e^8}-\frac{2b(d+ex)^{3/2}(bd-ae)^4(-2aBe-5Abe+7bBd)}{e^8}+\frac{2\sqrt{d+ex}\,(bd-ae)^5(-aBe-6Abe+7bBd)}{e^8}+\frac{2(bd-ae)^6(Bd-Ae)}{e^8\sqrt{d+ex}}+\frac{2b^6B(d+ex)^{13/2}}{13e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(B*d - A*e))/(e^8*Sqrt[d + e*x]) + (2*(b*d - a*e)^5*(7*b*B
*d - 6*A*b*e - a*B*e)*Sqrt[d + e*x])/e^8 - (2*b*(b*d - a*e)^4*(7*b*B*d - 5*
A*b*e - 2*a*B*e)*(d + e*x)^(3/2))/e^8 + (2*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A
*b*e - 3*a*B*e)*(d + e*x)^(5/2))/e^8 - (10*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A
*b*e - 4*a*B*e)*(d + e*x)^(7/2))/(7*e^8) + (2*b^4*(b*d - a*e)*(7*b*B*d - 2*
A*b*e - 5*a*B*e)*(d + e*x)^(9/2))/(3*e^8) - (2*b^5*(7*b*B*d - A*b*e - 6*a*B
*e)*(d + e*x)^(11/2))/(11*e^8) + (2*b^6*B*(d + e*x)^(13/2))/(13*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7(d+ex)^{3/2}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)}{e^7\sqrt{d+ex}}+\frac{3b}{}\right.\\ &= \frac{2(bd-ae)^6(Bd-Ae)}{e^8\sqrt{d+ex}}+\frac{2(bd-ae)^5(7bBd-6Abe-aBe)\sqrt{d+ex}}{e^8}-\frac{2b}{}\end{aligned}$$

Mathematica [A] time = 0.20, size = 259, normalized size = 0.86

$$\frac{2\left(-273b^5(d+ex)^6(-6aBe-Abe+7bBd)+1001b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-2145b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+3003b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-3003b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)+3003(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)+3003(bd-ae)^6(Bd-Ae)+231b^6B(d+ex)^7\right)}{3003e^8\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(3003*(b*d - a*e)^6*(B*d - A*e) + 3003*(b*d - a*e)^5*(7*b*B*d - 6*A*b*e
- a*B*e)*(d + e*x) - 3003*b*(b*d - a*e)^4*(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d
+ e*x)^2 + 3003*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^3
 - 2145*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^4 + 1001*
b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^5 - 273*b^5*(7*b*B*
d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 231*b^6*B*(d + e*x)^7))/(3003*e^8*Sqrt[d
 + e*x])
```

IntegrateAlgebraic [B] time = 0.23, size = 1069, normalized size = 3.56

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),
x]
```

```
[Out] (2*(3003*b^6*B*d^7 - 3003*A*b^6*d^6*e - 18018*a*b^5*B*d^6*e + 18018*a*A*b^5
*d^5*e^2 + 45045*a^2*b^4*B*d^5*e^2 - 45045*a^2*A*b^4*d^4*e^3 - 60060*a^3*b^
3*B*d^4*e^3 + 60060*a^3*A*b^3*d^3*e^4 + 45045*a^4*b^2*B*d^3*e^4 - 45045*a^4
*A*b^2*d^2*e^5 - 18018*a^5*b*B*d^2*e^5 + 18018*a^5*A*b*d*e^6 + 3003*a^6*B*d
*e^6 - 3003*a^6*A*e^7 + 21021*b^6*B*d^6*(d + e*x) - 18018*A*b^6*d^5*e*(d +
e*x) - 108108*a*b^5*B*d^5*e*(d + e*x) + 90090*a*A*b^5*d^4*e^2*(d + e*x) + 2
25225*a^2*b^4*B*d^4*e^2*(d + e*x) - 180180*a^2*A*b^4*d^3*e^3*(d + e*x) - 24
0240*a^3*b^3*B*d^3*e^3*(d + e*x) + 180180*a^3*A*b^3*d^2*e^4*(d + e*x) + 135
135*a^4*b^2*B*d^2*e^4*(d + e*x) - 90090*a^4*A*b^2*d*e^5*(d + e*x) - 36036*a
^5*b*B*d*e^5*(d + e*x) + 18018*a^5*A*b*e^6*(d + e*x) + 3003*a^6*B*e^6*(d +
e*x) - 21021*b^6*B*d^5*(d + e*x)^2 + 15015*A*b^6*d^4*e*(d + e*x)^2 + 90090*
a*b^5*B*d^4*e*(d + e*x)^2 - 60060*a*A*b^5*d^3*e^2*(d + e*x)^2 - 150150*a^2*
b^4*B*d^3*e^2*(d + e*x)^2 + 90090*a^2*A*b^4*d^2*e^3*(d + e*x)^2 + 120120*a^
3*b^3*B*d^2*e^3*(d + e*x)^2 - 60060*a^3*A*b^3*d*e^4*(d + e*x)^2 - 45045*a^4
*b^2*B*d*e^4*(d + e*x)^2 + 15015*a^4*A*b^2*e^5*(d + e*x)^2 + 6006*a^5*b*B*e
^5*(d + e*x)^2 + 21021*b^6*B*d^4*(d + e*x)^3 - 12012*A*b^6*d^3*e*(d + e*x)^
3 - 72072*a*b^5*B*d^3*e*(d + e*x)^3 + 36036*a*A*b^5*d^2*e^2*(d + e*x)^3 + 9
0090*a^2*b^4*B*d^2*e^2*(d + e*x)^3 - 36036*a^2*A*b^4*d*e^3*(d + e*x)^3 - 48
048*a^3*b^3*B*d*e^3*(d + e*x)^3 + 12012*a^3*A*b^3*e^4*(d + e*x)^3 + 9009*a^
4*b^2*B*e^4*(d + e*x)^3 - 15015*b^6*B*d^3*(d + e*x)^4 + 6435*A*b^6*d^2*e*(d
 + e*x)^4 + 38610*a*b^5*B*d^2*e*(d + e*x)^4 - 12870*a*A*b^5*d*e^2*(d + e*x)
^4 - 32175*a^2*b^4*B*d*e^2*(d + e*x)^4 + 6435*a^2*A*b^4*e^3*(d + e*x)^4 + 8
580*a^3*b^3*B*e^3*(d + e*x)^4 + 7007*b^6*B*d^2*(d + e*x)^5 - 2002*A*b^6*d*e
*(d + e*x)^5 - 12012*a*b^5*B*d*e*(d + e*x)^5 + 2002*a*A*b^5*e^2*(d + e*x)^5
 + 5005*a^2*b^4*B*e^2*(d + e*x)^5 - 1911*b^6*B*d*(d + e*x)^6 + 273*A*b^6*e*
(d + e*x)^6 + 1638*a*b^5*B*e*(d + e*x)^6 + 231*b^6*B*(d + e*x)^7))/(3003*e^
8*Sqrt[d + e*x])
```

fricas [B] time = 0.49, size = 778, normalized size = 2.59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/3003*(231*B*b^6*e^7*x^7 + 14336*B*b^6*d^7 - 3003*A*a^6*e^7 - 13312*(6*B*a
*b^5 + A*b^6)*d^6*e + 36608*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 54912*(4*B*
a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 48048*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4
- 24024*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + 6006*(B*a^6 + 6*A*a^5*b)*d*e^6
- 21*(14*B*b^6*d*e^6 - 13*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 7*(56*B*b^6*d^2*e^
5 - 52*(6*B*a*b^5 + A*b^6)*d*e^6 + 143*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7)*x^5 -
```

```
5*(112*B*b^6*d^3*e^4 - 104*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 286*(5*B*a^2*b^4
+ 2*A*a*b^5)*d*e^6 - 429*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + (896*B*b^6*
d^4*e^3 - 832*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 2288*(5*B*a^2*b^4 + 2*A*a*b^5)*
d^2*e^5 - 3432*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 3003*(3*B*a^4*b^2 + 4*A*
a^3*b^3)*e^7)*x^3 - (1792*B*b^6*d^5*e^2 - 1664*(6*B*a*b^5 + A*b^6)*d^4*e^3
+ 4576*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 6864*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*d^2*e^5 + 6006*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 3003*(2*B*a^5*b + 5*A*a
^4*b^2)*e^7)*x^2 + (7168*B*b^6*d^6*e - 6656*(6*B*a*b^5 + A*b^6)*d^5*e^2 + 1
8304*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^3 - 27456*(4*B*a^3*b^3 + 3*A*a^2*b^4)*
d^3*e^4 + 24024*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 12012*(2*B*a^5*b + 5*
A*a^4*b^2)*d*e^6 + 3003*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x + d)/(e^9*x +
d*e^8)
```

giac [B] time = 0.32, size = 1131, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/3003*(231*(x*e + d)^(13/2)*B*b^6*e^96 - 1911*(x*e + d)^(11/2)*B*b^6*d*e^9
6 + 7007*(x*e + d)^(9/2)*B*b^6*d^2*e^96 - 15015*(x*e + d)^(7/2)*B*b^6*d^3*e
^96 + 21021*(x*e + d)^(5/2)*B*b^6*d^4*e^96 - 21021*(x*e + d)^(3/2)*B*b^6*d^
5*e^96 + 21021*sqrt(x*e + d)*B*b^6*d^6*e^96 + 1638*(x*e + d)^(11/2)*B*a*b^5
*e^97 + 273*(x*e + d)^(11/2)*A*b^6*e^97 - 12012*(x*e + d)^(9/2)*B*a*b^5*d*e
^97 - 2002*(x*e + d)^(9/2)*A*b^6*d*e^97 + 38610*(x*e + d)^(7/2)*B*a*b^5*d^2
*e^97 + 6435*(x*e + d)^(7/2)*A*b^6*d^2*e^97 - 72072*(x*e + d)^(5/2)*B*a*b^5
*d^3*e^97 - 12012*(x*e + d)^(5/2)*A*b^6*d^3*e^97 + 90090*(x*e + d)^(3/2)*B*
a*b^5*d^4*e^97 + 15015*(x*e + d)^(3/2)*A*b^6*d^4*e^97 - 108108*sqrt(x*e + d
)*B*a*b^5*d^5*e^97 - 18018*sqrt(x*e + d)*A*b^6*d^5*e^97 + 5005*(x*e + d)^(9
/2)*B*a^2*b^4*e^98 + 2002*(x*e + d)^(9/2)*A*a*b^5*e^98 - 32175*(x*e + d)^(7
/2)*B*a^2*b^4*d*e^98 - 12870*(x*e + d)^(7/2)*A*a*b^5*d*e^98 + 90090*(x*e +
d)^(5/2)*B*a^2*b^4*d^2*e^98 + 36036*(x*e + d)^(5/2)*A*a*b^5*d^2*e^98 - 1501
50*(x*e + d)^(3/2)*B*a^2*b^4*d^3*e^98 - 60060*(x*e + d)^(3/2)*A*a*b^5*d^3*e
^98 + 225225*sqrt(x*e + d)*B*a^2*b^4*d^4*e^98 + 90090*sqrt(x*e + d)*A*a*b^5
*d^4*e^98 + 8580*(x*e + d)^(7/2)*B*a^3*b^3*e^99 + 6435*(x*e + d)^(7/2)*A*a^
2*b^4*e^99 - 48048*(x*e + d)^(5/2)*B*a^3*b^3*d*e^99 - 36036*(x*e + d)^(5/2)
*A*a^2*b^4*d*e^99 + 120120*(x*e + d)^(3/2)*B*a^3*b^3*d^2*e^99 + 90090*(x*e
+ d)^(3/2)*A*a^2*b^4*d^2*e^99 - 240240*sqrt(x*e + d)*B*a^3*b^3*d^3*e^99 - 1
80180*sqrt(x*e + d)*A*a^2*b^4*d^3*e^99 + 9009*(x*e + d)^(5/2)*B*a^4*b^2*e^1
00 + 12012*(x*e + d)^(5/2)*A*a^3*b^3*e^100 - 45045*(x*e + d)^(3/2)*B*a^4*b^
2*d*e^100 - 60060*(x*e + d)^(3/2)*A*a^3*b^3*d*e^100 + 135135*sqrt(x*e + d)*
B*a^4*b^2*d^2*e^100 + 180180*sqrt(x*e + d)*A*a^3*b^3*d^2*e^100 + 6006*(x*e
+ d)^(3/2)*B*a^5*b*e^101 + 15015*(x*e + d)^(3/2)*A*a^4*b^2*e^101 - 36036*sq
rt(x*e + d)*B*a^5*b*d*e^101 - 90090*sqrt(x*e + d)*A*a^4*b^2*d*e^101 + 3003*
sqrt(x*e + d)*B*a^6*e^102 + 18018*sqrt(x*e + d)*A*a^5*b*e^102)*e^(-104) + 2
*(B*b^6*d^7 - 6*B*a*b^5*d^6*e - A*b^6*d^6*e + 15*B*a^2*b^4*d^5*e^2 + 6*A*a*
b^5*d^5*e^2 - 20*B*a^3*b^3*d^4*e^3 - 15*A*a^2*b^4*d^4*e^3 + 15*B*a^4*b^2*d^
3*e^4 + 20*A*a^3*b^3*d^3*e^4 - 6*B*a^5*b*d^2*e^5 - 15*A*a^4*b^2*d^2*e^5 + B
*a^6*d*e^6 + 6*A*a^5*b*d*e^6 - A*a^6*e^7)*e^(-8)/sqrt(x*e + d)
```

maple [B] time = 0.06, size = 913, normalized size = 3.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/3003*(-231*B*b^6*e^7*x^7-273*A*b^6*e^7*x^6-1638*B*a*b^5*e^7*x^6+294*B*b^
6*d*e^6*x^6-2002*A*a*b^5*e^7*x^5+364*A*b^6*d*e^6*x^5-5005*B*a^2*b^4*e^7*x^5
```

```
+2184*B*a*b^5*d*e^6*x^5-392*B*b^6*d^2*e^5*x^5-6435*A*a^2*b^4*e^7*x^4+2860*A
*a*b^5*d*e^6*x^4-520*A*b^6*d^2*e^5*x^4-8580*B*a^3*b^3*e^7*x^4+7150*B*a^2*b^
4*d*e^6*x^4-3120*B*a*b^5*d^2*e^5*x^4+560*B*b^6*d^3*e^4*x^4-12012*A*a^3*b^3*
e^7*x^3+10296*A*a^2*b^4*d*e^6*x^3-4576*A*a*b^5*d^2*e^5*x^3+832*A*b^6*d^3*e^
4*x^3-9009*B*a^4*b^2*e^7*x^3+13728*B*a^3*b^3*d*e^6*x^3-11440*B*a^2*b^4*d^2*
e^5*x^3+4992*B*a*b^5*d^3*e^4*x^3-896*B*b^6*d^4*e^3*x^3-15015*A*a^4*b^2*e^7*
x^2+24024*A*a^3*b^3*d*e^6*x^2-20592*A*a^2*b^4*d^2*e^5*x^2+9152*A*a*b^5*d^3*
e^4*x^2-1664*A*b^6*d^4*e^3*x^2-6006*B*a^5*b*e^7*x^2+18018*B*a^4*b^2*d*e^6*x
^2-27456*B*a^3*b^3*d^2*e^5*x^2+22880*B*a^2*b^4*d^3*e^4*x^2-9984*B*a*b^5*d^4
*e^3*x^2+1792*B*b^6*d^5*e^2*x^2-18018*A*a^5*b*e^7*x+60060*A*a^4*b^2*d*e^6*x
-96096*A*a^3*b^3*d^2*e^5*x+82368*A*a^2*b^4*d^3*e^4*x-36608*A*a*b^5*d^4*e^3*
x+6656*A*b^6*d^5*e^2*x-3003*B*a^6*e^7*x+24024*B*a^5*b*d*e^6*x-72072*B*a^4*b
^2*d^2*e^5*x+109824*B*a^3*b^3*d^3*e^4*x-91520*B*a^2*b^4*d^4*e^3*x+39936*B*a
*b^5*d^5*e^2*x-7168*B*b^6*d^6*e*x+3003*A*a^6*e^7-36036*A*a^5*b*d*e^6+120120
*A*a^4*b^2*d^2*e^5-192192*A*a^3*b^3*d^3*e^4+164736*A*a^2*b^4*d^4*e^3-73216*
A*a*b^5*d^5*e^2+13312*A*b^6*d^6*e-6006*B*a^6*d*e^6+48048*B*a^5*b*d^2*e^5-14
4144*B*a^4*b^2*d^3*e^4+219648*B*a^3*b^3*d^4*e^3-183040*B*a^2*b^4*d^5*e^2+79
872*B*a*b^5*d^6*e-14336*B*b^6*d^7)/(e*x+d)^(1/2)/e^8
```

maxima [**B**] time = 0.77, size = 775, normalized size = 2.58

$$\frac{2\left(\frac{231\,(ex+d)^{\frac{13}{2}}Bb^6-273\,(7Bb^6d-(6Bab^5+Ab^6)e)(ex+d)^{\frac{11}{2}}+1001\,(7Bb^6d^2-2\,(6Bab^5+Ab^6)de+(5Ba^2b^4+2Aab^5)e^2)(ex+d)^{\frac{9}{2}}-2145\,(7Bb^6d^3-3\,(6Bab^5+Ab^6)d^2e+3\,(5Ba^2b^4+2Aab^5)de^2-(4Ba^3b^3+3Aa^2b^4)e^3)(ex+d)^{\frac{7}{2}}+3003\,(7Bb^6d^4-4\,(6Bab^5+Ab^6)d^3e+6\,(5Ba^2b^4+2Aab^5)d^2e^2-4\,(4Ba^3b^3+3Aa^2b^4)de^3+(3Ba^4b^2+4Aa^3b^3)e^4)(ex+d)^{\frac{5}{2}}-3003\,(7Bb^6d^5-5\,(6Bab^5+Ab^6)d^4e+10\,(5Ba^2b^4+2Aab^5)d^3e^2-10\,(4Ba^3b^3+3Aa^2b^4)d^2e^3+5\,(3Ba^4b^2+4Aa^3b^3)de^4-(2Ba^5b+5Aa^4b^2)e^5)(ex+d)^{\frac{3}{2}}+3003\,(7Bb^6d^6-6\,(6Bab^5+Ab^6)d^5e+15\,(5Ba^2b^4+2Aab^5)d^4e^2-20\,(4Ba^3b^3+3Aa^2b^4)d^3e^3+15\,(3Ba^4b^2+4Aa^3b^3)d^2e^4-6\,(2Ba^5b+5Aa^4b^2)de^5+(Ba^6+6Aa^5b)e^6)\sqrt{ex+d}}{e^7}+\frac{3003\,(Bb^6d^7-Aa^6e^7-(6Bab^5+Ab^6)d^6e+3\,(5Ba^2b^4+2Aab^5)d^5e^2-5\,(4Ba^3b^3+3Aa^2b^4)d^4e^3+5\,(3Ba^4b^2+4Aa^3b^3)d^3e^4-3\,(2Ba^5b+5Aa^4b^2)d^2e^5+(Ba^6+6Aa^5b)de^6)}{\sqrt{ex+d}\,e^7}\right)}{3003\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/3003*((231*(e*x + d)^(13/2)*B*b^6 - 273*(7*B*b^6*d - (6*B*a*b^5 + A*b^6)*
e)*(e*x + d)^(11/2) + 1001*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5*B*
a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(9/2) - 2145*(7*B*b^6*d^3 - 3*(6*B*a*b^
5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 + 3*A*a
^2*b^4)*e^3)*(e*x + d)^(7/2) + 3003*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b^6)*d^
3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d
*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(5/2) - 3003*(7*B*b^6*d^5
 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^2 - 10*
(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^4 -
 (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(3/2) + 3003*(7*B*b^6*d^6 - 6*(6*
B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 - 20*(4*B*a^3
*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^4 - 6*(2
*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*sqrt(e*x + d))/e^7
 + 3003*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*d^6*e + 3*(5*B*a^2*b^4
 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 5*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + (B*a^6 +
 6*A*a^5*b)*d*e^6)/(sqrt(e*x + d)*e^7))/e
```

mupad [**B**] time = 1.94, size = 438, normalized size = 1.46

$$\frac{(d+ex)^{11/2}\left(2Ab^6e-14Bb^6d+12Bab^5e\right)}{11e^8}-\frac{-2Ba^6de^6+2Aa^6e^7+12Ba^5bd^2e^5-12Aa^5bde^6-30Ba^4b^2d^3e^4+30Aa^4b^2d^2e^5+40Ba^3b^3d^4e^3-40Aa^3b^3d^3e^4-30Ba^2b^4d^5e^2+30Aa^2b^4d^4e^3+12Bab^5d^6e-12Aab^5d^5e^2-2Bb^6d^7+2Ab^6d^6e}{e^8\sqrt{d+ex}}+\frac{2(ae-bd)^5\sqrt{d+ex}\,(6Abe+Bae-7Bbd)}{e^8}+\frac{2Bb^6(d+ex)^{13/2}}{13e^8}+\frac{2b(ae-bd)^4(d+ex)^{3/2}(5Abe+2Bae-7Bbd)}{e^8}+\frac{2b^4(ae-bd)(d+ex)^{9/2}(2Abe+5Bae-7Bbd)}{3e^8}+\frac{2b^2(ae-bd)^3(d+ex)^{5/2}(4Abe+3Bae-7Bbd)}{e^8}+\frac{10b^3(ae-bd)^2(d+ex)^{7/2}(3Abe+4Bae-7Bbd)}{7e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(11*e^8) - (2*A*
a^6*e^7 - 2*B*b^6*d^7 + 2*A*b^6*d^6*e - 2*B*a^6*d*e^6 - 12*A*a*b^5*d^5*e^2
+ 12*B*a^5*b*d^2*e^5 + 30*A*a^2*b^4*d^4*e^3 - 40*A*a^3*b^3*d^3*e^4 + 30*A*a
^4*b^2*d^2*e^5 - 30*B*a^2*b^4*d^5*e^2 + 40*B*a^3*b^3*d^4*e^3 - 30*B*a^4*b^2
*d^3*e^4 - 12*A*a^5*b*d*e^6 + 12*B*a*b^5*d^6*e)/(e^8*(d + e*x)^(1/2)) + (2*
(a*e - b*d)^5*(d + e*x)^(1/2)*(6*A*b*e + B*a*e - 7*B*b*d))/e^8 + (2*B*b^6*(
d + e*x)^(13/2))/(13*e^8) + (2*b*(a*e - b*d)^4*(d + e*x)^(3/2)*(5*A*b*e + 2
```

```
*B*a*e - 7*B*b*d))/e^8 + (2*b^4*(a*e - b*d)*(d + e*x)^(9/2)*(2*A*b*e + 5*B*
a*e - 7*B*b*d))/(3*e^8) + (2*b^2*(a*e - b*d)^3*(d + e*x)^(5/2)*(4*A*b*e + 3
*B*a*e - 7*B*b*d))/e^8 + (10*b^3*(a*e - b*d)^2*(d + e*x)^(7/2)*(3*A*b*e + 4
*B*a*e - 7*B*b*d))/(7*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(3/2),x)
[Out] Timed out
```

3.1586 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=302

$$-\frac{2b^5(d+ex)^{9/2}(-6aBe-Abe+7bBd)}{9e^8}+\frac{6b^4(d+ex)^{7/2}(bd-ae)(-5aBe-2Abe+7bBd)}{7e^8}-\frac{2b^3(d+ex)^{5/2}(bd-ae)^2(}{e^8}$$

Rubi [A] time = 0.15, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^5(d+ex)^{9/2}(-6aBe-Abe+7bBd)}{9e^8}+\frac{6b^4(d+ex)^{7/2}(bd-ae)(-5aBe-2Abe+7bBd)}{7e^8}-\frac{2b^3(d+ex)^{5/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{e^8}+\frac{10b^2(d+ex)^{3/2}(bd-ae)^3(-3aBe-4Abe+7bBd)}{3e^8}-\frac{6b\sqrt{d+ex}\,(bd-ae)^4(-2aBe-5Abe+7bBd)}{e^8}-\frac{2(bd-ae)^5(-aBe-6Abe+7bBd)}{e^8\sqrt{d+ex}}+\frac{2(bd-ae)^6(Bd-Ae)}{3e^8(d+ex)^{3/2}}+\frac{2b^6B(d+ex)^{11/2}}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(B*d - A*e))/(3*e^8*(d + e*x)^(3/2)) - (2*(b*d - a*e)^5*(7
*b*B*d - 6*A*b*e - a*B*e))/(e^8*Sqrt[d + e*x]) - (6*b*(b*d - a*e)^4*(7*b*B*
d - 5*A*b*e - 2*a*B*e)*Sqrt[d + e*x])/e^8 + (10*b^2*(b*d - a*e)^3*(7*b*B*d
- 4*A*b*e - 3*a*B*e)*(d + e*x)^(3/2))/(3*e^8) - (2*b^3*(b*d - a*e)^2*(7*b*B
*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(5/2))/e^8 + (6*b^4*(b*d - a*e)*(7*b*B*d
- 2*A*b*e - 5*a*B*e)*(d + e*x)^(7/2))/(7*e^8) - (2*b^5*(7*b*B*d - A*b*e - 6
*a*B*e)*(d + e*x)^(9/2))/(9*e^8) + (2*b^6*B*(d + e*x)^(11/2))/(11*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7(d+ex)^{5/2}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)}{e^7(d+ex)^{3/2}}+\frac{3b(bd}{}\right.\\ &= \frac{2(bd-ae)^6(Bd-Ae)}{3e^8(d+ex)^{3/2}}-\frac{2(bd-ae)^5(7bBd-6Abe-aBe)}{e^8\sqrt{d+ex}}-\frac{6b(bd-ae)^4(7}{}\end{aligned}$$

Mathematica [A] time = 0.19, size = 259, normalized size = 0.86

$$\frac{2\left(-77b^5(d+ex)^6(-6aBe-Abe+7bBd)+297b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-693b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+1155b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)-2079b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)-693(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)+231(bd-ae)^6(Bd-Ae)+63b^6B(d+ex)^7\right)}{693e^8(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(231*(b*d - a*e)^6*(B*d - A*e) - 693*(b*d - a*e)^5*(7*b*B*d - 6*A*b*e -
a*B*e)*(d + e*x) - 2079*b*(b*d - a*e)^4*(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d +
e*x)^2 + 1155*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^3 -
 693*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^4 + 297*b^4*
(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^5 - 77*b^5*(7*b*B*d - A
*b*e - 6*a*B*e)*(d + e*x)^6 + 63*b^6*B*(d + e*x)^7))/(693*e^8*(d + e*x)^(3/
2))
```

IntegrateAlgebraic [B] time = 0.23, size = 1069, normalized size = 3.54

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),
x]
```

```
[Out] (2*(231*b^6*B*d^7 - 231*A*b^6*d^6*e - 1386*a*b^5*B*d^6*e + 1386*a*A*b^5*d^5
*e^2 + 3465*a^2*b^4*B*d^5*e^2 - 3465*a^2*A*b^4*d^4*e^3 - 4620*a^3*b^3*B*d^4
*e^3 + 4620*a^3*A*b^3*d^3*e^4 + 3465*a^4*b^2*B*d^3*e^4 - 3465*a^4*A*b^2*d^2
*e^5 - 1386*a^5*b*B*d^2*e^5 + 1386*a^5*A*b*d*e^6 + 231*a^6*B*d*e^6 - 231*a^
6*A*e^7 - 4851*b^6*B*d^6*(d + e*x) + 4158*A*b^6*d^5*e*(d + e*x) + 24948*a*b
^5*B*d^5*e*(d + e*x) - 20790*a*A*b^5*d^4*e^2*(d + e*x) - 51975*a^2*b^4*B*d^
4*e^2*(d + e*x) + 41580*a^2*A*b^4*d^3*e^3*(d + e*x) + 55440*a^3*b^3*B*d^3*e
^3*(d + e*x) - 41580*a^3*A*b^3*d^2*e^4*(d + e*x) - 31185*a^4*b^2*B*d^2*e^4*
(d + e*x) + 20790*a^4*A*b^2*d*e^5*(d + e*x) + 8316*a^5*b*B*d*e^5*(d + e*x)
- 4158*a^5*A*b*e^6*(d + e*x) - 693*a^6*B*e^6*(d + e*x) - 14553*b^6*B*d^5*(d
 + e*x)^2 + 10395*A*b^6*d^4*e*(d + e*x)^2 + 62370*a*b^5*B*d^4*e*(d + e*x)^2
 - 41580*a*A*b^5*d^3*e^2*(d + e*x)^2 - 103950*a^2*b^4*B*d^3*e^2*(d + e*x)^2
 + 62370*a^2*A*b^4*d^2*e^3*(d + e*x)^2 + 83160*a^3*b^3*B*d^2*e^3*(d + e*x)^
2 - 41580*a^3*A*b^3*d*e^4*(d + e*x)^2 - 31185*a^4*b^2*B*d*e^4*(d + e*x)^2 +
 10395*a^4*A*b^2*e^5*(d + e*x)^2 + 4158*a^5*b*B*e^5*(d + e*x)^2 + 8085*b^6*
B*d^4*(d + e*x)^3 - 4620*A*b^6*d^3*e*(d + e*x)^3 - 27720*a*b^5*B*d^3*e*(d +
 e*x)^3 + 13860*a*A*b^5*d^2*e^2*(d + e*x)^3 + 34650*a^2*b^4*B*d^2*e^2*(d +
e*x)^3 - 13860*a^2*A*b^4*d*e^3*(d + e*x)^3 - 18480*a^3*b^3*B*d*e^3*(d + e*x
)^3 + 4620*a^3*A*b^3*e^4*(d + e*x)^3 + 3465*a^4*b^2*B*e^4*(d + e*x)^3 - 485
1*b^6*B*d^3*(d + e*x)^4 + 2079*A*b^6*d^2*e*(d + e*x)^4 + 12474*a*b^5*B*d^2*
e*(d + e*x)^4 - 4158*a*A*b^5*d*e^2*(d + e*x)^4 - 10395*a^2*b^4*B*d*e^2*(d +
 e*x)^4 + 2079*a^2*A*b^4*e^3*(d + e*x)^4 + 2772*a^3*b^3*B*e^3*(d + e*x)^4 +
 2079*b^6*B*d^2*(d + e*x)^5 - 594*A*b^6*d*e*(d + e*x)^5 - 3564*a*b^5*B*d*e*
(d + e*x)^5 + 594*a*A*b^5*e^2*(d + e*x)^5 + 1485*a^2*b^4*B*e^2*(d + e*x)^5
- 539*b^6*B*d*(d + e*x)^6 + 77*A*b^6*e*(d + e*x)^6 + 462*a*b^5*B*e*(d + e*x
)^6 + 63*b^6*B*(d + e*x)^7))/(693*e^8*(d + e*x)^(3/2))
```

fricas [B] time = 0.45, size = 790, normalized size = 2.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/693*(63*B*b^6*e^7*x^7 - 14336*B*b^6*d^7 - 231*A*a^6*e^7 + 11264*(6*B*a*b^
5 + A*b^6)*d^6*e - 25344*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 + 29568*(4*B*a^3
*b^3 + 3*A*a^2*b^4)*d^4*e^3 - 18480*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 + 5
544*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 - 462*(B*a^6 + 6*A*a^5*b)*d*e^6 - 7*(
14*B*b^6*d*e^6 - 11*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 3*(56*B*b^6*d^2*e^5 - 44
*(6*B*a*b^5 + A*b^6)*d*e^6 + 99*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7)*x^5 - 3*(112
*B*b^6*d^3*e^4 - 88*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 198*(5*B*a^2*b^4 + 2*A*a*
```

```
b^5)*d*e^6 - 231*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + (896*B*b^6*d^4*e^3
- 704*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 1584*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^5
- 1848*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 1155*(3*B*a^4*b^2 + 4*A*a^3*b^3)
*e^7)*x^3 - 3*(1792*B*b^6*d^5*e^2 - 1408*(6*B*a*b^5 + A*b^6)*d^4*e^3 + 3168
*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 3696*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e
^5 + 2310*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 693*(2*B*a^5*b + 5*A*a^4*b^2)
*e^7)*x^2 - 3*(7168*B*b^6*d^6*e - 5632*(6*B*a*b^5 + A*b^6)*d^5*e^2 + 12672*
(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^3 - 14784*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e
^4 + 9240*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 2772*(2*B*a^5*b + 5*A*a^4*b
^2)*d*e^6 + 231*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x + d)/(e^10*x^2 + 2*d*e
^9*x + d^2*e^8)
```

giac [B] time = 0.31, size = 1103, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/693*(63*(x*e + d)^(11/2)*B*b^6*e^80 - 539*(x*e + d)^(9/2)*B*b^6*d*e^80 +
2079*(x*e + d)^(7/2)*B*b^6*d^2*e^80 - 4851*(x*e + d)^(5/2)*B*b^6*d^3*e^80 +
 8085*(x*e + d)^(3/2)*B*b^6*d^4*e^80 - 14553*sqrt(x*e + d)*B*b^6*d^5*e^80 +
 462*(x*e + d)^(9/2)*B*a*b^5*e^81 + 77*(x*e + d)^(9/2)*A*b^6*e^81 - 3564*(x
*e + d)^(7/2)*B*a*b^5*d*e^81 - 594*(x*e + d)^(7/2)*A*b^6*d*e^81 + 12474*(x*
e + d)^(5/2)*B*a*b^5*d^2*e^81 + 2079*(x*e + d)^(5/2)*A*b^6*d^2*e^81 - 27720
*(x*e + d)^(3/2)*B*a*b^5*d^3*e^81 - 4620*(x*e + d)^(3/2)*A*b^6*d^3*e^81 + 6
2370*sqrt(x*e + d)*B*a*b^5*d^4*e^81 + 10395*sqrt(x*e + d)*A*b^6*d^4*e^81 +
1485*(x*e + d)^(7/2)*B*a^2*b^4*e^82 + 594*(x*e + d)^(7/2)*A*a*b^5*e^82 - 10
395*(x*e + d)^(5/2)*B*a^2*b^4*d*e^82 - 4158*(x*e + d)^(5/2)*A*a*b^5*d*e^82
+ 34650*(x*e + d)^(3/2)*B*a^2*b^4*d^2*e^82 + 13860*(x*e + d)^(3/2)*A*a*b^5*
d^2*e^82 - 103950*sqrt(x*e + d)*B*a^2*b^4*d^3*e^82 - 41580*sqrt(x*e + d)*A*
a*b^5*d^3*e^82 + 2772*(x*e + d)^(5/2)*B*a^3*b^3*e^83 + 2079*(x*e + d)^(5/2)
*A*a^2*b^4*e^83 - 18480*(x*e + d)^(3/2)*B*a^3*b^3*d*e^83 - 13860*(x*e + d)^
(3/2)*A*a^2*b^4*d*e^83 + 83160*sqrt(x*e + d)*B*a^3*b^3*d^2*e^83 + 62370*sqr
t(x*e + d)*A*a^2*b^4*d^2*e^83 + 3465*(x*e + d)^(3/2)*B*a^4*b^2*e^84 + 4620*
(x*e + d)^(3/2)*A*a^3*b^3*e^84 - 31185*sqrt(x*e + d)*B*a^4*b^2*d*e^84 - 415
80*sqrt(x*e + d)*A*a^3*b^3*d*e^84 + 4158*sqrt(x*e + d)*B*a^5*b*e^85 + 10395
*sqrt(x*e + d)*A*a^4*b^2*e^85)*e^(-88) - 2/3*(21*(x*e + d)*B*b^6*d^6 - B*b^
6*d^7 - 108*(x*e + d)*B*a*b^5*d^5*e - 18*(x*e + d)*A*b^6*d^5*e + 6*B*a*b^5*
d^6*e + A*b^6*d^6*e + 225*(x*e + d)*B*a^2*b^4*d^4*e^2 + 90*(x*e + d)*A*a*b^
5*d^4*e^2 - 15*B*a^2*b^4*d^5*e^2 - 6*A*a*b^5*d^5*e^2 - 240*(x*e + d)*B*a^3*
b^3*d^3*e^3 - 180*(x*e + d)*A*a^2*b^4*d^3*e^3 + 20*B*a^3*b^3*d^4*e^3 + 15*A
*a^2*b^4*d^4*e^3 + 135*(x*e + d)*B*a^4*b^2*d^2*e^4 + 180*(x*e + d)*A*a^3*b^
3*d^2*e^4 - 15*B*a^4*b^2*d^3*e^4 - 20*A*a^3*b^3*d^3*e^4 - 36*(x*e + d)*B*a^
5*b*d*e^5 - 90*(x*e + d)*A*a^4*b^2*d*e^5 + 6*B*a^5*b*d^2*e^5 + 15*A*a^4*b^2
*d^2*e^5 + 3*(x*e + d)*B*a^6*e^6 + 18*(x*e + d)*A*a^5*b*e^6 - B*a^6*d*e^6 -
 6*A*a^5*b*d*e^6 + A*a^6*e^7)*e^(-8)/(x*e + d)^(3/2)
```

maple [B] time = 0.06, size = 913, normalized size = 3.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/693*(-63*B*b^6*e^7*x^7-77*A*b^6*e^7*x^6-462*B*a*b^5*e^7*x^6+98*B*b^6*d*e
^6*x^6-594*A*a*b^5*e^7*x^5+132*A*b^6*d*e^6*x^5-1485*B*a^2*b^4*e^7*x^5+792*B
*a*b^5*d*e^6*x^5-168*B*b^6*d^2*e^5*x^5-2079*A*a^2*b^4*e^7*x^4+1188*A*a*b^5*
d*e^6*x^4-264*A*b^6*d^2*e^5*x^4-2772*B*a^3*b^3*e^7*x^4+2970*B*a^2*b^4*d*e^6
```

```
*x^4-1584*B*a*b^5*d^2*e^5*x^4+336*B*b^6*d^3*e^4*x^4-4620*A*a^3*b^3*e^7*x^3+
5544*A*a^2*b^4*d*e^6*x^3-3168*A*a*b^5*d^2*e^5*x^3+704*A*b^6*d^3*e^4*x^3-346
5*B*a^4*b^2*e^7*x^3+7392*B*a^3*b^3*d*e^6*x^3-7920*B*a^2*b^4*d^2*e^5*x^3+422
4*B*a*b^5*d^3*e^4*x^3-896*B*b^6*d^4*e^3*x^3-10395*A*a^4*b^2*e^7*x^2+27720*A
*a^3*b^3*d*e^6*x^2-33264*A*a^2*b^4*d^2*e^5*x^2+19008*A*a*b^5*d^3*e^4*x^2-42
24*A*b^6*d^4*e^3*x^2-4158*B*a^5*b*e^7*x^2+20790*B*a^4*b^2*d*e^6*x^2-44352*B
*a^3*b^3*d^2*e^5*x^2+47520*B*a^2*b^4*d^3*e^4*x^2-25344*B*a*b^5*d^4*e^3*x^2+
5376*B*b^6*d^5*e^2*x^2+4158*A*a^5*b*e^7*x-41580*A*a^4*b^2*d*e^6*x+110880*A*
a^3*b^3*d^2*e^5*x-133056*A*a^2*b^4*d^3*e^4*x+76032*A*a*b^5*d^4*e^3*x-16896*
A*b^6*d^5*e^2*x+693*B*a^6*e^7*x-16632*B*a^5*b*d*e^6*x+83160*B*a^4*b^2*d^2*e
^5*x-177408*B*a^3*b^3*d^3*e^4*x+190080*B*a^2*b^4*d^4*e^3*x-101376*B*a*b^5*d
^5*e^2*x+21504*B*b^6*d^6*e*x+231*A*a^6*e^7+2772*A*a^5*b*d*e^6-27720*A*a^4*b
^2*d^2*e^5+73920*A*a^3*b^3*d^3*e^4-88704*A*a^2*b^4*d^4*e^3+50688*A*a*b^5*d^
5*e^2-11264*A*b^6*d^6*e+462*B*a^6*d*e^6-11088*B*a^5*b*d^2*e^5+55440*B*a^4*b
^2*d^3*e^4-118272*B*a^3*b^3*d^4*e^3+126720*B*a^2*b^4*d^5*e^2-67584*B*a*b^5*
d^6*e+14336*B*b^6*d^7)/(e*x+d)^(3/2)/e^8
```

maxima [B] time = 0.53, size = 773, normalized size = 2.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/693*((63*(e*x + d)^(11/2)*B*b^6 - 77*(7*B*b^6*d - (6*B*a*b^5 + A*b^6)*e)*
(e*x + d)^(9/2) + 297*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5*B*a^2*b
^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(7/2) - 693*(7*B*b^6*d^3 - 3*(6*B*a*b^5 + A*
b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 + 3*A*a^2*b^4
)*e^3)*(e*x + d)^(5/2) + 1155*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b^6)*d^3*e +
6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^3 +
 (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(3/2) - 2079*(7*B*b^6*d^5 - 5*(
6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^2 - 10*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^4 - (2*B*
a^5*b + 5*A*a^4*b^2)*e^5)*sqrt(e*x + d))/e^7 + 231*(B*b^6*d^7 - A*a^6*e^7 -
 (6*B*a*b^5 + A*b^6)*d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(
2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6 - 3*(7*B*b^6*d
^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 - 2
0*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*
e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(e*x + d
))/((e*x + d)^(3/2)*e^7))/e
```

mupad [B] time = 1.97, size = 569, normalized size = 1.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(9*e^8) - ((d + e
*x)*(2*B*a^6*e^6 + 14*B*b^6*d^6 + 12*A*a^5*b*e^6 - 12*A*b^6*d^5*e + 60*A*a*
b^5*d^4*e^2 - 60*A*a^4*b^2*d*e^5 - 120*A*a^2*b^4*d^3*e^3 + 120*A*a^3*b^3*d^
2*e^4 + 150*B*a^2*b^4*d^4*e^2 - 160*B*a^3*b^3*d^3*e^3 + 90*B*a^4*b^2*d^2*e^
4 - 72*B*a*b^5*d^5*e - 24*B*a^5*b*d*e^5) + (2*A*a^6*e^7)/3 - (2*B*b^6*d^7)/
3 + (2*A*b^6*d^6*e)/3 - (2*B*a^6*d*e^6)/3 - 4*A*a*b^5*d^5*e^2 + 4*B*a^5*b*d
^2*e^5 + 10*A*a^2*b^4*d^4*e^3 - (40*A*a^3*b^3*d^3*e^4)/3 + 10*A*a^4*b^2*d^2
*e^5 - 10*B*a^2*b^4*d^5*e^2 + (40*B*a^3*b^3*d^4*e^3)/3 - 10*B*a^4*b^2*d^3*e
^4 - 4*A*a^5*b*d*e^6 + 4*B*a*b^5*d^6*e)/(e^8*(d + e*x)^(3/2)) + (2*B*b^6*(d
```

```
 + e*x)^(11/2))/(11*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(1/2)*(5*A*b*e + 2*
B*a*e - 7*B*b*d))/e^8 + (6*b^4*(a*e - b*d)*(d + e*x)^(7/2)*(2*A*b*e + 5*B*a
*e - 7*B*b*d))/(7*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(3/2)*(4*A*b*e + 3
*B*a*e - 7*B*b*d))/(3*e^8) + (2*b^3*(a*e - b*d)^2*(d + e*x)^(5/2)*(3*A*b*e
+ 4*B*a*e - 7*B*b*d))/e^8
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(5/2),x)
[Out] Timed out
```

3.1587 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=304

$$-\frac{2b^5(d+ex)^{7/2}(-6aBe-Abe+7bBd)}{7e^8}+\frac{6b^4(d+ex)^{5/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{3/2}(bd-\ldots}{}$$

Rubi [A] time = 0.15, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^5(d+ex)^{7/2}(-6aBe-Abe+7bBd)}{7e^8}+\frac{6b^4(d+ex)^{5/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{3/2}(bd-ae)^2(-4aBe-3Abe+7bBd)}{3e^8}+\frac{10b^2\sqrt{d+ex}(bd-ae)^3(-3aBe-4Abe+7bBd)}{e^8}+\frac{6b(bd-ae)^4(-2aBe-5Abe+7bBd)}{e^8\sqrt{d+ex}}-\frac{2(bd-ae)^5(-aBe-6Abe+7bBd)}{3e^8(d+ex)^{3/2}}+\frac{2(bd-ae)^6(Bd-Ae)}{5e^8(d+ex)^{5/2}}+\frac{2b^6B(d+ex)^{9/2}}{9e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(B*d - A*e))/(5*e^8*(d + e*x)^(5/2)) - (2*(b*d - a*e)^5*(7
*b*B*d - 6*A*b*e - a*B*e))/(3*e^8*(d + e*x)^(3/2)) + (6*b*(b*d - a*e)^4*(7*
b*B*d - 5*A*b*e - 2*a*B*e))/(e^8*Sqrt[d + e*x]) + (10*b^2*(b*d - a*e)^3*(7*
b*B*d - 4*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/e^8 - (10*b^3*(b*d - a*e)^2*(7*b*
B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(3/2))/(3*e^8) + (6*b^4*(b*d - a*e)*(7*b
*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(5/2))/(5*e^8) - (2*b^5*(7*b*B*d - A*b*
e - 6*a*B*e)*(d + e*x)^(7/2))/(7*e^8) + (2*b^6*B*(d + e*x)^(9/2))/(9*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{(d+ex)^{7/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7(d+ex)^{7/2}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)}{e^7(d+ex)^{5/2}}+\frac{3b\ldots}{}\right.\\
&= \frac{2(bd-ae)^6(Bd-Ae)}{5e^8(d+ex)^{5/2}}-\frac{2(bd-ae)^5(7bBd-6Abe-aBe)}{3e^8(d+ex)^{3/2}}+\frac{6b(bd-ae)\ldots}{}
\end{aligned}$$

Mathematica [A] time = 0.19, size = 259, normalized size = 0.85

$$\frac{2\left(-45b^5(d+ex)^6(-6aBe-Abe+7bBd)+189b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-525b^3(d+ex)^4(bd-ae)^2(-4aBe-3Abe+7bBd)+1575b^2(d+ex)^3(bd-ae)^3(-3aBe-4Abe+7bBd)+945b(d+ex)^2(bd-ae)^4(-2aBe-5Abe+7bBd)-105(d+ex)(bd-ae)^5(-aBe-6Abe+7bBd)+63(bd-ae)^6(Bd-Ae)+35b^6B(d+ex)^7\right)}{315e^8(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(63*(b*d - a*e)^6*(B*d - A*e) - 105*(b*d - a*e)^5*(7*b*B*d - 6*A*b*e - a
*B*e)*(d + e*x) + 945*b*(b*d - a*e)^4*(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*
x)^2 + 1575*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^3 - 5
25*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^4 + 189*b^4*(b
*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^5 - 45*b^5*(7*b*B*d - A*b
*e - 6*a*B*e)*(d + e*x)^6 + 35*b^6*B*(d + e*x)^7))/(315*e^8*(d + e*x)^(5/2)
)
```

IntegrateAlgebraic [B] time = 0.23, size = 1069, normalized size = 3.52

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),
x]
```

```
[Out] (2*(63*b^6*B*d^7 - 63*A*b^6*d^6*e - 378*a*b^5*B*d^6*e + 378*a*A*b^5*d^5*e^2
 + 945*a^2*b^4*B*d^5*e^2 - 945*a^2*A*b^4*d^4*e^3 - 1260*a^3*b^3*B*d^4*e^3 +
 1260*a^3*A*b^3*d^3*e^4 + 945*a^4*b^2*B*d^3*e^4 - 945*a^4*A*b^2*d^2*e^5 - 3
78*a^5*b*B*d^2*e^5 + 378*a^5*A*b*d*e^6 + 63*a^6*B*d*e^6 - 63*a^6*A*e^7 - 73
5*b^6*B*d^6*(d + e*x) + 630*A*b^6*d^5*e*(d + e*x) + 3780*a*b^5*B*d^5*e*(d +
 e*x) - 3150*a*A*b^5*d^4*e^2*(d + e*x) - 7875*a^2*b^4*B*d^4*e^2*(d + e*x) +
 6300*a^2*A*b^4*d^3*e^3*(d + e*x) + 8400*a^3*b^3*B*d^3*e^3*(d + e*x) - 6300
*a^3*A*b^3*d^2*e^4*(d + e*x) - 4725*a^4*b^2*B*d^2*e^4*(d + e*x) + 3150*a^4*
A*b^2*d*e^5*(d + e*x) + 1260*a^5*b*B*d*e^5*(d + e*x) - 630*a^5*A*b*e^6*(d +
 e*x) - 105*a^6*B*e^6*(d + e*x) + 6615*b^6*B*d^5*(d + e*x)^2 - 4725*A*b^6*d
^4*e*(d + e*x)^2 - 28350*a*b^5*B*d^4*e*(d + e*x)^2 + 18900*a*A*b^5*d^3*e^2*
(d + e*x)^2 + 47250*a^2*b^4*B*d^3*e^2*(d + e*x)^2 - 28350*a^2*A*b^4*d^2*e^3
*(d + e*x)^2 - 37800*a^3*b^3*B*d^2*e^3*(d + e*x)^2 + 18900*a^3*A*b^3*d*e^4*
(d + e*x)^2 + 14175*a^4*b^2*B*d*e^4*(d + e*x)^2 - 4725*a^4*A*b^2*e^5*(d + e
*x)^2 - 1890*a^5*b*B*e^5*(d + e*x)^2 + 11025*b^6*B*d^4*(d + e*x)^3 - 6300*A
*b^6*d^3*e*(d + e*x)^3 - 37800*a*b^5*B*d^3*e*(d + e*x)^3 + 18900*a*A*b^5*d^
2*e^2*(d + e*x)^3 + 47250*a^2*b^4*B*d^2*e^2*(d + e*x)^3 - 18900*a^2*A*b^4*d
*e^3*(d + e*x)^3 - 25200*a^3*b^3*B*d*e^3*(d + e*x)^3 + 6300*a^3*A*b^3*e^4*(
d + e*x)^3 + 4725*a^4*b^2*B*e^4*(d + e*x)^3 - 3675*b^6*B*d^3*(d + e*x)^4 +
1575*A*b^6*d^2*e*(d + e*x)^4 + 9450*a*b^5*B*d^2*e*(d + e*x)^4 - 3150*a*A*b^
5*d*e^2*(d + e*x)^4 - 7875*a^2*b^4*B*d*e^2*(d + e*x)^4 + 1575*a^2*A*b^4*e^3
*(d + e*x)^4 + 2100*a^3*b^3*B*e^3*(d + e*x)^4 + 1323*b^6*B*d^2*(d + e*x)^5
- 378*A*b^6*d*e*(d + e*x)^5 - 2268*a*b^5*B*d*e*(d + e*x)^5 + 378*a*A*b^5*e^
2*(d + e*x)^5 + 945*a^2*b^4*B*e^2*(d + e*x)^5 - 315*b^6*B*d*(d + e*x)^6 + 4
5*A*b^6*e*(d + e*x)^6 + 270*a*b^5*B*e*(d + e*x)^6 + 35*b^6*B*(d + e*x)^7))/
(315*e^8*(d + e*x)^(5/2))
```

fricas [B] time = 0.44, size = 802, normalized size = 2.64

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/315*(35*B*b^6*e^7*x^7 + 14336*B*b^6*d^7 - 63*A*a^6*e^7 - 9216*(6*B*a*b^5
+ A*b^6)*d^6*e + 16128*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 13440*(4*B*a^3*b
^3 + 3*A*a^2*b^4)*d^4*e^3 + 5040*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 504*
(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 - 42*(B*a^6 + 6*A*a^5*b)*d*e^6 - 5*(14*B*
b^6*d*e^6 - 9*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 3*(56*B*b^6*d^2*e^5 - 36*(6*B*
a*b^5 + A*b^6)*d*e^6 + 63*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7)*x^5 - 5*(112*B*b^6
*d^3*e^4 - 72*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 126*(5*B*a^2*b^4 + 2*A*a*b^5)*d
```

```
*e^6 - 105*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + 5*(896*B*b^6*d^4*e^3 - 57
6*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 1008*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^5 - 84
0*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 315*(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^7)*
x^3 + 15*(1792*B*b^6*d^5*e^2 - 1152*(6*B*a*b^5 + A*b^6)*d^4*e^3 + 2016*(5*B
*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 1680*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^5 +
630*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 63*(2*B*a^5*b + 5*A*a^4*b^2)*e^7)*x
^2 + 5*(7168*B*b^6*d^6*e - 4608*(6*B*a*b^5 + A*b^6)*d^5*e^2 + 8064*(5*B*a^2
*b^4 + 2*A*a*b^5)*d^4*e^3 - 6720*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^4 + 2520
*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 252*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^6
- 21*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x + d)/(e^11*x^3 + 3*d*e^10*x^2 + 3
*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.33, size = 1103, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*b^6*e^64 - 315*(x*e + d)^(7/2)*B*b^6*d*e^64 + 1
323*(x*e + d)^(5/2)*B*b^6*d^2*e^64 - 3675*(x*e + d)^(3/2)*B*b^6*d^3*e^64 +
11025*sqrt(x*e + d)*B*b^6*d^4*e^64 + 270*(x*e + d)^(7/2)*B*a*b^5*e^65 + 45*
(x*e + d)^(7/2)*A*b^6*e^65 - 2268*(x*e + d)^(5/2)*B*a*b^5*d*e^65 - 378*(x*e
 + d)^(5/2)*A*b^6*d*e^65 + 9450*(x*e + d)^(3/2)*B*a*b^5*d^2*e^65 + 1575*(x*
e + d)^(3/2)*A*b^6*d^2*e^65 - 37800*sqrt(x*e + d)*B*a*b^5*d^3*e^65 - 6300*s
qrt(x*e + d)*A*b^6*d^3*e^65 + 945*(x*e + d)^(5/2)*B*a^2*b^4*e^66 + 378*(x*e
 + d)^(5/2)*A*a*b^5*e^66 - 7875*(x*e + d)^(3/2)*B*a^2*b^4*d*e^66 - 3150*(x*
e + d)^(3/2)*A*a*b^5*d*e^66 + 47250*sqrt(x*e + d)*B*a^2*b^4*d^2*e^66 + 1890
0*sqrt(x*e + d)*A*a*b^5*d^2*e^66 + 2100*(x*e + d)^(3/2)*B*a^3*b^3*e^67 + 15
75*(x*e + d)^(3/2)*A*a^2*b^4*e^67 - 25200*sqrt(x*e + d)*B*a^3*b^3*d*e^67 -
18900*sqrt(x*e + d)*A*a^2*b^4*d*e^67 + 4725*sqrt(x*e + d)*B*a^4*b^2*e^68 +
6300*sqrt(x*e + d)*A*a^3*b^3*e^68)*e^(-72) + 2/15*(315*(x*e + d)^2*B*b^6*d^
5 - 35*(x*e + d)*B*b^6*d^6 + 3*B*b^6*d^7 - 1350*(x*e + d)^2*B*a*b^5*d^4*e -
 225*(x*e + d)^2*A*b^6*d^4*e + 180*(x*e + d)*B*a*b^5*d^5*e + 30*(x*e + d)*A
*b^6*d^5*e - 18*B*a*b^5*d^6*e - 3*A*b^6*d^6*e + 2250*(x*e + d)^2*B*a^2*b^4*
d^3*e^2 + 900*(x*e + d)^2*A*a*b^5*d^3*e^2 - 375*(x*e + d)*B*a^2*b^4*d^4*e^2
 - 150*(x*e + d)*A*a*b^5*d^4*e^2 + 45*B*a^2*b^4*d^5*e^2 + 18*A*a*b^5*d^5*e^
2 - 1800*(x*e + d)^2*B*a^3*b^3*d^2*e^3 - 1350*(x*e + d)^2*A*a^2*b^4*d^2*e^3
 + 400*(x*e + d)*B*a^3*b^3*d^3*e^3 + 300*(x*e + d)*A*a^2*b^4*d^3*e^3 - 60*B
*a^3*b^3*d^4*e^3 - 45*A*a^2*b^4*d^4*e^3 + 675*(x*e + d)^2*B*a^4*b^2*d*e^4 +
 900*(x*e + d)^2*A*a^3*b^3*d*e^4 - 225*(x*e + d)*B*a^4*b^2*d^2*e^4 - 300*(x
*e + d)*A*a^3*b^3*d^2*e^4 + 45*B*a^4*b^2*d^3*e^4 + 60*A*a^3*b^3*d^3*e^4 - 9
0*(x*e + d)^2*B*a^5*b*e^5 - 225*(x*e + d)^2*A*a^4*b^2*e^5 + 60*(x*e + d)*B*
a^5*b*d*e^5 + 150*(x*e + d)*A*a^4*b^2*d*e^5 - 18*B*a^5*b*d^2*e^5 - 45*A*a^4
*b^2*d^2*e^5 - 5*(x*e + d)*B*a^6*e^6 - 30*(x*e + d)*A*a^5*b*e^6 + 3*B*a^6*d
*e^6 + 18*A*a^5*b*d*e^6 - 3*A*a^6*e^7)*e^(-8)/(x*e + d)^(5/2)
```

maple [B] time = 0.05, size = 913, normalized size = 3.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x)
```

```
[Out] -2/315*(-35*B*b^6*e^7*x^7-45*A*b^6*e^7*x^6-270*B*a*b^5*e^7*x^6+70*B*b^6*d*e
^6*x^6-378*A*a*b^5*e^7*x^5+108*A*b^6*d*e^6*x^5-945*B*a^2*b^4*e^7*x^5+648*B*
a*b^5*d*e^6*x^5-168*B*b^6*d^2*e^5*x^5-1575*A*a^2*b^4*e^7*x^4+1260*A*a*b^5*d
*e^6*x^4-360*A*b^6*d^2*e^5*x^4-2100*B*a^3*b^3*e^7*x^4+3150*B*a^2*b^4*d*e^6*
x^4-2160*B*a*b^5*d^2*e^5*x^4+560*B*b^6*d^3*e^4*x^4-6300*A*a^3*b^3*e^7*x^3+1
```

```
2600*A*a^2*b^4*d*e^6*x^3-10080*A*a*b^5*d^2*e^5*x^3+2880*A*b^6*d^3*e^4*x^3-4
725*B*a^4*b^2*e^7*x^3+16800*B*a^3*b^3*d*e^6*x^3-25200*B*a^2*b^4*d^2*e^5*x^3
+17280*B*a*b^5*d^3*e^4*x^3-4480*B*b^6*d^4*e^3*x^3+4725*A*a^4*b^2*e^7*x^2-37
800*A*a^3*b^3*d*e^6*x^2+75600*A*a^2*b^4*d^2*e^5*x^2-60480*A*a*b^5*d^3*e^4*x
^2+17280*A*b^6*d^4*e^3*x^2+1890*B*a^5*b*e^7*x^2-28350*B*a^4*b^2*d*e^6*x^2+1
00800*B*a^3*b^3*d^2*e^5*x^2-151200*B*a^2*b^4*d^3*e^4*x^2+103680*B*a*b^5*d^4
*e^3*x^2-26880*B*b^6*d^5*e^2*x^2+630*A*a^5*b*e^7*x+6300*A*a^4*b^2*d*e^6*x-5
0400*A*a^3*b^3*d^2*e^5*x+100800*A*a^2*b^4*d^3*e^4*x-80640*A*a*b^5*d^4*e^3*x
+23040*A*b^6*d^5*e^2*x+105*B*a^6*e^7*x+2520*B*a^5*b*d*e^6*x-37800*B*a^4*b^2
*d^2*e^5*x+134400*B*a^3*b^3*d^3*e^4*x-201600*B*a^2*b^4*d^4*e^3*x+138240*B*a
*b^5*d^5*e^2*x-35840*B*b^6*d^6*e*x+63*A*a^6*e^7+252*A*a^5*b*d*e^6+2520*A*a^
4*b^2*d^2*e^5-20160*A*a^3*b^3*d^3*e^4+40320*A*a^2*b^4*d^4*e^3-32256*A*a*b^5
*d^5*e^2+9216*A*b^6*d^6*e+42*B*a^6*d*e^6+1008*B*a^5*b*d^2*e^5-15120*B*a^4*b
^2*d^3*e^4+53760*B*a^3*b^3*d^4*e^3-80640*B*a^2*b^4*d^5*e^2+55296*B*a*b^5*d^
6*e-14336*B*b^6*d^7)/(e*x+d)^(5/2)/e^8
```

maxima [**B**] time = 0.63, size = 775, normalized size = 2.55

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*b^6 - 45*(7*B*b^6*d - (6*B*a*b^5 + A*b^6)*e)*(
e*x + d)^(7/2) + 189*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5*B*a^2*b^
4 + 2*A*a*b^5)*e^2)*(e*x + d)^(5/2) - 525*(7*B*b^6*d^3 - 3*(6*B*a*b^5 + A*b
^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 + 3*A*a^2*b^4)
*e^3)*(e*x + d)^(3/2) + 1575*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b^6)*d^3*e + 6
*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^3 +
(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*sqrt(e*x + d))/e^7 + 21*(3*B*b^6*d^7 - 3*A
*a^6*e^7 - 3*(6*B*a*b^5 + A*b^6)*d^6*e + 9*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^
2 - 15*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)
*d^3*e^4 - 9*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + 3*(B*a^6 + 6*A*a^5*b)*d*e^
6 + 45*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a
*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^2 - 5*(7*B*b^6
*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 -
 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^
2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(e*x +
 d))/((e*x + d)^(5/2)*e^7))/e
```

mupad [**B**] time = 1.96, size = 675, normalized size = 2.22

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(7*e^8) - ((d + e
*x)^2*(12*B*a^5*b*e^5 - 42*B*b^6*d^5 + 30*A*b^6*d^4*e + 30*A*a^4*b^2*e^5 -
120*A*a*b^5*d^3*e^2 - 120*A*a^3*b^3*d*e^4 - 90*B*a^4*b^2*d*e^4 + 180*A*a^2*
b^4*d^2*e^3 - 300*B*a^2*b^4*d^3*e^2 + 240*B*a^3*b^3*d^2*e^3 + 180*B*a*b^5*d
^4*e) + (d + e*x)*((2*B*a^6*e^6)/3 + (14*B*b^6*d^6)/3 + 4*A*a^5*b*e^6 - 4*A
*b^6*d^5*e + 20*A*a*b^5*d^4*e^2 - 20*A*a^4*b^2*d*e^5 - 40*A*a^2*b^4*d^3*e^3
 + 40*A*a^3*b^3*d^2*e^4 + 50*B*a^2*b^4*d^4*e^2 - (160*B*a^3*b^3*d^3*e^3)/3
+ 30*B*a^4*b^2*d^2*e^4 - 24*B*a*b^5*d^5*e - 8*B*a^5*b*d*e^5) + (2*A*a^6*e^7
)/5 - (2*B*b^6*d^7)/5 + (2*A*b^6*d^6*e)/5 - (2*B*a^6*d*e^6)/5 - (12*A*a*b^5
*d^5*e^2)/5 + (12*B*a^5*b*d^2*e^5)/5 + 6*A*a^2*b^4*d^4*e^3 - 8*A*a^3*b^3*d^
```

```
3*e^4 + 6*A*a^4*b^2*d^2*e^5 - 6*B*a^2*b^4*d^5*e^2 + 8*B*a^3*b^3*d^4*e^3 - 6
*B*a^4*b^2*d^3*e^4 - (12*A*a^5*b*d*e^6)/5 + (12*B*a*b^5*d^6*e)/5)/(e^8*(d +
 e*x)^(5/2)) + (2*B*b^6*(d + e*x)^(9/2))/(9*e^8) + (6*b^4*(a*e - b*d)*(d +
e*x)^(5/2)*(2*A*b*e + 5*B*a*e - 7*B*b*d))/(5*e^8) + (10*b^2*(a*e - b*d)^3*(
d + e*x)^(1/2)*(4*A*b*e + 3*B*a*e - 7*B*b*d))/e^8 + (10*b^3*(a*e - b*d)^2*(
d + e*x)^(3/2)*(3*A*b*e + 4*B*a*e - 7*B*b*d))/(3*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1588 $\int \frac{(A+Bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=256

$$-\frac{(bd-ae)^{5/2}(-9aBe+7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{11/2}}+\frac{\sqrt{d+ex}\,(bd-ae)^2(-9aBe+7Abe+2bBd)}{b^5}+\frac{(d+ex)^{3/2}}{}$$

Rubi [A] time = 0.32, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 50, 63, 208\}$

$$\frac{(d+ex)^{7/2}(-9aBe+7Abe+2bBd)}{7b^2(bd-ae)}+\frac{(d+ex)^{5/2}(-9aBe+7Abe+2bBd)}{5b^3}+\frac{(d+ex)^{3/2}(bd-ae)(-9aBe+7Abe+2bBd)}{3b^4}+\frac{\sqrt{d+ex}\,(bd-ae)^2(-9aBe+7Abe+2bBd)}{b^5}-\frac{(bd-ae)^{5/2}(-9aBe+7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{11/2}}-\frac{(d+ex)^{9/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)^2*(2*b*B*d + 7*A*b*e - 9*a*B*e)*Sqrt[d + e*x])/b^5 + ((b*d - a
*e)*(2*b*B*d + 7*A*b*e - 9*a*B*e)*(d + e*x)^(3/2))/(3*b^4) + ((2*b*B*d + 7*
A*b*e - 9*a*B*e)*(d + e*x)^(5/2))/(5*b^3) + ((2*b*B*d + 7*A*b*e - 9*a*B*e)*
(d + e*x)^(7/2))/(7*b^2*(b*d - a*e)) - ((A*b - a*B)*(d + e*x)^(9/2))/(b*(b*
d - a*e)*(a + b*x)) - ((b*d - a*e)^(5/2)*(2*b*B*d + 7*A*b*e - 9*a*B*e)*ArcT
anh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(11/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx = \int \frac{(A+Bx)(d+ex)^{7/2}}{(a+bx)^2}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+7Abe-9aBe)\int \frac{(d+ex)^{7/2}}{a+bx}\,dx}{2b(bd-ae)}$$

$$= \frac{(2bBd+7Abe-9aBe)(d+ex)^{7/2}}{7b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{9/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+7Abe-9aBe}{2b^2}$$

$$= \frac{(2bBd+7Abe-9aBe)(d+ex)^{5/2}}{5b^3} + \frac{(2bBd+7Abe-9aBe)(d+ex)^{7/2}}{7b^2(bd-ae)} - \frac{(Ab-aB}{b(bd-a}$$

$$= \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+ex)^{3/2}}{3b^4} + \frac{(2bBd+7Abe-9aBe)(d+ex)^{5/2}}{5b^3} +$$

$$= \frac{(bd-ae)^2(2bBd+7Abe-9aBe)\sqrt{d+ex}}{b^5} + \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+e}{3b^4}$$

$$= \frac{(bd-ae)^2(2bBd+7Abe-9aBe)\sqrt{d+ex}}{b^5} + \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+e}{3b^4}$$

$$= \frac{(bd-ae)^2(2bBd+7Abe-9aBe)\sqrt{d+ex}}{b^5} + \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+e}{3b^4}$$

Mathematica [A] time = 0.64, size = 193, normalized size = 0.75

$$\frac{\frac{2\left(-\frac{9aBe}{2}+\frac{7Abe}{2}+bBd\right)\left(7(bd-ae)\left(5(bd-ae)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)+15b^{7/2}(d+ex)^{7/2}\right)}{105b^{9/2}}+\frac{(d+ex)^{9/2}(aB-Ab)}{a+bx}}{b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(9/2))/(a + b*x) + (2*(b*B*d + (7*A*b*e)/2 - (9*
a*B*e)/2)*(15*b^(7/2)*(d + e*x)^(7/2) + 7*(b*d - a*e)*(3*b^(5/2)*(d + e*x)^
(5/2) + 5*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b
*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))))/(105*b
^(9/2)))/(b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 0.70, size = 663, normalized size = 2.59

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (210*b^4*B*d^4*Sqrt[d + e*x] + 735*A*b^4*d^3*e*Sqrt[d + e*x] - 1575*a*b^3*B
*d^3*e*Sqrt[d + e*x] - 2205*a*A*b^3*d^2*e^2*Sqrt[d + e*x] + 3465*a^2*b^2*B*
d^2*e^2*Sqrt[d + e*x] + 2205*a^2*A*b^2*d*e^3*Sqrt[d + e*x] - 3045*a^3*b*B*d
*e^3*Sqrt[d + e*x] - 735*a^3*A*b*e^4*Sqrt[d + e*x] + 945*a^4*B*e^4*Sqrt[d +
```

```
 e*x] - 140*b^4*B*d^3*(d + e*x)^(3/2) - 490*A*b^4*d^2*e*(d + e*x)^(3/2) + 9
10*a*b^3*B*d^2*e*(d + e*x)^(3/2) + 980*a*A*b^3*d*e^2*(d + e*x)^(3/2) - 1400
*a^2*b^2*B*d*e^2*(d + e*x)^(3/2) - 490*a^2*A*b^2*e^3*(d + e*x)^(3/2) + 630*
a^3*b*B*e^3*(d + e*x)^(3/2) - 28*b^4*B*d^2*(d + e*x)^(5/2) - 98*A*b^4*d*e*(
d + e*x)^(5/2) + 154*a*b^3*B*d*e*(d + e*x)^(5/2) + 98*a*A*b^3*e^2*(d + e*x)
^(5/2) - 126*a^2*b^2*B*e^2*(d + e*x)^(5/2) - 12*b^4*B*d*(d + e*x)^(7/2) - 4
2*A*b^4*e*(d + e*x)^(7/2) + 54*a*b^3*B*e*(d + e*x)^(7/2) - 30*b^4*B*(d + e*
x)^(9/2))/(105*b^5*(b*d - a*e - b*(d + e*x))) + ((-2*b^4*B*d^4 - 7*A*b^4*d^
3*e + 15*a*b^3*B*d^3*e + 21*a*A*b^3*d^2*e^2 - 33*a^2*b^2*B*d^2*e^2 - 21*a^2
*A*b^2*d*e^3 + 29*a^3*b*B*d*e^3 + 7*a^3*A*b*e^4 - 9*a^4*B*e^4)*ArcTan[(Sqrt
[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(b^(11/2)*Sqrt[-(b*d) +
 a*e])
```

fricas [B] time = 0.47, size = 1006, normalized size = 3.93

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/210*(105*(2*B*a*b^3*d^3 - (13*B*a^2*b^2 - 7*A*a*b^3)*d^2*e + 2*(10*B*a^3
*b - 7*A*a^2*b^2)*d*e^2 - (9*B*a^4 - 7*A*a^3*b)*e^3 + (2*B*b^4*d^3 - (13*B*
a*b^3 - 7*A*b^4)*d^2*e + 2*(10*B*a^2*b^2 - 7*A*a*b^3)*d*e^2 - (9*B*a^3*b -
7*A*a^2*b^2)*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(
e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(30*B*b^4*e^3*x^4 + (457*B*a
*b^3 - 105*A*b^4)*d^3 - 7*(277*B*a^2*b^2 - 161*A*a*b^3)*d^2*e + 35*(69*B*a^
3*b - 49*A*a^2*b^2)*d*e^2 - 105*(9*B*a^4 - 7*A*a^3*b)*e^3 + 6*(22*B*b^4*d*e
^2 - (9*B*a*b^3 - 7*A*b^4)*e^3)*x^3 + 2*(122*B*b^4*d^2*e - 2*(79*B*a*b^3 -
56*A*b^4)*d*e^2 + 7*(9*B*a^2*b^2 - 7*A*a*b^3)*e^3)*x^2 + 2*(176*B*b^4*d^3 -
 2*(345*B*a*b^3 - 203*A*b^4)*d^2*e + 14*(59*B*a^2*b^2 - 42*A*a*b^3)*d*e^2 -
 35*(9*B*a^3*b - 7*A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^6*x + a*b^5), -1/10
5*(105*(2*B*a*b^3*d^3 - (13*B*a^2*b^2 - 7*A*a*b^3)*d^2*e + 2*(10*B*a^3*b -
7*A*a^2*b^2)*d*e^2 - (9*B*a^4 - 7*A*a^3*b)*e^3 + (2*B*b^4*d^3 - (13*B*a*b^3
 - 7*A*b^4)*d^2*e + 2*(10*B*a^2*b^2 - 7*A*a*b^3)*d*e^2 - (9*B*a^3*b - 7*A*a
^2*b^2)*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a
*e)/b)/(b*d - a*e)) - (30*B*b^4*e^3*x^4 + (457*B*a*b^3 - 105*A*b^4)*d^3 - 7
*(277*B*a^2*b^2 - 161*A*a*b^3)*d^2*e + 35*(69*B*a^3*b - 49*A*a^2*b^2)*d*e^2
 - 105*(9*B*a^4 - 7*A*a^3*b)*e^3 + 6*(22*B*b^4*d*e^2 - (9*B*a*b^3 - 7*A*b^4
)*e^3)*x^3 + 2*(122*B*b^4*d^2*e - 2*(79*B*a*b^3 - 56*A*b^4)*d*e^2 + 7*(9*B*
a^2*b^2 - 7*A*a*b^3)*e^3)*x^2 + 2*(176*B*b^4*d^3 - 2*(345*B*a*b^3 - 203*A*b
^4)*d^2*e + 14*(59*B*a^2*b^2 - 42*A*a*b^3)*d*e^2 - 35*(9*B*a^3*b - 7*A*a^2*
b^2)*e^3)*x)*sqrt(e*x + d))/(b^6*x + a*b^5)]
```

giac [B] time = 0.25, size = 604, normalized size = 2.36

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^4*d^4 - 15*B*a*b^3*d^3*e + 7*A*b^4*d^3*e + 33*B*a^2*b^2*d^2*e^2 - 21
*A*a*b^3*d^2*e^2 - 29*B*a^3*b*d*e^3 + 21*A*a^2*b^2*d*e^3 + 9*B*a^4*e^4 - 7*
A*a^3*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*
b*e)*b^5) + (sqrt(x*e + d)*B*a*b^3*d^3*e - sqrt(x*e + d)*A*b^4*d^3*e - 3*sq
rt(x*e + d)*B*a^2*b^2*d^2*e^2 + 3*sqrt(x*e + d)*A*a*b^3*d^2*e^2 + 3*sqrt(x*
e + d)*B*a^3*b*d*e^3 - 3*sqrt(x*e + d)*A*a^2*b^2*d*e^3 - sqrt(x*e + d)*B*a^
4*e^4 + sqrt(x*e + d)*A*a^3*b*e^4)/(((x*e + d)*b - b*d + a*e)*b^5) + 2/105*
(15*(x*e + d)^(7/2)*B*b^12 + 21*(x*e + d)^(5/2)*B*b^12*d + 35*(x*e + d)^(3/
```

```
2)*B*b^12*d^2 + 105*sqrt(x*e + d)*B*b^12*d^3 - 42*(x*e + d)^(5/2)*B*a*b^11*
e + 21*(x*e + d)^(5/2)*A*b^12*e - 140*(x*e + d)^(3/2)*B*a*b^11*d*e + 70*(x*
e + d)^(3/2)*A*b^12*d*e - 630*sqrt(x*e + d)*B*a*b^11*d^2*e + 315*sqrt(x*e +
 d)*A*b^12*d^2*e + 105*(x*e + d)^(3/2)*B*a^2*b^10*e^2 - 70*(x*e + d)^(3/2)*
A*a*b^11*e^2 + 945*sqrt(x*e + d)*B*a^2*b^10*d*e^2 - 630*sqrt(x*e + d)*A*a*b
^11*d*e^2 - 420*sqrt(x*e + d)*B*a^3*b^9*e^3 + 315*sqrt(x*e + d)*A*a^2*b^10*
e^3)/b^14
```

maple [**B**] time = 0.08, size = 915, normalized size = 3.57

$$-\frac{7Aa^3e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^4}+\frac{21Aa^2de^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^3}-\frac{21Aad^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^2}+\frac{7Ad^3e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b}+\frac{9Ba^4e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^5}-\frac{29Ba^3de^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^4}+\frac{33Ba^2d^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^3}-\frac{15Bad^3e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^2}+\frac{2Bd^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b}+\frac{\sqrt{ex+d}\,Aa^3e^4}{(bex+ae)b^4}-\frac{3\sqrt{ex+d}\,Aa^2de^3}{(bex+ae)b^3}+\frac{3\sqrt{ex+d}\,Aad^2e^2}{(bex+ae)b^2}-\frac{\sqrt{ex+d}\,Ad^3e}{(bex+ae)b}-\frac{\sqrt{ex+d}\,Ba^4e^4}{(bex+ae)b^5}+\frac{3\sqrt{ex+d}\,Ba^3de^3}{(bex+ae)b^4}-\frac{3\sqrt{ex+d}\,Ba^2d^2e^2}{(bex+ae)b^3}+\frac{\sqrt{ex+d}\,Bad^3e}{(bex+ae)b^2}+\frac{6\sqrt{ex+d}\,Aa^2e^3}{b^4}-\frac{12\sqrt{ex+d}\,Aade^2}{b^3}+\frac{6\sqrt{ex+d}\,Ad^2e}{b^2}-\frac{8\sqrt{ex+d}\,Ba^3e^3}{b^5}+\frac{18\sqrt{ex+d}\,Ba^2de^2}{b^4}-\frac{12\sqrt{ex+d}\,Bad^2e}{b^3}+\frac{2\sqrt{ex+d}\,Bd^3}{b^2}-\frac{4(ex+d)^{3/2}Aae^2}{3b^3}+\frac{4(ex+d)^{3/2}Ade}{3b^2}+\frac{2(ex+d)^{3/2}Ba^2e^2}{b^4}-\frac{8(ex+d)^{3/2}Bade}{3b^3}+\frac{2(ex+d)^{3/2}Bd^2}{3b^2}+\frac{2(ex+d)^{5/2}Ae}{5b^2}-\frac{4(ex+d)^{5/2}Bae}{5b^3}+\frac{2(ex+d)^{5/2}Bd}{5b^2}+\frac{2(ex+d)^{7/2}B}{7b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 6/b^4*A*a^2*e^3*(e*x+d)^(1/2)+2/5/b^2*A*(e*x+d)^(5/2)*e-8/3/b^3*B*(e*x+d)^(
3/2)*a*d*e-12/b^3*A*a*d*e^2*(e*x+d)^(1/2)+18/b^4*B*a^2*d*e^2*(e*x+d)^(1/2)-
12/b^3*B*a*d^2*e*(e*x+d)^(1/2)-1/b*(e*x+d)^(1/2)/(b*e*x+a*e)*A*d^3*e-1/b^5*
(e*x+d)^(1/2)/(b*e*x+a*e)*B*a^4*e^4-7/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^3*e^4+2/7/b^2*B*(e*x+d)^(7/2)+2/5/b^2*B*
(e*x+d)^(5/2)*d+2/3/b^2*B*(e*x+d)^(3/2)*d^2+2/b^2*B*d^3*(e*x+d)^(1/2)+2/b/(
(a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d^4+6/b^2*
A*d^2*e*(e*x+d)^(1/2)-8/b^5*B*a^3*e^3*(e*x+d)^(1/2)-4/5/b^3*B*(e*x+d)^(5/2)
*a*e-4/3/b^3*A*(e*x+d)^(3/2)*a*e^2+4/3/b^2*A*(e*x+d)^(3/2)*d*e+2/b^4*B*(e*x
+d)^(3/2)*a^2*e^2+7/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*A*d^3*e+9/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*B*a^4*e^4+1/b^4*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a^3*e^4-15/b^2/((
a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d^3*e-3/b
^3*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a^2*d*e^3+3/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*
d^2*a*e^2+3/b^4*(e*x+d)^(1/2)/(b*e*x+a*e)*B*d*a^3*e^3-3/b^3*(e*x+d)^(1/2)/(
b*e*x+a*e)*B*a^2*d^2*e^2+1/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a*d^3*e+21/b^3/(
(a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^2*d*e^3-
21/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d^
2*a*e^2-29/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)*B*d*a^3*e^3+33/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*B*a^2*d^2*e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.16, size = 562, normalized size = 2.20

$$\left(\frac{2Ae-2Bd}{5b^2}+\frac{2B\left(2b^2d-2abe\right)}{5b^4}\right)(d+ex)^{5/2}+\left(\frac{\left(\frac{\left(2b^2d-2abe\right)\left(\frac{2Ae-2Bd}{b^2}+\frac{2B\left(2b^2d-2abe\right)}{b^4}\right)}{b^2}-\frac{2B(ae-bd)^2}{b^4}\right)\left(2b^2d-2abe\right)}{b^2}-\frac{(ae-bd)^2\left(\frac{2Ae-2Bd}{b^2}+\frac{2B\left(2b^2d-2abe\right)}{b^4}\right)}{b^2}\right)\sqrt{d+ex}+\left(\frac{\left(2b^2d-2abe\right)\left(\frac{2Ae-2Bd}{b^2}+\frac{2B\left(2b^2d-2abe\right)}{b^4}\right)}{3b^2}-\frac{2B(ae-bd)^2}{3b^4}\right)(d+ex)^{3/2}-\frac{\sqrt{d+ex}\left(Ba^4e^4-3Ba^3bde^3-Aa^3be^4+3Ba^2b^2d^2e^2+3Aa^2b^2de^3-Bab^3d^3e-3Aab^3d^2e^2+Ab^4d^3e\right)}{b^6(d+ex)-b^6d+ab^5e}+\frac{2B(d+ex)^{7/2}}{7b^2}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,(ae-bd)^{5/2}\sqrt{d+ex}\,(7Abe-9Bae+2Bbd)}{9Ba^4e^4-29Ba^3bde^3-7Aa^3be^4+33Ba^2b^2d^2e^2+21Aa^2b^2de^3-15Bab^3d^3e-21Aab^3d^2e^2+2Bb^4d^4+7Ab^4d^3e}\right)(ae-bd)^{5/2}(7Abe-9Bae+2Bbd)}{b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((2*A*e - 2*B*d)/(5*b^2) + (2*B*(2*b^2*d - 2*a*b*e))/(5*b^4))*(d + e*x)^(5/
2) + (((((2*b^2*d - 2*a*b*e)*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e
```

```
))/b^4))/b^2 - (2*B*(a*e - b*d)^2)/b^4)*(2*b^2*d - 2*a*b*e))/b^2 - ((a*e -
b*d)^2*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e))/b^4))/b^2)*(d + e*x
)^(1/2) + (((2*b^2*d - 2*a*b*e)*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*
b*e))/b^4))/(3*b^2) - (2*B*(a*e - b*d)^2)/(3*b^4))*(d + e*x)^(3/2) - ((d +
e*x)^(1/2)*(B*a^4*e^4 - A*a^3*b*e^4 + A*b^4*d^3*e - 3*A*a*b^3*d^2*e^2 + 3*A
*a^2*b^2*d*e^3 + 3*B*a^2*b^2*d^2*e^2 - B*a*b^3*d^3*e - 3*B*a^3*b*d*e^3))/(b
^6*(d + e*x) - b^6*d + a*b^5*e) + (2*B*(d + e*x)^(7/2))/(7*b^2) + (atan((b^
(1/2)*(a*e - b*d)^(5/2)*(d + e*x)^(1/2)*(7*A*b*e - 9*B*a*e + 2*B*b*d))/(9*B
*a^4*e^4 + 2*B*b^4*d^4 - 7*A*a^3*b*e^4 + 7*A*b^4*d^3*e - 21*A*a*b^3*d^2*e^2
 + 21*A*a^2*b^2*d*e^3 + 33*B*a^2*b^2*d^2*e^2 - 15*B*a*b^3*d^3*e - 29*B*a^3*
b*d*e^3))*(a*e - b*d)^(5/2)*(7*A*b*e - 9*B*a*e + 2*B*b*d))/b^(11/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] Timed out
```

3.1589 $\int \frac{(A+Bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=214

$$-\frac{(bd-ae)^{3/2}(-7aBe+5Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}+\frac{\sqrt{d+ex}\,(bd-ae)(-7aBe+5Abe+2bBd)}{b^4}+\frac{(d+ex)^{\cdots}}{\cdots}$$

Rubi [A] time = 0.20, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 50, 63, 208}

$$\frac{(d+ex)^{5/2}(-7aBe+5Abe+2bBd)}{5b^2(bd-ae)}+\frac{(d+ex)^{3/2}(-7aBe+5Abe+2bBd)}{3b^3}+\frac{\sqrt{d+ex}\,(bd-ae)(-7aBe+5Abe+2bBd)}{b^4}-\frac{(bd-ae)^{3/2}(-7aBe+5Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}-\frac{(d+ex)^{7/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)*(2*b*B*d + 5*A*b*e - 7*a*B*e)*Sqrt[d + e*x])/b^4 + ((2*b*B*d +
 5*A*b*e - 7*a*B*e)*(d + e*x)^(3/2))/(3*b^3) + ((2*b*B*d + 5*A*b*e - 7*a*B*
e)*(d + e*x)^(5/2))/(5*b^2*(b*d - a*e)) - ((A*b - a*B)*(d + e*x)^(7/2))/(b*
(b*d - a*e)*(a + b*x)) - ((b*d - a*e)^(3/2)*(2*b*B*d + 5*A*b*e - 7*a*B*e)*A
rcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx = \int \frac{(A+Bx)(d+ex)^{5/2}}{(a+bx)^2}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+5Abe-7aBe)\int \frac{(d+ex)^{5/2}}{a+bx}\,dx}{2b(bd-ae)}$$

$$= \frac{(2bBd+5Abe-7aBe)(d+ex)^{5/2}}{5b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{7/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+5Abe-7aBe)\int}{2b^2}$$

$$= \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{5/2}}{5b^2(bd-ae)} - \frac{(Ab-aB)(d}{b(bd-ae)(}$$

$$= \frac{(bd-ae)(2bBd+5Abe-7aBe)\sqrt{d+ex}}{b^4} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2bB}{}$$

$$= \frac{(bd-ae)(2bBd+5Abe-7aBe)\sqrt{d+ex}}{b^4} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2bB}{}$$

$$= \frac{(bd-ae)(2bBd+5Abe-7aBe)\sqrt{d+ex}}{b^4} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2bB}{}$$

Mathematica [A] time = 0.36, size = 166, normalized size = 0.78

$$\frac{\frac{2\left(-\frac{7aBe}{2}+\frac{5Abe}{2}+bBd\right)\left(5(bd-ae)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)}{15b^{7/2}}+\frac{(d+ex)^{7/2}(aB-Ab)}{a+bx}}{b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(7/2))/(a + b*x) + (2*(b*B*d + (5*A*b*e)/2 - (7*
a*B*e)/2)*(3*b^(5/2)*(d + e*x)^(5/2) + 5*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]
*(4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*
x])/Sqrt[b*d - a*e]])))/(15*b^(7/2)))/(b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 0.60, size = 391, normalized size = 1.83

$$\frac{\sqrt{d+ex}\left(105a^3Be^3-75a^2Abe^3+70a^2bBe^2(d+ex)-240a^2bBde^2-50aAb^2e^2(d+ex)+150aAb^2de^2+165ab^2Bd^2e-14ab^2Be(d+ex)^2-90ab^2Bde(d+ex)-75Ab^3d^2e+10Ab^3e(d+ex)^2+50Ab^3de(d+ex)-30b^3Bd^3+20b^3Bd^2(d+ex)+6b^3B(d+ex)^3+4b^3Bd(d+ex)^2\right)}{15b^4(ae+b(d+ex)-bd)}+\frac{\left(7a^4Be^4-5a^3Abe^4-23a^3bBde^3+15a^2Ab^2de^3+27a^2b^2Bd^2e^2-15aAb^3d^2e^2-13ab^3Bd^3e+5Ab^4d^3e+2b^4Bd^4\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{9/2}(ae-bd)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[d + e*x]*(-30*b^3*B*d^3 - 75*A*b^3*d^2*e + 165*a*b^2*B*d^2*e + 150*a*
A*b^2*d*e^2 - 240*a^2*b*B*d*e^2 - 75*a^2*A*b*e^3 + 105*a^3*B*e^3 + 20*b^3*B
*d^2*(d + e*x) + 50*A*b^3*d*e*(d + e*x) - 90*a*b^2*B*d*e*(d + e*x) - 50*a*A
*b^2*e^2*(d + e*x) + 70*a^2*b*B*e^2*(d + e*x) + 4*b^3*B*d*(d + e*x)^2 + 10*
A*b^3*e*(d + e*x)^2 - 14*a*b^2*B*e*(d + e*x)^2 + 6*b^3*B*(d + e*x)^3))/(15*
b^4*(-(b*d) + a*e + b*(d + e*x))) + ((2*b^4*B*d^4 + 5*A*b^4*d^3*e - 13*a*b^
3*B*d^3*e - 15*a*A*b^3*d^2*e^2 + 27*a^2*b^2*B*d^2*e^2 + 15*a^2*A*b^2*d*e^3
- 23*a^3*b*B*d*e^3 - 5*a^3*A*b*e^4 + 7*a^4*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*
d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(b^(9/2)*(-(b*d) + a*e)^(3/2))
```

fricas [A] time = 0.48, size = 666, normalized size = 3.11

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/30*(15*(2*B*a*b^2*d^2 - (9*B*a^2*b - 5*A*a*b^2)*d*e + (7*B*a^3 - 5*A*a^
2*b)*e^2 + (2*B*b^3*d^2 - (9*B*a*b^2 - 5*A*b^3)*d*e + (7*B*a^2*b - 5*A*a*b^
2)*e^2)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b
*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(6*B*b^3*e^2*x^3 + (61*B*a*b^2 - 15*A*
b^3)*d^2 - 10*(17*B*a^2*b - 10*A*a*b^2)*d*e + 15*(7*B*a^3 - 5*A*a^2*b)*e^2
+ 2*(11*B*b^3*d*e - (7*B*a*b^2 - 5*A*b^3)*e^2)*x^2 + 2*(23*B*b^3*d^2 - (59*
B*a*b^2 - 35*A*b^3)*d*e + 5*(7*B*a^2*b - 5*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/
(b^5*x + a*b^4), -1/15*(15*(2*B*a*b^2*d^2 - (9*B*a^2*b - 5*A*a*b^2)*d*e + (
7*B*a^3 - 5*A*a^2*b)*e^2 + (2*B*b^3*d^2 - (9*B*a*b^2 - 5*A*b^3)*d*e + (7*B*
a^2*b - 5*A*a*b^2)*e^2)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqr
t(-(b*d - a*e)/b)/(b*d - a*e)) - (6*B*b^3*e^2*x^3 + (61*B*a*b^2 - 15*A*b^3)
*d^2 - 10*(17*B*a^2*b - 10*A*a*b^2)*d*e + 15*(7*B*a^3 - 5*A*a^2*b)*e^2 + 2*
(11*B*b^3*d*e - (7*B*a*b^2 - 5*A*b^3)*e^2)*x^2 + 2*(23*B*b^3*d^2 - (59*B*a*
b^2 - 35*A*b^3)*d*e + 5*(7*B*a^2*b - 5*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(b^5
*x + a*b^4)]
```

giac [B] time = 0.20, size = 400, normalized size = 1.87

$$\frac{\left(2\,Bb^3d^3 - 11\,Bab^2d^2e + 5\,Ab^3d^2e + 16\,Ba^2bde^2 - 10\,Aab^2de^2 - 7\,Ba^3e^3 + 5\,Aa^2be^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^4} + \frac{\sqrt{xe+d}\,Bab^2d^2e - \sqrt{xe+d}\,Ab^3d^2e - 2\,\sqrt{xe+d}\,Ba^2bde^2 + 2\,\sqrt{xe+d}\,Aab^2de^2 + \sqrt{xe+d}\,Ba^3e^3 - \sqrt{xe+d}\,Aa^2be^3}{((xe+d)b - bd + ae)b^4} + \frac{2\left(3\,(xe+d)^{\frac{5}{2}}Bb^8 + 5\,(xe+d)^{\frac{3}{2}}Bb^8d + 15\,\sqrt{xe+d}\,Bb^8d^2 - 10\,(xe+d)^{\frac{3}{2}}Bab^7e + 5\,(xe+d)^{\frac{3}{2}}Ab^8e - 60\,\sqrt{xe+d}\,Bab^7de + 30\,\sqrt{xe+d}\,Ab^8de + 45\,\sqrt{xe+d}\,Ba^2b^6e^2 - 30\,\sqrt{xe+d}\,Aab^7e^2\right)}{15\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^3*d^3 - 11*B*a*b^2*d^2*e + 5*A*b^3*d^2*e + 16*B*a^2*b*d*e^2 - 10*A*a
*b^2*d*e^2 - 7*B*a^3*e^3 + 5*A*a^2*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*
d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) + (sqrt(x*e + d)*B*a*b^2*d^2*e - sqr
t(x*e + d)*A*b^3*d^2*e - 2*sqrt(x*e + d)*B*a^2*b*d*e^2 + 2*sqrt(x*e + d)*A*
a*b^2*d*e^2 + sqrt(x*e + d)*B*a^3*e^3 - sqrt(x*e + d)*A*a^2*b*e^3)/(((x*e +
 d)*b - b*d + a*e)*b^4) + 2/15*(3*(x*e + d)^(5/2)*B*b^8 + 5*(x*e + d)^(3/2)
*B*b^8*d + 15*sqrt(x*e + d)*B*b^8*d^2 - 10*(x*e + d)^(3/2)*B*a*b^7*e + 5*(x
*e + d)^(3/2)*A*b^8*e - 60*sqrt(x*e + d)*B*a*b^7*d*e + 30*sqrt(x*e + d)*A*b
^8*d*e + 45*sqrt(x*e + d)*B*a^2*b^6*e^2 - 30*sqrt(x*e + d)*A*a*b^7*e^2)/b^1
0
```

maple [B] time = 0.07, size = 626, normalized size = 2.93

$$\frac{5A\,a^2e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^3} - \frac{10Aad\,e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^2} + \frac{5A\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b} - \frac{7B\,a^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^4} + \frac{16B\,a^2d\,e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^3} - \frac{11Ba\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^2} + \frac{2B\,d^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b} - \frac{\sqrt{ex+d}\,A\,a^2e^3}{(bex+ae)\,b^3} + \frac{2\sqrt{ex+d}\,Aad\,e^2}{(bex+ae)\,b^2} - \frac{\sqrt{ex+d}\,A\,d^2e}{(bex+ae)\,b} + \frac{\sqrt{ex+d}\,B\,a^3e^3}{(bex+ae)\,b^4} - \frac{2\sqrt{ex+d}\,B\,a^2d\,e^2}{(bex+ae)\,b^3} + \frac{\sqrt{ex+d}\,Ba\,d^2e}{(bex+ae)\,b^2} - \frac{4\sqrt{ex+d}\,Aa\,e^2}{b^3} + \frac{4\sqrt{ex+d}\,Ade}{b^2} + \frac{6\sqrt{ex+d}\,B\,a^2e^2}{b^4} - \frac{8\sqrt{ex+d}\,Bade}{b^3} + \frac{2\sqrt{ex+d}\,B\,d^2}{b^2} + \frac{2\,(ex+d)^{\frac{3}{2}}\,Ae}{3b^2} - \frac{4\,(ex+d)^{\frac{3}{2}}\,Bae}{3b^3} + \frac{2\,(ex+d)^{\frac{3}{2}}\,Bd}{3b^2} + \frac{2\,(ex+d)^{\frac{5}{2}}\,B}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/5/b^2*B*(e*x+d)^(5/2)+2/3/b^2*A*(e*x+d)^(3/2)*e-4/3/b^3*B*(e*x+d)^(3/2)*a
*e+2/3/b^2*B*(e*x+d)^(3/2)*d-4/b^3*A*(e*x+d)^(1/2)*a*e^2+4/b^2*A*(e*x+d)^(1
/2)*d*e+6/b^4*B*(e*x+d)^(1/2)*a^2*e^2-8/b^3*B*(e*x+d)^(1/2)*a*d*e+2/b^2*B*(
e*x+d)^(1/2)*d^2-1/b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a^2*e^3+2/b^2*(e*x+d)^(1
/2)/(b*e*x+a*e)*A*a*d*e^2-1/b*(e*x+d)^(1/2)/(b*e*x+a*e)*A*d^2*e+1/b^4*(e*x+
d)^(1/2)/(b*e*x+a*e)*B*a^3*e^3-2/b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a^2*d*e^2+
1/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a*d^2*e+5/b^3/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^2*e^3-10/b^2/((a*e-b*d)*b)^(1/2)*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a*d*e^2+5/b/((a*e-b*d)*b)^(1/2
)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d^2*e-7/b^4/((a*e-b*d)*b)^(
1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^3*e^3+16/b^3/((a*e-b*d
)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^2*d*e^2-11/b^2/(
(a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d^2*e+2/
b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.13, size = 363, normalized size = 1.70

$$\left(\frac{2\,A\,e-2\,B\,d}{3\,b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{3\,b^4}\right)\,{\left(d+e\,x\right)}^{3/2}+\left(\frac{\left(2\,b^2\,d-2\,a\,b\,e\right)\,\left(\frac{2\,A\,e-2\,B\,d}{b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{b^4}\right)}{b^2}-\frac{2\,B\,{\left(a\,e-b\,d\right)}^2}{b^4}\right)\,\sqrt{d+e\,x}+\frac{\sqrt{d+e\,x}\,\left(B\,a^3\,e^3-2\,B\,a^2\,b\,d\,e^2-A\,a^2\,b\,e^3+B\,a\,b^2\,d^2\,e+2\,A\,a\,b^2\,d\,e^2-A\,b^3\,d^2\,e\right)}{b^5\,\left(d+e\,x\right)-b^5\,d+a\,b^4\,e}+\frac{2\,B\,{\left(d+e\,x\right)}^{5/2}}{5\,b^2}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{3/2}\,\sqrt{d+e\,x}\,\left(5\,A\,b\,e-7\,B\,a\,e+2\,B\,b\,d\right)}{-7\,B\,a^3\,e^3+16\,B\,a^2\,b\,d\,e^2+5\,A\,a^2\,b\,e^3-11\,B\,a\,b^2\,d^2\,e-10\,A\,a\,b^2\,d\,e^2+2\,B\,b^3\,d^3+5\,A\,b^3\,d^2\,e}\right)\,{\left(a\,e-b\,d\right)}^{3/2}\,\left(5\,A\,b\,e-7\,B\,a\,e+2\,B\,b\,d\right)}{b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((2*A*e - 2*B*d)/(3*b^2) + (2*B*(2*b^2*d - 2*a*b*e))/(3*b^4))*(d + e*x)^(3/
2) + (((2*b^2*d - 2*a*b*e)*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e))
/b^4))/b^2 - (2*B*(a*e - b*d)^2)/b^4)*(d + e*x)^(1/2) + ((d + e*x)^(1/2)*(B
*a^3*e^3 - A*a^2*b*e^3 - A*b^3*d^2*e + 2*A*a*b^2*d*e^2 + B*a*b^2*d^2*e - 2*
B*a^2*b*d*e^2))/(b^5*(d + e*x) - b^5*d + a*b^4*e) + (2*B*(d + e*x)^(5/2))/(
5*b^2) + (atan((b^(1/2)*(a*e - b*d)^(3/2)*(d + e*x)^(1/2)*(5*A*b*e - 7*B*a*
e + 2*B*b*d))/(2*B*b^3*d^3 - 7*B*a^3*e^3 + 5*A*a^2*b*e^3 + 5*A*b^3*d^2*e -
10*A*a*b^2*d*e^2 - 11*B*a*b^2*d^2*e + 16*B*a^2*b*d*e^2))*(a*e - b*d)^(3/2)*
(5*A*b*e - 7*B*a*e + 2*B*b*d))/b^(9/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1590 $\int \frac{(A+Bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=174

$$-\frac{\sqrt{bd-ae}\,(-5aBe+3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}+\frac{\sqrt{d+ex}\,(-5aBe+3Abe+2bBd)}{b^3}+\frac{(d+ex)^{3/2}(-5aBe\ \cdots}{3b^2(bd\ \cdots}$$

Rubi [A] time = 0.15, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 50, 63, 208}

$$\frac{(d+ex)^{3/2}(-5aBe+3Abe+2bBd)}{3b^2(bd-ae)}+\frac{\sqrt{d+ex}\,(-5aBe+3Abe+2bBd)}{b^3}-\frac{\sqrt{bd-ae}\,(-5aBe+3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}-\frac{(d+ex)^{5/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((2*b*B*d + 3*A*b*e - 5*a*B*e)*Sqrt[d + e*x])/b^3 + ((2*b*B*d + 3*A*b*e - 5
*a*B*e)*(d + e*x)^(3/2))/(3*b^2*(b*d - a*e)) - ((A*b - a*B)*(d + e*x)^(5/2)
)/(b*(b*d - a*e)*(a + b*x)) - (Sqrt[b*d - a*e]*(2*b*B*d + 3*A*b*e - 5*a*B*e
)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^{3/2}}{(a+bx)^2}\,dx \\
&= -\frac{(Ab-aB)(d+ex)^{5/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+3Abe-5aBe)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{2b(bd-ae)} \\
&= \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{5/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+3Abe-5aBe)\int}{2b^2} \\
&= \frac{(2bBd+3Abe-5aBe)\sqrt{d+ex}}{b^3} + \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(d+}{b(bd-ae)(a} \\
&= \frac{(2bBd+3Abe-5aBe)\sqrt{d+ex}}{b^3} + \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(d+}{b(bd-ae)(a} \\
&= \frac{(2bBd+3Abe-5aBe)\sqrt{d+ex}}{b^3} + \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(d+}{b(bd-ae)(a}
\end{aligned}
$$

Mathematica [A] time = 0.23, size = 136, normalized size = 0.78

$$
\frac{\frac{(-5aBe+3Abe+2bBd)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{5/2}}+\frac{(d+ex)^{5/2}(aB-Ab)}{a+bx}}{b(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(5/2))/(a + b*x) + ((2*b*B*d + 3*A*b*e - 5*a*B*e
)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcT
anh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))/(3*b^(5/2)))/(b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 0.47, size = 222, normalized size = 1.28

$$
\frac{\left(-5a^2Be^2+3aAbe^2+7abBde-3Ab^2de-2b^2Bd^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{7/2}\sqrt{ae-bd}}+\frac{\sqrt{d+ex}\left(-15a^2Be^2+9aAbe^2-10abBe(d+ex)+21abBde+6Ab^2e(d+ex)-9Ab^2de-6b^2Bd^2+2b^2B(d+ex)^2+4b^2Bd(d+ex)\right)}{3b^3(ae+b(d+ex)-bd)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[d + e*x]*(-6*b^2*B*d^2 - 9*A*b^2*d*e + 21*a*b*B*d*e + 9*a*A*b*e^2 - 1
5*a^2*B*e^2 + 4*b^2*B*d*(d + e*x) + 6*A*b^2*e*(d + e*x) - 10*a*b*B*e*(d + e
*x) + 2*b^2*B*(d + e*x)^2))/(3*b^3*(-(b*d) + a*e + b*(d + e*x))) + ((-2*b^2
*B*d^2 - 3*A*b^2*d*e + 7*a*b*B*d*e + 3*a*A*b*e^2 - 5*a^2*B*e^2)*ArcTan[(Sqr
t[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(b^(7/2)*Sqrt[-(b*d) +
 a*e])
```

fricas [A] time = 0.44, size = 392, normalized size = 2.25

$$
\left[\frac{3\left(2Babd-\left(5Ba^2-3Aab\right)e+\left(2Bb^2d-\left(5Bab-3Ab^2\right)e\right)x\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2bd-ae-2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(2Bb^2ex^2+\left(11Bab-3Ab^2\right)d-3\left(5Ba^2-3Aab\right)e+2\left(4Bb^2d-\left(5Bab-3Ab^2\right)e\right)x\right)\sqrt{ex+d}}{6\left(b^4x+ab^3\right)}, -\frac{3\left(2Babd-\left(5Ba^2-3Aab\right)e+\left(2Bb^2d-\left(5Bab-3Ab^2\right)e\right)x\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(2Bb^2ex^2+\left(11Bab-3Ab^2\right)d-3\left(5Ba^2-3Aab\right)e+2\left(4Bb^2d-\left(5Bab-3Ab^2\right)e\right)x\right)\sqrt{ex+d}}{3\left(b^4x+ab^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/6*(3*(2*B*a*b*d - (5*B*a^2 - 3*A*a*b)*e + (2*B*b^2*d - (5*B*a*b - 3*A*b^
2)*e)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*s
qrt((b*d - a*e)/b))/(b*x + a)) + 2*(2*B*b^2*e*x^2 + (11*B*a*b - 3*A*b^2)*d
- 3*(5*B*a^2 - 3*A*a*b)*e + 2*(4*B*b^2*d - (5*B*a*b - 3*A*b^2)*e)*x)*sqrt(e
*x + d))/(b^4*x + a*b^3), -1/3*(3*(2*B*a*b*d - (5*B*a^2 - 3*A*a*b)*e + (2*B
*b^2*d - (5*B*a*b - 3*A*b^2)*e)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (2*B*b^2*e*x^2 + (11*B*a*b - 3*A*b
^2)*d - 3*(5*B*a^2 - 3*A*a*b)*e + 2*(4*B*b^2*d - (5*B*a*b - 3*A*b^2)*e)*x)*
sqrt(e*x + d))/(b^4*x + a*b^3)]
```

giac [A] time = 0.19, size = 239, normalized size = 1.37

$$\frac{\left(2\,Bb^2d^2-7\,Babde+3\,Ab^2de+5\,Ba^2e^2-3\,Aabe^2\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^3}+\frac{\sqrt{xe+d}\,Babde-\sqrt{xe+d}\,Ab^2de-\sqrt{xe+d}\,Ba^2e^2+\sqrt{xe+d}\,Aabe^2}{((xe+d)b-bd+ae)b^3}+\frac{2\left((xe+d)^{\frac{3}{2}}Bb^4+3\sqrt{xe+d}\,Bb^4d-6\sqrt{xe+d}\,Bab^3e+3\sqrt{xe+d}\,Ab^4e\right)}{3\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^2*d^2 - 7*B*a*b*d*e + 3*A*b^2*d*e + 5*B*a^2*e^2 - 3*A*a*b*e^2)*arcta
n(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^3) + (sqrt(
x*e + d)*B*a*b*d*e - sqrt(x*e + d)*A*b^2*d*e - sqrt(x*e + d)*B*a^2*e^2 + sq
rt(x*e + d)*A*a*b*e^2)/(((x*e + d)*b - b*d + a*e)*b^3) + 2/3*((x*e + d)^(3/
2)*B*b^4 + 3*sqrt(x*e + d)*B*b^4*d - 6*sqrt(x*e + d)*B*a*b^3*e + 3*sqrt(x*e
 + d)*A*b^4*e)/b^6
```

maple [B] time = 0.07, size = 381, normalized size = 2.19

$$-\frac{3Aa\,e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^2}+\frac{3Ade\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{5B\,a^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^3}-\frac{7Bade\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^2}+\frac{2B\,d^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{\sqrt{ex+d}\,Aa\,e^2}{(bex+ae)\,b^2}-\frac{\sqrt{ex+d}\,Ade}{(bex+ae)\,b}-\frac{\sqrt{ex+d}\,B\,a^2e^2}{(bex+ae)\,b^3}+\frac{\sqrt{ex+d}\,Bade}{(bex+ae)\,b^2}+\frac{2\sqrt{ex+d}\,Ae}{b^2}-\frac{4\sqrt{ex+d}\,Bae}{b^3}+\frac{2\sqrt{ex+d}\,Bd}{b^2}+\frac{2\,(ex+d)^{\frac{3}{2}}\,B}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3/b^2*B*(e*x+d)^(3/2)+2/b^2*A*e*(e*x+d)^(1/2)-4/b^3*a*B*e*(e*x+d)^(1/2)+2
/b^2*B*d*(e*x+d)^(1/2)+1/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a*e^2-1/b*(e*x+d)^
(1/2)/(b*e*x+a*e)*A*d*e-1/b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a^2*e^2+1/b^2*(e*
x+d)^(1/2)/(b*e*x+a*e)*B*a*d*e-3/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*A*a*e^2+3/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*A*d*e+5/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^2*e^2-7/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d*e+2/b/((a*e-b*d)*b)^(1/2)*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.19, size = 174, normalized size = 1.00

$$\left(\frac{2\,A\,e-2\,B\,d}{b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{b^4}\right)\,\sqrt{d+e\,x}-\frac{\sqrt{d+e\,x}\,\left(B\,a^2\,e^2-A\,a\,b\,e^2-B\,d\,a\,b\,e+A\,d\,b^2\,e\right)}{b^4\,\left(d+e\,x\right)-b^4\,d+a\,b^3\,e}+\frac{2\,B\,{\left(d+e\,x\right)}^{3/2}}{3\,b^2}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,1{}\mathrm{i}}{\sqrt{b\,d-a\,e}}\right)\,\sqrt{b\,d-a\,e}\,\left(3\,A\,b\,e-5\,B\,a\,e+2\,B\,b\,d\right)\,1{}\mathrm{i}}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e))/b^4)*(d + e*x)^(1/2) - ((d
 + e*x)^(1/2)*(B*a^2*e^2 - A*a*b*e^2 + A*b^2*d*e - B*a*b*d*e))/(b^4*(d + e*
x) - b^4*d + a*b^3*e) + (2*B*(d + e*x)^(3/2))/(3*b^2) + (atan((b^(1/2)*(d +
 e*x)^(1/2)*1i)/(b*d - a*e)^(1/2))*(b*d - a*e)^(1/2)*(3*A*b*e - 5*B*a*e + 2
*B*b*d)*1i)/b^(7/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1591 $\int \frac{(A+Bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=140

$$-\frac{(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{bd-ae}}+\frac{\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{b^2(bd-ae)}-\frac{(d+ex)^{3/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 50, 63, 208}

$$\frac{\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{b^2(bd-ae)}-\frac{(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{bd-ae}}-\frac{(d+ex)^{3/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((2*b*B*d + A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(b^2*(b*d - a*e)) - ((A*b - a*B
)*(d + e*x)^(3/2))/(b*(b*d - a*e)*(a + b*x)) - ((2*b*B*d + A*b*e - 3*a*B*e)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(5/2)*Sqrt[b*d - a*e]
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx = \int \frac{(A+Bx)\sqrt{d+ex}}{(a+bx)^2}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+Abe-3aBe)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{2b(bd-ae)}$$

$$= \frac{(2bBd+Abe-3aBe)\sqrt{d+ex}}{b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+Abe-3aBe)\int \frac{}{(a+bx)}}{2b^2}$$

$$= \frac{(2bBd+Abe-3aBe)\sqrt{d+ex}}{b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+Abe-3aBe)\,\mathrm{Subst}\Big(}{b^2e}$$

$$= \frac{(2bBd+Abe-3aBe)\sqrt{d+ex}}{b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)} - \frac{(2bBd+Abe-3aBe)\tanh^{-1}}{b^{5/2}\sqrt{bd-ae}}$$

Mathematica [A] time = 0.14, size = 119, normalized size = 0.85

$$\frac{\frac{(-3aBe+Abe+2bBd)\left(\sqrt{b}\sqrt{d+ex}-\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{b^{3/2}}+\frac{(d+ex)^{3/2}(aB-Ab)}{a+bx}}{b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(3/2))/(a + b*x) + ((2*b*B*d + A*b*e - 3*a*B*e)*
(Sqrt[b]*Sqrt[d + e*x] - Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x]])/Sq
rt[b*d - a*e]]))/b^(3/2))/(b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 0.42, size = 128, normalized size = 0.91

$$\frac{(3aBe-Abe-2bBd)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{5/2}\sqrt{ae-bd}} + \frac{\sqrt{d+ex}\,(3aBe-Abe+2bB(d+ex)-2bBd)}{b^2(ae+b(d+ex)-bd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[d + e*x]*(-2*b*B*d - A*b*e + 3*a*B*e + 2*b*B*(d + e*x)))/(b^2*(-(b*d)
 + a*e + b*(d + e*x))) + ((-2*b*B*d - A*b*e + 3*a*B*e)*ArcTan[(Sqrt[b]*Sqrt
[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(b^(5/2)*Sqrt[-(b*d) + a*e])
```

fricas [A] time = 0.45, size = 393, normalized size = 2.81

$$\left[\frac{\left(2Babd-\left(3Ba^2-Aab\right)e+\left(2Bb^2d-\left(3Bab-Ab^2\right)e\right)x\right)\sqrt{b^2d-abe}\log\left(\frac{bex+2bd-ae-2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)+2\left(\left(3Bab^2-Ab^3\right)d-\left(3Ba^2b-Aab^2\right)e+2\left(Bb^3d-Bab^2e\right)x\right)\sqrt{ex+d}}{2\left(ab^4d-a^2b^3e+\left(b^5d-ab^4e\right)x\right)}, \frac{\left(2Babd-\left(3Ba^2-Aab\right)e+\left(2Bb^2d-\left(3Bab-Ab^2\right)e\right)x\right)\sqrt{-b^2d+abe}\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)+\left(\left(3Bab^2-Ab^3\right)d-\left(3Ba^2b-Aab^2\right)e+2\left(Bb^3d-Bab^2e\right)x\right)\sqrt{ex+d}}{ab^4d-a^2b^3e+\left(b^5d-ab^4e\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/2*((2*B*a*b*d - (3*B*a^2 - A*a*b)*e + (2*B*b^2*d - (3*B*a*b - A*b^2)*e)*
x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqr
t(e*x + d))/(b*x + a)) + 2*((3*B*a*b^2 - A*b^3)*d - (3*B*a^2*b - A*a*b^2)*e
 + 2*(B*b^3*d - B*a*b^2*e)*x)*sqrt(e*x + d))/(a*b^4*d - a^2*b^3*e + (b^5*d
- a*b^4*e)*x), ((2*B*a*b*d - (3*B*a^2 - A*a*b)*e + (2*B*b^2*d - (3*B*a*b -
A*b^2)*e)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + ((3*B*a*b^2 - A*b^3)*d - (3*B*a^2*b - A*a*b^2)*e + 2*(B*b
^3*d - B*a*b^2*e)*x)*sqrt(e*x + d))/(a*b^4*d - a^2*b^3*e + (b^5*d - a*b^4*e
)*x)]
```

giac [A] time = 0.22, size = 126, normalized size = 0.90

$$\frac{2\sqrt{xe+d}\,B}{b^2}+\frac{(2\,Bbd-3\,Bae+Abe)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^2}+\frac{\sqrt{xe+d}\,Bae-\sqrt{xe+d}\,Abe}{((xe+d)b-bd+ae)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B/b^2 + (2*B*b*d - 3*B*a*e + A*b*e)*arctan(sqrt(x*e + d)*b/
sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^2) + (sqrt(x*e + d)*B*a*e - s
qrt(x*e + d)*A*b*e)/(((x*e + d)*b - b*d + a*e)*b^2)
```

maple [A] time = 0.07, size = 186, normalized size = 1.33

$$\frac{Ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b}-\frac{3Bae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^2}+\frac{2Bd\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b}-\frac{\sqrt{ex+d}\,Ae}{(bex+ae)\,b}+\frac{\sqrt{ex+d}\,Bae}{(bex+ae)\,b^2}+\frac{2\sqrt{ex+d}\,B}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*B/b^2*(e*x+d)^(1/2)-1/b*(e*x+d)^(1/2)/(b*e*x+a*e)*A*e+1/b^2*(e*x+d)^(1/2)
/(b*e*x+a*e)*a*B*e+1/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*A*e-3/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*a*B*e+2/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.01, size = 108, normalized size = 0.77

$$\frac{2\,B\,\sqrt{d+e\,x}}{b^2}-\frac{(A\,b\,e-B\,a\,e)\,\sqrt{d+e\,x}}{b^3\,(d+e\,x)-b^3\,d+a\,b^2\,e}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)(A\,b\,e-3\,B\,a\,e+2\,B\,b\,d)}{b^{5/2}\,\sqrt{a\,e-b\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*B*(d + e*x)^(1/2))/b^2 - ((A*b*e - B*a*e)*(d + e*x)^(1/2))/(b^3*(d + e*x
) - b^3*d + a*b^2*e) + (atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2))*(
A*b*e - 3*B*a*e + 2*B*b*d))/(b^(5/2)*(a*e - b*d)^(1/2))
```

sympy [B] time = 107.95, size = 1251, normalized size = 8.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -2*A*a*e**2*sqrt(d + e*x)/(2*a**2*b*e**2 - 2*a*b**2*d*e + 2*a*b**2*e**2*x -
 2*b**3*d*e*x) + A*a*e**2*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**2*e**2*sqrt(-
1/(b*(a*e - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3)) - b**2*d**2*s
qrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/(2*b) - A*a*e**2*sqrt(-1/(b*(a*
e - b*d)**3))*log(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b*d*e*sqrt(-1
/(b*(a*e - b*d)**3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x
))/(2*b) - A*d*e*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**2*e**2*sqrt(-1/(b*(a*e
 - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3)) - b**2*d**2*sqrt(-1/(b
*(a*e - b*d)**3)) + sqrt(d + e*x))/2 + A*d*e*sqrt(-1/(b*(a*e - b*d)**3))*lo
g(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)*
*3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/2 + 2*A*d*e*s
qrt(d + e*x)/(2*a**2*e**2 - 2*a*b*d*e + 2*a*b*e**2*x - 2*b**2*d*e*x) + 2*A*
e*atan(sqrt(d + e*x)/sqrt(a*e/b - d))/(b**2*sqrt(a*e/b - d)) + 2*B*a**2*e**
2*sqrt(d + e*x)/(2*a**2*b**2*e**2 - 2*a*b**3*d*e + 2*a*b**3*e**2*x - 2*b**4
*d*e*x) - B*a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**2*e**2*sqrt(-1/(b
*(a*e - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3)) - b**2*d**2*sqrt(
-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/(2*b**2) + B*a**2*e**2*sqrt(-1/(b*(
a*e - b*d)**3))*log(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b*d*e*sqrt(
-1/(b*(a*e - b*d)**3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e
*x))/(2*b**2) - 2*B*a*d*e*sqrt(d + e*x)/(2*a**2*b*e**2 - 2*a*b**2*d*e + 2*a
*b**2*e**2*x - 2*b**3*d*e*x) + B*a*d*e*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**
2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3))
- b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/(2*b) - B*a*d*e*sq
rt(-1/(b*(a*e - b*d)**3))*log(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b
*d*e*sqrt(-1/(b*(a*e - b*d)**3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) +
sqrt(d + e*x))/(2*b) - 4*B*a*e*atan(sqrt(d + e*x)/sqrt(a*e/b - d))/(b**3*sq
rt(a*e/b - d)) + 2*B*d*atan(sqrt(d + e*x)/sqrt(a*e/b - d))/(b**2*sqrt(a*e/b
 - d)) + 2*B*sqrt(d + e*x)/b**2
```

3.1592 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=103

$$-\frac{(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}\,(Ab-aB)}{b(a+bx)(bd-ae)}$$

Rubi [A] time = 0.10, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 78, 63, 208}

$$-\frac{(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}\,(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(((A*b - a*B)*Sqrt[d + e*x])/(b*(b*d - a*e)*(a + b*x))) - ((2*b*B*d - A*b*
e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2)*(b*d
- a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2\sqrt{d+ex}}\,dx \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{b(bd-ae)(a+bx)}+\frac{(2bBd-Abe-aBe)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{2b(bd-ae)} \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{b(bd-ae)(a+bx)}+\frac{(2bBd-Abe-aBe)\,\mathrm{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d+ex}\right)}{be(bd-ae)} \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{b(bd-ae)(a+bx)}-\frac{(2bBd-Abe-aBe)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 102, normalized size = 0.99

$$
\frac{\sqrt{d+ex}\,(aB-Ab)}{b(a+bx)(bd-ae)}-\frac{(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-(A*b) + a*B)*Sqrt[d + e*x])/(b*(b*d - a*e)*(a + b*x)) - ((2*b*B*d - A*b*
e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2)*(b*d
- a*e)^(3/2))
```

IntegrateAlgebraic [A] time = 0.41, size = 123, normalized size = 1.19

$$
\frac{(-aBe-Abe+2bBd)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{3/2}(ae-bd)^{3/2}}+\frac{e\sqrt{d+ex}\,(Ab-aB)}{b(bd-ae)(-ae-b(d+ex)+bd)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((A*b - a*B)*e*Sqrt[d + e*x])/(b*(b*d - a*e)*(b*d - a*e - b*(d + e*x))) + (
(2*b*B*d - A*b*e - a*B*e)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])
/(b*d - a*e)])/(b^(3/2)*(-(b*d) + a*e)^(3/2))
```

fricas [B] time = 0.43, size = 397, normalized size = 3.85

$$
\left[\frac{\left(2\,Babd-\left(Ba^2+Aab\right)e+\left(2\,Bb^2d-\left(Bab+Ab^2\right)e\right)x\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(\left(Bab^2-Ab^3\right)d-\left(Ba^2b-Aab^2\right)e\right)\sqrt{ex+d}}{2\left(ab^4d^2-2\,a^2b^3de+a^3b^2e^2+\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)x\right)},\ \frac{\left(2\,Babd-\left(Ba^2+Aab\right)e+\left(2\,Bb^2d-\left(Bab+Ab^2\right)e\right)x\right)\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)+\left(\left(Bab^2-Ab^3\right)d-\left(Ba^2b-Aab^2\right)e\right)\sqrt{ex+d}}{ab^4d^2-2\,a^2b^3de+a^3b^2e^2+\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)x}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] [1/2*((2*B*a*b*d - (B*a^2 + A*a*b)*e + (2*B*b^2*d - (B*a*b + A*b^2)*e)*x)*s
qrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*
x + d))/(b*x + a)) + 2*((B*a*b^2 - A*b^3)*d - (B*a^2*b - A*a*b^2)*e)*sqrt(e
*x + d))/(a*b^4*d^2 - 2*a^2*b^3*d*e + a^3*b^2*e^2 + (b^5*d^2 - 2*a*b^4*d*e
+ a^2*b^3*e^2)*x), ((2*B*a*b*d - (B*a^2 + A*a*b)*e + (2*B*b^2*d - (B*a*b +
A*b^2)*e)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + ((B*a*b^2 - A*b^3)*d - (B*a^2*b - A*a*b^2)*e)*sqrt(e*x +
d))/(a*b^4*d^2 - 2*a^2*b^3*d*e + a^3*b^2*e^2 + (b^5*d^2 - 2*a*b^4*d*e + a^2
*b^3*e^2)*x)]
```

giac [A] time = 0.17, size = 135, normalized size = 1.31

$$\frac{(2\,Bbd - Bae - Abe)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d - abe\right)\sqrt{-b^2d + abe}} + \frac{\sqrt{xe+d}\,Bae - \sqrt{xe+d}\,Abe}{\left(b^2d - abe\right)\left((xe+d)b - bd + ae\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] (2*B*b*d - B*a*e - A*b*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((b^
2*d - a*b*e)*sqrt(-b^2*d + a*b*e)) + (sqrt(x*e + d)*B*a*e - sqrt(x*e + d)*A
*b*e)/((b^2*d - a*b*e)*((x*e + d)*b - b*d + a*e))
```

maple [B] time = 0.06, size = 195, normalized size = 1.89

$$\frac{Ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}} + \frac{Bae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}\;b} - \frac{2Bd\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}} + \frac{(Ab-Ba)\sqrt{ex+d}\;e}{(ae-bd)\,(ae-bd+(ex+d)\,b)\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] (A*b-B*a)*e/(a*e-b*d)/b*(e*x+d)^(1/2)/((e*x+d)*b+a*e-b*d)+1/(a*e-b*d)/((a*e
-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*e+1/(a*e-b*d)/
b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e-2/(
a*e-b*d)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*
d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.15, size = 99, normalized size = 0.96

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)\,\left(A\,b\,e+B\,a\,e-2\,B\,b\,d\right)}{b^{3/2}\,{\left(a\,e-b\,d\right)}^{3/2}} + \frac{\left(A\,b\,e-B\,a\,e\right)\,\sqrt{d+e\,x}}{b\,\left(a\,e-b\,d\right)\,\left(a\,e-b\,d+b\,\left(d+e\,x\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2))*(A*b*e + B*a*e - 2*B*b*d
))/(b^(3/2)*(a*e - b*d)^(3/2)) + ((A*b*e - B*a*e)*(d + e*x)^(1/2))/(b*(a*e
- b*d)*(a*e - b*d + b*(d + e*x)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1593 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=140

$$-\frac{Ab-aB}{b(a+bx)\sqrt{d+ex}\,(bd-ae)}+\frac{aBe-3Abe+2bBd}{b\sqrt{d+ex}\,(bd-ae)^2}-\frac{(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,(bd-ae)^{5/2}}$$

Rubi [A] time = 0.15, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{Ab-aB}{b(a+bx)\sqrt{d+ex}\,(bd-ae)}+\frac{aBe-3Abe+2bBd}{b\sqrt{d+ex}\,(bd-ae)^2}-\frac{(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d - 3*A*b*e + a*B*e)/(b*(b*d - a*e)^2*Sqrt[d + e*x]) - (A*b - a*B)/(
b*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x]) - ((2*b*B*d - 3*A*b*e + a*B*e)*ArcTa
nh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{(a+bx)^2(d+ex)^{3/2}}\,dx$$

$$= -\frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}} + \frac{(2bBd-3Abe+aBe)\int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx}{2b(bd-ae)}$$

$$= \frac{2bBd-3Abe+aBe}{b(bd-ae)^2\sqrt{d+ex}} - \frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}} + \frac{(2bBd-3Abe+a}{2(bd}$$

$$= \frac{2bBd-3Abe+aBe}{b(bd-ae)^2\sqrt{d+ex}} - \frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}} + \frac{(2bBd-3Abe+a}{}$$

$$= \frac{2bBd-3Abe+aBe}{b(bd-ae)^2\sqrt{d+ex}} - \frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}} - \frac{(2bBd-3Abe+a}{\sqrt{b}\,(b}$$

Mathematica [C] time = 0.04, size = 95, normalized size = 0.68

$$\frac{(a+bx)(aBe-3Abe+2bBd)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-(Ab-aB)(bd-ae)}{b(a+bx)\sqrt{d+ex}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-((A*b - a*B)*(b*d - a*e)) + (2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)*Hyperge
ometric2F1[-1/2, 1, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*(b*d - a*e)^2*(a +
b*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.51, size = 178, normalized size = 1.27

$$\frac{2aAe^2-aBe(d+ex)-2aBde+3Abe(d+ex)-2Abde+2bBd^2-2bBd(d+ex)}{\sqrt{d+ex}\,(bd-ae)^2(-ae-b(d+ex)+bd)}+\frac{(-aBe+3Abe-2bBd)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{\sqrt{b}\,(bd-ae)^2\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d^2 - 2*A*b*d*e - 2*a*B*d*e + 2*a*A*e^2 - 2*b*B*d*(d + e*x) + 3*A*b*
e*(d + e*x) - a*B*e*(d + e*x))/((b*d - a*e)^2*Sqrt[d + e*x]*(b*d - a*e - b*
(d + e*x))) + ((-2*b*B*d + 3*A*b*e - a*B*e)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a
*e]*Sqrt[d + e*x])/(b*d - a*e)])/(Sqrt[b]*(b*d - a*e)^2*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.45, size = 775, normalized size = 5.54

$$\left[-\frac{\left(2Babd^2+\left(Ba^2-3Aab\right)de+\left(2Bb^2de+\left(Bab-3Ab^2\right)e^2\right)x^2+\left(2Bb^2d^2+3\left(Bab-Ab^2\right)de+\left(Ba^2-3Aab\right)e^2\right)x\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2bd-ae+2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)-2\left(2Aa^2be^2+\left(3Bab^2-Ab^3\right)d^2-\left(3Ba^2b+Aab^2\right)de+\left(2Bb^3d^2-\left(Bab^2+3Ab^3\right)de-\left(Ba^2b-3Aab^2\right)e^2\right)x\right)\sqrt{ex+d}}{2\left(ab^4d^4-3a^2b^3d^3e+3a^3b^2d^2e^2-a^4bde^3+\left(b^5d^3e-3ab^4d^2e^2+3a^2b^3de^3-a^3b^2e^4\right)x^2+\left(b^5d^4-2ab^4d^3e+2a^3b^2de^3-a^4be^4\right)x\right)},\ \frac{\left(2Babd^2+\left(Ba^2-3Aab\right)de+\left(2Bb^2de+\left(Bab-3Ab^2\right)e^2\right)x^2+\left(2Bb^2d^2+3\left(Bab-Ab^2\right)de+\left(Ba^2-3Aab\right)e^2\right)x\right)\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)+\left(2Aa^2be^2+\left(3Bab^2-Ab^3\right)d^2-\left(3Ba^2b+Aab^2\right)de+\left(2Bb^3d^2-\left(Bab^2+3Ab^3\right)de-\left(Ba^2b-3Aab^2\right)e^2\right)x\right)\sqrt{ex+d}}{ab^4d^4-3a^2b^3d^3e+3a^3b^2d^2e^2-a^4bde^3+\left(b^5d^3e-3ab^4d^2e^2+3a^2b^3de^3-a^3b^2e^4\right)x^2+\left(b^5d^4-2ab^4d^3e+2a^3b^2de^3-a^4be^4\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/2*((2*B*a*b*d^2 + (B*a^2 - 3*A*a*b)*d*e + (2*B*b^2*d*e + (B*a*b - 3*A*b
^2)*e^2)*x^2 + (2*B*b^2*d^2 + 3*(B*a*b - A*b^2)*d*e + (B*a^2 - 3*A*a*b)*e^2
)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*s
```

```
qrt(e*x + d))/(b*x + a)) - 2*(2*A*a^2*b*e^2 + (3*B*a*b^2 - A*b^3)*d^2 - (3*
B*a^2*b + A*a*b^2)*d*e + (2*B*b^3*d^2 - (B*a*b^2 + 3*A*b^3)*d*e - (B*a^2*b
- 3*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(a*b^4*d^4 - 3*a^2*b^3*d^3*e + 3*a^3*b^
2*d^2*e^2 - a^4*b*d*e^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2*b^3*d*e^3 -
a^3*b^2*e^4)*x^2 + (b^5*d^4 - 2*a*b^4*d^3*e + 2*a^3*b^2*d*e^3 - a^4*b*e^4)*
x), ((2*B*a*b*d^2 + (B*a^2 - 3*A*a*b)*d*e + (2*B*b^2*d*e + (B*a*b - 3*A*b^2
)*e^2)*x^2 + (2*B*b^2*d^2 + 3*(B*a*b - A*b^2)*d*e + (B*a^2 - 3*A*a*b)*e^2)*
x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x +
b*d)) + (2*A*a^2*b*e^2 + (3*B*a*b^2 - A*b^3)*d^2 - (3*B*a^2*b + A*a*b^2)*d*
e + (2*B*b^3*d^2 - (B*a*b^2 + 3*A*b^3)*d*e - (B*a^2*b - 3*A*a*b^2)*e^2)*x)*
sqrt(e*x + d))/(a*b^4*d^4 - 3*a^2*b^3*d^3*e + 3*a^3*b^2*d^2*e^2 - a^4*b*d*e
^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2*b^3*d*e^3 - a^3*b^2*e^4)*x^2 + (b
^5*d^4 - 2*a*b^4*d^3*e + 2*a^3*b^2*d*e^3 - a^4*b*e^4)*x)]
```

giac [A] time = 0.19, size = 204, normalized size = 1.46

$$\frac{(2\,Bbd + Bae - 3\,Abe)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d^2 - 2\,abde + a^2e^2\right)\sqrt{-b^2d + abe}} + \frac{2\,(xe+d)Bbd - 2\,Bbd^2 + (xe+d)Bae - 3\,(xe+d)Abe + 2\,Bade + 2\,Abde - 2\,Aae^2}{\left(b^2d^2 - 2\,abde + a^2e^2\right)\left((xe+d)^{\frac{3}{2}}b - \sqrt{xe+d}\,bd + \sqrt{xe+d}\,ae\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b*d + B*a*e - 3*A*b*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((
b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt(-b^2*d + a*b*e)) + (2*(x*e + d)*B*b*d -
 2*B*b*d^2 + (x*e + d)*B*a*e - 3*(x*e + d)*A*b*e + 2*B*a*d*e + 2*A*b*d*e -
2*A*a*e^2)/((b^2*d^2 - 2*a*b*d*e + a^2*e^2)*((x*e + d)^(3/2)*b - sqrt(x*e +
 d)*b*d + sqrt(x*e + d)*a*e))
```

maple [B] time = 0.07, size = 253, normalized size = 1.81

$$-\frac{3Abe\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}} + \frac{Bae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}} + \frac{2Bbd\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}} - \frac{\sqrt{ex+d}\;Abe}{(ae-bd)^2\,(bex+ae)} + \frac{\sqrt{ex+d}\;Bae}{(ae-bd)^2\,(bex+ae)} - \frac{2Ae}{(ae-bd)^2\sqrt{ex+d}} + \frac{2Bd}{(ae-bd)^2\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*b*e+1/(a*e-b*d)^2*(e*x+d)^(1/2)/
(b*e*x+a*e)*a*B*e-3/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*A*b*e+1/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e+2/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*b*d-2/(a*e-b*d)^2/(e*x+d)^(1/2)*A*
e+2/(a*e-b*d)^2/(e*x+d)^(1/2)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.09, size = 156, normalized size = 1.11

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^{5/2}}\right)\,\left(B\,a\,e-3\,A\,b\,e+2\,B\,b\,d\right)}{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{5/2}}-\frac{\frac{2\,\left(A\,e-B\,d\right)}{a\,e-b\,d}-\frac{\left(d+e\,x\right)\,\left(B\,a\,e-3\,A\,b\,e+2\,B\,b\,d\right)}{{\left(a\,e-b\,d\right)}^2}}{b\,{\left(d+e\,x\right)}^{3/2}+\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b^(1/2)*(d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(a*e - b*d)
^(5/2))*(B*a*e - 3*A*b*e + 2*B*b*d))/(b^(1/2)*(a*e - b*d)^(5/2)) - ((2*(A*e
 - B*d))/(a*e - b*d) - ((d + e*x)*(B*a*e - 3*A*b*e + 2*B*b*d))/(a*e - b*d)^
2)/(b*(d + e*x)^(3/2) + (a*e - b*d)*(d + e*x)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1594 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)} dx$

Optimal. Leaf size=181

$$-\frac{Ab-aB}{b(a+bx)(d+ex)^{3/2}(bd-ae)}+\frac{3aBe-5Abe+2bBd}{\sqrt{d+ex}\,(bd-ae)^3}+\frac{3aBe-5Abe+2bBd}{3b(d+ex)^{3/2}(bd-ae)^2}-\frac{\sqrt{b}\,(3aBe-5Abe+2bBd)\tanh^{-1}}{(bd-ae)^{7/2}}$$

Rubi [A] time = 0.17, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{Ab-aB}{b(a+bx)(d+ex)^{3/2}(bd-ae)}+\frac{3aBe-5Abe+2bBd}{\sqrt{d+ex}\,(bd-ae)^3}+\frac{3aBe-5Abe+2bBd}{3b(d+ex)^{3/2}(bd-ae)^2}-\frac{\sqrt{b}\,(3aBe-5Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d - 5*A*b*e + 3*a*B*e)/(3*b*(b*d - a*e)^2*(d + e*x)^(3/2)) - (A*b -
a*B)/(b*(b*d - a*e)*(a + b*x)*(d + e*x)^(3/2)) + (2*b*B*d - 5*A*b*e + 3*a*B
*e)/((b*d - a*e)^3*Sqrt[d + e*x]) - (Sqrt[b]*(2*b*B*d - 5*A*b*e + 3*a*B*e)*
ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{(a+bx)^2(d+ex)^{5/2}}\,dx$$

$$= -\frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{(2bBd-5Abe+3aBe)\int \frac{1}{(a+bx)(d+ex)^{5/2}}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{(2bBd-5Ab$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{2bBd-5Abe}{(bd-ae)^3\sqrt{}}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{2bBd-5Abe}{(bd-ae)^3\sqrt{}}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{2bBd-5Abe}{(bd-ae)^3\sqrt{}}$$

Mathematica [C] time = 0.04, size = 94, normalized size = 0.52

$$\frac{(3aBe-5Abe+2bBd)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-\frac{3(Ab-aB)(bd-ae)}{a+bx}}{3b(d+ex)^{3/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-3*(A*b - a*B)*(b*d - a*e))/(a + b*x) + (2*b*B*d - 5*A*b*e + 3*a*B*e)*Hyp
ergeometric2F1[-3/2, 1, -1/2, (b*(d + e*x))/(b*d - a*e)])/(3*b*(b*d - a*e)^
2*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.60, size = 296, normalized size = 1.64

$$\frac{-2a^2Ae^3-6a^2Be^2(d+ex)+2a^2Bde^2+10aAbe^2(d+ex)+4aAbde^2-4abBd^2e+2abBde(d+ex)-9abBe(d+ex)^2-2Ab^2d^2e-10Ab^2de(d+ex)+15Ab^2e(d+ex)^2+2b^2Bd^3+4b^2Bd^2(d+ex)-6b^2Bd(d+ex)^2}{3(d+ex)^{3/2}(bd-ae)^3(-ae-b(d+ex)+bd)}+\frac{\left(-3a\sqrt{b}\,Be+5Ab^{3/2}e-2b^{3/2}Bd\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(bd-ae)^3\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b^2*B*d^3 - 2*A*b^2*d^2*e - 4*a*b*B*d^2*e + 4*a*A*b*d*e^2 + 2*a^2*B*d*e^
2 - 2*a^2*A*e^3 + 4*b^2*B*d^2*(d + e*x) - 10*A*b^2*d*e*(d + e*x) + 2*a*b*B*
d*e*(d + e*x) + 10*a*A*b*e^2*(d + e*x) - 6*a^2*B*e^2*(d + e*x) - 6*b^2*B*d*
(d + e*x)^2 + 15*A*b^2*e*(d + e*x)^2 - 9*a*b*B*e*(d + e*x)^2)/(3*(b*d - a*e
)^3*(d + e*x)^(3/2)*(b*d - a*e - b*(d + e*x))) + ((-2*b^(3/2)*B*d + 5*A*b^(
3/2)*e - 3*a*Sqrt[b]*B*e)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])
/(b*d - a*e)])/((b*d - a*e)^3*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.46, size = 1106, normalized size = 6.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/6*(3*(2*B*a*b*d^3 + (3*B*a^2 - 5*A*a*b)*d^2*e + (2*B*b^2*d*e^2 + (3*B*a*
b - 5*A*b^2)*e^3)*x^3 + (4*B*b^2*d^2*e + 2*(4*B*a*b - 5*A*b^2)*d*e^2 + (3*B
*a^2 - 5*A*a*b)*e^3)*x^2 + (2*B*b^2*d^3 + (7*B*a*b - 5*A*b^2)*d^2*e + 2*(3*
B*a^2 - 5*A*a*b)*d*e^2)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2
*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(2*A*a^2*e^2
 + (11*B*a*b - 3*A*b^2)*d^2 + 2*(2*B*a^2 - 7*A*a*b)*d*e + 3*(2*B*b^2*d*e +
(3*B*a*b - 5*A*b^2)*e^2)*x^2 + 2*(4*B*b^2*d^2 + 2*(4*B*a*b - 5*A*b^2)*d*e +
 (3*B*a^2 - 5*A*a*b)*e^2)*x)*sqrt(e*x + d))/(a*b^3*d^5 - 3*a^2*b^2*d^4*e +
3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d^2*e^3 + 3*a^2*b^2*
d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3
 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e - 3*a^2*b^2*d^3*e^2
+ 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x), -1/3*(3*(2*B*a*b*d^3 + (3*B*a^2 - 5*A*
a*b)*d^2*e + (2*B*b^2*d*e^2 + (3*B*a*b - 5*A*b^2)*e^3)*x^3 + (4*B*b^2*d^2*e
 + 2*(4*B*a*b - 5*A*b^2)*d*e^2 + (3*B*a^2 - 5*A*a*b)*e^3)*x^2 + (2*B*b^2*d^
3 + (7*B*a*b - 5*A*b^2)*d^2*e + 2*(3*B*a^2 - 5*A*a*b)*d*e^2)*x)*sqrt(-b/(b*
d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b
*d)) - (2*A*a^2*e^2 + (11*B*a*b - 3*A*b^2)*d^2 + 2*(2*B*a^2 - 7*A*a*b)*d*e
+ 3*(2*B*b^2*d*e + (3*B*a*b - 5*A*b^2)*e^2)*x^2 + 2*(4*B*b^2*d^2 + 2*(4*B*a
*b - 5*A*b^2)*d*e + (3*B*a^2 - 5*A*a*b)*e^2)*x)*sqrt(e*x + d))/(a*b^3*d^5 -
 3*a^2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d
^2*e^3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2
+ 3*a^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e -
 3*a^2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x)]
```

giac [**A**] time = 0.22, size = 297, normalized size = 1.64

$$\frac{\left(2\,Bb^2d + 3\,Babe - 5\,Ab^2e\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3\right)\sqrt{-b^2d+abe}} + \frac{\sqrt{xe+d}\,Babe - \sqrt{xe+d}\,Ab^2e}{\left(b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3\right)\left((xe+d)b - bd + ae\right)} + \frac{2\left(3\,(xe+d)Bbd + Bbd^2 + 3\,(xe+d)Bae - 6\,(xe+d)Abe - Bade - Abde + Aae^2\right)}{3\left(b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3\right)(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^2*d + 3*B*a*b*e - 5*A*b^2*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*
b*e))/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-b^2*d + a*
b*e)) + (sqrt(x*e + d)*B*a*b*e - sqrt(x*e + d)*A*b^2*e)/((b^3*d^3 - 3*a*b^2
*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*((x*e + d)*b - b*d + a*e)) + 2/3*(3*(x*e
+ d)*B*b*d + B*b*d^2 + 3*(x*e + d)*B*a*e - 6*(x*e + d)*A*b*e - B*a*d*e - A*
b*d*e + A*a*e^2)/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(x*e
+ d)^(3/2))
```

maple [**B**] time = 0.07, size = 328, normalized size = 1.81

$$\frac{5A\,b^2e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^3\sqrt{(ae-bd)\,b}} - \frac{3Babe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^3\sqrt{(ae-bd)\,b}} - \frac{2B\,b^2d\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^3\sqrt{(ae-bd)\,b}} + \frac{\sqrt{ex+d}\;A\,b^2e}{(ae-bd)^3\,(bex+ae)} - \frac{\sqrt{ex+d}\;Babe}{(ae-bd)^3\,(bex+ae)} + \frac{4Abe}{(ae-bd)^3\sqrt{ex+d}} - \frac{2Bae}{(ae-bd)^3\sqrt{ex+d}} - \frac{2Bbd}{(ae-bd)^3\sqrt{ex+d}} - \frac{2Ae}{3\,(ae-bd)^2\,(ex+d)^{\frac{3}{2}}} + \frac{2Bd}{3\,(ae-bd)^2\,(ex+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/(a*e-b*d)^3*b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*e-1/(a*e-b*d)^3*b*(e*x+d)^(1/
2)/(b*e*x+a*e)*a*B*e+5/(a*e-b*d)^3*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*A*e-3/(a*e-b*d)^3*b/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e-2/(a*e-b*d)^3*b^2/((a*e-b*d)*b)^
(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d-2/3/(a*e-b*d)^2/(e*x+
d)^(3/2)*A*e+2/3/(a*e-b*d)^2/(e*x+d)^(3/2)*B*d+4/(a*e-b*d)^3/(e*x+d)^(1/2)*
A*b*e-2/(a*e-b*d)^3/(e*x+d)^(1/2)*a*B*e-2/(a*e-b*d)^3/(e*x+d)^(1/2)*B*b*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.10, size = 210, normalized size = 1.16

$$-\frac{\frac{2\,(A\,e-B\,d)}{3\,(a\,e-b\,d)}+\frac{2\,(d+e\,x)\,(3\,B\,a\,e-5\,A\,b\,e+2\,B\,b\,d)}{3\,{(a\,e-b\,d)}^2}+\frac{b\,{(d+e\,x)}^2\,(3\,B\,a\,e-5\,A\,b\,e+2\,B\,b\,d)}{{(a\,e-b\,d)}^3}}{b\,{(d+e\,x)}^{5/2}+(a\,e-b\,d)\,{(d+e\,x)}^{3/2}}-\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{{(a\,e-b\,d)}^{7/2}}\right)\,(3\,B\,a\,e-5\,A\,b\,e+2\,B\,b\,d)}{{(a\,e-b\,d)}^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((2*(A*e - B*d))/(3*(a*e - b*d)) + (2*(d + e*x)*(3*B*a*e - 5*A*b*e + 2*B*
b*d))/(3*(a*e - b*d)^2) + (b*(d + e*x)^2*(3*B*a*e - 5*A*b*e + 2*B*b*d))/(a*
e - b*d)^3)/(b*(d + e*x)^(5/2) + (a*e - b*d)*(d + e*x)^(3/2)) - (b^(1/2)*at
an((b^(1/2)*(d + e*x)^(1/2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*
e^2))/(a*e - b*d)^(7/2))*(3*B*a*e - 5*A*b*e + 2*B*b*d))/(a*e - b*d)^(7/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1595 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=221

$$-\frac{b^{3/2}(5aBe-7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{9/2}}+\frac{b(5aBe-7Abe+2bBd)}{\sqrt{d+ex}\,(bd-ae)^4}+\frac{5aBe-7Abe+2bBd}{3(d+ex)^{3/2}(bd-ae)^3}+\frac{5aBe-7Abe\cdots}{5b(d+ex)^{5/2}(b\cdots}$$

Rubi [A] time = 0.23, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{b^{3/2}(5aBe-7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{9/2}}+\frac{b(5aBe-7Abe+2bBd)}{\sqrt{d+ex}\,(bd-ae)^4}+\frac{5aBe-7Abe+2bBd}{3(d+ex)^{3/2}(bd-ae)^3}+\frac{5aBe-7Abe+2bBd}{5b(d+ex)^{5/2}(bd-ae)^2}-\frac{Ab-aB}{b(a+bx)(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d - 7*A*b*e + 5*a*B*e)/(5*b*(b*d - a*e)^2*(d + e*x)^(5/2)) - (A*b -
a*B)/(b*(b*d - a*e)*(a + b*x)*(d + e*x)^(5/2)) + (2*b*B*d - 7*A*b*e + 5*a*B
*e)/(3*(b*d - a*e)^3*(d + e*x)^(3/2)) + (b*(2*b*B*d - 7*A*b*e + 5*a*B*e))/(
(b*d - a*e)^4*Sqrt[d + e*x]) - (b^(3/2)*(2*b*B*d - 7*A*b*e + 5*a*B*e)*ArcTa
nh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{(a+bx)^2(d+ex)^{7/2}}\,dx$$

$$= -\frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{(2bBd-7Abe+5aBe)\int \frac{1}{(a+bx)(d+ex)^{7/2}}}{2b(bd-ae)}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{(2bBd-7Ab}{}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe}{3(bd-ae)^3(d}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe}{3(bd-ae)^3(d}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe}{3(bd-ae)^3(d}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe}{3(bd-ae)^3(d}$$

Mathematica [C] time = 0.04, size = 94, normalized size = 0.43

$$\frac{(5aBe-7Abe+2bBd)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)-\frac{5(Ab-aB)(bd-ae)}{a+bx}}{5b(d+ex)^{5/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-5*(A*b - a*B)*(b*d - a*e))/(a + b*x) + (2*b*B*d - 7*A*b*e + 5*a*B*e)*Hyp
ergeometric2F1[-5/2, 1, -3/2, (b*(d + e*x))/(b*d - a*e)])/(5*b*(b*d - a*e)^
2*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 0.73, size = 449, normalized size = 2.03

$$\frac{6a^3Ae^4+10a^3Be^3(d+ex)-6a^3Bde^3-14a^2Abe^3(d+ex)-18a^2Abde^3+18a^2bBd^2e^2-16a^2bBde^2(d+ex)-50a^2bBe^2(d+ex)^2+18aAb^2d^2e^2+28aAb^2de^2(d+ex)+70aAb^2e^2(d+ex)^2-18ab^2Bd^3e+2ab^2Bd^2e(d+ex)+30ab^2Bde(d+ex)^2-75ab^2Be(d+ex)^3-6Ab^3d^3e-14Ab^3d^2e(d+ex)-70Ab^3de(d+ex)^2+105Ab^3e(d+ex)^3+6b^3Bd^4+4b^3Bd^3(d+ex)+20b^3Bd^2(d+ex)^2-30b^3Bd(d+ex)^3}{15(d+ex)^{5/2}(bd-ae)^4(-ae-b(d+ex)+bd)}+\frac{\left(-5ab^{3/2}Be+7Ab^{5/2}e-2b^{5/2}Bd\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(bd-ae)^4\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (6*b^3*B*d^4 - 6*A*b^3*d^3*e - 18*a*b^2*B*d^3*e + 18*a*A*b^2*d^2*e^2 + 18*a
^2*b*B*d^2*e^2 - 18*a^2*A*b*d*e^3 - 6*a^3*B*d*e^3 + 6*a^3*A*e^4 + 4*b^3*B*d
^3*(d + e*x) - 14*A*b^3*d^2*e*(d + e*x) + 2*a*b^2*B*d^2*e*(d + e*x) + 28*a*
A*b^2*d*e^2*(d + e*x) - 16*a^2*b*B*d*e^2*(d + e*x) - 14*a^2*A*b*e^3*(d + e*
x) + 10*a^3*B*e^3*(d + e*x) + 20*b^3*B*d^2*(d + e*x)^2 - 70*A*b^3*d*e*(d +
e*x)^2 + 30*a*b^2*B*d*e*(d + e*x)^2 + 70*a*A*b^2*e^2*(d + e*x)^2 - 50*a^2*b
*B*e^2*(d + e*x)^2 - 30*b^3*B*d*(d + e*x)^3 + 105*A*b^3*e*(d + e*x)^3 - 75*
a*b^2*B*e*(d + e*x)^3)/(15*(b*d - a*e)^4*(d + e*x)^(5/2)*(b*d - a*e - b*(d
```

```
+ e*x))) + ((-2*b^(5/2)*B*d + 7*A*b^(5/2)*e - 5*a*b^(3/2)*B*e)*ArcTan[(Sqrt
[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/((b*d - a*e)^4*Sqrt[-(b
*d) + a*e])
```

fricas [B] time = 0.47, size = 1749, normalized size = 7.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/30*(15*(2*B*a*b^2*d^4 + (5*B*a^2*b - 7*A*a*b^2)*d^3*e + (2*B*b^3*d*e^3
+ (5*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + (6*B*b^3*d^2*e^2 + (17*B*a*b^2 - 21*A*b^
3)*d*e^3 + (5*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + 3*(2*B*b^3*d^3*e + 7*(B*a*b^2
 - A*b^3)*d^2*e^2 + (5*B*a^2*b - 7*A*a*b^2)*d*e^3)*x^2 + (2*B*b^3*d^4 + (11
*B*a*b^2 - 7*A*b^3)*d^3*e + 3*(5*B*a^2*b - 7*A*a*b^2)*d^2*e^2)*x)*sqrt(b/(b
*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b
*d - a*e)))/(b*x + a)) + 2*(6*A*a^3*e^3 - (61*B*a*b^2 - 15*A*b^3)*d^3 - 4*(
12*B*a^2*b - 29*A*a*b^2)*d^2*e + 4*(B*a^3 - 8*A*a^2*b)*d*e^2 - 15*(2*B*b^3*
d*e^2 + (5*B*a*b^2 - 7*A*b^3)*e^3)*x^3 - 5*(14*B*b^3*d^2*e + (39*B*a*b^2 -
49*A*b^3)*d*e^2 + 2*(5*B*a^2*b - 7*A*a*b^2)*e^3)*x^2 - (46*B*b^3*d^3 + (163
*B*a*b^2 - 161*A*b^3)*d^2*e + 4*(29*B*a^2*b - 42*A*a*b^2)*d*e^2 - 2*(5*B*a^
3 - 7*A*a^2*b)*e^3)*x)*sqrt(e*x + d))/(a*b^4*d^7 - 4*a^2*b^3*d^6*e + 6*a^3*
b^2*d^5*e^2 - 4*a^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5*d^4*e^3 - 4*a*b^4*d^3*e^
4 + 6*a^2*b^3*d^2*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^7)*x^4 + (3*b^5*d^5*e^2 -
 11*a*b^4*d^4*e^3 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2*d^2*e^5 - a^4*b*d*e^6 +
a^5*e^7)*x^3 + 3*(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*a^2*b^3*d^4*e^3 + 2*a^3*b
^2*d^3*e^4 - 3*a^4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b^5*d^7 - a*b^4*d^6*e - 6*
a^2*b^3*d^5*e^2 + 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^3*e^4 + 3*a^5*d^2*e^5)*x)
, -1/15*(15*(2*B*a*b^2*d^4 + (5*B*a^2*b - 7*A*a*b^2)*d^3*e + (2*B*b^3*d*e^3
 + (5*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + (6*B*b^3*d^2*e^2 + (17*B*a*b^2 - 21*A*b
^3)*d*e^3 + (5*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + 3*(2*B*b^3*d^3*e + 7*(B*a*b^
2 - A*b^3)*d^2*e^2 + (5*B*a^2*b - 7*A*a*b^2)*d*e^3)*x^2 + (2*B*b^3*d^4 + (1
1*B*a*b^2 - 7*A*b^3)*d^3*e + 3*(5*B*a^2*b - 7*A*a*b^2)*d^2*e^2)*x)*sqrt(-b/
(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x
+ b*d)) + (6*A*a^3*e^3 - (61*B*a*b^2 - 15*A*b^3)*d^3 - 4*(12*B*a^2*b - 29*A
*a*b^2)*d^2*e + 4*(B*a^3 - 8*A*a^2*b)*d*e^2 - 15*(2*B*b^3*d*e^2 + (5*B*a*b^
2 - 7*A*b^3)*e^3)*x^3 - 5*(14*B*b^3*d^2*e + (39*B*a*b^2 - 49*A*b^3)*d*e^2 +
 2*(5*B*a^2*b - 7*A*a*b^2)*e^3)*x^2 - (46*B*b^3*d^3 + (163*B*a*b^2 - 161*A*
b^3)*d^2*e + 4*(29*B*a^2*b - 42*A*a*b^2)*d*e^2 - 2*(5*B*a^3 - 7*A*a^2*b)*e^
3)*x)*sqrt(e*x + d))/(a*b^4*d^7 - 4*a^2*b^3*d^6*e + 6*a^3*b^2*d^5*e^2 - 4*a
^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5*d^4*e^3 - 4*a*b^4*d^3*e^4 + 6*a^2*b^3*d^2
*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^7)*x^4 + (3*b^5*d^5*e^2 - 11*a*b^4*d^4*e^3
 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2*d^2*e^5 - a^4*b*d*e^6 + a^5*e^7)*x^3 + 3*
(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*a^2*b^3*d^4*e^3 + 2*a^3*b^2*d^3*e^4 - 3*a^
4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b^5*d^7 - a*b^4*d^6*e - 6*a^2*b^3*d^5*e^2 +
 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^3*e^4 + 3*a^5*d^2*e^5)*x)]
```

giac [B] time = 0.23, size = 435, normalized size = 1.97

$$\frac{\left(2\,Bb^3d + 5\,Bab^2e - 7\,Ab^3e\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4\right)\sqrt{-b^2d + abe}} + \frac{\sqrt{xe + d}\,Bab^2e - \sqrt{xe + d}\,Ab^3e}{\left(b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4\right)\left((xe + d)b - bd + ae\right)} + \frac{2\left(15\,(xe + d)^2Bb^2d + 5\,(xe + d)Bb^2d^2 + 3\,Bb^2d^3 + 30\,(xe + d)^2Babe - 45\,(xe + d)^2Ab^2e - 10\,(xe + d)Ab^2de - 6\,Babd^2e - 3\,Ab^2d^2e - 5\,(xe + d)Ba^2e^2 + 10\,(xe + d)Aabe^2 + 3\,Ba^2de^2 + 6\,Aabde^2 - 3\,Aa^2e^3\right)}{15\left(b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4\right)(xe + d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^3*d + 5*B*a*b^2*e - 7*A*b^3*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d +
a*b*e))/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4
*e^4)*sqrt(-b^2*d + a*b*e)) + (sqrt(x*e + d)*B*a*b^2*e - sqrt(x*e + d)*A*b^
3*e)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^
```

```
4)*((x*e + d)*b - b*d + a*e)) + 2/15*(15*(x*e + d)^2*B*b^2*d + 5*(x*e + d)*
B*b^2*d^2 + 3*B*b^2*d^3 + 30*(x*e + d)^2*B*a*b*e - 45*(x*e + d)^2*A*b^2*e -
 10*(x*e + d)*A*b^2*d*e - 6*B*a*b*d^2*e - 3*A*b^2*d^2*e - 5*(x*e + d)*B*a^2
*e^2 + 10*(x*e + d)*A*a*b*e^2 + 3*B*a^2*d*e^2 + 6*A*a*b*d*e^2 - 3*A*a^2*e^3
)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*
(x*e + d)^(5/2))
```

maple [B] time = 0.07, size = 403, normalized size = 1.82

$$-\frac{7Ab^3e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^4\sqrt{(ae-bd)b}}+\frac{5Bab^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^4\sqrt{(ae-bd)b}}+\frac{2Bb^3d\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^4\sqrt{(ae-bd)b}}-\frac{\sqrt{ex+d}\,Ab^3e}{(ae-bd)^4(bex+ae)}+\frac{\sqrt{ex+d}\,Bab^2e}{(ae-bd)^4(bex+ae)}-\frac{6Ab^2e}{(ae-bd)^4\sqrt{ex+d}}+\frac{4Babe}{(ae-bd)^4\sqrt{ex+d}}+\frac{2Bb^2d}{(ae-bd)^4\sqrt{ex+d}}+\frac{4Abe}{3(ae-bd)^3(ex+d)^{\frac{3}{2}}}-\frac{2Bae}{3(ae-bd)^3(ex+d)^{\frac{3}{2}}}-\frac{2Bbd}{3(ae-bd)^3(ex+d)^{\frac{3}{2}}}-\frac{2Ae}{5(ae-bd)^2(ex+d)^{\frac{5}{2}}}+\frac{2Bd}{5(ae-bd)^2(ex+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^4*b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*A*e+1/(a*e-b*d)^4*b^2*(e*x+d)^
(1/2)/(b*e*x+a*e)*a*B*e-7/(a*e-b*d)^4*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*e+5/(a*e-b*d)^4*b^2/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e+2/(a*e-b*d)^4*b^3/((a*e-b*d
)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d-2/5/(a*e-b*d)^2/
(e*x+d)^(5/2)*A*e+2/5/(a*e-b*d)^2/(e*x+d)^(5/2)*B*d+4/3/(a*e-b*d)^3/(e*x+d)
^(3/2)*A*b*e-2/3/(a*e-b*d)^3/(e*x+d)^(3/2)*a*B*e-2/3/(a*e-b*d)^3/(e*x+d)^(3
/2)*B*b*d-6*b^2/(a*e-b*d)^4/(e*x+d)^(1/2)*A*e+4*b/(a*e-b*d)^4/(e*x+d)^(1/2)
*a*B*e+2*b^2/(a*e-b*d)^4/(e*x+d)^(1/2)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.16, size = 261, normalized size = 1.18

$$\frac{b^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}{{\left(a\,e-b\,d\right)}^{9/2}}\right)\,\left(5\,B\,a\,e-7\,A\,b\,e+2\,B\,b\,d\right)}{{\left(a\,e-b\,d\right)}^{9/2}}-\frac{\frac{2\,\left(A\,e-B\,d\right)}{5\,\left(a\,e-b\,d\right)}+\frac{2\,\left(d+e\,x\right)\,\left(5\,B\,a\,e-7\,A\,b\,e+2\,B\,b\,d\right)}{15\,{\left(a\,e-b\,d\right)}^2}-\frac{b^2\,{\left(d+e\,x\right)}^3\,\left(5\,B\,a\,e-7\,A\,b\,e+2\,B\,b\,d\right)}{{\left(a\,e-b\,d\right)}^4}-\frac{2\,b\,{\left(d+e\,x\right)}^2\,\left(5\,B\,a\,e-7\,A\,b\,e+2\,B\,b\,d\right)}{3\,{\left(a\,e-b\,d\right)}^3}}{b\,{\left(d+e\,x\right)}^{7/2}+\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (b^(3/2)*atan((b^(1/2)*(d + e*x)^(1/2)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e
^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/(a*e - b*d)^(9/2))*(5*B*a*e - 7*A*b*e
+ 2*B*b*d))/(a*e - b*d)^(9/2) - ((2*(A*e - B*d))/(5*(a*e - b*d)) + (2*(d +
e*x)*(5*B*a*e - 7*A*b*e + 2*B*b*d))/(15*(a*e - b*d)^2) - (b^2*(d + e*x)^3*(
5*B*a*e - 7*A*b*e + 2*B*b*d))/(a*e - b*d)^4 - (2*b*(d + e*x)^2*(5*B*a*e - 7
*A*b*e + 2*B*b*d))/(3*(a*e - b*d)^3))/(b*(d + e*x)^(7/2) + (a*e - b*d)*(d +
 e*x)^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1596 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2} \, dx$

Optimal. Leaf size=332

$$-\frac{21e^2(bd-ae)^{3/2}(-11aBe+5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{13/2}}+\frac{21e^2\sqrt{d+ex}\,(bd-ae)(-11aBe+5Abe+6bBd)}{8b^6}+$$

Rubi [A] time = 0.33, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 50, 63, 208}

$$\frac{21e^2(d+ex)^{5/2}(-11aBe+5Abe+6bBd)}{40b^4(bd-ae)}+\frac{7e^2(d+ex)^{3/2}(-11aBe+5Abe+6bBd)}{8b^5}+\frac{21e^2\sqrt{d+ex}\,(bd-ae)(-11aBe+5Abe+6bBd)}{8b^6}-\frac{21e^2(bd-ae)^{3/2}(-11aBe+5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{13/2}}-\frac{(d+ex)^{9/2}(-11aBe+5Abe+6bBd)}{12b^2(a+bx)^2(bd-ae)}-\frac{3e(d+ex)^{7/2}(-11aBe+5Abe+6bBd)}{8b^3(a+bx)(bd-ae)}-\frac{(d+ex)^{11/2}(Ab-aB)}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (21*e^2*(b*d - a*e)*(6*b*B*d + 5*A*b*e - 11*a*B*e)*Sqrt[d + e*x])/(8*b^6) +
 (7*e^2*(6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(3/2))/(8*b^5) + (21*e^2*(
6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(5/2))/(40*b^4*(b*d - a*e)) - (3*e*
(6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(7/2))/(8*b^3*(b*d - a*e)*(a + b*x
)) - ((6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(9/2))/(12*b^2*(b*d - a*e)*(
a + b*x)^2) - ((A*b - a*B)*(d + e*x)^(11/2))/(3*b*(b*d - a*e)*(a + b*x)^3)
- (21*e^2*(b*d - a*e)^(3/2)*(6*b*B*d + 5*A*b*e - 11*a*B*e)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)(d+ex)^{9/2}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{11/2}}{3b(bd-ae)(a+bx)^3} + \frac{(6bBd+5Abe-11aBe)\int \frac{(d+ex)^{9/2}}{(a+bx)^3}\,dx}{6b(bd-ae)}$$

$$= -\frac{(6bBd+5Abe-11aBe)(d+ex)^{9/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{11/2}}{3b(bd-ae)(a+bx)^3} + \frac{(3e(6bBd+5Abe}{8b^2}$$

$$= -\frac{3e(6bBd+5Abe-11aBe)(d+ex)^{7/2}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd+5Abe-11aBe)(d+ex)^{9/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(A}{3b}$$

$$= \frac{21e^2(6bBd+5Abe-11aBe)(d+ex)^{5/2}}{40b^4(bd-ae)} - \frac{3e(6bBd+5Abe-11aBe)(d+ex)^{7/2}}{8b^3(bd-ae)(a+bx)} -$$

$$= \frac{7e^2(6bBd+5Abe-11aBe)(d+ex)^{3/2}}{8b^5} + \frac{21e^2(6bBd+5Abe-11aBe)(d+ex)^{5/2}}{40b^4(bd-ae)} -$$

$$= \frac{21e^2(bd-ae)(6bBd+5Abe-11aBe)\sqrt{d+ex}}{8b^6} + \frac{7e^2(6bBd+5Abe-11aBe)(d+}{8b^5}$$

$$= \frac{21e^2(bd-ae)(6bBd+5Abe-11aBe)\sqrt{d+ex}}{8b^6} + \frac{7e^2(6bBd+5Abe-11aBe)(d+}{8b^5}$$

$$= \frac{21e^2(bd-ae)(6bBd+5Abe-11aBe)\sqrt{d+ex}}{8b^6} + \frac{7e^2(6bBd+5Abe-11aBe)(d+}{8b^5}$$

Mathematica [C] time = 0.11, size = 100, normalized size = 0.30

$$\frac{(d+ex)^{11/2}\left(\frac{11(aB-Ab)}{(a+bx)^3} - \frac{e^2(-11aBe+5Abe+6bBd)\,{}_2F_1\left(3,\frac{11}{2};\frac{13}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}\right)}{33b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(11/2)*((11*(-(A*b) + a*B))/(a + b*x)^3 - (e^2*(6*b*B*d + 5*A*b*
e - 11*a*B*e)*Hypergeometric2F1[3, 11/2, 13/2, (b*(d + e*x))/(b*d - a*e)])/
(b*d - a*e)^3))/(33*b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 1.68, size = 678, normalized size = 2.04

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-1890*b^5*B*d^5 - 1575*A*b^5*d^4*e + 11025*a*b^4*B*d^4*
e + 6300*a*A*b^4*d^3*e^2 - 25200*a^2*b^3*B*d^3*e^2 - 9450*a^2*A*b^3*d^2*e^3
 + 28350*a^3*b^2*B*d^2*e^3 + 6300*a^3*A*b^2*d*e^4 - 15750*a^4*b*B*d*e^4 - 1
575*a^4*A*b*e^5 + 3465*a^5*B*e^5 + 5040*b^5*B*d^4*(d + e*x) + 4200*A*b^5*d^
3*e*(d + e*x) - 24360*a*b^4*B*d^3*e*(d + e*x) - 12600*a*A*b^4*d^2*e^2*(d +
e*x) + 42840*a^2*b^3*B*d^2*e^2*(d + e*x) + 12600*a^2*A*b^3*d*e^3*(d + e*x)
- 32760*a^3*b^2*B*d*e^3*(d + e*x) - 4200*a^3*A*b^2*e^4*(d + e*x) + 9240*a^4
*b*B*e^4*(d + e*x) - 4158*b^5*B*d^3*(d + e*x)^2 - 3465*A*b^5*d^2*e*(d + e*x
)^2 + 15939*a*b^4*B*d^2*e*(d + e*x)^2 + 6930*a*A*b^4*d*e^2*(d + e*x)^2 - 19
404*a^2*b^3*B*d*e^2*(d + e*x)^2 - 3465*a^2*A*b^3*e^3*(d + e*x)^2 + 7623*a^3
*b^2*B*e^3*(d + e*x)^2 + 864*b^5*B*d^2*(d + e*x)^3 + 720*A*b^5*d*e*(d + e*x
)^3 - 2448*a*b^4*B*d*e*(d + e*x)^3 - 720*a*A*b^4*e^2*(d + e*x)^3 + 1584*a^2
*b^3*B*e^2*(d + e*x)^3 + 96*b^5*B*d*(d + e*x)^4 + 80*A*b^5*e*(d + e*x)^4 -
176*a*b^4*B*e*(d + e*x)^4 + 48*b^5*B*(d + e*x)^5))/(120*b^6*(-(b*d) + a*e +
 b*(d + e*x))^3) - (21*(b*d - a*e)^2*(6*b*B*d*e^2 + 5*A*b*e^3 - 11*a*B*e^3)
*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*b^(13/2
)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.46, size = 1514, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/240*(315*(6*B*a^3*b^2*d^2*e^2 - (17*B*a^4*b - 5*A*a^3*b^2)*d*e^3 + (11*B
*a^5 - 5*A*a^4*b)*e^4 + (6*B*b^5*d^2*e^2 - (17*B*a*b^4 - 5*A*b^5)*d*e^3 + (
11*B*a^2*b^3 - 5*A*a*b^4)*e^4)*x^3 + 3*(6*B*a*b^4*d^2*e^2 - (17*B*a^2*b^3 -
 5*A*a*b^4)*d*e^3 + (11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 + 3*(6*B*a^2*b^3*
d^2*e^2 - (17*B*a^3*b^2 - 5*A*a^2*b^3)*d*e^3 + (11*B*a^4*b - 5*A*a^3*b^2)*e
^4)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqr
t((b*d - a*e)/b))/(b*x + a)) + 2*(48*B*b^5*e^4*x^5 - 20*(B*a*b^4 + 2*A*b^5)
*d^4 - 90*(2*B*a^2*b^3 + A*a*b^4)*d^3*e + 63*(51*B*a^3*b^2 - 5*A*a^2*b^3)*d
^2*e^2 - 210*(31*B*a^4*b - 10*A*a^3*b^2)*d*e^3 + 315*(11*B*a^5 - 5*A*a^4*b)
*e^4 + 16*(21*B*b^5*d*e^3 - (11*B*a*b^4 - 5*A*b^5)*e^4)*x^4 + 16*(108*B*b^5
*d^2*e^2 - (197*B*a*b^4 - 65*A*b^5)*d*e^3 + 9*(11*B*a^2*b^3 - 5*A*a*b^4)*e^
4)*x^3 - 3*(170*B*b^5*d^3*e - (2513*B*a*b^4 - 275*A*b^5)*d^2*e^2 + 6*(814*B
*a^2*b^3 - 265*A*a*b^4)*d*e^3 - 231*(11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 -
 2*(30*B*b^5*d^4 + 5*(53*B*a*b^4 + 25*A*b^5)*d^3*e - 18*(244*B*a^2*b^3 - 25
*A*a*b^4)*d^2*e^2 + 63*(139*B*a^3*b^2 - 45*A*a^2*b^3)*d*e^3 - 420*(11*B*a^4
*b - 5*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7
*x + a^3*b^6), -1/120*(315*(6*B*a^3*b^2*d^2*e^2 - (17*B*a^4*b - 5*A*a^3*b^2
)*d*e^3 + (11*B*a^5 - 5*A*a^4*b)*e^4 + (6*B*b^5*d^2*e^2 - (17*B*a*b^4 - 5*A
*b^5)*d*e^3 + (11*B*a^2*b^3 - 5*A*a*b^4)*e^4)*x^3 + 3*(6*B*a*b^4*d^2*e^2 -
(17*B*a^2*b^3 - 5*A*a*b^4)*d*e^3 + (11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 +
3*(6*B*a^2*b^3*d^2*e^2 - (17*B*a^3*b^2 - 5*A*a^2*b^3)*d*e^3 + (11*B*a^4*b -
 5*A*a^3*b^2)*e^4)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b
*d - a*e)/b)/(b*d - a*e)) - (48*B*b^5*e^4*x^5 - 20*(B*a*b^4 + 2*A*b^5)*d^4
- 90*(2*B*a^2*b^3 + A*a*b^4)*d^3*e + 63*(51*B*a^3*b^2 - 5*A*a^2*b^3)*d^2*e^
2 - 210*(31*B*a^4*b - 10*A*a^3*b^2)*d*e^3 + 315*(11*B*a^5 - 5*A*a^4*b)*e^4
+ 16*(21*B*b^5*d*e^3 - (11*B*a*b^4 - 5*A*b^5)*e^4)*x^4 + 16*(108*B*b^5*d^2*
```

```
e^2 - (197*B*a*b^4 - 65*A*b^5)*d*e^3 + 9*(11*B*a^2*b^3 - 5*A*a*b^4)*e^4)*x^
3 - 3*(170*B*b^5*d^3*e - (2513*B*a*b^4 - 275*A*b^5)*d^2*e^2 + 6*(814*B*a^2*
b^3 - 265*A*a*b^4)*d*e^3 - 231*(11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 - 2*(3
0*B*b^5*d^4 + 5*(53*B*a*b^4 + 25*A*b^5)*d^3*e - 18*(244*B*a^2*b^3 - 25*A*a*
b^4)*d^2*e^2 + 63*(139*B*a^3*b^2 - 45*A*a^2*b^3)*d*e^3 - 420*(11*B*a^4*b -
5*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x +
a^3*b^6)]
```

giac [B] time = 0.30, size = 829, normalized size = 2.50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 21/8*(6*B*b^3*d^3*e^2 - 23*B*a*b^2*d^2*e^3 + 5*A*b^3*d^2*e^3 + 28*B*a^2*b*d
*e^4 - 10*A*a*b^2*d*e^4 - 11*B*a^3*e^5 + 5*A*a^2*b*e^5)*arctan(sqrt(x*e + d
)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^6) - 1/24*(102*(x*e + d)^
(5/2)*B*b^5*d^3*e^2 - 192*(x*e + d)^(3/2)*B*b^5*d^4*e^2 + 90*sqrt(x*e + d)*
B*b^5*d^5*e^2 - 471*(x*e + d)^(5/2)*B*a*b^4*d^2*e^3 + 165*(x*e + d)^(5/2)*A
*b^5*d^2*e^3 + 1048*(x*e + d)^(3/2)*B*a*b^4*d^3*e^3 - 280*(x*e + d)^(3/2)*A
*b^5*d^3*e^3 - 573*sqrt(x*e + d)*B*a*b^4*d^4*e^3 + 123*sqrt(x*e + d)*A*b^5*
d^4*e^3 + 636*(x*e + d)^(5/2)*B*a^2*b^3*d*e^4 - 330*(x*e + d)^(5/2)*A*a*b^4
*d*e^4 - 1992*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^4 + 840*(x*e + d)^(3/2)*A*a*b
^4*d^2*e^4 + 1392*sqrt(x*e + d)*B*a^2*b^3*d^3*e^4 - 492*sqrt(x*e + d)*A*a*b
^4*d^3*e^4 - 267*(x*e + d)^(5/2)*B*a^3*b^2*e^5 + 165*(x*e + d)^(5/2)*A*a^2*
b^3*e^5 + 1608*(x*e + d)^(3/2)*B*a^3*b^2*d*e^5 - 840*(x*e + d)^(3/2)*A*a^2*
b^3*d*e^5 - 1638*sqrt(x*e + d)*B*a^3*b^2*d^2*e^5 + 738*sqrt(x*e + d)*A*a^2*
b^3*d^2*e^5 - 472*(x*e + d)^(3/2)*B*a^4*b*e^6 + 280*(x*e + d)^(3/2)*A*a^3*b
^2*e^6 + 942*sqrt(x*e + d)*B*a^4*b*d*e^6 - 492*sqrt(x*e + d)*A*a^3*b^2*d*e^
6 - 213*sqrt(x*e + d)*B*a^5*e^7 + 123*sqrt(x*e + d)*A*a^4*b*e^7)/(((x*e + d
)*b - b*d + a*e)^3*b^6) + 2/15*(3*(x*e + d)^(5/2)*B*b^16*e^2 + 15*(x*e + d)
^(3/2)*B*b^16*d*e^2 + 90*sqrt(x*e + d)*B*b^16*d^2*e^2 - 20*(x*e + d)^(3/2)*
B*a*b^15*e^3 + 5*(x*e + d)^(3/2)*A*b^16*e^3 - 240*sqrt(x*e + d)*B*a*b^15*d*
e^3 + 60*sqrt(x*e + d)*A*b^16*d*e^3 + 150*sqrt(x*e + d)*B*a^2*b^14*e^4 - 60
*sqrt(x*e + d)*A*a*b^15*e^4)/b^20
```

maple [B] time = 0.09, size = 1285, normalized size = 3.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/5*e^2/b^4*B*(e*x+d)^(5/2)+2/3*e^3/b^4*A*(e*x+d)^(3/2)-8/3*e^3/b^5*B*(e*x+
d)^(3/2)*a-8*e^4/b^5*A*(e*x+d)^(1/2)*a+8*e^3/b^4*A*(e*x+d)^(1/2)*d+20*e^4/b
^6*B*(e*x+d)^(1/2)*a^2+2*e^2/b^4*B*(e*x+d)^(3/2)*d+12*e^2/b^4*B*(e*x+d)^(1/
2)*d^2-157/4*e^6/b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^4*d-483/8*e^3/b^4/((a*
e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d^2+273/4*e
^5/b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^3*d^2-58*e^4/b^3/(b*e*x+a*e)^3*(e*x+
d)^(1/2)*B*a^2*d^3+191/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^4+35*e^5
/b^3/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a^2*d-123/4*e^5/b^3/(b*e*x+a*e)^3*(e*x+d
)^(1/2)*A*a^2*d^2+41/2*e^4/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a*d^3+157/8*e^
3/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a*d^2+41/2*e^6/b^4/(b*e*x+a*e)^3*(e*x+d
)^(1/2)*A*a^3*d-35*e^4/b^2/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a*d^2-105/4*e^4/b^
4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a*d-131
/3*e^3/b^2/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a*d^3+55/4*e^4/b^2/(b*e*x+a*e)^3*(
e*x+d)^(5/2)*A*a*d-53/2*e^4/b^3/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a^2*d+147/2*e
^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^
```

```
2*d-67*e^5/b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^3*d+83*e^4/b^3/(b*e*x+a*e)^3
*B*(e*x+d)^(3/2)*a^2*d^2-41/8*e^7/b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^4-41/
8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^4-35/3*e^6/b^4/(b*e*x+a*e)^3*A*(e*x
+d)^(3/2)*a^3+35/3*e^3/b/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*d^3+59/3*e^6/b^5/(b*
e*x+a*e)^3*B*(e*x+d)^(3/2)*a^4+105/8*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^2+105/8*e^3/b^3/((a*e-b*d)*b)^(1/2)*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d^2-32*e^3/b^5*B*(e*x+d)^(1/2)
*a*d+63/4*e^2/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*B*d^3+8*e^2/b/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*d^4-17/4*e^2/b/(b*e*x+a*
e)^3*(e*x+d)^(5/2)*B*d^3-15/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d^5-231/8
*e^5/b^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*
a^3+71/8*e^7/b^6/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^5-55/8*e^5/b^3/(b*e*x+a*e)
^3*(e*x+d)^(5/2)*A*a^2-55/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A*d^2+89/8*e^
5/b^4/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.12, size = 790, normalized size = 2.38

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((((2*A*e^3 - 2*B*d*e^2)/b^4 + (2*B*e^2*(4*b^4*d - 4*a*b^3*e))/b^8)*(4*b^4*
d - 4*a*b^3*e))/b^4 - (12*B*e^2*(a*e - b*d)^2)/b^6)*(d + e*x)^(1/2) - ((d +
 e*x)^(5/2)*((55*A*a^2*b^3*e^5)/8 - (89*B*a^3*b^2*e^5)/8 + (55*A*b^5*d^2*e^
3)/8 + (17*B*b^5*d^3*e^2)/4 - (157*B*a*b^4*d^2*e^3)/8 + (53*B*a^2*b^3*d*e^4
)/2 - (55*A*a*b^4*d*e^4)/4) - (d + e*x)^(3/2)*((59*B*a^4*b*e^6)/3 - (35*A*a
^3*b^2*e^6)/3 + (35*A*b^5*d^3*e^3)/3 + 8*B*b^5*d^4*e^2 - 35*A*a*b^4*d^2*e^4
 + 35*A*a^2*b^3*d*e^5 - (131*B*a*b^4*d^3*e^3)/3 - 67*B*a^3*b^2*d*e^5 + 83*B
*a^2*b^3*d^2*e^4) + (d + e*x)^(1/2)*((41*A*a^4*b*e^7)/8 - (71*B*a^5*e^7)/8
+ (41*A*b^5*d^4*e^3)/8 + (15*B*b^5*d^5*e^2)/4 - (41*A*a*b^4*d^3*e^4)/2 - (4
1*A*a^3*b^2*d*e^6)/2 - (191*B*a*b^4*d^4*e^3)/8 + (123*A*a^2*b^3*d^2*e^5)/4
+ 58*B*a^2*b^3*d^3*e^4 - (273*B*a^3*b^2*d^2*e^5)/4 + (157*B*a^4*b*d*e^6)/4)
)/(b^9*(d + e*x)^3 - (3*b^9*d - 3*a*b^8*e)*(d + e*x)^2 + (d + e*x)*(3*b^9*d
^2 + 3*a^2*b^7*e^2 - 6*a*b^8*d*e) - b^9*d^3 + a^3*b^6*e^3 - 3*a^2*b^7*d*e^2
 + 3*a*b^8*d^2*e) + ((2*A*e^3 - 2*B*d*e^2)/(3*b^4) + (2*B*e^2*(4*b^4*d - 4*
a*b^3*e))/(3*b^8))*(d + e*x)^(3/2) + (2*B*e^2*(d + e*x)^(5/2))/(5*b^4) + (2
1*e^2*atan((b^(1/2)*e^2*(a*e - b*d)^(3/2)*(d + e*x)^(1/2)*(5*A*b*e - 11*B*a
*e + 6*B*b*d))/(5*A*a^2*b*e^5 - 11*B*a^3*e^5 + 5*A*b^3*d^2*e^3 + 6*B*b^3*d^
3*e^2 - 23*B*a*b^2*d^2*e^3 - 10*A*a*b^2*d*e^4 + 28*B*a^2*b*d*e^4))*(a*e - b
*d)^(3/2)*(5*A*b*e - 11*B*a*e + 6*B*b*d))/(8*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1597 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=284

$$-\frac{35e^2\sqrt{bd-ae}\,(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{11/2}}+\frac{35e^2\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{8b^5}+\frac{35e^2(d+ex)^{3/2}(}{24b}$$

Rubi [A] time = 0.24, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 50, 63, 208}

$$\frac{35e^2(d+ex)^{3/2}(-3aBe+Abe+2bBd)}{24b^4(bd-ae)}+\frac{35e^2\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{8b^5}-\frac{35e^2\sqrt{bd-ae}\,(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{11/2}}-\frac{(d+ex)^{7/2}(-3aBe+Abe+2bBd)}{4b^2(a+bx)^2(bd-ae)}-\frac{7e(d+ex)^{5/2}(-3aBe+Abe+2bBd)}{8b^3(a+bx)(bd-ae)}-\frac{(d+ex)^{9/2}(Ab-aB)}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (35*e^2*(2*b*B*d + A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(8*b^5) + (35*e^2*(2*b*B
*d + A*b*e - 3*a*B*e)*(d + e*x)^(3/2))/(24*b^4*(b*d - a*e)) - (7*e*(2*b*B*d
 + A*b*e - 3*a*B*e)*(d + e*x)^(5/2))/(8*b^3*(b*d - a*e)*(a + b*x)) - ((2*b*
B*d + A*b*e - 3*a*B*e)*(d + e*x)^(7/2))/(4*b^2*(b*d - a*e)*(a + b*x)^2) - (
(A*b - a*B)*(d + e*x)^(9/2))/(3*b*(b*d - a*e)*(a + b*x)^3) - (35*e^2*Sqrt[b
*d - a*e]*(2*b*B*d + A*b*e - 3*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[
b*d - a*e]])/(8*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)(d+ex)^{7/2}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{3b(bd-ae)(a+bx)^3} + \frac{(2bBd+Abe-3aBe)\int \frac{(d+ex)^{7/2}}{(a+bx)^3}\,dx}{2b(bd-ae)}$$

$$= -\frac{(2bBd+Abe-3aBe)(d+ex)^{7/2}}{4b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{9/2}}{3b(bd-ae)(a+bx)^3} + \frac{(7e(2bBd+Abe-3a}{8b^2(bd}$$

$$= -\frac{7e(2bBd+Abe-3aBe)(d+ex)^{5/2}}{8b^3(bd-ae)(a+bx)} - \frac{(2bBd+Abe-3aBe)(d+ex)^{7/2}}{4b^2(bd-ae)(a+bx)^2} - \frac{(Ab-a}{3b(bd-}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(2bBd+Abe-3aBe)(d+ex)^{5/2}}{8b^3(bd-ae)(a+bx)} - \frac{(2bE}{}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)\sqrt{d+ex}}{8b^5} + \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(2}{}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)\sqrt{d+ex}}{8b^5} + \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(2}{}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)\sqrt{d+ex}}{8b^5} + \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(2}{}$$

Mathematica [C] time = 0.09, size = 99, normalized size = 0.35

$$\frac{(d+ex)^{9/2}\left(\frac{9aB-9Ab}{(a+bx)^3} - \frac{3e^2(-3aBe+Abe+2bBd)\,{}_2F_1\left(3,\frac{9}{2};\frac{11}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}\right)}{27b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(9/2)*((-9*A*b + 9*a*B)/(a + b*x)^3 - (3*e^2*(2*b*B*d + A*b*e -
3*a*B*e)*Hypergeometric2F1[3, 9/2, 11/2, (b*(d + e*x))/(b*d - a*e)])/(b*d -
 a*e)^3))/(27*b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 2.13, size = 496, normalized size = 1.75

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-210*b^4*B*d^4 - 105*A*b^4*d^3*e + 945*a*b^3*B*d^3*e +
315*a*A*b^3*d^2*e^2 - 1575*a^2*b^2*B*d^2*e^2 - 315*a^2*A*b^2*d*e^3 + 1155*a
^3*b*B*d*e^3 + 105*a^3*A*b*e^4 - 315*a^4*B*e^4 + 560*b^4*B*d^3*(d + e*x) +
280*A*b^4*d^2*e*(d + e*x) - 1960*a*b^3*B*d^2*e*(d + e*x) - 560*a*A*b^3*d*e^
2*(d + e*x) + 2240*a^2*b^2*B*d*e^2*(d + e*x) + 280*a^2*A*b^2*e^3*(d + e*x)
- 840*a^3*b*B*e^3*(d + e*x) - 462*b^4*B*d^2*(d + e*x)^2 - 231*A*b^4*d*e*(d
+ e*x)^2 + 1155*a*b^3*B*d*e*(d + e*x)^2 + 231*a*A*b^3*e^2*(d + e*x)^2 - 693
*a^2*b^2*B*e^2*(d + e*x)^2 + 96*b^4*B*d*(d + e*x)^3 + 48*A*b^4*e*(d + e*x)^
3 - 144*a*b^3*B*e*(d + e*x)^3 + 16*b^4*B*(d + e*x)^4))/(24*b^5*(-(b*d) + a*
e + b*(d + e*x))^3) - (35*(2*b^2*B*d^2*e^2 + A*b^2*d*e^3 - 5*a*b*B*d*e^3 -
a*A*b*e^4 + 3*a^2*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/
(b*d - a*e)])/(8*b^(11/2)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.46, size = 1026, normalized size = 3.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/48*(105*(2*B*a^3*b*d*e^2 - (3*B*a^4 - A*a^3*b)*e^3 + (2*B*b^4*d*e^2 - (
3*B*a*b^3 - A*b^4)*e^3)*x^3 + 3*(2*B*a*b^3*d*e^2 - (3*B*a^2*b^2 - A*a*b^3)*
e^3)*x^2 + 3*(2*B*a^2*b^2*d*e^2 - (3*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt((b*d
 - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b)
)/(b*x + a)) - 2*(16*B*b^4*e^3*x^4 - 4*(B*a*b^3 + 2*A*b^4)*d^3 - 14*(2*B*a^
2*b^2 + A*a*b^3)*d^2*e + 35*(9*B*a^3*b - A*a^2*b^2)*d*e^2 - 105*(3*B*a^4 -
A*a^3*b)*e^3 + 16*(10*B*b^4*d*e^2 - 3*(3*B*a*b^3 - A*b^4)*e^3)*x^3 - 3*(26*
B*b^4*d^2*e - (241*B*a*b^3 - 29*A*b^4)*d*e^2 + 77*(3*B*a^2*b^2 - A*a*b^3)*e
^3)*x^2 - 2*(6*B*b^4*d^3 + (41*B*a*b^3 + 19*A*b^4)*d^2*e - 7*(61*B*a^2*b^2
- 7*A*a*b^3)*d*e^2 + 140*(3*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^
8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5), -1/24*(105*(2*B*a^3*b*d*e^2 -
 (3*B*a^4 - A*a^3*b)*e^3 + (2*B*b^4*d*e^2 - (3*B*a*b^3 - A*b^4)*e^3)*x^3 +
3*(2*B*a*b^3*d*e^2 - (3*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 3*(2*B*a^2*b^2*d*e^
2 - (3*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
 d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (16*B*b^4*e^3*x^4 - 4*(B*a*b^3 +
2*A*b^4)*d^3 - 14*(2*B*a^2*b^2 + A*a*b^3)*d^2*e + 35*(9*B*a^3*b - A*a^2*b^2
)*d*e^2 - 105*(3*B*a^4 - A*a^3*b)*e^3 + 16*(10*B*b^4*d*e^2 - 3*(3*B*a*b^3 -
 A*b^4)*e^3)*x^3 - 3*(26*B*b^4*d^2*e - (241*B*a*b^3 - 29*A*b^4)*d*e^2 + 77*
(3*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 - 2*(6*B*b^4*d^3 + (41*B*a*b^3 + 19*A*b^4)
*d^2*e - 7*(61*B*a^2*b^2 - 7*A*a*b^3)*d*e^2 + 140*(3*B*a^3*b - A*a^2*b^2)*e
^3)*x)*sqrt(e*x + d))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)]
```

giac [B] time = 0.25, size = 577, normalized size = 2.03

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/8*(2*B*b^2*d^2*e^2 - 5*B*a*b*d*e^3 + A*b^2*d*e^3 + 3*B*a^2*e^4 - A*a*b*e
^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^5)
 - 1/24*(78*(x*e + d)^(5/2)*B*b^4*d^2*e^2 - 144*(x*e + d)^(3/2)*B*b^4*d^3*e
^2 + 66*sqrt(x*e + d)*B*b^4*d^4*e^2 - 243*(x*e + d)^(5/2)*B*a*b^3*d*e^3 + 8
```

```
7*(x*e + d)^(5/2)*A*b^4*d*e^3 + 568*(x*e + d)^(3/2)*B*a*b^3*d^2*e^3 - 136*(
x*e + d)^(3/2)*A*b^4*d^2*e^3 - 321*sqrt(x*e + d)*B*a*b^3*d^3*e^3 + 57*sqrt(
x*e + d)*A*b^4*d^3*e^3 + 165*(x*e + d)^(5/2)*B*a^2*b^2*e^4 - 87*(x*e + d)^(
5/2)*A*a*b^3*e^4 - 704*(x*e + d)^(3/2)*B*a^2*b^2*d*e^4 + 272*(x*e + d)^(3/2
)*A*a*b^3*d*e^4 + 567*sqrt(x*e + d)*B*a^2*b^2*d^2*e^4 - 171*sqrt(x*e + d)*A
*a*b^3*d^2*e^4 + 280*(x*e + d)^(3/2)*B*a^3*b*e^5 - 136*(x*e + d)^(3/2)*A*a^
2*b^2*e^5 - 435*sqrt(x*e + d)*B*a^3*b*d*e^5 + 171*sqrt(x*e + d)*A*a^2*b^2*d
*e^5 + 123*sqrt(x*e + d)*B*a^4*e^6 - 57*sqrt(x*e + d)*A*a^3*b*e^6)/(((x*e +
 d)*b - b*d + a*e)^3*b^5) + 2/3*((x*e + d)^(3/2)*B*b^8*e^2 + 9*sqrt(x*e + d
)*B*b^8*d*e^2 - 12*sqrt(x*e + d)*B*a*b^7*e^3 + 3*sqrt(x*e + d)*A*b^8*e^3)/b
^12
```

maple [B] time = 0.08, size = 905, normalized size = 3.19

$$\frac{19\sqrt{ex+d}\,Aa^3e^6}{8(bex+ae)^3b^4}-\frac{57\sqrt{ex+d}\,Aa^2de^5}{8(bex+ae)^3b^3}+\frac{57\sqrt{ex+d}\,Aad^2e^4}{8(bex+ae)^3b^2}-\frac{19\sqrt{ex+d}\,Ad^3e^3}{8(bex+ae)^3b}-\frac{41\sqrt{ex+d}\,Ba^4e^6}{8(bex+ae)^3b^5}+\frac{145\sqrt{ex+d}\,Ba^3de^5}{8(bex+ae)^3b^4}-\frac{189\sqrt{ex+d}\,Ba^2d^2e^4}{8(bex+ae)^3b^3}+\frac{107\sqrt{ex+d}\,Bad^3e^3}{8(bex+ae)^3b^2}-\frac{11\sqrt{ex+d}\,Bd^4e^2}{4(bex+ae)^3b}+\frac{17(ex+d)^{\frac{3}{2}}Aa^2e^5}{3(bex+ae)^3b^3}-\frac{34(ex+d)^{\frac{3}{2}}Aade^4}{3(bex+ae)^3b^2}+\frac{17(ex+d)^{\frac{3}{2}}Ad^2e^3}{3(bex+ae)^3b}-\frac{35(ex+d)^{\frac{3}{2}}Ba^3e^5}{3(bex+ae)^3b^4}+\frac{88(ex+d)^{\frac{3}{2}}Ba^2de^4}{3(bex+ae)^3b^3}-\frac{71(ex+d)^{\frac{3}{2}}Bad^2e^3}{3(bex+ae)^3b^2}+\frac{6(ex+d)^{\frac{3}{2}}Bd^3e^2}{(bex+ae)^3b}+\frac{29(ex+d)^{\frac{5}{2}}Aae^4}{8(bex+ae)^3b^2}-\frac{29(ex+d)^{\frac{5}{2}}Ade^3}{8(bex+ae)^3b}-\frac{55(ex+d)^{\frac{5}{2}}Ba^2e^4}{8(bex+ae)^3b^3}+\frac{81(ex+d)^{\frac{5}{2}}Bade^3}{8(bex+ae)^3b^2}-\frac{13(ex+d)^{\frac{5}{2}}Bd^2e^2}{4(bex+ae)^3b}-\frac{35Aae^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\sqrt{(ae-bd)b}\,b^4}+\frac{35Ade^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\sqrt{(ae-bd)b}\,b^3}+\frac{105Ba^2e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\sqrt{(ae-bd)b}\,b^5}-\frac{175Bade^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\sqrt{(ae-bd)b}\,b^4}+\frac{35Bd^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)b}\,b^3}+\frac{2\sqrt{ex+d}\,Ae^3}{b^4}-\frac{8\sqrt{ex+d}\,Bae^3}{b^5}+\frac{6\sqrt{ex+d}\,Bde^2}{b^4}+\frac{2(ex+d)^{\frac{3}{2}}Be^2}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/3*e^2/b^4*B*(e*x+d)^(3/2)+2*e^3/b^4*A*(e*x+d)^(1/2)-8*e^3/b^5*a*B*(e*x+d)
^(1/2)+6*e^2/b^4*B*d*(e*x+d)^(1/2)-34/3*e^4/b^2/(b*e*x+a*e)^3*A*(e*x+d)^(3/
2)*a*d+88/3*e^4/b^3/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2*d-71/3*e^3/b^2/(b*e*x
+a*e)^3*B*(e*x+d)^(3/2)*a*d^2+145/8*e^5/b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d
*a^3-57/8*e^5/b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2*d+57/8*e^4/b^2/(b*e*x+a
*e)^3*(e*x+d)^(1/2)*A*d^2*a+81/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a*d-
175/8*e^3/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*B*a*d+107/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^3-189/8*e^4/b^3/(b
*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^2*d^2-41/8*e^6/b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2
)*B*a^4+35/8*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*A*d+105/8*e^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*B*a^2-13/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*d^2+6*e^2/b
/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*d^3-11/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B
*d^4+35/4*e^2/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*B*d^2+29/8*e^4/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A*a-29/8*e^3/b/(b*e*x
+a*e)^3*(e*x+d)^(5/2)*A*d-55/8*e^4/b^3/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a^2+17
/3*e^5/b^3/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a^2-35/8*e^4/b^4/((a*e-b*d)*b)^(1/
2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a+17/3*e^3/b/(b*e*x+a*e)^3
*A*(e*x+d)^(3/2)*d^2-35/3*e^5/b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^3+19/8*e^
6/b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^3-19/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(1
/2)*A*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.16, size = 513, normalized size = 1.81

$$\left(\frac{2Ae^3-2Bde^2}{b^4}+\frac{2Be^2\left(4b^4d-4ab^3e\right)}{b^8}\right)\sqrt{d+ex}-\frac{\sqrt{d+ex}\left(\frac{41Ba^4e^6}{8}-\frac{145Ba^3bde^5}{8}-\frac{19Aa^3be^6}{8}+\frac{189Ba^2b^2d^2e^4}{8}+\frac{57Aa^2b^2de^5}{8}-\frac{107Bab^3d^3e^3}{8}-\frac{57Aab^3d^2e^4}{8}+\frac{11Bb^4d^4e^2}{4}+\frac{19Ab^4d^3e^3}{8}\right)-(d+ex)^{3/2}\left(-\frac{35Ba^3be^5}{3}+\frac{88Ba^2b^2de^4}{3}+\frac{17Aa^2b^2e^5}{3}-\frac{71Bab^3d^2e^3}{3}-\frac{34Aab^3de^4}{3}+6Bb^4d^3e^2+\frac{17Ab^4d^2e^3}{3}\right)+(d+ex)^{5/2}\left(\frac{55Ba^2b^2e^4}{8}-\frac{81Bab^3de^3}{8}-\frac{29Aab^3e^4}{8}+\frac{13Bb^4d^2e^2}{4}+\frac{29Ab^4de^3}{8}\right)}{b^8(d+ex)^3-\left(3b^8d-3ab^7e\right)(d+ex)^2+(d+ex)\left(3a^2b^6e^2-6ab^7de+3b^8d^2\right)-b^8d^3+a^3b^5e^3-3a^2b^6de^2+3ab^7d^2e}+\frac{2Be^2(d+ex)^{3/2}}{3b^4}+\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,1\mathrm{i}}{\sqrt{bd-ae}}\right)\sqrt{bd-ae}\,(Abe-3Bae+2Bbd)\,35\mathrm{i}}{8b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((2*A*e^3 - 2*B*d*e^2)/b^4 + (2*B*e^2*(4*b^4*d - 4*a*b^3*e))/b^8)*(d + e*x)
^(1/2) - ((d + e*x)^(1/2)*((41*B*a^4*e^6)/8 - (19*A*a^3*b*e^6)/8 + (19*A*b^
4*d^3*e^3)/8 + (11*B*b^4*d^4*e^2)/4 - (57*A*a*b^3*d^2*e^4)/8 + (57*A*a^2*b^
2*d*e^5)/8 - (107*B*a*b^3*d^3*e^3)/8 + (189*B*a^2*b^2*d^2*e^4)/8 - (145*B*a
^3*b*d*e^5)/8) - (d + e*x)^(3/2)*((17*A*a^2*b^2*e^5)/3 - (35*B*a^3*b*e^5)/3
 + (17*A*b^4*d^2*e^3)/3 + 6*B*b^4*d^3*e^2 - (71*B*a*b^3*d^2*e^3)/3 + (88*B*
a^2*b^2*d*e^4)/3 - (34*A*a*b^3*d*e^4)/3) + (d + e*x)^(5/2)*((29*A*b^4*d*e^3
)/8 - (29*A*a*b^3*e^4)/8 + (55*B*a^2*b^2*e^4)/8 + (13*B*b^4*d^2*e^2)/4 - (8
1*B*a*b^3*d*e^3)/8))/(b^8*(d + e*x)^3 - (3*b^8*d - 3*a*b^7*e)*(d + e*x)^2 +
 (d + e*x)*(3*b^8*d^2 + 3*a^2*b^6*e^2 - 6*a*b^7*d*e) - b^8*d^3 + a^3*b^5*e^
3 - 3*a^2*b^6*d*e^2 + 3*a*b^7*d^2*e) + (2*B*e^2*(d + e*x)^(3/2))/(3*b^4) +
(e^2*atan((b^(1/2)*(d + e*x)^(1/2)*1i)/(b*d - a*e)^(1/2))*(b*d - a*e)^(1/2)
*(A*b*e - 3*B*a*e + 2*B*b*d)*35i)/(8*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1598 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=250

$$-\frac{5e^2(-7aBe+Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{bd-ae}}+\frac{5e^2\sqrt{d+ex}\,(-7aBe+Abe+6bBd)}{8b^4(bd-ae)}-\frac{5e(d+ex)^{3/2}(-7aBe+A}{24b^3(a+bx)(bd-}$$

Rubi [A] time = 0.20, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 50, 63, 208}

$$\frac{5e^2\sqrt{d+ex}\,(-7aBe+Abe+6bBd)}{8b^4(bd-ae)}-\frac{5e^2(-7aBe+Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{bd-ae}}-\frac{(d+ex)^{5/2}(-7aBe+Abe+6bBd)}{12b^2(a+bx)^2(bd-ae)}-\frac{5e(d+ex)^{3/2}(-7aBe+Abe+6bBd)}{24b^3(a+bx)(bd-ae)}-\frac{(d+ex)^{7/2}(Ab-aB)}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (5*e^2*(6*b*B*d + A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(8*b^4*(b*d - a*e)) - (5*
e*(6*b*B*d + A*b*e - 7*a*B*e)*(d + e*x)^(3/2))/(24*b^3*(b*d - a*e)*(a + b*x
)) - ((6*b*B*d + A*b*e - 7*a*B*e)*(d + e*x)^(5/2))/(12*b^2*(b*d - a*e)*(a +
 b*x)^2) - ((A*b - a*B)*(d + e*x)^(7/2))/(3*b*(b*d - a*e)*(a + b*x)^3) - (5
*e^2*(6*b*B*d + A*b*e - 7*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
 a*e]])/(8*b^(9/2)*Sqrt[b*d - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)(d+ex)^{5/2}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{3b(bd-ae)(a+bx)^3} + \frac{(6bBd+Abe-7aBe)\int \frac{(d+ex)^{5/2}}{(a+bx)^3}\,dx}{6b(bd-ae)}$$

$$= -\frac{(6bBd+Abe-7aBe)(d+ex)^{5/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{7/2}}{3b(bd-ae)(a+bx)^3} + \frac{(5e(6bBd+Abe-7aBe}{24b^2(bd-}$$

$$= -\frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)} - \frac{(6bBd+Abe-7aBe)(d+ex)^{5/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)}{3b(bd-ae}$$

$$= \frac{5e^2(6bBd+Abe-7aBe)\sqrt{d+ex}}{8b^4(bd-ae)} - \frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)} - \frac{(6bBd+A}{12b^2(}$$

$$= \frac{5e^2(6bBd+Abe-7aBe)\sqrt{d+ex}}{8b^4(bd-ae)} - \frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)} - \frac{(6bBd+A}{12b^2(}$$

$$= \frac{5e^2(6bBd+Abe-7aBe)\sqrt{d+ex}}{8b^4(bd-ae)} - \frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)} - \frac{(6bBd+A}{12b^2(}$$

Mathematica [C] time = 0.08, size = 99, normalized size = 0.40

$$\frac{(d+ex)^{7/2}\left(\frac{7aB-7Ab}{(a+bx)^3} - \frac{e^2(-7aBe+Abe+6bBd)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}\right)}{21b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(7/2)*((-7*A*b + 7*a*B)/(a + b*x)^3 - (e^2*(6*b*B*d + A*b*e - 7*
a*B*e)*Hypergeometric2F1[3, 7/2, 9/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*
e)^3))/(21*b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 1.76, size = 317, normalized size = 1.27

$$-\frac{e^2\sqrt{d+ex}\left(-105a^3Be^3+15a^2Abe^3-280a^2bBe^2(d+ex)+300a^2bBde^2+40aAb^2e^2(d+ex)-30aAb^2de^2-285ab^2Bd^2e-231ab^2Be(d+ex)^2+520ab^2Bde(d+ex)+15Ab^3d^2e+33Ab^3e(d+ex)^2-40Ab^3de(d+ex)+90b^3Bd^3-240b^3Bd^2(d+ex)-48b^3B(d+ex)^3+198b^3Bd(d+ex)^2\right)}{24b^4(ae+b(d+ex)-bd)^3} - \frac{5\left(-7aBe^3+Abe^3+6bBde^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{9/2}\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] -1/24*(e^2*Sqrt[d + e*x]*(90*b^3*B*d^3 + 15*A*b^3*d^2*e - 285*a*b^2*B*d^2*e
 - 30*a*A*b^2*d*e^2 + 300*a^2*b*B*d*e^2 + 15*a^2*A*b*e^3 - 105*a^3*B*e^3 -
240*b^3*B*d^2*(d + e*x) - 40*A*b^3*d*e*(d + e*x) + 520*a*b^2*B*d*e*(d + e*x
) + 40*a*A*b^2*e^2*(d + e*x) - 280*a^2*b*B*e^2*(d + e*x) + 198*b^3*B*d*(d +
 e*x)^2 + 33*A*b^3*e*(d + e*x)^2 - 231*a*b^2*B*e*(d + e*x)^2 - 48*b^3*B*(d
+ e*x)^3))/(b^4*(-(b*d) + a*e + b*(d + e*x))^3) - (5*(6*b*B*d*e^2 + A*b*e^3
 - 7*a*B*e^3)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)
])/(8*b^(9/2)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.46, size = 1075, normalized size = 4.30

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/48*(15*(6*B*a^3*b*d*e^2 - (7*B*a^4 - A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (7*
B*a*b^3 - A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (7*B*a^2*b^2 - A*a*b^3)*e^
3)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (7*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(b^2*d
- a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b
*x + a)) - 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 + 2*(8*B*a^2*b^3 + A*a*b^4)*d^2*e -
 5*(25*B*a^3*b^2 - A*a^2*b^3)*d*e^2 + 15*(7*B*a^4*b - A*a^3*b^2)*e^3 - 48*(
B*b^5*d*e^2 - B*a*b^4*e^3)*x^3 + 3*(18*B*b^5*d^2*e - (95*B*a*b^4 - 11*A*b^5
)*d*e^2 + 11*(7*B*a^2*b^3 - A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5*d^3 + (23*B*a*b^
4 + 13*A*b^5)*d^2*e - (169*B*a^2*b^3 - 7*A*a*b^4)*d*e^2 + 20*(7*B*a^3*b^2 -
 A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d - a^4*b^5*e + (b^9*d - a*b^8*
e)*x^3 + 3*(a*b^8*d - a^2*b^7*e)*x^2 + 3*(a^2*b^7*d - a^3*b^6*e)*x), 1/24*(
15*(6*B*a^3*b*d*e^2 - (7*B*a^4 - A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (7*B*a*b^3
 - A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (7*B*a^2*b^2 - A*a*b^3)*e^3)*x^2
+ 3*(6*B*a^2*b^2*d*e^2 - (7*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(-b^2*d + a*b*
e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (4*(B*a*b^4 +
 2*A*b^5)*d^3 + 2*(8*B*a^2*b^3 + A*a*b^4)*d^2*e - 5*(25*B*a^3*b^2 - A*a^2*b
^3)*d*e^2 + 15*(7*B*a^4*b - A*a^3*b^2)*e^3 - 48*(B*b^5*d*e^2 - B*a*b^4*e^3)
*x^3 + 3*(18*B*b^5*d^2*e - (95*B*a*b^4 - 11*A*b^5)*d*e^2 + 11*(7*B*a^2*b^3
- A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5*d^3 + (23*B*a*b^4 + 13*A*b^5)*d^2*e - (169
*B*a^2*b^3 - 7*A*a*b^4)*d*e^2 + 20*(7*B*a^3*b^2 - A*a^2*b^3)*e^3)*x)*sqrt(e
*x + d))/(a^3*b^6*d - a^4*b^5*e + (b^9*d - a*b^8*e)*x^3 + 3*(a*b^8*d - a^2*
b^7*e)*x^2 + 3*(a^2*b^7*d - a^3*b^6*e)*x)]
```

giac [A] time = 0.27, size = 370, normalized size = 1.48

$$\frac{2\sqrt{xe+d}\,Be^2}{b^4} + \frac{5\left(6\,Bbde^2 - 7\,Bae^3 + Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\,\sqrt{-b^2d+abe}\,b^4} - \frac{54\,(xe+d)^{\frac{5}{2}}Bb^3de^2 - 96\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^2 + 42\,\sqrt{xe+d}\,Bb^3d^3e^2 - 87\,(xe+d)^{\frac{5}{2}}Bab^2e^3 + 33\,(xe+d)^{\frac{5}{2}}Ab^3e^3 + 232\,(xe+d)^{\frac{3}{2}}Bab^2de^3 - 40\,(xe+d)^{\frac{3}{2}}Ab^3de^3 - 141\,\sqrt{xe+d}\,Bab^2d^2e^3 + 15\,\sqrt{xe+d}\,Ab^3d^2e^3 - 136\,(xe+d)^{\frac{3}{2}}Ba^2be^4 + 40\,(xe+d)^{\frac{3}{2}}Aab^2e^4 + 156\,\sqrt{xe+d}\,Ba^2bde^4 - 30\,\sqrt{xe+d}\,Aab^2de^4 - 57\,\sqrt{xe+d}\,Ba^3e^5 + 15\,\sqrt{xe+d}\,Aa^2be^5}{24\,\left((xe+d)b - bd + ae\right)^3 b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2*sqrt(x*e + d)*B*e^2/b^4 + 5/8*(6*B*b*d*e^2 - 7*B*a*e^3 + A*b*e^3)*arctan(
sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) - 1/24*(54
*(x*e + d)^(5/2)*B*b^3*d*e^2 - 96*(x*e + d)^(3/2)*B*b^3*d^2*e^2 + 42*sqrt(x
*e + d)*B*b^3*d^3*e^2 - 87*(x*e + d)^(5/2)*B*a*b^2*e^3 + 33*(x*e + d)^(5/2)
*A*b^3*e^3 + 232*(x*e + d)^(3/2)*B*a*b^2*d*e^3 - 40*(x*e + d)^(3/2)*A*b^3*d
*e^3 - 141*sqrt(x*e + d)*B*a*b^2*d^2*e^3 + 15*sqrt(x*e + d)*A*b^3*d^2*e^3 -
 136*(x*e + d)^(3/2)*B*a^2*b*e^4 + 40*(x*e + d)^(3/2)*A*a*b^2*e^4 + 156*sqr
t(x*e + d)*B*a^2*b*d*e^4 - 30*sqrt(x*e + d)*A*a*b^2*d*e^4 - 57*sqrt(x*e + d
```

```
)*B*a^3*e^5 + 15*sqrt(x*e + d)*A*a^2*b*e^5)/(((x*e + d)*b - b*d + a*e)^3*b^
4)
```

maple [B] time = 0.08, size = 573, normalized size = 2.29

$$-\frac{5\sqrt{ex+d}\,A\,a^{2}e^{5}}{8\left(bex+ae\right)^{3}b^{3}}+\frac{5\sqrt{ex+d}\,Aad\,e^{4}}{4\left(bex+ae\right)^{3}b^{2}}-\frac{5\sqrt{ex+d}\,A\,d^{2}e^{3}}{8\left(bex+ae\right)^{3}b}+\frac{19\sqrt{ex+d}\,B\,a^{3}e^{5}}{8\left(bex+ae\right)^{3}b^{4}}-\frac{13\sqrt{ex+d}\,B\,a^{2}d\,e^{4}}{2\left(bex+ae\right)^{3}b^{3}}+\frac{47\sqrt{ex+d}\,Ba\,d^{2}e^{3}}{8\left(bex+ae\right)^{3}b^{2}}-\frac{7\sqrt{ex+d}\,B\,d^{3}e^{2}}{4\left(bex+ae\right)^{3}b}-\frac{5\left(ex+d\right)^{\frac{3}{2}}Aa\,e^{4}}{3\left(bex+ae\right)^{3}b^{2}}+\frac{5\left(ex+d\right)^{\frac{3}{2}}Ad\,e^{3}}{3\left(bex+ae\right)^{3}b}+\frac{17\left(ex+d\right)^{\frac{3}{2}}B\,a^{2}e^{4}}{3\left(bex+ae\right)^{3}b^{3}}-\frac{29\left(ex+d\right)^{\frac{3}{2}}Bad\,e^{3}}{3\left(bex+ae\right)^{3}b^{2}}+\frac{4\left(ex+d\right)^{\frac{3}{2}}B\,d^{2}e^{2}}{\left(bex+ae\right)^{3}b}-\frac{11\left(ex+d\right)^{\frac{5}{2}}A\,e^{3}}{8\left(bex+ae\right)^{3}b}+\frac{29\left(ex+d\right)^{\frac{5}{2}}Ba\,e^{3}}{8\left(bex+ae\right)^{3}b^{2}}-\frac{9\left(ex+d\right)^{\frac{5}{2}}Bd\,e^{2}}{4\left(bex+ae\right)^{3}b}+\frac{5A\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\sqrt{(ae-bd)\,b}\,b^{3}}-\frac{35Ba\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\sqrt{(ae-bd)\,b}\,b^{4}}+\frac{15Bd\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\,b^{3}}+\frac{2\sqrt{ex+d}\,B\,e^{2}}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*e^2*B/b^4*(e*x+d)^(1/2)-11/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A+29/8*e^3
/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a-9/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*
B*d-5/3*e^4/b^2/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a+5/3*e^3/b/(b*e*x+a*e)^3*A*(
e*x+d)^(3/2)*d+17/3*e^4/b^3/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2-29/3*e^3/b^2/
(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a*d+4*e^2/b/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*d^2
-5/8*e^5/b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2+5/4*e^4/b^2/(b*e*x+a*e)^3*(e
*x+d)^(1/2)*A*a*d-5/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^2+19/8*e^5/b^4/
(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^3-13/2*e^4/b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*
B*a^2*d+47/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^2-7/4*e^2/b/(b*e*x+a
*e)^3*(e*x+d)^(1/2)*B*d^3+5/8*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*A-35/8*e^3/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+15/4*e^2/b^3/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.23, size = 416, normalized size = 1.66

$$\frac{2\,B\,e^2\,\sqrt{d+e\,x}}{b^4}-\frac{{\left(d+e\,x\right)}^{5/2}\,\left(\frac{11\,A\,b^3\,e^3}{8}+\frac{9\,B\,d\,b^3\,e^2}{4}-\frac{29\,B\,a\,b^2\,e^3}{8}\right)-{\left(d+e\,x\right)}^{3/2}\,\left(\frac{17\,B\,a^2\,b\,e^4}{3}-\frac{29\,B\,a\,b^2\,d\,e^3}{3}-\frac{5\,A\,a\,b^2\,e^4}{3}+4\,B\,b^3\,d^2\,e^2+\frac{5\,A\,b^3\,d\,e^3}{3}\right)+\sqrt{d+e\,x}\,\left(-\frac{19\,B\,a^3\,e^5}{8}+\frac{13\,B\,a^2\,b\,d\,e^4}{2}+\frac{5\,A\,a^2\,b\,e^5}{8}-\frac{47\,B\,a\,b^2\,d^2\,e^3}{8}-\frac{5\,A\,a\,b^2\,d\,e^4}{4}+\frac{7\,B\,b^3\,d^3\,e^2}{4}+\frac{5\,A\,b^3\,d^2\,e^3}{8}\right)}{b^7\,{\left(d+e\,x\right)}^3-\left(3\,b^7\,d-3\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^2+\left(d+e\,x\right)\,\left(3\,a^2\,b^5\,e^2-6\,a\,b^6\,d\,e+3\,b^7\,d^2\right)-b^7\,d^3+a^3\,b^4\,e^3-3\,a^2\,b^5\,d\,e^2+3\,a\,b^6\,d^2\,e}+\frac{5\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,\left(A\,b\,e-7\,B\,a\,e+6\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^3-7\,B\,a\,e^3+6\,B\,b\,d\,e^2\right)}\right)\,\left(A\,b\,e-7\,B\,a\,e+6\,B\,b\,d\right)}{8\,b^{9/2}\,\sqrt{a\,e-b\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*B*e^2*(d + e*x)^(1/2))/b^4 - ((d + e*x)^(5/2)*((11*A*b^3*e^3)/8 - (29*B*
a*b^2*e^3)/8 + (9*B*b^3*d*e^2)/4) - (d + e*x)^(3/2)*((17*B*a^2*b*e^4)/3 - (
5*A*a*b^2*e^4)/3 + (5*A*b^3*d*e^3)/3 + 4*B*b^3*d^2*e^2 - (29*B*a*b^2*d*e^3)
/3) + (d + e*x)^(1/2)*((5*A*a^2*b*e^5)/8 - (19*B*a^3*e^5)/8 + (5*A*b^3*d^2*
e^3)/8 + (7*B*b^3*d^3*e^2)/4 - (47*B*a*b^2*d^2*e^3)/8 - (5*A*a*b^2*d*e^4)/4
 + (13*B*a^2*b*d*e^4)/2))/(b^7*(d + e*x)^3 - (3*b^7*d - 3*a*b^6*e)*(d + e*x
)^2 + (d + e*x)*(3*b^7*d^2 + 3*a^2*b^5*e^2 - 6*a*b^6*d*e) - b^7*d^3 + a^3*b
^4*e^3 - 3*a^2*b^5*d*e^2 + 3*a*b^6*d^2*e) + (5*e^2*atan((b^(1/2)*e^2*(d + e
*x)^(1/2)*(A*b*e - 7*B*a*e + 6*B*b*d))/((a*e - b*d)^(1/2)*(A*b*e^3 - 7*B*a*
e^3 + 6*B*b*d*e^2)))*(A*b*e - 7*B*a*e + 6*B*b*d))/(8*b^(9/2)*(a*e - b*d)^(1
/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1599 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=209

$$-\frac{e^2(-5aBe-Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}\,(-5aBe-Abe+6bBd)}{8b^3(a+bx)(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe-Abe+6bBd)}{12b^2(a+bx)^2(bd-ae)}$$

Rubi [A] time = 0.18, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 47, 63, 208}

$$-\frac{e^2(-5aBe-Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}(bd-ae)^{3/2}}-\frac{(d+ex)^{3/2}(-5aBe-Abe+6bBd)}{12b^2(a+bx)^2(bd-ae)}-\frac{e\sqrt{d+ex}\,(-5aBe-Abe+6bBd)}{8b^3(a+bx)(bd-ae)}-\frac{(d+ex)^{5/2}(Ab-aB)}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(e*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[d + e*x])/(8*b^3*(b*d - a*e)*(a + b*x)
) - ((6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(3/2))/(12*b^2*(b*d - a*e)*(a +
b*x)^2) - ((A*b - a*B)*(d + e*x)^(5/2))/(3*b*(b*d - a*e)*(a + b*x)^3) - (e^
2*(6*b*B*d - A*b*e - 5*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*
e]])/(8*b^(7/2)*(b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)(d+ex)^{3/2}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{3b(bd-ae)(a+bx)^3} + \frac{(6bBd-Abe-5aBe)\int \frac{(d+ex)^{3/2}}{(a+bx)^3}\,dx}{6b(bd-ae)}$$

$$= -\frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{5/2}}{3b(bd-ae)(a+bx)^3} + \frac{(e(6bBd-Abe-5aB}{8b^2(bd-}$$

$$= -\frac{e(6bBd-Abe-5aBe)\sqrt{d+ex}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(}{3b(bd-ae}$$

$$= -\frac{e(6bBd-Abe-5aBe)\sqrt{d+ex}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(}{3b(bd-ae}$$

$$= -\frac{e(6bBd-Abe-5aBe)\sqrt{d+ex}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(}{3b(bd-ae}$$

Mathematica [A] time = 0.45, size = 177, normalized size = 0.85

$$\frac{\frac{(a+bx)(-5aBe-Abe+6bBd)\left(3\sqrt{b}\,e^2(a+bx)^2\sqrt{d+ex}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)-b(d+ex)\sqrt{ae-bd}\,(3ae+2bd+5bex)\right)}{\sqrt{ae-bd}}-8b^3(d+ex)^3(Ab-aB)}{24b^4(a+bx)^3\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-8*b^3*(A*b - a*B)*(d + e*x)^3 + ((6*b*B*d - A*b*e - 5*a*B*e)*(a + b*x)*(-
(b*Sqrt[-(b*d) + a*e]*(d + e*x)*(2*b*d + 3*a*e + 5*b*e*x)) + 3*Sqrt[b]*e^2*
(a + b*x)^2*Sqrt[d + e*x]*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]
]))/Sqrt[-(b*d) + a*e])/(24*b^4*(b*d - a*e)*(a + b*x)^3*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 1.67, size = 325, normalized size = 1.56

$$\frac{\left(5aBe^3+Abe^3-6bBde^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{7/2}(bd-ae)\sqrt{ae-bd}} - \frac{e^2\sqrt{d+ex}\left(15a^3Be^3+3a^2Abe^3+40a^2bBe^2(d+ex)-48a^2bBde^2+8aAb^2e^2(d+ex)-6aAb^2de^2+51ab^2Bd^2e+33ab^2Be(d+ex)^2-88ab^2Bde(d+ex)+3Ab^3d^2e-3Ab^3e(d+ex)^2-8Ab^3de(d+ex)-18b^3Bd^3+48b^3Bd^2(d+ex)-30b^3Bd(d+ex)^2\right)}{24b^3(bd-ae)(-ae-b(d+ex)+bd)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] -1/24*(e^2*Sqrt[d + e*x]*(-18*b^3*B*d^3 + 3*A*b^3*d^2*e + 51*a*b^2*B*d^2*e
- 6*a*A*b^2*d*e^2 - 48*a^2*b*B*d*e^2 + 3*a^2*A*b*e^3 + 15*a^3*B*e^3 + 48*b^
3*B*d^2*(d + e*x) - 8*A*b^3*d*e*(d + e*x) - 88*a*b^2*B*d*e*(d + e*x) + 8*a*
A*b^2*e^2*(d + e*x) + 40*a^2*b*B*e^2*(d + e*x) - 30*b^3*B*d*(d + e*x)^2 - 3
*A*b^3*e*(d + e*x)^2 + 33*a*b^2*B*e*(d + e*x)^2))/(b^3*(b*d - a*e)*(b*d - a
*e - b*(d + e*x))^3) + ((-6*b*B*d*e^2 + A*b*e^3 + 5*a*B*e^3)*ArcTan[(Sqrt[b
]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*b^(7/2)*(b*d - a*e)*Sq
rt[-(b*d) + a*e])
```

fricas [B] time = 0.49, size = 1115, normalized size = 5.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/48*(3*(6*B*a^3*b*d*e^2 - (5*B*a^4 + A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (5*B
*a*b^3 + A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (5*B*a^2*b^2 + A*a*b^3)*e^3
)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (5*B*a^3*b + A*a^2*b^2)*e^3)*x)*sqrt(b^2*d -
 a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*
x + a)) - 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 + 2*(2*B*a^2*b^3 - 5*A*a*b^4)*d^2*e
- (23*B*a^3*b^2 + A*a^2*b^3)*d*e^2 + 3*(5*B*a^4*b + A*a^3*b^2)*e^3 + 3*(10*
B*b^5*d^2*e - (21*B*a*b^4 - A*b^5)*d*e^2 + (11*B*a^2*b^3 - A*a*b^4)*e^3)*x^
2 + 2*(6*B*b^5*d^3 + (5*B*a*b^4 + 7*A*b^5)*d^2*e - (31*B*a^2*b^3 + 11*A*a*b
^4)*d*e^2 + 4*(5*B*a^3*b^2 + A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d^2
 - 2*a^4*b^5*d*e + a^5*b^4*e^2 + (b^9*d^2 - 2*a*b^8*d*e + a^2*b^7*e^2)*x^3
+ 3*(a*b^8*d^2 - 2*a^2*b^7*d*e + a^3*b^6*e^2)*x^2 + 3*(a^2*b^7*d^2 - 2*a^3*
b^6*d*e + a^4*b^5*e^2)*x), 1/24*(3*(6*B*a^3*b*d*e^2 - (5*B*a^4 + A*a^3*b)*e
^3 + (6*B*b^4*d*e^2 - (5*B*a*b^3 + A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (
5*B*a^2*b^2 + A*a*b^3)*e^3)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (5*B*a^3*b + A*a^2
*b^2)*e^3)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d
)/(b*e*x + b*d)) - (4*(B*a*b^4 + 2*A*b^5)*d^3 + 2*(2*B*a^2*b^3 - 5*A*a*b^4)
*d^2*e - (23*B*a^3*b^2 + A*a^2*b^3)*d*e^2 + 3*(5*B*a^4*b + A*a^3*b^2)*e^3 +
 3*(10*B*b^5*d^2*e - (21*B*a*b^4 - A*b^5)*d*e^2 + (11*B*a^2*b^3 - A*a*b^4)*
e^3)*x^2 + 2*(6*B*b^5*d^3 + (5*B*a*b^4 + 7*A*b^5)*d^2*e - (31*B*a^2*b^3 + 1
1*A*a*b^4)*d*e^2 + 4*(5*B*a^3*b^2 + A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*
b^6*d^2 - 2*a^4*b^5*d*e + a^5*b^4*e^2 + (b^9*d^2 - 2*a*b^8*d*e + a^2*b^7*e^
2)*x^3 + 3*(a*b^8*d^2 - 2*a^2*b^7*d*e + a^3*b^6*e^2)*x^2 + 3*(a^2*b^7*d^2 -
 2*a^3*b^6*d*e + a^4*b^5*e^2)*x)]
```

giac [B] time = 0.23, size = 381, normalized size = 1.82

$$\frac{\left(6\,Bbde^2 - 5\,Bae^3 - Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^4d - ab^3e\right)\sqrt{-b^2d+abe}} - \frac{30\,(xe+d)^{\frac{5}{2}}Bb^3de^2 - 48\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^2 + 18\,\sqrt{xe+d}\,Bb^3d^3e^2 - 33\,(xe+d)^{\frac{5}{2}}Bab^2e^3 + 3\,(xe+d)^{\frac{5}{2}}Ab^3e^3 + 88\,(xe+d)^{\frac{3}{2}}Bab^2de^3 + 8\,(xe+d)^{\frac{3}{2}}Ab^3de^3 - 51\,\sqrt{xe+d}\,Bab^2d^2e^3 - 3\,\sqrt{xe+d}\,Ab^3d^2e^3 - 40\,(xe+d)^{\frac{3}{2}}Ba^2be^4 - 8\,(xe+d)^{\frac{3}{2}}Aab^2e^4 + 48\,\sqrt{xe+d}\,Ba^2bde^4 + 6\,\sqrt{xe+d}\,Aab^2de^4 - 15\,\sqrt{xe+d}\,Ba^3e^5 - 3\,\sqrt{xe+d}\,Aa^2be^5}{24\left(b^4d - ab^3e\right)\left((xe+d)b - bd + ae\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 1/8*(6*B*b*d*e^2 - 5*B*a*e^3 - A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^4*d - a*b^3*e)*sqrt(-b^2*d + a*b*e)) - 1/24*(30*(x*e + d)^(5/
2)*B*b^3*d*e^2 - 48*(x*e + d)^(3/2)*B*b^3*d^2*e^2 + 18*sqrt(x*e + d)*B*b^3*
d^3*e^2 - 33*(x*e + d)^(5/2)*B*a*b^2*e^3 + 3*(x*e + d)^(5/2)*A*b^3*e^3 + 88
*(x*e + d)^(3/2)*B*a*b^2*d*e^3 + 8*(x*e + d)^(3/2)*A*b^3*d*e^3 - 51*sqrt(x*
e + d)*B*a*b^2*d^2*e^3 - 3*sqrt(x*e + d)*A*b^3*d^2*e^3 - 40*(x*e + d)^(3/2)
*B*a^2*b*e^4 - 8*(x*e + d)^(3/2)*A*a*b^2*e^4 + 48*sqrt(x*e + d)*B*a^2*b*d*e
^4 + 6*sqrt(x*e + d)*A*a*b^2*d*e^4 - 15*sqrt(x*e + d)*B*a^3*e^5 - 3*sqrt(x*
e + d)*A*a^2*b*e^5)/((b^4*d - a*b^3*e)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.10, size = 487, normalized size = 2.33

$$-\frac{\sqrt{ex+d}\;Aa\,e^4}{8\,(bex+ae)^3\,b^2} + \frac{\sqrt{ex+d}\;Ad\,e^3}{8\,(bex+ae)^3\,b} + \frac{(ex+d)^{\frac{5}{2}}\,A\,e^3}{8\,(bex+ae)^3\,(ae-bd)} - \frac{5\sqrt{ex+d}\;B\,a^2e^4}{8\,(bex+ae)^3\,b^3} - \frac{11\,(ex+d)^{\frac{5}{2}}\,Ba\,e^3}{8\,(bex+ae)^3\,(ae-bd)\,b} + \frac{11\sqrt{ex+d}\;Bad\,e^3}{8\,(bex+ae)^3\,b^2} - \frac{3\sqrt{ex+d}\;B\,d^2e^2}{4\,(bex+ae)^3\,b} + \frac{5\,(ex+d)^{\frac{5}{2}}\,Bd\,e^2}{4\,(bex+ae)^3\,(ae-bd)} - \frac{(ex+d)^{\frac{3}{2}}\,A\,e^3}{3\,(bex+ae)^3\,b} + \frac{A\,e^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{8\,(ae-bd)\,\sqrt{(ae-bd)\,b}\;b^2} - \frac{5\,(ex+d)^{\frac{3}{2}}\,Ba\,e^3}{3\,(bex+ae)^3\,b^2} + \frac{5Ba\,e^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{8\,(ae-bd)\,\sqrt{(ae-bd)\,b}\;b^3} + \frac{2\,(ex+d)^{\frac{3}{2}}\,Bd\,e^2}{(bex+ae)^3\,b} - \frac{3Bd\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)\,\sqrt{(ae-bd)\,b}\;b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*e^3/(b*e*x+a*e)^3/(a*e-b*d)*(e*x+d)^(5/2)*A-11/8*e^3/(b*e*x+a*e)^3/(a*e
-b*d)/b*(e*x+d)^(5/2)*a*B+5/4*e^2/(b*e*x+a*e)^3/(a*e-b*d)*(e*x+d)^(5/2)*B*d
```

```
-1/3*e^3/(b*e*x+a*e)^3/b*(e*x+d)^(3/2)*A-5/3*e^3/(b*e*x+a*e)^3/b^2*(e*x+d)^
(3/2)*a*B+2*e^2/(b*e*x+a*e)^3/b*(e*x+d)^(3/2)*B*d-1/8*e^4/(b*e*x+a*e)^3/b^2
*(e*x+d)^(1/2)*A*a+1/8*e^3/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*A*d-5/8*e^4/(b*e*x
+a*e)^3/b^3*(e*x+d)^(1/2)*B*a^2+11/8*e^3/(b*e*x+a*e)^3/b^2*(e*x+d)^(1/2)*B*
a*d-3/4*e^2/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*B*d^2+1/8*e^3/(a*e-b*d)/b^2/((a*e
-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+5/8*e^3/(a*e-b
*d)/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B
-3/4*e^2/(a*e-b*d)/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.12, size = 325, normalized size = 1.56

$$\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,\left(A\,b\,e+5\,B\,a\,e-6\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^3+5\,B\,a\,e^3-6\,B\,b\,d\,e^2\right)}\right)\,\left(A\,b\,e+5\,B\,a\,e-6\,B\,b\,d\right)}{8\,b^{7/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{{\left(d+e\,x\right)}^{3/2}\,\left(A\,b\,e^3+5\,B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{3\,b^2}+\frac{\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}\,\left(A\,b\,e^3+5\,B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{8\,b^3}-\frac{{\left(d+e\,x\right)}^{5/2}\,\left(A\,b\,e^3-11\,B\,a\,e^3+10\,B\,b\,d\,e^2\right)}{8\,b\,\left(a\,e-b\,d\right)}}{\left(d+e\,x\right)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)+b^3\,{\left(d+e\,x\right)}^3-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^2+a^3\,e^3-b^3\,d^3+3\,a\,b^2\,d^2\,e-3\,a^2\,b\,d\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^2*atan((b^(1/2)*e^2*(d + e*x)^(1/2)*(A*b*e + 5*B*a*e - 6*B*b*d))/((a*e -
 b*d)^(1/2)*(A*b*e^3 + 5*B*a*e^3 - 6*B*b*d*e^2)))*(A*b*e + 5*B*a*e - 6*B*b*
d))/(8*b^(7/2)*(a*e - b*d)^(3/2)) - (((d + e*x)^(3/2)*(A*b*e^3 + 5*B*a*e^3
- 6*B*b*d*e^2))/(3*b^2) + ((a*e - b*d)*(d + e*x)^(1/2)*(A*b*e^3 + 5*B*a*e^3
 - 6*B*b*d*e^2))/(8*b^3) - ((d + e*x)^(5/2)*(A*b*e^3 - 11*B*a*e^3 + 10*B*b*
d*e^2))/(8*b*(a*e - b*d)))/((d + e*x)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*b^2*d*
e) + b^3*(d + e*x)^3 - (3*b^3*d - 3*a*b^2*e)*(d + e*x)^2 + a^3*e^3 - b^3*d^
3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1600 $\int \frac{(A+Bx)\sqrt{d+ex}}{(a^2+2abx+b^2x^2)^2}\,dx$

Optimal. Leaf size=209

$$\frac{e^2(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{5/2}(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}(-aBe-Abe+2bBd)}{8b^2(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}(-aBe-Abe+2bBd)}{4b^2(a+bx)^2(bd-ae)}-\frac{(d+}{3b(}$$

Rubi [A] time = 0.18, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 51, 63, 208}

$$\frac{e^2(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{5/2}(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}(-aBe-Abe+2bBd)}{8b^2(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}(-aBe-Abe+2bBd)}{4b^2(a+bx)^2(bd-ae)}-\frac{(d+ex)^{3/2}(Ab-aB)}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(4*b^2*(b*d - a*e)*(a + b*x)^2)
- (e*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(8*b^2*(b*d - a*e)^2*(a + b*x
)) - ((A*b - a*B)*(d + e*x)^(3/2))/(3*b*(b*d - a*e)*(a + b*x)^3) + (e^2*(2*
b*B*d - A*b*e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8
*b^(5/2)*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)\sqrt{d+ex}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{3b(bd-ae)(a+bx)^3} + \frac{(2bBd-Abe-aBe)\int \frac{\sqrt{d+ex}}{(a+bx)^3}\,dx}{2b(bd-ae)}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{3/2}}{3b(bd-ae)(a+bx)^3} + \frac{(e(2bBd-Abe-aBe))}{8b^2(bd-}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{8b^2(bd-ae)^2(a+bx)} - \frac{(Ab-aB)(d+}{3b(bd-ae)(a+}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{8b^2(bd-ae)^2(a+bx)} - \frac{(Ab-aB)(d+}{3b(bd-ae)(a+}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{8b^2(bd-ae)^2(a+bx)} - \frac{(Ab-aB)(d+}{3b(bd-ae)(a+}$$

Mathematica [C] time = 0.06, size = 98, normalized size = 0.47

$$\frac{(d+ex)^{3/2}\left(\frac{3e^2(aBe+Abe-2bBd)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}+\frac{3aB-3Ab}{(a+bx)^3}\right)}{9b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(3/2)*((-3*A*b + 3*a*B)/(a + b*x)^3 + (3*e^2*(-2*b*B*d + A*b*e +
 a*B*e)*Hypergeometric2F1[3/2, 3, 5/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^3))/(9*b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 1.39, size = 312, normalized size = 1.49

$$\frac{e^2\sqrt{d+ex}\left(3a^3Be^3+3a^2Abe^3+8a^2bBe^2(d+ex)-12a^2bBde^2-8aAb^2e^2(d+ex)-6aAb^2de^2+15ab^2Bd^2e-3ab^2Be(d+ex)^2-8ab^2Bde(d+ex)+3Ab^3d^2e-3Ab^3e(d+ex)^2+8Ab^3de(d+ex)-6b^3Bd^3+6b^3Bd(d+ex)^2\right)}{24b^2(bd-ae)^2(-ae-b(d+ex)+bd)^3}+\frac{\left(-aBe^3-Abe^3+2bBde^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{5/2}(bd-ae)^2\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-6*b^3*B*d^3 + 3*A*b^3*d^2*e + 15*a*b^2*B*d^2*e - 6*a*A
*b^2*d*e^2 - 12*a^2*b*B*d*e^2 + 3*a^2*A*b*e^3 + 3*a^3*B*e^3 + 8*A*b^3*d*e*(
```

```
d + e*x) - 8*a*b^2*B*d*e*(d + e*x) - 8*a*A*b^2*e^2*(d + e*x) + 8*a^2*b*B*e^
2*(d + e*x) + 6*b^3*B*d*(d + e*x)^2 - 3*A*b^3*e*(d + e*x)^2 - 3*a*b^2*B*e*(
d + e*x)^2))/(24*b^2*(b*d - a*e)^2*(b*d - a*e - b*(d + e*x))^3) + ((2*b*B*d
*e^2 - A*b*e^3 - a*B*e^3)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])
/(b*d - a*e)])/(8*b^(5/2)*(b*d - a*e)^2*Sqrt[-(b*d) + a*e])
```

fricas [**B**] time = 0.47, size = 1218, normalized size = 5.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/48*(3*(2*B*a^3*b*d*e^2 - (B*a^4 + A*a^3*b)*e^3 + (2*B*b^4*d*e^2 - (B*a*
b^3 + A*b^4)*e^3)*x^3 + 3*(2*B*a*b^3*d*e^2 - (B*a^2*b^2 + A*a*b^3)*e^3)*x^2
 + 3*(2*B*a^2*b^2*d*e^2 - (B*a^3*b + A*a^2*b^2)*e^3)*x)*sqrt(b^2*d - a*b*e)
*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a))
 + 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(4*B*a^2*b^3 + 11*A*a*b^4)*d^2*e + (7*B
*a^3*b^2 + 17*A*a^2*b^3)*d*e^2 - 3*(B*a^4*b + A*a^3*b^2)*e^3 + 3*(2*B*b^5*d
^2*e - (3*B*a*b^4 + A*b^5)*d*e^2 + (B*a^2*b^3 + A*a*b^4)*e^3)*x^2 + 2*(6*B*
b^5*d^3 - (13*B*a*b^4 - A*b^5)*d^2*e + (11*B*a^2*b^3 - 5*A*a*b^4)*d*e^2 - 4
*(B*a^3*b^2 - A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d^3 - 3*a^4*b^5*d^
2*e + 3*a^5*b^4*d*e^2 - a^6*b^3*e^3 + (b^9*d^3 - 3*a*b^8*d^2*e + 3*a^2*b^7*
d*e^2 - a^3*b^6*e^3)*x^3 + 3*(a*b^8*d^3 - 3*a^2*b^7*d^2*e + 3*a^3*b^6*d*e^2
 - a^4*b^5*e^3)*x^2 + 3*(a^2*b^7*d^3 - 3*a^3*b^6*d^2*e + 3*a^4*b^5*d*e^2 -
a^5*b^4*e^3)*x), -1/24*(3*(2*B*a^3*b*d*e^2 - (B*a^4 + A*a^3*b)*e^3 + (2*B*b
^4*d*e^2 - (B*a*b^3 + A*b^4)*e^3)*x^3 + 3*(2*B*a*b^3*d*e^2 - (B*a^2*b^2 + A
*a*b^3)*e^3)*x^2 + 3*(2*B*a^2*b^2*d*e^2 - (B*a^3*b + A*a^2*b^2)*e^3)*x)*sqr
t(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d))
+ (4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(4*B*a^2*b^3 + 11*A*a*b^4)*d^2*e + (7*B*a^
3*b^2 + 17*A*a^2*b^3)*d*e^2 - 3*(B*a^4*b + A*a^3*b^2)*e^3 + 3*(2*B*b^5*d^2*
e - (3*B*a*b^4 + A*b^5)*d*e^2 + (B*a^2*b^3 + A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5
*d^3 - (13*B*a*b^4 - A*b^5)*d^2*e + (11*B*a^2*b^3 - 5*A*a*b^4)*d*e^2 - 4*(B
*a^3*b^2 - A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d^3 - 3*a^4*b^5*d^2*e
 + 3*a^5*b^4*d*e^2 - a^6*b^3*e^3 + (b^9*d^3 - 3*a*b^8*d^2*e + 3*a^2*b^7*d*e
^2 - a^3*b^6*e^3)*x^3 + 3*(a*b^8*d^3 - 3*a^2*b^7*d^2*e + 3*a^3*b^6*d*e^2 -
a^4*b^5*e^3)*x^2 + 3*(a^2*b^7*d^3 - 3*a^3*b^6*d^2*e + 3*a^4*b^5*d*e^2 - a^5
*b^4*e^3)*x)]
```

giac [**B**] time = 0.25, size = 386, normalized size = 1.85

$$-\frac{\left(2\,Bbde^{2}-Bae^{3}-Abe^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{8\,\left(b^{4}d^{2}-2\,ab^{3}de+a^{2}b^{2}e^{2}\right)\sqrt{-b^{2}d+abe}}-\frac{6\,(xe+d)^{\frac{5}{2}}Bb^{3}de^{2}-6\,\sqrt{xe+d}\,Bb^{3}d^{3}e^{2}-3\,(xe+d)^{\frac{5}{2}}Bab^{2}e^{3}-3\,(xe+d)^{\frac{5}{2}}Ab^{3}e^{3}-8\,(xe+d)^{\frac{3}{2}}Bab^{2}de^{3}+8\,(xe+d)^{\frac{3}{2}}Ab^{3}de^{3}+15\,\sqrt{xe+d}\,Bab^{2}d^{2}e^{3}+3\,\sqrt{xe+d}\,Ab^{3}d^{2}e^{3}+8\,(xe+d)^{\frac{3}{2}}Ba^{2}be^{4}-8\,(xe+d)^{\frac{3}{2}}Aab^{2}e^{4}-12\,\sqrt{xe+d}\,Ba^{2}bde^{4}-6\,\sqrt{xe+d}\,Aab^{2}de^{4}+3\,\sqrt{xe+d}\,Ba^{3}e^{5}+3\,\sqrt{xe+d}\,Aa^{2}be^{5}}{24\,\left(b^{4}d^{2}-2\,ab^{3}de+a^{2}b^{2}e^{2}\right)\left((xe+d)b-bd+ae\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] -1/8*(2*B*b*d*e^2 - B*a*e^3 - A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d +
 a*b*e))/((b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*e^2)*sqrt(-b^2*d + a*b*e)) - 1/2
4*(6*(x*e + d)^(5/2)*B*b^3*d*e^2 - 6*sqrt(x*e + d)*B*b^3*d^3*e^2 - 3*(x*e +
 d)^(5/2)*B*a*b^2*e^3 - 3*(x*e + d)^(5/2)*A*b^3*e^3 - 8*(x*e + d)^(3/2)*B*a
*b^2*d*e^3 + 8*(x*e + d)^(3/2)*A*b^3*d*e^3 + 15*sqrt(x*e + d)*B*a*b^2*d^2*e
^3 + 3*sqrt(x*e + d)*A*b^3*d^2*e^3 + 8*(x*e + d)^(3/2)*B*a^2*b*e^4 - 8*(x*e
 + d)^(3/2)*A*a*b^2*e^4 - 12*sqrt(x*e + d)*B*a^2*b*d*e^4 - 6*sqrt(x*e + d)*
A*a*b^2*d*e^4 + 3*sqrt(x*e + d)*B*a^3*e^5 + 3*sqrt(x*e + d)*A*a^2*b*e^5)/((
b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*e^2)*((x*e + d)*b - b*d + a*e)^3)
```

maple [**B**] time = 0.08, size = 494, normalized size = 2.36

$$\frac{(ex+d)^{\frac{5}{2}}\,Ab\,e^{3}}{8\,(bex+ae)^{3}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}+\frac{(ex+d)^{\frac{5}{2}}\,Ba\,e^{3}}{8\,(bex+ae)^{3}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}-\frac{(ex+d)^{\frac{5}{2}}\,Bbd\,e^{2}}{4\,(bex+ae)^{3}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}+\frac{A\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)\sqrt{(ae-bd)\,b}\;b}+\frac{(ex+d)^{\frac{3}{2}}\,A\,e^{3}}{3\,(bex+ae)^{3}\,(ae-bd)}-\frac{(ex+d)^{\frac{3}{2}}\,Ba\,e^{3}}{3\,(bex+ae)^{3}\,(ae-bd)\,b}+\frac{Ba\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)\sqrt{(ae-bd)\,b}\;b^{2}}-\frac{Bd\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)\sqrt{(ae-bd)\,b}\;b}-\frac{\sqrt{ex+d}\;A\,e^{3}}{8\,(bex+ae)^{3}\,b}-\frac{\sqrt{ex+d}\;Ba\,e^{3}}{8\,(bex+ae)^{3}\,b^{2}}+\frac{\sqrt{ex+d}\;Bd\,e^{2}}{4\,(bex+ae)^{3}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*e^3/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*A*b+1/8*e^3
/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*a*B-1/4*e^2/(b*e*x
+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*B*b*d+1/3*e^3/(b*e*x+a*e)
^3/(a*e-b*d)*(e*x+d)^(3/2)*A-1/3*e^3/(b*e*x+a*e)^3/(a*e-b*d)/b*(e*x+d)^(3/2
)*B*a-1/8*e^3/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*A-1/8*e^3/(b*e*x+a*e)^3/b^2*(e*
x+d)^(1/2)*a*B+1/4*e^2/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*B*d+1/8*e^3/b/(a^2*e^2
-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^
(1/2)*b)*A+1/8*e^3/b^2/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-1/4*e^2/b/(a^2*e^2-2*a*b*d*e+b^
2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.13, size = 310, normalized size = 1.48

$$\frac{\frac{(d+e\,x)^{5/2}\,\left(A\,b\,e^3+B\,a\,e^3-2\,B\,b\,d\,e^2\right)}{8\,(a\,e-b\,d)^2}-\frac{\sqrt{d+e\,x}\,\left(A\,b\,e^3+B\,a\,e^3-2\,B\,b\,d\,e^2\right)}{8\,b^2}+\frac{\left(A\,b\,e^3-B\,a\,e^3\right)\,(d+e\,x)^{3/2}}{3\,b\,(a\,e-b\,d)}}{(d+e\,x)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)+b^3\,(d+e\,x)^3-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,(d+e\,x)^2+a^3\,e^3-b^3\,d^3+3\,a\,b^2\,d^2\,e-3\,a^2\,b\,d\,e^2}+\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,(A\,b\,e+B\,a\,e-2\,B\,b\,d)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^3+B\,a\,e^3-2\,B\,b\,d\,e^2\right)}\right)\,(A\,b\,e+B\,a\,e-2\,B\,b\,d)}{8\,b^{5/2}\,(a\,e-b\,d)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (((d + e*x)^(5/2)*(A*b*e^3 + B*a*e^3 - 2*B*b*d*e^2))/(8*(a*e - b*d)^2) - ((
d + e*x)^(1/2)*(A*b*e^3 + B*a*e^3 - 2*B*b*d*e^2))/(8*b^2) + ((A*b*e^3 - B*a
*e^3)*(d + e*x)^(3/2))/(3*b*(a*e - b*d)))/((d + e*x)*(3*b^3*d^2 + 3*a^2*b*e
^2 - 6*a*b^2*d*e) + b^3*(d + e*x)^3 - (3*b^3*d - 3*a*b^2*e)*(d + e*x)^2 + a
^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + (e^2*atan((b^(1/2)*e^2*
(d + e*x)^(1/2)*(A*b*e + B*a*e - 2*B*b*d))/((a*e - b*d)^(1/2)*(A*b*e^3 + B*
a*e^3 - 2*B*b*d*e^2)))*(A*b*e + B*a*e - 2*B*b*d))/(8*b^(5/2)*(a*e - b*d)^(5
/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1601 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2} dx$

Optimal. Leaf size=209

$$-\frac{e^2(-aBe-5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{3/2}(bd-ae)^{7/2}}+\frac{e\sqrt{d+ex}\,(-aBe-5Abe+6bBd)}{8b(a+bx)(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-5Abe+6bBd)}{12b(a+bx)^2(bd-ae)^2}$$

Rubi [A] time = 0.20, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{e^2(-aBe-5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{3/2}(bd-ae)^{7/2}}+\frac{e\sqrt{d+ex}\,(-aBe-5Abe+6bBd)}{8b(a+bx)(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-5Abe+6bBd)}{12b(a+bx)^2(bd-ae)^2}-\frac{\sqrt{d+ex}\,(Ab-aB)}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -((A*b - a*B)*Sqrt[d + e*x])/(3*b*(b*d - a*e)*(a + b*x)^3) - ((6*b*B*d - 5*
A*b*e - a*B*e)*Sqrt[d + e*x])/(12*b*(b*d - a*e)^2*(a + b*x)^2) + (e*(6*b*B*
d - 5*A*b*e - a*B*e)*Sqrt[d + e*x])/(8*b*(b*d - a*e)^3*(a + b*x)) - (e^2*(6
*b*B*d - 5*A*b*e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])
/(8*b^(3/2)*(b*d - a*e)^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{A+Bx}{(a+bx)^4\sqrt{d+ex}}\,dx$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3} + \frac{(6bBd-5Abe-aBe)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{6b(bd-ae)}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3} - \frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2} - \frac{(e(6bBd-5A}{}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3} - \frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2} + \frac{e(6bBd-5Ab}{8b(bd-}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3} - \frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2} + \frac{e(6bBd-5Ab}{8b(bd-}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3} - \frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2} + \frac{e(6bBd-5Ab}{8b(bd-}$$

Mathematica [C] time = 0.05, size = 97, normalized size = 0.46

$$\frac{\sqrt{d+ex}\left(\frac{e^2(aBe+5Abe-6bBd)\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}+\frac{aB-Ab}{(a+bx)^3}\right)}{3b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (Sqrt[d + e*x]*((-(A*b) + a*B)/(a + b*x)^3 + (e^2*(-6*b*B*d + 5*A*b*e + a*B
*e)*Hypergeometric2F1[1/2, 3, 3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^
3))/(3*b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 0.89, size = 325, normalized size = 1.56

$$\frac{e^2\sqrt{d+ex}\left(-3a^3Be^3+33a^2Abe^3+8a^2bBe^2(d+ex)-24a^2bBde^2+40aAb^2e^2(d+ex)-66aAb^2de^2+57ab^2Bd^2e+3ab^2Be(d+ex)^2-56ab^2Bde(d+ex)+33Ab^3d^2e+15Ab^3e(d+ex)^2-40Ab^3de(d+ex)-30b^3Bd^3+48b^3Bd^2(d+ex)-18b^3Bd(d+ex)^2\right)}{24b(bd-ae)^3(-ae-b(d+ex)+bd)^3}+\frac{\left(aBe^3+5Abe^3-6bBde^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{3/2}(bd-ae)^3\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-30*b^3*B*d^3 + 33*A*b^3*d^2*e + 57*a*b^2*B*d^2*e - 66*
a*A*b^2*d*e^2 - 24*a^2*b*B*d*e^2 + 33*a^2*A*b*e^3 - 3*a^3*B*e^3 + 48*b^3*B*
d^2*(d + e*x) - 40*A*b^3*d*e*(d + e*x) - 56*a*b^2*B*d*e*(d + e*x) + 40*a*A*
b^2*e^2*(d + e*x) + 8*a^2*b*B*e^2*(d + e*x) - 18*b^3*B*d*(d + e*x)^2 + 15*A
*b^3*e*(d + e*x)^2 + 3*a*b^2*B*e*(d + e*x)^2))/(24*b*(b*d - a*e)^3*(b*d - a
*e - b*(d + e*x))^3) + ((-6*b*B*d*e^2 + 5*A*b*e^3 + a*B*e^3)*ArcTan[(Sqrt[b
]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*b^(3/2)*(b*d - a*e)^3*
Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.48, size = 1337, normalized size = 6.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/48*(3*(6*B*a^3*b*d*e^2 - (B*a^4 + 5*A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (B*a
*b^3 + 5*A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (B*a^2*b^2 + 5*A*a*b^3)*e^3
)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (B*a^3*b + 5*A*a^2*b^2)*e^3)*x)*sqrt(b^2*d -
 a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*
x + a)) - 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(10*B*a^2*b^3 + 17*A*a*b^4)*d^2*
e + (13*B*a^3*b^2 + 59*A*a^2*b^3)*d*e^2 + 3*(B*a^4*b - 11*A*a^3*b^2)*e^3 -
3*(6*B*b^5*d^2*e - (7*B*a*b^4 + 5*A*b^5)*d*e^2 + (B*a^2*b^3 + 5*A*a*b^4)*e^
3)*x^2 + 2*(6*B*b^5*d^3 - (31*B*a*b^4 + 5*A*b^5)*d^2*e + (29*B*a^2*b^3 + 25
*A*a*b^4)*d*e^2 - 4*(B*a^3*b^2 + 5*A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b
^6*d^4 - 4*a^4*b^5*d^3*e + 6*a^5*b^4*d^2*e^2 - 4*a^6*b^3*d*e^3 + a^7*b^2*e^
4 + (b^9*d^4 - 4*a*b^8*d^3*e + 6*a^2*b^7*d^2*e^2 - 4*a^3*b^6*d*e^3 + a^4*b^
5*e^4)*x^3 + 3*(a*b^8*d^4 - 4*a^2*b^7*d^3*e + 6*a^3*b^6*d^2*e^2 - 4*a^4*b^5
*d*e^3 + a^5*b^4*e^4)*x^2 + 3*(a^2*b^7*d^4 - 4*a^3*b^6*d^3*e + 6*a^4*b^5*d^
2*e^2 - 4*a^5*b^4*d*e^3 + a^6*b^3*e^4)*x), 1/24*(3*(6*B*a^3*b*d*e^2 - (B*a^
4 + 5*A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (B*a*b^3 + 5*A*b^4)*e^3)*x^3 + 3*(6*B
*a*b^3*d*e^2 - (B*a^2*b^2 + 5*A*a*b^3)*e^3)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (B
*a^3*b + 5*A*a^2*b^2)*e^3)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b
*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(10*B*a^2
*b^3 + 17*A*a*b^4)*d^2*e + (13*B*a^3*b^2 + 59*A*a^2*b^3)*d*e^2 + 3*(B*a^4*b
 - 11*A*a^3*b^2)*e^3 - 3*(6*B*b^5*d^2*e - (7*B*a*b^4 + 5*A*b^5)*d*e^2 + (B*
a^2*b^3 + 5*A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5*d^3 - (31*B*a*b^4 + 5*A*b^5)*d^2
*e + (29*B*a^2*b^3 + 25*A*a*b^4)*d*e^2 - 4*(B*a^3*b^2 + 5*A*a^2*b^3)*e^3)*x
)*sqrt(e*x + d))/(a^3*b^6*d^4 - 4*a^4*b^5*d^3*e + 6*a^5*b^4*d^2*e^2 - 4*a^6
*b^3*d*e^3 + a^7*b^2*e^4 + (b^9*d^4 - 4*a*b^8*d^3*e + 6*a^2*b^7*d^2*e^2 - 4
*a^3*b^6*d*e^3 + a^4*b^5*e^4)*x^3 + 3*(a*b^8*d^4 - 4*a^2*b^7*d^3*e + 6*a^3*
b^6*d^2*e^2 - 4*a^4*b^5*d*e^3 + a^5*b^4*e^4)*x^2 + 3*(a^2*b^7*d^4 - 4*a^3*b
^6*d^3*e + 6*a^4*b^5*d^2*e^2 - 4*a^5*b^4*d*e^3 + a^6*b^3*e^4)*x)]
```

giac [B] time = 0.21, size = 429, normalized size = 2.05

$$\frac{\left(6\,Bbde^2-Bae^3-5\,Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3\right)\sqrt{-b^2d+abe}}+\frac{18\,(xe+d)^{\frac{5}{2}}Bb^3de^2-48\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^2+30\,\sqrt{xe+d}\,Bb^3d^3e^2-3\,(xe+d)^{\frac{5}{2}}Bab^2e^3-15\,(xe+d)^{\frac{5}{2}}Ab^3e^3+56\,(xe+d)^{\frac{3}{2}}Bab^2de^3+40\,(xe+d)^{\frac{3}{2}}Ab^3de^3-57\,\sqrt{xe+d}\,Bab^2d^2e^3-33\,\sqrt{xe+d}\,Ab^3d^2e^3-8\,(xe+d)^{\frac{3}{2}}Ba^2be^4-40\,(xe+d)^{\frac{3}{2}}Aab^2e^4+24\,\sqrt{xe+d}\,Ba^2bde^4+66\,\sqrt{xe+d}\,Aab^2de^4+3\,\sqrt{xe+d}\,Ba^3e^5-33\,\sqrt{xe+d}\,Aa^2be^5}{24\left(b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3\right)\left((xe+d)b-bd+ae\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 1/8*(6*B*b*d*e^2 - B*a*e^3 - 5*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*sqrt(-b^
2*d + a*b*e)) + 1/24*(18*(x*e + d)^(5/2)*B*b^3*d*e^2 - 48*(x*e + d)^(3/2)*B
*b^3*d^2*e^2 + 30*sqrt(x*e + d)*B*b^3*d^3*e^2 - 3*(x*e + d)^(5/2)*B*a*b^2*e
^3 - 15*(x*e + d)^(5/2)*A*b^3*e^3 + 56*(x*e + d)^(3/2)*B*a*b^2*d*e^3 + 40*(
x*e + d)^(3/2)*A*b^3*d*e^3 - 57*sqrt(x*e + d)*B*a*b^2*d^2*e^3 - 33*sqrt(x*e
 + d)*A*b^3*d^2*e^3 - 8*(x*e + d)^(3/2)*B*a^2*b*e^4 - 40*(x*e + d)^(3/2)*A*
a*b^2*e^4 + 24*sqrt(x*e + d)*B*a^2*b*d*e^4 + 66*sqrt(x*e + d)*A*a*b^2*d*e^4
 + 3*sqrt(x*e + d)*B*a^3*e^5 - 33*sqrt(x*e + d)*A*a^2*b*e^5)/((b^4*d^3 - 3*
a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.08, size = 679, normalized size = 3.25

$$\frac{5\,(ex+d)^{\frac{5}{2}}\,Ab^2e^3}{8\,(bex+ae)^3\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}+\frac{(ex+d)^{\frac{5}{2}}\,Bab\,e^3}{8\,(bex+ae)^3\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}-\frac{3\,(ex+d)^{\frac{5}{2}}\,Bb^2d\,e^2}{4\,(bex+ae)^3\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}+\frac{5\,(ex+d)^{\frac{3}{2}}\,Ab\,e^3}{3\,(bex+ae)^3\left(a^2e^2-2abde+b^2d^2\right)}+\frac{5A\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)\sqrt{(ae-bd)\,b}}+\frac{Ba\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)\sqrt{(ae-bd)\,b}\;b}+\frac{(ex+d)^{\frac{3}{2}}\,Ba\,e^3}{3\,(bex+ae)^3\left(a^2e^2-2abde+b^2d^2\right)}-\frac{2\,(ex+d)^{\frac{3}{2}}\,Bbd\,e^2}{(bex+ae)^3\left(a^2e^2-2abde+b^2d^2\right)}-\frac{3Bd\,e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)\sqrt{(ae-bd)\,b}}+\frac{11\sqrt{ex+d}\;A\,e^3}{8\,(bex+ae)^3\,(ae-bd)}-\frac{\sqrt{ex+d}\;Ba\,e^3}{8\,(bex+ae)^3\,(ae-bd)\,b}-\frac{5\sqrt{ex+d}\;Bd\,e^2}{4\,(bex+ae)^3\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 5/8*e^3/(b*e*x+a*e)^3*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*
x+d)^(5/2)*A+1/8*e^3/(b*e*x+a*e)^3*b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b
^3*d^3)*(e*x+d)^(5/2)*a*B-3/4*e^2/(b*e*x+a*e)^3*b^2/(a^3*e^3-3*a^2*b*d*e^2+
3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(5/2)*B*d+5/3*e^3/(b*e*x+a*e)^3/(a^2*e^2-2*a
*b*d*e+b^2*d^2)*(e*x+d)^(3/2)*A*b+1/3*e^3/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+
b^2*d^2)*(e*x+d)^(3/2)*a*B-2*e^2/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*
(e*x+d)^(3/2)*B*b*d+11/8*e^3/(b*e*x+a*e)^3/(a*e-b*d)*(e*x+d)^(1/2)*A-1/8*e^
3/(b*e*x+a*e)^3/b/(a*e-b*d)*(e*x+d)^(1/2)*a*B-5/4*e^2/(b*e*x+a*e)^3/(a*e-b*
d)*(e*x+d)^(1/2)*B*d+5/8*e^3/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)/
((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+1/8*e^3/b
/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-3/4*e^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*
b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.13, size = 331, normalized size = 1.58

$$\frac{\frac{(d+e\,x)^{3/2}\,\left(5\,A\,b\,e^3+B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{3\,(a\,e-b\,d)^2}+\frac{b\,(d+e\,x)^{5/2}\,\left(5\,A\,b\,e^3+B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{8\,(a\,e-b\,d)^3}-\frac{\sqrt{d+e\,x}\,\left(B\,a\,e^3-11\,A\,b\,e^3+10\,B\,b\,d\,e^2\right)}{8\,b\,(a\,e-b\,d)}}{(d+e\,x)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)+b^3\,(d+e\,x)^3-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,(d+e\,x)^2+a^3\,e^3-b^3\,d^3+3\,a\,b^2\,d^2\,e-3\,a^2\,b\,d\,e^2}+\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,(5\,A\,b\,e+B\,a\,e-6\,B\,b\,d)}{\sqrt{a\,e-b\,d}\,\left(5\,A\,b\,e^3+B\,a\,e^3-6\,B\,b\,d\,e^2\right)}\right)\,(5\,A\,b\,e+B\,a\,e-6\,B\,b\,d)}{8\,b^{3/2}\,(a\,e-b\,d)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (((d + e*x)^(3/2)*(5*A*b*e^3 + B*a*e^3 - 6*B*b*d*e^2))/(3*(a*e - b*d)^2) +
(b*(d + e*x)^(5/2)*(5*A*b*e^3 + B*a*e^3 - 6*B*b*d*e^2))/(8*(a*e - b*d)^3) -
 ((d + e*x)^(1/2)*(B*a*e^3 - 11*A*b*e^3 + 10*B*b*d*e^2))/(8*b*(a*e - b*d)))
/((d + e*x)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*b^2*d*e) + b^3*(d + e*x)^3 - (3*
b^3*d - 3*a*b^2*e)*(d + e*x)^2 + a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*
b*d*e^2) + (e^2*atan((b^(1/2)*e^2*(d + e*x)^(1/2)*(5*A*b*e + B*a*e - 6*B*b*
d))/((a*e - b*d)^(1/2)*(5*A*b*e^3 + B*a*e^3 - 6*B*b*d*e^2)))*(5*A*b*e + B*a
*e - 6*B*b*d))/(8*b^(3/2)*(a*e - b*d)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1602 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=250

$$\frac{5e^2(aBe-7Abe+6bBd)}{8b\sqrt{d+ex}\,(bd-ae)^4}-\frac{5e^2(aBe-7Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\,(bd-ae)^{9/2}}+\frac{5e(aBe-7Abe+6bBd)}{24b(a+bx)\sqrt{d+ex}\,(bd-ae)^3}-\frac{aB}{12b(a+b}$$

Rubi [A] time = 0.24, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {27, 78, 51, 63, 208}

$$\frac{5e^2(aBe-7Abe+6bBd)}{8b\sqrt{d+ex}\,(bd-ae)^4}-\frac{5e^2(aBe-7Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\,(bd-ae)^{9/2}}+\frac{5e(aBe-7Abe+6bBd)}{24b(a+bx)\sqrt{d+ex}\,(bd-ae)^3}-\frac{aBe-7Abe+6bBd}{12b(a+bx)^2\sqrt{d+ex}\,(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (5*e^2*(6*b*B*d - 7*A*b*e + a*B*e))/(8*b*(b*d - a*e)^4*Sqrt[d + e*x]) - (A*
b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3*Sqrt[d + e*x]) - (6*b*B*d - 7*A*b*e +
 a*B*e)/(12*b*(b*d - a*e)^2*(a + b*x)^2*Sqrt[d + e*x]) + (5*e*(6*b*B*d - 7*
A*b*e + a*B*e))/(24*b*(b*d - a*e)^3*(a + b*x)*Sqrt[d + e*x]) - (5*e^2*(6*b*
B*d - 7*A*b*e + a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8
*Sqrt[b]*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{A+Bx}{(a+bx)^4(d+ex)^{3/2}}\,dx$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}}+\frac{(6bBd-7Abe+aBe)\int \frac{1}{(a+bx)^3(d+ex)^{3/}}}{6b(bd-ae)}$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}}-\frac{6bBd-7Abe+aBe}{12b(bd-ae)^2(a+bx)^2\sqrt{d+ex}}-\frac{(5}{}$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}}-\frac{6bBd-7Abe+aBe}{12b(bd-ae)^2(a+bx)^2\sqrt{d+ex}}+\frac{}{24}$$

$$=\frac{5e^2(6bBd-7Abe+aBe)}{8b(bd-ae)^4\sqrt{d+ex}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}}-\frac{6bB}{12b(bd-}$$

$$=\frac{5e^2(6bBd-7Abe+aBe)}{8b(bd-ae)^4\sqrt{d+ex}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}}-\frac{6bB}{12b(bd-}$$

$$=\frac{5e^2(6bBd-7Abe+aBe)}{8b(bd-ae)^4\sqrt{d+ex}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}}-\frac{6bB}{12b(bd-}$$

Mathematica [C] time = 0.06, size = 99, normalized size = 0.40

$$\frac{\frac{aB-Ab}{(a+bx)^3}-\frac{e^2(-aBe+7Abe-6bBd)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}}{3b\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-(A*b) + a*B)/(a + b*x)^3 - (e^2*(-6*b*B*d + 7*A*b*e - a*B*e)*Hypergeomet
ric2F1[-1/2, 3, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^3)/(3*b*(b*d -
 a*e)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 1.69, size = 453, normalized size = 1.81

$$\frac{e^2\left(48a^3Ae^4-33a^3Be^3(d+ex)-48a^3Bde^3+231a^2Abe^3(d+ex)-144a^2Abde^3+144a^2bBd^2e^2-132a^2bBde^2(d+ex)-40a^2bBe^2(d+ex)^2+144aAb^2d^2e^2-462aAb^2de^2(d+ex)+280aAb^2e^2(d+ex)^2-144ab^2Bd^3e+363ab^2Bd^2e(d+ex)-200ab^2Bde(d+ex)^2-15ab^2Be(d+ex)^3-48Ab^3d^3e+231Ab^3d^2e(d+ex)-280Ab^3de(d+ex)^2+105Ab^3e(d+ex)^3+48b^3Bd^4-198b^3Bd^3(d+ex)+240b^3Bd^2(d+ex)^2-90b^3Bd(d+ex)^3\right)}{24\sqrt{d+ex}\,(bd-ae)^4(-ae-b(d+ex)+bd)^3}-\frac{5\left(aBe^3-7Abe^3+6bBde^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8\sqrt{b}\,(bd-ae)^4\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),
x]
```

```
[Out] (e^2*(48*b^3*B*d^4 - 48*A*b^3*d^3*e - 144*a*b^2*B*d^3*e + 144*a*A*b^2*d^2*e
^2 + 144*a^2*b*B*d^2*e^2 - 144*a^2*A*b*d*e^3 - 48*a^3*B*d*e^3 + 48*a^3*A*e^
4 - 198*b^3*B*d^3*(d + e*x) + 231*A*b^3*d^2*e*(d + e*x) + 363*a*b^2*B*d^2*e
*(d + e*x) - 462*a*A*b^2*d*e^2*(d + e*x) - 132*a^2*b*B*d*e^2*(d + e*x) + 23
1*a^2*A*b*e^3*(d + e*x) - 33*a^3*B*e^3*(d + e*x) + 240*b^3*B*d^2*(d + e*x)^
2 - 280*A*b^3*d*e*(d + e*x)^2 - 200*a*b^2*B*d*e*(d + e*x)^2 + 280*a*A*b^2*e
```

```
^2*(d + e*x)^2 - 40*a^2*b*B*e^2*(d + e*x)^2 - 90*b^3*B*d*(d + e*x)^3 + 105*
A*b^3*e*(d + e*x)^3 - 15*a*b^2*B*e*(d + e*x)^3))/(24*(b*d - a*e)^4*Sqrt[d +
 e*x]*(b*d - a*e - b*(d + e*x))^3) - (5*(6*b*B*d*e^2 - 7*A*b*e^3 + a*B*e^3)
*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*Sqrt[b]
*(b*d - a*e)^4*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.49, size = 2114, normalized size = 8.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/48*(15*(6*B*a^3*b*d^2*e^2 + (B*a^4 - 7*A*a^3*b)*d*e^3 + (6*B*b^4*d*e^3
+ (B*a*b^3 - 7*A*b^4)*e^4)*x^4 + (6*B*b^4*d^2*e^2 + (19*B*a*b^3 - 7*A*b^4)*
d*e^3 + 3*(B*a^2*b^2 - 7*A*a*b^3)*e^4)*x^3 + 3*(6*B*a*b^3*d^2*e^2 + 7*(B*a^
2*b^2 - A*a*b^3)*d*e^3 + (B*a^3*b - 7*A*a^2*b^2)*e^4)*x^2 + (18*B*a^2*b^2*d
^2*e^2 + 3*(3*B*a^3*b - 7*A*a^2*b^2)*d*e^3 + (B*a^4 - 7*A*a^3*b)*e^4)*x)*sq
rt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x
 + d))/(b*x + a)) - 2*(48*A*a^4*b*e^4 - 4*(B*a*b^4 + 2*A*b^5)*d^4 + 2*(16*B
*a^2*b^3 + 23*A*a*b^4)*d^3*e + (53*B*a^3*b^2 - 125*A*a^2*b^3)*d^2*e^2 - 3*(
27*B*a^4*b - 13*A*a^3*b^2)*d*e^3 + 15*(6*B*b^5*d^2*e^2 - (5*B*a*b^4 + 7*A*b
^5)*d*e^3 - (B*a^2*b^3 - 7*A*a*b^4)*e^4)*x^3 + 5*(6*B*b^5*d^3*e + (43*B*a*b
^4 - 7*A*b^5)*d^2*e^2 - (41*B*a^2*b^3 + 49*A*a*b^4)*d*e^3 - 8*(B*a^3*b^2 -
7*A*a^2*b^3)*e^4)*x^2 - (12*B*b^5*d^4 - 2*(47*B*a*b^4 + 7*A*b^5)*d^3*e - 2*
(65*B*a^2*b^3 - 56*A*a*b^4)*d^2*e^2 + (179*B*a^3*b^2 + 133*A*a^2*b^3)*d*e^3
 + 33*(B*a^4*b - 7*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(a^3*b^6*d^6 - 5*a^4*b
^5*d^5*e + 10*a^5*b^4*d^4*e^2 - 10*a^6*b^3*d^3*e^3 + 5*a^7*b^2*d^2*e^4 - a^
8*b*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2*b^7*d^3*e^3 - 10*a^3*b^6*
d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^4 + (b^9*d^6 - 2*a*b^8*d^5*e - 5
*a^2*b^7*d^4*e^2 + 20*a^3*b^6*d^3*e^3 - 25*a^4*b^5*d^2*e^4 + 14*a^5*b^4*d*e
^5 - 3*a^6*b^3*e^6)*x^3 + 3*(a*b^8*d^6 - 4*a^2*b^7*d^5*e + 5*a^3*b^6*d^4*e^
2 - 5*a^5*b^4*d^2*e^4 + 4*a^6*b^3*d*e^5 - a^7*b^2*e^6)*x^2 + (3*a^2*b^7*d^6
 - 14*a^3*b^6*d^5*e + 25*a^4*b^5*d^4*e^2 - 20*a^5*b^4*d^3*e^3 + 5*a^6*b^3*d
^2*e^4 + 2*a^7*b^2*d*e^5 - a^8*b*e^6)*x), 1/24*(15*(6*B*a^3*b*d^2*e^2 + (B*
a^4 - 7*A*a^3*b)*d*e^3 + (6*B*b^4*d*e^3 + (B*a*b^3 - 7*A*b^4)*e^4)*x^4 + (6
*B*b^4*d^2*e^2 + (19*B*a*b^3 - 7*A*b^4)*d*e^3 + 3*(B*a^2*b^2 - 7*A*a*b^3)*e
^4)*x^3 + 3*(6*B*a*b^3*d^2*e^2 + 7*(B*a^2*b^2 - A*a*b^3)*d*e^3 + (B*a^3*b -
 7*A*a^2*b^2)*e^4)*x^2 + (18*B*a^2*b^2*d^2*e^2 + 3*(3*B*a^3*b - 7*A*a^2*b^2
)*d*e^3 + (B*a^4 - 7*A*a^3*b)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2
*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (48*A*a^4*b*e^4 - 4*(B*a*b^4 + 2
*A*b^5)*d^4 + 2*(16*B*a^2*b^3 + 23*A*a*b^4)*d^3*e + (53*B*a^3*b^2 - 125*A*a
^2*b^3)*d^2*e^2 - 3*(27*B*a^4*b - 13*A*a^3*b^2)*d*e^3 + 15*(6*B*b^5*d^2*e^2
 - (5*B*a*b^4 + 7*A*b^5)*d*e^3 - (B*a^2*b^3 - 7*A*a*b^4)*e^4)*x^3 + 5*(6*B*
b^5*d^3*e + (43*B*a*b^4 - 7*A*b^5)*d^2*e^2 - (41*B*a^2*b^3 + 49*A*a*b^4)*d*
e^3 - 8*(B*a^3*b^2 - 7*A*a^2*b^3)*e^4)*x^2 - (12*B*b^5*d^4 - 2*(47*B*a*b^4
+ 7*A*b^5)*d^3*e - 2*(65*B*a^2*b^3 - 56*A*a*b^4)*d^2*e^2 + (179*B*a^3*b^2 +
 133*A*a^2*b^3)*d*e^3 + 33*(B*a^4*b - 7*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(
a^3*b^6*d^6 - 5*a^4*b^5*d^5*e + 10*a^5*b^4*d^4*e^2 - 10*a^6*b^3*d^3*e^3 + 5
*a^7*b^2*d^2*e^4 - a^8*b*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2*b^7*
d^3*e^3 - 10*a^3*b^6*d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^4 + (b^9*d^
6 - 2*a*b^8*d^5*e - 5*a^2*b^7*d^4*e^2 + 20*a^3*b^6*d^3*e^3 - 25*a^4*b^5*d^2
*e^4 + 14*a^5*b^4*d*e^5 - 3*a^6*b^3*e^6)*x^3 + 3*(a*b^8*d^6 - 4*a^2*b^7*d^5
*e + 5*a^3*b^6*d^4*e^2 - 5*a^5*b^4*d^2*e^4 + 4*a^6*b^3*d*e^5 - a^7*b^2*e^6)
*x^2 + (3*a^2*b^7*d^6 - 14*a^3*b^6*d^5*e + 25*a^4*b^5*d^4*e^2 - 20*a^5*b^4*
d^3*e^3 + 5*a^6*b^3*d^2*e^4 + 2*a^7*b^2*d*e^5 - a^8*b*e^6)*x)]
```

giac [B] time = 0.26, size = 516, normalized size = 2.06

$$\frac{5\left(6\,Bbde^2+Bae^3-7\,Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{-b^2d+abe}}+\frac{2\left(Bde^2-Ae^3\right)}{\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{xe+d}}+\frac{42\,(xe+d)^{\frac{5}{2}}Bb^3de^2-96\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^2+54\,\sqrt{xe+d}\,Bb^3d^3e^2+15\,(xe+d)^{\frac{5}{2}}Bab^2e^3-57\,(xe+d)^{\frac{5}{2}}Ab^3e^3+56\,(xe+d)^{\frac{3}{2}}Bab^2de^3+136\,(xe+d)^{\frac{3}{2}}Ab^3de^3-75\,\sqrt{xe+d}\,Bab^2d^2e^3-87\,\sqrt{xe+d}\,Ab^3d^2e^3+40\,(xe+d)^{\frac{3}{2}}Ba^2be^4-136\,(xe+d)^{\frac{3}{2}}Aab^2e^4-12\,\sqrt{xe+d}\,Ba^2bde^4+174\,\sqrt{xe+d}\,Aab^2de^4+33\,\sqrt{xe+d}\,Ba^3e^5-87\,\sqrt{xe+d}\,Aa^2be^5}{24\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\left((xe+d)b-bd+ae\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 5/8*(6*B*b*d*e^2 + B*a*e^3 - 7*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a
^4*e^4)*sqrt(-b^2*d + a*b*e)) + 2*(B*d*e^2 - A*e^3)/((b^4*d^4 - 4*a*b^3*d^3
*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*sqrt(x*e + d)) + 1/24*(42
*(x*e + d)^(5/2)*B*b^3*d*e^2 - 96*(x*e + d)^(3/2)*B*b^3*d^2*e^2 + 54*sqrt(x
*e + d)*B*b^3*d^3*e^2 + 15*(x*e + d)^(5/2)*B*a*b^2*e^3 - 57*(x*e + d)^(5/2)
*A*b^3*e^3 + 56*(x*e + d)^(3/2)*B*a*b^2*d*e^3 + 136*(x*e + d)^(3/2)*A*b^3*d
*e^3 - 75*sqrt(x*e + d)*B*a*b^2*d^2*e^3 - 87*sqrt(x*e + d)*A*b^3*d^2*e^3 +
40*(x*e + d)^(3/2)*B*a^2*b*e^4 - 136*(x*e + d)^(3/2)*A*a*b^2*e^4 - 12*sqrt(
x*e + d)*B*a^2*b*d*e^4 + 174*sqrt(x*e + d)*A*a*b^2*d*e^4 + 33*sqrt(x*e + d)
*B*a^3*e^5 - 87*sqrt(x*e + d)*A*a^2*b*e^5)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^
2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.08, size = 768, normalized size = 3.07

$$-\frac{29\sqrt{ex+d}\,A\,a^{2}b\,e^{5}}{8\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{29\sqrt{ex+d}\,Aa\,b^{2}d\,e^{4}}{4\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{29\sqrt{ex+d}\,A\,b^{3}d^{2}e^{3}}{8\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{11\sqrt{ex+d}\,B\,a^{3}e^{5}}{8\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{\sqrt{ex+d}\,B\,a^{2}bd\,e^{4}}{2\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{25\sqrt{ex+d}\,Ba\,b^{2}d^{2}e^{3}}{8\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{9\sqrt{ex+d}\,B\,b^{3}d^{3}e^{2}}{4\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{17\left(ex+d\right)^{\frac{3}{2}}Aa\,b^{2}e^{4}}{3\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{17\left(ex+d\right)^{\frac{3}{2}}A\,b^{3}d\,e^{3}}{3\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{5\left(ex+d\right)^{\frac{3}{2}}B\,a^{2}b\,e^{4}}{3\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{7\left(ex+d\right)^{\frac{3}{2}}Ba\,b^{2}d\,e^{3}}{3\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{4\left(ex+d\right)^{\frac{3}{2}}B\,b^{3}d^{2}e^{2}}{\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{19\left(ex+d\right)^{\frac{5}{2}}A\,b^{3}e^{3}}{8\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{5\left(ex+d\right)^{\frac{5}{2}}Ba\,b^{2}e^{3}}{8\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}+\frac{7\left(ex+d\right)^{\frac{5}{2}}B\,b^{3}d\,e^{2}}{4\left(ae-bd\right)^{4}\left(bex+ae\right)^{3}}-\frac{35Ab\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)}{8\left(ae-bd\right)^{4}\sqrt{\left(ae-bd\right)b}}+\frac{5Ba\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)}{8\left(ae-bd\right)^{4}\sqrt{\left(ae-bd\right)b}}+\frac{15Bbd\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)}{4\left(ae-bd\right)^{4}\sqrt{\left(ae-bd\right)b}}-\frac{2A\,e^{3}}{\left(ae-bd\right)^{4}\sqrt{ex+d}}+\frac{2Bd\,e^{2}}{\left(ae-bd\right)^{4}\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -19/8*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A*b^3+7/4*e^2/(a*e-b*d)^4
/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*b^3*d+5/8*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x
+d)^(5/2)*B*a*b^2-17/3*e^4/(a*e-b*d)^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a*b^2+
17/3*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*b^3*d+5/3*e^4/(a*e-b*d)^
4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2*b+7/3*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*B*(
e*x+d)^(3/2)*a*b^2*d-4*e^2/(a*e-b*d)^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*b^3*d^
2-29/8*e^5/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2*b+29/4*e^4/(a*e-b*
d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a*b^2*d-29/8*e^3/(a*e-b*d)^4/(b*e*x+a*e)
^3*(e*x+d)^(1/2)*A*b^3*d^2+11/8*e^5/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)
*B*a^3-1/2*e^4/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^2*b*d-25/8*e^3/(
a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*b^2*d^2+9/4*e^2/(a*e-b*d)^4/(b*e
*x+a*e)^3*(e*x+d)^(1/2)*B*b^3*d^3-35/8*e^3/(a*e-b*d)^4/((a*e-b*d)*b)^(1/2)*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*b+5/8*e^3/(a*e-b*d)^4/((a*e-b
*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+15/4*e^2/(a*e-
b*d)^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*b*
d-2*e^3/(a*e-b*d)^4/(e*x+d)^(1/2)*A+2*e^2/(a*e-b*d)^4/(e*x+d)^(1/2)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.34, size = 420, normalized size = 1.68

$$\frac{\frac{5\,{\left(d+e\,x\right)}^2\,\left(-7\,A\,b^2\,e^3+6\,B\,d\,b^2\,e^2+B\,a\,b\,e^3\right)}{3\,{\left(a\,e-b\,d\right)}^3}-\frac{2\,\left(A\,e^3-B\,d\,e^2\right)}{a\,e-b\,d}+\frac{11\,\left(d+e\,x\right)\,\left(B\,a\,e^3-7\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}{8\,{\left(a\,e-b\,d\right)}^2}+\frac{5\,b^2\,{\left(d+e\,x\right)}^3\,\left(B\,a\,e^3-7\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}{8\,{\left(a\,e-b\,d\right)}^4}}{\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)+b^3\,{\left(d+e\,x\right)}^{7/2}-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{5/2}+{\left(d+e\,x\right)}^{3/2}\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)}+\frac{5\,e^2\,\mathrm{atan}\left(\frac{5\,\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,\left(B\,a\,e-7\,A\,b\,e+6\,B\,b\,d\right)\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}{{\left(a\,e-b\,d\right)}^{9/2}\,\left(5\,B\,a\,e^3-35\,A\,b\,e^3+30\,B\,b\,d\,e^2\right)}\right)\,\left(B\,a\,e-7\,A\,b\,e+6\,B\,b\,d\right)}{8\,\sqrt{b}\,{\left(a\,e-b\,d\right)}^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((5*(d + e*x)^2*(B*a*b*e^3 - 7*A*b^2*e^3 + 6*B*b^2*d*e^2))/(3*(a*e - b*d)^3
) - (2*(A*e^3 - B*d*e^2))/(a*e - b*d) + (11*(d + e*x)*(B*a*e^3 - 7*A*b*e^3
+ 6*B*b*d*e^2))/(8*(a*e - b*d)^2) + (5*b^2*(d + e*x)^3*(B*a*e^3 - 7*A*b*e^3
 + 6*B*b*d*e^2))/(8*(a*e - b*d)^4))/((d + e*x)^(1/2)*(a^3*e^3 - b^3*d^3 + 3
*a*b^2*d^2*e - 3*a^2*b*d*e^2) + b^3*(d + e*x)^(7/2) - (3*b^3*d - 3*a*b^2*e)
*(d + e*x)^(5/2) + (d + e*x)^(3/2)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*b^2*d*e))
 + (5*e^2*atan((5*b^(1/2)*e^2*(d + e*x)^(1/2)*(B*a*e - 7*A*b*e + 6*B*b*d)*(
a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/((a
*e - b*d)^(9/2)*(5*B*a*e^3 - 35*A*b*e^3 + 30*B*b*d*e^2)))*(B*a*e - 7*A*b*e
+ 6*B*b*d))/(8*b^(1/2)*(a*e - b*d)^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1603 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=291

$$\frac{35e^2(aBe-3Abe+2bBd)}{8\sqrt{d+ex}\,(bd-ae)^5}+\frac{35e^2(aBe-3Abe+2bBd)}{24b(d+ex)^{3/2}(bd-ae)^4}-\frac{35\sqrt{b}\,e^2(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{11/2}}+\frac{7}{8b(a}$$

Rubi [A] time = 0.30, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$\frac{35e^2(aBe-3Abe+2bBd)}{8\sqrt{d+ex}\,(bd-ae)^5}+\frac{35e^2(aBe-3Abe+2bBd)}{24b(d+ex)^{3/2}(bd-ae)^4}-\frac{35\sqrt{b}\,e^2(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{11/2}}+\frac{7e(aBe-3Abe+2bBd)}{8b(a+bx)(d+ex)^{3/2}(bd-ae)^3}-\frac{aBe-3Abe+2bBd}{4b(a+bx)^2(d+ex)^{3/2}(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (35*e^2*(2*b*B*d - 3*A*b*e + a*B*e))/(24*b*(b*d - a*e)^4*(d + e*x)^(3/2)) -
 (A*b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3*(d + e*x)^(3/2)) - (2*b*B*d - 3*A
*b*e + a*B*e)/(4*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(3/2)) + (7*e*(2*b*B
*d - 3*A*b*e + a*B*e))/(8*b*(b*d - a*e)^3*(a + b*x)*(d + e*x)^(3/2)) + (35*
e^2*(2*b*B*d - 3*A*b*e + a*B*e))/(8*(b*d - a*e)^5*Sqrt[d + e*x]) - (35*Sqrt
[b]*e^2*(2*b*B*d - 3*A*b*e + a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*
d - a*e]])/(8*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{A+Bx}{(a+bx)^4(d+ex)^{5/2}}\,dx$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}+\frac{(2bBd-3Abe+aBe)\int \frac{1}{(a+bx)^3(d+ex)^{5/2}}}{2b(bd-ae)}$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bBd-3Abe+aBe}{4b(bd-ae)^2(a+bx)^2(d+ex)^{3/2}}-\frac{(7\ldots}{\ldots}$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bBd-3Abe+aBe}{4b(bd-ae)^2(a+bx)^2(d+ex)^{3/2}}+\frac{\ldots}{8b\ldots}$$

$$=\frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bB\ldots}{4b(bd-ae\ldots}$$

$$=\frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bB\ldots}{4b(bd-ae\ldots}$$

$$=\frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bB\ldots}{4b(bd-ae\ldots}$$

$$=\frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bB\ldots}{4b(bd-ae\ldots}$$

Mathematica [C] time = 0.06, size = 100, normalized size = 0.34

$$\frac{\frac{3aB-3Ab}{(a+bx)^3}-\frac{3e^2(-aBe+3Abe-2bBd)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}}{9b(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-3*A*b + 3*a*B)/(a + b*x)^3 - (3*e^2*(-2*b*B*d + 3*A*b*e - a*B*e)*Hyperge
ometric2F1[-3/2, 3, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^3)/(9*b*(
b*d - a*e)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [B] time = 2.06, size = 638, normalized size = 2.19

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),
x]
```

```
[Out] -1/24*(e^2*(-16*b^4*B*d^5 + 16*A*b^4*d^4*e + 64*a*b^3*B*d^4*e - 64*a*A*b^3*
d^3*e^2 - 96*a^2*b^2*B*d^3*e^2 + 96*a^2*A*b^2*d^2*e^3 + 64*a^3*b*B*d^2*e^3
- 64*a^3*A*b*d*e^4 - 16*a^4*B*d*e^4 + 16*a^4*A*e^5 - 96*b^4*B*d^4*(d + e*x)
 + 144*A*b^4*d^3*e*(d + e*x) + 240*a*b^3*B*d^3*e*(d + e*x) - 432*a*A*b^3*d^
```

```
2*e^2*(d + e*x) - 144*a^2*b^2*B*d^2*e^2*(d + e*x) + 432*a^2*A*b^2*d*e^3*(d
+ e*x) - 48*a^3*b*B*d*e^3*(d + e*x) - 144*a^3*A*b*e^4*(d + e*x) + 48*a^4*B*
e^4*(d + e*x) + 462*b^4*B*d^3*(d + e*x)^2 - 693*A*b^4*d^2*e*(d + e*x)^2 - 6
93*a*b^3*B*d^2*e*(d + e*x)^2 + 1386*a*A*b^3*d*e^2*(d + e*x)^2 - 693*a^2*A*b
^2*e^3*(d + e*x)^2 + 231*a^3*b*B*e^3*(d + e*x)^2 - 560*b^4*B*d^2*(d + e*x)^
3 + 840*A*b^4*d*e*(d + e*x)^3 + 280*a*b^3*B*d*e*(d + e*x)^3 - 840*a*A*b^3*e
^2*(d + e*x)^3 + 280*a^2*b^2*B*e^2*(d + e*x)^3 + 210*b^4*B*d*(d + e*x)^4 -
315*A*b^4*e*(d + e*x)^4 + 105*a*b^3*B*e*(d + e*x)^4))/((b*d - a*e)^5*(d + e
*x)^(3/2)*(b*d - a*e - b*(d + e*x))^3) - (35*(2*b^(3/2)*B*d*e^2 - 3*A*b^(3/
2)*e^3 + a*Sqrt[b]*B*e^3)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])
/(b*d - a*e)])/(8*(b*d - a*e)^5*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.50, size = 2648, normalized size = 9.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")

[Out] [1/48*(105*(2*B*a^3*b*d^3*e^2 + (B*a^4 - 3*A*a^3*b)*d^2*e^3 + (2*B*b^4*d*e^
4 + (B*a*b^3 - 3*A*b^4)*e^5)*x^5 + (4*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 - 3*A*b^
4)*d*e^4 + 3*(B*a^2*b^2 - 3*A*a*b^3)*e^5)*x^4 + (2*B*b^4*d^3*e^2 + (13*B*a*
b^3 - 3*A*b^4)*d^2*e^3 + 6*(2*B*a^2*b^2 - 3*A*a*b^3)*d*e^4 + 3*(B*a^3*b - 3
*A*a^2*b^2)*e^5)*x^3 + (6*B*a*b^3*d^3*e^2 + 3*(5*B*a^2*b^2 - 3*A*a*b^3)*d^2
*e^3 + 2*(4*B*a^3*b - 9*A*a^2*b^2)*d*e^4 + (B*a^4 - 3*A*a^3*b)*e^5)*x^2 + (
6*B*a^2*b^2*d^3*e^2 + (7*B*a^3*b - 9*A*a^2*b^2)*d^2*e^3 + 2*(B*a^4 - 3*A*a^
3*b)*d*e^4)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)
*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(16*A*a^4*e^4 - 4*(B*a*b
^3 + 2*A*b^4)*d^4 + 10*(4*B*a^2*b^2 + 5*A*a*b^3)*d^3*e + (247*B*a^3*b - 165
*A*a^2*b^2)*d^2*e^2 + 16*(2*B*a^4 - 13*A*a^3*b)*d*e^3 + 105*(2*B*b^4*d*e^3
+ (B*a*b^3 - 3*A*b^4)*e^4)*x^4 + 140*(2*B*b^4*d^2*e^2 + (5*B*a*b^3 - 3*A*b^
4)*d*e^3 + 2*(B*a^2*b^2 - 3*A*a*b^3)*e^4)*x^3 + 21*(2*B*b^4*d^3*e + (37*B*a
*b^3 - 3*A*b^4)*d^2*e^2 + 2*(20*B*a^2*b^2 - 27*A*a*b^3)*d*e^3 + 11*(B*a^3*b
 - 3*A*a^2*b^2)*e^4)*x^2 - 6*(2*B*b^4*d^4 - (19*B*a*b^3 + 3*A*b^4)*d^3*e -
2*(58*B*a^2*b^2 - 15*A*a*b^3)*d^2*e^2 - 3*(23*B*a^3*b - 53*A*a^2*b^2)*d*e^3
 - 8*(B*a^4 - 3*A*a^3*b)*e^4)*x)*sqrt(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^
6*e + 10*a^5*b^3*d^5*e^2 - 10*a^6*b^2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e
^5 + (b^8*d^5*e^2 - 5*a*b^7*d^4*e^3 + 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e
^5 + 5*a^4*b^4*d*e^6 - a^5*b^3*e^7)*x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 +
5*a^2*b^6*d^4*e^3 + 10*a^3*b^5*d^3*e^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*
e^6 - 3*a^6*b^2*e^7)*x^4 + (b^8*d^7 + a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35
*a^3*b^5*d^4*e^3 - 25*a^4*b^4*d^3*e^4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 -
 3*a^7*b*e^7)*x^3 + (3*a*b^7*d^7 - 9*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a
^4*b^4*d^4*e^3 - 35*a^5*b^3*d^3*e^4 + 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^
8*e^7)*x^2 + (3*a^2*b^6*d^7 - 13*a^3*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^
5*b^3*d^4*e^3 - 5*a^6*b^2*d^3*e^4 + 7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x), -1/2
4*(105*(2*B*a^3*b*d^3*e^2 + (B*a^4 - 3*A*a^3*b)*d^2*e^3 + (2*B*b^4*d*e^4 +
(B*a*b^3 - 3*A*b^4)*e^5)*x^5 + (4*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 - 3*A*b^4)*d
*e^4 + 3*(B*a^2*b^2 - 3*A*a*b^3)*e^5)*x^4 + (2*B*b^4*d^3*e^2 + (13*B*a*b^3
- 3*A*b^4)*d^2*e^3 + 6*(2*B*a^2*b^2 - 3*A*a*b^3)*d*e^4 + 3*(B*a^3*b - 3*A*a
^2*b^2)*e^5)*x^3 + (6*B*a*b^3*d^3*e^2 + 3*(5*B*a^2*b^2 - 3*A*a*b^3)*d^2*e^3
 + 2*(4*B*a^3*b - 9*A*a^2*b^2)*d*e^4 + (B*a^4 - 3*A*a^3*b)*e^5)*x^2 + (6*B*
a^2*b^2*d^3*e^2 + (7*B*a^3*b - 9*A*a^2*b^2)*d^2*e^3 + 2*(B*a^4 - 3*A*a^3*b)
*d*e^4)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(
b*d - a*e))/(b*e*x + b*d)) - (16*A*a^4*e^4 - 4*(B*a*b^3 + 2*A*b^4)*d^4 + 10
*(4*B*a^2*b^2 + 5*A*a*b^3)*d^3*e + (247*B*a^3*b - 165*A*a^2*b^2)*d^2*e^2 +
16*(2*B*a^4 - 13*A*a^3*b)*d*e^3 + 105*(2*B*b^4*d*e^3 + (B*a*b^3 - 3*A*b^4)*
e^4)*x^4 + 140*(2*B*b^4*d^2*e^2 + (5*B*a*b^3 - 3*A*b^4)*d*e^3 + 2*(B*a^2*b^
2 - 3*A*a*b^3)*e^4)*x^3 + 21*(2*B*b^4*d^3*e + (37*B*a*b^3 - 3*A*b^4)*d^2*e^
```

```
2 + 2*(20*B*a^2*b^2 - 27*A*a*b^3)*d*e^3 + 11*(B*a^3*b - 3*A*a^2*b^2)*e^4)*x
^2 - 6*(2*B*b^4*d^4 - (19*B*a*b^3 + 3*A*b^4)*d^3*e - 2*(58*B*a^2*b^2 - 15*A
*a*b^3)*d^2*e^2 - 3*(23*B*a^3*b - 53*A*a^2*b^2)*d*e^3 - 8*(B*a^4 - 3*A*a^3*
b)*e^4)*x)*sqrt(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^6*e + 10*a^5*b^3*d^5*e
^2 - 10*a^6*b^2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e^5 + (b^8*d^5*e^2 - 5*
a*b^7*d^4*e^3 + 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e^5 + 5*a^4*b^4*d*e^6 -
 a^5*b^3*e^7)*x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 + 5*a^2*b^6*d^4*e^3 + 10
*a^3*b^5*d^3*e^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*e^6 - 3*a^6*b^2*e^7)*x
^4 + (b^8*d^7 + a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35*a^3*b^5*d^4*e^3 - 25*
a^4*b^4*d^3*e^4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 - 3*a^7*b*e^7)*x^3 + (3
*a*b^7*d^7 - 9*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a^4*b^4*d^4*e^3 - 35*a^
5*b^3*d^3*e^4 + 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^8*e^7)*x^2 + (3*a^2*b^
6*d^7 - 13*a^3*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^5*b^3*d^4*e^3 - 5*a^6*
b^2*d^3*e^4 + 7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x)]
```

giac [B] time = 0.29, size = 750, normalized size = 2.58

$$\frac{35\left(2Bb^2de^2+Babe^3-3Ab^2e^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^5d^5-5ab^4d^4e+10a^2b^3d^3e^2-10a^3b^2d^2e^3+5a^4bde^4-a^5e^5\right)\sqrt{-b^2d+abe}}+\frac{210(xe+d)^4Bb^4de^2-560(xe+d)^3Bb^4d^2e^2+462(xe+d)^2Bb^4d^3e^2-96(xe+d)Bb^4d^4e^2-16Bb^4d^5e^2+105(xe+d)^4Bab^3e^3-315(xe+d)^4Ab^4e^3+280(xe+d)^3Bab^3de^3+840(xe+d)^3Ab^4de^3-693(xe+d)^2Bab^3d^2e^3-693(xe+d)^2Ab^4d^2e^3+240(xe+d)Bab^3d^3e^3+144(xe+d)Ab^4d^3e^3+64Bab^3d^4e^3+16Ab^4d^4e^3+280(xe+d)^3Ba^2b^2e^4-840(xe+d)^3Aab^3e^4+1386(xe+d)^2Aab^3de^4-144(xe+d)Ba^2b^2d^2e^4-432(xe+d)Aab^3d^2e^4-96Ba^2b^2d^3e^4-64Aab^3d^3e^4+231(xe+d)^2Ba^3be^5-693(xe+d)^2Aa^2b^2e^5-48(xe+d)Ba^3bde^5+432(xe+d)Aa^2b^2de^5+64Ba^3bd^2e^5+96Aa^2b^2d^2e^5+48(xe+d)Ba^4e^6-144(xe+d)Aa^3be^6-16Ba^4de^6-64Aa^3bde^6+16Aa^4e^7}{24\left(b^5d^5-5ab^4d^4e+10a^2b^3d^3e^2-10a^3b^2d^2e^3+5a^4bde^4-a^5e^5\right)\left((xe+d)^{\frac{3}{2}}b-\sqrt{xe+d}\,bd+\sqrt{xe+d}\,ae\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/8*(2*B*b^2*d*e^2 + B*a*b*e^3 - 3*A*b^2*e^3)*arctan(sqrt(x*e + d)*b/sqrt(
-b^2*d + a*b*e))/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^
2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*sqrt(-b^2*d + a*b*e)) + 1/24*(210*(x*e
 + d)^4*B*b^4*d*e^2 - 560*(x*e + d)^3*B*b^4*d^2*e^2 + 462*(x*e + d)^2*B*b^4
*d^3*e^2 - 96*(x*e + d)*B*b^4*d^4*e^2 - 16*B*b^4*d^5*e^2 + 105*(x*e + d)^4*
B*a*b^3*e^3 - 315*(x*e + d)^4*A*b^4*e^3 + 280*(x*e + d)^3*B*a*b^3*d*e^3 + 8
40*(x*e + d)^3*A*b^4*d*e^3 - 693*(x*e + d)^2*B*a*b^3*d^2*e^3 - 693*(x*e + d
)^2*A*b^4*d^2*e^3 + 240*(x*e + d)*B*a*b^3*d^3*e^3 + 144*(x*e + d)*A*b^4*d^3
*e^3 + 64*B*a*b^3*d^4*e^3 + 16*A*b^4*d^4*e^3 + 280*(x*e + d)^3*B*a^2*b^2*e^
4 - 840*(x*e + d)^3*A*a*b^3*e^4 + 1386*(x*e + d)^2*A*a*b^3*d*e^4 - 144*(x*e
 + d)*B*a^2*b^2*d^2*e^4 - 432*(x*e + d)*A*a*b^3*d^2*e^4 - 96*B*a^2*b^2*d^3*
e^4 - 64*A*a*b^3*d^3*e^4 + 231*(x*e + d)^2*B*a^3*b*e^5 - 693*(x*e + d)^2*A*
a^2*b^2*e^5 - 48*(x*e + d)*B*a^3*b*d*e^5 + 432*(x*e + d)*A*a^2*b^2*d*e^5 +
64*B*a^3*b*d^2*e^5 + 96*A*a^2*b^2*d^2*e^5 + 48*(x*e + d)*B*a^4*e^6 - 144*(x
*e + d)*A*a^3*b*e^6 - 16*B*a^4*d*e^6 - 64*A*a^3*b*d*e^6 + 16*A*a^4*e^7)/((b
^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*
d*e^4 - a^5*e^5)*((x*e + d)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(x*e + d)*a*e
)^3)
```

maple [B] time = 0.08, size = 853, normalized size = 2.93

$$\frac{55\sqrt{ex+d}\,Aa^2b^2e^5}{8(ae-bd)^5(bex+ae)^3}-\frac{55\sqrt{ex+d}\,Aab^3de^4}{4(ae-bd)^5(bex+ae)^3}+\frac{55\sqrt{ex+d}\,Ab^4d^2e^3}{8(ae-bd)^5(bex+ae)^3}-\frac{29\sqrt{ex+d}\,Ba^3be^5}{8(ae-bd)^5(bex+ae)^3}+\frac{4\sqrt{ex+d}\,Ba^2b^2de^4}{(ae-bd)^5(bex+ae)^3}+\frac{23\sqrt{ex+d}\,Bab^3d^2e^3}{8(ae-bd)^5(bex+ae)^3}-\frac{13\sqrt{ex+d}\,Bb^4d^3e^2}{4(ae-bd)^5(bex+ae)^3}+\frac{35(ex+d)^{\frac{3}{2}}Aab^3e^4}{3(ae-bd)^5(bex+ae)^3}-\frac{35(ex+d)^{\frac{3}{2}}Ab^4de^3}{3(ae-bd)^5(bex+ae)^3}-\frac{17(ex+d)^{\frac{3}{2}}Ba^2b^2e^4}{3(ae-bd)^5(bex+ae)^3}-\frac{(ex+d)^{\frac{3}{2}}Bab^3de^3}{3(ae-bd)^5(bex+ae)^3}+\frac{6(ex+d)^{\frac{3}{2}}Bb^4d^2e^2}{(ae-bd)^5(bex+ae)^3}+\frac{41(ex+d)^{\frac{5}{2}}Ab^4e^3}{8(ae-bd)^5(bex+ae)^3}-\frac{19(ex+d)^{\frac{5}{2}}Bab^3e^3}{8(ae-bd)^5(bex+ae)^3}-\frac{11(ex+d)^{\frac{5}{2}}Bb^4de^2}{4(ae-bd)^5(bex+ae)^3}+\frac{105Ab^2e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8(ae-bd)^5\sqrt{(ae-bd)b}}-\frac{35Babe^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8(ae-bd)^5\sqrt{(ae-bd)b}}-\frac{35Bb^2de^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4(ae-bd)^5\sqrt{(ae-bd)b}}+\frac{8Abe^3}{(ae-bd)^5\sqrt{ex+d}}-\frac{2Bae^3}{(ae-bd)^5\sqrt{ex+d}}-\frac{6Bbde^2}{(ae-bd)^5\sqrt{ex+d}}-\frac{2Ae^3}{3(ae-bd)^4(ex+d)^{\frac{3}{2}}}+\frac{2Bde^2}{3(ae-bd)^4(ex+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 41/8*e^3/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A-19/8*e^3/(a*e-b*d)^5
*b^3/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a-11/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3
*(e*x+d)^(5/2)*B*d+35/3*e^4/(a*e-b*d)^5*b^3/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a
-35/3*e^3/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*d-17/3*e^4/(a*e-b*d
)^5*b^2/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2-1/3*e^3/(a*e-b*d)^5*b^3/(b*e*x+a*
e)^3*B*(e*x+d)^(3/2)*a*d+6*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2
)*d^2+55/8*e^5/(a*e-b*d)^5*b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2-55/4*e^4/(
a*e-b*d)^5*b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a*d+55/8*e^3/(a*e-b*d)^5*b^4/(
b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^2-29/8*e^5/(a*e-b*d)^5*b/(b*e*x+a*e)^3*(e*x+
d)^(1/2)*B*a^3+23/8*e^3/(a*e-b*d)^5*b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^2
```

```
-13/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d^3+4*e^4/(a*e-b*d)
^5*b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^2*d+105/8*e^3/(a*e-b*d)^5*b^2/((a*e-
b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-35/8*e^3/(a*e-b
*d)^5*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B
-35/4*e^2/(a*e-b*d)^5*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*B*d-2/3*e^3/(a*e-b*d)^4/(e*x+d)^(3/2)*A+2/3*e^2/(a*e-b*d)^4/
(e*x+d)^(3/2)*B*d+8*e^3/(a*e-b*d)^5/(e*x+d)^(1/2)*A*b-2*e^3/(a*e-b*d)^5/(e*
x+d)^(1/2)*a*B-6*e^2/(a*e-b*d)^5/(e*x+d)^(1/2)*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.51, size = 483, normalized size = 1.66

$$-\frac{\frac{2\left(A e^3-B d e^2\right)}{3(a e-b d)}+\frac{77 (d+e x)^2\left(-3 A b^2 e^3+2 B d b^2 e^2+B a b e^3\right)}{8(a e-b d)^3}+\frac{35 (d+e x)^3\left(-3 A b^3 e^3+2 B d b^3 e^2+B a b^2 e^3\right)}{3(a e-b d)^4}+\frac{2 (d+e x)\left(B a e^3-3 A b e^3+2 B b d e^2\right)}{(a e-b d)^2}+\frac{35 b^3 (d+e x)^4\left(B a e^3-3 A b e^3+2 B b d e^2\right)}{8(a e-b d)^5}}{(d+e x)^{3/2}\left(a^3 e^3-3 a^2 b d e^2+3 a b^2 d^2 e-b^3 d^3\right)+b^3 (d+e x)^{9/2}-\left(3 b^3 d-3 a b^2 e\right)(d+e x)^{7/2}+(d+e x)^{5/2}\left(3 a^2 b e^2-6 a b^2 d e+3 b^3 d^2\right)}-\frac{35 \sqrt{b}\, e^2 \operatorname{atan}\left(\frac{\sqrt{b}\, e^2 \sqrt{d+e x}\,(B a e-3 A b e+2 B b d)\left(a^5 e^5-5 a^4 b d e^4+10 a^3 b^2 d^2 e^3-10 a^2 b^3 d^3 e^2+5 a b^4 d^4 e-b^5 d^5\right)}{(a e-b d)^{11/2}\left(B a e^3-3 A b e^3+2 B b d e^2\right)}\right)(B a e-3 A b e+2 B b d)}{8 (a e-b d)^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*(A*e^3 - B*d*e^2))/(3*(a*e - b*d)) + (77*(d + e*x)^2*(B*a*b*e^3 - 3*A
*b^2*e^3 + 2*B*b^2*d*e^2))/(8*(a*e - b*d)^3) + (35*(d + e*x)^3*(B*a*b^2*e^3
 - 3*A*b^3*e^3 + 2*B*b^3*d*e^2))/(3*(a*e - b*d)^4) + (2*(d + e*x)*(B*a*e^3
- 3*A*b*e^3 + 2*B*b*d*e^2))/(a*e - b*d)^2 + (35*b^3*(d + e*x)^4*(B*a*e^3 -
3*A*b*e^3 + 2*B*b*d*e^2))/(8*(a*e - b*d)^5))/((d + e*x)^(3/2)*(a^3*e^3 - b^
3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + b^3*(d + e*x)^(9/2) - (3*b^3*d - 3
*a*b^2*e)*(d + e*x)^(7/2) + (d + e*x)^(5/2)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*
b^2*d*e)) - (35*b^(1/2)*e^2*atan((b^(1/2)*e^2*(d + e*x)^(1/2)*(B*a*e - 3*A*
b*e + 2*B*b*d)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3
 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/((a*e - b*d)^(11/2)*(B*a*e^3 - 3*A*b*e^3
 + 2*B*b*d*e^2)))*(B*a*e - 3*A*b*e + 2*B*b*d))/(8*(a*e - b*d)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1604 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=339

$$-\frac{21b^{3/2}e^2(5aBe-11Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{13/2}}+\frac{21be^2(5aBe-11Abe+6bBd)}{8\sqrt{d+ex}\,(bd-ae)^6}+\frac{7e^2(5aBe-11Abe+6bBd)}{8(d+ex)^{3/2}(bd-ae)^5}+$$

Rubi [A] time = 0.38, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{21b^{3/2}e^2(5aBe-11Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{13/2}}+\frac{21be^2(5aBe-11Abe+6bBd)}{8\sqrt{d+ex}\,(bd-ae)^6}+\frac{7e^2(5aBe-11Abe+6bBd)}{8(d+ex)^{3/2}(bd-ae)^5}+\frac{21e^2(5aBe-11Abe+6bBd)}{40b(d+ex)^{5/2}(bd-ae)^4}+\frac{3e(5aBe-11Abe+6bBd)}{8b(a+bx)(d+ex)^{5/2}(bd-ae)^3}-\frac{5aBe-11Abe+6bBd}{12b(a+bx)^2(d+ex)^{5/2}(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (21*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(40*b*(b*d - a*e)^4*(d + e*x)^(5/2)
) - (A*b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3*(d + e*x)^(5/2)) - (6*b*B*d -
11*A*b*e + 5*a*B*e)/(12*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(5/2)) + (3*e
*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(8*b*(b*d - a*e)^3*(a + b*x)*(d + e*x)^(5/
2)) + (7*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(8*(b*d - a*e)^5*(d + e*x)^(3/
2)) + (21*b*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(8*(b*d - a*e)^6*Sqrt[d + e
*x]) - (21*b^(3/2)*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt
[d + e*x])/Sqrt[b*d - a*e]])/(8*(b*d - a*e)^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{A+Bx}{(a+bx)^4(d+ex)^{7/2}}\,dx$$

$$= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} + \frac{(6bBd-11Abe+5aBe)\int \frac{1}{(a+bx)^3(d\cdots}}{6b(bd-ae)}$$

$$= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{6bBd-11Abe+5aBe}{12b(bd-ae)^2(a+bx)^2(d+ex)^{5/2}} - \cdots$$

$$= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{6bBd-11Abe+5aBe}{12b(bd-ae)^2(a+bx)^2(d+ex)^{5/2}} - \cdots$$

$$= \frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{\cdots}{12b(\cdots}$$

$$= \frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{\cdots}{12b(\cdots}$$

$$= \frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{\cdots}{12b(\cdots}$$

$$= \frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{\cdots}{12b(\cdots}$$

$$= \frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}} - \frac{\cdots}{12b(\cdots}$$

Mathematica [C] time = 0.07, size = 100, normalized size = 0.29

$$\frac{\frac{5aB-5Ab}{(a+bx)^3} - \frac{e^2(-5aBe+11Abe-6bBd)\,{}_2F_1\left(-\frac{5}{2},3;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}}{15b(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-5*A*b + 5*a*B)/(a + b*x)^3 - (e^2*(-6*b*B*d + 11*A*b*e - 5*a*B*e)*Hyperg
eometric2F1[-5/2, 3, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^3)/(15*b
*(b*d - a*e)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 2.42, size = 900, normalized size = 2.65

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),
x]
```

```
[Out] (e^2*(48*b^5*B*d^6 - 48*A*b^5*d^5*e - 240*a*b^4*B*d^5*e + 240*a*A*b^4*d^4*e
^2 + 480*a^2*b^3*B*d^4*e^2 - 480*a^2*A*b^3*d^3*e^3 - 480*a^3*b^2*B*d^3*e^3
+ 480*a^3*A*b^2*d^2*e^4 + 240*a^4*b*B*d^2*e^4 - 240*a^4*A*b*d*e^5 - 48*a^5*
B*d*e^5 + 48*a^5*A*e^6 + 96*b^5*B*d^5*(d + e*x) - 176*A*b^5*d^4*e*(d + e*x)
 - 304*a*b^4*B*d^4*e*(d + e*x) + 704*a*A*b^4*d^3*e^2*(d + e*x) + 256*a^2*b^
3*B*d^3*e^2*(d + e*x) - 1056*a^2*A*b^3*d^2*e^3*(d + e*x) + 96*a^3*b^2*B*d^2
*e^3*(d + e*x) + 704*a^3*A*b^2*d*e^4*(d + e*x) - 224*a^4*b*B*d*e^4*(d + e*x
) - 176*a^4*A*b*e^5*(d + e*x) + 80*a^5*B*e^5*(d + e*x) + 864*b^5*B*d^4*(d +
 e*x)^2 - 1584*A*b^5*d^3*e*(d + e*x)^2 - 1872*a*b^4*B*d^3*e*(d + e*x)^2 + 4
752*a*A*b^4*d^2*e^2*(d + e*x)^2 + 432*a^2*b^3*B*d^2*e^2*(d + e*x)^2 - 4752*
a^2*A*b^3*d*e^3*(d + e*x)^2 + 1296*a^3*b^2*B*d*e^3*(d + e*x)^2 + 1584*a^3*A
*b^2*e^4*(d + e*x)^2 - 720*a^4*b*B*e^4*(d + e*x)^2 - 4158*b^5*B*d^3*(d + e*
x)^3 + 7623*A*b^5*d^2*e*(d + e*x)^3 + 4851*a*b^4*B*d^2*e*(d + e*x)^3 - 1524
6*a*A*b^4*d*e^2*(d + e*x)^3 + 2772*a^2*b^3*B*d*e^2*(d + e*x)^3 + 7623*a^2*A
*b^3*e^3*(d + e*x)^3 - 3465*a^3*b^2*B*e^3*(d + e*x)^3 + 5040*b^5*B*d^2*(d +
 e*x)^4 - 9240*A*b^5*d*e*(d + e*x)^4 - 840*a*b^4*B*d*e*(d + e*x)^4 + 9240*a
*A*b^4*e^2*(d + e*x)^4 - 4200*a^2*b^3*B*e^2*(d + e*x)^4 - 1890*b^5*B*d*(d +
 e*x)^5 + 3465*A*b^5*e*(d + e*x)^5 - 1575*a*b^4*B*e*(d + e*x)^5))/(120*(b*d
 - a*e)^6*(d + e*x)^(5/2)*(b*d - a*e - b*(d + e*x))^3) - (21*(6*b^(5/2)*B*d
*e^2 - 11*A*b^(5/2)*e^3 + 5*a*b^(3/2)*B*e^3)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) +
a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*(b*d - a*e)^6*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.51, size = 3685, normalized size = 10.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/240*(315*(6*B*a^3*b^2*d^4*e^2 + (5*B*a^4*b - 11*A*a^3*b^2)*d^3*e^3 + (6
*B*b^5*d*e^5 + (5*B*a*b^4 - 11*A*b^5)*e^6)*x^6 + 3*(6*B*b^5*d^2*e^4 + 11*(B
*a*b^4 - A*b^5)*d*e^5 + (5*B*a^2*b^3 - 11*A*a*b^4)*e^6)*x^5 + 3*(6*B*b^5*d^
3*e^3 + (23*B*a*b^4 - 11*A*b^5)*d^2*e^4 + 3*(7*B*a^2*b^3 - 11*A*a*b^4)*d*e^
5 + (5*B*a^3*b^2 - 11*A*a^2*b^3)*e^6)*x^4 + (6*B*b^5*d^4*e^2 + (59*B*a*b^4
- 11*A*b^5)*d^3*e^3 + 99*(B*a^2*b^3 - A*a*b^4)*d^2*e^4 + 3*(17*B*a^3*b^2 -
33*A*a^2*b^3)*d*e^5 + (5*B*a^4*b - 11*A*a^3*b^2)*e^6)*x^3 + 3*(6*B*a*b^4*d^
4*e^2 + (23*B*a^2*b^3 - 11*A*a*b^4)*d^3*e^3 + 3*(7*B*a^3*b^2 - 11*A*a^2*b^3
)*d^2*e^4 + (5*B*a^4*b - 11*A*a^3*b^2)*d*e^5)*x^2 + 3*(6*B*a^2*b^3*d^4*e^2
+ 11*(B*a^3*b^2 - A*a^2*b^3)*d^3*e^3 + (5*B*a^4*b - 11*A*a^3*b^2)*d^2*e^4)*
x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x +
d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(48*A*a^5*e^5 + 20*(B*a*b^4 + 2*A*b^
5)*d^5 - 10*(26*B*a^2*b^3 + 31*A*a*b^4)*d^4*e - 3*(851*B*a^3*b^2 - 445*A*a^
2*b^3)*d^3*e^2 - 16*(44*B*a^4*b - 173*A*a^3*b^2)*d^2*e^3 + 32*(B*a^5 - 13*A
*a^4*b)*d*e^4 - 315*(6*B*b^5*d*e^4 + (5*B*a*b^4 - 11*A*b^5)*e^5)*x^5 - 105*
(42*B*b^5*d^2*e^3 + (83*B*a*b^4 - 77*A*b^5)*d*e^4 + 8*(5*B*a^2*b^3 - 11*A*a
*b^4)*e^5)*x^4 - 21*(138*B*b^5*d^3*e^2 + (679*B*a*b^4 - 253*A*b^5)*d^2*e^3
+ 2*(334*B*a^2*b^3 - 517*A*a*b^4)*d*e^4 + 33*(5*B*a^3*b^2 - 11*A*a^2*b^3)*e
^5)*x^3 - 9*(30*B*b^5*d^4*e + (901*B*a*b^4 - 55*A*b^5)*d^3*e^2 + 2*(914*B*a
^2*b^3 - 803*A*a*b^4)*d^2*e^3 + 3*(337*B*a^3*b^2 - 671*A*a^2*b^3)*d*e^4 + 1
6*(5*B*a^4*b - 11*A*a^3*b^2)*e^5)*x^2 + (60*B*b^5*d^5 - 10*(73*B*a*b^4 + 11
*A*b^5)*d^4*e - 2*(3682*B*a^2*b^3 - 715*A*a*b^4)*d^3*e^2 - 3*(2569*B*a^3*b^
2 - 4103*A*a^2*b^3)*d^2*e^3 - 32*(52*B*a^4*b - 121*A*a^3*b^2)*d*e^4 + 16*(5
*B*a^5 - 11*A*a^4*b)*e^5)*x)*sqrt(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e
+ 15*a^5*b^4*d^7*e^2 - 20*a^6*b^3*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^
4*e^5 + a^9*d^3*e^6 + (b^9*d^6*e^3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 -
 20*a^3*b^6*d^3*e^6 + 15*a^4*b^5*d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x
^6 + 3*(b^9*d^7*e^2 - 5*a*b^8*d^6*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e
^5 - 5*a^4*b^5*d^3*e^6 + 9*a^5*b^4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)
*x^5 + 3*(b^9*d^8*e - 3*a*b^8*d^7*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*
```

```
e^4 - 30*a^4*b^5*d^4*e^5 + 19*a^5*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b
^2*d*e^8 + a^8*b*e^9)*x^4 + (b^9*d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 +
 62*a^3*b^6*d^6*e^3 - 36*a^4*b^5*d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*
d^3*e^6 - 30*a^7*b^2*d^2*e^7 + 3*a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9
- 3*a^2*b^7*d^8*e - 2*a^3*b^6*d^7*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5
*e^4 + 19*a^6*b^3*d^4*e^5 - 2*a^7*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8
)*x^2 + 3*(a^2*b^7*d^9 - 5*a^3*b^6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^
6*e^3 - 5*a^6*b^3*d^5*e^4 + 9*a^7*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e
^7)*x), -1/120*(315*(6*B*a^3*b^2*d^4*e^2 + (5*B*a^4*b - 11*A*a^3*b^2)*d^3*e
^3 + (6*B*b^5*d*e^5 + (5*B*a*b^4 - 11*A*b^5)*e^6)*x^6 + 3*(6*B*b^5*d^2*e^4
+ 11*(B*a*b^4 - A*b^5)*d*e^5 + (5*B*a^2*b^3 - 11*A*a*b^4)*e^6)*x^5 + 3*(6*B
*b^5*d^3*e^3 + (23*B*a*b^4 - 11*A*b^5)*d^2*e^4 + 3*(7*B*a^2*b^3 - 11*A*a*b^
4)*d*e^5 + (5*B*a^3*b^2 - 11*A*a^2*b^3)*e^6)*x^4 + (6*B*b^5*d^4*e^2 + (59*B
*a*b^4 - 11*A*b^5)*d^3*e^3 + 99*(B*a^2*b^3 - A*a*b^4)*d^2*e^4 + 3*(17*B*a^3
*b^2 - 33*A*a^2*b^3)*d*e^5 + (5*B*a^4*b - 11*A*a^3*b^2)*e^6)*x^3 + 3*(6*B*a
*b^4*d^4*e^2 + (23*B*a^2*b^3 - 11*A*a*b^4)*d^3*e^3 + 3*(7*B*a^3*b^2 - 11*A*
a^2*b^3)*d^2*e^4 + (5*B*a^4*b - 11*A*a^3*b^2)*d*e^5)*x^2 + 3*(6*B*a^2*b^3*d
^4*e^2 + 11*(B*a^3*b^2 - A*a^2*b^3)*d^3*e^3 + (5*B*a^4*b - 11*A*a^3*b^2)*d^
2*e^4)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b
*d - a*e))/(b*e*x + b*d)) + (48*A*a^5*e^5 + 20*(B*a*b^4 + 2*A*b^5)*d^5 - 10
*(26*B*a^2*b^3 + 31*A*a*b^4)*d^4*e - 3*(851*B*a^3*b^2 - 445*A*a^2*b^3)*d^3*
e^2 - 16*(44*B*a^4*b - 173*A*a^3*b^2)*d^2*e^3 + 32*(B*a^5 - 13*A*a^4*b)*d*e
^4 - 315*(6*B*b^5*d*e^4 + (5*B*a*b^4 - 11*A*b^5)*e^5)*x^5 - 105*(42*B*b^5*d
^2*e^3 + (83*B*a*b^4 - 77*A*b^5)*d*e^4 + 8*(5*B*a^2*b^3 - 11*A*a*b^4)*e^5)*
x^4 - 21*(138*B*b^5*d^3*e^2 + (679*B*a*b^4 - 253*A*b^5)*d^2*e^3 + 2*(334*B*
a^2*b^3 - 517*A*a*b^4)*d*e^4 + 33*(5*B*a^3*b^2 - 11*A*a^2*b^3)*e^5)*x^3 - 9
*(30*B*b^5*d^4*e + (901*B*a*b^4 - 55*A*b^5)*d^3*e^2 + 2*(914*B*a^2*b^3 - 80
3*A*a*b^4)*d^2*e^3 + 3*(337*B*a^3*b^2 - 671*A*a^2*b^3)*d*e^4 + 16*(5*B*a^4*
b - 11*A*a^3*b^2)*e^5)*x^2 + (60*B*b^5*d^5 - 10*(73*B*a*b^4 + 11*A*b^5)*d^4
*e - 2*(3682*B*a^2*b^3 - 715*A*a*b^4)*d^3*e^2 - 3*(2569*B*a^3*b^2 - 4103*A*
a^2*b^3)*d^2*e^3 - 32*(52*B*a^4*b - 121*A*a^3*b^2)*d*e^4 + 16*(5*B*a^5 - 11
*A*a^4*b)*e^5)*x)*sqrt(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e + 15*a^5*b^
4*d^7*e^2 - 20*a^6*b^3*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^4*e^5 + a^9
*d^3*e^6 + (b^9*d^6*e^3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 - 20*a^3*b^6
*d^3*e^6 + 15*a^4*b^5*d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x^6 + 3*(b^9
*d^7*e^2 - 5*a*b^8*d^6*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e^5 - 5*a^4*
b^5*d^3*e^6 + 9*a^5*b^4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)*x^5 + 3*(b
^9*d^8*e - 3*a*b^8*d^7*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*e^4 - 30*a^
4*b^5*d^4*e^5 + 19*a^5*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b^2*d*e^8 +
a^8*b*e^9)*x^4 + (b^9*d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 + 62*a^3*b^6
*d^6*e^3 - 36*a^4*b^5*d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*d^3*e^6 - 3
0*a^7*b^2*d^2*e^7 + 3*a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9 - 3*a^2*b^7
*d^8*e - 2*a^3*b^6*d^7*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5*e^4 + 19*a
^6*b^3*d^4*e^5 - 2*a^7*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8)*x^2 + 3*(
a^2*b^7*d^9 - 5*a^3*b^6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^6*e^3 - 5*a
^6*b^3*d^5*e^4 + 9*a^7*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e^7)*x)]
```

giac [B] time = 0.34, size = 779, normalized size = 2.30

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 21/8*(6*B*b^3*d*e^2 + 5*B*a*b^2*e^3 - 11*A*b^3*e^3)*arctan(sqrt(x*e + d)*b/
sqrt(-b^2*d + a*b*e))/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a
^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(-b^2*d
+ a*b*e)) + 2/15*(90*(x*e + d)^2*B*b^2*d*e^2 + 15*(x*e + d)*B*b^2*d^2*e^2 +
 3*B*b^2*d^3*e^2 + 60*(x*e + d)^2*B*a*b*e^3 - 150*(x*e + d)^2*A*b^2*e^3 - 1
```

```
0*(x*e + d)*B*a*b*d*e^3 - 20*(x*e + d)*A*b^2*d*e^3 - 6*B*a*b*d^2*e^3 - 3*A*
b^2*d^2*e^3 - 5*(x*e + d)*B*a^2*e^4 + 20*(x*e + d)*A*a*b*e^4 + 3*B*a^2*d*e^
4 + 6*A*a*b*d*e^4 - 3*A*a^2*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4
*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*(
x*e + d)^(5/2)) + 1/24*(90*(x*e + d)^(5/2)*B*b^5*d*e^2 - 192*(x*e + d)^(3/2
)*B*b^5*d^2*e^2 + 102*sqrt(x*e + d)*B*b^5*d^3*e^2 + 123*(x*e + d)^(5/2)*B*a
*b^4*e^3 - 213*(x*e + d)^(5/2)*A*b^5*e^3 - 88*(x*e + d)^(3/2)*B*a*b^4*d*e^3
 + 472*(x*e + d)^(3/2)*A*b^5*d*e^3 - 39*sqrt(x*e + d)*B*a*b^4*d^2*e^3 - 267
*sqrt(x*e + d)*A*b^5*d^2*e^3 + 280*(x*e + d)^(3/2)*B*a^2*b^3*e^4 - 472*(x*e
 + d)^(3/2)*A*a*b^4*e^4 - 228*sqrt(x*e + d)*B*a^2*b^3*d*e^4 + 534*sqrt(x*e
+ d)*A*a*b^4*d*e^4 + 165*sqrt(x*e + d)*B*a^3*b^2*e^5 - 267*sqrt(x*e + d)*A*
a^2*b^3*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^
3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*((x*e + d)*b - b*d +
a*e)^3)
```

maple [B]   time = 0.08, size = 935, normalized size = 2.76

$$-\frac{89\sqrt{ex+d}\,A a^2 b^3 e^5}{8(ae-bd)^6(bex+ae)^3}+\frac{89\sqrt{ex+d}\,A a b^4 d e^4}{4(ae-bd)^6(bex+ae)^3}-\frac{89\sqrt{ex+d}\,A b^5 d^2 e^3}{8(ae-bd)^6(bex+ae)^3}+\frac{55\sqrt{ex+d}\,B a^3 b^2 e^5}{8(ae-bd)^6(bex+ae)^3}-\frac{19\sqrt{ex+d}\,B a^2 b^3 d e^4}{2(ae-bd)^6(bex+ae)^3}-\frac{13\sqrt{ex+d}\,B a b^4 d^2 e^3}{8(ae-bd)^6(bex+ae)^3}+\frac{17\sqrt{ex+d}\,B b^5 d^3 e^2}{4(ae-bd)^6(bex+ae)^3}-\frac{59(ex+d)^{\frac{3}{2}} A a b^4 e^4}{3(ae-bd)^6(bex+ae)^3}+\frac{59(ex+d)^{\frac{3}{2}} A b^5 d e^3}{3(ae-bd)^6(bex+ae)^3}+\frac{35(ex+d)^{\frac{3}{2}} B a^2 b^3 e^4}{3(ae-bd)^6(bex+ae)^3}-\frac{11(ex+d)^{\frac{3}{2}} B a b^4 d e^3}{3(ae-bd)^6(bex+ae)^3}-\frac{8(ex+d)^{\frac{3}{2}} B b^5 d^2 e^2}{(ae-bd)^6(bex+ae)^3}-\frac{71(ex+d)^{\frac{5}{2}} A b^5 e^3}{8(ae-bd)^6(bex+ae)^3}+\frac{41(ex+d)^{\frac{5}{2}} B a b^4 e^3}{8(ae-bd)^6(bex+ae)^3}+\frac{15(ex+d)^{\frac{5}{2}} B b^5 d e^2}{4(ae-bd)^6(bex+ae)^3}-\frac{231 A b^3 e^3 \arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8(ae-bd)^6\sqrt{(ae-bd)b}}+\frac{105 B a b^2 e^3 \arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{8(ae-bd)^6\sqrt{(ae-bd)b}}+\frac{63 B b^3 d e^2 \arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4(ae-bd)^6\sqrt{(ae-bd)b}}-\frac{20 A b^2 e^3}{(ae-bd)^6\sqrt{ex+d}}+\frac{8 B a b e^3}{(ae-bd)^6\sqrt{ex+d}}+\frac{12 B b^2 d e^2}{(ae-bd)^6\sqrt{ex+d}}+\frac{8 A b e^3}{3(ae-bd)^5(ex+d)^{\frac{3}{2}}}-\frac{2 B a e^3}{3(ae-bd)^5(ex+d)^{\frac{3}{2}}}-\frac{2 B b d e^2}{(ae-bd)^5(ex+d)^{\frac{3}{2}}}-\frac{2 A e^3}{5(ae-bd)^4(ex+d)^{\frac{5}{2}}}+\frac{2 B d e^2}{5(ae-bd)^4(ex+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -2/5*e^3/(a*e-b*d)^4/(e*x+d)^(5/2)*A+2/5*e^2/(a*e-b*d)^4/(e*x+d)^(5/2)*B*d-
13/8*e^3/(a*e-b*d)^6*b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^2-11/3*e^3/(a*e-
b*d)^6*b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a*d+89/4*e^4/(a*e-b*d)^6*b^4/(b*e*
x+a*e)^3*(e*x+d)^(1/2)*A*a*d-19/2*e^4/(a*e-b*d)^6*b^3/(b*e*x+a*e)^3*(e*x+d)
^(1/2)*B*a^2*d-2/3*e^3/(a*e-b*d)^5/(e*x+d)^(3/2)*a*B-20*e^3*b^2/(a*e-b*d)^6
/(e*x+d)^(1/2)*A-89/8*e^5/(a*e-b*d)^6*b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2
-89/8*e^3/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^2+55/8*e^5/(a*e-b
*d)^6*b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^3+63/4*e^2/(a*e-b*d)^6*b^3/((a*e-
b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d+17/4*e^2/(a*e
-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d^3-8*e^2/(a*e-b*d)^6*b^5/(b*e*x+
a*e)^3*B*(e*x+d)^(3/2)*d^2+15/4*e^2/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+d)^(
5/2)*B*d+8/3*e^3/(a*e-b*d)^5/(e*x+d)^(3/2)*A*b-2*e^2/(a*e-b*d)^5/(e*x+d)^(3
/2)*B*b*d+12*e^2*b^2/(a*e-b*d)^6/(e*x+d)^(1/2)*B*d+8*e^3*b/(a*e-b*d)^6/(e*x
+d)^(1/2)*a*B-231/8*e^3/(a*e-b*d)^6*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-71/8*e^3/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+
d)^(5/2)*A+105/8*e^3/(a*e-b*d)^6*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*a*B+41/8*e^3/(a*e-b*d)^6*b^4/(b*e*x+a*e)^3*(e*x+d
)^(5/2)*B*a-59/3*e^4/(a*e-b*d)^6*b^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a+59/3*e
^3/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*d+35/3*e^4/(a*e-b*d)^6*b^3
/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B]   time = 2.65, size = 547, normalized size = 1.61

$$\frac{\frac{231\,(d+e\,x)^3\left(-11\,A\,b^3\,e^3+6\,B\,d\,b^3\,e^2+5\,B\,a\,b^2\,e^3\right)}{40\,(a\,e-b\,d)^4}-\frac{2\left(A\,e^3-B\,d\,e^2\right)}{5\,(a\,e-b\,d)}+\frac{7\,(d+e\,x)^4\left(-11\,A\,b^4\,e^3+6\,B\,d\,b^4\,e^2+5\,B\,a\,b^3\,e^3\right)}{(a\,e-b\,d)^5}-\frac{2\,(d+e\,x)\left(5\,B\,a\,e^3-11\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}{15\,(a\,e-b\,d)^2}+\frac{6\,b\,(d+e\,x)^2\left(5\,B\,a\,e^3-11\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}{5\,(a\,e-b\,d)^3}+\frac{21\,b^4\,(d+e\,x)^5\left(5\,B\,a\,e^3-11\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}{8\,(a\,e-b\,d)^6}}{(d+e\,x)^{5/2}\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)+b^3\,(d+e\,x)^{11/2}-\left(3\,b^3\,d-3\,a\,b^2\,e\right)(d+e\,x)^{9/2}+(d+e\,x)^{7/2}\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)}+\frac{21\,b^{3/2}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,(5\,B\,a\,e-11\,A\,b\,e+6\,B\,b\,d)\left(a^6\,e^6-6\,a^5\,b\,d\,e^5+15\,a^4\,b^2\,d^2\,e^4-20\,a^3\,b^3\,d^3\,e^3+15\,a^2\,b^4\,d^4\,e^2-6\,a\,b^5\,d^5\,e+b^6\,d^6\right)}{(a\,e-b\,d)^{13/2}\left(5\,B\,a\,e^3-11\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}\right)(5\,B\,a\,e-11\,A\,b\,e+6\,B\,b\,d)}{8\,(a\,e-b\,d)^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((231*(d + e*x)^3*(5*B*a*b^2*e^3 - 11*A*b^3*e^3 + 6*B*b^3*d*e^2))/(40*(a*e
- b*d)^4) - (2*(A*e^3 - B*d*e^2))/(5*(a*e - b*d)) + (7*(d + e*x)^4*(5*B*a*b
^3*e^3 - 11*A*b^4*e^3 + 6*B*b^4*d*e^2))/(a*e - b*d)^5 - (2*(d + e*x)*(5*B*a
*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2))/(15*(a*e - b*d)^2) + (6*b*(d + e*x)^2*(5*
B*a*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2))/(5*(a*e - b*d)^3) + (21*b^4*(d + e*x)^
5*(5*B*a*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2))/(8*(a*e - b*d)^6))/((d + e*x)^(5/
2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + b^3*(d + e*x)^(11/
2) - (3*b^3*d - 3*a*b^2*e)*(d + e*x)^(9/2) + (d + e*x)^(7/2)*(3*b^3*d^2 + 3
*a^2*b*e^2 - 6*a*b^2*d*e)) + (21*b^(3/2)*e^2*atan((b^(1/2)*e^2*(d + e*x)^(1
/2)*(5*B*a*e - 11*A*b*e + 6*B*b*d)*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2
- 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5))
/((a*e - b*d)^(13/2)*(5*B*a*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2)))*(5*B*a*e - 11
*A*b*e + 6*B*b*d))/(8*(a*e - b*d)^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1605 $\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=393

$$-\frac{231e^4\sqrt{bd-ae}\,(-13aBe+3Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{15/2}}+\frac{231e^4\sqrt{d+ex}\,(-13aBe+3Abe+10bBd)}{128b^7}+\frac{77e^4(a$$

Rubi [A] time = 0.36, antiderivative size = 393, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 50, 63, 208}

$$-\frac{33e^2(d+ex)^{7/2}(-13aBe+3Abe+10bBd)}{320b^4(a+bx)^2(bd-ae)}-\frac{231e^3(d+ex)^{5/2}(-13aBe+3Abe+10bBd)}{640b^5(a+bx)(bd-ae)}+\frac{77e^4(d+ex)^{3/2}(-13aBe+3Abe+10bBd)}{128b^6(bd-ae)}+\frac{231e^4\sqrt{d+ex}\,(-13aBe+3Abe+10bBd)}{128b^7}-\frac{231e^4\sqrt{bd-ae}\,(-13aBe+3Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{15/2}}-\frac{(d+ex)^{11/2}(-13aBe+3Abe+10bBd)}{40b^2(a+bx)^4(bd-ae)}-\frac{11e(d+ex)^{9/2}(-13aBe+3Abe+10bBd)}{240b^3(a+bx)^3(bd-ae)}-\frac{(d+ex)^{13/2}(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (231*e^4*(10*b*B*d + 3*A*b*e - 13*a*B*e)*Sqrt[d + e*x])/(128*b^7) + (77*e^4
*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d + e*x)^(3/2))/(128*b^6*(b*d - a*e)) - (
231*e^3*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d + e*x)^(5/2))/(640*b^5*(b*d - a*
e)*(a + b*x)) - (33*e^2*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d + e*x)^(7/2))/(3
20*b^4*(b*d - a*e)*(a + b*x)^2) - (11*e*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d
+ e*x)^(9/2))/(240*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d + 3*A*b*e - 13
*a*B*e)*(d + e*x)^(11/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(
d + e*x)^(13/2))/(5*b*(b*d - a*e)*(a + b*x)^5) - (231*e^4*Sqrt[b*d - a*e]*(
10*b*B*d + 3*A*b*e - 13*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a
*e]])/(128*b^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{11/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{13/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd+3Abe-13aBe)\int \frac{(d+ex)^{11/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd+3Abe-13aBe)(d+ex)^{11/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{13/2}}{5b(bd-ae)(a+bx)^5} + \frac{(11e(10bBd+3 \ldots}{8 \ldots}$$

$$= -\frac{11e(10bBd+3Abe-13aBe)(d+ex)^{9/2}}{240b^3(bd-ae)(a+bx)^3} - \frac{(10bBd+3Abe-13aBe)(d+ex)^{11/2}}{40b^2(bd-ae)(a+bx)^4} \ldots$$

$$= -\frac{33e^2(10bBd+3Abe-13aBe)(d+ex)^{7/2}}{320b^4(bd-ae)(a+bx)^2} - \frac{11e(10bBd+3Abe-13aBe)(d+ex) \ldots}{240b^3(bd-ae)(a+bx)^3}$$

$$= -\frac{231e^3(10bBd+3Abe-13aBe)(d+ex)^{5/2}}{640b^5(bd-ae)(a+bx)} - \frac{33e^2(10bBd+3Abe-13aBe)(d+e \ldots}{320b^4(bd-ae)(a+bx)^2}$$

$$= \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^{3/2}}{128b^6(bd-ae)} - \frac{231e^3(10bBd+3Abe-13aBe)(d+ex \ldots}{640b^5(bd-ae)(a+bx)}$$

$$= \frac{231e^4(10bBd+3Abe-13aBe)\sqrt{d+ex}}{128b^7} + \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^3 \ldots}{128b^6(bd-ae)}$$

$$= \frac{231e^4(10bBd+3Abe-13aBe)\sqrt{d+ex}}{128b^7} + \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^3 \ldots}{128b^6(bd-ae)}$$

$$= \frac{231e^4(10bBd+3Abe-13aBe)\sqrt{d+ex}}{128b^7} + \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^3 \ldots}{128b^6(bd-ae)}$$

Mathematica [C] time = 0.08, size = 100, normalized size = 0.25

$$\frac{(d+ex)^{13/2}\left(\frac{13(aB-Ab)}{(a+bx)^5} - \frac{e^4(-13aBe+3Abe+10bBd)\,{}_2F_1\left(5,\frac{13}{2};\frac{15}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}\right)}{65b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(13/2)*((13*(-(A*b) + a*B))/(a + b*x)^5 - (e^4*(10*b*B*d + 3*A*b
*e - 13*a*B*e)*Hypergeometric2F1[5, 13/2, 15/2, (b*(d + e*x))/(b*d - a*e)])
/(b*d - a*e)^5))/(65*b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 3.80, size = 1180, normalized size = 3.00

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3
,x]
```

```
[Out] (34650*b^6*B*d^6*e^4*Sqrt[d + e*x] + 10395*A*b^6*d^5*e^5*Sqrt[d + e*x] - 21
8295*a*b^5*B*d^5*e^5*Sqrt[d + e*x] - 51975*a*A*b^5*d^4*e^6*Sqrt[d + e*x] +
571725*a^2*b^4*B*d^4*e^6*Sqrt[d + e*x] + 103950*a^2*A*b^4*d^3*e^7*Sqrt[d +
e*x] - 796950*a^3*b^3*B*d^3*e^7*Sqrt[d + e*x] - 103950*a^3*A*b^3*d^2*e^8*Sq
rt[d + e*x] + 623700*a^4*b^2*B*d^2*e^8*Sqrt[d + e*x] + 51975*a^4*A*b^2*d*e^
9*Sqrt[d + e*x] - 259875*a^5*b*B*d*e^9*Sqrt[d + e*x] - 10395*a^5*A*b*e^10*S
qrt[d + e*x] + 45045*a^6*B*e^10*Sqrt[d + e*x] - 161700*b^6*B*d^5*e^4*(d + e
*x)^(3/2) - 48510*A*b^6*d^4*e^5*(d + e*x)^(3/2) + 857010*a*b^5*B*d^4*e^5*(d
 + e*x)^(3/2) + 194040*a*A*b^5*d^3*e^6*(d + e*x)^(3/2) - 1811040*a^2*b^4*B*
d^3*e^6*(d + e*x)^(3/2) - 291060*a^2*A*b^4*d^2*e^7*(d + e*x)^(3/2) + 190806
0*a^3*b^3*B*d^2*e^7*(d + e*x)^(3/2) + 194040*a^3*A*b^3*d*e^8*(d + e*x)^(3/2
) - 1002540*a^4*b^2*B*d*e^8*(d + e*x)^(3/2) - 48510*a^4*A*b^2*e^9*(d + e*x)
^(3/2) + 210210*a^5*b*B*e^9*(d + e*x)^(3/2) + 295680*b^6*B*d^4*e^4*(d + e*x
)^(5/2) + 88704*A*b^6*d^3*e^5*(d + e*x)^(5/2) - 1271424*a*b^5*B*d^3*e^5*(d
+ e*x)^(5/2) - 266112*a*A*b^5*d^2*e^6*(d + e*x)^(5/2) + 2040192*a^2*b^4*B*d
^2*e^6*(d + e*x)^(5/2) + 266112*a^2*A*b^4*d*e^7*(d + e*x)^(5/2) - 1448832*a
^3*b^3*B*d*e^7*(d + e*x)^(5/2) - 88704*a^3*A*b^3*e^8*(d + e*x)^(5/2) + 3843
84*a^4*b^2*B*e^8*(d + e*x)^(5/2) - 260700*b^6*B*d^3*e^4*(d + e*x)^(7/2) - 7
8210*A*b^6*d^2*e^5*(d + e*x)^(7/2) + 860310*a*b^5*B*d^2*e^5*(d + e*x)^(7/2)
 + 156420*a*A*b^5*d*e^6*(d + e*x)^(7/2) - 938520*a^2*b^4*B*d*e^6*(d + e*x)^
(7/2) - 78210*a^2*A*b^4*e^7*(d + e*x)^(7/2) + 338910*a^3*b^3*B*e^7*(d + e*x
)^(7/2) + 106150*b^6*B*d^2*e^4*(d + e*x)^(9/2) + 31845*A*b^6*d*e^5*(d + e*x
)^(9/2) - 244145*a*b^5*B*d*e^5*(d + e*x)^(9/2) - 31845*a*A*b^5*e^6*(d + e*x
)^(9/2) + 137995*a^2*b^4*B*e^6*(d + e*x)^(9/2) - 12800*b^6*B*d*e^4*(d + e*x
)^(11/2) - 3840*A*b^6*e^5*(d + e*x)^(11/2) + 16640*a*b^5*B*e^5*(d + e*x)^(1
1/2) - 1280*b^6*B*e^4*(d + e*x)^(13/2))/(1920*b^7*(b*d - a*e - b*(d + e*x))
^5) - (231*(10*b^2*B*d^2*e^4 + 3*A*b^2*d*e^5 - 23*a*b*B*d*e^5 - 3*a*A*b*e^6
 + 13*a^2*B*e^6)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a
*e)])/(128*b^(15/2)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.49, size = 1862, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fric
as")
```

```
[Out] [-1/3840*(3465*(10*B*a^5*b*d*e^4 - (13*B*a^6 - 3*A*a^5*b)*e^5 + (10*B*b^6*d
*e^4 - (13*B*a*b^5 - 3*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (13*B*a^2*b^
4 - 3*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (13*B*a^3*b^3 - 3*A*a^2*
b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (13*B*a^4*b^2 - 3*A*a^3*b^3)*e^5)*
x^2 + 5*(10*B*a^4*b^2*d*e^4 - (13*B*a^5*b - 3*A*a^4*b^2)*e^5)*x)*sqrt((b*d
- a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))
/(b*x + a)) - 2*(1280*B*b^6*e^5*x^6 - 96*(B*a*b^5 + 4*A*b^6)*d^5 - 176*(2*B
*a^2*b^4 + 3*A*a*b^5)*d^4*e - 396*(3*B*a^3*b^3 + 2*A*a^2*b^4)*d^3*e^2 - 138
6*(4*B*a^4*b^2 + A*a^3*b^3)*d^2*e^3 + 1155*(43*B*a^5*b - 3*A*a^4*b^2)*d*e^4
```

```
 - 3465*(13*B*a^6 - 3*A*a^5*b)*e^5 + 1280*(16*B*b^6*d*e^4 - (13*B*a*b^5 - 3
*A*b^6)*e^5)*x^5 - 5*(4590*B*b^6*d^2*e^3 - (32189*B*a*b^5 - 2529*A*b^6)*d*e
^4 + 2123*(13*B*a^2*b^4 - 3*A*a*b^5)*e^5)*x^4 - 10*(1030*B*b^6*d^3*e^2 + 3*
(1671*B*a*b^5 + 359*A*b^6)*d^2*e^3 - 22*(1757*B*a^2*b^4 - 132*A*a*b^5)*d*e^
4 + 2607*(13*B*a^3*b^3 - 3*A*a^2*b^4)*e^5)*x^3 - 2*(1640*B*b^6*d^4*e + 2*(2
759*B*a*b^5 + 1686*A*b^6)*d^3*e^2 + 33*(797*B*a^2*b^4 + 183*A*a*b^5)*d^2*e^
3 - 33*(6547*B*a^3*b^3 - 477*A*a^2*b^4)*d*e^4 + 14784*(13*B*a^4*b^2 - 3*A*a
^3*b^3)*e^5)*x^2 - 2*(240*B*b^6*d^5 + 8*(107*B*a*b^5 + 153*A*b^6)*d^4*e + 2
2*(131*B*a^2*b^4 + 84*A*a*b^5)*d^3*e^2 + 99*(137*B*a^3*b^3 + 33*A*a^2*b^4)*
d^2*e^3 - 462*(253*B*a^4*b^2 - 18*A*a^3*b^3)*d*e^4 + 8085*(13*B*a^5*b - 3*A
*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3
 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7), -1/1920*(3465*(10*B*a^5*b*d*e^4
 - (13*B*a^6 - 3*A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (13*B*a*b^5 - 3*A*b^6)*e^
5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (13*B*a^2*b^4 - 3*A*a*b^5)*e^5)*x^4 + 10*(10
*B*a^2*b^4*d*e^4 - (13*B*a^3*b^3 - 3*A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3
*d*e^4 - (13*B*a^4*b^2 - 3*A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (1
3*B*a^5*b - 3*A*a^4*b^2)*e^5)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)
*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (1280*B*b^6*e^5*x^6 - 96*(B*a*b^5 +
4*A*b^6)*d^5 - 176*(2*B*a^2*b^4 + 3*A*a*b^5)*d^4*e - 396*(3*B*a^3*b^3 + 2*A
*a^2*b^4)*d^3*e^2 - 1386*(4*B*a^4*b^2 + A*a^3*b^3)*d^2*e^3 + 1155*(43*B*a^5
*b - 3*A*a^4*b^2)*d*e^4 - 3465*(13*B*a^6 - 3*A*a^5*b)*e^5 + 1280*(16*B*b^6*
d*e^4 - (13*B*a*b^5 - 3*A*b^6)*e^5)*x^5 - 5*(4590*B*b^6*d^2*e^3 - (32189*B*
a*b^5 - 2529*A*b^6)*d*e^4 + 2123*(13*B*a^2*b^4 - 3*A*a*b^5)*e^5)*x^4 - 10*(
1030*B*b^6*d^3*e^2 + 3*(1671*B*a*b^5 + 359*A*b^6)*d^2*e^3 - 22*(1757*B*a^2*
b^4 - 132*A*a*b^5)*d*e^4 + 2607*(13*B*a^3*b^3 - 3*A*a^2*b^4)*e^5)*x^3 - 2*(
1640*B*b^6*d^4*e + 2*(2759*B*a*b^5 + 1686*A*b^6)*d^3*e^2 + 33*(797*B*a^2*b^
4 + 183*A*a*b^5)*d^2*e^3 - 33*(6547*B*a^3*b^3 - 477*A*a^2*b^4)*d*e^4 + 1478
4*(13*B*a^4*b^2 - 3*A*a^3*b^3)*e^5)*x^2 - 2*(240*B*b^6*d^5 + 8*(107*B*a*b^5
 + 153*A*b^6)*d^4*e + 22*(131*B*a^2*b^4 + 84*A*a*b^5)*d^3*e^2 + 99*(137*B*a
^3*b^3 + 33*A*a^2*b^4)*d^2*e^3 - 462*(253*B*a^4*b^2 - 18*A*a^3*b^3)*d*e^4 +
 8085*(13*B*a^5*b - 3*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(b^12*x^5 + 5*a*b^1
1*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7)]
```

giac [B] time = 0.36, size = 1066, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac
")
```

```
[Out] 231/128*(10*B*b^2*d^2*e^4 - 23*B*a*b*d*e^5 + 3*A*b^2*d*e^5 + 13*B*a^2*e^6 -
 3*A*a*b*e^6)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a
*b*e)*b^7) - 1/1920*(22950*(x*e + d)^(9/2)*B*b^6*d^2*e^4 - 81500*(x*e + d)^
(7/2)*B*b^6*d^3*e^4 + 110080*(x*e + d)^(5/2)*B*b^6*d^4*e^4 - 66980*(x*e + d
)^(3/2)*B*b^6*d^5*e^4 + 15450*sqrt(x*e + d)*B*b^6*d^6*e^4 - 58545*(x*e + d)
^(9/2)*B*a*b^5*d*e^5 + 12645*(x*e + d)^(9/2)*A*b^6*d*e^5 + 284310*(x*e + d)
^(7/2)*B*a*b^5*d^2*e^5 - 39810*(x*e + d)^(7/2)*A*b^6*d^2*e^5 - 490624*(x*e
+ d)^(5/2)*B*a*b^5*d^3*e^5 + 50304*(x*e + d)^(5/2)*A*b^6*d^3*e^5 + 364210*(
x*e + d)^(3/2)*B*a*b^5*d^4*e^5 - 29310*(x*e + d)^(3/2)*A*b^6*d^4*e^5 - 9925
5*sqrt(x*e + d)*B*a*b^5*d^5*e^5 + 6555*sqrt(x*e + d)*A*b^6*d^5*e^5 + 35595*
(x*e + d)^(9/2)*B*a^2*b^4*e^6 - 12645*(x*e + d)^(9/2)*A*a*b^5*e^6 - 324120*
(x*e + d)^(7/2)*B*a^2*b^4*d*e^6 + 79620*(x*e + d)^(7/2)*A*a*b^5*d*e^6 + 811
392*(x*e + d)^(5/2)*B*a^2*b^4*d^2*e^6 - 150912*(x*e + d)^(5/2)*A*a*b^5*d^2*
e^6 - 787040*(x*e + d)^(3/2)*B*a^2*b^4*d^3*e^6 + 117240*(x*e + d)^(3/2)*A*a
*b^5*d^3*e^6 + 264525*sqrt(x*e + d)*B*a^2*b^4*d^4*e^6 - 32775*sqrt(x*e + d)
*A*a*b^5*d^4*e^6 + 121310*(x*e + d)^(7/2)*B*a^3*b^3*e^7 - 39810*(x*e + d)^(
7/2)*A*a^2*b^4*e^7 - 591232*(x*e + d)^(5/2)*B*a^3*b^3*d*e^7 + 150912*(x*e +
 d)^(5/2)*A*a^2*b^4*d*e^7 + 845660*(x*e + d)^(3/2)*B*a^3*b^3*d^2*e^7 - 1758
60*(x*e + d)^(3/2)*A*a^2*b^4*d^2*e^7 - 374550*sqrt(x*e + d)*B*a^3*b^3*d^3*e
```

```
^7 + 65550*sqrt(x*e + d)*A*a^2*b^4*d^3*e^7 + 160384*(x*e + d)^(5/2)*B*a^4*b
^2*e^8 - 50304*(x*e + d)^(5/2)*A*a^3*b^3*e^8 - 452140*(x*e + d)^(3/2)*B*a^4
*b^2*d*e^8 + 117240*(x*e + d)^(3/2)*A*a^3*b^3*d*e^8 + 297300*sqrt(x*e + d)*
B*a^4*b^2*d^2*e^8 - 65550*sqrt(x*e + d)*A*a^3*b^3*d^2*e^8 + 96290*(x*e + d)
^(3/2)*B*a^5*b*e^9 - 29310*(x*e + d)^(3/2)*A*a^4*b^2*e^9 - 125475*sqrt(x*e
+ d)*B*a^5*b*d*e^9 + 32775*sqrt(x*e + d)*A*a^4*b^2*d*e^9 + 22005*sqrt(x*e +
 d)*B*a^6*e^10 - 6555*sqrt(x*e + d)*A*a^5*b*e^10)/(((x*e + d)*b - b*d + a*e
)^5*b^7) + 2/3*((x*e + d)^(3/2)*B*b^12*e^4 + 15*sqrt(x*e + d)*B*b^12*d*e^4
- 18*sqrt(x*e + d)*B*a*b^11*e^5 + 3*sqrt(x*e + d)*A*b^12*e^5)/b^18
```

maple [B] time = 0.09, size = 1633, normalized size = 4.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3*e^4/b^6*B*(e*x+d)^(3/2)+2*e^5/b^6*A*(e*x+d)^(1/2)-12*e^5/b^7*a*B*(e*x+d
)^(1/2)+10*e^4/b^6*B*d*(e*x+d)^(1/2)+977/64*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(3/
2)*A*d^4-9629/192*e^9/b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^5-437/128*e^5/b/(
b*e*x+a*e)^5*(e*x+d)^(1/2)*A*d^5+437/128*e^10/b^6/(b*e*x+a*e)^5*(e*x+d)^(1/
2)*A*a^5+1327/64*e^7/b^3/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a^2-131/5*e^5/b/(b*e
*x+a*e)^5*(e*x+d)^(5/2)*A*d^3-1253/15*e^8/b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B
*a^4+977/64*e^9/b^5/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^4+3003/128*e^6/b^7/((a*
e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^2-1467/128*
e^10/b^7/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^6+131/5*e^8/b^4/(b*e*x+a*e)^5*(e*x
+d)^(5/2)*A*a^3-693/128*e^6/b^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*A*a+693/128*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d-172/3*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B
*d^4+3349/96*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*d^5-515/64*e^4/b/(b*e*x+a*
e)^5*(e*x+d)^(1/2)*B*d^6+4075/96*e^4/b/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^3+13
27/64*e^5/b/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*d^2+843/128*e^6/b^2/(b*e*x+a*e)^5
*(e*x+d)^(9/2)*A*a-843/128*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*A*d-2373/128*e
^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*a^2-12131/192*e^7/b^4/(b*e*x+a*e)^5*B*
(e*x+d)^(7/2)*a^3+1155/64*e^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)*B*d^2-765/64*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*d^2
-977/16*e^6/b^2/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a*d^3+22607/96*e^8/b^5/(b*e*x
+a*e)^5*(e*x+d)^(3/2)*B*a^4*d-42283/96*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*
B*a^3*d^2+4919/12*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^2*d^3-36421/192*e
^5/b^2/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a*d^4+2185/128*e^6/b^2/(b*e*x+a*e)^5*(
e*x+d)^(1/2)*A*a*d^4+12485/64*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^3
-17635/128*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*d^4+6617/128*e^5/b^2/(
b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a*d^5-5313/128*e^5/b^6/((a*e-b*d)*b)^(1/2)*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d+3903/128*e^5/b^2/(b*e*x+a*e)
^5*(e*x+d)^(9/2)*B*a*d-2185/64*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*d^
3-2185/128*e^9/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4*d+2185/64*e^8/b^4/(b*e
*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d^2-4955/32*e^8/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/
2)*B*a^4*d^2+8365/128*e^9/b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5*d-1327/32*e
^6/b^2/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a*d+2701/16*e^6/b^3/(b*e*x+a*e)^5*B*(e
*x+d)^(7/2)*a^2*d-9477/64*e^5/b^2/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a*d^2-393/5
*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2*d+393/5*e^6/b^2/(b*e*x+a*e)^5*(e
*x+d)^(5/2)*A*a*d^2+4619/15*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^3*d-211
3/5*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d^2+3833/15*e^5/b^2/(b*e*x+a*
e)^5*(e*x+d)^(5/2)*B*a*d^3-977/16*e^8/b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^3
*d+2931/32*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^2*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.48, size = 996, normalized size = 2.53

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((2*A*e^5 - 2*B*d*e^4)/b^6 + (2*B*e^4*(6*b^6*d - 6*a*b^5*e))/b^12)*(d + e*x
)^(1/2) - ((d + e*x)^(5/2)*((1253*B*a^4*b^2*e^8)/15 - (131*A*a^3*b^3*e^8)/5
 + (131*A*b^6*d^3*e^5)/5 + (172*B*b^6*d^4*e^4)/3 - (393*A*a*b^5*d^2*e^6)/5
+ (393*A*a^2*b^4*d*e^7)/5 - (3833*B*a*b^5*d^3*e^5)/15 - (4619*B*a^3*b^3*d*e
^7)/15 + (2113*B*a^2*b^4*d^2*e^6)/5) - (d + e*x)^(3/2)*((977*A*a^4*b^2*e^9)
/64 - (9629*B*a^5*b*e^9)/192 + (977*A*b^6*d^4*e^5)/64 + (3349*B*b^6*d^5*e^4
)/96 - (977*A*a*b^5*d^3*e^6)/16 - (977*A*a^3*b^3*d*e^8)/16 - (36421*B*a*b^5
*d^4*e^5)/192 + (22607*B*a^4*b^2*d*e^8)/96 + (2931*A*a^2*b^4*d^2*e^7)/32 +
(4919*B*a^2*b^4*d^3*e^6)/12 - (42283*B*a^3*b^3*d^2*e^7)/96) - (d + e*x)^(7/
2)*((1327*A*a^2*b^4*e^7)/64 - (12131*B*a^3*b^3*e^7)/192 + (1327*A*b^6*d^2*e
^5)/64 + (4075*B*b^6*d^3*e^4)/96 - (9477*B*a*b^5*d^2*e^5)/64 + (2701*B*a^2*
b^4*d*e^6)/16 - (1327*A*a*b^5*d*e^6)/32) + (d + e*x)^(1/2)*((1467*B*a^6*e^1
0)/128 - (437*A*a^5*b*e^10)/128 + (437*A*b^6*d^5*e^5)/128 + (515*B*b^6*d^6*
e^4)/64 - (2185*A*a*b^5*d^4*e^6)/128 + (2185*A*a^4*b^2*d*e^9)/128 - (6617*B
*a*b^5*d^5*e^5)/128 + (2185*A*a^2*b^4*d^3*e^7)/64 - (2185*A*a^3*b^3*d^2*e^8
)/64 + (17635*B*a^2*b^4*d^4*e^6)/128 - (12485*B*a^3*b^3*d^3*e^7)/64 + (4955
*B*a^4*b^2*d^2*e^8)/32 - (8365*B*a^5*b*d*e^9)/128) + (d + e*x)^(9/2)*((843*
A*b^6*d*e^5)/128 - (843*A*a*b^5*e^6)/128 + (2373*B*a^2*b^4*e^6)/128 + (765*
B*b^6*d^2*e^4)/64 - (3903*B*a*b^5*d*e^5)/128))/((d + e*x)*(5*b^12*d^4 + 5*a
^4*b^8*e^4 - 20*a^3*b^9*d*e^3 + 30*a^2*b^10*d^2*e^2 - 20*a*b^11*d^3*e) - (d
 + e*x)^2*(10*b^12*d^3 - 10*a^3*b^9*e^3 + 30*a^2*b^10*d*e^2 - 30*a*b^11*d^2
*e) + b^12*(d + e*x)^5 - (5*b^12*d - 5*a*b^11*e)*(d + e*x)^4 - b^12*d^5 + (
d + e*x)^3*(10*b^12*d^2 + 10*a^2*b^10*e^2 - 20*a*b^11*d*e) + a^5*b^7*e^5 -
5*a^4*b^8*d*e^4 - 10*a^2*b^10*d^3*e^2 + 10*a^3*b^9*d^2*e^3 + 5*a*b^11*d^4*e
) + (2*B*e^4*(d + e*x)^(3/2))/(3*b^6) + (e^4*atan((b^(1/2)*(d + e*x)^(1/2)*
1i)/(b*d - a*e)^(1/2))*(b*d - a*e)^(1/2)*(3*A*b*e - 13*B*a*e + 10*B*b*d)*23
1i)/(128*b^(15/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(11/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1606 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=352

$$-\frac{63e^4(-11aBe+Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{13/2}\sqrt{bd-ae}}+\frac{63e^4\sqrt{d+ex}\,(-11aBe+Abe+10bBd)}{128b^6(bd-ae)}-\frac{21e^3(d+ex)^{3/2}(-11a}{128b^5(a+b}$$

Rubi [A] time = 0.30, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = $\{27, 78, 47, 50, 63, 208\}$

$$-\frac{21e^2(d+ex)^{5/2}(-11aBe+Abe+10bBd)}{320b^4(a+bx)^2(bd-ae)}-\frac{21e^3(d+ex)^{3/2}(-11aBe+Abe+10bBd)}{128b^5(a+bx)(bd-ae)}+\frac{63e^4\sqrt{d+ex}\,(-11aBe+Abe+10bBd)}{128b^6(bd-ae)}-\frac{63e^4(-11aBe+Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{13/2}\sqrt{bd-ae}}-\frac{(d+ex)^{9/2}(-11aBe+Abe+10bBd)}{40b^2(a+bx)^4(bd-ae)}-\frac{3e(d+ex)^{7/2}(-11aBe+Abe+10bBd)}{80b^3(a+bx)^3(bd-ae)}-\frac{(d+ex)^{11/2}(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (63*e^4*(10*b*B*d + A*b*e - 11*a*B*e)*Sqrt[d + e*x])/(128*b^6*(b*d - a*e))
- (21*e^3*(10*b*B*d + A*b*e - 11*a*B*e)*(d + e*x)^(3/2))/(128*b^5*(b*d - a*
e)*(a + b*x)) - (21*e^2*(10*b*B*d + A*b*e - 11*a*B*e)*(d + e*x)^(5/2))/(320
*b^4*(b*d - a*e)*(a + b*x)^2) - (3*e*(10*b*B*d + A*b*e - 11*a*B*e)*(d + e*x
)^(7/2))/(80*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d + A*b*e - 11*a*B*e)*
(d + e*x)^(9/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^
(11/2))/(5*b*(b*d - a*e)*(a + b*x)^5) - (63*e^4*(10*b*B*d + A*b*e - 11*a*B*
e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(13/2)*Sqrt[b*d
 - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{9/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{11/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd+Abe-11aBe)\int \frac{(d+ex)^{9/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd+Abe-11aBe)(d+ex)^{9/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{11/2}}{5b(bd-ae)(a+bx)^5} + \frac{(9e(10bBd+Abe}{80b^2}$$

$$= -\frac{3e(10bBd+Abe-11aBe)(d+ex)^{7/2}}{80b^3(bd-ae)(a+bx)^3} - \frac{(10bBd+Abe-11aBe)(d+ex)^{9/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(A}{5b}$$

$$= -\frac{21e^2(10bBd+Abe-11aBe)(d+ex)^{5/2}}{320b^4(bd-ae)(a+bx)^2} - \frac{3e(10bBd+Abe-11aBe)(d+ex)^{7/2}}{80b^3(bd-ae)(a+bx)^3} -$$

$$= -\frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} - \frac{21e^2(10bBd+Abe-11aBe)(d+ex)^{5/2}}{320b^4(bd-ae)(a+bx)^2}$$

$$= \frac{63e^4(10bBd+Abe-11aBe)\sqrt{d+ex}}{128b^6(bd-ae)} - \frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} -$$

$$= \frac{63e^4(10bBd+Abe-11aBe)\sqrt{d+ex}}{128b^6(bd-ae)} - \frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} -$$

$$= \frac{63e^4(10bBd+Abe-11aBe)\sqrt{d+ex}}{128b^6(bd-ae)} - \frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} -$$

Mathematica [C] time = 0.07, size = 99, normalized size = 0.28

$$\frac{(d+ex)^{11/2}\left(\frac{11(aB-Ab)}{(a+bx)^5} - \frac{e^4(-11aBe+Abe+10bBd)\,{}_2F_1\left(5,\frac{11}{2};\frac{13}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}\right)}{55b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(11/2)*((11*(-(A*b) + a*B))/(a + b*x)^5 - (e^4*(10*b*B*d + A*b*e
 - 11*a*B*e)*Hypergeometric2F1[5, 11/2, 13/2, (b*(d + e*x))/(b*d - a*e)])/(
b*d - a*e)^5))/(55*b*(b*d - a*e))
```

IntegrateAlgebraic [A] time = 5.33, size = 667, normalized size = 1.89

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] -1/640*(e^4*Sqrt[d + e*x]*(3150*b^5*B*d^5 + 315*A*b^5*d^4*e - 16065*a*b^4*B
*d^4*e - 1260*a*A*b^4*d^3*e^2 + 32760*a^2*b^3*B*d^3*e^2 + 1890*a^2*A*b^3*d^
2*e^3 - 33390*a^3*b^2*B*d^2*e^3 - 1260*a^3*A*b^2*d*e^4 + 17010*a^4*b*B*d*e^
4 + 315*a^4*A*b*e^5 - 3465*a^5*B*e^5 - 14700*b^5*B*d^4*(d + e*x) - 1470*A*b
^5*d^3*e*(d + e*x) + 60270*a*b^4*B*d^3*e*(d + e*x) + 4410*a*A*b^4*d^2*e^2*(
d + e*x) - 92610*a^2*b^3*B*d^2*e^2*(d + e*x) - 4410*a^2*A*b^3*d*e^3*(d + e*
x) + 63210*a^3*b^2*B*d*e^3*(d + e*x) + 1470*a^3*A*b^2*e^4*(d + e*x) - 16170
*a^4*b*B*e^4*(d + e*x) + 26880*b^5*B*d^3*(d + e*x)^2 + 2688*A*b^5*d^2*e*(d
+ e*x)^2 - 83328*a*b^4*B*d^2*e*(d + e*x)^2 - 5376*a*A*b^4*d*e^2*(d + e*x)^2
 + 86016*a^2*b^3*B*d*e^2*(d + e*x)^2 + 2688*a^2*A*b^3*e^3*(d + e*x)^2 - 295
68*a^3*b^2*B*e^3*(d + e*x)^2 - 23700*b^5*B*d^2*(d + e*x)^3 - 2370*A*b^5*d*e
*(d + e*x)^3 + 49770*a*b^4*B*d*e*(d + e*x)^3 + 2370*a*A*b^4*e^2*(d + e*x)^3
 - 26070*a^2*b^3*B*e^2*(d + e*x)^3 + 9650*b^5*B*d*(d + e*x)^4 + 965*A*b^5*e
*(d + e*x)^4 - 10615*a*b^4*B*e*(d + e*x)^4 - 1280*b^5*B*(d + e*x)^5))/(b^6*
(-(b*d) + a*e + b*(d + e*x))^5) - (63*(10*b*B*d*e^4 + A*b*e^5 - 11*a*B*e^5)
*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(128*b^(13
/2)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.49, size = 1955, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/1280*(315*(10*B*a^5*b*d*e^4 - (11*B*a^6 - A*a^5*b)*e^5 + (10*B*b^6*d*e^4
 - (11*B*a*b^5 - A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (11*B*a^2*b^4 - A*
a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (11*B*a^3*b^3 - A*a^2*b^4)*e^5)*
x^3 + 10*(10*B*a^3*b^3*d*e^4 - (11*B*a^4*b^2 - A*a^3*b^3)*e^5)*x^2 + 5*(10*
B*a^4*b^2*d*e^4 - (11*B*a^5*b - A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log(
(b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*
(32*(B*a*b^6 + 4*A*b^7)*d^5 + 16*(4*B*a^2*b^5 + A*a*b^6)*d^4*e + 12*(13*B*a
^3*b^4 + 2*A*a^2*b^5)*d^3*e^2 + 42*(14*B*a^4*b^3 + A*a^3*b^4)*d^2*e^3 - 105
*(41*B*a^5*b^2 - A*a^4*b^3)*d*e^4 + 315*(11*B*a^6*b - A*a^5*b^2)*e^5 - 1280
*(B*b^7*d*e^4 - B*a*b^6*e^5)*x^5 + 5*(650*B*b^7*d^2*e^3 - (2773*B*a*b^6 - 1
93*A*b^7)*d*e^4 + 193*(11*B*a^2*b^5 - A*a*b^6)*e^5)*x^4 + 10*(210*B*b^7*d^3
*e^2 + (521*B*a*b^6 + 149*A*b^7)*d^2*e^3 - 2*(1669*B*a^2*b^5 - 44*A*a*b^6)*
d*e^4 + 237*(11*B*a^3*b^4 - A*a^2*b^5)*e^5)*x^3 + 2*(440*B*b^7*d^4*e + 2*(3
53*B*a*b^6 + 342*A*b^7)*d^3*e^2 + 3*(919*B*a^2*b^5 + 61*A*a*b^6)*d^2*e^3 -
3*(6229*B*a^3*b^4 - 159*A*a^2*b^5)*d*e^4 + 1344*(11*B*a^4*b^3 - A*a^3*b^4)*
e^5)*x^2 + 2*(80*B*b^7*d^5 + 8*(19*B*a*b^6 + 41*A*b^7)*d^4*e + 2*(187*B*a^2
*b^5 + 28*A*a*b^6)*d^3*e^2 + 9*(159*B*a^3*b^4 + 11*A*a^2*b^5)*d^2*e^3 - 42*
(241*B*a^4*b^3 - 6*A*a^3*b^4)*d*e^4 + 735*(11*B*a^5*b^2 - A*a^4*b^3)*e^5)*x
)*sqrt(e*x + d))/(a^5*b^8*d - a^6*b^7*e + (b^13*d - a*b^12*e)*x^5 + 5*(a*b^
12*d - a^2*b^11*e)*x^4 + 10*(a^2*b^11*d - a^3*b^10*e)*x^3 + 10*(a^3*b^10*d
- a^4*b^9*e)*x^2 + 5*(a^4*b^9*d - a^5*b^8*e)*x), 1/640*(315*(10*B*a^5*b*d*e
^4 - (11*B*a^6 - A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (11*B*a*b^5 - A*b^6)*e^5)
*x^5 + 5*(10*B*a*b^5*d*e^4 - (11*B*a^2*b^4 - A*a*b^5)*e^5)*x^4 + 10*(10*B*a
^2*b^4*d*e^4 - (11*B*a^3*b^3 - A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4
 - (11*B*a^4*b^2 - A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (11*B*a^5*
b - A*a^4*b^2)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqr
```

```
t(e*x + d)/(b*e*x + b*d)) - (32*(B*a*b^6 + 4*A*b^7)*d^5 + 16*(4*B*a^2*b^5 +
 A*a*b^6)*d^4*e + 12*(13*B*a^3*b^4 + 2*A*a^2*b^5)*d^3*e^2 + 42*(14*B*a^4*b^
3 + A*a^3*b^4)*d^2*e^3 - 105*(41*B*a^5*b^2 - A*a^4*b^3)*d*e^4 + 315*(11*B*a
^6*b - A*a^5*b^2)*e^5 - 1280*(B*b^7*d*e^4 - B*a*b^6*e^5)*x^5 + 5*(650*B*b^7
*d^2*e^3 - (2773*B*a*b^6 - 193*A*b^7)*d*e^4 + 193*(11*B*a^2*b^5 - A*a*b^6)*
e^5)*x^4 + 10*(210*B*b^7*d^3*e^2 + (521*B*a*b^6 + 149*A*b^7)*d^2*e^3 - 2*(1
669*B*a^2*b^5 - 44*A*a*b^6)*d*e^4 + 237*(11*B*a^3*b^4 - A*a^2*b^5)*e^5)*x^3
 + 2*(440*B*b^7*d^4*e + 2*(353*B*a*b^6 + 342*A*b^7)*d^3*e^2 + 3*(919*B*a^2*
b^5 + 61*A*a*b^6)*d^2*e^3 - 3*(6229*B*a^3*b^4 - 159*A*a^2*b^5)*d*e^4 + 1344
*(11*B*a^4*b^3 - A*a^3*b^4)*e^5)*x^2 + 2*(80*B*b^7*d^5 + 8*(19*B*a*b^6 + 41
*A*b^7)*d^4*e + 2*(187*B*a^2*b^5 + 28*A*a*b^6)*d^3*e^2 + 9*(159*B*a^3*b^4 +
 11*A*a^2*b^5)*d^2*e^3 - 42*(241*B*a^4*b^3 - 6*A*a^3*b^4)*d*e^4 + 735*(11*B
*a^5*b^2 - A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d - a^6*b^7*e + (b^13
*d - a*b^12*e)*x^5 + 5*(a*b^12*d - a^2*b^11*e)*x^4 + 10*(a^2*b^11*d - a^3*b
^10*e)*x^3 + 10*(a^3*b^10*d - a^4*b^9*e)*x^2 + 5*(a^4*b^9*d - a^5*b^8*e)*x)
]
```

giac [B] time = 0.30, size = 770, normalized size = 2.19

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2*sqrt(x*e + d)*B*e^4/b^6 + 63/128*(10*B*b*d*e^4 - 11*B*a*e^5 + A*b*e^5)*ar
ctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^6) - 1/6
40*(3250*(x*e + d)^(9/2)*B*b^5*d*e^4 - 10900*(x*e + d)^(7/2)*B*b^5*d^2*e^4
+ 14080*(x*e + d)^(5/2)*B*b^5*d^3*e^4 - 8300*(x*e + d)^(3/2)*B*b^5*d^4*e^4
+ 1870*sqrt(x*e + d)*B*b^5*d^5*e^4 - 4215*(x*e + d)^(9/2)*B*a*b^4*e^5 + 965
*(x*e + d)^(9/2)*A*b^5*e^5 + 24170*(x*e + d)^(7/2)*B*a*b^4*d*e^5 - 2370*(x*
e + d)^(7/2)*A*b^5*d*e^5 - 44928*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 + 2688*(x*
e + d)^(5/2)*A*b^5*d^2*e^5 + 34670*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 - 1470*(
x*e + d)^(3/2)*A*b^5*d^3*e^5 - 9665*sqrt(x*e + d)*B*a*b^4*d^4*e^5 + 315*sqr
t(x*e + d)*A*b^5*d^4*e^5 - 13270*(x*e + d)^(7/2)*B*a^2*b^3*e^6 + 2370*(x*e
+ d)^(7/2)*A*a*b^4*e^6 + 47616*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 - 5376*(x*e
+ d)^(5/2)*A*a*b^4*d*e^6 - 54210*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 + 4410*(
x*e + d)^(3/2)*A*a*b^4*d^2*e^6 + 19960*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 - 12
60*sqrt(x*e + d)*A*a*b^4*d^3*e^6 - 16768*(x*e + d)^(5/2)*B*a^3*b^2*e^7 + 26
88*(x*e + d)^(5/2)*A*a^2*b^3*e^7 + 37610*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 -
4410*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 - 20590*sqrt(x*e + d)*B*a^3*b^2*d^2*e^
7 + 1890*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 - 9770*(x*e + d)^(3/2)*B*a^4*b*e^8
 + 1470*(x*e + d)^(3/2)*A*a^3*b^2*e^8 + 10610*sqrt(x*e + d)*B*a^4*b*d*e^8 -
 1260*sqrt(x*e + d)*A*a^3*b^2*d*e^8 - 2185*sqrt(x*e + d)*B*a^5*e^9 + 315*sq
rt(x*e + d)*A*a^4*b*e^9)/(((x*e + d)*b - b*d + a*e)^5*b^6)
```

maple [B] time = 0.08, size = 1173, normalized size = 3.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*e^4*B/b^6*(e*x+d)^(1/2)+63/32*e^8/b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d
+42/5*e^6/b^2/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a*d+351/5*e^5/b^2/(b*e*x+a*e)^5
*(e*x+d)^(5/2)*B*a*d^2+2059/64*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^
2-189/64*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*d^2+63/32*e^6/b^2/(b*e*x
+a*e)^5*(e*x+d)^(1/2)*A*a*d^3-1061/64*e^8/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B
*a^4*d-499/16*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*d^3+1933/128*e^5/b^
2/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a*d^4-2417/64*e^5/b^2/(b*e*x+a*e)^5*B*(e*x+
```

d)^(7/2)*a*d+441/64*e^7/b^3/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*a^2*d-372/5*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d-3467/64*e^5/b^2/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*a*d^3-441/64*e^6/b^2/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*a*d^2-3761/64*e^7/b^4/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*a^3*d+5421/64*e^6/b^3/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*a^2*d^2+63/128*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-193/128*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*A-237/64*e^6/b^2/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a+237/64*e^5/b/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*d+437/128*e^9/b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5-693/128*e^5/b^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+1327/64*e^6/b^3/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2-147/64*e^8/b^4/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*a^3+147/64*e^5/b/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*d^3+977/64*e^8/b^5/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*a^4+843/128*e^5/b^2/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*a-21/5*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2-21/5*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*d^2+131/5*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^3-63/128*e^9/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4+415/32*e^4/b/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*d^4+315/64*e^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d-325/64*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*d-22*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*d^3-187/64*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*d^5+545/32*e^4/b/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^2-63/128*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*d^4

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation *may* help (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.28, size = 838, normalized size = 2.38

$$\frac{2\,B\,e^4\,\sqrt{d+e\,x}}{b^6}-\frac{(d+e\,x)^{5/2}\,\left(-\frac{131\,B\,a^3\,b^2\,e^7}{5}+\frac{372\,B\,a^2\,b^3\,d\,e^6}{5}+\frac{21\,A\,a^2\,b^3\,e^7}{5}-\frac{351\,B\,a\,b^4\,d^2\,e^5}{5}-\frac{42\,A\,a\,b^4\,d\,e^6}{5}+22\,B\,b^5\,d^3\,e^4+\frac{21\,A\,b^5\,d^2\,e^5}{5}\right)-(d+e\,x)^{3/2}\,\left(\frac{977\,B\,a^4\,b\,e^8}{64}-\frac{3761\,B\,a^3\,b^2\,d\,e^7}{64}-\frac{147\,A\,a^3\,b^2\,e^8}{64}+\frac{5421\,B\,a^2\,b^3\,d^2\,e^6}{64}+\frac{441\,A\,a^2\,b^3\,d\,e^7}{64}-\frac{3467\,B\,a\,b^4\,d^3\,e^5}{64}-\frac{441\,A\,a\,b^4\,d^2\,e^6}{64}+\frac{415\,B\,b^5\,d^4\,e^4}{32}+\frac{147\,A\,b^5\,d^3\,e^5}{64}\right)+(d+e\,x)^{9/2}\,\left(\frac{193\,A\,b^5\,e^5}{128}+\frac{325\,B\,d\,b^5\,e^4}{64}-\frac{843\,B\,a\,b^4\,e^5}{128}\right)+\sqrt{d+e\,x}\,\left(-\frac{437\,B\,a^5\,e^9}{128}+\frac{1061\,B\,a^4\,b\,d\,e^8}{64}+\frac{63\,A\,a^4\,b\,e^9}{128}-\frac{2059\,B\,a^3\,b^2\,d^2\,e^7}{64}-\frac{63\,A\,a^3\,b^2\,d\,e^8}{32}+\frac{499\,B\,a^2\,b^3\,d^3\,e^6}{16}+\frac{189\,A\,a^2\,b^3\,d^2\,e^7}{64}-\frac{1933\,B\,a\,b^4\,d^4\,e^5}{128}-\frac{63\,A\,a\,b^4\,d^3\,e^6}{32}+\frac{187\,B\,b^5\,d^5\,e^4}{64}+\frac{63\,A\,b^5\,d^4\,e^5}{128}\right)-(d+e\,x)^{7/2}\,\left(\frac{1327\,B\,a^2\,b^3\,e^6}{64}-\frac{2417\,B\,a\,b^4\,d\,e^5}{64}-\frac{237\,A\,a\,b^4\,e^6}{64}+\frac{545\,B\,b^5\,d^2\,e^4}{32}+\frac{237\,A\,b^5\,d\,e^5}{64}\right)}{(d+e\,x)\,\left(5\,a^4\,b^7\,e^4-20\,a^3\,b^8\,d\,e^3+30\,a^2\,b^9\,d^2\,e^2-20\,a\,b^{10}\,d^3\,e+5\,b^{11}\,d^4\right)-(d+e\,x)^2\,\left(-10\,a^3\,b^8\,e^3+30\,a^2\,b^9\,d\,e^2-30\,a\,b^{10}\,d^2\,e+10\,b^{11}\,d^3\right)+b^{11}\,(d+e\,x)^5-\left(5\,b^{11}\,d-5\,a\,b^{10}\,e\right)\,(d+e\,x)^4-b^{11}\,d^5+(d+e\,x)^3\,\left(10\,a^2\,b^9\,e^2-20\,a\,b^{10}\,d\,e+10\,b^{11}\,d^2\right)+a^5\,b^6\,e^5-5\,a^4\,b^7\,d\,e^4-10\,a^2\,b^9\,d^3\,e^2+10\,a^3\,b^8\,d^2\,e^3+5\,a\,b^{10}\,d^4\,e}+\frac{63\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(A\,b\,e-11\,B\,a\,e+10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^5-11\,B\,a\,e^5+10\,B\,b\,d\,e^4\right)}\right)\,\left(A\,b\,e-11\,B\,a\,e+10\,B\,b\,d\right)}{128\,b^{13/2}\,\sqrt{a\,e-b\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*B*e^4*(d + e*x)^(1/2))/b^6 - ((d + e*x)^(5/2)*((21*A*a^2*b^3*e^7)/5 - (131*B*a^3*b^2*e^7)/5 + (21*A*b^5*d^2*e^5)/5 + 22*B*b^5*d^3*e^4 - (351*B*a*b^4*d^2*e^5)/5 + (372*B*a^2*b^3*d*e^6)/5 - (42*A*a*b^4*d*e^6)/5) - (d + e*x)^(3/2)*((977*B*a^4*b*e^8)/64 - (147*A*a^3*b^2*e^8)/64 + (147*A*b^5*d^3*e^5)/64 + (415*B*b^5*d^4*e^4)/32 - (441*A*a*b^4*d^2*e^6)/64 + (441*A*a^2*b^3*d*e^7)/64 - (3467*B*a*b^4*d^3*e^5)/64 - (3761*B*a^3*b^2*d*e^7)/64 + (5421*B*a^2*b^3*d^2*e^6)/64) + (d + e*x)^(9/2)*((193*A*b^5*e^5)/128 - (843*B*a*b^4*e^5)/128 + (325*B*b^5*d*e^4)/64) + (d + e*x)^(1/2)*((63*A*a^4*b*e^9)/128 - (437*B*a^5*e^9)/128 + (63*A*b^5*d^4*e^5)/128 + (187*B*b^5*d^5*e^4)/64 - (63*A*a*b^4*d^3*e^6)/32 - (63*A*a^3*b^2*d*e^8)/32 - (1933*B*a*b^4*d^4*e^5)/128 + (189*A*a^2*b^3*d^2*e^7)/64 + (499*B*a^2*b^3*d^3*e^6)/16 - (2059*B*a^3*b^2*d^2*e^7)/64 + (1061*B*a^4*b*d*e^8)/64) - (d + e*x)^(7/2)*((237*A*b^5*d*e^5)/64 - (237*A*a*b^4*e^6)/64 + (1327*B*a^2*b^3*e^6)/64 + (545*B*b^5*d^2*e^4)/32 - (2417*B*a*b^4*d*e^5)/64))/((d + e*x)*(5*b^11*d^4 + 5*a^4*b^7*e^4 - 20*a^3*b^8*d*e^3 + 30*a^2*b^9*d^2*e^2 - 20*a*b^10*d^3*e) - (d + e*x)^2*(10*b^11*d^3 - 10*a^3*b^8*e^3 + 30*a^2*b^9*d*e^2 - 30*a*b^10*d^2*e) + b^11*(d + e*x)^5 - (5*b^11*d - 5*a*b^10*e)*(d + e*x)^4 - b^11*d^5 + (d + e*x)^3*(10*b^11*d^2 + 10*a^2*b^9*e^2 - 20*a*b^10*d*e) + a^5*b^6*e^5 - 5*a^4*b^7*d*e^4 - 1
```

```
0*a^2*b^9*d^3*e^2 + 10*a^3*b^8*d^2*e^3 + 5*a*b^10*d^4*e) + (63*e^4*atan((b^
(1/2)*e^4*(d + e*x)^(1/2)*(A*b*e - 11*B*a*e + 10*B*b*d))/((a*e - b*d)^(1/2)
*(A*b*e^5 - 11*B*a*e^5 + 10*B*b*d*e^4)))*(A*b*e - 11*B*a*e + 10*B*b*d))/(12
8*b^(13/2)*(a*e - b*d)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
[Out] Timed out
```

3.1607 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$-\frac{7e^4(-9aBe-Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{11/2}(bd-ae)^{3/2}}-\frac{7e^3\sqrt{d+ex}\,(-9aBe-Abe+10bBd)}{128b^5(a+bx)(bd-ae)}-\frac{7e^2(d+ex)^{3/2}(-9aBe-Al}{192b^4(a+bx)^2(bd}$$

Rubi [A] time = 0.26, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 47, 63, 208}

$$-\frac{7e^2(d+ex)^{3/2}(-9aBe-Abe+10bBd)}{192b^4(a+bx)^2(bd-ae)}-\frac{7e^3\sqrt{d+ex}\,(-9aBe-Abe+10bBd)}{128b^5(a+bx)(bd-ae)}-\frac{7e^4(-9aBe-Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{11/2}(bd-ae)^{3/2}}-\frac{(d+ex)^{7/2}(-9aBe-Abe+10bBd)}{40b^2(a+bx)^4(bd-ae)}-\frac{7e(d+ex)^{5/2}(-9aBe-Abe+10bBd)}{240b^3(a+bx)^3(bd-ae)}-\frac{(d+ex)^{9/2}(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-7*e^3*(10*b*B*d - A*b*e - 9*a*B*e)*Sqrt[d + e*x])/(128*b^5*(b*d - a*e)*(a
 + b*x)) - (7*e^2*(10*b*B*d - A*b*e - 9*a*B*e)*(d + e*x)^(3/2))/(192*b^4*(b
*d - a*e)*(a + b*x)^2) - (7*e*(10*b*B*d - A*b*e - 9*a*B*e)*(d + e*x)^(5/2))
/(240*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d - A*b*e - 9*a*B*e)*(d + e*x
)^(7/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^(9/2))/(
5*b*(b*d - a*e)*(a + b*x)^5) - (7*e^4*(10*b*B*d - A*b*e - 9*a*B*e)*ArcTanh[
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(11/2)*(b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{7/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-Abe-9aBe)\int \frac{(d+ex)^{7/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd-Abe-9aBe)(d+ex)^{7/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{9/2}}{5b(bd-ae)(a+bx)^5} + \frac{(7e(10bBd-Abe-\cdots}{80b^2(b\cdots}$$

$$= -\frac{7e(10bBd-Abe-9aBe)(d+ex)^{5/2}}{240b^3(bd-ae)(a+bx)^3} - \frac{(10bBd-Abe-9aBe)(d+ex)^{7/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-\cdots}{5b(bd\cdots}$$

$$= -\frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2} - \frac{7e(10bBd-Abe-9aBe)(d+ex)^{5/2}}{240b^3(bd-ae)(a+bx)^3} - \frac{(1\cdots}{\cdots}$$

$$= -\frac{7e^3(10bBd-Abe-9aBe)\sqrt{d+ex}}{128b^5(bd-ae)(a+bx)} - \frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2} - \frac{7e(\cdots}{\cdots}$$

$$= -\frac{7e^3(10bBd-Abe-9aBe)\sqrt{d+ex}}{128b^5(bd-ae)(a+bx)} - \frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2} - \frac{7e(\cdots}{\cdots}$$

$$= -\frac{7e^3(10bBd-Abe-9aBe)\sqrt{d+ex}}{128b^5(bd-ae)(a+bx)} - \frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2} - \frac{7e(\cdots}{\cdots}$$

Mathematica [A] time = 0.95, size = 260, normalized size = 0.83

$$\frac{\frac{(a+bx)(9aBe+Abe-10bBd)\left(48b^4(d+ex)^4\sqrt{ae-bd}+56b^3e(a+bx)(d+ex)^3\sqrt{ae-bd}+70b^2e^2(a+bx)^2(d+ex)^2\sqrt{ae-bd}-105\sqrt{b}\,e^4(a+bx)^4\sqrt{d+ex}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)+105be^3(a+bx)^3(d+ex)\sqrt{ae-bd}\right)}{\sqrt{ae-bd}}-384b^5(d+ex)^5(Ab-aB)}{1920b^6(a+bx)^5\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-384*b^5*(A*b - a*B)*(d + e*x)^5 + ((-10*b*B*d + A*b*e + 9*a*B*e)*(a + b*x
)*(105*b*e^3*Sqrt[-(b*d) + a*e]*(a + b*x)^3*(d + e*x) + 70*b^2*e^2*Sqrt[-(b
*d) + a*e]*(a + b*x)^2*(d + e*x)^2 + 56*b^3*e*Sqrt[-(b*d) + a*e]*(a + b*x)*
(d + e*x)^3 + 48*b^4*Sqrt[-(b*d) + a*e]*(d + e*x)^4 - 105*Sqrt[b]*e^4*(a +
b*x)^4*Sqrt[d + e*x]*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/S
qrt[-(b*d) + a*e])/(1920*b^6*(b*d - a*e)*(a + b*x)^5*Sqrt[d + e*x])
```

IntegrateAlgebraic [B] time = 4.93, size = 676, normalized size = 2.16

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] -1/1920*(e^4*Sqrt[d + e*x]*(-1050*b^5*B*d^5 + 105*A*b^5*d^4*e + 5145*a*b^4*
B*d^4*e - 420*a*A*b^4*d^3*e^2 - 10080*a^2*b^3*B*d^3*e^2 + 630*a^2*A*b^3*d^2
```

```
*e^3 + 9870*a^3*b^2*B*d^2*e^3 - 420*a^3*A*b^2*d*e^4 - 4830*a^4*b*B*d*e^4 +
105*a^4*A*b*e^5 + 945*a^5*B*e^5 + 4900*b^5*B*d^4*(d + e*x) - 490*A*b^5*d^3*
e*(d + e*x) - 19110*a*b^4*B*d^3*e*(d + e*x) + 1470*a*A*b^4*d^2*e^2*(d + e*x
) + 27930*a^2*b^3*B*d^2*e^2*(d + e*x) - 1470*a^2*A*b^3*d*e^3*(d + e*x) - 18
130*a^3*b^2*B*d*e^3*(d + e*x) + 490*a^3*A*b^2*e^4*(d + e*x) + 4410*a^4*b*B*
e^4*(d + e*x) - 8960*b^5*B*d^3*(d + e*x)^2 + 896*A*b^5*d^2*e*(d + e*x)^2 +
25984*a*b^4*B*d^2*e*(d + e*x)^2 - 1792*a*A*b^4*d*e^2*(d + e*x)^2 - 25088*a^
2*b^3*B*d*e^2*(d + e*x)^2 + 896*a^2*A*b^3*e^3*(d + e*x)^2 + 8064*a^3*b^2*B*
e^3*(d + e*x)^2 + 7900*b^5*B*d^2*(d + e*x)^3 - 790*A*b^5*d*e*(d + e*x)^3 -
15010*a*b^4*B*d*e*(d + e*x)^3 + 790*a*A*b^4*e^2*(d + e*x)^3 + 7110*a^2*b^3*
B*e^2*(d + e*x)^3 - 2790*b^5*B*d*(d + e*x)^4 - 105*A*b^5*e*(d + e*x)^4 + 28
95*a*b^4*B*e*(d + e*x)^4))/(b^5*(b*d - a*e)*(b*d - a*e - b*(d + e*x))^5) -
(7*(10*b*B*d*e^4 - A*b*e^5 - 9*a*B*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*
Sqrt[d + e*x])/(b*d - a*e)])/(128*b^(11/2)*(b*d - a*e)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.49, size = 2041, normalized size = 6.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/3840*(105*(10*B*a^5*b*d*e^4 - (9*B*a^6 + A*a^5*b)*e^5 + (10*B*b^6*d*e^4
- (9*B*a*b^5 + A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (9*B*a^2*b^4 + A*a*b
^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (9*B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3
+ 10*(10*B*a^3*b^3*d*e^4 - (9*B*a^4*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4
*b^2*d*e^4 - (9*B*a^5*b + A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x
 + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(96*(B
*a*b^6 + 4*A*b^7)*d^5 + 16*(2*B*a^2*b^5 - 27*A*a*b^6)*d^4*e + 4*(17*B*a^3*b
^4 - 2*A*a^2*b^5)*d^3*e^2 + 14*(16*B*a^4*b^3 - A*a^3*b^4)*d^2*e^3 - 35*(39*
B*a^5*b^2 + A*a^4*b^3)*d*e^4 + 105*(9*B*a^6*b + A*a^5*b^2)*e^5 + 15*(186*B*
b^7*d^2*e^3 - (379*B*a*b^6 - 7*A*b^7)*d*e^4 + (193*B*a^2*b^5 - 7*A*a*b^6)*e
^5)*x^4 + 10*(326*B*b^7*d^3*e^2 + (17*B*a*b^6 + 121*A*b^7)*d^2*e^3 - 2*(527
*B*a^2*b^5 + 100*A*a*b^6)*d*e^4 + 79*(9*B*a^3*b^4 + A*a^2*b^5)*e^5)*x^3 + 2
*(1000*B*b^7*d^4*e - 2*(81*B*a*b^6 - 526*A*b^7)*d^3*e^2 + 3*(347*B*a^2*b^5
- 447*A*a*b^6)*d^2*e^3 - (5911*B*a^3*b^4 + 159*A*a^2*b^5)*d*e^4 + 448*(9*B*
a^4*b^3 + A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 + 8*(7*B*a*b^6 + 93*A*b^7)
*d^4*e + 2*(81*B*a^2*b^5 - 436*A*a*b^6)*d^3*e^2 + 3*(181*B*a^3*b^4 - 11*A*a
^2*b^5)*d^2*e^3 - 14*(229*B*a^4*b^3 + 6*A*a^3*b^4)*d*e^4 + 245*(9*B*a^5*b^2
 + A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^2 - 2*a^6*b^7*d*e + a^7*b^6
*e^2 + (b^13*d^2 - 2*a*b^12*d*e + a^2*b^11*e^2)*x^5 + 5*(a*b^12*d^2 - 2*a^2
*b^11*d*e + a^3*b^10*e^2)*x^4 + 10*(a^2*b^11*d^2 - 2*a^3*b^10*d*e + a^4*b^9
*e^2)*x^3 + 10*(a^3*b^10*d^2 - 2*a^4*b^9*d*e + a^5*b^8*e^2)*x^2 + 5*(a^4*b^
9*d^2 - 2*a^5*b^8*d*e + a^6*b^7*e^2)*x), 1/1920*(105*(10*B*a^5*b*d*e^4 - (9
*B*a^6 + A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (9*B*a*b^5 + A*b^6)*e^5)*x^5 + 5*
(10*B*a*b^5*d*e^4 - (9*B*a^2*b^4 + A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e
^4 - (9*B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (9*B*a^4
*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (9*B*a^5*b + A*a^4*b^2
)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b
*e*x + b*d)) - (96*(B*a*b^6 + 4*A*b^7)*d^5 + 16*(2*B*a^2*b^5 - 27*A*a*b^6)*
d^4*e + 4*(17*B*a^3*b^4 - 2*A*a^2*b^5)*d^3*e^2 + 14*(16*B*a^4*b^3 - A*a^3*b
^4)*d^2*e^3 - 35*(39*B*a^5*b^2 + A*a^4*b^3)*d*e^4 + 105*(9*B*a^6*b + A*a^5*
b^2)*e^5 + 15*(186*B*b^7*d^2*e^3 - (379*B*a*b^6 - 7*A*b^7)*d*e^4 + (193*B*a
^2*b^5 - 7*A*a*b^6)*e^5)*x^4 + 10*(326*B*b^7*d^3*e^2 + (17*B*a*b^6 + 121*A*
b^7)*d^2*e^3 - 2*(527*B*a^2*b^5 + 100*A*a*b^6)*d*e^4 + 79*(9*B*a^3*b^4 + A*
a^2*b^5)*e^5)*x^3 + 2*(1000*B*b^7*d^4*e - 2*(81*B*a*b^6 - 526*A*b^7)*d^3*e^
2 + 3*(347*B*a^2*b^5 - 447*A*a*b^6)*d^2*e^3 - (5911*B*a^3*b^4 + 159*A*a^2*b
^5)*d*e^4 + 448*(9*B*a^4*b^3 + A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 + 8*(
7*B*a*b^6 + 93*A*b^7)*d^4*e + 2*(81*B*a^2*b^5 - 436*A*a*b^6)*d^3*e^2 + 3*(1
```

```
81*B*a^3*b^4 - 11*A*a^2*b^5)*d^2*e^3 - 14*(229*B*a^4*b^3 + 6*A*a^3*b^4)*d*e
^4 + 245*(9*B*a^5*b^2 + A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^2 - 2*
a^6*b^7*d*e + a^7*b^6*e^2 + (b^13*d^2 - 2*a*b^12*d*e + a^2*b^11*e^2)*x^5 +
5*(a*b^12*d^2 - 2*a^2*b^11*d*e + a^3*b^10*e^2)*x^4 + 10*(a^2*b^11*d^2 - 2*a
^3*b^10*d*e + a^4*b^9*e^2)*x^3 + 10*(a^3*b^10*d^2 - 2*a^4*b^9*d*e + a^5*b^8
*e^2)*x^2 + 5*(a^4*b^9*d^2 - 2*a^5*b^8*d*e + a^6*b^7*e^2)*x)]
```

giac [B] time = 0.30, size = 781, normalized size = 2.50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 7/128*(10*B*b*d*e^4 - 9*B*a*e^5 - A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^6*d - a*b^5*e)*sqrt(-b^2*d + a*b*e)) - 1/1920*(2790*(x*e +
 d)^(9/2)*B*b^5*d*e^4 - 7900*(x*e + d)^(7/2)*B*b^5*d^2*e^4 + 8960*(x*e + d)
^(5/2)*B*b^5*d^3*e^4 - 4900*(x*e + d)^(3/2)*B*b^5*d^4*e^4 + 1050*sqrt(x*e +
 d)*B*b^5*d^5*e^4 - 2895*(x*e + d)^(9/2)*B*a*b^4*e^5 + 105*(x*e + d)^(9/2)*
A*b^5*e^5 + 15010*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 790*(x*e + d)^(7/2)*A*b^5
*d*e^5 - 25984*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 - 896*(x*e + d)^(5/2)*A*b^5*
d^2*e^5 + 19110*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 + 490*(x*e + d)^(3/2)*A*b^5
*d^3*e^5 - 5145*sqrt(x*e + d)*B*a*b^4*d^4*e^5 - 105*sqrt(x*e + d)*A*b^5*d^4
*e^5 - 7110*(x*e + d)^(7/2)*B*a^2*b^3*e^6 - 790*(x*e + d)^(7/2)*A*a*b^4*e^6
 + 25088*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 + 1792*(x*e + d)^(5/2)*A*a*b^4*d*e
^6 - 27930*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 - 1470*(x*e + d)^(3/2)*A*a*b^4
*d^2*e^6 + 10080*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 + 420*sqrt(x*e + d)*A*a*b^
4*d^3*e^6 - 8064*(x*e + d)^(5/2)*B*a^3*b^2*e^7 - 896*(x*e + d)^(5/2)*A*a^2*
b^3*e^7 + 18130*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 + 1470*(x*e + d)^(3/2)*A*a^
2*b^3*d*e^7 - 9870*sqrt(x*e + d)*B*a^3*b^2*d^2*e^7 - 630*sqrt(x*e + d)*A*a^
2*b^3*d^2*e^7 - 4410*(x*e + d)^(3/2)*B*a^4*b*e^8 - 490*(x*e + d)^(3/2)*A*a^
3*b^2*e^8 + 4830*sqrt(x*e + d)*B*a^4*b*d*e^8 + 420*sqrt(x*e + d)*A*a^3*b^2*
d*e^8 - 945*sqrt(x*e + d)*B*a^5*e^9 - 105*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*
d - a*b^5*e)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.07, size = 959, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -79/192*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(7/2)*A+7/128*e^5/(b*e*x+a*e)^5/(a*e-b*
d)*(e*x+d)^(9/2)*A+21/128*e^7/(b*e*x+a*e)^5/b^3*(e*x+d)^(1/2)*A*a^2*d-35/64
*e^4/(a*e-b*d)/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*B*d+49/96*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(3/2)*A*a*d+343/48*e^6/(b*e
*x+a*e)^5/b^3*(e*x+d)^(3/2)*B*a^2*d-1421/192*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^
(3/2)*B*a*d^2+259/128*e^7/(b*e*x+a*e)^5/b^4*(e*x+d)^(1/2)*B*d*a^3-399/128*e
^6/(b*e*x+a*e)^5/b^3*(e*x+d)^(1/2)*B*a^2*d^2-21/128*e^6/(b*e*x+a*e)^5/b^2*(
e*x+d)^(1/2)*A*d^2*a-193/128*e^5/(b*e*x+a*e)^5/(a*e-b*d)/b*(e*x+d)^(9/2)*a*
B+63/128*e^5/(a*e-b*d)/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*a*B+273/128*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*B*a*d^3+133
/15*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(5/2)*B*a*d-63/128*e^8/(b*e*x+a*e)^5/b^5*
(e*x+d)^(1/2)*B*a^4-7/15*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(5/2)*A*a+7/128*e^5/
(a*e-b*d)/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*A+7/15*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(5/2)*A*d-14/3*e^4/(b*e*x+a*e)^5/b*(e
*x+d)^(5/2)*B*d^2+245/96*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*B*d^3-35/64*e^4/
(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*B*d^4+93/64*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+
d)^(9/2)*B*d+395/96*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(7/2)*B*d-237/64*e^5/(b*e*x
```

```
+a*e)^5/b^2*(e*x+d)^(7/2)*a*B-21/5*e^6/(b*e*x+a*e)^5/b^3*(e*x+d)^(5/2)*B*a^
2-49/192*e^7/(b*e*x+a*e)^5/b^3*(e*x+d)^(3/2)*A*a^2-147/64*e^7/(b*e*x+a*e)^5
/b^4*(e*x+d)^(3/2)*B*a^3-49/192*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*A*d^2-7/1
28*e^8/(b*e*x+a*e)^5/b^4*(e*x+d)^(1/2)*A*a^3+7/128*e^5/(b*e*x+a*e)^5/b*(e*x
+d)^(1/2)*A*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.44, size = 594, normalized size = 1.90

$$\frac{7\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(A\,b\,e+9\,B\,a\,e-10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^5+9\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}\right)\,\left(A\,b\,e+9\,B\,a\,e-10\,B\,b\,d\right)}{128\,b^{11/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{79\,{\left(d+e\,x\right)}^{7/2}\,\left(A\,b\,e^5+9\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{192\,b^2}+\frac{7\,\sqrt{d+e\,x}\,\left(A\,b\,e^5+9\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{128\,b^5}+\frac{7\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{5/2}\,\left(A\,b\,e^5+9\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{15\,b^3}-\frac{{\left(d+e\,x\right)}^{9/2}\,\left(7\,A\,b\,e^5-193\,B\,a\,e^5+186\,B\,b\,d\,e^4\right)}{128\,b\,\left(a\,e-b\,d\right)}+\frac{49\,{\left(d+e\,x\right)}^{3/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)\,\left(A\,b\,e^5+9\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{192\,b^4}}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-{\left(d+e\,x\right)}^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+b^5\,{\left(d+e\,x\right)}^5-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^4+a^5\,e^5-b^5\,d^5+{\left(d+e\,x\right)}^3\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)-10\,a^2\,b^3\,d^3\,e^2+10\,a^3\,b^2\,d^2\,e^3+5\,a\,b^4\,d^4\,e-5\,a^4\,b\,d\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (7*e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(A*b*e + 9*B*a*e - 10*B*b*d))/((a*
e - b*d)^(1/2)*(A*b*e^5 + 9*B*a*e^5 - 10*B*b*d*e^4)))*(A*b*e + 9*B*a*e - 10
*B*b*d))/(128*b^(11/2)*(a*e - b*d)^(3/2)) - ((79*(d + e*x)^(7/2)*(A*b*e^5 +
 9*B*a*e^5 - 10*B*b*d*e^4))/(192*b^2) + (7*(d + e*x)^(1/2)*(A*b*e^5 + 9*B*a
*e^5 - 10*B*b*d*e^4)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(
128*b^5) + (7*(a*e - b*d)*(d + e*x)^(5/2)*(A*b*e^5 + 9*B*a*e^5 - 10*B*b*d*e
^4))/(15*b^3) - ((d + e*x)^(9/2)*(7*A*b*e^5 - 193*B*a*e^5 + 186*B*b*d*e^4))
/(128*b*(a*e - b*d)) + (49*(d + e*x)^(3/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)*
(A*b*e^5 + 9*B*a*e^5 - 10*B*b*d*e^4))/(192*b^4))/((d + e*x)*(5*b^5*d^4 + 5*
a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) - (d +
e*x)^2*(10*b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) +
b^5*(d + e*x)^5 - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (
d + e*x)^3*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^
2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1608 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$\frac{e^4(-7aBe-3Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{9/2}(bd-ae)^{5/2}}-\frac{e^3\sqrt{d+ex}\,(-7aBe-3Abe+10bBd)}{128b^4(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}\,(-7aBe-3Ab}{64b^4(a+bx)^2(bd}$$

Rubi [A] time = 0.27, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {27, 78, 47, 51, 63, 208}

$$-\frac{e^3\sqrt{d+ex}\,(-7aBe-3Abe+10bBd)}{128b^4(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}\,(-7aBe-3Abe+10bBd)}{64b^4(a+bx)^2(bd-ae)}+\frac{e^4(-7aBe-3Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{9/2}(bd-ae)^{5/2}}-\frac{e(d+ex)^{3/2}(-7aBe-3Abe+10bBd)}{48b^3(a+bx)^3(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe-3Abe+10bBd)}{40b^2(a+bx)^4(bd-ae)}-\frac{(d+ex)^{7/2}(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(e^2*(10*b*B*d - 3*A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(64*b^4*(b*d - a*e)*(a
+ b*x)^2) - (e^3*(10*b*B*d - 3*A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(128*b^4*(b*
d - a*e)^2*(a + b*x)) - (e*(10*b*B*d - 3*A*b*e - 7*a*B*e)*(d + e*x)^(3/2))/
(48*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d - 3*A*b*e - 7*a*B*e)*(d + e*x
)^(5/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^(7/2))/(
5*b*(b*d - a*e)*(a + b*x)^5) + (e^4*(10*b*B*d - 3*A*b*e - 7*a*B*e)*ArcTanh[
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(9/2)*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{5/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-3Abe-7aBe)\int \frac{(d+ex)^{5/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd-3Abe-7aBe)(d+ex)^{5/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{7/2}}{5b(bd-ae)(a+bx)^5} + \frac{(e(10bBd-3Abe-7a}{16b^2(bd}$$

$$= -\frac{e(10bBd-3Abe-7aBe)(d+ex)^{3/2}}{48b^3(bd-ae)(a+bx)^3} - \frac{(10bBd-3Abe-7aBe)(d+ex)^{5/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-a}{5b(bd-}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e(10bBd-3Abe-7aBe)(d+ex)^{3/2}}{48b^3(bd-ae)(a+bx)^3} - \frac{(10bBd}{4}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e^3(10bBd-3Abe-7aBe)\sqrt{d+ex}}{128b^4(bd-ae)^2(a+bx)} - \frac{e(10bBd}{48}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e^3(10bBd-3Abe-7aBe)\sqrt{d+ex}}{128b^4(bd-ae)^2(a+bx)} - \frac{e(10bBd}{48}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e^3(10bBd-3Abe-7aBe)\sqrt{d+ex}}{128b^4(bd-ae)^2(a+bx)} - \frac{e(10bBd}{48}$$

Mathematica [C] time = 0.06, size = 99, normalized size = 0.32

$$\frac{(d+ex)^{7/2}\left(\frac{e^4(7aBe+3Abe-10bBd)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{7aB-7Ab}{(a+bx)^5}\right)}{35b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(7/2)*((-7*A*b + 7*a*B)/(a + b*x)^5 + (e^4*(-10*b*B*d + 3*A*b*e
+ 7*a*B*e)*Hypergeometric2F1[7/2, 5, 9/2, (b*(d + e*x))/(b*d - a*e)])/(b*d
- a*e)^5))/(35*b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 4.64, size = 676, normalized size = 2.16

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(-150*b^5*B*d^5 + 45*A*b^5*d^4*e + 705*a*b^4*B*d^4*e - 1
80*a*A*b^4*d^3*e^2 - 1320*a^2*b^3*B*d^3*e^2 + 270*a^2*A*b^3*d^2*e^3 + 1230*
a^3*b^2*B*d^2*e^3 - 180*a^3*A*b^2*d*e^4 - 570*a^4*b*B*d*e^4 + 45*a^4*A*b*e^
5 + 105*a^5*B*e^5 + 700*b^5*B*d^4*(d + e*x) - 210*A*b^5*d^3*e*(d + e*x) - 2
590*a*b^4*B*d^3*e*(d + e*x) + 630*a*A*b^4*d^2*e^2*(d + e*x) + 3570*a^2*b^3*
B*d^2*e^2*(d + e*x) - 630*a^2*A*b^3*d*e^3*(d + e*x) - 2170*a^3*b^2*B*d*e^3*
(d + e*x) + 210*a^3*A*b^2*e^4*(d + e*x) + 490*a^4*b*B*e^4*(d + e*x) - 1280*
b^5*B*d^3*(d + e*x)^2 + 384*A*b^5*d^2*e*(d + e*x)^2 + 3456*a*b^4*B*d^2*e*(d
 + e*x)^2 - 768*a*A*b^4*d*e^2*(d + e*x)^2 - 3072*a^2*b^3*B*d*e^2*(d + e*x)^
2 + 384*a^2*A*b^3*e^3*(d + e*x)^2 + 896*a^3*b^2*B*e^3*(d + e*x)^2 + 580*b^5
*B*d^2*(d + e*x)^3 + 210*A*b^5*d*e*(d + e*x)^3 - 1370*a*b^4*B*d*e*(d + e*x)
^3 - 210*a*A*b^4*e^2*(d + e*x)^3 + 790*a^2*b^3*B*e^2*(d + e*x)^3 + 150*b^5*
B*d*(d + e*x)^4 - 45*A*b^5*e*(d + e*x)^4 - 105*a*b^4*B*e*(d + e*x)^4))/(192
0*b^4*(b*d - a*e)^2*(b*d - a*e - b*(d + e*x))^5) + ((10*b*B*d*e^4 - 3*A*b*e
^5 - 7*a*B*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*
e)])/(128*b^(9/2)*(b*d - a*e)^2*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.50, size = 2238, normalized size = 7.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/3840*(15*(10*B*a^5*b*d*e^4 - (7*B*a^6 + 3*A*a^5*b)*e^5 + (10*B*b^6*d*e^
4 - (7*B*a*b^5 + 3*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (7*B*a^2*b^4 + 3
*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (7*B*a^3*b^3 + 3*A*a^2*b^4)*e
^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (7*B*a^4*b^2 + 3*A*a^3*b^3)*e^5)*x^2 + 5
*(10*B*a^4*b^2*d*e^4 - (7*B*a^5*b + 3*A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e
)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)
) + 2*(96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(8*B*a^2*b^5 + 57*A*a*b^6)*d^4*e - 1
2*(B*a^3*b^4 - 46*A*a^2*b^5)*d^3*e^2 - 6*(6*B*a^4*b^3 - A*a^3*b^4)*d^2*e^3
+ 5*(37*B*a^5*b^2 + 3*A*a^4*b^3)*d*e^4 - 15*(7*B*a^6*b + 3*A*a^5*b^2)*e^5 +
 15*(10*B*b^7*d^2*e^3 - (17*B*a*b^6 + 3*A*b^7)*d*e^4 + (7*B*a^2*b^5 + 3*A*a
*b^6)*e^5)*x^4 + 10*(118*B*b^7*d^3*e^2 - 3*(99*B*a*b^6 - A*b^7)*d^2*e^3 + 6
*(43*B*a^2*b^5 - 4*A*a*b^6)*d*e^4 - (79*B*a^3*b^4 - 21*A*a^2*b^5)*e^5)*x^3
+ 2*(680*B*b^7*d^4*e - 2*(661*B*a*b^6 - 186*A*b^7)*d^3*e^2 + 3*(97*B*a^2*b^
5 - 357*A*a*b^6)*d^2*e^3 + (799*B*a^3*b^4 + 891*A*a^2*b^5)*d*e^4 - 64*(7*B*
a^4*b^3 + 3*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(43*B*a*b^6 - 63*A*b
^7)*d^4*e + 2*(B*a^2*b^5 - 636*A*a*b^6)*d^3*e^2 - 3*(29*B*a^3*b^4 - 279*A*a
^2*b^5)*d^2*e^3 + 2*(217*B*a^4*b^3 + 18*A*a^3*b^4)*d*e^4 - 35*(7*B*a^5*b^2
+ 3*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^3 - 3*a^6*b^7*d^2*e + 3*a^
7*b^6*d*e^2 - a^8*b^5*e^3 + (b^13*d^3 - 3*a*b^12*d^2*e + 3*a^2*b^11*d*e^2 -
 a^3*b^10*e^3)*x^5 + 5*(a*b^12*d^3 - 3*a^2*b^11*d^2*e + 3*a^3*b^10*d*e^2 -
a^4*b^9*e^3)*x^4 + 10*(a^2*b^11*d^3 - 3*a^3*b^10*d^2*e + 3*a^4*b^9*d*e^2 -
a^5*b^8*e^3)*x^3 + 10*(a^3*b^10*d^3 - 3*a^4*b^9*d^2*e + 3*a^5*b^8*d*e^2 - a
^6*b^7*e^3)*x^2 + 5*(a^4*b^9*d^3 - 3*a^5*b^8*d^2*e + 3*a^6*b^7*d*e^2 - a^7*
b^6*e^3)*x), -1/1920*(15*(10*B*a^5*b*d*e^4 - (7*B*a^6 + 3*A*a^5*b)*e^5 + (1
0*B*b^6*d*e^4 - (7*B*a*b^5 + 3*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (7*B
*a^2*b^4 + 3*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (7*B*a^3*b^3 + 3*
A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (7*B*a^4*b^2 + 3*A*a^3*b^3)*
e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (7*B*a^5*b + 3*A*a^4*b^2)*e^5)*x)*sqrt(-
b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (
96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(8*B*a^2*b^5 + 57*A*a*b^6)*d^4*e - 12*(B*a^
3*b^4 - 46*A*a^2*b^5)*d^3*e^2 - 6*(6*B*a^4*b^3 - A*a^3*b^4)*d^2*e^3 + 5*(37
```

```
*B*a^5*b^2 + 3*A*a^4*b^3)*d*e^4 - 15*(7*B*a^6*b + 3*A*a^5*b^2)*e^5 + 15*(10
*B*b^7*d^2*e^3 - (17*B*a*b^6 + 3*A*b^7)*d*e^4 + (7*B*a^2*b^5 + 3*A*a*b^6)*e
^5)*x^4 + 10*(118*B*b^7*d^3*e^2 - 3*(99*B*a*b^6 - A*b^7)*d^2*e^3 + 6*(43*B*
a^2*b^5 - 4*A*a*b^6)*d*e^4 - (79*B*a^3*b^4 - 21*A*a^2*b^5)*e^5)*x^3 + 2*(68
0*B*b^7*d^4*e - 2*(661*B*a*b^6 - 186*A*b^7)*d^3*e^2 + 3*(97*B*a^2*b^5 - 357
*A*a*b^6)*d^2*e^3 + (799*B*a^3*b^4 + 891*A*a^2*b^5)*d*e^4 - 64*(7*B*a^4*b^3
 + 3*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(43*B*a*b^6 - 63*A*b^7)*d^4
*e + 2*(B*a^2*b^5 - 636*A*a*b^6)*d^3*e^2 - 3*(29*B*a^3*b^4 - 279*A*a^2*b^5)
*d^2*e^3 + 2*(217*B*a^4*b^3 + 18*A*a^3*b^4)*d*e^4 - 35*(7*B*a^5*b^2 + 3*A*a
^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^3 - 3*a^6*b^7*d^2*e + 3*a^7*b^6*d
*e^2 - a^8*b^5*e^3 + (b^13*d^3 - 3*a*b^12*d^2*e + 3*a^2*b^11*d*e^2 - a^3*b^
10*e^3)*x^5 + 5*(a*b^12*d^3 - 3*a^2*b^11*d^2*e + 3*a^3*b^10*d*e^2 - a^4*b^9
*e^3)*x^4 + 10*(a^2*b^11*d^3 - 3*a^3*b^10*d^2*e + 3*a^4*b^9*d*e^2 - a^5*b^8
*e^3)*x^3 + 10*(a^3*b^10*d^3 - 3*a^4*b^9*d^2*e + 3*a^5*b^8*d*e^2 - a^6*b^7*
e^3)*x^2 + 5*(a^4*b^9*d^3 - 3*a^5*b^8*d^2*e + 3*a^6*b^7*d*e^2 - a^7*b^6*e^3
)*x)]
```

giac [B] time = 0.30, size = 805, normalized size = 2.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -1/128*(10*B*b*d*e^4 - 7*B*a*e^5 - 3*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-
b^2*d + a*b*e))/((b^6*d^2 - 2*a*b^5*d*e + a^2*b^4*e^2)*sqrt(-b^2*d + a*b*e)
) - 1/1920*(150*(x*e + d)^(9/2)*B*b^5*d*e^4 + 580*(x*e + d)^(7/2)*B*b^5*d^2
*e^4 - 1280*(x*e + d)^(5/2)*B*b^5*d^3*e^4 + 700*(x*e + d)^(3/2)*B*b^5*d^4*e
^4 - 150*sqrt(x*e + d)*B*b^5*d^5*e^4 - 105*(x*e + d)^(9/2)*B*a*b^4*e^5 - 45
*(x*e + d)^(9/2)*A*b^5*e^5 - 1370*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 210*(x*e
+ d)^(7/2)*A*b^5*d*e^5 + 3456*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 + 384*(x*e +
d)^(5/2)*A*b^5*d^2*e^5 - 2590*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 - 210*(x*e +
d)^(3/2)*A*b^5*d^3*e^5 + 705*sqrt(x*e + d)*B*a*b^4*d^4*e^5 + 45*sqrt(x*e +
d)*A*b^5*d^4*e^5 + 790*(x*e + d)^(7/2)*B*a^2*b^3*e^6 - 210*(x*e + d)^(7/2)*
A*a*b^4*e^6 - 3072*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 - 768*(x*e + d)^(5/2)*A*
a*b^4*d*e^6 + 3570*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 + 630*(x*e + d)^(3/2)*
A*a*b^4*d^2*e^6 - 1320*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 - 180*sqrt(x*e + d)*
A*a*b^4*d^3*e^6 + 896*(x*e + d)^(5/2)*B*a^3*b^2*e^7 + 384*(x*e + d)^(5/2)*A
*a^2*b^3*e^7 - 2170*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 - 630*(x*e + d)^(3/2)*A
*a^2*b^3*d*e^7 + 1230*sqrt(x*e + d)*B*a^3*b^2*d^2*e^7 + 270*sqrt(x*e + d)*A
*a^2*b^3*d^2*e^7 + 490*(x*e + d)^(3/2)*B*a^4*b*e^8 + 210*(x*e + d)^(3/2)*A*
a^3*b^2*e^8 - 570*sqrt(x*e + d)*B*a^4*b*d*e^8 - 180*sqrt(x*e + d)*A*a^3*b^2
*d*e^8 + 105*sqrt(x*e + d)*B*a^5*e^9 + 45*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*
d^2 - 2*a*b^5*d*e + a^2*b^4*e^2)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.08, size = 872, normalized size = 2.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3/128*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(9/2)*A*b+7/128
*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(9/2)*a*B-5/64*e^4/(
b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(9/2)*B*b*d+7/64*e^5/(b*e*
x+a*e)^5/(a*e-b*d)*(e*x+d)^(7/2)*A-79/192*e^5/(b*e*x+a*e)^5/b/(a*e-b*d)*(e*
x+d)^(7/2)*a*B+29/96*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(7/2)*B*d-1/5*e^5/
(b*e*x+a*e)^5/b*(e*x+d)^(5/2)*A-7/15*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(5/2)*a*
```

```
B+2/3*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(5/2)*B*d-7/64*e^6/(b*e*x+a*e)^5/b^2*(e*x
+d)^(3/2)*A*a+7/64*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*A*d-49/192*e^6/(b*e*x+
a*e)^5/b^3*(e*x+d)^(3/2)*B*a^2+119/192*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(3/2)*
B*a*d-35/96*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*B*d^2-3/128*e^7/(b*e*x+a*e)^5
/b^3*(e*x+d)^(1/2)*A*a^2+3/64*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*A*a*d-3/1
28*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*A*d^2-7/128*e^7/(b*e*x+a*e)^5/b^4*(e*x
+d)^(1/2)*B*a^3+3/16*e^6/(b*e*x+a*e)^5/b^3*(e*x+d)^(1/2)*B*a^2*d-27/128*e^5
/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*B*a*d^2+5/64*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(
1/2)*B*d^3+3/128*e^5/b^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+7/128*e^5/b^4/(a^2*e^2-2*a*b*d*
e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
a*B-5/64*e^4/b^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.35, size = 572, normalized size = 1.83

$$\frac{e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(3\,A\,b\,e+7\,B\,a\,e-10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(3\,A\,b\,e^5+7\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}\right)\,\left(3\,A\,b\,e+7\,B\,a\,e-10\,B\,b\,d\right)}{128\,b^{9/2}\,{\left(a\,e-b\,d\right)}^{5/2}}-\frac{\frac{{\left(d+e\,x\right)}^{5/2}\,\left(3\,A\,b\,e^5+7\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{15\,b^2}-\frac{{\left(d+e\,x\right)}^{9/2}\,\left(3\,A\,b\,e^5+7\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{128\,{\left(a\,e-b\,d\right)}^2}+\frac{7\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{3/2}\,\left(3\,A\,b\,e^5+7\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{192\,b^3}-\frac{{\left(d+e\,x\right)}^{7/2}\,\left(21\,A\,b\,e^5-79\,B\,a\,e^5+58\,B\,b\,d\,e^4\right)}{192\,b\,\left(a\,e-b\,d\right)}+\frac{\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)\,\left(3\,A\,b\,e^5+7\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{128\,b^4}}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-{\left(d+e\,x\right)}^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+b^5\,{\left(d+e\,x\right)}^5-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^4+a^5\,e^5-b^5\,d^5+{\left(d+e\,x\right)}^3\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)-10\,a^2\,b^3\,d^3\,e^2+10\,a^3\,b^2\,d^2\,e^3+5\,a\,b^4\,d^4\,e-5\,a^4\,b\,d\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(3*A*b*e + 7*B*a*e - 10*B*b*d))/((a*
e - b*d)^(1/2)*(3*A*b*e^5 + 7*B*a*e^5 - 10*B*b*d*e^4)))*(3*A*b*e + 7*B*a*e
- 10*B*b*d))/(128*b^(9/2)*(a*e - b*d)^(5/2)) - (((d + e*x)^(5/2)*(3*A*b*e^5
 + 7*B*a*e^5 - 10*B*b*d*e^4))/(15*b^2) - ((d + e*x)^(9/2)*(3*A*b*e^5 + 7*B*
a*e^5 - 10*B*b*d*e^4))/(128*(a*e - b*d)^2) + (7*(a*e - b*d)*(d + e*x)^(3/2)
*(3*A*b*e^5 + 7*B*a*e^5 - 10*B*b*d*e^4))/(192*b^3) - ((d + e*x)^(7/2)*(21*A
*b*e^5 - 79*B*a*e^5 + 58*B*b*d*e^4))/(192*b*(a*e - b*d)) + ((d + e*x)^(1/2)
*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)*(3*A*b*e^5 + 7*B*a*e^5 - 10*B*b*d*e^4))/(1
28*b^4))/((d + e*x)*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^
3*d^2*e^2 - 20*a*b^4*d^3*e) - (d + e*x)^2*(10*b^5*d^3 - 10*a^3*b^2*e^3 + 30
*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + b^5*(d + e*x)^5 - (5*b^5*d - 5*a*b^4*e)*
(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (d + e*x)^3*(10*b^5*d^2 + 10*a^2*b^3*e^2
- 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e -
 5*a^4*b*d*e^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1609 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$-\frac{3e^4(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{7/2}(bd-ae)^{7/2}}+\frac{3e^3\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{128b^3(a+bx)(bd-ae)^3}-\frac{e^2\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{64b^3(a+bx)^2(bd-ae)^2}$$

Rubi [A] time = 0.27, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = $\{27, 78, 47, 51, 63, 208\}$

$$\frac{3e^3\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{128b^3(a+bx)(bd-ae)^3}-\frac{e^2\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{64b^3(a+bx)^2(bd-ae)^2}-\frac{3e^4(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{7/2}(bd-ae)^{7/2}}-\frac{e\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{16b^3(a+bx)^3(bd-ae)}-\frac{(d+ex)^{3/2}(-aBe-Abe+2bBd)}{8b^2(a+bx)^4(bd-ae)}-\frac{(d+ex)^{5/2}(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(e*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(16*b^3*(b*d - a*e)*(a + b*x)^
3) - (e^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(64*b^3*(b*d - a*e)^2*(a
 + b*x)^2) + (3*e^3*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(128*b^3*(b*d
- a*e)^3*(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(3/2))/(8*b^2*(b
*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^(5/2))/(5*b*(b*d - a*e)*(a
+ b*x)^5) - (3*e^4*(2*b*B*d - A*b*e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x]
)/Sqrt[b*d - a*e]])/(128*b^(7/2)*(b*d - a*e)^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{3/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{5b(bd-ae)(a+bx)^5} + \frac{(2bBd-Abe-aBe)\int \frac{(d+ex)^{3/2}}{(a+bx)^5}\,dx}{2b(bd-ae)}$$

$$= -\frac{(2bBd-Abe-aBe)(d+ex)^{3/2}}{8b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{5/2}}{5b(bd-ae)(a+bx)^5} + \frac{(3e(2bBd-Abe-aBe}{16b^2(bd-}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{(2bBd-Abe-aBe)(d+ex)^{3/2}}{8b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d}{5b(bd-ae)(a}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} - \frac{(2bBd-Abe}{8b^2(bd-}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} + \frac{3e^3(2bBd-}{128b^3(bd}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} + \frac{3e^3(2bBd-}{128b^3(bd}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} + \frac{3e^3(2bBd-}{128b^3(bd}$$

Mathematica [C] time = 0.06, size = 98, normalized size = 0.31

$$\frac{(d+ex)^{5/2}\left(\frac{5e^4(aBe+Abe-2bBd)\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{5aB-5Ab}{(a+bx)^5}\right)}{25b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(5/2)*((-5*A*b + 5*a*B)/(a + b*x)^5 + (5*e^4*(-2*b*B*d + A*b*e +
 a*B*e)*Hypergeometric2F1[5/2, 5, 7/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^5))/(25*b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 3.19, size = 660, normalized size = 2.11

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] -1/640*(e^4*Sqrt[d + e*x]*(-30*b^5*B*d^5 + 15*A*b^5*d^4*e + 135*a*b^4*B*d^4
*e - 60*a*A*b^4*d^3*e^2 - 240*a^2*b^3*B*d^3*e^2 + 90*a^2*A*b^3*d^2*e^3 + 21
0*a^3*b^2*B*d^2*e^3 - 60*a^3*A*b^2*d*e^4 - 90*a^4*b*B*d*e^4 + 15*a^4*A*b*e^
5 + 15*a^5*B*e^5 + 140*b^5*B*d^4*(d + e*x) - 70*A*b^5*d^3*e*(d + e*x) - 490
*a*b^4*B*d^3*e*(d + e*x) + 210*a*A*b^4*d^2*e^2*(d + e*x) + 630*a^2*b^3*B*d^
2*e^2*(d + e*x) - 210*a^2*A*b^3*d*e^3*(d + e*x) - 350*a^3*b^2*B*d*e^3*(d +
e*x) + 70*a^3*A*b^2*e^4*(d + e*x) + 70*a^4*b*B*e^4*(d + e*x) - 128*A*b^5*d^
2*e*(d + e*x)^2 + 128*a*b^4*B*d^2*e*(d + e*x)^2 + 256*a*A*b^4*d*e^2*(d + e*
x)^2 - 256*a^2*b^3*B*d*e^2*(d + e*x)^2 - 128*a^2*A*b^3*e^3*(d + e*x)^2 + 12
8*a^3*b^2*B*e^3*(d + e*x)^2 - 140*b^5*B*d^2*(d + e*x)^3 + 70*A*b^5*d*e*(d +
 e*x)^3 + 210*a*b^4*B*d*e*(d + e*x)^3 - 70*a*A*b^4*e^2*(d + e*x)^3 - 70*a^2
*b^3*B*e^2*(d + e*x)^3 + 30*b^5*B*d*(d + e*x)^4 - 15*A*b^5*e*(d + e*x)^4 -
15*a*b^4*B*e*(d + e*x)^4))/(b^3*(b*d - a*e)^3*(b*d - a*e - b*(d + e*x))^5)
- (3*(2*b*B*d*e^4 - A*b*e^5 - a*B*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*S
qrt[d + e*x])/(b*d - a*e)])/(128*b^(7/2)*(b*d - a*e)^3*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.51, size = 2349, normalized size = 7.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/1280*(15*(2*B*a^5*b*d*e^4 - (B*a^6 + A*a^5*b)*e^5 + (2*B*b^6*d*e^4 - (B*
a*b^5 + A*b^6)*e^5)*x^5 + 5*(2*B*a*b^5*d*e^4 - (B*a^2*b^4 + A*a*b^5)*e^5)*x
^4 + 10*(2*B*a^2*b^4*d*e^4 - (B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3 + 10*(2*B*a^3
*b^3*d*e^4 - (B*a^4*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(2*B*a^4*b^2*d*e^4 - (B*a
^5*b + A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*
sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(32*(B*a*b^6 + 4*A*b^7)*d
^5 - 16*(6*B*a^2*b^5 + 29*A*a*b^6)*d^4*e + 4*(19*B*a^3*b^4 + 146*A*a^2*b^5)
*d^3*e^2 + 2*(4*B*a^4*b^3 - 129*A*a^3*b^4)*d^2*e^3 - 5*(7*B*a^5*b^2 + A*a^4
*b^3)*d*e^4 + 15*(B*a^6*b + A*a^5*b^2)*e^5 - 15*(2*B*b^7*d^2*e^3 - (3*B*a*b
^6 + A*b^7)*d*e^4 + (B*a^2*b^5 + A*a*b^6)*e^5)*x^4 + 10*(2*B*b^7*d^3*e^2 -
(17*B*a*b^6 + A*b^7)*d^2*e^3 + 2*(11*B*a^2*b^5 + 4*A*a*b^6)*d*e^4 - 7*(B*a^
3*b^4 + A*a^2*b^5)*e^5)*x^3 + 2*(120*B*b^7*d^4*e - 2*(227*B*a*b^6 - 2*A*b^7
)*d^3*e^2 + 27*(21*B*a^2*b^5 - A*a*b^6)*d^2*e^3 - 3*(99*B*a^3*b^4 - 29*A*a^
2*b^5)*d*e^4 + 64*(B*a^4*b^3 - A*a^3*b^4)*e^5)*x^2 + 2*(80*B*b^7*d^5 - 8*(3
1*B*a*b^6 - 11*A*b^7)*d^4*e + 2*(107*B*a^2*b^5 - 172*A*a*b^6)*d^3*e^2 + (B*
a^3*b^4 + 489*A*a^2*b^5)*d^2*e^3 - 2*(41*B*a^4*b^3 + 134*A*a^3*b^4)*d*e^4 +
 35*(B*a^5*b^2 + A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^4 - 4*a^6*b^7
*d^3*e + 6*a^7*b^6*d^2*e^2 - 4*a^8*b^5*d*e^3 + a^9*b^4*e^4 + (b^13*d^4 - 4*
a*b^12*d^3*e + 6*a^2*b^11*d^2*e^2 - 4*a^3*b^10*d*e^3 + a^4*b^9*e^4)*x^5 + 5
*(a*b^12*d^4 - 4*a^2*b^11*d^3*e + 6*a^3*b^10*d^2*e^2 - 4*a^4*b^9*d*e^3 + a^
5*b^8*e^4)*x^4 + 10*(a^2*b^11*d^4 - 4*a^3*b^10*d^3*e + 6*a^4*b^9*d^2*e^2 -
4*a^5*b^8*d*e^3 + a^6*b^7*e^4)*x^3 + 10*(a^3*b^10*d^4 - 4*a^4*b^9*d^3*e + 6
*a^5*b^8*d^2*e^2 - 4*a^6*b^7*d*e^3 + a^7*b^6*e^4)*x^2 + 5*(a^4*b^9*d^4 - 4*
a^5*b^8*d^3*e + 6*a^6*b^7*d^2*e^2 - 4*a^7*b^6*d*e^3 + a^8*b^5*e^4)*x), 1/64
0*(15*(2*B*a^5*b*d*e^4 - (B*a^6 + A*a^5*b)*e^5 + (2*B*b^6*d*e^4 - (B*a*b^5
+ A*b^6)*e^5)*x^5 + 5*(2*B*a*b^5*d*e^4 - (B*a^2*b^4 + A*a*b^5)*e^5)*x^4 + 1
0*(2*B*a^2*b^4*d*e^4 - (B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3 + 10*(2*B*a^3*b^3*d
*e^4 - (B*a^4*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(2*B*a^4*b^2*d*e^4 - (B*a^5*b +
 A*a^4*b^2)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e
*x + d)/(b*e*x + b*d)) - (32*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(6*B*a^2*b^5 + 29
*A*a*b^6)*d^4*e + 4*(19*B*a^3*b^4 + 146*A*a^2*b^5)*d^3*e^2 + 2*(4*B*a^4*b^3
 - 129*A*a^3*b^4)*d^2*e^3 - 5*(7*B*a^5*b^2 + A*a^4*b^3)*d*e^4 + 15*(B*a^6*b
```

```
 + A*a^5*b^2)*e^5 - 15*(2*B*b^7*d^2*e^3 - (3*B*a*b^6 + A*b^7)*d*e^4 + (B*a^
2*b^5 + A*a*b^6)*e^5)*x^4 + 10*(2*B*b^7*d^3*e^2 - (17*B*a*b^6 + A*b^7)*d^2*
e^3 + 2*(11*B*a^2*b^5 + 4*A*a*b^6)*d*e^4 - 7*(B*a^3*b^4 + A*a^2*b^5)*e^5)*x
^3 + 2*(120*B*b^7*d^4*e - 2*(227*B*a*b^6 - 2*A*b^7)*d^3*e^2 + 27*(21*B*a^2*
b^5 - A*a*b^6)*d^2*e^3 - 3*(99*B*a^3*b^4 - 29*A*a^2*b^5)*d*e^4 + 64*(B*a^4*
b^3 - A*a^3*b^4)*e^5)*x^2 + 2*(80*B*b^7*d^5 - 8*(31*B*a*b^6 - 11*A*b^7)*d^4
*e + 2*(107*B*a^2*b^5 - 172*A*a*b^6)*d^3*e^2 + (B*a^3*b^4 + 489*A*a^2*b^5)*
d^2*e^3 - 2*(41*B*a^4*b^3 + 134*A*a^3*b^4)*d*e^4 + 35*(B*a^5*b^2 + A*a^4*b^
3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^4 - 4*a^6*b^7*d^3*e + 6*a^7*b^6*d^2*e^
2 - 4*a^8*b^5*d*e^3 + a^9*b^4*e^4 + (b^13*d^4 - 4*a*b^12*d^3*e + 6*a^2*b^11
*d^2*e^2 - 4*a^3*b^10*d*e^3 + a^4*b^9*e^4)*x^5 + 5*(a*b^12*d^4 - 4*a^2*b^11
*d^3*e + 6*a^3*b^10*d^2*e^2 - 4*a^4*b^9*d*e^3 + a^5*b^8*e^4)*x^4 + 10*(a^2*
b^11*d^4 - 4*a^3*b^10*d^3*e + 6*a^4*b^9*d^2*e^2 - 4*a^5*b^8*d*e^3 + a^6*b^7
*e^4)*x^3 + 10*(a^3*b^10*d^4 - 4*a^4*b^9*d^3*e + 6*a^5*b^8*d^2*e^2 - 4*a^6*
b^7*d*e^3 + a^7*b^6*e^4)*x^2 + 5*(a^4*b^9*d^4 - 4*a^5*b^8*d^3*e + 6*a^6*b^7
*d^2*e^2 - 4*a^7*b^6*d*e^3 + a^8*b^5*e^4)*x)]
```

giac [B] time = 0.27, size = 814, normalized size = 2.60

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 3/128*(2*B*b*d*e^4 - B*a*e^5 - A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^3*e^3)*sqrt(-
b^2*d + a*b*e)) + 1/640*(30*(x*e + d)^(9/2)*B*b^5*d*e^4 - 140*(x*e + d)^(7/
2)*B*b^5*d^2*e^4 + 140*(x*e + d)^(3/2)*B*b^5*d^4*e^4 - 30*sqrt(x*e + d)*B*b
^5*d^5*e^4 - 15*(x*e + d)^(9/2)*B*a*b^4*e^5 - 15*(x*e + d)^(9/2)*A*b^5*e^5
+ 210*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 70*(x*e + d)^(7/2)*A*b^5*d*e^5 + 128*
(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 - 128*(x*e + d)^(5/2)*A*b^5*d^2*e^5 - 490*(
x*e + d)^(3/2)*B*a*b^4*d^3*e^5 - 70*(x*e + d)^(3/2)*A*b^5*d^3*e^5 + 135*sqr
t(x*e + d)*B*a*b^4*d^4*e^5 + 15*sqrt(x*e + d)*A*b^5*d^4*e^5 - 70*(x*e + d)^
(7/2)*B*a^2*b^3*e^6 - 70*(x*e + d)^(7/2)*A*a*b^4*e^6 - 256*(x*e + d)^(5/2)*
B*a^2*b^3*d*e^6 + 256*(x*e + d)^(5/2)*A*a*b^4*d*e^6 + 630*(x*e + d)^(3/2)*B
*a^2*b^3*d^2*e^6 + 210*(x*e + d)^(3/2)*A*a*b^4*d^2*e^6 - 240*sqrt(x*e + d)*
B*a^2*b^3*d^3*e^6 - 60*sqrt(x*e + d)*A*a*b^4*d^3*e^6 + 128*(x*e + d)^(5/2)*
B*a^3*b^2*e^7 - 128*(x*e + d)^(5/2)*A*a^2*b^3*e^7 - 350*(x*e + d)^(3/2)*B*a
^3*b^2*d*e^7 - 210*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 + 210*sqrt(x*e + d)*B*a^
3*b^2*d^2*e^7 + 90*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 + 70*(x*e + d)^(3/2)*B*a
^4*b*e^8 + 70*(x*e + d)^(3/2)*A*a^3*b^2*e^8 - 90*sqrt(x*e + d)*B*a^4*b*d*e^
8 - 60*sqrt(x*e + d)*A*a^3*b^2*d*e^8 + 15*sqrt(x*e + d)*B*a^5*e^9 + 15*sqrt
(x*e + d)*A*a^4*b*e^9)/((b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^
3*e^3)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 871, normalized size = 2.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3/128*e^5/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(
e*x+d)^(9/2)*A+3/128*e^5/(b*e*x+a*e)^5*b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2
*e-b^3*d^3)*(e*x+d)^(9/2)*a*B-3/64*e^4/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d
*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(9/2)*B*d+7/64*e^5/(b*e*x+a*e)^5/(a^2*e
^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(7/2)*A*b+7/64*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a
*b*d*e+b^2*d^2)*(e*x+d)^(7/2)*a*B-7/32*e^4/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e
```

```
+b^2*d^2)*(e*x+d)^(7/2)*B*b*d+1/5*e^5/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(5/2)
*A-1/5*e^5/(b*e*x+a*e)^5/(a*e-b*d)/b*(e*x+d)^(5/2)*B*a-7/64*e^5/(b*e*x+a*e)
^5/b*(e*x+d)^(3/2)*A-7/64*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(3/2)*a*B+7/32*e^4/
(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*B*d-3/128*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)
*A*a+3/128*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*A*d-3/128*e^6/(b*e*x+a*e)^5/b^
3*(e*x+d)^(1/2)*B*a^2+9/128*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*B*a*d-3/64*
e^4/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*B*d^2+3/128*e^5/b^2/(a^3*e^3-3*a^2*b*d*e^
2+3*a*b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*A+3/128*e^5/b^3/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)
/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-3/64*e
^4/b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.23, size = 535, normalized size = 1.71

$$\frac{\frac{7\,{\left(d+e\,x\right)}^{7/2}\,\left(A\,b\,e^5+B\,a\,e^5-2\,B\,b\,d\,e^4\right)}{64\,{\left(a\,e-b\,d\right)}^2}-\frac{7\,{\left(d+e\,x\right)}^{3/2}\,\left(A\,b\,e^5+B\,a\,e^5-2\,B\,b\,d\,e^4\right)}{64\,b^2}-\frac{3\,\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}\,\left(A\,b\,e^5+B\,a\,e^5-2\,B\,b\,d\,e^4\right)}{128\,b^3}+\frac{3\,b\,{\left(d+e\,x\right)}^{9/2}\,\left(A\,b\,e^5+B\,a\,e^5-2\,B\,b\,d\,e^4\right)}{128\,{\left(a\,e-b\,d\right)}^3}+\frac{\left(A\,b\,e^5-B\,a\,e^5\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,b\,\left(a\,e-b\,d\right)}}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-{\left(d+e\,x\right)}^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+b^5\,{\left(d+e\,x\right)}^5-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^4+a^5\,e^5-b^5\,d^5+{\left(d+e\,x\right)}^3\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)-10\,a^2\,b^3\,d^3\,e^2+10\,a^3\,b^2\,d^2\,e^3+5\,a\,b^4\,d^4\,e-5\,a^4\,b\,d\,e^4}+\frac{3\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(A\,b\,e+B\,a\,e-2\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^5+B\,a\,e^5-2\,B\,b\,d\,e^4\right)}\right)\,\left(A\,b\,e+B\,a\,e-2\,B\,b\,d\right)}{128\,b^{7/2}\,{\left(a\,e-b\,d\right)}^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((7*(d + e*x)^(7/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(64*(a*e - b*d)^2) -
 (7*(d + e*x)^(3/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(64*b^2) - (3*(a*e -
 b*d)*(d + e*x)^(1/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(128*b^3) + (3*b*(
d + e*x)^(9/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(128*(a*e - b*d)^3) + ((A
*b*e^5 - B*a*e^5)*(d + e*x)^(5/2))/(5*b*(a*e - b*d)))/((d + e*x)*(5*b^5*d^4
 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) -
(d + e*x)^2*(10*b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*
e) + b^5*(d + e*x)^5 - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^
5 + (d + e*x)^3*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d
^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (3*e^4*atan(
(b^(1/2)*e^4*(d + e*x)^(1/2)*(A*b*e + B*a*e - 2*B*b*d))/((a*e - b*d)^(1/2)*
(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4)))*(A*b*e + B*a*e - 2*B*b*d))/(128*b^(7/2)
*(a*e - b*d)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1610 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$\frac{e^4(-3aBe-7Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{5/2}(bd-ae)^{9/2}}-\frac{e^3\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{128b^2(a+bx)(bd-ae)^4}+\frac{e^2\sqrt{d+ex}\,(-3aBe-7Ab}{192b^2(a+bx)^2(bd}$$

Rubi [A] time = 0.29, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 51, 63, 208}

$$-\frac{e^3\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{128b^2(a+bx)(bd-ae)^4}+\frac{e^2\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{192b^2(a+bx)^2(bd-ae)^3}+\frac{e^4(-3aBe-7Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{5/2}(bd-ae)^{9/2}}-\frac{e\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{240b^2(a+bx)^3(bd-ae)^2}-\frac{\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{40b^2(a+bx)^4(bd-ae)}-\frac{(d+ex)^{3/2}(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -((10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(40*b^2*(b*d - a*e)*(a + b*
x)^4) - (e*(10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(240*b^2*(b*d - a*
e)^2*(a + b*x)^3) + (e^2*(10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(192
*b^2*(b*d - a*e)^3*(a + b*x)^2) - (e^3*(10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[
d + e*x])/(128*b^2*(b*d - a*e)^4*(a + b*x)) - ((A*b - a*B)*(d + e*x)^(3/2))
/(5*b*(b*d - a*e)*(a + b*x)^5) + (e^4*(10*b*B*d - 7*A*b*e - 3*a*B*e)*ArcTan
h[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(5/2)*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)\sqrt{d+ex}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-7Abe-3aBe)\int \frac{\sqrt{d+ex}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{3/2}}{5b(bd-ae)(a+bx)^5} + \frac{(e(10bBd-7Abe-3aB}{80b^2(bd}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} - \frac{(Ab-aB)(}{5b(bd-ae}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bBd-}{192b^2}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bBd-}{192b^2}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bBd-}{192b^2}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bBd-}{192b^2}$$

Mathematica [C] time = 0.06, size = 99, normalized size = 0.32

$$\frac{(d+ex)^{3/2}\left(\frac{e^4(3aBe+7Abe-10bBd)\,{}_2F_1\left(\frac{3}{2},5;\frac{5}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{3aB-3Ab}{(a+bx)^5}\right)}{15b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(3/2)*((-3*A*b + 3*a*B)/(a + b*x)^5 + (e^4*(-10*b*B*d + 7*A*b*e
+ 3*a*B*e)*Hypergeometric2F1[3/2, 5, 5/2, (b*(d + e*x))/(b*d - a*e)])/(b*d
- a*e)^5))/(15*b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 2.72, size = 676, normalized size = 2.16

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(-150*b^5*B*d^5 + 105*A*b^5*d^4*e + 645*a*b^4*B*d^4*e -
420*a*A*b^4*d^3*e^2 - 1080*a^2*b^3*B*d^3*e^2 + 630*a^2*A*b^3*d^2*e^3 + 870*
a^3*b^2*B*d^2*e^3 - 420*a^3*A*b^2*d*e^4 - 330*a^4*b*B*d*e^4 + 105*a^4*A*b*e
^5 + 45*a^5*B*e^5 - 580*b^5*B*d^4*(d + e*x) + 790*A*b^5*d^3*e*(d + e*x) + 1
530*a*b^4*B*d^3*e*(d + e*x) - 2370*a*A*b^4*d^2*e^2*(d + e*x) - 1110*a^2*b^3
*B*d^2*e^2*(d + e*x) + 2370*a^2*A*b^3*d*e^3*(d + e*x) - 50*a^3*b^2*B*d*e^3*
(d + e*x) - 790*a^3*A*b^2*e^4*(d + e*x) + 210*a^4*b*B*e^4*(d + e*x) + 1280*
b^5*B*d^3*(d + e*x)^2 - 896*A*b^5*d^2*e*(d + e*x)^2 - 2944*a*b^4*B*d^2*e*(d
 + e*x)^2 + 1792*a*A*b^4*d*e^2*(d + e*x)^2 + 2048*a^2*b^3*B*d*e^2*(d + e*x)
^2 - 896*a^2*A*b^3*e^3*(d + e*x)^2 - 384*a^3*b^2*B*e^3*(d + e*x)^2 - 700*b^
5*B*d^2*(d + e*x)^3 + 490*A*b^5*d*e*(d + e*x)^3 + 910*a*b^4*B*d*e*(d + e*x)
^3 - 490*a*A*b^4*e^2*(d + e*x)^3 - 210*a^2*b^3*B*e^2*(d + e*x)^3 + 150*b^5*
B*d*(d + e*x)^4 - 105*A*b^5*e*(d + e*x)^4 - 45*a*b^4*B*e*(d + e*x)^4))/(192
0*b^2*(b*d - a*e)^4*(b*d - a*e - b*(d + e*x))^5) + ((10*b*B*d*e^4 - 7*A*b*e
^5 - 3*a*B*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*
e)])/(128*b^(5/2)*(b*d - a*e)^4*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.50, size = 2580, normalized size = 8.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/3840*(15*(10*B*a^5*b*d*e^4 - (3*B*a^6 + 7*A*a^5*b)*e^5 + (10*B*b^6*d*e^
4 - (3*B*a*b^5 + 7*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (3*B*a^2*b^4 + 7
*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (3*B*a^3*b^3 + 7*A*a^2*b^4)*e
^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (3*B*a^4*b^2 + 7*A*a^3*b^3)*e^5)*x^2 + 5
*(10*B*a^4*b^2*d*e^4 - (3*B*a^5*b + 7*A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e
)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)
) + 2*(96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(28*B*a^2*b^5 + 117*A*a*b^6)*d^4*e +
 4*(197*B*a^3*b^4 + 898*A*a^2*b^5)*d^3*e^2 - 2*(278*B*a^4*b^3 + 1657*A*a^3*
b^4)*d^2*e^3 + 5*(33*B*a^5*b^2 + 263*A*a^4*b^3)*d*e^4 - 15*(3*B*a^6*b + 7*A
*a^5*b^2)*e^5 + 15*(10*B*b^7*d^2*e^3 - (13*B*a*b^6 + 7*A*b^7)*d*e^4 + (3*B*
a^2*b^5 + 7*A*a*b^6)*e^5)*x^4 - 10*(10*B*b^7*d^3*e^2 - (83*B*a*b^6 + 7*A*b^
7)*d^2*e^3 + 2*(47*B*a^2*b^5 + 28*A*a*b^6)*d*e^4 - 7*(3*B*a^3*b^4 + 7*A*a^2
*b^5)*e^5)*x^3 + 2*(40*B*b^7*d^4*e - 2*(141*B*a*b^6 + 14*A*b^7)*d^3*e^2 + 3
*(317*B*a^2*b^5 + 63*A*a*b^6)*d^2*e^3 - (901*B*a^3*b^4 + 609*A*a^2*b^5)*d*e
^4 + 64*(3*B*a^4*b^3 + 7*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(143*B*
a*b^6 - 3*A*b^7)*d^4*e + 2*(1041*B*a^2*b^5 - 76*A*a*b^6)*d^3*e^2 - 3*(529*B
*a^3*b^4 - 139*A*a^2*b^5)*d^2*e^3 + 2*(257*B*a^4*b^3 - 342*A*a^3*b^4)*d*e^4
 - 5*(21*B*a^5*b^2 - 79*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^5 - 5*
a^6*b^7*d^4*e + 10*a^7*b^6*d^3*e^2 - 10*a^8*b^5*d^2*e^3 + 5*a^9*b^4*d*e^4 -
 a^10*b^3*e^5 + (b^13*d^5 - 5*a*b^12*d^4*e + 10*a^2*b^11*d^3*e^2 - 10*a^3*b
^10*d^2*e^3 + 5*a^4*b^9*d*e^4 - a^5*b^8*e^5)*x^5 + 5*(a*b^12*d^5 - 5*a^2*b^
11*d^4*e + 10*a^3*b^10*d^3*e^2 - 10*a^4*b^9*d^2*e^3 + 5*a^5*b^8*d*e^4 - a^6
*b^7*e^5)*x^4 + 10*(a^2*b^11*d^5 - 5*a^3*b^10*d^4*e + 10*a^4*b^9*d^3*e^2 -
10*a^5*b^8*d^2*e^3 + 5*a^6*b^7*d*e^4 - a^7*b^6*e^5)*x^3 + 10*(a^3*b^10*d^5
- 5*a^4*b^9*d^4*e + 10*a^5*b^8*d^3*e^2 - 10*a^6*b^7*d^2*e^3 + 5*a^7*b^6*d*e
^4 - a^8*b^5*e^5)*x^2 + 5*(a^4*b^9*d^5 - 5*a^5*b^8*d^4*e + 10*a^6*b^7*d^3*e
^2 - 10*a^7*b^6*d^2*e^3 + 5*a^8*b^5*d*e^4 - a^9*b^4*e^5)*x), -1/1920*(15*(1
0*B*a^5*b*d*e^4 - (3*B*a^6 + 7*A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (3*B*a*b^5
+ 7*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (3*B*a^2*b^4 + 7*A*a*b^5)*e^5)*
x^4 + 10*(10*B*a^2*b^4*d*e^4 - (3*B*a^3*b^3 + 7*A*a^2*b^4)*e^5)*x^3 + 10*(1
0*B*a^3*b^3*d*e^4 - (3*B*a^4*b^2 + 7*A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*
d*e^4 - (3*B*a^5*b + 7*A*a^4*b^2)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(
```

```
-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (96*(B*a*b^6 + 4*A*b^7)*d^5
- 16*(28*B*a^2*b^5 + 117*A*a*b^6)*d^4*e + 4*(197*B*a^3*b^4 + 898*A*a^2*b^5)
*d^3*e^2 - 2*(278*B*a^4*b^3 + 1657*A*a^3*b^4)*d^2*e^3 + 5*(33*B*a^5*b^2 + 2
63*A*a^4*b^3)*d*e^4 - 15*(3*B*a^6*b + 7*A*a^5*b^2)*e^5 + 15*(10*B*b^7*d^2*e
^3 - (13*B*a*b^6 + 7*A*b^7)*d*e^4 + (3*B*a^2*b^5 + 7*A*a*b^6)*e^5)*x^4 - 10
*(10*B*b^7*d^3*e^2 - (83*B*a*b^6 + 7*A*b^7)*d^2*e^3 + 2*(47*B*a^2*b^5 + 28*
A*a*b^6)*d*e^4 - 7*(3*B*a^3*b^4 + 7*A*a^2*b^5)*e^5)*x^3 + 2*(40*B*b^7*d^4*e
 - 2*(141*B*a*b^6 + 14*A*b^7)*d^3*e^2 + 3*(317*B*a^2*b^5 + 63*A*a*b^6)*d^2*
e^3 - (901*B*a^3*b^4 + 609*A*a^2*b^5)*d*e^4 + 64*(3*B*a^4*b^3 + 7*A*a^3*b^4
)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(143*B*a*b^6 - 3*A*b^7)*d^4*e + 2*(1041*B
*a^2*b^5 - 76*A*a*b^6)*d^3*e^2 - 3*(529*B*a^3*b^4 - 139*A*a^2*b^5)*d^2*e^3
+ 2*(257*B*a^4*b^3 - 342*A*a^3*b^4)*d*e^4 - 5*(21*B*a^5*b^2 - 79*A*a^4*b^3)
*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^5 - 5*a^6*b^7*d^4*e + 10*a^7*b^6*d^3*e^2
 - 10*a^8*b^5*d^2*e^3 + 5*a^9*b^4*d*e^4 - a^10*b^3*e^5 + (b^13*d^5 - 5*a*b^
12*d^4*e + 10*a^2*b^11*d^3*e^2 - 10*a^3*b^10*d^2*e^3 + 5*a^4*b^9*d*e^4 - a^
5*b^8*e^5)*x^5 + 5*(a*b^12*d^5 - 5*a^2*b^11*d^4*e + 10*a^3*b^10*d^3*e^2 - 1
0*a^4*b^9*d^2*e^3 + 5*a^5*b^8*d*e^4 - a^6*b^7*e^5)*x^4 + 10*(a^2*b^11*d^5 -
 5*a^3*b^10*d^4*e + 10*a^4*b^9*d^3*e^2 - 10*a^5*b^8*d^2*e^3 + 5*a^6*b^7*d*e
^4 - a^7*b^6*e^5)*x^3 + 10*(a^3*b^10*d^5 - 5*a^4*b^9*d^4*e + 10*a^5*b^8*d^3
*e^2 - 10*a^6*b^7*d^2*e^3 + 5*a^7*b^6*d*e^4 - a^8*b^5*e^5)*x^2 + 5*(a^4*b^9
*d^5 - 5*a^5*b^8*d^4*e + 10*a^6*b^7*d^3*e^2 - 10*a^7*b^6*d^2*e^3 + 5*a^8*b^
5*d*e^4 - a^9*b^4*e^5)*x)]
```

giac [B] time = 0.27, size = 857, normalized size = 2.74

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -1/128*(10*B*b*d*e^4 - 3*B*a*e^5 - 7*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-
b^2*d + a*b*e))/((b^6*d^4 - 4*a*b^5*d^3*e + 6*a^2*b^4*d^2*e^2 - 4*a^3*b^3*d
*e^3 + a^4*b^2*e^4)*sqrt(-b^2*d + a*b*e)) - 1/1920*(150*(x*e + d)^(9/2)*B*b
^5*d*e^4 - 700*(x*e + d)^(7/2)*B*b^5*d^2*e^4 + 1280*(x*e + d)^(5/2)*B*b^5*d
^3*e^4 - 580*(x*e + d)^(3/2)*B*b^5*d^4*e^4 - 150*sqrt(x*e + d)*B*b^5*d^5*e^
4 - 45*(x*e + d)^(9/2)*B*a*b^4*e^5 - 105*(x*e + d)^(9/2)*A*b^5*e^5 + 910*(x
*e + d)^(7/2)*B*a*b^4*d*e^5 + 490*(x*e + d)^(7/2)*A*b^5*d*e^5 - 2944*(x*e +
 d)^(5/2)*B*a*b^4*d^2*e^5 - 896*(x*e + d)^(5/2)*A*b^5*d^2*e^5 + 1530*(x*e +
 d)^(3/2)*B*a*b^4*d^3*e^5 + 790*(x*e + d)^(3/2)*A*b^5*d^3*e^5 + 645*sqrt(x*
e + d)*B*a*b^4*d^4*e^5 + 105*sqrt(x*e + d)*A*b^5*d^4*e^5 - 210*(x*e + d)^(7
/2)*B*a^2*b^3*e^6 - 490*(x*e + d)^(7/2)*A*a*b^4*e^6 + 2048*(x*e + d)^(5/2)*
B*a^2*b^3*d*e^6 + 1792*(x*e + d)^(5/2)*A*a*b^4*d*e^6 - 1110*(x*e + d)^(3/2)
*B*a^2*b^3*d^2*e^6 - 2370*(x*e + d)^(3/2)*A*a*b^4*d^2*e^6 - 1080*sqrt(x*e +
 d)*B*a^2*b^3*d^3*e^6 - 420*sqrt(x*e + d)*A*a*b^4*d^3*e^6 - 384*(x*e + d)^(
5/2)*B*a^3*b^2*e^7 - 896*(x*e + d)^(5/2)*A*a^2*b^3*e^7 - 50*(x*e + d)^(3/2)
*B*a^3*b^2*d*e^7 + 2370*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 + 870*sqrt(x*e + d)
*B*a^3*b^2*d^2*e^7 + 630*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 + 210*(x*e + d)^(3
/2)*B*a^4*b*e^8 - 790*(x*e + d)^(3/2)*A*a^3*b^2*e^8 - 330*sqrt(x*e + d)*B*a
^4*b*d*e^8 - 420*sqrt(x*e + d)*A*a^3*b^2*d*e^8 + 45*sqrt(x*e + d)*B*a^5*e^9
 + 105*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*d^4 - 4*a*b^5*d^3*e + 6*a^2*b^4*d^2
*e^2 - 4*a^3*b^3*d*e^3 + a^4*b^2*e^4)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 1037, normalized size = 3.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 7/128*e^5/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^
3*d^3*e+b^4*d^4)*(e*x+d)^(9/2)*A+3/128*e^5/(b*e*x+a*e)^5*b^2/(a^4*e^4-4*a^3
*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(9/2)*a*B-5/64*e^
4/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+
b^4*d^4)*(e*x+d)^(9/2)*B*d+49/192*e^5/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d*
e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(7/2)*A+7/64*e^5/(b*e*x+a*e)^5*b/(a^3*e^
3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(7/2)*a*B-35/96*e^4/(b*e*x+a
*e)^5*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(7/2)*B*d+7
/15*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*A*b+1/5*e^5
/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*a*B-2/3*e^4/(b*e*x
+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*B*b*d+79/192*e^5/(b*e*x+a
*e)^5/(a*e-b*d)*(e*x+d)^(3/2)*A-7/64*e^5/(b*e*x+a*e)^5/b/(a*e-b*d)*(e*x+d)^
(3/2)*a*B-29/96*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(3/2)*B*d-7/128*e^5/(b*
e*x+a*e)^5/b*(e*x+d)^(1/2)*A-3/128*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*a*B+
5/64*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*B*d+7/128*e^5/b/(a^4*e^4-4*a^3*b*d*e
^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)/((a*e-b*d)*b)^(1/2)*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+3/128*e^5/b^2/(a^4*e^4-4*a^3*b*d*e^3+6*a
^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-5/64*e^4/b/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*
d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.24, size = 564, normalized size = 1.80

$$\frac{\frac{7\,(d+e\,x)^{7/2}\,\left(7\,A\,b^2\,e^5-10\,B\,d\,b^2\,e^4+3\,B\,a\,b\,e^5\right)}{192\,(a\,e-b\,d)^3}-\frac{\sqrt{d+e\,x}\,\left(7\,A\,b\,e^5+3\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{128\,b^2}+\frac{(d+e\,x)^{5/2}\,\left(7\,A\,b\,e^5+3\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{15\,(a\,e-b\,d)^2}+\frac{b^2\,(d+e\,x)^{9/2}\,\left(7\,A\,b\,e^5+3\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{128\,(a\,e-b\,d)^4}-\frac{(d+e\,x)^{3/2}\,\left(21\,B\,a\,e^5-79\,A\,b\,e^5+58\,B\,b\,d\,e^4\right)}{192\,b\,(a\,e-b\,d)}}{(d+e\,x)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-(d+e\,x)^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+b^5\,(d+e\,x)^5-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,(d+e\,x)^4+a^5\,e^5-b^5\,d^5+(d+e\,x)^3\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)-10\,a^2\,b^3\,d^3\,e^2+10\,a^3\,b^2\,d^2\,e^3+5\,a\,b^4\,d^4\,e-5\,a^4\,b\,d\,e^4}+\frac{e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(7\,A\,b\,e+3\,B\,a\,e-10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(7\,A\,b\,e^5+3\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}\right)\,\left(7\,A\,b\,e+3\,B\,a\,e-10\,B\,b\,d\right)}{128\,b^{5/2}\,(a\,e-b\,d)^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((7*(d + e*x)^(7/2)*(7*A*b^2*e^5 + 3*B*a*b*e^5 - 10*B*b^2*d*e^4))/(192*(a*e
 - b*d)^3) - ((d + e*x)^(1/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*B*b*d*e^4))/(128*
b^2) + ((d + e*x)^(5/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*B*b*d*e^4))/(15*(a*e -
b*d)^2) + (b^2*(d + e*x)^(9/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*B*b*d*e^4))/(128
*(a*e - b*d)^4) - ((d + e*x)^(3/2)*(21*B*a*e^5 - 79*A*b*e^5 + 58*B*b*d*e^4)
)/(192*b*(a*e - b*d)))/((d + e*x)*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e
^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) - (d + e*x)^2*(10*b^5*d^3 - 10*a^
3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + b^5*(d + e*x)^5 - (5*b^5*d
 - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (d + e*x)^3*(10*b^5*d^2 + 1
0*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5
*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(7*A
*b*e + 3*B*a*e - 10*B*b*d))/((a*e - b*d)^(1/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*
B*b*d*e^4)))*(7*A*b*e + 3*B*a*e - 10*B*b*d))/(128*b^(5/2)*(a*e - b*d)^(9/2)
)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1611 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=313

$$-\frac{7e^4(-aBe-9Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{3/2}(bd-ae)^{11/2}}+\frac{7e^3\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{128b(a+bx)(bd-ae)^5}-\frac{7e^2\sqrt{d+ex}\,(-aBe-9A}{192b(a+bx)^2(ba}$$

Rubi [A] time = 0.31, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {27, 78, 51, 63, 208}

$$-\frac{7e^4(-aBe-9Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{3/2}(bd-ae)^{11/2}}+\frac{7e^3\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{128b(a+bx)(bd-ae)^5}-\frac{7e^2\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{192b(a+bx)^2(bd-ae)^4}+\frac{7e\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{240b(a+bx)^3(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{40b(a+bx)^4(bd-ae)^2}-\frac{\sqrt{d+ex}\,(Ab-aB)}{5b(a+bx)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -((A*b - a*B)*Sqrt[d + e*x])/(5*b*(b*d - a*e)*(a + b*x)^5) - ((10*b*B*d - 9
*A*b*e - a*B*e)*Sqrt[d + e*x])/(40*b*(b*d - a*e)^2*(a + b*x)^4) + (7*e*(10*
b*B*d - 9*A*b*e - a*B*e)*Sqrt[d + e*x])/(240*b*(b*d - a*e)^3*(a + b*x)^3) -
 (7*e^2*(10*b*B*d - 9*A*b*e - a*B*e)*Sqrt[d + e*x])/(192*b*(b*d - a*e)^4*(a
 + b*x)^2) + (7*e^3*(10*b*B*d - 9*A*b*e - a*B*e)*Sqrt[d + e*x])/(128*b*(b*d
 - a*e)^5*(a + b*x)) - (7*e^4*(10*b*B*d - 9*A*b*e - a*B*e)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(3/2)*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{(a+bx)^6\sqrt{d+ex}}\,dx$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-9Abe-aBe)\int \frac{1}{(a+bx)^5\sqrt{d+ex}}\,dx}{10b(bd-ae)}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} - \frac{(7e(10bBd-9A\dots}{8\dots}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A\dots}{240b(bd-\dots}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A\dots}{240b(bd-\dots}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A\dots}{240b(bd-\dots}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A\dots}{240b(bd-\dots}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A\dots}{240b(bd-\dots}$$

Mathematica [C] time = 0.05, size = 97, normalized size = 0.31

$$\frac{\sqrt{d+ex}\left(\frac{e^4(aBe+9Abe-10bBd)\,{}_2F_1\left(\frac{1}{2},5;\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{aB-Ab}{(a+bx)^5}\right)}{5b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (Sqrt[d + e*x]*((-(A*b) + a*B)/(a + b*x)^5 + (e^4*(-10*b*B*d + 9*A*b*e + a*
B*e)*Hypergeometric2F1[1/2, 5, 3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)
^5))/(5*b*(b*d - a*e))
```

IntegrateAlgebraic [B] time = 2.03, size = 676, normalized size = 2.16

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(-2790*b^5*B*d^5 + 2895*A*b^5*d^4*e + 11055*a*b^4*B*d^4*
e - 11580*a*A*b^4*d^3*e^2 - 16320*a^2*b^3*B*d^3*e^2 + 17370*a^2*A*b^3*d^2*e
^3 + 10530*a^3*b^2*B*d^2*e^3 - 11580*a^3*A*b^2*d*e^4 - 2370*a^4*b*B*d*e^4 +
 2895*a^4*A*b*e^5 - 105*a^5*B*e^5 + 7900*b^5*B*d^4*(d + e*x) - 7110*A*b^5*d
^3*e*(d + e*x) - 24490*a*b^4*B*d^3*e*(d + e*x) + 21330*a*A*b^4*d^2*e^2*(d +
```

```
e*x) + 26070*a^2*b^3*B*d^2*e^2*(d + e*x) - 21330*a^2*A*b^3*d*e^3*(d + e*x)
 - 10270*a^3*b^2*B*d*e^3*(d + e*x) + 7110*a^3*A*b^2*e^4*(d + e*x) + 790*a^4
*b*B*e^4*(d + e*x) - 8960*b^5*B*d^3*(d + e*x)^2 + 8064*A*b^5*d^2*e*(d + e*x
)^2 + 18816*a*b^4*B*d^2*e*(d + e*x)^2 - 16128*a*A*b^4*d*e^2*(d + e*x)^2 - 1
0752*a^2*b^3*B*d*e^2*(d + e*x)^2 + 8064*a^2*A*b^3*e^3*(d + e*x)^2 + 896*a^3
*b^2*B*e^3*(d + e*x)^2 + 4900*b^5*B*d^2*(d + e*x)^3 - 4410*A*b^5*d*e*(d + e
*x)^3 - 5390*a*b^4*B*d*e*(d + e*x)^3 + 4410*a*A*b^4*e^2*(d + e*x)^3 + 490*a
^2*b^3*B*e^2*(d + e*x)^3 - 1050*b^5*B*d*(d + e*x)^4 + 945*A*b^5*e*(d + e*x)
^4 + 105*a*b^4*B*e*(d + e*x)^4))/(1920*b*(b*d - a*e)^5*(b*d - a*e - b*(d +
e*x))^5) - (7*(10*b*B*d*e^4 - 9*A*b*e^5 - a*B*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b
*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(128*b^(3/2)*(b*d - a*e)^5*Sqrt[-(b
*d) + a*e])
```

fricas [B] time = 0.52, size = 2715, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/3840*(105*(10*B*a^5*b*d*e^4 - (B*a^6 + 9*A*a^5*b)*e^5 + (10*B*b^6*d*e^4
- (B*a*b^5 + 9*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (B*a^2*b^4 + 9*A*a*b
^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (B*a^3*b^3 + 9*A*a^2*b^4)*e^5)*x^3
+ 10*(10*B*a^3*b^3*d*e^4 - (B*a^4*b^2 + 9*A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4
*b^2*d*e^4 - (B*a^5*b + 9*A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x
 + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(96*(B
*a*b^6 + 4*A*b^7)*d^5 - 16*(38*B*a^2*b^5 + 147*A*a*b^6)*d^4*e + 12*(139*B*a
^3*b^4 + 506*A*a^2*b^5)*d^3*e^2 - 6*(456*B*a^4*b^3 + 1429*A*a^3*b^4)*d^2*e^
3 + 5*(295*B*a^5*b^2 + 1473*A*a^4*b^3)*d*e^4 + 15*(7*B*a^6*b - 193*A*a^5*b^
2)*e^5 - 105*(10*B*b^7*d^2*e^3 - (11*B*a*b^6 + 9*A*b^7)*d*e^4 + (B*a^2*b^5
+ 9*A*a*b^6)*e^5)*x^4 + 70*(10*B*b^7*d^3*e^2 - 9*(9*B*a*b^6 + A*b^7)*d^2*e^
3 + 6*(13*B*a^2*b^5 + 12*A*a*b^6)*d*e^4 - 7*(B*a^3*b^4 + 9*A*a^2*b^5)*e^5)*
x^3 - 14*(40*B*b^7*d^4*e - 2*(137*B*a*b^6 + 18*A*b^7)*d^3*e^2 + 3*(299*B*a^
2*b^5 + 81*A*a*b^6)*d^2*e^3 - (727*B*a^3*b^4 + 783*A*a^2*b^5)*d*e^4 + 64*(B
*a^4*b^3 + 9*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(193*B*a*b^6 + 27*A
*b^7)*d^4*e + 2*(2161*B*a^2*b^5 + 684*A*a*b^6)*d^3*e^2 - 3*(2419*B*a^3*b^4
+ 1251*A*a^2*b^5)*d^2*e^3 + 2*(2317*B*a^4*b^3 + 3078*A*a^3*b^4)*d*e^4 - 395
*(B*a^5*b^2 + 9*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^6 - 6*a^6*b^7*
d^5*e + 15*a^7*b^6*d^4*e^2 - 20*a^8*b^5*d^3*e^3 + 15*a^9*b^4*d^2*e^4 - 6*a^
10*b^3*d*e^5 + a^11*b^2*e^6 + (b^13*d^6 - 6*a*b^12*d^5*e + 15*a^2*b^11*d^4*
e^2 - 20*a^3*b^10*d^3*e^3 + 15*a^4*b^9*d^2*e^4 - 6*a^5*b^8*d*e^5 + a^6*b^7*
e^6)*x^5 + 5*(a*b^12*d^6 - 6*a^2*b^11*d^5*e + 15*a^3*b^10*d^4*e^2 - 20*a^4*
b^9*d^3*e^3 + 15*a^5*b^8*d^2*e^4 - 6*a^6*b^7*d*e^5 + a^7*b^6*e^6)*x^4 + 10*
(a^2*b^11*d^6 - 6*a^3*b^10*d^5*e + 15*a^4*b^9*d^4*e^2 - 20*a^5*b^8*d^3*e^3
+ 15*a^6*b^7*d^2*e^4 - 6*a^7*b^6*d*e^5 + a^8*b^5*e^6)*x^3 + 10*(a^3*b^10*d^
6 - 6*a^4*b^9*d^5*e + 15*a^5*b^8*d^4*e^2 - 20*a^6*b^7*d^3*e^3 + 15*a^7*b^6*
d^2*e^4 - 6*a^8*b^5*d*e^5 + a^9*b^4*e^6)*x^2 + 5*(a^4*b^9*d^6 - 6*a^5*b^8*d
^5*e + 15*a^6*b^7*d^4*e^2 - 20*a^7*b^6*d^3*e^3 + 15*a^8*b^5*d^2*e^4 - 6*a^9
*b^4*d*e^5 + a^10*b^3*e^6)*x), 1/1920*(105*(10*B*a^5*b*d*e^4 - (B*a^6 + 9*A
*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (B*a*b^5 + 9*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^
5*d*e^4 - (B*a^2*b^4 + 9*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (B*a^
3*b^3 + 9*A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (B*a^4*b^2 + 9*A*a
^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (B*a^5*b + 9*A*a^4*b^2)*e^5)*x)*
sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d
)) - (96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(38*B*a^2*b^5 + 147*A*a*b^6)*d^4*e +
12*(139*B*a^3*b^4 + 506*A*a^2*b^5)*d^3*e^2 - 6*(456*B*a^4*b^3 + 1429*A*a^3*
b^4)*d^2*e^3 + 5*(295*B*a^5*b^2 + 1473*A*a^4*b^3)*d*e^4 + 15*(7*B*a^6*b - 1
93*A*a^5*b^2)*e^5 - 105*(10*B*b^7*d^2*e^3 - (11*B*a*b^6 + 9*A*b^7)*d*e^4 +
(B*a^2*b^5 + 9*A*a*b^6)*e^5)*x^4 + 70*(10*B*b^7*d^3*e^2 - 9*(9*B*a*b^6 + A*
```

```
b^7)*d^2*e^3 + 6*(13*B*a^2*b^5 + 12*A*a*b^6)*d*e^4 - 7*(B*a^3*b^4 + 9*A*a^2
*b^5)*e^5)*x^3 - 14*(40*B*b^7*d^4*e - 2*(137*B*a*b^6 + 18*A*b^7)*d^3*e^2 +
3*(299*B*a^2*b^5 + 81*A*a*b^6)*d^2*e^3 - (727*B*a^3*b^4 + 783*A*a^2*b^5)*d*
e^4 + 64*(B*a^4*b^3 + 9*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(193*B*a
*b^6 + 27*A*b^7)*d^4*e + 2*(2161*B*a^2*b^5 + 684*A*a*b^6)*d^3*e^2 - 3*(2419
*B*a^3*b^4 + 1251*A*a^2*b^5)*d^2*e^3 + 2*(2317*B*a^4*b^3 + 3078*A*a^3*b^4)*
d*e^4 - 395*(B*a^5*b^2 + 9*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^6 -
 6*a^6*b^7*d^5*e + 15*a^7*b^6*d^4*e^2 - 20*a^8*b^5*d^3*e^3 + 15*a^9*b^4*d^2
*e^4 - 6*a^10*b^3*d*e^5 + a^11*b^2*e^6 + (b^13*d^6 - 6*a*b^12*d^5*e + 15*a^
2*b^11*d^4*e^2 - 20*a^3*b^10*d^3*e^3 + 15*a^4*b^9*d^2*e^4 - 6*a^5*b^8*d*e^5
 + a^6*b^7*e^6)*x^5 + 5*(a*b^12*d^6 - 6*a^2*b^11*d^5*e + 15*a^3*b^10*d^4*e^
2 - 20*a^4*b^9*d^3*e^3 + 15*a^5*b^8*d^2*e^4 - 6*a^6*b^7*d*e^5 + a^7*b^6*e^6
)*x^4 + 10*(a^2*b^11*d^6 - 6*a^3*b^10*d^5*e + 15*a^4*b^9*d^4*e^2 - 20*a^5*b
^8*d^3*e^3 + 15*a^6*b^7*d^2*e^4 - 6*a^7*b^6*d*e^5 + a^8*b^5*e^6)*x^3 + 10*(
a^3*b^10*d^6 - 6*a^4*b^9*d^5*e + 15*a^5*b^8*d^4*e^2 - 20*a^6*b^7*d^3*e^3 +
15*a^7*b^6*d^2*e^4 - 6*a^8*b^5*d*e^5 + a^9*b^4*e^6)*x^2 + 5*(a^4*b^9*d^6 -
6*a^5*b^8*d^5*e + 15*a^6*b^7*d^4*e^2 - 20*a^7*b^6*d^3*e^3 + 15*a^8*b^5*d^2*
e^4 - 6*a^9*b^4*d*e^5 + a^10*b^3*e^6)*x)]
```

giac [B] time = 0.30, size = 881, normalized size = 2.81

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 7/128*(10*B*b*d*e^4 - B*a*e^5 - 9*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*a^3*b^3*d^
2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5)*sqrt(-b^2*d + a*b*e)) + 1/1920*(1050*(
x*e + d)^(9/2)*B*b^5*d*e^4 - 4900*(x*e + d)^(7/2)*B*b^5*d^2*e^4 + 8960*(x*e
 + d)^(5/2)*B*b^5*d^3*e^4 - 7900*(x*e + d)^(3/2)*B*b^5*d^4*e^4 + 2790*sqrt(
x*e + d)*B*b^5*d^5*e^4 - 105*(x*e + d)^(9/2)*B*a*b^4*e^5 - 945*(x*e + d)^(9
/2)*A*b^5*e^5 + 5390*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 4410*(x*e + d)^(7/2)*A
*b^5*d*e^5 - 18816*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 - 8064*(x*e + d)^(5/2)*A
*b^5*d^2*e^5 + 24490*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 + 7110*(x*e + d)^(3/2)
*A*b^5*d^3*e^5 - 11055*sqrt(x*e + d)*B*a*b^4*d^4*e^5 - 2895*sqrt(x*e + d)*A
*b^5*d^4*e^5 - 490*(x*e + d)^(7/2)*B*a^2*b^3*e^6 - 4410*(x*e + d)^(7/2)*A*a
*b^4*e^6 + 10752*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 + 16128*(x*e + d)^(5/2)*A*
a*b^4*d*e^6 - 26070*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 - 21330*(x*e + d)^(3/
2)*A*a*b^4*d^2*e^6 + 16320*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 + 11580*sqrt(x*e
 + d)*A*a*b^4*d^3*e^6 - 896*(x*e + d)^(5/2)*B*a^3*b^2*e^7 - 8064*(x*e + d)^
(5/2)*A*a^2*b^3*e^7 + 10270*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 + 21330*(x*e +
d)^(3/2)*A*a^2*b^3*d*e^7 - 10530*sqrt(x*e + d)*B*a^3*b^2*d^2*e^7 - 17370*sq
rt(x*e + d)*A*a^2*b^3*d^2*e^7 - 790*(x*e + d)^(3/2)*B*a^4*b*e^8 - 7110*(x*e
 + d)^(3/2)*A*a^3*b^2*e^8 + 2370*sqrt(x*e + d)*B*a^4*b*d*e^8 + 11580*sqrt(x
*e + d)*A*a^3*b^2*d*e^8 + 105*sqrt(x*e + d)*B*a^5*e^9 - 2895*sqrt(x*e + d)*
A*a^4*b*e^9)/((b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*a^3*b^3*d^
2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.08, size = 1274, normalized size = 4.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 63/128*e^5/(b*e*x+a*e)^5*b^4/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a
^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)*(e*x+d)^(9/2)*A+7/128*e^5/(b*e*x+a*e)
^5*b^3/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a^2*b^3*d^3*e^2+5*a*b^4
```

```
*d^4*e-b^5*d^5)*(e*x+d)^(9/2)*a*B-35/64*e^4/(b*e*x+a*e)^5*b^4/(a^5*e^5-5*a^
4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)*(e*x
+d)^(9/2)*B*d+147/64*e^5/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2
*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(7/2)*A+49/192*e^5/(b*e*x+a*e)^5*b^
2/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(
7/2)*a*B-245/96*e^4/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*
e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(7/2)*B*d+21/5*e^5/(b*e*x+a*e)^5*b^2/(a^
3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(5/2)*A+7/15*e^5/(b*e*x+
a*e)^5*b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(5/2)*a*B-14
/3*e^4/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x
+d)^(5/2)*B*d+237/64*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^
(3/2)*A*b+79/192*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(3/2
)*a*B-395/96*e^4/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(3/2)*B*
b*d+193/128*e^5/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(1/2)*A-7/128*e^5/(b*e*x+a*
e)^5/b/(a*e-b*d)*(e*x+d)^(1/2)*a*B-93/64*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d
)^(1/2)*B*d+63/128*e^5/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a^2*b^3
*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*A+7/128*e^5/b/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^
3-10*a^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)/((a*e-b*d)*b)^(1/2)*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-35/64*e^4/(a^5*e^5-5*a^4*b*d*e^4+10*a^
3*b^2*d^2*e^3-10*a^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)/((a*e-b*d)*b)^(1/2)
*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.29, size = 567, normalized size = 1.81

$$\frac{\frac{49\,(d+e\,x)^{7/2}\,\left(9\,A\,b^3\,e^5-10\,B\,d\,b^3\,e^4+B\,a\,b^2\,e^5\right)}{192\,(a\,e-b\,d)^4}+\frac{79\,(d+e\,x)^{3/2}\,\left(9\,A\,b\,e^5+B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{192\,(a\,e-b\,d)^2}+\frac{7\,b\,(d+e\,x)^{5/2}\,\left(9\,A\,b\,e^5+B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{15\,(a\,e-b\,d)^3}+\frac{7\,b^3\,(d+e\,x)^{9/2}\,\left(9\,A\,b\,e^5+B\,a\,e^5-10\,B\,b\,d\,e^4\right)}{128\,(a\,e-b\,d)^5}-\frac{\sqrt{d+e\,x}\,\left(7\,B\,a\,e^5-193\,A\,b\,e^5+186\,B\,b\,d\,e^4\right)}{128\,b\,(a\,e-b\,d)}}{(d+e\,x)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-(d+e\,x)^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+b^5\,(d+e\,x)^5-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,(d+e\,x)^4+a^5\,e^5-b^5\,d^5+(d+e\,x)^3\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)-10\,a^2\,b^3\,d^3\,e^2+10\,a^3\,b^2\,d^2\,e^3+5\,a\,b^4\,d^4\,e-5\,a^4\,b\,d\,e^4}+\frac{7\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(9\,A\,b\,e+B\,a\,e-10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(9\,A\,b\,e^5+B\,a\,e^5-10\,B\,b\,d\,e^4\right)}\right)\,\left(9\,A\,b\,e+B\,a\,e-10\,B\,b\,d\right)}{128\,b^{3/2}\,(a\,e-b\,d)^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((49*(d + e*x)^(7/2)*(9*A*b^3*e^5 + B*a*b^2*e^5 - 10*B*b^3*d*e^4))/(192*(a*
e - b*d)^4) + (79*(d + e*x)^(3/2)*(9*A*b*e^5 + B*a*e^5 - 10*B*b*d*e^4))/(19
2*(a*e - b*d)^2) + (7*b*(d + e*x)^(5/2)*(9*A*b*e^5 + B*a*e^5 - 10*B*b*d*e^4
))/(15*(a*e - b*d)^3) + (7*b^3*(d + e*x)^(9/2)*(9*A*b*e^5 + B*a*e^5 - 10*B*
b*d*e^4))/(128*(a*e - b*d)^5) - ((d + e*x)^(1/2)*(7*B*a*e^5 - 193*A*b*e^5 +
 186*B*b*d*e^4))/(128*b*(a*e - b*d)))/((d + e*x)*(5*b^5*d^4 + 5*a^4*b*e^4 -
 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) - (d + e*x)^2*(10*
b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + b^5*(d + e*
x)^5 - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (d + e*x)^3*
(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^2 + 10*a^3*
b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (7*e^4*atan((b^(1/2)*e^4*(d
+ e*x)^(1/2)*(9*A*b*e + B*a*e - 10*B*b*d))/((a*e - b*d)^(1/2)*(9*A*b*e^5 +
B*a*e^5 - 10*B*b*d*e^4)))*(9*A*b*e + B*a*e - 10*B*b*d))/(128*b^(3/2)*(a*e -
 b*d)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1612 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=352

$$\frac{63e^4(aBe-11Abe+10bBd)}{128b\sqrt{d+ex}\,(bd-ae)^6}-\frac{63e^4(aBe-11Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128\sqrt{b}\,(bd-ae)^{13/2}}+\frac{21e^3(aBe-11Abe+10bBd)}{128b(a+bx)\sqrt{d+ex}\,(bd-ae)^5}$$

Rubi [A] time = 0.38, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$\frac{63e^4(aBe-11Abe+10bBd)}{128b\sqrt{d+ex}\,(bd-ae)^6}+\frac{21e^3(aBe-11Abe+10bBd)}{128b(a+bx)\sqrt{d+ex}\,(bd-ae)^5}-\frac{21e^2(aBe-11Abe+10bBd)}{320b(a+bx)^2\sqrt{d+ex}\,(bd-ae)^4}-\frac{63e^4(aBe-11Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128\sqrt{b}\,(bd-ae)^{13/2}}+\frac{3e(aBe-11Abe+10bBd)}{80b(a+bx)^3\sqrt{d+ex}\,(bd-ae)^3}-\frac{aBe-11Abe+10bBd}{40b(a+bx)^4\sqrt{d+ex}\,(bd-ae)^2}-\frac{Ab-aB}{5b(a+bx)^5\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (63*e^4*(10*b*B*d - 11*A*b*e + a*B*e))/(128*b*(b*d - a*e)^6*Sqrt[d + e*x])
- (A*b - a*B)/(5*b*(b*d - a*e)*(a + b*x)^5*Sqrt[d + e*x]) - (10*b*B*d - 11*
A*b*e + a*B*e)/(40*b*(b*d - a*e)^2*(a + b*x)^4*Sqrt[d + e*x]) + (3*e*(10*b*
B*d - 11*A*b*e + a*B*e))/(80*b*(b*d - a*e)^3*(a + b*x)^3*Sqrt[d + e*x]) - (
21*e^2*(10*b*B*d - 11*A*b*e + a*B*e))/(320*b*(b*d - a*e)^4*(a + b*x)^2*Sqrt
[d + e*x]) + (21*e^3*(10*b*B*d - 11*A*b*e + a*B*e))/(128*b*(b*d - a*e)^5*(a
 + b*x)*Sqrt[d + e*x]) - (63*e^4*(10*b*B*d - 11*A*b*e + a*B*e)*ArcTanh[(Sqr
t[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*Sqrt[b]*(b*d - a*e)^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{(a+bx)^6(d+ex)^{3/2}}\,dx$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} + \frac{(10bBd-11Abe+aBe)\int \frac{1}{(a+bx)^5(d+ex)^{3/2}}}{10b(bd-ae)}$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} - \frac{(9e(1}{}$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} + \frac{3e}{80b(}$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} + \frac{3e}{80b(}$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} + \frac{3e}{80b(}$$

$$= \frac{63e^4(10bBd-11Abe+aBe)}{128b(bd-ae)^6\sqrt{d+ex}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bB}{40b(bd-}$$

$$= \frac{63e^4(10bBd-11Abe+aBe)}{128b(bd-ae)^6\sqrt{d+ex}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bB}{40b(bd-}$$

$$= \frac{63e^4(10bBd-11Abe+aBe)}{128b(bd-ae)^6\sqrt{d+ex}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bB}{40b(bd-}$$

Mathematica [C] time = 0.07, size = 97, normalized size = 0.28

$$\frac{\frac{e^4(aBe-11Abe+10bBd)\,{}_2F_1\left(-\frac{1}{2},5;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{aB-Ab}{(a+bx)^5}}{5b\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-(A*b) + a*B)/(a + b*x)^5 + (e^4*(10*b*B*d - 11*A*b*e + a*B*e)*Hypergeome
tric2F1[-1/2, 5, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^5)/(5*b*(b*d
- a*e)*Sqrt[d + e*x])
```

IntegrateAlgebraic [B] time = 4.87, size = 891, normalized size = 2.53

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),
x]
```

```
[Out] (e^4*(1280*b^5*B*d^6 - 1280*A*b^5*d^5*e - 6400*a*b^4*B*d^5*e + 6400*a*A*b^4
*d^4*e^2 + 12800*a^2*b^3*B*d^4*e^2 - 12800*a^2*A*b^3*d^3*e^3 - 12800*a^3*b^
2*B*d^3*e^3 + 12800*a^3*A*b^2*d^2*e^4 + 6400*a^4*b*B*d^2*e^4 - 6400*a^4*A*b
*d*e^5 - 1280*a^5*B*d*e^5 + 1280*a^5*A*e^6 - 9650*b^5*B*d^5*(d + e*x) + 106
15*A*b^5*d^4*e*(d + e*x) + 37635*a*b^4*B*d^4*e*(d + e*x) - 42460*a*A*b^4*d^
3*e^2*(d + e*x) - 54040*a^2*b^3*B*d^3*e^2*(d + e*x) + 63690*a^2*A*b^3*d^2*e
^3*(d + e*x) + 32810*a^3*b^2*B*d^2*e^3*(d + e*x) - 42460*a^3*A*b^2*d*e^4*(d
 + e*x) - 5790*a^4*b*B*d*e^4*(d + e*x) + 10615*a^4*A*b*e^5*(d + e*x) - 965*
a^5*B*e^5*(d + e*x) + 23700*b^5*B*d^4*(d + e*x)^2 - 26070*A*b^5*d^3*e*(d +
e*x)^2 - 68730*a*b^4*B*d^3*e*(d + e*x)^2 + 78210*a*A*b^4*d^2*e^2*(d + e*x)^
2 + 63990*a^2*b^3*B*d^2*e^2*(d + e*x)^2 - 78210*a^2*A*b^3*d*e^3*(d + e*x)^2
 - 16590*a^3*b^2*B*d*e^3*(d + e*x)^2 + 26070*a^3*A*b^2*e^4*(d + e*x)^2 - 23
70*a^4*b*B*e^4*(d + e*x)^2 - 26880*b^5*B*d^3*(d + e*x)^3 + 29568*A*b^5*d^2*
e*(d + e*x)^3 + 51072*a*b^4*B*d^2*e*(d + e*x)^3 - 59136*a*A*b^4*d*e^2*(d +
e*x)^3 - 21504*a^2*b^3*B*d*e^2*(d + e*x)^3 + 29568*a^2*A*b^3*e^3*(d + e*x)^
3 - 2688*a^3*b^2*B*e^3*(d + e*x)^3 + 14700*b^5*B*d^2*(d + e*x)^4 - 16170*A*
b^5*d*e*(d + e*x)^4 - 13230*a*b^4*B*d*e*(d + e*x)^4 + 16170*a*A*b^4*e^2*(d
+ e*x)^4 - 1470*a^2*b^3*B*e^2*(d + e*x)^4 - 3150*b^5*B*d*(d + e*x)^5 + 3465
*A*b^5*e*(d + e*x)^5 - 315*a*b^4*B*e*(d + e*x)^5))/(640*(b*d - a*e)^6*Sqrt[
d + e*x]*(b*d - a*e - b*(d + e*x))^5) - (63*(10*b*B*d*e^4 - 11*A*b*e^5 + a*
B*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(128
*Sqrt[b]*(b*d - a*e)^6*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.55, size = 3876, normalized size = 11.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/1280*(315*(10*B*a^5*b*d^2*e^4 + (B*a^6 - 11*A*a^5*b)*d*e^5 + (10*B*b^6*
d*e^5 + (B*a*b^5 - 11*A*b^6)*e^6)*x^6 + (10*B*b^6*d^2*e^4 + (51*B*a*b^5 - 1
1*A*b^6)*d*e^5 + 5*(B*a^2*b^4 - 11*A*a*b^5)*e^6)*x^5 + 5*(10*B*a*b^5*d^2*e^
4 + (21*B*a^2*b^4 - 11*A*a*b^5)*d*e^5 + 2*(B*a^3*b^3 - 11*A*a^2*b^4)*e^6)*x
^4 + 10*(10*B*a^2*b^4*d^2*e^4 + 11*(B*a^3*b^3 - A*a^2*b^4)*d*e^5 + (B*a^4*b
^2 - 11*A*a^3*b^3)*e^6)*x^3 + 5*(20*B*a^3*b^3*d^2*e^4 + 2*(6*B*a^4*b^2 - 11
*A*a^3*b^3)*d*e^5 + (B*a^5*b - 11*A*a^4*b^2)*e^6)*x^2 + (50*B*a^4*b^2*d^2*e
^4 + 5*(3*B*a^5*b - 11*A*a^4*b^2)*d*e^5 + (B*a^6 - 11*A*a^5*b)*e^6)*x)*sqrt
(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x +
 d))/(b*x + a)) - 2*(1280*A*a^6*b*e^6 - 32*(B*a*b^6 + 4*A*b^7)*d^6 + 16*(16
*B*a^2*b^5 + 59*A*a*b^6)*d^5*e - 4*(239*B*a^3*b^4 + 766*A*a^2*b^5)*d^4*e^2
+ 14*(178*B*a^4*b^3 + 417*A*a^3*b^4)*d^3*e^3 + 5*(97*B*a^5*b^2 - 1561*A*a^4
*b^3)*d^2*e^4 - 5*(449*B*a^6*b - 587*A*a^5*b^2)*d*e^5 + 315*(10*B*b^7*d^2*e
^4 - (9*B*a*b^6 + 11*A*b^7)*d*e^5 - (B*a^2*b^5 - 11*A*a*b^6)*e^6)*x^5 + 105
*(10*B*b^7*d^3*e^3 + (131*B*a*b^6 - 11*A*b^7)*d^2*e^4 - (127*B*a^2*b^5 + 14
3*A*a*b^6)*d*e^5 - 14*(B*a^3*b^4 - 11*A*a^2*b^5)*e^6)*x^4 - 42*(10*B*b^7*d^
4*e^2 - (129*B*a*b^6 + 11*A*b^7)*d^3*e^3 - 13*(41*B*a^2*b^5 - 11*A*a*b^6)*d
^2*e^4 + 4*(147*B*a^3*b^4 + 143*A*a^2*b^5)*d*e^5 + 64*(B*a^4*b^3 - 11*A*a^3
*b^4)*e^6)*x^3 + 6*(40*B*b^7*d^5*e - 2*(183*B*a*b^6 + 22*A*b^7)*d^4*e^2 + (
1883*B*a^2*b^5 + 407*A*a*b^6)*d^3*e^3 + 88*(29*B*a^3*b^4 - 24*A*a^2*b^5)*d^
2*e^4 - 2*(1857*B*a^4*b^3 + 1298*A*a^3*b^4)*d*e^5 - 395*(B*a^5*b^2 - 11*A*a
^4*b^3)*e^6)*x^2 - (160*B*b^7*d^6 - 16*(79*B*a*b^6 + 11*A*b^7)*d^5*e + 4*(1
163*B*a^2*b^5 + 352*A*a*b^6)*d^4*e^2 - 2*(5991*B*a^3*b^4 + 2629*A*a^2*b^5)*
d^3*e^3 - 2*(1048*B*a^4*b^3 - 6853*A*a^3*b^4)*d^2*e^4 + 5*(1913*B*a^5*b^2 +
 187*A*a^4*b^3)*d*e^5 + 965*(B*a^6*b - 11*A*a^5*b^2)*e^6)*x)*sqrt(e*x + d))
/(a^5*b^8*d^8 - 7*a^6*b^7*d^7*e + 21*a^7*b^6*d^6*e^2 - 35*a^8*b^5*d^5*e^3 +
 35*a^9*b^4*d^4*e^4 - 21*a^10*b^3*d^3*e^5 + 7*a^11*b^2*d^2*e^6 - a^12*b*d*e
^7 + (b^13*d^7*e - 7*a*b^12*d^6*e^2 + 21*a^2*b^11*d^5*e^3 - 35*a^3*b^10*d^4
*e^4 + 35*a^4*b^9*d^3*e^5 - 21*a^5*b^8*d^2*e^6 + 7*a^6*b^7*d*e^7 - a^7*b^6*
```

```
e^8)*x^6 + (b^13*d^8 - 2*a*b^12*d^7*e - 14*a^2*b^11*d^6*e^2 + 70*a^3*b^10*d
^5*e^3 - 140*a^4*b^9*d^4*e^4 + 154*a^5*b^8*d^3*e^5 - 98*a^6*b^7*d^2*e^6 + 3
4*a^7*b^6*d*e^7 - 5*a^8*b^5*e^8)*x^5 + 5*(a*b^12*d^8 - 5*a^2*b^11*d^7*e + 7
*a^3*b^10*d^6*e^2 + 7*a^4*b^9*d^5*e^3 - 35*a^5*b^8*d^4*e^4 + 49*a^6*b^7*d^3
*e^5 - 35*a^7*b^6*d^2*e^6 + 13*a^8*b^5*d*e^7 - 2*a^9*b^4*e^8)*x^4 + 10*(a^2
*b^11*d^8 - 6*a^3*b^10*d^7*e + 14*a^4*b^9*d^6*e^2 - 14*a^5*b^8*d^5*e^3 + 14
*a^7*b^6*d^3*e^5 - 14*a^8*b^5*d^2*e^6 + 6*a^9*b^4*d*e^7 - a^10*b^3*e^8)*x^3
 + 5*(2*a^3*b^10*d^8 - 13*a^4*b^9*d^7*e + 35*a^5*b^8*d^6*e^2 - 49*a^6*b^7*d
^5*e^3 + 35*a^7*b^6*d^4*e^4 - 7*a^8*b^5*d^3*e^5 - 7*a^9*b^4*d^2*e^6 + 5*a^1
0*b^3*d*e^7 - a^11*b^2*e^8)*x^2 + (5*a^4*b^9*d^8 - 34*a^5*b^8*d^7*e + 98*a^
6*b^7*d^6*e^2 - 154*a^7*b^6*d^5*e^3 + 140*a^8*b^5*d^4*e^4 - 70*a^9*b^4*d^3*
e^5 + 14*a^10*b^3*d^2*e^6 + 2*a^11*b^2*d*e^7 - a^12*b*e^8)*x), 1/640*(315*(
10*B*a^5*b*d^2*e^4 + (B*a^6 - 11*A*a^5*b)*d*e^5 + (10*B*b^6*d*e^5 + (B*a*b^
5 - 11*A*b^6)*e^6)*x^6 + (10*B*b^6*d^2*e^4 + (51*B*a*b^5 - 11*A*b^6)*d*e^5
 + 5*(B*a^2*b^4 - 11*A*a*b^5)*e^6)*x^5 + 5*(10*B*a*b^5*d^2*e^4 + (21*B*a^2*b
^4 - 11*A*a*b^5)*d*e^5 + 2*(B*a^3*b^3 - 11*A*a^2*b^4)*e^6)*x^4 + 10*(10*B*a
^2*b^4*d^2*e^4 + 11*(B*a^3*b^3 - A*a^2*b^4)*d*e^5 + (B*a^4*b^2 - 11*A*a^3*b
^3)*e^6)*x^3 + 5*(20*B*a^3*b^3*d^2*e^4 + 2*(6*B*a^4*b^2 - 11*A*a^3*b^3)*d*e
^5 + (B*a^5*b - 11*A*a^4*b^2)*e^6)*x^2 + (50*B*a^4*b^2*d^2*e^4 + 5*(3*B*a^5
*b - 11*A*a^4*b^2)*d*e^5 + (B*a^6 - 11*A*a^5*b)*e^6)*x)*sqrt(-b^2*d + a*b*e
)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (1280*A*a^6*b*
e^6 - 32*(B*a*b^6 + 4*A*b^7)*d^6 + 16*(16*B*a^2*b^5 + 59*A*a*b^6)*d^5*e - 4
*(239*B*a^3*b^4 + 766*A*a^2*b^5)*d^4*e^2 + 14*(178*B*a^4*b^3 + 417*A*a^3*b^
4)*d^3*e^3 + 5*(97*B*a^5*b^2 - 1561*A*a^4*b^3)*d^2*e^4 - 5*(449*B*a^6*b - 5
87*A*a^5*b^2)*d*e^5 + 315*(10*B*b^7*d^2*e^4 - (9*B*a*b^6 + 11*A*b^7)*d*e^5
 - (B*a^2*b^5 - 11*A*a*b^6)*e^6)*x^5 + 105*(10*B*b^7*d^3*e^3 + (131*B*a*b^6
 - 11*A*b^7)*d^2*e^4 - (127*B*a^2*b^5 + 143*A*a*b^6)*d*e^5 - 14*(B*a^3*b^4 -
 11*A*a^2*b^5)*e^6)*x^4 - 42*(10*B*b^7*d^4*e^2 - (129*B*a*b^6 + 11*A*b^7)*d
^3*e^3 - 13*(41*B*a^2*b^5 - 11*A*a*b^6)*d^2*e^4 + 4*(147*B*a^3*b^4 + 143*A*
a^2*b^5)*d*e^5 + 64*(B*a^4*b^3 - 11*A*a^3*b^4)*e^6)*x^3 + 6*(40*B*b^7*d^5*e
 - 2*(183*B*a*b^6 + 22*A*b^7)*d^4*e^2 + (1883*B*a^2*b^5 + 407*A*a*b^6)*d^3*
e^3 + 88*(29*B*a^3*b^4 - 24*A*a^2*b^5)*d^2*e^4 - 2*(1857*B*a^4*b^3 + 1298*A
*a^3*b^4)*d*e^5 - 395*(B*a^5*b^2 - 11*A*a^4*b^3)*e^6)*x^2 - (160*B*b^7*d^6
 - 16*(79*B*a*b^6 + 11*A*b^7)*d^5*e + 4*(1163*B*a^2*b^5 + 352*A*a*b^6)*d^4*e
^2 - 2*(5991*B*a^3*b^4 + 2629*A*a^2*b^5)*d^3*e^3 - 2*(1048*B*a^4*b^3 - 6853
*A*a^3*b^4)*d^2*e^4 + 5*(1913*B*a^5*b^2 + 187*A*a^4*b^3)*d*e^5 + 965*(B*a^6
*b - 11*A*a^5*b^2)*e^6)*x)*sqrt(e*x + d))/(a^5*b^8*d^8 - 7*a^6*b^7*d^7*e +
21*a^7*b^6*d^6*e^2 - 35*a^8*b^5*d^5*e^3 + 35*a^9*b^4*d^4*e^4 - 21*a^10*b^3*
d^3*e^5 + 7*a^11*b^2*d^2*e^6 - a^12*b*d*e^7 + (b^13*d^7*e - 7*a*b^12*d^6*e^
2 + 21*a^2*b^11*d^5*e^3 - 35*a^3*b^10*d^4*e^4 + 35*a^4*b^9*d^3*e^5 - 21*a^5
*b^8*d^2*e^6 + 7*a^6*b^7*d*e^7 - a^7*b^6*e^8)*x^6 + (b^13*d^8 - 2*a*b^12*d^
7*e - 14*a^2*b^11*d^6*e^2 + 70*a^3*b^10*d^5*e^3 - 140*a^4*b^9*d^4*e^4 + 154
*a^5*b^8*d^3*e^5 - 98*a^6*b^7*d^2*e^6 + 34*a^7*b^6*d*e^7 - 5*a^8*b^5*e^8)*x
^5 + 5*(a*b^12*d^8 - 5*a^2*b^11*d^7*e + 7*a^3*b^10*d^6*e^2 + 7*a^4*b^9*d^5*
e^3 - 35*a^5*b^8*d^4*e^4 + 49*a^6*b^7*d^3*e^5 - 35*a^7*b^6*d^2*e^6 + 13*a^8
*b^5*d*e^7 - 2*a^9*b^4*e^8)*x^4 + 10*(a^2*b^11*d^8 - 6*a^3*b^10*d^7*e + 14*
a^4*b^9*d^6*e^2 - 14*a^5*b^8*d^5*e^3 + 14*a^7*b^6*d^3*e^5 - 14*a^8*b^5*d^2*
e^6 + 6*a^9*b^4*d*e^7 - a^10*b^3*e^8)*x^3 + 5*(2*a^3*b^10*d^8 - 13*a^4*b^9*
d^7*e + 35*a^5*b^8*d^6*e^2 - 49*a^6*b^7*d^5*e^3 + 35*a^7*b^6*d^4*e^4 - 7*a^
8*b^5*d^3*e^5 - 7*a^9*b^4*d^2*e^6 + 5*a^10*b^3*d*e^7 - a^11*b^2*e^8)*x^2 +
(5*a^4*b^9*d^8 - 34*a^5*b^8*d^7*e + 98*a^6*b^7*d^6*e^2 - 154*a^7*b^6*d^5*e^
3 + 140*a^8*b^5*d^4*e^4 - 70*a^9*b^4*d^3*e^5 + 14*a^10*b^3*d^2*e^6 + 2*a^11
*b^2*d*e^7 - a^12*b*e^8)*x)]
```

giac [B] time = 0.37, size = 994, normalized size = 2.82

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 63/128*(10*B*b*d*e^4 + B*a*e^5 - 11*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b
^2*d + a*b*e))/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*
d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(-b^2*d + a*b*e
)) + 2*(B*d*e^4 - A*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 2
0*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(x*e
+ d)) + 1/640*(1870*(x*e + d)^(9/2)*B*b^5*d*e^4 - 8300*(x*e + d)^(7/2)*B*b^
5*d^2*e^4 + 14080*(x*e + d)^(5/2)*B*b^5*d^3*e^4 - 10900*(x*e + d)^(3/2)*B*b
^5*d^4*e^4 + 3250*sqrt(x*e + d)*B*b^5*d^5*e^4 + 315*(x*e + d)^(9/2)*B*a*b^4
*e^5 - 2185*(x*e + d)^(9/2)*A*b^5*e^5 + 6830*(x*e + d)^(7/2)*B*a*b^4*d*e^5
+ 9770*(x*e + d)^(7/2)*A*b^5*d*e^5 - 25472*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5
- 16768*(x*e + d)^(5/2)*A*b^5*d^2*e^5 + 30330*(x*e + d)^(3/2)*B*a*b^4*d^3*e
^5 + 13270*(x*e + d)^(3/2)*A*b^5*d^3*e^5 - 12035*sqrt(x*e + d)*B*a*b^4*d^4*
e^5 - 4215*sqrt(x*e + d)*A*b^5*d^4*e^5 + 1470*(x*e + d)^(7/2)*B*a^2*b^3*e^6
 - 9770*(x*e + d)^(7/2)*A*a*b^4*e^6 + 8704*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6
+ 33536*(x*e + d)^(5/2)*A*a*b^4*d*e^6 - 25590*(x*e + d)^(3/2)*B*a^2*b^3*d^2
*e^6 - 39810*(x*e + d)^(3/2)*A*a*b^4*d^2*e^6 + 15640*sqrt(x*e + d)*B*a^2*b^
3*d^3*e^6 + 16860*sqrt(x*e + d)*A*a*b^4*d^3*e^6 + 2688*(x*e + d)^(5/2)*B*a^
3*b^2*e^7 - 16768*(x*e + d)^(5/2)*A*a^2*b^3*e^7 + 3790*(x*e + d)^(3/2)*B*a^
3*b^2*d*e^7 + 39810*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 - 7210*sqrt(x*e + d)*B*
a^3*b^2*d^2*e^7 - 25290*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 + 2370*(x*e + d)^(3
/2)*B*a^4*b*e^8 - 13270*(x*e + d)^(3/2)*A*a^3*b^2*e^8 - 610*sqrt(x*e + d)*B
*a^4*b*d*e^8 + 16860*sqrt(x*e + d)*A*a^3*b^2*d*e^8 + 965*sqrt(x*e + d)*B*a^
5*e^9 - 4215*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*
b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6
*e^6)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 1568, normalized size = 4.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 843/32*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a*b^4*d^3+843/32*e^8/(
a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*b^2*d+379/64*e^7/(a*e-b*d)^6/(
b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^3*b^2*d-2559/64*e^6/(a*e-b*d)^6/(b*e*x+a*e)^
5*(e*x+d)^(3/2)*B*a^2*b^3*d^2+3033/64*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)
^(3/2)*B*a*b^4*d^3+3981/64*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^
2*b^3*d-3981/64*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a*b^4*d^2-199
/5*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a*b^4*d^2+262/5*e^6/(a*e-b
*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a*b^4*d+683/64*e^5/(a*e-b*d)^6/(b*e*x+a
*e)^5*B*(e*x+d)^(7/2)*a*b^4*d-61/64*e^8/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(
1/2)*B*a^4*b*d-721/64*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*b^2
*d^2+391/16*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*b^3*d^3-2529/
64*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*b^3*d^2+68/5*e^6/(a*e-
b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*b^3*d-2407/128*e^5/(a*e-b*d)^6/(b*
e*x+a*e)^5*(e*x+d)^(1/2)*B*a*b^4*d^4-2*e^5/(a*e-b*d)^6/(e*x+d)^(1/2)*A+2*e^
4/(a*e-b*d)^6/(e*x+d)^(1/2)*B*d-437/128*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+
d)^(9/2)*A*b^5-693/128*e^5/(a*e-b*d)^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*A*b+63/128*e^5/(a*e-b*d)^6/((a*e-b*d)*b)^(1/2)*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+193/128*e^9/(a*e-b*d)^6/(b*
e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5+1327/64*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d
)^(3/2)*A*b^5*d^3+237/64*e^8/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^4*
b-843/128*e^9/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4*b-843/128*e^5/(
a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*b^5*d^4-977/64*e^6/(a*e-b*d)^6/(b*
e*x+a*e)^5*A*(e*x+d)^(7/2)*a*b^4+977/64*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*A*(e*
x+d)^(7/2)*b^5*d+147/64*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2*b
^3+22*e^4/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*b^5*d^3-545/32*e^4/(a*e
```

```
-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*b^5*d^4+325/64*e^4/(a*e-b*d)^6/(b*e*x
+a*e)^5*(e*x+d)^(1/2)*B*b^5*d^5-415/32*e^4/(a*e-b*d)^6/(b*e*x+a*e)^5*B*(e*x
+d)^(7/2)*b^5*d^2+63/128*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*a*b^
4-131/5*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2*b^3-131/5*e^5/(a*
e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*b^5*d^2+21/5*e^7/(a*e-b*d)^6/(b*e*x+
a*e)^5*(e*x+d)^(5/2)*B*a^3*b^2-1327/64*e^8/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d
)^(3/2)*A*a^3*b^2+187/64*e^4/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*b^5*
d+315/64*e^4/(a*e-b*d)^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*B*b*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.84, size = 683, normalized size = 1.94

$$\frac{\frac{237\,(d+e\,x)^2\,\left(-11\,A\,b^2\,e^5+10\,B\,d\,b^2\,e^4+B\,a\,b\,e^5\right)}{64\,(a\,e-b\,d)^3}-\frac{2\,\left(A\,e^5-B\,d\,e^4\right)}{a\,e-b\,d}+\frac{147\,(d+e\,x)^4\,\left(-11\,A\,b^4\,e^5+10\,B\,d\,b^4\,e^4+B\,a\,b^3\,e^5\right)}{64\,(a\,e-b\,d)^5}+\frac{193\,(d+e\,x)\,\left(B\,a\,e^5-11\,A\,b\,e^5+10\,B\,b\,d\,e^4\right)}{128\,(a\,e-b\,d)^2}+\frac{21\,b^2\,(d+e\,x)^3\,\left(B\,a\,e^5-11\,A\,b\,e^5+10\,B\,b\,d\,e^4\right)}{5\,(a\,e-b\,d)^4}+\frac{63\,b^4\,(d+e\,x)^5\,\left(B\,a\,e^5-11\,A\,b\,e^5+10\,B\,b\,d\,e^4\right)}{128\,(a\,e-b\,d)^6}}{\sqrt{d+e\,x}\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5\right)-(d+e\,x)^{5/2}\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+(d+e\,x)^{3/2}\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)+b^5\,(d+e\,x)^{11/2}-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,(d+e\,x)^{9/2}+(d+e\,x)^{7/2}\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)}+\frac{63\,e^4\,\mathrm{atan}\left(\frac{63\,\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(B\,a\,e-11\,A\,b\,e+10\,B\,b\,d\right)\,\left(a^6\,e^6-6\,a^5\,b\,d\,e^5+15\,a^4\,b^2\,d^2\,e^4-20\,a^3\,b^3\,d^3\,e^3+15\,a^2\,b^4\,d^4\,e^2-6\,a\,b^5\,d^5\,e+b^6\,d^6\right)}{(a\,e-b\,d)^{13/2}\,\left(63\,B\,a\,e^5-693\,A\,b\,e^5+630\,B\,b\,d\,e^4\right)}\right)\,\left(B\,a\,e-11\,A\,b\,e+10\,B\,b\,d\right)}{128\,\sqrt{b}\,(a\,e-b\,d)^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((237*(d + e*x)^2*(B*a*b*e^5 - 11*A*b^2*e^5 + 10*B*b^2*d*e^4))/(64*(a*e - b
*d)^3) - (2*(A*e^5 - B*d*e^4))/(a*e - b*d) + (147*(d + e*x)^4*(B*a*b^3*e^5
- 11*A*b^4*e^5 + 10*B*b^4*d*e^4))/(64*(a*e - b*d)^5) + (193*(d + e*x)*(B*a*
e^5 - 11*A*b*e^5 + 10*B*b*d*e^4))/(128*(a*e - b*d)^2) + (21*b^2*(d + e*x)^3
*(B*a*e^5 - 11*A*b*e^5 + 10*B*b*d*e^4))/(5*(a*e - b*d)^4) + (63*b^4*(d + e*
x)^5*(B*a*e^5 - 11*A*b*e^5 + 10*B*b*d*e^4))/(128*(a*e - b*d)^6))/((d + e*x)
^(1/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b
^4*d^4*e - 5*a^4*b*d*e^4) - (d + e*x)^(5/2)*(10*b^5*d^3 - 10*a^3*b^2*e^3 +
30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + (d + e*x)^(3/2)*(5*b^5*d^4 + 5*a^4*b*e
^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) + b^5*(d + e*x
)^(11/2) - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^(9/2) + (d + e*x)^(7/2)*(10*b^5*
d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e)) + (63*e^4*atan((63*b^(1/2)*e^4*(d + e
*x)^(1/2)*(B*a*e - 11*A*b*e + 10*B*b*d)*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4
*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*
e^5))/((a*e - b*d)^(13/2)*(63*B*a*e^5 - 693*A*b*e^5 + 630*B*b*d*e^4)))*(B*a
*e - 11*A*b*e + 10*B*b*d))/(128*b^(1/2)*(a*e - b*d)^(13/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1613 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3} \, dx$

Optimal. Leaf size=400

$$\frac{231e^4(3aBe-13Abe+10bBd)}{128\sqrt{d+ex}\,(bd-ae)^7}+\frac{77e^4(3aBe-13Abe+10bBd)}{128b(d+ex)^{3/2}(bd-ae)^6}-\frac{231\sqrt{b}\,e^4(3aBe-13Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{b}}\right.}{128(bd-ae)^{15/2}}$$

Rubi [A] time = 0.45, antiderivative size = 400, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$\frac{231e^4(3aBe-13Abe+10bBd)}{128\sqrt{d+ex}\,(bd-ae)^7}+\frac{77e^4(3aBe-13Abe+10bBd)}{128b(d+ex)^{3/2}(bd-ae)^6}+\frac{231e^3(3aBe-13Abe+10bBd)}{640b(a+bx)(d+ex)^{3/2}(bd-ae)^5}-\frac{33e^2(3aBe-13Abe+10bBd)}{320b(a+bx)^2(d+ex)^{3/2}(bd-ae)^4}-\frac{231\sqrt{b}\,e^4(3aBe-13Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128(bd-ae)^{15/2}}+\frac{11e(3aBe-13Abe+10bBd)}{240b(a+bx)^3(d+ex)^{3/2}(bd-ae)^3}-\frac{3aBe-13Abe+10bBd}{40b(a+bx)^4(d+ex)^{3/2}(bd-ae)^2}-\frac{Ab-aB}{5b(a+bx)^5(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (77*e^4*(10*b*B*d - 13*A*b*e + 3*a*B*e))/(128*b*(b*d - a*e)^6*(d + e*x)^(3/
2)) - (A*b - a*B)/(5*b*(b*d - a*e)*(a + b*x)^5*(d + e*x)^(3/2)) - (10*b*B*d
 - 13*A*b*e + 3*a*B*e)/(40*b*(b*d - a*e)^2*(a + b*x)^4*(d + e*x)^(3/2)) + (
11*e*(10*b*B*d - 13*A*b*e + 3*a*B*e))/(240*b*(b*d - a*e)^3*(a + b*x)^3*(d +
 e*x)^(3/2)) - (33*e^2*(10*b*B*d - 13*A*b*e + 3*a*B*e))/(320*b*(b*d - a*e)^
4*(a + b*x)^2*(d + e*x)^(3/2)) + (231*e^3*(10*b*B*d - 13*A*b*e + 3*a*B*e))/
(640*b*(b*d - a*e)^5*(a + b*x)*(d + e*x)^(3/2)) + (231*e^4*(10*b*B*d - 13*A
*b*e + 3*a*B*e))/(128*(b*d - a*e)^7*Sqrt[d + e*x]) - (231*Sqrt[b]*e^4*(10*b
*B*d - 13*A*b*e + 3*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
)/(128*(b*d - a*e)^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{A+Bx}{(a+bx)^6(d+ex)^{5/2}}\,dx$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}+\frac{(10bBd-13Abe+3aBe)\int \frac{1}{(a+bx)^5(d+e}}{10b(bd-ae)}$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}-$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}+$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}+$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}+$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10}{40b(bd}$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10}{40b(bd}$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10}{40b(bd}$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10}{40b(bd}$$

Mathematica [C] time = 0.08, size = 99, normalized size = 0.25

$$\frac{\frac{e^4(3aBe-13Abe+10bBd)\,{}_2F_1\left(-\frac{3}{2},5;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{3aB-3Ab}{(a+bx)^5}}{15b(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-3*A*b + 3*a*B)/(a + b*x)^5 + (e^4*(10*b*B*d - 13*A*b*e + 3*a*B*e)*Hyperg
eometric2F1[-3/2, 5, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^5)/(15*b
*(b*d - a*e)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [B] time = 5.49, size = 1185, normalized size = 2.96

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),
x]
```

```
[Out] -1/1920*(e^4*(-1280*b^6*B*d^7 + 1280*A*b^6*d^6*e + 7680*a*b^5*B*d^6*e - 768
0*a*A*b^5*d^5*e^2 - 19200*a^2*b^4*B*d^5*e^2 + 19200*a^2*A*b^4*d^4*e^3 + 256
00*a^3*b^3*B*d^4*e^3 - 25600*a^3*A*b^3*d^3*e^4 - 19200*a^4*b^2*B*d^3*e^4 +
19200*a^4*A*b^2*d^2*e^5 + 7680*a^5*b*B*d^2*e^5 - 7680*a^5*A*b*d*e^6 - 1280*
a^6*B*d*e^6 + 1280*a^6*A*e^7 - 12800*b^6*B*d^6*(d + e*x) + 16640*A*b^6*d^5*
e*(d + e*x) + 60160*a*b^5*B*d^5*e*(d + e*x) - 83200*a*A*b^5*d^4*e^2*(d + e*
x) - 108800*a^2*b^4*B*d^4*e^2*(d + e*x) + 166400*a^2*A*b^4*d^3*e^3*(d + e*x
) + 89600*a^3*b^3*B*d^3*e^3*(d + e*x) - 166400*a^3*A*b^3*d^2*e^4*(d + e*x)
- 25600*a^4*b^2*B*d^2*e^4*(d + e*x) + 83200*a^4*A*b^2*d*e^5*(d + e*x) - 640
0*a^5*b*B*d*e^5*(d + e*x) - 16640*a^5*A*b*e^6*(d + e*x) + 3840*a^6*B*e^6*(d
 + e*x) + 106150*b^6*B*d^5*(d + e*x)^2 - 137995*A*b^6*d^4*e*(d + e*x)^2 - 3
92755*a*b^5*B*d^4*e*(d + e*x)^2 + 551980*a*A*b^5*d^3*e^2*(d + e*x)^2 + 5095
20*a^2*b^4*B*d^3*e^2*(d + e*x)^2 - 827970*a^2*A*b^4*d^2*e^3*(d + e*x)^2 - 2
33530*a^3*b^3*B*d^2*e^3*(d + e*x)^2 + 551980*a^3*A*b^3*d*e^4*(d + e*x)^2 -
21230*a^4*b^2*B*d*e^4*(d + e*x)^2 - 137995*a^4*A*b^2*e^5*(d + e*x)^2 + 3184
5*a^5*b*B*e^5*(d + e*x)^2 - 260700*b^6*B*d^4*(d + e*x)^3 + 338910*A*b^6*d^3
*e*(d + e*x)^3 + 703890*a*b^5*B*d^3*e*(d + e*x)^3 - 1016730*a*A*b^5*d^2*e^2
*(d + e*x)^3 - 547470*a^2*b^4*B*d^2*e^2*(d + e*x)^3 + 1016730*a^2*A*b^4*d*e
^3*(d + e*x)^3 + 26070*a^3*b^3*B*d*e^3*(d + e*x)^3 - 338910*a^3*A*b^3*e^4*(
d + e*x)^3 + 78210*a^4*b^2*B*e^4*(d + e*x)^3 + 295680*b^6*B*d^3*(d + e*x)^4
 - 384384*A*b^6*d^2*e*(d + e*x)^4 - 502656*a*b^5*B*d^2*e*(d + e*x)^4 + 7687
68*a*A*b^5*d*e^2*(d + e*x)^4 + 118272*a^2*b^4*B*d*e^2*(d + e*x)^4 - 384384*
a^2*A*b^4*e^3*(d + e*x)^4 + 88704*a^3*b^3*B*e^3*(d + e*x)^4 - 161700*b^6*B*
d^2*(d + e*x)^5 + 210210*A*b^6*d*e*(d + e*x)^5 + 113190*a*b^5*B*d*e*(d + e*
x)^5 - 210210*a*A*b^5*e^2*(d + e*x)^5 + 48510*a^2*b^4*B*e^2*(d + e*x)^5 + 3
4650*b^6*B*d*(d + e*x)^6 - 45045*A*b^6*e*(d + e*x)^6 + 10395*a*b^5*B*e*(d +
 e*x)^6))/((b*d - a*e)^7*(d + e*x)^(3/2)*(b*d - a*e - b*(d + e*x))^5) - (23
1*(10*b^(3/2)*B*d*e^4 - 13*A*b^(3/2)*e^5 + 3*a*Sqrt[b]*B*e^5)*ArcTan[(Sqrt[
b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(128*(b*d - a*e)^7*Sqrt[
-(b*d) + a*e])
```

fricas [B] time = 0.57, size = 4664, normalized size = 11.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/3840*(3465*(10*B*a^5*b*d^3*e^4 + (3*B*a^6 - 13*A*a^5*b)*d^2*e^5 + (10*B*
b^6*d*e^6 + (3*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (20*B*b^6*d^2*e^5 + 2*(28*B*a
*b^5 - 13*A*b^6)*d*e^6 + 5*(3*B*a^2*b^4 - 13*A*a*b^5)*e^7)*x^6 + (10*B*b^6*
d^3*e^4 + (103*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 130*(B*a^2*b^4 - A*a*b^5)*d*e^
6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 + 5*(10*B*a*b^5*d^3*e^4 + (43*
B*a^2*b^4 - 13*A*a*b^5)*d^2*e^5 + 4*(8*B*a^3*b^3 - 13*A*a^2*b^4)*d*e^6 + 2*
(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^7)*x^4 + 5*(20*B*a^2*b^4*d^3*e^4 + 2*(23*B*a
^3*b^3 - 13*A*a^2*b^4)*d^2*e^5 + 2*(11*B*a^4*b^2 - 26*A*a^3*b^3)*d*e^6 + (3
*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + (100*B*a^3*b^3*d^3*e^4 + 130*(B*a^4*b^2
 - A*a^3*b^3)*d^2*e^5 + 10*(4*B*a^5*b - 13*A*a^4*b^2)*d*e^6 + (3*B*a^6 - 13
*A*a^5*b)*e^7)*x^2 + (50*B*a^4*b^2*d^3*e^4 + 5*(7*B*a^5*b - 13*A*a^4*b^2)*d
^2*e^5 + 2*(3*B*a^6 - 13*A*a^5*b)*d*e^6)*x)*sqrt(b/(b*d - a*e))*log((b*e*x
+ 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a))
 + 2*(1280*A*a^6*e^6 - 96*(B*a*b^5 + 4*A*b^6)*d^6 + 16*(52*B*a^2*b^4 + 183*
A*a*b^5)*d^5*e - 28*(127*B*a^3*b^3 + 358*A*a^2*b^4)*d^4*e^2 + 70*(174*B*a^4
*b^2 + 301*A*a^3*b^3)*d^3*e^3 + 5*(6625*B*a^5*b - 7119*A*a^4*b^2)*d^2*e^4 +
 1280*(2*B*a^6 - 19*A*a^5*b)*d*e^5 + 3465*(10*B*b^6*d*e^5 + (3*B*a*b^5 - 13
```

*A*b^6)*e^6)*x^6 + 2310*(20*B*b^6*d^2*e^4 + 2*(38*B*a*b^5 - 13*A*b^6)*d*e^5 + 7*(3*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 + 231*(30*B*b^6*d^3*e^3 + 13*(73*B*a*b^5 - 3*A*b^6)*d^2*e^4 + 2*(781*B*a^2*b^4 - 611*A*a*b^5)*d*e^5 + 128*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 66*(30*B*b^6*d^4*e^2 - 3*(167*B*a*b^5 + 13*A*b^6)*d^3*e^3 - (6223*B*a^2*b^4 - 663*A*a*b^5)*d^2*e^4 - (5771*B*a^3*b^3 - 7891*A*a^2*b^4)*d*e^5 - 395*(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 4*(209*B*a*b^5 + 26*A*b^6)*d^4*e^2 + 2*(2811*B*a^2*b^4 + 559*A*a*b^5)*d^3*e^3 + 4*(8566*B*a^3*b^3 - 1911*A*a^2*b^4)*d^2*e^4 + 50*(388*B*a^4*b^2 - 845*A*a^3*b^3)*d*e^5 + 965*(3*B*a^5*b - 13*A*a^4*b^2)*e^6)*x^2 - 2*(240*B*b^6*d^6 - 8*(251*B*a*b^5 + 39*A*b^6)*d^5*e + 2*(4133*B*a^2*b^4 + 1352*A*a*b^5)*d^4*e^2 - 7*(3969*B*a^3*b^3 + 1651*A*a^2*b^4)*d^3*e^3 - 5*(16657*B*a^4*b^2 - 7917*A*a^3*b^3)*d^2*e^4 - 5*(5729*B*a^5*b - 19279*A*a^4*b^2)*d*e^5 - 640*(3*B*a^6 - 13*A*a^5*b)*e^6)*x)*sqrt(e*x + d))/(a^5*b^7*d^9 - 7*a^6*b^6*d^8*e + 21*a^7*b^5*d^7*e^2 - 35*a^8*b^4*d^6*e^3 + 35*a^9*b^3*d^5*e^4 - 21*a^10*b^2*d^4*e^5 + 7*a^11*b*d^3*e^6 - a^12*d^2*e^7 + (b^12*d^7*e^2 - 7*a*b^11*d^6*e^3 + 21*a^2*b^10*d^5*e^4 - 35*a^3*b^9*d^4*e^5 + 35*a^4*b^8*d^3*e^6 - 21*a^5*b^7*d^2*e^7 + 7*a^6*b^6*d*e^8 - a^7*b^5*e^9)*x^7 + (2*b^12*d^8*e - 9*a*b^11*d^7*e^2 + 7*a^2*b^10*d^6*e^3 + 35*a^3*b^9*d^5*e^4 - 105*a^4*b^8*d^4*e^5 + 133*a^5*b^7*d^3*e^6 - 91*a^6*b^6*d^2*e^7 + 33*a^7*b^5*d*e^8 - 5*a^8*b^4*e^9)*x^6 + (b^12*d^9 + 3*a*b^11*d^8*e - 39*a^2*b^10*d^7*e^2 + 105*a^3*b^9*d^6*e^3 - 105*a^4*b^8*d^5*e^4 - 21*a^5*b^7*d^4*e^5 + 147*a^6*b^6*d^3*e^6 - 141*a^7*b^5*d^2*e^7 + 60*a^8*b^4*d*e^8 - 10*a^9*b^3*e^9)*x^5 + 5*(a*b^11*d^9 - 3*a^2*b^10*d^8*e - 5*a^3*b^9*d^7*e^2 + 35*a^4*b^8*d^6*e^3 - 63*a^5*b^7*d^5*e^4 + 49*a^6*b^6*d^4*e^5 - 7*a^7*b^5*d^3*e^6 - 15*a^8*b^4*d^2*e^7 + 10*a^9*b^3*d*e^8 - 2*a^10*b^2*e^9)*x^4 + 5*(2*a^2*b^10*d^9 - 10*a^3*b^9*d^8*e + 15*a^4*b^8*d^7*e^2 + 7*a^5*b^7*d^6*e^3 - 49*a^6*b^6*d^5*e^4 + 63*a^7*b^5*d^4*e^5 - 35*a^8*b^4*d^3*e^6 + 5*a^9*b^3*d^2*e^7 + 3*a^10*b^2*d*e^8 - a^11*b*e^9)*x^3 + (10*a^3*b^9*d^9 - 60*a^4*b^8*d^8*e + 141*a^5*b^7*d^7*e^2 - 147*a^6*b^6*d^6*e^3 + 21*a^7*b^5*d^5*e^4 + 105*a^8*b^4*d^4*e^5 - 105*a^9*b^3*d^3*e^6 + 39*a^10*b^2*d^2*e^7 - 3*a^11*b*d*e^8 - a^12*e^9)*x^2 + (5*a^4*b^8*d^9 - 33*a^5*b^7*d^8*e + 91*a^6*b^6*d^7*e^2 - 133*a^7*b^5*d^6*e^3 + 105*a^8*b^4*d^5*e^4 - 35*a^9*b^3*d^4*e^5 - 7*a^10*b^2*d^3*e^6 + 9*a^11*b*d^2*e^7 - 2*a^12*d*e^8)*x), -1/1920*(3465*(10*B*a^5*b*d^3*e^4 + (3*B*a^6 - 13*A*a^5*b)*d^2*e^5 + (10*B*b^6*d*e^6 + (3*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (20*B*b^6*d^2*e^5 + 2*(28*B*a*b^5 - 13*A*b^6)*d*e^6 + 5*(3*B*a^2*b^4 - 13*A*a*b^5)*e^7)*x^6 + (10*B*b^6*d^3*e^4 + (103*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 130*(B*a^2*b^4 - A*a*b^5)*d*e^6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 + 5*(10*B*a*b^5*d^3*e^4 + (43*B*a^2*b^4 - 13*A*a*b^5)*d^2*e^5 + 4*(8*B*a^3*b^3 - 13*A*a^2*b^4)*d*e^6 + 2*(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^7)*x^4 + 5*(20*B*a^2*b^4*d^3*e^4 + 2*(23*B*a^3*b^3 - 13*A*a^2*b^4)*d^2*e^5 + 2*(11*B*a^4*b^2 - 26*A*a^3*b^3)*d*e^6 + (3*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + (100*B*a^3*b^3*d^3*e^4 + 130*(B*a^4*b^2 - A*a^3*b^3)*d^2*e^5 + 10*(4*B*a^5*b - 13*A*a^4*b^2)*d*e^6 + (3*B*a^6 - 13*A*a^5*b)*e^7)*x^2 + (50*B*a^4*b^2*d^3*e^4 + 5*(7*B*a^5*b - 13*A*a^4*b^2)*d^2*e^5 + 2*(3*B*a^6 - 13*A*a^5*b)*d*e^6)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (1280*A*a^6*e^6 - 96*(B*a*b^5 + 4*A*b^6)*d^6 + 16*(52*B*a^2*b^4 + 183*A*a*b^5)*d^5*e - 28*(127*B*a^3*b^3 + 358*A*a^2*b^4)*d^4*e^2 + 70*(174*B*a^4*b^2 + 301*A*a^3*b^3)*d^3*e^3 + 5*(6625*B*a^5*b - 7119*A*a^4*b^2)*d^2*e^4 + 1280*(2*B*a^6 - 19*A*a^5*b)*d*e^5 + 3465*(10*B*b^6*d*e^5 + (3*B*a*b^5 - 13*A*b^6)*e^6)*x^6 + 2310*(20*B*b^6*d^2*e^4 + 2*(38*B*a*b^5 - 13*A*b^6)*d*e^5 + 7*(3*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 + 231*(30*B*b^6*d^3*e^3 + 13*(73*B*a*b^5 - 3*A*b^6)*d^2*e^4 + 2*(781*B*a^2*b^4 - 611*A*a*b^5)*d*e^5 + 128*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 66*(30*B*b^6*d^4*e^2 - 3*(167*B*a*b^5 + 13*A*b^6)*d^3*e^3 - (6223*B*a^2*b^4 - 663*A*a*b^5)*d^2*e^4 - (5771*B*a^3*b^3 - 7891*A*a^2*b^4)*d*e^5 - 395*(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 4*(209*B*a*b^5 + 26*A*b^6)*d^4*e^2 + 2*(2811*B*a^2*b^4 + 559*A*a*b^5)*d^3*e^3 + 4*(8566*B*a^3*b^3 - 1911*A*a^2*b^4)*d^2*e^4 + 50*(388*B*a^4*b^2 - 845*A*a^3*b^3)*d*e^5 + 965*(3*B*a^5*b - 13*A*a^4*b^2)*e^6)*x^2 - 2*(240*B*b^6*d^6 - 8*(251*B*a*b^5 + 39*A*b^6)*d^5

```
*e + 2*(4133*B*a^2*b^4 + 1352*A*a*b^5)*d^4*e^2 - 7*(3969*B*a^3*b^3 + 1651*A
*a^2*b^4)*d^3*e^3 - 5*(16657*B*a^4*b^2 - 7917*A*a^3*b^3)*d^2*e^4 - 5*(5729*
B*a^5*b - 19279*A*a^4*b^2)*d*e^5 - 640*(3*B*a^6 - 13*A*a^5*b)*e^6)*x)*sqrt(
e*x + d))/(a^5*b^7*d^9 - 7*a^6*b^6*d^8*e + 21*a^7*b^5*d^7*e^2 - 35*a^8*b^4*
d^6*e^3 + 35*a^9*b^3*d^5*e^4 - 21*a^10*b^2*d^4*e^5 + 7*a^11*b*d^3*e^6 - a^1
2*d^2*e^7 + (b^12*d^7*e^2 - 7*a*b^11*d^6*e^3 + 21*a^2*b^10*d^5*e^4 - 35*a^3
*b^9*d^4*e^5 + 35*a^4*b^8*d^3*e^6 - 21*a^5*b^7*d^2*e^7 + 7*a^6*b^6*d*e^8 -
a^7*b^5*e^9)*x^7 + (2*b^12*d^8*e - 9*a*b^11*d^7*e^2 + 7*a^2*b^10*d^6*e^3 +
35*a^3*b^9*d^5*e^4 - 105*a^4*b^8*d^4*e^5 + 133*a^5*b^7*d^3*e^6 - 91*a^6*b^6
*d^2*e^7 + 33*a^7*b^5*d*e^8 - 5*a^8*b^4*e^9)*x^6 + (b^12*d^9 + 3*a*b^11*d^8
*e - 39*a^2*b^10*d^7*e^2 + 105*a^3*b^9*d^6*e^3 - 105*a^4*b^8*d^5*e^4 - 21*a
^5*b^7*d^4*e^5 + 147*a^6*b^6*d^3*e^6 - 141*a^7*b^5*d^2*e^7 + 60*a^8*b^4*d*e
^8 - 10*a^9*b^3*e^9)*x^5 + 5*(a*b^11*d^9 - 3*a^2*b^10*d^8*e - 5*a^3*b^9*d^7
*e^2 + 35*a^4*b^8*d^6*e^3 - 63*a^5*b^7*d^5*e^4 + 49*a^6*b^6*d^4*e^5 - 7*a^7
*b^5*d^3*e^6 - 15*a^8*b^4*d^2*e^7 + 10*a^9*b^3*d*e^8 - 2*a^10*b^2*e^9)*x^4
+ 5*(2*a^2*b^10*d^9 - 10*a^3*b^9*d^8*e + 15*a^4*b^8*d^7*e^2 + 7*a^5*b^7*d^6
*e^3 - 49*a^6*b^6*d^5*e^4 + 63*a^7*b^5*d^4*e^5 - 35*a^8*b^4*d^3*e^6 + 5*a^9
*b^3*d^2*e^7 + 3*a^10*b^2*d*e^8 - a^11*b*e^9)*x^3 + (10*a^3*b^9*d^9 - 60*a^
4*b^8*d^8*e + 141*a^5*b^7*d^7*e^2 - 147*a^6*b^6*d^6*e^3 + 21*a^7*b^5*d^5*e^
4 + 105*a^8*b^4*d^4*e^5 - 105*a^9*b^3*d^3*e^6 + 39*a^10*b^2*d^2*e^7 - 3*a^1
1*b*d*e^8 - a^12*e^9)*x^2 + (5*a^4*b^8*d^9 - 33*a^5*b^7*d^8*e + 91*a^6*b^6*
d^7*e^2 - 133*a^7*b^5*d^6*e^3 + 105*a^8*b^4*d^5*e^4 - 35*a^9*b^3*d^4*e^5 -
7*a^10*b^2*d^3*e^6 + 9*a^11*b*d^2*e^7 - 2*a^12*d*e^8)*x)]
```

giac [B] time = 0.42, size = 1103, normalized size = 2.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 231/128*(10*B*b^2*d*e^4 + 3*B*a*b*e^5 - 13*A*b^2*e^5)*arctan(sqrt(x*e + d)*
b/sqrt(-b^2*d + a*b*e))/((b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35
*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6
- a^7*e^7)*sqrt(-b^2*d + a*b*e)) + 2/3*(15*(x*e + d)*B*b*d*e^4 + B*b*d^2*e^
4 + 3*(x*e + d)*B*a*e^5 - 18*(x*e + d)*A*b*e^5 - B*a*d*e^5 - A*b*d*e^5 + A*
a*e^6)/((b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3
+ 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*(x*e +
 d)^(3/2)) + 1/1920*(15450*(x*e + d)^(9/2)*B*b^6*d*e^4 - 66980*(x*e + d)^(7
/2)*B*b^6*d^2*e^4 + 110080*(x*e + d)^(5/2)*B*b^6*d^3*e^4 - 81500*(x*e + d)^
(3/2)*B*b^6*d^4*e^4 + 22950*sqrt(x*e + d)*B*b^6*d^5*e^4 + 6555*(x*e + d)^(9
/2)*B*a*b^5*e^5 - 22005*(x*e + d)^(9/2)*A*b^6*e^5 + 37670*(x*e + d)^(7/2)*B
*a*b^5*d*e^5 + 96290*(x*e + d)^(7/2)*A*b^6*d*e^5 - 169856*(x*e + d)^(5/2)*B
*a*b^5*d^2*e^5 - 160384*(x*e + d)^(5/2)*A*b^6*d^2*e^5 + 204690*(x*e + d)^(3
/2)*B*a*b^5*d^3*e^5 + 121310*(x*e + d)^(3/2)*A*b^6*d^3*e^5 - 79155*sqrt(x*e
 + d)*B*a*b^5*d^4*e^5 - 35595*sqrt(x*e + d)*A*b^6*d^4*e^5 + 29310*(x*e + d)
^(7/2)*B*a^2*b^4*e^6 - 96290*(x*e + d)^(7/2)*A*a*b^5*e^6 + 9472*(x*e + d)^(
5/2)*B*a^2*b^4*d*e^6 + 320768*(x*e + d)^(5/2)*A*a*b^5*d*e^6 - 125070*(x*e +
 d)^(3/2)*B*a^2*b^4*d^2*e^6 - 363930*(x*e + d)^(3/2)*A*a*b^5*d^2*e^6 + 8712
0*sqrt(x*e + d)*B*a^2*b^4*d^3*e^6 + 142380*sqrt(x*e + d)*A*a*b^5*d^3*e^6 +
50304*(x*e + d)^(5/2)*B*a^3*b^3*e^7 - 160384*(x*e + d)^(5/2)*A*a^2*b^4*e^7
- 37930*(x*e + d)^(3/2)*B*a^3*b^3*d*e^7 + 363930*(x*e + d)^(3/2)*A*a^2*b^4*
d*e^7 - 15930*sqrt(x*e + d)*B*a^3*b^3*d^2*e^7 - 213570*sqrt(x*e + d)*A*a^2*
b^4*d^2*e^7 + 39810*(x*e + d)^(3/2)*B*a^4*b^2*e^8 - 121310*(x*e + d)^(3/2)*
A*a^3*b^3*e^8 - 27630*sqrt(x*e + d)*B*a^4*b^2*d*e^8 + 142380*sqrt(x*e + d)*
A*a^3*b^3*d*e^8 + 12645*sqrt(x*e + d)*B*a^5*b*e^9 - 35595*sqrt(x*e + d)*A*a
^4*b^2*e^9)/((b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4
*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*(
(x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 1653, normalized size = 4.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3793/192*e^7/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^3*d+531/64*e^7
/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^2+4169/64*e^6/(a*e-b*d
)^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^2*d^2-6823/64*e^5/(a*e-b*d)^7*b^5/(
b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a*d^3-363/8*e^6/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*
(e*x+d)^(1/2)*B*a^2*d^3+5277/128*e^5/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^
(1/2)*B*a*d^4+7119/64*e^7/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2
*d^2-2373/32*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a*d^3-2506/1
5*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a*d-74/15*e^6/(a*e-b*d)
^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d+921/64*e^8/(a*e-b*d)^7*b^2/(b*e*
x+a*e)^5*(e*x+d)^(1/2)*B*a^4*d-12131/64*e^7/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*(
e*x+d)^(3/2)*A*a^2*d+12131/64*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(3/
2)*A*a*d^2-2373/32*e^8/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d-
3767/192*e^5/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a*d+1327/15*e^5/
(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a*d^2-2/3*e^5/(a*e-b*d)^6/(e*
x+d)^(3/2)*A+2/3*e^4/(a*e-b*d)^6/(e*x+d)^(3/2)*B*d+12*e^5/(a*e-b*d)^7/(e*x+
d)^(1/2)*A*b-2*e^5/(a*e-b*d)^7/(e*x+d)^(1/2)*a*B-10*e^4/(a*e-b*d)^7/(e*x+d)
^(1/2)*B*b*d+3003/128*e^5/(a*e-b*d)^7*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+1467/128*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5
*(e*x+d)^(9/2)*A+12131/192*e^8/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*
A*a^3-12131/192*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*d^3-1155/
64*e^4/(a*e-b*d)^7*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*B*d-515/64*e^4/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*d-
765/64*e^4/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*d^5+3349/96*e^4/(a
*e-b*d)^7*b^6/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^2-1327/64*e^8/(a*e-b*d)^7*b^2
/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^4+2373/128*e^9/(a*e-b*d)^7*b^2/(b*e*x+a*e)
^5*(e*x+d)^(1/2)*A*a^4+2373/128*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(
1/2)*A*d^4+9629/192*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a-962
9/192*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*d-977/64*e^6/(a*e-b
*d)^7*b^4/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2-172/3*e^4/(a*e-b*d)^7*b^6/(b*e*
x+a*e)^5*(e*x+d)^(5/2)*B*d^3+4075/96*e^4/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x
+d)^(3/2)*B*d^4-693/128*e^5/(a*e-b*d)^7*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-843/128*e^9/(a*e-b*d)^7*b/(b*e*x+a*e)^5*
(e*x+d)^(1/2)*B*a^5-437/128*e^5/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(9/2)
*B*a+1253/15*e^7/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2+1253/15*
e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*d^2-131/5*e^7/(a*e-b*d)^7
*b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 3.15, size = 755, normalized size = 1.89

$$-\frac{\frac{2\left(A e^5-B d e^4\right)}{3(a e-b d)}+\frac{2123 (d+e x)^2\left(-13 A b^2 e^5+10 B d b^2 e^4+3 B a b e^5\right)}{384 (a e-b d)^3}+\frac{869 (d+e x)^3\left(-13 A b^3 e^5+10 B d b^3 e^4+3 B a b^2 e^5\right)}{64 (a e-b d)^4}+\frac{539 (d+e x)^5\left(-13 A b^5 e^5+10 B d b^5 e^4+3 B a b^4 e^5\right)}{64 (a e-b d)^6}+\frac{2 (d+e x)\left(3 B a e^5-13 A b e^5+10 B b d e^4\right)}{3 (a e-b d)^2}+\frac{77 b^3 (d+e x)^4\left(3 B a e^5-13 A b e^5+10 B b d e^4\right)}{5 (a e-b d)^5}+\frac{231 b^5 (d+e x)^6\left(3 B a e^5-13 A b e^5+10 B b d e^4\right)}{128 (a e-b d)^7}}{(d+e x)^{3/2}\left(a^5 e^5-5 a^4 b d e^4+10 a^3 b^2 d^2 e^3-10 a^2 b^3 d^3 e^2+5 a b^4 d^4 e-b^5 d^5\right)-(d+e x)^{7/2}\left(-10 a^3 b^2 e^3+30 a^2 b^3 d e^2-30 a b^4 d^2 e+10 b^5 d^3\right)+(d+e x)^{5/2}\left(5 a^4 b e^4-20 a^3 b^2 d e^3+30 a^2 b^3 d^2 e^2-20 a b^4 d^3 e+5 b^5 d^4\right)+b^5 (d+e x)^{13/2}-\left(5 b^5 d-5 a b^4 e\right)(d+e x)^{11/2}+(d+e x)^{9/2}\left(10 a^2 b^3 e^2-20 a b^4 d e+10 b^5 d^2\right)}-\frac{231 \sqrt{b}\, e^4 \operatorname{atan}\left(\frac{\sqrt{b}\, e^4 \sqrt{d+e x}\,(3 B a e-13 A b e+10 B b d)\left(a^7 e^7-7 a^6 b d e^6+21 a^5 b^2 d^2 e^5-35 a^4 b^3 d^3 e^4+35 a^3 b^4 d^4 e^3-21 a^2 b^5 d^5 e^2+7 a b^6 d^6 e-b^7 d^7\right)}{(a e-b d)^{15/2}\left(3 B a e^5-13 A b e^5+10 B b d e^4\right)}\right)(3 B a e-13 A b e+10 B b d)}{128 (a e-b d)^{15/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] - ((2*(A*e^5 - B*d*e^4))/(3*(a*e - b*d)) + (2123*(d + e*x)^2*(3*B*a*b*e^5 -
 13*A*b^2*e^5 + 10*B*b^2*d*e^4))/(384*(a*e - b*d)^3) + (869*(d + e*x)^3*(3*
B*a*b^2*e^5 - 13*A*b^3*e^5 + 10*B*b^3*d*e^4))/(64*(a*e - b*d)^4) + (539*(d
+ e*x)^5*(3*B*a*b^4*e^5 - 13*A*b^5*e^5 + 10*B*b^5*d*e^4))/(64*(a*e - b*d)^6
) + (2*(d + e*x)*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4))/(3*(a*e - b*d)^2)
 + (77*b^3*(d + e*x)^4*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4))/(5*(a*e - b
*d)^5) + (231*b^5*(d + e*x)^6*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4))/(128
*(a*e - b*d)^7))/((d + e*x)^(3/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 +
 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) - (d + e*x)^(7/2)*(10*
b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + (d + e*x)^(
5/2)*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*
a*b^4*d^3*e) + b^5*(d + e*x)^(13/2) - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^(11/2
) + (d + e*x)^(9/2)*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e)) - (231*b^
(1/2)*e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(3*B*a*e - 13*A*b*e + 10*B*b*d)
*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*
d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6))/((a*e - b*d)
^(15/2)*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4)))*(3*B*a*e - 13*A*b*e + 10*
B*b*d))/(128*(a*e - b*d)^(15/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1614 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=435

$$-\frac{3003b^{3/2}e^4(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128(bd-ae)^{17/2}}+\frac{3003be^4(aBe-3Abe+2bBd)}{128\sqrt{d+ex}\,(bd-ae)^8}+\frac{1001e^4(aBe-3Abe+2bBd)}{128(d+ex)^{3/2}(bd-ae)^7}$$

Rubi [A] time = 0.49, antiderivative size = 435, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{3003b^{3/2}e^4(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128(bd-ae)^{17/2}}+\frac{3003be^4(aBe-3Abe+2bBd)}{128\sqrt{d+ex}\,(bd-ae)^8}+\frac{1001e^4(aBe-3Abe+2bBd)}{128(d+ex)^{3/2}(bd-ae)^7}+\frac{3003e^4(aBe-3Abe+2bBd)}{640b(d+ex)^{5/2}(bd-ae)^6}+\frac{429e^3(aBe-3Abe+2bBd)}{128b(a+bx)(d+ex)^{5/2}(bd-ae)^5}-\frac{143e^2(aBe-3Abe+2bBd)}{192b(a+bx)^2(d+ex)^{5/2}(bd-ae)^4}+\frac{13e(aBe-3Abe+2bBd)}{48b(a+bx)^3(d+ex)^{5/2}(bd-ae)^3}-\frac{aBe-3Abe+2bBd}{8b(a+bx)^4(d+ex)^{5/2}(bd-ae)^2}-\frac{Ab-aB}{5b(a+bx)^5(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (3003*e^4*(2*b*B*d - 3*A*b*e + a*B*e))/(640*b*(b*d - a*e)^6*(d + e*x)^(5/2)
) - (A*b - a*B)/(5*b*(b*d - a*e)*(a + b*x)^5*(d + e*x)^(5/2)) - (2*b*B*d -
3*A*b*e + a*B*e)/(8*b*(b*d - a*e)^2*(a + b*x)^4*(d + e*x)^(5/2)) + (13*e*(2
*b*B*d - 3*A*b*e + a*B*e))/(48*b*(b*d - a*e)^3*(a + b*x)^3*(d + e*x)^(5/2))
 - (143*e^2*(2*b*B*d - 3*A*b*e + a*B*e))/(192*b*(b*d - a*e)^4*(a + b*x)^2*(
d + e*x)^(5/2)) + (429*e^3*(2*b*B*d - 3*A*b*e + a*B*e))/(128*b*(b*d - a*e)^
5*(a + b*x)*(d + e*x)^(5/2)) + (1001*e^4*(2*b*B*d - 3*A*b*e + a*B*e))/(128*
(b*d - a*e)^7*(d + e*x)^(3/2)) + (3003*b*e^4*(2*b*B*d - 3*A*b*e + a*B*e))/(
128*(b*d - a*e)^8*Sqrt[d + e*x]) - (3003*b^(3/2)*e^4*(2*b*B*d - 3*A*b*e + a
*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*(b*d - a*e)^(1
7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{A+Bx}{(a+bx)^6(d+ex)^{7/2}}\,dx$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}+\frac{(2bBd-3Abe+aBe)\int \frac{1}{(a+bx)^5(d+ex}}{2b(bd-ae)}$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}}-$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}}+$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}}+$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}}+$$

$$=\frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{}{8b(b}$$

$$=\frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{}{8b(b}$$

$$=\frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{}{8b(b}$$

$$=\frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{}{8b(b}$$

$$=\frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}}-\frac{}{8b(b}$$

Mathematica [C] time = 0.07, size = 100, normalized size = 0.23

$$\frac{\frac{5aB-5Ab}{(a+bx)^5}-\frac{5e^4(-aBe+3Abe-2bBd)\,{}_2F_1\left(-\frac{5}{2},5;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}}{25b(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-5*A*b + 5*a*B)/(a + b*x)^5 - (5*e^4*(-2*b*B*d + 3*A*b*e - a*B*e)*Hyperge
ometric2F1[-5/2, 5, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^5)/(25*b*
(b*d - a*e)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 5.83, size = 1471, normalized size = 3.38

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),
x]
```

```
[Out] (e^4*(768*b^7*B*d^8 - 768*A*b^7*d^7*e - 5376*a*b^6*B*d^7*e + 5376*a*A*b^6*d
^6*e^2 + 16128*a^2*b^5*B*d^6*e^2 - 16128*a^2*A*b^5*d^5*e^3 - 26880*a^3*b^4*
B*d^5*e^3 + 26880*a^3*A*b^4*d^4*e^4 + 26880*a^4*b^3*B*d^4*e^4 - 26880*a^4*A
*b^3*d^3*e^5 - 16128*a^5*b^2*B*d^3*e^5 + 16128*a^5*A*b^2*d^2*e^6 + 5376*a^6
*b*B*d^2*e^6 - 5376*a^6*A*b*d*e^7 - 768*a^7*B*d*e^7 + 768*a^7*A*e^8 + 2560*
b^7*B*d^7*(d + e*x) - 3840*A*b^7*d^6*e*(d + e*x) - 14080*a*b^6*B*d^6*e*(d +
 e*x) + 23040*a*A*b^6*d^5*e^2*(d + e*x) + 30720*a^2*b^5*B*d^5*e^2*(d + e*x)
 - 57600*a^2*A*b^5*d^4*e^3*(d + e*x) - 32000*a^3*b^4*B*d^4*e^3*(d + e*x) +
76800*a^3*A*b^4*d^3*e^4*(d + e*x) + 12800*a^4*b^3*B*d^3*e^4*(d + e*x) - 576
00*a^4*A*b^3*d^2*e^5*(d + e*x) + 3840*a^5*b^2*B*d^2*e^5*(d + e*x) + 23040*a
^5*A*b^2*d*e^6*(d + e*x) - 5120*a^6*b*B*d*e^6*(d + e*x) - 3840*a^6*A*b*e^7*
(d + e*x) + 1280*a^7*B*e^7*(d + e*x) + 33280*b^7*B*d^6*(d + e*x)^2 - 49920*
A*b^7*d^5*e*(d + e*x)^2 - 149760*a*b^6*B*d^5*e*(d + e*x)^2 + 249600*a*A*b^6
*d^4*e^2*(d + e*x)^2 + 249600*a^2*b^5*B*d^4*e^2*(d + e*x)^2 - 499200*a^2*A*
b^5*d^3*e^3*(d + e*x)^2 - 166400*a^3*b^4*B*d^3*e^3*(d + e*x)^2 + 499200*a^3
*A*b^4*d^2*e^4*(d + e*x)^2 - 249600*a^4*A*b^3*d*e^5*(d + e*x)^2 + 49920*a^5
*b^2*B*d*e^5*(d + e*x)^2 + 49920*a^5*A*b^2*e^6*(d + e*x)^2 - 16640*a^6*b*B*
e^6*(d + e*x)^2 - 275990*b^7*B*d^5*(d + e*x)^3 + 413985*A*b^7*d^4*e*(d + e*
x)^3 + 965965*a*b^6*B*d^4*e*(d + e*x)^3 - 1655940*a*A*b^6*d^3*e^2*(d + e*x)
^3 - 1103960*a^2*b^5*B*d^3*e^2*(d + e*x)^3 + 2483910*a^2*A*b^5*d^2*e^3*(d +
 e*x)^3 + 275990*a^3*b^4*B*d^2*e^3*(d + e*x)^3 - 1655940*a^3*A*b^4*d*e^4*(d
 + e*x)^3 + 275990*a^4*b^3*B*d*e^4*(d + e*x)^3 + 413985*a^4*A*b^3*e^5*(d +
e*x)^3 - 137995*a^5*b^2*B*e^5*(d + e*x)^3 + 677820*b^7*B*d^4*(d + e*x)^4 -
1016730*A*b^7*d^3*e*(d + e*x)^4 - 1694550*a*b^6*B*d^3*e*(d + e*x)^4 + 30501
90*a*A*b^6*d^2*e^2*(d + e*x)^4 + 1016730*a^2*b^5*B*d^2*e^2*(d + e*x)^4 - 30
50190*a^2*A*b^5*d*e^3*(d + e*x)^4 + 338910*a^3*b^4*B*d*e^3*(d + e*x)^4 + 10
16730*a^3*A*b^4*e^4*(d + e*x)^4 - 338910*a^4*b^3*B*e^4*(d + e*x)^4 - 768768
*b^7*B*d^3*(d + e*x)^5 + 1153152*A*b^7*d^2*e*(d + e*x)^5 + 1153152*a*b^6*B*
d^2*e*(d + e*x)^5 - 2306304*a*A*b^6*d*e^2*(d + e*x)^5 + 1153152*a^2*A*b^5*e
^3*(d + e*x)^5 - 384384*a^3*b^4*B*e^3*(d + e*x)^5 + 420420*b^7*B*d^2*(d + e
*x)^6 - 630630*A*b^7*d*e*(d + e*x)^6 - 210210*a*b^6*B*d*e*(d + e*x)^6 + 630
630*a*A*b^6*e^2*(d + e*x)^6 - 210210*a^2*b^5*B*e^2*(d + e*x)^6 - 90090*b^7*
B*d*(d + e*x)^7 + 135135*A*b^7*e*(d + e*x)^7 - 45045*a*b^6*B*e*(d + e*x)^7)
)/(1920*(b*d - a*e)^8*(d + e*x)^(5/2)*(b*d - a*e - b*(d + e*x))^5) - (3003*
(2*b^(5/2)*B*d*e^4 - 3*A*b^(5/2)*e^5 + a*b^(3/2)*B*e^5)*ArcTan[(Sqrt[b]*Sqr
t[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(128*(b*d - a*e)^8*Sqrt[-(b*d)
 + a*e])
```

fricas [B] time = 0.61, size = 6033, normalized size = 13.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/3840*(45045*(2*B*a^5*b^2*d^4*e^4 + (B*a^6*b - 3*A*a^5*b^2)*d^3*e^5 + (2
*B*b^7*d*e^7 + (B*a*b^6 - 3*A*b^7)*e^8)*x^8 + (6*B*b^7*d^2*e^6 + (13*B*a*b^
6 - 9*A*b^7)*d*e^7 + 5*(B*a^2*b^5 - 3*A*a*b^6)*e^8)*x^7 + (6*B*b^7*d^3*e^5
+ 3*(11*B*a*b^6 - 3*A*b^7)*d^2*e^6 + 5*(7*B*a^2*b^5 - 9*A*a*b^6)*d*e^7 + 10
*(B*a^3*b^4 - 3*A*a^2*b^5)*e^8)*x^6 + (2*B*b^7*d^4*e^4 + (31*B*a*b^6 - 3*A*
b^7)*d^3*e^5 + 15*(5*B*a^2*b^5 - 3*A*a*b^6)*d^2*e^6 + 10*(5*B*a^3*b^4 - 9*A
```

```
*a^2*b^5)*d*e^7 + 10*(B*a^4*b^3 - 3*A*a^3*b^4)*e^8)*x^5 + 5*(2*B*a*b^6*d^4*
e^4 + (13*B*a^2*b^5 - 3*A*a*b^6)*d^3*e^5 + 18*(B*a^3*b^4 - A*a^2*b^5)*d^2*e
^6 + 2*(4*B*a^4*b^3 - 9*A*a^3*b^4)*d*e^7 + (B*a^5*b^2 - 3*A*a^4*b^3)*e^8)*x
^4 + (20*B*a^2*b^5*d^4*e^4 + 10*(7*B*a^3*b^4 - 3*A*a^2*b^5)*d^3*e^5 + 30*(2
*B*a^4*b^3 - 3*A*a^3*b^4)*d^2*e^6 + (17*B*a^5*b^2 - 45*A*a^4*b^3)*d*e^7 + (
B*a^6*b - 3*A*a^5*b^2)*e^8)*x^3 + (20*B*a^3*b^4*d^4*e^4 + 10*(4*B*a^4*b^3 -
 3*A*a^3*b^4)*d^3*e^5 + 3*(7*B*a^5*b^2 - 15*A*a^4*b^3)*d^2*e^6 + 3*(B*a^6*b
 - 3*A*a^5*b^2)*d*e^7)*x^2 + (10*B*a^4*b^3*d^4*e^4 + (11*B*a^5*b^2 - 15*A*a
^4*b^3)*d^3*e^5 + 3*(B*a^6*b - 3*A*a^5*b^2)*d^2*e^6)*x)*sqrt(b/(b*d - a*e))
*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e))
)/(b*x + a)) + 2*(768*A*a^7*e^7 + 96*(B*a*b^6 + 4*A*b^7)*d^7 - 16*(62*B*a^2
*b^5 + 213*A*a*b^6)*d^6*e + 28*(187*B*a^3*b^4 + 498*A*a^2*b^5)*d^5*e^2 - 70
*(332*B*a^4*b^3 + 519*A*a^3*b^4)*d^4*e^3 - (100363*B*a^5*b^2 - 79905*A*a^4*
b^3)*d^3*e^4 - 1024*(16*B*a^6*b - 87*A*a^5*b^2)*d^2*e^5 + 512*(B*a^7 - 18*A
*a^6*b)*d*e^6 - 45045*(2*B*b^7*d*e^6 + (B*a*b^6 - 3*A*b^7)*e^7)*x^7 - 10510
5*(2*B*b^7*d^2*e^5 + (5*B*a*b^6 - 3*A*b^7)*d*e^6 + 2*(B*a^2*b^5 - 3*A*a*b^6
)*e^7)*x^6 - 3003*(46*B*b^7*d^3*e^4 + 3*(117*B*a*b^6 - 23*A*b^7)*d^2*e^5 +
12*(35*B*a^2*b^5 - 41*A*a*b^6)*d*e^6 + 128*(B*a^3*b^4 - 3*A*a^2*b^5)*e^7)*x
^5 - 2145*(6*B*b^7*d^4*e^3 + (307*B*a*b^6 - 9*A*b^7)*d^3*e^4 + 12*(83*B*a^2
*b^5 - 38*A*a*b^6)*d^2*e^5 + 6*(123*B*a^3*b^4 - 211*A*a^2*b^5)*d*e^6 + 158*
(B*a^4*b^3 - 3*A*a^3*b^4)*e^7)*x^4 + 715*(4*B*b^7*d^5*e^2 - 2*(43*B*a*b^6 +
 3*A*b^7)*d^4*e^3 - 4*(434*B*a^2*b^5 - 33*A*a*b^6)*d^3*e^4 - 2*(1547*B*a^3*
b^4 - 1269*A*a^2*b^5)*d^2*e^5 - 2*(755*B*a^4*b^3 - 1686*A*a^3*b^4)*d*e^6 -
193*(B*a^5*b^2 - 3*A*a^4*b^3)*e^7)*x^3 - 65*(16*B*b^7*d^6*e - 12*(17*B*a*b^
6 + 2*A*b^7)*d^5*e^2 + 6*(295*B*a^2*b^5 + 53*A*a*b^6)*d^4*e^3 + 2*(8837*B*a
^3*b^4 - 1407*A*a^2*b^5)*d^3*e^4 + 6*(3091*B*a^4*b^3 - 4184*A*a^3*b^4)*d^2*
e^5 + 3*(1867*B*a^5*b^2 - 5089*A*a^4*b^3)*d*e^6 + 256*(B*a^6*b - 3*A*a^5*b^
2)*e^7)*x^2 + 5*(96*B*b^7*d^7 - 16*(59*B*a*b^6 + 9*A*b^7)*d^6*e + 12*(395*B
*a^2*b^5 + 124*A*a*b^6)*d^5*e^2 - 42*(491*B*a^3*b^4 + 187*A*a^2*b^5)*d^4*e^
3 - 2*(51487*B*a^4*b^3 - 17430*A*a^3*b^4)*d^3*e^4 - 3*(20687*B*a^5*b^2 - 45
677*A*a^4*b^3)*d^2*e^5 - 1536*(5*B*a^6*b - 16*A*a^5*b^2)*d*e^6 + 256*(B*a^7
 - 3*A*a^6*b)*e^7)*x)*sqrt(e*x + d))/(a^5*b^8*d^11 - 8*a^6*b^7*d^10*e + 28*
a^7*b^6*d^9*e^2 - 56*a^8*b^5*d^8*e^3 + 70*a^9*b^4*d^7*e^4 - 56*a^10*b^3*d^6
*e^5 + 28*a^11*b^2*d^5*e^6 - 8*a^12*b*d^4*e^7 + a^13*d^3*e^8 + (b^13*d^8*e^
3 - 8*a*b^12*d^7*e^4 + 28*a^2*b^11*d^6*e^5 - 56*a^3*b^10*d^5*e^6 + 70*a^4*b
^9*d^4*e^7 - 56*a^5*b^8*d^3*e^8 + 28*a^6*b^7*d^2*e^9 - 8*a^7*b^6*d*e^10 + a
^8*b^5*e^11)*x^8 + (3*b^13*d^9*e^2 - 19*a*b^12*d^8*e^3 + 44*a^2*b^11*d^7*e^
4 - 28*a^3*b^10*d^6*e^5 - 70*a^4*b^9*d^5*e^6 + 182*a^5*b^8*d^4*e^7 - 196*a^
6*b^7*d^3*e^8 + 116*a^7*b^6*d^2*e^9 - 37*a^8*b^5*d*e^10 + 5*a^9*b^4*e^11)*x
^7 + (3*b^13*d^10*e - 9*a*b^12*d^9*e^2 - 26*a^2*b^11*d^8*e^3 + 172*a^3*b^10
*d^7*e^4 - 350*a^4*b^9*d^6*e^5 + 322*a^5*b^8*d^5*e^6 - 56*a^6*b^7*d^4*e^7 -
 164*a^7*b^6*d^3*e^8 + 163*a^8*b^5*d^2*e^9 - 65*a^9*b^4*d*e^10 + 10*a^10*b^
3*e^11)*x^6 + (b^13*d^11 + 7*a*b^12*d^10*e - 62*a^2*b^11*d^9*e^2 + 134*a^3*
b^10*d^8*e^3 - 10*a^4*b^9*d^7*e^4 - 406*a^5*b^8*d^6*e^5 + 728*a^6*b^7*d^5*e
^6 - 568*a^7*b^6*d^4*e^7 + 161*a^8*b^5*d^3*e^8 + 55*a^9*b^4*d^2*e^9 - 50*a^
10*b^3*d*e^10 + 10*a^11*b^2*e^11)*x^5 + 5*(a*b^12*d^11 - 2*a^2*b^11*d^10*e
- 14*a^3*b^10*d^9*e^2 + 65*a^4*b^9*d^8*e^3 - 106*a^5*b^8*d^7*e^4 + 56*a^6*b
^7*d^6*e^5 + 56*a^7*b^6*d^5*e^6 - 106*a^8*b^5*d^4*e^7 + 65*a^9*b^4*d^3*e^8
- 14*a^10*b^3*d^2*e^9 - 2*a^11*b^2*d*e^10 + a^12*b*e^11)*x^4 + (10*a^2*b^11
*d^11 - 50*a^3*b^10*d^10*e + 55*a^4*b^9*d^9*e^2 + 161*a^5*b^8*d^8*e^3 - 568
*a^6*b^7*d^7*e^4 + 728*a^7*b^6*d^6*e^5 - 406*a^8*b^5*d^5*e^6 - 10*a^9*b^4*d
^4*e^7 + 134*a^10*b^3*d^3*e^8 - 62*a^11*b^2*d^2*e^9 + 7*a^12*b*d*e^10 + a^1
3*e^11)*x^3 + (10*a^3*b^10*d^11 - 65*a^4*b^9*d^10*e + 163*a^5*b^8*d^9*e^2 -
 164*a^6*b^7*d^8*e^3 - 56*a^7*b^6*d^7*e^4 + 322*a^8*b^5*d^6*e^5 - 350*a^9*b
^4*d^5*e^6 + 172*a^10*b^3*d^4*e^7 - 26*a^11*b^2*d^3*e^8 - 9*a^12*b*d^2*e^9
+ 3*a^13*d*e^10)*x^2 + (5*a^4*b^9*d^11 - 37*a^5*b^8*d^10*e + 116*a^6*b^7*d^
9*e^2 - 196*a^7*b^6*d^8*e^3 + 182*a^8*b^5*d^7*e^4 - 70*a^9*b^4*d^6*e^5 - 28
*a^10*b^3*d^5*e^6 + 44*a^11*b^2*d^4*e^7 - 19*a^12*b*d^3*e^8 + 3*a^13*d^2*e^
9)*x), -1/1920*(45045*(2*B*a^5*b^2*d^4*e^4 + (B*a^6*b - 3*A*a^5*b^2)*d^3*e^
```

```
5 + (2*B*b^7*d*e^7 + (B*a*b^6 - 3*A*b^7)*e^8)*x^8 + (6*B*b^7*d^2*e^6 + (13*
B*a*b^6 - 9*A*b^7)*d*e^7 + 5*(B*a^2*b^5 - 3*A*a*b^6)*e^8)*x^7 + (6*B*b^7*d^
3*e^5 + 3*(11*B*a*b^6 - 3*A*b^7)*d^2*e^6 + 5*(7*B*a^2*b^5 - 9*A*a*b^6)*d*e^
7 + 10*(B*a^3*b^4 - 3*A*a^2*b^5)*e^8)*x^6 + (2*B*b^7*d^4*e^4 + (31*B*a*b^6
- 3*A*b^7)*d^3*e^5 + 15*(5*B*a^2*b^5 - 3*A*a*b^6)*d^2*e^6 + 10*(5*B*a^3*b^4
 - 9*A*a^2*b^5)*d*e^7 + 10*(B*a^4*b^3 - 3*A*a^3*b^4)*e^8)*x^5 + 5*(2*B*a*b^
6*d^4*e^4 + (13*B*a^2*b^5 - 3*A*a*b^6)*d^3*e^5 + 18*(B*a^3*b^4 - A*a^2*b^5)
*d^2*e^6 + 2*(4*B*a^4*b^3 - 9*A*a^3*b^4)*d*e^7 + (B*a^5*b^2 - 3*A*a^4*b^3)*
e^8)*x^4 + (20*B*a^2*b^5*d^4*e^4 + 10*(7*B*a^3*b^4 - 3*A*a^2*b^5)*d^3*e^5 +
 30*(2*B*a^4*b^3 - 3*A*a^3*b^4)*d^2*e^6 + (17*B*a^5*b^2 - 45*A*a^4*b^3)*d*e
^7 + (B*a^6*b - 3*A*a^5*b^2)*e^8)*x^3 + (20*B*a^3*b^4*d^4*e^4 + 10*(4*B*a^4
*b^3 - 3*A*a^3*b^4)*d^3*e^5 + 3*(7*B*a^5*b^2 - 15*A*a^4*b^3)*d^2*e^6 + 3*(B
*a^6*b - 3*A*a^5*b^2)*d*e^7)*x^2 + (10*B*a^4*b^3*d^4*e^4 + (11*B*a^5*b^2 -
15*A*a^4*b^3)*d^3*e^5 + 3*(B*a^6*b - 3*A*a^5*b^2)*d^2*e^6)*x)*sqrt(-b/(b*d
- a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d
)) + (768*A*a^7*e^7 + 96*(B*a*b^6 + 4*A*b^7)*d^7 - 16*(62*B*a^2*b^5 + 213*A
*a*b^6)*d^6*e + 28*(187*B*a^3*b^4 + 498*A*a^2*b^5)*d^5*e^2 - 70*(332*B*a^4*
b^3 + 519*A*a^3*b^4)*d^4*e^3 - (100363*B*a^5*b^2 - 79905*A*a^4*b^3)*d^3*e^4
 - 1024*(16*B*a^6*b - 87*A*a^5*b^2)*d^2*e^5 + 512*(B*a^7 - 18*A*a^6*b)*d*e^
6 - 45045*(2*B*b^7*d*e^6 + (B*a*b^6 - 3*A*b^7)*e^7)*x^7 - 105105*(2*B*b^7*d
^2*e^5 + (5*B*a*b^6 - 3*A*b^7)*d*e^6 + 2*(B*a^2*b^5 - 3*A*a*b^6)*e^7)*x^6 -
 3003*(46*B*b^7*d^3*e^4 + 3*(117*B*a*b^6 - 23*A*b^7)*d^2*e^5 + 12*(35*B*a^2
*b^5 - 41*A*a*b^6)*d*e^6 + 128*(B*a^3*b^4 - 3*A*a^2*b^5)*e^7)*x^5 - 2145*(6
*B*b^7*d^4*e^3 + (307*B*a*b^6 - 9*A*b^7)*d^3*e^4 + 12*(83*B*a^2*b^5 - 38*A*
a*b^6)*d^2*e^5 + 6*(123*B*a^3*b^4 - 211*A*a^2*b^5)*d*e^6 + 158*(B*a^4*b^3 -
 3*A*a^3*b^4)*e^7)*x^4 + 715*(4*B*b^7*d^5*e^2 - 2*(43*B*a*b^6 + 3*A*b^7)*d^
4*e^3 - 4*(434*B*a^2*b^5 - 33*A*a*b^6)*d^3*e^4 - 2*(1547*B*a^3*b^4 - 1269*A
*a^2*b^5)*d^2*e^5 - 2*(755*B*a^4*b^3 - 1686*A*a^3*b^4)*d*e^6 - 193*(B*a^5*b
^2 - 3*A*a^4*b^3)*e^7)*x^3 - 65*(16*B*b^7*d^6*e - 12*(17*B*a*b^6 + 2*A*b^7)
*d^5*e^2 + 6*(295*B*a^2*b^5 + 53*A*a*b^6)*d^4*e^3 + 2*(8837*B*a^3*b^4 - 140
7*A*a^2*b^5)*d^3*e^4 + 6*(3091*B*a^4*b^3 - 4184*A*a^3*b^4)*d^2*e^5 + 3*(186
7*B*a^5*b^2 - 5089*A*a^4*b^3)*d*e^6 + 256*(B*a^6*b - 3*A*a^5*b^2)*e^7)*x^2
+ 5*(96*B*b^7*d^7 - 16*(59*B*a*b^6 + 9*A*b^7)*d^6*e + 12*(395*B*a^2*b^5 + 1
24*A*a*b^6)*d^5*e^2 - 42*(491*B*a^3*b^4 + 187*A*a^2*b^5)*d^4*e^3 - 2*(51487
*B*a^4*b^3 - 17430*A*a^3*b^4)*d^3*e^4 - 3*(20687*B*a^5*b^2 - 45677*A*a^4*b^
3)*d^2*e^5 - 1536*(5*B*a^6*b - 16*A*a^5*b^2)*d*e^6 + 256*(B*a^7 - 3*A*a^6*b
)*e^7)*x)*sqrt(e*x + d))/(a^5*b^8*d^11 - 8*a^6*b^7*d^10*e + 28*a^7*b^6*d^9*
e^2 - 56*a^8*b^5*d^8*e^3 + 70*a^9*b^4*d^7*e^4 - 56*a^10*b^3*d^6*e^5 + 28*a^
11*b^2*d^5*e^6 - 8*a^12*b*d^4*e^7 + a^13*d^3*e^8 + (b^13*d^8*e^3 - 8*a*b^12
*d^7*e^4 + 28*a^2*b^11*d^6*e^5 - 56*a^3*b^10*d^5*e^6 + 70*a^4*b^9*d^4*e^7 -
 56*a^5*b^8*d^3*e^8 + 28*a^6*b^7*d^2*e^9 - 8*a^7*b^6*d*e^10 + a^8*b^5*e^11)
*x^8 + (3*b^13*d^9*e^2 - 19*a*b^12*d^8*e^3 + 44*a^2*b^11*d^7*e^4 - 28*a^3*b
^10*d^6*e^5 - 70*a^4*b^9*d^5*e^6 + 182*a^5*b^8*d^4*e^7 - 196*a^6*b^7*d^3*e^
8 + 116*a^7*b^6*d^2*e^9 - 37*a^8*b^5*d*e^10 + 5*a^9*b^4*e^11)*x^7 + (3*b^13
*d^10*e - 9*a*b^12*d^9*e^2 - 26*a^2*b^11*d^8*e^3 + 172*a^3*b^10*d^7*e^4 - 3
50*a^4*b^9*d^6*e^5 + 322*a^5*b^8*d^5*e^6 - 56*a^6*b^7*d^4*e^7 - 164*a^7*b^6
*d^3*e^8 + 163*a^8*b^5*d^2*e^9 - 65*a^9*b^4*d*e^10 + 10*a^10*b^3*e^11)*x^6
+ (b^13*d^11 + 7*a*b^12*d^10*e - 62*a^2*b^11*d^9*e^2 + 134*a^3*b^10*d^8*e^3
 - 10*a^4*b^9*d^7*e^4 - 406*a^5*b^8*d^6*e^5 + 728*a^6*b^7*d^5*e^6 - 568*a^7
*b^6*d^4*e^7 + 161*a^8*b^5*d^3*e^8 + 55*a^9*b^4*d^2*e^9 - 50*a^10*b^3*d*e^1
0 + 10*a^11*b^2*e^11)*x^5 + 5*(a*b^12*d^11 - 2*a^2*b^11*d^10*e - 14*a^3*b^1
0*d^9*e^2 + 65*a^4*b^9*d^8*e^3 - 106*a^5*b^8*d^7*e^4 + 56*a^6*b^7*d^6*e^5 +
 56*a^7*b^6*d^5*e^6 - 106*a^8*b^5*d^4*e^7 + 65*a^9*b^4*d^3*e^8 - 14*a^10*b^
3*d^2*e^9 - 2*a^11*b^2*d*e^10 + a^12*b*e^11)*x^4 + (10*a^2*b^11*d^11 - 50*a
^3*b^10*d^10*e + 55*a^4*b^9*d^9*e^2 + 161*a^5*b^8*d^8*e^3 - 568*a^6*b^7*d^7
*e^4 + 728*a^7*b^6*d^6*e^5 - 406*a^8*b^5*d^5*e^6 - 10*a^9*b^4*d^4*e^7 + 134
*a^10*b^3*d^3*e^8 - 62*a^11*b^2*d^2*e^9 + 7*a^12*b*d*e^10 + a^13*e^11)*x^3
+ (10*a^3*b^10*d^11 - 65*a^4*b^9*d^10*e + 163*a^5*b^8*d^9*e^2 - 164*a^6*b^7
*d^8*e^3 - 56*a^7*b^6*d^7*e^4 + 322*a^8*b^5*d^6*e^5 - 350*a^9*b^4*d^5*e^6 +
```

```
 172*a^10*b^3*d^4*e^7 - 26*a^11*b^2*d^3*e^8 - 9*a^12*b*d^2*e^9 + 3*a^13*d*e
^10)*x^2 + (5*a^4*b^9*d^11 - 37*a^5*b^8*d^10*e + 116*a^6*b^7*d^9*e^2 - 196*
a^7*b^6*d^8*e^3 + 182*a^8*b^5*d^7*e^4 - 70*a^9*b^4*d^6*e^5 - 28*a^10*b^3*d^
5*e^6 + 44*a^11*b^2*d^4*e^7 - 19*a^12*b*d^3*e^8 + 3*a^13*d^2*e^9)*x)]
```

giac [B] time = 0.44, size = 1676, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 3003/128*(2*B*b^3*d*e^4 + B*a*b^2*e^5 - 3*A*b^3*e^5)*arctan(sqrt(x*e + d)*b
/sqrt(-b^2*d + a*b*e))/((b^8*d^8 - 8*a*b^7*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*
a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*
e^6 - 8*a^7*b*d*e^7 + a^8*e^8)*sqrt(-b^2*d + a*b*e)) + 1/1920*(90090*(x*e +
 d)^7*B*b^7*d*e^4 - 420420*(x*e + d)^6*B*b^7*d^2*e^4 + 768768*(x*e + d)^5*B
*b^7*d^3*e^4 - 677820*(x*e + d)^4*B*b^7*d^4*e^4 + 275990*(x*e + d)^3*B*b^7*
d^5*e^4 - 33280*(x*e + d)^2*B*b^7*d^6*e^4 - 2560*(x*e + d)*B*b^7*d^7*e^4 -
768*B*b^7*d^8*e^4 + 45045*(x*e + d)^7*B*a*b^6*e^5 - 135135*(x*e + d)^7*A*b^
7*e^5 + 210210*(x*e + d)^6*B*a*b^6*d*e^5 + 630630*(x*e + d)^6*A*b^7*d*e^5 -
 1153152*(x*e + d)^5*B*a*b^6*d^2*e^5 - 1153152*(x*e + d)^5*A*b^7*d^2*e^5 +
1694550*(x*e + d)^4*B*a*b^6*d^3*e^5 + 1016730*(x*e + d)^4*A*b^7*d^3*e^5 - 9
65965*(x*e + d)^3*B*a*b^6*d^4*e^5 - 413985*(x*e + d)^3*A*b^7*d^4*e^5 + 1497
60*(x*e + d)^2*B*a*b^6*d^5*e^5 + 49920*(x*e + d)^2*A*b^7*d^5*e^5 + 14080*(x
*e + d)*B*a*b^6*d^6*e^5 + 3840*(x*e + d)*A*b^7*d^6*e^5 + 5376*B*a*b^6*d^7*e
^5 + 768*A*b^7*d^7*e^5 + 210210*(x*e + d)^6*B*a^2*b^5*e^6 - 630630*(x*e + d
)^6*A*a*b^6*e^6 + 2306304*(x*e + d)^5*A*a*b^6*d*e^6 - 1016730*(x*e + d)^4*B
*a^2*b^5*d^2*e^6 - 3050190*(x*e + d)^4*A*a*b^6*d^2*e^6 + 1103960*(x*e + d)^
3*B*a^2*b^5*d^3*e^6 + 1655940*(x*e + d)^3*A*a*b^6*d^3*e^6 - 249600*(x*e + d
)^2*B*a^2*b^5*d^4*e^6 - 249600*(x*e + d)^2*A*a*b^6*d^4*e^6 - 30720*(x*e + d
)*B*a^2*b^5*d^5*e^6 - 23040*(x*e + d)*A*a*b^6*d^5*e^6 - 16128*B*a^2*b^5*d^6
*e^6 - 5376*A*a*b^6*d^6*e^6 + 384384*(x*e + d)^5*B*a^3*b^4*e^7 - 1153152*(x
*e + d)^5*A*a^2*b^5*e^7 - 338910*(x*e + d)^4*B*a^3*b^4*d*e^7 + 3050190*(x*e
 + d)^4*A*a^2*b^5*d*e^7 - 275990*(x*e + d)^3*B*a^3*b^4*d^2*e^7 - 2483910*(x
*e + d)^3*A*a^2*b^5*d^2*e^7 + 166400*(x*e + d)^2*B*a^3*b^4*d^3*e^7 + 499200
*(x*e + d)^2*A*a^2*b^5*d^3*e^7 + 32000*(x*e + d)*B*a^3*b^4*d^4*e^7 + 57600*
(x*e + d)*A*a^2*b^5*d^4*e^7 + 26880*B*a^3*b^4*d^5*e^7 + 16128*A*a^2*b^5*d^5
*e^7 + 338910*(x*e + d)^4*B*a^4*b^3*e^8 - 1016730*(x*e + d)^4*A*a^3*b^4*e^8
 - 275990*(x*e + d)^3*B*a^4*b^3*d*e^8 + 1655940*(x*e + d)^3*A*a^3*b^4*d*e^8
 - 499200*(x*e + d)^2*A*a^3*b^4*d^2*e^8 - 12800*(x*e + d)*B*a^4*b^3*d^3*e^8
 - 76800*(x*e + d)*A*a^3*b^4*d^3*e^8 - 26880*B*a^4*b^3*d^4*e^8 - 26880*A*a^
3*b^4*d^4*e^8 + 137995*(x*e + d)^3*B*a^5*b^2*e^9 - 413985*(x*e + d)^3*A*a^4
*b^3*e^9 - 49920*(x*e + d)^2*B*a^5*b^2*d*e^9 + 249600*(x*e + d)^2*A*a^4*b^3
*d*e^9 - 3840*(x*e + d)*B*a^5*b^2*d^2*e^9 + 57600*(x*e + d)*A*a^4*b^3*d^2*e
^9 + 16128*B*a^5*b^2*d^3*e^9 + 26880*A*a^4*b^3*d^3*e^9 + 16640*(x*e + d)^2*
B*a^6*b*e^10 - 49920*(x*e + d)^2*A*a^5*b^2*e^10 + 5120*(x*e + d)*B*a^6*b*d*
e^10 - 23040*(x*e + d)*A*a^5*b^2*d*e^10 - 5376*B*a^6*b*d^2*e^10 - 16128*A*a
^5*b^2*d^2*e^10 - 1280*(x*e + d)*B*a^7*e^11 + 3840*(x*e + d)*A*a^6*b*e^11 +
 768*B*a^7*d*e^11 + 5376*A*a^6*b*d*e^11 - 768*A*a^7*e^12)/((b^8*d^8 - 8*a*b
^7*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 5
6*a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*e^6 - 8*a^7*b*d*e^7 + a^8*e^8)*((x*e + d
)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(x*e + d)*a*e)^5)
```

maple [B] time = 0.10, size = 1735, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -20195/192*e^7/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^3*d+5327/32*
e^6/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a*d^3-9443/128*e^5/(a*e-b
*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a*d^4+4253/192*e^5/(a*e-b*d)^8*b^6/
(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a*d-749/5*e^5/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(
e*x+d)^(5/2)*B*a*d^2-3269/64*e^8/(a*e-b*d)^8*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2
)*B*a^4*d+36463/192*e^5/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a*d^3
+5327/32*e^8/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d-15981/64*e
^7/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*d^2+1029/16*e^6/(a*e-b
*d)^8*b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*d^3+1211/64*e^7/(a*e-b*d)^8*b^4
/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^2+28329/64*e^7/(a*e-b*d)^8*b^5/(b*e*x+
a*e)^5*(e*x+d)^(3/2)*A*a^2*d-4067/64*e^6/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x
+d)^(3/2)*B*a^2*d^2+2002/5*e^6/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*
A*a*d-28329/64*e^6/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a*d^2-252/
5*e^6/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d-2/3*e^5/(a*e-b*d)
^7/(e*x+d)^(3/2)*a*B-2/5*e^5/(a*e-b*d)^6/(e*x+d)^(5/2)*A+4*e^5/(a*e-b*d)^7/
(e*x+d)^(3/2)*A*b-42*e^5*b^2/(a*e-b*d)^8/(e*x+d)^(1/2)*A+2/5*e^4/(a*e-b*d)^
6/(e*x+d)^(5/2)*B*d+7837/64*e^5/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*A*(e*x+d)^(7/
2)*d+3003/64*e^4/(a*e-b*d)^8*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)*B*d+1083/64*e^4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)
^(9/2)*B*d+350/3*e^4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*d^3-8099
/96*e^4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*d^4-5327/128*e^9/(a*e
-b*d)^8*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4-5327/128*e^5/(a*e-b*d)^8*b^7/
(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*d^4-9009/128*e^5/(a*e-b*d)^8*b^3/((a*e-b*d)*b
)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-3633/128*e^5/(a*e-b*d
)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(9/2)*A-10/3*e^4/(a*e-b*d)^7/(e*x+d)^(3/2)*B*
b*d+30*e^4*b^2/(a*e-b*d)^8/(e*x+d)^(1/2)*B*d+12*e^5*b/(a*e-b*d)^8/(e*x+d)^(
1/2)*a*B+3003/128*e^5/(a*e-b*d)^8*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+1253/15*e^7/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e
*x+d)^(5/2)*B*a^3-9443/64*e^8/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A
*a^3+9443/64*e^5/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*d^3+12131/19
2*e^8/(a*e-b*d)^8*b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^4+9629/192*e^6/(a*e-b
*d)^8*b^5/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2+1467/128*e^5/(a*e-b*d)^8*b^6/(b
*e*x+a*e)^5*(e*x+d)^(9/2)*B*a-1001/5*e^7/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x
+d)^(5/2)*A*a^2-1001/5*e^5/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*d^
2+2373/128*e^9/(a*e-b*d)^8*b^2/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5+1477/64*e^
4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*d^5-6941/96*e^4/(a*e-b*d)^8
*b^7/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^2-7837/64*e^6/(a*e-b*d)^8*b^6/(b*e*x+a
*e)^5*A*(e*x+d)^(7/2)*a
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 3.50, size = 802, normalized size = 1.84

$$\frac{\frac{27599\,(d+e\,x)^3\,\left(-3\,A\,b^3\,e^5+2\,B\,d\,b^3\,e^4+B\,a\,b^2\,e^5\right)}{384\,(a\,e-b\,d)^4}-\frac{2\,\left(A\,e^5-B\,d\,e^4\right)}{5\,(a\,e-b\,d)}+\frac{11297\,(d+e\,x)^4\,\left(-3\,A\,b^4\,e^5+2\,B\,d\,b^4\,e^4+B\,a\,b^3\,e^5\right)}{64\,(a\,e-b\,d)^5}+\frac{7007\,(d+e\,x)^6\,\left(-3\,A\,b^6\,e^5+2\,B\,d\,b^6\,e^4+B\,a\,b^5\,e^5\right)}{64\,(a\,e-b\,d)^7}-\frac{2\,(d+e\,x)\,\left(B\,a\,e^5-3\,A\,b\,e^5+2\,B\,b\,d\,e^4\right)}{3\,(a\,e-b\,d)^2}+\frac{26\,b\,(d+e\,x)^2\,\left(B\,a\,e^5-3\,A\,b\,e^5+2\,B\,b\,d\,e^4\right)}{3\,(a\,e-b\,d)^3}+\frac{1001\,b^4\,(d+e\,x)^5\,\left(B\,a\,e^5-3\,A\,b\,e^5+2\,B\,b\,d\,e^4\right)}{5\,(a\,e-b\,d)^6}+\frac{3003\,b^6\,(d+e\,x)^7\,\left(B\,a\,e^5-3\,A\,b\,e^5+2\,B\,b\,d\,e^4\right)}{128\,(a\,e-b\,d)^8}}{(d+e\,x)^{5/2}\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5\right)-(d+e\,x)^{9/2}\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)+(d+e\,x)^{7/2}\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)+b^5\,(d+e\,x)^{15/2}-\left(5\,b^5\,d-5\,a\,b^4\,e\right)\,(d+e\,x)^{13/2}+(d+e\,x)^{11/2}\,\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)}+\frac{3003\,b^{3/2}\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(B\,a\,e-3\,A\,b\,e+2\,B\,b\,d\right)\,\left(a^8\,e^8-8\,a^7\,b\,d\,e^7+28\,a^6\,b^2\,d^2\,e^6-56\,a^5\,b^3\,d^3\,e^5+70\,a^4\,b^4\,d^4\,e^4-56\,a^3\,b^5\,d^5\,e^3+28\,a^2\,b^6\,d^6\,e^2-8\,a\,b^7\,d^7\,e+b^8\,d^8\right)}{(a\,e-b\,d)^{17/2}\,\left(B\,a\,e^5-3\,A\,b\,e^5+2\,B\,b\,d\,e^4\right)}\right)\,\left(B\,a\,e-3\,A\,b\,e+2\,B\,b\,d\right)}{128\,(a\,e-b\,d)^{17/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((27599*(d + e*x)^3*(B*a*b^2*e^5 - 3*A*b^3*e^5 + 2*B*b^3*d*e^4))/(384*(a*e
- b*d)^4) - (2*(A*e^5 - B*d*e^4))/(5*(a*e - b*d)) + (11297*(d + e*x)^4*(B*a
*b^3*e^5 - 3*A*b^4*e^5 + 2*B*b^4*d*e^4))/(64*(a*e - b*d)^5) + (7007*(d + e*
x)^6*(B*a*b^5*e^5 - 3*A*b^6*e^5 + 2*B*b^6*d*e^4))/(64*(a*e - b*d)^7) - (2*(
d + e*x)*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(3*(a*e - b*d)^2) + (26*b*(d
+ e*x)^2*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(3*(a*e - b*d)^3) + (1001*b^4
*(d + e*x)^5*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(5*(a*e - b*d)^6) + (3003
*b^6*(d + e*x)^7*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(128*(a*e - b*d)^8))/
((d + e*x)^(5/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e
^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) - (d + e*x)^(9/2)*(10*b^5*d^3 - 10*a^3*
b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + (d + e*x)^(7/2)*(5*b^5*d^4 +
 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) + b^
5*(d + e*x)^(15/2) - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^(13/2) + (d + e*x)^(11
/2)*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e)) + (3003*b^(3/2)*e^4*atan(
(b^(1/2)*e^4*(d + e*x)^(1/2)*(B*a*e - 3*A*b*e + 2*B*b*d)*(a^8*e^8 + b^8*d^8
 + 28*a^2*b^6*d^6*e^2 - 56*a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*a^5*b^
3*d^3*e^5 + 28*a^6*b^2*d^2*e^6 - 8*a*b^7*d^7*e - 8*a^7*b*d*e^7))/((a*e - b*
d)^(17/2)*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4)))*(B*a*e - 3*A*b*e + 2*B*b*d)
)/(128*(a*e - b*d)^(17/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1615 $\int (A+Bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-aBe-Abe+2bBd)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(Bd-Ae)}{9e^3(a+bx)}+\frac{2bB\cdots}{\cdots}$$

Rubi [A] time = 0.09, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-aBe-Abe+2bBd)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(Bd-Ae)}{9e^3(a+bx)}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
9*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(11*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(13/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(13*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^{7/2}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^{7/2}}{e^2}+\frac{b(-2bBd+Abe+aBe)(\cdots}{e^2}\cdots\right)}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^3(a+bx)}-\frac{2(2bBd-A\cdots}{\cdots}\end{aligned}$$

Mathematica [A] time = 0.08, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{9/2}\left(13ae(11Ae-2Bd+9Bex)+13Abe(9ex-2d)+bB\left(8d^2-36dex+99e^2x^2\right)\right)}{1287e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(9/2)*(13*A*b*e*(-2*d + 9*e*x) + 13*a*e*(-2*B*d + 11*A*e + 9*B*e*x) + b*B*(8*d^2 - 36*d*e*x + 99*e^2*x^2)))/(1287*e^3*(a + b*x))

IntegrateAlgebraic [A] time = 51.49, size = 112, normalized size = 0.68

$$\frac{2(d+ex)^{9/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(143aAe^2+117aBe(d+ex)-143aBde+117Abe(d+ex)-143Abde+143bBd^2-234bBd(d+ex)+99bB(d+ex)^2\right)}{1287e^2(ae+bex)}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]

[Out] (2*(d + e*x)^(9/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(143*b*B*d^2 - 143*A*b*d*e - 143*a*B*d*e + 143*a*A*e^2 - 234*b*B*d*(d + e*x) + 117*A*b*e*(d + e*x) + 117*a*B*e*(d + e*x) + 99*b*B*(d + e*x)^2))/(1287*e^2*(a*e + b*e*x))

fricas [A] time = 0.43, size = 230, normalized size = 1.40

$$\frac{2\left(99Bbe^6x^6+8Bbd^6+143Aad^4e^2-26(Ba+Ab)d^5e+9\left(40Bbde^5+13(Ba+Ab)e^6\right)x^5+\left(458Bbd^2e^4+143Aae^6+442(Ba+Ab)de^5\right)x^4+2\left(106Bbd^3e^3+286Aade^5+299(Ba+Ab)d^2e^4\right)x^3+3\left(Bbd^4e^2+286Aad^2e^4+104(Ba+Ab)d^3e^3\right)x^2-\left(4Bbd^5e-572Aad^3e^3-13(Ba+Ab)d^4e^2\right)x\right)\sqrt{ex+d}}{1287e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] 2/1287*(99*B*b*e^6*x^6 + 8*B*b*d^6 + 143*A*a*d^4*e^2 - 26*(B*a + A*b)*d^5*e + 9*(40*B*b*d*e^5 + 13*(B*a + A*b)*e^6)*x^5 + (458*B*b*d^2*e^4 + 143*A*a*e^6 + 442*(B*a + A*b)*d*e^5)*x^4 + 2*(106*B*b*d^3*e^3 + 286*A*a*d*e^5 + 299*(B*a + A*b)*d^2*e^4)*x^3 + 3*(B*b*d^4*e^2 + 286*A*a*d^2*e^4 + 104*(B*a + A*b)*d^3*e^3)*x^2 - (4*B*b*d^5*e - 572*A*a*d^3*e^3 - 13*(B*a + A*b)*d^4*e^2)*x)*sqrt(e*x + d)/e^3

giac [B] time = 0.29, size = 1228, normalized size = 7.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^4*e^(-1)*sgn(b*x + a) + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^4*e^(-1)*sgn(b*x + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^4*e^(-2)*sgn(b*x + a) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*d^3*e^(-1)*sgn(b*x + a) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^3*e^(-1)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b*d^3*e^(-2)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a*d^4*sgn(b*x + a) + 60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*d^3*sgn(b*x + a) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*d^2*e^(-1)*sgn(b*x + a) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b*d^2*e^(-1)*sgn(b*x + a) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*d^2*e^(-2)*sgn(b*x + a) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*d^2*sgn(b*x + a) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*d*e^(-1)*sgn(b*x + a) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b*d*e^(-1)*sgn(b*x + a) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e

```
+ d)*d^5)*B*b*d*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*d*sgn(b*x +
a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*
d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
d)*d^5)*B*a*e^(-1)*sgn(b*x + a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*e^(-1)*sgn(b*x + a) + 15*(231*(x*e
 + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x
*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3
003*sqrt(x*e + d)*d^6)*B*b*e^(-2)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{9}{2}}\left(99Bb\,x^2e^2+117Ab\,e^2x+117Ba\,e^2x-36Bbdex+143Aa\,e^2-26Abde-26Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{1287\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/1287*(e*x+d)^(9/2)*(99*B*b*e^2*x^2+117*A*b*e^2*x+117*B*a*e^2*x-36*B*b*d*e
*x+143*A*a*e^2-26*A*b*d*e-26*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+
a)
```

maxima [B] time = 0.56, size = 263, normalized size = 1.60

$$\frac{2\left(9\,be^5x^5-2\,bd^5+11\,ad^4e+\left(34\,bde^4+11\,ae^5\right)x^4+2\left(23\,bd^2e^3+22\,ade^4\right)x^3+6\left(4\,bd^3e^2+11\,ad^2e^3\right)x^2+\left(bd^4e+44\,ad^3e^2\right)x\right)\sqrt{ex+d}\,A}{99\,e^2}+\frac{2\left(99\,be^6x^6+8\,bd^6-26\,ad^5e+9\left(40\,bde^5+13\,ae^6\right)x^5+2\left(229\,bd^2e^4+221\,ade^5\right)x^4+2\left(106\,bd^3e^3+299\,ad^2e^4\right)x^3+3\left(bd^4e^2+104\,ad^3e^3\right)x^2-\left(4\,bd^5e-13\,ad^4e^2\right)x\right)\sqrt{ex+d}\,B}{1287\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/99*(9*b*e^5*x^5 - 2*b*d^5 + 11*a*d^4*e + (34*b*d*e^4 + 11*a*e^5)*x^4 + 2*
(23*b*d^2*e^3 + 22*a*d*e^4)*x^3 + 6*(4*b*d^3*e^2 + 11*a*d^2*e^3)*x^2 + (b*d
^4*e + 44*a*d^3*e^2)*x)*sqrt(e*x + d)*A/e^2 + 2/1287*(99*b*e^6*x^6 + 8*b*d^
6 - 26*a*d^5*e + 9*(40*b*d*e^5 + 13*a*e^6)*x^5 + 2*(229*b*d^2*e^4 + 221*a*d
*e^5)*x^4 + 2*(106*b*d^3*e^3 + 299*a*d^2*e^4)*x^3 + 3*(b*d^4*e^2 + 104*a*d^
3*e^3)*x^2 - (4*b*d^5*e - 13*a*d^4*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\,\,(A+B\,x)\,\,(d+e\,x)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(7/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1616 $\int (A+Bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-aBe-Abe+2bBd)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(Bd-Ae)}{7e^3(a+bx)}+\frac{2b\ldots}{}$$

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-aBe-Abe+2bBd)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(Bd-Ae)}{7e^3(a+bx)}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
7*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(9*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(11/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(11*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^{5/2}\,dx}{ab+b^2x}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^{5/2}}{e^2}+\frac{b(-2bBd+Abe+aB\ldots}{e^2}\ldots\right)}{ab+b^2x}$$

$$=\frac{2(bd-ae)(Bd-Ae)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^3(a+bx)}-\frac{2(2bBd-\ldots}{}$$

Mathematica [A] time = 0.08, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\left(11ae(9Ae-2Bd+7Bex)+11Abe(7ex-2d)+bB\left(8d^2-28dex+63e^2x^2\right)\right)}{693e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(11*A*b*e*(-2*d + 7*e*x) + 11*a*e*(-2*
B*d + 9*A*e + 7*B*e*x) + b*B*(8*d^2 - 28*d*e*x + 63*e^2*x^2)))/(693*e^3*(a
+ b*x))
```

IntegrateAlgebraic [A] time = 51.05, size = 112, normalized size = 0.68

$$\frac{2(d+ex)^{7/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(99aAe^2+77aBe(d+ex)-99aBde+77Abe(d+ex)-99Abde+99bBd^2-154bBd(d+ex)+63bB(d+ex)^2\right)}{693e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] (2*(d + e*x)^(7/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(99*b*B*d^2 - 99*A*b*d*e - 99*
a*B*d*e + 99*a*A*e^2 - 154*b*B*d*(d + e*x) + 77*A*b*e*(d + e*x) + 77*a*B*e*
(d + e*x) + 63*b*B*(d + e*x)^2))/(693*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 189, normalized size = 1.15

$$\frac{2\left(63Bbe^5x^5+8Bbd^5+99Aad^3e^2-22(Ba+Ab)d^4e+7\left(23Bbde^4+11(Ba+Ab)e^5\right)x^4+\left(113Bbd^2e^3+99Aae^5+209(Ba+Ab)de^4\right)x^3+3\left(Bbd^3e^2+99Aade^4+55(Ba+Ab)d^2e^3\right)x^2-\left(4Bbd^4e-297Aad^2e^3-11(Ba+Ab)d^3e^2\right)x\right)\sqrt{ex+d}}{693e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*b*e^5*x^5 + 8*B*b*d^5 + 99*A*a*d^3*e^2 - 22*(B*a + A*b)*d^4*e +
 7*(23*B*b*d*e^4 + 11*(B*a + A*b)*e^5)*x^4 + (113*B*b*d^2*e^3 + 99*A*a*e^5
+ 209*(B*a + A*b)*d*e^4)*x^3 + 3*(B*b*d^3*e^2 + 99*A*a*d*e^4 + 55*(B*a + A*
b)*d^2*e^3)*x^2 - (4*B*b*d^4*e - 297*A*a*d^2*e^3 - 11*(B*a + A*b)*d^3*e^2)*
x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.25, size = 874, normalized size = 5.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^3*e^(-1)*sgn(b*x +
 a) + 1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^3*e^(-1)*sgn(b*x + a
) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B
*b*d^3*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
+ 15*sqrt(x*e + d)*d^2)*B*a*d^2*e^(-1)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2
) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^2*e^(-1)*sgn(b*x + a
) + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*b*d^2*e^(-2)*sgn(b*x + a) + 3465*sqrt(x*e + d)*A*
a*d^3*sgn(b*x + a) + 3465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*d^2*sgn
(b*x + a) + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*d*e^(-1)*sgn(b*x + a) + 297*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*A*b*d*e^(-1)*sgn(b*x + a) + 33*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*b*d*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3
/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*d*sgn(b*x + a) + 11*(35*(x*e + d)^(9/2) -
 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*B*a*e^(-1)*sgn(b*x + a) + 11*(35*(x*e + d)^(9/2) -
 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*A*b*e^(-1)*sgn(b*x + a) + 5*(63*(x*e + d)^(11/2) -
 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*e^(-2)*sgn(b*x + a
) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.04, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(63Bb\,x^{2}e^{2}+77Ab\,e^{2}x+77Ba\,e^{2}x-28Bbdex+99Aa\,e^{2}-22Abde-22Bade+8Bb\,d^{2}\right)\sqrt{(bx+a)^{2}}}{693\,(bx+a)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/693*(e*x+d)^(7/2)*(63*B*b*e^2*x^2+77*A*b*e^2*x+77*B*a*e^2*x-28*B*b*d*e*x+
99*A*a*e^2-22*A*b*d*e-22*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.58, size = 214, normalized size = 1.30

$$\frac{2\left(7\,be^{4}x^{4}-2\,bd^{4}+9\,ad^{3}e+\left(19\,bde^{3}+9\,ae^{4}\right)x^{3}+3\left(5\,bd^{2}e^{2}+9\,ade^{3}\right)x^{2}+\left(bd^{3}e+27\,ad^{2}e^{2}\right)x\right)\sqrt{ex+d}\,A}{63\,e^{2}}+\frac{2\left(63\,be^{5}x^{5}+8\,bd^{5}-22\,ad^{4}e+7\left(23\,bde^{4}+11\,ae^{5}\right)x^{4}+\left(113\,bd^{2}e^{3}+209\,ade^{4}\right)x^{3}+3\left(bd^{3}e^{2}+55\,ad^{2}e^{3}\right)x^{2}-\left(4\,bd^{4}e-11\,ad^{3}e^{2}\right)x\right)\sqrt{ex+d}\,B}{693\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*b*e^4*x^4 - 2*b*d^4 + 9*a*d^3*e + (19*b*d*e^3 + 9*a*e^4)*x^3 + 3*(5
*b*d^2*e^2 + 9*a*d*e^3)*x^2 + (b*d^3*e + 27*a*d^2*e^2)*x)*sqrt(e*x + d)*A/e
^2 + 2/693*(63*b*e^5*x^5 + 8*b*d^5 - 22*a*d^4*e + 7*(23*b*d*e^4 + 11*a*e^5)
*x^4 + (113*b*d^2*e^3 + 209*a*d*e^4)*x^3 + 3*(b*d^3*e^2 + 55*a*d^2*e^3)*x^2
 - (4*b*d^4*e - 11*a*d^3*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\ (A+B\,x)\ (d+e\,x)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(5/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1617 $\int (A+Bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-aBe-Abe+2bBd)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{2bB\sqrt{\cdots}}{\cdots}$$

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-aBe-Abe+2bBd)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
5*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(7*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(9/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(9*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^{3/2}\,dx}{ab+b^2x}$$
$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^{3/2}}{e^2}+\frac{b(-2bBd+Abe+aBe)(\cdots}{e^2}\cdots\right)}{ab+b^2x}$$
$$=\frac{2(bd-ae)(Bd-Ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{2(2bBd-A\cdots}{\cdots}$$

Mathematica [A] time = 0.07, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\left(9ae(7Ae-2Bd+5Bex)+9Abe(5ex-2d)+bB\left(8d^2-20dex+35e^2x^2\right)\right)}{315e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(9*A*b*e*(-2*d + 5*e*x) + 9*a*e*(-2*B*
d + 7*A*e + 5*B*e*x) + b*B*(8*d^2 - 20*d*e*x + 35*e^2*x^2)))/(315*e^3*(a +
b*x))
```

IntegrateAlgebraic [A] time = 50.77, size = 112, normalized size = 0.68

$$\frac{2(d+ex)^{5/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(63aAe^2+45aBe(d+ex)-63aBde+45Abe(d+ex)-63Abde+63bBd^2-90bBd(d+ex)+35bB(d+ex)^2\right)}{315e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] (2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(63*b*B*d^2 - 63*A*b*d*e - 63*
a*B*d*e + 63*a*A*e^2 - 90*b*B*d*(d + e*x) + 45*A*b*e*(d + e*x) + 45*a*B*e*(
d + e*x) + 35*b*B*(d + e*x)^2))/(315*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 149, normalized size = 0.91

$$\frac{2\left(35\,Bbe^4x^4+8\,Bbd^4+63\,Aad^2e^2-18\,(Ba+Ab)d^3e+5\left(10\,Bbde^3+9\,(Ba+Ab)e^4\right)x^3+3\left(Bbd^2e^2+21\,Aae^4+24\,(Ba+Ab)de^3\right)x^2-\left(4\,Bbd^3e-126\,Aade^3-9\,(Ba+Ab)d^2e^2\right)x\right)\sqrt{ex+d}}{315\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b*e^4*x^4 + 8*B*b*d^4 + 63*A*a*d^2*e^2 - 18*(B*a + A*b)*d^3*e +
 5*(10*B*b*d*e^3 + 9*(B*a + A*b)*e^4)*x^3 + 3*(B*b*d^2*e^2 + 21*A*a*e^4 + 2
4*(B*a + A*b)*d*e^3)*x^2 - (4*B*b*d^3*e - 126*A*a*d*e^3 - 9*(B*a + A*b)*d^2
*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.27, size = 571, normalized size = 3.48

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Bad^2e^{(-1)}\operatorname{sgn}(bx+a)+105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Abd^2e^{(-1)}\operatorname{sgn}(bx+a)+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Bbd^2e^{(-2)}\operatorname{sgn}(bx+a)+42\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Bade^{(-1)}\operatorname{sgn}(bx+a)+42\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Abde^{(-1)}\operatorname{sgn}(bx+a)+18\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bbde^{(-2)}\operatorname{sgn}(bx+a)+315\sqrt{xe+d}\,Aad^2\operatorname{sgn}(bx+a)+210\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aad\operatorname{sgn}(bx+a)+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bae^{(-1)}\operatorname{sgn}(bx+a)+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Abe^{(-1)}\operatorname{sgn}(bx+a)+\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)Bbe^{(-2)}\operatorname{sgn}(bx+a)+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Aa\operatorname{sgn}(bx+a)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^2*e^(-1)*sgn(b*x + a
) + 105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^2*e^(-1)*sgn(b*x + a) +
 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d
^2*e^(-2)*sgn(b*x + a) + 42*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*B*a*d*e^(-1)*sgn(b*x + a) + 42*(3*(x*e + d)^(5/2) - 10*(
x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d*e^(-1)*sgn(b*x + a) + 18*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*B*b*d*e^(-2)*sgn(b*x + a) + 315*sqrt(x*e + d)*A*a*d^2*sgn(b*x
+ a) + 210*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*d*sgn(b*x + a) + 9*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*B*a*e^(-1)*sgn(b*x + a) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^
(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b*e^(-1)*sgn(b*x
 + a) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d
^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*e^(-2)*sgn(b*x +
a) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A
*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(35Bb\,x^2e^2+45Ab\,e^2x+45Ba\,e^2x-20Bbdex+63Aa\,e^2-18Abde-18Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{315\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(5/2)*(35*B*b*e^2*x^2+45*A*b*e^2*x+45*B*a*e^2*x-20*B*b*d*e*x+
63*A*a*e^2-18*A*b*d*e-18*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.61, size = 167, normalized size = 1.02

$$\frac{2\left(5\,be^3x^3-2\,bd^3+7\,ad^2e+\left(8\,bde^2+7\,ae^3\right)x^2+\left(bd^2e+14\,ade^2\right)x\right)\sqrt{ex+d}\,A}{35\,e^2}+\frac{2\left(35\,be^4x^4+8\,bd^4-18\,ad^3e+5\left(10\,bde^3+9\,ae^4\right)x^3+3\left(bd^2e^2+24\,ade^3\right)x^2-\left(4\,bd^3e-9\,ad^2e^2\right)x\right)\sqrt{ex+d}\,B}{315\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*b*e^3*x^3 - 2*b*d^3 + 7*a*d^2*e + (8*b*d*e^2 + 7*a*e^3)*x^2 + (b*d^
2*e + 14*a*d*e^2)*x)*sqrt(e*x + d)*A/e^2 + 2/315*(35*b*e^4*x^4 + 8*b*d^4 -
18*a*d^3*e + 5*(10*b*d*e^3 + 9*a*e^4)*x^3 + 3*(b*d^2*e^2 + 24*a*d*e^3)*x^2
- (4*b*d^3*e - 9*a*d^2*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\,\,(A+B\,x)\,\,(d+e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1618 $\int (A+Bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+\frac{2b$$

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
3*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(7*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)\sqrt{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)\sqrt{d+ex}}{e^2}+\frac{b(-2bBd+Abe+aBe)(d}{e^2}\right.}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)}-\frac{2(2bBd-A}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(7ae(5Ae-2Bd+3Bex)+7Abe(3ex-2d)+bB\left(8d^2-12dex+15e^2x^2\right)\right)}{105e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(7*A*b*e*(-2*d + 3*e*x) + 7*a*e*(-2*B*
d + 5*A*e + 3*B*e*x) + b*B*(8*d^2 - 12*d*e*x + 15*e^2*x^2)))/(105*e^3*(a +
b*x))
```

IntegrateAlgebraic [A] time = 36.58, size = 112, normalized size = 0.68

$$\frac{2(d+ex)^{3/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(35aAe^2+21aBe(d+ex)-35aBde+21Abe(d+ex)-35Abde+35bBd^2-42bBd(d+ex)+15bB(d+ex)^2\right)}{105e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(35*b*B*d^2 - 35*A*b*d*e - 35*
a*B*d*e + 35*a*A*e^2 - 42*b*B*d*(d + e*x) + 21*A*b*e*(d + e*x) + 21*a*B*e*(
d + e*x) + 15*b*B*(d + e*x)^2))/(105*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 108, normalized size = 0.66

$$\frac{2\left(15\,Bbe^3x^3+8\,Bbd^3+35\,Aade^2-14\,(Ba+Ab)d^2e+3\left(Bbde^2+7\,(Ba+Ab)e^3\right)x^2-\left(4\,Bbd^2e-35\,Aae^3-7\,(Ba+Ab)de^2\right)x\right)\sqrt{ex+d}}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*b*e^3*x^3 + 8*B*b*d^3 + 35*A*a*d*e^2 - 14*(B*a + A*b)*d^2*e + 3
*(B*b*d*e^2 + 7*(B*a + A*b)*e^3)*x^2 - (4*B*b*d^2*e - 35*A*a*e^3 - 7*(B*a +
 A*b)*d*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.24, size = 322, normalized size = 1.96

$$\frac{2}{105}\left(35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Bade^{(-1)}\mathrm{sgn}\left(bx+a\right)+35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Abde^{(-1)}\mathrm{sgn}\left(bx+a\right)+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Bbde^{(-2)}\mathrm{sgn}\left(bx+a\right)+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Bae^{(-1)}\mathrm{sgn}\left(bx+a\right)+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Abe^{(-1)}\mathrm{sgn}\left(bx+a\right)+3\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bbe^{(-2)}\mathrm{sgn}\left(bx+a\right)+105\sqrt{xe+d}\,Aad\,\mathrm{sgn}\left(bx+a\right)+35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aa\,\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d*e^(-1)*sgn(b*x + a) +
 35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d*e^(-1)*sgn(b*x + a) + 7*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d*e^(-2)
*sgn(b*x + a) + 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
 d)*d^2)*B*a*e^(-1)*sgn(b*x + a) + 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*A*b*e^(-1)*sgn(b*x + a) + 3*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b
*e^(-2)*sgn(b*x + a) + 105*sqrt(x*e + d)*A*a*d*sgn(b*x + a) + 35*((x*e + d)
^(3/2) - 3*sqrt(x*e + d)*d)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(15Bb\,x^2e^2+21Ab\,e^2x+21Ba\,e^2x-12Bbdex+35Aa\,e^2-14Abde-14Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{105\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(3/2)*(15*B*b*e^2*x^2+21*A*b*e^2*x+21*B*a*e^2*x-12*B*b*d*e*x+
35*A*a*e^2-14*A*b*d*e-14*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.60, size = 120, normalized size = 0.73

$$\frac{2\left(3\,be^2x^2-2\,bd^2+5\,ade+\left(bde+5\,ae^2\right)x\right)\sqrt{ex+d}\,A}{15\,e^2}+\frac{2\left(15\,be^3x^3+8\,bd^3-14\,ad^2e+3\left(bde^2+7\,ae^3\right)x^2-\left(4\,bd^2e-7\,ade^2\right)x\right)\sqrt{ex+d}\,B}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*b*e^2*x^2 - 2*b*d^2 + 5*a*d*e + (b*d*e + 5*a*e^2)*x)*sqrt(e*x + d)*
A/e^2 + 2/105*(15*b*e^3*x^3 + 8*b*d^3 - 14*a*d^2*e + 3*(b*d*e^2 + 7*a*e^3)*
x^2 - (4*b*d^2*e - 7*a*d*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\;(A+B\,x)\,\sqrt{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{d+ex}\sqrt{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)*sqrt((a + b*x)**2), x)
```

3.1619 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=162

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-aBe-Abe+2bBd)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)}+\frac{2bB\sqrt{a}}{}$$

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-aBe-Abe+2bBd)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(3*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(5*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{\sqrt{d+ex}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2\sqrt{d+ex}}+\frac{b(-2bBd+Abe+aBe)\sqrt{d+ex}}{e^2}+\frac{b^2B(d+ex)^{3/}}{e^2}\right.}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)}-\frac{2(2bBd-Abe-aBe)(d}{3e^3(}\end{aligned}$$

Mathematica [A] time = 0.07, size = 86, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,\left(5ae(3Ae-2Bd+Bex)+5Abe(ex-2d)+bB\left(8d^2-4dex+3e^2x^2\right)\right)}{15e^3(a+bx)}$$

Antiderivative was successfully verified.

[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]

[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(5*A*b*e*(-2*d + e*x) + 5*a*e*(-2*B*d + 3*A*e + B*e*x) + b*B*(8*d^2 - 4*d*e*x + 3*e^2*x^2)))/(15*e^3*(a + b*x))

IntegrateAlgebraic [A] time = 22.77, size = 112, normalized size = 0.69

$$\frac{2\sqrt{d+ex}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(15aAe^2+5aBe(d+ex)-15aBde+5Abe(d+ex)-15Abde+15bBd^2-10bBd(d+ex)+3bB(d+ex)^2\right)}{15e^2(ae+bex)}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x], x]

[Out] (2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2]*(15*b*B*d^2 - 15*A*b*d*e - 15*a*B*d*e + 15*a*A*e^2 - 10*b*B*d*(d + e*x) + 5*A*b*e*(d + e*x) + 5*a*B*e*(d + e*x) + 3*b*B*(d + e*x)^2))/(15*e^2*(a*e + b*e*x))

fricas [A] time = 0.42, size = 70, normalized size = 0.43

$$\frac{2\left(3\,Bbe^2x^2+8\,Bbd^2+15\,Aae^2-10\,(Ba+Ab)de-\left(4\,Bbde-5\,(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{15\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas")

[Out] 2/15*(3*B*b*e^2*x^2 + 8*B*b*d^2 + 15*A*a*e^2 - 10*(B*a + A*b)*d*e - (4*B*b*d*e - 5*(B*a + A*b)*e^2)*x)*sqrt(e*x + d)/e^3

giac [A] time = 0.17, size = 133, normalized size = 0.82

$$\frac{2}{15}\left(5\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Bae^{(-1)}\mathrm{sgn}\left(bx+a\right)+5\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Abe^{(-1)}\mathrm{sgn}\left(bx+a\right)+\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Bbe^{(-2)}\mathrm{sgn}\left(bx+a\right)+15\sqrt{xe+d}\,Aa\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")

[Out] 2/15*(5*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*e^(-1)*sgn(b*x + a) + 5*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*e^(-1)*sgn(b*x + a) + (3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*e^(-2)*sgn(b*x + a) + 15*sqrt(x*e + d)*A*a*sgn(b*x + a))*e^(-1)

maple [A] time = 0.05, size = 89, normalized size = 0.55

$$\frac{2\sqrt{ex+d}\,\left(3Bb\,x^2e^2+5Ab\,e^2x+5Ba\,e^2x-4Bbdex+15Aa\,e^2-10Abde-10Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{15\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x)

[Out] 2/15*(e*x+d)^(1/2)*(3*B*b*e^2*x^2+5*A*b*e^2*x+5*B*a*e^2*x-4*B*b*d*e*x+15*A*a*e^2-10*A*b*d*e-10*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)

maxima [A] time = 0.71, size = 119, normalized size = 0.73

$$\frac{2\left(be^2x^2-2\,bd^2+3\,ade-\left(bde-3\,ae^2\right)x\right)A}{3\sqrt{ex+d}\,e^2}+\frac{2\left(3\,be^3x^3+8\,bd^3-10\,ad^2e-\left(bde^2-5\,ae^3\right)x^2+\left(4\,bd^2e-5\,ade^2\right)x\right)B}{15\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*e^2*x^2 - 2*b*d^2 + 3*a*d*e - (b*d*e - 3*a*e^2)*x)*A/(sqrt(e*x + d)*
e^2) + 2/15*(3*b*e^3*x^3 + 8*b*d^3 - 10*a*d^2*e - (b*d*e^2 - 5*a*e^3)*x^2 +
 (4*b*d^2*e - 5*a*d*e^2)*x)*B/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.27, size = 156, normalized size = 0.96

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^3}{5}+\frac{16\,B\,b\,d^3+30\,A\,a\,d\,e^2-20\,A\,b\,d^2\,e-20\,B\,a\,d^2\,e}{15\,b\,e^3}+\frac{x\,\left(30\,A\,a\,e^3-10\,A\,b\,d\,e^2-10\,B\,a\,d\,e^2+8\,B\,b\,d^2\,e\right)}{15\,b\,e^3}+\frac{x^2\,\left(10\,A\,b\,e^3+10\,B\,a\,e^3-2\,B\,b\,d\,e^2\right)}{15\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^3)/5 + (16*B*b*d^3 + 30*A*a*d*e^2 - 20*A*b*d^2
*e - 20*B*a*d^2*e)/(15*b*e^3) + (x*(30*A*a*e^3 - 10*A*b*d*e^2 - 10*B*a*d*e^
2 + 8*B*b*d^2*e))/(15*b*e^3) + (x^2*(10*A*b*e^3 + 10*B*a*e^3 - 2*B*b*d*e^2)
)/(15*b*e^3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{(a+bx)^2}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt((a + b*x)**2)/sqrt(d + e*x), x)
```

3.1620 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=160

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}(-aBe-Abe+2bBd)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}(bd-ae)(Bd-Ae)}{e^3(a+bx)\sqrt{d+ex}}+\frac{2bB\sqrt{a^2+2ab\cdots}}{3e^3\cdots}$$

Rubi [A] time = 0.08, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}(-aBe-Abe+2bBd)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}(bd-ae)(Bd-Ae)}{e^3(a+bx)\sqrt{d+ex}}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}(d+ex)^{3/2}}{3e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*S
qrt[d + e*x]) - (2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(e^3*(a + b*x)) + (2*b*B*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(3*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^{3/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^{3/2}}+\frac{b(-2bBd+Abe+aBe)}{e^2\sqrt{d+ex}}+\frac{b^2B\sqrt{d+ex}}{e^2}\right)d\cdots}{ab+b^2x}\\ &= -\frac{2(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}-\frac{2(2bBd-Abe-aBe)\sqrt{d+e\cdots}}{e^3(a+b\cdots}\end{aligned}$$

Mathematica [A] time = 0.06, size = 85, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(3ae(-Ae+2Bd+Bex)+3Abe(2d+ex)+bB\left(-8d^2-4dex+e^2x^2\right)\right)}{3e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(3*A*b*e*(2*d + e*x) + 3*a*e*(2*B*d - A*e + B*e*x) + b
*B*(-8*d^2 - 4*d*e*x + e^2*x^2)))/(3*e^3*(a + b*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 20.63, size = 111, normalized size = 0.69

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-3aAe^2+3aBe(d+ex)+3aBde+3Abe(d+ex)+3Abde-3bBd^2-6bBd(d+ex)+bB(d+ex)^2\right)}{3e^2\sqrt{d+ex}\,(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2
),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-3*b*B*d^2 + 3*A*b*d*e + 3*a*B*d*e - 3*a*A*e^
2 - 6*b*B*d*(d + e*x) + 3*A*b*e*(d + e*x) + 3*a*B*e*(d + e*x) + b*B*(d + e*
x)^2))/(3*e^2*Sqrt[d + e*x]*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 79, normalized size = 0.49

$$\frac{2\left(Bbe^2x^2-8\,Bbd^2-3\,Aae^2+6\,(Ba+Ab)de-\left(4\,Bbde-3\,(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{3\left(e^4x+de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*b*e^2*x^2 - 8*B*b*d^2 - 3*A*a*e^2 + 6*(B*a + A*b)*d*e - (4*B*b*d*e -
 3*(B*a + A*b)*e^2)*x)*sqrt(e*x + d)/(e^4*x + d*e^3)
```

giac [A] time = 0.18, size = 148, normalized size = 0.92

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bbe^6\mathrm{sgn}\,(bx+a)-6\sqrt{xe+d}\,Bbde^6\mathrm{sgn}\,(bx+a)+3\sqrt{xe+d}\,Bae^7\mathrm{sgn}\,(bx+a)+3\sqrt{xe+d}\,Abe^7\mathrm{sgn}\,(bx+a)\right)e^{(-9)}-\frac{2\left(Bbd^2\mathrm{sgn}\,(bx+a)-Bade\mathrm{sgn}\,(bx+a)-Abde\mathrm{sgn}\,(bx+a)+Aae^2\mathrm{sgn}\,(bx+a)\right)e^{(-3)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*b*e^6*sgn(b*x + a) - 6*sqrt(x*e + d)*B*b*d*e^6*sgn(b
*x + a) + 3*sqrt(x*e + d)*B*a*e^7*sgn(b*x + a) + 3*sqrt(x*e + d)*A*b*e^7*sg
n(b*x + a))*e^(-9) - 2*(B*b*d^2*sgn(b*x + a) - B*a*d*e*sgn(b*x + a) - A*b*d
*e*sgn(b*x + a) + A*a*e^2*sgn(b*x + a))*e^(-3)/sqrt(x*e + d)
```

maple [A] time = 0.04, size = 89, normalized size = 0.56

$$-\frac{2\left(-Bb\,x^2e^2-3Ab\,e^2x-3Ba\,e^2x+4Bbdex+3Aa\,e^2-6Abde-6Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{3\sqrt{ex+d}\,\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/3/(e*x+d)^(1/2)*(-B*b*e^2*x^2-3*A*b*e^2*x-3*B*a*e^2*x+4*B*b*d*e*x+3*A*a*
e^2-6*A*b*d*e-6*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.77, size = 75, normalized size = 0.47

$$\frac{2\,(bex+2\,bd-ae)A}{\sqrt{ex+d}\,e^2}+\frac{2\left(be^2x^2-8\,bd^2+6\,ade-\left(4\,bde-3\,ae^2\right)x\right)B}{3\,\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*(b*e*x + 2*b*d - a*e)*A/(sqrt(e*x + d)*e^2) + 2/3*(b*e^2*x^2 - 8*b*d^2 +
6*a*d*e - (4*b*d*e - 3*a*e^2)*x)*B/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.41, size = 109, normalized size = 0.68

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^2}{3\,e}-\frac{6\,A\,a\,e^2+16\,B\,b\,d^2-12\,A\,b\,d\,e-12\,B\,a\,d\,e}{3\,b\,e^3}+\frac{x\,\left(6\,A\,b\,e^2+6\,B\,a\,e^2-8\,B\,b\,d\,e\right)}{3\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^2)/(3*e) - (6*A*a*e^2 + 16*B*b*d^2 - 12*A*b*d*
e - 12*B*a*d*e)/(3*b*e^3) + (x*(6*A*b*e^2 + 6*B*a*e^2 - 8*B*b*d*e))/(3*b*e^
3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{(a+bx)^2}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt((a + b*x)**2)/(d + e*x)**(3/2), x)
```

3.1621 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=160

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d}}{e^3(a+bx)}$$

Rubi [A] time = 0.09, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)
*(d + e*x)^(3/2)) + (2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^3*(a + b*x)*Sqrt[d + e*x]) + (2*b*B*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^{5/2}}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^{3/2}}+\frac{b^2B}{e^2\sqrt{d+ex}}\right)dx}{ab+b^2x}\\
&= -\frac{2(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{2(2bBd-Abe-aBe)\sqrt{a^2+2a}}{e^3(a+bx)\sqrt{d+ex}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 86, normalized size = 0.54

$$-\frac{2\sqrt{(a+bx)^2}\left(ae(Ae+2Bd+3Bex)+Abe(2d+3ex)-bB\left(8d^2+12dex+3e^2x^2\right)\right)}{3e^3(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(A*b*e*(2*d + 3*e*x) + a*e*(2*B*d + A*e + 3*B*e*x) -
b*B*(8*d^2 + 12*d*e*x + 3*e^2*x^2)))/(3*e^3*(a + b*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 26.32, size = 110, normalized size = 0.69

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-aAe^2-3aBe(d+ex)+aBde-3Abe(d+ex)+Abde-bBd^2+6bBd(d+ex)+3bB(d+ex)^2\right)}{3e^2(d+ex)^{3/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2
),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-(b*B*d^2) + A*b*d*e + a*B*d*e - a*A*e^2 + 6*
b*B*d*(d + e*x) - 3*A*b*e*(d + e*x) - 3*a*B*e*(d + e*x) + 3*b*B*(d + e*x)^2
))/(3*e^2*(d + e*x)^(3/2)*(a*e + b*e*x))
```

fricas [A] time = 0.41, size = 91, normalized size = 0.57

$$\frac{2\left(3\,Bbe^2x^2+8\,Bbd^2-Aae^2-2\,(Ba+Ab)de+3\left(4\,Bbde-(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{3\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*b*e^2*x^2 + 8*B*b*d^2 - A*a*e^2 - 2*(B*a + A*b)*d*e + 3*(4*B*b*d*e
 - (B*a + A*b)*e^2)*x)*sqrt(e*x + d)/(e^5*x^2 + 2*d*e^4*x + d^2*e^3)
```

giac [A] time = 0.22, size = 136, normalized size = 0.85

$$2\sqrt{xe+d}\,Bbe^{(-3)}\mathrm{sgn}\,(bx+a)+\frac{2\left(6\,(xe+d)Bbd\mathrm{sgn}\,(bx+a)-Bbd^2\mathrm{sgn}\,(bx+a)-3\,(xe+d)Bae\mathrm{sgn}\,(bx+a)-3\,(xe+d)Abe\mathrm{sgn}\,(bx+a)+Bade\mathrm{sgn}\,(bx+a)+Abde\mathrm{sgn}\,(bx+a)-Aae^2\mathrm{sgn}\,(bx+a)\right)e^{(-3)}}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*b*e^(-3)*sgn(b*x + a) + 2/3*(6*(x*e + d)*B*b*d*sgn(b*x +
a) - B*b*d^2*sgn(b*x + a) - 3*(x*e + d)*B*a*e*sgn(b*x + a) - 3*(x*e + d)*A*
b*e*sgn(b*x + a) + B*a*d*e*sgn(b*x + a) + A*b*d*e*sgn(b*x + a) - A*a*e^2*sg
n(b*x + a))*e^(-3)/(x*e + d)^(3/2)
```

maple [A] time = 0.04, size = 88, normalized size = 0.55

$$-\frac{2\left(-3Bb\,x^2e^2+3Ab\,e^2x+3Ba\,e^2x-12Bbdex+Aa\,e^2+2Abde+2Bade-8Bb\,d^2\right)\sqrt{(bx+a)^2}}{3\,(ex+d)^{\frac{3}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-3*B*b*e^2*x^2+3*A*b*e^2*x+3*B*a*e^2*x-12*B*b*d*e*x+A*a
*e^2+2*A*b*d*e+2*B*a*d*e-8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.61, size = 96, normalized size = 0.60

$$-\frac{2\,(3\,bex+2\,bd+ae)A}{3\left(e^3x+de^2\right)\sqrt{ex+d}}+\frac{2\left(3\,be^2x^2+8\,bd^2-2\,ade+3\left(4\,bde-ae^2\right)x\right)B}{3\left(e^4x+de^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*e*x + 2*b*d + a*e)*A/((e^3*x + d*e^2)*sqrt(e*x + d)) + 2/3*(3*b*e
^2*x^2 + 8*b*d^2 - 2*a*d*e + 3*(4*b*d*e - a*e^2)*x)*B/((e^4*x + d*e^3)*sqrt
(e*x + d))
```

mupad [B] time = 2.48, size = 146, normalized size = 0.91

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,A\,a\,e^2-16\,B\,b\,d^2+4\,A\,b\,d\,e+4\,B\,a\,d\,e}{3\,b\,e^4}-\frac{2\,B\,x^2}{e^2}+\frac{x\,\left(6\,A\,b\,e^2+6\,B\,a\,e^2-24\,B\,b\,d\,e\right)}{3\,b\,e^4}\right)}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(3\,a\,e^4+3\,b\,d\,e^3\right)\,\sqrt{d+e\,x}}{3\,b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*A*a*e^2 - 16*B*b*d^2 + 4*A*b*d*e + 4*B*a*d*e)/(3*
b*e^4) - (2*B*x^2)/e^2 + (x*(6*A*b*e^2 + 6*B*a*e^2 - 24*B*b*d*e))/(3*b*e^4)
))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x)^(1/2))/(b*e) + (x*(3*a*e^4 + 3*b*d
*e^3)*(d + e*x)^(1/2))/(3*b*e^4))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1622 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=162

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^{5/2}}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}$$

Rubi [A] time = 0.08, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^{5/2}}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)
*(d + e*x)^(5/2)) + (2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(3*e^3*(a + b*x)*(d + e*x)^(3/2)) - (2*b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(e^3*(a + b*x)*Sqrt[d + e*x])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^{7/2}}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^{5/2}}+\frac{b^2B}{e^2(d+ex)^{3/2}}\right) d}{ab+b^2x}\\ &= -\frac{2(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^{5/2}}+\frac{2(2bBd-Abe-aBe)\sqrt{a^2+}}{3e^3(a+bx)(d+ex}\end{aligned}$$

Mathematica [A] time = 0.06, size = 86, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\left(ae(3Ae+2Bd+5Bex)+Abe(2d+5ex)+bB\left(8d^2+20dex+15e^2x^2\right)\right)}{15e^3(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(A*b*e*(2*d + 5*e*x) + a*e*(2*B*d + 3*A*e + 5*B*e*x)
+ b*B*(8*d^2 + 20*d*e*x + 15*e^2*x^2)))/(15*e^3*(a + b*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 40.00, size = 112, normalized size = 0.69

$$-\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(3aAe^2+5aBe(d+ex)-3aBde+5Abe(d+ex)-3Abde+3bBd^2-10bBd(d+ex)+15bB(d+ex)^2\right)}{15e^2(d+ex)^{5/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2
),x]
```

```
[Out] (-2*Sqrt[(a*e + b*e*x)^2/e^2]*(3*b*B*d^2 - 3*A*b*d*e - 3*a*B*d*e + 3*a*A*e^
2 - 10*b*B*d*(d + e*x) + 5*A*b*e*(d + e*x) + 5*a*B*e*(d + e*x) + 15*b*B*(d
+ e*x)^2))/(15*e^2*(d + e*x)^(5/2)*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 101, normalized size = 0.62

$$-\frac{2\left(15\,Bbe^2x^2+8\,Bbd^2+3\,Aae^2+2\,(Ba+Ab)de+5\left(4\,Bbde+(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{15\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*B*b*e^2*x^2 + 8*B*b*d^2 + 3*A*a*e^2 + 2*(B*a + A*b)*d*e + 5*(4*B*
b*d*e + (B*a + A*b)*e^2)*x)*sqrt(e*x + d)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^
4*x + d^3*e^3)
```

giac [A] time = 0.29, size = 135, normalized size = 0.83

$$-\frac{2\left(15\,(xe+d)^2Bb\mathrm{sgn}\left(bx+a\right)-10\,(xe+d)Bbd\mathrm{sgn}\left(bx+a\right)+3\,Bbd^2\mathrm{sgn}\left(bx+a\right)+5\,(xe+d)Bae\mathrm{sgn}\left(bx+a\right)+5\,(xe+d)Abe\mathrm{sgn}\left(bx+a\right)-3\,Bade\mathrm{sgn}\left(bx+a\right)-3\,Abde\mathrm{sgn}\left(bx+a\right)+3\,Aae^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*(x*e + d)^2*B*b*sgn(b*x + a) - 10*(x*e + d)*B*b*d*sgn(b*x + a) +
3*B*b*d^2*sgn(b*x + a) + 5*(x*e + d)*B*a*e*sgn(b*x + a) + 5*(x*e + d)*A*b*e
*sgn(b*x + a) - 3*B*a*d*e*sgn(b*x + a) - 3*A*b*d*e*sgn(b*x + a) + 3*A*a*e^2
*sgn(b*x + a))*e^(-3)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 89, normalized size = 0.55

$$-\frac{2\left(15Bb\,x^2e^2+5Ab\,e^2x+5Ba\,e^2x+20Bbdex+3Aa\,e^2+2Abde+2Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{15\,(ex+d)^{\frac{5}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(15*B*b*e^2*x^2+5*A*b*e^2*x+5*B*a*e^2*x+20*B*b*d*e*x+3*
A*a*e^2+2*A*b*d*e+2*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.58, size = 118, normalized size = 0.73

$$-\frac{2\,(5\,bex+2\,bd+3\,ae)A}{15\left(e^4x^2+2\,de^3x+d^2e^2\right)\sqrt{ex+d}}-\frac{2\left(15\,be^2x^2+8\,bd^2+2\,ade+5\left(4\,bde+ae^2\right)x\right)B}{15\left(e^5x^2+2\,de^4x+d^2e^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/15*(5*b*e*x + 2*b*d + 3*a*e)*A/((e^4*x^2 + 2*d*e^3*x + d^2*e^2)*sqrt(e*x
 + d)) - 2/15*(15*b*e^2*x^2 + 8*b*d^2 + 2*a*d*e + 5*(4*b*d*e + a*e^2)*x)*B/
((e^5*x^2 + 2*d*e^4*x + d^2*e^3)*sqrt(e*x + d))
```

mupad [B] time = 2.52, size = 174, normalized size = 1.07

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^2}{e^3}+\frac{6\,A\,a\,e^2+16\,B\,b\,d^2+4\,A\,b\,d\,e+4\,B\,a\,d\,e}{15\,b\,e^5}+\frac{x\,\left(10\,A\,b\,e^2+10\,B\,a\,e^2+40\,B\,b\,d\,e\right)}{15\,b\,e^5}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(15\,a\,e^5+30\,b\,d\,e^4\right)\,\sqrt{d+e\,x}}{15\,b\,e^5}+\frac{d\,x\,(2\,a\,e+b\,d)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*B*x^2)/e^3 + (6*A*a*e^2 + 16*B*b*d^2 + 4*A*b*d*e
+ 4*B*a*d*e)/(15*b*e^5) + (x*(10*A*b*e^2 + 10*B*a*e^2 + 40*B*b*d*e))/(15*b*
e^5)))/(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(15*a*
e^5 + 30*b*d*e^4)*(d + e*x)^(1/2))/(15*b*e^5) + (d*x*(2*a*e + b*d)*(d + e*x
)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1623 $\int (A+Bx)(d+ex)^{7/2} \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(-3aBe-Abe+4bBd)}{15e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)(-aBe-A$$

Rubi [A] time = 0.19, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(-3aBe-Abe+4bBd)}{15e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)(-aBe-Abe+2bBd)}{13e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2(-aBe-3Abe+4bBd)}{11e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^3(Bd-Ae)}{9e^5(a+bx)}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}}{17e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(9*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)) + (6*b*(b*d - a*e
)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(13*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(15/2)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(17/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^{7/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^{7/2}}{e^4}+\frac{b^3(bd-ae)^2(-4b$$

$$=\frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)}-\frac{2(bd-ae$$

Mathematica [A] time = 0.25, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{9/2}\left(-7293b^2(d+ex)^3(-3aBe-Abe+4bBd)+25245b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)-9945(d+ex)(bd-ae)^2(-aBe-3Abe+4bBd)+12155(bd-ae)^3(Bd-Ae)+6435b^3B(d+ex)^4\right)}{109395e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(9/2)*(12155*(b*d - a*e)^3*(B*d - A*e) - 9
945*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 25245*b*(b*d - a*
e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 7293*b^2*(4*b*B*d - A*b*e - 3*a*
B*e)*(d + e*x)^3 + 6435*b^3*B*(d + e*x)^4))/(109395*e^5*(a + b*x)^3)
```

IntegrateAlgebraic [**A**] time = 53.77, size = 374, normalized size = 1.21

$$\frac{2(d+ex)^{9/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(12155a^3Ae^4+9945a^3Be^3(d+ex)-12155a^3Bde^3+29835a^2Abe^3(d+ex)-36465a^2Abde^3+36465a^2bBd^2e^2-59670a^2bBde^2(d+ex)+25245a^2bBe^2(d+ex)^2+36465aAb^2d^2e^2-59670aAb^2de^2(d+ex)+25245aAb^2e^2(d+ex)^2-36465ab^2Bd^3e+89505ab^2Bd^2e(d+ex)-75735ab^2Bde(d+ex)^2+21879ab^2Be(d+ex)^3-12155Ab^3d^3e+29835Ab^3d^2e(d+ex)-25245Ab^3de(d+ex)^2+7293Ab^3e(d+ex)^3+12155b^3Bd^4-39780b^3Bd^3(d+ex)+50490b^3Bd^2(d+ex)^2-29172b^3Bd(d+ex)^3+6435b^3B(d+ex)^4\right)}{109395e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] (2*(d + e*x)^(9/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(12155*b^3*B*d^4 - 12155*A*b^3
*d^3*e - 36465*a*b^2*B*d^3*e + 36465*a*A*b^2*d^2*e^2 + 36465*a^2*b*B*d^2*e^
2 - 36465*a^2*A*b*d*e^3 - 12155*a^3*B*d*e^3 + 12155*a^3*A*e^4 - 39780*b^3*B
*d^3*(d + e*x) + 29835*A*b^3*d^2*e*(d + e*x) + 89505*a*b^2*B*d^2*e*(d + e*x
) - 59670*a*A*b^2*d*e^2*(d + e*x) - 59670*a^2*b*B*d*e^2*(d + e*x) + 29835*a
^2*A*b*e^3*(d + e*x) + 9945*a^3*B*e^3*(d + e*x) + 50490*b^3*B*d^2*(d + e*x)
^2 - 25245*A*b^3*d*e*(d + e*x)^2 - 75735*a*b^2*B*d*e*(d + e*x)^2 + 25245*a*
A*b^2*e^2*(d + e*x)^2 + 25245*a^2*b*B*e^2*(d + e*x)^2 - 29172*b^3*B*d*(d +
e*x)^3 + 7293*A*b^3*e*(d + e*x)^3 + 21879*a*b^2*B*e*(d + e*x)^3 + 6435*b^3*
B*(d + e*x)^4))/(109395*e^4*(a*e + b*e*x))
```

fricas [**B**] time = 0.44, size = 633, normalized size = 2.06

$$\frac{2\left(6435Bb^3e^8x^8+128Bb^3d^8+12155Aa^3d^4e^4-272\left(3Bab^2+Ab^3\right)d^7e+2040\left(Ba^2b+Aab^2\right)d^6e^2-2210\left(Ba^3+3Aa^2b\right)d^5e^3+429\left(52Bb^3de^7+17\left(3Bab^2+Ab^3\right)e^8\right)x^7+33\left(802Bb^3d^2e^6+782\left(3Bab^2+Ab^3\right)de^7+765\left(Ba^2b+Aab^2\right)e^8\right)x^6+9\left(1212Bb^3d^3e^5+3502\left(3Bab^2+Ab^3\right)d^2e^6+10200\left(Ba^2b+Aab^2\right)de^7+1105\left(Ba^3+3Aa^2b\right)e^8\right)x^5+5\left(7Bb^3d^4e^4+2431Aa^3e^8+2720\left(3Bab^2+Ab^3\right)d^3e^5+23358\left(Ba^2b+Aab^2\right)d^2e^6+7514\left(Ba^3+3Aa^2b\right)de^7\right)x^4-5\left(8Bb^3d^5e^3-9724Aa^3de^7-17\left(3Bab^2+Ab^3\right)d^4e^4-10812\left(Ba^2b+Aab^2\right)d^3e^5-10166\left(Ba^3+3Aa^2b\right)d^2e^6\right)x^3+3\left(16Bb^3d^6e^2+24310Aa^3d^2e^6-34\left(3Bab^2+Ab^3\right)d^5e^3+255\left(Ba^2b+Aab^2\right)d^4e^4+8840\left(Ba^3+3Aa^2b\right)d^3e^5\right)x^2-\left(64Bb^3d^7e-48620Aa^3d^3e^5-136\left(3Bab^2+Ab^3\right)d^6e^2+1020\left(Ba^2b+Aab^2\right)d^5e^3-1105\left(Ba^3+3Aa^2b\right)d^4e^4\right)x\right)\sqrt{ex+d}}{109395e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/109395*(6435*B*b^3*e^8*x^8 + 128*B*b^3*d^8 + 12155*A*a^3*d^4*e^4 - 272*(3
*B*a*b^2 + A*b^3)*d^7*e + 2040*(B*a^2*b + A*a*b^2)*d^6*e^2 - 2210*(B*a^3 +
3*A*a^2*b)*d^5*e^3 + 429*(52*B*b^3*d*e^7 + 17*(3*B*a*b^2 + A*b^3)*e^8)*x^7
+ 33*(802*B*b^3*d^2*e^6 + 782*(3*B*a*b^2 + A*b^3)*d*e^7 + 765*(B*a^2*b + A*
a*b^2)*e^8)*x^6 + 9*(1212*B*b^3*d^3*e^5 + 3502*(3*B*a*b^2 + A*b^3)*d^2*e^6
+ 10200*(B*a^2*b + A*a*b^2)*d*e^7 + 1105*(B*a^3 + 3*A*a^2*b)*e^8)*x^5 + 5*(
7*B*b^3*d^4*e^4 + 2431*A*a^3*e^8 + 2720*(3*B*a*b^2 + A*b^3)*d^3*e^5 + 23358
*(B*a^2*b + A*a*b^2)*d^2*e^6 + 7514*(B*a^3 + 3*A*a^2*b)*d*e^7)*x^4 - 5*(8*B
*b^3*d^5*e^3 - 9724*A*a^3*d*e^7 - 17*(3*B*a*b^2 + A*b^3)*d^4*e^4 - 10812*(B
*a^2*b + A*a*b^2)*d^3*e^5 - 10166*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*x^3 + 3*(16*
B*b^3*d^6*e^2 + 24310*A*a^3*d^2*e^6 - 34*(3*B*a*b^2 + A*b^3)*d^5*e^3 + 255*
(B*a^2*b + A*a*b^2)*d^4*e^4 + 8840*(B*a^3 + 3*A*a^2*b)*d^3*e^5)*x^2 - (64*B
*b^3*d^7*e - 48620*A*a^3*d^3*e^5 - 136*(3*B*a*b^2 + A*b^3)*d^6*e^2 + 1020*(
B*a^2*b + A*a*b^2)*d^5*e^3 - 1105*(B*a^3 + 3*A*a^2*b)*d^4*e^4)*x)*sqrt(e*x
+ d)/e^5
```

giac [**B**] time = 0.54, size = 3088, normalized size = 10.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d^4*e^(-1)*sgn
(b*x + a) + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d^4*e^(-1)
*sgn(b*x + a) + 153153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*B*a^2*b*d^4*e^(-2)*sgn(b*x + a) + 153153*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d^4*e^(-2)*sgn(b*x +
a) + 65637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*B*a*b^2*d^4*e^(-3)*sgn(b*x + a) + 21879*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*A*b^3*d^4*e^(-3)*sgn(b*x + a) + 2431*(35*(x*e + d)^(9/2) - 180*(x*e
 + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqr
t(x*e + d)*d^4)*B*b^3*d^4*e^(-4)*sgn(b*x + a) + 204204*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*d^3*e^(-1)*sgn(b*x + a)
 + 612612*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*A*a^2*b*d^3*e^(-1)*sgn(b*x + a) + 262548*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b*d^3*e^(-2
)*sgn(b*x + a) + 262548*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
 + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^2*d^3*e^(-2)*sgn(b*x + a) + 2
9172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^2*d^3*e^(-3)*sgn(b
x + a) + 9724(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*d^3*e^(-
3)*sgn(b*x + a) + 4420*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(
x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
693*sqrt(x*e + d)*d^5)*B*b^3*d^3*e^(-4)*sgn(b*x + a) + 765765*sqrt(x*e + d)
*A*a^3*d^4*sgn(b*x + a) + 1021020*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a
^3*d^3*sgn(b*x + a) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*d^2*e^(-1)*sgn(b*x + a)
+ 393822*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*A*a^2*b*d^2*e^(-1)*sgn(b*x + a) + 43758*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b*d^2*e^(-2)*sgn(b*x + a) + 43758
(35(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 42
0*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^2*d^2*e^(-2)*sgn(b*x +
 a) + 19890*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*B*a*b^2*d^2*e^(-3)*sgn(b*x + a) + 6630*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^3*d^2*e^(-3)*sgn(b*x
 + a) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e +
d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(
x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^3*d^2*e^(-4)*sgn(b*x + a)
+ 306306*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
A*a^3*d^2*sgn(b*x + a) + 9724*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*B*a^3*d*e^(-1)*sgn(b*x + a) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*A*a^2*b*d*e^(-1)*sgn(b*x + a) + 13260*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b*d*e^(-2)*sgn(b*x + a)
 + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
d^2 - 1386(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 3060*(231*(x*e + d)^(13/2) - 1638*
(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 +
9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^
6)*B*a*b^2*d*e^(-3)*sgn(b*x + a) + 1020*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b
^3*d*e^(-3)*sgn(b*x + a) + 476*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2
)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +

```
 d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 643
5*sqrt(x*e + d)*d^7)*B*b^3*d*e^(-4)*sgn(b*x + a) + 87516*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*
a^3*d*sgn(b*x + a) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 99
0*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*B*a^3*e^(-1)*sgn(b*x + a) + 3315*(63*(x*e + d)^(1
1/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/
2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b*e^(-1)*s
gn(b*x + a) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x
*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6
006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b*e^(-2)*sgn(b*x +
a) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(
9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
+ d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a*b^2*e^(-2)*sgn(b*x + a) + 357*
(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^
2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)
^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^2*e^
(-3)*sgn(b*x + a) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1
2285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/
2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(
x*e + d)*d^7)*A*b^3*e^(-3)*sgn(b*x + a) + 7*(6435*(x*e + d)^(17/2) - 58344*
(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*
d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e
 + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*
b^3*e^(-4)*sgn(b*x + a) + 2431*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*A*a^3*sgn(b*x + a))*e^(-1)
```

maple [**A**] time = 0.05, size = 317, normalized size = 1.03

$$\frac{2 (ex+d)^{\frac{9}{2}} \left(6435 B b^3 e^4 x^4 + 7293 A b^3 e^4 x^3 + 21879 B a b^2 e^4 x^3 - 3432 B b^3 d e^3 x^3 + 25245 A a b^2 e^4 x^2 - 3366 A b^3 d e^3 x^2 + 25245 B a^2 b e^4 x^2 - 10098 B a b^2 d e^3 x^2 + 1584 B b^3 d^2 e^2 x^2 + 29835 A a^2 b e^4 x - 9180 A a b^2 d e^3 x + 1224 A b^3 d^2 e^2 x + 9945 B a^3 e^4 x - 9180 B a^2 b d e^3 x + 3672 B a b^2 d^2 e^2 x - 576 B b^3 d^3 e x + 12155 A a^3 e^4 - 6630 A a^2 b d e^3 + 2040 A a b^2 d^2 e^2 - 272 A b^3 d^3 e - 2210 B a^3 d e^3 + 2040 B a^2 b d^2 e^2 - 816 B a b^2 d^3 e + 128 B b^3 d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{109395 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/109395*(e*x+d)^(9/2)*(6435*B*b^3*e^4*x^4+7293*A*b^3*e^4*x^3+21879*B*a*b^2
*e^4*x^3-3432*B*b^3*d*e^3*x^3+25245*A*a*b^2*e^4*x^2-3366*A*b^3*d*e^3*x^2+25
245*B*a^2*b*e^4*x^2-10098*B*a*b^2*d*e^3*x^2+1584*B*b^3*d^2*e^2*x^2+29835*A*
a^2*b*e^4*x-9180*A*a*b^2*d*e^3*x+1224*A*b^3*d^2*e^2*x+9945*B*a^3*e^4*x-9180
*B*a^2*b*d*e^3*x+3672*B*a*b^2*d^2*e^2*x-576*B*b^3*d^3*e*x+12155*A*a^3*e^4-6
630*A*a^2*b*d*e^3+2040*A*a*b^2*d^2*e^2-272*A*b^3*d^3*e-2210*B*a^3*d*e^3+204
0*B*a^2*b*d^2*e^2-816*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b
*x+a)^3
```

maxima [**B**] time = 0.75, size = 697, normalized size = 2.26

$$\frac{2 \left(429 b^3 e^7 x^7 - 16 b^3 d^7 + 120 a b^2 d^6 e - 390 a^2 b d^5 e^2 + 715 a^3 d^4 e^3 + 33 \left(46 b^3 d e^6 + 45 a b^2 e^7\right) x^6 + 9 \left(206 b^3 d^2 e^5 + 600 a b^2 d e^6 + 195 a^2 b e^7\right) x^5 + 5 \left(160 b^3 d^3 e^4 + 1374 a b^2 d^2 e^5 + 1326 a^2 b d e^6 + 143 a^3 e^7\right) x^4 + 5 \left(b^3 d^4 e^3 + 636 a b^2 d^3 e^4 + 1794 a^2 b d^2 e^5 + 572 a^3 d e^6\right) x^3 - 3 \left(2 b^3 d^5 e^2 - 15 a b^2 d^4 e^3 - 1560 a^2 b d^3 e^4 - 1430 a^3 d^2 e^5\right) x^2 + \left(8 b^3 d^6 e - 60 a b^2 d^5 e^2 + 195 a^2 b d^4 e^3 + 2860 a^3 d^3 e^4\right) x\right) \sqrt{ex+d} A}{6435 e^4} + \frac{2 \left(6435 b^3 e^8 x^8 + 128 b^3 d^8 - 816 a b^2 d^7 e + 2040 a^2 b d^6 e^2 - 2210 a^3 d^5 e^3 + 429 \left(52 b^3 d e^7 + 51 a b^2 e^8\right) x^7 + 33 \left(802 b^3 d^2 e^6 + 2346 a b^2 d e^7 + 765 a^2 b e^8\right) x^6 + 9 \left(1212 b^3 d^3 e^5 + 10506 a b^2 d^2 e^6 + 10200 a^2 b d e^7 + 1105 a^3 e^8\right) x^5 + 5 \left(7 b^3 d^4 e^4 + 8160 a b^2 d^3 e^5 + 23358 a^2 b d^2 e^6 + 7514 a^3 d e^7\right) x^4 - 5 \left(8 b^3 d^5 e^3 - 51 a b^2 d^4 e^4 - 10812 a^2 b d^3 e^5 - 10166 a^3 d^2 e^6\right) x^3 + 3 \left(16 b^3 d^6 e^2 - 102 a b^2 d^5 e^3 + 255 a^2 b d^4 e^4 + 8840 a^3 d^3 e^5\right) x^2 - \left(64 b^3 d^7 e - 408 a b^2 d^6 e^2 + 1020 a^2 b d^5 e^3 - 1105 a^3 d^4 e^4\right) x\right) \sqrt{ex+d} B}{109395 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/6435*(429*b^3*e^7*x^7 - 16*b^3*d^7 + 120*a*b^2*d^6*e - 390*a^2*b*d^5*e^2
+ 715*a^3*d^4*e^3 + 33*(46*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 9*(206*b^3*d^2*e
^5 + 600*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 5*(160*b^3*d^3*e^4 + 1374*a*b^2
*d^2*e^5 + 1326*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 + 5*(b^3*d^4*e^3 + 636*a*b^2
*d^3*e^4 + 1794*a^2*b*d^2*e^5 + 572*a^3*d*e^6)*x^3 - 3*(2*b^3*d^5*e^2 - 15*
a*b^2*d^4*e^3 - 1560*a^2*b*d^3*e^4 - 1430*a^3*d^2*e^5)*x^2 + (8*b^3*d^6*e -
 60*a*b^2*d^5*e^2 + 195*a^2*b*d^4*e^3 + 2860*a^3*d^3*e^4)*x)*sqrt(e*x + d)*
```

```
A/e^4 + 2/109395*(6435*b^3*e^8*x^8 + 128*b^3*d^8 - 816*a*b^2*d^7*e + 2040*a
^2*b*d^6*e^2 - 2210*a^3*d^5*e^3 + 429*(52*b^3*d*e^7 + 51*a*b^2*e^8)*x^7 + 3
3*(802*b^3*d^2*e^6 + 2346*a*b^2*d*e^7 + 765*a^2*b*e^8)*x^6 + 9*(1212*b^3*d^
3*e^5 + 10506*a*b^2*d^2*e^6 + 10200*a^2*b*d*e^7 + 1105*a^3*e^8)*x^5 + 5*(7*
b^3*d^4*e^4 + 8160*a*b^2*d^3*e^5 + 23358*a^2*b*d^2*e^6 + 7514*a^3*d*e^7)*x^
4 - 5*(8*b^3*d^5*e^3 - 51*a*b^2*d^4*e^4 - 10812*a^2*b*d^3*e^5 - 10166*a^3*d
^2*e^6)*x^3 + 3*(16*b^3*d^6*e^2 - 102*a*b^2*d^5*e^3 + 255*a^2*b*d^4*e^4 + 8
840*a^3*d^3*e^5)*x^2 - (64*b^3*d^7*e - 408*a*b^2*d^6*e^2 + 1020*a^2*b*d^5*e
^3 - 1105*a^3*d^4*e^4)*x)*sqrt(e*x + d)*B/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,(d+e\,x)^{7/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1624 $\int (A+Bx)(d+ex)^{5/2} \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(-3aBe-Abe+4bBd)}{13e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)(-aBe-$$

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(-3aBe-Abe+4bBd)}{13e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)(-aBe-Abe+2bBd)}{11e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2(-aBe-3Abe+4bBd)}{9e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3(Bd-Ae)}{7e^5(a+bx)}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}}{15e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)) + (6*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
11*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(13/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(15/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^{5/2}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^{5/2}}{e^4}+\frac{b^3(bd-ae)^2(\cdots}{}\right.}{}\\ &= \frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)}-\frac{2(bd-\cdots}{}\end{aligned}$$

Mathematica [A] time = 0.20, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{7/2}\left(-3465b^2(d+ex)^3(-3aBe-Abe+4bBd)+12285b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)-5005(d+ex)(bd-ae)^2(-aBe-3Abe+4bBd)+6435(bd-ae)^3(Bd-Ae)+3003b^3B(d+ex)^4\right)}{45045e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(7/2)*(6435*(b*d - a*e)^3*(B*d - A*e) - 50
05*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 12285*b*(b*d - a*e
)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 3465*b^2*(4*b*B*d - A*b*e - 3*a*B
*e)*(d + e*x)^3 + 3003*b^3*B*(d + e*x)^4))/(45045*e^5*(a + b*x)^3)
```

IntegrateAlgebraic [A] time = 53.45, size = 374, normalized size = 1.21

$$\frac{2(d+ex)^{7/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(6435a^3Ae^4+5005a^3Be^3(d+ex)-6435a^3Bde^3+15015a^2Abe^3(d+ex)-19305a^2Abde^3+19305a^2bBd^2e^2-30030a^2bBde^2(d+ex)+12285a^2bBe^2(d+ex)^2+19305aAb^2d^2e^2-30030aAb^2de^2(d+ex)+12285aAb^2e^2(d+ex)^2-19305ab^2Bd^3e+45045ab^2Bd^2e(d+ex)-36855ab^2Bde(d+ex)^2+10395ab^2Be(d+ex)^3-6435Ab^3d^3e+15015Ab^3d^2e(d+ex)-12285Ab^3de(d+ex)^2+3465Ab^3e(d+ex)^3+6435b^3Bd^4-20020b^3Bd^3(d+ex)+24570b^3Bd^2(d+ex)^2-13860b^3Bd(d+ex)^3+3003b^3B(d+ex)^4\right)}{45045e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] (2*(d + e*x)^(7/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(6435*b^3*B*d^4 - 6435*A*b^3*d
^3*e - 19305*a*b^2*B*d^3*e + 19305*a*A*b^2*d^2*e^2 + 19305*a^2*b*B*d^2*e^2
- 19305*a^2*A*b*d*e^3 - 6435*a^3*B*d*e^3 + 6435*a^3*A*e^4 - 20020*b^3*B*d^3
*(d + e*x) + 15015*A*b^3*d^2*e*(d + e*x) + 45045*a*b^2*B*d^2*e*(d + e*x) -
30030*a*A*b^2*d*e^2*(d + e*x) - 30030*a^2*b*B*d*e^2*(d + e*x) + 15015*a^2*A
*b*e^3*(d + e*x) + 5005*a^3*B*e^3*(d + e*x) + 24570*b^3*B*d^2*(d + e*x)^2 -
 12285*A*b^3*d*e*(d + e*x)^2 - 36855*a*b^2*B*d*e*(d + e*x)^2 + 12285*a*A*b^
2*e^2*(d + e*x)^2 + 12285*a^2*b*B*e^2*(d + e*x)^2 - 13860*b^3*B*d*(d + e*x)
^3 + 3465*A*b^3*e*(d + e*x)^3 + 10395*a*b^2*B*e*(d + e*x)^3 + 3003*b^3*B*(d
 + e*x)^4))/(45045*e^4*(a*e + b*e*x))
```

fricas [B] time = 0.42, size = 539, normalized size = 1.75

$$\frac{2\left(3003Bb^3e^7x^7+128Bb^3d^7+6435Aa^3d^3e^4-240(3Bab^2+Ab^3)d^6e+1560(Ba^2b+Aab^2)d^5e^2-1430(Ba^3+3Aa^2b)d^4e^3+231\left(31Bb^3de^6+15(3Bab^2+Ab^3)e^7\right)x^6+63\left(71Bb^3d^2e^5+135(3Bab^2+Ab^3)de^6+195(Ba^2b+Aab^2)e^7\right)x^5+35\left(Bb^3d^3e^4+159(3Bab^2+Ab^3)d^2e^5+897(Ba^2b+Aab^2)de^6+143(Ba^3+3Aa^2b)e^7\right)x^4-5\left(8Bb^3d^4e^3-1287Aa^3e^7-15(3Bab^2+Ab^3)d^3e^4-4407(Ba^2b+Aab^2)d^2e^5-2717(Ba^3+3Aa^2b)de^6\right)x^3+3\left(16Bb^3d^5e^2+6435Aa^3de^6-30(3Bab^2+Ab^3)d^4e^3+195(Ba^2b+Aab^2)d^3e^4+3575(Ba^3+3Aa^2b)d^2e^5\right)x^2-\left(64Bb^3d^6e-19305Aa^3d^2e^5-120(3Bab^2+Ab^3)d^5e^2+780(Ba^2b+Aab^2)d^4e^3-715(Ba^3+3Aa^2b)d^3e^4\right)x\right)\sqrt{ex+d}}{45045e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*B*b^3*e^7*x^7 + 128*B*b^3*d^7 + 6435*A*a^3*d^3*e^4 - 240*(3*B
*a*b^2 + A*b^3)*d^6*e + 1560*(B*a^2*b + A*a*b^2)*d^5*e^2 - 1430*(B*a^3 + 3*
A*a^2*b)*d^4*e^3 + 231*(31*B*b^3*d*e^6 + 15*(3*B*a*b^2 + A*b^3)*e^7)*x^6 +
63*(71*B*b^3*d^2*e^5 + 135*(3*B*a*b^2 + A*b^3)*d*e^6 + 195*(B*a^2*b + A*a*b
^2)*e^7)*x^5 + 35*(B*b^3*d^3*e^4 + 159*(3*B*a*b^2 + A*b^3)*d^2*e^5 + 897*(B
*a^2*b + A*a*b^2)*d*e^6 + 143*(B*a^3 + 3*A*a^2*b)*e^7)*x^4 - 5*(8*B*b^3*d^4
*e^3 - 1287*A*a^3*e^7 - 15*(3*B*a*b^2 + A*b^3)*d^3*e^4 - 4407*(B*a^2*b + A*
a*b^2)*d^2*e^5 - 2717*(B*a^3 + 3*A*a^2*b)*d*e^6)*x^3 + 3*(16*B*b^3*d^5*e^2
+ 6435*A*a^3*d*e^6 - 30*(3*B*a*b^2 + A*b^3)*d^4*e^3 + 195*(B*a^2*b + A*a*b^
2)*d^3*e^4 + 3575*(B*a^3 + 3*A*a^2*b)*d^2*e^5)*x^2 - (64*B*b^3*d^6*e - 1930
5*A*a^3*d^2*e^5 - 120*(3*B*a*b^2 + A*b^3)*d^5*e^2 + 780*(B*a^2*b + A*a*b^2)
*d^4*e^3 - 715*(B*a^3 + 3*A*a^2*b)*d^3*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.42, size = 2254, normalized size = 7.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d^3*e^(-1)*sgn(b
*x + a) + 45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d^3*e^(-1)*sg
n(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
 d)*d^2)*B*a^2*b*d^3*e^(-2)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*
```

e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d^3*e^(-2)*sgn(b*x + a) + 38
61*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*a*b^2*d^3*e^(-3)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*b^3*d^3*e^(-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*B*b^3*d^3*e^(-4)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*d^2*e^(-1)*sgn(b*x + a) + 27027*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b*d^2*
e^(-1)*sgn(b*x + a) + 11583*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b*d^2*e^(-2)*sgn(b*x + a)
 + 11583*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*A*a*b^2*d^2*e^(-2)*sgn(b*x + a) + 1287*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^2*d^2*e^(-3)*sgn(b*x + a) + 429*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*d^2*e^(-3)*sgn(b*x + a) +
 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*
d^5)*B*b^3*d^2*e^(-4)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a^3*d^3*sgn(b*x
+ a) + 45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*d^2*sgn(b*x + a) +
 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*B*a^3*d*e^(-1)*sgn(b*x + a) + 11583*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*a^2*b*d*e^(-1)*sgn(b*x + a) + 1287*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*a^2*b*d*e^(-2)*sgn(b*x + a) + 1287*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 585*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^2*d*e^(-3)*sgn(b*x
 + a) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*A*b^3*d*e^(-3)*sgn(b*x + a) + 45*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*B*b^3*d*e^(-4)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*d*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2)
- 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
 + 315*sqrt(x*e + d)*d^4)*B*a^3*e^(-1)*sgn(b*x + a) + 429*(35*(x*e + d)^(9/
2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*
d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b*e^(-1)*sgn(b*x + a) + 195*(63*(x*e + d
)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)
^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b*e^(-
2)*sgn(b*x + a) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x
*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 6
93*sqrt(x*e + d)*d^5)*A*a*b^2*e^(-2)*sgn(b*x + a) + 45*(231*(x*e + d)^(13/2
) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/
2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*
e + d)*d^6)*B*a*b^2*e^(-3)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*A*b^3*e^(-3)*sgn(b*x + a) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/
2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e
+ d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 64
35*sqrt(x*e + d)*d^7)*B*b^3*e^(-4)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^
3*sgn(b*x + a))*e^(-1)

maple [A] time = 0.05, size = 317, normalized size = 1.03

$$\frac{2 (ex+d)^{\frac{7}{2}} \left(3003 b^3 B x^4 e^4 + 3465 A b^3 e^4 x^3 + 10395 B a b^2 e^4 x^3 - 1848 B b^3 d e^3 x^3 + 12285 A a b^2 e^4 x^2 - 1890 A b^3 d e^3 x^2 + 12285 B a^2 b e^4 x^2 - 5670 B a b^2 d e^3 x^2 + 1008 B b^3 d^2 e^2 x^2 + 15015 A a^2 b e^4 x - 5460 A a b^2 d e^3 x + 840 A b^3 d^2 e^2 x + 5005 B a^3 e^4 x - 5460 B a^2 b d e^3 x + 2520 B a b^2 d^2 e^2 x - 448 B b^3 d^3 e x + 6435 A a^3 e^4 - 4290 A a^2 b d e^3 + 1560 A a b^2 d^2 e^2 - 240 A b^3 d^3 e - 1430 B a^3 d e^3 + 1560 B a^2 b d^2 e^2 - 720 B a b^2 d^3 e + 128 B b^3 d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{45045 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/45045*(e*x+d)^(7/2)*(3003*B*b^3*e^4*x^4+3465*A*b^3*e^4*x^3+10395*B*a*b^2*
e^4*x^3-1848*B*b^3*d*e^3*x^3+12285*A*a*b^2*e^4*x^2-1890*A*b^3*d*e^3*x^2+122
85*B*a^2*b*e^4*x^2-5670*B*a*b^2*d*e^3*x^2+1008*B*b^3*d^2*e^2*x^2+15015*A*a^
2*b*e^4*x-5460*A*a*b^2*d*e^3*x+840*A*b^3*d^2*e^2*x+5005*B*a^3*e^4*x-5460*B*
a^2*b*d*e^3*x+2520*B*a*b^2*d^2*e^2*x-448*B*b^3*d^3*e*x+6435*A*a^3*e^4-4290*
A*a^2*b*d*e^3+1560*A*a*b^2*d^2*e^2-240*A*b^3*d^3*e-1430*B*a^3*d*e^3+1560*B*
a^2*b*d^2*e^2-720*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a
)^3
```

maxima [B] time = 0.73, size = 592, normalized size = 1.92

$$\frac{2 \left(231 b^3 e^6 x^6 - 16 b^3 d^6 + 104 a b^2 d^5 e - 286 a^2 b d^4 e^2 + 429 a^3 d^3 e^3 + 63 \left(9 b^3 d e^5 + 13 a b^2 e^6\right) x^5 + 7 \left(53 b^3 d^2 e^4 + 299 a b^2 d e^5 + 143 a^2 b e^6\right) x^4 + \left(5 b^3 d^3 e^3 + 1469 a b^2 d^2 e^4 + 2717 a^2 b d e^5 + 429 a^3 e^6\right) x^3 - 3 \left(2 b^3 d^4 e^2 - 13 a b^2 d^3 e^3 - 715 a^2 b d^2 e^4 - 429 a^3 d e^5\right) x^2 + \left(8 b^3 d^5 e - 52 a b^2 d^4 e^2 + 143 a^2 b d^3 e^3 + 1287 a^3 d^2 e^4\right) x\right) \sqrt{ex+d} A}{3003 e^4} + \frac{2 \left(3003 b^3 e^7 x^7 + 128 b^3 d^7 - 720 a b^2 d^6 e + 1560 a^2 b d^5 e^2 - 1430 a^3 d^4 e^3 + 231 \left(31 b^3 d e^6 + 45 a b^2 e^7\right) x^6 + 63 \left(71 b^3 d^2 e^5 + 405 a b^2 d e^6 + 195 a^2 b e^7\right) x^5 + 35 \left(b^3 d^3 e^4 + 477 a b^2 d^2 e^5 + 897 a^2 b d e^6 + 143 a^3 e^7\right) x^4 - 5 \left(8 b^3 d^4 e^3 - 45 a b^2 d^3 e^4 - 4407 a^2 b d^2 e^5 - 2717 a^3 d e^6\right) x^3 + 3 \left(16 b^3 d^5 e^2 - 90 a b^2 d^4 e^3 + 195 a^2 b d^3 e^4 + 3575 a^3 d^2 e^5\right) x^2 - \left(64 b^3 d^6 e - 360 a b^2 d^5 e^2 + 780 a^2 b d^4 e^3 - 715 a^3 d^3 e^4\right) x\right) \sqrt{ex+d} B}{45045 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/3003*(231*b^3*e^6*x^6 - 16*b^3*d^6 + 104*a*b^2*d^5*e - 286*a^2*b*d^4*e^2
+ 429*a^3*d^3*e^3 + 63*(9*b^3*d*e^5 + 13*a*b^2*e^6)*x^5 + 7*(53*b^3*d^2*e^4
 + 299*a*b^2*d*e^5 + 143*a^2*b*e^6)*x^4 + (5*b^3*d^3*e^3 + 1469*a*b^2*d^2*e
^4 + 2717*a^2*b*d*e^5 + 429*a^3*e^6)*x^3 - 3*(2*b^3*d^4*e^2 - 13*a*b^2*d^3*
e^3 - 715*a^2*b*d^2*e^4 - 429*a^3*d*e^5)*x^2 + (8*b^3*d^5*e - 52*a*b^2*d^4*
e^2 + 143*a^2*b*d^3*e^3 + 1287*a^3*d^2*e^4)*x)*sqrt(e*x + d)*A/e^4 + 2/4504
5*(3003*b^3*e^7*x^7 + 128*b^3*d^7 - 720*a*b^2*d^6*e + 1560*a^2*b*d^5*e^2 -
1430*a^3*d^4*e^3 + 231*(31*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 63*(71*b^3*d^2*e
^5 + 405*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 35*(b^3*d^3*e^4 + 477*a*b^2*d^2
*e^5 + 897*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 - 5*(8*b^3*d^4*e^3 - 45*a*b^2*d^3
*e^4 - 4407*a^2*b*d^2*e^5 - 2717*a^3*d*e^6)*x^3 + 3*(16*b^3*d^5*e^2 - 90*a*
b^2*d^4*e^3 + 195*a^2*b*d^3*e^4 + 3575*a^3*d^2*e^5)*x^2 - (64*b^3*d^6*e - 3
60*a*b^2*d^5*e^2 + 780*a^2*b*d^4*e^3 - 715*a^3*d^3*e^4)*x)*sqrt(e*x + d)*B/
e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,(d+e\,x)^{5/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1625 $\int (A+Bx)(d+ex)^{3/2} \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-3aBe-Abe+4bBd)}{11e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(-aBe-$$

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-3aBe-Abe+4bBd)}{11e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(-aBe-Abe+2bBd)}{3e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2(-aBe-3Abe+4bBd)}{7e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3(Bd-Ae)}{5e^5(a+bx)}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (2*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3
*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(11/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(13/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^{3/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^{3/2}}{e^4}+\frac{b^3(bd-ae)^2(}{}\right.}{}$$

$$=\frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)}-\frac{2(bd-}{}$$

Mathematica [A] time = 0.18, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{5/2}\left(-1365b^2(d+ex)^3(-3aBe-Abe+4bBd)+5005b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)-2145(d+ex)(bd-ae)^2(-aBe-3Abe+4bBd)+3003(bd-ae)^3(Bd-Ae)+1155b^3B(d+ex)^4\right)}{15015e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(5/2)*(3003*(b*d - a*e)^3*(B*d - A*e) - 21
45*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 5005*b*(b*d - a*e)
*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 1365*b^2*(4*b*B*d - A*b*e - 3*a*B*
e)*(d + e*x)^3 + 1155*b^3*B*(d + e*x)^4))/(15015*e^5*(a + b*x)^3)
```

IntegrateAlgebraic [A] time = 53.02, size = 374, normalized size = 1.21

$$\frac{2(d+ex)^{5/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(3003a^3Ae^4+2145a^3Be^3(d+ex)-3003a^3Bde^3+6435a^2Abe^3(d+ex)-9009a^2Abde^3+9009a^2bBd^2e^2-12870a^2bBde^2(d+ex)+5005a^2bBe^2(d+ex)^2+9009aAb^2d^2e^2-12870aAb^2de^2(d+ex)+5005aAb^2e^2(d+ex)^2-9009ab^2Bd^3e+19305ab^2Bd^2e(d+ex)-15015ab^2Bde(d+ex)^2+4095ab^2Be(d+ex)^3-3003Ab^3d^3e+6435Ab^3d^2e(d+ex)-5005Ab^3de(d+ex)^2+1365Ab^3e(d+ex)^3+3003b^3Bd^4-8580b^3Bd^3(d+ex)+10010b^3Bd^2(d+ex)^2-5460b^3Bd(d+ex)^3+1155b^3B(d+ex)^4\right)}{15015e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] (2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(3003*b^3*B*d^4 - 3003*A*b^3*d
^3*e - 9009*a*b^2*B*d^3*e + 9009*a*A*b^2*d^2*e^2 + 9009*a^2*b*B*d^2*e^2 - 9
009*a^2*A*b*d*e^3 - 3003*a^3*B*d*e^3 + 3003*a^3*A*e^4 - 8580*b^3*B*d^3*(d +
 e*x) + 6435*A*b^3*d^2*e*(d + e*x) + 19305*a*b^2*B*d^2*e*(d + e*x) - 12870*
a*A*b^2*d*e^2*(d + e*x) - 12870*a^2*b*B*d*e^2*(d + e*x) + 6435*a^2*A*b*e^3*
(d + e*x) + 2145*a^3*B*e^3*(d + e*x) + 10010*b^3*B*d^2*(d + e*x)^2 - 5005*A
*b^3*d*e*(d + e*x)^2 - 15015*a*b^2*B*d*e*(d + e*x)^2 + 5005*a*A*b^2*e^2*(d
+ e*x)^2 + 5005*a^2*b*B*e^2*(d + e*x)^2 - 5460*b^3*B*d*(d + e*x)^3 + 1365*A
*b^3*e*(d + e*x)^3 + 4095*a*b^2*B*e*(d + e*x)^3 + 1155*b^3*B*(d + e*x)^4))/
(15015*e^4*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 446, normalized size = 1.45

$$\frac{2\left(1155Bb^3e^6x^6+128Bb^3d^6+3003Aa^3d^2e^4-208\left(3Bab^2+Ab^3\right)d^5e+1144\left(Ba^2b+Aab^2\right)d^4e^2-858\left(Ba^3+3Aa^2b\right)d^3e^3+105\left(14Bb^3de^5+13\left(3Bab^2+Ab^3\right)e^6\right)x^5+35\left(Bb^3d^2e^4+52\left(3Bab^2+Ab^3\right)de^5+143\left(Ba^2b+Aab^2\right)e^6\right)x^4-5\left(8Bb^3d^3e^3-13\left(3Bab^2+Ab^3\right)d^2e^4-1430\left(Ba^2b+Aab^2\right)de^5-429\left(Ba^3+3Aa^2b\right)e^6\right)x^3+3\left(16Bb^3d^4e^2+1001Aa^3e^6-26\left(3Bab^2+Ab^3\right)d^3e^3+143\left(Ba^2b+Aab^2\right)d^2e^4+1144\left(Ba^3+3Aa^2b\right)de^5\right)x^2-\left(64Bb^3d^5e-6006Aa^3de^5-104\left(3Bab^2+Ab^3\right)d^4e^2+572\left(Ba^2b+Aab^2\right)d^3e^3-429\left(Ba^3+3Aa^2b\right)d^2e^4\right)x\right)\sqrt{ex+d}}{15015e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/15015*(1155*B*b^3*e^6*x^6 + 128*B*b^3*d^6 + 3003*A*a^3*d^2*e^4 - 208*(3*B
*a*b^2 + A*b^3)*d^5*e + 1144*(B*a^2*b + A*a*b^2)*d^4*e^2 - 858*(B*a^3 + 3*A
*a^2*b)*d^3*e^3 + 105*(14*B*b^3*d*e^5 + 13*(3*B*a*b^2 + A*b^3)*e^6)*x^5 + 3
5*(B*b^3*d^2*e^4 + 52*(3*B*a*b^2 + A*b^3)*d*e^5 + 143*(B*a^2*b + A*a*b^2)*e
^6)*x^4 - 5*(8*B*b^3*d^3*e^3 - 13*(3*B*a*b^2 + A*b^3)*d^2*e^4 - 1430*(B*a^2
*b + A*a*b^2)*d*e^5 - 429*(B*a^3 + 3*A*a^2*b)*e^6)*x^3 + 3*(16*B*b^3*d^4*e^
2 + 1001*A*a^3*e^6 - 26*(3*B*a*b^2 + A*b^3)*d^3*e^3 + 143*(B*a^2*b + A*a*b^
2)*d^2*e^4 + 1144*(B*a^3 + 3*A*a^2*b)*d*e^5)*x^2 - (64*B*b^3*d^5*e - 6006*A
*a^3*d*e^5 - 104*(3*B*a*b^2 + A*b^3)*d^4*e^2 + 572*(B*a^2*b + A*a*b^2)*d^3*
e^3 - 429*(B*a^3 + 3*A*a^2*b)*d^2*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.34, size = 1524, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d^2*e^(-1)*sgn(b
*x + a) + 45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d^2*e^(-1)*sg
n(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
 d)*d^2)*B*a^2*b*d^2*e^(-2)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d^2*e^(-2)*sgn(b*x + a) + 38
61*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
```

```
sqrt(x*e + d)*d^3)*B*a*b^2*d^2*e^(-3)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*b^3*d^2*e^(-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*B*b^3*d^2*e^(-4)*sgn(b*x + a) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*d*e^(-1)*sgn(b*x + a) + 18018*(3*(x
*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b*d*e^(-
1)*sgn(b*x + a) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b*d*e^(-2)*sgn(b*x + a) + 7722
*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sq
rt(x*e + d)*d^3)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 858*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*B*a*b^2*d*e^(-3)*sgn(b*x + a) + 286*(35*(x*e + d)^(
9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2
)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*d*e^(-3)*sgn(b*x + a) + 130*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^3*d*e^
(-4)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a^3*d^2*sgn(b*x + a) + 30030*((x*
e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*d*sgn(b*x + a) + 1287*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*B*a^3*e^(-1)*sgn(b*x + a) + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)
*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b*e^(-1)*sgn(b*x
+ a) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b*e^(-2)*sgn
(b*x + a) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^2*e^(-2
)*sgn(b*x + a) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*B*a*b^2*e^(-3)*sgn(b*x + a) + 65*(63*(x*e + d)^(11/2)
- 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^
3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^3*e^(-3)*sgn(b*x
+ a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^
(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
 + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^3*e^(-4)*sgn(b*x + a) + 3003*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*sgn
(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 317, normalized size = 1.03

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(1155 b^3 B x^4 e^4 + 1365 A b^3 e^4 x^3 + 4095 B a b^2 e^4 x^3 - 840 B b^3 d e^3 x^3 + 5005 A a b^2 e^4 x^2 - 910 A b^3 d e^3 x^2 + 5005 B a^2 b e^4 x^2 - 2730 B a b^2 d e^3 x^2 + 560 B b^3 d^2 e^2 x^2 + 6435 A a^2 b e^4 x - 2860 A a b^2 d e^3 x + 520 A b^3 d^2 e^2 x + 2145 B a^3 e^4 x - 2860 B a^2 b d e^3 x + 1560 B a b^2 d^2 e^2 x - 320 B b^3 d^3 e x + 3003 A a^3 e^4 - 2574 A a^2 b d e^3 + 1144 A a b^2 d^2 e^2 - 208 A b^3 d^3 e - 858 B a^3 d e^3 + 1144 B a^2 b d^2 e^2 - 624 B a b^2 d^3 e + 128 B b^3 d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{15015 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/15015*(e*x+d)^(5/2)*(1155*B*b^3*e^4*x^4+1365*A*b^3*e^4*x^3+4095*B*a*b^2*e
^4*x^3-840*B*b^3*d*e^3*x^3+5005*A*a*b^2*e^4*x^2-910*A*b^3*d*e^3*x^2+5005*B*
a^2*b*e^4*x^2-2730*B*a*b^2*d*e^3*x^2+560*B*b^3*d^2*e^2*x^2+6435*A*a^2*b*e^4
*x-2860*A*a*b^2*d*e^3*x+520*A*b^3*d^2*e^2*x+2145*B*a^3*e^4*x-2860*B*a^2*b*d
*e^3*x+1560*B*a*b^2*d^2*e^2*x-320*B*b^3*d^3*e*x+3003*A*a^3*e^4-2574*A*a^2*b
*d*e^3+1144*A*a*b^2*d^2*e^2-208*A*b^3*d^3*e-858*B*a^3*d*e^3+1144*B*a^2*b*d^
2*e^2-624*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.63, size = 488, normalized size = 1.58

$$\frac{2 \left(105 b^3 e^5 x^5 - 16 b^3 d^5 + 88 a b^2 d^4 e - 198 a^2 b d^3 e^2 + 231 a^3 d^2 e^3 + 35 \left(4 b^3 d e^4 + 11 a b^2 e^5\right) x^4 + 5 \left(b^3 d^2 e^3 + 110 a b^2 d e^4 + 99 a^2 b e^5\right) x^3 - 3 \left(2 b^3 d^3 e^2 - 11 a b^2 d^2 e^3 - 264 a^2 b d e^4 - 77 a^3 e^5\right) x^2 + \left(8 b^3 d^4 e - 44 a b^2 d^3 e^2 + 99 a^2 b d^2 e^3 + 462 a^3 d e^4\right) x\right) \sqrt{ex+d} A}{1155 e^4} + \frac{2 \left(1155 b^3 e^6 x^6 + 128 b^3 d^6 - 624 a b^2 d^5 e + 1144 a^2 b d^4 e^2 - 858 a^3 d^3 e^3 + 105 \left(14 b^3 d e^5 + 39 a b^2 e^6\right) x^5 + 35 \left(b^3 d^2 e^4 + 156 a b^2 d e^5 + 143 a^2 b e^6\right) x^4 - 5 \left(8 b^3 d^3 e^3 - 39 a b^2 d^2 e^4 - 1430 a^2 b d e^5 - 429 a^3 e^6\right) x^3 + 3 \left(16 b^3 d^4 e^2 - 78 a b^2 d^3 e^3 + 143 a^2 b d^2 e^4 + 1144 a^3 d e^5\right) x^2 - \left(64 b^3 d^5 e - 312 a b^2 d^4 e^2 + 572 a^2 b d^3 e^3 - 429 a^3 d^2 e^4\right) x\right) \sqrt{ex+d} B}{15015 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/1155*(105*b^3*e^5*x^5 - 16*b^3*d^5 + 88*a*b^2*d^4*e - 198*a^2*b*d^3*e^2 +
 231*a^3*d^2*e^3 + 35*(4*b^3*d*e^4 + 11*a*b^2*e^5)*x^4 + 5*(b^3*d^2*e^3 + 1
10*a*b^2*d*e^4 + 99*a^2*b*e^5)*x^3 - 3*(2*b^3*d^3*e^2 - 11*a*b^2*d^2*e^3 -
264*a^2*b*d*e^4 - 77*a^3*e^5)*x^2 + (8*b^3*d^4*e - 44*a*b^2*d^3*e^2 + 99*a^
2*b*d^2*e^3 + 462*a^3*d*e^4)*x)*sqrt(e*x + d)*A/e^4 + 2/15015*(1155*b^3*e^6
*x^6 + 128*b^3*d^6 - 624*a*b^2*d^5*e + 1144*a^2*b*d^4*e^2 - 858*a^3*d^3*e^3
 + 105*(14*b^3*d*e^5 + 39*a*b^2*e^6)*x^5 + 35*(b^3*d^2*e^4 + 156*a*b^2*d*e^
5 + 143*a^2*b*e^6)*x^4 - 5*(8*b^3*d^3*e^3 - 39*a*b^2*d^2*e^4 - 1430*a^2*b*d
*e^5 - 429*a^3*e^6)*x^3 + 3*(16*b^3*d^4*e^2 - 78*a*b^2*d^3*e^3 + 143*a^2*b*
d^2*e^4 + 1144*a^3*d*e^5)*x^2 - (64*b^3*d^5*e - 312*a*b^2*d^4*e^2 + 572*a^2
*b*d^3*e^3 - 429*a^3*d^2*e^4)*x)*sqrt(e*x + d)*B/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+Bx)\,(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1626 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(-aBe-$$

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(-aBe-Abe+2bBd)}{7e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2(-aBe-3Abe+4bBd)}{5e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3(Bd-Ae)}{3e^5(a+bx)}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(3*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)) + (6*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(9/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(11/2)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(ab+b^2x\right)^3(A+Bx)\sqrt{d+ex}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)\sqrt{d+ex}}{e^4}+\frac{b^3(bd-ae)^2(-4b}{}\right.}{}$$

$$=\frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)}-\frac{2(bd-}{}$$

Mathematica [A] time = 0.17, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{3/2}\left(-385b^2(d+ex)^3(-3aBe-Abe+4bBd)+1485b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)-693(d+ex)(bd-ae)^2(-aBe-3Abe+4bBd)+1155(bd-ae)^3(Bd-Ae)+315b^3B(d+ex)^4\right)}{3465e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(3/2)*(1155*(b*d - a*e)^3*(B*d - A*e) - 69
3*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 1485*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 385*b^2*(4*b*B*d - A*b*e - 3*a*B*e)
*(d + e*x)^3 + 315*b^3*B*(d + e*x)^4))/(3465*e^5*(a + b*x)^3)
```

IntegrateAlgebraic [A] time = 52.82, size = 374, normalized size = 1.21

$$\frac{2(d+ex)^{3/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(1155a^3Ae^4+693a^3Be^3(d+ex)-1155a^3Bde^3+2079a^2Abe^3(d+ex)-3465a^2Abde^3+3465a^2bBd^2e^2-4158a^2bBde^2(d+ex)+1485a^2bBe^2(d+ex)^2+3465aAb^2d^2e^2-4158aAb^2de^2(d+ex)+1485aAb^2e^2(d+ex)^2-3465ab^2Bd^3e+6237ab^2Bd^2e(d+ex)-4455ab^2Bde(d+ex)^2+1155ab^2Be(d+ex)^3-1155Ab^3d^3e+2079Ab^3d^2e(d+ex)-1485Ab^3de(d+ex)^2+385Ab^3e(d+ex)^3+1155b^3Bd^4-2772b^3Bd^3(d+ex)+2970b^3Bd^2(d+ex)^2-1540b^3Bd(d+ex)^3+315b^3B(d+ex)^4\right)}{3465e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] (2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(1155*b^3*B*d^4 - 1155*A*b^3*d
^3*e - 3465*a*b^2*B*d^3*e + 3465*a*A*b^2*d^2*e^2 + 3465*a^2*b*B*d^2*e^2 - 3
465*a^2*A*b*d*e^3 - 1155*a^3*B*d*e^3 + 1155*a^3*A*e^4 - 2772*b^3*B*d^3*(d +
 e*x) + 2079*A*b^3*d^2*e*(d + e*x) + 6237*a*b^2*B*d^2*e*(d + e*x) - 4158*a*
A*b^2*d*e^2*(d + e*x) - 4158*a^2*b*B*d*e^2*(d + e*x) + 2079*a^2*A*b*e^3*(d
+ e*x) + 693*a^3*B*e^3*(d + e*x) + 2970*b^3*B*d^2*(d + e*x)^2 - 1485*A*b^3*
d*e*(d + e*x)^2 - 4455*a*b^2*B*d*e*(d + e*x)^2 + 1485*a*A*b^2*e^2*(d + e*x)
^2 + 1485*a^2*b*B*e^2*(d + e*x)^2 - 1540*b^3*B*d*(d + e*x)^3 + 385*A*b^3*e*
(d + e*x)^3 + 1155*a*b^2*B*e*(d + e*x)^3 + 315*b^3*B*(d + e*x)^4))/(3465*e^
4*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 353, normalized size = 1.15

$$\frac{2\left(315Bb^3e^5x^5+128Bb^3d^5+1155Aa^3de^4-176\left(3Bab^2+Ab^3\right)d^4e+792\left(Ba^2b+Aab^2\right)d^3e^2-462\left(Ba^3+3Aa^2b\right)d^2e^3+35\left(Bb^3de^4+11\left(3Bab^2+Ab^3\right)e^5\right)x^4-5\left(8Bb^3d^2e^3-11\left(3Bab^2+Ab^3\right)de^4-297\left(Ba^2b+Aab^2\right)e^5\right)x^3+3\left(16Bb^3d^3e^2-22\left(3Bab^2+Ab^3\right)d^2e^3+99\left(Ba^2b+Aab^2\right)de^4+231\left(Ba^3+3Aa^2b\right)e^5\right)x^2-\left(64Bb^3d^4e-1155Aa^3e^5-88\left(3Bab^2+Ab^3\right)d^3e^2+396\left(Ba^2b+Aab^2\right)d^2e^3-231\left(Ba^3+3Aa^2b\right)de^4\right)x\right)\sqrt{ex+d}}{3465e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/3465*(315*B*b^3*e^5*x^5 + 128*B*b^3*d^5 + 1155*A*a^3*d*e^4 - 176*(3*B*a*b
^2 + A*b^3)*d^4*e + 792*(B*a^2*b + A*a*b^2)*d^3*e^2 - 462*(B*a^3 + 3*A*a^2*
b)*d^2*e^3 + 35*(B*b^3*d*e^4 + 11*(3*B*a*b^2 + A*b^3)*e^5)*x^4 - 5*(8*B*b^3
*d^2*e^3 - 11*(3*B*a*b^2 + A*b^3)*d*e^4 - 297*(B*a^2*b + A*a*b^2)*e^5)*x^3
+ 3*(16*B*b^3*d^3*e^2 - 22*(3*B*a*b^2 + A*b^3)*d^2*e^3 + 99*(B*a^2*b + A*a*
b^2)*d*e^4 + 231*(B*a^3 + 3*A*a^2*b)*e^5)*x^2 - (64*B*b^3*d^4*e - 1155*A*a^
3*e^5 - 88*(3*B*a*b^2 + A*b^3)*d^3*e^2 + 396*(B*a^2*b + A*a*b^2)*d^2*e^3 -
231*(B*a^3 + 3*A*a^2*b)*d*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.27, size = 898, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d*e^(-1)*sgn(b*x +
 a) + 3465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d*e^(-1)*sgn(b*x +
 a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*B*a^2*b*d*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 297*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*B*a*b^2*d*e^(-3)*sgn(b*x + a) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^3*d*e^(-3)*sgn(
```

```
b*x + a) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^3*d*e^(-4)*
sgn(b*x + a) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
+ d)*d^2)*B*a^3*e^(-1)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)
^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b*e^(-1)*sgn(b*x + a) + 297*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*B*a^2*b*e^(-2)*sgn(b*x + a) + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^2*e^(-2)*sg
n(b*x + a) + 33*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^2*e^(-3
)*sgn(b*x + a) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*e^(
-3)*sgn(b*x + a) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*B*b^3*e^(-4)*sgn(b*x + a) + 3465*sqrt(x*e + d)*A*a^3*d
*sgn(b*x + a) + 1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*sgn(b*x +
a))*e^(-1)
```

maple [A] time = 0.06, size = 317, normalized size = 1.03

$$\frac{2 (ex+d)^{\frac{3}{2}} \left(315 b^3 B x^4 e^4 + 385 A b^3 e^4 x^3 + 1155 B a b^2 e^4 x^3 - 280 B b^3 d e^3 x^3 + 1485 A a b^2 e^4 x^2 - 330 A b^3 d e^3 x^2 + 1485 B a^2 b e^4 x^2 - 990 B a b^2 d e^3 x^2 + 240 B b^3 d^2 e^2 x^2 + 2079 A a^2 b e^4 x - 1188 A a b^2 d e^3 x + 264 A b^3 d^2 e^2 x + 693 B a^3 e^4 x - 1188 B a^2 b d e^3 x + 792 B a b^2 d^2 e^2 x - 192 B b^3 d^3 e x + 1155 A a^3 e^4 - 1386 A a^2 b d e^3 + 792 A a b^2 d^2 e^2 - 176 A b^3 d^3 e - 462 B a^3 d e^3 + 792 B a^2 b d^2 e^2 - 528 B a b^2 d^3 e + 128 B b^3 d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{3465 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(3/2)*(315*B*b^3*e^4*x^4+385*A*b^3*e^4*x^3+1155*B*a*b^2*e^4*
x^3-280*B*b^3*d*e^3*x^3+1485*A*a*b^2*e^4*x^2-330*A*b^3*d*e^3*x^2+1485*B*a^2
*b*e^4*x^2-990*B*a*b^2*d*e^3*x^2+240*B*b^3*d^2*e^2*x^2+2079*A*a^2*b*e^4*x-1
188*A*a*b^2*d*e^3*x+264*A*b^3*d^2*e^2*x+693*B*a^3*e^4*x-1188*B*a^2*b*d*e^3*
x+792*B*a*b^2*d^2*e^2*x-192*B*b^3*d^3*e*x+1155*A*a^3*e^4-1386*A*a^2*b*d*e^3
+792*A*a*b^2*d^2*e^2-176*A*b^3*d^3*e-462*B*a^3*d*e^3+792*B*a^2*b*d^2*e^2-52
8*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.61, size = 384, normalized size = 1.25

$$\frac{2 \left(35 b^3 e^4 x^4 - 16 b^3 d^4 + 72 a b^2 d^3 e - 126 a^2 b d^2 e^2 + 105 a^3 d e^3 + 5 \left(b^3 d e^3 + 27 a b^2 e^4\right) x^3 - 3 \left(2 b^3 d^2 e^2 - 9 a b^2 d e^3 - 63 a^2 b e^4\right) x^2 + \left(8 b^3 d^3 e - 36 a b^2 d^2 e^2 + 63 a^2 b d e^3 + 105 a^3 e^4\right) x\right) \sqrt{ex+d} A}{315 e^4} + \frac{2 \left(315 b^3 e^5 x^5 + 128 b^3 d^5 - 528 a b^2 d^4 e + 792 a^2 b d^3 e^2 - 462 a^3 d^2 e^3 + 35 \left(b^3 d e^4 + 33 a b^2 e^5\right) x^4 - 5 \left(8 b^3 d^2 e^3 - 33 a b^2 d e^4 - 297 a^2 b e^5\right) x^3 + 3 \left(16 b^3 d^3 e^2 - 66 a b^2 d^2 e^3 + 99 a^2 b d e^4 + 231 a^3 e^5\right) x^2 - \left(64 b^3 d^4 e - 264 a b^2 d^3 e^2 + 396 a^2 b d^2 e^3 - 231 a^3 d e^4\right) x\right) \sqrt{ex+d} B}{3465 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/315*(35*b^3*e^4*x^4 - 16*b^3*d^4 + 72*a*b^2*d^3*e - 126*a^2*b*d^2*e^2 + 1
05*a^3*d*e^3 + 5*(b^3*d*e^3 + 27*a*b^2*e^4)*x^3 - 3*(2*b^3*d^2*e^2 - 9*a*b^
2*d*e^3 - 63*a^2*b*e^4)*x^2 + (8*b^3*d^3*e - 36*a*b^2*d^2*e^2 + 63*a^2*b*d*
e^3 + 105*a^3*e^4)*x)*sqrt(e*x + d)*A/e^4 + 2/3465*(315*b^3*e^5*x^5 + 128*b
^3*d^5 - 528*a*b^2*d^4*e + 792*a^2*b*d^3*e^2 - 462*a^3*d^2*e^3 + 35*(b^3*d*
e^4 + 33*a*b^2*e^5)*x^4 - 5*(8*b^3*d^2*e^3 - 33*a*b^2*d*e^4 - 297*a^2*b*e^5
)*x^3 + 3*(16*b^3*d^3*e^2 - 66*a*b^2*d^2*e^3 + 99*a^2*b*d*e^4 + 231*a^3*e^5
)*x^2 - (64*b^3*d^4*e - 264*a*b^2*d^3*e^2 + 396*a^2*b*d^2*e^3 - 231*a^3*d*e
^4)*x)*sqrt(e*x + d)*B/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\sqrt{d+e\,x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\sqrt{d + ex}\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)*(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1627 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=306

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-3aBe-Abe+4bBd)}{7e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(-aBe-$$

Rubi [A] time = 0.15, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-3aBe-Abe+4bBd)}{7e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(-aBe-Abe+2bBd)}{5e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2(-aBe-3Abe+4bBd)}{3e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3(Bd-Ae)}{e^5(a+bx)}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)^(3/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) + (6*b*(b*d - a*e)*(2*b
*B*d - A*b*e - a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5
*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(9/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{\sqrt{d+ex}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4\sqrt{d+ex}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)\sqrt{d}}{e^4}\right.}{b}$$

$$=\frac{2(bd-ae)^3(Bd-Ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)}-\frac{2(bd-ae)^2(4bBd}{}$$

Mathematica [A] time = 0.10, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}\sqrt{d+ex}\left(-45b^2(d+ex)^3(-3aBe-Abe+4bBd)+189b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)-105(d+ex)(bd-ae)^2(-aBe-3Abe+4bBd)+315(bd-ae)^3(Bd-Ae)+35b^3B(d+ex)^4\right)}{315e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*Sqrt[d + e*x]*(315*(b*d - a*e)^3*(B*d - A*e) - 105*(
b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 189*b*(b*d - a*e)*(2*b
*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 45*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d +
 e*x)^3 + 35*b^3*B*(d + e*x)^4))/(315*e^5*(a + b*x)^3)
```

IntegrateAlgebraic [A] time = 38.83, size = 374, normalized size = 1.22

$$\frac{2\sqrt{d+ex}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(315a^3Ae^4+105a^3Be^3(d+ex)-315a^3Bde^3+315a^2Abe^3(d+ex)-945a^2Abde^3+945a^2bBd^2e^2-630a^2bBde^2(d+ex)+189a^2bBe^2(d+ex)^2+945aAb^2d^2e^2-630aAb^2de^2(d+ex)+189aAb^2e^2(d+ex)^2-945ab^2Bd^3e+945ab^2Bd^2e(d+ex)-567ab^2Bde(d+ex)^2+135ab^2Be(d+ex)^3-315Ab^3d^3e+315Ab^3d^2e(d+ex)-189Ab^3de(d+ex)^2+45Ab^3e(d+ex)^3+315b^3Bd^4-420b^3Bd^3(d+ex)+378b^3Bd^2(d+ex)^2-180b^3Bd(d+ex)^3+35b^3B(d+ex)^4\right)}{315e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x
],x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2]*(315*b^3*B*d^4 - 315*A*b^3*d^3*e
 - 945*a*b^2*B*d^3*e + 945*a*A*b^2*d^2*e^2 + 945*a^2*b*B*d^2*e^2 - 945*a^2*
A*b*d*e^3 - 315*a^3*B*d*e^3 + 315*a^3*A*e^4 - 420*b^3*B*d^3*(d + e*x) + 315
*A*b^3*d^2*e*(d + e*x) + 945*a*b^2*B*d^2*e*(d + e*x) - 630*a*A*b^2*d*e^2*(d
 + e*x) - 630*a^2*b*B*d*e^2*(d + e*x) + 315*a^2*A*b*e^3*(d + e*x) + 105*a^3
*B*e^3*(d + e*x) + 378*b^3*B*d^2*(d + e*x)^2 - 189*A*b^3*d*e*(d + e*x)^2 -
567*a*b^2*B*d*e*(d + e*x)^2 + 189*a*A*b^2*e^2*(d + e*x)^2 + 189*a^2*b*B*e^2
*(d + e*x)^2 - 180*b^3*B*d*(d + e*x)^3 + 45*A*b^3*e*(d + e*x)^3 + 135*a*b^2
*B*e*(d + e*x)^3 + 35*b^3*B*(d + e*x)^4))/(315*e^4*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 263, normalized size = 0.86

$$\frac{2\left(35\,Bb^3e^4x^4+128\,Bb^3d^4+315\,Aa^3e^4-144\left(3\,Bab^2+Ab^3\right)d^3e+504\left(Ba^2b+Aab^2\right)d^2e^2-210\left(Ba^3+3\,Aa^2b\right)de^3-5\left(8\,Bb^3de^3-9\left(3\,Bab^2+Ab^3\right)e^4\right)x^3+3\left(16\,Bb^3d^2e^2-18\left(3\,Bab^2+Ab^3\right)de^3+63\left(Ba^2b+Aab^2\right)e^4\right)x^2-\left(64\,Bb^3d^3e-72\left(3\,Bab^2+Ab^3\right)d^2e^2+252\left(Ba^2b+Aab^2\right)de^3-105\left(Ba^3+3\,Aa^2b\right)e^4\right)x\right)\sqrt{ex+d}}{315\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/315*(35*B*b^3*e^4*x^4 + 128*B*b^3*d^4 + 315*A*a^3*e^4 - 144*(3*B*a*b^2 +
A*b^3)*d^3*e + 504*(B*a^2*b + A*a*b^2)*d^2*e^2 - 210*(B*a^3 + 3*A*a^2*b)*d*
e^3 - 5*(8*B*b^3*d*e^3 - 9*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(16*B*b^3*d^2*e
^2 - 18*(3*B*a*b^2 + A*b^3)*d*e^3 + 63*(B*a^2*b + A*a*b^2)*e^4)*x^2 - (64*B
*b^3*d^3*e - 72*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 252*(B*a^2*b + A*a*b^2)*d*e^3
 - 105*(B*a^3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [A] time = 0.23, size = 393, normalized size = 1.28

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Ba^3e^{(-1)}\mathrm{sgn}(bx+a)+315\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aa^2be^{(-1)}\mathrm{sgn}(bx+a)+63\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Ba^2be^{(-2)}\mathrm{sgn}(bx+a)+63\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)Aab^2e^{(-2)}\mathrm{sgn}(bx+a)+27\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Bab^2e^{(-3)}\mathrm{sgn}(bx+a)+9\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)Ab^3e^{(-3)}\mathrm{sgn}(bx+a)+\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)Bb^3e^{(-4)}\mathrm{sgn}(bx+a)+315\sqrt{xe+d}\,Aa^3\mathrm{sgn}(bx+a)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*e^(-1)*sgn(b*x + a)
+ 315*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*e^(-1)*sgn(b*x + a) + 6
3*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*b
*e^(-2)*sgn(b*x + a) + 63*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*A*a*b^2*e^(-2)*sgn(b*x + a) + 27*(5*(x*e + d)^(7/2) - 21*(
x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b^2*e
^(-3)*sgn(b*x + a) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^3*e^(-3)*sgn(b*x + a) + (35*(x*e
 + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
```

```
d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^3*e^(-4)*sgn(b*x + a) + 315*sqrt(
x*e + d)*A*a^3*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 317, normalized size = 1.04

$$\frac{2\sqrt{ex+d}\left(35b^3Bx^4e^4+45Ab^3e^4x^3+135Bab^2e^4x^3-40Bb^3de^3x^3+189Aab^2e^4x^2-54Ab^3de^3x^2+189Ba^2be^4x^2-162Bab^2de^3x^2+48Bb^3d^2e^2x^2+315Aa^2be^4x-252Aab^2de^3x+72Ab^3d^2e^2x+105Ba^3e^4x-252Ba^2bde^3x+216Bab^2d^2e^2x-64Bb^3d^3ex+315Aa^3e^4-630Aa^2bde^3+504Aab^2d^2e^2-144Ab^3d^3e-210Ba^3de^3+504Ba^2bd^2e^2-432Bab^2d^3e+128Bb^3d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{315\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(1/2)*(35*B*b^3*e^4*x^4+45*A*b^3*e^4*x^3+135*B*a*b^2*e^4*x^3-
40*B*b^3*d*e^3*x^3+189*A*a*b^2*e^4*x^2-54*A*b^3*d*e^3*x^2+189*B*a^2*b*e^4*x
^2-162*B*a*b^2*d*e^3*x^2+48*B*b^3*d^2*e^2*x^2+315*A*a^2*b*e^4*x-252*A*a*b^2
*d*e^3*x+72*A*b^3*d^2*e^2*x+105*B*a^3*e^4*x-252*B*a^2*b*d*e^3*x+216*B*a*b^2
*d^2*e^2*x-64*B*b^3*d^3*e*x+315*A*a^3*e^4-630*A*a^2*b*d*e^3+504*A*a*b^2*d^2
*e^2-144*A*b^3*d^3*e-210*B*a^3*d*e^3+504*B*a^2*b*d^2*e^2-432*B*a*b^2*d^3*e+
128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.63, size = 382, normalized size = 1.25

$$\frac{2\left(5\,b^3e^4x^4-16\,b^3d^4+56\,ab^2d^3e-70\,a^2bd^2e^2+35\,a^3de^3-\left(b^3de^3-21\,ab^2e^4\right)x^3+\left(2\,b^3d^2e^2-7\,ab^2de^3+35\,a^2be^4\right)x^2-\left(8\,b^3d^3e-28\,ab^2d^2e^2+35\,a^2bde^3-35\,a^3e^4\right)x\right)A}{35\sqrt{ex+d}\,e^4}+\frac{2\left(35\,b^3e^5x^5+128\,b^3d^5-432\,ab^2d^4e+504\,a^2bd^3e^2-210\,a^3d^2e^3-5\left(b^3de^4-27\,ab^2e^5\right)x^4+\left(8\,b^3d^2e^3-27\,ab^2de^4+189\,a^2be^5\right)x^3-\left(16\,b^3d^3e^2-54\,ab^2d^2e^3+63\,a^2bde^4-105\,a^3e^5\right)x^2+\left(64\,b^3d^4e-216\,ab^2d^3e^2+252\,a^2bd^2e^3-105\,a^3de^4\right)x\right)B}{315\sqrt{ex+d}\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/35*(5*b^3*e^4*x^4 - 16*b^3*d^4 + 56*a*b^2*d^3*e - 70*a^2*b*d^2*e^2 + 35*a
^3*d*e^3 - (b^3*d*e^3 - 21*a*b^2*e^4)*x^3 + (2*b^3*d^2*e^2 - 7*a*b^2*d*e^3
+ 35*a^2*b*e^4)*x^2 - (8*b^3*d^3*e - 28*a*b^2*d^2*e^2 + 35*a^2*b*d*e^3 - 35
*a^3*e^4)*x)*A/(sqrt(e*x + d)*e^4) + 2/315*(35*b^3*e^5*x^5 + 128*b^3*d^5 -
432*a*b^2*d^4*e + 504*a^2*b*d^3*e^2 - 210*a^3*d^2*e^3 - 5*(b^3*d*e^4 - 27*a
*b^2*e^5)*x^4 + (8*b^3*d^2*e^3 - 27*a*b^2*d*e^4 + 189*a^2*b*e^5)*x^3 - (16*
b^3*d^3*e^2 - 54*a*b^2*d^2*e^3 + 63*a^2*b*d*e^4 - 105*a^3*e^5)*x^2 + (64*b^
3*d^4*e - 216*a*b^2*d^3*e^2 + 252*a^2*b*d^2*e^3 - 105*a^3*d*e^4)*x)*B/(sqrt
(e*x + d)*e^5)
```

mupad [B] time = 2.74, size = 434, normalized size = 1.42

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{-420\,B\,a^3\,d^2\,e^3+630\,A\,a^3\,d\,e^4+1008\,B\,a^2\,b\,d^3\,e^2-1260\,A\,a^2\,b\,d^2\,e^3-864\,B\,a\,b^2\,d^4\,e+1008\,A\,a\,b^2\,d^3\,e^2+256\,B\,b^3\,d^5-288\,A\,b^3\,d^4\,e}{315\,b\,e^5}+\frac{2\,B\,b^2\,x^5}{9}+\frac{x^3\,\left(378\,B\,a^2\,b\,e^5-54\,B\,a\,b^2\,d\,e^4+378\,A\,a\,b^2\,e^5+16\,B\,b^3\,d^2\,e^3-18\,A\,b^3\,d\,e^4\right)}{315\,b\,e^5}+\frac{x\,\left(-210\,B\,a^3\,d\,e^4+630\,A\,a^3\,e^5+504\,B\,a^2\,b\,d^2\,e^3-630\,A\,a^2\,b\,d\,e^4-432\,B\,a\,b^2\,d^3\,e^2+504\,A\,a\,b^2\,d^2\,e^3+128\,B\,b^3\,d^4\,e-144\,A\,b^3\,d^3\,e^2\right)}{315\,b\,e^5}+\frac{x^2\,\left(210\,B\,a^3\,e^5-126\,B\,a^2\,b\,d\,e^4+630\,A\,a^2\,b\,e^5+108\,B\,a\,b^2\,d^2\,e^3-126\,A\,a\,b^2\,d\,e^4-32\,B\,b^3\,d^3\,e^2+36\,A\,b^3\,d^2\,e^3\right)}{315\,b\,e^5}+\frac{2\,b\,x^4\,\left(9\,A\,b\,e+27\,B\,a\,e-B\,b\,d\right)}{63\,e}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((256*B*b^3*d^5 + 630*A*a^3*d*e^4 - 288*A*
b^3*d^4*e - 420*B*a^3*d^2*e^3 + 1008*A*a*b^2*d^3*e^2 - 1260*A*a^2*b*d^2*e^3
 + 1008*B*a^2*b*d^3*e^2 - 864*B*a*b^2*d^4*e)/(315*b*e^5) + (2*B*b^2*x^5)/9
+ (x^3*(378*A*a*b^2*e^5 + 378*B*a^2*b*e^5 - 18*A*b^3*d*e^4 + 16*B*b^3*d^2*e
^3 - 54*B*a*b^2*d*e^4))/(315*b*e^5) + (x*(630*A*a^3*e^5 - 210*B*a^3*d*e^4 +
 128*B*b^3*d^4*e - 144*A*b^3*d^3*e^2 + 504*A*a*b^2*d^2*e^3 - 432*B*a*b^2*d^
3*e^2 + 504*B*a^2*b*d^2*e^3 - 630*A*a^2*b*d*e^4))/(315*b*e^5) + (x^2*(210*B
*a^3*e^5 + 630*A*a^2*b*e^5 + 36*A*b^3*d^2*e^3 - 32*B*b^3*d^3*e^2 + 108*B*a*
b^2*d^2*e^3 - 126*A*a*b^2*d*e^4 - 126*B*a^2*b*d*e^4))/(315*b*e^5) + (2*b*x^
4*(9*A*b*e + 27*B*a*e - B*b*d))/(63*e)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^
(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1628 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=302

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-3aBe-Abe+4bBd)}{5e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(-aBe-}{e^5(a+bx)}$$

Rubi [A] time = 0.14, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-3aBe-Abe+4bBd)}{5e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{e^5(a+bx)\sqrt{d+ex}}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)
*Sqrt[d + e*x]) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[d + e*x
]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) + (2*b*(b*d - a*e)*(2*b*B*
d - A*b*e - a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a +
 b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(5*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(7*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{3/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{3/2}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4\sqrt{d+ex}}-\right.}{b^2\left(a\right.}$$

$$=-\frac{2(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}}-\frac{2(bd-ae)^2(4bBd-3Ab}{}$$

Mathematica [A] time = 0.14, size = 240, normalized size = 0.79

$$\frac{2\sqrt{(a+bx)^2}\left(35a^3e^3(-Ae+2Bd+Bex)+35a^2be^2\left(3Ae(2d+ex)+B\left(-8d^2-4dex+e^2x^2\right)\right)+7ab^2e\left(5Ae\left(-8d^2-4dex+e^2x^2\right)+3B\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)+b^3\left(7Ae\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+B\left(-128d^4-64d^3ex+16d^2e^2x^2-8de^3x^3+5e^4x^4\right)\right)\right)}{35e^5(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(35*a^3*e^3*(2*B*d - A*e + B*e*x) + 35*a^2*b*e^2*(3*A*
e*(2*d + e*x) + B*(-8*d^2 - 4*d*e*x + e^2*x^2)) + 7*a*b^2*e*(5*A*e*(-8*d^2
- 4*d*e*x + e^2*x^2) + 3*B*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3)) +
b^3*(7*A*e*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + B*(-128*d^4 - 64*
d^3*e*x + 16*d^2*e^2*x^2 - 8*d*e^3*x^3 + 5*e^4*x^4))))/(35*e^5*(a + b*x)*Sq
rt[d + e*x])
```

IntegrateAlgebraic [A] time = 23.91, size = 374, normalized size = 1.24

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-35a^3Ae^4+35a^3Be^3(d+ex)+35a^3Bde^3+105a^2Abe^3(d+ex)+105a^2Abde^3-105a^2bBd^2e^2-210a^2bBde^2(d+ex)+35a^2bBe^2(d+ex)^2-105aAb^2d^2e^2-210aAb^2de^2(d+ex)+35aAb^2e^2(d+ex)^2+105ab^2Bd^3e+315ab^2Bd^2e(d+ex)-105ab^2Bde(d+ex)^2+21ab^2Be(d+ex)^3+35Ab^3d^3e+105Ab^3d^2e(d+ex)-35Ab^3de(d+ex)^2+7Ab^3e(d+ex)^3-35b^3Bd^4-140b^3Bd^3(d+ex)+70b^3Bd^2(d+ex)^2-28b^3Bd(d+ex)^3+5b^3B(d+ex)^4\right)}{35e^4\sqrt{d+ex}\,(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-35*b^3*B*d^4 + 35*A*b^3*d^3*e + 105*a*b^2*B*
d^3*e - 105*a*A*b^2*d^2*e^2 - 105*a^2*b*B*d^2*e^2 + 105*a^2*A*b*d*e^3 + 35*
a^3*B*d*e^3 - 35*a^3*A*e^4 - 140*b^3*B*d^3*(d + e*x) + 105*A*b^3*d^2*e*(d +
 e*x) + 315*a*b^2*B*d^2*e*(d + e*x) - 210*a*A*b^2*d*e^2*(d + e*x) - 210*a^2
*b*B*d*e^2*(d + e*x) + 105*a^2*A*b*e^3*(d + e*x) + 35*a^3*B*e^3*(d + e*x) +
 70*b^3*B*d^2*(d + e*x)^2 - 35*A*b^3*d*e*(d + e*x)^2 - 105*a*b^2*B*d*e*(d +
 e*x)^2 + 35*a*A*b^2*e^2*(d + e*x)^2 + 35*a^2*b*B*e^2*(d + e*x)^2 - 28*b^3*
B*d*(d + e*x)^3 + 7*A*b^3*e*(d + e*x)^3 + 21*a*b^2*B*e*(d + e*x)^3 + 5*b^3*
B*(d + e*x)^4))/(35*e^4*Sqrt[d + e*x]*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 272, normalized size = 0.90

$$\frac{2\left(5\,Bb^3e^4x^4-128\,Bb^3d^4-35\,Aa^3e^4+112\left(3\,Bab^2+Ab^3\right)d^3e-280\left(Ba^2b+Aab^2\right)d^2e^2+70\left(Ba^3+3\,Aa^2b\right)de^3-\left(8\,Bb^3de^3-7\left(3\,Bab^2+Ab^3\right)e^4\right)x^3+\left(16\,Bb^3d^2e^2-14\left(3\,Bab^2+Ab^3\right)de^3+35\left(Ba^2b+Aab^2\right)e^4\right)x^2-\left(64\,Bb^3d^3e-56\left(3\,Bab^2+Ab^3\right)d^2e^2+140\left(Ba^2b+Aab^2\right)de^3-35\left(Ba^3+3\,Aa^2b\right)e^4\right)x\right)\sqrt{ex+d}}{35\left(e^6x+de^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(5*B*b^3*e^4*x^4 - 128*B*b^3*d^4 - 35*A*a^3*e^4 + 112*(3*B*a*b^2 + A*b
^3)*d^3*e - 280*(B*a^2*b + A*a*b^2)*d^2*e^2 + 70*(B*a^3 + 3*A*a^2*b)*d*e^3
- (8*B*b^3*d*e^3 - 7*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + (16*B*b^3*d^2*e^2 - 14*
(3*B*a*b^2 + A*b^3)*d*e^3 + 35*(B*a^2*b + A*a*b^2)*e^4)*x^2 - (64*B*b^3*d^3
*e - 56*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 140*(B*a^2*b + A*a*b^2)*d*e^3 - 35*(B
*a^3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/(e^6*x + d*e^5)
```

giac [B] time = 0.31, size = 525, normalized size = 1.74

$$\frac{2}{35}\left(5\,(xe+d)^{\frac{7}{2}}Bb^3e^{30}\mathrm{sgn}\left(bx+a\right)-28\,(xe+d)^{\frac{5}{2}}Bb^3de^{30}\mathrm{sgn}\left(bx+a\right)+70\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^{30}\mathrm{sgn}\left(bx+a\right)-140\,\sqrt{xe+d}\,Bb^3d^3e^{30}\mathrm{sgn}\left(bx+a\right)+21\,(xe+d)^{\frac{5}{2}}Bab^2e^{31}\mathrm{sgn}\left(bx+a\right)+7\,(xe+d)^{\frac{5}{2}}Ab^3e^{31}\mathrm{sgn}\left(bx+a\right)-105\,(xe+d)^{\frac{3}{2}}Bab^2de^{31}\mathrm{sgn}\left(bx+a\right)-35\,(xe+d)^{\frac{3}{2}}Ab^3de^{31}\mathrm{sgn}\left(bx+a\right)+315\,\sqrt{xe+d}\,Bab^2d^2e^{31}\mathrm{sgn}\left(bx+a\right)+105\,\sqrt{xe+d}\,Ab^3d^2e^{31}\mathrm{sgn}\left(bx+a\right)+35\,(xe+d)^{\frac{3}{2}}Ba^2be^{32}\mathrm{sgn}\left(bx+a\right)+35\,(xe+d)^{\frac{3}{2}}Aab^2e^{32}\mathrm{sgn}\left(bx+a\right)-210\,\sqrt{xe+d}\,Ba^2bde^{32}\mathrm{sgn}\left(bx+a\right)-210\,\sqrt{xe+d}\,Aab^2de^{32}\mathrm{sgn}\left(bx+a\right)+35\,\sqrt{xe+d}\,Ba^3e^{33}\mathrm{sgn}\left(bx+a\right)+105\,\sqrt{xe+d}\,Aa^2be^{33}\mathrm{sgn}\left(bx+a\right)\right)e^{(-35)}-\frac{2\left(Bb^3d^4\mathrm{sgn}\left(bx+a\right)-3\,Bab^2d^3e\mathrm{sgn}\left(bx+a\right)-Ab^3d^3e\mathrm{sgn}\left(bx+a\right)+3\,Ba^2bd^2e^2\mathrm{sgn}\left(bx+a\right)+3\,Aab^2d^2e^2\mathrm{sgn}\left(bx+a\right)-Ba^3de^3\mathrm{sgn}\left(bx+a\right)-3\,Aa^2bde^3\mathrm{sgn}\left(bx+a\right)+Aa^3e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*B*b^3*e^30*sgn(b*x + a) - 28*(x*e + d)^(5/2)*B*b^3*
d*e^30*sgn(b*x + a) + 70*(x*e + d)^(3/2)*B*b^3*d^2*e^30*sgn(b*x + a) - 140*
sqrt(x*e + d)*B*b^3*d^3*e^30*sgn(b*x + a) + 21*(x*e + d)^(5/2)*B*a*b^2*e^31
*sgn(b*x + a) + 7*(x*e + d)^(5/2)*A*b^3*e^31*sgn(b*x + a) - 105*(x*e + d)^(
3/2)*B*a*b^2*d*e^31*sgn(b*x + a) - 35*(x*e + d)^(3/2)*A*b^3*d*e^31*sgn(b*x
+ a) + 315*sqrt(x*e + d)*B*a*b^2*d^2*e^31*sgn(b*x + a) + 105*sqrt(x*e + d)*
A*b^3*d^2*e^31*sgn(b*x + a) + 35*(x*e + d)^(3/2)*B*a^2*b*e^32*sgn(b*x + a)
+ 35*(x*e + d)^(3/2)*A*a*b^2*e^32*sgn(b*x + a) - 210*sqrt(x*e + d)*B*a^2*b*
```

```
d*e^32*sgn(b*x + a) - 210*sqrt(x*e + d)*A*a*b^2*d*e^32*sgn(b*x + a) + 35*sq
rt(x*e + d)*B*a^3*e^33*sgn(b*x + a) + 105*sqrt(x*e + d)*A*a^2*b*e^33*sgn(b*
x + a))*e^(-35) - 2*(B*b^3*d^4*sgn(b*x + a) - 3*B*a*b^2*d^3*e*sgn(b*x + a)
- A*b^3*d^3*e*sgn(b*x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) + 3*A*a*b^2*d^2
*e^2*sgn(b*x + a) - B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a)
 + A*a^3*e^4*sgn(b*x + a))*e^(-5)/sqrt(x*e + d)
```

maple [A]   time = 0.05, size = 317, normalized size = 1.05

$$-\frac{2\left(-5b^3Bx^4e^4-7Ab^3e^4x^3-21Bab^2e^4x^3+8Bb^3de^3x^3-35Aab^2e^4x^2+14Ab^3de^3x^2-35Ba^2be^4x^2+42Bab^2de^3x^2-16Bb^3d^2e^2x^2-105Aa^2be^4x+140Aab^2de^3x-56Ab^3d^2e^2x-35Ba^3e^4x+140Ba^2bde^3x-168Bab^2d^2e^2x+64Bb^3d^3ex+35Aa^3e^4-210Aa^2bde^3+280Aab^2d^2e^2-112Ab^3d^3e-70Ba^3de^3+280Ba^2bd^2e^2-336Bab^2d^3e+128Bb^3d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{35\sqrt{ex+d}\,(bx+a)^3e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35/(e*x+d)^(1/2)*(-5*B*b^3*e^4*x^4-7*A*b^3*e^4*x^3-21*B*a*b^2*e^4*x^3+8*
B*b^3*d*e^3*x^3-35*A*a*b^2*e^4*x^2+14*A*b^3*d*e^3*x^2-35*B*a^2*b*e^4*x^2+42
*B*a*b^2*d*e^3*x^2-16*B*b^3*d^2*e^2*x^2-105*A*a^2*b*e^4*x+140*A*a*b^2*d*e^3
*x-56*A*b^3*d^2*e^2*x-35*B*a^3*e^4*x+140*B*a^2*b*d*e^3*x-168*B*a*b^2*d^2*e^
2*x+64*B*b^3*d^3*e*x+35*A*a^3*e^4-210*A*a^2*b*d*e^3+280*A*a*b^2*d^2*e^2-112
*A*b^3*d^3*e-70*B*a^3*d*e^3+280*B*a^2*b*d^2*e^2-336*B*a*b^2*d^3*e+128*B*b^3
*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A]   time = 0.77, size = 282, normalized size = 0.93

$$\frac{2\left(b^3e^3x^3+16\,b^3d^3-40\,ab^2d^2e+30\,a^2bde^2-5\,a^3e^3-\left(2\,b^3de^2-5\,ab^2e^3\right)x^2+\left(8\,b^3d^2e-20\,ab^2de^2+15\,a^2be^3\right)x\right)A}{5\sqrt{ex+d}\,e^4}+\frac{2\left(5\,b^3e^4x^4-128\,b^3d^4+336\,ab^2d^3e-280\,a^2bd^2e^2+70\,a^3de^3-\left(8\,b^3de^3-21\,ab^2e^4\right)x^3+\left(16\,b^3d^2e^2-42\,ab^2de^3+35\,a^2be^4\right)x^2-\left(64\,b^3d^3e-168\,ab^2d^2e^2+140\,a^2bde^3-35\,a^3e^4\right)x\right)B}{35\sqrt{ex+d}\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(b^3*e^3*x^3 + 16*b^3*d^3 - 40*a*b^2*d^2*e + 30*a^2*b*d*e^2 - 5*a^3*e^3
 - (2*b^3*d*e^2 - 5*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 20*a*b^2*d*e^2 + 15*a^2
*b*e^3)*x)*A/(sqrt(e*x + d)*e^4) + 2/35*(5*b^3*e^4*x^4 - 128*b^3*d^4 + 336*
a*b^2*d^3*e - 280*a^2*b*d^2*e^2 + 70*a^3*d*e^3 - (8*b^3*d*e^3 - 21*a*b^2*e^
4)*x^3 + (16*b^3*d^2*e^2 - 42*a*b^2*d*e^3 + 35*a^2*b*e^4)*x^2 - (64*b^3*d^3
*e - 168*a*b^2*d^2*e^2 + 140*a^2*b*d*e^3 - 35*a^3*e^4)*x)*B/(sqrt(e*x + d)*
e^5)
```

mupad [B]   time = 2.97, size = 327, normalized size = 1.08

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x\,\left(70\,B\,a^3\,e^4-280\,B\,a^2\,b\,d\,e^3+210\,A\,a^2\,b\,e^4+336\,B\,a\,b^2\,d^2\,e^2-280\,A\,a\,b^2\,d\,e^3-128\,B\,b^3\,d^3\,e+112\,A\,b^3\,d^2\,e^2\right)}{35\,b\,e^5}-\frac{-140\,B\,a^3\,d\,e^3+70\,A\,a^3\,e^4+560\,B\,a^2\,b\,d^2\,e^2-420\,A\,a^2\,b\,d\,e^3-672\,B\,a\,b^2\,d^3\,e+560\,A\,a\,b^2\,d^2\,e^2+256\,B\,b^3\,d^4-224\,A\,b^3\,d^3\,e}{35\,b\,e^5}+\frac{x^2\,\left(70\,B\,a^2\,b\,e^4-84\,B\,a\,b^2\,d\,e^3+70\,A\,a\,b^2\,e^4+32\,B\,b^3\,d^2\,e^2-28\,A\,b^3\,d\,e^3\right)}{35\,b\,e^5}+\frac{2\,b\,x^3\,\left(7\,A\,b\,e+21\,B\,a\,e-8\,B\,b\,d\right)}{35\,e^2}+\frac{2\,B\,b^2\,x^4}{7\,e}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x*(70*B*a^3*e^4 + 210*A*a^2*b*e^4 - 128*
B*b^3*d^3*e + 112*A*b^3*d^2*e^2 + 336*B*a*b^2*d^2*e^2 - 280*A*a*b^2*d*e^3 -
 280*B*a^2*b*d*e^3))/(35*b*e^5) - (70*A*a^3*e^4 + 256*B*b^3*d^4 - 224*A*b^3
*d^3*e - 140*B*a^3*d*e^3 + 560*A*a*b^2*d^2*e^2 + 560*B*a^2*b*d^2*e^2 - 420*
A*a^2*b*d*e^3 - 672*B*a*b^2*d^3*e)/(35*b*e^5) + (x^2*(70*A*a*b^2*e^4 + 70*B
*a^2*b*e^4 - 28*A*b^3*d*e^3 + 32*B*b^3*d^2*e^2 - 84*B*a*b^2*d*e^3))/(35*b*e
^5) + (2*b*x^3*(7*A*b*e + 21*B*a*e - 8*B*b*d))/(35*e^2) + (2*B*b^2*x^4)/(7*
e)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1629 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=304

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-3aBe-Abe+4bBd)}{3e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(-aBe-Abe+\cdots}{e^5(a+bx)}$$

Rubi [A] time = 0.14, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-3aBe-Abe+4bBd)}{3e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{e^5(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{3e^5(a+bx)(d+ex)^{3/2}}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*
x)*(d + e*x)^(3/2)) + (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*Sqrt[d + e*x]) + (6*b*(b*d - a*e)*(2*
b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a
 + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(5/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(5*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{5/2}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{5/2}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{3/2}}-\frac{3b^{4}\cdots}{\cdots}\cdots\right)}{b^2\left(ab+b^2\cdots\right)}\\ &= -\frac{2(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}}+\frac{2(bd-ae)^2(4bBd-3Abe-\cdots}{e^5(a+bx)\cdots}\end{aligned}$$

Mathematica [A] time = 0.18, size = 241, normalized size = 0.79

$$\frac{2\sqrt{(a+bx)^2}\left(-5a^3e^3(Ae+2Bd+3Bex)+15a^2be^2\left(B\left(8d^2+12dex+3e^2x^2\right)-Ae(2d+3ex)\right)+15ab^2e\left(Ae\left(8d^2+12dex+3e^2x^2\right)+B\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)\right)+b^3\left(5Ae\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)+B\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)\right)\right)}{15e^5(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*a^3*e^3*(2*B*d + A*e + 3*B*e*x) + 15*a^2*b*e^2*(-(
A*e*(2*d + 3*e*x)) + B*(8*d^2 + 12*d*e*x + 3*e^2*x^2)) + 15*a*b^2*e*(A*e*(8
*d^2 + 12*d*e*x + 3*e^2*x^2) + B*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*
x^3)) + b^3*(5*A*e*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + B*(128*
d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4))))/(15*e^5*(a
 + b*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 27.94, size = 374, normalized size = 1.23

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-5a^3Ae^4-15a^3Be^3(d+ex)+5a^3Bde^3-45a^2Abe^3(d+ex)+15a^2Abde^3-15a^2bBd^2e^2+90a^2bBde^2(d+ex)+45a^2bBe^2(d+ex)^2-15aAb^2d^2e^2+90aAb^2de^2(d+ex)+45aAb^2e^2(d+ex)^2+15ab^2Bd^3e-135ab^2Bd^2e(d+ex)-135ab^2Bde(d+ex)^2+15ab^2Be(d+ex)^3+5Ab^3d^3e-45Ab^3d^2e(d+ex)-45Ab^3de(d+ex)^2+5Ab^3e(d+ex)^3-5b^3Bd^4+60b^3Bd^3(d+ex)+90b^3Bd^2(d+ex)^2-20b^3Bd(d+ex)^3+3b^3B(d+ex)^4\right)}{15e^4(d+ex)^{3/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-5*b^3*B*d^4 + 5*A*b^3*d^3*e + 15*a*b^2*B*d^3
*e - 15*a*A*b^2*d^2*e^2 - 15*a^2*b*B*d^2*e^2 + 15*a^2*A*b*d*e^3 + 5*a^3*B*d
*e^3 - 5*a^3*A*e^4 + 60*b^3*B*d^3*(d + e*x) - 45*A*b^3*d^2*e*(d + e*x) - 13
5*a*b^2*B*d^2*e*(d + e*x) + 90*a*A*b^2*d*e^2*(d + e*x) + 90*a^2*b*B*d*e^2*(
d + e*x) - 45*a^2*A*b*e^3*(d + e*x) - 15*a^3*B*e^3*(d + e*x) + 90*b^3*B*d^2
*(d + e*x)^2 - 45*A*b^3*d*e*(d + e*x)^2 - 135*a*b^2*B*d*e*(d + e*x)^2 + 45*
a*A*b^2*e^2*(d + e*x)^2 + 45*a^2*b*B*e^2*(d + e*x)^2 - 20*b^3*B*d*(d + e*x)
^3 + 5*A*b^3*e*(d + e*x)^3 + 15*a*b^2*B*e*(d + e*x)^3 + 3*b^3*B*(d + e*x)^4
))/(15*e^4*(d + e*x)^(3/2)*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 284, normalized size = 0.93

$$\frac{2\left(3Bb^3e^4x^4+128Bb^3d^4-5Aa^3e^4-80\left(3Bab^2+Ab^3\right)d^3e+120\left(Ba^2b+Aab^2\right)d^2e^2-10\left(Ba^3+3Aa^2b\right)de^3-\left(8Bb^3de^3-5\left(3Bab^2+Ab^3\right)e^4\right)x^3+3\left(16Bb^3d^2e^2-10\left(3Bab^2+Ab^3\right)de^3+15\left(Ba^2b+Aab^2\right)e^4\right)x^2+3\left(64Bb^3d^3e-40\left(3Bab^2+Ab^3\right)d^2e^2+60\left(Ba^2b+Aab^2\right)de^3-5\left(Ba^3+3Aa^2b\right)e^4\right)x\right)\sqrt{ex+d}}{15\left(e^7x^2+2de^6x+d^2e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(3*B*b^3*e^4*x^4 + 128*B*b^3*d^4 - 5*A*a^3*e^4 - 80*(3*B*a*b^2 + A*b^3
)*d^3*e + 120*(B*a^2*b + A*a*b^2)*d^2*e^2 - 10*(B*a^3 + 3*A*a^2*b)*d*e^3 -
(8*B*b^3*d*e^3 - 5*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(16*B*b^3*d^2*e^2 - 10*
(3*B*a*b^2 + A*b^3)*d*e^3 + 15*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 3*(64*B*b^3*d
^3*e - 40*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 60*(B*a^2*b + A*a*b^2)*d*e^3 - 5*(B
*a^3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/(e^7*x^2 + 2*d*e^6*x + d^2*e^5)
```

giac [B] time = 0.25, size = 509, normalized size = 1.67

$$\frac{2}{15}\left(3(xe+d)^{\frac{5}{2}}Bb^3e^{20}\mathrm{sgn}(bx+a)-20(xe+d)^{\frac{3}{2}}Bb^3de^{20}\mathrm{sgn}(bx+a)+90\sqrt{xe+d}\,Bb^3d^2e^{20}\mathrm{sgn}(bx+a)+15(xe+d)^{\frac{3}{2}}Bab^2e^{21}\mathrm{sgn}(bx+a)+5(xe+d)^{\frac{3}{2}}Ab^3e^{21}\mathrm{sgn}(bx+a)-135\sqrt{xe+d}\,Bab^2de^{21}\mathrm{sgn}(bx+a)-45\sqrt{xe+d}\,Ab^3de^{21}\mathrm{sgn}(bx+a)+45\sqrt{xe+d}\,Ba^2be^{22}\mathrm{sgn}(bx+a)+45\sqrt{xe+d}\,Aab^2e^{22}\mathrm{sgn}(bx+a)\right)e^{(-25)}+\frac{2\left(12(xe+d)Bb^3d^3\mathrm{sgn}(bx+a)-Bb^3d^4\mathrm{sgn}(bx+a)-27(xe+d)Bab^2d^2e\,\mathrm{sgn}(bx+a)-9(xe+d)Ab^3d^2e\,\mathrm{sgn}(bx+a)+3Bab^2d^3e\,\mathrm{sgn}(bx+a)+Ab^3d^3e\,\mathrm{sgn}(bx+a)+18(xe+d)Ba^2bde^2\mathrm{sgn}(bx+a)+18(xe+d)Aab^2de^2\mathrm{sgn}(bx+a)-3Ba^2bd^2e^2\mathrm{sgn}(bx+a)-3Aab^2d^2e^2\mathrm{sgn}(bx+a)-3(xe+d)Ba^3e^3\mathrm{sgn}(bx+a)-9(xe+d)Aa^2be^3\mathrm{sgn}(bx+a)+Ba^3de^3\mathrm{sgn}(bx+a)+3Aa^2bde^3\mathrm{sgn}(bx+a)-Aa^3e^4\mathrm{sgn}(bx+a)\right)e^{(-5)}}{3(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*b^3*e^20*sgn(b*x + a) - 20*(x*e + d)^(3/2)*B*b^3*
d*e^20*sgn(b*x + a) + 90*sqrt(x*e + d)*B*b^3*d^2*e^20*sgn(b*x + a) + 15*(x*
e + d)^(3/2)*B*a*b^2*e^21*sgn(b*x + a) + 5*(x*e + d)^(3/2)*A*b^3*e^21*sgn(b
*x + a) - 135*sqrt(x*e + d)*B*a*b^2*d*e^21*sgn(b*x + a) - 45*sqrt(x*e + d)*
A*b^3*d*e^21*sgn(b*x + a) + 45*sqrt(x*e + d)*B*a^2*b*e^22*sgn(b*x + a) + 45
*sqrt(x*e + d)*A*a*b^2*e^22*sgn(b*x + a))*e^(-25) + 2/3*(12*(x*e + d)*B*b^3
*d^3*sgn(b*x + a) - B*b^3*d^4*sgn(b*x + a) - 27*(x*e + d)*B*a*b^2*d^2*e*sgn
(b*x + a) - 9*(x*e + d)*A*b^3*d^2*e*sgn(b*x + a) + 3*B*a*b^2*d^3*e*sgn(b*x
```

```
+ a) + A*b^3*d^3*e*sgn(b*x + a) + 18*(x*e + d)*B*a^2*b*d*e^2*sgn(b*x + a) +
 18*(x*e + d)*A*a*b^2*d*e^2*sgn(b*x + a) - 3*B*a^2*b*d^2*e^2*sgn(b*x + a) -
 3*A*a*b^2*d^2*e^2*sgn(b*x + a) - 3*(x*e + d)*B*a^3*e^3*sgn(b*x + a) - 9*(x
*e + d)*A*a^2*b*e^3*sgn(b*x + a) + B*a^3*d*e^3*sgn(b*x + a) + 3*A*a^2*b*d*e
^3*sgn(b*x + a) - A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 317, normalized size = 1.04

$$-\frac{2\left(-3b^3Bx^4e^4-5Ab^3e^4x^3-15Bab^2e^4x^3+8Bb^3de^3x^3-45Aab^2e^4x^2+30Ab^3de^3x^2-45Ba^2be^4x^2+90Bab^2de^3x^2-48Bb^3d^2e^2x^2+45Aa^2be^4x-180Aab^2de^3x+120Ab^3d^2e^2x+15Ba^3e^4x-180Ba^2bde^3x+360Bab^2d^2e^2x-192Bb^3d^3ex+5Aa^3e^4+30Aa^2bde^3-120Aab^2d^2e^2+80Ab^3d^3e+10Ba^3de^3-120Ba^2bd^2e^2+240Bab^2d^3e-128Bb^3d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{15(ex+d)^{\frac{3}{2}}(bx+a)^3e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15/(e*x+d)^(3/2)*(-3*B*b^3*e^4*x^4-5*A*b^3*e^4*x^3-15*B*a*b^2*e^4*x^3+8*
B*b^3*d*e^3*x^3-45*A*a*b^2*e^4*x^2+30*A*b^3*d*e^3*x^2-45*B*a^2*b*e^4*x^2+90
*B*a*b^2*d*e^3*x^2-48*B*b^3*d^2*e^2*x^2+45*A*a^2*b*e^4*x-180*A*a*b^2*d*e^3*
x+120*A*b^3*d^2*e^2*x+15*B*a^3*e^4*x-180*B*a^2*b*d*e^3*x+360*B*a*b^2*d^2*e^
2*x-192*B*b^3*d^3*e*x+5*A*a^3*e^4+30*A*a^2*b*d*e^3-120*A*a*b^2*d^2*e^2+80*A
*b^3*d^3*e+10*B*a^3*d*e^3-120*B*a^2*b*d^2*e^2+240*B*a*b^2*d^3*e-128*B*b^3*d
^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.65, size = 304, normalized size = 1.00

$$\frac{2\left(b^3e^3x^3-16b^3d^3+24ab^2d^2e-6a^2bde^2-a^3e^3-3\left(2b^3de^2-3ab^2e^3\right)x^2-3\left(8b^3d^2e-12ab^2de^2+3a^2be^3\right)x\right)A}{3\left(e^5x+de^4\right)\sqrt{ex+d}}+\frac{2\left(3b^3e^4x^4+128b^3d^4-240ab^2d^3e+120a^2bd^2e^2-10a^3de^3-\left(8b^3de^3-15ab^2e^4\right)x^3+3\left(16b^3d^2e^2-30ab^2de^3+15a^2be^4\right)x^2+3\left(64b^3d^3e-120ab^2d^2e^2+60a^2bde^3-5a^3e^4\right)x\right)B}{15\left(e^6x+de^5\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/3*(b^3*e^3*x^3 - 16*b^3*d^3 + 24*a*b^2*d^2*e - 6*a^2*b*d*e^2 - a^3*e^3 -
3*(2*b^3*d*e^2 - 3*a*b^2*e^3)*x^2 - 3*(8*b^3*d^2*e - 12*a*b^2*d*e^2 + 3*a^2
*b*e^3)*x)*A/((e^5*x + d*e^4)*sqrt(e*x + d)) + 2/15*(3*b^3*e^4*x^4 + 128*b^
3*d^4 - 240*a*b^2*d^3*e + 120*a^2*b*d^2*e^2 - 10*a^3*d*e^3 - (8*b^3*d*e^3 -
 15*a*b^2*e^4)*x^3 + 3*(16*b^3*d^2*e^2 - 30*a*b^2*d*e^3 + 15*a^2*b*e^4)*x^2
 + 3*(64*b^3*d^3*e - 120*a*b^2*d^2*e^2 + 60*a^2*b*d*e^3 - 5*a^3*e^4)*x)*B/(
(e^6*x + d*e^5)*sqrt(e*x + d))
```

mupad [B] time = 3.09, size = 362, normalized size = 1.19

$$\frac{\sqrt{a^2+2abx+b^2x^2}\left(\frac{x^2\left(6Ba^2be^4-12Bab^2de^3+6Aab^2e^4+\frac{32Bb^3d^2e^2}{5}-4Ab^3de^3\right)}{be^6}-\frac{x\left(30Ba^3e^4-360Ba^2bde^3+90Aa^2be^4+720Bab^2d^2e^2-360Aab^2de^3-384Bb^3d^3e+240Ab^3d^2e^2\right)}{15be^6}-\frac{\frac{4Ba^3de^3}{3}+\frac{2Aa^3e^4}{3}-16Ba^2bd^2e^2+4Aa^2bde^3+32Bab^2d^3e-16Aab^2d^2e^2-\frac{256Bb^3d^4}{15}+\frac{32Ab^3d^3e}{3}}{be^6}+\frac{2bx^3(5Abe+15Bae-8Bbd)}{15e^3}+\frac{2Bb^2x^4}{5e^2}\right)}{x^2\sqrt{d+ex}+\frac{ad\sqrt{d+ex}}{be}+\frac{x\left(15ae^6+15bde^5\right)\sqrt{d+ex}}{15be^6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^2*(6*A*a*b^2*e^4 + 6*B*a^2*b*e^4 - 4*A
*b^3*d*e^3 + (32*B*b^3*d^2*e^2)/5 - 12*B*a*b^2*d*e^3))/(b*e^6) - (x*(30*B*a
^3*e^4 + 90*A*a^2*b*e^4 - 384*B*b^3*d^3*e + 240*A*b^3*d^2*e^2 + 720*B*a*b^2
*d^2*e^2 - 360*A*a*b^2*d*e^3 - 360*B*a^2*b*d*e^3))/(15*b*e^6) - ((2*A*a^3*e
^4)/3 - (256*B*b^3*d^4)/15 + (32*A*b^3*d^3*e)/3 + (4*B*a^3*d*e^3)/3 - 16*A*
a*b^2*d^2*e^2 - 16*B*a^2*b*d^2*e^2 + 4*A*a^2*b*d*e^3 + 32*B*a*b^2*d^3*e)/(b
*e^6) + (2*b*x^3*(5*A*b*e + 15*B*a*e - 8*B*b*d))/(15*e^3) + (2*B*b^2*x^4)/(
5*e^2)))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x)^(1/2))/(b*e) + (x*(15*a*e^6
+ 15*b*d*e^5)*(d + e*x)^(1/2))/(15*b*e^6))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(5/2),x)
[Out] Timed out
```

3.1630 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=304

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{e^5(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)\sqrt{d+ex}}+\frac{2\cdots}{\cdots}$$

Rubi [A] time = 0.14, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{e^5(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)\sqrt{d+ex}}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{3e^5(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{2b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*
x)*(d + e*x)^(5/2)) + (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^(3/2)) - (6*b*(b*d - a*e)
*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*Sq
rt[d + e*x]) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(3/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(3*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{7/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{7/2}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{5/2}}-\frac{3b^4\cdots}{\cdots}\right)}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{2(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{2(bd-ae)^2(4bBd-3Abe-\cdots}{3e^5(a+bx)(\cdots}$$

Mathematica [A] time = 0.15, size = 244, normalized size = 0.80

$$-\frac{2\sqrt{(a+bx)^2}\left(a^3e^3(3Ae+2Bd+5Bex)+3a^2be^2\left(Ae(2d+5ex)+B\left(8d^2+20dex+15e^2x^2\right)\right)-3ab^2e\left(3B\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)-Ae\left(8d^2+20dex+15e^2x^2\right)\right)+b^3\left(B\left(128d^4+320d^3ex+240d^2e^2x^2+40de^3x^3-5e^4x^4\right)-3Ae\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)\right)\right)}{15e^5(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(a^3*e^3*(2*B*d + 3*A*e + 5*B*e*x) + 3*a^2*b*e^2*(A*e
*(2*d + 5*e*x) + B*(8*d^2 + 20*d*e*x + 15*e^2*x^2)) - 3*a*b^2*e*(-(A*e*(8*d
^2 + 20*d*e*x + 15*e^2*x^2)) + 3*B*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*
e^3*x^3)) + b^3*(-3*A*e*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3) +
B*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*e^3*x^3 - 5*e^4*x^4))))/(
15*e^5*(a + b*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 33.99, size = 374, normalized size = 1.23

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-3a^3Ae^4-5a^3Be^3(d+ex)+3a^3Bde^3-15a^2Abe^3(d+ex)+9a^2Abde^3-9a^2bBd^2e^2+30a^2bBde^2(d+ex)-45a^2bBe^2(d+ex)^2-9aAb^2d^2e^2+30aAb^2de^2(d+ex)-45aAb^2e^2(d+ex)^2+9ab^2Bd^3e-45ab^2Bd^2e(d+ex)+135ab^2Bde(d+ex)^2+45ab^2Be(d+ex)^3+3Ab^3d^3e-15Ab^3d^2e(d+ex)+45Ab^3de(d+ex)^2+15Ab^3e(d+ex)^3-3b^3Bd^4+20b^3Bd^3(d+ex)-90b^3Bd^2(d+ex)^2-60b^3Bd(d+ex)^3+5b^3B(d+ex)^4\right)}{15e^4(d+ex)^{5/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-3*b^3*B*d^4 + 3*A*b^3*d^3*e + 9*a*b^2*B*d^3*
e - 9*a*A*b^2*d^2*e^2 - 9*a^2*b*B*d^2*e^2 + 9*a^2*A*b*d*e^3 + 3*a^3*B*d*e^3
 - 3*a^3*A*e^4 + 20*b^3*B*d^3*(d + e*x) - 15*A*b^3*d^2*e*(d + e*x) - 45*a*b
^2*B*d^2*e*(d + e*x) + 30*a*A*b^2*d*e^2*(d + e*x) + 30*a^2*b*B*d*e^2*(d + e
*x) - 15*a^2*A*b*e^3*(d + e*x) - 5*a^3*B*e^3*(d + e*x) - 90*b^3*B*d^2*(d +
e*x)^2 + 45*A*b^3*d*e*(d + e*x)^2 + 135*a*b^2*B*d*e*(d + e*x)^2 - 45*a*A*b^
2*e^2*(d + e*x)^2 - 45*a^2*b*B*e^2*(d + e*x)^2 - 60*b^3*B*d*(d + e*x)^3 + 1
5*A*b^3*e*(d + e*x)^3 + 45*a*b^2*B*e*(d + e*x)^3 + 5*b^3*B*(d + e*x)^4))/(1
5*e^4*(d + e*x)^(5/2)*(a*e + b*e*x))
```

fricas [A] time = 0.45, size = 294, normalized size = 0.97

$$\frac{2\left(5Bb^3e^4x^4-128Bb^3d^4-3Aa^3e^4+48\left(3Bab^2+Ab^3\right)d^3e-24\left(Ba^2b+Aab^2\right)d^2e^2-2\left(Ba^3+3Aa^2b\right)de^3-5\left(8Bb^3de^3-3\left(3Bab^2+Ab^3\right)e^4\right)x^3-15\left(16Bb^3d^2e^2-6\left(3Bab^2+Ab^3\right)de^3+3\left(Ba^2b+Aab^2\right)e^4\right)x^2-5\left(64Bb^3d^3e-24\left(3Bab^2+Ab^3\right)d^2e^2+12\left(Ba^2b+Aab^2\right)de^3+\left(Ba^3+3Aa^2b\right)e^4\right)x\right)\sqrt{ex+d}}{15\left(e^8x^3+3de^7x^2+3d^2e^6x+d^3e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(5*B*b^3*e^4*x^4 - 128*B*b^3*d^4 - 3*A*a^3*e^4 + 48*(3*B*a*b^2 + A*b^3
)*d^3*e - 24*(B*a^2*b + A*a*b^2)*d^2*e^2 - 2*(B*a^3 + 3*A*a^2*b)*d*e^3 - 5*
(8*B*b^3*d*e^3 - 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 - 15*(16*B*b^3*d^2*e^2 - 6*
(3*B*a*b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b + A*a*b^2)*e^4)*x^2 - 5*(64*B*b^3*d^
3*e - 24*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 12*(B*a^2*b + A*a*b^2)*d*e^3 + (B*a^
3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/(e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6*x +
 d^3*e^5)
```

giac [B] time = 0.26, size = 508, normalized size = 1.67

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bb^3e^{10}\mathrm{sgn}(bx+a)-12\sqrt{xe+d}\,Bb^3de^{10}\mathrm{sgn}(bx+a)+9\sqrt{xe+d}\,Bab^2e^{11}\mathrm{sgn}(bx+a)+3\sqrt{xe+d}\,Ab^3e^{11}\mathrm{sgn}(bx+a)\right)e^{(-15)}-\frac{2\left(90(xe+d)^2Bb^3d^2\mathrm{sgn}(bx+a)-20(xe+d)Bb^3d^3\mathrm{sgn}(bx+a)+3Bb^3d^4\mathrm{sgn}(bx+a)-135(xe+d)^2Bab^2de\,\mathrm{sgn}(bx+a)-45(xe+d)^2Ab^3de\,\mathrm{sgn}(bx+a)+45(xe+d)Bab^2d^2e\,\mathrm{sgn}(bx+a)+15(xe+d)Ab^3d^2e\,\mathrm{sgn}(bx+a)-9Bab^2d^3e\,\mathrm{sgn}(bx+a)-3Ab^3d^3e\,\mathrm{sgn}(bx+a)+45(xe+d)^2Ba^2be^2\mathrm{sgn}(bx+a)+45(xe+d)^2Aab^2e^2\mathrm{sgn}(bx+a)-30(xe+d)Ba^2bde^2\mathrm{sgn}(bx+a)-30(xe+d)Aab^2de^2\mathrm{sgn}(bx+a)+9Ba^2bd^2e^2\mathrm{sgn}(bx+a)+9Aab^2d^2e^2\mathrm{sgn}(bx+a)+5(xe+d)Ba^3e^3\mathrm{sgn}(bx+a)+15(xe+d)Aa^2be^3\mathrm{sgn}(bx+a)-3Ba^3de^3\mathrm{sgn}(bx+a)-9Aa^2bde^3\mathrm{sgn}(bx+a)+3Aa^3e^4\mathrm{sgn}(bx+a)\right)e^{(-5)}}{15(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*b^3*e^10*sgn(b*x + a) - 12*sqrt(x*e + d)*B*b^3*d*e^1
0*sgn(b*x + a) + 9*sqrt(x*e + d)*B*a*b^2*e^11*sgn(b*x + a) + 3*sqrt(x*e + d
)*A*b^3*e^11*sgn(b*x + a))*e^(-15) - 2/15*(90*(x*e + d)^2*B*b^3*d^2*sgn(b*x
 + a) - 20*(x*e + d)*B*b^3*d^3*sgn(b*x + a) + 3*B*b^3*d^4*sgn(b*x + a) - 13
5*(x*e + d)^2*B*a*b^2*d*e*sgn(b*x + a) - 45*(x*e + d)^2*A*b^3*d*e*sgn(b*x +
 a) + 45*(x*e + d)*B*a*b^2*d^2*e*sgn(b*x + a) + 15*(x*e + d)*A*b^3*d^2*e*sg
n(b*x + a) - 9*B*a*b^2*d^3*e*sgn(b*x + a) - 3*A*b^3*d^3*e*sgn(b*x + a) + 45
```

```
*(x*e + d)^2*B*a^2*b*e^2*sgn(b*x + a) + 45*(x*e + d)^2*A*a*b^2*e^2*sgn(b*x
+ a) - 30*(x*e + d)*B*a^2*b*d*e^2*sgn(b*x + a) - 30*(x*e + d)*A*a*b^2*d*e^2
*sgn(b*x + a) + 9*B*a^2*b*d^2*e^2*sgn(b*x + a) + 9*A*a*b^2*d^2*e^2*sgn(b*x
+ a) + 5*(x*e + d)*B*a^3*e^3*sgn(b*x + a) + 15*(x*e + d)*A*a^2*b*e^3*sgn(b*
x + a) - 3*B*a^3*d*e^3*sgn(b*x + a) - 9*A*a^2*b*d*e^3*sgn(b*x + a) + 3*A*a^
3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 317, normalized size = 1.04

$$-\frac{2\left(-5b^{3}B\,x^{4}e^{4}-15A\,b^{3}e^{4}x^{3}-45Ba\,b^{2}e^{4}x^{3}+40B\,b^{3}d\,e^{3}x^{3}+45Aa\,b^{2}e^{4}x^{2}-90A\,b^{3}d\,e^{3}x^{2}+45B\,a^{2}b\,e^{4}x^{2}-270Ba\,b^{2}d\,e^{3}x^{2}+240B\,b^{3}d^{2}e^{2}x^{2}+15A\,a^{2}b\,e^{4}x+60Aa\,b^{2}d\,e^{3}x-120A\,b^{3}d^{2}e^{2}x+5B\,a^{3}e^{4}x+60B\,a^{2}bd\,e^{3}x-360Ba\,b^{2}d^{2}e^{2}x+320B\,b^{3}d^{3}ex+3A\,a^{3}e^{4}+6A\,a^{2}bd\,e^{3}+24Aa\,b^{2}d^{2}e^{2}-48A\,b^{3}d^{3}e+2B\,a^{3}d\,e^{3}+24B\,a^{2}b\,d^{2}e^{2}-144Ba\,b^{2}d^{3}e+128B\,b^{3}d^{4}\right)\left((bx+a)^{2}\right)^{\frac{3}{2}}}{15\,(ex+d)^{\frac{5}{2}}\,(bx+a)^{3}\,e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-5*B*b^3*e^4*x^4-15*A*b^3*e^4*x^3-45*B*a*b^2*e^4*x^3+4
0*B*b^3*d*e^3*x^3+45*A*a*b^2*e^4*x^2-90*A*b^3*d*e^3*x^2+45*B*a^2*b*e^4*x^2-
270*B*a*b^2*d*e^3*x^2+240*B*b^3*d^2*e^2*x^2+15*A*a^2*b*e^4*x+60*A*a*b^2*d*e
^3*x-120*A*b^3*d^2*e^2*x+5*B*a^3*e^4*x+60*B*a^2*b*d*e^3*x-360*B*a*b^2*d^2*e
^2*x+320*B*b^3*d^3*e*x+3*A*a^3*e^4+6*A*a^2*b*d*e^3+24*A*a*b^2*d^2*e^2-48*A*
b^3*d^3*e+2*B*a^3*d*e^3+24*B*a^2*b*d^2*e^2-144*B*a*b^2*d^3*e+128*B*b^3*d^4)
*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.74, size = 326, normalized size = 1.07

$$\frac{2\left(5\,b^{3}e^{3}x^{3}+16\,b^{3}d^{3}-8\,ab^{2}d^{2}e-2\,a^{2}bde^{2}-a^{3}e^{3}+15\left(2\,b^{3}de^{2}-ab^{2}e^{3}\right)x^{2}+5\left(8\,b^{3}d^{2}e-4\,ab^{2}de^{2}-a^{2}be^{3}\right)x\right)A}{5\left(e^{6}x^{2}+2\,de^{5}x+d^{2}e^{4}\right)\sqrt{ex+d}}+\frac{2\left(5\,b^{3}e^{4}x^{4}-128\,b^{3}d^{4}+144\,ab^{2}d^{3}e-24\,a^{2}bd^{2}e^{2}-2\,a^{3}de^{3}-5\left(8\,b^{3}de^{3}-9\,ab^{2}e^{4}\right)x^{3}-15\left(16\,b^{3}d^{2}e^{2}-18\,ab^{2}de^{3}+3\,a^{2}be^{4}\right)x^{2}-5\left(64\,b^{3}d^{3}e-72\,ab^{2}d^{2}e^{2}+12\,a^{2}bde^{3}+a^{3}e^{4}\right)x\right)B}{15\left(e^{7}x^{2}+2\,de^{6}x+d^{2}e^{5}\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(5*b^3*e^3*x^3 + 16*b^3*d^3 - 8*a*b^2*d^2*e - 2*a^2*b*d*e^2 - a^3*e^3 +
 15*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 5*(8*b^3*d^2*e - 4*a*b^2*d*e^2 - a^2*b*
e^3)*x)*A/((e^6*x^2 + 2*d*e^5*x + d^2*e^4)*sqrt(e*x + d)) + 2/15*(5*b^3*e^4
*x^4 - 128*b^3*d^4 + 144*a*b^2*d^3*e - 24*a^2*b*d^2*e^2 - 2*a^3*d*e^3 - 5*(
8*b^3*d*e^3 - 9*a*b^2*e^4)*x^3 - 15*(16*b^3*d^2*e^2 - 18*a*b^2*d*e^3 + 3*a^
2*b*e^4)*x^2 - 5*(64*b^3*d^3*e - 72*a*b^2*d^2*e^2 + 12*a^2*b*d*e^3 + a^3*e^
4)*x)*B/((e^7*x^2 + 2*d*e^6*x + d^2*e^5)*sqrt(e*x + d))
```

mupad [B] time = 3.08, size = 377, normalized size = 1.24

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{4\,B\,a^3\,d\,e^3+6\,A\,a^3\,e^4+48\,B\,a^2\,b\,d^2\,e^2+12\,A\,a^2\,b\,d\,e^3-288\,B\,a\,b^2\,d^3\,e+48\,A\,a\,b^2\,d^2\,e^2+256\,B\,b^3\,d^4-96\,A\,b^3\,d^3\,e}{15\,b\,e^7}+\frac{2\,x^2\,\left(3\,B\,a^2\,e^2-18\,B\,a\,b\,d\,e+3\,A\,a\,b\,e^2+16\,B\,b^2\,d^2-6\,A\,b^2\,d\,e\right)}{e^5}+\frac{x\,\left(10\,B\,a^3\,e^4+120\,B\,a^2\,b\,d\,e^3+30\,A\,a^2\,b\,e^4-720\,B\,a\,b^2\,d^2\,e^2+120\,A\,a\,b^2\,d\,e^3+640\,B\,b^3\,d^3\,e-240\,A\,b^3\,d^2\,e^2\right)}{15\,b\,e^7}-\frac{2\,b\,x^3\,\left(3\,A\,b\,e+9\,B\,a\,e-8\,B\,b\,d\right)}{3\,e^4}-\frac{2\,B\,b^2\,x^4}{3\,e^3}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(15\,a\,e^7+30\,b\,d\,e^6\right)\,\sqrt{d+e\,x}}{15\,b\,e^7}+\frac{d\,x\,\left(2\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(7/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((6*A*a^3*e^4 + 256*B*b^3*d^4 - 96*A*b^3*
d^3*e + 4*B*a^3*d*e^3 + 48*A*a*b^2*d^2*e^2 + 48*B*a^2*b*d^2*e^2 + 12*A*a^2*
b*d*e^3 - 288*B*a*b^2*d^3*e)/(15*b*e^7) + (2*x^2*(3*B*a^2*e^2 + 16*B*b^2*d^
2 + 3*A*a*b*e^2 - 6*A*b^2*d*e - 18*B*a*b*d*e))/e^5 + (x*(10*B*a^3*e^4 + 30*
A*a^2*b*e^4 + 640*B*b^3*d^3*e - 240*A*b^3*d^2*e^2 - 720*B*a*b^2*d^2*e^2 + 1
20*A*a*b^2*d*e^3 + 120*B*a^2*b*d*e^3))/(15*b*e^7) - (2*b*x^3*(3*A*b*e + 9*B
*a*e - 8*B*b*d))/(3*e^4) - (2*B*b^2*x^4)/(3*e^3)))/(x^3*(d + e*x)^(1/2) + (
a*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(15*a*e^7 + 30*b*d*e^6)*(d + e*x)^(1/
2))/(15*b*e^7) + (d*x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1631 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)^2(-aBe-Abe+2bBd)}{3e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^3}{13e^7(a+bx)}$$

Rubi [A] time = 0.28, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{19/2}(-5aBe-Abe+6bBd)}{19e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}(bd-ae)(-2aBe-Abe+3bBd)}{17e^7(a+bx)}-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)^2(-aBe-Abe+2bBd)}{3e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^3(-aBe-2Abe+3bBd)}{13e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^4(-aBe-5Abe+6bBd)}{11e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^5(Bd-Ae)}{9e^7(a+bx)}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{21/2}}{21e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(9*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (10*b*(b*d - a*
e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(13*e^7*(a + b*x)) - (4*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(
d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (10*b^3*
(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(17*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e
*x)^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*e^7*(a + b*x)) + (2*b^5*B*(d
+ e*x)^(21/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(21*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^{7/2}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^{7/2}}{e^6}+\frac{b^5(bd-ae)^4(-6b}{}\right.}{}\\ &= \frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)}-\frac{2(bd-ae}{}\end{aligned}$$

Mathematica [A] time = 0.31, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{9/2}\left(-153153b^4(d+ex)^5(-5aBe-Abe+6bBd)+855855b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-1939938b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+1119195b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)-264537(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)+323323(bd-ae)^5(Bd-Ae)+138567b^5B(d+ex)^6\right)}{2909907e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(9/2)*(323323*(b*d - a*e)^5*(B*d - A*e) - 26
4537*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 1119195*b*(b*d -
 a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 1939938*b^2*(b*d - a*e)^2
*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3 + 855855*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*(d + e*x)^4 - 153153*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d +
e*x)^5 + 138567*b^5*B*(d + e*x)^6))/(2909907*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 55.80, size = 812, normalized size = 1.80

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] (2*(d + e*x)^(9/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(323323*b^5*B*d^6 - 323323*A*b
^5*d^5*e - 1616615*a*b^4*B*d^5*e + 1616615*a*A*b^4*d^4*e^2 + 3233230*a^2*b^
3*B*d^4*e^2 - 3233230*a^2*A*b^3*d^3*e^3 - 3233230*a^3*b^2*B*d^3*e^3 + 32332
30*a^3*A*b^2*d^2*e^4 + 1616615*a^4*b*B*d^2*e^4 - 1616615*a^4*A*b*d*e^5 - 32
3323*a^5*B*d*e^5 + 323323*a^5*A*e^6 - 1587222*b^5*B*d^5*(d + e*x) + 1322685
*A*b^5*d^4*e*(d + e*x) + 6613425*a*b^4*B*d^4*e*(d + e*x) - 5290740*a*A*b^4*
d^3*e^2*(d + e*x) - 10581480*a^2*b^3*B*d^3*e^2*(d + e*x) + 7936110*a^2*A*b^
3*d^2*e^3*(d + e*x) + 7936110*a^3*b^2*B*d^2*e^3*(d + e*x) - 5290740*a^3*A*b
^2*d*e^4*(d + e*x) - 2645370*a^4*b*B*d*e^4*(d + e*x) + 1322685*a^4*A*b*e^5*
(d + e*x) + 264537*a^5*B*e^5*(d + e*x) + 3357585*b^5*B*d^4*(d + e*x)^2 - 22
38390*A*b^5*d^3*e*(d + e*x)^2 - 11191950*a*b^4*B*d^3*e*(d + e*x)^2 + 671517
0*a*A*b^4*d^2*e^2*(d + e*x)^2 + 13430340*a^2*b^3*B*d^2*e^2*(d + e*x)^2 - 67
15170*a^2*A*b^3*d*e^3*(d + e*x)^2 - 6715170*a^3*b^2*B*d*e^3*(d + e*x)^2 + 2
238390*a^3*A*b^2*e^4*(d + e*x)^2 + 1119195*a^4*b*B*e^4*(d + e*x)^2 - 387987
6*b^5*B*d^3*(d + e*x)^3 + 1939938*A*b^5*d^2*e*(d + e*x)^3 + 9699690*a*b^4*B
*d^2*e*(d + e*x)^3 - 3879876*a*A*b^4*d*e^2*(d + e*x)^3 - 7759752*a^2*b^3*B*
d*e^2*(d + e*x)^3 + 1939938*a^2*A*b^3*e^3*(d + e*x)^3 + 1939938*a^3*b^2*B*e
^3*(d + e*x)^3 + 2567565*b^5*B*d^2*(d + e*x)^4 - 855855*A*b^5*d*e*(d + e*x)
^4 - 4279275*a*b^4*B*d*e*(d + e*x)^4 + 855855*a*A*b^4*e^2*(d + e*x)^4 + 171
1710*a^2*b^3*B*e^2*(d + e*x)^4 - 918918*b^5*B*d*(d + e*x)^5 + 153153*A*b^5*
e*(d + e*x)^5 + 765765*a*b^4*B*e*(d + e*x)^5 + 138567*b^5*B*(d + e*x)^6))/(
2909907*e^6*(a*e + b*e*x))
```

fricas [B] time = 0.47, size = 1137, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/2909907*(138567*B*b^5*e^10*x^10 + 1024*B*b^5*d^10 + 323323*A*a^5*d^4*e^6
- 1792*(5*B*a*b^4 + A*b^5)*d^9*e + 17024*(2*B*a^2*b^3 + A*a*b^4)*d^8*e^2 -
72352*(B*a^3*b^2 + A*a^2*b^3)*d^7*e^3 + 90440*(B*a^4*b + 2*A*a^3*b^2)*d^6*e
^4 - 58786*(B*a^5 + 5*A*a^4*b)*d^5*e^5 + 7293*(64*B*b^5*d*e^9 + 21*(5*B*a*b
^4 + A*b^5)*e^10)*x^9 + 1287*(414*B*b^5*d^2*e^8 + 406*(5*B*a*b^4 + A*b^5)*d
*e^9 + 665*(2*B*a^2*b^3 + A*a*b^4)*e^10)*x^8 + 858*(242*B*b^5*d^3*e^7 + 707
*(5*B*a*b^4 + A*b^5)*d^2*e^8 + 3458*(2*B*a^2*b^3 + A*a*b^4)*d*e^9 + 2261*(B
*a^3*b^2 + A*a^2*b^3)*e^10)*x^7 + 231*(B*b^5*d^4*e^6 + 1048*(5*B*a*b^4 + A*
b^5)*d^3*e^7 + 15238*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^8 + 29716*(B*a^3*b^2 + A
*a^2*b^3)*d*e^9 + 4845*(B*a^4*b + 2*A*a^3*b^2)*e^10)*x^6 - 63*(4*B*b^5*d^5*
e^5 - 7*(5*B*a*b^4 + A*b^5)*d^4*e^6 - 23028*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^7
```

```
 - 133076*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^8 - 64600*(B*a^4*b + 2*A*a^3*b^2)*d
*e^9 - 4199*(B*a^5 + 5*A*a^4*b)*e^10)*x^5 + 7*(40*B*b^5*d^6*e^4 + 46189*A*a
^5*e^10 - 70*(5*B*a*b^4 + A*b^5)*d^5*e^5 + 665*(2*B*a^2*b^3 + A*a*b^4)*d^4*
e^6 + 516800*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^7 + 739670*(B*a^4*b + 2*A*a^3*b^
2)*d^2*e^8 + 142766*(B*a^5 + 5*A*a^4*b)*d*e^9)*x^4 - 2*(160*B*b^5*d^7*e^3 -
 646646*A*a^5*d*e^9 - 280*(5*B*a*b^4 + A*b^5)*d^6*e^4 + 2660*(2*B*a^2*b^3 +
 A*a*b^4)*d^5*e^5 - 11305*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^6 - 1198330*(B*a^4*
b + 2*A*a^3*b^2)*d^3*e^7 - 676039*(B*a^5 + 5*A*a^4*b)*d^2*e^8)*x^3 + 3*(128
*B*b^5*d^8*e^2 + 646646*A*a^5*d^2*e^8 - 224*(5*B*a*b^4 + A*b^5)*d^7*e^3 + 2
128*(2*B*a^2*b^3 + A*a*b^4)*d^6*e^4 - 9044*(B*a^3*b^2 + A*a^2*b^3)*d^5*e^5
+ 11305*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^6 + 235144*(B*a^5 + 5*A*a^4*b)*d^3*e^
7)*x^2 - (512*B*b^5*d^9*e - 1293292*A*a^5*d^3*e^7 - 896*(5*B*a*b^4 + A*b^5)
*d^8*e^2 + 8512*(2*B*a^2*b^3 + A*a*b^4)*d^7*e^3 - 36176*(B*a^3*b^2 + A*a^2*
b^3)*d^6*e^4 + 45220*(B*a^4*b + 2*A*a^3*b^2)*d^5*e^5 - 29393*(B*a^5 + 5*A*a
^4*b)*d^4*e^6)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.78, size = 5468, normalized size = 12.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d^4*e^(-1)*
sgn(b*x + a) + 24249225*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d^4*e
^(-1)*sgn(b*x + a) + 4849845*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^4*b*d^4*e^(-2)*sgn(b*x + a) + 9699690*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d^4*e^(-2)*s
gn(b*x + a) + 4157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
 d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b^2*d^4*e^(-3)*sgn(b*x + a) + 4
157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a^2*b^3*d^4*e^(-3)*sgn(b*x + a) + 461890*(35*(x*e
+ d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d
)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*d^4*e^(-4)*sgn(b*x + a) + 23
0945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^4*d^4*e^(-4)*sgn(b
*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*B*a*b^4*d^4*e^(-5)*sgn(b*x + a) + 20995*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*d^4*e^(-5)*s
gn(b*x + a) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*d^4*e^(-6)*sgn(b*x
 + a) + 3879876*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*B*a^5*d^3*e^(-1)*sgn(b*x + a) + 19399380*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b*d^3*e^(-1)*sgn(b*x + a) + 83
14020*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*B*a^4*b*d^3*e^(-2)*sgn(b*x + a) + 16628040*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^3*b^2*d^3*e^(-2)*sgn(b*x + a) + 1847560*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*B*a^3*b^2*d^3*e^(-3)*sgn(b*x + a) + 1847560*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^3*d^3*e^(-3)*sgn(b*x + a) + 839
800*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
- 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d
^5)*B*a^2*b^3*d^3*e^(-4)*sgn(b*x + a) + 419900*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
```

5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^4*d^3*e^(-4)*sgn(b*x + a) + 96900*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a*b^4*d^3*e^(-5)*sgn(b*x + a) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^5*d^3*e^(-5)*sgn(b*x + a) + 9044*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^5*d^3*e^(-6)*sgn(b*x + a) + 14549535*sqrt(x*e + d)*A*a^5*d^4*sgn(b*x + a) + 19399380*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*d^3*sgn(b*x + a) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*d^2*e^(-1)*sgn(b*x + a) + 12471030*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b*d^2*e^(-1)*sgn(b*x + a) + 1385670*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b*d^2*e^(-2)*sgn(b*x + a) + 2771340*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^2*d^2*e^(-2)*sgn(b*x + a) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^2*d^2*e^(-3)*sgn(b*x + a) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^3*d^2*e^(-3)*sgn(b*x + a) + 290700*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^3*d^2*e^(-4)*sgn(b*x + a) + 145350*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a*b^4*d^2*e^(-4)*sgn(b*x + a) + 67830*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^4*d^2*e^(-5)*sgn(b*x + a) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^5*d^2*e^(-5)*sgn(b*x + a) + 798*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^5*d^2*e^(-6)*sgn(b*x + a) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*d^2*sgn(b*x + a) + 184756*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^5*d*e^(-1)*sgn(b*x + a) + 923780*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4*b*d*e^(-1)*sgn(b*x + a) + 419900*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b*d*e^(-2)*sgn(b*x + a) + 839800*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^2*d*e^(-2)*sgn(b*x + a) + 193800*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^3*b^2*d*e^(-3)*sgn(b*x + a) + 193800*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^3*d*e^(-3)*sgn(b*x + a) + 90440*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1228

5*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) + 45220*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 2660*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^4*d*e^(-5)*sgn(b*x + a) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^5*d*e^(-5)*sgn(b*x + a) + 252*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*b^5*d*e^(-6)*sgn(b*x + a) + 1662804*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*d*sgn(b*x + a) + 20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^5*e^(-1)*sgn(b*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^4*b*e^(-1)*sgn(b*x + a) + 24225*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^4*b*e^(-2)*sgn(b*x + a) + 48450*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 22610*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 22610*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 1330*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a^2*b^3*e^(-4)*sgn(b*x + a) + 665*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*a*b^4*e^(-4)*sgn(b*x + a) + 315*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*a*b^4*e^(-5)*sgn(b*x + a) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*A*b^5*e^(-5)*sgn(b*x + a) + 15*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*B*b^5*e^(-6)*sgn(b*x + a) + 46189*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d

```
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*A*a^5*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 689, normalized size = 1.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*(e*x+d)^(9/2)*(138567*B*b^5*e^6*x^6+153153*A*b^5*e^6*x^5+765765*B
*a*b^4*e^6*x^5-87516*B*b^5*d*e^5*x^5+855855*A*a*b^4*e^6*x^4-90090*A*b^5*d*e
^5*x^4+1711710*B*a^2*b^3*e^6*x^4-450450*B*a*b^4*d*e^5*x^4+51480*B*b^5*d^2*e
^4*x^4+1939938*A*a^2*b^3*e^6*x^3-456456*A*a*b^4*d*e^5*x^3+48048*A*b^5*d^2*e
^4*x^3+1939938*B*a^3*b^2*e^6*x^3-912912*B*a^2*b^3*d*e^5*x^3+240240*B*a*b^4*
d^2*e^4*x^3-27456*B*b^5*d^3*e^3*x^3+2238390*A*a^3*b^2*e^6*x^2-895356*A*a^2*
b^3*d*e^5*x^2+210672*A*a*b^4*d^2*e^4*x^2-22176*A*b^5*d^3*e^3*x^2+1119195*B*
a^4*b*e^6*x^2-895356*B*a^3*b^2*d*e^5*x^2+421344*B*a^2*b^3*d^2*e^4*x^2-11088
0*B*a*b^4*d^3*e^3*x^2+12672*B*b^5*d^4*e^2*x^2+1322685*A*a^4*b*e^6*x-813960*
A*a^3*b^2*d*e^5*x+325584*A*a^2*b^3*d^2*e^4*x-76608*A*a*b^4*d^3*e^3*x+8064*A
*b^5*d^4*e^2*x+264537*B*a^5*e^6*x-406980*B*a^4*b*d*e^5*x+325584*B*a^3*b^2*d
^2*e^4*x-153216*B*a^2*b^3*d^3*e^3*x+40320*B*a*b^4*d^4*e^2*x-4608*B*b^5*d^5*
e*x+323323*A*a^5*e^6-293930*A*a^4*b*d*e^5+180880*A*a^3*b^2*d^2*e^4-72352*A*
a^2*b^3*d^3*e^3+17024*A*a*b^4*d^4*e^2-1792*A*b^5*d^5*e-58786*B*a^5*d*e^5+90
440*B*a^4*b*d^2*e^4-72352*B*a^3*b^2*d^3*e^3+34048*B*a^2*b^3*d^4*e^2-8960*B*
a*b^4*d^5*e+1024*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.69, size = 1241, normalized size = 2.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/415701*(21879*b^5*e^9*x^9 - 256*b^5*d^9 + 2432*a*b^4*d^8*e - 10336*a^2*b^
3*d^7*e^2 + 25840*a^3*b^2*d^6*e^3 - 41990*a^4*b*d^5*e^4 + 46189*a^5*d^4*e^5
 + 1287*(58*b^5*d*e^8 + 95*a*b^4*e^9)*x^8 + 858*(101*b^5*d^2*e^7 + 494*a*b^
4*d*e^8 + 323*a^2*b^3*e^9)*x^7 + 66*(524*b^5*d^3*e^6 + 7619*a*b^4*d^2*e^7 +
 14858*a^2*b^3*d*e^8 + 4845*a^3*b^2*e^9)*x^6 + 9*(7*b^5*d^4*e^5 + 23028*a*b
^4*d^3*e^6 + 133076*a^2*b^3*d^2*e^7 + 129200*a^3*b^2*d*e^8 + 20995*a^4*b*e^
9)*x^5 - (70*b^5*d^5*e^4 - 665*a*b^4*d^4*e^5 - 516800*a^2*b^3*d^3*e^6 - 147
9340*a^3*b^2*d^2*e^7 - 713830*a^4*b*d*e^8 - 46189*a^5*e^9)*x^4 + 2*(40*b^5*
d^6*e^3 - 380*a*b^4*d^5*e^4 + 1615*a^2*b^3*d^4*e^5 + 342380*a^3*b^2*d^3*e^6
 + 482885*a^4*b*d^2*e^7 + 92378*a^5*d*e^8)*x^3 - 6*(16*b^5*d^7*e^2 - 152*a*
b^4*d^6*e^3 + 646*a^2*b^3*d^5*e^4 - 1615*a^3*b^2*d^4*e^5 - 83980*a^4*b*d^3*
e^6 - 46189*a^5*d^2*e^7)*x^2 + (128*b^5*d^8*e - 1216*a*b^4*d^7*e^2 + 5168*a
^2*b^3*d^6*e^3 - 12920*a^3*b^2*d^5*e^4 + 20995*a^4*b*d^4*e^5 + 184756*a^5*d
^3*e^6)*x)*sqrt(e*x + d)*A/e^6 + 2/2909907*(138567*b^5*e^10*x^10 + 1024*b^5
*d^10 - 8960*a*b^4*d^9*e + 34048*a^2*b^3*d^8*e^2 - 72352*a^3*b^2*d^7*e^3 +
90440*a^4*b*d^6*e^4 - 58786*a^5*d^5*e^5 + 7293*(64*b^5*d*e^9 + 105*a*b^4*e^
10)*x^9 + 2574*(207*b^5*d^2*e^8 + 1015*a*b^4*d*e^9 + 665*a^2*b^3*e^10)*x^8
+ 858*(242*b^5*d^3*e^7 + 3535*a*b^4*d^2*e^8 + 6916*a^2*b^3*d*e^9 + 2261*a^3
*b^2*e^10)*x^7 + 231*(b^5*d^4*e^6 + 5240*a*b^4*d^3*e^7 + 30476*a^2*b^3*d^2*
e^8 + 29716*a^3*b^2*d*e^9 + 4845*a^4*b*e^10)*x^6 - 63*(4*b^5*d^5*e^5 - 35*a
*b^4*d^4*e^6 - 46056*a^2*b^3*d^3*e^7 - 133076*a^3*b^2*d^2*e^8 - 64600*a^4*b
*d*e^9 - 4199*a^5*e^10)*x^5 + 14*(20*b^5*d^6*e^4 - 175*a*b^4*d^5*e^5 + 665*
a^2*b^3*d^4*e^6 + 258400*a^3*b^2*d^3*e^7 + 369835*a^4*b*d^2*e^8 + 71383*a^5
*d*e^9)*x^4 - 2*(160*b^5*d^7*e^3 - 1400*a*b^4*d^6*e^4 + 5320*a^2*b^3*d^5*e^
5 - 11305*a^3*b^2*d^4*e^6 - 1198330*a^4*b*d^3*e^7 - 676039*a^5*d^2*e^8)*x^3
```

```
 + 3*(128*b^5*d^8*e^2 - 1120*a*b^4*d^7*e^3 + 4256*a^2*b^3*d^6*e^4 - 9044*a^
3*b^2*d^5*e^5 + 11305*a^4*b*d^4*e^6 + 235144*a^5*d^3*e^7)*x^2 - (512*b^5*d^
9*e - 4480*a*b^4*d^8*e^2 + 17024*a^2*b^3*d^7*e^3 - 36176*a^3*b^2*d^6*e^4 +
45220*a^4*b*d^5*e^5 - 29393*a^5*d^4*e^6)*x)*sqrt(e*x + d)*B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,(d + e\,x)^{7/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1632 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^2(-aBe-Abe+2bBd)}{13e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-}{11e^7(a+bx)}$$

Rubi [A] time = 0.22, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}(-5aBe-Abe+6bBd)}{17e^7(a+bx)}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)(-2aBe-Abe+3bBd)}{3e^7(a+bx)}-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^2(-aBe-Abe+2bBd)}{13e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^3(-aBe-2Abe+3bBd)}{11e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^4(-aBe-5Abe+6bBd)}{9e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^5(Bd-Ae)}{7e^7(a+bx)}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{19/2}}{19e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (10*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(11*e^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d
 + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (2*b^3*(
b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(3*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x
)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x)) + (2*b^5*B*(d +
e*x)^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^{5/2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^{5/2}}{e^6}+\frac{b^5(bd-ae)^4(}{}\right.}{}$$

$$=\frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)}-\frac{2(bd-}{}$$

Mathematica [A] time = 0.24, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\left(-171171b^4(d+ex)^5(-5aBe-Abe+6bBd)+969969b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-2238390b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+1322685b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)-323323(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)+415701(bd-ae)^5(Bd-Ae)+153153b^5B(d+ex)^6\right)}{2909907e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(415701*(b*d - a*e)^5*(B*d - A*e) - 32
3323*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 1322685*b*(b*d -
 a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 2238390*b^2*(b*d - a*e)^2
*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3 + 969969*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*(d + e*x)^4 - 171171*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d +
e*x)^5 + 153153*b^5*B*(d + e*x)^6))/(2909907*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 55.03, size = 812, normalized size = 1.80

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] (2*(d + e*x)^(7/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(415701*b^5*B*d^6 - 415701*A*b
^5*d^5*e - 2078505*a*b^4*B*d^5*e + 2078505*a*A*b^4*d^4*e^2 + 4157010*a^2*b^
3*B*d^4*e^2 - 4157010*a^2*A*b^3*d^3*e^3 - 4157010*a^3*b^2*B*d^3*e^3 + 41570
10*a^3*A*b^2*d^2*e^4 + 2078505*a^4*b*B*d^2*e^4 - 2078505*a^4*A*b*d*e^5 - 41
5701*a^5*B*d*e^5 + 415701*a^5*A*e^6 - 1939938*b^5*B*d^5*(d + e*x) + 1616615
*A*b^5*d^4*e*(d + e*x) + 8083075*a*b^4*B*d^4*e*(d + e*x) - 6466460*a*A*b^4*
d^3*e^2*(d + e*x) - 12932920*a^2*b^3*B*d^3*e^2*(d + e*x) + 9699690*a^2*A*b^
3*d^2*e^3*(d + e*x) + 9699690*a^3*b^2*B*d^2*e^3*(d + e*x) - 6466460*a^3*A*b
^2*d*e^4*(d + e*x) - 3233230*a^4*b*B*d*e^4*(d + e*x) + 1616615*a^4*A*b*e^5*
(d + e*x) + 323323*a^5*B*e^5*(d + e*x) + 3968055*b^5*B*d^4*(d + e*x)^2 - 26
45370*A*b^5*d^3*e*(d + e*x)^2 - 13226850*a*b^4*B*d^3*e*(d + e*x)^2 + 793611
0*a*A*b^4*d^2*e^2*(d + e*x)^2 + 15872220*a^2*b^3*B*d^2*e^2*(d + e*x)^2 - 79
36110*a^2*A*b^3*d*e^3*(d + e*x)^2 - 7936110*a^3*b^2*B*d*e^3*(d + e*x)^2 + 2
645370*a^3*A*b^2*e^4*(d + e*x)^2 + 1322685*a^4*b*B*e^4*(d + e*x)^2 - 447678
0*b^5*B*d^3*(d + e*x)^3 + 2238390*A*b^5*d^2*e*(d + e*x)^3 + 11191950*a*b^4*
B*d^2*e*(d + e*x)^3 - 4476780*a*A*b^4*d*e^2*(d + e*x)^3 - 8953560*a^2*b^3*B
*d*e^2*(d + e*x)^3 + 2238390*a^2*A*b^3*e^3*(d + e*x)^3 + 2238390*a^3*b^2*B*
e^3*(d + e*x)^3 + 2909907*b^5*B*d^2*(d + e*x)^4 - 969969*A*b^5*d*e*(d + e*x
)^4 - 4849845*a*b^4*B*d*e*(d + e*x)^4 + 969969*a*A*b^4*e^2*(d + e*x)^4 + 19
39938*a^2*b^3*B*e^2*(d + e*x)^4 - 1027026*b^5*B*d*(d + e*x)^5 + 171171*A*b^
5*e*(d + e*x)^5 + 855855*a*b^4*B*e*(d + e*x)^5 + 153153*b^5*B*(d + e*x)^6))
/(2909907*e^6*(a*e + b*e*x))
```

fricas [B] time = 0.45, size = 993, normalized size = 2.20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/2909907*(153153*B*b^5*e^9*x^9 + 3072*B*b^5*d^9 + 415701*A*a^5*d^3*e^6 - 4
864*(5*B*a*b^4 + A*b^5)*d^8*e + 41344*(2*B*a^2*b^3 + A*a*b^4)*d^7*e^2 - 155
040*(B*a^3*b^2 + A*a^2*b^3)*d^6*e^3 + 167960*(B*a^4*b + 2*A*a^3*b^2)*d^5*e^
4 - 92378*(B*a^5 + 5*A*a^4*b)*d^4*e^5 + 9009*(39*B*b^5*d*e^8 + 19*(5*B*a*b^
4 + A*b^5)*e^9)*x^8 + 3003*(69*B*b^5*d^2*e^7 + 133*(5*B*a*b^4 + A*b^5)*d*e^
8 + 323*(2*B*a^2*b^3 + A*a*b^4)*e^9)*x^7 + 231*(3*B*b^5*d^3*e^6 + 1045*(5*B
*a*b^4 + A*b^5)*d^2*e^7 + 10013*(2*B*a^2*b^3 + A*a*b^4)*d*e^8 + 9690*(B*a^3
*b^2 + A*a^2*b^3)*e^9)*x^6 - 63*(12*B*b^5*d^4*e^5 - 19*(5*B*a*b^4 + A*b^5)*
d^3*e^6 - 22933*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^7 - 87210*(B*a^3*b^2 + A*a^2*
b^3)*d*e^8 - 20995*(B*a^4*b + 2*A*a^3*b^2)*e^9)*x^5 + 7*(120*B*b^5*d^5*e^4
```

```
- 190*(5*B*a*b^4 + A*b^5)*d^4*e^5 + 1615*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^6 +
513570*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^7 + 482885*(B*a^4*b + 2*A*a^3*b^2)*d*e
^8 + 46189*(B*a^5 + 5*A*a^4*b)*e^9)*x^4 - (960*B*b^5*d^6*e^3 - 415701*A*a^5
*e^9 - 1520*(5*B*a*b^4 + A*b^5)*d^5*e^4 + 12920*(2*B*a^2*b^3 + A*a*b^4)*d^4
*e^5 - 48450*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^6 - 2372435*(B*a^4*b + 2*A*a^3*b
^2)*d^2*e^7 - 877591*(B*a^5 + 5*A*a^4*b)*d*e^8)*x^3 + 3*(384*B*b^5*d^7*e^2
+ 415701*A*a^5*d*e^8 - 608*(5*B*a*b^4 + A*b^5)*d^6*e^3 + 5168*(2*B*a^2*b^3
+ A*a*b^4)*d^5*e^4 - 19380*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^5 + 20995*(B*a^4*b
 + 2*A*a^3*b^2)*d^3*e^6 + 230945*(B*a^5 + 5*A*a^4*b)*d^2*e^7)*x^2 - (1536*B
*b^5*d^8*e - 1247103*A*a^5*d^2*e^7 - 2432*(5*B*a*b^4 + A*b^5)*d^7*e^2 + 206
72*(2*B*a^2*b^3 + A*a*b^4)*d^6*e^3 - 77520*(B*a^3*b^2 + A*a^2*b^3)*d^5*e^4
+ 83980*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^5 - 46189*(B*a^5 + 5*A*a^4*b)*d^3*e^6
)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.62, size = 4050, normalized size = 8.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d^3*e^(-1)*
sgn(b*x + a) + 24249225*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d^3*e
^(-1)*sgn(b*x + a) + 4849845*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^4*b*d^3*e^(-2)*sgn(b*x + a) + 9699690*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d^3*e^(-2)*s
gn(b*x + a) + 4157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
 d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b^2*d^3*e^(-3)*sgn(b*x + a) + 4
157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a^2*b^3*d^3*e^(-3)*sgn(b*x + a) + 461890*(35*(x*e
+ d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d
)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*d^3*e^(-4)*sgn(b*x + a) + 23
0945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^4*d^3*e^(-4)*sgn(b
*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*B*a*b^4*d^3*e^(-5)*sgn(b*x + a) + 20995*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*d^3*e^(-5)*s
gn(b*x + a) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*d^3*e^(-6)*sgn(b*x
 + a) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*B*a^5*d^2*e^(-1)*sgn(b*x + a) + 14549535*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b*d^2*e^(-1)*sgn(b*x + a) + 62
35515*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*B*a^4*b*d^2*e^(-2)*sgn(b*x + a) + 12471030*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^3*b^2*d^2*e^(-2)*sgn(b*x + a) + 1385670*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*B*a^3*b^2*d^2*e^(-3)*sgn(b*x + a) + 1385670*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^3*d^2*e^(-3)*sgn(b*x + a) + 629
850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
- 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d
^5)*B*a^2*b^3*d^2*e^(-4)*sgn(b*x + a) + 314925*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^4*d^2*e^(-4)*sgn(b*x +
 a) + 72675*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d
```

)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x
*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a*b^4*d^2*e^(-5)*sgn(b*x + a)
 + 14535*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(
9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
+ d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^5*d^2*e^(-5)*sgn(b*x + a) + 67
83*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
d^2 - 25025(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^5*d
^2*e^(-6)*sgn(b*x + a) + 14549535*sqrt(x*e + d)*A*a^5*d^3*sgn(b*x + a) + 14
549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*d^2*sgn(b*x + a) + 12471
03*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*a^5*d*e^(-1)*sgn(b*x + a) + 6235515*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*
a^4*b*d*e^(-1)*sgn(b*x + a) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*B*a^4*b*d*e^(-2)*sgn(b*x + a) + 1385670*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*A*a^3*b^2*d*e^(-2)*sgn(b*x + a) + 629850*(63*(x*e + d)^(
11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5
/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^2*d*e^(
-3)*sgn(b*x + a) + 629850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 99
0*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^3*d*e^(-3)*sgn(b*x + a) + 145350*(231*(x*
e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(
x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
3003*sqrt(x*e + d)*d^6)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) + 72675*(231*(x*e +
 d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
 + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 300
3*sqrt(x*e + d)*d^6)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 33915*(429*(x*e + d)^(
15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e +
 d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 150
15*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^4*d*e^(-5)*sgn(b*x +
 a) + 6783*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d
)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 2702
7*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)
*A*b^5*d*e^(-5)*sgn(b*x + a) + 399*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)
^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850
850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/
2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^5*d*e^(
-6)*sgn(b*x + a) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*s
qrt(x*e + d)*d^2)*A*a^5*d*sgn(b*x + a) + 46189*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*B*a^5*e^(-1)*sgn(b*x + a) + 230945*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*A*a^4*b*e^(-1)*sgn(b*x + a) + 104975*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b*e^(-2)
*sgn(b*x + a) + 209950*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(
x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
693*sqrt(x*e + d)*d^5)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 48450*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 48450*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 22610*(429*(x*e + d)^(15/2) -
3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2
)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e
+ d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^2*b^3*e^(-4)*sgn(b*x + a) + 11

```
305*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2
)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e
+ d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^
4*e^(-4)*sgn(b*x + a) + 665*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)
*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*
e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6
- 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^4*e^(-5)*sgn
(b*x + a) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*
(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)
*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*
e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^5*e^(-5)*sgn(b*x + a) + 63
*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15
/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 323
3230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^
(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*b^5*e^
(-6)*sgn(b*x + a) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 689, normalized size = 1.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(153153*B*b^5*e^6*x^6+171171*A*b^5*e^6*x^5+855855*B
*a*b^4*e^6*x^5-108108*B*b^5*d*e^5*x^5+969969*A*a*b^4*e^6*x^4-114114*A*b^5*d
*e^5*x^4+1939938*B*a^2*b^3*e^6*x^4-570570*B*a*b^4*d*e^5*x^4+72072*B*b^5*d^2
*e^4*x^4+2238390*A*a^2*b^3*e^6*x^3-596904*A*a*b^4*d*e^5*x^3+70224*A*b^5*d^2
*e^4*x^3+2238390*B*a^3*b^2*e^6*x^3-1193808*B*a^2*b^3*d*e^5*x^3+351120*B*a*b
^4*d^2*e^4*x^3-44352*B*b^5*d^3*e^3*x^3+2645370*A*a^3*b^2*e^6*x^2-1220940*A*
a^2*b^3*d*e^5*x^2+325584*A*a*b^4*d^2*e^4*x^2-38304*A*b^5*d^3*e^3*x^2+132268
5*B*a^4*b*e^6*x^2-1220940*B*a^3*b^2*d*e^5*x^2+651168*B*a^2*b^3*d^2*e^4*x^2-
191520*B*a*b^4*d^3*e^3*x^2+24192*B*b^5*d^4*e^2*x^2+1616615*A*a^4*b*e^6*x-11
75720*A*a^3*b^2*d*e^5*x+542640*A*a^2*b^3*d^2*e^4*x-144704*A*a*b^4*d^3*e^3*x
+17024*A*b^5*d^4*e^2*x+323323*B*a^5*e^6*x-587860*B*a^4*b*d*e^5*x+542640*B*a
^3*b^2*d^2*e^4*x-289408*B*a^2*b^3*d^3*e^3*x+85120*B*a*b^4*d^4*e^2*x-10752*B
*b^5*d^5*e*x+415701*A*a^5*e^6-461890*A*a^4*b*d*e^5+335920*A*a^3*b^2*d^2*e^4
-155040*A*a^2*b^3*d^3*e^3+41344*A*a*b^4*d^4*e^2-4864*A*b^5*d^5*e-92378*B*a^
5*d*e^5+167960*B*a^4*b*d^2*e^4-155040*B*a^3*b^2*d^3*e^3+82688*B*a^2*b^3*d^4
*e^2-24320*B*a*b^4*d^5*e+3072*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.85, size = 1080, normalized size = 2.39

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/153153*(9009*b^5*e^8*x^8 - 256*b^5*d^8 + 2176*a*b^4*d^7*e - 8160*a^2*b^3*
d^6*e^2 + 17680*a^3*b^2*d^5*e^3 - 24310*a^4*b*d^4*e^4 + 21879*a^5*d^3*e^5 +
 3003*(7*b^5*d*e^7 + 17*a*b^4*e^8)*x^7 + 231*(55*b^5*d^2*e^6 + 527*a*b^4*d*
e^7 + 510*a^2*b^3*e^8)*x^6 + 63*(b^5*d^3*e^5 + 1207*a*b^4*d^2*e^6 + 4590*a^
2*b^3*d*e^7 + 2210*a^3*b^2*e^8)*x^5 - 35*(2*b^5*d^4*e^4 - 17*a*b^4*d^3*e^5
- 5406*a^2*b^3*d^2*e^6 - 10166*a^3*b^2*d*e^7 - 2431*a^4*b*e^8)*x^4 + (80*b^
5*d^5*e^3 - 680*a*b^4*d^4*e^4 + 2550*a^2*b^3*d^3*e^5 + 249730*a^3*b^2*d^2*e
^6 + 230945*a^4*b*d*e^7 + 21879*a^5*e^8)*x^3 - 3*(32*b^5*d^6*e^2 - 272*a*b^
4*d^5*e^3 + 1020*a^2*b^3*d^4*e^4 - 2210*a^3*b^2*d^3*e^5 - 60775*a^4*b*d^2*e
```

```
^6 - 21879*a^5*d*e^7)*x^2 + (128*b^5*d^7*e - 1088*a*b^4*d^6*e^2 + 4080*a^2*
b^3*d^5*e^3 - 8840*a^3*b^2*d^4*e^4 + 12155*a^4*b*d^3*e^5 + 65637*a^5*d^2*e^
6)*x)*sqrt(e*x + d)*A/e^6 + 2/2909907*(153153*b^5*e^9*x^9 + 3072*b^5*d^9 -
24320*a*b^4*d^8*e + 82688*a^2*b^3*d^7*e^2 - 155040*a^3*b^2*d^6*e^3 + 167960
*a^4*b*d^5*e^4 - 92378*a^5*d^4*e^5 + 9009*(39*b^5*d*e^8 + 95*a*b^4*e^9)*x^8
 + 3003*(69*b^5*d^2*e^7 + 665*a*b^4*d*e^8 + 646*a^2*b^3*e^9)*x^7 + 231*(3*b
^5*d^3*e^6 + 5225*a*b^4*d^2*e^7 + 20026*a^2*b^3*d*e^8 + 9690*a^3*b^2*e^9)*x
^6 - 63*(12*b^5*d^4*e^5 - 95*a*b^4*d^3*e^6 - 45866*a^2*b^3*d^2*e^7 - 87210*
a^3*b^2*d*e^8 - 20995*a^4*b*e^9)*x^5 + 7*(120*b^5*d^5*e^4 - 950*a*b^4*d^4*e
^5 + 3230*a^2*b^3*d^3*e^6 + 513570*a^3*b^2*d^2*e^7 + 482885*a^4*b*d*e^8 + 4
6189*a^5*e^9)*x^4 - (960*b^5*d^6*e^3 - 7600*a*b^4*d^5*e^4 + 25840*a^2*b^3*d
^4*e^5 - 48450*a^3*b^2*d^3*e^6 - 2372435*a^4*b*d^2*e^7 - 877591*a^5*d*e^8)*
x^3 + 3*(384*b^5*d^7*e^2 - 3040*a*b^4*d^6*e^3 + 10336*a^2*b^3*d^5*e^4 - 193
80*a^3*b^2*d^4*e^5 + 20995*a^4*b*d^3*e^6 + 230945*a^5*d^2*e^7)*x^2 - (1536*
b^5*d^8*e - 12160*a*b^4*d^7*e^2 + 41344*a^2*b^3*d^6*e^3 - 77520*a^3*b^2*d^5
*e^4 + 83980*a^4*b*d^4*e^5 - 46189*a^5*d^3*e^6)*x)*sqrt(e*x + d)*B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1633 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2(-aBe-Abe+2bBd)}{11e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-}{9e^7(a+bx)}$$

Rubi [A] time = 0.22, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(-5aBe-Abe+6bBd)}{15e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)(-2aBe-Abe+3bBd)}{13e^7(a+bx)}-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2(-aBe-Abe+2bBd)}{11e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^3(-aBe-2Abe+3bBd)}{9e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^4(-aBe-5Abe+6bBd)}{7e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^5(Bd-Ae)}{5e^7(a+bx)}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}}{17e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (10*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(9*e^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d +
 e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (10*b^3*(b
*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(13*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x
)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x)) + (2*b^5*B*(d +
e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^{3/2}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Big(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^{3/2}}{e^6}+\frac{b^5(bd-ae)^4(}{}\\
&= \frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)}-\frac{2(bd-}{}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\left(-51051b^4(d+ex)^5(-5aBe-Abe+6bBd)+294525b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-696150b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+425425b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)-109395(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)+153153(bd-ae)^5(Bd-Ae)+45045b^5B(d+ex)^6\right)}{765765e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(153153*(b*d - a*e)^5*(B*d - A*e) - 10
9395*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 425425*b*(b*d -
a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 696150*b^2*(b*d - a*e)^2*(
2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3 + 294525*b^3*(b*d - a*e)*(3*b*B*d - A*
b*e - 2*a*B*e)*(d + e*x)^4 - 51051*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x
)^5 + 45045*b^5*B*(d + e*x)^6))/(765765*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 54.55, size = 812, normalized size = 1.80

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] (2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(153153*b^5*B*d^6 - 153153*A*b
^5*d^5*e - 765765*a*b^4*B*d^5*e + 765765*a*A*b^4*d^4*e^2 + 1531530*a^2*b^3*
B*d^4*e^2 - 1531530*a^2*A*b^3*d^3*e^3 - 1531530*a^3*b^2*B*d^3*e^3 + 1531530
*a^3*A*b^2*d^2*e^4 + 765765*a^4*b*B*d^2*e^4 - 765765*a^4*A*b*d*e^5 - 153153
*a^5*B*d*e^5 + 153153*a^5*A*e^6 - 656370*b^5*B*d^5*(d + e*x) + 546975*A*b^5
*d^4*e*(d + e*x) + 2734875*a*b^4*B*d^4*e*(d + e*x) - 2187900*a*A*b^4*d^3*e^
2*(d + e*x) - 4375800*a^2*b^3*B*d^3*e^2*(d + e*x) + 3281850*a^2*A*b^3*d^2*e
^3*(d + e*x) + 3281850*a^3*b^2*B*d^2*e^3*(d + e*x) - 2187900*a^3*A*b^2*d*e^
4*(d + e*x) - 1093950*a^4*b*B*d*e^4*(d + e*x) + 546975*a^4*A*b*e^5*(d + e*x
) + 109395*a^5*B*e^5*(d + e*x) + 1276275*b^5*B*d^4*(d + e*x)^2 - 850850*A*b
^5*d^3*e*(d + e*x)^2 - 4254250*a*b^4*B*d^3*e*(d + e*x)^2 + 2552550*a*A*b^4*
d^2*e^2*(d + e*x)^2 + 5105100*a^2*b^3*B*d^2*e^2*(d + e*x)^2 - 2552550*a^2*A
*b^3*d*e^3*(d + e*x)^2 - 2552550*a^3*b^2*B*d*e^3*(d + e*x)^2 + 850850*a^3*A
*b^2*e^4*(d + e*x)^2 + 425425*a^4*b*B*e^4*(d + e*x)^2 - 1392300*b^5*B*d^3*(
d + e*x)^3 + 696150*A*b^5*d^2*e*(d + e*x)^3 + 3480750*a*b^4*B*d^2*e*(d + e*
x)^3 - 1392300*a*A*b^4*d*e^2*(d + e*x)^3 - 2784600*a^2*b^3*B*d*e^2*(d + e*x
)^3 + 696150*a^2*A*b^3*e^3*(d + e*x)^3 + 696150*a^3*b^2*B*e^3*(d + e*x)^3 +
 883575*b^5*B*d^2*(d + e*x)^4 - 294525*A*b^5*d*e*(d + e*x)^4 - 1472625*a*b^
4*B*d*e*(d + e*x)^4 + 294525*a*A*b^4*e^2*(d + e*x)^4 + 589050*a^2*b^3*B*e^2
*(d + e*x)^4 - 306306*b^5*B*d*(d + e*x)^5 + 51051*A*b^5*e*(d + e*x)^5 + 255
255*a*b^4*B*e*(d + e*x)^5 + 45045*b^5*B*(d + e*x)^6))/(765765*e^6*(a*e + b*
e*x))
```

fricas [B] time = 0.44, size = 848, normalized size = 1.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/765765*(45045*B*b^5*e^8*x^8 + 3072*B*b^5*d^8 + 153153*A*a^5*d^2*e^6 - 435
2*(5*B*a*b^4 + A*b^5)*d^7*e + 32640*(2*B*a^2*b^3 + A*a*b^4)*d^6*e^2 - 10608
0*(B*a^3*b^2 + A*a^2*b^3)*d^5*e^3 + 97240*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^4 -
 43758*(B*a^5 + 5*A*a^4*b)*d^3*e^5 + 3003*(18*B*b^5*d*e^7 + 17*(5*B*a*b^4 +
 A*b^5)*e^8)*x^7 + 231*(3*B*b^5*d^2*e^6 + 272*(5*B*a*b^4 + A*b^5)*d*e^7 + 1
275*(2*B*a^2*b^3 + A*a*b^4)*e^8)*x^6 - 63*(12*B*b^5*d^3*e^5 - 17*(5*B*a*b^4
 + A*b^5)*d^2*e^6 - 5950*(2*B*a^2*b^3 + A*a*b^4)*d*e^7 - 11050*(B*a^3*b^2 +
 A*a^2*b^3)*e^8)*x^5 + 35*(24*B*b^5*d^4*e^4 - 34*(5*B*a*b^4 + A*b^5)*d^3*e^
5 + 255*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^6 + 26520*(B*a^3*b^2 + A*a^2*b^3)*d*e
^7 + 12155*(B*a^4*b + 2*A*a^3*b^2)*e^8)*x^4 - 5*(192*B*b^5*d^5*e^3 - 272*(5
```

```
*B*a*b^4 + A*b^5)*d^4*e^4 + 2040*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^5 - 6630*(B*
a^3*b^2 + A*a^2*b^3)*d^2*e^6 - 121550*(B*a^4*b + 2*A*a^3*b^2)*d*e^7 - 21879
*(B*a^5 + 5*A*a^4*b)*e^8)*x^3 + 3*(384*B*b^5*d^6*e^2 + 51051*A*a^5*e^8 - 54
4*(5*B*a*b^4 + A*b^5)*d^5*e^3 + 4080*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^4 - 1326
0*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^5 + 12155*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^6 +
 58344*(B*a^5 + 5*A*a^4*b)*d*e^7)*x^2 - (1536*B*b^5*d^7*e - 306306*A*a^5*d*
e^7 - 2176*(5*B*a*b^4 + A*b^5)*d^6*e^2 + 16320*(2*B*a^2*b^3 + A*a*b^4)*d^5*
e^3 - 53040*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^4 + 48620*(B*a^4*b + 2*A*a^3*b^2)
*d^3*e^5 - 21879*(B*a^5 + 5*A*a^4*b)*d^2*e^6)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.48, size = 2788, normalized size = 6.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")

[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d^2*e^(-1)*sgn
(b*x + a) + 1276275*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d^2*e^(-1
)*sgn(b*x + a) + 255255*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*B*a^4*b*d^2*e^(-2)*sgn(b*x + a) + 510510*(3*(x*e + d)^(5/2)
- 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d^2*e^(-2)*sgn(b*x
 + a) + 218790*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/
2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b^2*d^2*e^(-3)*sgn(b*x + a) + 218790*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a^2*b^3*d^2*e^(-3)*sgn(b*x + a) + 24310*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*d^2*e^(-4)*sgn(b*x + a) + 12155*(35*(
x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
 + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^4*d^2*e^(-4)*sgn(b*x + a) +
5525*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*
d^5)*B*a*b^4*d^2*e^(-5)*sgn(b*x + a) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*d^2*e^(-5)*sgn(b*x + a) +
 255*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)
*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)
^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*d^2*e^(-6)*sgn(b*x + a) + 102102
*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*d*
e^(-1)*sgn(b*x + a) + 510510*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*A*a^4*b*d*e^(-1)*sgn(b*x + a) + 218790*(5*(x*e + d)^(7/
2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*
B*a^4*b*d*e^(-2)*sgn(b*x + a) + 437580*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5
/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^2*d*e^(-2)*s
gn(b*x + a) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^2
*d*e^(-3)*sgn(b*x + a) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*A*a^2*b^3*d*e^(-3)*sgn(b*x + a) + 22100*(63*(x*e + d)^(11/2) - 385*(x*e +
 d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*
e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) +
 11050*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 2550*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*B*a*b^4*d*e^(-5)*sgn(b*x + a) + 510*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^5*
```

```
d*e^(-5)*sgn(b*x + a) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
 + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)
^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*s
qrt(x*e + d)*d^7)*B*b^5*d*e^(-6)*sgn(b*x + a) + 765765*sqrt(x*e + d)*A*a^5*
d^2*sgn(b*x + a) + 510510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*d*sgn
(b*x + a) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*e^(-1)*sgn(b*x + a) + 109395*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*A*a^4*b*e^(-1)*sgn(b*x + a) + 12155*(35*(x*e + d)^(9/2) - 180*(x*
e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sq
rt(x*e + d)*d^4)*B*a^4*b*e^(-2)*sgn(b*x + a) + 24310*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 11050*(63*(x*e + d)
^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^
(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^2*e^(
-3)*sgn(b*x + a) + 11050*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 2550*(231*(x*e + d
)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
 d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*
sqrt(x*e + d)*d^6)*B*a^2*b^3*e^(-4)*sgn(b*x + a) + 1275*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*A*a*b^4*e^(-4)*sgn(b*x + a) + 595*(429*(x*e + d)^(15/2) - 3465
*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^
3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)
^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^4*e^(-5)*sgn(b*x + a) + 119*(429
*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 -
25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/
2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^5*e^(-5)*s
gn(b*x + a) + 7*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*
(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)
*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*
e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^5*e^(-6)*sgn(b*x + a) + 51
051*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5
*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 689, normalized size = 1.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/765765*(e*x+d)^(5/2)*(45045*B*b^5*e^6*x^6+51051*A*b^5*e^6*x^5+255255*B*a*
b^4*e^6*x^5-36036*B*b^5*d*e^5*x^5+294525*A*a*b^4*e^6*x^4-39270*A*b^5*d*e^5*
x^4+589050*B*a^2*b^3*e^6*x^4-196350*B*a*b^4*d*e^5*x^4+27720*B*b^5*d^2*e^4*x
^4+696150*A*a^2*b^3*e^6*x^3-214200*A*a*b^4*d*e^5*x^3+28560*A*b^5*d^2*e^4*x^
3+696150*B*a^3*b^2*e^6*x^3-428400*B*a^2*b^3*d*e^5*x^3+142800*B*a*b^4*d^2*e^
4*x^3-20160*B*b^5*d^3*e^3*x^3+850850*A*a^3*b^2*e^6*x^2-464100*A*a^2*b^3*d*e
^5*x^2+142800*A*a*b^4*d^2*e^4*x^2-19040*A*b^5*d^3*e^3*x^2+425425*B*a^4*b*e^
6*x^2-464100*B*a^3*b^2*d*e^5*x^2+285600*B*a^2*b^3*d^2*e^4*x^2-95200*B*a*b^4
*d^3*e^3*x^2+13440*B*b^5*d^4*e^2*x^2+546975*A*a^4*b*e^6*x-486200*A*a^3*b^2*
d*e^5*x+265200*A*a^2*b^3*d^2*e^4*x-81600*A*a*b^4*d^3*e^3*x+10880*A*b^5*d^4*
e^2*x+109395*B*a^5*e^6*x-243100*B*a^4*b*d*e^5*x+265200*B*a^3*b^2*d^2*e^4*x-
163200*B*a^2*b^3*d^3*e^3*x+54400*B*a*b^4*d^4*e^2*x-7680*B*b^5*d^5*e*x+15315
3*A*a^5*e^6-218790*A*a^4*b*d*e^5+194480*A*a^3*b^2*d^2*e^4-106080*A*a^2*b^3*
d^3*e^3+32640*A*a*b^4*d^4*e^2-4352*A*b^5*d^5*e-43758*B*a^5*d*e^5+97240*B*a^
4*b*d^2*e^4-106080*B*a^3*b^2*d^3*e^3+65280*B*a^2*b^3*d^4*e^2-21760*B*a*b^4*
d^5*e+3072*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.77, size = 921, normalized size = 2.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/45045*(3003*b^5*e^7*x^7 - 256*b^5*d^7 + 1920*a*b^4*d^6*e - 6240*a^2*b^3*d
^5*e^2 + 11440*a^3*b^2*d^4*e^3 - 12870*a^4*b*d^3*e^4 + 9009*a^5*d^2*e^5 + 2
31*(16*b^5*d*e^6 + 75*a*b^4*e^7)*x^6 + 63*(b^5*d^2*e^5 + 350*a*b^4*d*e^6 +
650*a^2*b^3*e^7)*x^5 - 35*(2*b^5*d^3*e^4 - 15*a*b^4*d^2*e^5 - 1560*a^2*b^3*
d*e^6 - 1430*a^3*b^2*e^7)*x^4 + 5*(16*b^5*d^4*e^3 - 120*a*b^4*d^3*e^4 + 390
*a^2*b^3*d^2*e^5 + 14300*a^3*b^2*d*e^6 + 6435*a^4*b*e^7)*x^3 - 3*(32*b^5*d^
5*e^2 - 240*a*b^4*d^4*e^3 + 780*a^2*b^3*d^3*e^4 - 1430*a^3*b^2*d^2*e^5 - 17
160*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (128*b^5*d^6*e - 960*a*b^4*d^5*e^2 +
3120*a^2*b^3*d^4*e^3 - 5720*a^3*b^2*d^3*e^4 + 6435*a^4*b*d^2*e^5 + 18018*a^
5*d*e^6)*x)*sqrt(e*x + d)*A/e^6 + 2/765765*(45045*b^5*e^8*x^8 + 3072*b^5*d^
8 - 21760*a*b^4*d^7*e + 65280*a^2*b^3*d^6*e^2 - 106080*a^3*b^2*d^5*e^3 + 97
240*a^4*b*d^4*e^4 - 43758*a^5*d^3*e^5 + 3003*(18*b^5*d*e^7 + 85*a*b^4*e^8)*
x^7 + 231*(3*b^5*d^2*e^6 + 1360*a*b^4*d*e^7 + 2550*a^2*b^3*e^8)*x^6 - 63*(1
2*b^5*d^3*e^5 - 85*a*b^4*d^2*e^6 - 11900*a^2*b^3*d*e^7 - 11050*a^3*b^2*e^8)
*x^5 + 35*(24*b^5*d^4*e^4 - 170*a*b^4*d^3*e^5 + 510*a^2*b^3*d^2*e^6 + 26520
*a^3*b^2*d*e^7 + 12155*a^4*b*e^8)*x^4 - 5*(192*b^5*d^5*e^3 - 1360*a*b^4*d^4
*e^4 + 4080*a^2*b^3*d^3*e^5 - 6630*a^3*b^2*d^2*e^6 - 121550*a^4*b*d*e^7 - 2
1879*a^5*e^8)*x^3 + 3*(384*b^5*d^6*e^2 - 2720*a*b^4*d^5*e^3 + 8160*a^2*b^3*
d^4*e^4 - 13260*a^3*b^2*d^3*e^5 + 12155*a^4*b*d^2*e^6 + 58344*a^5*d*e^7)*x^
2 - (1536*b^5*d^7*e - 10880*a*b^4*d^6*e^2 + 32640*a^2*b^3*d^5*e^3 - 53040*a
^3*b^2*d^4*e^4 + 48620*a^4*b*d^3*e^5 - 21879*a^5*d^2*e^6)*x)*sqrt(e*x + d)*
B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,(d + e\,x)^{3/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1634 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2(-aBe-Abe+2bBd)}{9e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3(}{7e^7(a+bx)}$$

Rubi [A] time = 0.21, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(-5aBe-Abe+6bBd)}{13e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)(-2aBe-Abe+3bBd)}{11e^7(a+bx)}-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2(-aBe-Abe+2bBd)}{9e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3(-aBe-2Abe+3bBd)}{7e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4(-aBe-5Abe+6bBd)}{5e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5(Bd-Ae)}{3e^7(a+bx)}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}}{15e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(3*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (10*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(7*e^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d +
 e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (10*b^3*(b*d
 - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(11*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^
(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (2*b^5*B*(d + e*
x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(ab+b^2x\right)^5(A+Bx)\sqrt{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^5(bd-ae)^5(-Bd+Ae)\sqrt{d+ex}}{e^6}+\frac{b^5(bd-ae)^4(-6bBd+}{e}\right.}{}$$

$$=\frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)}-\frac{2(bd-ae)^4}{}$$

Mathematica [A] time = 0.20, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(-3465b^4(d+ex)^5(-5aBe-Abe+6bBd)+20475b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-50050b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+32175b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)-9009(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)+15015(bd-ae)^5(Bd-Ae)+3003b^5B(d+ex)^6\right)}{45045e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(15015*(b*d - a*e)^5*(B*d - A*e) - 900
9*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 32175*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 50050*b^2*(b*d - a*e)^2*(2*b*B
*d - A*b*e - a*B*e)*(d + e*x)^3 + 20475*b^3*(b*d - a*e)*(3*b*B*d - A*b*e -
2*a*B*e)*(d + e*x)^4 - 3465*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 3
003*b^5*B*(d + e*x)^6))/(45045*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 53.72, size = 812, normalized size = 1.80

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(15015*b^5*B*d^6 - 15015*A*b^5
*d^5*e - 75075*a*b^4*B*d^5*e + 75075*a*A*b^4*d^4*e^2 + 150150*a^2*b^3*B*d^4
*e^2 - 150150*a^2*A*b^3*d^3*e^3 - 150150*a^3*b^2*B*d^3*e^3 + 150150*a^3*A*b
^2*d^2*e^4 + 75075*a^4*b*B*d^2*e^4 - 75075*a^4*A*b*d*e^5 - 15015*a^5*B*d*e^
5 + 15015*a^5*A*e^6 - 54054*b^5*B*d^5*(d + e*x) + 45045*A*b^5*d^4*e*(d + e*
x) + 225225*a*b^4*B*d^4*e*(d + e*x) - 180180*a*A*b^4*d^3*e^2*(d + e*x) - 36
0360*a^2*b^3*B*d^3*e^2*(d + e*x) + 270270*a^2*A*b^3*d^2*e^3*(d + e*x) + 270
270*a^3*b^2*B*d^2*e^3*(d + e*x) - 180180*a^3*A*b^2*d*e^4*(d + e*x) - 90090*
a^4*b*B*d*e^4*(d + e*x) + 45045*a^4*A*b*e^5*(d + e*x) + 9009*a^5*B*e^5*(d +
 e*x) + 96525*b^5*B*d^4*(d + e*x)^2 - 64350*A*b^5*d^3*e*(d + e*x)^2 - 32175
0*a*b^4*B*d^3*e*(d + e*x)^2 + 193050*a*A*b^4*d^2*e^2*(d + e*x)^2 + 386100*a
^2*b^3*B*d^2*e^2*(d + e*x)^2 - 193050*a^2*A*b^3*d*e^3*(d + e*x)^2 - 193050*
a^3*b^2*B*d*e^3*(d + e*x)^2 + 64350*a^3*A*b^2*e^4*(d + e*x)^2 + 32175*a^4*b
*B*e^4*(d + e*x)^2 - 100100*b^5*B*d^3*(d + e*x)^3 + 50050*A*b^5*d^2*e*(d +
e*x)^3 + 250250*a*b^4*B*d^2*e*(d + e*x)^3 - 100100*a*A*b^4*d*e^2*(d + e*x)^
3 - 200200*a^2*b^3*B*d*e^2*(d + e*x)^3 + 50050*a^2*A*b^3*e^3*(d + e*x)^3 +
50050*a^3*b^2*B*e^3*(d + e*x)^3 + 61425*b^5*B*d^2*(d + e*x)^4 - 20475*A*b^5
*d*e*(d + e*x)^4 - 102375*a*b^4*B*d*e*(d + e*x)^4 + 20475*a*A*b^4*e^2*(d +
e*x)^4 + 40950*a^2*b^3*B*e^2*(d + e*x)^4 - 20790*b^5*B*d*(d + e*x)^5 + 3465
*A*b^5*e*(d + e*x)^5 + 17325*a*b^4*B*e*(d + e*x)^5 + 3003*b^5*B*(d + e*x)^6
))/(45045*e^6*(a*e + b*e*x))
```

fricas [B] time = 0.43, size = 702, normalized size = 1.55

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*B*b^5*e^7*x^7 + 1024*B*b^5*d^7 + 15015*A*a^5*d*e^6 - 1280*(5*
B*a*b^4 + A*b^5)*d^6*e + 8320*(2*B*a^2*b^3 + A*a*b^4)*d^5*e^2 - 22880*(B*a^
3*b^2 + A*a^2*b^3)*d^4*e^3 + 17160*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 6006*(
B*a^5 + 5*A*a^4*b)*d^2*e^5 + 231*(B*b^5*d*e^6 + 15*(5*B*a*b^4 + A*b^5)*e^7)
*x^6 - 63*(4*B*b^5*d^2*e^5 - 5*(5*B*a*b^4 + A*b^5)*d*e^6 - 325*(2*B*a^2*b^3
 + A*a*b^4)*e^7)*x^5 + 35*(8*B*b^5*d^3*e^4 - 10*(5*B*a*b^4 + A*b^5)*d^2*e^5
 + 65*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 + 1430*(B*a^3*b^2 + A*a^2*b^3)*e^7)*x^4
 - 5*(64*B*b^5*d^4*e^3 - 80*(5*B*a*b^4 + A*b^5)*d^3*e^4 + 520*(2*B*a^2*b^3
+ A*a*b^4)*d^2*e^5 - 1430*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 - 6435*(B*a^4*b + 2
*A*a^3*b^2)*e^7)*x^3 + 3*(128*B*b^5*d^5*e^2 - 160*(5*B*a*b^4 + A*b^5)*d^4*e
^3 + 1040*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 2860*(B*a^3*b^2 + A*a^2*b^3)*d^
```

```
2*e^5 + 2145*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 3003*(B*a^5 + 5*A*a^4*b)*e^7)*
x^2 - (512*B*b^5*d^6*e - 15015*A*a^5*e^7 - 640*(5*B*a*b^4 + A*b^5)*d^5*e^2
+ 4160*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^3 - 11440*(B*a^3*b^2 + A*a^2*b^3)*d^3*
e^4 + 8580*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^5 - 3003*(B*a^5 + 5*A*a^4*b)*d*e^6
)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.39, size = 1682, normalized size = 3.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d*e^(-1)*sgn(b*x
 + a) + 75075*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d*e^(-1)*sgn(b*
x + a) + 15015*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*B*a^4*b*d*e^(-2)*sgn(b*x + a) + 30030*(3*(x*e + d)^(5/2) - 10*(x*e +
d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d*e^(-2)*sgn(b*x + a) + 12870*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*B*a^3*b^2*d*e^(-3)*sgn(b*x + a) + 12870*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a
^2*b^3*d*e^(-3)*sgn(b*x + a) + 1430*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) + 715*(35*(x*e + d)^(9/2) - 180*(x*e
 + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqr
t(x*e + d)*d^4)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 325*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^4*d*e^(-5)*sgn(b*
x + a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*A*b^5*d*e^(-5)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*B*b^5*d*e^(-6)*sgn(b*x + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*e^(-1)*sgn(b*x + a) + 15015*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b*e^(-1)*sgn(b*x
 + a) + 6435*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)
*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b*e^(-2)*sgn(b*x + a) + 12870*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 1430*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 1430*(35*(x*e + d)^(9/2) - 18
0*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 3
15*sqrt(x*e + d)*d^4)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 650*(63*(x*e + d)^(11
/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2
)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^3*e^(-4)*
sgn(b*x + a) + 325*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*A*a*b^4*e^(-4)*sgn(b*x + a) + 75*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*B*a*b^4*e^(-5)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e
 + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009
*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A
*b^5*e^(-5)*sgn(b*x + a) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*
d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d
)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*
sqrt(x*e + d)*d^7)*B*b^5*e^(-6)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a^5*d*
sgn(b*x + a) + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*sgn(b*x +
```

```
a))*e^(-1)
```

maple [A] time = 0.05, size = 689, normalized size = 1.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3003*B*b^5*e^6*x^6+3465*A*b^5*e^6*x^5+17325*B*a*b^4*
e^6*x^5-2772*B*b^5*d*e^5*x^5+20475*A*a*b^4*e^6*x^4-3150*A*b^5*d*e^5*x^4+409
50*B*a^2*b^3*e^6*x^4-15750*B*a*b^4*d*e^5*x^4+2520*B*b^5*d^2*e^4*x^4+50050*A
*a^2*b^3*e^6*x^3-18200*A*a*b^4*d*e^5*x^3+2800*A*b^5*d^2*e^4*x^3+50050*B*a^3
*b^2*e^6*x^3-36400*B*a^2*b^3*d*e^5*x^3+14000*B*a*b^4*d^2*e^4*x^3-2240*B*b^5
*d^3*e^3*x^3+64350*A*a^3*b^2*e^6*x^2-42900*A*a^2*b^3*d*e^5*x^2+15600*A*a*b^
4*d^2*e^4*x^2-2400*A*b^5*d^3*e^3*x^2+32175*B*a^4*b*e^6*x^2-42900*B*a^3*b^2*
d*e^5*x^2+31200*B*a^2*b^3*d^2*e^4*x^2-12000*B*a*b^4*d^3*e^3*x^2+1920*B*b^5*
d^4*e^2*x^2+45045*A*a^4*b*e^6*x-51480*A*a^3*b^2*d*e^5*x+34320*A*a^2*b^3*d^2
*e^4*x-12480*A*a*b^4*d^3*e^3*x+1920*A*b^5*d^4*e^2*x+9009*B*a^5*e^6*x-25740*
B*a^4*b*d*e^5*x+34320*B*a^3*b^2*d^2*e^4*x-24960*B*a^2*b^3*d^3*e^3*x+9600*B*
a*b^4*d^4*e^2*x-1536*B*b^5*d^5*e*x+15015*A*a^5*e^6-30030*A*a^4*b*d*e^5+3432
0*A*a^3*b^2*d^2*e^4-22880*A*a^2*b^3*d^3*e^3+8320*A*a*b^4*d^4*e^2-1280*A*b^5
*d^5*e-6006*B*a^5*d*e^5+17160*B*a^4*b*d^2*e^4-22880*B*a^3*b^2*d^3*e^3+16640
*B*a^2*b^3*d^4*e^2-6400*B*a*b^4*d^5*e+1024*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7
/(b*x+a)^5
```

maxima [B] time = 0.81, size = 760, normalized size = 1.68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/9009*(693*b^5*e^6*x^6 - 256*b^5*d^6 + 1664*a*b^4*d^5*e - 4576*a^2*b^3*d^4
*e^2 + 6864*a^3*b^2*d^3*e^3 - 6006*a^4*b*d^2*e^4 + 3003*a^5*d*e^5 + 63*(b^5
*d*e^5 + 65*a*b^4*e^6)*x^5 - 35*(2*b^5*d^2*e^4 - 13*a*b^4*d*e^5 - 286*a^2*b
^3*e^6)*x^4 + 10*(8*b^5*d^3*e^3 - 52*a*b^4*d^2*e^4 + 143*a^2*b^3*d*e^5 + 12
87*a^3*b^2*e^6)*x^3 - 3*(32*b^5*d^4*e^2 - 208*a*b^4*d^3*e^3 + 572*a^2*b^3*d
^2*e^4 - 858*a^3*b^2*d*e^5 - 3003*a^4*b*e^6)*x^2 + (128*b^5*d^5*e - 832*a*b
^4*d^4*e^2 + 2288*a^2*b^3*d^3*e^3 - 3432*a^3*b^2*d^2*e^4 + 3003*a^4*b*d*e^5
 + 3003*a^5*e^6)*x)*sqrt(e*x + d)*A/e^6 + 2/45045*(3003*b^5*e^7*x^7 + 1024*
b^5*d^7 - 6400*a*b^4*d^6*e + 16640*a^2*b^3*d^5*e^2 - 22880*a^3*b^2*d^4*e^3
+ 17160*a^4*b*d^3*e^4 - 6006*a^5*d^2*e^5 + 231*(b^5*d*e^6 + 75*a*b^4*e^7)*x
^6 - 63*(4*b^5*d^2*e^5 - 25*a*b^4*d*e^6 - 650*a^2*b^3*e^7)*x^5 + 70*(4*b^5*
d^3*e^4 - 25*a*b^4*d^2*e^5 + 65*a^2*b^3*d*e^6 + 715*a^3*b^2*e^7)*x^4 - 5*(6
4*b^5*d^4*e^3 - 400*a*b^4*d^3*e^4 + 1040*a^2*b^3*d^2*e^5 - 1430*a^3*b^2*d*e
^6 - 6435*a^4*b*e^7)*x^3 + 3*(128*b^5*d^5*e^2 - 800*a*b^4*d^4*e^3 + 2080*a^
2*b^3*d^3*e^4 - 2860*a^3*b^2*d^2*e^5 + 2145*a^4*b*d*e^6 + 3003*a^5*e^7)*x^2
 - (512*b^5*d^6*e - 3200*a*b^4*d^5*e^2 + 8320*a^2*b^3*d^4*e^3 - 11440*a^3*b
^2*d^3*e^4 + 8580*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*sqrt(e*x + d)*B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\sqrt{d+e\,x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\sqrt{d + ex}\left((a + bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)*(e*x+d)**(1/2),x)
[Out] Integral((A + B*x)*sqrt(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1635 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=448

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2(-aBe-Abe+2bBd)}{7e^7(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae}{e^7(a+bx)}$$

Rubi [A] time = 0.22, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-5aBe-Abe+6bBd)}{11e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(-2aBe-Abe+3bBd)}{9e^7(a+bx)}-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2(-aBe-Abe+2bBd)}{7e^7(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3(-aBe-2Abe+3bBd)}{e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4(-aBe-5Abe+6bBd)}{3e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5(Bd-Ae)}{e^7(a+bx)}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)^(3/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (2*b*(b*d - a*e)^3*(3
*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e
^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(
7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (10*b^3*(b*d - a*e)
*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(9*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(11/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(13/2)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{\sqrt{d+ex}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6\sqrt{d+ex}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)\sqrt{d}}{e^6}\right.}{}$$

$$=\frac{2(bd-ae)^5(Bd-Ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)}-\frac{2(bd-ae)^4(6bBd}{}$$

Mathematica [A] time = 0.19, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\sqrt{d+ex}\left(-819b^4(d+ex)^5(-5aBe-Abe+6bBd)+5005b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-12870b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+9009b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)-3003(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)+9009(bd-ae)^5(Bd-Ae)+693b^5B(d+ex)^6\right)}{9009e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(9009*(b*d - a*e)^5*(B*d - A*e) - 3003*(
b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 9009*b*(b*d - a*e)^3*(
3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 12870*b^2*(b*d - a*e)^2*(2*b*B*d -
 A*b*e - a*B*e)*(d + e*x)^3 + 5005*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B
*e)*(d + e*x)^4 - 819*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 693*b^5
*B*(d + e*x)^6))/(9009*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 53.12, size = 812, normalized size = 1.81

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x
],x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2]*(9009*b^5*B*d^6 - 9009*A*b^5*d^5
*e - 45045*a*b^4*B*d^5*e + 45045*a*A*b^4*d^4*e^2 + 90090*a^2*b^3*B*d^4*e^2
- 90090*a^2*A*b^3*d^3*e^3 - 90090*a^3*b^2*B*d^3*e^3 + 90090*a^3*A*b^2*d^2*e
^4 + 45045*a^4*b*B*d^2*e^4 - 45045*a^4*A*b*d*e^5 - 9009*a^5*B*d*e^5 + 9009*
a^5*A*e^6 - 18018*b^5*B*d^5*(d + e*x) + 15015*A*b^5*d^4*e*(d + e*x) + 75075
*a*b^4*B*d^4*e*(d + e*x) - 60060*a*A*b^4*d^3*e^2*(d + e*x) - 120120*a^2*b^3
*B*d^3*e^2*(d + e*x) + 90090*a^2*A*b^3*d^2*e^3*(d + e*x) + 90090*a^3*b^2*B*
d^2*e^3*(d + e*x) - 60060*a^3*A*b^2*d*e^4*(d + e*x) - 30030*a^4*b*B*d*e^4*(
d + e*x) + 15015*a^4*A*b*e^5*(d + e*x) + 3003*a^5*B*e^5*(d + e*x) + 27027*b
^5*B*d^4*(d + e*x)^2 - 18018*A*b^5*d^3*e*(d + e*x)^2 - 90090*a*b^4*B*d^3*e*
(d + e*x)^2 + 54054*a*A*b^4*d^2*e^2*(d + e*x)^2 + 108108*a^2*b^3*B*d^2*e^2*
(d + e*x)^2 - 54054*a^2*A*b^3*d*e^3*(d + e*x)^2 - 54054*a^3*b^2*B*d*e^3*(d
+ e*x)^2 + 18018*a^3*A*b^2*e^4*(d + e*x)^2 + 9009*a^4*b*B*e^4*(d + e*x)^2 -
 25740*b^5*B*d^3*(d + e*x)^3 + 12870*A*b^5*d^2*e*(d + e*x)^3 + 64350*a*b^4*
B*d^2*e*(d + e*x)^3 - 25740*a*A*b^4*d*e^2*(d + e*x)^3 - 51480*a^2*b^3*B*d*e
^2*(d + e*x)^3 + 12870*a^2*A*b^3*e^3*(d + e*x)^3 + 12870*a^3*b^2*B*e^3*(d +
 e*x)^3 + 15015*b^5*B*d^2*(d + e*x)^4 - 5005*A*b^5*d*e*(d + e*x)^4 - 25025*
a*b^4*B*d*e*(d + e*x)^4 + 5005*a*A*b^4*e^2*(d + e*x)^4 + 10010*a^2*b^3*B*e^
2*(d + e*x)^4 - 4914*b^5*B*d*(d + e*x)^5 + 819*A*b^5*e*(d + e*x)^5 + 4095*a
*b^4*B*e*(d + e*x)^5 + 693*b^5*B*(d + e*x)^6))/(9009*e^6*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 560, normalized size = 1.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/9009*(693*B*b^5*e^6*x^6 + 3072*B*b^5*d^6 + 9009*A*a^5*e^6 - 3328*(5*B*a*b
^4 + A*b^5)*d^5*e + 18304*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 41184*(B*a^3*b^
2 + A*a^2*b^3)*d^3*e^3 + 24024*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 6006*(B*a^
5 + 5*A*a^4*b)*d*e^5 - 63*(12*B*b^5*d*e^5 - 13*(5*B*a*b^4 + A*b^5)*e^6)*x^5
 + 35*(24*B*b^5*d^2*e^4 - 26*(5*B*a*b^4 + A*b^5)*d*e^5 + 143*(2*B*a^2*b^3 +
 A*a*b^4)*e^6)*x^4 - 10*(96*B*b^5*d^3*e^3 - 104*(5*B*a*b^4 + A*b^5)*d^2*e^4
 + 572*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 - 1287*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^
3 + 3*(384*B*b^5*d^4*e^2 - 416*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 2288*(2*B*a^2*
```

```
b^3 + A*a*b^4)*d^2*e^4 - 5148*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 3003*(B*a^4*b
 + 2*A*a^3*b^2)*e^6)*x^2 - (1536*B*b^5*d^5*e - 1664*(5*B*a*b^4 + A*b^5)*d^4
*e^2 + 9152*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 20592*(B*a^3*b^2 + A*a^2*b^3)
*d^2*e^4 + 12012*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - 3003*(B*a^5 + 5*A*a^4*b)*e
^6)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.25, size = 758, normalized size = 1.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/9009*(3003*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*e^(-1)*sgn(b*x + a
) + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*e^(-1)*sgn(b*x + a)
 + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B
*a^4*b*e^(-2)*sgn(b*x + a) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 2574*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^3*e^(-3)*sg
n(b*x + a) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d
)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*e^
(-4)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(
x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b
^4*e^(-4)*sgn(b*x + a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^4*e^(-5)*sgn(b*x + a) + 13*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*e^(-5)*s
gn(b*x + a) + 3*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
 + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 600
6*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*e^(-6)*sgn(b*x + a) +
 9009*sqrt(x*e + d)*A*a^5*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 689, normalized size = 1.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/9009*(e*x+d)^(1/2)*(693*B*b^5*e^6*x^6+819*A*b^5*e^6*x^5+4095*B*a*b^4*e^6*
x^5-756*B*b^5*d*e^5*x^5+5005*A*a*b^4*e^6*x^4-910*A*b^5*d*e^5*x^4+10010*B*a^
2*b^3*e^6*x^4-4550*B*a*b^4*d*e^5*x^4+840*B*b^5*d^2*e^4*x^4+12870*A*a^2*b^3*
e^6*x^3-5720*A*a*b^4*d*e^5*x^3+1040*A*b^5*d^2*e^4*x^3+12870*B*a^3*b^2*e^6*x
^3-11440*B*a^2*b^3*d*e^5*x^3+5200*B*a*b^4*d^2*e^4*x^3-960*B*b^5*d^3*e^3*x^3
+18018*A*a^3*b^2*e^6*x^2-15444*A*a^2*b^3*d*e^5*x^2+6864*A*a*b^4*d^2*e^4*x^2
-1248*A*b^5*d^3*e^3*x^2+9009*B*a^4*b*e^6*x^2-15444*B*a^3*b^2*d*e^5*x^2+1372
8*B*a^2*b^3*d^2*e^4*x^2-6240*B*a*b^4*d^3*e^3*x^2+1152*B*b^5*d^4*e^2*x^2+150
15*A*a^4*b*e^6*x-24024*A*a^3*b^2*d*e^5*x+20592*A*a^2*b^3*d^2*e^4*x-9152*A*a
*b^4*d^3*e^3*x+1664*A*b^5*d^4*e^2*x+3003*B*a^5*e^6*x-12012*B*a^4*b*d*e^5*x+
20592*B*a^3*b^2*d^2*e^4*x-18304*B*a^2*b^3*d^3*e^3*x+8320*B*a*b^4*d^4*e^2*x-
1536*B*b^5*d^5*e*x+9009*A*a^5*e^6-30030*A*a^4*b*d*e^5+48048*A*a^3*b^2*d^2*e
^4-41184*A*a^2*b^3*d^3*e^3+18304*A*a*b^4*d^4*e^2-3328*A*b^5*d^5*e-6006*B*a^
5*d*e^5+24024*B*a^4*b*d^2*e^4-41184*B*a^3*b^2*d^3*e^3+36608*B*a^2*b^3*d^4*e
^2-16640*B*a*b^4*d^5*e+3072*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.74, size = 758, normalized size = 1.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/693*(63*b^5*e^6*x^6 - 256*b^5*d^6 + 1408*a*b^4*d^5*e - 3168*a^2*b^3*d^4*e
^2 + 3696*a^3*b^2*d^3*e^3 - 2310*a^4*b*d^2*e^4 + 693*a^5*d*e^5 - 7*(b^5*d*e
^5 - 55*a*b^4*e^6)*x^5 + 5*(2*b^5*d^2*e^4 - 11*a*b^4*d*e^5 + 198*a^2*b^3*e^
6)*x^4 - 2*(8*b^5*d^3*e^3 - 44*a*b^4*d^2*e^4 + 99*a^2*b^3*d*e^5 - 693*a^3*b
^2*e^6)*x^3 + (32*b^5*d^4*e^2 - 176*a*b^4*d^3*e^3 + 396*a^2*b^3*d^2*e^4 - 4
62*a^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (128*b^5*d^5*e - 704*a*b^4*d^4*e^2
 + 1584*a^2*b^3*d^3*e^3 - 1848*a^3*b^2*d^2*e^4 + 1155*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*A/(sqrt(e*x + d)*e^6) + 2/9009*(693*b^5*e^7*x^7 + 3072*b^5*d^7 - 1
6640*a*b^4*d^6*e + 36608*a^2*b^3*d^5*e^2 - 41184*a^3*b^2*d^4*e^3 + 24024*a^
4*b*d^3*e^4 - 6006*a^5*d^2*e^5 - 63*(b^5*d*e^6 - 65*a*b^4*e^7)*x^6 + 7*(12*
b^5*d^2*e^5 - 65*a*b^4*d*e^6 + 1430*a^2*b^3*e^7)*x^5 - 10*(12*b^5*d^3*e^4 -
 65*a*b^4*d^2*e^5 + 143*a^2*b^3*d*e^6 - 1287*a^3*b^2*e^7)*x^4 + (192*b^5*d^
4*e^3 - 1040*a*b^4*d^3*e^4 + 2288*a^2*b^3*d^2*e^5 - 2574*a^3*b^2*d*e^6 + 90
09*a^4*b*e^7)*x^3 - (384*b^5*d^5*e^2 - 2080*a*b^4*d^4*e^3 + 4576*a^2*b^3*d^
3*e^4 - 5148*a^3*b^2*d^2*e^5 + 3003*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (1536
*b^5*d^6*e - 8320*a*b^4*d^5*e^2 + 18304*a^2*b^3*d^4*e^3 - 20592*a^3*b^2*d^3
*e^4 + 12012*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*B/(sqrt(e*x + d)*e^7)
```

mupad [B] time = 3.26, size = 826, normalized size = 1.84

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*B*b^4*x^7)/13 + (6144*B*b^5*d^7 + 1801
8*A*a^5*d*e^6 - 6656*A*b^5*d^6*e - 12012*B*a^5*d^2*e^5 + 36608*A*a*b^4*d^5*
e^2 - 60060*A*a^4*b*d^2*e^5 + 48048*B*a^4*b*d^3*e^4 - 82368*A*a^2*b^3*d^4*e
^3 + 96096*A*a^3*b^2*d^3*e^4 + 73216*B*a^2*b^3*d^5*e^2 - 82368*B*a^3*b^2*d^
4*e^3 - 33280*B*a*b^4*d^6*e)/(9009*b*e^7) + (x^3*(18018*B*a^4*b*e^7 + 36036
*A*a^3*b^2*e^7 - 416*A*b^5*d^3*e^4 + 384*B*b^5*d^4*e^3 + 2288*A*a*b^4*d^2*e
^5 - 5148*A*a^2*b^3*d*e^6 - 2080*B*a*b^4*d^3*e^4 - 5148*B*a^3*b^2*d*e^6 + 4
576*B*a^2*b^3*d^2*e^5))/(9009*b*e^7) + (x^4*(25740*A*a^2*b^3*e^7 + 25740*B*
a^3*b^2*e^7 + 260*A*b^5*d^2*e^5 - 240*B*b^5*d^3*e^4 + 1300*B*a*b^4*d^2*e^5
- 2860*B*a^2*b^3*d*e^6 - 1430*A*a*b^4*d*e^6))/(9009*b*e^7) + (2*b^3*x^6*(13
*A*b*e + 65*B*a*e - B*b*d))/(143*e) + (x*(18018*A*a^5*e^7 - 6006*B*a^5*d*e^
6 + 3072*B*b^5*d^6*e - 3328*A*b^5*d^5*e^2 + 18304*A*a*b^4*d^4*e^3 - 16640*B
*a*b^4*d^5*e^2 + 24024*B*a^4*b*d^2*e^5 - 41184*A*a^2*b^3*d^3*e^4 + 48048*A*
a^3*b^2*d^2*e^5 + 36608*B*a^2*b^3*d^4*e^3 - 41184*B*a^3*b^2*d^3*e^4 - 30030
*A*a^4*b*d*e^6))/(9009*b*e^7) + (x^2*(6006*B*a^5*e^7 + 30030*A*a^4*b*e^7 +
832*A*b^5*d^4*e^3 - 768*B*b^5*d^5*e^2 - 4576*A*a*b^4*d^3*e^4 - 12012*A*a^3*
b^2*d*e^6 + 4160*B*a*b^4*d^4*e^3 + 10296*A*a^2*b^3*d^2*e^5 - 9152*B*a^2*b^3
*d^3*e^4 + 10296*B*a^3*b^2*d^2*e^5 - 6006*B*a^4*b*d*e^6))/(9009*b*e^7) + (2
*b^2*x^5*(1430*B*a^2*e^2 + 12*B*b^2*d^2 + 715*A*a*b*e^2 - 13*A*b^2*d*e - 65
*B*a*b*d*e))/(1287*e^2)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1636 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=446

$$-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae}{3e^7(a+bx)}$$

Rubi [A] time = 0.22, antiderivative size = 446, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-5aBe-Abe+6bBd)}{9e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(-2aBe-Abe+3bBd)}{7e^7(a+bx)}-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3(-aBe-2Abe+3bBd)}{3e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{e^7(a+bx)\sqrt{d+ex}}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)
*Sqrt[d + e*x]) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[d + e*x
]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b*(b*d - a*e)^3*(3*b
*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e
^7*(a + b*x)) - (4*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(5
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b^3*(b*d - a*e)*(3
*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(9/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(11/2)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{3/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{3/2}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6\sqrt{d+ex}}-\right.}{}$$

$$= -\frac{2(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}}-\frac{2(bd-ae)^4(6bBd-5Ab}{}$$

Mathematica [A] time = 0.20, size = 239, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\left(-77b^4(d+ex)^5(-5aBe-Abe+6bBd)+495b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-1386b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+1155b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)-693(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)-693(bd-ae)^5(Bd-Ae)+63b^5B(d+ex)^6\right)}{693e^7(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-693*(b*d - a*e)^5*(B*d - A*e) - 693*(b*d - a*e)^4*(6
*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 1155*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b
*e - a*B*e)*(d + e*x)^2 - 1386*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*
(d + e*x)^3 + 495*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4 -
 77*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 63*b^5*B*(d + e*x)^6))/(6
93*e^7*(a + b*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 38.16, size = 812, normalized size = 1.82

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-693*b^5*B*d^6 + 693*A*b^5*d^5*e + 3465*a*b^4
*B*d^5*e - 3465*a*A*b^4*d^4*e^2 - 6930*a^2*b^3*B*d^4*e^2 + 6930*a^2*A*b^3*d
^3*e^3 + 6930*a^3*b^2*B*d^3*e^3 - 6930*a^3*A*b^2*d^2*e^4 - 3465*a^4*b*B*d^2
*e^4 + 3465*a^4*A*b*d*e^5 + 693*a^5*B*d*e^5 - 693*a^5*A*e^6 - 4158*b^5*B*d^
5*(d + e*x) + 3465*A*b^5*d^4*e*(d + e*x) + 17325*a*b^4*B*d^4*e*(d + e*x) -
13860*a*A*b^4*d^3*e^2*(d + e*x) - 27720*a^2*b^3*B*d^3*e^2*(d + e*x) + 20790
*a^2*A*b^3*d^2*e^3*(d + e*x) + 20790*a^3*b^2*B*d^2*e^3*(d + e*x) - 13860*a^
3*A*b^2*d*e^4*(d + e*x) - 6930*a^4*b*B*d*e^4*(d + e*x) + 3465*a^4*A*b*e^5*(
d + e*x) + 693*a^5*B*e^5*(d + e*x) + 3465*b^5*B*d^4*(d + e*x)^2 - 2310*A*b^
5*d^3*e*(d + e*x)^2 - 11550*a*b^4*B*d^3*e*(d + e*x)^2 + 6930*a*A*b^4*d^2*e^
2*(d + e*x)^2 + 13860*a^2*b^3*B*d^2*e^2*(d + e*x)^2 - 6930*a^2*A*b^3*d*e^3*
(d + e*x)^2 - 6930*a^3*b^2*B*d*e^3*(d + e*x)^2 + 2310*a^3*A*b^2*e^4*(d + e*
x)^2 + 1155*a^4*b*B*e^4*(d + e*x)^2 - 2772*b^5*B*d^3*(d + e*x)^3 + 1386*A*b
^5*d^2*e*(d + e*x)^3 + 6930*a*b^4*B*d^2*e*(d + e*x)^3 - 2772*a*A*b^4*d*e^2*
(d + e*x)^3 - 5544*a^2*b^3*B*d*e^2*(d + e*x)^3 + 1386*a^2*A*b^3*e^3*(d + e*
x)^3 + 1386*a^3*b^2*B*e^3*(d + e*x)^3 + 1485*b^5*B*d^2*(d + e*x)^4 - 495*A*
b^5*d*e*(d + e*x)^4 - 2475*a*b^4*B*d*e*(d + e*x)^4 + 495*a*A*b^4*e^2*(d + e
*x)^4 + 990*a^2*b^3*B*e^2*(d + e*x)^4 - 462*b^5*B*d*(d + e*x)^5 + 77*A*b^5*
e*(d + e*x)^5 + 385*a*b^4*B*e*(d + e*x)^5 + 63*b^5*B*(d + e*x)^6))/(693*e^6
*Sqrt[d + e*x]*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 569, normalized size = 1.28

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/693*(63*B*b^5*e^6*x^6 - 3072*B*b^5*d^6 - 693*A*a^5*e^6 + 2816*(5*B*a*b^4
+ A*b^5)*d^5*e - 12672*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 22176*(B*a^3*b^2 +
 A*a^2*b^3)*d^3*e^3 - 9240*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 1386*(B*a^5 +
5*A*a^4*b)*d*e^5 - 7*(12*B*b^5*d*e^5 - 11*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*
(24*B*b^5*d^2*e^4 - 22*(5*B*a*b^4 + A*b^5)*d*e^5 + 99*(2*B*a^2*b^3 + A*a*b^
4)*e^6)*x^4 - 2*(96*B*b^5*d^3*e^3 - 88*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 396*(2
*B*a^2*b^3 + A*a*b^4)*d*e^5 - 693*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + (384*B
*b^5*d^4*e^2 - 352*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 1584*(2*B*a^2*b^3 + A*a*b^
```

4)*d^2*e^4 - 2772*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 1155*(B*a^4*b + 2*A*a^3*b
^2)*e^6)*x^2 - (1536*B*b^5*d^5*e - 1408*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 6336*
(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 11088*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 4
620*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - 693*(B*a^5 + 5*A*a^4*b)*e^6)*x)*sqrt(e*
x + d)/(e^8*x + d*e^7)

giac [**B**] time = 0.33, size = 1125, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="g
iac")

[Out] 2/693*(63*(x*e + d)^(11/2)*B*b^5*e^70*sgn(b*x + a) - 462*(x*e + d)^(9/2)*B*
b^5*d*e^70*sgn(b*x + a) + 1485*(x*e + d)^(7/2)*B*b^5*d^2*e^70*sgn(b*x + a)
- 2772*(x*e + d)^(5/2)*B*b^5*d^3*e^70*sgn(b*x + a) + 3465*(x*e + d)^(3/2)*B
*b^5*d^4*e^70*sgn(b*x + a) - 4158*sqrt(x*e + d)*B*b^5*d^5*e^70*sgn(b*x + a)
 + 385*(x*e + d)^(9/2)*B*a*b^4*e^71*sgn(b*x + a) + 77*(x*e + d)^(9/2)*A*b^5
*e^71*sgn(b*x + a) - 2475*(x*e + d)^(7/2)*B*a*b^4*d*e^71*sgn(b*x + a) - 495
*(x*e + d)^(7/2)*A*b^5*d*e^71*sgn(b*x + a) + 6930*(x*e + d)^(5/2)*B*a*b^4*d
^2*e^71*sgn(b*x + a) + 1386*(x*e + d)^(5/2)*A*b^5*d^2*e^71*sgn(b*x + a) - 1
1550*(x*e + d)^(3/2)*B*a*b^4*d^3*e^71*sgn(b*x + a) - 2310*(x*e + d)^(3/2)*A
*b^5*d^3*e^71*sgn(b*x + a) + 17325*sqrt(x*e + d)*B*a*b^4*d^4*e^71*sgn(b*x +
 a) + 3465*sqrt(x*e + d)*A*b^5*d^4*e^71*sgn(b*x + a) + 990*(x*e + d)^(7/2)*
B*a^2*b^3*e^72*sgn(b*x + a) + 495*(x*e + d)^(7/2)*A*a*b^4*e^72*sgn(b*x + a)
 - 5544*(x*e + d)^(5/2)*B*a^2*b^3*d*e^72*sgn(b*x + a) - 2772*(x*e + d)^(5/2
)*A*a*b^4*d*e^72*sgn(b*x + a) + 13860*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^72*sg
n(b*x + a) + 6930*(x*e + d)^(3/2)*A*a*b^4*d^2*e^72*sgn(b*x + a) - 27720*sqr
t(x*e + d)*B*a^2*b^3*d^3*e^72*sgn(b*x + a) - 13860*sqrt(x*e + d)*A*a*b^4*d^
3*e^72*sgn(b*x + a) + 1386*(x*e + d)^(5/2)*B*a^3*b^2*e^73*sgn(b*x + a) + 13
86*(x*e + d)^(5/2)*A*a^2*b^3*e^73*sgn(b*x + a) - 6930*(x*e + d)^(3/2)*B*a^3
*b^2*d*e^73*sgn(b*x + a) - 6930*(x*e + d)^(3/2)*A*a^2*b^3*d*e^73*sgn(b*x +
a) + 20790*sqrt(x*e + d)*B*a^3*b^2*d^2*e^73*sgn(b*x + a) + 20790*sqrt(x*e +
 d)*A*a^2*b^3*d^2*e^73*sgn(b*x + a) + 1155*(x*e + d)^(3/2)*B*a^4*b*e^74*sgn
(b*x + a) + 2310*(x*e + d)^(3/2)*A*a^3*b^2*e^74*sgn(b*x + a) - 6930*sqrt(x*
e + d)*B*a^4*b*d*e^74*sgn(b*x + a) - 13860*sqrt(x*e + d)*A*a^3*b^2*d*e^74*s
gn(b*x + a) + 693*sqrt(x*e + d)*B*a^5*e^75*sgn(b*x + a) + 3465*sqrt(x*e + d
)*A*a^4*b*e^75*sgn(b*x + a))*e^(-77) - 2*(B*b^5*d^6*sgn(b*x + a) - 5*B*a*b^
4*d^5*e*sgn(b*x + a) - A*b^5*d^5*e*sgn(b*x + a) + 10*B*a^2*b^3*d^4*e^2*sgn(
b*x + a) + 5*A*a*b^4*d^4*e^2*sgn(b*x + a) - 10*B*a^3*b^2*d^3*e^3*sgn(b*x +
a) - 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 5*B*a^4*b*d^2*e^4*sgn(b*x + a) + 1
0*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - B*a^5*d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e
^5*sgn(b*x + a) + A*a^5*e^6*sgn(b*x + a))*e^(-7)/sqrt(x*e + d)

maple [**A**] time = 0.06, size = 689, normalized size = 1.54

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x)

[Out] -2/693/(e*x+d)^(1/2)*(-63*B*b^5*e^6*x^6-77*A*b^5*e^6*x^5-385*B*a*b^4*e^6*x^
5+84*B*b^5*d*e^5*x^5-495*A*a*b^4*e^6*x^4+110*A*b^5*d*e^5*x^4-990*B*a^2*b^3*
e^6*x^4+550*B*a*b^4*d*e^5*x^4-120*B*b^5*d^2*e^4*x^4-1386*A*a^2*b^3*e^6*x^3+
792*A*a*b^4*d*e^5*x^3-176*A*b^5*d^2*e^4*x^3-1386*B*a^3*b^2*e^6*x^3+1584*B*a
^2*b^3*d*e^5*x^3-880*B*a*b^4*d^2*e^4*x^3+192*B*b^5*d^3*e^3*x^3-2310*A*a^3*b
^2*e^6*x^2+2772*A*a^2*b^3*d*e^5*x^2-1584*A*a*b^4*d^2*e^4*x^2+352*A*b^5*d^3*
e^3*x^2-1155*B*a^4*b*e^6*x^2+2772*B*a^3*b^2*d*e^5*x^2-3168*B*a^2*b^3*d^2*e^
4*x^2+1760*B*a*b^4*d^3*e^3*x^2-384*B*b^5*d^4*e^2*x^2-3465*A*a^4*b*e^6*x+924

```
0*A*a^3*b^2*d*e^5*x-11088*A*a^2*b^3*d^2*e^4*x+6336*A*a*b^4*d^3*e^3*x-1408*A
*b^5*d^4*e^2*x-693*B*a^5*e^6*x+4620*B*a^4*b*d*e^5*x-11088*B*a^3*b^2*d^2*e^4
*x+12672*B*a^2*b^3*d^3*e^3*x-7040*B*a*b^4*d^4*e^2*x+1536*B*b^5*d^5*e*x+693*
A*a^5*e^6-6930*A*a^4*b*d*e^5+18480*A*a^3*b^2*d^2*e^4-22176*A*a^2*b^3*d^3*e^
3+12672*A*a*b^4*d^4*e^2-2816*A*b^5*d^5*e-1386*B*a^5*d*e^5+9240*B*a^4*b*d^2*
e^4-22176*B*a^3*b^2*d^3*e^3+25344*B*a^2*b^3*d^4*e^2-14080*B*a*b^4*d^5*e+307
2*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**A**] time = 0.66, size = 603, normalized size = 1.35

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/63*(7*b^5*e^5*x^5 + 256*b^5*d^5 - 1152*a*b^4*d^4*e + 2016*a^2*b^3*d^3*e^2
 - 1680*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 - 63*a^5*e^5 - 5*(2*b^5*d*e^4 - 9
*a*b^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 36*a*b^4*d*e^4 + 63*a^2*b^3*e^5)*x^3 -
 2*(16*b^5*d^3*e^2 - 72*a*b^4*d^2*e^3 + 126*a^2*b^3*d*e^4 - 105*a^3*b^2*e^5
)*x^2 + (128*b^5*d^4*e - 576*a*b^4*d^3*e^2 + 1008*a^2*b^3*d^2*e^3 - 840*a^3
*b^2*d*e^4 + 315*a^4*b*e^5)*x)*A/(sqrt(e*x + d)*e^6) + 2/693*(63*b^5*e^6*x^
6 - 3072*b^5*d^6 + 14080*a*b^4*d^5*e - 25344*a^2*b^3*d^4*e^2 + 22176*a^3*b^
2*d^3*e^3 - 9240*a^4*b*d^2*e^4 + 1386*a^5*d*e^5 - 7*(12*b^5*d*e^5 - 55*a*b^
4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 55*a*b^4*d*e^5 + 99*a^2*b^3*e^6)*x^4 - 2*
(96*b^5*d^3*e^3 - 440*a*b^4*d^2*e^4 + 792*a^2*b^3*d*e^5 - 693*a^3*b^2*e^6)*
x^3 + (384*b^5*d^4*e^2 - 1760*a*b^4*d^3*e^3 + 3168*a^2*b^3*d^2*e^4 - 2772*a
^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (1536*b^5*d^5*e - 7040*a*b^4*d^4*e^2 +
 12672*a^2*b^3*d^3*e^3 - 11088*a^3*b^2*d^2*e^4 + 4620*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*B/(sqrt(e*x + d)*e^7)
```

mupad [**B**] time = 3.74, size = 659, normalized size = 1.48

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^2*(2310*B*a^4*b*e^6 + 4620*A*a^3*b^2*e
^6 - 704*A*b^5*d^3*e^3 + 768*B*b^5*d^4*e^2 + 3168*A*a*b^4*d^2*e^4 - 5544*A*
a^2*b^3*d*e^5 - 3520*B*a*b^4*d^3*e^3 - 5544*B*a^3*b^2*d*e^5 + 6336*B*a^2*b^
3*d^2*e^4))/(693*b*e^7) - (1386*A*a^5*e^6 + 6144*B*b^5*d^6 - 5632*A*b^5*d^5
*e - 2772*B*a^5*d*e^5 + 25344*A*a*b^4*d^4*e^2 + 18480*B*a^4*b*d^2*e^4 - 443
52*A*a^2*b^3*d^3*e^3 + 36960*A*a^3*b^2*d^2*e^4 + 50688*B*a^2*b^3*d^4*e^2 -
44352*B*a^3*b^2*d^3*e^3 - 13860*A*a^4*b*d*e^5 - 28160*B*a*b^4*d^5*e)/(693*b
*e^7) + (x^3*(2772*A*a^2*b^3*e^6 + 2772*B*a^3*b^2*e^6 + 352*A*b^5*d^2*e^4 -
 384*B*b^5*d^3*e^3 + 1760*B*a*b^4*d^2*e^4 - 3168*B*a^2*b^3*d*e^5 - 1584*A*a
*b^4*d*e^5))/(693*b*e^7) + (2*b^3*x^5*(11*A*b*e + 55*B*a*e - 12*B*b*d))/(99
*e^2) + (x*(1386*B*a^5*e^6 + 6930*A*a^4*b*e^6 - 3072*B*b^5*d^5*e + 2816*A*b
^5*d^4*e^2 - 12672*A*a*b^4*d^3*e^3 - 18480*A*a^3*b^2*d*e^5 + 14080*B*a*b^4*
d^4*e^2 + 22176*A*a^2*b^3*d^2*e^4 - 25344*B*a^2*b^3*d^3*e^3 + 22176*B*a^3*b
^2*d^2*e^4 - 9240*B*a^4*b*d*e^5))/(693*b*e^7) + (10*b^2*x^4*(198*B*a^2*e^2
+ 24*B*b^2*d^2 + 99*A*a*b*e^2 - 22*A*b^2*d*e - 110*B*a*b*d*e))/(693*e^3) +
(2*B*b^4*x^6)/(11*e)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1637 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=446

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2(-aBe-Abe+2bBd)}{3e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3(-$$

Rubi [A] time = 0.20, antiderivative size = 446, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-5aBe-Abe+6bBd)}{7e^7(a+bx)}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(-2aBe-Abe+3bBd)}{e^7(a+bx)}-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2(-aBe-Abe+2bBd)}{3e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{e^7(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{3e^7(a+bx)(d+ex)^{3/2}}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*
x)*(d + e*x)^(3/2)) + (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) + (10*b*(b*d - a*e)^3*
(3*b*B*d - 2*A*b*e - a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e
^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(
3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (2*b^3*(b*d - a*e)*
(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(7/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(9/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{5/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{5/2}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{3/2}}-5b^6\right.}{}$$

$$= -\frac{2(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{3/2}}+\frac{2(bd-ae)^4(6bBd-5Abe-}{e^7(a+bx)}$$

Mathematica [**A**] time = 0.29, size = 239, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\left(-9b^4(d+ex)^5(-5aBe-Abe+6bBd)+63b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-210b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)+315b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)+63(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)-21(bd-ae)^5(Bd-Ae)+7b^5B(d+ex)^6\right)}{63e^7(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^5*(B*d - A*e) + 63*(b*d - a*e)^4*(6*b
*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 315*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e
- a*B*e)*(d + e*x)^2 - 210*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d +
 e*x)^3 + 63*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4 - 9*b^
4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 7*b^5*B*(d + e*x)^6))/(63*e^7*(
a + b*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [**A**] time = 30.08, size = 812, normalized size = 1.82

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-21*b^5*B*d^6 + 21*A*b^5*d^5*e + 105*a*b^4*B*
d^5*e - 105*a*A*b^4*d^4*e^2 - 210*a^2*b^3*B*d^4*e^2 + 210*a^2*A*b^3*d^3*e^3
 + 210*a^3*b^2*B*d^3*e^3 - 210*a^3*A*b^2*d^2*e^4 - 105*a^4*b*B*d^2*e^4 + 10
5*a^4*A*b*d*e^5 + 21*a^5*B*d*e^5 - 21*a^5*A*e^6 + 378*b^5*B*d^5*(d + e*x) -
 315*A*b^5*d^4*e*(d + e*x) - 1575*a*b^4*B*d^4*e*(d + e*x) + 1260*a*A*b^4*d^
3*e^2*(d + e*x) + 2520*a^2*b^3*B*d^3*e^2*(d + e*x) - 1890*a^2*A*b^3*d^2*e^3
*(d + e*x) - 1890*a^3*b^2*B*d^2*e^3*(d + e*x) + 1260*a^3*A*b^2*d*e^4*(d + e
*x) + 630*a^4*b*B*d*e^4*(d + e*x) - 315*a^4*A*b*e^5*(d + e*x) - 63*a^5*B*e^
5*(d + e*x) + 945*b^5*B*d^4*(d + e*x)^2 - 630*A*b^5*d^3*e*(d + e*x)^2 - 315
0*a*b^4*B*d^3*e*(d + e*x)^2 + 1890*a*A*b^4*d^2*e^2*(d + e*x)^2 + 3780*a^2*b
^3*B*d^2*e^2*(d + e*x)^2 - 1890*a^2*A*b^3*d*e^3*(d + e*x)^2 - 1890*a^3*b^2*
B*d*e^3*(d + e*x)^2 + 630*a^3*A*b^2*e^4*(d + e*x)^2 + 315*a^4*b*B*e^4*(d +
e*x)^2 - 420*b^5*B*d^3*(d + e*x)^3 + 210*A*b^5*d^2*e*(d + e*x)^3 + 1050*a*b
^4*B*d^2*e*(d + e*x)^3 - 420*a*A*b^4*d*e^2*(d + e*x)^3 - 840*a^2*b^3*B*d*e^
2*(d + e*x)^3 + 210*a^2*A*b^3*e^3*(d + e*x)^3 + 210*a^3*b^2*B*e^3*(d + e*x)
^3 + 189*b^5*B*d^2*(d + e*x)^4 - 63*A*b^5*d*e*(d + e*x)^4 - 315*a*b^4*B*d*e
*(d + e*x)^4 + 63*a*A*b^4*e^2*(d + e*x)^4 + 126*a^2*b^3*B*e^2*(d + e*x)^4 -
 54*b^5*B*d*(d + e*x)^5 + 9*A*b^5*e*(d + e*x)^5 + 45*a*b^4*B*e*(d + e*x)^5
+ 7*b^5*B*(d + e*x)^6))/(63*e^6*(d + e*x)^(3/2)*(a*e + b*e*x))
```

fricas [**A**] time = 0.42, size = 581, normalized size = 1.30

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/63*(7*B*b^5*e^6*x^6 + 1024*B*b^5*d^6 - 21*A*a^5*e^6 - 768*(5*B*a*b^4 + A*
b^5)*d^5*e + 2688*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 3360*(B*a^3*b^2 + A*a^2
*b^3)*d^3*e^3 + 840*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 42*(B*a^5 + 5*A*a^4*b
)*d*e^5 - 3*(4*B*b^5*d*e^5 - 3*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 3*(8*B*b^5*d^
2*e^4 - 6*(5*B*a*b^4 + A*b^5)*d*e^5 + 21*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 -
 2*(32*B*b^5*d^3*e^3 - 24*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 84*(2*B*a^2*b^3 + A
*a*b^4)*d*e^5 - 105*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 3*(128*B*b^5*d^4*e^2
 - 96*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 336*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 4
20*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 105*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 3
```

```
*(512*B*b^5*d^5*e - 384*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 1344*(2*B*a^2*b^3 + A
*a*b^4)*d^3*e^3 - 1680*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 420*(B*a^4*b + 2*A
*a^3*b^2)*d*e^5 - 21*(B*a^5 + 5*A*a^4*b)*e^6)*x)*sqrt(e*x + d)/(e^9*x^2 + 2
*d*e^8*x + d^2*e^7)
```

giac [B] time = 0.40, size = 1101, normalized size = 2.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/63*(7*(x*e + d)^(9/2)*B*b^5*e^56*sgn(b*x + a) - 54*(x*e + d)^(7/2)*B*b^5*
d*e^56*sgn(b*x + a) + 189*(x*e + d)^(5/2)*B*b^5*d^2*e^56*sgn(b*x + a) - 420
*(x*e + d)^(3/2)*B*b^5*d^3*e^56*sgn(b*x + a) + 945*sqrt(x*e + d)*B*b^5*d^4*
e^56*sgn(b*x + a) + 45*(x*e + d)^(7/2)*B*a*b^4*e^57*sgn(b*x + a) + 9*(x*e +
 d)^(7/2)*A*b^5*e^57*sgn(b*x + a) - 315*(x*e + d)^(5/2)*B*a*b^4*d*e^57*sgn(
b*x + a) - 63*(x*e + d)^(5/2)*A*b^5*d*e^57*sgn(b*x + a) + 1050*(x*e + d)^(3
/2)*B*a*b^4*d^2*e^57*sgn(b*x + a) + 210*(x*e + d)^(3/2)*A*b^5*d^2*e^57*sgn(
b*x + a) - 3150*sqrt(x*e + d)*B*a*b^4*d^3*e^57*sgn(b*x + a) - 630*sqrt(x*e
+ d)*A*b^5*d^3*e^57*sgn(b*x + a) + 126*(x*e + d)^(5/2)*B*a^2*b^3*e^58*sgn(b
*x + a) + 63*(x*e + d)^(5/2)*A*a*b^4*e^58*sgn(b*x + a) - 840*(x*e + d)^(3/2
)*B*a^2*b^3*d*e^58*sgn(b*x + a) - 420*(x*e + d)^(3/2)*A*a*b^4*d*e^58*sgn(b*
x + a) + 3780*sqrt(x*e + d)*B*a^2*b^3*d^2*e^58*sgn(b*x + a) + 1890*sqrt(x*e
 + d)*A*a*b^4*d^2*e^58*sgn(b*x + a) + 210*(x*e + d)^(3/2)*B*a^3*b^2*e^59*sg
n(b*x + a) + 210*(x*e + d)^(3/2)*A*a^2*b^3*e^59*sgn(b*x + a) - 1890*sqrt(x*
e + d)*B*a^3*b^2*d*e^59*sgn(b*x + a) - 1890*sqrt(x*e + d)*A*a^2*b^3*d*e^59*
sgn(b*x + a) + 315*sqrt(x*e + d)*B*a^4*b*e^60*sgn(b*x + a) + 630*sqrt(x*e +
 d)*A*a^3*b^2*e^60*sgn(b*x + a))*e^(-63) + 2/3*(18*(x*e + d)*B*b^5*d^5*sgn(
b*x + a) - B*b^5*d^6*sgn(b*x + a) - 75*(x*e + d)*B*a*b^4*d^4*e*sgn(b*x + a)
 - 15*(x*e + d)*A*b^5*d^4*e*sgn(b*x + a) + 5*B*a*b^4*d^5*e*sgn(b*x + a) + A
*b^5*d^5*e*sgn(b*x + a) + 120*(x*e + d)*B*a^2*b^3*d^3*e^2*sgn(b*x + a) + 60
*(x*e + d)*A*a*b^4*d^3*e^2*sgn(b*x + a) - 10*B*a^2*b^3*d^4*e^2*sgn(b*x + a)
 - 5*A*a*b^4*d^4*e^2*sgn(b*x + a) - 90*(x*e + d)*B*a^3*b^2*d^2*e^3*sgn(b*x
+ a) - 90*(x*e + d)*A*a^2*b^3*d^2*e^3*sgn(b*x + a) + 10*B*a^3*b^2*d^3*e^3*s
gn(b*x + a) + 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 30*(x*e + d)*B*a^4*b*d*e^
4*sgn(b*x + a) + 60*(x*e + d)*A*a^3*b^2*d*e^4*sgn(b*x + a) - 5*B*a^4*b*d^2*
e^4*sgn(b*x + a) - 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - 3*(x*e + d)*B*a^5*e^
5*sgn(b*x + a) - 15*(x*e + d)*A*a^4*b*e^5*sgn(b*x + a) + B*a^5*d*e^5*sgn(b*
x + a) + 5*A*a^4*b*d*e^5*sgn(b*x + a) - A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e
 + d)^(3/2)
```

maple [A] time = 0.05, size = 689, normalized size = 1.54

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/63/(e*x+d)^(3/2)*(-7*B*b^5*e^6*x^6-9*A*b^5*e^6*x^5-45*B*a*b^4*e^6*x^5+12
*B*b^5*d*e^5*x^5-63*A*a*b^4*e^6*x^4+18*A*b^5*d*e^5*x^4-126*B*a^2*b^3*e^6*x^
4+90*B*a*b^4*d*e^5*x^4-24*B*b^5*d^2*e^4*x^4-210*A*a^2*b^3*e^6*x^3+168*A*a*b
^4*d*e^5*x^3-48*A*b^5*d^2*e^4*x^3-210*B*a^3*b^2*e^6*x^3+336*B*a^2*b^3*d*e^5
*x^3-240*B*a*b^4*d^2*e^4*x^3+64*B*b^5*d^3*e^3*x^3-630*A*a^3*b^2*e^6*x^2+126
0*A*a^2*b^3*d*e^5*x^2-1008*A*a*b^4*d^2*e^4*x^2+288*A*b^5*d^3*e^3*x^2-315*B*
a^4*b*e^6*x^2+1260*B*a^3*b^2*d*e^5*x^2-2016*B*a^2*b^3*d^2*e^4*x^2+1440*B*a*
b^4*d^3*e^3*x^2-384*B*b^5*d^4*e^2*x^2+315*A*a^4*b*e^6*x-2520*A*a^3*b^2*d*e^
5*x+5040*A*a^2*b^3*d^2*e^4*x-4032*A*a*b^4*d^3*e^3*x+1152*A*b^5*d^4*e^2*x+63
*B*a^5*e^6*x-1260*B*a^4*b*d*e^5*x+5040*B*a^3*b^2*d^2*e^4*x-8064*B*a^2*b^3*d
```

```
^3*e^3*x+5760*B*a*b^4*d^4*e^2*x-1536*B*b^5*d^5*e*x+21*A*a^5*e^6+210*A*a^4*b
*d*e^5-1680*A*a^3*b^2*d^2*e^4+3360*A*a^2*b^3*d^3*e^3-2688*A*a*b^4*d^4*e^2+7
68*A*b^5*d^5*e+42*B*a^5*d*e^5-840*B*a^4*b*d^2*e^4+3360*B*a^3*b^2*d^3*e^3-53
76*B*a^2*b^3*d^4*e^2+3840*B*a*b^4*d^5*e-1024*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e
^7/(b*x+a)^5
```

maxima [A] time = 0.87, size = 625, normalized size = 1.40

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/21*(3*b^5*e^5*x^5 - 256*b^5*d^5 + 896*a*b^4*d^4*e - 1120*a^2*b^3*d^3*e^2
+ 560*a^3*b^2*d^2*e^3 - 70*a^4*b*d*e^4 - 7*a^5*e^5 - 3*(2*b^5*d*e^4 - 7*a*b
^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 28*a*b^4*d*e^4 + 35*a^2*b^3*e^5)*x^3 - 6*(
16*b^5*d^3*e^2 - 56*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 - 35*a^3*b^2*e^5)*x^2
- 3*(128*b^5*d^4*e - 448*a*b^4*d^3*e^2 + 560*a^2*b^3*d^2*e^3 - 280*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*A/((e^7*x + d*e^6)*sqrt(e*x + d)) + 2/63*(7*b^5*e^
6*x^6 + 1024*b^5*d^6 - 3840*a*b^4*d^5*e + 5376*a^2*b^3*d^4*e^2 - 3360*a^3*b
^2*d^3*e^3 + 840*a^4*b*d^2*e^4 - 42*a^5*d*e^5 - 3*(4*b^5*d*e^5 - 15*a*b^4*e
^6)*x^5 + 6*(4*b^5*d^2*e^4 - 15*a*b^4*d*e^5 + 21*a^2*b^3*e^6)*x^4 - 2*(32*b
^5*d^3*e^3 - 120*a*b^4*d^2*e^4 + 168*a^2*b^3*d*e^5 - 105*a^3*b^2*e^6)*x^3 +
 3*(128*b^5*d^4*e^2 - 480*a*b^4*d^3*e^3 + 672*a^2*b^3*d^2*e^4 - 420*a^3*b^2
*d*e^5 + 105*a^4*b*e^6)*x^2 + 3*(512*b^5*d^5*e - 1920*a*b^4*d^4*e^2 + 2688*
a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 420*a^4*b*d*e^5 - 21*a^5*e^6)*x)*B
/((e^8*x + d*e^7)*sqrt(e*x + d))
```

mupad [B] time = 3.89, size = 695, normalized size = 1.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^2*(630*B*a^4*b*e^6 + 1260*A*a^3*b^2*e^
6 - 576*A*b^5*d^3*e^3 + 768*B*b^5*d^4*e^2 + 2016*A*a*b^4*d^2*e^4 - 2520*A*a
^2*b^3*d*e^5 - 2880*B*a*b^4*d^3*e^3 - 2520*B*a^3*b^2*d*e^5 + 4032*B*a^2*b^3
*d^2*e^4))/(63*b*e^8) - (42*A*a^5*e^6 - 2048*B*b^5*d^6 + 1536*A*b^5*d^5*e +
 84*B*a^5*d*e^5 - 5376*A*a*b^4*d^4*e^2 - 1680*B*a^4*b*d^2*e^4 + 6720*A*a^2*
b^3*d^3*e^3 - 3360*A*a^3*b^2*d^2*e^4 - 10752*B*a^2*b^3*d^4*e^2 + 6720*B*a^3
*b^2*d^3*e^3 + 420*A*a^4*b*d*e^5 + 7680*B*a*b^4*d^5*e)/(63*b*e^8) + (x^3*(4
20*A*a^2*b^3*e^6 + 420*B*a^3*b^2*e^6 + 96*A*b^5*d^2*e^4 - 128*B*b^5*d^3*e^3
 + 480*B*a*b^4*d^2*e^4 - 672*B*a^2*b^3*d*e^5 - 336*A*a*b^4*d*e^5))/(63*b*e^
8) + (2*b^3*x^5*(3*A*b*e + 15*B*a*e - 4*B*b*d))/(21*e^3) - (x*(126*B*a^5*e^
6 + 630*A*a^4*b*e^6 - 3072*B*b^5*d^5*e + 2304*A*b^5*d^4*e^2 - 8064*A*a*b^4*
d^3*e^3 - 5040*A*a^3*b^2*d*e^5 + 11520*B*a*b^4*d^4*e^2 + 10080*A*a^2*b^3*d^
2*e^4 - 16128*B*a^2*b^3*d^3*e^3 + 10080*B*a^3*b^2*d^2*e^4 - 2520*B*a^4*b*d*
e^5))/(63*b*e^8) + (2*b^2*x^4*(42*B*a^2*e^2 + 8*B*b^2*d^2 + 21*A*a*b*e^2 -
6*A*b^2*d*e - 30*B*a*b*d*e))/(21*e^4) + (2*B*b^4*x^6)/(9*e^2)))/(x^2*(d + e
*x)^(1/2) + (a*d*(d + e*x)^(1/2))/(b*e) + (x*(63*a*e^8 + 63*b*d*e^7)*(d + e
*x)^(1/2))/(63*b*e^8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1638 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=448

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}-\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2}{e^7(a+bx)\sqrt{d+ex}}$$

Rubi [A] time = 0.20, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-5aBe-Abe+6bBd)}{5e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(-2aBe-Abe+3bBd)}{3e^7(a+bx)}-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}-\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^7(a+bx)\sqrt{d+ex}}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{3e^7(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{5e^7(a+bx)(d+ex)^{5/2}}+\frac{2b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*
x)*(d + e*x)^(5/2)) + (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^(3/2)) - (10*b*(b*d - a*e
)^3*(3*b*B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*
x)*Sqrt[d + e*x]) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d
+ e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b^3*(b*d - a*e)
*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(3*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(5/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(7/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{7/2}}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{7/2}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{5/2}}-\right.}{}\\
&= -\frac{2(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{5/2}}+\frac{2(bd-ae)^4(6bBd-5Ab}{3e^7(a+b}
\end{aligned}$$

Mathematica [A] time = 0.31, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(-21b^4(d+ex)^5(-5aBe-Abe+6bBd)+175b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-1050b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)-525b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)+35(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)-21(bd-ae)^5(Bd-Ae)+15b^5B(d+ex)^6\right)}{105e^7(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^5*(B*d - A*e) + 35*(b*d - a*e)^4*(6*b
*B*d - 5*A*b*e - a*B*e)*(d + e*x) - 525*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e
- a*B*e)*(d + e*x)^2 - 1050*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d
+ e*x)^3 + 175*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4 - 21
*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 15*b^5*B*(d + e*x)^6))/(105*
e^7*(a + b*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 33.34, size = 812, normalized size = 1.81

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-21*b^5*B*d^6 + 21*A*b^5*d^5*e + 105*a*b^4*B*
d^5*e - 105*a*A*b^4*d^4*e^2 - 210*a^2*b^3*B*d^4*e^2 + 210*a^2*A*b^3*d^3*e^3
 + 210*a^3*b^2*B*d^3*e^3 - 210*a^3*A*b^2*d^2*e^4 - 105*a^4*b*B*d^2*e^4 + 10
5*a^4*A*b*d*e^5 + 21*a^5*B*d*e^5 - 21*a^5*A*e^6 + 210*b^5*B*d^5*(d + e*x) -
 175*A*b^5*d^4*e*(d + e*x) - 875*a*b^4*B*d^4*e*(d + e*x) + 700*a*A*b^4*d^3*
e^2*(d + e*x) + 1400*a^2*b^3*B*d^3*e^2*(d + e*x) - 1050*a^2*A*b^3*d^2*e^3*(
d + e*x) - 1050*a^3*b^2*B*d^2*e^3*(d + e*x) + 700*a^3*A*b^2*d*e^4*(d + e*x)
 + 350*a^4*b*B*d*e^4*(d + e*x) - 175*a^4*A*b*e^5*(d + e*x) - 35*a^5*B*e^5*(
d + e*x) - 1575*b^5*B*d^4*(d + e*x)^2 + 1050*A*b^5*d^3*e*(d + e*x)^2 + 5250
*a*b^4*B*d^3*e*(d + e*x)^2 - 3150*a*A*b^4*d^2*e^2*(d + e*x)^2 - 6300*a^2*b^
3*B*d^2*e^2*(d + e*x)^2 + 3150*a^2*A*b^3*d*e^3*(d + e*x)^2 + 3150*a^3*b^2*B
*d*e^3*(d + e*x)^2 - 1050*a^3*A*b^2*e^4*(d + e*x)^2 - 525*a^4*b*B*e^4*(d +
e*x)^2 - 2100*b^5*B*d^3*(d + e*x)^3 + 1050*A*b^5*d^2*e*(d + e*x)^3 + 5250*a
*b^4*B*d^2*e*(d + e*x)^3 - 2100*a*A*b^4*d*e^2*(d + e*x)^3 - 4200*a^2*b^3*B*
d*e^2*(d + e*x)^3 + 1050*a^2*A*b^3*e^3*(d + e*x)^3 + 1050*a^3*b^2*B*e^3*(d
+ e*x)^3 + 525*b^5*B*d^2*(d + e*x)^4 - 175*A*b^5*d*e*(d + e*x)^4 - 875*a*b^
4*B*d*e*(d + e*x)^4 + 175*a*A*b^4*e^2*(d + e*x)^4 + 350*a^2*b^3*B*e^2*(d +
e*x)^4 - 126*b^5*B*d*(d + e*x)^5 + 21*A*b^5*e*(d + e*x)^5 + 105*a*b^4*B*e*(
d + e*x)^5 + 15*b^5*B*(d + e*x)^6))/(105*e^6*(d + e*x)^(5/2)*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 592, normalized size = 1.32

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/105*(15*B*b^5*e^6*x^6 - 3072*B*b^5*d^6 - 21*A*a^5*e^6 + 1792*(5*B*a*b^4 +
 A*b^5)*d^5*e - 4480*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 3360*(B*a^3*b^2 + A*
a^2*b^3)*d^3*e^3 - 280*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 14*(B*a^5 + 5*A*a^
4*b)*d*e^5 - 3*(12*B*b^5*d*e^5 - 7*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*(24*B*b
^5*d^2*e^4 - 14*(5*B*a*b^4 + A*b^5)*d*e^5 + 35*(2*B*a^2*b^3 + A*a*b^4)*e^6)
*x^4 - 10*(96*B*b^5*d^3*e^3 - 56*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 140*(2*B*a^2
*b^3 + A*a*b^4)*d*e^5 - 105*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 - 15*(384*B*b^
5*d^4*e^2 - 224*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 560*(2*B*a^2*b^3 + A*a*b^4)*d
^2*e^4 - 420*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 35*(B*a^4*b + 2*A*a^3*b^2)*e^6
```

```
)*x^2 - 5*(1536*B*b^5*d^5*e - 896*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 2240*(2*B*a
^2*b^3 + A*a*b^4)*d^3*e^3 - 1680*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 140*(B*a
^4*b + 2*A*a^3*b^2)*d*e^5 + 7*(B*a^5 + 5*A*a^4*b)*e^6)*x)*sqrt(e*x + d)/(e^
10*x^3 + 3*d*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7)
```

giac [B] time = 0.35, size = 1101, normalized size = 2.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*b^5*e^42*sgn(b*x + a) - 126*(x*e + d)^(5/2)*B*b
^5*d*e^42*sgn(b*x + a) + 525*(x*e + d)^(3/2)*B*b^5*d^2*e^42*sgn(b*x + a) -
2100*sqrt(x*e + d)*B*b^5*d^3*e^42*sgn(b*x + a) + 105*(x*e + d)^(5/2)*B*a*b^
4*e^43*sgn(b*x + a) + 21*(x*e + d)^(5/2)*A*b^5*e^43*sgn(b*x + a) - 875*(x*e
 + d)^(3/2)*B*a*b^4*d*e^43*sgn(b*x + a) - 175*(x*e + d)^(3/2)*A*b^5*d*e^43*
sgn(b*x + a) + 5250*sqrt(x*e + d)*B*a*b^4*d^2*e^43*sgn(b*x + a) + 1050*sqrt
(x*e + d)*A*b^5*d^2*e^43*sgn(b*x + a) + 350*(x*e + d)^(3/2)*B*a^2*b^3*e^44*
sgn(b*x + a) + 175*(x*e + d)^(3/2)*A*a*b^4*e^44*sgn(b*x + a) - 4200*sqrt(x*
e + d)*B*a^2*b^3*d*e^44*sgn(b*x + a) - 2100*sqrt(x*e + d)*A*a*b^4*d*e^44*sg
n(b*x + a) + 1050*sqrt(x*e + d)*B*a^3*b^2*e^45*sgn(b*x + a) + 1050*sqrt(x*e
 + d)*A*a^2*b^3*e^45*sgn(b*x + a))*e^(-49) - 2/15*(225*(x*e + d)^2*B*b^5*d^
4*sgn(b*x + a) - 30*(x*e + d)*B*b^5*d^5*sgn(b*x + a) + 3*B*b^5*d^6*sgn(b*x
+ a) - 750*(x*e + d)^2*B*a*b^4*d^3*e*sgn(b*x + a) - 150*(x*e + d)^2*A*b^5*d
^3*e*sgn(b*x + a) + 125*(x*e + d)*B*a*b^4*d^4*e*sgn(b*x + a) + 25*(x*e + d)
*A*b^5*d^4*e*sgn(b*x + a) - 15*B*a*b^4*d^5*e*sgn(b*x + a) - 3*A*b^5*d^5*e*s
gn(b*x + a) + 900*(x*e + d)^2*B*a^2*b^3*d^2*e^2*sgn(b*x + a) + 450*(x*e + d
)^2*A*a*b^4*d^2*e^2*sgn(b*x + a) - 200*(x*e + d)*B*a^2*b^3*d^3*e^2*sgn(b*x
+ a) - 100*(x*e + d)*A*a*b^4*d^3*e^2*sgn(b*x + a) + 30*B*a^2*b^3*d^4*e^2*sg
n(b*x + a) + 15*A*a*b^4*d^4*e^2*sgn(b*x + a) - 450*(x*e + d)^2*B*a^3*b^2*d*
e^3*sgn(b*x + a) - 450*(x*e + d)^2*A*a^2*b^3*d*e^3*sgn(b*x + a) + 150*(x*e
+ d)*B*a^3*b^2*d^2*e^3*sgn(b*x + a) + 150*(x*e + d)*A*a^2*b^3*d^2*e^3*sgn(b
*x + a) - 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 30*A*a^2*b^3*d^3*e^3*sgn(b*x
+ a) + 75*(x*e + d)^2*B*a^4*b*e^4*sgn(b*x + a) + 150*(x*e + d)^2*A*a^3*b^2*
e^4*sgn(b*x + a) - 50*(x*e + d)*B*a^4*b*d*e^4*sgn(b*x + a) - 100*(x*e + d)*
A*a^3*b^2*d*e^4*sgn(b*x + a) + 15*B*a^4*b*d^2*e^4*sgn(b*x + a) + 30*A*a^3*b
^2*d^2*e^4*sgn(b*x + a) + 5*(x*e + d)*B*a^5*e^5*sgn(b*x + a) + 25*(x*e + d)
*A*a^4*b*e^5*sgn(b*x + a) - 3*B*a^5*d*e^5*sgn(b*x + a) - 15*A*a^4*b*d*e^5*s
gn(b*x + a) + 3*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(5/2)
```

maple [A] time = 0.06, size = 689, normalized size = 1.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/105/(e*x+d)^(5/2)*(-15*B*b^5*e^6*x^6-21*A*b^5*e^6*x^5-105*B*a*b^4*e^6*x^
5+36*B*b^5*d*e^5*x^5-175*A*a*b^4*e^6*x^4+70*A*b^5*d*e^5*x^4-350*B*a^2*b^3*e
^6*x^4+350*B*a*b^4*d*e^5*x^4-120*B*b^5*d^2*e^4*x^4-1050*A*a^2*b^3*e^6*x^3+1
400*A*a*b^4*d*e^5*x^3-560*A*b^5*d^2*e^4*x^3-1050*B*a^3*b^2*e^6*x^3+2800*B*a
^2*b^3*d*e^5*x^3-2800*B*a*b^4*d^2*e^4*x^3+960*B*b^5*d^3*e^3*x^3+1050*A*a^3*
b^2*e^6*x^2-6300*A*a^2*b^3*d*e^5*x^2+8400*A*a*b^4*d^2*e^4*x^2-3360*A*b^5*d^
3*e^3*x^2+525*B*a^4*b*e^6*x^2-6300*B*a^3*b^2*d*e^5*x^2+16800*B*a^2*b^3*d^2*
e^4*x^2-16800*B*a*b^4*d^3*e^3*x^2+5760*B*b^5*d^4*e^2*x^2+175*A*a^4*b*e^6*x+
1400*A*a^3*b^2*d*e^5*x-8400*A*a^2*b^3*d^2*e^4*x+11200*A*a*b^4*d^3*e^3*x-448
0*A*b^5*d^4*e^2*x+35*B*a^5*e^6*x+700*B*a^4*b*d*e^5*x-8400*B*a^3*b^2*d^2*e^4
*x+22400*B*a^2*b^3*d^3*e^3*x-22400*B*a*b^4*d^4*e^2*x+7680*B*b^5*d^5*e*x+21*
```

```
A*a^5*e^6+70*A*a^4*b*d*e^5+560*A*a^3*b^2*d^2*e^4-3360*A*a^2*b^3*d^3*e^3+448
0*A*a*b^4*d^4*e^2-1792*A*b^5*d^5*e+14*B*a^5*d*e^5+280*B*a^4*b*d^2*e^4-3360*
B*a^3*b^2*d^3*e^3+8960*B*a^2*b^3*d^4*e^2-8960*B*a*b^4*d^5*e+3072*B*b^5*d^6)
*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [A] time = 0.78, size = 647, normalized size = 1.44

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/15*(3*b^5*e^5*x^5 + 256*b^5*d^5 - 640*a*b^4*d^4*e + 480*a^2*b^3*d^3*e^2 -
 80*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(2*b^5*d*e^4 - 5*a*b^4
*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 20*a*b^4*d*e^4 + 15*a^2*b^3*e^5)*x^3 + 30*(
16*b^5*d^3*e^2 - 40*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 - 5*a^3*b^2*e^5)*x^2 +
 5*(128*b^5*d^4*e - 320*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^3 - 40*a^3*b^2*d*
e^4 - 5*a^4*b*e^5)*x)*A/((e^8*x^2 + 2*d*e^7*x + d^2*e^6)*sqrt(e*x + d)) + 2
/105*(15*b^5*e^6*x^6 - 3072*b^5*d^6 + 8960*a*b^4*d^5*e - 8960*a^2*b^3*d^4*e
^2 + 3360*a^3*b^2*d^3*e^3 - 280*a^4*b*d^2*e^4 - 14*a^5*d*e^5 - 3*(12*b^5*d*
e^5 - 35*a*b^4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 35*a*b^4*d*e^5 + 35*a^2*b^3*
e^6)*x^4 - 10*(96*b^5*d^3*e^3 - 280*a*b^4*d^2*e^4 + 280*a^2*b^3*d*e^5 - 105
*a^3*b^2*e^6)*x^3 - 15*(384*b^5*d^4*e^2 - 1120*a*b^4*d^3*e^3 + 1120*a^2*b^3
*d^2*e^4 - 420*a^3*b^2*d*e^5 + 35*a^4*b*e^6)*x^2 - 5*(1536*b^5*d^5*e - 4480
*a*b^4*d^4*e^2 + 4480*a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 140*a^4*b*d*
e^5 + 7*a^5*e^6)*x)*B/((e^9*x^2 + 2*d*e^8*x + d^2*e^7)*sqrt(e*x + d))
```

mupad [B] time = 3.95, size = 718, normalized size = 1.60

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(7/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^3*(20*A*a^2*b^3*e^6 + 20*B*a^3*b^2*e^6
 + (32*A*b^5*d^2*e^4)/3 - (128*B*b^5*d^3*e^3)/7 + (160*B*a*b^4*d^2*e^4)/3 -
 (160*B*a^2*b^3*d*e^5)/3 - (80*A*a*b^4*d*e^5)/3))/(b*e^9) - (x^2*(10*B*a^4*
b*e^6 + 20*A*a^3*b^2*e^6 - 64*A*b^5*d^3*e^3 + (768*B*b^5*d^4*e^2)/7 + 160*A
*a*b^4*d^2*e^4 - 120*A*a^2*b^3*d*e^5 - 320*B*a*b^4*d^3*e^3 - 120*B*a^3*b^2*
d*e^5 + 320*B*a^2*b^3*d^2*e^4))/(b*e^9) - ((2*A*a^5*e^6)/5 + (2048*B*b^5*d^
6)/35 - (512*A*b^5*d^5*e)/15 + (4*B*a^5*d*e^5)/15 + (256*A*a*b^4*d^4*e^2)/3
 + (16*B*a^4*b*d^2*e^4)/3 - 64*A*a^2*b^3*d^3*e^3 + (32*A*a^3*b^2*d^2*e^4)/3
 + (512*B*a^2*b^3*d^4*e^2)/3 - 64*B*a^3*b^2*d^3*e^3 + (4*A*a^4*b*d*e^5)/3 -
 (512*B*a*b^4*d^5*e)/3)/(b*e^9) + (b^3*x^5*((2*A*b*e)/5 + 2*B*a*e - (24*B*b
*d)/35))/e^4 - (x*(70*B*a^5*e^6 + 350*A*a^4*b*e^6 + 15360*B*b^5*d^5*e - 896
0*A*b^5*d^4*e^2 + 22400*A*a*b^4*d^3*e^3 + 2800*A*a^3*b^2*d*e^5 - 44800*B*a*
b^4*d^4*e^2 - 16800*A*a^2*b^3*d^2*e^4 + 44800*B*a^2*b^3*d^3*e^3 - 16800*B*a
^3*b^2*d^2*e^4 + 1400*B*a^4*b*d*e^5))/(105*b*e^9) + (b^2*x^4*((20*B*a^2*e^2
)/3 + (16*B*b^2*d^2)/7 + (10*A*a*b*e^2)/3 - (4*A*b^2*d*e)/3 - (20*B*a*b*d*e
)/3))/e^5 + (2*B*b^4*x^6)/(7*e^3)))/(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)
^(1/2))/(b*e^2) + (x^2*(a*e^9 + 2*b*d*e^8)*(d + e*x)^(1/2))/(b*e^9) + (d*x*
(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1639 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=289

$$\frac{2(a+bx)(d+ex)^{5/2}(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)(b}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.22, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 80, 50, 63, 208}

$$\frac{2(a+bx)(d+ex)^{5/2}(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)(d+ex)^{3/2}(Ab-aB)(bd-ae)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B(a+bx)(d+ex)^{7/2}}{7be\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x])/(b^4*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]) + (2*(A*b - a*B)*(b*d - a*e)*(a + b*x)*(d + e*x)^(3/2))/(3*b
^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x)*(d + e*x)^(5/2
))/(5*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*B*(a + b*x)*(d + e*x)^(7/2))/
(7*b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*(A*b - a*B)*(b*d - a*e)^(5/2)*(a
 + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(9/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^{5/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)(d+ex)^{7/2}}{7be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{7}{2}Ab^2e-\frac{7}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{5/2}}{ab+b^2x}\,dx}{7b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{7/2}}{7be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(b^2d-abe\right)\left(\frac{7}{2}Ab^2e \right.\right.}{7b^4e\sqrt{}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a}{7be\sqrt{a}}$$

$$= \frac{2(Ab-aB)(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.30, size = 154, normalized size = 0.53

$$\frac{2(a+bx)\left(\frac{7e(Ab-aB)\left(5(bd-ae)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)}{15b^{7/2}}+B(d+ex)^{7/2}\right)}{7be\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(B*(d + e*x)^(7/2) + (7*(A*b - a*B)*e*(3*b^(5/2)*(d + e*x)^(5/
2) + 5*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b*d
- a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])))/(15*b^(7/2
))))/(7*b*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 51.23, size = 346, normalized size = 1.20

$$\frac{(-ae-bex)\left(-\frac{2\left(-105a^3Be^3\sqrt{d+ex}+105a^2Abe^3\sqrt{d+ex}+35a^2bBe^2(d+ex)^{3/2}+210a^2bBde^2\sqrt{d+ex}-35aAb^2e^2(d+ex)^{3/2}-210aAb^2de^2\sqrt{d+ex}-105ab^2Bd^2e\sqrt{d+ex}-21ab^2Be(d+ex)^{5/2}-35ab^2Bde(d+ex)^{3/2}+105Ab^3d^2e\sqrt{d+ex}+21Ab^3e(d+ex)^{5/2}+35Ab^3de(d+ex)^{3/2}+15b^3B(d+ex)^{7/2}\right)}{105b^4e}-\frac{2(Ab-aB)(ae-bd)^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{9/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2
],x]
```

```
[Out] ((-(a*e) - b*e*x)*((-2*(105*A*b^3*d^2*e*Sqrt[d + e*x] - 105*a*b^2*B*d^2*e*S
qrt[d + e*x] - 210*a*A*b^2*d*e^2*Sqrt[d + e*x] + 210*a^2*b*B*d*e^2*Sqrt[d +
```

```
 e*x] + 105*a^2*A*b*e^3*Sqrt[d + e*x] - 105*a^3*B*e^3*Sqrt[d + e*x] + 35*A*
b^3*d*e*(d + e*x)^(3/2) - 35*a*b^2*B*d*e*(d + e*x)^(3/2) - 35*a*A*b^2*e^2*(
d + e*x)^(3/2) + 35*a^2*b*B*e^2*(d + e*x)^(3/2) + 21*A*b^3*e*(d + e*x)^(5/2
) - 21*a*b^2*B*e*(d + e*x)^(5/2) + 15*b^3*B*(d + e*x)^(7/2)))/(105*b^4*e) -
 (2*(A*b - a*B)*(-(b*d) + a*e)^(5/2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqr
t[d + e*x])/(b*d - a*e)])/b^(9/2)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.46, size = 591, normalized size = 2.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/105*(105*((B*a*b^2 - A*b^3)*d^2*e - 2*(B*a^2*b - A*a*b^2)*d*e^2 + (B*a^3
 - A*a^2*b)*e^3)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x
+ d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(15*B*b^3*e^3*x^3 + 15*B*b^3*d^3
 - 161*(B*a*b^2 - A*b^3)*d^2*e + 245*(B*a^2*b - A*a*b^2)*d*e^2 - 105*(B*a^3
 - A*a^2*b)*e^3 + 3*(15*B*b^3*d*e^2 - 7*(B*a*b^2 - A*b^3)*e^3)*x^2 + (45*B*
b^3*d^2*e - 77*(B*a*b^2 - A*b^3)*d*e^2 + 35*(B*a^2*b - A*a*b^2)*e^3)*x)*sqr
t(e*x + d))/(b^4*e), 2/105*(105*((B*a*b^2 - A*b^3)*d^2*e - 2*(B*a^2*b - A*a
*b^2)*d*e^2 + (B*a^3 - A*a^2*b)*e^3)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x
+ d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) + (15*B*b^3*e^3*x^3 + 15*B*b^3*d^3
 - 161*(B*a*b^2 - A*b^3)*d^2*e + 245*(B*a^2*b - A*a*b^2)*d*e^2 - 105*(B*a^3
 - A*a^2*b)*e^3 + 3*(15*B*b^3*d*e^2 - 7*(B*a*b^2 - A*b^3)*e^3)*x^2 + (45*B*
b^3*d^2*e - 77*(B*a*b^2 - A*b^3)*d*e^2 + 35*(B*a^2*b - A*a*b^2)*e^3)*x)*sqr
t(e*x + d))/(b^4*e)]
```

giac [B] time = 0.23, size = 497, normalized size = 1.72

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^3*d^3*sgn(b*x + a) - A*b^4*d^3*sgn(b*x + a) - 3*B*a^2*b^2*d^2*e*s
gn(b*x + a) + 3*A*a*b^3*d^2*e*sgn(b*x + a) + 3*B*a^3*b*d*e^2*sgn(b*x + a) -
 3*A*a^2*b^2*d*e^2*sgn(b*x + a) - B*a^4*e^3*sgn(b*x + a) + A*a^3*b*e^3*sgn(
b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e
)*b^4) + 2/105*(15*(x*e + d)^(7/2)*B*b^6*e^6*sgn(b*x + a) - 21*(x*e + d)^(5
/2)*B*a*b^5*e^7*sgn(b*x + a) + 21*(x*e + d)^(5/2)*A*b^6*e^7*sgn(b*x + a) -
35*(x*e + d)^(3/2)*B*a*b^5*d*e^7*sgn(b*x + a) + 35*(x*e + d)^(3/2)*A*b^6*d*
e^7*sgn(b*x + a) - 105*sqrt(x*e + d)*B*a*b^5*d^2*e^7*sgn(b*x + a) + 105*sqr
t(x*e + d)*A*b^6*d^2*e^7*sgn(b*x + a) + 35*(x*e + d)^(3/2)*B*a^2*b^4*e^8*sg
n(b*x + a) - 35*(x*e + d)^(3/2)*A*a*b^5*e^8*sgn(b*x + a) + 210*sqrt(x*e + d
)*B*a^2*b^4*d*e^8*sgn(b*x + a) - 210*sqrt(x*e + d)*A*a*b^5*d*e^8*sgn(b*x +
a) - 105*sqrt(x*e + d)*B*a^3*b^3*e^9*sgn(b*x + a) + 105*sqrt(x*e + d)*A*a^2
*b^4*e^9*sgn(b*x + a))*e^(-7)/b^7
```

maple [B] time = 0.06, size = 671, normalized size = 2.32

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)*(15*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^3+21*A*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(5/2)*b^3*e-21*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^2*e-
35*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^2*e^2+35*A*((a*e-b*d)*b)^(1/2)*(
```

```
e*x+d)^(3/2)*b^3*d*e-105*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*
b*e^4+315*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*b^2*d*e^3-315*A
*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b^3*d^2*e^2+105*A*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b^4*d^3*e+35*B*((a*e-b*d)*b)^(1/2)*(e*x+d
)^(3/2)*a^2*b*e^2-35*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^2*d*e+105*B*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*e^4-315*B*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)*a^3*b*d*e^3+315*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*a^2*b^2*d^2*e^2-105*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*a*b^3*d^3*e+105*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b*e^3-210*A*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^2*d*e^2+105*A*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*b^3*d^2*e-105*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*e^3+210*B*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b*d*e^2-105*B*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*a*b^2*d^2*e)/((b*x+a)^2)^(1/2)/e/b^4/((a*e-b*d)*b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\sqrt{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/sqrt((b*x + a)^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{5/2}}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((A + B*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.1640 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=230

$$\frac{2(a+bx)(d+ex)^{3/2}(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)(b}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.14, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 80, 50, 63, 208}

$$\frac{2(a+bx)(d+ex)^{3/2}(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B(a+bx)(d+ex)^{5/2}}{5be\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x])/(b^3*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x)*(d + e*x)^(3/2))/(3*b^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (2*B*(a + b*x)*(d + e*x)^(5/2))/(5*b*e*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) - (2*(A*b - a*B)*(b*d - a*e)^(3/2)*(a + b*x)*ArcTanh[(Sqrt
[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^{3/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)(d+ex)^{5/2}}{5be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{5}{2}Ab^2e-\frac{5}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{3/2}}{ab+b^2x}\,dx}{5b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{5/2}}{5be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(b^2d-abe\right)\left(\frac{5}{2}Ab^2e \right.\right.}{5b^4e\sqrt{}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+}{5be\sqrt{a^2}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+}{5be\sqrt{a^2}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+}{5be\sqrt{a^2}}$$

Mathematica [A] time = 0.17, size = 127, normalized size = 0.55

$$\frac{2(a+bx)\left(\frac{5e(Ab-aB)\left(\sqrt{b}\,\sqrt{d+ex}\,(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{5/2}}+B(d+ex)^{5/2}\right)}{5be\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(B*(d + e*x)^(5/2) + (5*(A*b - a*B)*e*(Sqrt[b]*Sqrt[d + e*x]*(
4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x]
)/Sqrt[b*d - a*e]]))/(3*b^(5/2))))/(5*b*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 43.11, size = 186, normalized size = 0.81

$$\frac{(-ae-bex)\left(\frac{2(Ab-aB)(ae-bd)^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\sqrt{ae-bd}}{bd-ae}\right)}{b^{7/2}}-\frac{2\sqrt{d+ex}\left(15a^2Be^2-15aAbe^2-5abBe(d+ex)-15abBde+5Ab^2e(d+ex)+15Ab^2de+3b^2B(d+ex)^2\right)}{15b^3e}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2
],x]
```

```
[Out] ((-(a*e) - b*e*x)*((-2*Sqrt[d + e*x]*(15*A*b^2*d*e - 15*a*b*B*d*e - 15*a*A*
b*e^2 + 15*a^2*B*e^2 + 5*A*b^2*e*(d + e*x) - 5*a*b*B*e*(d + e*x) + 3*b^2*B*
(d + e*x)^2))/(15*b^3*e) + (2*(A*b - a*B)*(-(b*d) + a*e)^(3/2)*ArcTan[(Sqrt
[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/b^(7/2)))/(e*Sqrt[(a*e
+ b*e*x)^2/e^2])
```

fricas [A] time = 0.43, size = 373, normalized size = 1.62

$$\left[-\frac{15\left((Bab - Ab^2)de - (Ba^2 - Aab)e^2\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2bd-ae-2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right) - 2\left(3Bb^2e^2x^2 + 3Bb^2d^2 - 20(Bab - Ab^2)de + 15(Ba^2 - Aab)e^2 + \left(6Bb^2de - 5(Bab - Ab^2)e^2\right)x\right)\sqrt{ex+d}}{15b^3e}, \frac{2\left(15\left((Bab - Ab^2)de - (Ba^2 - Aab)e^2\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right) + \left(3Bb^2e^2x^2 + 3Bb^2d^2 - 20(Bab - Ab^2)de + 15(Ba^2 - Aab)e^2 + \left(6Bb^2de - 5(Bab - Ab^2)e^2\right)x\right)\sqrt{ex+d}\right)}{15b^3e}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*((B*a*b - A*b^2)*d*e - (B*a^2 - A*a*b)*e^2)*sqrt((b*d - a*e)/b)*
log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)
) - 2*(3*B*b^2*e^2*x^2 + 3*B*b^2*d^2 - 20*(B*a*b - A*b^2)*d*e + 15*(B*a^2 -
 A*a*b)*e^2 + (6*B*b^2*d*e - 5*(B*a*b - A*b^2)*e^2)*x)*sqrt(e*x + d))/(b^3*
e), 2/15*(15*((B*a*b - A*b^2)*d*e - (B*a^2 - A*a*b)*e^2)*sqrt(-(b*d - a*e)/
b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) + (3*B*b^2*e^2
*x^2 + 3*B*b^2*d^2 - 20*(B*a*b - A*b^2)*d*e + 15*(B*a^2 - A*a*b)*e^2 + (6*B
*b^2*d*e - 5*(B*a*b - A*b^2)*e^2)*x)*sqrt(e*x + d))/(b^3*e)]
```

giac [A] time = 0.22, size = 306, normalized size = 1.33

$$-\frac{2\left(Bab^2d^2\mathrm{sgn}(bx+a) - Ab^3d^2\mathrm{sgn}(bx+a) - 2Ba^2bde\,\mathrm{sgn}(bx+a) + 2Aab^2de\,\mathrm{sgn}(bx+a) + Ba^3e^2\mathrm{sgn}(bx+a) - Aa^2be^2\mathrm{sgn}(bx+a)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^3} + \frac{2\left(3(xe+d)^{\frac{5}{2}}Bb^4e^4\mathrm{sgn}(bx+a) - 5(xe+d)^{\frac{3}{2}}Bab^3e^5\mathrm{sgn}(bx+a) + 5(xe+d)^{\frac{3}{2}}Ab^4e^5\mathrm{sgn}(bx+a) - 15\sqrt{xe+d}\,Bab^3de^5\mathrm{sgn}(bx+a) + 15\sqrt{xe+d}\,Ab^4de^5\mathrm{sgn}(bx+a) + 15\sqrt{xe+d}\,Ba^2b^2e^6\mathrm{sgn}(bx+a) - 15\sqrt{xe+d}\,Aab^3e^6\mathrm{sgn}(bx+a)\right)e^{(-5)}}{15b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^2*d^2*sgn(b*x + a) - A*b^3*d^2*sgn(b*x + a) - 2*B*a^2*b*d*e*sgn(b
*x + a) + 2*A*a*b^2*d*e*sgn(b*x + a) + B*a^3*e^2*sgn(b*x + a) - A*a^2*b*e^2
*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d +
a*b*e)*b^3) + 2/15*(3*(x*e + d)^(5/2)*B*b^4*e^4*sgn(b*x + a) - 5*(x*e + d)^
(3/2)*B*a*b^3*e^5*sgn(b*x + a) + 5*(x*e + d)^(3/2)*A*b^4*e^5*sgn(b*x + a) -
 15*sqrt(x*e + d)*B*a*b^3*d*e^5*sgn(b*x + a) + 15*sqrt(x*e + d)*A*b^4*d*e^5
*sgn(b*x + a) + 15*sqrt(x*e + d)*B*a^2*b^2*e^6*sgn(b*x + a) - 15*sqrt(x*e +
 d)*A*a*b^3*e^6*sgn(b*x + a))*e^(-5)/b^5
```

maple [B] time = 0.06, size = 414, normalized size = 1.80

$$\frac{2(bx+a)\left(15Aa^2be^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 30Aab^2de^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 15Ab^3d^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 15Ba^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 30Ba^2bde^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 15Bab^2d^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 15\sqrt{(ae-bd)b}\sqrt{ex+d}\,Aabe^2 + 15\sqrt{(ae-bd)b}\sqrt{ex+d}\,Ab^2de + 15\sqrt{(ae-bd)b}\sqrt{ex+d}\,Ba^2e^2 - 15\sqrt{(ae-bd)b}\sqrt{ex+d}\,Babde + 5\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}Ab^2e - 5\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}Babe + 3\sqrt{(ae-bd)b}\,(ex+d)^{\frac{5}{2}}Bb^2\right)}{15\sqrt{(bx+a)^2}\sqrt{(ae-bd)b}\,b^3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/15*(b*x+a)*(3*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*b^2+5*A*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(3/2)*b^2*e+15*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a
^2*b*e^3-30*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b^2*d*e^2+15*A*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b^3*d^2*e-5*B*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(3/2)*a*b*e-15*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3
*e^3+30*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*b*d*e^2-15*B*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b^2*d^2*e-15*A*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(1/2)*a*b*e^2+15*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d*e+15*B
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2-15*B*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*a*b*d*e)/((b*x+a)^2)^(1/2)/e/b^3/((a*e-b*d)*b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\sqrt{(bx + a)^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt((b*x + a)^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+ex)^{3/2}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((A + B*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^{\frac{3}{2}}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
[Out] Integral((A + B*x)*(d + e*x)**(3/2)/sqrt((a + b*x)**2), x)
```

3.1641 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=173

$$\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.10, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 80, 50, 63, 208}

$$\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*(a + b*x)*Sqrt[d + e*x])/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (2*B*(a + b*x)*(d + e*x)^(3/2))/(3*b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
(2*(A*b - a*B)*Sqrt[b*d - a*e]*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/(b^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)\sqrt{d+ex}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{3}{2}Ab^2e-\frac{3}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{\sqrt{d+ex}}{ab+b^2x}\,dx}{3b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(b^2d-abe\right)\left(\frac{3}{2}Ab^2e-\right.\right.}{3b^4e}$$

$$= \frac{2(Ab-aB)(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(b^2d-abe\right)\left(\frac{3}{2}Ab^2e-\right.\right.}{}$$

$$= \frac{2(Ab-aB)(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)\sqrt{bd-ae}\,(a\,+}{b^{5/2}\sqrt{a^2+2}}$$

Mathematica [A] time = 0.09, size = 114, normalized size = 0.66

$$\frac{2(a+bx)\left(\sqrt{b}\sqrt{d+ex}\,(-3aBe+3Abe+bB(d+ex))+3e(aB-Ab)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{5/2}e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[d + e*x]*(3*A*b*e - 3*a*B*e + b*B*(d + e*x)) + 3
*(-(A*b) + a*B)*e*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d
- a*e]]))/(3*b^(5/2)*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 28.93, size = 136, normalized size = 0.79

$$\frac{(-ae-bex)\left(-\frac{2(Ab-aB)\sqrt{ae-bd}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{5/2}}-\frac{2\sqrt{d+ex}\,(-3aBe+3Abe+bB(d+ex))}{3b^2e}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] ((-(a*e) - b*e*x)*((-2*Sqrt[d + e*x]*(3*A*b*e - 3*a*B*e + b*B*(d + e*x)))/(
3*b^2*e) - (2*(A*b - a*B)*Sqrt[-(b*d) + a*e]*ArcTan[(Sqrt[b]*Sqrt[-(b*d) +
a*e]*Sqrt[d + e*x])/(b*d - a*e)])/b^(5/2)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.43, size = 211, normalized size = 1.22

$$\left[-\frac{3\,(Ba-Ab)e\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\,(Bbex+Bbd-3\,(Ba-Ab)e)\sqrt{ex+d}}{3\,b^2e},\ \frac{2\left(3\,(Ba-Ab)e\sqrt{-\frac{bd-ae}{b}}\,\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)+(Bbex+Bbd-3\,(Ba-Ab)e)\sqrt{ex+d}\right)}{3\,b^2e}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*a - A*b)*e*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqr
t(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(B*b*e*x + B*b*d - 3*(B*a
- A*b)*e)*sqrt(e*x + d))/(b^2*e), 2/3*(3*(B*a - A*b)*e*sqrt(-(b*d - a*e)/b)
*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) + (B*b*e*x + B*b
*d - 3*(B*a - A*b)*e)*sqrt(e*x + d))/(b^2*e)]
```

giac [A] time = 0.24, size = 168, normalized size = 0.97

$$-\frac{2\left(Babd\operatorname{sgn}\left(bx+a\right)-Ab^{2}d\operatorname{sgn}\left(bx+a\right)-Ba^{2}e\operatorname{sgn}\left(bx+a\right)+Aabe\operatorname{sgn}\left(bx+a\right)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{\sqrt{-b^{2}d+abe}\,b^{2}}+\frac{2\left(\left(xe+d\right)^{\frac{3}{2}}Bb^{2}e^{2}\operatorname{sgn}\left(bx+a\right)-3\sqrt{xe+d}\,Babe^{3}\operatorname{sgn}\left(bx+a\right)+3\sqrt{xe+d}\,Ab^{2}e^{3}\operatorname{sgn}\left(bx+a\right)\right)e^{(-3)}}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b*d*sgn(b*x + a) - A*b^2*d*sgn(b*x + a) - B*a^2*e*sgn(b*x + a) + A*
a*b*e*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2
*d + a*b*e)*b^2) + 2/3*((x*e + d)^(3/2)*B*b^2*e^2*sgn(b*x + a) - 3*sqrt(x*e
 + d)*B*a*b*e^3*sgn(b*x + a) + 3*sqrt(x*e + d)*A*b^2*e^3*sgn(b*x + a))*e^(-
3)/b^3
```

maple [A] time = 0.06, size = 226, normalized size = 1.31

$$\frac{2\left(bx+a\right)\left(-3Aab\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3A\,b^{2}de\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3B\,a^{2}e^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-3Babde\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3\sqrt{ex+d}\,\sqrt{(ae-bd)b}\;Abe-3\sqrt{ex+d}\,\sqrt{(ae-bd)b}\;Bae+\left(ex+d\right)^{\frac{3}{2}}\sqrt{(ae-bd)b}\;Bb\right)}{3\sqrt{\left(bx+a\right)^{2}}\,\sqrt{(ae-bd)b}\;b^{2}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(-3*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b*e^2+3*A*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b^2*d*e+B*(e*x+d)^(3/2)*((a*e-b*
d)*b)^(1/2)*b+3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*e^2-3*B*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b*d*e+3*A*(e*x+d)^(1/2)*((a*e-
b*d)*b)^(1/2)*b*e-3*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a*e)/((b*x+a)^2)^(1
/2)/e/b^2/((a*e-b*d)*b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\sqrt{(bx+a)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt((b*x + a)^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\sqrt{(a+b\,x)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
[Out] Integral((A + B*x)*sqrt(d + e*x)/sqrt((a + b*x)**2), x)
```

3.1642 $\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=124

$$\frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,\sqrt{bd-ae}}$$

Rubi [A] time = 0.08, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {770, 80, 63, 208}

$$\frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*B*(a + b*x)*Sqrt[d + e*x])/(b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*(A*b
 - a*B)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2
)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{1}{2}Ab^2e-\frac{1}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)\sqrt{d+ex}}}{b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(\frac{1}{2}Ab^2e-\frac{1}{2}abBe\right)\left(ab+b^2x\right)\right)\text{Subst}\left(\int \frac{}{ab-\frac{b^2d}{e}}\right.}{b^2e^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{bd-ae}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.07, size = 111, normalized size = 0.90

$$\frac{2(a+bx)\left(e(aB-Ab)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)+\sqrt{b}B\sqrt{d+ex}(bd-ae)\right)}{b^{3/2}e\sqrt{(a+bx)^2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*B*(b*d - a*e)*Sqrt[d + e*x] + (-(A*b) + a*B)*e*Sqrt[b
*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))/(b^(3/2)*e*(b*
d - a*e)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 22.48, size = 116, normalized size = 0.94

$$\frac{(-ae-bex)\left(\frac{2(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{3/2}\sqrt{ae-bd}}-\frac{2B\sqrt{d+ex}}{be}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),
x]
```

```
[Out] ((-(a*e) - b*e*x)*((-2*B*Sqrt[d + e*x])/(b*e) + (2*(A*b - a*B)*ArcTan[(Sqrt
[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(b^(3/2)*Sqrt[-(b*d) +
a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.45, size = 209, normalized size = 1.69

$$\left[-\frac{\sqrt{b^2d-abe}(Ba-Ab)e\log\left(\frac{bex+2bd-ae-2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)-2\left(Bb^2d-Babe\right)\sqrt{ex+d}}{b^3de-ab^2e^2}, -\frac{2\left(\sqrt{-b^2d+abe}(Ba-Ab)e\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)-\left(Bb^2d-Babe\right)\sqrt{ex+d}\right)}{b^3de-ab^2e^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-(sqrt(b^2*d - a*b*e)*(B*a - A*b)*e*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*
d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(B*b^2*d - B*a*b*e)*sqrt(e*x + d))
/(b^3*d*e - a*b^2*e^2), -2*(sqrt(-b^2*d + a*b*e)*(B*a - A*b)*e*arctan(sqrt(
```

```
-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (B*b^2*d - B*a*b*e)*sqrt(e*x
 + d))/(b^3*d*e - a*b^2*e^2)]
```

giac [A] time = 0.17, size = 87, normalized size = 0.70

$$\frac{2\sqrt{xe+d}\,Be^{(-1)}\mathrm{sgn}\,(bx+a)}{b}-\frac{2\left(Ba\mathrm{sgn}\,(bx+a)-Ab\mathrm{sgn}\,(bx+a)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^(-1)*sgn(b*x + a)/b - 2*(B*a*sgn(b*x + a) - A*b*sgn(b*x
 + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b
)
```

maple [A] time = 0.06, size = 110, normalized size = 0.89

$$\frac{2\,(bx+a)\left(Abe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-Bae\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+\sqrt{ex+d}\;\sqrt{(ae-bd)\,b}\;B\right)}{\sqrt{(bx+a)^2}\;\sqrt{(ae-bd)\,b}\;be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2*(b*x+a)*(A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b*e-B*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*e+B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2))/((
b*x+a)^2)^(1/2)/e/b/((a*e-b*d)*b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{(bx+a)^2}\;\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{(a+b\,x)^2}\;\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(d + e*x)*sqrt((a + b*x)**2)), x)
```

3.1643 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=138

$$-\frac{2(a+bx)(Bd-Ae)}{e\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}$$

Rubi [A] time = 0.11, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {770, 78, 63, 208}

$$-\frac{2(a+bx)(Bd-Ae)}{e\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*(a + b*x))/(e*(b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - (2*(A*b - a*B)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt
[b*d - a*e]])/(Sqrt[b]*(b*d - a*e)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{e(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \frac{}{\left(ab+b^2 \right.}}{(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{e(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2(Ab-aB)\left(ab+b^2x\right)\right)\text{Subst}}{e(bd-ae)\sqrt{a^2}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{e(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{}}\right.}{\sqrt{b}\,(bd-ae)^{3/2}\sqrt{a^2+2abx+}}$$

Mathematica [A] time = 0.08, size = 128, normalized size = 0.93

$$\frac{2(a+bx)\left(e\sqrt{d+ex}\,(aB-Ab)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)-\sqrt{b}\,(bd-ae)(Bd-Ae)\right)}{\sqrt{b}\,e\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-(Sqrt[b]*(b*d - a*e)*(B*d - A*e)) + (-(A*b) + a*B)*e*Sqrt[b*
d - a*e]*Sqrt[d + e*x]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))/(
Sqrt[b]*e*(b*d - a*e)^2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 23.23, size = 130, normalized size = 0.94

$$\frac{(-ae-bex)\left(\frac{2(Ae-Bd)}{e\sqrt{d+ex}\,(ae-bd)}-\frac{2(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\sqrt{ae-bd}}{bd-ae}\right)}{\sqrt{b}\,(ae-bd)^{3/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((2*(-(B*d) + A*e))/(e*(-(b*d) + a*e)*Sqrt[d + e*x]) - (2
*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x]])/(b*d - a*e)]
)/(Sqrt[b]*(-(b*d) + a*e)^(3/2))))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.43, size = 363, normalized size = 2.63

$$\left[\frac{\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(Bb^2d^2+Aabe^2-\left(Bab+Ab^2\right)de\right)\sqrt{ex+d}}{b^3d^3e-2\,ab^2d^2e^2+a^2bde^3+\left(b^3d^2e^2-2\,ab^2de^3+a^2be^4\right)x}, -\frac{2\left(\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)+\left(Bb^2d^2+Aabe^2-\left(Bab+Ab^2\right)de\right)\sqrt{ex+d}\right)}{b^3d^3e-2\,ab^2d^2e^2+a^2bde^3+\left(b^3d^2e^2-2\,ab^2de^3+a^2be^4\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [(((B*a - A*b)*e^2*x + (B*a - A*b)*d*e)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*
b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(B*b^2*d^2
+ A*a*b*e^2 - (B*a*b + A*b^2)*d*e)*sqrt(e*x + d))/(b^3*d^3*e - 2*a*b^2*d^2*
e^2 + a^2*b*d*e^3 + (b^3*d^2*e^2 - 2*a*b^2*d*e^3 + a^2*b*e^4)*x), -2*(((B*a
```

```
 - A*b)*e^2*x + (B*a - A*b)*d*e)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d +
a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (B*b^2*d^2 + A*a*b*e^2 - (B*a*b + A*b
^2)*d*e)*sqrt(e*x + d))/(b^3*d^3*e - 2*a*b^2*d^2*e^2 + a^2*b*d*e^3 + (b^3*d
^2*e^2 - 2*a*b^2*d*e^3 + a^2*b*e^4)*x)]
```

giac [A] time = 0.29, size = 117, normalized size = 0.85

$$-\frac{2\left(B a \mathrm{sgn}\left(b x+a\right)-A b \mathrm{sgn}\left(b x+a\right)\right)\arctan\left(\frac{\sqrt{x e+d}\, b}{\sqrt{-b^2 d+a b e}}\right)}{\sqrt{-b^2 d+a b e}\left(b d-a e\right)}-\frac{2\left(B d \mathrm{sgn}\left(b x+a\right)-A e \mathrm{sgn}\left(b x+a\right)\right)}{\left(b d e-a e^2\right)\sqrt{x e+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/(sqrt(-b^2*d + a*b*e)*(b*d - a*e)) - 2*(B*d*sgn(b*x + a) - A*e*s
gn(b*x + a))/((b*d*e - a*e^2)*sqrt(x*e + d))
```

maple [A] time = 0.06, size = 148, normalized size = 1.07

$$-\frac{2\left(b x+a\right)\left(\sqrt{e x+d}\, A b e \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right)b}}\right)-\sqrt{e x+d}\, B a e \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right)b}}\right)+\sqrt{\left(a e-b d\right)b}\, A e-\sqrt{\left(a e-b d\right)b}\, B d\right)}{\sqrt{\left(b x+a\right)^2}\,\left(a e-b d\right)\sqrt{\left(a e-b d\right)b}\,\sqrt{e x+d}\, e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2*(b*x+a)*(A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*b*e
-B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a*e+A*((a*e-b*
d)*b)^(1/2)*e-B*((a*e-b*d)*b)^(1/2)*d)/((b*x+a)^2)^(1/2)/e/(a*e-b*d)/((a*e-
b*d)*b)^(1/2)/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B x+A}{\sqrt{\left(b x+a\right)^2}\left(e x+d\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+B x}{\left(d+e x\right)^{\frac{3}{2}}\sqrt{\left(a+b x\right)^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**(3/2)*sqrt((a + b*x)**2)), x)
```

3.1644 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=194

$$\frac{2(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{2(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}$$

Rubi [A] time = 0.13, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$\frac{2(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{2(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*(a + b*x))/(3*e*(b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x))/((b*d - a*e)^2*Sqrt[d + e*x]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (2*Sqrt[b]*(A*b - a*B)*(a + b*x)*ArcTanh[(Sq
rt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/((b*d - a*e)^(5/2)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \cdots}{(bd-ae)\sqrt{a^2+2abx \cdots}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx \cdots}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2a \cdots}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx \cdots}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2a \cdots}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx \cdots}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2a \cdots}}$$

Mathematica [C] time = 0.05, size = 102, normalized size = 0.53

$$\frac{2(a+bx)\left(3e(d+ex)(Ab-aB)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-(bd-ae)(Bd-Ae)\right)}{3e\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-((b*d - a*e)*(B*d - A*e)) + 3*(A*b - a*B)*e*(d + e*x)*Hyperg
eometric2F1[-1/2, 1, 1/2, (b*(d + e*x))/(b*d - a*e)]))/(3*e*(b*d - a*e)^2*S
qrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 40.29, size = 173, normalized size = 0.89

$$\frac{(-ae-bex)\left(\frac{2\left(Ab^{3/2}-a\sqrt{b}\,B\right)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{5/2}}+\frac{2\left(aAe^2+3aBe(d+ex)-aBde-3Abe(d+ex)-Abde+bBd^2\right)}{3e(d+ex)^{3/2}(ae-bd)^2}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((2*(b*B*d^2 - A*b*d*e - a*B*d*e + a*A*e^2 - 3*A*b*e*(d +
 e*x) + 3*a*B*e*(d + e*x)))/(3*e*(-(b*d) + a*e)^2*(d + e*x)^(3/2)) + (2*(A*
b^(3/2) - a*Sqrt[b]*B)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x]])/(b
*d - a*e)])/(-(b*d) + a*e)^(5/2)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.44, size = 506, normalized size = 2.61

$$\left[-\frac{3\left((Ba-Ab)e^3x^2+2\,(Ba-Ab)de^2x+(Ba-Ab)d^2e\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae-2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)+2\left(Bbd^2+Aae^2+3\,(Ba-Ab)e^2x+2\,(Ba-2\,Ab)de\right)\sqrt{ex+d}}{3\left(b^2d^4e-2\,abd^3e^2+a^2d^2e^3+\left(b^2d^2e^3-2\,abde^4+a^2e^5\right)x^2+2\left(b^2d^3e^2-2\,abd^2e^3+a^2de^4\right)x\right)},\ \frac{2\left(3\left((Ba-Ab)e^3x^2+2\,(Ba-Ab)de^2x+(Ba-Ab)d^2e\right)\sqrt{-\frac{b}{bd-ae}}\,\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\,\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-\left(Bbd^2+Aae^2+3\,(Ba-Ab)e^2x+2\,(Ba-2\,Ab)de\right)\sqrt{ex+d}\right)}{3\left(b^2d^4e-2\,abd^3e^2+a^2d^2e^3+\left(b^2d^2e^3-2\,abde^4+a^2e^5\right)x^2+2\left(b^2d^3e^2-2\,abd^2e^3+a^2de^4\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*((B*a - A*b)*e^3*x^2 + 2*(B*a - A*b)*d*e^2*x + (B*a - A*b)*d^2*e)*
sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*
sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(B*b*d^2 + A*a*e^2 + 3*(B*a - A*b)*e^2*
x + 2*(B*a - 2*A*b)*d*e)*sqrt(e*x + d))/(b^2*d^4*e - 2*a*b*d^3*e^2 + a^2*d^
2*e^3 + (b^2*d^2*e^3 - 2*a*b*d*e^4 + a^2*e^5)*x^2 + 2*(b^2*d^3*e^2 - 2*a*b*
d^2*e^3 + a^2*d*e^4)*x), 2/3*(3*((B*a - A*b)*e^3*x^2 + 2*(B*a - A*b)*d*e^2*
x + (B*a - A*b)*d^2*e)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x +
d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (B*b*d^2 + A*a*e^2 + 3*(B*a - A*b)
*e^2*x + 2*(B*a - 2*A*b)*d*e)*sqrt(e*x + d))/(b^2*d^4*e - 2*a*b*d^3*e^2 + a
^2*d^2*e^3 + (b^2*d^2*e^3 - 2*a*b*d*e^4 + a^2*e^5)*x^2 + 2*(b^2*d^3*e^2 - 2
*a*b*d^2*e^3 + a^2*d*e^4)*x)]
```

giac [A] time = 0.21, size = 209, normalized size = 1.08

$$-\frac{2\left(Bab\operatorname{sgn}(bx+a)-Ab^2\operatorname{sgn}(bx+a)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-b^2d+abe}}-\frac{2\left(Bbd^2\operatorname{sgn}(bx+a)+3\,(xe+d)Bae\operatorname{sgn}(bx+a)-3\,(xe+d)Abe\operatorname{sgn}(bx+a)-Bade\operatorname{sgn}(bx+a)-Abde\operatorname{sgn}(bx+a)+Aae^2\operatorname{sgn}(bx+a)\right)}{3\left(b^2d^2e-2\,abde^2+a^2e^3\right)(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b
^2*d + a*b*e))/((b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt(-b^2*d + a*b*e)) - 2/3
*(B*b*d^2*sgn(b*x + a) + 3*(x*e + d)*B*a*e*sgn(b*x + a) - 3*(x*e + d)*A*b*e
*sgn(b*x + a) - B*a*d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e^2*sgn(b
*x + a))/((b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3)*(x*e + d)^(3/2))
```

maple [A] time = 0.07, size = 235, normalized size = 1.21

$$\frac{2\,(bx+a)\left(3\,(ex+d)^{\frac{3}{2}}A\,b^2e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3\sqrt{(ae-bd)\,b}\;Ab\,e^2x-3\,(ex+d)^{\frac{3}{2}}\,Babe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-3\sqrt{(ae-bd)\,b}\;Ba\,e^2x-\sqrt{(ae-bd)\,b}\;Aa\,e^2+4\sqrt{(ae-bd)\,b}\;Abde-2\sqrt{(ae-bd)\,b}\;Bade-\sqrt{(ae-bd)\,b}\;Bb\,d^2\right)}{3\sqrt{(bx+a)^2}\;(ae-bd)^2\sqrt{(ae-bd)\,b}\;(ex+d)^{\frac{3}{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(3*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*
b^2*e-3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a*b*e+3
*A*((a*e-b*d)*b)^(1/2)*x*b*e^2-3*B*((a*e-b*d)*b)^(1/2)*x*a*e^2-A*((a*e-b*d)
*b)^(1/2)*a*e^2+4*A*((a*e-b*d)*b)^(1/2)*b*d*e-2*B*((a*e-b*d)*b)^(1/2)*a*d*e
-B*((a*e-b*d)*b)^(1/2)*b*d^2)/((b*x+a)^2)^(1/2)/e/(a*e-b*d)^2/((a*e-b*d)*b)
^(1/2)/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{(bx+a)^2}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1645 $\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=251

$$\frac{2b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{2(a+bx)(Ab-aB)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{2(a+bx)(Bd-}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+e}$$

Rubi [A] time = 0.16, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$\frac{2b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{2(a+bx)(Ab-aB)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{2(a+bx)(Bd-Ae)}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}-\frac{2b^{3/2}(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*(a + b*x))/(5*e*(b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x))/(3*(b*d - a*e)^2*(d + e*x)^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b*(A*b - a*B)*(a + b*x))/((b*d - a*e)
^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b^(3/2)*(A*b - a*B)*(a
 + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/((b*d - a*e)^(7/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \frac{}{(ab}}{(bd-ae)\sqrt{a^2+2abx}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

Mathematica [C] time = 0.05, size = 102, normalized size = 0.41

$$\frac{2(a+bx)\left(5e(d+ex)(Ab-aB)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-3(bd-ae)(Bd-Ae)\right)}{15e\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-3*(b*d - a*e)*(B*d - A*e) + 5*(A*b - a*B)*e*(d + e*x)*Hyperg
eometric2F1[-3/2, 1, -1/2, (b*(d + e*x))/(b*d - a*e)]))/(15*e*(b*d - a*e)^2
*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 60.56, size = 264, normalized size = 1.05

$$\frac{(-ae-bex)\left(\frac{2\left(3a^2Ae^3+5a^2Be^2(d+ex)-3a^2Bde^2-5aAbe^2(d+ex)-6aAbde^2+6abBd^2e-5abBde(d+ex)-15abBe(d+ex)^2+3Ab^2d^2e+5Ab^2de(d+ex)+15Ab^2e(d+ex)^2-3b^2Bd^3\right)}{15e(d+ex)^{5/2}(ae-bd)^3}-\frac{2\left(Ab^{5/2}-ab^{3/2}B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{7/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((2*(-3*b^2*B*d^3 + 3*A*b^2*d^2*e + 6*a*b*B*d^2*e - 6*a*A
*b*d*e^2 - 3*a^2*B*d*e^2 + 3*a^2*A*e^3 + 5*A*b^2*d*e*(d + e*x) - 5*a*b*B*d*
e*(d + e*x) - 5*a*A*b*e^2*(d + e*x) + 5*a^2*B*e^2*(d + e*x) + 15*A*b^2*e*(d
 + e*x)^2 - 15*a*b*B*e*(d + e*x)^2))/(15*e*(-(b*d) + a*e)^3*(d + e*x)^(5/2)
) - (2*(A*b^(5/2) - a*b^(3/2)*B)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d
+ e*x])/(b*d - a*e)])/(-(b*d) + a*e)^(7/2)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.49, size = 902, normalized size = 3.59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] [1/15*(15*((B*a*b - A*b^2)*e^4*x^3 + 3*(B*a*b - A*b^2)*d*e^3*x^2 + 3*(B*a*b
 - A*b^2)*d^2*e^2*x + (B*a*b - A*b^2)*d^3*e)*sqrt(b/(b*d - a*e))*log((b*e*x
 + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)
) - 2*(3*B*b^2*d^3 - 3*A*a^2*e^3 + 15*(B*a*b - A*b^2)*e^3*x^2 + (14*B*a*b -
 23*A*b^2)*d^2*e - (2*B*a^2 - 11*A*a*b)*d*e^2 + 5*(7*(B*a*b - A*b^2)*d*e^2
- (B*a^2 - A*a*b)*e^3)*x)*sqrt(e*x + d))/(b^3*d^6*e - 3*a*b^2*d^5*e^2 + 3*a
^2*b*d^4*e^3 - a^3*d^3*e^4 + (b^3*d^3*e^4 - 3*a*b^2*d^2*e^5 + 3*a^2*b*d*e^6
 - a^3*e^7)*x^3 + 3*(b^3*d^4*e^3 - 3*a*b^2*d^3*e^4 + 3*a^2*b*d^2*e^5 - a^3*
d*e^6)*x^2 + 3*(b^3*d^5*e^2 - 3*a*b^2*d^4*e^3 + 3*a^2*b*d^3*e^4 - a^3*d^2*e
^5)*x), 2/15*(15*((B*a*b - A*b^2)*e^4*x^3 + 3*(B*a*b - A*b^2)*d*e^3*x^2 + 3
*(B*a*b - A*b^2)*d^2*e^2*x + (B*a*b - A*b^2)*d^3*e)*sqrt(-b/(b*d - a*e))*ar
ctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (3*B*
b^2*d^3 - 3*A*a^2*e^3 + 15*(B*a*b - A*b^2)*e^3*x^2 + (14*B*a*b - 23*A*b^2)*
d^2*e - (2*B*a^2 - 11*A*a*b)*d*e^2 + 5*(7*(B*a*b - A*b^2)*d*e^2 - (B*a^2 -
A*a*b)*e^3)*x)*sqrt(e*x + d))/(b^3*d^6*e - 3*a*b^2*d^5*e^2 + 3*a^2*b*d^4*e^
3 - a^3*d^3*e^4 + (b^3*d^3*e^4 - 3*a*b^2*d^2*e^5 + 3*a^2*b*d*e^6 - a^3*e^7)
*x^3 + 3*(b^3*d^4*e^3 - 3*a*b^2*d^3*e^4 + 3*a^2*b*d^2*e^5 - a^3*d*e^6)*x^2
+ 3*(b^3*d^5*e^2 - 3*a*b^2*d^4*e^3 + 3*a^2*b*d^3*e^4 - a^3*d^2*e^5)*x)]
```

giac [A] time = 0.27, size = 368, normalized size = 1.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] -2*(B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(
-b^2*d + a*b*e))/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(
-b^2*d + a*b*e)) - 2/15*(3*B*b^2*d^3*sgn(b*x + a) + 15*(x*e + d)^2*B*a*b*e*
sgn(b*x + a) - 15*(x*e + d)^2*A*b^2*e*sgn(b*x + a) + 5*(x*e + d)*B*a*b*d*e*
sgn(b*x + a) - 5*(x*e + d)*A*b^2*d*e*sgn(b*x + a) - 6*B*a*b*d^2*e*sgn(b*x +
 a) - 3*A*b^2*d^2*e*sgn(b*x + a) - 5*(x*e + d)*B*a^2*e^2*sgn(b*x + a) + 5*(
x*e + d)*A*a*b*e^2*sgn(b*x + a) + 3*B*a^2*d*e^2*sgn(b*x + a) + 6*A*a*b*d*e^
2*sgn(b*x + a) - 3*A*a^2*e^3*sgn(b*x + a))/((b^3*d^3*e - 3*a*b^2*d^2*e^2 +
3*a^2*b*d*e^3 - a^3*e^4)*(x*e + d)^(5/2))
```

maple [B] time = 0.08, size = 386, normalized size = 1.54

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x)

[Out] -2/15*(b*x+a)*(15*A*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*b^3*e-15*B*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b
^2*e+15*A*((a*e-b*d)*b)^(1/2)*x^2*b^2*e^3-15*B*((a*e-b*d)*b)^(1/2)*x^2*a*b*
e^3-5*A*((a*e-b*d)*b)^(1/2)*x*a*b*e^3+35*A*((a*e-b*d)*b)^(1/2)*x*b^2*d*e^2+
5*B*((a*e-b*d)*b)^(1/2)*x*a^2*e^3-35*B*((a*e-b*d)*b)^(1/2)*x*a*b*d*e^2+3*A*
((a*e-b*d)*b)^(1/2)*a^2*e^3-11*A*((a*e-b*d)*b)^(1/2)*a*b*d*e^2+23*A*((a*e-b
*d)*b)^(1/2)*b^2*d^2*e+2*B*((a*e-b*d)*b)^(1/2)*a^2*d*e^2-14*B*((a*e-b*d)*b)
^(1/2)*a*b*d^2*e-3*B*((a*e-b*d)*b)^(1/2)*b^2*d^3)/((b*x+a)^2)^(1/2)/e/(a*e-
b*d)^3/((a*e-b*d)*b)^(1/2)/(e*x+d)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{(bx + a)^2}\,(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{(a + b\,x)^2}\,(d + e\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(7/2)),x)
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(7/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.1646 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=407

$$-\frac{(d+ex)^{9/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+5Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{7e(a+bx)(bd-ae)^{3/2}(-9aBe+}{4b^{11/2}\sqrt{a^2+}$$

Rubi [A] time = 0.38, antiderivative size = 407, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{(d+ex)^{9/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+5Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{7e(a+bx)(d+ex)^{5/2}(-9aBe+5Abe+4bBd)}{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{7e(a+bx)(d+ex)^{3/2}(-9aBe+5Abe+4bBd)}{12b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)\sqrt{d+ex}\,(bd-ae)(-9aBe+5Abe+4bBd)}{4b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{7e(a+bx)(bd-ae)^{3/2}(-9aBe+5Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{11/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (7*e*(b*d - a*e)*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(4*
b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*e*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a
+ b*x)*(d + e*x)^(3/2))/(12*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*e*(4*b*
B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)*(d + e*x)^(5/2))/(20*b^3*(b*d - a*e)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - ((4*b*B*d + 5*A*b*e - 9*a*B*e)*(d + e*x)^(7/2
))/(4*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*
x)^(9/2))/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*
(b*d - a*e)^(3/2)*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*
Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
```

```
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd+5Abe-9aBe)\left(ab+b^2x\right)\right)\int}{4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(4bBd+5Abe-9aBe)(d+ex)^{7/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{9/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(7}{}$$

$$= \frac{7e(4bBd+5Abe-9aBe)(a+bx)(d+ex)^{5/2}}{20b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+5Abe-9aBe)(d+ex)^{7/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} -$$

$$= \frac{7e(4bBd+5Abe-9aBe)(a+bx)(d+ex)^{3/2}}{12b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(4bBd+5Abe-9aBe)(a+bx)(d}{20b^3(bd-ae)\sqrt{a^2+2abx+b^2}}$$

$$= \frac{7e(bd-ae)(4bBd+5Abe-9aBe)(a+bx)\sqrt{d+ex}}{4b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(4bBd+5Abe-9aBe)(a+}{12b^4\sqrt{a^2+2abx+}}$$

$$= \frac{7e(bd-ae)(4bBd+5Abe-9aBe)(a+bx)\sqrt{d+ex}}{4b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(4bBd+5Abe-9aBe)(a+}{12b^4\sqrt{a^2+2abx+}}$$

$$= \frac{7e(bd-ae)(4bBd+5Abe-9aBe)(a+bx)\sqrt{d+ex}}{4b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(4bBd+5Abe-9aBe)(a+}{12b^4\sqrt{a^2+2abx+}}$$

Mathematica [C] time = 0.12, size = 111, normalized size = 0.27

$$\frac{(a+bx)(d+ex)^{9/2}\left(\frac{e(a+bx)^2(-9aBe+5Abe+4bBd)\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+9aB-9Ab\right)}{18b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

[Out] ((a + b*x)*(d + e*x)^(9/2)*(-9*A*b + 9*a*B + (e*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)^2*Hypergeometric2F1[2, 9/2, 11/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2))/(18*b*(b*d - a*e)*((a + b*x)^2)^(3/2))

IntegrateAlgebraic [A] time = 64.93, size = 509, normalized size = 1.25

$$\frac{(-ae-bex)\left(\frac{7(bd-ae)^2\left(-9aBe^2+5Abe^2+4bBde\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{11/2}\sqrt{ae-bd}}-\frac{e\sqrt{d+ex}\left(945a^4Be^4-525a^3Abe^4+1575a^3bBe^3(d+ex)-3255a^3bBde^3-875a^2Ab^2e^3(d+ex)+1575a^2Ab^2de^3+4095a^2b^2Bd^2e^2+504a^2b^2Be^2(d+ex)^2-3850a^2b^2Bde^2(d+ex)-1575aAb^3d^2e^2-280aAb^3e^2(d+ex)^2+1750aAb^3de^2(d+ex)-2205ab^3Bd^3e+2975ab^3Bd^2e(d+ex)-72ab^3Be(d+ex)^3-728ab^3Bde(d+ex)^2+525Ab^4d^3e-875Ab^4d^2e(d+ex)+40Ab^4e(d+ex)^3+280Ab^4de(d+ex)^2+420b^4Bd^4-700b^4Bd^3(d+ex)+224b^4Bd^2(d+ex)^2+24b^4B(d+ex)^4+32b^4Bd(d+ex)^3\right)}{60b^5(ae+b(d+ex)-bd)^2}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]

[Out] ((-(a*e) - b*e*x)*(-1/60*(e*Sqrt[d + e*x]*(420*b^4*B*d^4 + 525*A*b^4*d^3*e - 2205*a*b^3*B*d^3*e - 1575*a*A*b^3*d^2*e^2 + 4095*a^2*b^2*B*d^2*e^2 + 1575*a^2*A*b^2*d*e^3 - 3255*a^3*b*B*d*e^3 - 525*a^3*A*b*e^4 + 945*a^4*B*e^4 - 700*b^4*B*d^3*(d + e*x) - 875*A*b^4*d^2*e*(d + e*x) + 2975*a*b^3*B*d^2*e*(d + e*x) + 1750*a*A*b^3*d*e^2*(d + e*x) - 3850*a^2*b^2*B*d*e^2*(d + e*x) - 875*a^2*A*b^2*e^3*(d + e*x) + 1575*a^3*b*B*e^3*(d + e*x) + 224*b^4*B*d^2*(d + e*x)^2 + 280*A*b^4*d*e*(d + e*x)^2 - 728*a*b^3*B*d*e*(d + e*x)^2 - 280*a*A*b^3*e^2*(d + e*x)^2 + 504*a^2*b^2*B*e^2*(d + e*x)^2 + 32*b^4*B*d*(d + e*x)^3 + 40*A*b^4*e*(d + e*x)^3 - 72*a*b^3*B*e*(d + e*x)^3 + 24*b^4*B*(d + e*x)^4))/(b^5*(-(b*d) + a*e + b*(d + e*x))^2) + (7*(b*d - a*e)^2*(4*b*B*d*e + 5*A*b*e^2 - 9*a*B*e^2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*b^(11/2)*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])

fricas [A] time = 0.47, size = 1060, normalized size = 2.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")

[Out] [1/120*(105*(4*B*a^2*b^2*d^2*e - (13*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + (9*B*a^4 - 5*A*a^3*b)*e^3 + (4*B*b^4*d^2*e - (13*B*a*b^3 - 5*A*b^4)*d*e^2 + (9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + 2*(4*B*a*b^3*d^2*e - (13*B*a^2*b^2 - 5*A*a*b^3)*d*e^2 + (9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(24*B*b^4*e^3*x^4 - 30*(B*a*b^3 + A*b^4)*d^3 + 7*(107*B*a^2*b^2 - 15*A*a*b^3)*d^2*e - 140*(12*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + 105*(9*B*a^4 - 5*A*a^3*b)*e^3 + 8*(16*B*b^4*d*e^2 - (9*B*a*b^3 - 5*A*b^4)*e^3)*x^3 + 8*(58*B*b^4*d^2*e - 2*(59*B*a*b^3 - 25*A*b^4)*d*e^2 + 7*(9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 - (60*B*b^4*d^3 - (1303*B*a*b^3 - 195*A*b^4)*d^2*e + 14*(203*B*a^2*b^2 - 85*A*a*b^3)*d*e^2 - 175*(9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5), -1/60*(105*(4*B*a^2*b^2*d^2*e - (13*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + (9*B*a^4 - 5*A*a^3*b)*e^3 + (4*B*b^4*d^2*e - (13*B*a*b^3 - 5*A*b^4)*d*e^2 + (9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + 2*(4*B*a*b^3*d^2*e - (13*B*a^2*b^2 - 5*A*a*b^3)*d*e^2 + (9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (24*B*b^4*e^3*x^4 - 30*(B*a*b^3 + A*b^4)*d^3 + 7*(107*B*a^2*b^2 - 15*A*a*b^3)*d^2*e - 140*(12*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + 105*(9*B*a^4 - 5*A*a^3*b)*e^3 + 8*(16*B*b^4*d*e^2 - (9*B*a*b^3 - 5*A*b^4)*e^3)*x^3 + 8*(58*B*b^4*d^2*e - 2*(59*B*a*b^3 - 25*A*b^4)*d*e^2 + 7*(9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 - (60*B*b^4*d^3 - (1303*B*a*b^3 - 195*A*b^4)*d^2*e + 14*(203*B*a^2*b^2 - 85*A*a*b^3)*d*e^2 - 175*(9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)]

giac [B] time = 0.44, size = 685, normalized size = 1.68

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 7/4*(4*B*b^3*d^3*e^2 - 17*B*a*b^2*d^2*e^3 + 5*A*b^3*d^2*e^3 + 22*B*a^2*b*d*
e^4 - 10*A*a*b^2*d*e^4 - 9*B*a^3*e^5 + 5*A*a^2*b*e^5)*arctan(sqrt(x*e + d)*
b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sqrt(-b^2*d + a*b*e)*b^5*sgn((x*e + d)*b*e
- b*d*e + a*e^2)) - 1/4*(4*(x*e + d)^(3/2)*B*b^4*d^3*e^2 - 4*sqrt(x*e + d)*
B*b^4*d^4*e^2 - 25*(x*e + d)^(3/2)*B*a*b^3*d^2*e^3 + 13*(x*e + d)^(3/2)*A*b
^4*d^2*e^3 + 27*sqrt(x*e + d)*B*a*b^3*d^3*e^3 - 11*sqrt(x*e + d)*A*b^4*d^3*
e^3 + 38*(x*e + d)^(3/2)*B*a^2*b^2*d*e^4 - 26*(x*e + d)^(3/2)*A*a*b^3*d*e^4
 - 57*sqrt(x*e + d)*B*a^2*b^2*d^2*e^4 + 33*sqrt(x*e + d)*A*a*b^3*d^2*e^4 -
17*(x*e + d)^(3/2)*B*a^3*b*e^5 + 13*(x*e + d)^(3/2)*A*a^2*b^2*e^5 + 49*sqrt
(x*e + d)*B*a^3*b*d*e^5 - 33*sqrt(x*e + d)*A*a^2*b^2*d*e^5 - 15*sqrt(x*e +
d)*B*a^4*e^6 + 11*sqrt(x*e + d)*A*a^3*b*e^6)*e^(-1)/(((x*e + d)*b - b*d + a
*e)^2*b^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/15*(3*(x*e + d)^(5/2)*B*b
^12*e^6 + 10*(x*e + d)^(3/2)*B*b^12*d*e^6 + 45*sqrt(x*e + d)*B*b^12*d^2*e^6
 - 15*(x*e + d)^(3/2)*B*a*b^11*e^7 + 5*(x*e + d)^(3/2)*A*b^12*e^7 - 135*sqr
t(x*e + d)*B*a*b^11*d*e^7 + 45*sqrt(x*e + d)*A*b^12*d*e^7 + 90*sqrt(x*e + d
)*B*a^2*b^10*e^8 - 45*sqrt(x*e + d)*A*a*b^11*e^8)*e^(-5)/(b^15*sgn((x*e + d
)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.11, size = 1873, normalized size = 4.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*(-155*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^2*e^3+720*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(1/2)*x*a*b^3*d^2*e^2+720*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
1/2)*x*a*b^3*d*e^3-2160*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^2*b^2*d*e^3
+160*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a*b^3*d*e^2-1080*B*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*x^2*a*b^3*d*e^3-945*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*a^5*e^5+60*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^4*d^4+525*A*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b*e^5-60*B*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*b^4*d^3+945*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*e^4+855
*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^2*d*e^3+360*A*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(1/2)*x^2*b^4*d*e^3+80*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*b^
4*d*e^2-1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^4*d*e^4+
48*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x*a*b^3*e^2-120*B*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*x^2*a*b^3*e^3-495*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^3
*d^2*e^2-1815*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*b*d*e^3+1215*B*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^2*d^2*e^2-405*B*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(1/2)*a*b^3*d^3*e-3570*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a
^2*b^3*d^2*e^3+840*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^4*d^
3*e^2+390*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^3*d*e^2-720*A*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(1/2)*x*a^2*b^2*e^4-490*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2
)*a^2*b^2*d*e^2+375*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^3*d^2*e+1440*B*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b*e^4+720*B*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*x^2*a^2*b^2*e^4+360*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*b^4*
d^2*e^2+4620*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^2*d*e^4+
1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^4*d^2*e^3-240*B*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^2*b^2*e^3-2100*A*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)*x*a^2*b^3*d*e^4+2310*B*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*x^2*a^2*b^3*d*e^4-1785*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*x^2*a*b^4*d^2*e^3+80*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a*b^3*e^
3-360*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a*b^3*e^4-525*A*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*a^3*b*e^4+165*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^4*
d^3*e+1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^2*e^5+24*B
```

```
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^2*e^2-1890*B*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)*x*a^4*b*e^5+24*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x
^2*b^4*e^2+40*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*b^4*e^3+525*A*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^3*e^5+525*A*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^5*d^2*e^3-945*B*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*x^2*a^3*b^2*e^5+420*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x^2*b^5*d^3*e^2-1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b
)*a^3*b^2*d*e^4+525*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*b^3*d
^2*e^3+135*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^3*b*e^3+2310*B*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b*d*e^4-1785*B*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*a^3*b^2*d^2*e^3+420*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*a^2*b^3*d^3*e^2-195*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*b^4*d^2
*e)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^5/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{7}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{7/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1647 $\int \frac{(A+Bx)(d+ex)^{5/2}}{(a^2+2abx+b^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=341

$$-\frac{(d+ex)^{7/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe+3Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e(a+bx)\sqrt{bd-ae}\,(-7aBe+3Ab$$

Rubi [A] time = 0.30, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{(d+ex)^{7/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe+3Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{5e(a+bx)(d+ex)^{3/2}(-7aBe+3Abe+4bBd)}{12b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{5e(a+bx)\sqrt{d+ex}\,(-7aBe+3Abe+4bBd)}{4b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(a+bx)\sqrt{bd-ae}\,(-7aBe+3Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{9/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (5*e*(4*b*B*d + 3*A*b*e - 7*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(4*b^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) + (5*e*(4*b*B*d + 3*A*b*e - 7*a*B*e)*(a + b*x)*(d +
e*x)^(3/2))/(12*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((4*b*B*d
+ 3*A*b*e - 7*a*B*e)*(d + e*x)^(5/2))/(4*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(7/2))/(2*b*(b*d - a*e)*(a + b*x)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*Sqrt[b*d - a*e]*(4*b*B*d + 3*A*b*e - 7*a
*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(9/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd+3Abe-7aBe)\left(ab+b^2x\right)\right)}{4(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{(4bBd+3Abe-7aBe)(d+ex)^{5/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{7/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)(d+ex)^{3/2}}{12b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+3Abe-7aBe)(d+ex)^{5/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)\sqrt{d+ex}}{4b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(4bBd+3Abe-7aBe)(a+bx)(a}{12b^3(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)\sqrt{d+ex}}{4b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(4bBd+3Abe-7aBe)(a+bx)(a}{12b^3(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)\sqrt{d+ex}}{4b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(4bBd+3Abe-7aBe)(a+bx)(a}{12b^3(bd-ae)\sqrt{a^2+2abx+b}}$$

Mathematica [C] time = 0.10, size = 111, normalized size = 0.33

$$\frac{(a+bx)(d+ex)^{7/2}\left(\frac{e(a+bx)^2(-7aBe+3Abe+4bBd)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+7aB-7Ab\right)}{14b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(d + e*x)^(7/2)*(-7*A*b + 7*a*B + (e*(4*b*B*d + 3*A*b*e - 7*a*B*
e)*(a + b*x)^2*Hypergeometric2F1[2, 7/2, 9/2, (b*(d + e*x))/(b*d - a*e)])/(
b*d - a*e)^2))/(14*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [A] time = 59.94, size = 372, normalized size = 1.09

$$\frac{(-ae-bex)\left(\frac{5\left(7a^2Be^3-3aAbe^3-11abBde^2+3Ab^2de^2+4b^2Bd^2e\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{9/2}\sqrt{ae-bd}}-\frac{e\sqrt{d+ex}\left(-105a^3Be^3+45a^2Abe^3-175a^2bBe^2(d+ex)+270a^2bBde^2+75aAb^2e^2(d+ex)-90aAb^2de^2-225ab^2Bd^2e-56ab^2Be(d+ex)^2+275ab^2Bde(d+ex)+45Ab^3d^2e+24Ab^3e(d+ex)^2-75Ab^3de(d+ex)+60b^3Bd^3-100b^3Bd^2(d+ex)+8b^3B(d+ex)^3+32b^3Bd(d+ex)^2\right)}{12b^4(ae+b(d+ex)-bd)^2}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/12*(e*Sqrt[d + e*x]*(60*b^3*B*d^3 + 45*A*b^3*d^2*e -
225*a*b^2*B*d^2*e - 90*a*A*b^2*d*e^2 + 270*a^2*b*B*d*e^2 + 45*a^2*A*b*e^3 -
 105*a^3*B*e^3 - 100*b^3*B*d^2*(d + e*x) - 75*A*b^3*d*e*(d + e*x) + 275*a*b
^2*B*d*e*(d + e*x) + 75*a*A*b^2*e^2*(d + e*x) - 175*a^2*b*B*e^2*(d + e*x) +
 32*b^3*B*d*(d + e*x)^2 + 24*A*b^3*e*(d + e*x)^2 - 56*a*b^2*B*e*(d + e*x)^2
 + 8*b^3*B*(d + e*x)^3))/(b^4*(-(b*d) + a*e + b*(d + e*x))^2) + (5*(4*b^2*B
*d^2*e + 3*A*b^2*d*e^2 - 11*a*b*B*d*e^2 - 3*a*A*b*e^3 + 7*a^2*B*e^3)*ArcTan
[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*b^(9/2)*Sqrt[-
(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.46, size = 680, normalized size = 1.99

$$\left[-\frac{15\left(4Ba^2bde-\left(7Ba^3-3Aa^2b\right)e^2+\left(4Bb^3de-\left(7Bab^2-3Ab^3\right)e^2\right)x^2+2\left(4Bab^2de-\left(7Ba^2b-3Aab^2\right)e^2\right)x\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2bd-ae+2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(8Bb^3e^2x^3-6\left(Bab^2+Ab^3\right)d^2+5\left(19Ba^2b-3Aab^2\right)de-15\left(7Ba^3-3Aa^2b\right)e^2+8\left(7Bb^3de-\left(7Bab^2-3Ab^3\right)e^2\right)x^2-\left(12Bb^3d^2-\left(163Bab^2-27Ab^3\right)de+25\left(7Ba^2b-3Aab^2\right)e^2\right)x\right)\sqrt{ex+d}}{24\left(b^6x^2+2ab^5x+a^2b^4\right)},\ -\frac{15\left(4Ba^2bde-\left(7Ba^3-3Aa^2b\right)e^2+\left(4Bb^3de-\left(7Bab^2-3Ab^3\right)e^2\right)x^2+2\left(4Bab^2de-\left(7Ba^2b-3Aab^2\right)e^2\right)x\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(8Bb^3e^2x^3-6\left(Bab^2+Ab^3\right)d^2+5\left(19Ba^2b-3Aab^2\right)de-15\left(7Ba^3-3Aa^2b\right)e^2+8\left(7Bb^3de-\left(7Bab^2-3Ab^3\right)e^2\right)x^2-\left(12Bb^3d^2-\left(163Bab^2-27Ab^3\right)de+25\left(7Ba^2b-3Aab^2\right)e^2\right)x\right)\sqrt{ex+d}}{12\left(b^6x^2+2ab^5x+a^2b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/24*(15*(4*B*a^2*b*d*e - (7*B*a^3 - 3*A*a^2*b)*e^2 + (4*B*b^3*d*e - (7*B
*a*b^2 - 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (7*B*a^2*b - 3*A*a*b^2)*e^2
)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt(
(b*d - a*e)/b))/(b*x + a)) - 2*(8*B*b^3*e^2*x^3 - 6*(B*a*b^2 + A*b^3)*d^2 +
 5*(19*B*a^2*b - 3*A*a*b^2)*d*e - 15*(7*B*a^3 - 3*A*a^2*b)*e^2 + 8*(7*B*b^3
*d*e - (7*B*a*b^2 - 3*A*b^3)*e^2)*x^2 - (12*B*b^3*d^2 - (163*B*a*b^2 - 27*A
*b^3)*d*e + 25*(7*B*a^2*b - 3*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(b^6*x^2 + 2*
a*b^5*x + a^2*b^4), -1/12*(15*(4*B*a^2*b*d*e - (7*B*a^3 - 3*A*a^2*b)*e^2 +
(4*B*b^3*d*e - (7*B*a*b^2 - 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (7*B*a^2
*b - 3*A*a*b^2)*e^2)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-
(b*d - a*e)/b)/(b*d - a*e)) - (8*B*b^3*e^2*x^3 - 6*(B*a*b^2 + A*b^3)*d^2 +
5*(19*B*a^2*b - 3*A*a*b^2)*d*e - 15*(7*B*a^3 - 3*A*a^2*b)*e^2 + 8*(7*B*b^3*
d*e - (7*B*a*b^2 - 3*A*b^3)*e^2)*x^2 - (12*B*b^3*d^2 - (163*B*a*b^2 - 27*A*
b^3)*d*e + 25*(7*B*a^2*b - 3*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(b^6*x^2 + 2*a
*b^5*x + a^2*b^4)]
```

giac [A] time = 0.37, size = 478, normalized size = 1.40

$$\frac{5\left(4Bb^2d^2e^2-11Babde^3+3Ab^2de^3+7Ba^2e^4-3Aabe^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{4\sqrt{-b^2d+abe}\,b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\left(4(xe+d)^{\frac{3}{2}}Bb^3d^2e^2-4\sqrt{xe+d}\,Bb^3d^3e^2-17(xe+d)^{\frac{3}{2}}Bab^2de^3+9(xe+d)^{\frac{3}{2}}Ab^3de^3+19\sqrt{xe+d}\,Bab^2d^2e^3-7\sqrt{xe+d}\,Ab^3d^2e^3+13(xe+d)^{\frac{3}{2}}Ba^2be^4-9(xe+d)^{\frac{3}{2}}Aab^2e^4-26\sqrt{xe+d}\,Ba^2bde^4+14\sqrt{xe+d}\,Aab^2de^4+11\sqrt{xe+d}\,Ba^3e^5-7\sqrt{xe+d}\,Aa^2be^5\right)e^{(-1)}}{4((xe+d)b-bd+ae)^2b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{2\left((xe+d)^{\frac{3}{2}}Bb^6e^4+6\sqrt{xe+d}\,Bb^6de^4-9\sqrt{xe+d}\,Bab^5e^5+3\sqrt{xe+d}\,Ab^6e^5\right)e^{(-3)}}{3b^9\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 5/4*(4*B*b^2*d^2*e^2 - 11*B*a*b*d*e^3 + 3*A*b^2*d*e^3 + 7*B*a^2*e^4 - 3*A*a
*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sqrt(-b^2*d +
a*b*e)*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/4*(4*(x*e + d)^(3/2)*B*b
^3*d^2*e^2 - 4*sqrt(x*e + d)*B*b^3*d^3*e^2 - 17*(x*e + d)^(3/2)*B*a*b^2*d*e
^3 + 9*(x*e + d)^(3/2)*A*b^3*d*e^3 + 19*sqrt(x*e + d)*B*a*b^2*d^2*e^3 - 7*s
qrt(x*e + d)*A*b^3*d^2*e^3 + 13*(x*e + d)^(3/2)*B*a^2*b*e^4 - 9*(x*e + d)^(
3/2)*A*a*b^2*e^4 - 26*sqrt(x*e + d)*B*a^2*b*d*e^4 + 14*sqrt(x*e + d)*A*a*b^
2*d*e^4 + 11*sqrt(x*e + d)*B*a^3*e^5 - 7*sqrt(x*e + d)*A*a^2*b*e^5)*e^(-1)/
```

```
(((x*e + d)*b - b*d + a*e)^2*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/3*
((x*e + d)^(3/2)*B*b^6*e^4 + 6*sqrt(x*e + d)*B*b^6*d*e^4 - 9*sqrt(x*e + d)*
B*a*b^5*e^5 + 3*sqrt(x*e + d)*A*b^6*e^5)*e^(-3)/(b^9*sgn((x*e + d)*b*e - b*
d*e + a*e^2))
```

maple [B] time = 0.08, size = 1150, normalized size = 3.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(51*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b^2*d*e-42*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(1/2)*A*a*b^2*d*e^2+126*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*
b*d*e^2-57*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a*b^2*d^2*e+60*B*a^2*b^2*d^2
*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+21*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*A*b^3*d^2*e+45*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a^2*b*e^3+96*
B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x*a*b^2*d*e^2+27*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(3/2)*A*a*b^2*e^2-27*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*b^3*d*e+45*A
*a^2*b^2*d*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-31*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(3/2)*B*a^2*b*e^2-165*B*a^3*b*d*e^3*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)+105*B*a^4*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)-45*A*a^3*b*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-105*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*e^3-12*B*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*b
^3*d^2+12*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*b^3*d^3+48*B*(e*x+d)^(1/2)*((
a*e-b*d)*b)^(1/2)*x^2*b^3*d*e^2-330*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*x*a^2*b^2*d*e^3+120*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*
a*b^3*d^2*e^2+48*A*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x*a*b^2*e^3+16*B*(e*x+
d)^(3/2)*((a*e-b*d)*b)^(1/2)*x*a*b^2*e^2-72*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(
1/2)*x^2*a*b^2*e^3-144*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x*a^2*b*e^3-165*
B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^3*d*e^3+90*A*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^3*d*e^3-90*A*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*x*a^2*b^2*e^4+210*B*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)*x*a^3*b*e^4+8*B*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*x^2*b^3*e^2+
105*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^2*e^4+60*B*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^4*d^2*e^2-45*A*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^3*e^4+45*A*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)*x^2*b^4*d*e^3+24*A*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x^2*
b^3*e^3)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^4/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{5/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1648 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=280

$$-\frac{(d+ex)^{5/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe+Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3e(a+bx)(-5aBe+Abe+4bBd}{4b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.23, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{(d+ex)^{5/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe+Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{3e(a+bx)\sqrt{d+ex}\,(-5aBe+Abe+4bBd)}{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3e(a+bx)(-5aBe+Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}\sqrt{a^2+2abx+b^2x^2}\,\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*e*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(4*b^3*(b*d - a*e
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((4*b*B*d + A*b*e - 5*a*B*e)*(d + e*x)^(
3/2))/(4*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d +
 e*x)^(5/2))/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3
*e*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/(4*b^(7/2)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd+Abe-5aBe)\left(ab+b^2x\right)\right)\int \frac{(\ldots}{(a\ldots}}{4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{5/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(3e(\ldots}{\ldots}$$

$$= \frac{3e(4bBd+Abe-5aBe)(a+bx)\sqrt{d+ex}}{4b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{\ldots}{2b(b\ldots}$$

$$= \frac{3e(4bBd+Abe-5aBe)(a+bx)\sqrt{d+ex}}{4b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{\ldots}{2b(b\ldots}$$

$$= \frac{3e(4bBd+Abe-5aBe)(a+bx)\sqrt{d+ex}}{4b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{\ldots}{2b(b\ldots}$$

Mathematica [C] time = 0.09, size = 110, normalized size = 0.39

$$\frac{(a+bx)(d+ex)^{5/2}\left(\frac{e(a+bx)^2(-5aBe+Abe+4bBd)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+5aB-5Ab\right)}{10b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(d + e*x)^(5/2)*(-5*A*b + 5*a*B + (e*(4*b*B*d + A*b*e - 5*a*B*e)
*(a + b*x)^2*Hypergeometric2F1[2, 5/2, 7/2, (b*(d + e*x))/(b*d - a*e)])/(b*
d - a*e)^2))/(10*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [A] time = 53.94, size = 236, normalized size = 0.84

$$\frac{(-ae-bex)\left(\frac{e\sqrt{d+ex}\left(-15a^2Be^2+3aAbe^2-25abBe(d+ex)+27abBde+5Ab^2e(d+ex)-3Ab^2de-12b^2Bd^2-8b^2B(d+ex)^2+20b^2Bd(d+ex)\right)}{4b^3(ae+b(d+ex)-bd)^2}+\frac{3\left(-5aBe^2+Abe^2+4bBde\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{7/2}\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e*Sqrt[d + e*x]*(-12*b^2*B*d^2 - 3*A*b^2*d*e + 27*a*b*B
*d*e + 3*a*A*b*e^2 - 15*a^2*B*e^2 + 20*b^2*B*d*(d + e*x) + 5*A*b^2*e*(d + e
*x) - 25*a*b*B*e*(d + e*x) - 8*b^2*B*(d + e*x)^2))/(4*b^3*(-(b*d) + a*e + b
*(d + e*x))^2) + (3*(4*b*B*d*e + A*b*e^2 - 5*a*B*e^2)*ArcTan[(Sqrt[b]*Sqrt[
-(b*d) + a*e]*Sqrt[d + e*x]])/(b*d - a*e)])/(4*b^(7/2)*Sqrt[-(b*d) + a*e])))
/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.44, size = 703, normalized size = 2.51

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/8*(3*(4*B*a^2*b*d*e - (5*B*a^3 - A*a^2*b)*e^2 + (4*B*b^3*d*e - (5*B*a*b^
2 - A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (5*B*a^2*b - A*a*b^2)*e^2)*x)*sqrt
(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x +
 d))/(b*x + a)) - 2*(2*(B*a*b^3 + A*b^4)*d^2 - (17*B*a^2*b^2 - A*a*b^3)*d*e
 + 3*(5*B*a^3*b - A*a^2*b^2)*e^2 - 8*(B*b^4*d*e - B*a*b^3*e^2)*x^2 + (4*B*b
^4*d^2 - (29*B*a*b^3 - 5*A*b^4)*d*e + 5*(5*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqr
t(e*x + d))/(a^2*b^5*d - a^3*b^4*e + (b^7*d - a*b^6*e)*x^2 + 2*(a*b^6*d - a
^2*b^5*e)*x), 1/4*(3*(4*B*a^2*b*d*e - (5*B*a^3 - A*a^2*b)*e^2 + (4*B*b^3*d*
e - (5*B*a*b^2 - A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (5*B*a^2*b - A*a*b^2)
*e^2)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*
e*x + b*d)) - (2*(B*a*b^3 + A*b^4)*d^2 - (17*B*a^2*b^2 - A*a*b^3)*d*e + 3*(
5*B*a^3*b - A*a^2*b^2)*e^2 - 8*(B*b^4*d*e - B*a*b^3*e^2)*x^2 + (4*B*b^4*d^2
 - (29*B*a*b^3 - 5*A*b^4)*d*e + 5*(5*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqrt(e*x
+ d))/(a^2*b^5*d - a^3*b^4*e + (b^7*d - a*b^6*e)*x^2 + 2*(a*b^6*d - a^2*b^5
*e)*x)]
```

giac [A] time = 0.30, size = 312, normalized size = 1.11

$$\frac{2\sqrt{xe+d}\,Be}{b^3\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{3\left(4Bbde^2-5Bae^3+Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{4\sqrt{-b^2d+abe}\,b^3\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\left(4(xe+d)^{\frac{3}{2}}Bb^2de^2-4\sqrt{xe+d}\,Bb^2d^2e^2-9(xe+d)^{\frac{3}{2}}Babe^3+5(xe+d)^{\frac{3}{2}}Ab^2e^3+11\sqrt{xe+d}\,Babde^3-3\sqrt{xe+d}\,Ab^2de^3-7\sqrt{xe+d}\,Ba^2e^4+3\sqrt{xe+d}\,Aabe^4\right)e^{(-1)}}{4\left((xe+d)b-bd+ae\right)^2b^3\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2*sqrt(x*e + d)*B*e/(b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 3/4*(4*B*b*d
*e^2 - 5*B*a*e^3 + A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^
(-1)/(sqrt(-b^2*d + a*b*e)*b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/4*(4
*(x*e + d)^(3/2)*B*b^2*d*e^2 - 4*sqrt(x*e + d)*B*b^2*d^2*e^2 - 9*(x*e + d)^
(3/2)*B*a*b*e^3 + 5*(x*e + d)^(3/2)*A*b^2*e^3 + 11*sqrt(x*e + d)*B*a*b*d*e^
3 - 3*sqrt(x*e + d)*A*b^2*d*e^3 - 7*sqrt(x*e + d)*B*a^2*e^4 + 3*sqrt(x*e +
d)*A*a*b*e^4)*e^(-1)/(((x*e + d)*b - b*d + a*e)^2*b^3*sgn((x*e + d)*b*e - b
*d*e + a*e^2))
```

maple [B] time = 0.07, size = 608, normalized size = 2.17

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(-3*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^3*e^3+15*B*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^2*e^3-12*B*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^3*d*e^2-6*A*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*x*a*b^2*e^3-8*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*b^2*e
^2+30*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^2*b*e^3-24*B*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^2*d*e^2+5*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(3/2)*A*b^2*e-3*A*a^2*b*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)-9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b*e+4*B*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(3/2)*b^2*d-16*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a*b*e^2+15*B*a^3*
e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-12*B*a^2*b*d*e^2*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a*b
*e^2-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^2*d*e-15*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*B*a^2*e^2+11*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a*b*d*e-4*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^3
/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{3/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1649 $\int \frac{(A+Bx)\sqrt{d+ex}}{(a^2+2abx+b^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=215

$$-\frac{(d+ex)^{3/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)(-3aBe-Abe+4bBd)\,\text{ta}}{4b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(b}$$

Rubi [A] time = 0.19, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 47, 63, 208}

$$-\frac{(d+ex)^{3/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)(-3aBe-Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(4*b^2*(b*d - a*e)*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(3/2))/(2*b*(b*d - a*e)*(a + b
*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(4*b*B*d - A*b*e - 3*a*B*e)*(a + b*
x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(5/2)*(b*d - a*e)
^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)\sqrt{d+ex}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-Abe-3aBe)\left(ab+b^2x\right)\right)\int \frac{\cdots}{(a\cdots}}{4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(4bBd-Abe-3aBe)\sqrt{d+ex}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(e(4\cdots}{\cdots}$$

$$= -\frac{(4bBd-Abe-3aBe)\sqrt{d+ex}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{((4b\cdots}{\cdots}$$

$$= -\frac{(4bBd-Abe-3aBe)\sqrt{d+ex}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{e(4b\cdots}{\cdots}$$

Mathematica [A] time = 0.33, size = 167, normalized size = 0.78

$$\frac{(a+bx)\left(\frac{(a+bx)(-3aBe-Abe+4bBd)\left(\sqrt{b}\,e(a+bx)\sqrt{d+ex}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)-b(d+ex)\sqrt{ae-bd}\right)}{\sqrt{ae-bd}}-2b^2(d+ex)^2(Ab-aB)\right)}{4b^3\left((a+bx)^2\right)^{3/2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(-2*b^2*(A*b - a*B)*(d + e*x)^2 + ((4*b*B*d - A*b*e - 3*a*B*e)*(
a + b*x)*(-(b*Sqrt[-(b*d) + a*e]*(d + e*x)) + Sqrt[b]*e*(a + b*x)*Sqrt[d +
e*x]*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/Sqrt[-(b*d) + a*e
]))/(4*b^3*(b*d - a*e)*((a + b*x)^2)^(3/2)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 42.64, size = 243, normalized size = 1.13

$$\frac{(-ae-bex)\left(\frac{e\sqrt{d+ex}\left(-3a^2Be^2-aAbe^2-5abBe(d+ex)+7abBde+Ab^2e(d+ex)+Ab^2de-4b^2Bd^2+4b^2Bd(d+ex)\right)}{4b^2(bd-ae)(-ae-b(d+ex)+bd)^2}+\frac{\left(-3aBe^2-Abe^2+4bBde\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{5/2}(bd-ae)\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e*Sqrt[d + e*x]*(-4*b^2*B*d^2 + A*b^2*d*e + 7*a*b*B*d*e
 - a*A*b*e^2 - 3*a^2*B*e^2 + 4*b^2*B*d*(d + e*x) + A*b^2*e*(d + e*x) - 5*a*
b*B*e*(d + e*x)))/(4*b^2*(b*d - a*e)*(b*d - a*e - b*(d + e*x))^2) + ((4*b*B
```

```
*d*e - A*b*e^2 - 3*a*B*e^2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x
])/(b*d - a*e)])/(4*b^(5/2)*(b*d - a*e)*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e
+ b*e*x)^2/e^2])
```

fricas [B] time = 0.46, size = 721, normalized size = 3.35

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/8*((4*B*a^2*b*d*e - (3*B*a^3 + A*a^2*b)*e^2 + (4*B*b^3*d*e - (3*B*a*b^2
+ A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (3*B*a^2*b + A*a*b^2)*e^2)*x)*sqrt(b
^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d
))/(b*x + a)) - 2*(2*(B*a*b^3 + A*b^4)*d^2 - (5*B*a^2*b^2 + 3*A*a*b^3)*d*e
+ (3*B*a^3*b + A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (9*B*a*b^3 - A*b^4)*d*e + (5
*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^2 - 2*a^3*b^4*d*e +
 a^4*b^3*e^2 + (b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*x^2 + 2*(a*b^6*d^2 - 2
*a^2*b^5*d*e + a^3*b^4*e^2)*x), 1/4*((4*B*a^2*b*d*e - (3*B*a^3 + A*a^2*b)*e
^2 + (4*B*b^3*d*e - (3*B*a*b^2 + A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (3*B*
a^2*b + A*a*b^2)*e^2)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*s
qrt(e*x + d)/(b*e*x + b*d)) - (2*(B*a*b^3 + A*b^4)*d^2 - (5*B*a^2*b^2 + 3*A
*a*b^3)*d*e + (3*B*a^3*b + A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (9*B*a*b^3 - A*b
^4)*d*e + (5*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^2 - 2*a
^3*b^4*d*e + a^4*b^3*e^2 + (b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*x^2 + 2*(a
*b^6*d^2 - 2*a^2*b^5*d*e + a^3*b^4*e^2)*x)]
```

giac [B] time = 0.36, size = 337, normalized size = 1.57

$$\frac{\left(4\,Bbde^{2}-3\,Bae^{3}-Abe^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{4\left(b^{3}de\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-ab^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{-b^{2}d+abe}}-\frac{4\,(xe+d)^{\frac{3}{2}}Bb^{2}de^{2}-4\,\sqrt{xe+d}\,Bb^{2}d^{2}e^{2}-5\,(xe+d)^{\frac{3}{2}}Babe^{3}+(xe+d)^{\frac{3}{2}}Ab^{2}e^{3}+7\,\sqrt{xe+d}\,Babde^{3}+\sqrt{xe+d}\,Ab^{2}de^{3}-3\,\sqrt{xe+d}\,Ba^{2}e^{4}-\sqrt{xe+d}\,Aabe^{4}}{4\left(b^{3}de\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-ab^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\left((xe+d)b-bd+ae\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 1/4*(4*B*b*d*e^2 - 3*B*a*e^3 - A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^3*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a*b^2*e^2*sgn((x*e
 + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/4*(4*(x*e + d)^(3/2)*
B*b^2*d*e^2 - 4*sqrt(x*e + d)*B*b^2*d^2*e^2 - 5*(x*e + d)^(3/2)*B*a*b*e^3 +
 (x*e + d)^(3/2)*A*b^2*e^3 + 7*sqrt(x*e + d)*B*a*b*d*e^3 + sqrt(x*e + d)*A*
b^2*d*e^3 - 3*sqrt(x*e + d)*B*a^2*e^4 - sqrt(x*e + d)*A*a*b*e^4)/((b^3*d*e*
sgn((x*e + d)*b*e - b*d*e + a*e^2) - a*b^2*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2))*((x*e + d)*b - b*d + a*e)^2)
```

maple [B] time = 0.07, size = 555, normalized size = 2.58

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/4*(A*b^3*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*B*a*b^2*e^
3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-4*B*b^3*d*e^2*x^2*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+2*A*a*b^2*e^3*x*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+6*B*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)-8*B*a*b^2*d*e^2*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+((a*e-
b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*b^2*e+A*a^2*b*e^3*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-5*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b*e+4*((a*e-b*d)*b
```

```
)^(1/2)*(e*x+d)^(3/2)*B*b^2*d+3*B*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)-4*B*a^2*b*d*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a*b*e^2+((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A
*b^2*d*e-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*e^2+7*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(1/2)*B*a*b*d*e-4*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^2*d^2)/e*
(b*x+a)/((a*e-b*d)*b)^(1/2)/b^2/(a*e-b*d)/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.1650 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=215

$$-\frac{\sqrt{d+ex}\,(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-aBe-3Abe+4bBd)}{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)(-aBe-3Abe+4bBd)\ \mathrm{ta}}{4b^{3/2}\sqrt{a^2+2abx+b^2x^2}\ (\mathrm{b}}$$

Rubi [A] time = 0.20, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{\sqrt{d+ex}\,(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-aBe-3Abe+4bBd)}{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)(-aBe-3Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[d + e*x])/(4*b*(b*d - a*e)^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - ((A*b - a*B)*Sqrt[d + e*x])/(2*b*(b*d - a*e)*(a + b*x
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(4*b*B*d - 3*A*b*e - a*B*e)*(a + b*x)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(3/2)*(b*d - a*e)^(
5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-3Abe-aBe)\left(ab+b\right.\right.}{4(bd-ae)\sqrt{a^2+2}}$$

$$= -\frac{(4bBd-3Abe-aBe)\sqrt{d+ex}}{4b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x}}$$

$$= -\frac{(4bBd-3Abe-aBe)\sqrt{d+ex}}{4b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x}}$$

$$= -\frac{(4bBd-3Abe-aBe)\sqrt{d+ex}}{4b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x}}$$

Mathematica [A] time = 0.26, size = 170, normalized size = 0.79

$$\frac{(a+bx)\sqrt{d+ex}\left(\frac{(a+bx)(-aBe-3Abe+4bBd)\left(\sqrt{b}\sqrt{d+ex}\,(ae-bd)+e(a+bx)\sqrt{ae-bd}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)\right)}{2\sqrt{b}\sqrt{d+ex}\,(bd-ae)^2}+aB-Ab\right)}{2b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*Sqrt[d + e*x]*(-(A*b) + a*B + ((4*b*B*d - 3*A*b*e - a*B*e)*(a +
b*x)*(Sqrt[b]*(-(b*d) + a*e)*Sqrt[d + e*x] + e*Sqrt[-(b*d) + a*e]*(a + b*x)
*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/(2*Sqrt[b]*(b*d - a*e
)^2*Sqrt[d + e*x])))/(2*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [A] time = 39.59, size = 243, normalized size = 1.13

$$\frac{(-ae-bex)\left(\frac{e\sqrt{d+ex}\left(a^2Be^2-5aAbe^2-abBe(d+ex)+3abBde-3Ab^2e(d+ex)+5Ab^2de-4b^2Bd^2+4b^2Bd(d+ex)\right)}{4b(bd-ae)^2(-ae-b(d+ex)+bd)^2}+\frac{\left(aBe^2+3Abe^2-4bBde\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{3/2}(bd-ae)^2\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e*Sqrt[d + e*x]*(-4*b^2*B*d^2 + 5*A*b^2*d*e + 3*a*b*B*d
*e - 5*a*A*b*e^2 + a^2*B*e^2 + 4*b^2*B*d*(d + e*x) - 3*A*b^2*e*(d + e*x) -
a*b*B*e*(d + e*x)))/(4*b*(b*d - a*e)^2*(b*d - a*e - b*(d + e*x))^2) + ((-4*
b*B*d*e + 3*A*b*e^2 + a*B*e^2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d +
```

```
e*x])/(b*d - a*e)])/(4*b^(3/2)*(b*d - a*e)^2*Sqrt[-(b*d) + a*e]))))/(e*Sqrt[
(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.55, size = 808, normalized size = 3.76

$$\left[-\frac{\left(4Ba^2bde - (Ba^3 + 3Aa^2b)e^2 + (4Bb^3de - (Bab^2 + 3Ab^3)e^2)x^2 + 2(4Bab^2de - (Ba^2b + 3Aab^2)e^2)x\right)\sqrt{b^2d - abe}\log\left(\frac{bex + 2bd - ae - 2\sqrt{b^2d - abe}\sqrt{ex + d}}{bx + a}\right) + 2\left(2(Bab^3 + Ab^4)d^2 - (Ba^2b^2 + 7Aab^3)de - (Ba^3b - 5Aa^2b^2)e^2 + (4Bb^4d^2 - (5Bab^3 + 3Ab^4)de + (Ba^2b^2 + 3Aab^3)e^2)x\right)\sqrt{ex + d}}{8\left(a^2b^5d^3 - 3a^3b^4d^2e + 3a^4b^3de^2 - a^5b^2e^3 + (b^7d^3 - 3ab^6d^2e + 3a^2b^5de^2 - a^3b^4e^3)x^2 + 2(ab^6d^3 - 3a^2b^5d^2e + 3a^3b^4de^2 - a^4b^3e^3)x\right)}, -\frac{\left(4Ba^2bde - (Ba^3 + 3Aa^2b)e^2 + (4Bb^3de - (Bab^2 + 3Ab^3)e^2)x^2 + 2(4Bab^2de - (Ba^2b + 3Aab^2)e^2)x\right)\sqrt{-b^2d + abe}\arctan\left(\frac{\sqrt{-b^2d + abe}\sqrt{ex + d}}{bex + bd}\right) + \left(2(Bab^3 + Ab^4)d^2 - (Ba^2b^2 + 7Aab^3)de - (Ba^3b - 5Aa^2b^2)e^2 + (4Bb^4d^2 - (5Bab^3 + 3Ab^4)de + (Ba^2b^2 + 3Aab^3)e^2)x\right)\sqrt{ex + d}}{4\left(a^2b^5d^3 - 3a^3b^4d^2e + 3a^4b^3de^2 - a^5b^2e^3 + (b^7d^3 - 3ab^6d^2e + 3a^2b^5de^2 - a^3b^4e^3)x^2 + 2(ab^6d^3 - 3a^2b^5d^2e + 3a^3b^4de^2 - a^4b^3e^3)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/8*((4*B*a^2*b*d*e - (B*a^3 + 3*A*a^2*b)*e^2 + (4*B*b^3*d*e - (B*a*b^2 +
 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (B*a^2*b + 3*A*a*b^2)*e^2)*x)*sqrt(
b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x +
d))/(b*x + a)) + 2*(2*(B*a*b^3 + A*b^4)*d^2 - (B*a^2*b^2 + 7*A*a*b^3)*d*e -
 (B*a^3*b - 5*A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (5*B*a*b^3 + 3*A*b^4)*d*e + (
B*a^2*b^2 + 3*A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^3 - 3*a^3*b^4*d^2*
e + 3*a^4*b^3*d*e^2 - a^5*b^2*e^3 + (b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*
e^2 - a^3*b^4*e^3)*x^2 + 2*(a*b^6*d^3 - 3*a^2*b^5*d^2*e + 3*a^3*b^4*d*e^2 -
 a^4*b^3*e^3)*x), -1/4*((4*B*a^2*b*d*e - (B*a^3 + 3*A*a^2*b)*e^2 + (4*B*b^3
*d*e - (B*a*b^2 + 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (B*a^2*b + 3*A*a*b
^2)*e^2)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/
(b*e*x + b*d)) + (2*(B*a*b^3 + A*b^4)*d^2 - (B*a^2*b^2 + 7*A*a*b^3)*d*e - (
B*a^3*b - 5*A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (5*B*a*b^3 + 3*A*b^4)*d*e + (B*
a^2*b^2 + 3*A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^3 - 3*a^3*b^4*d^2*e
+ 3*a^4*b^3*d*e^2 - a^5*b^2*e^3 + (b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^
2 - a^3*b^4*e^3)*x^2 + 2*(a*b^6*d^3 - 3*a^2*b^5*d^2*e + 3*a^3*b^4*d*e^2 - a
^4*b^3*e^3)*x)]
```

giac [B] time = 0.30, size = 402, normalized size = 1.87

$$-\frac{(4Bbde^2 - Bae^3 - 3Abe^3)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{4\left(b^3d^2e\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right) - 2ab^2de^2\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right) + a^2be^3\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)\right)\sqrt{-b^2d+abe}} - \frac{4(xe+d)^{\frac{3}{2}}Bb^2de^2 - 4\sqrt{xe+d}\,Bb^2d^2e^2 - (xe+d)^{\frac{3}{2}}Babe^3 - 3(xe+d)^{\frac{3}{2}}Ab^2e^3 + 3\sqrt{xe+d}\,Babde^3 + 5\sqrt{xe+d}\,Ab^2de^3 + \sqrt{xe+d}\,Ba^2e^4 - 5\sqrt{xe+d}\,Aabe^4}{4\left(b^3d^2e\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right) - 2ab^2de^2\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right) + a^2be^3\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)\right)\left((xe+d)b - bd + ae\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -1/4*(4*B*b*d*e^2 - B*a*e^3 - 3*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/((b^3*d^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 2*a*b^2*d*e^2*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b*e^3*sgn((x*e + d)*b*e - b*d*e + a
*e^2))*sqrt(-b^2*d + a*b*e)) - 1/4*(4*(x*e + d)^(3/2)*B*b^2*d*e^2 - 4*sqrt(
x*e + d)*B*b^2*d^2*e^2 - (x*e + d)^(3/2)*B*a*b*e^3 - 3*(x*e + d)^(3/2)*A*b^
2*e^3 + 3*sqrt(x*e + d)*B*a*b*d*e^3 + 5*sqrt(x*e + d)*A*b^2*d*e^3 + sqrt(x*
e + d)*B*a^2*e^4 - 5*sqrt(x*e + d)*A*a*b*e^4)/((b^3*d^2*e*sgn((x*e + d)*b*e
 - b*d*e + a*e^2) - 2*a*b^2*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*
b*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^2)
```

maple [B] time = 0.07, size = 556, normalized size = 2.59

$$\frac{(bx+a)\left(3Ab^3e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + Bab^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 4Bb^3de^2x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 6Aab^2e^3x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 2Ba^2be^3x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 8Bab^2de^2x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 3Aa^2be^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + Ba^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) - 4Ba^2bde^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 5\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,Aabe^2 - 5\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,Ab^2de - \sqrt{(ae-bd)b}\,\sqrt{ex+d}\,Ba^2e^2 - 3\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,Babde + 4\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,Bb^2d^2 + 3\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}Ab^2e + \sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}Babe - 4\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}Bb^2d\right)}{4\sqrt{(ae-bd)b}\,(ae-bd)^2\left((bx+a)^2\right)^{\frac{3}{2}}be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 1/4*(b*x+a)/e*(3*A*b^3*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+
B*a*b^2*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-4*B*b^3*d*e^2*x
^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+6*A*a*b^2*e^3*x*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+2*B*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-8*B*a*b^2*d*e^2*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
```

```
*b)+3*A*a^2*b*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(3/2)*A*b^2*e+B*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)-4*B*a^2*b*d*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+((a*e
-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b*e-4*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*
b^2*d+5*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a*b*e^2-5*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*A*b^2*d*e-((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*e^2-3*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a*b*d*e+4*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B
*b^2*d^2)/((a*e-b*d)*b)^(1/2)/b/(a*e-b*d)^2/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{d + e\,x}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1651 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=281

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}+\frac{-aBe+5Abe-4bBd}{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{3e(a+bx)(a}{4b\sqrt{a^2+2abx+}$$

Rubi [A] time = 0.26, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}-\frac{aBe-5Abe+4bBd}{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{3e(a+bx)(aBe-5Abe+4bBd)}{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{3e(a+bx)(aBe-5Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(4*b*B*d - 5*A*b*e + a*B*e)/(4*b*(b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]) - (A*b - a*B)/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (3*e*(4*b*B*d - 5*A*b*e + a*B*e)*(a + b*x))/
(4*b*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*e*(4*b
*B*d - 5*A*b*e + a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d
- a*e]])/(4*Sqrt[b]*(b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{2b(bd-ae)(a+bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-5Abe+a\ldots\right.}{4(bd-\ldots}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a\ldots}{2b(bd-ae)(a+bx)\sqrt{d+e\ldots}}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a\ldots}{2b(bd-ae)(a+bx)\sqrt{d+e\ldots}}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a\ldots}{2b(bd-ae)(a+bx)\sqrt{d+e\ldots}}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a\ldots}{2b(bd-ae)(a+bx)\sqrt{d+e\ldots}}$$

Mathematica [C] time = 0.07, size = 110, normalized size = 0.39

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(-aBe+5Abe-4bBd)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+aB-Ab\right)}{2b\left((a+bx)^2\right)^{3/2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-(A*b) + a*B + (e*(-4*b*B*d + 5*A*b*e - a*B*e)*(a + b*x)^2*Hype
rgeometric2F1[-1/2, 2, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2))/(2*
b*(b*d - a*e)*((a + b*x)^2)^(3/2)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 52.41, size = 328, normalized size = 1.17

$$\frac{(-ae-bex)\left(-\frac{e\left(8a^2Ae^3-5a^2Be^2(d+ex)-8a^2Bde^2+25aAbe^2(d+ex)-16aAbde^2+16abBd^2e-15abBde(d+ex)-3abBe(d+ex)^2+8Ab^2d^2e-25Ab^2de(d+ex)+15Ab^2e(d+ex)^2-8b^2Bd^3+20b^2Bd^2(d+ex)-12b^2Bd(d+ex)^2\right)}{4\sqrt{d+ex}\,(bd-ae)^3(-ae-b(d+ex)+bd)^2}-\frac{3\left(aBe^2-5Abe^2+4bBde\right)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\sqrt{ae-bd}}{bd-ae}\right)}{4\sqrt{b}\,(bd-ae)^3\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/4*(e*(-8*b^2*B*d^3 + 8*A*b^2*d^2*e + 16*a*b*B*d^2*e -
 16*a*A*b*d*e^2 - 8*a^2*B*d*e^2 + 8*a^2*A*e^3 + 20*b^2*B*d^2*(d + e*x) - 25
*A*b^2*d*e*(d + e*x) - 15*a*b*B*d*e*(d + e*x) + 25*a*A*b*e^2*(d + e*x) - 5*
```

```
a^2*B*e^2*(d + e*x) - 12*b^2*B*d*(d + e*x)^2 + 15*A*b^2*e*(d + e*x)^2 - 3*a
*b*B*e*(d + e*x)^2))/((b*d - a*e)^3*Sqrt[d + e*x]*(b*d - a*e - b*(d + e*x))
^2) - (3*(4*b*B*d*e - 5*A*b*e^2 + a*B*e^2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*
e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*Sqrt[b]*(b*d - a*e)^3*Sqrt[-(b*d) + a*e]
)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.55, size = 1410, normalized size = 5.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/8*(3*(4*B*a^2*b*d^2*e + (B*a^3 - 5*A*a^2*b)*d*e^2 + (4*B*b^3*d*e^2 + (B*
a*b^2 - 5*A*b^3)*e^3)*x^3 + (4*B*b^3*d^2*e + (9*B*a*b^2 - 5*A*b^3)*d*e^2 +
2*(B*a^2*b - 5*A*a*b^2)*e^3)*x^2 + (8*B*a*b^2*d^2*e + 2*(3*B*a^2*b - 5*A*a*
b^2)*d*e^2 + (B*a^3 - 5*A*a^2*b)*e^3)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2
*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(8*A*a^3*b
*e^3 + 2*(B*a*b^3 + A*b^4)*d^3 + 11*(B*a^2*b^2 - A*a*b^3)*d^2*e - (13*B*a^3
*b - A*a^2*b^2)*d*e^2 + 3*(4*B*b^4*d^2*e - (3*B*a*b^3 + 5*A*b^4)*d*e^2 - (B
*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + (4*B*b^4*d^3 + (17*B*a*b^3 - 5*A*b^4)*d^2*
e - 4*(4*B*a^2*b^2 + 5*A*a*b^3)*d*e^2 - 5*(B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*s
qrt(e*x + d))/(a^2*b^5*d^5 - 4*a^3*b^4*d^4*e + 6*a^4*b^3*d^3*e^2 - 4*a^5*b^
2*d^2*e^3 + a^6*b*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*e^2 + 6*a^2*b^5*d^2*e^3
- 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^3 + (b^7*d^5 - 2*a*b^6*d^4*e - 2*a^2*b^5
*d^3*e^2 + 8*a^3*b^4*d^2*e^3 - 7*a^4*b^3*d*e^4 + 2*a^5*b^2*e^5)*x^2 + (2*a*
b^6*d^5 - 7*a^2*b^5*d^4*e + 8*a^3*b^4*d^3*e^2 - 2*a^4*b^3*d^2*e^3 - 2*a^5*b
^2*d*e^4 + a^6*b*e^5)*x), -1/4*(3*(4*B*a^2*b*d^2*e + (B*a^3 - 5*A*a^2*b)*d*
e^2 + (4*B*b^3*d*e^2 + (B*a*b^2 - 5*A*b^3)*e^3)*x^3 + (4*B*b^3*d^2*e + (9*B
*a*b^2 - 5*A*b^3)*d*e^2 + 2*(B*a^2*b - 5*A*a*b^2)*e^3)*x^2 + (8*B*a*b^2*d^2
*e + 2*(3*B*a^2*b - 5*A*a*b^2)*d*e^2 + (B*a^3 - 5*A*a^2*b)*e^3)*x)*sqrt(-b^
2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (8*
A*a^3*b*e^3 + 2*(B*a*b^3 + A*b^4)*d^3 + 11*(B*a^2*b^2 - A*a*b^3)*d^2*e - (1
3*B*a^3*b - A*a^2*b^2)*d*e^2 + 3*(4*B*b^4*d^2*e - (3*B*a*b^3 + 5*A*b^4)*d*e
^2 - (B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + (4*B*b^4*d^3 + (17*B*a*b^3 - 5*A*b^
4)*d^2*e - 4*(4*B*a^2*b^2 + 5*A*a*b^3)*d*e^2 - 5*(B*a^3*b - 5*A*a^2*b^2)*e^
3)*x)*sqrt(e*x + d))/(a^2*b^5*d^5 - 4*a^3*b^4*d^4*e + 6*a^4*b^3*d^3*e^2 - 4
*a^5*b^2*d^2*e^3 + a^6*b*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*e^2 + 6*a^2*b^5*d
^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^3 + (b^7*d^5 - 2*a*b^6*d^4*e - 2*
a^2*b^5*d^3*e^2 + 8*a^3*b^4*d^2*e^3 - 7*a^4*b^3*d*e^4 + 2*a^5*b^2*e^5)*x^2
+ (2*a*b^6*d^5 - 7*a^2*b^5*d^4*e + 8*a^3*b^4*d^3*e^2 - 2*a^4*b^3*d^2*e^3 -
2*a^5*b^2*d*e^4 + a^6*b*e^5)*x)]
```

giac [B] time = 0.40, size = 616, normalized size = 2.19

$$-\frac{3\left(4\,Bbde^{2}+Bae^{3}-5\,Abe^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{4\left(b^{3}d^{3}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-3\,ab^{2}d^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+3\,a^{2}bde^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{3}e^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{-b^{2}d+abe}}-\frac{2\left(Bde^{2}-Ae^{3}\right)}{\left(b^{3}d^{3}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-3\,ab^{2}d^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+3\,a^{2}bde^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{3}e^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{xe+d}}-\frac{4\,(xe+d)^{\frac{3}{2}}Bb^{2}de^{2}-4\,\sqrt{xe+d}\,Bb^{2}d^{2}e^{2}+3\,(xe+d)^{\frac{3}{2}}Babe^{3}-7\,(xe+d)^{\frac{3}{2}}Ab^{2}e^{3}-\sqrt{xe+d}\,Babde^{3}+9\,\sqrt{xe+d}\,Ab^{2}de^{3}+5\,\sqrt{xe+d}\,Ba^{2}e^{4}-9\,\sqrt{xe+d}\,Aabe^{4}}{4\left(b^{3}d^{3}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-3\,ab^{2}d^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+3\,a^{2}bde^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{3}e^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\left((xe+d)b-bd+ae\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -3/4*(4*B*b*d*e^2 + B*a*e^3 - 5*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/((b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e^2
*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*sgn((x*e + d)*b*e - b*d
*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b
*e)) - 2*(B*d*e^2 - A*e^3)/((b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) -
 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*sgn((x*
e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*s
qrt(x*e + d)) - 1/4*(4*(x*e + d)^(3/2)*B*b^2*d*e^2 - 4*sqrt(x*e + d)*B*b^2*
```

```
d^2*e^2 + 3*(x*e + d)^(3/2)*B*a*b*e^3 - 7*(x*e + d)^(3/2)*A*b^2*e^3 - sqrt(
x*e + d)*B*a*b*d*e^3 + 9*sqrt(x*e + d)*A*b^2*d*e^3 + 5*sqrt(x*e + d)*B*a^2*
e^4 - 9*sqrt(x*e + d)*A*a*b*e^4)/((b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*s
gn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e
^2))*((x*e + d)*b - b*d + a*e)^2)
```

maple [B] time = 0.08, size = 681, normalized size = 2.42

$$-\frac{\left(15 \sqrt{e x+d}\, A b^{3} e^{2} x^{2} \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)-3 \sqrt{e x+d}\, B a b^{2} e^{2} x^{2} \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)-12 \sqrt{e x+d}\, B b^{3} d e x^{2} \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)+30 \sqrt{e x+d}\, A a b^{2} e^{2} x \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)-6 \sqrt{e x+d}\, B a^{2} b e^{2} x \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)-24 \sqrt{e x+d}\, B a b^{2} d e x \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)+15 \sqrt{e x+d}\, A a^{2} b e^{2} \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)+15 \sqrt{\left(a e-b d\right) b}\, A b^{2} e^{2} x^{2}-3 \sqrt{e x+d}\, B a^{3} e^{2} \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)-12 \sqrt{e x+d}\, B a^{2} b d e \arctan\left(\frac{\sqrt{e x+d}\, b}{\sqrt{\left(a e-b d\right) b}}\right)-3 \sqrt{\left(a e-b d\right) b}\, B a b e^{2} x^{2}-12 \sqrt{\left(a e-b d\right) b}\, B b^{2} d e x^{2}+25 \sqrt{\left(a e-b d\right) b}\, A a b e^{2} x+5 \sqrt{\left(a e-b d\right) b}\, A b^{2} d e x-5 \sqrt{\left(a e-b d\right) b}\, B a^{2} e^{2} x-21 \sqrt{\left(a e-b d\right) b}\, B a b d e x-4 \sqrt{\left(a e-b d\right) b}\, B b^{2} d^{2} x+8 \sqrt{\left(a e-b d\right) b}\, A a^{2} e^{2}+9 \sqrt{\left(a e-b d\right) b}\, A a b d e-2 \sqrt{\left(a e-b d\right) b}\, A b^{2} d^{2}-13 \sqrt{\left(a e-b d\right) b}\, B a^{2} d e-2 \sqrt{\left(a e-b d\right) b}\, B a b d^{2}\right) \left(b x+a\right)}{4 \sqrt{e x+d}\, \sqrt{\left(a e-b d\right) b}\, \left(a e-b d\right)^{3} \left(\left(b x+a\right)^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(15*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*b^
3*e^2-3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a*b
^2*e^2-12*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*b
^3*d*e+30*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a*b
^2*e^2-6*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^2*
b*e^2-24*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a*b^
2*d*e+15*A*((a*e-b*d)*b)^(1/2)*x^2*b^2*e^2+15*A*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^2*b*e^2-3*B*((a*e-b*d)*b)^(1/2)*x^2*a*b*e^
2-12*B*((a*e-b*d)*b)^(1/2)*x^2*b^2*d*e-3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*(e*x+d)^(1/2)*a^3*e^2-12*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*(e*x+d)^(1/2)*a^2*b*d*e+25*A*((a*e-b*d)*b)^(1/2)*x*a*b*e^2+5*A*((a*
e-b*d)*b)^(1/2)*x*b^2*d*e-5*B*((a*e-b*d)*b)^(1/2)*x*a^2*e^2-21*B*((a*e-b*d)
*b)^(1/2)*x*a*b*d*e-4*B*((a*e-b*d)*b)^(1/2)*x*b^2*d^2+8*A*((a*e-b*d)*b)^(1/
2)*a^2*e^2+9*A*((a*e-b*d)*b)^(1/2)*a*b*d*e-2*A*((a*e-b*d)*b)^(1/2)*b^2*d^2-
13*B*((a*e-b*d)*b)^(1/2)*a^2*d*e-2*B*((a*e-b*d)*b)^(1/2)*a*b*d^2)*(b*x+a)/(
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^3/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^{2} x^{2} + 2\, abx + a^{2}\right)^{\frac{3}{2}} (ex + d)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\, x}{{\left(d + e\, x\right)}^{3/2}\, {\left(a^2 + 2\, a\, b\, x + b^2\, x^2\right)}^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1652 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=348

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{5e(a+bx)(3aBe-7Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}+\frac{-3aBe}{4b\sqrt{a^2+2abx+}}$$

Rubi [A] time = 0.32, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{5e(a+bx)(3aBe-7Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{3aBe-7Abe+4bBd}{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{5e(a+bx)(3aBe-7Abe+4bBd)}{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}+\frac{5\sqrt{b}\,e(a+bx)(3aBe-7Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(4*b*B*d - 7*A*b*e + 3*a*B*e)/(4*b*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(2*b*(b*d - a*e)*(a + b*x)*(d + e*x)^(3
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(4*b*B*d - 7*A*b*e + 3*a*B*e)*(a
+ b*x))/(12*b*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
- (5*e*(4*b*B*d - 7*A*b*e + 3*a*B*e)*(a + b*x))/(4*(b*d - a*e)^4*Sqrt[d + e
*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*Sqrt[b]*e*(4*b*B*d - 7*A*b*e + 3*a*
B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d -
a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{2b(bd-ae)(a+bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-7Abe+\right.}{4(bc}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

Mathematica [C] time = 0.07, size = 111, normalized size = 0.32

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(-3aBe+7Abe-4bBd)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+3aB-3Ab\right)}{6b\left((a+bx)^2\right)^{3/2}(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-3*A*b + 3*a*B + (e*(-4*b*B*d + 7*A*b*e - 3*a*B*e)*(a + b*x)^2*
Hypergeometric2F1[-3/2, 2, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2)
)/(6*b*(b*d - a*e)*((a + b*x)^2)^(3/2)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 63.32, size = 490, normalized size = 1.41

$$\frac{(-ae-bex)\left(\frac{e\left(8a^3Ae^4+24a^3Be^3(d+ex)-8a^3Bde^3-56a^2Abe^3(d+ex)-24a^2Abde^3+24a^2bBd^2e^2-16a^2bBde^2(d+ex)+75a^2bBe^2(d+ex)^2+24aAb^2d^2e^2+112aAb^2de^2(d+ex)-175aAb^2e^2(d+ex)^2-24ab^2Bd^3e-40ab^2Bd^2e(d+ex)+25ab^2Bde(d+ex)^2+45ab^2Be(d+ex)^3-8Ab^3d^3e-56Ab^3d^2e(d+ex)+175Ab^3de(d+ex)^2-105Ab^3e(d+ex)^3+8b^3Bd^4+32b^3Bd^3(d+ex)-100b^3Bd^2(d+ex)^2+60b^3Bd(d+ex)^3\right)}{12(d+ex)^{3/2}(bd-ae)^4(-ae-b(d+ex)+bd)^2}-\frac{5\left(3a\sqrt{b}Be^2-7Ab^{3/2}e^2+4b^{3/2}Bde\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4(bd-ae)^4\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e*(8*b^3*B*d^4 - 8*A*b^3*d^3*e - 24*a*b^2*B*d^3*e + 24*
a*A*b^2*d^2*e^2 + 24*a^2*b*B*d^2*e^2 - 24*a^2*A*b*d*e^3 - 8*a^3*B*d*e^3 + 8
*a^3*A*e^4 + 32*b^3*B*d^3*(d + e*x) - 56*A*b^3*d^2*e*(d + e*x) - 40*a*b^2*B
*d^2*e*(d + e*x) + 112*a*A*b^2*d*e^2*(d + e*x) - 16*a^2*b*B*d*e^2*(d + e*x)
 - 56*a^2*A*b*e^3*(d + e*x) + 24*a^3*B*e^3*(d + e*x) - 100*b^3*B*d^2*(d + e
*x)^2 + 175*A*b^3*d*e*(d + e*x)^2 + 25*a*b^2*B*d*e*(d + e*x)^2 - 175*a*A*b^
2*e^2*(d + e*x)^2 + 75*a^2*b*B*e^2*(d + e*x)^2 + 60*b^3*B*d*(d + e*x)^3 - 1
05*A*b^3*e*(d + e*x)^3 + 45*a*b^2*B*e*(d + e*x)^3))/(12*(b*d - a*e)^4*(d +
e*x)^(3/2)*(b*d - a*e - b*(d + e*x))^2) - (5*(4*b^(3/2)*B*d*e - 7*A*b^(3/2)
*e^2 + 3*a*Sqrt[b]*B*e^2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])
/(b*d - a*e)])/(4*(b*d - a*e)^4*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)
^2/e^2])
```

fricas [B] time = 0.55, size = 1776, normalized size = 5.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/24*(15*(4*B*a^2*b*d^3*e + (3*B*a^3 - 7*A*a^2*b)*d^2*e^2 + (4*B*b^3*d*e^
3 + (3*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + 2*(4*B*b^3*d^2*e^2 + 7*(B*a*b^2 - A*b^
3)*d*e^3 + (3*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + (4*B*b^3*d^3*e + (19*B*a*b^2
- 7*A*b^3)*d^2*e^2 + 4*(4*B*a^2*b - 7*A*a*b^2)*d*e^3 + (3*B*a^3 - 7*A*a^2*b
)*e^4)*x^2 + 2*(4*B*a*b^2*d^3*e + 7*(B*a^2*b - A*a*b^2)*d^2*e^2 + (3*B*a^3
- 7*A*a^2*b)*d*e^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*
d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(8*A*a^3*e^3 + 6
*(B*a*b^2 + A*b^3)*d^3 + (83*B*a^2*b - 39*A*a*b^2)*d^2*e + 16*(B*a^3 - 5*A*
a^2*b)*d*e^2 + 15*(4*B*b^3*d*e^2 + (3*B*a*b^2 - 7*A*b^3)*e^3)*x^3 + 5*(16*B
*b^3*d^2*e + 4*(8*B*a*b^2 - 7*A*b^3)*d*e^2 + 5*(3*B*a^2*b - 7*A*a*b^2)*e^3)
*x^2 + (12*B*b^3*d^3 + (145*B*a*b^2 - 21*A*b^3)*d^2*e + 2*(67*B*a^2*b - 119
*A*a*b^2)*d*e^2 + 8*(3*B*a^3 - 7*A*a^2*b)*e^3)*x)*sqrt(e*x + d))/(a^2*b^4*d
^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^6*d^2*e^4 +
(b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5 + a^4*
b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e^3 + 2*a^3*b
^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^2*b^4*d^4*e^
2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(a*b^5*d^6 -
3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5*b*d^2*e^4 +
 a^6*d*e^5)*x), 1/12*(15*(4*B*a^2*b*d^3*e + (3*B*a^3 - 7*A*a^2*b)*d^2*e^2 +
 (4*B*b^3*d*e^3 + (3*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + 2*(4*B*b^3*d^2*e^2 + 7*(
B*a*b^2 - A*b^3)*d*e^3 + (3*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + (4*B*b^3*d^3*e
+ (19*B*a*b^2 - 7*A*b^3)*d^2*e^2 + 4*(4*B*a^2*b - 7*A*a*b^2)*d*e^3 + (3*B*a
^3 - 7*A*a^2*b)*e^4)*x^2 + 2*(4*B*a*b^2*d^3*e + 7*(B*a^2*b - A*a*b^2)*d^2*e
^2 + (3*B*a^3 - 7*A*a^2*b)*d*e^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*
e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (8*A*a^3*e^3 + 6*(B*
a*b^2 + A*b^3)*d^3 + (83*B*a^2*b - 39*A*a*b^2)*d^2*e + 16*(B*a^3 - 5*A*a^2*
b)*d*e^2 + 15*(4*B*b^3*d*e^2 + (3*B*a*b^2 - 7*A*b^3)*e^3)*x^3 + 5*(16*B*b^3
*d^2*e + 4*(8*B*a*b^2 - 7*A*b^3)*d*e^2 + 5*(3*B*a^2*b - 7*A*a*b^2)*e^3)*x^2
 + (12*B*b^3*d^3 + (145*B*a*b^2 - 21*A*b^3)*d^2*e + 2*(67*B*a^2*b - 119*A*a
*b^2)*d*e^2 + 8*(3*B*a^3 - 7*A*a^2*b)*e^3)*x)*sqrt(e*x + d))/(a^2*b^4*d^6 -
 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^6*d^2*e^4 + (b^6
*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5 + a^4*b^2*
e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e^3 + 2*a^3*b^3*d
^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^2*b^4*d^4*e^2 +
16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(a*b^5*d^6 - 3*a^
2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5*b*d^2*e^4 + a^6
*d*e^5)*x)]
```

giac [B] time = 0.49, size = 785, normalized size = 2.26

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -5/4*(4*B*b^2*d*e^2 + 3*B*a*b*e^3 - 7*A*b^2*e^3)*arctan(sqrt(x*e + d)*b/sqr
t(-b^2*d + a*b*e))/((b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^3
*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e +
d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 2/3*(
6*(x*e + d)*B*b*d*e^2 + B*b*d^2*e^2 + 3*(x*e + d)*B*a*e^3 - 9*(x*e + d)*A*b
*e^3 - B*a*d*e^3 - A*b*d*e^3 + A*a*e^4)/((b^4*d^4*e*sgn((x*e + d)*b*e - b*d
*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^
2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)*
b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*(x*e + d
)^(3/2)) - 1/4*(4*(x*e + d)^(3/2)*B*b^3*d*e^2 - 4*sqrt(x*e + d)*B*b^3*d^2*e
^2 + 7*(x*e + d)^(3/2)*B*a*b^2*e^3 - 11*(x*e + d)^(3/2)*A*b^3*e^3 - 5*sqrt(
x*e + d)*B*a*b^2*d*e^3 + 13*sqrt(x*e + d)*A*b^3*d*e^3 + 9*sqrt(x*e + d)*B*a
^2*b*e^4 - 13*sqrt(x*e + d)*A*a*b^2*e^4)/((b^4*d^4*e*sgn((x*e + d)*b*e - b*
d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b
^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)
*b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e +
 d)*b - b*d + a*e)^2)
```

maple [B] time = 0.13, size = 928, normalized size = 2.67

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(105*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^2*b
^2*e^2-120*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a*
b^3*d*e-8*A*((a*e-b*d)*b)^(1/2)*a^3*e^3-6*A*((a*e-b*d)*b)^(1/2)*b^3*d^3-16*
B*((a*e-b*d)*b)^(1/2)*a^3*d*e^2-6*B*((a*e-b*d)*b)^(1/2)*a*b^2*d^3+80*A*((a*
e-b*d)*b)^(1/2)*a^2*b*d*e^2+39*A*((a*e-b*d)*b)^(1/2)*a*b^2*d^2*e-83*B*((a*e
-b*d)*b)^(1/2)*a^2*b*d^2*e+105*A*((a*e-b*d)*b)^(1/2)*x^3*b^3*e^3-24*B*((a*e
-b*d)*b)^(1/2)*x*a^3*e^3-12*B*((a*e-b*d)*b)^(1/2)*x*b^3*d^3-45*B*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a*b^3*e^2-60*B*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*b^4*d*e+210*A*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a*b^3*e^2-90*B*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a^2*b^2*e^2-60*B*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^2*b^2*d*e-160*B*((a*
e-b*d)*b)^(1/2)*x^2*a*b^2*d*e^2+238*A*((a*e-b*d)*b)^(1/2)*x*a*b^2*d*e^2-134
*B*((a*e-b*d)*b)^(1/2)*x*a^2*b*d*e^2-145*B*((a*e-b*d)*b)^(1/2)*x*a*b^2*d^2*
e+21*A*((a*e-b*d)*b)^(1/2)*x*b^3*d^2*e+105*A*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*b^4*e^2-75*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b*
e^3-80*B*((a*e-b*d)*b)^(1/2)*x^2*b^3*d^2*e+56*A*((a*e-b*d)*b)^(1/2)*x*a^2*b
*e^3-45*B*((a*e-b*d)*b)^(1/2)*x^3*a*b^2*e^3-60*B*((a*e-b*d)*b)^(1/2)*x^3*b^
3*d*e^2-45*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^3*
b*e^2+175*A*((a*e-b*d)*b)^(1/2)*x^2*a*b^2*e^3+140*A*((a*e-b*d)*b)^(1/2)*x^2
*b^3*d*e^2)*(b*x+a)/(e*x+d)^(3/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^4/((b*x+a)^
2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{5/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1653 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=414

$$-\frac{7be(a+bx)(5aBe-9Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^5}-\frac{7e(a+bx)(5aBe-9Abe+4bBd)}{12\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}+\frac{-5aBe+9Abe-}{4b\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

Rubi [A] time = 0.37, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{7be(a+bx)(5aBe-9Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^5}-\frac{7e(a+bx)(5aBe-9Abe+4bBd)}{12\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}-\frac{5aBe-9Abe+4bBd}{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}-\frac{7e(a+bx)(5aBe-9Abe+4bBd)}{20b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}+\frac{7b^{3/2}e(a+bx)(5aBe-9Abe+4bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(4*b*B*d - 9*A*b*e + 5*a*B*e)/(4*b*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(2*b*(b*d - a*e)*(a + b*x)*(d + e*x)^(5
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*(4*b*B*d - 9*A*b*e + 5*a*B*e)*(a
+ b*x))/(20*b*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
- (7*e*(4*b*B*d - 9*A*b*e + 5*a*B*e)*(a + b*x))/(12*(b*d - a*e)^4*(d + e*x)
^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*b*e*(4*b*B*d - 9*A*b*e + 5*a*B*e
)*(a + b*x))/(4*(b*d - a*e)^5*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (7*b^(3/2)*e*(4*b*B*d - 9*A*b*e + 5*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqr
t[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d - a*e)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{2b(bd-ae)(a+bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-9Ab\ldots\right.}{4\ldots}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A\ldots}{2b(bd-ae)(a+bx)(d\ldots}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A\ldots}{2b(bd-ae)(a+bx)(d\ldots}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A\ldots}{2b(bd-ae)(a+bx)(d\ldots}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A\ldots}{2b(bd-ae)(a+bx)(d\ldots}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A\ldots}{2b(bd-ae)(a+bx)(d\ldots}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A\ldots}{2b(bd-ae)(a+bx)(d\ldots}$$

Mathematica [C] time = 0.07, size = 111, normalized size = 0.27

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(-5aBe+9Abe-4bBd)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+5aB-5Ab\right)}{10b\left((a+bx)^2\right)^{3/2}(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-5*A*b + 5*a*B + (e*(-4*b*B*d + 9*A*b*e - 5*a*B*e)*(a + b*x)^2*
Hypergeometric2F1[-5/2, 2, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2)
)/(10*b*(b*d - a*e)*((a + b*x)^2)^(3/2)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 70.06, size = 687, normalized size = 1.66

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/60*(e*(-24*b^4*B*d^5 + 24*A*b^4*d^4*e + 96*a*b^3*B*d^
4*e - 96*a*A*b^3*d^3*e^2 - 144*a^2*b^2*B*d^3*e^2 + 144*a^2*A*b^2*d^2*e^3 +
96*a^3*b*B*d^2*e^3 - 96*a^3*A*b*d*e^4 - 24*a^4*B*d*e^4 + 24*a^4*A*e^5 - 32*
b^4*B*d^4*(d + e*x) + 72*A*b^4*d^3*e*(d + e*x) + 56*a*b^3*B*d^3*e*(d + e*x)
 - 216*a*A*b^3*d^2*e^2*(d + e*x) + 24*a^2*b^2*B*d^2*e^2*(d + e*x) + 216*a^2
*A*b^2*d*e^3*(d + e*x) - 88*a^3*b*B*d*e^3*(d + e*x) - 72*a^3*A*b*e^4*(d + e
*x) + 40*a^4*B*e^4*(d + e*x) - 224*b^4*B*d^3*(d + e*x)^2 + 504*A*b^4*d^2*e*
(d + e*x)^2 + 168*a*b^3*B*d^2*e*(d + e*x)^2 - 1008*a*A*b^3*d*e^2*(d + e*x)^
2 + 336*a^2*b^2*B*d*e^2*(d + e*x)^2 + 504*a^2*A*b^2*e^3*(d + e*x)^2 - 280*a
^3*b*B*e^3*(d + e*x)^2 + 700*b^4*B*d^2*(d + e*x)^3 - 1575*A*b^4*d*e*(d + e*
x)^3 + 175*a*b^3*B*d*e*(d + e*x)^3 + 1575*a*A*b^3*e^2*(d + e*x)^3 - 875*a^2
*b^2*B*e^2*(d + e*x)^3 - 420*b^4*B*d*(d + e*x)^4 + 945*A*b^4*e*(d + e*x)^4
- 525*a*b^3*B*e*(d + e*x)^4))/((b*d - a*e)^5*(d + e*x)^(5/2)*(b*d - a*e - b
*(d + e*x))^2) - (7*(4*b^(5/2)*B*d*e - 9*A*b^(5/2)*e^2 + 5*a*b^(3/2)*B*e^2)
*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*(b*d -
a*e)^5*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.49, size = 2675, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/120*(105*(4*B*a^2*b^2*d^4*e + (5*B*a^3*b - 9*A*a^2*b^2)*d^3*e^2 + (4*B*b
^4*d*e^4 + (5*B*a*b^3 - 9*A*b^4)*e^5)*x^5 + (12*B*b^4*d^2*e^3 + (23*B*a*b^3
 - 27*A*b^4)*d*e^4 + 2*(5*B*a^2*b^2 - 9*A*a*b^3)*e^5)*x^4 + (12*B*b^4*d^3*e
^2 + 3*(13*B*a*b^3 - 9*A*b^4)*d^2*e^3 + 2*(17*B*a^2*b^2 - 27*A*a*b^3)*d*e^4
 + (5*B*a^3*b - 9*A*a^2*b^2)*e^5)*x^3 + (4*B*b^4*d^4*e + (29*B*a*b^3 - 9*A*
b^4)*d^3*e^2 + 6*(7*B*a^2*b^2 - 9*A*a*b^3)*d^2*e^3 + 3*(5*B*a^3*b - 9*A*a^2
*b^2)*d*e^4)*x^2 + (8*B*a*b^3*d^4*e + 2*(11*B*a^2*b^2 - 9*A*a*b^3)*d^3*e^2
+ 3*(5*B*a^3*b - 9*A*a^2*b^2)*d^2*e^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x +
2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) +
 2*(24*A*a^4*e^4 - 30*(B*a*b^3 + A*b^4)*d^4 - (659*B*a^2*b^2 - 255*A*a*b^3)
*d^3*e - 16*(17*B*a^3*b - 54*A*a^2*b^2)*d^2*e^2 + 8*(2*B*a^4 - 21*A*a^3*b)*
d*e^3 - 105*(4*B*b^4*d*e^3 + (5*B*a*b^3 - 9*A*b^4)*e^4)*x^4 - 35*(28*B*b^4*
d^2*e^2 + (55*B*a*b^3 - 63*A*b^4)*d*e^3 + 5*(5*B*a^2*b^2 - 9*A*a*b^3)*e^4)*
x^3 - 7*(92*B*b^4*d^3*e + 9*(39*B*a*b^3 - 23*A*b^4)*d^2*e^2 + 3*(109*B*a^2*
b^2 - 177*A*a*b^3)*d*e^3 + 8*(5*B*a^3*b - 9*A*a^2*b^2)*e^4)*x^2 - (60*B*b^4
*d^4 + (1183*B*a*b^3 - 135*A*b^4)*d^3*e + 3*(643*B*a^2*b^2 - 831*A*a*b^3)*d
^2*e^2 + 72*(9*B*a^3*b - 17*A*a^2*b^2)*d*e^3 - 8*(5*B*a^4 - 9*A*a^3*b)*e^4)
*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 10*a^4*b^3*d^6*e^2 - 10
*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b^7*d^5*e^3 - 5*a*b^6*d
^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*a^4*b^3*d*e^7 - a^5*b^
2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a^2*b^5*d^4*e^4 - 10*a^
3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 - 2*a^6*b*e^8)*x^4 + (3
*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a^3*b^4*d^4*e^4 - 35*a^
4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^7*e^8)*x^3 + (b^7*d^8
+ a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e^3 - 25*a^4*b^3*d^4*e^
4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*x^2 + (2*a*b^6*d^8 - 7
*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e^3 - 20*a^5*b^2*d^4*e^
4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x), 1/60*(105*(4*B*a^2*b^2*d^4*e + (5
*B*a^3*b - 9*A*a^2*b^2)*d^3*e^2 + (4*B*b^4*d*e^4 + (5*B*a*b^3 - 9*A*b^4)*e^
5)*x^5 + (12*B*b^4*d^2*e^3 + (23*B*a*b^3 - 27*A*b^4)*d*e^4 + 2*(5*B*a^2*b^2
 - 9*A*a*b^3)*e^5)*x^4 + (12*B*b^4*d^3*e^2 + 3*(13*B*a*b^3 - 9*A*b^4)*d^2*e
^3 + 2*(17*B*a^2*b^2 - 27*A*a*b^3)*d*e^4 + (5*B*a^3*b - 9*A*a^2*b^2)*e^5)*x
^3 + (4*B*b^4*d^4*e + (29*B*a*b^3 - 9*A*b^4)*d^3*e^2 + 6*(7*B*a^2*b^2 - 9*A
```

```
*a*b^3)*d^2*e^3 + 3*(5*B*a^3*b - 9*A*a^2*b^2)*d*e^4)*x^2 + (8*B*a*b^3*d^4*e
 + 2*(11*B*a^2*b^2 - 9*A*a*b^3)*d^3*e^2 + 3*(5*B*a^3*b - 9*A*a^2*b^2)*d^2*e
^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d
- a*e))/(b*e*x + b*d)) + (24*A*a^4*e^4 - 30*(B*a*b^3 + A*b^4)*d^4 - (659*B*
a^2*b^2 - 255*A*a*b^3)*d^3*e - 16*(17*B*a^3*b - 54*A*a^2*b^2)*d^2*e^2 + 8*(
2*B*a^4 - 21*A*a^3*b)*d*e^3 - 105*(4*B*b^4*d*e^3 + (5*B*a*b^3 - 9*A*b^4)*e^
4)*x^4 - 35*(28*B*b^4*d^2*e^2 + (55*B*a*b^3 - 63*A*b^4)*d*e^3 + 5*(5*B*a^2*
b^2 - 9*A*a*b^3)*e^4)*x^3 - 7*(92*B*b^4*d^3*e + 9*(39*B*a*b^3 - 23*A*b^4)*d
^2*e^2 + 3*(109*B*a^2*b^2 - 177*A*a*b^3)*d*e^3 + 8*(5*B*a^3*b - 9*A*a^2*b^2
)*e^4)*x^2 - (60*B*b^4*d^4 + (1183*B*a*b^3 - 135*A*b^4)*d^3*e + 3*(643*B*a^
2*b^2 - 831*A*a*b^3)*d^2*e^2 + 72*(9*B*a^3*b - 17*A*a^2*b^2)*d*e^3 - 8*(5*B
*a^4 - 9*A*a^3*b)*e^4)*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 1
0*a^4*b^3*d^6*e^2 - 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b
^7*d^5*e^3 - 5*a*b^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*
a^4*b^3*d*e^7 - a^5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a
^2*b^5*d^4*e^4 - 10*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 -
 2*a^6*b*e^8)*x^4 + (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a
^3*b^4*d^4*e^4 - 35*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^
7*e^8)*x^3 + (b^7*d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e
^3 - 25*a^4*b^3*d^4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*
x^2 + (2*a*b^6*d^8 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e
^3 - 20*a^5*b^2*d^4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x)]
```

giac [B] time = 0.57, size = 1011, normalized size = 2.44

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -7/4*(4*B*b^3*d*e^2 + 5*B*a*b^2*e^3 - 9*A*b^3*e^3)*arctan(sqrt(x*e + d)*b/s
qrt(-b^2*d + a*b*e))/((b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b
^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^3*sgn((x*e
 + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) + 5*a^4*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^6*sgn((x
*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/4*(4*(x*e + d)^(3/2
)*B*b^4*d*e^2 - 4*sqrt(x*e + d)*B*b^4*d^2*e^2 + 11*(x*e + d)^(3/2)*B*a*b^3*
e^3 - 15*(x*e + d)^(3/2)*A*b^4*e^3 - 9*sqrt(x*e + d)*B*a*b^3*d*e^3 + 17*sqr
t(x*e + d)*A*b^4*d*e^3 + 13*sqrt(x*e + d)*B*a^2*b^2*e^4 - 17*sqrt(x*e + d)*
A*a*b^3*e^4)/((b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e
^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^3*sgn((x*e + d)*b*
e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ 5*a^4*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^6*sgn((x*e + d)*
b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^2) - 2/15*(45*(x*e + d)^2*B
*b^2*d*e^2 + 10*(x*e + d)*B*b^2*d^2*e^2 + 3*B*b^2*d^3*e^2 + 45*(x*e + d)^2*
B*a*b*e^3 - 90*(x*e + d)^2*A*b^2*e^3 - 5*(x*e + d)*B*a*b*d*e^3 - 15*(x*e +
d)*A*b^2*d*e^3 - 6*B*a*b*d^2*e^3 - 3*A*b^2*d^2*e^3 - 5*(x*e + d)*B*a^2*e^4
+ 15*(x*e + d)*A*a*b*e^4 + 3*B*a^2*d*e^4 + 6*A*a*b*d*e^4 - 3*A*a^2*e^5)/((b
^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e^2*sgn((x*e + d)
*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^
2) - 10*a^3*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^5*
sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^6*sgn((x*e + d)*b*e - b*d*e + a*
e^2))*(x*e + d)^(5/2))
```

maple [B] time = 0.08, size = 1230, normalized size = 2.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/60*(945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*
b^5*e^2-30*A*((a*e-b*d)*b)^(1/2)*b^4*d^4+16*B*((a*e-b*d)*b)^(1/2)*a^4*d*e^3
-840*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a*b^4*d*
e+24*A*((a*e-b*d)*b)^(1/2)*a^4*e^4+945*A*((a*e-b*d)*b)^(1/2)*x^4*b^4*e^4+40
*B*((a*e-b*d)*b)^(1/2)*x*a^4*e^4-60*B*((a*e-b*d)*b)^(1/2)*x*b^4*d^4-30*B*((
a*e-b*d)*b)^(1/2)*a*b^3*d^4-525*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*(e*x+d)^(5/2)*a^3*b^2*e^2+1575*A*((a*e-b*d)*b)^(1/2)*x^3*a*b^3*e^4+2205*
A*((a*e-b*d)*b)^(1/2)*x^3*b^4*d*e^3-875*B*((a*e-b*d)*b)^(1/2)*x^3*a^2*b^2*e
^4-980*B*((a*e-b*d)*b)^(1/2)*x^3*b^4*d^2*e^2+504*A*((a*e-b*d)*b)^(1/2)*x^2*
a^2*b^2*e^4+1449*A*((a*e-b*d)*b)^(1/2)*x^2*b^4*d^2*e^2-280*B*((a*e-b*d)*b)^
(1/2)*x^2*a^3*b*e^4-644*B*((a*e-b*d)*b)^(1/2)*x^2*b^4*d^3*e-72*A*((a*e-b*d)
*b)^(1/2)*x*a^3*b*e^4+135*A*((a*e-b*d)*b)^(1/2)*x*b^4*d^3*e+945*A*arctan((e
*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a^2*b^3*e^2-525*B*((a*e-b*
d)*b)^(1/2)*x^4*a*b^3*e^4-420*B*((a*e-b*d)*b)^(1/2)*x^4*b^4*d*e^3-168*A*((a
*e-b*d)*b)^(1/2)*a^3*b*d*e^3+864*A*((a*e-b*d)*b)^(1/2)*a^2*b^2*d^2*e^2+255*
A*((a*e-b*d)*b)^(1/2)*a*b^3*d^3*e-272*B*((a*e-b*d)*b)^(1/2)*a^3*b*d^2*e^2-6
59*B*((a*e-b*d)*b)^(1/2)*a^2*b^2*d^3*e-2289*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b
^2*d*e^3-2457*B*((a*e-b*d)*b)^(1/2)*x^2*a*b^3*d^2*e^2+1224*A*((a*e-b*d)*b)^
(1/2)*x*a^2*b^2*d*e^3+2493*A*((a*e-b*d)*b)^(1/2)*x*a*b^3*d^2*e^2-648*B*((a*
e-b*d)*b)^(1/2)*x*a^3*b*d*e^3-1929*B*((a*e-b*d)*b)^(1/2)*x*a^2*b^2*d^2*e^2-
1183*B*((a*e-b*d)*b)^(1/2)*x*a*b^3*d^3*e-525*B*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*a*b^4*e^2-420*B*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*b^5*d*e+1890*A*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a*b^4*e^2-1050*B*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a^2*b^3*e^2-420*B*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a^2*b^3*d*e-1925*B*((a*e-b*d)*b)^(1
/2)*x^3*a*b^3*d*e^3+3717*A*((a*e-b*d)*b)^(1/2)*x^2*a*b^3*d*e^3)*(b*x+a)/(e*
x+d)^(5/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^5/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{7/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1654 $\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=557

$$-\frac{(d+ex)^{13/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{11/2}(-13aBe+5Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{231e^3(a+bx)(bd-ae)}{6}$$

Rubi [A] time = 0.52, antiderivative size = 557, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{33e^2(d+ex)^{7/2}(-13aBe+5Abe+8bBd)}{64b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{231e^3(a+bx)(d+ex)^{5/2}(-13aBe+5Abe+8bBd)}{320b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{77e^3(a+bx)(d+ex)^{3/2}(-13aBe+5Abe+8bBd)}{64b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{231e^3(a+bx)\sqrt{d+ex}\,(bd-ae)(-13aBe+5Abe+8bBd)}{64b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{231e^3(a+bx)(bd-ae)^{3/2}(-13aBe+5Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{15/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{13/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{11/2}(-13aBe+5Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{11e(d+ex)^{9/2}(-13aBe+5Abe+8bBd)}{96b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (231*e^3*(b*d - a*e)*(8*b*B*d + 5*A*b*e - 13*a*B*e)*(a + b*x)*Sqrt[d + e*x]
)/(64*b^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (77*e^3*(8*b*B*d + 5*A*b*e - 13*
a*B*e)*(a + b*x)*(d + e*x)^(3/2))/(64*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(231*e^3*(8*b*B*d + 5*A*b*e - 13*a*B*e)*(a + b*x)*(d + e*x)^(5/2))/(320*b^5
*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (33*e^2*(8*b*B*d + 5*A*b*e -
13*a*B*e)*(d + e*x)^(7/2))/(64*b^4*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) - (11*e*(8*b*B*d + 5*A*b*e - 13*a*B*e)*(d + e*x)^(9/2))/(96*b^3*(b*d - a
*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d + 5*A*b*e - 13*a*B
*e)*(d + e*x)^(11/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(13/2))/(4*b*(b*d - a*e)*(a + b*x)^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - (231*e^3*(b*d - a*e)^(3/2)*(8*b*B*d + 5*A*b*e
 - 13*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(6
4*b^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{13/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd+5Abe-13aBe)\left(ab+b^2x\right)\right.}{8(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{(8bBd+5Abe-13aBe)(d+ex)^{11/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{13/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

$$= -\frac{11e(8bBd+5Abe-13aBe)(d+ex)^{9/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd+5Abe-13aBe)(d+ex)^{1}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+}}$$

$$= -\frac{33e^2(8bBd+5Abe-13aBe)(d+ex)^{7/2}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{11e(8bBd+5Abe-13aBe)(d+ex)^{9/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2}}$$

$$= \frac{231e^3(8bBd+5Abe-13aBe)(a+bx)(d+ex)^{5/2}}{320b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{33e^2(8bBd+5Abe-13aBe)(d}{64b^4(bd-ae)\sqrt{a^2+2abx+}}$$

$$= \frac{77e^3(8bBd+5Abe-13aBe)(a+bx)(d+ex)^{3/2}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{231e^3(8bBd+5Abe-13aBe)(a}{320b^5(bd-ae)\sqrt{a^2+2ab}}$$

$$= \frac{231e^3(bd-ae)(8bBd+5Abe-13aBe)(a+bx)\sqrt{d+ex}}{64b^7\sqrt{a^2+2abx+b^2x^2}} + \frac{77e^3(8bBd+5Abe-13a}{64b^6\sqrt{a^2+2}}$$

$$= \frac{231e^3(bd-ae)(8bBd+5Abe-13aBe)(a+bx)\sqrt{d+ex}}{64b^7\sqrt{a^2+2abx+b^2x^2}} + \frac{77e^3(8bBd+5Abe-13a}{64b^6\sqrt{a^2+2}}$$

$$= \frac{231e^3(bd-ae)(8bBd+5Abe-13aBe)(a+bx)\sqrt{d+ex}}{64b^7\sqrt{a^2+2abx+b^2x^2}} + \frac{77e^3(8bBd+5Abe-13a}{64b^6\sqrt{a^2+2}}$$

Mathematica [C] time = 0.21, size = 117, normalized size = 0.21

$$\frac{(d+ex)^{13/2}\left(\frac{e^3(a+bx)^4(-13aBe+5Abe+8bBd)\,{}_2F_1\left(4,\frac{13}{2};\frac{15}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+13(aB-Ab)\right)}{52b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(13/2)*(13*(-(A*b) + a*B) + (e^3*(8*b*B*d + 5*A*b*e - 13*a*B*e)*
(a + b*x)^4*Hypergeometric2F1[4, 13/2, 15/2, (b*(d + e*x))/(b*d - a*e)])/(b
*d - a*e)^4))/(52*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 69.41, size = 1196, normalized size = 2.15

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^(
5/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*((-27720*b^6*B*d^6*e^3*Sqrt[d + e*x] - 17325*A*b^6*d^5*e^
4*Sqrt[d + e*x] + 183645*a*b^5*B*d^5*e^4*Sqrt[d + e*x] + 86625*a*A*b^5*d^4*
e^5*Sqrt[d + e*x] - 502425*a^2*b^4*B*d^4*e^5*Sqrt[d + e*x] - 173250*a^2*A*b
^4*d^3*e^6*Sqrt[d + e*x] + 727650*a^3*b^3*B*d^3*e^6*Sqrt[d + e*x] + 173250*
a^3*A*b^3*d^2*e^7*Sqrt[d + e*x] - 589050*a^4*b^2*B*d^2*e^7*Sqrt[d + e*x] -
86625*a^4*A*b^2*d*e^8*Sqrt[d + e*x] + 252945*a^5*b*B*d*e^8*Sqrt[d + e*x] +
17325*a^5*A*b*e^9*Sqrt[d + e*x] - 45045*a^6*B*e^9*Sqrt[d + e*x] + 101640*b^
6*B*d^5*e^3*(d + e*x)^(3/2) + 63525*A*b^6*d^4*e^4*(d + e*x)^(3/2) - 571725*
a*b^5*B*d^4*e^4*(d + e*x)^(3/2) - 254100*a*A*b^5*d^3*e^5*(d + e*x)^(3/2) +
1270500*a^2*b^4*B*d^3*e^5*(d + e*x)^(3/2) + 381150*a^2*A*b^4*d^2*e^6*(d + e
*x)^(3/2) - 1397550*a^3*b^3*B*d^2*e^6*(d + e*x)^(3/2) - 254100*a^3*A*b^3*d*
e^7*(d + e*x)^(3/2) + 762300*a^4*b^2*B*d*e^7*(d + e*x)^(3/2) + 63525*a^4*A*
b^2*e^8*(d + e*x)^(3/2) - 165165*a^5*b*B*e^8*(d + e*x)^(3/2) - 134904*b^6*B
*d^4*e^3*(d + e*x)^(5/2) - 84315*A*b^6*d^3*e^4*(d + e*x)^(5/2) + 623931*a*b
^5*B*d^3*e^4*(d + e*x)^(5/2) + 252945*a*A*b^5*d^2*e^5*(d + e*x)^(5/2) - 106
2369*a^2*b^4*B*d^2*e^5*(d + e*x)^(5/2) - 252945*a^2*A*b^4*d*e^6*(d + e*x)^(
5/2) + 792561*a^3*b^3*B*d*e^6*(d + e*x)^(5/2) + 84315*a^3*A*b^3*e^7*(d + e*
x)^(5/2) - 219219*a^4*b^2*B*e^7*(d + e*x)^(5/2) + 73656*b^6*B*d^3*e^3*(d +
e*x)^(7/2) + 46035*A*b^6*d^2*e^4*(d + e*x)^(7/2) - 267003*a*b^5*B*d^2*e^4*(
d + e*x)^(7/2) - 92070*a*A*b^5*d*e^5*(d + e*x)^(7/2) + 313038*a^2*b^4*B*d*e
^5*(d + e*x)^(7/2) + 46035*a^2*A*b^4*e^6*(d + e*x)^(7/2) - 119691*a^3*b^3*B
*e^6*(d + e*x)^(7/2) - 11264*b^6*B*d^2*e^3*(d + e*x)^(9/2) - 7040*A*b^6*d*e
^4*(d + e*x)^(9/2) + 29568*a*b^5*B*d*e^4*(d + e*x)^(9/2) + 7040*a*A*b^5*e^5
*(d + e*x)^(9/2) - 18304*a^2*b^4*B*e^5*(d + e*x)^(9/2) - 1024*b^6*B*d*e^3*(
d + e*x)^(11/2) - 640*A*b^6*e^4*(d + e*x)^(11/2) + 1664*a*b^5*B*e^4*(d + e*
x)^(11/2) - 384*b^6*B*e^3*(d + e*x)^(13/2))/(960*b^7*(b*d - a*e - b*(d + e*
x))^4) + (231*(b*d - a*e)^2*(8*b*B*d*e^3 + 5*A*b*e^4 - 13*a*B*e^4)*ArcTan[(
Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(15/2)*Sqrt[-
(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.47, size = 2006, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="
fricas")
```

```
[Out] [1/1920*(3465*(8*B*a^4*b^2*d^2*e^3 - (21*B*a^5*b - 5*A*a^4*b^2)*d*e^4 + (13
*B*a^6 - 5*A*a^5*b)*e^5 + (8*B*b^6*d^2*e^3 - (21*B*a*b^5 - 5*A*b^6)*d*e^4 +
 (13*B*a^2*b^4 - 5*A*a*b^5)*e^5)*x^4 + 4*(8*B*a*b^5*d^2*e^3 - (21*B*a^2*b^4
 - 5*A*a*b^5)*d*e^4 + (13*B*a^3*b^3 - 5*A*a^2*b^4)*e^5)*x^3 + 6*(8*B*a^2*b^
4*d^2*e^3 - (21*B*a^3*b^3 - 5*A*a^2*b^4)*d*e^4 + (13*B*a^4*b^2 - 5*A*a^3*b^
3)*e^5)*x^2 + 4*(8*B*a^3*b^3*d^2*e^3 - (21*B*a^4*b^2 - 5*A*a^3*b^3)*d*e^4 +
 (13*B*a^5*b - 5*A*a^4*b^2)*e^5)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d
- a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(384*B*b^6*e^
5*x^6 - 80*(B*a*b^5 + 3*A*b^6)*d^5 - 440*(B*a^2*b^4 + A*a*b^5)*d^4*e - 990*
(3*B*a^3*b^3 + A*a^2*b^4)*d^3*e^2 + 231*(199*B*a^4*b^2 - 15*A*a^3*b^3)*d^2*
e^3 - 4620*(19*B*a^5*b - 5*A*a^4*b^2)*d*e^4 + 3465*(13*B*a^6 - 5*A*a^5*b)*e
^5 + 128*(26*B*b^6*d*e^4 - (13*B*a*b^5 - 5*A*b^6)*e^5)*x^5 + 128*(173*B*b^6
*d^2*e^3 - 8*(37*B*a*b^5 - 10*A*b^6)*d*e^4 + 11*(13*B*a^2*b^4 - 5*A*a*b^5)*
e^5)*x^4 - (10680*B*b^6*d^3*e^2 - (132091*B*a*b^5 - 11475*A*b^6)*d^2*e^3 +
22*(10901*B*a^2*b^4 - 2905*A*a*b^5)*d*e^4 - 9207*(13*B*a^3*b^3 - 5*A*a^2*b^
4)*e^5)*x^3 - (2480*B*b^6*d^4*e + 10*(1697*B*a*b^5 + 515*A*b^6)*d^3*e^2 - 3
3*(7063*B*a^2*b^4 - 575*A*a*b^5)*d^2*e^3 + 264*(1642*B*a^3*b^3 - 435*A*a^2*
b^4)*d*e^4 - 16863*(13*B*a^4*b^2 - 5*A*a^3*b^3)*e^5)*x^2 - (320*B*b^6*d^5 +
 40*(43*B*a*b^5 + 41*A*b^6)*d^4*e + 220*(53*B*a^2*b^4 + 17*A*a*b^5)*d^3*e^2
 - 33*(5197*B*a^3*b^3 - 405*A*a^2*b^4)*d^2*e^3 + 462*(701*B*a^4*b^2 - 185*A
*a^3*b^3)*d*e^4 - 12705*(13*B*a^5*b - 5*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(
b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*x^2 + 4*a^3*b^8*x + a^4*b^7), -1/960*(3
465*(8*B*a^4*b^2*d^2*e^3 - (21*B*a^5*b - 5*A*a^4*b^2)*d*e^4 + (13*B*a^6 - 5
*A*a^5*b)*e^5 + (8*B*b^6*d^2*e^3 - (21*B*a*b^5 - 5*A*b^6)*d*e^4 + (13*B*a^2
*b^4 - 5*A*a*b^5)*e^5)*x^4 + 4*(8*B*a*b^5*d^2*e^3 - (21*B*a^2*b^4 - 5*A*a*b
^5)*d*e^4 + (13*B*a^3*b^3 - 5*A*a^2*b^4)*e^5)*x^3 + 6*(8*B*a^2*b^4*d^2*e^3
- (21*B*a^3*b^3 - 5*A*a^2*b^4)*d*e^4 + (13*B*a^4*b^2 - 5*A*a^3*b^3)*e^5)*x^
2 + 4*(8*B*a^3*b^3*d^2*e^3 - (21*B*a^4*b^2 - 5*A*a^3*b^3)*d*e^4 + (13*B*a^5
*b - 5*A*a^4*b^2)*e^5)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt
(-(b*d - a*e)/b)/(b*d - a*e)) - (384*B*b^6*e^5*x^6 - 80*(B*a*b^5 + 3*A*b^6)
*d^5 - 440*(B*a^2*b^4 + A*a*b^5)*d^4*e - 990*(3*B*a^3*b^3 + A*a^2*b^4)*d^3*
e^2 + 231*(199*B*a^4*b^2 - 15*A*a^3*b^3)*d^2*e^3 - 4620*(19*B*a^5*b - 5*A*a
^4*b^2)*d*e^4 + 3465*(13*B*a^6 - 5*A*a^5*b)*e^5 + 128*(26*B*b^6*d*e^4 - (13
*B*a*b^5 - 5*A*b^6)*e^5)*x^5 + 128*(173*B*b^6*d^2*e^3 - 8*(37*B*a*b^5 - 10*
A*b^6)*d*e^4 + 11*(13*B*a^2*b^4 - 5*A*a*b^5)*e^5)*x^4 - (10680*B*b^6*d^3*e^
2 - (132091*B*a*b^5 - 11475*A*b^6)*d^2*e^3 + 22*(10901*B*a^2*b^4 - 2905*A*a
*b^5)*d*e^4 - 9207*(13*B*a^3*b^3 - 5*A*a^2*b^4)*e^5)*x^3 - (2480*B*b^6*d^4*
e + 10*(1697*B*a*b^5 + 515*A*b^6)*d^3*e^2 - 33*(7063*B*a^2*b^4 - 575*A*a*b^
5)*d^2*e^3 + 264*(1642*B*a^3*b^3 - 435*A*a^2*b^4)*d*e^4 - 16863*(13*B*a^4*b
^2 - 5*A*a^3*b^3)*e^5)*x^2 - (320*B*b^6*d^5 + 40*(43*B*a*b^5 + 41*A*b^6)*d^
4*e + 220*(53*B*a^2*b^4 + 17*A*a*b^5)*d^3*e^2 - 33*(5197*B*a^3*b^3 - 405*A*
a^2*b^4)*d^2*e^3 + 462*(701*B*a^4*b^2 - 185*A*a^3*b^3)*d*e^4 - 12705*(13*B*
a^5*b - 5*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^
2*b^9*x^2 + 4*a^3*b^8*x + a^4*b^7)]
```

giac [B] time = 0.61, size = 1167, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="
giac")
```

```
[Out] 231/64*(8*B*b^3*d^3*e^3 - 29*B*a*b^2*d^2*e^4 + 5*A*b^3*d^2*e^4 + 34*B*a^2*b
*d*e^5 - 10*A*a*b^2*d*e^5 - 13*B*a^3*e^6 + 5*A*a^2*b*e^6)*arctan(sqrt(x*e +
 d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^7*sgn((x*e + d)*b*e - b
*d*e + a*e^2)) - 1/192*(2136*(x*e + d)^(7/2)*B*b^6*d^3*e^3 - 5912*(x*e + d)
^(5/2)*B*b^6*d^4*e^3 + 5480*(x*e + d)^(3/2)*B*b^6*d^5*e^3 - 1704*sqrt(x*e +
 d)*B*b^6*d^6*e^3 - 8703*(x*e + d)^(7/2)*B*a*b^5*d^2*e^4 + 2295*(x*e + d)^(
7/2)*A*b^6*d^2*e^4 + 29503*(x*e + d)^(5/2)*B*a*b^5*d^3*e^4 - 5855*(x*e + d)
```

```
^(5/2)*A*b^6*d^3*e^4 - 32553*(x*e + d)^(3/2)*B*a*b^5*d^4*e^4 + 5153*(x*e +
d)^(3/2)*A*b^6*d^4*e^4 + 11769*sqrt(x*e + d)*B*a*b^5*d^5*e^4 - 1545*sqrt(x*
e + d)*A*b^6*d^5*e^4 + 10998*(x*e + d)^(7/2)*B*a^2*b^4*d*e^5 - 4590*(x*e +
d)^(7/2)*A*a*b^5*d*e^5 - 53037*(x*e + d)^(5/2)*B*a^2*b^4*d^2*e^5 + 17565*(x
*e + d)^(5/2)*A*a*b^5*d^2*e^5 + 75412*(x*e + d)^(3/2)*B*a^2*b^4*d^3*e^5 - 2
0612*(x*e + d)^(3/2)*A*a*b^5*d^3*e^5 - 33285*sqrt(x*e + d)*B*a^2*b^4*d^4*e^
5 + 7725*sqrt(x*e + d)*A*a*b^5*d^4*e^5 - 4431*(x*e + d)^(7/2)*B*a^3*b^3*e^6
 + 2295*(x*e + d)^(7/2)*A*a^2*b^4*e^6 + 41213*(x*e + d)^(5/2)*B*a^3*b^3*d*e
^6 - 17565*(x*e + d)^(5/2)*A*a^2*b^4*d*e^6 - 85718*(x*e + d)^(3/2)*B*a^3*b^
3*d^2*e^6 + 30918*(x*e + d)^(3/2)*A*a^2*b^4*d^2*e^6 + 49530*sqrt(x*e + d)*B
*a^3*b^3*d^3*e^6 - 15450*sqrt(x*e + d)*A*a^2*b^4*d^3*e^6 - 11767*(x*e + d)^
(5/2)*B*a^4*b^2*e^7 + 5855*(x*e + d)^(5/2)*A*a^3*b^3*e^7 + 48012*(x*e + d)^
(3/2)*B*a^4*b^2*d*e^7 - 20612*(x*e + d)^(3/2)*A*a^3*b^3*d*e^7 - 41010*sqrt(
x*e + d)*B*a^4*b^2*d^2*e^7 + 15450*sqrt(x*e + d)*A*a^3*b^3*d^2*e^7 - 10633*
(x*e + d)^(3/2)*B*a^5*b*e^8 + 5153*(x*e + d)^(3/2)*A*a^4*b^2*e^8 + 17949*sq
rt(x*e + d)*B*a^5*b*d*e^8 - 7725*sqrt(x*e + d)*A*a^4*b^2*d*e^8 - 3249*sqrt(
x*e + d)*B*a^6*e^9 + 1545*sqrt(x*e + d)*A*a^5*b*e^9)/(((x*e + d)*b - b*d +
a*e)^4*b^7*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/15*(3*(x*e + d)^(5/2)*B*
b^20*e^3 + 20*(x*e + d)^(3/2)*B*b^20*d*e^3 + 150*sqrt(x*e + d)*B*b^20*d^2*e
^3 - 25*(x*e + d)^(3/2)*B*a*b^19*e^4 + 5*(x*e + d)^(3/2)*A*b^20*e^4 - 375*s
qrt(x*e + d)*B*a*b^19*d*e^4 + 75*sqrt(x*e + d)*A*b^20*d*e^4 + 225*sqrt(x*e
+ d)*B*a^2*b^18*e^5 - 75*sqrt(x*e + d)*A*a*b^19*e^5)/(b^25*sgn((x*e + d)*b*
e - b*d*e + a*e^2))
```

maple [B] time = 0.16, size = 3768, normalized size = 6.76

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/960*(-10240*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^3*b^3*d*e^4-76800*B*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^5*d^2*e^4-57600*A*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*x^2*a^2*b^4*d*e^5-117810*B*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*a^6*b*d*e^6+288000*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a
^3*b^3*d*e^5-115200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^2*b^4*d^2*e^4
-38400*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^3*d*e^5-76800*B*((a*e-b*
d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^3*d^2*e^4+192000*B*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(1/2)*x*a^4*b^2*d*e^5-10240*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a
*b^5*d*e^4+48000*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a*b^5*d*e^5-38400*
A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^5*d*e^5-15360*B*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(3/2)*x^2*a^2*b^4*d*e^4+192000*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
1/2)*x^3*a^2*b^4*d*e^5+45045*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
a^7*e^7+10680*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^6*d^3-29560*B*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(5/2)*b^6*d^4-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*a^6*b*e^7+27400*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*b^6*d^5-45045
*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^6*e^6-8520*B*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*b^6*d^6-27720*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*
b^7*d^3*e^4-69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^3*b^4
*e^7+180180*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^4*b^3*e^7+1
1475*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a^2*b^4*e^3+11475*A*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(7/2)*b^6*d^2*e-103950*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*x^2*a^4*b^3*e^7-22155*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a^3*b^3*e
^3+270270*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^5*b^2*e^7+292
75*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^3*b^3*e^4-29275*A*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(5/2)*b^6*d^3*e-69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2
)*b)*x*a^5*b^2*e^7-59219*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^4*b^2*e^4+18
0180*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^6*b*e^7+25125*A*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^4*b^2*e^5+25765*A*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(3/2)*b^6*d^4*e+34650*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^5*
```

b^2*d*e^6-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b^3*d^2*e^5-49965*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^5*b*e^5+100485*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^5*b^2*d^2*e^5-27720*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b^3*d^3*e^4+17325*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^5*b*e^6-7725*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^6*d^5*e-384*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x^4*b^6*e^4-640*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^4*b^6*e^5-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a^2*b^5*e^7-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*b^7*d^2*e^5+45045*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a^3*b^4*e^7+34650*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^6*d*e^6-1536*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x^3*a*b^5*e^4+3200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^4*a*b^5*e^5-2560*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^4*b^6*d*e^4-117810*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a^2*b^5*d*e^6+100485*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^6*d^2*e^5-2560*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a*b^5*e^5+9600*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a*b^5*e^6-9600*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^6*d*e^5-115200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^5*b*e^6-48225*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*b^2*d*e^5+77250*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*b^3*d^2*e^4-77250*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^4*d^3*e^3+38625*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^5*d^4*e^2+137745*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^5*b*d*e^5-224250*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*b^2*d^2*e^4+247650*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*b^3*d^3*e^3-166425*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^4*d^4*e^2+377060*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^4*d^3*e^2-162765*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^5*d^4*e-265185*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^4*d^2*e^2+147515*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^5*d^3*e+12800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^4*b^2*e^5-1536*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x*a^3*b^3*e^4+19200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*a^3*b^3*e^5-115200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a^3*b^3*e^6-706860*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^4*b^3*d*e^6+602910*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^4*d^2*e^5-166320*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^5*d^3*e^4-87825*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^4*d*e^3+87825*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^5*d^2*e^2-2560*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^3*b^3*e^5+57600*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^3*b^3*e^6+138600*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^4*b^3*d*e^6-69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^4*d^2*e^5+206065*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^3*b^3*d*e^3-172800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^4*b^2*e^6-471240*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^5*b^2*d*e^6+401940*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^4*b^3*d^2*e^5-110880*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^4*d^3*e^4-103060*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^3*b^3*d*e^4+154590*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^4*d^2*e^3-103060*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^5*d^3*e^2+38400*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^4*b^2*e^6+237500*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^4*b^2*d*e^4-428590*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^3*b^3*d^2*e^3+58845*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^5*d^5*e+138600*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^5*d*e^6-69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a*b^6*d^2*e^5-2304*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x^2*a^2*b^4*e^4+12800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a^2*b^4*e^5-28800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a^2*b^4*e^6-19200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^6*d^2*e^4-471240*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^3*b^4*d*e^6+401940*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^5*d^2*e^5-110880*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a*b^6*d^3*e^4-22950*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a*b^5*d*e^2-3840*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*a^2*b^4*e^5+38400*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a^2*b^4*e^6+207900*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^4*d*e^6-103950*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^5*d^2*e^5+54990*B*((a*e-b*d)*b)^(1/2)*(

```
e*x+d)^(7/2)*a^2*b^4*d*e^2-43515*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a*b^5*
d^2*e)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^7/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{11}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="
maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(11/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{11/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(11/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1655 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=489

$$-\frac{(d+ex)^{11/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{9/2}(-11aBe+3Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{105e^3(a+bx)\sqrt{bd-ae}\,(-}{64b^{13}}$$

Rubi [A] time = 0.42, antiderivative size = 489, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{21e^2(d+ex)^{5/2}(-11aBe+3Abe+8bBd)}{64b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{35e^3(a+bx)(d+ex)^{3/2}(-11aBe+3Abe+8bBd)}{64b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{105e^3(a+bx)\sqrt{d+ex}\,(-11aBe+3Abe+8bBd)}{64b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{105e^3(a+bx)\sqrt{bd-ae}\,(-11aBe+3Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{13/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{11/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{9/2}(-11aBe+3Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3e(d+ex)^{7/2}(-11aBe+3Abe+8bBd)}{32b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (105*e^3*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(64*b^6*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) + (35*e^3*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(a +
b*x)*(d + e*x)^(3/2))/(64*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
(21*e^2*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(d + e*x)^(5/2))/(64*b^4*(b*d - a*e)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*e*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(d +
e*x)^(7/2))/(32*b^3*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
((8*b*B*d + 3*A*b*e - 11*a*B*e)*(d + e*x)^(9/2))/(24*b^2*(b*d - a*e)*(a + b
*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(11/2))/(4*b*
(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (105*e^3*Sqrt[b*d
- a*e]*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e
*x])/Sqrt[b*d - a*e]])/(64*b^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{11/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd+3Abe-11aBe)\left(ab+b\right.\right.}{8(bd-ae)\sqrt{a^2+2abx\,-}}$$

$$= -\frac{(8bBd+3Abe-11aBe)(d+ex)^{9/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{11/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{3e(8bBd+3Abe-11aBe)(d+ex)^{7/2}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd+3Abe-11aBe)(d+e}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2ab}}$$

$$= -\frac{21e^2(8bBd+3Abe-11aBe)(d+ex)^{5/2}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(8bBd+3Abe-11aBe)(d+ex)}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+}}$$

$$= \frac{35e^3(8bBd+3Abe-11aBe)(a+bx)(d+ex)^{3/2}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{21e^2(8bBd+3Abe-11aBe)(a}{64b^4(bd-ae)\sqrt{a^2+2abx+}}$$

$$= \frac{105e^3(8bBd+3Abe-11aBe)(a+bx)\sqrt{d+ex}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{35e^3(8bBd+3Abe-11aBe)(a}{64b^5(bd-ae)\sqrt{a^2+2ab}}$$

$$= \frac{105e^3(8bBd+3Abe-11aBe)(a+bx)\sqrt{d+ex}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{35e^3(8bBd+3Abe-11aBe)(a}{64b^5(bd-ae)\sqrt{a^2+2ab}}$$

$$= \frac{105e^3(8bBd+3Abe-11aBe)(a+bx)\sqrt{d+ex}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{35e^3(8bBd+3Abe-11aBe)(a}{64b^5(bd-ae)\sqrt{a^2+2ab}}$$

Mathematica [C] time = 0.18, size = 117, normalized size = 0.24

$$\frac{(d+ex)^{11/2}\left(\frac{e^3(a+bx)^4(-11aBe+3Abe+8bBd)\,{}_2F_1\left(4,\frac{11}{2};\frac{13}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+11(aB-Ab)\right)}{44b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(11/2)*(11*(-(A*b) + a*B) + (e^3*(8*b*B*d + 3*A*b*e - 11*a*B*e)*
(a + b*x)^4*Hypergeometric2F1[4, 11/2, 13/2, (b*(d + e*x))/(b*d - a*e)])/(b
*d - a*e)^4))/(44*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 69.12, size = 726, normalized size = 1.48

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/192*(e^3*Sqrt[d + e*x]*(2520*b^5*B*d^5 + 945*A*b^5*d^
4*e - 13545*a*b^4*B*d^4*e - 3780*a*A*b^4*d^3*e^2 + 28980*a^2*b^3*B*d^3*e^2
+ 5670*a^2*A*b^3*d^2*e^3 - 30870*a^3*b^2*B*d^2*e^3 - 3780*a^3*A*b^2*d*e^4 +
 16380*a^4*b*B*d*e^4 + 945*a^4*A*b*e^5 - 3465*a^5*B*e^5 - 9240*b^5*B*d^4*(d
 + e*x) - 3465*A*b^5*d^3*e*(d + e*x) + 40425*a*b^4*B*d^3*e*(d + e*x) + 1039
5*a*A*b^4*d^2*e^2*(d + e*x) - 65835*a^2*b^3*B*d^2*e^2*(d + e*x) - 10395*a^2
*A*b^3*d*e^3*(d + e*x) + 47355*a^3*b^2*B*d*e^3*(d + e*x) + 3465*a^3*A*b^2*e
^4*(d + e*x) - 12705*a^4*b*B*e^4*(d + e*x) + 12264*b^5*B*d^3*(d + e*x)^2 +
4599*A*b^5*d^2*e*(d + e*x)^2 - 41391*a*b^4*B*d^2*e*(d + e*x)^2 - 9198*a*A*b
^4*d*e^2*(d + e*x)^2 + 45990*a^2*b^3*B*d*e^2*(d + e*x)^2 + 4599*a^2*A*b^3*e
^3*(d + e*x)^2 - 16863*a^3*b^2*B*e^3*(d + e*x)^2 - 6696*b^5*B*d^2*(d + e*x)
^3 - 2511*A*b^5*d*e*(d + e*x)^3 + 15903*a*b^4*B*d*e*(d + e*x)^3 + 2511*a*A*
b^4*e^2*(d + e*x)^3 - 9207*a^2*b^3*B*e^2*(d + e*x)^3 + 1024*b^5*B*d*(d + e*
x)^4 + 384*A*b^5*e*(d + e*x)^4 - 1408*a*b^4*B*e*(d + e*x)^4 + 128*b^5*B*(d
+ e*x)^5))/(b^6*(-(b*d) + a*e + b*(d + e*x))^4) + (105*(8*b^2*B*d^2*e^3 + 3
*A*b^2*d*e^4 - 19*a*b*B*d*e^4 - 3*a*A*b*e^5 + 11*a^2*B*e^5)*ArcTan[(Sqrt[b]
*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(13/2)*Sqrt[-(b*d) +
 a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.46, size = 1414, normalized size = 2.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(315*(8*B*a^4*b*d*e^3 - (11*B*a^5 - 3*A*a^4*b)*e^4 + (8*B*b^5*d*e^3
 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (11*B*a^2*b^3 - 3
*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (11*B*a^3*b^2 - 3*A*a^2*b^3)*e^
4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (11*B*a^4*b - 3*A*a^3*b^2)*e^4)*x)*sqrt((b*
d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b
))/(b*x + a)) - 2*(128*B*b^5*e^4*x^5 - 16*(B*a*b^4 + 3*A*b^5)*d^4 - 72*(B*a
^2*b^3 + A*a*b^4)*d^3*e - 126*(3*B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 105*(35*B
*a^4*b - 3*A*a^3*b^2)*d*e^3 - 315*(11*B*a^5 - 3*A*a^4*b)*e^4 + 128*(13*B*b^
5*d*e^3 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 - (1320*B*b^5*d^2*e^2 - (10271*B*
a*b^4 - 975*A*b^5)*d*e^3 + 837*(11*B*a^2*b^3 - 3*A*a*b^4)*e^4)*x^3 - (400*B
*b^5*d^3*e + 30*(71*B*a*b^4 + 21*A*b^5)*d^2*e^2 - 9*(2041*B*a^2*b^3 - 185*A
*a*b^4)*d*e^3 + 1533*(11*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 - (64*B*b^5*d^4
+ 8*(35*B*a*b^4 + 33*A*b^5)*d^3*e + 36*(41*B*a^2*b^3 + 13*A*a*b^4)*d^2*e^2
- 21*(649*B*a^3*b^2 - 57*A*a^2*b^3)*d*e^3 + 1155*(11*B*a^4*b - 3*A*a^3*b^2)
*e^4)*x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7
*x + a^4*b^6), -1/192*(315*(8*B*a^4*b*d*e^3 - (11*B*a^5 - 3*A*a^4*b)*e^4 +
(8*B*b^5*d*e^3 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (11
*B*a^2*b^3 - 3*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (11*B*a^3*b^2 - 3
```

```
*A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (11*B*a^4*b - 3*A*a^3*b^2)*e^
4)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*
d - a*e)) - (128*B*b^5*e^4*x^5 - 16*(B*a*b^4 + 3*A*b^5)*d^4 - 72*(B*a^2*b^3
 + A*a*b^4)*d^3*e - 126*(3*B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 105*(35*B*a^4*b
 - 3*A*a^3*b^2)*d*e^3 - 315*(11*B*a^5 - 3*A*a^4*b)*e^4 + 128*(13*B*b^5*d*e^
3 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 - (1320*B*b^5*d^2*e^2 - (10271*B*a*b^4
- 975*A*b^5)*d*e^3 + 837*(11*B*a^2*b^3 - 3*A*a*b^4)*e^4)*x^3 - (400*B*b^5*d
^3*e + 30*(71*B*a*b^4 + 21*A*b^5)*d^2*e^2 - 9*(2041*B*a^2*b^3 - 185*A*a*b^4
)*d*e^3 + 1533*(11*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 - (64*B*b^5*d^4 + 8*(3
5*B*a*b^4 + 33*A*b^5)*d^3*e + 36*(41*B*a^2*b^3 + 13*A*a*b^4)*d^2*e^2 - 21*(
649*B*a^3*b^2 - 57*A*a^2*b^3)*d*e^3 + 1155*(11*B*a^4*b - 3*A*a^3*b^2)*e^4)*
x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a
^4*b^6)]
```

giac [B] time = 0.52, size = 872, normalized size = 1.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 105/64*(8*B*b^2*d^2*e^3 - 19*B*a*b*d*e^4 + 3*A*b^2*d*e^4 + 11*B*a^2*e^5 - 3
*A*a*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b
*e)*b^6*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/192*(1320*(x*e + d)^(7/2)*B
*b^5*d^2*e^3 - 3560*(x*e + d)^(5/2)*B*b^5*d^3*e^3 + 3224*(x*e + d)^(3/2)*B*
b^5*d^4*e^3 - 984*sqrt(x*e + d)*B*b^5*d^5*e^3 - 3615*(x*e + d)^(7/2)*B*a*b^
4*d*e^4 + 975*(x*e + d)^(7/2)*A*b^5*d*e^4 + 12975*(x*e + d)^(5/2)*B*a*b^4*d
^2*e^4 - 2295*(x*e + d)^(5/2)*A*b^5*d^2*e^4 - 14825*(x*e + d)^(3/2)*B*a*b^4
*d^3*e^4 + 1929*(x*e + d)^(3/2)*A*b^5*d^3*e^4 + 5481*sqrt(x*e + d)*B*a*b^4*
d^4*e^4 - 561*sqrt(x*e + d)*A*b^5*d^4*e^4 + 2295*(x*e + d)^(7/2)*B*a^2*b^3*
e^5 - 975*(x*e + d)^(7/2)*A*a*b^4*e^5 - 15270*(x*e + d)^(5/2)*B*a^2*b^3*d*e
^5 + 4590*(x*e + d)^(5/2)*A*a*b^4*d*e^5 + 25131*(x*e + d)^(3/2)*B*a^2*b^3*d
^2*e^5 - 5787*(x*e + d)^(3/2)*A*a*b^4*d^2*e^5 - 12084*sqrt(x*e + d)*B*a^2*b
^3*d^3*e^5 + 2244*sqrt(x*e + d)*A*a*b^4*d^3*e^5 + 5855*(x*e + d)^(5/2)*B*a^
3*b^2*e^6 - 2295*(x*e + d)^(5/2)*A*a^2*b^3*e^6 - 18683*(x*e + d)^(3/2)*B*a^
3*b^2*d*e^6 + 5787*(x*e + d)^(3/2)*A*a^2*b^3*d*e^6 + 13206*sqrt(x*e + d)*B*
a^3*b^2*d^2*e^6 - 3366*sqrt(x*e + d)*A*a^2*b^3*d^2*e^6 + 5153*(x*e + d)^(3/
2)*B*a^4*b*e^7 - 1929*(x*e + d)^(3/2)*A*a^3*b^2*e^7 - 7164*sqrt(x*e + d)*B*
a^4*b*d*e^7 + 2244*sqrt(x*e + d)*A*a^3*b^2*d*e^7 + 1545*sqrt(x*e + d)*B*a^5
*e^8 - 561*sqrt(x*e + d)*A*a^4*b*e^8)/(((x*e + d)*b - b*d + a*e)^4*b^6*sgn(
(x*e + d)*b*e - b*d*e + a*e^2)) + 2/3*((x*e + d)^(3/2)*B*b^10*e^3 + 12*sqrt
(x*e + d)*B*b^10*d*e^3 - 15*sqrt(x*e + d)*B*a*b^9*e^4 + 3*sqrt(x*e + d)*A*b
^10*e^4)/(b^15*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.14, size = 2430, normalized size = 4.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-3780*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^4*b^2*e^6+61
44*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^4*d*e^4+3465*B*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^6*e^6+9216*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
1/2)*x^2*a^2*b^3*d*e^4+6144*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^2*d
*e^4+3560*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*b^5*d^3-945*A*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^5*b*e^6-3224*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
3/2)*b^5*d^4-3465*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^5*e^5+984*B*((a*e-b
*d)*b)^(1/2)*(e*x+d)^(1/2)*b^5*d^5-1320*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)
```

```
*b^5*d^2+1536*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^4*e^5+5670*A*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^4*d*e^5+3615*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(7/2)*a*b^4*d*e+768*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x
^2*a^2*b^3*e^4-7680*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a^2*b^3*e^5-359
10*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^3*d*e^5+15120*B*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^4*d^2*e^4-4590*A*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^4*d*e^2-5985*B*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)*x^4*a*b^5*d*e^5+3780*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x^3*a*b^5*d*e^5+512*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a*b^4
*e^4-1920*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a*b^4*e^5+1536*B*((a*e-b*
d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^5*d*e^4-23940*B*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*x^3*a^2*b^4*d*e^5+10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*x^3*a*b^5*d^2*e^4+8700*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*
b*d*e^4-13206*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*b^2*d^2*e^3+12084*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^3*d^3*e^2-5481*B*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(1/2)*a*b^4*d^4*e+2304*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^2
*b^3*e^5+3780*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^3*d*e^5
+15270*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^3*d*e^2+18683*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(3/2)*a^3*b^2*d*e^3-25131*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
3/2)*a^2*b^3*d^2*e^2+14825*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^4*d^3*e-
7680*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^4*b*e^5-2244*A*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*a^3*b^2*d*e^4-23940*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x*a^4*b^2*d*e^5+10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*x*a^3*b^3*d^2*e^4-5787*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^3*d*e^3
+5787*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^4*d^2*e^2+1536*A*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^2*e^5+3366*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2
)*a^2*b^3*d^2*e^3-2244*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^4*d^3*e^2-58
55*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^3*b^2*e^3+13860*B*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^5*b*e^6+1929*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^
(3/2)*a^3*b^2*e^4-1929*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*b^5*d^3*e+945*A*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b^2*d*e^5-5025*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(3/2)*a^4*b*e^4-5985*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*a^5*b*d*e^5+2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^
4*b^2*d^2*e^4+945*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*b*e^5+561*A*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^5*d^4*e-2295*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
7/2)*a^2*b^3*e^2+20790*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^
4*b^2*e^6+2295*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^3*e^3+2295*A*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(5/2)*b^5*d^2*e-975*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7
/2)*b^5*d*e-5670*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^3*
e^6-945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^5*e^6+945*A*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*b^6*d*e^5+128*B*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(3/2)*x^4*b^5*e^4+3465*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x^4*a^2*b^4*e^6+2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b
)*x^4*b^6*d^2*e^4+384*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^5*e^5-3780*
A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^4*e^6+13860*B*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^3*b^3*e^6+975*A*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(7/2)*a*b^4*e^2-12975*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b
^4*d^2*e+512*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^3*b^2*e^4-11520*B*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^3*b^2*e^5)/e*(b*x+a)/((a*e-b*d)*b)^(1/2
)/b^6/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{9}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
```

```
axima")
[Out] integrate((B*x + A)*(e*x + d)^(9/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+ex)^{9/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1656 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=424

$$-\frac{(d+ex)^{9/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{35e^3(a+bx)(-9aBe+Ab}{64b^{11/2}\sqrt{a^2+2a}$$

Rubi [A] time = 0.35, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{35e^2(d+ex)^{3/2}(-9aBe+Abe+8bBd)}{192b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{35e^3(a+bx)\sqrt{d+ex}\,(-9aBe+Abe+8bBd)}{64b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{35e^3(a+bx)(-9aBe+Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{11/2}\sqrt{a^2+2abx+b^2x^2}\,\sqrt{bd-ae}}-\frac{(d+ex)^{9/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{7e(d+ex)^{5/2}(-9aBe+Abe+8bBd)}{96b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (35*e^3*(8*b*B*d + A*b*e - 9*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(64*b^5*(b*d -
 a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^2*(8*b*B*d + A*b*e - 9*a*B*e)*
(d + e*x)^(3/2))/(192*b^4*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e
*(8*b*B*d + A*b*e - 9*a*B*e)*(d + e*x)^(5/2))/(96*b^3*(b*d - a*e)*(a + b*x)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d + A*b*e - 9*a*B*e)*(d + e*x)^(7
/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b
 - a*B)*(d + e*x)^(9/2))/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) - (35*e^3*(8*b*B*d + A*b*e - 9*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*
Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(11/2)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd+Abe-9aBe)\left(ab+b^2x\right.\right.}{8(bd-ae)\sqrt{a^2+2abx+}}$$

$$= -\frac{(8bBd+Abe-9aBe)(d+ex)^{7/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{9/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{7e(8bBd+Abe-9aBe)(d+ex)^{5/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd+Abe-9aBe)(d+ex}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2ab}}$$

$$= -\frac{35e^2(8bBd+Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(8bBd+Abe-9aBe)(d+ex)^{5/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2}}$$

$$= \frac{35e^3(8bBd+Abe-9aBe)(a+bx)\sqrt{d+ex}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{35e^2(8bBd+Abe-9aBe)(d+ex)}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x}}$$

$$= \frac{35e^3(8bBd+Abe-9aBe)(a+bx)\sqrt{d+ex}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{35e^2(8bBd+Abe-9aBe)(d+ex)}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x}}$$

$$= \frac{35e^3(8bBd+Abe-9aBe)(a+bx)\sqrt{d+ex}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{35e^2(8bBd+Abe-9aBe)(d+ex)}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x}}$$

Mathematica [C] time = 0.16, size = 114, normalized size = 0.27

$$\frac{(d+ex)^{9/2}\left(\frac{e^3(a+bx)^4(-9aBe+Abe+8bBd)\,{}_2F_1\left(4,\frac{9}{2};\frac{11}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+9aB-9Ab\right)}{36b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(9/2)*(-9*A*b + 9*a*B + (e^3*(8*b*B*d + A*b*e - 9*a*B*e)*(a + b*
x)^4*Hypergeometric2F1[4, 9/2, 11/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e
)^4))/(36*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [**A**] time = 64.73, size = 502, normalized size = 1.18

$$\frac{(-ae-bex)\left(\frac{e^3\sqrt{d+ex}\left(-945a^4Be^4+105a^3Abe^4-3465a^3bBe^3(d+ex)+3675a^3bBde^3+385a^2Ab^2e^3(d+ex)-315a^2Ab^2de^3-5355a^2b^2Bd^2e^2-4599a^2b^2Be^2(d+ex)^2+10010a^2b^2Bde^2(d+ex)+315aAb^3d^2e^2+511aAb^3e^2(d+ex)^2-770aAb^3de^2(d+ex)+3465ab^3Bd^3e-9625ab^3Bd^2e(d+ex)-2511ab^3Be(d+ex)^3+8687ab^3Bde(d+ex)^2-105Ab^4d^3e+385Ab^4d^2e(d+ex)+279Ab^4e(d+ex)^3-511Ab^4de(d+ex)^2-840b^4Bd^4+3080b^4Bd^3(d+ex)-4088b^4Bd^2(d+ex)^2-384b^4B(d+ex)^4+2232b^4Bd(d+ex)^3\right)}{192b^5(ae+b(d+ex)-bd)^4}+\frac{35\left(-9aBe^4+Abe^4+8bBde^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{11/2}\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*Sqrt[d + e*x]*(-840*b^4*B*d^4 - 105*A*b^4*d^3*e + 3
465*a*b^3*B*d^3*e + 315*a*A*b^3*d^2*e^2 - 5355*a^2*b^2*B*d^2*e^2 - 315*a^2*
A*b^2*d*e^3 + 3675*a^3*b*B*d*e^3 + 105*a^3*A*b*e^4 - 945*a^4*B*e^4 + 3080*b
^4*B*d^3*(d + e*x) + 385*A*b^4*d^2*e*(d + e*x) - 9625*a*b^3*B*d^2*e*(d + e*
x) - 770*a*A*b^3*d*e^2*(d + e*x) + 10010*a^2*b^2*B*d*e^2*(d + e*x) + 385*a^
2*A*b^2*e^3*(d + e*x) - 3465*a^3*b*B*e^3*(d + e*x) - 4088*b^4*B*d^2*(d + e*
x)^2 - 511*A*b^4*d*e*(d + e*x)^2 + 8687*a*b^3*B*d*e*(d + e*x)^2 + 511*a*A*b
^3*e^2*(d + e*x)^2 - 4599*a^2*b^2*B*e^2*(d + e*x)^2 + 2232*b^4*B*d*(d + e*x
)^3 + 279*A*b^4*e*(d + e*x)^3 - 2511*a*b^3*B*e*(d + e*x)^3 - 384*b^4*B*(d +
 e*x)^4))/(192*b^5*(-(b*d) + a*e + b*(d + e*x))^4) + (35*(8*b*B*d*e^3 + A*b
*e^4 - 9*a*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d -
a*e)])/(64*b^(11/2)*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [**B**] time = 0.47, size = 1485, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(105*(8*B*a^4*b*d*e^3 - (9*B*a^5 - A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (
9*B*a*b^4 - A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (9*B*a^2*b^3 - A*a*b^4)*
e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (9*B*a^3*b^2 - A*a^2*b^3)*e^4)*x^2 + 4*(8
*B*a^3*b^2*d*e^3 - (9*B*a^4*b - A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b*e)*log(
(b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*
(16*(B*a*b^5 + 3*A*b^6)*d^4 + 8*(5*B*a^2*b^4 + A*a*b^5)*d^3*e + 14*(11*B*a^
3*b^3 + A*a^2*b^4)*d^2*e^2 - 35*(33*B*a^4*b^2 - A*a^3*b^3)*d*e^3 + 105*(9*B
*a^5*b - A*a^4*b^2)*e^4 - 384*(B*b^6*d*e^3 - B*a*b^5*e^4)*x^4 + 3*(232*B*b^
6*d^2*e^2 - (1069*B*a*b^5 - 93*A*b^6)*d*e^3 + 93*(9*B*a^2*b^4 - A*a*b^5)*e^
4)*x^3 + (304*B*b^6*d^3*e + 2*(425*B*a*b^5 + 163*A*b^6)*d^2*e^2 - (5753*B*a
^2*b^4 - 185*A*a*b^5)*d*e^3 + 511*(9*B*a^3*b^3 - A*a^2*b^4)*e^4)*x^2 + (64*
B*b^6*d^4 + 8*(19*B*a*b^5 + 25*A*b^6)*d^3*e + 4*(149*B*a^2*b^4 + 13*A*a*b^5
)*d^2*e^2 - 7*(611*B*a^3*b^3 - 19*A*a^2*b^4)*d*e^3 + 385*(9*B*a^4*b^2 - A*a
^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d - a^5*b^6*e + (b^11*d - a*b^10*e)
*x^4 + 4*(a*b^10*d - a^2*b^9*e)*x^3 + 6*(a^2*b^9*d - a^3*b^8*e)*x^2 + 4*(a^
3*b^8*d - a^4*b^7*e)*x), 1/192*(105*(8*B*a^4*b*d*e^3 - (9*B*a^5 - A*a^4*b)*
e^4 + (8*B*b^5*d*e^3 - (9*B*a*b^4 - A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 -
(9*B*a^2*b^3 - A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (9*B*a^3*b^2 - A*
a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (9*B*a^4*b - A*a^3*b^2)*e^4)*x)*
sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d
)) - (16*(B*a*b^5 + 3*A*b^6)*d^4 + 8*(5*B*a^2*b^4 + A*a*b^5)*d^3*e + 14*(11
*B*a^3*b^3 + A*a^2*b^4)*d^2*e^2 - 35*(33*B*a^4*b^2 - A*a^3*b^3)*d*e^3 + 105
*(9*B*a^5*b - A*a^4*b^2)*e^4 - 384*(B*b^6*d*e^3 - B*a*b^5*e^4)*x^4 + 3*(232
*B*b^6*d^2*e^2 - (1069*B*a*b^5 - 93*A*b^6)*d*e^3 + 93*(9*B*a^2*b^4 - A*a*b^
5)*e^4)*x^3 + (304*B*b^6*d^3*e + 2*(425*B*a*b^5 + 163*A*b^6)*d^2*e^2 - (575
3*B*a^2*b^4 - 185*A*a*b^5)*d*e^3 + 511*(9*B*a^3*b^3 - A*a^2*b^4)*e^4)*x^2 +
```

```
(64*B*b^6*d^4 + 8*(19*B*a*b^5 + 25*A*b^6)*d^3*e + 4*(149*B*a^2*b^4 + 13*A*
a*b^5)*d^2*e^2 - 7*(611*B*a^3*b^3 - 19*A*a^2*b^4)*d*e^3 + 385*(9*B*a^4*b^2
- A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d - a^5*b^6*e + (b^11*d - a*b^
10*e)*x^4 + 4*(a*b^10*d - a^2*b^9*e)*x^3 + 6*(a^2*b^9*d - a^3*b^8*e)*x^2 +
4*(a^3*b^8*d - a^4*b^7*e)*x)]
```

giac [A] time = 0.49, size = 620, normalized size = 1.46

$$\frac{2\sqrt{xe+d}Be^3}{b^5\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{35\left(8Bbde^3-9Bae^4+Abe^4\right)\arctan\left(\frac{\sqrt{xe+d}b}{\sqrt{-b^2d+abe}}\right)}{64\sqrt{-b^2d+abe}b^5\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{696(xe+d)^{\frac{7}{2}}Bb^4de^3-1784(xe+d)^{\frac{5}{2}}Bb^4d^2e^3+1544(xe+d)^{\frac{3}{2}}Bb^4d^3e^3-456\sqrt{xe+d}Bb^4d^4e^3-975(xe+d)^{\frac{7}{2}}Bab^3e^4+279(xe+d)^{\frac{7}{2}}Ab^4e^4+4079(xe+d)^{\frac{5}{2}}Bab^3de^4-511(xe+d)^{\frac{5}{2}}Ab^4de^4-5017(xe+d)^{\frac{3}{2}}Bab^3d^2e^4+385(xe+d)^{\frac{3}{2}}Ab^4d^2e^4+1929\sqrt{xe+d}Bab^3d^3e^4-105\sqrt{xe+d}Ab^4d^3e^4-2295(xe+d)^{\frac{5}{2}}Ba^2b^2e^5+511(xe+d)^{\frac{5}{2}}Aab^3e^5+5402(xe+d)^{\frac{3}{2}}Ba^2b^2de^5-770(xe+d)^{\frac{3}{2}}Aab^3de^5-3051\sqrt{xe+d}Ba^2b^2d^2e^5+315\sqrt{xe+d}Aab^3d^2e^5-1929(xe+d)^{\frac{3}{2}}Ba^3be^6+385(xe+d)^{\frac{3}{2}}Aa^2b^2e^6+2139\sqrt{xe+d}Ba^3bde^6-315\sqrt{xe+d}Aa^2b^2de^6-561\sqrt{xe+d}Ba^4e^7+105\sqrt{xe+d}Aa^3be^7}{192\left((xe+d)b-bd+ae\right)^4b^5\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^3/(b^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 35/64*(8*B
*b*d*e^3 - 9*B*a*e^4 + A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e)
)/(sqrt(-b^2*d + a*b*e)*b^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/192*(69
6*(x*e + d)^(7/2)*B*b^4*d*e^3 - 1784*(x*e + d)^(5/2)*B*b^4*d^2*e^3 + 1544*(
x*e + d)^(3/2)*B*b^4*d^3*e^3 - 456*sqrt(x*e + d)*B*b^4*d^4*e^3 - 975*(x*e +
 d)^(7/2)*B*a*b^3*e^4 + 279*(x*e + d)^(7/2)*A*b^4*e^4 + 4079*(x*e + d)^(5/2
)*B*a*b^3*d*e^4 - 511*(x*e + d)^(5/2)*A*b^4*d*e^4 - 5017*(x*e + d)^(3/2)*B*
a*b^3*d^2*e^4 + 385*(x*e + d)^(3/2)*A*b^4*d^2*e^4 + 1929*sqrt(x*e + d)*B*a*
b^3*d^3*e^4 - 105*sqrt(x*e + d)*A*b^4*d^3*e^4 - 2295*(x*e + d)^(5/2)*B*a^2*
b^2*e^5 + 511*(x*e + d)^(5/2)*A*a*b^3*e^5 + 5402*(x*e + d)^(3/2)*B*a^2*b^2*
d*e^5 - 770*(x*e + d)^(3/2)*A*a*b^3*d*e^5 - 3051*sqrt(x*e + d)*B*a^2*b^2*d^
2*e^5 + 315*sqrt(x*e + d)*A*a*b^3*d^2*e^5 - 1929*(x*e + d)^(3/2)*B*a^3*b*e^
6 + 385*(x*e + d)^(3/2)*A*a^2*b^2*e^6 + 2139*sqrt(x*e + d)*B*a^3*b*d*e^6 -
315*sqrt(x*e + d)*A*a^2*b^2*d*e^6 - 561*sqrt(x*e + d)*B*a^4*e^7 + 105*sqrt(
x*e + d)*A*a^3*b*e^7)/(((x*e + d)*b - b*d + a*e)^4*b^5*sgn((x*e + d)*b*e -
b*d*e + a*e^2))
```

maple [B] time = 0.08, size = 1390, normalized size = 3.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+945*B*arctan((e
*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^4*e^5+945*B*a^5*e^5*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-456*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^4
*d^4-105*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+1544*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3-105*A*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*x^4*b^5*e^5+279*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^4*e+696
*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^4*d-1784*B*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(5/2)*b^4*d^2-945*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4-315*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3+315*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*A*a*b^3*d^2*e^2+2139*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3
-3051*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+1929*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(1/2)*B*a*b^3*d^3*e-770*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A
*a*b^3*d*e^2+5402*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2-5017*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-1536*((a*e-b*d)*b)^(1/2)*(e*x
+d)^(1/2)*B*a^3*b*e^4*x-2304*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*e^
4*x^2-3360*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-50
40*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+4079*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^3*d*e-3360*B*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*x^3*a*b^4*d*e^4-1536*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*x^3*a*b^3*e^4+105*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a^3*b*e^4-105*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^4*d^3*e-420*A*a^3*b^2*e^5*x*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)-2295*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b
```

```
^2*e^2+3780*B*a^4*b*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-630*A
*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+5670*B*a^3*b^2
*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-1929*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(3/2)*B*a^3*b*e^3-840*B*a^4*b*d*e^4*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)+385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*b^4*d^2*e+511*A*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^3*e^2-511*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^
(5/2)*b^4*d*e-840*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*b^5*d*e
^4-420*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a*b^4*e^5-384*B*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^4*e^4+3780*B*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^3*e^5-975*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)
*a*b^3*e)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^5/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{7}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{7/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1657 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$-\frac{(d+ex)^{7/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe-Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e^3(a+bx)(-7aBe-A}{64b^{9/2}\sqrt{a^2+2a}}$$

Rubi [A] time = 0.32, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 47, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}\,(-7aBe-Abe+8bBd)}{64b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e^3(a+bx)(-7aBe-Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{(d+ex)^{7/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe-Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e(d+ex)^{3/2}(-7aBe-Abe+8bBd)}{96b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-5*e^2*(8*b*B*d - A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(64*b^4*(b*d - a*e)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(8*b*B*d - A*b*e - 7*a*B*e)*(d + e*x)^(3/
2))/(96*b^3*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*
d - A*b*e - 7*a*B*e)*(d + e*x)^(5/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(7/2))/(4*b*(b*d - a*e)*
(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e^3*(8*b*B*d - A*b*e - 7*a*
B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(9/2
)*(b*d - a*e)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-Abe-7aBe)\left(ab+b^2x\right)\right)\int}{8(bd-ae)\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(8bBd-Abe-7aBe)(d+ex)^{5/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{7/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

$$= -\frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-Abe-7aBe)(d+ex)^{5/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+}}$$

$$= -\frac{5e^2(8bBd-Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} -$$

$$= -\frac{5e^2(8bBd-Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} -$$

$$= -\frac{5e^2(8bBd-Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} -$$

Mathematica [A] time = 1.00, size = 219, normalized size = 0.61

$$\frac{-\frac{(a+bx)(-7aBe-Abe+8bBd)\left(b(d+ex)\sqrt{ae-bd}\left(15a^2e^2+10abe(d+4ex)+b^2\left(8d^2+26dex+33e^2x^2\right)\right)-15\sqrt{b}e^3(a+bx)^3\sqrt{d+ex}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)\right)}{3\sqrt{ae-bd}}-16b^4(d+ex)^4(Ab-aB)}{64b^5(a+bx)^3\sqrt{(a+bx)^2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-16*b^4*(A*b - a*B)*(d + e*x)^4 - ((8*b*B*d - A*b*e - 7*a*B*e)*(a + b*x)*(
b*Sqrt[-(b*d) + a*e]*(d + e*x)*(15*a^2*e^2 + 10*a*b*e*(d + 4*e*x) + b^2*(8*
d^2 + 26*d*e*x + 33*e^2*x^2)) - 15*Sqrt[b]*e^3*(a + b*x)^3*Sqrt[d + e*x]*Ar
cTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/(3*Sqrt[-(b*d) + a*e]))/
(64*b^5*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 61.06, size = 511, normalized size = 1.42

$$\frac{(-ae-bex)\left(\frac{e^3\sqrt{d+ex}\left(-105a^4Be^4-15a^3Abe^4-385a^3bBe^3(d+ex)+435a^3bBde^3-55a^2Ab^2e^3(d+ex)+45a^2Ab^2de^3-675a^2b^2Bd^2e^2-511a^2b^2Be^2(d+ex)^2+1210a^2b^2Bde^2(d+ex)-45aAb^3d^2e^2-73aAb^3e^2(d+ex)^2+110aAb^3de^2(d+ex)+465ab^3Bd^3e-1265ab^3Bd^2e(d+ex)-279ab^3Be(d+ex)^3+1095ab^3Bde(d+ex)^2+15Ab^4d^3e-55Ab^4d^2e(d+ex)+15Ab^4e(d+ex)^3+73Ab^4de(d+ex)^2-120b^4Bd^4+440b^4Bd^3(d+ex)-584b^4Bd^2(d+ex)^2+264b^4Bd(d+ex)^3\right)}{192b^4(bd-ae)(-ae-b(d+ex)+bd)^4}+\frac{5\left(-7aBe^4-Abe^4+8bBde^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{9/2}(bd-ae)\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*Sqrt[d + e*x]*(-120*b^4*B*d^4 + 15*A*b^4*d^3*e + 46
5*a*b^3*B*d^3*e - 45*a*A*b^3*d^2*e^2 - 675*a^2*b^2*B*d^2*e^2 + 45*a^2*A*b^2
*d*e^3 + 435*a^3*b*B*d*e^3 - 15*a^3*A*b*e^4 - 105*a^4*B*e^4 + 440*b^4*B*d^3
*(d + e*x) - 55*A*b^4*d^2*e*(d + e*x) - 1265*a*b^3*B*d^2*e*(d + e*x) + 110*
a*A*b^3*d*e^2*(d + e*x) + 1210*a^2*b^2*B*d*e^2*(d + e*x) - 55*a^2*A*b^2*e^3
*(d + e*x) - 385*a^3*b*B*e^3*(d + e*x) - 584*b^4*B*d^2*(d + e*x)^2 + 73*A*b
^4*d*e*(d + e*x)^2 + 1095*a*b^3*B*d*e*(d + e*x)^2 - 73*a*A*b^3*e^2*(d + e*x
)^2 - 511*a^2*b^2*B*e^2*(d + e*x)^2 + 264*b^4*B*d*(d + e*x)^3 + 15*A*b^4*e*
(d + e*x)^3 - 279*a*b^3*B*e*(d + e*x)^3))/(192*b^4*(b*d - a*e)*(b*d - a*e -
 b*(d + e*x))^4) + (5*(8*b*B*d*e^3 - A*b*e^4 - 7*a*B*e^4)*ArcTan[(Sqrt[b]*S
qrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(9/2)*(b*d - a*e)*Sqrt
[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.48, size = 1547, normalized size = 4.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(15*(8*B*a^4*b*d*e^3 - (7*B*a^5 + A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (7
*B*a*b^4 + A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (7*B*a^2*b^3 + A*a*b^4)*e
^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (7*B*a^3*b^2 + A*a^2*b^3)*e^4)*x^2 + 4*(8*
B*a^3*b^2*d*e^3 - (7*B*a^4*b + A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b*e)*log((
b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(
16*(B*a*b^5 + 3*A*b^6)*d^4 + 8*(B*a^2*b^4 - 7*A*a*b^5)*d^3*e + 2*(13*B*a^3*
b^3 - A*a^2*b^4)*d^2*e^2 - 5*(31*B*a^4*b^2 + A*a^3*b^3)*d*e^3 + 15*(7*B*a^5
*b + A*a^4*b^2)*e^4 + 3*(88*B*b^6*d^2*e^2 - (181*B*a*b^5 - 5*A*b^6)*d*e^3 +
 (93*B*a^2*b^4 - 5*A*a*b^5)*e^4)*x^3 + (208*B*b^6*d^3*e + 2*(25*B*a*b^5 + 5
9*A*b^6)*d^2*e^2 - (769*B*a^2*b^4 + 191*A*a*b^5)*d*e^3 + 73*(7*B*a^3*b^3 +
A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 + 8*(3*B*a*b^5 + 17*A*b^6)*d^3*e + 4*(2
5*B*a^2*b^4 - 43*A*a*b^5)*d^2*e^2 - (573*B*a^3*b^3 + 19*A*a^2*b^4)*d*e^3 +
55*(7*B*a^4*b^2 + A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^2 - 2*a^5*b^
6*d*e + a^6*b^5*e^2 + (b^11*d^2 - 2*a*b^10*d*e + a^2*b^9*e^2)*x^4 + 4*(a*b^
10*d^2 - 2*a^2*b^9*d*e + a^3*b^8*e^2)*x^3 + 6*(a^2*b^9*d^2 - 2*a^3*b^8*d*e
+ a^4*b^7*e^2)*x^2 + 4*(a^3*b^8*d^2 - 2*a^4*b^7*d*e + a^5*b^6*e^2)*x), 1/19
2*(15*(8*B*a^4*b*d*e^3 - (7*B*a^5 + A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (7*B*a*
b^4 + A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (7*B*a^2*b^3 + A*a*b^4)*e^4)*x
^3 + 6*(8*B*a^2*b^3*d*e^3 - (7*B*a^3*b^2 + A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3
*b^2*d*e^3 - (7*B*a^4*b + A*a^3*b^2)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sq
rt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (16*(B*a*b^5 + 3*A*b^6)*d
^4 + 8*(B*a^2*b^4 - 7*A*a*b^5)*d^3*e + 2*(13*B*a^3*b^3 - A*a^2*b^4)*d^2*e^2
 - 5*(31*B*a^4*b^2 + A*a^3*b^3)*d*e^3 + 15*(7*B*a^5*b + A*a^4*b^2)*e^4 + 3*
(88*B*b^6*d^2*e^2 - (181*B*a*b^5 - 5*A*b^6)*d*e^3 + (93*B*a^2*b^4 - 5*A*a*b
^5)*e^4)*x^3 + (208*B*b^6*d^3*e + 2*(25*B*a*b^5 + 59*A*b^6)*d^2*e^2 - (769*
B*a^2*b^4 + 191*A*a*b^5)*d*e^3 + 73*(7*B*a^3*b^3 + A*a^2*b^4)*e^4)*x^2 + (6
4*B*b^6*d^4 + 8*(3*B*a*b^5 + 17*A*b^6)*d^3*e + 4*(25*B*a^2*b^4 - 43*A*a*b^5
)*d^2*e^2 - (573*B*a^3*b^3 + 19*A*a^2*b^4)*d*e^3 + 55*(7*B*a^4*b^2 + A*a^3*
b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^2 - 2*a^5*b^6*d*e + a^6*b^5*e^2 + (b
^11*d^2 - 2*a*b^10*d*e + a^2*b^9*e^2)*x^4 + 4*(a*b^10*d^2 - 2*a^2*b^9*d*e +
 a^3*b^8*e^2)*x^3 + 6*(a^2*b^9*d^2 - 2*a^3*b^8*d*e + a^4*b^7*e^2)*x^2 + 4*(
a^3*b^8*d^2 - 2*a^4*b^7*d*e + a^5*b^6*e^2)*x)]
```

giac [B] time = 0.48, size = 647, normalized size = 1.80

$$\frac{5\left(8\,Bbde^3 - 7\,Bae^4 - Abe^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{64\left(b^5d\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right) - ab^4e\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)\right)\sqrt{-b^2d+abe}} - \frac{264\,(xe+d)^{\frac{7}{2}}Bb^4de^3 - 584\,(xe+d)^{\frac{5}{2}}Bb^4d^2e^3 + 440\,(xe+d)^{\frac{3}{2}}Bb^4d^3e^3 - 120\,\sqrt{xe+d}\,Bb^4d^4e^3 - 279\,(xe+d)^{\frac{7}{2}}Bab^3e^4 + 15\,(xe+d)^{\frac{7}{2}}Ab^4e^4 + 1095\,(xe+d)^{\frac{5}{2}}Bab^3de^4 + 73\,(xe+d)^{\frac{5}{2}}Ab^4de^4 - 1265\,(xe+d)^{\frac{3}{2}}Bab^3d^2e^4 - 55\,(xe+d)^{\frac{3}{2}}Ab^4d^2e^4 + 465\,\sqrt{xe+d}\,Bab^3d^3e^4 + 15\,\sqrt{xe+d}\,Ab^4d^3e^4 - 511\,(xe+d)^{\frac{5}{2}}Ba^2b^2e^5 - 73\,(xe+d)^{\frac{5}{2}}Aab^3e^5 + 1210\,(xe+d)^{\frac{3}{2}}Ba^2b^2de^5 + 110\,(xe+d)^{\frac{3}{2}}Aab^3de^5 - 675\,\sqrt{xe+d}\,Ba^2b^2d^2e^5 - 45\,\sqrt{xe+d}\,Aab^3d^2e^5 - 385\,(xe+d)^{\frac{3}{2}}Ba^3be^6 - 55\,(xe+d)^{\frac{3}{2}}Aa^2b^2e^6 + 435\,\sqrt{xe+d}\,Ba^3bde^6 + 45\,\sqrt{xe+d}\,Aa^2b^2de^6 - 105\,\sqrt{xe+d}\,Ba^4e^7 - 15\,\sqrt{xe+d}\,Aa^3be^7}{192\left(b^5d\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right) - ab^4e\,\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)\right)\left((xe+d)b - bd + ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 5/64*(8*B*b*d*e^3 - 7*B*a*e^4 - A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/((b^5*d*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a*b^4*e*sgn((x*e +
d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/192*(264*(x*e + d)^(7/2)
*B*b^4*d*e^3 - 584*(x*e + d)^(5/2)*B*b^4*d^2*e^3 + 440*(x*e + d)^(3/2)*B*b^
4*d^3*e^3 - 120*sqrt(x*e + d)*B*b^4*d^4*e^3 - 279*(x*e + d)^(7/2)*B*a*b^3*e
^4 + 15*(x*e + d)^(7/2)*A*b^4*e^4 + 1095*(x*e + d)^(5/2)*B*a*b^3*d*e^4 + 73
*(x*e + d)^(5/2)*A*b^4*d*e^4 - 1265*(x*e + d)^(3/2)*B*a*b^3*d^2*e^4 - 55*(x
*e + d)^(3/2)*A*b^4*d^2*e^4 + 465*sqrt(x*e + d)*B*a*b^3*d^3*e^4 + 15*sqrt(x
*e + d)*A*b^4*d^3*e^4 - 511*(x*e + d)^(5/2)*B*a^2*b^2*e^5 - 73*(x*e + d)^(5
/2)*A*a*b^3*e^5 + 1210*(x*e + d)^(3/2)*B*a^2*b^2*d*e^5 + 110*(x*e + d)^(3/2
)*A*a*b^3*d*e^5 - 675*sqrt(x*e + d)*B*a^2*b^2*d^2*e^5 - 45*sqrt(x*e + d)*A*
a*b^3*d^2*e^5 - 385*(x*e + d)^(3/2)*B*a^3*b*e^6 - 55*(x*e + d)^(3/2)*A*a^2*
b^2*e^6 + 435*sqrt(x*e + d)*B*a^3*b*d*e^6 + 45*sqrt(x*e + d)*A*a^2*b^2*d*e^
6 - 105*sqrt(x*e + d)*B*a^4*e^7 - 15*sqrt(x*e + d)*A*a^3*b*e^7)/((b^5*d*sgn
((x*e + d)*b*e - b*d*e + a*e^2) - a*b^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2
))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.07, size = 1273, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+105*B*a*b^4*e^5*
x^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*B*a^5*e^5*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-120*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^4*
d^4+15*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+440*((a*e-b*
d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+15*A*b^5*e^5*x^4*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e+264*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d-584*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)
*B*b^4*d^2-105*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4+45*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3-45*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A
*a*b^3*d^2*e^2+435*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3-675*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+465*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*B*a*b^3*d^3*e+110*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d*e^
2+1210*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2-1265*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-480*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)-720*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)+1095*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-480*B
*a*b^4*d*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-15*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(1/2)*A*a^3*b*e^4+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b
^4*d^3*e+60*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-511
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+420*B*a^4*b*e^5*x*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+90*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)+630*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-120*B*a^
4*b*d*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-55*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*A*b^4*d^2*e-73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3*e^
2+73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-120*B*b^5*d*e^4*x^4*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+60*A*a*b^4*e^5*x^3*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)+420*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-279*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/e*(b*x+a)
/((a*e-b*d)*b)^(1/2)/b^4/(a*e-b*d)/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^{5/2}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1658 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$-\frac{(d+ex)^{5/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe-3Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{e^3(a+bx)(-5aBe-3Abe}{64b^{7/2}\sqrt{a^2+2abx}}$$

Rubi [A] time = 0.32, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 51, 63, 208}

$$-\frac{e^2\sqrt{d+ex}\,(-5aBe-3Abe+8bBd)}{64b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e^3(a+bx)(-5aBe-3Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}\,(-5aBe-3Abe+8bBd)}{32b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe-3Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(e^2*(8*b*B*d - 3*A*b*e - 5*a*B*e)*Sqrt[d + e*x])/(64*b^3*(b*d - a*e)^2*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(8*b*B*d - 3*A*b*e - 5*a*B*e)*Sqrt[d + e*
x])/(32*b^3*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*
d - 3*A*b*e - 5*a*B*e)*(d + e*x)^(3/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(5/2))/(4*b*(b*d - a*e
)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(8*b*B*d - 3*A*b*e - 5*
a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(7
/2)*(b*d - a*e)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-3Abe-5aBe)\left(ab+b^2\right.\right.}{8(bd-ae)\sqrt{a^2+2abx+}}$$

$$= -\frac{(8bBd-3Abe-5aBe)(d+ex)^{3/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{5/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-3Abe-5aBe)(d+e}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2ab}}$$

$$= -\frac{e^2(8bBd-3Abe-5aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{e^2(8bBd-3Abe-5aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{e^2(8bBd-3Abe-5aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [C] time = 0.12, size = 116, normalized size = 0.32

$$\frac{(d+ex)^{5/2}\left(-\frac{e^3(a+bx)^4(5aBe+3Abe-8bBd)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+5aB-5Ab\right)}{20b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(5/2)*(-5*A*b + 5*a*B - (e^3*(-8*b*B*d + 3*A*b*e + 5*a*B*e)*(a +
 b*x)^4*Hypergeometric2F1[5/2, 4, 7/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^4))/(20*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 58.58, size = 511, normalized size = 1.42

$$\frac{(-ae-bex)\left(\frac{(5aBe^4+3Abe^4-8bBde^3)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{7/2}(bd-ae)^2\sqrt{ae-bd}}-\frac{e^3\sqrt{d+ex}\left(-15a^4Be^4-9a^3Abe^4-55a^3bBe^3(d+ex)+69a^3bBde^3-33a^2Ab^2e^3(d+ex)+27a^2Ab^2de^3-117a^2b^2Bd^2e^2-73a^2b^2Be^2(d+ex)^2+198a^2b^2Bde^2(d+ex)-27aAb^3d^2e^2+33aAb^3e^2(d+ex)^2+66aAb^3de^2(d+ex)+87ab^3Bd^3e-231ab^3Bd^2e(d+ex)+15ab^3Be(d+ex)^3+113ab^3Bde(d+ex)^2+9Ab^4d^3e-33Ab^4d^2e(d+ex)+9Ab^4e(d+ex)^3-33Ab^4de(d+ex)^2-24b^4Bd^4+88b^4Bd^3(d+ex)-40b^4Bd^2(d+ex)^2-24b^4Bd(d+ex)^3\right)}{192b^3(bd-ae)^2(-ae-b(d+ex)+bd)^4}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/192*(e^3*Sqrt[d + e*x]*(-24*b^4*B*d^4 + 9*A*b^4*d^3*e
 + 87*a*b^3*B*d^3*e - 27*a*A*b^3*d^2*e^2 - 117*a^2*b^2*B*d^2*e^2 + 27*a^2*A
*b^2*d*e^3 + 69*a^3*b*B*d*e^3 - 9*a^3*A*b*e^4 - 15*a^4*B*e^4 + 88*b^4*B*d^3
*(d + e*x) - 33*A*b^4*d^2*e*(d + e*x) - 231*a*b^3*B*d^2*e*(d + e*x) + 66*a*
A*b^3*d*e^2*(d + e*x) + 198*a^2*b^2*B*d*e^2*(d + e*x) - 33*a^2*A*b^2*e^3*(d
 + e*x) - 55*a^3*b*B*e^3*(d + e*x) - 40*b^4*B*d^2*(d + e*x)^2 - 33*A*b^4*d*
e*(d + e*x)^2 + 113*a*b^3*B*d*e*(d + e*x)^2 + 33*a*A*b^3*e^2*(d + e*x)^2 -
73*a^2*b^2*B*e^2*(d + e*x)^2 - 24*b^4*B*d*(d + e*x)^3 + 9*A*b^4*e*(d + e*x)
^3 + 15*a*b^3*B*e*(d + e*x)^3))/(b^3*(b*d - a*e)^2*(b*d - a*e - b*(d + e*x)
)^4) + ((-8*b*B*d*e^3 + 3*A*b*e^4 + 5*a*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d)
+ a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(7/2)*(b*d - a*e)^2*Sqrt[-(b*d) +
 a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.46, size = 1706, normalized size = 4.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(3*(8*B*a^4*b*d*e^3 - (5*B*a^5 + 3*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 -
(5*B*a*b^4 + 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (5*B*a^2*b^3 + 3*A*a*
b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (5*B*a^3*b^2 + 3*A*a^2*b^3)*e^4)*x^2
 + 4*(8*B*a^3*b^2*d*e^3 - (5*B*a^4*b + 3*A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*
b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x +
 a)) + 2*(16*(B*a*b^5 + 3*A*b^6)*d^4 - 24*(B*a^2*b^4 + 5*A*a*b^5)*d^3*e - 6
*(B*a^3*b^3 - 13*A*a^2*b^4)*d^2*e^2 + (29*B*a^4*b^2 + 3*A*a^3*b^3)*d*e^3 -
3*(5*B*a^5*b + 3*A*a^4*b^2)*e^4 + 3*(8*B*b^6*d^2*e^2 - (13*B*a*b^5 + 3*A*b^
6)*d*e^3 + (5*B*a^2*b^4 + 3*A*a*b^5)*e^4)*x^3 + (112*B*b^6*d^3*e - 6*(45*B*
a*b^5 - A*b^6)*d^2*e^2 + 3*(77*B*a^2*b^4 - 13*A*a*b^5)*d*e^3 - (73*B*a^3*b^
3 - 33*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(13*B*a*b^5 - 9*A*b^6)*d^3*e
 - 12*(B*a^2*b^4 + 17*A*a*b^5)*d^2*e^2 + (107*B*a^3*b^3 + 165*A*a^2*b^4)*d*
e^3 - 11*(5*B*a^4*b^2 + 3*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^3 -
3*a^5*b^6*d^2*e + 3*a^6*b^5*d*e^2 - a^7*b^4*e^3 + (b^11*d^3 - 3*a*b^10*d^2*
e + 3*a^2*b^9*d*e^2 - a^3*b^8*e^3)*x^4 + 4*(a*b^10*d^3 - 3*a^2*b^9*d^2*e +
3*a^3*b^8*d*e^2 - a^4*b^7*e^3)*x^3 + 6*(a^2*b^9*d^3 - 3*a^3*b^8*d^2*e + 3*a
^4*b^7*d*e^2 - a^5*b^6*e^3)*x^2 + 4*(a^3*b^8*d^3 - 3*a^4*b^7*d^2*e + 3*a^5*
b^6*d*e^2 - a^6*b^5*e^3)*x), -1/192*(3*(8*B*a^4*b*d*e^3 - (5*B*a^5 + 3*A*a^
4*b)*e^4 + (8*B*b^5*d*e^3 - (5*B*a*b^4 + 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d
*e^3 - (5*B*a^2*b^3 + 3*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (5*B*a^3
*b^2 + 3*A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (5*B*a^4*b + 3*A*a^3*
b^2)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + (16*(B*a*b^5 + 3*A*b^6)*d^4 - 24*(B*a^2*b^4 + 5*A*a*b^5)*
d^3*e - 6*(B*a^3*b^3 - 13*A*a^2*b^4)*d^2*e^2 + (29*B*a^4*b^2 + 3*A*a^3*b^3)
*d*e^3 - 3*(5*B*a^5*b + 3*A*a^4*b^2)*e^4 + 3*(8*B*b^6*d^2*e^2 - (13*B*a*b^5
 + 3*A*b^6)*d*e^3 + (5*B*a^2*b^4 + 3*A*a*b^5)*e^4)*x^3 + (112*B*b^6*d^3*e -
 6*(45*B*a*b^5 - A*b^6)*d^2*e^2 + 3*(77*B*a^2*b^4 - 13*A*a*b^5)*d*e^3 - (73
*B*a^3*b^3 - 33*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(13*B*a*b^5 - 9*A*b
^6)*d^3*e - 12*(B*a^2*b^4 + 17*A*a*b^5)*d^2*e^2 + (107*B*a^3*b^3 + 165*A*a^
2*b^4)*d*e^3 - 11*(5*B*a^4*b^2 + 3*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b
^7*d^3 - 3*a^5*b^6*d^2*e + 3*a^6*b^5*d*e^2 - a^7*b^4*e^3 + (b^11*d^3 - 3*a*
```

```
b^10*d^2*e + 3*a^2*b^9*d*e^2 - a^3*b^8*e^3)*x^4 + 4*(a*b^10*d^3 - 3*a^2*b^9
*d^2*e + 3*a^3*b^8*d*e^2 - a^4*b^7*e^3)*x^3 + 6*(a^2*b^9*d^3 - 3*a^3*b^8*d^
2*e + 3*a^4*b^7*d*e^2 - a^5*b^6*e^3)*x^2 + 4*(a^3*b^8*d^3 - 3*a^4*b^7*d^2*e
 + 3*a^5*b^6*d*e^2 - a^6*b^5*e^3)*x)]
```

giac [B] time = 0.45, size = 715, normalized size = 1.99

$$-\frac{\left(8 \, B b d e^{3} - 5 \, B a e^{4} - 3 \, A b e^{4}\right) \arctan\left(\frac{\sqrt{x e + d} b}{\sqrt{-b^{2} d + a b e}}\right)}{64 \, \left(b^{5} d^{2} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) - 2 \, a b^{4} d e \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) + a^{2} b^{3} e^{2} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right)\right) \sqrt{-b^{2} d + a b e}} - \frac{24 \, (x e + d)^{\frac{7}{2}} B b^{4} d e^{3} + 40 \, (x e + d)^{\frac{5}{2}} B b^{4} d^{2} e^{3} - 88 \, (x e + d)^{\frac{3}{2}} B b^{4} d^{3} e^{3} + 24 \, \sqrt{x e + d} B b^{4} d^{4} e^{3} - 15 \, (x e + d)^{\frac{7}{2}} B a b^{3} e^{4} - 9 \, (x e + d)^{\frac{7}{2}} A b^{4} e^{4} - 113 \, (x e + d)^{\frac{5}{2}} B a b^{3} d e^{4} + 33 \, (x e + d)^{\frac{5}{2}} A b^{4} d e^{4} + 231 \, (x e + d)^{\frac{3}{2}} B a b^{3} d^{2} e^{4} + 33 \, (x e + d)^{\frac{3}{2}} A b^{4} d^{2} e^{4} - 87 \, \sqrt{x e + d} B a b^{3} d^{3} e^{4} - 9 \, \sqrt{x e + d} A b^{4} d^{3} e^{4} + 73 \, (x e + d)^{\frac{5}{2}} B a^{2} b^{2} e^{5} - 33 \, (x e + d)^{\frac{5}{2}} A a b^{3} e^{5} - 198 \, (x e + d)^{\frac{3}{2}} B a^{2} b^{2} d e^{5} - 66 \, (x e + d)^{\frac{3}{2}} A a b^{3} d e^{5} + 117 \, \sqrt{x e + d} B a^{2} b^{2} d^{2} e^{5} + 27 \, \sqrt{x e + d} A a b^{3} d^{2} e^{5} + 55 \, (x e + d)^{\frac{3}{2}} B a^{3} b e^{6} + 33 \, (x e + d)^{\frac{3}{2}} A a^{2} b^{2} e^{6} - 69 \, \sqrt{x e + d} B a^{3} b d e^{6} - 27 \, \sqrt{x e + d} A a^{2} b^{2} d e^{6} + 15 \, \sqrt{x e + d} B a^{4} e^{7} + 9 \, \sqrt{x e + d} A a^{3} b e^{7}}{192 \, \left(b^{5} d^{2} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) - 2 \, a b^{4} d e \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) + a^{2} b^{3} e^{2} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right)\right) \left((x e + d) b - b d + a e\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -1/64*(8*B*b*d*e^3 - 5*B*a*e^4 - 3*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^
2*d + a*b*e))/((b^5*d^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 2*a*b^4*d*e*sg
n((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b^3*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/192*(24*(x*e + d)^(7/2)*B*b^4*d*e^3 + 40*
(x*e + d)^(5/2)*B*b^4*d^2*e^3 - 88*(x*e + d)^(3/2)*B*b^4*d^3*e^3 + 24*sqrt(
x*e + d)*B*b^4*d^4*e^3 - 15*(x*e + d)^(7/2)*B*a*b^3*e^4 - 9*(x*e + d)^(7/2)
*A*b^4*e^4 - 113*(x*e + d)^(5/2)*B*a*b^3*d*e^4 + 33*(x*e + d)^(5/2)*A*b^4*d
*e^4 + 231*(x*e + d)^(3/2)*B*a*b^3*d^2*e^4 + 33*(x*e + d)^(3/2)*A*b^4*d^2*e
^4 - 87*sqrt(x*e + d)*B*a*b^3*d^3*e^4 - 9*sqrt(x*e + d)*A*b^4*d^3*e^4 + 73*
(x*e + d)^(5/2)*B*a^2*b^2*e^5 - 33*(x*e + d)^(5/2)*A*a*b^3*e^5 - 198*(x*e +
 d)^(3/2)*B*a^2*b^2*d*e^5 - 66*(x*e + d)^(3/2)*A*a*b^3*d*e^5 + 117*sqrt(x*e
 + d)*B*a^2*b^2*d^2*e^5 + 27*sqrt(x*e + d)*A*a*b^3*d^2*e^5 + 55*(x*e + d)^(
3/2)*B*a^3*b*e^6 + 33*(x*e + d)^(3/2)*A*a^2*b^2*e^6 - 69*sqrt(x*e + d)*B*a^
3*b*d*e^6 - 27*sqrt(x*e + d)*A*a^2*b^2*d*e^6 + 15*sqrt(x*e + d)*B*a^4*e^7 +
 9*sqrt(x*e + d)*A*a^3*b*e^7)/((b^5*d^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)
- 2*a*b^4*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b^3*e^2*sgn((x*e + d
)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.08, size = 1273, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(b*x+a)/e*(-33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+15*B*a
*b^4*e^5*x^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*B*a^5*e^5*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-24*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*B*b^4*d^4+9*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+88*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+9*A*b^5*e^5*x^4*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)+9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e-24*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d-40*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2
)*B*b^4*d^2-15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4+27*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3-27*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A
*a*b^3*d^2*e^2+69*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3-117*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+87*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(1/2)*B*a*b^3*d^3*e+66*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d*e^2+1
98*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2-231*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-96*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)-144*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)+113*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-96*B*a*b^4*d
*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-9*((a*e-b*d)*b)^(1/2)*
(e*x+d)^(1/2)*A*a^3*b*e^4+9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^4*d^3*e+3
6*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-73*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+60*B*a^4*b*e^5*x*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)+54*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)+90*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
```

```
*b)-55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-24*B*a^4*b*d*e^4*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)
*A*b^4*d^2*e+33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3*e^2-33*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-24*B*b^5*d*e^4*x^4*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+36*A*a*b^4*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)+60*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+
15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/((a*e-b*d)*b)^(1/2)/b^3/(a*
e-b*d)^2/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{3/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1659 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$\frac{e^2\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{64b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{96b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^{3/2}(Ab-aB}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x}}$$

Rubi [A] time = 0.35, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 51, 63, 208}

$$\frac{e^2\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{64b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e^3(a+bx)(-3aBe-5Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{7/2}}-\frac{e\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{96b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^{3/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (e^2*(8*b*B*d - 5*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(64*b^2*(b*d - a*e)^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d - 5*A*b*e - 3*a*B*e)*Sqrt[d + e*x])
/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(8*b*B
*d - 5*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(96*b^2*(b*d - a*e)^2*(a + b*x)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(3/2))/(4*b*(b*d - a*e)
*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(8*b*B*d - 5*A*b*e - 3*a
*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(5/
2)*(b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)\sqrt{d+ex}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-5Abe-3aBe)\left(ab+b^2x\right)\right)}{8(bd-ae)\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

$$= -\frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-5Abe-3aBe)\sqrt{d+e}}{96b^2(bd-ae)^2(a+bx)\sqrt{a^2+2abx}}$$

$$= \frac{e^2(8bBd-5Abe-3aBe)\sqrt{d+ex}}{64b^2(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} -$$

$$= \frac{e^2(8bBd-5Abe-3aBe)\sqrt{d+ex}}{64b^2(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} -$$

$$= \frac{e^2(8bBd-5Abe-3aBe)\sqrt{d+ex}}{64b^2(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} -$$

Mathematica [C] time = 0.10, size = 116, normalized size = 0.32

$$\frac{(d+ex)^{3/2}\left(-\frac{e^3(a+bx)^4(3aBe+5Abe-8bBd)\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+3aB-3Ab\right)}{12b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(3/2)*(-3*A*b + 3*a*B - (e^3*(-8*b*B*d + 5*A*b*e + 3*a*B*e)*(a +
 b*x)^4*Hypergeometric2F1[3/2, 4, 5/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^4))/(12*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 57.40, size = 511, normalized size = 1.42

$$\frac{(-ae-bex)\left(\frac{e^3\sqrt{d+ex}\left(-9a^4Be^4-15a^3Abe^4-33a^3bBe^3(d+ex)+51a^3bBde^3+73a^2Ab^2e^3(d+ex)+45a^2Ab^2de^3-99a^2b^2Bd^2e^2+33a^2b^2Be^2(d+ex)^2+26a^2b^2Bde^2(d+ex)-45aAb^3d^2e^2+55aAb^3e^2(d+ex)^2-146aAb^3de^2(d+ex)+81ab^3Bd^3e+47ab^3Bd^2e(d+ex)+9ab^3Be(d+ex)^3-121ab^3Bde(d+ex)^2+15Ab^4d^3e+73Ab^4d^2e(d+ex)+15Ab^4e(d+ex)^3-55Ab^4de(d+ex)^2-24b^4Bd^4-40b^4Bd^3(d+ex)+88b^4Bd^2(d+ex)^2-24b^4Bd(d+ex)^3\right)}{192b^2(bd-ae)^3(-ae-b(d+ex)+bd)^4}+\frac{\left(-3aBe^4-5Abe^4+8bBde^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{5/2}(bd-ae)^3\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*Sqrt[d + e*x]*(-24*b^4*B*d^4 + 15*A*b^4*d^3*e + 81*
a*b^3*B*d^3*e - 45*a*A*b^3*d^2*e^2 - 99*a^2*b^2*B*d^2*e^2 + 45*a^2*A*b^2*d*
e^3 + 51*a^3*b*B*d*e^3 - 15*a^3*A*b*e^4 - 9*a^4*B*e^4 - 40*b^4*B*d^3*(d + e
*x) + 73*A*b^4*d^2*e*(d + e*x) + 47*a*b^3*B*d^2*e*(d + e*x) - 146*a*A*b^3*d
*e^2*(d + e*x) + 26*a^2*b^2*B*d*e^2*(d + e*x) + 73*a^2*A*b^2*e^3*(d + e*x)
- 33*a^3*b*B*e^3*(d + e*x) + 88*b^4*B*d^2*(d + e*x)^2 - 55*A*b^4*d*e*(d + e
*x)^2 - 121*a*b^3*B*d*e*(d + e*x)^2 + 55*a*A*b^3*e^2*(d + e*x)^2 + 33*a^2*b
^2*B*e^2*(d + e*x)^2 - 24*b^4*B*d*(d + e*x)^3 + 15*A*b^4*e*(d + e*x)^3 + 9*
a*b^3*B*e*(d + e*x)^3))/(192*b^2*(b*d - a*e)^3*(b*d - a*e - b*(d + e*x))^4)
 + ((8*b*B*d*e^3 - 5*A*b*e^4 - 3*a*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e
]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(5/2)*(b*d - a*e)^3*Sqrt[-(b*d) + a*e]
)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.49, size = 1841, normalized size = 5.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(3*(8*B*a^4*b*d*e^3 - (3*B*a^5 + 5*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (
3*B*a*b^4 + 5*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (3*B*a^2*b^3 + 5*A*a*b
^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (3*B*a^3*b^2 + 5*A*a^2*b^3)*e^4)*x^2
+ 4*(8*B*a^3*b^2*d*e^3 - (3*B*a^4*b + 5*A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b
*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x +
a)) - 2*(16*(B*a*b^5 + 3*A*b^6)*d^4 - 8*(7*B*a^2*b^4 + 23*A*a*b^5)*d^3*e +
2*(29*B*a^3*b^3 + 127*A*a^2*b^4)*d^2*e^2 - (27*B*a^4*b^2 + 133*A*a^3*b^3)*d
*e^3 + 3*(3*B*a^5*b + 5*A*a^4*b^2)*e^4 - 3*(8*B*b^6*d^2*e^2 - (11*B*a*b^5 +
 5*A*b^6)*d*e^3 + (3*B*a^2*b^4 + 5*A*a*b^5)*e^4)*x^3 + (16*B*b^6*d^3*e - 10
*(11*B*a*b^5 + A*b^6)*d^2*e^2 + (127*B*a^2*b^4 + 65*A*a*b^5)*d*e^3 - 11*(3*
B*a^3*b^3 + 5*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(29*B*a*b^5 - A*b^6)*
d^3*e + 4*(65*B*a^2*b^4 - 11*A*a*b^5)*d^2*e^2 - (125*B*a^3*b^3 - 109*A*a^2*
b^4)*d*e^3 + (33*B*a^4*b^2 - 73*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*
d^4 - 4*a^5*b^6*d^3*e + 6*a^6*b^5*d^2*e^2 - 4*a^7*b^4*d*e^3 + a^8*b^3*e^4 +
 (b^11*d^4 - 4*a*b^10*d^3*e + 6*a^2*b^9*d^2*e^2 - 4*a^3*b^8*d*e^3 + a^4*b^7
*e^4)*x^4 + 4*(a*b^10*d^4 - 4*a^2*b^9*d^3*e + 6*a^3*b^8*d^2*e^2 - 4*a^4*b^7
*d*e^3 + a^5*b^6*e^4)*x^3 + 6*(a^2*b^9*d^4 - 4*a^3*b^8*d^3*e + 6*a^4*b^7*d^
2*e^2 - 4*a^5*b^6*d*e^3 + a^6*b^5*e^4)*x^2 + 4*(a^3*b^8*d^4 - 4*a^4*b^7*d^3
*e + 6*a^5*b^6*d^2*e^2 - 4*a^6*b^5*d*e^3 + a^7*b^4*e^4)*x), 1/192*(3*(8*B*a
^4*b*d*e^3 - (3*B*a^5 + 5*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (3*B*a*b^4 + 5*A*
b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (3*B*a^2*b^3 + 5*A*a*b^4)*e^4)*x^3 + 6
*(8*B*a^2*b^3*d*e^3 - (3*B*a^3*b^2 + 5*A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2
*d*e^3 - (3*B*a^4*b + 5*A*a^3*b^2)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt
(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (16*(B*a*b^5 + 3*A*b^6)*d^4
 - 8*(7*B*a^2*b^4 + 23*A*a*b^5)*d^3*e + 2*(29*B*a^3*b^3 + 127*A*a^2*b^4)*d^
2*e^2 - (27*B*a^4*b^2 + 133*A*a^3*b^3)*d*e^3 + 3*(3*B*a^5*b + 5*A*a^4*b^2)*
e^4 - 3*(8*B*b^6*d^2*e^2 - (11*B*a*b^5 + 5*A*b^6)*d*e^3 + (3*B*a^2*b^4 + 5*
A*a*b^5)*e^4)*x^3 + (16*B*b^6*d^3*e - 10*(11*B*a*b^5 + A*b^6)*d^2*e^2 + (12
7*B*a^2*b^4 + 65*A*a*b^5)*d*e^3 - 11*(3*B*a^3*b^3 + 5*A*a^2*b^4)*e^4)*x^2 +
 (64*B*b^6*d^4 - 8*(29*B*a*b^5 - A*b^6)*d^3*e + 4*(65*B*a^2*b^4 - 11*A*a*b^
5)*d^2*e^2 - (125*B*a^3*b^3 - 109*A*a^2*b^4)*d*e^3 + (33*B*a^4*b^2 - 73*A*a
```

```
^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^4 - 4*a^5*b^6*d^3*e + 6*a^6*b^5*d
^2*e^2 - 4*a^7*b^4*d*e^3 + a^8*b^3*e^4 + (b^11*d^4 - 4*a*b^10*d^3*e + 6*a^2
*b^9*d^2*e^2 - 4*a^3*b^8*d*e^3 + a^4*b^7*e^4)*x^4 + 4*(a*b^10*d^4 - 4*a^2*b
^9*d^3*e + 6*a^3*b^8*d^2*e^2 - 4*a^4*b^7*d*e^3 + a^5*b^6*e^4)*x^3 + 6*(a^2*
b^9*d^4 - 4*a^3*b^8*d^3*e + 6*a^4*b^7*d^2*e^2 - 4*a^5*b^6*d*e^3 + a^6*b^5*e
^4)*x^2 + 4*(a^3*b^8*d^4 - 4*a^4*b^7*d^3*e + 6*a^5*b^6*d^2*e^2 - 4*a^6*b^5*
d*e^3 + a^7*b^4*e^4)*x)]
```

giac [B] time = 0.44, size = 787, normalized size = 2.19

$$\frac{\left(8Bbde^3-3Bae^4-5Abe^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{64\left(b^5d^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-3ab^4d^2e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+3a^2b^3de^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-a^3b^2e^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}+\frac{24(xe+d)^{\frac{7}{2}}Bb^4de^3-88(xe+d)^{\frac{5}{2}}Bb^4d^2e^3+40(xe+d)^{\frac{3}{2}}Bb^4d^3e^3+24\sqrt{xe+d}\,Bb^4d^4e^3-9(xe+d)^{\frac{7}{2}}Bab^3e^4-15(xe+d)^{\frac{7}{2}}Ab^4e^4+121(xe+d)^{\frac{5}{2}}Bab^3de^4+55(xe+d)^{\frac{5}{2}}Ab^4de^4-47(xe+d)^{\frac{3}{2}}Bab^3d^2e^4-73(xe+d)^{\frac{3}{2}}Ab^4d^2e^4-81\sqrt{xe+d}\,Bab^3d^3e^4-15\sqrt{xe+d}\,Ab^4d^3e^4-33(xe+d)^{\frac{5}{2}}Ba^2b^2e^5-55(xe+d)^{\frac{5}{2}}Aab^3e^5-26(xe+d)^{\frac{3}{2}}Ba^2b^2de^5+146(xe+d)^{\frac{3}{2}}Aab^3de^5+99\sqrt{xe+d}\,Ba^2b^2d^2e^5+45\sqrt{xe+d}\,Aab^3d^2e^5+33(xe+d)^{\frac{3}{2}}Ba^3be^6-73(xe+d)^{\frac{3}{2}}Aa^2b^2e^6-51\sqrt{xe+d}\,Ba^3bde^6-45\sqrt{xe+d}\,Aa^2b^2de^6+9\sqrt{xe+d}\,Ba^4e^7+15\sqrt{xe+d}\,Aa^3be^7}{192\left(b^5d^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-3ab^4d^2e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+3a^2b^3de^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-a^3b^2e^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\left((xe+d)b-bd+ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 1/64*(8*B*b*d*e^3 - 3*B*a*e^4 - 5*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^5*d^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^4*d^2*e*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b^3*d*e^2*sgn((x*e + d)*b*e - b*d
*e + a*e^2) - a^3*b^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d +
 a*b*e)) + 1/192*(24*(x*e + d)^(7/2)*B*b^4*d*e^3 - 88*(x*e + d)^(5/2)*B*b^4
*d^2*e^3 + 40*(x*e + d)^(3/2)*B*b^4*d^3*e^3 + 24*sqrt(x*e + d)*B*b^4*d^4*e^
3 - 9*(x*e + d)^(7/2)*B*a*b^3*e^4 - 15*(x*e + d)^(7/2)*A*b^4*e^4 + 121*(x*e
 + d)^(5/2)*B*a*b^3*d*e^4 + 55*(x*e + d)^(5/2)*A*b^4*d*e^4 - 47*(x*e + d)^(
3/2)*B*a*b^3*d^2*e^4 - 73*(x*e + d)^(3/2)*A*b^4*d^2*e^4 - 81*sqrt(x*e + d)*
B*a*b^3*d^3*e^4 - 15*sqrt(x*e + d)*A*b^4*d^3*e^4 - 33*(x*e + d)^(5/2)*B*a^2
*b^2*e^5 - 55*(x*e + d)^(5/2)*A*a*b^3*e^5 - 26*(x*e + d)^(3/2)*B*a^2*b^2*d*
e^5 + 146*(x*e + d)^(3/2)*A*a*b^3*d*e^5 + 99*sqrt(x*e + d)*B*a^2*b^2*d^2*e^
5 + 45*sqrt(x*e + d)*A*a*b^3*d^2*e^5 + 33*(x*e + d)^(3/2)*B*a^3*b*e^6 - 73*
(x*e + d)^(3/2)*A*a^2*b^2*e^6 - 51*sqrt(x*e + d)*B*a^3*b*d*e^6 - 45*sqrt(x*
e + d)*A*a^2*b^2*d*e^6 + 9*sqrt(x*e + d)*B*a^4*e^7 + 15*sqrt(x*e + d)*A*a^3
*b*e^7)/((b^5*d^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^4*d^2*e*sgn((x
*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b^3*d*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2) - a^3*b^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d
 + a*e)^4)
```

maple [B] time = 0.08, size = 1296, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(b*x+a)/e*(73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+9*B*a*b
^4*e^5*x^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9*B*a^5*e^5*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-24*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*
b^4*d^4+15*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-40*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+15*A*b^5*e^5*x^4*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e-24*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d+88*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2
)*B*b^4*d^2-9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4+45*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3-45*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*
a*b^3*d^2*e^2+51*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3-99*((a*e-b
*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+81*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*B*a*b^3*d^3*e-146*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d*e^2+26
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2+47*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(3/2)*B*a*b^3*d^2*e-96*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-144*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)-121*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-96*B*a*b^4*d*e^
4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-15*((a*e-b*d)*b)^(1/2)*(e
```

```
*x+d)^(1/2)*A*a^3*b*e^4+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^4*d^3*e+60
*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+33*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+36*B*a^4*b*e^5*x*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)+90*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)+54*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)-33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-24*B*a^4*b*d*e^4*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*
A*b^4*d^2*e+55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3*e^2-55*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-24*B*b^5*d*e^4*x^4*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)+60*A*a*b^4*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^
(1/2)*b)+36*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/((a*e-b*d)*b)^(1/2)/b^2/(a*e-
b*d)/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
[Out] integrate((B*x + A)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1660 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$-\frac{5e^2\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{5e\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{96b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-7Abe+8}{24b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.35, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{5e^3(a+bx)(-aBe-7Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}+\frac{5e\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{96b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{24b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{\sqrt{d+ex}\,(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-5*e^2*(8*b*B*d - 7*A*b*e - a*B*e)*Sqrt[d + e*x])/(64*b*(b*d - a*e)^4*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*Sqrt[d + e*x])/(4*b*(b*d - a*e)*(
a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d - 7*A*b*e - a*B*e)*Sq
rt[d + e*x])/(24*b*(b*d - a*e)^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (5*e*(8*b*B*d - 7*A*b*e - a*B*e)*Sqrt[d + e*x])/(96*b*(b*d - a*e)^3*(a +
 b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^3*(8*b*B*d - 7*A*b*e - a*B*e)*(
a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(3/2)*(b*d
 - a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-7Abe-aBe)\right)\left(\right.}{8(bd-ae)\sqrt{a}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-7Abe-aB}{24b(bd-ae)^2(a+bx)^2\sqrt{a}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-7Abe-aB}{24b(bd-ae)^2(a+bx)^2\sqrt{a}}$$

$$= -\frac{5e^2(8bBd-7Abe-aBe)\sqrt{d+ex}}{64b(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{5e^2(8bBd-7Abe-aBe)\sqrt{d+ex}}{64b(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{5e^2(8bBd-7Abe-aBe)\sqrt{d+ex}}{64b(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

Mathematica [C] time = 0.08, size = 114, normalized size = 0.32

$$\frac{\sqrt{d+ex}\left(-\frac{e^3(a+bx)^4(aBe+7Abe-8bBd)\,{}_2F_1\left(\frac{1}{2},4;\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+aB-Ab\right)}{4b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[d + e*x]*(-(A*b) + a*B - (e^3*(-8*b*B*d + 7*A*b*e + a*B*e)*(a + b*x)^
4*Hypergeometric2F1[1/2, 4, 3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)
)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 59.75, size = 511, normalized size = 1.42

$$\frac{(-ae-bex)\left(\frac{e^3\sqrt{d+ex}\left(15a^4Be^4-279a^3Abe^4-73a^3bBe^3(d+ex)+219a^3bBde^3-511a^2Ab^2e^3(d+ex)+837a^2Ab^2de^3-747a^2b^2Bd^2e^2-55a^2b^2Be^2(d+ex)^2+730a^2b^2Bde^2(d+ex)-837aAb^3d^2e^2-385aAb^3e^2(d+ex)^2+1022aAb^3de^2(d+ex)+777ab^3Bd^3e-1241ab^3Bd^2e(d+ex)-15ab^3Be(d+ex)^3+495ab^3Bde(d+ex)^2+279Ab^4d^3e-511Ab^4d^2e(d+ex)-105Ab^4e(d+ex)^3+385Ab^4de(d+ex)^2-264b^4Bd^4+584b^4Bd^3(d+ex)-440b^4Bd^2(d+ex)^2+120b^4Bd(d+ex)^3\right)}{192b(bd-ae)^4(-ae-b(d+ex)+bd)^4}-\frac{5\left(-aBe^4-7Abe^4+8bBde^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{3/2}(bd-ae)^4\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*Sqrt[d + e*x]*(-264*b^4*B*d^4 + 279*A*b^4*d^3*e + 7
77*a*b^3*B*d^3*e - 837*a*A*b^3*d^2*e^2 - 747*a^2*b^2*B*d^2*e^2 + 837*a^2*A*
b^2*d*e^3 + 219*a^3*b*B*d*e^3 - 279*a^3*A*b*e^4 + 15*a^4*B*e^4 + 584*b^4*B*
d^3*(d + e*x) - 511*A*b^4*d^2*e*(d + e*x) - 1241*a*b^3*B*d^2*e*(d + e*x) +
1022*a*A*b^3*d*e^2*(d + e*x) + 730*a^2*b^2*B*d*e^2*(d + e*x) - 511*a^2*A*b^
2*e^3*(d + e*x) - 73*a^3*b*B*e^3*(d + e*x) - 440*b^4*B*d^2*(d + e*x)^2 + 38
5*A*b^4*d*e*(d + e*x)^2 + 495*a*b^3*B*d*e*(d + e*x)^2 - 385*a*A*b^3*e^2*(d
+ e*x)^2 - 55*a^2*b^2*B*e^2*(d + e*x)^2 + 120*b^4*B*d*(d + e*x)^3 - 105*A*b
^4*e*(d + e*x)^3 - 15*a*b^3*B*e*(d + e*x)^3))/(192*b*(b*d - a*e)^4*(b*d - a
*e - b*(d + e*x))^4) - (5*(8*b*B*d*e^3 - 7*A*b*e^4 - a*B*e^4)*ArcTan[(Sqrt[
b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(3/2)*(b*d - a*e)^
4*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.49, size = 1980, normalized size = 5.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(15*(8*B*a^4*b*d*e^3 - (B*a^5 + 7*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (
B*a*b^4 + 7*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (B*a^2*b^3 + 7*A*a*b^4)*
e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (B*a^3*b^2 + 7*A*a^2*b^3)*e^4)*x^2 + 4*(8
*B*a^3*b^2*d*e^3 - (B*a^4*b + 7*A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b*e)*log(
(b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*
(16*(B*a*b^5 + 3*A*b^6)*d^4 - 8*(11*B*a^2*b^4 + 31*A*a*b^5)*d^3*e + 2*(109*
B*a^3*b^3 + 263*A*a^2*b^4)*d^2*e^2 - (131*B*a^4*b^2 + 605*A*a^3*b^3)*d*e^3
- 3*(5*B*a^5*b - 93*A*a^4*b^2)*e^4 + 15*(8*B*b^6*d^2*e^2 - (9*B*a*b^5 + 7*A
*b^6)*d*e^3 + (B*a^2*b^4 + 7*A*a*b^5)*e^4)*x^3 - 5*(16*B*b^6*d^3*e - 2*(53*
B*a*b^5 + 7*A*b^6)*d^2*e^2 + (101*B*a^2*b^4 + 91*A*a*b^5)*d*e^3 - 11*(B*a^3
*b^3 + 7*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(45*B*a*b^5 + 7*A*b^6)*d^3
*e + 4*(229*B*a^2*b^4 + 77*A*a*b^5)*d^2*e^2 - 7*(99*B*a^3*b^3 + 109*A*a^2*b
^4)*d*e^3 + 73*(B*a^4*b^2 + 7*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^
5 - 5*a^5*b^6*d^4*e + 10*a^6*b^5*d^3*e^2 - 10*a^7*b^4*d^2*e^3 + 5*a^8*b^3*d
*e^4 - a^9*b^2*e^5 + (b^11*d^5 - 5*a*b^10*d^4*e + 10*a^2*b^9*d^3*e^2 - 10*a
^3*b^8*d^2*e^3 + 5*a^4*b^7*d*e^4 - a^5*b^6*e^5)*x^4 + 4*(a*b^10*d^5 - 5*a^2
*b^9*d^4*e + 10*a^3*b^8*d^3*e^2 - 10*a^4*b^7*d^2*e^3 + 5*a^5*b^6*d*e^4 - a^
6*b^5*e^5)*x^3 + 6*(a^2*b^9*d^5 - 5*a^3*b^8*d^4*e + 10*a^4*b^7*d^3*e^2 - 10
*a^5*b^6*d^2*e^3 + 5*a^6*b^5*d*e^4 - a^7*b^4*e^5)*x^2 + 4*(a^3*b^8*d^5 - 5*
a^4*b^7*d^4*e + 10*a^5*b^6*d^3*e^2 - 10*a^6*b^5*d^2*e^3 + 5*a^7*b^4*d*e^4 -
 a^8*b^3*e^5)*x), -1/192*(15*(8*B*a^4*b*d*e^3 - (B*a^5 + 7*A*a^4*b)*e^4 + (
8*B*b^5*d*e^3 - (B*a*b^4 + 7*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (B*a^2*
b^3 + 7*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (B*a^3*b^2 + 7*A*a^2*b^3
)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (B*a^4*b + 7*A*a^3*b^2)*e^4)*x)*sqrt(-b
^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (1
6*(B*a*b^5 + 3*A*b^6)*d^4 - 8*(11*B*a^2*b^4 + 31*A*a*b^5)*d^3*e + 2*(109*B*
a^3*b^3 + 263*A*a^2*b^4)*d^2*e^2 - (131*B*a^4*b^2 + 605*A*a^3*b^3)*d*e^3 -
3*(5*B*a^5*b - 93*A*a^4*b^2)*e^4 + 15*(8*B*b^6*d^2*e^2 - (9*B*a*b^5 + 7*A*b
^6)*d*e^3 + (B*a^2*b^4 + 7*A*a*b^5)*e^4)*x^3 - 5*(16*B*b^6*d^3*e - 2*(53*B*
a*b^5 + 7*A*b^6)*d^2*e^2 + (101*B*a^2*b^4 + 91*A*a*b^5)*d*e^3 - 11*(B*a^3*b
^3 + 7*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(45*B*a*b^5 + 7*A*b^6)*d^3*e
 + 4*(229*B*a^2*b^4 + 77*A*a*b^5)*d^2*e^2 - 7*(99*B*a^3*b^3 + 109*A*a^2*b^4
)*d*e^3 + 73*(B*a^4*b^2 + 7*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^5
- 5*a^5*b^6*d^4*e + 10*a^6*b^5*d^3*e^2 - 10*a^7*b^4*d^2*e^3 + 5*a^8*b^3*d*e
^4 - a^9*b^2*e^5 + (b^11*d^5 - 5*a*b^10*d^4*e + 10*a^2*b^9*d^3*e^2 - 10*a^3
*b^8*d^2*e^3 + 5*a^4*b^7*d*e^4 - a^5*b^6*e^5)*x^4 + 4*(a*b^10*d^5 - 5*a^2*b
^9*d^4*e + 10*a^3*b^8*d^3*e^2 - 10*a^4*b^7*d^2*e^3 + 5*a^5*b^6*d*e^4 - a^6*
b^5*e^5)*x^3 + 6*(a^2*b^9*d^5 - 5*a^3*b^8*d^4*e + 10*a^4*b^7*d^3*e^2 - 10*a
^5*b^6*d^2*e^3 + 5*a^6*b^5*d*e^4 - a^7*b^4*e^5)*x^2 + 4*(a^3*b^8*d^5 - 5*a^
```

```
4*b^7*d^4*e + 10*a^5*b^6*d^3*e^2 - 10*a^6*b^5*d^2*e^3 + 5*a^7*b^4*d*e^4 - a
^8*b^3*e^5)*x)]
```

giac [B] time = 0.41, size = 851, normalized size = 2.37

$$-\frac{5\left(8 Bbde^3 - Bae^4 - 7Abe^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{64\left(b^5d^4\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) - 4ab^4d^3e\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) + 6a^2b^3d^2e^2\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) - 4a^3b^2de^3\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) + a^4be^4\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}} - \frac{120(xe+d)^{7/2}Bb^4de^3 - 440(xe+d)^{5/2}Bb^4d^2e^3 + 584(xe+d)^{3/2}Bb^4d^3e^3 - 264\sqrt{xe+d}\,Bb^4d^4e^3 - 15(xe+d)^{7/2}Bab^3e^4 - 105(xe+d)^{7/2}Ab^4e^4 + 495(xe+d)^{5/2}Bab^3de^4 + 385(xe+d)^{5/2}Ab^4de^4 - 1241(xe+d)^{3/2}Bab^3d^2e^4 - 511(xe+d)^{3/2}Ab^4d^2e^4 + 777\sqrt{xe+d}\,Bab^3d^3e^4 + 279\sqrt{xe+d}\,Ab^4d^3e^4 - 55(xe+d)^{5/2}Ba^2b^2e^5 - 385(xe+d)^{5/2}Aab^3e^5 + 730(xe+d)^{3/2}Ba^2b^2de^5 + 1022(xe+d)^{3/2}Aab^3de^5 - 747\sqrt{xe+d}\,Ba^2b^2d^2e^5 - 837\sqrt{xe+d}\,Aab^3d^2e^5 - 73(xe+d)^{3/2}Ba^3be^6 - 511(xe+d)^{3/2}Aa^2b^2e^6 + 219\sqrt{xe+d}\,Ba^3bde^6 + 837\sqrt{xe+d}\,Aa^2b^2de^6 + 15\sqrt{xe+d}\,Ba^4e^7 - 279\sqrt{xe+d}\,Aa^3be^7}{192\left(b^5d^4\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) - 4ab^4d^3e\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) + 6a^2b^3d^2e^2\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) - 4a^3b^2de^3\operatorname{sgn}\left((xe+d)be-bde+ae^2\right) + a^4be^4\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)\right)\left((xe+d)b-bd+ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -5/64*(8*B*b*d*e^3 - B*a*e^4 - 7*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*
d + a*b*e))/((b^5*d^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^4*d^3*e*sg
n((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^3*d^2*e^2*sgn((x*e + d)*b*e - b*
d*e + a*e^2) - 4*a^3*b^2*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*b*e
^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/192*(120*(
x*e + d)^(7/2)*B*b^4*d*e^3 - 440*(x*e + d)^(5/2)*B*b^4*d^2*e^3 + 584*(x*e +
 d)^(3/2)*B*b^4*d^3*e^3 - 264*sqrt(x*e + d)*B*b^4*d^4*e^3 - 15*(x*e + d)^(7
/2)*B*a*b^3*e^4 - 105*(x*e + d)^(7/2)*A*b^4*e^4 + 495*(x*e + d)^(5/2)*B*a*b
^3*d*e^4 + 385*(x*e + d)^(5/2)*A*b^4*d*e^4 - 1241*(x*e + d)^(3/2)*B*a*b^3*d
^2*e^4 - 511*(x*e + d)^(3/2)*A*b^4*d^2*e^4 + 777*sqrt(x*e + d)*B*a*b^3*d^3*
e^4 + 279*sqrt(x*e + d)*A*b^4*d^3*e^4 - 55*(x*e + d)^(5/2)*B*a^2*b^2*e^5 -
385*(x*e + d)^(5/2)*A*a*b^3*e^5 + 730*(x*e + d)^(3/2)*B*a^2*b^2*d*e^5 + 102
2*(x*e + d)^(3/2)*A*a*b^3*d*e^5 - 747*sqrt(x*e + d)*B*a^2*b^2*d^2*e^5 - 837
*sqrt(x*e + d)*A*a*b^3*d^2*e^5 - 73*(x*e + d)^(3/2)*B*a^3*b*e^6 - 511*(x*e
+ d)^(3/2)*A*a^2*b^2*e^6 + 219*sqrt(x*e + d)*B*a^3*b*d*e^6 + 837*sqrt(x*e +
 d)*A*a^2*b^2*d*e^6 + 15*sqrt(x*e + d)*B*a^4*e^7 - 279*sqrt(x*e + d)*A*a^3*
b*e^7)/((b^5*d^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^4*d^3*e*sgn((x*
e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^3*d^2*e^2*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) - 4*a^3*b^2*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*b*e^4*sg
n((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.08, size = 1296, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 1/192*(511*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+15*B*a*b^4*e^5*x
^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*B*a^5*e^5*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)+264*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^4*d^
4+105*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-584*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+105*A*b^5*e^5*x^4*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+105*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e-120*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d+440*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2
)*B*b^4*d^2-15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4-837*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3+837*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*A*a*b^3*d^2*e^2-219*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3+747*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2-777*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*B*a*b^3*d^3*e-1022*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d
*e^2-730*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2+1241*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-480*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)-720*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)-495*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-480*
B*a*b^4*d*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+279*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(1/2)*A*a^3*b*e^4-279*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*
A*b^4*d^3*e+420*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
+55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+60*B*a^4*b*e^5*x*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+630*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^
```

```
(1/2)/((a*e-b*d)*b)^(1/2)*b)+90*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)+73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-120*B*a
^4*b*d*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+511*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(3/2)*A*b^4*d^2*e+385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3
*e^2-385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-120*B*b^5*d*e^4*x^4*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+420*A*a*b^4*e^5*x^3*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+60*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/e*(b*x
+a)/((a*e-b*d)*b)^(1/2)/b/(a*e-b*d)^2/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((b*x+a)^
2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{d + e\,x}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1661 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=424

$$-\frac{35e^3(a+bx)(aBe-9Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^5}+\frac{35e^3(a+bx)(aBe-9Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{11/2}}-\frac{3\cdots}{192b\sqrt{a^2\cdots}}$$

Rubi [A] time = 0.44, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{35e^3(a+bx)(aBe-9Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^5}-\frac{35e^2(aBe-9Abe+8bBd)}{192b\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^4}+\frac{35e^3(a+bx)(aBe-9Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{11/2}}+\frac{7e(aBe-9Abe+8bBd)}{96b(a+bx)\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^3}-\frac{aBe-9Abe+8bBd}{24b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{Ab-aB}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-35*e^2*(8*b*B*d - 9*A*b*e + a*B*e))/(192*b*(b*d - a*e)^4*Sqrt[d + e*x]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqr
t[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (8*b*B*d - 9*A*b*e + a*B*e)/(24
*b*(b*d - a*e)^2*(a + b*x)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (7*e*(8*b*B*d - 9*A*b*e + a*B*e))/(96*b*(b*d - a*e)^3*(a + b*x)*Sqrt[d + e
*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^3*(8*b*B*d - 9*A*b*e + a*B*e)*(a
 + b*x))/(64*b*(b*d - a*e)^5*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (35*e^3*(8*b*B*d - 9*A*b*e + a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*
x])/Sqrt[b*d - a*e]])/(64*Sqrt[b]*(b*d - a*e)^(11/2)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-9Abe\ \cdots\right.}{8(bd\ \cdots}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{8b\cdots}{24b(bd-ae)^2(a+\cdots}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{8b\cdots}{24b(bd-ae)^2(a+\cdots}$$

$$= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab\cdots}{4b(bd-ae)(a+bx)^3\sqrt{d\cdots}}$$

$$= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab\cdots}{4b(bd-ae)(a+bx)^3\sqrt{d\cdots}}$$

$$= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab\cdots}{4b(bd-ae)(a+bx)^3\sqrt{d\cdots}}$$

$$= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab\cdots}{4b(bd-ae)(a+bx)^3\sqrt{d\cdots}}$$

Mathematica [C] time = 0.09, size = 114, normalized size = 0.27

$$\frac{\frac{e^3(a+bx)^4(-aBe+9Abe-8bBd)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+aB-Ab}{4b(a+bx)^3\sqrt{(a+bx)^2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-(A*b) + a*B + (e^3*(-8*b*B*d + 9*A*b*e - a*B*e)*(a + b*x)^4*Hypergeometri
c2F1[-1/2, 4, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)/(4*b*(b*d - a
*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 63.85, size = 682, normalized size = 1.61

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/192*(e^3*(-384*b^4*B*d^5 + 384*A*b^4*d^4*e + 1536*a*b
^3*B*d^4*e - 1536*a*A*b^3*d^3*e^2 - 2304*a^2*b^2*B*d^3*e^2 + 2304*a^2*A*b^2
*d^2*e^3 + 1536*a^3*b*B*d^2*e^3 - 1536*a^3*A*b*d*e^4 - 384*a^4*B*d*e^4 + 38
4*a^4*A*e^5 + 2232*b^4*B*d^4*(d + e*x) - 2511*A*b^4*d^3*e*(d + e*x) - 6417*
a*b^3*B*d^3*e*(d + e*x) + 7533*a*A*b^3*d^2*e^2*(d + e*x) + 5859*a^2*b^2*B*d
^2*e^2*(d + e*x) - 7533*a^2*A*b^2*d*e^3*(d + e*x) - 1395*a^3*b*B*d*e^3*(d +
 e*x) + 2511*a^3*A*b*e^4*(d + e*x) - 279*a^4*B*e^4*(d + e*x) - 4088*b^4*B*d
^3*(d + e*x)^2 + 4599*A*b^4*d^2*e*(d + e*x)^2 + 7665*a*b^3*B*d^2*e*(d + e*x
)^2 - 9198*a*A*b^3*d*e^2*(d + e*x)^2 - 3066*a^2*b^2*B*d*e^2*(d + e*x)^2 + 4
599*a^2*A*b^2*e^3*(d + e*x)^2 - 511*a^3*b*B*e^3*(d + e*x)^2 + 3080*b^4*B*d^
2*(d + e*x)^3 - 3465*A*b^4*d*e*(d + e*x)^3 - 2695*a*b^3*B*d*e*(d + e*x)^3 +
 3465*a*A*b^3*e^2*(d + e*x)^3 - 385*a^2*b^2*B*e^2*(d + e*x)^3 - 840*b^4*B*d
*(d + e*x)^4 + 945*A*b^4*e*(d + e*x)^4 - 105*a*b^3*B*e*(d + e*x)^4))/((b*d
- a*e)^5*Sqrt[d + e*x]*(b*d - a*e - b*(d + e*x))^4) - (35*(8*b*B*d*e^3 - 9*
A*b*e^4 + a*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d -
 a*e)])/(64*Sqrt[b]*(b*d - a*e)^5*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*
x)^2/e^2])
```

fricas [B] time = 0.50, size = 2968, normalized size = 7.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(105*(8*B*a^4*b*d^2*e^3 + (B*a^5 - 9*A*a^4*b)*d*e^4 + (8*B*b^5*d*e^4
 + (B*a*b^4 - 9*A*b^5)*e^5)*x^5 + (8*B*b^5*d^2*e^3 + 3*(11*B*a*b^4 - 3*A*b^
5)*d*e^4 + 4*(B*a^2*b^3 - 9*A*a*b^4)*e^5)*x^4 + 2*(16*B*a*b^4*d^2*e^3 + 2*(
13*B*a^2*b^3 - 9*A*a*b^4)*d*e^4 + 3*(B*a^3*b^2 - 9*A*a^2*b^3)*e^5)*x^3 + 2*
(24*B*a^2*b^3*d^2*e^3 + (19*B*a^3*b^2 - 27*A*a^2*b^3)*d*e^4 + 2*(B*a^4*b -
9*A*a^3*b^2)*e^5)*x^2 + (32*B*a^3*b^2*d^2*e^3 + 12*(B*a^4*b - 3*A*a^3*b^2)*
d*e^4 + (B*a^5 - 9*A*a^4*b)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d
- a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(384*A*a^5*b*e^
5 + 16*(B*a*b^5 + 3*A*b^6)*d^5 - 24*(5*B*a^2*b^4 + 13*A*a*b^5)*d^4*e + 6*(7
9*B*a^3*b^3 + 149*A*a^2*b^4)*d^3*e^2 + (293*B*a^4*b^2 - 1605*A*a^3*b^3)*d^2
*e^3 - 3*(221*B*a^5*b - 197*A*a^4*b^2)*d*e^4 + 105*(8*B*b^6*d^2*e^3 - (7*B*
a*b^5 + 9*A*b^6)*d*e^4 - (B*a^2*b^4 - 9*A*a*b^5)*e^5)*x^4 + 35*(8*B*b^6*d^3
*e^2 + 9*(9*B*a*b^5 - A*b^6)*d^2*e^3 - 6*(13*B*a^2*b^4 + 15*A*a*b^5)*d*e^4
- 11*(B*a^3*b^3 - 9*A*a^2*b^4)*e^5)*x^3 - 7*(16*B*b^6*d^4*e - 2*(83*B*a*b^5
 + 9*A*b^6)*d^3*e^2 - 3*(151*B*a^2*b^4 - 63*A*a*b^5)*d^2*e^3 + 2*(265*B*a^3
*b^3 + 243*A*a^2*b^4)*d*e^4 + 73*(B*a^4*b^2 - 9*A*a^3*b^3)*e^5)*x^2 + (64*B
*b^6*d^5 - 8*(59*B*a*b^5 + 9*A*b^6)*d^4*e + 108*(17*B*a^2*b^4 + 5*A*a*b^5)*
d^3*e^2 + (989*B*a^3*b^3 - 2133*A*a^2*b^4)*d^2*e^3 - 2*(1069*B*a^4*b^2 + 42
3*A*a^3*b^3)*d*e^4 - 279*(B*a^5*b - 9*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(a^
4*b^7*d^7 - 6*a^5*b^6*d^6*e + 15*a^6*b^5*d^5*e^2 - 20*a^7*b^4*d^4*e^3 + 15*
a^8*b^3*d^3*e^4 - 6*a^9*b^2*d^2*e^5 + a^10*b*d*e^6 + (b^11*d^6*e - 6*a*b^10
*d^5*e^2 + 15*a^2*b^9*d^4*e^3 - 20*a^3*b^8*d^3*e^4 + 15*a^4*b^7*d^2*e^5 - 6
*a^5*b^6*d*e^6 + a^6*b^5*e^7)*x^5 + (b^11*d^7 - 2*a*b^10*d^6*e - 9*a^2*b^9*
d^5*e^2 + 40*a^3*b^8*d^4*e^3 - 65*a^4*b^7*d^3*e^4 + 54*a^5*b^6*d^2*e^5 - 23
*a^6*b^5*d*e^6 + 4*a^7*b^4*e^7)*x^4 + 2*(2*a*b^10*d^7 - 9*a^2*b^9*d^6*e + 1
2*a^3*b^8*d^5*e^2 + 5*a^4*b^7*d^4*e^3 - 30*a^5*b^6*d^3*e^4 + 33*a^6*b^5*d^2
*e^5 - 16*a^7*b^4*d*e^6 + 3*a^8*b^3*e^7)*x^3 + 2*(3*a^2*b^9*d^7 - 16*a^3*b^
8*d^6*e + 33*a^4*b^7*d^5*e^2 - 30*a^5*b^6*d^4*e^3 + 5*a^6*b^5*d^3*e^4 + 12*
a^7*b^4*d^2*e^5 - 9*a^8*b^3*d*e^6 + 2*a^9*b^2*e^7)*x^2 + (4*a^3*b^8*d^7 - 2
3*a^4*b^7*d^6*e + 54*a^5*b^6*d^5*e^2 - 65*a^6*b^5*d^4*e^3 + 40*a^7*b^4*d^3*
e^4 - 9*a^8*b^3*d^2*e^5 - 2*a^9*b^2*d*e^6 + a^10*b*e^7)*x), -1/192*(105*(8*
B*a^4*b*d^2*e^3 + (B*a^5 - 9*A*a^4*b)*d*e^4 + (8*B*b^5*d*e^4 + (B*a*b^4 - 9
```

```
*A*b^5)*e^5)*x^5 + (8*B*b^5*d^2*e^3 + 3*(11*B*a*b^4 - 3*A*b^5)*d*e^4 + 4*(B
*a^2*b^3 - 9*A*a*b^4)*e^5)*x^4 + 2*(16*B*a*b^4*d^2*e^3 + 2*(13*B*a^2*b^3 -
9*A*a*b^4)*d*e^4 + 3*(B*a^3*b^2 - 9*A*a^2*b^3)*e^5)*x^3 + 2*(24*B*a^2*b^3*d
^2*e^3 + (19*B*a^3*b^2 - 27*A*a^2*b^3)*d*e^4 + 2*(B*a^4*b - 9*A*a^3*b^2)*e^
5)*x^2 + (32*B*a^3*b^2*d^2*e^3 + 12*(B*a^4*b - 3*A*a^3*b^2)*d*e^4 + (B*a^5
- 9*A*a^4*b)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(
e*x + d)/(b*e*x + b*d)) + (384*A*a^5*b*e^5 + 16*(B*a*b^5 + 3*A*b^6)*d^5 - 2
4*(5*B*a^2*b^4 + 13*A*a*b^5)*d^4*e + 6*(79*B*a^3*b^3 + 149*A*a^2*b^4)*d^3*e
^2 + (293*B*a^4*b^2 - 1605*A*a^3*b^3)*d^2*e^3 - 3*(221*B*a^5*b - 197*A*a^4*
b^2)*d*e^4 + 105*(8*B*b^6*d^2*e^3 - (7*B*a*b^5 + 9*A*b^6)*d*e^4 - (B*a^2*b^
4 - 9*A*a*b^5)*e^5)*x^4 + 35*(8*B*b^6*d^3*e^2 + 9*(9*B*a*b^5 - A*b^6)*d^2*e
^3 - 6*(13*B*a^2*b^4 + 15*A*a*b^5)*d*e^4 - 11*(B*a^3*b^3 - 9*A*a^2*b^4)*e^5
)*x^3 - 7*(16*B*b^6*d^4*e - 2*(83*B*a*b^5 + 9*A*b^6)*d^3*e^2 - 3*(151*B*a^2
*b^4 - 63*A*a*b^5)*d^2*e^3 + 2*(265*B*a^3*b^3 + 243*A*a^2*b^4)*d*e^4 + 73*(
B*a^4*b^2 - 9*A*a^3*b^3)*e^5)*x^2 + (64*B*b^6*d^5 - 8*(59*B*a*b^5 + 9*A*b^6
)*d^4*e + 108*(17*B*a^2*b^4 + 5*A*a*b^5)*d^3*e^2 + (989*B*a^3*b^3 - 2133*A*
a^2*b^4)*d^2*e^3 - 2*(1069*B*a^4*b^2 + 423*A*a^3*b^3)*d*e^4 - 279*(B*a^5*b
- 9*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(a^4*b^7*d^7 - 6*a^5*b^6*d^6*e + 15*a
^6*b^5*d^5*e^2 - 20*a^7*b^4*d^4*e^3 + 15*a^8*b^3*d^3*e^4 - 6*a^9*b^2*d^2*e^
5 + a^10*b*d*e^6 + (b^11*d^6*e - 6*a*b^10*d^5*e^2 + 15*a^2*b^9*d^4*e^3 - 20
*a^3*b^8*d^3*e^4 + 15*a^4*b^7*d^2*e^5 - 6*a^5*b^6*d*e^6 + a^6*b^5*e^7)*x^5
+ (b^11*d^7 - 2*a*b^10*d^6*e - 9*a^2*b^9*d^5*e^2 + 40*a^3*b^8*d^4*e^3 - 65*
a^4*b^7*d^3*e^4 + 54*a^5*b^6*d^2*e^5 - 23*a^6*b^5*d*e^6 + 4*a^7*b^4*e^7)*x^
4 + 2*(2*a*b^10*d^7 - 9*a^2*b^9*d^6*e + 12*a^3*b^8*d^5*e^2 + 5*a^4*b^7*d^4*
e^3 - 30*a^5*b^6*d^3*e^4 + 33*a^6*b^5*d^2*e^5 - 16*a^7*b^4*d*e^6 + 3*a^8*b^
3*e^7)*x^3 + 2*(3*a^2*b^9*d^7 - 16*a^3*b^8*d^6*e + 33*a^4*b^7*d^5*e^2 - 30*
a^5*b^6*d^4*e^3 + 5*a^6*b^5*d^3*e^4 + 12*a^7*b^4*d^2*e^5 - 9*a^8*b^3*d*e^6
+ 2*a^9*b^2*e^7)*x^2 + (4*a^3*b^8*d^7 - 23*a^4*b^7*d^6*e + 54*a^5*b^6*d^5*e
^2 - 65*a^6*b^5*d^4*e^3 + 40*a^7*b^4*d^3*e^4 - 9*a^8*b^3*d^2*e^5 - 2*a^9*b^
2*d*e^6 + a^10*b*e^7)*x)]
```

giac [B] time = 0.63, size = 1132, normalized size = 2.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -35/64*(8*B*b*d*e^3 + B*a*e^4 - 9*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^5*d^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b*e -
b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*
a^4*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)*b*e
- b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 2*(B*d*e^3 - A*e^4)/((b^5*d^5*sgn
((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^
2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^4*sgn((x*e + d)*
b*e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(x*e
 + d)) - 1/192*(456*(x*e + d)^(7/2)*B*b^4*d*e^3 - 1544*(x*e + d)^(5/2)*B*b^
4*d^2*e^3 + 1784*(x*e + d)^(3/2)*B*b^4*d^3*e^3 - 696*sqrt(x*e + d)*B*b^4*d^
4*e^3 + 105*(x*e + d)^(7/2)*B*a*b^3*e^4 - 561*(x*e + d)^(7/2)*A*b^4*e^4 + 1
159*(x*e + d)^(5/2)*B*a*b^3*d*e^4 + 1929*(x*e + d)^(5/2)*A*b^4*d*e^4 - 3057
*(x*e + d)^(3/2)*B*a*b^3*d^2*e^4 - 2295*(x*e + d)^(3/2)*A*b^4*d^2*e^4 + 180
9*sqrt(x*e + d)*B*a*b^3*d^3*e^4 + 975*sqrt(x*e + d)*A*b^4*d^3*e^4 + 385*(x*
e + d)^(5/2)*B*a^2*b^2*e^5 - 1929*(x*e + d)^(5/2)*A*a*b^3*e^5 + 762*(x*e +
d)^(3/2)*B*a^2*b^2*d*e^5 + 4590*(x*e + d)^(3/2)*A*a*b^3*d*e^5 - 1251*sqrt(x
*e + d)*B*a^2*b^2*d^2*e^5 - 2925*sqrt(x*e + d)*A*a*b^3*d^2*e^5 + 511*(x*e +
 d)^(3/2)*B*a^3*b*e^6 - 2295*(x*e + d)^(3/2)*A*a^2*b^2*e^6 - 141*sqrt(x*e +
 d)*B*a^3*b*d*e^6 + 2925*sqrt(x*e + d)*A*a^2*b^2*d*e^6 + 279*sqrt(x*e + d)*
```

```
B*a^4*e^7 - 975*sqrt(x*e + d)*A*a^3*b*e^7)/((b^5*d^5*sgn((x*e + d)*b*e - b*
d*e + a*e^2) - 5*a*b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^
3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^3*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2
) - a^5*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4
)
```

maple [B] time = 0.12, size = 1493, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^4
*b*e^4-48*((a*e-b*d)*b)^(1/2)*A*b^4*d^4-663*((a*e-b*d)*b)^(1/2)*B*a^4*d*e^3
-3360*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*a*b^4
*d*e^3-5040*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2
*a^2*b^3*d*e^3-3360*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(
1/2)*x*a^3*b^2*d*e^3+384*((a*e-b*d)*b)^(1/2)*A*a^4*e^4+945*((a*e-b*d)*b)^(1
/2)*A*b^4*e^4*x^4-279*((a*e-b*d)*b)^(1/2)*B*a^4*e^4*x-64*((a*e-b*d)*b)^(1/2
)*B*b^4*d^4*x-16*((a*e-b*d)*b)^(1/2)*B*a*b^3*d^4-105*B*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^5*e^4-840*B*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^4*b^5*d*e^3+3780*A*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*a*b^4*e^4-420*B*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*a^2*b^3*e^4+5670*A*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a^2*b^3*e^4-630*B*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a^3*b^2*e^4+3780*A
*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^3*b^2*e^4-42
0*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^4*b*e^4-8
40*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^4*b*d*e^3-
105*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^4*a*b^4*e
^4+945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^4*b^5*
e^4+3465*((a*e-b*d)*b)^(1/2)*A*a*b^3*e^4*x^3+315*((a*e-b*d)*b)^(1/2)*A*b^4*
d*e^3*x^3-385*((a*e-b*d)*b)^(1/2)*B*a^2*b^2*e^4*x^3-280*((a*e-b*d)*b)^(1/2)
*B*b^4*d^2*e^2*x^3+4599*((a*e-b*d)*b)^(1/2)*A*a^2*b^2*e^4*x^2-126*((a*e-b*d
)*b)^(1/2)*A*b^4*d^2*e^2*x^2-511*((a*e-b*d)*b)^(1/2)*B*a^3*b*e^4*x^2+112*((
a*e-b*d)*b)^(1/2)*B*b^4*d^3*e*x^2+2511*((a*e-b*d)*b)^(1/2)*A*a^3*b*e^4*x+72
*((a*e-b*d)*b)^(1/2)*A*b^4*d^3*e*x-105*((a*e-b*d)*b)^(1/2)*B*a*b^3*e^4*x^4-
840*((a*e-b*d)*b)^(1/2)*B*b^4*d*e^3*x^4+975*((a*e-b*d)*b)^(1/2)*A*a^3*b*d*e
^3-630*((a*e-b*d)*b)^(1/2)*A*a^2*b^2*d^2*e^2+264*((a*e-b*d)*b)^(1/2)*A*a*b^
3*d^3*e-370*((a*e-b*d)*b)^(1/2)*B*a^3*b*d^2*e^2+104*((a*e-b*d)*b)^(1/2)*B*a
^2*b^2*d^3*e-4221*((a*e-b*d)*b)^(1/2)*B*a^2*b^2*d*e^3*x^2-1050*((a*e-b*d)*b
)^(1/2)*B*a*b^3*d^2*e^2*x^2+1665*((a*e-b*d)*b)^(1/2)*A*a^2*b^2*d*e^3*x-468*
((a*e-b*d)*b)^(1/2)*A*a*b^3*d^2*e^2*x-2417*((a*e-b*d)*b)^(1/2)*B*a^3*b*d*e^
3*x-1428*((a*e-b*d)*b)^(1/2)*B*a^2*b^2*d^2*e^2*x+408*((a*e-b*d)*b)^(1/2)*B*
a*b^3*d^3*e*x-3115*((a*e-b*d)*b)^(1/2)*B*a*b^3*d*e^3*x^3+1197*((a*e-b*d)*b)
^(1/2)*A*a*b^3*d*e^3*x^2)*(b*x+a)/(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*
d)^5/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}} (ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(3/2)), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
[Out] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1662 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=496

$$-\frac{105e^3(a+bx)(3aBe-11Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}-\frac{35e^3(a+bx)(3aBe-11Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}+\frac{105\sqrt{b}\,e^3(a+bx)(3a}{64\sqrt{a^2}}$$

Rubi [A] time = 0.55, antiderivative size = 496, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{105e^3(a+bx)(3aBe-11Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}-\frac{35e^3(a+bx)(3aBe-11Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}-\frac{21e^2(3aBe-11Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}+\frac{105\sqrt{b}\,e^3(a+bx)(3aBe-11Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{13/2}}+\frac{3e(3aBe-11Abe+8bBd)}{32b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}-\frac{3aBe-11Abe+8bBd}{24b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{Ab-aB}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-21*e^2*(8*b*B*d - 11*A*b*e + 3*a*B*e))/(64*b*(b*d - a*e)^4*(d + e*x)^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(4*b*(b*d - a*e)*(a + b*x)^3
*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (8*b*B*d - 11*A*b*e + 3*a
*B*e)/(24*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + (3*e*(8*b*B*d - 11*A*b*e + 3*a*B*e))/(32*b*(b*d - a*e)^3*(a + b
*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^3*(8*b*B*d - 11*
A*b*e + 3*a*B*e)*(a + b*x))/(64*b*(b*d - a*e)^5*(d + e*x)^(3/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - (105*e^3*(8*b*B*d - 11*A*b*e + 3*a*B*e)*(a + b*x))/(6
4*(b*d - a*e)^6*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (105*Sqrt[b]
*e^3*(8*b*B*d - 11*A*b*e + 3*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]])/(64*(b*d - a*e)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-11A\right.}{8}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{8}{24b(bd-ae)^2(a}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{8}{24b(bd-ae)^2(a}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Al}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Al}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Al}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Al}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Al}{4b(bd-ae)(a+bx)^3(d}$$

Mathematica [C] time = 0.09, size = 115, normalized size = 0.23

$$\frac{\frac{e^3(a+bx)^4(-3aBe+11Abe-8bBd)\,{}_2F_1\left(-\frac{3}{2},4;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+3aB-3Ab}{12b(a+bx)^3\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-3*A*b + 3*a*B + (e^3*(-8*b*B*d + 11*A*b*e - 3*a*B*e)*(a + b*x)^4*Hypergeo
metric2F1[-3/2, 4, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)/(12*b*(
b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 71.08, size = 932, normalized size = 1.88

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*(128*b^5*B*d^6 - 128*A*b^5*d^5*e - 640*a*b^4*B*d^5*
e + 640*a*A*b^4*d^4*e^2 + 1280*a^2*b^3*B*d^4*e^2 - 1280*a^2*A*b^3*d^3*e^3 -
 1280*a^3*b^2*B*d^3*e^3 + 1280*a^3*A*b^2*d^2*e^4 + 640*a^4*b*B*d^2*e^4 - 64
0*a^4*A*b*d*e^5 - 128*a^5*B*d*e^5 + 128*a^5*A*e^6 + 1024*b^5*B*d^5*(d + e*x
) - 1408*A*b^5*d^4*e*(d + e*x) - 3712*a*b^4*B*d^4*e*(d + e*x) + 5632*a*A*b^
4*d^3*e^2*(d + e*x) + 4608*a^2*b^3*B*d^3*e^2*(d + e*x) - 8448*a^2*A*b^3*d^2
*e^3*(d + e*x) - 1792*a^3*b^2*B*d^2*e^3*(d + e*x) + 5632*a^3*A*b^2*d*e^4*(d
 + e*x) - 512*a^4*b*B*d*e^4*(d + e*x) - 1408*a^4*A*b*e^5*(d + e*x) + 384*a^
5*B*e^5*(d + e*x) - 6696*b^5*B*d^4*(d + e*x)^2 + 9207*A*b^5*d^3*e*(d + e*x)
^2 + 17577*a*b^4*B*d^3*e*(d + e*x)^2 - 27621*a*A*b^4*d^2*e^2*(d + e*x)^2 -
12555*a^2*b^3*B*d^2*e^2*(d + e*x)^2 + 27621*a^2*A*b^3*d*e^3*(d + e*x)^2 - 8
37*a^3*b^2*B*d*e^3*(d + e*x)^2 - 9207*a^3*A*b^2*e^4*(d + e*x)^2 + 2511*a^4*
b*B*e^4*(d + e*x)^2 + 12264*b^5*B*d^3*(d + e*x)^3 - 16863*A*b^5*d^2*e*(d +
e*x)^3 - 19929*a*b^4*B*d^2*e*(d + e*x)^3 + 33726*a*A*b^4*d*e^2*(d + e*x)^3
+ 3066*a^2*b^3*B*d*e^2*(d + e*x)^3 - 16863*a^2*A*b^3*e^3*(d + e*x)^3 + 4599
*a^3*b^2*B*e^3*(d + e*x)^3 - 9240*b^5*B*d^2*(d + e*x)^4 + 12705*A*b^5*d*e*(
d + e*x)^4 + 5775*a*b^4*B*d*e*(d + e*x)^4 - 12705*a*A*b^4*e^2*(d + e*x)^4 +
 3465*a^2*b^3*B*e^2*(d + e*x)^4 + 2520*b^5*B*d*(d + e*x)^5 - 3465*A*b^5*e*(
d + e*x)^5 + 945*a*b^4*B*e*(d + e*x)^5))/(192*(b*d - a*e)^6*(d + e*x)^(3/2)
*(b*d - a*e - b*(d + e*x))^4) - (105*(8*b^(3/2)*B*d*e^3 - 11*A*b^(3/2)*e^4
+ 3*a*Sqrt[b]*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d
 - a*e)])/(64*(b*d - a*e)^6*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e
^2])
```

fricas [B] time = 0.54, size = 3596, normalized size = 7.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(315*(8*B*a^4*b*d^3*e^3 + (3*B*a^5 - 11*A*a^4*b)*d^2*e^4 + (8*B*b^5
*d*e^5 + (3*B*a*b^4 - 11*A*b^5)*e^6)*x^6 + 2*(8*B*b^5*d^2*e^4 + (19*B*a*b^4
 - 11*A*b^5)*d*e^5 + 2*(3*B*a^2*b^3 - 11*A*a*b^4)*e^6)*x^5 + (8*B*b^5*d^3*e
^3 + (67*B*a*b^4 - 11*A*b^5)*d^2*e^4 + 8*(9*B*a^2*b^3 - 11*A*a*b^4)*d*e^5 +
 6*(3*B*a^3*b^2 - 11*A*a^2*b^3)*e^6)*x^4 + 4*(8*B*a*b^4*d^3*e^3 + (27*B*a^2
*b^3 - 11*A*a*b^4)*d^2*e^4 + (17*B*a^3*b^2 - 33*A*a^2*b^3)*d*e^5 + (3*B*a^4
*b - 11*A*a^3*b^2)*e^6)*x^3 + (48*B*a^2*b^3*d^3*e^3 + 2*(41*B*a^3*b^2 - 33*
A*a^2*b^3)*d^2*e^4 + 8*(4*B*a^4*b - 11*A*a^3*b^2)*d*e^5 + (3*B*a^5 - 11*A*a
^4*b)*e^6)*x^2 + 2*(16*B*a^3*b^2*d^3*e^3 + 2*(7*B*a^4*b - 11*A*a^3*b^2)*d^2
*e^4 + (3*B*a^5 - 11*A*a^4*b)*d*e^5)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*
b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2
*(128*A*a^5*e^5 + 16*(B*a*b^4 + 3*A*b^5)*d^5 - 8*(17*B*a^2*b^3 + 41*A*a*b^4
)*d^4*e + 10*(69*B*a^3*b^2 + 103*A*a^2*b^3)*d^3*e^2 + (2639*B*a^4*b - 2295*
A*a^3*b^2)*d^2*e^3 + 256*(B*a^5 - 8*A*a^4*b)*d*e^4 + 315*(8*B*b^5*d*e^4 + (
3*B*a*b^4 - 11*A*b^5)*e^5)*x^5 + 105*(32*B*b^5*d^2*e^3 + 4*(25*B*a*b^4 - 11
*A*b^5)*d*e^4 + 11*(3*B*a^2*b^3 - 11*A*a*b^4)*e^5)*x^4 + 21*(24*B*b^5*d^3*e
^2 + (601*B*a*b^4 - 33*A*b^5)*d^2*e^3 + 2*(403*B*a^2*b^3 - 407*A*a*b^4)*d*e
^4 + 73*(3*B*a^3*b^2 - 11*A*a^2*b^3)*e^5)*x^3 - 9*(16*B*b^5*d^4*e - 2*(105*
B*a*b^4 + 11*A*b^5)*d^3*e^2 - (1937*B*a^2*b^3 - 297*A*a*b^4)*d^2*e^3 - 8*(1
80*B*a^3*b^2 - 319*A*a^2*b^3)*d*e^4 - 93*(3*B*a^4*b - 11*A*a^3*b^2)*e^5)*x^
```

```
2 + (64*B*b^5*d^5 - 8*(65*B*a*b^4 + 11*A*b^5)*d^4*e + 4*(639*B*a^2*b^3 + 18
7*A*a*b^4)*d^3*e^2 + (10331*B*a^3*b^2 - 3795*A*a^2*b^3)*d^2*e^3 + 22*(205*B
*a^4*b - 581*A*a^3*b^2)*d*e^4 + 128*(3*B*a^5 - 11*A*a^4*b)*e^5)*x)*sqrt(e*x
 + d))/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^6*e^2 - 20*a^7*b^3*d^5
*e^3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^2*e^6 + (b^10*d^6*e^2
- 6*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d^3*e^5 + 15*a^4*b^6*d^
2*e^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*d^7*e - 4*a*b^9*d^6*e^
2 + 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b^6*d^3*e^5 + 24*a^5*b^
5*d^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (b^10*d^8 + 2*a*b^9*d^7
*e - 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4*b^6*d^4*e^4 - 6*a^5*b
^5*d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 + 6*a^8*b^2*e^8)*x^4 + 4
*(a*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 19*a^4*b^6*d^5*e^3 - 30
*a^5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2*e^6 - 3*a^8*b^2*d*e^7
 + a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e + 43*a^4*b^6*d^6*e^2
- 6*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3*d^3*e^5 - 27*a^8*b^2*
d^2*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^7*d^8 - 11*a^4*b^6*d^7
*e + 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7*b^3*d^4*e^4 + 3*a^8*b
^2*d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x), 1/192*(315*(8*B*a^4*b*d^3*e^
3 + (3*B*a^5 - 11*A*a^4*b)*d^2*e^4 + (8*B*b^5*d*e^5 + (3*B*a*b^4 - 11*A*b^5
)*e^6)*x^6 + 2*(8*B*b^5*d^2*e^4 + (19*B*a*b^4 - 11*A*b^5)*d*e^5 + 2*(3*B*a^
2*b^3 - 11*A*a*b^4)*e^6)*x^5 + (8*B*b^5*d^3*e^3 + (67*B*a*b^4 - 11*A*b^5)*d
^2*e^4 + 8*(9*B*a^2*b^3 - 11*A*a*b^4)*d*e^5 + 6*(3*B*a^3*b^2 - 11*A*a^2*b^3
)*e^6)*x^4 + 4*(8*B*a*b^4*d^3*e^3 + (27*B*a^2*b^3 - 11*A*a*b^4)*d^2*e^4 + (
17*B*a^3*b^2 - 33*A*a^2*b^3)*d*e^5 + (3*B*a^4*b - 11*A*a^3*b^2)*e^6)*x^3 +
(48*B*a^2*b^3*d^3*e^3 + 2*(41*B*a^3*b^2 - 33*A*a^2*b^3)*d^2*e^4 + 8*(4*B*a^
4*b - 11*A*a^3*b^2)*d*e^5 + (3*B*a^5 - 11*A*a^4*b)*e^6)*x^2 + 2*(16*B*a^3*b
^2*d^3*e^3 + 2*(7*B*a^4*b - 11*A*a^3*b^2)*d^2*e^4 + (3*B*a^5 - 11*A*a^4*b)*
d*e^5)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b
*d - a*e))/(b*e*x + b*d)) - (128*A*a^5*e^5 + 16*(B*a*b^4 + 3*A*b^5)*d^5 - 8
*(17*B*a^2*b^3 + 41*A*a*b^4)*d^4*e + 10*(69*B*a^3*b^2 + 103*A*a^2*b^3)*d^3*
e^2 + (2639*B*a^4*b - 2295*A*a^3*b^2)*d^2*e^3 + 256*(B*a^5 - 8*A*a^4*b)*d*e
^4 + 315*(8*B*b^5*d*e^4 + (3*B*a*b^4 - 11*A*b^5)*e^5)*x^5 + 105*(32*B*b^5*d
^2*e^3 + 4*(25*B*a*b^4 - 11*A*b^5)*d*e^4 + 11*(3*B*a^2*b^3 - 11*A*a*b^4)*e^
5)*x^4 + 21*(24*B*b^5*d^3*e^2 + (601*B*a*b^4 - 33*A*b^5)*d^2*e^3 + 2*(403*B
*a^2*b^3 - 407*A*a*b^4)*d*e^4 + 73*(3*B*a^3*b^2 - 11*A*a^2*b^3)*e^5)*x^3 -
9*(16*B*b^5*d^4*e - 2*(105*B*a*b^4 + 11*A*b^5)*d^3*e^2 - (1937*B*a^2*b^3 -
297*A*a*b^4)*d^2*e^3 - 8*(180*B*a^3*b^2 - 319*A*a^2*b^3)*d*e^4 - 93*(3*B*a^
4*b - 11*A*a^3*b^2)*e^5)*x^2 + (64*B*b^5*d^5 - 8*(65*B*a*b^4 + 11*A*b^5)*d^
4*e + 4*(639*B*a^2*b^3 + 187*A*a*b^4)*d^3*e^2 + (10331*B*a^3*b^2 - 3795*A*a
^2*b^3)*d^2*e^3 + 22*(205*B*a^4*b - 581*A*a^3*b^2)*d*e^4 + 128*(3*B*a^5 - 1
1*A*a^4*b)*e^5)*x)*sqrt(e*x + d))/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b
^4*d^6*e^2 - 20*a^7*b^3*d^5*e^3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^
10*d^2*e^6 + (b^10*d^6*e^2 - 6*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*
b^7*d^3*e^5 + 15*a^4*b^6*d^2*e^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(
b^10*d^7*e - 4*a*b^9*d^6*e^2 + 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*
a^4*b^6*d^3*e^5 + 24*a^5*b^5*d^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^
5 + (b^10*d^8 + 2*a*b^9*d^7*e - 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 5
5*a^4*b^6*d^4*e^4 - 6*a^5*b^5*d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e
^7 + 6*a^8*b^2*e^8)*x^4 + 4*(a*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^
2 + 19*a^4*b^6*d^5*e^3 - 30*a^5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^
3*d^2*e^6 - 3*a^8*b^2*d*e^7 + a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*
d^7*e + 43*a^4*b^6*d^6*e^2 - 6*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^
7*b^3*d^3*e^5 - 27*a^8*b^2*d^2*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a
^3*b^7*d^8 - 11*a^4*b^6*d^7*e + 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 1
0*a^7*b^3*d^4*e^4 + 3*a^8*b^2*d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x)]
```

giac [B] time = 0.71, size = 1301, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -105/64*(8*B*b^2*d*e^3 + 3*B*a*b*e^4 - 11*A*b^2*e^4)*arctan(sqrt(x*e + d)*b
/sqrt(-b^2*d + a*b*e))/((b^6*d^6*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b
^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e +
 d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e
^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e + d)*b*e - b*d*e +
 a*e^2))*sqrt(-b^2*d + a*b*e)) - 2/3*(12*(x*e + d)*B*b*d*e^3 + B*b*d^2*e^3
+ 3*(x*e + d)*B*a*e^4 - 15*(x*e + d)*A*b*e^4 - B*a*d*e^4 - A*b*d*e^4 + A*a*
e^5)/((b^6*d^6*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2
*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b
*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))*(x*e + d)
^(3/2)) - 1/192*(984*(x*e + d)^(7/2)*B*b^5*d*e^3 - 3224*(x*e + d)^(5/2)*B*b
^5*d^2*e^3 + 3560*(x*e + d)^(3/2)*B*b^5*d^3*e^3 - 1320*sqrt(x*e + d)*B*b^5*
d^4*e^3 + 561*(x*e + d)^(7/2)*B*a*b^4*e^4 - 1545*(x*e + d)^(7/2)*A*b^5*e^4
+ 1295*(x*e + d)^(5/2)*B*a*b^4*d*e^4 + 5153*(x*e + d)^(5/2)*A*b^5*d*e^4 - 4
825*(x*e + d)^(3/2)*B*a*b^4*d^2*e^4 - 5855*(x*e + d)^(3/2)*A*b^5*d^2*e^4 +
2985*sqrt(x*e + d)*B*a*b^4*d^3*e^4 + 2295*sqrt(x*e + d)*A*b^5*d^3*e^4 + 192
9*(x*e + d)^(5/2)*B*a^2*b^3*e^5 - 5153*(x*e + d)^(5/2)*A*a*b^4*e^5 - 1030*(
x*e + d)^(3/2)*B*a^2*b^3*d*e^5 + 11710*(x*e + d)^(3/2)*A*a*b^4*d*e^5 - 1035
*sqrt(x*e + d)*B*a^2*b^3*d^2*e^5 - 6885*sqrt(x*e + d)*A*a*b^4*d^2*e^5 + 229
5*(x*e + d)^(3/2)*B*a^3*b^2*e^6 - 5855*(x*e + d)^(3/2)*A*a^2*b^3*e^6 - 1605
*sqrt(x*e + d)*B*a^3*b^2*d*e^6 + 6885*sqrt(x*e + d)*A*a^2*b^3*d*e^6 + 975*s
qrt(x*e + d)*B*a^4*b*e^7 - 2295*sqrt(x*e + d)*A*a^3*b^2*e^7)/((b^6*d^6*sgn(
(x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e +
a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3
*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e +
 d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)
 + a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.13, size = 1860, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-3360*B*((a*e-b*d)*b)^(1/2)*x^4*b^5*d^2*e^3-128*A*((a*e-b*d)*b)^(1/2
)*a^5*e^5-48*A*((a*e-b*d)*b)^(1/2)*b^5*d^5+3465*A*((a*e-b*d)*b)^(1/2)*x^5*b
^5*e^5-384*B*((a*e-b*d)*b)^(1/2)*x*a^5*e^5-64*B*((a*e-b*d)*b)^(1/2)*x*b^5*d
^5-15120*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a^
2*b^4*d*e^3-10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/
2)*x*a^3*b^3*d*e^3-10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x
+d)^(3/2)*x^3*a*b^5*d*e^3-256*B*((a*e-b*d)*b)^(1/2)*a^5*d*e^4-16*B*((a*e-b*
d)*b)^(1/2)*a*b^4*d^5-945*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*
x+d)^(3/2)*a^5*b*e^4+9207*A*((a*e-b*d)*b)^(1/2)*x^2*a^3*b^2*e^5-198*A*((a*e
-b*d)*b)^(1/2)*x^2*b^5*d^3*e^2-2511*B*((a*e-b*d)*b)^(1/2)*x^2*a^4*b*e^5+144
*B*((a*e-b*d)*b)^(1/2)*x^2*b^5*d^4*e+1408*A*((a*e-b*d)*b)^(1/2)*x*a^4*b*e^5
+88*A*((a*e-b*d)*b)^(1/2)*x*b^5*d^4*e+3465*A*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^4*b^6*e^4-945*B*((a*e-b*d)*b)^(1/2)*x^5*a*b^4
*e^5-2520*B*((a*e-b*d)*b)^(1/2)*x^5*b^5*d*e^4+12705*A*((a*e-b*d)*b)^(1/2)*x
^4*a*b^4*e^5+4620*A*((a*e-b*d)*b)^(1/2)*x^4*b^5*d*e^4-3465*B*((a*e-b*d)*b)^
(1/2)*x^4*a^2*b^3*e^5+693*A*((a*e-b*d)*b)^(1/2)*x^3*b^5*d^2*e^3+3465*A*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^4*b^2*e^4-4599*B*((
a*e-b*d)*b)^(1/2)*x^3*a^3*b^2*e^5-504*B*((a*e-b*d)*b)^(1/2)*x^3*b^5*d^3*e^2
+16863*A*((a*e-b*d)*b)^(1/2)*x^3*a^2*b^3*e^5+2048*A*((a*e-b*d)*b)^(1/2)*a^4
*b*d*e^4+2295*A*((a*e-b*d)*b)^(1/2)*a^3*b^2*d^2*e^3-1030*A*((a*e-b*d)*b)^(1
```

```
/2)*a^2*b^3*d^3*e^2+328*A*((a*e-b*d)*b)^(1/2)*a*b^4*d^4*e-2639*B*((a*e-b*d)
*b)^(1/2)*a^4*b*d^2*e^3-690*B*((a*e-b*d)*b)^(1/2)*a^3*b^2*d^3*e^2+136*B*((a
*e-b*d)*b)^(1/2)*a^2*b^3*d^4*e-2556*B*((a*e-b*d)*b)^(1/2)*x*a^2*b^3*d^3*e^2
+520*B*((a*e-b*d)*b)^(1/2)*x*a*b^4*d^4*e-12960*B*((a*e-b*d)*b)^(1/2)*x^2*a^
3*b^2*d*e^4-17433*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^3*d^2*e^3-1890*B*((a*e-b*
d)*b)^(1/2)*x^2*a*b^4*d^3*e^2+12782*A*((a*e-b*d)*b)^(1/2)*x*a^3*b^2*d*e^4+3
795*A*((a*e-b*d)*b)^(1/2)*x*a^2*b^3*d^2*e^3-748*A*((a*e-b*d)*b)^(1/2)*x*a*b
^4*d^3*e^2-4510*B*((a*e-b*d)*b)^(1/2)*x*a^4*b*d*e^4-10331*B*((a*e-b*d)*b)^(
1/2)*x*a^3*b^2*d^2*e^3-945*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e
*x+d)^(3/2)*x^4*a*b^5*e^4-2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b
)*(e*x+d)^(3/2)*x^4*b^6*d*e^3+13860*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*(e*x+d)^(3/2)*x^3*a*b^5*e^4-3780*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*(e*x+d)^(3/2)*x^3*a^2*b^4*e^4+20790*A*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a^2*b^4*e^4-5670*B*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a^3*b^3*e^4+13860*A*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a^3*b^3*e^4-10500*B*((a*e-b*
d)*b)^(1/2)*x^4*a*b^4*d*e^4-3780*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)*(e*x+d)^(3/2)*x*a^4*b^2*e^4+17094*A*((a*e-b*d)*b)^(1/2)*x^3*a*b^4*d*e^4
-16926*B*((a*e-b*d)*b)^(1/2)*x^3*a^2*b^3*d*e^4-12621*B*((a*e-b*d)*b)^(1/2)*
x^3*a*b^4*d^2*e^3-2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d
)^(3/2)*a^4*b^2*d*e^3+22968*A*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^3*d*e^4+2673*A*
((a*e-b*d)*b)^(1/2)*x^2*a*b^4*d^2*e^3)*(b*x+a)/(e*x+d)^(3/2)/((a*e-b*d)*b)^
(1/2)/(a*e-b*d)^6/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{5/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
[Out] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1663 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=564

$$-\frac{231be^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^7}-\frac{77e^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^6}-\frac{231e^3(a+bx)(5aB}{320b\sqrt{a^2+2abx+b^2}}$$

Rubi [A] time = 0.57, antiderivative size = 564, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{231be^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^7}-\frac{77e^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^6}-\frac{231e^3(a+bx)(5aBe-13Abe+8bBd)}{320b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^5}-\frac{33e^2(5aBe-13Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4}+\frac{231b^{3/2}e^3(a+bx)(5aBe-13Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{15/2}}+\frac{11e(5aBe-13Abe+8bBd)}{96b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}-\frac{5aBe-13Abe+8bBd}{24b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}-\frac{Ab-aB}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-33*e^2*(8*b*B*d - 13*A*b*e + 5*a*B*e))/(64*b*(b*d - a*e)^4*(d + e*x)^(5/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(4*b*(b*d - a*e)*(a + b*x)^3
*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (8*b*B*d - 13*A*b*e + 5*a
*B*e)/(24*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + (11*e*(8*b*B*d - 13*A*b*e + 5*a*B*e))/(96*b*(b*d - a*e)^3*(a +
b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*e^3*(8*b*B*d - 1
3*A*b*e + 5*a*B*e)*(a + b*x))/(320*b*(b*d - a*e)^5*(d + e*x)^(5/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) - (77*e^3*(8*b*B*d - 13*A*b*e + 5*a*B*e)*(a + b*x))/
(64*(b*d - a*e)^6*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*b*e
^3*(8*b*B*d - 13*A*b*e + 5*a*B*e)*(a + b*x))/(64*(b*d - a*e)^7*Sqrt[d + e*x
]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (231*b^(3/2)*e^3*(8*b*B*d - 13*A*b*e + 5
*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*(b*
d - a*e)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-13A\right.}{8}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{8}{24b(bd-ae)^2(a}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{8}{24b(bd-ae)^2(a}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab}{4b(bd-ae)(a+bx)^3(d}$$

Mathematica [C] time = 0.10, size = 115, normalized size = 0.20

$$\frac{\frac{e^3(a+bx)^4(-5aBe+13Abe-8bBd)\,{}_2F_1\left(-\frac{5}{2},4;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+5aB-5Ab}{20b(a+bx)^3\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-5*A*b + 5*a*B + (e^3*(-8*b*B*d + 13*A*b*e - 5*a*B*e)*(a + b*x)^4*Hypergeo
metric2F1[-5/2, 4, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)/(20*b*(
b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 79.19, size = 1217, normalized size = 2.16

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/960*(e^3*(-384*b^6*B*d^7 + 384*A*b^6*d^6*e + 2304*a*b
^5*B*d^6*e - 2304*a*A*b^5*d^5*e^2 - 5760*a^2*b^4*B*d^5*e^2 + 5760*a^2*A*b^4
*d^4*e^3 + 7680*a^3*b^3*B*d^4*e^3 - 7680*a^3*A*b^3*d^3*e^4 - 5760*a^4*b^2*B
*d^3*e^4 + 5760*a^4*A*b^2*d^2*e^5 + 2304*a^5*b*B*d^2*e^5 - 2304*a^5*A*b*d*e
^6 - 384*a^6*B*d*e^6 + 384*a^6*A*e^7 - 1024*b^6*B*d^6*(d + e*x) + 1664*A*b^
6*d^5*e*(d + e*x) + 4480*a*b^5*B*d^5*e*(d + e*x) - 8320*a*A*b^5*d^4*e^2*(d
+ e*x) - 7040*a^2*b^4*B*d^4*e^2*(d + e*x) + 16640*a^2*A*b^4*d^3*e^3*(d + e*
x) + 3840*a^3*b^3*B*d^3*e^3*(d + e*x) - 16640*a^3*A*b^3*d^2*e^4*(d + e*x) +
 1280*a^4*b^2*B*d^2*e^4*(d + e*x) + 8320*a^4*A*b^2*d*e^5*(d + e*x) - 2176*a
^5*b*B*d*e^5*(d + e*x) - 1664*a^5*A*b*e^6*(d + e*x) + 640*a^6*B*e^6*(d + e*
x) - 11264*b^6*B*d^5*(d + e*x)^2 + 18304*A*b^6*d^4*e*(d + e*x)^2 + 38016*a*
b^5*B*d^4*e*(d + e*x)^2 - 73216*a*A*b^5*d^3*e^2*(d + e*x)^2 - 39424*a^2*b^4
*B*d^3*e^2*(d + e*x)^2 + 109824*a^2*A*b^4*d^2*e^3*(d + e*x)^2 + 2816*a^3*b^
3*B*d^2*e^3*(d + e*x)^2 - 73216*a^3*A*b^3*d*e^4*(d + e*x)^2 + 16896*a^4*b^2
*B*d*e^4*(d + e*x)^2 + 18304*a^4*A*b^2*e^5*(d + e*x)^2 - 7040*a^5*b*B*e^5*(
d + e*x)^2 + 73656*b^6*B*d^4*(d + e*x)^3 - 119691*A*b^6*d^3*e*(d + e*x)^3 -
 174933*a*b^5*B*d^3*e*(d + e*x)^3 + 359073*a*A*b^5*d^2*e^2*(d + e*x)^3 + 82
863*a^2*b^4*B*d^2*e^2*(d + e*x)^3 - 359073*a^2*A*b^4*d*e^3*(d + e*x)^3 + 64
449*a^3*b^3*B*d*e^3*(d + e*x)^3 + 119691*a^3*A*b^3*e^4*(d + e*x)^3 - 46035*
a^4*b^2*B*e^4*(d + e*x)^3 - 134904*b^6*B*d^3*(d + e*x)^4 + 219219*A*b^6*d^2
*e*(d + e*x)^4 + 185493*a*b^5*B*d^2*e*(d + e*x)^4 - 438438*a*A*b^5*d*e^2*(d
 + e*x)^4 + 33726*a^2*b^4*B*d*e^2*(d + e*x)^4 + 219219*a^2*A*b^4*e^3*(d + e
*x)^4 - 84315*a^3*b^3*B*e^3*(d + e*x)^4 + 101640*b^6*B*d^2*(d + e*x)^5 - 16
5165*A*b^6*d*e*(d + e*x)^5 - 38115*a*b^5*B*d*e*(d + e*x)^5 + 165165*a*A*b^5
*e^2*(d + e*x)^5 - 63525*a^2*b^4*B*e^2*(d + e*x)^5 - 27720*b^6*B*d*(d + e*x
)^6 + 45045*A*b^6*e*(d + e*x)^6 - 17325*a*b^5*B*e*(d + e*x)^6))/((b*d - a*e
)^7*(d + e*x)^(5/2)*(b*d - a*e - b*(d + e*x))^4) - (231*(8*b^(5/2)*B*d*e^3
- 13*A*b^(5/2)*e^4 + 5*a*b^(3/2)*B*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*
Sqrt[d + e*x])/(b*d - a*e)])/(64*(b*d - a*e)^7*Sqrt[-(b*d) + a*e])))/(e*Sqr
t[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.56, size = 4833, normalized size = 8.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/1920*(3465*(8*B*a^4*b^2*d^4*e^3 + (5*B*a^5*b - 13*A*a^4*b^2)*d^3*e^4 + (
8*B*b^6*d*e^6 + (5*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (24*B*b^6*d^2*e^5 + (47*B
*a*b^5 - 39*A*b^6)*d*e^6 + 4*(5*B*a^2*b^4 - 13*A*a*b^5)*e^7)*x^6 + 3*(8*B*b
^6*d^3*e^4 + (37*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 4*(9*B*a^2*b^4 - 13*A*a*b^5)
*d*e^6 + 2*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 + (8*B*b^6*d^4*e^3 + (101*
B*a*b^5 - 13*A*b^6)*d^3*e^4 + 12*(17*B*a^2*b^4 - 13*A*a*b^5)*d^2*e^5 + 2*(6
1*B*a^3*b^3 - 117*A*a^2*b^4)*d*e^6 + 4*(5*B*a^4*b^2 - 13*A*a^3*b^3)*e^7)*x^
4 + (32*B*a*b^5*d^4*e^3 + 4*(41*B*a^2*b^4 - 13*A*a*b^5)*d^3*e^4 + 6*(31*B*a
^3*b^3 - 39*A*a^2*b^4)*d^2*e^5 + 4*(17*B*a^4*b^2 - 39*A*a^3*b^3)*d*e^6 + (5
```

```
*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + 3*(16*B*a^2*b^4*d^4*e^3 + 2*(21*B*a^3*b
^3 - 13*A*a^2*b^4)*d^3*e^4 + 4*(7*B*a^4*b^2 - 13*A*a^3*b^3)*d^2*e^5 + (5*B*
a^5*b - 13*A*a^4*b^2)*d*e^6)*x^2 + (32*B*a^3*b^3*d^4*e^3 + 4*(11*B*a^4*b^2
- 13*A*a^3*b^3)*d^3*e^4 + 3*(5*B*a^5*b - 13*A*a^4*b^2)*d^2*e^5)*x)*sqrt(b/(
b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(
b*d - a*e)))/(b*x + a)) + 2*(384*A*a^6*e^6 - 80*(B*a*b^5 + 3*A*b^6)*d^6 + 2
80*(3*B*a^2*b^4 + 7*A*a*b^5)*d^5*e - 70*(79*B*a^3*b^3 + 109*A*a^2*b^4)*d^4*
e^2 - (33619*B*a^4*b^2 - 22155*A*a^3*b^3)*d^3*e^3 - 128*(54*B*a^5*b - 253*A
*a^4*b^2)*d^2*e^4 + 128*(2*B*a^6 - 31*A*a^5*b)*d*e^5 - 3465*(8*B*b^6*d*e^5
+ (5*B*a*b^5 - 13*A*b^6)*e^6)*x^6 - 1155*(56*B*b^6*d^2*e^4 + (123*B*a*b^5 -
 91*A*b^6)*d*e^5 + 11*(5*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 - 231*(184*B*b^6*
d^3*e^3 + (1147*B*a*b^5 - 299*A*b^6)*d^2*e^4 + (1229*B*a^2*b^4 - 1677*A*a*b
^5)*d*e^5 + 73*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 33*(120*B*b^6*d^4*e^
2 + (4867*B*a*b^5 - 195*A*b^6)*d^3*e^3 + (12651*B*a^2*b^4 - 7787*A*a*b^5)*d
^2*e^4 + (8267*B*a^3*b^3 - 15691*A*a^2*b^4)*d*e^5 + 279*(5*B*a^4*b^2 - 13*A
*a^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 10*(135*B*a*b^5 + 13*A*b^6)*d^4*e
^2 - (20339*B*a^2*b^4 - 2275*A*a*b^5)*d^3*e^3 - (28157*B*a^3*b^3 - 31629*A*
a^2*b^4)*d^2*e^4 - (11019*B*a^4*b^2 - 25987*A*a^3*b^3)*d*e^5 - 128*(5*B*a^5
*b - 13*A*a^4*b^2)*e^6)*x^2 - (320*B*b^6*d^6 - 40*(79*B*a*b^5 + 13*A*b^6)*d
^5*e + 1820*(11*B*a^2*b^4 + 3*A*a*b^5)*d^4*e^2 + (134441*B*a^3*b^3 - 35945*
A*a^2*b^4)*d^3*e^3 + (103033*B*a^4*b^2 - 196001*A*a^3*b^3)*d^2*e^4 + 128*(1
27*B*a^5*b - 351*A*a^4*b^2)*d*e^5 - 128*(5*B*a^6 - 13*A*a^5*b)*e^6)*x)*sqrt
(e*x + d))/(a^4*b^7*d^10 - 7*a^5*b^6*d^9*e + 21*a^6*b^5*d^8*e^2 - 35*a^7*b^
4*d^7*e^3 + 35*a^8*b^3*d^6*e^4 - 21*a^9*b^2*d^5*e^5 + 7*a^10*b*d^4*e^6 - a^
11*d^3*e^7 + (b^11*d^7*e^3 - 7*a*b^10*d^6*e^4 + 21*a^2*b^9*d^5*e^5 - 35*a^3
*b^8*d^4*e^6 + 35*a^4*b^7*d^3*e^7 - 21*a^5*b^6*d^2*e^8 + 7*a^6*b^5*d*e^9 -
a^7*b^4*e^10)*x^7 + (3*b^11*d^8*e^2 - 17*a*b^10*d^7*e^3 + 35*a^2*b^9*d^6*e^
4 - 21*a^3*b^8*d^5*e^5 - 35*a^4*b^7*d^4*e^6 + 77*a^5*b^6*d^3*e^7 - 63*a^6*b
^5*d^2*e^8 + 25*a^7*b^4*d*e^9 - 4*a^8*b^3*e^10)*x^6 + 3*(b^11*d^9*e - 3*a*b
^10*d^8*e^2 - 5*a^2*b^9*d^7*e^3 + 35*a^3*b^8*d^6*e^4 - 63*a^4*b^7*d^5*e^5 +
 49*a^5*b^6*d^4*e^6 - 7*a^6*b^5*d^3*e^7 - 15*a^7*b^4*d^2*e^8 + 10*a^8*b^3*d
*e^9 - 2*a^9*b^2*e^10)*x^5 + (b^11*d^10 + 5*a*b^10*d^9*e - 45*a^2*b^9*d^8*e
^2 + 95*a^3*b^8*d^7*e^3 - 35*a^4*b^7*d^6*e^4 - 147*a^5*b^6*d^5*e^5 + 245*a^
6*b^5*d^4*e^6 - 155*a^7*b^4*d^3*e^7 + 30*a^8*b^3*d^2*e^8 + 10*a^9*b^2*d*e^9
 - 4*a^10*b*e^10)*x^4 + (4*a*b^10*d^10 - 10*a^2*b^9*d^9*e - 30*a^3*b^8*d^8*
e^2 + 155*a^4*b^7*d^7*e^3 - 245*a^5*b^6*d^6*e^4 + 147*a^6*b^5*d^5*e^5 + 35*
a^7*b^4*d^4*e^6 - 95*a^8*b^3*d^3*e^7 + 45*a^9*b^2*d^2*e^8 - 5*a^10*b*d*e^9
- a^11*e^10)*x^3 + 3*(2*a^2*b^9*d^10 - 10*a^3*b^8*d^9*e + 15*a^4*b^7*d^8*e^
2 + 7*a^5*b^6*d^7*e^3 - 49*a^6*b^5*d^6*e^4 + 63*a^7*b^4*d^5*e^5 - 35*a^8*b^
3*d^4*e^6 + 5*a^9*b^2*d^3*e^7 + 3*a^10*b*d^2*e^8 - a^11*d*e^9)*x^2 + (4*a^3
*b^8*d^10 - 25*a^4*b^7*d^9*e + 63*a^5*b^6*d^8*e^2 - 77*a^6*b^5*d^7*e^3 + 35
*a^7*b^4*d^6*e^4 + 21*a^8*b^3*d^5*e^5 - 35*a^9*b^2*d^4*e^6 + 17*a^10*b*d^3*
e^7 - 3*a^11*d^2*e^8)*x), 1/960*(3465*(8*B*a^4*b^2*d^4*e^3 + (5*B*a^5*b - 1
3*A*a^4*b^2)*d^3*e^4 + (8*B*b^6*d*e^6 + (5*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (
24*B*b^6*d^2*e^5 + (47*B*a*b^5 - 39*A*b^6)*d*e^6 + 4*(5*B*a^2*b^4 - 13*A*a*
b^5)*e^7)*x^6 + 3*(8*B*b^6*d^3*e^4 + (37*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 4*(9
*B*a^2*b^4 - 13*A*a*b^5)*d*e^6 + 2*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 +
(8*B*b^6*d^4*e^3 + (101*B*a*b^5 - 13*A*b^6)*d^3*e^4 + 12*(17*B*a^2*b^4 - 13
*A*a*b^5)*d^2*e^5 + 2*(61*B*a^3*b^3 - 117*A*a^2*b^4)*d*e^6 + 4*(5*B*a^4*b^2
 - 13*A*a^3*b^3)*e^7)*x^4 + (32*B*a*b^5*d^4*e^3 + 4*(41*B*a^2*b^4 - 13*A*a*
b^5)*d^3*e^4 + 6*(31*B*a^3*b^3 - 39*A*a^2*b^4)*d^2*e^5 + 4*(17*B*a^4*b^2 -
39*A*a^3*b^3)*d*e^6 + (5*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + 3*(16*B*a^2*b^4
*d^4*e^3 + 2*(21*B*a^3*b^3 - 13*A*a^2*b^4)*d^3*e^4 + 4*(7*B*a^4*b^2 - 13*A*
a^3*b^3)*d^2*e^5 + (5*B*a^5*b - 13*A*a^4*b^2)*d*e^6)*x^2 + (32*B*a^3*b^3*d^
4*e^3 + 4*(11*B*a^4*b^2 - 13*A*a^3*b^3)*d^3*e^4 + 3*(5*B*a^5*b - 13*A*a^4*b
^2)*d^2*e^5)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt
(-b/(b*d - a*e))/(b*e*x + b*d)) + (384*A*a^6*e^6 - 80*(B*a*b^5 + 3*A*b^6)*d
^6 + 280*(3*B*a^2*b^4 + 7*A*a*b^5)*d^5*e - 70*(79*B*a^3*b^3 + 109*A*a^2*b^4
)*d^4*e^2 - (33619*B*a^4*b^2 - 22155*A*a^3*b^3)*d^3*e^3 - 128*(54*B*a^5*b -
```

```
253*A*a^4*b^2)*d^2*e^4 + 128*(2*B*a^6 - 31*A*a^5*b)*d*e^5 - 3465*(8*B*b^6*
d*e^5 + (5*B*a*b^5 - 13*A*b^6)*e^6)*x^6 - 1155*(56*B*b^6*d^2*e^4 + (123*B*a
*b^5 - 91*A*b^6)*d*e^5 + 11*(5*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 - 231*(184*
B*b^6*d^3*e^3 + (1147*B*a*b^5 - 299*A*b^6)*d^2*e^4 + (1229*B*a^2*b^4 - 1677
*A*a*b^5)*d*e^5 + 73*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 33*(120*B*b^6*
d^4*e^2 + (4867*B*a*b^5 - 195*A*b^6)*d^3*e^3 + (12651*B*a^2*b^4 - 7787*A*a*
b^5)*d^2*e^4 + (8267*B*a^3*b^3 - 15691*A*a^2*b^4)*d*e^5 + 279*(5*B*a^4*b^2
- 13*A*a^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 10*(135*B*a*b^5 + 13*A*b^6)
*d^4*e^2 - (20339*B*a^2*b^4 - 2275*A*a*b^5)*d^3*e^3 - (28157*B*a^3*b^3 - 31
629*A*a^2*b^4)*d^2*e^4 - (11019*B*a^4*b^2 - 25987*A*a^3*b^3)*d*e^5 - 128*(5
*B*a^5*b - 13*A*a^4*b^2)*e^6)*x^2 - (320*B*b^6*d^6 - 40*(79*B*a*b^5 + 13*A*
b^6)*d^5*e + 1820*(11*B*a^2*b^4 + 3*A*a*b^5)*d^4*e^2 + (134441*B*a^3*b^3 -
35945*A*a^2*b^4)*d^3*e^3 + (103033*B*a^4*b^2 - 196001*A*a^3*b^3)*d^2*e^4 +
128*(127*B*a^5*b - 351*A*a^4*b^2)*d*e^5 - 128*(5*B*a^6 - 13*A*a^5*b)*e^6)*x
)*sqrt(e*x + d))/(a^4*b^7*d^10 - 7*a^5*b^6*d^9*e + 21*a^6*b^5*d^8*e^2 - 35*
a^7*b^4*d^7*e^3 + 35*a^8*b^3*d^6*e^4 - 21*a^9*b^2*d^5*e^5 + 7*a^10*b*d^4*e^
6 - a^11*d^3*e^7 + (b^11*d^7*e^3 - 7*a*b^10*d^6*e^4 + 21*a^2*b^9*d^5*e^5 -
35*a^3*b^8*d^4*e^6 + 35*a^4*b^7*d^3*e^7 - 21*a^5*b^6*d^2*e^8 + 7*a^6*b^5*d*
e^9 - a^7*b^4*e^10)*x^7 + (3*b^11*d^8*e^2 - 17*a*b^10*d^7*e^3 + 35*a^2*b^9*
d^6*e^4 - 21*a^3*b^8*d^5*e^5 - 35*a^4*b^7*d^4*e^6 + 77*a^5*b^6*d^3*e^7 - 63
*a^6*b^5*d^2*e^8 + 25*a^7*b^4*d*e^9 - 4*a^8*b^3*e^10)*x^6 + 3*(b^11*d^9*e -
 3*a*b^10*d^8*e^2 - 5*a^2*b^9*d^7*e^3 + 35*a^3*b^8*d^6*e^4 - 63*a^4*b^7*d^5
*e^5 + 49*a^5*b^6*d^4*e^6 - 7*a^6*b^5*d^3*e^7 - 15*a^7*b^4*d^2*e^8 + 10*a^8
*b^3*d*e^9 - 2*a^9*b^2*e^10)*x^5 + (b^11*d^10 + 5*a*b^10*d^9*e - 45*a^2*b^9
*d^8*e^2 + 95*a^3*b^8*d^7*e^3 - 35*a^4*b^7*d^6*e^4 - 147*a^5*b^6*d^5*e^5 +
245*a^6*b^5*d^4*e^6 - 155*a^7*b^4*d^3*e^7 + 30*a^8*b^3*d^2*e^8 + 10*a^9*b^2
*d*e^9 - 4*a^10*b*e^10)*x^4 + (4*a*b^10*d^10 - 10*a^2*b^9*d^9*e - 30*a^3*b^
8*d^8*e^2 + 155*a^4*b^7*d^7*e^3 - 245*a^5*b^6*d^6*e^4 + 147*a^6*b^5*d^5*e^5
 + 35*a^7*b^4*d^4*e^6 - 95*a^8*b^3*d^3*e^7 + 45*a^9*b^2*d^2*e^8 - 5*a^10*b*
d*e^9 - a^11*e^10)*x^3 + 3*(2*a^2*b^9*d^10 - 10*a^3*b^8*d^9*e + 15*a^4*b^7*
d^8*e^2 + 7*a^5*b^6*d^7*e^3 - 49*a^6*b^5*d^6*e^4 + 63*a^7*b^4*d^5*e^5 - 35*
a^8*b^3*d^4*e^6 + 5*a^9*b^2*d^3*e^7 + 3*a^10*b*d^2*e^8 - a^11*d*e^9)*x^2 +
(4*a^3*b^8*d^10 - 25*a^4*b^7*d^9*e + 63*a^5*b^6*d^8*e^2 - 77*a^6*b^5*d^7*e^
3 + 35*a^7*b^4*d^6*e^4 + 21*a^8*b^3*d^5*e^5 - 35*a^9*b^2*d^4*e^6 + 17*a^10*
b*d^3*e^7 - 3*a^11*d^2*e^8)*x)]
```

giac [B] time = 0.85, size = 1527, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -231/64*(8*B*b^3*d*e^3 + 5*B*a*b^2*e^4 - 13*A*b^3*e^4)*arctan(sqrt(x*e + d)
*b/sqrt(-b^2*d + a*b*e))/((b^7*d^7*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 7*a
*b^6*d^6*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 21*a^2*b^5*d^5*e^2*sgn((x*e
 + d)*b*e - b*d*e + a*e^2) - 35*a^3*b^4*d^4*e^3*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) + 35*a^4*b^3*d^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 21*a^5*b^
2*d^2*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 7*a^6*b*d*e^6*sgn((x*e + d)*
b*e - b*d*e + a*e^2) - a^7*e^7*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^
2*d + a*b*e)) - 2/15*(150*(x*e + d)^2*B*b^2*d*e^3 + 20*(x*e + d)*B*b^2*d^2*
e^3 + 3*B*b^2*d^3*e^3 + 75*(x*e + d)^2*B*a*b*e^4 - 225*(x*e + d)^2*A*b^2*e^
4 - 15*(x*e + d)*B*a*b*d*e^4 - 25*(x*e + d)*A*b^2*d*e^4 - 6*B*a*b*d^2*e^4 -
 3*A*b^2*d^2*e^4 - 5*(x*e + d)*B*a^2*e^5 + 25*(x*e + d)*A*a*b*e^5 + 3*B*a^2
*d*e^5 + 6*A*a*b*d*e^5 - 3*A*a^2*e^6)/((b^7*d^7*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) - 7*a*b^6*d^6*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 21*a^2*b^5*d^5
*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 35*a^3*b^4*d^4*e^3*sgn((x*e + d)*
b*e - b*d*e + a*e^2) + 35*a^4*b^3*d^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2
) - 21*a^5*b^2*d^2*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 7*a^6*b*d*e^6*s
```

```
gn((x*e + d)*b*e - b*d*e + a*e^2) - a^7*e^7*sgn((x*e + d)*b*e - b*d*e + a*e
^2))*(x*e + d)^(5/2)) - 1/192*(1704*(x*e + d)^(7/2)*B*b^6*d*e^3 - 5480*(x*e
 + d)^(5/2)*B*b^6*d^2*e^3 + 5912*(x*e + d)^(3/2)*B*b^6*d^3*e^3 - 2136*sqrt(
x*e + d)*B*b^6*d^4*e^3 + 1545*(x*e + d)^(7/2)*B*a*b^5*e^4 - 3249*(x*e + d)^
(7/2)*A*b^6*e^4 + 327*(x*e + d)^(5/2)*B*a*b^5*d*e^4 + 10633*(x*e + d)^(5/2)
*A*b^6*d*e^4 - 5969*(x*e + d)^(3/2)*B*a*b^5*d^2*e^4 - 11767*(x*e + d)^(3/2)
*A*b^6*d^2*e^4 + 4113*sqrt(x*e + d)*B*a*b^5*d^3*e^4 + 4431*sqrt(x*e + d)*A*
b^6*d^3*e^4 + 5153*(x*e + d)^(5/2)*B*a^2*b^4*e^5 - 10633*(x*e + d)^(5/2)*A*
a*b^5*e^5 - 5798*(x*e + d)^(3/2)*B*a^2*b^4*d*e^5 + 23534*(x*e + d)^(3/2)*A*
a*b^5*d*e^5 + 477*sqrt(x*e + d)*B*a^2*b^4*d^2*e^5 - 13293*sqrt(x*e + d)*A*a
*b^5*d^2*e^5 + 5855*(x*e + d)^(3/2)*B*a^3*b^3*e^6 - 11767*(x*e + d)^(3/2)*A
*a^2*b^4*e^6 - 4749*sqrt(x*e + d)*B*a^3*b^3*d*e^6 + 13293*sqrt(x*e + d)*A*a
^2*b^4*d*e^6 + 2295*sqrt(x*e + d)*B*a^4*b^2*e^7 - 4431*sqrt(x*e + d)*A*a^3*
b^3*e^7)/((b^7*d^7*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 7*a*b^6*d^6*e*sgn((
x*e + d)*b*e - b*d*e + a*e^2) + 21*a^2*b^5*d^5*e^2*sgn((x*e + d)*b*e - b*d*
e + a*e^2) - 35*a^3*b^4*d^4*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 35*a^4
*b^3*d^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 21*a^5*b^2*d^2*e^5*sgn((x
*e + d)*b*e - b*d*e + a*e^2) + 7*a^6*b*d*e^6*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - a^7*e^7*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e
)^4)
```

maple [B] time = 0.14, size = 2282, normalized size = 4.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/960*(520*A*((a*e-b*d)*b)^(1/2)*x*b^6*d^5*e-110880*B*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a^3*b^4*d*e^3-110880*B*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^3*a*b^6*d*e^3-166320*B*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*a^2*b^5*d*e^3+256
*B*((a*e-b*d)*b)^(1/2)*a^6*d*e^5-80*B*((a*e-b*d)*b)^(1/2)*a*b^5*d^6+384*A*(
(a*e-b*d)*b)^(1/2)*a^6*e^6-240*A*((a*e-b*d)*b)^(1/2)*b^6*d^6+45045*A*((a*e-
b*d)*b)^(1/2)*x^6*b^6*e^6+640*B*((a*e-b*d)*b)^(1/2)*x*a^6*e^6-320*B*((a*e-b
*d)*b)^(1/2)*x*b^6*d^6+256971*A*((a*e-b*d)*b)^(1/2)*x^3*a*b^5*d^2*e^4-27281
1*B*((a*e-b*d)*b)^(1/2)*x^3*a^3*b^3*d*e^5-417483*B*((a*e-b*d)*b)^(1/2)*x^3*
a^2*b^4*d^2*e^4-160611*B*((a*e-b*d)*b)^(1/2)*x^3*a*b^5*d^3*e^3+285857*A*((a
*e-b*d)*b)^(1/2)*x^2*a^3*b^3*d*e^5+347919*A*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^4
*d^2*e^4+25025*A*((a*e-b*d)*b)^(1/2)*x^2*a*b^5*d^3*e^3-121209*B*((a*e-b*d)*
b)^(1/2)*x^2*a^4*b^2*d*e^5-309727*B*((a*e-b*d)*b)^(1/2)*x^2*a^3*b^3*d^2*e^4
-223729*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^4*d^3*e^3-14850*B*((a*e-b*d)*b)^(1/
2)*x^2*a*b^5*d^4*e^2+44928*A*((a*e-b*d)*b)^(1/2)*x*a^4*b^2*d*e^5+196001*A*(
(a*e-b*d)*b)^(1/2)*x*a^3*b^3*d^2*e^4+35945*A*((a*e-b*d)*b)^(1/2)*x*a^2*b^4*
d^3*e^3-5460*A*((a*e-b*d)*b)^(1/2)*x*a*b^5*d^4*e^2-16256*B*((a*e-b*d)*b)^(1
/2)*x*a^5*b*d*e^5-103033*B*((a*e-b*d)*b)^(1/2)*x*a^4*b^2*d^2*e^4-134441*B*(
(a*e-b*d)*b)^(1/2)*x*a^3*b^3*d^3*e^3-20020*B*((a*e-b*d)*b)^(1/2)*x*a^2*b^4*
d^4*e^2+3160*B*((a*e-b*d)*b)^(1/2)*x*a*b^5*d^5*e-17325*B*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^4*a*b^6*e^4-27720*B*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^4*b^7*d*e^3+180180*A*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^3*a*b^6*e^4-69300*B*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^3*a^2*b^5*e^4+270
270*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*a^2*b^5
*e^4-103950*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2
*a^3*b^4*e^4+180180*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(
5/2)*x*a^3*b^4*e^4-142065*B*((a*e-b*d)*b)^(1/2)*x^5*a*b^5*d*e^5-69300*B*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a^4*b^3*e^4+387387
*A*((a*e-b*d)*b)^(1/2)*x^4*a*b^5*d*e^5-283899*B*((a*e-b*d)*b)^(1/2)*x^4*a^2
*b^4*d*e^5-264957*B*((a*e-b*d)*b)^(1/2)*x^4*a*b^5*d^2*e^4-27720*B*arctan((e
*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a^4*b^3*d*e^3+517803*A*((a
```

```
*e-b*d)*b)^(1/2)*x^3*a^2*b^4*d*e^5+119691*A*((a*e-b*d)*b)^(1/2)*x^3*a^3*b^3
*e^6+6435*A*((a*e-b*d)*b)^(1/2)*x^3*b^6*d^3*e^3-46035*B*((a*e-b*d)*b)^(1/2)
*x^3*a^4*b^2*e^6-3960*B*((a*e-b*d)*b)^(1/2)*x^3*b^6*d^4*e^2+18304*A*((a*e-b
*d)*b)^(1/2)*x^2*a^4*b^2*e^6-1430*A*((a*e-b*d)*b)^(1/2)*x^2*b^6*d^4*e^2-704
0*B*((a*e-b*d)*b)^(1/2)*x^2*a^5*b*e^6+880*B*((a*e-b*d)*b)^(1/2)*x^2*b^6*d^5
*e-1664*A*((a*e-b*d)*b)^(1/2)*x*a^5*b*e^6+45045*A*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^4*b^7*e^4-17325*B*((a*e-b*d)*b)^(1/2)*x^
6*a*b^5*e^6-27720*B*((a*e-b*d)*b)^(1/2)*x^6*b^6*d*e^5+165165*A*((a*e-b*d)*b
)^(1/2)*x^5*a*b^5*e^6+105105*A*((a*e-b*d)*b)^(1/2)*x^5*b^6*d*e^5-63525*B*((
a*e-b*d)*b)^(1/2)*x^5*a^2*b^4*e^6-64680*B*((a*e-b*d)*b)^(1/2)*x^5*b^6*d^2*e
^4+219219*A*((a*e-b*d)*b)^(1/2)*x^4*a^2*b^4*e^6+69069*A*((a*e-b*d)*b)^(1/2)
*x^4*b^6*d^2*e^4+45045*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d
)^(5/2)*a^4*b^3*e^4-84315*B*((a*e-b*d)*b)^(1/2)*x^4*a^3*b^3*e^6-42504*B*((a
*e-b*d)*b)^(1/2)*x^4*b^6*d^3*e^3-17325*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*(e*x+d)^(5/2)*a^5*b^2*e^4+22155*A*((a*e-b*d)*b)^(1/2)*a^3*b^3*d^3
*e^3-7630*A*((a*e-b*d)*b)^(1/2)*a^2*b^4*d^4*e^2+1960*A*((a*e-b*d)*b)^(1/2)*
a*b^5*d^5*e-6912*B*((a*e-b*d)*b)^(1/2)*a^5*b*d^2*e^4-33619*B*((a*e-b*d)*b)^
(1/2)*a^4*b^2*d^3*e^3-5530*B*((a*e-b*d)*b)^(1/2)*a^3*b^3*d^4*e^2+840*B*((a*
e-b*d)*b)^(1/2)*a^2*b^4*d^5*e+32384*A*((a*e-b*d)*b)^(1/2)*a^4*b^2*d^2*e^4-3
968*A*((a*e-b*d)*b)^(1/2)*a^5*b*d*e^5)*(b*x+a)/(e*x+d)^(5/2)/((a*e-b*d)*b)^
(1/2)/(a*e-b*d)^7/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{7/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1664 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=234

$$-\frac{b^3(d+ex)^{m+5}(-4aBe-Abe+5bBd)}{e^6(m+5)}+\frac{2b^2(bd-ae)(d+ex)^{m+4}(-3aBe-2Abe+5bBd)}{e^6(m+4)}-\frac{(bd-ae)^4(Bd-Ae)(d+\cdots}{e^6(m+1)}$$

Rubi [A] time = 0.17, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$\frac{2b^2(bd-ae)(d+ex)^{m+4}(-3aBe-2Abe+5bBd)}{e^6(m+4)}-\frac{b^3(d+ex)^{m+5}(-4aBe-Abe+5bBd)}{e^6(m+5)}-\frac{(bd-ae)^4(Bd-Ae)(d+ex)^{m+1}}{e^6(m+1)}+\frac{(bd-ae)^3(d+ex)^{m+2}(-aBe-4Abe+5bBd)}{e^6(m+2)}-\frac{2b(bd-ae)^2(d+ex)^{m+3}(-2aBe-3Abe+5bBd)}{e^6(m+3)}+\frac{b^4B(d+ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(1 + m))/(e^6*(1 + m))) + ((b*d - a*
e)^3*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(2 + m))/(e^6*(2 + m)) - (2*b*(b
*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(3 + m))/(e^6*(3 + m))
+ (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(4 + m))/(e^6*
(4 + m)) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)
) + (b^4*B*(d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^4(A+Bx)(d+ex)^m \, dx \\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^m}{e^5}+\frac{(-bd+ae)^3(-5bBd+4A\cdots}{e^5}\right. \\
&= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^{1+m}}{e^6(1+m)}+\frac{(bd-ae)^3(5bBd-4Abe-aB\cdots}{e^6(2+m)}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 208, normalized size = 0.89

$$\frac{(d+ex)^{m+1}\left(-\frac{b^3(d+ex)^4(-4aBe-Abe+5bBd)}{m+5}+\frac{2b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)}{m+4}-\frac{2b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)}{m+3}+\frac{(d+ex)(bd-ae)^3(-aBe-4Abe+5bBd)}{m+2}-\frac{(bd-ae)^4(Bd-Ae)}{m+1}+\frac{b^4B(d+ex)^5}{m+6}\right)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((b*d - a*e)^4*(B*d - A*e))/(1 + m)) + ((b*d - a*e)^3
*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x))/(2 + m) - (2*b*(b*d - a*e)^2*(5*b*B
*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^2)/(3 + m) + (2*b^2*(b*d - a*e)*(5*b*B*d
- 2*A*b*e - 3*a*B*e)*(d + e*x)^3)/(4 + m) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e
)*(d + e*x)^4)/(5 + m) + (b^4*B*(d + e*x)^5)/(6 + m)))/e^6
```

IntegrateAlgebraic [F] time = 0.50, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2
, x]
```

fricas [B] time = 0.48, size = 2274, normalized size = 9.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] (A*a^4*d*e^5*m^5 - 120*B*b^4*d^6 + 720*A*a^4*d*e^5 + 144*(4*B*a*b^3 + A*b^4
)*d^5*e - 360*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 480*(2*B*a^3*b + 3*A*a^2*
b^2)*d^3*e^3 - 360*(B*a^4 + 4*A*a^3*b)*d^2*e^4 + (B*b^4*e^6*m^5 + 15*B*b^4*
e^6*m^4 + 85*B*b^4*e^6*m^3 + 225*B*b^4*e^6*m^2 + 274*B*b^4*e^6*m + 120*B*b^
4*e^6)*x^6 + (144*(4*B*a*b^3 + A*b^4)*e^6 + (B*b^4*d*e^5 + (4*B*a*b^3 + A*b
^4)*e^6)*m^5 + 2*(5*B*b^4*d*e^5 + 8*(4*B*a*b^3 + A*b^4)*e^6)*m^4 + 5*(7*B*b
^4*d*e^5 + 19*(4*B*a*b^3 + A*b^4)*e^6)*m^3 + 10*(5*B*b^4*d*e^5 + 26*(4*B*a*
b^3 + A*b^4)*e^6)*m^2 + 12*(2*B*b^4*d*e^5 + 27*(4*B*a*b^3 + A*b^4)*e^6)*m)*
x^5 + (20*A*a^4*d*e^5 - (B*a^4 + 4*A*a^3*b)*d^2*e^4)*m^4 + (360*(3*B*a^2*b^
2 + 2*A*a*b^3)*e^6 + ((4*B*a*b^3 + A*b^4)*d*e^5 + 2*(3*B*a^2*b^2 + 2*A*a*b^
3)*e^6)*m^5 - (5*B*b^4*d^2*e^4 - 12*(4*B*a*b^3 + A*b^4)*d*e^5 - 34*(3*B*a^2
*b^2 + 2*A*a*b^3)*e^6)*m^4 - (30*B*b^4*d^2*e^4 - 47*(4*B*a*b^3 + A*b^4)*d*e
^5 - 214*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*m^3 - (55*B*b^4*d^2*e^4 - 72*(4*B*a
*b^3 + A*b^4)*d*e^5 - 614*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*m^2 - 6*(5*B*b^4*d
^2*e^4 - 6*(4*B*a*b^3 + A*b^4)*d*e^5 - 132*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*m
)*x^4 + (155*A*a^4*d*e^5 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^3 - 18*(B*a^4
+ 4*A*a^3*b)*d^2*e^4)*m^3 + 2*(240*(2*B*a^3*b + 3*A*a^2*b^2)*e^6 + ((3*B*a^
2*b^2 + 2*A*a*b^3)*d*e^5 + (2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m^5 - 2*((4*B*a*b
^3 + A*b^4)*d^2*e^4 - 7*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 - 9*(2*B*a^3*b + 3*
A*a^2*b^2)*e^6)*m^4 + (10*B*b^4*d^3*e^3 - 18*(4*B*a*b^3 + A*b^4)*d^2*e^4 +
65*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 + 121*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m^3
 + 2*(15*B*b^4*d^3*e^3 - 20*(4*B*a*b^3 + A*b^4)*d^2*e^4 + 56*(3*B*a^2*b^2 +
 2*A*a*b^3)*d*e^5 + 186*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m^2 + 4*(5*B*b^4*d^3
*e^3 - 6*(4*B*a*b^3 + A*b^4)*d^2*e^4 + 15*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 +
 127*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m)*x^3 + (580*A*a^4*d*e^5 - 12*(3*B*a^2
*b^2 + 2*A*a*b^3)*d^4*e^2 + 60*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^3 - 119*(B*a
^4 + 4*A*a^3*b)*d^2*e^4)*m^2 + (360*(B*a^4 + 4*A*a^3*b)*e^6 + (2*(2*B*a^3*b
 + 3*A*a^2*b^2)*d*e^5 + (B*a^4 + 4*A*a^3*b)*e^6)*m^5 - (6*(3*B*a^2*b^2 + 2*
A*a*b^3)*d^2*e^4 - 32*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 - 19*(B*a^4 + 4*A*a^3
*b)*e^6)*m^4 + (12*(4*B*a*b^3 + A*b^4)*d^3*e^3 - 72*(3*B*a^2*b^2 + 2*A*a*b^
3)*d^2*e^4 + 178*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 + 137*(B*a^4 + 4*A*a^3*b)*
e^6)*m^3 - (60*B*b^4*d^4*e^2 - 84*(4*B*a*b^3 + A*b^4)*d^3*e^3 + 246*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^2*e^4 - 388*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 - 461*(B*a
^4 + 4*A*a^3*b)*e^6)*m^2 - 6*(10*B*b^4*d^4*e^2 - 12*(4*B*a*b^3 + A*b^4)*d^3
*e^3 + 30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^4 - 40*(2*B*a^3*b + 3*A*a^2*b^2)*
d*e^5 - 117*(B*a^4 + 4*A*a^3*b)*e^6)*m)*x^2 + 2*(522*A*a^4*d*e^5 + 12*(4*B*
a*b^3 + A*b^4)*d^5*e - 66*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 148*(2*B*a^3*
```

```
b + 3*A*a^2*b^2)*d^3*e^3 - 171*(B*a^4 + 4*A*a^3*b)*d^2*e^4)*m + (720*A*a^4*
e^6 + (A*a^4*e^6 + (B*a^4 + 4*A*a^3*b)*d*e^5)*m^5 + 2*(10*A*a^4*e^6 - 2*(2*
B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 9*(B*a^4 + 4*A*a^3*b)*d*e^5)*m^4 + (155*A*
a^4*e^6 + 12*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 - 60*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^4 + 119*(B*a^4 + 4*A*a^3*b)*d*e^5)*m^3 + 2*(290*A*a^4*e^6 - 12*(4*
B*a*b^3 + A*b^4)*d^4*e^2 + 66*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 - 148*(2*B*
a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 171*(B*a^4 + 4*A*a^3*b)*d*e^5)*m^2 + 12*(10*
B*b^4*d^5*e + 87*A*a^4*e^6 - 12*(4*B*a*b^3 + A*b^4)*d^4*e^2 + 30*(3*B*a^2*b
^2 + 2*A*a*b^3)*d^3*e^3 - 40*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 30*(B*a^4
+ 4*A*a^3*b)*d*e^5)*m)*x)*(e*x + d)^m/(e^6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 +
 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m + 720*e^6)
```

giac [B] time = 0.32, size = 4381, normalized size = 18.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*b^4*m^5*x^6*e^6 + (x*e + d)^m*B*b^4*d*m^5*x^5*e^5 + 4*(x*e +
 d)^m*B*a*b^3*m^5*x^5*e^6 + (x*e + d)^m*A*b^4*m^5*x^5*e^6 + 15*(x*e + d)^m*
B*b^4*m^4*x^6*e^6 + 4*(x*e + d)^m*B*a*b^3*d*m^5*x^4*e^5 + (x*e + d)^m*A*b^4
*d*m^5*x^4*e^5 + 10*(x*e + d)^m*B*b^4*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*b^4*d
^2*m^4*x^4*e^4 + 6*(x*e + d)^m*B*a^2*b^2*m^5*x^4*e^6 + 4*(x*e + d)^m*A*a*b^
3*m^5*x^4*e^6 + 64*(x*e + d)^m*B*a*b^3*m^4*x^5*e^6 + 16*(x*e + d)^m*A*b^4*m
^4*x^5*e^6 + 85*(x*e + d)^m*B*b^4*m^3*x^6*e^6 + 6*(x*e + d)^m*B*a^2*b^2*d*m
^5*x^3*e^5 + 4*(x*e + d)^m*A*a*b^3*d*m^5*x^3*e^5 + 48*(x*e + d)^m*B*a*b^3*d
*m^4*x^4*e^5 + 12*(x*e + d)^m*A*b^4*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*b^4*d*
m^3*x^5*e^5 - 16*(x*e + d)^m*B*a*b^3*d^2*m^4*x^3*e^4 - 4*(x*e + d)^m*A*b^4*
d^2*m^4*x^3*e^4 - 30*(x*e + d)^m*B*b^4*d^2*m^3*x^4*e^4 + 20*(x*e + d)^m*B*b
^4*d^3*m^3*x^3*e^3 + 4*(x*e + d)^m*B*a^3*b*m^5*x^3*e^6 + 6*(x*e + d)^m*A*a^
2*b^2*m^5*x^3*e^6 + 102*(x*e + d)^m*B*a^2*b^2*m^4*x^4*e^6 + 68*(x*e + d)^m*
A*a*b^3*m^4*x^4*e^6 + 380*(x*e + d)^m*B*a*b^3*m^3*x^5*e^6 + 95*(x*e + d)^m*
A*b^4*m^3*x^5*e^6 + 225*(x*e + d)^m*B*b^4*m^2*x^6*e^6 + 4*(x*e + d)^m*B*a^3
*b*d*m^5*x^2*e^5 + 6*(x*e + d)^m*A*a^2*b^2*d*m^5*x^2*e^5 + 84*(x*e + d)^m*B
*a^2*b^2*d*m^4*x^3*e^5 + 56*(x*e + d)^m*A*a*b^3*d*m^4*x^3*e^5 + 188*(x*e +
d)^m*B*a*b^3*d*m^3*x^4*e^5 + 47*(x*e + d)^m*A*b^4*d*m^3*x^4*e^5 + 50*(x*e +
 d)^m*B*b^4*d*m^2*x^5*e^5 - 18*(x*e + d)^m*B*a^2*b^2*d^2*m^4*x^2*e^4 - 12*(
x*e + d)^m*A*a*b^3*d^2*m^4*x^2*e^4 - 144*(x*e + d)^m*B*a*b^3*d^2*m^3*x^3*e^
4 - 36*(x*e + d)^m*A*b^4*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*B*b^4*d^2*m^2*x^4
*e^4 + 48*(x*e + d)^m*B*a*b^3*d^3*m^3*x^2*e^3 + 12*(x*e + d)^m*A*b^4*d^3*m^
3*x^2*e^3 + 60*(x*e + d)^m*B*b^4*d^3*m^2*x^3*e^3 - 60*(x*e + d)^m*B*b^4*d^4
*m^2*x^2*e^2 + (x*e + d)^m*B*a^4*m^5*x^2*e^6 + 4*(x*e + d)^m*A*a^3*b*m^5*x^
2*e^6 + 72*(x*e + d)^m*B*a^3*b*m^4*x^3*e^6 + 108*(x*e + d)^m*A*a^2*b^2*m^4*
x^3*e^6 + 642*(x*e + d)^m*B*a^2*b^2*m^3*x^4*e^6 + 428*(x*e + d)^m*A*a*b^3*m
^3*x^4*e^6 + 1040*(x*e + d)^m*B*a*b^3*m^2*x^5*e^6 + 260*(x*e + d)^m*A*b^4*m
^2*x^5*e^6 + 274*(x*e + d)^m*B*b^4*m*x^6*e^6 + (x*e + d)^m*B*a^4*d*m^5*x*e^
5 + 4*(x*e + d)^m*A*a^3*b*d*m^5*x*e^5 + 64*(x*e + d)^m*B*a^3*b*d*m^4*x^2*e^
5 + 96*(x*e + d)^m*A*a^2*b^2*d*m^4*x^2*e^5 + 390*(x*e + d)^m*B*a^2*b^2*d*m^
3*x^3*e^5 + 260*(x*e + d)^m*A*a*b^3*d*m^3*x^3*e^5 + 288*(x*e + d)^m*B*a*b^3
*d*m^2*x^4*e^5 + 72*(x*e + d)^m*A*b^4*d*m^2*x^4*e^5 + 24*(x*e + d)^m*B*b^4*
d*m*x^5*e^5 - 8*(x*e + d)^m*B*a^3*b*d^2*m^4*x*e^4 - 12*(x*e + d)^m*A*a^2*b^
2*d^2*m^4*x*e^4 - 216*(x*e + d)^m*B*a^2*b^2*d^2*m^3*x^2*e^4 - 144*(x*e + d)
^m*A*a*b^3*d^2*m^3*x^2*e^4 - 320*(x*e + d)^m*B*a*b^3*d^2*m^2*x^3*e^4 - 80*(
x*e + d)^m*A*b^4*d^2*m^2*x^3*e^4 - 30*(x*e + d)^m*B*b^4*d^2*m*x^4*e^4 + 36*
(x*e + d)^m*B*a^2*b^2*d^3*m^3*x*e^3 + 24*(x*e + d)^m*A*a*b^3*d^3*m^3*x*e^3
+ 336*(x*e + d)^m*B*a*b^3*d^3*m^2*x^2*e^3 + 84*(x*e + d)^m*A*b^4*d^3*m^2*x^
2*e^3 + 40*(x*e + d)^m*B*b^4*d^3*m*x^3*e^3 - 96*(x*e + d)^m*B*a*b^3*d^4*m^2
*x*e^2 - 24*(x*e + d)^m*A*b^4*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*b^4*d^4*m*x^
2*e^2 + 120*(x*e + d)^m*B*b^4*d^5*m*x*e + (x*e + d)^m*A*a^4*m^5*x*e^6 + 19*
```

```
(x*e + d)^m*B*a^4*m^4*x^2*e^6 + 76*(x*e + d)^m*A*a^3*b*m^4*x^2*e^6 + 484*(x
*e + d)^m*B*a^3*b*m^3*x^3*e^6 + 726*(x*e + d)^m*A*a^2*b^2*m^3*x^3*e^6 + 184
2*(x*e + d)^m*B*a^2*b^2*m^2*x^4*e^6 + 1228*(x*e + d)^m*A*a*b^3*m^2*x^4*e^6
+ 1296*(x*e + d)^m*B*a*b^3*m*x^5*e^6 + 324*(x*e + d)^m*A*b^4*m*x^5*e^6 + 12
0*(x*e + d)^m*B*b^4*x^6*e^6 + (x*e + d)^m*A*a^4*d*m^5*e^5 + 18*(x*e + d)^m*
B*a^4*d*m^4*x*e^5 + 72*(x*e + d)^m*A*a^3*b*d*m^4*x*e^5 + 356*(x*e + d)^m*B*
a^3*b*d*m^3*x^2*e^5 + 534*(x*e + d)^m*A*a^2*b^2*d*m^3*x^2*e^5 + 672*(x*e +
d)^m*B*a^2*b^2*d*m^2*x^3*e^5 + 448*(x*e + d)^m*A*a*b^3*d*m^2*x^3*e^5 + 144*
(x*e + d)^m*B*a*b^3*d*m*x^4*e^5 + 36*(x*e + d)^m*A*b^4*d*m*x^4*e^5 - (x*e +
 d)^m*B*a^4*d^2*m^4*e^4 - 4*(x*e + d)^m*A*a^3*b*d^2*m^4*e^4 - 120*(x*e + d)
^m*B*a^3*b*d^2*m^3*x*e^4 - 180*(x*e + d)^m*A*a^2*b^2*d^2*m^3*x*e^4 - 738*(x
*e + d)^m*B*a^2*b^2*d^2*m^2*x^2*e^4 - 492*(x*e + d)^m*A*a*b^3*d^2*m^2*x^2*e
^4 - 192*(x*e + d)^m*B*a*b^3*d^2*m*x^3*e^4 - 48*(x*e + d)^m*A*b^4*d^2*m*x^3
*e^4 + 8*(x*e + d)^m*B*a^3*b*d^3*m^3*e^3 + 12*(x*e + d)^m*A*a^2*b^2*d^3*m^3
*e^3 + 396*(x*e + d)^m*B*a^2*b^2*d^3*m^2*x*e^3 + 264*(x*e + d)^m*A*a*b^3*d^
3*m^2*x*e^3 + 288*(x*e + d)^m*B*a*b^3*d^3*m*x^2*e^3 + 72*(x*e + d)^m*A*b^4*
d^3*m*x^2*e^3 - 36*(x*e + d)^m*B*a^2*b^2*d^4*m^2*e^2 - 24*(x*e + d)^m*A*a*b
^3*d^4*m^2*e^2 - 576*(x*e + d)^m*B*a*b^3*d^4*m*x*e^2 - 144*(x*e + d)^m*A*b^
4*d^4*m*x*e^2 + 96*(x*e + d)^m*B*a*b^3*d^5*m*e + 24*(x*e + d)^m*A*b^4*d^5*m
*e - 120*(x*e + d)^m*B*b^4*d^6 + 20*(x*e + d)^m*A*a^4*m^4*x*e^6 + 137*(x*e
+ d)^m*B*a^4*m^3*x^2*e^6 + 548*(x*e + d)^m*A*a^3*b*m^3*x^2*e^6 + 1488*(x*e
+ d)^m*B*a^3*b*m^2*x^3*e^6 + 2232*(x*e + d)^m*A*a^2*b^2*m^2*x^3*e^6 + 2376*
(x*e + d)^m*B*a^2*b^2*m*x^4*e^6 + 1584*(x*e + d)^m*A*a*b^3*m*x^4*e^6 + 576*
(x*e + d)^m*B*a*b^3*x^5*e^6 + 144*(x*e + d)^m*A*b^4*x^5*e^6 + 20*(x*e + d)^
m*A*a^4*d*m^4*e^5 + 119*(x*e + d)^m*B*a^4*d*m^3*x*e^5 + 476*(x*e + d)^m*A*a
^3*b*d*m^3*x*e^5 + 776*(x*e + d)^m*B*a^3*b*d*m^2*x^2*e^5 + 1164*(x*e + d)^m
*A*a^2*b^2*d*m^2*x^2*e^5 + 360*(x*e + d)^m*B*a^2*b^2*d*m*x^3*e^5 + 240*(x*e
 + d)^m*A*a*b^3*d*m*x^3*e^5 - 18*(x*e + d)^m*B*a^4*d^2*m^3*e^4 - 72*(x*e +
d)^m*A*a^3*b*d^2*m^3*e^4 - 592*(x*e + d)^m*B*a^3*b*d^2*m^2*x*e^4 - 888*(x*e
 + d)^m*A*a^2*b^2*d^2*m^2*x*e^4 - 540*(x*e + d)^m*B*a^2*b^2*d^2*m*x^2*e^4 -
 360*(x*e + d)^m*A*a*b^3*d^2*m*x^2*e^4 + 120*(x*e + d)^m*B*a^3*b*d^3*m^2*e^
3 + 180*(x*e + d)^m*A*a^2*b^2*d^3*m^2*e^3 + 1080*(x*e + d)^m*B*a^2*b^2*d^3*
m*x*e^3 + 720*(x*e + d)^m*A*a*b^3*d^3*m*x*e^3 - 396*(x*e + d)^m*B*a^2*b^2*d
^4*m*e^2 - 264*(x*e + d)^m*A*a*b^3*d^4*m*e^2 + 576*(x*e + d)^m*B*a*b^3*d^5*
e + 144*(x*e + d)^m*A*b^4*d^5*e + 155*(x*e + d)^m*A*a^4*m^3*x*e^6 + 461*(x*
e + d)^m*B*a^4*m^2*x^2*e^6 + 1844*(x*e + d)^m*A*a^3*b*m^2*x^2*e^6 + 2032*(x
*e + d)^m*B*a^3*b*m*x^3*e^6 + 3048*(x*e + d)^m*A*a^2*b^2*m*x^3*e^6 + 1080*(
x*e + d)^m*B*a^2*b^2*x^4*e^6 + 720*(x*e + d)^m*A*a*b^3*x^4*e^6 + 155*(x*e +
 d)^m*A*a^4*d*m^3*e^5 + 342*(x*e + d)^m*B*a^4*d*m^2*x*e^5 + 1368*(x*e + d)^
m*A*a^3*b*d*m^2*x*e^5 + 480*(x*e + d)^m*B*a^3*b*d*m*x^2*e^5 + 720*(x*e + d)
^m*A*a^2*b^2*d*m*x^2*e^5 - 119*(x*e + d)^m*B*a^4*d^2*m^2*e^4 - 476*(x*e + d
)^m*A*a^3*b*d^2*m^2*e^4 - 960*(x*e + d)^m*B*a^3*b*d^2*m*x*e^4 - 1440*(x*e +
 d)^m*A*a^2*b^2*d^2*m*x*e^4 + 592*(x*e + d)^m*B*a^3*b*d^3*m*e^3 + 888*(x*e
+ d)^m*A*a^2*b^2*d^3*m*e^3 - 1080*(x*e + d)^m*B*a^2*b^2*d^4*e^2 - 720*(x*e
+ d)^m*A*a*b^3*d^4*e^2 + 580*(x*e + d)^m*A*a^4*m^2*x*e^6 + 702*(x*e + d)^m*
B*a^4*m*x^2*e^6 + 2808*(x*e + d)^m*A*a^3*b*m*x^2*e^6 + 960*(x*e + d)^m*B*a^
3*b*x^3*e^6 + 1440*(x*e + d)^m*A*a^2*b^2*x^3*e^6 + 580*(x*e + d)^m*A*a^4*d*
m^2*e^5 + 360*(x*e + d)^m*B*a^4*d*m*x*e^5 + 1440*(x*e + d)^m*A*a^3*b*d*m*x*
e^5 - 342*(x*e + d)^m*B*a^4*d^2*m*e^4 - 1368*(x*e + d)^m*A*a^3*b*d^2*m*e^4
+ 960*(x*e + d)^m*B*a^3*b*d^3*e^3 + 1440*(x*e + d)^m*A*a^2*b^2*d^3*e^3 + 10
44*(x*e + d)^m*A*a^4*m*x*e^6 + 360*(x*e + d)^m*B*a^4*x^2*e^6 + 1440*(x*e +
d)^m*A*a^3*b*x^2*e^6 + 1044*(x*e + d)^m*A*a^4*d*m*e^5 - 360*(x*e + d)^m*B*a
^4*d^2*e^4 - 1440*(x*e + d)^m*A*a^3*b*d^2*e^4 + 720*(x*e + d)^m*A*a^4*x*e^6
 + 720*(x*e + d)^m*A*a^4*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^4*e^6 + 735*m
^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.14, size = 2355, normalized size = 10.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^4*e^5*m^5*x^5+A*b^4*e^5*m^5*x^4+4*B*a*b^3*e^5*m^5*x^4+15
*B*b^4*e^5*m^4*x^5+4*A*a*b^3*e^5*m^5*x^3+16*A*b^4*e^5*m^4*x^4+6*B*a^2*b^2*e
^5*m^5*x^3+64*B*a*b^3*e^5*m^4*x^4-5*B*b^4*d*e^4*m^4*x^4+85*B*b^4*e^5*m^3*x^
5+6*A*a^2*b^2*e^5*m^5*x^2+68*A*a*b^3*e^5*m^4*x^3-4*A*b^4*d*e^4*m^4*x^3+95*A
*b^4*e^5*m^3*x^4+4*B*a^3*b*e^5*m^5*x^2+102*B*a^2*b^2*e^5*m^4*x^3-16*B*a*b^3
*d*e^4*m^4*x^3+380*B*a*b^3*e^5*m^3*x^4-50*B*b^4*d*e^4*m^3*x^4+225*B*b^4*e^5
*m^2*x^5+4*A*a^3*b*e^5*m^5*x+108*A*a^2*b^2*e^5*m^4*x^2-12*A*a*b^3*d*e^4*m^4
*x^2+428*A*a*b^3*e^5*m^3*x^3-48*A*b^4*d*e^4*m^3*x^3+260*A*b^4*e^5*m^2*x^4+B
*a^4*e^5*m^5*x+72*B*a^3*b*e^5*m^4*x^2-18*B*a^2*b^2*d*e^4*m^4*x^2+642*B*a^2*
b^2*e^5*m^3*x^3-192*B*a*b^3*d*e^4*m^3*x^3+1040*B*a*b^3*e^5*m^2*x^4+20*B*b^4
*d^2*e^3*m^3*x^3-175*B*b^4*d*e^4*m^2*x^4+274*B*b^4*e^5*m*x^5+A*a^4*e^5*m^5+
76*A*a^3*b*e^5*m^4*x-12*A*a^2*b^2*d*e^4*m^4*x+726*A*a^2*b^2*e^5*m^3*x^2-168
*A*a*b^3*d*e^4*m^3*x^2+1228*A*a*b^3*e^5*m^2*x^3+12*A*b^4*d^2*e^3*m^3*x^2-18
8*A*b^4*d*e^4*m^2*x^3+324*A*b^4*e^5*m*x^4+19*B*a^4*e^5*m^4*x-8*B*a^3*b*d*e^
4*m^4*x+484*B*a^3*b*e^5*m^3*x^2-252*B*a^2*b^2*d*e^4*m^3*x^2+1842*B*a^2*b^2*
e^5*m^2*x^3+48*B*a*b^3*d^2*e^3*m^3*x^2-752*B*a*b^3*d*e^4*m^2*x^3+1296*B*a*b
^3*e^5*m*x^4+120*B*b^4*d^2*e^3*m^2*x^3-250*B*b^4*d*e^4*m*x^4+120*B*b^4*e^5*
x^5+20*A*a^4*e^5*m^4-4*A*a^3*b*d*e^4*m^4+548*A*a^3*b*e^5*m^3*x-192*A*a^2*b^
2*d*e^4*m^3*x+2232*A*a^2*b^2*e^5*m^2*x^2+24*A*a*b^3*d^2*e^3*m^3*x-780*A*a*b
^3*d*e^4*m^2*x^2+1584*A*a*b^3*e^5*m*x^3+108*A*b^4*d^2*e^3*m^2*x^2-288*A*b^4
*d*e^4*m*x^3+144*A*b^4*e^5*x^4-B*a^4*d*e^4*m^4+137*B*a^4*e^5*m^3*x-128*B*a^
3*b*d*e^4*m^3*x+1488*B*a^3*b*e^5*m^2*x^2+36*B*a^2*b^2*d^2*e^3*m^3*x-1170*B*
a^2*b^2*d*e^4*m^2*x^2+2376*B*a^2*b^2*e^5*m*x^3+432*B*a*b^3*d^2*e^3*m^2*x^2-
1152*B*a*b^3*d*e^4*m*x^3+576*B*a*b^3*e^5*x^4-60*B*b^4*d^3*e^2*m^2*x^2+220*B
*b^4*d^2*e^3*m*x^3-120*B*b^4*d*e^4*x^4+155*A*a^4*e^5*m^3-72*A*a^3*b*d*e^4*m
^3+1844*A*a^3*b*e^5*m^2*x+12*A*a^2*b^2*d^2*e^3*m^3-1068*A*a^2*b^2*d*e^4*m^2
*x+3048*A*a^2*b^2*e^5*m*x^2+288*A*a*b^3*d^2*e^3*m^2*x-1344*A*a*b^3*d*e^4*m*
x^2+720*A*a*b^3*e^5*x^3-24*A*b^4*d^3*e^2*m^2*x+240*A*b^4*d^2*e^3*m*x^2-144*
A*b^4*d*e^4*x^3-18*B*a^4*d*e^4*m^3+461*B*a^4*e^5*m^2*x+8*B*a^3*b*d^2*e^3*m^
3-712*B*a^3*b*d*e^4*m^2*x+2032*B*a^3*b*e^5*m*x^2+432*B*a^2*b^2*d^2*e^3*m^2*
x-2016*B*a^2*b^2*d*e^4*m*x^2+1080*B*a^2*b^2*e^5*x^3-96*B*a*b^3*d^3*e^2*m^2*
x+960*B*a*b^3*d^2*e^3*m*x^2-576*B*a*b^3*d*e^4*x^3-180*B*b^4*d^3*e^2*m*x^2+1
20*B*b^4*d^2*e^3*x^3+580*A*a^4*e^5*m^2-476*A*a^3*b*d*e^4*m^2+2808*A*a^3*b*e
^5*m*x+180*A*a^2*b^2*d^2*e^3*m^2-2328*A*a^2*b^2*d*e^4*m*x+1440*A*a^2*b^2*e^
5*x^2-24*A*a*b^3*d^3*e^2*m^2+984*A*a*b^3*d^2*e^3*m*x-720*A*a*b^3*d*e^4*x^2-
168*A*b^4*d^3*e^2*m*x+144*A*b^4*d^2*e^3*x^2-119*B*a^4*d*e^4*m^2+702*B*a^4*e
^5*m*x+120*B*a^3*b*d^2*e^3*m^2-1552*B*a^3*b*d*e^4*m*x+960*B*a^3*b*e^5*x^2-3
6*B*a^2*b^2*d^3*e^2*m^2+1476*B*a^2*b^2*d^2*e^3*m*x-1080*B*a^2*b^2*d*e^4*x^2
-672*B*a*b^3*d^3*e^2*m*x+576*B*a*b^3*d^2*e^3*x^2+120*B*b^4*d^4*e*m*x-120*B*
b^4*d^3*e^2*x^2+1044*A*a^4*e^5*m-1368*A*a^3*b*d*e^4*m+1440*A*a^3*b*e^5*x+88
8*A*a^2*b^2*d^2*e^3*m-1440*A*a^2*b^2*d*e^4*x-264*A*a*b^3*d^3*e^2*m+720*A*a*
b^3*d^2*e^3*x+24*A*b^4*d^4*e*m-144*A*b^4*d^3*e^2*x-342*B*a^4*d*e^4*m+360*B*
a^4*e^5*x+592*B*a^3*b*d^2*e^3*m-960*B*a^3*b*d*e^4*x-396*B*a^2*b^2*d^3*e^2*m
+1080*B*a^2*b^2*d^2*e^3*x+96*B*a*b^3*d^4*e*m-576*B*a*b^3*d^3*e^2*x+120*B*b^
4*d^4*e*x+720*A*a^4*e^5-1440*A*a^3*b*d*e^4+1440*A*a^2*b^2*d^2*e^3-720*A*a*b
^3*d^3*e^2+144*A*b^4*d^4*e-360*B*a^4*d*e^4+960*B*a^3*b*d^2*e^3-1080*B*a^2*b
^2*d^3*e^2+576*B*a*b^3*d^4*e-120*B*b^4*d^5)/e^6/(m^6+21*m^5+175*m^4+735*m^3
+1624*m^2+1764*m+720)
```

maxima [B] time = 0.91, size = 957, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^4/((m^2 + 3*m + 2)*e^2) +
 4*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a^3*b/((m^2 + 3*m + 2)*e
^2) + (e*x + d)^(m + 1)*A*a^4/(e*(m + 1)) + 4*((m^2 + 3*m + 2)*e^3*x^3 + (m
```

```
^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a^3*b/((m^3 + 6*m^2
+ 11*m + 6)*e^3) + 6*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2
*e*m*x + 2*d^3)*(e*x + d)^m*A*a^2*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 6*((
m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 +
m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a^2*b^2/((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*e^4) + 4*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3
*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x
 + d)^m*A*a*b^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 4*((m^4 + 10*m^
3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 -
4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x
 + 24*d^5)*(e*x + d)^m*B*a*b^3/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m +
120)*e^5) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 1
1*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d
^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*A*b^4/((m^5 + 15*m^4 + 85*m
^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*
m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m
^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3
 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*b^4/((
m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 3.10, size = 2117, normalized size = 9.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^m*(720*A*a^4*d*e^5 - 120*B*b^4*d^6 + 144*A*b^4*d^5*e - 360*B*a^4
*d^2*e^4 - 720*A*a*b^3*d^4*e^2 - 1440*A*a^3*b*d^2*e^4 + 960*B*a^3*b*d^3*e^3
 + 580*A*a^4*d*e^5*m^2 + 155*A*a^4*d*e^5*m^3 + 20*A*a^4*d*e^5*m^4 + A*a^4*d
*e^5*m^5 - 342*B*a^4*d^2*e^4*m + 1440*A*a^2*b^2*d^3*e^3 - 1080*B*a^2*b^2*d^
4*e^2 - 119*B*a^4*d^2*e^4*m^2 - 18*B*a^4*d^2*e^4*m^3 - B*a^4*d^2*e^4*m^4 +
576*B*a*b^3*d^5*e + 1044*A*a^4*d*e^5*m + 24*A*b^4*d^5*e*m + 888*A*a^2*b^2*d
^3*e^3*m - 24*A*a*b^3*d^4*e^2*m^2 - 476*A*a^3*b*d^2*e^4*m^2 - 72*A*a^3*b*d^
2*e^4*m^3 - 4*A*a^3*b*d^2*e^4*m^4 - 396*B*a^2*b^2*d^4*e^2*m + 120*B*a^3*b*d
^3*e^3*m^2 + 8*B*a^3*b*d^3*e^3*m^3 + 96*B*a*b^3*d^5*e*m + 180*A*a^2*b^2*d^3
*e^3*m^2 + 12*A*a^2*b^2*d^3*e^3*m^3 - 36*B*a^2*b^2*d^4*e^2*m^2 - 264*A*a*b^
3*d^4*e^2*m - 1368*A*a^3*b*d^2*e^4*m + 592*B*a^3*b*d^3*e^3*m))/(e^6*(1764*m
 + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x*(d + e*x)^m*(72
0*A*a^4*e^6 + 1044*A*a^4*e^6*m + 580*A*a^4*e^6*m^2 + 155*A*a^4*e^6*m^3 + 20
*A*a^4*e^6*m^4 + A*a^4*e^6*m^5 - 144*A*b^4*d^4*e^2*m + 342*B*a^4*d*e^5*m^2
+ 119*B*a^4*d*e^5*m^3 + 18*B*a^4*d*e^5*m^4 + B*a^4*d*e^5*m^5 - 24*A*b^4*d^4
*e^2*m^2 + 360*B*a^4*d*e^5*m + 120*B*b^4*d^5*e*m - 1440*A*a^2*b^2*d^2*e^4*m
 + 264*A*a*b^3*d^3*e^3*m^2 + 24*A*a*b^3*d^3*e^3*m^3 + 1080*B*a^2*b^2*d^3*e^
3*m - 96*B*a*b^3*d^4*e^2*m^2 - 592*B*a^3*b*d^2*e^4*m^2 - 120*B*a^3*b*d^2*e^
4*m^3 - 8*B*a^3*b*d^2*e^4*m^4 + 1440*A*a^3*b*d*e^5*m - 888*A*a^2*b^2*d^2*e^
4*m^2 - 180*A*a^2*b^2*d^2*e^4*m^3 - 12*A*a^2*b^2*d^2*e^4*m^4 + 396*B*a^2*b^
2*d^3*e^3*m^2 + 36*B*a^2*b^2*d^3*e^3*m^3 + 720*A*a*b^3*d^3*e^3*m + 1368*A*a
^3*b*d*e^5*m^2 + 476*A*a^3*b*d*e^5*m^3 + 72*A*a^3*b*d*e^5*m^4 + 4*A*a^3*b*d
*e^5*m^5 - 576*B*a*b^3*d^4*e^2*m - 960*B*a^3*b*d^2*e^4*m))/(e^6*(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^2*(m + 1)*(d + e*x)
^m*(360*B*a^4*e^4 + 1440*A*a^3*b*e^4 + 342*B*a^4*e^4*m - 60*B*b^4*d^4*m + 1
19*B*a^4*e^4*m^2 + 18*B*a^4*e^4*m^3 + B*a^4*e^4*m^4 + 476*A*a^3*b*e^4*m^2 +
 72*A*a^3*b*e^4*m^3 + 4*A*a^3*b*e^4*m^4 + 12*A*b^4*d^3*e*m^2 + 1368*A*a^3*b
*e^4*m + 72*A*b^4*d^3*e*m - 132*A*a*b^3*d^2*e^2*m^2 + 444*A*a^2*b^2*d*e^3*m
^2 - 12*A*a*b^3*d^2*e^2*m^3 + 90*A*a^2*b^2*d*e^3*m^3 + 6*A*a^2*b^2*d*e^3*m^
4 - 540*B*a^2*b^2*d^2*e^2*m + 288*B*a*b^3*d^3*e*m + 480*B*a^3*b*d*e^3*m - 1
98*B*a^2*b^2*d^2*e^2*m^2 - 18*B*a^2*b^2*d^2*e^2*m^3 - 360*A*a*b^3*d^2*e^2*m
 + 720*A*a^2*b^2*d*e^3*m + 48*B*a*b^3*d^3*e*m^2 + 296*B*a^3*b*d*e^3*m^2 + 6
0*B*a^3*b*d*e^3*m^3 + 4*B*a^3*b*d*e^3*m^4))/(e^4*(1764*m + 1624*m^2 + 735*m
```

```
^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (B*b^4*x^6*(d + e*x)^m*(274*m + 225*m
^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 +
 21*m^5 + m^6 + 720) + (b^2*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(180*B
*a^2*e^2 + 120*A*a*b*e^2 + 66*B*a^2*e^2*m - 5*B*b^2*d^2*m + 6*B*a^2*e^2*m^2
 + 44*A*a*b*e^2*m + 6*A*b^2*d*e*m + 4*A*a*b*e^2*m^2 + A*b^2*d*e*m^2 + 24*B*
a*b*d*e*m + 4*B*a*b*d*e*m^2))/(e^2*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 +
 21*m^5 + m^6 + 720)) + (b^3*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4
+ 24)*(6*A*b*e + 24*B*a*e + A*b*e*m + 4*B*a*e*m + B*b*d*m))/(e*(1764*m + 16
24*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (2*b*x^3*(d + e*x)^m*(3
*m + m^2 + 2)*(240*B*a^3*e^3 + 360*A*a^2*b*e^3 + 148*B*a^3*e^3*m + 10*B*b^3
*d^3*m + 30*B*a^3*e^3*m^2 + 2*B*a^3*e^3*m^3 + 45*A*a^2*b*e^3*m^2 + 3*A*a^2*
b*e^3*m^3 - 2*A*b^3*d^2*e*m^2 + 222*A*a^2*b*e^3*m - 12*A*b^3*d^2*e*m + 60*A
*a*b^2*d*e^2*m - 48*B*a*b^2*d^2*e*m + 90*B*a^2*b*d*e^2*m + 22*A*a*b^2*d*e^2
*m^2 + 2*A*a*b^2*d*e^2*m^3 - 8*B*a*b^2*d^2*e*m^2 + 33*B*a^2*b*d*e^2*m^2 + 3
*B*a^2*b*d*e^2*m^3))/(e^3*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 +
 m^6 + 720))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1665 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=138

$$-\frac{(bd-ae)^2(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(bd-ae)(d+ex)^{m+2}(-aBe-2Abe+3bBd)}{e^4(m+2)}-\frac{b(d+ex)^{m+3}(-2aBe-Abe+}{e^4(m+3)}$$

Rubi [A] time = 0.08, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$-\frac{(bd-ae)^2(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(bd-ae)(d+ex)^{m+2}(-aBe-2Abe+3bBd)}{e^4(m+2)}-\frac{b(d+ex)^{m+3}(-2aBe-Abe+3bBd)}{e^4(m+3)}+\frac{b^2B(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((b*d - a*
e)*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(2 + m))/(e^4*(2 + m)) - (b*(3*b*B
*d - A*b*e - 2*a*B*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (b^2*B*(d + e*x)^(
4 + m))/(e^4*(4 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^2(A+Bx)(d+ex)^m \, dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^m}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\ &= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^{1+m}}{e^4(1+m)}+\frac{(bd-ae)(3bBd-2Abe-a}{e^4(2+m)}\end{aligned}$$

Mathematica [A] time = 0.10, size = 122, normalized size = 0.88

$$\frac{(d+ex)^{m+1}\left(-\frac{b(d+ex)^2(-2aBe-Abe+3bBd)}{m+3}+\frac{(d+ex)(bd-ae)(-aBe-2Abe+3bBd)}{m+2}-\frac{(bd-ae)^2(Bd-Ae)}{m+1}+\frac{b^2B(d+ex)^3}{m+4}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((b*d - a*e)^2*(B*d - A*e))/(1 + m)) + ((b*d - a*e)*(
3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x))/(2 + m) - (b*(3*b*B*d - A*b*e - 2*a*B
*e)*(d + e*x)^2)/(3 + m) + (b^2*B*(d + e*x)^3)/(4 + m)))/e^4
```

IntegrateAlgebraic [F] time = 0.15, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),
x]
```

fricas [B] time = 0.48, size = 660, normalized size = 4.78

$$\frac{\left(Aa^2de^3m^3 - 6Bb^2d^4 + 24Aa^2de^3 + 8\left(2Bab + Ab^2\right)d^3e - 12\left(Ba^2 + 2Aab\right)d^2e^2 + \left(Bb^2e^4m^3 + 6Bb^2e^4m^2 + 11Bb^2e^4m + 6Bb^2e^4\right)x^4 + \left(8\left(2Bab + Ab^2\right)e^4 + \left(Bb^2de^3 + \left(2Bab + Ab^2\right)e^4\right)m^3 + \left(3Bb^2de^3 + 7\left(2Bab + Ab^2\right)e^4\right)m^2 + 2\left(Bb^2de^3 + 7\left(2Bab + Ab^2\right)e^4\right)m\right)x^3 + \left(9Aa^2de^3 - \left(Ba^2 + 2Aab\right)d^2e^2\right)m^2 + \left(12\left(Ba^2 + 2Aab\right)e^4 + \left(\left(2Bab + Ab^2\right)de^3 + \left(Ba^2 + 2Aab\right)e^4\right)m^3 - \left(3Bb^2d^2e^2 - 5\left(2Bab + Ab^2\right)de^3 - 8\left(Ba^2 + 2Aab\right)e^4\right)m^2 - \left(3Bb^2d^2e^2 - 4\left(2Bab + Ab^2\right)de^3 - 19\left(Ba^2 + 2Aab\right)e^4\right)m\right)x^2 + \left(26Aa^2de^3 + 2\left(2Bab + Ab^2\right)d^3e - 7\left(Ba^2 + 2Aab\right)d^2e^2\right)m + \left(24Aa^2e^4 + \left(Aa^2e^4 + \left(Ba^2 + 2Aab\right)de^3\right)m^3 + \left(9Aa^2e^4 - 2\left(2Bab + Ab^2\right)d^2e^2 + 7\left(Ba^2 + 2Aab\right)de^3\right)m^2 + 2\left(3Bb^2d^3e + 13Aa^2e^4 - 4\left(2Bab + Ab^2\right)d^2e^2 + 6\left(Ba^2 + 2Aab\right)de^3\right)m\right)x\right)(ex + d)^m}{e^4m^4 + 10e^4m^3 + 35e^4m^2 + 50e^4m + 24e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (A*a^2*d*e^3*m^3 - 6*B*b^2*d^4 + 24*A*a^2*d*e^3 + 8*(2*B*a*b + A*b^2)*d^3*e
 - 12*(B*a^2 + 2*A*a*b)*d^2*e^2 + (B*b^2*e^4*m^3 + 6*B*b^2*e^4*m^2 + 11*B*b
^2*e^4*m + 6*B*b^2*e^4)*x^4 + (8*(2*B*a*b + A*b^2)*e^4 + (B*b^2*d*e^3 + (2*
B*a*b + A*b^2)*e^4)*m^3 + (3*B*b^2*d*e^3 + 7*(2*B*a*b + A*b^2)*e^4)*m^2 + 2
*(B*b^2*d*e^3 + 7*(2*B*a*b + A*b^2)*e^4)*m)*x^3 + (9*A*a^2*d*e^3 - (B*a^2 +
 2*A*a*b)*d^2*e^2)*m^2 + (12*(B*a^2 + 2*A*a*b)*e^4 + ((2*B*a*b + A*b^2)*d*e
^3 + (B*a^2 + 2*A*a*b)*e^4)*m^3 - (3*B*b^2*d^2*e^2 - 5*(2*B*a*b + A*b^2)*d*
e^3 - 8*(B*a^2 + 2*A*a*b)*e^4)*m^2 - (3*B*b^2*d^2*e^2 - 4*(2*B*a*b + A*b^2)
*d*e^3 - 19*(B*a^2 + 2*A*a*b)*e^4)*m)*x^2 + (26*A*a^2*d*e^3 + 2*(2*B*a*b +
A*b^2)*d^3*e - 7*(B*a^2 + 2*A*a*b)*d^2*e^2)*m + (24*A*a^2*e^4 + (A*a^2*e^4
+ (B*a^2 + 2*A*a*b)*d*e^3)*m^3 + (9*A*a^2*e^4 - 2*(2*B*a*b + A*b^2)*d^2*e^2
 + 7*(B*a^2 + 2*A*a*b)*d*e^3)*m^2 + 2*(3*B*b^2*d^3*e + 13*A*a^2*e^4 - 4*(2*
B*a*b + A*b^2)*d^2*e^2 + 6*(B*a^2 + 2*A*a*b)*d*e^3)*m)*x)*(e*x + d)^m/(e^4*
m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.26, size = 1267, normalized size = 9.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*b^2*m^3*x^4*e^4 + (x*e + d)^m*B*b^2*d*m^3*x^3*e^3 + 2*(x*e +
 d)^m*B*a*b*m^3*x^3*e^4 + (x*e + d)^m*A*b^2*m^3*x^3*e^4 + 6*(x*e + d)^m*B*b
^2*m^2*x^4*e^4 + 2*(x*e + d)^m*B*a*b*d*m^3*x^2*e^3 + (x*e + d)^m*A*b^2*d*m^
3*x^2*e^3 + 3*(x*e + d)^m*B*b^2*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*b^2*d^2*m^2
*x^2*e^2 + (x*e + d)^m*B*a^2*m^3*x^2*e^4 + 2*(x*e + d)^m*A*a*b*m^3*x^2*e^4
+ 14*(x*e + d)^m*B*a*b*m^2*x^3*e^4 + 7*(x*e + d)^m*A*b^2*m^2*x^3*e^4 + 11*(
x*e + d)^m*B*b^2*m*x^4*e^4 + (x*e + d)^m*B*a^2*d*m^3*x*e^3 + 2*(x*e + d)^m*
A*a*b*d*m^3*x*e^3 + 10*(x*e + d)^m*B*a*b*d*m^2*x^2*e^3 + 5*(x*e + d)^m*A*b^
2*d*m^2*x^2*e^3 + 2*(x*e + d)^m*B*b^2*d*m*x^3*e^3 - 4*(x*e + d)^m*B*a*b*d^2
*m^2*x*e^2 - 2*(x*e + d)^m*A*b^2*d^2*m^2*x*e^2 - 3*(x*e + d)^m*B*b^2*d^2*m*
x^2*e^2 + 6*(x*e + d)^m*B*b^2*d^3*m*x*e + (x*e + d)^m*A*a^2*m^3*x*e^4 + 8*(
x*e + d)^m*B*a^2*m^2*x^2*e^4 + 16*(x*e + d)^m*A*a*b*m^2*x^2*e^4 + 28*(x*e +
 d)^m*B*a*b*m*x^3*e^4 + 14*(x*e + d)^m*A*b^2*m*x^3*e^4 + 6*(x*e + d)^m*B*b^
2*x^4*e^4 + (x*e + d)^m*A*a^2*d*m^3*e^3 + 7*(x*e + d)^m*B*a^2*d*m^2*x*e^3 +
 14*(x*e + d)^m*A*a*b*d*m^2*x*e^3 + 8*(x*e + d)^m*B*a*b*d*m*x^2*e^3 + 4*(x*
e + d)^m*A*b^2*d*m*x^2*e^3 - (x*e + d)^m*B*a^2*d^2*m^2*e^2 - 2*(x*e + d)^m*
A*a*b*d^2*m^2*e^2 - 16*(x*e + d)^m*B*a*b*d^2*m*x*e^2 - 8*(x*e + d)^m*A*b^2*
```

```
d^2*m*x*e^2 + 4*(x*e + d)^m*B*a*b*d^3*m*e + 2*(x*e + d)^m*A*b^2*d^3*m*e - 6
*(x*e + d)^m*B*b^2*d^4 + 9*(x*e + d)^m*A*a^2*m^2*x*e^4 + 19*(x*e + d)^m*B*a
^2*m*x^2*e^4 + 38*(x*e + d)^m*A*a*b*m*x^2*e^4 + 16*(x*e + d)^m*B*a*b*x^3*e^
4 + 8*(x*e + d)^m*A*b^2*x^3*e^4 + 9*(x*e + d)^m*A*a^2*d*m^2*e^3 + 12*(x*e +
 d)^m*B*a^2*d*m*x*e^3 + 24*(x*e + d)^m*A*a*b*d*m*x*e^3 - 7*(x*e + d)^m*B*a^
2*d^2*m*e^2 - 14*(x*e + d)^m*A*a*b*d^2*m*e^2 + 16*(x*e + d)^m*B*a*b*d^3*e +
 8*(x*e + d)^m*A*b^2*d^3*e + 26*(x*e + d)^m*A*a^2*m*x*e^4 + 12*(x*e + d)^m*
B*a^2*x^2*e^4 + 24*(x*e + d)^m*A*a*b*x^2*e^4 + 26*(x*e + d)^m*A*a^2*d*m*e^3
 - 12*(x*e + d)^m*B*a^2*d^2*e^2 - 24*(x*e + d)^m*A*a*b*d^2*e^2 + 24*(x*e +
d)^m*A*a^2*x*e^4 + 24*(x*e + d)^m*A*a^2*d*e^3)/(m^4*e^4 + 10*m^3*e^4 + 35*m
^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.06, size = 576, normalized size = 4.17

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^2*e^3*m^3*x^3+A*b^2*e^3*m^3*x^2+2*B*a*b*e^3*m^3*x^2+6*B*
b^2*e^3*m^2*x^3+2*A*a*b*e^3*m^3*x+7*A*b^2*e^3*m^2*x^2+B*a^2*e^3*m^3*x+14*B*
a*b*e^3*m^2*x^2-3*B*b^2*d*e^2*m^2*x^2+11*B*b^2*e^3*m*x^3+A*a^2*e^3*m^3+16*A
*a*b*e^3*m^2*x-2*A*b^2*d*e^2*m^2*x+14*A*b^2*e^3*m*x^2+8*B*a^2*e^3*m^2*x-4*B
*a*b*d*e^2*m^2*x+28*B*a*b*e^3*m*x^2-9*B*b^2*d*e^2*m*x^2+6*B*b^2*e^3*x^3+9*A
*a^2*e^3*m^2-2*A*a*b*d*e^2*m^2+38*A*a*b*e^3*m*x-10*A*b^2*d*e^2*m*x+8*A*b^2*
e^3*x^2-B*a^2*d*e^2*m^2+19*B*a^2*e^3*m*x-20*B*a*b*d*e^2*m*x+16*B*a*b*e^3*x^
2+6*B*b^2*d^2*e*m*x-6*B*b^2*d*e^2*x^2+26*A*a^2*e^3*m-14*A*a*b*d*e^2*m+24*A*
a*b*e^3*x+2*A*b^2*d^2*e*m-8*A*b^2*d*e^2*x-7*B*a^2*d*e^2*m+12*B*a^2*e^3*x+4*
B*a*b*d^2*e*m-16*B*a*b*d*e^2*x+6*B*b^2*d^2*e*x+24*A*a^2*e^3-24*A*a*b*d*e^2+
8*A*b^2*d^2*e-12*B*a^2*d*e^2+16*B*a*b*d^2*e-6*B*b^2*d^3)/e^4/(m^4+10*m^3+35
*m^2+50*m+24)
```

maxima [B] time = 0.76, size = 364, normalized size = 2.64

$$\frac{\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}Ba^{2}}{\left(m^{2}+3m+2\right)e^{2}}+\frac{2\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}Aab}{\left(m^{2}+3m+2\right)e^{2}}+\frac{(ex+d)^{m+1}Aa^{2}}{e(m+1)}+\frac{2\left(\left(m^{2}+3m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2d^{2}emx+2d^{3}\right)(ex+d)^{m}Bab}{\left(m^{3}+6m^{2}+11m+6\right)e^{3}}+\frac{\left(\left(m^{2}+3m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2d^{2}emx+2d^{3}\right)(ex+d)^{m}Ab^{2}}{\left(m^{3}+6m^{2}+11m+6\right)e^{3}}+\frac{\left(\left(m^{3}+6m^{2}+11m+6\right)e^{4}x^{4}+\left(m^{3}+3m^{2}+2m\right)de^{3}x^{3}-3\left(m^{2}+m\right)d^{2}e^{2}x^{2}+6d^{3}emx-6d^{4}\right)(ex+d)^{m}Bb^{2}}{\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^2/((m^2 + 3*m + 2)*e^2) +
 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a*b/((m^2 + 3*m + 2)*e^2
) + (e*x + d)^(m + 1)*A*a^2/(e*(m + 1)) + 2*((m^2 + 3*m + 2)*e^3*x^3 + (m^2
 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a*b/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x
 + 2*d^3)*(e*x + d)^m*A*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2
+ 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x
^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m
+ 24)*e^4)
```

mupad [B] time = 2.40, size = 676, normalized size = 4.90

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^m*(24*A*a^2*d*e^3 - 6*B*b^2*d^4 + 8*A*b^2*d^3*e - 12*B*a^2*d^2*e
^2 + 9*A*a^2*d*e^3*m^2 + A*a^2*d*e^3*m^3 - 7*B*a^2*d^2*e^2*m + 16*B*a*b*d^3
*e - B*a^2*d^2*e^2*m^2 - 24*A*a*b*d^2*e^2 + 26*A*a^2*d*e^3*m + 2*A*b^2*d^3*
```

```
e*m - 14*A*a*b*d^2*e^2*m - 2*A*a*b*d^2*e^2*m^2 + 4*B*a*b*d^3*e*m))/(e^4*(50
*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x*(d + e*x)^m*(24*A*a^2*e^4 + 26*A*a^2
*e^4*m + 9*A*a^2*e^4*m^2 + A*a^2*e^4*m^3 - 8*A*b^2*d^2*e^2*m + 7*B*a^2*d*e^
3*m^2 + B*a^2*d*e^3*m^3 - 2*A*b^2*d^2*e^2*m^2 + 12*B*a^2*d*e^3*m + 6*B*b^2*
d^3*e*m + 14*A*a*b*d*e^3*m^2 + 2*A*a*b*d*e^3*m^3 - 16*B*a*b*d^2*e^2*m - 4*B
*a*b*d^2*e^2*m^2 + 24*A*a*b*d*e^3*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 +
24)) + (x^2*(m + 1)*(d + e*x)^m*(12*B*a^2*e^2 + 24*A*a*b*e^2 + 7*B*a^2*e^2*
m - 3*B*b^2*d^2*m + B*a^2*e^2*m^2 + 14*A*a*b*e^2*m + 4*A*b^2*d*e*m + 2*A*a*
b*e^2*m^2 + A*b^2*d*e*m^2 + 8*B*a*b*d*e*m + 2*B*a*b*d*e*m^2))/(e^2*(50*m +
35*m^2 + 10*m^3 + m^4 + 24)) + (B*b^2*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 +
 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24) + (b*x^3*(d + e*x)^m*(3*m + m^2 +
2)*(4*A*b*e + 8*B*a*e + A*b*e*m + 2*B*a*e*m + B*b*d*m))/(e*(50*m + 35*m^2 +
 10*m^3 + m^4 + 24))
```

sympy [A] time = 6.65, size = 6186, normalized size = 44.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((d**m*(A*a**2*x + A*a*b*x**2 + A*b**2*x**3/3 + B*a**2*x**2/2 + 2*
B*a*b*x**3/3 + B*b**2*x**4/4), Eq(e, 0)), (-2*A*a**2*e**3/(6*d**3*e**4 + 18
*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*A*a*b*d*e**2/(6*d**3*e**4
+ 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*a*b*e**3*x/(6*d**3*e
**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*A*b**2*d**2*e/(6*d
**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*b**2*d*e**2
*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*b**2
*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) -
B*a**2*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
 - 3*B*a**2*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*
x**3) - 4*B*a*b*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e
**7*x**3) - 12*B*a*b*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**
2 + 6*e**7*x**3) - 12*B*a*b*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*
e**6*x**2 + 6*e**7*x**3) + 6*B*b**2*d**3*log(d/e + x)/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*B*b**2*d**3/(6*d**3*e**4 + 18
*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*b**2*d**2*e*x*log(d/e +
 x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 27*B*b*
*2*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) +
 18*B*b**2*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e*
*6*x**2 + 6*e**7*x**3) + 18*B*b**2*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*
x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*B*b**2*e**3*x**3*log(d/e + x)/(6*d**3
*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-A*a**
2*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*A*a*b*d*e**2/(2*d**2*e*
*4 + 4*d*e**5*x + 2*e**6*x**2) - 4*A*a*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x +
 2*e**6*x**2) + 2*A*b**2*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 3*A*b**2*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A
*b**2*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*
b**2*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*b**2*e**3*x**2
*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - B*a**2*d*e**2/(2*d
**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*B*a**2*e**3*x/(2*d**2*e**4 + 4*d*e
**5*x + 2*e**6*x**2) + 4*B*a*b*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*
x + 2*e**6*x**2) + 6*B*a*b*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
+ 8*B*a*b*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) +
8*B*a*b*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*B*a*b*e**3*x*
*2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*B*b**2*d**3*lo
g(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*B*b**2*d**3/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*b**2*d**2*e*x*log(d/e + x)/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*b**2*d**2*e*x/(2*d**2*e**4 + 4*d*e
**5*x + 2*e**6*x**2) - 6*B*b**2*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d
```

```
*e**5*x + 2*e**6*x**2) + 2*B*b**2*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e
**6*x**2), Eq(m, -3)), (-2*A*a**2*e**3/(2*d*e**4 + 2*e**5*x) + 4*A*a*b*d*e*
*2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 4*A*a*b*d*e**2/(2*d*e**4 + 2*e**5*x
) + 4*A*a*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*b**2*d**2*e*log
(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*b**2*d**2*e/(2*d*e**4 + 2*e**5*x) - 4
*A*b**2*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*b**2*e**3*x**2/(2
*d*e**4 + 2*e**5*x) + 2*B*a**2*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) +
2*B*a**2*d*e**2/(2*d*e**4 + 2*e**5*x) + 2*B*a**2*e**3*x*log(d/e + x)/(2*d*e
**4 + 2*e**5*x) - 8*B*a*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 8*B*a
*b*d**2*e/(2*d*e**4 + 2*e**5*x) - 8*B*a*b*d*e**2*x*log(d/e + x)/(2*d*e**4 +
 2*e**5*x) + 4*B*a*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*B*b**2*d**3*log(d/
e + x)/(2*d*e**4 + 2*e**5*x) + 6*B*b**2*d**3/(2*d*e**4 + 2*e**5*x) + 6*B*b*
*2*d**2*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*B*b**2*d*e**2*x**2/(2*d*
e**4 + 2*e**5*x) + B*b**2*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (A*a
**2*log(d/e + x)/e - 2*A*a*b*d*log(d/e + x)/e**2 + 2*A*a*b*x/e + A*b**2*d**
2*log(d/e + x)/e**3 - A*b**2*d*x/e**2 + A*b**2*x**2/(2*e) - B*a**2*d*log(d/
e + x)/e**2 + B*a**2*x/e + 2*B*a*b*d**2*log(d/e + x)/e**3 - 2*B*a*b*d*x/e**
2 + B*a*b*x**2/e - B*b**2*d**3*log(d/e + x)/e**4 + B*b**2*d**2*x/e**3 - B*b
**2*d*x**2/(2*e**2) + B*b**2*x**3/(3*e), Eq(m, -1)), (A*a**2*d*e**3*m**3*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 9*A*a**2*d*e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 26*A*a**2*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a**2*d*e**3*(d + e*x
)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*a*
*2*e**4*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + 9*A*a**2*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 26*A*a**2*e**4*m*x*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a**
2*e**4*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) - 2*A*a*b*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 14*A*a*b*d**2*e**2*m*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 24*A*a*b*d
**2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) + 2*A*a*b*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*a*b*d*e**3*m**2*x*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*b*
d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) + 2*A*a*b*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 16*A*a*b*e**4*m**2*x**2*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 38*A*
a*b*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 24*A*a*b*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*A*b**2*d**3*e*m*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*A*b**2*d
**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4) - 2*A*b**2*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*A*b**2*d**2*e**2*m*x*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*b**2*d
*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 5*A*b**2*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*A*b**2*d*e**3*m*x**2*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ A*b**2*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m*
*2 + 50*e**4*m + 24*e**4) + 7*A*b**2*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*b**2*e**4*m*x*
*3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 8*A*b**2*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) - B*a**2*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*B*a**2*d**2*e**2*
```

```
m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e*
*4) - 12*B*a**2*d**2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + B*a**2*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*B*a**2*d*e**3*m**2
*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 12*B*a**2*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**
4*m**2 + 50*e**4*m + 24*e**4) + B*a**2*e**4*m**3*x**2*(d + e*x)**m/(e**4*m*
*4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*a**2*e**4*m**
2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + 19*B*a**2*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*B*a**2*e**4*x**2*(d + e*x)**m/(e**4
*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*B*a*b*d**3*e
*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 16*B*a*b*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) - 4*B*a*b*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 16*B*a*b*d**2*e**2*
m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + 2*B*a*b*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 10*B*a*b*d*e**3*m**2*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*a*b*
d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 2*B*a*b*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*B*a*b*e**4*m**2*x**3*(d + e
*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 28
*B*a*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 16*B*a*b*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*B*b**2*d**4*(d + e*x)**m/(e
**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*b**2*d*
*3*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) - 3*B*b**2*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*b**2*d**2*e**2*m*x**2*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
 B*b**2*d*e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m
**2 + 50*e**4*m + 24*e**4) + 3*B*b**2*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*b**2*d*e**3*
m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + B*b**2*e**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*b**2*e**4*m**2*x**4*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*B*b**2*
e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) + 6*B*b**2*e**4*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.1666 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=471

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+2}(-aBe-5Abe+}{e^7(m+2)(a+bx)}$$

Rubi [A] time = 0.33, antiderivative size = 471, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+2}(-aBe-5Abe+6bBd)}{e^7(m+2)(a+bx)}+\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(d+ex)^{m+3}(-aBe-2Abe+3bBd)}{e^7(m+3)(a+bx)}-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+4}(-aBe-Abe+2bBd)}{e^7(m+4)(a+bx)}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+5}(-2aBe-Abe+3bBd)}{e^7(m+5)(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+6}(-5aBe-Abe+6bBd)}{e^7(m+6)(a+bx)}+\frac{b^5B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+7}}{e^7(m+7)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^7*(1 + m)*(a + b*x)) - ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d +
e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(2 + m)*(a + b*x)) + (5*b*
(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(3 + m)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(e^7*(3 + m)*(a + b*x)) - (10*b^2*(b*d - a*e)^2*(2*b*B*d -
A*b*e - a*B*e)*(d + e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(4 + m
)*(a + b*x)) + (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(5
+ m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(5 + m)*(a + b*x)) - (b^4*(6*b*B*d
 - A*b*e - 5*a*B*e)*(d + e*x)^(6 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(
6 + m)*(a + b*x)) + (b^5*B*(d + e*x)^(7 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^7*(7 + m)*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5 (A+Bx)(d+ex)^m\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^m}{e^6}+\frac{b^5(bd-ae)^4(-6}{}\right.}{}$$

$$= \frac{(bd-ae)^5(Bd-Ae)(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^7(1+m)(a+bx)}-\frac{(bd-a}{}$$

Mathematica [A] time = 0.31, size = 269, normalized size = 0.57

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(-\frac{b^4(d+ex)^5(-5aBe-Abe+6bBd)}{m+6}+\frac{5b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)}{m+5}-\frac{10b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+2bBd)}{m+4}+\frac{5b(d+ex)^2(bd-ae)^3(-aBe-2Abe+3bBd)}{m+3}-\frac{(d+ex)(bd-ae)^4(-aBe-5Abe+6bBd)}{m+2}+\frac{(bd-ae)^5(Bd-Ae)}{m+1}+\frac{b^5B(d+ex)^6}{m+7}\right)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*(((b*d - a*e)^5*(B*d - A*e))/(1 + m) -
 ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x))/(2 + m) + (5*b*(b*d
- a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2)/(3 + m) - (10*b^2*(b*d -
a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3)/(4 + m) + (5*b^3*(b*d - a*e)*
(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4)/(5 + m) - (b^4*(6*b*B*d - A*b*e -
5*a*B*e)*(d + e*x)^5)/(6 + m) + (b^5*B*(d + e*x)^6)/(7 + m)))/(e^7*(a + b*x
))
```

IntegrateAlgebraic [F] time = 5.50, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.51, size = 3485, normalized size = 7.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] (A*a^5*d*e^6*m^6 + 720*B*b^5*d^7 + 5040*A*a^5*d*e^6 - 840*(5*B*a*b^4 + A*b^
5)*d^6*e + 5040*(2*B*a^2*b^3 + A*a*b^4)*d^5*e^2 - 12600*(B*a^3*b^2 + A*a^2*
b^3)*d^4*e^3 + 8400*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 2520*(B*a^5 + 5*A*a^4
*b)*d^2*e^5 + (B*b^5*e^7*m^6 + 21*B*b^5*e^7*m^5 + 175*B*b^5*e^7*m^4 + 735*B
*b^5*e^7*m^3 + 1624*B*b^5*e^7*m^2 + 1764*B*b^5*e^7*m + 720*B*b^5*e^7)*x^7 +
 (840*(5*B*a*b^4 + A*b^5)*e^7 + (B*b^5*d*e^6 + (5*B*a*b^4 + A*b^5)*e^7)*m^6
 + (15*B*b^5*d*e^6 + 22*(5*B*a*b^4 + A*b^5)*e^7)*m^5 + 5*(17*B*b^5*d*e^6 +
38*(5*B*a*b^4 + A*b^5)*e^7)*m^4 + 5*(45*B*b^5*d*e^6 + 164*(5*B*a*b^4 + A*b^
5)*e^7)*m^3 + (274*B*b^5*d*e^6 + 1849*(5*B*a*b^4 + A*b^5)*e^7)*m^2 + 2*(60*
B*b^5*d*e^6 + 1019*(5*B*a*b^4 + A*b^5)*e^7)*m)*x^6 + (27*A*a^5*d*e^6 - (B*a
^5 + 5*A*a^4*b)*d^2*e^5)*m^5 + (5040*(2*B*a^2*b^3 + A*a*b^4)*e^7 + ((5*B*a*
b^4 + A*b^5)*d*e^6 + 5*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m^6 - (6*B*b^5*d^2*e^5
- 17*(5*B*a*b^4 + A*b^5)*d*e^6 - 115*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m^5 - 15*
(4*B*b^5*d^2*e^5 - 7*(5*B*a*b^4 + A*b^5)*d*e^6 - 69*(2*B*a^2*b^3 + A*a*b^4)
*e^7)*m^4 - 5*(42*B*b^5*d^2*e^5 - 59*(5*B*a*b^4 + A*b^5)*d*e^6 - 925*(2*B*a
^2*b^3 + A*a*b^4)*e^7)*m^3 - 2*(150*B*b^5*d^2*e^5 - 187*(5*B*a*b^4 + A*b^5)
*d*e^6 - 5360*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m^2 - 12*(12*B*b^5*d^2*e^5 - 14*
(5*B*a*b^4 + A*b^5)*d*e^6 - 1005*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m)*x^5 + 5*(5
9*A*a^5*d*e^6 + 2*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 5*(B*a^5 + 5*A*a^4*b)*d
^2*e^5)*m^4 + 5*(2520*(B*a^3*b^2 + A*a^2*b^3)*e^7 + ((2*B*a^2*b^3 + A*a*b^4
)*d*e^6 + 2*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m^6 - ((5*B*a*b^4 + A*b^5)*d^2*e^5
 - 19*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 - 48*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m^5 +
 (6*B*b^5*d^3*e^4 - 13*(5*B*a*b^4 + A*b^5)*d^2*e^5 + 131*(2*B*a^2*b^3 + A*a
*b^4)*d*e^6 + 452*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m^4 + (36*B*b^5*d^3*e^4 - 53
*(5*B*a*b^4 + A*b^5)*d^2*e^5 + 401*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 + 2112*(B*
a^3*b^2 + A*a^2*b^3)*e^7)*m^3 + (66*B*b^5*d^3*e^4 - 83*(5*B*a*b^4 + A*b^5)*
```

```
d^2*e^5 + 540*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 + 5090*(B*a^3*b^2 + A*a^2*b^3)*
e^7)*m^2 + 6*(6*B*b^5*d^3*e^4 - 7*(5*B*a*b^4 + A*b^5)*d^2*e^5 + 42*(2*B*a^2
*b^3 + A*a*b^4)*d*e^6 + 984*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m)*x^4 + 5*(333*A*
a^5*d*e^6 - 12*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^3 + 44*(B*a^4*b + 2*A*a^3*b^2)
*d^3*e^4 - 49*(B*a^5 + 5*A*a^4*b)*d^2*e^5)*m^3 + 5*(1680*(B*a^4*b + 2*A*a^3
*b^2)*e^7 + (2*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 + (B*a^4*b + 2*A*a^3*b^2)*e^7)
*m^6 - (4*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 - 42*(B*a^3*b^2 + A*a^2*b^3)*d*e^
6 - 25*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^5 + (4*(5*B*a*b^4 + A*b^5)*d^3*e^4 -
64*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 + 326*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 + 24
7*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^4 - (24*B*b^5*d^4*e^3 - 40*(5*B*a*b^4 + A*
b^5)*d^3*e^4 + 332*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 - 1134*(B*a^3*b^2 + A*a^
2*b^3)*d*e^6 - 1219*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^3 - 4*(18*B*b^5*d^4*e^3
- 23*(5*B*a*b^4 + A*b^5)*d^3*e^4 + 152*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 - 42
2*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 - 778*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^2 - 4*
(12*B*b^5*d^4*e^3 - 14*(5*B*a*b^4 + A*b^5)*d^3*e^4 + 84*(2*B*a^2*b^3 + A*a*
b^4)*d^2*e^5 - 210*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 - 949*(B*a^4*b + 2*A*a^3*b
^2)*e^7)*m)*x^3 + (5104*A*a^5*d*e^6 + 120*(2*B*a^2*b^3 + A*a*b^4)*d^5*e^2 -
 1080*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^3 + 1790*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^
4 - 1175*(B*a^5 + 5*A*a^4*b)*d^2*e^5)*m^2 + (2520*(B*a^5 + 5*A*a^4*b)*e^7 +
 (5*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + (B*a^5 + 5*A*a^4*b)*e^7)*m^6 - (30*(B*a
^3*b^2 + A*a^2*b^3)*d^2*e^5 - 115*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 - 26*(B*a^5
 + 5*A*a^4*b)*e^7)*m^5 + 15*(4*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 38*(B*a^3*
b^2 + A*a^2*b^3)*d^2*e^5 + 67*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 18*(B*a^5 + 5
*A*a^4*b)*e^7)*m^4 - 5*(12*(5*B*a*b^4 + A*b^5)*d^4*e^3 - 168*(2*B*a^2*b^3 +
 A*a*b^4)*d^3*e^4 + 750*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^5 - 817*(B*a^4*b + 2*
A*a^3*b^2)*d*e^6 - 284*(B*a^5 + 5*A*a^4*b)*e^7)*m^3 + (360*B*b^5*d^5*e^2 -
480*(5*B*a*b^4 + A*b^5)*d^4*e^3 + 3300*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 95
10*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^5 + 7390*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 3
929*(B*a^5 + 5*A*a^4*b)*e^7)*m^2 + 6*(60*B*b^5*d^5*e^2 - 70*(5*B*a*b^4 + A*
b^5)*d^4*e^3 + 420*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 1050*(B*a^3*b^2 + A*a^
2*b^3)*d^2*e^5 + 700*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 879*(B*a^5 + 5*A*a^4*b
)*e^7)*m)*x^2 + 2*(4014*A*a^5*d*e^6 - 60*(5*B*a*b^4 + A*b^5)*d^6*e + 780*(2
*B*a^2*b^3 + A*a*b^4)*d^5*e^2 - 3210*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^3 + 3190
*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 1377*(B*a^5 + 5*A*a^4*b)*d^2*e^5)*m + (5
040*A*a^5*e^7 + (A*a^5*e^7 + (B*a^5 + 5*A*a^4*b)*d*e^6)*m^6 + (27*A*a^5*e^7
 - 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^5 + 25*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^5 +
 5*(59*A*a^5*e^7 + 12*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 - 44*(B*a^4*b + 2*A*a
^3*b^2)*d^2*e^5 + 49*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^4 + 5*(333*A*a^5*e^7 - 24
*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^3 + 216*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 - 35
8*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^5 + 235*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^3 + 2*
(2552*A*a^5*e^7 + 60*(5*B*a*b^4 + A*b^5)*d^5*e^2 - 780*(2*B*a^2*b^3 + A*a*b
^4)*d^4*e^3 + 3210*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 - 3190*(B*a^4*b + 2*A*a^
3*b^2)*d^2*e^5 + 1377*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^2 - 12*(60*B*b^5*d^6*e -
 669*A*a^5*e^7 - 70*(5*B*a*b^4 + A*b^5)*d^5*e^2 + 420*(2*B*a^2*b^3 + A*a*b^
4)*d^4*e^3 - 1050*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 + 700*(B*a^4*b + 2*A*a^3*
b^2)*d^2*e^5 - 210*(B*a^5 + 5*A*a^4*b)*d*e^6)*m))*x)*(e*x + d)^m/(e^7*m^7 +
28*e^7*m^6 + 322*e^7*m^5 + 1960*e^7*m^4 + 6769*e^7*m^3 + 13132*e^7*m^2 + 13
068*e^7*m + 5040*e^7)
```

giac [B] time = 0.84, size = 8708, normalized size = 18.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*B*b^5*m^6*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*B*b^5*d*m^6*x^6*e
^6*sgn(b*x + a) + 5*(x*e + d)^m*B*a*b^4*m^6*x^6*e^7*sgn(b*x + a) + (x*e + d
)^m*A*b^5*m^6*x^6*e^7*sgn(b*x + a) + 21*(x*e + d)^m*B*b^5*m^5*x^7*e^7*sgn(b
```

x + a) + 5(x*e + d)^m*B*a*b^4*d*m^6*x^5*e^6*sgn(b*x + a) + (x*e + d)^m*A*
b^5*d*m^6*x^5*e^6*sgn(b*x + a) + 15*(x*e + d)^m*B*b^5*d*m^5*x^6*e^6*sgn(b*x
 + a) - 6*(x*e + d)^m*B*b^5*d^2*m^5*x^5*e^5*sgn(b*x + a) + 10*(x*e + d)^m*B
*a^2*b^3*m^6*x^5*e^7*sgn(b*x + a) + 5*(x*e + d)^m*A*a*b^4*m^6*x^5*e^7*sgn(b
x + a) + 110(x*e + d)^m*B*a*b^4*m^5*x^6*e^7*sgn(b*x + a) + 22*(x*e + d)^m
*A*b^5*m^5*x^6*e^7*sgn(b*x + a) + 175*(x*e + d)^m*B*b^5*m^4*x^7*e^7*sgn(b*x
 + a) + 10*(x*e + d)^m*B*a^2*b^3*d*m^6*x^4*e^6*sgn(b*x + a) + 5*(x*e + d)^m
*A*a*b^4*d*m^6*x^4*e^6*sgn(b*x + a) + 85*(x*e + d)^m*B*a*b^4*d*m^5*x^5*e^6*
sgn(b*x + a) + 17*(x*e + d)^m*A*b^5*d*m^5*x^5*e^6*sgn(b*x + a) + 85*(x*e +
d)^m*B*b^5*d*m^4*x^6*e^6*sgn(b*x + a) - 25*(x*e + d)^m*B*a*b^4*d^2*m^5*x^4*
e^5*sgn(b*x + a) - 5*(x*e + d)^m*A*b^5*d^2*m^5*x^4*e^5*sgn(b*x + a) - 60*(x
*e + d)^m*B*b^5*d^2*m^4*x^5*e^5*sgn(b*x + a) + 30*(x*e + d)^m*B*b^5*d^3*m^4
*x^4*e^4*sgn(b*x + a) + 10*(x*e + d)^m*B*a^3*b^2*m^6*x^4*e^7*sgn(b*x + a) +
 10*(x*e + d)^m*A*a^2*b^3*m^6*x^4*e^7*sgn(b*x + a) + 230*(x*e + d)^m*B*a^2*
b^3*m^5*x^5*e^7*sgn(b*x + a) + 115*(x*e + d)^m*A*a*b^4*m^5*x^5*e^7*sgn(b*x
+ a) + 950*(x*e + d)^m*B*a*b^4*m^4*x^6*e^7*sgn(b*x + a) + 190*(x*e + d)^m*A
*b^5*m^4*x^6*e^7*sgn(b*x + a) + 735*(x*e + d)^m*B*b^5*m^3*x^7*e^7*sgn(b*x +
 a) + 10*(x*e + d)^m*B*a^3*b^2*d*m^6*x^3*e^6*sgn(b*x + a) + 10*(x*e + d)^m*
A*a^2*b^3*d*m^6*x^3*e^6*sgn(b*x + a) + 190*(x*e + d)^m*B*a^2*b^3*d*m^5*x^4*
e^6*sgn(b*x + a) + 95*(x*e + d)^m*A*a*b^4*d*m^5*x^4*e^6*sgn(b*x + a) + 525*
(x*e + d)^m*B*a*b^4*d*m^4*x^5*e^6*sgn(b*x + a) + 105*(x*e + d)^m*A*b^5*d*m^
4*x^5*e^6*sgn(b*x + a) + 225*(x*e + d)^m*B*b^5*d*m^3*x^6*e^6*sgn(b*x + a) -
 40*(x*e + d)^m*B*a^2*b^3*d^2*m^5*x^3*e^5*sgn(b*x + a) - 20*(x*e + d)^m*A*a
*b^4*d^2*m^5*x^3*e^5*sgn(b*x + a) - 325*(x*e + d)^m*B*a*b^4*d^2*m^4*x^4*e^5
*sgn(b*x + a) - 65*(x*e + d)^m*A*b^5*d^2*m^4*x^4*e^5*sgn(b*x + a) - 210*(x*
e + d)^m*B*b^5*d^2*m^3*x^5*e^5*sgn(b*x + a) + 100*(x*e + d)^m*B*a*b^4*d^3*m
^4*x^3*e^4*sgn(b*x + a) + 20*(x*e + d)^m*A*b^5*d^3*m^4*x^3*e^4*sgn(b*x + a)
 + 180*(x*e + d)^m*B*b^5*d^3*m^3*x^4*e^4*sgn(b*x + a) - 120*(x*e + d)^m*B*b
^5*d^4*m^3*x^3*e^3*sgn(b*x + a) + 5*(x*e + d)^m*B*a^4*b*m^6*x^3*e^7*sgn(b*x
 + a) + 10*(x*e + d)^m*A*a^3*b^2*m^6*x^3*e^7*sgn(b*x + a) + 240*(x*e + d)^m
*B*a^3*b^2*m^5*x^4*e^7*sgn(b*x + a) + 240*(x*e + d)^m*A*a^2*b^3*m^5*x^4*e^7
*sgn(b*x + a) + 2070*(x*e + d)^m*B*a^2*b^3*m^4*x^5*e^7*sgn(b*x + a) + 1035*
(x*e + d)^m*A*a*b^4*m^4*x^5*e^7*sgn(b*x + a) + 4100*(x*e + d)^m*B*a*b^4*m^3
*x^6*e^7*sgn(b*x + a) + 820*(x*e + d)^m*A*b^5*m^3*x^6*e^7*sgn(b*x + a) + 16
24*(x*e + d)^m*B*b^5*m^2*x^7*e^7*sgn(b*x + a) + 5*(x*e + d)^m*B*a^4*b*d*m^6
*x^2*e^6*sgn(b*x + a) + 10*(x*e + d)^m*A*a^3*b^2*d*m^6*x^2*e^6*sgn(b*x + a)
 + 210*(x*e + d)^m*B*a^3*b^2*d*m^5*x^3*e^6*sgn(b*x + a) + 210*(x*e + d)^m*A
*a^2*b^3*d*m^5*x^3*e^6*sgn(b*x + a) + 1310*(x*e + d)^m*B*a^2*b^3*d*m^4*x^4*
e^6*sgn(b*x + a) + 655*(x*e + d)^m*A*a*b^4*d*m^4*x^4*e^6*sgn(b*x + a) + 147
5*(x*e + d)^m*B*a*b^4*d*m^3*x^5*e^6*sgn(b*x + a) + 295*(x*e + d)^m*A*b^5*d*
m^3*x^5*e^6*sgn(b*x + a) + 274*(x*e + d)^m*B*b^5*d*m^2*x^6*e^6*sgn(b*x + a)
 - 30*(x*e + d)^m*B*a^3*b^2*d^2*m^5*x^2*e^5*sgn(b*x + a) - 30*(x*e + d)^m*A
*a^2*b^3*d^2*m^5*x^2*e^5*sgn(b*x + a) - 640*(x*e + d)^m*B*a^2*b^3*d^2*m^4*x
^3*e^5*sgn(b*x + a) - 320*(x*e + d)^m*A*a*b^4*d^2*m^4*x^3*e^5*sgn(b*x + a)
- 1325*(x*e + d)^m*B*a*b^4*d^2*m^3*x^4*e^5*sgn(b*x + a) - 265*(x*e + d)^m*A
*b^5*d^2*m^3*x^4*e^5*sgn(b*x + a) - 300*(x*e + d)^m*B*b^5*d^2*m^2*x^5*e^5*s
gn(b*x + a) + 120*(x*e + d)^m*B*a^2*b^3*d^3*m^4*x^2*e^4*sgn(b*x + a) + 60*(
x*e + d)^m*A*a*b^4*d^3*m^4*x^2*e^4*sgn(b*x + a) + 1000*(x*e + d)^m*B*a*b^4*
d^3*m^3*x^3*e^4*sgn(b*x + a) + 200*(x*e + d)^m*A*b^5*d^3*m^3*x^3*e^4*sgn(b*
x + a) + 330*(x*e + d)^m*B*b^5*d^3*m^2*x^4*e^4*sgn(b*x + a) - 300*(x*e + d)
^m*B*a*b^4*d^4*m^3*x^2*e^3*sgn(b*x + a) - 60*(x*e + d)^m*A*b^5*d^4*m^3*x^2*
e^3*sgn(b*x + a) - 360*(x*e + d)^m*B*b^5*d^4*m^2*x^3*e^3*sgn(b*x + a) + 360
*(x*e + d)^m*B*b^5*d^5*m^2*x^2*e^2*sgn(b*x + a) + (x*e + d)^m*B*a^5*m^6*x^2
*e^7*sgn(b*x + a) + 5*(x*e + d)^m*A*a^4*b*m^6*x^2*e^7*sgn(b*x + a) + 125*(x
*e + d)^m*B*a^4*b*m^5*x^3*e^7*sgn(b*x + a) + 250*(x*e + d)^m*A*a^3*b^2*m^5*
x^3*e^7*sgn(b*x + a) + 2260*(x*e + d)^m*B*a^3*b^2*m^4*x^4*e^7*sgn(b*x + a)
+ 2260*(x*e + d)^m*A*a^2*b^3*m^4*x^4*e^7*sgn(b*x + a) + 9250*(x*e + d)^m*B*
a^2*b^3*m^3*x^5*e^7*sgn(b*x + a) + 4625*(x*e + d)^m*A*a*b^4*m^3*x^5*e^7*sgn
(b*x + a) + 9245*(x*e + d)^m*B*a*b^4*m^2*x^6*e^7*sgn(b*x + a) + 1849*(x*e +

d)^m*A*b^5*m^2*x^6*e^7*sgn(b*x + a) + 1764*(x*e + d)^m*B*b^5*m*x^7*e^7*sgn (b*x + a) + (x*e + d)^m*B*a^5*d*m^6*x*e^6*sgn(b*x + a) + 5*(x*e + d)^m*A*a^ 4*b*d*m^6*x*e^6*sgn(b*x + a) + 115*(x*e + d)^m*B*a^4*b*d*m^5*x^2*e^6*sgn(b* x + a) + 230*(x*e + d)^m*A*a^3*b^2*d*m^5*x^2*e^6*sgn(b*x + a) + 1630*(x*e + d)^m*B*a^3*b^2*d*m^4*x^3*e^6*sgn(b*x + a) + 1630*(x*e + d)^m*A*a^2*b^3*d*m ^4*x^3*e^6*sgn(b*x + a) + 4010*(x*e + d)^m*B*a^2*b^3*d*m^3*x^4*e^6*sgn(b*x + a) + 2005*(x*e + d)^m*A*a*b^4*d*m^3*x^4*e^6*sgn(b*x + a) + 1870*(x*e + d) ^m*B*a*b^4*d*m^2*x^5*e^6*sgn(b*x + a) + 374*(x*e + d)^m*A*b^5*d*m^2*x^5*e^6 *sgn(b*x + a) + 120*(x*e + d)^m*B*b^5*d*m*x^6*e^6*sgn(b*x + a) - 10*(x*e + d)^m*B*a^4*b*d^2*m^5*x*e^5*sgn(b*x + a) - 20*(x*e + d)^m*A*a^3*b^2*d^2*m^5* x*e^5*sgn(b*x + a) - 570*(x*e + d)^m*B*a^3*b^2*d^2*m^4*x^2*e^5*sgn(b*x + a) - 570*(x*e + d)^m*A*a^2*b^3*d^2*m^4*x^2*e^5*sgn(b*x + a) - 3320*(x*e + d)^ m*B*a^2*b^3*d^2*m^3*x^3*e^5*sgn(b*x + a) - 1660*(x*e + d)^m*A*a*b^4*d^2*m^3 *x^3*e^5*sgn(b*x + a) - 2075*(x*e + d)^m*B*a*b^4*d^2*m^2*x^4*e^5*sgn(b*x + a) - 415*(x*e + d)^m*A*b^5*d^2*m^2*x^4*e^5*sgn(b*x + a) - 144*(x*e + d)^m*B *b^5*d^2*m*x^5*e^5*sgn(b*x + a) + 60*(x*e + d)^m*B*a^3*b^2*d^3*m^4*x*e^4*sg n(b*x + a) + 60*(x*e + d)^m*A*a^2*b^3*d^3*m^4*x*e^4*sgn(b*x + a) + 1680*(x* e + d)^m*B*a^2*b^3*d^3*m^3*x^2*e^4*sgn(b*x + a) + 840*(x*e + d)^m*A*a*b^4*d ^3*m^3*x^2*e^4*sgn(b*x + a) + 2300*(x*e + d)^m*B*a*b^4*d^3*m^2*x^3*e^4*sgn(b*x + a) + 460*(x*e + d)^m*A*b^5*d^3*m^2*x^3*e^4*sgn(b*x + a) + 180*(x*e + d)^m*B*b^5*d^3*m*x^4*e^4*sgn(b*x + a) - 240*(x*e + d)^m*B*a^2*b^3*d^4*m^3*x *e^3*sgn(b*x + a) - 120*(x*e + d)^m*A*a*b^4*d^4*m^3*x*e^3*sgn(b*x + a) - 24 00*(x*e + d)^m*B*a*b^4*d^4*m^2*x^2*e^3*sgn(b*x + a) - 480*(x*e + d)^m*A*b^5 *d^4*m^2*x^2*e^3*sgn(b*x + a) - 240*(x*e + d)^m*B*b^5*d^4*m*x^3*e^3*sgn(b*x + a) + 600*(x*e + d)^m*B*a*b^4*d^5*m^2*x*e^2*sgn(b*x + a) + 120*(x*e + d)^ m*A*b^5*d^5*m^2*x*e^2*sgn(b*x + a) + 360*(x*e + d)^m*B*b^5*d^5*m*x^2*e^2*sg n(b*x + a) - 720*(x*e + d)^m*B*b^5*d^6*m*x*e*sgn(b*x + a) + (x*e + d)^m*A*a ^5*m^6*x*e^7*sgn(b*x + a) + 26*(x*e + d)^m*B*a^5*m^5*x^2*e^7*sgn(b*x + a) + 130*(x*e + d)^m*A*a^4*b*m^5*x^2*e^7*sgn(b*x + a) + 1235*(x*e + d)^m*B*a^4* b*m^4*x^3*e^7*sgn(b*x + a) + 2470*(x*e + d)^m*A*a^3*b^2*m^4*x^3*e^7*sgn(b*x + a) + 10560*(x*e + d)^m*B*a^3*b^2*m^3*x^4*e^7*sgn(b*x + a) + 10560*(x*e + d)^m*A*a^2*b^3*m^3*x^4*e^7*sgn(b*x + a) + 21440*(x*e + d)^m*B*a^2*b^3*m^2* x^5*e^7*sgn(b*x + a) + 10720*(x*e + d)^m*A*a*b^4*m^2*x^5*e^7*sgn(b*x + a) + 10190*(x*e + d)^m*B*a*b^4*m*x^6*e^7*sgn(b*x + a) + 2038*(x*e + d)^m*A*b^5* m*x^6*e^7*sgn(b*x + a) + 720*(x*e + d)^m*B*b^5*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*A*a^5*d*m^6*e^6*sgn(b*x + a) + 25*(x*e + d)^m*B*a^5*d*m^5*x*e^6*sgn(b*x + a) + 125*(x*e + d)^m*A*a^4*b*d*m^5*x*e^6*sgn(b*x + a) + 1005*(x*e + d)^m*B*a^4*b*d*m^4*x^2*e^6*sgn(b*x + a) + 2010*(x*e + d)^m*A*a^3*b^2*d*m^4*x ^2*e^6*sgn(b*x + a) + 5670*(x*e + d)^m*B*a^3*b^2*d*m^3*x^3*e^6*sgn(b*x + a) + 5670*(x*e + d)^m*A*a^2*b^3*d*m^3*x^3*e^6*sgn(b*x + a) + 5400*(x*e + d)^m *B*a^2*b^3*d*m^2*x^4*e^6*sgn(b*x + a) + 2700*(x*e + d)^m*A*a*b^4*d*m^2*x^4* e^6*sgn(b*x + a) + 840*(x*e + d)^m*B*a*b^4*d*m*x^5*e^6*sgn(b*x + a) + 168*(x*e + d)^m*A*b^5*d*m*x^5*e^6*sgn(b*x + a) - (x*e + d)^m*B*a^5*d^2*m^5*e^5*s gn(b*x + a) - 5*(x*e + d)^m*A*a^4*b*d^2*m^5*e^5*sgn(b*x + a) - 220*(x*e + d)^m*B*a^4*b*d^2*m^4*x*e^5*sgn(b*x + a) - 440*(x*e + d)^m*A*a^3*b^2*d^2*m^4* x*e^5*sgn(b*x + a) - 3750*(x*e + d)^m*B*a^3*b^2*d^2*m^3*x^2*e^5*sgn(b*x + a) - 3750*(x*e + d)^m*A*a^2*b^3*d^2*m^3*x^2*e^5*sgn(b*x + a) - 6080*(x*e + d)^m*B*a^2*b^3*d^2*m^2*x^3*e^5*sgn(b*x + a) - 3040*(x*e + d)^m*A*a*b^4*d^2*m ^2*x^3*e^5*sgn(b*x + a) - 1050*(x*e + d)^m*B*a*b^4*d^2*m*x^4*e^5*sgn(b*x + a) - 210*(x*e + d)^m*A*b^5*d^2*m*x^4*e^5*sgn(b*x + a) + 10*(x*e + d)^m*B*a^ 4*b*d^3*m^4*e^4*sgn(b*x + a) + 20*(x*e + d)^m*A*a^3*b^2*d^3*m^4*e^4*sgn(b*x + a) + 1080*(x*e + d)^m*B*a^3*b^2*d^3*m^3*x*e^4*sgn(b*x + a) + 1080*(x*e + d)^m*A*a^2*b^3*d^3*m^3*x*e^4*sgn(b*x + a) + 6600*(x*e + d)^m*B*a^2*b^3*d^3 *m^2*x^2*e^4*sgn(b*x + a) + 3300*(x*e + d)^m*A*a*b^4*d^3*m^2*x^2*e^4*sgn(b* x + a) + 1400*(x*e + d)^m*B*a*b^4*d^3*m*x^3*e^4*sgn(b*x + a) + 280*(x*e + d)^m*A*b^5*d^3*m*x^3*e^4*sgn(b*x + a) - 60*(x*e + d)^m*B*a^3*b^2*d^4*m^3*e^3 *sgn(b*x + a) - 60*(x*e + d)^m*A*a^2*b^3*d^4*m^3*e^3*sgn(b*x + a) - 3120*(x *e + d)^m*B*a^2*b^3*d^4*m^2*x*e^3*sgn(b*x + a) - 1560*(x*e + d)^m*A*a*b^4*d ^4*m^2*x*e^3*sgn(b*x + a) - 2100*(x*e + d)^m*B*a*b^4*d^4*m*x^2*e^3*sgn(b*x

+ a) - 420*(x*e + d)^m*A*b^5*d^4*m*x^2*e^3*sgn(b*x + a) + 240*(x*e + d)^m*B*a^2*b^3*d^5*m^2*e^2*sgn(b*x + a) + 120*(x*e + d)^m*A*a*b^4*d^5*m^2*e^2*sgn(b*x + a) + 4200*(x*e + d)^m*B*a*b^4*d^5*m*x*e^2*sgn(b*x + a) + 840*(x*e + d)^m*A*b^5*d^5*m*x*e^2*sgn(b*x + a) - 600*(x*e + d)^m*B*a*b^4*d^6*m*e*sgn(b*x + a) - 120*(x*e + d)^m*A*b^5*d^6*m*e*sgn(b*x + a) + 720*(x*e + d)^m*B*b^5*d^7*sgn(b*x + a) + 27*(x*e + d)^m*A*a^5*m^5*x*e^7*sgn(b*x + a) + 270*(x*e + d)^m*B*a^5*m^4*x^2*e^7*sgn(b*x + a) + 1350*(x*e + d)^m*A*a^4*b*m^4*x^2*e^7*sgn(b*x + a) + 6095*(x*e + d)^m*B*a^4*b*m^3*x^3*e^7*sgn(b*x + a) + 12190*(x*e + d)^m*A*a^3*b^2*m^3*x^3*e^7*sgn(b*x + a) + 25450*(x*e + d)^m*B*a^3*b^2*m^2*x^4*e^7*sgn(b*x + a) + 25450*(x*e + d)^m*A*a^2*b^3*m^2*x^4*e^7*sgn(b*x + a) + 24120*(x*e + d)^m*B*a^2*b^3*m*x^5*e^7*sgn(b*x + a) + 12060*(x*e + d)^m*A*a*b^4*m*x^5*e^7*sgn(b*x + a) + 4200*(x*e + d)^m*B*a*b^4*x^6*e^7*sgn(b*x + a) + 840*(x*e + d)^m*A*b^5*x^6*e^7*sgn(b*x + a) + 27*(x*e + d)^m*A*a^5*d*m^5*e^6*sgn(b*x + a) + 245*(x*e + d)^m*B*a^5*d*m^4*x*e^6*sgn(b*x + a) + 1225*(x*e + d)^m*A*a^4*b*d*m^4*x*e^6*sgn(b*x + a) + 4085*(x*e + d)^m*B*a^4*b*d*m^3*x^2*e^6*sgn(b*x + a) + 8170*(x*e + d)^m*A*a^3*b^2*d*m^3*x^2*e^6*sgn(b*x + a) + 8440*(x*e + d)^m*B*a^3*b^2*d*m^2*x^3*e^6*sgn(b*x + a) + 8440*(x*e + d)^m*A*a^2*b^3*d*m^2*x^3*e^6*sgn(b*x + a) + 2520*(x*e + d)^m*B*a^2*b^3*d*m*x^4*e^6*sgn(b*x + a) + 1260*(x*e + d)^m*A*a*b^4*d*m*x^4*e^6*sgn(b*x + a) - 25*(x*e + d)^m*B*a^5*d^2*m^4*e^5*sgn(b*x + a) - 125*(x*e + d)^m*A*a^4*b*d^2*m^4*e^5*sgn(b*x + a) - 1790*(x*e + d)^m*B*a^4*b*d^2*m^3*x*e^5*sgn(b*x + a) - 3580*(x*e + d)^m*A*a^3*b^2*d^2*m^3*x*e^5*sgn(b*x + a) - 9510*(x*e + d)^m*B*a^3*b^2*d^2*m^2*x^2*e^5*sgn(b*x + a) - 9510*(x*e + d)^m*A*a^2*b^3*d^2*m^2*x^2*e^5*sgn(b*x + a) - 3360*(x*e + d)^m*B*a^2*b^3*d^2*m*x^3*e^5*sgn(b*x + a) - 1680*(x*e + d)^m*A*a*b^4*d^2*m*x^3*e^5*sgn(b*x + a) + 220*(x*e + d)^m*B*a^4*b*d^3*m^3*e^4*sgn(b*x + a) + 440*(x*e + d)^m*A*a^3*b^2*d^3*m^3*e^4*sgn(b*x + a) + 6420*(x*e + d)^m*B*a^3*b^2*d^3*m^2*x*e^4*sgn(b*x + a) + 6420*(x*e + d)^m*A*a^2*b^3*d^3*m^2*x*e^4*sgn(b*x + a) + 5040*(x*e + d)^m*B*a^2*b^3*d^3*m*x^2*e^4*sgn(b*x + a) + 2520*(x*e + d)^m*A*a*b^4*d^3*m*x^2*e^4*sgn(b*x + a) - 1080*(x*e + d)^m*B*a^3*b^2*d^4*m^2*e^3*sgn(b*x + a) - 1080*(x*e + d)^m*A*a^2*b^3*d^4*m^2*e^3*sgn(b*x + a) - 10080*(x*e + d)^m*B*a^2*b^3*d^4*m*x*e^3*sgn(b*x + a) - 5040*(x*e + d)^m*A*a*b^4*d^4*m*x*e^3*sgn(b*x + a) + 3120*(x*e + d)^m*B*a^2*b^3*d^5*m*e^2*sgn(b*x + a) + 1560*(x*e + d)^m*A*a*b^4*d^5*m*e^2*sgn(b*x + a) - 4200*(x*e + d)^m*B*a*b^4*d^6*e*sgn(b*x + a) - 840*(x*e + d)^m*A*b^5*d^6*e*sgn(b*x + a) + 295*(x*e + d)^m*A*a^5*m^4*x*e^7*sgn(b*x + a) + 1420*(x*e + d)^m*B*a^5*m^3*x^2*e^7*sgn(b*x + a) + 7100*(x*e + d)^m*A*a^4*b*m^3*x^2*e^7*sgn(b*x + a) + 15560*(x*e + d)^m*B*a^4*b*m^2*x^3*e^7*sgn(b*x + a) + 31120*(x*e + d)^m*A*a^3*b^2*m^2*x^3*e^7*sgn(b*x + a) + 29520*(x*e + d)^m*B*a^3*b^2*m*x^4*e^7*sgn(b*x + a) + 29520*(x*e + d)^m*A*a^2*b^3*m*x^4*e^7*sgn(b*x + a) + 10080*(x*e + d)^m*B*a^2*b^3*x^5*e^7*sgn(b*x + a) + 5040*(x*e + d)^m*A*a*b^4*x^5*e^7*sgn(b*x + a) + 295*(x*e + d)^m*A*a^5*d*m^4*e^6*sgn(b*x + a) + 1175*(x*e + d)^m*B*a^5*d*m^3*x*e^6*sgn(b*x + a) + 5875*(x*e + d)^m*A*a^4*b*d*m^3*x*e^6*sgn(b*x + a) + 7390*(x*e + d)^m*B*a^4*b*d*m^2*x^2*e^6*sgn(b*x + a) + 14780*(x*e + d)^m*A*a^3*b^2*d*m^2*x^2*e^6*sgn(b*x + a) + 4200*(x*e + d)^m*B*a^3*b^2*d*m*x^3*e^6*sgn(b*x + a) + 4200*(x*e + d)^m*A*a^2*b^3*d*m*x^3*e^6*sgn(b*x + a) - 245*(x*e + d)^m*B*a^5*d^2*m^3*e^5*sgn(b*x + a) - 1225*(x*e + d)^m*A*a^4*b*d^2*m^3*e^5*sgn(b*x + a) - 6380*(x*e + d)^m*B*a^4*b*d^2*m^2*x*e^5*sgn(b*x + a) - 12760*(x*e + d)^m*A*a^3*b^2*d^2*m^2*x*e^5*sgn(b*x + a) - 6300*(x*e + d)^m*B*a^3*b^2*d^2*m*x^2*e^5*sgn(b*x + a) - 6300*(x*e + d)^m*A*a^2*b^3*d^2*m*x^2*e^5*sgn(b*x + a) + 1790*(x*e + d)^m*B*a^4*b*d^3*m^2*e^4*sgn(b*x + a) + 3580*(x*e + d)^m*A*a^3*b^2*d^3*m^2*e^4*sgn(b*x + a) + 12600*(x*e + d)^m*B*a^3*b^2*d^3*m*x*e^4*sgn(b*x + a) + 12600*(x*e + d)^m*A*a^2*b^3*d^3*m*x*e^4*sgn(b*x + a) - 6420*(x*e + d)^m*B*a^3*b^2*d^4*m*e^3*sgn(b*x + a) - 6420*(x*e + d)^m*A*a^2*b^3*d^4*m*e^3*sgn(b*x + a) + 10080*(x*e + d)^m*B*a^2*b^3*d^5*e^2*sgn(b*x + a) + 5040*(x*e + d)^m*A*a*b^4*d^5*e^2*sgn(b*x + a) + 1665*(x*e + d)^m*A*a^5*m^3*x*e^7*sgn(b*x + a) + 3929*(x*e + d)^m*B*a^5*m^2*x^2*e^7*sgn(b*x + a) + 19645*(x*e + d)^m*A*a^4*b*m^2*x^2*e^7*sgn(b*x + a) + 18980*(x*e + d)^m*B*a^4*b*m*x^3*e^7*sgn(b*x + a) + 37960*(x*e + d)^m*A*a^3*b^2*m*x^3*e^7*sgn(b*x + a)

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+ 12600*(x*e + d)^m*B*a^3*b^2*x^4*e^7*sgn(b*x + a) + 12600*(x*e + d)^m*A*a^
2*b^3*x^4*e^7*sgn(b*x + a) + 1665*(x*e + d)^m*A*a^5*d*m^3*e^6*sgn(b*x + a)
+ 2754*(x*e + d)^m*B*a^5*d*m^2*x*e^6*sgn(b*x + a) + 13770*(x*e + d)^m*A*a^4
*b*d*m^2*x*e^6*sgn(b*x + a) + 4200*(x*e + d)^m*B*a^4*b*d*m*x^2*e^6*sgn(b*x
+ a) + 8400*(x*e + d)^m*A*a^3*b^2*d*m*x^2*e^6*sgn(b*x + a) - 1175*(x*e + d)
^m*B*a^5*d^2*m^2*e^5*sgn(b*x + a) - 5875*(x*e + d)^m*A*a^4*b*d^2*m^2*e^5*sg
n(b*x + a) - 8400*(x*e + d)^m*B*a^4*b*d^2*m*x*e^5*sgn(b*x + a) - 16800*(x*e
 + d)^m*A*a^3*b^2*d^2*m*x*e^5*sgn(b*x + a) + 6380*(x*e + d)^m*B*a^4*b*d^3*m
*e^4*sgn(b*x + a) + 12760*(x*e + d)^m*A*a^3*b^2*d^3*m*e^4*sgn(b*x + a) - 12
600*(x*e + d)^m*B*a^3*b^2*d^4*e^3*sgn(b*x + a) - 12600*(x*e + d)^m*A*a^2*b^
3*d^4*e^3*sgn(b*x + a) + 5104*(x*e + d)^m*A*a^5*m^2*x*e^7*sgn(b*x + a) + 52
74*(x*e + d)^m*B*a^5*m*x^2*e^7*sgn(b*x + a) + 26370*(x*e + d)^m*A*a^4*b*m*x
^2*e^7*sgn(b*x + a) + 8400*(x*e + d)^m*B*a^4*b*x^3*e^7*sgn(b*x + a) + 16800
*(x*e + d)^m*A*a^3*b^2*x^3*e^7*sgn(b*x + a) + 5104*(x*e + d)^m*A*a^5*d*m^2*
e^6*sgn(b*x + a) + 2520*(x*e + d)^m*B*a^5*d*m*x*e^6*sgn(b*x + a) + 12600*(x
*e + d)^m*A*a^4*b*d*m*x*e^6*sgn(b*x + a) - 2754*(x*e + d)^m*B*a^5*d^2*m*e^5
*sgn(b*x + a) - 13770*(x*e + d)^m*A*a^4*b*d^2*m*e^5*sgn(b*x + a) + 8400*(x*
e + d)^m*B*a^4*b*d^3*e^4*sgn(b*x + a) + 16800*(x*e + d)^m*A*a^3*b^2*d^3*e^4
*sgn(b*x + a) + 8028*(x*e + d)^m*A*a^5*m*x*e^7*sgn(b*x + a) + 2520*(x*e + d
)^m*B*a^5*x^2*e^7*sgn(b*x + a) + 12600*(x*e + d)^m*A*a^4*b*x^2*e^7*sgn(b*x
+ a) + 8028*(x*e + d)^m*A*a^5*d*m*e^6*sgn(b*x + a) - 2520*(x*e + d)^m*B*a^5
*d^2*e^5*sgn(b*x + a) - 12600*(x*e + d)^m*A*a^4*b*d^2*e^5*sgn(b*x + a) + 50
40*(x*e + d)^m*A*a^5*x*e^7*sgn(b*x + a) + 5040*(x*e + d)^m*A*a^5*d*e^6*sgn(
b*x + a))/(m^7*e^7 + 28*m^6*e^7 + 322*m^5*e^7 + 1960*m^4*e^7 + 6769*m^3*e^7
 + 13132*m^2*e^7 + 13068*m*e^7 + 5040*e^7)
```

maple [B] time = 0.07, size = 3931, normalized size = 8.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)

[Out] (e*x+d)^(m+1)*(B*b^5*e^6*m^6*x^6+A*b^5*e^6*m^6*x^5+5*B*a*b^4*e^6*m^6*x^5+21
*B*b^5*e^6*m^5*x^6+5*A*a*b^4*e^6*m^6*x^4+22*A*b^5*e^6*m^5*x^5+10*B*a^2*b^3*
e^6*m^6*x^4+110*B*a*b^4*e^6*m^5*x^5-6*B*b^5*d*e^5*m^5*x^5+175*B*b^5*e^6*m^4
*x^6+10*A*a^2*b^3*e^6*m^6*x^3+115*A*a*b^4*e^6*m^5*x^4-5*A*b^5*d*e^5*m^5*x^4
+190*A*b^5*e^6*m^4*x^5+10*B*a^3*b^2*e^6*m^6*x^3+230*B*a^2*b^3*e^6*m^5*x^4-2
5*B*a*b^4*d*e^5*m^5*x^4+950*B*a*b^4*e^6*m^4*x^5-90*B*b^5*d*e^5*m^4*x^5+735*
B*b^5*e^6*m^3*x^6+10*A*a^3*b^2*e^6*m^6*x^2+240*A*a^2*b^3*e^6*m^5*x^3-20*A*a
*b^4*d*e^5*m^5*x^3+1035*A*a*b^4*e^6*m^4*x^4-85*A*b^5*d*e^5*m^4*x^4+820*A*b^
5*e^6*m^3*x^5+5*B*a^4*b*e^6*m^6*x^2+240*B*a^3*b^2*e^6*m^5*x^3-40*B*a^2*b^3*
d*e^5*m^5*x^3+2070*B*a^2*b^3*e^6*m^4*x^4-425*B*a*b^4*d*e^5*m^4*x^4+4100*B*a
*b^4*e^6*m^3*x^5+30*B*b^5*d^2*e^4*m^4*x^4-510*B*b^5*d*e^5*m^3*x^5+1624*B*b^
5*e^6*m^2*x^6+5*A*a^4*b*e^6*m^6*x+250*A*a^3*b^2*e^6*m^5*x^2-30*A*a^2*b^3*d*
e^5*m^5*x^2+2260*A*a^2*b^3*e^6*m^4*x^3-380*A*a*b^4*d*e^5*m^4*x^3+4625*A*a*b
^4*e^6*m^3*x^4+20*A*b^5*d^2*e^4*m^4*x^3-525*A*b^5*d*e^5*m^3*x^4+1849*A*b^5*
e^6*m^2*x^5+B*a^5*e^6*m^6*x+125*B*a^4*b*e^6*m^5*x^2-30*B*a^3*b^2*d*e^5*m^5*
x^2+2260*B*a^3*b^2*e^6*m^4*x^3-760*B*a^2*b^3*d*e^5*m^4*x^3+9250*B*a^2*b^3*e
^6*m^3*x^4+100*B*a*b^4*d^2*e^4*m^4*x^3-2625*B*a*b^4*d*e^5*m^3*x^4+9245*B*a*
b^4*e^6*m^2*x^5+300*B*b^5*d^2*e^4*m^3*x^4-1350*B*b^5*d*e^5*m^2*x^5+1764*B*b
^5*e^6*m*x^6+A*a^5*e^6*m^6+130*A*a^4*b*e^6*m^5*x-20*A*a^3*b^2*d*e^5*m^5*x+2
470*A*a^3*b^2*e^6*m^4*x^2-630*A*a^2*b^3*d*e^5*m^4*x^2+10560*A*a^2*b^3*e^6*m
^3*x^3+60*A*a*b^4*d^2*e^4*m^4*x^2-2620*A*a*b^4*d*e^5*m^3*x^3+10720*A*a*b^4*
e^6*m^2*x^4+260*A*b^5*d^2*e^4*m^3*x^3-1475*A*b^5*d*e^5*m^2*x^4+2038*A*b^5*e
^6*m*x^5+26*B*a^5*e^6*m^5*x-10*B*a^4*b*d*e^5*m^5*x+1235*B*a^4*b*e^6*m^4*x^2
-630*B*a^3*b^2*d*e^5*m^4*x^2+10560*B*a^3*b^2*e^6*m^3*x^3+120*B*a^2*b^3*d^2*
e^4*m^4*x^2-5240*B*a^2*b^3*d*e^5*m^3*x^3+21440*B*a^2*b^3*e^6*m^2*x^4+1300*B
*a*b^4*d^2*e^4*m^3*x^3-7375*B*a*b^4*d*e^5*m^2*x^4+10190*B*a*b^4*e^6*m*x^5-1
20*B*b^5*d^3*e^3*m^3*x^3+1050*B*b^5*d^2*e^4*m^2*x^4-1644*B*b^5*d*e^5*m*x^5+
```

```
720*B*b^5*e^6*x^6+27*A*a^5*e^6*m^5-5*A*a^4*b*d*e^5*m^5+1350*A*a^4*b*e^6*m^4
*x-460*A*a^3*b^2*d*e^5*m^4*x+12190*A*a^3*b^2*e^6*m^3*x^2+60*A*a^2*b^3*d^2*e
^4*m^4*x-4890*A*a^2*b^3*d*e^5*m^3*x^2+25450*A*a^2*b^3*e^6*m^2*x^3+960*A*a*b
^4*d^2*e^4*m^3*x^2-8020*A*a*b^4*d*e^5*m^2*x^3+12060*A*a*b^4*e^6*m*x^4-60*A*
b^5*d^3*e^3*m^3*x^2+1060*A*b^5*d^2*e^4*m^2*x^3-1870*A*b^5*d*e^5*m*x^4+840*A
*b^5*e^6*x^5-B*a^5*d*e^5*m^5+270*B*a^5*e^6*m^4*x-230*B*a^4*b*d*e^5*m^4*x+60
95*B*a^4*b*e^6*m^3*x^2+60*B*a^3*b^2*d^2*e^4*m^4*x-4890*B*a^3*b^2*d*e^5*m^3*
x^2+25450*B*a^3*b^2*e^6*m^2*x^3+1920*B*a^2*b^3*d^2*e^4*m^3*x^2-16040*B*a^2*
b^3*d*e^5*m^2*x^3+24120*B*a^2*b^3*e^6*m*x^4-300*B*a*b^4*d^3*e^3*m^3*x^2+530
0*B*a*b^4*d^2*e^4*m^2*x^3-9350*B*a*b^4*d*e^5*m*x^4+4200*B*a*b^4*e^6*x^5-720
*B*b^5*d^3*e^3*m^2*x^3+1500*B*b^5*d^2*e^4*m*x^4-720*B*b^5*d*e^5*x^5+295*A*a
^5*e^6*m^4-125*A*a^4*b*d*e^5*m^4+7100*A*a^4*b*e^6*m^3*x+20*A*a^3*b^2*d^2*e^
4*m^4-4020*A*a^3*b^2*d*e^5*m^3*x+31120*A*a^3*b^2*e^6*m^2*x^2+1140*A*a^2*b^3
*d^2*e^4*m^3*x-17010*A*a^2*b^3*d*e^5*m^2*x^2+29520*A*a^2*b^3*e^6*m*x^3-120*
A*a*b^4*d^3*e^3*m^3*x+4980*A*a*b^4*d^2*e^4*m^2*x^2-10800*A*a*b^4*d*e^5*m*x^
3+5040*A*a*b^4*e^6*x^4-600*A*b^5*d^3*e^3*m^2*x^2+1660*A*b^5*d^2*e^4*m*x^3-8
40*A*b^5*d*e^5*x^4-25*B*a^5*d*e^5*m^4+1420*B*a^5*e^6*m^3*x+10*B*a^4*b*d^2*e
^4*m^4-2010*B*a^4*b*d*e^5*m^3*x+15560*B*a^4*b*e^6*m^2*x^2+1140*B*a^3*b^2*d^
2*e^4*m^3*x-17010*B*a^3*b^2*d*e^5*m^2*x^2+29520*B*a^3*b^2*e^6*m*x^3-240*B*a
^2*b^3*d^3*e^3*m^3*x+9960*B*a^2*b^3*d^2*e^4*m^2*x^2-21600*B*a^2*b^3*d*e^5*m
*x^3+10080*B*a^2*b^3*e^6*x^4-3000*B*a*b^4*d^3*e^3*m^2*x^2+8300*B*a*b^4*d^2*
e^4*m*x^3-4200*B*a*b^4*d*e^5*x^4+360*B*b^5*d^4*e^2*m^2*x^2-1320*B*b^5*d^3*e
^3*m*x^3+720*B*b^5*d^2*e^4*x^4+1665*A*a^5*e^6*m^3-1225*A*a^4*b*d*e^5*m^3+19
645*A*a^4*b*e^6*m^2*x+440*A*a^3*b^2*d^2*e^4*m^3-16340*A*a^3*b^2*d*e^5*m^2*x
+37960*A*a^3*b^2*e^6*m*x^2-60*A*a^2*b^3*d^3*e^3*m^3+7500*A*a^2*b^3*d^2*e^4*
m^2*x-25320*A*a^2*b^3*d*e^5*m*x^2+12600*A*a^2*b^3*e^6*x^3-1680*A*a*b^4*d^3*
e^3*m^2*x+9120*A*a*b^4*d^2*e^4*m*x^2-5040*A*a*b^4*d*e^5*x^3+120*A*b^5*d^4*e
^2*m^2*x-1380*A*b^5*d^3*e^3*m*x^2+840*A*b^5*d^2*e^4*x^3-245*B*a^5*d*e^5*m^3
+3929*B*a^5*e^6*m^2*x+220*B*a^4*b*d^2*e^4*m^3-8170*B*a^4*b*d*e^5*m^2*x+1898
0*B*a^4*b*e^6*m*x^2-60*B*a^3*b^2*d^3*e^3*m^3+7500*B*a^3*b^2*d^2*e^4*m^2*x-2
5320*B*a^3*b^2*d*e^5*m*x^2+12600*B*a^3*b^2*e^6*x^3-3360*B*a^2*b^3*d^3*e^3*m
^2*x+18240*B*a^2*b^3*d^2*e^4*m*x^2-10080*B*a^2*b^3*d*e^5*x^3+600*B*a*b^4*d^
4*e^2*m^2*x-6900*B*a*b^4*d^3*e^3*m*x^2+4200*B*a*b^4*d^2*e^4*x^3+1080*B*b^5*
d^4*e^2*m*x^2-720*B*b^5*d^3*e^3*x^3+5104*A*a^5*e^6*m^2-5875*A*a^4*b*d*e^5*m
^2+26370*A*a^4*b*e^6*m*x+3580*A*a^3*b^2*d^2*e^4*m^2-29560*A*a^3*b^2*d*e^5*m
*x+16800*A*a^3*b^2*e^6*x^2-1080*A*a^2*b^3*d^3*e^3*m^2+19020*A*a^2*b^3*d^2*e
^4*m*x-12600*A*a^2*b^3*d*e^5*x^2+120*A*a*b^4*d^4*e^2*m^2-6600*A*a*b^4*d^3*e
^3*m*x+5040*A*a*b^4*d^2*e^4*x^2+960*A*b^5*d^4*e^2*m*x-840*A*b^5*d^3*e^3*x^2
-1175*B*a^5*d*e^5*m^2+5274*B*a^5*e^6*m*x+1790*B*a^4*b*d^2*e^4*m^2-14780*B*a
^4*b*d*e^5*m*x+8400*B*a^4*b*e^6*x^2-1080*B*a^3*b^2*d^3*e^3*m^2+19020*B*a^3*
b^2*d^2*e^4*m*x-12600*B*a^3*b^2*d*e^5*x^2+240*B*a^2*b^3*d^4*e^2*m^2-13200*B
*a^2*b^3*d^3*e^3*m*x+10080*B*a^2*b^3*d^2*e^4*x^2+4800*B*a*b^4*d^4*e^2*m*x-4
200*B*a*b^4*d^3*e^3*x^2-720*B*b^5*d^5*e*m*x+720*B*b^5*d^4*e^2*x^2+8028*A*a^
5*e^6*m-13770*A*a^4*b*d*e^5*m+12600*A*a^4*b*e^6*x+12760*A*a^3*b^2*d^2*e^4*m
-16800*A*a^3*b^2*d*e^5*x-6420*A*a^2*b^3*d^3*e^3*m+12600*A*a^2*b^3*d^2*e^4*x
+1560*A*a*b^4*d^4*e^2*m-5040*A*a*b^4*d^3*e^3*x-120*A*b^5*d^5*e*m+840*A*b^5*
d^4*e^2*x-2754*B*a^5*d*e^5*m+2520*B*a^5*e^6*x+6380*B*a^4*b*d^2*e^4*m-8400*B
*a^4*b*d*e^5*x-6420*B*a^3*b^2*d^3*e^3*m+12600*B*a^3*b^2*d^2*e^4*x+3120*B*a^
2*b^3*d^4*e^2*m-10080*B*a^2*b^3*d^3*e^3*x-600*B*a*b^4*d^5*e*m+4200*B*a*b^4*
d^4*e^2*x-720*B*b^5*d^5*e*x+5040*A*a^5*e^6-12600*A*a^4*b*d*e^5+16800*A*a^3*
b^2*d^2*e^4-12600*A*a^2*b^3*d^3*e^3+5040*A*a*b^4*d^4*e^2-840*A*b^5*d^5*e-25
20*B*a^5*d*e^5+8400*B*a^4*b*d^2*e^4-12600*B*a^3*b^2*d^3*e^3+10080*B*a^2*b^3
*d^4*e^2-4200*B*a*b^4*d^5*e+720*B*b^5*d^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5/e^7/
(m^7+28*m^6+322*m^5+1960*m^4+6769*m^3+13132*m^2+13068*m+5040)
```

maxima [B] time = 0.82, size = 1864, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^5*e^6*x^6 - 60*(m^2 + 11
*m + 30)*a^2*b^3*d^4*e^2 + 20*(m^3 + 15*m^2 + 74*m + 120)*a^3*b^2*d^3*e^3 -
 5*(m^4 + 18*m^3 + 119*m^2 + 342*m + 360)*a^4*b*d^2*e^4 + (m^5 + 20*m^4 + 1
55*m^3 + 580*m^2 + 1044*m + 720)*a^5*d*e^5 + 120*a*b^4*d^5*e*(m + 6) - 120*
b^5*d^6 + ((m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d*e^5 + 5*(m^5 + 16*
m^4 + 95*m^3 + 260*m^2 + 324*m + 144)*a*b^4*e^6)*x^5 - 5*((m^4 + 6*m^3 + 11
*m^2 + 6*m)*b^5*d^2*e^4 - (m^5 + 12*m^4 + 47*m^3 + 72*m^2 + 36*m)*a*b^4*d*e
^5 - 2*(m^5 + 17*m^4 + 107*m^3 + 307*m^2 + 396*m + 180)*a^2*b^3*e^6)*x^4 +
10*(2*(m^3 + 3*m^2 + 2*m)*b^5*d^3*e^3 - 2*(m^4 + 9*m^3 + 20*m^2 + 12*m)*a*b
^4*d^2*e^4 + (m^5 + 14*m^4 + 65*m^3 + 112*m^2 + 60*m)*a^2*b^3*d*e^5 + (m^5
+ 18*m^4 + 121*m^3 + 372*m^2 + 508*m + 240)*a^3*b^2*e^6)*x^3 - 5*(12*(m^2 +
 m)*b^5*d^4*e^2 - 12*(m^3 + 7*m^2 + 6*m)*a*b^4*d^3*e^3 + 6*(m^4 + 12*m^3 +
41*m^2 + 30*m)*a^2*b^3*d^2*e^4 - 2*(m^5 + 16*m^4 + 89*m^3 + 194*m^2 + 120*m
)*a^3*b^2*d*e^5 - (m^5 + 19*m^4 + 137*m^3 + 461*m^2 + 702*m + 360)*a^4*b*e^
6)*x^2 - (120*(m^2 + 6*m)*a*b^4*d^4*e^2 - 60*(m^3 + 11*m^2 + 30*m)*a^2*b^3*
d^3*e^3 + 20*(m^4 + 15*m^3 + 74*m^2 + 120*m)*a^3*b^2*d^2*e^4 - 5*(m^5 + 18*
m^4 + 119*m^3 + 342*m^2 + 360*m)*a^4*b*d*e^5 - (m^5 + 20*m^4 + 155*m^3 + 58
0*m^2 + 1044*m + 720)*a^5*e^6 - 120*b^5*d^5*e*m)*x)*(e*x + d)^m*A/((m^6 + 2
1*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + ((m^6 + 21*m^5
+ 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^5*e^7*x^7 + 240*(m^2 + 13*
m + 42)*a^2*b^3*d^5*e^2 - 60*(m^3 + 18*m^2 + 107*m + 210)*a^3*b^2*d^4*e^3 +
 10*(m^4 + 22*m^3 + 179*m^2 + 638*m + 840)*a^4*b*d^3*e^4 - (m^5 + 25*m^4 +
245*m^3 + 1175*m^2 + 2754*m + 2520)*a^5*d^2*e^5 - 600*a*b^4*d^6*e*(m + 7) +
 720*b^5*d^7 + ((m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*b^5*d*e
^6 + 5*(m^6 + 22*m^5 + 190*m^4 + 820*m^3 + 1849*m^2 + 2038*m + 840)*a*b^4*e
^7)*x^6 - (6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d^2*e^5 - 5*(m^6 +
 17*m^5 + 105*m^4 + 295*m^3 + 374*m^2 + 168*m)*a*b^4*d*e^6 - 10*(m^6 + 23*m
^5 + 207*m^4 + 925*m^3 + 2144*m^2 + 2412*m + 1008)*a^2*b^3*e^7)*x^5 + 5*(6*
(m^4 + 6*m^3 + 11*m^2 + 6*m)*b^5*d^3*e^4 - 5*(m^5 + 13*m^4 + 53*m^3 + 83*m^
2 + 42*m)*a*b^4*d^2*e^5 + 2*(m^6 + 19*m^5 + 131*m^4 + 401*m^3 + 540*m^2 + 2
52*m)*a^2*b^3*d*e^6 + 2*(m^6 + 24*m^5 + 226*m^4 + 1056*m^3 + 2545*m^2 + 295
2*m + 1260)*a^3*b^2*e^7)*x^4 - 5*(24*(m^3 + 3*m^2 + 2*m)*b^5*d^4*e^3 - 20*(
m^4 + 10*m^3 + 23*m^2 + 14*m)*a*b^4*d^3*e^4 + 8*(m^5 + 16*m^4 + 83*m^3 + 15
2*m^2 + 84*m)*a^2*b^3*d^2*e^5 - 2*(m^6 + 21*m^5 + 163*m^4 + 567*m^3 + 844*m
^2 + 420*m)*a^3*b^2*d*e^6 - (m^6 + 25*m^5 + 247*m^4 + 1219*m^3 + 3112*m^2 +
 3796*m + 1680)*a^4*b*e^7)*x^3 + (360*(m^2 + m)*b^5*d^5*e^2 - 300*(m^3 + 8*
m^2 + 7*m)*a*b^4*d^4*e^3 + 120*(m^4 + 14*m^3 + 55*m^2 + 42*m)*a^2*b^3*d^3*e
^4 - 30*(m^5 + 19*m^4 + 125*m^3 + 317*m^2 + 210*m)*a^3*b^2*d^2*e^5 + 5*(m^6
 + 23*m^5 + 201*m^4 + 817*m^3 + 1478*m^2 + 840*m)*a^4*b*d*e^6 + (m^6 + 26*m
^5 + 270*m^4 + 1420*m^3 + 3929*m^2 + 5274*m + 2520)*a^5*e^7)*x^2 + (600*(m^
2 + 7*m)*a*b^4*d^5*e^2 - 240*(m^3 + 13*m^2 + 42*m)*a^2*b^3*d^4*e^3 + 60*(m^
4 + 18*m^3 + 107*m^2 + 210*m)*a^3*b^2*d^3*e^4 - 10*(m^5 + 22*m^4 + 179*m^3
+ 638*m^2 + 840*m)*a^4*b*d^2*e^5 + (m^6 + 25*m^5 + 245*m^4 + 1175*m^3 + 275
4*m^2 + 2520*m)*a^5*d*e^6 - 720*b^5*d^6*e*m)*x)*(e*x + d)^m*B/((m^7 + 28*m^
6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(d + e\,x\right)^m\,{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1667 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=321

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+2}(-aBe-3Abe+}{e^5(m+2)(a+bx)}$$

Rubi [A] time = 0.21, antiderivative size = 321, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+2}(-aBe-3Abe+4bBd)}{e^5(m+2)(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+3}(-aBe-Abe+2bBd)}{e^5(m+3)(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+4}(-3aBe-Abe+4bBd)}{e^5(m+4)(a+bx)}+\frac{b^3B\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+5}}{e^5(m+5)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^5*(1 + m)*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d +
e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(2 + m)*(a + b*x)) + (3*b*
(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(3 + m)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(e^5*(3 + m)*(a + b*x)) - (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d +
 e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(4 + m)*(a + b*x)) + (b^3
*B*(d + e*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(5 + m)*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^m\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^m}{e^4}+\frac{b^3(bd-ae)^2(-}{}\right.}{}\\ &= \frac{(bd-ae)^3(Bd-Ae)(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^5(1+m)(a+bx)}-\frac{(bd-a}{}\end{aligned}$$

Mathematica [A] time = 0.27, size = 183, normalized size = 0.57

$$\frac{\left((a+bx)^2\right)^{3/2}(d+ex)^{m+1}\left(-\frac{b^2(d+ex)^3(-3aBe-Abe+4bBd)}{m+4}+\frac{3b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)}{m+3}-\frac{(d+ex)(bd-ae)^2(-aBe-3Abe+4bBd)}{m+2}+\frac{(bd-ae)^3(Bd-Ae)}{m+1}+\frac{b^3B(d+ex)^4}{m+5}\right)}{e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (((a + b*x)^2)^(3/2)*(d + e*x)^(1 + m)*(((b*d - a*e)^3*(B*d - A*e))/(1 + m)
 - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x))/(2 + m) + (3*b*(b*
d - a*e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2)/(3 + m) - (b^2*(4*b*B*d - A
*b*e - 3*a*B*e)*(d + e*x)^3)/(4 + m) + (b^3*B*(d + e*x)^4)/(5 + m)))/(e^5*(
a + b*x)^3)
```

IntegrateAlgebraic [F] time = 3.76, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [B] time = 0.47, size = 1282, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] (A*a^3*d*e^4*m^4 + 24*B*b^3*d^5 + 120*A*a^3*d*e^4 - 30*(3*B*a*b^2 + A*b^3)*
d^4*e + 120*(B*a^2*b + A*a*b^2)*d^3*e^2 - 60*(B*a^3 + 3*A*a^2*b)*d^2*e^3 +
(B*b^3*e^5*m^4 + 10*B*b^3*e^5*m^3 + 35*B*b^3*e^5*m^2 + 50*B*b^3*e^5*m + 24*
B*b^3*e^5)*x^5 + (30*(3*B*a*b^2 + A*b^3)*e^5 + (B*b^3*d*e^4 + (3*B*a*b^2 +
A*b^3)*e^5)*m^4 + (6*B*b^3*d*e^4 + 11*(3*B*a*b^2 + A*b^3)*e^5)*m^3 + (11*B*
b^3*d*e^4 + 41*(3*B*a*b^2 + A*b^3)*e^5)*m^2 + (6*B*b^3*d*e^4 + 61*(3*B*a*b^
2 + A*b^3)*e^5)*m)*x^4 + (14*A*a^3*d*e^4 - (B*a^3 + 3*A*a^2*b)*d^2*e^3)*m^3
 + (120*(B*a^2*b + A*a*b^2)*e^5 + ((3*B*a*b^2 + A*b^3)*d*e^4 + 3*(B*a^2*b +
 A*a*b^2)*e^5)*m^4 - 4*(B*b^3*d^2*e^3 - 2*(3*B*a*b^2 + A*b^3)*d*e^4 - 9*(B*
a^2*b + A*a*b^2)*e^5)*m^3 - (12*B*b^3*d^2*e^3 - 17*(3*B*a*b^2 + A*b^3)*d*e^
4 - 147*(B*a^2*b + A*a*b^2)*e^5)*m^2 - 2*(4*B*b^3*d^2*e^3 - 5*(3*B*a*b^2 +
A*b^3)*d*e^4 - 117*(B*a^2*b + A*a*b^2)*e^5)*m)*x^3 + (71*A*a^3*d*e^4 + 6*(B
*a^2*b + A*a*b^2)*d^3*e^2 - 12*(B*a^3 + 3*A*a^2*b)*d^2*e^3)*m^2 + (60*(B*a^
3 + 3*A*a^2*b)*e^5 + (3*(B*a^2*b + A*a*b^2)*d*e^4 + (B*a^3 + 3*A*a^2*b)*e^5
)*m^4 - (3*(3*B*a*b^2 + A*b^3)*d^2*e^3 - 30*(B*a^2*b + A*a*b^2)*d*e^4 - 13*
(B*a^3 + 3*A*a^2*b)*e^5)*m^3 + (12*B*b^3*d^3*e^2 - 18*(3*B*a*b^2 + A*b^3)*d
^2*e^3 + 87*(B*a^2*b + A*a*b^2)*d*e^4 + 59*(B*a^3 + 3*A*a^2*b)*e^5)*m^2 + (
12*B*b^3*d^3*e^2 - 15*(3*B*a*b^2 + A*b^3)*d^2*e^3 + 60*(B*a^2*b + A*a*b^2)*
d*e^4 + 107*(B*a^3 + 3*A*a^2*b)*e^5)*m)*x^2 + (154*A*a^3*d*e^4 - 6*(3*B*a*b
^2 + A*b^3)*d^4*e + 54*(B*a^2*b + A*a*b^2)*d^3*e^2 - 47*(B*a^3 + 3*A*a^2*b)
*d^2*e^3)*m + (120*A*a^3*e^5 + (A*a^3*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^4)*m^4
+ 2*(7*A*a^3*e^5 - 3*(B*a^2*b + A*a*b^2)*d^2*e^3 + 6*(B*a^3 + 3*A*a^2*b)*d*
e^4)*m^3 + (71*A*a^3*e^5 + 6*(3*B*a*b^2 + A*b^3)*d^3*e^2 - 54*(B*a^2*b + A*
a*b^2)*d^2*e^3 + 47*(B*a^3 + 3*A*a^2*b)*d*e^4)*m^2 - 2*(12*B*b^3*d^4*e - 77
*A*a^3*e^5 - 15*(3*B*a*b^2 + A*b^3)*d^3*e^2 + 60*(B*a^2*b + A*a*b^2)*d^2*e^
3 - 30*(B*a^3 + 3*A*a^2*b)*d*e^4)*m)*x)*(e*x + d)^m/(e^5*m^5 + 15*e^5*m^4 +
 85*e^5*m^3 + 225*e^5*m^2 + 274*e^5*m + 120*e^5)
```

giac [B] time = 0.42, size = 3208, normalized size = 9.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)

[Out] ((x*e + d)^m*B*b^3*m^4*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*B*b^3*d*m^4*x^4*e
^4*sgn(b*x + a) + 3*(x*e + d)^m*B*a*b^2*m^4*x^4*e^5*sgn(b*x + a) + (x*e + d
)^m*A*b^3*m^4*x^4*e^5*sgn(b*x + a) + 10*(x*e + d)^m*B*b^3*m^3*x^5*e^5*sgn(b
x + a) + 3(x*e + d)^m*B*a*b^2*d*m^4*x^3*e^4*sgn(b*x + a) + (x*e + d)^m*A*
b^3*d*m^4*x^3*e^4*sgn(b*x + a) + 6*(x*e + d)^m*B*b^3*d*m^3*x^4*e^4*sgn(b*x
+ a) - 4*(x*e + d)^m*B*b^3*d^2*m^3*x^3*e^3*sgn(b*x + a) + 3*(x*e + d)^m*B*a
^2*b*m^4*x^3*e^5*sgn(b*x + a) + 3*(x*e + d)^m*A*a*b^2*m^4*x^3*e^5*sgn(b*x +
 a) + 33*(x*e + d)^m*B*a*b^2*m^3*x^4*e^5*sgn(b*x + a) + 11*(x*e + d)^m*A*b^
3*m^3*x^4*e^5*sgn(b*x + a) + 35*(x*e + d)^m*B*b^3*m^2*x^5*e^5*sgn(b*x + a)
+ 3*(x*e + d)^m*B*a^2*b*d*m^4*x^2*e^4*sgn(b*x + a) + 3*(x*e + d)^m*A*a*b^2*
d*m^4*x^2*e^4*sgn(b*x + a) + 24*(x*e + d)^m*B*a*b^2*d*m^3*x^3*e^4*sgn(b*x +
 a) + 8*(x*e + d)^m*A*b^3*d*m^3*x^3*e^4*sgn(b*x + a) + 11*(x*e + d)^m*B*b^3
*d*m^2*x^4*e^4*sgn(b*x + a) - 9*(x*e + d)^m*B*a*b^2*d^2*m^3*x^2*e^3*sgn(b*x
 + a) - 3*(x*e + d)^m*A*b^3*d^2*m^3*x^2*e^3*sgn(b*x + a) - 12*(x*e + d)^m*B
*b^3*d^2*m^2*x^3*e^3*sgn(b*x + a) + 12*(x*e + d)^m*B*b^3*d^3*m^2*x^2*e^2*sg
n(b*x + a) + (x*e + d)^m*B*a^3*m^4*x^2*e^5*sgn(b*x + a) + 3*(x*e + d)^m*A*a
^2*b*m^4*x^2*e^5*sgn(b*x + a) + 36*(x*e + d)^m*B*a^2*b*m^3*x^3*e^5*sgn(b*x
+ a) + 36*(x*e + d)^m*A*a*b^2*m^3*x^3*e^5*sgn(b*x + a) + 123*(x*e + d)^m*B*
a*b^2*m^2*x^4*e^5*sgn(b*x + a) + 41*(x*e + d)^m*A*b^3*m^2*x^4*e^5*sgn(b*x +
 a) + 50*(x*e + d)^m*B*b^3*m*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*B*a^3*d*m^4
*x*e^4*sgn(b*x + a) + 3*(x*e + d)^m*A*a^2*b*d*m^4*x*e^4*sgn(b*x + a) + 30*(
x*e + d)^m*B*a^2*b*d*m^3*x^2*e^4*sgn(b*x + a) + 30*(x*e + d)^m*A*a*b^2*d*m^
3*x^2*e^4*sgn(b*x + a) + 51*(x*e + d)^m*B*a*b^2*d*m^2*x^3*e^4*sgn(b*x + a)
+ 17*(x*e + d)^m*A*b^3*d*m^2*x^3*e^4*sgn(b*x + a) + 6*(x*e + d)^m*B*b^3*d*m
*x^4*e^4*sgn(b*x + a) - 6*(x*e + d)^m*B*a^2*b*d^2*m^3*x*e^3*sgn(b*x + a) -
6*(x*e + d)^m*A*a*b^2*d^2*m^3*x*e^3*sgn(b*x + a) - 54*(x*e + d)^m*B*a*b^2*d
^2*m^2*x^2*e^3*sgn(b*x + a) - 18*(x*e + d)^m*A*b^3*d^2*m^2*x^2*e^3*sgn(b*x
+ a) - 8*(x*e + d)^m*B*b^3*d^2*m*x^3*e^3*sgn(b*x + a) + 18*(x*e + d)^m*B*a*
b^2*d^3*m^2*x*e^2*sgn(b*x + a) + 6*(x*e + d)^m*A*b^3*d^3*m^2*x*e^2*sgn(b*x
+ a) + 12*(x*e + d)^m*B*b^3*d^3*m*x^2*e^2*sgn(b*x + a) - 24*(x*e + d)^m*B*b
^3*d^4*m*x*e*sgn(b*x + a) + (x*e + d)^m*A*a^3*m^4*x*e^5*sgn(b*x + a) + 13*(
x*e + d)^m*B*a^3*m^3*x^2*e^5*sgn(b*x + a) + 39*(x*e + d)^m*A*a^2*b*m^3*x^2*
e^5*sgn(b*x + a) + 147*(x*e + d)^m*B*a^2*b*m^2*x^3*e^5*sgn(b*x + a) + 147*(
x*e + d)^m*A*a*b^2*m^2*x^3*e^5*sgn(b*x + a) + 183*(x*e + d)^m*B*a*b^2*m*x^4
*e^5*sgn(b*x + a) + 61*(x*e + d)^m*A*b^3*m*x^4*e^5*sgn(b*x + a) + 24*(x*e +
 d)^m*B*b^3*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*A*a^3*d*m^4*e^4*sgn(b*x + a)
 + 12*(x*e + d)^m*B*a^3*d*m^3*x*e^4*sgn(b*x + a) + 36*(x*e + d)^m*A*a^2*b*d
*m^3*x*e^4*sgn(b*x + a) + 87*(x*e + d)^m*B*a^2*b*d*m^2*x^2*e^4*sgn(b*x + a)
 + 87*(x*e + d)^m*A*a*b^2*d*m^2*x^2*e^4*sgn(b*x + a) + 30*(x*e + d)^m*B*a*b
^2*d*m*x^3*e^4*sgn(b*x + a) + 10*(x*e + d)^m*A*b^3*d*m*x^3*e^4*sgn(b*x + a)
 - (x*e + d)^m*B*a^3*d^2*m^3*e^3*sgn(b*x + a) - 3*(x*e + d)^m*A*a^2*b*d^2*m
^3*e^3*sgn(b*x + a) - 54*(x*e + d)^m*B*a^2*b*d^2*m^2*x*e^3*sgn(b*x + a) - 5
4*(x*e + d)^m*A*a*b^2*d^2*m^2*x*e^3*sgn(b*x + a) - 45*(x*e + d)^m*B*a*b^2*d
^2*m*x^2*e^3*sgn(b*x + a) - 15*(x*e + d)^m*A*b^3*d^2*m*x^2*e^3*sgn(b*x + a)
 + 6*(x*e + d)^m*B*a^2*b*d^3*m^2*e^2*sgn(b*x + a) + 6*(x*e + d)^m*A*a*b^2*d
^3*m^2*e^2*sgn(b*x + a) + 90*(x*e + d)^m*B*a*b^2*d^3*m*x*e^2*sgn(b*x + a) +
 30*(x*e + d)^m*A*b^3*d^3*m*x*e^2*sgn(b*x + a) - 18*(x*e + d)^m*B*a*b^2*d^4
*m*e*sgn(b*x + a) - 6*(x*e + d)^m*A*b^3*d^4*m*e*sgn(b*x + a) + 24*(x*e + d)
^m*B*b^3*d^5*sgn(b*x + a) + 14*(x*e + d)^m*A*a^3*m^3*x*e^5*sgn(b*x + a) + 5
9*(x*e + d)^m*B*a^3*m^2*x^2*e^5*sgn(b*x + a) + 177*(x*e + d)^m*A*a^2*b*m^2*
x^2*e^5*sgn(b*x + a) + 234*(x*e + d)^m*B*a^2*b*m*x^3*e^5*sgn(b*x + a) + 234
*(x*e + d)^m*A*a*b^2*m*x^3*e^5*sgn(b*x + a) + 90*(x*e + d)^m*B*a*b^2*x^4*e^
5*sgn(b*x + a) + 30*(x*e + d)^m*A*b^3*x^4*e^5*sgn(b*x + a) + 14*(x*e + d)^m
*A*a^3*d*m^3*e^4*sgn(b*x + a) + 47*(x*e + d)^m*B*a^3*d*m^2*x*e^4*sgn(b*x +
a) + 141*(x*e + d)^m*A*a^2*b*d*m^2*x*e^4*sgn(b*x + a) + 60*(x*e + d)^m*B*a^
2*b*d*m*x^2*e^4*sgn(b*x + a) + 60*(x*e + d)^m*A*a*b^2*d*m*x^2*e^4*sgn(b*x +
 a) - 12*(x*e + d)^m*B*a^3*d^2*m^2*e^3*sgn(b*x + a) - 36*(x*e + d)^m*A*a^2*

```
b*d^2*m^2*e^3*sgn(b*x + a) - 120*(x*e + d)^m*B*a^2*b*d^2*m*x*e^3*sgn(b*x +
a) - 120*(x*e + d)^m*A*a*b^2*d^2*m*x*e^3*sgn(b*x + a) + 54*(x*e + d)^m*B*a^
2*b*d^3*m*e^2*sgn(b*x + a) + 54*(x*e + d)^m*A*a*b^2*d^3*m*e^2*sgn(b*x + a)
- 90*(x*e + d)^m*B*a*b^2*d^4*e*sgn(b*x + a) - 30*(x*e + d)^m*A*b^3*d^4*e*sg
n(b*x + a) + 71*(x*e + d)^m*A*a^3*m^2*x*e^5*sgn(b*x + a) + 107*(x*e + d)^m*
B*a^3*m*x^2*e^5*sgn(b*x + a) + 321*(x*e + d)^m*A*a^2*b*m*x^2*e^5*sgn(b*x +
a) + 120*(x*e + d)^m*B*a^2*b*x^3*e^5*sgn(b*x + a) + 120*(x*e + d)^m*A*a*b^2
*x^3*e^5*sgn(b*x + a) + 71*(x*e + d)^m*A*a^3*d*m^2*e^4*sgn(b*x + a) + 60*(x
*e + d)^m*B*a^3*d*m*x*e^4*sgn(b*x + a) + 180*(x*e + d)^m*A*a^2*b*d*m*x*e^4*
sgn(b*x + a) - 47*(x*e + d)^m*B*a^3*d^2*m*e^3*sgn(b*x + a) - 141*(x*e + d)^
m*A*a^2*b*d^2*m*e^3*sgn(b*x + a) + 120*(x*e + d)^m*B*a^2*b*d^3*e^2*sgn(b*x
+ a) + 120*(x*e + d)^m*A*a*b^2*d^3*e^2*sgn(b*x + a) + 154*(x*e + d)^m*A*a^3
*m*x*e^5*sgn(b*x + a) + 60*(x*e + d)^m*B*a^3*x^2*e^5*sgn(b*x + a) + 180*(x*
e + d)^m*A*a^2*b*x^2*e^5*sgn(b*x + a) + 154*(x*e + d)^m*A*a^3*d*m*e^4*sgn(b
*x + a) - 60*(x*e + d)^m*B*a^3*d^2*e^3*sgn(b*x + a) - 180*(x*e + d)^m*A*a^2
*b*d^2*e^3*sgn(b*x + a) + 120*(x*e + d)^m*A*a^3*x*e^5*sgn(b*x + a) + 120*(x
*e + d)^m*A*a^3*d*e^4*sgn(b*x + a))/(m^5*e^5 + 15*m^4*e^5 + 85*m^3*e^5 + 22
5*m^2*e^5 + 274*m*e^5 + 120*e^5)
```

maple [B] time = 0.06, size = 1286, normalized size = 4.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^3*e^4*m^4*x^4+A*b^3*e^4*m^4*x^3+3*B*a*b^2*e^4*m^4*x^3+10
*B*b^3*e^4*m^3*x^4+3*A*a*b^2*e^4*m^4*x^2+11*A*b^3*e^4*m^3*x^3+3*B*a^2*b*e^4
*m^4*x^2+33*B*a*b^2*e^4*m^3*x^3-4*B*b^3*d*e^3*m^3*x^3+35*B*b^3*e^4*m^2*x^4+
3*A*a^2*b*e^4*m^4*x+36*A*a*b^2*e^4*m^3*x^2-3*A*b^3*d*e^3*m^3*x^2+41*A*b^3*e
^4*m^2*x^3+B*a^3*e^4*m^4*x+36*B*a^2*b*e^4*m^3*x^2-9*B*a*b^2*d*e^3*m^3*x^2+1
23*B*a*b^2*e^4*m^2*x^3-24*B*b^3*d*e^3*m^2*x^3+50*B*b^3*e^4*m*x^4+A*a^3*e^4*
m^4+39*A*a^2*b*e^4*m^3*x-6*A*a*b^2*d*e^3*m^3*x+147*A*a*b^2*e^4*m^2*x^2-24*A
*b^3*d*e^3*m^2*x^2+61*A*b^3*e^4*m*x^3+13*B*a^3*e^4*m^3*x-6*B*a^2*b*d*e^3*m^
3*x+147*B*a^2*b*e^4*m^2*x^2-72*B*a*b^2*d*e^3*m^2*x^2+183*B*a*b^2*e^4*m*x^3+
12*B*b^3*d^2*e^2*m^2*x^2-44*B*b^3*d*e^3*m*x^3+24*B*b^3*e^4*x^4+14*A*a^3*e^4
*m^3-3*A*a^2*b*d*e^3*m^3+177*A*a^2*b*e^4*m^2*x-60*A*a*b^2*d*e^3*m^2*x+234*A
*a*b^2*e^4*m*x^2+6*A*b^3*d^2*e^2*m^2*x-51*A*b^3*d*e^3*m*x^2+30*A*b^3*e^4*x^
3-B*a^3*d*e^3*m^3+59*B*a^3*e^4*m^2*x-60*B*a^2*b*d*e^3*m^2*x+234*B*a^2*b*e^4
*m*x^2+18*B*a*b^2*d^2*e^2*m^2*x-153*B*a*b^2*d*e^3*m*x^2+90*B*a*b^2*e^4*x^3+
36*B*b^3*d^2*e^2*m*x^2-24*B*b^3*d*e^3*x^3+71*A*a^3*e^4*m^2-36*A*a^2*b*d*e^3
*m^2+321*A*a^2*b*e^4*m*x+6*A*a*b^2*d^2*e^2*m^2-174*A*a*b^2*d*e^3*m*x+120*A*
a*b^2*e^4*x^2+36*A*b^3*d^2*e^2*m*x-30*A*b^3*d*e^3*x^2-12*B*a^3*d*e^3*m^2+10
7*B*a^3*e^4*m*x+6*B*a^2*b*d^2*e^2*m^2-174*B*a^2*b*d*e^3*m*x+120*B*a^2*b*e^4
*x^2+108*B*a*b^2*d^2*e^2*m*x-90*B*a*b^2*d*e^3*x^2-24*B*b^3*d^3*e*m*x+24*B*b
^3*d^2*e^2*x^2+154*A*a^3*e^4*m-141*A*a^2*b*d*e^3*m+180*A*a^2*b*e^4*x+54*A*a
*b^2*d^2*e^2*m-120*A*a*b^2*d*e^3*x-6*A*b^3*d^3*e*m+30*A*b^3*d^2*e^2*x-47*B*
a^3*d*e^3*m+60*B*a^3*e^4*x+54*B*a^2*b*d^2*e^2*m-120*B*a^2*b*d*e^3*x-18*B*a*
b^2*d^3*e*m+90*B*a*b^2*d^2*e^2*x-24*B*b^3*d^3*e*x+120*A*a^3*e^4-180*A*a^2*b
*d*e^3+120*A*a*b^2*d^2*e^2-30*A*b^3*d^3*e-60*B*a^3*d*e^3+120*B*a^2*b*d^2*e^
2-90*B*a*b^2*d^3*e+24*B*b^3*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3/e^5/(m^5+15*m^
4+85*m^3+225*m^2+274*m+120)
```

maxima [B] time = 0.65, size = 756, normalized size = 2.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] ((m^3 + 6*m^2 + 11*m + 6)*b^3*e^4*x^4 - 3*(m^2 + 7*m + 12)*a^2*b*d^2*e^2 +
(m^3 + 9*m^2 + 26*m + 24)*a^3*d*e^3 + 6*a*b^2*d^3*e*(m + 4) - 6*b^3*d^4 + (
(m^3 + 3*m^2 + 2*m)*b^3*d*e^3 + 3*(m^3 + 7*m^2 + 14*m + 8)*a*b^2*e^4)*x^3 -
 3*((m^2 + m)*b^3*d^2*e^2 - (m^3 + 5*m^2 + 4*m)*a*b^2*d*e^3 - (m^3 + 8*m^2
+ 19*m + 12)*a^2*b*e^4)*x^2 - (6*(m^2 + 4*m)*a*b^2*d^2*e^2 - 3*(m^3 + 7*m^2
 + 12*m)*a^2*b*d*e^3 - (m^3 + 9*m^2 + 26*m + 24)*a^3*e^4 - 6*b^3*d^3*e*m)*x
)*(e*x + d)^m*A/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*b^3*e^5*x^5 + 6*(m^2 + 9*m + 20)*a^2*b*d^3*e^2 - (m^3
 + 12*m^2 + 47*m + 60)*a^3*d^2*e^3 - 18*a*b^2*d^4*e*(m + 5) + 24*b^3*d^5 +
((m^4 + 6*m^3 + 11*m^2 + 6*m)*b^3*d*e^4 + 3*(m^4 + 11*m^3 + 41*m^2 + 61*m +
 30)*a*b^2*e^5)*x^4 - (4*(m^3 + 3*m^2 + 2*m)*b^3*d^2*e^3 - 3*(m^4 + 8*m^3 +
 17*m^2 + 10*m)*a*b^2*d*e^4 - 3*(m^4 + 12*m^3 + 49*m^2 + 78*m + 40)*a^2*b*e
^5)*x^3 + (12*(m^2 + m)*b^3*d^3*e^2 - 9*(m^3 + 6*m^2 + 5*m)*a*b^2*d^2*e^3 +
 3*(m^4 + 10*m^3 + 29*m^2 + 20*m)*a^2*b*d*e^4 + (m^4 + 13*m^3 + 59*m^2 + 10
7*m + 60)*a^3*e^5)*x^2 + (18*(m^2 + 5*m)*a*b^2*d^3*e^2 - 6*(m^3 + 9*m^2 + 2
0*m)*a^2*b*d^2*e^3 + (m^4 + 12*m^3 + 47*m^2 + 60*m)*a^3*d*e^4 - 24*b^3*d^4*
e*m)*x)*(e*x + d)^m*B/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,(d + e\,x)^m\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^m\,\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((A + B*x)*(d + e*x)**m*((a + b*x)**2)**(3/2), x)
```

3.1668 $\int (A+Bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=171

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+2}(-aBe-Abe+2bBd)}{e^3(m+2)(a+bx)}+\frac{bB\sqrt{a^2}}{}$$

Rubi [A] time = 0.10, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+2}(-aBe-Abe+2bBd)}{e^3(m+2)(a+bx)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+3}}{e^3(m+3)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^3*(1 + m)*(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(2 + m)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(e^3*(2 + m)*(a + b*x)) + (b*B*(d + e*x)^(3 + m)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(3 + m)*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^m\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^m}{e^2}+\frac{b(-2bBd+Abe+aBe)(d+}{e^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)(Bd-Ae)(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^3(1+m)(a+bx)}-\frac{(2bBd-Abe}{}\end{aligned}$$

Mathematica [A] time = 0.12, size = 121, normalized size = 0.71

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(ae(m+3)(Ae(m+2)-Bd+Be(m+1)x)+b\left(Ae(m+3)(e(m+1)x-d)+B\left(2d^2-2de(m+1)x+e^2\left(m^2+3m+2\right)x^2\right)\right)\right)}{e^3(m+1)(m+2)(m+3)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*(a*e*(3 + m)*(-(B*d) + A*e*(2 + m) + B
*e*(1 + m)*x) + b*(A*e*(3 + m)*(-d + e*(1 + m)*x) + B*(2*d^2 - 2*d*e*(1 + m
)*x + e^2*(2 + 3*m + m^2)*x^2))))/(e^3*(1 + m)*(2 + m)*(3 + m)*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.08, size = 0, normalized size = 0.00

$$\int (A + Bx)(d + ex)^m \sqrt{a^2 + 2abx + b^2x^2}\, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.44, size = 256, normalized size = 1.50

$$\frac{\left(Aade^2m^2 + 2\,Bbd^3 + 6\,Aade^2 - 3\,(Ba + Ab)d^2e + \left(Bbe^3m^2 + 3\,Bbe^3m + 2\,Bbe^3\right)x^3 + \left(3\,(Ba + Ab)e^3 + \left(Bbde^2 + (Ba + Ab)e^3\right)m^2 + \left(Bbde^2 + 4\,(Ba + Ab)e^3\right)m\right)x^2 + \left(5\,Aade^2 - (Ba + Ab)d^2e\right)m + \left(6\,Aae^3 + \left(Aae^3 + (Ba + Ab)de^2\right)m^2 - \left(2\,Bbd^2e - 5\,Aae^3 - 3\,(Ba + Ab)de^2\right)m\right)x\right)(ex + d)^m}{e^3m^3 + 6\,e^3m^2 + 11\,e^3m + 6\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] (A*a*d*e^2*m^2 + 2*B*b*d^3 + 6*A*a*d*e^2 - 3*(B*a + A*b)*d^2*e + (B*b*e^3*m
^2 + 3*B*b*e^3*m + 2*B*b*e^3)*x^3 + (3*(B*a + A*b)*e^3 + (B*b*d*e^2 + (B*a
+ A*b)*e^3)*m^2 + (B*b*d*e^2 + 4*(B*a + A*b)*e^3)*m)*x^2 + (5*A*a*d*e^2 - (
B*a + A*b)*d^2*e)*m + (6*A*a*e^3 + (A*a*e^3 + (B*a + A*b)*d*e^2)*m^2 - (2*B
*b*d^2*e - 5*A*a*e^3 - 3*(B*a + A*b)*d*e^2)*m)*x)*(e*x + d)^m/(e^3*m^3 + 6*
e^3*m^2 + 11*e^3*m + 6*e^3)
```

giac [B] time = 0.22, size = 659, normalized size = 3.85

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*B*b*m^2*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*B*b*d*m^2*x^2*e^2*s
gn(b*x + a) + (x*e + d)^m*B*a*m^2*x^2*e^3*sgn(b*x + a) + (x*e + d)^m*A*b*m^
2*x^2*e^3*sgn(b*x + a) + 3*(x*e + d)^m*B*b*m*x^3*e^3*sgn(b*x + a) + (x*e +
d)^m*B*a*d*m^2*x*e^2*sgn(b*x + a) + (x*e + d)^m*A*b*d*m^2*x*e^2*sgn(b*x + a
) + (x*e + d)^m*B*b*d*m*x^2*e^2*sgn(b*x + a) - 2*(x*e + d)^m*B*b*d^2*m*x*e*
sgn(b*x + a) + (x*e + d)^m*A*a*m^2*x*e^3*sgn(b*x + a) + 4*(x*e + d)^m*B*a*m
*x^2*e^3*sgn(b*x + a) + 4*(x*e + d)^m*A*b*m*x^2*e^3*sgn(b*x + a) + 2*(x*e +
 d)^m*B*b*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*A*a*d*m^2*e^2*sgn(b*x + a) + 3
*(x*e + d)^m*B*a*d*m*x*e^2*sgn(b*x + a) + 3*(x*e + d)^m*A*b*d*m*x*e^2*sgn(b
*x + a) - (x*e + d)^m*B*a*d^2*m*e*sgn(b*x + a) - (x*e + d)^m*A*b*d^2*m*e*sg
n(b*x + a) + 2*(x*e + d)^m*B*b*d^3*sgn(b*x + a) + 5*(x*e + d)^m*A*a*m*x*e^3
*sgn(b*x + a) + 3*(x*e + d)^m*B*a*x^2*e^3*sgn(b*x + a) + 3*(x*e + d)^m*A*b*
x^2*e^3*sgn(b*x + a) + 5*(x*e + d)^m*A*a*d*m*e^2*sgn(b*x + a) - 3*(x*e + d)
^m*B*a*d^2*e*sgn(b*x + a) - 3*(x*e + d)^m*A*b*d^2*e*sgn(b*x + a) + 6*(x*e +
 d)^m*A*a*x*e^3*sgn(b*x + a) + 6*(x*e + d)^m*A*a*d*e^2*sgn(b*x + a))/(m^3*e
^3 + 6*m^2*e^3 + 11*m*e^3 + 6*e^3)
```

maple [A] time = 0.05, size = 205, normalized size = 1.20

$$\frac{\left(Bb\,e^2m^2x^2 + Ab\,e^2m^2x + Ba\,e^2m^2x + 3Bb\,e^2m\,x^2 + Aa\,e^2m^2 + 4Ab\,e^2mx + 4Ba\,e^2mx - 2Bbdemx + 2Bb\,x^2e^2 + 5Aa\,e^2m - Abdem + 3Ab\,e^2x - aBdem + 3Ba\,e^2x - 2Bbdex + 6Aa\,e^2 - 3Abde - 3Bade + 2Bb\,d^2\right)\sqrt{(bx + a)^2}\;(ex + d)^{m+1}}{(bx + a)\left(m^3 + 6m^2 + 11m + 6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b*e^2*m^2*x^2+A*b*e^2*m^2*x+B*a*e^2*m^2*x+3*B*b*e^2*m*x^2+
A*a*e^2*m^2+4*A*b*e^2*m*x+4*B*a*e^2*m*x-2*B*b*d*e*m*x+2*B*b*e^2*x^2+5*A*a*e
^2*m-A*b*d*e*m+3*A*b*e^2*x-B*a*d*e*m+3*B*a*e^2*x-2*B*b*d*e*x+6*A*a*e^2-3*A*
b*d*e-3*B*a*d*e+2*B*b*d^2)*((b*x+a)^2)^(1/2)/(b*x+a)/e^3/(m^3+6*m^2+11*m+6)
```

maxima [A] time = 0.59, size = 177, normalized size = 1.04

$$\frac{\left(be^2(m+1)x^2 + ade(m+2) - bd^2 + \left(ae^2(m+2) + bdem\right)x\right)(ex+d)^m A}{\left(m^2+3\,m+2\right)e^2} + \frac{\left(\left(m^2+3\,m+2\right)be^3x^3 - ad^2e(m+3) + 2\,bd^3 + \left(\left(m^2+m\right)bde^2 + \left(m^2+4\,m+3\right)ae^3\right)x^2 + \left(\left(m^2+3\,m\right)ade^2 - 2\,bd^2em\right)x\right)(ex+d)^m B}{\left(m^3+6\,m^2+11\,m+6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] (b*e^2*(m + 1)*x^2 + a*d*e*(m + 2) - b*d^2 + (a*e^2*(m + 2) + b*d*e*m)*x)*(
e*x + d)^m*A/((m^2 + 3*m + 2)*e^2) + ((m^2 + 3*m + 2)*b*e^3*x^3 - a*d^2*e*(
m + 3) + 2*b*d^3 + ((m^2 + m)*b*d*e^2 + (m^2 + 4*m + 3)*a*e^3)*x^2 + ((m^2
+ 3*m)*a*d*e^2 - 2*b*d^2*e*m)*x)*(e*x + d)^m*B/((m^3 + 6*m^2 + 11*m + 6)*e^
3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A + B\,x)\,\left(d + e\,x\right)^m\,\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^m\,\sqrt{(a + bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m*sqrt((a + b*x)**2), x)
```

3.1669 $\int (d+ex)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=119

$$\frac{(a+bx)(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(d+ex)^{-2p-1}}{(2p+1)(bd-ae)^2}-\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}(ef-dg)(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)^2}$$

Rubi [A] time = 0.07, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {769, 646, 37}

$$\frac{(a+bx)(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(d+ex)^{-2p-1}}{(2p+1)(bd-ae)^2}-\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}(ef-dg)(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*f - a*g)*(a + b*x)*(d + e*x)^(-1 - 2*p)*(a^2 + 2*a*b*x + b^2*x^2)^p)/((
b*d - a*e)^2*(1 + 2*p)) - ((e*f - d*g)*(a^2 + 2*a*b*x + b^2*x^2)^(1 + p))/(
2*(b*d - a*e)^2*(1 + p)*(d + e*x)^(2*(1 + p)))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int (d+ex)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx=-\frac{(ef-dg)(d+ex)^{-2(1+p)}\left(a^2+2abx+b^2x^2\right)^{1+p}}{2(bd-ae)^2(1+p)}+\frac{(bf-ag}{}$$

$$=-\frac{(ef-dg)(d+ex)^{-2(1+p)}\left(a^2+2abx+b^2x^2\right)^{1+p}}{2(bd-ae)^2(1+p)}+\frac{\left((bf-a\right.}{}$$

$$=\frac{(bf-ag)(a+bx)(d+ex)^{-1-2p}\left(a^2+2abx+b^2x^2\right)^p}{(bd-ae)^2(1+2p)}-\frac{(ef-}{}$$

Mathematica [A] time = 0.08, size = 97, normalized size = 0.82

$$\frac{(a+bx)\left((a+bx)^2\right)^p(d+ex)^{-2(p+1)}(b(2df(p+1)+dg(2p+1)x+efx)-a(dg+e(2fp+f+2g(p+1)x)))}{2(p+1)(2p+1)(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a + b*x)*((a + b*x)^2)^p*(b*(2*d*f*(1 + p) + e*f*x + d*g*(1 + 2*p)*x) - a
*(d*g + e*(f + 2*f*p + 2*g*(1 + p)*x))))/(2*(b*d - a*e)^2*(1 + p)*(1 + 2*p)
*(d + e*x)^(2*(1 + p)))
```

IntegrateAlgebraic [F] time = 0.27, size = 0, normalized size = 0.00

$$\int (d+ex)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)
^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(d + e*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b
^2*x^2)^p, x]
```

fricas [B] time = 0.45, size = 348, normalized size = 2.92

$$-\frac{\left(a^2d^2g-\left(b^2e^2f+2\left(b^2de-abe^2\right)gp+\left(b^2de-2\,abe^2\right)g\right)x^3-2\left(abd^2-a^2de\right)fp-\left(3\,b^2def+\left(b^2d^2-2\,abde-2\,a^2e^2\right)g+2\left(\left(b^2de-abe^2\right)f+\left(b^2d^2-a^2e^2\right)g\right)p\right)x^2-\left(2\,abd^2-a^2de\right)f+\left(3\,a^2deg-\left(2\,b^2d^2+2\,abde-a^2e^2\right)f-2\left(\left(b^2d^2-a^2e^2\right)f+\left(abd^2-a^2de\right)g\right)p\right)x\right)\left(b^2x^2+2\,abx+a^2\right)^p(ex+d)^{-2p-3}}{2\left(b^2d^2-2\,abde+a^2e^2+2\left(b^2d^2-2\,abde+a^2e^2\right)p^2+3\left(b^2d^2-2\,abde+a^2e^2\right)p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fr
icas")
```

```
[Out] -1/2*(a^2*d^2*g - (b^2*e^2*f + 2*(b^2*d*e - a*b*e^2)*g*p + (b^2*d*e - 2*a*b
*e^2)*g)*x^3 - 2*(a*b*d^2 - a^2*d*e)*f*p - (3*b^2*d*e*f + (b^2*d^2 - 2*a*b*
d*e - 2*a^2*e^2)*g + 2*((b^2*d*e - a*b*e^2)*f + (b^2*d^2 - a^2*e^2)*g)*p)*x
^2 - (2*a*b*d^2 - a^2*d*e)*f + (3*a^2*d*e*g - (2*b^2*d^2 + 2*a*b*d*e - a^2*
e^2)*f - 2*((b^2*d^2 - a^2*e^2)*f + (a*b*d^2 - a^2*d*e)*g)*p)*x)*(b^2*x^2 +
 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2 + 2*(
b^2*d^2 - 2*a*b*d*e + a^2*e^2)*p^2 + 3*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*p)
```

giac [B] time = 0.34, size = 1352, normalized size = 11.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d*g*p*x^3*e^(-2*p*log(x*e + d) - 3*l
og(x*e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d^2*g*p*x^2*e^(-2*p*lo
g(x*e + d) - 3*log(x*e + d)) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*g*p*x^3*e^
(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^
2*d*f*p*x^2*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + (b^2*x^2 + 2*a*b*x
 + a^2)^p*b^2*d*g*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + 2*(b^2*x
^2 + 2*a*b*x + a^2)^p*b^2*d^2*f*p*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d))
+ 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d^2*g*p*x*e^(-2*p*log(x*e + d) - 3*log(
x*e + d)) + (b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d^2*g*x^2*e^(-2*p*log(x*e + d)
- 3*log(x*e + d)) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*f*p*x^2*e^(-2*p*log(x
*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*g*p*x^2*e
^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) + (b^2*x^2 + 2*a*b*x + a^2)^p*b^2
```

```
*f*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a*b*x +
a^2)^p*a*b*g*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 +
2*a*b*x + a^2)^p*a^2*d*g*p*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + 3
*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d*f*x^2*e^(-2*p*log(x*e + d) - 3*log(x*e +
 d) + 1) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d*g*x^2*e^(-2*p*log(x*e + d) -
 3*log(x*e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d^2*f*p*e^(-2*p*lo
g(x*e + d) - 3*log(x*e + d)) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d^2*f*x*e^
(-2*p*log(x*e + d) - 3*log(x*e + d)) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*f*
p*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a*b*x + a^2
)^p*a^2*g*x^2*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a
*b*x + a^2)^p*a^2*d*f*p*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + 2*(b^2
*x^2 + 2*a*b*x + a^2)^p*a*b*d*f*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1
) - 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*d*g*x*e^(-2*p*log(x*e + d) - 3*log(x*
e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d^2*f*e^(-2*p*log(x*e + d)
- 3*log(x*e + d)) - (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*d^2*g*e^(-2*p*log(x*e +
 d) - 3*log(x*e + d)) - (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*f*x*e^(-2*p*log(x*e
 + d) - 3*log(x*e + d) + 2) - (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*d*f*e^(-2*p*l
og(x*e + d) - 3*log(x*e + d) + 1))/(2*b^2*d^2*p^2 - 4*a*b*d*p^2*e + 3*b^2*d
^2*p + 2*a^2*p^2*e^2 - 6*a*b*d*p*e + b^2*d^2 + 3*a^2*p*e^2 - 2*a*b*d*e + a^
2*e^2)
```

maple [A] time = 0.05, size = 174, normalized size = 1.46

$$-\frac{(bx+a)\left(2aegpx-2bdgpx+2aefp+2aegx-2bdfp-bdgx-befx+adg+aef-2bdf\right)(ex+d)^{-2p-2}\left(b^2x^2+2abx+a^2\right)^p}{2\left(2a^2e^2p^2-4abdep^2+2b^2d^2p^2+3a^2e^2p-6abdep+3b^2d^2p+a^2e^2-2abde+b^2d^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(-2*p-3)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b*x+a)*(e*x+d)^(-2*p-2)*(2*a*e*g*p*x-2*b*d*g*p*x+2*a*e*f*p+2*a*e*g*x-
2*b*d*f*p-b*d*g*x-b*e*f*x+a*d*g+a*e*f-2*b*d*f)*(b^2*x^2+2*a*b*x+a^2)^p/(2*a
^2*e^2*p^2-4*a*b*d*e*p^2+2*b^2*d^2*p^2+3*a^2*e^2*p-6*a*b*d*e*p+3*b^2*d^2*p+
a^2*e^2-2*a*b*d*e+b^2*d^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(gx+f\right)\left(b^2x^2+2\,abx+a^2\right)^p(ex+d)^{-2\,p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="ma
xima")
```

```
[Out] integrate((g*x + f)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3), x)
```

mupad [B] time = 2.43, size = 375, normalized size = 3.15

$$-\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\left(\frac{x^2\left(2\,a^2\,e^2\,g-b^2\,d^2\,g-3\,b^2\,d\,e\,f+2\,a^2\,e^2\,g\,p-2\,b^2\,d^2\,g\,p+2\,a\,b\,d\,e\,g+2\,a\,b\,e^2\,f\,p-2\,b^2\,d\,e\,f\,p\right)}{2\,(a\,e-b\,d)^2\,(d+e\,x)^{2\,p+3}\,\left(2\,p^2+3\,p+1\right)}+\frac{x\left(a^2\,e^2\,f-2\,b^2\,d^2\,f+3\,a^2\,d\,e\,g+2\,a^2\,e^2\,f\,p-2\,b^2\,d^2\,f\,p-2\,a\,b\,d\,e\,f-2\,a\,b\,d^2\,g\,p+2\,a^2\,d\,e\,g\,p\right)}{2\,(a\,e-b\,d)^2\,(d+e\,x)^{2\,p+3}\,\left(2\,p^2+3\,p+1\right)}+\frac{a\,d\left(a\,d\,g+a\,e\,f-2\,b\,d\,f+2\,a\,e\,f\,p-2\,b\,d\,f\,p\right)}{2\,(a\,e-b\,d)^2\,(d+e\,x)^{2\,p+3}\,\left(2\,p^2+3\,p+1\right)}-\frac{b\,e\,x^3\left(b\,d\,g-2\,a\,e\,g+b\,e\,f-2\,a\,e\,g\,p+2\,b\,d\,g\,p\right)}{2\,(a\,e-b\,d)^2\,(d+e\,x)^{2\,p+3}\,\left(2\,p^2+3\,p+1\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] -(a^2 + b^2*x^2 + 2*a*b*x)^p*((x^2*(2*a^2*e^2*g - b^2*d^2*g - 3*b^2*d*e*f +
 2*a^2*e^2*g*p - 2*b^2*d^2*g*p + 2*a*b*d*e*g + 2*a*b*e^2*f*p - 2*b^2*d*e*f*
p))/(2*(a*e - b*d)^2*(d + e*x)^(2*p + 3)*(3*p + 2*p^2 + 1)) + (x*(a^2*e^2*f
 - 2*b^2*d^2*f + 3*a^2*d*e*g + 2*a^2*e^2*f*p - 2*b^2*d^2*f*p - 2*a*b*d*e*f
- 2*a*b*d^2*g*p + 2*a^2*d*e*g*p))/(2*(a*e - b*d)^2*(d + e*x)^(2*p + 3)*(3*p
 + 2*p^2 + 1)) + (a*d*(a*d*g + a*e*f - 2*b*d*f + 2*a*e*f*p - 2*b*d*f*p))/(2
*(a*e - b*d)^2*(d + e*x)^(2*p + 3)*(3*p + 2*p^2 + 1)) - (b*e*x^3*(b*d*g - 2
```

```
*a*e*g + b*e*f - 2*a*e*g*p + 2*b*d*g*p))/(2*(a*e - b*d)^2*(d + e*x)^(2*p +
3)*(3*p + 2*p^2 + 1)))
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(-3-2*p)*(g*x+f)*(b**2*x**2+2*a*b*x+a**2)**p,x)
[Out] Exception raised: HeuristicGCDFailed
```

3.1670 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right) \, dx$

Optimal. Leaf size=92

$$-\frac{3b^2(d+ex)^8(bd-ae)}{8e^4}+\frac{3b(d+ex)^7(bd-ae)^2}{7e^4}-\frac{(d+ex)^6(bd-ae)^3}{6e^4}+\frac{b^3(d+ex)^9}{9e^4}$$

Rubi [A] time = 0.15, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 43\}$

$$-\frac{3b^2(d+ex)^8(bd-ae)}{8e^4}+\frac{3b(d+ex)^7(bd-ae)^2}{7e^4}-\frac{(d+ex)^6(bd-ae)^3}{6e^4}+\frac{b^3(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^3*(d + e*x)^6)/(6*e^4) + (3*b*(b*d - a*e)^2*(d + e*x)^7)/(7*e
^4) - (3*b^2*(b*d - a*e)*(d + e*x)^8)/(8*e^4) + (b^3*(d + e*x)^9)/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^5\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^5}{e^3}+\frac{3b(bd-ae)^2(d+ex)^6}{e^3}-\frac{3b^2(bd-ae)}{e^3}\right.\\ &= -\frac{(bd-ae)^3(d+ex)^6}{6e^4}+\frac{3b(bd-ae)^2(d+ex)^7}{7e^4}-\frac{3b^2(bd-ae)(d+}{8e^4}\end{aligned}$$

Mathematica [B] time = 0.03, size = 267, normalized size = 2.90

$$a^3d^5x+\frac{1}{7}be^3x^7\left(3a^2e^2+15abde+10b^2d^2\right)+\frac{1}{3}ad^3x^3\left(10a^2e^2+15abde+3b^2d^2\right)+\frac{1}{2}a^2d^4x^2(5ae+3bd)+\frac{1}{6}e^2x^6\left(a^3e^3+15a^2bde^2+30ab^2d^2e+10b^3d^3\right)+dex^5\left(a^3e^3+6a^2bde^2+6ab^2d^2e+b^3d^3\right)+\frac{1}{4}d^2x^4\left(10a^3e^3+30a^2bde^2+15ab^2d^2e+b^3d^3\right)+\frac{1}{8}b^2e^4x^8(3ae+5bd)+\frac{1}{9}b^3e^5x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^5*x + (a^2*d^4*(3*b*d + 5*a*e)*x^2)/2 + (a*d^3*(3*b^2*d^2 + 15*a*b*d*
e + 10*a^2*e^2)*x^3)/3 + (d^2*(b^3*d^3 + 15*a*b^2*d^2*e + 30*a^2*b*d*e^2 +
10*a^3*e^3)*x^4)/4 + d*e*(b^3*d^3 + 6*a*b^2*d^2*e + 6*a^2*b*d*e^2 + a^3*e^3
)*x^5 + (e^2*(10*b^3*d^3 + 30*a*b^2*d^2*e + 15*a^2*b*d*e^2 + a^3*e^3)*x^6)/
6 + (b*e^3*(10*b^2*d^2 + 15*a*b*d*e + 3*a^2*e^2)*x^7)/7 + (b^2*e^4*(5*b*d +
 3*a*e)*x^8)/8 + (b^3*e^5*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.40, size = 303, normalized size = 3.29

$$\frac{1}{9}x^9e^5b^3+\frac{5}{8}x^8e^4db^3+\frac{3}{8}x^8e^5b^2a+\frac{10}{7}x^7e^3d^2b^3+\frac{15}{7}x^7e^4db^2a+\frac{3}{7}x^7e^5ba^2+\frac{5}{3}x^6e^2d^3b^3+5x^6e^3d^2b^2a+\frac{5}{2}x^6e^4dba^2+\frac{1}{6}x^6e^5a^3+x^5ed^4b^3+6x^5e^2d^3b^2a+6x^5e^3d^2ba^2+x^5e^4da^3+\frac{1}{4}x^4d^5b^3+\frac{15}{4}x^4ed^4b^2a+\frac{15}{2}x^4e^2d^3ba^2+\frac{5}{2}x^4e^3d^2a^3+x^3d^5b^2a+5x^3ed^4ba^2+\frac{10}{3}x^3e^2d^3a^3+\frac{3}{2}x^2d^5ba^2+\frac{5}{2}x^2ed^4a^3+xd^5a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*b^3 + 5/8*x^8*e^4*d*b^3 + 3/8*x^8*e^5*b^2*a + 10/7*x^7*e^3*d^2*
b^3 + 15/7*x^7*e^4*d*b^2*a + 3/7*x^7*e^5*b*a^2 + 5/3*x^6*e^2*d^3*b^3 + 5*x^
6*e^3*d^2*b^2*a + 5/2*x^6*e^4*d*b*a^2 + 1/6*x^6*e^5*a^3 + x^5*e*d^4*b^3 + 6
*x^5*e^2*d^3*b^2*a + 6*x^5*e^3*d^2*b*a^2 + x^5*e^4*d*a^3 + 1/4*x^4*d^5*b^3
+ 15/4*x^4*e*d^4*b^2*a + 15/2*x^4*e^2*d^3*b*a^2 + 5/2*x^4*e^3*d^2*a^3 + x^3
*d^5*b^2*a + 5*x^3*e*d^4*b*a^2 + 10/3*x^3*e^2*d^3*a^3 + 3/2*x^2*d^5*b*a^2 +
 5/2*x^2*e*d^4*a^3 + x*d^5*a^3
```

giac [B] time = 0.15, size = 291, normalized size = 3.16

$$\frac{1}{9}b^3x^9e^5+\frac{5}{8}b^3dx^8e^4+\frac{10}{7}b^3d^2x^7e^3+\frac{5}{3}b^3d^3x^6e^2+b^3d^4x^5e+\frac{1}{4}b^3d^5x^4+\frac{3}{8}ab^2x^8e^5+\frac{15}{7}ab^2dx^7e^4+5ab^2d^2x^6e^3+6ab^2d^3x^5e^2+\frac{15}{4}ab^2d^4x^4e+ab^2d^5x^3+\frac{3}{7}a^2bx^7e^5+\frac{5}{2}a^2bdx^6e^4+6a^2bd^2x^5e^3+\frac{15}{2}a^2bd^3x^4e^2+5a^2bd^4x^3e+\frac{3}{2}a^2bd^5x^2+\frac{1}{6}a^3x^6e^5+a^3dx^5e^4+\frac{5}{2}a^3d^2x^4e^3+\frac{10}{3}a^3d^3x^3e^2+\frac{5}{2}a^3d^4x^2e+a^3d^5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/9*b^3*x^9*e^5 + 5/8*b^3*d*x^8*e^4 + 10/7*b^3*d^2*x^7*e^3 + 5/3*b^3*d^3*x^
6*e^2 + b^3*d^4*x^5*e + 1/4*b^3*d^5*x^4 + 3/8*a*b^2*x^8*e^5 + 15/7*a*b^2*d*
x^7*e^4 + 5*a*b^2*d^2*x^6*e^3 + 6*a*b^2*d^3*x^5*e^2 + 15/4*a*b^2*d^4*x^4*e
+ a*b^2*d^5*x^3 + 3/7*a^2*b*x^7*e^5 + 5/2*a^2*b*d*x^6*e^4 + 6*a^2*b*d^2*x^5
*e^3 + 15/2*a^2*b*d^3*x^4*e^2 + 5*a^2*b*d^4*x^3*e + 3/2*a^2*b*d^5*x^2 + 1/6
*a^3*x^6*e^5 + a^3*d*x^5*e^4 + 5/2*a^3*d^2*x^4*e^3 + 10/3*a^3*d^3*x^3*e^2 +
 5/2*a^3*d^4*x^2*e + a^3*d^5*x
```

maple [B] time = 0.04, size = 394, normalized size = 4.28

$$\frac{b^3e^5x^9}{9}+a^3d^5x+\frac{\left(2ab^2e^5+\left(ae^5+5bde^4\right)b^2\right)x^8}{8}+\frac{\left(a^2be^5+2\left(ae^5+5bde^4\right)ab+\left(5ade^4+10bd^2e^3\right)b^2\right)x^7}{7}+\frac{\left(\left(ae^5+5bde^4\right)a^2+2\left(5ade^4+10bd^2e^3\right)ab+\left(10ad^2e^3+10bd^3e^2\right)b^2\right)x^6}{6}+\frac{\left(\left(5ade^4+10bd^2e^3\right)a^2+2\left(10ad^2e^3+10bd^3e^2\right)ab+\left(10ad^3e^2+5bd^4e\right)b^2\right)x^5}{5}+\frac{\left(\left(10ad^2e^3+10bd^3e^2\right)a^2+2\left(10ad^3e^2+5bd^4e\right)ab+\left(5ad^4e+bd^5\right)b^2\right)x^4}{4}+\frac{\left(ab^2d^5+\left(10ad^3e^2+5bd^4e\right)a^2+2\left(5ad^4e+bd^5\right)ab\right)x^3}{3}+\frac{\left(2a^2bd^5+\left(5ad^4e+bd^5\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/9*b^3*e^5*x^9+1/8*((a*e^5+5*b*d*e^4)*b^2+2*b^2*e^5*a)*x^8+1/7*((5*a*d*e^4
+10*b*d^2*e^3)*b^2+2*(a*e^5+5*b*d*e^4)*a*b+a^2*b*e^5)*x^7+1/6*((10*a*d^2*e^
3+10*b*d^3*e^2)*b^2+2*(5*a*d*e^4+10*b*d^2*e^3)*a*b+(a*e^5+5*b*d*e^4)*a^2)*x
^6+1/5*((10*a*d^3*e^2+5*b*d^4*e)*b^2+2*(10*a*d^2*e^3+10*b*d^3*e^2)*a*b+(5*a
*d*e^4+10*b*d^2*e^3)*a^2)*x^5+1/4*((5*a*d^4*e+b*d^5)*b^2+2*(10*a*d^3*e^2+5*
b*d^4*e)*a*b+(10*a*d^2*e^3+10*b*d^3*e^2)*a^2)*x^4+1/3*(a*d^5*b^2+2*(5*a*d^4
*e+b*d^5)*a*b+(10*a*d^3*e^2+5*b*d^4*e)*a^2)*x^3+1/2*(2*a^2*d^5*b+(5*a*d^4*e
+b*d^5)*a^2)*x^2+a^3*d^5*x
```

maxima [B] time = 0.58, size = 277, normalized size = 3.01

$$\frac{1}{9}b^3e^5x^9+a^3d^5x+\frac{1}{8}\left(5b^3de^4+3ab^2e^5\right)x^8+\frac{1}{7}\left(10b^3d^2e^3+15ab^2de^4+3a^2be^5\right)x^7+\frac{1}{6}\left(10b^3d^3e^2+30ab^2d^2e^3+15a^2bde^4+a^3e^5\right)x^6+\left(b^3d^4e+6ab^2d^3e^2+6a^2bd^2e^3+a^3de^4\right)x^5+\frac{1}{4}\left(b^3d^5+15ab^2d^4e+30a^2bd^3e^2+10a^3d^2e^3\right)x^4+\frac{1}{3}\left(3ab^2d^5+15a^2bd^4e+10a^3d^3e^2\right)x^3+\frac{1}{2}\left(3a^2bd^5+5a^3d^4e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/9*b^3*e^5*x^9 + a^3*d^5*x + 1/8*(5*b^3*d*e^4 + 3*a*b^2*e^5)*x^8 + 1/7*(10
*b^3*d^2*e^3 + 15*a*b^2*d*e^4 + 3*a^2*b*e^5)*x^7 + 1/6*(10*b^3*d^3*e^2 + 30
*a*b^2*d^2*e^3 + 15*a^2*b*d*e^4 + a^3*e^5)*x^6 + (b^3*d^4*e + 6*a*b^2*d^3*e
^2 + 6*a^2*b*d^2*e^3 + a^3*d*e^4)*x^5 + 1/4*(b^3*d^5 + 15*a*b^2*d^4*e + 30*
a^2*b*d^3*e^2 + 10*a^3*d^2*e^3)*x^4 + 1/3*(3*a*b^2*d^5 + 15*a^2*b*d^4*e + 1
0*a^3*d^3*e^2)*x^3 + 1/2*(3*a^2*b*d^5 + 5*a^3*d^4*e)*x^2
```

mupad [B] time = 0.11, size = 261, normalized size = 2.84

$$x^5\left(a^3\,d\,e^4+6\,a^2\,b\,d^2\,e^3+6\,a\,b^2\,d^3\,e^2+b^3\,d^4\,e\right)+x^4\left(\frac{5\,a^3\,d^2\,e^3}{2}+\frac{15\,a^2\,b\,d^3\,e^2}{2}+\frac{15\,a\,b^2\,d^4\,e}{4}+\frac{b^3\,d^5}{4}\right)+x^6\left(\frac{a^3\,e^5}{6}+\frac{5\,a^2\,b\,d\,e^4}{2}+5\,a\,b^2\,d^2\,e^3+\frac{5\,b^3\,d^3\,e^2}{3}\right)+a^3\,d^5\,x+\frac{b^3\,e^5\,x^9}{9}+\frac{a^2\,d^4\,x^2\,\left(5\,a\,e+3\,b\,d\right)}{2}+\frac{b^2\,e^4\,x^8\,\left(3\,a\,e+5\,b\,d\right)}{8}+\frac{a\,d^3\,x^3\,\left(10\,a^2\,e^2+15\,a\,b\,d\,e+3\,b^2\,d^2\right)}{3}+\frac{b\,e^3\,x^7\,\left(3\,a^2\,e^2+15\,a\,b\,d\,e+10\,b^2\,d^2\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^5*(a^3*d*e^4 + b^3*d^4*e + 6*a*b^2*d^3*e^2 + 6*a^2*b*d^2*e^3) + x^4*((b^3
*d^5)/4 + (5*a^3*d^2*e^3)/2 + (15*a^2*b*d^3*e^2)/2 + (15*a*b^2*d^4*e)/4) +
x^6*((a^3*e^5)/6 + (5*b^3*d^3*e^2)/3 + 5*a*b^2*d^2*e^3 + (5*a^2*b*d*e^4)/2)
 + a^3*d^5*x + (b^3*e^5*x^9)/9 + (a^2*d^4*x^2*(5*a*e + 3*b*d))/2 + (b^2*e^4
*x^8*(3*a*e + 5*b*d))/8 + (a*d^3*x^3*(10*a^2*e^2 + 3*b^2*d^2 + 15*a*b*d*e))
/3 + (b*e^3*x^7*(3*a^2*e^2 + 10*b^2*d^2 + 15*a*b*d*e))/7
```

sympy [B] time = 0.13, size = 308, normalized size = 3.35

$$a^3d^5x+\frac{b^3e^5x^9}{9}+x^8\left(\frac{3ab^2e^5}{8}+\frac{5b^3de^4}{8}\right)+x^7\left(\frac{3a^2be^5}{7}+\frac{15ab^2de^4}{7}+\frac{10b^3d^2e^3}{7}\right)+x^6\left(\frac{a^3e^5}{6}+\frac{5a^2bde^4}{2}+5ab^2d^2e^3+\frac{5b^3d^3e^2}{3}\right)+x^5\left(a^3de^4+6a^2bd^2e^3+6ab^2d^3e^2+b^3d^4e\right)+x^4\left(\frac{5a^3d^2e^3}{2}+\frac{15a^2bd^3e^2}{2}+\frac{15ab^2d^4e}{4}+\frac{b^3d^5}{4}\right)+x^3\left(\frac{10a^3d^3e^2}{3}+5a^2bd^4e+ab^2d^5\right)+x^2\left(\frac{5a^3d^4e}{2}+\frac{3a^2bd^5}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**5*x + b**3*e**5*x**9/9 + x**8*(3*a*b**2*e**5/8 + 5*b**3*d*e**4/8) +
 x**7*(3*a**2*b*e**5/7 + 15*a*b**2*d*e**4/7 + 10*b**3*d**2*e**3/7) + x**6*(
a**3*e**5/6 + 5*a**2*b*d*e**4/2 + 5*a*b**2*d**2*e**3 + 5*b**3*d**3*e**2/3)
+ x**5*(a**3*d*e**4 + 6*a**2*b*d**2*e**3 + 6*a*b**2*d**3*e**2 + b**3*d**4*e
) + x**4*(5*a**3*d**2*e**3/2 + 15*a**2*b*d**3*e**2/2 + 15*a*b**2*d**4*e/4 +
 b**3*d**5/4) + x**3*(10*a**3*d**3*e**2/3 + 5*a**2*b*d**4*e + a*b**2*d**5)
+ x**2*(5*a**3*d**4*e/2 + 3*a**2*b*d**5/2)
```

3.1671 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) \, dx$

Optimal. Leaf size=92

$$-\frac{3b^2(d+ex)^7(bd-ae)}{7e^4}+\frac{b(d+ex)^6(bd-ae)^2}{2e^4}-\frac{(d+ex)^5(bd-ae)^3}{5e^4}+\frac{b^3(d+ex)^8}{8e^4}$$

Rubi [A] time = 0.12, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$-\frac{3b^2(d+ex)^7(bd-ae)}{7e^4}+\frac{b(d+ex)^6(bd-ae)^2}{2e^4}-\frac{(d+ex)^5(bd-ae)^3}{5e^4}+\frac{b^3(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^3*(d + e*x)^5)/(5*e^4) + (b*(b*d - a*e)^2*(d + e*x)^6)/(2*e^4
) - (3*b^2*(b*d - a*e)*(d + e*x)^7)/(7*e^4) + (b^3*(d + e*x)^8)/(8*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) \, dx &= \int (a+bx)^3(d+ex)^4 \, dx \\
&= \int \left(\frac{(-bd+ae)^3(d+ex)^4}{e^3}+\frac{3b(bd-ae)^2(d+ex)^5}{e^3}-\frac{3b^2(bd-ae)(d+ex)^6}{e^3}\right. \\
&= -\frac{(bd-ae)^3(d+ex)^5}{5e^4}+\frac{b(bd-ae)^2(d+ex)^6}{2e^4}-\frac{3b^2(bd-ae)(d+ex)^7}{7e^4}
\end{aligned}$$

Mathematica [B] time = 0.03, size = 217, normalized size = 2.36

$$a^3d^4x+\frac{1}{2}be^2x^6\left(a^2e^2+4abde+2b^2d^2\right)+ad^2x^3\left(2a^2e^2+4abde+b^2d^2\right)+\frac{1}{2}a^2d^3x^2(4ae+3bd)+\frac{1}{5}ex^5\left(a^3e^3+12a^2bde^2+18ab^2d^2e+4b^3d^3\right)+\frac{1}{4}dx^4\left(4a^3e^3+18a^2bde^2+12ab^2d^2e+b^3d^3\right)+\frac{1}{7}b^2e^3x^7(3ae+4bd)+\frac{1}{8}b^3e^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^4*x + (a^2*d^3*(3*b*d + 4*a*e)*x^2)/2 + a*d^2*(b^2*d^2 + 4*a*b*d*e +
2*a^2*e^2)*x^3 + (d*(b^3*d^3 + 12*a*b^2*d^2*e + 18*a^2*b*d*e^2 + 4*a^3*e^3)
*x^4)/4 + (e*(4*b^3*d^3 + 18*a*b^2*d^2*e + 12*a^2*b*d*e^2 + a^3*e^3)*x^5)/5
 + (b*e^2*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2)*x^6)/2 + (b^2*e^3*(4*b*d + 3*a*
e)*x^7)/7 + (b^3*e^4*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.36, size = 245, normalized size = 2.66

$$\frac{1}{8}x^8e^4b^3+\frac{4}{7}x^7e^3db^3+\frac{3}{7}x^7e^4b^2a+x^6e^2d^2b^3+2x^6e^3db^2a+\frac{1}{2}x^6e^4ba^2+\frac{4}{5}x^5ed^3b^3+\frac{18}{5}x^5e^2d^2b^2a+\frac{12}{5}x^5e^3dba^2+\frac{1}{5}x^5e^4a^3+\frac{1}{4}x^4d^4b^3+3x^4ed^3b^2a+\frac{9}{2}x^4e^2d^2ba^2+x^4e^3da^3+x^3d^4b^2a+4x^3ed^3ba^2+2x^3e^2d^2a^3+\frac{3}{2}x^2d^4ba^2+2x^2ed^3a^3+xd^4a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*b^3 + 4/7*x^7*e^3*d*b^3 + 3/7*x^7*e^4*b^2*a + x^6*e^2*d^2*b^3 +
 2*x^6*e^3*d*b^2*a + 1/2*x^6*e^4*b*a^2 + 4/5*x^5*e*d^3*b^3 + 18/5*x^5*e^2*d
^2*b^2*a + 12/5*x^5*e^3*d*b*a^2 + 1/5*x^5*e^4*a^3 + 1/4*x^4*d^4*b^3 + 3*x^4
*e*d^3*b^2*a + 9/2*x^4*e^2*d^2*b*a^2 + x^4*e^3*d*a^3 + x^3*d^4*b^2*a + 4*x^
3*e*d^3*b*a^2 + 2*x^3*e^2*d^2*a^3 + 3/2*x^2*d^4*b*a^2 + 2*x^2*e*d^3*a^3 + x
*d^4*a^3
```

giac [B] time = 0.16, size = 237, normalized size = 2.58

$$\frac{1}{8}b^3x^8e^4+\frac{4}{7}b^3dx^7e^3+b^3d^2x^6e^2+\frac{4}{5}b^3d^3x^5e+\frac{1}{4}b^3d^4x^4+\frac{3}{7}ab^2x^7e^4+2ab^2dx^6e^3+\frac{18}{5}ab^2d^2x^5e^2+3ab^2d^3x^4e+ab^2d^4x^3+\frac{1}{2}a^2bx^6e^4+\frac{12}{5}a^2bdx^5e^3+\frac{9}{2}a^2bd^2x^4e^2+4a^2bd^3x^3e+\frac{3}{2}a^2bd^4x^2+\frac{1}{5}a^3x^5e^4+a^3dx^4e^3+2a^3d^2x^3e^2+2a^3d^3x^2e+a^3d^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/8*b^3*x^8*e^4 + 4/7*b^3*d*x^7*e^3 + b^3*d^2*x^6*e^2 + 4/5*b^3*d^3*x^5*e +
 1/4*b^3*d^4*x^4 + 3/7*a*b^2*x^7*e^4 + 2*a*b^2*d*x^6*e^3 + 18/5*a*b^2*d^2*x
^5*e^2 + 3*a*b^2*d^3*x^4*e + a*b^2*d^4*x^3 + 1/2*a^2*b*x^6*e^4 + 12/5*a^2*b
*d*x^5*e^3 + 9/2*a^2*b*d^2*x^4*e^2 + 4*a^2*b*d^3*x^3*e + 3/2*a^2*b*d^4*x^2
+ 1/5*a^3*x^5*e^4 + a^3*d*x^4*e^3 + 2*a^3*d^2*x^3*e^2 + 2*a^3*d^3*x^2*e + a
^3*d^4*x
```

maple [B] time = 0.04, size = 319, normalized size = 3.47

$$\frac{b^3e^4x^8}{8}+a^3d^4x+\frac{\left(2ab^2e^4+\left(ae^4+4bde^3\right)b^2\right)x^7}{7}+\frac{\left(a^2be^4+2\left(ae^4+4bde^3\right)ab+\left(4ade^3+6bd^2e^2\right)b^2\right)x^6}{6}+\frac{\left(\left(ae^4+4bde^3\right)a^2+2\left(4ade^3+6bd^2e^2\right)ab+\left(6ad^2e^2+4bd^3e\right)b^2\right)x^5}{5}+\frac{\left(\left(4ade^3+6bd^2e^2\right)a^2+2\left(6ad^2e^2+4bd^3e\right)ab+\left(4ad^3e+bd^4\right)b^2\right)x^4}{4}+\frac{\left(ab^2d^4+\left(6ad^2e^2+4bd^3e\right)a^2+2\left(4ad^3e+bd^4\right)ab\right)x^3}{3}+\frac{\left(2a^2bd^4+\left(4ad^3e+bd^4\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/8*b^3*e^4*x^8+1/7*((a*e^4+4*b*d*e^3)*b^2+2*a*b^2*e^4)*x^7+1/6*((4*a*d*e^3
+6*b*d^2*e^2)*b^2+2*(a*e^4+4*b*d*e^3)*a*b+b*e^4*a^2)*x^6+1/5*((6*a*d^2*e^2+
4*b*d^3*e)*b^2+2*(4*a*d*e^3+6*b*d^2*e^2)*a*b+(a*e^4+4*b*d*e^3)*a^2)*x^5+1/4
*((4*a*d^3*e+b*d^4)*b^2+2*(6*a*d^2*e^2+4*b*d^3*e)*a*b+(4*a*d*e^3+6*b*d^2*e^
2)*a^2)*x^4+1/3*(a*d^4*b^2+2*(4*a*d^3*e+b*d^4)*a*b+(6*a*d^2*e^2+4*b*d^3*e)*
a^2)*x^3+1/2*(2*a^2*d^4*b+(4*a*d^3*e+b*d^4)*a^2)*x^2+a^3*d^4*x
```

maxima [B] time = 0.50, size = 225, normalized size = 2.45

$$\frac{1}{8}b^3e^4x^8+a^3d^4x+\frac{1}{7}\left(4b^3de^3+3ab^2e^4\right)x^7+\frac{1}{2}\left(2b^3d^2e^2+4ab^2de^3+a^2be^4\right)x^6+\frac{1}{5}\left(4b^3d^3e+18ab^2d^2e^2+12a^2bde^3+a^3e^4\right)x^5+\frac{1}{4}\left(b^3d^4+12ab^2d^3e+18a^2bd^2e^2+4a^3de^3\right)x^4+\left(ab^2d^4+4a^2bd^3e+2a^3d^2e^2\right)x^3+\frac{1}{2}\left(3a^2bd^4+4a^3d^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/8*b^3*e^4*x^8 + a^3*d^4*x + 1/7*(4*b^3*d*e^3 + 3*a*b^2*e^4)*x^7 + 1/2*(2*
b^3*d^2*e^2 + 4*a*b^2*d*e^3 + a^2*b*e^4)*x^6 + 1/5*(4*b^3*d^3*e + 18*a*b^2*
d^2*e^2 + 12*a^2*b*d*e^3 + a^3*e^4)*x^5 + 1/4*(b^3*d^4 + 12*a*b^2*d^3*e + 1
8*a^2*b*d^2*e^2 + 4*a^3*d*e^3)*x^4 + (a*b^2*d^4 + 4*a^2*b*d^3*e + 2*a^3*d^2
*e^2)*x^3 + 1/2*(3*a^2*b*d^4 + 4*a^3*d^3*e)*x^2
```

mupad [B] time = 0.08, size = 208, normalized size = 2.26

$$x^4\left(a^3\,d\,e^3+\frac{9\,a^2\,b\,d^2\,e^2}{2}+3\,a\,b^2\,d^3\,e+\frac{b^3\,d^4}{4}\right)+x^5\left(\frac{a^3\,e^4}{5}+\frac{12\,a^2\,b\,d\,e^3}{5}+\frac{18\,a\,b^2\,d^2\,e^2}{5}+\frac{4\,b^3\,d^3\,e}{5}\right)+a^3\,d^4\,x+\frac{b^3\,e^4\,x^8}{8}+\frac{a^2\,d^3\,x^2\,\left(4\,a\,e+3\,b\,d\right)}{2}+\frac{b^2\,e^3\,x^7\,\left(3\,a\,e+4\,b\,d\right)}{7}+a\,d^2\,x^3\,\left(2\,a^2\,e^2+4\,a\,b\,d\,e+b^2\,d^2\right)+\frac{b\,e^2\,x^6\,\left(a^2\,e^2+4\,a\,b\,d\,e+2\,b^2\,d^2\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((b^3*d^4)/4 + a^3*d*e^3 + (9*a^2*b*d^2*e^2)/2 + 3*a*b^2*d^3*e) + x^5*(
(a^3*e^4)/5 + (4*b^3*d^3*e)/5 + (18*a*b^2*d^2*e^2)/5 + (12*a^2*b*d*e^3)/5)
+ a^3*d^4*x + (b^3*e^4*x^8)/8 + (a^2*d^3*x^2*(4*a*e + 3*b*d))/2 + (b^2*e^3*
x^7*(3*a*e + 4*b*d))/7 + a*d^2*x^3*(2*a^2*e^2 + b^2*d^2 + 4*a*b*d*e) + (b*e
^2*x^6*(a^2*e^2 + 2*b^2*d^2 + 4*a*b*d*e))/2
```

sympy [B] time = 0.11, size = 243, normalized size = 2.64

$$a^{3} d^{4} x + \frac{b^{3} e^{4} x^{8}}{8} + x^{7} \left(\frac{3 a b^{2} e^{4}}{7} + \frac{4 b^{3} d e^{3}}{7}\right) + x^{6} \left(\frac{a^{2} b e^{4}}{2} + 2 a b^{2} d e^{3} + b^{3} d^{2} e^{2}\right) + x^{5} \left(\frac{a^{3} e^{4}}{5} + \frac{12 a^{2} b d e^{3}}{5} + \frac{18 a b^{2} d^{2} e^{2}}{5} + \frac{4 b^{3} d^{3} e}{5}\right) + x^{4} \left(a^{3} d e^{3} + \frac{9 a^{2} b d^{2} e^{2}}{2} + 3 a b^{2} d^{3} e + \frac{b^{3} d^{4}}{4}\right) + x^{3} \left(2 a^{3} d^{2} e^{2} + 4 a^{2} b d^{3} e + a b^{2} d^{4}\right) + x^{2} \left(2 a^{3} d^{3} e + \frac{3 a^{2} b d^{4}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**4*x + b**3*e**4*x**8/8 + x**7*(3*a*b**2*e**4/7 + 4*b**3*d*e**3/7) +
 x**6*(a**2*b*e**4/2 + 2*a*b**2*d*e**3 + b**3*d**2*e**2) + x**5*(a**3*e**4/
5 + 12*a**2*b*d*e**3/5 + 18*a*b**2*d**2*e**2/5 + 4*b**3*d**3*e/5) + x**4*(a
**3*d*e**3 + 9*a**2*b*d**2*e**2/2 + 3*a*b**2*d**3*e + b**3*d**4/4) + x**3*(
2*a**3*d**2*e**2 + 4*a**2*b*d**3*e + a*b**2*d**4) + x**2*(2*a**3*d**3*e + 3
*a**2*b*d**4/2)
```

3.1672 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=92

$$\frac{e^2(a+bx)^6(bd-ae)}{2b^4}+\frac{3e(a+bx)^5(bd-ae)^2}{5b^4}+\frac{(a+bx)^4(bd-ae)^3}{4b^4}+\frac{e^3(a+bx)^7}{7b^4}$$

Rubi [A] time = 0.10, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{e^2(a+bx)^6(bd-ae)}{2b^4}+\frac{3e(a+bx)^5(bd-ae)^2}{5b^4}+\frac{(a+bx)^4(bd-ae)^3}{4b^4}+\frac{e^3(a+bx)^7}{7b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^4)/(4*b^4) + (3*e*(b*d - a*e)^2*(a + b*x)^5)/(5*b^
4) + (e^2*(b*d - a*e)*(a + b*x)^6)/(2*b^4) + (e^3*(a + b*x)^7)/(7*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^3(d+ex)^3\,dx\\ &= \int \left(\frac{(bd-ae)^3(a+bx)^3}{b^3}+\frac{3e(bd-ae)^2(a+bx)^4}{b^3}+\frac{3e^2(bd-ae)(a\right.\\ &= \frac{(bd-ae)^3(a+bx)^4}{4b^4}+\frac{3e(bd-ae)^2(a+bx)^5}{5b^4}+\frac{e^2(bd-ae)(a+bx\end{aligned}$$

Mathematica [A] time = 0.02, size = 161, normalized size = 1.75

$$a^3d^3x+\frac{3}{5}bex^5\left(a^2e^2+3abde+b^2d^2\right)+adx^3\left(a^2e^2+3abde+b^2d^2\right)+\frac{3}{2}a^2d^2x^2(ae+bd)+\frac{1}{4}x^4\left(a^3e^3+9a^2bde^2+9ab^2d^2e+b^3d^3\right)+\frac{1}{2}b^2e^2x^6(ae+bd)+\frac{1}{7}b^3e^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^3*x + (3*a^2*d^2*(b*d + a*e)*x^2)/2 + a*d*(b^2*d^2 + 3*a*b*d*e + a^2*
e^2)*x^3 + ((b^3*d^3 + 9*a*b^2*d^2*e + 9*a^2*b*d*e^2 + a^3*e^3)*x^4)/4 + (3
*b*e*(b^2*d^2 + 3*a*b*d*e + a^2*e^2)*x^5)/5 + (b^2*e^2*(b*d + a*e)*x^6)/2 +
 (b^3*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.39, size = 188, normalized size = 2.04

$$\frac{1}{7}x^7e^3b^3+\frac{1}{2}x^6e^2db^3+\frac{1}{2}x^6e^3b^2a+\frac{3}{5}x^5ed^2b^3+\frac{9}{5}x^5e^2db^2a+\frac{3}{5}x^5e^3ba^2+\frac{1}{4}x^4d^3b^3+\frac{9}{4}x^4ed^2b^2a+\frac{9}{4}x^4e^2dba^2+\frac{1}{4}x^4e^3a^3+x^3d^3b^2a+3x^3ed^2ba^2+x^3e^2da^3+\frac{3}{2}x^2d^3ba^2+\frac{3}{2}x^2ed^2a^3+xd^3a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*b^3 + 1/2*x^6*e^2*d*b^3 + 1/2*x^6*e^3*b^2*a + 3/5*x^5*e*d^2*b^3
 + 9/5*x^5*e^2*d*b^2*a + 3/5*x^5*e^3*b*a^2 + 1/4*x^4*d^3*b^3 + 9/4*x^4*e*d^
2*b^2*a + 9/4*x^4*e^2*d*b*a^2 + 1/4*x^4*e^3*a^3 + x^3*d^3*b^2*a + 3*x^3*e*d
^2*b*a^2 + x^3*e^2*d*a^3 + 3/2*x^2*d^3*b*a^2 + 3/2*x^2*e*d^2*a^3 + x*d^3*a^
3
```

giac [B] time = 0.15, size = 184, normalized size = 2.00

$$\frac{1}{7}b^3x^7e^3+\frac{1}{2}b^3dx^6e^2+\frac{3}{5}b^3d^2x^5e+\frac{1}{4}b^3d^3x^4+\frac{1}{2}ab^2x^6e^3+\frac{9}{5}ab^2dx^5e^2+\frac{9}{4}ab^2d^2x^4e+ab^2d^3x^3+\frac{3}{5}a^2bx^5e^3+\frac{9}{4}a^2bdx^4e^2+3a^2bd^2x^3e+\frac{3}{2}a^2bd^3x^2+\frac{1}{4}a^3x^4e^3+a^3dx^3e^2+\frac{3}{2}a^3d^2x^2e+a^3d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/7*b^3*x^7*e^3 + 1/2*b^3*d*x^6*e^2 + 3/5*b^3*d^2*x^5*e + 1/4*b^3*d^3*x^4 +
 1/2*a*b^2*x^6*e^3 + 9/5*a*b^2*d*x^5*e^2 + 9/4*a*b^2*d^2*x^4*e + a*b^2*d^3*
x^3 + 3/5*a^2*b*x^5*e^3 + 9/4*a^2*b*d*x^4*e^2 + 3*a^2*b*d^2*x^3*e + 3/2*a^2
*b*d^3*x^2 + 1/4*a^3*x^4*e^3 + a^3*d*x^3*e^2 + 3/2*a^3*d^2*x^2*e + a^3*d^3*
x
```

maple [B] time = 0.04, size = 244, normalized size = 2.65

$$\frac{b^3e^3x^7}{7}+a^3d^3x+\frac{\left(2ab^2e^3+\left(ae^3+3bde^2\right)b^2\right)x^6}{6}+\frac{\left(a^2be^3+2\left(ae^3+3bde^2\right)ab+\left(3ade^2+3bd^2e\right)b^2\right)x^5}{5}+\frac{\left(\left(ae^3+3bde^2\right)a^2+2\left(3ade^2+3bd^2e\right)ab+\left(3ad^2e+bd^3\right)b^2\right)x^4}{4}+\frac{\left(ab^2d^3+\left(3ade^2+3bd^2e\right)a^2+2\left(3ad^2e+bd^3\right)ab\right)x^3}{3}+\frac{\left(2a^2bd^3+\left(3ad^2e+bd^3\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/7*b^3*e^3*x^7+1/6*((a*e^3+3*b*d*e^2)*b^2+2*b^2*e^3*a)*x^6+1/5*((3*a*d*e^2
+3*b*d^2*e)*b^2+2*(a*e^3+3*b*d*e^2)*a*b+b*e^3*a^2)*x^5+1/4*((3*a*d^2*e+b*d^
3)*b^2+2*(3*a*d*e^2+3*b*d^2*e)*a*b+(a*e^3+3*b*d*e^2)*a^2)*x^4+1/3*(a*d^3*b^
2+2*(3*a*d^2*e+b*d^3)*a*b+(3*a*d*e^2+3*b*d^2*e)*a^2)*x^3+1/2*(2*a^2*d^3*b+(
3*a*d^2*e+b*d^3)*a^2)*x^2+a^3*d^3*x
```

maxima [A] time = 0.52, size = 167, normalized size = 1.82

$$\frac{1}{7}b^3e^3x^7+a^3d^3x+\frac{1}{2}\left(b^3de^2+ab^2e^3\right)x^6+\frac{3}{5}\left(b^3d^2e+3ab^2de^2+a^2be^3\right)x^5+\frac{1}{4}\left(b^3d^3+9ab^2d^2e+9a^2bde^2+a^3e^3\right)x^4+\left(ab^2d^3+3a^2bd^2e+a^3de^2\right)x^3+\frac{3}{2}\left(a^2bd^3+a^3d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/7*b^3*e^3*x^7 + a^3*d^3*x + 1/2*(b^3*d*e^2 + a*b^2*e^3)*x^6 + 3/5*(b^3*d^
2*e + 3*a*b^2*d*e^2 + a^2*b*e^3)*x^5 + 1/4*(b^3*d^3 + 9*a*b^2*d^2*e + 9*a^2
*b*d*e^2 + a^3*e^3)*x^4 + (a*b^2*d^3 + 3*a^2*b*d^2*e + a^3*d*e^2)*x^3 + 3/2
*(a^2*b*d^3 + a^3*d^2*e)*x^2
```

mupad [B] time = 0.07, size = 152, normalized size = 1.65

$$x^4\left(\frac{a^3e^3}{4}+\frac{9a^2bde^2}{4}+\frac{9ab^2d^2e}{4}+\frac{b^3d^3}{4}\right)+a^3d^3x+\frac{b^3e^3x^7}{7}+adx^3\left(a^2e^2+3abde+b^2d^2\right)+\frac{3bex^5\left(a^2e^2+3abde+b^2d^2\right)}{5}+\frac{3a^2d^2x^2\left(ae+bd\right)}{2}+\frac{b^2e^2x^6\left(ae+bd\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((a^3*e^3)/4 + (b^3*d^3)/4 + (9*a*b^2*d^2*e)/4 + (9*a^2*b*d*e^2)/4) + a
^3*d^3*x + (b^3*e^3*x^7)/7 + a*d*x^3*(a^2*e^2 + b^2*d^2 + 3*a*b*d*e) + (3*b
*e*x^5*(a^2*e^2 + b^2*d^2 + 3*a*b*d*e))/5 + (3*a^2*d^2*x^2*(a*e + b*d))/2 +
 (b^2*e^2*x^6*(a*e + b*d))/2
```

sympy [B] time = 0.10, size = 190, normalized size = 2.07

$$a^3d^3x + \frac{b^3e^3x^7}{7} + x^6\left(\frac{ab^2e^3}{2} + \frac{b^3de^2}{2}\right) + x^5\left(\frac{3a^2be^3}{5} + \frac{9ab^2de^2}{5} + \frac{3b^3d^2e}{5}\right) + x^4\left(\frac{a^3e^3}{4} + \frac{9a^2bde^2}{4} + \frac{9ab^2d^2e}{4} + \frac{b^3d^3}{4}\right) + x^3\left(a^3de^2 + 3a^2bd^2e + ab^2d^3\right) + x^2\left(\frac{3a^3d^2e}{2} + \frac{3a^2bd^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**3*x + b**3*e**3*x**7/7 + x**6*(a*b**2*e**3/2 + b**3*d*e**2/2) + x**
5*(3*a**2*b*e**3/5 + 9*a*b**2*d*e**2/5 + 3*b**3*d**2*e/5) + x**4*(a**3*e**3
/4 + 9*a**2*b*d*e**2/4 + 9*a*b**2*d**2*e/4 + b**3*d**3/4) + x**3*(a**3*d*e*
*2 + 3*a**2*b*d**2*e + a*b**2*d**3) + x**2*(3*a**3*d**2*e/2 + 3*a**2*b*d**3
/2)
```

3.1673 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=65

$$\frac{2e(a+bx)^5(bd-ae)}{5b^3}+\frac{(a+bx)^4(bd-ae)^2}{4b^3}+\frac{e^2(a+bx)^6}{6b^3}$$

Rubi [A] time = 0.07, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{2e(a+bx)^5(bd-ae)}{5b^3}+\frac{(a+bx)^4(bd-ae)^2}{4b^3}+\frac{e^2(a+bx)^6}{6b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^4)/(4*b^3) + (2*e*(b*d - a*e)*(a + b*x)^5)/(5*b^3)
 + (e^2*(a + b*x)^6)/(6*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)dx &= \int (a+bx)^3(d+ex)^2\,dx\\ &= \int \left(\frac{(bd-ae)^2(a+bx)^3}{b^2}+\frac{2e(bd-ae)(a+bx)^4}{b^2}+\frac{e^2(a+bx)^5}{b^2}\right)dx\\ &= \frac{(bd-ae)^2(a+bx)^4}{4b^3}+\frac{2e(bd-ae)(a+bx)^5}{5b^3}+\frac{e^2(a+bx)^6}{6b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 122, normalized size = 1.88

$$a^3d^2x+\frac{1}{4}bx^4\left(3a^2e^2+6abde+b^2d^2\right)+\frac{1}{3}ax^3\left(a^2e^2+6abde+3b^2d^2\right)+\frac{1}{2}a^2dx^2(2ae+3bd)+\frac{1}{5}b^2ex^5(3ae+2bd)+\frac{1}{6}b^3e^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^2*x + (a^2*d*(3*b*d + 2*a*e)*x^2)/2 + (a*(3*b^2*d^2 + 6*a*b*d*e + a^2
*e^2)*x^3)/3 + (b*(b^2*d^2 + 6*a*b*d*e + 3*a^2*e^2)*x^4)/4 + (b^2*e*(2*b*d
+ 3*a*e)*x^5)/5 + (b^3*e^2*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.39, size = 130, normalized size = 2.00

$$\frac{1}{6}x^6e^2b^3 + \frac{2}{5}x^5edb^3 + \frac{3}{5}x^5e^2b^2a + \frac{1}{4}x^4d^2b^3 + \frac{3}{2}x^4edb^2a + \frac{3}{4}x^4e^2ba^2 + x^3d^2b^2a + 2x^3edba^2 + \frac{1}{3}x^3e^2a^3 + \frac{3}{2}x^2d^2ba^2 + x^2eda^3 + xd^2a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*b^3 + 2/5*x^5*e*d*b^3 + 3/5*x^5*e^2*b^2*a + 1/4*x^4*d^2*b^3 + 3
/2*x^4*e*d*b^2*a + 3/4*x^4*e^2*b*a^2 + x^3*d^2*b^2*a + 2*x^3*e*d*b*a^2 + 1/
3*x^3*e^2*a^3 + 3/2*x^2*d^2*b*a^2 + x^2*e*d*a^3 + x*d^2*a^3
```

giac [B] time = 0.15, size = 130, normalized size = 2.00

$$\frac{1}{6}b^3x^6e^2 + \frac{2}{5}b^3dx^5e + \frac{1}{4}b^3d^2x^4 + \frac{3}{5}ab^2x^5e^2 + \frac{3}{2}ab^2dx^4e + ab^2d^2x^3 + \frac{3}{4}a^2bx^4e^2 + 2a^2bdx^3e + \frac{3}{2}a^2bd^2x^2 + \frac{1}{3}a^3x^3e^2 + a^3dx^2e + a^3d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*b^3*x^6*e^2 + 2/5*b^3*d*x^5*e + 1/4*b^3*d^2*x^4 + 3/5*a*b^2*x^5*e^2 + 3
/2*a*b^2*d*x^4*e + a*b^2*d^2*x^3 + 3/4*a^2*b*x^4*e^2 + 2*a^2*b*d*x^3*e + 3/
2*a^2*b*d^2*x^2 + 1/3*a^3*x^3*e^2 + a^3*d*x^2*e + a^3*d^2*x
```

maple [B] time = 0.05, size = 169, normalized size = 2.60

$$\frac{b^3e^2x^6}{6} + a^3d^2x + \frac{\left(2ab^2e^2 + \left(ae^2 + 2bde\right)b^2\right)x^5}{5} + \frac{\left(a^2be^2 + 2\left(ae^2 + 2bde\right)ab + \left(2ade + bd^2\right)b^2\right)x^4}{4} + \frac{\left(ab^2d^2 + \left(ae^2 + 2bde\right)a^2 + 2\left(2ade + bd^2\right)ab\right)x^3}{3} + \frac{\left(2a^2bd^2 + \left(2ade + bd^2\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/6*b^3*e^2*x^6+1/5*((a*e^2+2*b*d*e)*b^2+2*b^2*e^2*a)*x^5+1/4*((2*a*d*e+b*d
^2)*b^2+2*(a*e^2+2*b*d*e)*a*b+b*e^2*a^2)*x^4+1/3*(a*b^2*d^2+2*(2*a*d*e+b*d^
2)*a*b+(a*e^2+2*b*d*e)*a^2)*x^3+1/2*(2*a^2*d^2*b+(2*a*d*e+b*d^2)*a^2)*x^2+a
^3*d^2*x
```

maxima [B] time = 0.53, size = 124, normalized size = 1.91

$$\frac{1}{6}b^3e^2x^6 + a^3d^2x + \frac{1}{5}\left(2b^3de + 3ab^2e^2\right)x^5 + \frac{1}{4}\left(b^3d^2 + 6ab^2de + 3a^2be^2\right)x^4 + \frac{1}{3}\left(3ab^2d^2 + 6a^2bde + a^3e^2\right)x^3 + \frac{1}{2}\left(3a^2bd^2 + 2a^3de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*b^3*e^2*x^6 + a^3*d^2*x + 1/5*(2*b^3*d*e + 3*a*b^2*e^2)*x^5 + 1/4*(b^3*
d^2 + 6*a*b^2*d*e + 3*a^2*b*e^2)*x^4 + 1/3*(3*a*b^2*d^2 + 6*a^2*b*d*e + a^3
*e^2)*x^3 + 1/2*(3*a^2*b*d^2 + 2*a^3*d*e)*x^2
```

mupad [B] time = 0.05, size = 115, normalized size = 1.77

$$x^3\left(\frac{a^3e^2}{3} + 2a^2bde + ab^2d^2\right) + x^4\left(\frac{3a^2be^2}{4} + \frac{3ab^2de}{2} + \frac{b^3d^2}{4}\right) + a^3d^2x + \frac{b^3e^2x^6}{6} + \frac{a^2dx^2\left(2ae + 3bd\right)}{2} + \frac{b^2ex^5\left(3ae + 2bd\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((a^3*e^2)/3 + a*b^2*d^2 + 2*a^2*b*d*e) + x^4*((b^3*d^2)/4 + (3*a^2*b*e
^2)/4 + (3*a*b^2*d*e)/2) + a^3*d^2*x + (b^3*e^2*x^6)/6 + (a^2*d*x^2*(2*a*e
+ 3*b*d))/2 + (b^2*e*x^5*(3*a*e + 2*b*d))/5
```

sympy [B] time = 0.09, size = 133, normalized size = 2.05

$$a^3d^2x + \frac{b^3e^2x^6}{6} + x^5\left(\frac{3ab^2e^2}{5} + \frac{2b^3de}{5}\right) + x^4\left(\frac{3a^2be^2}{4} + \frac{3ab^2de}{2} + \frac{b^3d^2}{4}\right) + x^3\left(\frac{a^3e^2}{3} + 2a^2bde + ab^2d^2\right) + x^2\left(a^3de + \frac{3a^2bd^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**2*x + b**3*e**2*x**6/6 + x**5*(3*a*b**2*e**2/5 + 2*b**3*d*e/5) + x*
*4*(3*a**2*b*e**2/4 + 3*a*b**2*d*e/2 + b**3*d**2/4) + x**3*(a**3*e**2/3 + 2
*a**2*b*d*e + a*b**2*d**2) + x**2*(a**3*d*e + 3*a**2*b*d**2/2)
```

3.1674 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^4(bd-ae)}{4b^2}+\frac{e(a+bx)^5}{5b^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 43}

$$\frac{(a+bx)^4(bd-ae)}{4b^2}+\frac{e(a+bx)^5}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^4)/(4*b^2) + (e*(a + b*x)^5)/(5*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)\,dx\\
&= \int \left(\frac{(bd-ae)(a+bx)^3}{b}+\frac{e(a+bx)^4}{b}\right)dx\\
&= \frac{(bd-ae)(a+bx)^4}{4b^2}+\frac{e(a+bx)^5}{5b^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.76

$$a^3dx+\frac{1}{2}a^2x^2(ae+3bd)+\frac{1}{4}b^2x^4(3ae+bd)+abx^3(ae+bd)+\frac{1}{5}b^3ex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d*x + (a^2*(3*b*d + a*e)*x^2)/2 + a*b*(b*d + a*e)*x^3 + (b^2*(b*d + 3*a
*e)*x^4)/4 + (b^3*e*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.35, size = 72, normalized size = 1.89

$$\frac{1}{5}x^5eb^3 + \frac{1}{4}x^4db^3 + \frac{3}{4}x^4eb^2a + x^3db^2a + x^3eba^2 + \frac{3}{2}x^2dba^2 + \frac{1}{2}x^2ea^3 + xda^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*b^3 + 1/4*x^4*d*b^3 + 3/4*x^4*e*b^2*a + x^3*d*b^2*a + x^3*e*b*a^2
 + 3/2*x^2*d*b*a^2 + 1/2*x^2*e*a^3 + x*d*a^3
```

giac [B] time = 0.17, size = 76, normalized size = 2.00

$$\frac{1}{5}b^3x^5e + \frac{1}{4}b^3dx^4 + \frac{3}{4}ab^2x^4e + ab^2dx^3 + a^2bx^3e + \frac{3}{2}a^2bdx^2 + \frac{1}{2}a^3x^2e + a^3dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/5*b^3*x^5*e + 1/4*b^3*d*x^4 + 3/4*a*b^2*x^4*e + a*b^2*d*x^3 + a^2*b*x^3*e
 + 3/2*a^2*b*d*x^2 + 1/2*a^3*x^2*e + a^3*d*x
```

maple [B] time = 0.04, size = 94, normalized size = 2.47

$$\frac{b^3e\,x^5}{5} + a^3dx + \frac{\left(2a\,b^2e + (ae+bd)\,b^2\right)x^4}{4} + \frac{\left(a^2be + a\,b^2d + 2\,(ae+bd)\,ab\right)x^3}{3} + \frac{\left(2a^2bd + (ae+bd)\,a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*b^3*e*x^5+1/4*((a*e+b*d)*b^2+2*b^2*e*a)*x^4+1/3*(a*d*b^2+2*(a*e+b*d)*a*
b+b*e*a^2)*x^3+1/2*(2*a^2*d*b+(a*e+b*d)*a^2)*x^2+a^3*d*x
```

maxima [B] time = 0.54, size = 69, normalized size = 1.82

$$\frac{1}{5}\,b^3ex^5 + a^3dx + \frac{1}{4}\left(b^3d + 3\,ab^2e\right)x^4 + \left(ab^2d + a^2be\right)x^3 + \frac{1}{2}\left(3\,a^2bd + a^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/5*b^3*e*x^5 + a^3*d*x + 1/4*(b^3*d + 3*a*b^2*e)*x^4 + (a*b^2*d + a^2*b*e)
*x^3 + 1/2*(3*a^2*b*d + a^3*e)*x^2
```

mupad [B] time = 0.04, size = 65, normalized size = 1.71

$$x^2\left(\frac{e\,a^3}{2} + \frac{3\,b\,d\,a^2}{2}\right) + x^4\left(\frac{d\,b^3}{4} + \frac{3\,a\,e\,b^2}{4}\right) + \frac{b^3\,e\,x^5}{5} + a^3\,d\,x + a\,b\,x^3\,(a\,e + b\,d)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((a^3*e)/2 + (3*a^2*b*d)/2) + x^4*((b^3*d)/4 + (3*a*b^2*e)/4) + (b^3*e*
x^5)/5 + a^3*d*x + a*b*x^3*(a*e + b*d)
```

sympy [B] time = 0.08, size = 73, normalized size = 1.92

$$a^3dx + \frac{b^3ex^5}{5} + x^4\left(\frac{3ab^2e}{4} + \frac{b^3d}{4}\right) + x^3\left(a^2be + ab^2d\right) + x^2\left(\frac{a^3e}{2} + \frac{3a^2bd}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d*x + b**3*e*x**5/5 + x**4*(3*a*b**2*e/4 + b**3*d/4) + x**3*(a**2*b*e
+ a*b**2*d) + x**2*(a**3*e/2 + 3*a**2*b*d/2)
```

3.1675 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^4}{4b}$$

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{27, 32\}$

$$\frac{(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a + b*x)^4/(4*b)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3\,dx\\ &= \frac{(a+bx)^4}{4b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\frac{(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a + b*x)^4/(4*b)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [B] time = 0.37, size = 31, normalized size = 2.21

$$\frac{1}{4}x^4b^3 + x^3b^2a + \frac{3}{2}x^2ba^2 + xa^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] 1/4*x^4*b^3 + x^3*b^2*a + 3/2*x^2*b*a^2 + x*a^3
```

giac [B] time = 0.15, size = 31, normalized size = 2.21

$$\frac{1}{2}\left(bx^2 + 2\,ax\right)a^2 + \frac{1}{4}\left(bx^2 + 2\,ax\right)^2 b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] 1/2*(b*x^2 + 2*a*x)*a^2 + 1/4*(b*x^2 + 2*a*x)^2*b
```

maple [B] time = 0.05, size = 32, normalized size = 2.29

$$\frac{1}{4}b^3x^4 + a\,b^2x^3 + \frac{3}{2}a^2b\,x^2 + a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/4*b^3*x^4+a*b^2*x^3+3/2*a^2*b*x^2+a^3*x
```

maxima [A] time = 0.49, size = 23, normalized size = 1.64

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^2}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^2/b
```

mupad [B] time = 0.04, size = 31, normalized size = 2.21

$$a^3\,x + \frac{3\,a^2\,b\,x^2}{2} + a\,b^2\,x^3 + \frac{b^3\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] a^3*x + (b^3*x^4)/4 + (3*a^2*b*x^2)/2 + a*b^2*x^3
```

sympy [B] time = 0.07, size = 32, normalized size = 2.29

$$a^3x + \frac{3a^2bx^2}{2} + ab^2x^3 + \frac{b^3x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2),x)
[Out] a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4
```

3.1676 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx$

Optimal. Leaf size=74

$$-\frac{(bd-ae)^3\log(d+ex)}{e^4}+\frac{bx(bd-ae)^2}{e^3}-\frac{(a+bx)^2(bd-ae)}{2e^2}+\frac{(a+bx)^3}{3e}$$

Rubi [A] time = 0.03, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{bx(bd-ae)^2}{e^3}-\frac{(a+bx)^2(bd-ae)}{2e^2}-\frac{(bd-ae)^3\log(d+ex)}{e^4}+\frac{(a+bx)^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^2*x)/e^3 - ((b*d - a*e)*(a + b*x)^2)/(2*e^2) + (a + b*x)^3/(
3*e) - ((b*d - a*e)^3*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx &= \int \frac{(a+bx)^3}{d+ex}\,dx\\ &= \int \left(\frac{b(bd-ae)^2}{e^3}-\frac{b(bd-ae)(a+bx)}{e^2}+\frac{b(a+bx)^2}{e}+\frac{(-bd+ae)^3}{e^3(d+ex)}\right)dx\\ &= \frac{b(bd-ae)^2x}{e^3}-\frac{(bd-ae)(a+bx)^2}{2e^2}+\frac{(a+bx)^3}{3e}-\frac{(bd-ae)^3\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 1.00

$$\frac{bex\left(18a^2e^2+9abe(ex-2d)+b^2\left(6d^2-3dex+2e^2x^2\right)\right)-6(bd-ae)^3\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (b*e*x*(18*a^2*e^2 + 9*a*b*e*(-2*d + e*x) + b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^
2)) - 6*(b*d - a*e)^3*Log[d + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x), x]
```

fricas [A] time = 0.41, size = 115, normalized size = 1.55

$$\frac{2\,b^3e^3x^3-3\left(b^3de^2-3\,ab^2e^3\right)x^2+6\left(b^3d^2e-3\,ab^2de^2+3\,a^2be^3\right)x-6\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\log\left(ex+d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="fricas")
[Out] 1/6*(2*b^3*e^3*x^3 - 3*(b^3*d*e^2 - 3*a*b^2*e^3)*x^2 + 6*(b^3*d^2*e - 3*a*b
^2*d*e^2 + 3*a^2*b*e^3)*x - 6*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^
3*e^3)*log(e*x + d))/e^4
```

giac [A] time = 0.18, size = 113, normalized size = 1.53

$$-\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,b^3x^3e^2-3\,b^3dx^2e+6\,b^3d^2x+9\,ab^2x^2e^2-18\,ab^2dxe+18\,a^2bxe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="giac")
[Out] -(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*e^(-4)*log(abs(x*e + d
)) + 1/6*(2*b^3*x^3*e^2 - 3*b^3*d*x^2*e + 6*b^3*d^2*x + 9*a*b^2*x^2*e^2 - 1
8*a*b^2*d*x*e + 18*a^2*b*x*e^2)*e^(-3)
```

maple [A] time = 0.05, size = 133, normalized size = 1.80

$$\frac{b^3x^3}{3e}+\frac{3a\,b^2x^2}{2e}-\frac{b^3d\,x^2}{2e^2}+\frac{a^3\ln\left(ex+d\right)}{e}-\frac{3a^2bd\ln\left(ex+d\right)}{e^2}+\frac{3a^2bx}{e}+\frac{3a\,b^2d^2\ln\left(ex+d\right)}{e^3}-\frac{3a\,b^2dx}{e^2}-\frac{b^3d^3\ln\left(ex+d\right)}{e^4}+\frac{b^3d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x)
[Out] 1/3*b^3/e*x^3+3/2*b^2/e*x^2*a-1/2*b^3/e^2*x^2*d+3*b/e*a^2*x-3*b^2/e^2*a*d*x
+b^3/e^3*d^2*x+1/e*ln(e*x+d)*a^3-3/e^2*ln(e*x+d)*a^2*b*d+3/e^3*ln(e*x+d)*a*
b^2*d^2-1/e^4*ln(e*x+d)*b^3*d^3
```

maxima [A] time = 0.68, size = 114, normalized size = 1.54

$$\frac{2\,b^3e^2x^3-3\left(b^3de-3\,ab^2e^2\right)x^2+6\left(b^3d^2-3\,ab^2de+3\,a^2be^2\right)x}{6\,e^3}-\frac{\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="maxima")
[Out] 1/6*(2*b^3*e^2*x^3 - 3*(b^3*d*e - 3*a*b^2*e^2)*x^2 + 6*(b^3*d^2 - 3*a*b^2*d
*e + 3*a^2*b*e^2)*x)/e^3 - (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e
^3)*log(e*x + d)/e^4
```

mupad [B] time = 2.03, size = 118, normalized size = 1.59

$$x^2\left(\frac{3\,a\,b^2}{2\,e}-\frac{b^3\,d}{2\,e^2}\right)+x\left(\frac{3\,a^2\,b}{e}-\frac{d\,\left(\frac{3\,a\,b^2}{e}-\frac{b^3\,d}{e^2}\right)}{e}\right)+\frac{\ln\left(d+e\,x\right)\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{e^4}+\frac{b^3\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x),x)
```

```
[Out] x^2*((3*a*b^2)/(2*e) - (b^3*d)/(2*e^2)) + x*((3*a^2*b)/e - (d*((3*a*b^2)/e
- (b^3*d)/e^2))/e) + (log(d + e*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a
^2*b*d*e^2))/e^4 + (b^3*x^3)/(3*e)
```

sympy [A] time = 0.32, size = 83, normalized size = 1.12

$$\frac{b^3x^3}{3e}+x^2\left(\frac{3ab^2}{2e}-\frac{b^3d}{2e^2}\right)+x\left(\frac{3a^2b}{e}-\frac{3ab^2d}{e^2}+\frac{b^3d^2}{e^3}\right)+\frac{(ae-bd)^3\log\left(d+ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d),x)
```

```
[Out] b**3*x**3/(3*e) + x**2*(3*a*b**2/(2*e) - b**3*d/(2*e**2)) + x*(3*a**2*b/e -
 3*a*b**2*d/e**2 + b**3*d**2/e**3) + (a*e - b*d)**3*log(d + e*x)/e**4
```

3.1677 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2} dx$

Optimal. Leaf size=75

$$-\frac{b^2x(2bd-3ae)}{e^3}+\frac{(bd-ae)^3}{e^4(d+ex)}+\frac{3b(bd-ae)^2\log(d+ex)}{e^4}+\frac{b^3x^2}{2e^2}$$

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$-\frac{b^2x(2bd-3ae)}{e^3}+\frac{(bd-ae)^3}{e^4(d+ex)}+\frac{3b(bd-ae)^2\log(d+ex)}{e^4}+\frac{b^3x^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] -((b^2*(2*b*d - 3*a*e)*x)/e^3) + (b^3*x^2)/(2*e^2) + (b*d - a*e)^3/(e^4*(d
+ e*x)) + (3*b*(b*d - a*e)^2*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2} dx &= \int \frac{(a+bx)^3}{(d+ex)^2} dx\\
&= \int \left(-\frac{b^2(2bd-3ae)}{e^3}+\frac{b^3x}{e^2}+\frac{(-bd+ae)^3}{e^3(d+ex)^2}+\frac{3b(bd-ae)^2}{e^3(d+ex)}\right) dx\\
&= -\frac{b^2(2bd-3ae)x}{e^3}+\frac{b^3x^2}{2e^2}+\frac{(bd-ae)^3}{e^4(d+ex)}+\frac{3b(bd-ae)^2\log(d+ex)}{e^4}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.52

$$\frac{3\left(a^2be^2-2ab^2de+b^3d^2\right)\log(d+ex)}{e^4}+\frac{-a^3e^3+3a^2bde^2-3ab^2d^2e+b^3d^3}{e^4(d+ex)}-\frac{b^2x(2bd-3ae)}{e^3}+\frac{b^3x^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] -((b^2*(2*b*d - 3*a*e)*x)/e^3) + (b^3*x^2)/(2*e^2) + (b^3*d^3 - 3*a*b^2*d^2
*e + 3*a^2*b*d*e^2 - a^3*e^3)/(e^4*(d + e*x)) + (3*(b^3*d^2 - 2*a*b^2*d*e +
 a^2*b*e^2)*Log[d + e*x])/e^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2, x]
```

fricas [B] time = 0.42, size = 172, normalized size = 2.29

$$\frac{b^3e^3x^3+2\,b^3d^3-6\,ab^2d^2e+6\,a^2bde^2-2\,a^3e^3-3\left(b^3de^2-2\,ab^2e^3\right)x^2-2\left(2\,b^3d^2e-3\,ab^2de^2\right)x+6\left(b^3d^3-2\,ab^2d^2e+a^2bde^2+\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x\right)\log\left(ex+d\right)}{2\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*e^3*x^3 + 2*b^3*d^3 - 6*a*b^2*d^2*e + 6*a^2*b*d*e^2 - 2*a^3*e^3 -
3*(b^3*d*e^2 - 2*a*b^2*e^3)*x^2 - 2*(2*b^3*d^2*e - 3*a*b^2*d*e^2)*x + 6*(b^
3*d^3 - 2*a*b^2*d^2*e + a^2*b*d*e^2 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^
3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [B] time = 0.16, size = 164, normalized size = 2.19

$$\frac{1}{2}\left(b^3-\frac{6\left(b^3de-ab^2e^2\right)e^{(-1)}}{xe+d}\right)(xe+d)^2e^{(-4)}-3\left(b^3d^2-2\,ab^2de+a^2be^2\right)e^{(-4)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right)+\left(\frac{b^3d^3e^2}{xe+d}-\frac{3\,ab^2d^2e^3}{xe+d}+\frac{3\,a^2bde^4}{xe+d}-\frac{a^3e^5}{xe+d}\right)e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(b^3 - 6*(b^3*d*e - a*b^2*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*e^(-4) - 3
*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*e +
d)^2) + (b^3*d^3*e^2/(x*e + d) - 3*a*b^2*d^2*e^3/(x*e + d) + 3*a^2*b*d*e^4/
(x*e + d) - a^3*e^5/(x*e + d))*e^(-6)
```

maple [B] time = 0.05, size = 149, normalized size = 1.99

$$\frac{b^3x^2}{2e^2}-\frac{a^3}{(ex+d)\,e}+\frac{3a^2bd}{(ex+d)\,e^2}+\frac{3a^2b\ln(ex+d)}{e^2}-\frac{3a\,b^2d^2}{(ex+d)\,e^3}-\frac{6a\,b^2d\ln(ex+d)}{e^3}+\frac{3a\,b^2x}{e^2}+\frac{b^3d^3}{(ex+d)\,e^4}+\frac{3b^3d^2\ln(ex+d)}{e^4}-\frac{2b^3dx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x)
```

```
[Out] 1/2*b^3/e^2*x^2+3*b^2/e^2*a*x-2*b^3*d/e^3*x-1/e/(e*x+d)*a^3+3/e^2/(e*x+d)*a
^2*b*d-3/e^3/(e*x+d)*a*b^2*d^2+1/(e*x+d)*b^3*d^3/e^4+3*b/e^2*ln(e*x+d)*a^2-
6*b^2/e^3*ln(e*x+d)*a*d+3*b^3*d^2/e^4*ln(e*x+d)
```

maxima [A] time = 0.60, size = 117, normalized size = 1.56

$$\frac{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3}{e^5x+de^4}+\frac{b^3ex^2-2\left(2\,b^3d-3\,ab^2e\right)x}{2\,e^3}+\frac{3\left(b^3d^2-2\,ab^2de+a^2be^2\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)/(e^5*x + d*e^4) + 1/2*(
b^3*e*x^2 - 2*(2*b^3*d - 3*a*b^2*e)*x)/e^3 + 3*(b^3*d^2 - 2*a*b^2*d*e + a^2
*b*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 0.07, size = 123, normalized size = 1.64

$$x\left(\frac{3\,a\,b^2}{e^2}-\frac{2\,b^3\,d}{e^3}\right)+\frac{\ln\left(d+e\,x\right)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)}{e^4}-\frac{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}{e\,\left(x\,e^4+d\,e^3\right)}+\frac{b^3\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^2,x)
```

```
[Out] x*((3*a*b^2)/e^2 - (2*b^3*d)/e^3) + (log(d + e*x)*(3*b^3*d^2 + 3*a^2*b*e^2
- 6*a*b^2*d*e))/e^4 - (a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)/(
e*(d*e^3 + e^4*x)) + (b^3*x^2)/(2*e^2)
```

sympy [A] time = 0.66, size = 102, normalized size = 1.36

$$\frac{b^3x^2}{2e^2}+\frac{3b\left(ae-bd\right)^2\log\left(d+ex\right)}{e^4}+x\left(\frac{3ab^2}{e^2}-\frac{2b^3d}{e^3}\right)+\frac{-a^3e^3+3a^2bde^2-3ab^2d^2e+b^3d^3}{de^4+e^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**2,x)
```

```
[Out] b**3*x**2/(2*e**2) + 3*b*(a*e - b*d)**2*log(d + e*x)/e**4 + x*(3*a*b**2/e**
2 - 2*b**3*d/e**3) + (-a**3*e**3 + 3*a**2*b*d*e**2 - 3*a*b**2*d**2*e + b**3
*d**3)/(d*e**4 + e**5*x)
```

3.1678 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=78

$$-\frac{3b^2(bd-ae)\log(d+ex)}{e^4}-\frac{3b(bd-ae)^2}{e^4(d+ex)}+\frac{(bd-ae)^3}{2e^4(d+ex)^2}+\frac{b^3x}{e^3}$$

Rubi [A] time = 0.05, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$-\frac{3b^2(bd-ae)\log(d+ex)}{e^4}-\frac{3b(bd-ae)^2}{e^4(d+ex)}+\frac{(bd-ae)^3}{2e^4(d+ex)^2}+\frac{b^3x}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] (b^3*x)/e^3 + (b*d - a*e)^3/(2*e^4*(d + e*x)^2) - (3*b*(b*d - a*e)^2)/(e^4*
(d + e*x)) - (3*b^2*(b*d - a*e)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^3}\,dx\\
&= \int \left(\frac{b^3}{e^3}+\frac{(-bd+ae)^3}{e^3(d+ex)^3}+\frac{3b(bd-ae)^2}{e^3(d+ex)^2}-\frac{3b^2(bd-ae)}{e^3(d+ex)}\right)dx\\
&= \frac{b^3x}{e^3}+\frac{(bd-ae)^3}{2e^4(d+ex)^2}-\frac{3b(bd-ae)^2}{e^4(d+ex)}-\frac{3b^2(bd-ae)\log(d+ex)}{e^4}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.46

$$\frac{-a^3e^3-3a^2be^2(d+2ex)+3ab^2de(3d+4ex)-6b^2(d+ex)^2(bd-ae)\log(d+ex)+b^3\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] (-(a^3*e^3) - 3*a^2*b*e^2*(d + 2*e*x) + 3*a*b^2*d*e*(3*d + 4*e*x) + b^3*(-5
*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) - 6*b^2*(b*d - a*e)*(d + e*x)^2
*Log[d + e*x])/(2*e^4*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3, x]
```

fricas [B] time = 0.40, size = 188, normalized size = 2.41

$$\frac{2\,b^3e^3x^3+4\,b^3de^2x^2-5\,b^3d^3+9\,ab^2d^2e-3\,a^2bde^2-a^3e^3-2\left(2\,b^3d^2e-6\,ab^2de^2+3\,a^2be^3\right)x-6\left(b^3d^3-ab^2d^2e+\left(b^3de^2-ab^2e^3\right)x^2+2\left(b^3d^2e-ab^2de^2\right)x\right)\log\left(ex+d\right)}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="fricas")
[Out] 1/2*(2*b^3*e^3*x^3 + 4*b^3*d*e^2*x^2 - 5*b^3*d^3 + 9*a*b^2*d^2*e - 3*a^2*b*
d*e^2 - a^3*e^3 - 2*(2*b^3*d^2*e - 6*a*b^2*d*e^2 + 3*a^2*b*e^3)*x - 6*(b^3*
d^3 - a*b^2*d^2*e + (b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(b^3*d^2*e - a*b^2*d*e^
2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.16, size = 110, normalized size = 1.41

$$b^3xe^{(-3)}-3\left(b^3d-ab^2e\right)e^{(-4)}\log\left(|xe+d|\right)-\frac{\left(5\,b^3d^3-9\,ab^2d^2e+3\,a^2bde^2+a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x\right)e^{(-4)}}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="giac")
[Out] b^3*x*e^(-3) - 3*(b^3*d - a*b^2*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*b^3*d^
3 - 9*a*b^2*d^2*e + 3*a^2*b*d*e^2 + a^3*e^3 + 6*(b^3*d^2*e - 2*a*b^2*d*e^2
+ a^2*b*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [B] time = 0.05, size = 160, normalized size = 2.05

$$-\frac{a^3}{2\left(ex+d\right)^2e}+\frac{3a^2bd}{2\left(ex+d\right)^2e^2}-\frac{3a\,b^2d^2}{2\left(ex+d\right)^2e^3}+\frac{b^3d^3}{2\left(ex+d\right)^2e^4}-\frac{3a^2b}{\left(ex+d\right)e^2}+\frac{6a\,b^2d}{\left(ex+d\right)e^3}+\frac{3a\,b^2\ln\left(ex+d\right)}{e^3}-\frac{3b^3d^2}{\left(ex+d\right)e^4}-\frac{3b^3d\ln\left(ex+d\right)}{e^4}+\frac{b^3x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x)
[Out] b^3*x/e^3-3*b/e^2/(e*x+d)*a^2+6*b^2/e^3/(e*x+d)*a*d-3*b^3/e^4/(e*x+d)*d^2-1
/2/e/(e*x+d)^2*a^3+3/2/e^2/(e*x+d)^2*a^2*b*d-3/2/e^3/(e*x+d)^2*d^2*a*b^2+1/
2/e^4/(e*x+d)^2*b^3*d^3+3*b^2/e^3*ln(e*x+d)*a-3*b^3/e^4*ln(e*x+d)*d
```

maxima [A] time = 0.49, size = 125, normalized size = 1.60

$$\frac{b^3x}{e^3}-\frac{5\,b^3d^3-9\,ab^2d^2e+3\,a^2bde^2+a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}-\frac{3\left(b^3d-ab^2e\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="maxima")
[Out] b^3*x/e^3 - 1/2*(5*b^3*d^3 - 9*a*b^2*d^2*e + 3*a^2*b*d*e^2 + a^3*e^3 + 6*(b
^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) -
3*(b^3*d - a*b^2*e)*log(e*x + d)/e^4
```

mupad [B] time = 2.04, size = 130, normalized size = 1.67

$$\frac{b^3 x}{e^3} - \frac{\ln(d+e\,x)\left(3\,b^3\,d-3\,a\,b^2\,e\right)}{e^4} - \frac{\frac{a^3\,e^3+3\,a^2\,b\,d\,e^2-9\,a\,b^2\,d^2\,e+5\,b^3\,d^3}{2\,e}+x\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^3,x)
```

```
[Out] (b^3*x)/e^3 - (log(d + e*x)*(3*b^3*d - 3*a*b^2*e))/e^4 - ((a^3*e^3 + 5*b^3*
d^3 - 9*a*b^2*d^2*e + 3*a^2*b*d*e^2)/(2*e) + x*(3*b^3*d^2 + 3*a^2*b*e^2 - 6
*a*b^2*d*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x)
```

sympy [A] time = 0.83, size = 128, normalized size = 1.64

$$\frac{b^3x}{e^3} + \frac{3b^2\left(ae-bd\right)\log\left(d+ex\right)}{e^4} + \frac{-a^3e^3-3a^2bde^2+9ab^2d^2e-5b^3d^3+x\left(-6a^2be^3+12ab^2de^2-6b^3d^2e\right)}{2d^2e^4+4de^5x+2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**3,x)
```

```
[Out] b**3*x/e**3 + 3*b**2*(a*e - b*d)*log(d + e*x)/e**4 + (-a**3*e**3 - 3*a**2*b
*d*e**2 + 9*a*b**2*d**2*e - 5*b**3*d**3 + x*(-6*a**2*b*e**3 + 12*a*b**2*d*e
**2 - 6*b**3*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
```

3.1679 $\int \frac{(a+bx)(a^2+2abx+b^2x^2)}{(d+ex)^4}\,dx$

Optimal. Leaf size=86

$$\frac{3b^2(bd-ae)}{e^4(d+ex)}-\frac{3b(bd-ae)^2}{2e^4(d+ex)^2}+\frac{(bd-ae)^3}{3e^4(d+ex)^3}+\frac{b^3\log(d+ex)}{e^4}$$

Rubi [A] time = 0.06, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{3b^2(bd-ae)}{e^4(d+ex)}-\frac{3b(bd-ae)^2}{2e^4(d+ex)^2}+\frac{(bd-ae)^3}{3e^4(d+ex)^3}+\frac{b^3\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] (b*d - a*e)^3/(3*e^4*(d + e*x)^3) - (3*b*(b*d - a*e)^2)/(2*e^4*(d + e*x)^2)
 + (3*b^2*(b*d - a*e))/(e^4*(d + e*x)) + (b^3*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^4}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^4}+\frac{3b(bd-ae)^2}{e^3(d+ex)^3}-\frac{3b^2(bd-ae)}{e^3(d+ex)^2}+\frac{b^3}{e^3(d+ex)}\right)dx\\ &= \frac{(bd-ae)^3}{3e^4(d+ex)^3}-\frac{3b(bd-ae)^2}{2e^4(d+ex)^2}+\frac{3b^2(bd-ae)}{e^4(d+ex)}+\frac{b^3\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.92

$$\frac{\frac{(bd-ae)\left(2a^2e^2+abe(5d+9ex)+b^2\left(11d^2+27dex+18e^2x^2\right)\right)}{(d+ex)^3}+6b^3\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] (((b*d - a*e)*(2*a^2*e^2 + a*b*e*(5*d + 9*e*x) + b^2*(11*d^2 + 27*d*e*x + 1
8*e^2*x^2)))/(d + e*x)^3 + 6*b^3*Log[d + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]

[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4, x]

fricas [B] time = 0.42, size = 177, normalized size = 2.06

$$\frac{11\,b^3d^3-6\,ab^2d^2e-3\,a^2bde^2-2\,a^3e^3+18\left(b^3de^2-ab^2e^3\right)x^2+9\left(3\,b^3d^2e-2\,ab^2de^2-a^2be^3\right)x+6\left(b^3e^3x^3+3\,b^3de^2x^2+3\,b^3d^2ex+b^3d^3\right)\log\left(ex+d\right)}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="fricas")

[Out] 1/6*(11*b^3*d^3 - 6*a*b^2*d^2*e - 3*a^2*b*d*e^2 - 2*a^3*e^3 + 18*(b^3*d*e^2 - a*b^2*e^3)*x^2 + 9*(3*b^3*d^2*e - 2*a*b^2*d*e^2 - a^2*b*e^3)*x + 6*(b^3*e^3*x^3 + 3*b^3*d*e^2*x^2 + 3*b^3*d^2*e*x + b^3*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)

giac [A] time = 0.16, size = 117, normalized size = 1.36

$$b^3e^{(-4)}\log\left(|xe+d|\right)+\frac{\left(18\left(b^3de-ab^2e^2\right)x^2+9\left(3\,b^3d^2-2\,ab^2de-a^2be^2\right)x+\left(11\,b^3d^3-6\,ab^2d^2e-3\,a^2bde^2-2\,a^3e^3\right)e^{(-1)}\right)e^{(-3)}}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="giac")

[Out] b^3*e^(-4)*log(abs(x*e + d)) + 1/6*(18*(b^3*d*e - a*b^2*e^2)*x^2 + 9*(3*b^3*d^2 - 2*a*b^2*d*e - a^2*b*e^2)*x + (11*b^3*d^3 - 6*a*b^2*d^2*e - 3*a^2*b*d*e^2 - 2*a^3*e^3)*e^(-1))*e^(-3)/(x*e + d)^3

maple [B] time = 0.05, size = 166, normalized size = 1.93

$$-\frac{a^3}{3\,(ex+d)^3\,e}+\frac{a^2bd}{(ex+d)^3\,e^2}-\frac{a\,b^2d^2}{(ex+d)^3\,e^3}+\frac{b^3d^3}{3\,(ex+d)^3\,e^4}-\frac{3a^2b}{2\,(ex+d)^2\,e^2}+\frac{3a\,b^2d}{(ex+d)^2\,e^3}-\frac{3b^3d^2}{2\,(ex+d)^2\,e^4}-\frac{3a\,b^2}{(ex+d)\,e^3}+\frac{3b^3d}{(ex+d)\,e^4}+\frac{b^3\ln\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x)

[Out] -3*b^2/e^3/(e*x+d)*a+3*b^3/e^4/(e*x+d)*d-3/2*b/e^2/(e*x+d)^2*a^2+3*b^2/e^3/(e*x+d)^2*a*d-3/2*b^3/e^4/(e*x+d)^2*d^2-1/3/e/(e*x+d)^3*a^3+1/e^2/(e*x+d)^3*a^2*b*d-1/e^3/(e*x+d)^3*a*b^2*d^2+1/3/e^4/(e*x+d)^3*b^3*d^3+b^3*ln(e*x+d)/e^4

maxima [A] time = 0.46, size = 143, normalized size = 1.66

$$\frac{11\,b^3d^3-6\,ab^2d^2e-3\,a^2bde^2-2\,a^3e^3+18\left(b^3de^2-ab^2e^3\right)x^2+9\left(3\,b^3d^2e-2\,ab^2de^2-a^2be^3\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{b^3\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="maxima")

[Out] 1/6*(11*b^3*d^3 - 6*a*b^2*d^2*e - 3*a^2*b*d*e^2 - 2*a^3*e^3 + 18*(b^3*d*e^2 - a*b^2*e^3)*x^2 + 9*(3*b^3*d^2*e - 2*a*b^2*d*e^2 - a^2*b*e^3)*x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + b^3*log(e*x + d)/e^4

mupad [B] time = 0.09, size = 138, normalized size = 1.60

$$\frac{b^3\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{2\,a^3\,e^3+3\,a^2\,b\,d\,e^2+6\,a\,b^2\,d^2\,e-11\,b^3\,d^3}{6\,e^4}+\frac{3\,x\,\left(a^2\,b\,e^2+2\,a\,b^2\,d\,e-3\,b^3\,d^2\right)}{2\,e^3}+\frac{3\,b^2\,x^2\,\left(a\,e-b\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^4,x)
```

```
[Out] (b^3*log(d + e*x))/e^4 - ((2*a^3*e^3 - 11*b^3*d^3 + 6*a*b^2*d^2*e + 3*a^2*b
*d*e^2)/(6*e^4) + (3*x*(a^2*b*e^2 - 3*b^3*d^2 + 2*a*b^2*d*e))/(2*e^3) + (3*
b^2*x^2*(a*e - b*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [A] time = 1.18, size = 148, normalized size = 1.72

$$\frac{b^3\log\left(d+ex\right)}{e^4}+\frac{-2a^3e^3-3a^2bde^2-6ab^2d^2e+11b^3d^3+x^2\left(-18ab^2e^3+18b^3de^2\right)+x\left(-9a^2be^3-18ab^2de^2+27b^3d^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**4,x)
```

```
[Out] b**3*log(d + e*x)/e**4 + (-2*a**3*e**3 - 3*a**2*b*d*e**2 - 6*a*b**2*d**2*e
+ 11*b**3*d**3 + x**2*(-18*a*b**2*e**3 + 18*b**3*d*e**2) + x*(-9*a**2*b*e**
3 - 18*a*b**2*d*e**2 + 27*b**3*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x + 18*
d*e**6*x**2 + 6*e**7*x**3)
```

3.1680 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=143

$$-\frac{5b^4(d+ex)^{11}(bd-ae)}{11e^6}+\frac{b^3(d+ex)^{10}(bd-ae)^2}{e^6}-\frac{10b^2(d+ex)^9(bd-ae)^3}{9e^6}+\frac{5b(d+ex)^8(bd-ae)^4}{8e^6}-\frac{(d+ex)^7(bd-$$

Rubi [A] time = 0.31, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{5b^4(d+ex)^{11}(bd-ae)}{11e^6}+\frac{b^3(d+ex)^{10}(bd-ae)^2}{e^6}-\frac{10b^2(d+ex)^9(bd-ae)^3}{9e^6}+\frac{5b(d+ex)^8(bd-ae)^4}{8e^6}-\frac{(d+ex)^7(bd-ae)^5}{7e^6}+\frac{b^5(d+ex)^{12}}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^5*(d + e*x)^7)/(7*e^6) + (5*b*(b*d - a*e)^4*(d + e*x)^8)/(8*e
^6) - (10*b^2*(b*d - a*e)^3*(d + e*x)^9)/(9*e^6) + (b^3*(b*d - a*e)^2*(d +
e*x)^10)/e^6 - (5*b^4*(b*d - a*e)*(d + e*x)^11)/(11*e^6) + (b^5*(d + e*x)^1
2)/(12*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^5(d+ex)^6 \, dx \\
&= \int \left(\frac{(-bd+ae)^5(d+ex)^6}{e^5}+\frac{5b(bd-ae)^4(d+ex)^7}{e^5}-\frac{10b^2(bd-ae)^3}{e^5}\right. \\
&= -\frac{(bd-ae)^5(d+ex)^7}{7e^6}+\frac{5b(bd-ae)^4(d+ex)^8}{8e^6}-\frac{10b^2(bd-ae)^3(d+}{9e^6}
\end{aligned}$$

Mathematica [B] time = 0.07, size = 501, normalized size = 3.50

$$a^5d^6x+\frac{1}{2}a^4d^5x^2(6ae+5bd)+\frac{1}{2}b^3e^4x^{10}\left(2a^2e^2+6abde+3b^2d^2\right)+\frac{5}{3}a^3d^4x^3\left(3a^2e^2+6abde+2b^2d^2\right)+\frac{5}{9}b^2e^3x^9\left(2a^3e^3+12a^2bde^2+15ab^2d^2e+4b^3d^3\right)+\frac{5}{4}a^2d^3x^4\left(4a^3e^3+15a^2bde^2+12ab^2d^2e+2b^3d^3\right)+\frac{5}{8}be^2x^8\left(a^4e^4+12a^3bde^3+30a^2b^2d^2e^2+20ab^3d^3e+3b^4d^4\right)+ad^2x^5\left(3a^4e^4+20a^3bde^3+30a^2b^2d^2e^2+12ab^3d^3e+b^4d^4\right)+\frac{1}{7}ex^7\left(a^5e^5+30a^4bde^4+150a^3b^2d^2e^3+200a^2b^3d^3e^2+75ab^4d^4e+6b^5d^5\right)+\frac{1}{6}dx^6\left(6a^5e^5+75a^4bde^4+200a^3b^2d^2e^3+150a^2b^3d^3e^2+30ab^4d^4e+b^5d^5\right)+\frac{1}{11}b^4e^5x^{11}(5ae+6bd)+\frac{1}{12}b^5e^6x^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d^6*x + (a^4*d^5*(5*b*d + 6*a*e)*x^2)/2 + (5*a^3*d^4*(2*b^2*d^2 + 6*a*b
*d*e + 3*a^2*e^2)*x^3)/3 + (5*a^2*d^3*(2*b^3*d^3 + 12*a*b^2*d^2*e + 15*a^2*
b*d*e^2 + 4*a^3*e^3)*x^4)/4 + a*d^2*(b^4*d^4 + 12*a*b^3*d^3*e + 30*a^2*b^2*
d^2*e^2 + 20*a^3*b*d*e^3 + 3*a^4*e^4)*x^5 + (d*(b^5*d^5 + 30*a*b^4*d^4*e +
150*a^2*b^3*d^3*e^2 + 200*a^3*b^2*d^2*e^3 + 75*a^4*b*d*e^4 + 6*a^5*e^5)*x^6
```

```
)/6 + (e*(6*b^5*d^5 + 75*a*b^4*d^4*e + 200*a^2*b^3*d^3*e^2 + 150*a^3*b^2*d^
2*e^3 + 30*a^4*b*d*e^4 + a^5*e^5)*x^7)/7 + (5*b*e^2*(3*b^4*d^4 + 20*a*b^3*d
^3*e + 30*a^2*b^2*d^2*e^2 + 12*a^3*b*d*e^3 + a^4*e^4)*x^8)/8 + (5*b^2*e^3*(
4*b^3*d^3 + 15*a*b^2*d^2*e + 12*a^2*b*d*e^2 + 2*a^3*e^3)*x^9)/9 + (b^3*e^4*
(3*b^2*d^2 + 6*a*b*d*e + 2*a^2*e^2)*x^10)/2 + (b^4*e^5*(6*b*d + 5*a*e)*x^11
)/11 + (b^5*e^6*x^12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.38, size = 579, normalized size = 4.05

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^6*b^5 + 6/11*x^11*e^5*d*b^5 + 5/11*x^11*e^6*b^4*a + 3/2*x^10*e^
4*d^2*b^5 + 3*x^10*e^5*d*b^4*a + x^10*e^6*b^3*a^2 + 20/9*x^9*e^3*d^3*b^5 +
25/3*x^9*e^4*d^2*b^4*a + 20/3*x^9*e^5*d*b^3*a^2 + 10/9*x^9*e^6*b^2*a^3 + 15
/8*x^8*e^2*d^4*b^5 + 25/2*x^8*e^3*d^3*b^4*a + 75/4*x^8*e^4*d^2*b^3*a^2 + 15
/2*x^8*e^5*d*b^2*a^3 + 5/8*x^8*e^6*b*a^4 + 6/7*x^7*e*d^5*b^5 + 75/7*x^7*e^2
*d^4*b^4*a + 200/7*x^7*e^3*d^3*b^3*a^2 + 150/7*x^7*e^4*d^2*b^2*a^3 + 30/7*x
^7*e^5*d*b*a^4 + 1/7*x^7*e^6*a^5 + 1/6*x^6*d^6*b^5 + 5*x^6*e*d^5*b^4*a + 25
*x^6*e^2*d^4*b^3*a^2 + 100/3*x^6*e^3*d^3*b^2*a^3 + 25/2*x^6*e^4*d^2*b*a^4 +
 x^6*e^5*d*a^5 + x^5*d^6*b^4*a + 12*x^5*e*d^5*b^3*a^2 + 30*x^5*e^2*d^4*b^2*
a^3 + 20*x^5*e^3*d^3*b*a^4 + 3*x^5*e^4*d^2*a^5 + 5/2*x^4*d^6*b^3*a^2 + 15*x
^4*e*d^5*b^2*a^3 + 75/4*x^4*e^2*d^4*b*a^4 + 5*x^4*e^3*d^3*a^5 + 10/3*x^3*d^
6*b^2*a^3 + 10*x^3*e*d^5*b*a^4 + 5*x^3*e^2*d^4*a^5 + 5/2*x^2*d^6*b*a^4 + 3*
x^2*e*d^5*a^5 + x*d^6*a^5
```

giac [B] time = 0.22, size = 555, normalized size = 3.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/12*b^5*x^12*e^6 + 6/11*b^5*d*x^11*e^5 + 3/2*b^5*d^2*x^10*e^4 + 20/9*b^5*d
^3*x^9*e^3 + 15/8*b^5*d^4*x^8*e^2 + 6/7*b^5*d^5*x^7*e + 1/6*b^5*d^6*x^6 + 5
/11*a*b^4*x^11*e^6 + 3*a*b^4*d*x^10*e^5 + 25/3*a*b^4*d^2*x^9*e^4 + 25/2*a*b
^4*d^3*x^8*e^3 + 75/7*a*b^4*d^4*x^7*e^2 + 5*a*b^4*d^5*x^6*e + a*b^4*d^6*x^5
 + a^2*b^3*x^10*e^6 + 20/3*a^2*b^3*d*x^9*e^5 + 75/4*a^2*b^3*d^2*x^8*e^4 + 2
00/7*a^2*b^3*d^3*x^7*e^3 + 25*a^2*b^3*d^4*x^6*e^2 + 12*a^2*b^3*d^5*x^5*e +
5/2*a^2*b^3*d^6*x^4 + 10/9*a^3*b^2*x^9*e^6 + 15/2*a^3*b^2*d*x^8*e^5 + 150/7
*a^3*b^2*d^2*x^7*e^4 + 100/3*a^3*b^2*d^3*x^6*e^3 + 30*a^3*b^2*d^4*x^5*e^2 +
 15*a^3*b^2*d^5*x^4*e + 10/3*a^3*b^2*d^6*x^3 + 5/8*a^4*b*x^8*e^6 + 30/7*a^4
*b*d*x^7*e^5 + 25/2*a^4*b*d^2*x^6*e^4 + 20*a^4*b*d^3*x^5*e^3 + 75/4*a^4*b*d
^4*x^4*e^2 + 10*a^4*b*d^5*x^3*e + 5/2*a^4*b*d^6*x^2 + 1/7*a^5*x^7*e^6 + a^5
*d*x^6*e^5 + 3*a^5*d^2*x^5*e^4 + 5*a^5*d^3*x^4*e^3 + 5*a^5*d^4*x^3*e^2 + 3*
a^5*d^5*x^2*e + a^5*d^6*x
```

maple [B] time = 0.04, size = 817, normalized size = 5.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/12*b^5*e^6*x^12+1/11*((a*e^6+6*b*d*e^5)*b^4+4*b^4*e^6*a)*x^11+1/10*((6*a*
d*e^5+15*b*d^2*e^4)*b^4+4*(a*e^6+6*b*d*e^5)*a*b^3+6*b^3*e^6*a^2)*x^10+1/9*(
(15*a*d^2*e^4+20*b*d^3*e^3)*b^4+4*(6*a*d*e^5+15*b*d^2*e^4)*a*b^3+6*(a*e^6+6
*b*d*e^5)*a^2*b^2+4*b^2*e^6*a^3)*x^9+1/8*((20*a*d^3*e^3+15*b*d^4*e^2)*b^4+4
*(15*a*d^2*e^4+20*b*d^3*e^3)*a*b^3+6*(6*a*d*e^5+15*b*d^2*e^4)*a^2*b^2+4*(a*
e^6+6*b*d*e^5)*a^3*b+b*e^6*a^4)*x^8+1/7*((15*a*d^4*e^2+6*b*d^5*e)*b^4+4*(20
*a*d^3*e^3+15*b*d^4*e^2)*a*b^3+6*(15*a*d^2*e^4+20*b*d^3*e^3)*a^2*b^2+4*(6*a
*d*e^5+15*b*d^2*e^4)*a^3*b+(a*e^6+6*b*d*e^5)*a^4)*x^7+1/6*((6*a*d^5*e+b*d^6
)*b^4+4*(15*a*d^4*e^2+6*b*d^5*e)*a*b^3+6*(20*a*d^3*e^3+15*b*d^4*e^2)*a^2*b^
2+4*(15*a*d^2*e^4+20*b*d^3*e^3)*a^3*b+(6*a*d*e^5+15*b*d^2*e^4)*a^4)*x^6+1/5
*(a*d^6*b^4+4*(6*a*d^5*e+b*d^6)*a*b^3+6*(15*a*d^4*e^2+6*b*d^5*e)*a^2*b^2+4*
(20*a*d^3*e^3+15*b*d^4*e^2)*a^3*b+(15*a*d^2*e^4+20*b*d^3*e^3)*a^4)*x^5+1/4*
(4*a^2*d^6*b^3+6*(6*a*d^5*e+b*d^6)*a^2*b^2+4*(15*a*d^4*e^2+6*b*d^5*e)*a^3*b
+(20*a*d^3*e^3+15*b*d^4*e^2)*a^4)*x^4+1/3*(6*a^3*d^6*b^2+4*(6*a*d^5*e+b*d^6
)*a^3*b+(15*a*d^4*e^2+6*b*d^5*e)*a^4)*x^3+1/2*(4*a^4*d^6*b+(6*a*d^5*e+b*d^6
)*a^4)*x^2+a^5*d^6*x
```

maxima [B] time = 0.49, size = 517, normalized size = 3.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/12*b^5*e^6*x^12 + a^5*d^6*x + 1/11*(6*b^5*d*e^5 + 5*a*b^4*e^6)*x^11 + 1/2
*(3*b^5*d^2*e^4 + 6*a*b^4*d*e^5 + 2*a^2*b^3*e^6)*x^10 + 5/9*(4*b^5*d^3*e^3
+ 15*a*b^4*d^2*e^4 + 12*a^2*b^3*d*e^5 + 2*a^3*b^2*e^6)*x^9 + 5/8*(3*b^5*d^4
*e^2 + 20*a*b^4*d^3*e^3 + 30*a^2*b^3*d^2*e^4 + 12*a^3*b^2*d*e^5 + a^4*b*e^6
)*x^8 + 1/7*(6*b^5*d^5*e + 75*a*b^4*d^4*e^2 + 200*a^2*b^3*d^3*e^3 + 150*a^3
*b^2*d^2*e^4 + 30*a^4*b*d*e^5 + a^5*e^6)*x^7 + 1/6*(b^5*d^6 + 30*a*b^4*d^5*
e + 150*a^2*b^3*d^4*e^2 + 200*a^3*b^2*d^3*e^3 + 75*a^4*b*d^2*e^4 + 6*a^5*d*
e^5)*x^6 + (a*b^4*d^6 + 12*a^2*b^3*d^5*e + 30*a^3*b^2*d^4*e^2 + 20*a^4*b*d^
3*e^3 + 3*a^5*d^2*e^4)*x^5 + 5/4*(2*a^2*b^3*d^6 + 12*a^3*b^2*d^5*e + 15*a^4
*b*d^4*e^2 + 4*a^5*d^3*e^3)*x^4 + 5/3*(2*a^3*b^2*d^6 + 6*a^4*b*d^5*e + 3*a^
5*d^4*e^2)*x^3 + 1/2*(5*a^4*b*d^6 + 6*a^5*d^5*e)*x^2
```

mupad [B] time = 2.13, size = 492, normalized size = 3.44

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*(a*b^4*d^6 + 3*a^5*d^2*e^4 + 12*a^2*b^3*d^5*e + 20*a^4*b*d^3*e^3 + 30*a
^3*b^2*d^4*e^2) + x^8*((5*a^4*b*e^6)/8 + (15*b^5*d^4*e^2)/8 + (25*a*b^4*d^3
*e^3)/2 + (15*a^3*b^2*d*e^5)/2 + (75*a^2*b^3*d^2*e^4)/4) + x^6*((b^5*d^6)/6
 + a^5*d*e^5 + (25*a^4*b*d^2*e^4)/2 + 25*a^2*b^3*d^4*e^2 + (100*a^3*b^2*d^3
*e^3)/3 + 5*a*b^4*d^5*e) + x^7*((a^5*e^6)/7 + (6*b^5*d^5*e)/7 + (75*a*b^4*d
^4*e^2)/7 + (200*a^2*b^3*d^3*e^3)/7 + (150*a^3*b^2*d^2*e^4)/7 + (30*a^4*b*d
*e^5)/7) + a^5*d^6*x + (b^5*e^6*x^12)/12 + (5*a^2*d^3*x^4*(4*a^3*e^3 + 2*b^
3*d^3 + 12*a*b^2*d^2*e + 15*a^2*b*d*e^2))/4 + (5*b^2*e^3*x^9*(2*a^3*e^3 + 4
*b^3*d^3 + 15*a*b^2*d^2*e + 12*a^2*b*d*e^2))/9 + (a^4*d^5*x^2*(6*a*e + 5*b*
```

```
d))/2 + (b^4*e^5*x^11*(5*a*e + 6*b*d))/11 + (5*a^3*d^4*x^3*(3*a^2*e^2 + 2*b
^2*d^2 + 6*a*b*d*e))/3 + (b^3*e^4*x^10*(2*a^2*e^2 + 3*b^2*d^2 + 6*a*b*d*e))
/2
```

sympy [B] time = 0.16, size = 580, normalized size = 4.06

$$a^5d^6x + \frac{b^5e^6x^{12}}{12} + x^{11}\left(\frac{5ab^4e^6}{11} + \frac{6b^5de^5}{11}\right) + x^{10}\left(a^2b^3e^6 + 3ab^4de^5 + \frac{3b^5d^2e^4}{2}\right) + x^9\left(\frac{10a^3b^2e^6}{9} + \frac{20a^2b^3de^5}{3} + \frac{25ab^4d^2e^4}{3} + \frac{20b^5d^3e^3}{9}\right) + x^8\left(\frac{5a^4be^6}{8} + \frac{15a^3b^2de^5}{2} + \frac{75a^2b^3d^2e^4}{4} + \frac{25ab^4d^3e^3}{2} + \frac{15b^5d^4e^2}{8}\right) + x^7\left(\frac{a^5e^6}{7} + \frac{30a^4bde^5}{7} + \frac{150a^3b^2d^2e^4}{7} + \frac{200a^2b^3d^3e^3}{7} + \frac{75ab^4d^4e^2}{7} + \frac{6b^5d^5e}{7}\right) + x^6\left(a^5de^5 + \frac{25a^4bd^2e^4}{2} + \frac{100a^3b^2d^3e^3}{3} + 25a^2b^3d^4e^2 + 5ab^4d^5e + \frac{b^5d^6}{6}\right) + x^5\left(3a^5d^2e^4 + 20a^4bd^3e^3 + 30a^3b^2d^4e^2 + 12a^2b^3d^5e + ab^4d^6\right) + x^4\left(5a^5d^3e^3 + \frac{75a^4bd^4e^2}{4} + 15a^3b^2d^5e + \frac{5a^2b^3d^6}{2}\right) + x^3\left(5a^5d^4e^2 + 10a^4bd^5e + \frac{10a^3b^2d^6}{3}\right) + x^2\left(3a^5d^5e + \frac{5a^4bd^6}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**6*x + b**5*e**6*x**12/12 + x**11*(5*a*b**4*e**6/11 + 6*b**5*d*e**5/
11) + x**10*(a**2*b**3*e**6 + 3*a*b**4*d*e**5 + 3*b**5*d**2*e**4/2) + x**9*
(10*a**3*b**2*e**6/9 + 20*a**2*b**3*d*e**5/3 + 25*a*b**4*d**2*e**4/3 + 20*b
**5*d**3*e**3/9) + x**8*(5*a**4*b*e**6/8 + 15*a**3*b**2*d*e**5/2 + 75*a**2*
b**3*d**2*e**4/4 + 25*a*b**4*d**3*e**3/2 + 15*b**5*d**4*e**2/8) + x**7*(a**
5*e**6/7 + 30*a**4*b*d*e**5/7 + 150*a**3*b**2*d**2*e**4/7 + 200*a**2*b**3*d
**3*e**3/7 + 75*a*b**4*d**4*e**2/7 + 6*b**5*d**5*e/7) + x**6*(a**5*d*e**5 +
 25*a**4*b*d**2*e**4/2 + 100*a**3*b**2*d**3*e**3/3 + 25*a**2*b**3*d**4*e**2
 + 5*a*b**4*d**5*e + b**5*d**6/6) + x**5*(3*a**5*d**2*e**4 + 20*a**4*b*d**3
*e**3 + 30*a**3*b**2*d**4*e**2 + 12*a**2*b**3*d**5*e + a*b**4*d**6) + x**4*
(5*a**5*d**3*e**3 + 75*a**4*b*d**4*e**2/4 + 15*a**3*b**2*d**5*e + 5*a**2*b*
*3*d**6/2) + x**3*(5*a**5*d**4*e**2 + 10*a**4*b*d**5*e + 10*a**3*b**2*d**6/
3) + x**2*(3*a**5*d**5*e + 5*a**4*b*d**6/2)
```

3.1681 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=146

$$\frac{e^4(a+bx)^{10}(bd-ae)}{2b^6}+\frac{10e^3(a+bx)^9(bd-ae)^2}{9b^6}+\frac{5e^2(a+bx)^8(bd-ae)^3}{4b^6}+\frac{5e(a+bx)^7(bd-ae)^4}{7b^6}+\frac{(a+bx)^6(bd-ae}{6b^6}$$

Rubi [A] time = 0.25, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$\frac{e^4(a+bx)^{10}(bd-ae)}{2b^6}+\frac{10e^3(a+bx)^9(bd-ae)^2}{9b^6}+\frac{5e^2(a+bx)^8(bd-ae)^3}{4b^6}+\frac{5e(a+bx)^7(bd-ae)^4}{7b^6}+\frac{(a+bx)^6(bd-ae)^5}{6b^6}+\frac{e^5(a+bx)^{11}}{11b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^5*(a + b*x)^6)/(6*b^6) + (5*e*(b*d - a*e)^4*(a + b*x)^7)/(7*b^
6) + (5*e^2*(b*d - a*e)^3*(a + b*x)^8)/(4*b^6) + (10*e^3*(b*d - a*e)^2*(a +
 b*x)^9)/(9*b^6) + (e^4*(b*d - a*e)*(a + b*x)^10)/(2*b^6) + (e^5*(a + b*x)^
11)/(11*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^5(d+ex)^5 \, dx \\
&= \int \left(\frac{(bd-ae)^5(a+bx)^5}{b^5}+\frac{5e(bd-ae)^4(a+bx)^6}{b^5}+\frac{10e^2(bd-ae)^3(a}{b^5}\right. \\
&= \frac{(bd-ae)^5(a+bx)^6}{6b^6}+\frac{5e(bd-ae)^4(a+bx)^7}{7b^6}+\frac{5e^2(bd-ae)^3(a+bx}{4b^6}
\end{aligned}$$

Mathematica [B] time = 0.05, size = 413, normalized size = 2.83

$$a^5d^5x+\frac{5}{2}a^4d^4x^2(ae+bd)+\frac{5}{9}b^3e^3x^9\left(2a^2e^2+5abde+2b^2d^2\right)+\frac{5}{3}a^3d^3x^3\left(2a^2e^2+5abde+2b^2d^2\right)+\frac{5}{4}b^2e^2x^8\left(a^3e^3+5a^2bde^2+5ab^2d^2e+b^3d^3\right)+\frac{5}{2}a^2d^2x^4\left(a^3e^3+5a^2bde^2+5ab^2d^2e+b^3d^3\right)+\frac{5}{7}bex^7\left(a^4e^4+10a^3bde^3+20a^2b^2d^2e^2+10ab^3d^3e+b^4d^4\right)+adx^5\left(a^4e^4+10a^3bde^3+20a^2b^2d^2e^2+10ab^3d^3e+b^4d^4\right)+\frac{1}{6}x^6\left(a^5e^5+25a^4bde^4+100a^3b^2d^2e^3+100a^2b^3d^3e^2+25ab^4d^4e+b^5d^5\right)+\frac{1}{2}b^4e^4x^{10}(ae+bd)+\frac{1}{11}b^5e^5x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d^5*x + (5*a^4*d^4*(b*d + a*e)*x^2)/2 + (5*a^3*d^3*(2*b^2*d^2 + 5*a*b*d
*e + 2*a^2*e^2)*x^3)/3 + (5*a^2*d^2*(b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^
2 + a^3*e^3)*x^4)/2 + a*d*(b^4*d^4 + 10*a*b^3*d^3*e + 20*a^2*b^2*d^2*e^2 +
10*a^3*b*d*e^3 + a^4*e^4)*x^5 + ((b^5*d^5 + 25*a*b^4*d^4*e + 100*a^2*b^3*d^
3*e^2 + 100*a^3*b^2*d^2*e^3 + 25*a^4*b*d*e^4 + a^5*e^5)*x^6)/6 + (5*b*e*(b^
```

```
4*d^4 + 10*a*b^3*d^3*e + 20*a^2*b^2*d^2*e^2 + 10*a^3*b*d*e^3 + a^4*e^4)*x^7
)/7 + (5*b^2*e^2*(b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2 + a^3*e^3)*x^8)/4
 + (5*b^3*e^3*(2*b^2*d^2 + 5*a*b*d*e + 2*a^2*e^2)*x^9)/9 + (b^4*e^4*(b*d +
a*e)*x^10)/2 + (b^5*e^5*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.37, size = 488, normalized size = 3.34

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*b^5 + 1/2*x^10*e^4*d*b^5 + 1/2*x^10*e^5*b^4*a + 10/9*x^9*e^3*
d^2*b^5 + 25/9*x^9*e^4*d*b^4*a + 10/9*x^9*e^5*b^3*a^2 + 5/4*x^8*e^2*d^3*b^5
 + 25/4*x^8*e^3*d^2*b^4*a + 25/4*x^8*e^4*d*b^3*a^2 + 5/4*x^8*e^5*b^2*a^3 +
5/7*x^7*e*d^4*b^5 + 50/7*x^7*e^2*d^3*b^4*a + 100/7*x^7*e^3*d^2*b^3*a^2 + 50
/7*x^7*e^4*d*b^2*a^3 + 5/7*x^7*e^5*b*a^4 + 1/6*x^6*d^5*b^5 + 25/6*x^6*e*d^4
*b^4*a + 50/3*x^6*e^2*d^3*b^3*a^2 + 50/3*x^6*e^3*d^2*b^2*a^3 + 25/6*x^6*e^4
*d*b*a^4 + 1/6*x^6*e^5*a^5 + x^5*d^5*b^4*a + 10*x^5*e*d^4*b^3*a^2 + 20*x^5*
e^2*d^3*b^2*a^3 + 10*x^5*e^3*d^2*b*a^4 + x^5*e^4*d*a^5 + 5/2*x^4*d^5*b^3*a^
2 + 25/2*x^4*e*d^4*b^2*a^3 + 25/2*x^4*e^2*d^3*b*a^4 + 5/2*x^4*e^3*d^2*a^5 +
 10/3*x^3*d^5*b^2*a^3 + 25/3*x^3*e*d^4*b*a^4 + 10/3*x^3*e^2*d^3*a^5 + 5/2*x
^2*d^5*b*a^4 + 5/2*x^2*e*d^4*a^5 + x*d^5*a^5
```

giac [B] time = 0.18, size = 470, normalized size = 3.22

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/11*b^5*x^11*e^5 + 1/2*b^5*d*x^10*e^4 + 10/9*b^5*d^2*x^9*e^3 + 5/4*b^5*d^3
*x^8*e^2 + 5/7*b^5*d^4*x^7*e + 1/6*b^5*d^5*x^6 + 1/2*a*b^4*x^10*e^5 + 25/9*
a*b^4*d*x^9*e^4 + 25/4*a*b^4*d^2*x^8*e^3 + 50/7*a*b^4*d^3*x^7*e^2 + 25/6*a*
b^4*d^4*x^6*e + a*b^4*d^5*x^5 + 10/9*a^2*b^3*x^9*e^5 + 25/4*a^2*b^3*d*x^8*e
^4 + 100/7*a^2*b^3*d^2*x^7*e^3 + 50/3*a^2*b^3*d^3*x^6*e^2 + 10*a^2*b^3*d^4*
x^5*e + 5/2*a^2*b^3*d^5*x^4 + 5/4*a^3*b^2*x^8*e^5 + 50/7*a^3*b^2*d*x^7*e^4
+ 50/3*a^3*b^2*d^2*x^6*e^3 + 20*a^3*b^2*d^3*x^5*e^2 + 25/2*a^3*b^2*d^4*x^4*
e + 10/3*a^3*b^2*d^5*x^3 + 5/7*a^4*b*x^7*e^5 + 25/6*a^4*b*d*x^6*e^4 + 10*a^
4*b*d^2*x^5*e^3 + 25/2*a^4*b*d^3*x^4*e^2 + 25/3*a^4*b*d^4*x^3*e + 5/2*a^4*b
*d^5*x^2 + 1/6*a^5*x^6*e^5 + a^5*d*x^5*e^4 + 5/2*a^5*d^2*x^4*e^3 + 10/3*a^5
*d^3*x^3*e^2 + 5/2*a^5*d^4*x^2*e + a^5*d^5*x
```

maple [B] time = 0.04, size = 688, normalized size = 4.71

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/11*b^5*e^5*x^11+1/10*((a*e^5+5*b*d*e^4)*b^4+4*b^4*e^5*a)*x^10+1/9*((5*a*d
*e^4+10*b*d^2*e^3)*b^4+4*(a*e^5+5*b*d*e^4)*a*b^3+6*b^3*e^5*a^2)*x^9+1/8*((1
0*a*d^2*e^3+10*b*d^3*e^2)*b^4+4*(5*a*d*e^4+10*b*d^2*e^3)*a*b^3+6*(a*e^5+5*b
*d*e^4)*a^2*b^2+4*b^2*e^5*a^3)*x^8+1/7*((10*a*d^3*e^2+5*b*d^4*e)*b^4+4*(10*
a*d^2*e^3+10*b*d^3*e^2)*a*b^3+6*(5*a*d*e^4+10*b*d^2*e^3)*a^2*b^2+4*(a*e^5+5
*b*d*e^4)*a^3*b+b*e^5*a^4)*x^7+1/6*((5*a*d^4*e+b*d^5)*b^4+4*(10*a*d^3*e^2+5
*b*d^4*e)*a*b^3+6*(10*a*d^2*e^3+10*b*d^3*e^2)*a^2*b^2+4*(5*a*d*e^4+10*b*d^2
*e^3)*a^3*b+(a*e^5+5*b*d*e^4)*a^4)*x^6+1/5*(a*d^5*b^4+4*(5*a*d^4*e+b*d^5)*a
*b^3+6*(10*a*d^3*e^2+5*b*d^4*e)*a^2*b^2+4*(10*a*d^2*e^3+10*b*d^3*e^2)*a^3*b
+(5*a*d*e^4+10*b*d^2*e^3)*a^4)*x^5+1/4*(4*a^2*d^5*b^3+6*(5*a*d^4*e+b*d^5)*a
^2*b^2+4*(10*a*d^3*e^2+5*b*d^4*e)*a^3*b+(10*a*d^2*e^3+10*b*d^3*e^2)*a^4)*x^
4+1/3*(6*a^3*d^5*b^2+4*(5*a*d^4*e+b*d^5)*a^3*b+(10*a*d^3*e^2+5*b*d^4*e)*a^4
)*x^3+1/2*(4*a^4*d^5*b+(5*a*d^4*e+b*d^5)*a^4)*x^2+a^5*d^5*x
```

maxima [B] time = 0.53, size = 427, normalized size = 2.92

$$\frac{1}{11} b^5 e^5 x^{11} + a^5 d^5 x + \frac{1}{2} \left(b^5 d e^4 + a b^4 e^5\right) x^{10} + \frac{5}{9} \left(2 b^5 d^2 e^3 + 5 a b^4 d e^4 + 2 a^2 b^3 e^5\right) x^9 + \frac{5}{4} \left(b^5 d^3 e^2 + 5 a b^4 d^2 e^3 + 5 a^2 b^3 d e^4 + a^3 b^2 e^5\right) x^8 + \frac{5}{7} \left(b^5 d^4 e + 10 a b^4 d^3 e^2 + 20 a^2 b^3 d^2 e^3 + 10 a^3 b^2 d e^4 + a^4 b e^5\right) x^7 + \frac{1}{6} \left(b^5 d^5 + 25 a b^4 d^4 e + 100 a^2 b^3 d^3 e^2 + 100 a^3 b^2 d^2 e^3 + 25 a^4 b d e^4 + a^5 e^5\right) x^6 + \left(a b^4 d^5 + 10 a^2 b^3 d^4 e + 20 a^3 b^2 d^3 e^2 + 10 a^4 b d^2 e^3 + a^5 d e^4\right) x^5 + \frac{5}{2} \left(a^2 b^3 d^5 + 5 a^3 b^2 d^4 e + 5 a^4 b d^3 e^2 + a^5 d^2 e^3\right) x^4 + \frac{5}{3} \left(2 a^3 b^2 d^5 + 5 a^4 b d^4 e + 2 a^5 d^3 e^2\right) x^3 + \frac{5}{2} \left(a^4 b d^5 + a^5 d^4 e\right) x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/11*b^5*e^5*x^11 + a^5*d^5*x + 1/2*(b^5*d*e^4 + a*b^4*e^5)*x^10 + 5/9*(2*b
^5*d^2*e^3 + 5*a*b^4*d*e^4 + 2*a^2*b^3*e^5)*x^9 + 5/4*(b^5*d^3*e^2 + 5*a*b^
4*d^2*e^3 + 5*a^2*b^3*d*e^4 + a^3*b^2*e^5)*x^8 + 5/7*(b^5*d^4*e + 10*a*b^4*
d^3*e^2 + 20*a^2*b^3*d^2*e^3 + 10*a^3*b^2*d*e^4 + a^4*b*e^5)*x^7 + 1/6*(b^5
*d^5 + 25*a*b^4*d^4*e + 100*a^2*b^3*d^3*e^2 + 100*a^3*b^2*d^2*e^3 + 25*a^4*
b*d*e^4 + a^5*e^5)*x^6 + (a*b^4*d^5 + 10*a^2*b^3*d^4*e + 20*a^3*b^2*d^3*e^2
 + 10*a^4*b*d^2*e^3 + a^5*d*e^4)*x^5 + 5/2*(a^2*b^3*d^5 + 5*a^3*b^2*d^4*e +
 5*a^4*b*d^3*e^2 + a^5*d^2*e^3)*x^4 + 5/3*(2*a^3*b^2*d^5 + 5*a^4*b*d^4*e +
2*a^5*d^3*e^2)*x^3 + 5/2*(a^4*b*d^5 + a^5*d^4*e)*x^2
```

mupad [B] time = 2.08, size = 405, normalized size = 2.77

$$x^6 \left(\frac{a^5 e^5}{6} + \frac{25 a^4 b d e^4}{6} + \frac{50 a^3 b^2 d^2 e^3}{3} + \frac{50 a^2 b^3 d^3 e^2}{3} + \frac{25 a b^4 d^4 e}{6} + \frac{b^5 d^5}{6}\right) + x^5 \left(a^5 d e^4 + 10 a^4 b d^2 e^3 + 20 a^3 b^2 d^3 e^2 + 10 a^2 b^3 d^4 e + a b^4 d^5\right) + x^7 \left(\frac{5 a^4 b e^5}{7} + \frac{50 a^3 b^2 d e^4}{7} + \frac{100 a^2 b^3 d^2 e^3}{7} + \frac{50 a b^4 d^3 e^2}{7} + \frac{5 b^5 d^4 e}{7}\right) + a^5 d^5 x + \frac{b^5 e^5 x^{11}}{11} + \frac{5 a^2 d^2 x^4 \left(a^3 e^3 + 5 a^2 b d e^2 + 5 a b^2 d^2 e + b^3 d^3\right)}{2} + \frac{5 b^2 e^2 x^8 \left(a^3 e^3 + 5 a^2 b d e^2 + 5 a b^2 d^2 e + b^3 d^3\right)}{4} + \frac{5 a^4 d^4 x^2 \left(a e + b d\right)}{2} + \frac{b^4 e^4 x^{10} \left(a e + b d\right)}{2} + \frac{5 a^3 d^3 x^3 \left(2 a^2 e^2 + 5 a b d e + 2 b^2 d^2\right)}{3} + \frac{5 b^3 e^3 x^9 \left(2 a^2 e^2 + 5 a b d e + 2 b^2 d^2\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^6*((a^5*e^5)/6 + (b^5*d^5)/6 + (50*a^2*b^3*d^3*e^2)/3 + (50*a^3*b^2*d^2*e
^3)/3 + (25*a*b^4*d^4*e)/6 + (25*a^4*b*d*e^4)/6) + x^5*(a*b^4*d^5 + a^5*d*e
^4 + 10*a^2*b^3*d^4*e + 10*a^4*b*d^2*e^3 + 20*a^3*b^2*d^3*e^2) + x^7*((5*a^
4*b*e^5)/7 + (5*b^5*d^4*e)/7 + (50*a*b^4*d^3*e^2)/7 + (50*a^3*b^2*d*e^4)/7
+ (100*a^2*b^3*d^2*e^3)/7) + a^5*d^5*x + (b^5*e^5*x^11)/11 + (5*a^2*d^2*x^4
*(a^3*e^3 + b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2))/2 + (5*b^2*e^2*x^8*(a
^3*e^3 + b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2))/4 + (5*a^4*d^4*x^2*(a*e
+ b*d))/2 + (b^4*e^4*x^10*(a*e + b*d))/2 + (5*a^3*d^3*x^3*(2*a^2*e^2 + 2*b^
2*d^2 + 5*a*b*d*e))/3 + (5*b^3*e^3*x^9*(2*a^2*e^2 + 2*b^2*d^2 + 5*a*b*d*e))
/9
```

sympy [B] time = 0.15, size = 500, normalized size = 3.42

$$a^5 d^5 x + \frac{b^5 e^5 x^{11}}{11} + x^{10} \left(\frac{a b^4 e^5}{2} + \frac{b^5 d e^4}{2}\right) + x^9 \left(\frac{10 a^2 b^3 e^5}{9} + \frac{25 a b^4 d e^4}{9} + \frac{10 b^5 d^2 e^3}{9}\right) + x^8 \left(\frac{5 a^3 b^2 e^5}{4} + \frac{25 a^2 b^3 d e^4}{4} + \frac{25 a b^4 d^2 e^3}{4} + \frac{5 b^5 d^3 e^2}{4}\right) + x^7 \left(\frac{5 a^4 b e^5}{7} + \frac{50 a^3 b^2 d e^4}{7} + \frac{100 a^2 b^3 d^2 e^3}{7} + \frac{50 a b^4 d^3 e^2}{7} + \frac{5 b^5 d^4 e}{7}\right) + x^6 \left(\frac{a^5 e^5}{6} + \frac{25 a^4 b d e^4}{6} + \frac{50 a^3 b^2 d^2 e^3}{3} + \frac{50 a^2 b^3 d^3 e^2}{3} + \frac{25 a b^4 d^4 e}{6} + \frac{b^5 d^5}{6}\right) + x^5 \left(a^5 d e^4 + 10 a^4 b d^2 e^3 + 20 a^3 b^2 d^3 e^2 + 10 a^2 b^3 d^4 e + a b^4 d^5\right) + x^4 \left(\frac{5 a^5 d^2 e^3}{2} + \frac{25 a^4 b d^3 e^2}{2} + \frac{25 a^3 b^2 d^4 e}{2} + \frac{5 a^2 b^3 d^5}{2}\right) + x^3 \left(\frac{10 a^5 d^3 e^2}{3} + \frac{25 a^4 b d^4 e}{3} + \frac{10 a^3 b^2 d^5}{3}\right) + x^2 \left(\frac{5 a^5 d^4 e}{2} + \frac{5 a^4 b d^5}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**5*x + b**5*e**5*x**11/11 + x**10*(a*b**4*e**5/2 + b**5*d*e**4/2) +
x**9*(10*a**2*b**3*e**5/9 + 25*a*b**4*d*e**4/9 + 10*b**5*d**2*e**3/9) + x**
8*(5*a**3*b**2*e**5/4 + 25*a**2*b**3*d*e**4/4 + 25*a*b**4*d**2*e**3/4 + 5*b
```

```
**5*d**3*e**2/4) + x**7*(5*a**4*b*e**5/7 + 50*a**3*b**2*d*e**4/7 + 100*a**2
*b**3*d**2*e**3/7 + 50*a*b**4*d**3*e**2/7 + 5*b**5*d**4*e/7) + x**6*(a**5*e
**5/6 + 25*a**4*b*d*e**4/6 + 50*a**3*b**2*d**2*e**3/3 + 50*a**2*b**3*d**3*e
**2/3 + 25*a*b**4*d**4*e/6 + b**5*d**5/6) + x**5*(a**5*d*e**4 + 10*a**4*b*d
**2*e**3 + 20*a**3*b**2*d**3*e**2 + 10*a**2*b**3*d**4*e + a*b**4*d**5) + x*
*4*(5*a**5*d**2*e**3/2 + 25*a**4*b*d**3*e**2/2 + 25*a**3*b**2*d**4*e/2 + 5*
a**2*b**3*d**5/2) + x**3*(10*a**5*d**3*e**2/3 + 25*a**4*b*d**4*e/3 + 10*a**
3*b**2*d**5/3) + x**2*(5*a**5*d**4*e/2 + 5*a**4*b*d**5/2)
```

3.1682 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=119

$$\frac{4e^3(a+bx)^9(bd-ae)}{9b^5}+\frac{3e^2(a+bx)^8(bd-ae)^2}{4b^5}+\frac{4e(a+bx)^7(bd-ae)^3}{7b^5}+\frac{(a+bx)^6(bd-ae)^4}{6b^5}+\frac{e^4(a+bx)^{10}}{10b^5}$$

Rubi [A] time = 0.22, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{4e^3(a+bx)^9(bd-ae)}{9b^5}+\frac{3e^2(a+bx)^8(bd-ae)^2}{4b^5}+\frac{4e(a+bx)^7(bd-ae)^3}{7b^5}+\frac{(a+bx)^6(bd-ae)^4}{6b^5}+\frac{e^4(a+bx)^{10}}{10b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^6)/(6*b^5) + (4*e*(b*d - a*e)^3*(a + b*x)^7)/(7*b^
5) + (3*e^2*(b*d - a*e)^2*(a + b*x)^8)/(4*b^5) + (4*e^3*(b*d - a*e)*(a + b*
x)^9)/(9*b^5) + (e^4*(a + b*x)^10)/(10*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^5(d+ex)^4 \, dx \\
&= \int \left(\frac{(bd-ae)^4(a+bx)^5}{b^4}+\frac{4e(bd-ae)^3(a+bx)^6}{b^4}+\frac{6e^2(bd-ae)^2(a}{b^4}\right. \\
&= \frac{(bd-ae)^4(a+bx)^6}{6b^5}+\frac{4e(bd-ae)^3(a+bx)^7}{7b^5}+\frac{3e^2(bd-ae)^2(a+bx}{4b^5}
\end{aligned}$$

Mathematica [B] time = 0.08, size = 301, normalized size = 2.53

$$\frac{x\left(252a^5\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+210a^4bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)+120a^3b^2x^2\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)+45a^2b^3x^3\left(70d^4+224d^3ex+280d^2e^2x^2+160de^3x^3+35e^4x^4\right)+10ab^4x^4\left(126d^4+420d^3ex+540d^2e^2x^2+315de^3x^3+70e^4x^4\right)+b^5x^5\left(210d^4+720d^3ex+945d^2e^2x^2+560de^3x^3+126e^4x^4\right)\right)}{1260}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(252*a^5*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^3*x^3 + e^4*x^4) +
 210*a^4*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*x^3 + 5*e^4*x
^4) + 120*a^3*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e^3*x^
3 + 15*e^4*x^4) + 45*a^2*b^3*x^3*(70*d^4 + 224*d^3*e*x + 280*d^2*e^2*x^2 +
160*d*e^3*x^3 + 35*e^4*x^4) + 10*a*b^4*x^4*(126*d^4 + 420*d^3*e*x + 540*d^2
```

```
*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4) + b^5*x^5*(210*d^4 + 720*d^3*e*x + 9
45*d^2*e^2*x^2 + 560*d*e^3*x^3 + 126*e^4*x^4)))/1260
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.49, size = 396, normalized size = 3.33

$$\frac{1}{10}x^{10}e^4b^5 + \frac{4}{9}x^9e^3db^5 + \frac{5}{9}x^9e^4b^4a + \frac{3}{4}x^8e^2d^2b^5 + \frac{5}{2}x^8e^3db^4a + \frac{5}{4}x^8e^4b^3a^2 + \frac{4}{7}x^7ed^3b^5 + \frac{30}{7}x^7e^2d^2b^4a + \frac{40}{7}x^7e^3db^3a^2 + \frac{10}{7}x^7e^4b^2a^3 + \frac{1}{6}x^6d^4b^5 + \frac{10}{3}x^6ed^3b^4a + 10x^6e^2d^2b^3a^2 + \frac{20}{3}x^6e^3db^2a^3 + \frac{5}{6}x^6e^4ba^4 + x^5d^4b^4a + 8x^5ed^3b^3a^2 + 12x^5e^2d^2b^2a^3 + 4x^5e^3dba^4 + \frac{1}{5}x^5e^4a^5 + \frac{5}{2}x^4d^4b^3a^2 + 10x^4ed^3b^2a^3 + \frac{15}{2}x^4e^2d^2ba^4 + x^4e^3da^5 + \frac{10}{3}x^3d^4b^2a^3 + \frac{20}{3}x^3ed^3ba^4 + 2x^3e^2d^2a^5 + \frac{5}{2}x^2d^4ba^4 + 2x^2ed^3a^5 + xd^4a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*b^5 + 4/9*x^9*e^3*d*b^5 + 5/9*x^9*e^4*b^4*a + 3/4*x^8*e^2*d^2
*b^5 + 5/2*x^8*e^3*d*b^4*a + 5/4*x^8*e^4*b^3*a^2 + 4/7*x^7*e*d^3*b^5 + 30/7
*x^7*e^2*d^2*b^4*a + 40/7*x^7*e^3*d*b^3*a^2 + 10/7*x^7*e^4*b^2*a^3 + 1/6*x^
6*d^4*b^5 + 10/3*x^6*e*d^3*b^4*a + 10*x^6*e^2*d^2*b^3*a^2 + 20/3*x^6*e^3*d*
b^2*a^3 + 5/6*x^6*e^4*b*a^4 + x^5*d^4*b^4*a + 8*x^5*e*d^3*b^3*a^2 + 12*x^5*
e^2*d^2*b^2*a^3 + 4*x^5*e^3*d*b*a^4 + 1/5*x^5*e^4*a^5 + 5/2*x^4*d^4*b^3*a^2
 + 10*x^4*e*d^3*b^2*a^3 + 15/2*x^4*e^2*d^2*b*a^4 + x^4*e^3*d*a^5 + 10/3*x^3
*d^4*b^2*a^3 + 20/3*x^3*e*d^3*b*a^4 + 2*x^3*e^2*d^2*a^5 + 5/2*x^2*d^4*b*a^4
 + 2*x^2*e*d^3*a^5 + x*d^4*a^5
```

giac [B] time = 0.16, size = 384, normalized size = 3.23

$$\frac{1}{10}b^5x^{10}e^4 + \frac{4}{9}b^5dx^9e^3 + \frac{3}{4}b^5d^2x^8e^2 + \frac{4}{7}b^5d^3x^7e + \frac{1}{6}b^5d^4x^6 + \frac{5}{9}ab^4x^9e^4 + \frac{5}{2}ab^4dx^8e^3 + \frac{30}{7}ab^4d^2x^7e^2 + \frac{10}{3}ab^4d^3x^6e + ab^4d^4x^5 + \frac{5}{4}a^2b^3x^8e^4 + \frac{40}{7}a^2b^3dx^7e^3 + 10a^2b^3d^2x^6e^2 + 8a^2b^3d^3x^5e + \frac{5}{2}a^2b^3d^4x^4 + \frac{10}{7}a^3b^2x^7e^4 + \frac{20}{3}a^3b^2dx^6e^3 + 12a^3b^2d^2x^5e^2 + 10a^3b^2d^3x^4e + \frac{10}{3}a^3b^2d^4x^3 + \frac{5}{6}a^4bx^6e^4 + 4a^4bdx^5e^3 + \frac{15}{2}a^4bd^2x^4e^2 + \frac{20}{3}a^4bd^3x^3e + \frac{5}{2}a^4bd^4x^2 + \frac{1}{5}a^5x^5e^4 + a^5dx^4e^3 + 2a^5d^2x^3e^2 + 2a^5d^3x^2e + a^5d^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/10*b^5*x^10*e^4 + 4/9*b^5*d*x^9*e^3 + 3/4*b^5*d^2*x^8*e^2 + 4/7*b^5*d^3*x
^7*e + 1/6*b^5*d^4*x^6 + 5/9*a*b^4*x^9*e^4 + 5/2*a*b^4*d*x^8*e^3 + 30/7*a*b
^4*d^2*x^7*e^2 + 10/3*a*b^4*d^3*x^6*e + a*b^4*d^4*x^5 + 5/4*a^2*b^3*x^8*e^4
 + 40/7*a^2*b^3*d*x^7*e^3 + 10*a^2*b^3*d^2*x^6*e^2 + 8*a^2*b^3*d^3*x^5*e +
5/2*a^2*b^3*d^4*x^4 + 10/7*a^3*b^2*x^7*e^4 + 20/3*a^3*b^2*d*x^6*e^3 + 12*a^
3*b^2*d^2*x^5*e^2 + 10*a^3*b^2*d^3*x^4*e + 10/3*a^3*b^2*d^4*x^3 + 5/6*a^4*b
*x^6*e^4 + 4*a^4*b*d*x^5*e^3 + 15/2*a^4*b*d^2*x^4*e^2 + 20/3*a^4*b*d^3*x^3*
e + 5/2*a^4*b*d^4*x^2 + 1/5*a^5*x^5*e^4 + a^5*d*x^4*e^3 + 2*a^5*d^2*x^3*e^2
 + 2*a^5*d^3*x^2*e + a^5*d^4*x
```

maple [B] time = 0.04, size = 559, normalized size = 4.70

$$\frac{b^5e^4x^{10}}{10} + a^5d^4x + \frac{\left(4ab^4e^4 + \left(ae^4+4bde^3\right)b^4\right)x^9}{9} + \frac{\left(6a^2b^3e^4 + 4\left(ae^4+4bde^3\right)ab^3 + \left(4ade^3+6bd^2e^2\right)b^4\right)x^8}{8} + \frac{\left(4a^3b^2e^4 + 6\left(ae^4+4bde^3\right)a^2b^2 + 4\left(4ade^3+6bd^2e^2\right)ab^3 + \left(6ad^2e^2+4bd^3e\right)b^4\right)x^7}{7} + \frac{\left(a^4be^4 + 4\left(ae^4+4bde^3\right)a^3b + 6\left(4ade^3+6bd^2e^2\right)a^2b^2 + 4\left(6ad^2e^2+4bd^3e\right)ab^3 + \left(4ad^3e+bd^4\right)b^4\right)x^6}{6} + \frac{\left(ab^4d^4 + \left(ae^4+4bde^3\right)a^4 + 4\left(4ade^3+6bd^2e^2\right)a^3b + 6\left(6ad^2e^2+4bd^3e\right)a^2b^2 + 4\left(4ad^3e+bd^4\right)ab^3\right)x^5}{5} + \frac{\left(4a^2b^3d^4 + \left(4ade^3+6bd^2e^2\right)a^4 + 4\left(6ad^2e^2+4bd^3e\right)a^3b + 6\left(4ad^3e+bd^4\right)a^2b^2\right)x^4}{4} + \frac{\left(6a^3b^2d^4 + \left(6ad^2e^2+4bd^3e\right)a^4 + 4\left(4ad^3e+bd^4\right)a^3b\right)x^3}{3} + \frac{\left(4a^4bd^4 + \left(4ad^3e+bd^4\right)a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/10*b^5*e^4*x^10+1/9*((a*e^4+4*b*d*e^3)*b^4+4*b^4*e^4*a)*x^9+1/8*((4*a*d*e
^3+6*b*d^2*e^2)*b^4+4*(a*e^4+4*b*d*e^3)*a*b^3+6*b^3*e^4*a^2)*x^8+1/7*((6*a*
d^2*e^2+4*b*d^3*e)*b^4+4*(4*a*d*e^3+6*b*d^2*e^2)*a*b^3+6*(a*e^4+4*b*d*e^3)*
a^2*b^2+4*b^2*e^4*a^3)*x^7+1/6*((4*a*d^3*e+b*d^4)*b^4+4*(6*a*d^2*e^2+4*b*d^
3*e)*a*b^3+6*(4*a*d*e^3+6*b*d^2*e^2)*a^2*b^2+4*(a*e^4+4*b*d*e^3)*a^3*b+e^4*
```

```
a^4*b)*x^6+1/5*(a*d^4*b^4+4*(4*a*d^3*e+b*d^4)*a*b^3+6*(6*a*d^2*e^2+4*b*d^3*
e)*a^2*b^2+4*(4*a*d*e^3+6*b*d^2*e^2)*a^3*b+(a*e^4+4*b*d*e^3)*a^4)*x^5+1/4*(
4*a^2*d^4*b^3+6*(4*a*d^3*e+b*d^4)*a^2*b^2+4*(6*a*d^2*e^2+4*b*d^3*e)*a^3*b+(
4*a*d*e^3+6*b*d^2*e^2)*a^4)*x^4+1/3*(6*a^3*d^4*b^2+4*(4*a*d^3*e+b*d^4)*a^3*
b+(6*a*d^2*e^2+4*b*d^3*e)*a^4)*x^3+1/2*(4*a^4*d^4*b+(4*a*d^3*e+b*d^4)*a^4)*
x^2+a^5*d^4*x
```

maxima [B] time = 0.64, size = 360, normalized size = 3.03

$$\frac{1}{10}b^5e^4x^{10}+a^5d^4x+\frac{1}{9}\left(4b^5de^3+5ab^4e^4\right)x^9+\frac{1}{4}\left(3b^5d^2e^2+10ab^4de^3+5a^2b^3e^4\right)x^8+\frac{2}{7}\left(2b^5d^3e+15ab^4d^2e^2+20a^2b^3de^3+5a^3b^2e^4\right)x^7+\frac{1}{6}\left(b^5d^4+20ab^4d^3e+60a^2b^3d^2e^2+40a^3b^2de^3+5a^4be^4\right)x^6+\frac{1}{5}\left(5ab^4d^4+40a^2b^3d^3e+60a^3b^2d^2e^2+20a^4bde^3+a^5e^4\right)x^5+\frac{1}{2}\left(5a^2b^3d^4+20a^3b^2d^3e+15a^4bd^2e^2+2a^5de^3\right)x^4+\frac{2}{3}\left(5a^3b^2d^4+10a^4bd^3e+3a^5d^2e^2\right)x^3+\frac{1}{2}\left(5a^4bd^4+4a^5d^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/10*b^5*e^4*x^10 + a^5*d^4*x + 1/9*(4*b^5*d*e^3 + 5*a*b^4*e^4)*x^9 + 1/4*(
3*b^5*d^2*e^2 + 10*a*b^4*d*e^3 + 5*a^2*b^3*e^4)*x^8 + 2/7*(2*b^5*d^3*e + 15
*a*b^4*d^2*e^2 + 20*a^2*b^3*d*e^3 + 5*a^3*b^2*e^4)*x^7 + 1/6*(b^5*d^4 + 20*
a*b^4*d^3*e + 60*a^2*b^3*d^2*e^2 + 40*a^3*b^2*d*e^3 + 5*a^4*b*e^4)*x^6 + 1/
5*(5*a*b^4*d^4 + 40*a^2*b^3*d^3*e + 60*a^3*b^2*d^2*e^2 + 20*a^4*b*d*e^3 + a
^5*e^4)*x^5 + 1/2*(5*a^2*b^3*d^4 + 20*a^3*b^2*d^3*e + 15*a^4*b*d^2*e^2 + 2*
a^5*d*e^3)*x^4 + 2/3*(5*a^3*b^2*d^4 + 10*a^4*b*d^3*e + 3*a^5*d^2*e^2)*x^3 +
 1/2*(5*a^4*b*d^4 + 4*a^5*d^3*e)*x^2
```

mupad [B] time = 2.07, size = 340, normalized size = 2.86

$$x^4\left(a^5\,d\,e^3+\frac{15\,a^4\,b\,d^2\,e^2}{2}+10\,a^3\,b^2\,d^3\,e+\frac{5\,a^2\,b^3\,d^4}{2}\right)+x^7\left(\frac{10\,a^3\,b^2\,e^4}{7}+\frac{40\,a^2\,b^3\,d\,e^3}{7}+\frac{30\,a\,b^4\,d^2\,e^2}{7}+\frac{4\,b^5\,d^3\,e}{7}\right)+x^5\left(\frac{a^5\,e^4}{5}+4\,a^4\,b\,d\,e^3+12\,a^3\,b^2\,d^2\,e^2+8\,a^2\,b^3\,d^3\,e+a\,b^4\,d^4\right)+x^6\left(\frac{5\,a^4\,b\,e^4}{6}+\frac{20\,a^3\,b^2\,d\,e^3}{3}+10\,a^2\,b^3\,d^2\,e^2+\frac{10\,a\,b^4\,d^3\,e}{3}+\frac{b^5\,d^4}{6}\right)+a^5\,d^4\,x+\frac{b^5\,e^4\,x^{10}}{10}+\frac{a^4\,d^3\,x^2\,\left(4\,a\,e+5\,b\,d\right)}{2}+\frac{b^4\,e^3\,x^9\,\left(5\,a\,e+4\,b\,d\right)}{9}+\frac{2\,a^3\,d^2\,x^3\,\left(3\,a^2\,e^2+10\,a\,b\,d\,e+5\,b^2\,d^2\right)}{3}+\frac{b^3\,e^2\,x^8\,\left(5\,a^2\,e^2+10\,a\,b\,d\,e+3\,b^2\,d^2\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*(a^5*d*e^3 + (5*a^2*b^3*d^4)/2 + 10*a^3*b^2*d^3*e + (15*a^4*b*d^2*e^2)/
2) + x^7*((4*b^5*d^3*e)/7 + (10*a^3*b^2*e^4)/7 + (30*a*b^4*d^2*e^2)/7 + (40
*a^2*b^3*d*e^3)/7) + x^5*((a^5*e^4)/5 + a*b^4*d^4 + 8*a^2*b^3*d^3*e + 12*a^
3*b^2*d^2*e^2 + 4*a^4*b*d*e^3) + x^6*((b^5*d^4)/6 + (5*a^4*b*e^4)/6 + (20*a
^3*b^2*d*e^3)/3 + 10*a^2*b^3*d^2*e^2 + (10*a*b^4*d^3*e)/3) + a^5*d^4*x + (b
^5*e^4*x^10)/10 + (a^4*d^3*x^2*(4*a*e + 5*b*d))/2 + (b^4*e^3*x^9*(5*a*e + 4
*b*d))/9 + (2*a^3*d^2*x^3*(3*a^2*e^2 + 5*b^2*d^2 + 10*a*b*d*e))/3 + (b^3*e^
2*x^8*(5*a^2*e^2 + 3*b^2*d^2 + 10*a*b*d*e))/4
```

sympy [B] time = 0.14, size = 401, normalized size = 3.37

$$a^5d^4x+\frac{b^5e^4x^{10}}{10}+x^9\left(\frac{5ab^4e^4}{9}+\frac{4b^5de^3}{9}\right)+x^8\left(\frac{5a^2b^3e^4}{4}+\frac{5ab^4de^3}{2}+\frac{3b^5d^2e^2}{4}\right)+x^7\left(\frac{10a^3b^2e^4}{7}+\frac{40a^2b^3de^3}{7}+\frac{30ab^4d^2e^2}{7}+\frac{4b^5d^3e}{7}\right)+x^6\left(\frac{5a^4be^4}{6}+\frac{20a^3b^2de^3}{3}+10a^2b^3d^2e^2+\frac{10ab^4d^3e}{3}+\frac{b^5d^4}{6}\right)+x^5\left(\frac{a^5e^4}{5}+4a^4bde^3+12a^3b^2d^2e^2+8a^2b^3d^3e+ab^4d^4\right)+x^4\left(a^5de^3+\frac{15a^4bd^2e^2}{2}+10a^3b^2d^3e+\frac{5a^2b^3d^4}{2}\right)+x^3\left(2a^5d^2e^2+\frac{20a^4bd^3e}{3}+\frac{10a^3b^2d^4}{3}\right)+x^2\left(2a^5d^3e+\frac{5a^4bd^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**4*x + b**5*e**4*x**10/10 + x**9*(5*a*b**4*e**4/9 + 4*b**5*d*e**3/9)
 + x**8*(5*a**2*b**3*e**4/4 + 5*a*b**4*d*e**3/2 + 3*b**5*d**2*e**2/4) + x**
7*(10*a**3*b**2*e**4/7 + 40*a**2*b**3*d*e**3/7 + 30*a*b**4*d**2*e**2/7 + 4*
b**5*d**3*e/7) + x**6*(5*a**4*b*e**4/6 + 20*a**3*b**2*d*e**3/3 + 10*a**2*b*
*3*d**2*e**2 + 10*a*b**4*d**3*e/3 + b**5*d**4/6) + x**5*(a**5*e**4/5 + 4*a*
*4*b*d*e**3 + 12*a**3*b**2*d**2*e**2 + 8*a**2*b**3*d**3*e + a*b**4*d**4) +
x**4*(a**5*d*e**3 + 15*a**4*b*d**2*e**2/2 + 10*a**3*b**2*d**3*e + 5*a**2*b*
*3*d**4/2) + x**3*(2*a**5*d**2*e**2 + 20*a**4*b*d**3*e/3 + 10*a**3*b**2*d**
4/3) + x**2*(2*a**5*d**3*e + 5*a**4*b*d**4/2)
```

3.1683 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=92

$$\frac{3e^2(a+bx)^8(bd-ae)}{8b^4}+\frac{3e(a+bx)^7(bd-ae)^2}{7b^4}+\frac{(a+bx)^6(bd-ae)^3}{6b^4}+\frac{e^3(a+bx)^9}{9b^4}$$

Rubi [A] time = 0.15, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{3e^2(a+bx)^8(bd-ae)}{8b^4}+\frac{3e(a+bx)^7(bd-ae)^2}{7b^4}+\frac{(a+bx)^6(bd-ae)^3}{6b^4}+\frac{e^3(a+bx)^9}{9b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^6)/(6*b^4) + (3*e*(b*d - a*e)^2*(a + b*x)^7)/(7*b^
4) + (3*e^2*(b*d - a*e)*(a + b*x)^8)/(8*b^4) + (e^3*(a + b*x)^9)/(9*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^3\,dx\\ &= \int \left(\frac{(bd-ae)^3(a+bx)^5}{b^3}+\frac{3e(bd-ae)^2(a+bx)^6}{b^3}+\frac{3e^2(bd-ae)(\right.\\ &= \frac{(bd-ae)^3(a+bx)^6}{6b^4}+\frac{3e(bd-ae)^2(a+bx)^7}{7b^4}+\frac{3e^2(bd-ae)(a+}{8b^4}\end{aligned}$$

Mathematica [B] time = 0.07, size = 235, normalized size = 2.55

$$\frac{1}{504}x\left(126a^5\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+126a^4bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+84a^3b^2x^2\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)+36a^2b^3x^3\left(35d^3+84d^2ex+70de^2x^2+20e^3x^3\right)+9ab^4x^4\left(56d^3+140d^2ex+120de^2x^2+35e^3x^3\right)+b^5x^5\left(84d^3+216d^2ex+189de^2x^2+56e^3x^3\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(126*a^5*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) + 126*a^4*b*x*(10*d
^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + 84*a^3*b^2*x^2*(20*d^3 + 45*d
^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 36*a^2*b^3*x^3*(35*d^3 + 84*d^2*e*x +
 70*d*e^2*x^2 + 20*e^3*x^3) + 9*a*b^4*x^4*(56*d^3 + 140*d^2*e*x + 120*d*e^2
*x^2 + 35*e^3*x^3) + b^5*x^5*(84*d^3 + 216*d^2*e*x + 189*d*e^2*x^2 + 56*e^3
*x^3)))/504
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.37, size = 303, normalized size = 3.29

$$\frac{1}{9}x^9e^3b^5 + \frac{3}{8}x^8e^2db^5 + \frac{5}{8}x^8e^3b^4a + \frac{3}{7}x^7ed^2b^5 + \frac{15}{7}x^7e^2db^4a + \frac{10}{7}x^7e^3b^3a^2 + \frac{1}{6}x^6d^3b^5 + \frac{5}{2}x^6ed^2b^4a + 5x^6e^2db^3a^2 + \frac{5}{3}x^6e^3b^2a^3 + x^5d^3b^4a + 6x^5ed^2b^3a^2 + 6x^5e^2db^2a^3 + x^5e^3ba^4 + \frac{5}{2}x^4d^3b^3a^2 + \frac{15}{2}x^4ed^2b^2a^3 + \frac{15}{4}x^4e^2dba^4 + \frac{1}{4}x^4e^3a^5 + \frac{10}{3}x^3d^3b^2a^3 + 5x^3ed^2ba^4 + x^3e^2da^5 + \frac{5}{2}x^2d^3ba^4 + \frac{3}{2}x^2ed^2a^5 + xd^3a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*b^5 + 3/8*x^8*e^2*d*b^5 + 5/8*x^8*e^3*b^4*a + 3/7*x^7*e*d^2*b^5
 + 15/7*x^7*e^2*d*b^4*a + 10/7*x^7*e^3*b^3*a^2 + 1/6*x^6*d^3*b^5 + 5/2*x^6*
e*d^2*b^4*a + 5*x^6*e^2*d*b^3*a^2 + 5/3*x^6*e^3*b^2*a^3 + x^5*d^3*b^4*a + 6
*x^5*e*d^2*b^3*a^2 + 6*x^5*e^2*d*b^2*a^3 + x^5*e^3*b*a^4 + 5/2*x^4*d^3*b^3*
a^2 + 15/2*x^4*e*d^2*b^2*a^3 + 15/4*x^4*e^2*d*b*a^4 + 1/4*x^4*e^3*a^5 + 10/
3*x^3*d^3*b^2*a^3 + 5*x^3*e*d^2*b*a^4 + x^3*e^2*d*a^5 + 5/2*x^2*d^3*b*a^4 +
 3/2*x^2*e*d^2*a^5 + x*d^3*a^5
```

giac [B] time = 0.17, size = 297, normalized size = 3.23

$$\frac{1}{9}b^5x^9e^3 + \frac{3}{8}b^5dx^8e^2 + \frac{3}{7}b^5d^2x^7e + \frac{1}{6}b^5d^3x^6 + \frac{5}{8}ab^4x^8e^3 + \frac{15}{7}ab^4dx^7e^2 + \frac{5}{2}ab^4d^2x^6e + ab^4d^3x^5 + \frac{10}{7}a^2b^3x^7e^3 + 5a^2b^3dx^6e^2 + 6a^2b^3d^2x^5e + \frac{5}{2}a^2b^3d^3x^4 + \frac{5}{3}a^3b^2x^6e^3 + 6a^3b^2dx^5e^2 + \frac{15}{2}a^3b^2d^2x^4e + \frac{10}{3}a^3b^2d^3x^3 + a^4bx^5e^3 + \frac{15}{4}a^4bdx^4e^2 + 5a^4bd^2x^3e + \frac{5}{2}a^4bd^3x^2 + \frac{1}{4}a^5x^4e^3 + a^5dx^3e^2 + \frac{3}{2}a^5d^2x^2e + a^5d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/9*b^5*x^9*e^3 + 3/8*b^5*d*x^8*e^2 + 3/7*b^5*d^2*x^7*e + 1/6*b^5*d^3*x^6 +
 5/8*a*b^4*x^8*e^3 + 15/7*a*b^4*d*x^7*e^2 + 5/2*a*b^4*d^2*x^6*e + a*b^4*d^3
*x^5 + 10/7*a^2*b^3*x^7*e^3 + 5*a^2*b^3*d*x^6*e^2 + 6*a^2*b^3*d^2*x^5*e + 5
/2*a^2*b^3*d^3*x^4 + 5/3*a^3*b^2*x^6*e^3 + 6*a^3*b^2*d*x^5*e^2 + 15/2*a^3*b
^2*d^2*x^4*e + 10/3*a^3*b^2*d^3*x^3 + a^4*b*x^5*e^3 + 15/4*a^4*b*d*x^4*e^2
+ 5*a^4*b*d^2*x^3*e + 5/2*a^4*b*d^3*x^2 + 1/4*a^5*x^4*e^3 + a^5*d*x^3*e^2 +
 3/2*a^5*d^2*x^2*e + a^5*d^3*x
```

maple [B] time = 0.04, size = 430, normalized size = 4.67

$$\frac{b^5e^3x^9}{9} + a^5d^3x + \frac{\left(4ab^4e^3 + \left(ae^3+3bde^2\right)b^4\right)x^8}{8} + \frac{\left(6a^2b^3e^3 + 4\left(ae^3+3bde^2\right)ab^3 + \left(3ade^2+3bd^2e\right)b^4\right)x^7}{7} + \frac{\left(4a^3b^2e^3 + 6\left(ae^3+3bde^2\right)a^2b^2 + 4\left(3ade^2+3bd^2e\right)ab^3 + \left(3ad^2e+bd^3\right)b^4\right)x^6}{6} + \frac{\left(a^4be^3 + ab^4d^3 + 4\left(ae^3+3bde^2\right)a^3b + 6\left(3ade^2+3bd^2e\right)a^2b^2 + 4\left(3ad^2e+bd^3\right)ab^3\right)x^5}{5} + \frac{\left(4a^2b^3d^3 + \left(ae^3+3bde^2\right)a^4 + 4\left(3ade^2+3bd^2e\right)a^3b + 6\left(3ad^2e+bd^3\right)a^2b^2\right)x^4}{4} + \frac{\left(6a^3b^2d^3 + \left(3ade^2+3bd^2e\right)a^4 + 4\left(3ad^2e+bd^3\right)a^3b\right)x^3}{3} + \frac{\left(4a^4bd^3 + \left(3ad^2e+bd^3\right)a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/9*b^5*e^3*x^9+1/8*((a*e^3+3*b*d*e^2)*b^4+4*b^4*e^3*a)*x^8+1/7*((3*a*d*e^2
+3*b*d^2*e)*b^4+4*(a*e^3+3*b*d*e^2)*a*b^3+6*b^3*e^3*a^2)*x^7+1/6*((3*a*d^2*
e+b*d^3)*b^4+4*(3*a*d*e^2+3*b*d^2*e)*a*b^3+6*(a*e^3+3*b*d*e^2)*a^2*b^2+4*b^
2*e^3*a^3)*x^6+1/5*(a*d^3*b^4+4*(3*a*d^2*e+b*d^3)*a*b^3+6*(3*a*d*e^2+3*b*d^
2*e)*a^2*b^2+4*(a*e^3+3*b*d*e^2)*a^3*b+b*e^3*a^4)*x^5+1/4*(4*a^2*d^3*b^3+6*
(3*a*d^2*e+b*d^3)*a^2*b^2+4*(3*a*d*e^2+3*b*d^2*e)*a^3*b+(a*e^3+3*b*d*e^2)*a
^4)*x^4+1/3*(6*a^3*d^3*b^2+4*(3*a*d^2*e+b*d^3)*a^3*b+(3*a*d*e^2+3*b*d^2*e)*
a^4)*x^3+1/2*(4*a^4*d^3*b+(3*a*d^2*e+b*d^3)*a^4)*x^2+a^5*d^3*x
```

maxima [B] time = 0.61, size = 277, normalized size = 3.01

$$\frac{1}{9}b^5e^3x^9 + a^5d^3x + \frac{1}{8}\left(3b^5de^2 + 5ab^4e^3\right)x^8 + \frac{1}{7}\left(3b^5d^2e + 15ab^4de^2 + 10a^2b^3e^3\right)x^7 + \frac{1}{6}\left(b^5d^3 + 15ab^4d^2e + 30a^2b^3de^2 + 10a^3b^2e^3\right)x^6 + \left(ab^4d^3 + 6a^2b^3d^2e + 6a^3b^2de^2 + a^4be^3\right)x^5 + \frac{1}{4}\left(10a^2b^3d^3 + 30a^3b^2d^2e + 15a^4bde^2 + a^5e^3\right)x^4 + \frac{1}{3}\left(10a^3b^2d^3 + 15a^4bd^2e + 3a^5de^2\right)x^3 + \frac{1}{2}\left(5a^4bd^3 + 3a^5d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/9*b^5*e^3*x^9 + a^5*d^3*x + 1/8*(3*b^5*d*e^2 + 5*a*b^4*e^3)*x^8 + 1/7*(3*
b^5*d^2*e + 15*a*b^4*d*e^2 + 10*a^2*b^3*e^3)*x^7 + 1/6*(b^5*d^3 + 15*a*b^4*
d^2*e + 30*a^2*b^3*d*e^2 + 10*a^3*b^2*e^3)*x^6 + (a*b^4*d^3 + 6*a^2*b^3*d^2
*e + 6*a^3*b^2*d*e^2 + a^4*b*e^3)*x^5 + 1/4*(10*a^2*b^3*d^3 + 30*a^3*b^2*d^
2*e + 15*a^4*b*d*e^2 + a^5*e^3)*x^4 + 1/3*(10*a^3*b^2*d^3 + 15*a^4*b*d^2*e
+ 3*a^5*d*e^2)*x^3 + 1/2*(5*a^4*b*d^3 + 3*a^5*d^2*e)*x^2
```

mupad [B] time = 0.10, size = 261, normalized size = 2.84

$$x^5\left(a^4be^3+6a^3b^2de^2+6a^2b^3d^2e+ab^4d^3\right)+x^4\left(\frac{a^5e^3}{4}+\frac{15a^4bde^2}{4}+\frac{15a^3b^2d^2e}{2}+\frac{5a^2b^3d^3}{2}\right)+x^6\left(\frac{5a^3b^2e^3}{3}+5a^2b^3de^2+\frac{5ab^4d^2e}{2}+\frac{b^5d^3}{6}\right)+a^5d^3x+\frac{b^5e^3x^9}{9}+\frac{a^4d^2x^2\left(3ae+5bd\right)}{2}+\frac{b^4e^2x^8\left(5ae+3bd\right)}{8}+\frac{a^3dx^3\left(3a^2e^2+15abde+10b^2d^2\right)}{3}+\frac{b^3ex^7\left(10a^2e^2+15abde+3b^2d^2\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*(a*b^4*d^3 + a^4*b*e^3 + 6*a^2*b^3*d^2*e + 6*a^3*b^2*d*e^2) + x^4*((a^5
*e^3)/4 + (5*a^2*b^3*d^3)/2 + (15*a^3*b^2*d^2*e)/2 + (15*a^4*b*d*e^2)/4) +
x^6*((b^5*d^3)/6 + (5*a^3*b^2*e^3)/3 + 5*a^2*b^3*d*e^2 + (5*a*b^4*d^2*e)/2)
 + a^5*d^3*x + (b^5*e^3*x^9)/9 + (a^4*d^2*x^2*(3*a*e + 5*b*d))/2 + (b^4*e^2
*x^8*(5*a*e + 3*b*d))/8 + (a^3*d*x^3*(3*a^2*e^2 + 10*b^2*d^2 + 15*a*b*d*e))
/3 + (b^3*e*x^7*(10*a^2*e^2 + 3*b^2*d^2 + 15*a*b*d*e))/7
```

sympy [B] time = 0.12, size = 308, normalized size = 3.35

$$a^5d^3x+\frac{b^5e^3x^9}{9}+x^8\left(\frac{5ab^4e^3}{8}+\frac{3b^5de^2}{8}\right)+x^7\left(\frac{10a^2b^3e^3}{7}+\frac{15ab^4de^2}{7}+\frac{3b^5d^2e}{7}\right)+x^6\left(\frac{5a^3b^2e^3}{3}+5a^2b^3de^2+\frac{5ab^4d^2e}{2}+\frac{b^5d^3}{6}\right)+x^5\left(a^4be^3+6a^3b^2de^2+6a^2b^3d^2e+ab^4d^3\right)+x^4\left(\frac{a^5e^3}{4}+\frac{15a^4bde^2}{4}+\frac{15a^3b^2d^2e}{2}+\frac{5a^2b^3d^3}{2}\right)+x^3\left(a^5de^2+5a^4bd^2e+\frac{10a^3b^2d^3}{3}\right)+x^2\left(\frac{3a^5d^2e}{2}+\frac{5a^4bd^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**3*x + b**5*e**3*x**9/9 + x**8*(5*a*b**4*e**3/8 + 3*b**5*d*e**2/8) +
 x**7*(10*a**2*b**3*e**3/7 + 15*a*b**4*d*e**2/7 + 3*b**5*d**2*e/7) + x**6*(
5*a**3*b**2*e**3/3 + 5*a**2*b**3*d*e**2 + 5*a*b**4*d**2*e/2 + b**5*d**3/6)
+ x**5*(a**4*b*e**3 + 6*a**3*b**2*d*e**2 + 6*a**2*b**3*d**2*e + a*b**4*d**3
) + x**4*(a**5*e**3/4 + 15*a**4*b*d*e**2/4 + 15*a**3*b**2*d**2*e/2 + 5*a**2
*b**3*d**3/2) + x**3*(a**5*d*e**2 + 5*a**4*b*d**2*e + 10*a**3*b**2*d**3/3)
+ x**2*(3*a**5*d**2*e/2 + 5*a**4*b*d**3/2)
```

3.1684 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=65

$$\frac{2e(a+bx)^7(bd-ae)}{7b^3}+\frac{(a+bx)^6(bd-ae)^2}{6b^3}+\frac{e^2(a+bx)^8}{8b^3}$$

Rubi [A] time = 0.11, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{2e(a+bx)^7(bd-ae)}{7b^3}+\frac{(a+bx)^6(bd-ae)^2}{6b^3}+\frac{e^2(a+bx)^8}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^6)/(6*b^3) + (2*e*(b*d - a*e)*(a + b*x)^7)/(7*b^3)
 + (e^2*(a + b*x)^8)/(8*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^5(d+ex)^2 \, dx \\
&= \int \left(\frac{(bd-ae)^2(a+bx)^5}{b^2}+\frac{2e(bd-ae)(a+bx)^6}{b^2}+\frac{e^2(a+bx)^7}{b^2}\right) dx \\
&= \frac{(bd-ae)^2(a+bx)^6}{6b^3}+\frac{2e(bd-ae)(a+bx)^7}{7b^3}+\frac{e^2(a+bx)^8}{8b^3}
\end{aligned}$$

Mathematica [B] time = 0.03, size = 189, normalized size = 2.91

$$a^5d^2x+\frac{1}{2}a^4dx^2(2ae+5bd)+ab^2x^5\left(2a^2e^2+4abde+b^2d^2\right)+\frac{5}{4}a^2bx^4\left(a^2e^2+4abde+2b^2d^2\right)+\frac{1}{6}b^3x^6\left(10a^2e^2+10abde+b^2d^2\right)+\frac{1}{3}a^3x^3\left(a^2e^2+10abde+10b^2d^2\right)+\frac{1}{7}b^4ex^7(5ae+2bd)+\frac{1}{8}b^5e^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d^2*x + (a^4*d*(5*b*d + 2*a*e)*x^2)/2 + (a^3*(10*b^2*d^2 + 10*a*b*d*e +
 a^2*e^2)*x^3)/3 + (5*a^2*b*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2)*x^4)/4 + a*b^
2*(b^2*d^2 + 4*a*b*d*e + 2*a^2*e^2)*x^5 + (b^3*(b^2*d^2 + 10*a*b*d*e + 10*a
^2*e^2)*x^6)/6 + (b^4*e*(2*b*d + 5*a*e)*x^7)/7 + (b^5*e^2*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.36, size = 212, normalized size = 3.26

$$\frac{1}{8}x^8e^2b^5 + \frac{2}{7}x^7edb^5 + \frac{5}{7}x^7e^2b^4a + \frac{1}{6}x^6d^2b^5 + \frac{5}{3}x^6edb^4a + \frac{5}{3}x^6e^2b^3a^2 + x^5d^2b^4a + 4x^5edb^3a^2 + 2x^5e^2b^2a^3 + \frac{5}{2}x^4d^2b^3a^2 + 5x^4edb^2a^3 + \frac{5}{4}x^4e^2ba^4 + \frac{10}{3}x^3d^2b^2a^3 + \frac{10}{3}x^3edba^4 + \frac{1}{3}x^3e^2a^5 + \frac{5}{2}x^2d^2ba^4 + x^2eda^5 + xd^2a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*b^5 + 2/7*x^7*e*d*b^5 + 5/7*x^7*e^2*b^4*a + 1/6*x^6*d^2*b^5 + 5
/3*x^6*e*d*b^4*a + 5/3*x^6*e^2*b^3*a^2 + x^5*d^2*b^4*a + 4*x^5*e*d*b^3*a^2
+ 2*x^5*e^2*b^2*a^3 + 5/2*x^4*d^2*b^3*a^2 + 5*x^4*e*d*b^2*a^3 + 5/4*x^4*e^2
*b*a^4 + 10/3*x^3*d^2*b^2*a^3 + 10/3*x^3*e*d*b*a^4 + 1/3*x^3*e^2*a^5 + 5/2*
x^2*d^2*b*a^4 + x^2*e*d*a^5 + x*d^2*a^5
```

giac [B] time = 0.16, size = 212, normalized size = 3.26

$$\frac{1}{8}b^5x^8e^2 + \frac{2}{7}b^5dx^7e + \frac{1}{6}b^5d^2x^6 + \frac{5}{7}ab^4x^7e^2 + \frac{5}{3}ab^4dx^6e + ab^4d^2x^5 + \frac{5}{3}a^2b^3x^6e^2 + 4a^2b^3dx^5e + \frac{5}{2}a^2b^3d^2x^4 + 2a^3b^2x^5e^2 + 5a^3b^2dx^4e + \frac{10}{3}a^3b^2d^2x^3 + \frac{5}{4}a^4bx^4e^2 + \frac{10}{3}a^4bdx^3e + \frac{5}{2}a^4bd^2x^2 + \frac{1}{3}a^5x^3e^2 + a^5dx^2e + a^5d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*b^5*x^8*e^2 + 2/7*b^5*d*x^7*e + 1/6*b^5*d^2*x^6 + 5/7*a*b^4*x^7*e^2 + 5
/3*a*b^4*d*x^6*e + a*b^4*d^2*x^5 + 5/3*a^2*b^3*x^6*e^2 + 4*a^2*b^3*d*x^5*e
+ 5/2*a^2*b^3*d^2*x^4 + 2*a^3*b^2*x^5*e^2 + 5*a^3*b^2*d*x^4*e + 10/3*a^3*b^
2*d^2*x^3 + 5/4*a^4*b*x^4*e^2 + 10/3*a^4*b*d*x^3*e + 5/2*a^4*b*d^2*x^2 + 1/
3*a^5*x^3*e^2 + a^5*d*x^2*e + a^5*d^2*x
```

maple [B] time = 0.05, size = 301, normalized size = 4.63

$$\frac{b^5e^2x^8}{8} + a^5d^2x + \frac{\left(4ab^4e^2 + \left(ae^2 + 2bde\right)b^4\right)x^7}{7} + \frac{\left(6a^2b^3e^2 + 4\left(ae^2 + 2bde\right)ab^3 + \left(2ade + bd^2\right)b^4\right)x^6}{6} + \frac{\left(4a^3b^2e^2 + ab^4d^2 + 6\left(ae^2 + 2bde\right)a^2b^2 + 4\left(2ade + bd^2\right)ab^3\right)x^5}{5} + \frac{\left(a^4be^2 + 4a^2b^3d^2 + 4\left(ae^2 + 2bde\right)a^3b + 6\left(2ade + bd^2\right)a^2b^2\right)x^4}{4} + \frac{\left(6a^3b^2d^2 + \left(ae^2 + 2bde\right)a^4 + 4\left(2ade + bd^2\right)a^3b\right)x^3}{3} + \frac{\left(4a^4bd^2 + \left(2ade + bd^2\right)a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*b^5*e^2*x^8+1/7*((a*e^2+2*b*d*e)*b^4+4*b^4*e^2*a)*x^7+1/6*((2*a*d*e+b*d
^2)*b^4+4*(a*e^2+2*b*d*e)*a*b^3+6*a^2*b^3*e^2)*x^6+1/5*(a*d^2*b^4+4*(2*a*d*
e+b*d^2)*a*b^3+6*(a*e^2+2*b*d*e)*a^2*b^2+4*b^2*e^2*a^3)*x^5+1/4*(4*a^2*d^2*
b^3+6*(2*a*d*e+b*d^2)*a^2*b^2+4*(a*e^2+2*b*d*e)*a^3*b+b*e^2*a^4)*x^4+1/3*(6
*a^3*d^2*b^2+4*(2*a*d*e+b*d^2)*a^3*b+(a*e^2+2*b*d*e)*a^4)*x^3+1/2*(4*a^4*d^
2*b+(2*a*d*e+b*d^2)*a^4)*x^2+a^5*d^2*x
```

maxima [B] time = 0.63, size = 197, normalized size = 3.03

$$\frac{1}{8}b^5e^2x^8 + a^5d^2x + \frac{1}{7}\left(2b^5de + 5ab^4e^2\right)x^7 + \frac{1}{6}\left(b^5d^2 + 10ab^4de + 10a^2b^3e^2\right)x^6 + \left(ab^4d^2 + 4a^2b^3de + 2a^3b^2e^2\right)x^5 + \frac{5}{4}\left(2a^2b^3d^2 + 4a^3b^2de + a^4be^2\right)x^4 + \frac{1}{3}\left(10a^3b^2d^2 + 10a^4bde + a^5e^2\right)x^3 + \frac{1}{2}\left(5a^4bd^2 + 2a^5de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/8*b^5*e^2*x^8 + a^5*d^2*x + 1/7*(2*b^5*d*e + 5*a*b^4*e^2)*x^7 + 1/6*(b^5*
d^2 + 10*a*b^4*d*e + 10*a^2*b^3*e^2)*x^6 + (a*b^4*d^2 + 4*a^2*b^3*d*e + 2*a
^3*b^2*e^2)*x^5 + 5/4*(2*a^2*b^3*d^2 + 4*a^3*b^2*d*e + a^4*b*e^2)*x^4 + 1/3
*(10*a^3*b^2*d^2 + 10*a^4*b*d*e + a^5*e^2)*x^3 + 1/2*(5*a^4*b*d^2 + 2*a^5*d
*e)*x^2
```

mupad [B] time = 0.08, size = 181, normalized size = 2.78

$$x^3\left(\frac{a^5e^2}{3}+\frac{10a^4bde}{3}+\frac{10a^3b^2d^2}{3}\right)+x^6\left(\frac{5a^2b^3e^2}{3}+\frac{5ab^4de}{3}+\frac{b^5d^2}{6}\right)+a^5d^2x+\frac{b^5e^2x^8}{8}+\frac{a^4dx^2(2ae+5bd)}{2}+\frac{b^4ex^7(5ae+2bd)}{7}+\frac{5a^2bx^4\left(a^2e^2+4abde+2b^2d^2\right)}{4}+ab^2x^5\left(2a^2e^2+4abde+b^2d^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((a^5*e^2)/3 + (10*a^3*b^2*d^2)/3 + (10*a^4*b*d*e)/3) + x^6*((b^5*d^2)/
6 + (5*a^2*b^3*e^2)/3 + (5*a*b^4*d*e)/3) + a^5*d^2*x + (b^5*e^2*x^8)/8 + (a
^4*d*x^2*(2*a*e + 5*b*d))/2 + (b^4*e*x^7*(5*a*e + 2*b*d))/7 + (5*a^2*b*x^4*
(a^2*e^2 + 2*b^2*d^2 + 4*a*b*d*e))/4 + a*b^2*x^5*(2*a^2*e^2 + b^2*d^2 + 4*a
*b*d*e)
```

sympy [B] time = 0.11, size = 218, normalized size = 3.35

$$a^5d^2x+\frac{b^5e^2x^8}{8}+x^7\left(\frac{5ab^4e^2}{7}+\frac{2b^5de}{7}\right)+x^6\left(\frac{5a^2b^3e^2}{3}+\frac{5ab^4de}{3}+\frac{b^5d^2}{6}\right)+x^5\left(2a^3b^2e^2+4a^2b^3de+ab^4d^2\right)+x^4\left(\frac{5a^4be^2}{4}+5a^3b^2de+\frac{5a^2b^3d^2}{2}\right)+x^3\left(\frac{a^5e^2}{3}+\frac{10a^4bde}{3}+\frac{10a^3b^2d^2}{3}\right)+x^2\left(a^5de+\frac{5a^4bd^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**2*x + b**5*e**2*x**8/8 + x**7*(5*a*b**4*e**2/7 + 2*b**5*d*e/7) + x*
*6*(5*a**2*b**3*e**2/3 + 5*a*b**4*d*e/3 + b**5*d**2/6) + x**5*(2*a**3*b**2*
e**2 + 4*a**2*b**3*d*e + a*b**4*d**2) + x**4*(5*a**4*b*e**2/4 + 5*a**3*b**2
*d*e + 5*a**2*b**3*d**2/2) + x**3*(a**5*e**2/3 + 10*a**4*b*d*e/3 + 10*a**3*
b**2*d**2/3) + x**2*(a**5*d*e + 5*a**4*b*d**2/2)
```

3.1685 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^6(bd-ae)}{6b^2}+\frac{e(a+bx)^7}{7b^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}=0.069$, Rules used = $\{27,43\}$

$$\frac{(a+bx)^6(bd-ae)}{6b^2}+\frac{e(a+bx)^7}{7b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^6)/(6*b^2) + (e*(a + b*x)^7)/(7*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx&=\int (a+bx)^5(d+ex)\,dx\\&=\int \left(\frac{(bd-ae)(a+bx)^5}{b}+\frac{e(a+bx)^6}{b}\right)dx\\&=\frac{(bd-ae)(a+bx)^6}{6b^2}+\frac{e(a+bx)^7}{7b^2}\end{aligned}$$

Mathematica [B] time = 0.02, size = 109, normalized size = 2.87

$$a^5dx+\frac{1}{2}a^4x^2(ae+5bd)+\frac{5}{3}a^3bx^3(ae+2bd)+\frac{5}{2}a^2b^2x^4(ae+bd)+\frac{1}{6}b^4x^6(5ae+bd)+ab^3x^5(2ae+bd)+\frac{1}{7}b^5ex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d*x + (a^4*(5*b*d + a*e)*x^2)/2 + (5*a^3*b*(2*b*d + a*e)*x^3)/3 + (5*a^
2*b^2*(b*d + a*e)*x^4)/2 + a*b^3*(b*d + 2*a*e)*x^5 + (b^4*(b*d + 5*a*e)*x^6
)/6 + (b^5*e*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.36, size = 121, normalized size = 3.18

$$\frac{1}{7}x^7eb^5 + \frac{1}{6}x^6db^5 + \frac{5}{6}x^6eb^4a + x^5db^4a + 2x^5eb^3a^2 + \frac{5}{2}x^4db^3a^2 + \frac{5}{2}x^4eb^2a^3 + \frac{10}{3}x^3db^2a^3 + \frac{5}{3}x^3eba^4 + \frac{5}{2}x^2dba^4 + \frac{1}{2}x^2ea^5 + xda^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*b^5 + 1/6*x^6*d*b^5 + 5/6*x^6*e*b^4*a + x^5*d*b^4*a + 2*x^5*e*b^3
*a^2 + 5/2*x^4*d*b^3*a^2 + 5/2*x^4*e*b^2*a^3 + 10/3*x^3*d*b^2*a^3 + 5/3*x^3
*e*b*a^4 + 5/2*x^2*d*b*a^4 + 1/2*x^2*e*a^5 + x*d*a^5
```

giac [B] time = 0.15, size = 127, normalized size = 3.34

$$\frac{1}{7}b^5x^7e + \frac{1}{6}b^5dx^6 + \frac{5}{6}ab^4x^6e + ab^4dx^5 + 2a^2b^3x^5e + \frac{5}{2}a^2b^3dx^4 + \frac{5}{2}a^3b^2x^4e + \frac{10}{3}a^3b^2dx^3 + \frac{5}{3}a^4bx^3e + \frac{5}{2}a^4bdx^2 + \frac{1}{2}a^5x^2e + a^5dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/7*b^5*x^7*e + 1/6*b^5*d*x^6 + 5/6*a*b^4*x^6*e + a*b^4*d*x^5 + 2*a^2*b^3*x
^5*e + 5/2*a^2*b^3*d*x^4 + 5/2*a^3*b^2*x^4*e + 10/3*a^3*b^2*d*x^3 + 5/3*a^4
*b*x^3*e + 5/2*a^4*b*d*x^2 + 1/2*a^5*x^2*e + a^5*d*x
```

maple [B] time = 0.04, size = 172, normalized size = 4.53

$$\frac{b^5ex^7}{7} + a^5dx + \frac{\left(4ab^4e + (ae+bd)b^4\right)x^6}{6} + \frac{\left(6a^2b^3e + ab^4d + 4(ae+bd)ab^3\right)x^5}{5} + \frac{\left(4a^3b^2e + 4a^2b^3d + 6(ae+bd)a^2b^2\right)x^4}{4} + \frac{\left(a^4be + 6a^3b^2d + 4(ae+bd)a^3b\right)x^3}{3} + \frac{\left(4a^4bd + (ae+bd)a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/7*b^5*e*x^7+1/6*((a*e+b*d)*b^4+4*b^4*e*a)*x^6+1/5*(a*d*b^4+4*(a*e+b*d)*a*
b^3+6*b^3*e*a^2)*x^5+1/4*(4*a^2*d*b^3+6*(a*e+b*d)*a^2*b^2+4*b^2*e*a^3)*x^4+
1/3*(6*a^3*d*b^2+4*(a*e+b*d)*a^3*b+b*e*a^4)*x^3+1/2*(4*a^4*d*b+(a*e+b*d)*a^
4)*x^2+a^5*d*x
```

maxima [B] time = 0.60, size = 115, normalized size = 3.03

$$\frac{1}{7}b^5ex^7 + a^5dx + \frac{1}{6}\left(b^5d + 5ab^4e\right)x^6 + \left(ab^4d + 2a^2b^3e\right)x^5 + \frac{5}{2}\left(a^2b^3d + a^3b^2e\right)x^4 + \frac{5}{3}\left(2a^3b^2d + a^4be\right)x^3 + \frac{1}{2}\left(5a^4bd + a^5e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/7*b^5*e*x^7 + a^5*d*x + 1/6*(b^5*d + 5*a*b^4*e)*x^6 + (a*b^4*d + 2*a^2*b^
3*e)*x^5 + 5/2*(a^2*b^3*d + a^3*b^2*e)*x^4 + 5/3*(2*a^3*b^2*d + a^4*b*e)*x^
3 + 1/2*(5*a^4*b*d + a^5*e)*x^2
```

mupad [B] time = 2.02, size = 103, normalized size = 2.71

$$x^2\left(\frac{e\,a^5}{2} + \frac{5\,b\,d\,a^4}{2}\right) + x^6\left(\frac{d\,b^5}{6} + \frac{5\,a\,e\,b^4}{6}\right) + \frac{b^5\,e\,x^7}{7} + a^5\,d\,x + \frac{5\,a^3\,b\,x^3\,\left(a\,e + 2\,b\,d\right)}{3} + a\,b^3\,x^5\,\left(2\,a\,e + b\,d\right) + \frac{5\,a^2\,b^2\,x^4\,\left(a\,e + b\,d\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*((a^5*e)/2 + (5*a^4*b*d)/2) + x^6*((b^5*d)/6 + (5*a*b^4*e)/6) + (b^5*e*
x^7)/7 + a^5*d*x + (5*a^3*b*x^3*(a*e + 2*b*d))/3 + a*b^3*x^5*(2*a*e + b*d)
+ (5*a^2*b^2*x^4*(a*e + b*d))/2
```

sympy [B] time = 0.10, size = 129, normalized size = 3.39

$$a^5dx + \frac{b^5ex^7}{7} + x^6\left(\frac{5ab^4e}{6} + \frac{b^5d}{6}\right) + x^5\left(2a^2b^3e + ab^4d\right) + x^4\left(\frac{5a^3b^2e}{2} + \frac{5a^2b^3d}{2}\right) + x^3\left(\frac{5a^4be}{3} + \frac{10a^3b^2d}{3}\right) + x^2\left(\frac{a^5e}{2} + \frac{5a^4bd}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d*x + b**5*e*x**7/7 + x**6*(5*a*b**4*e/6 + b**5*d/6) + x**5*(2*a**2*b*
*3*e + a*b**4*d) + x**4*(5*a**3*b**2*e/2 + 5*a**2*b**3*d/2) + x**3*(5*a**4*
b*e/3 + 10*a**3*b**2*d/3) + x**2*(a**5*e/2 + 5*a**4*b*d/2)
```

3.1686 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^6}{6b}$$

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 32\}$

$$\frac{(a+bx)^6}{6b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a + b*x)^6/(6*b)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5\,dx\\ &= \frac{(a+bx)^6}{6b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\frac{(a+bx)^6}{6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a + b*x)^6/(6*b)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.38, size = 53, normalized size = 3.79

$$\frac{1}{6}x^6b^5 + x^5b^4a + \frac{5}{2}x^4b^3a^2 + \frac{10}{3}x^3b^2a^3 + \frac{5}{2}x^2ba^4 + xa^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^5 + x^5*b^4*a + 5/2*x^4*b^3*a^2 + 10/3*x^3*b^2*a^3 + 5/2*x^2*b*a^
4 + x*a^5
```

giac [B] time = 0.15, size = 51, normalized size = 3.64

$$\frac{1}{2}\left(bx^2 + 2\,ax\right)a^4 + \frac{1}{2}\left(bx^2 + 2\,ax\right)^2a^2b + \frac{1}{6}\left(bx^2 + 2\,ax\right)^3b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*a^4 + 1/2*(b*x^2 + 2*a*x)^2*a^2*b + 1/6*(b*x^2 + 2*a*x)
^3*b^2
```

maple [B] time = 0.04, size = 54, normalized size = 3.86

$$\frac{1}{6}b^5x^6 + a\,b^4x^5 + \frac{5}{2}a^2b^3x^4 + \frac{10}{3}a^3b^2x^3 + \frac{5}{2}a^4b\,x^2 + a^5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/6*b^5*x^6+a*b^4*x^5+5/2*a^2*b^3*x^4+10/3*a^3*b^2*x^3+5/2*a^4*b*x^2+a^5*x
```

maxima [A] time = 0.48, size = 23, normalized size = 1.64

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^3}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^3/b
```

mupad [B] time = 0.03, size = 53, normalized size = 3.79

$$a^5\,x + \frac{5\,a^4\,b\,x^2}{2} + \frac{10\,a^3\,b^2\,x^3}{3} + \frac{5\,a^2\,b^3\,x^4}{2} + a\,b^4\,x^5 + \frac{b^5\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] a^5*x + (b^5*x^6)/6 + (5*a^4*b*x^2)/2 + a*b^4*x^5 + (10*a^3*b^2*x^3)/3 + (5
*a^2*b^3*x^4)/2
```

sympy [B] time = 0.08, size = 60, normalized size = 4.29

$$a^5x + \frac{5a^4bx^2}{2} + \frac{10a^3b^2x^3}{3} + \frac{5a^2b^3x^4}{2} + ab^4x^5 + \frac{b^5x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*x**3/3 + 5*a**2*b**3*x**4/2 + a*b**
4*x**5 + b**5*x**6/6
```

3.1687 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=122

$$-\frac{(bd-ae)^5\log(d+ex)}{e^6}+\frac{bx(bd-ae)^4}{e^5}-\frac{(a+bx)^2(bd-ae)^3}{2e^4}+\frac{(a+bx)^3(bd-ae)^2}{3e^3}-\frac{(a+bx)^4(bd-ae)}{4e^2}+\frac{(a+bx)^5}{5e}$$

Rubi [A] time = 0.06, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{bx(bd-ae)^4}{e^5}-\frac{(a+bx)^2(bd-ae)^3}{2e^4}+\frac{(a+bx)^3(bd-ae)^2}{3e^3}-\frac{(a+bx)^4(bd-ae)}{4e^2}-\frac{(bd-ae)^5\log(d+ex)}{e^6}+\frac{(a+bx)^5}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^4*x)/e^5 - ((b*d - a*e)^3*(a + b*x)^2)/(2*e^4) + ((b*d - a*e
)^2*(a + b*x)^3)/(3*e^3) - ((b*d - a*e)*(a + b*x)^4)/(4*e^2) + (a + b*x)^5/
(5*e) - ((b*d - a*e)^5*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx &= \int \frac{(a+bx)^5}{d+ex}\,dx\\ &= \int \left(\frac{b(bd-ae)^4}{e^5}-\frac{b(bd-ae)^3(a+bx)}{e^4}+\frac{b(bd-ae)^2(a+bx)^2}{e^3}-\frac{b(bd-ae)(\ldots}{e^2}\right.\\ &= \frac{b(bd-ae)^4x}{e^5}-\frac{(bd-ae)^3(a+bx)^2}{2e^4}+\frac{(bd-ae)^2(a+bx)^3}{3e^3}-\frac{(bd-ae)(a+b\ldots}{4e^2}\end{aligned}$$

Mathematica [A] time = 0.06, size = 167, normalized size = 1.37

$$\frac{bex\left(300a^4e^4+300a^3be^3(ex-2d)+100a^2b^2e^2\left(6d^2-3dex+2e^2x^2\right)+25ab^3e\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+b^4\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)-60(bd-ae)^5\log(d+ex)}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (b*e*x*(300*a^4*e^4 + 300*a^3*b*e^3*(-2*d + e*x) + 100*a^2*b^2*e^2*(6*d^2 -
 3*d*e*x + 2*e^2*x^2) + 25*a*b^3*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e
^3*x^3) + b^4*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4
*x^4)) - 60*(b*d - a*e)^5*Log[d + e*x])/(60*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x), x]
```

fricas [B] time = 0.39, size = 259, normalized size = 2.12

$$\frac{12\,b^5e^5x^5-15\left(b^5de^4-5\,ab^4e^5\right)x^4+20\left(b^5d^2e^3-5\,ab^4de^4+10\,a^2b^3e^5\right)x^3-30\left(b^5d^3e^2-5\,ab^4d^2e^3+10\,a^2b^3de^4-10\,a^3b^2e^5\right)x^2+60\left(b^5d^4e-5\,ab^4d^3e^2+10\,a^2b^3d^2e^3-10\,a^3b^2de^4+5\,a^4be^5\right)x-60\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)\log\left(ex+d\right)}{60\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*b^5*e^5*x^5 - 15*(b^5*d*e^4 - 5*a*b^4*e^5)*x^4 + 20*(b^5*d^2*e^3 -
 5*a*b^4*d*e^4 + 10*a^2*b^3*e^5)*x^3 - 30*(b^5*d^3*e^2 - 5*a*b^4*d^2*e^3 +
10*a^2*b^3*d*e^4 - 10*a^3*b^2*e^5)*x^2 + 60*(b^5*d^4*e - 5*a*b^4*d^3*e^2 +
10*a^2*b^3*d^2*e^3 - 10*a^3*b^2*d*e^4 + 5*a^4*b*e^5)*x - 60*(b^5*d^5 - 5*a*
b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e
^5)*log(e*x + d))/e^6
```

giac [B] time = 0.16, size = 259, normalized size = 2.12

$$-\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{60}\left(12\,b^5x^5e^4-15\,b^5dx^4e^3+20\,b^5d^2x^3e^2-30\,b^5d^3x^2e+60\,b^5d^4x+75\,ab^4x^4e^4-100\,ab^4dx^3e^3+150\,ab^4d^2x^2e^2-300\,ab^4d^3xe+200\,a^2b^3x^3e^4-300\,a^2b^3dx^2e^3+600\,a^2b^3d^2xe^2+300\,a^3b^2x^2e^4-600\,a^3b^2dxe^3+300\,a^4bxe^4\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4
*b*d*e^4 - a^5*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*b^5*x^5*e^4 - 15*b^
5*d*x^4*e^3 + 20*b^5*d^2*x^3*e^2 - 30*b^5*d^3*x^2*e + 60*b^5*d^4*x + 75*a*b
^4*x^4*e^4 - 100*a*b^4*d*x^3*e^3 + 150*a*b^4*d^2*x^2*e^2 - 300*a*b^4*d^3*x*
e + 200*a^2*b^3*x^3*e^4 - 300*a^2*b^3*d*x^2*e^3 + 600*a^2*b^3*d^2*x*e^2 + 3
00*a^3*b^2*x^2*e^4 - 600*a^3*b^2*d*x*e^3 + 300*a^4*b*x*e^4)*e^(-5)
```

maple [B] time = 0.05, size = 302, normalized size = 2.48

$$\frac{b^5x^5}{5e}+\frac{5a\,b^4x^4}{4e}-\frac{b^5d\,x^4}{4e^2}+\frac{10a^2b^3x^3}{3e}-\frac{5a\,b^4d\,x^3}{3e^2}+\frac{b^5d^2x^3}{3e^3}+\frac{5a^3b^2x^2}{e}-\frac{5a^2b^3d\,x^2}{e^2}+\frac{5a\,b^4d^2x^2}{2e^3}-\frac{b^5d^3x^2}{2e^4}+\frac{a^5\ln\left(ex+d\right)}{e}-\frac{5a^4bd\ln\left(ex+d\right)}{e^2}+\frac{5a^4bx}{e}+\frac{10a^3b^2d^2\ln\left(ex+d\right)}{e^3}-\frac{10a^3b^2dx}{e^2}-\frac{10a^2b^3d^3\ln\left(ex+d\right)}{e^4}+\frac{10a^2b^3d^2x}{e^3}+\frac{5a\,b^4d^4\ln\left(ex+d\right)}{e^5}-\frac{5a\,b^4d^3x}{e^4}-\frac{b^5d^5\ln\left(ex+d\right)}{e^6}+\frac{b^5d^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x)
```

```
[Out] 1/5*b^5/e*x^5+5/4*b^4/e*x^4*a-1/4*b^5/e^2*x^4*d+10/3*b^3/e*x^3*a^2-5/3*b^4/
e^2*x^3*a*d+1/3*b^5/e^3*x^3*d^2+5*b^2/e*x^2*a^3-5*b^3/e^2*x^2*a^2*d+5/2*b^4
/e^3*x^2*a*d^2-1/2*b^5/e^4*x^2*d^3+5*b/e*a^4*x-10*b^2/e^2*a^3*d*x+10*b^3/e^
3*a^2*d^2*x-5*b^4/e^4*a*d^3*x+b^5/e^5*d^4*x+1/e*ln(e*x+d)*a^5-5/e^2*ln(e*x+
d)*a^4*b*d+10/e^3*ln(e*x+d)*a^3*b^2*d^2-10/e^4*ln(e*x+d)*a^2*b^3*d^3+5/e^5*
ln(e*x+d)*a*b^4*d^4-1/e^6*ln(e*x+d)*b^5*d^5
```

maxima [B] time = 0.55, size = 258, normalized size = 2.11

$$\frac{12\,b^5e^4x^5-15\left(b^5de^3-5\,ab^4e^4\right)x^4+20\left(b^5d^2e^2-5\,ab^4de^3+10\,a^2b^3e^4\right)x^3-30\left(b^5d^3e-5\,ab^4d^2e^2+10\,a^2b^3de^3-10\,a^3b^2e^4\right)x^2+60\left(b^5d^4-5\,ab^4d^3e+10\,a^2b^3d^2e^2-10\,a^3b^2de^3+5\,a^4be^4\right)x}{60\,e^5}-\frac{\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)\log\left(ex+d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*b^5*e^4*x^5 - 15*(b^5*d*e^3 - 5*a*b^4*e^4)*x^4 + 20*(b^5*d^2*e^2 -
 5*a*b^4*d*e^3 + 10*a^2*b^3*e^4)*x^3 - 30*(b^5*d^3*e - 5*a*b^4*d^2*e^2 + 10
*a^2*b^3*d*e^3 - 10*a^3*b^2*e^4)*x^2 + 60*(b^5*d^4 - 5*a*b^4*d^3*e + 10*a^2
*b^3*d^2*e^2 - 10*a^3*b^2*d*e^3 + 5*a^4*b*e^4)*x)/e^5 - (b^5*d^5 - 5*a*b^4*
d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*
log(e*x + d)/e^6
```

mupad [B] time = 1.99, size = 280, normalized size = 2.30

$$x\left(\frac{5a^4b}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{5ab^4}{e}-\frac{b^5d}{e^2}\right)}{e}-\frac{10a^2b^3}{e}\right)}{e}+\frac{10a^3b^2}{e}\right)}{e}\right)+x^4\left(\frac{5ab^4}{4e}-\frac{b^5d}{4e^2}\right)+x^2\left(\frac{d\left(\frac{d\left(\frac{5ab^4}{e}-\frac{b^5d}{e^2}\right)}{e}-\frac{10a^2b^3}{e}\right)}{2e}+\frac{5a^3b^2}{e}\right)-x^3\left(\frac{d\left(\frac{5ab^4}{e}-\frac{b^5d}{e^2}\right)}{3e}-\frac{10a^2b^3}{3e}\right)+\frac{b^5x^5}{5e}+\frac{\ln(d+ex)\left(a^5e^5-5a^4bde^4+10a^3b^2d^2e^3-10a^2b^3d^3e^2+5ab^4d^4e-b^5d^5\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x),x)
```

```
[Out] x*((5*a^4*b)/e - (d*((d*((d*((5*a*b^4)/e - (b^5*d)/e^2))/e - (10*a^2*b^3)/e
))/e + (10*a^3*b^2)/e))/e) + x^4*((5*a*b^4)/(4*e) - (b^5*d)/(4*e^2)) + x^2*
((d*((d*((5*a*b^4)/e - (b^5*d)/e^2))/e - (10*a^2*b^3)/e))/(2*e) + (5*a^3*b^
2)/e) - x^3*((d*((5*a*b^4)/e - (b^5*d)/e^2))/(3*e) - (10*a^2*b^3)/(3*e)) +
(b^5*x^5)/(5*e) + (log(d + e*x)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 1
0*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/e^6
```

sympy [B] time = 0.51, size = 209, normalized size = 1.71

$$\frac{b^5x^5}{5e}+x^4\left(\frac{5ab^4}{4e}-\frac{b^5d}{4e^2}\right)+x^3\left(\frac{10a^2b^3}{3e}-\frac{5ab^4d}{3e^2}+\frac{b^5d^2}{3e^3}\right)+x^2\left(\frac{5a^3b^2}{e}-\frac{5a^2b^3d}{e^2}+\frac{5ab^4d^2}{2e^3}-\frac{b^5d^3}{2e^4}\right)+x\left(\frac{5a^4b}{e}-\frac{10a^3b^2d}{e^2}+\frac{10a^2b^3d^2}{e^3}-\frac{5ab^4d^3}{e^4}+\frac{b^5d^4}{e^5}\right)+\frac{(ae-bd)^5\log(d+ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d),x)
```

```
[Out] b**5*x**5/(5*e) + x**4*(5*a*b**4/(4*e) - b**5*d/(4*e**2)) + x**3*(10*a**2*b
**3/(3*e) - 5*a*b**4*d/(3*e**2) + b**5*d**2/(3*e**3)) + x**2*(5*a**3*b**2/e
 - 5*a**2*b**3*d/e**2 + 5*a*b**4*d**2/(2*e**3) - b**5*d**3/(2*e**4)) + x*(5
*a**4*b/e - 10*a**3*b**2*d/e**2 + 10*a**2*b**3*d**2/e**3 - 5*a*b**4*d**3/e*
*4 + b**5*d**4/e**5) + (a*e - b*d)**5*log(d + e*x)/e**6
```

3.1688 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=130

$$-\frac{5b^4(d+ex)^3(bd-ae)}{3e^6}+\frac{5b^3(d+ex)^2(bd-ae)^2}{e^6}-\frac{10b^2x(bd-ae)^3}{e^5}+\frac{(bd-ae)^5}{e^6(d+ex)}+\frac{5b(bd-ae)^4\log(d+ex)}{e^6}+\frac{b^5(d}{4}$$

Rubi [A] time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{5b^4(d+ex)^3(bd-ae)}{3e^6}+\frac{5b^3(d+ex)^2(bd-ae)^2}{e^6}-\frac{10b^2x(bd-ae)^3}{e^5}+\frac{(bd-ae)^5}{e^6(d+ex)}+\frac{5b(bd-ae)^4\log(d+ex)}{e^6}+\frac{b^5(d+ex)^4}{4e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (-10*b^2*(b*d - a*e)^3*x)/e^5 + (b*d - a*e)^5/(e^6*(d + e*x)) + (5*b^3*(b*d
 - a*e)^2*(d + e*x)^2)/e^6 - (5*b^4*(b*d - a*e)*(d + e*x)^3)/(3*e^6) + (b^5
*(d + e*x)^4)/(4*e^6) + (5*b*(b*d - a*e)^4*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^2}\,dx\\
&= \int \left(-\frac{10b^2(bd-ae)^3}{e^5}+\frac{(-bd+ae)^5}{e^5(d+ex)^2}+\frac{5b(bd-ae)^4}{e^5(d+ex)}+\frac{10b^3(bd-ae)^2(d+}{e^5}\right.\\
&= -\frac{10b^2(bd-ae)^3x}{e^5}+\frac{(bd-ae)^5}{e^6(d+ex)}+\frac{5b^3(bd-ae)^2(d+ex)^2}{e^6}-\frac{5b^4(bd-ae)(}{3e^6}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 228, normalized size = 1.75

$$\frac{-12a^5e^5+60a^4bde^4+120a^3b^2e^3\left(-d^2+dex+e^2x^2\right)+60a^2b^3e^2\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+20ab^4e\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+60b(d+ex)(bd-ae)^4\log(d+ex)+b^5\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)}{12e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (60*a^4*b*d*e^4 - 12*a^5*e^5 + 120*a^3*b^2*e^3*(-d^2 + d*e*x + e^2*x^2) + 6
0*a^2*b^3*e^2*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 20*a*b^4*e*(-3*
d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + b^5*(12*d^5 - 48
```

```
*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5) + 60*
b*(b*d - a*e)^4*(d + e*x)*Log[d + e*x])/(12*e^6*(d + e*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2, x]
```

fricas [B] time = 0.40, size = 373, normalized size = 2.87

$$\frac{3 b^5 e^5 x^5 + 12 b^5 d^5 - 60 ab^4 d^4 e + 120 a^2 b^3 d^3 e^2 - 120 a^3 b^2 d^2 e^3 + 60 a^4 bde^4 - 12 a^5 e^5 - 5 \left(b^5 de^4 - 4 ab^4 e^5\right) x^4 + 10 \left(b^5 d^2 e^3 - 4 ab^4 de^4 + 6 a^2 b^3 e^5\right) x^3 - 30 \left(b^5 d^3 e^2 - 4 ab^4 d^2 e^3 + 6 a^2 b^3 de^4 - 4 a^3 b^2 e^5\right) x^2 - 12 \left(4 b^5 d^4 e - 15 ab^4 d^3 e^2 + 20 a^2 b^3 d^2 e^3 - 10 a^3 b^2 de^4\right) x + 60 \left(b^5 d^5 - 4 ab^4 d^4 e + 6 a^2 b^3 d^3 e^2 - 4 a^3 b^2 d^2 e^3 + a^4 bde^4 + \left(b^5 d^4 e - 4 ab^4 d^3 e^2 + 6 a^2 b^3 d^2 e^3 - 4 a^3 b^2 de^4 + a^4 be^5\right) x\right) \log\left(ex + d\right)}{12 \left(e^7 x + de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^5*e^5*x^5 + 12*b^5*d^5 - 60*a*b^4*d^4*e + 120*a^2*b^3*d^3*e^2 - 1
20*a^3*b^2*d^2*e^3 + 60*a^4*b*d*e^4 - 12*a^5*e^5 - 5*(b^5*d*e^4 - 4*a*b^4*e
^5)*x^4 + 10*(b^5*d^2*e^3 - 4*a*b^4*d*e^4 + 6*a^2*b^3*e^5)*x^3 - 30*(b^5*d^
3*e^2 - 4*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 - 4*a^3*b^2*e^5)*x^2 - 12*(4*b^5*
d^4*e - 15*a*b^4*d^3*e^2 + 20*a^2*b^3*d^2*e^3 - 10*a^3*b^2*d*e^4)*x + 60*(b
^5*d^5 - 4*a*b^4*d^4*e + 6*a^2*b^3*d^3*e^2 - 4*a^3*b^2*d^2*e^3 + a^4*b*d*e^
4 + (b^5*d^4*e - 4*a*b^4*d^3*e^2 + 6*a^2*b^3*d^2*e^3 - 4*a^3*b^2*d*e^4 + a^
4*b*e^5)*x)*log(e*x + d))/(e^7*x + d*e^6)
```

giac [B] time = 0.19, size = 328, normalized size = 2.52

$$\frac{1}{12} \left(3 b^5 - \frac{20 \left(b^5 de - ab^4 e^2\right) e^{(-1)}}{xe + d} + \frac{60 \left(b^5 d^2 e^2 - 2 ab^4 de^3 + a^2 b^3 e^4\right) e^{(-2)}}{(xe + d)^2} - \frac{120 \left(b^5 d^3 e^3 - 3 ab^4 d^2 e^4 + 3 a^2 b^3 de^5 - a^3 b^2 e^6\right) e^{(-3)}}{(xe + d)^3}\right) (xe + d)^4 e^{(-6)} - 5 \left(b^5 d^4 - 4 ab^4 d^3 e + 6 a^2 b^3 d^2 e^2 - 4 a^3 b^2 de^3 + a^4 be^4\right) e^{(-6)} \log\left(\frac{|xe + d| e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{b^5 d^5 e^4}{xe + d} - \frac{5 ab^4 d^4 e^5}{xe + d} + \frac{10 a^2 b^3 d^3 e^6}{xe + d} - \frac{10 a^3 b^2 d^2 e^7}{xe + d} + \frac{5 a^4 bde^8}{xe + d} - \frac{a^5 e^9}{xe + d}\right) e^{(-10)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*b^5 - 20*(b^5*d*e - a*b^4*e^2)*e^(-1)/(x*e + d) + 60*(b^5*d^2*e^2 -
 2*a*b^4*d*e^3 + a^2*b^3*e^4)*e^(-2)/(x*e + d)^2 - 120*(b^5*d^3*e^3 - 3*a*b
^4*d^2*e^4 + 3*a^2*b^3*d*e^5 - a^3*b^2*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4
*e^(-6) - 5*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
+ a^4*b*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (b^5*d^5*e^4/(x*
e + d) - 5*a*b^4*d^4*e^5/(x*e + d) + 10*a^2*b^3*d^3*e^6/(x*e + d) - 10*a^3*
b^2*d^2*e^7/(x*e + d) + 5*a^4*b*d*e^8/(x*e + d) - a^5*e^9/(x*e + d))*e^(-10
)
```

maple [B] time = 0.05, size = 326, normalized size = 2.51

$$\frac{b^5 x^4}{4e^2} + \frac{5a\,b^4 x^3}{3e^2} - \frac{2b^5 d\,x^3}{3e^3} + \frac{5a^2 b^3 x^2}{e^2} - \frac{5a\,b^4 d\,x^2}{e^3} + \frac{3b^5 d^2 x^2}{2e^4} - \frac{a^5}{(ex + d)\,e} + \frac{5a^4 bd}{(ex + d)\,e^2} + \frac{5a^4 b \ln(ex + d)}{e^2} - \frac{10a^3 b^2 d^2}{(ex + d)\,e^3} - \frac{20a^3 b^2 d \ln(ex + d)}{e^3} + \frac{10a^3 b^2 x}{e^2} + \frac{10a^2 b^3 d^3}{(ex + d)\,e^4} + \frac{30a^2 b^3 d^2 \ln(ex + d)}{e^4} - \frac{20a^2 b^3 dx}{e^3} - \frac{5a\,b^4 d^4}{(ex + d)\,e^5} - \frac{20a\,b^4 d^3 \ln(ex + d)}{e^5} + \frac{15a\,b^4 d^2 x}{e^4} + \frac{b^5 d^5}{(ex + d)\,e^6} + \frac{5b^5 d^4 \ln(ex + d)}{e^6} - \frac{4b^5 d^3 x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x)
```

```
[Out] 1/4*b^5/e^2*x^4+5/3*b^4/e^2*x^3*a-2/3*b^5/e^3*x^3*d+5*b^3/e^2*x^2*a^2-5*b^4
/e^3*x^2*a*d+3/2*b^5/e^4*x^2*d^2+10*b^2/e^2*a^3*x-20*b^3/e^3*a^2*d*x+15*b^4
/e^4*a*d^2*x-4*b^5/e^5*d^3*x-1/e/(e*x+d)*a^5+5/e^2/(e*x+d)*a^4*b*d-10/e^3/(
e*x+d)*a^3*b^2*d^2+10/e^4/(e*x+d)*a^2*b^3*d^3-5/e^5/(e*x+d)*a*b^4*d^4+1/e^6
/(e*x+d)*b^5*d^5+5*b/e^2*ln(e*x+d)*a^4-20*b^2/e^3*ln(e*x+d)*a^3*d+30*b^3/e^
4*ln(e*x+d)*a^2*d^2-20*b^4/e^5*ln(e*x+d)*a*d^3+5*b^5/e^6*ln(e*x+d)*d^4
```

maxima [B] time = 0.51, size = 264, normalized size = 2.03

$$\frac{b^5d^5 - 5ab^4d^4e + 10a^2b^3d^3e^2 - 10a^3b^2d^2e^3 + 5a^4bde^4 - a^5e^5}{e^7x + de^6} + \frac{3b^5e^3x^4 - 4\left(2b^5de^2 - 5ab^4e^3\right)x^3 + 6\left(3b^5d^2e - 10ab^4de^2 + 10a^2b^3e^3\right)x^2 - 12\left(4b^5d^3 - 15ab^4d^2e + 20a^2b^3de^2 - 10a^3b^2e^3\right)x}{12e^5} + \frac{5\left(b^5d^4 - 4ab^4d^3e + 6a^2b^3d^2e^2 - 4a^3b^2de^3 + a^4be^4\right)\log(ex+d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*
b*d*e^4 - a^5*e^5)/(e^7*x + d*e^6) + 1/12*(3*b^5*e^3*x^4 - 4*(2*b^5*d*e^2 -
 5*a*b^4*e^3)*x^3 + 6*(3*b^5*d^2*e - 10*a*b^4*d*e^2 + 10*a^2*b^3*e^3)*x^2 -
 12*(4*b^5*d^3 - 15*a*b^4*d^2*e + 20*a^2*b^3*d*e^2 - 10*a^3*b^2*e^3)*x)/e^5
 + 5*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b
*e^4)*log(e*x + d)/e^6
```

mupad [B] time = 2.02, size = 327, normalized size = 2.52

$$x^3\left(\frac{5ab^4}{3e^2}-\frac{2b^5d}{3e^3}\right)-x^2\left(\frac{d\left(\frac{5ab^4}{e^2}-\frac{2b^5d}{e^3}\right)}{e}-\frac{5a^2b^3}{e^2}+\frac{b^5d^2}{2e^4}\right)+x\left(\frac{10a^3b^2}{e^2}+\frac{2d\left(\frac{2d\left(\frac{5ab^4}{e^2}-\frac{2b^5d}{e^3}\right)}{e}-\frac{10a^2b^3}{e^2}+\frac{b^5d^2}{e^4}\right)}{e}-\frac{d^2\left(\frac{5ab^4}{e^2}-\frac{2b^5d}{e^3}\right)}{e^2}\right)+\frac{\ln(d+ex)\left(5a^4be^4-20a^3b^2de^3+30a^2b^3d^2e^2-20ab^4d^3e+5b^5d^4\right)}{e^6}-\frac{a^5e^5-5a^4bde^4+10a^3b^2d^2e^3-10a^2b^3d^3e^2+5ab^4d^4e-b^5d^5}{e\left(xe^6+de^5\right)}+\frac{b^5x^4}{4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^2,x)
```

```
[Out] x^3*((5*a*b^4)/(3*e^2) - (2*b^5*d)/(3*e^3)) - x^2*((d*((5*a*b^4)/e^2 - (2*b
^5*d)/e^3))/e - (5*a^2*b^3)/e^2 + (b^5*d^2)/(2*e^4)) + x*((10*a^3*b^2)/e^2
+ (2*d*((2*d*((5*a*b^4)/e^2 - (2*b^5*d)/e^3))/e - (10*a^2*b^3)/e^2 + (b^5*d
^2)/e^4))/e - (d^2*((5*a*b^4)/e^2 - (2*b^5*d)/e^3))/e^2) + (log(d + e*x)*(5
*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d
^3*e))/e^6 - (a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 +
 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)/(e*(d*e^5 + e^6*x)) + (b^5*x^4)/(4*e^2)
```

sympy [A] time = 0.90, size = 231, normalized size = 1.78

$$\frac{b^5x^4}{4e^2}+\frac{5b(ae-bd)^4\log(d+ex)}{e^6}+x^3\left(\frac{5ab^4}{3e^2}-\frac{2b^5d}{3e^3}\right)+x^2\left(\frac{5a^2b^3}{e^2}-\frac{5ab^4d}{e^3}+\frac{3b^5d^2}{2e^4}\right)+x\left(\frac{10a^3b^2}{e^2}-\frac{20a^2b^3d}{e^3}+\frac{15ab^4d^2}{e^4}-\frac{4b^5d^3}{e^5}\right)+\frac{-a^5e^5+5a^4bde^4-10a^3b^2d^2e^3+10a^2b^3d^3e^2-5ab^4d^4e+b^5d^5}{de^6+e^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**2,x)
```

```
[Out] b**5*x**4/(4*e**2) + 5*b*(a*e - b*d)**4*log(d + e*x)/e**6 + x**3*(5*a*b**4/
(3*e**2) - 2*b**5*d/(3*e**3)) + x**2*(5*a**2*b**3/e**2 - 5*a*b**4*d/e**3 +
3*b**5*d**2/(2*e**4)) + x*(10*a**3*b**2/e**2 - 20*a**2*b**3*d/e**3 + 15*a*b
**4*d**2/e**4 - 4*b**5*d**3/e**5) + (-a**5*e**5 + 5*a**4*b*d*e**4 - 10*a**3
*b**2*d**2*e**3 + 10*a**2*b**3*d**3*e**2 - 5*a*b**4*d**4*e + b**5*d**5)/(d*
e**6 + e**7*x)
```

3.1689 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3} \, dx$

Optimal. Leaf size=133

$$-\frac{5b^4(d+ex)^2(bd-ae)}{2e^6}+\frac{10b^3x(bd-ae)^2}{e^5}-\frac{10b^2(bd-ae)^3\log(d+ex)}{e^6}-\frac{5b(bd-ae)^4}{e^6(d+ex)}+\frac{(bd-ae)^5}{2e^6(d+ex)^2}+\frac{b^5(d+ex)^3}{3e^6}$$

Rubi [A] time = 0.13, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{5b^4(d+ex)^2(bd-ae)}{2e^6}+\frac{10b^3x(bd-ae)^2}{e^5}-\frac{10b^2(bd-ae)^3\log(d+ex)}{e^6}-\frac{5b(bd-ae)^4}{e^6(d+ex)}+\frac{(bd-ae)^5}{2e^6(d+ex)^2}+\frac{b^5(d+ex)^3}{3e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (10*b^3*(b*d - a*e)^2*x)/e^5 + (b*d - a*e)^5/(2*e^6*(d + e*x)^2) - (5*b*(b*
d - a*e)^4)/(e^6*(d + e*x)) - (5*b^4*(b*d - a*e)*(d + e*x)^2)/(2*e^6) + (b^
5*(d + e*x)^3)/(3*e^6) - (10*b^2*(b*d - a*e)^3*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3} \, dx &= \int \frac{(a+bx)^5}{(d+ex)^3} \, dx \\
&= \int \left(\frac{10b^3(bd-ae)^2}{e^5}+\frac{(-bd+ae)^5}{e^5(d+ex)^3}+\frac{5b(bd-ae)^4}{e^5(d+ex)^2}-\frac{10b^2(bd-ae)^3}{e^5(d+ex)}-\frac{5b^4(b
\end{aligned}$$

$$= \frac{10b^3(bd-ae)^2x}{e^5}+\frac{(bd-ae)^5}{2e^6(d+ex)^2}-\frac{5b(bd-ae)^4}{e^6(d+ex)}-\frac{5b^4(bd-ae)(d+ex)^2}{2e^6}+\frac{b}{}$$

Mathematica [A] time = 0.07, size = 230, normalized size = 1.73

$$\frac{-3a^5e^5-15a^4be^4(d+2ex)+30a^3b^2de^3(3d+4ex)+30a^2b^3e^2\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+15ab^4e\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)-60b^2(d+ex)^2(bd-ae)^3\log(d+ex)+b^5\left(-27d^5+6d^4ex+63d^3e^2x^2+20d^2e^3x^3-5de^4x^4+2e^5x^5\right)}{6e^6(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (-3*a^5*e^5 - 15*a^4*b*e^4*(d + 2*e*x) + 30*a^3*b^2*d*e^3*(3*d + 4*e*x) + 3
0*a^2*b^3*e^2*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) + 15*a*b^4*e*(
7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + b^5*(-27*d^5
```

```
+ 6*d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) -
60*b^2*(b*d - a*e)^3*(d + e*x)^2*Log[d + e*x])/(6*e^6*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3, x]
```

fricas [B] time = 0.42, size = 416, normalized size = 3.13

$$\frac{2\,b^5e^5x^5-27\,b^5d^5+105\,ab^4d^4e-150\,a^2b^3d^3e^2+90\,a^3b^2d^2e^3-15\,a^4bde^4-3\,a^5e^5-5\,\left(b^5de^4-3\,ab^4e^5\right)x^4+20\,\left(b^5d^2e^3-3\,ab^4de^4+3\,a^2b^3e^5\right)x^3+3\,\left(21\,b^5d^3e^2-55\,ab^4d^2e^3+40\,a^2b^3de^4\right)x^2+6\,\left(b^5d^4e+5\,ab^4d^3e^2-20\,a^2b^3d^2e^3+20\,a^3b^2de^4-5\,a^4be^5\right)x-60\,\left(b^5d^5-3\,ab^4d^4e+3\,a^2b^3d^3e^2-a^3b^2d^2e^3+\left(b^5d^3e^2-3\,ab^4d^2e^3+3\,a^2b^3de^4-a^3b^2e^5\right)x^2+2\,\left(b^5d^4e-3\,ab^4d^3e^2+3\,a^2b^3d^2e^3-a^3b^2de^4\right)x\right)\log\left(ex+d\right)}{6\,\left(e^8x^2+2\,de^7x+d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^5*e^5*x^5 - 27*b^5*d^5 + 105*a*b^4*d^4*e - 150*a^2*b^3*d^3*e^2 + 9
0*a^3*b^2*d^2*e^3 - 15*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(b^5*d*e^4 - 3*a*b^4*e^5
)*x^4 + 20*(b^5*d^2*e^3 - 3*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + 3*(21*b^5*d^
3*e^2 - 55*a*b^4*d^2*e^3 + 40*a^2*b^3*d*e^4)*x^2 + 6*(b^5*d^4*e + 5*a*b^4*d
^3*e^2 - 20*a^2*b^3*d^2*e^3 + 20*a^3*b^2*d*e^4 - 5*a^4*b*e^5)*x - 60*(b^5*d
^5 - 3*a*b^4*d^4*e + 3*a^2*b^3*d^3*e^2 - a^3*b^2*d^2*e^3 + (b^5*d^3*e^2 - 3
*a*b^4*d^2*e^3 + 3*a^2*b^3*d*e^4 - a^3*b^2*e^5)*x^2 + 2*(b^5*d^4*e - 3*a*b^
4*d^3*e^2 + 3*a^2*b^3*d^2*e^3 - a^3*b^2*d*e^4)*x)*log(e*x + d))/(e^8*x^2 +
2*d*e^7*x + d^2*e^6)
```

giac [A] time = 0.16, size = 250, normalized size = 1.88

$$-10\,\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{6}\,\left(2\,b^5x^3e^6-9\,b^5dx^2e^5+36\,b^5d^2xe^4+15\,ab^4x^2e^6-90\,ab^4dxe^5+60\,a^2b^3xe^6\right)e^{(-9)}-\frac{\left(9\,b^5d^5-35\,ab^4d^4e+50\,a^2b^3d^3e^2-30\,a^3b^2d^2e^3+5\,a^4bde^4+a^5e^5+10\,\left(b^5d^4e-4\,ab^4d^3e^2+6\,a^2b^3d^2e^3-4\,a^3b^2de^4+a^4be^5\right)x\right)e^{(-6)}}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -10*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*e^(-6)*log(ab
s(x*e + d)) + 1/6*(2*b^5*x^3*e^6 - 9*b^5*d*x^2*e^5 + 36*b^5*d^2*x*e^4 + 15*
a*b^4*x^2*e^6 - 90*a*b^4*d*x*e^5 + 60*a^2*b^3*x*e^6)*e^(-9) - 1/2*(9*b^5*d^
5 - 35*a*b^4*d^4*e + 50*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^
4 + a^5*e^5 + 10*(b^5*d^4*e - 4*a*b^4*d^3*e^2 + 6*a^2*b^3*d^2*e^3 - 4*a^3*b
^2*d*e^4 + a^4*b*e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [B] time = 0.06, size = 346, normalized size = 2.60

$$\frac{b^5x^3}{3e^3}-\frac{a^5}{2\,(ex+d)^2\,e}+\frac{5a^4bd}{2\,(ex+d)^2\,e^2}-\frac{5a^3b^2d^2}{(ex+d)^2\,e^3}+\frac{5a^2b^3d^3}{(ex+d)^2\,e^4}-\frac{5a\,b^4d^4}{2\,(ex+d)^2\,e^5}+\frac{5a\,b^4x^2}{2e^3}+\frac{b^5d^5}{2\,(ex+d)^2\,e^6}-\frac{3b^5d\,x^2}{2e^4}-\frac{5a^4b}{(ex+d)\,e^2}+\frac{20a^3b^2d}{(ex+d)\,e^3}+\frac{10a^3b^2\ln(ex+d)}{e^3}-\frac{30a^2b^3d^2}{(ex+d)\,e^4}-\frac{30a^2b^3d\ln(ex+d)}{e^4}+\frac{10a^2b^3x}{e^3}+\frac{20a\,b^4d^3}{(ex+d)\,e^5}+\frac{30a\,b^4d^2\ln(ex+d)}{e^5}-\frac{15a\,b^4dx}{e^4}-\frac{5b^5d^4}{(ex+d)\,e^6}-\frac{10b^5d^3\ln(ex+d)}{e^6}+\frac{6b^5d^2x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x)
```

```
[Out] 1/3*b^5/e^3*x^3+5/2*b^4/e^3*x^2*a-3/2*b^5/e^4*x^2*d+10*b^3/e^3*a^2*x-15*b^4
/e^4*a*d*x+6*b^5/e^5*d^2*x-5*b/e^2/(e*x+d)*a^4+20*b^2/e^3/(e*x+d)*a^3*d-30*
b^3/e^4/(e*x+d)*a^2*d^2+20*b^4/e^5/(e*x+d)*a*d^3-5*b^5/e^6/(e*x+d)*d^4-1/2/
e/(e*x+d)^2*a^5+5/2/e^2/(e*x+d)^2*a^4*b*d-5/e^3/(e*x+d)^2*a^3*b^2*d^2+5/e^4
/(e*x+d)^2*a^2*b^3*d^3-5/2/e^5/(e*x+d)^2*a*b^4*d^4+1/2/e^6/(e*x+d)^2*b^5*d^
5+10*b^2/e^3*ln(e*x+d)*a^3-30*b^3/e^4*ln(e*x+d)*a^2*d+30*b^4/e^5*ln(e*x+d)*
a*d^2-10*b^5/e^6*ln(e*x+d)*d^3
```

maxima [B] time = 0.72, size = 271, normalized size = 2.04

$$-\frac{9\,b^5d^5-35\,ab^4d^4e+50\,a^2b^3d^3e^2-30\,a^3b^2d^2e^3+5\,a^4bde^4+a^5e^5+10\,\left(b^5d^4e-4\,ab^4d^3e^2+6\,a^2b^3d^2e^3-4\,a^3b^2de^4+a^4be^5\right)x}{2\,\left(e^8x^2+2\,de^7x+d^2e^6\right)}+\frac{2\,b^5e^2x^3-3\,\left(3\,b^5de-5\,ab^4e^2\right)x^2+6\,\left(6\,b^5d^2-15\,ab^4de+10\,a^2b^3e^2\right)x}{6\,e^5}-\frac{10\,\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)\log\left(ex+d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*b^5*d^5 - 35*a*b^4*d^4*e + 50*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3
+ 5*a^4*b*d*e^4 + a^5*e^5 + 10*(b^5*d^4*e - 4*a*b^4*d^3*e^2 + 6*a^2*b^3*d^2
*e^3 - 4*a^3*b^2*d*e^4 + a^4*b*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/
6*(2*b^5*e^2*x^3 - 3*(3*b^5*d*e - 5*a*b^4*e^2)*x^2 + 6*(6*b^5*d^2 - 15*a*b^
4*d*e + 10*a^2*b^3*e^2)*x)/e^5 - 10*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*
e^2 - a^3*b^2*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 0.09, size = 291, normalized size = 2.19

$$x^2\,\left(\frac{5\,a\,b^4}{2\,e^3}-\frac{3\,b^5\,d}{2\,e^4}\right)-\frac{\frac{a^5\,e^5+5\,a^4\,b\,d\,e^4-30\,a^3\,b^2\,d^2\,e^3+50\,a^2\,b^3\,d^3\,e^2-35\,a\,b^4\,d^4\,e+9\,b^5\,d^5}{2\,e}+x\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)}{d^2\,e^5+2\,d\,e^6\,x+e^7\,x^2}-x\,\left(\frac{3\,d\,\left(\frac{5\,a\,b^4}{e^3}-\frac{3\,b^5\,d}{e^4}\right)}{e}-\frac{10\,a^2\,b^3}{e^3}+\frac{3\,b^5\,d^2}{e^5}\right)-\frac{\ln\left(d+e\,x\right)\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-30\,a\,b^4\,d^2\,e+10\,b^5\,d^3\right)}{e^6}+\frac{b^5\,x^3}{3\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((5*a*b^4)/(2*e^3) - (3*b^5*d)/(2*e^4)) - ((a^5*e^5 + 9*b^5*d^5 + 50*a^
2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 - 35*a*b^4*d^4*e + 5*a^4*b*d*e^4)/(2*e)
+ x*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a
*b^4*d^3*e))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3*d*((5*a*b^4)/e^3 - (3*
b^5*d)/e^4))/e - (10*a^2*b^3)/e^3 + (3*b^5*d^2)/e^5) - (log(d + e*x)*(10*b^
5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e))/e^6 + (b^5*x^3
)/(3*e^3)
```

sympy [B] time = 1.65, size = 258, normalized size = 1.94

$$\frac{b^5x^3}{3e^3}+\frac{10b^2\left(ae-bd\right)^3\log\left(d+ex\right)}{e^6}+x^2\left(\frac{5ab^4}{2e^3}-\frac{3b^5d}{2e^4}\right)+x\left(\frac{10a^2b^3}{e^3}-\frac{15ab^4d}{e^4}+\frac{6b^5d^2}{e^5}\right)+\frac{-a^5e^5-5a^4bde^4+30a^3b^2d^2e^3-50a^2b^3d^3e^2+35ab^4d^4e-9b^5d^5+x\left(-10a^4be^5+40a^3b^2de^4-60a^2b^3d^2e^3+40ab^4d^3e^2-10b^5d^4e\right)}{2d^2e^6+4de^7x+2e^8x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**3,x)
```

```
[Out] b**5*x**3/(3*e**3) + 10*b**2*(a*e - b*d)**3*log(d + e*x)/e**6 + x**2*(5*a*b
**4/(2*e**3) - 3*b**5*d/(2*e**4)) + x*(10*a**2*b**3/e**3 - 15*a*b**4*d/e**4
 + 6*b**5*d**2/e**5) + (-a**5*e**5 - 5*a**4*b*d*e**4 + 30*a**3*b**2*d**2*e*
*3 - 50*a**2*b**3*d**3*e**2 + 35*a*b**4*d**4*e - 9*b**5*d**5 + x*(-10*a**4*
b*e**5 + 40*a**3*b**2*d*e**4 - 60*a**2*b**3*d**2*e**3 + 40*a*b**4*d**3*e**2
 - 10*b**5*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**2)
```

3.1690 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4} \, dx$

Optimal. Leaf size=130

$$-\frac{b^4x(4bd-5ae)}{e^5}+\frac{10b^3(bd-ae)^2\log(d+ex)}{e^6}+\frac{10b^2(bd-ae)^3}{e^6(d+ex)}-\frac{5b(bd-ae)^4}{2e^6(d+ex)^2}+\frac{(bd-ae)^5}{3e^6(d+ex)^3}+\frac{b^5x^2}{2e^4}$$

Rubi [A] time = 0.12, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{b^4x(4bd-5ae)}{e^5}+\frac{10b^2(bd-ae)^3}{e^6(d+ex)}+\frac{10b^3(bd-ae)^2\log(d+ex)}{e^6}-\frac{5b(bd-ae)^4}{2e^6(d+ex)^2}+\frac{(bd-ae)^5}{3e^6(d+ex)^3}+\frac{b^5x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((b^4*(4*b*d - 5*a*e)*x)/e^5) + (b^5*x^2)/(2*e^4) + (b*d - a*e)^5/(3*e^6*(
d + e*x)^3) - (5*b*(b*d - a*e)^4)/(2*e^6*(d + e*x)^2) + (10*b^2*(b*d - a*e)
^3)/(e^6*(d + e*x)) + (10*b^3*(b*d - a*e)^2*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4} \, dx &= \int \frac{(a+bx)^5}{(d+ex)^4} \, dx \\
&= \int \left(-\frac{b^4(4bd-5ae)}{e^5}+\frac{b^5x}{e^4}+\frac{(-bd+ae)^5}{e^5(d+ex)^4}+\frac{5b(bd-ae)^4}{e^5(d+ex)^3}-\frac{10b^2(bd-ae}{e^5(d+ex)^2} \right. \\
&= -\frac{b^4(4bd-5ae)x}{e^5}+\frac{b^5x^2}{2e^4}+\frac{(bd-ae)^5}{3e^6(d+ex)^3}-\frac{5b(bd-ae)^4}{2e^6(d+ex)^2}+\frac{10b^2(bd-ae)^3}{e^6(d+ex)}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 229, normalized size = 1.76

$$\frac{-2a^5e^5-5a^4be^4(d+3ex)-20a^3b^2e^3\left(d^2+3dex+3e^2x^2\right)+10a^2b^3de^2\left(11d^2+27dex+18e^2x^2\right)+10ab^4e\left(-13d^4-27d^3ex-9d^2e^2x^2+9de^3x^3+3e^4x^4\right)+60b^3(d+ex)^3(bd-ae)^2\log(d+ex)+b^5\left(47d^5+81d^4ex-9d^3e^2x^2-63d^2e^3x^3-15de^4x^4+3e^5x^5\right)}{6e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (-2*a^5*e^5 - 5*a^4*b*e^4*(d + 3*e*x) - 20*a^3*b^2*e^3*(d^2 + 3*d*e*x + 3*e
^2*x^2) + 10*a^2*b^3*d*e^2*(11*d^2 + 27*d*e*x + 18*e^2*x^2) + 10*a*b^4*e*(-
13*d^4 - 27*d^3*e*x - 9*d^2*e^2*x^2 + 9*d*e^3*x^3 + 3*e^4*x^4) + b^5*(47*d^
```

```
5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 + 3*e^5*x^5)
 + 60*b^3*(b*d - a*e)^2*(d + e*x)^3*Log[d + e*x])/(6*e^6*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4, x]
```

fricas [B] time = 0.40, size = 425, normalized size = 3.27

$$\frac{3\,b^5e^5x^5+47\,b^5d^5-130\,ab^4d^4e+110\,a^2b^3d^3e^2-20\,a^3b^2d^2e^3-5\,a^4bde^4-2\,a^5e^5-15\left(b^5de^4-2\,ab^4e^5\right)x^4-9\left(7\,b^5d^2e^3-10\,ab^4de^4\right)x^3-3\left(3\,b^5d^3e^2+30\,ab^4d^2e^3-60\,a^2b^3de^4+20\,a^3b^2e^5\right)x^2+3\left(27\,b^5d^4e-90\,ab^4d^3e^2+90\,a^2b^3d^2e^3-20\,a^3b^2de^4-5\,a^4be^5\right)x+60\left(b^5d^5-2\,ab^4d^4e+a^2b^3d^3e^2+\left(b^5d^2e^3-2\,ab^4de^4+a^2b^3e^5\right)x^3+3\left(b^5d^3e^2-2\,ab^4d^2e^3+a^2b^3de^4\right)x^2+3\left(b^5d^4e-2\,ab^4d^3e^2+a^2b^3d^2e^3\right)x\right)\log\left(ex+d\right)}{6\left(e^9x^3+3\,de^8x^2+3\,d^2e^7x+d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*b^5*e^5*x^5 + 47*b^5*d^5 - 130*a*b^4*d^4*e + 110*a^2*b^3*d^3*e^2 - 2
0*a^3*b^2*d^2*e^3 - 5*a^4*b*d*e^4 - 2*a^5*e^5 - 15*(b^5*d*e^4 - 2*a*b^4*e^5
)*x^4 - 9*(7*b^5*d^2*e^3 - 10*a*b^4*d*e^4)*x^3 - 3*(3*b^5*d^3*e^2 + 30*a*b^
4*d^2*e^3 - 60*a^2*b^3*d*e^4 + 20*a^3*b^2*e^5)*x^2 + 3*(27*b^5*d^4*e - 90*a
*b^4*d^3*e^2 + 90*a^2*b^3*d^2*e^3 - 20*a^3*b^2*d*e^4 - 5*a^4*b*e^5)*x + 60*
(b^5*d^5 - 2*a*b^4*d^4*e + a^2*b^3*d^3*e^2 + (b^5*d^2*e^3 - 2*a*b^4*d*e^4 +
 a^2*b^3*e^5)*x^3 + 3*(b^5*d^3*e^2 - 2*a*b^4*d^2*e^3 + a^2*b^3*d*e^4)*x^2 +
 3*(b^5*d^4*e - 2*a*b^4*d^3*e^2 + a^2*b^3*d^2*e^3)*x)*log(e*x + d))/(e^9*x^
3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [B] time = 0.16, size = 249, normalized size = 1.92

$$10\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{2}\left(b^5x^2e^4-8\,b^5dxe^3+10\,ab^4xe^4\right)e^{(-8)}+\frac{\left(47\,b^5d^5-130\,ab^4d^4e+110\,a^2b^3d^3e^2-20\,a^3b^2d^2e^3-5\,a^4bde^4-2\,a^5e^5+60\left(b^5d^3e^2-3\,ab^4d^2e^3+3\,a^2b^3de^4-a^3b^2e^5\right)x^2+15\left(7\,b^5d^4e-20\,ab^4d^3e^2+18\,a^2b^3d^2e^3-4\,a^3b^2de^4-a^4be^5\right)x\right)e^{(-6)}}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 10*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(b^
5*x^2*e^4 - 8*b^5*d*x*e^3 + 10*a*b^4*x*e^4)*e^(-8) + 1/6*(47*b^5*d^5 - 130*
a*b^4*d^4*e + 110*a^2*b^3*d^3*e^2 - 20*a^3*b^2*d^2*e^3 - 5*a^4*b*d*e^4 - 2*
a^5*e^5 + 60*(b^5*d^3*e^2 - 3*a*b^4*d^2*e^3 + 3*a^2*b^3*d*e^4 - a^3*b^2*e^5
)*x^2 + 15*(7*b^5*d^4*e - 20*a*b^4*d^3*e^2 + 18*a^2*b^3*d^2*e^3 - 4*a^3*b^2
*d*e^4 - a^4*b*e^5)*x)*e^(-6)/(x*e + d)^3
```

maple [B] time = 0.06, size = 361, normalized size = 2.78

$$-\frac{a^5}{3\left(ex+d\right)^3e}+\frac{5a^4bd}{3\left(ex+d\right)^3e^2}-\frac{10a^3b^2d^2}{3\left(ex+d\right)^3e^3}+\frac{10a^2b^3d^3}{3\left(ex+d\right)^3e^4}-\frac{5a\,b^4d^4}{3\left(ex+d\right)^3e^5}+\frac{b^5d^5}{3\left(ex+d\right)^3e^6}-\frac{5a^4b}{2\left(ex+d\right)^2e^2}+\frac{10a^3b^2d}{\left(ex+d\right)^2e^3}-\frac{15a^2b^3d^2}{\left(ex+d\right)^2e^4}+\frac{10a\,b^4d^3}{\left(ex+d\right)^2e^5}-\frac{5b^5d^4}{2\left(ex+d\right)^2e^6}+\frac{b^5x^2}{2e^4}-\frac{10a^3b^2}{\left(ex+d\right)e^3}+\frac{30a^2b^3d}{\left(ex+d\right)e^4}+\frac{10a^2b^3\ln\left(ex+d\right)}{e^4}-\frac{30a\,b^4d^2}{\left(ex+d\right)e^5}-\frac{20a\,b^4d\ln\left(ex+d\right)}{e^5}+\frac{5a\,b^4x}{e^4}+\frac{10b^5d^3}{\left(ex+d\right)e^6}+\frac{10b^5d^2\ln\left(ex+d\right)}{e^6}-\frac{4b^5dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x)
```

```
[Out] 1/2*b^5*x^2/e^4+5*b^4/e^4*a*x-4*b^5/e^5*x*d-10*b^2/e^3/(e*x+d)*a^3+30*b^3/e
^4/(e*x+d)*a^2*d-30*b^4/e^5/(e*x+d)*a*d^2+10*b^5/e^6/(e*x+d)*d^3-5/2*b/e^2/
(e*x+d)^2*a^4+10*b^2/e^3/(e*x+d)^2*a^3*d-15*b^3/e^4/(e*x+d)^2*a^2*d^2+10*b^
4/e^5/(e*x+d)^2*a*d^3-5/2*b^5/e^6/(e*x+d)^2*d^4-1/3/e/(e*x+d)^3*a^5+5/3/e^2
/(e*x+d)^3*a^4*b*d-10/3/e^3/(e*x+d)^3*a^3*b^2*d^2+10/3/e^4/(e*x+d)^3*a^2*b^
3*d^3-5/3/e^5/(e*x+d)^3*a*b^4*d^4+1/3/e^6/(e*x+d)^3*b^5*d^5+10*b^3/e^4*ln(e
*x+d)*a^2-20*b^4/e^5*ln(e*x+d)*a*d+10*b^5/e^6*ln(e*x+d)*d^2
```

maxima [B] time = 0.76, size = 282, normalized size = 2.17

$$\frac{47\,b^5d^5-130\,ab^4d^4e+110\,a^2b^3d^3e^2-20\,a^3b^2d^2e^3-5\,a^4bde^4-2\,a^5e^5+60\left(b^5d^3e^2-3\,ab^4d^2e^3+3\,a^2b^3de^4-a^3b^2e^5\right)x^2+15\left(7\,b^5d^4e-20\,ab^4d^3e^2+18\,a^2b^3d^2e^3-4\,a^3b^2de^4-a^4be^5\right)x}{6\left(e^9x^3+3\,de^8x^2+3\,d^2e^7x+d^3e^6\right)}+\frac{b^5ex^2-2\left(4\,b^5d-5\,ab^4e\right)x}{2\,e^5}+\frac{10\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)\log\left(ex+d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*b^5*d^5 - 130*a*b^4*d^4*e + 110*a^2*b^3*d^3*e^2 - 20*a^3*b^2*d^2*e^
3 - 5*a^4*b*d*e^4 - 2*a^5*e^5 + 60*(b^5*d^3*e^2 - 3*a*b^4*d^2*e^3 + 3*a^2*b
^3*d*e^4 - a^3*b^2*e^5)*x^2 + 15*(7*b^5*d^4*e - 20*a*b^4*d^3*e^2 + 18*a^2*b
^3*d^2*e^3 - 4*a^3*b^2*d*e^4 - a^4*b*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2
*e^7*x + d^3*e^6) + 1/2*(b^5*e*x^2 - 2*(4*b^5*d - 5*a*b^4*e)*x)/e^5 + 10*(b
^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 0.12, size = 285, normalized size = 2.19

$$x\left(\frac{5\,a\,b^4}{e^4}-\frac{4\,b^5\,d}{e^5}\right)-\frac{\frac{2\,a^5\,e^5+5\,a^4\,b\,d\,e^4+20\,a^3\,b^2\,d^2\,e^3-110\,a^2\,b^3\,d^3\,e^2+130\,a\,b^4\,d^4\,e-47\,b^5\,d^5}{6\,e}+x\left(\frac{5\,a^4\,b\,e^4}{2}+10\,a^3\,b^2\,d\,e^3-45\,a^2\,b^3\,d^2\,e^2+50\,a\,b^4\,d^3\,e-\frac{35\,b^5\,d^4}{2}\right)-x^2\left(-10\,a^3\,b^2\,e^4+30\,a^2\,b^3\,d\,e^3-30\,a\,b^4\,d^2\,e^2+10\,b^5\,d^3\,e\right)}{d^3\,e^5+3\,d^2\,e^6\,x+3\,d\,e^7\,x^2+e^8\,x^3}+\frac{b^5\,x^2}{2\,e^4}+\frac{\ln\left(d+e\,x\right)\left(10\,a^2\,b^3\,e^2-20\,a\,b^4\,d\,e+10\,b^5\,d^2\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^4,x)
```

```
[Out] x*((5*a*b^4)/e^4 - (4*b^5*d)/e^5) - ((2*a^5*e^5 - 47*b^5*d^5 - 110*a^2*b^3*
d^3*e^2 + 20*a^3*b^2*d^2*e^3 + 130*a*b^4*d^4*e + 5*a^4*b*d*e^4)/(6*e) + x*(
(5*a^4*b*e^4)/2 - (35*b^5*d^4)/2 + 10*a^3*b^2*d*e^3 - 45*a^2*b^3*d^2*e^2 +
50*a*b^4*d^3*e) - x^2*(10*b^5*d^3*e - 10*a^3*b^2*e^4 - 30*a*b^4*d^2*e^2 + 3
0*a^2*b^3*d*e^3))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (b^5*x^
2)/(2*e^4) + (log(d + e*x)*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e))/e^
6
```

sympy [B] time = 3.06, size = 284, normalized size = 2.18

$$\frac{b^5x^2}{2e^4}+\frac{10b^3\left(ae-bd\right)^2\log\left(d+ex\right)}{e^6}+x\left(\frac{5ab^4}{e^4}-\frac{4b^5d}{e^5}\right)+\frac{-2a^5e^5-5a^4bde^4-20a^3b^2d^2e^3+110a^2b^3d^3e^2-130ab^4d^4e+47b^5d^5+x^2\left(-60a^3b^2e^5+180a^2b^3de^4-180ab^4d^2e^3+60b^5d^3e^2\right)+x\left(-15a^4be^5-60a^3b^2de^4+270a^2b^3d^2e^3-300ab^4d^3e^2+105b^5d^4e\right)}{6d^3e^6+18d^2e^7x+18de^8x^2+6e^9x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**4,x)
```

```
[Out] b**5*x**2/(2*e**4) + 10*b**3*(a*e - b*d)**2*log(d + e*x)/e**6 + x*(5*a*b**4
/e**4 - 4*b**5*d/e**5) + (-2*a**5*e**5 - 5*a**4*b*d*e**4 - 20*a**3*b**2*d**
2*e**3 + 110*a**2*b**3*d**3*e**2 - 130*a*b**4*d**4*e + 47*b**5*d**5 + x**2*
(-60*a**3*b**2*e**5 + 180*a**2*b**3*d*e**4 - 180*a*b**4*d**2*e**3 + 60*b**5
*d**3*e**2) + x*(-15*a**4*b*e**5 - 60*a**3*b**2*d*e**4 + 270*a**2*b**3*d**2
*e**3 - 300*a*b**4*d**3*e**2 + 105*b**5*d**4*e))/(6*d**3*e**6 + 18*d**2*e**
7*x + 18*d*e**8*x**2 + 6*e**9*x**3)
```

3.1691 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=173

$$\frac{6e^5(a+bx)^{13}(bd-ae)}{13b^7}+\frac{5e^4(a+bx)^{12}(bd-ae)^2}{4b^7}+\frac{20e^3(a+bx)^{11}(bd-ae)^3}{11b^7}+\frac{3e^2(a+bx)^{10}(bd-ae)^4}{2b^7}+\frac{2e(a+bx)^9(}{3b^7}$$

Rubi [A] time = 0.44, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 43}

$$\frac{6e^5(a+bx)^{13}(bd-ae)}{13b^7}+\frac{5e^4(a+bx)^{12}(bd-ae)^2}{4b^7}+\frac{20e^3(a+bx)^{11}(bd-ae)^3}{11b^7}+\frac{3e^2(a+bx)^{10}(bd-ae)^4}{2b^7}+\frac{2e(a+bx)^9(bd-ae)^5}{3b^7}+\frac{(a+bx)^8(bd-ae)^6}{8b^7}+\frac{e^6(a+bx)^{14}}{14b^7}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^6*(a + b*x)^8)/(8*b^7) + (2*e*(b*d - a*e)^5*(a + b*x)^9)/(3*b^
7) + (3*e^2*(b*d - a*e)^4*(a + b*x)^10)/(2*b^7) + (20*e^3*(b*d - a*e)^3*(a
+ b*x)^11)/(11*b^7) + (5*e^4*(b*d - a*e)^2*(a + b*x)^12)/(4*b^7) + (6*e^5*(
b*d - a*e)*(a + b*x)^13)/(13*b^7) + (e^6*(a + b*x)^14)/(14*b^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^3 dx &= \int (a+bx)^7(d+ex)^6 \, dx\\ &= \int \left(\frac{(bd-ae)^6(a+bx)^7}{b^6}+\frac{6e(bd-ae)^5(a+bx)^8}{b^6}+\frac{15e^2(bd-ae)^4(a}{b^6}\right.\\ &= \frac{(bd-ae)^6(a+bx)^8}{8b^7}+\frac{2e(bd-ae)^5(a+bx)^9}{3b^7}+\frac{3e^2(bd-ae)^4(a+bx}{2b^7}\end{aligned}$$

Mathematica [B] time = 0.17, size = 581, normalized size = 3.36

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(3432*a^7*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 21*d^2
*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + 3003*a^6*b*x*(28*d^6 + 112*d^5*e*x + 21
0*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^5*x^5 + 7*e^6*x^
6) + 2002*a^5*b^2*x^2*(84*d^6 + 378*d^5*e*x + 756*d^4*e^2*x^2 + 840*d^3*e^3
*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 28*e^6*x^6) + 1001*a^4*b^3*x^3*(21
```

```
0*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3 + 1575*d^2*e^4*x
^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + 364*a^3*b^4*x^4*(462*d^6 + 2310*d^5*e*x
+ 4950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5 +
 210*e^6*x^6) + 91*a^2*b^5*x^5*(924*d^6 + 4752*d^5*e*x + 10395*d^4*e^2*x^2
+ 12320*d^3*e^3*x^3 + 8316*d^2*e^4*x^4 + 3024*d*e^5*x^5 + 462*e^6*x^6) + 14
*a*b^6*x^6*(1716*d^6 + 9009*d^5*e*x + 20020*d^4*e^2*x^2 + 24024*d^3*e^3*x^3
 + 16380*d^2*e^4*x^4 + 6006*d*e^5*x^5 + 924*e^6*x^6) + b^7*x^7*(3003*d^6 +
16016*d^5*e*x + 36036*d^4*e^2*x^2 + 43680*d^3*e^3*x^3 + 30030*d^2*e^4*x^4 +
 11088*d*e^5*x^5 + 1716*e^6*x^6)))/24024
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.37, size = 798, normalized size = 4.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*e^6*b^7 + 6/13*x^13*e^5*d*b^7 + 7/13*x^13*e^6*b^6*a + 5/4*x^12*e^
4*d^2*b^7 + 7/2*x^12*e^5*d*b^6*a + 7/4*x^12*e^6*b^5*a^2 + 20/11*x^11*e^3*d^
3*b^7 + 105/11*x^11*e^4*d^2*b^6*a + 126/11*x^11*e^5*d*b^5*a^2 + 35/11*x^11*
e^6*b^4*a^3 + 3/2*x^10*e^2*d^4*b^7 + 14*x^10*e^3*d^3*b^6*a + 63/2*x^10*e^4*
d^2*b^5*a^2 + 21*x^10*e^5*d*b^4*a^3 + 7/2*x^10*e^6*b^3*a^4 + 2/3*x^9*e*d^5*
b^7 + 35/3*x^9*e^2*d^4*b^6*a + 140/3*x^9*e^3*d^3*b^5*a^2 + 175/3*x^9*e^4*d^
2*b^4*a^3 + 70/3*x^9*e^5*d*b^3*a^4 + 7/3*x^9*e^6*b^2*a^5 + 1/8*x^8*d^6*b^7
+ 21/4*x^8*e*d^5*b^6*a + 315/8*x^8*e^2*d^4*b^5*a^2 + 175/2*x^8*e^3*d^3*b^4*
a^3 + 525/8*x^8*e^4*d^2*b^3*a^4 + 63/4*x^8*e^5*d*b^2*a^5 + 7/8*x^8*e^6*b*a^
6 + x^7*d^6*b^6*a + 18*x^7*e*d^5*b^5*a^2 + 75*x^7*e^2*d^4*b^4*a^3 + 100*x^7
*e^3*d^3*b^3*a^4 + 45*x^7*e^4*d^2*b^2*a^5 + 6*x^7*e^5*d*b*a^6 + 1/7*x^7*e^6
*a^7 + 7/2*x^6*d^6*b^5*a^2 + 35*x^6*e*d^5*b^4*a^3 + 175/2*x^6*e^2*d^4*b^3*a
^4 + 70*x^6*e^3*d^3*b^2*a^5 + 35/2*x^6*e^4*d^2*b*a^6 + x^6*e^5*d*a^7 + 7*x^
5*d^6*b^4*a^3 + 42*x^5*e*d^5*b^3*a^4 + 63*x^5*e^2*d^4*b^2*a^5 + 28*x^5*e^3*
d^3*b*a^6 + 3*x^5*e^4*d^2*a^7 + 35/4*x^4*d^6*b^3*a^4 + 63/2*x^4*e*d^5*b^2*a
^5 + 105/4*x^4*e^2*d^4*b*a^6 + 5*x^4*e^3*d^3*a^7 + 7*x^3*d^6*b^2*a^5 + 14*x
^3*e*d^5*b*a^6 + 5*x^3*e^2*d^4*a^7 + 7/2*x^2*d^6*b*a^6 + 3*x^2*e*d^5*a^7 +
x*d^6*a^7
```

giac [B] time = 0.27, size = 766, normalized size = 4.43

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/14*b^7*x^14*e^6 + 6/13*b^7*d*x^13*e^5 + 5/4*b^7*d^2*x^12*e^4 + 20/11*b^7*
d^3*x^11*e^3 + 3/2*b^7*d^4*x^10*e^2 + 2/3*b^7*d^5*x^9*e + 1/8*b^7*d^6*x^8 +
 7/13*a*b^6*x^13*e^6 + 7/2*a*b^6*d*x^12*e^5 + 105/11*a*b^6*d^2*x^11*e^4 + 1
4*a*b^6*d^3*x^10*e^3 + 35/3*a*b^6*d^4*x^9*e^2 + 21/4*a*b^6*d^5*x^8*e + a*b^
6*d^6*x^7 + 7/4*a^2*b^5*x^12*e^6 + 126/11*a^2*b^5*d*x^11*e^5 + 63/2*a^2*b^5
*d^2*x^10*e^4 + 140/3*a^2*b^5*d^3*x^9*e^3 + 315/8*a^2*b^5*d^4*x^8*e^2 + 18*
```

```
a^2*b^5*d^5*x^7*e + 7/2*a^2*b^5*d^6*x^6 + 35/11*a^3*b^4*x^11*e^6 + 21*a^3*b
^4*d*x^10*e^5 + 175/3*a^3*b^4*d^2*x^9*e^4 + 175/2*a^3*b^4*d^3*x^8*e^3 + 75*
a^3*b^4*d^4*x^7*e^2 + 35*a^3*b^4*d^5*x^6*e + 7*a^3*b^4*d^6*x^5 + 7/2*a^4*b^
3*x^10*e^6 + 70/3*a^4*b^3*d*x^9*e^5 + 525/8*a^4*b^3*d^2*x^8*e^4 + 100*a^4*b
^3*d^3*x^7*e^3 + 175/2*a^4*b^3*d^4*x^6*e^2 + 42*a^4*b^3*d^5*x^5*e + 35/4*a^
4*b^3*d^6*x^4 + 7/3*a^5*b^2*x^9*e^6 + 63/4*a^5*b^2*d*x^8*e^5 + 45*a^5*b^2*d
^2*x^7*e^4 + 70*a^5*b^2*d^3*x^6*e^3 + 63*a^5*b^2*d^4*x^5*e^2 + 63/2*a^5*b^2
*d^5*x^4*e + 7*a^5*b^2*d^6*x^3 + 7/8*a^6*b*x^8*e^6 + 6*a^6*b*d*x^7*e^5 + 35
/2*a^6*b*d^2*x^6*e^4 + 28*a^6*b*d^3*x^5*e^3 + 105/4*a^6*b*d^4*x^4*e^2 + 14*
a^6*b*d^5*x^3*e + 7/2*a^6*b*d^6*x^2 + 1/7*a^7*x^7*e^6 + a^7*d*x^6*e^5 + 3*a
^7*d^2*x^5*e^4 + 5*a^7*d^3*x^4*e^3 + 5*a^7*d^4*x^3*e^2 + 3*a^7*d^5*x^2*e +
a^7*d^6*x
```

maple [B] time = 0.04, size = 1165, normalized size = 6.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/14*b^7*e^6*x^14+1/13*((a*e^6+6*b*d*e^5)*b^6+6*b^6*e^6*a)*x^13+1/12*((6*a*
d*e^5+15*b*d^2*e^4)*b^6+6*(a*e^6+6*b*d*e^5)*a*b^5+15*b^5*e^6*a^2)*x^12+1/11
*((15*a*d^2*e^4+20*b*d^3*e^3)*b^6+6*(6*a*d*e^5+15*b*d^2*e^4)*a*b^5+15*(a*e^
6+6*b*d*e^5)*a^2*b^4+20*b^4*e^6*a^3)*x^11+1/10*((20*a*d^3*e^3+15*b*d^4*e^2)
*b^6+6*(15*a*d^2*e^4+20*b*d^3*e^3)*a*b^5+15*(6*a*d*e^5+15*b*d^2*e^4)*a^2*b^
4+20*(a*e^6+6*b*d*e^5)*a^3*b^3+15*b^3*e^6*a^4)*x^10+1/9*((15*a*d^4*e^2+6*b*
d^5*e)*b^6+6*(20*a*d^3*e^3+15*b*d^4*e^2)*a*b^5+15*(15*a*d^2*e^4+20*b*d^3*e^
3)*a^2*b^4+20*(6*a*d*e^5+15*b*d^2*e^4)*a^3*b^3+15*(a*e^6+6*b*d*e^5)*a^4*b^2
+6*b^2*e^6*a^5)*x^9+1/8*((6*a*d^5*e+b*d^6)*b^6+6*(15*a*d^4*e^2+6*b*d^5*e)*a
*b^5+15*(20*a*d^3*e^3+15*b*d^4*e^2)*a^2*b^4+20*(15*a*d^2*e^4+20*b*d^3*e^3)*
a^3*b^3+15*(6*a*d*e^5+15*b*d^2*e^4)*a^4*b^2+6*(a*e^6+6*b*d*e^5)*a^5*b+b*e^6
*a^6)*x^8+1/7*(a*d^6*b^6+6*(6*a*d^5*e+b*d^6)*a*b^5+15*(15*a*d^4*e^2+6*b*d^5
*e)*a^2*b^4+20*(20*a*d^3*e^3+15*b*d^4*e^2)*a^3*b^3+15*(15*a*d^2*e^4+20*b*d^
3*e^3)*a^4*b^2+6*(6*a*d*e^5+15*b*d^2*e^4)*a^5*b+(a*e^6+6*b*d*e^5)*a^6)*x^7+
1/6*(6*a^2*d^6*b^5+15*(6*a*d^5*e+b*d^6)*a^2*b^4+20*(15*a*d^4*e^2+6*b*d^5*e)
*a^3*b^3+15*(20*a*d^3*e^3+15*b*d^4*e^2)*a^4*b^2+6*(15*a*d^2*e^4+20*b*d^3*e^
3)*a^5*b+(6*a*d*e^5+15*b*d^2*e^4)*a^6)*x^6+1/5*(15*a^3*d^6*b^4+20*(6*a*d^5*
e+b*d^6)*a^3*b^3+15*(15*a*d^4*e^2+6*b*d^5*e)*a^4*b^2+6*(20*a*d^3*e^3+15*b*d
^4*e^2)*a^5*b+(15*a*d^2*e^4+20*b*d^3*e^3)*a^6)*x^5+1/4*(20*a^4*d^6*b^3+15*(
6*a*d^5*e+b*d^6)*a^4*b^2+6*(15*a*d^4*e^2+6*b*d^5*e)*a^5*b+(20*a*d^3*e^3+15*
b*d^4*e^2)*a^6)*x^4+1/3*(15*a^5*d^6*b^2+6*(6*a*d^5*e+b*d^6)*a^5*b+(15*a*d^4
*e^2+6*b*d^5*e)*a^6)*x^3+1/2*(6*a^6*d^6*b+(6*a*d^5*e+b*d^6)*a^6)*x^2+a^7*d^
6*x
```

maxima [B] time = 0.61, size = 706, normalized size = 4.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/14*b^7*e^6*x^14 + a^7*d^6*x + 1/13*(6*b^7*d*e^5 + 7*a*b^6*e^6)*x^13 + 1/4
*(5*b^7*d^2*e^4 + 14*a*b^6*d*e^5 + 7*a^2*b^5*e^6)*x^12 + 1/11*(20*b^7*d^3*e
^3 + 105*a*b^6*d^2*e^4 + 126*a^2*b^5*d*e^5 + 35*a^3*b^4*e^6)*x^11 + 1/2*(3*
b^7*d^4*e^2 + 28*a*b^6*d^3*e^3 + 63*a^2*b^5*d^2*e^4 + 42*a^3*b^4*d*e^5 + 7*
a^4*b^3*e^6)*x^10 + 1/3*(2*b^7*d^5*e + 35*a*b^6*d^4*e^2 + 140*a^2*b^5*d^3*e
^3 + 175*a^3*b^4*d^2*e^4 + 70*a^4*b^3*d*e^5 + 7*a^5*b^2*e^6)*x^9 + 1/8*(b^7
*d^6 + 42*a*b^6*d^5*e + 315*a^2*b^5*d^4*e^2 + 700*a^3*b^4*d^3*e^3 + 525*a^4
*b^3*d^2*e^4 + 126*a^5*b^2*d*e^5 + 7*a^6*b*e^6)*x^8 + 1/7*(7*a*b^6*d^6 + 12
6*a^2*b^5*d^5*e + 525*a^3*b^4*d^4*e^2 + 700*a^4*b^3*d^3*e^3 + 315*a^5*b^2*d
^2*e^4 + 42*a^6*b*d*e^5 + a^7*e^6)*x^7 + 1/2*(7*a^2*b^5*d^6 + 70*a^3*b^4*d^
```

```
5*e + 175*a^4*b^3*d^4*e^2 + 140*a^5*b^2*d^3*e^3 + 35*a^6*b*d^2*e^4 + 2*a^7*
d*e^5)*x^6 + (7*a^3*b^4*d^6 + 42*a^4*b^3*d^5*e + 63*a^5*b^2*d^4*e^2 + 28*a^
6*b*d^3*e^3 + 3*a^7*d^2*e^4)*x^5 + 1/4*(35*a^4*b^3*d^6 + 126*a^5*b^2*d^5*e
+ 105*a^6*b*d^4*e^2 + 20*a^7*d^3*e^3)*x^4 + (7*a^5*b^2*d^6 + 14*a^6*b*d^5*e
 + 5*a^7*d^4*e^2)*x^3 + 1/2*(7*a^6*b*d^6 + 6*a^7*d^5*e)*x^2
```

mupad [B] time = 2.26, size = 683, normalized size = 3.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*(7*a^3*b^4*d^6 + 3*a^7*d^2*e^4 + 42*a^4*b^3*d^5*e + 28*a^6*b*d^3*e^3 +
63*a^5*b^2*d^4*e^2) + x^10*((7*a^4*b^3*e^6)/2 + (3*b^7*d^4*e^2)/2 + 14*a*b^
6*d^3*e^3 + 21*a^3*b^4*d*e^5 + (63*a^2*b^5*d^2*e^4)/2) + x^6*(a^7*d*e^5 + (
7*a^2*b^5*d^6)/2 + 35*a^3*b^4*d^5*e + (35*a^6*b*d^2*e^4)/2 + (175*a^4*b^3*d
^4*e^2)/2 + 70*a^5*b^2*d^3*e^3) + x^9*((2*b^7*d^5*e)/3 + (7*a^5*b^2*e^6)/3
+ (35*a*b^6*d^4*e^2)/3 + (70*a^4*b^3*d*e^5)/3 + (140*a^2*b^5*d^3*e^3)/3 + (
175*a^3*b^4*d^2*e^4)/3) + x^7*((a^7*e^6)/7 + a*b^6*d^6 + 18*a^2*b^5*d^5*e +
 75*a^3*b^4*d^4*e^2 + 100*a^4*b^3*d^3*e^3 + 45*a^5*b^2*d^2*e^4 + 6*a^6*b*d*
e^5) + x^8*((b^7*d^6)/8 + (7*a^6*b*e^6)/8 + (63*a^5*b^2*d*e^5)/4 + (315*a^2
*b^5*d^4*e^2)/8 + (175*a^3*b^4*d^3*e^3)/2 + (525*a^4*b^3*d^2*e^4)/8 + (21*a
*b^6*d^5*e)/4) + x^4*((35*a^4*b^3*d^6)/4 + 5*a^7*d^3*e^3 + (63*a^5*b^2*d^5*
e)/2 + (105*a^6*b*d^4*e^2)/4) + x^11*((35*a^3*b^4*e^6)/11 + (20*b^7*d^3*e^3
)/11 + (105*a*b^6*d^2*e^4)/11 + (126*a^2*b^5*d*e^5)/11) + a^7*d^6*x + (b^7*
e^6*x^14)/14 + (a^6*d^5*x^2*(6*a*e + 7*b*d))/2 + (b^6*e^5*x^13*(7*a*e + 6*b
*d))/13 + a^5*d^4*x^3*(5*a^2*e^2 + 7*b^2*d^2 + 14*a*b*d*e) + (b^5*e^4*x^12*
(7*a^2*e^2 + 5*b^2*d^2 + 14*a*b*d*e))/4
```

sympy [B] time = 0.19, size = 796, normalized size = 4.60

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**6*x + b**7*e**6*x**14/14 + x**13*(7*a*b**6*e**6/13 + 6*b**7*d*e**5/
13) + x**12*(7*a**2*b**5*e**6/4 + 7*a*b**6*d*e**5/2 + 5*b**7*d**2*e**4/4) +
 x**11*(35*a**3*b**4*e**6/11 + 126*a**2*b**5*d*e**5/11 + 105*a*b**6*d**2*e*
*4/11 + 20*b**7*d**3*e**3/11) + x**10*(7*a**4*b**3*e**6/2 + 21*a**3*b**4*d*
e**5 + 63*a**2*b**5*d**2*e**4/2 + 14*a*b**6*d**3*e**3 + 3*b**7*d**4*e**2/2)
 + x**9*(7*a**5*b**2*e**6/3 + 70*a**4*b**3*d*e**5/3 + 175*a**3*b**4*d**2*e*
*4/3 + 140*a**2*b**5*d**3*e**3/3 + 35*a*b**6*d**4*e**2/3 + 2*b**7*d**5*e/3)
 + x**8*(7*a**6*b*e**6/8 + 63*a**5*b**2*d*e**5/4 + 525*a**4*b**3*d**2*e**4/
8 + 175*a**3*b**4*d**3*e**3/2 + 315*a**2*b**5*d**4*e**2/8 + 21*a*b**6*d**5*
e/4 + b**7*d**6/8) + x**7*(a**7*e**6/7 + 6*a**6*b*d*e**5 + 45*a**5*b**2*d**
2*e**4 + 100*a**4*b**3*d**3*e**3 + 75*a**3*b**4*d**4*e**2 + 18*a**2*b**5*d*
*5*e + a*b**6*d**6) + x**6*(a**7*d*e**5 + 35*a**6*b*d**2*e**4/2 + 70*a**5*b
**2*d**3*e**3 + 175*a**4*b**3*d**4*e**2/2 + 35*a**3*b**4*d**5*e + 7*a**2*b*
*5*d**6/2) + x**5*(3*a**7*d**2*e**4 + 28*a**6*b*d**3*e**3 + 63*a**5*b**2*d*
*4*e**2 + 42*a**4*b**3*d**5*e + 7*a**3*b**4*d**6) + x**4*(5*a**7*d**3*e**3
+ 105*a**6*b*d**4*e**2/4 + 63*a**5*b**2*d**5*e/2 + 35*a**4*b**3*d**6/4) + x
**3*(5*a**7*d**4*e**2 + 14*a**6*b*d**5*e + 7*a**5*b**2*d**6) + x**2*(3*a**7
*d**5*e + 7*a**6*b*d**6/2)
```

3.1692 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=143

$$\frac{5e^4(a+bx)^{12}(bd-ae)}{12b^6}+\frac{10e^3(a+bx)^{11}(bd-ae)^2}{11b^6}+\frac{e^2(a+bx)^{10}(bd-ae)^3}{b^6}+\frac{5e(a+bx)^9(bd-ae)^4}{9b^6}+\frac{(a+bx)^8(bd-}{8b^6}$$

Rubi [A] time = 0.36, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{5e^4(a+bx)^{12}(bd-ae)}{12b^6}+\frac{10e^3(a+bx)^{11}(bd-ae)^2}{11b^6}+\frac{e^2(a+bx)^{10}(bd-ae)^3}{b^6}+\frac{5e(a+bx)^9(bd-ae)^4}{9b^6}+\frac{(a+bx)^8(bd-ae)^5}{8b^6}+\frac{e^5(a+bx)^{13}}{13b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^5*(a + b*x)^8)/(8*b^6) + (5*e*(b*d - a*e)^4*(a + b*x)^9)/(9*b^
6) + (e^2*(b*d - a*e)^3*(a + b*x)^10)/b^6 + (10*e^3*(b*d - a*e)^2*(a + b*x)
^11)/(11*b^6) + (5*e^4*(b*d - a*e)*(a + b*x)^12)/(12*b^6) + (e^5*(a + b*x)^
13)/(13*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^3 dx &= \int (a+bx)^7(d+ex)^5 dx\\ &= \int \left(\frac{(bd-ae)^5(a+bx)^7}{b^5}+\frac{5e(bd-ae)^4(a+bx)^8}{b^5}+\frac{10e^2(bd-ae)^3(a}{b^5}\right.\\ &= \frac{(bd-ae)^5(a+bx)^8}{8b^6}+\frac{5e(bd-ae)^4(a+bx)^9}{9b^6}+\frac{e^2(bd-ae)^3(a+bx)}{b^6}\end{aligned}$$

Mathematica [B] time = 0.14, size = 493, normalized size = 3.45

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(1716*a^7*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2*e^3*x^3 + 6*d*e^
4*x^4 + e^5*x^5) + 1716*a^6*b*x*(21*d^5 + 70*d^4*e*x + 105*d^3*e^2*x^2 + 84
*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + 1287*a^5*b^2*x^2*(56*d^5 + 210*d
^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5) +
715*a^4*b^3*x^3*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*x^3
```

```
+ 315*d*e^4*x^4 + 56*e^5*x^5) + 286*a^3*b^4*x^4*(252*d^5 + 1050*d^4*e*x + 1
800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5) + 78*a^2*
b^5*x^5*(462*d^5 + 1980*d^4*e*x + 3465*d^3*e^2*x^2 + 3080*d^2*e^3*x^3 + 138
6*d*e^4*x^4 + 252*e^5*x^5) + 13*a*b^6*x^6*(792*d^5 + 3465*d^4*e*x + 6160*d^
3*e^2*x^2 + 5544*d^2*e^3*x^3 + 2520*d*e^4*x^4 + 462*e^5*x^5) + b^7*x^7*(128
7*d^5 + 5720*d^4*e*x + 10296*d^3*e^2*x^2 + 9360*d^2*e^3*x^3 + 4290*d*e^4*x^
4 + 792*e^5*x^5)))/10296
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.39, size = 670, normalized size = 4.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^5*b^7 + 5/12*x^12*e^4*d*b^7 + 7/12*x^12*e^5*b^6*a + 10/11*x^11*
e^3*d^2*b^7 + 35/11*x^11*e^4*d*b^6*a + 21/11*x^11*e^5*b^5*a^2 + x^10*e^2*d^
3*b^7 + 7*x^10*e^3*d^2*b^6*a + 21/2*x^10*e^4*d*b^5*a^2 + 7/2*x^10*e^5*b^4*a
^3 + 5/9*x^9*e*d^4*b^7 + 70/9*x^9*e^2*d^3*b^6*a + 70/3*x^9*e^3*d^2*b^5*a^2
+ 175/9*x^9*e^4*d*b^4*a^3 + 35/9*x^9*e^5*b^3*a^4 + 1/8*x^8*d^5*b^7 + 35/8*x
^8*e*d^4*b^6*a + 105/4*x^8*e^2*d^3*b^5*a^2 + 175/4*x^8*e^3*d^2*b^4*a^3 + 17
5/8*x^8*e^4*d*b^3*a^4 + 21/8*x^8*e^5*b^2*a^5 + x^7*d^5*b^6*a + 15*x^7*e*d^4
*b^5*a^2 + 50*x^7*e^2*d^3*b^4*a^3 + 50*x^7*e^3*d^2*b^3*a^4 + 15*x^7*e^4*d*b
^2*a^5 + x^7*e^5*b*a^6 + 7/2*x^6*d^5*b^5*a^2 + 175/6*x^6*e*d^4*b^4*a^3 + 17
5/3*x^6*e^2*d^3*b^3*a^4 + 35*x^6*e^3*d^2*b^2*a^5 + 35/6*x^6*e^4*d*b*a^6 + 1
/6*x^6*e^5*a^7 + 7*x^5*d^5*b^4*a^3 + 35*x^5*e*d^4*b^3*a^4 + 42*x^5*e^2*d^3*
b^2*a^5 + 14*x^5*e^3*d^2*b*a^6 + x^5*e^4*d*a^7 + 35/4*x^4*d^5*b^3*a^4 + 105
/4*x^4*e*d^4*b^2*a^5 + 35/2*x^4*e^2*d^3*b*a^6 + 5/2*x^4*e^3*d^2*a^7 + 7*x^3
*d^5*b^2*a^5 + 35/3*x^3*e*d^4*b*a^6 + 10/3*x^3*e^2*d^3*a^7 + 7/2*x^2*d^5*b*
a^6 + 5/2*x^2*e*d^4*a^7 + x*d^5*a^7
```

giac [B] time = 0.16, size = 646, normalized size = 4.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/13*b^7*x^13*e^5 + 5/12*b^7*d*x^12*e^4 + 10/11*b^7*d^2*x^11*e^3 + b^7*d^3*
x^10*e^2 + 5/9*b^7*d^4*x^9*e + 1/8*b^7*d^5*x^8 + 7/12*a*b^6*x^12*e^5 + 35/1
1*a*b^6*d*x^11*e^4 + 7*a*b^6*d^2*x^10*e^3 + 70/9*a*b^6*d^3*x^9*e^2 + 35/8*a
*b^6*d^4*x^8*e + a*b^6*d^5*x^7 + 21/11*a^2*b^5*x^11*e^5 + 21/2*a^2*b^5*d*x^
10*e^4 + 70/3*a^2*b^5*d^2*x^9*e^3 + 105/4*a^2*b^5*d^3*x^8*e^2 + 15*a^2*b^5*
d^4*x^7*e + 7/2*a^2*b^5*d^5*x^6 + 7/2*a^3*b^4*x^10*e^5 + 175/9*a^3*b^4*d*x^
9*e^4 + 175/4*a^3*b^4*d^2*x^8*e^3 + 50*a^3*b^4*d^3*x^7*e^2 + 175/6*a^3*b^4*
d^4*x^6*e + 7*a^3*b^4*d^5*x^5 + 35/9*a^4*b^3*x^9*e^5 + 175/8*a^4*b^3*d*x^8*
e^4 + 50*a^4*b^3*d^2*x^7*e^3 + 175/3*a^4*b^3*d^3*x^6*e^2 + 35*a^4*b^3*d^4*x
^5*e + 35/4*a^4*b^3*d^5*x^4 + 21/8*a^5*b^2*x^8*e^5 + 15*a^5*b^2*d*x^7*e^4 +
 35*a^5*b^2*d^2*x^6*e^3 + 42*a^5*b^2*d^3*x^5*e^2 + 105/4*a^5*b^2*d^4*x^4*e
```

```
+ 7*a^5*b^2*d^5*x^3 + a^6*b*x^7*e^5 + 35/6*a^6*b*d*x^6*e^4 + 14*a^6*b*d^2*x
^5*e^3 + 35/2*a^6*b*d^3*x^4*e^2 + 35/3*a^6*b*d^4*x^3*e + 7/2*a^6*b*d^5*x^2
+ 1/6*a^7*x^6*e^5 + a^7*d*x^5*e^4 + 5/2*a^7*d^2*x^4*e^3 + 10/3*a^7*d^3*x^3*
e^2 + 5/2*a^7*d^4*x^2*e + a^7*d^5*x
```

maple [B] time = 0.05, size = 982, normalized size = 6.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/13*b^7*e^5*x^13+1/12*((a*e^5+5*b*d*e^4)*b^6+6*b^6*e^5*a)*x^12+1/11*((5*a*
d*e^4+10*b*d^2*e^3)*b^6+6*(a*e^5+5*b*d*e^4)*a*b^5+15*b^5*e^5*a^2)*x^11+1/10
*((10*a*d^2*e^3+10*b*d^3*e^2)*b^6+6*(5*a*d*e^4+10*b*d^2*e^3)*a*b^5+15*(a*e^
5+5*b*d*e^4)*a^2*b^4+20*b^4*e^5*a^3)*x^10+1/9*((10*a*d^3*e^2+5*b*d^4*e)*b^6
+6*(10*a*d^2*e^3+10*b*d^3*e^2)*a*b^5+15*(5*a*d*e^4+10*b*d^2*e^3)*a^2*b^4+20
*(a*e^5+5*b*d*e^4)*a^3*b^3+15*b^3*e^5*a^4)*x^9+1/8*((5*a*d^4*e+b*d^5)*b^6+6
*(10*a*d^3*e^2+5*b*d^4*e)*a*b^5+15*(10*a*d^2*e^3+10*b*d^3*e^2)*a^2*b^4+20*(
5*a*d*e^4+10*b*d^2*e^3)*a^3*b^3+15*(a*e^5+5*b*d*e^4)*a^4*b^2+6*b^2*e^5*a^5)
*x^8+1/7*(a*d^5*b^6+6*(5*a*d^4*e+b*d^5)*a*b^5+15*(10*a*d^3*e^2+5*b*d^4*e)*a
^2*b^4+20*(10*a*d^2*e^3+10*b*d^3*e^2)*a^3*b^3+15*(5*a*d*e^4+10*b*d^2*e^3)*a
^4*b^2+6*(a*e^5+5*b*d*e^4)*a^5*b+b*e^5*a^6)*x^7+1/6*(6*a^2*d^5*b^5+15*(5*a*
d^4*e+b*d^5)*a^2*b^4+20*(10*a*d^3*e^2+5*b*d^4*e)*a^3*b^3+15*(10*a*d^2*e^3+1
0*b*d^3*e^2)*a^4*b^2+6*(5*a*d*e^4+10*b*d^2*e^3)*a^5*b+(a*e^5+5*b*d*e^4)*a^6
)*x^6+1/5*(15*a^3*d^5*b^4+20*(5*a*d^4*e+b*d^5)*a^3*b^3+15*(10*a*d^3*e^2+5*b
*d^4*e)*a^4*b^2+6*(10*a*d^2*e^3+10*b*d^3*e^2)*a^5*b+(5*a*d*e^4+10*b*d^2*e^3
)*a^6)*x^5+1/4*(20*a^4*d^5*b^3+15*(5*a*d^4*e+b*d^5)*a^4*b^2+6*(10*a*d^3*e^2
+5*b*d^4*e)*a^5*b+(10*a*d^2*e^3+10*b*d^3*e^2)*a^6)*x^4+1/3*(15*a^5*d^5*b^2+
6*(5*a*d^4*e+b*d^5)*a^5*b+(10*a*d^3*e^2+5*b*d^4*e)*a^6)*x^3+1/2*(6*a^6*d^5*
b+(5*a*d^4*e+b*d^5)*a^6)*x^2+a^7*d^5*x
```

maxima [B] time = 0.57, size = 594, normalized size = 4.15

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/13*b^7*e^5*x^13 + a^7*d^5*x + 1/12*(5*b^7*d*e^4 + 7*a*b^6*e^5)*x^12 + 1/1
1*(10*b^7*d^2*e^3 + 35*a*b^6*d*e^4 + 21*a^2*b^5*e^5)*x^11 + 1/2*(2*b^7*d^3*
e^2 + 14*a*b^6*d^2*e^3 + 21*a^2*b^5*d*e^4 + 7*a^3*b^4*e^5)*x^10 + 5/9*(b^7*
d^4*e + 14*a*b^6*d^3*e^2 + 42*a^2*b^5*d^2*e^3 + 35*a^3*b^4*d*e^4 + 7*a^4*b^
3*e^5)*x^9 + 1/8*(b^7*d^5 + 35*a*b^6*d^4*e + 210*a^2*b^5*d^3*e^2 + 350*a^3*
b^4*d^2*e^3 + 175*a^4*b^3*d*e^4 + 21*a^5*b^2*e^5)*x^8 + (a*b^6*d^5 + 15*a^2
*b^5*d^4*e + 50*a^3*b^4*d^3*e^2 + 50*a^4*b^3*d^2*e^3 + 15*a^5*b^2*d*e^4 + a
^6*b*e^5)*x^7 + 1/6*(21*a^2*b^5*d^5 + 175*a^3*b^4*d^4*e + 350*a^4*b^3*d^3*e
^2 + 210*a^5*b^2*d^2*e^3 + 35*a^6*b*d*e^4 + a^7*e^5)*x^6 + (7*a^3*b^4*d^5 +
 35*a^4*b^3*d^4*e + 42*a^5*b^2*d^3*e^2 + 14*a^6*b*d^2*e^3 + a^7*d*e^4)*x^5
+ 5/4*(7*a^4*b^3*d^5 + 21*a^5*b^2*d^4*e + 14*a^6*b*d^3*e^2 + 2*a^7*d^2*e^3)
*x^4 + 1/3*(21*a^5*b^2*d^5 + 35*a^6*b*d^4*e + 10*a^7*d^3*e^2)*x^3 + 1/2*(7*
a^6*b*d^5 + 5*a^7*d^4*e)*x^2
```

mupad [B] time = 2.17, size = 570, normalized size = 3.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*(a^7*d*e^4 + 7*a^3*b^4*d^5 + 35*a^4*b^3*d^4*e + 14*a^6*b*d^2*e^3 + 42*a
^5*b^2*d^3*e^2) + x^9*((5*b^7*d^4*e)/9 + (35*a^4*b^3*e^5)/9 + (70*a*b^6*d^3
*e^2)/9 + (175*a^3*b^4*d*e^4)/9 + (70*a^2*b^5*d^2*e^3)/3) + x^7*(a*b^6*d^5
+ a^6*b*e^5 + 15*a^2*b^5*d^4*e + 15*a^5*b^2*d*e^4 + 50*a^3*b^4*d^3*e^2 + 50
*a^4*b^3*d^2*e^3) + x^6*((a^7*e^5)/6 + (7*a^2*b^5*d^5)/2 + (175*a^3*b^4*d^4
*e)/6 + (175*a^4*b^3*d^3*e^2)/3 + 35*a^5*b^2*d^2*e^3 + (35*a^6*b*d*e^4)/6)
+ x^8*((b^7*d^5)/8 + (21*a^5*b^2*e^5)/8 + (175*a^4*b^3*d*e^4)/8 + (105*a^2*
b^5*d^3*e^2)/4 + (175*a^3*b^4*d^2*e^3)/4 + (35*a*b^6*d^4*e)/8) + a^7*d^5*x
+ (b^7*e^5*x^13)/13 + (5*a^4*d^2*x^4*(2*a^3*e^3 + 7*b^3*d^3 + 21*a*b^2*d^2*
e + 14*a^2*b*d*e^2))/4 + (b^4*e^2*x^10*(7*a^3*e^3 + 2*b^3*d^3 + 14*a*b^2*d^
2*e + 21*a^2*b*d*e^2))/2 + (a^6*d^4*x^2*(5*a*e + 7*b*d))/2 + (b^6*e^4*x^12*
(7*a*e + 5*b*d))/12 + (a^5*d^3*x^3*(10*a^2*e^2 + 21*b^2*d^2 + 35*a*b*d*e))/
3 + (b^5*e^3*x^11*(21*a^2*e^2 + 10*b^2*d^2 + 35*a*b*d*e))/11
```

sympy [B] time = 0.18, size = 673, normalized size = 4.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**5*x + b**7*e**5*x**13/13 + x**12*(7*a*b**6*e**5/12 + 5*b**7*d*e**4/
12) + x**11*(21*a**2*b**5*e**5/11 + 35*a*b**6*d*e**4/11 + 10*b**7*d**2*e**3
/11) + x**10*(7*a**3*b**4*e**5/2 + 21*a**2*b**5*d*e**4/2 + 7*a*b**6*d**2*e*
*3 + b**7*d**3*e**2) + x**9*(35*a**4*b**3*e**5/9 + 175*a**3*b**4*d*e**4/9 +
 70*a**2*b**5*d**2*e**3/3 + 70*a*b**6*d**3*e**2/9 + 5*b**7*d**4*e/9) + x**8
*(21*a**5*b**2*e**5/8 + 175*a**4*b**3*d*e**4/8 + 175*a**3*b**4*d**2*e**3/4
+ 105*a**2*b**5*d**3*e**2/4 + 35*a*b**6*d**4*e/8 + b**7*d**5/8) + x**7*(a**
6*b*e**5 + 15*a**5*b**2*d*e**4 + 50*a**4*b**3*d**2*e**3 + 50*a**3*b**4*d**3
*e**2 + 15*a**2*b**5*d**4*e + a*b**6*d**5) + x**6*(a**7*e**5/6 + 35*a**6*b*
d*e**4/6 + 35*a**5*b**2*d**2*e**3 + 175*a**4*b**3*d**3*e**2/3 + 175*a**3*b*
*4*d**4*e/6 + 7*a**2*b**5*d**5/2) + x**5*(a**7*d*e**4 + 14*a**6*b*d**2*e**3
 + 42*a**5*b**2*d**3*e**2 + 35*a**4*b**3*d**4*e + 7*a**3*b**4*d**5) + x**4*
(5*a**7*d**2*e**3/2 + 35*a**6*b*d**3*e**2/2 + 105*a**5*b**2*d**4*e/4 + 35*a
**4*b**3*d**5/4) + x**3*(10*a**7*d**3*e**2/3 + 35*a**6*b*d**4*e/3 + 7*a**5*
b**2*d**5) + x**2*(5*a**7*d**4*e/2 + 7*a**6*b*d**5/2)
```

3.1693 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=119

$$\frac{4e^3(a+bx)^{11}(bd-ae)}{11b^5}+\frac{3e^2(a+bx)^{10}(bd-ae)^2}{5b^5}+\frac{4e(a+bx)^9(bd-ae)^3}{9b^5}+\frac{(a+bx)^8(bd-ae)^4}{8b^5}+\frac{e^4(a+bx)^{12}}{12b^5}$$

Rubi [A] time = 0.28, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{4e^3(a+bx)^{11}(bd-ae)}{11b^5}+\frac{3e^2(a+bx)^{10}(bd-ae)^2}{5b^5}+\frac{4e(a+bx)^9(bd-ae)^3}{9b^5}+\frac{(a+bx)^8(bd-ae)^4}{8b^5}+\frac{e^4(a+bx)^{12}}{12b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^8)/(8*b^5) + (4*e*(b*d - a*e)^3*(a + b*x)^9)/(9*b^
5) + (3*e^2*(b*d - a*e)^2*(a + b*x)^10)/(5*b^5) + (4*e^3*(b*d - a*e)*(a + b
*x)^11)/(11*b^5) + (e^4*(a + b*x)^12)/(12*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^4\,dx\\ &= \int \left(\frac{(bd-ae)^4(a+bx)^7}{b^4}+\frac{4e(bd-ae)^3(a+bx)^8}{b^4}+\frac{6e^2(bd-ae)^2(a\right.\\ &= \frac{(bd-ae)^4(a+bx)^8}{8b^5}+\frac{4e(bd-ae)^3(a+bx)^9}{9b^5}+\frac{3e^2(bd-ae)^2(a+bx\right.}{5b^5}\end{aligned}$$

Mathematica [B] time = 0.12, size = 405, normalized size = 3.40

$$\frac{x\left(792a^7\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+924a^6bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)+792a^5b^2x^2\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)+495a^4b^3x^3\left(70d^4+224d^3ex+280d^2e^2x^2+160de^3x^3+35e^4x^4\right)+220a^3b^4x^4\left(126d^4+420d^3ex+540d^2e^2x^2+315de^3x^3+70e^4x^4\right)+66a^2b^5x^5\left(210d^4+720d^3ex+945d^2e^2x^2+560de^3x^3+126e^4x^4\right)+12ab^6x^6\left(330d^4+1155d^3ex+1540d^2e^2x^2+924de^3x^3+210e^4x^4\right)+b^7x^7\left(495d^4+1760d^3ex+2376d^2e^2x^2+1440de^3x^3+330e^4x^4\right)\right)}{3960}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(792*a^7*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^3*x^3 + e^4*x^4) +
 924*a^6*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*x^3 + 5*e^4*x
^4) + 792*a^5*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e^3*x^
3 + 15*e^4*x^4) + 495*a^4*b^3*x^3*(70*d^4 + 224*d^3*e*x + 280*d^2*e^2*x^2 +
 160*d*e^3*x^3 + 35*e^4*x^4) + 220*a^3*b^4*x^4*(126*d^4 + 420*d^3*e*x + 540
*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4) + 66*a^2*b^5*x^5*(210*d^4 + 720*
```

```
d^3*e*x + 945*d^2*e^2*x^2 + 560*d*e^3*x^3 + 126*e^4*x^4) + 12*a*b^6*x^6*(33
0*d^4 + 1155*d^3*e*x + 1540*d^2*e^2*x^2 + 924*d*e^3*x^3 + 210*e^4*x^4) + b^
7*x^7*(495*d^4 + 1760*d^3*e*x + 2376*d^2*e^2*x^2 + 1440*d*e^3*x^3 + 330*e^4
*x^4)))/3960
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.37, size = 546, normalized size = 4.59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*b^7 + 4/11*x^11*e^3*d*b^7 + 7/11*x^11*e^4*b^6*a + 3/5*x^10*e^
2*d^2*b^7 + 14/5*x^10*e^3*d*b^6*a + 21/10*x^10*e^4*b^5*a^2 + 4/9*x^9*e*d^3*
b^7 + 14/3*x^9*e^2*d^2*b^6*a + 28/3*x^9*e^3*d*b^5*a^2 + 35/9*x^9*e^4*b^4*a^
3 + 1/8*x^8*d^4*b^7 + 7/2*x^8*e*d^3*b^6*a + 63/4*x^8*e^2*d^2*b^5*a^2 + 35/2
*x^8*e^3*d*b^4*a^3 + 35/8*x^8*e^4*b^3*a^4 + x^7*d^4*b^6*a + 12*x^7*e*d^3*b^
5*a^2 + 30*x^7*e^2*d^2*b^4*a^3 + 20*x^7*e^3*d*b^3*a^4 + 3*x^7*e^4*b^2*a^5 +
 7/2*x^6*d^4*b^5*a^2 + 70/3*x^6*e*d^3*b^4*a^3 + 35*x^6*e^2*d^2*b^3*a^4 + 14
*x^6*e^3*d*b^2*a^5 + 7/6*x^6*e^4*b*a^6 + 7*x^5*d^4*b^4*a^3 + 28*x^5*e*d^3*b
^3*a^4 + 126/5*x^5*e^2*d^2*b^2*a^5 + 28/5*x^5*e^3*d*b*a^6 + 1/5*x^5*e^4*a^7
 + 35/4*x^4*d^4*b^3*a^4 + 21*x^4*e*d^3*b^2*a^5 + 21/2*x^4*e^2*d^2*b*a^6 + x
^4*e^3*d*a^7 + 7*x^3*d^4*b^2*a^5 + 28/3*x^3*e*d^3*b*a^6 + 2*x^3*e^2*d^2*a^7
 + 7/2*x^2*d^4*b*a^6 + 2*x^2*e*d^3*a^7 + x*d^4*a^7
```

giac [B] time = 0.19, size = 530, normalized size = 4.45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/12*b^7*x^12*e^4 + 4/11*b^7*d*x^11*e^3 + 3/5*b^7*d^2*x^10*e^2 + 4/9*b^7*d^
3*x^9*e + 1/8*b^7*d^4*x^8 + 7/11*a*b^6*x^11*e^4 + 14/5*a*b^6*d*x^10*e^3 + 1
4/3*a*b^6*d^2*x^9*e^2 + 7/2*a*b^6*d^3*x^8*e + a*b^6*d^4*x^7 + 21/10*a^2*b^5
*x^10*e^4 + 28/3*a^2*b^5*d*x^9*e^3 + 63/4*a^2*b^5*d^2*x^8*e^2 + 12*a^2*b^5*
d^3*x^7*e + 7/2*a^2*b^5*d^4*x^6 + 35/9*a^3*b^4*x^9*e^4 + 35/2*a^3*b^4*d*x^8
*e^3 + 30*a^3*b^4*d^2*x^7*e^2 + 70/3*a^3*b^4*d^3*x^6*e + 7*a^3*b^4*d^4*x^5
+ 35/8*a^4*b^3*x^8*e^4 + 20*a^4*b^3*d*x^7*e^3 + 35*a^4*b^3*d^2*x^6*e^2 + 28
*a^4*b^3*d^3*x^5*e + 35/4*a^4*b^3*d^4*x^4 + 3*a^5*b^2*x^7*e^4 + 14*a^5*b^2*
d*x^6*e^3 + 126/5*a^5*b^2*d^2*x^5*e^2 + 21*a^5*b^2*d^3*x^4*e + 7*a^5*b^2*d^
4*x^3 + 7/6*a^6*b*x^6*e^4 + 28/5*a^6*b*d*x^5*e^3 + 21/2*a^6*b*d^2*x^4*e^2 +
 28/3*a^6*b*d^3*x^3*e + 7/2*a^6*b*d^4*x^2 + 1/5*a^7*x^5*e^4 + a^7*d*x^4*e^3
 + 2*a^7*d^2*x^3*e^2 + 2*a^7*d^3*x^2*e + a^7*d^4*x
```

maple [B] time = 0.05, size = 799, normalized size = 6.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/12*b^7*e^4*x^12+1/11*((a*e^4+4*b*d*e^3)*b^6+6*b^6*e^4*a)*x^11+1/10*((4*a*
d*e^3+6*b*d^2*e^2)*b^6+6*(a*e^4+4*b*d*e^3)*a*b^5+15*b^5*e^4*a^2)*x^10+1/9*(
(6*a*d^2*e^2+4*b*d^3*e)*b^6+6*(4*a*d*e^3+6*b*d^2*e^2)*a*b^5+15*(a*e^4+4*b*d
*e^3)*a^2*b^4+20*b^4*e^4*a^3)*x^9+1/8*((4*a*d^3*e+b*d^4)*b^6+6*(6*a*d^2*e^2
+4*b*d^3*e)*a*b^5+15*(4*a*d*e^3+6*b*d^2*e^2)*a^2*b^4+20*(a*e^4+4*b*d*e^3)*a
^3*b^3+15*b^3*e^4*a^4)*x^8+1/7*(a*d^4*b^6+6*(4*a*d^3*e+b*d^4)*a*b^5+15*(6*a
*d^2*e^2+4*b*d^3*e)*a^2*b^4+20*(4*a*d*e^3+6*b*d^2*e^2)*a^3*b^3+15*(a*e^4+4*
b*d*e^3)*a^4*b^2+6*b^2*e^4*a^5)*x^7+1/6*(6*a^2*d^4*b^5+15*(4*a*d^3*e+b*d^4)
*a^2*b^4+20*(6*a*d^2*e^2+4*b*d^3*e)*a^3*b^3+15*(4*a*d*e^3+6*b*d^2*e^2)*a^4*
b^2+6*(a*e^4+4*b*d*e^3)*a^5*b+b*e^4*a^6)*x^6+1/5*(15*a^3*d^4*b^4+20*(4*a*d^
3*e+b*d^4)*a^3*b^3+15*(6*a*d^2*e^2+4*b*d^3*e)*a^4*b^2+6*(4*a*d*e^3+6*b*d^2*
e^2)*a^5*b+(a*e^4+4*b*d*e^3)*a^6)*x^5+1/4*(20*a^4*d^4*b^3+15*(4*a*d^3*e+b*d
^4)*a^4*b^2+6*(6*a*d^2*e^2+4*b*d^3*e)*a^5*b+(4*a*d*e^3+6*b*d^2*e^2)*a^6)*x^
4+1/3*(15*a^5*d^4*b^2+6*(4*a*d^3*e+b*d^4)*a^5*b+(6*a*d^2*e^2+4*b*d^3*e)*a^6
)*x^3+1/2*(6*a^6*d^4*b+(4*a*d^3*e+b*d^4)*a^6)*x^2+a^7*d^4*x
```

maxima [B] time = 0.59, size = 489, normalized size = 4.11

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/12*b^7*e^4*x^12 + a^7*d^4*x + 1/11*(4*b^7*d*e^3 + 7*a*b^6*e^4)*x^11 + 1/1
0*(6*b^7*d^2*e^2 + 28*a*b^6*d*e^3 + 21*a^2*b^5*e^4)*x^10 + 1/9*(4*b^7*d^3*e
 + 42*a*b^6*d^2*e^2 + 84*a^2*b^5*d*e^3 + 35*a^3*b^4*e^4)*x^9 + 1/8*(b^7*d^4
 + 28*a*b^6*d^3*e + 126*a^2*b^5*d^2*e^2 + 140*a^3*b^4*d*e^3 + 35*a^4*b^3*e^
4)*x^8 + (a*b^6*d^4 + 12*a^2*b^5*d^3*e + 30*a^3*b^4*d^2*e^2 + 20*a^4*b^3*d*
e^3 + 3*a^5*b^2*e^4)*x^7 + 7/6*(3*a^2*b^5*d^4 + 20*a^3*b^4*d^3*e + 30*a^4*b
^3*d^2*e^2 + 12*a^5*b^2*d*e^3 + a^6*b*e^4)*x^6 + 1/5*(35*a^3*b^4*d^4 + 140*
a^4*b^3*d^3*e + 126*a^5*b^2*d^2*e^2 + 28*a^6*b*d*e^3 + a^7*e^4)*x^5 + 1/4*(
35*a^4*b^3*d^4 + 84*a^5*b^2*d^3*e + 42*a^6*b*d^2*e^2 + 4*a^7*d*e^3)*x^4 + 1
/3*(21*a^5*b^2*d^4 + 28*a^6*b*d^3*e + 6*a^7*d^2*e^2)*x^3 + 1/2*(7*a^6*b*d^4
 + 4*a^7*d^3*e)*x^2
```

mupad [B] time = 0.18, size = 470, normalized size = 3.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*((a^7*e^4)/5 + 7*a^3*b^4*d^4 + 28*a^4*b^3*d^3*e + (126*a^5*b^2*d^2*e^2)
/5 + (28*a^6*b*d*e^3)/5) + x^8*((b^7*d^4)/8 + (35*a^4*b^3*e^4)/8 + (35*a^3*
b^4*d*e^3)/2 + (63*a^2*b^5*d^2*e^2)/4 + (7*a*b^6*d^3*e)/2) + x^4*(a^7*d*e^3
 + (35*a^4*b^3*d^4)/4 + 21*a^5*b^2*d^3*e + (21*a^6*b*d^2*e^2)/2) + x^9*((4*
b^7*d^3*e)/9 + (35*a^3*b^4*e^4)/9 + (14*a*b^6*d^2*e^2)/3 + (28*a^2*b^5*d*e^
3)/3) + x^7*(a*b^6*d^4 + 3*a^5*b^2*e^4 + 12*a^2*b^5*d^3*e + 20*a^4*b^3*d*e^
3 + 30*a^3*b^4*d^2*e^2) + x^6*((7*a^6*b*e^4)/6 + (7*a^2*b^5*d^4)/2 + (70*a^
3*b^4*d^3*e)/3 + 14*a^5*b^2*d*e^3 + 35*a^4*b^3*d^2*e^2) + a^7*d^4*x + (b^7*
e^4*x^12)/12 + (a^6*d^3*x^2*(4*a*e + 7*b*d))/2 + (b^6*e^3*x^11*(7*a*e + 4*b
*d))/11 + (a^5*d^2*x^3*(6*a^2*e^2 + 21*b^2*d^2 + 28*a*b*d*e))/3 + (b^5*e^2*
x^10*(21*a^2*e^2 + 6*b^2*d^2 + 28*a*b*d*e))/10
```

sympy [B] time = 0.16, size = 549, normalized size = 4.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**4*x + b**7*e**4*x**12/12 + x**11*(7*a*b**6*e**4/11 + 4*b**7*d*e**3/
11) + x**10*(21*a**2*b**5*e**4/10 + 14*a*b**6*d*e**3/5 + 3*b**7*d**2*e**2/5
) + x**9*(35*a**3*b**4*e**4/9 + 28*a**2*b**5*d*e**3/3 + 14*a*b**6*d**2*e**2
/3 + 4*b**7*d**3*e/9) + x**8*(35*a**4*b**3*e**4/8 + 35*a**3*b**4*d*e**3/2 +
 63*a**2*b**5*d**2*e**2/4 + 7*a*b**6*d**3*e/2 + b**7*d**4/8) + x**7*(3*a**5
*b**2*e**4 + 20*a**4*b**3*d*e**3 + 30*a**3*b**4*d**2*e**2 + 12*a**2*b**5*d*
*3*e + a*b**6*d**4) + x**6*(7*a**6*b*e**4/6 + 14*a**5*b**2*d*e**3 + 35*a**4
*b**3*d**2*e**2 + 70*a**3*b**4*d**3*e/3 + 7*a**2*b**5*d**4/2) + x**5*(a**7*
e**4/5 + 28*a**6*b*d*e**3/5 + 126*a**5*b**2*d**2*e**2/5 + 28*a**4*b**3*d**3
*e + 7*a**3*b**4*d**4) + x**4*(a**7*d*e**3 + 21*a**6*b*d**2*e**2/2 + 21*a**
5*b**2*d**3*e + 35*a**4*b**3*d**4/4) + x**3*(2*a**7*d**2*e**2 + 28*a**6*b*d
**3*e/3 + 7*a**5*b**2*d**4) + x**2*(2*a**7*d**3*e + 7*a**6*b*d**4/2)
```

3.1694 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=92

$$\frac{3e^2(a+bx)^{10}(bd-ae)}{10b^4}+\frac{e(a+bx)^9(bd-ae)^2}{3b^4}+\frac{(a+bx)^8(bd-ae)^3}{8b^4}+\frac{e^3(a+bx)^{11}}{11b^4}$$

Rubi [A] time = 0.22, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{3e^2(a+bx)^{10}(bd-ae)}{10b^4}+\frac{e(a+bx)^9(bd-ae)^2}{3b^4}+\frac{(a+bx)^8(bd-ae)^3}{8b^4}+\frac{e^3(a+bx)^{11}}{11b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^8)/(8*b^4) + (e*(b*d - a*e)^2*(a + b*x)^9)/(3*b^4)
 + (3*e^2*(b*d - a*e)*(a + b*x)^10)/(10*b^4) + (e^3*(a + b*x)^11)/(11*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^7(d+ex)^3 \, dx\\ &= \int \left(\frac{(bd-ae)^3(a+bx)^7}{b^3}+\frac{3e(bd-ae)^2(a+bx)^8}{b^3}+\frac{3e^2(bd-ae)(a+\right.\\ &= \frac{(bd-ae)^3(a+bx)^8}{8b^4}+\frac{e(bd-ae)^2(a+bx)^9}{3b^4}+\frac{3e^2(bd-ae)(a+bx)^1}{10b^4}\end{aligned}$$

Mathematica [B] time = 0.05, size = 360, normalized size = 3.91

$$a^7d^3x+\frac{1}{2}a^6d^2x^2(3ae+7bd)+\frac{1}{3}b^5ex^9\left(7a^2e^2+7abde+b^2d^2\right)+a^5dx^3\left(a^2e^2+7abde+7b^2d^2\right)+ab^3x^7\left(5a^3e^3+15a^2bde^2+9ab^2d^2e+b^3d^3\right)+\frac{7}{2}a^2b^2x^6\left(a^3e^3+5a^2bde^2+5ab^2d^2e+b^3d^3\right)+\frac{7}{5}a^3bx^5\left(a^3e^3+9a^2bde^2+15ab^2d^2e+5b^3d^3\right)+\frac{1}{8}b^4x^8\left(35a^3e^3+63a^2bde^2+21ab^2d^2e+b^3d^3\right)+\frac{1}{4}a^4x^4\left(a^3e^3+21a^2bde^2+63ab^2d^2e+35b^3d^3\right)+\frac{1}{10}b^6e^2x^{10}(7ae+3bd)+\frac{1}{11}b^7e^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] a^7*d^3*x + (a^6*d^2*(7*b*d + 3*a*e)*x^2)/2 + a^5*d*(7*b^2*d^2 + 7*a*b*d*e
+ a^2*e^2)*x^3 + (a^4*(35*b^3*d^3 + 63*a*b^2*d^2*e + 21*a^2*b*d*e^2 + a^3*e
^3)*x^4)/4 + (7*a^3*b*(5*b^3*d^3 + 15*a*b^2*d^2*e + 9*a^2*b*d*e^2 + a^3*e^3
)*x^5)/5 + (7*a^2*b^2*(b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2 + a^3*e^3)*x
^6)/2 + a*b^3*(b^3*d^3 + 9*a*b^2*d^2*e + 15*a^2*b*d*e^2 + 5*a^3*e^3)*x^7 +
(b^4*(b^3*d^3 + 21*a*b^2*d^2*e + 63*a^2*b*d*e^2 + 35*a^3*e^3)*x^8)/8 + (b^5
```

```
*e*(b^2*d^2 + 7*a*b*d*e + 7*a^2*e^2)*x^9)/3 + (b^6*e^2*(3*b*d + 7*a*e)*x^10
)/10 + (b^7*e^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.44, size = 420, normalized size = 4.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*b^7 + 3/10*x^10*e^2*d*b^7 + 7/10*x^10*e^3*b^6*a + 1/3*x^9*e*d
^2*b^7 + 7/3*x^9*e^2*d*b^6*a + 7/3*x^9*e^3*b^5*a^2 + 1/8*x^8*d^3*b^7 + 21/8
*x^8*e*d^2*b^6*a + 63/8*x^8*e^2*d*b^5*a^2 + 35/8*x^8*e^3*b^4*a^3 + x^7*d^3*
b^6*a + 9*x^7*e*d^2*b^5*a^2 + 15*x^7*e^2*d*b^4*a^3 + 5*x^7*e^3*b^3*a^4 + 7/
2*x^6*d^3*b^5*a^2 + 35/2*x^6*e*d^2*b^4*a^3 + 35/2*x^6*e^2*d*b^3*a^4 + 7/2*x
^6*e^3*b^2*a^5 + 7*x^5*d^3*b^4*a^3 + 21*x^5*e*d^2*b^3*a^4 + 63/5*x^5*e^2*d*
b^2*a^5 + 7/5*x^5*e^3*b*a^6 + 35/4*x^4*d^3*b^3*a^4 + 63/4*x^4*e*d^2*b^2*a^5
 + 21/4*x^4*e^2*d*b*a^6 + 1/4*x^4*e^3*a^7 + 7*x^3*d^3*b^2*a^5 + 7*x^3*e*d^2
*b*a^6 + x^3*e^2*d*a^7 + 7/2*x^2*d^3*b*a^6 + 3/2*x^2*e*d^2*a^7 + x*d^3*a^7
```

giac [B] time = 0.17, size = 412, normalized size = 4.48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/11*b^7*x^11*e^3 + 3/10*b^7*d*x^10*e^2 + 1/3*b^7*d^2*x^9*e + 1/8*b^7*d^3*x
^8 + 7/10*a*b^6*x^10*e^3 + 7/3*a*b^6*d*x^9*e^2 + 21/8*a*b^6*d^2*x^8*e + a*b
^6*d^3*x^7 + 7/3*a^2*b^5*x^9*e^3 + 63/8*a^2*b^5*d*x^8*e^2 + 9*a^2*b^5*d^2*x
^7*e + 7/2*a^2*b^5*d^3*x^6 + 35/8*a^3*b^4*x^8*e^3 + 15*a^3*b^4*d*x^7*e^2 +
35/2*a^3*b^4*d^2*x^6*e + 7*a^3*b^4*d^3*x^5 + 5*a^4*b^3*x^7*e^3 + 35/2*a^4*b
^3*d*x^6*e^2 + 21*a^4*b^3*d^2*x^5*e + 35/4*a^4*b^3*d^3*x^4 + 7/2*a^5*b^2*x^
6*e^3 + 63/5*a^5*b^2*d*x^5*e^2 + 63/4*a^5*b^2*d^2*x^4*e + 7*a^5*b^2*d^3*x^3
 + 7/5*a^6*b*x^5*e^3 + 21/4*a^6*b*d*x^4*e^2 + 7*a^6*b*d^2*x^3*e + 7/2*a^6*b
*d^3*x^2 + 1/4*a^7*x^4*e^3 + a^7*d*x^3*e^2 + 3/2*a^7*d^2*x^2*e + a^7*d^3*x
```

maple [B] time = 0.04, size = 616, normalized size = 6.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/11*b^7*e^3*x^11+1/10*((a*e^3+3*b*d*e^2)*b^6+6*b^6*e^3*a)*x^10+1/9*((3*a*d
*e^2+3*b*d^2*e)*b^6+6*(a*e^3+3*b*d*e^2)*a*b^5+15*b^5*e^3*a^2)*x^9+1/8*((3*a
*d^2*e+b*d^3)*b^6+6*(3*a*d*e^2+3*b*d^2*e)*a*b^5+15*(a*e^3+3*b*d*e^2)*a^2*b^
4+20*b^4*e^3*a^3)*x^8+1/7*(a*d^3*b^6+6*(3*a*d^2*e+b*d^3)*a*b^5+15*(3*a*d*e^
2+3*b*d^2*e)*a^2*b^4+20*(a*e^3+3*b*d*e^2)*a^3*b^3+15*b^3*e^3*a^4)*x^7+1/6*(
```

```
6*a^2*d^3*b^5+15*(3*a*d^2*e+b*d^3)*a^2*b^4+20*(3*a*d*e^2+3*b*d^2*e)*a^3*b^3
+15*(a*e^3+3*b*d*e^2)*a^4*b^2+6*b^2*e^3*a^5)*x^6+1/5*(15*a^3*d^3*b^4+20*(3*
a*d^2*e+b*d^3)*a^3*b^3+15*(3*a*d*e^2+3*b*d^2*e)*a^4*b^2+6*(a*e^3+3*b*d*e^2)
*a^5*b+b*e^3*a^6)*x^5+1/4*(20*a^4*d^3*b^3+15*(3*a*d^2*e+b*d^3)*a^4*b^2+6*(3
*a*d*e^2+3*b*d^2*e)*a^5*b+(a*e^3+3*b*d*e^2)*a^6)*x^4+1/3*(15*a^5*d^3*b^2+6*
(3*a*d^2*e+b*d^3)*a^5*b+(3*a*d*e^2+3*b*d^2*e)*a^6)*x^3+1/2*(6*a^6*d^3*b+(3*
a*d^2*e+b*d^3)*a^6)*x^2+a^7*d^3*x
```

maxima [B] time = 0.58, size = 376, normalized size = 4.09

$$\frac{1}{11}b^7e^3x^{11}+a^7d^3x+\frac{1}{10}\left(3b^7de^2+7ab^6e^3\right)x^{10}+\frac{1}{3}\left(b^7d^2e+7ab^6de^2+7a^2b^5e^3\right)x^9+\frac{1}{8}\left(b^7d^3+21ab^6d^2e+63a^2b^5de^2+35a^3b^4e^3\right)x^8+\left(ab^6d^3+9a^2b^5d^2e+15a^3b^4de^2+5a^4b^3e^3\right)x^7+\frac{7}{2}\left(a^2b^5d^3+5a^3b^4d^2e+5a^4b^3de^2+a^5b^2e^3\right)x^6+\frac{7}{5}\left(5a^3b^4d^3+15a^4b^3d^2e+9a^5b^2de^2+a^6be^3\right)x^5+\frac{1}{4}\left(35a^4b^3d^3+63a^5b^2d^2e+21a^6bde^2+a^7e^3\right)x^4+\left(7a^5b^2d^3+7a^6bd^2e+a^7de^2\right)x^3+\frac{1}{2}\left(7a^6bd^3+3a^7d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/11*b^7*e^3*x^11 + a^7*d^3*x + 1/10*(3*b^7*d*e^2 + 7*a*b^6*e^3)*x^10 + 1/3
*(b^7*d^2*e + 7*a*b^6*d*e^2 + 7*a^2*b^5*e^3)*x^9 + 1/8*(b^7*d^3 + 21*a*b^6*
d^2*e + 63*a^2*b^5*d*e^2 + 35*a^3*b^4*e^3)*x^8 + (a*b^6*d^3 + 9*a^2*b^5*d^2
*e + 15*a^3*b^4*d*e^2 + 5*a^4*b^3*e^3)*x^7 + 7/2*(a^2*b^5*d^3 + 5*a^3*b^4*d
^2*e + 5*a^4*b^3*d*e^2 + a^5*b^2*e^3)*x^6 + 7/5*(5*a^3*b^4*d^3 + 15*a^4*b^3
*d^2*e + 9*a^5*b^2*d*e^2 + a^6*b*e^3)*x^5 + 1/4*(35*a^4*b^3*d^3 + 63*a^5*b^
2*d^2*e + 21*a^6*b*d*e^2 + a^7*e^3)*x^4 + (7*a^5*b^2*d^3 + 7*a^6*b*d^2*e +
a^7*d*e^2)*x^3 + 1/2*(7*a^6*b*d^3 + 3*a^7*d^2*e)*x^2
```

mupad [B] time = 2.17, size = 356, normalized size = 3.87

$$x^7\left(5a^4b^3e^3+15a^3b^4de^2+9a^2b^5d^2e+ab^6d^3\right)+x^5\left(\frac{7a^6be^3}{5}+\frac{63a^5b^2de^2}{5}+21a^4b^3d^2e+7a^3b^4d^3\right)+x^4\left(\frac{a^7e^3}{4}+\frac{21a^6bde^2}{4}+\frac{63a^5b^2d^2e}{4}+\frac{35a^4b^3d^3}{4}\right)+x^8\left(\frac{35a^3b^4e^3}{8}+\frac{63a^2b^5de^2}{8}+\frac{21ab^6d^2e}{8}+\frac{b^7d^3}{8}\right)+a^7d^3x+\frac{b^7e^3x^{11}}{11}+\frac{7a^2b^2x^6\left(a^3e^3+5a^2bde^2+5ab^2d^2e+b^3d^3\right)}{2}+\frac{a^6d^2x^2\,(3ae+7bd)}{2}+\frac{b^6e^2x^{10}\,(7ae+3bd)}{10}+a^5dx^3\left(a^2e^2+7abde+7b^2d^2\right)+\frac{b^5ex^9\left(7a^2e^2+7abde+b^2d^2\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^7*(a*b^6*d^3 + 5*a^4*b^3*e^3 + 9*a^2*b^5*d^2*e + 15*a^3*b^4*d*e^2) + x^5*
((7*a^6*b*e^3)/5 + 7*a^3*b^4*d^3 + 21*a^4*b^3*d^2*e + (63*a^5*b^2*d*e^2)/5)
 + x^4*((a^7*e^3)/4 + (35*a^4*b^3*d^3)/4 + (63*a^5*b^2*d^2*e)/4 + (21*a^6*b
*d*e^2)/4) + x^8*((b^7*d^3)/8 + (35*a^3*b^4*e^3)/8 + (63*a^2*b^5*d*e^2)/8 +
 (21*a*b^6*d^2*e)/8) + a^7*d^3*x + (b^7*e^3*x^11)/11 + (7*a^2*b^2*x^6*(a^3*
e^3 + b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2))/2 + (a^6*d^2*x^2*(3*a*e + 7
*b*d))/2 + (b^6*e^2*x^10*(7*a*e + 3*b*d))/10 + a^5*d*x^3*(a^2*e^2 + 7*b^2*d
^2 + 7*a*b*d*e) + (b^5*e*x^9*(7*a^2*e^2 + b^2*d^2 + 7*a*b*d*e))/3
```

sympy [B] time = 0.14, size = 427, normalized size = 4.64

$$a^7d^3x+\frac{b^7e^3x^{11}}{11}+x^{10}\left(\frac{7ab^6e^3}{10}+\frac{3b^7de^2}{10}\right)+x^9\left(\frac{7a^2b^5e^3}{3}+\frac{7ab^6de^2}{3}+\frac{b^7d^2e}{3}\right)+x^8\left(\frac{35a^3b^4e^3}{8}+\frac{63a^2b^5de^2}{8}+\frac{21ab^6d^2e}{8}+\frac{b^7d^3}{8}\right)+x^7\left(5a^4b^3e^3+15a^3b^4de^2+9a^2b^5d^2e+ab^6d^3\right)+x^6\left(\frac{7a^5b^2e^3}{2}+\frac{35a^4b^3de^2}{2}+\frac{35a^3b^4d^2e}{2}+\frac{7a^2b^5d^3}{2}\right)+x^5\left(\frac{7a^6be^3}{5}+\frac{63a^5b^2de^2}{5}+21a^4b^3d^2e+7a^3b^4d^3\right)+x^4\left(\frac{a^7e^3}{4}+\frac{21a^6bde^2}{4}+\frac{63a^5b^2d^2e}{4}+\frac{35a^4b^3d^3}{4}\right)+x^3\left(a^7de^2+7a^6bd^2e+7a^5b^2d^3\right)+x^2\left(\frac{3a^7d^2e}{2}+\frac{7a^6bd^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**3*x + b**7*e**3*x**11/11 + x**10*(7*a*b**6*e**3/10 + 3*b**7*d*e**2/
10) + x**9*(7*a**2*b**5*e**3/3 + 7*a*b**6*d*e**2/3 + b**7*d**2*e/3) + x**8*
(35*a**3*b**4*e**3/8 + 63*a**2*b**5*d*e**2/8 + 21*a*b**6*d**2*e/8 + b**7*d*
*3/8) + x**7*(5*a**4*b**3*e**3 + 15*a**3*b**4*d*e**2 + 9*a**2*b**5*d**2*e +
 a*b**6*d**3) + x**6*(7*a**5*b**2*e**3/2 + 35*a**4*b**3*d*e**2/2 + 35*a**3*
b**4*d**2*e/2 + 7*a**2*b**5*d**3/2) + x**5*(7*a**6*b*e**3/5 + 63*a**5*b**2*
d*e**2/5 + 21*a**4*b**3*d**2*e + 7*a**3*b**4*d**3) + x**4*(a**7*e**3/4 + 21
*a**6*b*d*e**2/4 + 63*a**5*b**2*d**2*e/4 + 35*a**4*b**3*d**3/4) + x**3*(a**
7*d*e**2 + 7*a**6*b*d**2*e + 7*a**5*b**2*d**3) + x**2*(3*a**7*d**2*e/2 + 7*
a**6*b*d**3/2)
```

3.1695 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=65

$$\frac{2e(a+bx)^9(bd-ae)}{9b^3}+\frac{(a+bx)^8(bd-ae)^2}{8b^3}+\frac{e^2(a+bx)^{10}}{10b^3}$$

Rubi [A] time = 0.15, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{2e(a+bx)^9(bd-ae)}{9b^3}+\frac{(a+bx)^8(bd-ae)^2}{8b^3}+\frac{e^2(a+bx)^{10}}{10b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^8)/(8*b^3) + (2*e*(b*d - a*e)*(a + b*x)^9)/(9*b^3)
 + (e^2*(a + b*x)^10)/(10*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^7(d+ex)^2 \, dx \\
&= \int \left(\frac{(bd-ae)^2(a+bx)^7}{b^2}+\frac{2e(bd-ae)(a+bx)^8}{b^2}+\frac{e^2(a+bx)^9}{b^2}\right) dx \\
&= \frac{(bd-ae)^2(a+bx)^8}{8b^3}+\frac{2e(bd-ae)(a+bx)^9}{9b^3}+\frac{e^2(a+bx)^{10}}{10b^3}
\end{aligned}$$

Mathematica [B] time = 0.07, size = 229, normalized size = 3.52

$$\frac{1}{360}x\left(120a^7\left(3d^2+3dex+e^2x^2\right)+210a^6bx\left(6d^2+8dex+3e^2x^2\right)+252a^5b^2x^2\left(10d^2+15dex+6e^2x^2\right)+210a^4b^3x^3\left(15d^2+24dex+10e^2x^2\right)+120a^3b^4x^4\left(21d^2+35dex+15e^2x^2\right)+45a^2b^5x^5\left(28d^2+48dex+21e^2x^2\right)+10ab^6x^6\left(36d^2+63dex+28e^2x^2\right)+b^7x^7\left(45d^2+80dex+36e^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(120*a^7*(3*d^2 + 3*d*e*x + e^2*x^2) + 210*a^6*b*x*(6*d^2 + 8*d*e*x + 3*
e^2*x^2) + 252*a^5*b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2) + 210*a^4*b^3*x^
3*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + 120*a^3*b^4*x^4*(21*d^2 + 35*d*e*x + 1
5*e^2*x^2) + 45*a^2*b^5*x^5*(28*d^2 + 48*d*e*x + 21*e^2*x^2) + 10*a*b^6*x^6
*(36*d^2 + 63*d*e*x + 28*e^2*x^2) + b^7*x^7*(45*d^2 + 80*d*e*x + 36*e^2*x^2
)))/360
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.40, size = 294, normalized size = 4.52

$$\frac{1}{10}x^{10}e^2b^7+\frac{2}{9}x^9edb^7+\frac{7}{9}x^9e^2b^6a+\frac{1}{8}x^8d^2b^7+\frac{7}{4}x^8edb^6a+\frac{21}{8}x^8e^2b^5a^2+x^7d^2b^6a+6x^7edb^5a^2+5x^7e^2b^4a^3+\frac{7}{2}x^6d^2b^5a^2+\frac{35}{3}x^6edb^4a^3+\frac{35}{6}x^6e^2b^3a^4+7x^5d^2b^4a^3+14x^5edb^3a^4+\frac{21}{5}x^5e^2b^2a^5+\frac{35}{4}x^4d^2b^3a^4+\frac{21}{2}x^4edb^2a^5+\frac{7}{4}x^4e^2ba^6+7x^3d^2b^2a^5+\frac{14}{3}x^3edba^6+\frac{1}{3}x^3e^2a^7+\frac{7}{2}x^2d^2ba^6+x^2eda^7+xd^2a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*b^7 + 2/9*x^9*e*d*b^7 + 7/9*x^9*e^2*b^6*a + 1/8*x^8*d^2*b^7 +
 7/4*x^8*e*d*b^6*a + 21/8*x^8*e^2*b^5*a^2 + x^7*d^2*b^6*a + 6*x^7*e*d*b^5*a
^2 + 5*x^7*e^2*b^4*a^3 + 7/2*x^6*d^2*b^5*a^2 + 35/3*x^6*e*d*b^4*a^3 + 35/6*
x^6*e^2*b^3*a^4 + 7*x^5*d^2*b^4*a^3 + 14*x^5*e*d*b^3*a^4 + 21/5*x^5*e^2*b^2
*a^5 + 35/4*x^4*d^2*b^3*a^4 + 21/2*x^4*e*d*b^2*a^5 + 7/4*x^4*e^2*b*a^6 + 7*
x^3*d^2*b^2*a^5 + 14/3*x^3*e*d*b*a^6 + 1/3*x^3*e^2*a^7 + 7/2*x^2*d^2*b*a^6
+ x^2*e*d*a^7 + x*d^2*a^7
```

giac [B] time = 0.19, size = 294, normalized size = 4.52

$$\frac{1}{10}b^7x^{10}e^2+\frac{2}{9}b^7dx^9e+\frac{1}{8}b^7d^2x^8+\frac{7}{9}ab^6x^9e^2+\frac{7}{4}ab^6dx^8e+ab^6d^2x^7+\frac{21}{8}a^2b^5x^8e^2+6a^2b^5dx^7e+\frac{7}{2}a^2b^5d^2x^6+5a^3b^4x^7e^2+\frac{35}{3}a^3b^4dx^6e+7a^3b^4d^2x^5+\frac{35}{6}a^4b^3x^6e^2+14a^4b^3dx^5e+\frac{35}{4}a^4b^3d^2x^4+\frac{21}{5}a^5b^2x^5e^2+\frac{21}{2}a^5b^2dx^4e+7a^5b^2d^2x^3+\frac{7}{4}a^6bx^4e^2+\frac{14}{3}a^6bdx^3e+\frac{7}{2}a^6bd^2x^2+\frac{1}{3}a^7x^3e^2+a^7dx^2e+a^7d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/10*b^7*x^10*e^2 + 2/9*b^7*d*x^9*e + 1/8*b^7*d^2*x^8 + 7/9*a*b^6*x^9*e^2 +
 7/4*a*b^6*d*x^8*e + a*b^6*d^2*x^7 + 21/8*a^2*b^5*x^8*e^2 + 6*a^2*b^5*d*x^7
*e + 7/2*a^2*b^5*d^2*x^6 + 5*a^3*b^4*x^7*e^2 + 35/3*a^3*b^4*d*x^6*e + 7*a^3
*b^4*d^2*x^5 + 35/6*a^4*b^3*x^6*e^2 + 14*a^4*b^3*d*x^5*e + 35/4*a^4*b^3*d^2
*x^4 + 21/5*a^5*b^2*x^5*e^2 + 21/2*a^5*b^2*d*x^4*e + 7*a^5*b^2*d^2*x^3 + 7/
4*a^6*b*x^4*e^2 + 14/3*a^6*b*d*x^3*e + 7/2*a^6*b*d^2*x^2 + 1/3*a^7*x^3*e^2
+ a^7*d*x^2*e + a^7*d^2*x
```

maple [B] time = 0.05, size = 433, normalized size = 6.66

$$\frac{b^7e^2x^{10}}{10}+a^7d^2x+\frac{\left(6ab^6e^2+\left(ae^2+2bde\right)b^6\right)x^9}{9}+\frac{\left(15a^2b^5e^2+6\left(ae^2+2bde\right)ab^5+\left(2ade+bd^2\right)b^6\right)x^8}{8}+\frac{\left(20a^3b^4e^2+ab^6d^2+15\left(ae^2+2bde\right)a^2b^4+6\left(2ade+bd^2\right)ab^5\right)x^7}{7}+\frac{\left(15a^4b^3e^2+6a^2b^5d^2+20\left(ae^2+2bde\right)a^3b^3+15\left(2ade+bd^2\right)a^2b^4\right)x^6}{6}+\frac{\left(6a^5b^2e^2+15a^3b^4d^2+15\left(ae^2+2bde\right)a^4b^2+20\left(2ade+bd^2\right)a^3b^3\right)x^5}{5}+\frac{\left(a^6be^2+20a^4b^3d^2+6\left(ae^2+2bde\right)a^5b+15\left(2ade+bd^2\right)a^4b^2\right)x^4}{4}+\frac{\left(15a^5b^2d^2+\left(ae^2+2bde\right)a^6+6\left(2ade+bd^2\right)a^5b\right)x^3}{3}+\frac{\left(6a^6bd^2+\left(2ade+bd^2\right)a^6\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/10*b^7*e^2*x^10+1/9*((a*e^2+2*b*d*e)*b^6+6*b^6*e^2*a)*x^9+1/8*((2*a*d*e+b
*d^2)*b^6+6*(a*e^2+2*b*d*e)*a*b^5+15*b^5*e^2*a^2)*x^8+1/7*(a*d^2*b^6+6*(2*a
*d*e+b*d^2)*a*b^5+15*(a*e^2+2*b*d*e)*a^2*b^4+20*b^4*e^2*a^3)*x^7+1/6*(6*a^2
*d^2*b^5+15*(2*a*d*e+b*d^2)*a^2*b^4+20*(a*e^2+2*b*d*e)*a^3*b^3+15*b^3*e^2*a
^4)*x^6+1/5*(15*a^3*d^2*b^4+20*(2*a*d*e+b*d^2)*a^3*b^3+15*(a*e^2+2*b*d*e)*a
^4*b^2+6*b^2*e^2*a^5)*x^5+1/4*(20*a^4*d^2*b^3+15*(2*a*d*e+b*d^2)*a^4*b^2+6*
(a*e^2+2*b*d*e)*a^5*b+b*e^2*a^6)*x^4+1/3*(15*a^5*d^2*b^2+6*(2*a*d*e+b*d^2)*
a^5*b+(a*e^2+2*b*d*e)*a^6)*x^3+1/2*(6*a^6*d^2*b+(2*a*d*e+b*d^2)*a^6)*x^2+a^
7*d^2*x
```

maxima [B] time = 0.56, size = 273, normalized size = 4.20

$$\frac{1}{10}b^7e^2x^{10}+a^7d^2x+\frac{1}{9}\left(2b^7de+7ab^6e^2\right)x^9+\frac{1}{8}\left(b^7d^2+14ab^6de+21a^2b^5e^2\right)x^8+\left(ab^6d^2+6a^2b^5de+5a^3b^4e^2\right)x^7+\frac{7}{6}\left(3a^2b^5d^2+10a^3b^4de+5a^4b^3e^2\right)x^6+\frac{7}{5}\left(5a^3b^4d^2+10a^4b^3de+3a^5b^2e^2\right)x^5+\frac{7}{4}\left(5a^4b^3d^2+6a^5b^2de+a^6be^2\right)x^4+\frac{1}{3}\left(21a^5b^2d^2+14a^6bde+a^7e^2\right)x^3+\frac{1}{2}\left(7a^6bd^2+2a^7de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/10*b^7*e^2*x^10 + a^7*d^2*x + 1/9*(2*b^7*d*e + 7*a*b^6*e^2)*x^9 + 1/8*(b^
7*d^2 + 14*a*b^6*d*e + 21*a^2*b^5*e^2)*x^8 + (a*b^6*d^2 + 6*a^2*b^5*d*e + 5
*a^3*b^4*e^2)*x^7 + 7/6*(3*a^2*b^5*d^2 + 10*a^3*b^4*d*e + 5*a^4*b^3*e^2)*x^
6 + 7/5*(5*a^3*b^4*d^2 + 10*a^4*b^3*d*e + 3*a^5*b^2*e^2)*x^5 + 7/4*(5*a^4*b
^3*d^2 + 6*a^5*b^2*d*e + a^6*b*e^2)*x^4 + 1/3*(21*a^5*b^2*d^2 + 14*a^6*b*d*
e + a^7*e^2)*x^3 + 1/2*(7*a^6*b*d^2 + 2*a^7*d*e)*x^2
```

mupad [B] time = 2.09, size = 249, normalized size = 3.83

$$x^3\left(\frac{a^7e^2}{3}+\frac{14a^6bde}{3}+7a^5b^2d^2\right)+x^8\left(\frac{21a^2b^5e^2}{8}+\frac{7ab^6de}{4}+\frac{b^7d^2}{8}\right)+a^7d^2x+\frac{b^7e^2x^{10}}{10}+\frac{a^6dx^2\,(2ae+7bd)}{2}+\frac{b^6ex^9\,(7ae+2bd)}{9}+\frac{7a^4bx^4\,(a^2e^2+6abde+5b^2d^2)}{4}+ab^4x^7\,(5a^2e^2+6abde+b^2d^2)+\frac{7a^3b^2x^5\,(3a^2e^2+10abde+5b^2d^2)}{5}+\frac{7a^2b^3x^6\,(5a^2e^2+10abde+3b^2d^2)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^3*((a^7*e^2)/3 + 7*a^5*b^2*d^2 + (14*a^6*b*d*e)/3) + x^8*((b^7*d^2)/8 + (
21*a^2*b^5*e^2)/8 + (7*a*b^6*d*e)/4) + a^7*d^2*x + (b^7*e^2*x^10)/10 + (a^6
*d*x^2*(2*a*e + 7*b*d))/2 + (b^6*e*x^9*(7*a*e + 2*b*d))/9 + (7*a^4*b*x^4*(a
^2*e^2 + 5*b^2*d^2 + 6*a*b*d*e))/4 + a*b^4*x^7*(5*a^2*e^2 + b^2*d^2 + 6*a*b
*d*e) + (7*a^3*b^2*x^5*(3*a^2*e^2 + 5*b^2*d^2 + 10*a*b*d*e))/5 + (7*a^2*b^3
*x^6*(5*a^2*e^2 + 3*b^2*d^2 + 10*a*b*d*e))/6
```

sympy [B] time = 0.12, size = 303, normalized size = 4.66

$$a^7d^2x+\frac{b^7e^2x^{10}}{10}+x^9\left(\frac{7ab^6e^2}{9}+\frac{2b^7de}{9}\right)+x^8\left(\frac{21a^2b^5e^2}{8}+\frac{7ab^6de}{4}+\frac{b^7d^2}{8}\right)+x^7\left(5a^3b^4e^2+6a^2b^5de+ab^6d^2\right)+x^6\left(\frac{35a^4b^3e^2}{6}+\frac{35a^3b^4de}{3}+\frac{7a^2b^5d^2}{2}\right)+x^5\left(\frac{21a^5b^2e^2}{5}+14a^4b^3de+7a^3b^4d^2\right)+x^4\left(\frac{7a^6be^2}{4}+\frac{21a^5b^2de}{2}+\frac{35a^4b^3d^2}{4}\right)+x^3\left(\frac{a^7e^2}{3}+\frac{14a^6bde}{3}+7a^5b^2d^2\right)+x^2\left(a^7de+\frac{7a^6bd^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**2*x + b**7*e**2*x**10/10 + x**9*(7*a*b**6*e**2/9 + 2*b**7*d*e/9) +
x**8*(21*a**2*b**5*e**2/8 + 7*a*b**6*d*e/4 + b**7*d**2/8) + x**7*(5*a**3*b*
*4*e**2 + 6*a**2*b**5*d*e + a*b**6*d**2) + x**6*(35*a**4*b**3*e**2/6 + 35*a
**3*b**4*d*e/3 + 7*a**2*b**5*d**2/2) + x**5*(21*a**5*b**2*e**2/5 + 14*a**4*
b**3*d*e + 7*a**3*b**4*d**2) + x**4*(7*a**6*b*e**2/4 + 21*a**5*b**2*d*e/2 +
 35*a**4*b**3*d**2/4) + x**3*(a**7*e**2/3 + 14*a**6*b*d*e/3 + 7*a**5*b**2*d
**2) + x**2*(a**7*d*e + 7*a**6*b*d**2/2)
```

3.1696 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^8(bd-ae)}{8b^2}+\frac{e(a+bx)^9}{9b^2}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{(a+bx)^8(bd-ae)}{8b^2}+\frac{e(a+bx)^9}{9b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^8)/(8*b^2) + (e*(a + b*x)^9)/(9*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)\,dx\\ &= \int \left(\frac{(bd-ae)(a+bx)^7}{b}+\frac{e(a+bx)^8}{b}\right)dx\\ &= \frac{(bd-ae)(a+bx)^8}{8b^2}+\frac{e(a+bx)^9}{9b^2}\end{aligned}$$

Mathematica [B] time = 0.02, size = 151, normalized size = 3.97

$$a^7dx+\frac{1}{2}a^6x^2(ae+7bd)+\frac{7}{3}a^5bx^3(ae+3bd)+\frac{7}{4}a^4b^2x^4(3ae+5bd)+7a^3b^3x^5(ae+bd)+\frac{7}{6}a^2b^4x^6(5ae+3bd)+\frac{1}{8}b^6x^8(7ae+bd)+ab^5x^7(3ae+bd)+\frac{1}{9}b^7ex^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] a^7*d*x + (a^6*(7*b*d + a*e)*x^2)/2 + (7*a^5*b*(3*b*d + a*e)*x^3)/3 + (7*a^
4*b^2*(5*b*d + 3*a*e)*x^4)/4 + 7*a^3*b^3*(b*d + a*e)*x^5 + (7*a^2*b^4*(3*b*
d + 5*a*e)*x^6)/6 + a*b^5*(b*d + 3*a*e)*x^7 + (b^6*(b*d + 7*a*e)*x^8)/8 + (
b^7*e*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.38, size = 169, normalized size = 4.45

$$\frac{1}{9}x^9eb^7 + \frac{1}{8}x^8db^7 + \frac{7}{8}x^8eb^6a + x^7db^6a + 3x^7eb^5a^2 + \frac{7}{2}x^6db^5a^2 + \frac{35}{6}x^6eb^4a^3 + 7x^5db^4a^3 + 7x^5eb^3a^4 + \frac{35}{4}x^4db^3a^4 + \frac{21}{4}x^4eb^2a^5 + 7x^3db^2a^5 + \frac{7}{3}x^3eba^6 + \frac{7}{2}x^2dba^6 + \frac{1}{2}x^2ea^7 + xda^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*b^7 + 1/8*x^8*d*b^7 + 7/8*x^8*e*b^6*a + x^7*d*b^6*a + 3*x^7*e*b^5
*a^2 + 7/2*x^6*d*b^5*a^2 + 35/6*x^6*e*b^4*a^3 + 7*x^5*d*b^4*a^3 + 7*x^5*e*b
^3*a^4 + 35/4*x^4*d*b^3*a^4 + 21/4*x^4*e*b^2*a^5 + 7*x^3*d*b^2*a^5 + 7/3*x^
3*e*b*a^6 + 7/2*x^2*d*b*a^6 + 1/2*x^2*e*a^7 + x*d*a^7
```

giac [B] time = 0.21, size = 177, normalized size = 4.66

$$\frac{1}{9}\,b^7x^9e + \frac{1}{8}\,b^7dx^8 + \frac{7}{8}\,ab^6x^8e + ab^6dx^7 + 3\,a^2b^5x^7e + \frac{7}{2}\,a^2b^5dx^6 + \frac{35}{6}\,a^3b^4x^6e + 7\,a^3b^4dx^5 + 7\,a^4b^3x^5e + \frac{35}{4}\,a^4b^3dx^4 + \frac{21}{4}\,a^5b^2x^4e + 7\,a^5b^2dx^3 + \frac{7}{3}\,a^6bx^3e + \frac{7}{2}\,a^6bdx^2 + \frac{1}{2}\,a^7x^2e + a^7dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/9*b^7*x^9*e + 1/8*b^7*d*x^8 + 7/8*a*b^6*x^8*e + a*b^6*d*x^7 + 3*a^2*b^5*x
^7*e + 7/2*a^2*b^5*d*x^6 + 35/6*a^3*b^4*x^6*e + 7*a^3*b^4*d*x^5 + 7*a^4*b^3
*x^5*e + 35/4*a^4*b^3*d*x^4 + 21/4*a^5*b^2*x^4*e + 7*a^5*b^2*d*x^3 + 7/3*a^
6*b*x^3*e + 7/2*a^6*b*d*x^2 + 1/2*a^7*x^2*e + a^7*d*x
```

maple [B] time = 0.04, size = 250, normalized size = 6.58

$$\frac{b^7 e\,x^9}{9} + a^7dx + \frac{\left(6a\,b^6e + (ae+bd)\,b^6\right)x^8}{8} + \frac{\left(15a^2b^5e + a\,b^6d + 6\,(ae+bd)\,a\,b^5\right)x^7}{7} + \frac{\left(20a^3b^4e + 6a^2b^5d + 15\,(ae+bd)\,a^2b^4\right)x^6}{6} + \frac{\left(15a^4b^3e + 15a^3b^4d + 20\,(ae+bd)\,a^3b^3\right)x^5}{5} + \frac{\left(6a^5b^2e + 20a^4b^3d + 15\,(ae+bd)\,a^4b^2\right)x^4}{4} + \frac{\left(a^6be + 15a^5b^2d + 6\,(ae+bd)\,a^5b\right)x^3}{3} + \frac{\left(6a^6bd + (ae+bd)\,a^6\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/9*b^7*e*x^9+1/8*((a*e+b*d)*b^6+6*b^6*e*a)*x^8+1/7*(a*d*b^6+6*(a*e+b*d)*a*
b^5+15*b^5*e*a^2)*x^7+1/6*(6*a^2*d*b^5+15*(a*e+b*d)*a^2*b^4+20*b^4*e*a^3)*x
^6+1/5*(15*a^3*d*b^4+20*(a*e+b*d)*a^3*b^3+15*b^3*e*a^4)*x^5+1/4*(20*a^4*d*b
^3+15*(a*e+b*d)*a^4*b^2+6*b^2*e*a^5)*x^4+1/3*(15*a^5*d*b^2+6*(a*e+b*d)*a^5*
b+b*e*a^6)*x^3+1/2*(6*a^6*d*b+(a*e+b*d)*a^6)*x^2+a^7*d*x
```

maxima [B] time = 0.55, size = 163, normalized size = 4.29

$$\frac{1}{9}\,b^7ex^9 + a^7dx + \frac{1}{8}\left(b^7d + 7\,ab^6e\right)x^8 + \left(ab^6d + 3\,a^2b^5e\right)x^7 + \frac{7}{6}\left(3\,a^2b^5d + 5\,a^3b^4e\right)x^6 + 7\left(a^3b^4d + a^4b^3e\right)x^5 + \frac{7}{4}\left(5\,a^4b^3d + 3\,a^5b^2e\right)x^4 + \frac{7}{3}\left(3\,a^5b^2d + a^6be\right)x^3 + \frac{1}{2}\left(7\,a^6bd + a^7e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/9*b^7*e*x^9 + a^7*d*x + 1/8*(b^7*d + 7*a*b^6*e)*x^8 + (a*b^6*d + 3*a^2*b^
5*e)*x^7 + 7/6*(3*a^2*b^5*d + 5*a^3*b^4*e)*x^6 + 7*(a^3*b^4*d + a^4*b^3*e)*
x^5 + 7/4*(5*a^4*b^3*d + 3*a^5*b^2*e)*x^4 + 7/3*(3*a^5*b^2*d + a^6*b*e)*x^3
 + 1/2*(7*a^6*b*d + a^7*e)*x^2
```

mupad [B] time = 0.07, size = 143, normalized size = 3.76

$$x^2\left(\frac{e\,a^7}{2} + \frac{7\,b\,d\,a^6}{2}\right) + x^8\left(\frac{d\,b^7}{8} + \frac{7\,a\,e\,b^6}{8}\right) + \frac{b^7\,e\,x^9}{9} + a^7\,d\,x + \frac{7\,a^5\,b\,x^3\,\left(a\,e+3\,b\,d\right)}{3} + a\,b^5\,x^7\,\left(3\,a\,e+b\,d\right) + 7\,a^3\,b^3\,x^5\,\left(a\,e+b\,d\right) + \frac{7\,a^4\,b^2\,x^4\,\left(3\,a\,e+5\,b\,d\right)}{4} + \frac{7\,a^2\,b^4\,x^6\,\left(5\,a\,e+3\,b\,d\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^2*((a^7*e)/2 + (7*a^6*b*d)/2) + x^8*((b^7*d)/8 + (7*a*b^6*e)/8) + (b^7*e*
x^9)/9 + a^7*d*x + (7*a^5*b*x^3*(a*e + 3*b*d))/3 + a*b^5*x^7*(3*a*e + b*d)
+ 7*a^3*b^3*x^5*(a*e + b*d) + (7*a^4*b^2*x^4*(3*a*e + 5*b*d))/4 + (7*a^2*b^
4*x^6*(5*a*e + 3*b*d))/6
```

sympy [B] time = 0.10, size = 178, normalized size = 4.68

$$a^7dx + \frac{b^7ex^9}{9} + x^8\left(\frac{7ab^6e}{8} + \frac{b^7d}{8}\right) + x^7\left(3a^2b^5e + ab^6d\right) + x^6\left(\frac{35a^3b^4e}{6} + \frac{7a^2b^5d}{2}\right) + x^5\left(7a^4b^3e + 7a^3b^4d\right) + x^4\left(\frac{21a^5b^2e}{4} + \frac{35a^4b^3d}{4}\right) + x^3\left(\frac{7a^6be}{3} + 7a^5b^2d\right) + x^2\left(\frac{a^7e}{2} + \frac{7a^6bd}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d*x + b**7*e*x**9/9 + x**8*(7*a*b**6*e/8 + b**7*d/8) + x**7*(3*a**2*b*
*5*e + a*b**6*d) + x**6*(35*a**3*b**4*e/6 + 7*a**2*b**5*d/2) + x**5*(7*a**4
*b**3*e + 7*a**3*b**4*d) + x**4*(21*a**5*b**2*e/4 + 35*a**4*b**3*d/4) + x**
3*(7*a**6*b*e/3 + 7*a**5*b**2*d) + x**2*(a**7*e/2 + 7*a**6*b*d/2)
```

3.1697 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^8}{8b}$$

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 32}

$$\frac{(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a + b*x)^8/(8*b)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7\,dx\\ &= \frac{(a+bx)^8}{8b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\frac{(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a + b*x)^8/(8*b)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.38, size = 75, normalized size = 5.36

$$\frac{1}{8}x^{8}b^{7}+x^{7}b^{6}a+\frac{7}{2}x^{6}b^{5}a^{2}+7x^{5}b^{4}a^{3}+\frac{35}{4}x^{4}b^{3}a^{4}+7x^{3}b^{2}a^{5}+\frac{7}{2}x^{2}ba^{6}+xa^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^7 + x^7*b^6*a + 7/2*x^6*b^5*a^2 + 7*x^5*b^4*a^3 + 35/4*x^4*b^3*a^
4 + 7*x^3*b^2*a^5 + 7/2*x^2*b*a^6 + x*a^7
```

giac [B] time = 0.18, size = 71, normalized size = 5.07

$$\frac{1}{2}\left(bx^{2}+2\,ax\right)a^{6}+\frac{3}{4}\left(bx^{2}+2\,ax\right)^{2}a^{4}b+\frac{1}{2}\left(bx^{2}+2\,ax\right)^{3}a^{2}b^{2}+\frac{1}{8}\left(bx^{2}+2\,ax\right)^{4}b^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*a^6 + 3/4*(b*x^2 + 2*a*x)^2*a^4*b + 1/2*(b*x^2 + 2*a*x)
^3*a^2*b^2 + 1/8*(b*x^2 + 2*a*x)^4*b^3
```

maple [B] time = 0.04, size = 76, normalized size = 5.43

$$\frac{1}{8}b^{7}x^{8}+a\,b^{6}x^{7}+\frac{7}{2}a^{2}b^{5}x^{6}+7a^{3}b^{4}x^{5}+\frac{35}{4}a^{4}b^{3}x^{4}+7a^{5}b^{2}x^{3}+\frac{7}{2}a^{6}b\,x^{2}+a^{7}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/8*b^7*x^8+a*b^6*x^7+7/2*a^2*b^5*x^6+7*a^3*b^4*x^5+35/4*a^4*b^3*x^4+7*a^5*
b^2*x^3+7/2*a^6*b*x^2+a^7*x
```

maxima [A] time = 0.48, size = 23, normalized size = 1.64

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{4}}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^4/b
```

mupad [B] time = 0.03, size = 75, normalized size = 5.36

$$a^{7}\,x+\frac{7\,a^{6}\,b\,x^{2}}{2}+7\,a^{5}\,b^{2}\,x^{3}+\frac{35\,a^{4}\,b^{3}\,x^{4}}{4}+7\,a^{3}\,b^{4}\,x^{5}+\frac{7\,a^{2}\,b^{5}\,x^{6}}{2}+a\,b^{6}\,x^{7}+\frac{b^{7}\,x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] a^7*x + (b^7*x^8)/8 + (7*a^6*b*x^2)/2 + a*b^6*x^7 + 7*a^5*b^2*x^3 + (35*a^4
*b^3*x^4)/4 + 7*a^3*b^4*x^5 + (7*a^2*b^5*x^6)/2
```

sympy [B] time = 0.08, size = 83, normalized size = 5.93

$$a^{7}x+\frac{7a^{6}bx^{2}}{2}+7a^{5}b^{2}x^{3}+\frac{35a^{4}b^{3}x^{4}}{4}+7a^{3}b^{4}x^{5}+\frac{7a^{2}b^{5}x^{6}}{2}+ab^{6}x^{7}+\frac{b^{7}x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*x + 7*a**6*b*x**2/2 + 7*a**5*b**2*x**3 + 35*a**4*b**3*x**4/4 + 7*a**3*
b**4*x**5 + 7*a**2*b**5*x**6/2 + a*b**6*x**7 + b**7*x**8/8
```

3.1698 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=170

$$-\frac{(bd-ae)^7\log(d+ex)}{e^8}+\frac{bx(bd-ae)^6}{e^7}-\frac{(a+bx)^2(bd-ae)^5}{2e^6}+\frac{(a+bx)^3(bd-ae)^4}{3e^5}-\frac{(a+bx)^4(bd-ae)^3}{4e^4}+\frac{(a+bx)^5(\ldots}{5e\ldots}$$

Rubi [A] time = 0.08, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{bx(bd-ae)^6}{e^7}-\frac{(a+bx)^2(bd-ae)^5}{2e^6}+\frac{(a+bx)^3(bd-ae)^4}{3e^5}-\frac{(a+bx)^4(bd-ae)^3}{4e^4}+\frac{(a+bx)^5(bd-ae)^2}{5e^3}-\frac{(a+bx)^6(bd-ae)}{6e^2}-\frac{(bd-ae)^7\log(d+ex)}{e^8}+\frac{(a+bx)^7}{7e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^6*x)/e^7 - ((b*d - a*e)^5*(a + b*x)^2)/(2*e^6) + ((b*d - a*e
)^4*(a + b*x)^3)/(3*e^5) - ((b*d - a*e)^3*(a + b*x)^4)/(4*e^4) + ((b*d - a*
e)^2*(a + b*x)^5)/(5*e^3) - ((b*d - a*e)*(a + b*x)^6)/(6*e^2) + (a + b*x)^7
/(7*e) - ((b*d - a*e)^7*Log[d + e*x])/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{d+ex}\,dx &= \int \frac{(a+bx)^7}{d+ex}\,dx\\
&= \int \left(\frac{b(bd-ae)^6}{e^7}-\frac{b(bd-ae)^5(a+bx)}{e^6}+\frac{b(bd-ae)^4(a+bx)^2}{e^5}-\frac{b(bd-ae)^3\ldots}{e^4\ldots}\right.\\
&= \frac{b(bd-ae)^6x}{e^7}-\frac{(bd-ae)^5(a+bx)^2}{2e^6}+\frac{(bd-ae)^4(a+bx)^3}{3e^5}-\frac{(bd-ae)^3(a+b\ldots}{4e^4}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 304, normalized size = 1.79

$$\frac{bex\left(2940a^6e^6+4410a^5be^5(ex-2d)+2450a^4b^2e^4\left(6d^2-3dex+2e^2x^2\right)+1225a^3b^3e^3\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+147a^2b^4e^2\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)+49ab^5e\left(-60d^5+30d^4ex-20d^3e^2x^2+15d^2e^3x^3-12de^4x^4+10e^5x^5\right)+b^6\left(420d^6-210d^5ex+140d^4e^2x^2-105d^3e^3x^3+84d^2e^4x^4-70de^5x^5+60e^6x^6\right)\right)-420(bd-ae)^7\log(d+ex)}{420e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x),x]
```

```
[Out] (b*e*x*(2940*a^6*e^6 + 4410*a^5*b*e^5*(-2*d + e*x) + 2450*a^4*b^2*e^4*(6*d^
2 - 3*d*e*x + 2*e^2*x^2) + 1225*a^3*b^3*e^3*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*
x^2 + 3*e^3*x^3) + 147*a^2*b^4*e^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 -
15*d*e^3*x^3 + 12*e^4*x^4) + 49*a*b^5*e*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*
```

```
x^2 + 15*d^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5) + b^6*(420*d^6 - 210*d^5*
e*x + 140*d^4*e^2*x^2 - 105*d^3*e^3*x^3 + 84*d^2*e^4*x^4 - 70*d*e^5*x^5 + 6
0*e^6*x^6)) - 420*(b*d - a*e)^7*Log[d + e*x])/(420*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x), x]
```

fricas [B] time = 0.46, size = 459, normalized size = 2.70

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*b^7*e^7*x^7 - 70*(b^7*d*e^6 - 7*a*b^6*e^7)*x^6 + 84*(b^7*d^2*e^5
- 7*a*b^6*d*e^6 + 21*a^2*b^5*e^7)*x^5 - 105*(b^7*d^3*e^4 - 7*a*b^6*d^2*e^5
+ 21*a^2*b^5*d*e^6 - 35*a^3*b^4*e^7)*x^4 + 140*(b^7*d^4*e^3 - 7*a*b^6*d^3*e
^4 + 21*a^2*b^5*d^2*e^5 - 35*a^3*b^4*d*e^6 + 35*a^4*b^3*e^7)*x^3 - 210*(b^7
*d^5*e^2 - 7*a*b^6*d^4*e^3 + 21*a^2*b^5*d^3*e^4 - 35*a^3*b^4*d^2*e^5 + 35*a
^4*b^3*d*e^6 - 21*a^5*b^2*e^7)*x^2 + 420*(b^7*d^6*e - 7*a*b^6*d^5*e^2 + 21*
a^2*b^5*d^4*e^3 - 35*a^3*b^4*d^3*e^4 + 35*a^4*b^3*d^2*e^5 - 21*a^5*b^2*d*e^
6 + 7*a^6*b*e^7)*x - 420*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35
*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6
- a^7*e^7)*log(e*x + d))/e^8
```

giac [B] time = 0.17, size = 469, normalized size = 2.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^
4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*e^(-8)*log(ab
s(x*e + d)) + 1/420*(60*b^7*x^7*e^6 - 70*b^7*d*x^6*e^5 + 84*b^7*d^2*x^5*e^4
 - 105*b^7*d^3*x^4*e^3 + 140*b^7*d^4*x^3*e^2 - 210*b^7*d^5*x^2*e + 420*b^7*
d^6*x + 490*a*b^6*x^6*e^6 - 588*a*b^6*d*x^5*e^5 + 735*a*b^6*d^2*x^4*e^4 - 9
80*a*b^6*d^3*x^3*e^3 + 1470*a*b^6*d^4*x^2*e^2 - 2940*a*b^6*d^5*x*e + 1764*a
^2*b^5*x^5*e^6 - 2205*a^2*b^5*d*x^4*e^5 + 2940*a^2*b^5*d^2*x^3*e^4 - 4410*a
^2*b^5*d^3*x^2*e^3 + 8820*a^2*b^5*d^4*x*e^2 + 3675*a^3*b^4*x^4*e^6 - 4900*a
^3*b^4*d*x^3*e^5 + 7350*a^3*b^4*d^2*x^2*e^4 - 14700*a^3*b^4*d^3*x*e^3 + 490
0*a^4*b^3*x^3*e^6 - 7350*a^4*b^3*d*x^2*e^5 + 14700*a^4*b^3*d^2*x*e^4 + 4410
*a^5*b^2*x^2*e^6 - 8820*a^5*b^2*d*x*e^5 + 2940*a^6*b*x*e^6)*e^(-7)
```

maple [B] time = 0.05, size = 539, normalized size = 3.17

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x)
```

```
[Out] -1/4*b^7/e^4*x^4*d^3-1/2*b^7/e^6*x^2*d^5+1/5*b^7/e^3*x^5*d^2+21/5*b^5/e*x^5
*a^2+35/4*b^4/e*x^4*a^3+1/3*b^7/e^5*x^3*d^4+21/2*b^2/e*x^2*a^5+35/3*b^3/e*x
^3*a^4+b^7/e^7*d^6*x-1/6*b^7/e^2*x^6*d+7/6*b^6/e*x^6*a-1/e^8*ln(e*x+d)*b^7*
d^7+7*b/e*a^6*x-7*b^6/e^6*a*d^5*x+35*b^3/e^3*a^4*d^2*x+1/e*ln(e*x+d)*a^7+1/
7*b^7/e*x^7-35/e^4*ln(e*x+d)*a^4*b^3*d^3+7/2*b^6/e^5*x^2*a*d^4+7/4*b^6/e^3*
x^4*a*d^2-21/e^6*ln(e*x+d)*a^2*b^5*d^5+21/e^3*ln(e*x+d)*a^5*b^2*d^2-35*b^4/
e^4*a^3*d^3*x-7/5*b^6/e^2*x^5*a*d+35/e^5*ln(e*x+d)*a^3*b^4*d^4-7/e^2*ln(e*x
+d)*a^6*b*d+7/e^7*ln(e*x+d)*a*b^6*d^6+21*b^5/e^5*a^2*d^4*x-21/2*b^5/e^4*x^2
*a^2*d^3-21*b^2/e^2*a^5*d*x-35/2*b^3/e^2*x^2*a^4*d+35/2*b^4/e^3*x^2*a^3*d^2
-7/3*b^6/e^4*x^3*a*d^3-35/3*b^4/e^2*x^3*a^3*d+7*b^5/e^3*x^3*a^2*d^2-21/4*b^
5/e^2*x^4*a^2*d
```

maxima [B] time = 0.65, size = 458, normalized size = 2.69

$$\frac{60 b^7 e^6 x^7 - 70(b^7 d e^5 - 7ab^6e^6)x^6 + 84(b^7d^2e^4 - 7ab^6de^5 + 21a^2b^5e^6)x^5 - 105(b^7d^3e^3 - 7ab^6d^2e^4 + 21a^2b^5de^5 - 35a^3b^4e^6)x^4 + 140(b^7d^4e^2 - 7ab^6d^3e^3 + 21a^2b^5d^2e^4 - 35a^3b^4de^5 + 35a^4b^3e^6)x^3 - 210(b^7d^5e - 7ab^6d^4e^2 + 21a^2b^5d^3e^3 - 35a^3b^4d^2e^4 + 35a^4b^3de^5 - 21a^5b^2e^6)x^2 + 420(b^7d^6 - 7ab^6d^5e + 21a^2b^5d^4e^2 - 35a^3b^4d^3e^3 + 35a^4b^3d^2e^4 - 21a^5b^2de^5 + 7a^6be^6)x}{420e^7} - \frac{(b^7d^7 - 7ab^6d^6e + 21a^2b^5d^5e^2 - 35a^3b^4d^4e^3 + 35a^4b^3d^3e^4 - 21a^5b^2d^2e^5 + 7a^6bde^6 - a^7e^7)\log(ex+d)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*b^7*e^6*x^7 - 70*(b^7*d*e^5 - 7*a*b^6*e^6)*x^6 + 84*(b^7*d^2*e^4
- 7*a*b^6*d*e^5 + 21*a^2*b^5*e^6)*x^5 - 105*(b^7*d^3*e^3 - 7*a*b^6*d^2*e^4
+ 21*a^2*b^5*d*e^5 - 35*a^3*b^4*e^6)*x^4 + 140*(b^7*d^4*e^2 - 7*a*b^6*d^3*e
^3 + 21*a^2*b^5*d^2*e^4 - 35*a^3*b^4*d*e^5 + 35*a^4*b^3*e^6)*x^3 - 210*(b^7
*d^5*e - 7*a*b^6*d^4*e^2 + 21*a^2*b^5*d^3*e^3 - 35*a^3*b^4*d^2*e^4 + 35*a^4
*b^3*d*e^5 - 21*a^5*b^2*e^6)*x^2 + 420*(b^7*d^6 - 7*a*b^6*d^5*e + 21*a^2*b^
5*d^4*e^2 - 35*a^3*b^4*d^3*e^3 + 35*a^4*b^3*d^2*e^4 - 21*a^5*b^2*d*e^5 + 7*
a^6*b*e^6)*x)/e^7 - (b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*
b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7
*e^7)*log(e*x + d)/e^8
```

mupad [B] time = 0.07, size = 510, normalized size = 3.00

$$x^6\left(\frac{7ab^6}{6e}-\frac{b^7d}{6e^2}\right)+x\left(\frac{7a^6b}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{7ab^6}{e}-\frac{b^7d}{e^2}\right)}{e}-\frac{21a^2b^5}{e}\right)}{e}+\frac{35a^3b^4}{e}\right)}{e}-\frac{35a^4b^3}{e}\right)}{e}+\frac{21a^5b^2}{e}\right)}{e}\right)+x^4\left(\frac{d\left(\frac{d\left(\frac{7ab^6}{e}-\frac{b^7d}{e^2}\right)}{e}-\frac{21a^2b^5}{e}\right)}{4e}+\frac{35a^3b^4}{4e}\right)+x^2\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{7ab^6}{e}-\frac{b^7d}{e^2}\right)}{e}-\frac{21a^2b^5}{e}\right)}{e}+\frac{35a^3b^4}{e}\right)}{e}-\frac{35a^4b^3}{e}\right)}{2e}+\frac{21a^5b^2}{2e}\right)-x^5\left(\frac{d\left(\frac{7ab^6}{e}-\frac{b^7d}{e^2}\right)}{5e}-\frac{21a^2b^5}{5e}\right)-x^3\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{7ab^6}{e}-\frac{b^7d}{e^2}\right)}{e}-\frac{21a^2b^5}{e}\right)}{e}+\frac{35a^3b^4}{e}\right)}{3e}-\frac{35a^4b^3}{3e}\right)+\frac{\ln(d+ex)\left(a^7e^7-b^7d^7-21a^2b^5d^5e^2+35a^3b^4d^4e^3-35a^4b^3d^3e^4+21a^5b^2d^2e^5+7ab^6d^6e-7a^6bde^6\right)}{e^8}+\frac{b^7x^7}{7e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x),x)
```

```
[Out] x^6*((7*a*b^6)/(6*e) - (b^7*d)/(6*e^2)) + x*((7*a^6*b)/e - (d*((d*((d*((d*(
(d*((7*a*b^6)/e - (b^7*d)/e^2))/e - (21*a^2*b^5)/e))/e + (35*a^3*b^4)/e))/e
 - (35*a^4*b^3)/e))/e + (21*a^5*b^2)/e))/e) + x^4*((d*((d*((7*a*b^6)/e - (b
^7*d)/e^2))/e - (21*a^2*b^5)/e))/(4*e) + (35*a^3*b^4)/(4*e)) + x^2*((d*((d*
((d*((d*((7*a*b^6)/e - (b^7*d)/e^2))/e - (21*a^2*b^5)/e))/e + (35*a^3*b^4)/
e))/e - (35*a^4*b^3)/e))/(2*e) + (21*a^5*b^2)/(2*e)) - x^5*((d*((7*a*b^6)/e
 - (b^7*d)/e^2))/(5*e) - (21*a^2*b^5)/(5*e)) - x^3*((d*((d*((d*((7*a*b^6)/e
 - (b^7*d)/e^2))/e - (21*a^2*b^5)/e))/e + (35*a^3*b^4)/e))/(3*e) - (35*a^4*
b^3)/(3*e)) + (log(d + e*x)*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^
3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7
*a^6*b*d*e^6))/e^8 + (b^7*x^7)/(7*e)
```

sympy [B] time = 0.83, size = 408, normalized size = 2.40

$$\frac{b^7x^7}{7e}+x^6\left(\frac{7ab^6}{6e}-\frac{b^7d}{6e^2}\right)+x^5\left(\frac{21a^2b^5}{5e}-\frac{7ab^6d}{5e^2}+\frac{b^7d^2}{5e^3}\right)+x^4\left(\frac{35a^3b^4}{4e}-\frac{21a^2b^5d}{4e^2}+\frac{7ab^6d^2}{4e^3}-\frac{b^7d^3}{4e^4}\right)+x^3\left(\frac{35a^4b^3}{3e}-\frac{35a^3b^4d}{3e^2}+\frac{7a^2b^5d^2}{e^3}-\frac{7ab^6d^3}{3e^4}+\frac{b^7d^4}{3e^5}\right)+x^2\left(\frac{21a^5b^2}{2e}-\frac{35a^4b^3d}{2e^2}+\frac{35a^3b^4d^2}{2e^3}-\frac{21a^2b^5d^3}{2e^4}+\frac{7ab^6d^4}{2e^5}-\frac{b^7d^5}{2e^6}\right)+x\left(\frac{7a^6b}{e}-\frac{21a^5b^2d}{e^2}+\frac{35a^4b^3d^2}{e^3}-\frac{35a^3b^4d^3}{e^4}+\frac{21a^2b^5d^4}{e^5}-\frac{7ab^6d^5}{e^6}+\frac{b^7d^6}{e^7}\right)+\frac{(ae-bd)^7\log(d+ex)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d),x)
```

```
[Out] b**7*x**7/(7*e) + x**6*(7*a*b**6/(6*e) - b**7*d/(6*e**2)) + x**5*(21*a**2*b
**5/(5*e) - 7*a*b**6*d/(5*e**2) + b**7*d**2/(5*e**3)) + x**4*(35*a**3*b**4/
(4*e) - 21*a**2*b**5*d/(4*e**2) + 7*a*b**6*d**2/(4*e**3) - b**7*d**3/(4*e**
4)) + x**3*(35*a**4*b**3/(3*e) - 35*a**3*b**4*d/(3*e**2) + 7*a**2*b**5*d**2
/e**3 - 7*a*b**6*d**3/(3*e**4) + b**7*d**4/(3*e**5)) + x**2*(21*a**5*b**2/(
2*e) - 35*a**4*b**3*d/(2*e**2) + 35*a**3*b**4*d**2/(2*e**3) - 21*a**2*b**5*
d**3/(2*e**4) + 7*a*b**6*d**4/(2*e**5) - b**7*d**5/(2*e**6)) + x*(7*a**6*b/
e - 21*a**5*b**2*d/e**2 + 35*a**4*b**3*d**2/e**3 - 35*a**3*b**4*d**3/e**4 +
 21*a**2*b**5*d**4/e**5 - 7*a*b**6*d**5/e**6 + b**7*d**6/e**7) + (a*e - b*d
)**7*log(d + e*x)/e**8
```

3.1699 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=186

$$-\frac{7b^6(d+ex)^5(bd-ae)}{5e^8}+\frac{21b^5(d+ex)^4(bd-ae)^2}{4e^8}-\frac{35b^4(d+ex)^3(bd-ae)^3}{3e^8}+\frac{35b^3(d+ex)^2(bd-ae)^4}{2e^8}-\frac{21b^2x(bd-}{e^7}$$

Rubi [A] time = 0.26, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{7b^6(d+ex)^5(bd-ae)}{5e^8}+\frac{21b^5(d+ex)^4(bd-ae)^2}{4e^8}-\frac{35b^4(d+ex)^3(bd-ae)^3}{3e^8}+\frac{35b^3(d+ex)^2(bd-ae)^4}{2e^8}-\frac{21b^2x(bd-ae)^5}{e^7}+\frac{(bd-ae)^7}{e^8(d+ex)}+\frac{7b(bd-ae)^6\log(d+ex)}{e^8}+\frac{b^7(d+ex)^6}{6e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (-21*b^2*(b*d - a*e)^5*x)/e^7 + (b*d - a*e)^7/(e^8*(d + e*x)) + (35*b^3*(b*
d - a*e)^4*(d + e*x)^2)/(2*e^8) - (35*b^4*(b*d - a*e)^3*(d + e*x)^3)/(3*e^8
) + (21*b^5*(b*d - a*e)^2*(d + e*x)^4)/(4*e^8) - (7*b^6*(b*d - a*e)*(d + e*
x)^5)/(5*e^8) + (b^7*(d + e*x)^6)/(6*e^8) + (7*b*(b*d - a*e)^6*Log[d + e*x]
)/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^2}\,dx\\ &= \int \left(-\frac{21b^2(bd-ae)^5}{e^7}+\frac{(-bd+ae)^7}{e^7(d+ex)^2}+\frac{7b(bd-ae)^6}{e^7(d+ex)}+\frac{35b^3(bd-ae)^4(d+ex}{e^7}\right.\\ &= -\frac{21b^2(bd-ae)^5x}{e^7}+\frac{(bd-ae)^7}{e^8(d+ex)}+\frac{35b^3(bd-ae)^4(d+ex)^2}{2e^8}-\frac{35b^4(bd-ae)^3}{3e^8}\end{aligned}$$

Mathematica [B] time = 0.11, size = 387, normalized size = 2.08

$$\frac{-60a^7e^7+420a^6bde^6+1260a^5b^2e^5\left(-d^2+dex+e^2x^2\right)+1050a^4b^3e^4\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+700a^3b^4e^3\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+105a^2b^5e^2\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)+42ab^6e\left(-10d^6+50d^5ex+30d^4e^2x^2-10d^3e^3x^3+5d^2e^4x^4-3de^5x^5+2e^6x^6\right)+420b(d+ex)(bd-ae)^6\log(d+ex)+b^7\left(60d^7-360d^6ex-210d^5e^2x^2+70d^4e^3x^3-35d^3e^4x^4+21d^2e^5x^5-14de^6x^6+10e^7x^7\right)}{60e^8(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (420*a^6*b*d*e^6 - 60*a^7*e^7 + 1260*a^5*b^2*e^5*(-d^2 + d*e*x + e^2*x^2) +
 1050*a^4*b^3*e^4*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 700*a^3*b^4
```

```
*e^3*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + 105*a^2
*b^5*e^2*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x
^4 + 3*e^5*x^5) + 42*a*b^6*e*(-10*d^6 + 50*d^5*e*x + 30*d^4*e^2*x^2 - 10*d^
3*e^3*x^3 + 5*d^2*e^4*x^4 - 3*d*e^5*x^5 + 2*e^6*x^6) + b^7*(60*d^7 - 360*d^
6*e*x - 210*d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5
- 14*d*e^6*x^6 + 10*e^7*x^7) + 420*b*(b*d - a*e)^6*(d + e*x)*Log[d + e*x])/
(60*e^8*(d + e*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^2,x]
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^2, x]
```

fricas [B] time = 0.44, size = 629, normalized size = 3.38

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x, algorithm="fricas")
[Out] 1/60*(10*b^7*e^7*x^7 + 60*b^7*d^7 - 420*a*b^6*d^6*e + 1260*a^2*b^5*d^5*e^2
- 2100*a^3*b^4*d^4*e^3 + 2100*a^4*b^3*d^3*e^4 - 1260*a^5*b^2*d^2*e^5 + 420*
a^6*b*d*e^6 - 60*a^7*e^7 - 14*(b^7*d*e^6 - 6*a*b^6*e^7)*x^6 + 21*(b^7*d^2*e
^5 - 6*a*b^6*d*e^6 + 15*a^2*b^5*e^7)*x^5 - 35*(b^7*d^3*e^4 - 6*a*b^6*d^2*e^
5 + 15*a^2*b^5*d*e^6 - 20*a^3*b^4*e^7)*x^4 + 70*(b^7*d^4*e^3 - 6*a*b^6*d^3*
e^4 + 15*a^2*b^5*d^2*e^5 - 20*a^3*b^4*d*e^6 + 15*a^4*b^3*e^7)*x^3 - 210*(b^
7*d^5*e^2 - 6*a*b^6*d^4*e^3 + 15*a^2*b^5*d^3*e^4 - 20*a^3*b^4*d^2*e^5 + 15*
a^4*b^3*d*e^6 - 6*a^5*b^2*e^7)*x^2 - 60*(6*b^7*d^6*e - 35*a*b^6*d^5*e^2 + 8
4*a^2*b^5*d^4*e^3 - 105*a^3*b^4*d^3*e^4 + 70*a^4*b^3*d^2*e^5 - 21*a^5*b^2*d
*e^6)*x + 420*(b^7*d^7 - 6*a*b^6*d^6*e + 15*a^2*b^5*d^5*e^2 - 20*a^3*b^4*d^
4*e^3 + 15*a^4*b^3*d^3*e^4 - 6*a^5*b^2*d^2*e^5 + a^6*b*d*e^6 + (b^7*d^6*e -
 6*a*b^6*d^5*e^2 + 15*a^2*b^5*d^4*e^3 - 20*a^3*b^4*d^3*e^4 + 15*a^4*b^3*d^2
*e^5 - 6*a^5*b^2*d*e^6 + a^6*b*e^7)*x)*log(e*x + d))/(e^9*x + d*e^8)
```

giac [B] time = 0.21, size = 542, normalized size = 2.91

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x, algorithm="giac")
[Out] 1/60*(10*b^7 - 84*(b^7*d*e - a*b^6*e^2)*e^(-1)/(x*e + d) + 315*(b^7*d^2*e^2
 - 2*a*b^6*d*e^3 + a^2*b^5*e^4)*e^(-2)/(x*e + d)^2 - 700*(b^7*d^3*e^3 - 3*a
*b^6*d^2*e^4 + 3*a^2*b^5*d*e^5 - a^3*b^4*e^6)*e^(-3)/(x*e + d)^3 + 1050*(b^
7*d^4*e^4 - 4*a*b^6*d^3*e^5 + 6*a^2*b^5*d^2*e^6 - 4*a^3*b^4*d*e^7 + a^4*b^3
*e^8)*e^(-4)/(x*e + d)^4 - 1260*(b^7*d^5*e^5 - 5*a*b^6*d^4*e^6 + 10*a^2*b^5
*d^3*e^7 - 10*a^3*b^4*d^2*e^8 + 5*a^4*b^3*d*e^9 - a^5*b^2*e^10)*e^(-5)/(x*e
 + d)^5)*(x*e + d)^6*e^(-8) - 7*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e
^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)
*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (b^7*d^7*e^6/(x*e + d) - 7*a
*b^6*d^6*e^7/(x*e + d) + 21*a^2*b^5*d^5*e^8/(x*e + d) - 35*a^3*b^4*d^4*e^9/
(x*e + d) + 35*a^4*b^3*d^3*e^10/(x*e + d) - 21*a^5*b^2*d^2*e^11/(x*e + d) +
 7*a^6*b*d*e^12/(x*e + d) - a^7*e^13/(x*e + d))*e^(-14)
```

maple [B] time = 0.06, size = 571, normalized size = 3.07

$$\frac{b^7x^6}{6e^2}+\frac{7ab^6x^5}{5e^2}-\frac{2b^7dx^5}{5e^3}+\frac{21a^2b^5x^4}{4e^2}-\frac{7ab^6dx^4}{2e^3}+\frac{3b^7d^2x^4}{4e^4}+\frac{35a^3b^4x^3}{3e^2}-\frac{14a^2b^5dx^3}{e^3}+\frac{7ab^6d^2x^3}{e^4}-\frac{4b^7d^3x^3}{3e^5}+\frac{35a^4b^3x^2}{2e^2}-\frac{35a^3b^4dx^2}{e^3}+\frac{63a^2b^5d^2x^2}{2e^4}-\frac{14ab^6d^3x^2}{e^5}+\frac{5b^7d^4x^2}{2e^6}-\frac{a^7}{(ex+d)e}+\frac{7a^6bd}{(ex+d)e^2}+\frac{7a^6b\ln(ex+d)}{e^2}-\frac{21a^5b^2d^2}{(ex+d)e^3}-\frac{42a^5b^2d\ln(ex+d)}{e^3}+\frac{21a^5b^2x}{e^2}+\frac{35a^4b^3d^3}{(ex+d)e^4}+\frac{105a^4b^3d^2\ln(ex+d)}{e^4}-\frac{70a^4b^3dx}{e^3}-\frac{35a^3b^4d^4}{(ex+d)e^5}-\frac{140a^3b^4d^3\ln(ex+d)}{e^5}+\frac{105a^3b^4d^2x}{e^4}+\frac{21a^2b^5d^5}{(ex+d)e^6}+\frac{105a^2b^5d^4\ln(ex+d)}{e^6}-\frac{84a^2b^5d^3x}{e^5}-\frac{7ab^6d^6}{(ex+d)e^7}-\frac{42ab^6d^5\ln(ex+d)}{e^7}+\frac{35ab^6d^4x}{e^6}+\frac{b^7d^7}{(ex+d)e^8}+\frac{7b^7d^6\ln(ex+d)}{e^8}-\frac{6b^7d^5x}{e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x)
```

```
[Out] 7/5*b^6/e^2*x^5*a-2/5*b^7/e^3*x^5*d+7*b/e^2*ln(e*x+d)*a^6+7*b^7/e^8*ln(e*x+
d)*d^6+1/e^8/(e*x+d)*b^7*d^7+35/2*b^3/e^2*x^2*a^4+5/2*b^7/e^6*x^2*d^4+21*b^
2/e^2*a^5*x-6*b^7/e^7*d^5*x+21/4*b^5/e^2*x^4*a^2+3/4*b^7/e^4*x^4*d^2+35/3*b
^4/e^2*x^3*a^3-4/3*b^7/e^5*x^3*d^3+1/6*b^7/e^2*x^6-1/e/(e*x+d)*a^7-42*b^2/e
^3*ln(e*x+d)*a^5*d+105*b^3/e^4*ln(e*x+d)*a^4*d^2-14*b^5/e^3*x^3*a^2*d-7/e^7
/(e*x+d)*a*b^6*d^6-84*b^5/e^5*a^2*d^3*x+35*b^6/e^6*a*d^4*x+7/e^2/(e*x+d)*d*
a^6*b-21/e^3/(e*x+d)*a^5*b^2*d^2+35/e^4/(e*x+d)*a^4*b^3*d^3-35/e^5/(e*x+d)*
a^3*b^4*d^4+21/e^6/(e*x+d)*a^2*b^5*d^5-140*b^4/e^5*ln(e*x+d)*a^3*d^3+105*b^
5/e^6*ln(e*x+d)*a^2*d^4-7/2*b^6/e^3*x^4*a*d-42*b^6/e^7*ln(e*x+d)*a*d^5+7*b^
6/e^4*x^3*a*d^2-35*b^4/e^3*x^2*a^3*d+63/2*b^5/e^4*x^2*a^2*d^2-14*b^6/e^5*x^
2*a*d^3-70*b^3/e^3*a^4*d*x+105*b^4/e^4*a^3*d^2*x
```

maxima [B] time = 0.79, size = 466, normalized size = 2.51

$$\frac{b^7d^7-7ab^6d^6e+21a^2b^5d^5e^2-35a^3b^4d^4e^3+35a^4b^3d^3e^4-21a^5b^2d^2e^5+7a^6bde^6-a^7e^7}{e^9x+de^8}+\frac{10b^7e^5x^6-12(2b^7de^4-7ab^6e^5)x^5+15(3b^7d^2e^3-14ab^6de^4+21a^2b^5e^5)x^4-20(4b^7d^3e^2-21ab^6d^2e^3+42a^2b^5de^4-35a^3b^4e^5)x^3+30(5b^7d^4e-28ab^6d^3e^2+63a^2b^5d^2e^3-70a^3b^4de^4+35a^4b^3e^5)x^2-60(6b^7d^5-35ab^6d^4e+84a^2b^5d^3e^2-105a^3b^4d^2e^3+70a^4b^3de^4-21a^5b^2e^5)x}{60e^7}+\frac{7(b^7d^6-6ab^6d^5e+15a^2b^5d^4e^2-20a^3b^4d^3e^3+15a^4b^3d^2e^4-6a^5b^2de^5+a^6be^6)\log(ex+d)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4
*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)/(e^9*x + d*e^8
) + 1/60*(10*b^7*e^5*x^6 - 12*(2*b^7*d*e^4 - 7*a*b^6*e^5)*x^5 + 15*(3*b^7*d
^2*e^3 - 14*a*b^6*d*e^4 + 21*a^2*b^5*e^5)*x^4 - 20*(4*b^7*d^3*e^2 - 21*a*b^
6*d^2*e^3 + 42*a^2*b^5*d*e^4 - 35*a^3*b^4*e^5)*x^3 + 30*(5*b^7*d^4*e - 28*a
*b^6*d^3*e^2 + 63*a^2*b^5*d^2*e^3 - 70*a^3*b^4*d*e^4 + 35*a^4*b^3*e^5)*x^2
- 60*(6*b^7*d^5 - 35*a*b^6*d^4*e + 84*a^2*b^5*d^3*e^2 - 105*a^3*b^4*d^2*e^3
 + 70*a^4*b^3*d*e^4 - 21*a^5*b^2*e^5)*x)/e^7 + 7*(b^7*d^6 - 6*a*b^6*d^5*e +
 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d
*e^5 + a^6*b*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 2.00, size = 839, normalized size = 4.51

$$x^5\left(\frac{7ab^6}{5e^2}-\frac{2b^7d}{5e^3}\right)+x^2\left(\frac{d^2\left(\frac{2d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e}-\frac{21a^2b^5}{e^2}+\frac{b^7d^2}{e^4}\right)}{2e^2}-\frac{d\left(\frac{35a^3b^4}{e^2}+\frac{2d\left(\frac{2d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e}-\frac{21a^2b^5}{e^2}+\frac{b^7d^2}{e^4}\right)}{e}-\frac{d^2\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e^2}\right)}{e}+\frac{35a^4b^3}{2e^2}\right)-x^4\left(\frac{d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{2e}-\frac{21a^2b^5}{4e^2}+\frac{b^7d^2}{4e^4}\right)+x^3\left(\frac{35a^3b^4}{3e^2}+\frac{2d\left(\frac{2d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e}-\frac{21a^2b^5}{e^2}+\frac{b^7d^2}{e^4}\right)}{3e}-\frac{d^2\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{3e^2}\right)-x\left(\frac{d^2\left(\frac{35a^3b^4}{e^2}+\frac{2d\left(\frac{2d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e}-\frac{21a^2b^5}{e^2}+\frac{b^7d^2}{e^4}\right)}{e}-\frac{d^2\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e^2}\right)}{e^2}-\frac{21a^5b^2}{e^2}+\frac{2d\left(\frac{d^2\left(\frac{2d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e}-\frac{21a^2b^5}{e^2}+\frac{b^7d^2}{e^4}\right)}{e^2}-\frac{2d\left(\frac{35a^3b^4}{e^2}+\frac{2d\left(\frac{2d\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e}-\frac{21a^2b^5}{e^2}+\frac{b^7d^2}{e^4}\right)}{e}-\frac{d^2\left(\frac{7ab^6}{e^2}-\frac{2b^7d}{e^3}\right)}{e^2}\right)}{e}+\frac{35a^4b^3}{e^2}\right)}{e}\right)+\frac{\ln(d+ex)\left(7a^6be^6-42a^5b^2de^5+105a^4b^3d^2e^4-140a^3b^4d^3e^3+105a^2b^5d^4e^2-42ab^6d^5e+7b^7d^6\right)}{e^8}-\frac{a^7e^7-7a^6bde^6+21a^5b^2d^2e^5-35a^4b^3d^3e^4+35a^3b^4d^4e^3-21a^2b^5d^5e^2+7ab^6d^6e-b^7d^7}{e\left(xe^8+de^7\right)}+\frac{b^7x^6}{6e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^2,x)
```

```
[Out] x^5*((7*a*b^6)/(5*e^2) - (2*b^7*d)/(5*e^3)) + x^2*((d^2*((2*d*((7*a*b^6)/e^
2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)/e^2 + (b^7*d^2)/e^4))/(2*e^2) - (d*((3
5*a^3*b^4)/e^2 + (2*d*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^
5)/e^2 + (b^7*d^2)/e^4))/e - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e^2))/e
+ (35*a^4*b^3)/(2*e^2)) - x^4*((d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/(2*e) -
(21*a^2*b^5)/(4*e^2) + (b^7*d^2)/(4*e^4)) + x^3*((35*a^3*b^4)/(3*e^2) + (2*
d*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)/e^2 + (b^7*d^2)/e
^4))/(3*e) - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/(3*e^2)) - x*((d^2*((35*
a^3*b^4)/e^2 + (2*d*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)
/e^2 + (b^7*d^2)/e^4))/e - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e^2))/e^2
- (21*a^5*b^2)/e^2 + (2*d*((d^2*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e -
(21*a^2*b^5)/e^2 + (b^7*d^2)/e^4))/e^2 - (2*d*((35*a^3*b^4)/e^2 + (2*d*((2*
```

```
d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)/e^2 + (b^7*d^2)/e^4))/e
 - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e^2))/e + (35*a^4*b^3)/e^2))/e) +
(log(d + e*x)*(7*b^7*d^6 + 7*a^6*b*e^6 - 42*a^5*b^2*d*e^5 + 105*a^2*b^5*d^4
*e^2 - 140*a^3*b^4*d^3*e^3 + 105*a^4*b^3*d^2*e^4 - 42*a*b^6*d^5*e))/e^8 - (
a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^
3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)/(e*(d*e^7 + e^8
*x)) + (b^7*x^6)/(6*e^2)
```

sympy [B] time = 1.50, size = 428, normalized size = 2.30

$$\frac{b^7x^6}{6e^2} + \frac{7b(ae-bd)^6\log(d+ex)}{e^8} + x^5\left(\frac{7ab^6}{5e^2} - \frac{2b^7d}{5e^3}\right) + x^4\left(\frac{21a^2b^5}{4e^2} - \frac{7ab^6d}{2e^3} + \frac{3b^7d^2}{4e^4}\right) + x^3\left(\frac{35a^3b^4}{3e^2} - \frac{14a^2b^5d}{e^3} + \frac{7ab^6d^2}{e^4} - \frac{4b^7d^3}{3e^5}\right) + x^2\left(\frac{35a^4b^3}{2e^2} - \frac{35a^3b^4d}{e^3} + \frac{63a^2b^5d^2}{2e^4} - \frac{14ab^6d^3}{e^5} + \frac{5b^7d^4}{2e^6}\right) + x\left(\frac{21a^5b^2}{e^2} - \frac{70a^4b^3d}{e^3} + \frac{105a^3b^4d^2}{e^4} - \frac{84a^2b^5d^3}{e^5} + \frac{35ab^6d^4}{e^6} - \frac{6b^7d^5}{e^7}\right) + \frac{-a^7e^7 + 7a^6bde^6 - 21a^5b^2d^2e^5 + 35a^4b^3d^3e^4 - 35a^3b^4d^4e^3 + 21a^2b^5d^5e^2 - 7ab^6d^6e + b^7d^7}{de^8 + e^9x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**2,x)
```

```
[Out] b**7*x**6/(6*e**2) + 7*b*(a*e - b*d)**6*log(d + e*x)/e**8 + x**5*(7*a*b**6/
(5*e**2) - 2*b**7*d/(5*e**3)) + x**4*(21*a**2*b**5/(4*e**2) - 7*a*b**6*d/(2
*e**3) + 3*b**7*d**2/(4*e**4)) + x**3*(35*a**3*b**4/(3*e**2) - 14*a**2*b**5
*d/e**3 + 7*a*b**6*d**2/e**4 - 4*b**7*d**3/(3*e**5)) + x**2*(35*a**4*b**3/(
2*e**2) - 35*a**3*b**4*d/e**3 + 63*a**2*b**5*d**2/(2*e**4) - 14*a*b**6*d**3
/e**5 + 5*b**7*d**4/(2*e**6)) + x*(21*a**5*b**2/e**2 - 70*a**4*b**3*d/e**3
+ 105*a**3*b**4*d**2/e**4 - 84*a**2*b**5*d**3/e**5 + 35*a*b**6*d**4/e**6 -
6*b**7*d**5/e**7) + (-a**7*e**7 + 7*a**6*b*d*e**6 - 21*a**5*b**2*d**2*e**5
+ 35*a**4*b**3*d**3*e**4 - 35*a**3*b**4*d**4*e**3 + 21*a**2*b**5*d**5*e**2
- 7*a*b**6*d**6*e + b**7*d**7)/(d*e**8 + e**9*x)
```

3.1700 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=185

$$-\frac{7b^6(d+ex)^4(bd-ae)}{4e^8}+\frac{7b^5(d+ex)^3(bd-ae)^2}{e^8}-\frac{35b^4(d+ex)^2(bd-ae)^3}{2e^8}+\frac{35b^3x(bd-ae)^4}{e^7}-\frac{21b^2(bd-ae)^5\log(d$$

Rubi [A] time = 0.22, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{7b^6(d+ex)^4(bd-ae)}{4e^8}+\frac{7b^5(d+ex)^3(bd-ae)^2}{e^8}-\frac{35b^4(d+ex)^2(bd-ae)^3}{2e^8}+\frac{35b^3x(bd-ae)^4}{e^7}-\frac{21b^2(bd-ae)^5\log(d+ex)}{e^8}-\frac{7b(bd-ae)^6}{e^8(d+ex)}+\frac{(bd-ae)^7}{2e^8(d+ex)^2}+\frac{b^7(d+ex)^5}{5e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (35*b^3*(b*d - a*e)^4*x)/e^7 + (b*d - a*e)^7/(2*e^8*(d + e*x)^2) - (7*b*(b*
d - a*e)^6)/(e^8*(d + e*x)) - (35*b^4*(b*d - a*e)^3*(d + e*x)^2)/(2*e^8) +
(7*b^5*(b*d - a*e)^2*(d + e*x)^3)/e^8 - (7*b^6*(b*d - a*e)*(d + e*x)^4)/(4*
e^8) + (b^7*(d + e*x)^5)/(5*e^8) - (21*b^2*(b*d - a*e)^5*Log[d + e*x])/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^3}\,dx\\
&= \int \left(\frac{35b^3(bd-ae)^4}{e^7}+\frac{(-bd+ae)^7}{e^7(d+ex)^3}+\frac{7b(bd-ae)^6}{e^7(d+ex)^2}-\frac{21b^2(bd-ae)^5}{e^7(d+ex)}-\frac{35b^4(\right.\\
&= \frac{35b^3(bd-ae)^4x}{e^7}+\frac{(bd-ae)^7}{2e^8(d+ex)^2}-\frac{7b(bd-ae)^6}{e^8(d+ex)}-\frac{35b^4(bd-ae)^3(d+ex)^2}{2e^8}+
\end{aligned}$$

Mathematica [B] time = 0.12, size = 388, normalized size = 2.10

$$\frac{-10a^7e^7-70a^6be^6(d+2ex)+210a^5b^2de^5(3d+4ex)+350a^4b^3e^4\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+350a^3b^4e^3\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)+70a^2b^5e^2\left(-27d^5+6d^4ex+63d^3e^2x^2+20d^2e^3x^3-5de^4x^4+2e^5x^5\right)+35ab^6e\left(22d^6-16d^5ex-68d^4e^2x^2-20d^3e^3x^3+5d^2e^4x^4-2de^5x^5+e^6x^6\right)-420b^2(d+ex)^2(bd-ae)^5\log(d+ex)+b^7\left(-130d^7+160d^6ex+500d^5e^2x^2+140d^4e^3x^3-35d^3e^4x^4+14d^2e^5x^5-7de^6x^6+4e^7x^7\right)}{20e^8(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (-10*a^7*e^7 - 70*a^6*b*e^6*(d + 2*e*x) + 210*a^5*b^2*d*e^5*(3*d + 4*e*x) +
 350*a^4*b^3*e^4*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) + 350*a^3*b
^4*e^3*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + 70*a^
```

2*b^5*e^2*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) + 35*a*b^6*e*(22*d^6 - 16*d^5*e*x - 68*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*d*e^5*x^5 + e^6*x^6) + b^7*(-130*d^7 + 160*d^6*e*x + 500*d^5*e^2*x^2 + 140*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 14*d^2*e^5*x^5 - 7*d*e^6*x^6 + 4*e^7*x^7) - 420*b^2*(b*d - a*e)^5*(d + e*x)^2*Log[d + e*x])/(20*e^8*(d + e*x)^2)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^3,x]

[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^3, x]

fricas [B] time = 0.44, size = 701, normalized size = 3.79

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x, algorithm="fricas")

[Out] 1/20*(4*b^7*e^7*x^7 - 130*b^7*d^7 + 770*a*b^6*d^6*e - 1890*a^2*b^5*d^5*e^2 + 2450*a^3*b^4*d^4*e^3 - 1750*a^4*b^3*d^3*e^4 + 630*a^5*b^2*d^2*e^5 - 70*a^6*b*d*e^6 - 10*a^7*e^7 - 7*(b^7*d*e^6 - 5*a*b^6*e^7)*x^6 + 14*(b^7*d^2*e^5 - 5*a*b^6*d*e^6 + 10*a^2*b^5*e^7)*x^5 - 35*(b^7*d^3*e^4 - 5*a*b^6*d^2*e^5 + 10*a^2*b^5*d*e^6 - 10*a^3*b^4*e^7)*x^4 + 140*(b^7*d^4*e^3 - 5*a*b^6*d^3*e^4 + 10*a^2*b^5*d^2*e^5 - 10*a^3*b^4*d*e^6 + 5*a^4*b^3*e^7)*x^3 + 10*(50*b^7*d^5*e^2 - 238*a*b^6*d^4*e^3 + 441*a^2*b^5*d^3*e^4 - 385*a^3*b^4*d^2*e^5 + 140*a^4*b^3*d*e^6)*x^2 + 20*(8*b^7*d^6*e - 28*a*b^6*d^5*e^2 + 21*a^2*b^5*d^4*e^3 + 35*a^3*b^4*d^3*e^4 - 70*a^4*b^3*d^2*e^5 + 42*a^5*b^2*d*e^6 - 7*a^6*b*e^7)*x - 420*(b^7*d^7 - 5*a*b^6*d^6*e + 10*a^2*b^5*d^5*e^2 - 10*a^3*b^4*d^4*e^3 + 5*a^4*b^3*d^3*e^4 - a^5*b^2*d^2*e^5 + (b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^2 + 2*(b^7*d^6*e - 5*a*b^6*d^5*e^2 + 10*a^2*b^5*d^4*e^3 - 10*a^3*b^4*d^3*e^4 + 5*a^4*b^3*d^2*e^5 - a^5*b^2*d*e^6)*x)*log(e*x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)

giac [B] time = 0.21, size = 448, normalized size = 2.42

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x, algorithm="giac")

[Out] -21*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(4*b^7*x^5*e^12 - 15*b^7*d*x^4*e^11 + 40*b^7*d^2*x^3*e^10 - 100*b^7*d^3*x^2*e^9 + 300*b^7*d^4*x*e^8 + 35*a*b^6*x^4*e^12 - 140*a*b^6*d*x^3*e^11 + 420*a*b^6*d^2*x^2*e^10 - 1400*a*b^6*d^3*x*e^9 + 140*a^2*b^5*x^3*e^12 - 630*a^2*b^5*d*x^2*e^11 + 2520*a^2*b^5*d^2*x*e^10 + 350*a^3*b^4*x^2*e^12 - 2100*a^3*b^4*d*x*e^11 + 700*a^4*b^3*x*e^12)*e^(-15) - 1/2*(13*b^7*d^7 - 77*a*b^6*d^6*e + 189*a^2*b^5*d^5*e^2 - 245*a^3*b^4*d^4*e^3 + 175*a^4*b^3*d^3*e^4 - 63*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 + a^7*e^7 + 14*(b^7*d^6*e - 6*a*b^6*d^5*e^2 + 15*a^2*b^5*d^4*e^3 - 20*a^3*b^4*d^3*e^4 + 15*a^4*b^3*d^2*e^5 - 6*a^5*b^2*d*e^6 + a^6*b*e^7)*x)*e^(-8)/(x*e + d)^2

maple [B] time = 0.06, size = 599, normalized size = 3.24

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x)
```

```
[Out] 21/2/e^6/(e*x+d)^2*a^2*b^5*d^5-7/2/e^7/(e*x+d)^2*a*b^6*d^6-7*b^6/e^4*x^3*a*
d-63/2*b^5/e^4*x^2*a^2*d-105*b^3/e^4*ln(e*x+d)*a^4*d-7*b/e^2/(e*x+d)*a^6-7*
b^7/e^8/(e*x+d)*d^6+7/4*b^6/e^3*x^4*a-3/4*b^7/e^4*x^4*d+7*b^5/e^3*x^3*a^2+2
*b^7/e^5*x^3*d^2+35/2*b^4/e^3*x^2*a^3-5*b^7/e^6*x^2*d^3+35*b^3/e^3*a^4*x+1/
2/e^8/(e*x+d)^2*b^7*d^7+21*b^2/e^3*ln(e*x+d)*a^5-21*b^7/e^8*ln(e*x+d)*d^5+1
5*b^7/e^7*d^4*x-1/2/e/(e*x+d)^2*a^7+1/5*b^7/e^3*x^5+21*b^6/e^5*x^2*a*d^2-10
5*b^4/e^4*a^3*d*x+210*b^4/e^5*ln(e*x+d)*a^3*d^2-210*b^5/e^6*ln(e*x+d)*a^2*d
^3+105*b^6/e^7*ln(e*x+d)*a*d^4-21/2/e^3/(e*x+d)^2*d^2*a^5*b^2+35/2/e^4/(e*x
+d)^2*a^4*b^3*d^3-35/2/e^5/(e*x+d)^2*a^3*b^4*d^4+126*b^5/e^5*a^2*d^2*x-70*b
^6/e^6*a*d^3*x+42*b^2/e^3/(e*x+d)*a^5*d-105*b^3/e^4/(e*x+d)*a^4*d^2+140*b^4
/e^5/(e*x+d)*a^3*d^3-105*b^5/e^6/(e*x+d)*a^2*d^4+42*b^6/e^7/(e*x+d)*a*d^5+7
/2/e^2/(e*x+d)^2*d*a^6*b
```

maxima [B] time = 0.67, size = 473, normalized size = 2.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*b^7*d^7 - 77*a*b^6*d^6*e + 189*a^2*b^5*d^5*e^2 - 245*a^3*b^4*d^4*e
^3 + 175*a^4*b^3*d^3*e^4 - 63*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 + a^7*e^7 + 1
4*(b^7*d^6*e - 6*a*b^6*d^5*e^2 + 15*a^2*b^5*d^4*e^3 - 20*a^3*b^4*d^3*e^4 +
15*a^4*b^3*d^2*e^5 - 6*a^5*b^2*d*e^6 + a^6*b*e^7)*x)/(e^10*x^2 + 2*d*e^9*x
+ d^2*e^8) + 1/20*(4*b^7*e^4*x^5 - 5*(3*b^7*d*e^3 - 7*a*b^6*e^4)*x^4 + 20*(
2*b^7*d^2*e^2 - 7*a*b^6*d*e^3 + 7*a^2*b^5*e^4)*x^3 - 10*(10*b^7*d^3*e - 42*
a*b^6*d^2*e^2 + 63*a^2*b^5*d*e^3 - 35*a^3*b^4*e^4)*x^2 + 20*(15*b^7*d^4 - 7
0*a*b^6*d^3*e + 126*a^2*b^5*d^2*e^2 - 105*a^3*b^4*d*e^3 + 35*a^4*b^3*e^4)*x
)/e^7 - 21*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e
^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*log(e*x + d)/e^8
```

mupad [B] time = 2.02, size = 690, normalized size = 3.73

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^3,x)
```

```
[Out] x^4*((7*a*b^6)/(4*e^3) - (3*b^7*d)/(4*e^4)) - x^3*((d*((7*a*b^6)/e^3 - (3*b
^7*d)/e^4))/e - (7*a^2*b^5)/e^3 + (b^7*d^2)/e^5) + x^2*((35*a^3*b^4)/(2*e^3
) - (b^7*d^3)/(2*e^6) + (3*d*((3*d*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e - (21
*a^2*b^5)/e^3 + (3*b^7*d^2)/e^5))/(2*e) - (3*d^2*((7*a*b^6)/e^3 - (3*b^7*d)
/e^4))/(2*e^2)) + x*((3*d^2*((3*d*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e - (21*
a^2*b^5)/e^3 + (3*b^7*d^2)/e^5))/e^2 + (35*a^4*b^3)/e^3 - (3*d*((35*a^3*b^4
)/e^3 - (b^7*d^3)/e^6 + (3*d*((3*d*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e - (21
*a^2*b^5)/e^3 + (3*b^7*d^2)/e^5))/e - (3*d^2*((7*a*b^6)/e^3 - (3*b^7*d)/e^4
))/e^2))/e - (d^3*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e^3) - ((a^7*e^7 + 13*b^
7*d^7 + 189*a^2*b^5*d^5*e^2 - 245*a^3*b^4*d^4*e^3 + 175*a^4*b^3*d^3*e^4 - 6
3*a^5*b^2*d^2*e^5 - 77*a*b^6*d^6*e + 7*a^6*b*d*e^6)/(2*e) + x*(7*b^7*d^6 +
7*a^6*b*e^6 - 42*a^5*b^2*d*e^5 + 105*a^2*b^5*d^4*e^2 - 140*a^3*b^4*d^3*e^3
+ 105*a^4*b^3*d^2*e^4 - 42*a*b^6*d^5*e))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) -
```

```
(log(d + e*x)*(21*b^7*d^5 - 21*a^5*b^2*e^5 + 105*a^4*b^3*d*e^4 + 210*a^2*b^
5*d^3*e^2 - 210*a^3*b^4*d^2*e^3 - 105*a*b^6*d^4*e))/e^8 + (b^7*x^5)/(5*e^3)
```

sympy [**B**] time = 3.02, size = 447, normalized size = 2.42

$$\frac{b^7x^5}{5e^3} + \frac{21b^2(ae-bd)^5\log(d+ex)}{e^8} + x^4\left(\frac{7ab^6}{4e^3} - \frac{3b^7d}{4e^4}\right) + x^3\left(\frac{7a^2b^5}{e^3} - \frac{7ab^6d}{e^4} + \frac{2b^7d^2}{e^5}\right) + x^2\left(\frac{35a^3b^4}{2e^3} - \frac{63a^2b^5d}{2e^4} + \frac{21ab^6d^2}{e^5} - \frac{5b^7d^3}{e^6}\right) + x\left(\frac{35a^4b^3}{e^3} - \frac{105a^3b^4d}{e^4} + \frac{126a^2b^5d^2}{e^5} - \frac{70ab^6d^3}{e^6} + \frac{15b^7d^4}{e^7}\right) + \frac{-a^7e^7 - 7a^6bde^6 + 63a^5b^2d^2e^5 - 175a^4b^3d^3e^4 + 245a^3b^4d^4e^3 - 189a^2b^5d^5e^2 + 77ab^6d^6e - 13b^7d^7 + x\left(-14a^6be^7 + 84a^5b^2de^6 - 210a^4b^3d^2e^5 + 280a^3b^4d^3e^4 - 210a^2b^5d^4e^3 + 84ab^6d^5e^2 - 14b^7d^6e\right)}{2d^2e^8 + 4de^9x + 2e^{10}x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**3,x)
```

```
[Out] b**7*x**5/(5*e**3) + 21*b**2*(a*e - b*d)**5*log(d + e*x)/e**8 + x**4*(7*a*b
**6/(4*e**3) - 3*b**7*d/(4*e**4)) + x**3*(7*a**2*b**5/e**3 - 7*a*b**6*d/e**
4 + 2*b**7*d**2/e**5) + x**2*(35*a**3*b**4/(2*e**3) - 63*a**2*b**5*d/(2*e**
4) + 21*a*b**6*d**2/e**5 - 5*b**7*d**3/e**6) + x*(35*a**4*b**3/e**3 - 105*a
**3*b**4*d/e**4 + 126*a**2*b**5*d**2/e**5 - 70*a*b**6*d**3/e**6 + 15*b**7*d
**4/e**7) + (-a**7*e**7 - 7*a**6*b*d*e**6 + 63*a**5*b**2*d**2*e**5 - 175*a*
*4*b**3*d**3*e**4 + 245*a**3*b**4*d**4*e**3 - 189*a**2*b**5*d**5*e**2 + 77*
a*b**6*d**6*e - 13*b**7*d**7 + x*(-14*a**6*b*e**7 + 84*a**5*b**2*d*e**6 - 2
10*a**4*b**3*d**2*e**5 + 280*a**3*b**4*d**3*e**4 - 210*a**2*b**5*d**4*e**3
+ 84*a*b**6*d**5*e**2 - 14*b**7*d**6*e))/(2*d**2*e**8 + 4*d*e**9*x + 2*e**1
0*x**2)
```

3.1701 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=187

$$-\frac{7b^6(d+ex)^3(bd-ae)}{3e^8}+\frac{21b^5(d+ex)^2(bd-ae)^2}{2e^8}-\frac{35b^4x(bd-ae)^3}{e^7}+\frac{35b^3(bd-ae)^4\log(d+ex)}{e^8}+\frac{21b^2(bd-ae)^5}{e^8(d+ex)}-$$

Rubi [A] time = 0.21, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 43}

$$-\frac{7b^6(d+ex)^3(bd-ae)}{3e^8}+\frac{21b^5(d+ex)^2(bd-ae)^2}{2e^8}-\frac{35b^4x(bd-ae)^3}{e^7}+\frac{21b^2(bd-ae)^5}{e^8(d+ex)}+\frac{35b^3(bd-ae)^4\log(d+ex)}{e^8}-\frac{7b(bd-ae)^6}{2e^8(d+ex)^2}+\frac{(bd-ae)^7}{3e^8(d+ex)^3}+\frac{b^7(d+ex)^4}{4e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (-35*b^4*(b*d - a*e)^3*x)/e^7 + (b*d - a*e)^7/(3*e^8*(d + e*x)^3) - (7*b*(b
*d - a*e)^6)/(2*e^8*(d + e*x)^2) + (21*b^2*(b*d - a*e)^5)/(e^8*(d + e*x)) +
 (21*b^5*(b*d - a*e)^2*(d + e*x)^2)/(2*e^8) - (7*b^6*(b*d - a*e)*(d + e*x)^
3)/(3*e^8) + (b^7*(d + e*x)^4)/(4*e^8) + (35*b^3*(b*d - a*e)^4*Log[d + e*x]
)/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^4}\,dx \\
&= \int \left(-\frac{35b^4(bd-ae)^3}{e^7}+\frac{(-bd+ae)^7}{e^7(d+ex)^4}+\frac{7b(bd-ae)^6}{e^7(d+ex)^3}-\frac{21b^2(bd-ae)^5}{e^7(d+ex)^2}+\frac{35b}{e}\right. \\
&= -\frac{35b^4(bd-ae)^3x}{e^7}+\frac{(bd-ae)^7}{3e^8(d+ex)^3}-\frac{7b(bd-ae)^6}{2e^8(d+ex)^2}+\frac{21b^2(bd-ae)^5}{e^8(d+ex)}+\frac{21b^5(}{}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 199, normalized size = 1.06

$$\frac{6b^5e^2x^2\left(21a^2e^2-28abde+10b^2d^2\right)-12b^4ex\left(-35a^3e^3+84a^2bde^2-70ab^2d^2e+20b^3d^3\right)-4b^6e^3x^3(4bd-7ae)+420b^3(bd-ae)^4\log(d+ex)+\frac{252b^2(bd-ae)^5}{d+ex}-\frac{42b(bd-ae)^6}{(d+ex)^2}+\frac{4(bd-ae)^7}{(d+ex)^3}+3b^7e^4x^4}{12e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (-12*b^4*e*(20*b^3*d^3 - 70*a*b^2*d^2*e + 84*a^2*b*d*e^2 - 35*a^3*e^3)*x +
6*b^5*e^2*(10*b^2*d^2 - 28*a*b*d*e + 21*a^2*e^2)*x^2 - 4*b^6*e^3*(4*b*d - 7
```

```
*a*e)*x^3 + 3*b^7*e^4*x^4 + (4*(b*d - a*e)^7)/(d + e*x)^3 - (42*b*(b*d - a*
e)^6)/(d + e*x)^2 + (252*b^2*(b*d - a*e)^5)/(d + e*x) + 420*b^3*(b*d - a*e)
^4*Log[d + e*x]])/(12*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^4,x]
[Out] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^4, x]
```

fricas [B] time = 0.43, size = 737, normalized size = 3.94

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x, algorithm="fricas")
[Out] 1/12*(3*b^7*e^7*x^7 + 214*b^7*d^7 - 1036*a*b^6*d^6*e + 1974*a^2*b^5*d^5*e^2
 - 1820*a^3*b^4*d^4*e^3 + 770*a^4*b^3*d^3*e^4 - 84*a^5*b^2*d^2*e^5 - 14*a^6
*b*d*e^6 - 4*a^7*e^7 - 7*(b^7*d*e^6 - 4*a*b^6*e^7)*x^6 + 21*(b^7*d^2*e^5 -
4*a*b^6*d*e^6 + 6*a^2*b^5*e^7)*x^5 - 105*(b^7*d^3*e^4 - 4*a*b^6*d^2*e^5 + 6
*a^2*b^5*d*e^6 - 4*a^3*b^4*e^7)*x^4 - 2*(278*b^7*d^4*e^3 - 1022*a*b^6*d^3*e
^4 + 1323*a^2*b^5*d^2*e^5 - 630*a^3*b^4*d*e^6)*x^3 - 6*(68*b^7*d^5*e^2 - 18
2*a*b^6*d^4*e^3 + 63*a^2*b^5*d^3*e^4 + 210*a^3*b^4*d^2*e^5 - 210*a^4*b^3*d*
e^6 + 42*a^5*b^2*e^7)*x^2 + 6*(37*b^7*d^6*e - 238*a*b^6*d^5*e^2 + 567*a^2*b
^5*d^4*e^3 - 630*a^3*b^4*d^3*e^4 + 315*a^4*b^3*d^2*e^5 - 42*a^5*b^2*d*e^6 -
 7*a^6*b*e^7)*x + 420*(b^7*d^7 - 4*a*b^6*d^6*e + 6*a^2*b^5*d^5*e^2 - 4*a^3*
b^4*d^4*e^3 + a^4*b^3*d^3*e^4 + (b^7*d^4*e^3 - 4*a*b^6*d^3*e^4 + 6*a^2*b^5*
d^2*e^5 - 4*a^3*b^4*d*e^6 + a^4*b^3*e^7)*x^3 + 3*(b^7*d^5*e^2 - 4*a*b^6*d^4
*e^3 + 6*a^2*b^5*d^3*e^4 - 4*a^3*b^4*d^2*e^5 + a^4*b^3*d*e^6)*x^2 + 3*(b^7*
d^6*e - 4*a*b^6*d^5*e^2 + 6*a^2*b^5*d^4*e^3 - 4*a^3*b^4*d^3*e^4 + a^4*b^3*d
^2*e^5)*x)*log(e*x + d))/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.18, size = 442, normalized size = 2.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x, algorithm="giac")
[Out] 35*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3
*e^4)*e^(-8)*log(abs(x*e + d)) + 1/12*(3*b^7*x^4*e^12 - 16*b^7*d*x^3*e^11 +
 60*b^7*d^2*x^2*e^10 - 240*b^7*d^3*x*e^9 + 28*a*b^6*x^3*e^12 - 168*a*b^6*d*
x^2*e^11 + 840*a*b^6*d^2*x*e^10 + 126*a^2*b^5*x^2*e^12 - 1008*a^2*b^5*d*x*e
^11 + 420*a^3*b^4*x*e^12)*e^(-16) + 1/6*(107*b^7*d^7 - 518*a*b^6*d^6*e + 98
7*a^2*b^5*d^5*e^2 - 910*a^3*b^4*d^4*e^3 + 385*a^4*b^3*d^3*e^4 - 42*a^5*b^2*
d^2*e^5 - 7*a^6*b*d*e^6 - 2*a^7*e^7 + 126*(b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 +
10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^
2 + 21*(11*b^7*d^6*e - 54*a*b^6*d^5*e^2 + 105*a^2*b^5*d^4*e^3 - 100*a^3*b^4
*d^3*e^4 + 45*a^4*b^3*d^2*e^5 - 6*a^5*b^2*d*e^6 - a^6*b*e^7)*x)*e^(-8)/(x*e
 + d)^3
```

maple [B] time = 0.07, size = 622, normalized size = 3.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x)
```

```
[Out] 35*b^4/e^4*a^3*x-20*b^7/e^7*d^3*x-21*b^2/e^3/(e*x+d)*a^5+21*b^7/e^8/(e*x+d)
*d^5+1/3/e^8/(e*x+d)^3*b^7*d^7-7/2*b/e^2/(e*x+d)^2*a^6-7/2*b^7/e^8/(e*x+d)^
2*d^6+1/4*b^7/e^4*x^4-1/3/e/(e*x+d)^3*a^7+70*b^4/e^5/(e*x+d)^2*a^3*d^3+35*b
^3/e^4*ln(e*x+d)*a^4+35*b^7/e^8*ln(e*x+d)*d^4+7/3*b^6/e^4*x^3*a-4/3*b^7/e^5
*x^3*d+21/2*b^5/e^4*x^2*a^2+5*b^7/e^6*x^2*d^2+210*b^5/e^6/(e*x+d)*a^2*d^3-1
05*b^6/e^7/(e*x+d)*a*d^4+21*b^2/e^3/(e*x+d)^2*a^5*d-140*b^4/e^5*ln(e*x+d)*a
^3*d+210*b^5/e^6*ln(e*x+d)*a^2*d^2-140*b^6/e^7*ln(e*x+d)*a*d^3+21*b^6/e^7/(
e*x+d)^2*a*d^5+7/3/e^2/(e*x+d)^3*d*a^6*b-7/e^3/(e*x+d)^3*d^2*a^5*b^2+35/3/e
^4/(e*x+d)^3*d^3*a^4*b^3-35/3/e^5/(e*x+d)^3*a^3*b^4*d^4+7/e^6/(e*x+d)^3*a^2
*b^5*d^5-7/3/e^7/(e*x+d)^3*a*b^6*d^6-14*b^6/e^5*x^2*a*d-84*b^5/e^5*a^2*d*x+
70*b^6/e^6*a*d^2*x+105*b^3/e^4/(e*x+d)*a^4*d-210*b^4/e^5/(e*x+d)*a^3*d^2-10
5/2*b^3/e^4/(e*x+d)^2*a^4*d^2-105/2*b^5/e^6/(e*x+d)^2*a^2*d^4
```

maxima [B] time = 0.67, size = 485, normalized size = 2.59

$$\frac{107\,b^7d^7 - 518\,ab^6d^6e + 987\,a^2b^5d^5e^2 - 910\,a^3b^4d^4e^3 + 385\,a^4b^3d^3e^4 - 42\,a^5b^2d^2e^5 - 7\,a^6bde^6 - 2\,a^7e^7 + 126\left(b^7d^5e^2 - 5\,ab^6d^4e^3 + 10\,a^2b^5d^3e^4 - 10\,a^3b^4d^2e^5 + 5\,a^4b^3de^6 - a^5b^2e^7\right)x^2 + 21\left(11\,b^7d^6e - 54\,ab^6d^5e^2 + 105\,a^2b^5d^4e^3 - 100\,a^3b^4d^3e^4 + 45\,a^4b^3d^2e^5 - 6\,a^5b^2de^6 - a^6be^7\right)x}{6\left(e^{11}x^3 + 3\,de^{10}x^2 + 3\,d^2e^9x + d^3e^8\right)} + \frac{3\,b^7e^3x^4 - 4\left(4\,b^7de^2 - 7\,ab^6e^3\right)x^3 + 6\left(10\,b^7d^2e - 28\,ab^6de^2 + 21\,a^2b^5e^3\right)x^2 - 12\left(20\,b^7d^3 - 70\,ab^6d^2e + 84\,a^2b^5de^2 - 35\,a^3b^4e^3\right)x}{12\,e^7} + \frac{35\left(b^7d^4 - 4\,ab^6d^3e + 6\,a^2b^5d^2e^2 - 4\,a^3b^4de^3 + a^4b^3e^4\right)\log\left(ex + d\right)}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*b^7*d^7 - 518*a*b^6*d^6*e + 987*a^2*b^5*d^5*e^2 - 910*a^3*b^4*d^4*
e^3 + 385*a^4*b^3*d^3*e^4 - 42*a^5*b^2*d^2*e^5 - 7*a^6*b*d*e^6 - 2*a^7*e^7
+ 126*(b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*
e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^2 + 21*(11*b^7*d^6*e - 54*a*b^6*d^5*
e^2 + 105*a^2*b^5*d^4*e^3 - 100*a^3*b^4*d^3*e^4 + 45*a^4*b^3*d^2*e^5 - 6*a^
5*b^2*d*e^6 - a^6*b*e^7)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^
8) + 1/12*(3*b^7*e^3*x^4 - 4*(4*b^7*d*e^2 - 7*a*b^6*e^3)*x^3 + 6*(10*b^7*d^
2*e - 28*a*b^6*d*e^2 + 21*a^2*b^5*e^3)*x^2 - 12*(20*b^7*d^3 - 70*a*b^6*d^2*
e + 84*a^2*b^5*d*e^2 - 35*a^3*b^4*e^3)*x)/e^7 + 35*(b^7*d^4 - 4*a*b^6*d^3*e
 + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*log(e*x + d)/e^8
```

mupad [B] time = 2.12, size = 558, normalized size = 2.98

$$x\left(\frac{35\,a^3\,b^4}{e^4} - \frac{4\,b^7\,d^3}{e^7} + \frac{4\,d\left(\frac{4\,d\left(\frac{7\,a\,b^6}{e^4} - \frac{4\,b^7\,d}{e^5}\right)}{e} - \frac{21\,a^2\,b^5}{e^4} + \frac{6\,b^7\,d^2}{e^6}\right)}{e} - \frac{6\,d^2\left(\frac{7\,a\,b^6}{e^4} - \frac{4\,b^7\,d}{e^5}\right)}{e^2}\right) - \frac{\frac{2\,a^7\,e^7+7\,a^6\,b\,d\,e^6+42\,a^5\,b^2\,d^2\,e^5-385\,a^4\,b^3\,d^3\,e^4+910\,a^3\,b^4\,d^4\,e^3-987\,a^2\,b^5\,d^5\,e^2+518\,a\,b^6\,d^6\,e-107\,b^7\,d^7}{6\,e} + x\left(\frac{7\,a^6\,b\,e^6}{2} + 21\,a^5\,b^2\,d\,e^5 - \frac{315\,a^4\,b^3\,d^2\,e^4}{2} + 350\,a^3\,b^4\,d^3\,e^3 - \frac{735\,a^2\,b^5\,d^4\,e^2}{2} + 189\,a\,b^6\,d^5\,e - \frac{77\,b^7\,d^6}{2}\right) - x^2\left(-21\,a^5\,b^2\,e^6 + 105\,a^4\,b^3\,d\,e^5 - 210\,a^3\,b^4\,d^2\,e^4 + 210\,a^2\,b^5\,d^3\,e^3 - 105\,a\,b^6\,d^4\,e^2 + 21\,b^7\,d^5\,e\right)}{d^3\,e^7 + 3\,d^2\,e^8\,x + 3\,d\,e^9\,x^2 + e^{10}\,x^3} + x^3\left(\frac{7\,a\,b^6}{3\,e^4} - \frac{4\,b^7\,d}{3\,e^5}\right) - x^2\left(\frac{2\,d\left(\frac{7\,a\,b^6}{e^4} - \frac{4\,b^7\,d}{e^5}\right)}{e} - \frac{21\,a^2\,b^5}{2\,e^4} + \frac{3\,b^7\,d^2}{e^6}\right) + \frac{\ln\left(d + e\,x\right)\left(35\,a^4\,b^3\,e^4 - 140\,a^3\,b^4\,d\,e^3 + 210\,a^2\,b^5\,d^2\,e^2 - 140\,a\,b^6\,d^3\,e + 35\,b^7\,d^4\right)}{e^8} + \frac{b^7\,x^4}{4\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^4,x)
```

```
[Out] x*((35*a^3*b^4)/e^4 - (4*b^7*d^3)/e^7 + (4*d*((4*d*((7*a*b^6)/e^4 - (4*b^7*
d)/e^5))/e - (21*a^2*b^5)/e^4 + (6*b^7*d^2)/e^6))/e - (6*d^2*((7*a*b^6)/e^4
 - (4*b^7*d)/e^5))/e^2) - ((2*a^7*e^7 - 107*b^7*d^7 - 987*a^2*b^5*d^5*e^2 +
 910*a^3*b^4*d^4*e^3 - 385*a^4*b^3*d^3*e^4 + 42*a^5*b^2*d^2*e^5 + 518*a*b^6
*d^6*e + 7*a^6*b*d*e^6)/(6*e) + x*((7*a^6*b*e^6)/2 - (77*b^7*d^6)/2 + 21*a^
5*b^2*d*e^5 - (735*a^2*b^5*d^4*e^2)/2 + 350*a^3*b^4*d^3*e^3 - (315*a^4*b^3*
d^2*e^4)/2 + 189*a*b^6*d^5*e) - x^2*(21*b^7*d^5*e - 21*a^5*b^2*e^6 - 105*a*
b^6*d^4*e^2 + 105*a^4*b^3*d*e^5 + 210*a^2*b^5*d^3*e^3 - 210*a^3*b^4*d^2*e^4
))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) + x^3*((7*a*b^6)/(3*e^4
) - (4*b^7*d)/(3*e^5)) - x^2*((2*d*((7*a*b^6)/e^4 - (4*b^7*d)/e^5))/e - (21
*a^2*b^5)/(2*e^4) + (3*b^7*d^2)/e^6) + (log(d + e*x)*(35*b^7*d^4 + 35*a^4*b
^3*e^4 - 140*a^3*b^4*d*e^3 + 210*a^2*b^5*d^2*e^2 - 140*a*b^6*d^3*e))/e^8 +
(b^7*x^4)/(4*e^4)
```

sympy [B] time = 6.27, size = 474, normalized size = 2.53

$$\frac{b^7x^4}{4e^4} + \frac{35b^3\left(ae - bd\right)^4\log\left(d + ex\right)}{e^8} + x^3\left(\frac{7ab^6}{3e^4} - \frac{4b^7d}{3e^5}\right) + x^2\left(\frac{21a^2b^5}{2e^4} - \frac{14ab^6d}{e^5} + \frac{5b^7d^2}{e^6}\right) + x\left(\frac{35a^3b^4}{e^4} - \frac{84a^2b^5d}{e^5} + \frac{70ab^6d^2}{e^6} - \frac{20b^7d^3}{e^7}\right) + \frac{-2a^7e^7 - 7a^6bde^6 - 42a^5b^2d^2e^5 + 385a^4b^3d^3e^4 - 910a^3b^4d^4e^3 + 987a^2b^5d^5e^2 - 518ab^6d^6e + 107b^7d^7 + x^2\left(-126a^5b^2e^7 + 630a^4b^3de^6 - 1260a^3b^4d^2e^5 + 1260a^2b^5d^3e^4 - 630ab^6d^4e^3 + 126b^7d^5e^2\right) + x\left(-21a^6be^7 - 126a^5b^2de^6 + 945a^4b^3d^2e^5 - 2100a^3b^4d^3e^4 + 2205a^2b^5d^4e^3 - 1134ab^6d^5e^2 + 231b^7d^6e\right)}{6d^3e^8 + 18d^2e^9x + 18de^{10}x^2 + 6e^{11}x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**4,x)
```

```
[Out] b**7*x**4/(4*e**4) + 35*b**3*(a*e - b*d)**4*log(d + e*x)/e**8 + x**3*(7*a*b
**6/(3*e**4) - 4*b**7*d/(3*e**5)) + x**2*(21*a**2*b**5/(2*e**4) - 14*a*b**6
*d/e**5 + 5*b**7*d**2/e**6) + x*(35*a**3*b**4/e**4 - 84*a**2*b**5*d/e**5 +
70*a*b**6*d**2/e**6 - 20*b**7*d**3/e**7) + (-2*a**7*e**7 - 7*a**6*b*d*e**6
- 42*a**5*b**2*d**2*e**5 + 385*a**4*b**3*d**3*e**4 - 910*a**3*b**4*d**4*e**
3 + 987*a**2*b**5*d**5*e**2 - 518*a*b**6*d**6*e + 107*b**7*d**7 + x**2*(-12
6*a**5*b**2*e**7 + 630*a**4*b**3*d*e**6 - 1260*a**3*b**4*d**2*e**5 + 1260*a
**2*b**5*d**3*e**4 - 630*a*b**6*d**4*e**3 + 126*b**7*d**5*e**2) + x*(-21*a*
*6*b*e**7 - 126*a**5*b**2*d*e**6 + 945*a**4*b**3*d**2*e**5 - 2100*a**3*b**4
*d**3*e**4 + 2205*a**2*b**5*d**4*e**3 - 1134*a*b**6*d**5*e**2 + 231*b**7*d*
*6*e))/(6*d**3*e**8 + 18*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3)
```

3.1702 $\int \frac{(a+bx)(d+ex)^4}{a^2+2abx+b^2x^2} dx$

Optimal. Leaf size=97

$$\frac{(bd-ae)^4\log(a+bx)}{b^5}+\frac{ex(bd-ae)^3}{b^4}+\frac{(d+ex)^2(bd-ae)^2}{2b^3}+\frac{(d+ex)^3(bd-ae)}{3b^2}+\frac{(d+ex)^4}{4b}$$

Rubi [A] time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{ex(bd-ae)^3}{b^4}+\frac{(d+ex)^2(bd-ae)^2}{2b^3}+\frac{(d+ex)^3(bd-ae)}{3b^2}+\frac{(bd-ae)^4\log(a+bx)}{b^5}+\frac{(d+ex)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(b*d - a*e)^3*x)/b^4 + ((b*d - a*e)^2*(d + e*x)^2)/(2*b^3) + ((b*d - a*e
)*(d + e*x)^3)/(3*b^2) + (d + e*x)^4/(4*b) + ((b*d - a*e)^4*Log[a + b*x])/b
^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^4}{a^2+2abx+b^2x^2}dx &= \int \frac{(d+ex)^4}{a+bx}dx\\ &= \int \left(\frac{e(bd-ae)^3}{b^4}+\frac{(bd-ae)^4}{b^4(a+bx)}+\frac{e(bd-ae)^2(d+ex)}{b^3}+\frac{e(bd-ae)(d+ex)^2}{b^2}+\frac{e(d+ex)^3}{b}\right)dx\\ &= \frac{e(bd-ae)^3x}{b^4}+\frac{(bd-ae)^2(d+ex)^2}{2b^3}+\frac{(bd-ae)(d+ex)^3}{3b^2}+\frac{(d+ex)^4}{4b}+\frac{(bd-ae)^4\log(a+bx)}{b^5}\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.18

$$\frac{bex\left(-12a^3e^3+6a^2be^2(8d+ex)-4ab^2e\left(18d^2+6dex+e^2x^2\right)+b^3\left(48d^3+36d^2ex+16de^2x^2+3e^3x^3\right)\right)+12(bd-ae)^4\log(a+bx)}{12b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*e*x*(-12*a^3*e^3 + 6*a^2*b*e^2*(8*d + e*x) - 4*a*b^2*e*(18*d^2 + 6*d*e*x
 + e^2*x^2) + b^3*(48*d^3 + 36*d^2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3)) + 12*(b
*d - a*e)^4*Log[a + b*x])/(12*b^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.39, size = 181, normalized size = 1.87

$$\frac{3\,b^4e^4x^4+4\left(4\,b^4de^3-ab^3e^4\right)x^3+6\left(6\,b^4d^2e^2-4\,ab^3de^3+a^2b^2e^4\right)x^2+12\left(4\,b^4d^3e-6\,ab^3d^2e^2+4\,a^2b^2de^3-a^3be^4\right)x+12\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\log\left(bx+a\right)}{12\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*e^4*x^4 + 4*(4*b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(6*b^4*d^2*e^2 -
4*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 12*(4*b^4*d^3*e - 6*a*b^3*d^2*e^2 + 4*a^
2*b^2*d*e^3 - a^3*b*e^4)*x + 12*(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^
2 - 4*a^3*b*d*e^3 + a^4*e^4)*log(b*x + a))/b^5
```

giac [A] time = 0.18, size = 174, normalized size = 1.79

$$\frac{3\,b^3x^4e^4+16\,b^3dx^3e^3+36\,b^3d^2x^2e^2+48\,b^3d^3xe-4\,ab^2x^3e^4-24\,ab^2dx^2e^3-72\,ab^2d^2xe^2+6\,a^2bx^2e^4+48\,a^2bdxe^3-12\,a^3xe^4}{12\,b^4}+\frac{\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\log\left(|bx+a|\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/12*(3*b^3*x^4*e^4 + 16*b^3*d*x^3*e^3 + 36*b^3*d^2*x^2*e^2 + 48*b^3*d^3*x*
e - 4*a*b^2*x^3*e^4 - 24*a*b^2*d*x^2*e^3 - 72*a*b^2*d^2*x*e^2 + 6*a^2*b*x^2
*e^4 + 48*a^2*b*d*x*e^3 - 12*a^3*x*e^4)/b^4 + (b^4*d^4 - 4*a*b^3*d^3*e + 6*
a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*log(abs(b*x + a))/b^5
```

maple [B] time = 0.05, size = 209, normalized size = 2.15

$$\frac{e^4x^4}{4b}-\frac{a\,e^4x^3}{3b^2}+\frac{4d\,e^3x^3}{3b}+\frac{a^2e^4x^2}{2b^3}-\frac{2ad\,e^3x^2}{b^2}+\frac{3d^2e^2x^2}{b}+\frac{a^4e^4\ln\left(bx+a\right)}{b^5}-\frac{4a^3d\,e^3\ln\left(bx+a\right)}{b^4}-\frac{a^3e^4x}{b^4}+\frac{6a^2d^2e^2\ln\left(bx+a\right)}{b^3}+\frac{4a^2d\,e^3x}{b^3}-\frac{4a\,d^3e\ln\left(bx+a\right)}{b^2}-\frac{6a\,d^2e^2x}{b^2}+\frac{d^4\ln\left(bx+a\right)}{b}+\frac{4d^3ex}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*e^4/b*x^4-1/3*e^4/b^2*x^3*a+4/3*e^3/b*x^3*d+1/2*e^4/b^3*x^2*a^2-2*e^3/b
^2*x^2*a*d+3*e^2/b*x^2*d^2-e^4/b^4*a^3*x+4*e^3/b^3*a^2*d*x-6*e^2/b^2*a*d^2*
x+4*e/b*d^3*x+1/b^5*ln(b*x+a)*a^4*e^4-4/b^4*ln(b*x+a)*a^3*d*e^3+6/b^3*ln(b*
x+a)*a^2*d^2*e^2-4/b^2*ln(b*x+a)*a*d^3*e+1/b*ln(b*x+a)*d^4
```

maxima [A] time = 0.48, size = 179, normalized size = 1.85

$$\frac{3\,b^3e^4x^4+4\left(4\,b^3de^3-ab^2e^4\right)x^3+6\left(6\,b^3d^2e^2-4\,ab^2de^3+a^2be^4\right)x^2+12\left(4\,b^3d^3e-6\,ab^2d^2e^2+4\,a^2bde^3-a^3e^4\right)x}{12\,b^4}+\frac{\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\log\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/12*(3*b^3*e^4*x^4 + 4*(4*b^3*d*e^3 - a*b^2*e^4)*x^3 + 6*(6*b^3*d^2*e^2 -
4*a*b^2*d*e^3 + a^2*b*e^4)*x^2 + 12*(4*b^3*d^3*e - 6*a*b^2*d^2*e^2 + 4*a^2*
b*d*e^3 - a^3*e^4)*x)/b^4 + (b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 -
4*a^3*b*d*e^3 + a^4*e^4)*log(b*x + a)/b^5
```

mupad [B] time = 0.05, size = 188, normalized size = 1.94

$$x\left(\frac{4d^3e}{b}-\frac{a\left(\frac{a\left(\frac{ae^4}{b^2}-\frac{4de^3}{b}\right)}{b}+\frac{6d^2e^2}{b}\right)}{b}\right)-x^3\left(\frac{ae^4}{3b^2}-\frac{4de^3}{3b}\right)+x^2\left(\frac{a\left(\frac{ae^4}{b^2}-\frac{4de^3}{b}\right)}{2b}+\frac{3d^2e^2}{b}\right)+\frac{\ln(a+bx)\left(a^4e^4-4a^3bde^3+6a^2b^2d^2e^2-4ab^3d^3e+b^4d^4\right)}{b^5}+\frac{e^4x^4}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((4*d^3*e)/b - (a*((a*((a*e^4)/b^2 - (4*d*e^3)/b))/b + (6*d^2*e^2)/b))/b)
 - x^3*((a*e^4)/(3*b^2) - (4*d*e^3)/(3*b)) + x^2*((a*((a*e^4)/b^2 - (4*d*e^
3)/b))/(2*b) + (3*d^2*e^2)/b) + (log(a + b*x)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^
2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/b^5 + (e^4*x^4)/(4*b)
```

sympy [A] time = 0.44, size = 136, normalized size = 1.40

$$x^3\left(-\frac{ae^4}{3b^2}+\frac{4de^3}{3b}\right)+x^2\left(\frac{a^2e^4}{2b^3}-\frac{2ade^3}{b^2}+\frac{3d^2e^2}{b}\right)+x\left(-\frac{a^3e^4}{b^4}+\frac{4a^2de^3}{b^3}-\frac{6ad^2e^2}{b^2}+\frac{4d^3e}{b}\right)+\frac{e^4x^4}{4b}+\frac{(ae-bd)^4\log(a+bx)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] x**3*(-a*e**4/(3*b**2) + 4*d*e**3/(3*b)) + x**2*(a**2*e**4/(2*b**3) - 2*a*d
*e**3/b**2 + 3*d**2*e**2/b) + x*(-a**3*e**4/b**4 + 4*a**2*d*e**3/b**3 - 6*a
*d**2*e**2/b**2 + 4*d**3*e/b) + e**4*x**4/(4*b) + (a*e - b*d)**4*log(a + b*
x)/b**5
```

3.1703 $\int \frac{(a+bx)(d+ex)^3}{a^2+2abx+b^2x^2} dx$

Optimal. Leaf size=73

$$\frac{(bd-ae)^3\log(a+bx)}{b^4}+\frac{ex(bd-ae)^2}{b^3}+\frac{(d+ex)^2(bd-ae)}{2b^2}+\frac{(d+ex)^3}{3b}$$

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{ex(bd-ae)^2}{b^3}+\frac{(d+ex)^2(bd-ae)}{2b^2}+\frac{(bd-ae)^3\log(a+bx)}{b^4}+\frac{(d+ex)^3}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(b*d - a*e)^2*x)/b^3 + ((b*d - a*e)*(d + e*x)^2)/(2*b^2) + (d + e*x)^3/(
3*b) + ((b*d - a*e)^3*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^3}{a^2+2abx+b^2x^2} dx &= \int \frac{(d+ex)^3}{a+bx} dx \\
&= \int \left(\frac{e(bd-ae)^2}{b^3}+\frac{(bd-ae)^3}{b^3(a+bx)}+\frac{e(bd-ae)(d+ex)}{b^2}+\frac{e(d+ex)^2}{b}\right) dx \\
&= \frac{e(bd-ae)^2x}{b^3}+\frac{(bd-ae)(d+ex)^2}{2b^2}+\frac{(d+ex)^3}{3b}+\frac{(bd-ae)^3\log(a+bx)}{b^4}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 1.01

$$\frac{bex\left(6a^2e^2-3abe(6d+ex)+b^2\left(18d^2+9dex+2e^2x^2\right)\right)+6(bd-ae)^3\log(a+bx)}{6b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*e*x*(6*a^2*e^2 - 3*a*b*e*(6*d + e*x) + b^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2
)) + 6*(b*d - a*e)^3*Log[a + b*x])/(6*b^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^3}{a^2+2abx+b^2x^2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.38, size = 116, normalized size = 1.59

$$\frac{2\,b^{3}e^{3}x^{3}+3\left(3\,b^{3}de^{2}-ab^{2}e^{3}\right)x^{2}+6\left(3\,b^{3}d^{2}e-3\,ab^{2}de^{2}+a^{2}be^{3}\right)x+6\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\log\left(bx+a\right)}{6\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*e^3*x^3 + 3*(3*b^3*d*e^2 - a*b^2*e^3)*x^2 + 6*(3*b^3*d^2*e - 3*a
*b^2*d*e^2 + a^2*b*e^3)*x + 6*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^
3*e^3)*log(b*x + a))/b^4
```

giac [A] time = 0.16, size = 110, normalized size = 1.51

$$\frac{2\,b^{2}x^{3}e^{3}+9\,b^{2}dx^{2}e^{2}+18\,b^{2}d^{2}xe-3\,abx^{2}e^{3}-18\,abdxe^{2}+6\,a^{2}xe^{3}}{6\,b^{3}}+\frac{\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\log\left(|bx+a|\right)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*(2*b^2*x^3*e^3 + 9*b^2*d*x^2*e^2 + 18*b^2*d^2*x*e - 3*a*b*x^2*e^3 - 18*
a*b*d*x*e^2 + 6*a^2*x*e^3)/b^3 + (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 -
 a^3*e^3)*log(abs(b*x + a))/b^4
```

maple [A] time = 0.05, size = 133, normalized size = 1.82

$$\frac{e^{3}x^{3}}{3b}-\frac{a\,e^{3}x^{2}}{2b^{2}}+\frac{3d\,e^{2}x^{2}}{2b}-\frac{a^{3}e^{3}\ln\left(bx+a\right)}{b^{4}}+\frac{3a^{2}d\,e^{2}\ln\left(bx+a\right)}{b^{3}}+\frac{a^{2}e^{3}x}{b^{3}}-\frac{3a\,d^{2}e\ln\left(bx+a\right)}{b^{2}}-\frac{3ad\,e^{2}x}{b^{2}}+\frac{d^{3}\ln\left(bx+a\right)}{b}+\frac{3d^{2}ex}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/3*e^3/b*x^3-1/2*e^3/b^2*x^2*a+3/2*e^2/b*x^2*d+e^3/b^3*a^2*x-3*e^2/b^2*a*d
*x+3*e/b*d^2*x-1/b^4*ln(b*x+a)*a^3*e^3+3/b^3*ln(b*x+a)*a^2*d*e^2-3/b^2*ln(b
*x+a)*a*d^2*e+1/b*ln(b*x+a)*d^3
```

maxima [A] time = 0.50, size = 114, normalized size = 1.56

$$\frac{2\,b^{2}e^{3}x^{3}+3\left(3\,b^{2}de^{2}-abe^{3}\right)x^{2}+6\left(3\,b^{2}d^{2}e-3\,abde^{2}+a^{2}e^{3}\right)x}{6\,b^{3}}+\frac{\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\log\left(bx+a\right)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*(2*b^2*e^3*x^3 + 3*(3*b^2*d*e^2 - a*b*e^3)*x^2 + 6*(3*b^2*d^2*e - 3*a*b
*d*e^2 + a^2*e^3)*x)/b^3 + (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e
^3)*log(b*x + a)/b^4
```

mupad [B] time = 1.99, size = 118, normalized size = 1.62

$$x\left(\frac{3\,d^{2}\,e}{b}+\frac{a\,\left(\frac{a\,e^{3}}{b^{2}}-\frac{3\,d\,e^{2}}{b}\right)}{b}\right)-x^{2}\,\left(\frac{a\,e^{3}}{2\,b^{2}}-\frac{3\,d\,e^{2}}{2\,b}\right)-\frac{\ln\left(a+b\,x\right)\,\left(a^{3}\,e^{3}-3\,a^{2}\,b\,d\,e^{2}+3\,a\,b^{2}\,d^{2}\,e-b^{3}\,d^{3}\right)}{b^{4}}+\frac{e^{3}\,x^{3}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((3*d^2*e)/b + (a*((a*e^3)/b^2 - (3*d*e^2)/b))/b) - x^2*((a*e^3)/(2*b^2)
- (3*d*e^2)/(2*b)) - (log(a + b*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a
^2*b*d*e^2))/b^4 + (e^3*x^3)/(3*b)
```

sympy [A] time = 0.33, size = 83, normalized size = 1.14

$$x^2\left(-\frac{ae^3}{2b^2}+\frac{3de^2}{2b}\right)+x\left(\frac{a^2e^3}{b^3}-\frac{3ade^2}{b^2}+\frac{3d^2e}{b}\right)+\frac{e^3x^3}{3b}-\frac{(ae-bd)^3\log(a+bx)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] x**2*(-a*e**3/(2*b**2) + 3*d*e**2/(2*b)) + x*(a**2*e**3/b**3 - 3*a*d*e**2/b
**2 + 3*d**2*e/b) + e**3*x**3/(3*b) - (a*e - b*d)**3*log(a + b*x)/b**4
```

3.1704 $\int \frac{(a+bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=49

$$\frac{(bd-ae)^2\log(a+bx)}{b^3}+\frac{ex(bd-ae)}{b^2}+\frac{(d+ex)^2}{2b}$$

Rubi [A] time = 0.02, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{ex(bd-ae)}{b^2}+\frac{(bd-ae)^2\log(a+bx)}{b^3}+\frac{(d+ex)^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(b*d - a*e)*x)/b^2 + (d + e*x)^2/(2*b) + ((b*d - a*e)^2*Log[a + b*x])/b^
3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^2}{a+bx}\,dx\\ &= \int \left(\frac{e(bd-ae)}{b^2}+\frac{(bd-ae)^2}{b^2(a+bx)}+\frac{e(d+ex)}{b}\right)dx\\ &= \frac{e(bd-ae)x}{b^2}+\frac{(d+ex)^2}{2b}+\frac{(bd-ae)^2\log(a+bx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.88

$$\frac{bex(-2ae+4bd+bex)+2(bd-ae)^2\log(a+bx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*e*x*(4*b*d - 2*a*e + b*e*x) + 2*(b*d - a*e)^2*Log[a + b*x])/(2*b^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.39, size = 63, normalized size = 1.29

$$\frac{b^2e^2x^2 + 2\left(2\,b^2de - abe^2\right)x + 2\left(b^2d^2 - 2\,abde + a^2e^2\right)\log\left(bx + a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] 1/2*(b^2*e^2*x^2 + 2*(2*b^2*d*e - a*b*e^2)*x + 2*(b^2*d^2 - 2*a*b*d*e + a^2
*e^2)*log(b*x + a))/b^3
```

giac [A] time = 0.15, size = 59, normalized size = 1.20

$$\frac{bx^2e^2 + 4\,bdxe - 2\,axe^2}{2\,b^2} + \frac{\left(b^2d^2 - 2\,abde + a^2e^2\right)\log\left(|bx + a|\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] 1/2*(b*x^2*e^2 + 4*b*d*x*e - 2*a*x*e^2)/b^2 + (b^2*d^2 - 2*a*b*d*e + a^2*e^
2)*log(abs(b*x + a))/b^3
```

maple [A] time = 0.05, size = 74, normalized size = 1.51

$$\frac{e^2x^2}{2b} + \frac{a^2e^2\ln\left(bx + a\right)}{b^3} - \frac{2ade\ln\left(bx + a\right)}{b^2} - \frac{a\,e^2x}{b^2} + \frac{d^2\ln\left(bx + a\right)}{b} + \frac{2dex}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/2*e^2/b*x^2-e^2/b^2*a*x+2*e/b*x*d+1/b^3*ln(b*x+a)*a^2*e^2-2/b^2*ln(b*x+a)
*a*d*e+1/b*ln(b*x+a)*d^2
```

maxima [A] time = 0.49, size = 61, normalized size = 1.24

$$\frac{be^2x^2 + 2\left(2\,bde - ae^2\right)x}{2\,b^2} + \frac{\left(b^2d^2 - 2\,abde + a^2e^2\right)\log\left(bx + a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] 1/2*(b*e^2*x^2 + 2*(2*b*d*e - a*e^2)*x)/b^2 + (b^2*d^2 - 2*a*b*d*e + a^2*e^
2)*log(b*x + a)/b^3
```

mupad [B] time = 0.07, size = 62, normalized size = 1.27

$$\frac{\ln\left(a + b\,x\right)\,\left(a^2\,e^2 - 2\,a\,b\,d\,e + b^2\,d^2\right)}{b^3} - x\,\left(\frac{a\,e^2}{b^2} - \frac{2\,d\,e}{b}\right) + \frac{e^2\,x^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (log(a + b*x)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/b^3 - x*((a*e^2)/b^2 - (2*d*
e)/b) + (e^2*x^2)/(2*b)
```

sympy [A] time = 0.26, size = 44, normalized size = 0.90

$$x\left(-\frac{ae^2}{b^2}+\frac{2de}{b}\right)+\frac{e^2x^2}{2b}+\frac{(ae-bd)^2\log(a+bx)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] x*(-a*e**2/b**2 + 2*d*e/b) + e**2*x**2/(2*b) + (a*e - b*d)**2*log(a + b*x)/
b**3
```

3.1705 $\int \frac{(a+bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=25

$$\frac{(bd-ae)\log(a+bx)}{b^2}+\frac{ex}{b}$$

Rubi [A] time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{(bd-ae)\log(a+bx)}{b^2}+\frac{ex}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*x)/b + ((b*d - a*e)*Log[a + b*x])/b^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{d+ex}{a+bx}\,dx\\
&= \int \left(\frac{e}{b}+\frac{bd-ae}{b(a+bx)}\right)dx\\
&= \frac{ex}{b}+\frac{(bd-ae)\log(a+bx)}{b^2}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 1.00

$$\frac{(bd-ae)\log(a+bx)}{b^2}+\frac{ex}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*x)/b + ((b*d - a*e)*Log[a + b*x])/b^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.38, size = 24, normalized size = 0.96

$$\frac{bex + (bd - ae)\log(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] (b*e*x + (b*d - a*e)*log(b*x + a))/b^2
```

giac [A] time = 0.16, size = 28, normalized size = 1.12

$$\frac{xe}{b} + \frac{(bd - ae)\log(|bx + a|)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] x*e/b + (b*d - a*e)*log(abs(b*x + a))/b^2
```

maple [A] time = 0.05, size = 32, normalized size = 1.28

$$-\frac{ae\ln(bx + a)}{b^2} + \frac{d\ln(bx + a)}{b} + \frac{ex}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/b*e*x-1/b^2*ln(b*x+a)*a*e+1/b*ln(b*x+a)*d
```

maxima [A] time = 0.55, size = 25, normalized size = 1.00

$$\frac{ex}{b} + \frac{(bd - ae)\log(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] e*x/b + (b*d - a*e)*log(b*x + a)/b^2
```

mupad [B] time = 0.04, size = 26, normalized size = 1.04

$$\frac{e\,x}{b} - \frac{\ln(a + b\,x)\,(a\,e - b\,d)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] (e*x)/b - (log(a + b*x)*(a*e - b*d))/b^2
```

sympy [A] time = 0.19, size = 20, normalized size = 0.80

$$\frac{ex}{b} - \frac{(ae - bd)\log(a + bx)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] e*x/b - (a*e - b*d)*log(a + b*x)/b**2
```

3.1706 $\int \frac{a+bx}{a^2+2abx+b^2x^2} \, dx$

Optimal. Leaf size=10

$$\frac{\log(a+bx)}{b}$$

Rubi [A] time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 31}

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Log[a + b*x]/b
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned} \int \frac{a+bx}{a^2+2abx+b^2x^2} \, dx &= \int \frac{1}{a+bx} \, dx \\ &= \frac{\log(a+bx)}{b} \end{aligned}$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Log[a + b*x]/b
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{a^2+2abx+b^2x^2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2), x]
```

fricas [A] time = 0.39, size = 10, normalized size = 1.00

$$\frac{\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] log(b*x + a)/b
```

giac [B] time = 0.15, size = 22, normalized size = 2.20

$$\frac{\log\left(a^2+\left(bx^2+2\,ax\right)b\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] 1/2*log(a^2 + (b*x^2 + 2*a*x)*b)/b
```

maple [A] time = 0.04, size = 11, normalized size = 1.10

$$\frac{\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] 1/b*ln(b*x+a)
```

maxima [B] time = 0.53, size = 22, normalized size = 2.20

$$\frac{\log\left(b^2x^2+2\,abx+a^2\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] 1/2*log(b^2*x^2 + 2*a*b*x + a^2)/b
```

mupad [B] time = 0.02, size = 10, normalized size = 1.00

$$\frac{\ln(a+b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] log(a + b*x)/b
```

sympy [A] time = 0.09, size = 7, normalized size = 0.70

$$\frac{\log(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] log(a + b*x)/b
```

3.1707 $\int \frac{a+bx}{(d+ex)(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=36

$$\frac{\log(a+bx)}{bd-ae}-\frac{\log(d+ex)}{bd-ae}$$

Rubi [A] time = 0.01, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {27, 36, 31}

$$\frac{\log(a+bx)}{bd-ae}-\frac{\log(d+ex)}{bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] Log[a + b*x]/(b*d - a*e) - Log[d + e*x]/(b*d - a*e)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)}\,dx\\ &= \frac{b\int \frac{1}{a+bx}\,dx}{bd-ae}-\frac{e\int \frac{1}{d+ex}\,dx}{bd-ae}\\ &= \frac{\log(a+bx)}{bd-ae}-\frac{\log(d+ex)}{bd-ae}\end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.72

$$\frac{\log(a+bx)-\log(d+ex)}{bd-ae}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (Log[a + b*x] - Log[d + e*x])/(b*d - a*e)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.40, size = 26, normalized size = 0.72

$$\frac{\log(bx+a)-\log(ex+d)}{bd-ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] (log(b*x + a) - log(e*x + d))/(b*d - a*e)
```

giac [A] time = 0.16, size = 49, normalized size = 1.36

$$\frac{b\log(|bx+a|)}{b^2d-abe}-\frac{e\log(|xe+d|)}{bde-ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] b*log(abs(b*x + a))/(b^2*d - a*b*e) - e*log(abs(x*e + d))/(b*d*e - a*e^2)
```

maple [A] time = 0.05, size = 37, normalized size = 1.03

$$-\frac{\ln(bx+a)}{ae-bd}+\frac{\ln(ex+d)}{ae-bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] -1/(a*e-b*d)*ln(b*x+a)+1/(a*e-b*d)*ln(e*x+d)
```

maxima [A] time = 0.62, size = 36, normalized size = 1.00

$$\frac{\log(bx+a)}{bd-ae}-\frac{\log(ex+d)}{bd-ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] log(b*x + a)/(b*d - a*e) - log(e*x + d)/(b*d - a*e)
```

mupad [B] time = 0.08, size = 40, normalized size = 1.11

$$\frac{\mathrm{atan}\left(\frac{b\,d\,2\mathrm{i}+b\,e\,x\,2\mathrm{i}}{a\,e-b\,d}+1\mathrm{i}\right)\,2\mathrm{i}}{a\,e-b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b*d*2i + b*e*x*2i)/(a*e - b*d) + 1i)*2i)/(a*e - b*d)
```

sympy [B] time = 0.38, size = 128, normalized size = 3.56

$$\frac{\log\left(x+\frac{-\frac{a^2e^2}{ae-bd}+\frac{2abde}{ae-bd}+ae-\frac{b^2d^2}{ae-bd}+bd}{2be}\right)}{ae-bd}-\frac{\log\left(x+\frac{\frac{a^2e^2}{ae-bd}-\frac{2abde}{ae-bd}+ae+\frac{b^2d^2}{ae-bd}+bd}{2be}\right)}{ae-bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] log(x + (-a**2*e**2/(a*e - b*d) + 2*a*b*d*e/(a*e - b*d) + a*e - b**2*d**2/(
a*e - b*d) + b*d)/(2*b*e))/(a*e - b*d) - log(x + (a**2*e**2/(a*e - b*d) - 2
*a*b*d*e/(a*e - b*d) + a*e + b**2*d**2/(a*e - b*d) + b*d)/(2*b*e))/(a*e - b
*d)
```

3.1708 $\int \frac{a+bx}{(d+ex)^2(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=56

$$\frac{1}{(d+ex)(bd-ae)}+\frac{b\log(a+bx)}{(bd-ae)^2}-\frac{b\log(d+ex)}{(bd-ae)^2}$$

Rubi [A] time = 0.04, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{1}{(d+ex)(bd-ae)}+\frac{b\log(a+bx)}{(bd-ae)^2}-\frac{b\log(d+ex)}{(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 1/((b*d - a*e)*(d + e*x)) + (b*Log[a + b*x])/(b*d - a*e)^2 - (b*Log[d + e*x
])/(b*d - a*e)^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^2}\,dx\\ &= \int \left(\frac{b^2}{(bd-ae)^2(a+bx)}-\frac{e}{(bd-ae)(d+ex)^2}-\frac{be}{(bd-ae)^2(d+ex)}\right)dx\\ &= \frac{1}{(bd-ae)(d+ex)}+\frac{b\log(a+bx)}{(bd-ae)^2}-\frac{b\log(d+ex)}{(bd-ae)^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 53, normalized size = 0.95

$$\frac{b(d+ex)\log(a+bx)-ae-b(d+ex)\log(d+ex)+bd}{(d+ex)(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (b*d - a*e + b*(d + e*x)*Log[a + b*x] - b*(d + e*x)*Log[d + e*x])/((b*d - a
*e)^2*(d + e*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^2(a^2+2abx+b^2x^2)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [A] time = 0.42, size = 92, normalized size = 1.64

$$\frac{bd-ae+(bex+bd)\log(bx+a)-(bex+bd)\log(ex+d)}{b^2d^3-2\,abd^2e+a^2de^2+\left(b^2d^2e-2\,abde^2+a^2e^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (b*d - a*e + (b*e*x + b*d)*log(b*x + a) - (b*e*x + b*d)*log(e*x + d))/(b^2*
d^3 - 2*a*b*d^2*e + a^2*d*e^2 + (b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3)*x)
```

giac [A] time = 0.17, size = 82, normalized size = 1.46

$$\frac{be\log\left(\left|b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right|\right)}{b^2d^2e-2\,abde^2+a^2e^3}+\frac{e}{\left(bde-ae^2\right)(xe+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] b*e*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^2*d^2*e - 2*a*b*d*e^2 +
a^2*e^3) + e/((b*d*e - a*e^2)*(x*e + d))
```

maple [A] time = 0.06, size = 58, normalized size = 1.04

$$\frac{b\ln(bx+a)}{(ae-bd)^2}-\frac{b\ln(ex+d)}{(ae-bd)^2}-\frac{1}{(ae-bd)(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] b/(a*e-b*d)^2*ln(b*x+a)-1/(a*e-b*d)/(e*x+d)-b/(a*e-b*d)^2*ln(e*x+d)
```

maxima [A] time = 0.48, size = 90, normalized size = 1.61

$$\frac{b\log(bx+a)}{b^2d^2-2\,abde+a^2e^2}-\frac{b\log(ex+d)}{b^2d^2-2\,abde+a^2e^2}+\frac{1}{bd^2-ade+\left(bde-ae^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] b*log(b*x + a)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2) - b*log(e*x + d)/(b^2*d^2 -
2*a*b*d*e + a^2*e^2) + 1/(b*d^2 - a*d*e + (b*d*e - a*e^2)*x)
```

mupad [B] time = 2.32, size = 77, normalized size = 1.38

$$\frac{2\,b\,\mathrm{atanh}\left(\frac{a^2\,e^2-b^2\,d^2}{(a\,e-b\,d)^2}+\frac{2\,b\,e\,x}{a\,e-b\,d}\right)}{(a\,e-b\,d)^2}-\frac{1}{(a\,e-b\,d)\,(d+e\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b*atanh((a^2*e^2 - b^2*d^2)/(a*e - b*d)^2 + (2*b*e*x)/(a*e - b*d)))/(a*e
 - b*d)^2 - 1/((a*e - b*d)*(d + e*x))
```

sympy [**B**] time = 0.71, size = 233, normalized size = 4.16

$$-\frac{b\log\left(x+\frac{-\frac{a^3be^3}{(ae-bd)^2}+\frac{3a^2b^2de^2}{(ae-bd)^2}-\frac{3ab^3d^2e}{(ae-bd)^2}+abe+\frac{b^4d^3}{(ae-bd)^2}+b^2d}{2b^2e}\right)}{(ae-bd)^2}+\frac{b\log\left(x+\frac{\frac{a^3be^3}{(ae-bd)^2}-\frac{3a^2b^2de^2}{(ae-bd)^2}+\frac{3ab^3d^2e}{(ae-bd)^2}+abe-\frac{b^4d^3}{(ae-bd)^2}+b^2d}{2b^2e}\right)}{(ae-bd)^2}-\frac{1}{ade-bd^2+x\left(ae^2-bde\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -b*log(x + (-a**3*b*e**3/(a*e - b*d)**2 + 3*a**2*b**2*d*e**2/(a*e - b*d)**2
 - 3*a*b**3*d**2*e/(a*e - b*d)**2 + a*b*e + b**4*d**3/(a*e - b*d)**2 + b**2
*d)/(2*b**2*e))/(a*e - b*d)**2 + b*log(x + (a**3*b*e**3/(a*e - b*d)**2 - 3*
a**2*b**2*d*e**2/(a*e - b*d)**2 + 3*a*b**3*d**2*e/(a*e - b*d)**2 + a*b*e -
b**4*d**3/(a*e - b*d)**2 + b**2*d)/(2*b**2*e))/(a*e - b*d)**2 - 1/(a*d*e -
b*d**2 + x*(a*e**2 - b*d*e))
```

3.1709 $\int \frac{a+bx}{(d+ex)^3(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=82

$$\frac{b^2\log(a+bx)}{(bd-ae)^3}-\frac{b^2\log(d+ex)}{(bd-ae)^3}+\frac{b}{(d+ex)(bd-ae)^2}+\frac{1}{2(d+ex)^2(bd-ae)}$$

Rubi [A] time = 0.05, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}=0.065$, Rules used = $\{27,44\}$

$$\frac{b^2\log(a+bx)}{(bd-ae)^3}-\frac{b^2\log(d+ex)}{(bd-ae)^3}+\frac{b}{(d+ex)(bd-ae)^2}+\frac{1}{2(d+ex)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 1/(2*(b*d - a*e)*(d + e*x)^2) + b/((b*d - a*e)^2*(d + e*x)) + (b^2*Log[a +
b*x])/(b*d - a*e)^3 - (b^2*Log[d + e*x])/(b*d - a*e)^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^3}\,dx\\ &= \int \left(\frac{b^3}{(bd-ae)^3(a+bx)}-\frac{e}{(bd-ae)(d+ex)^3}-\frac{be}{(bd-ae)^2(d+ex)^2}-\frac{}{(bd\ldots}\right.\\ &= \frac{1}{2(bd-ae)(d+ex)^2}+\frac{b}{(bd-ae)^2(d+ex)}+\frac{b^2\log(a+bx)}{(bd-ae)^3}-\frac{b^2\log(d+\ldots}{(bd-ae)^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 0.82

$$\frac{2b^2\log(a+bx)+\frac{(bd-ae)(-ae+3bd+2bex)}{(d+ex)^2}-2b^2\log(d+ex)}{2(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (((b*d - a*e)*(3*b*d - a*e + 2*b*e*x))/(d + e*x)^2 + 2*b^2*Log[a + b*x] - 2
*b^2*Log[d + e*x])/(2*(b*d - a*e)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [B] time = 0.41, size = 242, normalized size = 2.95

$$\frac{3\,b^2d^2-4\,abde+a^2e^2+2\left(b^2de-abe^2\right)x+2\left(b^2e^2x^2+2\,b^2dex+b^2d^2\right)\log\left(bx+a\right)-2\left(b^2e^2x^2+2\,b^2dex+b^2d^2\right)\log\left(ex+d\right)}{2\left(b^3d^5-3\,ab^2d^4e+3\,a^2bd^3e^2-a^3d^2e^3+\left(b^3d^3e^2-3\,ab^2d^2e^3+3\,a^2bde^4-a^3e^5\right)x^2+2\left(b^3d^4e-3\,ab^2d^3e^2+3\,a^2bd^2e^3-a^3de^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] 1/2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2 + 2*(b^2*d*e - a*b*e^2)*x + 2*(b^2*e^2
*x^2 + 2*b^2*d*e*x + b^2*d^2)*log(b*x + a) - 2*(b^2*e^2*x^2 + 2*b^2*d*e*x +
 b^2*d^2)*log(e*x + d))/(b^3*d^5 - 3*a*b^2*d^4*e + 3*a^2*b*d^3*e^2 - a^3*d^
2*e^3 + (b^3*d^3*e^2 - 3*a*b^2*d^2*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*x^2 + 2*(
b^3*d^4*e - 3*a*b^2*d^3*e^2 + 3*a^2*b*d^2*e^3 - a^3*d*e^4)*x)
```

giac [B] time = 0.16, size = 166, normalized size = 2.02

$$\frac{b^3\log\left(|bx+a|\right)}{b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3}-\frac{b^2e\log\left(|xe+d|\right)}{b^3d^3e-3\,ab^2d^2e^2+3\,a^2bde^3-a^3e^4}+\frac{3\,b^2d^2-4\,abde+a^2e^2+2\left(b^2de-abe^2\right)x}{2\,(bd-ae)^3(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] b^3*log(abs(b*x + a))/(b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^
3) - b^2*e*log(abs(x*e + d))/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 -
 a^3*e^4) + 1/2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2 + 2*(b^2*d*e - a*b*e^2)*x)
/((b*d - a*e)^3*(x*e + d)^2)
```

maple [A] time = 0.05, size = 81, normalized size = 0.99

$$-\frac{b^2\ln\left(bx+a\right)}{\left(ae-bd\right)^3}+\frac{b^2\ln\left(ex+d\right)}{\left(ae-bd\right)^3}+\frac{b}{\left(ae-bd\right)^2\left(ex+d\right)}-\frac{1}{2\left(ae-bd\right)\left(ex+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
[Out] -1/(a*e-b*d)^3*b^2*ln(b*x+a)-1/2/(a*e-b*d)/(e*x+d)^2+1/(a*e-b*d)^3*b^2*ln(e
*x+d)+b/(a*e-b*d)^2/(e*x+d)
```

maxima [B] time = 0.47, size = 202, normalized size = 2.46

$$\frac{b^2\log\left(bx+a\right)}{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3}-\frac{b^2\log\left(ex+d\right)}{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3}+\frac{2\,bex+3\,bd-ae}{2\left(b^2d^4-2\,abd^3e+a^2d^2e^2+\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)x^2+2\left(b^2d^3e-2\,abd^2e^2+a^2de^3\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] b^2*log(b*x + a)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) - b^2*
log(e*x + d)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) + 1/2*(2*b
```

```
*e*x + 3*b*d - a*e)/(b^2*d^4 - 2*a*b*d^3*e + a^2*d^2*e^2 + (b^2*d^2*e^2 - 2
*a*b*d*e^3 + a^2*e^4)*x^2 + 2*(b^2*d^3*e - 2*a*b*d^2*e^2 + a^2*d*e^3)*x)
```

mupad [B] time = 2.26, size = 183, normalized size = 2.23

$$-\frac{\frac{a\,e-3\,b\,d}{2\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}-\frac{b\,e\,x}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}}{d^2+2\,d\,e\,x+e^2\,x^2}-\frac{2\,b^2\,\mathrm{atanh}\left(\frac{a^3\,e^3-a^2\,b\,d\,e^2-a\,b^2\,d^2\,e+b^3\,d^3}{{\left(a\,e-b\,d\right)}^3}+\frac{2\,b\,e\,x\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^3}\right)}{{\left(a\,e-b\,d\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((a*e - 3*b*d)/(2*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) - (b*e*x)/(a^2*e^2 + b
^2*d^2 - 2*a*b*d*e))/(d^2 + e^2*x^2 + 2*d*e*x) - (2*b^2*atanh((a^3*e^3 + b^
3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2)/(a*e - b*d)^3 + (2*b*e*x*(a^2*e^2 + b^2*
d^2 - 2*a*b*d*e))/(a*e - b*d)^3))/(a*e - b*d)^3
```

sympy [B] time = 1.08, size = 381, normalized size = 4.65

$$\frac{b^{2} \log{\left(x + \frac{- \frac{a^{4} b^{2} e^{4}}{\left(ae - bd\right)^{3}} + \frac{4 a^{3} b^{3} d e^{3}}{\left(ae - bd\right)^{3}} - \frac{6 a^{2} b^{4} d^{2} e^{2}}{\left(ae - bd\right)^{3}} + \frac{4 a b^{5} d^{3} e}{\left(ae - bd\right)^{3}} + a b^{2} e - \frac{b^{6} d^{4}}{\left(ae - bd\right)^{3}} + b^{3} d}{2 b^{3} e} \right)}}{\left(ae - bd\right)^{3}} - \frac{b^{2} \log{\left(x + \frac{\frac{a^{4} b^{2} e^{4}}{\left(ae - bd\right)^{3}} - \frac{4 a^{3} b^{3} d e^{3}}{\left(ae - bd\right)^{3}} + \frac{6 a^{2} b^{4} d^{2} e^{2}}{\left(ae - bd\right)^{3}} - \frac{4 a b^{5} d^{3} e}{\left(ae - bd\right)^{3}} + a b^{2} e + \frac{b^{6} d^{4}}{\left(ae - bd\right)^{3}} + b^{3} d}{2 b^{3} e} \right)}}{\left(ae - bd\right)^{3}} + \frac{- ae + 3 bd + 2 bex}{2 a^{2} d^{2} e^{2} - 4 a b d^{3} e + 2 b^{2} d^{4} + x^{2} \left(2 a^{2} e^{4} - 4 a b d e^{3} + 2 b^{2} d^{2} e^{2}\right) + x \left(4 a^{2} d e^{3} - 8 a b d^{2} e^{2} + 4 b^{2} d^{3} e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] b**2*log(x + (-a**4*b**2*e**4/(a*e - b*d)**3 + 4*a**3*b**3*d*e**3/(a*e - b*
d)**3 - 6*a**2*b**4*d**2*e**2/(a*e - b*d)**3 + 4*a*b**5*d**3*e/(a*e - b*d)*
*3 + a*b**2*e - b**6*d**4/(a*e - b*d)**3 + b**3*d)/(2*b**3*e))/(a*e - b*d)*
*3 - b**2*log(x + (a**4*b**2*e**4/(a*e - b*d)**3 - 4*a**3*b**3*d*e**3/(a*e
- b*d)**3 + 6*a**2*b**4*d**2*e**2/(a*e - b*d)**3 - 4*a*b**5*d**3*e/(a*e - b
*d)**3 + a*b**2*e + b**6*d**4/(a*e - b*d)**3 + b**3*d)/(2*b**3*e))/(a*e - b
*d)**3 + (-a*e + 3*b*d + 2*b*e*x)/(2*a**2*d**2*e**2 - 4*a*b*d**3*e + 2*b**2
*d**4 + x**2*(2*a**2*e**4 - 4*a*b*d*e**3 + 2*b**2*d**2*e**2) + x*(4*a**2*d*
e**3 - 8*a*b*d**2*e**2 + 4*b**2*d**3*e))
```

3.1710 $\int \frac{a+bx}{(d+ex)^4(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=106

$$\frac{b^3\log(a+bx)}{(bd-ae)^4}-\frac{b^3\log(d+ex)}{(bd-ae)^4}+\frac{b^2}{(d+ex)(bd-ae)^3}+\frac{b}{2(d+ex)^2(bd-ae)^2}+\frac{1}{3(d+ex)^3(bd-ae)}$$

Rubi [A] time = 0.07, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{b^2}{(d+ex)(bd-ae)^3}+\frac{b^3\log(a+bx)}{(bd-ae)^4}-\frac{b^3\log(d+ex)}{(bd-ae)^4}+\frac{b}{2(d+ex)^2(bd-ae)^2}+\frac{1}{3(d+ex)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 1/(3*(b*d - a*e)*(d + e*x)^3) + b/(2*(b*d - a*e)^2*(d + e*x)^2) + b^2/((b*d
 - a*e)^3*(d + e*x)) + (b^3*Log[a + b*x])/(b*d - a*e)^4 - (b^3*Log[d + e*x]
)/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^4}\,dx\\ &= \int \left(\frac{b^4}{(bd-ae)^4(a+bx)}-\frac{e}{(bd-ae)(d+ex)^4}-\frac{be}{(bd-ae)^2(d+ex)^3}-\frac{}{(bd-a}\right.\\ &= \frac{1}{3(bd-ae)(d+ex)^3}+\frac{b}{2(bd-ae)^2(d+ex)^2}+\frac{b^2}{(bd-ae)^3(d+ex)}+\frac{b^3\log(a}{(bd-}\end{aligned}$$

Mathematica [A] time = 0.04, size = 106, normalized size = 1.00

$$\frac{b^3\log(a+bx)}{(bd-ae)^4}-\frac{b^3\log(d+ex)}{(bd-ae)^4}+\frac{b^2}{(d+ex)(bd-ae)^3}+\frac{b}{2(d+ex)^2(bd-ae)^2}-\frac{1}{3(d+ex)^3(ae-bd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -1/3*1/((-(b*d) + a*e)*(d + e*x)^3) + b/(2*(b*d - a*e)^2*(d + e*x)^2) + b^2
/((b*d - a*e)^3*(d + e*x)) + (b^3*Log[a + b*x])/(b*d - a*e)^4 - (b^3*Log[d
+ e*x])/(b*d - a*e)^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)), x]
```

fricas [B] time = 0.40, size = 425, normalized size = 4.01

$$\frac{11\,b^3d^3 - 18\,ab^2d^2e + 9\,a^2bde^2 - 2\,a^3e^3 + 6\left(b^3de^2 - ab^2e^3\right)x^2 + 3\left(5\,b^3d^2e - 6\,ab^2de^2 + a^2be^3\right)x + 6\left(b^3e^3x^3 + 3\,b^3de^2x^2 + 3\,b^3d^2ex + b^3d^3\right)\log\left(bx+a\right) - 6\left(b^3e^3x^3 + 3\,b^3de^2x^2 + 3\,b^3d^2ex + b^3d^3\right)\log\left(ex+d\right)}{6\left(b^4d^7 - 4\,ab^3d^6e + 6\,a^2b^2d^5e^2 - 4\,a^3bd^4e^3 + a^4d^3e^4 + \left(b^4d^4e^3 - 4\,ab^3d^3e^4 + 6\,a^2b^2d^2e^5 - 4\,a^3bde^6 + a^4e^7\right)x^3 + 3\left(b^4d^5e^2 - 4\,ab^3d^4e^3 + 6\,a^2b^2d^3e^4 - 4\,a^3bd^2e^5 + a^4de^6\right)x^2 + 3\left(b^4d^6e - 4\,ab^3d^5e^2 + 6\,a^2b^2d^4e^3 - 4\,a^3bd^3e^4 + a^4d^2e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(11*b^3*d^3 - 18*a*b^2*d^2*e + 9*a^2*b*d*e^2 - 2*a^3*e^3 + 6*(b^3*d*e^2
 - a*b^2*e^3)*x^2 + 3*(5*b^3*d^2*e - 6*a*b^2*d*e^2 + a^2*b*e^3)*x + 6*(b^3*
e^3*x^3 + 3*b^3*d*e^2*x^2 + 3*b^3*d^2*e*x + b^3*d^3)*log(b*x + a) - 6*(b^3*
e^3*x^3 + 3*b^3*d*e^2*x^2 + 3*b^3*d^2*e*x + b^3*d^3)*log(e*x + d))/(b^4*d^7
 - 4*a*b^3*d^6*e + 6*a^2*b^2*d^5*e^2 - 4*a^3*b*d^4*e^3 + a^4*d^3*e^4 + (b^4
*d^4*e^3 - 4*a*b^3*d^3*e^4 + 6*a^2*b^2*d^2*e^5 - 4*a^3*b*d*e^6 + a^4*e^7)*x
^3 + 3*(b^4*d^5*e^2 - 4*a*b^3*d^4*e^3 + 6*a^2*b^2*d^3*e^4 - 4*a^3*b*d^2*e^5
 + a^4*d*e^6)*x^2 + 3*(b^4*d^6*e - 4*a*b^3*d^5*e^2 + 6*a^2*b^2*d^4*e^3 - 4*
a^3*b*d^3*e^4 + a^4*d^2*e^5)*x)
```

giac [B] time = 0.17, size = 238, normalized size = 2.25

$$\frac{b^4\log\left(|bx+a|\right)}{b^5d^4 - 4\,ab^4d^3e + 6\,a^2b^3d^2e^2 - 4\,a^3b^2de^3 + a^4be^4} - \frac{b^3e\log\left(|xe+d|\right)}{b^4d^4e - 4\,ab^3d^3e^2 + 6\,a^2b^2d^2e^3 - 4\,a^3bde^4 + a^4e^5} + \frac{11\,b^3d^3 - 18\,ab^2d^2e + 9\,a^2bde^2 - 2\,a^3e^3 + 6\left(b^3de^2 - ab^2e^3\right)x^2 + 3\left(5\,b^3d^2e - 6\,ab^2de^2 + a^2be^3\right)x}{6\,(bd-ae)^4(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] b^4*log(abs(b*x + a))/(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*
b^2*d*e^3 + a^4*b*e^4) - b^3*e*log(abs(x*e + d))/(b^4*d^4*e - 4*a*b^3*d^3*e
^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) + 1/6*(11*b^3*d^3 - 18*a*
b^2*d^2*e + 9*a^2*b*d*e^2 - 2*a^3*e^3 + 6*(b^3*d*e^2 - a*b^2*e^3)*x^2 + 3*(
5*b^3*d^2*e - 6*a*b^2*d*e^2 + a^2*b*e^3)*x)/((b*d - a*e)^4*(x*e + d)^3)
```

maple [A] time = 0.10, size = 104, normalized size = 0.98

$$\frac{b^3\ln\left(bx+a\right)}{\left(ae-bd\right)^4} - \frac{b^3\ln\left(ex+d\right)}{\left(ae-bd\right)^4} - \frac{b^2}{\left(ae-bd\right)^3\left(ex+d\right)} + \frac{b}{2\left(ae-bd\right)^2\left(ex+d\right)^2} - \frac{1}{3\left(ae-bd\right)\left(ex+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/(a*e-b*d)^4*b^3*ln(b*x+a)-1/3/(a*e-b*d)/(e*x+d)^3-1/(a*e-b*d)^3*b^2/(e*x+
d)+1/2*b/(a*e-b*d)^2/(e*x+d)^2-1/(a*e-b*d)^4*b^3*ln(e*x+d)
```

maxima [B] time = 0.62, size = 362, normalized size = 3.42

$$\frac{b^3\log\left(bx+a\right)}{b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4} - \frac{b^3\log\left(ex+d\right)}{b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4} + \frac{6\,b^2e^2x^2 + 11\,b^2d^2 - 7\,abde + 2\,a^2e^2 + 3\left(5\,b^2de - abe^2\right)x}{6\left(b^3d^6 - 3\,ab^2d^5e + 3\,a^2bd^4e^2 - a^3d^3e^3 + \left(b^3d^3e^3 - 3\,ab^2d^2e^4 + 3\,a^2bde^5 - a^3e^6\right)x^3 + 3\left(b^3d^4e^2 - 3\,ab^2d^3e^3 + 3\,a^2bd^2e^4 - a^3de^5\right)x^2 + 3\left(b^3d^5e - 3\,ab^2d^4e^2 + 3\,a^2bd^3e^3 - a^3d^2e^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] b^3*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e
^3 + a^4*e^4) - b^3*log(e*x + d)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e
^2 - 4*a^3*b*d*e^3 + a^4*e^4) + 1/6*(6*b^2*e^2*x^2 + 11*b^2*d^2 - 7*a*b*d*e
 + 2*a^2*e^2 + 3*(5*b^2*d*e - a*b*e^2)*x)/(b^3*d^6 - 3*a*b^2*d^5*e + 3*a^2*
b*d^4*e^2 - a^3*d^3*e^3 + (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2*b*d*e^5 -
a^3*e^6)*x^3 + 3*(b^3*d^4*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^4 - a^3*d*e
^5)*x^2 + 3*(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3*d^2*e^4)*x
)
```

mupad [B] time = 0.22, size = 313, normalized size = 2.95

$$\frac{2\,b^3\,\mathrm{atanh}\left(\frac{a^4\,e^4-2\,a^3\,b\,d\,e^3+2\,a\,b^3\,d^3\,e-b^4\,d^4}{{\left(a\,e-b\,d\right)}^4}+\frac{2\,b\,e\,x\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{{\left(a\,e-b\,d\right)}^4}\right)}{{\left(a\,e-b\,d\right)}^4}-\frac{\frac{2\,a^2\,e^2-7\,a\,b\,d\,e+11\,b^2\,d^2}{6\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}-\frac{b\,x\,\left(a\,e^2-5\,b\,d\,e\right)}{2\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}+\frac{b^2\,e^2\,x^2}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b^3*atanh((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a*e - b*d
)^4 + (2*b*e*x*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(a*e -
b*d)^4))/(a*e - b*d)^4 - ((2*a^2*e^2 + 11*b^2*d^2 - 7*a*b*d*e)/(6*(a^3*e^3
- b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) - (b*x*(a*e^2 - 5*b*d*e))/(2*(a
^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (b^2*e^2*x^2)/(a^3*e^3
 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(d^3 + e^3*x^3 + 3*d*e^2*x^2 +
 3*d^2*e*x)
```

sympy [B] time = 1.53, size = 570, normalized size = 5.38

$$-\frac{b^3\log\left(x+\frac{-\frac{a^5b^3e^5}{(ae-bd)^4}+\frac{5a^4b^4de^4}{(ae-bd)^4}-\frac{10a^3b^5d^2e^3}{(ae-bd)^4}+\frac{10a^2b^6d^3e^2}{(ae-bd)^4}-\frac{5ab^7d^4e}{(ae-bd)^4}+ab^3e+\frac{b^8d^5}{(ae-bd)^4}+b^4d}{2b^4e}\right)}{(ae-bd)^4}+\frac{b^3\log\left(x+\frac{\frac{a^5b^3e^5}{(ae-bd)^4}-\frac{5a^4b^4de^4}{(ae-bd)^4}+\frac{10a^3b^5d^2e^3}{(ae-bd)^4}-\frac{10a^2b^6d^3e^2}{(ae-bd)^4}+\frac{5ab^7d^4e}{(ae-bd)^4}+ab^3e-\frac{b^8d^5}{(ae-bd)^4}+b^4d}{2b^4e}\right)}{(ae-bd)^4}+\frac{-2a^2e^2+7abde-11b^2d^2-6b^2e^2x^2+x\left(3abe^2-15b^2de\right)}{6a^3d^3e^3-18a^2bd^4e^2+18ab^2d^5e-6b^3d^6+x^3\left(6a^3e^6-18a^2bde^5+18ab^2d^2e^4-6b^3d^3e^3\right)+x^2\left(18a^3de^5-54a^2bd^2e^4+54ab^2d^3e^3-18b^3d^4e^2\right)+x\left(18a^3d^2e^4-54a^2bd^3e^3+54ab^2d^4e^2-18b^3d^5e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -b**3*log(x + (-a**5*b**3*e**5/(a*e - b*d)**4 + 5*a**4*b**4*d*e**4/(a*e - b
*d)**4 - 10*a**3*b**5*d**2*e**3/(a*e - b*d)**4 + 10*a**2*b**6*d**3*e**2/(a*
e - b*d)**4 - 5*a*b**7*d**4*e/(a*e - b*d)**4 + a*b**3*e + b**8*d**5/(a*e -
b*d)**4 + b**4*d)/(2*b**4*e))/(a*e - b*d)**4 + b**3*log(x + (a**5*b**3*e**5
/(a*e - b*d)**4 - 5*a**4*b**4*d*e**4/(a*e - b*d)**4 + 10*a**3*b**5*d**2*e**
3/(a*e - b*d)**4 - 10*a**2*b**6*d**3*e**2/(a*e - b*d)**4 + 5*a*b**7*d**4*e/
(a*e - b*d)**4 + a*b**3*e - b**8*d**5/(a*e - b*d)**4 + b**4*d)/(2*b**4*e))/
(a*e - b*d)**4 + (-2*a**2*e**2 + 7*a*b*d*e - 11*b**2*d**2 - 6*b**2*e**2*x**
2 + x*(3*a*b*e**2 - 15*b**2*d*e))/(6*a**3*d**3*e**3 - 18*a**2*b*d**4*e**2 +
 18*a*b**2*d**5*e - 6*b**3*d**6 + x**3*(6*a**3*e**6 - 18*a**2*b*d*e**5 + 18
*a*b**2*d**2*e**4 - 6*b**3*d**3*e**3) + x**2*(18*a**3*d*e**5 - 54*a**2*b*d*
*2*e**4 + 54*a*b**2*d**3*e**3 - 18*b**3*d**4*e**2) + x*(18*a**3*d**2*e**4 -
 54*a**2*b*d**3*e**3 + 54*a*b**2*d**4*e**2 - 18*b**3*d**5*e))
```

3.1711 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=102

$$\frac{6e^2(bd-ae)^2\log(a+bx)}{b^5}-\frac{4e(bd-ae)^3}{b^5(a+bx)}-\frac{(bd-ae)^4}{2b^5(a+bx)^2}+\frac{e^3x(4bd-3ae)}{b^4}+\frac{e^4x^2}{2b^3}$$

Rubi [A] time = 0.09, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{e^3x(4bd-3ae)}{b^4}+\frac{6e^2(bd-ae)^2\log(a+bx)}{b^5}-\frac{4e(bd-ae)^3}{b^5(a+bx)}-\frac{(bd-ae)^4}{2b^5(a+bx)^2}+\frac{e^4x^2}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^3*(4*b*d - 3*a*e)*x)/b^4 + (e^4*x^2)/(2*b^3) - (b*d - a*e)^4/(2*b^5*(a +
 b*x)^2) - (4*e*(b*d - a*e)^3)/(b^5*(a + b*x)) + (6*e^2*(b*d - a*e)^2*Log[a
 + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^4}{(a+bx)^3}\,dx\\
&= \int \left(\frac{e^3(4bd-3ae)}{b^4}+\frac{e^4x}{b^3}+\frac{(bd-ae)^4}{b^4(a+bx)^3}+\frac{4e(bd-ae)^3}{b^4(a+bx)^2}+\frac{6e^2(bd-ae)^2}{b^4(a+bx)}\right)dx\\
&= \frac{e^3(4bd-3ae)x}{b^4}+\frac{e^4x^2}{2b^3}-\frac{(bd-ae)^4}{2b^5(a+bx)^2}-\frac{4e(bd-ae)^3}{b^5(a+bx)}+\frac{6e^2(bd-ae)^2\log(a+bx)}{b^5}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 163, normalized size = 1.60

$$\frac{7a^4e^4+2a^3be^3(ex-10d)+a^2b^2e^2\left(18d^2-16dex-11e^2x^2\right)-4ab^3e\left(d^3-6d^2ex-4de^2x^2+e^3x^3\right)+12e^2(a+bx)^2(bd-ae)^2\log(a+bx)+b^4\left(-d^4-8d^3ex+8de^3x^3+e^4x^4\right)}{2b^5(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (7*a^4*e^4 + 2*a^3*b*e^3*(-10*d + e*x) + a^2*b^2*e^2*(18*d^2 - 16*d*e*x - 1
1*e^2*x^2) - 4*a*b^3*e*(d^3 - 6*d^2*e*x - 4*d*e^2*x^2 + e^3*x^3) + b^4*(-d^
```

```
4 - 8*d^3*e*x + 8*d*e^3*x^3 + e^4*x^4) + 12*e^2*(b*d - a*e)^2*(a + b*x)^2*L
og[a + b*x])/(2*b^5*(a + b*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^4}{(a^2+2abx+b^2x^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.41, size = 292, normalized size = 2.86

$$\frac{b^4e^4x^4 - b^4d^4 - 4\,ab^3d^3e + 18\,a^2b^2d^2e^2 - 20\,a^3bde^3 + 7\,a^4e^4 + 4\left(2\,b^4de^3 - ab^3e^4\right)x^3 + \left(16\,ab^3de^3 - 11\,a^2b^2e^4\right)x^2 - 2\left(4\,b^4d^3e - 12\,ab^3d^2e^2 + 8\,a^2b^2de^3 - a^3be^4\right)x + 12\left(a^2b^2d^2e^2 - 2\,a^3bde^3 + a^4e^4 + \left(b^4d^2e^2 - 2\,ab^3de^3 + a^2b^2e^4\right)x^2 + 2\left(ab^3d^2e^2 - 2\,a^2b^2de^3 + a^3be^4\right)x\right)\log\left(bx+a\right)}{2\left(b^7x^2 + 2\,ab^6x + a^2b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*e^4*x^4 - b^4*d^4 - 4*a*b^3*d^3*e + 18*a^2*b^2*d^2*e^2 - 20*a^3*b*
d*e^3 + 7*a^4*e^4 + 4*(2*b^4*d*e^3 - a*b^3*e^4)*x^3 + (16*a*b^3*d*e^3 - 11*
a^2*b^2*e^4)*x^2 - 2*(4*b^4*d^3*e - 12*a*b^3*d^2*e^2 + 8*a^2*b^2*d*e^3 - a^
3*b*e^4)*x + 12*(a^2*b^2*d^2*e^2 - 2*a^3*b*d*e^3 + a^4*e^4 + (b^4*d^2*e^2 -
 2*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 - 2*a^2*b^2*d*e^3 + a^
3*b*e^4)*x)*log(b*x + a))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)
```

giac [A] time = 0.16, size = 172, normalized size = 1.69

$$\frac{6\left(b^2d^2e^2 - 2\,abde^3 + a^2e^4\right)\log\left(|bx+a|\right)}{b^5} + \frac{b^3x^2e^4 + 8\,b^3dxe^3 - 6\,ab^2xe^4}{2\,b^6} - \frac{b^4d^4 + 4\,ab^3d^3e - 18\,a^2b^2d^2e^2 + 20\,a^3bde^3 - 7\,a^4e^4 + 8\left(b^4d^3e - 3\,ab^3d^2e^2 + 3\,a^2b^2de^3 - a^3be^4\right)x}{2\,(bx+a)^2b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 6*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*log(abs(b*x + a))/b^5 + 1/2*(b^3*x^
2*e^4 + 8*b^3*d*x*e^3 - 6*a*b^2*x*e^4)/b^6 - 1/2*(b^4*d^4 + 4*a*b^3*d^3*e -
 18*a^2*b^2*d^2*e^2 + 20*a^3*b*d*e^3 - 7*a^4*e^4 + 8*(b^4*d^3*e - 3*a*b^3*d
^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)/((b*x + a)^2*b^5)
```

maple [B] time = 0.07, size = 245, normalized size = 2.40

$$-\frac{a^4e^4}{2\,(bx+a)^2\,b^5} + \frac{2a^3d\,e^3}{(bx+a)^2\,b^4} - \frac{3a^2d^2e^2}{(bx+a)^2\,b^3} + \frac{2a\,d^3e}{(bx+a)^2\,b^2} - \frac{d^4}{2\,(bx+a)^2\,b} + \frac{e^4x^2}{2b^3} + \frac{4a^3e^4}{(bx+a)\,b^5} - \frac{12a^2d\,e^3}{(bx+a)\,b^4} + \frac{6a^2e^4\ln\left(bx+a\right)}{b^5} + \frac{12a\,d^2e^2}{(bx+a)\,b^3} - \frac{12ad\,e^3\ln\left(bx+a\right)}{b^4} - \frac{3a\,e^4x}{b^4} - \frac{4d^3e}{(bx+a)\,b^2} + \frac{6d^2e^2\ln\left(bx+a\right)}{b^3} + \frac{4d\,e^3x}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2*e^4*x^2/b^3-3*e^4/b^4*a*x+4*e^3/b^3*x*d-1/2/b^5/(b*x+a)^2*a^4*e^4+2/b^4
/(b*x+a)^2*a^3*d*e^3-3/b^3/(b*x+a)^2*a^2*d^2*e^2+2/b^2/(b*x+a)^2*a*d^3*e-1/
2/b/(b*x+a)^2*d^4+6/b^5*e^4*ln(b*x+a)*a^2-12/b^4*e^3*ln(b*x+a)*a*d+6/b^3*e^
2*ln(b*x+a)*d^2+4/b^5*e^4/(b*x+a)*a^3-12/b^4*e^3/(b*x+a)*a^2*d+12/b^3*e^2/(
b*x+a)*a*d^2-4/b^2*e/(b*x+a)*d^3
```

maxima [A] time = 0.54, size = 190, normalized size = 1.86

$$-\frac{b^4d^4 + 4\,ab^3d^3e - 18\,a^2b^2d^2e^2 + 20\,a^3bde^3 - 7\,a^4e^4 + 8\left(b^4d^3e - 3\,ab^3d^2e^2 + 3\,a^2b^2de^3 - a^3be^4\right)x}{2\left(b^7x^2 + 2\,ab^6x + a^2b^5\right)} + \frac{be^4x^2 + 2\left(4\,bde^3 - 3\,ae^4\right)x}{2\,b^4} + \frac{6\left(b^2d^2e^2 - 2\,abde^3 + a^2e^4\right)\log\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^4*d^4 + 4*a*b^3*d^3*e - 18*a^2*b^2*d^2*e^2 + 20*a^3*b*d*e^3 - 7*a^4
*e^4 + 8*(b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)/(b^
7*x^2 + 2*a*b^6*x + a^2*b^5) + 1/2*(b*e^4*x^2 + 2*(4*b*d*e^3 - 3*a*e^4)*x)/
b^4 + 6*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*log(b*x + a)/b^5
```

mupad [B] time = 0.10, size = 197, normalized size = 1.93

$$\frac{e^4\,x^2}{2\,b^3}-x\,\left(\frac{3\,a\,e^4}{b^4}-\frac{4\,d\,e^3}{b^3}\right)-\frac{\frac{-7\,a^4\,e^4+20\,a^3\,b\,d\,e^3-18\,a^2\,b^2\,d^2\,e^2+4\,a\,b^3\,d^3\,e+b^4\,d^4}{2\,b}-x\,\left(4\,a^3\,e^4-12\,a^2\,b\,d\,e^3+12\,a\,b^2\,d^2\,e^2-4\,b^3\,d^3\,e\right)}{a^2\,b^4+2\,a\,b^5\,x+b^6\,x^2}+\frac{\ln\left(a+b\,x\right)\,\left(6\,a^2\,e^4-12\,a\,b\,d\,e^3+6\,b^2\,d^2\,e^2\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^4*x^2)/(2*b^3) - x*((3*a*e^4)/b^4 - (4*d*e^3)/b^3) - ((b^4*d^4 - 7*a^4*e
^4 - 18*a^2*b^2*d^2*e^2 + 4*a*b^3*d^3*e + 20*a^3*b*d*e^3)/(2*b) - x*(4*a^3*
e^4 - 4*b^3*d^3*e + 12*a*b^2*d^2*e^2 - 12*a^2*b*d*e^3))/(a^2*b^4 + b^6*x^2
+ 2*a*b^5*x) + (log(a + b*x)*(6*a^2*e^4 + 6*b^2*d^2*e^2 - 12*a*b*d*e^3))/b^
5
```

sympy [A] time = 1.24, size = 185, normalized size = 1.81

$$x\left(-\frac{3ae^4}{b^4}+\frac{4de^3}{b^3}\right)+\frac{7a^4e^4-20a^3bde^3+18a^2b^2d^2e^2-4ab^3d^3e-b^4d^4+x\left(8a^3be^4-24a^2b^2de^3+24ab^3d^2e^2-8b^4d^3e\right)}{2a^2b^5+4ab^6x+2b^7x^2}+\frac{e^4x^2}{2b^3}+\frac{6e^2\left(ae-bd\right)^2\log\left(a+bx\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] x*(-3*a*e**4/b**4 + 4*d*e**3/b**3) + (7*a**4*e**4 - 20*a**3*b*d*e**3 + 18*a
**2*b**2*d**2*e**2 - 4*a*b**3*d**3*e - b**4*d**4 + x*(8*a**3*b*e**4 - 24*a*
*2*b**2*d*e**3 + 24*a*b**3*d**2*e**2 - 8*b**4*d**3*e))/(2*a**2*b**5 + 4*a*b
**6*x + 2*b**7*x**2) + e**4*x**2/(2*b**3) + 6*e**2*(a*e - b*d)**2*log(a + b
*x)/b**5
```

3.1712 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=78

$$\frac{3e^2(bd-ae)\log(a+bx)}{b^4}-\frac{3e(bd-ae)^2}{b^4(a+bx)}-\frac{(bd-ae)^3}{2b^4(a+bx)^2}+\frac{e^3x}{b^3}$$

Rubi [A] time = 0.06, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{3e^2(bd-ae)\log(a+bx)}{b^4}-\frac{3e(bd-ae)^2}{b^4(a+bx)}-\frac{(bd-ae)^3}{2b^4(a+bx)^2}+\frac{e^3x}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^3*x)/b^3 - (b*d - a*e)^3/(2*b^4*(a + b*x)^2) - (3*e*(b*d - a*e)^2)/(b^4*
(a + b*x)) + (3*e^2*(b*d - a*e)*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^3}{(a+bx)^3}\,dx\\
&= \int \left(\frac{e^3}{b^3}+\frac{(bd-ae)^3}{b^3(a+bx)^3}+\frac{3e(bd-ae)^2}{b^3(a+bx)^2}+\frac{3e^2(bd-ae)}{b^3(a+bx)}\right)dx\\
&= \frac{e^3x}{b^3}-\frac{(bd-ae)^3}{2b^4(a+bx)^2}-\frac{3e(bd-ae)^2}{b^4(a+bx)}+\frac{3e^2(bd-ae)\log(a+bx)}{b^4}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.46

$$\frac{-5a^3e^3+a^2be^2(9d-4ex)+ab^2e\left(-3d^2+12dex+4e^2x^2\right)-6e^2(a+bx)^2(ae-bd)\log(a+bx)-\left(b^3\left(d^3+6d^2ex-2e^3x^3\right)\right)}{2b^4(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-5*a^3*e^3 + a^2*b*e^2*(9*d - 4*e*x) + a*b^2*e*(-3*d^2 + 12*d*e*x + 4*e^2*
x^2) - b^3*(d^3 + 6*d^2*e*x - 2*e^3*x^3) - 6*e^2*(-(b*d) + a*e)*(a + b*x)^2
*Log[a + b*x])/(2*b^4*(a + b*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [B] time = 0.40, size = 188, normalized size = 2.41

$$\frac{2\,b^3e^3x^3+4\,ab^2e^3x^2-b^3d^3-3\,ab^2d^2e+9\,a^2bde^2-5\,a^3e^3-2\left(3\,b^3d^2e-6\,ab^2de^2+2\,a^2be^3\right)x+6\left(a^2bde^2-a^3e^3+\left(b^3de^2-ab^2e^3\right)x^2+2\left(ab^2de^2-a^2be^3\right)x\right)\log\left(bx+a\right)}{2\left(b^6x^2+2\,ab^5x+a^2b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*e^3*x^3 + 4*a*b^2*e^3*x^2 - b^3*d^3 - 3*a*b^2*d^2*e + 9*a^2*b*d*
e^2 - 5*a^3*e^3 - 2*(3*b^3*d^2*e - 6*a*b^2*d*e^2 + 2*a^2*b*e^3)*x + 6*(a^2*
b*d*e^2 - a^3*e^3 + (b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(a*b^2*d*e^2 - a^2*b*e^
3)*x)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)
```

giac [A] time = 0.16, size = 107, normalized size = 1.37

$$\frac{xe^3}{b^3}+\frac{3\left(bde^2-ae^3\right)\log\left(|bx+a|\right)}{b^4}-\frac{b^3d^3+3\,ab^2d^2e-9\,a^2bde^2+5\,a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x}{2\,(bx+a)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] x*e^3/b^3 + 3*(b*d*e^2 - a*e^3)*log(abs(b*x + a))/b^4 - 1/2*(b^3*d^3 + 3*a*
b^2*d^2*e - 9*a^2*b*d*e^2 + 5*a^3*e^3 + 6*(b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*
b*e^3)*x)/((b*x + a)^2*b^4)
```

maple [B] time = 0.06, size = 160, normalized size = 2.05

$$\frac{a^3e^3}{2\,(bx+a)^2\,b^4}-\frac{3a^2d\,e^2}{2\,(bx+a)^2\,b^3}+\frac{3a\,d^2e}{2\,(bx+a)^2\,b^2}-\frac{d^3}{2\,(bx+a)^2\,b}-\frac{3a^2e^3}{(bx+a)\,b^4}+\frac{6ad\,e^2}{(bx+a)\,b^3}-\frac{3a\,e^3\ln\left(bx+a\right)}{b^4}-\frac{3d^2e}{(bx+a)\,b^2}+\frac{3d\,e^2\ln\left(bx+a\right)}{b^3}+\frac{e^3x}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] e^3*x/b^3+1/2/b^4/(b*x+a)^2*a^3*e^3-3/2/b^3/(b*x+a)^2*a^2*d*e^2+3/2/b^2/(b*
x+a)^2*a*d^2*e-1/2/b/(b*x+a)^2*d^3-3/b^4*e^3*ln(b*x+a)*a+3/b^3*e^2*ln(b*x+a
)*d-3/b^4*e^3/(b*x+a)*a^2+6/b^3*e^2/(b*x+a)*a*d-3/b^2*e/(b*x+a)*d^2
```

maxima [A] time = 0.53, size = 125, normalized size = 1.60

$$\frac{e^3x}{b^3}-\frac{b^3d^3+3\,ab^2d^2e-9\,a^2bde^2+5\,a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x}{2\left(b^6x^2+2\,ab^5x+a^2b^4\right)}+\frac{3\left(bde^2-ae^3\right)\log\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] e^3*x/b^3 - 1/2*(b^3*d^3 + 3*a*b^2*d^2*e - 9*a^2*b*d*e^2 + 5*a^3*e^3 + 6*(b
^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x)/(b^6*x^2 + 2*a*b^5*x + a^2*b^4) +
3*(b*d*e^2 - a*e^3)*log(b*x + a)/b^4
```

mupad [B] time = 0.10, size = 130, normalized size = 1.67

$$\frac{e^3\,x}{b^3}-\frac{\ln\left(a+b\,x\right)\,\left(3\,a\,e^3-3\,b\,d\,e^2\right)}{b^4}-\frac{\frac{5\,a^3\,e^3-9\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e+b^3\,d^3}{2\,b}+x\,\left(3\,a^2\,e^3-6\,a\,b\,d\,e^2+3\,b^2\,d^2\,e\right)}{a^2\,b^3+2\,a\,b^4\,x+b^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^3*x)/b^3 - (log(a + b*x)*(3*a*e^3 - 3*b*d*e^2))/b^4 - ((5*a^3*e^3 + b^3*
d^3 + 3*a*b^2*d^2*e - 9*a^2*b*d*e^2)/(2*b) + x*(3*a^2*e^3 + 3*b^2*d^2*e - 6
*a*b*d*e^2))/(a^2*b^3 + b^5*x^2 + 2*a*b^4*x)
```

sympy [A] time = 0.85, size = 128, normalized size = 1.64

$$\frac{-5a^3e^3+9a^2bde^2-3ab^2d^2e-b^3d^3+x\left(-6a^2be^3+12ab^2de^2-6b^3d^2e\right)}{2a^2b^4+4ab^5x+2b^6x^2}+\frac{e^3x}{b^3}-\frac{3e^2\left(ae-bd\right)\log\left(a+bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-5*a**3*e**3 + 9*a**2*b*d*e**2 - 3*a*b**2*d**2*e - b**3*d**3 + x*(-6*a**2*
b*e**3 + 12*a*b**2*d*e**2 - 6*b**3*d**2*e))/(2*a**2*b**4 + 4*a*b**5*x + 2*b
**6*x**2) + e**3*x/b**3 - 3*e**2*(a*e - b*d)*log(a + b*x)/b**4
```

3.1713 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=59

$$-\frac{2e(bd-ae)}{b^3(a+bx)}-\frac{(bd-ae)^2}{2b^3(a+bx)^2}+\frac{e^2\log(a+bx)}{b^3}$$

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{2e(bd-ae)}{b^3(a+bx)}-\frac{(bd-ae)^2}{2b^3(a+bx)^2}+\frac{e^2\log(a+bx)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(b*d - a*e)^2/(2*b^3*(a + b*x)^2) - (2*e*(b*d - a*e))/(b^3*(a + b*x)) + (e
^2*Log[a + b*x])/b^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^2}{(a+bx)^3}\,dx\\
&= \int \left(\frac{(bd-ae)^2}{b^2(a+bx)^3}+\frac{2e(bd-ae)}{b^2(a+bx)^2}+\frac{e^2}{b^2(a+bx)}\right)dx\\
&= -\frac{(bd-ae)^2}{2b^3(a+bx)^2}-\frac{2e(bd-ae)}{b^3(a+bx)}+\frac{e^2\log(a+bx)}{b^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.83

$$\frac{2e^2\log(a+bx)-\frac{(bd-ae)(3ae+b(d+4ex))}{(a+bx)^2}}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-(((b*d - a*e)*(3*a*e + b*(d + 4*e*x)))/(a + b*x)^2) + 2*e^2*Log[a + b*x])
/(2*b^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.41, size = 99, normalized size = 1.68

$$-\frac{b^2d^2+2\,abde-3\,a^2e^2+4\left(b^2de-abe^2\right)x-2\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\log\left(bx+a\right)}{2\left(b^5x^2+2\,ab^4x+a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*d^2 + 2*a*b*d*e - 3*a^2*e^2 + 4*(b^2*d*e - a*b*e^2)*x - 2*(b^2*e^
2*x^2 + 2*a*b*e^2*x + a^2*e^2)*log(b*x + a))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3
)
```

giac [A] time = 0.15, size = 67, normalized size = 1.14

$$\frac{e^2\log\left(|bx+a|\right)}{b^3}-\frac{4\left(bde-ae^2\right)x+\frac{b^2d^2+2\,abde-3\,a^2e^2}{b}}{2\,(bx+a)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] e^2*log(abs(b*x + a))/b^3 - 1/2*(4*(b*d*e - a*e^2)*x + (b^2*d^2 + 2*a*b*d*e
 - 3*a^2*e^2)/b)/((b*x + a)^2*b^2)
```

maple [A] time = 0.06, size = 92, normalized size = 1.56

$$-\frac{a^2e^2}{2\,(bx+a)^2\,b^3}+\frac{ade}{(bx+a)^2\,b^2}-\frac{d^2}{2\,(bx+a)^2\,b}+\frac{2a\,e^2}{(bx+a)\,b^3}-\frac{2de}{(bx+a)\,b^2}+\frac{e^2\ln\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2/b^3/(b*x+a)^2*a^2*e^2+1/b^2/(b*x+a)^2*a*d*e-1/2/b/(b*x+a)^2*d^2+e^2*ln
(b*x+a)/b^3+2/b^3*e^2/(b*x+a)*a-2/b^2*e/(b*x+a)*d
```

maxima [A] time = 0.58, size = 79, normalized size = 1.34

$$-\frac{b^2d^2+2\,abde-3\,a^2e^2+4\left(b^2de-abe^2\right)x}{2\left(b^5x^2+2\,ab^4x+a^2b^3\right)}+\frac{e^2\log\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*d^2 + 2*a*b*d*e - 3*a^2*e^2 + 4*(b^2*d*e - a*b*e^2)*x)/(b^5*x^2 +
 2*a*b^4*x + a^2*b^3) + e^2*log(b*x + a)/b^3
```

mupad [B] time = 0.07, size = 77, normalized size = 1.31

$$\frac{e^2\,\ln\left(a+b\,x\right)}{b^3}-\frac{\frac{-3\,a^2\,e^2+2\,a\,b\,d\,e+b^2\,d^2}{2\,b^3}-\frac{2\,e\,x\,\left(a\,e-b\,d\right)}{b^2}}{a^2+2\,a\,b\,x+b^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^2*log(a + b*x))/b^3 - ((b^2*d^2 - 3*a^2*e^2 + 2*a*b*d*e)/(2*b^3) - (2*e*
x*(a*e - b*d))/b^2)/(a^2 + b^2*x^2 + 2*a*b*x)
```

sympy [A] time = 0.48, size = 80, normalized size = 1.36

$$\frac{3a^2e^2-2abde-b^2d^2+x\left(4abe^2-4b^2de\right)}{2a^2b^3+4ab^4x+2b^5x^2}+\frac{e^2\log\left(a+bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (3*a**2*e**2 - 2*a*b*d*e - b**2*d**2 + x*(4*a*b*e**2 - 4*b**2*d*e))/(2*a**2
*b**3 + 4*a*b**4*x + 2*b**5*x**2) + e**2*log(a + b*x)/b**3
```

3.1714 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=28

$$-\frac{(d+ex)^2}{2(a+bx)^2(bd-ae)}$$

Rubi [A] time = 0.00, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 37}

$$-\frac{(d+ex)^2}{2(a+bx)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(d + e*x)^2/(2*(b*d - a*e)*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned} \int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{d+ex}{(a+bx)^3}\,dx \\ &= -\frac{(d+ex)^2}{2(bd-ae)(a+bx)^2} \end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.93

$$-\frac{ae+b(d+2ex)}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/2*(a*e + b*(d + 2*e*x))/(b^2*(a + b*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.39, size = 38, normalized size = 1.36

$$-\frac{2\,bex + bd + ae}{2\,\left(b^{4}x^{2} + 2\,ab^{3}x + a^{2}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] -1/2*(2*b*e*x + b*d + a*e)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

giac [A] time = 0.16, size = 26, normalized size = 0.93

$$-\frac{2\,bxe + bd + ae}{2\,(bx + a)^{2}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
[Out] -1/2*(2*b*x*e + b*d + a*e)/((b*x + a)^2*b^2)
```

maple [A] time = 0.04, size = 35, normalized size = 1.25

$$-\frac{e}{(bx + a)\,b^{2}} - \frac{-ae + bd}{2\,(bx + a)^{2}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
[Out] -1/2*(-a*e+b*d)/b^2/(b*x+a)^2-e/b^2/(b*x+a)
```

maxima [A] time = 0.50, size = 38, normalized size = 1.36

$$-\frac{2\,bex + bd + ae}{2\,\left(b^{4}x^{2} + 2\,ab^{3}x + a^{2}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
[Out] -1/2*(2*b*e*x + b*d + a*e)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

mupad [B] time = 2.01, size = 39, normalized size = 1.39

$$-\frac{\frac{a\,e+b\,d}{2\,b^2}+\frac{e\,x}{b}}{a^2+2\,a\,b\,x+b^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
[Out] -((a*e + b*d)/(2*b^2) + (e*x)/b)/(a^2 + b^2*x^2 + 2*a*b*x)
```

sympy [A] time = 0.28, size = 39, normalized size = 1.39

$$\frac{-ae - bd - 2bex}{2a^{2}b^{2} + 4ab^{3}x + 2b^{4}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
[Out] (-a*e - b*d - 2*b*e*x)/(2*a**2*b**2 + 4*a*b**3*x + 2*b**4*x**2)
```

3.1715 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=14

$$-\frac{1}{2b(a+bx)^2}$$

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 32}

$$-\frac{1}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/(2*b*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3}\,dx\\ &= -\frac{1}{2b(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$-\frac{1}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/2*1/(b*(a + b*x)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^2, x]
```

fricas [A] time = 0.39, size = 24, normalized size = 1.71

$$-\frac{1}{2\left(b^{3}x^{2}+2\,ab^{2}x+a^{2}b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
[Out] -1/2/(b^3*x^2 + 2*a*b^2*x + a^2*b)
```

giac [A] time = 0.15, size = 23, normalized size = 1.64

$$-\frac{1}{2\left(a^{2}+\left(bx^{2}+2\,ax\right)b\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
[Out] -1/2/((a^2 + (b*x^2 + 2*a*x)*b)*b)
```

maple [A] time = 0.05, size = 13, normalized size = 0.93

$$-\frac{1}{2\left(bx+a\right)^{2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x)
[Out] -1/2/b/(b*x+a)^2
```

maxima [A] time = 0.52, size = 23, normalized size = 1.64

$$-\frac{1}{2\left(b^{2}x^{2}+2\,abx+a^{2}\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
[Out] -1/2/((b^2*x^2 + 2*a*b*x + a^2)*b)
```

mupad [B] time = 0.03, size = 26, normalized size = 1.86

$$-\frac{1}{2\,a^{2}\,b+4\,a\,b^{2}\,x+2\,b^{3}\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
[Out] -1/(2*a^2*b + 2*b^3*x^2 + 4*a*b^2*x)
```

sympy [B] time = 0.19, size = 26, normalized size = 1.86

$$-\frac{1}{2a^{2}b+4ab^{2}x+2b^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**2,x)
[Out] -1/(2*a**2*b + 4*a*b**2*x + 2*b**3*x**2)
```

3.1716 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=82

$$\frac{e^2\log(a+bx)}{(bd-ae)^3}-\frac{e^2\log(d+ex)}{(bd-ae)^3}+\frac{e}{(a+bx)(bd-ae)^2}-\frac{1}{2(a+bx)^2(bd-ae)}$$

Rubi [A] time = 0.05, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{e^2\log(a+bx)}{(bd-ae)^3}-\frac{e^2\log(d+ex)}{(bd-ae)^3}+\frac{e}{(a+bx)(bd-ae)^2}-\frac{1}{2(a+bx)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -1/(2*(b*d - a*e)*(a + b*x)^2) + e/((b*d - a*e)^2*(a + b*x)) + (e^2*Log[a +
 b*x])/(b*d - a*e)^3 - (e^2*Log[d + e*x])/(b*d - a*e)^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)}\,dx\\ &= \int \left(\frac{b}{(bd-ae)(a+bx)^3}-\frac{be}{(bd-ae)^2(a+bx)^2}+\frac{be^2}{(bd-ae)^3(a+bx)}-\frac{}{(bd-a}\right.\\ &= -\frac{1}{2(bd-ae)(a+bx)^2}+\frac{e}{(bd-ae)^2(a+bx)}+\frac{e^2\log(a+bx)}{(bd-ae)^3}-\frac{e^2\log(d+ex}{(bd-ae)^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 0.82

$$\frac{\frac{(bd-ae)(3ae-bd+2bex)}{(a+bx)^2}+2e^2\log(a+bx)-2e^2\log(d+ex)}{2(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (((b*d - a*e)*(-(b*d) + 3*a*e + 2*b*e*x))/(a + b*x)^2 + 2*e^2*Log[a + b*x]
- 2*e^2*Log[d + e*x])/(2*(b*d - a*e)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.41, size = 242, normalized size = 2.95

$$-\frac{b^2d^2-4\,abde+3\,a^2e^2-2\left(b^2de-abe^2\right)x-2\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\log\left(bx+a\right)+2\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\log\left(ex+d\right)}{2\left(a^2b^3d^3-3\,a^3b^2d^2e+3\,a^4bde^2-a^5e^3+\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)x^2+2\left(ab^4d^3-3\,a^2b^3d^2e+3\,a^3b^2de^2-a^4be^3\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*d^2 - 4*a*b*d*e + 3*a^2*e^2 - 2*(b^2*d*e - a*b*e^2)*x - 2*(b^2*e^
2*x^2 + 2*a*b*e^2*x + a^2*e^2)*log(b*x + a) + 2*(b^2*e^2*x^2 + 2*a*b*e^2*x
+ a^2*e^2)*log(e*x + d))/(a^2*b^3*d^3 - 3*a^3*b^2*d^2*e + 3*a^4*b*d*e^2 - a
^5*e^3 + (b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*x^2 + 2*
(a*b^4*d^3 - 3*a^2*b^3*d^2*e + 3*a^3*b^2*d*e^2 - a^4*b*e^3)*x)
```

giac [B] time = 0.16, size = 162, normalized size = 1.98

$$\frac{be^2\log\left(|bx+a|\right)}{b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3}-\frac{e^3\log\left(|xe+d|\right)}{b^3d^3e-3\,ab^2d^2e^2+3\,a^2bde^3-a^3e^4}-\frac{b^2d^2-4\,abde+3\,a^2e^2-2\left(b^2de-abe^2\right)x}{2\left(bd-ae\right)^3\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] b*e^2*log(abs(b*x + a))/(b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*
e^3) - e^3*log(abs(x*e + d))/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 -
 a^3*e^4) - 1/2*(b^2*d^2 - 4*a*b*d*e + 3*a^2*e^2 - 2*(b^2*d*e - a*b*e^2)*x)
/((b*d - a*e)^3*(b*x + a)^2)
```

maple [A] time = 0.05, size = 81, normalized size = 0.99

$$-\frac{e^2\ln\left(bx+a\right)}{\left(ae-bd\right)^3}+\frac{e^2\ln\left(ex+d\right)}{\left(ae-bd\right)^3}+\frac{e}{\left(ae-bd\right)^2\left(bx+a\right)}+\frac{1}{2\left(ae-bd\right)\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2/(a*e-b*d)/(b*x+a)^2-e^2/(a*e-b*d)^3*ln(b*x+a)+e/(a*e-b*d)^2/(b*x+a)+e^2
/(a*e-b*d)^3*ln(e*x+d)
```

maxima [B] time = 0.56, size = 202, normalized size = 2.46

$$\frac{e^2\log\left(bx+a\right)}{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3}-\frac{e^2\log\left(ex+d\right)}{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3}+\frac{2\,bex-bd+3\,ae}{2\left(a^2b^2d^2-2\,a^3bde+a^4e^2+\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)x^2+2\left(ab^3d^2-2\,a^2b^2de+a^3be^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] e^2*log(b*x + a)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) - e^2*
log(e*x + d)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) + 1/2*(2*b
```

```
*e*x - b*d + 3*a*e)/(a^2*b^2*d^2 - 2*a^3*b*d*e + a^4*e^2 + (b^4*d^2 - 2*a*b
^3*d*e + a^2*b^2*e^2)*x^2 + 2*(a*b^3*d^2 - 2*a^2*b^2*d*e + a^3*b*e^2)*x)
```

mupad [B] time = 2.16, size = 182, normalized size = 2.22

$$\frac{\frac{3\,a\,e-b\,d}{2\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}+\frac{b\,e\,x}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}}{a^2+2\,a\,b\,x+b^2\,x^2}-\frac{2\,e^2\,\mathrm{atanh}\left(\frac{a^3\,e^3-a^2\,b\,d\,e^2-a\,b^2\,d^2\,e+b^3\,d^3}{{\left(a\,e-b\,d\right)}^3}+\frac{2\,b\,e\,x\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^3}\right)}{{\left(a\,e-b\,d\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((3*a*e - b*d)/(2*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) + (b*e*x)/(a^2*e^2 + b^2
*d^2 - 2*a*b*d*e))/(a^2 + b^2*x^2 + 2*a*b*x) - (2*e^2*atanh((a^3*e^3 + b^3*
d^3 - a*b^2*d^2*e - a^2*b*d*e^2)/(a*e - b*d)^3 + (2*b*e*x*(a^2*e^2 + b^2*d^
2 - 2*a*b*d*e))/(a*e - b*d)^3))/(a*e - b*d)^3
```

sympy [B] time = 1.09, size = 381, normalized size = 4.65

$$\frac{e^{2} \log{\left(x + \frac{- \frac{a^{4} e^{6}}{\left(ae - bd\right)^{3}} + \frac{4 a^{3} b d e^{5}}{\left(ae - bd\right)^{3}} - \frac{6 a^{2} b^{2} d^{2} e^{4}}{\left(ae - bd\right)^{3}} + \frac{4 a b^{3} d^{3} e^{3}}{\left(ae - bd\right)^{3}} + a e^{3} - \frac{b^{4} d^{4} e^{2}}{\left(ae - bd\right)^{3}} + b d e^{2}}{2 b e^{3}} \right)}}{\left(ae - bd\right)^{3}} - \frac{e^{2} \log{\left(x + \frac{\frac{a^{4} e^{6}}{\left(ae - bd\right)^{3}} - \frac{4 a^{3} b d e^{5}}{\left(ae - bd\right)^{3}} + \frac{6 a^{2} b^{2} d^{2} e^{4}}{\left(ae - bd\right)^{3}} - \frac{4 a b^{3} d^{3} e^{3}}{\left(ae - bd\right)^{3}} + a e^{3} + \frac{b^{4} d^{4} e^{2}}{\left(ae - bd\right)^{3}} + b d e^{2}}{2 b e^{3}} \right)}}{\left(ae - bd\right)^{3}} + \frac{3 a e - b d + 2 b e x}{2 a^{4} e^{2} - 4 a^{3} b d e + 2 a^{2} b^{2} d^{2} + x^{2} \left(2 a^{2} b^{2} e^{2} - 4 a b^{3} d e + 2 b^{4} d^{2}\right) + x \left(4 a^{3} b e^{2} - 8 a^{2} b^{2} d e + 4 a b^{3} d^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] e**2*log(x + (-a**4*e**6/(a*e - b*d)**3 + 4*a**3*b*d*e**5/(a*e - b*d)**3 -
6*a**2*b**2*d**2*e**4/(a*e - b*d)**3 + 4*a*b**3*d**3*e**3/(a*e - b*d)**3 +
a*e**3 - b**4*d**4*e**2/(a*e - b*d)**3 + b*d*e**2)/(2*b*e**3))/(a*e - b*d)*
*3 - e**2*log(x + (a**4*e**6/(a*e - b*d)**3 - 4*a**3*b*d*e**5/(a*e - b*d)**
3 + 6*a**2*b**2*d**2*e**4/(a*e - b*d)**3 - 4*a*b**3*d**3*e**3/(a*e - b*d)**
3 + a*e**3 + b**4*d**4*e**2/(a*e - b*d)**3 + b*d*e**2)/(2*b*e**3))/(a*e - b
*d)**3 + (3*a*e - b*d + 2*b*e*x)/(2*a**4*e**2 - 4*a**3*b*d*e + 2*a**2*b**2*
d**2 + x**2*(2*a**2*b**2*e**2 - 4*a*b**3*d*e + 2*b**4*d**2) + x*(4*a**3*b*e
**2 - 8*a**2*b**2*d*e + 4*a*b**3*d**2))
```

3.1717 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=109

$$\frac{e^2}{(d+ex)(bd-ae)^3}+\frac{3be^2\log(a+bx)}{(bd-ae)^4}-\frac{3be^2\log(d+ex)}{(bd-ae)^4}+\frac{2be}{(a+bx)(bd-ae)^3}-\frac{b}{2(a+bx)^2(bd-ae)^2}$$

Rubi [A] time = 0.07, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 44}

$$\frac{e^2}{(d+ex)(bd-ae)^3}+\frac{3be^2\log(a+bx)}{(bd-ae)^4}-\frac{3be^2\log(d+ex)}{(bd-ae)^4}+\frac{2be}{(a+bx)(bd-ae)^3}-\frac{b}{2(a+bx)^2(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -b/(2*(b*d - a*e)^2*(a + b*x)^2) + (2*b*e)/((b*d - a*e)^3*(a + b*x)) + e^2/
((b*d - a*e)^3*(d + e*x)) + (3*b*e^2*Log[a + b*x])/(b*d - a*e)^4 - (3*b*e^2
*Log[d + e*x])/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{1}{(a+bx)^3(d+ex)^2}\,dx$$

$$=\int \left(\frac{b^2}{(bd-ae)^2(a+bx)^3}-\frac{2b^2e}{(bd-ae)^3(a+bx)^2}+\frac{3b^2e^2}{(bd-ae)^4(a+bx)}-\ldots\right.$$

$$=-\frac{b}{2(bd-ae)^2(a+bx)^2}+\frac{2be}{(bd-ae)^3(a+bx)}+\frac{e^2}{(bd-ae)^3(d+ex)}+\ldots$$

Mathematica [A] time = 0.07, size = 98, normalized size = 0.90

$$\frac{\frac{2e^2(bd-ae)}{d+ex}+\frac{4be(bd-ae)}{a+bx}-\frac{b(bd-ae)^2}{(a+bx)^2}+6be^2\log(a+bx)-6be^2\log(d+ex)}{2(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-((b*(b*d - a*e)^2)/(a + b*x)^2) + (4*b*e*(b*d - a*e))/(a + b*x) + (2*e^2*
(b*d - a*e))/(d + e*x) + 6*b*e^2*Log[a + b*x] - 6*b*e^2*Log[d + e*x])/(2*(b
*d - a*e)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.44, size = 494, normalized size = 4.53

$$-\frac{b^3d^3-6\,ab^2d^2e+3\,a^2bde^2+2\,a^3e^3-6\left(b^3de^2-ab^2e^3\right)x^2-3\left(b^3d^2e+2\,ab^2de^2-3\,a^2be^3\right)x-6\left(b^3e^3x^3+a^2bde^2+\left(b^3de^2+2\,ab^2e^3\right)x^2+\left(2\,ab^2de^2+a^2be^3\right)x\right)\log\left(bx+a\right)+6\left(b^3e^3x^3+a^2bde^2+\left(b^3de^2+2\,ab^2e^3\right)x^2+\left(2\,ab^2de^2+a^2be^3\right)x\right)\log\left(ex+d\right)}{2\left(a^2b^4d^5-4\,a^3b^3d^4e+6\,a^4b^2d^3e^2-4\,a^5bd^2e^3+a^6de^4+\left(b^6d^4e-4\,ab^5d^3e^2+6\,a^2b^4d^2e^3-4\,a^3b^3de^4+a^4b^2e^5\right)x^3+\left(b^6d^5-2\,ab^5d^4e-2\,a^2b^4d^3e^2+8\,a^3b^3d^2e^3-7\,a^4b^2de^4+2\,a^5be^5\right)x^2+\left(2\,ab^5d^5-7\,a^2b^4d^4e+8\,a^3b^3d^3e^2-2\,a^4b^2d^2e^3-2\,a^5bde^4+a^6e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^3*d^3 - 6*a*b^2*d^2*e + 3*a^2*b*d*e^2 + 2*a^3*e^3 - 6*(b^3*d*e^2 -
a*b^2*e^3)*x^2 - 3*(b^3*d^2*e + 2*a*b^2*d*e^2 - 3*a^2*b*e^3)*x - 6*(b^3*e^3
*x^3 + a^2*b*d*e^2 + (b^3*d*e^2 + 2*a*b^2*e^3)*x^2 + (2*a*b^2*d*e^2 + a^2*b
*e^3)*x)*log(b*x + a) + 6*(b^3*e^3*x^3 + a^2*b*d*e^2 + (b^3*d*e^2 + 2*a*b^2
*e^3)*x^2 + (2*a*b^2*d*e^2 + a^2*b*e^3)*x)*log(e*x + d))/(a^2*b^4*d^5 - 4*a
^3*b^3*d^4*e + 6*a^4*b^2*d^3*e^2 - 4*a^5*b*d^2*e^3 + a^6*d*e^4 + (b^6*d^4*e
 - 4*a*b^5*d^3*e^2 + 6*a^2*b^4*d^2*e^3 - 4*a^3*b^3*d*e^4 + a^4*b^2*e^5)*x^3
 + (b^6*d^5 - 2*a*b^5*d^4*e - 2*a^2*b^4*d^3*e^2 + 8*a^3*b^3*d^2*e^3 - 7*a^4
*b^2*d*e^4 + 2*a^5*b*e^5)*x^2 + (2*a*b^5*d^5 - 7*a^2*b^4*d^4*e + 8*a^3*b^3*
d^3*e^2 - 2*a^4*b^2*d^2*e^3 - 2*a^5*b*d*e^4 + a^6*e^5)*x)
```

giac [A] time = 0.19, size = 212, normalized size = 1.94

$$\frac{3\,be^3\log\left(\left|b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right|\right)}{b^4d^4e-4\,ab^3d^3e^2+6\,a^2b^2d^2e^3-4\,a^3bde^4+a^4e^5}+\frac{e^5}{\left(b^3d^3e^3-3\,ab^2d^2e^4+3\,a^2bde^5-a^3e^6\right)(xe+d)}+\frac{5\,b^3e^2-\frac{6\left(b^3de^3-ab^2e^4\right)e^{(-1)}}{xe+d}}{2\,(bd-ae)^4\left(b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 3*b*e^3*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^4*d^4*e - 4*a*b^3*d^
3*e^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) + e^5/((b^3*d^3*e^3 -
3*a*b^2*d^2*e^4 + 3*a^2*b*d*e^5 - a^3*e^6)*(x*e + d)) + 1/2*(5*b^3*e^2 - 6*
(b^3*d*e^3 - a*b^2*e^4)*e^(-1)/(x*e + d))/((b*d - a*e)^4*(b - b*d/(x*e + d)
 + a*e/(x*e + d))^2)
```

maple [A] time = 0.06, size = 109, normalized size = 1.00

$$\frac{3b\,e^2\ln\left(bx+a\right)}{\left(ae-bd\right)^4}-\frac{3b\,e^2\ln\left(ex+d\right)}{\left(ae-bd\right)^4}-\frac{2be}{\left(ae-bd\right)^3\left(bx+a\right)}-\frac{e^2}{\left(ae-bd\right)^3\left(ex+d\right)}-\frac{b}{2\left(ae-bd\right)^2\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2*b/(a*e-b*d)^2/(b*x+a)^2+3*b/(a*e-b*d)^4*e^2*ln(b*x+a)-2*b/(a*e-b*d)^3*
e/(b*x+a)-e^2/(a*e-b*d)^3/(e*x+d)-3*b/(a*e-b*d)^4*e^2*ln(e*x+d)
```

maxima [B] time = 0.66, size = 386, normalized size = 3.54

$$\frac{3\,be^2\log\left(bx+a\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}-\frac{3\,be^2\log\left(ex+d\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}+\frac{6\,b^2e^2x^2-b^2d^2+5\,abde+2\,a^2e^2+3\left(b^2de+3\,abe^2\right)x}{2\left(a^2b^3d^4-3\,a^3b^2d^3e+3\,a^4bd^2e^2-a^5de^3+\left(b^5d^3e-3\,ab^4d^2e^2+3\,a^2b^3de^3-a^3b^2e^4\right)x^3+\left(b^5d^4-ab^4d^3e-3\,a^2b^3d^2e^2+5\,a^3b^2de^3-2\,a^4be^4\right)x^2+\left(2\,ab^4d^4-5\,a^2b^3d^3e+3\,a^3b^2d^2e^2+a^4bde^3-a^5e^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 3*b*e^2*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b
*d*e^3 + a^4*e^4) - 3*b*e^2*log(e*x + d)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b
^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) + 1/2*(6*b^2*e^2*x^2 - b^2*d^2 + 5*a*
b*d*e + 2*a^2*e^2 + 3*(b^2*d*e + 3*a*b*e^2)*x)/(a^2*b^3*d^4 - 3*a^3*b^2*d^3
*e + 3*a^4*b*d^2*e^2 - a^5*d*e^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2*b^3
*d*e^3 - a^3*b^2*e^4)*x^3 + (b^5*d^4 - a*b^4*d^3*e - 3*a^2*b^3*d^2*e^2 + 5*
a^3*b^2*d*e^3 - 2*a^4*b*e^4)*x^2 + (2*a*b^4*d^4 - 5*a^2*b^3*d^3*e + 3*a^3*b
^2*d^2*e^2 + a^4*b*d*e^3 - a^5*e^4)*x)
```

mupad [B] time = 2.21, size = 330, normalized size = 3.03

$$\frac{6\,b\,e^2\,\mathrm{atanh}\left(\frac{a^4\,e^4-2\,a^3\,b\,d\,e^3+2\,a\,b^3\,d^3\,e-b^4\,d^4}{{\left(a\,e-b\,d\right)}^4}+\frac{2\,b\,e\,x\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{{\left(a\,e-b\,d\right)}^4}\right)}{{\left(a\,e-b\,d\right)}^4}-\frac{\frac{2\,a^2\,e^2+5\,a\,b\,d\,e-b^2\,d^2}{2\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}+\frac{3\,e\,x\,\left(d\,b^2+3\,a\,e\,b\right)}{2\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}+\frac{3\,b^2\,e^2\,x^2}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}}{x\,\left(e\,a^2+2\,b\,d\,a\right)+a^2\,d+x^2\,\left(d\,b^2+2\,a\,e\,b\right)+b^2\,e\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (6*b*e^2*atanh((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a*e - b
*d)^4 + (2*b*e*x*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(a*e
- b*d)^4))/(a*e - b*d)^4 - ((2*a^2*e^2 - b^2*d^2 + 5*a*b*d*e)/(2*(a^3*e^3 -
 b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (3*e*x*(b^2*d + 3*a*b*e))/(2*(
a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (3*b^2*e^2*x^2)/(a^3*
e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(x*(a^2*e + 2*a*b*d) + a^2*
d + x^2*(b^2*d + 2*a*b*e) + b^2*e*x^3)
```

sympy [B] time = 1.73, size = 634, normalized size = 5.82

$$-\frac{3be^2\log\left(x+\frac{-\frac{3a^5be^7}{(ae-bd)^4}+\frac{15a^4b^2de^6}{(ae-bd)^4}-\frac{30a^3b^3d^2e^5}{(ae-bd)^4}+\frac{30a^2b^4d^3e^4}{(ae-bd)^4}-\frac{15ab^5d^4e^3}{(ae-bd)^4}+3abe^3+\frac{3b^6d^5e^2}{(ae-bd)^4}+3b^2de^2}{6b^2e^3}\right)}{(ae-bd)^4}+\frac{3be^2\log\left(x+\frac{\frac{3a^5be^7}{(ae-bd)^4}-\frac{15a^4b^2de^6}{(ae-bd)^4}+\frac{30a^3b^3d^2e^5}{(ae-bd)^4}-\frac{30a^2b^4d^3e^4}{(ae-bd)^4}+\frac{15ab^5d^4e^3}{(ae-bd)^4}+3abe^3-\frac{3b^6d^5e^2}{(ae-bd)^4}+3b^2de^2}{6b^2e^3}\right)}{(ae-bd)^4}+\frac{-2a^2e^2-5abde+b^2d^2-6b^2e^2x^2+x\left(-9abe^2-3b^2de\right)}{2a^5de^3-6a^4bd^2e^2+6a^3b^2d^3e-2a^2b^3d^4+x^3\left(2a^3b^2e^4-6a^2b^3de^3+6ab^4d^2e^2-2b^5d^3e\right)+x^2\left(4a^4be^4-10a^3b^2de^3+6a^2b^3d^2e^2+2ab^4d^3e-2b^5d^4\right)+x\left(2a^5e^4-2a^4bde^3-6a^3b^2d^2e^2+10a^2b^3d^3e-4ab^4d^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -3*b*e**2*log(x + (-3*a**5*b*e**7/(a*e - b*d)**4 + 15*a**4*b**2*d*e**6/(a*e
 - b*d)**4 - 30*a**3*b**3*d**2*e**5/(a*e - b*d)**4 + 30*a**2*b**4*d**3*e**4
/(a*e - b*d)**4 - 15*a*b**5*d**4*e**3/(a*e - b*d)**4 + 3*a*b*e**3 + 3*b**6*
d**5*e**2/(a*e - b*d)**4 + 3*b**2*d*e**2)/(6*b**2*e**3))/(a*e - b*d)**4 + 3
*b*e**2*log(x + (3*a**5*b*e**7/(a*e - b*d)**4 - 15*a**4*b**2*d*e**6/(a*e -
b*d)**4 + 30*a**3*b**3*d**2*e**5/(a*e - b*d)**4 - 30*a**2*b**4*d**3*e**4/(a
*e - b*d)**4 + 15*a*b**5*d**4*e**3/(a*e - b*d)**4 + 3*a*b*e**3 - 3*b**6*d**
5*e**2/(a*e - b*d)**4 + 3*b**2*d*e**2)/(6*b**2*e**3))/(a*e - b*d)**4 + (-2*
a**2*e**2 - 5*a*b*d*e + b**2*d**2 - 6*b**2*e**2*x**2 + x*(-9*a*b*e**2 - 3*b
**2*d*e))/(2*a**5*d*e**3 - 6*a**4*b*d**2*e**2 + 6*a**3*b**2*d**3*e - 2*a**2
*b**3*d**4 + x**3*(2*a**3*b**2*e**4 - 6*a**2*b**3*d*e**3 + 6*a*b**4*d**2*e*
*2 - 2*b**5*d**3*e) + x**2*(4*a**4*b*e**4 - 10*a**3*b**2*d*e**3 + 6*a**2*b*
*3*d**2*e**2 + 2*a*b**4*d**3*e - 2*b**5*d**4) + x*(2*a**5*e**4 - 2*a**4*b*d
*e**3 - 6*a**3*b**2*d**2*e**2 + 10*a**2*b**3*d**3*e - 4*a*b**4*d**4))
```

3.1718 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=143

$$\frac{6b^2e^2\log(a+bx)}{(bd-ae)^5}-\frac{6b^2e^2\log(d+ex)}{(bd-ae)^5}+\frac{3b^2e}{(a+bx)(bd-ae)^4}-\frac{b^2}{2(a+bx)^2(bd-ae)^3}+\frac{3be^2}{(d+ex)(bd-ae)^4}+\frac{e^2}{2(d+ex)^2(b$$

Rubi [A] time = 0.11, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{6b^2e^2\log(a+bx)}{(bd-ae)^5}-\frac{6b^2e^2\log(d+ex)}{(bd-ae)^5}+\frac{3b^2e}{(a+bx)(bd-ae)^4}-\frac{b^2}{2(a+bx)^2(bd-ae)^3}+\frac{3be^2}{(d+ex)(bd-ae)^4}+\frac{e^2}{2(d+ex)^2(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -b^2/(2*(b*d - a*e)^3*(a + b*x)^2) + (3*b^2*e)/((b*d - a*e)^4*(a + b*x)) +
e^2/(2*(b*d - a*e)^3*(d + e*x)^2) + (3*b*e^2)/((b*d - a*e)^4*(d + e*x)) + (
6*b^2*e^2*Log[a + b*x])/(b*d - a*e)^5 - (6*b^2*e^2*Log[d + e*x])/(b*d - a*e
)^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)^3}\,dx\\ &= \int \left(\frac{b^3}{(bd-ae)^3(a+bx)^3}-\frac{3b^3e}{(bd-ae)^4(a+bx)^2}+\frac{6b^3e^2}{(bd-ae)^5(a+bx)}-\frac{}{(bd-}\right.\\ &= -\frac{b^2}{2(bd-ae)^3(a+bx)^2}+\frac{3b^2e}{(bd-ae)^4(a+bx)}+\frac{e^2}{2(bd-ae)^3(d+ex)^2}+\frac{}{(bd-}\end{aligned}$$

Mathematica [A] time = 0.10, size = 128, normalized size = 0.90

$$\frac{\frac{6b^2e(bd-ae)}{a+bx}-\frac{b^2(bd-ae)^2}{(a+bx)^2}+12b^2e^2\log(a+bx)+\frac{6be^2(bd-ae)}{d+ex}+\frac{e^2(bd-ae)^2}{(d+ex)^2}-12b^2e^2\log(d+ex)}{2(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

[Out] (-((b^2*(b*d - a*e)^2)/(a + b*x)^2) + (6*b^2*e*(b*d - a*e))/(a + b*x) + (e^2*(b*d - a*e)^2)/(d + e*x)^2 + (6*b*e^2*(b*d - a*e))/(d + e*x) + 12*b^2*e^2*Log[a + b*x] - 12*b^2*e^2*Log[d + e*x])/(2*(b*d - a*e)^5)

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]

[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2), x]

fricas [B] time = 0.43, size = 760, normalized size = 5.31

$$-\frac{b^4d^4-8ab^3d^3e+8a^3bde^3-a^4e^4-12\left(b^4de^3-ab^3e^4\right)x^3-18\left(b^4d^2e^2-a^2b^2e^4\right)x^2-4\left(b^4d^3e+6ab^3d^2e^2-6a^2b^2de^3-a^3be^4\right)x-12\left(b^4e^4x^4+a^2b^2d^2e^2+2\left(b^4de^3+ab^3e^4\right)x^3+\left(b^4d^2e^2+4ab^3de^3+a^2b^2e^4\right)x^2+2\left(ab^3d^2e^2+a^2b^2de^3\right)x\right)\log\left(bx+a\right)+12\left(b^4e^4x^4+a^2b^2d^2e^2+2\left(b^4de^3+ab^3e^4\right)x^3+\left(b^4d^2e^2+4ab^3de^3+a^2b^2e^4\right)x^2+2\left(ab^3d^2e^2+a^2b^2de^3\right)x\right)\log\left(ex+d\right)}{2\left(a^2b^5d^7-5a^3b^4d^6e+10a^4b^3d^5e^2-10a^5b^2d^4e^3+5a^6bd^3e^4-a^7d^2e^5+\left(b^7d^5e^2-5ab^6d^4e^3+10a^2b^5d^3e^4-10a^3b^4d^2e^5+5a^4b^3de^6-a^5b^2e^7\right)x^4+2\left(b^7d^6e-4ab^6d^5e^2+5a^2b^5d^4e^3-5a^4b^3d^2e^5+4a^5b^2de^6-a^6be^7\right)x^3+\left(b^7d^7-ab^6d^6e-9a^2b^5d^5e^2+25a^3b^4d^4e^3-25a^4b^3d^3e^4+9a^5b^2d^2e^5+a^6bde^6-a^7e^7\right)x^2+2\left(ab^6d^7-4a^2b^5d^6e+5a^3b^4d^5e^2-5a^5b^2d^3e^4+4a^6bd^2e^5-a^7de^6\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")

[Out] -1/2*(b^4*d^4 - 8*a*b^3*d^3*e + 8*a^3*b*d*e^3 - a^4*e^4 - 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 - 18*(b^4*d^2*e^2 - a^2*b^2*e^4)*x^2 - 4*(b^4*d^3*e + 6*a*b^3*d^2*e^2 - 6*a^2*b^2*d*e^3 - a^3*b*e^4)*x - 12*(b^4*e^4*x^4 + a^2*b^2*d^2*e^2 + 2*(b^4*d*e^3 + a*b^3*e^4)*x^3 + (b^4*d^2*e^2 + 4*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 + a^2*b^2*d*e^3)*x)*log(b*x + a) + 12*(b^4*e^4*x^4 + a^2*b^2*d^2*e^2 + 2*(b^4*d*e^3 + a*b^3*e^4)*x^3 + (b^4*d^2*e^2 + 4*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 + a^2*b^2*d*e^3)*x)*log(e*x + d))/(a^2*b^5*d^7 - 5*a^3*b^4*d^6*e + 10*a^4*b^3*d^5*e^2 - 10*a^5*b^2*d^4*e^3 + 5*a^6*b*d^3*e^4 - a^7*d^2*e^5 + (b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^4 + 2*(b^7*d^6*e - 4*a*b^6*d^5*e^2 + 5*a^2*b^5*d^4*e^3 - 5*a^4*b^3*d^2*e^5 + 4*a^5*b^2*d*e^6 - a^6*b*e^7)*x^3 + (b^7*d^7 - a*b^6*d^6*e - 9*a^2*b^5*d^5*e^2 + 25*a^3*b^4*d^4*e^3 - 25*a^4*b^3*d^3*e^4 + 9*a^5*b^2*d^2*e^5 + a^6*b*d*e^6 - a^7*e^7)*x^2 + 2*(a*b^6*d^7 - 4*a^2*b^5*d^6*e + 5*a^3*b^4*d^5*e^2 - 5*a^5*b^2*d^3*e^4 + 4*a^6*b*d^2*e^5 - a^7*d*e^6)*x)

giac [B] time = 0.20, size = 332, normalized size = 2.32

$$\frac{6b^3e^2\log\left(|bx+a|\right)}{b^6d^5-5ab^5d^4e+10a^2b^4d^3e^2-10a^3b^3d^2e^3+5a^4b^2de^4-a^5be^5}-\frac{6b^2e^3\log\left(|xe+d|\right)}{b^5d^5e-5ab^4d^4e^2+10a^2b^3d^3e^3-10a^3b^2d^2e^4+5a^4bde^5-a^5e^6}+\frac{12b^3x^3e^3+18b^3dx^2e^2+4b^3d^2xe-b^3d^3+18ab^2x^2e^3+28ab^2dxe^2+7ab^2d^2e+4a^2bxe^3+7a^2bde^2-a^3e^3}{2\left(b^4d^4-4ab^3d^3e+6a^2b^2d^2e^2-4a^3bde^3+a^4e^4\right)\left(bx^2e+bdx+axe+ad\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")

[Out] 6*b^3*e^2*log(abs(b*x + a))/(b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*a^3*b^3*d^2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5) - 6*b^2*e^3*log(abs(x*e + d))/(b^5*d^5*e - 5*a*b^4*d^4*e^2 + 10*a^2*b^3*d^3*e^3 - 10*a^3*b^2*d^2*e^4 + 5*a^4*b*d*e^5 - a^5*e^6) + 1/2*(12*b^3*x^3*e^3 + 18*b^3*d*x^2*e^2 + 4*b^3*d^2*x*e - b^3*d^3 + 18*a*b^2*x^2*e^3 + 28*a*b^2*d*x*e^2 + 7*a*b^2*d^2*e + 4*a^2*b*x*e^3 + 7*a^2*b*d*e^2 - a^3*e^3)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*(b*x^2*e + b*d*x + a*x*e + a*d)^2)

maple [A] time = 0.06, size = 140, normalized size = 0.98

$$-\frac{6b^2e^2\ln\left(bx+a\right)}{\left(ae-bd\right)^5}+\frac{6b^2e^2\ln\left(ex+d\right)}{\left(ae-bd\right)^5}+\frac{3b^2e}{\left(ae-bd\right)^4\left(bx+a\right)}+\frac{3b\,e^2}{\left(ae-bd\right)^4\left(ex+d\right)}+\frac{b^2}{2\left(ae-bd\right)^3\left(bx+a\right)^2}-\frac{e^2}{2\left(ae-bd\right)^3\left(ex+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2/(a*e-b*d)^3*b^2/(b*x+a)^2-6*b^2/(a*e-b*d)^5*e^2*ln(b*x+a)+3*b^2/(a*e-b*
d)^4*e/(b*x+a)-1/2*e^2/(a*e-b*d)^3/(e*x+d)^2+6*b^2/(a*e-b*d)^5*e^2*ln(e*x+d
)+3*e^2/(a*e-b*d)^4*b/(e*x+d)
```

maxima [B] time = 0.70, size = 594, normalized size = 4.15

$$\frac{6 b^2 e^2 \log(bx+a)}{b^5 d^5 - 5 ab^4 d^4 e + 10 a^2 b^3 d^3 e^2 - 10 a^3 b^2 d^2 e^3 + 5 a^4 bde^4 - a^5 e^5} - \frac{6 b^2 e^2 \log(ex+d)}{b^5 d^5 - 5 ab^4 d^4 e + 10 a^2 b^3 d^3 e^2 - 10 a^3 b^2 d^2 e^3 + 5 a^4 bde^4 - a^5 e^5} + \frac{12 b^3 e^3 x^3 - b^3 d^3 + 7 ab^2 d^2 e + 7 a^2 bde^2 - a^3 e^3 + 18 \left(b^3 de^2 + ab^2 e^3\right) x^2 + 4 \left(b^3 d^2 e + 7 ab^2 de^2 + a^2 be^3\right) x}{2 \left(a^2 b^4 d^6 - 4 a^3 b^3 d^5 e + 6 a^4 b^2 d^4 e^2 - 4 a^5 bd^3 e^3 + a^6 d^2 e^4 + \left(b^6 d^4 e^2 - 4 ab^5 d^3 e^3 + 6 a^2 b^4 d^2 e^4 - 4 a^3 b^3 de^5 + a^4 b^2 e^6\right) x^4 + 2 \left(b^6 d^5 e - 3 ab^5 d^4 e^2 + 2 a^2 b^4 d^3 e^3 + 2 a^3 b^3 d^2 e^4 - 3 a^4 b^2 de^5 + a^5 be^6\right) x^3 + \left(b^6 d^6 - 9 a^2 b^4 d^4 e^2 + 16 a^3 b^3 d^3 e^3 - 9 a^4 b^2 d^2 e^4 + a^6 e^6\right) x^2 + 2 \left(ab^5 d^6 - 3 a^2 b^4 d^5 e + 2 a^3 b^3 d^4 e^2 + 2 a^4 b^2 d^3 e^3 - 3 a^5 bd^2 e^4 + a^6 de^5\right) x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 6*b^2*e^2*log(b*x + a)/(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a
^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - 6*b^2*e^2*log(e*x + d)/(b^5*d^5
 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4
- a^5*e^5) + 1/2*(12*b^3*e^3*x^3 - b^3*d^3 + 7*a*b^2*d^2*e + 7*a^2*b*d*e^2
- a^3*e^3 + 18*(b^3*d*e^2 + a*b^2*e^3)*x^2 + 4*(b^3*d^2*e + 7*a*b^2*d*e^2 +
 a^2*b*e^3)*x)/(a^2*b^4*d^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b
*d^3*e^3 + a^6*d^2*e^4 + (b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4
 - 4*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*
a^2*b^4*d^3*e^3 + 2*a^3*b^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b
^6*d^6 - 9*a^2*b^4*d^4*e^2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e
^6)*x^2 + 2*(a*b^5*d^6 - 3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^
3*e^3 - 3*a^5*b*d^2*e^4 + a^6*d*e^5)*x)
```

mupad [B] time = 2.34, size = 542, normalized size = 3.79

$$\frac{\frac{6\,b^3\,e^3\,x^3}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}-\frac{a^3\,e^3-7\,a^2\,b\,d\,e^2-7\,a\,b^2\,d^2\,e+b^3\,d^3}{2\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}+\frac{9\,b\,e\,x^2\,\left(d\,b^2\,e+a\,b\,e^2\right)}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}+\frac{2\,b\,e\,x\,\left(a^2\,e^2+7\,a\,b\,d\,e+b^2\,d^2\right)}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}}{x\,\left(2\,e\,a^2\,d+2\,b\,a\,d^2\right)+x^2\,\left(a^2\,e^2+4\,a\,b\,d\,e+b^2\,d^2\right)+x^3\,\left(2\,d\,b^2\,e+2\,a\,b\,e^2\right)+a^2\,d^2+b^2\,e^2\,x^4}-\frac{12\,b^2\,e^2\,\mathrm{atanh}\left(\frac{a^5\,e^5-3\,a^4\,b\,d\,e^4+2\,a^3\,b^2\,d^2\,e^3+2\,a^2\,b^3\,d^3\,e^2-3\,a\,b^4\,d^4\,e+b^5\,d^5}{{\left(a\,e-b\,d\right)}^5}+\frac{2\,b\,e\,x\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}{{\left(a\,e-b\,d\right)}^5}\right)}{{\left(a\,e-b\,d\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((6*b^3*e^3*x^3)/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4
*a^3*b*d*e^3) - (a^3*e^3 + b^3*d^3 - 7*a*b^2*d^2*e - 7*a^2*b*d*e^2)/(2*(a^4
*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (9*b
*e*x^2*(a*b*e^2 + b^2*d*e))/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^
3*d^3*e - 4*a^3*b*d*e^3) + (2*b*e*x*(a^2*e^2 + b^2*d^2 + 7*a*b*d*e))/(a^4*e
^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/(x*(2*a*
b*d^2 + 2*a^2*d*e) + x^2*(a^2*e^2 + b^2*d^2 + 4*a*b*d*e) + x^3*(2*a*b*e^2 +
 2*b^2*d*e) + a^2*d^2 + b^2*e^2*x^4) - (12*b^2*e^2*atanh((a^5*e^5 + b^5*d^5
 + 2*a^2*b^3*d^3*e^2 + 2*a^3*b^2*d^2*e^3 - 3*a*b^4*d^4*e - 3*a^4*b*d*e^4)/(
a*e - b*d)^5 + (2*b*e*x*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^
3*e - 4*a^3*b*d*e^3))/(a*e - b*d)^5))/(a*e - b*d)^5
```

sympy [B] time = 2.42, size = 881, normalized size = 6.16

$$\frac{6 b^{2} e^{2} \log{\left(x + \frac{- \frac{6 a^{6} b^{2} e^{8}}{\left(a e - b d\right)^{5}} + \frac{36 a^{5} b^{3} d e^{7}}{\left(a e - b d\right)^{5}} - \frac{90 a^{4} b^{4} d^{2} e^{6}}{\left(a e - b d\right)^{5}} + \frac{120 a^{3} b^{5} d^{3} e^{5}}{\left(a e - b d\right)^{5}} - \frac{90 a^{2} b^{6} d^{4} e^{4}}{\left(a e - b d\right)^{5}} + \frac{36 a b^{7} d^{5} e^{3}}{\left(a e - b d\right)^{5}} + 6 a b^{2} e^{3} - \frac{6 b^{8} d^{6} e^{2}}{\left(a e - b d\right)^{5}} + 6 b^{3} d e^{2}}{12 b^{3} e^{3}} \right)}}{\left(a e - b d\right)^{5}} - \frac{6 b^{2} e^{2} \log{\left(x + \frac{\frac{6 a^{6} b^{2} e^{8}}{\left(a e - b d\right)^{5}} - \frac{36 a^{5} b^{3} d e^{7}}{\left(a e - b d\right)^{5}} + \frac{90 a^{4} b^{4} d^{2} e^{6}}{\left(a e - b d\right)^{5}} - \frac{120 a^{3} b^{5} d^{3} e^{5}}{\left(a e - b d\right)^{5}} + \frac{90 a^{2} b^{6} d^{4} e^{4}}{\left(a e - b d\right)^{5}} - \frac{36 a b^{7} d^{5} e^{3}}{\left(a e - b d\right)^{5}} + 6 a b^{2} e^{3} + \frac{6 b^{8} d^{6} e^{2}}{\left(a e - b d\right)^{5}} + 6 b^{3} d e^{2}}{12 b^{3} e^{3}} \right)}}{\left(a e - b d\right)^{5}} + \frac{- a^{3} e^{3} + 7 a^{2} b d e^{2} + 7 a b^{2} d^{2} e - b^{3} d^{3} + 12 b^{3} e^{3} x^{3} + x^{2} \left(18 a b^{2} e^{3} + 18 b^{3} d e^{2}\right) + x \left(4 a^{2} b e^{3} + 28 a b^{2} d e^{2} + 4 b^{3} d^{2} e\right)}{2 a^{6} d^{2} e^{4} - 8 a^{5} b d^{3} e^{3} + 12 a^{4} b^{2} d^{4} e^{2} - 8 a^{3} b^{3} d^{5} e + 2 a^{2} b^{4} d^{6} + x^{4} \left(2 a^{4} b^{2} e^{6} - 8 a^{3} b^{3} d e^{5} + 12 a^{2} b^{4} d^{2} e^{4} - 8 a b^{5} d^{3} e^{3} + 2 b^{6} d^{4} e^{2}\right) + x^{3} \left(4 a^{5} b e^{6} - 12 a^{4} b^{2} d e^{5} + 8 a^{3} b^{3} d^{2} e^{4} + 8 a^{2} b^{4} d^{3} e^{3} - 12 a b^{5} d^{4} e^{2} + 4 b^{6} d^{5} e\right) + x^{2} \left(2 a^{6} e^{6} - 18 a^{4} b^{2} d^{2} e^{4} + 32 a^{3} b^{3} d^{3} e^{3} - 18 a^{2} b^{4} d^{4} e^{2} + 2 b^{6} d^{6}\right) + x \left(4 a^{6} d e^{5} - 12 a^{5} b d^{2} e^{4} + 8 a^{4} b^{2} d^{3} e^{3} + 8 a^{3} b^{3} d^{4} e^{2} - 12 a^{2} b^{4} d^{5} e + 4 a b^{5} d^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 6*b**2*e**2*log(x + (-6*a**6*b**2*e**8/(a*e - b*d)**5 + 36*a**5*b**3*d*e**7
/(a*e - b*d)**5 - 90*a**4*b**4*d**2*e**6/(a*e - b*d)**5 + 120*a**3*b**5*d**
3*e**5/(a*e - b*d)**5 - 90*a**2*b**6*d**4*e**4/(a*e - b*d)**5 + 36*a*b**7*d
**5*e**3/(a*e - b*d)**5 + 6*a*b**2*e**3 - 6*b**8*d**6*e**2/(a*e - b*d)**5 +
 6*b**3*d*e**2)/(12*b**3*e**3))/(a*e - b*d)**5 - 6*b**2*e**2*log(x + (6*a**
6*b**2*e**8/(a*e - b*d)**5 - 36*a**5*b**3*d*e**7/(a*e - b*d)**5 + 90*a**4*b
**4*d**2*e**6/(a*e - b*d)**5 - 120*a**3*b**5*d**3*e**5/(a*e - b*d)**5 + 90*
```

```
a**2*b**6*d**4*e**4/(a*e - b*d)**5 - 36*a*b**7*d**5*e**3/(a*e - b*d)**5 + 6
*a*b**2*e**3 + 6*b**8*d**6*e**2/(a*e - b*d)**5 + 6*b**3*d*e**2)/(12*b**3*e*
*3))/(a*e - b*d)**5 + (-a**3*e**3 + 7*a**2*b*d*e**2 + 7*a*b**2*d**2*e - b**
3*d**3 + 12*b**3*e**3*x**3 + x**2*(18*a*b**2*e**3 + 18*b**3*d*e**2) + x*(4*
a**2*b*e**3 + 28*a*b**2*d*e**2 + 4*b**3*d**2*e))/(2*a**6*d**2*e**4 - 8*a**5
*b*d**3*e**3 + 12*a**4*b**2*d**4*e**2 - 8*a**3*b**3*d**5*e + 2*a**2*b**4*d*
*6 + x**4*(2*a**4*b**2*e**6 - 8*a**3*b**3*d*e**5 + 12*a**2*b**4*d**2*e**4 -
 8*a*b**5*d**3*e**3 + 2*b**6*d**4*e**2) + x**3*(4*a**5*b*e**6 - 12*a**4*b**
2*d*e**5 + 8*a**3*b**3*d**2*e**4 + 8*a**2*b**4*d**3*e**3 - 12*a*b**5*d**4*e
**2 + 4*b**6*d**5*e) + x**2*(2*a**6*e**6 - 18*a**4*b**2*d**2*e**4 + 32*a**3
*b**3*d**3*e**3 - 18*a**2*b**4*d**4*e**2 + 2*b**6*d**6) + x*(4*a**6*d*e**5
- 12*a**5*b*d**2*e**4 + 8*a**4*b**2*d**3*e**3 + 8*a**3*b**3*d**4*e**2 - 12*
a**2*b**4*d**5*e + 4*a*b**5*d**6))
```

3.1719 $\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=170

$$\frac{10b^3e^2\log(a+bx)}{(bd-ae)^6}-\frac{10b^3e^2\log(d+ex)}{(bd-ae)^6}+\frac{4b^3e}{(a+bx)(bd-ae)^5}-\frac{b^3}{2(a+bx)^2(bd-ae)^4}+\frac{6b^2e^2}{(d+ex)(bd-ae)^5}+\frac{3b}{2(d+ex)^2}$$

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 44}

$$\frac{6b^2e^2}{(d+ex)(bd-ae)^5}+\frac{10b^3e^2\log(a+bx)}{(bd-ae)^6}-\frac{10b^3e^2\log(d+ex)}{(bd-ae)^6}+\frac{4b^3e}{(a+bx)(bd-ae)^5}-\frac{b^3}{2(a+bx)^2(bd-ae)^4}+\frac{3be^2}{2(d+ex)^2(bd-ae)^4}+\frac{e^2}{3(d+ex)^3(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -b^3/(2*(b*d - a*e)^4*(a + b*x)^2) + (4*b^3*e)/((b*d - a*e)^5*(a + b*x)) +
e^2/(3*(b*d - a*e)^3*(d + e*x)^3) + (3*b*e^2)/(2*(b*d - a*e)^4*(d + e*x)^2)
 + (6*b^2*e^2)/((b*d - a*e)^5*(d + e*x)) + (10*b^3*e^2*Log[a + b*x])/(b*d -
 a*e)^6 - (10*b^3*e^2*Log[d + e*x])/(b*d - a*e)^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)^4}\,dx\\
&= \int \left(\frac{b^4}{(bd-ae)^4(a+bx)^3}-\frac{4b^4e}{(bd-ae)^5(a+bx)^2}+\frac{10b^4e^2}{(bd-ae)^6(a+bx)}-\frac{}{(bd-}\right.\\
&= -\frac{b^3}{2(bd-ae)^4(a+bx)^2}+\frac{4b^3e}{(bd-ae)^5(a+bx)}+\frac{e^2}{3(bd-ae)^3(d+ex)^3}+\frac{}{2(bd}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 154, normalized size = 0.91

$$\frac{\frac{24b^3e(bd-ae)}{a+bx}-\frac{3b^3(bd-ae)^2}{(a+bx)^2}+60b^3e^2\log(a+bx)+\frac{36b^2e^2(bd-ae)}{d+ex}+\frac{9be^2(bd-ae)^2}{(d+ex)^2}+\frac{2e^2(bd-ae)^3}{(d+ex)^3}-60b^3e^2\log(d+ex)}{6(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-3*b^3*(b*d - a*e)^2)/(a + b*x)^2 + (24*b^3*e*(b*d - a*e))/(a + b*x) + (2
*e^2*(b*d - a*e)^3)/(d + e*x)^3 + (9*b*e^2*(b*d - a*e)^2)/(d + e*x)^2 + (36
```

```
*b^2*e^2*(b*d - a*e))/(d + e*x) + 60*b^3*e^2*Log[a + b*x] - 60*b^3*e^2*Log[
d + e*x])/(6*(b*d - a*e)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2), x]
```

fricas [B] time = 0.43, size = 1151, normalized size = 6.77

$$-\frac{3b^5d^5-30ab^4d^4e-20a^2b^3d^3e^2+60a^3b^2d^2e^3-15a^4bde^4+2a^5e^5-60\left(b^5de^4-ab^4e^5\right)x^4-30\left(5b^5d^2e^3-2ab^4de^4-3a^2b^3e^5\right)x^3-10\left(11b^5d^3e^2+12ab^4d^2e^3-21a^2b^3de^4-2a^3b^2e^5\right)x^2-5\left(3b^5d^4e+32ab^4d^3e^2-24a^2b^3d^2e^3-12a^3b^2de^4+a^4be^5\right)x-60\left(b^5e^5x^5+a^2b^3d^3e^2+\left(3b^5de^4+2ab^4e^5\right)x^4+\left(3b^5d^2e^3+6ab^4de^4+a^2b^3e^5\right)x^3+\left(b^5d^3e^2+6ab^4d^2e^3+3a^2b^3de^4\right)x^2+\left(2ab^4d^3e^2+3a^2b^3d^2e^3\right)x\right)\log\left(bx+a\right)+60\left(b^5e^5x^5+a^2b^3d^3e^2+\left(3b^5de^4+2ab^4e^5\right)x^4+\left(3b^5d^2e^3+6ab^4de^4+a^2b^3e^5\right)x^3+\left(b^5d^3e^2+6ab^4d^2e^3+3a^2b^3de^4\right)x^2+\left(2ab^4d^3e^2+3a^2b^3d^2e^3\right)x\right)\log\left(ex+d\right)}{6\left(a^2b^6d^9-6a^3b^5d^8e+15a^4b^4d^7e^2-20a^5b^3d^6e^3+15a^6b^2d^5e^4-6a^7bd^4e^5+a^8d^3e^6+\left(b^8d^6e^3-6ab^7d^5e^4+15a^2b^6d^4e^5-20a^3b^5d^3e^6+15a^4b^4d^2e^7-6a^5b^3de^8+a^6b^2e^9\right)x^5+\left(3b^8d^7e^2-16ab^7d^6e^3+33a^2b^6d^5e^4-30a^3b^5d^4e^5+5a^4b^4d^3e^6+12a^5b^3d^2e^7-9a^6b^2de^8+2a^7be^9\right)x^4+\left(3b^8d^8e-12ab^7d^7e^2+10a^2b^6d^6e^3+24a^3b^5d^5e^4-60a^4b^4d^4e^5+52a^5b^3d^3e^6-18a^6b^2d^2e^7+a^8e^9\right)x^3+\left(b^8d^9-18a^2b^6d^7e^2+52a^3b^5d^6e^3-60a^4b^4d^5e^4+24a^5b^3d^4e^5+10a^6b^2d^3e^6-12a^7bd^2e^7+3a^8de^8\right)x^2+\left(2ab^7d^9-9a^2b^6d^8e+12a^3b^5d^7e^2+5a^4b^4d^6e^3-30a^5b^3d^5e^4+33a^6b^2d^4e^5-16a^7bd^3e^6+3a^8d^2e^7\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*b^5*d^5 - 30*a*b^4*d^4*e - 20*a^2*b^3*d^3*e^2 + 60*a^3*b^2*d^2*e^3
- 15*a^4*b*d*e^4 + 2*a^5*e^5 - 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 - 30*(5*b^5*d
^2*e^3 - 2*a*b^4*d*e^4 - 3*a^2*b^3*e^5)*x^3 - 10*(11*b^5*d^3*e^2 + 12*a*b^4
*d^2*e^3 - 21*a^2*b^3*d*e^4 - 2*a^3*b^2*e^5)*x^2 - 5*(3*b^5*d^4*e + 32*a*b^
4*d^3*e^2 - 24*a^2*b^3*d^2*e^3 - 12*a^3*b^2*d*e^4 + a^4*b*e^5)*x - 60*(b^5*
e^5*x^5 + a^2*b^3*d^3*e^2 + (3*b^5*d*e^4 + 2*a*b^4*e^5)*x^4 + (3*b^5*d^2*e^
3 + 6*a*b^4*d*e^4 + a^2*b^3*e^5)*x^3 + (b^5*d^3*e^2 + 6*a*b^4*d^2*e^3 + 3*a
^2*b^3*d*e^4)*x^2 + (2*a*b^4*d^3*e^2 + 3*a^2*b^3*d^2*e^3)*x)*log(b*x + a) +
 60*(b^5*e^5*x^5 + a^2*b^3*d^3*e^2 + (3*b^5*d*e^4 + 2*a*b^4*e^5)*x^4 + (3*b
^5*d^2*e^3 + 6*a*b^4*d*e^4 + a^2*b^3*e^5)*x^3 + (b^5*d^3*e^2 + 6*a*b^4*d^2*
e^3 + 3*a^2*b^3*d*e^4)*x^2 + (2*a*b^4*d^3*e^2 + 3*a^2*b^3*d^2*e^3)*x)*log(e
*x + d))/(a^2*b^6*d^9 - 6*a^3*b^5*d^8*e + 15*a^4*b^4*d^7*e^2 - 20*a^5*b^3*d
^6*e^3 + 15*a^6*b^2*d^5*e^4 - 6*a^7*b*d^4*e^5 + a^8*d^3*e^6 + (b^8*d^6*e^3
- 6*a*b^7*d^5*e^4 + 15*a^2*b^6*d^4*e^5 - 20*a^3*b^5*d^3*e^6 + 15*a^4*b^4*d^
2*e^7 - 6*a^5*b^3*d*e^8 + a^6*b^2*e^9)*x^5 + (3*b^8*d^7*e^2 - 16*a*b^7*d^6*
e^3 + 33*a^2*b^6*d^5*e^4 - 30*a^3*b^5*d^4*e^5 + 5*a^4*b^4*d^3*e^6 + 12*a^5*
b^3*d^2*e^7 - 9*a^6*b^2*d*e^8 + 2*a^7*b*e^9)*x^4 + (3*b^8*d^8*e - 12*a*b^7*
d^7*e^2 + 10*a^2*b^6*d^6*e^3 + 24*a^3*b^5*d^5*e^4 - 60*a^4*b^4*d^4*e^5 + 52
*a^5*b^3*d^3*e^6 - 18*a^6*b^2*d^2*e^7 + a^8*e^9)*x^3 + (b^8*d^9 - 18*a^2*b^
6*d^7*e^2 + 52*a^3*b^5*d^6*e^3 - 60*a^4*b^4*d^5*e^4 + 24*a^5*b^3*d^4*e^5 +
10*a^6*b^2*d^3*e^6 - 12*a^7*b*d^2*e^7 + 3*a^8*d*e^8)*x^2 + (2*a*b^7*d^9 - 9
*a^2*b^6*d^8*e + 12*a^3*b^5*d^7*e^2 + 5*a^4*b^4*d^6*e^3 - 30*a^5*b^3*d^5*e^
4 + 33*a^6*b^2*d^4*e^5 - 16*a^7*b*d^3*e^6 + 3*a^8*d^2*e^7)*x)
```

giac [B] time = 0.17, size = 435, normalized size = 2.56

$$\frac{10\,b^4e^2\log\left(|bx+a|\right)}{b^7d^6-6\,ab^6d^5e+15\,a^2b^5d^4e^2-20\,a^3b^4d^3e^3+15\,a^4b^3d^2e^4-6\,a^5b^2de^5+a^6be^6}-\frac{10\,b^3e^3\log\left(|xe+d|\right)}{b^6d^6e-6\,ab^5d^5e^2+15\,a^2b^4d^4e^3-20\,a^3b^3d^3e^4+15\,a^4b^2d^2e^5-6\,a^5bde^6+a^6e^7}-\frac{3\,b^5d^5-30\,ab^4d^4e-20\,a^2b^3d^3e^2+60\,a^3b^2d^2e^3-15\,a^4bde^4+2\,a^5e^5-60\left(b^5de^4-ab^4e^5\right)x^4-30\left(5\,b^5d^2e^3-2\,ab^4de^4-3\,a^2b^3e^5\right)x^3-10\left(11\,b^5d^3e^2+12\,ab^4d^2e^3-21\,a^2b^3de^4-2\,a^3b^2e^5\right)x^2-5\left(3\,b^5d^4e+32\,ab^4d^3e^2-24\,a^2b^3d^2e^3-12\,a^3b^2de^4+a^4be^5\right)x}{6\,(bd-ae)^6(bx+a)^2(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 10*b^4*e^2*log(abs(b*x + a))/(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2
- 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6) -
10*b^3*e^3*log(abs(x*e + d))/(b^6*d^6*e - 6*a*b^5*d^5*e^2 + 15*a^2*b^4*d^4*
e^3 - 20*a^3*b^3*d^3*e^4 + 15*a^4*b^2*d^2*e^5 - 6*a^5*b*d*e^6 + a^6*e^7) -
1/6*(3*b^5*d^5 - 30*a*b^4*d^4*e - 20*a^2*b^3*d^3*e^2 + 60*a^3*b^2*d^2*e^3 -
 15*a^4*b*d*e^4 + 2*a^5*e^5 - 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 - 30*(5*b^5*d^
2*e^3 - 2*a*b^4*d*e^4 - 3*a^2*b^3*e^5)*x^3 - 10*(11*b^5*d^3*e^2 + 12*a*b^4*
d^2*e^3 - 21*a^2*b^3*d*e^4 - 2*a^3*b^2*e^5)*x^2 - 5*(3*b^5*d^4*e + 32*a*b^4
```

```
*d^3*e^2 - 24*a^2*b^3*d^2*e^3 - 12*a^3*b^2*d*e^4 + a^4*b*e^5)*x)/((b*d - a*
e)^6*(b*x + a)^2*(x*e + d)^3)
```

maple [A] time = 0.06, size = 165, normalized size = 0.97

$$\frac{10b^3e^2\ln(bx+a)}{(ae-bd)^6} - \frac{10b^3e^2\ln(ex+d)}{(ae-bd)^6} - \frac{4b^3e}{(ae-bd)^5(bx+a)} - \frac{6b^2e^2}{(ae-bd)^5(ex+d)} - \frac{b^3}{2(ae-bd)^4(bx+a)^2} + \frac{3be^2}{2(ae-bd)^4(ex+d)^2} - \frac{e^2}{3(ae-bd)^3(ex+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2/(a*e-b*d)^4*b^3/(b*x+a)^2+10*b^3/(a*e-b*d)^6*e^2*ln(b*x+a)-4*b^3/(a*e-
b*d)^5*e/(b*x+a)-1/3*e^2/(a*e-b*d)^3/(e*x+d)^3-10*b^3/(a*e-b*d)^6*e^2*ln(e*
x+d)-6*e^2/(a*e-b*d)^5*b^2/(e*x+d)+3/2*e^2/(a*e-b*d)^4*b/(e*x+d)^2
```

maxima [B] time = 1.07, size = 890, normalized size = 5.24

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 10*b^3*e^2*log(b*x + a)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*
a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) - 10*b^3*e^
2*log(e*x + d)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d
^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) + 1/6*(60*b^4*e^4*x^
4 - 3*b^4*d^4 + 27*a*b^3*d^3*e + 47*a^2*b^2*d^2*e^2 - 13*a^3*b*d*e^3 + 2*a^
4*e^4 + 30*(5*b^4*d*e^3 + 3*a*b^3*e^4)*x^3 + 10*(11*b^4*d^2*e^2 + 23*a*b^3*
d*e^3 + 2*a^2*b^2*e^4)*x^2 + 5*(3*b^4*d^3*e + 35*a*b^3*d^2*e^2 + 11*a^2*b^2
*d*e^3 - a^3*b*e^4)*x)/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 10*a^4*b^3*d^6*e^2
- 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b^7*d^5*e^3 - 5*a*b
^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*a^4*b^3*d*e^7 - a^
5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a^2*b^5*d^4*e^4 - 1
0*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 - 2*a^6*b*e^8)*x^4
+ (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a^3*b^4*d^4*e^4 - 3
5*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^7*e^8)*x^3 + (b^7*
d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e^3 - 25*a^4*b^3*d^
4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*x^2 + (2*a*b^6*d^8
 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e^3 - 20*a^5*b^2*d^
4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x)
```

mupad [B] time = 2.58, size = 798, normalized size = 4.69

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (20*b^3*e^2*atanh((a^6*e^6 - b^6*d^6 - 5*a^2*b^4*d^4*e^2 + 5*a^4*b^2*d^2*e^
4 + 4*a*b^5*d^5*e - 4*a^5*b*d*e^5)/(a*e - b*d)^6 + (2*b*e*x*(a^5*e^5 - b^5*
d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e
^4))/(a*e - b*d)^6))/(a*e - b*d)^6 - ((2*a^4*e^4 - 3*b^4*d^4 + 47*a^2*b^2*d
^2*e^2 + 27*a*b^3*d^3*e - 13*a^3*b*d*e^3)/(6*(a^5*e^5 - b^5*d^5 - 10*a^2*b^
3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*b*x*(
3*b^3*d^3*e - a^3*e^4 + 35*a*b^2*d^2*e^2 + 11*a^2*b*d*e^3))/(6*(a^5*e^5 - b
^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*
d*e^4)) + (10*b^4*e^4*x^4)/(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3
*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (5*b^2*x^2*(2*a^2*e^4 + 11*
b^2*d^2*e^2 + 23*a*b*d*e^3))/(3*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 1
0*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*b^2*e*x^3*(5*b^2*d
```

```
*e^2 + 3*a*b*e^3))/(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2
*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/(x^2*(b^2*d^3 + 3*a^2*d*e^2 + 6*a*b*
d^2*e) + x^3*(a^2*e^3 + 3*b^2*d^2*e + 6*a*b*d*e^2) + x*(3*a^2*d^2*e + 2*a*b
*d^3) + x^4*(3*b^2*d*e^2 + 2*a*b*e^3) + a^2*d^3 + b^2*e^3*x^5)
```

sympy [B]   time = 3.36, size = 1221, normalized size = 7.18

$$-\frac{10b^3e^2\log\left(x+\frac{-\frac{10a^7b^3e^9}{(ae-bd)^6}+\frac{70a^6b^4de^8}{(ae-bd)^6}-\frac{210a^5b^5d^2e^7}{(ae-bd)^6}+\frac{350a^4b^6d^3e^6}{(ae-bd)^6}-\frac{350a^3b^7d^4e^5}{(ae-bd)^6}+\frac{210a^2b^8d^5e^4}{(ae-bd)^6}-\frac{70ab^9d^6e^3}{(ae-bd)^6}+10ab^3e^3+\frac{10b^{10}d^7e^2}{(ae-bd)^6}+10b^4de^2}{20b^4e^3}\right)}{(ae-bd)^6}+\frac{10b^3e^2\log\left(x+\frac{\frac{10a^7b^3e^9}{(ae-bd)^6}-\frac{70a^6b^4de^8}{(ae-bd)^6}+\frac{210a^5b^5d^2e^7}{(ae-bd)^6}-\frac{350a^4b^6d^3e^6}{(ae-bd)^6}+\frac{350a^3b^7d^4e^5}{(ae-bd)^6}-\frac{210a^2b^8d^5e^4}{(ae-bd)^6}+\frac{70ab^9d^6e^3}{(ae-bd)^6}+10ab^3e^3-\frac{10b^{10}d^7e^2}{(ae-bd)^6}+10b^4de^2}{20b^4e^3}\right)}{(ae-bd)^6}+\frac{-2a^4e^4+13a^3bde^3-47a^2b^2d^2e^2-27ab^3d^3e+3b^4d^4-60b^4e^4x^4+x^3\left(-90ab^3e^4-150b^4de^3\right)+x^2\left(-20a^2b^2e^4-230ab^3de^3-110b^4d^2e^2\right)+x\left(5a^3be^4-55a^2b^2de^3-175ab^3d^2e^2-15b^4d^3e\right)}{6a^7d^3e^5-30a^6bd^4e^4+60a^5b^2d^5e^3-60a^4b^3d^6e^2+30a^3b^4d^7e-6a^2b^5d^8+x^5\left(6a^5b^2e^8-30a^4b^3de^7+60a^3b^4d^2e^6-60a^2b^5d^3e^5+30ab^6d^4e^4-6b^7d^5e^3\right)+x^4\left(12a^6be^8-42a^5b^2de^7+30a^4b^3d^2e^6+60a^3b^4d^3e^5-120a^2b^5d^4e^4+78ab^6d^5e^3-18b^7d^6e^2\right)+x^3\left(6a^7e^8+6a^6bde^7-102a^5b^2d^2e^6+210a^4b^3d^3e^5-150a^3b^4d^4e^4-6a^2b^5d^5e^3+54ab^6d^6e^2-18b^7d^7e\right)+x^2\left(18a^7de^7-54a^6bd^2e^6+6a^5b^2d^3e^5+150a^4b^3d^4e^4-210a^3b^4d^5e^3+102a^2b^5d^6e^2-6ab^6d^7e-6b^7d^8\right)+x\left(18a^7d^2e^6-78a^6bd^3e^5+120a^5b^2d^4e^4-60a^4b^3d^5e^3-30a^3b^4d^6e^2+42a^2b^5d^7e-12ab^6d^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -10*b**3*e**2*log(x + (-10*a**7*b**3*e**9/(a*e - b*d)**6 + 70*a**6*b**4*d*e
**8/(a*e - b*d)**6 - 210*a**5*b**5*d**2*e**7/(a*e - b*d)**6 + 350*a**4*b**6
*d**3*e**6/(a*e - b*d)**6 - 350*a**3*b**7*d**4*e**5/(a*e - b*d)**6 + 210*a*
*2*b**8*d**5*e**4/(a*e - b*d)**6 - 70*a*b**9*d**6*e**3/(a*e - b*d)**6 + 10*
a*b**3*e**3 + 10*b**10*d**7*e**2/(a*e - b*d)**6 + 10*b**4*d*e**2)/(20*b**4*
e**3))/(a*e - b*d)**6 + 10*b**3*e**2*log(x + (10*a**7*b**3*e**9/(a*e - b*d)
**6 - 70*a**6*b**4*d*e**8/(a*e - b*d)**6 + 210*a**5*b**5*d**2*e**7/(a*e - b
*d)**6 - 350*a**4*b**6*d**3*e**6/(a*e - b*d)**6 + 350*a**3*b**7*d**4*e**5/(
a*e - b*d)**6 - 210*a**2*b**8*d**5*e**4/(a*e - b*d)**6 + 70*a*b**9*d**6*e**
3/(a*e - b*d)**6 + 10*a*b**3*e**3 - 10*b**10*d**7*e**2/(a*e - b*d)**6 + 10*
b**4*d*e**2)/(20*b**4*e**3))/(a*e - b*d)**6 + (-2*a**4*e**4 + 13*a**3*b*d*e
**3 - 47*a**2*b**2*d**2*e**2 - 27*a*b**3*d**3*e + 3*b**4*d**4 - 60*b**4*e**
4*x**4 + x**3*(-90*a*b**3*e**4 - 150*b**4*d*e**3) + x**2*(-20*a**2*b**2*e**
4 - 230*a*b**3*d*e**3 - 110*b**4*d**2*e**2) + x*(5*a**3*b*e**4 - 55*a**2*b*
*2*d*e**3 - 175*a*b**3*d**2*e**2 - 15*b**4*d**3*e))/(6*a**7*d**3*e**5 - 30*
a**6*b*d**4*e**4 + 60*a**5*b**2*d**5*e**3 - 60*a**4*b**3*d**6*e**2 + 30*a**
3*b**4*d**7*e - 6*a**2*b**5*d**8 + x**5*(6*a**5*b**2*e**8 - 30*a**4*b**3*d*
e**7 + 60*a**3*b**4*d**2*e**6 - 60*a**2*b**5*d**3*e**5 + 30*a*b**6*d**4*e**
4 - 6*b**7*d**5*e**3) + x**4*(12*a**6*b*e**8 - 42*a**5*b**2*d*e**7 + 30*a**
4*b**3*d**2*e**6 + 60*a**3*b**4*d**3*e**5 - 120*a**2*b**5*d**4*e**4 + 78*a*
b**6*d**5*e**3 - 18*b**7*d**6*e**2) + x**3*(6*a**7*e**8 + 6*a**6*b*d*e**7 -
 102*a**5*b**2*d**2*e**6 + 210*a**4*b**3*d**3*e**5 - 150*a**3*b**4*d**4*e**
4 - 6*a**2*b**5*d**5*e**3 + 54*a*b**6*d**6*e**2 - 18*b**7*d**7*e) + x**2*(1
8*a**7*d*e**7 - 54*a**6*b*d**2*e**6 + 6*a**5*b**2*d**3*e**5 + 150*a**4*b**3
*d**4*e**4 - 210*a**3*b**4*d**5*e**3 + 102*a**2*b**5*d**6*e**2 - 6*a*b**6*d
**7*e - 6*b**7*d**8) + x*(18*a**7*d**2*e**6 - 78*a**6*b*d**3*e**5 + 120*a**
5*b**2*d**4*e**4 - 60*a**4*b**3*d**5*e**3 - 30*a**3*b**4*d**6*e**2 + 42*a**
2*b**5*d**7*e - 12*a*b**6*d**8))
```

3.1720 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=111

$$-\frac{4e^3(bd-ae)}{b^5(a+bx)}-\frac{3e^2(bd-ae)^2}{b^5(a+bx)^2}-\frac{4e(bd-ae)^3}{3b^5(a+bx)^3}-\frac{(bd-ae)^4}{4b^5(a+bx)^4}+\frac{e^4\log(a+bx)}{b^5}$$

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{4e^3(bd-ae)}{b^5(a+bx)}-\frac{3e^2(bd-ae)^2}{b^5(a+bx)^2}-\frac{4e(bd-ae)^3}{3b^5(a+bx)^3}-\frac{(bd-ae)^4}{4b^5(a+bx)^4}+\frac{e^4\log(a+bx)}{b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(b*d - a*e)^4/(4*b^5*(a + b*x)^4) - (4*e*(b*d - a*e)^3)/(3*b^5*(a + b*x)^3
) - (3*e^2*(b*d - a*e)^2)/(b^5*(a + b*x)^2) - (4*e^3*(b*d - a*e))/(b^5*(a +
 b*x)) + (e^4*Log[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^4}{(a+bx)^5}\,dx\\
&= \int \left(\frac{(bd-ae)^4}{b^4(a+bx)^5}+\frac{4e(bd-ae)^3}{b^4(a+bx)^4}+\frac{6e^2(bd-ae)^2}{b^4(a+bx)^3}+\frac{4e^3(bd-ae)}{b^4(a+bx)^2}+\frac{e^4}{b^4(a+bx)}\right)dx\\
&= -\frac{(bd-ae)^4}{4b^5(a+bx)^4}-\frac{4e(bd-ae)^3}{3b^5(a+bx)^3}-\frac{3e^2(bd-ae)^2}{b^5(a+bx)^2}-\frac{4e^3(bd-ae)}{b^5(a+bx)}+\frac{e^4\log(a+bx)}{b^5}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 120, normalized size = 1.08

$$\frac{e^4\log(a+bx)}{b^5}-\frac{(bd-ae)\left(25a^3e^3+a^2be^2(13d+88ex)+ab^2e\left(7d^2+40dex+108e^2x^2\right)+b^3\left(3d^3+16d^2ex+36de^2x^2+48e^3x^3\right)\right)}{12b^5(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/12*((b*d - a*e)*(25*a^3*e^3 + a^2*b*e^2*(13*d + 88*e*x) + a*b^2*e*(7*d^2
 + 40*d*e*x + 108*e^2*x^2) + b^3*(3*d^3 + 16*d^2*e*x + 36*d*e^2*x^2 + 48*e^
3*x^3)))/(b^5*(a + b*x)^4) + (e^4*Log[a + b*x])/b^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.41, size = 267, normalized size = 2.41

$$-\frac{3b^4d^4+4ab^3d^3e+6a^2b^2d^2e^2+12a^3bde^3-25a^4e^4+48\left(b^4de^3-ab^3e^4\right)x^3+36\left(b^4d^2e^2+2ab^3de^3-3a^2b^2e^4\right)x^2+8\left(2b^4d^3e+3ab^3d^2e^2+6a^2b^2de^3-11a^3be^4\right)x-12\left(b^4e^4x^4+4ab^3e^4x^3+6a^2b^2e^4x^2+4a^3be^4x+a^4e^4\right)\log\left(bx+a\right)}{12\left(b^9x^4+4ab^8x^3+6a^2b^7x^2+4a^3b^6x+a^4b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^4*d^4 + 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 + 12*a^3*b*d*e^3 - 25*
a^4*e^4 + 48*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 36*(b^4*d^2*e^2 + 2*a*b^3*d*e^3
- 3*a^2*b^2*e^4)*x^2 + 8*(2*b^4*d^3*e + 3*a*b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 -
 11*a^3*b*e^4)*x - 12*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 +
4*a^3*b*e^4*x + a^4*e^4)*log(b*x + a))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x
^2 + 4*a^3*b^6*x + a^4*b^5)
```

giac [A] time = 0.18, size = 174, normalized size = 1.57

$$\frac{e^4\log\left(|bx+a|\right)}{b^5}-\frac{48\left(b^3de^3-ab^2e^4\right)x^3+36\left(b^3d^2e^2+2ab^2de^3-3a^2be^4\right)x^2+8\left(2b^3d^3e+3ab^2d^2e^2+6a^2bde^3-11a^3e^4\right)x+\frac{3b^4d^4+4ab^3d^3e+6a^2b^2d^2e^2+12a^3bde^3-25a^4e^4}{b}}{12\left(bx+a\right)^4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] e^4*log(abs(b*x + a))/b^5 - 1/12*(48*(b^3*d*e^3 - a*b^2*e^4)*x^3 + 36*(b^3*
d^2*e^2 + 2*a*b^2*d*e^3 - 3*a^2*b*e^4)*x^2 + 8*(2*b^3*d^3*e + 3*a*b^2*d^2*e
^2 + 6*a^2*b*d*e^3 - 11*a^3*e^4)*x + (3*b^4*d^4 + 4*a*b^3*d^3*e + 6*a^2*b^2
*d^2*e^2 + 12*a^3*b*d*e^3 - 25*a^4*e^4)/b)/((b*x + a)^4*b^4)
```

maple [B] time = 0.05, size = 260, normalized size = 2.34

$$-\frac{a^4e^4}{4\left(bx+a\right)^4b^5}+\frac{a^3d\,e^3}{\left(bx+a\right)^4b^4}-\frac{3a^2d^2e^2}{2\left(bx+a\right)^4b^3}+\frac{a\,d^3e}{\left(bx+a\right)^4b^2}-\frac{d^4}{4\left(bx+a\right)^4b}+\frac{4a^3e^4}{3\left(bx+a\right)^3b^5}-\frac{4a^2d\,e^3}{\left(bx+a\right)^3b^4}+\frac{4a\,d^2e^2}{\left(bx+a\right)^3b^3}-\frac{4d^3e}{3\left(bx+a\right)^3b^2}-\frac{3a^2e^4}{\left(bx+a\right)^2b^5}+\frac{6ad\,e^3}{\left(bx+a\right)^2b^4}-\frac{3d^2e^2}{\left(bx+a\right)^2b^3}+\frac{4a\,e^4}{\left(bx+a\right)b^5}-\frac{4d\,e^3}{\left(bx+a\right)b^4}+\frac{e^4\ln\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 4/3*e^4/b^5/(b*x+a)^3*a^3-4*e^3/b^4/(b*x+a)^3*a^2*d+4*e^2/b^3/(b*x+a)^3*a*d
^2-4/3*e/b^2/(b*x+a)^3*d^3-3*e^4/b^5/(b*x+a)^2*a^2+6*e^3/b^4/(b*x+a)^2*a*d-
3*e^2/b^3/(b*x+a)^2*d^2+e^4*ln(b*x+a)/b^5+4/b^5*e^4/(b*x+a)*a-4/b^4*e^3/(b*
x+a)*d-1/4/b^5/(b*x+a)^4*a^4*e^4+1/b^4/(b*x+a)^4*a^3*d*e^3-3/2/b^3/(b*x+a)^
4*a^2*d^2*e^2+1/b^2/(b*x+a)^4*a*d^3*e-1/4/b/(b*x+a)^4*d^4
```

maxima [B] time = 0.59, size = 219, normalized size = 1.97

$$-\frac{3b^4d^4+4ab^3d^3e+6a^2b^2d^2e^2+12a^3bde^3-25a^4e^4+48\left(b^4de^3-ab^3e^4\right)x^3+36\left(b^4d^2e^2+2ab^3de^3-3a^2b^2e^4\right)x^2+8\left(2b^4d^3e+3ab^3d^2e^2+6a^2b^2de^3-11a^3be^4\right)x}{12\left(b^9x^4+4ab^8x^3+6a^2b^7x^2+4a^3b^6x+a^4b^5\right)}+\frac{e^4\log\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(3*b^4*d^4 + 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 + 12*a^3*b*d*e^3 - 25*
a^4*e^4 + 48*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 36*(b^4*d^2*e^2 + 2*a*b^3*d*e^3
- 3*a^2*b^2*e^4)*x^2 + 8*(2*b^4*d^3*e + 3*a*b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 -
 11*a^3*b*e^4)*x)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^
4*b^5) + e^4*log(b*x + a)/b^5
```

mupad [B] time = 2.09, size = 213, normalized size = 1.92

$$\frac{e^4\,\ln\left(a+b\,x\right)}{b^5}-\frac{\frac{-25\,a^4\,e^4+12\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2+4\,a\,b^3\,d^3\,e+3\,b^4\,d^4}{12\,b^5}+\frac{3\,x^2\,\left(-3\,a^2\,e^4+2\,a\,b\,d\,e^3+b^2\,d^2\,e^2\right)}{b^3}+\frac{2\,x\,\left(-11\,a^3\,e^4+6\,a^2\,b\,d\,e^3+3\,a\,b^2\,d^2\,e^2+2\,b^3\,d^3\,e\right)}{3\,b^4}-\frac{4\,e^3\,x^3\,\left(a\,e-b\,d\right)}{b^2}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (e^4*log(a + b*x))/b^5 - ((3*b^4*d^4 - 25*a^4*e^4 + 6*a^2*b^2*d^2*e^2 + 4*a
*b^3*d^3*e + 12*a^3*b*d*e^3)/(12*b^5) + (3*x^2*(b^2*d^2*e^2 - 3*a^2*e^4 + 2
*a*b*d*e^3))/b^3 + (2*x*(2*b^3*d^3*e - 11*a^3*e^4 + 3*a*b^2*d^2*e^2 + 6*a^2
*b*d*e^3))/(3*b^4) - (4*e^3*x^3*(a*e - b*d))/b^2)/(a^4 + b^4*x^4 + 4*a*b^3*
x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x)
```

sympy [B] time = 3.34, size = 230, normalized size = 2.07

$$\frac{25a^4e^4-12a^3bde^3-6a^2b^2d^2e^2-4ab^3d^3e-3b^4d^4+x^3\left(48ab^3e^4-48b^4de^3\right)+x^2\left(108a^2b^2e^4-72ab^3de^3-36b^4d^2e^2\right)+x\left(88a^3be^4-48a^2b^2de^3-24ab^3d^2e^2-16b^4d^3e\right)}{12a^4b^5+48a^3b^6x+72a^2b^7x^2+48ab^8x^3+12b^9x^4}+\frac{e^4\log\left(a+bx\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (25*a**4*e**4 - 12*a**3*b*d*e**3 - 6*a**2*b**2*d**2*e**2 - 4*a*b**3*d**3*e
- 3*b**4*d**4 + x**3*(48*a*b**3*e**4 - 48*b**4*d*e**3) + x**2*(108*a**2*b**
2*e**4 - 72*a*b**3*d*e**3 - 36*b**4*d**2*e**2) + x*(88*a**3*b*e**4 - 48*a**
2*b**2*d*e**3 - 24*a*b**3*d**2*e**2 - 16*b**4*d**3*e))/(12*a**4*b**5 + 48*a
**3*b**6*x + 72*a**2*b**7*x**2 + 48*a*b**8*x**3 + 12*b**9*x**4) + e**4*log(
a + b*x)/b**5
```

3.1721 $\int \frac{(a+bx)(d+ex)^3}{(a^2+2abx+b^2x^2)^3} dx$

Optimal. Leaf size=28

$$-\frac{(d+ex)^4}{4(a+bx)^4(bd-ae)}$$

Rubi [A] time = 0.00, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 37\}$

$$-\frac{(d+ex)^4}{4(a+bx)^4(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(d + e*x)^4/(4*(b*d - a*e)*(a + b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^3}{(a^2+2abx+b^2x^2)^3} dx &= \int \frac{(d+ex)^3}{(a+bx)^5} dx\\ &= -\frac{(d+ex)^4}{4(bd-ae)(a+bx)^4}\end{aligned}$$

Mathematica [B] time = 0.03, size = 91, normalized size = 3.25

$$-\frac{a^3e^3+a^2be^2(d+4ex)+ab^2e\left(d^2+4dex+6e^2x^2\right)+b^3\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{4b^4(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/4*(a^3*e^3 + a^2*b*e^2*(d + 4*e*x) + a*b^2*e*(d^2 + 4*d*e*x + 6*e^2*x^2)
 + b^3*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3))/(b^4*(a + b*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^3}{(a^2+2abx+b^2x^2)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.39, size = 143, normalized size = 5.11

$$-\frac{4\,b^3e^3x^3+b^3d^3+ab^2d^2e+a^2bde^2+a^3e^3+6\left(b^3de^2+ab^2e^3\right)x^2+4\left(b^3d^2e+ab^2de^2+a^2be^3\right)x}{4\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(4*b^3*e^3*x^3 + b^3*d^3 + a*b^2*d^2*e + a^2*b*d*e^2 + a^3*e^3 + 6*(b^
3*d*e^2 + a*b^2*e^3)*x^2 + 4*(b^3*d^2*e + a*b^2*d*e^2 + a^2*b*e^3)*x)/(b^8*
x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4)
```

giac [B] time = 0.16, size = 106, normalized size = 3.79

$$-\frac{4\,b^3x^3e^3+6\,b^3dx^2e^2+4\,b^3d^2xe+b^3d^3+6\,ab^2x^2e^3+4\,ab^2dxe^2+ab^2d^2e+4\,a^2bxe^3+a^2bde^2+a^3e^3}{4\,(bx+a)^4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/4*(4*b^3*x^3*e^3 + 6*b^3*d*x^2*e^2 + 4*b^3*d^2*x*e + b^3*d^3 + 6*a*b^2*x
^2*e^3 + 4*a*b^2*d*x*e^2 + a*b^2*d^2*e + 4*a^2*b*x*e^3 + a^2*b*d*e^2 + a^3*
e^3)/((b*x + a)^4*b^4)
```

maple [B] time = 0.05, size = 122, normalized size = 4.36

$$-\frac{e^3}{(bx+a)\,b^4}+\frac{3\,(ae-bd)\,e^2}{2\,(bx+a)^2\,b^4}-\frac{\left(a^2e^2-2abde+b^2d^2\right)e}{(bx+a)^3\,b^4}-\frac{-e^3a^3+3a^2bd\,e^2-3a\,d^2e\,b^2+d^3b^3}{4\,(bx+a)^4\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -e*(a^2*e^2-2*a*b*d*e+b^2*d^2)/b^4/(b*x+a)^3+3/2*e^2*(a*e-b*d)/b^4/(b*x+a)^
2-e^3/b^4/(b*x+a)-1/4*(-a^3*e^3+3*a^2*b*d*e^2-3*a*b^2*d^2*e+b^3*d^3)/b^4/(b
*x+a)^4
```

maxima [B] time = 0.52, size = 143, normalized size = 5.11

$$-\frac{4\,b^3e^3x^3+b^3d^3+ab^2d^2e+a^2bde^2+a^3e^3+6\left(b^3de^2+ab^2e^3\right)x^2+4\left(b^3d^2e+ab^2de^2+a^2be^3\right)x}{4\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(4*b^3*e^3*x^3 + b^3*d^3 + a*b^2*d^2*e + a^2*b*d*e^2 + a^3*e^3 + 6*(b^
3*d*e^2 + a*b^2*e^3)*x^2 + 4*(b^3*d^2*e + a*b^2*d*e^2 + a^2*b*e^3)*x)/(b^8*
x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4)
```

mupad [B] time = 0.06, size = 135, normalized size = 4.82

$$-\frac{\frac{a^3\,e^3+a^2\,b\,d\,e^2+a\,b^2\,d^2\,e+b^3\,d^3}{4\,b^4}+\frac{e^3\,x^3}{b}+\frac{e\,x\,\left(a^2\,e^2+a\,b\,d\,e+b^2\,d^2\right)}{b^3}+\frac{3\,e^2\,x^2\,\left(a\,e+b\,d\right)}{2\,b^2}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a^3*e^3 + b^3*d^3 + a*b^2*d^2*e + a^2*b*d*e^2)/(4*b^4) + (e^3*x^3)/b + (
e*x*(a^2*e^2 + b^2*d^2 + a*b*d*e))/b^3 + (3*e^2*x^2*(a*e + b*d))/(2*b^2))/(
a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x)
```

sympy [B] time = 1.83, size = 155, normalized size = 5.54

$$\frac{-a^3e^3 - a^2bde^2 - ab^2d^2e - b^3d^3 - 4b^3e^3x^3 + x^2\left(-6ab^2e^3 - 6b^3de^2\right) + x\left(-4a^2be^3 - 4ab^2de^2 - 4b^3d^2e\right)}{4a^4b^4 + 16a^3b^5x + 24a^2b^6x^2 + 16ab^7x^3 + 4b^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-a**3*e**3 - a**2*b*d*e**2 - a*b**2*d**2*e - b**3*d**3 - 4*b**3*e**3*x**3
+ x**2*(-6*a*b**2*e**3 - 6*b**3*d*e**2) + x*(-4*a**2*b*e**3 - 4*a*b**2*d*e*
*2 - 4*b**3*d**2*e))/(4*a**4*b**4 + 16*a**3*b**5*x + 24*a**2*b**6*x**2 + 16
*a*b**7*x**3 + 4*b**8*x**4)
```

3.1722 $\int \frac{(a+bx)(d+ex)^2}{(a^2+2abx+b^2x^2)^3}\,dx$

Optimal. Leaf size=65

$$-\frac{2e(bd-ae)}{3b^3(a+bx)^3}-\frac{(bd-ae)^2}{4b^3(a+bx)^4}-\frac{e^2}{2b^3(a+bx)^2}$$

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{2e(bd-ae)}{3b^3(a+bx)^3}-\frac{(bd-ae)^2}{4b^3(a+bx)^4}-\frac{e^2}{2b^3(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(b*d - a*e)^2/(4*b^3*(a + b*x)^4) - (2*e*(b*d - a*e))/(3*b^3*(a + b*x)^3)
- e^2/(2*b^3*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^2}{(a+bx)^5}\,dx\\ &= \int \left(\frac{(bd-ae)^2}{b^2(a+bx)^5}+\frac{2e(bd-ae)}{b^2(a+bx)^4}+\frac{e^2}{b^2(a+bx)^3}\right)dx\\ &= -\frac{(bd-ae)^2}{4b^3(a+bx)^4}-\frac{2e(bd-ae)}{3b^3(a+bx)^3}-\frac{e^2}{2b^3(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.86

$$-\frac{a^2e^2+2abe(d+2ex)+b^2\left(3d^2+8dex+6e^2x^2\right)}{12b^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/12*(a^2*e^2 + 2*a*b*e*(d + 2*e*x) + b^2*(3*d^2 + 8*d*e*x + 6*e^2*x^2))/(
b^3*(a + b*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.40, size = 98, normalized size = 1.51

$$-\frac{6\,b^2e^2x^2+3\,b^2d^2+2\,abde+a^2e^2+4\left(2\,b^2de+abe^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
[Out] -1/12*(6*b^2*e^2*x^2 + 3*b^2*d^2 + 2*a*b*d*e + a^2*e^2 + 4*(2*b^2*d*e + a*b
*e^2)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3)
```

giac [A] time = 0.15, size = 60, normalized size = 0.92

$$-\frac{6\,b^2x^2e^2+8\,b^2dxe+3\,b^2d^2+4\,abxe^2+2\,abde+a^2e^2}{12\,(bx+a)^4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
[Out] -1/12*(6*b^2*x^2*e^2 + 8*b^2*d*x*e + 3*b^2*d^2 + 4*a*b*x*e^2 + 2*a*b*d*e +
a^2*e^2)/((b*x + a)^4*b^3)
```

maple [A] time = 0.06, size = 71, normalized size = 1.09

$$-\frac{e^2}{2\,(bx+a)^2\,b^3}+\frac{2\,(ae-bd)\,e}{3\,(bx+a)^3\,b^3}-\frac{a^2e^2-2abde+b^2d^2}{4\,(bx+a)^4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x)
[Out] 2/3*e*(a*e-b*d)/b^3/(b*x+a)^3-1/2*e^2/b^3/(b*x+a)^2-1/4*(a^2*e^2-2*a*b*d*e+
b^2*d^2)/b^3/(b*x+a)^4
```

maxima [A] time = 0.67, size = 98, normalized size = 1.51

$$-\frac{6\,b^2e^2x^2+3\,b^2d^2+2\,abde+a^2e^2+4\left(2\,b^2de+abe^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
[Out] -1/12*(6*b^2*e^2*x^2 + 3*b^2*d^2 + 2*a*b*d*e + a^2*e^2 + 4*(2*b^2*d*e + a*b
*e^2)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3)
```

mupad [B] time = 0.04, size = 96, normalized size = 1.48

$$-\frac{\frac{a^2\,e^2+2\,a\,b\,d\,e+3\,b^2\,d^2}{12\,b^3}+\frac{e^2\,x^2}{2\,b}+\frac{e\,x\,\left(a\,e+2\,b\,d\right)}{3\,b^2}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a^2*e^2 + 3*b^2*d^2 + 2*a*b*d*e)/(12*b^3) + (e^2*x^2)/(2*b) + (e*x*(a*e
+ 2*b*d))/(3*b^2))/(a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x
)
```

sympy [A] time = 0.80, size = 104, normalized size = 1.60

$$\frac{-a^2e^2 - 2abde - 3b^2d^2 - 6b^2e^2x^2 + x\left(-4abe^2 - 8b^2de\right)}{12a^4b^3 + 48a^3b^4x + 72a^2b^5x^2 + 48ab^6x^3 + 12b^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-a**2*e**2 - 2*a*b*d*e - 3*b**2*d**2 - 6*b**2*e**2*x**2 + x*(-4*a*b*e**2 -
 8*b**2*d*e))/(12*a**4*b**3 + 48*a**3*b**4*x + 72*a**2*b**5*x**2 + 48*a*b**
6*x**3 + 12*b**7*x**4)
```

3.1723 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=38

$$-\frac{bd-ae}{4b^2(a+bx)^4}-\frac{e}{3b^2(a+bx)^3}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$-\frac{bd-ae}{4b^2(a+bx)^4}-\frac{e}{3b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(b*d - a*e)/(4*b^2*(a + b*x)^4) - e/(3*b^2*(a + b*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^3} dx &= \int \frac{d+ex}{(a+bx)^5} dx\\ &= \int \left(\frac{bd-ae}{b(a+bx)^5}+\frac{e}{b(a+bx)^4}\right) dx\\ &= -\frac{bd-ae}{4b^2(a+bx)^4}-\frac{e}{3b^2(a+bx)^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{ae+3bd+4bex}{12b^2(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/12*(3*b*d + a*e + 4*b*e*x)/(b^2*(a + b*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [A] time = 0.39, size = 61, normalized size = 1.61

$$-\frac{4\,bex + 3\,bd + ae}{12\,\left(b^{6}x^{4} + 4\,ab^{5}x^{3} + 6\,a^{2}b^{4}x^{2} + 4\,a^{3}b^{3}x + a^{4}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(4*b*e*x + 3*b*d + a*e)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

giac [A] time = 0.16, size = 27, normalized size = 0.71

$$-\frac{4\,bxe + 3\,bd + ae}{12\,(bx + a)^{4}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/12*(4*b*x*e + 3*b*d + a*e)/((b*x + a)^4*b^2)
```

maple [A] time = 0.09, size = 35, normalized size = 0.92

$$-\frac{e}{3\,(bx + a)^{3}\,b^{2}} - \frac{-ae + bd}{4\,(bx + a)^{4}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/3*e/b^2/(b*x+a)^3-1/4*(-a*e+b*d)/b^2/(b*x+a)^4
```

maxima [A] time = 0.53, size = 61, normalized size = 1.61

$$-\frac{4\,bex + 3\,bd + ae}{12\,\left(b^{6}x^{4} + 4\,ab^{5}x^{3} + 6\,a^{2}b^{4}x^{2} + 4\,a^{3}b^{3}x + a^{4}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(4*b*e*x + 3*b*d + a*e)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

mupad [B] time = 2.01, size = 63, normalized size = 1.66

$$-\frac{\frac{a\,e+3\,b\,d}{12\,b^2}+\frac{e\,x}{3\,b}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a*e + 3*b*d)/(12*b^2) + (e*x)/(3*b))/(a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^
2*b^2*x^2 + 4*a^3*b*x)
```

sympy [B] time = 0.46, size = 65, normalized size = 1.71

$$\frac{-ae - 3bd - 4bex}{12a^4b^2 + 48a^3b^3x + 72a^2b^4x^2 + 48ab^5x^3 + 12b^6x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-a*e - 3*b*d - 4*b*e*x)/(12*a**4*b**2 + 48*a**3*b**3*x + 72*a**2*b**4*x**2
 + 48*a*b**5*x**3 + 12*b**6*x**4)
```

3.1724 $\int \frac{a+bx}{(a^2+2abx+b^2x^2)^3}\,dx$

Optimal. Leaf size=14

$$-\frac{1}{4b(a+bx)^4}$$

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = $\{27, 32\}$

$$-\frac{1}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/(4*b*(a + b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(a^2+2abx+b^2x^2)^3}\,dx &= \int \frac{1}{(a+bx)^5}\,dx\\ &= -\frac{1}{4b(a+bx)^4}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$-\frac{1}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/4*1/(b*(a + b*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(a^2+2abx+b^2x^2)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^3, x]
```

fricas [B] time = 0.38, size = 46, normalized size = 3.29

$$-\frac{1}{4\left(b^5x^4 + 4\,ab^4x^3 + 6\,a^2b^3x^2 + 4\,a^3b^2x + a^4b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
[Out] -1/4/(b^5*x^4 + 4*a*b^4*x^3 + 6*a^2*b^3*x^2 + 4*a^3*b^2*x + a^4*b)
```

giac [A] time = 0.15, size = 23, normalized size = 1.64

$$-\frac{1}{4\left(a^2 + \left(bx^2 + 2\,ax\right)b\right)^2 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
[Out] -1/4/((a^2 + (b*x^2 + 2*a*x)*b)^2*b)
```

maple [A] time = 0.06, size = 13, normalized size = 0.93

$$-\frac{1}{4\,(bx + a)^4\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x)
[Out] -1/4/b/(b*x+a)^4
```

maxima [A] time = 0.56, size = 23, normalized size = 1.64

$$-\frac{1}{4\left(b^2x^2 + 2\,abx + a^2\right)^2 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
[Out] -1/4/((b^2*x^2 + 2*a*b*x + a^2)^2*b)
```

mupad [B] time = 1.99, size = 48, normalized size = 3.43

$$-\frac{1}{4\,a^4\,b + 16\,a^3\,b^2\,x + 24\,a^2\,b^3\,x^2 + 16\,a\,b^4\,x^3 + 4\,b^5\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
[Out] -1/(4*a^4*b + 4*b^5*x^4 + 16*a^3*b^2*x + 16*a*b^4*x^3 + 24*a^2*b^3*x^2)
```

sympy [B] time = 0.32, size = 49, normalized size = 3.50

$$-\frac{1}{4a^4b + 16a^3b^2x + 24a^2b^3x^2 + 16ab^4x^3 + 4b^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**3,x)
[Out] -1/(4*a**4*b + 16*a**3*b**2*x + 24*a**2*b**3*x**2 + 16*a*b**4*x**3 + 4*b**5
*x**4)
```

3.1725 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^3} \, dx$

Optimal. Leaf size=130

$$\frac{e^4 \log(a+bx)}{(bd-ae)^5}-\frac{e^4 \log(d+ex)}{(bd-ae)^5}+\frac{e^3}{(a+bx)(bd-ae)^4}-\frac{e^2}{2(a+bx)^2(bd-ae)^3}+\frac{e}{3(a+bx)^3(bd-ae)^2}-\frac{1}{4(a+bx)^4(bd-}$$

Rubi [A] time = 0.09, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 44}

$$\frac{e^3}{(a+bx)(bd-ae)^4}-\frac{e^2}{2(a+bx)^2(bd-ae)^3}+\frac{e^4 \log(a+bx)}{(bd-ae)^5}-\frac{e^4 \log(d+ex)}{(bd-ae)^5}+\frac{e}{3(a+bx)^3(bd-ae)^2}-\frac{1}{4(a+bx)^4(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -1/(4*(b*d - a*e)*(a + b*x)^4) + e/(3*(b*d - a*e)^2*(a + b*x)^3) - e^2/(2*(
b*d - a*e)^3*(a + b*x)^2) + e^3/((b*d - a*e)^4*(a + b*x)) + (e^4*Log[a + b*
x])/(b*d - a*e)^5 - (e^4*Log[d + e*x])/(b*d - a*e)^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^3} \, dx &= \int \frac{1}{(a+bx)^5(d+ex)} \, dx\\
&= \int \left(\frac{b}{(bd-ae)(a+bx)^5}-\frac{be}{(bd-ae)^2(a+bx)^4}+\frac{be^2}{(bd-ae)^3(a+bx)^3}-\frac{}{(bd-}\right.\\
&= -\frac{1}{4(bd-ae)(a+bx)^4}+\frac{e}{3(bd-ae)^2(a+bx)^3}-\frac{e^2}{2(bd-ae)^3(a+bx)^2}+\frac{}{(bd-}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 130, normalized size = 1.00

$$\frac{e^4 \log(a+bx)}{(bd-ae)^5}-\frac{e^4 \log(d+ex)}{(bd-ae)^5}+\frac{e^3}{(a+bx)(bd-ae)^4}-\frac{e^2}{2(a+bx)^2(bd-ae)^3}+\frac{e}{3(a+bx)^3(bd-ae)^2}+\frac{1}{4(a+bx)^4(ae-bd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] 1/(4*(-(b*d) + a*e)*(a + b*x)^4) + e/(3*(b*d - a*e)^2*(a + b*x)^3) - e^2/(2
*(b*d - a*e)^3*(a + b*x)^2) + e^3/((b*d - a*e)^4*(a + b*x)) + (e^4*Log[a +
b*x])/(b*d - a*e)^5 - (e^4*Log[d + e*x])/(b*d - a*e)^5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.41, size = 657, normalized size = 5.05

$$-\frac{3\,b^4d^4-16\,ab^3d^3e+36\,a^2b^2d^2e^2-48\,a^3bde^3+25\,a^4e^4-12\left(b^4de^3-ab^3e^4\right)x^3+6\left(b^4d^2e^2-8\,ab^3de^3+7\,a^2b^2e^4\right)x^2-4\left(b^4d^3e-6\,ab^3d^2e^2+18\,a^2b^2de^3-13\,a^3be^4\right)x-12\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\log\left(bx+a\right)+12\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\log\left(ex+d\right)}{12\left(a^4b^5d^5-5\,a^5b^4d^4e+10\,a^6b^3d^3e^2-10\,a^7b^2d^2e^3+5\,a^8bde^4-a^9e^5+\left(b^9d^5-5\,ab^8d^4e+10\,a^2b^7d^3e^2-10\,a^3b^6d^2e^3+5\,a^4b^5de^4-a^5b^4e^5\right)x^4+4\left(ab^8d^5-5\,a^2b^7d^4e+10\,a^3b^6d^3e^2-10\,a^4b^5d^2e^3+5\,a^5b^4de^4-a^6b^3e^5\right)x^3+6\left(a^2b^7d^5-5\,a^3b^6d^4e+10\,a^4b^5d^3e^2-10\,a^5b^4d^2e^3+5\,a^6b^3de^4-a^7b^2e^5\right)x^2+4\left(a^3b^6d^5-5\,a^4b^5d^4e+10\,a^5b^4d^3e^2-10\,a^6b^3d^2e^3+5\,a^7b^2de^4-a^8be^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^4*d^4 - 16*a*b^3*d^3*e + 36*a^2*b^2*d^2*e^2 - 48*a^3*b*d*e^3 + 2
5*a^4*e^4 - 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 - 8*a*b^3*d*e^3
 + 7*a^2*b^2*e^4)*x^2 - 4*(b^4*d^3*e - 6*a*b^3*d^2*e^2 + 18*a^2*b^2*d*e^3 -
 13*a^3*b*e^4)*x - 12*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 +
4*a^3*b*e^4*x + a^4*e^4)*log(b*x + a) + 12*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 +
 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*log(e*x + d))/(a^4*b^5*d^5 -
5*a^5*b^4*d^4*e + 10*a^6*b^3*d^3*e^2 - 10*a^7*b^2*d^2*e^3 + 5*a^8*b*d*e^4 -
 a^9*e^5 + (b^9*d^5 - 5*a*b^8*d^4*e + 10*a^2*b^7*d^3*e^2 - 10*a^3*b^6*d^2*e
^3 + 5*a^4*b^5*d*e^4 - a^5*b^4*e^5)*x^4 + 4*(a*b^8*d^5 - 5*a^2*b^7*d^4*e +
10*a^3*b^6*d^3*e^2 - 10*a^4*b^5*d^2*e^3 + 5*a^5*b^4*d*e^4 - a^6*b^3*e^5)*x^
3 + 6*(a^2*b^7*d^5 - 5*a^3*b^6*d^4*e + 10*a^4*b^5*d^3*e^2 - 10*a^5*b^4*d^2*
e^3 + 5*a^6*b^3*d*e^4 - a^7*b^2*e^5)*x^2 + 4*(a^3*b^6*d^5 - 5*a^4*b^5*d^4*e
 + 10*a^5*b^4*d^3*e^2 - 10*a^6*b^3*d^2*e^3 + 5*a^7*b^2*d*e^4 - a^8*b*e^5)*x
)
```

giac [B] time = 0.18, size = 322, normalized size = 2.48

$$\frac{be^4\log\left(|bx+a|\right)}{b^6d^5-5\,ab^5d^4e+10\,a^2b^4d^3e^2-10\,a^3b^3d^2e^3+5\,a^4b^2de^4-a^5be^5}-\frac{e^5\log\left(|xe+d|\right)}{b^5d^5e-5\,ab^4d^4e^2+10\,a^2b^3d^3e^3-10\,a^3b^2d^2e^4+5\,a^4bde^5-a^5e^6}-\frac{3\,b^4d^4-16\,ab^3d^3e+36\,a^2b^2d^2e^2-48\,a^3bde^3+25\,a^4e^4-12\left(b^4de^3-ab^3e^4\right)x^3+6\left(b^4d^2e^2-8\,ab^3de^3+7\,a^2b^2e^4\right)x^2-4\left(b^4d^3e-6\,ab^3d^2e^2+18\,a^2b^2de^3-13\,a^3be^4\right)x}{12\,(bd-ae)^5(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] b*e^4*log(abs(b*x + a))/(b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*
a^3*b^3*d^2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5) - e^5*log(abs(x*e + d))/(b^5
*d^5*e - 5*a*b^4*d^4*e^2 + 10*a^2*b^3*d^3*e^3 - 10*a^3*b^2*d^2*e^4 + 5*a^4*
b*d*e^5 - a^5*e^6) - 1/12*(3*b^4*d^4 - 16*a*b^3*d^3*e + 36*a^2*b^2*d^2*e^2
- 48*a^3*b*d*e^3 + 25*a^4*e^4 - 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(b^4*d^2
*e^2 - 8*a*b^3*d*e^3 + 7*a^2*b^2*e^4)*x^2 - 4*(b^4*d^3*e - 6*a*b^3*d^2*e^2
+ 18*a^2*b^2*d*e^3 - 13*a^3*b*e^4)*x)/((b*d - a*e)^5*(b*x + a)^4)
```

maple [A] time = 0.06, size = 125, normalized size = 0.96

$$-\frac{e^4\ln\left(bx+a\right)}{\left(ae-bd\right)^5}+\frac{e^4\ln\left(ex+d\right)}{\left(ae-bd\right)^5}+\frac{e^3}{\left(ae-bd\right)^4\left(bx+a\right)}+\frac{e^2}{2\left(ae-bd\right)^3\left(bx+a\right)^2}+\frac{e}{3\left(ae-bd\right)^2\left(bx+a\right)^3}+\frac{1}{4\left(ae-bd\right)\left(bx+a\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/4/(a*e-b*d)/(b*x+a)^4+1/2*e^2/(a*e-b*d)^3/(b*x+a)^2+e^3/(a*e-b*d)^4/(b*x+
a)-e^4/(a*e-b*d)^5*ln(b*x+a)+1/3*e/(a*e-b*d)^2/(b*x+a)^3+e^4/(a*e-b*d)^5*ln
(e*x+d)
```

maxima [**B**] time = 0.78, size = 558, normalized size = 4.29

$$\frac{e^4\log\left(bx+a\right)}{b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5}-\frac{e^4\log\left(ex+d\right)}{b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5}+\frac{12\,b^3e^3x^3-3\,b^3d^3+13\,ab^2d^2e-23\,a^2bde^2+25\,a^3e^3-6\left(b^3de^2-7\,ab^2e^3\right)x^2+4\left(b^3d^2e-5\,ab^2de^2+13\,a^2be^3\right)x}{12\left(a^4b^4d^4-4\,a^5b^3d^3e+6\,a^6b^2d^2e^2-4\,a^7bde^3+a^8e^4+\left(b^8d^4-4\,ab^7d^3e+6\,a^2b^6d^2e^2-4\,a^3b^5de^3+a^4b^4e^4\right)x^4+4\left(ab^7d^4-4\,a^2b^6d^3e+6\,a^3b^5d^2e^2-4\,a^4b^4de^3+a^5b^3e^4\right)x^3+6\left(a^2b^6d^4-4\,a^3b^5d^3e+6\,a^4b^4d^2e^2-4\,a^5b^3de^3+a^6b^2e^4\right)x^2+4\left(a^3b^5d^4-4\,a^4b^4d^3e+6\,a^5b^3d^2e^2-4\,a^6b^2de^3+a^7be^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] e^4*log(b*x + a)/(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2
*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - e^4*log(e*x + d)/(b^5*d^5 - 5*a*b^4*d
^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) +
 1/12*(12*b^3*e^3*x^3 - 3*b^3*d^3 + 13*a*b^2*d^2*e - 23*a^2*b*d*e^2 + 25*a^
3*e^3 - 6*(b^3*d*e^2 - 7*a*b^2*e^3)*x^2 + 4*(b^3*d^2*e - 5*a*b^2*d*e^2 + 13
*a^2*b*e^3)*x)/(a^4*b^4*d^4 - 4*a^5*b^3*d^3*e + 6*a^6*b^2*d^2*e^2 - 4*a^7*b
*d*e^3 + a^8*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*d^2*e^2 - 4*a^3*b^5
*d*e^3 + a^4*b^4*e^4)*x^4 + 4*(a*b^7*d^4 - 4*a^2*b^6*d^3*e + 6*a^3*b^5*d^2*
e^2 - 4*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^3 + 6*(a^2*b^6*d^4 - 4*a^3*b^5*d^3*e
 + 6*a^4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x^2 + 4*(a^3*b^5*d^4
- 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^2*e^2 - 4*a^6*b^2*d*e^3 + a^7*b*e^4)*x)
```

mupad [**B**] time = 2.27, size = 505, normalized size = 3.88

$$\frac{\frac{25\,a^3\,e^3-23\,a^2\,b\,d\,e^2+13\,a\,b^2\,d^2\,e-3\,b^3\,d^3}{12\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}+\frac{b^3\,e^3\,x^3}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}-\frac{e^2\,x^2\left(b^3\,d-7\,a\,b^2\,e\right)}{2\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}+\frac{e\,x\left(13\,a^2\,b\,e^2-5\,a\,b^2\,d\,e+b^3\,d^2\right)}{3\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}-\frac{2\,e^4\,\mathrm{atanh}\left(\frac{a^5\,e^5-3\,a^4\,b\,d\,e^4+2\,a^3\,b^2\,d^2\,e^3+2\,a^2\,b^3\,d^3\,e^2-3\,a\,b^4\,d^4\,e+b^5\,d^5}{{\left(a\,e-b\,d\right)}^5}+\frac{2\,b\,e\,x\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}{{\left(a\,e-b\,d\right)}^5}\right)}{{\left(a\,e-b\,d\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((25*a^3*e^3 - 3*b^3*d^3 + 13*a*b^2*d^2*e - 23*a^2*b*d*e^2)/(12*(a^4*e^4 +
b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (b^3*e^3*x^
3)/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)
- (e^2*x^2*(b^3*d - 7*a*b^2*e))/(2*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 -
 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (e*x*(b^3*d^2 + 13*a^2*b*e^2 - 5*a*b^2*d
*e))/(3*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*
e^3)))/(a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x) - (2*e^4*a
tanh((a^5*e^5 + b^5*d^5 + 2*a^2*b^3*d^3*e^2 + 2*a^3*b^2*d^2*e^3 - 3*a*b^4*d
^4*e - 3*a^4*b*d*e^4)/(a*e - b*d)^5 + (2*b*e*x*(a^4*e^4 + b^4*d^4 + 6*a^2*b
^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/(a*e - b*d)^5))/(a*e - b*d)^5
```

sympy [**B**] time = 2.14, size = 802, normalized size = 6.17

$$\frac{e^4\log\left(x+\frac{-\frac{a^6e^{10}}{(ae-bd)^5}+\frac{6a^5bde^9}{(ae-bd)^5}-\frac{15a^4b^2d^2e^8}{(ae-bd)^5}+\frac{20a^3b^3d^3e^7}{(ae-bd)^5}-\frac{15a^2b^4d^4e^6}{(ae-bd)^5}+\frac{6ab^5d^5e^5}{(ae-bd)^5}+ae^5-\frac{b^6d^6e^4}{(ae-bd)^5}+bde^4}{2be^5}\right)}{(ae-bd)^5}-\frac{e^4\log\left(x+\frac{\frac{a^6e^{10}}{(ae-bd)^5}-\frac{6a^5bde^9}{(ae-bd)^5}+\frac{15a^4b^2d^2e^8}{(ae-bd)^5}-\frac{20a^3b^3d^3e^7}{(ae-bd)^5}+\frac{15a^2b^4d^4e^6}{(ae-bd)^5}-\frac{6ab^5d^5e^5}{(ae-bd)^5}+ae^5+\frac{b^6d^6e^4}{(ae-bd)^5}+bde^4}{2be^5}\right)}{(ae-bd)^5}+\frac{25a^3e^3-23a^2bde^2+13ab^2d^2e-3b^3d^3+12b^3e^3x^3+x^2\left(42ab^2e^3-6b^3de^2\right)+x\left(52a^2be^3-20ab^2de^2+4b^3d^2e\right)}{12a^8e^4-48a^7bde^3+72a^6b^2d^2e^2-48a^5b^3d^3e+12a^4b^4d^4+x^4\left(12a^4b^4e^4-48a^3b^5de^3+72a^2b^6d^2e^2-48ab^7d^3e+12b^8d^4\right)+x^3\left(48a^5b^3e^4-192a^4b^4de^3+288a^3b^5d^2e^2-192a^2b^6d^3e+48ab^7d^4\right)+x^2\left(72a^6b^2e^4-288a^5b^3de^3+432a^4b^4d^2e^2-288a^3b^5d^3e+72a^2b^6d^4\right)+x\left(48a^7be^4-192a^6b^2de^3+288a^5b^3d^2e^2-192a^4b^4d^3e+48a^3b^5d^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] e**4*log(x + (-a**6*e**10/(a*e - b*d)**5 + 6*a**5*b*d*e**9/(a*e - b*d)**5 -
 15*a**4*b**2*d**2*e**8/(a*e - b*d)**5 + 20*a**3*b**3*d**3*e**7/(a*e - b*d)
**5 - 15*a**2*b**4*d**4*e**6/(a*e - b*d)**5 + 6*a*b**5*d**5*e**5/(a*e - b*d
)**5 + a*e**5 - b**6*d**6*e**4/(a*e - b*d)**5 + b*d*e**4)/(2*b*e**5))/(a*e
- b*d)**5 - e**4*log(x + (a**6*e**10/(a*e - b*d)**5 - 6*a**5*b*d*e**9/(a*e
- b*d)**5 + 15*a**4*b**2*d**2*e**8/(a*e - b*d)**5 - 20*a**3*b**3*d**3*e**7/
(a*e - b*d)**5 + 15*a**2*b**4*d**4*e**6/(a*e - b*d)**5 - 6*a*b**5*d**5*e**5
/(a*e - b*d)**5 + a*e**5 + b**6*d**6*e**4/(a*e - b*d)**5 + b*d*e**4)/(2*b*e
**5))/(a*e - b*d)**5 + (25*a**3*e**3 - 23*a**2*b*d*e**2 + 13*a*b**2*d**2*e
- 3*b**3*d**3 + 12*b**3*e**3*x**3 + x**2*(42*a*b**2*e**3 - 6*b**3*d*e**2) +
 x*(52*a**2*b*e**3 - 20*a*b**2*d*e**2 + 4*b**3*d**2*e))/(12*a**8*e**4 - 48*
a**7*b*d*e**3 + 72*a**6*b**2*d**2*e**2 - 48*a**5*b**3*d**3*e + 12*a**4*b**4
*d**4 + x**4*(12*a**4*b**4*e**4 - 48*a**3*b**5*d*e**3 + 72*a**2*b**6*d**2*e
**2 - 48*a*b**7*d**3*e + 12*b**8*d**4) + x**3*(48*a**5*b**3*e**4 - 192*a**4
```

```
*b**4*d*e**3 + 288*a**3*b**5*d**2*e**2 - 192*a**2*b**6*d**3*e + 48*a*b**7*d
**4) + x**2*(72*a**6*b**2*e**4 - 288*a**5*b**3*d*e**3 + 432*a**4*b**4*d**2*
e**2 - 288*a**3*b**5*d**3*e + 72*a**2*b**6*d**4) + x*(48*a**7*b*e**4 - 192*
a**6*b**2*d*e**3 + 288*a**5*b**3*d**2*e**2 - 192*a**4*b**4*d**3*e + 48*a**3
*b**5*d**4))
```

3.1726 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=159

$$\frac{e^4}{(d+ex)(bd-ae)^5}+\frac{5be^4\log(a+bx)}{(bd-ae)^6}-\frac{5be^4\log(d+ex)}{(bd-ae)^6}+\frac{4be^3}{(a+bx)(bd-ae)^5}-\frac{3be^2}{2(a+bx)^2(bd-ae)^4}+\frac{2be}{3(a+bx)^3(bd$$

Rubi [A] time = 0.14, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{e^4}{(d+ex)(bd-ae)^5}+\frac{4be^3}{(a+bx)(bd-ae)^5}-\frac{3be^2}{2(a+bx)^2(bd-ae)^4}+\frac{5be^4\log(a+bx)}{(bd-ae)^6}-\frac{5be^4\log(d+ex)}{(bd-ae)^6}+\frac{2be}{3(a+bx)^3(bd-ae)^3}-\frac{b}{4(a+bx)^4(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -b/(4*(b*d - a*e)^2*(a + b*x)^4) + (2*b*e)/(3*(b*d - a*e)^3*(a + b*x)^3) -
(3*b*e^2)/(2*(b*d - a*e)^4*(a + b*x)^2) + (4*b*e^3)/((b*d - a*e)^5*(a + b*x
)) + e^4/((b*d - a*e)^5*(d + e*x)) + (5*b*e^4*Log[a + b*x])/(b*d - a*e)^6 -
 (5*b*e^4*Log[d + e*x])/(b*d - a*e)^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)^2}\,dx\\ &= \int \left(\frac{b^2}{(bd-ae)^2(a+bx)^5}-\frac{2b^2e}{(bd-ae)^3(a+bx)^4}+\frac{3b^2e^2}{(bd-ae)^4(a+bx)^3}-\frac{}{(bd}\right.\\ &= -\frac{b}{4(bd-ae)^2(a+bx)^4}+\frac{2be}{3(bd-ae)^3(a+bx)^3}-\frac{3be^2}{2(bd-ae)^4(a+bx)^2}+\frac{}{(b}\end{aligned}$$

Mathematica [A] time = 0.07, size = 144, normalized size = 0.91

$$\frac{\frac{12e^4(bd-ae)}{d+ex}+\frac{48be^3(bd-ae)}{a+bx}-\frac{18be^2(bd-ae)^2}{(a+bx)^2}+\frac{8be(bd-ae)^3}{(a+bx)^3}-\frac{3b(bd-ae)^4}{(a+bx)^4}+60be^4\log(a+bx)-60be^4\log(d+ex)}{12(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-3*b*(b*d - a*e)^4)/(a + b*x)^4 + (8*b*e*(b*d - a*e)^3)/(a + b*x)^3 - (18
*b*e^2*(b*d - a*e)^2)/(a + b*x)^2 + (48*b*e^3*(b*d - a*e))/(a + b*x) + (12*
```

```
e^4*(b*d - a*e))/(d + e*x) + 60*b*e^4*Log[a + b*x] - 60*b*e^4*Log[d + e*x])
/(12*(b*d - a*e)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.43, size = 1083, normalized size = 6.81

$$-\frac{3\,b^5d^5 - 20\,ab^4d^4e + 60\,a^2b^3d^3e^2 - 120\,a^3b^2d^2e^3 + 65\,a^4bde^4 + 12\,a^5e^5 - 60\left(b^5de^4 - ab^4e^5\right)x^4 - 30\left(b^5d^2e^3 + 6\,ab^4de^4 - 7\,a^2b^3e^5\right)x^3 + 10\left(b^5d^3e^2 - 12\,ab^4d^2e^3 - 15\,a^2b^3de^4 + 26\,a^3b^2e^5\right)x^2 - 5\left(b^5d^4e - 8\,ab^4d^3e^2 + 36\,a^2b^3d^2e^3 - 4\,a^3b^2de^4 - 25\,a^4be^5\right)x - 60\left(b^5e^5x^5 + a^4bde^4 + \left(b^5de^4 + 4\,ab^4e^5\right)x^4 + 2\left(2\,ab^4de^4 + 3\,a^2b^3e^5\right)x^3 + 2\left(3\,a^2b^3de^4 + 2\,a^3b^2e^5\right)x^2 + \left(4\,a^3b^2de^4 + a^4be^5\right)x\right)\log\left(bx+a\right) + 60\left(b^5e^5x^5 + a^4bde^4 + \left(b^5de^4 + 4\,ab^4e^5\right)x^4 + 2\left(2\,ab^4de^4 + 3\,a^2b^3e^5\right)x^3 + 2\left(3\,a^2b^3de^4 + 2\,a^3b^2e^5\right)x^2 + \left(4\,a^3b^2de^4 + a^4be^5\right)x\right)\log\left(ex+d\right)}{12\left(a^4b^6d^7 - 6\,a^5b^5d^6e + 15\,a^6b^4d^5e^2 - 20\,a^7b^3d^4e^3 + 15\,a^8b^2d^3e^4 - 6\,a^9bd^2e^5 + a^{10}de^6 + \left(b^{10}d^6e - 6\,ab^9d^5e^2 + 15\,a^2b^8d^4e^3 - 20\,a^3b^7d^3e^4 + 15\,a^4b^6d^2e^5 - 6\,a^5b^5de^6 + a^6b^4e^7\right)x^5 + \left(b^{10}d^7 - 2\,ab^9d^6e - 9\,a^2b^8d^5e^2 + 40\,a^3b^7d^4e^3 - 65\,a^4b^6d^3e^4 + 54\,a^5b^5d^2e^5 - 23\,a^6b^4de^6 + 4\,a^7b^3e^7\right)x^4 + 2\left(2\,ab^9d^7 - 9\,a^2b^8d^6e + 12\,a^3b^7d^5e^2 + 5\,a^4b^6d^4e^3 - 30\,a^5b^5d^3e^4 + 33\,a^6b^4d^2e^5 - 16\,a^7b^3de^6 + 3\,a^8b^2e^7\right)x^3 + 2\left(3\,a^2b^8d^7 - 16\,a^3b^7d^6e + 33\,a^4b^6d^5e^2 - 30\,a^5b^5d^4e^3 + 5\,a^6b^4d^3e^4 + 12\,a^7b^3d^2e^5 - 9\,a^8b^2de^6 + 2\,a^9be^7\right)x^2 + \left(4\,a^3b^7d^7 - 23\,a^4b^6d^6e + 54\,a^5b^5d^5e^2 - 65\,a^6b^4d^4e^3 + 40\,a^7b^3d^3e^4 - 9\,a^8b^2d^2e^5 - 2\,a^9bde^6 + a^{10}e^7\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^5*d^5 - 20*a*b^4*d^4*e + 60*a^2*b^3*d^3*e^2 - 120*a^3*b^2*d^2*e^
3 + 65*a^4*b*d*e^4 + 12*a^5*e^5 - 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 - 30*(b^5*
d^2*e^3 + 6*a*b^4*d*e^4 - 7*a^2*b^3*e^5)*x^3 + 10*(b^5*d^3*e^2 - 12*a*b^4*d
^2*e^3 - 15*a^2*b^3*d*e^4 + 26*a^3*b^2*e^5)*x^2 - 5*(b^5*d^4*e - 8*a*b^4*d^
3*e^2 + 36*a^2*b^3*d^2*e^3 - 4*a^3*b^2*d*e^4 - 25*a^4*b*e^5)*x - 60*(b^5*e^
5*x^5 + a^4*b*d*e^4 + (b^5*d*e^4 + 4*a*b^4*e^5)*x^4 + 2*(2*a*b^4*d*e^4 + 3*
a^2*b^3*e^5)*x^3 + 2*(3*a^2*b^3*d*e^4 + 2*a^3*b^2*e^5)*x^2 + (4*a^3*b^2*d*e
^4 + a^4*b*e^5)*x)*log(b*x + a) + 60*(b^5*e^5*x^5 + a^4*b*d*e^4 + (b^5*d*e^
4 + 4*a*b^4*e^5)*x^4 + 2*(2*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + 2*(3*a^2*b^3
*d*e^4 + 2*a^3*b^2*e^5)*x^2 + (4*a^3*b^2*d*e^4 + a^4*b*e^5)*x)*log(e*x + d)
)/(a^4*b^6*d^7 - 6*a^5*b^5*d^6*e + 15*a^6*b^4*d^5*e^2 - 20*a^7*b^3*d^4*e^3
+ 15*a^8*b^2*d^3*e^4 - 6*a^9*b*d^2*e^5 + a^10*d*e^6 + (b^10*d^6*e - 6*a*b^9
*d^5*e^2 + 15*a^2*b^8*d^4*e^3 - 20*a^3*b^7*d^3*e^4 + 15*a^4*b^6*d^2*e^5 - 6
*a^5*b^5*d*e^6 + a^6*b^4*e^7)*x^5 + (b^10*d^7 - 2*a*b^9*d^6*e - 9*a^2*b^8*d
^5*e^2 + 40*a^3*b^7*d^4*e^3 - 65*a^4*b^6*d^3*e^4 + 54*a^5*b^5*d^2*e^5 - 23*
a^6*b^4*d*e^6 + 4*a^7*b^3*e^7)*x^4 + 2*(2*a*b^9*d^7 - 9*a^2*b^8*d^6*e + 12*
a^3*b^7*d^5*e^2 + 5*a^4*b^6*d^4*e^3 - 30*a^5*b^5*d^3*e^4 + 33*a^6*b^4*d^2*e
^5 - 16*a^7*b^3*d*e^6 + 3*a^8*b^2*e^7)*x^3 + 2*(3*a^2*b^8*d^7 - 16*a^3*b^7*
d^6*e + 33*a^4*b^6*d^5*e^2 - 30*a^5*b^5*d^4*e^3 + 5*a^6*b^4*d^3*e^4 + 12*a^
7*b^3*d^2*e^5 - 9*a^8*b^2*d*e^6 + 2*a^9*b*e^7)*x^2 + (4*a^3*b^7*d^7 - 23*a^
4*b^6*d^6*e + 54*a^5*b^5*d^5*e^2 - 65*a^6*b^4*d^4*e^3 + 40*a^7*b^3*d^3*e^4
- 9*a^8*b^2*d^2*e^5 - 2*a^9*b*d*e^6 + a^10*e^7)*x)
```

giac [B] time = 0.21, size = 358, normalized size = 2.25

$$\frac{5\,be^5\log\left(\left|b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right|\right)}{b^6d^6e - 6\,ab^5d^5e^2 + 15\,a^2b^4d^4e^3 - 20\,a^3b^3d^3e^4 + 15\,a^4b^2d^2e^5 - 6\,a^5bde^6 + a^6e^7} + \frac{e^9}{\left(b^5d^5e^5 - 5\,ab^4d^4e^6 + 10\,a^2b^3d^3e^7 - 10\,a^3b^2d^2e^8 + 5\,a^4bde^9 - a^5e^{10}\right)(xe+d)} + \frac{77\,b^5e^4 - \frac{260\left(b^5de^5 - ab^4e^6\right)e^{(-1)}}{xe+d} + \frac{300\left(b^5d^2e^6 - 2\,ab^4de^7 + a^2b^3e^8\right)e^{(-2)}}{(xe+d)^2} - \frac{120\left(b^5d^3e^7 - 3\,ab^4d^2e^8 + 3\,a^2b^3de^9 - a^3b^2e^{10}\right)e^{(-3)}}{(xe+d)^3}}{12\,(bd-ae)^6\left(b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 5*b*e^5*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^6*d^6*e - 6*a*b^5*d^
5*e^2 + 15*a^2*b^4*d^4*e^3 - 20*a^3*b^3*d^3*e^4 + 15*a^4*b^2*d^2*e^5 - 6*a^
5*b*d*e^6 + a^6*e^7) + e^9/((b^5*d^5*e^5 - 5*a*b^4*d^4*e^6 + 10*a^2*b^3*d^3
*e^7 - 10*a^3*b^2*d^2*e^8 + 5*a^4*b*d*e^9 - a^5*e^10)*(x*e + d)) + 1/12*(77
*b^5*e^4 - 260*(b^5*d*e^5 - a*b^4*e^6)*e^(-1)/(x*e + d) + 300*(b^5*d^2*e^6
- 2*a*b^4*d*e^7 + a^2*b^3*e^8)*e^(-2)/(x*e + d)^2 - 120*(b^5*d^3*e^7 - 3*a*
b^4*d^2*e^8 + 3*a^2*b^3*d*e^9 - a^3*b^2*e^10)*e^(-3)/(x*e + d)^3)/((b*d - a
*e)^6*(b - b*d/(x*e + d) + a*e/(x*e + d))^4)
```

maple [A] time = 0.06, size = 155, normalized size = 0.97

$$\frac{5b\,e^4\ln(bx+a)}{(ae-bd)^6} - \frac{5b\,e^4\ln(ex+d)}{(ae-bd)^6} - \frac{4b\,e^3}{(ae-bd)^5(bx+a)} - \frac{e^4}{(ae-bd)^5(ex+d)} - \frac{3b\,e^2}{2(ae-bd)^4(bx+a)^2} - \frac{2be}{3(ae-bd)^3(bx+a)^3} - \frac{b}{4(ae-bd)^2(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/4*b/(a*e-b*d)^2/(b*x+a)^4+5*b/(a*e-b*d)^6*e^4*ln(b*x+a)-4*b/(a*e-b*d)^5*
e^3/(b*x+a)-3/2*b/(a*e-b*d)^4*e^2/(b*x+a)^2-2/3*b/(a*e-b*d)^3*e/(b*x+a)^3-e
^4/(a*e-b*d)^5/(e*x+d)-5*b/(a*e-b*d)^6*e^4*ln(e*x+d)
```

maxima [B] time = 0.86, size = 858, normalized size = 5.40

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 5*b*e^4*log(b*x + a)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3
*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) - 5*b*e^4*log(
e*x + d)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3
 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) + 1/12*(60*b^4*e^4*x^4 - 3
*b^4*d^4 + 17*a*b^3*d^3*e - 43*a^2*b^2*d^2*e^2 + 77*a^3*b*d*e^3 + 12*a^4*e^
4 + 30*(b^4*d*e^3 + 7*a*b^3*e^4)*x^3 - 10*(b^4*d^2*e^2 - 11*a*b^3*d*e^3 - 2
6*a^2*b^2*e^4)*x^2 + 5*(b^4*d^3*e - 7*a*b^3*d^2*e^2 + 29*a^2*b^2*d*e^3 + 25
*a^3*b*e^4)*x)/(a^4*b^5*d^6 - 5*a^5*b^4*d^5*e + 10*a^6*b^3*d^4*e^2 - 10*a^7
*b^2*d^3*e^3 + 5*a^8*b*d^2*e^4 - a^9*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 +
 10*a^2*b^7*d^3*e^3 - 10*a^3*b^6*d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x
^5 + (b^9*d^6 - a*b^8*d^5*e - 10*a^2*b^7*d^4*e^2 + 30*a^3*b^6*d^3*e^3 - 35*
a^4*b^5*d^2*e^4 + 19*a^5*b^4*d*e^5 - 4*a^6*b^3*e^6)*x^4 + 2*(2*a*b^8*d^6 -
7*a^2*b^7*d^5*e + 5*a^3*b^6*d^4*e^2 + 10*a^4*b^5*d^3*e^3 - 20*a^5*b^4*d^2*e
^4 + 13*a^6*b^3*d*e^5 - 3*a^7*b^2*e^6)*x^3 + 2*(3*a^2*b^7*d^6 - 13*a^3*b^6*
d^5*e + 20*a^4*b^5*d^4*e^2 - 10*a^5*b^4*d^3*e^3 - 5*a^6*b^3*d^2*e^4 + 7*a^7
*b^2*d*e^5 - 2*a^8*b*e^6)*x^2 + (4*a^3*b^6*d^6 - 19*a^4*b^5*d^5*e + 35*a^5*
b^4*d^4*e^2 - 30*a^6*b^3*d^3*e^3 + 10*a^7*b^2*d^2*e^4 + a^8*b*d*e^5 - a^9*e
^6)*x)
```

mupad [B] time = 0.52, size = 763, normalized size = 4.80

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] (10*b*e^4*atanh((a^6*e^6 - b^6*d^6 - 5*a^2*b^4*d^4*e^2 + 5*a^4*b^2*d^2*e^4
+ 4*a*b^5*d^5*e - 4*a^5*b*d*e^5)/(a*e - b*d)^6 + (2*b*e*x*(a^5*e^5 - b^5*d^
5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4
))/(a*e - b*d)^6))/(a*e - b*d)^6 - ((12*a^4*e^4 - 3*b^4*d^4 - 43*a^2*b^2*d^
2*e^2 + 17*a*b^3*d^3*e + 77*a^3*b*d*e^3)/(12*(a^5*e^5 - b^5*d^5 - 10*a^2*b^
3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*e*x*(
b^4*d^3 + 25*a^3*b*e^3 + 29*a^2*b^2*d*e^2 - 7*a*b^3*d^2*e))/(12*(a^5*e^5 -
b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b
*d*e^4)) + (5*b^4*e^4*x^4)/(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3
*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (5*e^3*x^3*(b^4*d + 7*a*b^3
*e))/(2*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*
b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*e^2*x^2*(26*a^2*b^2*e^2 - b^4*d^2 + 11*a*b
^3*d*e))/(6*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 +
5*a*b^4*d^4*e - 5*a^4*b*d*e^4)))/(x^4*(b^4*d + 4*a*b^3*e) + a^4*d + x*(a^4*
```

```
e + 4*a^3*b*d) + x^2*(6*a^2*b^2*d + 4*a^3*b*e) + x^3*(6*a^2*b^2*e + 4*a*b^3
*d) + b^4*e*x^5)
```

sympy [B] time = 3.55, size = 1178, normalized size = 7.41

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] -5*b*e**4*log(x + (-5*a**7*b*e**11/(a*e - b*d)**6 + 35*a**6*b**2*d*e**10/(a
*e - b*d)**6 - 105*a**5*b**3*d**2*e**9/(a*e - b*d)**6 + 175*a**4*b**4*d**3*
e**8/(a*e - b*d)**6 - 175*a**3*b**5*d**4*e**7/(a*e - b*d)**6 + 105*a**2*b**
6*d**5*e**6/(a*e - b*d)**6 - 35*a*b**7*d**6*e**5/(a*e - b*d)**6 + 5*a*b*e**
5 + 5*b**8*d**7*e**4/(a*e - b*d)**6 + 5*b**2*d*e**4)/(10*b**2*e**5))/(a*e -
 b*d)**6 + 5*b*e**4*log(x + (5*a**7*b*e**11/(a*e - b*d)**6 - 35*a**6*b**2*d
*e**10/(a*e - b*d)**6 + 105*a**5*b**3*d**2*e**9/(a*e - b*d)**6 - 175*a**4*b
**4*d**3*e**8/(a*e - b*d)**6 + 175*a**3*b**5*d**4*e**7/(a*e - b*d)**6 - 105
*a**2*b**6*d**5*e**6/(a*e - b*d)**6 + 35*a*b**7*d**6*e**5/(a*e - b*d)**6 +
5*a*b*e**5 - 5*b**8*d**7*e**4/(a*e - b*d)**6 + 5*b**2*d*e**4)/(10*b**2*e**5
))/(a*e - b*d)**6 + (-12*a**4*e**4 - 77*a**3*b*d*e**3 + 43*a**2*b**2*d**2*e
**2 - 17*a*b**3*d**3*e + 3*b**4*d**4 - 60*b**4*e**4*x**4 + x**3*(-210*a*b**
3*e**4 - 30*b**4*d*e**3) + x**2*(-260*a**2*b**2*e**4 - 110*a*b**3*d*e**3 +
10*b**4*d**2*e**2) + x*(-125*a**3*b*e**4 - 145*a**2*b**2*d*e**3 + 35*a*b**3
*d**2*e**2 - 5*b**4*d**3*e))/(12*a**9*d*e**5 - 60*a**8*b*d**2*e**4 + 120*a*
*7*b**2*d**3*e**3 - 120*a**6*b**3*d**4*e**2 + 60*a**5*b**4*d**5*e - 12*a**4
*b**5*d**6 + x**5*(12*a**5*b**4*e**6 - 60*a**4*b**5*d*e**5 + 120*a**3*b**6*
d**2*e**4 - 120*a**2*b**7*d**3*e**3 + 60*a*b**8*d**4*e**2 - 12*b**9*d**5*e)
 + x**4*(48*a**6*b**3*e**6 - 228*a**5*b**4*d*e**5 + 420*a**4*b**5*d**2*e**4
 - 360*a**3*b**6*d**3*e**3 + 120*a**2*b**7*d**4*e**2 + 12*a*b**8*d**5*e - 1
2*b**9*d**6) + x**3*(72*a**7*b**2*e**6 - 312*a**6*b**3*d*e**5 + 480*a**5*b*
*4*d**2*e**4 - 240*a**4*b**5*d**3*e**3 - 120*a**3*b**6*d**4*e**2 + 168*a**2
*b**7*d**5*e - 48*a*b**8*d**6) + x**2*(48*a**8*b*e**6 - 168*a**7*b**2*d*e**
5 + 120*a**6*b**3*d**2*e**4 + 240*a**5*b**4*d**3*e**3 - 480*a**4*b**5*d**4*
e**2 + 312*a**3*b**6*d**5*e - 72*a**2*b**7*d**6) + x*(12*a**9*e**6 - 12*a**
8*b*d*e**5 - 120*a**7*b**2*d**2*e**4 + 360*a**6*b**3*d**3*e**3 - 420*a**5*b
**4*d**4*e**2 + 228*a**4*b**5*d**5*e - 48*a**3*b**6*d**6))
```

3.1727 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=192

$$\frac{15b^2e^4\log(a+bx)}{(bd-ae)^7}-\frac{15b^2e^4\log(d+ex)}{(bd-ae)^7}+\frac{10b^2e^3}{(a+bx)(bd-ae)^6}-\frac{3b^2e^2}{(a+bx)^2(bd-ae)^5}+\frac{b^2e}{(a+bx)^3(bd-ae)^4}-\frac{b}{4(a+bx)^4}$$

Rubi [A] time = 0.19, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{10b^2e^3}{(a+bx)(bd-ae)^6}-\frac{3b^2e^2}{(a+bx)^2(bd-ae)^5}+\frac{15b^2e^4\log(a+bx)}{(bd-ae)^7}-\frac{15b^2e^4\log(d+ex)}{(bd-ae)^7}+\frac{b^2e}{(a+bx)^3(bd-ae)^4}-\frac{b^2}{4(a+bx)^4(bd-ae)^3}+\frac{5be^4}{(d+ex)(bd-ae)^6}+\frac{e^4}{2(d+ex)^2(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -b^2/(4*(b*d - a*e)^3*(a + b*x)^4) + (b^2*e)/((b*d - a*e)^4*(a + b*x)^3) -
(3*b^2*e^2)/((b*d - a*e)^5*(a + b*x)^2) + (10*b^2*e^3)/((b*d - a*e)^6*(a +
b*x)) + e^4/(2*(b*d - a*e)^5*(d + e*x)^2) + (5*b*e^4)/((b*d - a*e)^6*(d + e
*x)) + (15*b^2*e^4*Log[a + b*x])/(b*d - a*e)^7 - (15*b^2*e^4*Log[d + e*x])/
(b*d - a*e)^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)^3}\,dx\\ &= \int \left(\frac{b^3}{(bd-ae)^3(a+bx)^5}-\frac{3b^3e}{(bd-ae)^4(a+bx)^4}+\frac{6b^3e^2}{(bd-ae)^5(a+bx)^3}-\frac{}{(bd\right.\\ &= -\frac{b^2}{4(bd-ae)^3(a+bx)^4}+\frac{b^2e}{(bd-ae)^4(a+bx)^3}-\frac{3b^2e^2}{(bd-ae)^5(a+bx)^2}+\frac{}{(bd-}\end{aligned}$$

Mathematica [A] time = 0.10, size = 179, normalized size = 0.93

$$\frac{\frac{40b^2e^3(bd-ae)}{a+bx}-\frac{12b^2e^2(bd-ae)^2}{(a+bx)^2}+\frac{4b^2e(bd-ae)^3}{(a+bx)^3}-\frac{b^2(bd-ae)^4}{(a+bx)^4}+60b^2e^4\log(a+bx)+\frac{20be^4(bd-ae)}{d+ex}+\frac{2e^4(bd-ae)^2}{(d+ex)^2}-60b^2e^4\log(d+ex)}{4(bd-ae)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-((b^2*(b*d - a*e)^4)/(a + b*x)^4) + (4*b^2*e*(b*d - a*e)^3)/(a + b*x)^3 -
 (12*b^2*e^2*(b*d - a*e)^2)/(a + b*x)^2 + (40*b^2*e^3*(b*d - a*e))/(a + b*x
```

```
) + (2*e^4*(b*d - a*e)^2)/(d + e*x)^2 + (20*b*e^4*(b*d - a*e))/(d + e*x) +
60*b^2*e^4*Log[a + b*x] - 60*b^2*e^4*Log[d + e*x])/(4*(b*d - a*e)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.45, size = 1565, normalized size = 8.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b^6*d^6 - 8*a*b^5*d^5*e + 30*a^2*b^4*d^4*e^2 - 80*a^3*b^3*d^3*e^3 + 3
5*a^4*b^2*d^2*e^4 + 24*a^5*b*d*e^5 - 2*a^6*e^6 - 60*(b^6*d*e^5 - a*b^5*e^6)
*x^5 - 30*(3*b^6*d^2*e^4 + 4*a*b^5*d*e^5 - 7*a^2*b^4*e^6)*x^4 - 20*(b^6*d^3
*e^3 + 15*a*b^5*d^2*e^4 - 3*a^2*b^4*d*e^5 - 13*a^3*b^3*e^6)*x^3 + 5*(b^6*d^
4*e^2 - 16*a*b^5*d^3*e^3 - 66*a^2*b^4*d^2*e^4 + 56*a^3*b^3*d*e^5 + 25*a^4*b
^2*e^6)*x^2 - 2*(b^6*d^5*e - 10*a*b^5*d^4*e^2 + 60*a^2*b^4*d^3*e^3 + 50*a^3
*b^3*d^2*e^4 - 95*a^4*b^2*d*e^5 - 6*a^5*b*e^6)*x - 60*(b^6*e^6*x^6 + a^4*b^
2*d^2*e^4 + 2*(b^6*d*e^5 + 2*a*b^5*e^6)*x^5 + (b^6*d^2*e^4 + 8*a*b^5*d*e^5
+ 6*a^2*b^4*e^6)*x^4 + 4*(a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^
3 + (6*a^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^2 + 2*(2*a^3*b^3*
d^2*e^4 + a^4*b^2*d*e^5)*x)*log(b*x + a) + 60*(b^6*e^6*x^6 + a^4*b^2*d^2*e^
4 + 2*(b^6*d*e^5 + 2*a*b^5*e^6)*x^5 + (b^6*d^2*e^4 + 8*a*b^5*d*e^5 + 6*a^2*
b^4*e^6)*x^4 + 4*(a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 + (6*a
^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^2 + 2*(2*a^3*b^3*d^2*e^4
+ a^4*b^2*d*e^5)*x)*log(e*x + d))/(a^4*b^7*d^9 - 7*a^5*b^6*d^8*e + 21*a^6*b
^5*d^7*e^2 - 35*a^7*b^4*d^6*e^3 + 35*a^8*b^3*d^5*e^4 - 21*a^9*b^2*d^4*e^5 +
 7*a^10*b*d^3*e^6 - a^11*d^2*e^7 + (b^11*d^7*e^2 - 7*a*b^10*d^6*e^3 + 21*a^
2*b^9*d^5*e^4 - 35*a^3*b^8*d^4*e^5 + 35*a^4*b^7*d^3*e^6 - 21*a^5*b^6*d^2*e^
7 + 7*a^6*b^5*d*e^8 - a^7*b^4*e^9)*x^6 + 2*(b^11*d^8*e - 5*a*b^10*d^7*e^2 +
 7*a^2*b^9*d^6*e^3 + 7*a^3*b^8*d^5*e^4 - 35*a^4*b^7*d^4*e^5 + 49*a^5*b^6*d^
3*e^6 - 35*a^6*b^5*d^2*e^7 + 13*a^7*b^4*d*e^8 - 2*a^8*b^3*e^9)*x^5 + (b^11*
d^9 + a*b^10*d^8*e - 29*a^2*b^9*d^7*e^2 + 91*a^3*b^8*d^6*e^3 - 119*a^4*b^7*
d^5*e^4 + 49*a^5*b^6*d^4*e^5 + 49*a^6*b^5*d^3*e^6 - 71*a^7*b^4*d^2*e^7 + 34
*a^8*b^3*d*e^8 - 6*a^9*b^2*e^9)*x^4 + 4*(a*b^10*d^9 - 4*a^2*b^9*d^8*e + a^3
*b^8*d^7*e^2 + 21*a^4*b^7*d^6*e^3 - 49*a^5*b^6*d^5*e^4 + 49*a^6*b^5*d^4*e^5
 - 21*a^7*b^4*d^3*e^6 - a^8*b^3*d^2*e^7 + 4*a^9*b^2*d*e^8 - a^10*b*e^9)*x^3
 + (6*a^2*b^9*d^9 - 34*a^3*b^8*d^8*e + 71*a^4*b^7*d^7*e^2 - 49*a^5*b^6*d^6*
e^3 - 49*a^6*b^5*d^5*e^4 + 119*a^7*b^4*d^4*e^5 - 91*a^8*b^3*d^3*e^6 + 29*a^
9*b^2*d^2*e^7 - a^10*b*d*e^8 - a^11*e^9)*x^2 + 2*(2*a^3*b^8*d^9 - 13*a^4*b^
7*d^8*e + 35*a^5*b^6*d^7*e^2 - 49*a^6*b^5*d^6*e^3 + 35*a^7*b^4*d^5*e^4 - 7*
a^8*b^3*d^4*e^5 - 7*a^9*b^2*d^3*e^6 + 5*a^10*b*d^2*e^7 - a^11*d*e^8)*x)
```

giac [B] time = 0.17, size = 547, normalized size = 2.85

$$\frac{15\,b^{3}e^{4}\log\left(|bx+a|\right)}{b^{8}d^{7}-7\,ab^{7}d^{6}e+21\,a^{2}b^{6}d^{5}e^{2}-35\,a^{3}b^{5}d^{4}e^{3}+35\,a^{4}b^{4}d^{3}e^{4}-21\,a^{5}b^{3}d^{2}e^{5}+7\,a^{6}b^{2}de^{6}-a^{7}be^{7}}-\frac{15\,b^{2}e^{5}\log\left(|xe+d|\right)}{b^{7}d^{7}e-7\,ab^{6}d^{6}e^{2}+21\,a^{2}b^{5}d^{5}e^{3}-35\,a^{3}b^{4}d^{4}e^{4}+35\,a^{4}b^{3}d^{3}e^{5}-21\,a^{5}b^{2}d^{2}e^{6}+7\,a^{6}bde^{7}-a^{7}e^{8}}-\frac{b^{6}d^{6}-8\,ab^{5}d^{5}e+30\,a^{2}b^{4}d^{4}e^{2}-80\,a^{3}b^{3}d^{3}e^{3}+35\,a^{4}b^{2}d^{2}e^{4}+24\,a^{5}bde^{5}-2\,a^{6}e^{6}-60\left(b^{6}de^{5}-ab^{5}e^{6}\right)x^{5}-30\left(3\,b^{6}d^{2}e^{4}+4\,ab^{5}de^{5}-7\,a^{2}b^{4}e^{6}\right)x^{4}-20\left(b^{6}d^{3}e^{3}+15\,ab^{5}d^{2}e^{4}-3\,a^{2}b^{4}de^{5}-13\,a^{3}b^{3}e^{6}\right)x^{3}+5\left(b^{6}d^{4}e^{2}-16\,ab^{5}d^{3}e^{3}-66\,a^{2}b^{4}d^{2}e^{4}+56\,a^{3}b^{3}de^{5}+25\,a^{4}b^{2}e^{6}\right)x^{2}-2\left(b^{6}d^{5}e-10\,ab^{5}d^{4}e^{2}+60\,a^{2}b^{4}d^{3}e^{3}+50\,a^{3}b^{3}d^{2}e^{4}-95\,a^{4}b^{2}de^{5}-6\,a^{5}be^{6}\right)x}{4\,(bd-ae)^{7}(bx+a)^{4}(xe+d)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 15*b^3*e^4*log(abs(b*x + a))/(b^8*d^7 - 7*a*b^7*d^6*e + 21*a^2*b^6*d^5*e^2
- 35*a^3*b^5*d^4*e^3 + 35*a^4*b^4*d^3*e^4 - 21*a^5*b^3*d^2*e^5 + 7*a^6*b^2*
d*e^6 - a^7*b*e^7) - 15*b^2*e^5*log(abs(x*e + d))/(b^7*d^7*e - 7*a*b^6*d^6*
e^2 + 21*a^2*b^5*d^5*e^3 - 35*a^3*b^4*d^4*e^4 + 35*a^4*b^3*d^3*e^5 - 21*a^5
*b^2*d^2*e^6 + 7*a^6*b*d*e^7 - a^7*e^8) - 1/4*(b^6*d^6 - 8*a*b^5*d^5*e + 30
*a^2*b^4*d^4*e^2 - 80*a^3*b^3*d^3*e^3 + 35*a^4*b^2*d^2*e^4 + 24*a^5*b*d*e^5
 - 2*a^6*e^6 - 60*(b^6*d*e^5 - a*b^5*e^6)*x^5 - 30*(3*b^6*d^2*e^4 + 4*a*b^5
*d*e^5 - 7*a^2*b^4*e^6)*x^4 - 20*(b^6*d^3*e^3 + 15*a*b^5*d^2*e^4 - 3*a^2*b^
4*d*e^5 - 13*a^3*b^3*e^6)*x^3 + 5*(b^6*d^4*e^2 - 16*a*b^5*d^3*e^3 - 66*a^2*
b^4*d^2*e^4 + 56*a^3*b^3*d*e^5 + 25*a^4*b^2*e^6)*x^2 - 2*(b^6*d^5*e - 10*a*
b^5*d^4*e^2 + 60*a^2*b^4*d^3*e^3 + 50*a^3*b^3*d^2*e^4 - 95*a^4*b^2*d*e^5 -
6*a^5*b*e^6)*x)/((b*d - a*e)^7*(b*x + a)^4*(x*e + d)^2)
```

maple [A] time = 0.06, size = 189, normalized size = 0.98

$$-\frac{15b^2e^4\ln(bx+a)}{(ae-bd)^7}+\frac{15b^2e^4\ln(ex+d)}{(ae-bd)^7}+\frac{10b^2e^3}{(ae-bd)^6(bx+a)}+\frac{5b\,e^4}{(ae-bd)^6(ex+d)}+\frac{3b^2e^2}{(ae-bd)^5(bx+a)^2}-\frac{e^4}{2(ae-bd)^5(ex+d)^2}+\frac{b^2e}{(ae-bd)^4(bx+a)^3}+\frac{b^2}{4(ae-bd)^3(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/4/(a*e-b*d)^3*b^2/(b*x+a)^4-15*b^2/(a*e-b*d)^7*e^4*ln(b*x+a)+10*b^2/(a*e-
b*d)^6*e^3/(b*x+a)+3*b^2/(a*e-b*d)^5*e^2/(b*x+a)^2+b^2/(a*e-b*d)^4*e/(b*x+a
)^3-1/2*e^4/(a*e-b*d)^5/(e*x+d)^2+15*b^2/(a*e-b*d)^7*e^4*ln(e*x+d)+5*e^4/(a
*e-b*d)^6*b/(e*x+d)
```

maxima [B] time = 1.27, size = 1200, normalized size = 6.25

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 15*b^2*e^4*log(b*x + a)/(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*
a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 -
 a^7*e^7) - 15*b^2*e^4*log(e*x + d)/(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d
^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a
^6*b*d*e^6 - a^7*e^7) + 1/4*(60*b^5*e^5*x^5 - b^5*d^5 + 7*a*b^4*d^4*e - 23*
a^2*b^3*d^3*e^2 + 57*a^3*b^2*d^2*e^3 + 22*a^4*b*d*e^4 - 2*a^5*e^5 + 30*(3*b
^5*d*e^4 + 7*a*b^4*e^5)*x^4 + 20*(b^5*d^2*e^3 + 16*a*b^4*d*e^4 + 13*a^2*b^3
*e^5)*x^3 - 5*(b^5*d^3*e^2 - 15*a*b^4*d^2*e^3 - 81*a^2*b^3*d*e^4 - 25*a^3*b
^2*e^5)*x^2 + 2*(b^5*d^4*e - 9*a*b^4*d^3*e^2 + 51*a^2*b^3*d^2*e^3 + 101*a^3
*b^2*d*e^4 + 6*a^4*b*e^5)*x)/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^
6*e^2 - 20*a^7*b^3*d^5*e^3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^
2*e^6 + (b^10*d^6*e^2 - 6*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d
^3*e^5 + 15*a^4*b^6*d^2*e^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*
d^7*e - 4*a*b^9*d^6*e^2 + 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b
^6*d^3*e^5 + 24*a^5*b^5*d^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (
b^10*d^8 + 2*a*b^9*d^7*e - 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4
*b^6*d^4*e^4 - 6*a^5*b^5*d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 +
6*a^8*b^2*e^8)*x^4 + 4*(a*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 1
9*a^4*b^6*d^5*e^3 - 30*a^5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2
*e^6 - 3*a^8*b^2*d*e^7 + a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e
 + 43*a^4*b^6*d^6*e^2 - 6*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3
*d^3*e^5 - 27*a^8*b^2*d^2*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^
7*d^8 - 11*a^4*b^6*d^7*e + 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7
*b^3*d^4*e^4 + 3*a^8*b^2*d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x)
```

mupad [B] time = 2.69, size = 1098, normalized size = 5.72

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((5*e^3*x^3*(b^5*d^2 + 13*a^2*b^3*e^2 + 16*a*b^4*d*e))/(a^6*e^6 + b^6*d^6 +
 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5
*e - 6*a^5*b*d*e^5) - (2*a^5*e^5 + b^5*d^5 + 23*a^2*b^3*d^3*e^2 - 57*a^3*b^
2*d^2*e^3 - 7*a*b^4*d^4*e - 22*a^4*b*d*e^4)/(4*(a^6*e^6 + b^6*d^6 + 15*a^2*
b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a
^5*b*d*e^5)) + (5*e^2*x^2*(25*a^3*b^2*e^3 - b^5*d^3 + 81*a^2*b^3*d*e^2 + 15
*a*b^4*d^2*e))/(4*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*
e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5)) + (15*b^5*e^5*x^
5)/(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^
2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5) + (e*x*(b^5*d^4 + 6*a^4*b*e^4 +
101*a^3*b^2*d*e^3 + 51*a^2*b^3*d^2*e^2 - 9*a*b^4*d^3*e))/(2*(a^6*e^6 + b^6*
d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^
5*d^5*e - 6*a^5*b*d*e^5)) + (15*b*e^3*x^4*(7*a*b^3*e^2 + 3*b^4*d*e))/(2*(a^
6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*
e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5)))/(x*(4*a^3*b*d^2 + 2*a^4*d*e) + x^2*(
a^4*e^2 + 6*a^2*b^2*d^2 + 8*a^3*b*d*e) + x^4*(b^4*d^2 + 6*a^2*b^2*e^2 + 8*a
*b^3*d*e) + x^5*(4*a*b^3*e^2 + 2*b^4*d*e) + x^3*(4*a*b^3*d^2 + 4*a^3*b*e^2
+ 12*a^2*b^2*d*e) + a^4*d^2 + b^4*e^2*x^6) - (30*b^2*e^4*atanh((a^7*e^7 + b
^7*d^7 + 9*a^2*b^5*d^5*e^2 - 5*a^3*b^4*d^4*e^3 - 5*a^4*b^3*d^3*e^4 + 9*a^5*
b^2*d^2*e^5 - 5*a*b^6*d^6*e - 5*a^6*b*d*e^6)/(a*e - b*d)^7 + (2*b*e*x*(a^6*
e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^
4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5))/(a*e - b*d)^7))/(a*e - b*d)^7
```

sympy [B] time = 5.06, size = 1571, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 15*b**2*e**4*log(x + (-15*a**8*b**2*e**12/(a*e - b*d)**7 + 120*a**7*b**3*d*
e**11/(a*e - b*d)**7 - 420*a**6*b**4*d**2*e**10/(a*e - b*d)**7 + 840*a**5*b
**5*d**3*e**9/(a*e - b*d)**7 - 1050*a**4*b**6*d**4*e**8/(a*e - b*d)**7 + 84
0*a**3*b**7*d**5*e**7/(a*e - b*d)**7 - 420*a**2*b**8*d**6*e**6/(a*e - b*d)*
*7 + 120*a*b**9*d**7*e**5/(a*e - b*d)**7 + 15*a*b**2*e**5 - 15*b**10*d**8*e
**4/(a*e - b*d)**7 + 15*b**3*d*e**4)/(30*b**3*e**5))/(a*e - b*d)**7 - 15*b*
*2*e**4*log(x + (15*a**8*b**2*e**12/(a*e - b*d)**7 - 120*a**7*b**3*d*e**11/
(a*e - b*d)**7 + 420*a**6*b**4*d**2*e**10/(a*e - b*d)**7 - 840*a**5*b**5*d*
*3*e**9/(a*e - b*d)**7 + 1050*a**4*b**6*d**4*e**8/(a*e - b*d)**7 - 840*a**3
*b**7*d**5*e**7/(a*e - b*d)**7 + 420*a**2*b**8*d**6*e**6/(a*e - b*d)**7 - 1
20*a*b**9*d**7*e**5/(a*e - b*d)**7 + 15*a*b**2*e**5 + 15*b**10*d**8*e**4/(a
*e - b*d)**7 + 15*b**3*d*e**4)/(30*b**3*e**5))/(a*e - b*d)**7 + (-2*a**5*e*
*5 + 22*a**4*b*d*e**4 + 57*a**3*b**2*d**2*e**3 - 23*a**2*b**3*d**3*e**2 + 7
*a*b**4*d**4*e - b**5*d**5 + 60*b**5*e**5*x**5 + x**4*(210*a*b**4*e**5 + 90
*b**5*d*e**4) + x**3*(260*a**2*b**3*e**5 + 320*a*b**4*d*e**4 + 20*b**5*d**2
*e**3) + x**2*(125*a**3*b**2*e**5 + 405*a**2*b**3*d*e**4 + 75*a*b**4*d**2*e
**3 - 5*b**5*d**3*e**2) + x*(12*a**4*b*e**5 + 202*a**3*b**2*d*e**4 + 102*a*
*2*b**3*d**2*e**3 - 18*a*b**4*d**3*e**2 + 2*b**5*d**4*e))/(4*a**10*d**2*e**
6 - 24*a**9*b*d**3*e**5 + 60*a**8*b**2*d**4*e**4 - 80*a**7*b**3*d**5*e**3 +
 60*a**6*b**4*d**6*e**2 - 24*a**5*b**5*d**7*e + 4*a**4*b**6*d**8 + x**6*(4*
a**6*b**4*e**8 - 24*a**5*b**5*d*e**7 + 60*a**4*b**6*d**2*e**6 - 80*a**3*b**
7*d**3*e**5 + 60*a**2*b**8*d**4*e**4 - 24*a*b**9*d**5*e**3 + 4*b**10*d**6*e
**2) + x**5*(16*a**7*b**3*e**8 - 88*a**6*b**4*d*e**7 + 192*a**5*b**5*d**2*e
**6 - 200*a**4*b**6*d**3*e**5 + 80*a**3*b**7*d**4*e**4 + 24*a**2*b**8*d**5*
e**3 - 32*a*b**9*d**6*e**2 + 8*b**10*d**7*e) + x**4*(24*a**8*b**2*e**8 - 11
2*a**7*b**3*d*e**7 + 172*a**6*b**4*d**2*e**6 - 24*a**5*b**5*d**3*e**5 - 220
*a**4*b**6*d**4*e**4 + 256*a**3*b**7*d**5*e**3 - 108*a**2*b**8*d**6*e**2 +
```

```
8*a*b**9*d**7*e + 4*b**10*d**8) + x**3*(16*a**9*b*e**8 - 48*a**8*b**2*d*e**
7 - 32*a**7*b**3*d**2*e**6 + 304*a**6*b**4*d**3*e**5 - 480*a**5*b**5*d**4*e
**4 + 304*a**4*b**6*d**5*e**3 - 32*a**3*b**7*d**6*e**2 - 48*a**2*b**8*d**7*
e + 16*a*b**9*d**8) + x**2*(4*a**10*e**8 + 8*a**9*b*d*e**7 - 108*a**8*b**2*
d**2*e**6 + 256*a**7*b**3*d**3*e**5 - 220*a**6*b**4*d**4*e**4 - 24*a**5*b**
5*d**5*e**3 + 172*a**4*b**6*d**6*e**2 - 112*a**3*b**7*d**7*e + 24*a**2*b**8
*d**8) + x*(8*a**10*d*e**7 - 32*a**9*b*d**2*e**6 + 24*a**8*b**2*d**3*e**5 +
 80*a**7*b**3*d**4*e**4 - 200*a**6*b**4*d**5*e**3 + 192*a**5*b**5*d**6*e**2
 - 88*a**4*b**6*d**7*e + 16*a**3*b**7*d**8))
```

3.1728 $\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=222

$$\frac{35b^3e^4\log(a+bx)}{(bd-ae)^8}-\frac{35b^3e^4\log(d+ex)}{(bd-ae)^8}+\frac{20b^3e^3}{(a+bx)(bd-ae)^7}-\frac{5b^3e^2}{(a+bx)^2(bd-ae)^6}+\frac{4b^3e}{3(a+bx)^3(bd-ae)^5}-\frac{}{4(a+}$$

Rubi [A] time = 0.26, antiderivative size = 222, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{15b^2e^4}{(d+ex)(bd-ae)^7}+\frac{20b^3e^3}{(a+bx)(bd-ae)^7}-\frac{5b^3e^2}{(a+bx)^2(bd-ae)^6}+\frac{35b^3e^4\log(a+bx)}{(bd-ae)^8}-\frac{35b^3e^4\log(d+ex)}{(bd-ae)^8}+\frac{4b^3e}{3(a+bx)^3(bd-ae)^5}-\frac{b^3}{4(a+bx)^4(bd-ae)^4}+\frac{5be^4}{2(d+ex)^2(bd-ae)^6}+\frac{e^4}{3(d+ex)^3(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -b^3/(4*(b*d - a*e)^4*(a + b*x)^4) + (4*b^3*e)/(3*(b*d - a*e)^5*(a + b*x)^3
) - (5*b^3*e^2)/((b*d - a*e)^6*(a + b*x)^2) + (20*b^3*e^3)/((b*d - a*e)^7*(
a + b*x)) + e^4/(3*(b*d - a*e)^5*(d + e*x)^3) + (5*b*e^4)/(2*(b*d - a*e)^6*
(d + e*x)^2) + (15*b^2*e^4)/((b*d - a*e)^7*(d + e*x)) + (35*b^3*e^4*Log[a +
 b*x])/(b*d - a*e)^8 - (35*b^3*e^4*Log[d + e*x])/(b*d - a*e)^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)^4}\,dx\\
&= \int \left(\frac{b^4}{(bd-ae)^4(a+bx)^5}-\frac{4b^4e}{(bd-ae)^5(a+bx)^4}+\frac{10b^4e^2}{(bd-ae)^6(a+bx)^3}-\right.\\
&= -\frac{b^3}{4(bd-ae)^4(a+bx)^4}+\frac{4b^3e}{3(bd-ae)^5(a+bx)^3}-\frac{5b^3e^2}{(bd-ae)^6(a+bx)^2}+
\end{aligned}$$

Mathematica [A] time = 0.13, size = 204, normalized size = 0.92

$$\frac{\frac{240b^3e^3(bd-ae)}{a+bx}-\frac{60b^3e^2(bd-ae)^2}{(a+bx)^2}+\frac{16b^3e(bd-ae)^3}{(a+bx)^3}-\frac{3b^3(bd-ae)^4}{(a+bx)^4}+420b^3e^4\log(a+bx)+\frac{180b^2e^4(bd-ae)}{d+ex}+\frac{30be^4(bd-ae)^2}{(d+ex)^2}+\frac{4e^4(bd-ae)^3}{(d+ex)^3}-420b^3e^4\log(d+ex)}{12(bd-ae)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-3*b^3*(b*d - a*e)^4)/(a + b*x)^4 + (16*b^3*e*(b*d - a*e)^3)/(a + b*x)^3
- (60*b^3*e^2*(b*d - a*e)^2)/(a + b*x)^2 + (240*b^3*e^3*(b*d - a*e))/(a + b
```

```
*x) + (4*e^4*(b*d - a*e)^3)/(d + e*x)^3 + (30*b*e^4*(b*d - a*e)^2)/(d + e*x
)^2 + (180*b^2*e^4*(b*d - a*e))/(d + e*x) + 420*b^3*e^4*Log[a + b*x] - 420*
b^3*e^4*Log[d + e*x])/(12*(b*d - a*e)^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3), x]
```

fricas [B] time = 0.49, size = 2090, normalized size = 9.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^7*d^7 - 28*a*b^6*d^6*e + 126*a^2*b^5*d^5*e^2 - 420*a^3*b^4*d^4*e
^3 + 105*a^4*b^3*d^3*e^4 + 252*a^5*b^2*d^2*e^5 - 42*a^6*b*d*e^6 + 4*a^7*e^7
 - 420*(b^7*d*e^6 - a*b^6*e^7)*x^6 - 210*(5*b^7*d^2*e^5 + 2*a*b^6*d*e^6 - 7
*a^2*b^5*e^7)*x^5 - 70*(11*b^7*d^3*e^4 + 42*a*b^6*d^2*e^5 - 27*a^2*b^5*d*e^
6 - 26*a^3*b^4*e^7)*x^4 - 35*(3*b^7*d^4*e^3 + 76*a*b^6*d^3*e^4 + 54*a^2*b^5
*d^2*e^5 - 108*a^3*b^4*d*e^6 - 25*a^4*b^3*e^7)*x^3 + 21*(b^7*d^5*e^2 - 20*a
*b^6*d^4*e^3 - 150*a^2*b^5*d^3*e^4 + 60*a^3*b^4*d^2*e^5 + 105*a^4*b^3*d*e^6
 + 4*a^5*b^2*e^7)*x^2 - 7*(b^7*d^6*e - 12*a*b^6*d^5*e^2 + 90*a^2*b^5*d^4*e^
3 + 180*a^3*b^4*d^3*e^4 - 225*a^4*b^3*d^2*e^5 - 36*a^5*b^2*d*e^6 + 2*a^6*b*
e^7)*x - 420*(b^7*e^7*x^7 + a^4*b^3*d^3*e^4 + (3*b^7*d*e^6 + 4*a*b^6*e^7)*x
^6 + 3*(b^7*d^2*e^5 + 4*a*b^6*d*e^6 + 2*a^2*b^5*e^7)*x^5 + (b^7*d^3*e^4 + 1
2*a*b^6*d^2*e^5 + 18*a^2*b^5*d*e^6 + 4*a^3*b^4*e^7)*x^4 + (4*a*b^6*d^3*e^4
+ 18*a^2*b^5*d^2*e^5 + 12*a^3*b^4*d*e^6 + a^4*b^3*e^7)*x^3 + 3*(2*a^2*b^5*d
^3*e^4 + 4*a^3*b^4*d^2*e^5 + a^4*b^3*d*e^6)*x^2 + (4*a^3*b^4*d^3*e^4 + 3*a^
4*b^3*d^2*e^5)*x)*log(b*x + a) + 420*(b^7*e^7*x^7 + a^4*b^3*d^3*e^4 + (3*b^
7*d*e^6 + 4*a*b^6*e^7)*x^6 + 3*(b^7*d^2*e^5 + 4*a*b^6*d*e^6 + 2*a^2*b^5*e^7
)*x^5 + (b^7*d^3*e^4 + 12*a*b^6*d^2*e^5 + 18*a^2*b^5*d*e^6 + 4*a^3*b^4*e^7)
*x^4 + (4*a*b^6*d^3*e^4 + 18*a^2*b^5*d^2*e^5 + 12*a^3*b^4*d*e^6 + a^4*b^3*e
^7)*x^3 + 3*(2*a^2*b^5*d^3*e^4 + 4*a^3*b^4*d^2*e^5 + a^4*b^3*d*e^6)*x^2 + (
4*a^3*b^4*d^3*e^4 + 3*a^4*b^3*d^2*e^5)*x)*log(e*x + d))/(a^4*b^8*d^11 - 8*a
^5*b^7*d^10*e + 28*a^6*b^6*d^9*e^2 - 56*a^7*b^5*d^8*e^3 + 70*a^8*b^4*d^7*e^
4 - 56*a^9*b^3*d^6*e^5 + 28*a^10*b^2*d^5*e^6 - 8*a^11*b*d^4*e^7 + a^12*d^3*
e^8 + (b^12*d^8*e^3 - 8*a*b^11*d^7*e^4 + 28*a^2*b^10*d^6*e^5 - 56*a^3*b^9*d
^5*e^6 + 70*a^4*b^8*d^4*e^7 - 56*a^5*b^7*d^3*e^8 + 28*a^6*b^6*d^2*e^9 - 8*a
^7*b^5*d*e^10 + a^8*b^4*e^11)*x^7 + (3*b^12*d^9*e^2 - 20*a*b^11*d^8*e^3 + 5
2*a^2*b^10*d^7*e^4 - 56*a^3*b^9*d^6*e^5 - 14*a^4*b^8*d^5*e^6 + 112*a^5*b^7*
d^4*e^7 - 140*a^6*b^6*d^3*e^8 + 88*a^7*b^5*d^2*e^9 - 29*a^8*b^4*d*e^10 + 4*
a^9*b^3*e^11)*x^6 + 3*(b^12*d^10*e - 4*a*b^11*d^9*e^2 - 2*a^2*b^10*d^8*e^3
+ 40*a^3*b^9*d^7*e^4 - 98*a^4*b^8*d^6*e^5 + 112*a^5*b^7*d^5*e^6 - 56*a^6*b^
6*d^4*e^7 - 8*a^7*b^5*d^3*e^8 + 25*a^8*b^4*d^2*e^9 - 12*a^9*b^3*d*e^10 + 2*
a^10*b^2*e^11)*x^5 + (b^12*d^11 + 4*a*b^11*d^10*e - 50*a^2*b^10*d^9*e^2 + 1
40*a^3*b^9*d^8*e^3 - 130*a^4*b^8*d^7*e^4 - 112*a^5*b^7*d^6*e^5 + 392*a^6*b^
6*d^5*e^6 - 400*a^7*b^5*d^4*e^7 + 185*a^8*b^4*d^3*e^8 - 20*a^9*b^3*d^2*e^9
- 14*a^10*b^2*d*e^10 + 4*a^11*b*e^11)*x^4 + (4*a*b^11*d^11 - 14*a^2*b^10*d^
10*e - 20*a^3*b^9*d^9*e^2 + 185*a^4*b^8*d^8*e^3 - 400*a^5*b^7*d^7*e^4 + 392
*a^6*b^6*d^6*e^5 - 112*a^7*b^5*d^5*e^6 - 130*a^8*b^4*d^4*e^7 + 140*a^9*b^3*
d^3*e^8 - 50*a^10*b^2*d^2*e^9 + 4*a^11*b*d*e^10 + a^12*e^11)*x^3 + 3*(2*a^2
*b^10*d^11 - 12*a^3*b^9*d^10*e + 25*a^4*b^8*d^9*e^2 - 8*a^5*b^7*d^8*e^3 - 5
6*a^6*b^6*d^7*e^4 + 112*a^7*b^5*d^6*e^5 - 98*a^8*b^4*d^5*e^6 + 40*a^9*b^3*d
```

```
^4*e^7 - 2*a^10*b^2*d^3*e^8 - 4*a^11*b*d^2*e^9 + a^12*d*e^10)*x^2 + (4*a^3*
b^9*d^11 - 29*a^4*b^8*d^10*e + 88*a^5*b^7*d^9*e^2 - 140*a^6*b^6*d^8*e^3 + 1
12*a^7*b^5*d^7*e^4 - 14*a^8*b^4*d^6*e^5 - 56*a^9*b^3*d^5*e^6 + 52*a^10*b^2*
d^4*e^7 - 20*a^11*b*d^3*e^8 + 3*a^12*d^2*e^9)*x)
```

giac [B] time = 0.18, size = 673, normalized size = 3.03

$$\frac{35\,b^{4}e^{4}\log\left(|bx+a|\right)}{b^{9}d^{8}-8\,ab^{8}d^{7}e+28\,a^{2}b^{7}d^{6}e^{2}-56\,a^{3}b^{6}d^{5}e^{3}+70\,a^{4}b^{5}d^{4}e^{4}-56\,a^{5}b^{4}d^{3}e^{5}+28\,a^{6}b^{3}d^{2}e^{6}-8\,a^{7}b^{2}de^{7}+a^{8}be^{8}}-\frac{35\,b^{3}e^{5}\log\left(|xe+d|\right)}{b^{8}d^{8}e-8\,ab^{7}d^{7}e^{2}+28\,a^{2}b^{6}d^{6}e^{3}-56\,a^{3}b^{5}d^{5}e^{4}+70\,a^{4}b^{4}d^{4}e^{5}-56\,a^{5}b^{3}d^{3}e^{6}+28\,a^{6}b^{2}d^{2}e^{7}-8\,a^{7}bde^{8}+a^{8}e^{9}}-\frac{3\,b^{7}d^{7}-28\,ab^{6}d^{6}e+126\,a^{2}b^{5}d^{5}e^{2}-420\,a^{3}b^{4}d^{4}e^{3}+105\,a^{4}b^{3}d^{3}e^{4}+252\,a^{5}b^{2}d^{2}e^{5}-42\,a^{6}bde^{6}+4\,a^{7}e^{7}-420\left(b^{7}de^{6}-ab^{6}e^{7}\right)x^{6}-210\left(5\,b^{7}d^{2}e^{5}+2\,ab^{6}de^{6}-7\,a^{2}b^{5}e^{7}\right)x^{5}-70\left(11\,b^{7}d^{3}e^{4}+42\,ab^{6}d^{2}e^{5}-27\,a^{2}b^{5}de^{6}-26\,a^{3}b^{4}e^{7}\right)x^{4}-35\left(3\,b^{7}d^{4}e^{3}+76\,ab^{6}d^{3}e^{4}+54\,a^{2}b^{5}d^{2}e^{5}-108\,a^{3}b^{4}de^{6}-25\,a^{4}b^{3}e^{7}\right)x^{3}+21\left(b^{7}d^{5}e^{2}-20\,ab^{6}d^{4}e^{3}-150\,a^{2}b^{5}d^{3}e^{4}+60\,a^{3}b^{4}d^{2}e^{5}+105\,a^{4}b^{3}de^{6}+4\,a^{5}b^{2}e^{7}\right)x^{2}-7\left(b^{7}d^{6}e-12\,ab^{6}d^{5}e^{2}+90\,a^{2}b^{5}d^{4}e^{3}+180\,a^{3}b^{4}d^{3}e^{4}-225\,a^{4}b^{3}d^{2}e^{5}-36\,a^{5}b^{2}de^{6}+2\,a^{6}be^{7}\right)x}{12\left(bd-ae\right)^{8}\left(bx+a\right)^{4}\left(xe+d\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 35*b^4*e^4*log(abs(b*x + a))/(b^9*d^8 - 8*a*b^8*d^7*e + 28*a^2*b^7*d^6*e^2
- 56*a^3*b^6*d^5*e^3 + 70*a^4*b^5*d^4*e^4 - 56*a^5*b^4*d^3*e^5 + 28*a^6*b^3
*d^2*e^6 - 8*a^7*b^2*d*e^7 + a^8*b*e^8) - 35*b^3*e^5*log(abs(x*e + d))/(b^8
*d^8*e - 8*a*b^7*d^7*e^2 + 28*a^2*b^6*d^6*e^3 - 56*a^3*b^5*d^5*e^4 + 70*a^4
*b^4*d^4*e^5 - 56*a^5*b^3*d^3*e^6 + 28*a^6*b^2*d^2*e^7 - 8*a^7*b*d*e^8 + a^
8*e^9) - 1/12*(3*b^7*d^7 - 28*a*b^6*d^6*e + 126*a^2*b^5*d^5*e^2 - 420*a^3*b
^4*d^4*e^3 + 105*a^4*b^3*d^3*e^4 + 252*a^5*b^2*d^2*e^5 - 42*a^6*b*d*e^6 + 4
*a^7*e^7 - 420*(b^7*d*e^6 - a*b^6*e^7)*x^6 - 210*(5*b^7*d^2*e^5 + 2*a*b^6*d
*e^6 - 7*a^2*b^5*e^7)*x^5 - 70*(11*b^7*d^3*e^4 + 42*a*b^6*d^2*e^5 - 27*a^2*
b^5*d*e^6 - 26*a^3*b^4*e^7)*x^4 - 35*(3*b^7*d^4*e^3 + 76*a*b^6*d^3*e^4 + 54
*a^2*b^5*d^2*e^5 - 108*a^3*b^4*d*e^6 - 25*a^4*b^3*e^7)*x^3 + 21*(b^7*d^5*e^
2 - 20*a*b^6*d^4*e^3 - 150*a^2*b^5*d^3*e^4 + 60*a^3*b^4*d^2*e^5 + 105*a^4*b
^3*d*e^6 + 4*a^5*b^2*e^7)*x^2 - 7*(b^7*d^6*e - 12*a*b^6*d^5*e^2 + 90*a^2*b^
5*d^4*e^3 + 180*a^3*b^4*d^3*e^4 - 225*a^4*b^3*d^2*e^5 - 36*a^5*b^2*d*e^6 +
2*a^6*b*e^7)*x)/((b*d - a*e)^8*(b*x + a)^4*(x*e + d)^3)
```

maple [A] time = 0.06, size = 215, normalized size = 0.97

$$\frac{35b^3e^4\ln(bx+a)}{(ae-bd)^8}-\frac{35b^3e^4\ln(ex+d)}{(ae-bd)^8}-\frac{20b^3e^3}{(ae-bd)^7(bx+a)}-\frac{15b^2e^4}{(ae-bd)^7(ex+d)}-\frac{5b^3e^2}{(ae-bd)^6(bx+a)^2}+\frac{5be^4}{2(ae-bd)^6(ex+d)^2}-\frac{4b^3e}{3(ae-bd)^5(bx+a)^3}-\frac{e^4}{3(ae-bd)^5(ex+d)^3}-\frac{b^3}{4(ae-bd)^4(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/4/(a*e-b*d)^4*b^3/(b*x+a)^4+35*b^3/(a*e-b*d)^8*e^4*ln(b*x+a)-20*b^3/(a*e
-b*d)^7*e^3/(b*x+a)-5*b^3/(a*e-b*d)^6*e^2/(b*x+a)^2-4/3*b^3/(a*e-b*d)^5*e/(
b*x+a)^3-1/3*e^4/(a*e-b*d)^5/(e*x+d)^3-35*b^3/(a*e-b*d)^8*e^4*ln(e*x+d)-15*
e^4/(a*e-b*d)^7*b^2/(e*x+d)+5/2*e^4/(a*e-b*d)^6*b/(e*x+d)^2
```

maxima [B] time = 1.58, size = 1587, normalized size = 7.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 35*b^3*e^4*log(b*x + a)/(b^8*d^8 - 8*a*b^7*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*
a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*
e^6 - 8*a^7*b*d*e^7 + a^8*e^8) - 35*b^3*e^4*log(e*x + d)/(b^8*d^8 - 8*a*b^7
*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*
a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*e^6 - 8*a^7*b*d*e^7 + a^8*e^8) + 1/12*(420
*b^6*e^6*x^6 - 3*b^6*d^6 + 25*a*b^5*d^5*e - 101*a^2*b^4*d^4*e^2 + 319*a^3*b
^3*d^3*e^3 + 214*a^4*b^2*d^2*e^4 - 38*a^5*b*d*e^5 + 4*a^6*e^6 + 210*(5*b^6*
d*e^5 + 7*a*b^5*e^6)*x^5 + 70*(11*b^6*d^2*e^4 + 53*a*b^5*d*e^5 + 26*a^2*b^4
*e^6)*x^4 + 35*(3*b^6*d^3*e^3 + 79*a*b^5*d^2*e^4 + 133*a^2*b^4*d*e^5 + 25*a
^3*b^3*e^6)*x^3 - 21*(b^6*d^4*e^2 - 19*a*b^5*d^3*e^3 - 169*a^2*b^4*d^2*e^4
- 109*a^3*b^3*d*e^5 - 4*a^4*b^2*e^6)*x^2 + 7*(b^6*d^5*e - 11*a*b^5*d^4*e^2
+ 79*a^2*b^4*d^3*e^3 + 259*a^3*b^3*d^2*e^4 + 34*a^4*b^2*d*e^5 - 2*a^5*b*e^6
)*x)/(a^4*b^7*d^10 - 7*a^5*b^6*d^9*e + 21*a^6*b^5*d^8*e^2 - 35*a^7*b^4*d^7*
```

```
e^3 + 35*a^8*b^3*d^6*e^4 - 21*a^9*b^2*d^5*e^5 + 7*a^10*b*d^4*e^6 - a^11*d^3
*e^7 + (b^11*d^7*e^3 - 7*a*b^10*d^6*e^4 + 21*a^2*b^9*d^5*e^5 - 35*a^3*b^8*d
^4*e^6 + 35*a^4*b^7*d^3*e^7 - 21*a^5*b^6*d^2*e^8 + 7*a^6*b^5*d*e^9 - a^7*b^
4*e^10)*x^7 + (3*b^11*d^8*e^2 - 17*a*b^10*d^7*e^3 + 35*a^2*b^9*d^6*e^4 - 21
*a^3*b^8*d^5*e^5 - 35*a^4*b^7*d^4*e^6 + 77*a^5*b^6*d^3*e^7 - 63*a^6*b^5*d^2
*e^8 + 25*a^7*b^4*d*e^9 - 4*a^8*b^3*e^10)*x^6 + 3*(b^11*d^9*e - 3*a*b^10*d^
8*e^2 - 5*a^2*b^9*d^7*e^3 + 35*a^3*b^8*d^6*e^4 - 63*a^4*b^7*d^5*e^5 + 49*a^
5*b^6*d^4*e^6 - 7*a^6*b^5*d^3*e^7 - 15*a^7*b^4*d^2*e^8 + 10*a^8*b^3*d*e^9 -
 2*a^9*b^2*e^10)*x^5 + (b^11*d^10 + 5*a*b^10*d^9*e - 45*a^2*b^9*d^8*e^2 + 9
5*a^3*b^8*d^7*e^3 - 35*a^4*b^7*d^6*e^4 - 147*a^5*b^6*d^5*e^5 + 245*a^6*b^5*
d^4*e^6 - 155*a^7*b^4*d^3*e^7 + 30*a^8*b^3*d^2*e^8 + 10*a^9*b^2*d*e^9 - 4*a
^10*b*e^10)*x^4 + (4*a*b^10*d^10 - 10*a^2*b^9*d^9*e - 30*a^3*b^8*d^8*e^2 +
155*a^4*b^7*d^7*e^3 - 245*a^5*b^6*d^6*e^4 + 147*a^6*b^5*d^5*e^5 + 35*a^7*b^
4*d^4*e^6 - 95*a^8*b^3*d^3*e^7 + 45*a^9*b^2*d^2*e^8 - 5*a^10*b*d*e^9 - a^11
*e^10)*x^3 + 3*(2*a^2*b^9*d^10 - 10*a^3*b^8*d^9*e + 15*a^4*b^7*d^8*e^2 + 7*
a^5*b^6*d^7*e^3 - 49*a^6*b^5*d^6*e^4 + 63*a^7*b^4*d^5*e^5 - 35*a^8*b^3*d^4*
e^6 + 5*a^9*b^2*d^3*e^7 + 3*a^10*b*d^2*e^8 - a^11*d*e^9)*x^2 + (4*a^3*b^8*d
^10 - 25*a^4*b^7*d^9*e + 63*a^5*b^6*d^8*e^2 - 77*a^6*b^5*d^7*e^3 + 35*a^7*b
^4*d^6*e^4 + 21*a^8*b^3*d^5*e^5 - 35*a^9*b^2*d^4*e^6 + 17*a^10*b*d^3*e^7 -
3*a^11*d^2*e^8)*x)
```

mupad [B] time = 3.02, size = 1469, normalized size = 6.62

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] (70*b^3*e^4*atanh((a^8*e^8 - b^8*d^8 - 14*a^2*b^6*d^6*e^2 + 14*a^3*b^5*d^5*
e^3 - 14*a^5*b^3*d^3*e^5 + 14*a^6*b^2*d^2*e^6 + 6*a*b^7*d^7*e - 6*a^7*b*d*e
^7)/(a*e - b*d)^8 + (2*b*e*x*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a
^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e -
7*a^6*b*d*e^6))/(a*e - b*d)^8))/(a*e - b*d)^8 - ((4*a^6*e^6 - 3*b^6*d^6 - 1
01*a^2*b^4*d^4*e^2 + 319*a^3*b^3*d^3*e^3 + 214*a^4*b^2*d^2*e^4 + 25*a*b^5*d
^5*e - 38*a^5*b*d*e^5)/(12*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3
*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*
a^6*b*d*e^6)) + (35*b^6*e^6*x^6)/(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 +
35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*
e - 7*a^6*b*d*e^6) + (7*e^2*x^2*(4*a^4*b^2*e^4 - b^6*d^4 + 109*a^3*b^3*d*e^
3 + 169*a^2*b^4*d^2*e^2 + 19*a*b^5*d^3*e))/(4*(a^7*e^7 - b^7*d^7 - 21*a^2*b
^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 +
 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)) + (7*e*x*(b^6*d^5 - 2*a^5*b*e^5 + 34*a^4*b
^2*d*e^4 + 79*a^2*b^4*d^3*e^2 + 259*a^3*b^3*d^2*e^3 - 11*a*b^5*d^4*e))/(12*
(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d
^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)) + (35*e^2*x^3
*(3*b^6*d^3*e + 25*a^3*b^3*e^4 + 79*a*b^5*d^2*e^2 + 133*a^2*b^4*d*e^3))/(12
*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*
d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)) + (35*b^2*e^
3*x^5*(7*a*b^3*e^3 + 5*b^4*d*e^2))/(2*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e
^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6
*d^6*e - 7*a^6*b*d*e^6)) + (35*b*e^2*x^4*(26*a^2*b^3*e^4 + 11*b^5*d^2*e^2 +
 53*a*b^4*d*e^3))/(6*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d
^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*
d*e^6)))/(x^6*(4*a*b^3*e^3 + 3*b^4*d*e^2) + x^2*(3*a^4*d*e^2 + 6*a^2*b^2*d^
3 + 12*a^3*b*d^2*e) + x^5*(3*b^4*d^2*e + 6*a^2*b^2*e^3 + 12*a*b^3*d*e^2) +
x^3*(a^4*e^3 + 4*a*b^3*d^3 + 18*a^2*b^2*d^2*e + 12*a^3*b*d*e^2) + x^4*(b^4*
d^3 + 4*a^3*b*e^3 + 18*a^2*b^2*d*e^2 + 12*a*b^3*d^2*e) + x*(4*a^3*b*d^3 + 3
*a^4*d^2*e) + a^4*d^3 + b^4*e^3*x^7)
```

sympy [B] time = 7.63, size = 2009, normalized size = 9.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] -35*b**3*e**4*log(x + (-35*a**9*b**3*e**13/(a*e - b*d)**8 + 315*a**8*b**4*d
*e**12/(a*e - b*d)**8 - 1260*a**7*b**5*d**2*e**11/(a*e - b*d)**8 + 2940*a**
6*b**6*d**3*e**10/(a*e - b*d)**8 - 4410*a**5*b**7*d**4*e**9/(a*e - b*d)**8
+ 4410*a**4*b**8*d**5*e**8/(a*e - b*d)**8 - 2940*a**3*b**9*d**6*e**7/(a*e -
 b*d)**8 + 1260*a**2*b**10*d**7*e**6/(a*e - b*d)**8 - 315*a*b**11*d**8*e**5
/(a*e - b*d)**8 + 35*a*b**3*e**5 + 35*b**12*d**9*e**4/(a*e - b*d)**8 + 35*b
**4*d*e**4)/(70*b**4*e**5))/(a*e - b*d)**8 + 35*b**3*e**4*log(x + (35*a**9*
b**3*e**13/(a*e - b*d)**8 - 315*a**8*b**4*d*e**12/(a*e - b*d)**8 + 1260*a**
7*b**5*d**2*e**11/(a*e - b*d)**8 - 2940*a**6*b**6*d**3*e**10/(a*e - b*d)**8
 + 4410*a**5*b**7*d**4*e**9/(a*e - b*d)**8 - 4410*a**4*b**8*d**5*e**8/(a*e
- b*d)**8 + 2940*a**3*b**9*d**6*e**7/(a*e - b*d)**8 - 1260*a**2*b**10*d**7*
e**6/(a*e - b*d)**8 + 315*a*b**11*d**8*e**5/(a*e - b*d)**8 + 35*a*b**3*e**5
 - 35*b**12*d**9*e**4/(a*e - b*d)**8 + 35*b**4*d*e**4)/(70*b**4*e**5))/(a*e
 - b*d)**8 + (-4*a**6*e**6 + 38*a**5*b*d*e**5 - 214*a**4*b**2*d**2*e**4 - 3
19*a**3*b**3*d**3*e**3 + 101*a**2*b**4*d**4*e**2 - 25*a*b**5*d**5*e + 3*b**
6*d**6 - 420*b**6*e**6*x**6 + x**5*(-1470*a*b**5*e**6 - 1050*b**6*d*e**5) +
 x**4*(-1820*a**2*b**4*e**6 - 3710*a*b**5*d*e**5 - 770*b**6*d**2*e**4) + x*
*3*(-875*a**3*b**3*e**6 - 4655*a**2*b**4*d*e**5 - 2765*a*b**5*d**2*e**4 - 1
05*b**6*d**3*e**3) + x**2*(-84*a**4*b**2*e**6 - 2289*a**3*b**3*d*e**5 - 354
9*a**2*b**4*d**2*e**4 - 399*a*b**5*d**3*e**3 + 21*b**6*d**4*e**2) + x*(14*a
**5*b*e**6 - 238*a**4*b**2*d*e**5 - 1813*a**3*b**3*d**2*e**4 - 553*a**2*b**
4*d**3*e**3 + 77*a*b**5*d**4*e**2 - 7*b**6*d**5*e))/(12*a**11*d**3*e**7 - 8
4*a**10*b*d**4*e**6 + 252*a**9*b**2*d**5*e**5 - 420*a**8*b**3*d**6*e**4 + 4
20*a**7*b**4*d**7*e**3 - 252*a**6*b**5*d**8*e**2 + 84*a**5*b**6*d**9*e - 12
*a**4*b**7*d**10 + x**7*(12*a**7*b**4*e**10 - 84*a**6*b**5*d*e**9 + 252*a**
5*b**6*d**2*e**8 - 420*a**4*b**7*d**3*e**7 + 420*a**3*b**8*d**4*e**6 - 252*
a**2*b**9*d**5*e**5 + 84*a*b**10*d**6*e**4 - 12*b**11*d**7*e**3) + x**6*(48
*a**8*b**3*e**10 - 300*a**7*b**4*d*e**9 + 756*a**6*b**5*d**2*e**8 - 924*a**
5*b**6*d**3*e**7 + 420*a**4*b**7*d**4*e**6 + 252*a**3*b**8*d**5*e**5 - 420*
a**2*b**9*d**6*e**4 + 204*a*b**10*d**7*e**3 - 36*b**11*d**8*e**2) + x**5*(7
2*a**9*b**2*e**10 - 360*a**8*b**3*d*e**9 + 540*a**7*b**4*d**2*e**8 + 252*a*
*6*b**5*d**3*e**7 - 1764*a**5*b**6*d**4*e**6 + 2268*a**4*b**7*d**5*e**5 - 1
260*a**3*b**8*d**6*e**4 + 180*a**2*b**9*d**7*e**3 + 108*a*b**10*d**8*e**2 -
 36*b**11*d**9*e) + x**4*(48*a**10*b*e**10 - 120*a**9*b**2*d*e**9 - 360*a**
8*b**3*d**2*e**8 + 1860*a**7*b**4*d**3*e**7 - 2940*a**6*b**5*d**4*e**6 + 17
64*a**5*b**6*d**5*e**5 + 420*a**4*b**7*d**6*e**4 - 1140*a**3*b**8*d**7*e**3
 + 540*a**2*b**9*d**8*e**2 - 60*a*b**10*d**9*e - 12*b**11*d**10) + x**3*(12
*a**11*e**10 + 60*a**10*b*d*e**9 - 540*a**9*b**2*d**2*e**8 + 1140*a**8*b**3
*d**3*e**7 - 420*a**7*b**4*d**4*e**6 - 1764*a**6*b**5*d**5*e**5 + 2940*a**5
*b**6*d**6*e**4 - 1860*a**4*b**7*d**7*e**3 + 360*a**3*b**8*d**8*e**2 + 120*
a**2*b**9*d**9*e - 48*a*b**10*d**10) + x**2*(36*a**11*d*e**9 - 108*a**10*b*
d**2*e**8 - 180*a**9*b**2*d**3*e**7 + 1260*a**8*b**3*d**4*e**6 - 2268*a**7*
b**4*d**5*e**5 + 1764*a**6*b**5*d**6*e**4 - 252*a**5*b**6*d**7*e**3 - 540*a
**4*b**7*d**8*e**2 + 360*a**3*b**8*d**9*e - 72*a**2*b**9*d**10) + x*(36*a**
11*d**2*e**8 - 204*a**10*b*d**3*e**7 + 420*a**9*b**2*d**4*e**6 - 252*a**8*b
**3*d**5*e**5 - 420*a**7*b**4*d**6*e**4 + 924*a**6*b**5*d**7*e**3 - 756*a**
5*b**6*d**8*e**2 + 300*a**4*b**7*d**9*e - 48*a**3*b**8*d**10))
```

3.1729 $\int (a+bx)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=146

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8}{8e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)}{7e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^2}{6e^3(a+bx)}$$

Rubi [A] time = 0.15, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8}{8e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)}{7e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^2}{6e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x))
 - (2*b*(b*d - a*e)*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a +
b*x)) + (b^2*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^5\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^5\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^5}{e^2}-\frac{2b(bd-ae)(d+ex)^6}{e^2}+\frac{b^2(d+ex)^7}{e^2}\right)}{ab+b^2x}\\ &= \frac{(bd-ae)^2(d+ex)^6\sqrt{a^2+2abx+b^2x^2}}{6e^3(a+bx)}-\frac{2b(bd-ae)(d+ex)^7\sqrt{a^2+}}{7e^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.06, size = 196, normalized size = 1.34

$$\frac{x\sqrt{(a+bx)^2}\left(28a^2\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+8abx\left(21d^5+70d^4ex+105d^3e^2x^2+84d^2e^3x^3+35de^4x^4+6e^5x^5\right)+b^2x^2\left(56d^5+210d^4ex+336d^3e^2x^2+280d^2e^3x^3+120de^4x^4+21e^5x^5\right)\right)}{168(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(28*a^2*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2*
e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + 8*a*b*x*(21*d^5 + 70*d^4*e*x + 105*d^3*e
^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + b^2*x^2*(56*d^5 + 210
*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5))
)/(168*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.24, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.41, size = 197, normalized size = 1.35

$$\frac{1}{8}b^2e^5x^8+a^2d^5x+\frac{1}{7}\left(5b^2de^4+2abe^5\right)x^7+\frac{1}{6}\left(10b^2d^2e^3+10abde^4+a^2e^5\right)x^6+\left(2b^2d^3e^2+4abd^2e^3+a^2de^4\right)x^5+\frac{5}{4}\left(b^2d^4e+4abd^3e^2+2a^2d^2e^3\right)x^4+\frac{1}{3}\left(b^2d^5+10abd^4e+10a^2d^3e^2\right)x^3+\frac{1}{2}\left(2abd^5+5a^2d^4e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/8*b^2*e^5*x^8 + a^2*d^5*x + 1/7*(5*b^2*d*e^4 + 2*a*b*e^5)*x^7 + 1/6*(10*b
^2*d^2*e^3 + 10*a*b*d*e^4 + a^2*e^5)*x^6 + (2*b^2*d^3*e^2 + 4*a*b*d^2*e^3 +
 a^2*d*e^4)*x^5 + 5/4*(b^2*d^4*e + 4*a*b*d^3*e^2 + 2*a^2*d^2*e^3)*x^4 + 1/3
*(b^2*d^5 + 10*a*b*d^4*e + 10*a^2*d^3*e^2)*x^3 + 1/2*(2*a*b*d^5 + 5*a^2*d^4
*e)*x^2
```

giac [B] time = 0.17, size = 311, normalized size = 2.13

$$\frac{1}{8}b^2x^8e^5\mathrm{sgn}(bx+a)+\frac{5}{7}b^2dx^7e^4\mathrm{sgn}(bx+a)+\frac{5}{3}b^2d^2x^6e^3\mathrm{sgn}(bx+a)+2b^2d^3x^5e^2\mathrm{sgn}(bx+a)+\frac{5}{4}b^2d^4x^4e\,\mathrm{sgn}(bx+a)+\frac{1}{3}b^2d^5x^3\mathrm{sgn}(bx+a)+\frac{2}{7}abx^7e^5\mathrm{sgn}(bx+a)+\frac{5}{3}abdx^6e^4\mathrm{sgn}(bx+a)+4abd^2x^5e^3\mathrm{sgn}(bx+a)+5abd^3x^4e^2\mathrm{sgn}(bx+a)+\frac{10}{3}abd^4x^3e\,\mathrm{sgn}(bx+a)+abd^5x^2\mathrm{sgn}(bx+a)+\frac{1}{6}a^2x^6e^5\mathrm{sgn}(bx+a)+a^2dx^5e^4\mathrm{sgn}(bx+a)+\frac{5}{2}a^2d^2x^4e^3\mathrm{sgn}(bx+a)+\frac{10}{3}a^2d^3x^3e^2\mathrm{sgn}(bx+a)+\frac{5}{2}a^2d^4x^2e\,\mathrm{sgn}(bx+a)+a^2d^5x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*b^2*x^8*e^5*sgn(b*x + a) + 5/7*b^2*d*x^7*e^4*sgn(b*x + a) + 5/3*b^2*d^2
*x^6*e^3*sgn(b*x + a) + 2*b^2*d^3*x^5*e^2*sgn(b*x + a) + 5/4*b^2*d^4*x^4*e*
sgn(b*x + a) + 1/3*b^2*d^5*x^3*sgn(b*x + a) + 2/7*a*b*x^7*e^5*sgn(b*x + a)
+ 5/3*a*b*d*x^6*e^4*sgn(b*x + a) + 4*a*b*d^2*x^5*e^3*sgn(b*x + a) + 5*a*b*d
^3*x^4*e^2*sgn(b*x + a) + 10/3*a*b*d^4*x^3*e*sgn(b*x + a) + a*b*d^5*x^2*sgn
(b*x + a) + 1/6*a^2*x^6*e^5*sgn(b*x + a) + a^2*d*x^5*e^4*sgn(b*x + a) + 5/2
*a^2*d^2*x^4*e^3*sgn(b*x + a) + 10/3*a^2*d^3*x^3*e^2*sgn(b*x + a) + 5/2*a^2
*d^4*x^2*e*sgn(b*x + a) + a^2*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 230, normalized size = 1.58

$$\frac{\left(21b^2e^5x^7+48x^6abe^5+120x^6b^2de^4+28x^5a^2e^5+280x^5abde^4+280x^5b^2d^2e^3+168a^2de^4x^4+672abd^2e^3x^4+336b^2d^3e^2x^4+420x^3a^2d^2e^3+840x^3abd^3e^2+210x^3b^2d^4e+560x^2a^2d^3e^2+560x^2abd^4e+56x^2b^2d^5+420xa^2d^4e+168xabd^5+168a^2d^5\right)\sqrt{(bx+a)^2}\,x}{168bx+168a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/168*x*(21*b^2*e^5*x^7+48*a*b*e^5*x^6+120*b^2*d*e^4*x^6+28*a^2*e^5*x^5+280
*a*b*d*e^4*x^5+280*b^2*d^2*e^3*x^5+168*a^2*d*e^4*x^4+672*a*b*d^2*e^3*x^4+33
6*b^2*d^3*e^2*x^4+420*a^2*d^2*e^3*x^3+840*a*b*d^3*e^2*x^3+210*b^2*d^4*e*x^3
+560*a^2*d^3*e^2*x^2+560*a*b*d^4*e*x^2+56*b^2*d^5*x^2+420*a^2*d^4*e*x+168*a
*b*d^5*x+168*a^2*d^5)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.58, size = 1323, normalized size = 9.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^5*x^5/b - 13/56*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*e^5*x^4/b^2 + 9/28*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*e^5*x^3
/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d^5*x + 1/2*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*a^6*e^5*x/b^5 - 11/28*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*e^5*x^2
/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*d^5/b + 1/2*sqrt(b^2*x^2 + 2*a
*b*x + a^2)*a^7*e^5/b^6 + 25/56*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*e^5*x/b
^5 - 27/56*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*e^5/b^6 + 1/7*(5*b*d*e^4 + a
*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^4/b^2 - 11/42*(5*b*d*e^4 + a*e^5)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x^3/b^3 + 5/6*(2*b*d^2*e^3 + a*d*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*x^3/b^2 - 1/2*(5*b*d*e^4 + a*e^5)*sqrt(b^2*x^2
+ 2*a*b*x + a^2)*a^5*x/b^5 + 5/2*(2*b*d^2*e^3 + a*d*e^4)*sqrt(b^2*x^2 + 2*a
*b*x + a^2)*a^4*x/b^4 - 5*(b*d^3*e^2 + a*d^2*e^3)*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*a^3*x/b^3 + 5/2*(b*d^4*e + 2*a*d^3*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*
a^2*x/b^2 - 1/2*(b*d^5 + 5*a*d^4*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b + 5
/14*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x^2/b^4 - 3/2*(
2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x^2/b^3 + 2*(b*d^3
*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 - 1/2*(5*b*d*e^4
+ a*e^5)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^6/b^6 + 5/2*(2*b*d^2*e^3 + a*d*e^4
)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^5/b^5 - 5*(b*d^3*e^2 + a*d^2*e^3)*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*a^4/b^4 + 5/2*(b*d^4*e + 2*a*d^3*e^2)*sqrt(b^2*x^2 +
 2*a*b*x + a^2)*a^3/b^3 - 1/2*(b*d^5 + 5*a*d^4*e)*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*a^2/b^2 - 3/7*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*
x/b^5 + 2*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^4
 - 7/2*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b^3 + 5/
4*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 + 10/21*(5*
b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^6 - 7/3*(2*b*d^2*e^3
 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^5 + 9/2*(b*d^3*e^2 + a*d^
2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^4 - 25/12*(b*d^4*e + 2*a*d^3*e
^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(b*d^5 + 5*a*d^4*e)*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 4.77, size = 1541, normalized size = 10.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^5,x)
```

```
[Out] a*d^5*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^5*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^5*x^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(8*b) + (a*e^5*x^4*(a^2 + b^2
*x^2 + 2*a*b*x)^(3/2))/(7*b^2) + (5*d*e^4*x^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(7*b) - (13*a*e^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(6*b^4*x^4*(a^2 + b^2
*x^2 + 2*a*b*x) - a^6 + 20*a^4*b^2*x^2 + 19*a^5*b*x - 11*a*b^3*x^3*(a^2 + b
^2*x^2 + 2*a*b*x) + 15*a^2*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - 18*a^3*b*x*(
a^2 + b^2*x^2 + 2*a*b*x)))/(336*b^6) + (2*d^3*e^2*x^2*(a^2 + b^2*x^2 + 2*a*
b*x)^(3/2))/b + (5*d^2*e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(3*b) + (5*
d^4*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b) - (a^3*e^5*(a^2 + b^2*x^2 +
```

```
2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 +
 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(35*b^6) - (41*a^2*e^5*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 1
4*a^3*b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2
*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(560*b^6) - (5*a*d^4*e*(8*b^2*(a^2 + b^2*x
^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(96*b^4) - (
5*a^3*d^3*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*b^2) - (3
*a*d^2*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*
b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x))
)/(4*b^4) - (29*a^2*d*e^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 +
 b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*
x^2 + 2*a*b*x)))/(56*b^5) - (7*a*d^3*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a
^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(6*b^3) -
(5*a^3*d*e^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^
2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(24*b^5) + (5*a*d^3*e^2*x*(a^2 + b^2*x
^2 + 2*a*b*x)^(3/2))/(2*b^2) + (5*a*d*e^4*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(6*b^2) - (5*a^2*d^4*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/(4*b) - (19*a^2*d^2*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2
 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(12*b^4) - (11*a^2*d^3*e^2
*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/(16*b^5) - (a^3*d^2*e^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b
^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^6) - (11*a*d*e^4*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 14*a^3*b^2*x
^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2*b*x*(a^2 +
 b^2*x^2 + 2*a*b*x)))/(42*b^5) + (2*a*d^2*e^3*x^2*(a^2 + b^2*x^2 + 2*a*b*x)
^(3/2))/b^2
```

sympy [B] time = 0.16, size = 218, normalized size = 1.49

$$a^2d^5x + \frac{b^2e^5x^8}{8} + x^7\left(\frac{2abe^5}{7} + \frac{5b^2de^4}{7}\right) + x^6\left(\frac{a^2e^5}{6} + \frac{5abde^4}{3} + \frac{5b^2d^2e^3}{3}\right) + x^5\left(a^2de^4 + 4abd^2e^3 + 2b^2d^3e^2\right) + x^4\left(\frac{5a^2d^2e^3}{2} + 5abd^3e^2 + \frac{5b^2d^4e}{4}\right) + x^3\left(\frac{10a^2d^3e^2}{3} + \frac{10abd^4e}{3} + \frac{b^2d^5}{3}\right) + x^2\left(\frac{5a^2d^4e}{2} + abd^5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**5*x + b**2*e**5*x**8/8 + x**7*(2*a*b*e**5/7 + 5*b**2*d*e**4/7) + x*
*6*(a**2*e**5/6 + 5*a*b*d*e**4/3 + 5*b**2*d**2*e**3/3) + x**5*(a**2*d*e**4
+ 4*a*b*d**2*e**3 + 2*b**2*d**3*e**2) + x**4*(5*a**2*d**2*e**3/2 + 5*a*b*d*
*3*e**2 + 5*b**2*d**4*e/4) + x**3*(10*a**2*d**3*e**2/3 + 10*a*b*d**4*e/3 +
b**2*d**5/3) + x**2*(5*a**2*d**4*e/2 + a*b*d**5)
```

3.1730 $\int (a+bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=146

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7}{7e^3(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)}{3e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)^2}{5e^3(a+bx)}$$

Rubi [A] time = 0.13, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7}{7e^3(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)}{3e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)^2}{5e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x))
 - (b*(b*d - a*e)*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*
x)) + (b^2*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^4\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^4\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^4}{e^2}-\frac{2b(bd-ae)(d+ex)^5}{e^2}+\frac{b^2(d+ex)^6}{e^2}\right)}{ab+b^2x}$$

$$=\frac{(bd-ae)^2(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{b(bd-ae)(d+ex)^6\sqrt{a^2+2}}{3e^3(a+bx)}$$

Mathematica [A] time = 0.05, size = 163, normalized size = 1.12

$$\frac{x\sqrt{(a+bx)^2}\left(21a^2\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+7abx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)+b^2x^2\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)\right)}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(21*a^2*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^3
*x^3 + e^4*x^4) + 7*a*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*
x^3 + 5*e^4*x^4) + b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e
^3*x^3 + 15*e^4*x^4)))/(105*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.62, size = 0, normalized size = 0.00

$$\int(a+bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.39, size = 156, normalized size = 1.07

$$\frac{1}{7}b^2e^4x^7+a^2d^4x+\frac{1}{3}\left(2b^2de^3+abe^4\right)x^6+\frac{1}{5}\left(6b^2d^2e^2+8abde^3+a^2e^4\right)x^5+\left(b^2d^3e+3abd^2e^2+a^2de^3\right)x^4+\frac{1}{3}\left(b^2d^4+8abd^3e+6a^2d^2e^2\right)x^3+\left(abd^4+2a^2d^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/7*b^2*e^4*x^7 + a^2*d^4*x + 1/3*(2*b^2*d*e^3 + a*b*e^4)*x^6 + 1/5*(6*b^2*
d^2*e^2 + 8*a*b*d*e^3 + a^2*e^4)*x^5 + (b^2*d^3*e + 3*a*b*d^2*e^2 + a^2*d*e
^3)*x^4 + 1/3*(b^2*d^4 + 8*a*b*d^3*e + 6*a^2*d^2*e^2)*x^3 + (a*b*d^4 + 2*a^
2*d^3*e)*x^2
```

giac [B] time = 0.18, size = 254, normalized size = 1.74

$$\frac{1}{7}b^2x^7e^4\mathrm{sgn}(bx+a)+\frac{2}{3}b^2dx^6e^3\mathrm{sgn}(bx+a)+\frac{6}{5}b^2d^2x^5e^2\mathrm{sgn}(bx+a)+b^2d^3x^4e\,\mathrm{sgn}(bx+a)+\frac{1}{3}b^2d^4x^3\mathrm{sgn}(bx+a)+\frac{1}{3}abx^6e^4\mathrm{sgn}(bx+a)+\frac{8}{5}abdx^5e^3\mathrm{sgn}(bx+a)+3abd^2x^4e^2\mathrm{sgn}(bx+a)+\frac{8}{3}abd^3x^3e\,\mathrm{sgn}(bx+a)+abd^4x^2\mathrm{sgn}(bx+a)+\frac{1}{5}a^2x^5e^4\mathrm{sgn}(bx+a)+a^2dx^4e^3\mathrm{sgn}(bx+a)+2a^2d^2x^3e^2\mathrm{sgn}(bx+a)+2a^2d^3x^2e\,\mathrm{sgn}(bx+a)+a^2d^4x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7*b^2*x^7*e^4*sgn(b*x + a) + 2/3*b^2*d*x^6*e^3*sgn(b*x + a) + 6/5*b^2*d^2
*x^5*e^2*sgn(b*x + a) + b^2*d^3*x^4*e*sgn(b*x + a) + 1/3*b^2*d^4*x^3*sgn(b*
x + a) + 1/3*a*b*x^6*e^4*sgn(b*x + a) + 8/5*a*b*d*x^5*e^3*sgn(b*x + a) + 3*
a*b*d^2*x^4*e^2*sgn(b*x + a) + 8/3*a*b*d^3*x^3*e*sgn(b*x + a) + a*b*d^4*x^2
*sgn(b*x + a) + 1/5*a^2*x^5*e^4*sgn(b*x + a) + a^2*d*x^4*e^3*sgn(b*x + a) +
 2*a^2*d^2*x^3*e^2*sgn(b*x + a) + 2*a^2*d^3*x^2*e*sgn(b*x + a) + a^2*d^4*x*
sgn(b*x + a)
```

maple [A] time = 0.05, size = 189, normalized size = 1.29

$$\frac{\left(15b^2e^4x^6+35x^5abe^4+70x^5b^2de^3+21x^4a^2e^4+168x^4abde^3+126x^4b^2d^2e^2+105a^2de^3x^3+315abd^2e^2x^3+105b^2d^3ex^3+210x^2a^2d^2e^2+280x^2abd^3e+35x^2b^2d^4+210a^2d^3ex+105abd^4x+105a^2d^4\right)\sqrt{(bx+a)^2}\,x}{105bx+105a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/105*x*(15*b^2*e^4*x^6+35*a*b*e^4*x^5+70*b^2*d*e^3*x^5+21*a^2*e^4*x^4+168*
a*b*d*e^3*x^4+126*b^2*d^2*e^2*x^4+105*a^2*d*e^3*x^3+315*a*b*d^2*e^2*x^3+105
```

```
*b^2*d^3*e*x^3+210*a^2*d^2*e^2*x^2+280*a*b*d^3*e*x^2+35*b^2*d^4*x^2+210*a^2
*d^3*e*x+105*a*b*d^4*x+105*a^2*d^4)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.70, size = 996, normalized size = 6.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^4*x^4/b - 11/42*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*e^4*x^3/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d^4*x - 1/2*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^5*e^4*x/b^4 + 5/14*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*a^2*e^4*x^2/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*d^4/b - 1/2
*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^6*e^4/b^5 - 3/7*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*a^3*e^4*x/b^4 + 10/21*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*e^4/b^5 + 1
/6*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^3/b^2 + 1/2*(4*b*d
*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*x/b^4 - (3*b*d^2*e^2 + 2*a*
d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3*x/b^3 + (2*b*d^3*e + 3*a*d^2*e^2)*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x/b^2 - 1/2*(b*d^4 + 4*a*d^3*e)*sqrt(b^2*
x^2 + 2*a*b*x + a^2)*a*x/b - 3/10*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*x^2/b^3 + 2/5*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*x^2/b^2 + 1/2*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a
^5/b^5 - (3*b*d^2*e^2 + 2*a*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4/b^4 +
(2*b*d^3*e + 3*a*d^2*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3/b^3 - 1/2*(b*d^
4 + 4*a*d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^2 + 2/5*(4*b*d*e^3 + a*e
^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^4 - 7/10*(3*b*d^2*e^2 + 2*a*d*e
^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b^3 + 1/2*(2*b*d^3*e + 3*a*d^2*e^2)
*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 - 7/15*(4*b*d*e^3 + a*e^4)*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*a^3/b^5 + 9/10*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*a^2/b^4 - 5/6*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*a/b^3 + 1/3*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)
^(3/2)/b^2
```

mupad [B] time = 3.59, size = 1095, normalized size = 7.50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^4,x)
```

```
[Out] a*d^4*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^4*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^4*x^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(7*b) - (a^3*e^4*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) -
4*a^2*b*x))/(24*b^5) + (a*e^4*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(6*b^2)
+ (2*d*e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(3*b) - (11*a*e^4*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 14*a^3*
b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2*b*x*(
a^2 + b^2*x^2 + 2*a*b*x)))/(210*b^5) + (6*d^2*e^2*x^2*(a^2 + b^2*x^2 + 2*a*
b*x)^(3/2))/(5*b) + (d^3*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/b - (29*a^2*e
^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a
^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(280*b
^5) - (a*d^3*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2))/(24*b^4) - (3*a^3*d^2*e^2*(x/2 + a/(2*b))*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2))/(2*b^2) - (7*a*d^2*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2
)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(10*b^
3) - (19*a^2*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b
*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(30*b^4) - (a^3*d*e^3*(8*b^2*(a^
2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(15
```

```
*b^6) + (3*a*d^2*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(2*b^2) + (4*a*d*e^
3*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) - (a^2*d^3*e*(x/2 + a/(2*b))
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/b - (3*a*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*
x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(10*b^4) - (33*a^2*d^2*e^2*(8*b^2*(
a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
80*b^5)
```

sympy [A] time = 0.16, size = 168, normalized size = 1.15

$$a^2d^4x + \frac{b^2e^4x^7}{7} + x^6\left(\frac{abe^4}{3} + \frac{2b^2de^3}{3}\right) + x^5\left(\frac{a^2e^4}{5} + \frac{8abde^3}{5} + \frac{6b^2d^2e^2}{5}\right) + x^4\left(a^2de^3 + 3abd^2e^2 + b^2d^3e\right) + x^3\left(2a^2d^2e^2 + \frac{8abd^3e}{3} + \frac{b^2d^4}{3}\right) + x^2\left(2a^2d^3e + abd^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**4*x + b**2*e**4*x**7/7 + x**6*(a*b*e**4/3 + 2*b**2*d*e**3/3) + x**5
*(a**2*e**4/5 + 8*a*b*d*e**3/5 + 6*b**2*d**2*e**2/5) + x**4*(a**2*d*e**3 +
3*a*b*d**2*e**2 + b**2*d**3*e) + x**3*(2*a**2*d**2*e**2 + 8*a*b*d**3*e/3 +
b**2*d**4/3) + x**2*(2*a**2*d**3*e + a*b*d**4)
```

3.1731 $\int (a+bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=146

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6}{6e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)^2}{4e^3(a+bx)}$$

Rubi [A] time = 0.11, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6}{6e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)^2}{4e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x))
 - (2*b*(b*d - a*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a +
b*x)) + (b^2*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^3\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^3\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^3}{e^2}-\frac{2b(bd-ae)(d+ex)^4}{e^2}+\frac{b^2(d+ex)^5}{e^2}\right)}{ab+b^2x}\\ &= \frac{(bd-ae)^2(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)}-\frac{2b(bd-ae)(d+ex)^5\sqrt{a^2+}}{5e^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 130, normalized size = 0.89

$$\frac{x\sqrt{(a+bx)^2}\left(15a^2\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+6abx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+b^2x^2\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(15*a^2*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) +
6*a*b*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + b^2*x^2*(20*d^3
+ 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3)))/(60*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.29, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.40, size = 124, normalized size = 0.85

$$\frac{1}{6}b^2e^3x^6+a^2d^3x+\frac{1}{5}\left(3b^2de^2+2abe^3\right)x^5+\frac{1}{4}\left(3b^2d^2e+6abde^2+a^2e^3\right)x^4+\frac{1}{3}\left(b^2d^3+6abd^2e+3a^2de^2\right)x^3+\frac{1}{2}\left(2abd^3+3a^2d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*b^2*e^3*x^6 + a^2*d^3*x + 1/5*(3*b^2*d*e^2 + 2*a*b*e^3)*x^5 + 1/4*(3*b^
2*d^2*e + 6*a*b*d*e^2 + a^2*e^3)*x^4 + 1/3*(b^2*d^3 + 6*a*b*d^2*e + 3*a^2*d
*e^2)*x^3 + 1/2*(2*a*b*d^3 + 3*a^2*d^2*e)*x^2
```

giac [A] time = 0.16, size = 199, normalized size = 1.36

$$\frac{1}{6}b^2x^6e^3\mathrm{sgn}(bx+a)+\frac{3}{5}b^2dx^5e^2\mathrm{sgn}(bx+a)+\frac{3}{4}b^2d^2x^4e\mathrm{sgn}(bx+a)+\frac{1}{3}b^2d^3x^3\mathrm{sgn}(bx+a)+\frac{2}{5}abx^5e^3\mathrm{sgn}(bx+a)+\frac{3}{2}abdx^4e^2\mathrm{sgn}(bx+a)+2abd^2x^3e\mathrm{sgn}(bx+a)+abd^3x^2\mathrm{sgn}(bx+a)+\frac{1}{4}a^2x^4e^3\mathrm{sgn}(bx+a)+a^2dx^3e^2\mathrm{sgn}(bx+a)+\frac{3}{2}a^2d^2x^2e\mathrm{sgn}(bx+a)+a^2d^3x\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*b^2*x^6*e^3*sgn(b*x + a) + 3/5*b^2*d*x^5*e^2*sgn(b*x + a) + 3/4*b^2*d^2
*x^4*e*sgn(b*x + a) + 1/3*b^2*d^3*x^3*sgn(b*x + a) + 2/5*a*b*x^5*e^3*sgn(b*
x + a) + 3/2*a*b*d*x^4*e^2*sgn(b*x + a) + 2*a*b*d^2*x^3*e*sgn(b*x + a) + a*
b*d^3*x^2*sgn(b*x + a) + 1/4*a^2*x^4*e^3*sgn(b*x + a) + a^2*d*x^3*e^2*sgn(b
*x + a) + 3/2*a^2*d^2*x^2*e*sgn(b*x + a) + a^2*d^3*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 148, normalized size = 1.01

$$\frac{\left(10b^2e^3x^5+24x^4abe^3+36x^4b^2de^2+15x^3a^2e^3+90x^3abde^2+45x^3b^2d^2e+60x^2a^2de^2+120x^2abd^2e+20x^2b^2d^3+90xa^2d^2e+60xabd^3+60a^2d^3\right)\sqrt{(bx+a)^2}\,x}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x*(10*b^2*e^3*x^5+24*a*b*e^3*x^4+36*b^2*d*e^2*x^4+15*a^2*e^3*x^3+90*a*
b*d*e^2*x^3+45*b^2*d^2*e*x^3+60*a^2*d*e^2*x^2+120*a*b*d^2*e*x^2+20*b^2*d^3*
x^2+90*a^2*d^2*e*x+60*a*b*d^3*x+60*a^2*d^3)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.61, size = 693, normalized size = 4.75

$$\frac{(b^2x^2+2abx+a^2)^{\frac{3}{2}}e^3x^3}{6b}+\frac{1}{2}\sqrt{b^2x^2+2abx+a^2}\,ad^3x+\frac{\sqrt{b^2x^2+2abx+a^2}\,a^4e^3x}{2b^3}-\frac{3(b^2x^2+2abx+a^2)^{\frac{3}{2}}ae^3x^2}{10b^2}+\frac{\sqrt{b^2x^2+2abx+a^2}\,a^2d^3}{2b}+\frac{\sqrt{b^2x^2+2abx+a^2}\,a^5e^3}{2b^4}+\frac{2(b^2x^2+2abx+a^2)^{\frac{3}{2}}a^2e^3x}{5b^3}-\frac{7(b^2x^2+2abx+a^2)^{\frac{3}{2}}a^3e^3}{15b^4}-\frac{(3bde^2+ae^3)\sqrt{b^2x^2+2abx+a^2}\,a^3x}{2b^3}+\frac{3(bd^2e+ade^2)\sqrt{b^2x^2+2abx+a^2}\,a^2x}{2b^2}-\frac{(bd^3+3ad^2e)\sqrt{b^2x^2+2abx+a^2}\,ax}{2b}+\frac{(3bde^2+ae^3)(b^2x^2+2abx+a^2)^{\frac{3}{2}}x^2}{5b^2}-\frac{(3bde^2+ae^3)\sqrt{b^2x^2+2abx+a^2}\,a^4}{2b^4}+\frac{3(bd^2e+ade^2)\sqrt{b^2x^2+2abx+a^2}\,a^3}{2b^3}-\frac{(bd^3+3ad^2e)\sqrt{b^2x^2+2abx+a^2}\,a^2}{2b^2}-\frac{7(3bde^2+ae^3)(b^2x^2+2abx+a^2)^{\frac{3}{2}}ax}{20b^3}+\frac{3(bd^2e+ade^2)(b^2x^2+2abx+a^2)^{\frac{3}{2}}x}{4b^2}+\frac{9(3bde^2+ae^3)(b^2x^2+2abx+a^2)^{\frac{3}{2}}a^2}{20b^4}-\frac{5(bd^2e+ade^2)(b^2x^2+2abx+a^2)^{\frac{3}{2}}a}{4b^3}+\frac{(bd^3+3ad^2e)(b^2x^2+2abx+a^2)^{\frac{3}{2}}}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^3*x^3/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*a*d^3*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*e^3*x/b^3 - 3/10*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*a*e^3*x^2/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a
^2)*a^2*d^3/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^5*e^3/b^4 + 2/5*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)*a^2*e^3*x/b^3 - 7/15*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*a^3*e^3/b^4 - 1/2*(3*b*d*e^2 + a*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3*
x/b^3 + 3/2*(b*d^2*e + a*d*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x/b^2 - 1
/2*(b*d^3 + 3*a*d^2*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b + 1/5*(3*b*d*e^2
 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 - 1/2*(3*b*d*e^2 + a*e^3)
*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4/b^4 + 3/2*(b*d^2*e + a*d*e^2)*sqrt(b^2*x
^2 + 2*a*b*x + a^2)*a^3/b^3 - 1/2*(b*d^3 + 3*a*d^2*e)*sqrt(b^2*x^2 + 2*a*b*
x + a^2)*a^2/b^2 - 7/20*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)
*a*x/b^3 + 3/4*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 +
9/20*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^4 - 5/4*(b*d
^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(b*d^3 + 3*a*d^
2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 3.01, size = 734, normalized size = 5.03

$$ad^3\left(\frac{x}{2}+\frac{a}{2b}\right)\sqrt{a^2+2abx+b^2x^2}+\frac{d^3\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{24b^3}+\frac{e^3x^3\left(a^2+2abx+b^2x^2\right)^{3/2}}{6b}-\frac{19a^2e^3\sqrt{a^2+2abx+b^2x^2}\left(a^3-5ab^2x^2+3bx\left(a^2+2abx+b^2x^2\right)-4a^2bx\right)}{120b^4}-\frac{a^3e^3\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{60b^6}+\frac{ae^3x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}{5b^2}+\frac{3de^2x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}{5b}-\frac{3ae^3\sqrt{a^2+2abx+b^2x^2}\left(4b^2x^2\left(a^2+2abx+b^2x^2\right)-a^4+9a^2b^2x^2+8a^3bx-7abx\left(a^2+2abx+b^2x^2\right)\right)}{40b^4}+\frac{3d^2ex\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b}-\frac{7ade^2\sqrt{a^2+2abx+b^2x^2}\left(a^3-5ab^2x^2+3bx\left(a^2+2abx+b^2x^2\right)-4a^2bx\right)}{20b^3}-\frac{ad^2e\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{32b^4}+\frac{3ade^2x\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b^2}-\frac{33a^2de^2\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{160b^5}-\frac{3a^2d^2e\left(\frac{x}{2}+\frac{a}{2b}\right)\sqrt{a^2+2abx+b^2x^2}}{4b}-\frac{3a^3de^2\left(\frac{x}{2}+\frac{a}{2b}\right)\sqrt{a^2+2abx+b^2x^2}}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^3,x)
```

```
[Out] a*d^3*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^3*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(6*b) - (19*a^2*e^3*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x)
 - 4*a^2*b*x))/(120*b^4) - (a^3*e^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4
*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(60*b^6) + (a*e^3*x^2*(a^2 + b^2
*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (3*d*e^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(5*b) - (3*a*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*
x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 +
 2*a*b*x)))/(40*b^4) + (3*d^2*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b) -
(7*a*d*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2
+ b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(20*b^3) - (a*d^2*e*(8*b^2*(a^2 + b^2*x^
2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(32*b^4) + (3
*a*d*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (33*a^2*d*e^2*(8*b^2*
(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/
(160*b^5) - (3*a^2*d^2*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
4*b) - (3*a^3*d*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2
)
```

sympy [A] time = 0.13, size = 133, normalized size = 0.91

$$a^2d^3x+\frac{b^2e^3x^6}{6}+x^5\left(\frac{2abe^3}{5}+\frac{3b^2de^2}{5}\right)+x^4\left(\frac{a^2e^3}{4}+\frac{3abde^2}{2}+\frac{3b^2d^2e}{4}\right)+x^3\left(a^2de^2+2abd^2e+\frac{b^2d^3}{3}\right)+x^2\left(\frac{3a^2d^2e}{2}+abd^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**3*x + b**2*e**3*x**6/6 + x**5*(2*a*b*e**3/5 + 3*b**2*d*e**2/5) + x*
*4*(a**2*e**3/4 + 3*a*b*d*e**2/2 + 3*b**2*d**2*e/4) + x**3*(a**2*d*e**2 + 2
*a*b*d**2*e + b**2*d**3/3) + x**2*(3*a**2*d**2*e/2 + a*b*d**3)
```

3.1732 $\int (a+bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=125

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(bd-ae)}{2b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)^2}{3b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)}{5b^3}$$

Rubi [A] time = 0.10, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(bd-ae)}{2b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)^2}{3b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) + (e*(b*d
 - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^3) + (e^2*(a + b*x)
^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^2\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^2\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^2(a+bx)^2}{b^2}+\frac{2e(bd-ae)(a+bx)^3}{b^2}+\frac{e^2(a+bx)}{b^2}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}{3b^3}+\frac{e(bd-ae)(a+bx)^3\sqrt{a^2}}{2b^3}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 97, normalized size = 0.78

$$\frac{x\sqrt{(a+bx)^2}\left(10a^2\left(3d^2+3dex+e^2x^2\right)+5abx\left(6d^2+8dex+3e^2x^2\right)+b^2x^2\left(10d^2+15dex+6e^2x^2\right)\right)}{30(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^2*(3*d^2 + 3*d*e*x + e^2*x^2) + 5*a*b*x*(6*d^2 +
 8*d*e*x + 3*e^2*x^2) + b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2)))/(30*(a +
b*x))
```

IntegrateAlgebraic [F] time = 1.07, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.40, size = 81, normalized size = 0.65

$$\frac{1}{5}\,b^2e^2x^5+a^2d^2x+\frac{1}{2}\left(b^2de+abe^2\right)x^4+\frac{1}{3}\left(b^2d^2+4\,abde+a^2e^2\right)x^3+\left(abd^2+a^2de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/5*b^2*e^2*x^5 + a^2*d^2*x + 1/2*(b^2*d*e + a*b*e^2)*x^4 + 1/3*(b^2*d^2 +
4*a*b*d*e + a^2*e^2)*x^3 + (a*b*d^2 + a^2*d*e)*x^2
```

giac [A] time = 0.16, size = 143, normalized size = 1.14

$$\frac{1}{5}\,b^2x^5e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,b^2dx^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,b^2d^2x^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,abx^4e^2\mathrm{sgn}\left(bx+a\right)+\frac{4}{3}\,abdx^3e\mathrm{sgn}\left(bx+a\right)+abd^2x^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,a^2x^3e^2\mathrm{sgn}\left(bx+a\right)+a^2dx^2e\mathrm{sgn}\left(bx+a\right)+a^2d^2x\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/5*b^2*x^5*e^2*sgn(b*x + a) + 1/2*b^2*d*x^4*e*sgn(b*x + a) + 1/3*b^2*d^2*x
^3*sgn(b*x + a) + 1/2*a*b*x^4*e^2*sgn(b*x + a) + 4/3*a*b*d*x^3*e*sgn(b*x +
a) + a*b*d^2*x^2*sgn(b*x + a) + 1/3*a^2*x^3*e^2*sgn(b*x + a) + a^2*d*x^2*e*
sgn(b*x + a) + a^2*d^2*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 107, normalized size = 0.86

$$\frac{\left(6b^2e^2x^4+15x^3ab\,e^2+15x^3b^2de+10x^2a^2e^2+40x^2abde+10x^2b^2d^2+30a^2dex+30ab\,d^2x+30a^2d^2\right)\sqrt{(bx+a)^2}\;x}{30bx+30a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/30*x*(6*b^2*e^2*x^4+15*a*b*e^2*x^3+15*b^2*d*e*x^3+10*a^2*e^2*x^2+40*a*b*d
*e*x^2+10*b^2*d^2*x^2+30*a^2*d*e*x+30*a*b*d^2*x+30*a^2*d^2)*((b*x+a)^2)^(1/
2)/(b*x+a)
```

maxima [B] time = 0.55, size = 452, normalized size = 3.62

$$\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\,ad^2x-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^3e^2x}{2\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}e^2x^2}{5\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^2d^2}{2\,b}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^4e^2}{2\,b^3}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ae^2x}{20\,b^2}+\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2e^2}{20\,b^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\left(2\,bde+ae^2\right)a^2x}{2\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\left(bd^2+2\,ade\right)ax}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\left(2\,bde+ae^2\right)a^3}{2\,b^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\left(bd^2+2\,ade\right)a^2}{2\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,bde+ae^2\right)x}{4\,b^2}-\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,bde+ae^2\right)a}{12\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(bd^2+2\,ade\right)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d^2*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^
2)*a^3*e^2*x/b^2 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^2*x^2/b + 1/2*sqrt
(b^2*x^2 + 2*a*b*x + a^2)*a^2*d^2/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4
*e^2/b^3 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*e^2*x/b^2 + 9/20*(b^2*x^2
 + 2*a*b*x + a^2)^(3/2)*a^2*e^2/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(2*
b*d*e + a*e^2)*a^2*x/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d^2 + 2*a*d
*e)*a*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(2*b*d*e + a*e^2)*a^3/b^3 - 1
/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d^2 + 2*a*d*e)*a^2/b^2 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*(2*b*d*e + a*e^2)*x/b^2 - 5/12*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*(2*b*d*e + a*e^2)*a/b^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*
d^2 + 2*a*d*e)/b^2
```

mupad [B] time = 2.58, size = 438, normalized size = 3.50

$$a\,d^2\left(\frac{x}{2}+\frac{a}{2\,b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{d^2\left(8\,b^2\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^3}+\frac{e^2\,x^2\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{5\,b}-\frac{11\,a^2\,e^2\left(8\,b^2\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{160\,b^5}-\frac{a^3\,e^2\left(\frac{x}{2}+\frac{a}{2\,b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,b^2}+\frac{d\,e\,x\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{2\,b}-\frac{7\,a\,e^2\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\left(a^3-5\,a\,b^2\,x^2+3\,b\,x\left(a^2+2\,a\,b\,x+b^2\,x^2\right)-4\,a^2\,b\,x\right)}{60\,b^3}+\frac{a\,e^2\,x\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{4\,b^2}-\frac{a^2\,d\,e\left(\frac{x}{2}+\frac{a}{2\,b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{2\,b}-\frac{a\,d\,e\left(8\,b^2\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{48\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^2,x)
```

```
[Out] a*d^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^2*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b) - (11*a^2*e^2*(8*b^2*(a
^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(1
60*b^5) - (a^3*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2)
 + (d*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(2*b) - (7*a*e^2*(a^2 + b^2*x^2
+ 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a
^2*b*x))/(60*b^3) + (a*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (a^
2*d*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*b) - (a*d*e*(8*b^
2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/(48*b^4)
```

sympy [A] time = 0.12, size = 87, normalized size = 0.70

$$a^2d^2x+\frac{b^2e^2x^5}{5}+x^4\left(\frac{abe^2}{2}+\frac{b^2de}{2}\right)+x^3\left(\frac{a^2e^2}{3}+\frac{4abde}{3}+\frac{b^2d^2}{3}\right)+x^2\left(a^2de+abd^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**2*x + b**2*e**2*x**5/5 + x**4*(a*b*e**2/2 + b**2*d*e/2) + x**3*(a**
2*e**2/3 + 4*a*b*d*e/3 + b**2*d**2/3) + x**2*(a**2*d*e + a*b*d**2)
```

3.1733 $\int (a+bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=78

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)}{3b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3}{4b^2}$$

Rubi [A] time = 0.06, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)}{3b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^2) + (e*(a + b
*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)(a+bx)^2}{b}+\frac{e(a+bx)^3}{b}\right)dx}{ab+b^2x}\\
&= \frac{(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}{3b^2}+\frac{e(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^2}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 64, normalized size = 0.82

$$\frac{x\sqrt{(a+bx)^2}\,\left(6a^2(2d+ex)+4abx(3d+2ex)+b^2x^2(4d+3ex)\right)}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(6*a^2*(2*d + e*x) + 4*a*b*x*(3*d + 2*e*x) + b^2*x^2*(
4*d + 3*e*x)))/(12*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.84, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
, x]
```

fricas [A] time = 0.40, size = 48, normalized size = 0.62

$$\frac{1}{4}\,b^2ex^4+a^2dx+\frac{1}{3}\left(b^2d+2\,abe\right)x^3+\frac{1}{2}\left(2\,abd+a^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*b^2*e*x^4 + a^2*d*x + 1/3*(b^2*d + 2*a*b*e)*x^3 + 1/2*(2*a*b*d + a^2*e)
*x^2
```

giac [A] time = 0.16, size = 88, normalized size = 1.13

$$\frac{1}{4}\,b^2x^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,b^2dx^3\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,abx^3e\mathrm{sgn}\left(bx+a\right)+abdx^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,a^2x^2e\mathrm{sgn}\left(bx+a\right)+a^2dx\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*b^2*x^4*e*sgn(b*x + a) + 1/3*b^2*d*x^3*sgn(b*x + a) + 2/3*a*b*x^3*e*sgn
(b*x + a) + a*b*d*x^2*sgn(b*x + a) + 1/2*a^2*x^2*e*sgn(b*x + a) + a^2*d*x*s
gn(b*x + a)
```

maple [A] time = 0.05, size = 66, normalized size = 0.85

$$\frac{\left(3e\,b^2x^3+8x^2abe+4x^2b^2d+6a^2ex+12abdx+12a^2d\right)\sqrt{\left(bx+a\right)^2}\,x}{12bx+12a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/12*x*(3*b^2*e*x^3+8*a*b*e*x^2+4*b^2*d*x^2+6*a^2*e*x+12*a*b*d*x+12*a^2*d)*
((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.64, size = 251, normalized size = 3.22

$$\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,adx+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^2ex}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^2d}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^3e}{2\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(bd+ae)ax}{2\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ex}{4\,b}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(bd+ae)a^2}{2\,b^2}-\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ae}{12\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(bd+ae)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*a^2*e*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*d/b + 1/2*sqrt(b^2*x^2 +
 2*a*b*x + a^2)*a^3*e/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d + a*e)*a
*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e*x/b - 1/2*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*(b*d + a*e)*a^2/b^2 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*e/b^
2 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*d + a*e)/b^2
```

mupad [B] time = 2.50, size = 219, normalized size = 2.81

$$\frac{d\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{24b^3}+\frac{ex\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b}-\frac{a^2e\left(\frac{x}{2}+\frac{a}{2b}\right)\sqrt{a^2+2abx+b^2x^2}}{4b}-\frac{5ae\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{96b^4}+\frac{a\left(a+bx\right)\left(3bd-ae+2bex\right)\sqrt{a^2+2abx+b^2x^2}}{6b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x),x)
```

```
[Out] (d*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*
x)^(1/2))/(24*b^3) + (e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b) - (a^2*e*(
x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b) - (5*a*e*(8*b^2*(a^2
+ b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(96*b
^4) + (a*(a + b*x)*(3*b*d - a*e + 2*b*e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/(6*b^2)
```

sympy [A] time = 0.11, size = 49, normalized size = 0.63

$$a^2dx+\frac{b^2ex^4}{4}+x^3\left(\frac{2abe}{3}+\frac{b^2d}{3}\right)+x^2\left(\frac{a^2e}{2}+abd\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d*x + b**2*e*x**4/4 + x**3*(2*a*b*e/3 + b**2*d/3) + x**2*(a**2*e/2 + a
*b*d)
```

3.1734 $\int (a+bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=27

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b}$$

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(3/2)/(3*b)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 0.67

$$\frac{\left((a+bx)^2\right)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] ((a + b*x)^2)^(3/2)/(3*b)
```

IntegrateAlgebraic [A] time = 0.02, size = 18, normalized size = 0.67

$$\frac{\left((a+bx)^2\right)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] ((a + b*x)^2)^(3/2)/(3*b)
```

fricas [A] time = 0.42, size = 20, normalized size = 0.74

$$\frac{1}{3}b^2x^3+abx^2+a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] 1/3*b^2*x^3 + a*b*x^2 + a^2*x
```

giac [A] time = 0.15, size = 18, normalized size = 0.67

$$\frac{(bx+a)^3\operatorname{sgn}(bx+a)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] 1/3*(b*x + a)^3*sgn(b*x + a)/b
```

maple [A] time = 0.05, size = 38, normalized size = 1.41

$$\frac{\left(b^2x^2+3abx+3a^2\right)\sqrt{(bx+a)^2}\,x}{3bx+3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2),x)
[Out] 1/3*x*(b^2*x^2+3*a*b*x+3*a^2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [A] time = 0.70, size = 14, normalized size = 0.52

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] 1/3*((b*x + a)^2)^(3/2)/b
```

mupad [B] time = 2.17, size = 76, normalized size = 2.81

$$\frac{\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^3}+\frac{a\,\sqrt{(a+b\,x)^2}\,\left(a+b\,x\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x),x)
[Out] ((8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/(24*b^3) + (a*((a + b*x)^2)^(1/2)*(a + b*x))/(2*b)
```

sympy [A] time = 0.09, size = 19, normalized size = 0.70

$$a^2x+abx^2+\frac{b^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2),x)
[Out] a**2*x + a*b*x**2 + b**2*x**3/3
```

3.1735 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$

Optimal. Leaf size=122

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^3(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^2(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e}$$

Rubi [A] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^2(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^3(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x))) + ((a +
b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e) + ((b*d - a*e)^2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b(bd-ae)}{e^2}+\frac{b(a+bx)}{e}+\frac{(-bd+ae)^2}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= -\frac{b(bd-ae)x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e}+\frac{(bd-a\end{aligned}$$

Mathematica [A] time = 0.03, size = 61, normalized size = 0.50

$$\frac{\sqrt{(a+bx)^2}\left(bex(4ae-2bd+bex)+2(bd-ae)^2\log(d+ex)\right)}{2e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(b*e*x*(-2*b*d + 4*a*e + b*e*x) + 2*(b*d - a*e)^2*Log[d
+ e*x]))/(2*e^3*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.10, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x), x]
```

fricas [A] time = 0.42, size = 62, normalized size = 0.51

$$\frac{b^2e^2x^2-2\left(b^2de-2\,abe^2\right)x+2\left(b^2d^2-2\,abde+a^2e^2\right)\log\left(ex+d\right)}{2\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*e^2*x^2 - 2*(b^2*d*e - 2*a*b*e^2)*x + 2*(b^2*d^2 - 2*a*b*d*e + a^2
*e^2)*log(e*x + d))/e^3
```

giac [A] time = 0.16, size = 97, normalized size = 0.80

$$\left(b^2d^2\mathrm{sgn}\left(bx+a\right)-2\,abde\mathrm{sgn}\left(bx+a\right)+a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}\log\left(|xe+d|\right)+\frac{1}{2}\left(b^2x^2e\mathrm{sgn}\left(bx+a\right)-2\,b^2dx\mathrm{sgn}\left(bx+a\right)+4\,abxe\mathrm{sgn}\left(bx+a\right)\right)e^{(-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (b^2*d^2*sgn(b*x + a) - 2*a*b*d*e*sgn(b*x + a) + a^2*e^2*sgn(b*x + a))*e^(-
3)*log(abs(x*e + d)) + 1/2*(b^2*x^2*e*sgn(b*x + a) - 2*b^2*d*x*sgn(b*x + a)
 + 4*a*b*x*e*sgn(b*x + a))*e^(-2)
```

maple [C] time = 0.08, size = 102, normalized size = 0.84

$$\frac{\left(b^2e^2x^2+2a^2e^2\ln\left(bex+bd\right)-4abde\ln\left(bex+bd\right)+4ab\,e^2x+2b^2d^2\ln\left(bex+bd\right)-2b^2dex+3a^2e^2-2abde\right)\mathrm{csgn}\left(bx+a\right)}{2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*csgn(b*x+a)*(x^2*b^2*e^2+2*ln(b*e*x+b*d)*a^2*e^2-4*ln(b*e*x+b*d)*a*b*d*
e+2*ln(b*e*x+b*d)*b^2*d^2+4*x*a*b*e^2-2*x*b^2*d*e+3*a^2*e^2-2*a*b*d*e)/e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\;(a+b\,x)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x),x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x), x)
```

sympy [A] time = 0.24, size = 44, normalized size = 0.36

$$\frac{b^2x^2}{2e}+x\left(\frac{2ab}{e}-\frac{b^2d}{e^2}\right)+\frac{(ae-bd)^2\log(d+ex)}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d),x)
```

```
[Out] b**2*x**2/(2*e) + x*(2*a*b/e - b**2*d/e**2) + (a*e - b*d)**2*log(d + e*x)/e
**3
```

3.1736 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=132

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)(d+ex)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)}{e^3(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}$$

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)(d+ex)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)}{e^3(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (b^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x)) - ((b*d - a*e)^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*(d + e*x)) - (2*b*(b*d - a*e)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{b^2}{e^2}+\frac{(-bd+ae)^2}{e^2(d+ex)^2}-\frac{2b(bd-ae)}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= \frac{b^2x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}-\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)(d+ex)}-\frac{2b(bd-ae)\sqrt{a^2+}}{e^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 0.66

$$\frac{\sqrt{(a+bx)^2}\left(-a^2e^2-2b(d+ex)(bd-ae)\log(d+ex)+2abde+b^2\left(-d^2+dex+e^2x^2\right)\right)}{e^3(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(2*a*b*d*e - a^2*e^2 + b^2*(-d^2 + d*e*x + e^2*x^2) - 2*
b*(b*d - a*e)*(d + e*x)*Log[d + e*x]))/(e^3*(a + b*x)*(d + e*x))
```

IntegrateAlgebraic [F] time = 1.49, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x)^2, x]
```

fricas [A] time = 0.42, size = 92, normalized size = 0.70

$$\frac{b^2e^2x^2+b^2dex-b^2d^2+2\,abde-a^2e^2-2\left(b^2d^2-abde+\left(b^2de-abe^2\right)x\right)\log\left(ex+d\right)}{e^4x+de^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] (b^2*e^2*x^2 + b^2*d*e*x - b^2*d^2 + 2*a*b*d*e - a^2*e^2 - 2*(b^2*d^2 - a*b
*d*e + (b^2*d*e - a*b*e^2)*x)*log(e*x + d))/(e^4*x + d*e^3)
```

giac [A] time = 0.15, size = 101, normalized size = 0.77

$$b^2xe^{(-2)}\mathrm{sgn}\left(bx+a\right)-2\left(b^2d\mathrm{sgn}\left(bx+a\right)-abe\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}\log\left(|xe+d|\right)-\frac{\left(b^2d^2\mathrm{sgn}\left(bx+a\right)-2\,abde\mathrm{sgn}\left(bx+a\right)+a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] b^2*x*e^(-2)*sgn(b*x + a) - 2*(b^2*d*sgn(b*x + a) - a*b*e*sgn(b*x + a))*e^(
-3)*log(abs(x*e + d)) - (b^2*d^2*sgn(b*x + a) - 2*a*b*d*e*sgn(b*x + a) + a^
2*e^2*sgn(b*x + a))*e^(-3)/(x*e + d)
```

maple [C] time = 0.07, size = 131, normalized size = 0.99

$$\frac{\left(2ab\,e^2x\ln\left(bex+bd\right)-2b^2dex\ln\left(bex+bd\right)+b^2e^2x^2+2abde\ln\left(bex+bd\right)+ab\,e^2x-2b^2d^2\ln\left(bex+bd\right)+b^2dex-a^2e^2+3abde-b^2d^2\right)\mathrm{csgn}\left(bx+a\right)}{\left(ex+d\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x)
```

```
[Out] csgn(b*x+a)*(2*ln(b*e*x+b*d)*x*a*b*e^2-2*ln(b*e*x+b*d)*x*b^2*d*e+b^2*e^2*x^
2+2*a*b*d*e*ln(b*e*x+b*d)-2*b^2*d^2*ln(b*e*x+b*d)+a*b*e^2*x+b^2*d*e*x-a^2*e
^2+3*a*b*d*e-b^2*d^2)/e^3/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\,\,(a+b\,x)}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^2,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^2, x)
```

sympy [A] time = 0.37, size = 60, normalized size = 0.45

$$\frac{b^2x}{e^2}+\frac{2b\,(ae-bd)\log{(d+ex)}}{e^3}+\frac{-a^2e^2+2abde-b^2d^2}{de^3+e^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**2,x)
```

```
[Out] b**2*x/e**2 + 2*b*(a*e - b*d)*log(d + e*x)/e**3 + (-a**2*e**2 + 2*a*b*d*e -
 b**2*d**2)/(d*e**3 + e**4*x)
```

3.1737 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=140

$$\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^3(a+bx)(d+ex)^2}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^3(a+bx)}$$

Rubi [A] time = 0.08, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^3(a+bx)(d+ex)^2}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(d + e*x)^2
) + (2*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*(d + e*x
)) + (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^3}\,dx}{ab+b^2x}$$
$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^3}\,dx}{ab+b^2x}$$
$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^3}-\frac{2b(bd-ae)}{e^2(d+ex)^2}+\frac{b^2}{e^2(d+ex)}\right)dx}{ab+b^2x}$$
$$=-\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)(d+ex)}+\frac{b^2\sqrt{a}}{}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.52

$$\frac{\sqrt{(a+bx)^2}\left((bd-ae)(ae+3bd+4bex)+2b^2(d+ex)^2\log(d+ex)\right)}{2e^3(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*((b*d - a*e)*(3*b*d + a*e + 4*b*e*x) + 2*b^2*(d + e*x)^2
*Log[d + e*x]))/(2*e^3*(a + b*x)*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 2.13, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x)^3, x]
```

fricas [A] time = 0.43, size = 100, normalized size = 0.71

$$\frac{3\,b^2d^2-2\,abde-a^2e^2+4\left(b^2de-abe^2\right)x+2\left(b^2e^2x^2+2\,b^2dex+b^2d^2\right)\log\left(ex+d\right)}{2\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(3*b^2*d^2 - 2*a*b*d*e - a^2*e^2 + 4*(b^2*d*e - a*b*e^2)*x + 2*(b^2*e^2
*x^2 + 2*b^2*d*e*x + b^2*d^2)*log(e*x + d))/(e^5*x^2 + 2*d*e^4*x + d^2*e^3)
```

giac [A] time = 0.16, size = 105, normalized size = 0.75

$$b^2e^{(-3)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(4\left(b^2d\mathrm{sgn}\left(bx+a\right)-abe\mathrm{sgn}\left(bx+a\right)\right)x+\left(3\,b^2d^2\mathrm{sgn}\left(bx+a\right)-2\,abde\mathrm{sgn}\left(bx+a\right)-a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}\right)e^{(-2)}}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] b^2*e^(-3)*log(abs(x*e + d))*sgn(b*x + a) + 1/2*(4*(b^2*d*sgn(b*x + a) - a*
b*e*sgn(b*x + a))*x + (3*b^2*d^2*sgn(b*x + a) - 2*a*b*d*e*sgn(b*x + a) - a^
2*e^2*sgn(b*x + a))*e^(-1))*e^(-2)/(x*e + d)^2
```

maple [C] time = 0.07, size = 112, normalized size = 0.80

$$\frac{\left(2b^2e^2x^2\ln\left(bex+bd\right)+4b^2dex\ln\left(bex+bd\right)-4ab\,e^2x+2b^2d^2\ln\left(bex+bd\right)+4b^2dex-a^2e^2-2abde+3b^2d^2\right)\mathrm{csgn}\left(bx+a\right)}{2\left(ex+d\right)^2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x)
```

```
[Out] 1/2*csgn(b*x+a)*(2*ln(b*e*x+b*d)*x^2*b^2*e^2+4*b^2*d*e*x*ln(b*e*x+b*d)+2*b^
2*d^2*ln(b*e*x+b*d)-4*a*b*e^2*x+4*b^2*d*e*x-a^2*e^2-2*a*b*d*e+3*b^2*d^2)/e^
3/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\,(a+b\,x)}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^3,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^3, x)
```

sympy [A] time = 0.48, size = 80, normalized size = 0.57

$$\frac{b^2\log(d+ex)}{e^3}+\frac{-a^2e^2-2abde+3b^2d^2+x\left(-4abe^2+4b^2de\right)}{2d^2e^3+4de^4x+2e^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**3,x)
```

```
[Out] b**2*log(d + e*x)/e**3 + (-a**2*e**2 - 2*a*b*d*e + 3*b**2*d**2 + x*(-4*a*b*
e**2 + 4*b**2*d*e))/(2*d**2*e**3 + 4*d*e**4*x + 2*e**5*x**2)
```

3.1738 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4} dx$

Optimal. Leaf size=41

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(d+ex)^3(bd-ae)}$$

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(d+ex)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(3/2)/(3*(b*d - a*e)*(d + e*x)^3)
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4} dx = \frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(bd-ae)(d+ex)^3}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 1.73

$$-\frac{\sqrt{(a+bx)^2}\left(a^2e^2+abe(d+3ex)+b^2\left(d^2+3dex+3e^2x^2\right)\right)}{3e^3(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] -1/3*(Sqrt[(a + b*x)^2]*(a^2*e^2 + a*b*e*(d + 3*e*x) + b^2*(d^2 + 3*d*e*x +
 3*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 1.13, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*
x)^4, x]
```

fricas [B] time = 0.41, size = 84, normalized size = 2.05

$$-\frac{3\,b^2e^2x^2+b^2d^2+abde+a^2e^2+3\,\left(b^2de+abe^2\right)x}{3\,\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*e^2*x^2 + b^2*d^2 + a*b*d*e + a^2*e^2 + 3*(b^2*d*e + a*b*e^2)*x
)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

giac [B] time = 0.16, size = 94, normalized size = 2.29

$$-\frac{\left(3\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+3\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+3\,abxe^2\mathrm{sgn}\left(bx+a\right)+abde\mathrm{sgn}\left(bx+a\right)+a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{3\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] -1/3*(3*b^2*x^2*e^2*sgn(b*x + a) + 3*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn(b
*x + a) + 3*a*b*x*e^2*sgn(b*x + a) + a*b*d*e*sgn(b*x + a) + a^2*e^2*sgn(b*x
 + a))*e^(-3)/(x*e + d)^3
```

maple [B] time = 0.05, size = 76, normalized size = 1.85

$$-\frac{\left(3b^2e^2x^2+3ab\,e^2x+3b^2dex+a^2e^2+abde+b^2d^2\right)\sqrt{(bx+a)^2}}{3\,(ex+d)^3\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x)
```

```
[Out] -1/3*(3*b^2*e^2*x^2+3*a*b*e^2*x+3*b^2*d*e*x+a^2*e^2+a*b*d*e+b^2*d^2)*((b*x+
a)^2)^(1/2)/(e*x+d)^3/e^3/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.10, size = 75, normalized size = 1.83

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(a^2\,e^2+a\,b\,d\,e+3\,a\,b\,e^2\,x+b^2\,d^2+3\,b^2\,d\,e\,x+3\,b^2\,e^2\,x^2\right)}{3\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^4,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(a^2*e^2 + b^2*d^2 + 3*b^2*e^2*x^2 + 3*a*b*e^2*x + 3*
b^2*d*e*x + a*b*d*e))/(3*e^3*(a + b*x)*(d + e*x)^3)
```

sympy [B] time = 0.65, size = 88, normalized size = 2.15

$$\frac{-a^2e^2 - abde - b^2d^2 - 3b^2e^2x^2 + x\left(-3abe^2 - 3b^2de\right)}{3d^3e^3 + 9d^2e^4x + 9de^5x^2 + 3e^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**4,x)
```

```
[Out] (-a**2*e**2 - a*b*d*e - b**2*d**2 - 3*b**2*e**2*x**2 + x*(-3*a*b*e**2 - 3*b
**2*d*e))/(3*d**3*e**3 + 9*d**2*e**4*x + 9*d*e**5*x**2 + 3*e**6*x**3)
```

3.1739 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^3(a+bx)(d+ex)^4}$$

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x)*(d + e*x)^4
) + (2*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e
*x)^3) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(d + e*x)^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^5}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^5}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^5}-\frac{2b(bd-ae)}{e^2(d+ex)^4}+\frac{b^2}{e^2(d+ex)^3}\right)dx}{ab+b^2x}\\
&= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}-\frac{b^2\sqrt{a}}{2e^3(}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(3a^2e^2+2abe(d+4ex)+b^2\left(d^2+4dex+6e^2x^2\right)\right)}{12e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(3*a^2*e^2 + 2*a*b*e*(d + 4*e*x) + b^2*(d^2 + 4*d*
e*x + 6*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 181.15, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.40, size = 98, normalized size = 0.67

$$-\frac{6\,b^2e^2x^2+b^2d^2+2\,abde+3\,a^2e^2+4\left(b^2de+2\,abe^2\right)x}{12\left(e^7x^4+4\,de^6x^3+6\,d^2e^5x^2+4\,d^3e^4x+d^4e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*e^2*x^2 + b^2*d^2 + 2*a*b*d*e + 3*a^2*e^2 + 4*(b^2*d*e + 2*a*b
*e^2)*x)/(e^7*x^4 + 4*d*e^6*x^3 + 6*d^2*e^5*x^2 + 4*d^3*e^4*x + d^4*e^3)
```

giac [A] time = 0.17, size = 96, normalized size = 0.66

$$-\frac{\left(6\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+4\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+8\,abxe^2\mathrm{sgn}\left(bx+a\right)+2\,abde\mathrm{sgn}\left(bx+a\right)+3\,a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{12\left(xe+d\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(6*b^2*x^2*e^2*sgn(b*x + a) + 4*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn(
b*x + a) + 8*a*b*x*e^2*sgn(b*x + a) + 2*a*b*d*e*sgn(b*x + a) + 3*a^2*e^2*sg
n(b*x + a))*e^(-3)/(x*e + d)^4
```

maple [A] time = 0.05, size = 78, normalized size = 0.53

$$-\frac{\left(6b^2e^2x^2+8ab\,e^2x+4b^2dex+3a^2e^2+2abde+b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{12\left(ex+d\right)^4\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x)
```

```
[Out] -1/12/e^3*(6*b^2*e^2*x^2+8*a*b*e^2*x+4*b^2*d*e*x+3*a^2*e^2+2*a*b*d*e+b^2*d^
2)*((b*x+a)^2)^(1/2)/(e*x+d)^4/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.14, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(3\,a^2\,e^2+2\,a\,b\,d\,e+8\,a\,b\,e^2\,x+b^2\,d^2+4\,b^2\,d\,e\,x+6\,b^2\,e^2\,x^2\right)}{12\,e^3\,(a+b\,x)\,(d+e\,x)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^5,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(3*a^2*e^2 + b^2*d^2 + 6*b^2*e^2*x^2 + 8*a*b*e^2*x +
4*b^2*d*e*x + 2*a*b*d*e))/(12*e^3*(a + b*x)*(d + e*x)^4)
```

sympy [A] time = 0.99, size = 104, normalized size = 0.71

$$\frac{-3a^2e^2-2abde-b^2d^2-6b^2e^2x^2+x\left(-8abe^2-4b^2de\right)}{12d^4e^3+48d^3e^4x+72d^2e^5x^2+48de^6x^3+12e^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**5,x)
```

```
[Out] (-3*a**2*e**2 - 2*a*b*d*e - b**2*d**2 - 6*b**2*e**2*x**2 + x*(-8*a*b*e**2 -
 4*b**2*d*e))/(12*d**4*e**3 + 48*d**3*e**4*x + 72*d**2*e**5*x**2 + 48*d*e**
6*x**3 + 12*e**7*x**4)
```

3.1740 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{2e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^5}$$

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{2e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e*x)^5
) + (b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(d + e*x
)^4) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e*x)^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^6}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^6}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^6}-\frac{2b(bd-ae)}{e^2(d+ex)^5}+\frac{b^2}{e^2(d+ex)^4}\right)dx}{ab+b^2x}\\
&= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^4}-\frac{b^2\sqrt{a^2+}}{3e^3(a+b}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(6a^2e^2+3abe(d+5ex)+b^2\left(d^2+5dex+10e^2x^2\right)\right)}{30e^3(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -1/30*(Sqrt[(a + b*x)^2]*(6*a^2*e^2 + 3*a*b*e*(d + 5*e*x) + b^2*(d^2 + 5*d*
e*x + 10*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.15, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 109, normalized size = 0.75

$$-\frac{10\,b^2e^2x^2+b^2d^2+3\,abde+6\,a^2e^2+5\left(b^2de+3\,abe^2\right)x}{30\left(e^8x^5+5\,de^7x^4+10\,d^2e^6x^3+10\,d^3e^5x^2+5\,d^4e^4x+d^5e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/30*(10*b^2*e^2*x^2 + b^2*d^2 + 3*a*b*d*e + 6*a^2*e^2 + 5*(b^2*d*e + 3*a*
b*e^2)*x)/(e^8*x^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10*d^3*e^5*x^2 + 5*d^4*
e^4*x + d^5*e^3)
```

giac [A] time = 0.21, size = 96, normalized size = 0.66

$$-\frac{\left(10\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+5\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+15\,abxe^2\mathrm{sgn}\left(bx+a\right)+3\,abde\mathrm{sgn}\left(bx+a\right)+6\,a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{30\left(xe+d\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/30*(10*b^2*x^2*e^2*sgn(b*x + a) + 5*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn
(b*x + a) + 15*a*b*x*e^2*sgn(b*x + a) + 3*a*b*d*e*sgn(b*x + a) + 6*a^2*e^2*
sgn(b*x + a))*e^(-3)/(x*e + d)^5
```

maple [A] time = 0.04, size = 78, normalized size = 0.53

$$-\frac{\left(10b^2e^2x^2+15ab\,e^2x+5b^2dex+6a^2e^2+3abde+b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{30\left(ex+d\right)^5\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x)
```

```
[Out] -1/30/e^3*(10*b^2*e^2*x^2+15*a*b*e^2*x+5*b^2*d*e*x+6*a^2*e^2+3*a*b*d*e+b^2*
d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^5/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.12, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(6\,a^2\,e^2+3\,a\,b\,d\,e+15\,a\,b\,e^2\,x+b^2\,d^2+5\,b^2\,d\,e\,x+10\,b^2\,e^2\,x^2\right)}{30\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^6,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(6*a^2*e^2 + b^2*d^2 + 10*b^2*e^2*x^2 + 15*a*b*e^2*x
+ 5*b^2*d*e*x + 3*a*b*d*e))/(30*e^3*(a + b*x)*(d + e*x)^5)
```

sympy [A] time = 1.02, size = 116, normalized size = 0.79

$$\frac{-6a^2e^2-3abde-b^2d^2-10b^2e^2x^2+x\left(-15abe^2-5b^2de\right)}{30d^5e^3+150d^4e^4x+300d^3e^5x^2+300d^2e^6x^3+150de^7x^4+30e^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**6,x)
```

```
[Out] (-6*a**2*e**2 - 3*a*b*d*e - b**2*d**2 - 10*b**2*e**2*x**2 + x*(-15*a*b*e**2
 - 5*b**2*d*e))/(30*d**5*e**3 + 150*d**4*e**4*x + 300*d**3*e**5*x**2 + 300*
d**2*e**6*x**3 + 150*d*e**7*x**4 + 30*e**8*x**5)
```

3.1741 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{6e^3(a+bx)(d+ex)^6}$$

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{6e^3(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x)*(d + e*x)^6
) + (2*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e
*x)^5) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x)*(d + e*x)^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^7}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^7}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^7}-\frac{2b(bd-ae)}{e^2(d+ex)^6}+\frac{b^2}{e^2(d+ex)^5}\right)dx}{ab+b^2x}\\
&= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{6e^3(a+bx)(d+ex)^6}+\frac{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}-\frac{b^2\sqrt{a}}{4e^3(}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(10a^2e^2+4abe(d+6ex)+b^2\left(d^2+6dex+15e^2x^2\right)\right)}{60e^3(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(10*a^2*e^2 + 4*a*b*e*(d + 6*e*x) + b^2*(d^2 + 6*d
*e*x + 15*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.40, size = 120, normalized size = 0.82

$$-\frac{15\,b^2e^2x^2+b^2d^2+4\,abde+10\,a^2e^2+6\left(b^2de+4\,abe^2\right)x}{60\left(e^9x^6+6\,de^8x^5+15\,d^2e^7x^4+20\,d^3e^6x^3+15\,d^4e^5x^2+6\,d^5e^4x+d^6e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*e^2*x^2 + b^2*d^2 + 4*a*b*d*e + 10*a^2*e^2 + 6*(b^2*d*e + 4*a
*b*e^2)*x)/(e^9*x^6 + 6*d*e^8*x^5 + 15*d^2*e^7*x^4 + 20*d^3*e^6*x^3 + 15*d^
4*e^5*x^2 + 6*d^5*e^4*x + d^6*e^3)
```

giac [A] time = 0.16, size = 96, normalized size = 0.66

$$-\frac{\left(15\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+6\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+24\,abxe^2\mathrm{sgn}\left(bx+a\right)+4\,abde\mathrm{sgn}\left(bx+a\right)+10\,a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(15*b^2*x^2*e^2*sgn(b*x + a) + 6*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn
(b*x + a) + 24*a*b*x*e^2*sgn(b*x + a) + 4*a*b*d*e*sgn(b*x + a) + 10*a^2*e^2
*sgn(b*x + a))*e^(-3)/(x*e + d)^6
```

maple [A] time = 0.05, size = 78, normalized size = 0.53

$$-\frac{\left(15b^2e^2x^2+24ab\,e^2x+6b^2dex+10a^2e^2+4abde+b^2d^2\right)\sqrt{(bx+a)^2}}{60\,(ex+d)^6\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x)
```

```
[Out] -1/60/e^3*(15*b^2*e^2*x^2+24*a*b*e^2*x+6*b^2*d*e*x+10*a^2*e^2+4*a*b*d*e+b^2
*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^6/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.12, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(10\,a^2\,e^2+4\,a\,b\,d\,e+24\,a\,b\,e^2\,x+b^2\,d^2+6\,b^2\,d\,e\,x+15\,b^2\,e^2\,x^2\right)}{60\,e^3\,(a+b\,x)\,(d+e\,x)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^7,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(10*a^2*e^2 + b^2*d^2 + 15*b^2*e^2*x^2 + 24*a*b*e^2*x
 + 6*b^2*d*e*x + 4*a*b*d*e))/(60*e^3*(a + b*x)*(d + e*x)^6)
```

sympy [A] time = 1.22, size = 128, normalized size = 0.88

$$\frac{-10a^2e^2-4abde-b^2d^2-15b^2e^2x^2+x\left(-24abe^2-6b^2de\right)}{60d^6e^3+360d^5e^4x+900d^4e^5x^2+1200d^3e^6x^3+900d^2e^7x^4+360de^8x^5+60e^9x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**7,x)
```

```
[Out] (-10*a**2*e**2 - 4*a*b*d*e - b**2*d**2 - 15*b**2*e**2*x**2 + x*(-24*a*b*e**
2 - 6*b**2*d*e))/(60*d**6*e**3 + 360*d**5*e**4*x + 900*d**4*e**5*x**2 + 120
0*d**3*e**6*x**3 + 900*d**2*e**7*x**4 + 360*d*e**8*x**5 + 60*e**9*x**6)
```

3.1742 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^8} dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^6}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^3(a+bx)(d+ex)^7}$$

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^6}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^3(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^8,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a + b*x)*(d + e*x)^7
) + (b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e*x
)^6) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^8}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^8}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^8}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^8}-\frac{2b(bd-ae)}{e^2(d+ex)^7}+\frac{b^2}{e^2(d+ex)^6}\right)dx}{ab+b^2x}\\
&= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{7e^3(a+bx)(d+ex)^7}+\frac{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^6}-\frac{b^2\sqrt{a^2+}}{5e^3(a+b}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(15a^2e^2+5abe(d+7ex)+b^2\left(d^2+7dex+21e^2x^2\right)\right)}{105e^3(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^8,x]
```

```
[Out] -1/105*(Sqrt[(a + b*x)^2]*(15*a^2*e^2 + 5*a*b*e*(d + 7*e*x) + b^2*(d^2 + 7*
d*e*x + 21*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^8,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.40, size = 131, normalized size = 0.90

$$-\frac{21\,b^2e^2x^2+b^2d^2+5\,abde+15\,a^2e^2+7\left(b^2de+5\,abe^2\right)x}{105\left(e^{10}x^7+7\,de^9x^6+21\,d^2e^8x^5+35\,d^3e^7x^4+35\,d^4e^6x^3+21\,d^5e^5x^2+7\,d^6e^4x+d^7e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/105*(21*b^2*e^2*x^2 + b^2*d^2 + 5*a*b*d*e + 15*a^2*e^2 + 7*(b^2*d*e + 5*
a*b*e^2)*x)/(e^10*x^7 + 7*d*e^9*x^6 + 21*d^2*e^8*x^5 + 35*d^3*e^7*x^4 + 35*
d^4*e^6*x^3 + 21*d^5*e^5*x^2 + 7*d^6*e^4*x + d^7*e^3)
```

giac [A] time = 0.20, size = 96, normalized size = 0.66

$$-\frac{\left(21\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+7\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+35\,abxe^2\mathrm{sgn}\left(bx+a\right)+5\,abde\mathrm{sgn}\left(bx+a\right)+15\,a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}}{105\,(xe+d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/105*(21*b^2*x^2*e^2*sgn(b*x + a) + 7*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sg
n(b*x + a) + 35*a*b*x*e^2*sgn(b*x + a) + 5*a*b*d*e*sgn(b*x + a) + 15*a^2*e^
2*sgn(b*x + a))*e^(-3)/(x*e + d)^7
```

maple [A] time = 0.06, size = 78, normalized size = 0.53

$$-\frac{\left(21b^2e^2x^2+35ab\,e^2x+7b^2dex+15a^2e^2+5abde+b^2d^2\right)\sqrt{(bx+a)^2}}{105\,(ex+d)^7\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x)
```

```
[Out] -1/105/e^3*(21*b^2*e^2*x^2+35*a*b*e^2*x+7*b^2*d*e*x+15*a^2*e^2+5*a*b*d*e+b^
2*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^7/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.13, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(15\,a^2\,e^2+5\,a\,b\,d\,e+35\,a\,b\,e^2\,x+b^2\,d^2+7\,b^2\,d\,e\,x+21\,b^2\,e^2\,x^2\right)}{105\,e^3\,\left(a+b\,x\right)\,\left(d+e\,x\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^8,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(15*a^2*e^2 + b^2*d^2 + 21*b^2*e^2*x^2 + 35*a*b*e^2*x
 + 7*b^2*d*e*x + 5*a*b*d*e))/(105*e^3*(a + b*x)*(d + e*x)^7)
```

sympy [A] time = 1.43, size = 139, normalized size = 0.95

$$\frac{-15a^2e^2-5abde-b^2d^2-21b^2e^2x^2+x\left(-35abe^2-7b^2de\right)}{105d^7e^3+735d^6e^4x+2205d^5e^5x^2+3675d^4e^6x^3+3675d^3e^7x^4+2205d^2e^8x^5+735de^9x^6+105e^{10}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**8,x)
```

```
[Out] (-15*a**2*e**2 - 5*a*b*d*e - b**2*d**2 - 21*b**2*e**2*x**2 + x*(-35*a*b*e**
2 - 7*b**2*d*e))/(105*d**7*e**3 + 735*d**6*e**4*x + 2205*d**5*e**5*x**2 + 3
675*d**4*e**6*x**3 + 3675*d**3*e**7*x**4 + 2205*d**2*e**8*x**5 + 735*d*e**9
*x**6 + 105*e**10*x**7)
```

3.1743 $\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=254

$$\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^2}{5e^5(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^3}{9e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d \cdots}{8e^5(a+b \cdots}$$

Rubi [A] time = 0.35, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}}{12e^5(a+bx)}-\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)}{11e^5(a+bx)}+\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^2}{5e^5(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^3}{9e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^4}{8e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x))
 - (4*b*(b*d - a*e)^3*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a
+ b*x)) + (3*b^2*(b*d - a*e)^2*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(5*e^5*(a + b*x)) - (4*b^3*(b*d - a*e)*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(11*e^5*(a + b*x)) + (b^4*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(12*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^7 \, dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^7 \, dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^7}{e^4}-\frac{4b(bd-ae)^3(d+ex)^8}{e^4}+\frac{6b \cdots}{\cdots}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^4(d+ex)^8\sqrt{a^2+2abx+b^2x^2}}{8e^5(a+bx)}-\frac{4b(bd-ae)^3(d+ex)^9 \cdots}{9e^5(a \cdots}
\end{aligned}$$

Mathematica [A] time = 0.13, size = 432, normalized size = 1.70

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(495*a^4*(8*d^7 + 28*d^6*e*x + 56*d^5*e^2*x^2 + 70*d^4
*e^3*x^3 + 56*d^3*e^4*x^4 + 28*d^2*e^5*x^5 + 8*d*e^6*x^6 + e^7*x^7) + 220*a
^3*b*x*(36*d^7 + 168*d^6*e*x + 378*d^5*e^2*x^2 + 504*d^4*e^3*x^3 + 420*d^3*
e^4*x^4 + 216*d^2*e^5*x^5 + 63*d*e^6*x^6 + 8*e^7*x^7) + 66*a^2*b^2*x^2*(120
*d^7 + 630*d^6*e*x + 1512*d^5*e^2*x^2 + 2100*d^4*e^3*x^3 + 1800*d^3*e^4*x^4
 + 945*d^2*e^5*x^5 + 280*d*e^6*x^6 + 36*e^7*x^7) + 12*a*b^3*x^3*(330*d^7 +
1848*d^6*e*x + 4620*d^5*e^2*x^2 + 6600*d^4*e^3*x^3 + 5775*d^3*e^4*x^4 + 308
0*d^2*e^5*x^5 + 924*d*e^6*x^6 + 120*e^7*x^7) + b^4*x^4*(792*d^7 + 4620*d^6*
e*x + 11880*d^5*e^2*x^2 + 17325*d^4*e^3*x^3 + 15400*d^3*e^4*x^4 + 8316*d^2*
e^5*x^5 + 2520*d*e^6*x^6 + 330*e^7*x^7)))/(3960*(a + b*x))
```

IntegrateAlgebraic [F] time = 4.47, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [B] time = 0.40, size = 489, normalized size = 1.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/12*b^4*e^7*x^12 + a^4*d^7*x + 1/11*(7*b^4*d*e^6 + 4*a*b^3*e^7)*x^11 + 1/1
0*(21*b^4*d^2*e^5 + 28*a*b^3*d*e^6 + 6*a^2*b^2*e^7)*x^10 + 1/9*(35*b^4*d^3*
e^4 + 84*a*b^3*d^2*e^5 + 42*a^2*b^2*d*e^6 + 4*a^3*b*e^7)*x^9 + 1/8*(35*b^4*
d^4*e^3 + 140*a*b^3*d^3*e^4 + 126*a^2*b^2*d^2*e^5 + 28*a^3*b*d*e^6 + a^4*e^
7)*x^8 + (3*b^4*d^5*e^2 + 20*a*b^3*d^4*e^3 + 30*a^2*b^2*d^3*e^4 + 12*a^3*b*
d^2*e^5 + a^4*d*e^6)*x^7 + 7/6*(b^4*d^6*e + 12*a*b^3*d^5*e^2 + 30*a^2*b^2*d
^4*e^3 + 20*a^3*b*d^3*e^4 + 3*a^4*d^2*e^5)*x^6 + 1/5*(b^4*d^7 + 28*a*b^3*d^
6*e + 126*a^2*b^2*d^5*e^2 + 140*a^3*b*d^4*e^3 + 35*a^4*d^3*e^4)*x^5 + 1/4*(
4*a*b^3*d^7 + 42*a^2*b^2*d^6*e + 84*a^3*b*d^5*e^2 + 35*a^4*d^4*e^3)*x^4 + 1
/3*(6*a^2*b^2*d^7 + 28*a^3*b*d^6*e + 21*a^4*d^5*e^2)*x^3 + 1/2*(4*a^3*b*d^7
 + 7*a^4*d^6*e)*x^2
```

giac [B] time = 0.21, size = 761, normalized size = 3.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/12*b^4*x^12*e^7*sgn(b*x + a) + 7/11*b^4*d*x^11*e^6*sgn(b*x + a) + 21/10*b
^4*d^2*x^10*e^5*sgn(b*x + a) + 35/9*b^4*d^3*x^9*e^4*sgn(b*x + a) + 35/8*b^4
```

```
*d^4*x^8*e^3*sgn(b*x + a) + 3*b^4*d^5*x^7*e^2*sgn(b*x + a) + 7/6*b^4*d^6*x^
6*e*sgn(b*x + a) + 1/5*b^4*d^7*x^5*sgn(b*x + a) + 4/11*a*b^3*x^11*e^7*sgn(b
*x + a) + 14/5*a*b^3*d*x^10*e^6*sgn(b*x + a) + 28/3*a*b^3*d^2*x^9*e^5*sgn(b
*x + a) + 35/2*a*b^3*d^3*x^8*e^4*sgn(b*x + a) + 20*a*b^3*d^4*x^7*e^3*sgn(b*
x + a) + 14*a*b^3*d^5*x^6*e^2*sgn(b*x + a) + 28/5*a*b^3*d^6*x^5*e*sgn(b*x +
 a) + a*b^3*d^7*x^4*sgn(b*x + a) + 3/5*a^2*b^2*x^10*e^7*sgn(b*x + a) + 14/3
*a^2*b^2*d*x^9*e^6*sgn(b*x + a) + 63/4*a^2*b^2*d^2*x^8*e^5*sgn(b*x + a) + 3
0*a^2*b^2*d^3*x^7*e^4*sgn(b*x + a) + 35*a^2*b^2*d^4*x^6*e^3*sgn(b*x + a) +
126/5*a^2*b^2*d^5*x^5*e^2*sgn(b*x + a) + 21/2*a^2*b^2*d^6*x^4*e*sgn(b*x + a
) + 2*a^2*b^2*d^7*x^3*sgn(b*x + a) + 4/9*a^3*b*x^9*e^7*sgn(b*x + a) + 7/2*a
^3*b*d*x^8*e^6*sgn(b*x + a) + 12*a^3*b*d^2*x^7*e^5*sgn(b*x + a) + 70/3*a^3*
b*d^3*x^6*e^4*sgn(b*x + a) + 28*a^3*b*d^4*x^5*e^3*sgn(b*x + a) + 21*a^3*b*d
^5*x^4*e^2*sgn(b*x + a) + 28/3*a^3*b*d^6*x^3*e*sgn(b*x + a) + 2*a^3*b*d^7*x
^2*sgn(b*x + a) + 1/8*a^4*x^8*e^7*sgn(b*x + a) + a^4*d*x^7*e^6*sgn(b*x + a)
 + 7/2*a^4*d^2*x^6*e^5*sgn(b*x + a) + 7*a^4*d^3*x^5*e^4*sgn(b*x + a) + 35/4
*a^4*d^4*x^4*e^3*sgn(b*x + a) + 7*a^4*d^5*x^3*e^2*sgn(b*x + a) + 7/2*a^4*d^
6*x^2*e*sgn(b*x + a) + a^4*d^7*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 564, normalized size = 2.22

$$\frac{\left(330 b^4 e^7 x^{11}+1440 x^{10} a b^3 e^7+2520 x^{10} b^4 d e^6+2376 x^9 a^2 b^2 e^7+11088 x^9 a b^3 d e^6+8316 x^9 b^4 d^2 e^5+1760 x^8 a^3 b e^7+18480 x^8 a^2 b^2 d e^6+36960 x^8 a b^3 d^2 e^5+15400 x^8 b^4 d^3 e^4+495 x^7 a^4 e^7+13860 x^7 a^3 b d e^6+62370 x^7 a^2 b^2 d^2 e^5+69300 x^7 a b^3 d^3 e^4+17325 x^7 b^4 d^4 e^3+3960 a^4 d e^6 x^6+47520 a^3 b d^2 e^5 x^6+118800 a^2 b^2 d^3 e^4 x^6+79200 a b^3 d^4 e^3 x^6+11880 b^4 d^5 e^2 x^6+13860 x^5 a^4 d^2 e^5+92400 x^5 a^3 b d^3 e^4+138600 x^5 a^2 b^2 d^4 e^3+55440 x^5 a b^3 d^5 e^2+4620 x^5 b^4 d^6 e+27720 x^4 a^4 d^3 e^4+110880 x^4 a^3 b d^4 e^3+99792 x^4 a^2 b^2 d^5 e^2+22176 x^4 a b^3 d^6 e+792 x^4 b^4 d^7+34650 x^3 a^4 d^4 e^3+83160 x^3 a^3 b d^5 e^2+41580 x^3 a^2 b^2 d^6 e+3960 x^3 a b^3 d^7+27720 x^2 a^4 d^5 e^2+36960 x^2 a^3 b d^6 e+7920 x^2 a^2 b^2 d^7+13860 x a^4 d^6 e+7920 x a^3 b d^7+3960 a^4 d^7\right)\left(\left(b x+a\right)^2\right)^{\frac{3}{2}} x}{3960 \left(b x+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/3960*x*(330*b^4*e^7*x^11+1440*a*b^3*e^7*x^10+2520*b^4*d*e^6*x^10+2376*a^2
*b^2*e^7*x^9+11088*a*b^3*d*e^6*x^9+8316*b^4*d^2*e^5*x^9+1760*a^3*b*e^7*x^8+
18480*a^2*b^2*d*e^6*x^8+36960*a*b^3*d^2*e^5*x^8+15400*b^4*d^3*e^4*x^8+495*a
^4*e^7*x^7+13860*a^3*b*d*e^6*x^7+62370*a^2*b^2*d^2*e^5*x^7+69300*a*b^3*d^3*
e^4*x^7+17325*b^4*d^4*e^3*x^7+3960*a^4*d*e^6*x^6+47520*a^3*b*d^2*e^5*x^6+11
8800*a^2*b^2*d^3*e^4*x^6+79200*a*b^3*d^4*e^3*x^6+11880*b^4*d^5*e^2*x^6+1386
0*a^4*d^2*e^5*x^5+92400*a^3*b*d^3*e^4*x^5+138600*a^2*b^2*d^4*e^3*x^5+55440*
a*b^3*d^5*e^2*x^5+4620*b^4*d^6*e*x^5+27720*a^4*d^3*e^4*x^4+110880*a^3*b*d^4
*e^3*x^4+99792*a^2*b^2*d^5*e^2*x^4+22176*a*b^3*d^6*e*x^4+792*b^4*d^7*x^4+34
650*a^4*d^4*e^3*x^3+83160*a^3*b*d^5*e^2*x^3+41580*a^2*b^2*d^6*e*x^3+3960*a*
b^3*d^7*x^3+27720*a^4*d^5*e^2*x^2+36960*a^3*b*d^6*e*x^2+7920*a^2*b^2*d^7*x^
2+13860*a^4*d^6*e*x+7920*a^3*b*d^7*x+3960*a^4*d^7)*((b*x+a)^2)^(3/2)/(b*x+a
)^3
```

maxima [B] time = 0.75, size = 2152, normalized size = 8.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^7*x^7/b - 19/132*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a*e^7*x^6/b^2 + 41/220*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^7
*x^5/b^3 - 85/396*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*e^7*x^4/b^4 + 23/99*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*e^7*x^3/b^5 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*a*d^7*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^8*e^7*x/b^7 - 8/3
3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^7*x^2/b^6 + 1/4*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^2*d^7/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^9*e^7/b^8 +
49/198*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*e^7*x/b^7 - 247/990*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*a^7*e^7/b^8 + 1/11*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*x^6/b^2 - 17/110*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*x^5/b^3 + 7/10*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*x^5/b^2 + 13/66*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^2*x^4/b^4 - 7/6*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
```

```
a*x^4/b^3 + 7/9*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*x^4/b^2 - 59/264*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x
^3/b^5 + 35/24*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*
x^3/b^4 - 91/72*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a*x^3/b^3 + 35/8*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x
^3/b^2 - 1/4*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^7*x/b^7
+ 7/4*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6*x/b^6 - 7
/4*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*x/b^5 +
35/4*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 7/
4*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 7
/4*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*
(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b + 21/88*(7*b*d*e^
6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x^2/b^6 - 13/8*(3*b*d^2*e^5
+ a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x^2/b^5 + 37/24*(5*b*d^3*e^4
 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x^2/b^4 - 55/8*(b*d^4*e
^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + (3*b*d^5*e^2 +
5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 - 1/4*(7*b*d*e^6 + a*e
^7)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^8/b^8 + 7/4*(3*b*d^2*e^5 + a*d*e^6)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^7/b^7 - 7/4*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6/b^6 + 35/4*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 - 7/4*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 7/4*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a^2/b^2 - 65/264*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^5*x/b^7 + 41/24*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^4*x/b^6 - 121/72*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^3*x/b^5 + 65/8*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*a^2*x/b^4 - 3/2*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*a*x/b^3 + 7/6*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*x/b^2 + 329/1320*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/
b^8 - 209/120*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b
^7 + 125/72*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4
/b^6 - 69/8*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^5
 + 17/10*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^
4 - 49/30*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b^3 + 1
/5*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^7\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^7\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**7*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**7*((a + b*x)**2)**(3/2), x)
```

3.1744 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=254

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^2}{3e^5(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^3}{2e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+e}{7e^5(a+bx)}$$

Rubi [A] time = 0.30, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}}{11e^5(a+bx)}-\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)}{5e^5(a+bx)}+\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^2}{3e^5(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^3}{2e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)^4}{7e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x))
 - (b*(b*d - a*e)^3*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a +
b*x)) + (2*b^2*(b*d - a*e)^2*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*
e^5*(a + b*x)) - (2*b^3*(b*d - a*e)*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(5*e^5*(a + b*x)) + (b^4*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
11*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^6\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^6\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^6}{e^4}-\frac{4b(bd-ae)^3(d+ex)^7}{e^4}+\frac{6b}{}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^4(d+ex)^7\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)}-\frac{b(bd-ae)^3(d+ex)^8}{2e^5(a+}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 377, normalized size = 1.48

$$\frac{x\sqrt{(a+bx)^2}\left(330a^4\left(7d^6+21d^5ex+35d^4e^2x^2+35d^3e^3x^3+21d^2e^4x^4+7de^5x^5+e^6x^6\right)+165a^3bx\left(28d^6+112d^5ex+210d^4e^2x^2+224d^3e^3x^3+140d^2e^4x^4+48de^5x^5+7e^6x^6\right)+55a^2b^2x^2\left(84d^6+378d^5ex+756d^4e^2x^2+840d^3e^3x^3+540d^2e^4x^4+189de^5x^5+28e^6x^6\right)+11ab^3x^3\left(210d^6+1008d^5ex+2100d^4e^2x^2+2400d^3e^3x^3+1575d^2e^4x^4+560de^5x^5+84e^6x^6\right)+b^4x^4\left(462d^6+2310d^5ex+4950d^4e^2x^2+5775d^3e^3x^3+3850d^2e^4x^4+1386de^5x^5+210e^6x^6\right)\right)}{2310(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(330*a^4*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 + 35*d^3
*e^3*x^3 + 21*d^2*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + 165*a^3*b*x*(28*d^6 +
112*d^5*e*x + 210*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^
5*x^5 + 7*e^6*x^6) + 55*a^2*b^2*x^2*(84*d^6 + 378*d^5*e*x + 756*d^4*e^2*x^2
 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 28*e^6*x^6) + 11*a*b
^3*x^3*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3 + 1575
*d^2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + b^4*x^4*(462*d^6 + 2310*d^5*e*
x + 4950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5
 + 210*e^6*x^6)))/(2310*(a + b*x))
```

IntegrateAlgebraic [F] time = 3.77, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [B] time = 0.43, size = 418, normalized size = 1.65

$$\frac{1}{11}b^4e^6x^{11}+a^4d^6x+\frac{1}{5}\left(3b^4de^5+2ab^3e^6\right)x^{10}+\frac{1}{3}\left(5b^4d^2e^4+8ab^3de^5+2a^2b^2e^6\right)x^9+\frac{1}{2}\left(5b^4d^3e^3+15ab^3d^2e^4+9a^2b^2de^5+a^3be^6\right)x^8+\frac{1}{7}\left(15b^4d^4e^2+80ab^3d^3e^3+90a^2b^2d^2e^4+24a^3bde^5+a^4e^6\right)x^7+\left(b^4d^5e+10ab^3d^4e^2+20a^2b^2d^3e^3+10a^3bd^2e^4+a^4de^5\right)x^6+\frac{1}{5}\left(b^4d^6+24ab^3d^5e+90a^2b^2d^4e^2+80a^3bd^3e^3+15a^4d^2e^4\right)x^5+\left(ab^3d^6+9a^2b^2d^5e+15a^3bd^4e^2+5a^4d^3e^3\right)x^4+\left(2a^2b^2d^6+8a^3bd^5e+5a^4d^4e^2\right)x^3+\left(2a^3bd^6+3a^4d^5e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/11*b^4*e^6*x^11 + a^4*d^6*x + 1/5*(3*b^4*d*e^5 + 2*a*b^3*e^6)*x^10 + 1/3*
(5*b^4*d^2*e^4 + 8*a*b^3*d*e^5 + 2*a^2*b^2*e^6)*x^9 + 1/2*(5*b^4*d^3*e^3 +
15*a*b^3*d^2*e^4 + 9*a^2*b^2*d*e^5 + a^3*b*e^6)*x^8 + 1/7*(15*b^4*d^4*e^2 +
 80*a*b^3*d^3*e^3 + 90*a^2*b^2*d^2*e^4 + 24*a^3*b*d*e^5 + a^4*e^6)*x^7 + (b
^4*d^5*e + 10*a*b^3*d^4*e^2 + 20*a^2*b^2*d^3*e^3 + 10*a^3*b*d^2*e^4 + a^4*d
*e^5)*x^6 + 1/5*(b^4*d^6 + 24*a*b^3*d^5*e + 90*a^2*b^2*d^4*e^2 + 80*a^3*b*d
^3*e^3 + 15*a^4*d^2*e^4)*x^5 + (a*b^3*d^6 + 9*a^2*b^2*d^5*e + 15*a^3*b*d^4*
e^2 + 5*a^4*d^3*e^3)*x^4 + (2*a^2*b^2*d^6 + 8*a^3*b*d^5*e + 5*a^4*d^4*e^2)*
x^3 + (2*a^3*b*d^6 + 3*a^4*d^5*e)*x^2
```

giac [B] time = 0.22, size = 660, normalized size = 2.60

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/11*b^4*x^11*e^6*sgn(b*x + a) + 3/5*b^4*d*x^10*e^5*sgn(b*x + a) + 5/3*b^4*
d^2*x^9*e^4*sgn(b*x + a) + 5/2*b^4*d^3*x^8*e^3*sgn(b*x + a) + 15/7*b^4*d^4*
x^7*e^2*sgn(b*x + a) + b^4*d^5*x^6*e*sgn(b*x + a) + 1/5*b^4*d^6*x^5*sgn(b*x
 + a) + 2/5*a*b^3*x^10*e^6*sgn(b*x + a) + 8/3*a*b^3*d*x^9*e^5*sgn(b*x + a)
+ 15/2*a*b^3*d^2*x^8*e^4*sgn(b*x + a) + 80/7*a*b^3*d^3*x^7*e^3*sgn(b*x + a)
```

```
 + 10*a*b^3*d^4*x^6*e^2*sgn(b*x + a) + 24/5*a*b^3*d^5*x^5*e*sgn(b*x + a) +
a*b^3*d^6*x^4*sgn(b*x + a) + 2/3*a^2*b^2*x^9*e^6*sgn(b*x + a) + 9/2*a^2*b^2
*d*x^8*e^5*sgn(b*x + a) + 90/7*a^2*b^2*d^2*x^7*e^4*sgn(b*x + a) + 20*a^2*b^
2*d^3*x^6*e^3*sgn(b*x + a) + 18*a^2*b^2*d^4*x^5*e^2*sgn(b*x + a) + 9*a^2*b^
2*d^5*x^4*e*sgn(b*x + a) + 2*a^2*b^2*d^6*x^3*sgn(b*x + a) + 1/2*a^3*b*x^8*e
^6*sgn(b*x + a) + 24/7*a^3*b*d*x^7*e^5*sgn(b*x + a) + 10*a^3*b*d^2*x^6*e^4*
sgn(b*x + a) + 16*a^3*b*d^3*x^5*e^3*sgn(b*x + a) + 15*a^3*b*d^4*x^4*e^2*sgn
(b*x + a) + 8*a^3*b*d^5*x^3*e*sgn(b*x + a) + 2*a^3*b*d^6*x^2*sgn(b*x + a) +
 1/7*a^4*x^7*e^6*sgn(b*x + a) + a^4*d*x^6*e^5*sgn(b*x + a) + 3*a^4*d^2*x^5*
e^4*sgn(b*x + a) + 5*a^4*d^3*x^4*e^3*sgn(b*x + a) + 5*a^4*d^4*x^3*e^2*sgn(b
*x + a) + 3*a^4*d^5*x^2*e*sgn(b*x + a) + a^4*d^6*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 489, normalized size = 1.93

$$\frac{\left(210 b^4 e^6 x^{10} + 924 x^9 a b^3 e^6 + 1386 x^9 b^4 d e^5 + 1540 x^8 a^2 b^2 e^6 + 6160 x^8 a b^3 d e^5 + 3850 x^8 b^4 d^2 e^4 + 1155 x^7 a^3 b e^6 + 10395 x^7 a^2 b^2 d e^5 + 17325 x^7 a b^3 d^2 e^4 + 5775 x^7 b^4 d^3 e^3 + 330 x^6 a^4 e^6 + 7920 x^6 a^3 b d e^5 + 29700 x^6 a^2 b^2 d^2 e^4 + 26400 x^6 a b^3 d^3 e^3 + 4950 x^6 b^4 d^4 e^2 + 2310 a^4 d e^5 x^5 + 23100 a^3 b d^2 e^4 x^5 + 46200 a^2 b^2 d^3 e^3 x^5 + 23100 a b^3 d^4 e^2 x^5 + 2310 b^4 d^5 e x^5 + 6930 x^4 a^4 d^2 e^4 + 36960 x^4 a^3 b d^3 e^3 + 41580 x^4 a^2 b^2 d^4 e^2 + 11088 x^4 a b^3 d^5 e + 462 x^4 b^4 d^6 + 11550 a^4 d^3 e^3 x^3 + 34650 a^3 b d^4 e^2 x^3 + 20790 a^2 b^2 d^5 e x^3 + 2310 a b^3 d^6 x^3 + 11550 a^4 d^4 e^2 x^2 + 18480 a^3 b d^5 e x^2 + 4620 a^2 b^2 d^6 x^2 + 6930 a^4 d^5 e x + 4620 a^3 b d^6 x + 2310 a^4 d^6\right) \left(\left(b x + a\right)^2\right)^{\frac{3}{2}} x}{2310 \left(b x + a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2310*x*(210*b^4*e^6*x^10+924*a*b^3*e^6*x^9+1386*b^4*d*e^5*x^9+1540*a^2*b^
2*e^6*x^8+6160*a*b^3*d*e^5*x^8+3850*b^4*d^2*e^4*x^8+1155*a^3*b*e^6*x^7+1039
5*a^2*b^2*d*e^5*x^7+17325*a*b^3*d^2*e^4*x^7+5775*b^4*d^3*e^3*x^7+330*a^4*e^
6*x^6+7920*a^3*b*d*e^5*x^6+29700*a^2*b^2*d^2*e^4*x^6+26400*a*b^3*d^3*e^3*x^
6+4950*b^4*d^4*e^2*x^6+2310*a^4*d*e^5*x^5+23100*a^3*b*d^2*e^4*x^5+46200*a^2
*b^2*d^3*e^3*x^5+23100*a*b^3*d^4*e^2*x^5+2310*b^4*d^5*e*x^5+6930*a^4*d^2*e^
4*x^4+36960*a^3*b*d^3*e^3*x^4+41580*a^2*b^2*d^4*e^2*x^4+11088*a*b^3*d^5*e*x
^4+462*b^4*d^6*x^4+11550*a^4*d^3*e^3*x^3+34650*a^3*b*d^4*e^2*x^3+20790*a^2*
b^2*d^5*e*x^3+2310*a*b^3*d^6*x^3+11550*a^4*d^4*e^2*x^2+18480*a^3*b*d^5*e*x^
2+4620*a^2*b^2*d^6*x^2+6930*a^4*d^5*e*x+4620*a^3*b*d^6*x+2310*a^4*d^6)*((b*
x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.64, size = 1736, normalized size = 6.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^6*x^6/b - 17/110*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a*e^6*x^5/b^2 + 13/66*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^6*
x^4/b^3 - 59/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*e^6*x^3/b^4 + 1/4*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^6*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a
^7*e^6*x/b^6 + 21/88*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*e^6*x^2/b^5 + 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^6/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*a^8*e^6/b^7 - 65/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^6*x/b^6 + 3
29/1320*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*e^6/b^7 + 1/10*(6*b*d*e^5 + a*e
^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^5/b^2 - 1/6*(6*b*d*e^5 + a*e^6)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a*x^4/b^3 + 1/3*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*x^4/b^2 + 5/24*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*a^2*x^3/b^4 - 13/24*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*a*x^3/b^3 + 5/8*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*x^3/b^2 + 1/4*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^6*x/b^6 - 3/4*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*a^5*x/b^5 + 5/4*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^4*x/b^4 - 5/4*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x
 + a^2)^(3/2)*a^3*x/b^3 + 3/4*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^2*x/b^2 - 1/4*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*a*x/b - 13/56*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3
*x^2/b^5 + 37/56*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
```

```
a^2*x^2/b^4 - 55/56*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a*x^2/b^3 + 5/7*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*x^2/b^2 + 1/4*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^7
/b^7 - 3/4*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6/b^
6 + 5/4*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5
 - 5/4*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4
+ 3/4*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1
/4*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 + 41/168*(6*
b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^6 - 121/168*(5*b*d
^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^5 + 65/56*(4*b*
d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 15/14*(3
*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/2*(2*
b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 - 209/840*(6*b
*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^7 + 125/168*(5*b*d^2*
e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^6 - 69/56*(4*b*d^3*e
^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^5 + 17/14*(3*b*d^4*
e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^4 - 7/10*(2*b*d^5*
e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b^3 + 1/5*(b*d^6 + 6*a*d
^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,{\left(d+e\,x\right)}^6\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6 \left((a+bx)^2\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**6*((a + b*x)**2)**(3/2), x)
```

3.1745 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{3/2} dx$

Optimal. Leaf size=254

$$\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^2}{4e^5(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)^3}{7e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+\cdots}{6e^5(a+b\cdots}$$

Rubi [A] time = 0.27, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}}{10e^5(a+bx)}-\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)}{9e^5(a+bx)}+\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^2}{4e^5(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)^3}{7e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^4}{6e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a + b*x))
 - (4*b*(b*d - a*e)^3*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a
+ b*x)) + (3*b^2*(b*d - a*e)^2*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
4*e^5*(a + b*x)) - (4*b^3*(b*d - a*e)*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(9*e^5*(a + b*x)) + (b^4*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(10*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{3/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^5\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^5\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^5}{e^4}-\frac{4b(bd-ae)^3(d+ex)^6}{e^4}+\cdots\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^4(d+ex)^6\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)}-\frac{4b(bd-ae)^3(d+ex)^{7}\cdots}{7e^5(a\cdots}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 322, normalized size = 1.27

$$\frac{x\sqrt{(a+bx)^2}\left(210a^4\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+120a^3bx\left(21d^5+70d^4ex+105d^3e^2x^2+84d^2e^3x^3+35de^4x^4+6e^5x^5\right)+45a^2b^2x^2\left(56d^5+210d^4ex+336d^3e^2x^2+280d^2e^3x^3+120de^4x^4+21e^5x^5\right)+10ab^3x^3\left(126d^5+504d^4ex+840d^3e^2x^2+720d^2e^3x^3+315de^4x^4+56e^5x^5\right)+b^4x^4\left(252d^5+1050d^4ex+1800d^3e^2x^2+1575d^2e^3x^3+700de^4x^4+126e^5x^5\right)\right)}{1260(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(210*a^4*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2
*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + 120*a^3*b*x*(21*d^5 + 70*d^4*e*x + 105*
d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + 45*a^2*b^2*x^2*(
56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 +
21*e^5*x^5) + 10*a*b^3*x^3*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d
^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + b^4*x^4*(252*d^5 + 1050*d^4*e*x
+ 1800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5)))/(126
0*(a + b*x))
```

IntegrateAlgebraic [F] time = 3.23, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.41, size = 360, normalized size = 1.42

$$\frac{1}{10}b^4e^5x^{10}+a^4d^5x+\frac{1}{9}\left(5b^4de^4+4ab^3e^5\right)x^9+\frac{1}{4}\left(5b^4d^2e^3+10ab^3de^4+3a^2b^2e^5\right)x^8+\frac{2}{7}\left(5b^4d^3e^2+20ab^3d^2e^3+15a^2b^2de^4+2a^3be^5\right)x^7+\frac{1}{6}\left(5b^4d^4e+40ab^3d^3e^2+60a^2b^2d^2e^3+20a^3bde^4+a^4e^5\right)x^6+\frac{1}{5}\left(b^4d^5+20ab^3d^4e+60a^2b^2d^3e^2+40a^3bd^2e^3+5a^4de^4\right)x^5+\frac{1}{2}\left(2ab^3d^5+15a^2b^2d^4e+20a^3bd^3e^2+5a^4d^2e^3\right)x^4+\frac{2}{3}\left(3a^2b^2d^5+10a^3bd^4e+5a^4d^3e^2\right)x^3+\frac{1}{2}\left(4a^3bd^5+5a^4d^4e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/10*b^4*e^5*x^10 + a^4*d^5*x + 1/9*(5*b^4*d*e^4 + 4*a*b^3*e^5)*x^9 + 1/4*(
5*b^4*d^2*e^3 + 10*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*x^8 + 2/7*(5*b^4*d^3*e^2 +
20*a*b^3*d^2*e^3 + 15*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*x^7 + 1/6*(5*b^4*d^4*e +
 40*a*b^3*d^3*e^2 + 60*a^2*b^2*d^2*e^3 + 20*a^3*b*d*e^4 + a^4*e^5)*x^6 + 1/
5*(b^4*d^5 + 20*a*b^3*d^4*e + 60*a^2*b^2*d^3*e^2 + 40*a^3*b*d^2*e^3 + 5*a^4
*d*e^4)*x^5 + 1/2*(2*a*b^3*d^5 + 15*a^2*b^2*d^4*e + 20*a^3*b*d^3*e^2 + 5*a^
4*d^2*e^3)*x^4 + 2/3*(3*a^2*b^2*d^5 + 10*a^3*b*d^4*e + 5*a^4*d^3*e^2)*x^3 +
 1/2*(4*a^3*b*d^5 + 5*a^4*d^4*e)*x^2
```

giac [B] time = 0.19, size = 561, normalized size = 2.21

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/10*b^4*x^10*e^5*sgn(b*x + a) + 5/9*b^4*d*x^9*e^4*sgn(b*x + a) + 5/4*b^4*d
^2*x^8*e^3*sgn(b*x + a) + 10/7*b^4*d^3*x^7*e^2*sgn(b*x + a) + 5/6*b^4*d^4*x
^6*e*sgn(b*x + a) + 1/5*b^4*d^5*x^5*sgn(b*x + a) + 4/9*a*b^3*x^9*e^5*sgn(b*
x + a) + 5/2*a*b^3*d*x^8*e^4*sgn(b*x + a) + 40/7*a*b^3*d^2*x^7*e^3*sgn(b*x
+ a) + 20/3*a*b^3*d^3*x^6*e^2*sgn(b*x + a) + 4*a*b^3*d^4*x^5*e*sgn(b*x + a)
 + a*b^3*d^5*x^4*sgn(b*x + a) + 3/4*a^2*b^2*x^8*e^5*sgn(b*x + a) + 30/7*a^2
*b^2*d*x^7*e^4*sgn(b*x + a) + 10*a^2*b^2*d^2*x^6*e^3*sgn(b*x + a) + 12*a^2*
```

```
b^2*d^3*x^5*e^2*sgn(b*x + a) + 15/2*a^2*b^2*d^4*x^4*e*sgn(b*x + a) + 2*a^2*
b^2*d^5*x^3*sgn(b*x + a) + 4/7*a^3*b*x^7*e^5*sgn(b*x + a) + 10/3*a^3*b*d*x^
6*e^4*sgn(b*x + a) + 8*a^3*b*d^2*x^5*e^3*sgn(b*x + a) + 10*a^3*b*d^3*x^4*e^
2*sgn(b*x + a) + 20/3*a^3*b*d^4*x^3*e*sgn(b*x + a) + 2*a^3*b*d^5*x^2*sgn(b*
x + a) + 1/6*a^4*x^6*e^5*sgn(b*x + a) + a^4*d*x^5*e^4*sgn(b*x + a) + 5/2*a^
4*d^2*x^4*e^3*sgn(b*x + a) + 10/3*a^4*d^3*x^3*e^2*sgn(b*x + a) + 5/2*a^4*d^
4*x^2*e*sgn(b*x + a) + a^4*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 414, normalized size = 1.63

$$\frac{\left(126 b^4 e^5 x^9+560 x^8 a b^3 e^5+700 x^8 b^4 d e^4+945 x^7 a^2 b^2 e^5+3150 x^7 a b^3 d e^4+1575 x^7 b^4 d^2 e^3+720 x^6 a^3 b e^5+5400 x^6 a^2 b^2 d e^4+7200 x^6 a b^3 d^2 e^3+1800 x^6 b^4 d^3 e^2+210 x^5 a^4 e^5+4200 x^5 a^3 b d e^4+12600 x^5 a^2 b^2 d^2 e^3+8400 x^5 a b^3 d^3 e^2+1050 x^5 b^4 d^4 e+1260 x^4 a^4 d e^4+10080 x^4 a^3 b d^2 e^3+15120 x^4 a^2 b^2 d^3 e^2+5040 x^4 a b^3 d^4 e+252 x^4 b^4 d^5+3150 x^3 a^4 d^2 e^3+12600 x^3 a^3 b d^3 e^2+9450 x^3 a^2 b^2 d^4 e+1260 x^3 a b^3 d^5+4200 x^2 a^4 d^3 e^2+8400 x^2 a^3 b d^4 e+2520 x^2 a^2 b^2 d^5+3150 x a^4 d^4 e+2520 x a^3 b d^5+1260 a^4 d^5\right)\left(\left(b x+a\right)^2\right)^{\frac{3}{2}} x}{1260 \left(b x+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/1260*x*(126*b^4*e^5*x^9+560*a*b^3*e^5*x^8+700*b^4*d*e^4*x^8+945*a^2*b^2*e
^5*x^7+3150*a*b^3*d*e^4*x^7+1575*b^4*d^2*e^3*x^7+720*a^3*b*e^5*x^6+5400*a^2
*b^2*d*e^4*x^6+7200*a*b^3*d^2*e^3*x^6+1800*b^4*d^3*e^2*x^6+210*a^4*e^5*x^5+
4200*a^3*b*d*e^4*x^5+12600*a^2*b^2*d^2*e^3*x^5+8400*a*b^3*d^3*e^2*x^5+1050*
b^4*d^4*e*x^5+1260*a^4*d*e^4*x^4+10080*a^3*b*d^2*e^3*x^4+15120*a^2*b^2*d^3*
e^2*x^4+5040*a*b^3*d^4*e*x^4+252*b^4*d^5*x^4+3150*a^4*d^2*e^3*x^3+12600*a^3
*b*d^3*e^2*x^3+9450*a^2*b^2*d^4*e*x^3+1260*a*b^3*d^5*x^3+4200*a^4*d^3*e^2*x
^2+8400*a^3*b*d^4*e*x^2+2520*a^2*b^2*d^5*x^2+3150*a^4*d^4*e*x+2520*a^3*b*d^
5*x+1260*a^4*d^5)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.77, size = 1323, normalized size = 5.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^5*x^5/b - 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*e^5*x^4/b^2 + 5/24*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^5*x^3/
b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^5*x + 1/4*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^6*e^5*x/b^5 - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*e^5*
x^2/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^5/b + 1/4*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*a^7*e^5/b^6 + 41/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4
*e^5*x/b^5 - 209/840*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^5/b^6 + 1/9*(5*b
*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^4/b^2 - 13/72*(5*b*d*e^4
+ a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^3/b^3 + 5/8*(2*b*d^2*e^3 + a*d
*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^3/b^2 - 1/4*(5*b*d*e^4 + a*e^5)*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*x/b^5 + 5/4*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 5/2*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 5/4*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a*x/b + 37/168*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^2*x^2/b^4 - 55/56*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*a*x^2/b^3 + 10/7*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*x^2/b^2 - 1/4*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6/b
^6 + 5/4*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 -
5/2*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 5/4*(
b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^5
 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 121/504*(5*b*d*e^4
+ a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^5 + 65/56*(2*b*d^2*e^3 + a
*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 15/7*(b*d^3*e^2 + a*d^2
*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 5/6*(b*d^4*e + 2*a*d^3*e^2)
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 + 125/504*(5*b*d*e^4 + a*e^5)*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^6 - 69/56*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2
```

```
+ 2*a*b*x + a^2)^(5/2)*a^3/b^5 + 17/7*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*
a*b*x + a^2)^(5/2)*a^2/b^4 - 7/6*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*a/b^3 + 1/5*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^5\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^5\,\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**5*((a + b*x)**2)**(3/2), x)
```

3.1746 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=219

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{2b^5}+\frac{6e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^5}+\frac{2e\sqrt{a^2+2abx+b^2x^2}\,(a}{3b^5}$$

Rubi [A] time = 0.22, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{2b^5}+\frac{6e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^5}+\frac{2e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)^3}{3b^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^4}{5b^5}+\frac{e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^5) + (2*e*(b
*d - a*e)^3*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^5) + (6*e^2*(b*
d - a*e)^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) + (e^3*(b*d -
 a*e)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^5) + (e^4*(a + b*x)^8
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^4\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^4\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(bd-ae)^4(a+bx)^4}{b^4}+\frac{4e(bd-ae)^3(a+bx)^5}{b^4}+\frac{6e^2}{}\right.}{ab+b^2x}$$

$$=\frac{(bd-ae)^4(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^5}+\frac{2e(bd-ae)^3(a+bx)^5}{3b}$$

Mathematica [A] time = 0.08, size = 267, normalized size = 1.22

$$\frac{x\sqrt{(a+bx)^2}\left(126a^4\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+84a^3bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right)+36a^2b^2x^2\left(35d^4+105d^3ex+126d^2e^2x^2+70de^3x^3+15e^4x^4\right)+9ab^3x^3\left(70d^4+224d^3ex+280d^2e^2x^2+160de^3x^3+35e^4x^4\right)+b^4x^4\left(126d^4+420d^3ex+540d^2e^2x^2+315de^3x^3+70e^4x^4\right)\right)}{630(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(126*a^4*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^
3*x^3 + e^4*x^4) + 84*a^3*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*
e^3*x^3 + 5*e^4*x^4) + 36*a^2*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x
^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 9*a*b^3*x^3*(70*d^4 + 224*d^3*e*x + 280*d
^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + b^4*x^4*(126*d^4 + 420*d^3*e*x +
 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4)))/(630*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.43, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.42, size = 285, normalized size = 1.30

$$\frac{1}{9}b^4e^4x^9+a^4d^4x+\frac{1}{2}\left(b^4de^3+ab^3e^4\right)x^8+\frac{2}{7}\left(3b^4d^2e^2+8ab^3de^3+3a^2b^2e^4\right)x^7+\frac{2}{3}\left(b^4d^3e+6ab^3d^2e^2+6a^2b^2de^3+a^3be^4\right)x^6+\frac{1}{5}\left(b^4d^4+16ab^3d^3e+36a^2b^2d^2e^2+16a^3bde^3+a^4e^4\right)x^5+\left(ab^3d^4+6a^2b^2d^3e+6a^3bd^2e^2+a^4de^3\right)x^4+\frac{2}{3}\left(3a^2b^2d^4+8a^3bd^3e+3a^4d^2e^2\right)x^3+2\left(a^3bd^4+a^4d^3e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/9*b^4*e^4*x^9 + a^4*d^4*x + 1/2*(b^4*d*e^3 + a*b^3*e^4)*x^8 + 2/7*(3*b^4*
d^2*e^2 + 8*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^7 + 2/3*(b^4*d^3*e + 6*a*b^3*d^2
*e^2 + 6*a^2*b^2*d*e^3 + a^3*b*e^4)*x^6 + 1/5*(b^4*d^4 + 16*a*b^3*d^3*e + 3
6*a^2*b^2*d^2*e^2 + 16*a^3*b*d*e^3 + a^4*e^4)*x^5 + (a*b^3*d^4 + 6*a^2*b^2*
d^3*e + 6*a^3*b*d^2*e^2 + a^4*d*e^3)*x^4 + 2/3*(3*a^2*b^2*d^4 + 8*a^3*b*d^3
*e + 3*a^4*d^2*e^2)*x^3 + 2*(a^3*b*d^4 + a^4*d^3*e)*x^2
```

giac [B] time = 0.19, size = 461, normalized size = 2.11

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/9*b^4*x^9*e^4*sgn(b*x + a) + 1/2*b^4*d*x^8*e^3*sgn(b*x + a) + 6/7*b^4*d^2
*x^7*e^2*sgn(b*x + a) + 2/3*b^4*d^3*x^6*e*sgn(b*x + a) + 1/5*b^4*d^4*x^5*sg
n(b*x + a) + 1/2*a*b^3*x^8*e^4*sgn(b*x + a) + 16/7*a*b^3*d*x^7*e^3*sgn(b*x
+ a) + 4*a*b^3*d^2*x^6*e^2*sgn(b*x + a) + 16/5*a*b^3*d^3*x^5*e*sgn(b*x + a)
 + a*b^3*d^4*x^4*sgn(b*x + a) + 6/7*a^2*b^2*x^7*e^4*sgn(b*x + a) + 4*a^2*b^
2*d*x^6*e^3*sgn(b*x + a) + 36/5*a^2*b^2*d^2*x^5*e^2*sgn(b*x + a) + 6*a^2*b^
2*d^3*x^4*e*sgn(b*x + a) + 2*a^2*b^2*d^4*x^3*sgn(b*x + a) + 2/3*a^3*b*x^6*e
^4*sgn(b*x + a) + 16/5*a^3*b*d*x^5*e^3*sgn(b*x + a) + 6*a^3*b*d^2*x^4*e^2*s
gn(b*x + a) + 16/3*a^3*b*d^3*x^3*e*sgn(b*x + a) + 2*a^3*b*d^4*x^2*sgn(b*x +
 a) + 1/5*a^4*x^5*e^4*sgn(b*x + a) + a^4*d*x^4*e^3*sgn(b*x + a) + 2*a^4*d^2
```

```
*x^3*e^2*sgn(b*x + a) + 2*a^4*d^3*x^2*e*sgn(b*x + a) + a^4*d^4*x*sgn(b*x +
a)
```

maple [B] time = 0.05, size = 339, normalized size = 1.55

$$\frac{\left(70b^4e^4x^8 + 315x^7a\,b^3e^4 + 315x^7b^4d\,e^3 + 540x^6a^2b^2e^4 + 1440x^6a\,b^3d\,e^3 + 540x^6b^4d^2e^2 + 420x^5a^3b\,e^4 + 2520x^5a^2b^2d\,e^3 + 2520x^5a\,b^3d^2e^2 + 420x^5b^4d^3e + 126x^4a^4e^4 + 2016x^4a^3bd\,e^3 + 4536x^4a^2b^2d^2e^2 + 2016x^4a\,b^3d^3e + 126x^4b^4d^4 + 630a^4d\,e^3x^3 + 3780a^3b\,d^2e^2x^3 + 3780a^2b^2d^3e\,x^3 + 630a\,b^3d^4x^3 + 1260x^2a^4d^2e^2 + 3360x^2a^3b\,d^3e + 1260x^2a^2b^2d^4 + 1260a^4d^3ex + 1260a^3b\,d^4x + 630a^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{630\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/630*x*(70*b^4*e^4*x^8+315*a*b^3*e^4*x^7+315*b^4*d*e^3*x^7+540*a^2*b^2*e^4
*x^6+1440*a*b^3*d*e^3*x^6+540*b^4*d^2*e^2*x^6+420*a^3*b*e^4*x^5+2520*a^2*b^
2*d*e^3*x^5+2520*a*b^3*d^2*e^2*x^5+420*b^4*d^3*e*x^5+126*a^4*e^4*x^4+2016*a
^3*b*d*e^3*x^4+4536*a^2*b^2*d^2*e^2*x^4+2016*a*b^3*d^3*e*x^4+126*b^4*d^4*x^
4+630*a^4*d*e^3*x^3+3780*a^3*b*d^2*e^2*x^3+3780*a^2*b^2*d^3*e*x^3+630*a*b^3
*d^4*x^3+1260*a^4*d^2*e^2*x^2+3360*a^3*b*d^3*e*x^2+1260*a^2*b^2*d^4*x^2+126
0*a^4*d^3*e*x+1260*a^3*b*d^4*x+630*a^4*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.74, size = 998, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^4*x^4/b - 13/72*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*a*e^4*x^3/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^4*x - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*e^4*x/b^4 + 37/168*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*a^2*e^4*x^2/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^4
/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6*e^4/b^5 - 121/504*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*a^3*e^4*x/b^4 + 125/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^4*e^4/b^5 + 1/8*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^3/
b^2 + 1/4*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 1
/2*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 1/
2*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4
*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b - 11/56*(4*b*d*e
^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + 2/7*(3*b*d^2*e^2 +
2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 + 1/4*(4*b*d*e^3 + a*e^4
)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 - 1/2*(3*b*d^2*e^2 + 2*a*d*e^3)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 1/2*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*a^2/b^2 + 13/56*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*a^2*x/b^4 - 3/7*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*a*x/b^3 + 1/3*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*x/b^2 - 69/280*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^3/b^5 + 17/35*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a
^2/b^4 - 7/15*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b
^3 + 1/5*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^4\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^4\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**4*((a + b*x)**2)**(3/2), x)
```

3.1747 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{3/2} dx$

Optimal. Leaf size=172

$$\frac{3e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^4}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)^2}{2b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+b$$

Rubi [A] time = 0.18, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{3e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^4}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)^2}{2b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^3}{5b^4}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^4) + (e*(b*d
 - a*e)^2*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^4) + (3*e^2*(b*d
- a*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^4) + (e^3*(a + b*x)^
7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2} dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^3\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^3\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^3(a+bx)^4}{b^3}+\frac{3e(bd-ae)^2(a+bx)^5}{b^3}+\frac{3e^2}{}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^3(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^4}+\frac{e(bd-ae)^2(a+bx)^5}{2b}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 212, normalized size = 1.23

$$\frac{x\sqrt{(a+bx)^2}\left(70a^4\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+56a^3bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+28a^2b^2x^2\left(20d^3+45d^2ex+36de^2x^2+10e^3x^3\right)+8ab^3x^3\left(35d^3+84d^2ex+70de^2x^2+20e^3x^3\right)+b^4x^4\left(56d^3+140d^2ex+120de^2x^2+35e^3x^3\right)\right)}{280(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(70*a^4*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) +
56*a^3*b*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + 28*a^2*b^2*x^
2*(20*d^3 + 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 8*a*b^3*x^3*(35*d^3 +
 84*d^2*e*x + 70*d*e^2*x^2 + 20*e^3*x^3) + b^4*x^4*(56*d^3 + 140*d^2*e*x +
120*d*e^2*x^2 + 35*e^3*x^3)))/(280*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.95, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.41, size = 225, normalized size = 1.31

$$\frac{1}{8}b^4e^3x^8+a^4d^3x+\frac{1}{7}\left(3b^4de^2+4ab^3e^3\right)x^7+\frac{1}{2}\left(b^4d^2e+4ab^3de^2+2a^2b^2e^3\right)x^6+\frac{1}{5}\left(b^4d^3+12ab^3d^2e+18a^2b^2de^2+4a^3be^3\right)x^5+\frac{1}{4}\left(4ab^3d^3+18a^2b^2d^2e+12a^3bde^2+a^4e^3\right)x^4+\left(2a^2b^2d^3+4a^3bd^2e+a^4de^2\right)x^3+\frac{1}{2}\left(4a^3bd^3+3a^4d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/8*b^4*e^3*x^8 + a^4*d^3*x + 1/7*(3*b^4*d*e^2 + 4*a*b^3*e^3)*x^7 + 1/2*(b^
4*d^2*e + 4*a*b^3*d*e^2 + 2*a^2*b^2*e^3)*x^6 + 1/5*(b^4*d^3 + 12*a*b^3*d^2*
e + 18*a^2*b^2*d*e^2 + 4*a^3*b*e^3)*x^5 + 1/4*(4*a*b^3*d^3 + 18*a^2*b^2*d^2
*e + 12*a^3*b*d*e^2 + a^4*e^3)*x^4 + (2*a^2*b^2*d^3 + 4*a^3*b*d^2*e + a^4*d
*e^2)*x^3 + 1/2*(4*a^3*b*d^3 + 3*a^4*d^2*e)*x^2
```

giac [B] time = 0.21, size = 360, normalized size = 2.09

$$\frac{1}{8}b^4x^8e^3\mathrm{sgn}(bx+a)+\frac{3}{7}b^4dx^7e^2\mathrm{sgn}(bx+a)+\frac{1}{2}b^4d^2x^6e\mathrm{sgn}(bx+a)+\frac{1}{5}b^4d^3x^5\mathrm{sgn}(bx+a)+\frac{4}{7}ab^3x^7e^3\mathrm{sgn}(bx+a)+2ab^3dx^6e^2\mathrm{sgn}(bx+a)+\frac{12}{5}ab^3d^2x^5e\mathrm{sgn}(bx+a)+ab^3d^3x^4\mathrm{sgn}(bx+a)+a^2b^2x^6e^3\mathrm{sgn}(bx+a)+\frac{18}{5}a^2b^2dx^5e^2\mathrm{sgn}(bx+a)+\frac{9}{2}a^2b^2d^2x^4e\mathrm{sgn}(bx+a)+2a^2b^2d^3x^3\mathrm{sgn}(bx+a)+\frac{4}{5}a^3bx^5e^3\mathrm{sgn}(bx+a)+3a^3bdx^4e^2\mathrm{sgn}(bx+a)+4a^3bd^2x^3e\mathrm{sgn}(bx+a)+2a^3bd^3x^2\mathrm{sgn}(bx+a)+\frac{1}{4}a^4x^4e^3\mathrm{sgn}(bx+a)+a^4dx^3e^2\mathrm{sgn}(bx+a)+\frac{3}{2}a^4d^2x^2e\mathrm{sgn}(bx+a)+a^4d^3x\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/8*b^4*x^8*e^3*sgn(b*x + a) + 3/7*b^4*d*x^7*e^2*sgn(b*x + a) + 1/2*b^4*d^2
*x^6*e*sgn(b*x + a) + 1/5*b^4*d^3*x^5*sgn(b*x + a) + 4/7*a*b^3*x^7*e^3*sgn(
b*x + a) + 2*a*b^3*d*x^6*e^2*sgn(b*x + a) + 12/5*a*b^3*d^2*x^5*e*sgn(b*x +
a) + a*b^3*d^3*x^4*sgn(b*x + a) + a^2*b^2*x^6*e^3*sgn(b*x + a) + 18/5*a^2*b
^2*d*x^5*e^2*sgn(b*x + a) + 9/2*a^2*b^2*d^2*x^4*e*sgn(b*x + a) + 2*a^2*b^2*
d^3*x^3*sgn(b*x + a) + 4/5*a^3*b*x^5*e^3*sgn(b*x + a) + 3*a^3*b*d*x^4*e^2*s
gn(b*x + a) + 4*a^3*b*d^2*x^3*e*sgn(b*x + a) + 2*a^3*b*d^3*x^2*sgn(b*x + a)
 + 1/4*a^4*x^4*e^3*sgn(b*x + a) + a^4*d*x^3*e^2*sgn(b*x + a) + 3/2*a^4*d^2*
x^2*e*sgn(b*x + a) + a^4*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 264, normalized size = 1.53

$$\frac{\left(35e^3b^4x^7+160x^6e^3ab^3+120x^6de^2b^4+280x^5e^3a^2b^2+560x^5de^2ab^3+140x^5d^2eb^4+224x^4e^3a^3b+1008x^4de^2a^2b^2+672x^4d^2eab^3+56x^4d^3b^4+70x^3e^3a^4+840x^3de^2a^3b+1260x^3d^2ea^2b^2+280x^3d^3ab^3+280a^4de^2x^2+1120a^3bd^2ex^2+560a^2b^2d^3x^2+420xd^2ea^4+560xd^3a^3b+280d^3a^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{280\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/280*x*(35*b^4*e^3*x^7+160*a*b^3*e^3*x^6+120*b^4*d*e^2*x^6+280*a^2*b^2*e^3
*x^5+560*a*b^3*d*e^2*x^5+140*b^4*d^2*e*x^5+224*a^3*b*e^3*x^4+1008*a^2*b^2*d
*e^2*x^4+672*a*b^3*d^2*e*x^4+56*b^4*d^3*x^4+70*a^4*e^3*x^3+840*a^3*b*d*e^2*
x^3+1260*a^2*b^2*d^2*e*x^3+280*a*b^3*d^3*x^3+280*a^4*d*e^2*x^2+1120*a^3*b*d
^2*e*x^2+560*a^2*b^2*d^3*x^2+420*a^4*d^2*e*x+560*a^3*b*d^3*x+280*a^4*d^3)*(
(b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.65, size = 693, normalized size = 4.03

$$\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} e^{3} x^{3}}{8 b}+\frac{1}{4}\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a d^{3} x+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{4} e^{3} x}{4 b^{3}}-\frac{11\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} a e^{3} x^{2}}{56 b^{2}}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{2} d^{3}}{4 b}+\frac{\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{5} e^{3}}{4 b^{4}}+\frac{13\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} a^{2} e^{3} x}{56 b^{3}}-\frac{69\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} a^{3} e^{3}}{280 b^{4}}-\frac{\left(3 b d e^{2}+a e^{3}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{3} x}{4 b^{3}}+\frac{3\left(b d^{2} e+a d e^{2}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{2} x}{4 b^{2}}-\frac{\left(b d^{3}+3 a d^{2} e\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a x}{4 b}+\frac{\left(3 b d e^{2}+a e^{3}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} x^{2}}{7 b^{2}}-\frac{\left(3 b d e^{2}+a e^{3}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{4}}{4 b^{4}}+\frac{3\left(b d^{2} e+a d e^{2}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{3}}{4 b^{3}}-\frac{\left(b d^{3}+3 a d^{2} e\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{3}{2}} a^{2}}{4 b^{2}}-\frac{3\left(3 b d e^{2}+a e^{3}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} a x}{14 b^{3}}+\frac{\left(b d^{2} e+a d e^{2}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} x}{2 b^{2}}+\frac{17\left(3 b d e^{2}+a e^{3}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} a^{2}}{70 b^{4}}-\frac{7\left(b d^{2} e+a d e^{2}\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}} a}{10 b^{3}}+\frac{\left(b d^{3}+3 a d^{2} e\right)\left(b^{2} x^{2}+2 a b x+a^{2}\right)^{\frac{5}{2}}}{5 b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^3*x^3/b + 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*a*d^3*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*e^3*x/b^3 - 11/5
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*e^3*x^2/b^2 + 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a^2*d^3/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*e^3/b^4 + 13
/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^3*x/b^3 - 69/280*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*a^3*e^3/b^4 - 1/4*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a^3*x/b^3 + 3/4*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*a^2*x/b^2 - 1/4*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x
/b + 1/7*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 - 1/4*
(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 3/4*(b*d^2*e
+ a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^3 + 3*a*d^2*e
)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 3/14*(3*b*d*e^2 + a*e^3)*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/2*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*x/b^2 + 17/70*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^2/b^4 - 7/10*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a/b^3 + 1/5*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,{(d+e\,x)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b x\right) \left(d + e x\right)^{3} \left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3*((a + b*x)**2)**(3/2), x)
```

3.1748 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{3/2} dx$

Optimal. Leaf size=125

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)}{3b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^2}{5b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{7b^3}$$

Rubi [A] time = 0.13, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)}{3b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^2}{5b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^3) + (e*(b*d
 - a*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) + (e^2*(a + b*x)
^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2} dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^2\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^2\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^2(a+bx)^4}{b^2}+\frac{2e(bd-ae)(a+bx)^5}{b^2}+\frac{e^2(a+bx)}{b^2}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^2(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^3}+\frac{e(bd-ae)(a+bx)^5\sqrt{a^2}}{3b^3}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 157, normalized size = 1.26

$$\frac{x\sqrt{(a+bx)^2}\left(35a^4\left(3d^2+3dex+e^2x^2\right)+35a^3bx\left(6d^2+8dex+3e^2x^2\right)+21a^2b^2x^2\left(10d^2+15dex+6e^2x^2\right)+7ab^3x^3\left(15d^2+24dex+10e^2x^2\right)+b^4x^4\left(21d^2+35dex+15e^2x^2\right)\right)}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(35*a^4*(3*d^2 + 3*d*e*x + e^2*x^2) + 35*a^3*b*x*(6*d^
2 + 8*d*e*x + 3*e^2*x^2) + 21*a^2*b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2) +
 7*a*b^3*x^3*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + b^4*x^4*(21*d^2 + 35*d*e*x
+ 15*e^2*x^2)))/(105*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.48, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [A] time = 0.41, size = 156, normalized size = 1.25

$$\frac{1}{7}b^4e^2x^7+a^4d^2x+\frac{1}{3}\left(b^4de+2\,ab^3e^2\right)x^6+\frac{1}{5}\left(b^4d^2+8\,ab^3de+6\,a^2b^2e^2\right)x^5+\left(ab^3d^2+3\,a^2b^2de+a^3be^2\right)x^4+\frac{1}{3}\left(6\,a^2b^2d^2+8\,a^3bde+a^4e^2\right)x^3+\left(2\,a^3bd^2+a^4de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/7*b^4*e^2*x^7 + a^4*d^2*x + 1/3*(b^4*d*e + 2*a*b^3*e^2)*x^6 + 1/5*(b^4*d^
2 + 8*a*b^3*d*e + 6*a^2*b^2*e^2)*x^5 + (a*b^3*d^2 + 3*a^2*b^2*d*e + a^3*b*e
^2)*x^4 + 1/3*(6*a^2*b^2*d^2 + 8*a^3*b*d*e + a^4*e^2)*x^3 + (2*a^3*b*d^2 +
a^4*d*e)*x^2
```

giac [B] time = 0.18, size = 260, normalized size = 2.08

$$\frac{1}{7}b^4x^7e^2\mathrm{sgn}(bx+a)+\frac{1}{3}b^4dx^6e\,\mathrm{sgn}(bx+a)+\frac{1}{5}b^4d^2x^5\mathrm{sgn}(bx+a)+\frac{2}{3}ab^3x^6e^2\mathrm{sgn}(bx+a)+\frac{8}{5}ab^3dx^5e\,\mathrm{sgn}(bx+a)+ab^3d^2x^4\mathrm{sgn}(bx+a)+\frac{6}{5}a^2b^2x^5e^2\mathrm{sgn}(bx+a)+3a^2b^2dx^4e\,\mathrm{sgn}(bx+a)+2a^2b^2d^2x^3\mathrm{sgn}(bx+a)+a^3bx^4e^2\mathrm{sgn}(bx+a)+\frac{8}{3}a^3bdx^3e\,\mathrm{sgn}(bx+a)+2a^3bd^2x^2\mathrm{sgn}(bx+a)+\frac{1}{3}a^4x^3e^2\mathrm{sgn}(bx+a)+a^4dx^2e\,\mathrm{sgn}(bx+a)+a^4d^2x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/7*b^4*x^7*e^2*sgn(b*x + a) + 1/3*b^4*d*x^6*e*sgn(b*x + a) + 1/5*b^4*d^2*x
^5*sgn(b*x + a) + 2/3*a*b^3*x^6*e^2*sgn(b*x + a) + 8/5*a*b^3*d*x^5*e*sgn(b*
x + a) + a*b^3*d^2*x^4*sgn(b*x + a) + 6/5*a^2*b^2*x^5*e^2*sgn(b*x + a) + 3*
a^2*b^2*d*x^4*e*sgn(b*x + a) + 2*a^2*b^2*d^2*x^3*sgn(b*x + a) + a^3*b*x^4*e
^2*sgn(b*x + a) + 8/3*a^3*b*d*x^3*e*sgn(b*x + a) + 2*a^3*b*d^2*x^2*sgn(b*x
+ a) + 1/3*a^4*x^3*e^2*sgn(b*x + a) + a^4*d*x^2*e*sgn(b*x + a) + a^4*d^2*x*
sgn(b*x + a)
```

maple [B] time = 0.05, size = 189, normalized size = 1.51

$$\frac{\left(15e^2b^4x^6+70x^5e^2a\,b^3+35x^5b^4de+126x^4a^2b^2e^2+168x^4dea\,b^3+21x^4b^4d^2+105a^3b\,e^2x^3+315a^2b^2de\,x^3+105a\,b^3d^2x^3+35x^2e^2a^4+280x^2de\,a^3b+210x^2d^2a^2b^2+105a^4dex+210a^3b\,d^2x+105d^2a^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{105\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

[Out] 1/105*x*(15*b^4*e^2*x^6+70*a*b^3*e^2*x^5+35*b^4*d*e*x^5+126*a^2*b^2*e^2*x^4
+168*a*b^3*d*e*x^4+21*b^4*d^2*x^4+105*a^3*b*e^2*x^3+315*a^2*b^2*d*e*x^3+105
*a*b^3*d^2*x^3+35*a^4*e^2*x^2+280*a^3*b*d*e*x^2+210*a^2*b^2*d^2*x^2+105*a^4
*d*e*x+210*a^3*b*d^2*x+105*a^4*d^2)*((b*x+a)^2)^(3/2)/(b*x+a)^3

maxima [B] time = 0.57, size = 452, normalized size = 3.62

$$\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^3e^2x}{4\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}e^2x^2}{7\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2d^2}{4\,b}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^4e^2}{4\,b^3}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}ae^2x}{14\,b^2}+\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2e^2}{70\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,bde+ae^2\right)a^2x}{4\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(bd^2+2\,ade\right)ax}{4\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(2\,bde+ae^2\right)a^3}{4\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(bd^2+2\,ade\right)a^2}{4\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(2\,bde+ae^2\right)x}{6\,b^2}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(2\,bde+ae^2\right)a}{30\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(bd^2+2\,ade\right)}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")

[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^2*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)
^(3/2)*a^3*e^2*x/b^2 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^2*x^2/b + 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^2/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*a^4*e^2/b^3 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*e^2*x/b^2 + 17/70
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^2/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*(2*b*d*e + a*e^2)*a^2*x/b^2 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(
b*d^2 + 2*a*d*e)*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(2*b*d*e + a*e
^2)*a^3/b^3 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*d^2 + 2*a*d*e)*a^2/b^2
 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*b*d*e + a*e^2)*x/b^2 - 7/30*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*(2*b*d*e + a*e^2)*a/b^3 + 1/5*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*(b*d^2 + 2*a*d*e)/b^2

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)

[Out] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^2\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)

[Out] Integral((a + b*x)*(d + e*x)**2*((a + b*x)**2)**(3/2), x)

3.1749 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=78

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)}{5b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{6b^2}$$

Rubi [A] time = 0.05, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)}{5b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{6b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^2) + (e*(a + b
*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)(a+bx)^4}{b}+\frac{e(a+bx)^5}{b}\right)dx}{ab+b^2x}\\
&= \frac{(bd-ae)(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^2}+\frac{e(a+bx)^5\sqrt{a^2+2abx}}{6b^2}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 102, normalized size = 1.31

$$\frac{x\sqrt{(a+bx)^2}\left(15a^4(2d+ex)+20a^3bx(3d+2ex)+15a^2b^2x^2(4d+3ex)+6ab^3x^3(5d+4ex)+b^4x^4(6d+5ex)\right)}{30(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(15*a^4*(2*d + e*x) + 20*a^3*b*x*(3*d + 2*e*x) + 15*a^
2*b^2*x^2*(4*d + 3*e*x) + 6*a*b^3*x^3*(5*d + 4*e*x) + b^4*x^4*(6*d + 5*e*x)
))/(30*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.01, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2), x]
```

fricas [A] time = 0.39, size = 96, normalized size = 1.23

$$\frac{1}{6}\,b^4ex^6+a^4dx+\frac{1}{5}\left(b^4d+4\,ab^3e\right)x^5+\frac{1}{2}\left(2\,ab^3d+3\,a^2b^2e\right)x^4+\frac{2}{3}\left(3\,a^2b^2d+2\,a^3be\right)x^3+\frac{1}{2}\left(4\,a^3bd+a^4e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 1/6*b^4*e*x^6 + a^4*d*x + 1/5*(b^4*d + 4*a*b^3*e)*x^5 + 1/2*(2*a*b^3*d + 3*
a^2*b^2*e)*x^4 + 2/3*(3*a^2*b^2*d + 2*a^3*b*e)*x^3 + 1/2*(4*a^3*b*d + a^4*e
)*x^2
```

giac [B] time = 0.18, size = 162, normalized size = 2.08

$$\frac{1}{6}\,b^4x^6e\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,b^4dx^5\mathrm{sgn}\left(bx+a\right)+\frac{4}{5}\,ab^3x^5e\mathrm{sgn}\left(bx+a\right)+ab^3dx^4\mathrm{sgn}\left(bx+a\right)+\frac{3}{2}\,a^2b^2x^4e\mathrm{sgn}\left(bx+a\right)+2\,a^2b^2dx^3\mathrm{sgn}\left(bx+a\right)+\frac{4}{3}\,a^3bx^3e\mathrm{sgn}\left(bx+a\right)+2\,a^3bdx^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,a^4x^2e\mathrm{sgn}\left(bx+a\right)+a^4dx\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*b^4*x^6*e*sgn(b*x + a) + 1/5*b^4*d*x^5*sgn(b*x + a) + 4/5*a*b^3*x^5*e*s
gn(b*x + a) + a*b^3*d*x^4*sgn(b*x + a) + 3/2*a^2*b^2*x^4*e*sgn(b*x + a) + 2
*a^2*b^2*d*x^3*sgn(b*x + a) + 4/3*a^3*b*x^3*e*sgn(b*x + a) + 2*a^3*b*d*x^2*
sgn(b*x + a) + 1/2*a^4*x^2*e*sgn(b*x + a) + a^4*d*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 114, normalized size = 1.46

$$\frac{\left(5e\,b^4x^5+24x^4ea\,b^3+6x^4d\,b^4+45x^3e\,a^2b^2+30x^3da\,b^3+40x^2e\,a^3b+60x^2d\,a^2b^2+15a^4ex+60a^3bdx+30d\,a^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{30\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/30*x*(5*b^4*e*x^5+24*a*b^3*e*x^4+6*b^4*d*x^4+45*a^2*b^2*e*x^3+30*a*b^3*d*
x^3+40*a^3*b*e*x^2+60*a^2*b^2*d*x^2+15*a^4*e*x+60*a^3*b*d*x+30*a^4*d)*((b*x
+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.61, size = 251, normalized size = 3.22

$$\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}adx+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2ex}{4\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2d}{4\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^3e}{4\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(bd+ae)ax}{4\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}ex}{6\,b}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(bd+ae)a^2}{4\,b^2}-\frac{7\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}ae}{30\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(bd+ae)}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*a^2*e*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d/b + 1/4*(b^2*x^2
 + 2*a*b*x + a^2)^(3/2)*a^3*e/b^2 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*
d + a*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e*x/b - 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*(b*d + a*e)*a^2/b^2 - 7/30*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*a*e/b^2 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(b*d + a*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1750 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=27

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b}$$

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(5/2)/(5*b)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.93

$$\frac{(a+bx)^4\sqrt{(a+bx)^2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)^4*Sqrt[(a + b*x)^2])/(5*b)
```

IntegrateAlgebraic [A] time = 0.03, size = 18, normalized size = 0.67

$$\frac{\left((a+bx)^2\right)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)^2)^(5/2)/(5*b)
```

fricas [A] time = 0.41, size = 42, normalized size = 1.56

$$\frac{1}{5}\,b^4x^5+ab^3x^4+2\,a^2b^2x^3+2\,a^3bx^2+a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/5*b^4*x^5 + a*b^3*x^4 + 2*a^2*b^2*x^3 + 2*a^3*b*x^2 + a^4*x
```

giac [B] time = 0.20, size = 86, normalized size = 3.19

$$\frac{1}{5}\,b^4x^5\mathrm{sgn}\left(bx+a\right)+ab^3x^4\mathrm{sgn}\left(bx+a\right)+2\,a^2b^2x^3\mathrm{sgn}\left(bx+a\right)+2\,a^3bx^2\mathrm{sgn}\left(bx+a\right)+a^4x\mathrm{sgn}\left(bx+a\right)+\frac{a^5\mathrm{sgn}\left(bx+a\right)}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/5*b^4*x^5*sgn(b*x + a) + a*b^3*x^4*sgn(b*x + a) + 2*a^2*b^2*x^3*sgn(b*x +
 a) + 2*a^3*b*x^2*sgn(b*x + a) + a^4*x*sgn(b*x + a) + 1/5*a^5*sgn(b*x + a)/
b
```

maple [B] time = 0.05, size = 60, normalized size = 2.22

$$\frac{\left(b^4x^4+5a\,b^3x^3+10a^2b^2x^2+10a^3bx+5a^4\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x}{5\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/5*x*(b^4*x^4+5*a*b^3*x^3+10*a^2*b^2*x^2+10*a^3*b*x+5*a^4)*((b*x+a)^2)^(3/
2)/(b*x+a)^3
```

maxima [A] time = 0.48, size = 23, normalized size = 0.85

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b
```

mupad [B] time = 2.16, size = 30, normalized size = 1.11

$$\frac{{\left(a+b\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] ((a + b*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b)
```

sympy [A] time = 0.93, size = 158, normalized size = 5.85

$$\begin{cases} \frac{a^4\sqrt{a^2+2abx+b^2x^2}}{5b}+\frac{4a^3x\sqrt{a^2+2abx+b^2x^2}}{5}+\frac{6a^2bx^2\sqrt{a^2+2abx+b^2x^2}}{5}+\frac{4ab^2x^3\sqrt{a^2+2abx+b^2x^2}}{5}+\frac{b^3x^4\sqrt{a^2+2abx+b^2x^2}}{5} & \text{for}\ b\neq 0 \\ ax\left(a^2\right)^{\frac{3}{2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Piecewise((a**4*sqrt(a**2 + 2*a*b*x + b**2*x**2)/(5*b) + 4*a**3*x*sqrt(a**2
 + 2*a*b*x + b**2*x**2)/5 + 6*a**2*b*x**2*sqrt(a**2 + 2*a*b*x + b**2*x**2)/
5 + 4*a*b**2*x**3*sqrt(a**2 + 2*a*b*x + b**2*x**2)/5 + b**3*x**4*sqrt(a**2
+ 2*a*b*x + b**2*x**2)/5, Ne(b, 0)), (a*x*(a**2)**(3/2), True))
```

3.1751 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=210

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)}{e^5(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae}{2e^3}$$

Rubi [A] time = 0.10, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^3}-\frac{(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)}{e^5(a+bx)}+\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x))) + ((b*
d - a*e)^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3) - ((b*d - a*e)*
(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^2) + ((a + b*x)^3*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(4*e) + ((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*
Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{d+ex}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{d+ex}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b(bd-ae)^3}{e^4}+\frac{b(bd-ae)^2(a+bx)}{e^3}-\frac{b(bd-ae)(a+bx)^2}{e^2}+\frac{b(a+}{e}\right.}{ab+b^2x}\\
&= -\frac{b(bd-ae)^3x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{(bd-ae)^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e^3}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 133, normalized size = 0.63

$$\frac{\sqrt{(a+bx)^2}\left(bex\left(48a^3e^3+36a^2be^2(ex-2d)+8ab^2e\left(6d^2-3dex+2e^2x^2\right)+b^3\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)+12(bd-ae)^4\log(d+ex)\right)}{12e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(b*e*x*(48*a^3*e^3 + 36*a^2*b*e^2*(-2*d + e*x) + 8*a*b^2
*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b^3*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 +
 3*e^3*x^3)) + 12*(b*d - a*e)^4*Log[d + e*x]))/(12*e^5*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.88, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x), x]
```

fricas [A] time = 0.41, size = 179, normalized size = 0.85

$$\frac{3\,b^4e^4x^4-4\left(b^4de^3-4\,ab^3e^4\right)x^3+6\left(b^4d^2e^2-4\,ab^3de^3+6\,a^2b^2e^4\right)x^2-12\left(b^4d^3e-4\,ab^3d^2e^2+6\,a^2b^2de^3-4\,a^3be^4\right)x+12\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\log\left(ex+d\right)}{12\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/12*(3*b^4*e^4*x^4 - 4*(b^4*d*e^3 - 4*a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 - 4*
a*b^3*d*e^3 + 6*a^2*b^2*e^4)*x^2 - 12*(b^4*d^3*e - 4*a*b^3*d^2*e^2 + 6*a^2*
b^2*d*e^3 - 4*a^3*b*e^4)*x + 12*(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^
2 - 4*a^3*b*d*e^3 + a^4*e^4)*log(e*x + d))/e^5
```

giac [A] time = 0.17, size = 266, normalized size = 1.27

$$\left(b^4d^4\mathrm{sgn}\left(bx+a\right)-4\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+6\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)-4\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right)+\frac{1}{12}\left(3\,b^4x^4e^3\mathrm{sgn}\left(bx+a\right)-4\,b^4dx^3e^2\mathrm{sgn}\left(bx+a\right)+6\,b^4d^2x^2e\mathrm{sgn}\left(bx+a\right)-12\,b^4d^3x\mathrm{sgn}\left(bx+a\right)+16\,ab^3x^3e^3\mathrm{sgn}\left(bx+a\right)-24\,ab^3dx^2e^2\mathrm{sgn}\left(bx+a\right)+48\,ab^3d^2xe\mathrm{sgn}\left(bx+a\right)+36\,a^2b^2x^2e^3\mathrm{sgn}\left(bx+a\right)-72\,a^2b^2dxe^2\mathrm{sgn}\left(bx+a\right)+48\,a^3bxe^3\mathrm{sgn}\left(bx+a\right)\right)e^{(-4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (b^4*d^4*sgn(b*x + a) - 4*a*b^3*d^3*e*sgn(b*x + a) + 6*a^2*b^2*d^2*e^2*sgn(
b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) + a^4*e^4*sgn(b*x + a))*e^(-5)*log(ab
s(x*e + d)) + 1/12*(3*b^4*x^4*e^3*sgn(b*x + a) - 4*b^4*d*x^3*e^2*sgn(b*x +
a) + 6*b^4*d^2*x^2*e*sgn(b*x + a) - 12*b^4*d^3*x*sgn(b*x + a) + 16*a*b^3*x^
3*e^3*sgn(b*x + a) - 24*a*b^3*d*x^2*e^2*sgn(b*x + a) + 48*a*b^3*d^2*x*e*sgn
(b*x + a) + 36*a^2*b^2*x^2*e^3*sgn(b*x + a) - 72*a^2*b^2*d*x*e^2*sgn(b*x +
a) + 48*a^3*b*x*e^3*sgn(b*x + a))*e^(-4)
```

maple [A] time = 0.06, size = 225, normalized size = 1.07

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(3b^4e^4x^4+16a\,b^3e^4x^3-4b^4d\,e^3x^3+36a^2b^2e^4x^2-24a\,b^3d\,e^3x^2+6b^4d^2e^2x^2+12a^4e^4\ln\left(ex+d\right)-48a^3bd\,e^3\ln\left(ex+d\right)+48a^3b\,e^4x+72a^2b^2d^2e^2\ln\left(ex+d\right)-72a^2b^2d\,e^3x-48a\,b^3d^3e\ln\left(ex+d\right)+48a\,b^3d^2e^2x+12b^4d^4\ln\left(ex+d\right)-12b^4d^3ex\right)}{12\left(bx+a\right)^3e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(3*x^4*b^4*e^4+16*x^3*a*b^3*e^4-4*x^3*b^4*d*e^3+36*x
^2*a^2*b^2*e^4-24*x^2*a*b^3*d*e^3+6*x^2*b^4*d^2*e^2+12*ln(e*x+d)*a^4*e^4-48
*ln(e*x+d)*a^3*b*d*e^3+72*ln(e*x+d)*a^2*b^2*d^2*e^2-48*ln(e*x+d)*a*b^3*d^3*
e+12*ln(e*x+d)*b^4*d^4+48*x*a^3*b*e^4-72*x*a^2*b^2*d*e^3+48*x*a*b^3*d^2*e^2
-12*x*b^4*d^3*e)/(b*x+a)^3/e^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x),x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x), x)
```

3.1752 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=239

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^5(a+bx)(d+ex)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3\log(d+ex)}{e^5(a+bx)}+\frac{6b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-a}{e^4(a+bx)}$$

Rubi [A] time = 0.16, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}{3e^5(a+bx)}-\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}{e^5(a+bx)}+\frac{6b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^4(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^5(a+bx)(d+ex)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3\log(d+ex)}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (6*b^2*(b*d - a*e)^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x)) - ((b
*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) - (2*b
^3*(b*d - a*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) +
 (b^4*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) - (4*b*(
b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^2}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^2}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{6b^2(bd-ae)^2}{e^4}+\frac{(-bd+ae)^4}{e^4(d+ex)^2}-\frac{4b(bd-ae)^3}{e^4(d+ex)}-\frac{4b^3(bd-ae)(}{e^4}\right.}{ab+b^2x}\\
&= \frac{6b^2(bd-ae)^2x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)(d+ex)}-2
\end{aligned}$$

Mathematica [A] time = 0.12, size = 183, normalized size = 0.77

$$\frac{\sqrt{(a+bx)^2}\left(-3a^4e^4+12a^3bde^3+18a^2b^2e^2\left(-d^2+dex+e^2x^2\right)+6ab^3e\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)-12b(d+ex)(bd-ae)^3\log(d+ex)+b^4\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)\right)}{3e^5(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(12*a^3*b*d*e^3 - 3*a^4*e^4 + 18*a^2*b^2*e^2*(-d^2 + d*e
*x + e^2*x^2) + 6*a*b^3*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + b^4
*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) - 12*b*(b*d -
 a*e)^3*(d + e*x)*Log[d + e*x]))/(3*e^5*(a + b*x)*(d + e*x))
```

IntegrateAlgebraic [F] time = 2.11, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x)^2, x]
```

fricas [A] time = 0.41, size = 267, normalized size = 1.12

$$\frac{b^4e^4x^4-3\,b^4d^4+12\,ab^3d^3e-18\,a^2b^2d^2e^2+12\,a^3bde^3-3\,a^4e^4-2\left(b^4de^3-3\,ab^3e^4\right)x^3+6\left(b^4d^2e^2-3\,ab^3de^3+3\,a^2b^2e^4\right)x^2+3\left(3\,b^4d^3e-8\,ab^3d^2e^2+6\,a^2b^2de^3\right)x-12\left(b^4d^4-3\,ab^3d^3e+3\,a^2b^2d^2e^2-a^3bde^3+\left(b^4d^3e-3\,ab^3d^2e^2+3\,a^2b^2de^3-a^3be^4\right)x\right)\log\left(ex+d\right)}{3\left(e^6x+de^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/3*(b^4*e^4*x^4 - 3*b^4*d^4 + 12*a*b^3*d^3*e - 18*a^2*b^2*d^2*e^2 + 12*a^3
*b*d*e^3 - 3*a^4*e^4 - 2*(b^4*d*e^3 - 3*a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 - 3
*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 + 3*(3*b^4*d^3*e - 8*a*b^3*d^2*e^2 + 6*a^
2*b^2*d*e^3)*x - 12*(b^4*d^4 - 3*a*b^3*d^3*e + 3*a^2*b^2*d^2*e^2 - a^3*b*d*
e^3 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)*log(e*
x + d))/(e^6*x + d*e^5)
```

giac [A] time = 0.21, size = 268, normalized size = 1.12

$$-4\left(b^4d^3\mathrm{sgn}\left(bx+a\right)-3\,ab^3d^2e\,\mathrm{sgn}\left(bx+a\right)+3\,a^2b^2de^2\mathrm{sgn}\left(bx+a\right)-a^3be^3\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right)+\frac{1}{3}\left(b^4x^3e^4\mathrm{sgn}\left(bx+a\right)-3\,b^4dx^2e^3\mathrm{sgn}\left(bx+a\right)+9\,b^4d^2xe^2\mathrm{sgn}\left(bx+a\right)+6\,ab^3x^2e^4\mathrm{sgn}\left(bx+a\right)-24\,ab^3dxe^3\mathrm{sgn}\left(bx+a\right)+18\,a^2b^2xe^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-6)}-\frac{\left(b^4d^4\mathrm{sgn}\left(bx+a\right)-4\,ab^3d^3e\,\mathrm{sgn}\left(bx+a\right)+6\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)-4\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -4*(b^4*d^3*sgn(b*x + a) - 3*a*b^3*d^2*e*sgn(b*x + a) + 3*a^2*b^2*d*e^2*sgn
(b*x + a) - a^3*b*e^3*sgn(b*x + a))*e^(-5)*log(abs(x*e + d)) + 1/3*(b^4*x^3
*e^4*sgn(b*x + a) - 3*b^4*d*x^2*e^3*sgn(b*x + a) + 9*b^4*d^2*x*e^2*sgn(b*x
+ a) + 6*a*b^3*x^2*e^4*sgn(b*x + a) - 24*a*b^3*d*x*e^3*sgn(b*x + a) + 18*a^
2*b^2*x*e^4*sgn(b*x + a))*e^(-6) - (b^4*d^4*sgn(b*x + a) - 4*a*b^3*d^3*e*sg
n(b*x + a) + 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) +
a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)
```

maple [A] time = 0.06, size = 327, normalized size = 1.37

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(b^4e^4x^4+6a\,b^3e^4x^3-2b^4d\,e^3x^3+12a^3b\,e^4x\ln\left(ex+d\right)-36a^2b^2d\,e^3x\ln\left(ex+d\right)+18a^2b^2e^4x^2+36a\,b^3d^2e^2x\ln\left(ex+d\right)-18a\,b^3d\,e^3x^2-12b^4d^3ex\ln\left(ex+d\right)+6b^4d^2e^2x^2+12a^3bd\,e^3\ln\left(ex+d\right)-36a^2b^2d^2e^2\ln\left(ex+d\right)+18a^2b^2d\,e^3x+36a\,b^3d^3e\ln\left(ex+d\right)-24a\,b^3d^2e^2x-12b^4d^4\ln\left(ex+d\right)+9b^4d^3ex-3a^4e^4+12a^3bd\,e^3-18a^2b^2d^2e^2+12a\,b^3d^3e-3b^4d^4\right)}{3\left(bx+a\right)^3\left(ex+d\right)e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x)
```

```
[Out] 1/3*((b*x+a)^2)^(3/2)*(b^4*e^4*x^4+6*a*b^3*e^4*x^3-2*b^4*d*e^3*x^3+12*ln(e*
x+d)*x*a^3*b*e^4-36*ln(e*x+d)*x*a^2*b^2*d*e^3+36*ln(e*x+d)*x*a*b^3*d^2*e^2-
12*ln(e*x+d)*x*b^4*d^3*e+18*a^2*b^2*e^4*x^2-18*a*b^3*d*e^3*x^2+6*b^4*d^2*e^
2*x^2+12*a^3*b*d*e^3*ln(e*x+d)-36*a^2*b^2*d^2*e^2*ln(e*x+d)+36*a*b^3*d^3*e*
ln(e*x+d)-12*b^4*d^4*ln(e*x+d)+18*a^2*b^2*d*e^3*x-24*a*b^3*d^2*e^2*x+9*b^4*
d^3*e*x-3*a^4*e^4+12*d*e^3*a^3*b-18*a^2*b^2*d^2*e^2+12*a*b^3*d^3*e-3*b^4*d^
4)/(b*x+a)^3/e^5/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{{(d+e\,x)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**2, x)
```

3.1753 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=238

$$\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^5(a+bx)(d+ex)^2}+\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^5(a+bx)}+\frac{b}{}$$

Rubi [A] time = 0.15, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^3x\sqrt{a^2+2abx+b^2x^2}\,(3bd-4ae)}{e^4(a+bx)}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^5(a+bx)(d+ex)^2}+\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^5(a+bx)}+\frac{b^4x^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] -((b^3*(3*b*d - 4*a*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x))) +
(b^4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)) - ((b*d - a*e)^4*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(d + e*x)^2) + (4*b*(b*d -
a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) + (6*b^2*(b
*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^3}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^3}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b^3(3bd-4ae)}{e^4}+\frac{b^4x}{e^3}+\frac{(-bd+ae)^4}{e^4(d+ex)^3}-\frac{4b(bd-ae)^3}{e^4(d+ex)^2}+\frac{6b^2(bd}{e^4(d}\right.}{ab+b^2x}$$

$$=-\frac{b^3(3bd-4ae)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{b^4x^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)}-\frac{(bd-ae}{2e^5}$$

Mathematica [A] time = 0.12, size = 185, normalized size = 0.78

$$\frac{\sqrt{(a+bx)^2}\left(-a^4e^4-4a^3be^3(d+2ex)+6a^2b^2de^2(3d+4ex)+4ab^3e\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+12b^2(d+ex)^2(bd-ae)^2\log(d+ex)+b^4\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)\right)}{2e^5(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-(a^4*e^4) - 4*a^3*b*e^3*(d + 2*e*x) + 6*a^2*b^2*d*e^2*
(3*d + 4*e*x) + 4*a*b^3*e*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) +
b^4*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + 12*b^2*(
b*d - a*e)^2*(d + e*x)^2*Log[d + e*x]))/(2*e^5*(a + b*x)*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 2.83, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x)^3, x]
```

fricas [A] time = 0.44, size = 291, normalized size = 1.22

$$\frac{b^4e^4x^4+7b^4d^4-20ab^3d^3e+18a^2b^2d^2e^2-4a^3bde^3-a^4e^4-4\left(b^4de^3-2ab^3e^4\right)x^3-\left(11b^4d^2e^2-16ab^3de^3\right)x^2+2\left(b^4d^3e-8ab^3d^2e^2+12a^2b^2de^3-4a^3be^4\right)x+12\left(b^4d^4-2ab^3d^3e+a^2b^2d^2e^2+\left(b^4d^2e^2-2ab^3de^3+a^2b^2e^4\right)x^2+2\left(b^4d^3e-2ab^3d^2e^2+a^2b^2de^3\right)x\right)\log(ex+d)}{2\left(e^7x^2+2de^6x+d^2e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/2*(b^4*e^4*x^4 + 7*b^4*d^4 - 20*a*b^3*d^3*e + 18*a^2*b^2*d^2*e^2 - 4*a^3*
b*d*e^3 - a^4*e^4 - 4*(b^4*d*e^3 - 2*a*b^3*e^4)*x^3 - (11*b^4*d^2*e^2 - 16*
a*b^3*d*e^3)*x^2 + 2*(b^4*d^3*e - 8*a*b^3*d^2*e^2 + 12*a^2*b^2*d*e^3 - 4*a^
3*b*e^4)*x + 12*(b^4*d^4 - 2*a*b^3*d^3*e + a^2*b^2*d^2*e^2 + (b^4*d^2*e^2 -
 2*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(b^4*d^3*e - 2*a*b^3*d^2*e^2 + a^2*b^
2*d*e^3)*x)*log(e*x + d))/(e^7*x^2 + 2*d*e^6*x + d^2*e^5)
```

giac [A] time = 0.18, size = 265, normalized size = 1.11

$$6\left(b^4d^2\mathrm{sgn}(bx+a)-2ab^3de\,\mathrm{sgn}(bx+a)+a^2b^2e^2\mathrm{sgn}(bx+a)\right)e^{(-5)}\log(|xe+d|)+\frac{1}{2}\left(b^4x^2e^3\mathrm{sgn}(bx+a)-6b^4dxe^2\mathrm{sgn}(bx+a)+8ab^3xe^3\mathrm{sgn}(bx+a)\right)e^{(-6)}+\frac{\left(7b^4d^4\mathrm{sgn}(bx+a)-20ab^3d^3e\,\mathrm{sgn}(bx+a)+18a^2b^2d^2e^2\mathrm{sgn}(bx+a)-4a^3bde^3\mathrm{sgn}(bx+a)-a^4e^4\mathrm{sgn}(bx+a)+8\left(b^4d^3e\,\mathrm{sgn}(bx+a)-3ab^3d^2e^2\mathrm{sgn}(bx+a)+3a^2b^2de^3\mathrm{sgn}(bx+a)-a^3be^4\mathrm{sgn}(bx+a)\right)x\right)e^{(-5)}}{2(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 6*(b^4*d^2*sgn(b*x + a) - 2*a*b^3*d*e*sgn(b*x + a) + a^2*b^2*e^2*sgn(b*x +
a))*e^(-5)*log(abs(x*e + d)) + 1/2*(b^4*x^2*e^3*sgn(b*x + a) - 6*b^4*d*x*e^
2*sgn(b*x + a) + 8*a*b^3*x*e^3*sgn(b*x + a))*e^(-6) + 1/2*(7*b^4*d^4*sgn(b*
x + a) - 20*a*b^3*d^3*e*sgn(b*x + a) + 18*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*
a^3*b*d*e^3*sgn(b*x + a) - a^4*e^4*sgn(b*x + a) + 8*(b^4*d^3*e*sgn(b*x + a)
 - 3*a*b^3*d^2*e^2*sgn(b*x + a) + 3*a^2*b^2*d*e^3*sgn(b*x + a) - a^3*b*e^4*
sgn(b*x + a))*x)*e^(-5)/(x*e + d)^2
```

maple [A] time = 0.08, size = 350, normalized size = 1.47

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(b^4e^4x^4+12a^2b^2e^4x^2\ln(ex+d)-24ab^3de^3x^2\ln(ex+d)+8ab^3e^4x^3+12b^4d^2e^2x^2\ln(ex+d)-4b^4de^3x^3+24a^2b^2de^3x\ln(ex+d)-48ab^3d^2e^2x\ln(ex+d)+16ab^3de^3x^2+24b^4d^3ex\ln(ex+d)-11b^4d^2e^2x^2-8a^3be^4x+12a^2b^2d^2e^2\ln(ex+d)+24a^2b^2de^3x-24ab^3d^3e\ln(ex+d)-16ab^3d^2e^2x+12b^4d^4\ln(ex+d)+2b^4d^3ex-a^4e^4-4a^3bde^3+18a^2b^2d^2e^2-20ab^3d^3e+7b^4d^4\right)}{2(bx+a)^3(ex+d)^2e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x)
```

```
[Out] 1/2*((b*x+a)^2)^(3/2)*(b^4*e^4*x^4+12*ln(e*x+d)*x^2*a^2*b^2*e^4-24*ln(e*x+d
)*x^2*a*b^3*d*e^3+12*ln(e*x+d)*x^2*b^4*d^2*e^2+8*a*b^3*e^4*x^3-4*b^4*d*e^3*
x^3+24*a^2*b^2*d*e^3*x*ln(e*x+d)-48*a*b^3*d^2*e^2*x*ln(e*x+d)+24*b^4*d^3*e*
x*ln(e*x+d)+16*a*b^3*d*e^3*x^2-11*b^4*d^2*e^2*x^2+12*a^2*b^2*d^2*e^2*ln(e*x
+d)-24*a*b^3*d^3*e*ln(e*x+d)+12*b^4*d^4*ln(e*x+d)-8*a^3*b*e^4*x+24*a^2*b^2*
d*e^3*x-16*a*b^3*d^2*e^2*x+2*b^4*d^3*e*x-a^4*e^4-4*a^3*b*d*e^3+18*a^2*b^2*d
^2*e^2-20*a*b^3*d^3*e+7*b^4*d^4)/(b*x+a)^3/e^5/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{{(d+e\,x)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**3, x)
```

3.1754 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=238

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^3}+\frac{b^4x\sqrt{a^2}}{e^4}$$

Rubi [A] time = 0.14, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^3}-\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)}{e^5(a+bx)}+\frac{b^4x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] (b^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x)) - ((b*d - a*e)^4*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^3) + (2*b*(b*d - a*e)
^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)^2) - (6*b^2*(b*d
 - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) - (4*b^3
*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^4}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^4}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{b^4}{e^4}+\frac{(-bd+ae)^4}{e^4(d+ex)^4}-\frac{4b(bd-ae)^3}{e^4(d+ex)^3}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^2}-\frac{4b^3(b}{e^4(d}\right.}{ab+b^2x}\\ &= \frac{b^4x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3}+\frac{2b(bd-ae)^3}{e^5(a+}\end{aligned}$$

Mathematica [A] time = 0.09, size = 181, normalized size = 0.76

$$-\frac{\sqrt{(a+bx)^2}\left(a^4e^4+2a^3be^3(d+3ex)+6a^2b^2e^2\left(d^2+3dex+3e^2x^2\right)-2ab^3de\left(11d^2+27dex+18e^2x^2\right)+12b^3(d+ex)^3(bd-ae)\log(d+ex)+b^4\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)\right)}{3e^5(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] -1/3*(Sqrt[(a + b*x)^2]*(a^4*e^4 + 2*a^3*b*e^3*(d + 3*e*x) + 6*a^2*b^2*e^2*
(d^2 + 3*d*e*x + 3*e^2*x^2) - 2*a*b^3*d*e*(11*d^2 + 27*d*e*x + 18*e^2*x^2)
+ b^4*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^3 - 3*e^4*x^4) + 12*
b^3*(b*d - a*e)*(d + e*x)^3*Log[d + e*x]))/(e^5*(a + b*x)*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 6.61, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d +
e*x)^4, x]
```

fricas [A] time = 0.46, size = 292, normalized size = 1.23

$$\frac{3b^4e^4x^4+9b^4de^3x^3-13b^4d^4+22ab^3d^3e-6a^2b^2d^2e^2-2a^3bde^3-a^4e^4-9\left(b^4d^2e^2-4ab^3de^3+2a^2b^2e^4\right)x^2-3\left(9b^4d^3e-18ab^3d^2e^2+6a^2b^2de^3+2a^3be^4\right)x-12\left(b^4d^4-ab^3d^3e+\left(b^4de^3-ab^3e^4\right)x^3+3\left(b^4d^2e^2-ab^3de^3\right)x^2+3\left(b^4d^3e-ab^3d^2e^2\right)x\right)\log(ex+d)}{3\left(e^8x^3+3de^7x^2+3d^2e^6x+d^3e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/3*(3*b^4*e^4*x^4 + 9*b^4*d*e^3*x^3 - 13*b^4*d^4 + 22*a*b^3*d^3*e - 6*a^2*
b^2*d^2*e^2 - 2*a^3*b*d*e^3 - a^4*e^4 - 9*(b^4*d^2*e^2 - 4*a*b^3*d*e^3 + 2*
a^2*b^2*e^4)*x^2 - 3*(9*b^4*d^3*e - 18*a*b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 + 2*
a^3*b*e^4)*x - 12*(b^4*d^4 - a*b^3*d^3*e + (b^4*d*e^3 - a*b^3*e^4)*x^3 + 3*
(b^4*d^2*e^2 - a*b^3*d*e^3)*x^2 + 3*(b^4*d^3*e - a*b^3*d^2*e^2)*x)*log(e*x
+ d))/(e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6*x + d^3*e^5)
```

giac [A] time = 0.20, size = 260, normalized size = 1.09

$$b^4xe^{(-4)}\mathrm{sgn}(bx+a)-4\left(b^4d\,\mathrm{sgn}(bx+a)-ab^3e\,\mathrm{sgn}(bx+a)\right)e^{(-5)}\log(|xe+d|)-\frac{\left(13b^4d^4\mathrm{sgn}(bx+a)-22ab^3d^3e\,\mathrm{sgn}(bx+a)+6a^2b^2d^2e^2\mathrm{sgn}(bx+a)+2a^3bde^3\mathrm{sgn}(bx+a)+a^4e^4\mathrm{sgn}(bx+a)+18\left(b^4d^2e^2\mathrm{sgn}(bx+a)-2ab^3de^3\mathrm{sgn}(bx+a)+a^2b^2e^4\mathrm{sgn}(bx+a)\right)x^2+6\left(5b^4d^3e\,\mathrm{sgn}(bx+a)-9ab^3d^2e^2\mathrm{sgn}(bx+a)+3a^2b^2de^3\mathrm{sgn}(bx+a)+a^3be^4\mathrm{sgn}(bx+a)\right)x\right)e^{(-5)}}{3(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] b^4*x*e^(-4)*sgn(b*x + a) - 4*(b^4*d*sgn(b*x + a) - a*b^3*e*sgn(b*x + a))*e
^(-5)*log(abs(x*e + d)) - 1/3*(13*b^4*d^4*sgn(b*x + a) - 22*a*b^3*d^3*e*sgn
(b*x + a) + 6*a^2*b^2*d^2*e^2*sgn(b*x + a) + 2*a^3*b*d*e^3*sgn(b*x + a) + a
^4*e^4*sgn(b*x + a) + 18*(b^4*d^2*e^2*sgn(b*x + a) - 2*a*b^3*d*e^3*sgn(b*x
+ a) + a^2*b^2*e^4*sgn(b*x + a))*x^2 + 6*(5*b^4*d^3*e*sgn(b*x + a) - 9*a*b^
3*d^2*e^2*sgn(b*x + a) + 3*a^2*b^2*d*e^3*sgn(b*x + a) + a^3*b*e^4*sgn(b*x +
 a))*x)*e^(-5)/(x*e + d)^3
```

maple [A] time = 0.06, size = 330, normalized size = 1.39

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(12ab^3e^4x^3\ln(ex+d)-12b^4de^3x^3\ln(ex+d)+3b^4e^4x^4+36ab^3de^3x^2\ln(ex+d)-36b^4d^2e^2x^2\ln(ex+d)+9b^4de^3x^3-18a^2b^2e^4x^2+36ab^3d^2e^2x\ln(ex+d)+36ab^3de^3x^2-36b^4d^3ex\ln(ex+d)-9b^4d^2e^2x^2-6a^3be^4x-18a^2b^2de^3x+12ab^3d^3e\ln(ex+d)+54ab^3d^2e^2x-12b^4d^4\ln(ex+d)-27b^4d^3ex-a^4e^4-2a^3bde^3-6a^2b^2d^2e^2+22ab^3d^3e-13b^4d^4\right)}{3(bx+a)^3(ex+d)^3e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x)
```

```
[Out] 1/3*((b*x+a)^2)^(3/2)*(12*ln(e*x+d)*x^3*a*b^3*e^4-12*ln(e*x+d)*x^3*b^4*d*e^
3+3*b^4*e^4*x^4+36*a*b^3*d*e^3*x^2*ln(e*x+d)-36*b^4*d^2*e^2*x^2*ln(e*x+d)+9
*b^4*d*e^3*x^3+36*a*b^3*d^2*e^2*x*ln(e*x+d)-36*b^4*d^3*e*x*ln(e*x+d)-18*a^2
*b^2*e^4*x^2+36*a*b^3*d*e^3*x^2-9*b^4*d^2*e^2*x^2+12*a*b^3*d^3*e*ln(e*x+d)-
12*b^4*d^4*ln(e*x+d)-6*a^3*b*e^4*x-18*a^2*b^2*d*e^3*x+54*a*b^3*d^2*e^2*x-27
*b^4*d^3*e*x-a^4*e^4-2*a^3*b*d*e^3-6*a^2*b^2*d^2*e^2+22*a*b^3*d^3*e-13*b^4*
d^4)/(b*x+a)^3/e^5/(e*x+d)^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**4, x)
```

3.1755 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5} dx$

Optimal. Leaf size=246

$$-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^2}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^5(a+bx)(d+ex)^4}+\frac{b^4\sqrt{a^2+2a}}{}$$

Rubi [A] time = 0.14, antiderivative size = 246, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)(d+ex)}-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^2}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^5(a+bx)(d+ex)^4}+\frac{b^4\sqrt{a^2+2abx+b^2x^2}\log(d+ex)}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a + b*x)*(d + e*x)^4
) + (4*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d +
 e*x)^3) - (3*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*
x)*(d + e*x)^2) + (4*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a
 + b*x)*(d + e*x)) + (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*
(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^5}dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^5}dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^5}-\frac{4b(bd-ae)^3}{e^4(d+ex)^4}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^3}-\frac{4b^3(bd-ae)}{e^4(d+ex)^2}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{4e^5(a+bx)(d+ex)^4}+\frac{4b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3}-3b$$

Mathematica [**A**] time = 0.09, size = 144, normalized size = 0.59

$$\frac{\sqrt{(a+bx)^2}\left((bd-ae)\left(3a^3e^3+a^2be^2(7d+16ex)+ab^2e\left(13d^2+40dex+36e^2x^2\right)+b^3\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)+12b^4(d+ex)^4\log(d+ex)\right)}{12e^5(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*((b*d - a*e)*(3*a^3*e^3 + a^2*b*e^2*(7*d + 16*e*x) + a*b
^2*e*(13*d^2 + 40*d*e*x + 36*e^2*x^2) + b^3*(25*d^3 + 88*d^2*e*x + 108*d*e^
2*x^2 + 48*e^3*x^3)) + 12*b^4*(d + e*x)^4*Log[d + e*x]))/(12*e^5*(a + b*x)*
(d + e*x)^4)
```

IntegrateAlgebraic [**F**] time = 180.12, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,
x]
```

```
[Out] $Aborted
```

fricas [**A**] time = 0.43, size = 268, normalized size = 1.09

$$\frac{25\,b^4d^4-12\,ab^3d^3e-6\,a^2b^2d^2e^2-4\,a^3bde^3-3\,a^4e^4+48\left(b^4de^3-ab^3e^4\right)x^3+36\left(3\,b^4d^2e^2-2\,ab^3de^3-a^2b^2e^4\right)x^2+8\left(11\,b^4d^3e-6\,ab^3d^2e^2-3\,a^2b^2de^3-2\,a^3be^4\right)x+12\left(b^4e^4x^4+4\,b^4de^3x^3+6\,b^4d^2e^2x^2+4\,b^4d^3ex+b^4d^4\right)\log\left(ex+d\right)}{12\left(e^9x^4+4\,de^8x^3+6\,d^2e^7x^2+4\,d^3e^6x+d^4e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/12*(25*b^4*d^4 - 12*a*b^3*d^3*e - 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 - 3*a
^4*e^4 + 48*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 36*(3*b^4*d^2*e^2 - 2*a*b^3*d*e^3
 - a^2*b^2*e^4)*x^2 + 8*(11*b^4*d^3*e - 6*a*b^3*d^2*e^2 - 3*a^2*b^2*d*e^3 -
 2*a^3*b*e^4)*x + 12*(b^4*e^4*x^4 + 4*b^4*d*e^3*x^3 + 6*b^4*d^2*e^2*x^2 + 4
*b^4*d^3*e*x + b^4*d^4)*log(e*x + d))/(e^9*x^4 + 4*d*e^8*x^3 + 6*d^2*e^7*x^
2 + 4*d^3*e^6*x + d^4*e^5)
```

giac [**A**] time = 0.17, size = 268, normalized size = 1.09

$$b^4e^{(-5)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(48\left(b^4de^2\mathrm{sgn}\left(bx+a\right)-ab^3e^3\mathrm{sgn}\left(bx+a\right)\right)x^3+36\left(3\,b^4d^2e\mathrm{sgn}\left(bx+a\right)-2\,ab^3de^2\mathrm{sgn}\left(bx+a\right)-a^2b^2e^3\mathrm{sgn}\left(bx+a\right)\right)x^2+8\left(11\,b^4d^3\mathrm{sgn}\left(bx+a\right)-6\,ab^3d^2e\mathrm{sgn}\left(bx+a\right)-3\,a^2b^2de^2\mathrm{sgn}\left(bx+a\right)-2\,a^3be^3\mathrm{sgn}\left(bx+a\right)\right)x+\left(25\,b^4d^4\mathrm{sgn}\left(bx+a\right)-12\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)-6\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)-4\,a^3bde^3\mathrm{sgn}\left(bx+a\right)-3\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}\right)e^{(-4)}}{12\left(xe+d\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] b^4*e^(-5)*log(abs(x*e + d))*sgn(b*x + a) + 1/12*(48*(b^4*d*e^2*sgn(b*x + a
) - a*b^3*e^3*sgn(b*x + a))*x^3 + 36*(3*b^4*d^2*e*sgn(b*x + a) - 2*a*b^3*d*
e^2*sgn(b*x + a) - a^2*b^2*e^3*sgn(b*x + a))*x^2 + 8*(11*b^4*d^3*sgn(b*x +
a) - 6*a*b^3*d^2*e*sgn(b*x + a) - 3*a^2*b^2*d*e^2*sgn(b*x + a) - 2*a^3*b*e^
3*sgn(b*x + a))*x + (25*b^4*d^4*sgn(b*x + a) - 12*a*b^3*d^3*e*sgn(b*x + a)
- 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) - 3*a^4*e^4*s
gn(b*x + a))*e^(-1))*e^(-4)/(x*e + d)^4
```

maple [A] time = 0.06, size = 276, normalized size = 1.12

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(12b^4e^4x^4\ln(ex+d)+48b^4d\,e^3x^3\ln(ex+d)-48a\,b^3e^4x^3+72b^4d^2e^2x^2\ln(ex+d)+48b^4d\,e^3x^3-36a^2b^2e^4x^2-72a\,b^3d\,e^3x^2+48b^4d^3ex\ln(ex+d)+108b^4d^2e^2x^2-16a^3b\,e^4x-24a^2b^2d\,e^3x-48a\,b^3d^2e^2x+12b^4d^4\ln(ex+d)+88b^4d^3ex-3a^4e^4-4a^3bd\,e^3-6a^2b^2d^2e^2-12a\,b^3d^3e+25b^4d^4\right)}{12\,(bx+a)^3\,(ex+d)^4\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(12*ln(e*x+d)*x^4*b^4*e^4+48*b^4*d*e^3*x^3*ln(e*x+d)
+72*b^4*d^2*e^2*x^2*ln(e*x+d)-48*a*b^3*e^4*x^3+48*b^4*d*e^3*x^3+48*b^4*d^3*
e*x*ln(e*x+d)-36*a^2*b^2*e^4*x^2-72*a*b^3*d*e^3*x^2+108*b^4*d^2*e^2*x^2+12*
b^4*d^4*ln(e*x+d)-16*a^3*b*e^4*x-24*a^2*b^2*d*e^3*x-48*a*b^3*d^2*e^2*x+88*b
^4*d^3*e*x-3*a^4*e^4-4*a^3*b*d*e^3-6*a^2*b^2*d^2*e^2-12*a*b^3*d^3*e+25*b^4*
d^4)/(b*x+a)^3/e^5/(e*x+d)^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{(d+e\,x)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**5, x)
```

3.1756 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=41

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(d+ex)^5(bd-ae)}$$

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(d+ex)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]

[Out] (a^2 + 2*a*b*x + b^2*x^2)^(5/2)/(5*(b*d - a*e)*(d + e*x)^5)
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx = \frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(bd-ae)(d+ex)^5}$$

Mathematica [B] time = 0.06, size = 158, normalized size = 3.85

$$-\frac{\sqrt{(a+bx)^2}\left(a^4e^4+a^3be^3(d+5ex)+a^2b^2e^2\left(d^2+5dex+10e^2x^2\right)+ab^3e\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+b^4\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)}{5e^5(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]

[Out] -1/5*(Sqrt[(a + b*x)^2]*(a^4*e^4 + a^3*b*e^3*(d + 5*e*x) + a^2*b^2*e^2*(d^2
 + 5*d*e*x + 10*e^2*x^2) + a*b^3*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3
*x^3) + b^4*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)))
/(e^5*(a + b*x)*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,
x]

[Out] $Aborted
```

fricas [B] time = 0.45, size = 215, normalized size = 5.24

$$-\frac{5 \, b^{4} e^{4} x^{4} + b^{4} d^{4} + a b^{3} d^{3} e + a^{2} b^{2} d^{2} e^{2} + a^{3} b d e^{3} + a^{4} e^{4} + 10 \, {\left(b^{4} d e^{3} + a b^{3} e^{4}\right)} x^{3} + 10 \, {\left(b^{4} d^{2} e^{2} + a b^{3} d e^{3} + a^{2} b^{2} e^{4}\right)} x^{2} + 5 \, {\left(b^{4} d^{3} e + a b^{3} d^{2} e^{2} + a^{2} b^{2} d e^{3} + a^{3} b e^{4}\right)} x}{5 \, {\left(e^{10} x^{5} + 5 \, d e^{9} x^{4} + 10 \, d^{2} e^{8} x^{3} + 10 \, d^{3} e^{7} x^{2} + 5 \, d^{4} e^{6} x + d^{5} e^{5}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] -1/5*(5*b^4*e^4*x^4 + b^4*d^4 + a*b^3*d^3*e + a^2*b^2*d^2*e^2 + a^3*b*d*e^3
 + a^4*e^4 + 10*(b^4*d*e^3 + a*b^3*e^4)*x^3 + 10*(b^4*d^2*e^2 + a*b^3*d*e^3
 + a^2*b^2*e^4)*x^2 + 5*(b^4*d^3*e + a*b^3*d^2*e^2 + a^2*b^2*d*e^3 + a^3*b*
e^4)*x)/(e^10*x^5 + 5*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2 + 5*d^4*e
^6*x + d^5*e^5)
```

giac [B] time = 0.21, size = 260, normalized size = 6.34

$$-\frac{{\left(5 \, b^{4} x^{4} e^{4} \mathrm{sgn}\left(b x + a\right) + 10 \, b^{4} d x^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 10 \, b^{4} d^{2} x^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 5 \, b^{4} d^{3} x e \mathrm{sgn}\left(b x + a\right) + b^{4} d^{4} \mathrm{sgn}\left(b x + a\right) + 10 \, a b^{3} x^{3} e^{4} \mathrm{sgn}\left(b x + a\right) + 10 \, a b^{3} d x^{2} e^{3} \mathrm{sgn}\left(b x + a\right) + 5 \, a b^{3} d^{2} x e^{2} \mathrm{sgn}\left(b x + a\right) + a b^{3} d^{3} e \mathrm{sgn}\left(b x + a\right) + 10 \, a^{2} b^{2} x^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 5 \, a^{2} b^{2} d x e^{3} \mathrm{sgn}\left(b x + a\right) + a^{2} b^{2} d^{2} e^{2} \mathrm{sgn}\left(b x + a\right) + 5 \, a^{3} b x e^{4} \mathrm{sgn}\left(b x + a\right) + a^{3} b d e^{3} \mathrm{sgn}\left(b x + a\right) + a^{4} e^{4} \mathrm{sgn}\left(b x + a\right)\right)} e^{\left(-5\right)}}{5 \, {\left(x e + d\right)}^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] -1/5*(5*b^4*x^4*e^4*sgn(b*x + a) + 10*b^4*d*x^3*e^3*sgn(b*x + a) + 10*b^4*d
^2*x^2*e^2*sgn(b*x + a) + 5*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x + a)
 + 10*a*b^3*x^3*e^4*sgn(b*x + a) + 10*a*b^3*d*x^2*e^3*sgn(b*x + a) + 5*a*b^
3*d^2*x*e^2*sgn(b*x + a) + a*b^3*d^3*e*sgn(b*x + a) + 10*a^2*b^2*x^2*e^4*sg
n(b*x + a) + 5*a^2*b^2*d*x*e^3*sgn(b*x + a) + a^2*b^2*d^2*e^2*sgn(b*x + a)
+ 5*a^3*b*x*e^4*sgn(b*x + a) + a^3*b*d*e^3*sgn(b*x + a) + a^4*e^4*sgn(b*x +
 a))*e^(-5)/(x*e + d)^5
```

maple [B] time = 0.06, size = 197, normalized size = 4.80

$$-\frac{\left(5 b^{4} e^{4} x^{4}+10 a \,b^{3} e^{4} x^{3}+10 b^{4} d \,e^{3} x^{3}+10 a^{2} b^{2} e^{4} x^{2}+10 a \,b^{3} d \,e^{3} x^{2}+10 b^{4} d^{2} e^{2} x^{2}+5 a^{3} b \,e^{4} x +5 a^{2} b^{2} d \,e^{3} x +5 a \,b^{3} d^{2} e^{2} x +5 b^{4} d^{3} e x +a^{4} e^{4}+a^{3} b d \,e^{3}+a^{2} b^{2} d^{2} e^{2}+a \,b^{3} d^{3} e +b^{4} d^{4}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}}}{5 \left(e x +d \right)^{5} \left(b x +a \right)^{3} e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x)
```

```
[Out] -1/5*(5*b^4*e^4*x^4+10*a*b^3*e^4*x^3+10*b^4*d*e^3*x^3+10*a^2*b^2*e^4*x^2+10
*a*b^3*d*e^3*x^2+10*b^4*d^2*e^2*x^2+5*a^3*b*e^4*x+5*a^2*b^2*d*e^3*x+5*a*b^3
*d^2*e^2*x+5*b^4*d^3*e*x+a^4*e^4+a^3*b*d*e^3+a^2*b^2*d^2*e^2+a*b^3*d^3*e+b^
4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^5/e^5/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.15, size = 449, normalized size = 10.95

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{4\,e^5}+\frac{d\,\left(\frac{d\,\left(\frac{b^4\,d}{4\,e^3}-\frac{b^3\,\left(4\,a\,e-b\,d\right)}{4\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{4\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}-\frac{\left(\frac{a^4}{5\,e}-\frac{d\,\left(\frac{d\,\left(\frac{d\,\left(\frac{4\,a\,b^3}{5\,e}-\frac{b^4\,d}{5\,e^2}\right)}{e}-\frac{6\,a^2\,b^2}{5\,e}\right)}{e}+\frac{4\,a^3\,b}{5\,e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}-\frac{\left(\frac{6\,a^2\,b^2\,e^2-8\,a\,b^3\,d\,e+3\,b^4\,d^2}{3\,e^5}+\frac{d\,\left(\frac{b^4\,d}{3\,e^4}-\frac{2\,b^3\,\left(2\,a\,e-b\,d\right)}{3\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}+\frac{\left(\frac{3\,b^4\,d-4\,a\,b^3\,e}{2\,e^5}+\frac{b^4\,d}{2\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^2}-\frac{b^4\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{e^5\,\left(a+b\,x\right)\,\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^6,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(4*e^5) + (d*((
d*((b^4*d)/(4*e^3) - (b^3*(4*a*e - b*d))/(4*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(4*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^4) - ((a^4/(5*e) - (d*((d*((d*((4*a*b^3)/(5*e) - (b^4*d)/(5*e^2
)))/e - (6*a^2*b^2)/(5*e)))/e + (4*a^3*b)/(5*e)))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3
*d*e)/(3*e^5) + (d*((b^4*d)/(3*e^4) - (2*b^3*(2*a*e - b*d))/(3*e^4)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) + (((3*b^4*d - 4*a*b
^3*e)/(2*e^5) + (b^4*d)/(2*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^2) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(e^5*(a + b*x)*(d +
e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**6, x)
```

3.1757 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=98

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{30(d+ex)^5(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{6(d+ex)^6(bd-ae)}$$

Rubi [A] time = 0.05, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{30(d+ex)^5(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{6(d+ex)^6(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] ((a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(b*d - a*e)*(d + e*x)^6) + (
b*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(30*(b*d - a*e)^2*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^7}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^7}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{6(bd-ae)(d+ex)^6} + \frac{\left(b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^6}\,dx}{6(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{6(bd-ae)(d+ex)^6} + \frac{b(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^5}$$

Mathematica [A] time = 0.06, size = 162, normalized size = 1.65

$$-\frac{\sqrt{(a+bx)^2}\left(5a^4e^4+4a^3be^3(d+6ex)+3a^2b^2e^2\left(d^2+6dex+15e^2x^2\right)+2ab^3e\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+b^4\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)}{30e^5(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -1/30*(Sqrt[(a + b*x)^2]*(5*a^4*e^4 + 4*a^3*b*e^3*(d + 6*e*x) + 3*a^2*b^2*e
^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + 2*a*b^3*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2
 + 20*e^3*x^3) + b^4*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*
e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.42, size = 236, normalized size = 2.41

$$-\frac{15\,b^4e^4x^4+b^4d^4+2\,ab^3d^3e+3\,a^2b^2d^2e^2+4\,a^3bde^3+5\,a^4e^4+20\left(b^4de^3+2\,ab^3e^4\right)x^3+15\left(b^4d^2e^2+2\,ab^3de^3+3\,a^2b^2e^4\right)x^2+6\left(b^4d^3e+2\,ab^3d^2e^2+3\,a^2b^2de^3+4\,a^3be^4\right)x}{30\left(e^{11}x^6+6\,de^{10}x^5+15\,d^2e^9x^4+20\,d^3e^8x^3+15\,d^4e^7x^2+6\,d^5e^6x+d^6e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] -1/30*(15*b^4*e^4*x^4 + b^4*d^4 + 2*a*b^3*d^3*e + 3*a^2*b^2*d^2*e^2 + 4*a^3
*b*d*e^3 + 5*a^4*e^4 + 20*(b^4*d*e^3 + 2*a*b^3*e^4)*x^3 + 15*(b^4*d^2*e^2 +
 2*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 + 6*(b^4*d^3*e + 2*a*b^3*d^2*e^2 + 3*a^
2*b^2*d*e^3 + 4*a^3*b*e^4)*x)/(e^11*x^6 + 6*d*e^10*x^5 + 15*d^2*e^9*x^4 + 2
0*d^3*e^8*x^3 + 15*d^4*e^7*x^2 + 6*d^5*e^6*x + d^6*e^5)
```

giac [B] time = 0.21, size = 264, normalized size = 2.69

$$-\frac{\left(15\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+20\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+15\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+6\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(bx+a\right)+40\,ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+30\,ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+12\,ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+2\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+45\,a^2b^2x^2e^4\mathrm{sgn}\left(bx+a\right)+18\,a^2b^2dxe^3\mathrm{sgn}\left(bx+a\right)+3\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)+24\,a^3bxe^4\mathrm{sgn}\left(bx+a\right)+4\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+5\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{30\left(xe+d\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] -1/30*(15*b^4*x^4*e^4*sgn(b*x + a) + 20*b^4*d*x^3*e^3*sgn(b*x + a) + 15*b^4
*d^2*x^2*e^2*sgn(b*x + a) + 6*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x +
a) + 40*a*b^3*x^3*e^4*sgn(b*x + a) + 30*a*b^3*d*x^2*e^3*sgn(b*x + a) + 12*a
*b^3*d^2*x*e^2*sgn(b*x + a) + 2*a*b^3*d^3*e*sgn(b*x + a) + 45*a^2*b^2*x^2*e
^4*sgn(b*x + a) + 18*a^2*b^2*d*x*e^3*sgn(b*x + a) + 3*a^2*b^2*d^2*e^2*sgn(b
*x + a) + 24*a^3*b*x*e^4*sgn(b*x + a) + 4*a^3*b*d*e^3*sgn(b*x + a) + 5*a^4*
e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^6
```

maple [B] time = 0.05, size = 201, normalized size = 2.05

$$-\frac{\left(15b^4e^4x^4+40a\,b^3e^4x^3+20b^4d\,e^3x^3+45a^2b^2e^4x^2+30a\,b^3d\,e^3x^2+15b^4d^2e^2x^2+24a^3b\,e^4x+18a^2b^2d\,e^3x+12a\,b^3d^2e^2x+6b^4d^3ex+5a^4e^4+4a^3bd\,e^3+3a^2b^2d^2e^2+2a\,b^3d^3e+b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{30\,(ex+d)^6\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x)
```

```
[Out] -1/30/e^5*(15*b^4*e^4*x^4+40*a*b^3*e^4*x^3+20*b^4*d*e^3*x^3+45*a^2*b^2*e^4*
x^2+30*a*b^3*d*e^3*x^2+15*b^4*d^2*e^2*x^2+24*a^3*b*e^4*x+18*a^2*b^2*d*e^3*x
+12*a*b^3*d^2*e^2*x+6*b^4*d^3*e*x+5*a^4*e^4+4*a^3*b*d*e^3+3*a^2*b^2*d^2*e^2
+2*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^6/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.14, size = 449, normalized size = 4.58

$$\frac{\left(\frac{-4a^3be^3+6a^2b^2de^2-4ab^3d^2e+b^4d^3}{5e^5}+\frac{d\left(\frac{d\left(\frac{b^4d}{5e^3}-\frac{b^3(4ae-bd)}{5e^3}\right)}{e}+\frac{b^2(6a^2e^2-4abde+b^2d^2)}{5e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^5}-\frac{\left(\frac{a^4}{6e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{2ab^3}{3e}-\frac{b^4d}{6e^2}\right)}{e}-\frac{a^2b^2}{e}\right)}{e}+\frac{2a^3b}{3e}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^6}-\frac{\left(\frac{6a^2b^2e^2-8ab^3de+3b^4d^2}{4e^5}+\frac{d\left(\frac{b^4d}{4e^4}-\frac{b^3(2ae-bd)}{2e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^4}+\frac{\left(\frac{3b^4d-4ab^3e}{3e^5}+\frac{b^4d}{3e^5}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)(d+ex)^3}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)(d+ex)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^7,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(5*e^5) + (d*((
d*((b^4*d)/(5*e^3) - (b^3*(4*a*e - b*d))/(5*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(5*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^5) - ((a^4/(6*e) - (d*((d*((d*((2*a*b^3)/(3*e) - (b^4*d)/(6*e^2
)))/e - (a^2*b^2)/e))/e + (2*a^3*b)/(3*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1
/2))/((a + b*x)*(d + e*x)^6) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3*d*e)/
(4*e^5) + (d*((b^4*d)/(4*e^4) - (b^3*(2*a*e - b*d))/(2*e^4)))/e)*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) + (((3*b^4*d - 4*a*b^3*e)/(3
*e^5) + (b^4*d)/(3*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e
*x)^3) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*e^5*(a + b*x)*(d + e*x)^2
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**7, x)
```

3.1758 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=149

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{105(d+ex)^5(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{21(d+ex)^6(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{7(d+ex)^7(bd-ae)}$$

Rubi [A] time = 0.07, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{105(d+ex)^5(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{21(d+ex)^6(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{7(d+ex)^7(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] ((a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(b*d - a*e)*(d + e*x)^7) + (
b*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(21*(b*d - a*e)^2*(d + e*x)^6)
 + (b^2*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(105*(b*d - a*e)^3*(d +
e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^8}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^8}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{7(bd-ae)(d+ex)^7} + \frac{\left(2b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^7}\,dx}{7(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{7(bd-ae)(d+ex)^7} + \frac{b(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{21(bd-ae)^2(d+ex)^6} + \frac{\left(b^3\sqrt{a\ldots\right.}{\ldots}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{7(bd-ae)(d+ex)^7} + \frac{b(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{21(bd-ae)^2(d+ex)^6} + \frac{b^2(a+\ldots}{1\ldots}$$

Mathematica [A] time = 0.06, size = 162, normalized size = 1.09

$$-\frac{\sqrt{(a+bx)^2}\left(15a^4e^4+10a^3be^3(d+7ex)+6a^2b^2e^2\left(d^2+7dex+21e^2x^2\right)+3ab^3e\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+b^4\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)}{105e^5(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -1/105*(Sqrt[(a + b*x)^2]*(15*a^4*e^4 + 10*a^3*b*e^3*(d + 7*e*x) + 6*a^2*b^
2*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*a*b^3*e*(d^3 + 7*d^2*e*x + 21*d*e^2*
x^2 + 35*e^3*x^3) + b^4*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 +
35*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.45, size = 247, normalized size = 1.66

$$-\frac{35\,b^4e^4x^4+b^4d^4+3\,ab^3d^3e+6\,a^2b^2d^2e^2+10\,a^3bde^3+15\,a^4e^4+35\left(b^4de^3+3\,ab^3e^4\right)x^3+21\left(b^4d^2e^2+3\,ab^3de^3+6\,a^2b^2e^4\right)x^2+7\left(b^4d^3e+3\,ab^3d^2e^2+6\,a^2b^2de^3+10\,a^3be^4\right)x}{105\left(e^{12}x^7+7\,de^{11}x^6+21\,d^2e^{10}x^5+35\,d^3e^9x^4+35\,d^4e^8x^3+21\,d^5e^7x^2+7\,d^6e^6x+d^7e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/105*(35*b^4*e^4*x^4 + b^4*d^4 + 3*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 + 10*a
^3*b*d*e^3 + 15*a^4*e^4 + 35*(b^4*d*e^3 + 3*a*b^3*e^4)*x^3 + 21*(b^4*d^2*e^
2 + 3*a*b^3*d*e^3 + 6*a^2*b^2*e^4)*x^2 + 7*(b^4*d^3*e + 3*a*b^3*d^2*e^2 + 6
*a^2*b^2*d*e^3 + 10*a^3*b*e^4)*x)/(e^12*x^7 + 7*d*e^11*x^6 + 21*d^2*e^10*x^
5 + 35*d^3*e^9*x^4 + 35*d^4*e^8*x^3 + 21*d^5*e^7*x^2 + 7*d^6*e^6*x + d^7*e^
5)
```

giac [B] time = 0.17, size = 264, normalized size = 1.77

$$-\frac{\left(35\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+35\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+21\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+7\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(bx+a\right)+105\,ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+63\,ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+21\,ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+3\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+126\,a^2b^2x^2e^4\mathrm{sgn}\left(bx+a\right)+42\,a^2b^2dxe^3\mathrm{sgn}\left(bx+a\right)+6\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)+70\,a^3bxe^4\mathrm{sgn}\left(bx+a\right)+10\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+15\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{105\left(xe+d\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/105*(35*b^4*x^4*e^4*sgn(b*x + a) + 35*b^4*d*x^3*e^3*sgn(b*x + a) + 21*b^
4*d^2*x^2*e^2*sgn(b*x + a) + 7*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x +
 a) + 105*a*b^3*x^3*e^4*sgn(b*x + a) + 63*a*b^3*d*x^2*e^3*sgn(b*x + a) + 21
*a*b^3*d^2*x*e^2*sgn(b*x + a) + 3*a*b^3*d^3*e*sgn(b*x + a) + 126*a^2*b^2*x^
2*e^4*sgn(b*x + a) + 42*a^2*b^2*d*x*e^3*sgn(b*x + a) + 6*a^2*b^2*d^2*e^2*sg
n(b*x + a) + 70*a^3*b*x*e^4*sgn(b*x + a) + 10*a^3*b*d*e^3*sgn(b*x + a) + 15
*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^7
```

maple [A] time = 0.05, size = 201, normalized size = 1.35

$$-\frac{\left(35b^4e^4x^4+105a\,b^3e^4x^3+35b^4d\,e^3x^3+126a^2b^2e^4x^2+63a\,b^3d\,e^3x^2+21b^4d^2e^2x^2+70a^3b\,e^4x+42a^2b^2d\,e^3x+21a\,b^3d^2e^2x+7b^4d^3ex+15a^4e^4+10a^3bd\,e^3+6a^2b^2d^2e^2+3a\,b^3d^3e+b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{105\,(ex+d)^7\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x)
```

```
[Out] -1/105/e^5*(35*b^4*e^4*x^4+105*a*b^3*e^4*x^3+35*b^4*d*e^3*x^3+126*a^2*b^2*e
^4*x^2+63*a*b^3*d*e^3*x^2+21*b^4*d^2*e^2*x^2+70*a^3*b*e^4*x+42*a^2*b^2*d*e^
3*x+21*a*b^3*d^2*e^2*x+7*b^4*d^3*e*x+15*a^4*e^4+10*a^3*b*d*e^3+6*a^2*b^2*d^
2*e^2+3*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^7/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.15, size = 449, normalized size = 3.01

$$\frac{\left(\frac{-4a^3b\,e^3+6a^2b^2d\,e^2-4a\,b^3d^2e+b^4d^3}{6e^5}+\frac{d\left(\frac{d\left(\frac{b^4d}{6e^3}-\frac{b^3(4ae-bd)}{6e^3}\right)}{e}+\frac{b^2(6a^2e^2-4abde+b^2d^2)}{6e^4}\right)}{e}\right)\sqrt{a^2+2\,a\,b\,x+b^2x^2}}{(a+bx)\,(d+ex)^6}-\frac{\left(\frac{a^4}{7e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{4ab^3}{7e}-\frac{b^4d}{7e^2}\right)}{e}-\frac{6a^2b^2}{7e}\right)}{e}+\frac{4a^3b}{7e}\right)}{e}\right)\sqrt{a^2+2\,a\,b\,x+b^2x^2}}{(a+bx)\,(d+ex)^7}-\frac{\left(\frac{6a^2b^2e^2-8a\,b^3d\,e+3b^4d^2}{5e^5}+\frac{d\left(\frac{b^4d}{5e^4}-\frac{2b^3(2ae-bd)}{5e^4}\right)}{e}\right)\sqrt{a^2+2\,a\,b\,x+b^2x^2}}{(a+bx)\,(d+ex)^5}+\frac{\left(\frac{3b^4d-4ab^3e}{4e^5}+\frac{b^4d}{4e^5}\right)\sqrt{a^2+2\,a\,b\,x+b^2x^2}}{(a+bx)\,(d+ex)^4}-\frac{b^4\sqrt{a^2+2\,a\,b\,x+b^2x^2}}{3e^5\,(a+bx)\,(d+ex)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^8,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(6*e^5) + (d*((
d*((b^4*d)/(6*e^3) - (b^3*(4*a*e - b*d))/(6*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(6*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^6) - ((a^4/(7*e) - (d*((d*((d*((4*a*b^3)/(7*e) - (b^4*d)/(7*e^2
)))/e - (6*a^2*b^2)/(7*e)))/e + (4*a^3*b)/(7*e)))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3
*d*e)/(5*e^5) + (d*((b^4*d)/(5*e^4) - (2*b^3*(2*a*e - b*d))/(5*e^4)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) + (((3*b^4*d - 4*a*b
^3*e)/(4*e^5) + (b^4*d)/(4*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^4) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*e^5*(a + b*x)*(d
+ e*x)^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**8, x)
```

3.1759 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=252

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^6}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^5(a+bx)(d+ex)^7}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{8e^5(a+bx)(d+ex)^8}-\frac{b^4\sqrt{a^2+2ab}}{4e^5(a+bx)(}$$

Rubi [A] time = 0.13, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{4e^5(a+bx)(d+ex)^4}+\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^5(a+bx)(d+ex)^5}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^6}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^5(a+bx)(d+ex)^7}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{8e^5(a+bx)(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x)*(d + e*x)^8
) + (4*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)*(d +
 e*x)^7) - (b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)
*(d + e*x)^6) + (4*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a
 + b*x)*(d + e*x)^5) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a + b*x)
*(d + e*x)^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^9}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^9}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^9}-\frac{4b(bd-ae)^3}{e^4(d+ex)^8}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^7}-\frac{4b^3(bd-ae)}{e^4(d+ex)^6}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{8e^5(a+bx)(d+ex)^8}+\frac{4b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}-$$

Mathematica [A] time = 0.06, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(35a^4e^4+20a^3be^3(d+8ex)+10a^2b^2e^2\left(d^2+8dex+28e^2x^2\right)+4ab^3e\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+b^4\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)}{280e^5(a+bx)(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -1/280*(Sqrt[(a + b*x)^2]*(35*a^4*e^4 + 20*a^3*b*e^3*(d + 8*e*x) + 10*a^2*b
^2*e^2*(d^2 + 8*d*e*x + 28*e^2*x^2) + 4*a*b^3*e*(d^3 + 8*d^2*e*x + 28*d*e^2
*x^2 + 56*e^3*x^3) + b^4*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 +
 70*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,
x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.43, size = 258, normalized size = 1.02

$$-\frac{70\,b^4e^4x^4+b^4d^4+4\,ab^3d^3e+10\,a^2b^2d^2e^2+20\,a^3bde^3+35\,a^4e^4+56\left(b^4de^3+4\,ab^3e^4\right)x^3+28\left(b^4d^2e^2+4\,ab^3de^3+10\,a^2b^2e^4\right)x^2+8\left(b^4d^3e+4\,ab^3d^2e^2+10\,a^2b^2de^3+20\,a^3be^4\right)x}{280\left(e^{13}x^8+8\,de^{12}x^7+28\,d^2e^{11}x^6+56\,d^3e^{10}x^5+70\,d^4e^9x^4+56\,d^5e^8x^3+28\,d^6e^7x^2+8\,d^7e^6x+d^8e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/280*(70*b^4*e^4*x^4 + b^4*d^4 + 4*a*b^3*d^3*e + 10*a^2*b^2*d^2*e^2 + 20*
a^3*b*d*e^3 + 35*a^4*e^4 + 56*(b^4*d*e^3 + 4*a*b^3*e^4)*x^3 + 28*(b^4*d^2*e
^2 + 4*a*b^3*d*e^3 + 10*a^2*b^2*e^4)*x^2 + 8*(b^4*d^3*e + 4*a*b^3*d^2*e^2 +
 10*a^2*b^2*d*e^3 + 20*a^3*b*e^4)*x)/(e^13*x^8 + 8*d*e^12*x^7 + 28*d^2*e^11
*x^6 + 56*d^3*e^10*x^5 + 70*d^4*e^9*x^4 + 56*d^5*e^8*x^3 + 28*d^6*e^7*x^2 +
 8*d^7*e^6*x + d^8*e^5)
```

giac [A] time = 0.20, size = 264, normalized size = 1.05

$$-\frac{\left(70\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+56\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+28\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+8\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(bx+a\right)+224\,ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+112\,ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+32\,ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+4\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+280\,a^2b^2x^2e^4\mathrm{sgn}\left(bx+a\right)+80\,a^2b^2dxe^3\mathrm{sgn}\left(bx+a\right)+10\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)+160\,a^3bxe^4\mathrm{sgn}\left(bx+a\right)+20\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+35\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{280\,(xe+d)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/280*(70*b^4*x^4*e^4*sgn(b*x + a) + 56*b^4*d*x^3*e^3*sgn(b*x + a) + 28*b^
4*d^2*x^2*e^2*sgn(b*x + a) + 8*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x +
 a) + 224*a*b^3*x^3*e^4*sgn(b*x + a) + 112*a*b^3*d*x^2*e^3*sgn(b*x + a) + 3
2*a*b^3*d^2*x*e^2*sgn(b*x + a) + 4*a*b^3*d^3*e*sgn(b*x + a) + 280*a^2*b^2*x
^2*e^4*sgn(b*x + a) + 80*a^2*b^2*d*x*e^3*sgn(b*x + a) + 10*a^2*b^2*d^2*e^2*
sgn(b*x + a) + 160*a^3*b*x*e^4*sgn(b*x + a) + 20*a^3*b*d*e^3*sgn(b*x + a) +
 35*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^8
```

maple [A] time = 0.07, size = 201, normalized size = 0.80

$$-\frac{\left(70b^4e^4x^4+224a\,b^3e^4x^3+56b^4d\,e^3x^3+280a^2b^2e^4x^2+112a\,b^3d\,e^3x^2+28b^4d^2e^2x^2+160a^3b\,e^4x+80a^2b^2d\,e^3x+32a\,b^3d^2e^2x+8b^4d^3ex+35a^4e^4+20a^3bd\,e^3+10a^2b^2d^2e^2+4a\,b^3d^3e+b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{280\,(ex+d)^8\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x)
```

```
[Out] -1/280/e^5*(70*b^4*e^4*x^4+224*a*b^3*e^4*x^3+56*b^4*d*e^3*x^3+280*a^2*b^2*e
^4*x^2+112*a*b^3*d*e^3*x^2+28*b^4*d^2*e^2*x^2+160*a^3*b*e^4*x+80*a^2*b^2*d*
e^3*x+32*a*b^3*d^2*e^2*x+8*b^4*d^3*e*x+35*a^4*e^4+20*a^3*b*d*e^3+10*a^2*b^2
*d^2*e^2+4*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^8/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 449, normalized size = 1.78

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{7\,e^5}+\frac{d\,\left(\frac{d\,\left(\frac{b^4\,d}{7\,e^3}-\frac{b^3\,\left(4\,a\,e-b\,d\right)}{7\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{7\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^7}-\frac{\left(\frac{a^4}{8\,e}-\frac{d\,\left(\frac{d\,\left(\frac{d\,\left(\frac{a\,b^3}{2\,e}-\frac{b^4\,d}{8\,e^2}\right)}{e}-\frac{3\,a^2\,b^2}{4\,e}\right)}{e}+\frac{a^3\,b}{2\,e}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^8}-\frac{\left(\frac{6\,a^2\,b^2\,e^2-8\,a\,b^3\,d\,e+3\,b^4\,d^2}{6\,e^5}+\frac{d\,\left(\frac{b^4\,d}{6\,e^4}-\frac{b^3\,\left(2\,a\,e-b\,d\right)}{3\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^6}+\frac{\left(\frac{3\,b^4\,d-4\,a\,b^3\,e}{5\,e^5}+\frac{b^4\,d}{5\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}-\frac{b^4\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{4\,e^5\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^9,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(7*e^5) + (d*((
d*((b^4*d)/(7*e^3) - (b^3*(4*a*e - b*d))/(7*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(7*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^7) - ((a^4/(8*e) - (d*((d*((d*((a*b^3)/(2*e) - (b^4*d)/(8*e^2))
)/e - (3*a^2*b^2)/(4*e)))/e + (a^3*b)/(2*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^8) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3*d*e
)/(6*e^5) + (d*((b^4*d)/(6*e^4) - (b^3*(2*a*e - b*d))/(3*e^4)))/e)*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) + (((3*b^4*d - 4*a*b^3*e)/
(5*e^5) + (b^4*d)/(5*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d +
 e*x)^5) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^5*(a + b*x)*(d + e*x)
^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1760 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=254

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^7}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{2e^5(a+bx)(d+ex)^8}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{9e^5(a+bx)(d+ex)^9}-\frac{b^4\sqrt{a^2+2ab\cdots}}{5e^5(a+bx)(\cdots}$$

Rubi [A] time = 0.13, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^5}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^5(a+bx)(d+ex)^6}-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^7}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{2e^5(a+bx)(d+ex)^8}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{9e^5(a+bx)(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d + e*x)^9
) + (b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(d + e
*x)^8) - (6*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*
x)*(d + e*x)^7) + (2*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*
(a + b*x)*(d + e*x)^6) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*
x)*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{10}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{10}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{10}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^9} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^8} - \frac{4b^3(bd-ae)}{e^4(d+ex)^7}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^9} + \frac{b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)(d+ex)^8} - 6b^2$$

Mathematica [A] time = 0.06, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(70a^4e^4+35a^3be^3(d+9ex)+15a^2b^2e^2\left(d^2+9dex+36e^2x^2\right)+5ab^3e\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)+b^4\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)\right)}{630e^5(a+bx)(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -1/630*(Sqrt[(a + b*x)^2]*(70*a^4*e^4 + 35*a^3*b*e^3*(d + 9*e*x) + 15*a^2*b
^2*e^2*(d^2 + 9*d*e*x + 36*e^2*x^2) + 5*a*b^3*e*(d^3 + 9*d^2*e*x + 36*d*e^2
*x^2 + 84*e^3*x^3) + b^4*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 +
 126*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.48, size = 269, normalized size = 1.06

$$-\frac{126\,b^4e^4x^4+b^4d^4+5\,ab^3d^3e+15\,a^2b^2d^2e^2+35\,a^3bde^3+70\,a^4e^4+84\left(b^4de^3+5\,ab^3e^4\right)x^3+36\left(b^4d^2e^2+5\,ab^3de^3+15\,a^2b^2e^4\right)x^2+9\left(b^4d^3e+5\,ab^3d^2e^2+15\,a^2b^2de^3+35\,a^3be^4\right)x}{630\left(e^{14}x^9+9\,de^{13}x^8+36\,d^2e^{12}x^7+84\,d^3e^{11}x^6+126\,d^4e^{10}x^5+126\,d^5e^9x^4+84\,d^6e^8x^3+36\,d^7e^7x^2+9\,d^8e^6x+d^9e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/630*(126*b^4*e^4*x^4 + b^4*d^4 + 5*a*b^3*d^3*e + 15*a^2*b^2*d^2*e^2 + 35
*a^3*b*d*e^3 + 70*a^4*e^4 + 84*(b^4*d*e^3 + 5*a*b^3*e^4)*x^3 + 36*(b^4*d^2*
e^2 + 5*a*b^3*d*e^3 + 15*a^2*b^2*e^4)*x^2 + 9*(b^4*d^3*e + 5*a*b^3*d^2*e^2
+ 15*a^2*b^2*d*e^3 + 35*a^3*b*e^4)*x)/(e^14*x^9 + 9*d*e^13*x^8 + 36*d^2*e^1
2*x^7 + 84*d^3*e^11*x^6 + 126*d^4*e^10*x^5 + 126*d^5*e^9*x^4 + 84*d^6*e^8*x
^3 + 36*d^7*e^7*x^2 + 9*d^8*e^6*x + d^9*e^5)
```

giac [A] time = 0.17, size = 264, normalized size = 1.04

$$-\frac{\left(126\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+84\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+36\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+9\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(bx+a\right)+420\,ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+180\,ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+45\,ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+5\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+540\,a^2b^2x^2e^4\mathrm{sgn}\left(bx+a\right)+135\,a^2b^2dxe^3\mathrm{sgn}\left(bx+a\right)+15\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)+315\,a^3bxe^4\mathrm{sgn}\left(bx+a\right)+35\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+70\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{630\left(xe+d\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/630*(126*b^4*x^4*e^4*sgn(b*x + a) + 84*b^4*d*x^3*e^3*sgn(b*x + a) + 36*b
^4*d^2*x^2*e^2*sgn(b*x + a) + 9*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x
+ a) + 420*a*b^3*x^3*e^4*sgn(b*x + a) + 180*a*b^3*d*x^2*e^3*sgn(b*x + a) +
45*a*b^3*d^2*x*e^2*sgn(b*x + a) + 5*a*b^3*d^3*e*sgn(b*x + a) + 540*a^2*b^2*
x^2*e^4*sgn(b*x + a) + 135*a^2*b^2*d*x*e^3*sgn(b*x + a) + 15*a^2*b^2*d^2*e^
2*sgn(b*x + a) + 315*a^3*b*x*e^4*sgn(b*x + a) + 35*a^3*b*d*e^3*sgn(b*x + a)
 + 70*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^9
```

maple [A] time = 0.06, size = 201, normalized size = 0.79

$$-\frac{\left(126 b^4 e^4 x^4+420 a b^3 e^4 x^3+84 b^4 d e^3 x^3+540 a^2 b^2 e^4 x^2+180 a b^3 d e^3 x^2+36 b^4 d^2 e^2 x^2+315 a^3 b e^4 x+135 a^2 b^2 d e^3 x+45 a b^3 d^2 e^2 x+9 b^4 d^3 e x+70 a^4 e^4+35 a^3 b d e^3+15 a^2 b^2 d^2 e^2+5 a b^3 d^3 e+b^4 d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{630 (ex+d)^9 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x)
```

```
[Out] -1/630/e^5*(126*b^4*e^4*x^4+420*a*b^3*e^4*x^3+84*b^4*d*e^3*x^3+540*a^2*b^2*
e^4*x^2+180*a*b^3*d*e^3*x^2+36*b^4*d^2*e^2*x^2+315*a^3*b*e^4*x+135*a^2*b^2*
d*e^3*x+45*a*b^3*d^2*e^2*x+9*b^4*d^3*e*x+70*a^4*e^4+35*a^3*b*d*e^3+15*a^2*b
^2*d^2*e^2+5*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^9/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 449, normalized size = 1.77

$$\frac{\left(\frac{-4 a^3 b e^3+6 a^2 b^2 d e^2-4 a b^3 d^2 e+b^4 d^3}{8 e^5}+\frac{d\left(\frac{d\left(\frac{b^4 d}{8 e^3}-\frac{b^3 (4 a e-b d)}{8 e^3}\right)}{e}+\frac{b^2 (6 a^2 e^2-4 a b d e+b^2 d^2)}{8 e^4}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^8}-\frac{\left(\frac{a^4}{9 e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{4 a b^3}{9 e}-\frac{b^4 d}{9 e^2}\right)}{e}-\frac{2 a^2 b^2}{3 e}\right)}{e}+\frac{4 a^3 b}{9 e}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^9}-\frac{\left(\frac{6 a^2 b^2 e^2-8 a b^3 d e+3 b^4 d^2}{7 e^5}+\frac{d\left(\frac{b^4 d}{7 e^4}-\frac{2 b^3 (2 a e-b d)}{7 e^4}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^7}+\frac{\left(\frac{3 b^4 d-4 a b^3 e}{6 e^5}+\frac{b^4 d}{6 e^5}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^6}-\frac{b^4 \sqrt{a^2+2 a b x+b^2 x^2}}{5 e^5 (a+b x)(d+e x)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^10,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(8*e^5) + (d*((
d*((b^4*d)/(8*e^3) - (b^3*(4*a*e - b*d))/(8*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(8*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^8) - ((a^4/(9*e) - (d*((d*((d*((4*a*b^3)/(9*e) - (b^4*d)/(9*e^2
)))/e - (2*a^2*b^2)/(3*e)))/e + (4*a^3*b)/(9*e)))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3
*d*e)/(7*e^5) + (d*((b^4*d)/(7*e^4) - (2*b^3*(2*a*e - b*d))/(7*e^4)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) + (((3*b^4*d - 4*a*b
^3*e)/(6*e^5) + (b^4*d)/(6*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^6) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*e^5*(a + b*x)*(d
+ e*x)^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1761 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=254

$$-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^5(a+bx)(d+ex)^8}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^5(a+bx)(d+ex)^9}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{10e^5(a+bx)(d+ex)^{10}}-\frac{b^4\sqrt{a^2+2a}}{6e^5(a+bx)}$$

Rubi [A] time = 0.14, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)(d+ex)^6}+\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{7e^5(a+bx)(d+ex)^7}-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^5(a+bx)(d+ex)^8}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^5(a+bx)(d+ex)^9}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{10e^5(a+bx)(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^5*(a + b*x)*(d + e*x)^
10) + (4*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d
 + e*x)^9) - (3*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a
+ b*x)*(d + e*x)^8) + (4*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*
e^5*(a + b*x)*(d + e*x)^7) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a
+ b*x)*(d + e*x)^6)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{11}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{11}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{11}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{10}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^9} - \frac{4b^3(bd-ae)}{e^4(d+ex)^8}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{10e^5(a+bx)(d+ex)^{10}} + \frac{4b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^9} - 3$$

Mathematica [A] time = 0.06, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(126a^4e^4+56a^3be^3(d+10ex)+21a^2b^2e^2\left(d^2+10dex+45e^2x^2\right)+6ab^3e\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)+b^4\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)\right)}{1260e^5(a+bx)(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -1/1260*(Sqrt[(a + b*x)^2]*(126*a^4*e^4 + 56*a^3*b*e^3*(d + 10*e*x) + 21*a^
2*b^2*e^2*(d^2 + 10*d*e*x + 45*e^2*x^2) + 6*a*b^3*e*(d^3 + 10*d^2*e*x + 45*
d*e^2*x^2 + 120*e^3*x^3) + b^4*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e
^3*x^3 + 210*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^10)
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.43, size = 280, normalized size = 1.10

$$-\frac{210\,b^4e^4x^4+b^4d^4+6\,ab^3d^3e+21\,a^2b^2d^2e^2+56\,a^3bde^3+126\,a^4e^4+120\left(b^4de^3+6\,ab^3e^4\right)x^3+45\left(b^4d^2e^2+6\,ab^3de^3+21\,a^2b^2e^4\right)x^2+10\left(b^4d^3e+6\,ab^3d^2e^2+21\,a^2b^2de^3+56\,a^3be^4\right)x}{1260\left(e^{15}x^{10}+10\,de^{14}x^9+45\,d^2e^{13}x^8+120\,d^3e^{12}x^7+210\,d^4e^{11}x^6+252\,d^5e^{10}x^5+210\,d^6e^9x^4+120\,d^7e^8x^3+45\,d^8e^7x^2+10\,d^9e^6x+d^{10}e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/1260*(210*b^4*e^4*x^4 + b^4*d^4 + 6*a*b^3*d^3*e + 21*a^2*b^2*d^2*e^2 + 5
6*a^3*b*d*e^3 + 126*a^4*e^4 + 120*(b^4*d*e^3 + 6*a*b^3*e^4)*x^3 + 45*(b^4*d
^2*e^2 + 6*a*b^3*d*e^3 + 21*a^2*b^2*e^4)*x^2 + 10*(b^4*d^3*e + 6*a*b^3*d^2*
e^2 + 21*a^2*b^2*d*e^3 + 56*a^3*b*e^4)*x)/(e^15*x^10 + 10*d*e^14*x^9 + 45*d
^2*e^13*x^8 + 120*d^3*e^12*x^7 + 210*d^4*e^11*x^6 + 252*d^5*e^10*x^5 + 210*
d^6*e^9*x^4 + 120*d^7*e^8*x^3 + 45*d^8*e^7*x^2 + 10*d^9*e^6*x + d^10*e^5)
```

giac [A] time = 0.20, size = 264, normalized size = 1.04

$$-\frac{\left(210\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+120\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+45\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+10\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(bx+a\right)+720\,ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+270\,ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+60\,ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+6\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+945\,a^2b^2x^2e^4\mathrm{sgn}\left(bx+a\right)+210\,a^2b^2dxe^3\mathrm{sgn}\left(bx+a\right)+21\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)+560\,a^3bxe^4\mathrm{sgn}\left(bx+a\right)+56\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+126\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{1260\,(xe+d)^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/1260*(210*b^4*x^4*e^4*sgn(b*x + a) + 120*b^4*d*x^3*e^3*sgn(b*x + a) + 45
*b^4*d^2*x^2*e^2*sgn(b*x + a) + 10*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b
*x + a) + 720*a*b^3*x^3*e^4*sgn(b*x + a) + 270*a*b^3*d*x^2*e^3*sgn(b*x + a)
 + 60*a*b^3*d^2*x*e^2*sgn(b*x + a) + 6*a*b^3*d^3*e*sgn(b*x + a) + 945*a^2*b
^2*x^2*e^4*sgn(b*x + a) + 210*a^2*b^2*d*x*e^3*sgn(b*x + a) + 21*a^2*b^2*d^2
*e^2*sgn(b*x + a) + 560*a^3*b*x*e^4*sgn(b*x + a) + 56*a^3*b*d*e^3*sgn(b*x +
 a) + 126*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^10
```

maple [A] time = 0.06, size = 201, normalized size = 0.79

$$-\frac{\left(210 b^4 e^4 x^4+720 a b^3 e^4 x^3+120 b^4 d e^3 x^3+945 a^2 b^2 e^4 x^2+270 a b^3 d e^3 x^2+45 b^4 d^2 e^2 x^2+560 a^3 b e^4 x+210 a^2 b^2 d e^3 x+60 a b^3 d^2 e^2 x+10 b^4 d^3 e x+126 a^4 e^4+56 a^3 b d e^3+21 a^2 b^2 d^2 e^2+6 a b^3 d^3 e+b^4 d^4\right)\left((b x+a)^2\right)^{\frac{3}{2}}}{1260 (e x+d)^{10} (b x+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x)
```

```
[Out] -1/1260/e^5*(210*b^4*e^4*x^4+720*a*b^3*e^4*x^3+120*b^4*d*e^3*x^3+945*a^2*b^
2*e^4*x^2+270*a*b^3*d*e^3*x^2+45*b^4*d^2*e^2*x^2+560*a^3*b*e^4*x+210*a^2*b^
2*d*e^3*x+60*a*b^3*d^2*e^2*x+10*b^4*d^3*e*x+126*a^4*e^4+56*a^3*b*d*e^3+21*a
^2*b^2*d^2*e^2+6*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^10/(b*x+a)^
3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.20, size = 449, normalized size = 1.77

$$\frac{\left(\frac{-4 a^3 b e^3+6 a^2 b^2 d e^2-4 a b^3 d^2 e+b^4 d^3}{9 e^5}+\frac{d\left(\frac{d\left(\frac{b^4 d}{9 e^3}-\frac{b^3 (4 a e-b d)}{9 e^3}\right)}{e}+\frac{b^2 (6 a^2 e^2-4 a b d e+b^2 d^2)}{9 e^4}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^9}-\frac{\left(\frac{a^4}{10 e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{2 a b^3}{5 e}-\frac{b^4 d}{10 e^2}\right)}{e}-\frac{3 a^2 b^2}{5 e}\right)}{e}+\frac{2 a^3 b}{5 e}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^{10}}-\frac{\left(\frac{6 a^2 b^2 e^2-8 a b^3 d e+3 b^4 d^2}{8 e^5}+\frac{d\left(\frac{b^4 d}{8 e^4}-\frac{b^3 (2 a e-b d)}{4 e^4}\right)}{e}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^8}+\frac{\left(\frac{3 b^4 d-4 a b^3 e}{7 e^5}+\frac{b^4 d}{7 e^5}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)(d+e x)^7}-\frac{b^4\sqrt{a^2+2 a b x+b^2 x^2}}{6 e^5 (a+b x)(d+e x)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^11,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(9*e^5) + (d*((
d*((b^4*d)/(9*e^3) - (b^3*(4*a*e - b*d))/(9*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(9*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^9) - ((a^4/(10*e) - (d*((d*((d*((2*a*b^3)/(5*e) - (b^4*d)/(10*e
^2)))/e - (3*a^2*b^2)/(5*e)))/e + (2*a^3*b)/(5*e)))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*
b^3*d*e)/(8*e^5) + (d*((b^4*d)/(8*e^4) - (b^3*(2*a*e - b*d))/(4*e^4)))/e)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) + (((3*b^4*d - 4*a*
b^3*e)/(7*e^5) + (b^4*d)/(7*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*
x)*(d + e*x)^7) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*e^5*(a + b*x)*(d
 + e*x)^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1762 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=254

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^5(a+bx)(d+ex)^9}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{5e^5(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^5(a+bx)(d+ex)^{11}}-\frac{b^4\sqrt{a^2+2a}}{7e^5(a+bx)}$$

Rubi [A] time = 0.13, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}+\frac{b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{2e^5(a+bx)(d+ex)^8}-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^5(a+bx)(d+ex)^9}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{5e^5(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^5(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)*(d + e*x)^
11) + (2*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)*(d
 + e*x)^10) - (2*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a
 + b*x)*(d + e*x)^9) + (b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e
^5*(a + b*x)*(d + e*x)^8) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a +
 b*x)*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{12}}dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{12}}dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{12}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{11}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{10}} - \frac{4b^3(bd-ae)}{e^4(d+ex)^9}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{11e^5(a+bx)(d+ex)^{11}} + \frac{2b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{10}} - 2\ldots$$

Mathematica [A] time = 0.07, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(210a^4e^4+84a^3be^3(d+11ex)+28a^2b^2e^2\left(d^2+11dex+55e^2x^2\right)+7ab^3e\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)+b^4\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)\right)}{2310e^5(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -1/2310*(Sqrt[(a + b*x)^2]*(210*a^4*e^4 + 84*a^3*b*e^3*(d + 11*e*x) + 28*a^
2*b^2*e^2*(d^2 + 11*d*e*x + 55*e^2*x^2) + 7*a*b^3*e*(d^3 + 11*d^2*e*x + 55*
d*e^2*x^2 + 165*e^3*x^3) + b^4*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e
^3*x^3 + 330*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^11)
```

IntegrateAlgebraic [F] time = 180.08, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 291, normalized size = 1.15

$$-\frac{330\,b^4e^4x^4+b^4d^4+7\,ab^3d^3e+28\,a^2b^2d^2e^2+84\,a^3bde^3+210\,a^4e^4+165\left(b^4de^3+7\,ab^3e^4\right)x^3+55\left(b^4d^2e^2+7\,ab^3de^3+28\,a^2b^2e^4\right)x^2+11\left(b^4d^3e+7\,ab^3d^2e^2+28\,a^2b^2de^3+84\,a^3be^4\right)x}{2310\left(e^{16}x^{11}+11\,de^{15}x^{10}+55\,d^2e^{14}x^9+165\,d^3e^{13}x^8+330\,d^4e^{12}x^7+462\,d^5e^{11}x^6+462\,d^6e^{10}x^5+330\,d^7e^9x^4+165\,d^8e^8x^3+55\,d^9e^7x^2+11\,d^{10}e^6x+d^{11}e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/2310*(330*b^4*e^4*x^4 + b^4*d^4 + 7*a*b^3*d^3*e + 28*a^2*b^2*d^2*e^2 + 8
4*a^3*b*d*e^3 + 210*a^4*e^4 + 165*(b^4*d*e^3 + 7*a*b^3*e^4)*x^3 + 55*(b^4*d
^2*e^2 + 7*a*b^3*d*e^3 + 28*a^2*b^2*e^4)*x^2 + 11*(b^4*d^3*e + 7*a*b^3*d^2*
e^2 + 28*a^2*b^2*d*e^3 + 84*a^3*b*e^4)*x)/(e^16*x^11 + 11*d*e^15*x^10 + 55*
d^2*e^14*x^9 + 165*d^3*e^13*x^8 + 330*d^4*e^12*x^7 + 462*d^5*e^11*x^6 + 462
*d^6*e^10*x^5 + 330*d^7*e^9*x^4 + 165*d^8*e^8*x^3 + 55*d^9*e^7*x^2 + 11*d^1
0*e^6*x + d^11*e^5)
```

giac [A] time = 0.17, size = 264, normalized size = 1.04

$$-\frac{\left(330\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+165\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+55\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+11\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(bx+a\right)+1155\,ab^3x^3e^4\mathrm{sgn}\left(bx+a\right)+385\,ab^3dx^2e^3\mathrm{sgn}\left(bx+a\right)+77\,ab^3d^2xe^2\mathrm{sgn}\left(bx+a\right)+7\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+1540\,a^2b^2x^2e^4\mathrm{sgn}\left(bx+a\right)+308\,a^2b^2dxe^3\mathrm{sgn}\left(bx+a\right)+28\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)+924\,a^3bxe^4\mathrm{sgn}\left(bx+a\right)+84\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+210\,a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}}{2310\left(xe+d\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/2310*(330*b^4*x^4*e^4*sgn(b*x + a) + 165*b^4*d*x^3*e^3*sgn(b*x + a) + 55
*b^4*d^2*x^2*e^2*sgn(b*x + a) + 11*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b
*x + a) + 1155*a*b^3*x^3*e^4*sgn(b*x + a) + 385*a*b^3*d*x^2*e^3*sgn(b*x + a
) + 77*a*b^3*d^2*x*e^2*sgn(b*x + a) + 7*a*b^3*d^3*e*sgn(b*x + a) + 1540*a^2
*b^2*x^2*e^4*sgn(b*x + a) + 308*a^2*b^2*d*x*e^3*sgn(b*x + a) + 28*a^2*b^2*d
^2*e^2*sgn(b*x + a) + 924*a^3*b*x*e^4*sgn(b*x + a) + 84*a^3*b*d*e^3*sgn(b*x
 + a) + 210*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^11
```

maple [A] time = 0.06, size = 201, normalized size = 0.79

$$-\frac{\left(330b^4e^4x^4+1155a\,b^3e^4x^3+165b^4d\,e^3x^3+1540a^2b^2e^4x^2+385a\,b^3d\,e^3x^2+55b^4d^2e^2x^2+924a^3b\,e^4x+308a^2b^2d\,e^3x+77a\,b^3d^2e^2x+11b^4d^3ex+210a^4e^4+84a^3bd\,e^3+28a^2b^2d^2e^2+7a\,b^3d^3e+b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{2310\,(ex+d)^{11}\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x)
```

```
[Out] -1/2310/e^5*(330*b^4*e^4*x^4+1155*a*b^3*e^4*x^3+165*b^4*d*e^3*x^3+1540*a^2*
b^2*e^4*x^2+385*a*b^3*d*e^3*x^2+55*b^4*d^2*e^2*x^2+924*a^3*b*e^4*x+308*a^2*
b^2*d*e^3*x+77*a*b^3*d^2*e^2*x+11*b^4*d^3*e*x+210*a^4*e^4+84*a^3*b*d*e^3+28
*a^2*b^2*d^2*e^2+7*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^11/(b*x+a
)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.20, size = 449, normalized size = 1.77

$$\frac{\left(\frac{-4a^3b\,e^3+6a^2b^2d\,e^2-4a\,b^3d^2e+b^4d^3}{10e^5}+\frac{d\left(\frac{d\left(\frac{b^4d}{10e^3}-\frac{b^3(4ae-bd)}{10e^3}\right)}{e}+\frac{b^2\left(6a^2e^2-4abde+b^2d^2\right)}{10e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)\,(d+ex)^{10}}-\frac{\left(\frac{a^4}{11e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{4ab^3}{11e}-\frac{b^4d}{11e^2}\right)}{e}-\frac{6a^2b^2}{11e}\right)}{e}+\frac{4a^3b}{11e}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)\,(d+ex)^{11}}-\frac{\left(\frac{6a^2b^2e^2-8ab^3de+3b^4d^2}{9e^5}+\frac{d\left(\frac{b^4d}{9e^4}-\frac{2b^3(2ae-bd)}{9e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)\,(d+ex)^9}+\frac{\left(\frac{3b^4d-4ab^3e}{8e^5}+\frac{b^4d}{8e^5}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)\,(d+ex)^8}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{7e^5\,(a+bx)\,(d+ex)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^12,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(10*e^5) + (d*(
(d*((b^4*d)/(10*e^3) - (b^3*(4*a*e - b*d))/(10*e^3)))/e + (b^2*(6*a^2*e^2 +
 b^2*d^2 - 4*a*b*d*e))/(10*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a +
 b*x)*(d + e*x)^10) - ((a^4/(11*e) - (d*((d*((d*((4*a*b^3)/(11*e) - (b^4*d)
/(11*e^2)))/e - (6*a^2*b^2)/(11*e)))/e + (4*a^3*b)/(11*e)))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((3*b^4*d^2 + 6*a^2*b^2*e^
2 - 8*a*b^3*d*e)/(9*e^5) + (d*((b^4*d)/(9*e^4) - (2*b^3*(2*a*e - b*d))/(9*e
^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) + (((3*b^
4*d - 4*a*b^3*e)/(8*e^5) + (b^4*d)/(8*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/((a + b*x)*(d + e*x)^8) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*e^5*(a
 + b*x)*(d + e*x)^7)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**12,x)
[Out] Exception raised: HeuristicGCDFailed
```

3.1763 $\int (a+bx)(d+ex)^9 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=362

$$\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(bd-ae)^4}{4e^7(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^5}{11e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex}{10e^7(a+bx}$$

Rubi [A] time = 0.69, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{16}}{16e^7(a+bx)}-\frac{2b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15}(bd-ae)}{5e^7(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{14}(bd-ae)^2}{14e^7(a+bx)}-\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13}(bd-ae)^3}{13e^7(a+bx)}+\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(bd-ae)^4}{4e^7(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^5}{11e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^6}{10e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^9*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^7*(a + b*x
)) - (6*b*(b*d - a*e)^5*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7
*(a + b*x)) + (5*b^2*(b*d - a*e)^4*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(4*e^7*(a + b*x)) - (20*b^3*(b*d - a*e)^3*(d + e*x)^13*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(13*e^7*(a + b*x)) + (15*b^4*(b*d - a*e)^2*(d + e*x)^14*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(14*e^7*(a + b*x)) - (2*b^5*(b*d - a*e)*(d + e*x
)^15*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (b^6*(d + e*x)^16*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(16*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^9\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^9\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^9\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^9}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{10}}{e^6} + 1\right.}{}$$

$$= \frac{(bd-ae)^6(d+ex)^{10}\sqrt{a^2+2abx+b^2x^2}}{10e^7(a+bx)} - \frac{6b(bd-ae)^5(d+ex}{11e^7(}$$

Mathematica [B] time = 0.23, size = 756, normalized size = 2.09

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^9*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(8008*a^6*(10*d^9 + 45*d^8*e*x + 120*d^7*e^2*x^2 + 210
*d^6*e^3*x^3 + 252*d^5*e^4*x^4 + 210*d^4*e^5*x^5 + 120*d^3*e^6*x^6 + 45*d^2
*e^7*x^7 + 10*d*e^8*x^8 + e^9*x^9) + 4368*a^5*b*x*(55*d^9 + 330*d^8*e*x + 9
90*d^7*e^2*x^2 + 1848*d^6*e^3*x^3 + 2310*d^5*e^4*x^4 + 1980*d^4*e^5*x^5 + 1
155*d^3*e^6*x^6 + 440*d^2*e^7*x^7 + 99*d*e^8*x^8 + 10*e^9*x^9) + 1820*a^4*b
^2*x^2*(220*d^9 + 1485*d^8*e*x + 4752*d^7*e^2*x^2 + 9240*d^6*e^3*x^3 + 1188
0*d^5*e^4*x^4 + 10395*d^4*e^5*x^5 + 6160*d^3*e^6*x^6 + 2376*d^2*e^7*x^7 + 5
40*d*e^8*x^8 + 55*e^9*x^9) + 560*a^3*b^3*x^3*(715*d^9 + 5148*d^8*e*x + 1716
0*d^7*e^2*x^2 + 34320*d^6*e^3*x^3 + 45045*d^5*e^4*x^4 + 40040*d^4*e^5*x^5 +
 24024*d^3*e^6*x^6 + 9360*d^2*e^7*x^7 + 2145*d*e^8*x^8 + 220*e^9*x^9) + 120
*a^2*b^4*x^4*(2002*d^9 + 15015*d^8*e*x + 51480*d^7*e^2*x^2 + 105105*d^6*e^3
*x^3 + 140140*d^5*e^4*x^4 + 126126*d^4*e^5*x^5 + 76440*d^3*e^6*x^6 + 30030*
d^2*e^7*x^7 + 6930*d*e^8*x^8 + 715*e^9*x^9) + 16*a*b^5*x^5*(5005*d^9 + 3861
0*d^8*e*x + 135135*d^7*e^2*x^2 + 280280*d^6*e^3*x^3 + 378378*d^5*e^4*x^4 +
343980*d^4*e^5*x^5 + 210210*d^3*e^6*x^6 + 83160*d^2*e^7*x^7 + 19305*d*e^8*x
^8 + 2002*e^9*x^9) + b^6*x^6*(11440*d^9 + 90090*d^8*e*x + 320320*d^7*e^2*x^
2 + 672672*d^6*e^3*x^3 + 917280*d^5*e^4*x^4 + 840840*d^4*e^5*x^5 + 517440*d
^3*e^6*x^6 + 205920*d^2*e^7*x^7 + 48048*d*e^8*x^8 + 5005*e^9*x^9)))/(80080*
(a + b*x))
```

IntegrateAlgebraic [F] time = 7.95, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^9\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^9*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^9*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.48, size = 892, normalized size = 2.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/16*b^6*e^9*x^16 + a^6*d^9*x + 1/5*(3*b^6*d*e^8 + 2*a*b^5*e^9)*x^15 + 3/14
*(12*b^6*d^2*e^7 + 18*a*b^5*d*e^8 + 5*a^2*b^4*e^9)*x^14 + 1/13*(84*b^6*d^3*
e^6 + 216*a*b^5*d^2*e^7 + 135*a^2*b^4*d*e^8 + 20*a^3*b^3*e^9)*x^13 + 1/4*(4
2*b^6*d^4*e^5 + 168*a*b^5*d^3*e^6 + 180*a^2*b^4*d^2*e^7 + 60*a^3*b^3*d*e^8
+ 5*a^4*b^2*e^9)*x^12 + 3/11*(42*b^6*d^5*e^4 + 252*a*b^5*d^4*e^5 + 420*a^2*
b^4*d^3*e^6 + 240*a^3*b^3*d^2*e^7 + 45*a^4*b^2*d*e^8 + 2*a^5*b*e^9)*x^11 +
1/10*(84*b^6*d^6*e^3 + 756*a*b^5*d^5*e^4 + 1890*a^2*b^4*d^4*e^5 + 1680*a^3*
b^3*d^3*e^6 + 540*a^4*b^2*d^2*e^7 + 54*a^5*b*d*e^8 + a^6*e^9)*x^10 + (4*b^6
*d^7*e^2 + 56*a*b^5*d^6*e^3 + 210*a^2*b^4*d^5*e^4 + 280*a^3*b^3*d^4*e^5 + 1
40*a^4*b^2*d^3*e^6 + 24*a^5*b*d^2*e^7 + a^6*d*e^8)*x^9 + 9/8*(b^6*d^8*e + 2
4*a*b^5*d^7*e^2 + 140*a^2*b^4*d^6*e^3 + 280*a^3*b^3*d^5*e^4 + 210*a^4*b^2*d
^4*e^5 + 56*a^5*b*d^3*e^6 + 4*a^6*d^2*e^7)*x^8 + 1/7*(b^6*d^9 + 54*a*b^5*d^
8*e + 540*a^2*b^4*d^7*e^2 + 1680*a^3*b^3*d^6*e^3 + 1890*a^4*b^2*d^5*e^4 + 7
56*a^5*b*d^4*e^5 + 84*a^6*d^3*e^6)*x^7 + 1/2*(2*a*b^5*d^9 + 45*a^2*b^4*d^8*
e + 240*a^3*b^3*d^7*e^2 + 420*a^4*b^2*d^6*e^3 + 252*a^5*b*d^5*e^4 + 42*a^6*
d^4*e^5)*x^6 + 3/5*(5*a^2*b^4*d^9 + 60*a^3*b^3*d^8*e + 180*a^4*b^2*d^7*e^2
+ 168*a^5*b*d^6*e^3 + 42*a^6*d^5*e^4)*x^5 + 1/4*(20*a^3*b^3*d^9 + 135*a^4*b
^2*d^8*e + 216*a^5*b*d^7*e^2 + 84*a^6*d^6*e^3)*x^4 + (5*a^4*b^2*d^9 + 18*a^
5*b*d^8*e + 12*a^6*d^7*e^2)*x^3 + 3/2*(2*a^5*b*d^9 + 3*a^6*d^8*e)*x^2
```

giac [B] time = 0.29, size = 1387, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/16*b^6*x^16*e^9*sgn(b*x + a) + 3/5*b^6*d*x^15*e^8*sgn(b*x + a) + 18/7*b^6
*d^2*x^14*e^7*sgn(b*x + a) + 84/13*b^6*d^3*x^13*e^6*sgn(b*x + a) + 21/2*b^6
*d^4*x^12*e^5*sgn(b*x + a) + 126/11*b^6*d^5*x^11*e^4*sgn(b*x + a) + 42/5*b^
6*d^6*x^10*e^3*sgn(b*x + a) + 4*b^6*d^7*x^9*e^2*sgn(b*x + a) + 9/8*b^6*d^8*
x^8*e*sgn(b*x + a) + 1/7*b^6*d^9*x^7*sgn(b*x + a) + 2/5*a*b^5*x^15*e^9*sgn(
b*x + a) + 27/7*a*b^5*d*x^14*e^8*sgn(b*x + a) + 216/13*a*b^5*d^2*x^13*e^7*s
gn(b*x + a) + 42*a*b^5*d^3*x^12*e^6*sgn(b*x + a) + 756/11*a*b^5*d^4*x^11*e^
5*sgn(b*x + a) + 378/5*a*b^5*d^5*x^10*e^4*sgn(b*x + a) + 56*a*b^5*d^6*x^9*e
^3*sgn(b*x + a) + 27*a*b^5*d^7*x^8*e^2*sgn(b*x + a) + 54/7*a*b^5*d^8*x^7*e*
sgn(b*x + a) + a*b^5*d^9*x^6*sgn(b*x + a) + 15/14*a^2*b^4*x^14*e^9*sgn(b*x
+ a) + 135/13*a^2*b^4*d*x^13*e^8*sgn(b*x + a) + 45*a^2*b^4*d^2*x^12*e^7*sgn
(b*x + a) + 1260/11*a^2*b^4*d^3*x^11*e^6*sgn(b*x + a) + 189*a^2*b^4*d^4*x^1
0*e^5*sgn(b*x + a) + 210*a^2*b^4*d^5*x^9*e^4*sgn(b*x + a) + 315/2*a^2*b^4*d
^6*x^8*e^3*sgn(b*x + a) + 540/7*a^2*b^4*d^7*x^7*e^2*sgn(b*x + a) + 45/2*a^2
*b^4*d^8*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^9*x^5*sgn(b*x + a) + 20/13*a^3*b^
3*x^13*e^9*sgn(b*x + a) + 15*a^3*b^3*d*x^12*e^8*sgn(b*x + a) + 720/11*a^3*b
^3*d^2*x^11*e^7*sgn(b*x + a) + 168*a^3*b^3*d^3*x^10*e^6*sgn(b*x + a) + 280*
a^3*b^3*d^4*x^9*e^5*sgn(b*x + a) + 315*a^3*b^3*d^5*x^8*e^4*sgn(b*x + a) + 2
40*a^3*b^3*d^6*x^7*e^3*sgn(b*x + a) + 120*a^3*b^3*d^7*x^6*e^2*sgn(b*x + a)
+ 36*a^3*b^3*d^8*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d^9*x^4*sgn(b*x + a) + 5/4*
a^4*b^2*x^12*e^9*sgn(b*x + a) + 135/11*a^4*b^2*d*x^11*e^8*sgn(b*x + a) + 54
*a^4*b^2*d^2*x^10*e^7*sgn(b*x + a) + 140*a^4*b^2*d^3*x^9*e^6*sgn(b*x + a) +
 945/4*a^4*b^2*d^4*x^8*e^5*sgn(b*x + a) + 270*a^4*b^2*d^5*x^7*e^4*sgn(b*x +
 a) + 210*a^4*b^2*d^6*x^6*e^3*sgn(b*x + a) + 108*a^4*b^2*d^7*x^5*e^2*sgn(b*
x + a) + 135/4*a^4*b^2*d^8*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^9*x^3*sgn(b*x +
 a) + 6/11*a^5*b*x^11*e^9*sgn(b*x + a) + 27/5*a^5*b*d*x^10*e^8*sgn(b*x + a)
 + 24*a^5*b*d^2*x^9*e^7*sgn(b*x + a) + 63*a^5*b*d^3*x^8*e^6*sgn(b*x + a) +
108*a^5*b*d^4*x^7*e^5*sgn(b*x + a) + 126*a^5*b*d^5*x^6*e^4*sgn(b*x + a) + 5
04/5*a^5*b*d^6*x^5*e^3*sgn(b*x + a) + 54*a^5*b*d^7*x^4*e^2*sgn(b*x + a) + 1
8*a^5*b*d^8*x^3*e*sgn(b*x + a) + 3*a^5*b*d^9*x^2*sgn(b*x + a) + 1/10*a^6*x^
```

```
10*e^9*sgn(b*x + a) + a^6*d*x^9*e^8*sgn(b*x + a) + 9/2*a^6*d^2*x^8*e^7*sgn(
b*x + a) + 12*a^6*d^3*x^7*e^6*sgn(b*x + a) + 21*a^6*d^4*x^6*e^5*sgn(b*x + a
) + 126/5*a^6*d^5*x^5*e^4*sgn(b*x + a) + 21*a^6*d^6*x^4*e^3*sgn(b*x + a) +
12*a^6*d^7*x^3*e^2*sgn(b*x + a) + 9/2*a^6*d^8*x^2*e*sgn(b*x + a) + a^6*d^9*
x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 1034, normalized size = 2.86

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/80080*x*(5005*b^6*e^9*x^15+32032*a*b^5*e^9*x^14+48048*b^6*d*e^8*x^14+8580
0*a^2*b^4*e^9*x^13+308880*a*b^5*d*e^8*x^13+205920*b^6*d^2*e^7*x^13+123200*a
^3*b^3*e^9*x^12+831600*a^2*b^4*d*e^8*x^12+1330560*a*b^5*d^2*e^7*x^12+517440
*b^6*d^3*e^6*x^12+100100*a^4*b^2*e^9*x^11+1201200*a^3*b^3*d*e^8*x^11+360360
0*a^2*b^4*d^2*e^7*x^11+3363360*a*b^5*d^3*e^6*x^11+840840*b^6*d^4*e^5*x^11+4
3680*a^5*b*e^9*x^10+982800*a^4*b^2*d*e^8*x^10+5241600*a^3*b^3*d^2*e^7*x^10+
9172800*a^2*b^4*d^3*e^6*x^10+5503680*a*b^5*d^4*e^5*x^10+917280*b^6*d^5*e^4*
x^10+8008*a^6*e^9*x^9+432432*a^5*b*d*e^8*x^9+4324320*a^4*b^2*d^2*e^7*x^9+13
453440*a^3*b^3*d^3*e^6*x^9+15135120*a^2*b^4*d^4*e^5*x^9+6054048*a*b^5*d^5*e
^4*x^9+672672*b^6*d^6*e^3*x^9+80080*a^6*d*e^8*x^8+1921920*a^5*b*d^2*e^7*x^8
+11211200*a^4*b^2*d^3*e^6*x^8+22422400*a^3*b^3*d^4*e^5*x^8+16816800*a^2*b^4
*d^5*e^4*x^8+4484480*a*b^5*d^6*e^3*x^8+320320*b^6*d^7*e^2*x^8+360360*a^6*d^
2*e^7*x^7+5045040*a^5*b*d^3*e^6*x^7+18918900*a^4*b^2*d^4*e^5*x^7+25225200*a
^3*b^3*d^5*e^4*x^7+12612600*a^2*b^4*d^6*e^3*x^7+2162160*a*b^5*d^7*e^2*x^7+9
0090*b^6*d^8*e*x^7+960960*a^6*d^3*e^6*x^6+8648640*a^5*b*d^4*e^5*x^6+2162160
0*a^4*b^2*d^5*e^4*x^6+19219200*a^3*b^3*d^6*e^3*x^6+6177600*a^2*b^4*d^7*e^2*
x^6+617760*a*b^5*d^8*e*x^6+11440*b^6*d^9*x^6+1681680*a^6*d^4*e^5*x^5+100900
80*a^5*b*d^5*e^4*x^5+16816800*a^4*b^2*d^6*e^3*x^5+9609600*a^3*b^3*d^7*e^2*x
^5+1801800*a^2*b^4*d^8*e*x^5+80080*a*b^5*d^9*x^5+2018016*a^6*d^5*e^4*x^4+80
72064*a^5*b*d^6*e^3*x^4+8648640*a^4*b^2*d^7*e^2*x^4+2882880*a^3*b^3*d^8*e*x
^4+240240*a^2*b^4*d^9*x^4+1681680*a^6*d^6*e^3*x^3+4324320*a^5*b*d^7*e^2*x^3
+2702700*a^4*b^2*d^8*e*x^3+400400*a^3*b^3*d^9*x^3+960960*a^6*d^7*e^2*x^2+14
41440*a^5*b*d^8*e*x^2+400400*a^4*b^2*d^9*x^2+360360*a^6*d^8*e*x+240240*a^5*
b*d^9*x+80080*a^6*d^9)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.80, size = 3175, normalized size = 8.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/16*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^9*x^9/b - 5/48*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*e^9*x^8/b^2 + 11/84*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^9*x^
7/b^3 - 23/156*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^9*x^6/b^4 + 49/312*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^9*x^5/b^5 - 557/3432*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a^5*e^9*x^4/b^6 + 283/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6
*e^9*x^3/b^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^9*x + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^10*e^9*x/b^9 - 95/572*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*a^7*e^9*x^2/b^8 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^9/b + 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^11*e^9/b^10 + 381/2288*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^8*e^9*x/b^9 - 2669/16016*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^9*
e^9/b^10 + 1/15*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^8/b^2
 - 23/210*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^7/b^3 + 9
/14*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^7/b^2 + 53/39
0*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^6/b^4 - 27/26*(
```

4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^6/b^3 + 12/13*(7
*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^6/b^2 - 59/390*
(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^5/b^5 + 33/26*(4*
b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^5/b^4 - 19/13*(7
*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^5/b^3 + 7/2*(
3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/b^2 + 137/85
8*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^4/b^6 - 399/286
*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^4/b^5 + 251/
143*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^4/b^4
 - 119/22*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^4
/b^3 + 126/11*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b
^2 - 703/4290*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x^3/b
^7 + 417/286*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^
3/b^6 - 272/143*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^3*x^3/b^5 + 70/11*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a^2*x^3/b^4 - 189/11*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2
)^(7/2)*a*x^3/b^3 + 21/5*(2*b*d^6*e^3 + 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*x^3/b^2 - 1/6*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^9*x/b^9 + 3/2*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^
8*x/b^8 - 2*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7
x/b^7 + 7(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*
x/b^6 - 21*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^
5 + 7*(2*b*d^6*e^3 + 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4
 - 2*(3*b*d^7*e^2 + 7*a*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3
 + 3/2*(b*d^8*e + 4*a*d^7*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1
/6*(b*d^9 + 9*a*d^8*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b + 237/1430*(9*
b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*x^2/b^8 - 425/286*(4*b
*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x^2/b^7 + 844/429*(
7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^2/b^6 - 22
4/33*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^2/b^
5 + 217/11*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^2/
b^4 - 91/15*(2*b*d^6*e^3 + 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x
^2/b^3 + 4/3*(3*b*d^7*e^2 + 7*a*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^
2/b^2 - 1/6*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^10/b^10 +
 3/2*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^9/b^9 - 2*(7
*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^8/b^8 + 7*(3*b*
d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7/b^7 - 21*(b*d^5*
e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/b^6 + 7*(2*b*d^6*e^3 +
 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 2*(3*b*d^7*e^2 + 7*
a*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 3/2*(b*d^8*e + 4*a*d^7
e^2)(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^9 + 9*a*d^8*e)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 119/715*(9*b*d*e^8 + a*e^9)*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*a^7*x/b^9 + 214/143*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^
2 + 2*a*b*x + a^2)^(7/2)*a^6*x/b^8 - 1709/858*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x/b^7 + 917/132*(3*b*d^4*e^5 + 2*a*d^3*e
^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6 - 455/22*(b*d^5*e^4 + a*d^4*e
^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 + 203/30*(2*b*d^6*e^3 + 3*a*d
^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 11/6*(3*b*d^7*e^2 + 7*a
*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 9/8*(b*d^8*e + 4*a*d^7*
e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 834/5005*(9*b*d*e^8 + a*e^9)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^8/b^10 - 1501/1001*(4*b*d^2*e^7 + a*d*e^8)
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^7/b^9 + 1715/858*(7*b*d^3*e^6 + 3*a*d^2*
e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6/b^8 - 923/132*(3*b*d^4*e^5 + 2*a*d
^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7 + 461/22*(b*d^5*e^4 + a*d^4
e^5)(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/30*(2*b*d^6*e^3 + 3*a*d
^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 83/42*(3*b*d^7*e^2 + 7*a*
d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 81/56*(b*d^8*e + 4*a*d^7
e^2)(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(b*d^9 + 9*a*d^8*e)*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)/b^2

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^9\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^9*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^9*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^9\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**9*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**9*((a + b*x)**2)**(5/2), x)
```

3.1764 $\int (a+bx)(d+ex)^8 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=362

$$\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^4}{11e^7(a+bx)}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^5}{5e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+}{9e^7(a+bx}$$

Rubi [A] time = 0.59, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15}}{15e^7(a+bx)}-\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{14}(bd-ae)}{7e^7(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13}(bd-ae)^2}{13e^7(a+bx)}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(bd-ae)^3}{3e^7(a+bx)}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^4}{11e^7(a+bx)}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^5}{5e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^6}{9e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^8*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x))
 - (3*b*(b*d - a*e)^5*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a
 + b*x)) + (15*b^2*(b*d - a*e)^4*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(11*e^7*(a + b*x)) - (5*b^3*(b*d - a*e)^3*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(3*e^7*(a + b*x)) + (15*b^4*(b*d - a*e)^2*(d + e*x)^13*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) - (3*b^5*(b*d - a*e)*(d + e*x)^1
4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (b^6*(d + e*x)^15*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^8 \left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^8 dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^8 dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^8}{e^6} - \frac{6b(bd-ae)^5(d+ex)^9}{e^6} + 15\right.}{}$$

$$= \frac{(bd-ae)^6(d+ex)^9\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)} - \frac{3b(bd-ae)^5(d+ex)^1}{5e^7(a}$$

Mathematica [A] time = 0.22, size = 679, normalized size = 1.88

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^8*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(5005*a^6*(9*d^8 + 36*d^7*e*x + 84*d^6*e^2*x^2 + 126*d
^5*e^3*x^3 + 126*d^4*e^4*x^4 + 84*d^3*e^5*x^5 + 36*d^2*e^6*x^6 + 9*d*e^7*x^
7 + e^8*x^8) + 3003*a^5*b*x*(45*d^8 + 240*d^7*e*x + 630*d^6*e^2*x^2 + 1008*
d^5*e^3*x^3 + 1050*d^4*e^4*x^4 + 720*d^3*e^5*x^5 + 315*d^2*e^6*x^6 + 80*d*e
^7*x^7 + 9*e^8*x^8) + 1365*a^4*b^2*x^2*(165*d^8 + 990*d^7*e*x + 2772*d^6*e^
2*x^2 + 4620*d^5*e^3*x^3 + 4950*d^4*e^4*x^4 + 3465*d^3*e^5*x^5 + 1540*d^2*e
^6*x^6 + 396*d*e^7*x^7 + 45*e^8*x^8) + 455*a^3*b^3*x^3*(495*d^8 + 3168*d^7*
e*x + 9240*d^6*e^2*x^2 + 15840*d^5*e^3*x^3 + 17325*d^4*e^4*x^4 + 12320*d^3*
e^5*x^5 + 5544*d^2*e^6*x^6 + 1440*d*e^7*x^7 + 165*e^8*x^8) + 105*a^2*b^4*x^
4*(1287*d^8 + 8580*d^7*e*x + 25740*d^6*e^2*x^2 + 45045*d^5*e^3*x^3 + 50050*
d^4*e^4*x^4 + 36036*d^3*e^5*x^5 + 16380*d^2*e^6*x^6 + 4290*d*e^7*x^7 + 495*
e^8*x^8) + 15*a*b^5*x^5*(3003*d^8 + 20592*d^7*e*x + 63063*d^6*e^2*x^2 + 112
112*d^5*e^3*x^3 + 126126*d^4*e^4*x^4 + 91728*d^3*e^5*x^5 + 42042*d^2*e^6*x^
6 + 11088*d*e^7*x^7 + 1287*e^8*x^8) + b^6*x^6*(6435*d^8 + 45045*d^7*e*x + 1
40140*d^6*e^2*x^2 + 252252*d^5*e^3*x^3 + 286650*d^4*e^4*x^4 + 210210*d^3*e^
5*x^5 + 97020*d^2*e^6*x^6 + 25740*d*e^7*x^7 + 3003*e^8*x^8)))/(45045*(a + b
*x))
```

IntegrateAlgebraic [F] time = 7.88, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^8 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^8*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^8*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.44, size = 797, normalized size = 2.20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/15*b^6*e^8*x^15 + a^6*d^8*x + 1/7*(4*b^6*d*e^7 + 3*a*b^5*e^8)*x^14 + 1/13
*(28*b^6*d^2*e^6 + 48*a*b^5*d*e^7 + 15*a^2*b^4*e^8)*x^13 + 1/3*(14*b^6*d^3*
e^5 + 42*a*b^5*d^2*e^6 + 30*a^2*b^4*d*e^7 + 5*a^3*b^3*e^8)*x^12 + 1/11*(70*
b^6*d^4*e^4 + 336*a*b^5*d^3*e^5 + 420*a^2*b^4*d^2*e^6 + 160*a^3*b^3*d*e^7 +
 15*a^4*b^2*e^8)*x^11 + 1/5*(28*b^6*d^5*e^3 + 210*a*b^5*d^4*e^4 + 420*a^2*b
^4*d^3*e^5 + 280*a^3*b^3*d^2*e^6 + 60*a^4*b^2*d*e^7 + 3*a^5*b*e^8)*x^10 + 1
/9*(28*b^6*d^6*e^2 + 336*a*b^5*d^5*e^3 + 1050*a^2*b^4*d^4*e^4 + 1120*a^3*b^
3*d^3*e^5 + 420*a^4*b^2*d^2*e^6 + 48*a^5*b*d*e^7 + a^6*e^8)*x^9 + (b^6*d^7*
e + 21*a*b^5*d^6*e^2 + 105*a^2*b^4*d^5*e^3 + 175*a^3*b^3*d^4*e^4 + 105*a^4*
b^2*d^3*e^5 + 21*a^5*b*d^2*e^6 + a^6*d*e^7)*x^8 + 1/7*(b^6*d^8 + 48*a*b^5*d
^7*e + 420*a^2*b^4*d^6*e^2 + 1120*a^3*b^3*d^5*e^3 + 1050*a^4*b^2*d^4*e^4 +
336*a^5*b*d^3*e^5 + 28*a^6*d^2*e^6)*x^7 + 1/3*(3*a*b^5*d^8 + 60*a^2*b^4*d^7
*e + 280*a^3*b^3*d^6*e^2 + 420*a^4*b^2*d^5*e^3 + 210*a^5*b*d^4*e^4 + 28*a^6
*d^3*e^5)*x^6 + 1/5*(15*a^2*b^4*d^8 + 160*a^3*b^3*d^7*e + 420*a^4*b^2*d^6*e
^2 + 336*a^5*b*d^5*e^3 + 70*a^6*d^4*e^4)*x^5 + (5*a^3*b^3*d^8 + 30*a^4*b^2*
d^7*e + 42*a^5*b*d^6*e^2 + 14*a^6*d^5*e^3)*x^4 + 1/3*(15*a^4*b^2*d^8 + 48*a
^5*b*d^7*e + 28*a^6*d^6*e^2)*x^3 + (3*a^5*b*d^8 + 4*a^6*d^7*e)*x^2
```

giac [B] time = 0.24, size = 1242, normalized size = 3.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/15*b^6*x^15*e^8*sgn(b*x + a) + 4/7*b^6*d*x^14*e^7*sgn(b*x + a) + 28/13*b^
6*d^2*x^13*e^6*sgn(b*x + a) + 14/3*b^6*d^3*x^12*e^5*sgn(b*x + a) + 70/11*b^
6*d^4*x^11*e^4*sgn(b*x + a) + 28/5*b^6*d^5*x^10*e^3*sgn(b*x + a) + 28/9*b^6
*d^6*x^9*e^2*sgn(b*x + a) + b^6*d^7*x^8*e*sgn(b*x + a) + 1/7*b^6*d^8*x^7*sg
n(b*x + a) + 3/7*a*b^5*x^14*e^8*sgn(b*x + a) + 48/13*a*b^5*d*x^13*e^7*sgn(b
*x + a) + 14*a*b^5*d^2*x^12*e^6*sgn(b*x + a) + 336/11*a*b^5*d^3*x^11*e^5*sg
n(b*x + a) + 42*a*b^5*d^4*x^10*e^4*sgn(b*x + a) + 112/3*a*b^5*d^5*x^9*e^3*s
gn(b*x + a) + 21*a*b^5*d^6*x^8*e^2*sgn(b*x + a) + 48/7*a*b^5*d^7*x^7*e*sgn(
b*x + a) + a*b^5*d^8*x^6*sgn(b*x + a) + 15/13*a^2*b^4*x^13*e^8*sgn(b*x + a)
 + 10*a^2*b^4*d*x^12*e^7*sgn(b*x + a) + 420/11*a^2*b^4*d^2*x^11*e^6*sgn(b*x
 + a) + 84*a^2*b^4*d^3*x^10*e^5*sgn(b*x + a) + 350/3*a^2*b^4*d^4*x^9*e^4*sg
n(b*x + a) + 105*a^2*b^4*d^5*x^8*e^3*sgn(b*x + a) + 60*a^2*b^4*d^6*x^7*e^2*
sgn(b*x + a) + 20*a^2*b^4*d^7*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^8*x^5*sgn(b*
x + a) + 5/3*a^3*b^3*x^12*e^8*sgn(b*x + a) + 160/11*a^3*b^3*d*x^11*e^7*sgn(
b*x + a) + 56*a^3*b^3*d^2*x^10*e^6*sgn(b*x + a) + 1120/9*a^3*b^3*d^3*x^9*e^
5*sgn(b*x + a) + 175*a^3*b^3*d^4*x^8*e^4*sgn(b*x + a) + 160*a^3*b^3*d^5*x^7
*e^3*sgn(b*x + a) + 280/3*a^3*b^3*d^6*x^6*e^2*sgn(b*x + a) + 32*a^3*b^3*d^7
*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d^8*x^4*sgn(b*x + a) + 15/11*a^4*b^2*x^11*e
^8*sgn(b*x + a) + 12*a^4*b^2*d*x^10*e^7*sgn(b*x + a) + 140/3*a^4*b^2*d^2*x^
9*e^6*sgn(b*x + a) + 105*a^4*b^2*d^3*x^8*e^5*sgn(b*x + a) + 150*a^4*b^2*d^4
*x^7*e^4*sgn(b*x + a) + 140*a^4*b^2*d^5*x^6*e^3*sgn(b*x + a) + 84*a^4*b^2*d
^6*x^5*e^2*sgn(b*x + a) + 30*a^4*b^2*d^7*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^8
*x^3*sgn(b*x + a) + 3/5*a^5*b*x^10*e^8*sgn(b*x + a) + 16/3*a^5*b*d*x^9*e^7*
sgn(b*x + a) + 21*a^5*b*d^2*x^8*e^6*sgn(b*x + a) + 48*a^5*b*d^3*x^7*e^5*sgn
(b*x + a) + 70*a^5*b*d^4*x^6*e^4*sgn(b*x + a) + 336/5*a^5*b*d^5*x^5*e^3*sgn
(b*x + a) + 42*a^5*b*d^6*x^4*e^2*sgn(b*x + a) + 16*a^5*b*d^7*x^3*e*sgn(b*x
+ a) + 3*a^5*b*d^8*x^2*sgn(b*x + a) + 1/9*a^6*x^9*e^8*sgn(b*x + a) + a^6*d*
x^8*e^7*sgn(b*x + a) + 4*a^6*d^2*x^7*e^6*sgn(b*x + a) + 28/3*a^6*d^3*x^6*e^
5*sgn(b*x + a) + 14*a^6*d^4*x^5*e^4*sgn(b*x + a) + 14*a^6*d^5*x^4*e^3*sgn(b
*x + a) + 28/3*a^6*d^6*x^3*e^2*sgn(b*x + a) + 4*a^6*d^7*x^2*e*sgn(b*x + a)
+ a^6*d^8*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 925, normalized size = 2.56

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/45045*x*(3003*b^6*e^8*x^14+19305*a*b^5*e^8*x^13+25740*b^6*d*e^7*x^13+5197
5*a^2*b^4*e^8*x^12+166320*a*b^5*d*e^7*x^12+97020*b^6*d^2*e^6*x^12+75075*a^3
*b^3*e^8*x^11+450450*a^2*b^4*d*e^7*x^11+630630*a*b^5*d^2*e^6*x^11+210210*b^
6*d^3*e^5*x^11+61425*a^4*b^2*e^8*x^10+655200*a^3*b^3*d*e^7*x^10+1719900*a^2
*b^4*d^2*e^6*x^10+1375920*a*b^5*d^3*e^5*x^10+286650*b^6*d^4*e^4*x^10+27027*
a^5*b*e^8*x^9+540540*a^4*b^2*d*e^7*x^9+2522520*a^3*b^3*d^2*e^6*x^9+3783780*
a^2*b^4*d^3*e^5*x^9+1891890*a*b^5*d^4*e^4*x^9+252252*b^6*d^5*e^3*x^9+5005*a
^6*e^8*x^8+240240*a^5*b*d*e^7*x^8+2102100*a^4*b^2*d^2*e^6*x^8+5605600*a^3*b
^3*d^3*e^5*x^8+5255250*a^2*b^4*d^4*e^4*x^8+1681680*a*b^5*d^5*e^3*x^8+140140
*b^6*d^6*e^2*x^8+45045*a^6*d*e^7*x^7+945945*a^5*b*d^2*e^6*x^7+4729725*a^4*b
^2*d^3*e^5*x^7+7882875*a^3*b^3*d^4*e^4*x^7+4729725*a^2*b^4*d^5*e^3*x^7+9459
45*a*b^5*d^6*e^2*x^7+45045*b^6*d^7*e*x^7+180180*a^6*d^2*e^6*x^6+2162160*a^5
*b*d^3*e^5*x^6+6756750*a^4*b^2*d^4*e^4*x^6+7207200*a^3*b^3*d^5*e^3*x^6+2702
700*a^2*b^4*d^6*e^2*x^6+308880*a*b^5*d^7*e*x^6+6435*b^6*d^8*x^6+420420*a^6*
d^3*e^5*x^5+3153150*a^5*b*d^4*e^4*x^5+6306300*a^4*b^2*d^5*e^3*x^5+4204200*a
^3*b^3*d^6*e^2*x^5+900900*a^2*b^4*d^7*e*x^5+45045*a*b^5*d^8*x^5+630630*a^6*
d^4*e^4*x^4+3027024*a^5*b*d^5*e^3*x^4+3783780*a^4*b^2*d^6*e^2*x^4+1441440*a
^3*b^3*d^7*e*x^4+135135*a^2*b^4*d^8*x^4+630630*a^6*d^5*e^3*x^3+1891890*a^5*
b*d^6*e^2*x^3+1351350*a^4*b^2*d^7*e*x^3+225225*a^3*b^3*d^8*x^3+420420*a^6*d
^6*e^2*x^2+720720*a^5*b*d^7*e*x^2+225225*a^4*b^2*d^8*x^2+180180*a^6*d^7*e*x
+135135*a^5*b*d^8*x+45045*a^6*d^8)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.82, size = 2653, normalized size = 7.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/15*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^8*x^8/b - 23/210*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a*e^8*x^7/b^2 + 53/390*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^8
*x^6/b^3 - 59/390*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^8*x^5/b^4 + 137/858
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^8*x^4/b^5 - 703/4290*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*a^5*e^8*x^3/b^6 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^
8*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^9*e^8*x/b^8 + 237/1430*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*a^6*e^8*x^2/b^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^2*d^8/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^10*e^8/b^9 - 119/715*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^7*e^8*x/b^8 + 834/5005*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a^8*e^8/b^9 + 1/14*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*x^7/b^2 - 3/26*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a*x^6/b^3 + 4/13*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*x^6/b^2 + 11/78*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^
5/b^4 - 19/39*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x
^5/b^3 + 7/3*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/
b^2 - 133/858*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^4/b
^5 + 251/429*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*
x^4/b^4 - 119/33*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
a*x^4/b^3 + 14/11*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*x^4/b^2 + 139/858*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^
4*x^3/b^6 - 272/429*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*a^3*x^3/b^5 + 140/33*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*a^2*x^3/b^4 - 21/11*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a*x^3/b^3 + 7/5*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*x^3/b^2 + 1/6*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^8*x/b^8 - 2/3*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^7*x/b^7 + 14/3*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
```

```
2)*a^6*x/b^6 - 7/3*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^5*x/b^5 + 7/3*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^4*x/b^4 - 14/3*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^3*x/b^3 + 2/3*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^2*x/b^2 - 1/6*(b*d^8 + 8*a*d^7*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x
/b - 425/2574*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x^2/b
^7 + 844/1287*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4
*x^2/b^6 - 448/99*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^3*x^2/b^5 + 217/99*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*a^2*x^2/b^4 - 91/45*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a*x^2/b^3 + 28/9*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*x^2/b^2 + 1/6*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^9/b^9 - 2/3*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^8/b^8 + 14/3*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^
7/b^7 - 7/3*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6
/b^6 + 7/3*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/
b^5 - 14/3*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^
4 + 2/3*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 -
 1/6*(b*d^8 + 8*a*d^7*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 + 214/1287
*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*x/b^8 - 1709/2574*
(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x/b^7 + 917/1
98*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6 - 45
5/198*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5
 + 203/90*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x
/b^4 - 77/18*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/
b^3 + 1/2*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 -
 1501/9009*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^7/b^9 + 17
15/2574*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6/b^8 -
 923/198*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7
+ 461/198*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b
^6 - 209/90*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3
/b^5 + 83/18*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/
b^4 - 9/14*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3
+ 1/7*(b*d^8 + 8*a*d^7*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^8\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^8*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^8*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + bx\right) \left(d + ex\right)^{8} \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**8*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**8*((a + b*x)**2)**(5/2), x)
```

3.1765 $\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=362

$$\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^4}{2e^7(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^5}{3e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d\cdots}{8e^7(a+b\cdots}$$

Rubi [A] time = 0.52, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{14}}{14e^7(a+bx)}-\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13}(bd-ae)}{13e^7(a+bx)}+\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(bd-ae)^2}{4e^7(a+bx)}-\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^3}{11e^7(a+bx)}+\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^4}{2e^7(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^5}{3e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^6}{8e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x))
 - (2*b*(b*d - a*e)^5*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a
+ b*x)) + (3*b^2*(b*d - a*e)^4*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(2*e^7*(a + b*x)) - (20*b^3*(b*d - a*e)^3*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(11*e^7*(a + b*x)) + (5*b^4*(b*d - a*e)^2*(d + e*x)^12*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)) - (6*b^5*(b*d - a*e)*(d + e*x)^13*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (b^6*(d + e*x)^14*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(14*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^7 dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^7 dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^7}{e^6} - \frac{6b(bd-ae)^5(d+ex)^8}{e^6} + \frac{15b^2(b}{}\right.}{}$$
$$= \frac{(bd-ae)^6(d+ex)^8\sqrt{a^2+2abx+b^2x^2}}{8e^7(a+bx)} - \frac{2b(bd-ae)^5(d+ex)^9\sqrt{a}}{3e^7(a+b}$$

Mathematica [A] time = 0.19, size = 602, normalized size = 1.66

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3003*a^6*(8*d^7 + 28*d^6*e*x + 56*d^5*e^2*x^2 + 70*d^
4*e^3*x^3 + 56*d^3*e^4*x^4 + 28*d^2*e^5*x^5 + 8*d*e^6*x^6 + e^7*x^7) + 2002
*a^5*b*x*(36*d^7 + 168*d^6*e*x + 378*d^5*e^2*x^2 + 504*d^4*e^3*x^3 + 420*d^
3*e^4*x^4 + 216*d^2*e^5*x^5 + 63*d*e^6*x^6 + 8*e^7*x^7) + 1001*a^4*b^2*x^2*
(120*d^7 + 630*d^6*e*x + 1512*d^5*e^2*x^2 + 2100*d^4*e^3*x^3 + 1800*d^3*e^4
*x^4 + 945*d^2*e^5*x^5 + 280*d*e^6*x^6 + 36*e^7*x^7) + 364*a^3*b^3*x^3*(330
*d^7 + 1848*d^6*e*x + 4620*d^5*e^2*x^2 + 6600*d^4*e^3*x^3 + 5775*d^3*e^4*x^
4 + 3080*d^2*e^5*x^5 + 924*d*e^6*x^6 + 120*e^7*x^7) + 91*a^2*b^4*x^4*(792*d
^7 + 4620*d^6*e*x + 11880*d^5*e^2*x^2 + 17325*d^4*e^3*x^3 + 15400*d^3*e^4*x
^4 + 8316*d^2*e^5*x^5 + 2520*d*e^6*x^6 + 330*e^7*x^7) + 14*a*b^5*x^5*(1716*
d^7 + 10296*d^6*e*x + 27027*d^5*e^2*x^2 + 40040*d^4*e^3*x^3 + 36036*d^3*e^4
*x^4 + 19656*d^2*e^5*x^5 + 6006*d*e^6*x^6 + 792*e^7*x^7) + b^6*x^6*(3432*d^
7 + 21021*d^6*e*x + 56056*d^5*e^2*x^2 + 84084*d^4*e^3*x^3 + 76440*d^3*e^4*x
^4 + 42042*d^2*e^5*x^5 + 12936*d*e^6*x^6 + 1716*e^7*x^7)))/(24024*(a + b*x)
)
```

IntegrateAlgebraic [F] time = 6.81, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.44, size = 706, normalized size = 1.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/14*b^6*e^7*x^14 + a^6*d^7*x + 1/13*(7*b^6*d*e^6 + 6*a*b^5*e^7)*x^13 + 1/4
*(7*b^6*d^2*e^5 + 14*a*b^5*d*e^6 + 5*a^2*b^4*e^7)*x^12 + 1/11*(35*b^6*d^3*e
```

```
^4 + 126*a*b^5*d^2*e^5 + 105*a^2*b^4*d*e^6 + 20*a^3*b^3*e^7)*x^11 + 1/2*(7*
b^6*d^4*e^3 + 42*a*b^5*d^3*e^4 + 63*a^2*b^4*d^2*e^5 + 28*a^3*b^3*d*e^6 + 3*
a^4*b^2*e^7)*x^10 + 1/3*(7*b^6*d^5*e^2 + 70*a*b^5*d^4*e^3 + 175*a^2*b^4*d^3
*e^4 + 140*a^3*b^3*d^2*e^5 + 35*a^4*b^2*d*e^6 + 2*a^5*b*e^7)*x^9 + 1/8*(7*b
^6*d^6*e + 126*a*b^5*d^5*e^2 + 525*a^2*b^4*d^4*e^3 + 700*a^3*b^3*d^3*e^4 +
315*a^4*b^2*d^2*e^5 + 42*a^5*b*d*e^6 + a^6*e^7)*x^8 + 1/7*(b^6*d^7 + 42*a*b
^5*d^6*e + 315*a^2*b^4*d^5*e^2 + 700*a^3*b^3*d^4*e^3 + 525*a^4*b^2*d^3*e^4
+ 126*a^5*b*d^2*e^5 + 7*a^6*d*e^6)*x^7 + 1/2*(2*a*b^5*d^7 + 35*a^2*b^4*d^6*
e + 140*a^3*b^3*d^5*e^2 + 175*a^4*b^2*d^4*e^3 + 70*a^5*b*d^3*e^4 + 7*a^6*d^
2*e^5)*x^6 + (3*a^2*b^4*d^7 + 28*a^3*b^3*d^6*e + 63*a^4*b^2*d^5*e^2 + 42*a^
5*b*d^4*e^3 + 7*a^6*d^3*e^4)*x^5 + 1/4*(20*a^3*b^3*d^7 + 105*a^4*b^2*d^6*e
+ 126*a^5*b*d^5*e^2 + 35*a^6*d^4*e^3)*x^4 + (5*a^4*b^2*d^7 + 14*a^5*b*d^6*e
 + 7*a^6*d^5*e^2)*x^3 + 1/2*(6*a^5*b*d^7 + 7*a^6*d^6*e)*x^2
```

giac [B] time = 0.28, size = 1099, normalized size = 3.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/14*b^6*x^14*e^7*sgn(b*x + a) + 7/13*b^6*d*x^13*e^6*sgn(b*x + a) + 7/4*b^6
*d^2*x^12*e^5*sgn(b*x + a) + 35/11*b^6*d^3*x^11*e^4*sgn(b*x + a) + 7/2*b^6*
d^4*x^10*e^3*sgn(b*x + a) + 7/3*b^6*d^5*x^9*e^2*sgn(b*x + a) + 7/8*b^6*d^6*
x^8*e*sgn(b*x + a) + 1/7*b^6*d^7*x^7*sgn(b*x + a) + 6/13*a*b^5*x^13*e^7*sgn
(b*x + a) + 7/2*a*b^5*d*x^12*e^6*sgn(b*x + a) + 126/11*a*b^5*d^2*x^11*e^5*s
gn(b*x + a) + 21*a*b^5*d^3*x^10*e^4*sgn(b*x + a) + 70/3*a*b^5*d^4*x^9*e^3*s
gn(b*x + a) + 63/4*a*b^5*d^5*x^8*e^2*sgn(b*x + a) + 6*a*b^5*d^6*x^7*e*sgn(b
*x + a) + a*b^5*d^7*x^6*sgn(b*x + a) + 5/4*a^2*b^4*x^12*e^7*sgn(b*x + a) +
105/11*a^2*b^4*d*x^11*e^6*sgn(b*x + a) + 63/2*a^2*b^4*d^2*x^10*e^5*sgn(b*x
+ a) + 175/3*a^2*b^4*d^3*x^9*e^4*sgn(b*x + a) + 525/8*a^2*b^4*d^4*x^8*e^3*s
gn(b*x + a) + 45*a^2*b^4*d^5*x^7*e^2*sgn(b*x + a) + 35/2*a^2*b^4*d^6*x^6*e*
sgn(b*x + a) + 3*a^2*b^4*d^7*x^5*sgn(b*x + a) + 20/11*a^3*b^3*x^11*e^7*sgn(
b*x + a) + 14*a^3*b^3*d*x^10*e^6*sgn(b*x + a) + 140/3*a^3*b^3*d^2*x^9*e^5*s
gn(b*x + a) + 175/2*a^3*b^3*d^3*x^8*e^4*sgn(b*x + a) + 100*a^3*b^3*d^4*x^7*
e^3*sgn(b*x + a) + 70*a^3*b^3*d^5*x^6*e^2*sgn(b*x + a) + 28*a^3*b^3*d^6*x^5
*e*sgn(b*x + a) + 5*a^3*b^3*d^7*x^4*sgn(b*x + a) + 3/2*a^4*b^2*x^10*e^7*sgn
(b*x + a) + 35/3*a^4*b^2*d*x^9*e^6*sgn(b*x + a) + 315/8*a^4*b^2*d^2*x^8*e^5
*sgn(b*x + a) + 75*a^4*b^2*d^3*x^7*e^4*sgn(b*x + a) + 175/2*a^4*b^2*d^4*x^6
*e^3*sgn(b*x + a) + 63*a^4*b^2*d^5*x^5*e^2*sgn(b*x + a) + 105/4*a^4*b^2*d^6
*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^7*x^3*sgn(b*x + a) + 2/3*a^5*b*x^9*e^7*sg
n(b*x + a) + 21/4*a^5*b*d*x^8*e^6*sgn(b*x + a) + 18*a^5*b*d^2*x^7*e^5*sgn(b
*x + a) + 35*a^5*b*d^3*x^6*e^4*sgn(b*x + a) + 42*a^5*b*d^4*x^5*e^3*sgn(b*x
+ a) + 63/2*a^5*b*d^5*x^4*e^2*sgn(b*x + a) + 14*a^5*b*d^6*x^3*e*sgn(b*x + a
) + 3*a^5*b*d^7*x^2*sgn(b*x + a) + 1/8*a^6*x^8*e^7*sgn(b*x + a) + a^6*d*x^7
*e^6*sgn(b*x + a) + 7/2*a^6*d^2*x^6*e^5*sgn(b*x + a) + 7*a^6*d^3*x^5*e^4*sg
n(b*x + a) + 35/4*a^6*d^4*x^4*e^3*sgn(b*x + a) + 7*a^6*d^5*x^3*e^2*sgn(b*x
+ a) + 7/2*a^6*d^6*x^2*e*sgn(b*x + a) + a^6*d^7*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 816, normalized size = 2.25

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24024*x*(1716*b^6*e^7*x^13+11088*a*b^5*e^7*x^12+12936*b^6*d*e^6*x^12+3003
0*a^2*b^4*e^7*x^11+84084*a*b^5*d*e^6*x^11+42042*b^6*d^2*e^5*x^11+43680*a^3*
b^3*e^7*x^10+229320*a^2*b^4*d*e^6*x^10+275184*a*b^5*d^2*e^5*x^10+76440*b^6*
```

```
d^3*e^4*x^10+36036*a^4*b^2*e^7*x^9+336336*a^3*b^3*d*e^6*x^9+756756*a^2*b^4*
d^2*e^5*x^9+504504*a*b^5*d^3*e^4*x^9+84084*b^6*d^4*e^3*x^9+16016*a^5*b*e^7*
x^8+280280*a^4*b^2*d*e^6*x^8+1121120*a^3*b^3*d^2*e^5*x^8+1401400*a^2*b^4*d^
3*e^4*x^8+560560*a*b^5*d^4*e^3*x^8+56056*b^6*d^5*e^2*x^8+3003*a^6*e^7*x^7+1
26126*a^5*b*d*e^6*x^7+945945*a^4*b^2*d^2*e^5*x^7+2102100*a^3*b^3*d^3*e^4*x^
7+1576575*a^2*b^4*d^4*e^3*x^7+378378*a*b^5*d^5*e^2*x^7+21021*b^6*d^6*e*x^7+
24024*a^6*d*e^6*x^6+432432*a^5*b*d^2*e^5*x^6+1801800*a^4*b^2*d^3*e^4*x^6+24
02400*a^3*b^3*d^4*e^3*x^6+1081080*a^2*b^4*d^5*e^2*x^6+144144*a*b^5*d^6*e*x^
6+3432*b^6*d^7*x^6+84084*a^6*d^2*e^5*x^5+840840*a^5*b*d^3*e^4*x^5+2102100*a
^4*b^2*d^4*e^3*x^5+1681680*a^3*b^3*d^5*e^2*x^5+420420*a^2*b^4*d^6*e*x^5+240
24*a*b^5*d^7*x^5+168168*a^6*d^3*e^4*x^4+1009008*a^5*b*d^4*e^3*x^4+1513512*a
^4*b^2*d^5*e^2*x^4+672672*a^3*b^3*d^6*e*x^4+72072*a^2*b^4*d^7*x^4+210210*a^
6*d^4*e^3*x^3+756756*a^5*b*d^5*e^2*x^3+630630*a^4*b^2*d^6*e*x^3+120120*a^3*
b^3*d^7*x^3+168168*a^6*d^5*e^2*x^2+336336*a^5*b*d^6*e*x^2+120120*a^4*b^2*d^
7*x^2+84084*a^6*d^6*e*x+72072*a^5*b*d^7*x+24024*a^6*d^7)*((b*x+a)^2)^(5/2)/
(b*x+a)^5
```

maxima [B] time = 0.72, size = 2153, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/14*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^7*x^7/b - 3/26*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*e^7*x^6/b^2 + 11/78*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^7*x^
5/b^3 - 133/858*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^7*x^4/b^4 + 139/858*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^7*x^3/b^5 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*d^7*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^8*e^7*x/b^7 - 425
/2574*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*e^7*x^2/b^6 + 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*a^2*d^7/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^9*e^7/b^
8 + 214/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*e^7*x/b^7 - 1501/9009*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*a^7*e^7/b^8 + 1/13*(7*b*d*e^6 + a*e^7)*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*x^6/b^2 - 19/156*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*a*x^5/b^3 + 7/12*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*x^5/b^2 + 251/1716*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^2*x^4/b^4 - 119/132*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a*x^4/b^3 + 7/11*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*x^4/b^2 - 68/429*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a^3*x^3/b^5 + 35/33*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^2*x^3/b^4 - 21/22*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*a*x^3/b^3 + 7/2*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*x^3/b^2 - 1/6*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^7*x/b^7 + 7/6*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^6*x/b^6 - 7/6*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^5*x/b^5 + 35/6*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^4*x/b^4 - 7/6*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^3*x/b^3 + 7/6*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a
^2*x/b^2 - 1/6*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b +
211/1287*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^2/b^6 -
112/99*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^2/b^5
+ 217/198*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x
^2/b^4 - 91/18*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^
2/b^3 + 7/9*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2
/b^2 - 1/6*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^8/b^8 + 7/
6*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7/b^7 - 7/6*(5*
b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/b^6 + 35/6*(b*
d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 7/6*(3*b*d^5
*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 7/6*(b*d^6*e
```

```
+ 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^7 + 7*a*d
^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 1709/10296*(7*b*d*e^6 + a*e
^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x/b^7 + 917/792*(3*b*d^2*e^5 + a*d*
e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6 - 455/396*(5*b*d^3*e^4 + 3*a
*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 + 203/36*(b*d^4*e^3 + a
*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 77/72*(3*b*d^5*e^2 +
5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 7/8*(b*d^6*e + 3*a*d
^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 1715/10296*(7*b*d*e^6 + a*e
^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6/b^8 - 923/792*(3*b*d^2*e^5 + a*d*e^
6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7 + 461/396*(5*b*d^3*e^4 + 3*a*d^2
*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/36*(b*d^4*e^3 + a*d^3*e
^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 83/72*(3*b*d^5*e^2 + 5*a*d^4*
e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 9/8*(b*d^6*e + 3*a*d^5*e^2)*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,x)\,(d + e\,x)^7\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a + bx)\,(d + ex)^7\left((a + bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**7*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**7*((a + b*x)**2)**(5/2), x)
```

3.1766 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=311

$$\frac{e^5\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{11}(bd-ae)}{2b^7}+\frac{15e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)^2}{11b^7}+\frac{2e^3\sqrt{a^2+2abx+b^2x^2}\,(a}{b^7}$$

Rubi [A] time = 0.45, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{e^5\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{11}(bd-ae)}{2b^7}+\frac{15e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)^2}{11b^7}+\frac{2e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)^3}{b^7}+\frac{5e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^4}{3b^7}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^5}{4b^7}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^6}{7b^7}+\frac{e^6\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{12}}{13b^7}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^7) + (3*e*(b
*d - a*e)^5*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^7) + (5*e^2*(b*
d - a*e)^4*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^7) + (2*e^3*(b*d
 - a*e)^3*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^7 + (15*e^4*(b*d - a
*e)^2*(a + b*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^7) + (e^5*(b*d - a*
e)*(a + b*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^7) + (e^6*(a + b*x)^12*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*b^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^6\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^6\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^6(a+bx)^6}{b^6}+\frac{6e(bd-ae)^5(a+bx)^7}{b^6}+\frac{15e^2(bd}{}\right.}{}\\
&= \frac{(bd-ae)^6(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^7}+\frac{3e(bd-ae)^5(a+bx)^7\sqrt{a}}{4b^7}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 525, normalized size = 1.69

$$\frac{x\sqrt{(a+bx)^2}\left(1716a^6(7d^6+21d^5ex+35d^4e^2x^2+35d^3e^3x^3+21d^2e^4x^4+7de^5x^5+e^6x^6)+1287a^5bx(28d^6+112d^5ex+210d^4e^2x^2+224d^3e^3x^3+140d^2e^4x^4+48de^5x^5+7e^6x^6)+715a^4b^2x^2(84d^6+378d^5ex+756d^4e^2x^2+840d^3e^3x^3+540d^2e^4x^4+189de^5x^5+28e^6x^6)+286a^3b^3x^3(210d^6+1008d^5ex+2100d^4e^2x^2+2400d^3e^3x^3+1575d^2e^4x^4+560de^5x^5+84e^6x^6)+78a^2b^4x^4(462d^6+2310d^5ex+4950d^4e^2x^2+5775d^3e^3x^3+3850d^2e^4x^4+1386de^5x^5+210e^6x^6)+13ab^5x^5(924d^6+4752d^5ex+10395d^4e^2x^2+12320d^3e^3x^3+8316d^2e^4x^4+3024de^5x^5+462e^6x^6)+b^6x^6(1716d^6+9009d^5ex+20020d^4e^2x^2+24024d^3e^3x^3+16380d^2e^4x^4+6006de^5x^5+924e^6x^6)\right)}{12012(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(1716*a^6*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 + 35*d^
3*e^3*x^3 + 21*d^2*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + 1287*a^5*b*x*(28*d^6
+ 112*d^5*e*x + 210*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*
e^5*x^5 + 7*e^6*x^6) + 715*a^4*b^2*x^2*(84*d^6 + 378*d^5*e*x + 756*d^4*e^2*
x^2 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 28*e^6*x^6) + 286
*a^3*b^3*x^3*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3
+ 1575*d^2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + 78*a^2*b^4*x^4*(462*d^6
+ 2310*d^5*e*x + 4950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1
386*d*e^5*x^5 + 210*e^6*x^6) + 13*a*b^5*x^5*(924*d^6 + 4752*d^5*e*x + 10395
*d^4*e^2*x^2 + 12320*d^3*e^3*x^3 + 8316*d^2*e^4*x^4 + 3024*d*e^5*x^5 + 462*
e^6*x^6) + b^6*x^6*(1716*d^6 + 9009*d^5*e*x + 20020*d^4*e^2*x^2 + 24024*d^3
*e^3*x^3 + 16380*d^2*e^4*x^4 + 6006*d*e^5*x^5 + 924*e^6*x^6)))/(12012*(a +
b*x))
```

IntegrateAlgebraic [F] time = 5.48, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.43, size = 599, normalized size = 1.93

$$\frac{1}{13}b^6e^6x^{13}+a^6d^6x+\frac{1}{2}(b^6de^5+ab^5e^6)x^{12}+\frac{3}{11}(5b^6d^2e^4+12ab^5de^5+5a^2b^4e^6)x^{11}+(2b^6d^3e^3+9ab^5d^2e^4+9a^2b^4de^5+2a^3b^3e^6)x^{10}+\frac{5}{3}(b^6d^4e^2+8ab^5d^3e^3+15a^2b^4d^2e^4+8a^3b^3de^5+a^4b^2e^6)x^9+\frac{3}{4}(b^6d^5e+15ab^5d^4e^2+50a^2b^4d^3e^3+50a^3b^3d^2e^4+15a^4b^2de^5+a^5be^6)x^8+\frac{1}{7}(b^6d^6+36ab^5d^5e+225a^2b^4d^4e^2+400a^3b^3d^3e^3+225a^4b^2d^2e^4+36a^5bde^5+a^6e^6)x^7+(ab^5d^6+15a^2b^4d^5e+50a^3b^3d^4e^2+50a^4b^2d^3e^3+15a^5bd^2e^4+a^6de^5)x^6+3(a^2b^4d^6+8a^3b^3d^5e+15a^4b^2d^4e^2+8a^5bd^3e^3+a^6d^2e^4)x^5+\frac{5}{2}(2a^3b^3d^6+9a^4b^2d^5e+9a^5bd^4e^2+2a^6d^3e^3)x^4+(5a^4b^2d^6+12a^5bd^5e+5a^6d^4e^2)x^3+3(a^5bd^6+a^6d^5e)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/13*b^6*e^6*x^13 + a^6*d^6*x + 1/2*(b^6*d*e^5 + a*b^5*e^6)*x^12 + 3/11*(5*
b^6*d^2*e^4 + 12*a*b^5*d*e^5 + 5*a^2*b^4*e^6)*x^11 + (2*b^6*d^3*e^3 + 9*a*b
^5*d^2*e^4 + 9*a^2*b^4*d*e^5 + 2*a^3*b^3*e^6)*x^10 + 5/3*(b^6*d^4*e^2 + 8*a
*b^5*d^3*e^3 + 15*a^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^9 + 3/
4*(b^6*d^5*e + 15*a*b^5*d^4*e^2 + 50*a^2*b^4*d^3*e^3 + 50*a^3*b^3*d^2*e^4 +
 15*a^4*b^2*d*e^5 + a^5*b*e^6)*x^8 + 1/7*(b^6*d^6 + 36*a*b^5*d^5*e + 225*a^
2*b^4*d^4*e^2 + 400*a^3*b^3*d^3*e^3 + 225*a^4*b^2*d^2*e^4 + 36*a^5*b*d*e^5
+ a^6*e^6)*x^7 + (a*b^5*d^6 + 15*a^2*b^4*d^5*e + 50*a^3*b^3*d^4*e^2 + 50*a^
4*b^2*d^3*e^3 + 15*a^5*b*d^2*e^4 + a^6*d*e^5)*x^6 + 3*(a^2*b^4*d^6 + 8*a^3*
b^3*d^5*e + 15*a^4*b^2*d^4*e^2 + 8*a^5*b*d^3*e^3 + a^6*d^2*e^4)*x^5 + 5/2*(
2*a^3*b^3*d^6 + 9*a^4*b^2*d^5*e + 9*a^5*b*d^4*e^2 + 2*a^6*d^3*e^3)*x^4 + (5
*a^4*b^2*d^6 + 12*a^5*b*d^5*e + 5*a^6*d^4*e^2)*x^3 + 3*(a^5*b*d^6 + a^6*d^5
*e)*x^2
```

giac [B] time = 0.21, size = 955, normalized size = 3.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/13*b^6*x^13*e^6*sgn(b*x + a) + 1/2*b^6*d*x^12*e^5*sgn(b*x + a) + 15/11*b^
6*d^2*x^11*e^4*sgn(b*x + a) + 2*b^6*d^3*x^10*e^3*sgn(b*x + a) + 5/3*b^6*d^4
*x^9*e^2*sgn(b*x + a) + 3/4*b^6*d^5*x^8*e*sgn(b*x + a) + 1/7*b^6*d^6*x^7*sg
n(b*x + a) + 1/2*a*b^5*x^12*e^6*sgn(b*x + a) + 36/11*a*b^5*d*x^11*e^5*sgn(b
*x + a) + 9*a*b^5*d^2*x^10*e^4*sgn(b*x + a) + 40/3*a*b^5*d^3*x^9*e^3*sgn(b*
x + a) + 45/4*a*b^5*d^4*x^8*e^2*sgn(b*x + a) + 36/7*a*b^5*d^5*x^7*e*sgn(b*x
 + a) + a*b^5*d^6*x^6*sgn(b*x + a) + 15/11*a^2*b^4*x^11*e^6*sgn(b*x + a) +
9*a^2*b^4*d*x^10*e^5*sgn(b*x + a) + 25*a^2*b^4*d^2*x^9*e^4*sgn(b*x + a) + 7
5/2*a^2*b^4*d^3*x^8*e^3*sgn(b*x + a) + 225/7*a^2*b^4*d^4*x^7*e^2*sgn(b*x +
a) + 15*a^2*b^4*d^5*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^6*x^5*sgn(b*x + a) + 2
*a^3*b^3*x^10*e^6*sgn(b*x + a) + 40/3*a^3*b^3*d*x^9*e^5*sgn(b*x + a) + 75/2
*a^3*b^3*d^2*x^8*e^4*sgn(b*x + a) + 400/7*a^3*b^3*d^3*x^7*e^3*sgn(b*x + a)
+ 50*a^3*b^3*d^4*x^6*e^2*sgn(b*x + a) + 24*a^3*b^3*d^5*x^5*e*sgn(b*x + a) +
 5*a^3*b^3*d^6*x^4*sgn(b*x + a) + 5/3*a^4*b^2*x^9*e^6*sgn(b*x + a) + 45/4*a
^4*b^2*d*x^8*e^5*sgn(b*x + a) + 225/7*a^4*b^2*d^2*x^7*e^4*sgn(b*x + a) + 50
*a^4*b^2*d^3*x^6*e^3*sgn(b*x + a) + 45*a^4*b^2*d^4*x^5*e^2*sgn(b*x + a) + 4
5/2*a^4*b^2*d^5*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^6*x^3*sgn(b*x + a) + 3/4*a
^5*b*x^8*e^6*sgn(b*x + a) + 36/7*a^5*b*d*x^7*e^5*sgn(b*x + a) + 15*a^5*b*d^
2*x^6*e^4*sgn(b*x + a) + 24*a^5*b*d^3*x^5*e^3*sgn(b*x + a) + 45/2*a^5*b*d^4
*x^4*e^2*sgn(b*x + a) + 12*a^5*b*d^5*x^3*e*sgn(b*x + a) + 3*a^5*b*d^6*x^2*s
gn(b*x + a) + 1/7*a^6*x^7*e^6*sgn(b*x + a) + a^6*d*x^6*e^5*sgn(b*x + a) + 3
*a^6*d^2*x^5*e^4*sgn(b*x + a) + 5*a^6*d^3*x^4*e^3*sgn(b*x + a) + 5*a^6*d^4*
x^3*e^2*sgn(b*x + a) + 3*a^6*d^5*x^2*e*sgn(b*x + a) + a^6*d^6*x*sgn(b*x + a
)
```

maple [B] time = 0.05, size = 707, normalized size = 2.27

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12012*x*(924*b^6*e^6*x^12+6006*a*b^5*e^6*x^11+6006*b^6*d*e^5*x^11+16380*a
^2*b^4*e^6*x^10+39312*a*b^5*d*e^5*x^10+16380*b^6*d^2*e^4*x^10+24024*a^3*b^3
*e^6*x^9+108108*a^2*b^4*d*e^5*x^9+108108*a*b^5*d^2*e^4*x^9+24024*b^6*d^3*e^
3*x^9+20020*a^4*b^2*e^6*x^8+160160*a^3*b^3*d*e^5*x^8+300300*a^2*b^4*d^2*e^4
*x^8+160160*a*b^5*d^3*e^3*x^8+20020*b^6*d^4*e^2*x^8+9009*a^5*b*e^6*x^7+1351
35*a^4*b^2*d*e^5*x^7+450450*a^3*b^3*d^2*e^4*x^7+450450*a^2*b^4*d^3*e^3*x^7+
135135*a*b^5*d^4*e^2*x^7+9009*b^6*d^5*e*x^7+1716*a^6*e^6*x^6+61776*a^5*b*d*
e^5*x^6+386100*a^4*b^2*d^2*e^4*x^6+686400*a^3*b^3*d^3*e^3*x^6+386100*a^2*b^
4*d^4*e^2*x^6+61776*a*b^5*d^5*e*x^6+1716*b^6*d^6*x^6+12012*a^6*d*e^5*x^5+18
0180*a^5*b*d^2*e^4*x^5+600600*a^4*b^2*d^3*e^3*x^5+600600*a^3*b^3*d^4*e^2*x^
5+180180*a^2*b^4*d^5*e*x^5+12012*a*b^5*d^6*x^5+36036*a^6*d^2*e^4*x^4+288288
*a^5*b*d^3*e^3*x^4+540540*a^4*b^2*d^4*e^2*x^4+288288*a^3*b^3*d^5*e*x^4+3603
6*a^2*b^4*d^6*x^4+60060*a^6*d^3*e^3*x^3+270270*a^5*b*d^4*e^2*x^3+270270*a^4
*b^2*d^5*e*x^3+60060*a^3*b^3*d^6*x^3+60060*a^6*d^4*e^2*x^2+144144*a^5*b*d^5
*e*x^2+60060*a^4*b^2*d^6*x^2+36036*a^6*d^5*e*x+36036*a^5*b*d^6*x+12012*a^6*
d^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.70, size = 1736, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^6*x^6/b - 19/156*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a*e^6*x^5/b^2 + 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e
```

```
^6*x^4/b^3 - 68/429*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^6*x^3/b^4 + 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^6*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^7*e^6*x/b^6 + 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^6*x^2/b^5
+ 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^6/b - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*a^8*e^6/b^7 - 1709/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*e^6
*x/b^6 + 1715/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*e^6/b^7 + 1/12*(6*b
*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/b^2 - 17/132*(6*b*d*e^5
 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^4/b^3 + 3/11*(5*b*d^2*e^4 + 2
*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b^2 + 5/33*(6*b*d*e^5 + a*e^6
)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^3/b^4 - 9/22*(5*b*d^2*e^4 + 2*a*d*e
^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 + 1/2*(4*b*d^3*e^3 + 3*a*d^2*
e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 + 1/6*(6*b*d*e^5 + a*e^6)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*x/b^6 - 1/2*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/6*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*a*x/b - 16/99*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^3*x^2/b^5 + 31/66*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a^2*x^2/b^4 - 13/18*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 5/9*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*a^7/b^7 - 1/2*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*a^6/b^6 + 5/6*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^5/b^5 - 5/6*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*a^4/b^4 + 1/2*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^3/b^3 - 1/6*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b
^2 + 131/792*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6
- 65/132*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^
5 + 29/36*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x
/b^4 - 55/72*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*
x/b^3 + 3/8*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2
 - 923/5544*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7 + 4
61/924*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 -
209/252*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5
 + 415/504*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/
b^4 - 27/56*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3
 + 1/7*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+bx)\,(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**6*((a + b*x)**2)**(5/2), x)
```

3.1767 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=263

$$\frac{5e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)}{11b^6}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)^2}{b^6}+\frac{10e^2\sqrt{a^2+2abx+b^2x^2}\,(a}{9b^6}$$

Rubi [A] time = 0.38, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{5e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)}{11b^6}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)^2}{b^6}+\frac{10e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^3}{9b^6}+\frac{5e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^4}{8b^6}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^5}{7b^6}+\frac{e^5\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{11}}{12b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^5*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^6) + (5*e*(b
*d - a*e)^4*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^6) + (10*e^2*(b
*d - a*e)^3*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^6) + (e^3*(b*d
- a*e)^2*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^6 + (5*e^4*(b*d - a*e
)*(a + b*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^6) + (e^5*(a + b*x)^11*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*b^6)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{5/2} dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^5\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^5\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(bd-ae)^5(a+bx)^6}{b^5}+\frac{5e(bd-ae)^4(a+bx)^7}{b^5}+\frac{10e^2(bd}{}\right.}{ab+}\\
&= \frac{(bd-ae)^5(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^6}+\frac{5e(bd-ae)^4(a+bx)^7\sqrt{}}{8b^6}
\end{aligned}$$

Mathematica [A] time = 0.14, size = 448, normalized size = 1.70

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(924*a^6*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2
*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + 792*a^5*b*x*(21*d^5 + 70*d^4*e*x + 105*
d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + 495*a^4*b^2*x^2*
(56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 +
 21*e^5*x^5) + 220*a^3*b^3*x^3*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 7
20*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + 66*a^2*b^4*x^4*(252*d^5 + 10
50*d^4*e*x + 1800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*
x^5) + 12*a*b^5*x^5*(462*d^5 + 1980*d^4*e*x + 3465*d^3*e^2*x^2 + 3080*d^2*e
^3*x^3 + 1386*d*e^4*x^4 + 252*e^5*x^5) + b^6*x^6*(792*d^5 + 3465*d^4*e*x +
6160*d^3*e^2*x^2 + 5544*d^2*e^3*x^3 + 2520*d*e^4*x^4 + 462*e^5*x^5)))/(5544
*(a + b*x))
```

IntegrateAlgebraic [F] time = 4.48, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.43, size = 517, normalized size = 1.97

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*b^6*e^5*x^12 + a^6*d^5*x + 1/11*(5*b^6*d*e^4 + 6*a*b^5*e^5)*x^11 + 1/2
*(2*b^6*d^2*e^3 + 6*a*b^5*d*e^4 + 3*a^2*b^4*e^5)*x^10 + 5/9*(2*b^6*d^3*e^2
+ 12*a*b^5*d^2*e^3 + 15*a^2*b^4*d*e^4 + 4*a^3*b^3*e^5)*x^9 + 5/8*(b^6*d^4*e
 + 12*a*b^5*d^3*e^2 + 30*a^2*b^4*d^2*e^3 + 20*a^3*b^3*d*e^4 + 3*a^4*b^2*e^5
)*x^8 + 1/7*(b^6*d^5 + 30*a*b^5*d^4*e + 150*a^2*b^4*d^3*e^2 + 200*a^3*b^3*d
^2*e^3 + 75*a^4*b^2*d*e^4 + 6*a^5*b*e^5)*x^7 + 1/6*(6*a*b^5*d^5 + 75*a^2*b^
4*d^4*e + 200*a^3*b^3*d^3*e^2 + 150*a^4*b^2*d^2*e^3 + 30*a^5*b*d*e^4 + a^6*
e^5)*x^6 + (3*a^2*b^4*d^5 + 20*a^3*b^3*d^4*e + 30*a^4*b^2*d^3*e^2 + 12*a^5*
b*d^2*e^3 + a^6*d*e^4)*x^5 + 5/4*(4*a^3*b^3*d^5 + 15*a^4*b^2*d^4*e + 12*a^5
*b*d^3*e^2 + 2*a^6*d^2*e^3)*x^4 + 5/3*(3*a^4*b^2*d^5 + 6*a^5*b*d^4*e + 2*a^
6*d^3*e^2)*x^3 + 1/2*(6*a^5*b*d^5 + 5*a^6*d^4*e)*x^2
```

giac [B] time = 0.21, size = 810, normalized size = 3.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/12*b^6*x^12*e^5*sgn(b*x + a) + 5/11*b^6*d*x^11*e^4*sgn(b*x + a) + b^6*d^2
*x^10*e^3*sgn(b*x + a) + 10/9*b^6*d^3*x^9*e^2*sgn(b*x + a) + 5/8*b^6*d^4*x^
```

```
8*e*sgn(b*x + a) + 1/7*b^6*d^5*x^7*sgn(b*x + a) + 6/11*a*b^5*x^11*e^5*sgn(b
*x + a) + 3*a*b^5*d*x^10*e^4*sgn(b*x + a) + 20/3*a*b^5*d^2*x^9*e^3*sgn(b*x
+ a) + 15/2*a*b^5*d^3*x^8*e^2*sgn(b*x + a) + 30/7*a*b^5*d^4*x^7*e*sgn(b*x +
 a) + a*b^5*d^5*x^6*sgn(b*x + a) + 3/2*a^2*b^4*x^10*e^5*sgn(b*x + a) + 25/3
*a^2*b^4*d*x^9*e^4*sgn(b*x + a) + 75/4*a^2*b^4*d^2*x^8*e^3*sgn(b*x + a) + 1
50/7*a^2*b^4*d^3*x^7*e^2*sgn(b*x + a) + 25/2*a^2*b^4*d^4*x^6*e*sgn(b*x + a)
 + 3*a^2*b^4*d^5*x^5*sgn(b*x + a) + 20/9*a^3*b^3*x^9*e^5*sgn(b*x + a) + 25/
2*a^3*b^3*d*x^8*e^4*sgn(b*x + a) + 200/7*a^3*b^3*d^2*x^7*e^3*sgn(b*x + a) +
 100/3*a^3*b^3*d^3*x^6*e^2*sgn(b*x + a) + 20*a^3*b^3*d^4*x^5*e*sgn(b*x + a)
 + 5*a^3*b^3*d^5*x^4*sgn(b*x + a) + 15/8*a^4*b^2*x^8*e^5*sgn(b*x + a) + 75/
7*a^4*b^2*d*x^7*e^4*sgn(b*x + a) + 25*a^4*b^2*d^2*x^6*e^3*sgn(b*x + a) + 30
*a^4*b^2*d^3*x^5*e^2*sgn(b*x + a) + 75/4*a^4*b^2*d^4*x^4*e*sgn(b*x + a) + 5
*a^4*b^2*d^5*x^3*sgn(b*x + a) + 6/7*a^5*b*x^7*e^5*sgn(b*x + a) + 5*a^5*b*d*
x^6*e^4*sgn(b*x + a) + 12*a^5*b*d^2*x^5*e^3*sgn(b*x + a) + 15*a^5*b*d^3*x^4
*e^2*sgn(b*x + a) + 10*a^5*b*d^4*x^3*e*sgn(b*x + a) + 3*a^5*b*d^5*x^2*sgn(b
*x + a) + 1/6*a^6*x^6*e^5*sgn(b*x + a) + a^6*d*x^5*e^4*sgn(b*x + a) + 5/2*a
^6*d^2*x^4*e^3*sgn(b*x + a) + 10/3*a^6*d^3*x^3*e^2*sgn(b*x + a) + 5/2*a^6*d
^4*x^2*e*sgn(b*x + a) + a^6*d^5*x*sgn(b*x + a)
```

maple [**B**] time = 0.06, size = 598, normalized size = 2.27

$$\frac{\left(462b^6e^5x^{11}+3024x^{10}e^5ab^5+2520x^{10}de^4b^6+8316x^9e^5a^2b^4+16632x^9de^4ab^5+5544x^9d^2e^3b^6+12320x^8e^5a^3b^3+46200x^8de^4a^2b^4+36960x^8d^2e^3ab^5+6160x^8d^3e^2b^6+10395x^7e^5a^4b^2+69300x^7de^4a^3b^3+103950x^7d^2e^3a^2b^4+41580x^7d^3e^2ab^5+3465x^7d^4eb^6+4752x^6e^5a^5b+59400x^6de^4a^4b^2+158400x^6d^2e^3a^3b^3+118800x^6d^3e^2a^2b^4+23760x^6d^4eab^5+792x^6d^5b^6+924x^5e^5a^6+27720x^5de^4a^5b+138600x^5d^2e^3a^4b^2+184800x^5d^3e^2a^3b^3+69300x^5d^4ea^2b^4+5544x^5d^5ab^5+5544a^6de^4x^4+66528a^5bd^2e^3x^4+166320a^4b^2d^3e^2x^4+110880a^3b^3d^4ex^4+16632a^2b^4d^5x^4+13860x^3d^2e^3a^6+83160x^3d^3e^2a^5b+103950x^3d^4ea^4b^2+27720x^3d^5a^3b^3+18480x^2d^3e^2a^6+55440x^2d^4ea^5b+27720x^2d^5a^4b^2+13860xd^4ea^6+16632xd^5a^5b+5544a^6d^5\right)x\left((bx+a)^2\right)^{5/2}}{5544\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/5544*x*(462*b^6*e^5*x^11+3024*a*b^5*e^5*x^10+2520*b^6*d*e^4*x^10+8316*a^2
*b^4*e^5*x^9+16632*a*b^5*d*e^4*x^9+5544*b^6*d^2*e^3*x^9+12320*a^3*b^3*e^5*x
^8+46200*a^2*b^4*d*e^4*x^8+36960*a*b^5*d^2*e^3*x^8+6160*b^6*d^3*e^2*x^8+103
95*a^4*b^2*e^5*x^7+69300*a^3*b^3*d*e^4*x^7+103950*a^2*b^4*d^2*e^3*x^7+41580
*a*b^5*d^3*e^2*x^7+3465*b^6*d^4*e*x^7+4752*a^5*b*e^5*x^6+59400*a^4*b^2*d*e^
4*x^6+158400*a^3*b^3*d^2*e^3*x^6+118800*a^2*b^4*d^3*e^2*x^6+23760*a*b^5*d^4
*e*x^6+792*b^6*d^5*x^6+924*a^6*e^5*x^5+27720*a^5*b*d*e^4*x^5+138600*a^4*b^2
*d^2*e^3*x^5+184800*a^3*b^3*d^3*e^2*x^5+69300*a^2*b^4*d^4*e*x^5+5544*a*b^5*
d^5*x^5+5544*a^6*d*e^4*x^4+66528*a^5*b*d^2*e^3*x^4+166320*a^4*b^2*d^3*e^2*x
^4+110880*a^3*b^3*d^4*e*x^4+16632*a^2*b^4*d^5*x^4+13860*a^6*d^2*e^3*x^3+831
60*a^5*b*d^3*e^2*x^3+103950*a^4*b^2*d^4*e*x^3+27720*a^3*b^3*d^5*x^3+18480*a
^6*d^3*e^2*x^2+55440*a^5*b*d^4*e*x^2+27720*a^4*b^2*d^5*x^2+13860*a^6*d^4*e*
x+16632*a^5*b*d^5*x+5544*a^6*d^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**B**] time = 0.64, size = 1323, normalized size = 5.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^5*x^5/b - 17/132*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a*e^5*x^4/b^2 + 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^5*x
^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^5*x + 1/6*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*a^6*e^5*x/b^5 - 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e
^5*x^2/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^5/b + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^7*e^5/b^6 + 131/792*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^4*e^5*x/b^5 - 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*e^5/b^6 + 1/1
1*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b^2 - 3/22*(5*b*d
*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 + 1/2*(2*b*d^2*e^3
+ a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 - 1/6*(5*b*d*e^4 + a*e^5
)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(2*b*d^2*e^3 + a*d*e^4)*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/3*(b*d^3*e^2 + a*d^2*e^3)*(b^2
```

```
*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 5/6*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^
2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*a*x/b + 31/198*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*a^2*x^2/b^4 - 13/18*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*x^2/b^3 + 10/9*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*x^2/b^2 - 1/6*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^6/b^6 + 5/6*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b
^5 - 5/3*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 +
5/6*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(
b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 65/396*(5*b*d*
e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 + 29/36*(2*b*d^2*e^3
 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 55/36*(b*d^3*e^2 +
a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 5/8*(b*d^4*e + 2*a*d^3
*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 461/2772*(5*b*d*e^4 + a*e^5)*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/252*(2*b*d^2*e^3 + a*d*e^4)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 415/252*(b*d^3*e^2 + a*d^2*e^3)*(b
^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 45/56*(b*d^4*e + 2*a*d^3*e^2)*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^5\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^5\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**5*((a + b*x)**2)**(5/2), x)
```

3.1768 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=219

$$\frac{2e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)}{5b^5}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^2}{3b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+b}{2b^5}$$

Rubi [A] time = 0.30, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{2e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)}{5b^5}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^2}{3b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^3}{2b^5}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^4}{7b^5}+\frac{e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}}{11b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) + (e*(b*d
 - a*e)^3*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^5) + (2*e^2*(b*d
- a*e)^2*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^5) + (2*e^3*(b*d -
 a*e)*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^5) + (e^4*(a + b*x)^1
0*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^{5/2} dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^4\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^4\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^4(a+bx)^6}{b^4}+\frac{4e(bd-ae)^3(a+bx)^7}{b^4}+\frac{6e^2(bd-}{}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^4(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^5}+\frac{e(bd-ae)^3(a+bx)^7\sqrt{a^2}}{2b^5}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 371, normalized size = 1.69

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(462*a^6*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^
3*x^3 + e^4*x^4) + 462*a^5*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d
*e^3*x^3 + 5*e^4*x^4) + 330*a^4*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2
*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 165*a^3*b^3*x^3*(70*d^4 + 224*d^3*e*x +
 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + 55*a^2*b^4*x^4*(126*d^4 +
420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4) + 11*a*b^5*x^5*
(210*d^4 + 720*d^3*e*x + 945*d^2*e^2*x^2 + 560*d*e^3*x^3 + 126*e^4*x^4) + b
^6*x^6*(330*d^4 + 1155*d^3*e*x + 1540*d^2*e^2*x^2 + 924*d*e^3*x^3 + 210*e^4
*x^4)))/(2310*(a + b*x))
```

IntegrateAlgebraic [F] time = 3.44, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.42, size = 418, normalized size = 1.91

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/11*b^6*e^4*x^11 + a^6*d^4*x + 1/5*(2*b^6*d*e^3 + 3*a*b^5*e^4)*x^10 + 1/3*
(2*b^6*d^2*e^2 + 8*a*b^5*d*e^3 + 5*a^2*b^4*e^4)*x^9 + 1/2*(b^6*d^3*e + 9*a*
b^5*d^2*e^2 + 15*a^2*b^4*d*e^3 + 5*a^3*b^3*e^4)*x^8 + 1/7*(b^6*d^4 + 24*a*b
^5*d^3*e + 90*a^2*b^4*d^2*e^2 + 80*a^3*b^3*d*e^3 + 15*a^4*b^2*e^4)*x^7 + (a
*b^5*d^4 + 10*a^2*b^4*d^3*e + 20*a^3*b^3*d^2*e^2 + 10*a^4*b^2*d*e^3 + a^5*b
*e^4)*x^6 + 1/5*(15*a^2*b^4*d^4 + 80*a^3*b^3*d^3*e + 90*a^4*b^2*d^2*e^2 + 2
4*a^5*b*d*e^3 + a^6*e^4)*x^5 + (5*a^3*b^3*d^4 + 15*a^4*b^2*d^3*e + 9*a^5*b*
d^2*e^2 + a^6*d*e^3)*x^4 + (5*a^4*b^2*d^4 + 8*a^5*b*d^3*e + 2*a^6*d^2*e^2)*
x^3 + (3*a^5*b*d^4 + 2*a^6*d^3*e)*x^2
```

giac [B] time = 0.19, size = 666, normalized size = 3.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/11*b^6*x^11*e^4*sgn(b*x + a) + 2/5*b^6*d*x^10*e^3*sgn(b*x + a) + 2/3*b^6*
d^2*x^9*e^2*sgn(b*x + a) + 1/2*b^6*d^3*x^8*e*sgn(b*x + a) + 1/7*b^6*d^4*x^7
*sgn(b*x + a) + 3/5*a*b^5*x^10*e^4*sgn(b*x + a) + 8/3*a*b^5*d*x^9*e^3*sgn(b
*x + a) + 9/2*a*b^5*d^2*x^8*e^2*sgn(b*x + a) + 24/7*a*b^5*d^3*x^7*e*sgn(b*x
 + a) + a*b^5*d^4*x^6*sgn(b*x + a) + 5/3*a^2*b^4*x^9*e^4*sgn(b*x + a) + 15/
```

```
2*a^2*b^4*d*x^8*e^3*sgn(b*x + a) + 90/7*a^2*b^4*d^2*x^7*e^2*sgn(b*x + a) +
10*a^2*b^4*d^3*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^4*x^5*sgn(b*x + a) + 5/2*a^
3*b^3*x^8*e^4*sgn(b*x + a) + 80/7*a^3*b^3*d*x^7*e^3*sgn(b*x + a) + 20*a^3*b
^3*d^2*x^6*e^2*sgn(b*x + a) + 16*a^3*b^3*d^3*x^5*e*sgn(b*x + a) + 5*a^3*b^3
*d^4*x^4*sgn(b*x + a) + 15/7*a^4*b^2*x^7*e^4*sgn(b*x + a) + 10*a^4*b^2*d*x^
6*e^3*sgn(b*x + a) + 18*a^4*b^2*d^2*x^5*e^2*sgn(b*x + a) + 15*a^4*b^2*d^3*x
^4*e*sgn(b*x + a) + 5*a^4*b^2*d^4*x^3*sgn(b*x + a) + a^5*b*x^6*e^4*sgn(b*x
+ a) + 24/5*a^5*b*d*x^5*e^3*sgn(b*x + a) + 9*a^5*b*d^2*x^4*e^2*sgn(b*x + a)
 + 8*a^5*b*d^3*x^3*e*sgn(b*x + a) + 3*a^5*b*d^4*x^2*sgn(b*x + a) + 1/5*a^6*
x^5*e^4*sgn(b*x + a) + a^6*d*x^4*e^3*sgn(b*x + a) + 2*a^6*d^2*x^3*e^2*sgn(b
*x + a) + 2*a^6*d^3*x^2*e*sgn(b*x + a) + a^6*d^4*x*sgn(b*x + a)
```

maple [B] time = 0.06, size = 489, normalized size = 2.23

$$\frac{\left(210e^4b^6x^{10}+1386x^9e^4ab^5+924x^9de^3b^6+3850x^8e^4a^2b^4+6160x^8de^3ab^5+1540x^8d^2e^2b^6+5775x^7e^4a^3b^3+17325x^7de^3a^2b^4+10395x^7d^2e^2ab^5+1155x^7d^3eb^6+4950x^6e^4a^4b^2+26400x^6de^3a^3b^3+29700x^6d^2e^2a^2b^4+7920x^6d^3eab^5+330x^6d^4b^6+2310a^5be^4x^5+23100a^4b^2de^3x^5+46200a^3b^3d^2e^2x^5+23100a^2b^4d^3ex^5+2310ab^5d^4x^5+462x^4e^4a^6+11088x^4de^3a^5b+41580x^4d^2e^2a^4b^2+36960x^4d^3ea^3b^3+6930x^4d^4a^2b^4+2310a^6de^3x^3+20790a^5bd^2e^2x^3+34650a^4b^2d^3ex^3+11550a^3b^3d^4x^3+4620a^6d^2e^2x^2+18480a^5bd^3ex^2+11550a^4b^2d^4x^2+4620a^6d^3ex+6930a^5bd^4x+2310d^4a^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}x}{2310\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/2310*x*(210*b^6*e^4*x^10+1386*a*b^5*e^4*x^9+924*b^6*d*e^3*x^9+3850*a^2*b^
4*e^4*x^8+6160*a*b^5*d*e^3*x^8+1540*b^6*d^2*e^2*x^8+5775*a^3*b^3*e^4*x^7+17
325*a^2*b^4*d*e^3*x^7+10395*a*b^5*d^2*e^2*x^7+1155*b^6*d^3*e*x^7+4950*a^4*b
^2*e^4*x^6+26400*a^3*b^3*d*e^3*x^6+29700*a^2*b^4*d^2*e^2*x^6+7920*a*b^5*d^3
*e*x^6+330*b^6*d^4*x^6+2310*a^5*b*e^4*x^5+23100*a^4*b^2*d*e^3*x^5+46200*a^3
*b^3*d^2*e^2*x^5+23100*a^2*b^4*d^3*e*x^5+2310*a*b^5*d^4*x^5+462*a^6*e^4*x^4
+11088*a^5*b*d*e^3*x^4+41580*a^4*b^2*d^2*e^2*x^4+36960*a^3*b^3*d^3*e*x^4+69
30*a^2*b^4*d^4*x^4+2310*a^6*d*e^3*x^3+20790*a^5*b*d^2*e^2*x^3+34650*a^4*b^2
*d^3*e*x^3+11550*a^3*b^3*d^4*x^3+4620*a^6*d^2*e^2*x^2+18480*a^5*b*d^3*e*x^2
+11550*a^4*b^2*d^4*x^2+4620*a^6*d^3*e*x+6930*a^5*b*d^4*x+2310*a^6*d^4)*((b*
x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.53, size = 998, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^4*x^4/b - 3/22*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*e^4*x^3/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^4*x - 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^4*x/b^4 + 31/198*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^2*e^4*x^2/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^4
/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*e^4/b^5 - 65/396*(b^2*x^2 + 2*
a*b*x + a^2)^(7/2)*a^3*e^4*x/b^4 + 461/2772*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^4*e^4/b^5 + 1/10*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3
/b^2 + 1/6*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 -
1/3*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1
/3*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/
6*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b - 13/90*(4*b*d*
e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 2/9*(3*b*d^2*e^2 +
 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(4*b*d*e^3 + a*e^
4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 1/3*(3*b*d^2*e^2 + 2*a*d*e^3)*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/3*(2*b*d^3*e + 3*a*d^2*e^2)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*a^2/b^2 + 29/180*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^2*x/b^4 - 11/36*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a*x/b^3 + 1/4*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*x/b^2 - 209/1260*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a^3/b^5 + 83/252*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^
```

```
(7/2)*a^2/b^4 - 9/28*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*a/b^3 + 1/7*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^4\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^4\,\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**4*((a + b*x)**2)**(5/2), x)
```

3.1769 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=172

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)}{3b^4}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^2}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6 \cdots}{7b^4}$$

Rubi [A] time = 0.24, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)}{3b^4}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^2}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^3}{7b^4}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9}{10b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^4) + (3*e*(b
*d - a*e)^2*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^4) + (e^2*(b*d
- a*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (e^3*(a + b*x)^
9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*b^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^3\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^3\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^3(a+bx)^6}{b^3}+\frac{3e(bd-ae)^2(a+bx)^7}{b^3}+\frac{3e^2(bd- \cdots}{\cdots}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^3(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^4}+\frac{3e(bd-ae)^2(a+bx)^7\sqrt{\cdots}}{8b^4}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 294, normalized size = 1.71

$$\frac{x\sqrt{(a+bx)^2}\left(210a^6(4d^3+6d^2ex+4de^2x^2+e^3x^3)+252a^5bx(10d^3+20d^2ex+15de^2x^2+4e^3x^3)+210a^4b^2x^2(20d^3+45d^2ex+36de^2x^2+10e^3x^3)+120a^3b^3x^3(35d^3+84d^2ex+70de^2x^2+20e^3x^3)+45a^2b^4x^4(56d^3+140d^2ex+120de^2x^2+35e^3x^3)+10ab^5x^5(84d^3+216d^2ex+189de^2x^2+56e^3x^3)+b^6x^6(120d^3+315d^2ex+280de^2x^2+84e^3x^3)\right)}{840(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(210*a^6*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) +
 252*a^5*b*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + 210*a^4*b^2
*x^2*(20*d^3 + 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 120*a^3*b^3*x^3*(3
5*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 + 20*e^3*x^3) + 45*a^2*b^4*x^4*(56*d^3 +
140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3) + 10*a*b^5*x^5*(84*d^3 + 216*d^2*
e*x + 189*d*e^2*x^2 + 56*e^3*x^3) + b^6*x^6*(120*d^3 + 315*d^2*e*x + 280*d*
e^2*x^2 + 84*e^3*x^3)))/(840*(a + b*x))
```

IntegrateAlgebraic [F] time = 2.57, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.40, size = 327, normalized size = 1.90

$$\frac{1}{10}b^6e^3x^{10}+a^6d^3x+\frac{1}{3}\left(b^6de^2+2ab^5e^3\right)x^9+\frac{3}{8}\left(b^6d^2e+6ab^5de^2+5a^2b^4e^3\right)x^8+\frac{1}{7}\left(b^6d^3+18ab^5d^2e+45a^2b^4de^2+20a^3b^3e^3\right)x^7+\frac{1}{2}\left(2ab^5d^3+15a^2b^4d^2e+20a^3b^3de^2+5a^4b^2e^3\right)x^6+\frac{3}{5}\left(5a^2b^4d^3+20a^3b^3d^2e+15a^4b^2de^2+2a^5be^3\right)x^5+\frac{1}{4}\left(20a^3b^3d^3+45a^4b^2d^2e+18a^5bde^2+a^6e^3\right)x^4+\left(5a^4b^2d^3+6a^5bd^2e+a^6de^2\right)x^3+\frac{3}{2}\left(2a^5bd^3+a^6d^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/10*b^6*e^3*x^10 + a^6*d^3*x + 1/3*(b^6*d*e^2 + 2*a*b^5*e^3)*x^9 + 3/8*(b^
6*d^2*e + 6*a*b^5*d*e^2 + 5*a^2*b^4*e^3)*x^8 + 1/7*(b^6*d^3 + 18*a*b^5*d^2*
e + 45*a^2*b^4*d*e^2 + 20*a^3*b^3*e^3)*x^7 + 1/2*(2*a*b^5*d^3 + 15*a^2*b^4*
d^2*e + 20*a^3*b^3*d*e^2 + 5*a^4*b^2*e^3)*x^6 + 3/5*(5*a^2*b^4*d^3 + 20*a^3
*b^3*d^2*e + 15*a^4*b^2*d*e^2 + 2*a^5*b*e^3)*x^5 + 1/4*(20*a^3*b^3*d^3 + 45
*a^4*b^2*d^2*e + 18*a^5*b*d*e^2 + a^6*e^3)*x^4 + (5*a^4*b^2*d^3 + 6*a^5*b*d
^2*e + a^6*d*e^2)*x^3 + 3/2*(2*a^5*b*d^3 + a^6*d^2*e)*x^2
```

giac [B] time = 0.22, size = 523, normalized size = 3.04

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/10*b^6*x^10*e^3*sgn(b*x + a) + 1/3*b^6*d*x^9*e^2*sgn(b*x + a) + 3/8*b^6*d
^2*x^8*e*sgn(b*x + a) + 1/7*b^6*d^3*x^7*sgn(b*x + a) + 2/3*a*b^5*x^9*e^3*sg
n(b*x + a) + 9/4*a*b^5*d*x^8*e^2*sgn(b*x + a) + 18/7*a*b^5*d^2*x^7*e*sgn(b*
x + a) + a*b^5*d^3*x^6*sgn(b*x + a) + 15/8*a^2*b^4*x^8*e^3*sgn(b*x + a) + 4
5/7*a^2*b^4*d*x^7*e^2*sgn(b*x + a) + 15/2*a^2*b^4*d^2*x^6*e*sgn(b*x + a) +
3*a^2*b^4*d^3*x^5*sgn(b*x + a) + 20/7*a^3*b^3*x^7*e^3*sgn(b*x + a) + 10*a^3
*b^3*d*x^6*e^2*sgn(b*x + a) + 12*a^3*b^3*d^2*x^5*e*sgn(b*x + a) + 5*a^3*b^3
*d^3*x^4*sgn(b*x + a) + 5/2*a^4*b^2*x^6*e^3*sgn(b*x + a) + 9*a^4*b^2*d*x^5*
e^2*sgn(b*x + a) + 45/4*a^4*b^2*d^2*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^3*x^3*
```

```
sgn(b*x + a) + 6/5*a^5*b*x^5*e^3*sgn(b*x + a) + 9/2*a^5*b*d*x^4*e^2*sgn(b*x
 + a) + 6*a^5*b*d^2*x^3*e*sgn(b*x + a) + 3*a^5*b*d^3*x^2*sgn(b*x + a) + 1/4
*a^6*x^4*e^3*sgn(b*x + a) + a^6*d*x^3*e^2*sgn(b*x + a) + 3/2*a^6*d^2*x^2*e*
sgn(b*x + a) + a^6*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 380, normalized size = 2.21

$$\frac{\left(84e^{3}b^{6}x^{9}+560x^{8}e^{3}a\,b^{5}+280x^{8}d\,e^{2}b^{6}+1575x^{7}e^{3}a^{2}b^{4}+1890x^{7}d\,e^{2}a\,b^{5}+315x^{7}d^{2}e\,b^{6}+2400x^{6}e^{3}a^{3}b^{3}+5400x^{6}d\,e^{2}a^{2}b^{4}+2160x^{6}d^{2}ea\,b^{5}+120x^{6}d^{3}b^{6}+2100x^{5}e^{3}a^{4}b^{2}+8400x^{5}d\,e^{2}a^{3}b^{3}+6300x^{5}d^{2}e\,a^{2}b^{4}+840x^{5}d^{3}a\,b^{5}+1008x^{4}e^{3}a^{5}b+7560x^{4}d\,e^{2}a^{4}b^{2}+10080x^{4}d^{2}e\,a^{3}b^{3}+2520x^{4}d^{3}a^{2}b^{4}+210x^{3}e^{3}a^{6}+3780x^{3}d\,e^{2}a^{5}b+9450x^{3}d^{2}e\,a^{4}b^{2}+4200x^{3}d^{3}a^{3}b^{3}+840a^{6}d\,e^{2}x^{2}+5040a^{5}b\,d^{2}e\,x^{2}+4200a^{4}b^{2}d^{3}x^{2}+1260x\,d^{2}e\,a^{6}+2520x\,d^{3}a^{5}b+840d^{3}a^{6}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}x}{840\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/840*x*(84*b^6*e^3*x^9+560*a*b^5*e^3*x^8+280*b^6*d*e^2*x^8+1575*a^2*b^4*e^
3*x^7+1890*a*b^5*d*e^2*x^7+315*b^6*d^2*e*x^7+2400*a^3*b^3*e^3*x^6+5400*a^2*
b^4*d*e^2*x^6+2160*a*b^5*d^2*e*x^6+120*b^6*d^3*x^6+2100*a^4*b^2*e^3*x^5+840
0*a^3*b^3*d*e^2*x^5+6300*a^2*b^4*d^2*e*x^5+840*a*b^5*d^3*x^5+1008*a^5*b*e^3
*x^4+7560*a^4*b^2*d*e^2*x^4+10080*a^3*b^3*d^2*e*x^4+2520*a^2*b^4*d^3*x^4+21
0*a^6*e^3*x^3+3780*a^5*b*d*e^2*x^3+9450*a^4*b^2*d^2*e*x^3+4200*a^3*b^3*d^3*
x^3+840*a^6*d*e^2*x^2+5040*a^5*b*d^2*e*x^2+4200*a^4*b^2*d^3*x^2+1260*a^6*d^
2*e*x+2520*a^5*b*d^3*x+840*a^6*d^3)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.60, size = 693, normalized size = 4.03

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}e^{3}x^{3}}{10\,b}+\frac{1}{6}\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}ad^{3}x+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{4}e^{3}x}{6\,b^{3}}-\frac{13\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}ae^{3}x^{2}}{90\,b^{2}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{2}d^{3}}{6\,b}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{5}e^{3}}{6\,b^{4}}+\frac{29\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}a^{2}e^{3}x}{180\,b^{3}}-\frac{209\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}a^{3}e^{3}}{1260\,b^{4}}-\frac{\left(3\,bde^{2}+ae^{3}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{3}x}{6\,b^{3}}+\frac{\left(bd^{2}e+ade^{2}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{2}x}{2\,b^{2}}-\frac{\left(bd^{3}+3\,ad^{2}e\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}ax}{6\,b}+\frac{\left(3\,bde^{2}+ae^{3}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}x^{2}}{9\,b^{2}}-\frac{\left(3\,bde^{2}+ae^{3}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{4}}{6\,b^{4}}+\frac{\left(bd^{2}e+ade^{2}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{3}}{2\,b^{3}}-\frac{\left(bd^{3}+3\,ad^{2}e\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}a^{2}}{6\,b^{2}}-\frac{11\left(3\,bde^{2}+ae^{3}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}ax}{72\,b^{3}}+\frac{3\left(bd^{2}e+ade^{2}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}x}{8\,b^{2}}+\frac{83\left(3\,bde^{2}+ae^{3}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}a^{2}}{504\,b^{4}}-\frac{27\left(bd^{2}e+ade^{2}\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}a}{56\,b^{3}}+\frac{\left(bd^{3}+3\,ad^{2}e\right)\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}}{7\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^3*x^3/b + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*d^3*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*e^3*x/b^3 - 13/
90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*e^3*x^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*a^2*d^3/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^3/b^4 + 2
9/180*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^3*x/b^3 - 209/1260*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*a^3*e^3/b^4 - 1/6*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^2*x/b^2 - 1/6*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a*x/b + 1/9*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 -
1/6*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/2*(b*d^
2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^3 + 3*a*d
^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 11/72*(3*b*d*e^2 + a*e^3)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 3/8*(b*d^2*e + a*d*e^2)*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*x/b^2 + 83/504*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^2/b^4 - 27/56*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*a/b^3 + 1/7*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,x\right)\,{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b x\right) \left(d + e x\right)^{3} \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3*((a + b*x)**2)**(5/2), x)
```

3.1770 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=125

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{4b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^3}$$

Rubi [A] time = 0.18, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{4b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^3) + (e*(b*d
 - a*e)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3) + (e^2*(a + b*x)
^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^2\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^2\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^2(a+bx)^6}{b^2}+\frac{2e(bd-ae)(a+bx)^7}{b^2}+\frac{e^2(a+bx)}{b^2}\right.}{ab+b^2x}$$

$$=\frac{(bd-ae)^2(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^3}+\frac{e(bd-ae)(a+bx)^7\sqrt{a^2}}{4b^3}$$

Mathematica [A] time = 0.08, size = 217, normalized size = 1.74

$$\frac{x\sqrt{(a+bx)^2}\left(84a^6\left(3d^2+3dex+e^2x^2\right)+126a^5bx\left(6d^2+8dex+3e^2x^2\right)+126a^4b^2x^2\left(10d^2+15dex+6e^2x^2\right)+84a^3b^3x^3\left(15d^2+24dex+10e^2x^2\right)+36a^2b^4x^4\left(21d^2+35dex+15e^2x^2\right)+9ab^5x^5\left(28d^2+48dex+21e^2x^2\right)+b^6x^6\left(36d^2+63dex+28e^2x^2\right)\right)}{252(a+bx)}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]

[Out] (x*Sqrt[(a + b*x)^2]*(84*a^6*(3*d^2 + 3*d*e*x + e^2*x^2) + 126*a^5*b*x*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 126*a^4*b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2) + 84*a^3*b^3*x^3*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + 36*a^2*b^4*x^4*(21*d^2 + 35*d*e*x + 15*e^2*x^2) + 9*a*b^5*x^5*(28*d^2 + 48*d*e*x + 21*e^2*x^2) + b^6*x^6*(36*d^2 + 63*d*e*x + 28*e^2*x^2)))/(252*(a + b*x))

IntegrateAlgebraic [F] time = 1.90, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]

[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2), x]

fricas [B] time = 0.41, size = 234, normalized size = 1.87

$$\frac{1}{9}b^6e^2x^9+a^6d^2x+\frac{1}{4}\left(b^6de+3ab^5e^2\right)x^8+\frac{1}{7}\left(b^6d^2+12ab^5de+15a^2b^4e^2\right)x^7+\frac{1}{3}\left(3ab^5d^2+15a^2b^4de+10a^3b^3e^2\right)x^6+\left(3a^2b^4d^2+8a^3b^3de+3a^4b^2e^2\right)x^5+\frac{1}{2}\left(10a^3b^3d^2+15a^4b^2de+3a^5be^2\right)x^4+\frac{1}{3}\left(15a^4b^2d^2+12a^5bde+a^6e^2\right)x^3+\left(3a^5bd^2+a^6de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")

[Out] 1/9*b^6*e^2*x^9 + a^6*d^2*x + 1/4*(b^6*d*e + 3*a*b^5*e^2)*x^8 + 1/7*(b^6*d^2 + 12*a*b^5*d*e + 15*a^2*b^4*e^2)*x^7 + 1/3*(3*a*b^5*d^2 + 15*a^2*b^4*d*e + 10*a^3*b^3*e^2)*x^6 + (3*a^2*b^4*d^2 + 8*a^3*b^3*d*e + 3*a^4*b^2*e^2)*x^5 + 1/2*(10*a^3*b^3*d^2 + 15*a^4*b^2*d*e + 3*a^5*b*e^2)*x^4 + 1/3*(15*a^4*b^2*d^2 + 12*a^5*b*d*e + a^6*e^2)*x^3 + (3*a^5*b*d^2 + a^6*d*e)*x^2

giac [B] time = 0.18, size = 379, normalized size = 3.03

$$\frac{1}{9}b^6x^9e^2\mathrm{sgn}(bx+a)+\frac{1}{4}b^6dx^8e\,\mathrm{sgn}(bx+a)+\frac{1}{7}b^6d^2x^7\mathrm{sgn}(bx+a)+\frac{3}{4}ab^5x^8e^2\mathrm{sgn}(bx+a)+\frac{12}{7}ab^5dx^7e\,\mathrm{sgn}(bx+a)+ab^5d^2x^6\mathrm{sgn}(bx+a)+\frac{15}{7}a^2b^4x^7e^2\mathrm{sgn}(bx+a)+5a^2b^4dx^6e\,\mathrm{sgn}(bx+a)+3a^2b^4d^2x^5\mathrm{sgn}(bx+a)+\frac{10}{3}a^3b^3x^6e^2\mathrm{sgn}(bx+a)+8a^3b^3dx^5e\,\mathrm{sgn}(bx+a)+5a^3b^3d^2x^4\mathrm{sgn}(bx+a)+3a^4b^2x^5e^2\mathrm{sgn}(bx+a)+\frac{15}{2}a^4b^2dx^4e\,\mathrm{sgn}(bx+a)+5a^4b^2d^2x^3\mathrm{sgn}(bx+a)+\frac{3}{2}a^5bx^4e^2\mathrm{sgn}(bx+a)+4a^5bdx^3e\,\mathrm{sgn}(bx+a)+3a^5bd^2x^2\mathrm{sgn}(bx+a)+\frac{1}{3}a^6x^3e^2\mathrm{sgn}(bx+a)+a^6dx^2e\,\mathrm{sgn}(bx+a)+a^6d^2x\,\mathrm{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")

[Out] 1/9*b^6*x^9*e^2*sgn(b*x + a) + 1/4*b^6*d*x^8*e*sgn(b*x + a) + 1/7*b^6*d^2*x^7*sgn(b*x + a) + 3/4*a*b^5*x^8*e^2*sgn(b*x + a) + 12/7*a*b^5*d*x^7*e*sgn(b*x + a) + a*b^5*d^2*x^6*sgn(b*x + a) + 15/7*a^2*b^4*x^7*e^2*sgn(b*x + a) + 5*a^2*b^4*d*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^2*x^5*sgn(b*x + a) + 10/3*a^3*b^3*x^6*e^2*sgn(b*x + a) + 8*a^3*b^3*d*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d^2*x^4*sgn(b*x + a) + 3*a^4*b^2*x^5*e^2*sgn(b*x + a) + 15/2*a^4*b^2*d*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^2*x^3*sgn(b*x + a) + 3/2*a^5*b*x^4*e^2*sgn(b*x + a) + 4*a^5*b*d*x^3*e*sgn(b*x + a) + 3*a^5*b*d^2*x^2*sgn(b*x + a) + 1/3*a^6*x^3*e^2*sgn(b*x + a) + a^6*d*x^2*e*sgn(b*x + a) + a^6*d^2*x*sgn(b*x + a)

maple [B] time = 0.05, size = 271, normalized size = 2.17

$$\frac{\left(28b^6e^2x^8+189x^7e^2ab^5+63x^7deb^6+540x^6e^2a^2b^4+432x^6deab^5+36x^6d^2b^6+840x^5e^2a^3b^3+1260x^5dea^2b^4+252x^5d^2ab^5+756a^4b^2e^2x^4+2016a^3b^3dex^4+756a^2b^4d^2x^4+378x^3e^2a^5b+1890x^3dea^4b^2+1260x^3d^2a^3b^3+84x^2e^2a^6+1008x^2dea^5b+1260x^2d^2a^4b^2+252a^6dex+756a^5bd^2x+252d^2a^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}x}{252\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/252*x*(28*b^6*e^2*x^8+189*a*b^5*e^2*x^7+63*b^6*d*e*x^7+540*a^2*b^4*e^2*x^
6+432*a*b^5*d*e*x^6+36*b^6*d^2*x^6+840*a^3*b^3*e^2*x^5+1260*a^2*b^4*d*e*x^5
+252*a*b^5*d^2*x^5+756*a^4*b^2*e^2*x^4+2016*a^3*b^3*d*e*x^4+756*a^2*b^4*d^2
*x^4+378*a^5*b*e^2*x^3+1890*a^4*b^2*d*e*x^3+1260*a^3*b^3*d^2*x^3+84*a^6*e^2
*x^2+1008*a^5*b*d*e*x^2+1260*a^4*b^2*d^2*x^2+252*a^6*d*e*x+756*a^5*b*d^2*x+
252*a^6*d^2)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.76, size = 452, normalized size = 3.62

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^3e^2x}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}e^2x^2}{9\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2d^2}{6\,b}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^4e^2}{6\,b^3}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}ae^2x}{72\,b^2}+\frac{83\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}a^2e^2}{504\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(2\,bde+ae^2\right)a^2x}{6\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(bd^2+2\,ade\right)ax}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(2\,bde+ae^2\right)a^3}{6\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\left(bd^2+2\,ade\right)a^2}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}\left(2\,bde+ae^2\right)x}{8\,b^2}-\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}\left(2\,bde+ae^2\right)a}{56\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}\left(bd^2+2\,ade\right)}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^2*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*a^3*e^2*x/b^2 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^2*x^2/b + 1/6*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^2/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^4*e^2/b^3 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*e^2*x/b^2 + 83/5
04*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^2/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*(2*b*d*e + a*e^2)*a^2*x/b^2 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*(b*d^2 + 2*a*d*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*b*d*e + a
*e^2)*a^3/b^3 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(b*d^2 + 2*a*d*e)*a^2/b
^2 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*b*d*e + a*e^2)*x/b^2 - 9/56*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*b*d*e + a*e^2)*a/b^3 + 1/7*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*(b*d^2 + 2*a*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,{(d+e\,x)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^2\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**2*((a + b*x)**2)**(5/2), x)
```

3.1771 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=78

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^2}$$

Rubi [A] time = 0.05, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^2) + (e*(a + b
*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)(a+bx)^6}{b}+\frac{e(a+bx)^7}{b}\right)dx}{ab+b^2x}\\
&= \frac{(bd-ae)(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^2}+\frac{e(a+bx)^7\sqrt{a^2+2abx}}{8b^2}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 140, normalized size = 1.79

$$\frac{x\sqrt{(a+bx)^2}\left(28a^6(2d+ex)+56a^5bx(3d+2ex)+70a^4b^2x^2(4d+3ex)+56a^3b^3x^3(5d+4ex)+28a^2b^4x^4(6d+5ex)+8ab^5x^5(7d+6ex)+b^6x^6(8d+7ex)\right)}{56(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(28*a^6*(2*d + e*x) + 56*a^5*b*x*(3*d + 2*e*x) + 70*a^
4*b^2*x^2*(4*d + 3*e*x) + 56*a^3*b^3*x^3*(5*d + 4*e*x) + 28*a^2*b^4*x^4*(6*
d + 5*e*x) + 8*a*b^5*x^5*(7*d + 6*e*x) + b^6*x^6*(8*d + 7*e*x)))/(56*(a + b
*x))
```

IntegrateAlgebraic [F] time = 1.32, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2), x]
```

fricas [B] time = 0.40, size = 142, normalized size = 1.82

$$\frac{1}{8}b^6ex^8+a^6dx+\frac{1}{7}\left(b^6d+6\,ab^5e\right)x^7+\frac{1}{2}\left(2\,ab^5d+5\,a^2b^4e\right)x^6+\left(3\,a^2b^4d+4\,a^3b^3e\right)x^5+\frac{5}{4}\left(4\,a^3b^3d+3\,a^4b^2e\right)x^4+\left(5\,a^4b^2d+2\,a^5be\right)x^3+\frac{1}{2}\left(6\,a^5bd+a^6e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 1/8*b^6*e*x^8 + a^6*d*x + 1/7*(b^6*d + 6*a*b^5*e)*x^7 + 1/2*(2*a*b^5*d + 5*
a^2*b^4*e)*x^6 + (3*a^2*b^4*d + 4*a^3*b^3*e)*x^5 + 5/4*(4*a^3*b^3*d + 3*a^4
*b^2*e)*x^4 + (5*a^4*b^2*d + 2*a^5*b*e)*x^3 + 1/2*(6*a^5*b*d + a^6*e)*x^2
```

giac [B] time = 0.17, size = 236, normalized size = 3.03

$$\frac{1}{8}\,b^6x^8e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,b^6dx^7\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,ab^5x^7e\mathrm{sgn}\left(bx+a\right)+ab^5dx^6\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}\,a^2b^4x^6e\mathrm{sgn}\left(bx+a\right)+3\,a^2b^4dx^5\mathrm{sgn}\left(bx+a\right)+4\,a^3b^3x^5e\mathrm{sgn}\left(bx+a\right)+5\,a^3b^3dx^4\mathrm{sgn}\left(bx+a\right)+\frac{15}{4}\,a^4b^2x^4e\mathrm{sgn}\left(bx+a\right)+5\,a^4b^2dx^3\mathrm{sgn}\left(bx+a\right)+2\,a^5bx^3e\mathrm{sgn}\left(bx+a\right)+3\,a^5bdx^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,a^6x^2e\mathrm{sgn}\left(bx+a\right)+a^6dx\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/8*b^6*x^8*e*sgn(b*x + a) + 1/7*b^6*d*x^7*sgn(b*x + a) + 6/7*a*b^5*x^7*e*s
gn(b*x + a) + a*b^5*d*x^6*sgn(b*x + a) + 5/2*a^2*b^4*x^6*e*sgn(b*x + a) + 3
*a^2*b^4*d*x^5*sgn(b*x + a) + 4*a^3*b^3*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d*x^
4*sgn(b*x + a) + 15/4*a^4*b^2*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d*x^3*sgn(b*x
+ a) + 2*a^5*b*x^3*e*sgn(b*x + a) + 3*a^5*b*d*x^2*sgn(b*x + a) + 1/2*a^6*x^
2*e*sgn(b*x + a) + a^6*d*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 162, normalized size = 2.08

$$\frac{\left(7e\,b^6x^7+48x^6ea\,b^5+8x^6d\,b^6+140x^5e\,a^2b^4+56x^5da\,b^5+224a^3b^3e\,x^4+168a^2b^4d\,x^4+210x^3e\,a^4b^2+280x^3d\,a^3b^3+112a^5be\,x^2+280a^4b^2d\,x^2+28xe\,a^6+168xd\,a^5b+56d\,a^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}x}{56\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/56*x*(7*b^6*e*x^7+48*a*b^5*e*x^6+8*b^6*d*x^6+140*a^2*b^4*e*x^5+56*a*b^5*d
*x^5+224*a^3*b^3*e*x^4+168*a^2*b^4*d*x^4+210*a^4*b^2*e*x^3+280*a^3*b^3*d*x^
```

```
3+112*a^5*b*e*x^2+280*a^4*b^2*d*x^2+28*a^6*e*x+168*a^5*b*d*x+56*a^6*d)*((b*
x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.63, size = 251, normalized size = 3.22

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}adx+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2ex}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2d}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^3e}{6\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(bd+ae)ax}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}ex}{8\,b}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(bd+ae)a^2}{6\,b^2}-\frac{9\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}ae}{56\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}(bd+ae)}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^2*e*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d/b + 1/6*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*a^3*e/b^2 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(b*
d + a*e)*a*x/b + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e*x/b - 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*(b*d + a*e)*a^2/b^2 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a*e/b^2 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(b*d + a*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)\,\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1772 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=27

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b}$$

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(7/2)/(7*b)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.93

$$\frac{(a+bx)^6\sqrt{(a+bx)^2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)^6*Sqrt[(a + b*x)^2])/(7*b)
```

IntegrateAlgebraic [A] time = 0.03, size = 18, normalized size = 0.67

$$\frac{\left((a+bx)^2\right)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)^2)^(7/2)/(7*b)
```

fricas [B] time = 0.40, size = 64, normalized size = 2.37

$$\frac{1}{7}\,b^6x^7+ab^5x^6+3\,a^2b^4x^5+5\,a^3b^3x^4+5\,a^4b^2x^3+3\,a^5bx^2+a^6x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/7*b^6*x^7 + a*b^5*x^6 + 3*a^2*b^4*x^5 + 5*a^3*b^3*x^4 + 5*a^4*b^2*x^3 + 3
*a^5*b*x^2 + a^6*x
```

giac [B] time = 0.19, size = 120, normalized size = 4.44

$$\frac{1}{7}\,b^{6}x^{7}\mathrm{sgn}\left(bx+a\right)+ab^{5}x^{6}\mathrm{sgn}\left(bx+a\right)+3\,a^{2}b^{4}x^{5}\mathrm{sgn}\left(bx+a\right)+5\,a^{3}b^{3}x^{4}\mathrm{sgn}\left(bx+a\right)+5\,a^{4}b^{2}x^{3}\mathrm{sgn}\left(bx+a\right)+3\,a^{5}bx^{2}\mathrm{sgn}\left(bx+a\right)+a^{6}x\mathrm{sgn}\left(bx+a\right)+\frac{a^{7}\mathrm{sgn}\left(bx+a\right)}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/7*b^6*x^7*sgn(b*x + a) + a*b^5*x^6*sgn(b*x + a) + 3*a^2*b^4*x^5*sgn(b*x +
 a) + 5*a^3*b^3*x^4*sgn(b*x + a) + 5*a^4*b^2*x^3*sgn(b*x + a) + 3*a^5*b*x^2
*sgn(b*x + a) + a^6*x*sgn(b*x + a) + 1/7*a^7*sgn(b*x + a)/b
```

maple [B] time = 0.04, size = 82, normalized size = 3.04

$$\frac{\left(b^{6}x^{6}+7a\,b^{5}x^{5}+21a^{2}b^{4}x^{4}+35a^{3}b^{3}x^{3}+35a^{4}b^{2}x^{2}+21a^{5}bx+7a^{6}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}x}{7\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/7*x*(b^6*x^6+7*a*b^5*x^5+21*a^2*b^4*x^4+35*a^3*b^3*x^3+35*a^4*b^2*x^2+21*
a^5*b*x+7*a^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.68, size = 23, normalized size = 0.85

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b
```

mupad [B] time = 2.24, size = 14, normalized size = 0.52

$$\frac{{\left({\left(a+b\,x\right)}^2\right)}^{7/2}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] ((a + b*x)^2)^(7/2)/(7*b)
```

sympy [A] time = 5.52, size = 226, normalized size = 8.37

$$\begin{cases} \frac{a^{6}\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7b}+\frac{6a^{5}x\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7}+\frac{15a^{4}bx^{2}\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7}+\frac{20a^{3}b^{2}x^{3}\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7}+\frac{15a^{2}b^{3}x^{4}\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7}+\frac{6ab^{4}x^{5}\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7}+\frac{b^{5}x^{6}\sqrt{a^{2}+2abx+b^{2}x^{2}}}{7} & \text{for}\: b \neq 0 \\ ax\left(a^{2}\right)^{\frac{5}{2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Piecewise((a**6*sqrt(a**2 + 2*a*b*x + b**2*x**2)/(7*b) + 6*a**5*x*sqrt(a**2
 + 2*a*b*x + b**2*x**2)/7 + 15*a**4*b*x**2*sqrt(a**2 + 2*a*b*x + b**2*x**2)
/7 + 20*a**3*b**2*x**3*sqrt(a**2 + 2*a*b*x + b**2*x**2)/7 + 15*a**2*b**3*x*
*4*sqrt(a**2 + 2*a*b*x + b**2*x**2)/7 + 6*a*b**4*x**5*sqrt(a**2 + 2*a*b*x +
 b**2*x**2)/7 + b**5*x**6*sqrt(a**2 + 2*a*b*x + b**2*x**2)/7, Ne(b, 0)), (a
*x*(a**2)**(5/2), True))
```

3.1773 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=298

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6\log(d+ex)}{e^7(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae}{2e^5}$$

Rubi [A] time = 0.16, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^5}-\frac{(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^4}+\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^3}-\frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6\log(d+ex)}{e^7(a+bx)}+\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^5*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x))) + ((b*
d - a*e)^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5) - ((b*d - a*e)^
3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^4) + ((b*d - a*e)^2*(a +
b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3) - ((b*d - a*e)*(a + b*x)^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^2) + ((a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(6*e) + ((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{d+ex}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b(bd-ae)^5}{e^6}+\frac{b(bd-ae)^4(a+bx)}{e^5}-\frac{b(bd-ae)^3(a+bx)^2}{e^4}+\right.}{ab+b^2x}$$
$$= -\frac{b(bd-ae)^5x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{(bd-ae)^4(a+bx)\sqrt{a^2+2abx+b^2}}{2e^5}$$

Mathematica [A] time = 0.11, size = 248, normalized size = 0.83

$$\frac{\sqrt{(a+bx)^2}\left(bex\left(360a^5e^5+450a^4be^4(ex-2d)+200a^3b^2e^3\left(6d^2-3dex+2e^2x^2\right)+75a^2b^3e^2\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+6ab^4e\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)+b^5\left(-60d^5+30d^4ex-20d^3e^2x^2+15d^2e^3x^3-12de^4x^4+10e^5x^5\right)\right)+60(bd-ae)^6\log(d+ex)\right)}{60e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(b*e*x*(360*a^5*e^5 + 450*a^4*b*e^4*(-2*d + e*x) + 200*a
^3*b^2*e^3*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + 75*a^2*b^3*e^2*(-12*d^3 + 6*d^2*
e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + 6*a*b^4*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^
2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + b^5*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2
*x^2 + 15*d^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5)) + 60*(b*d - a*e)^6*Log[
d + e*x]))/(60*e^7*(a + b*x))
```

IntegrateAlgebraic [F] time = 3.12, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x), x]
```

fricas [A] time = 0.41, size = 351, normalized size = 1.18

$$\frac{10b^6e^6x^6-12\left(b^6de^5-6ab^5e^6\right)x^5+15\left(b^6d^2e^4-6ab^5de^5+15a^2b^4e^6\right)x^4-20\left(b^6d^3e^3-6ab^5d^2e^4+15a^2b^4de^5-20a^3b^3e^6\right)x^3+30\left(b^6d^4e^2-6ab^5d^3e^3+15a^2b^4d^2e^4-20a^3b^3de^5+15a^4b^2e^6\right)x^2-60\left(b^6d^5e-6ab^5d^4e^2+15a^2b^4d^3e^3-20a^3b^3d^2e^4+15a^4b^2de^5-6a^5be^6\right)x+60\left(b^6d^6-6ab^5d^5e+15a^2b^4d^4e^2-20a^3b^3d^3e^3+15a^4b^2d^2e^4-6a^5bde^5+a^6e^6\right)\log(ex+d)}{60e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/60*(10*b^6*e^6*x^6 - 12*(b^6*d*e^5 - 6*a*b^5*e^6)*x^5 + 15*(b^6*d^2*e^4 -
 6*a*b^5*d*e^5 + 15*a^2*b^4*e^6)*x^4 - 20*(b^6*d^3*e^3 - 6*a*b^5*d^2*e^4 +
15*a^2*b^4*d*e^5 - 20*a^3*b^3*e^6)*x^3 + 30*(b^6*d^4*e^2 - 6*a*b^5*d^3*e^3
+ 15*a^2*b^4*d^2*e^4 - 20*a^3*b^3*d*e^5 + 15*a^4*b^2*e^6)*x^2 - 60*(b^6*d^5
*e - 6*a*b^5*d^4*e^2 + 15*a^2*b^4*d^3*e^3 - 20*a^3*b^3*d^2*e^4 + 15*a^4*b^2
*d*e^5 - 6*a^5*b*e^6)*x + 60*(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2
- 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*log(e*
x + d))/e^7
```

giac [B] time = 0.22, size = 522, normalized size = 1.75

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (b^6*d^6*sgn(b*x + a) - 6*a*b^5*d^5*e*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn
(b*x + a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x +
a) - 6*a^5*b*d*e^5*sgn(b*x + a) + a^6*e^6*sgn(b*x + a))*e^(-7)*log(abs(x*e
+ d)) + 1/60*(10*b^6*x^6*e^5*sgn(b*x + a) - 12*b^6*d*x^5*e^4*sgn(b*x + a) +
 15*b^6*d^2*x^4*e^3*sgn(b*x + a) - 20*b^6*d^3*x^3*e^2*sgn(b*x + a) + 30*b^6
*d^4*x^2*e*sgn(b*x + a) - 60*b^6*d^5*x*sgn(b*x + a) + 72*a*b^5*x^5*e^5*sgn(
b*x + a) - 90*a*b^5*d*x^4*e^4*sgn(b*x + a) + 120*a*b^5*d^2*x^3*e^3*sgn(b*x
+ a) - 180*a*b^5*d^3*x^2*e^2*sgn(b*x + a) + 360*a*b^5*d^4*x*e*sgn(b*x + a)
+ 225*a^2*b^4*x^4*e^5*sgn(b*x + a) - 300*a^2*b^4*d*x^3*e^4*sgn(b*x + a) + 4
50*a^2*b^4*d^2*x^2*e^3*sgn(b*x + a) - 900*a^2*b^4*d^3*x*e^2*sgn(b*x + a) +
400*a^3*b^3*x^3*e^5*sgn(b*x + a) - 600*a^3*b^3*d*x^2*e^4*sgn(b*x + a) + 120
0*a^3*b^3*d^2*x*e^3*sgn(b*x + a) + 450*a^4*b^2*x^2*e^5*sgn(b*x + a) - 900*a
^4*b^2*d*x*e^4*sgn(b*x + a) + 360*a^5*b*x*e^5*sgn(b*x + a))*e^(-6)
```

maple [B] time = 0.06, size = 428, normalized size = 1.44

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(10*x^6*b^6*e^6+60*ln(e*x+d)*a^6*e^6+60*ln(e*x+d)*b^
6*d^6-360*ln(e*x+d)*a*b^5*d^5*e-180*x^2*a*b^5*d^3*e^3-900*x*a^4*b^2*d*e^5+1
200*x*a^3*b^3*d^2*e^4-900*x*a^2*b^4*d^3*e^3+360*x*a*b^5*d^4*e^2+900*ln(e*x+
d)*a^2*b^4*d^4*e^2-90*x^4*a*b^5*d*e^5-300*x^3*a^2*b^4*d*e^5-20*x^3*b^6*d^3*
e^3+72*x^5*a*b^5*e^6-12*x^5*b^6*d*e^5+225*x^4*a^2*b^4*e^6+15*x^4*b^6*d^2*e^
4+400*x^3*a^3*b^3*e^6-1200*ln(e*x+d)*a^3*b^3*d^3*e^3+450*x^2*a^4*b^2*e^6+30
*x^2*b^6*d^4*e^2+360*x*a^5*b*e^6-360*ln(e*x+d)*a^5*b*d*e^5+900*ln(e*x+d)*a^
4*b^2*d^2*e^4+120*x^3*a*b^5*d^2*e^4-600*x^2*a^3*b^3*d*e^5+450*x^2*a^2*b^4*d
^2*e^4-60*x*b^6*d^5*e)/(b*x+a)^5/e^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x),x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + bx)\left((a + bx)^2\right)^{\frac{5}{2}}}{d + ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x), x)
```

3.1774 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=345

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{e^7(a+bx)(d+ex)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5\log(d+ex)}{e^7(a+bx)}+\frac{15b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^6(a+bx)}$$

Rubi [A] time = 0.30, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5}{5e^7(a+bx)}-\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)}{2e^7(a+bx)}+\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)^2}{e^7(a+bx)}-\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^3}{e^7(a+bx)}+\frac{15b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^6(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{e^7(a+bx)(d+ex)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5\log(d+ex)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (15*b^2*(b*d - a*e)^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((
b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) - (10
*b^3*(b*d - a*e)^3*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x
)) + (5*b^4*(b*d - a*e)^2*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(
a + b*x)) - (3*b^5*(b*d - a*e)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
2*e^7*(a + b*x)) + (b^6*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(
a + b*x)) - (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{15b^2(bd-ae)^4}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^2}-\frac{6b(bd-ae)^5}{e^6(d+ex)}-\frac{20b^3(bd-ae}{e^6}\right.}{ab+b^2x}$$

$$= \frac{15b^2(bd-ae)^4x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)(d+ex)}-$$

Mathematica [A] time = 0.20, size = 320, normalized size = 0.93

$$\frac{\sqrt{(a+bx)^2}\left(-10a^6e^6+60a^5bde^5+150a^4b^2e^4\left(-d^2+dex+e^2x^2\right)+100a^3b^3e^3\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+50a^2b^4e^2\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+5ab^5e\left(12d^5-48d^4ex-30d^3e^2x^2+10d^2e^3x^3-5de^4x^4+3e^5x^5\right)-60b(d+ex)(bd-ae)^5\log(d+ex)+b^6\left(-10d^6+50d^5ex+30d^4e^2x^2-10d^3e^3x^3+5d^2e^4x^4-3de^5x^5+2e^6x^6\right)\right)}{10e^7(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(60*a^5*b*d*e^5 - 10*a^6*e^6 + 150*a^4*b^2*e^4*(-d^2 + d
*e*x + e^2*x^2) + 100*a^3*b^3*e^3*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^
3) + 50*a^2*b^4*e^2*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4
*x^4) + 5*a*b^5*e*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 -
5*d*e^4*x^4 + 3*e^5*x^5) + b^6*(-10*d^6 + 50*d^5*e*x + 30*d^4*e^2*x^2 - 10*
d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 3*d*e^5*x^5 + 2*e^6*x^6) - 60*b*(b*d - a*e)^5
*(d + e*x)*Log[d + e*x]))/(10*e^7*(a + b*x)*(d + e*x))
```

IntegrateAlgebraic [F] time = 3.49, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x)^2, x]
```

fricas [A] time = 0.42, size = 496, normalized size = 1.44

$$\frac{2\,b^6e^6x^6-10\,b^6d^6+60\,ab^5d^5e-150\,a^2b^4d^4e^2+200\,a^3b^3d^3e^3-150\,a^4b^2d^2e^4+60\,a^5bde^5-10\,a^6e^6-3\left(b^6de^5-5\,ab^5e^6\right)x^5+5\left(b^6d^2e^4-5\,ab^5de^5+10\,a^2b^4e^6\right)x^4-10\left(b^6d^3e^3-5\,ab^5d^2e^4+10\,a^2b^4de^5-10\,a^3b^3e^6\right)x^3+30\left(b^6d^4e^2-5\,ab^5d^3e^3+10\,a^2b^4d^2e^4-10\,a^3b^3de^5+5\,a^4b^2e^6\right)x^2+10\left(5\,b^6d^5e-24\,ab^5d^4e^2+45\,a^2b^4d^3e^3-40\,a^3b^3d^2e^4+15\,a^4b^2de^5\right)x-60\left(b^6d^6-5\,ab^5d^5e+10\,a^2b^4d^4e^2-10\,a^3b^3d^3e^3+5\,a^4b^2d^2e^4-a^5bde^5+\left(b^6d^5e-5\,ab^5d^4e^2+10\,a^2b^4d^3e^3-10\,a^3b^3d^2e^4+5\,a^4b^2de^5-a^5be^6\right)x\right)\log\left(ex+d\right)}{10\left(e^8x+de^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/10*(2*b^6*e^6*x^6 - 10*b^6*d^6 + 60*a*b^5*d^5*e - 150*a^2*b^4*d^4*e^2 + 2
00*a^3*b^3*d^3*e^3 - 150*a^4*b^2*d^2*e^4 + 60*a^5*b*d*e^5 - 10*a^6*e^6 - 3*
(b^6*d*e^5 - 5*a*b^5*e^6)*x^5 + 5*(b^6*d^2*e^4 - 5*a*b^5*d*e^5 + 10*a^2*b^4
*e^6)*x^4 - 10*(b^6*d^3*e^3 - 5*a*b^5*d^2*e^4 + 10*a^2*b^4*d*e^5 - 10*a^3*b
^3*e^6)*x^3 + 30*(b^6*d^4*e^2 - 5*a*b^5*d^3*e^3 + 10*a^2*b^4*d^2*e^4 - 10*a
^3*b^3*d*e^5 + 5*a^4*b^2*e^6)*x^2 + 10*(5*b^6*d^5*e - 24*a*b^5*d^4*e^2 + 45
*a^2*b^4*d^3*e^3 - 40*a^3*b^3*d^2*e^4 + 15*a^4*b^2*d*e^5)*x - 60*(b^6*d^6 -
```

```
5*a*b^5*d^5*e + 10*a^2*b^4*d^4*e^2 - 10*a^3*b^3*d^3*e^3 + 5*a^4*b^2*d^2*e^
4 - a^5*b*d*e^5 + (b^6*d^5*e - 5*a*b^5*d^4*e^2 + 10*a^2*b^4*d^3*e^3 - 10*a^
3*b^3*d^2*e^4 + 5*a^4*b^2*d*e^5 - a^5*b*e^6)*x)*log(e*x + d))/(e^8*x + d*e^
7)
```

giac [A] time = 0.20, size = 519, normalized size = 1.50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -6*(b^6*d^5*sgn(b*x + a) - 5*a*b^5*d^4*e*sgn(b*x + a) + 10*a^2*b^4*d^3*e^2*
sgn(b*x + a) - 10*a^3*b^3*d^2*e^3*sgn(b*x + a) + 5*a^4*b^2*d*e^4*sgn(b*x +
a) - a^5*b*e^5*sgn(b*x + a))*e^(-7)*log(abs(x*e + d)) + 1/10*(2*b^6*x^5*e^8
*sgn(b*x + a) - 5*b^6*d*x^4*e^7*sgn(b*x + a) + 10*b^6*d^2*x^3*e^6*sgn(b*x +
 a) - 20*b^6*d^3*x^2*e^5*sgn(b*x + a) + 50*b^6*d^4*x*e^4*sgn(b*x + a) + 15*
a*b^5*x^4*e^8*sgn(b*x + a) - 40*a*b^5*d*x^3*e^7*sgn(b*x + a) + 90*a*b^5*d^2
*x^2*e^6*sgn(b*x + a) - 240*a*b^5*d^3*x*e^5*sgn(b*x + a) + 50*a^2*b^4*x^3*e
^8*sgn(b*x + a) - 150*a^2*b^4*d*x^2*e^7*sgn(b*x + a) + 450*a^2*b^4*d^2*x*e^
6*sgn(b*x + a) + 100*a^3*b^3*x^2*e^8*sgn(b*x + a) - 400*a^3*b^3*d*x*e^7*sgn
(b*x + a) + 150*a^4*b^2*x*e^8*sgn(b*x + a))*e^(-10) - (b^6*d^6*sgn(b*x + a)
 - 6*a*b^5*d^5*e*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn(b*x + a) - 20*a^3*b^
3*d^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x + a) - 6*a^5*b*d*e^5*sg
n(b*x + a) + a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)
```

maple [B] time = 0.07, size = 601, normalized size = 1.74

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x)
```

```
[Out] 1/10*((b*x+a)^2)^(5/2)*(2*b^6*e^6*x^6+600*ln(e*x+d)*x*a^3*b^3*d^2*e^4+300*l
n(e*x+d)*x*a*b^5*d^4*e^2-300*ln(e*x+d)*x*a^4*b^2*d*e^5-600*ln(e*x+d)*x*a^2*
b^4*d^3*e^3-60*b^6*d^6*ln(e*x+d)+300*a*b^5*d^5*e*ln(e*x+d)-150*a*b^5*d^3*e^
3*x^2+150*a^4*b^2*d*e^5*x-400*a^3*b^3*d^2*e^4*x+450*a^2*b^4*d^3*e^3*x-240*a
*b^5*d^4*e^2*x+60*d*e^5*a^5*b-10*b^6*d^6-10*a^6*e^6-150*a^4*b^2*d^2*e^4+200
*a^3*b^3*d^3*e^3-150*a^2*b^4*d^4*e^2+60*a*b^5*d^5*e-600*a^2*b^4*d^4*e^2*ln(
e*x+d)-25*a*b^5*d*e^5*x^4-100*a^2*b^4*d*e^5*x^3-10*b^6*d^3*e^3*x^3+15*a*b^5
*e^6*x^5-3*b^6*d*e^5*x^5+50*a^2*b^4*e^6*x^4+5*b^6*d^2*e^4*x^4+100*a^3*b^3*e
^6*x^3+600*a^3*b^3*d^3*e^3*ln(e*x+d)+150*a^4*b^2*e^6*x^2+30*b^6*d^4*e^2*x^2
+60*a^5*b*d*e^5*ln(e*x+d)-300*a^4*b^2*d^2*e^4*ln(e*x+d)+50*a*b^5*d^2*e^4*x^
3-300*a^3*b^3*d*e^5*x^2+300*a^2*b^4*d^2*e^4*x^2+50*b^6*d^5*e*x+60*ln(e*x+d)
*x*a^5*b*e^6-60*ln(e*x+d)*x*b^6*d^5*e)/(b*x+a)^5/e^7/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2,x)
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**2,x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**2, x)
```

3.1775 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=347

$$\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{2e^7(a+bx)(d+ex)^2}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)}{e^7(a+bx)}+$$

Rubi [A] time = 0.26, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}{4e^7(a+bx)}-\frac{2b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)}{e^7(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2}{2e^7(a+bx)}-\frac{20b^3x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^6(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{2e^7(a+bx)(d+ex)^2}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (-20*b^3*(b*d - a*e)^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - (
(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2)
+ (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x
)) + (15*b^4*(b*d - a*e)^2*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^
7*(a + b*x)) - (2*b^5*(b*d - a*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(e^7*(a + b*x)) + (b^6*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*
(a + b*x)) + (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*
x])/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^3}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^3}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{20b^3(bd-ae)^3}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^3}-\frac{6b(bd-ae)^5}{e^6(d+ex)^2}+\frac{15b^2(bd-}{e^6(d+e}\right.}{ab+b^2x}$$

$$= -\frac{20b^3(bd-ae)^3x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{2e^7(a+bx)(d+ex)^2}$$

Mathematica [A]   time = 0.14, size = 321, normalized size = 0.93

$$\frac{\sqrt{(a+bx)^2}\left(-2a^6e^6-12a^5be^5(d+2ex)+30a^4b^2de^4(3d+4ex)+40a^3b^3e^3\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+30a^2b^4e^2\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)+4ab^5e\left(-27d^5+6d^4ex+63d^3e^2x^2+20d^2e^3x^3-5de^4x^4+2e^5x^5\right)+60b^2(d+ex)^2(bd-ae)^4\log(d+ex)+b^6\left(22d^6-16d^5ex-68d^4e^2x^2-20d^3e^3x^3+5d^2e^4x^4-2de^5x^5+e^6x^6\right)\right)}{4e^7(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-2*a^6*e^6 - 12*a^5*b*e^5*(d + 2*e*x) + 30*a^4*b^2*d*e^
4*(3*d + 4*e*x) + 40*a^3*b^3*e^3*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*
x^3) + 30*a^2*b^4*e^2*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e
^4*x^4) + 4*a*b^5*e*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3
- 5*d*e^4*x^4 + 2*e^5*x^5) + b^6*(22*d^6 - 16*d^5*e*x - 68*d^4*e^2*x^2 - 20
*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*d*e^5*x^5 + e^6*x^6) + 60*b^2*(b*d - a*e)^
4*(d + e*x)^2*Log[d + e*x]))/(4*e^7*(a + b*x)*(d + e*x)^2)
```

IntegrateAlgebraic [F]   time = 4.84, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x)^3, x]
```

fricas [B]   time = 0.43, size = 548, normalized size = 1.58

$$\frac{b^6e^6x^6+22\,b^6d^6-108\,ab^5d^5e+210\,a^2b^4d^4e^2-200\,a^3b^3d^3e^3+90\,a^4b^2d^2e^4-12\,a^5bde^5-2\,a^6e^6-2\left(b^6de^5-4\,ab^5e^6\right)x^5+5\left(b^6d^2e^4-4\,ab^5de^5+6\,a^2b^4e^6\right)x^4-20\left(b^6d^3e^3-4\,ab^5d^2e^4+6\,a^2b^4de^5-4\,a^3b^3e^6\right)x^3-2\left(34\,b^6d^4e^2-126\,ab^5d^3e^3+165\,a^2b^4d^2e^4-80\,a^3b^3de^5\right)x^2-4\left(4\,b^6d^5e-6\,ab^5d^4e^2-15\,a^2b^4d^3e^3+40\,a^3b^3d^2e^4-30\,a^4b^2de^5+6\,a^5be^6\right)x+60\left(b^6d^6-4\,ab^5d^5e+6\,a^2b^4d^4e^2-4\,a^3b^3d^3e^3+a^4b^2d^2e^4+\left(b^6d^4e^2-4\,ab^5d^3e^3+6\,a^2b^4d^2e^4-4\,a^3b^3de^5+a^4b^2e^6\right)x^2+2\left(b^6d^5e-4\,ab^5d^4e^2+6\,a^2b^4d^3e^3-4\,a^3b^3d^2e^4+a^4b^2de^5\right)x\right)\log\left(ex+d\right)}{4\left(e^9x^2+2\,de^8x+d^2e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/4*(b^6*e^6*x^6 + 22*b^6*d^6 - 108*a*b^5*d^5*e + 210*a^2*b^4*d^4*e^2 - 200
*a^3*b^3*d^3*e^3 + 90*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 2*a^6*e^6 - 2*(b^6
*d*e^5 - 4*a*b^5*e^6)*x^5 + 5*(b^6*d^2*e^4 - 4*a*b^5*d*e^5 + 6*a^2*b^4*e^6)
*x^4 - 20*(b^6*d^3*e^3 - 4*a*b^5*d^2*e^4 + 6*a^2*b^4*d*e^5 - 4*a^3*b^3*e^6)
*x^3 - 2*(34*b^6*d^4*e^2 - 126*a*b^5*d^3*e^3 + 165*a^2*b^4*d^2*e^4 - 80*a^3
*b^3*d*e^5)*x^2 - 4*(4*b^6*d^5*e - 6*a*b^5*d^4*e^2 - 15*a^2*b^4*d^3*e^3 + 4
0*a^3*b^3*d^2*e^4 - 30*a^4*b^2*d*e^5 + 6*a^5*b*e^6)*x + 60*(b^6*d^6 - 4*a*b
```

```
^5*d^5*e + 6*a^2*b^4*d^4*e^2 - 4*a^3*b^3*d^3*e^3 + a^4*b^2*d^2*e^4 + (b^6*d
^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5 + a^4*b^2*e^
6)*x^2 + 2*(b^6*d^5*e - 4*a*b^5*d^4*e^2 + 6*a^2*b^4*d^3*e^3 - 4*a^3*b^3*d^2
*e^4 + a^4*b^2*d*e^5)*x)*log(e*x + d))/(e^9*x^2 + 2*d*e^8*x + d^2*e^7)
```

giac [A] time = 0.19, size = 509, normalized size = 1.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 15*(b^6*d^4*sgn(b*x + a) - 4*a*b^5*d^3*e*sgn(b*x + a) + 6*a^2*b^4*d^2*e^2*s
gn(b*x + a) - 4*a^3*b^3*d*e^3*sgn(b*x + a) + a^4*b^2*e^4*sgn(b*x + a))*e^(-
7)*log(abs(x*e + d)) + 1/4*(b^6*x^4*e^9*sgn(b*x + a) - 4*b^6*d*x^3*e^8*sgn(
b*x + a) + 12*b^6*d^2*x^2*e^7*sgn(b*x + a) - 40*b^6*d^3*x*e^6*sgn(b*x + a)
+ 8*a*b^5*x^3*e^9*sgn(b*x + a) - 36*a*b^5*d*x^2*e^8*sgn(b*x + a) + 144*a*b^
5*d^2*x*e^7*sgn(b*x + a) + 30*a^2*b^4*x^2*e^9*sgn(b*x + a) - 180*a^2*b^4*d*
x*e^8*sgn(b*x + a) + 80*a^3*b^3*x*e^9*sgn(b*x + a))*e^(-12) + 1/2*(11*b^6*d
^6*sgn(b*x + a) - 54*a*b^5*d^5*e*sgn(b*x + a) + 105*a^2*b^4*d^4*e^2*sgn(b*x
 + a) - 100*a^3*b^3*d^3*e^3*sgn(b*x + a) + 45*a^4*b^2*d^2*e^4*sgn(b*x + a)
- 6*a^5*b*d*e^5*sgn(b*x + a) - a^6*e^6*sgn(b*x + a) + 12*(b^6*d^5*e*sgn(b*x
 + a) - 5*a*b^5*d^4*e^2*sgn(b*x + a) + 10*a^2*b^4*d^3*e^3*sgn(b*x + a) - 10
*a^3*b^3*d^2*e^4*sgn(b*x + a) + 5*a^4*b^2*d*e^5*sgn(b*x + a) - a^5*b*e^6*sg
n(b*x + a))*x)*e^(-7)/(x*e + d)^2
```

maple [B] time = 0.07, size = 669, normalized size = 1.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x)
```

```
[Out] 1/4*((b*x+a)^2)^(5/2)*(b^6*e^6*x^6-240*ln(e*x+d)*x^2*a^3*b^3*d*e^5+360*ln(e
*x+d)*x^2*a^2*b^4*d^2*e^4-240*ln(e*x+d)*x^2*a*b^5*d^3*e^3-480*a^3*b^3*d^2*e
^4*x*ln(e*x+d)-480*a*b^5*d^4*e^2*x*ln(e*x+d)+120*a^4*b^2*d*e^5*x*ln(e*x+d)+
720*a^2*b^4*d^3*e^3*x*ln(e*x+d)+60*b^6*d^6*ln(e*x+d)-240*a*b^5*d^5*e*ln(e*x
+d)+252*a*b^5*d^3*e^3*x^2+120*a^4*b^2*d*e^5*x-160*a^3*b^3*d^2*e^4*x+60*a^2*
b^4*d^3*e^3*x+24*a*b^5*d^4*e^2*x-12*a^5*b*d*e^5+22*b^6*d^6-2*a^6*e^6+90*a^4
*b^2*d^2*e^4-200*a^3*b^3*d^3*e^3+210*a^2*b^4*d^4*e^2-108*a*b^5*d^5*e+360*a^
2*b^4*d^4*e^2*ln(e*x+d)-20*a*b^5*d*e^5*x^4-120*a^2*b^4*d*e^5*x^3-20*b^6*d^3
*e^3*x^3+8*a*b^5*e^6*x^5-2*b^6*d*e^5*x^5+30*a^2*b^4*e^6*x^4+5*b^6*d^2*e^4*x
^4+80*a^3*b^3*e^6*x^3-240*a^3*b^3*d^3*e^3*ln(e*x+d)-68*b^6*d^4*e^2*x^2-24*a
^5*b*e^6*x+60*a^4*b^2*d^2*e^4*ln(e*x+d)+80*a*b^5*d^2*e^4*x^3+160*a^3*b^3*d*
e^5*x^2-330*a^2*b^4*d^2*e^4*x^2+60*ln(e*x+d)*x^2*a^4*b^2*e^6+60*ln(e*x+d)*x
^2*b^6*d^4*e^2-16*b^6*d^5*e*x+120*b^6*d^5*e*x*ln(e*x+d))/(b*x+a)^5/e^7/(e*x
+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**3, x)
```

3.1776 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=345

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{3e^7(a+bx)(d+ex)^3}+\frac{b^6\sqrt{a^2+2}}{3}$$

Rubi [A] time = 0.25, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}{3e^7(a+bx)}-\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}{e^7(a+bx)}+\frac{15b^4x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^6(a+bx)}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{3e^7(a+bx)(d+ex)^3}-\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3\log(d+ex)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (15*b^4*(b*d - a*e)^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((
b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) +
 (3*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)
^2) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(
d + e*x)) - (3*b^5*(b*d - a*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(a + b*x)) + (b^6*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a
+ b*x)) - (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])
/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^4}\,dx}{b^4\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^4}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{15b^4(bd-ae)^2}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^4}-\frac{6b(bd-ae)^5}{e^6(d+ex)^3}+\frac{15b^2(bd-ae}{e^6(d+ex)^2}\cdots\right.}{ab+b^2x} \\
&= \frac{15b^4(bd-ae)^2x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^3}+\cdots
\end{aligned}
$$

Mathematica [A] time = 0.15, size = 320, normalized size = 0.93

$$
-\frac{\sqrt{(a+bx)^2}\left(a^6e^6+3a^5be^5(d+3ex)+15a^4b^2e^4\left(d^2+3dex+3e^2x^2\right)-10a^3b^3de^3\left(11d^2+27dex+18e^2x^2\right)+15a^2b^4e^2\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)-3ab^5e\left(47d^5+81d^4ex-9d^3e^2x^2-63d^2e^3x^3-15de^4x^4+3e^5x^5\right)+60b^3(d+ex)^3(bd-ae)^3\log(d+ex)+b^6\left(37d^6+51d^5ex-39d^4e^2x^2-73d^3e^3x^3-15d^2e^4x^4+3de^5x^5-e^6x^6\right)\right)}{3e^7(a+bx)(d+ex)^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] -1/3*(Sqrt[(a + b*x)^2]*(a^6*e^6 + 3*a^5*b*e^5*(d + 3*e*x) + 15*a^4*b^2*e^4
*(d^2 + 3*d*e*x + 3*e^2*x^2) - 10*a^3*b^3*d*e^3*(11*d^2 + 27*d*e*x + 18*e^2
*x^2) + 15*a^2*b^4*e^2*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^3 -
 3*e^4*x^4) - 3*a*b^5*e*(47*d^5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x
^3 - 15*d*e^4*x^4 + 3*e^5*x^5) + b^6*(37*d^6 + 51*d^5*e*x - 39*d^4*e^2*x^2
- 73*d^3*e^3*x^3 - 15*d^2*e^4*x^4 + 3*d*e^5*x^5 - e^6*x^6) + 60*b^3*(b*d -
a*e)^3*(d + e*x)^3*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 6.41, size = 0, normalized size = 0.00

$$
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d +
e*x)^4, x]
```

fricas [B] time = 0.41, size = 576, normalized size = 1.67

$$
\frac{b^6e^6x^6-37b^6d^6+141ab^5d^5e-195a^2b^4d^4e^2+110a^3b^3d^3e^3-15a^4b^2d^2e^4-3a^5bde^5-a^6e^6-3\left(b^6de^5-3ab^5e^6\right)x^5+15\left(b^6d^2e^4-3ab^5de^5+3a^2b^4e^6\right)x^4+\left(73b^6d^3e^3-189ab^5d^2e^4+135a^2b^4de^5\right)x^3+3\left(13b^6d^4e^2-9ab^5d^3e^3-45a^2b^4d^2e^4+60a^3b^3de^5-15a^4b^2e^6\right)x^2-3\left(17b^6d^5e-81ab^5d^4e^2+135a^2b^4d^3e^3-90a^3b^3d^2e^4+15a^4b^2de^5+3a^5be^6\right)x-60\left(b^6d^6-3ab^5d^5e+3a^2b^4d^4e^2-a^3b^3d^3e^3+\left(b^6d^3e^3-3ab^5d^2e^4+3a^2b^4de^5-a^3b^3e^6\right)x^3+3\left(b^6d^4e^2-3ab^5d^3e^3+3a^2b^4d^2e^4-a^3b^3de^5\right)x^2+3\left(b^6d^5e-3ab^5d^4e^2+3a^2b^4d^3e^3-a^3b^3d^2e^4\right)x\right)\log(ex+d)}{3\left(e^{10}x^3+3de^9x^2+3d^2e^8x+d^3e^7\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/3*(b^6*e^6*x^6 - 37*b^6*d^6 + 141*a*b^5*d^5*e - 195*a^2*b^4*d^4*e^2 + 110
*a^3*b^3*d^3*e^3 - 15*a^4*b^2*d^2*e^4 - 3*a^5*b*d*e^5 - a^6*e^6 - 3*(b^6*d*
e^5 - 3*a*b^5*e^6)*x^5 + 15*(b^6*d^2*e^4 - 3*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x
^4 + (73*b^6*d^3*e^3 - 189*a*b^5*d^2*e^4 + 135*a^2*b^4*d*e^5)*x^3 + 3*(13*b
^6*d^4*e^2 - 9*a*b^5*d^3*e^3 - 45*a^2*b^4*d^2*e^4 + 60*a^3*b^3*d*e^5 - 15*a
^4*b^2*e^6)*x^2 - 3*(17*b^6*d^5*e - 81*a*b^5*d^4*e^2 + 135*a^2*b^4*d^3*e^3
- 90*a^3*b^3*d^2*e^4 + 15*a^4*b^2*d*e^5 + 3*a^5*b*e^6)*x - 60*(b^6*d^6 - 3*
```

a*b^5*d^5*e + 3*a^2*b^4*d^4*e^2 - a^3*b^3*d^3*e^3 + (b^6*d^3*e^3 - 3*a*b^5*
d^2*e^4 + 3*a^2*b^4*d*e^5 - a^3*b^3*e^6)*x^3 + 3*(b^6*d^4*e^2 - 3*a*b^5*d^3
*e^3 + 3*a^2*b^4*d^2*e^4 - a^3*b^3*d*e^5)*x^2 + 3*(b^6*d^5*e - 3*a*b^5*d^4*
e^2 + 3*a^2*b^4*d^3*e^3 - a^3*b^3*d^2*e^4)*x)*log(e*x + d))/(e^10*x^3 + 3*d
*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7)

giac [A] time = 0.19, size = 503, normalized size = 1.46

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="giac"
)

[Out] -20*(b^6*d^3*sgn(b*x + a) - 3*a*b^5*d^2*e*sgn(b*x + a) + 3*a^2*b^4*d*e^2*sg
n(b*x + a) - a^3*b^3*e^3*sgn(b*x + a))*e^(-7)*log(abs(x*e + d)) + 1/3*(b^6*
x^3*e^8*sgn(b*x + a) - 6*b^6*d*x^2*e^7*sgn(b*x + a) + 30*b^6*d^2*x*e^6*sgn(
b*x + a) + 9*a*b^5*x^2*e^8*sgn(b*x + a) - 72*a*b^5*d*x*e^7*sgn(b*x + a) + 4
5*a^2*b^4*x*e^8*sgn(b*x + a))*e^(-12) - 1/3*(37*b^6*d^6*sgn(b*x + a) - 141*
a*b^5*d^5*e*sgn(b*x + a) + 195*a^2*b^4*d^4*e^2*sgn(b*x + a) - 110*a^3*b^3*d
^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x + a) + 3*a^5*b*d*e^5*sgn(b
*x + a) + a^6*e^6*sgn(b*x + a) + 45*(b^6*d^4*e^2*sgn(b*x + a) - 4*a*b^5*d^3
*e^3*sgn(b*x + a) + 6*a^2*b^4*d^2*e^4*sgn(b*x + a) - 4*a^3*b^3*d*e^5*sgn(b*
x + a) + a^4*b^2*e^6*sgn(b*x + a))*x^2 + 9*(9*b^6*d^5*e*sgn(b*x + a) - 35*a
*b^5*d^4*e^2*sgn(b*x + a) + 50*a^2*b^4*d^3*e^3*sgn(b*x + a) - 30*a^3*b^3*d^
2*e^4*sgn(b*x + a) + 5*a^4*b^2*d*e^5*sgn(b*x + a) + a^5*b*e^6*sgn(b*x + a))
*x)*e^(-7)/(x*e + d)^3

maple [B] time = 0.11, size = 692, normalized size = 2.01

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x)

[Out] 1/3*((b*x+a)^2)^(5/2)*(b^6*e^6*x^6+180*ln(e*x+d)*x^3*a*b^5*d^2*e^4-180*ln(e
*x+d)*x^3*a^2*b^4*d*e^5+180*a^3*b^3*d*e^5*x^2*ln(e*x+d)-540*a^2*b^4*d^2*e^4
*x^2*ln(e*x+d)+540*a*b^5*d^3*e^3*x^2*ln(e*x+d)+180*a^3*b^3*d^2*e^4*x*ln(e*x
+d)+540*a*b^5*d^4*e^2*x*ln(e*x+d)-540*a^2*b^4*d^3*e^3*x*ln(e*x+d)-60*b^6*d^
6*ln(e*x+d)+180*a*b^5*d^5*e*ln(e*x+d)-27*a*b^5*d^3*e^3*x^2-45*a^4*b^2*d*e^5
*x+270*a^3*b^3*d^2*e^4*x-405*a^2*b^4*d^3*e^3*x+243*a*b^5*d^4*e^2*x-3*a^5*b*
d*e^5-37*b^6*d^6-a^6*e^6-15*a^4*b^2*d^2*e^4+110*a^3*b^3*d^3*e^3-195*a^2*b^4
*d^4*e^2+141*a*b^5*d^5*e-180*a^2*b^4*d^4*e^2*ln(e*x+d)-45*a*b^5*d*e^5*x^4+1
35*a^2*b^4*d*e^5*x^3+73*b^6*d^3*e^3*x^3+9*a*b^5*e^6*x^5-3*b^6*d*e^5*x^5+45*
a^2*b^4*e^6*x^4+15*b^6*d^2*e^4*x^4+60*a^3*b^3*d^3*e^3*ln(e*x+d)-45*a^4*b^2*
e^6*x^2+39*b^6*d^4*e^2*x^2-9*a^5*b*e^6*x-189*a*b^5*d^2*e^4*x^3+180*a^3*b^3*
d*e^5*x^2-135*a^2*b^4*d^2*e^4*x^2-180*b^6*d^4*e^2*x^2*ln(e*x+d)-51*b^6*d^5*
e*x-180*b^6*d^5*e*x*ln(e*x+d)+60*ln(e*x+d)*x^3*a^3*b^3*e^6-60*ln(e*x+d)*x^3
*b^6*d^3*e^3)/(b*x+a)^5/e^7/(e*x+d)^3

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="maxim
a")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4,x)
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**4,x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**4, x)
```

3.1777 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=344

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{4e^7(a+bx)(d+ex)^4}+\frac{b^6x^2\sqrt{a^2+}}{2e^5(}$$

Rubi [A] time = 0.24, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$-\frac{b^5x\sqrt{a^2+2abx+b^2x^2}\,(5bd-6ae)}{e^6(a+bx)}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)(d+ex)}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{4e^7(a+bx)(d+ex)^4}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^7(a+bx)}+\frac{b^6x^2\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -((b^5*(5*b*d - 6*a*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x))) +
(b^6*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)) - ((b*d - a*e)^6*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^4) + (2*b*(b*d -
a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^3) - (15*b^2
*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2)
 + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d +
 e*x)) + (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^5}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^5}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b^5(5bd-6ae)}{e^6}+\frac{b^6x}{e^5}+\frac{(-bd+ae)^6}{e^6(d+ex)^5}-\frac{6b(bd-ae)^5}{e^6(d+ex)^4}+ \frac{15}{\cdots}\right.}{ab+b^2x}$$
$$= -\frac{b^5(5bd-6ae)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{b^6x^2\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)}-\frac{(bd-\cdots}{\cdots}$$

Mathematica [A] time = 0.15, size = 318, normalized size = 0.92

$$-\frac{\sqrt{(a+bx)^2}\left(a^6e^6+2a^5be^5(d+4ex)+5a^4b^2e^4\left(d^2+4dex+6e^2x^2\right)+20a^3b^3e^3\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)-5a^2b^4de^2\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)+2ab^5e\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)-60b^4(d+ex)^4(bd-ae)^2\log(d+ex)+b^6\left(-57d^6-168d^5ex-132d^4e^2x^2+32d^3e^3x^3+68d^2e^4x^4+12de^5x^5-2e^6x^6\right)\right)}{4e^7(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -1/4*(Sqrt[(a + b*x)^2]*(a^6*e^6 + 2*a^5*b*e^5*(d + 4*e*x) + 5*a^4*b^2*e^4*
(d^2 + 4*d*e*x + 6*e^2*x^2) + 20*a^3*b^3*e^3*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2
 + 4*e^3*x^3) - 5*a^2*b^4*d*e^2*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e
^3*x^3) + 2*a*b^5*e*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^
3 - 48*d*e^4*x^4 - 12*e^5*x^5) + b^6*(-57*d^6 - 168*d^5*e*x - 132*d^4*e^2*x
^2 + 32*d^3*e^3*x^3 + 68*d^2*e^4*x^4 + 12*d*e^5*x^5 - 2*e^6*x^6) - 60*b^4*(
b*d - a*e)^2*(d + e*x)^4*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.43, size = 571, normalized size = 1.66

$$\frac{2b^6e^6x^6+57b^6d^6-154ab^5d^5e+125a^2b^4d^4e^2-20a^3b^3d^3e^3-5a^4b^2d^2e^4-2a^5bde^5-a^6e^6-12\left(b^6de^5-2ab^5e^6\right)x^5-4\left(17b^6d^2e^4-24ab^5de^5\right)x^4-16\left(2b^6d^3e^3+6ab^5d^2e^4-15a^2b^4de^5+5a^3b^3e^6\right)x^3+6\left(22b^6d^4e^2-84ab^5d^3e^3+90a^2b^4d^2e^4-20a^3b^3de^5-5a^4b^2e^6\right)x^2+4\left(42b^6d^5e-124ab^5d^4e^2+110a^2b^4d^3e^3-20a^3b^3d^2e^4-5a^4b^2de^5-2a^5be^6\right)x+60\left(b^6d^6-2ab^5d^5e+a^2b^4d^4e^2+\left(b^6d^2e^4-2ab^5de^5+a^2b^4e^6\right)x^4+4\left(b^6d^3e^3-2ab^5d^2e^4+a^2b^4de^5\right)x^3+6\left(b^6d^4e^2-2ab^5d^3e^3+a^2b^4d^2e^4\right)x^2+4\left(b^6d^5e-2ab^5d^4e^2+a^2b^4d^3e^3\right)x\right)\log(ex+d)}{4\left(e^{11}x^4+4de^{10}x^3+6d^2e^9x^2+4d^3e^8x+d^4e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/4*(2*b^6*e^6*x^6 + 57*b^6*d^6 - 154*a*b^5*d^5*e + 125*a^2*b^4*d^4*e^2 - 2
0*a^3*b^3*d^3*e^3 - 5*a^4*b^2*d^2*e^4 - 2*a^5*b*d*e^5 - a^6*e^6 - 12*(b^6*d
*e^5 - 2*a*b^5*e^6)*x^5 - 4*(17*b^6*d^2*e^4 - 24*a*b^5*d*e^5)*x^4 - 16*(2*b
^6*d^3*e^3 + 6*a*b^5*d^2*e^4 - 15*a^2*b^4*d*e^5 + 5*a^3*b^3*e^6)*x^3 + 6*(2
2*b^6*d^4*e^2 - 84*a*b^5*d^3*e^3 + 90*a^2*b^4*d^2*e^4 - 20*a^3*b^3*d*e^5 -
5*a^4*b^2*e^6)*x^2 + 4*(42*b^6*d^5*e - 124*a*b^5*d^4*e^2 + 110*a^2*b^4*d^3*
e^3 - 20*a^3*b^3*d^2*e^4 - 5*a^4*b^2*d*e^5 - 2*a^5*b*e^6)*x + 60*(b^6*d^6 -
 2*a*b^5*d^5*e + a^2*b^4*d^4*e^2 + (b^6*d^2*e^4 - 2*a*b^5*d*e^5 + a^2*b^4*e
^6)*x^4 + 4*(b^6*d^3*e^3 - 2*a*b^5*d^2*e^4 + a^2*b^4*d*e^5)*x^3 + 6*(b^6*d^
4*e^2 - 2*a*b^5*d^3*e^3 + a^2*b^4*d^2*e^4)*x^2 + 4*(b^6*d^5*e - 2*a*b^5*d^4
```

```
*e^2 + a^2*b^4*d^3*e^3)*x)*log(e*x + d))/(e^11*x^4 + 4*d*e^10*x^3 + 6*d^2*e
^9*x^2 + 4*d^3*e^8*x + d^4*e^7)
```

giac [A] time = 0.23, size = 504, normalized size = 1.47

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] 15*(b^6*d^2*sgn(b*x + a) - 2*a*b^5*d*e*sgn(b*x + a) + a^2*b^4*e^2*sgn(b*x +
 a))*e^(-7)*log(abs(x*e + d)) + 1/2*(b^6*x^2*e^5*sgn(b*x + a) - 10*b^6*d*x*
e^4*sgn(b*x + a) + 12*a*b^5*x*e^5*sgn(b*x + a))*e^(-10) + 1/4*(57*b^6*d^6*s
gn(b*x + a) - 154*a*b^5*d^5*e*sgn(b*x + a) + 125*a^2*b^4*d^4*e^2*sgn(b*x +
a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) - 5*a^4*b^2*d^2*e^4*sgn(b*x + a) - 2*a
^5*b*d*e^5*sgn(b*x + a) - a^6*e^6*sgn(b*x + a) + 80*(b^6*d^3*e^3*sgn(b*x +
a) - 3*a*b^5*d^2*e^4*sgn(b*x + a) + 3*a^2*b^4*d*e^5*sgn(b*x + a) - a^3*b^3*
e^6*sgn(b*x + a))*x^3 + 30*(7*b^6*d^4*e^2*sgn(b*x + a) - 20*a*b^5*d^3*e^3*s
gn(b*x + a) + 18*a^2*b^4*d^2*e^4*sgn(b*x + a) - 4*a^3*b^3*d*e^5*sgn(b*x + a
) - a^4*b^2*e^6*sgn(b*x + a))*x^2 + 4*(47*b^6*d^5*e*sgn(b*x + a) - 130*a*b^
5*d^4*e^2*sgn(b*x + a) + 110*a^2*b^4*d^3*e^3*sgn(b*x + a) - 20*a^3*b^3*d^2*
e^4*sgn(b*x + a) - 5*a^4*b^2*d*e^5*sgn(b*x + a) - 2*a^5*b*e^6*sgn(b*x + a))
*x)*e^(-7)/(x*e + d)^4
```

maple [B] time = 0.08, size = 670, normalized size = 1.95

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x)
```

```
[Out] 1/4*((b*x+a)^2)^(5/2)*(2*b^6*e^6*x^6-120*ln(e*x+d)*x^4*a*b^5*d*e^5-480*a*b^
5*d^2*e^4*x^3*ln(e*x+d)+240*a^2*b^4*d*e^5*x^3*ln(e*x+d)+360*a^2*b^4*d^2*e^4
*x^2*ln(e*x+d)-720*a*b^5*d^3*e^3*x^2*ln(e*x+d)-480*a*b^5*d^4*e^2*x*ln(e*x+d
)+240*a^2*b^4*d^3*e^3*x*ln(e*x+d)+60*b^6*d^6*ln(e*x+d)-120*a*b^5*d^5*e*ln(e
*x+d)-504*a*b^5*d^3*e^3*x^2-20*a^4*b^2*d*e^5*x-80*a^3*b^3*d^2*e^4*x+440*a^2
*b^4*d^3*e^3*x-496*a*b^5*d^4*e^2*x-2*a^5*b*d*e^5+57*b^6*d^6-a^6*e^6-5*a^4*b
^2*d^2*e^4-20*a^3*b^3*d^3*e^3+125*a^2*b^4*d^4*e^2-154*a*b^5*d^5*e+60*a^2*b^
4*d^4*e^2*ln(e*x+d)+96*a*b^5*d*e^5*x^4+240*a^2*b^4*d*e^5*x^3-32*b^6*d^3*e^3
*x^3+24*a*b^5*e^6*x^5-12*b^6*d*e^5*x^5-68*b^6*d^2*e^4*x^4-80*a^3*b^3*e^6*x^
3-30*a^4*b^2*e^6*x^2+132*b^6*d^4*e^2*x^2-8*a^5*b*e^6*x-96*a*b^5*d^2*e^4*x^3
-120*a^3*b^3*d*e^5*x^2+540*a^2*b^4*d^2*e^4*x^2+360*b^6*d^4*e^2*x^2*ln(e*x+d
)+60*ln(e*x+d)*x^4*a^2*b^4*e^6+60*ln(e*x+d)*x^4*b^6*d^2*e^4+168*b^6*d^5*e*x
+240*b^6*d^5*e*x*ln(e*x+d)+240*b^6*d^3*e^3*x^3*ln(e*x+d))/(b*x+a)^5/e^7/(e*
x+d)^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5,x)
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**5,x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**5, x)
```

3.1778 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=344

$$-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^3}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{2e^7(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{5e^7(a+bx)(d+ex)^5}+\frac{b^6x\sqrt{a^2+2}}{e^6(a}$$

Rubi [A] time = 0.23, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)(d+ex)^2}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^3}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{2e^7(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{5e^7(a+bx)(d+ex)^5}-\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)}{e^7(a+bx)}+\frac{b^6x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] (b^6*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((b*d - a*e)^6*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^5) + (3*b*(b*d - a*e)
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^4) - (5*b^2*(b
*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^3) + (1
0*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)
^2) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(
d + e*x)) - (6*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^6}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^6}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{b^6}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^6}-\frac{6b(bd-ae)^5}{e^6(d+ex)^5}+\frac{15b^2(bd-ae)^4}{e^6(d+ex)^4}-\frac{20b^3}{e^6(}\right.}{ab+b^2x}$$

$$= \frac{b^6x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5}+\frac{3b(bd-ae)^5}{2e^7(a}$$

Mathematica [A] time = 0.16, size = 315, normalized size = 0.92

$$-\frac{\sqrt{(a+bx)^2}\left(2a^6e^6+3a^5be^5(d+5ex)+5a^4b^2e^4\left(d^2+5dex+10e^2x^2\right)+10a^3b^3e^3\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+30a^2b^4e^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)-ab^5de\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)+60b^5(d+ex)^5(bd-ae)\log(d+ex)+b^6\left(87d^6+375d^5ex+600d^4e^2x^2+400d^3e^3x^3+50d^2e^4x^4-50de^5x^5-10e^6x^6\right)\right)}{10e^7(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] -1/10*(Sqrt[(a + b*x)^2]*(2*a^6*e^6 + 3*a^5*b*e^5*(d + 5*e*x) + 5*a^4*b^2*e
^4*(d^2 + 5*d*e*x + 10*e^2*x^2) + 10*a^3*b^3*e^3*(d^3 + 5*d^2*e*x + 10*d*e^
2*x^2 + 10*e^3*x^3) + 30*a^2*b^4*e^2*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10
*d*e^3*x^3 + 5*e^4*x^4) - a*b^5*d*e*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x
^2 + 900*d*e^3*x^3 + 300*e^4*x^4) + b^6*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2
*x^2 + 400*d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6) + 60*b
^5*(b*d - a*e)*(d + e*x)^5*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.12, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.42, size = 542, normalized size = 1.58

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] 1/10*(10*b^6*e^6*x^6 + 50*b^6*d*e^5*x^5 - 87*b^6*d^6 + 137*a*b^5*d^5*e - 30
*a^2*b^4*d^4*e^2 - 10*a^3*b^3*d^3*e^3 - 5*a^4*b^2*d^2*e^4 - 3*a^5*b*d*e^5 -
 2*a^6*e^6 - 50*(b^6*d^2*e^4 - 6*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x^4 - 100*(4*
b^6*d^3*e^3 - 9*a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 - 50*(12
*b^6*d^4*e^2 - 22*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 + 2*a^3*b^3*d*e^5 + a^4
*b^2*e^6)*x^2 - 5*(75*b^6*d^5*e - 125*a*b^5*d^4*e^2 + 30*a^2*b^4*d^3*e^3 +
10*a^3*b^3*d^2*e^4 + 5*a^4*b^2*d*e^5 + 3*a^5*b*e^6)*x - 60*(b^6*d^6 - a*b^5
*d^5*e + (b^6*d*e^5 - a*b^5*e^6)*x^5 + 5*(b^6*d^2*e^4 - a*b^5*d*e^5)*x^4 +
10*(b^6*d^3*e^3 - a*b^5*d^2*e^4)*x^3 + 10*(b^6*d^4*e^2 - a*b^5*d^3*e^3)*x^2
```

```
+ 5*(b^6*d^5*e - a*b^5*d^4*e^2)*x)*log(e*x + d))/(e^12*x^5 + 5*d*e^11*x^4
+ 10*d^2*e^10*x^3 + 10*d^3*e^9*x^2 + 5*d^4*e^8*x + d^5*e^7)
```

giac [A] time = 0.20, size = 499, normalized size = 1.45

$$b^{6} x e^{(-6)} \mathrm{sgn}\left(b x + a\right) - 6 \, {\left(b^{6} d \mathrm{sgn}\left(b x + a\right) - a b^{5} e \mathrm{sgn}\left(b x + a\right)\right)} e^{(-7)} \log\left({\left| x e + d \right|}\right) - \frac{{\left(87 \, b^{6} d^{6} \mathrm{sgn}\left(b x + a\right) - 137 \, a b^{5} d^{5} e \mathrm{sgn}\left(b x + a\right) + 30 \, a^{2} b^{4} d^{4} e^{2} \mathrm{sgn}\left(b x + a\right) + 10 \, a^{3} b^{3} d^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 5 \, a^{4} b^{2} d^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 3 \, a^{5} b d e^{5} \mathrm{sgn}\left(b x + a\right) + 2 \, a^{6} e^{6} \mathrm{sgn}\left(b x + a\right) + 150 \, {\left(b^{6} d^{2} e^{4} \mathrm{sgn}\left(b x + a\right) - 2 \, a b^{5} d e^{5} \mathrm{sgn}\left(b x + a\right) + a^{2} b^{4} e^{6} \mathrm{sgn}\left(b x + a\right)\right)} x^{4} + 100 \, {\left(5 \, b^{6} d^{3} e^{3} \mathrm{sgn}\left(b x + a\right) - 9 \, a b^{5} d^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 3 \, a^{2} b^{4} d e^{5} \mathrm{sgn}\left(b x + a\right) + a^{3} b^{3} e^{6} \mathrm{sgn}\left(b x + a\right)\right)} x^{3} + 50 \, {\left(13 \, b^{6} d^{4} e^{2} \mathrm{sgn}\left(b x + a\right) - 22 \, a b^{5} d^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 6 \, a^{2} b^{4} d^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 2 \, a^{3} b^{3} d e^{5} \mathrm{sgn}\left(b x + a\right) + a^{4} b^{2} e^{6} \mathrm{sgn}\left(b x + a\right)\right)} x^{2} + 5 \, {\left(77 \, b^{6} d^{5} e \mathrm{sgn}\left(b x + a\right) - 125 \, a b^{5} d^{4} e^{2} \mathrm{sgn}\left(b x + a\right) + 30 \, a^{2} b^{4} d^{3} e^{3} \mathrm{sgn}\left(b x + a\right) + 10 \, a^{3} b^{3} d^{2} e^{4} \mathrm{sgn}\left(b x + a\right) + 5 \, a^{4} b^{2} d e^{5} \mathrm{sgn}\left(b x + a\right) + 3 \, a^{5} b e^{6} \mathrm{sgn}\left(b x + a\right)\right)} x\right)} e^{(-7)}}{10 \, {\left(x e + d\right)}^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] b^6*x*e^(-6)*sgn(b*x + a) - 6*(b^6*d*sgn(b*x + a) - a*b^5*e*sgn(b*x + a))*e
^(-7)*log(abs(x*e + d)) - 1/10*(87*b^6*d^6*sgn(b*x + a) - 137*a*b^5*d^5*e*s
gn(b*x + a) + 30*a^2*b^4*d^4*e^2*sgn(b*x + a) + 10*a^3*b^3*d^3*e^3*sgn(b*x
+ a) + 5*a^4*b^2*d^2*e^4*sgn(b*x + a) + 3*a^5*b*d*e^5*sgn(b*x + a) + 2*a^6*
e^6*sgn(b*x + a) + 150*(b^6*d^2*e^4*sgn(b*x + a) - 2*a*b^5*d*e^5*sgn(b*x +
a) + a^2*b^4*e^6*sgn(b*x + a))*x^4 + 100*(5*b^6*d^3*e^3*sgn(b*x + a) - 9*a*
b^5*d^2*e^4*sgn(b*x + a) + 3*a^2*b^4*d*e^5*sgn(b*x + a) + a^3*b^3*e^6*sgn(b
*x + a))*x^3 + 50*(13*b^6*d^4*e^2*sgn(b*x + a) - 22*a*b^5*d^3*e^3*sgn(b*x +
 a) + 6*a^2*b^4*d^2*e^4*sgn(b*x + a) + 2*a^3*b^3*d*e^5*sgn(b*x + a) + a^4*b
^2*e^6*sgn(b*x + a))*x^2 + 5*(77*b^6*d^5*e*sgn(b*x + a) - 125*a*b^5*d^4*e^2
*sgn(b*x + a) + 30*a^2*b^4*d^3*e^3*sgn(b*x + a) + 10*a^3*b^3*d^2*e^4*sgn(b*
x + a) + 5*a^4*b^2*d*e^5*sgn(b*x + a) + 3*a^5*b*e^6*sgn(b*x + a))*x)*e^(-7)
/(x*e + d)^5
```

maple [B] time = 0.11, size = 603, normalized size = 1.75

$$\frac{\left(\left(b x +a \right)^{2}\right)^{\frac{5}{2}} \left(60 a \,b^{5} e^{6} x^{5} \ln \left(e x +d \right)-60 b^{6} d \,e^{5} x^{5} \ln \left(e x +d \right)+10 b^{6} e^{6} x^{6}+300 a \,b^{5} d \,e^{5} x^{4} \ln \left(e x +d \right)-300 b^{6} d^{2} e^{4} x^{4} \ln \left(e x +d \right)+50 b^{6} d \,e^{5} x^{5}-150 a^{2} b^{4} e^{6} x^{4}+600 a \,b^{5} d^{2} e^{4} x^{3} \ln \left(e x +d \right)+300 a \,b^{5} d \,e^{5} x^{4}-600 b^{6} d^{3} e^{3} x^{3} \ln \left(e x +d \right)-50 b^{6} d^{2} e^{4} x^{4}-100 a^{3} b^{3} e^{6} x^{3}-300 a^{2} b^{4} d \,e^{5} x^{3}+600 a \,b^{5} d^{3} e^{3} x^{2} \ln \left(e x +d \right)+900 a \,b^{5} d^{2} e^{4} x^{3}-600 b^{6} d^{4} e^{2} x^{2} \ln \left(e x +d \right)-400 b^{6} d^{3} e^{3} x^{3}-50 a^{4} b^{2} e^{6} x^{2}-100 a^{3} b^{3} d \,e^{5} x^{2}-300 a^{2} b^{4} d^{2} e^{4} x^{2}+300 a \,b^{5} d^{4} e^{2} x \ln \left(e x +d \right)+1100 a \,b^{5} d^{3} e^{3} x^{2}-300 b^{6} d^{5} e x \ln \left(e x +d \right)-600 b^{6} d^{4} e^{2} x^{2}-15 a^{5} b \,e^{6} x -25 a^{4} b^{2} d \,e^{5} x -50 a^{3} b^{3} d^{2} e^{4} x -150 a^{2} b^{4} d^{3} e^{3} x +60 a \,b^{5} d^{5} e \ln \left(e x +d \right)+625 a \,b^{5} d^{4} e^{2} x -60 b^{6} d^{6} \ln \left(e x +d \right)-375 b^{6} d^{5} e x -2 a^{6} e^{6}-3 a^{5} b d \,e^{5}-5 a^{4} b^{2} d^{2} e^{4}-10 a^{3} b^{3} d^{3} e^{3}-30 a^{2} b^{4} d^{4} e^{2}+137 a \,b^{5} d^{5} e -87 b^{6} d^{6}\right)}{10 \left(b x +a \right)^{5} \left(e x +d \right)^{5} e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x)
```

```
[Out] 1/10*((b*x+a)^2)^(5/2)*(10*b^6*e^6*x^6+300*a*b^5*d*e^5*x^4*ln(e*x+d)+600*a*
b^5*d^2*e^4*x^3*ln(e*x+d)+600*a*b^5*d^3*e^3*x^2*ln(e*x+d)+300*a*b^5*d^4*e^2
*x*ln(e*x+d)-60*b^6*d^6*ln(e*x+d)+60*a*b^5*d^5*e*ln(e*x+d)+1100*a*b^5*d^3*e
^3*x^2-25*a^4*b^2*d*e^5*x-50*a^3*b^3*d^2*e^4*x-150*a^2*b^4*d^3*e^3*x+625*a*
b^5*d^4*e^2*x-3*a^5*b*d*e^5-87*b^6*d^6-2*a^6*e^6-5*a^4*b^2*d^2*e^4-10*a^3*b
^3*d^3*e^3-30*a^2*b^4*d^4*e^2+137*a*b^5*d^5*e+300*a*b^5*d*e^5*x^4-300*a^2*b
^4*d*e^5*x^3-400*b^6*d^3*e^3*x^3+50*b^6*d*e^5*x^5-150*a^2*b^4*e^6*x^4-50*b^
6*d^2*e^4*x^4-100*a^3*b^3*e^6*x^3+60*ln(e*x+d)*x^5*a*b^5*e^6-50*a^4*b^2*e^6
*x^2-600*b^6*d^4*e^2*x^2-15*a^5*b*e^6*x+900*a*b^5*d^2*e^4*x^3-100*a^3*b^3*d
*e^5*x^2-300*a^2*b^4*d^2*e^4*x^2-60*ln(e*x+d)*x^5*b^6*d*e^5-600*b^6*d^4*e^2
*x^2*ln(e*x+d)-300*b^6*d^2*e^4*x^4*ln(e*x+d)-375*b^6*d^5*e*x-300*b^6*d^5*e*
x*ln(e*x+d)-600*b^6*d^3*e^3*x^3*ln(e*x+d))/(b*x+a)^5/e^7/(e*x+d)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6,x)
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**6,x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**6, x)
```

3.1779 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=356

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^4}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{6e^7(a+bx)(d+ex)^6}+\frac{b^6\sqrt{a^2+2}}{}$$

Rubi [A] time = 0.21, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^7(a+bx)(d+ex)^2}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^3}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^4}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{6e^7(a+bx)(d+ex)^6}+\frac{b^6\sqrt{a^2+2abx+b^2x^2}\log(d+ex)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^7*(a + b*x)*(d + e*x)^6
) + (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d +
 e*x)^5) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a +
 b*x)*(d + e*x)^4) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
3*e^7*(a + b*x)*(d + e*x)^3) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2) + (6*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (b^6*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^7}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^7}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^7} - \frac{6b(bd-ae)^5}{e^6(d+ex)^6} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^5} - \frac{20b^3(bd-ae}{e^6(d+ex)^4}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{6e^7(a+bx)(d+ex)^6} + \frac{6b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5} - \frac{15}{}$$

Mathematica [A] time = 0.17, size = 258, normalized size = 0.72

$$\frac{\sqrt{(a+bx)^2}\left((bd-ae)\left(10a^5e^5+2a^4be^4(11d+36ex)+a^3b^2e^3\left(37d^2+162dex+225e^2x^2\right)+a^2b^3e^2\left(57d^3+282d^2ex+525de^2x^2+400e^3x^3\right)+ab^4e\left(87d^4+462d^3ex+975d^2e^2x^2+1000de^3x^3+450e^4x^4\right)+b^5\left(147d^5+822d^4ex+1875d^3e^2x^2+2200d^2e^3x^3+1350de^4x^4+360e^5x^5\right)\right)+60b^6(d+ex)^6\log(d+ex)\right)}{60e^7(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*((b*d - a*e)*(10*a^5*e^5 + 2*a^4*b*e^4*(11*d + 36*e*x) +
 a^3*b^2*e^3*(37*d^2 + 162*d*e*x + 225*e^2*x^2) + a^2*b^3*e^2*(57*d^3 + 282
*d^2*e*x + 525*d*e^2*x^2 + 400*e^3*x^3) + a*b^4*e*(87*d^4 + 462*d^3*e*x + 9
75*d^2*e^2*x^2 + 1000*d*e^3*x^3 + 450*e^4*x^4) + b^5*(147*d^5 + 822*d^4*e*x
 + 1875*d^3*e^2*x^2 + 2200*d^2*e^3*x^3 + 1350*d*e^4*x^4 + 360*e^5*x^5)) + 6
0*b^6*(d + e*x)^6*Log[d + e*x]))/(60*e^7*(a + b*x)*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 180.26, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,
x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 492, normalized size = 1.38

$$\frac{147\,b^6d^6-60\,ab^5d^5e-30\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3-15\,a^4b^2d^2e^4-12\,a^5bde^5-10\,a^6e^6+360\left(b^6de^5-ab^5e^6\right)x^5+450\left(3\,b^6d^2e^4-2\,ab^5de^5-a^2b^4e^6\right)x^4+200\left(11\,b^6d^3e^3-6\,ab^5d^2e^4-3\,a^2b^4de^5-2\,a^3b^3e^6\right)x^3+75\left(25\,b^6d^4e^2-12\,ab^5d^3e^3-6\,a^2b^4d^2e^4-4\,a^3b^3de^5-3\,a^4b^2e^6\right)x^2+6\left(137\,b^6d^5e-60\,ab^5d^4e^2-30\,a^2b^4d^3e^3-20\,a^3b^3d^2e^4-15\,a^4b^2de^5-12\,a^5be^6\right)x+60\left(b^6e^6x^6+6\,b^6de^5x^5+15\,b^6d^2e^4x^4+20\,b^6d^3e^3x^3+15\,b^6d^4e^2x^2+6\,b^6d^5ex+b^6d^6\right)\log\left(ex+d\right)}{60\left(e^{13}x^6+6\,de^{12}x^5+15\,d^2e^{11}x^4+20\,d^3e^{10}x^3+15\,d^4e^9x^2+6\,d^5e^8x+d^6e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] 1/60*(147*b^6*d^6 - 60*a*b^5*d^5*e - 30*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^
3 - 15*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 10*a^6*e^6 + 360*(b^6*d*e^5 - a*b
^5*e^6)*x^5 + 450*(3*b^6*d^2*e^4 - 2*a*b^5*d*e^5 - a^2*b^4*e^6)*x^4 + 200*(
11*b^6*d^3*e^3 - 6*a*b^5*d^2*e^4 - 3*a^2*b^4*d*e^5 - 2*a^3*b^3*e^6)*x^3 + 7
5*(25*b^6*d^4*e^2 - 12*a*b^5*d^3*e^3 - 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5
- 3*a^4*b^2*e^6)*x^2 + 6*(137*b^6*d^5*e - 60*a*b^5*d^4*e^2 - 30*a^2*b^4*d^3
*e^3 - 20*a^3*b^3*d^2*e^4 - 15*a^4*b^2*d*e^5 - 12*a^5*b*e^6)*x + 60*(b^6*e^
6*x^6 + 6*b^6*d*e^5*x^5 + 15*b^6*d^2*e^4*x^4 + 20*b^6*d^3*e^3*x^3 + 15*b^6*
d^4*e^2*x^2 + 6*b^6*d^5*e*x + b^6*d^6)*log(e*x + d))/(e^13*x^6 + 6*d*e^12*x
^5 + 15*d^2*e^11*x^4 + 20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 + 6*d^5*e^8*x + d^6
*e^7)
```

giac [A] time = 0.19, size = 507, normalized size = 1.42

$$b^{6}e^{(-7)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(360\left(b^{6}de^{4}\mathrm{sgn}\left(bx+a\right)-ab^{5}e^{5}\mathrm{sgn}\left(bx+a\right)\right)x^{5}+450\left(3b^{6}d^{2}e^{3}\mathrm{sgn}\left(bx+a\right)-2ab^{5}de^{4}\mathrm{sgn}\left(bx+a\right)-a^{2}b^{4}e^{5}\mathrm{sgn}\left(bx+a\right)\right)x^{4}+200\left(11b^{6}d^{3}e^{2}\mathrm{sgn}\left(bx+a\right)-6ab^{5}d^{2}e^{3}\mathrm{sgn}\left(bx+a\right)-3a^{2}b^{4}de^{4}\mathrm{sgn}\left(bx+a\right)-2a^{3}b^{3}e^{5}\mathrm{sgn}\left(bx+a\right)\right)x^{3}+75\left(25b^{6}d^{4}e\,\mathrm{sgn}\left(bx+a\right)-12ab^{5}d^{3}e^{2}\mathrm{sgn}\left(bx+a\right)-6a^{2}b^{4}d^{2}e^{3}\mathrm{sgn}\left(bx+a\right)-4a^{3}b^{3}de^{4}\mathrm{sgn}\left(bx+a\right)-3a^{4}b^{2}e^{5}\mathrm{sgn}\left(bx+a\right)\right)x^{2}+6\left(137b^{6}d^{5}\mathrm{sgn}\left(bx+a\right)-60ab^{5}d^{4}e\,\mathrm{sgn}\left(bx+a\right)-30a^{2}b^{4}d^{3}e^{2}\mathrm{sgn}\left(bx+a\right)-20a^{3}b^{3}d^{2}e^{3}\mathrm{sgn}\left(bx+a\right)-15a^{4}b^{2}de^{4}\mathrm{sgn}\left(bx+a\right)-12a^{5}be^{5}\mathrm{sgn}\left(bx+a\right)\right)x+\left(147b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)-60ab^{5}d^{5}e\,\mathrm{sgn}\left(bx+a\right)-30a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)-20a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)-15a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)-12a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)-10a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}\right)e^{(-6)}}{60\left(xe+d\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] b^6*e^(-7)*log(abs(x*e + d))*sgn(b*x + a) + 1/60*(360*(b^6*d*e^4*sgn(b*x +
a) - a*b^5*e^5*sgn(b*x + a))*x^5 + 450*(3*b^6*d^2*e^3*sgn(b*x + a) - 2*a*b^
5*d*e^4*sgn(b*x + a) - a^2*b^4*e^5*sgn(b*x + a))*x^4 + 200*(11*b^6*d^3*e^2*
sgn(b*x + a) - 6*a*b^5*d^2*e^3*sgn(b*x + a) - 3*a^2*b^4*d*e^4*sgn(b*x + a)
- 2*a^3*b^3*e^5*sgn(b*x + a))*x^3 + 75*(25*b^6*d^4*e*sgn(b*x + a) - 12*a*b^
5*d^3*e^2*sgn(b*x + a) - 6*a^2*b^4*d^2*e^3*sgn(b*x + a) - 4*a^3*b^3*d*e^4*s
gn(b*x + a) - 3*a^4*b^2*e^5*sgn(b*x + a))*x^2 + 6*(137*b^6*d^5*sgn(b*x + a)
 - 60*a*b^5*d^4*e*sgn(b*x + a) - 30*a^2*b^4*d^3*e^2*sgn(b*x + a) - 20*a^3*b
^3*d^2*e^3*sgn(b*x + a) - 15*a^4*b^2*d*e^4*sgn(b*x + a) - 12*a^5*b*e^5*sgn(
b*x + a))*x + (147*b^6*d^6*sgn(b*x + a) - 60*a*b^5*d^5*e*sgn(b*x + a) - 30*
a^2*b^4*d^4*e^2*sgn(b*x + a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) - 15*a^4*b^2
*d^2*e^4*sgn(b*x + a) - 12*a^5*b*d*e^5*sgn(b*x + a) - 10*a^6*e^6*sgn(b*x +
a))*e^(-1))*e^(-6)/(x*e + d)^6
```

maple [A] time = 0.07, size = 507, normalized size = 1.42

$$\frac{\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}\left(60b^{6}d^{6}\ln\left(ex+d\right)+60\ln\left(ex+d\right)x^{6}b^{6}e^{6}-900ab^{5}d^{3}e^{3}x^{2}-90a^{4}b^{2}de^{5}x-120a^{3}b^{3}d^{2}e^{4}x-180a^{2}b^{4}d^{3}e^{3}x-360ab^{5}d^{4}e^{2}x-12a^{5}bde^{5}+147b^{6}d^{6}-10a^{6}e^{6}-15a^{4}b^{2}d^{2}e^{4}-20a^{3}b^{3}d^{3}e^{3}-30a^{2}b^{4}d^{4}e^{2}-60ab^{5}d^{5}e-900ab^{5}de^{5}x^{4}-600a^{2}b^{4}de^{5}x^{3}+2200b^{6}d^{3}e^{3}x^{3}-360ab^{5}e^{6}x^{5}+360b^{6}de^{5}x^{5}-450a^{2}b^{4}e^{6}x^{4}+1350b^{6}d^{2}e^{4}x^{4}-400a^{3}b^{3}e^{6}x^{3}-225a^{4}b^{2}e^{6}x^{2}+1875b^{6}d^{4}e^{2}x^{2}-72a^{5}be^{6}x-1200ab^{5}d^{2}e^{4}x^{3}-300a^{3}b^{3}de^{5}x^{2}-450a^{2}b^{4}d^{2}e^{4}x^{2}+360b^{6}de^{5}x^{5}\ln\left(ex+d\right)+900b^{6}d^{4}e^{2}x^{2}\ln\left(ex+d\right)+900b^{6}d^{2}e^{4}x^{4}\ln\left(ex+d\right)+822b^{6}d^{5}ex+360b^{6}d^{5}ex\ln\left(ex+d\right)+1200b^{6}d^{3}e^{3}x^{3}\ln\left(ex+d\right)\right)}{60\left(bx+a\right)^{5}e^{7}\left(ex+d\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(60*b^6*d^6*ln(e*x+d)+60*ln(e*x+d)*x^6*b^6*e^6-900*a
*b^5*d^3*e^3*x^2-90*a^4*b^2*d*e^5*x-120*a^3*b^3*d^2*e^4*x-180*a^2*b^4*d^3*e
^3*x-360*a*b^5*d^4*e^2*x-12*a^5*b*d*e^5+147*b^6*d^6-10*a^6*e^6-15*a^4*b^2*d
^2*e^4-20*a^3*b^3*d^3*e^3-30*a^2*b^4*d^4*e^2-60*a*b^5*d^5*e-900*a*b^5*d*e^5
*x^4-600*a^2*b^4*d*e^5*x^3+2200*b^6*d^3*e^3*x^3-360*a*b^5*e^6*x^5+360*b^6*d
*e^5*x^5-450*a^2*b^4*e^6*x^4+1350*b^6*d^2*e^4*x^4-400*a^3*b^3*e^6*x^3-225*a
^4*b^2*e^6*x^2+1875*b^6*d^4*e^2*x^2-72*a^5*b*e^6*x-1200*a*b^5*d^2*e^4*x^3-3
00*a^3*b^3*d*e^5*x^2-450*a^2*b^4*d^2*e^4*x^2+360*b^6*d*e^5*x^5*ln(e*x+d)+90
0*b^6*d^4*e^2*x^2*ln(e*x+d)+900*b^6*d^2*e^4*x^4*ln(e*x+d)+822*b^6*d^5*e*x+3
60*b^6*d^5*e*x*ln(e*x+d)+1200*b^6*d^3*e^3*x^3*ln(e*x+d))/(b*x+a)^5/e^7/(e*x
+d)^6
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7, x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**7,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1780 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=41

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(d+ex)^7(bd-ae)}$$

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.030$, Rules used = {767}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(d+ex)^7(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(7/2)/(7*(b*d - a*e)*(d + e*x)^7)
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx = \frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(bd-ae)(d+ex)^7}$$

Mathematica [B] time = 0.11, size = 289, normalized size = 7.05

$$-\frac{\sqrt{(a+bx)^2}\left(a^6e^6+a^5be^5(d+7ex)+a^4b^2e^4\left(d^2+7dex+21e^2x^2\right)+a^3b^3e^3\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+a^2b^4e^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)+ab^5e\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)+b^6\left(d^6+7d^5ex+21d^4e^2x^2+35d^3e^3x^3+35d^2e^4x^4+21de^5x^5+7e^6x^6\right)\right)}{7e^7(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] -1/7*(Sqrt[(a + b*x)^2]*(a^6*e^6 + a^5*b*e^5*(d + 7*e*x) + a^4*b^2*e^4*(d^2
 + 7*d*e*x + 21*e^2*x^2) + a^3*b^3*e^3*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35
*e^3*x^3) + a^2*b^4*e^2*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 +
35*e^4*x^4) + a*b^5*e*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 +
35*d*e^4*x^4 + 21*e^5*x^5) + b^6*(d^6 + 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3
*e^3*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^5 + 7*e^6*x^6)))/(e^7*(a + b*x)*(d +
 e*x)^7)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.42, size = 398, normalized size = 9.71

$$-\frac{7 b^{6} e^{6} x^{6} + b^{6} d^{6} + a b^{5} d^{5} e + a^{2} b^{4} d^{4} e^{2} + a^{3} b^{3} d^{3} e^{3} + a^{4} b^{2} d^{2} e^{4} + a^{5} b d e^{5} + a^{6} e^{6} + 21 \left(b^{6} d e^{5} + a b^{5} e^{6}\right) x^{5} + 35 \left(b^{6} d^{2} e^{4} + a b^{5} d e^{5} + a^{2} b^{4} e^{6}\right) x^{4} + 35 \left(b^{6} d^{3} e^{3} + a b^{5} d^{2} e^{4} + a^{2} b^{4} d e^{5} + a^{3} b^{3} e^{6}\right) x^{3} + 21 \left(b^{6} d^{4} e^{2} + a b^{5} d^{3} e^{3} + a^{2} b^{4} d^{2} e^{4} + a^{3} b^{3} d e^{5} + a^{4} b^{2} e^{6}\right) x^{2} + 7 \left(b^{6} d^{5} e + a b^{5} d^{4} e^{2} + a^{2} b^{4} d^{3} e^{3} + a^{3} b^{3} d^{2} e^{4} + a^{4} b^{2} d e^{5} + a^{5} b e^{6}\right) x}{7 \left(e^{14} x^{7} + 7 d e^{13} x^{6} + 21 d^{2} e^{12} x^{5} + 35 d^{3} e^{11} x^{4} + 35 d^{4} e^{10} x^{3} + 21 d^{5} e^{9} x^{2} + 7 d^{6} e^{8} x + d^{7} e^{7}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/7*(7*b^6*e^6*x^6 + b^6*d^6 + a*b^5*d^5*e + a^2*b^4*d^4*e^2 + a^3*b^3*d^3
*e^3 + a^4*b^2*d^2*e^4 + a^5*b*d*e^5 + a^6*e^6 + 21*(b^6*d*e^5 + a*b^5*e^6)
*x^5 + 35*(b^6*d^2*e^4 + a*b^5*d*e^5 + a^2*b^4*e^6)*x^4 + 35*(b^6*d^3*e^3 +
 a*b^5*d^2*e^4 + a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 + 21*(b^6*d^4*e^2 + a*b^5
*d^3*e^3 + a^2*b^4*d^2*e^4 + a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^2 + 7*(b^6*d^5*
e + a*b^5*d^4*e^2 + a^2*b^4*d^3*e^3 + a^3*b^3*d^2*e^4 + a^4*b^2*d*e^5 + a^5
*b*e^6)*x)/(e^14*x^7 + 7*d*e^13*x^6 + 21*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 3
5*d^4*e^10*x^3 + 21*d^5*e^9*x^2 + 7*d^6*e^8*x + d^7*e^7)
```

giac [B] time = 0.19, size = 514, normalized size = 12.54

$$-\frac{\left(7 b^{6} x^{6} e^{6} \mathrm{sgn}\left(bx+a\right) + 21 b^{6} d x^{5} e^{5} \mathrm{sgn}\left(bx+a\right) + 35 b^{6} d^{2} x^{4} e^{4} \mathrm{sgn}\left(bx+a\right) + 35 b^{6} d^{3} x^{3} e^{3} \mathrm{sgn}\left(bx+a\right) + 21 b^{6} d^{4} x^{2} e^{2} \mathrm{sgn}\left(bx+a\right) + 7 b^{6} d^{5} x e \mathrm{sgn}\left(bx+a\right) + b^{6} d^{6} \mathrm{sgn}\left(bx+a\right) + 21 a b^{5} x^{5} e^{6} \mathrm{sgn}\left(bx+a\right) + 35 a b^{5} d x^{4} e^{5} \mathrm{sgn}\left(bx+a\right) + 35 a b^{5} d^{2} x^{3} e^{4} \mathrm{sgn}\left(bx+a\right) + 21 a b^{5} d^{3} x^{2} e^{3} \mathrm{sgn}\left(bx+a\right) + 7 a b^{5} d^{4} x e^{2} \mathrm{sgn}\left(bx+a\right) + a b^{5} d^{5} e \mathrm{sgn}\left(bx+a\right) + 35 a^{2} b^{4} x^{4} e^{6} \mathrm{sgn}\left(bx+a\right) + 35 a^{2} b^{4} d x^{3} e^{5} \mathrm{sgn}\left(bx+a\right) + 21 a^{2} b^{4} d^{2} x^{2} e^{4} \mathrm{sgn}\left(bx+a\right) + 7 a^{2} b^{4} d^{3} x e^{3} \mathrm{sgn}\left(bx+a\right) + a^{2} b^{4} d^{4} e^{2} \mathrm{sgn}\left(bx+a\right) + 35 a^{3} b^{3} x^{3} e^{6} \mathrm{sgn}\left(bx+a\right) + 21 a^{3} b^{3} d x^{2} e^{5} \mathrm{sgn}\left(bx+a\right) + 7 a^{3} b^{3} d^{2} x e^{4} \mathrm{sgn}\left(bx+a\right) + a^{3} b^{3} d^{3} e^{3} \mathrm{sgn}\left(bx+a\right) + 21 a^{4} b^{2} x^{2} e^{6} \mathrm{sgn}\left(bx+a\right) + 7 a^{4} b^{2} d x e^{5} \mathrm{sgn}\left(bx+a\right) + a^{4} b^{2} d^{2} e^{4} \mathrm{sgn}\left(bx+a\right) + 7 a^{5} b x e^{6} \mathrm{sgn}\left(bx+a\right) + a^{5} b d e^{5} \mathrm{sgn}\left(bx+a\right) + a^{6} e^{6} \mathrm{sgn}\left(bx+a\right)\right) e^{(-7)}}{7 \left(xe+d\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/7*(7*b^6*x^6*e^6*sgn(b*x + a) + 21*b^6*d*x^5*e^5*sgn(b*x + a) + 35*b^6*d
^2*x^4*e^4*sgn(b*x + a) + 35*b^6*d^3*x^3*e^3*sgn(b*x + a) + 21*b^6*d^4*x^2*
e^2*sgn(b*x + a) + 7*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) + 21*a
*b^5*x^5*e^6*sgn(b*x + a) + 35*a*b^5*d*x^4*e^5*sgn(b*x + a) + 35*a*b^5*d^2*
x^3*e^4*sgn(b*x + a) + 21*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 7*a*b^5*d^4*x*e^
2*sgn(b*x + a) + a*b^5*d^5*e*sgn(b*x + a) + 35*a^2*b^4*x^4*e^6*sgn(b*x + a)
 + 35*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 21*a^2*b^4*d^2*x^2*e^4*sgn(b*x + a)
+ 7*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + a^2*b^4*d^4*e^2*sgn(b*x + a) + 35*a^3*
b^3*x^3*e^6*sgn(b*x + a) + 21*a^3*b^3*d*x^2*e^5*sgn(b*x + a) + 7*a^3*b^3*d^
2*x*e^4*sgn(b*x + a) + a^3*b^3*d^3*e^3*sgn(b*x + a) + 21*a^4*b^2*x^2*e^6*sg
n(b*x + a) + 7*a^4*b^2*d*x*e^5*sgn(b*x + a) + a^4*b^2*d^2*e^4*sgn(b*x + a)
+ 7*a^5*b*x*e^6*sgn(b*x + a) + a^5*b*d*e^5*sgn(b*x + a) + a^6*e^6*sgn(b*x +
 a))*e^(-7)/(x*e + d)^7
```

maple [B] time = 0.05, size = 386, normalized size = 9.41

$$-\frac{\left(7 b^{6} e^{6} x^{6} + 21 a b^{5} e^{6} x^{5} + 21 b^{6} d e^{5} x^{5} + 35 a^{2} b^{4} e^{6} x^{4} + 35 a b^{5} d e^{5} x^{4} + 35 b^{6} d^{2} e^{4} x^{4} + 35 a^{3} b^{3} e^{6} x^{3} + 35 a^{2} b^{4} d e^{5} x^{3} + 35 a b^{5} d^{2} e^{4} x^{3} + 35 b^{6} d^{3} e^{3} x^{3} + 21 a^{4} b^{2} e^{6} x^{2} + 21 a^{3} b^{3} d e^{5} x^{2} + 21 a^{2} b^{4} d^{2} e^{4} x^{2} + 21 a b^{5} d^{3} e^{3} x^{2} + 21 b^{6} d^{4} e^{2} x^{2} + 7 a^{5} b e^{6} x + 7 a^{4} b^{2} d e^{5} x + 7 a^{3} b^{3} d^{2} e^{4} x + 7 a^{2} b^{4} d^{3} e^{3} x + 7 a b^{5} d^{4} e^{2} x + 7 b^{6} d^{5} e x + a^{6} e^{6} + a^{5} b d e^{5} + a^{4} b^{2} d^{2} e^{4} + a^{3} b^{3} d^{3} e^{3} + a^{2} b^{4} d^{4} e^{2} + a b^{5} d^{5} e + b^{6} d^{6}\right) \left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}}{7 \left(ex+d\right)^{7} \left(bx+a\right)^{5} e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x)
```

```
[Out] -1/7*(7*b^6*e^6*x^6+21*a*b^5*e^6*x^5+21*b^6*d*e^5*x^5+35*a^2*b^4*e^6*x^4+35
*a*b^5*d*e^5*x^4+35*b^6*d^2*e^4*x^4+35*a^3*b^3*e^6*x^3+35*a^2*b^4*d*e^5*x^3
+35*a*b^5*d^2*e^4*x^3+35*b^6*d^3*e^3*x^3+21*a^4*b^2*e^6*x^2+21*a^3*b^3*d*e^
5*x^2+21*a^2*b^4*d^2*e^4*x^2+21*a*b^5*d^3*e^3*x^2+21*b^6*d^4*e^2*x^2+7*a^5*
b*e^6*x+7*a^4*b^2*d*e^5*x+7*a^3*b^3*d^2*e^4*x+7*a^2*b^4*d^3*e^3*x+7*a*b^5*d
^4*e^2*x+7*b^6*d^5*e*x+a^6*e^6+a^5*b*d*e^5+a^4*b^2*d^2*e^4+a^3*b^3*d^3*e^3+
a^2*b^4*d^4*e^2+a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^7/e^7/(b*x+a
)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.38, size = 1010, normalized size = 24.63

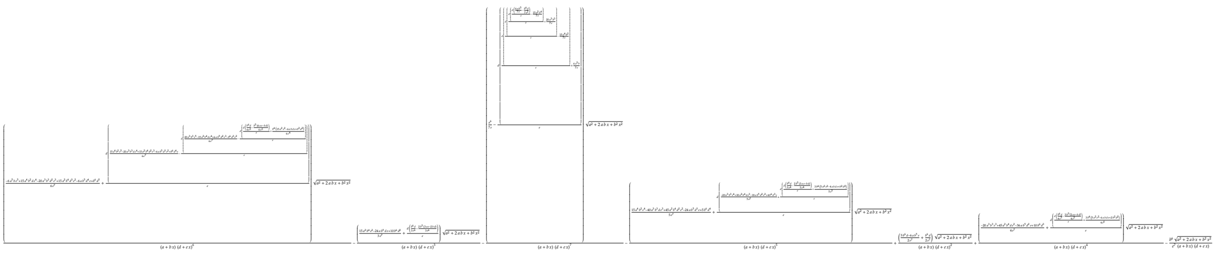

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^8,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(6*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(6*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(6*e^7) - (d*(
(d*((b^6*d)/(6*e^3) - (b^5*(6*a*e - b*d))/(6*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(6*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^6) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
3*e^7) + (d*((b^6*d)/(3*e^6) - (2*b^5*(3*a*e - 2*b*d))/(3*e^6)))/e)*(a^2 +
b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - ((a^6/(7*e) - (d*((d*((
d*((d*((d*((6*a*b^5)/(7*e) - (b^6*d)/(7*e^2)))/e - (15*a^2*b^4)/(7*e)))/e +
 (20*a^3*b^3)/(7*e)))/e - (15*a^4*b^2)/(7*e)))/e + (6*a^5*b)/(7*e)))/e)*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((5*b^6*d^4 + 15*a
^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(5*e^7
) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3
)/(5*e^7) + (d*((d*((b^6*d)/(5*e^4) - (2*b^5*(3*a*e - b*d))/(5*e^4)))/e + (
3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(5*e^5)))/e))/e)*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) + ((((5*b^6*d - 6*a*b^5*e)/(2*e^7) +
 (b^6*d)/(2*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^2)
+ (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(4*e^
7) + (d*((d*((b^6*d)/(4*e^5) - (3*b^5*(2*a*e - b*d))/(4*e^5)))/e + (3*b^4*(
5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(4*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^4) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(e^7
*(a + b*x)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1781 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=98

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{56(d+ex)^7(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{8(d+ex)^8(bd-ae)}$$

Rubi [A] time = 0.05, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{56(d+ex)^7(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{8(d+ex)^8(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] ((a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(b*d - a*e)*(d + e*x)^8) + (
b*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(56*(b*d - a*e)^2*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^9}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^9}\,dx}{ab+b^2x}$$
$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{8(bd-ae)(d+ex)^8} + \frac{\left(b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^8}\,dx}{8(bd-ae)\left(ab+b^2x\right)}$$
$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{8(bd-ae)(d+ex)^8} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{56(bd-ae)^2(d+ex)^7}$$

Mathematica [B] time = 0.11, size = 295, normalized size = 3.01

$$-\frac{\sqrt{(a+bx)^2}\left(7a^6e^6+6a^5be^5(d+8ex)+5a^4b^2e^4\left(d^2+8dex+28e^2x^2\right)+4a^3b^3e^3\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+3a^2b^4e^2\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)+2ab^5e\left(d^5+8d^4ex+28d^3e^2x^2+56d^2e^3x^3+70de^4x^4+56e^5x^5\right)+b^6\left(d^6+8d^5ex+28d^4e^2x^2+56d^3e^3x^3+70d^2e^4x^4+56de^5x^5+28e^6x^6\right)\right)}{56e^7(a+bx)(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] -1/56*(Sqrt[(a + b*x)^2]*(7*a^6*e^6 + 6*a^5*b*e^5*(d + 8*e*x) + 5*a^4*b^2*e
^4*(d^2 + 8*d*e*x + 28*e^2*x^2) + 4*a^3*b^3*e^3*(d^3 + 8*d^2*e*x + 28*d*e^2
*x^2 + 56*e^3*x^3) + 3*a^2*b^4*e^2*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d
*e^3*x^3 + 70*e^4*x^4) + 2*a*b^5*e*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d
^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + b^6*(d^6 + 8*d^5*e*x + 28*d^4*e^2
*x^2 + 56*d^3*e^3*x^3 + 70*d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6)))/(e^7*
(a + b*x)*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.41, size = 430, normalized size = 4.39

$$-\frac{28b^6e^6x^6+b^6d^6+2ab^5d^5e+3a^2b^4d^4e^2+4a^3b^3d^3e^3+5a^4b^2d^2e^4+6a^5bde^5+7a^6e^6+56\left(b^6de^5+2ab^5e^6\right)x^5+70\left(b^6d^2e^4+2ab^5de^5+3a^2b^4e^6\right)x^4+56\left(b^6d^3e^3+2ab^5d^2e^4+3a^2b^4de^5+4a^3b^3e^6\right)x^3+28\left(b^6d^4e^2+2ab^5d^3e^3+3a^2b^4d^2e^4+4a^3b^3de^5+5a^4b^2e^6\right)x^2+8\left(b^6d^5e+2ab^5d^4e^2+3a^2b^4d^3e^3+4a^3b^3d^2e^4+5a^4b^2de^5+6a^5be^6\right)x}{56\left(e^{15}x^8+8de^{14}x^7+28d^2e^{13}x^6+56d^3e^{12}x^5+70d^4e^{11}x^4+56d^5e^{10}x^3+28d^6e^9x^2+8d^7e^8x+d^8e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/56*(28*b^6*e^6*x^6 + b^6*d^6 + 2*a*b^5*d^5*e + 3*a^2*b^4*d^4*e^2 + 4*a^3
*b^3*d^3*e^3 + 5*a^4*b^2*d^2*e^4 + 6*a^5*b*d*e^5 + 7*a^6*e^6 + 56*(b^6*d*e^
5 + 2*a*b^5*e^6)*x^5 + 70*(b^6*d^2*e^4 + 2*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x^4
 + 56*(b^6*d^3*e^3 + 2*a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + 4*a^3*b^3*e^6)*x^3
 + 28*(b^6*d^4*e^2 + 2*a*b^5*d^3*e^3 + 3*a^2*b^4*d^2*e^4 + 4*a^3*b^3*d*e^5
+ 5*a^4*b^2*e^6)*x^2 + 8*(b^6*d^5*e + 2*a*b^5*d^4*e^2 + 3*a^2*b^4*d^3*e^3 +
 4*a^3*b^3*d^2*e^4 + 5*a^4*b^2*d*e^5 + 6*a^5*b*e^6)*x)/(e^15*x^8 + 8*d*e^14
*x^7 + 28*d^2*e^13*x^6 + 56*d^3*e^12*x^5 + 70*d^4*e^11*x^4 + 56*d^5*e^10*x^
3 + 28*d^6*e^9*x^2 + 8*d^7*e^8*x + d^8*e^7)
```

giac [B] time = 0.24, size = 520, normalized size = 5.31

$$-\frac{\left(28\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+56\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+70\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+56\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+28\,b^{6}d^{4}x^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+8\,b^{6}d^{5}xe\,\mathrm{sgn}\left(bx+a\right)+b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+112\,ab^{5}x^{5}e^{6}\mathrm{sgn}\left(bx+a\right)+140\,ab^{5}dx^{4}e^{5}\mathrm{sgn}\left(bx+a\right)+112\,ab^{5}d^{2}x^{3}e^{4}\mathrm{sgn}\left(bx+a\right)+56\,ab^{5}d^{3}x^{2}e^{3}\mathrm{sgn}\left(bx+a\right)+16\,ab^{5}d^{4}xe^{2}\mathrm{sgn}\left(bx+a\right)+2\,ab^{5}d^{5}e\,\mathrm{sgn}\left(bx+a\right)+210\,a^{2}b^{4}x^{4}e^{6}\mathrm{sgn}\left(bx+a\right)+168\,a^{2}b^{4}dx^{3}e^{5}\mathrm{sgn}\left(bx+a\right)+84\,a^{2}b^{4}d^{2}x^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+24\,a^{2}b^{4}d^{3}xe^{3}\mathrm{sgn}\left(bx+a\right)+3\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+224\,a^{3}b^{3}x^{3}e^{6}\mathrm{sgn}\left(bx+a\right)+112\,a^{3}b^{3}dx^{2}e^{5}\mathrm{sgn}\left(bx+a\right)+32\,a^{3}b^{3}d^{2}xe^{4}\mathrm{sgn}\left(bx+a\right)+4\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+140\,a^{4}b^{2}x^{2}e^{6}\mathrm{sgn}\left(bx+a\right)+40\,a^{4}b^{2}dxe^{5}\mathrm{sgn}\left(bx+a\right)+5\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+48\,a^{5}bxe^{6}\mathrm{sgn}\left(bx+a\right)+6\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+7\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{\left(-7\right)}}{56\,{\left(xe+d\right)}^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/56*(28*b^6*x^6*e^6*sgn(b*x + a) + 56*b^6*d*x^5*e^5*sgn(b*x + a) + 70*b^6
*d^2*x^4*e^4*sgn(b*x + a) + 56*b^6*d^3*x^3*e^3*sgn(b*x + a) + 28*b^6*d^4*x^
2*e^2*sgn(b*x + a) + 8*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) + 11
2*a*b^5*x^5*e^6*sgn(b*x + a) + 140*a*b^5*d*x^4*e^5*sgn(b*x + a) + 112*a*b^5
*d^2*x^3*e^4*sgn(b*x + a) + 56*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 16*a*b^5*d^
4*x*e^2*sgn(b*x + a) + 2*a*b^5*d^5*e*sgn(b*x + a) + 210*a^2*b^4*x^4*e^6*sgn
(b*x + a) + 168*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 84*a^2*b^4*d^2*x^2*e^4*sgn
(b*x + a) + 24*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 3*a^2*b^4*d^4*e^2*sgn(b*x +
 a) + 224*a^3*b^3*x^3*e^6*sgn(b*x + a) + 112*a^3*b^3*d*x^2*e^5*sgn(b*x + a)
 + 32*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 4*a^3*b^3*d^3*e^3*sgn(b*x + a) + 140
*a^4*b^2*x^2*e^6*sgn(b*x + a) + 40*a^4*b^2*d*x*e^5*sgn(b*x + a) + 5*a^4*b^2
*d^2*e^4*sgn(b*x + a) + 48*a^5*b*x*e^6*sgn(b*x + a) + 6*a^5*b*d*e^5*sgn(b*x
 + a) + 7*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^8
```

maple [B] time = 0.05, size = 392, normalized size = 4.00

$$-\frac{\left(28b^{6}e^{6}x^{6}+112a\,b^{5}e^{6}x^{5}+56b^{6}d\,e^{5}x^{5}+210a^{2}b^{4}e^{6}x^{4}+140a\,b^{5}d\,e^{5}x^{4}+70b^{6}d^{2}e^{4}x^{4}+224a^{3}b^{3}e^{6}x^{3}+168a^{2}b^{4}d\,e^{5}x^{3}+112a\,b^{5}d^{2}e^{4}x^{3}+56b^{6}d^{3}e^{3}x^{3}+140a^{4}b^{2}e^{6}x^{2}+112a^{3}b^{3}d\,e^{5}x^{2}+84a^{2}b^{4}d^{2}e^{4}x^{2}+56a\,b^{5}d^{3}e^{3}x^{2}+28b^{6}d^{4}e^{2}x^{2}+48a^{5}b\,e^{6}x+40a^{4}b^{2}d\,e^{5}x+32a^{3}b^{3}d^{2}e^{4}x+24a^{2}b^{4}d^{3}e^{3}x+16a\,b^{5}d^{4}e^{2}x+8b^{6}d^{5}ex+7a^{6}e^{6}+6a^{5}bd\,e^{5}+5a^{4}b^{2}d^{2}e^{4}+4a^{3}b^{3}d^{3}e^{3}+3a^{2}b^{4}d^{4}e^{2}+2a\,b^{5}d^{5}e+b^{6}d^{6}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}}{56\left(ex+d\right)^{8}\left(bx+a\right)^{5}e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x)
```

```
[Out] -1/56/e^7*(28*b^6*e^6*x^6+112*a*b^5*e^6*x^5+56*b^6*d*e^5*x^5+210*a^2*b^4*e^
6*x^4+140*a*b^5*d*e^5*x^4+70*b^6*d^2*e^4*x^4+224*a^3*b^3*e^6*x^3+168*a^2*b^
4*d*e^5*x^3+112*a*b^5*d^2*e^4*x^3+56*b^6*d^3*e^3*x^3+140*a^4*b^2*e^6*x^2+11
2*a^3*b^3*d*e^5*x^2+84*a^2*b^4*d^2*e^4*x^2+56*a*b^5*d^3*e^3*x^2+28*b^6*d^4*
e^2*x^2+48*a^5*b*e^6*x+40*a^4*b^2*d*e^5*x+32*a^3*b^3*d^2*e^4*x+24*a^2*b^4*d
^3*e^3*x+16*a*b^5*d^4*e^2*x+8*b^6*d^5*e*x+7*a^6*e^6+6*a^5*b*d*e^5+5*a^4*b^2
*d^2*e^4+4*a^3*b^3*d^3*e^3+3*a^2*b^4*d^4*e^2+2*a*b^5*d^5*e+b^6*d^6)*((b*x+a
)^2)^(5/2)/(e*x+d)^8/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.30, size = 1010, normalized size = 10.31

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^9,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(7*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(7*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(7*e^7) - (d*(
(d*((b^6*d)/(7*e^3) - (b^5*(6*a*e - b*d))/(7*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(7*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^7) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
4*e^7) + (d*((b^6*d)/(4*e^6) - (b^5*(3*a*e - 2*b*d))/(2*e^6)))/e)*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - ((a^6/(8*e) - (d*((d*((d*
((d*((d*((3*a*b^5)/(4*e) - (b^6*d)/(8*e^2)))/e - (15*a^2*b^4)/(8*e)))/e + (
5*a^3*b^3)/(2*e)))/e - (15*a^4*b^2)/(8*e)))/e + (3*a^5*b)/(4*e)))/e)*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((5*b^6*d^4 + 15*a^4*
b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(6*e^7) +
 (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3)/(
6*e^7) + (d*((d*((b^6*d)/(6*e^4) - (b^5*(3*a*e - b*d))/(3*e^4)))/e + (b^4*(
5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(2*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/((a + b*x)*(d + e*x)^6) + (((5*b^6*d - 6*a*b^5*e)/(3*e^7) + (b^6*d
)/(3*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) + (((10
*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(5*e^7) + (d
*((d*((b^6*d)/(5*e^5) - (3*b^5*(2*a*e - b*d))/(5*e^5)))/e + (3*b^4*(5*a^2*e
^2 + 2*b^2*d^2 - 6*a*b*d*e))/(5*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/
((a + b*x)*(d + e*x)^5) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*e^7*(a +
 b*x)*(d + e*x)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1782 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=149

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{252(d+ex)^7(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{36(d+ex)^8(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{9(d+ex)^9(bd-ae)}$$

Rubi [A] time = 0.06, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{252(d+ex)^7(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{36(d+ex)^8(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{9(d+ex)^9(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] ((a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(b*d - a*e)*(d + e*x)^9) + (
b*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(36*(b*d - a*e)^2*(d + e*x)^8)
 + (b^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(252*(b*d - a*e)^3*(d +
e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{10}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{10}}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{9(bd-ae)(d+ex)^9} + \frac{\left(2b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^9}\,dx}{9(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{9(bd-ae)(d+ex)^9} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{36(bd-ae)^2(d+ex)^8} + \frac{\left(b^3\sqrt{a^2+\cdots\right.}{36\cdots}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{9(bd-ae)(d+ex)^9} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{36(bd-ae)^2(d+ex)^8} + \frac{b^2(a+bx\cdots}{252(\cdots}$$

Mathematica [A] time = 0.11, size = 295, normalized size = 1.98

$$-\frac{\sqrt{(a+bx)^2}\left(28a^6e^6+21a^5be^5(d+9ex)+15a^4b^2e^4\left(d^2+9dex+36e^2x^2\right)+10a^3b^3e^3\left(d^3+9d^2ex+36de^2x^2+84e^3x^3\right)+6a^2b^4e^2\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)+3ab^5e\left(d^5+9d^4ex+36d^3e^2x^2+84d^2e^3x^3+126de^4x^4+126e^5x^5\right)+b^6\left(d^6+9d^5ex+36d^4e^2x^2+84d^3e^3x^3+126d^2e^4x^4+126de^5x^5+84e^6x^6\right)\right)}{252e^7(a+bx)(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] -1/252*(Sqrt[(a + b*x)^2]*(28*a^6*e^6 + 21*a^5*b*e^5*(d + 9*e*x) + 15*a^4*b
^2*e^4*(d^2 + 9*d*e*x + 36*e^2*x^2) + 10*a^3*b^3*e^3*(d^3 + 9*d^2*e*x + 36*
d*e^2*x^2 + 84*e^3*x^3) + 6*a^2*b^4*e^2*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 +
 84*d*e^3*x^3 + 126*e^4*x^4) + 3*a*b^5*e*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2
+ 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5) + b^6*(d^6 + 9*d^5*e*x + 36
*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^4 + 126*d*e^5*x^5 + 84*e^6*x^
6)))/(e^7*(a + b*x)*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 180.02, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10
,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.41, size = 441, normalized size = 2.96

$$-\frac{84\,b^6e^6x^6+b^6d^6+3\,ab^5d^5e+6\,a^2b^4d^4e^2+10\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4+21\,a^5bde^5+28\,a^6e^6+126\left(b^6de^5+3\,ab^5e^6\right)x^5+126\left(b^6d^2e^4+3\,ab^5de^5+6\,a^2b^4e^6\right)x^4+84\left(b^6d^3e^3+3\,ab^5d^2e^4+6\,a^2b^4de^5+10\,a^3b^3e^6\right)x^3+36\left(b^6d^4e^2+3\,ab^5d^3e^3+6\,a^2b^4d^2e^4+10\,a^3b^3de^5+15\,a^4b^2e^6\right)x^2+9\left(b^6d^5e+3\,ab^5d^4e^2+6\,a^2b^4d^3e^3+10\,a^3b^3d^2e^4+15\,a^4b^2de^5+21\,a^5be^6\right)x}{252\left(e^{16}x^9+9\,de^{15}x^8+36\,d^2e^{14}x^7+84\,d^3e^{13}x^6+126\,d^4e^{12}x^5+126\,d^5e^{11}x^4+84\,d^6e^{10}x^3+36\,d^7e^9x^2+9\,d^8e^8x+d^9e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/252*(84*b^6*e^6*x^6 + b^6*d^6 + 3*a*b^5*d^5*e + 6*a^2*b^4*d^4*e^2 + 10*a
^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 + 21*a^5*b*d*e^5 + 28*a^6*e^6 + 126*(b^
6*d*e^5 + 3*a*b^5*e^6)*x^5 + 126*(b^6*d^2*e^4 + 3*a*b^5*d*e^5 + 6*a^2*b^4*e
^6)*x^4 + 84*(b^6*d^3*e^3 + 3*a*b^5*d^2*e^4 + 6*a^2*b^4*d*e^5 + 10*a^3*b^3*
e^6)*x^3 + 36*(b^6*d^4*e^2 + 3*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 + 10*a^3*b
^3*d*e^5 + 15*a^4*b^2*e^6)*x^2 + 9*(b^6*d^5*e + 3*a*b^5*d^4*e^2 + 6*a^2*b^4
```

```
*d^3*e^3 + 10*a^3*b^3*d^2*e^4 + 15*a^4*b^2*d*e^5 + 21*a^5*b*e^6)*x)/(e^16*x
^9 + 9*d*e^15*x^8 + 36*d^2*e^14*x^7 + 84*d^3*e^13*x^6 + 126*d^4*e^12*x^5 +
126*d^5*e^11*x^4 + 84*d^6*e^10*x^3 + 36*d^7*e^9*x^2 + 9*d^8*e^8*x + d^9*e^7
)
```

giac [B] time = 0.19, size = 520, normalized size = 3.49

$$-\frac{\left(84\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+126\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+126\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+84\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+36\,b^{6}d^{4}x^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+9\,b^{6}d^{5}xe\,\mathrm{sgn}\left(bx+a\right)+b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+378\,ab^{5}x^{5}e^{6}\mathrm{sgn}\left(bx+a\right)+378\,ab^{5}dx^{4}e^{5}\mathrm{sgn}\left(bx+a\right)+252\,ab^{5}d^{2}x^{3}e^{4}\mathrm{sgn}\left(bx+a\right)+108\,ab^{5}d^{3}x^{2}e^{3}\mathrm{sgn}\left(bx+a\right)+27\,ab^{5}d^{4}xe^{2}\mathrm{sgn}\left(bx+a\right)+3\,ab^{5}d^{5}e\,\mathrm{sgn}\left(bx+a\right)+756\,a^{2}b^{4}x^{4}e^{6}\mathrm{sgn}\left(bx+a\right)+504\,a^{2}b^{4}dx^{3}e^{5}\mathrm{sgn}\left(bx+a\right)+216\,a^{2}b^{4}d^{2}x^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+54\,a^{2}b^{4}d^{3}xe^{3}\mathrm{sgn}\left(bx+a\right)+6\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+840\,a^{3}b^{3}x^{3}e^{6}\mathrm{sgn}\left(bx+a\right)+360\,a^{3}b^{3}dx^{2}e^{5}\mathrm{sgn}\left(bx+a\right)+90\,a^{3}b^{3}d^{2}xe^{4}\mathrm{sgn}\left(bx+a\right)+10\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+540\,a^{4}b^{2}x^{2}e^{6}\mathrm{sgn}\left(bx+a\right)+135\,a^{4}b^{2}dxe^{5}\mathrm{sgn}\left(bx+a\right)+15\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+189\,a^{5}bxe^{6}\mathrm{sgn}\left(bx+a\right)+21\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+28\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{\left(-7\right)}}{252\,{\left(xe+d\right)}^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/252*(84*b^6*x^6*e^6*sgn(b*x + a) + 126*b^6*d*x^5*e^5*sgn(b*x + a) + 126*
b^6*d^2*x^4*e^4*sgn(b*x + a) + 84*b^6*d^3*x^3*e^3*sgn(b*x + a) + 36*b^6*d^4
*x^2*e^2*sgn(b*x + a) + 9*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) +
 378*a*b^5*x^5*e^6*sgn(b*x + a) + 378*a*b^5*d*x^4*e^5*sgn(b*x + a) + 252*a*
b^5*d^2*x^3*e^4*sgn(b*x + a) + 108*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 27*a*b^
5*d^4*x*e^2*sgn(b*x + a) + 3*a*b^5*d^5*e*sgn(b*x + a) + 756*a^2*b^4*x^4*e^6
*sgn(b*x + a) + 504*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 216*a^2*b^4*d^2*x^2*e^
4*sgn(b*x + a) + 54*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 6*a^2*b^4*d^4*e^2*sgn(
b*x + a) + 840*a^3*b^3*x^3*e^6*sgn(b*x + a) + 360*a^3*b^3*d*x^2*e^5*sgn(b*x
 + a) + 90*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 10*a^3*b^3*d^3*e^3*sgn(b*x + a)
 + 540*a^4*b^2*x^2*e^6*sgn(b*x + a) + 135*a^4*b^2*d*x*e^5*sgn(b*x + a) + 15
*a^4*b^2*d^2*e^4*sgn(b*x + a) + 189*a^5*b*x*e^6*sgn(b*x + a) + 21*a^5*b*d*e
^5*sgn(b*x + a) + 28*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^9
```

maple [B] time = 0.06, size = 392, normalized size = 2.63

$$-\frac{\left(84 b^{6} e^{6} x^{6}+378 a \,b^{5} e^{6} x^{5}+126 b^{6} d \,e^{5} x^{5}+756 a^{2} b^{4} e^{6} x^{4}+378 a \,b^{5} d \,e^{5} x^{4}+126 b^{6} d^{2} e^{4} x^{4}+840 a^{3} b^{3} e^{6} x^{3}+504 a^{2} b^{4} d \,e^{5} x^{3}+252 a \,b^{5} d^{2} e^{4} x^{3}+84 b^{6} d^{3} e^{3} x^{3}+540 a^{4} b^{2} e^{6} x^{2}+360 a^{3} b^{3} d \,e^{5} x^{2}+216 a^{2} b^{4} d^{2} e^{4} x^{2}+108 a \,b^{5} d^{3} e^{3} x^{2}+36 b^{6} d^{4} e^{2} x^{2}+189 a^{5} b \,e^{6} x +135 a^{4} b^{2} d \,e^{5} x +90 a^{3} b^{3} d^{2} e^{4} x +54 a^{2} b^{4} d^{3} e^{3} x +27 a \,b^{5} d^{4} e^{2} x +9 b^{6} d^{5} e x +28 a^{6} e^{6}+21 a^{5} b d \,e^{5}+15 a^{4} b^{2} d^{2} e^{4}+10 a^{3} b^{3} d^{3} e^{3}+6 a^{2} b^{4} d^{4} e^{2}+3 a \,b^{5} d^{5} e +b^{6} d^{6}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{5}{2}}}{252 \left(e x +d \right)^{9} \left(b x +a \right)^{5} e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x)
```

```
[Out] -1/252/e^7*(84*b^6*e^6*x^6+378*a*b^5*e^6*x^5+126*b^6*d*e^5*x^5+756*a^2*b^4*
e^6*x^4+378*a*b^5*d*e^5*x^4+126*b^6*d^2*e^4*x^4+840*a^3*b^3*e^6*x^3+504*a^2
*b^4*d*e^5*x^3+252*a*b^5*d^2*e^4*x^3+84*b^6*d^3*e^3*x^3+540*a^4*b^2*e^6*x^2
+360*a^3*b^3*d*e^5*x^2+216*a^2*b^4*d^2*e^4*x^2+108*a*b^5*d^3*e^3*x^2+36*b^6
*d^4*e^2*x^2+189*a^5*b*e^6*x+135*a^4*b^2*d*e^5*x+90*a^3*b^3*d^2*e^4*x+54*a^
2*b^4*d^3*e^3*x+27*a*b^5*d^4*e^2*x+9*b^6*d^5*e*x+28*a^6*e^6+21*a^5*b*d*e^5+
15*a^4*b^2*d^2*e^4+10*a^3*b^3*d^3*e^3+6*a^2*b^4*d^4*e^2+3*a*b^5*d^5*e+b^6*d
^6)*((b*x+a)^2)^(5/2)/(e*x+d)^9/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.26, size = 1010, normalized size = 6.78

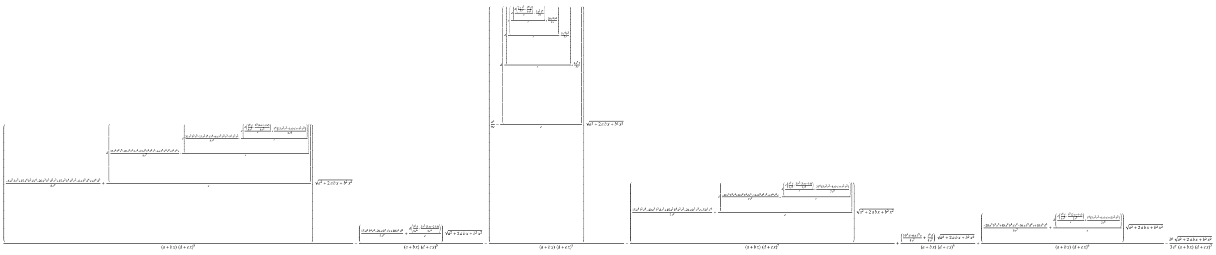

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^10,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(8*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(8*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(8*e^7) - (d*(
(d*((b^6*d)/(8*e^3) - (b^5*(6*a*e - b*d))/(8*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(8*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^8) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
5*e^7) + (d*((b^6*d)/(5*e^6) - (2*b^5*(3*a*e - 2*b*d))/(5*e^6)))/e)*(a^2 +
b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - ((a^6/(9*e) - (d*((d*((
d*((d*((d*((2*a*b^5)/(3*e) - (b^6*d)/(9*e^2)))/e - (5*a^2*b^4)/(3*e)))/e +
(20*a^3*b^3)/(9*e)))/e - (5*a^4*b^2)/(3*e)))/e + (2*a^5*b)/(3*e)))/e)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((5*b^6*d^4 + 15*a^4
*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(7*e^7)
+ (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3)/
(7*e^7) + (d*((d*((b^6*d)/(7*e^4) - (2*b^5*(3*a*e - b*d))/(7*e^4)))/e + (3*
b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(7*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) + (((5*b^6*d - 6*a*b^5*e)/(4*e^7) + (
b^6*d)/(4*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) +
(((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(6*e^7)
 + (d*((d*((b^6*d)/(6*e^5) - (b^5*(2*a*e - b*d))/(2*e^5)))/e + (b^4*(5*a^2*
e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(2*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^6) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*e^7*(a
+ b*x)*(d + e*x)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1783 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=200

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{120(d+ex)^8(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{30(d+ex)^9(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{10(d+ex)^{10}(bd-ae)}+\frac{b^3\sqrt{a^2+2abx}}{840(d+ex}$$

Rubi [A] time = 0.09, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{840(d+ex)^7(bd-ae)^4}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{120(d+ex)^8(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{30(d+ex)^9(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{10(d+ex)^{10}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] ((a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*(b*d - a*e)*(d + e*x)^10) +
 (b*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(30*(b*d - a*e)^2*(d + e*x)^
9) + (b^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(120*(b*d - a*e)^3*(d
+ e*x)^8) + (b^3*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(840*(b*d - a*e
)^4*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{11}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{11}}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{\left(3b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{10}}\,dx}{10(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^9} + \frac{\left(b^3\sqrt{a^2+\right.}{15\ldots}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^9} + \frac{b^2(a+bx\ldots}{120(\ldots}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^9} + \frac{b^2(a+bx\ldots}{120(\ldots}$$

Mathematica [A] time = 0.11, size = 295, normalized size = 1.48

$$-\frac{\sqrt{(a+bx)^2}\left(84a^6e^6+56a^5be^5(d+10ex)+35a^4b^2e^4\left(d^2+10dex+45e^2x^2\right)+20a^3b^3e^3\left(d^3+10d^2ex+45de^2x^2+120e^3x^3\right)+10a^2b^4e^2\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)+4ab^5e\left(d^5+10d^4ex+45d^3e^2x^2+120d^2e^3x^3+210de^4x^4+252e^5x^5\right)+b^6\left(d^6+10d^5ex+45d^4e^2x^2+120d^3e^3x^3+210d^2e^4x^4+252de^5x^5+210e^6x^6\right)\right)}{840e^7(a+bx)(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] -1/840*(Sqrt[(a + b*x)^2]*(84*a^6*e^6 + 56*a^5*b*e^5*(d + 10*e*x) + 35*a^4*
b^2*e^4*(d^2 + 10*d*e*x + 45*e^2*x^2) + 20*a^3*b^3*e^3*(d^3 + 10*d^2*e*x +
45*d*e^2*x^2 + 120*e^3*x^3) + 10*a^2*b^4*e^2*(d^4 + 10*d^3*e*x + 45*d^2*e^2
*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4) + 4*a*b^5*e*(d^5 + 10*d^4*e*x + 45*d^3*
e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5) + b^6*(d^6 + 10*d^
5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 + 210*d^2*e^4*x^4 + 252*d*e^5*x^5
+ 210*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^10)
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$\text{\$Aborted}$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11
,x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.45, size = 452, normalized size = 2.26

$$-\frac{210\,b^6e^6x^6+b^6d^6+4\,ab^5d^5e+10\,a^2b^4d^4e^2+20\,a^3b^3d^3e^3+35\,a^4b^2d^2e^4+56\,a^5bde^5+84\,a^6e^6+252\left(b^6de^5+4\,ab^5e^6\right)x^5+210\left(b^6d^2e^4+4\,ab^5de^5+10\,a^2b^4e^6\right)x^4+120\left(b^6d^3e^3+4\,ab^5d^2e^4+10\,a^2b^4de^5+20\,a^3b^3e^6\right)x^3+45\left(b^6d^4e^2+4\,ab^5d^3e^3+10\,a^2b^4d^2e^4+20\,a^3b^3de^5+35\,a^4b^2e^6\right)x^2+10\left(b^6d^5e+4\,ab^5d^4e^2+10\,a^2b^4d^3e^3+20\,a^3b^3d^2e^4+35\,a^4b^2de^5+56\,a^5be^6\right)x}{840\left(e^{17}x^{10}+10\,de^{16}x^9+45\,d^2e^{15}x^8+120\,d^3e^{14}x^7+210\,d^4e^{13}x^6+252\,d^5e^{12}x^5+210\,d^6e^{11}x^4+120\,d^7e^{10}x^3+45\,d^8e^9x^2+10\,d^9e^8x+d^{10}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/840*(210*b^6*e^6*x^6 + b^6*d^6 + 4*a*b^5*d^5*e + 10*a^2*b^4*d^4*e^2 + 20
*a^3*b^3*d^3*e^3 + 35*a^4*b^2*d^2*e^4 + 56*a^5*b*d*e^5 + 84*a^6*e^6 + 252*(
b^6*d*e^5 + 4*a*b^5*e^6)*x^5 + 210*(b^6*d^2*e^4 + 4*a*b^5*d*e^5 + 10*a^2*b^
```

```
4*e^6)*x^4 + 120*(b^6*d^3*e^3 + 4*a*b^5*d^2*e^4 + 10*a^2*b^4*d*e^5 + 20*a^3
*b^3*e^6)*x^3 + 45*(b^6*d^4*e^2 + 4*a*b^5*d^3*e^3 + 10*a^2*b^4*d^2*e^4 + 20
*a^3*b^3*d*e^5 + 35*a^4*b^2*e^6)*x^2 + 10*(b^6*d^5*e + 4*a*b^5*d^4*e^2 + 10
*a^2*b^4*d^3*e^3 + 20*a^3*b^3*d^2*e^4 + 35*a^4*b^2*d*e^5 + 56*a^5*b*e^6)*x)
/(e^17*x^10 + 10*d*e^16*x^9 + 45*d^2*e^15*x^8 + 120*d^3*e^14*x^7 + 210*d^4*
e^13*x^6 + 252*d^5*e^12*x^5 + 210*d^6*e^11*x^4 + 120*d^7*e^10*x^3 + 45*d^8*
e^9*x^2 + 10*d^9*e^8*x + d^10*e^7)
```

giac [**B**] time = 0.20, size = 520, normalized size = 2.60

$$-\frac{\left(210\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+252\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+210\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+120\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right)+45\,b^6d^4x^2e^2\mathrm{sgn}\left(bx+a\right)+10\,b^6d^5xe\mathrm{sgn}\left(bx+a\right)+b^6d^6\mathrm{sgn}\left(bx+a\right)+1008\,ab^5x^5e^6\mathrm{sgn}\left(bx+a\right)+840\,ab^5dx^4e^5\mathrm{sgn}\left(bx+a\right)+480\,ab^5d^2x^3e^4\mathrm{sgn}\left(bx+a\right)+180\,ab^5d^3x^2e^3\mathrm{sgn}\left(bx+a\right)+40\,ab^5d^4xe^2\mathrm{sgn}\left(bx+a\right)+4\,ab^5d^5e\mathrm{sgn}\left(bx+a\right)+2100\,a^2b^4x^4e^6\mathrm{sgn}\left(bx+a\right)+1200\,a^2b^4dx^3e^5\mathrm{sgn}\left(bx+a\right)+450\,a^2b^4d^2x^2e^4\mathrm{sgn}\left(bx+a\right)+100\,a^2b^4d^3xe^3\mathrm{sgn}\left(bx+a\right)+10\,a^2b^4d^4e^2\mathrm{sgn}\left(bx+a\right)+2400\,a^3b^3x^3e^6\mathrm{sgn}\left(bx+a\right)+900\,a^3b^3dx^2e^5\mathrm{sgn}\left(bx+a\right)+200\,a^3b^3d^2xe^4\mathrm{sgn}\left(bx+a\right)+20\,a^3b^3d^3e^3\mathrm{sgn}\left(bx+a\right)+1575\,a^4b^2x^2e^6\mathrm{sgn}\left(bx+a\right)+350\,a^4b^2dxe^5\mathrm{sgn}\left(bx+a\right)+35\,a^4b^2d^2e^4\mathrm{sgn}\left(bx+a\right)+560\,a^5bxe^6\mathrm{sgn}\left(bx+a\right)+56\,a^5bde^5\mathrm{sgn}\left(bx+a\right)+84\,a^6e^6\mathrm{sgn}\left(bx+a\right)\right)e^{(-7)}}{840\,(xe+d)^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/840*(210*b^6*x^6*e^6*sgn(b*x + a) + 252*b^6*d*x^5*e^5*sgn(b*x + a) + 210
*b^6*d^2*x^4*e^4*sgn(b*x + a) + 120*b^6*d^3*x^3*e^3*sgn(b*x + a) + 45*b^6*d
^4*x^2*e^2*sgn(b*x + a) + 10*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a
) + 1008*a*b^5*x^5*e^6*sgn(b*x + a) + 840*a*b^5*d*x^4*e^5*sgn(b*x + a) + 48
0*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 180*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 40*
a*b^5*d^4*x*e^2*sgn(b*x + a) + 4*a*b^5*d^5*e*sgn(b*x + a) + 2100*a^2*b^4*x^
4*e^6*sgn(b*x + a) + 1200*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 450*a^2*b^4*d^2*
x^2*e^4*sgn(b*x + a) + 100*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 10*a^2*b^4*d^4*
e^2*sgn(b*x + a) + 2400*a^3*b^3*x^3*e^6*sgn(b*x + a) + 900*a^3*b^3*d*x^2*e^
5*sgn(b*x + a) + 200*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 20*a^3*b^3*d^3*e^3*sg
n(b*x + a) + 1575*a^4*b^2*x^2*e^6*sgn(b*x + a) + 350*a^4*b^2*d*x*e^5*sgn(b*
x + a) + 35*a^4*b^2*d^2*e^4*sgn(b*x + a) + 560*a^5*b*x*e^6*sgn(b*x + a) + 5
6*a^5*b*d*e^5*sgn(b*x + a) + 84*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^10
```

maple [**B**] time = 0.06, size = 392, normalized size = 1.96

$$-\frac{\left(210b^6e^6x^6+1008a\,b^5e^6x^5+252b^6d\,e^5x^5+2100a^2b^4e^6x^4+840a\,b^5d\,e^5x^4+210b^6d^2e^4x^4+2400a^3b^3e^6x^3+1200a^2b^4d\,e^5x^3+480a\,b^5d^2e^4x^3+120b^6d^3e^3x^3+1575a^4b^2e^6x^2+900a^3b^3d\,e^5x^2+450a^2b^4d^2e^4x^2+180a\,b^5d^3e^3x^2+45b^6d^4e^2x^2+560a^5b\,e^6x+350a^4b^2d\,e^5x+200a^3b^3d^2e^4x+100a^2b^4d^3e^3x+40a\,b^5d^4e^2x+10b^6d^5ex+84a^6e^6+56a^5bd\,e^5+35a^4b^2d^2e^4+20a^3b^3d^3e^3+10a^2b^4d^4e^2+4a\,b^5d^5e+b^6d^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{840\,(ex+d)^{10}\,(bx+a)^5\,e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x)
```

```
[Out] -1/840/e^7*(210*b^6*e^6*x^6+1008*a*b^5*e^6*x^5+252*b^6*d*e^5*x^5+2100*a^2*b
^4*e^6*x^4+840*a*b^5*d*e^5*x^4+210*b^6*d^2*e^4*x^4+2400*a^3*b^3*e^6*x^3+120
0*a^2*b^4*d*e^5*x^3+480*a*b^5*d^2*e^4*x^3+120*b^6*d^3*e^3*x^3+1575*a^4*b^2*
e^6*x^2+900*a^3*b^3*d*e^5*x^2+450*a^2*b^4*d^2*e^4*x^2+180*a*b^5*d^3*e^3*x^2
+45*b^6*d^4*e^2*x^2+560*a^5*b*e^6*x+350*a^4*b^2*d*e^5*x+200*a^3*b^3*d^2*e^4
*x+100*a^2*b^4*d^3*e^3*x+40*a*b^5*d^4*e^2*x+10*b^6*d^5*e*x+84*a^6*e^6+56*a^
5*b*d*e^5+35*a^4*b^2*d^2*e^4+20*a^3*b^3*d^3*e^3+10*a^2*b^4*d^4*e^2+4*a*b^5*
d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^10/(b*x+a)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.53, size = 1010, normalized size = 5.05

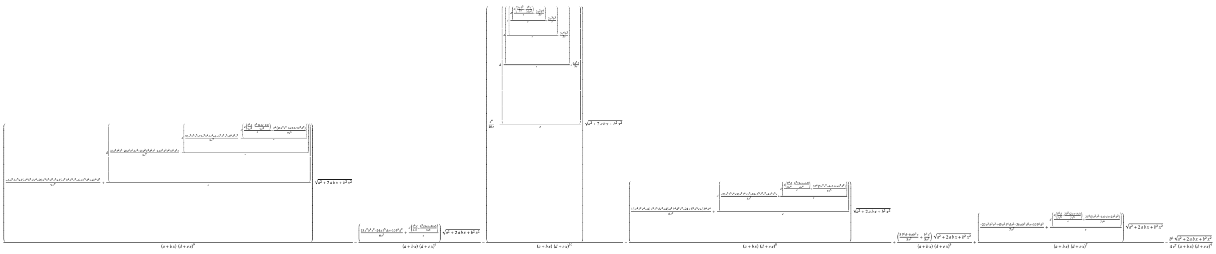

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^11,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(9*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(9*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(9*e^7) - (d*(
(d*((b^6*d)/(9*e^3) - (b^5*(6*a*e - b*d))/(9*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(9*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^9) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
6*e^7) + (d*((b^6*d)/(6*e^6) - (b^5*(3*a*e - 2*b*d))/(3*e^6)))/e)*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - ((a^6/(10*e) - (d*((d*((d
*((d*((d*((3*a*b^5)/(5*e) - (b^6*d)/(10*e^2)))/e - (3*a^2*b^4)/(2*e)))/e +
(2*a^3*b^3)/e))/e - (3*a^4*b^2)/(2*e)))/e + (3*a^5*b)/(5*e)))/e)*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((5*b^6*d^4 + 15*a^4*b^2
*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(8*e^7) + (d
*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3)/(8*e
^7) + (d*((d*((b^6*d)/(8*e^4) - (b^5*(3*a*e - b*d))/(4*e^4)))/e + (3*b^4*(5
*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(8*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/((a + b*x)*(d + e*x)^8) + (((5*b^6*d - 6*a*b^5*e)/(5*e^7) + (b^6*d)
/(5*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) + (((10*
b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(7*e^7) + (d*
((d*((b^6*d)/(7*e^5) - (3*b^5*(2*a*e - b*d))/(7*e^5)))/e + (3*b^4*(5*a^2*e^
2 + 2*b^2*d^2 - 6*a*b*d*e))/(7*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
(a + b*x)*(d + e*x)^7) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^7*(a +
b*x)*(d + e*x)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1784 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=359

$$-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^7(a+bx)(d+ex)^9}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{11e^7(a+bx)(d+ex)^{11}}-\frac{b^6\sqrt{a^2+}}{5e^7(a+}$$

Rubi [A] time = 0.20, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5}+\frac{b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)^6}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^7(a+bx)(d+ex)^7}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{2e^7(a+bx)(d+ex)^8}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^7(a+bx)(d+ex)^9}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{11e^7(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^
11) + (3*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d
 + e*x)^10) - (5*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a
 + b*x)*(d + e*x)^9) + (5*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(2*e^7*(a + b*x)*(d + e*x)^8) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7) + (b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^6) - (b^6*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(5*e^7*(a + b*x)*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{12}}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{12}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{12}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{11}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{10}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^9}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11}} + \frac{3b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{10}} - \frac{5b^2(}{}$$

Mathematica [A] time = 0.11, size = 295, normalized size = 0.82

$$-\frac{\sqrt{(a+bx)^2}\left(210a^6e^6+126a^5be^5(d+11ex)+70a^4b^2e^4\left(d^2+11dex+55e^2x^2\right)+35a^3b^3e^3\left(d^3+11d^2ex+55de^2x^2+165e^3x^3\right)+15a^2b^4e^2\left(d^4+11d^3ex+55d^2e^2x^2+165de^3x^3+330e^4x^4\right)+5ab^5e\left(d^5+11d^4ex+55d^3e^2x^2+165d^2e^3x^3+330de^4x^4+462e^5x^5\right)+b^6\left(d^6+11d^5ex+55d^4e^2x^2+165d^3e^3x^3+330d^2e^4x^4+462de^5x^5+462e^6x^6\right)\right)}{2310e^7(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -1/2310*(Sqrt[(a + b*x)^2]*(210*a^6*e^6 + 126*a^5*b*e^5*(d + 11*e*x) + 70*a
^4*b^2*e^4*(d^2 + 11*d*e*x + 55*e^2*x^2) + 35*a^3*b^3*e^3*(d^3 + 11*d^2*e*x
 + 55*d*e^2*x^2 + 165*e^3*x^3) + 15*a^2*b^4*e^2*(d^4 + 11*d^3*e*x + 55*d^2*
e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4) + 5*a*b^5*e*(d^5 + 11*d^4*e*x + 55*d
^3*e^2*x^2 + 165*d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5) + b^6*(d^6 + 11
*d^5*e*x + 55*d^4*e^2*x^2 + 165*d^3*e^3*x^3 + 330*d^2*e^4*x^4 + 462*d*e^5*x
^5 + 462*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^11)
```

IntegrateAlgebraic [F] time = 180.08, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.43, size = 463, normalized size = 1.29

$$-\frac{462\,b^6e^6x^6+b^6d^6+5\,ab^5d^5e+15\,a^2b^4d^4e^2+35\,a^3b^3d^3e^3+70\,a^4b^2d^2e^4+126\,a^5bde^5+210\,a^6e^6+462\left(b^6de^5+5\,ab^5e^6\right)x^5+330\left(b^6d^2e^4+5\,ab^5de^5+15\,a^2b^4e^6\right)x^4+165\left(b^6d^3e^3+5\,ab^5d^2e^4+15\,a^2b^4de^5+35\,a^3b^3e^6\right)x^3+55\left(b^6d^4e^2+5\,ab^5d^3e^3+15\,a^2b^4d^2e^4+35\,a^3b^3de^5+70\,a^4b^2e^6\right)x^2+11\left(b^6d^5e+5\,ab^5d^4e^2+15\,a^2b^4d^3e^3+35\,a^3b^3d^2e^4+70\,a^4b^2de^5+126\,a^5be^6\right)x}{2310\left(e^{18}x^{11}+11\,de^{17}x^{10}+55\,d^2e^{16}x^9+165\,d^3e^{15}x^8+330\,d^4e^{14}x^7+462\,d^5e^{13}x^6+462\,d^6e^{12}x^5+330\,d^7e^{11}x^4+165\,d^8e^{10}x^3+55\,d^9e^9x^2+11\,d^{10}e^8x+d^{11}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/2310*(462*b^6*e^6*x^6 + b^6*d^6 + 5*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 + 3
5*a^3*b^3*d^3*e^3 + 70*a^4*b^2*d^2*e^4 + 126*a^5*b*d*e^5 + 210*a^6*e^6 + 46
2*(b^6*d*e^5 + 5*a*b^5*e^6)*x^5 + 330*(b^6*d^2*e^4 + 5*a*b^5*d*e^5 + 15*a^2
*b^4*e^6)*x^4 + 165*(b^6*d^3*e^3 + 5*a*b^5*d^2*e^4 + 15*a^2*b^4*d*e^5 + 35*
a^3*b^3*e^6)*x^3 + 55*(b^6*d^4*e^2 + 5*a*b^5*d^3*e^3 + 15*a^2*b^4*d^2*e^4 +
 35*a^3*b^3*d*e^5 + 70*a^4*b^2*e^6)*x^2 + 11*(b^6*d^5*e + 5*a*b^5*d^4*e^2 +
 15*a^2*b^4*d^3*e^3 + 35*a^3*b^3*d^2*e^4 + 70*a^4*b^2*d*e^5 + 126*a^5*b*e^6
)*x)/(e^18*x^11 + 11*d*e^17*x^10 + 55*d^2*e^16*x^9 + 165*d^3*e^15*x^8 + 330
*d^4*e^14*x^7 + 462*d^5*e^13*x^6 + 462*d^6*e^12*x^5 + 330*d^7*e^11*x^4 + 16
5*d^8*e^10*x^3 + 55*d^9*e^9*x^2 + 11*d^10*e^8*x + d^11*e^7)
```

giac [A] time = 0.20, size = 520, normalized size = 1.45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/2310*(462*b^6*x^6*e^6*sgn(b*x + a) + 462*b^6*d*x^5*e^5*sgn(b*x + a) + 33
0*b^6*d^2*x^4*e^4*sgn(b*x + a) + 165*b^6*d^3*x^3*e^3*sgn(b*x + a) + 55*b^6*
d^4*x^2*e^2*sgn(b*x + a) + 11*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x +
a) + 2310*a*b^5*x^5*e^6*sgn(b*x + a) + 1650*a*b^5*d*x^4*e^5*sgn(b*x + a) +
825*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 275*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 5
5*a*b^5*d^4*x*e^2*sgn(b*x + a) + 5*a*b^5*d^5*e*sgn(b*x + a) + 4950*a^2*b^4*
x^4*e^6*sgn(b*x + a) + 2475*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 825*a^2*b^4*d^
2*x^2*e^4*sgn(b*x + a) + 165*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 15*a^2*b^4*d^
4*e^2*sgn(b*x + a) + 5775*a^3*b^3*x^3*e^6*sgn(b*x + a) + 1925*a^3*b^3*d*x^2
*e^5*sgn(b*x + a) + 385*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 35*a^3*b^3*d^3*e^3
*sgn(b*x + a) + 3850*a^4*b^2*x^2*e^6*sgn(b*x + a) + 770*a^4*b^2*d*x*e^5*sgn
(b*x + a) + 70*a^4*b^2*d^2*e^4*sgn(b*x + a) + 1386*a^5*b*x*e^6*sgn(b*x + a)
 + 126*a^5*b*d*e^5*sgn(b*x + a) + 210*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d
)^11
```

maple [A] time = 0.07, size = 392, normalized size = 1.09

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x)
```

```
[Out] -1/2310/e^7*(462*b^6*e^6*x^6+2310*a*b^5*e^6*x^5+462*b^6*d*e^5*x^5+4950*a^2*
b^4*e^6*x^4+1650*a*b^5*d*e^5*x^4+330*b^6*d^2*e^4*x^4+5775*a^3*b^3*e^6*x^3+2
475*a^2*b^4*d*e^5*x^3+825*a*b^5*d^2*e^4*x^3+165*b^6*d^3*e^3*x^3+3850*a^4*b^
2*e^6*x^2+1925*a^3*b^3*d*e^5*x^2+825*a^2*b^4*d^2*e^4*x^2+275*a*b^5*d^3*e^3*
x^2+55*b^6*d^4*e^2*x^2+1386*a^5*b*e^6*x+770*a^4*b^2*d*e^5*x+385*a^3*b^3*d^2
*e^4*x+165*a^2*b^4*d^3*e^3*x+55*a*b^5*d^4*e^2*x+11*b^6*d^5*e*x+210*a^6*e^6+
126*a^5*b*d*e^5+70*a^4*b^2*d^2*e^4+35*a^3*b^3*d^3*e^3+15*a^2*b^4*d^4*e^2+5*
a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^11/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.53, size = 1010, normalized size = 2.81

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^12,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(10*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(10*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(10*e^7) - (
d*((d*((b^6*d)/(10*e^3) - (b^5*(6*a*e - b*d))/(10*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(10*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^10) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(7*e^7) + (d*((b^6*d)/(7*e^6) - (2*b^5*(3*a*e - 2*b*d))/(7*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - ((a^6/(11*e) - (
d*((d*((d*((d*((d*((6*a*b^5)/(11*e) - (b^6*d)/(11*e^2)))/e - (15*a^2*b^4)/(
11*e)))/e + (20*a^3*b^3)/(11*e)))/e - (15*a^4*b^2)/(11*e)))/e + (6*a^5*b)/(
11*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((5
*b^6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^
5*d^3*e)/(9*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 3
0*a^2*b^4*d*e^3)/(9*e^7) + (d*((d*((b^6*d)/(9*e^4) - (2*b^5*(3*a*e - b*d))/
(9*e^4)))/e + (b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(3*e^5)))/e))/e)*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) + (((5*b^6*d - 6*a*b^5
*e)/(6*e^7) + (b^6*d)/(6*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*
(d + e*x)^6) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5
*d^2*e)/(8*e^7) + (d*((d*((b^6*d)/(8*e^5) - (3*b^5*(2*a*e - b*d))/(8*e^5)))
/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(8*e^6)))/e)*(a^2 + b^2*x^
2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/(5*e^7*(a + b*x)*(d + e*x)^5)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1785 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}} dx$

Optimal. Leaf size=362

$$-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^{10}}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{11e^7(a+bx)(d+ex)^{11}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{12e^7(a+bx)(d+ex)^{12}}-\frac{b^6\sqrt{a^2+}}{6e^7(a+}$$

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{6e^7(a+bx)(d+ex)^6}+\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{7e^7(a+bx)(d+ex)^7}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{8e^7(a+bx)(d+ex)^8}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^7(a+bx)(d+ex)^9}-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^{10}}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{11e^7(a+bx)(d+ex)^{11}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{12e^7(a+bx)(d+ex)^{12}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*e^7*(a + b*x)*(d + e*x)^
12) + (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(
d + e*x)^11) - (3*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(
a + b*x)*(d + e*x)^10) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(9*e^7*(a + b*x)*(d + e*x)^9) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(8*e^7*(a + b*x)*(d + e*x)^8) + (6*b^5*(b*d - a*e)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7) - (b^6*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(6*e^7*(a + b*x)*(d + e*x)^6)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{13}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{13}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{13}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{12}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{11}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{10}}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{12e^7(a+bx)(d+ex)^{12}} + \frac{6b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11}} - \frac{3b^2(}{}$$

Mathematica [A] time = 0.10, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(462a^6e^6+252a^5be^5(d+12ex)+126a^4b^2e^4\left(d^2+12dex+66e^2x^2\right)+56a^3b^3e^3\left(d^3+12d^2ex+66de^2x^2+220e^3x^3\right)+21a^2b^4e^2\left(d^4+12d^3ex+66d^2e^2x^2+220de^3x^3+495e^4x^4\right)+6ab^5e\left(d^5+12d^4ex+66d^3e^2x^2+220d^2e^3x^3+495de^4x^4+792e^5x^5\right)+b^6\left(d^6+12d^5ex+66d^4e^2x^2+220d^3e^3x^3+495d^2e^4x^4+792de^5x^5+924e^6x^6\right)\right)}{5544e^7(a+bx)(d+ex)^{12}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -1/5544*(Sqrt[(a + b*x)^2]*(462*a^6*e^6 + 252*a^5*b*e^5*(d + 12*e*x) + 126*
a^4*b^2*e^4*(d^2 + 12*d*e*x + 66*e^2*x^2) + 56*a^3*b^3*e^3*(d^3 + 12*d^2*e*
x + 66*d*e^2*x^2 + 220*e^3*x^3) + 21*a^2*b^4*e^2*(d^4 + 12*d^3*e*x + 66*d^2
*e^2*x^2 + 220*d*e^3*x^3 + 495*e^4*x^4) + 6*a*b^5*e*(d^5 + 12*d^4*e*x + 66*
d^3*e^2*x^2 + 220*d^2*e^3*x^3 + 495*d*e^4*x^4 + 792*e^5*x^5) + b^6*(d^6 + 1
2*d^5*e*x + 66*d^4*e^2*x^2 + 220*d^3*e^3*x^3 + 495*d^2*e^4*x^4 + 792*d*e^5*
x^5 + 924*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^12)
```

IntegrateAlgebraic [F] time = 180.11, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 474, normalized size = 1.31

$$-\frac{924\,b^6e^6x^6+b^6d^6+6\,ab^5d^5e+21\,a^2b^4d^4e^2+56\,a^3b^3d^3e^3+126\,a^4b^2d^2e^4+252\,a^5bde^5+462\,a^6e^6+792\left(b^6de^5+6\,ab^5e^6\right)x^5+495\left(b^6d^2e^4+6\,ab^5de^5+21\,a^2b^4e^6\right)x^4+220\left(b^6d^3e^3+6\,ab^5d^2e^4+21\,a^2b^4de^5+56\,a^3b^3e^6\right)x^3+66\left(b^6d^4e^2+6\,ab^5d^3e^3+21\,a^2b^4d^2e^4+56\,a^3b^3de^5+126\,a^4b^2e^6\right)x^2+12\left(b^6d^5e+6\,ab^5d^4e^2+21\,a^2b^4d^3e^3+56\,a^3b^3d^2e^4+126\,a^4b^2de^5+252\,a^5be^6\right)x}{5544\left(e^{19}x^{12}+12\,de^{18}x^{11}+66\,d^2e^{17}x^{10}+220\,d^3e^{16}x^9+495\,d^4e^{15}x^8+792\,d^5e^{14}x^7+924\,d^6e^{13}x^6+792\,d^7e^{12}x^5+495\,d^8e^{11}x^4+220\,d^9e^{10}x^3+66\,d^{10}e^9x^2+12\,d^{11}e^8x+d^{12}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="fric
as")
```

```
[Out] -1/5544*(924*b^6*e^6*x^6 + b^6*d^6 + 6*a*b^5*d^5*e + 21*a^2*b^4*d^4*e^2 + 5
6*a^3*b^3*d^3*e^3 + 126*a^4*b^2*d^2*e^4 + 252*a^5*b*d*e^5 + 462*a^6*e^6 + 7
92*(b^6*d*e^5 + 6*a*b^5*e^6)*x^5 + 495*(b^6*d^2*e^4 + 6*a*b^5*d*e^5 + 21*a^
2*b^4*e^6)*x^4 + 220*(b^6*d^3*e^3 + 6*a*b^5*d^2*e^4 + 21*a^2*b^4*d*e^5 + 56
*a^3*b^3*e^6)*x^3 + 66*(b^6*d^4*e^2 + 6*a*b^5*d^3*e^3 + 21*a^2*b^4*d^2*e^4
+ 56*a^3*b^3*d*e^5 + 126*a^4*b^2*e^6)*x^2 + 12*(b^6*d^5*e + 6*a*b^5*d^4*e^2
 + 21*a^2*b^4*d^3*e^3 + 56*a^3*b^3*d^2*e^4 + 126*a^4*b^2*d*e^5 + 252*a^5*b*
e^6)*x)/(e^19*x^12 + 12*d*e^18*x^11 + 66*d^2*e^17*x^10 + 220*d^3*e^16*x^9 +
 495*d^4*e^15*x^8 + 792*d^5*e^14*x^7 + 924*d^6*e^13*x^6 + 792*d^7*e^12*x^5
```

```
+ 495*d^8*e^11*x^4 + 220*d^9*e^10*x^3 + 66*d^10*e^9*x^2 + 12*d^11*e^8*x + d
^12*e^7)
```

giac [A] time = 0.24, size = 520, normalized size = 1.44

$$-\frac{\left(924\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+792\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+495\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+220\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+66\,b^{6}d^{4}x^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+12\,b^{6}d^{5}xe\mathrm{sgn}\left(bx+a\right)+b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+4752\,ab^{5}x^{5}e^{6}\mathrm{sgn}\left(bx+a\right)+2970\,ab^{5}dx^{4}e^{5}\mathrm{sgn}\left(bx+a\right)+1320\,ab^{5}d^{2}x^{3}e^{4}\mathrm{sgn}\left(bx+a\right)+396\,ab^{5}d^{3}x^{2}e^{3}\mathrm{sgn}\left(bx+a\right)+72\,ab^{5}d^{4}xe^{2}\mathrm{sgn}\left(bx+a\right)+6\,ab^{5}d^{5}e\mathrm{sgn}\left(bx+a\right)+10395\,a^{2}b^{4}x^{4}e^{6}\mathrm{sgn}\left(bx+a\right)+4620\,a^{2}b^{4}dx^{3}e^{5}\mathrm{sgn}\left(bx+a\right)+1386\,a^{2}b^{4}d^{2}x^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+252\,a^{2}b^{4}d^{3}xe^{3}\mathrm{sgn}\left(bx+a\right)+21\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+12320\,a^{3}b^{3}x^{3}e^{6}\mathrm{sgn}\left(bx+a\right)+3696\,a^{3}b^{3}dx^{2}e^{5}\mathrm{sgn}\left(bx+a\right)+672\,a^{3}b^{3}d^{2}xe^{4}\mathrm{sgn}\left(bx+a\right)+56\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+8316\,a^{4}b^{2}x^{2}e^{6}\mathrm{sgn}\left(bx+a\right)+1512\,a^{4}b^{2}dxe^{5}\mathrm{sgn}\left(bx+a\right)+126\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+3024\,a^{5}bxe^{6}\mathrm{sgn}\left(bx+a\right)+252\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+462\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{(-7)}}{5544\,(xe+d)^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="giac
")
```

```
[Out] -1/5544*(924*b^6*x^6*e^6*sgn(b*x + a) + 792*b^6*d*x^5*e^5*sgn(b*x + a) + 49
5*b^6*d^2*x^4*e^4*sgn(b*x + a) + 220*b^6*d^3*x^3*e^3*sgn(b*x + a) + 66*b^6*
d^4*x^2*e^2*sgn(b*x + a) + 12*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x +
a) + 4752*a*b^5*x^5*e^6*sgn(b*x + a) + 2970*a*b^5*d*x^4*e^5*sgn(b*x + a) +
1320*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 396*a*b^5*d^3*x^2*e^3*sgn(b*x + a) +
72*a*b^5*d^4*x*e^2*sgn(b*x + a) + 6*a*b^5*d^5*e*sgn(b*x + a) + 10395*a^2*b^
4*x^4*e^6*sgn(b*x + a) + 4620*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 1386*a^2*b^4
*d^2*x^2*e^4*sgn(b*x + a) + 252*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 21*a^2*b^4
*d^4*e^2*sgn(b*x + a) + 12320*a^3*b^3*x^3*e^6*sgn(b*x + a) + 3696*a^3*b^3*d
*x^2*e^5*sgn(b*x + a) + 672*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 56*a^3*b^3*d^3
*e^3*sgn(b*x + a) + 8316*a^4*b^2*x^2*e^6*sgn(b*x + a) + 1512*a^4*b^2*d*x*e^
5*sgn(b*x + a) + 126*a^4*b^2*d^2*e^4*sgn(b*x + a) + 3024*a^5*b*x*e^6*sgn(b*
x + a) + 252*a^5*b*d*e^5*sgn(b*x + a) + 462*a^6*e^6*sgn(b*x + a))*e^(-7)/(x
*e + d)^12
```

maple [A] time = 0.06, size = 392, normalized size = 1.08

$$-\frac{\left(924b^{6}e^{6}x^{6}+4752a\,b^{5}e^{6}x^{5}+792b^{6}d\,e^{5}x^{5}+10395a^{2}b^{4}e^{6}x^{4}+2970a\,b^{5}d\,e^{5}x^{4}+495b^{6}d^{2}e^{4}x^{4}+12320a^{3}b^{3}e^{6}x^{3}+4620a^{2}b^{4}d\,e^{5}x^{3}+1320a\,b^{5}d^{2}e^{4}x^{3}+220b^{6}d^{3}e^{3}x^{3}+8316a^{4}b^{2}e^{6}x^{2}+3696a^{3}b^{3}d\,e^{5}x^{2}+1386a^{2}b^{4}d^{2}e^{4}x^{2}+396a\,b^{5}d^{3}e^{3}x^{2}+66b^{6}d^{4}e^{2}x^{2}+3024a^{5}b\,e^{6}x+1512a^{4}b^{2}d\,e^{5}x+672a^{3}b^{3}d^{2}e^{4}x+252a^{2}b^{4}d^{3}e^{3}x+72a\,b^{5}d^{4}e^{2}x+12b^{6}d^{5}ex+462a^{6}e^{6}+252a^{5}bd\,e^{5}+126a^{4}b^{2}d^{2}e^{4}+56a^{3}b^{3}d^{3}e^{3}+21a^{2}b^{4}d^{4}e^{2}+6a\,b^{5}d^{5}e+b^{6}d^{6}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}}{5544\left(ex+d\right)^{12}\left(bx+a\right)^{5}e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x)
```

```
[Out] -1/5544/e^7*(924*b^6*e^6*x^6+4752*a*b^5*e^6*x^5+792*b^6*d*e^5*x^5+10395*a^2
*b^4*e^6*x^4+2970*a*b^5*d*e^5*x^4+495*b^6*d^2*e^4*x^4+12320*a^3*b^3*e^6*x^3
+4620*a^2*b^4*d*e^5*x^3+1320*a*b^5*d^2*e^4*x^3+220*b^6*d^3*e^3*x^3+8316*a^4
*b^2*e^6*x^2+3696*a^3*b^3*d*e^5*x^2+1386*a^2*b^4*d^2*e^4*x^2+396*a*b^5*d^3*
e^3*x^2+66*b^6*d^4*e^2*x^2+3024*a^5*b*e^6*x+1512*a^4*b^2*d*e^5*x+672*a^3*b^
3*d^2*e^4*x+252*a^2*b^4*d^3*e^3*x+72*a*b^5*d^4*e^2*x+12*b^6*d^5*e*x+462*a^6
*e^6+252*a^5*b*d*e^5+126*a^4*b^2*d^2*e^4+56*a^3*b^3*d^3*e^3+21*a^2*b^4*d^4*
e^2+6*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^12/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.37, size = 1010, normalized size = 2.79

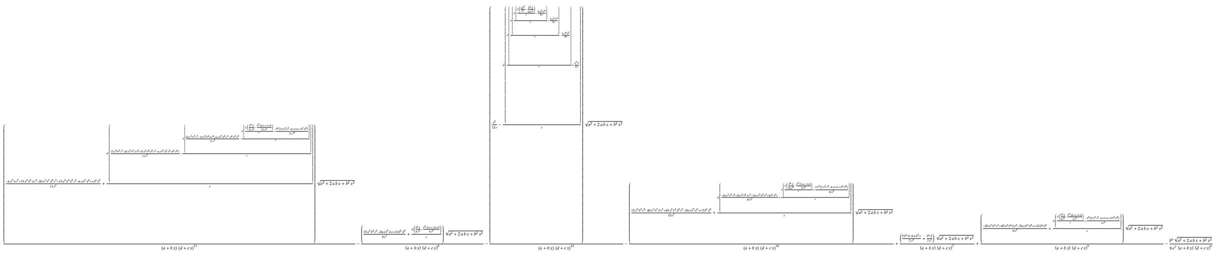

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^13,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(11*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(11*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(11*e^7) - (
d*((d*((b^6*d)/(11*e^3) - (b^5*(6*a*e - b*d))/(11*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(11*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^11) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(8*e^7) + (d*((b^6*d)/(8*e^6) - (b^5*(3*a*e - 2*b*d))/(4*e^6)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - ((a^6/(12*e) - (d*
((d*((d*((d*((d*((a*b^5)/(2*e) - (b^6*d)/(12*e^2)))/e - (5*a^2*b^4)/(4*e)))
/e + (5*a^3*b^3)/(3*e)))/e - (5*a^4*b^2)/(4*e)))/e + (a^5*b)/(2*e)))/e)*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - (((5*b^6*d^4 + 15*
a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(10*e
^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e
^3)/(10*e^7) + (d*((d*((b^6*d)/(10*e^4) - (b^5*(3*a*e - b*d))/(5*e^4)))/e +
 (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(10*e^5)))/e))/e)*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) + (((5*b^6*d - 6*a*b^5*e)/(7*e^
7) + (b^6*d)/(7*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)
^7) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(
9*e^7) + (d*((d*((b^6*d)/(9*e^5) - (b^5*(2*a*e - b*d))/(3*e^5)))/e + (b^4*(
5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(3*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^9) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*e
^7*(a + b*x)*(d + e*x)^6)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**13,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1786 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx$

Optimal. Leaf size=360

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^7(a+bx)(d+ex)^{11}}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{2e^7(a+bx)(d+ex)^{12}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{13e^7(a+bx)(d+ex)^{13}}-\frac{b^6\sqrt{a^2+}}{7e^7(a+}$$

Rubi [A] time = 0.19, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^7}+\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{4e^7(a+bx)(d+ex)^8}-\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^7(a+bx)(d+ex)^9}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)(d+ex)^{10}}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^7(a+bx)(d+ex)^{11}}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{2e^7(a+bx)(d+ex)^{12}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{13e^7(a+bx)(d+ex)^{13}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)*(d + e*x)^
13) + (b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d +
 e*x)^12) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a
 + b*x)*(d + e*x)^11) + (2*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^7*(a + b*x)*(d + e*x)^10) - (5*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^9) + (3*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^8) - (b^6*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{14}}dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{14}}dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{14}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{13}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{12}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{11}}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13}} + \frac{b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{2e^7(a+bx)(d+ex)^{12}} - \frac{15b^2(b}{}$$

Mathematica [A] time = 0.12, size = 295, normalized size = 0.82

$$-\frac{\sqrt{(a+bx)^2}\left(924a^6e^6+462a^5be^5(d+13ex)+210a^4b^2e^4\left(d^2+13dex+78e^2x^2\right)+84a^3b^3e^3\left(d^3+13d^2ex+78de^2x^2+286e^3x^3\right)+28a^2b^4e^2\left(d^4+13d^3ex+78d^2e^2x^2+286de^3x^3+715e^4x^4\right)+7ab^5e\left(d^5+13d^4ex+78d^3e^2x^2+286d^2e^3x^3+715de^4x^4+1287e^5x^5\right)+b^6\left(d^6+13d^5ex+78d^4e^2x^2+286d^3e^3x^3+715d^2e^4x^4+1287de^5x^5+1716e^6x^6\right)\right)}{12012e^7(a+bx)(d+ex)^{13}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -1/12012*(Sqrt[(a + b*x)^2]*(924*a^6*e^6 + 462*a^5*b*e^5*(d + 13*e*x) + 210
*a^4*b^2*e^4*(d^2 + 13*d*e*x + 78*e^2*x^2) + 84*a^3*b^3*e^3*(d^3 + 13*d^2*e
*x + 78*d*e^2*x^2 + 286*e^3*x^3) + 28*a^2*b^4*e^2*(d^4 + 13*d^3*e*x + 78*d^
2*e^2*x^2 + 286*d*e^3*x^3 + 715*e^4*x^4) + 7*a*b^5*e*(d^5 + 13*d^4*e*x + 78
*d^3*e^2*x^2 + 286*d^2*e^3*x^3 + 715*d*e^4*x^4 + 1287*e^5*x^5) + b^6*(d^6 +
 13*d^5*e*x + 78*d^4*e^2*x^2 + 286*d^3*e^3*x^3 + 715*d^2*e^4*x^4 + 1287*d*e
^5*x^5 + 1716*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^13)
```

IntegrateAlgebraic [F] time = 180.14, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.41, size = 485, normalized size = 1.35

$$-\frac{1716\,b^6e^6x^6+b^6d^6+7\,ab^5d^5e+28\,a^2b^4d^4e^2+84\,a^3b^3d^3e^3+210\,a^4b^2d^2e^4+462\,a^5bde^5+924\,a^6e^6+1287\left(b^6de^5+7\,ab^5e^6\right)x^5+715\left(b^6d^2e^4+7\,ab^5de^5+28\,a^2b^4e^6\right)x^4+286\left(b^6d^3e^3+7\,ab^5d^2e^4+28\,a^2b^4de^5+84\,a^3b^3e^6\right)x^3+78\left(b^6d^4e^2+7\,ab^5d^3e^3+28\,a^2b^4d^2e^4+84\,a^3b^3de^5+210\,a^4b^2e^6\right)x^2+13\left(b^6d^5e+7\,ab^5d^4e^2+28\,a^2b^4d^3e^3+84\,a^3b^3d^2e^4+210\,a^4b^2de^5+462\,a^5be^6\right)x}{12012\left(e^{20}x^{13}+13\,de^{19}x^{12}+78\,d^2e^{18}x^{11}+286\,d^3e^{17}x^{10}+715\,d^4e^{16}x^9+1287\,d^5e^{15}x^8+1716\,d^6e^{14}x^7+1716\,d^7e^{13}x^6+1287\,d^8e^{12}x^5+715\,d^9e^{11}x^4+286\,d^{10}e^{10}x^3+78\,d^{11}e^9x^2+13\,d^{12}e^8x+d^{13}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="fric
as")
```

```
[Out] -1/12012*(1716*b^6*e^6*x^6 + b^6*d^6 + 7*a*b^5*d^5*e + 28*a^2*b^4*d^4*e^2 +
 84*a^3*b^3*d^3*e^3 + 210*a^4*b^2*d^2*e^4 + 462*a^5*b*d*e^5 + 924*a^6*e^6 +
 1287*(b^6*d*e^5 + 7*a*b^5*e^6)*x^5 + 715*(b^6*d^2*e^4 + 7*a*b^5*d*e^5 + 28
*a^2*b^4*e^6)*x^4 + 286*(b^6*d^3*e^3 + 7*a*b^5*d^2*e^4 + 28*a^2*b^4*d*e^5 +
 84*a^3*b^3*e^6)*x^3 + 78*(b^6*d^4*e^2 + 7*a*b^5*d^3*e^3 + 28*a^2*b^4*d^2*e
^4 + 84*a^3*b^3*d*e^5 + 210*a^4*b^2*e^6)*x^2 + 13*(b^6*d^5*e + 7*a*b^5*d^4*
e^2 + 28*a^2*b^4*d^3*e^3 + 84*a^3*b^3*d^2*e^4 + 210*a^4*b^2*d*e^5 + 462*a^5
*b*e^6)*x)/(e^20*x^13 + 13*d*e^19*x^12 + 78*d^2*e^18*x^11 + 286*d^3*e^17*x^
10 + 715*d^4*e^16*x^9 + 1287*d^5*e^15*x^8 + 1716*d^6*e^14*x^7 + 1716*d^7*e^
```

```
13*x^6 + 1287*d^8*e^12*x^5 + 715*d^9*e^11*x^4 + 286*d^10*e^10*x^3 + 78*d^11
*e^9*x^2 + 13*d^12*e^8*x + d^13*e^7)
```

giac [A] time = 0.20, size = 520, normalized size = 1.44

$$-\frac{\left(1716\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+1287\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+715\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+286\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+78\,b^{6}d^{4}x^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+13\,b^{6}d^{5}xe\mathrm{sgn}\left(bx+a\right)+b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+9009\,ab^{5}x^{5}e^{6}\mathrm{sgn}\left(bx+a\right)+5005\,ab^{5}dx^{4}e^{5}\mathrm{sgn}\left(bx+a\right)+2002\,ab^{5}d^{2}x^{3}e^{4}\mathrm{sgn}\left(bx+a\right)+546\,ab^{5}d^{3}x^{2}e^{3}\mathrm{sgn}\left(bx+a\right)+91\,ab^{5}d^{4}xe^{2}\mathrm{sgn}\left(bx+a\right)+7\,ab^{5}d^{5}e\mathrm{sgn}\left(bx+a\right)+20020\,a^{2}b^{4}x^{4}e^{6}\mathrm{sgn}\left(bx+a\right)+8008\,a^{2}b^{4}dx^{3}e^{5}\mathrm{sgn}\left(bx+a\right)+2184\,a^{2}b^{4}d^{2}x^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+364\,a^{2}b^{4}d^{3}xe^{3}\mathrm{sgn}\left(bx+a\right)+28\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+24024\,a^{3}b^{3}x^{3}e^{6}\mathrm{sgn}\left(bx+a\right)+6552\,a^{3}b^{3}dx^{2}e^{5}\mathrm{sgn}\left(bx+a\right)+1092\,a^{3}b^{3}d^{2}xe^{4}\mathrm{sgn}\left(bx+a\right)+84\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+16380\,a^{4}b^{2}x^{2}e^{6}\mathrm{sgn}\left(bx+a\right)+2730\,a^{4}b^{2}dxe^{5}\mathrm{sgn}\left(bx+a\right)+210\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+6006\,a^{5}bxe^{6}\mathrm{sgn}\left(bx+a\right)+462\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+924\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{\left(-7\right)}}{12012\,{\left(xe+d\right)}^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="giac
")
```

```
[Out] -1/12012*(1716*b^6*x^6*e^6*sgn(b*x + a) + 1287*b^6*d*x^5*e^5*sgn(b*x + a) +
 715*b^6*d^2*x^4*e^4*sgn(b*x + a) + 286*b^6*d^3*x^3*e^3*sgn(b*x + a) + 78*b
^6*d^4*x^2*e^2*sgn(b*x + a) + 13*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x
 + a) + 9009*a*b^5*x^5*e^6*sgn(b*x + a) + 5005*a*b^5*d*x^4*e^5*sgn(b*x + a)
 + 2002*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 546*a*b^5*d^3*x^2*e^3*sgn(b*x + a)
 + 91*a*b^5*d^4*x*e^2*sgn(b*x + a) + 7*a*b^5*d^5*e*sgn(b*x + a) + 20020*a^2
*b^4*x^4*e^6*sgn(b*x + a) + 8008*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 2184*a^2*
b^4*d^2*x^2*e^4*sgn(b*x + a) + 364*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 28*a^2*
b^4*d^4*e^2*sgn(b*x + a) + 24024*a^3*b^3*x^3*e^6*sgn(b*x + a) + 6552*a^3*b^
3*d*x^2*e^5*sgn(b*x + a) + 1092*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 84*a^3*b^3
*d^3*e^3*sgn(b*x + a) + 16380*a^4*b^2*x^2*e^6*sgn(b*x + a) + 2730*a^4*b^2*d
*x*e^5*sgn(b*x + a) + 210*a^4*b^2*d^2*e^4*sgn(b*x + a) + 6006*a^5*b*x*e^6*s
gn(b*x + a) + 462*a^5*b*d*e^5*sgn(b*x + a) + 924*a^6*e^6*sgn(b*x + a))*e^(-
7)/(x*e + d)^13
```

maple [A] time = 0.06, size = 392, normalized size = 1.09

$$-\frac{\left(1716b^{6}e^{6}x^{6}+9009a\,b^{5}e^{6}x^{5}+1287b^{6}d\,e^{5}x^{5}+20020a^{2}b^{4}e^{6}x^{4}+5005a\,b^{5}d\,e^{5}x^{4}+715b^{6}d^{2}e^{4}x^{4}+24024a^{3}b^{3}e^{6}x^{3}+8008a^{2}b^{4}d\,e^{5}x^{3}+2002a\,b^{5}d^{2}e^{4}x^{3}+286b^{6}d^{3}e^{3}x^{3}+16380a^{4}b^{2}e^{6}x^{2}+6552a^{3}b^{3}d\,e^{5}x^{2}+2184a^{2}b^{4}d^{2}e^{4}x^{2}+546a\,b^{5}d^{3}e^{3}x^{2}+78b^{6}d^{4}e^{2}x^{2}+6006a^{5}b\,e^{6}x+2730a^{4}b^{2}d\,e^{5}x+1092a^{3}b^{3}d^{2}e^{4}x+364a^{2}b^{4}d^{3}e^{3}x+91a\,b^{5}d^{4}e^{2}x+13b^{6}d^{5}ex+924a^{6}e^{6}+462a^{5}bd\,e^{5}+210a^{4}b^{2}d^{2}e^{4}+84a^{3}b^{3}d^{3}e^{3}+28a^{2}b^{4}d^{4}e^{2}+7a\,b^{5}d^{5}e+b^{6}d^{6}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}}{12012\left(ex+d\right)^{13}\left(bx+a\right)^{5}e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x)
```

```
[Out] -1/12012/e^7*(1716*b^6*e^6*x^6+9009*a*b^5*e^6*x^5+1287*b^6*d*e^5*x^5+20020*
a^2*b^4*e^6*x^4+5005*a*b^5*d*e^5*x^4+715*b^6*d^2*e^4*x^4+24024*a^3*b^3*e^6*
x^3+8008*a^2*b^4*d*e^5*x^3+2002*a*b^5*d^2*e^4*x^3+286*b^6*d^3*e^3*x^3+16380
*a^4*b^2*e^6*x^2+6552*a^3*b^3*d*e^5*x^2+2184*a^2*b^4*d^2*e^4*x^2+546*a*b^5*
d^3*e^3*x^2+78*b^6*d^4*e^2*x^2+6006*a^5*b*e^6*x+2730*a^4*b^2*d*e^5*x+1092*a
^3*b^3*d^2*e^4*x+364*a^2*b^4*d^3*e^3*x+91*a*b^5*d^4*e^2*x+13*b^6*d^5*e*x+92
4*a^6*e^6+462*a^5*b*d*e^5+210*a^4*b^2*d^2*e^4+84*a^3*b^3*d^3*e^3+28*a^2*b^4
*d^4*e^2+7*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^13/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.39, size = 1010, normalized size = 2.81

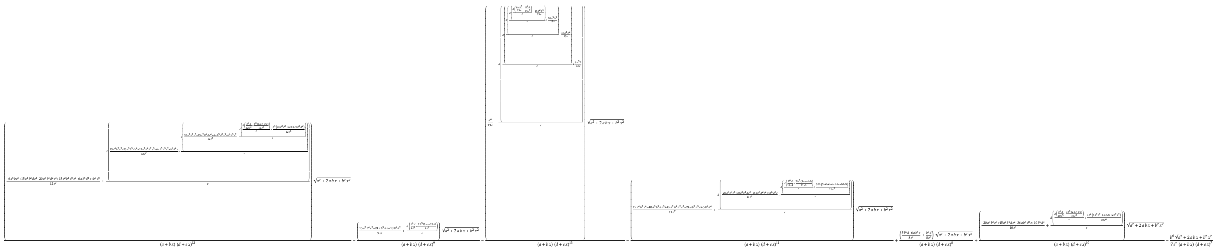

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^14,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(12*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(12*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(12*e^7) - (
d*((d*((b^6*d)/(12*e^3) - (b^5*(6*a*e - b*d))/(12*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(12*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^12) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(9*e^7) + (d*((b^6*d)/(9*e^6) - (2*b^5*(3*a*e - 2*b*d))/(9*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - ((a^6/(13*e) - (
d*((d*((d*((d*((d*((6*a*b^5)/(13*e) - (b^6*d)/(13*e^2)))/e - (15*a^2*b^4)/(
13*e)))/e + (20*a^3*b^3)/(13*e)))/e - (15*a^4*b^2)/(13*e)))/e + (6*a^5*b)/(
13*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) - (((5
*b^6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^
5*d^3*e)/(11*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 +
30*a^2*b^4*d*e^3)/(11*e^7) + (d*((d*((b^6*d)/(11*e^4) - (2*b^5*(3*a*e - b*d
))/(11*e^4)))/e + (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(11*e^5)))/e))/
e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) + (((5*b^6*d -
 6*a*b^5*e)/(8*e^7) + (b^6*d)/(8*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a
 + b*x)*(d + e*x)^8) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 -
36*a*b^5*d^2*e)/(10*e^7) + (d*((d*((b^6*d)/(10*e^5) - (3*b^5*(2*a*e - b*d))
/(10*e^5)))/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(10*e^6)))/e)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (b^6*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2))/(7*e^7*(a + b*x)*(d + e*x)^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**14,x)
```

```
[Out] Timed out
```

3.1787 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15}}\,dx$

Optimal. Leaf size=362

$$-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^{12}}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{13e^7(a+bx)(d+ex)^{13}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{14e^7(a+bx)(d+ex)^{14}}-\frac{b^6\sqrt{a^2+}}{8e^7(a+}$$

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{8e^7(a+bx)(d+ex)^8}+\frac{2b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^7(a+bx)(d+ex)^9}-\frac{3b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^7(a+bx)(d+ex)^{10}}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{11e^7(a+bx)(d+ex)^{11}}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^{12}}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{13e^7(a+bx)(d+ex)^{13}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{14e^7(a+bx)(d+ex)^{14}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^15,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(14*e^7*(a + b*x)*(d + e*x)^
14) + (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)*(
d + e*x)^13) - (5*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(
a + b*x)*(d + e*x)^12) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(11*e^7*(a + b*x)*(d + e*x)^11) - (3*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^10) + (2*b^5*(b*d - a*e)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^9) - (b^6*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(8*e^7*(a + b*x)*(d + e*x)^8)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{15}}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{15}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{15}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{14}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{13}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{12}}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{14e^7(a+bx)(d+ex)^{14}} + \frac{6b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13}} - \frac{5b^2(}{}$$

Mathematica [A] time = 0.11, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(1716a^6e^6+792a^5be^5(d+14ex)+330a^4b^2e^4\left(d^2+14dex+91e^2x^2\right)+120a^3b^3e^3\left(d^3+14d^2ex+91de^2x^2+364e^3x^3\right)+36a^2b^4e^2\left(d^4+14d^3ex+91d^2e^2x^2+364de^3x^3+1001e^4x^4\right)+8ab^5e\left(d^5+14d^4ex+91d^3e^2x^2+364d^2e^3x^3+1001de^4x^4+2002e^5x^5\right)+b^6\left(d^6+14d^5ex+91d^4e^2x^2+364d^3e^3x^3+1001d^2e^4x^4+2002de^5x^5+3003e^6x^6\right)\right)}{24024e^7(a+bx)(d+ex)^{14}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^15,x]
```

```
[Out] -1/24024*(Sqrt[(a + b*x)^2]*(1716*a^6*e^6 + 792*a^5*b*e^5*(d + 14*e*x) + 33
0*a^4*b^2*e^4*(d^2 + 14*d*e*x + 91*e^2*x^2) + 120*a^3*b^3*e^3*(d^3 + 14*d^2
*e*x + 91*d*e^2*x^2 + 364*e^3*x^3) + 36*a^2*b^4*e^2*(d^4 + 14*d^3*e*x + 91*
d^2*e^2*x^2 + 364*d*e^3*x^3 + 1001*e^4*x^4) + 8*a*b^5*e*(d^5 + 14*d^4*e*x +
 91*d^3*e^2*x^2 + 364*d^2*e^3*x^3 + 1001*d*e^4*x^4 + 2002*e^5*x^5) + b^6*(d
^6 + 14*d^5*e*x + 91*d^4*e^2*x^2 + 364*d^3*e^3*x^3 + 1001*d^2*e^4*x^4 + 200
2*d*e^5*x^5 + 3003*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^14)
```

IntegrateAlgebraic [F] time = 180.18, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^15
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.43, size = 496, normalized size = 1.37

$$-\frac{3003b^6e^6x^6+b^6d^6+8ab^5d^5e+36a^2b^4d^4e^2+120a^3b^3d^3e^3+330a^4b^2d^2e^4+792a^5bde^5+1716a^6e^6+2002\left(b^6de^5+8ab^5e^6\right)x^5+1001\left(b^6d^2e^4+8ab^5de^5+36a^2b^4e^6\right)x^4+364\left(b^6d^3e^3+8ab^5d^2e^4+36a^2b^4de^5+120a^3b^3e^6\right)x^3+91\left(b^6d^4e^2+8ab^5d^3e^3+36a^2b^4d^2e^4+120a^3b^3de^5+330a^4b^2e^6\right)x^2+14\left(b^6d^5e+8ab^5d^4e^2+36a^2b^4d^3e^3+120a^3b^3d^2e^4+330a^4b^2de^5+792a^5be^6\right)x}{24024\left(e^{21}x^{14}+14de^{20}x^{13}+91d^2e^{19}x^{12}+364d^3e^{18}x^{11}+1001d^4e^{17}x^{10}+2002d^5e^{16}x^9+3003d^6e^{15}x^8+3432d^7e^{14}x^7+3003d^8e^{13}x^6+2002d^9e^{12}x^5+1001d^{10}e^{11}x^4+364d^{11}e^{10}x^3+91d^{12}e^9x^2+14d^{13}e^8x+d^{14}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x, algorithm="fric
as")
```

```
[Out] -1/24024*(3003*b^6*e^6*x^6 + b^6*d^6 + 8*a*b^5*d^5*e + 36*a^2*b^4*d^4*e^2 +
 120*a^3*b^3*d^3*e^3 + 330*a^4*b^2*d^2*e^4 + 792*a^5*b*d*e^5 + 1716*a^6*e^6
 + 2002*(b^6*d*e^5 + 8*a*b^5*e^6)*x^5 + 1001*(b^6*d^2*e^4 + 8*a*b^5*d*e^5 +
 36*a^2*b^4*e^6)*x^4 + 364*(b^6*d^3*e^3 + 8*a*b^5*d^2*e^4 + 36*a^2*b^4*d*e^
5 + 120*a^3*b^3*e^6)*x^3 + 91*(b^6*d^4*e^2 + 8*a*b^5*d^3*e^3 + 36*a^2*b^4*d
^2*e^4 + 120*a^3*b^3*d*e^5 + 330*a^4*b^2*e^6)*x^2 + 14*(b^6*d^5*e + 8*a*b^5
*d^4*e^2 + 36*a^2*b^4*d^3*e^3 + 120*a^3*b^3*d^2*e^4 + 330*a^4*b^2*d*e^5 + 7
92*a^5*b*e^6)*x)/(e^21*x^14 + 14*d*e^20*x^13 + 91*d^2*e^19*x^12 + 364*d^3*e
^18*x^11 + 1001*d^4*e^17*x^10 + 2002*d^5*e^16*x^9 + 3003*d^6*e^15*x^8 + 343
```

```
2*d^7*e^14*x^7 + 3003*d^8*e^13*x^6 + 2002*d^9*e^12*x^5 + 1001*d^10*e^11*x^4
 + 364*d^11*e^10*x^3 + 91*d^12*e^9*x^2 + 14*d^13*e^8*x + d^14*e^7)
```

giac [**A**] time = 0.20, size = 520, normalized size = 1.44

$$-\frac{\left(3003\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+2002\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+1001\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+364\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+91\,b^{6}d^{4}x^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+14\,b^{6}d^{5}xe\mathrm{sgn}\left(bx+a\right)+b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+16016\,ab^{5}x^{5}e^{6}\mathrm{sgn}\left(bx+a\right)+8008\,ab^{5}dx^{4}e^{5}\mathrm{sgn}\left(bx+a\right)+2912\,ab^{5}d^{2}x^{3}e^{4}\mathrm{sgn}\left(bx+a\right)+728\,ab^{5}d^{3}x^{2}e^{3}\mathrm{sgn}\left(bx+a\right)+112\,ab^{5}d^{4}xe^{2}\mathrm{sgn}\left(bx+a\right)+8\,ab^{5}d^{5}e\mathrm{sgn}\left(bx+a\right)+36036\,a^{2}b^{4}x^{4}e^{6}\mathrm{sgn}\left(bx+a\right)+13104\,a^{2}b^{4}dx^{3}e^{5}\mathrm{sgn}\left(bx+a\right)+3276\,a^{2}b^{4}d^{2}x^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+504\,a^{2}b^{4}d^{3}xe^{3}\mathrm{sgn}\left(bx+a\right)+36\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+43680\,a^{3}b^{3}x^{3}e^{6}\mathrm{sgn}\left(bx+a\right)+10920\,a^{3}b^{3}dx^{2}e^{5}\mathrm{sgn}\left(bx+a\right)+1680\,a^{3}b^{3}d^{2}xe^{4}\mathrm{sgn}\left(bx+a\right)+120\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+30030\,a^{4}b^{2}x^{2}e^{6}\mathrm{sgn}\left(bx+a\right)+4620\,a^{4}b^{2}dxe^{5}\mathrm{sgn}\left(bx+a\right)+330\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+11088\,a^{5}bxe^{6}\mathrm{sgn}\left(bx+a\right)+792\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+1716\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{(-7)}}{24024\,(xe+d)^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x, algorithm="giac
")
```

```
[Out] -1/24024*(3003*b^6*x^6*e^6*sgn(b*x + a) + 2002*b^6*d*x^5*e^5*sgn(b*x + a) +
 1001*b^6*d^2*x^4*e^4*sgn(b*x + a) + 364*b^6*d^3*x^3*e^3*sgn(b*x + a) + 91*
b^6*d^4*x^2*e^2*sgn(b*x + a) + 14*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*
x + a) + 16016*a*b^5*x^5*e^6*sgn(b*x + a) + 8008*a*b^5*d*x^4*e^5*sgn(b*x +
a) + 2912*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 728*a*b^5*d^3*x^2*e^3*sgn(b*x +
a) + 112*a*b^5*d^4*x*e^2*sgn(b*x + a) + 8*a*b^5*d^5*e*sgn(b*x + a) + 36036*
a^2*b^4*x^4*e^6*sgn(b*x + a) + 13104*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 3276*
a^2*b^4*d^2*x^2*e^4*sgn(b*x + a) + 504*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 36*
a^2*b^4*d^4*e^2*sgn(b*x + a) + 43680*a^3*b^3*x^3*e^6*sgn(b*x + a) + 10920*a
^3*b^3*d*x^2*e^5*sgn(b*x + a) + 1680*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 120*a
^3*b^3*d^3*e^3*sgn(b*x + a) + 30030*a^4*b^2*x^2*e^6*sgn(b*x + a) + 4620*a^4
*b^2*d*x*e^5*sgn(b*x + a) + 330*a^4*b^2*d^2*e^4*sgn(b*x + a) + 11088*a^5*b*
x*e^6*sgn(b*x + a) + 792*a^5*b*d*e^5*sgn(b*x + a) + 1716*a^6*e^6*sgn(b*x +
a))*e^(-7)/(x*e + d)^14
```

maple [**A**] time = 0.06, size = 392, normalized size = 1.08

$$-\frac{\left(3003b^{6}e^{6}x^{6}+16016a\,b^{5}e^{6}x^{5}+2002b^{6}d\,e^{5}x^{5}+36036a^{2}b^{4}e^{6}x^{4}+8008a\,b^{5}d\,e^{5}x^{4}+1001b^{6}d^{2}e^{4}x^{4}+43680a^{3}b^{3}e^{6}x^{3}+13104a^{2}b^{4}d\,e^{5}x^{3}+2912a\,b^{5}d^{2}e^{4}x^{3}+364b^{6}d^{3}e^{3}x^{3}+30030a^{4}b^{2}e^{6}x^{2}+10920a^{3}b^{3}d\,e^{5}x^{2}+3276a^{2}b^{4}d^{2}e^{4}x^{2}+728a\,b^{5}d^{3}e^{3}x^{2}+91b^{6}d^{4}e^{2}x^{2}+11088a^{5}b\,e^{6}x+4620a^{4}b^{2}d\,e^{5}x+1680a^{3}b^{3}d^{2}e^{4}x+504a^{2}b^{4}d^{3}e^{3}x+112a\,b^{5}d^{4}e^{2}x+14b^{6}d^{5}ex+1716a^{6}e^{6}+792a^{5}bd\,e^{5}+330a^{4}b^{2}d^{2}e^{4}+120a^{3}b^{3}d^{3}e^{3}+36a^{2}b^{4}d^{4}e^{2}+8a\,b^{5}d^{5}e+b^{6}d^{6}\right)\left((bx+a)^{2}\right)^{\frac{5}{2}}}{24024\,(ex+d)^{14}\,(bx+a)^{5}\,e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x)
```

```
[Out] -1/24024/e^7*(3003*b^6*e^6*x^6+16016*a*b^5*e^6*x^5+2002*b^6*d*e^5*x^5+36036
*a^2*b^4*e^6*x^4+8008*a*b^5*d*e^5*x^4+1001*b^6*d^2*e^4*x^4+43680*a^3*b^3*e^
6*x^3+13104*a^2*b^4*d*e^5*x^3+2912*a*b^5*d^2*e^4*x^3+364*b^6*d^3*e^3*x^3+30
030*a^4*b^2*e^6*x^2+10920*a^3*b^3*d*e^5*x^2+3276*a^2*b^4*d^2*e^4*x^2+728*a*
b^5*d^3*e^3*x^2+91*b^6*d^4*e^2*x^2+11088*a^5*b*e^6*x+4620*a^4*b^2*d*e^5*x+1
680*a^3*b^3*d^2*e^4*x+504*a^2*b^4*d^3*e^3*x+112*a*b^5*d^4*e^2*x+14*b^6*d^5*
e*x+1716*a^6*e^6+792*a^5*b*d*e^5+330*a^4*b^2*d^2*e^4+120*a^3*b^3*d^3*e^3+36
*a^2*b^4*d^4*e^2+8*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^14/(b*x+a
)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.40, size = 1010, normalized size = 2.79

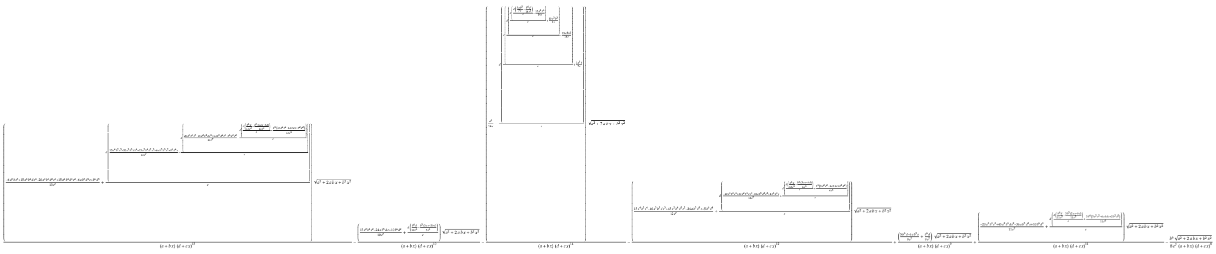

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^15,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(13*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(13*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(13*e^7) - (
d*((d*((b^6*d)/(13*e^3) - (b^5*(6*a*e - b*d))/(13*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(13*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^13) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(10*e^7) + (d*((b^6*d)/(10*e^6) - (b^5*(3*a*e - 2*b*d))/(5*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - ((a^6/(14*e) -
(d*((d*((d*((d*((d*((3*a*b^5)/(7*e) - (b^6*d)/(14*e^2)))/e - (15*a^2*b^4)/(
14*e)))/e + (10*a^3*b^3)/(7*e)))/e - (15*a^4*b^2)/(14*e)))/e + (3*a^5*b)/(7
*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^14) - (((5*b
^6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*
d^3*e)/(12*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30
*a^2*b^4*d*e^3)/(12*e^7) + (d*((d*((b^6*d)/(12*e^4) - (b^5*(3*a*e - b*d))/(
6*e^4)))/e + (b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(4*e^5)))/e))/e)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) + (((5*b^6*d - 6*a*b^5
*e)/(9*e^7) + (b^6*d)/(9*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*
(d + e*x)^9) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5
*d^2*e)/(11*e^7) + (d*((d*((b^6*d)/(11*e^5) - (3*b^5*(2*a*e - b*d))/(11*e^5
)))/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(11*e^6)))/e)*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (b^6*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/(8*e^7*(a + b*x)*(d + e*x)^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**15,x)
```

```
[Out] Timed out
```

3.1788 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{16}}\,dx$

Optimal. Leaf size=362

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{13e^7(a+bx)(d+ex)^{13}}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{7e^7(a+bx)(d+ex)^{14}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{15e^7(a+bx)(d+ex)^{15}}-\frac{b^6\sqrt{a^2 \cdots}}{9e^7(a+\cdots}$$

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)(d+ex)^9}+\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^7(a+bx)(d+ex)^{10}}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{11e^7(a+bx)(d+ex)^{11}}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^{12}}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{13e^7(a+bx)(d+ex)^{13}}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{7e^7(a+bx)(d+ex)^{14}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{15e^7(a+bx)(d+ex)^{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^16,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x)*(d + e*x)^
15) + (3*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d
 + e*x)^14) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*
(a + b*x)*(d + e*x)^13) + (5*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(3*e^7*(a + b*x)*(d + e*x)^12) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^11) + (3*b^5*(b*d - a*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^10) - (b^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^9)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{16}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{16}}dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{16}}dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{16}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{15}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{14}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{13}}\right.}{ab+b^2x}$$
$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{15e^7(a+bx)(d+ex)^{15}} + \frac{3b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^{14}} - \frac{15b^2}{}$$

Mathematica [A] time = 0.12, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(3003a^6e^6+1287a^5be^5(d+15ex)+495a^4b^2e^4\left(d^2+15dex+105e^2x^2\right)+165a^3b^3e^3\left(d^3+15d^2ex+105de^2x^2+455e^3x^3\right)+45a^2b^4e^2\left(d^4+15d^3ex+105d^2e^2x^2+455de^3x^3+1365e^4x^4\right)+9ab^5e\left(d^5+15d^4ex+105d^3e^2x^2+455d^2e^3x^3+1365de^4x^4+3003e^5x^5\right)+b^6\left(d^6+15d^5ex+105d^4e^2x^2+455d^3e^3x^3+1365d^2e^4x^4+3003de^5x^5+5005e^6x^6\right)\right)}{45045e^7(a+bx)(d+ex)^{15}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^16,x]
```

```
[Out] -1/45045*(Sqrt[(a + b*x)^2]*(3003*a^6*e^6 + 1287*a^5*b*e^5*(d + 15*e*x) + 4
95*a^4*b^2*e^4*(d^2 + 15*d*e*x + 105*e^2*x^2) + 165*a^3*b^3*e^3*(d^3 + 15*d
^2*e*x + 105*d*e^2*x^2 + 455*e^3*x^3) + 45*a^2*b^4*e^2*(d^4 + 15*d^3*e*x +
105*d^2*e^2*x^2 + 455*d*e^3*x^3 + 1365*e^4*x^4) + 9*a*b^5*e*(d^5 + 15*d^4*e
*x + 105*d^3*e^2*x^2 + 455*d^2*e^3*x^3 + 1365*d*e^4*x^4 + 3003*e^5*x^5) + b
^6*(d^6 + 15*d^5*e*x + 105*d^4*e^2*x^2 + 455*d^3*e^3*x^3 + 1365*d^2*e^4*x^4
 + 3003*d*e^5*x^5 + 5005*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^15)
```

IntegrateAlgebraic [F] time = 180.24, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^16
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.44, size = 507, normalized size = 1.40

$$-\frac{5005\,b^6e^6x^6+b^6d^6+9\,ab^5d^5e+45\,a^2b^4d^4e^2+165\,a^3b^3d^3e^3+495\,a^4b^2d^2e^4+1287\,a^5bde^5+3003\,a^6e^6+3003\left(b^6de^5+9\,ab^5e^6\right)x^5+1365\left(b^6d^2e^4+9\,ab^5de^5+45\,a^2b^4e^6\right)x^4+455\left(b^6d^3e^3+9\,ab^5d^2e^4+45\,a^2b^4de^5+165\,a^3b^3e^6\right)x^3+105\left(b^6d^4e^2+9\,ab^5d^3e^3+45\,a^2b^4d^2e^4+165\,a^3b^3de^5+495\,a^4b^2e^6\right)x^2+15\left(b^6d^5e+9\,ab^5d^4e^2+45\,a^2b^4d^3e^3+165\,a^3b^3d^2e^4+495\,a^4b^2de^5+1287\,a^5be^6\right)x}{45045\left(e^{22}x^{15}+15\,de^{21}x^{14}+105\,d^2e^{20}x^{13}+455\,d^3e^{19}x^{12}+1365\,d^4e^{18}x^{11}+3003\,d^5e^{17}x^{10}+5005\,d^6e^{16}x^9+6435\,d^7e^{15}x^8+6435\,d^8e^{14}x^7+5005\,d^9e^{13}x^6+3003\,d^{10}e^{12}x^5+1365\,d^{11}e^{11}x^4+455\,d^{12}e^{10}x^3+105\,d^{13}e^9x^2+15\,d^{14}e^8x+d^{15}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x, algorithm="fric
as")
```

```
[Out] -1/45045*(5005*b^6*e^6*x^6 + b^6*d^6 + 9*a*b^5*d^5*e + 45*a^2*b^4*d^4*e^2 +
 165*a^3*b^3*d^3*e^3 + 495*a^4*b^2*d^2*e^4 + 1287*a^5*b*d*e^5 + 3003*a^6*e^
6 + 3003*(b^6*d*e^5 + 9*a*b^5*e^6)*x^5 + 1365*(b^6*d^2*e^4 + 9*a*b^5*d*e^5
+ 45*a^2*b^4*e^6)*x^4 + 455*(b^6*d^3*e^3 + 9*a*b^5*d^2*e^4 + 45*a^2*b^4*d*e
^5 + 165*a^3*b^3*e^6)*x^3 + 105*(b^6*d^4*e^2 + 9*a*b^5*d^3*e^3 + 45*a^2*b^4
*d^2*e^4 + 165*a^3*b^3*d*e^5 + 495*a^4*b^2*e^6)*x^2 + 15*(b^6*d^5*e + 9*a*b
^5*d^4*e^2 + 45*a^2*b^4*d^3*e^3 + 165*a^3*b^3*d^2*e^4 + 495*a^4*b^2*d*e^5 +
 1287*a^5*b*e^6)*x)/(e^22*x^15 + 15*d*e^21*x^14 + 105*d^2*e^20*x^13 + 455*d
^3*e^19*x^12 + 1365*d^4*e^18*x^11 + 3003*d^5*e^17*x^10 + 5005*d^6*e^16*x^9
+ 6435*d^7*e^15*x^8 + 6435*d^8*e^14*x^7 + 5005*d^9*e^13*x^6 + 3003*d^10*e^1
```

```
2*x^5 + 1365*d^11*e^11*x^4 + 455*d^12*e^10*x^3 + 105*d^13*e^9*x^2 + 15*d^14
*e^8*x + d^15*e^7)
```

giac [A] time = 0.19, size = 520, normalized size = 1.44

$$-\frac{5005\,b^6x^6e^6\operatorname{sgn}(bx+a)+3003\,b^6dx^5e^5\operatorname{sgn}(bx+a)+1365\,b^6d^2x^4e^4\operatorname{sgn}(bx+a)+455\,b^6d^3x^3e^3\operatorname{sgn}(bx+a)+105\,b^6d^4x^2e^2\operatorname{sgn}(bx+a)+15\,b^6d^5xe\operatorname{sgn}(bx+a)+b^6d^6\operatorname{sgn}(bx+a)+27027\,ab^5x^5e^6\operatorname{sgn}(bx+a)+12285\,ab^5dx^4e^5\operatorname{sgn}(bx+a)+4095\,ab^5d^2x^3e^4\operatorname{sgn}(bx+a)+945\,ab^5d^3x^2e^3\operatorname{sgn}(bx+a)+135\,ab^5d^4xe^2\operatorname{sgn}(bx+a)+9\,ab^5d^5e\operatorname{sgn}(bx+a)+61425\,a^2b^4x^4e^6\operatorname{sgn}(bx+a)+20475\,a^2b^4dx^3e^5\operatorname{sgn}(bx+a)+4725\,a^2b^4d^2x^2e^4\operatorname{sgn}(bx+a)+675\,a^2b^4d^3xe^3\operatorname{sgn}(bx+a)+45\,a^2b^4d^4e^2\operatorname{sgn}(bx+a)+75075\,a^3b^3x^3e^6\operatorname{sgn}(bx+a)+17325\,a^3b^3dx^2e^5\operatorname{sgn}(bx+a)+2475\,a^3b^3d^2xe^4\operatorname{sgn}(bx+a)+165\,a^3b^3d^3e^3\operatorname{sgn}(bx+a)+51975\,a^4b^2x^2e^6\operatorname{sgn}(bx+a)+7425\,a^4b^2dxe^5\operatorname{sgn}(bx+a)+495\,a^4b^2d^2e^4\operatorname{sgn}(bx+a)+19305\,a^5bxe^6\operatorname{sgn}(bx+a)+1287\,a^5bde^5\operatorname{sgn}(bx+a)+3003\,a^6e^6\operatorname{sgn}(bx+a)}{45045\,(xe+d)^{15}e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x, algorithm="giac
")
```

```
[Out] -1/45045*(5005*b^6*x^6*e^6*sgn(b*x + a) + 3003*b^6*d*x^5*e^5*sgn(b*x + a) +
 1365*b^6*d^2*x^4*e^4*sgn(b*x + a) + 455*b^6*d^3*x^3*e^3*sgn(b*x + a) + 105
*b^6*d^4*x^2*e^2*sgn(b*x + a) + 15*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b
*x + a) + 27027*a*b^5*x^5*e^6*sgn(b*x + a) + 12285*a*b^5*d*x^4*e^5*sgn(b*x
+ a) + 4095*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 945*a*b^5*d^3*x^2*e^3*sgn(b*x
+ a) + 135*a*b^5*d^4*x*e^2*sgn(b*x + a) + 9*a*b^5*d^5*e*sgn(b*x + a) + 6142
5*a^2*b^4*x^4*e^6*sgn(b*x + a) + 20475*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 472
5*a^2*b^4*d^2*x^2*e^4*sgn(b*x + a) + 675*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 4
5*a^2*b^4*d^4*e^2*sgn(b*x + a) + 75075*a^3*b^3*x^3*e^6*sgn(b*x + a) + 17325
*a^3*b^3*d*x^2*e^5*sgn(b*x + a) + 2475*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 165
*a^3*b^3*d^3*e^3*sgn(b*x + a) + 51975*a^4*b^2*x^2*e^6*sgn(b*x + a) + 7425*a
^4*b^2*d*x*e^5*sgn(b*x + a) + 495*a^4*b^2*d^2*e^4*sgn(b*x + a) + 19305*a^5*
b*x*e^6*sgn(b*x + a) + 1287*a^5*b*d*e^5*sgn(b*x + a) + 3003*a^6*e^6*sgn(b*x
 + a))*e^(-7)/(x*e + d)^15
```

maple [A] time = 0.07, size = 392, normalized size = 1.08

$$-\frac{\left(5005b^6e^6x^6+27027ab^5e^6x^5+3003b^6de^5x^5+61425a^2b^4e^6x^4+12285ab^5de^5x^4+1365b^6d^2e^4x^4+75075a^3b^3e^6x^3+20475a^2b^4de^5x^3+4095ab^5d^2e^4x^3+455b^6d^3e^3x^3+51975a^4b^2e^6x^2+17325a^3b^3de^5x^2+4725a^2b^4d^2e^4x^2+945ab^5d^3e^3x^2+105b^6d^4e^2x^2+19305a^5be^6x+7425a^4b^2de^5x+2475a^3b^3d^2e^4x+675a^2b^4d^3e^3x+135ab^5d^4e^2x+15b^6d^5ex+3003a^6e^6+1287a^5bde^5+495a^4b^2d^2e^4+165a^3b^3d^3e^3+45a^2b^4d^4e^2+9ab^5d^5e+b^6d^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{45045\,(ex+d)^{15}(bx+a)^5e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x)
```

```
[Out] -1/45045/e^7*(5005*b^6*e^6*x^6+27027*a*b^5*e^6*x^5+3003*b^6*d*e^5*x^5+61425
*a^2*b^4*e^6*x^4+12285*a*b^5*d*e^5*x^4+1365*b^6*d^2*e^4*x^4+75075*a^3*b^3*e
^6*x^3+20475*a^2*b^4*d*e^5*x^3+4095*a*b^5*d^2*e^4*x^3+455*b^6*d^3*e^3*x^3+5
1975*a^4*b^2*e^6*x^2+17325*a^3*b^3*d*e^5*x^2+4725*a^2*b^4*d^2*e^4*x^2+945*a
*b^5*d^3*e^3*x^2+105*b^6*d^4*e^2*x^2+19305*a^5*b*e^6*x+7425*a^4*b^2*d*e^5*x
+2475*a^3*b^3*d^2*e^4*x+675*a^2*b^4*d^3*e^3*x+135*a*b^5*d^4*e^2*x+15*b^6*d^
5*e*x+3003*a^6*e^6+1287*a^5*b*d*e^5+495*a^4*b^2*d^2*e^4+165*a^3*b^3*d^3*e^3
+45*a^2*b^4*d^4*e^2+9*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^15/(b*
x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.45, size = 1010, normalized size = 2.79

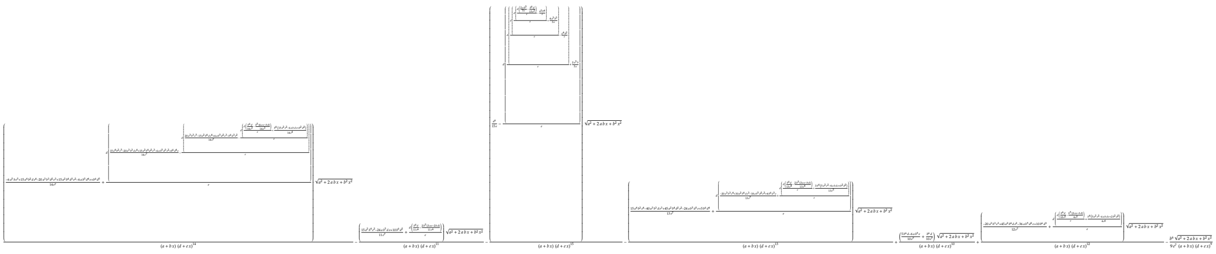

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^16,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(14*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(14*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(14*e^7) - (
d*((d*((b^6*d)/(14*e^3) - (b^5*(6*a*e - b*d))/(14*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(14*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^14) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(11*e^7) + (d*((b^6*d)/(11*e^6) - (2*b^5*(3*a*e - 2*b*d))/(11*e^6)))/
e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - ((a^6/(15*e)
 - (d*((d*((d*((d*((d*((2*a*b^5)/(5*e) - (b^6*d)/(15*e^2)))/e - (a^2*b^4)/e
))/e + (4*a^3*b^3)/(3*e)))/e - (a^4*b^2)/e))/e + (2*a^5*b)/(5*e)))/e)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^15) - (((5*b^6*d^4 + 15*a^
4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(13*e^7
) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3
)/(13*e^7) + (d*((d*((b^6*d)/(13*e^4) - (2*b^5*(3*a*e - b*d))/(13*e^4)))/e
+ (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(13*e^5)))/e))/e)*(a^2 + b^2*x^
2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) + (((5*b^6*d - 6*a*b^5*e)/(10*
e^7) + (b^6*d)/(10*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e
*x)^10) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*
e)/(12*e^7) + (d*((d*((b^6*d)/(12*e^5) - (b^5*(2*a*e - b*d))/(4*e^5)))/e +
(b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(4*e^6)))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2
))/(9*e^7*(a + b*x)*(d + e*x)^9)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**16,x)
```

```
[Out] Timed out
```

3.1789 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17}}\,dx$

Optimal. Leaf size=362

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{14e^7(a+bx)(d+ex)^{14}}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{15}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{16e^7(a+bx)(d+ex)^{16}}-\frac{b^6\sqrt{a^2}}{10e^7(a}$$

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{10e^7(a+bx)(d+ex)^{10}}+\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{11e^7(a+bx)(d+ex)^{11}}-\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^7(a+bx)(d+ex)^{12}}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{13e^7(a+bx)(d+ex)^{13}}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{14e^7(a+bx)(d+ex)^{14}}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{15}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{16e^7(a+bx)(d+ex)^{16}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^17,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(16*e^7*(a + b*x)*(d + e*x)^
16) + (2*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d
 + e*x)^15) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(14*e^7*
(a + b*x)*(d + e*x)^14) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(13*e^7*(a + b*x)*(d + e*x)^13) - (5*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^12) + (6*b^5*(b*d - a*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^11) - (b^6*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(10*e^7*(a + b*x)*(d + e*x)^10)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{17}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{17}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{17}}-\frac{6b(bd-ae)^5}{e^6(d+ex)^{16}}+\frac{15b^2(bd-ae)^4}{e^6(d+ex)^{15}}-\frac{20b^3(bd-ae)^3}{e^6(d+ex)^{14}}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{16e^7(a+bx)(d+ex)^{16}}+\frac{2b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{15}}-\frac{15b^2}{}$$

Mathematica [A] time = 0.10, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(5005a^6e^6+2002a^5be^5(d+16ex)+715a^4b^2e^4\left(d^2+16dex+120e^2x^2\right)+220a^3b^3e^3\left(d^3+16d^2ex+120de^2x^2+560e^3x^3\right)+55a^2b^4e^2\left(d^4+16d^3ex+120d^2e^2x^2+560de^3x^3+1820e^4x^4\right)+10ab^5e\left(d^5+16d^4ex+120d^3e^2x^2+560d^2e^3x^3+1820de^4x^4+4368e^5x^5\right)+b^6\left(d^6+16d^5ex+120d^4e^2x^2+560d^3e^3x^3+1820d^2e^4x^4+4368de^5x^5+8008e^6x^6\right)\right)}{80080e^7(a+bx)(d+ex)^{16}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^17,x]
```

```
[Out] -1/80080*(Sqrt[(a + b*x)^2]*(5005*a^6*e^6 + 2002*a^5*b*e^5*(d + 16*e*x) + 7
15*a^4*b^2*e^4*(d^2 + 16*d*e*x + 120*e^2*x^2) + 220*a^3*b^3*e^3*(d^3 + 16*d
^2*e*x + 120*d*e^2*x^2 + 560*e^3*x^3) + 55*a^2*b^4*e^2*(d^4 + 16*d^3*e*x +
120*d^2*e^2*x^2 + 560*d*e^3*x^3 + 1820*e^4*x^4) + 10*a*b^5*e*(d^5 + 16*d^4*
e*x + 120*d^3*e^2*x^2 + 560*d^2*e^3*x^3 + 1820*d*e^4*x^4 + 4368*e^5*x^5) +
b^6*(d^6 + 16*d^5*e*x + 120*d^4*e^2*x^2 + 560*d^3*e^3*x^3 + 1820*d^2*e^4*x^
4 + 4368*d*e^5*x^5 + 8008*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^16)
```

IntegrateAlgebraic [F] time = 180.31, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^17
,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.42, size = 518, normalized size = 1.43

$$-\frac{8008\,b^6e^6x^6+b^6d^6+10\,ab^5d^5e+55\,a^2b^4d^4e^2+220\,a^3b^3d^3e^3+715\,a^4b^2d^2e^4+2002\,a^5bde^5+5005\,a^6e^6+4368\left(b^6de^5+10\,ab^5e^6\right)x^5+1820\left(b^6d^2e^4+10\,ab^5de^5+55\,a^2b^4e^6\right)x^4+560\left(b^6d^3e^3+10\,ab^5d^2e^4+55\,a^2b^4de^5+220\,a^3b^3e^6\right)x^3+120\left(b^6d^4e^2+10\,ab^5d^3e^3+55\,a^2b^4d^2e^4+220\,a^3b^3de^5+715\,a^4b^2e^6\right)x^2+16\left(b^6d^5e+10\,ab^5d^4e^2+55\,a^2b^4d^3e^3+220\,a^3b^3d^2e^4+715\,a^4b^2de^5+2002\,a^5be^6\right)x}{80080\left(e^{23}x^{16}+16\,de^{22}x^{15}+120\,d^2e^{21}x^{14}+560\,d^3e^{20}x^{13}+1820\,d^4e^{19}x^{12}+4368\,d^5e^{18}x^{11}+8008\,d^6e^{17}x^{10}+11440\,d^7e^{16}x^9+12870\,d^8e^{15}x^8+11440\,d^9e^{14}x^7+8008\,d^{10}e^{13}x^6+4368\,d^{11}e^{12}x^5+1820\,d^{12}e^{11}x^4+560\,d^{13}e^{10}x^3+120\,d^{14}e^9x^2+16\,d^{15}e^8x+d^{16}e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x, algorithm="fric
as")
```

```
[Out] -1/80080*(8008*b^6*e^6*x^6 + b^6*d^6 + 10*a*b^5*d^5*e + 55*a^2*b^4*d^4*e^2
+ 220*a^3*b^3*d^3*e^3 + 715*a^4*b^2*d^2*e^4 + 2002*a^5*b*d*e^5 + 5005*a^6*e
^6 + 4368*(b^6*d*e^5 + 10*a*b^5*e^6)*x^5 + 1820*(b^6*d^2*e^4 + 10*a*b^5*d*e
^5 + 55*a^2*b^4*e^6)*x^4 + 560*(b^6*d^3*e^3 + 10*a*b^5*d^2*e^4 + 55*a^2*b^4
*d*e^5 + 220*a^3*b^3*e^6)*x^3 + 120*(b^6*d^4*e^2 + 10*a*b^5*d^3*e^3 + 55*a^
2*b^4*d^2*e^4 + 220*a^3*b^3*d*e^5 + 715*a^4*b^2*e^6)*x^2 + 16*(b^6*d^5*e +
10*a*b^5*d^4*e^2 + 55*a^2*b^4*d^3*e^3 + 220*a^3*b^3*d^2*e^4 + 715*a^4*b^2*d
*e^5 + 2002*a^5*b*e^6)*x)/(e^23*x^16 + 16*d*e^22*x^15 + 120*d^2*e^21*x^14 +
 560*d^3*e^20*x^13 + 1820*d^4*e^19*x^12 + 4368*d^5*e^18*x^11 + 8008*d^6*e^1
7*x^10 + 11440*d^7*e^16*x^9 + 12870*d^8*e^15*x^8 + 11440*d^9*e^14*x^7 + 800
```

```
8*d^10*e^13*x^6 + 4368*d^11*e^12*x^5 + 1820*d^12*e^11*x^4 + 560*d^13*e^10*x
^3 + 120*d^14*e^9*x^2 + 16*d^15*e^8*x + d^16*e^7)
```

giac [A] time = 0.22, size = 520, normalized size = 1.44

$$-\frac{\left(8008\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+4368\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+1820\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+560\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+120\,b^{6}d^{4}x^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+16\,b^{6}d^{5}xe\,\mathrm{sgn}\left(bx+a\right)+b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+43680\,ab^{5}x^{5}e^{6}\mathrm{sgn}\left(bx+a\right)+18200\,ab^{5}dx^{4}e^{5}\mathrm{sgn}\left(bx+a\right)+5600\,ab^{5}d^{2}x^{3}e^{4}\mathrm{sgn}\left(bx+a\right)+1200\,ab^{5}d^{3}x^{2}e^{3}\mathrm{sgn}\left(bx+a\right)+160\,ab^{5}d^{4}xe^{2}\mathrm{sgn}\left(bx+a\right)+10\,ab^{5}d^{5}e\,\mathrm{sgn}\left(bx+a\right)+100100\,a^{2}b^{4}x^{4}e^{6}\mathrm{sgn}\left(bx+a\right)+30800\,a^{2}b^{4}dx^{3}e^{5}\mathrm{sgn}\left(bx+a\right)+6600\,a^{2}b^{4}d^{2}x^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+880\,a^{2}b^{4}d^{3}xe^{3}\mathrm{sgn}\left(bx+a\right)+55\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+123200\,a^{3}b^{3}x^{3}e^{6}\mathrm{sgn}\left(bx+a\right)+26400\,a^{3}b^{3}dx^{2}e^{5}\mathrm{sgn}\left(bx+a\right)+3520\,a^{3}b^{3}d^{2}xe^{4}\mathrm{sgn}\left(bx+a\right)+220\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+85800\,a^{4}b^{2}x^{2}e^{6}\mathrm{sgn}\left(bx+a\right)+11440\,a^{4}b^{2}dxe^{5}\mathrm{sgn}\left(bx+a\right)+715\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+32032\,a^{5}bxe^{6}\mathrm{sgn}\left(bx+a\right)+2002\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+5005\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{\left(-7\right)}}{80080\,\left(xe+d\right)^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x, algorithm="giac
")
```

```
[Out] -1/80080*(8008*b^6*x^6*e^6*sgn(b*x + a) + 4368*b^6*d*x^5*e^5*sgn(b*x + a) +
 1820*b^6*d^2*x^4*e^4*sgn(b*x + a) + 560*b^6*d^3*x^3*e^3*sgn(b*x + a) + 120
*b^6*d^4*x^2*e^2*sgn(b*x + a) + 16*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b
*x + a) + 43680*a*b^5*x^5*e^6*sgn(b*x + a) + 18200*a*b^5*d*x^4*e^5*sgn(b*x
+ a) + 5600*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 1200*a*b^5*d^3*x^2*e^3*sgn(b*x
 + a) + 160*a*b^5*d^4*x*e^2*sgn(b*x + a) + 10*a*b^5*d^5*e*sgn(b*x + a) + 10
0100*a^2*b^4*x^4*e^6*sgn(b*x + a) + 30800*a^2*b^4*d*x^3*e^5*sgn(b*x + a) +
6600*a^2*b^4*d^2*x^2*e^4*sgn(b*x + a) + 880*a^2*b^4*d^3*x*e^3*sgn(b*x + a)
+ 55*a^2*b^4*d^4*e^2*sgn(b*x + a) + 123200*a^3*b^3*x^3*e^6*sgn(b*x + a) + 2
6400*a^3*b^3*d*x^2*e^5*sgn(b*x + a) + 3520*a^3*b^3*d^2*x*e^4*sgn(b*x + a) +
 220*a^3*b^3*d^3*e^3*sgn(b*x + a) + 85800*a^4*b^2*x^2*e^6*sgn(b*x + a) + 11
440*a^4*b^2*d*x*e^5*sgn(b*x + a) + 715*a^4*b^2*d^2*e^4*sgn(b*x + a) + 32032
*a^5*b*x*e^6*sgn(b*x + a) + 2002*a^5*b*d*e^5*sgn(b*x + a) + 5005*a^6*e^6*sg
n(b*x + a))*e^(-7)/(x*e + d)^16
```

maple [A] time = 0.06, size = 392, normalized size = 1.08

$$-\frac{\left(8008 b^{6} e^{6} x^{6}+43680 a \,b^{5} e^{6} x^{5}+4368 b^{6} d \,e^{5} x^{5}+100100 a^{2} b^{4} e^{6} x^{4}+18200 a \,b^{5} d \,e^{5} x^{4}+1820 b^{6} d^{2} e^{4} x^{4}+123200 a^{3} b^{3} e^{6} x^{3}+30800 a^{2} b^{4} d \,e^{5} x^{3}+5600 a \,b^{5} d^{2} e^{4} x^{3}+560 b^{6} d^{3} e^{3} x^{3}+85800 a^{4} b^{2} e^{6} x^{2}+26400 a^{3} b^{3} d \,e^{5} x^{2}+6600 a^{2} b^{4} d^{2} e^{4} x^{2}+1200 a \,b^{5} d^{3} e^{3} x^{2}+120 b^{6} d^{4} e^{2} x^{2}+32032 a^{5} b \,e^{6} x +11440 a^{4} b^{2} d \,e^{5} x +3520 a^{3} b^{3} d^{2} e^{4} x +880 a^{2} b^{4} d^{3} e^{3} x +160 a \,b^{5} d^{4} e^{2} x +16 b^{6} d^{5} e x +5005 a^{6} e^{6}+2002 a^{5} b d \,e^{5}+715 a^{4} b^{2} d^{2} e^{4}+220 a^{3} b^{3} d^{3} e^{3}+55 a^{2} b^{4} d^{4} e^{2}+10 a \,b^{5} d^{5} e +b^{6} d^{6}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{5}{2}}}{80080 \left(e x +d \right)^{16} \left(b x +a \right)^{5} e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x)
```

```
[Out] -1/80080/e^7*(8008*b^6*e^6*x^6+43680*a*b^5*e^6*x^5+4368*b^6*d*e^5*x^5+10010
0*a^2*b^4*e^6*x^4+18200*a*b^5*d*e^5*x^4+1820*b^6*d^2*e^4*x^4+123200*a^3*b^3
*e^6*x^3+30800*a^2*b^4*d*e^5*x^3+5600*a*b^5*d^2*e^4*x^3+560*b^6*d^3*e^3*x^3
+85800*a^4*b^2*e^6*x^2+26400*a^3*b^3*d*e^5*x^2+6600*a^2*b^4*d^2*e^4*x^2+120
0*a*b^5*d^3*e^3*x^2+120*b^6*d^4*e^2*x^2+32032*a^5*b*e^6*x+11440*a^4*b^2*d*e
^5*x+3520*a^3*b^3*d^2*e^4*x+880*a^2*b^4*d^3*e^3*x+160*a*b^5*d^4*e^2*x+16*b^
6*d^5*e*x+5005*a^6*e^6+2002*a^5*b*d*e^5+715*a^4*b^2*d^2*e^4+220*a^3*b^3*d^3
*e^3+55*a^2*b^4*d^4*e^2+10*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^1
6/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.45, size = 1010, normalized size = 2.79

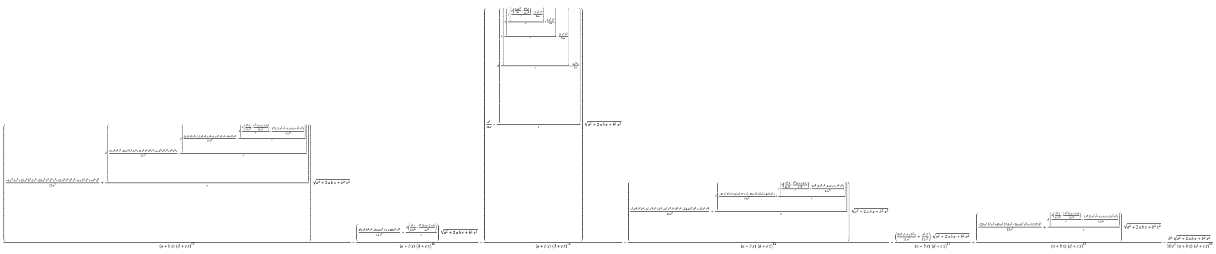

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^17,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(15*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(15*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(15*e^7) - (
d*((d*((b^6*d)/(15*e^3) - (b^5*(6*a*e - b*d))/(15*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(15*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^15) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(12*e^7) + (d*((b^6*d)/(12*e^6) - (b^5*(3*a*e - 2*b*d))/(6*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - ((a^6/(16*e) -
(d*((d*((d*((d*((d*((3*a*b^5)/(8*e) - (b^6*d)/(16*e^2)))/e - (15*a^2*b^4)/(
16*e)))/e + (5*a^3*b^3)/(4*e)))/e - (15*a^4*b^2)/(16*e)))/e + (3*a^5*b)/(8*
e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^16) - (((5*b^
6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d
^3*e)/(14*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*
a^2*b^4*d*e^3)/(14*e^7) + (d*((d*((b^6*d)/(14*e^4) - (b^5*(3*a*e - b*d))/(7
*e^4)))/e + (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(14*e^5)))/e))/e)*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^14) + (((5*b^6*d - 6*a*b
^5*e)/(11*e^7) + (b^6*d)/(11*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b
*x)*(d + e*x)^11) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*
a*b^5*d^2*e)/(13*e^7) + (d*((d*((b^6*d)/(13*e^5) - (3*b^5*(2*a*e - b*d))/(1
3*e^5)))/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(13*e^6)))/e)*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) - (b^6*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/(10*e^7*(a + b*x)*(d + e*x)^10)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**17,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1790 $\int \frac{(a+bx)(d+ex)^4}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$\frac{(a+bx)(d+ex)^5}{5e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$\frac{(a+bx)(d+ex)^5}{5e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^5)/(5*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^4}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^4}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^4\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)(d+ex)^5}{5e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 30, normalized size = 0.77

$$\frac{(a+bx)(d+ex)^5}{5e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

[In] Integrate[((a + b*x)*(d + e*x)^4)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] ((a + b*x)*(d + e*x)^5)/(5*e*Sqrt[(a + b*x)^2])

IntegrateAlgebraic [F] time = 0.81, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^4}{\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] Defer[IntegrateAlgebraic][((a + b*x)*(d + e*x)^4)/Sqrt[a^2 + 2*a*b*x + b^2*x^2], x]

fricas [A] time = 0.42, size = 42, normalized size = 1.08

$$\frac{1}{5}\,e^4x^5 + de^3x^4 + 2\,d^2e^2x^3 + 2\,d^3ex^2 + d^4x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] 1/5*e^4*x^5 + d*e^3*x^4 + 2*d^2*e^2*x^3 + 2*d^3*e*x^2 + d^4*x

giac [A] time = 0.15, size = 18, normalized size = 0.46

$$\frac{1}{5}\,(xe+d)^5 e^{(-1)}\mathrm{sgn}\,(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] 1/5*(x*e + d)^5*e^(-1)*sgn(b*x + a)

maple [B] time = 0.05, size = 58, normalized size = 1.49

$$\frac{\left(e^4x^4+5d\,e^3x^3+10d^2e^2x^2+10d^3ex+5d^4\right)(bx+a)\,x}{5\sqrt{(bx+a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x)

[Out] 1/5*x*(e^4*x^4+5*d*e^3*x^3+10*d^2*e^2*x^2+10*d^3*e*x+5*d^4)*(b*x+a)/((b*x+a)^2)^(1/2)

maxima [B] time = 0.57, size = 688, normalized size = 17.64

$$\frac{\sqrt{b^2x^2+2abx+a^2}\,e^4x^4}{5b} - \frac{9\sqrt{b^2x^2+2abx+a^2}\,ae^4x^3}{20b^2} - \frac{77a^3e^4x^2}{60b^3} + \frac{47\sqrt{b^2x^2+2abx+a^2}\,a^2e^4x^2}{60b^3} + \frac{77a^4e^4x}{30b^4} + \frac{ad^4\log\left(x+\frac{a}{b}\right)}{b} - \frac{a^5e^4\log\left(x+\frac{a}{b}\right)}{b^5} - \frac{47\sqrt{b^2x^2+2abx+a^2}\,a^4e^4}{30b^5} + \frac{(4bde^3+ae^4)\sqrt{b^2x^2+2abx+a^2}\,x^3}{4b^2} + \frac{13(4bde^3+ae^4)a^2x^2}{12b^3} - \frac{5(3bd^2e^2+2ade^3)ax^2}{3b^2} + \frac{(2bd^3e+3ad^2e^2)x^2}{b} - \frac{7(4bde^3+ae^4)\sqrt{b^2x^2+2abx+a^2}\,ax^2}{12b^3} + \frac{2(3bd^2e^2+2ade^3)\sqrt{b^2x^2+2abx+a^2}\,x^2}{3b^2} - \frac{13(4bde^3+ae^4)a^3x}{6b^4} + \frac{10(3bd^2e^2+2ade^3)a^2x}{3b^3} - \frac{2(2bd^3e+3ad^2e^2)ax}{b^2} + \frac{(4bde^3+ae^4)a^4\log\left(x+\frac{a}{b}\right)}{b^5} - \frac{2(3bd^2e^2+2ade^3)a^3\log\left(x+\frac{a}{b}\right)}{b^4} + \frac{2(2bd^3e+3ad^2e^2)a^2\log\left(x+\frac{a}{b}\right)}{b^3} - \frac{(bd^4+4ad^3e)a\log\left(x+\frac{a}{b}\right)}{b^2} + \frac{7(4bde^3+ae^4)\sqrt{b^2x^2+2abx+a^2}\,a^3}{6b^5} - \frac{4(3bd^2e^2+2ade^3)\sqrt{b^2x^2+2abx+a^2}\,a^2}{3b^4} + \frac{(bd^4+4ad^3e)\sqrt{b^2x^2+2abx+a^2}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")

[Out] 1/5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*e^4*x^4/b - 9/20*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*e^4*x^3/b^2 - 77/60*a^3*e^4*x^2/b^3 + 47/60*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*e^4*x^2/b^3 + 77/30*a^4*e^4*x/b^4 + a*d^4*log(x + a/b)/b - a^5*e^4*log(x + a/b)/b^5 - 47/30*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*e^4/b^5 + 1/4*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*x^3/b^2 + 13/12*(4*b*d*e^3 + a*e^4)*a^2*x^2/b^3 - 5/3*(3*b*d^2*e^2 + 2*a*d*e^3)*a*x^2/b^2 + (2*b*d^

```
3*e + 3*a*d^2*e^2)*x^2/b - 7/12*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*a*x^2/b^3 + 2/3*(3*b*d^2*e^2 + 2*a*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a
^2)*x^2/b^2 - 13/6*(4*b*d*e^3 + a*e^4)*a^3*x/b^4 + 10/3*(3*b*d^2*e^2 + 2*a*
d*e^3)*a^2*x/b^3 - 2*(2*b*d^3*e + 3*a*d^2*e^2)*a*x/b^2 + (4*b*d*e^3 + a*e^4
)*a^4*log(x + a/b)/b^5 - 2*(3*b*d^2*e^2 + 2*a*d*e^3)*a^3*log(x + a/b)/b^4 +
 2*(2*b*d^3*e + 3*a*d^2*e^2)*a^2*log(x + a/b)/b^3 - (b*d^4 + 4*a*d^3*e)*a*l
og(x + a/b)/b^2 + 7/6*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3
/b^5 - 4/3*(3*b*d^2*e^2 + 2*a*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^4
+ (b*d^4 + 4*a*d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^4}{\sqrt{\left(a+b\,x\right)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^4)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.12, size = 42, normalized size = 1.08

$$d^4x + 2d^3ex^2 + 2d^2e^2x^3 + de^3x^4 + \frac{e^4x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] d**4*x + 2*d**3*e*x**2 + 2*d**2*e**2*x**3 + d*e**3*x**4 + e**4*x**5/5
```

3.1791 $\int \frac{(a+bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$\frac{(a+bx)(d+ex)^4}{4e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$\frac{(a+bx)(d+ex)^4}{4e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^4)/(4*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^3}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^3\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)(d+ex)^4}{4e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$\frac{(a+bx)(d+ex)^4}{4e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^4)/(4*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 0.67, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*
x^2], x]
```

fricas [A] time = 0.42, size = 31, normalized size = 0.79

$$\frac{1}{4}\,e^3x^4 + de^2x^3 + \frac{3}{2}\,d^2ex^2 + d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*e^3*x^4 + d*e^2*x^3 + 3/2*d^2*e*x^2 + d^3*x
```

giac [A] time = 0.17, size = 18, normalized size = 0.46

$$\frac{1}{4}\,(xe+d)^4 e^{(-1)}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*e^(-1)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 47, normalized size = 1.21

$$\frac{\left(e^3x^3+4d\,e^2x^2+6d^2ex+4d^3\right)(bx+a)\,x}{4\sqrt{(bx+a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/4*x*(e^3*x^3+4*d*e^2*x^2+6*d^2*e*x+4*d^3)*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [B] time = 0.53, size = 432, normalized size = 11.08

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,e^3x^3}{4\,b}+\frac{13\,a^2e^3x^2}{12\,b^2}-\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,ae^3x^2}{12\,b^2}-\frac{13\,a^3e^3x}{6\,b^3}+\frac{ad^3\log\left(x+\frac{a}{b}\right)}{b}+\frac{a^4e^3\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,a^3e^3}{6\,b^4}-\frac{5\left(3\,bde^2+ae^3\right)ax^2}{6\,b^2}+\frac{3\left(bd^2e+ade^2\right)x^2}{2\,b}+\frac{\left(3\,bde^2+ae^3\right)\sqrt{b^2x^2+2\,abx+a^2}\,x^2}{3\,b^2}+\frac{5\left(3\,bde^2+ae^3\right)a^2x}{3\,b^3}-\frac{3\left(bd^2e+ade^2\right)ax}{b^2}-\frac{\left(3\,bde^2+ae^3\right)a^3\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{3\left(bd^2e+ade^2\right)a^2\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{\left(bd^3+3\,ad^2e\right)a\log\left(x+\frac{a}{b}\right)}{b^2}-\frac{2\left(3\,bde^2+ae^3\right)\sqrt{b^2x^2+2\,abx+a^2}\,a^2}{3\,b^4}+\frac{\left(bd^3+3\,ad^2e\right)\sqrt{b^2x^2+2\,abx+a^2}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*e^3*x^3/b + 13/12*a^2*e^3*x^2/b^2 - 7/12*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*e^3*x^2/b^2 - 13/6*a^3*e^3*x/b^3 + a*d^3*lo
g(x + a/b)/b + a^4*e^3*log(x + a/b)/b^4 + 7/6*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*a^3*e^3/b^4 - 5/6*(3*b*d*e^2 + a*e^3)*a*x^2/b^2 + 3/2*(b*d^2*e + a*d*e^2)*
x^2/b + 1/3*(3*b*d*e^2 + a*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*x^2/b^2 + 5/3
*(3*b*d*e^2 + a*e^3)*a^2*x/b^3 - 3*(b*d^2*e + a*d*e^2)*a*x/b^2 - (3*b*d*e^2
 + a*e^3)*a^3*log(x + a/b)/b^4 + 3*(b*d^2*e + a*d*e^2)*a^2*log(x + a/b)/b^3
```

```
 - (b*d^3 + 3*a*d^2*e)*a*log(x + a/b)/b^2 - 2/3*(3*b*d*e^2 + a*e^3)*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*a^2/b^4 + (b*d^3 + 3*a*d^2*e)*sqrt(b^2*x^2 + 2*a*b*x
 + a^2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+bx)\,(d+ex)^3}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.11, size = 32, normalized size = 0.82

$$d^3x + \frac{3d^2ex^2}{2} + de^2x^3 + \frac{e^3x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] d**3*x + 3*d**2*e*x**2/2 + d*e**2*x**3 + e**3*x**4/4
```

3.1792 $\int \frac{(a+bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=39

$$\frac{(a+bx)(d+ex)^3}{3e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$\frac{(a+bx)(d+ex)^3}{3e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^3)/(3*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}} \, dx &= \frac{\left(ab+b^2x\right) \int \frac{(a+bx)(d+ex)^2}{ab+b^2x} \, dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right) \int (d+ex)^2 \, dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)(d+ex)^3}{3e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$\frac{(a+bx)(d+ex)^3}{3e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^3)/(3*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 0.60, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*
x^2], x]
```

fricas [A] time = 0.41, size = 20, normalized size = 0.51

$$\frac{1}{3}\,e^2x^3 + dex^2 + d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*e^2*x^3 + d*e*x^2 + d^2*x
```

giac [A] time = 0.18, size = 18, normalized size = 0.46

$$\frac{1}{3}\,(xe+d)^3e^{(-1)}\mathrm{sgn}\,(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*e^(-1)*sgn(b*x + a)
```

maple [A] time = 0.04, size = 36, normalized size = 0.92

$$\frac{\left(e^2x^2+3dex+3d^2\right)(bx+a)\,x}{3\sqrt{(bx+a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/3*x*(e^2*x^2+3*d*e*x+3*d^2)*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [B] time = 0.49, size = 239, normalized size = 6.13

$$-\frac{5\,ae^2x^2}{6\,b} + \frac{\sqrt{b^2x^2+2\,abx+a^2}\,e^2x^2}{3\,b} + \frac{5\,a^2e^2x}{3\,b^2} + \frac{ad^2\log\left(x+\frac{a}{b}\right)}{b} - \frac{a^3e^2\log\left(x+\frac{a}{b}\right)}{b^3} + \frac{\left(2\,bde+ae^2\right)x^2}{2\,b} - \frac{2\,\sqrt{b^2x^2+2\,abx+a^2}\,a^2e^2}{3\,b^3} - \frac{\left(2\,bde+ae^2\right)ax}{b^2} + \frac{\left(2\,bde+ae^2\right)a^2\log\left(x+\frac{a}{b}\right)}{b^3} - \frac{\left(bd^2+2\,ade\right)a\log\left(x+\frac{a}{b}\right)}{b^2} + \frac{\sqrt{b^2x^2+2\,abx+a^2}\left(bd^2+2\,ade\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5/6*a*e^2*x^2/b + 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*e^2*x^2/b + 5/3*a^2*e^
2*x/b^2 + a*d^2*log(x + a/b)/b - a^3*e^2*log(x + a/b)/b^3 + 1/2*(2*b*d*e +
a*e^2)*x^2/b - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*e^2/b^3 - (2*b*d*e + a
*e^2)*a*x/b^2 + (2*b*d*e + a*e^2)*a^2*log(x + a/b)/b^3 - (b*d^2 + 2*a*d*e)*
a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d^2 + 2*a*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^2}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.10, size = 19, normalized size = 0.49

$$d^2x + dex^2 + \frac{e^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/((b*x+a)**2)**(1/2),x)
[Out] d**2*x + d*e*x**2 + e**2*x**3/3
```

3.1793 $\int \frac{(a+bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=62

$$\frac{dx(a+bx)}{\sqrt{a^2+2abx+b^2x^2}}+\frac{ex^2(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 21}

$$\frac{dx(a+bx)}{\sqrt{a^2+2abx+b^2x^2}}+\frac{ex^2(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (d*x*(a + b*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (e*x^2*(a + b*x))/(2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{dx(a+bx)}{\sqrt{a^2+2abx+b^2x^2}}+\frac{ex^2(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.45

$$\frac{x(a+bx)(2d+ex)}{2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*(a + b*x)*(2*d + e*x))/(2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.42, size = 10, normalized size = 0.16

$$\frac{1}{2}\,ex^2+dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] 1/2*e*x^2 + d*x
```

giac [A] time = 0.15, size = 19, normalized size = 0.31

$$\frac{1}{2}\left(x^2e+2\,dx\right)\operatorname{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] 1/2*(x^2*e + 2*d*x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 25, normalized size = 0.40

$$\frac{(ex+2d)\,(bx+a)\,x}{2\sqrt{(bx+a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x)
[Out] 1/2*x*(e*x+2*d)*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [B] time = 0.76, size = 95, normalized size = 1.53

$$\frac{1}{2}\,ex^2-\frac{aex}{b}+\frac{ad\log\left(x+\frac{a}{b}\right)}{b}+\frac{a^2e\log\left(x+\frac{a}{b}\right)}{b^2}-\frac{(bd+ae)a\log\left(x+\frac{a}{b}\right)}{b^2}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(bd+ae)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] 1/2*e*x^2 - a*e*x/b + a*d*log(x + a/b)/b + a^2*e*log(x + a/b)/b^2 - (b*d +
a*e)*a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d + a*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,(d+e\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.09, size = 8, normalized size = 0.13

$$dx + \frac{ex^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)**2)**(1/2),x)
[Out] d*x + e*x**2/2
```

3.1794 $\int \frac{a+bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=24

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{b}$$

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Sqrt[a^2 + 2*a*b*x + b^2*x^2]/b
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{a+bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}}{b}$$

Mathematica [A] time = 0.00, size = 18, normalized size = 0.75

$$\frac{x(a+bx)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*(a + b*x))/Sqrt[(a + b*x)^2]
```

IntegrateAlgebraic [A] time = 0.02, size = 15, normalized size = 0.62

$$\frac{\sqrt{(a+bx)^2}}{b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Sqrt[(a + b*x)^2]/b
```

fricas [A] time = 0.41, size = 1, normalized size = 0.04

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] x
```

giac [A] time = 0.15, size = 20, normalized size = 0.83

$$x\mathrm{sgn}\left(bx+a\right)+\frac{a\mathrm{sgn}\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] x*sgn(b*x + a) + a*sgn(b*x + a)/b
```

maple [A] time = 0.05, size = 17, normalized size = 0.71

$$\frac{\left(bx+a\right)x}{\sqrt{\left(bx+a\right)^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)/((b*x+a)^2)^(1/2)*x
```

maxima [A] time = 0.55, size = 13, normalized size = 0.54

$$\frac{\sqrt{\left(bx+a\right)^{2}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] sqrt((b*x + a)^2)/b
```

mupad [B] time = 2.38, size = 76, normalized size = 3.17

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b}+\frac{a\,\ln\left(a+b\,x+\sqrt{{\left(a+b\,x\right)}^2}\right)}{b}-\frac{a\,\ln\left(a\,b+\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{b^2}+b^2\,x\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((a + b*x)^2)^(1/2),x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^(1/2)/b + (a*log(a + b*x + ((a + b*x)^2)^(1/2)))/
b - (a*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^(1/2)
```

sympy [A] time = 0.08, size = 0, normalized size = 0.00

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)**2)**(1/2),x)
```

```
[Out] x
```

3.1795 $\int \frac{a+bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=35

$$\frac{(a+bx)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 31}

$$\frac{(a+bx)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*Log[d + e*x])/(e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{d+ex}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.74

$$\frac{(a+bx)\log(d+ex)}{e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*Log[d + e*x])/(e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]), x]
```

fricas [A] time = 0.44, size = 10, normalized size = 0.29

$$\frac{\log\left(ex+d\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] log(e*x + d)/e
```

giac [A] time = 0.16, size = 17, normalized size = 0.49

$$e^{(-1)}\log\left(|xe+d|\right)\operatorname{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] e^(-1)*log(abs(x*e + d))*sgn(b*x + a)
```

maple [A] time = 0.05, size = 25, normalized size = 0.71

$$\frac{(bx+a)\ln\left(ex+d\right)}{\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*ln(e*x+d)/e/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{a+b\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)),x)
[Out] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)), x)
```

sympy [A] time = 0.10, size = 7, normalized size = 0.20

$$\frac{\log \left(d + ex\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)**2)**(1/2),x)
[Out] log(d + e*x)/e
```

3.1796 $\int \frac{a+bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=38

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{(d+ex)(bd-ae)}$$

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{(d+ex)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] Sqrt[a^2 + 2*a*b*x + b^2*x^2]/((b*d - a*e)*(d + e*x))
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)(d+ex)}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.74

$$-\frac{a+bx}{e\sqrt{(a+bx)^2}\,(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] -((a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)))
```

IntegrateAlgebraic [F] time = 0.49, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] Defer[IntegrateAlgebraic][(a + b*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]), x]
```

fricas [A] time = 0.42, size = 13, normalized size = 0.34

$$-\frac{1}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/(e^2*x + d*e)
```

giac [A] time = 0.17, size = 18, normalized size = 0.47

$$-\frac{e^{(-1)}\operatorname{sgn}(bx+a)}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -e^(-1)*sgn(b*x + a)/(x*e + d)
```

maple [A] time = 0.05, size = 27, normalized size = 0.71

$$-\frac{bx+a}{(ex+d)\sqrt{(bx+a)^2}\, e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/(e*x+d)/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.10, size = 28, normalized size = 0.74

$$-\frac{\sqrt{(a+b\,x)^2}}{e\,(a+b\,x)\,(d+e\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^2),x)
```

```
[Out] -((a + b*x)^2)^(1/2)/(e*(a + b*x)*(d + e*x))
```

sympy [A] time = 0.17, size = 10, normalized size = 0.26

$$-\frac{1}{de+e^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] -1/(d*e + e**2*x)
```

3.1797 $\int \frac{a+bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{-a-bx}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 0.93, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$-\frac{a+bx}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(a + b*x)/(2*e*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^3}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{a+bx}{2e(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.71

$$-\frac{a+bx}{2e\sqrt{(a+bx)^2}\,(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] -1/2*(a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)^2)
```

IntegrateAlgebraic [F] time = 0.75, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] Defer[IntegrateAlgebraic][(a + b*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]), x]
```

fricas [A] time = 0.42, size = 24, normalized size = 0.57

$$-\frac{1}{2\left(e^3x^2+2\,de^2x+d^2e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] -1/2/(e^3*x^2 + 2*d*e^2*x + d^2*e)
```

giac [A] time = 0.15, size = 18, normalized size = 0.43

$$-\frac{e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] -1/2*e^(-1)*sgn(b*x + a)/(x*e + d)^2
```

maple [A] time = 0.05, size = 27, normalized size = 0.64

$$-\frac{bx+a}{2\left(ex+d\right)^2\sqrt{\left(bx+a\right)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x)
[Out] -1/2/(e*x+d)^2/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 28, normalized size = 0.67

$$-\frac{\sqrt{(a+b\,x)^2}}{2\,e\,(a+b\,x)\,(d+e\,x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^3),x)
[Out] -((a + b*x)^2)^(1/2)/(2*e*(a + b*x)*(d + e*x)^2)
```

sympy [A] time = 0.22, size = 26, normalized size = 0.62

$$-\frac{1}{2d^2e+4de^2x+2e^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/((b*x+a)**2)**(1/2),x)
[Out] -1/(2*d**2*e + 4*d*e**2*x + 2*e**3*x**2)
```

3.1798 $\int \frac{a+bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{-a-bx}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 0.93, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$-\frac{a+bx}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(a + b*x)/(3*e*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^4}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a+bx}{3e(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.71

$$-\frac{a+bx}{3e\sqrt{(a+bx)^2}\,(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/3*(a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 1.03, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]), x]
```

fricas [A] time = 0.47, size = 35, normalized size = 0.83

$$-\frac{1}{3\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/3/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e)
```

giac [A] time = 0.16, size = 18, normalized size = 0.43

$$-\frac{e^{(-1)}\mathrm{sgn}\,(bx+a)}{3\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/3*e^(-1)*sgn(b*x + a)/(x*e + d)^3
```

maple [A] time = 0.05, size = 27, normalized size = 0.64

$$-\frac{bx+a}{3\,(ex+d)^3\,\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/3/(e*x+d)^3/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.14, size = 28, normalized size = 0.67

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}}{3\,e\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^4),x)
[Out] -((a + b*x)^2)^(1/2)/(3*e*(a + b*x)*(d + e*x)^3)
```

sympy [A] time = 0.28, size = 37, normalized size = 0.88

$$-\frac{1}{3d^3e + 9d^2e^2x + 9de^3x^2 + 3e^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/((b*x+a)**2)**(1/2),x)
[Out] -1/(3*d**3*e + 9*d**2*e**2*x + 9*d*e**3*x**2 + 3*e**4*x**3)
```

3.1799 $\int \frac{a+bx}{(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{-a-bx}{4e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 0.93, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$-\frac{a+bx}{4e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(a + b*x)/(4*e*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^5}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{a+bx}{4e(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.71

$$-\frac{a+bx}{4e\sqrt{(a+bx)^2}\,(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/4*(a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)^4)
```

IntegrateAlgebraic [B] time = 87.25, size = 4872, normalized size = 116.00

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a*b^5*x^4)/d^4 - (a*b^4*Sqrt[b^2]*x^4)/d^4 + (b^6*x^5)/d^4 - (b^5*Sqrt[b^
2]*x^5)/d^4 + (b^5*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 - (b^4*Sqrt[b^2]*
x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a
*b*x + b^2*x^2])*(-(a*b) - b^2*x + Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
*(2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(-a^2 - a*
b*x - a*Sqrt[b^2]*x - b^2*x^2 + a*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^2]
*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((2*a*b^6*x^4)/d^3 - (2*a*b^5*Sqrt[b^2
]*x^4)/d^3 + (2*b^7*x^5)/d^3 - (2*b^6*Sqrt[b^2]*x^5)/d^3 + (2*b^6*x^4*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/d^3 - (2*b^5*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/d^3)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(-(a*b) -
 b^2*x + Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a*e - Sqrt[b^2]*
e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])^2*(-a^2 - a*b*x - a*Sqrt[b^2]*x - b^
2*x^2 + a*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])) + ((4*a*b^7*x^4)/d^2 - (4*a*b^6*Sqrt[b^2]*x^4)/d^2 + (4*b^8*x^5)
/d^2 - (4*b^7*Sqrt[b^2]*x^5)/d^2 + (4*b^7*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/d^2 - (4*b^6*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2)/((-a - Sqr
t[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(-(a*b) - b^2*x + Sqrt[b^2]*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])^3*(-a^2 - a*b*x - a*Sqrt[b^2]*x - b^2*x^2 + a*Sqrt[a^2 + 2*a
*b*x + b^2*x^2] + Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((8*a*b^8*x
^4)/d - (8*a*b^7*Sqrt[b^2]*x^4)/d + (8*b^9*x^5)/d - (8*b^8*Sqrt[b^2]*x^5)/d
 + (8*b^8*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d - (8*b^7*Sqrt[b^2]*x^4*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/d)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2])*(-(a*b) - b^2*x + Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a
*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])^4*(-a^2 - a*b*x - a*S
qrt[b^2]*x - b^2*x^2 + a*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^2]*x*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])) + ((2*a^7)/d^4 + (2*a^7*Sqrt[b^2])/(b*d^4) - (2*b
^7*x^7)/d^4 - (2*b^6*Sqrt[b^2]*x^7)/d^4 + (2*a^6*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/d^4 + (2*a^6*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(b*d^4) - (2*a^5
*b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 - (2*a^5*Sqrt[b^2]*x*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/d^4 + (2*a^4*b^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 +
(2*a^4*(b^2)^(3/2)*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(b*d^4) - (2*a^3*b^3*
x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 - (2*a^3*(b^2)^(3/2)*x^3*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/d^4 + (2*a^2*b^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4
 + (2*a^2*b^3*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 - (2*a*b^5*x
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 - (2*a*b^4*Sqrt[b^2]*x^5*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/d^4 + (2*b^6*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4 + (2
*b^5*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^4)/((a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 +
2*a*b*x + b^2*x^2])*(a^2 + a*b*x - a*Sqrt[b^2]*x + b^2*x^2 + a*Sqrt[a^2 + 2
*a*b*x + b^2*x^2] - Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*a^3 + 3*a
^2*b*x - 3*a^2*Sqrt[b^2]*x + 3*a*b^2*x^2 - 3*a*b*Sqrt[b^2]*x^2 - 2*(b^2)^(3
/2)*x^3 + 2*a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + a*b*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2] - 3*a*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 2*b^2*x^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])) + ((4*a^7*b)/d^3 + (4*a^7*Sqrt[b^2])/d^3 - (4*b^8
*x^7)/d^3 - (4*b^7*Sqrt[b^2]*x^7)/d^3 + (4*a^6*b*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/d^3 + (4*a^6*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 - (4*a^5*b^2
*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 - (4*a^5*b*Sqrt[b^2]*x*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/d^3 + (4*a^4*b^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 +
```

```
(4*a^4*(b^2)^(3/2)*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 - (4*a^3*b^4*x^3*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 - (4*a^3*b^3*Sqrt[b^2]*x^3*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/d^3 + (4*a^2*b^5*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 +
 (4*a^2*b^4*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 - (4*a*b^6*x^5
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 - (4*a*b^5*Sqrt[b^2]*x^5*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/d^3 + (4*b^7*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3 + (4*b
^6*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^3)/((a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])^2*(a^2 + a*b*x - a*Sqrt[b^2]*x + b^2*x^2 + a*Sqrt[a^2 + 2
*a*b*x + b^2*x^2] - Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*a^3 + 3*a
^2*b*x - 3*a^2*Sqrt[b^2]*x + 3*a*b^2*x^2 - 3*a*b*Sqrt[b^2]*x^2 - 2*(b^2)^(3
/2)*x^3 + 2*a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + a*b*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2] - 3*a*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 2*b^2*x^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])) + ((8*a^7*b^2)/d^2 + (8*a^7*b*Sqrt[b^2])/d^2 - (8
*b^9*x^7)/d^2 - (8*b^8*Sqrt[b^2]*x^7)/d^2 + (8*a^6*b^2*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/d^2 + (8*a^6*b*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2 - (8
*a^5*b^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2 - (8*a^5*(b^2)^(3/2)*x*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/d^2 + (8*a^4*b^4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/d^2 + (8*a^4*b^3*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2 - (8*a^
3*b^5*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2 - (8*a^3*b^4*Sqrt[b^2]*x^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/d^2 + (8*a^2*b^6*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/d^2 + (8*a^2*b^5*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2 - (8
*a*b^7*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2 - (8*a*b^6*Sqrt[b^2]*x^5*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/d^2 + (8*b^8*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
d^2 + (8*b^7*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d^2)/((a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])^3*(a^2 + a*b*x - a*Sqrt[b^2]*x + b^2*x^2 + a*Sq
rt[a^2 + 2*a*b*x + b^2*x^2] - Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2
*a^3 + 3*a^2*b*x - 3*a^2*Sqrt[b^2]*x + 3*a*b^2*x^2 - 3*a*b*Sqrt[b^2]*x^2 -
2*(b^2)^(3/2)*x^3 + 2*a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + a*b*x*Sqrt[a^2 +
2*a*b*x + b^2*x^2] - 3*a*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 2*b^2*
x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((16*a^7*b^3)/d + (16*a^7*(b^2)^(3/2)
)/d - (16*b^10*x^7)/d - (16*b^9*Sqrt[b^2]*x^7)/d + (16*a^6*b^3*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/d + (16*a^6*(b^2)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d
 - (16*a^5*b^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d - (16*a^5*b^3*Sqrt[b^2]*x
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d + (16*a^4*b^5*x^2*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/d + (16*a^4*b^4*Sqrt[b^2]*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d - (1
6*a^3*b^6*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d - (16*a^3*b^5*Sqrt[b^2]*x^3*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d + (16*a^2*b^7*x^4*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/d + (16*a^2*b^6*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d - (16
*a*b^8*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d - (16*a*b^7*Sqrt[b^2]*x^5*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/d + (16*b^9*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d
+ (16*b^8*Sqrt[b^2]*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/d)/((a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])^4*(a^2 + a*b*x - a*Sqrt[b^2]*x + b^2*x^2 + a*Sqrt[a^
2 + 2*a*b*x + b^2*x^2] - Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(2*a^3
+ 3*a^2*b*x - 3*a^2*Sqrt[b^2]*x + 3*a*b^2*x^2 - 3*a*b*Sqrt[b^2]*x^2 - 2*(b^
2)^(3/2)*x^3 + 2*a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + a*b*x*Sqrt[a^2 + 2*a*b
*x + b^2*x^2] - 3*a*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 2*b^2*x^2*S
qrt[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.42, size = 46, normalized size = 1.10

$$-\frac{1}{4\left(e^{5}x^{4}+4\,de^{4}x^{3}+6\,d^{2}e^{3}x^{2}+4\,d^{3}e^{2}x+d^{4}e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4/(e^5*x^4 + 4*d*e^4*x^3 + 6*d^2*e^3*x^2 + 4*d^3*e^2*x + d^4*e)
```

giac [A] time = 0.15, size = 18, normalized size = 0.43

$$-\frac{e^{(-1)}\operatorname{sgn}(bx+a)}{4(xe+d)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] -1/4*e^(-1)*sgn(b*x + a)/(x*e + d)^4
```

maple [A] time = 0.05, size = 27, normalized size = 0.64

$$-\frac{bx+a}{4(ex+d)^4\sqrt{(bx+a)^2}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x)
[Out] -1/4/(e*x+d)^4/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 28, normalized size = 0.67

$$-\frac{\sqrt{(a+b\,x)^2}}{4\,e\,(a+b\,x)\,(d+e\,x)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^5),x)
[Out] -((a + b*x)^2)^(1/2)/(4*e*(a + b*x)*(d + e*x)^4)
```

sympy [A] time = 0.34, size = 49, normalized size = 1.17

$$-\frac{1}{4d^4e+16d^3e^2x+24d^2e^3x^2+16de^4x^3+4e^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**5/((b*x+a)**2)**(1/2),x)
[Out] -1/(4*d**4*e + 16*d**3*e**2*x + 24*d**2*e**3*x**2 + 16*d*e**4*x**3 + 4*e**5
*x**4)
```

3.1800 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(d+ex)^3}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(bd-ae)^3\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{4e^2x(a+bx)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a}{b^3}$$

Rubi [A] time = 0.11, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {768, 646, 43}

$$\frac{4e^2x(a+bx)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(d+ex)^3}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(d+ex)^2(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(bd-ae)^3\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (4*e^2*(b*d - a*e)^2*x*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*
e*(b*d - a*e)*(a + b*x)*(d + e*x)^2)/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(4*e*(a + b*x)*(d + e*x)^3)/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (d + e*
x)^4/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (4*e*(b*d - a*e)^3*(a + b*x)*Log[a
 + b*x])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(4e)\int \frac{(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}$$

$$= -\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{ab+b^2x}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4e\left(ab+b^2x\right)\right)\int \left(\frac{e(bd-ae)^2}{b^4} + \frac{(bd-ae)^3}{b^3\left(ab+b^2x\right)} + \frac{e(bd-ae)(d+ex)}{b^3}\right.}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{4e^2(bd-ae)^2x(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2e(bd-ae)(a+bx)(d+ex)^2}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{4e(a+bx)(d+ex)^3}{3b^2\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.08, size = 170, normalized size = 0.81

$$\frac{-3a^4e^4+3a^3be^3(4d+3ex)+6a^2b^2e^2\left(-3d^2-4dex+e^2x^2\right)-2ab^3e\left(-6d^3-9d^2ex+9de^2x^2+e^3x^3\right)-12e(a+bx)(ae-bd)^3\log(a+bx)+b^4\left(-3d^4+18d^2e^2x^2+6de^3x^3+e^4x^4\right)}{3b^5\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-3*a^4*e^4 + 3*a^3*b*e^3*(4*d + 3*e*x) + 6*a^2*b^2*e^2*(-3*d^2 - 4*d*e*x +
 e^2*x^2) - 2*a*b^3*e*(-6*d^3 - 9*d^2*e*x + 9*d*e^2*x^2 + e^3*x^3) + b^4*(-
3*d^4 + 18*d^2*e^2*x^2 + 6*d*e^3*x^3 + e^4*x^4) - 12*e*(-(b*d) + a*e)^3*(a
+ b*x)*Log[a + b*x])/(3*b^5*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 2.80, size = 3569, normalized size = 17.00

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] (d^4*(-(a*b) + b^2*x) - Sqrt[b^2]*d^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/((b^2)
^(3/2)*x*(a + b*x) - b^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((-8*a*d^3*e*x)
/Sqrt[b^2] + (8*a*d^3*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (8*a*d^3*e*x*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 8*d^3*e*x^2
*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (8*d^3*e*x*S
qrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/a])/Sqrt[b^2])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2
])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((8*a^2*d^3*e)/(b*S
qrt[b^2]) + (6*a^2*d^2*e^2*x)/(b*Sqrt[b^2]) - (18*a*d^2*e^2*x^2)/Sqrt[b^2]
- (12*b*d^2*e^2*x^3)/Sqrt[b^2] - (12*a^2*d^2*e^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/b^3 + (6*a*d^2*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (12*d^2*e^2*
x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (24*a^2*d^2*e^2*x*ArcTanh[(-(Sqrt[b^
2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 - (24*a*d^2*e^2*x^2*ArcTanh[
(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + (24*a*d^2*e^2*x*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/a])/(b*Sqrt[b^2]) - (4*a*d^3*e*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (4*b*d^3*e*x^2*Log[-a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (4*d^3*e*x*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b - (4*a*d^3
*e*x*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (4*b
*d^3*e*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2]
+ (4*d^3*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 +
```

```
 2*a*b*x + b^2*x^2]])/b)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((-12*a^3*Sqrt[b^2]*
d^2*e^2)/b^4 + (2*a^3*Sqrt[b^2]*d*e^3*x)/b^4 + (30*a^2*Sqrt[b^2]*d*e^3*x^2)
/b^3 + (20*a*(b^2)^(3/2)*d*e^3*x^3)/b^4 + (8*a^3*d*e^3*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/b^4 - (10*a^2*d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (20*a
*d*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (24*a^3*d*e^3*x*ArcTanh[(-(
Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^3 + (24*a^2*d*e^3*x^2*A
rcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 - (24*a^2*S
qrt[b^2]*d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^4 + (12*a^2*Sqrt[b^2]*d^2*e^2*x*Log[-a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3 + (12*a*(b^2)^(3/2)*d^2*
e^2*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4 - (12*a*
d^2*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]])/b^2 + (12*a^2*Sqrt[b^2]*d^2*e^2*x*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3 + (12*a*(b^2)^(3/2)*d^2*e^2*x^2*Log[a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4 - (12*a*d^2*e^2*x*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2
]])/b^2)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]
*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((8*a^4*d*e^3)/(b^3*Sqrt[b^2]) - (a^
3*d*e^3*x)/(b^2)^(3/2) - (7*a^4*e^4*x)/(3*b^3*Sqrt[b^2]) - (5*a^2*d*e^3*x^2
)/(b*Sqrt[b^2]) - (40*a^3*e^4*x^2)/(3*(b^2)^(3/2)) - (8*a*d*e^3*x^3)/Sqrt[b
^2] - (10*a^2*e^4*x^3)/(b*Sqrt[b^2]) - (4*b*d*e^3*x^4)/Sqrt[b^2] - (5*a*e^4
*x^4)/(3*Sqrt[b^2]) - (2*b*e^4*x^5)/(3*Sqrt[b^2]) - (2*a^4*e^4*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/b^5 + (a^2*d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 +
(13*a^3*e^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (4*a*d*e^3*x^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/b^2 + (9*a^2*e^4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/b^3 + (4*d*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (a*e^4*x^3*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/b^2 + (2*e^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*
b) - (8*a^4*e^4*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
a])/b^4 - (8*a^3*e^4*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/a])/b^3 + (8*a^3*e^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt
[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b^3*Sqrt[b^2]) - (12*a^3*d*e
^3*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (
12*a^2*d*e^3*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*
Sqrt[b^2]) + (12*a^2*d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3 - (12*a^3*d*e^3*x*Log[a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (12*a^2*d*e^3*x^2*Log
[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (12*a^2*
d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2]])/b^3)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((-2*a^5*e^4)/(b^4*Sqrt
[b^2]) + (3*a^4*e^4*x)/(4*b^3*Sqrt[b^2]) + (15*a^3*e^4*x^2)/(4*(b^2)^(3/2))
 + (6*a^2*e^4*x^3)/(b*Sqrt[b^2]) + (3*a*e^4*x^4)/Sqrt[b^2] - (3*a^3*e^4*x*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^4) - (3*a^2*e^4*x^2*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/b^3 - (3*a*e^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (4*a^4*e
^4*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^3*Sqrt[b^2])
 + (4*a^3*e^4*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b
^2)^(3/2) - (4*a^3*e^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^4 + (4*a^4*e^4*x*Log[a - Sqrt[b^2]*x +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^3*Sqrt[b^2]) + (4*a^3*e^4*x^2*Log[a - S
qrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (4*a^3*e^4*x*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2]])/b^4)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.42, size = 268, normalized size = 1.28

$$\frac{b^{4}e^{4}x^{4} - 3\,b^{4}d^{4} + 12\,ab^{3}d^{3}e - 18\,a^{2}b^{2}d^{2}e^{2} + 12\,a^{3}bde^{3} - 3\,a^{4}e^{4} + 2\left(3\,b^{4}de^{3} - ab^{3}e^{4}\right)x^{3} + 6\left(3\,b^{4}d^{2}e^{2} - 3\,ab^{3}de^{3} + a^{2}b^{2}e^{4}\right)x^{2} + 3\left(6\,ab^{3}d^{2}e^{2} - 8\,a^{2}b^{2}de^{3} + 3\,a^{3}be^{4}\right)x + 12\left(ab^{3}d^{3}e - 3\,a^{2}b^{2}d^{2}e^{2} + 3\,a^{3}bde^{3} - a^{4}e^{4} + \left(b^{4}d^{3}e - 3\,ab^{3}d^{2}e^{2} + 3\,a^{2}b^{2}de^{3} - a^{3}be^{4}\right)x\right)\log\left(bx + a\right)}{3\left(b^{6}x + ab^{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/3*(b^4*e^4*x^4 - 3*b^4*d^4 + 12*a*b^3*d^3*e - 18*a^2*b^2*d^2*e^2 + 12*a^3
*b*d*e^3 - 3*a^4*e^4 + 2*(3*b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(3*b^4*d^2*e^2 -
 3*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 3*(6*a*b^3*d^2*e^2 - 8*a^2*b^2*d*e^3 +
3*a^3*b*e^4)*x + 12*(a*b^3*d^3*e - 3*a^2*b^2*d^2*e^2 + 3*a^3*b*d*e^3 - a^4*
e^4 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)*log(b*
x + a))/(b^6*x + a*b^5)
```

giac [A] time = 0.33, size = 237, normalized size = 1.13

$$\frac{1}{3}\sqrt{b^2x^2+2\,abx+a^2}\left(x\left(\frac{xe^4}{b^3}+\frac{2\left(3\,b^{13}de^3-2\,ab^{12}e^4\right)}{b^{16}}\right)+\frac{18\,b^{13}d^2e^2-30\,ab^{12}de^3+13\,a^2b^{11}e^4}{b^{16}}\right)-\frac{4\left(b^3d^3e-3\,ab^2d^2e^2+3\,a^2bde^3-a^3e^4\right)\log\left(\left|-3\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)^2ab-a^3b-\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)^3|b|-3\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)a^2|b|\right|\right)}{3\,b^4|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(x*(x*e^4/b^3 + 2*(3*b^13*d*e^3 - 2*a*b^1
2*e^4)/b^16) + (18*b^13*d^2*e^2 - 30*a*b^12*d*e^3 + 13*a^2*b^11*e^4)/b^16)
- 4/3*(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 - a^3*e^4)*log(abs(-3*(x
*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^2*a*b - a^3*b - (x*abs(b) - sqrt(b
^2*x^2 + 2*a*b*x + a^2))^3*abs(b) - 3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x +
a^2))*a^2*abs(b)))/(b^4*abs(b))
```

maple [B] time = 0.07, size = 321, normalized size = 1.53

$$-\frac{\left(-b^4e^4x^4+2a\,b^3e^4x^3-6b^4d\,e^3x^3+12a^3b\,e^4x\ln\left(bx+a\right)-36a^2b^2d\,e^3x\ln\left(bx+a\right)-6a^2b^2e^4x^2+36a\,b^3d^2e^2x\ln\left(bx+a\right)+18a\,b^3d\,e^3x^2-12b^4d^3ex\ln\left(bx+a\right)-18b^4d^2e^2x^2+12a^4e^4\ln\left(bx+a\right)-36a^3bd\,e^3\ln\left(bx+a\right)-9a^3b\,e^4x+36a^2b^2d^2e^2\ln\left(bx+a\right)+24a^2b^2d\,e^3x-12a\,b^3d^3e\ln\left(bx+a\right)-18a\,b^3d^2e^2x+3a^4e^4-12a^3bd\,e^3+18a^2b^2d^2e^2-12a\,b^3d^3e+3b^4d^4\right)\left(bx+a\right)^2}{3\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/3*(-b^4*e^4*x^4+2*a*b^3*e^4*x^3-6*b^4*d*e^3*x^3+12*ln(b*x+a)*x*a^3*b*e^4
-36*ln(b*x+a)*x*a^2*b^2*d*e^3+36*ln(b*x+a)*x*a*b^3*d^2*e^2-12*ln(b*x+a)*x*b
^4*d^3*e-6*a^2*b^2*e^4*x^2+18*a*b^3*d*e^3*x^2-18*b^4*d^2*e^2*x^2+12*ln(b*x+
a)*a^4*e^4-36*ln(b*x+a)*a^3*b*d*e^3+36*ln(b*x+a)*a^2*b^2*d^2*e^2-12*ln(b*x+
a)*a*b^3*d^3*e-9*a^3*b*e^4*x+24*a^2*b^2*d*e^3*x-18*a*b^3*d^2*e^2*x+3*a^4*e^
4-12*a^3*b*d*e^3+18*a^2*b^2*d^2*e^2-12*a*b^3*d^3*e+3*b^4*d^4)*(b*x+a)^2/b^5
/((b*x+a)^2)^(3/2)
```

maxima [B] time = 0.64, size = 754, normalized size = 3.59

$$\frac{e^4x^4}{3\sqrt{b^2x^2+2\,abx+a^2}\,b}-\frac{7\,ae^4x^3}{6\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{9\,a^2e^4x^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^3}-\frac{10\,a^3e^4\log\left(x+\frac{a}{b}\right)}{b^5}+\frac{9\,a^4e^4}{\sqrt{b^2x^2+2\,abx+a^2}\,b^5}+\frac{\left(4\,bde^3+ae^4\right)x^3}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{20\,a^4e^4x}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{5\left(4\,bde^3+ae^4\right)ax^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^3}+\frac{2\left(3\,bd^2e^2+2\,ade^3\right)x^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{ad^4}{2\,b^3\left(x+\frac{a}{b}\right)^2}-\frac{39\,a^5e^4}{2\,b^7\left(x+\frac{a}{b}\right)^2}+\frac{6\left(4\,bde^3+ae^4\right)a^2\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{6\left(3\,bd^2e^2+2\,ade^3\right)a\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{2\left(2\,bd^3e+3\,ad^2e^2\right)\log\left(x+\frac{a}{b}\right)}{b^3}-\frac{5\left(4\,bde^3+ae^4\right)a^3}{\sqrt{b^2x^2+2\,abx+a^2}\,b^5}+\frac{4\left(3\,bd^2e^2+2\,ade^3\right)a^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^4}-\frac{bd^4+4\,ad^3e}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{12\left(4\,bde^3+ae^4\right)a^3x}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{12\left(3\,bd^2e^2+2\,ade^3\right)a^2x}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{4\left(2\,bd^3e+3\,ad^2e^2\right)ax}{b^4\left(x+\frac{a}{b}\right)^2}+\frac{23\left(4\,bde^3+ae^4\right)a^4}{2\,b^7\left(x+\frac{a}{b}\right)^2}-\frac{11\left(3\,bd^2e^2+2\,ade^3\right)a^3}{b^6\left(x+\frac{a}{b}\right)^2}+\frac{3\left(2\,bd^3e+3\,ad^2e^2\right)a^2}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{\left(bd^4+4\,ad^3e\right)a}{2\,b^4\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/3*e^4*x^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b) - 7/6*a*e^4*x^3/(sqrt(b^2*x^2
 + 2*a*b*x + a^2)*b^2) + 9/2*a^2*e^4*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^3
) - 10*a^3*e^4*log(x + a/b)/b^5 + 9*a^4*e^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*
b^5) + 1/2*(4*b*d*e^3 + a*e^4)*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 20
*a^4*e^4*x/(b^6*(x + a/b)^2) - 5/2*(4*b*d*e^3 + a*e^4)*a*x^2/(sqrt(b^2*x^2
+ 2*a*b*x + a^2)*b^3) + 2*(3*b*d^2*e^2 + 2*a*d*e^3)*x^2/(sqrt(b^2*x^2 + 2*a
*b*x + a^2)*b^2) - 1/2*a*d^4/(b^3*(x + a/b)^2) - 39/2*a^5*e^4/(b^7*(x + a/b
)^2) + 6*(4*b*d*e^3 + a*e^4)*a^2*log(x + a/b)/b^5 - 6*(3*b*d^2*e^2 + 2*a*d*
e^3)*a*log(x + a/b)/b^4 + 2*(2*b*d^3*e + 3*a*d^2*e^2)*log(x + a/b)/b^3 - 5*
(4*b*d*e^3 + a*e^4)*a^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^5) + 4*(3*b*d^2*e^
2 + 2*a*d*e^3)*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (b*d^4 + 4*a*d^3*e
```

```
)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 12*(4*b*d*e^3 + a*e^4)*a^3*x/(b^6*(
x + a/b)^2) - 12*(3*b*d^2*e^2 + 2*a*d*e^3)*a^2*x/(b^5*(x + a/b)^2) + 4*(2*b
*d^3*e + 3*a*d^2*e^2)*a*x/(b^4*(x + a/b)^2) + 23/2*(4*b*d*e^3 + a*e^4)*a^4/
(b^7*(x + a/b)^2) - 11*(3*b*d^2*e^2 + 2*a*d*e^3)*a^3/(b^6*(x + a/b)^2) + 3*
(2*b*d^3*e + 3*a*d^2*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(b*d^4 + 4*a*d^3*e)*a
/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^4}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^4}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**4/((a + b*x)**2)**(3/2), x)
```

3.1801 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}} dx$

Optimal. Leaf size=162

$$-\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{3e^2x(a+bx)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {768, 646, 43}

$$\frac{3e^2x(a+bx)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*e^2*(b*d - a*e)*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*e*
(a + b*x)*(d + e*x)^2)/(2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (d + e*x)^3/
(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*e*(b*d - a*e)^2*(a + b*x)*Log[a + b*
x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(3e)\int \frac{(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}$$
$$= -\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^2}{ab+b^2x}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$
$$= -\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3e\left(ab+b^2x\right)\right)\int \left(\frac{e(bd-ae)}{b^3} + \frac{(bd-ae)^2}{b^2\left(ab+b^2x\right)} + \frac{e(d+ex)}{b^2}\right)dx}{b\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{3e^2(bd-ae)x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{3e(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{3e(bd-}{b^4}$$

Mathematica [A] time = 0.05, size = 120, normalized size = 0.74

$$\frac{2a^3e^3-2a^2be^2(3d+2ex)+3ab^2e\left(2d^2+2dex-e^2x^2\right)+6e(a+bx)(bd-ae)^2\log(a+bx)+b^3\left(-2d^3+6de^2x^2+e^3x^3\right)}{2b^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*e^3 - 2*a^2*b*e^2*(3*d + 2*e*x) + 3*a*b^2*e*(2*d^2 + 2*d*e*x - e^2*x
^2) + b^3*(-2*d^3 + 6*d*e^2*x^2 + e^3*x^3) + 6*e*(b*d - a*e)^2*(a + b*x)*Lo
g[a + b*x])/(2*b^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.91, size = 2469, normalized size = 15.24

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] -((a*d^3)/(b*Sqrt[b^2]*x*(a + b*x) - b^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
+ ((a^3*Sqrt[b^2]*e^3*x)/(2*b^4) + (15*a^2*Sqrt[b^2]*e^3*x^2)/(2*b^3) + (5*
a*(b^2)^(3/2)*e^3*x^3)/b^4 + (2*a^3*e^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4
- (5*a^2*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^3) - (5*a*e^3*x^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/b^2 + (6*a^3*e^3*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/a])/b^3 + (6*a^2*e^3*x^2*ArcTanh[(-(Sqrt[b^2]*x)
+ Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 - (6*a^2*Sqrt[b^2]*e^3*x*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/a])/b^4)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((6*a^2*d^2*e)/(b*Sqrt[b^2]) + (2
*b*d^3*x)/Sqrt[b^2] - (2*d^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (3*a*d^2*e*
x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (3*b*d
^2*e*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] +
 (3*d^2*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/b - (3*a*d^2*e*x*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a
*b*x + b^2*x^2]])/Sqrt[b^2] - (3*b*d^2*e*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2
 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (3*d^2*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b)/((-a - Sqrt[b^2]
*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])) + ((-6*a^3*d*e^2)/(b^2)^(3/2) - (6*a*d^2*e*x)/Sqrt[b^2] + (6*a*
d^2*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (6*a*d^2*e*x*ArcTanh[(-(Sqrt[b^2
]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 6*d^2*e*x^2*ArcTanh[(-(Sqrt[b
```

```
^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (6*d^2*e*x*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqr
t[b^2] + (6*a^2*b*d*e^2*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2]])/(b^2)^(3/2) + (6*a*d*e^2*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*
x + b^2*x^2]])/Sqrt[b^2] - (6*a*d*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 + (6*a^2*b*d*e^2*x*Lo
g[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) + (6*a*d*e^
2*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (6*
a*d*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/b^2)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])
*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((2*a^4*e^3)/(b^3*Sqr
t[b^2]) + (3*a^2*d*e^2*x)/(b*Sqrt[b^2]) - (a^3*e^3*x)/(4*(b^2)^(3/2)) - (9*
a*d*e^2*x^2)/Sqrt[b^2] - (5*a^2*e^3*x^2)/(4*b*Sqrt[b^2]) - (6*b*d*e^2*x^3)/
Sqrt[b^2] - (2*a*e^3*x^3)/Sqrt[b^2] - (b*e^3*x^4)/Sqrt[b^2] - (6*a^2*d*e^2*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (3*a*d*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/b^2 + (a^2*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3) + (6*d*e^2*x^
2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (a*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/b^2 + (e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (12*a^2*d*e^2*x*ArcTa
nh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 - (12*a*d*e^2*x
^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + (12*a*d
*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/a])/(b*Sqrt[b^2]) - (3*a^3*e^3*x*Log[-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) - (3*a^2*e^3*x^2*Log[-a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (3*a^2*e^3*x*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^
2]])/b^3 - (3*a^3*e^3*x*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/(b^2)^(3/2) - (3*a^2*e^3*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]])/(b*Sqrt[b^2]) + (3*a^2*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a
 - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^3)/((-a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*
x^2]))
```

fricas [A] time = 0.45, size = 173, normalized size = 1.07

$$\frac{b^3e^3x^3 - 2\,b^3d^3 + 6\,ab^2d^2e - 6\,a^2bde^2 + 2\,a^3e^3 + 3\,\left(2\,b^3de^2 - ab^2e^3\right)x^2 + 2\,\left(3\,ab^2de^2 - 2\,a^2be^3\right)x + 6\,\left(ab^2d^2e - 2\,a^2bde^2 + a^3e^3 + \left(b^3d^2e - 2\,ab^2de^2 + a^2be^3\right)x\right)\log\left(bx + a\right)}{2\,\left(b^5x + ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(b^3*e^3*x^3 - 2*b^3*d^3 + 6*a*b^2*d^2*e - 6*a^2*b*d*e^2 + 2*a^3*e^3 +
3*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(3*a*b^2*d*e^2 - 2*a^2*b*e^3)*x + 6*(a*
b^2*d^2*e - 2*a^2*b*d*e^2 + a^3*e^3 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^
3)*x)*log(b*x + a))/(b^5*x + a*b^4)
```

giac [A] time = 0.34, size = 185, normalized size = 1.14

$$\frac{1}{2}\,\sqrt{b^2x^2 + 2\,abx + a^2}\left(\frac{xe^3}{b^3} + \frac{6\,b^7de^2 - 5\,ab^6e^3}{b^{10}}\right) - \frac{\left(b^2d^2e - 2\,abde^2 + a^2e^3\right)\log\left(\left|-3\,\left(x|b| - \sqrt{b^2x^2 + 2\,abx + a^2}\right)^2ab - a^3b - \left(x|b| - \sqrt{b^2x^2 + 2\,abx + a^2}\right)^3|b| - 3\,\left(x|b| - \sqrt{b^2x^2 + 2\,abx + a^2}\right)a^2|b|\right|\right)}{b^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(x*e^3/b^3 + (6*b^7*d*e^2 - 5*a*b^6*e^3)/
b^10) - (b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3)*log(abs(-3*(x*abs(b) - sqrt(b^2
*x^2 + 2*a*b*x + a^2))^2*a*b - a^3*b - (x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x +
 a^2))^3*abs(b) - 3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))*a^2*abs(b)))
/(b^3*abs(b))
```

maple [A] time = 0.07, size = 209, normalized size = 1.29

$$\frac{\left(b^{3} e^{3} x^{3}+6 a^{2} b \,e^{3} x \ln \left(b x +a \right)-12 a \,b^{2} d \,e^{2} x \ln \left(b x +a \right)-3 a \,b^{2} e^{3} x^{2}+6 b^{3} d^{2} e x \ln \left(b x +a \right)+6 b^{3} d \,e^{2} x^{2}+6 a^{3} e^{3} \ln \left(b x +a \right)-12 a^{2} b d \,e^{2} \ln \left(b x +a \right)-4 a^{2} b \,e^{3} x +6 a \,b^{2} d^{2} e \ln \left(b x +a \right)+6 a \,b^{2} d \,e^{2} x +2 a^{3} e^{3}-6 a^{2} b d \,e^{2}+6 a \,b^{2} d^{2} e -2 b^{3} d^{3}\right) \left(b x +a \right)^{2}}{2 \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}} b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(b^3*e^3*x^3+6*ln(b*x+a)*x*a^2*b*e^3-12*ln(b*x+a)*x*a*b^2*d*e^2+6*ln(b*
x+a)*x*b^3*d^2*e-3*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+6*a^3*e^3*ln(b*x+a)-12*a^2
*b*d*e^2*ln(b*x+a)+6*a*b^2*d^2*e*ln(b*x+a)-4*a^2*b*e^3*x+6*a*b^2*d*e^2*x+2*
a^3*e^3-6*a^2*b*d*e^2+6*a*b^2*d^2*e-2*b^3*d^3)*(b*x+a)^2/b^4/((b*x+a)^2)^(3
/2)
```

maxima [B] time = 0.63, size = 481, normalized size = 2.97

$$\frac{e^{3} x^{3}}{2 \sqrt{b^{2} x^{2}+2 a b x+a^{2}}\, b}-\frac{5 a e^{3} x^{2}}{2 \sqrt{b^{2} x^{2}+2 a b x+a^{2}}\, b^{2}}+\frac{6 a^{2} e^{3} \log\left(x+\frac{a}{b}\right)}{b^{4}}-\frac{5 a^{3} e^{3}}{\sqrt{b^{2} x^{2}+2 a b x+a^{2}}\, b^{4}}+\frac{\left(3 b d e^{2}+a e^{3}\right) x^{2}}{\sqrt{b^{2} x^{2}+2 a b x+a^{2}}\, b^{2}}+\frac{12 a^{3} e^{3} x}{b^{5}\left(x+\frac{a}{b}\right)^{2}}-\frac{a d^{3}}{2 b^{3}\left(x+\frac{a}{b}\right)^{2}}+\frac{23 a^{4} e^{3}}{2 b^{6}\left(x+\frac{a}{b}\right)^{2}}-\frac{3\left(3 b d e^{2}+a e^{3}\right) a \log\left(x+\frac{a}{b}\right)}{b^{4}}+\frac{3\left(b d^{2} e+a d e^{2}\right) \log\left(x+\frac{a}{b}\right)}{b^{3}}+\frac{2\left(3 b d e^{2}+a e^{3}\right) a^{2}}{\sqrt{b^{2} x^{2}+2 a b x+a^{2}}\, b^{4}}-\frac{b d^{3}+3 a d^{2} e}{\sqrt{b^{2} x^{2}+2 a b x+a^{2}}\, b^{2}}-\frac{6\left(3 b d e^{2}+a e^{3}\right) a^{2} x}{b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{6\left(b d^{2} e+a d e^{2}\right) a x}{b^{4}\left(x+\frac{a}{b}\right)^{2}}-\frac{11\left(3 b d e^{2}+a e^{3}\right) a^{3}}{2 b^{6}\left(x+\frac{a}{b}\right)^{2}}+\frac{9\left(b d^{2} e+a d e^{2}\right) a^{2}}{2 b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{\left(b d^{3}+3 a d^{2} e\right) a}{2 b^{4}\left(x+\frac{a}{b}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/2*e^3*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b) - 5/2*a*e^3*x^2/(sqrt(b^2*x^2
 + 2*a*b*x + a^2)*b^2) + 6*a^2*e^3*log(x + a/b)/b^4 - 5*a^3*e^3/(sqrt(b^2*x
^2 + 2*a*b*x + a^2)*b^4) + (3*b*d*e^2 + a*e^3)*x^2/(sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*b^2) + 12*a^3*e^3*x/(b^5*(x + a/b)^2) - 1/2*a*d^3/(b^3*(x + a/b)^2)
+ 23/2*a^4*e^3/(b^6*(x + a/b)^2) - 3*(3*b*d*e^2 + a*e^3)*a*log(x + a/b)/b^4
 + 3*(b*d^2*e + a*d*e^2)*log(x + a/b)/b^3 + 2*(3*b*d*e^2 + a*e^3)*a^2/(sqrt
(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (b*d^3 + 3*a*d^2*e)/(sqrt(b^2*x^2 + 2*a*b*
x + a^2)*b^2) - 6*(3*b*d*e^2 + a*e^3)*a^2*x/(b^5*(x + a/b)^2) + 6*(b*d^2*e
+ a*d*e^2)*a*x/(b^4*(x + a/b)^2) - 11/2*(3*b*d*e^2 + a*e^3)*a^3/(b^6*(x + a
/b)^2) + 9/2*(b*d^2*e + a*d*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(b*d^3 + 3*a*d
^2*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b x\right) \left(d + e x\right)^{3}}{\left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(3/2), x)
```

3.1802 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}} dx$

Optimal. Leaf size=106

$$-\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3}$$

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {768, 640, 608, 31}

$$-\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((d + e*x)^2/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (2*e^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/b^3 + (2*e*(b*d - a*e)*(a + b*x)*Log[a + b*x])/(b^3*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(2e)\int \frac{d+ex}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}$$

$$= -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3} + \frac{(2e(bd-ae))\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b^2}$$

$$= -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3} + \frac{\left(2e(bd-ae)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3} + \frac{2e(bd-ae)(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 0.70

$$\frac{-a^2e^2+abe(2d+ex)-2e(a+bx)(ae-bd)\log(a+bx)+b^2\left(e^2x^2-d^2\right)}{b^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(a^2*e^2) + a*b*e*(2*d + e*x) + b^2*(-d^2 + e^2*x^2) - 2*e*(-(b*d) + a*e)
*(a + b*x)*Log[a + b*x])/(b^3*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.37, size = 924, normalized size = 8.72

$$\frac{a\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)e^2}{\left(b^2\right)^{3/2}}+\frac{a\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)e^2}{b^3}+\frac{-2e^2x^3b^4+2d^2xb^4-2ad^2b^3-3ae^2x^2b^3+a^2e^2xb^2-2a^3e^2b+\sqrt{b^2}\sqrt{a^2+2bxa+b^2x^2}\left(-2b^2d^2-2a^2e^2+2b^2e^2x^2+abe^2x\right)}{2b^4\sqrt{b^2}x(a+bx)-2b^5x\sqrt{a^2+2bxa+b^2x^2}}+\left(\frac{ae^2}{\left(b^2\right)^{3/2}}-\frac{ae^2}{b^3}\right)\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)+\frac{-\frac{2dex^2\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^3}{\left(b^2\right)^{3/2}}-\frac{2dex^2\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)b^3}{\left(b^2\right)^{3/2}}+\frac{4a^2deb}{\left(b^2\right)^{3/2}}-\frac{4adex}{\sqrt{b^2}}+4dex^2\tanh^{-1}\left(\frac{\sqrt{a^2+2bxa+b^2x^2}-\sqrt{b^2}x}{a}\right)-\frac{4dex\sqrt{a^2+2bxa+b^2x^2}\tanh^{-1}\left(\frac{\sqrt{a^2+2bxa+b^2x^2}-\sqrt{b^2}x}{a}\right)}{\sqrt{b^2}}-\frac{2adex\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)}{\sqrt{b^2}}-\frac{2adex\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)}{\sqrt{b^2}}+\frac{4adex\tanh^{-1}\left(\frac{\sqrt{a^2+2bxa+b^2x^2}-\sqrt{b^2}x}{a}\right)}{b}+\frac{2dex\sqrt{a^2+2bxa+b^2x^2}\log\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)}{b}+\frac{2dex\sqrt{a^2+2bxa+b^2x^2}\log\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)}{b}+\frac{4ade\sqrt{a^2+2bxa+b^2x^2}}{b^2}}{\left(-a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)\left(a-\sqrt{b^2}x+\sqrt{a^2+2bxa+b^2x^2}\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] (-2*a*b^3*d^2 - 2*a^3*b*e^2 + 2*b^4*d^2*x + a^2*b^2*e^2*x - 3*a*b^3*e^2*x^2
 - 2*b^4*e^2*x^3 + Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-2*b^2*d^2 - 2*
a^2*e^2 + a*b*e^2*x + 2*b^2*e^2*x^2))/(2*b^4*Sqrt[b^2]*x*(a + b*x) - 2*b^5*
x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a*e^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/b^3 + (a*e^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*
x + b^2*x^2]])/(b^2)^(3/2) + (-((a*e^2)/b^3) + (a*e^2)/(b^2)^(3/2))*Log[a -
 Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + ((4*a^2*b*d*e)/(b^2)^(3/2)
- (4*a*d*e*x)/Sqrt[b^2] + (4*a*d*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + (4*
a*d*e*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 4*
d*e*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (4*d*
e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/a])/Sqrt[b^2] - (2*a*d*e*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (2*b^3*d*e*x^2*Log[-a - Sqrt[b^2]*x + Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2) + (2*d*e*x*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b - (2*a*d*e
*x*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (2*b^3
*d*e*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b^2)^(3/2)
+ (2*d*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]])/b)/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*
(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.48, size = 92, normalized size = 0.87

$$\frac{b^2e^2x^2+abe^2x-b^2d^2+2\,abde-a^2e^2+2\left(abde-a^2e^2+\left(b^2de-abe^2\right)x\right)\log\left(bx+a\right)}{b^4x+ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] (b^2*e^2*x^2 + a*b*e^2*x - b^2*d^2 + 2*a*b*d*e - a^2*e^2 + 2*(a*b*d*e - a^2
*e^2 + (b^2*d*e - a*b*e^2)*x)*log(b*x + a))/(b^4*x + a*b^3)
```

giac [B] time = 0.36, size = 148, normalized size = 1.40

$$-\frac{2\left(bde-ae^{2}\right)\log\left(\left|-3\left(x|b|-\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\right)^{2}ab-a^{3}b-\left(x|b|-\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\right)^{3}|b|-3\left(x|b|-\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\right)a^{2}|b|\right|\right)}{3\,b^{2}|b|}+\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,e^{2}}{b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] -2/3*(b*d*e - a*e^2)*log(abs(-3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^
2*a*b - a^3*b - (x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^3*abs(b) - 3*(x*
abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))*a^2*abs(b)))/(b^2*abs(b)) + sqrt(b^
2*x^2 + 2*a*b*x + a^2)*e^2/b^3
```

maple [A] time = 0.07, size = 116, normalized size = 1.09

$$-\frac{\left(2ab\,e^{2}x\ln\left(bx+a\right)-2b^{2}dex\ln\left(bx+a\right)-b^{2}e^{2}x^{2}+2a^{2}e^{2}\ln\left(bx+a\right)-2abde\ln\left(bx+a\right)-ab\,e^{2}x+a^{2}e^{2}-2abde+b^{2}d^{2}\right)\left(bx+a\right)^{2}}{\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(2*ln(b*x+a)*x*a*b*e^2-2*ln(b*x+a)*x*b^2*d*e-b^2*e^2*x^2+2*ln(b*x+a)*a^2*e
^2-2*ln(b*x+a)*a*b*d*e-a*b*e^2*x+a^2*e^2-2*a*b*d*e+b^2*d^2)*(b*x+a)^2/b^3/(
(b*x+a)^2)^(3/2)
```

maxima [B] time = 0.57, size = 272, normalized size = 2.57

$$\frac{e^{2}x^{2}}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b}-\frac{3\,ae^{2}\log\left(x+\frac{a}{b}\right)}{b^{3}}+\frac{2\,a^{2}e^{2}}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b^{3}}-\frac{6\,a^{2}e^{2}x}{b^{4}\left(x+\frac{a}{b}\right)^{2}}+\frac{\left(2\,bde+ae^{2}\right)\log\left(x+\frac{a}{b}\right)}{b^{3}}-\frac{bd^{2}+2\,ade}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b^{2}}-\frac{ad^{2}}{2\,b^{3}\left(x+\frac{a}{b}\right)^{2}}-\frac{11\,a^{3}e^{2}}{2\,b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{2\left(2\,bde+ae^{2}\right)ax}{b^{4}\left(x+\frac{a}{b}\right)^{2}}+\frac{3\left(2\,bde+ae^{2}\right)a^{2}}{2\,b^{5}\left(x+\frac{a}{b}\right)^{2}}+\frac{\left(bd^{2}+2\,ade\right)a}{2\,b^{4}\left(x+\frac{a}{b}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] e^2*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b) - 3*a*e^2*log(x + a/b)/b^3 + 2*a^
2*e^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^3) - 6*a^2*e^2*x/(b^4*(x + a/b)^2) +
 (2*b*d*e + a*e^2)*log(x + a/b)/b^3 - (b*d^2 + 2*a*d*e)/(sqrt(b^2*x^2 + 2*a
*b*x + a^2)*b^2) - 1/2*a*d^2/(b^3*(x + a/b)^2) - 11/2*a^3*e^2/(b^5*(x + a/b
)^2) + 2*(2*b*d*e + a*e^2)*a*x/(b^4*(x + a/b)^2) + 3/2*(2*b*d*e + a*e^2)*a^
2/(b^5*(x + a/b)^2) + 1/2*(b*d^2 + 2*a*d*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,x\right)\,\left(d+e\,x\right)^2}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^2}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**2/((a + b*x)**2)**(3/2), x)
```

3.1803 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=67

$$\frac{e(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {768, 608, 31}

$$\frac{e(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((d + e*x)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (e*(a + b*x)*Log[a + b*x])
/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= -\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{e\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}\\
&= -\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(e\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 36, normalized size = 0.54

$$\frac{e(a+bx)\log(a+bx)+ae-bd}{b^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(b*d) + a*e + e*(a + b*x)*Log[a + b*x])/(b^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 0.76, size = 435, normalized size = 6.49

$$\frac{2ex^2\tanh^{-1}\left(\frac{\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}\,x}{a}\right)+\frac{2aex\tanh^{-1}\left(\frac{\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}\,x}{a}\right)}{b}-\frac{2ex\sqrt{a^2+2abx+b^2x^2}\tanh^{-1}\left(\frac{\sqrt{a^2+2abx+b^2x^2}-\sqrt{b^2}\,x}{a}\right)}{\sqrt{b^2}}-\frac{2ad}{\sqrt{b^2}}}{\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}-\frac{be\log\left(\sqrt{a^2+2abx+b^2x^2}-a-\sqrt{b^2}\,x\right)}{2\left(b^2\right)^{3/2}}-\frac{be\log\left(\sqrt{a^2+2abx+b^2x^2}+a-\sqrt{b^2}\,x\right)}{2\left(b^2\right)^{3/2}}+\frac{\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\,(ae-bd)+a^2be-ab^2ex+b^3dx}{b^3\sqrt{b^2}\,x(a+bx)-b^4x\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^2*b*e + b^3*d*x - a*b^2*e*x + Sqrt[b^2]*(-(b*d) + a*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(b^3*Sqrt[b^2]*x*(a + b*x) - b^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + ((-2*a*d)/Sqrt[b^2] + (2*a*e*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 +
2*a*b*x + b^2*x^2])/a])/b + 2*e*x^2*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/a] - (2*e*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt
[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2])/((-a - Sqrt[b^2]*x
 + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b
^2*x^2])) - (b*e*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*
(b^2)^(3/2)) - (b*e*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(
2*(b^2)^(3/2))
```

fricas [A] time = 0.45, size = 39, normalized size = 0.58

$$-\frac{bd-ae-(bex+ae)\log(bx+a)}{b^3x+ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] -(b*d - a*e - (b*e*x + a*e)*log(b*x + a))/(b^3*x + a*b^2)
```

giac [B] time = 0.33, size = 114, normalized size = 1.70

$$-\frac{e\log\left(\left|-3\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)^2ab-a^3b-\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)^3|b|-3\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)a^2|b|\right|\right)}{3\,b|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/3*e*log(abs(-3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^2*a*b - a^3*b
- (x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^3*abs(b) - 3*(x*abs(b) - sqrt(
b^2*x^2 + 2*a*b*x + a^2))*a^2*abs(b)))/(b*abs(b))
```

maple [A] time = 0.06, size = 48, normalized size = 0.72

$$\frac{(bex\ln(bx+a)+ae\ln(bx+a)+ae-bd)(bx+a)^2}{\left((bx+a)^2\right)^{\frac{3}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (ln(b*x+a)*x*b*e+ln(b*x+a)*a*e+a*e-b*d)*(b*x+a)^2/b^2/((b*x+a)^2)^(3/2)
```

maxima [B] time = 0.55, size = 117, normalized size = 1.75

$$\frac{e\log\left(x+\frac{a}{b}\right)}{b^2}-\frac{bd+ae}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{2\,aex}{b^3\left(x+\frac{a}{b}\right)^2}-\frac{ad}{2\,b^3\left(x+\frac{a}{b}\right)^2}+\frac{3\,a^2e}{2\,b^4\left(x+\frac{a}{b}\right)^2}+\frac{(bd+ae)a}{2\,b^4\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] e*log(x + a/b)/b^2 - (b*d + a*e)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 2*a*
e*x/(b^3*(x + a/b)^2) - 1/2*a*d/(b^3*(x + a/b)^2) + 3/2*a^2*e/(b^4*(x + a/b
)^2) + 1/2*(b*d + a*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,(d+e\,x)}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.1804 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=25

$$-\frac{1}{b\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$-\frac{1}{b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(1/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx=-\frac{1}{b\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.01, size = 16, normalized size = 0.64

$$-\frac{1}{b\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(1/(b*Sqrt[(a + b*x)^2]))
```

IntegrateAlgebraic [A] time = 0.03, size = 16, normalized size = 0.64

$$-\frac{1}{b\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(1/(b*Sqrt[(a + b*x)^2]))
```

fricas [A] time = 0.42, size = 13, normalized size = 0.52

$$-\frac{1}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
[Out] -1/(b^2*x + a*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$undef$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
[Out] undef
```

maple [A] time = 0.04, size = 22, normalized size = 0.88

$$-\frac{(bx+a)^2}{\left((bx+a)^2\right)^{\frac{3}{2}} b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
[Out] -(b*x+a)^2/b/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.67, size = 23, normalized size = 0.92

$$-\frac{1}{\sqrt{b^2x^2+2\,abx+a^2}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
[Out] -1/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b)
```

mupad [B] time = 2.15, size = 23, normalized size = 0.92

$$-\frac{1}{b\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] -1/(b*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
```

sympy [A] time = 0.85, size = 34, normalized size = 1.36

$$\begin{cases} -\frac{1}{b\sqrt{a^2+2abx+b^2x^2}} & \text{for } b \neq 0 \\ \frac{ax}{\left(a^2\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Piecewise((-1/(b*sqrt(a**2 + 2*a*b*x + b**2*x**2)), Ne(b, 0)), (a*x/(a**2)*
*(3/2), True))
```

3.1805 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=120

$$-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Rubi [A] time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x)*Log[a + b*x
])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(a + b*x)*Log[d + e*x
])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{b}{(bd-ae)(a+bx)^2}-\frac{be}{(bd-ae)^2(a+bx)}+\frac{e^2}{(bd-ae)^2(d+ex)}\right)dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{1}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\log(a+bx)}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a\cdot}{(bd-ae}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 57, normalized size = 0.48

$$\frac{e(a+bx)\log(d+ex)-e(a+bx)\log(a+bx)+ae-bd}{\sqrt{(a+bx)^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-(b*d) + a*e - e*(a + b*x)*Log[a + b*x] + e*(a + b*x)*Log[d + e*x])/((b*d
- a*e)^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 2.47, size = 1732, normalized size = 14.43

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (b*d*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/(a*(b*d -
a*e)^2) - (b*d*ArcTanh[(Sqrt[b^2]*e*x)/(2*b*d - a*e) - (e*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(2*b*d - a*e)])/(a*(b*d - a*e)^2) + (Sqrt[b^2]*d*Log[-a - Sqr
t[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*a*(b*d - a*e)^2) + (Sqrt[b^2]
*d*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*a*(b*d - a*e)^2
) - (Sqrt[b^2]*d*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]])/(2*a*(b*d - a*e)^2) - (Sqrt[b^2]*d*Log[2*b*d - a*e - Sqrt[b^2]*e*
x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(2*a*(b*d - a*e)^2) + ((2*a*Sqrt[b^2]
)/(b*(-(b*d) + a*e)) - (2*Sqrt[b^2]*x)/(-(b*d) + a*e) + (2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(-(b*d) + a*e) - (2*b*x*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/a])/(-(b*d) + a*e) - (2*b^2*x^2*ArcTanh[(-(Sqrt[b^2]*x
) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(a*(-(b*d) + a*e)) + (2*Sqrt[b^2]*x*
Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/a])/(a*(-(b*d) + a*e)) + (2*b*x*ArcTanh[(-(Sqrt[b^2]*e*x) + e*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(-(b*d) + a*e) + (2*b^2*x^2*A
rcTanh[(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])
/(a*(-(b*d) + a*e)) - (2*Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[
(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(a*(-(
b*d) + a*e)) + (Sqrt[b^2]*x*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2
*x^2]])/(-(b*d) + a*e) + ((b^2)^(3/2)*x^2*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/(a*b*(-(b*d) + a*e)) - (b*x*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(-(b*d) + a*
e)) + (Sqrt[b^2]*x*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(-
(b*d) + a*e) + ((b^2)^(3/2)*x^2*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]])/(a*b*(-(b*d) + a*e)) - (b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a
- Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(-(b*d) + a*e)) - (Sqrt[
b^2]*x*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/
(-(b*d) + a*e) - ((b^2)^(3/2)*x^2*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]])/(a*b*(-(b*d) + a*e)) + (b*x*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/(a*(-(b*d) + a*e)) - (Sqrt[b^2]*x*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/(-(b*d) + a*e) - ((b^2)^(3/2)*x^2*Log[2*b*d -
 a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*b*(-(b*d) + a*e
)) + (b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(-(b*d) + a*e)))/((-a - Sqrt[b^2]*x + S
qrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2]))
```

fricas [A] time = 0.44, size = 93, normalized size = 0.78

$$-\frac{bd-ae+(bex+ae)\log(bx+a)-(bex+ae)\log(ex+d)}{ab^2d^2-2\,a^2bde+a^3e^2+\left(b^3d^2-2\,ab^2de+a^2be^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] -(b*d - a*e + (b*e*x + a*e)*log(b*x + a) - (b*e*x + a*e)*log(e*x + d))/(a*b
^2*d^2 - 2*a^2*b*d*e + a^3*e^2 + (b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*x)
```

giac [B] time = 0.24, size = 203, normalized size = 1.69

$$-\frac{ae\log\left(\left|b+\frac{a}{x}\right|\right)}{ab^2d^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-2\,a^2bde\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^3e^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}+\frac{de\log\left(\left|\frac{d}{x}+e\right|\right)}{b^2d^3\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-2\,abd^2e\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^2de^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}+\frac{b^2d-abe}{(bd-ae)^2a\left(b+\frac{a}{x}\right)\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -a*e*log(abs(b + a/x))/(a*b^2*d^2*sgn(b/x + a/x^2) - 2*a^2*b*d*e*sgn(b/x +
a/x^2) + a^3*e^2*sgn(b/x + a/x^2)) + d*e*log(abs(d/x + e))/(b^2*d^3*sgn(b/x
 + a/x^2) - 2*a*b*d^2*e*sgn(b/x + a/x^2) + a^2*d*e^2*sgn(b/x + a/x^2)) + (b
^2*d - a*b*e)/((b*d - a*e)^2*a*(b + a/x)*sgn(b/x + a/x^2))
```

maple [A] time = 0.06, size = 77, normalized size = 0.64

$$-\frac{(bex\ln(bx+a)-bex\ln(ex+d)+ae\ln(bx+a)-ae\ln(ex+d)-ae+bd)(bx+a)^2}{(ae-bd)^2\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(b*e*x*ln(b*x+a)-ln(e*x+d)*x*b*e+a*e*ln(b*x+a)-ln(e*x+d)*a*e-a*e+b*d)*(b*x
+a)^2/(a*e-b*d)^2/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,x}{(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)*((a + b*x)**2)**(3/2)), x)
```

3.1806 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=169

$$-\frac{b}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{2be(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{2be(a+\cdots}{\sqrt{a^2+2a\cdots}}$$

Rubi [A] time = 0.11, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{b}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{2be(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{2be(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(b/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x))/((b*d -
a*e)^2*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*e*(a + b*x)*Log[a +
b*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b*e*(a + b*x)*Log[
d + e*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{b^2}{(bd-ae)^2(a+bx)^2}-\frac{2b^2e}{(bd-ae)^3(a+bx)}+\frac{e^2}{(bd-ae)^2(d+ex)^2}+\frac{2be^2}{(bd-ae)^3(d+ex)}\right)\cdots}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{b}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)}{(bd-ae)^2(d+ex)\sqrt{a^2+2abx+b^2x^2}}-\cdots\end{aligned}$$

Mathematica [A] time = 0.07, size = 92, normalized size = 0.54

$$\frac{-((bd-ae)(ae+b(d+2ex)))-2be(a+bx)(d+ex)\log(a+bx)+2be(a+bx)(d+ex)\log(d+ex)}{\sqrt{(a+bx)^2}\,(d+ex)(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-((b*d - a*e)*(a*e + b*(d + 2*e*x))) - 2*b*e*(a + b*x)*(d + e*x)*Log[a + b
*x] + 2*b*e*(a + b*x)*(d + e*x)*Log[d + e*x])/((b*d - a*e)^3*Sqrt[(a + b*x)
^2]*(d + e*x))
```

IntegrateAlgebraic [B] time = 18.08, size = 4119, normalized size = 24.37

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),
x]
```

```
[Out] (-8*b^2*x^2*(-(b^2*d) + a*b*e + b^2*e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - 8*
(b^2)^(3/2)*x^2*(a*b*d - a^2*e + b^2*d*x - 2*a*b*e*x - b^2*e*x^2))/(Sqrt[b^
2]*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-8*a*b^3*d^2*x^2 + 8*a^2*b^2*
d*e*x^2 - 8*b^4*d^2*x^3 + 8*a*b^3*d*e*x^3 + 8*a^2*b^2*e^2*x^3 + 16*a*b^3*e^
2*x^4 + 8*b^4*e^2*x^5) + (b*d - a*e)*(8*a^2*b^4*d^2*x^2 - 8*a^3*b^3*d*e*x^2
 + 16*a*b^5*d^2*x^3 - 16*a^2*b^4*d*e*x^3 - 8*a^3*b^3*e^2*x^3 + 8*b^6*d^2*x^
4 - 8*a*b^5*d*e*x^4 - 24*a^2*b^4*e^2*x^4 - 24*a*b^5*e^2*x^5 - 8*b^6*e^2*x^6
)) + (2*b^2*d*ArcTanh[(Sqrt[b^2]*x)/a - Sqrt[a^2 + 2*a*b*x + b^2*x^2]/a])/(
a*(b*d - a*e)^3) - (2*b^2*d*ArcTanh[(Sqrt[b^2]*e*x)/(2*b*d - a*e) - (e*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(a*(b*d - a*e)^3) + (b*Sqrt[b^2]
*d*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^3)
 + (b*Sqrt[b^2]*d*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*
(b*d - a*e)^3) - (b*Sqrt[b^2]*d*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^
2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^3) - (b*Sqrt[b^2]*d*Log[2*b*d - a*e
 - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^3) + ((
-16*a^2*b^3*Sqrt[b^2]*x^3)/(b*d - a*e)^2 - (32*a*b^4*Sqrt[b^2]*x^4)/(b*d -
a*e)^2 - (16*b^5*Sqrt[b^2]*x^5)/(b*d - a*e)^2 + (16*a*b^4*x^3*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(b*d - a*e)^2 + (16*b^5*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(b*d - a*e)^2 - (16*a^2*b^4*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/a])/(b*d - a*e)^2 - (48*a*b^5*x^4*ArcTanh[(-(Sqrt[b^2]*x) +
 Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*d - a*e)^2 - (48*b^6*x^5*ArcTanh[(-(
Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*d - a*e)^2 - (16*b^7*x
^6*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(a*(b*d - a
*e)^2) + (16*a*b^3*Sqrt[b^2]*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(S
qrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*d - a*e)^2 + (32*b^4*Sq
rt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/a])/(b*d - a*e)^2 + (16*b^5*Sqrt[b^2]*x^5*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/a])/(a*(b*d - a*e)^2) + (16*a^2*b^4*x^3*ArcTanh[(-(Sqrt[b^2]*e*x) + e*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(b*d - a*e)^2 + (48*a*b^5*x^4*
ArcTanh[(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)]
)/(b*d - a*e)^2 + (48*b^6*x^5*ArcTanh[(-(Sqrt[b^2]*e*x) + e*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(2*b*d - a*e)])/(b*d - a*e)^2 + (16*b^7*x^6*ArcTanh[(-(Sqrt
[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(a*(b*d - a*e
)^2) - (16*a*b^3*Sqrt[b^2]*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqr
t[b^2]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(b*d - a*e)^
2 - (32*b^4*Sqrt[b^2]*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2
]*e*x) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(b*d - a*e)^2 - (
16*b^5*Sqrt[b^2]*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*e*x
```

```
) + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*d - a*e)])/(a*(b*d - a*e)^2) + (8
*a^2*b^3*Sqrt[b^2]*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/(b*d - a*e)^2 + (24*a*b^4*Sqrt[b^2]*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2
+ 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 + (24*b^5*Sqrt[b^2]*x^5*Log[-a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 + (8*b^6*Sqrt[b^2]*x
^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2)
 - (8*a*b^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 - (16*b^5*x^4*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)
^2 - (8*b^6*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a
^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2) + (8*a^2*b^3*Sqrt[b^2]*x^3*Log[
a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 + (24*a*b^4
*Sqrt[b^2]*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d -
 a*e)^2 + (24*b^5*Sqrt[b^2]*x^5*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x +
b^2*x^2]])/(b*d - a*e)^2 + (8*b^6*Sqrt[b^2]*x^6*Log[a - Sqrt[b^2]*x + Sqrt[
a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2) - (8*a*b^4*x^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d -
 a*e)^2 - (16*b^5*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + S
qrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 - (8*b^6*x^5*Sqrt[a^2 + 2*a*b*
x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d
- a*e)^2) - (8*a^2*b^3*Sqrt[b^2]*x^3*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 - (24*a*b^4*Sqrt[b^2]*x^4*Log[2
*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^
2 - (24*b^5*Sqrt[b^2]*x^5*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/(b*d - a*e)^2 - (8*b^6*Sqrt[b^2]*x^6*Log[2*b*d - a*e + S
qrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2) + (8*a*b
^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 + (16*b^5*x^4*Sqrt[a^2 + 2*a*b*
x + b^2*x^2]*Log[2*b*d - a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]])/(b*d - a*e)^2 + (8*b^6*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[2*b*d -
a*e + Sqrt[b^2]*e*x - e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2) -
 (8*a^2*b^3*Sqrt[b^2]*x^3*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/(b*d - a*e)^2 - (24*a*b^4*Sqrt[b^2]*x^4*Log[2*b*d - a*e
- Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d - a*e)^2 - (24*b^5
*Sqrt[b^2]*x^5*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]])/(b*d - a*e)^2 - (8*b^6*Sqrt[b^2]*x^6*Log[2*b*d - a*e - Sqrt[b^2]*e*
x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2) + (8*a*b^4*x^3*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]])/(b*d - a*e)^2 + (16*b^5*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*Log[2*b*d - a*e - Sqrt[b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*d
- a*e)^2 + (8*b^6*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[2*b*d - a*e - Sqrt[
b^2]*e*x + e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(a*(b*d - a*e)^2))/((-a - Sqrt
[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])*(a^2 + a*b*x - a*Sqrt[b^2]*x + b^2*x^2 + a*Sqrt[a^2 + 2*a*b
*x + b^2*x^2] - Sqrt[b^2]*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])*(-a^2 - a*b*x -
a*Sqrt[b^2]*x - b^2*x^2 + a*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + Sqrt[b^2]*x*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]))
```

fricas [A] time = 0.44, size = 241, normalized size = 1.43

$$-\frac{b^{2} d^{2} - a^{2} e^{2} + 2 \left(b^{2} d e - a b e^{2}\right) x + 2 \left(b^{2} e^{2} x^{2} + a b d e + \left(b^{2} d e + a b e^{2}\right) x\right) \log\left(b x + a\right) - 2 \left(b^{2} e^{2} x^{2} + a b d e + \left(b^{2} d e + a b e^{2}\right) x\right) \log\left(e x + d\right)}{a b^{3} d^{4} - 3 a^{2} b^{2} d^{3} e + 3 a^{3} b d^{2} e^{2} - a^{4} d e^{3} + \left(b^{4} d^{3} e - 3 a b^{3} d^{2} e^{2} + 3 a^{2} b^{2} d e^{3} - a^{3} b e^{4}\right) x^{2} + \left(b^{4} d^{4} - 2 a b^{3} d^{3} e + 2 a^{3} b d e^{3} - a^{4} e^{4}\right) x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] -(b^2*d^2 - a^2*e^2 + 2*(b^2*d*e - a*b*e^2)*x + 2*(b^2*e^2*x^2 + a*b*d*e +
(b^2*d*e + a*b*e^2)*x)*log(b*x + a) - 2*(b^2*e^2*x^2 + a*b*d*e + (b^2*d*e +
 a*b*e^2)*x)*log(e*x + d))/(a*b^3*d^4 - 3*a^2*b^2*d^3*e + 3*a^3*b*d^2*e^2 -
```

```
a^4*d*e^3 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x^
2 + (b^4*d^4 - 2*a*b^3*d^3*e + 2*a^3*b*d*e^3 - a^4*e^4)*x)
```

giac [B] time = 0.46, size = 486, normalized size = 2.88

$$\frac{2\,be^2\log\left(\left|-b+\frac{bd}{xe+d}-\frac{ae}{xe+d}\right|\right)}{b^3d^3e\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)-3\,ab^2d^2e^2\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)+3\,a^2bde^3\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)-a^3e^4\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)}+\frac{e^3}{\left(b^2d^2e^2\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)-2\,abde^3\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)+a^2e^4\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)\right)(xe+d)}+\frac{b^2e}{(bd-ae)^3\left(b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right)\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2*b*e^2*log(abs(-b + b*d/(x*e + d) - a*e/(x*e + d)))/(b^3*d^3*e*sgn(-b*e/(x
*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 3*a*b^2*d^2*e^2*sgn(-b*e
/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 3*a^2*b*d*e^3*sgn(-b*
e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - a^3*e^4*sgn(-b*e/(x*
e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + e^3/((b^2*d^2*e^2*sgn(-b
*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 2*a*b*d*e^3*sgn(-b*
e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + a^2*e^4*sgn(-b*e/(x*
e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2))*(x*e + d)) + b^2*e/((b*d -
 a*e)^3*(b - b*d/(x*e + d) + a*e/(x*e + d))*sgn(-b*e/(x*e + d) + b*d*e/(x*e
 + d)^2 - a*e^2/(x*e + d)^2))
```

maple [A] time = 0.09, size = 181, normalized size = 1.07

$$\frac{\left(2b^2e^2x^2\ln(bx+a)-2b^2e^2x^2\ln(ex+d)+2ab\,e^2x\ln(bx+a)-2ab\,e^2x\ln(ex+d)+2b^2dex\ln(bx+a)-2b^2dex\ln(ex+d)+2abde\ln(bx+a)-2abde\ln(ex+d)-2ab\,e^2x+2b^2dex-a^2e^2+b^2d^2\right)(bx+a)^2}{(ex+d)(ae-bd)^3\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (2*ln(b*x+a)*x^2*b^2*e^2-2*ln(e*x+d)*x^2*b^2*e^2+2*a*b*e^2*x*ln(b*x+a)+2*b^
2*d*e*x*ln(b*x+a)-2*ln(e*x+d)*x*a*b*e^2-2*ln(e*x+d)*x*b^2*d*e+2*a*b*d*e*ln(
b*x+a)-2*ln(e*x+d)*a*b*d*e-2*a*b*e^2*x+2*b^2*d*e*x-a^2*e^2+b^2*d^2)*(b*x+a)
^2/(e*x+d)/(a*e-b*d)^3/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^2\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**2*((a + b*x)**2)**(3/2)), x)
```

3.1807 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{b^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{2be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}-\frac{e(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae}$$

Rubi [A] time = 0.15, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{b^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{2be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}-\frac{e(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2}-\frac{3b^2e(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{3b^2e(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(b^2/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x))/(2*(b*
d - a*e)^2*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*e*(a + b*x))/(
(b*d - a*e)^3*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*b^2*e*(a + b*x)
*Log[a + b*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*b^2*e*(a
+ b*x)*Log[d + e*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^3}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{b^3}{(bd-ae)^3(a+bx)^2}-\frac{3b^3e}{(bd-ae)^4(a+bx)}+\frac{e^2}{(bd-ae)^2(d+ex)^3}+\frac{2be^2}{(bd-ae)^3(d+}\right.}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{b^2}{(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)}{2(bd-ae)^2(d+ex)^2\sqrt{a^2+2abx+b}}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 135, normalized size = 0.61

$$\frac{-(bd-ae)\left(-a^2e^2+abe(5d+3ex)+b^2\left(2d^2+9dex+6e^2x^2\right)\right)-6b^2e(a+bx)(d+ex)^2\log(a+bx)+6b^2e(a+bx)(d+ex)^2\log(d+ex)}{2\sqrt{(a+bx)^2}\,(d+ex)^2(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-((b*d - a*e)*(-(a^2*e^2) + a*b*e*(5*d + 3*e*x) + b^2*(2*d^2 + 9*d*e*x + 6
*e^2*x^2))) - 6*b^2*e*(a + b*x)*(d + e*x)^2*Log[a + b*x] + 6*b^2*e*(a + b*x
)*(d + e*x)^2*Log[d + e*x])/(2*(b*d - a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^2)
```

IntegrateAlgebraic [B] time = 53.00, size = 5578, normalized size = 25.01

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.45, size = 495, normalized size = 2.22

$$-\frac{2b^3d^3+3ab^2d^2e-6a^2bde^2+a^3e^3+6\left(b^3de^2-ab^2e^3\right)x^2+3\left(3b^3d^2e-2ab^2de^2-a^2be^3\right)x+6\left(b^3e^3x^3+ab^2d^2e+\left(2b^3de^2+ab^2e^3\right)x^2+\left(b^3d^2e+2ab^2de^2\right)x\right)\log(bx+a)-6\left(b^3e^3x^3+ab^2d^2e+\left(2b^3de^2+ab^2e^3\right)x^2+\left(b^3d^2e+2ab^2de^2\right)x\right)\log(ex+d)}{2\left(ab^4d^6-4a^2b^3d^5e+6a^3b^2d^4e^2-4a^4bd^3e^3+a^5d^2e^4+\left(b^5d^4e^2-4ab^4d^3e^3+6a^2b^3d^2e^4-4a^3b^2de^5+a^4be^6\right)x^3+\left(2b^5d^5e-7ab^4d^4e^2+8a^2b^3d^3e^3-2a^3b^2d^2e^4-2a^4bde^5+a^5e^6\right)x^2+\left(b^5d^6-2ab^4d^5e-2a^2b^3d^4e^2+8a^3b^2d^3e^3-7a^4bd^2e^4+2a^5de^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] -1/2*(2*b^3*d^3 + 3*a*b^2*d^2*e - 6*a^2*b*d*e^2 + a^3*e^3 + 6*(b^3*d*e^2 -
a*b^2*e^3)*x^2 + 3*(3*b^3*d^2*e - 2*a*b^2*d*e^2 - a^2*b*e^3)*x + 6*(b^3*e^3
*x^3 + a*b^2*d^2*e + (2*b^3*d*e^2 + a*b^2*e^3)*x^2 + (b^3*d^2*e + 2*a*b^2*d
*e^2)*x)*log(b*x + a) - 6*(b^3*e^3*x^3 + a*b^2*d^2*e + (2*b^3*d*e^2 + a*b^2
*e^3)*x^2 + (b^3*d^2*e + 2*a*b^2*d*e^2)*x)*log(e*x + d))/(a*b^4*d^6 - 4*a^2
*b^3*d^5*e + 6*a^3*b^2*d^4*e^2 - 4*a^4*b*d^3*e^3 + a^5*d^2*e^4 + (b^5*d^4*e
^2 - 4*a*b^4*d^3*e^3 + 6*a^2*b^3*d^2*e^4 - 4*a^3*b^2*d*e^5 + a^4*b*e^6)*x^3
 + (2*b^5*d^5*e - 7*a*b^4*d^4*e^2 + 8*a^2*b^3*d^3*e^3 - 2*a^3*b^2*d^2*e^4 -
 2*a^4*b*d*e^5 + a^5*e^6)*x^2 + (b^5*d^6 - 2*a*b^4*d^5*e - 2*a^2*b^3*d^4*e^
2 + 8*a^3*b^2*d^3*e^3 - 7*a^4*b*d^2*e^4 + 2*a^5*d*e^5)*x)
```

giac [B] time = 2.85, size = 461, normalized size = 2.07

$$-\frac{3ab^2e\log\left(\left|b+\frac{a}{x}\right|\right)}{ab^4d^4\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-4a^2b^3d^3e\,\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+6a^3b^2d^2e^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-4a^4bde^3\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^5e^4\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}+\frac{3b^2de\log\left(\left|\frac{d}{x}+e\right|\right)}{b^4d^5\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-4ab^3d^4e\,\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+6a^2b^2d^3e^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-4a^3bd^2e^3\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^4de^4\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}+\frac{2b^4d^3e^2+3ab^3d^2e^3-6a^2b^2de^4+a^3be^5+\frac{4b^4d^4e+2ab^3d^3e^2-3a^2b^2d^2e^3-4a^3bde^4+a^4e^5}{x}+\frac{2\left(b^4d^5-ab^3d^4e+3a^2b^2d^3e^2-4a^3bd^2e^3+a^4de^4\right)}{x^2}}{2(bd-ae)^4a\left(b+\frac{a}{x}\right)d^2\left(\frac{d}{x}+e\right)^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] -3*a*b^2*e*log(abs(b + a/x))/(a*b^4*d^4*sgn(b/x + a/x^2) - 4*a^2*b^3*d^3*e*
sgn(b/x + a/x^2) + 6*a^3*b^2*d^2*e^2*sgn(b/x + a/x^2) - 4*a^4*b*d*e^3*sgn(b
/x + a/x^2) + a^5*e^4*sgn(b/x + a/x^2)) + 3*b^2*d*e*log(abs(d/x + e))/(b^4*
d^5*sgn(b/x + a/x^2) - 4*a*b^3*d^4*e*sgn(b/x + a/x^2) + 6*a^2*b^2*d^3*e^2*s
gn(b/x + a/x^2) - 4*a^3*b*d^2*e^3*sgn(b/x + a/x^2) + a^4*d*e^4*sgn(b/x + a/
x^2)) + 1/2*(2*b^4*d^3*e^2 + 3*a*b^3*d^2*e^3 - 6*a^2*b^2*d*e^4 + a^3*b*e^5
+ (4*b^4*d^4*e + 2*a*b^3*d^3*e^2 - 3*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*
e^5)/x + 2*(b^4*d^5 - a*b^3*d^4*e + 3*a^2*b^2*d^3*e^2 - 4*a^3*b*d^2*e^3 + a
^4*d*e^4)/x^2)/((b*d - a*e)^4*a*(b + a/x)*d^2*(d/x + e)^2*sgn(b/x + a/x^2))
```

maple [A] time = 0.07, size = 331, normalized size = 1.48

$$-\frac{\left(6b^{3}e^{3}x^{3}\ln\left(bx+a\right)-6b^{3}e^{3}x^{3}\ln\left(ex+d\right)+6a\,b^{2}e^{3}x^{2}\ln\left(bx+a\right)-6a\,b^{2}e^{3}x^{2}\ln\left(ex+d\right)+12b^{3}d\,e^{2}x^{2}\ln\left(bx+a\right)-12b^{3}d\,e^{2}x^{2}\ln\left(ex+d\right)+12a\,b^{2}d\,e^{2}x\ln\left(bx+a\right)-12a\,b^{2}d\,e^{2}x\ln\left(ex+d\right)-6a\,b^{2}e^{3}x^{2}+6b^{3}d^{2}ex\ln\left(bx+a\right)-6b^{3}d^{2}ex\ln\left(ex+d\right)+6b^{3}d\,e^{2}x^{2}-3a^{2}b\,e^{3}x+6a\,b^{2}d^{2}e\ln\left(bx+a\right)-6a\,b^{2}d^{2}e\ln\left(ex+d\right)-6a\,b^{2}d\,e^{2}x+9b^{3}d^{2}ex+a^{3}e^{3}-6a^{2}bd\,e^{2}+3a\,b^{2}d^{2}e+2b^{3}d^{3}\right)\left(bx+a\right)^{2}}{2\left(ex+d\right)^{2}\left(ae-bd\right)^{4}\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(6*ln(b*x+a)*x^3*b^3*e^3-6*ln(e*x+d)*x^3*b^3*e^3+6*ln(b*x+a)*x^2*a*b^2
*e^3+12*ln(b*x+a)*x^2*b^3*d*e^2-6*ln(e*x+d)*x^2*a*b^2*e^3-12*ln(e*x+d)*x^2*
b^3*d*e^2+12*a*b^2*d*e^2*x*ln(b*x+a)+6*b^3*d^2*e*x*ln(b*x+a)-12*ln(e*x+d)*x
*a*b^2*d*e^2-6*ln(e*x+d)*x*b^3*d^2*e-6*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+6*a*b^
2*d^2*e*ln(b*x+a)-6*ln(e*x+d)*a*b^2*d^2*e-3*a^2*b*e^3*x-6*a*b^2*d*e^2*x+9*b
^3*d^2*e*x+a^3*e^3-6*a^2*b*d*e^2+3*a*b^2*d^2*e+2*b^3*d^3)*(b*x+a)^2/(e*x+d)
^2/(a*e-b*d)^4/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{\left(d + ex\right)^{3} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**3*((a + b*x)**2)**(3/2)), x)
```

3.1808 $\int \frac{(a+bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}} \, dx$

Optimal. Leaf size=252

$$-\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{10e^3(a+bx)(bd-ae)^2\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{20e^2(bd-ae)^3}{3b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^4}{6b^6(a+bx)\sqrt{a^2+2abx}}$$

Rubi [A] time = 0.19, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {768, 646, 43}

$$\frac{5e^4x(a+bx)(4bd-3ae)}{3b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{20e^2(bd-ae)^3}{3b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{10e^3(a+bx)(bd-ae)^2\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^4}{6b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{5e^5x^2(a+bx)}{6b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^5/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (20*e^2*(b*d - a*e)^3)
/(3*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(b*d - a*e)^4)/(6*b^6*(a + b*
x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^4*(4*b*d - 3*a*e)*x*(a + b*x))/(3*
b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^5*x^2*(a + b*x))/(6*b^4*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) + (10*e^3*(b*d - a*e)^2*(a + b*x)*Log[a + b*x])/(b^6*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{(5e)\int \frac{(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{3b}$$

$$= -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(5be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^4}{\left(ab+b^2x\right)^3}\,dx}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(5be\left(ab+b^2x\right)\right)\int \left(\frac{e^3(4bd-3ae)}{b^7} + \frac{e^4x}{b^6} + \frac{(bd-ae)^4}{b^7(a+bx)^3} + \cdots\right.}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{20e^2(bd-ae)^3}{3b^6\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(bd-ae)^4}{6b^6(a+bx)\sqrt{a^2+2abx+\cdots}}$$

Mathematica [A] time = 0.11, size = 232, normalized size = 0.92

$$\frac{47a^5e^5 + a^4be^4(81ex-130d) + a^3b^2e^3\left(110d^2-270dex-9e^2x^2\right) - a^2b^3e^2\left(20d^3-270d^2ex+90de^2x^2+63e^3x^3\right) - 5ab^4e\left(d^4+12d^3ex-36d^2e^2x^2-18de^3x^3+3e^4x^4\right) + 60e^3(a+bx)^3(bd-ae)^2\log(a+bx) + b^5\left(-2d^5-15d^4ex-60d^3e^2x^2+30de^4x^4+3e^5x^5\right)}{6b^6\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (47*a^5*e^5 + a^4*b*e^4*(-130*d + 81*e*x) + a^3*b^2*e^3*(110*d^2 - 270*d*e*
x - 9*e^2*x^2) - a^2*b^3*e^2*(20*d^3 - 270*d^2*e*x + 90*d*e^2*x^2 + 63*e^3*
x^3) - 5*a*b^4*e*(d^4 + 12*d^3*e*x - 36*d^2*e^2*x^2 - 18*d*e^3*x^3 + 3*e^4*
x^4) + b^5*(-2*d^5 - 15*d^4*e*x - 60*d^3*e^2*x^2 + 30*d*e^4*x^4 + 3*e^5*x^5
) + 60*e^3*(b*d - a*e)^2*(a + b*x)^3*Log[a + b*x])/(6*b^6*((a + b*x)^2)^(3/
2))
```

IntegrateAlgebraic [B] time = 8.17, size = 6538, normalized size = 25.94

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.42, size = 426, normalized size = 1.69

$$\frac{3b^5e^5x^5 - 2b^5d^5 - 5ab^4d^4e - 20a^2b^3d^3e^2 + 110a^3b^2d^2e^3 - 130a^4bde^4 + 47a^5e^5 + 15\left(2b^5de^4 - ab^4e^5\right)x^4 + 9\left(10ab^4de^4 - 7a^2b^3e^5\right)x^3 - 3\left(20b^5d^3e^2 - 60ab^4d^2e^3 + 30a^2b^3de^4 + 3a^3b^2e^5\right)x^2 - 3\left(5b^5d^4e + 20ab^4d^3e^2 - 90a^2b^3d^2e^3 + 90a^3b^2de^4 - 27a^4be^5\right)x + 60\left(a^3b^2d^2e^3 - 2a^4bde^4 + a^5e^5 + \left(b^5d^2e^3 - 2ab^4de^4 + a^2b^3e^5\right)x^3 + 3\left(ab^4d^2e^3 - 2a^2b^3de^4 + a^3b^2e^5\right)x^2 + 3\left(a^2b^3d^2e^3 - 2a^3b^2de^4 + a^4be^5\right)x\right)\log(bx+a)}{6\left(b^9x^3 + 3ab^8x^2 + 3a^2b^7x + a^3b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/6*(3*b^5*e^5*x^5 - 2*b^5*d^5 - 5*a*b^4*d^4*e - 20*a^2*b^3*d^3*e^2 + 110*a
^3*b^2*d^2*e^3 - 130*a^4*b*d*e^4 + 47*a^5*e^5 + 15*(2*b^5*d*e^4 - a*b^4*e^5
)*x^4 + 9*(10*a*b^4*d*e^4 - 7*a^2*b^3*e^5)*x^3 - 3*(20*b^5*d^3*e^2 - 60*a*b
^4*d^2*e^3 + 30*a^2*b^3*d*e^4 + 3*a^3*b^2*e^5)*x^2 - 3*(5*b^5*d^4*e + 20*a*
b^4*d^3*e^2 - 90*a^2*b^3*d^2*e^3 + 90*a^3*b^2*d*e^4 - 27*a^4*b*e^5)*x + 60*
(a^3*b^2*d^2*e^3 - 2*a^4*b*d*e^4 + a^5*e^5 + (b^5*d^2*e^3 - 2*a*b^4*d*e^4 +
 a^2*b^3*e^5)*x^3 + 3*(a*b^4*d^2*e^3 - 2*a^2*b^3*d*e^4 + a^3*b^2*e^5)*x^2 +
 3*(a^2*b^3*d^2*e^3 - 2*a^3*b^2*d*e^4 + a^4*b*e^5)*x)*log(b*x + a))/(b^9*x^
3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^5}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^5/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [B] time = 0.06, size = 495, normalized size = 1.96

$$\frac{\left(3b^5e^5x^5+60a^2b^3e^5x^3\ln(bx+a)-120a\,b^4d\,e^4x^3\ln(bx+a)-15a\,b^4e^5x^4+60b^5d^2e^3x^3\ln(bx+a)+30b^5d\,e^4x^4+180a^3b^2e^5x^2\ln(bx+a)-360a^2b^3d\,e^4x^2\ln(bx+a)-63a^2b^3e^5x^3+180a\,b^4d^2e^3x^2\ln(bx+a)+90a\,b^4d\,e^4x^3+180a^4b\,e^5x\ln(bx+a)-360a^3b^2d\,e^4x\ln(bx+a)-9a^3b^2e^5x^2+180a^2b^3d^2e^3x\ln(bx+a)-90a^2b^3d\,e^4x^2+180a\,b^4d^2e^3x^2-60b^5d^3e^2x^2+60a^5e^5\ln(bx+a)-120a^4bd\,e^4\ln(bx+a)+81a^4b\,e^5x+60a^3b^2d^2e^3\ln(bx+a)-270a^3b^2d\,e^4x+270a^2b^3d^2e^3x-60a\,b^4d^3e^2x-15b^5d^4ex+47a^5e^5-130a^4bd\,e^4+110a^3b^2d^2e^3-20a^2b^3d^3e^2-5a\,b^4d^4e-2b^5d^5\right)(bx+a)^2}{6\left((bx+a)^2\right)^{\frac{5}{2}}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/6*(-130*a^4*b*d*e^4+110*a^3*b^2*d^2*e^3-20*a^2*b^3*d^3*e^2-5*a*b^4*d^4*e+
180*ln(b*x+a)*x^2*a*b^4*d^2*e^3-360*ln(b*x+a)*x*a^3*b^2*d*e^4-360*ln(b*x+a)
*x^2*a^2*b^3*d*e^4-120*ln(b*x+a)*x^3*a*b^4*d*e^4+180*ln(b*x+a)*x*a^2*b^3*d^
2*e^3+47*a^5*e^5+3*x^5*b^5*e^5-60*x^2*b^5*d^3*e^2-9*x^2*a^3*b^2*e^5-63*x^3*
a^2*b^3*e^5-15*x^4*a*b^4*e^5+30*x^4*b^5*d*e^4-15*x*b^5*d^4*e+81*x*a^4*b*e^5
-2*b^5*d^5+270*x*a^2*b^3*d^2*e^3-60*x*a*b^4*d^3*e^2+60*ln(b*x+a)*a^5*e^5+18
0*ln(b*x+a)*x*a^4*b*e^5-120*ln(b*x+a)*a^4*b*d*e^4-90*x^2*a^2*b^3*d*e^4-270*
x*a^3*b^2*d*e^4+90*x^3*a*b^4*d*e^4+60*ln(b*x+a)*x^3*a^2*b^3*e^5+60*ln(b*x+a
)*x^3*b^5*d^2*e^3+180*ln(b*x+a)*x^2*a^3*b^2*e^5+60*ln(b*x+a)*a^3*b^2*d^2*e^
3+180*x^2*a*b^4*d^2*e^3)*(b*x+a)^2/b^6/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.18, size = 1010, normalized size = 4.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*b*e^5*((2*b^6*x^6 - 12*a*b^5*x^5 - 68*a^2*b^4*x^4 - 32*a^3*b^3*x^3 + 13
2*a^4*b^2*x^2 + 168*a^5*b*x + 57*a^6)/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*
x^2 + 4*a^3*b^8*x + a^4*b^7) + 60*a^2*log(b*x + a)/b^7) + 5/12*b*d*e^4*((12
*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x -
77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) -
60*a*log(b*x + a)/b^6) + 1/12*a*e^5*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^
3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6
*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 5/6*b*d^2*
e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*
b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 5
/12*a*d*e^4*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^
4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/
b^5) - 5/6*b*d^3*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*
(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 5/6*a*d^2*e^3*(12*x^2/((b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) +
6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4))
- 1/12*b*d^5*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^
4)) - 5/12*a*d^4*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x +
 a/b)^4)) - 5/12*b*d^4*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a
^2/(b^7*(x + a/b)^4)) - 5/6*a*d^3*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x +
a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/4*a*d^5/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^5}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int(((a + b*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^5}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**5/((a + b*x)**2)**(5/2), x)
```

3.1809 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=201

$$-\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{4e^3(a+bx)(bd-ae)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{4e^2(bd-ae)^2}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{2e(bd-ae)^3}{3b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.14, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {768, 646, 43}

$$-\frac{4e^2(bd-ae)^2}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{4e^3(a+bx)(bd-ae)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{2e(bd-ae)^3}{3b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{4e^4x(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^4/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (4*e^2*(b*d - a*e)^2)/
(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*e*(b*d - a*e)^3)/(3*b^5*(a + b*x)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (4*e^4*x*(a + b*x))/(3*b^4*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (4*e^3*(b*d - a*e)*(a + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{(4e)\int \frac{(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{3b}$$

$$= -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(4be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{\left(ab+b^2x\right)^3}\,dx}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(4be\left(ab+b^2x\right)\right)\int \left(\frac{e^3}{b^6}+\frac{(bd-ae)^3}{b^6(a+bx)^3}+\frac{3e(bd-ae)^2}{b^6(a+bx)^2}+\frac{3e^2}{b^6}\right.}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{4e^2(bd-ae)^2}{b^5\sqrt{a^2+2abx+b^2x^2}} - \frac{2e(bd-ae)^3}{3b^5(a+bx)\sqrt{a^2+2abx+}}$$

Mathematica [A] time = 0.08, size = 170, normalized size = 0.85

$$\frac{-13a^4e^4+a^3be^3(22d-27ex)-3a^2b^2e^2\left(2d^2-18dex+3e^2x^2\right)+ab^3e\left(-2d^3-18d^2ex+36de^2x^2+9e^3x^3\right)-12e^3(a+bx)^3(ae-bd)\log(a+bx)-\left(b^4\left(d^4+6d^3ex+18d^2e^2x^2-3e^4x^4\right)\right)}{3b^5\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-13*a^4*e^4 + a^3*b*e^3*(22*d - 27*e*x) - 3*a^2*b^2*e^2*(2*d^2 - 18*d*e*x
+ 3*e^2*x^2) + a*b^3*e*(-2*d^3 - 18*d^2*e*x + 36*d*e^2*x^2 + 9*e^3*x^3) - b
^4*(d^4 + 6*d^3*e*x + 18*d^2*e^2*x^2 - 3*e^4*x^4) - 12*e^3*(-(b*d) + a*e)*(
a + b*x)^3*Log[a + b*x])/(3*b^5*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [B] time = 4.77, size = 4330, normalized size = 21.54

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (4*Sqrt[b^2]*d^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(a^2*b*d^2 - 4*a^3*d*e - a*b
^2*d^2*x + 4*a^2*b*d*e*x - 18*a^3*e^2*x + b^3*d^2*x^2 - 4*a*b^2*d*e*x^2 - 2
7*a^2*b*e^2*x^2 + 6*b^3*d*e*x^3 - 27*a*b^2*e^2*x^3) + 4*d^2*(a^3*b^2*d^2 -
4*a^4*b*d*e + 6*a^5*e^2 + 18*a^4*b*e^2*x + 45*a^3*b^2*e^2*x^2 - b^5*d^2*x^3
 - 2*a*b^4*d*e*x^3 + 54*a^2*b^3*e^2*x^3 - 6*b^5*d*e*x^4 + 27*a*b^4*e^2*x^4)
)/(3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(4*a^2*b^6 + 8*a*b^7*x + 4*b^8*x^2)
+ 3*Sqrt[b^2]*x^3*(-4*a^3*b^5 - 12*a^2*b^6*x - 12*a*b^7*x^2 - 4*b^8*x^3)) +
 ((192*a^4*d^2*e^2*x)/(b*Sqrt[b^2]) + (48*a^6*e^4*x)/(b^3*Sqrt[b^2]) + (480
*a^3*d^2*e^2*x^2)/Sqrt[b^2] + (208*a^5*e^4*x^2)/(b^2)^(3/2) + (640*a^2*b*d^
2*e^2*x^3)/Sqrt[b^2] + (1328*a^4*e^4*x^3)/(3*b*Sqrt[b^2]) + 480*a*Sqrt[b^2]
*d^2*e^2*x^4 + (400*a^3*e^4*x^4)/Sqrt[b^2] + (192*b^3*d^2*e^2*x^5)/Sqrt[b^2
] + (48*a^2*b*e^4*x^5)/Sqrt[b^2] - 112*a*Sqrt[b^2]*e^4*x^6 - (32*b^3*e^4*x^
7)/Sqrt[b^2] - (64*a^4*d^2*e^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (32*a^6
*e^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^5) - (128*a^3*d^2*e^2*x*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/b^2 - (112*a^5*e^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3
*b^4) - (352*a^2*d^2*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (512*a^4*e^
4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) - 288*a*d^2*e^2*x^3*Sqrt[a^2 +
 2*a*b*x + b^2*x^2] - (272*a^3*e^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 -
 192*b*d^2*e^2*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (128*a^2*e^4*x^4*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/b + 80*a*e^4*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + 32
```

*b*e^4*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (128*a^4*e^4*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b^2 - (384*a^3*e^4*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b - 384*a^2*e^4*x^5*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - 128*a*b*e^4*x^6*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + (128*a^3*e^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/(b*Sqrt[b^2]) + (256*a^2*e^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] + (128*a*b*e^4*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3) + ((128*a^6*d*e^3)/(3*b^3*Sqrt[b^2]) + (160*a^5*d*e^3*x)/(b^2)^(3/2) + (544*a^4*d*e^3*x^2)/(b*Sqrt[b^2]) + (768*a^3*d*e^3*x^3)/Sqrt[b^2] + (384*a^2*b*d*e^3*x^4)/Sqrt[b^2] - (160*a^4*d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (384*a^3*d*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - (384*a^2*d*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b - (64*a^3*d*e^3*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (192*a^2*b*d*e^3*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - 192*a*Sqrt[b^2]*d*e^3*x^5*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (64*b^3*d*e^3*x^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (64*a^2*d*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 128*a*d*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 64*b*d*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (64*a^3*d*e^3*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (192*a^2*b*d*e^3*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - 192*a*Sqrt[b^2]*d*e^3*x^5*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (64*b^3*d*e^3*x^6*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (64*a^2*d*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 128*a*d*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 64*b*d*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3) + ((-32*a^7*e^4)/(3*b^4*Sqrt[b^2]) - (160*a^5*d*e^3*x)/(b^2)^(3/2) - (48*a^6*e^4*x)/(b^3*Sqrt[b^2]) - (544*a^4*d*e^3*x^2)/(b*Sqrt[b^2]) - (208*a^5*e^4*x^2)/(b^2)^(3/2) - (3008*a^3*d*e^3*x^3)/(3*Sqrt[b^2]) - (320*a^4*e^4*x^3)/(b*Sqrt[b^2]) - (960*a^2*b*d*e^3*x^4)/Sqrt[b^2] - (160*a^3*e^4*x^4)/Sqrt[b^2] - 384*a*Sqrt[b^2]*d*e^3*x^5 + (128*a^5*d*e^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (352*a^4*d*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) + (48*a^5*e^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^4 + (1280*a^3*d*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^2) + (160*a^4*e^4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 + (576*a^2*d*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b + (160*a^3*e^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + 384*a*d*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (128*a^3*d*e^3*x^3*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 384*a^2*d*e^3*x^4*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 384*a*b*d*e^3*x^5*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 128*b^2*d*e^3*x^6*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (128*a^2*d*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - (256*a*b*d*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/Sqrt[b^2] - 128*Sqrt[b^2]*d*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + (64*a^4*e^4*x^3*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (192*a^3*e^4*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (192*a^2*b*e^4*x^5*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + 64*a*Sqrt[b^2]*e^4*x^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (64*a^3*e^4*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*

```
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b^2 - (128*a^2*e^4*x^4*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b - 64
*a*e^4*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2]] + (64*a^4*e^4*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2]])/(b*Sqrt[b^2]) + (192*a^3*e^4*x^4*Log[a - Sqrt[b^2]*x + Sqr
t[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (192*a^2*b*e^4*x^5*Log[a - Sqrt[b^
2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + 64*a*Sqrt[b^2]*e^4*x^6*L
og[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (64*a^3*e^4*x^3*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2
]])/b^2 - (128*a^2*e^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b - 64*a*e^4*x^5*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b
^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2])^3)
```

fricas [A] time = 0.49, size = 292, normalized size = 1.45

$$\frac{3\,b^4e^4x^4+9\,ab^3e^4x^3-b^4d^4-2\,ab^3d^3e-6\,a^2b^2d^2e^2+22\,a^3bde^3-13\,a^4e^4-9\left(2\,b^4d^2e^2-4\,ab^3de^3+a^2b^2e^4\right)x^2-3\left(2\,b^4d^3e+6\,ab^3d^2e^2-18\,a^2b^2de^3+9\,a^3be^4\right)x+12\left(a^3bde^3-a^4e^4+\left(b^4de^3-ab^3e^4\right)x^3+3\left(ab^3de^3-a^2b^2e^4\right)x^2+3\left(a^2b^2de^3-a^3be^4\right)x\right)\log\left(bx+a\right)}{3\left(b^8x^3+3\,ab^7x^2+3\,a^2b^6x+a^3b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/3*(3*b^4*e^4*x^4 + 9*a*b^3*e^4*x^3 - b^4*d^4 - 2*a*b^3*d^3*e - 6*a^2*b^2*
d^2*e^2 + 22*a^3*b*d*e^3 - 13*a^4*e^4 - 9*(2*b^4*d^2*e^2 - 4*a*b^3*d*e^3 +
a^2*b^2*e^4)*x^2 - 3*(2*b^4*d^3*e + 6*a*b^3*d^2*e^2 - 18*a^2*b^2*d*e^3 + 9*
a^3*b*e^4)*x + 12*(a^3*b*d*e^3 - a^4*e^4 + (b^4*d*e^3 - a*b^3*e^4)*x^3 + 3*
(a*b^3*d*e^3 - a^2*b^2*e^4)*x^2 + 3*(a^2*b^2*d*e^3 - a^3*b*e^4)*x)*log(b*x
+ a))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^4}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^4/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [B] time = 0.07, size = 322, normalized size = 1.60

$$-\frac{\left(12a\,b^3e^4x^3\ln\left(bx+a\right)-12b^4d\,e^3x^3\ln\left(bx+a\right)-3b^4e^4x^4+36a^2b^2e^4x^2\ln\left(bx+a\right)-36a\,b^3d\,e^3x^2\ln\left(bx+a\right)-9a\,b^3e^4x^3+36a^3b\,e^4x\ln\left(bx+a\right)-36a^2b^2d\,e^3x\ln\left(bx+a\right)+9a^2b^2e^4x^2-36a\,b^3d\,e^3x^2+18b^4d^2e^2x^2+12a^4e^4\ln\left(bx+a\right)-12a^3bd\,e^3\ln\left(bx+a\right)+27a^3b\,e^4x-54a^2b^2d\,e^3x+18a\,b^3d^2e^2x+6b^4d^3ex+13a^4e^4-22a^3bd\,e^3+6a^2b^2d^2e^2+2a\,b^3d^3e+b^4d^4\right)\left(bx+a\right)^2}{3\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/3*(12*ln(b*x+a)*x^3*a*b^3*e^4-12*ln(b*x+a)*x^3*b^4*d*e^3-3*b^4*e^4*x^4+3
6*ln(b*x+a)*x^2*a^2*b^2*e^4-36*ln(b*x+a)*x^2*a*b^3*d*e^3-9*a*b^3*e^4*x^3+36
*a^3*b*e^4*x*ln(b*x+a)-36*a^2*b^2*d*e^3*x*ln(b*x+a)+9*a^2*b^2*e^4*x^2-36*a*
b^3*d*e^3*x^2+18*b^4*d^2*e^2*x^2+12*a^4*e^4*ln(b*x+a)-12*a^3*b*d*e^3*ln(b*x
+a)+27*a^3*b*e^4*x-54*a^2*b^2*d*e^3*x+18*a*b^3*d^2*e^2*x+6*b^4*d^3*e*x+13*a
^4*e^4-22*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2+2*a*b^3*d^3*e+b^4*d^4)*(b*x+a)^2/b^
5/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.99, size = 755, normalized size = 3.76

$$\frac{1}{12}\,be^4\left(\frac{12\,b^5x^5+48\,ab^4x^4-48\,a^2b^3x^3-252\,a^3b^2x^2-248\,a^4bx-77\,a^5}{b^{10}x^4+4\,ab^9x^3+6\,a^2b^8x^2+4\,a^3b^7x+a^4b^6}-\frac{60\,a\log\left(bx+a\right)}{b^6}\right)+\frac{1}{3}\,bde^3\left(\frac{48\,ab^3x^3+108\,a^2b^2x^2+88\,a^3bx+25\,a^4}{b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5}+\frac{12\,\log\left(bx+a\right)}{b^5}\right)+\frac{1}{12}\,ae^4\left(\frac{48\,ab^3x^3+108\,a^2b^2x^2+88\,a^3bx+25\,a^4}{b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5}+\frac{12\,\log\left(bx+a\right)}{b^5}\right)-\frac{1}{2}\,bd^2e^2\left(\frac{12\,x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\frac{8\,a^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}+\frac{6\,a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8\,a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3\,a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{3}\,ade^3\left(\frac{12\,x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\frac{8\,a^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}+\frac{6\,a}{b^6\left(x+\frac{a}{b}\right)^2}-\frac{8\,a^2}{b^7\left(x+\frac{a}{b}\right)^3}-\frac{3\,a^3}{b^8\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{12}\,bd^4\left(\frac{4}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{3\,a}{b^6\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{3}\,ad^3e\left(\frac{4}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{3\,a}{b^6\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{3}\,bd^3e\left(\frac{6}{b^5\left(x+\frac{a}{b}\right)^2}-\frac{8\,a}{b^6\left(x+\frac{a}{b}\right)^3}+\frac{3\,a^2}{b^7\left(x+\frac{a}{b}\right)^4}\right)-\frac{1}{2}\,ad^2e^2\left(\frac{6}{b^5\left(x+\frac{a}{b}\right)^2}-\frac{8\,a}{b^6\left(x+\frac{a}{b}\right)^3}+\frac{3\,a^2}{b^7\left(x+\frac{a}{b}\right)^4}\right)-\frac{ad^4}{4\,b^5\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*b*e^4*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 -
 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*
x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 1/3*b*d*e^3*((48*a*b^3*x^3 + 108*a^
2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4
*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 1/12*a*e^4*((48*a*b^3*x^3 +
108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x
^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) - 1/2*b*d^2*e^2*(12*x^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x
+ a/b)^4)) - 1/3*a*d*e^3*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*
a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(
b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*b*d^4*(4/((b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*a*d^3*e*(4/((b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*b*d^3*e*(6/(b^5*
(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/2*a*d^2
*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)
) - 1/4*a*d^4/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{(d+e\,x)}^4}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^4}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**4/((a + b*x)**2)**(5/2), x)
```

3.1810 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=154

$$-\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{2e^2(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e^3(a+bx)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.11, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {768, 646, 43}

$$-\frac{2e^2(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^3(a+bx)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^3/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (2*e^2*(b*d - a*e))/(b
^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(b*d - a*e)^2)/(2*b^4*(a + b*x)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(a + b*x)*Log[a + b*x])/(b^4*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{e\int \frac{(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{b}$$

$$= -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^2}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(be\left(ab+b^2x\right)\right)\int \left(\frac{(bd-ae)^2}{b^5(a+bx)^3}+\frac{2e(bd-ae)}{b^5(a+bx)^2}+\frac{e^2}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{2e^2(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{e(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2}}$$

Mathematica [A] time = 0.05, size = 91, normalized size = 0.59

$$\frac{6e^3(a+bx)^3\log(a+bx)-(bd-ae)\left(11a^2e^2+abe(5d+27ex)+b^2\left(2d^2+9dex+18e^2x^2\right)\right)}{6b^4\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-((b*d - a*e)*(11*a^2*e^2 + a*b*e*(5*d + 27*e*x) + b^2*(2*d^2 + 9*d*e*x +
18*e^2*x^2))) + 6*e^3*(a + b*x)^3*Log[a + b*x])/(6*b^4*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [B] time = 3.21, size = 2559, normalized size = 16.62

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (2*Sqrt[b^2]*d*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(-6*a^3*d*e - 3*a*b^2*d^2*x +
6*a^2*b*d*e*x - 18*a^3*e^2*x - 6*a*b^2*d*e*x^2 - 27*a^2*b*e^2*x^2 + 9*b^3*d
*e*x^3 - 27*a*b^2*e^2*x^3) + 2*d*(2*a^3*b^2*d^2 - 6*a^4*b*d*e + 6*a^5*e^2 +
 3*a^2*b^3*d^2*x + 18*a^4*b*e^2*x + 3*a*b^4*d^2*x^2 + 45*a^3*b^2*e^2*x^2 -
3*a*b^4*d*e*x^3 + 54*a^2*b^3*e^2*x^3 - 9*b^5*d*e*x^4 + 27*a*b^4*e^2*x^4))/(
3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(4*a^2*b^6 + 8*a*b^7*x + 4*b^8*x^2) + 3
*Sqrt[b^2]*x^3*(-4*a^3*b^5 - 12*a^2*b^6*x - 12*a*b^7*x^2 - 4*b^8*x^3)) + ((
-40*a^5*Sqrt[b^2]*e^3*x)/b^4 - (136*a^4*Sqrt[b^2]*e^3*x^2)/b^3 - (752*a^3*(
b^2)^(3/2)*e^3*x^3)/(3*b^4) - (240*a^2*Sqrt[b^2]*e^3*x^4)/b - 96*a*Sqrt[b^2
]*e^3*x^5 + (32*a^5*e^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (88*a^4*e^
3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) + (320*a^3*e^3*x^2*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(3*b^2) + (144*a^2*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/b + 96*a*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (32*a^3*e^3*x^3*ArcTanh[(
-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/b + 96*a^2*e^3*x^4*ArcT
anh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 96*a*b*e^3*x^5*Ar
cTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] + 32*b^2*e^3*x^6*
ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a] - (32*a^2*(b^2)
^(3/2)*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/a])/b^4 - (64*a*Sqrt[b^2]*e^3*x^4*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a]
```

```
)/b - 32*Sqrt[b^2]*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*ArcTanh[(-(Sqrt[b^
2]*x) + Sqrt[a^2 + 2*a*b*x + b^2*x^2])/a])/((-a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2])^3*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3)
+ ((32*a^6*e^3)/(3*b^3*Sqrt[b^2]) + (16*a^2*b*d^3*x)/Sqrt[b^2] + (96*a^4*d*
e^2*x)/(b*Sqrt[b^2]) + (40*a^5*e^3*x)/(b^2)^(3/2) + 16*a*Sqrt[b^2]*d^3*x^2
+ (240*a^3*d*e^2*x^2)/Sqrt[b^2] + (136*a^4*e^3*x^2)/(b*Sqrt[b^2]) + (32*b^3
*d^3*x^3)/(3*Sqrt[b^2]) + (320*a^2*b*d*e^2*x^3)/Sqrt[b^2] + (192*a^3*e^3*x^
3)/Sqrt[b^2] + 240*a*Sqrt[b^2]*d*e^2*x^4 + (96*a^2*b*e^3*x^4)/Sqrt[b^2] + (
96*b^3*d*e^2*x^5)/Sqrt[b^2] - (32*a^2*d^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3
*b) - (32*a^4*d*e^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (16*a*d^3*x*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/3 - (64*a^3*d*e^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/b^2 - (40*a^4*e^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^3 - (32*b*d^3*x^2*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/3 - (176*a^2*d*e^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/b - (96*a^3*e^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 - 144*a*d*e^2
*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (96*a^2*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/b - 96*b*d*e^2*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2] - (16*a^3*e^3*x^3
*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - (48*a^2
*b*e^3*x^4*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2]
 - 48*a*Sqrt[b^2]*e^3*x^5*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x
^2]] - (16*b^3*e^3*x^6*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]
])/Sqrt[b^2] + (16*a^2*e^3*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[
b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 32*a*e^3*x^4*Sqrt[a^2 + 2*a*b*
x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] + 16*b*e
^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[-a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*
b*x + b^2*x^2]] - (16*a^3*e^3*x^3*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]])/Sqrt[b^2] - (48*a^2*b*e^3*x^4*Log[a - Sqrt[b^2]*x + Sqrt[a^2 +
 2*a*b*x + b^2*x^2]])/Sqrt[b^2] - 48*a*Sqrt[b^2]*e^3*x^5*Log[a - Sqrt[b^2]*
x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]] - (16*b^3*e^3*x^6*Log[a - Sqrt[b^2]*x +
Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/Sqrt[b^2] + (16*a^2*e^3*x^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/b + 32
*a*e^3*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqrt[b^2]*x + Sqrt[a^2 + 2
*a*b*x + b^2*x^2]] + 16*b*e^3*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[a - Sqr
t[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2]])/((-a - Sqrt[b^2]*x + Sqrt[a^2 +
2*a*b*x + b^2*x^2])^3*(a - Sqrt[b^2]*x + Sqrt[a^2 + 2*a*b*x + b^2*x^2])^3)
```

fricas [**A**] time = 0.49, size = 176, normalized size = 1.14

$$-\frac{2\,b^3d^3+3\,ab^2d^2e+6\,a^2bde^2-11\,a^3e^3+18\,\left(b^3de^2-ab^2e^3\right)x^2+9\,\left(b^3d^2e+2\,ab^2de^2-3\,a^2be^3\right)x-6\,\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\log\left(bx+a\right)}{6\,\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/6*(2*b^3*d^3 + 3*a*b^2*d^2*e + 6*a^2*b*d*e^2 - 11*a^3*e^3 + 18*(b^3*d*e^
2 - a*b^2*e^3)*x^2 + 9*(b^3*d^2*e + 2*a*b^2*d*e^2 - 3*a^2*b*e^3)*x - 6*(b^3
*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*log(b*x + a))/(b^7*x^
3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^3}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^3/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [A] time = 0.06, size = 179, normalized size = 1.16

$$\frac{\left(6b^{3}e^{3}x^{3}\ln\left(bx+a\right)+18a\,b^{2}e^{3}x^{2}\ln\left(bx+a\right)+18a^{2}b\,e^{3}x\ln\left(bx+a\right)+18a\,b^{2}e^{3}x^{2}-18b^{3}d\,e^{2}x^{2}+6a^{3}e^{3}\ln\left(bx+a\right)+27a^{2}b\,e^{3}x-18a\,b^{2}d\,e^{2}x-9b^{3}d^{2}ex+11a^{3}e^{3}-6a^{2}bd\,e^{2}-3a\,b^{2}d^{2}e-2b^{3}d^{3}\right)\left(bx+a\right)^{2}}{6\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/6*(6*b^3*e^3*x^3*ln(b*x+a)+18*a*b^2*e^3*x^2*ln(b*x+a)+18*a^2*b*e^3*x*ln(b
*x+a)+18*a*b^2*e^3*x^2-18*b^3*d*e^2*x^2+6*a^3*e^3*ln(b*x+a)+27*a^2*b*e^3*x-
18*a*b^2*d*e^2*x-9*b^3*d^2*e*x+11*a^3*e^3-6*a^2*b*d*e^2-3*a*b^2*d^2*e-2*b^3
*d^3)*(b*x+a)^2/b^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.78, size = 533, normalized size = 3.46

$$\frac{1}{12}be^{3}\left(\frac{48ab^{3}x^{3}+108a^{2}b^{2}x^{2}+88a^{3}bx+25a^{4}}{b^{9}x^{4}+4ab^{8}x^{3}+6a^{2}b^{7}x^{2}+4a^{3}b^{6}x+a^{4}b^{5}}+\frac{12\log\left(bx+a\right)}{b^{5}}\right)-\frac{1}{4}bde^{2}\left(\frac{12x^{2}}{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}b^{2}}+\frac{8a^{2}}{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}b^{4}}+\frac{6a}{b^{6}\left(x+\frac{a}{b}\right)^{2}}-\frac{8a^{2}}{b^{7}\left(x+\frac{a}{b}\right)^{3}}-\frac{3a^{3}}{b^{8}\left(x+\frac{a}{b}\right)^{4}}\right)-\frac{1}{12}ae^{3}\left(\frac{12x^{2}}{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}b^{2}}+\frac{8a^{2}}{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}b^{4}}+\frac{6a}{b^{6}\left(x+\frac{a}{b}\right)^{2}}-\frac{8a^{2}}{b^{7}\left(x+\frac{a}{b}\right)^{3}}-\frac{3a^{3}}{b^{8}\left(x+\frac{a}{b}\right)^{4}}\right)-\frac{1}{12}bd^{3}\left(\frac{4}{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}b^{2}}-\frac{3a}{b^{6}\left(x+\frac{a}{b}\right)^{4}}\right)-\frac{1}{4}ad^{2}e\left(\frac{4}{\left(b^{2}x^{2}+2abx+a^{2}\right)^{\frac{3}{2}}b^{2}}-\frac{3a}{b^{6}\left(x+\frac{a}{b}\right)^{4}}\right)-\frac{1}{4}bd^{2}e\left(\frac{6}{b^{5}\left(x+\frac{a}{b}\right)^{2}}-\frac{8a}{b^{6}\left(x+\frac{a}{b}\right)^{3}}+\frac{3a^{2}}{b^{7}\left(x+\frac{a}{b}\right)^{4}}\right)-\frac{1}{4}ade^{2}\left(\frac{6}{b^{5}\left(x+\frac{a}{b}\right)^{2}}-\frac{8a}{b^{6}\left(x+\frac{a}{b}\right)^{3}}+\frac{3a^{2}}{b^{7}\left(x+\frac{a}{b}\right)^{4}}\right)-\frac{ad^{3}}{4b^{5}\left(x+\frac{a}{b}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*b*e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4
 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b
^5) - 1/4*b*d*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x
+ a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*a*e^3*(12*x^2/((b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b
^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12
*b*d^3*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) -
1/4*a*d^2*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4
)) - 1/4*b*d^2*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*
(x + a/b)^4)) - 1/4*a*d*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) +
3*a^2/(b^7*(x + a/b)^4)) - 1/4*a*d^3/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + bx\right) \left(d + ex\right)^{3}}{\left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(5/2), x)
```

3.1811 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{(d+ex)^3}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)}$$

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$-\frac{(d+ex)^3}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^3/(3*(b*d - a*e)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^3}{3(bd-ae)\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Mathematica [A] time = 0.03, size = 60, normalized size = 1.46

$$\frac{-a^2e^2-abe(d+3ex)-\left(b^2\left(d^2+3dex+3e^2x^2\right)\right)}{3b^3\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(a^2*e^2) - a*b*e*(d + 3*e*x) - b^2*(d^2 + 3*d*e*x + 3*e^2*x^2))/(3*b^3*(
(a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [B] time = 1.13, size = 348, normalized size = 8.49

$$\frac{4\sqrt{b^2}\sqrt{a^2+2abx+b^2x^2}\left(a^4e^2-2a^3bde-a^3be^2x+a^2b^2d^2+2a^2b^2dex+a^2b^2e^2x^2-ab^3d^2x-2ab^3dex^2+b^4d^2x^2+3b^4dex^3+3b^4e^2x^4\right)+4\left(a^5be^2-2a^4b^2de+a^3b^3d^2-a^2b^4e^2x^3-ab^5dex^3-3ab^5e^2x^4-b^6d^2x^3-3b^6dex^4-3b^6e^2x^5\right)}{3b^3x^3\sqrt{a^2+2abx+b^2x^2}\left(4a^2b^4+8ab^5x+4b^6x^2\right)+3b^3\sqrt{b^2}\,x^3\left(-4a^3b^3-12a^2b^4x-12ab^5x^2-4b^6x^3\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (4*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(a^2*b^2*d^2 - 2*a^3*b*d*e + a^4
*e^2 - a*b^3*d^2*x + 2*a^2*b^2*d*e*x - a^3*b*e^2*x + b^4*d^2*x^2 - 2*a*b^3*
```

```
d*e*x^2 + a^2*b^2*e^2*x^2 + 3*b^4*d*e*x^3 + 3*b^4*e^2*x^4) + 4*(a^3*b^3*d^2
 - 2*a^4*b^2*d*e + a^5*b*e^2 - b^6*d^2*x^3 - a*b^5*d*e*x^3 - a^2*b^4*e^2*x^
3 - 3*b^6*d*e*x^4 - 3*a*b^5*e^2*x^4 - 3*b^6*e^2*x^5))/(3*b^3*x^3*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]*(4*a^2*b^4 + 8*a*b^5*x + 4*b^6*x^2) + 3*b^3*Sqrt[b^2]*x
^3*(-4*a^3*b^3 - 12*a^2*b^4*x - 12*a*b^5*x^2 - 4*b^6*x^3))
```

fricas [B] time = 0.44, size = 84, normalized size = 2.05

$$-\frac{3\,b^2e^2x^2+b^2d^2+abde+a^2e^2+3\left(b^2de+abe^2\right)x}{3\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/3*(3*b^2*e^2*x^2 + b^2*d^2 + a*b*d*e + a^2*e^2 + 3*(b^2*d*e + a*b*e^2)*x
)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)(ex+d)^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^2/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [A] time = 0.05, size = 69, normalized size = 1.68

$$-\frac{(bx+a)^2\left(3b^2e^2x^2+3ab\,e^2x+3b^2dex+a^2e^2+abde+b^2d^2\right)}{3\left((bx+a)^2\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/3*(b*x+a)^2*(3*b^2*e^2*x^2+3*a*b*e^2*x+3*b^2*d*e*x+a^2*e^2+a*b*d*e+b^2*d
^2)/b^3/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.73, size = 274, normalized size = 6.68

$$-\frac{e^2x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b}-\frac{2\,a^2e^2}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^3}-\frac{bd^2+2\,ade}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{ae^2}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,a^2e^2}{3\,b^6\left(x+\frac{a}{b}\right)^3}-\frac{ad^2}{4\,b^5\left(x+\frac{a}{b}\right)^4}+\frac{a^3e^2}{4\,b^7\left(x+\frac{a}{b}\right)^4}-\frac{2\,bde+ae^2}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\left(2\,bde+ae^2\right)a}{3\,b^6\left(x+\frac{a}{b}\right)^3}-\frac{\left(2\,bde+ae^2\right)a^2}{4\,b^7\left(x+\frac{a}{b}\right)^4}+\frac{\left(bd^2+2\,ade\right)a}{4\,b^6\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] -e^2*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b) - 2/3*a^2*e^2/((b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*b^3) - 1/3*(b*d^2 + 2*a*d*e)/((b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*b^2) - 1/2*a*e^2/(b^5*(x + a/b)^2) + 2/3*a^2*e^2/(b^6*(x + a/b)^3) - 1/
4*a*d^2/(b^5*(x + a/b)^4) + 1/4*a^3*e^2/(b^7*(x + a/b)^4) - 1/2*(2*b*d*e +
a*e^2)/(b^5*(x + a/b)^2) + 2/3*(2*b*d*e + a*e^2)*a/(b^6*(x + a/b)^3) - 1/4*
(2*b*d*e + a*e^2)*a^2/(b^7*(x + a/b)^4) + 1/4*(b*d^2 + 2*a*d*e)*a/(b^6*(x +
 a/b)^4)
```

mupad [B] time = 2.24, size = 77, normalized size = 1.88

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(a^2\,e^2+a\,b\,d\,e+3\,a\,b\,e^2\,x+b^2\,d^2+3\,b^2\,d\,e\,x+3\,b^2\,e^2\,x^2\right)}{3\,b^3\,{\left(a+b\,x\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^2*e^2 + b^2*d^2 + 3*b^2*e^2*x^2 + 3*a*
b*e^2*x + 3*b^2*d*e*x + a*b*d*e))/(3*b^3*(a + b*x)^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^2}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**2/((a + b*x)**2)**(5/2), x)
```

3.1812 $\int \frac{(a+bx)(d+ex)}{(a^2+2abx+b^2x^2)^{5/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e}{6b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {768, 607}

$$-\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e}{6b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - e/(6*b^2*(a + b*x)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{3b}\\ &= -\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e}{6b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.47

$$\frac{-ae-2bd-3bex}{6b^2\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*b*d - a*e - 3*b*e*x)/(6*b^2*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [B] time = 0.84, size = 235, normalized size = 3.46

$$\frac{2\left(-2a^4be+2a^3b^2d-ab^4ex^3-2b^5dx^3-3b^5ex^4\right)+2\sqrt{b^2}\,\sqrt{a^2+2abx+b^2x^2}\,\left(-2a^3e+2a^2bd+2a^2bex-2ab^2dx-2ab^2ex^2+2b^3dx^2+3b^3ex^3\right)}{3x^3\sqrt{a^2+2abx+b^2x^2}\,\left(4a^2b^6+8ab^7x+4b^8x^2\right)+3\sqrt{b^2}\,x^3\left(-4a^3b^5-12a^2b^6x-12ab^7x^2-4b^8x^3\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[b^2]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*(2*a^2*b*d - 2*a^3*e - 2*a*b^2*d
*x + 2*a^2*b*e*x + 2*b^3*d*x^2 - 2*a*b^2*e*x^2 + 3*b^3*e*x^3) + 2*(2*a^3*b^
2*d - 2*a^4*b*e - 2*b^5*d*x^3 - a*b^4*e*x^3 - 3*b^5*e*x^4))/(3*x^3*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]*(4*a^2*b^6 + 8*a*b^7*x + 4*b^8*x^2) + 3*Sqrt[b^2]*x^3
*(-4*a^3*b^5 - 12*a^2*b^6*x - 12*a*b^7*x^2 - 4*b^8*x^3))
```

fricas [A] time = 0.44, size = 50, normalized size = 0.74

$$-\frac{3\,bex+2\,bd+ae}{6\left(b^5x^3+3\,ab^4x^2+3\,a^2b^3x+a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/6*(3*b*e*x + 2*b*d + a*e)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [A] time = 0.06, size = 35, normalized size = 0.51

$$-\frac{(bx+a)^2\,(3bex+ae+2bd)}{6\left((bx+a)^2\right)^{\frac{5}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/6*(b*x+a)^2/b^2*(3*b*e*x+a*e+2*b*d)/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.60, size = 118, normalized size = 1.74

$$-\frac{bd+ae}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{e}{2\,b^4\left(x+\frac{a}{b}\right)^2}+\frac{2\,ae}{3\,b^5\left(x+\frac{a}{b}\right)^3}-\frac{ad}{4\,b^5\left(x+\frac{a}{b}\right)^4}-\frac{a^2e}{4\,b^6\left(x+\frac{a}{b}\right)^4}+\frac{(bd+ae)a}{4\,b^6\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/3*(b*d + a*e)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 1/2*e/(b^4*(x + a/
b)^2) + 2/3*a*e/(b^5*(x + a/b)^3) - 1/4*a*d/(b^5*(x + a/b)^4) - 1/4*a^2*e/(
b^6*(x + a/b)^4) + 1/4*(b*d + a*e)*a/(b^6*(x + a/b)^4)
```

mupad [B] time = 2.16, size = 43, normalized size = 0.63

$$-\frac{(a\,e+2\,b\,d+3\,b\,e\,x)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,b^2\,{(a+b\,x)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a*e + 2*b*d + 3*b*e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^2*(a + b*x)
^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)/((a + b*x)**2)**(5/2), x)
```

3.1813 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=27

$$-\frac{1}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$-\frac{1}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -1/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx=-\frac{1}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 0.67

$$-\frac{1}{3b\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -1/3*1/(b*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.03, size = 18, normalized size = 0.67

$$-\frac{1}{3b\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -1/3*1/(b*((a + b*x)^2)^(3/2))
```

fricas [A] time = 0.43, size = 35, normalized size = 1.30

$$-\frac{1}{3\left(b^4x^3+3\,ab^3x^2+3\,a^2b^2x+a^3b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
[Out] -1/3/(b^4*x^3 + 3*a*b^3*x^2 + 3*a^2*b^2*x + a^3*b)
```

giac [A] time = 0.20, size = 23, normalized size = 0.85

$$-\frac{1}{3\left(a^2+\left(bx^2+2\,ax\right)b\right)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
[Out] -1/3/((a^2 + (b*x^2 + 2*a*x)*b)^(3/2)*b)
```

maple [A] time = 0.05, size = 22, normalized size = 0.81

$$-\frac{(bx+a)^2}{3\left((bx+a)^2\right)^{\frac{5}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
[Out] -1/3*(b*x+a)^2/b/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.59, size = 23, normalized size = 0.85

$$-\frac{1}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
[Out] -1/3/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b)
```

mupad [B] time = 2.09, size = 30, normalized size = 1.11

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,b\,(a+b\,x)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] -(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)/(3*b*(a + b*x)^4)
```

sympy [A] time = 1.57, size = 97, normalized size = 3.59

$$\begin{cases} -\frac{1}{3a^2b\sqrt{a^2+2abx+b^2x^2}+6ab^2x\sqrt{a^2+2abx+b^2x^2}+3b^3x^2\sqrt{a^2+2abx+b^2x^2}} & \text{for } b\neq 0 \\ \frac{ax}{\left(a^2\right)^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Piecewise((-1/(3*a**2*b*sqrt(a**2 + 2*a*b*x + b**2*x**2) + 6*a*b**2*x*sqrt(
a**2 + 2*a*b*x + b**2*x**2) + 3*b**3*x**2*sqrt(a**2 + 2*a*b*x + b**2*x**2))
, Ne(b, 0)), (a*x/(a**2)**(5/2), True))
```

3.1814 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}} \, dx$

Optimal. Leaf size=210

$$-\frac{e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{e^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{}{2(a+bx)\sqrt{a^2}}$$

Rubi [A] time = 0.14, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{e^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{e^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{e}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{1}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -(e^2/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - 1/(3*(b*d - a*e)*(a
+ b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + e/(2*(b*d - a*e)^2*(a + b*x)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x)*Log[a + b*x])/((b*d - a*e)^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(a + b*x)*Log[d + e*x])/((b*d - a*e)^4*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{b}{(bd-ae)(a+bx)^4}-\frac{be}{(bd-ae)^2(a+bx)^3}+\frac{be^2}{(bd-ae)^3(a+bx)^2}-\frac{be^3}{(bd-ae)^4(a+b}\right.}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{e^2}{(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{1}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x}}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 116, normalized size = 0.55

$$\frac{-(bd-ae)\left(11a^2e^2+abe(15ex-7d)+b^2\left(2d^2-3dex+6e^2x^2\right)\right)+6e^3(a+bx)^3\log(d+ex)-6e^3(a+bx)^3\log(a+bx)}{6\left((a+bx)^2\right)^{3/2}(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-((b*d - a*e)*(11*a^2*e^2 + a*b*e*(-7*d + 15*e*x) + b^2*(2*d^2 - 3*d*e*x +
 6*e^2*x^2))) - 6*e^3*(a + b*x)^3*Log[a + b*x] + 6*e^3*(a + b*x)^3*Log[d +
e*x])/(6*(b*d - a*e)^4*((a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [B] time = 20.15, size = 7693, normalized size = 36.63

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.45, size = 425, normalized size = 2.02

$$-\frac{2\,b^3d^3-9\,ab^2d^2e+18\,a^2bde^2-11\,a^3e^3+6\left(b^3de^2-ab^2e^3\right)x^2-3\left(b^3d^2e-6\,ab^2de^2+5\,a^2be^3\right)x+6\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\log\left(bx+a\right)-6\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\log\left(ex+d\right)}{6\left(a^3b^4d^4-4\,a^4b^3d^3e+6\,a^5b^2d^2e^2-4\,a^6bde^3+a^7e^4+\left(b^7d^4-4\,ab^6d^3e+6\,a^2b^5d^2e^2-4\,a^3b^4de^3+a^4b^3e^4\right)x^3+3\left(ab^6d^4-4\,a^2b^5d^3e+6\,a^3b^4d^2e^2-4\,a^4b^3de^3+a^5b^2e^4\right)x^2+3\left(a^2b^5d^4-4\,a^3b^4d^3e+6\,a^4b^3d^2e^2-4\,a^5b^2de^3+a^6be^4\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/6*(2*b^3*d^3 - 9*a*b^2*d^2*e + 18*a^2*b*d*e^2 - 11*a^3*e^3 + 6*(b^3*d*e^
2 - a*b^2*e^3)*x^2 - 3*(b^3*d^2*e - 6*a*b^2*d*e^2 + 5*a^2*b*e^3)*x + 6*(b^3
*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*log(b*x + a) - 6*(b^3
*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*log(e*x + d))/(a^3*b^
4*d^4 - 4*a^4*b^3*d^3*e + 6*a^5*b^2*d^2*e^2 - 4*a^6*b*d*e^3 + a^7*e^4 + (b^
7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*
x^3 + 3*(a*b^6*d^4 - 4*a^2*b^5*d^3*e + 6*a^3*b^4*d^2*e^2 - 4*a^4*b^3*d*e^3
+ a^5*b^2*e^4)*x^2 + 3*(a^2*b^5*d^4 - 4*a^3*b^4*d^3*e + 6*a^4*b^3*d^2*e^2 -
 4*a^5*b^2*d*e^3 + a^6*b*e^4)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)), x)
```

maple [A] time = 0.06, size = 251, normalized size = 1.20

$$-\frac{\left(6b^3e^3x^3\ln\left(bx+a\right)-6b^3e^3x^3\ln\left(ex+d\right)+18a\,b^2e^3x^2\ln\left(bx+a\right)-18a\,b^2e^3x^2\ln\left(ex+d\right)+18a^2b\,e^3x\ln\left(bx+a\right)-18a^2b\,e^3x\ln\left(ex+d\right)-6a\,b^2e^3x^2+6b^3d\,e^2x^2+6a^3e^3\ln\left(bx+a\right)-6a^3e^3\ln\left(ex+d\right)-15a^2b\,e^3x+18a\,b^2d\,e^2x-3b^3d^2ex-11a^3e^3+18a^2bd\,e^2-9a\,b^2d^2e+2b^3d^3\right)\left(bx+a\right)^2}{6\left(ae-bd\right)^4\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/6*(6*b^3*e^3*x^3*ln(b*x+a)-6*b^3*e^3*x^3*ln(e*x+d)+18*a*b^2*e^3*x^2*ln(b
*x+a)-18*a*b^2*e^3*x^2*ln(e*x+d)+18*a^2*b*e^3*x*ln(b*x+a)-18*ln(e*x+d)*x*a^
2*b*e^3-6*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+6*a^3*e^3*ln(b*x+a)-6*ln(e*x+d)*a^3
*e^3-15*a^2*b*e^3*x+18*a*b^2*d*e^2*x-3*b^3*d^2*e*x-11*a^3*e^3+18*a^2*b*d*e^
2-9*a*b^2*d^2*e+2*b^3*d^3)*(b*x+a)^2/(a*e-b*d)^4/((b*x+a)^2)^(5/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{\left(d+e\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{\left(d + ex\right) \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)*((a + b*x)**2)**(5/2)), x)
```

3.1815 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=260

$$-\frac{e^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^4}-\frac{4be^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{4be^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{}{\sqrt{a^2+2a}}$$

Rubi [A] time = 0.19, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 44\}$

$$-\frac{e^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^4}-\frac{3be^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{4be^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{4be^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{be}{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{b}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-3*b*e^2)/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - b/(3*(b*d - a*e)
^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b*e)/((b*d - a*e)^3*(a + b
*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x))/((b*d - a*e)^4*(d + e*
x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (4*b*e^3*(a + b*x)*Log[a + b*x])/((b*d
- a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (4*b*e^3*(a + b*x)*Log[d + e*x])/
((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \left(\frac{b^2}{(bd-ae)^2(a+bx)^4} - \frac{2b^2e}{(bd-ae)^3(a+bx)^3} + \frac{3b^2e^2}{(bd-ae)^4(a+bx)^2} - \frac{4b^2e^3}{(bd-ae)^5(a-}\right.}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{3be^2}{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{b}{3(bd-ae)^2(a+bx)^2\sqrt{a^2+2abx+b}}$$

Mathematica [A] time = 0.10, size = 144, normalized size = 0.55

$$\frac{\frac{3e^3(a+bx)^3(ae-bd)}{d+ex}+12be^3(a+bx)^3\log(d+ex)-9be^2(a+bx)^2(bd-ae)+3be(a+bx)(bd-ae)^2-b(bd-ae)^3-12be^3(a+bx)^3\log(a+bx)}{3\left((a+bx)^2\right)^{3/2}(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-(b*(b*d - a*e)^3) + 3*b*e*(b*d - a*e)^2*(a + b*x) - 9*b*e^2*(b*d - a*e)*(
a + b*x)^2 + (3*e^3*(-(b*d) + a*e)*(a + b*x)^3)/(d + e*x) - 12*b*e^3*(a + b
*x)^3*Log[a + b*x] + 12*b*e^3*(a + b*x)^3*Log[d + e*x])/(3*(b*d - a*e)^5*((
a + b*x)^2)^(3/2))
```

IntegrateAlgebraic [F] time = 180.00, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),
x]
```

```
[Out] $Aborted
```

fricas [B] time = 0.44, size = 751, normalized size = 2.89

$$-\frac{b^4d^4-6ab^3d^3e+18a^2b^2d^2e^2-10a^3bde^3-3a^4e^4+12\left(b^4de^3-ab^3e^4\right)x^3+6\left(b^4d^2e^2+4ab^3de^3-5a^2b^2e^4\right)x^2-2\left(b^4d^3e-9ab^3d^2e^2-3a^2b^2de^3+11a^3be^4\right)x+12\left(b^4e^4x^4+a^3bde^3+\left(b^4de^3+3ab^3e^4\right)x^3+3\left(ab^3de^3+a^2b^2e^4\right)x^2+\left(3a^2b^2de^3+a^3be^4\right)x\right)\log(bx+a)-12\left(b^4e^4x^4+a^3bde^3+\left(b^4de^3+3ab^3e^4\right)x^3+3\left(ab^3de^3+a^2b^2e^4\right)x^2+\left(3a^2b^2de^3+a^3be^4\right)x\right)\log(ex+d)}{3\left(a^3b^5d^6-5a^4b^4d^5e+10a^5b^3d^4e^2-10a^6b^2d^3e^3+5a^7bd^2e^4-a^8de^5+\left(b^8d^5e-5ab^7d^4e^2+10a^2b^6d^3e^3-10a^3b^5d^2e^4+5a^4b^4de^5-a^5b^3e^6\right)x^4+\left(b^8d^6-2ab^7d^5e-5a^2b^6d^4e^2+20a^3b^5d^3e^3-25a^4b^4d^2e^4+14a^5b^3de^5-3a^6b^2e^6\right)x^3+3\left(ab^7d^6-4a^2b^6d^5e+5a^3b^5d^4e^2-5a^5b^3d^2e^4+4a^6b^2de^5-a^7be^6\right)x^2+\left(3a^2b^6d^6-14a^3b^5d^5e+25a^4b^4d^4e^2-20a^5b^3d^3e^3+5a^6b^2d^2e^4+2a^7bde^5-a^8e^6\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/3*(b^4*d^4 - 6*a*b^3*d^3*e + 18*a^2*b^2*d^2*e^2 - 10*a^3*b*d*e^3 - 3*a^4
*e^4 + 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 + 4*a*b^3*d*e^3 - 5*
a^2*b^2*e^4)*x^2 - 2*(b^4*d^3*e - 9*a*b^3*d^2*e^2 - 3*a^2*b^2*d*e^3 + 11*a^
3*b*e^4)*x + 12*(b^4*e^4*x^4 + a^3*b*d*e^3 + (b^4*d*e^3 + 3*a*b^3*e^4)*x^3
+ 3*(a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + (3*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*log(
b*x + a) - 12*(b^4*e^4*x^4 + a^3*b*d*e^3 + (b^4*d*e^3 + 3*a*b^3*e^4)*x^3 +
3*(a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + (3*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*log(e*
x + d))/(a^3*b^5*d^6 - 5*a^4*b^4*d^5*e + 10*a^5*b^3*d^4*e^2 - 10*a^6*b^2*d^
3*e^3 + 5*a^7*b*d^2*e^4 - a^8*d*e^5 + (b^8*d^5*e - 5*a*b^7*d^4*e^2 + 10*a^2
*b^6*d^3*e^3 - 10*a^3*b^5*d^2*e^4 + 5*a^4*b^4*d*e^5 - a^5*b^3*e^6)*x^4 + (b
^8*d^6 - 2*a*b^7*d^5*e - 5*a^2*b^6*d^4*e^2 + 20*a^3*b^5*d^3*e^3 - 25*a^4*b^
```

```
4*d^2*e^4 + 14*a^5*b^3*d*e^5 - 3*a^6*b^2*e^6)*x^3 + 3*(a*b^7*d^6 - 4*a^2*b^
6*d^5*e + 5*a^3*b^5*d^4*e^2 - 5*a^5*b^3*d^2*e^4 + 4*a^6*b^2*d*e^5 - a^7*b*e
^6)*x^2 + (3*a^2*b^6*d^6 - 14*a^3*b^5*d^5*e + 25*a^4*b^4*d^4*e^2 - 20*a^5*b
^3*d^3*e^3 + 5*a^6*b^2*d^2*e^4 + 2*a^7*b*d*e^5 - a^8*e^6)*x)
```

giac [B] time = 0.51, size = 774, normalized size = 2.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 4*b*e^4*log(abs(-b + b*d/(x*e + d) - a*e/(x*e + d)))/(b^5*d^5*e*sgn(-b*e/(x
*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 5*a*b^4*d^4*e^2*sgn(-b*e
/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 10*a^2*b^3*d^3*e^3*sg
n(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 10*a^3*b^2*d^2*
e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 5*a^4*b*d
*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - a^5*e^6*
sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + e^7/((b^4*d^
4*e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 4*a*b^3
*d^3*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 6*a^
2*b^2*d^2*e^6*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) -
 4*a^3*b*d*e^7*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)
+ a^4*e^8*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2))*(x*e
 + d)) + 1/3*(13*b^4*e^3 - 30*(b^4*d*e^4 - a*b^3*e^5)*e^(-1)/(x*e + d) + 18
*(b^4*d^2*e^5 - 2*a*b^3*d*e^6 + a^2*b^2*e^7)*e^(-2)/(x*e + d)^2)/((b*d - a*
e)^5*(b - b*d/(x*e + d) + a*e/(x*e + d))^3*sgn(-b*e/(x*e + d) + b*d*e/(x*e
+ d)^2 - a*e^2/(x*e + d)^2))
```

maple [B] time = 0.07, size = 483, normalized size = 1.86

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/3*(36*a^2*b^2*d*e^3*x*ln(b*x+a)+36*a*b^3*d*e^3*x^2*ln(b*x+a)-6*a*b^3*d^3*
e+18*a^2*b^2*d^2*e^2-36*a*b^3*d*e^3*x^2*ln(e*x+d)-36*a^2*b^2*d*e^3*x*ln(e*x
+d)-12*b^4*e^4*x^4*ln(e*x+d)+b^4*d^4-3*a^4*e^4+6*b^4*d^2*e^2*x^2-22*a^3*b*e
^4*x-2*b^4*d^3*e*x-30*a^2*b^2*e^4*x^2-12*a*b^3*e^4*x^3+12*b^4*d*e^3*x^3-10*
a^3*b*d*e^3+6*a^2*b^2*d*e^3*x+18*a*b^3*d^2*e^2*x-12*a^3*b*d*e^3*ln(e*x+d)+3
6*a*b^3*e^4*x^3*ln(b*x+a)+24*a*b^3*d*e^3*x^2+12*ln(b*x+a)*x^4*b^4*e^4+12*a^
3*b*e^4*x*ln(b*x+a)-12*a^3*b*e^4*x*ln(e*x+d)+12*a^3*b*d*e^3*ln(b*x+a)-12*b^
4*d*e^3*x^3*ln(e*x+d)+12*b^4*d*e^3*x^3*ln(b*x+a)+36*a^2*b^2*e^4*x^2*ln(b*x+
a)-36*a^2*b^2*e^4*x^2*ln(e*x+d)-36*a*b^3*e^4*x^3*ln(e*x+d))*(b*x+a)^2/(e*x+
d)/(a*e-b*d)^5/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
[Out] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1816 $\int \frac{a+bx}{(d+ex)^3 (a^2+2abx+b^2x^2)^{5/2}} \, dx$

Optimal. Leaf size=323

$$-\frac{4be^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^3(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^4}-\frac{10b^2e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+$$

Rubi [A] time = 0.24, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{4be^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^3(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^4}-\frac{6b^2e^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{10b^2e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+\frac{10b^2e^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+\frac{3b^2e}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{b^2}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-6*b^2*e^2)/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - b^2/(3*(b*d -
a*e)^3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*b^2*e)/(2*(b*d - a*e
)^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x))/(2*(b*d - a*
e)^4*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (4*b*e^3*(a + b*x))/((b*d
 - a*e)^5*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (10*b^2*e^3*(a + b*x)*
Log[a + b*x])/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (10*b^2*e^3*(
a + b*x)*Log[d + e*x])/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^3}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \left(\frac{b^3}{(bd-ae)^3(a+bx)^4} - \frac{3b^3e}{(bd-ae)^4(a+bx)^3} + \frac{6b^3e^2}{(bd-ae)^5(a+bx)^2} - \frac{10b^3e^3}{(bd-ae)^6(a-}\right.}{b\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{6b^2e^2}{(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}} - \frac{b^2}{3(bd-ae)^3(a+bx)^2\sqrt{a^2+2abx+b}}$$

Mathematica [A] time = 0.12, size = 184, normalized size = 0.57

$$\frac{60b^2e^3(a+bx)^3\log(d+ex) - 36b^2e^2(a+bx)^2(bd-ae) + 9b^2e(a+bx)(bd-ae)^2 - 2b^2(bd-ae)^3 - 60b^2e^3(a+bx)^3\log(a+bx) - \frac{3e^3(a+bx)^3(bd-ae)^2}{(d+ex)^2} - \frac{24be^3(a+bx)^3(bd-ae)}{d+ex}}{6\left((a+bx)^2\right)^{3/2}(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*b^2*(b*d - a*e)^3 + 9*b^2*e*(b*d - a*e)^2*(a + b*x) - 36*b^2*e^2*(b*d -
 a*e)*(a + b*x)^2 - (3*e^3*(b*d - a*e)^2*(a + b*x)^3)/(d + e*x)^2 - (24*b*e
^3*(b*d - a*e)*(a + b*x)^3)/(d + e*x) - 60*b^2*e^3*(a + b*x)^3*Log[a + b*x]
 + 60*b^2*e^3*(a + b*x)^3*Log[d + e*x])/(6*(b*d - a*e)^6*((a + b*x)^2)^(3/2
))
```

IntegrateAlgebraic [B] time = 178.09, size = 9902, normalized size = 30.66

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),
x]
```

```
[Out] Result too large to show
```

fricas [B] time = 0.48, size = 1151, normalized size = 3.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/6*(2*b^5*d^5 - 15*a*b^4*d^4*e + 60*a^2*b^3*d^3*e^2 - 20*a^3*b^2*d^2*e^3
- 30*a^4*b*d*e^4 + 3*a^5*e^5 + 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 + 30*(3*b^5*d
^2*e^3 + 2*a*b^4*d*e^4 - 5*a^2*b^3*e^5)*x^3 + 10*(2*b^5*d^3*e^2 + 21*a*b^4*
d^2*e^3 - 12*a^2*b^3*d*e^4 - 11*a^3*b^2*e^5)*x^2 - 5*(b^5*d^4*e - 12*a*b^4*
d^3*e^2 - 24*a^2*b^3*d^2*e^3 + 32*a^3*b^2*d*e^4 + 3*a^4*b*e^5)*x + 60*(b^5*
e^5*x^5 + a^3*b^2*d^2*e^3 + (2*b^5*d*e^4 + 3*a*b^4*e^5)*x^4 + (b^5*d^2*e^3
+ 6*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + (3*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 +
 a^3*b^2*e^5)*x^2 + (3*a^2*b^3*d^2*e^3 + 2*a^3*b^2*d*e^4)*x)*log(b*x + a) -
 60*(b^5*e^5*x^5 + a^3*b^2*d^2*e^3 + (2*b^5*d*e^4 + 3*a*b^4*e^5)*x^4 + (b^5
*d^2*e^3 + 6*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + (3*a*b^4*d^2*e^3 + 6*a^2*b^
```

```
3*d*e^4 + a^3*b^2*e^5)*x^2 + (3*a^2*b^3*d^2*e^3 + 2*a^3*b^2*d*e^4)*x)*log(e
*x + d))/(a^3*b^6*d^8 - 6*a^4*b^5*d^7*e + 15*a^5*b^4*d^6*e^2 - 20*a^6*b^3*d
^5*e^3 + 15*a^7*b^2*d^4*e^4 - 6*a^8*b*d^3*e^5 + a^9*d^2*e^6 + (b^9*d^6*e^2
- 6*a*b^8*d^5*e^3 + 15*a^2*b^7*d^4*e^4 - 20*a^3*b^6*d^3*e^5 + 15*a^4*b^5*d^
2*e^6 - 6*a^5*b^4*d*e^7 + a^6*b^3*e^8)*x^5 + (2*b^9*d^7*e - 9*a*b^8*d^6*e^2
 + 12*a^2*b^7*d^5*e^3 + 5*a^3*b^6*d^4*e^4 - 30*a^4*b^5*d^3*e^5 + 33*a^5*b^4
*d^2*e^6 - 16*a^6*b^3*d*e^7 + 3*a^7*b^2*e^8)*x^4 + (b^9*d^8 - 18*a^2*b^7*d^
6*e^2 + 52*a^3*b^6*d^5*e^3 - 60*a^4*b^5*d^4*e^4 + 24*a^5*b^4*d^3*e^5 + 10*a
^6*b^3*d^2*e^6 - 12*a^7*b^2*d*e^7 + 3*a^8*b*e^8)*x^3 + (3*a*b^8*d^8 - 12*a^
2*b^7*d^7*e + 10*a^3*b^6*d^6*e^2 + 24*a^4*b^5*d^5*e^3 - 60*a^5*b^4*d^4*e^4
+ 52*a^6*b^3*d^3*e^5 - 18*a^7*b^2*d^2*e^6 + a^9*e^8)*x^2 + (3*a^2*b^7*d^8 -
 16*a^3*b^6*d^7*e + 33*a^4*b^5*d^6*e^2 - 30*a^5*b^4*d^5*e^3 + 5*a^6*b^3*d^4
*e^4 + 12*a^7*b^2*d^3*e^5 - 9*a^8*b*d^2*e^6 + 2*a^9*d*e^7)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^3), x)
```

maple [B] time = 0.08, size = 753, normalized size = 2.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/6*(-30*a^4*b*d*e^4-20*a^3*b^2*d^2*e^3+60*a^2*b^3*d^3*e^2-15*a*b^4*d^4*e+
180*a*b^4*d^2*e^3*x^2*ln(b*x+a)+120*a^3*b^2*d*e^4*x*ln(b*x+a)+360*a^2*b^3*d
*e^4*x^2*ln(b*x+a)+360*a*b^4*d*e^4*x^3*ln(b*x+a)+180*a^2*b^3*d^2*e^3*x*ln(b
*x+a)+3*a^5*e^5+90*x^3*b^5*d^2*e^3+20*b^5*d^3*e^2*x^2-110*a^3*b^2*e^5*x^2-1
50*a^2*b^3*e^5*x^3-60*a*b^4*e^5*x^4+60*b^5*d*e^4*x^4-5*b^5*d^4*e*x-15*a^4*b
*e^5*x+2*b^5*d^5-120*ln(e*x+d)*x*a^3*b^2*d*e^4-180*ln(e*x+d)*x*a^2*b^3*d^2*
e^3-360*ln(e*x+d)*x^2*a^2*b^3*d*e^4-180*ln(e*x+d)*x^2*a*b^4*d^2*e^3-360*ln(
e*x+d)*x^3*a*b^4*d*e^4+120*a^2*b^3*d^2*e^3*x+60*a*b^4*d^3*e^2*x+60*ln(b*x+a
)*x^5*b^5*e^5-60*ln(e*x+d)*x^5*b^5*e^5-180*ln(e*x+d)*x^3*a^2*b^3*e^5-60*ln(
e*x+d)*x^3*b^5*d^2*e^3-60*ln(e*x+d)*x^2*a^3*b^2*e^5-60*ln(e*x+d)*a^3*b^2*d^
2*e^3+180*ln(b*x+a)*x^4*a*b^4*e^5+120*ln(b*x+a)*x^4*b^5*d*e^4-180*ln(e*x+d)
*x^4*a*b^4*e^5-120*ln(e*x+d)*x^4*b^5*d*e^4-120*a^2*b^3*d*e^4*x^2-160*a^3*b^
2*d*e^4*x+60*a*b^4*d*e^4*x^3+180*a^2*b^3*e^5*x^3*ln(b*x+a)+60*b^5*d^2*e^3*x
^3*ln(b*x+a)+60*a^3*b^2*e^5*x^2*ln(b*x+a)+60*a^3*b^2*d^2*e^3*ln(b*x+a)+210*
a*b^4*d^2*e^3*x^2)*(b*x+a)^2/(e*x+d)^2/(a*e-b*d)^6/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+bx}{(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1817 $\int (a+bx)(d+ex)^{7/2} \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=100

$$-\frac{6b^2(d+ex)^{13/2}(bd-ae)}{13e^4}+\frac{6b(d+ex)^{11/2}(bd-ae)^2}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^3}{9e^4}+\frac{2b^3(d+ex)^{15/2}}{15e^4}$$

Rubi [A] time = 0.04, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{6b^2(d+ex)^{13/2}(bd-ae)}{13e^4}+\frac{6b(d+ex)^{11/2}(bd-ae)^2}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^3}{9e^4}+\frac{2b^3(d+ex)^{15/2}}{15e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(9/2))/(9*e^4) + (6*b*(b*d - a*e)^2*(d + e*x)^(
11/2))/(11*e^4) - (6*b^2*(b*d - a*e)*(d + e*x)^(13/2))/(13*e^4) + (2*b^3*(d
 + e*x)^(15/2))/(15*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^3(d+ex)^{7/2}\, dx \\
&= \int \left(\frac{(-bd+ae)^3(d+ex)^{7/2}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{9/2}}{e^3}-\frac{3b^2(bd-ae}{e}\right. \\
&= -\frac{2(bd-ae)^3(d+ex)^{9/2}}{9e^4}+\frac{6b(bd-ae)^2(d+ex)^{11/2}}{11e^4}-\frac{6b^2(bd-ae)(}{13e}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{9/2}\left(-1485b^2(d+ex)^2(bd-ae)+1755b(d+ex)(bd-ae)^2-715(bd-ae)^3+429b^3(d+ex)^3\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*(b*d - a*e)^3 + 1755*b*(b*d - a*e)^2*(d + e*x) - 1
485*b^2*(b*d - a*e)*(d + e*x)^2 + 429*b^3*(d + e*x)^3))/(6435*e^4)
```

IntegrateAlgebraic [A] time = 0.07, size = 132, normalized size = 1.32

$$\frac{2(d+ex)^{9/2}\left(715a^3e^3+1755a^2be^2(d+ex)-2145a^2bde^2+2145ab^2d^2e+1485ab^2e(d+ex)^2-3510ab^2de(d+ex)-715b^3d^3+1755b^3d^2(d+ex)+429b^3(d+ex)^3-1485b^3d(d+ex)^2\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*b^3*d^3 + 2145*a*b^2*d^2*e - 2145*a^2*b*d*e^2 + 71
5*a^3*e^3 + 1755*b^3*d^2*(d + e*x) - 3510*a*b^2*d*e*(d + e*x) + 1755*a^2*b*
e^2*(d + e*x) - 1485*b^3*d*(d + e*x)^2 + 1485*a*b^2*e*(d + e*x)^2 + 429*b^3
*(d + e*x)^3))/(6435*e^4)
```

fricas [B] time = 0.42, size = 320, normalized size = 3.20

$$\frac{2\left(429\,b^{3}e^{7}x^{7}-16\,b^{3}d^{7}+120\,ab^{2}d^{6}e-390\,a^{2}bd^{5}e^{2}+715\,a^{3}d^{4}e^{3}+33\left(46\,b^{3}de^{6}+45\,ab^{2}e^{7}\right)x^{6}+9\left(206\,b^{3}d^{2}e^{5}+600\,ab^{2}de^{6}+195\,a^{2}be^{7}\right)x^{5}+5\left(160\,b^{3}d^{3}e^{4}+1374\,ab^{2}d^{2}e^{5}+1326\,a^{2}bde^{6}+143\,a^{3}e^{7}\right)x^{4}+5\left(b^{3}d^{4}e^{3}+636\,ab^{2}d^{3}e^{4}+1794\,a^{2}bd^{2}e^{5}+572\,a^{3}de^{6}\right)x^{3}-3\left(2\,b^{3}d^{5}e^{2}-15\,ab^{2}d^{4}e^{3}-1560\,a^{2}bd^{3}e^{4}-1430\,a^{3}d^{2}e^{5}\right)x^{2}+\left(8\,b^{3}d^{6}e-60\,ab^{2}d^{5}e^{2}+195\,a^{2}bd^{4}e^{3}+2860\,a^{3}d^{3}e^{4}\right)x\right)\sqrt{ex+d}}{6435\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/6435*(429*b^3*e^7*x^7 - 16*b^3*d^7 + 120*a*b^2*d^6*e - 390*a^2*b*d^5*e^2
+ 715*a^3*d^4*e^3 + 33*(46*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 9*(206*b^3*d^2*e
^5 + 600*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 5*(160*b^3*d^3*e^4 + 1374*a*b^2
*d^2*e^5 + 1326*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 + 5*(b^3*d^4*e^3 + 636*a*b^2
*d^3*e^4 + 1794*a^2*b*d^2*e^5 + 572*a^3*d*e^6)*x^3 - 3*(2*b^3*d^5*e^2 - 15*
a*b^2*d^4*e^3 - 1560*a^2*b*d^3*e^4 - 1430*a^3*d^2*e^5)*x^2 + (8*b^3*d^6*e -
 60*a*b^2*d^5*e^2 + 195*a^2*b*d^4*e^3 + 2860*a^3*d^3*e^4)*x)*sqrt(e*x + d)/
e^4
```

giac [B] time = 0.26, size = 1270, normalized size = 12.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/45045*(45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d^4*e^(-1) + 900
9*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d
^4*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^3*d^4*e^(-3) + 36036*(3*(x*e + d)^(5/2)
- 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d^3*e^(-1) + 15444*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*a*b^2*d^3*e^(-2) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*b^3*d^3*e^(-3) + 45045*sqrt(x*e + d)*a^3*d^4 + 60060*((x*e + d)^(3/2
) - 3*sqrt(x*e + d)*d)*a^3*d^3 + 23166*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5
/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b*d^2*e^(-1) + 2
574*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^2*d^2*e^(-2) + 390*(6
3*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386
*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^
3*d^2*e^(-3) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^3*d^2 + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^
2*b*d*e^(-1) + 780*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*a*b^2*d*e^(-2) + 60*(231*(x*e + d)^(13/2) - 1638*(x*e +
d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x
*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^3*
d*e^(-3) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*d + 195*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b*e^(-1) + 45*(231*(x*e + d
)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
```

```
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*
sqrt(x*e + d)*d^6)*a*b^2*e^(-2) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^
(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(
x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6
- 6435*sqrt(x*e + d)*d^7)*b^3*e^(-3) + 143*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.16

$$\frac{2 \left(e x +d \right)^{\frac{9}{2}} \left(429 b^{3} e^{3} x^{3}+1485 a \,b^{2} e^{3} x^{2}-198 b^{3} d \,e^{2} x^{2}+1755 a^{2} b \,e^{3} x -540 a \,b^{2} d \,e^{2} x +72 b^{3} d^{2} e x +715 a^{3} e^{3}-390 a^{2} b d \,e^{2}+120 a \,b^{2} d^{2} e -16 b^{3} d^{3}\right)}{6435 e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/6435*(e*x+d)^(9/2)*(429*b^3*e^3*x^3+1485*a*b^2*e^3*x^2-198*b^3*d*e^2*x^2+
1755*a^2*b*e^3*x-540*a*b^2*d*e^2*x+72*b^3*d^2*e*x+715*a^3*e^3-390*a^2*b*d*e
^2+120*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.60, size = 118, normalized size = 1.18

$$\frac{2 \left(429 \, {\left(e x + d\right)}^{\frac{15}{2}} b^{3} - 1485 \, {\left(b^{3} d - a b^{2} e\right)} {\left(e x + d\right)}^{\frac{13}{2}} + 1755 \, {\left(b^{3} d^{2} - 2 \, a b^{2} d e + a^{2} b e^{2}\right)} {\left(e x + d\right)}^{\frac{11}{2}} - 715 \, {\left(b^{3} d^{3} - 3 \, a b^{2} d^{2} e + 3 \, a^{2} b d e^{2} - a^{3} e^{3}\right)} {\left(e x + d\right)}^{\frac{9}{2}}\right)}}{6435 \, e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*b^3 - 1485*(b^3*d - a*b^2*e)*(e*x + d)^(13/2)
+ 1755*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(11/2) - 715*(b^3*d^3
- 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(9/2))/e^4
```

mupad [B] time = 0.08, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{15/2}}{15\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{13/2}}{13\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(15/2))/(15*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(13/2)
)/(13*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(9/2))/(9*e^4) + (6*b*(a*e - b*d)^2
*(d + e*x)^(11/2))/(11*e^4)
```

sympy [A] time = 9.58, size = 654, normalized size = 6.54

$$\begin{cases} \frac{2 a^{3} d^{4} \sqrt{d + e x}}{9 e} + \frac{8 a^{3} d^{3} x \sqrt{d + e x}}{9} + \frac{4 a^{3} d^{2} e x^{2} \sqrt{d + e x}}{3} + \frac{8 a^{3} d e^{2} x^{3} \sqrt{d + e x}}{9} + \frac{2 a^{3} e^{3} x^{4} \sqrt{d + e x}}{9} - \frac{4 a^{2} b d^{5} \sqrt{d + e x}}{33 e^{2}} + \frac{2 a^{2} b d^{4} x \sqrt{d + e x}}{33 e} + \frac{16 a^{2} b d^{3} x^{2} \sqrt{d + e x}}{11} + \frac{92 a^{2} b d^{2} e x^{3} \sqrt{d + e x}}{33} + \frac{68 a^{2} b d e^{2} x^{4} \sqrt{d + e x}}{33} + \frac{6 a^{2} b e^{3} x^{5} \sqrt{d + e x}}{11} + \frac{16 a b^{2} d^{6} \sqrt{d + e x}}{429 e^{3}} - \frac{8 a b^{2} d^{5} x \sqrt{d + e x}}{429 e^{2}} + \frac{2 a b^{2} d^{4} x^{2} \sqrt{d + e x}}{143 e} + \frac{424 a b^{2} d^{3} x^{3} \sqrt{d + e x}}{429} + \frac{916 a b^{2} d^{2} e x^{4} \sqrt{d + e x}}{429} + \frac{240 a b^{2} d e^{2} x^{5} \sqrt{d + e x}}{143} + \frac{6 a b^{2} e^{3} x^{6} \sqrt{d + e x}}{13} - \frac{32 b^{3} d^{7} \sqrt{d + e x}}{6435 e^{4}} + \frac{16 b^{3} d^{6} x \sqrt{d + e x}}{6435 e^{3}} - \frac{4 b^{3} d^{5} x^{2} \sqrt{d + e x}}{2145 e^{2}} + \frac{2 b^{3} d^{4} x^{3} \sqrt{d + e x}}{1287 e} + \frac{320 b^{3} d^{3} x^{4} \sqrt{d + e x}}{1287} + \frac{412 b^{3} d^{2} e x^{5} \sqrt{d + e x}}{715} + \frac{92 b^{3} d e^{2} x^{6} \sqrt{d + e x}}{195} + \frac{2 b^{3} e^{3} x^{7} \sqrt{d + e x}}{15} & \text{for}\: e \neq 0 \\d^{\frac{7}{2}} \left(a^{3} x + \frac{3 a^{2} b x^{2}}{2} + a b^{2} x^{3} + \frac{b^{3} x^{4}}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*a**3*d**4*sqrt(d + e*x)/(9*e) + 8*a**3*d**3*x*sqrt(d + e*x)/9
+ 4*a**3*d**2*e*x**2*sqrt(d + e*x)/3 + 8*a**3*d*e**2*x**3*sqrt(d + e*x)/9 +
2*a**3*e**3*x**4*sqrt(d + e*x)/9 - 4*a**2*b*d**5*sqrt(d + e*x)/(33*e**2) +
2*a**2*b*d**4*x*sqrt(d + e*x)/(33*e) + 16*a**2*b*d**3*x**2*sqrt(d + e*x)/1
1 + 92*a**2*b*d**2*e*x**3*sqrt(d + e*x)/33 + 68*a**2*b*d*e**2*x**4*sqrt(d +
e*x)/33 + 6*a**2*b*e**3*x**5*sqrt(d + e*x)/11 + 16*a*b**2*d**6*sqrt(d + e*
x)/(429*e**3) - 8*a*b**2*d**5*x*sqrt(d + e*x)/(429*e**2) + 2*a*b**2*d**4*x*
```

```
*2*sqrt(d + e*x)/(143*e) + 424*a*b**2*d**3*x**3*sqrt(d + e*x)/429 + 916*a*b
**2*d**2*e*x**4*sqrt(d + e*x)/429 + 240*a*b**2*d*e**2*x**5*sqrt(d + e*x)/14
3 + 6*a*b**2*e**3*x**6*sqrt(d + e*x)/13 - 32*b**3*d**7*sqrt(d + e*x)/(6435*
e**4) + 16*b**3*d**6*x*sqrt(d + e*x)/(6435*e**3) - 4*b**3*d**5*x**2*sqrt(d
+ e*x)/(2145*e**2) + 2*b**3*d**4*x**3*sqrt(d + e*x)/(1287*e) + 320*b**3*d**
3*x**4*sqrt(d + e*x)/1287 + 412*b**3*d**2*e*x**5*sqrt(d + e*x)/715 + 92*b**
3*d*e**2*x**6*sqrt(d + e*x)/195 + 2*b**3*e**3*x**7*sqrt(d + e*x)/15, Ne(e,
0)), (d**(7/2)*(a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4), True
))
```

3.1818 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(d+ex)^{11/2}(bd-ae)}{11e^4}+\frac{2b(d+ex)^{9/2}(bd-ae)^2}{3e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^3}{7e^4}+\frac{2b^3(d+ex)^{13/2}}{13e^4}$$

Rubi [A] time = 0.04, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{6b^2(d+ex)^{11/2}(bd-ae)}{11e^4}+\frac{2b(d+ex)^{9/2}(bd-ae)^2}{3e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^3}{7e^4}+\frac{2b^3(d+ex)^{13/2}}{13e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(7/2))/(7*e^4) + (2*b*(b*d - a*e)^2*(d + e*x)^(
9/2))/(3*e^4) - (6*b^2*(b*d - a*e)*(d + e*x)^(11/2))/(11*e^4) + (2*b^3*(d +
 e*x)^(13/2))/(13*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^{5/2}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{7/2}}{e^3}-\frac{3b^2(bd-ae}{e}\right.\\ &= -\frac{2(bd-ae)^3(d+ex)^{7/2}}{7e^4}+\frac{2b(bd-ae)^2(d+ex)^{9/2}}{3e^4}-\frac{6b^2(bd-ae)(d}{11e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{7/2}\left(-819b^2(d+ex)^2(bd-ae)+1001b(d+ex)(bd-ae)^2-429(bd-ae)^3+231b^3(d+ex)^3\right)}{3003e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-429*(b*d - a*e)^3 + 1001*b*(b*d - a*e)^2*(d + e*x) - 8
19*b^2*(b*d - a*e)*(d + e*x)^2 + 231*b^3*(d + e*x)^3))/(3003*e^4)
```

IntegrateAlgebraic [A] time = 0.07, size = 132, normalized size = 1.32

$$\frac{2(d+ex)^{7/2}\left(429a^3e^3+1001a^2be^2(d+ex)-1287a^2bde^2+1287ab^2d^2e+819ab^2e(d+ex)^2-2002ab^2de(d+ex)-429b^3d^3+1001b^3d^2(d+ex)+231b^3(d+ex)^3-819b^3d(d+ex)^2\right)}{3003e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-429*b^3*d^3 + 1287*a*b^2*d^2*e - 1287*a^2*b*d*e^2 + 42
9*a^3*e^3 + 1001*b^3*d^2*(d + e*x) - 2002*a*b^2*d*e*(d + e*x) + 1001*a^2*b*
e^2*(d + e*x) - 819*b^3*d*(d + e*x)^2 + 819*a*b^2*e*(d + e*x)^2 + 231*b^3*(
d + e*x)^3))/(3003*e^4)
```

fricas [B] time = 0.43, size = 268, normalized size = 2.68

$$\frac{2\left(231\,b^3e^6x^6-16\,b^3d^6+104\,ab^2d^5e-286\,a^2bd^4e^2+429\,a^3d^3e^3+63\left(9\,b^3de^5+13\,ab^2e^6\right)x^5+7\left(53\,b^3d^2e^4+299\,ab^2de^5+143\,a^2be^6\right)x^4+\left(5\,b^3d^3e^3+1469\,ab^2d^2e^4+2717\,a^2bde^5+429\,a^3e^6\right)x^3-3\left(2\,b^3d^4e^2-13\,ab^2d^3e^3-715\,a^2bd^2e^4-429\,a^3de^5\right)x^2+\left(8\,b^3d^5e-52\,ab^2d^4e^2+143\,a^2bd^3e^3+1287\,a^3d^2e^4\right)x\right)\sqrt{ex+d}}{3003\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/3003*(231*b^3*e^6*x^6 - 16*b^3*d^6 + 104*a*b^2*d^5*e - 286*a^2*b*d^4*e^2
+ 429*a^3*d^3*e^3 + 63*(9*b^3*d*e^5 + 13*a*b^2*e^6)*x^5 + 7*(53*b^3*d^2*e^4
 + 299*a*b^2*d*e^5 + 143*a^2*b*e^6)*x^4 + (5*b^3*d^3*e^3 + 1469*a*b^2*d^2*e
^4 + 2717*a^2*b*d*e^5 + 429*a^3*e^6)*x^3 - 3*(2*b^3*d^4*e^2 - 13*a*b^2*d^3*
e^3 - 715*a^2*b*d^2*e^4 - 429*a^3*d*e^5)*x^2 + (8*b^3*d^5*e - 52*a*b^2*d^4*
e^2 + 143*a^2*b*d^3*e^3 + 1287*a^3*d^2*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.22, size = 908, normalized size = 9.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/15015*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d^3*e^(-1) + 300
3*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d
^3*e^(-2) + 429*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^3*d^3*e^(-3) + 9009*(3*(x*e + d)^(5/2) -
10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d^2*e^(-1) + 3861*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*a*b^2*d^2*e^(-2) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*b^3*d^2*e^(-3) + 15015*sqrt(x*e + d)*a^3*d^3 + 15015*((x*e + d)^(3/2) -
 3*sqrt(x*e + d)*d)*a^3*d^2 + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*
d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b*d*e^(-1) + 429*(35
*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x
*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^2*d*e^(-2) + 65*(63*(x*e + d
)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)
^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*d*e^(-3)
 + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a
^3*d + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b*e^(-1) + 65*
(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 13
86*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*
a*b^2*e^(-2) + 5*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*
e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 60
06*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^3*e^(-3) + 429*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(231b^3e^3x^3+819a\,b^2e^3x^2-126b^3d\,e^2x^2+1001a^2b\,e^3x-364a\,b^2d\,e^2x+56b^3d^2ex+429a^3e^3-286a^2bd\,e^2+104a\,b^2d^2e-16b^3d^3\right)}{3003e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3003*(e*x+d)^(7/2)*(231*b^3*e^3*x^3+819*a*b^2*e^3*x^2-126*b^3*d*e^2*x^2+1
001*a^2*b*e^3*x-364*a*b^2*d*e^2*x+56*b^3*d^2*e*x+429*a^3*e^3-286*a^2*b*d*e^
2+104*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.57, size = 118, normalized size = 1.18

$$\frac{2\left(231\,(ex+d)^{\frac{13}{2}}b^3-819\left(b^3d-ab^2e\right)(ex+d)^{\frac{11}{2}}+1001\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)^{\frac{9}{2}}-429\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)(ex+d)^{\frac{7}{2}}\right)}{3003\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/3003*(231*(e*x + d)^(13/2)*b^3 - 819*(b^3*d - a*b^2*e)*(e*x + d)^(11/2) +
 1001*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(9/2) - 429*(b^3*d^3 -
3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(7/2))/e^4
```

mupad [B] time = 2.07, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{13/2}}{13\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}+\frac{2\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{9/2}}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(13/2))/(13*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(11/2)
)/(11*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(7/2))/(7*e^4) + (2*b*(a*e - b*d)^2
*(d + e*x)^(9/2))/(3*e^4)
```

sympy [A] time = 4.59, size = 549, normalized size = 5.49

$$\begin{cases} \frac{2a^3d^3\sqrt{d+ex}}{7e}+\frac{6a^3d^2x\sqrt{d+ex}}{7}+\frac{6a^3dex^2\sqrt{d+ex}}{7}+\frac{2a^3e^2x^3\sqrt{d+ex}}{7}-\frac{4a^2bd^4\sqrt{d+ex}}{21e^2}+\frac{2a^2bd^3x\sqrt{d+ex}}{21e}+\frac{10a^2bd^2x^2\sqrt{d+ex}}{7}+\frac{38a^2bdex^3\sqrt{d+ex}}{21}+\frac{2a^2be^2x^4\sqrt{d+ex}}{3}+\frac{16ab^2d^5\sqrt{d+ex}}{231e^3}-\frac{8ab^2d^4x\sqrt{d+ex}}{231e^2}+\frac{2ab^2d^3x^2\sqrt{d+ex}}{77e}+\frac{226ab^2d^2x^3\sqrt{d+ex}}{231}+\frac{46ab^2dex^4\sqrt{d+ex}}{33}+\frac{6ab^2e^2x^5\sqrt{d+ex}}{11}-\frac{32b^3d^6\sqrt{d+ex}}{3003e^4}+\frac{16b^3d^5x\sqrt{d+ex}}{3003e^3}-\frac{4b^3d^4x^2\sqrt{d+ex}}{1001e^2}+\frac{10b^3d^3x^3\sqrt{d+ex}}{3003e}+\frac{106b^3d^2x^4\sqrt{d+ex}}{429}+\frac{54b^3dex^5\sqrt{d+ex}}{143}+\frac{2b^3e^2x^6\sqrt{d+ex}}{13} & \text{for}\: e \neq 0 \\ d^{\frac{5}{2}}\left(a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*a**3*d**3*sqrt(d + e*x)/(7*e) + 6*a**3*d**2*x*sqrt(d + e*x)/7
+ 6*a**3*d*e*x**2*sqrt(d + e*x)/7 + 2*a**3*e**2*x**3*sqrt(d + e*x)/7 - 4*a*
*2*b*d**4*sqrt(d + e*x)/(21*e**2) + 2*a**2*b*d**3*x*sqrt(d + e*x)/(21*e) +
10*a**2*b*d**2*x**2*sqrt(d + e*x)/7 + 38*a**2*b*d*e*x**3*sqrt(d + e*x)/21 +
 2*a**2*b*e**2*x**4*sqrt(d + e*x)/3 + 16*a*b**2*d**5*sqrt(d + e*x)/(231*e**
3) - 8*a*b**2*d**4*x*sqrt(d + e*x)/(231*e**2) + 2*a*b**2*d**3*x**2*sqrt(d +
 e*x)/(77*e) + 226*a*b**2*d**2*x**3*sqrt(d + e*x)/231 + 46*a*b**2*d*e*x**4*
sqrt(d + e*x)/33 + 6*a*b**2*e**2*x**5*sqrt(d + e*x)/11 - 32*b**3*d**6*sqrt(
d + e*x)/(3003*e**4) + 16*b**3*d**5*x*sqrt(d + e*x)/(3003*e**3) - 4*b**3*d*
*4*x**2*sqrt(d + e*x)/(1001*e**2) + 10*b**3*d**3*x**3*sqrt(d + e*x)/(3003*e
) + 106*b**3*d**2*x**4*sqrt(d + e*x)/429 + 54*b**3*d*e*x**5*sqrt(d + e*x)/1
43 + 2*b**3*e**2*x**6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(a**3*x + 3*a*
*2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4), True))
```

3.1819 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{2b^2(d+ex)^{9/2}(bd-ae)}{3e^4}+\frac{6b(d+ex)^{7/2}(bd-ae)^2}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^3}{5e^4}+\frac{2b^3(d+ex)^{11/2}}{11e^4}$$

Rubi [A] time = 0.03, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{2b^2(d+ex)^{9/2}(bd-ae)}{3e^4}+\frac{6b(d+ex)^{7/2}(bd-ae)^2}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^3}{5e^4}+\frac{2b^3(d+ex)^{11/2}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(5/2))/(5*e^4) + (6*b*(b*d - a*e)^2*(d + e*x)^(
7/2))/(7*e^4) - (2*b^2*(b*d - a*e)*(d + e*x)^(9/2))/(3*e^4) + (2*b^3*(d + e
*x)^(11/2))/(11*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx = \int (a+bx)^3(d+ex)^{3/2}\,dx$$
$$= \int \left(\frac{(-bd+ae)^3(d+ex)^{3/2}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{5/2}}{e^3}-\frac{3b^2(bd-$$
$$= -\frac{2(bd-ae)^3(d+ex)^{5/2}}{5e^4}+\frac{6b(bd-ae)^2(d+ex)^{7/2}}{7e^4}-\frac{2b^2(bd-a}{3}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{5/2}\left(-385b^2(d+ex)^2(bd-ae)+495b(d+ex)(bd-ae)^2-231(bd-ae)^3+105b^3(d+ex)^3\right)}{1155e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-231*(b*d - a*e)^3 + 495*b*(b*d - a*e)^2*(d + e*x) - 38
5*b^2*(b*d - a*e)*(d + e*x)^2 + 105*b^3*(d + e*x)^3))/(1155*e^4)
```

IntegrateAlgebraic [A] time = 0.07, size = 132, normalized size = 1.32

$$\frac{2(d+ex)^{5/2}\left(231a^3e^3+495a^2be^2(d+ex)-693a^2bde^2+693ab^2d^2e+385ab^2e(d+ex)^2-990ab^2de(d+ex)-231b^3d^3+495b^3d^2(d+ex)+105b^3(d+ex)^3-385b^3d(d+ex)^2\right)}{1155e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-231*b^3*d^3 + 693*a*b^2*d^2*e - 693*a^2*b*d*e^2 + 231*
a^3*e^3 + 495*b^3*d^2*(d + e*x) - 990*a*b^2*d*e*(d + e*x) + 495*a^2*b*e^2*(
d + e*x) - 385*b^3*d*(d + e*x)^2 + 385*a*b^2*e*(d + e*x)^2 + 105*b^3*(d + e
*x)^3))/(1155*e^4)
```

fricas [B] time = 0.44, size = 216, normalized size = 2.16

$$\frac{2\left(105\,b^3e^5x^5-16\,b^3d^5+88\,ab^2d^4e-198\,a^2bd^3e^2+231\,a^3d^2e^3+35\left(4\,b^3de^4+11\,ab^2e^5\right)x^4+5\left(b^3d^2e^3+110\,ab^2de^4+99\,a^2be^5\right)x^3-3\left(2\,b^3d^3e^2-11\,ab^2d^2e^3-264\,a^2bde^4-77\,a^3e^5\right)x^2+\left(8\,b^3d^4e-44\,ab^2d^3e^2+99\,a^2bd^2e^3+462\,a^3de^4\right)x\right)\sqrt{ex+d}}{1155\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/1155*(105*b^3*e^5*x^5 - 16*b^3*d^5 + 88*a*b^2*d^4*e - 198*a^2*b*d^3*e^2 +
 231*a^3*d^2*e^3 + 35*(4*b^3*d*e^4 + 11*a*b^2*e^5)*x^4 + 5*(b^3*d^2*e^3 + 1
10*a*b^2*d*e^4 + 99*a^2*b*e^5)*x^3 - 3*(2*b^3*d^3*e^2 - 11*a*b^2*d^2*e^3 -
264*a^2*b*d*e^4 - 77*a^3*e^5)*x^2 + (8*b^3*d^4*e - 44*a*b^2*d^3*e^2 + 99*a^
2*b*d^2*e^3 + 462*a^3*d*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.18, size = 598, normalized size = 5.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/3465*(3465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d^2*e^(-1) + 693*(
3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d^2*
e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*b^3*d^2*e^(-3) + 1386*(3*(x*e + d)^(5/2) - 10*(
x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d*e^(-1) + 594*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*a*b^2*d*e^(-2) + 22*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*d*
e^(-3) + 3465*sqrt(x*e + d)*a^3*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*a^3*d + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b*e^(-1) + 33*(35*(x*e + d)^(9/2) - 1
80*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
315*sqrt(x*e + d)*d^4)*a*b^2*e^(-2) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*e^(-3) + 231*(3*(x*e + d)^(5/2)
 - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3)*e^(-1)
```

maple [A] time = 0.06, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(105b^3e^3x^3+385a\,b^2e^3x^2-70b^3d\,e^2x^2+495a^2b\,e^3x-220a\,b^2d\,e^2x+40b^3d^2ex+231a^3e^3-198a^2bd\,e^2+88a\,b^2d^2e-16b^3d^3\right)}{1155e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/1155*(e*x+d)^(5/2)*(105*b^3*e^3*x^3+385*a*b^2*e^3*x^2-70*b^3*d*e^2*x^2+49
5*a^2*b*e^3*x-220*a*b^2*d*e^2*x+40*b^3*d^2*e*x+231*a^3*e^3-198*a^2*b*d*e^2+
88*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.55, size = 118, normalized size = 1.18

$$\frac{2\left(105\,(ex+d)^{\frac{11}{2}}b^3-385\left(b^3d-ab^2e\right)(ex+d)^{\frac{9}{2}}+495\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)^{\frac{7}{2}}-231\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)(ex+d)^{\frac{5}{2}}\right)}{1155\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/1155*(105*(e*x + d)^(11/2)*b^3 - 385*(b^3*d - a*b^2*e)*(e*x + d)^(9/2) +
495*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(7/2) - 231*(b^3*d^3 - 3*
a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 0.06, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(11/2))/(11*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(9/2))
/(9*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(5/2))/(5*e^4) + (6*b*(a*e - b*d)^2*(
d + e*x)^(7/2))/(7*e^4)
```

sympy [A] time = 16.77, size = 386, normalized size = 3.86

$$a^3d\left(\begin{cases}\sqrt{d}\,x & \text{for}\ e=0\\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2a^3\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{6a^2bd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{6a^2b\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^2}+\frac{6ab^2d\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+\frac{6ab^2\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^3}+\frac{2b^3d\left(-\frac{d^3(d+ex)^{\frac{3}{2}}}{3}+\frac{3d^2(d+ex)^{\frac{5}{2}}}{5}-\frac{3d(d+ex)^{\frac{7}{2}}}{7}+\frac{(d+ex)^{\frac{9}{2}}}{9}\right)}{e^4}+\frac{2b^3\left(\frac{d^4(d+ex)^{\frac{3}{2}}}{3}-\frac{4d^3(d+ex)^{\frac{5}{2}}}{5}+\frac{6d^2(d+ex)^{\frac{7}{2}}}{7}-\frac{4d(d+ex)^{\frac{9}{2}}}{9}+\frac{(d+ex)^{\frac{11}{2}}}{11}\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
 2*a**3*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 6*a**2*b*d*(-d*(d
+ e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 6*a**2*b*(d**2*(d + e*x)**(3/2
)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*a*b**2*d*(d**2*
(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 6*
a*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x
)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*b**3*d*(-d**3*(d + e*x)**(3/2)/3
+ 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/
e**4 + 2*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2
*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1820 $\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(d+ex)^{7/2}(bd-ae)}{7e^4}+\frac{6b(d+ex)^{5/2}(bd-ae)^2}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^3}{3e^4}+\frac{2b^3(d+ex)^{9/2}}{9e^4}$$

Rubi [A] time = 0.03, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{6b^2(d+ex)^{7/2}(bd-ae)}{7e^4}+\frac{6b(d+ex)^{5/2}(bd-ae)^2}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^3}{3e^4}+\frac{2b^3(d+ex)^{9/2}}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(3/2))/(3*e^4) + (6*b*(b*d - a*e)^2*(d + e*x)^(
5/2))/(5*e^4) - (6*b^2*(b*d - a*e)*(d + e*x)^(7/2))/(7*e^4) + (2*b^3*(d + e
*x)^(9/2))/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^3\sqrt{d+ex}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{3/2}}{e^3}-\frac{3b^2(bd-ae)(d}{e^3}\right.\\ &= -\frac{2(bd-ae)^3(d+ex)^{3/2}}{3e^4}+\frac{6b(bd-ae)^2(d+ex)^{5/2}}{5e^4}-\frac{6b^2(bd-ae)(d+}{7e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{3/2}\left(-135b^2(d+ex)^2(bd-ae)+189b(d+ex)(bd-ae)^2-105(bd-ae)^3+35b^3(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*(b*d - a*e)^3 + 189*b*(b*d - a*e)^2*(d + e*x) - 13
5*b^2*(b*d - a*e)*(d + e*x)^2 + 35*b^3*(d + e*x)^3))/(315*e^4)
```

IntegrateAlgebraic [A] time = 0.06, size = 132, normalized size = 1.32

$$\frac{2(d+ex)^{3/2}\left(105a^3e^3+189a^2be^2(d+ex)-315a^2bde^2+315ab^2d^2e+135ab^2e(d+ex)^2-378ab^2de(d+ex)-105b^3d^3+189b^3d^2(d+ex)+35b^3(d+ex)^3-135b^3d(d+ex)^2\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*b^3*d^3 + 315*a*b^2*d^2*e - 315*a^2*b*d*e^2 + 105*
a^3*e^3 + 189*b^3*d^2*(d + e*x) - 378*a*b^2*d*e*(d + e*x) + 189*a^2*b*e^2*(
d + e*x) - 135*b^3*d*(d + e*x)^2 + 135*a*b^2*e*(d + e*x)^2 + 35*b^3*(d + e*
x)^3))/(315*e^4)
```

fricas [A] time = 0.41, size = 164, normalized size = 1.64

$$\frac{2\left(35\,b^3e^4x^4-16\,b^3d^4+72\,ab^2d^3e-126\,a^2bd^2e^2+105\,a^3de^3+5\left(b^3de^3+27\,ab^2e^4\right)x^3-3\left(2\,b^3d^2e^2-9\,ab^2de^3-63\,a^2be^4\right)x^2+\left(8\,b^3d^3e-36\,ab^2d^2e^2+63\,a^2bde^3+105\,a^3e^4\right)x\right)\sqrt{ex+d}}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/315*(35*b^3*e^4*x^4 - 16*b^3*d^4 + 72*a*b^2*d^3*e - 126*a^2*b*d^2*e^2 + 1
05*a^3*d*e^3 + 5*(b^3*d*e^3 + 27*a*b^2*e^4)*x^3 - 3*(2*b^3*d^2*e^2 - 9*a*b^
2*d*e^3 - 63*a^2*b*e^4)*x^2 + (8*b^3*d^3*e - 36*a*b^2*d^2*e^2 + 63*a^2*b*d*
e^3 + 105*a^3*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.24, size = 339, normalized size = 3.39

$$\frac{2}{315}\left(315\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^2bde^{(-1)}+63\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)ab^2de^{(-2)}+9\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)b^3de^{(-3)}+63\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^2be^{(-1)}+27\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)ab^2e^{(-2)}+\left(35\,(xe+d)^{\frac{9}{2}}-180\,(xe+d)^{\frac{7}{2}}d+378\,(xe+d)^{\frac{5}{2}}d^2-420\,(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)b^3e^{(-3)}+315\sqrt{xe+d}\,a^3d+105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^3\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(315*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d*e^(-1) + 63*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d*e^(-2)
+ 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*b^3*d*e^(-3) + 63*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/
2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*e^(-1) + 27*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^2*e^(-2)
 + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*e^(-3) + 315*sqrt(x*e
+ d)*a^3*d + 105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(35b^3e^3x^3+135a\,b^2e^3x^2-30b^3d\,e^2x^2+189a^2b\,e^3x-108a\,b^2d\,e^2x+24b^3d^2ex+105a^3e^3-126a^2bd\,e^2+72a\,b^2d^2e-16b^3d^3\right)}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(35*b^3*e^3*x^3+135*a*b^2*e^3*x^2-30*b^3*d*e^2*x^2+189*
a^2*b*e^3*x-108*a*b^2*d*e^2*x+24*b^3*d^2*e*x+105*a^3*e^3-126*a^2*b*d*e^2+72
*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.62, size = 118, normalized size = 1.18

$$\frac{2\left(35\,(ex+d)^{\frac{9}{2}}b^3-135\left(b^3d-ab^2e\right)(ex+d)^{\frac{7}{2}}+189\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)^{\frac{5}{2}}-105\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)(ex+d)^{\frac{3}{2}}\right)}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*b^3 - 135*(b^3*d - a*b^2*e)*(e*x + d)^(7/2) + 189
*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(5/2) - 105*(b^3*d^3 - 3*a*b
^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 0.06, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{3/2}}{3\,e^4}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(9/2))/(9*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(7/2))/(
7*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(3/2))/(3*e^4) + (6*b*(a*e - b*d)^2*(d
+ e*x)^(5/2))/(5*e^4)
```

sympy [A] time = 4.58, size = 146, normalized size = 1.46

$$\frac{2\left(\frac{b^{3}(d+ex)^{\frac{9}{2}}}{9e^{3}}+\frac{(d+ex)^{\frac{7}{2}}\left(3ab^{2}e-3b^{3}d\right)}{7e^{3}}+\frac{(d+ex)^{\frac{5}{2}}\left(3a^{2}be^{2}-6ab^{2}de+3b^{3}d^{2}\right)}{5e^{3}}+\frac{(d+ex)^{\frac{3}{2}}\left(a^{3}e^{3}-3a^{2}bde^{2}+3ab^{2}d^{2}e-b^{3}d^{3}\right)}{3e^{3}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(b**3*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(3*a*b**2*e - 3*b**3*d
)/(7*e**3) + (d + e*x)**(5/2)*(3*a**2*b*e**2 - 6*a*b**2*d*e + 3*b**3*d**2)/
(5*e**3) + (d + e*x)**(3/2)*(a**3*e**3 - 3*a**2*b*d*e**2 + 3*a*b**2*d**2*e
- b**3*d**3)/(3*e**3))/e
```

3.1821 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=96

$$-\frac{6b^2(d+ex)^{5/2}(bd-ae)}{5e^4}+\frac{2b(d+ex)^{3/2}(bd-ae)^2}{e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^3}{e^4}+\frac{2b^3(d+ex)^{7/2}}{7e^4}$$

Rubi [A] time = 0.03, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{6b^2(d+ex)^{5/2}(bd-ae)}{5e^4}+\frac{2b(d+ex)^{3/2}(bd-ae)^2}{e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^3}{e^4}+\frac{2b^3(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^3*Sqrt[d + e*x])/e^4 + (2*b*(b*d - a*e)^2*(d + e*x)^(3/2))/
e^4 - (6*b^2*(b*d - a*e)*(d + e*x)^(5/2))/(5*e^4) + (2*b^3*(d + e*x)^(7/2))
/(7*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^3}{\sqrt{d+ex}}\,dx\\
&= \int \left(\frac{(-bd+ae)^3}{e^3\sqrt{d+ex}}+\frac{3b(bd-ae)^2\sqrt{d+ex}}{e^3}-\frac{3b^2(bd-ae)(d+ex)^{3/2}}{e^3}+\frac{b^3(d\right.\\
&= -\frac{2(bd-ae)^3\sqrt{d+ex}}{e^4}+\frac{2b(bd-ae)^2(d+ex)^{3/2}}{e^4}-\frac{6b^2(bd-ae)(d+ex)^{5/2}}{5e^4}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.82

$$\frac{2\sqrt{d+ex}\left(-21b^2(d+ex)^2(bd-ae)+35b(d+ex)(bd-ae)^2-35(bd-ae)^3+5b^3(d+ex)^3\right)}{35e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-35*(b*d - a*e)^3 + 35*b*(b*d - a*e)^2*(d + e*x) - 21*b^2
*(b*d - a*e)*(d + e*x)^2 + 5*b^3*(d + e*x)^3))/(35*e^4)
```

IntegrateAlgebraic [A] time = 0.06, size = 132, normalized size = 1.38

$$\frac{2\sqrt{d+ex}\,\left(35a^3e^3+35a^2be^2(d+ex)-105a^2bde^2+105ab^2d^2e+21ab^2e(d+ex)^2-70ab^2de(d+ex)-35b^3d^3+35b^3d^2(d+ex)+5b^3(d+ex)^3-21b^3d(d+ex)^2\right)}{35e^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-35*b^3*d^3 + 105*a*b^2*d^2*e - 105*a^2*b*d*e^2 + 35*a^3*
e^3 + 35*b^3*d^2*(d + e*x) - 70*a*b^2*d*e*(d + e*x) + 35*a^2*b*e^2*(d + e*x
) - 21*b^3*d*(d + e*x)^2 + 21*a*b^2*e*(d + e*x)^2 + 5*b^3*(d + e*x)^3))/(35
*e^4)
```

fricas [A] time = 0.42, size = 115, normalized size = 1.20

$$\frac{2\left(5\,b^3e^3x^3-16\,b^3d^3+56\,ab^2d^2e-70\,a^2bde^2+35\,a^3e^3-3\left(2\,b^3de^2-7\,ab^2e^3\right)x^2+\left(8\,b^3d^2e-28\,ab^2de^2+35\,a^2be^3\right)x\right)\sqrt{ex+d}}{35\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/35*(5*b^3*e^3*x^3 - 16*b^3*d^3 + 56*a*b^2*d^2*e - 70*a^2*b*d*e^2 + 35*a^3
*e^3 - 3*(2*b^3*d*e^2 - 7*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 28*a*b^2*d*e^2 +
35*a^2*b*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.19, size = 143, normalized size = 1.49

$$\frac{2}{35}\left(35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^2be^{(-1)}+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)ab^2e^{(-2)}+\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)b^3e^{(-3)}+35\sqrt{xe+d}\,a^3\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/35*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*e^(-1) + 7*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*e^(-2) + (5*(x
*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
 + d)*d^3)*b^3*e^(-3) + 35*sqrt(x*e + d)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.21

$$\frac{2\left(5b^3e^3x^3+21a\,b^2e^3x^2-6b^3d\,e^2x^2+35a^2b\,e^3x-28a\,b^2d\,e^2x+8b^3d^2ex+35a^3e^3-70a^2bd\,e^2+56a\,b^2d^2e-16b^3d^3\right)\sqrt{ex+d}}{35e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/35*(5*b^3*e^3*x^3+21*a*b^2*e^3*x^2-6*b^3*d*e^2*x^2+35*a^2*b*e^3*x-28*a*b^
2*d*e^2*x+8*b^3*d^2*e*x+35*a^3*e^3-70*a^2*b*d*e^2+56*a*b^2*d^2*e-16*b^3*d^3
)*(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.54, size = 118, normalized size = 1.23

$$\frac{2\left(5\,(ex+d)^{\frac{7}{2}}b^3-21\left(b^3d-ab^2e\right)(ex+d)^{\frac{5}{2}}+35\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)^{\frac{3}{2}}-35\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{ex+d}\right)}{35\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

[Out] 2/35*(5*(e*x + d)^(7/2)*b^3 - 21*(b^3*d - a*b^2*e)*(e*x + d)^(5/2) + 35*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(3/2) - 35*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(e*x + d))/e^4

mupad [B] time = 0.06, size = 87, normalized size = 0.91

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,\sqrt{d+e\,x}}{e^4}+\frac{2\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{3/2}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(1/2),x)

[Out] (2*b^3*(d + e*x)^(7/2))/(7*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(5/2))/(5*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(1/2))/e^4 + (2*b*(a*e - b*d)^2*(d + e*x)^(3/2))/e^4

sympy [A] time = 38.31, size = 394, normalized size = 4.10

$$\begin{cases} \frac{-\frac{2a^3d}{\sqrt{d+ex}} - 2a^3\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{6a^2bd\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{6a^2b\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} - \frac{6ab^2d\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2} - \frac{6ab^2\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2} - \frac{2b^3d\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^3} - \frac{2b^3\left(\frac{d^4}{\sqrt{d+ex}} + 4d^3\sqrt{d+ex} - 2d^2(d+ex)^{\frac{3}{2}} + \frac{4d(d+ex)^{\frac{5}{2}}}{5} - \frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}}{e} & \text{for}\: e \neq 0 \\ \frac{\begin{cases} a^3x & \text{for}\: b = 0 \\ \frac{a^3bx + \frac{3a^2b^2x^2}{2} + ab^3x^3 + \frac{b^4x^4}{4}}{b} & \text{otherwise} \end{cases}}{\sqrt{d}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)

[Out] Piecewise(((-2*a**3*d/sqrt(d + e*x) - 2*a**3*(-d/sqrt(d + e*x) - sqrt(d + e*x)) - 6*a**2*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 6*a**2*b*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 6*a*b**2*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 6*a*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 2*b**3*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 2*b**3*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), (Piecewise((a**3*x, Eq(b, 0)), ((a**3*b*x + 3*a**2*b**2*x**2/2 + a*b**3*x**3 + b**4*x**4/4)/b, True))/sqrt(d), True))

3.1822 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{2b^2(d+ex)^{3/2}(bd-ae)}{e^4}+\frac{6b\sqrt{d+ex}\,(bd-ae)^2}{e^4}+\frac{2(bd-ae)^3}{e^4\sqrt{d+ex}}+\frac{2b^3(d+ex)^{5/2}}{5e^4}$$

Rubi [A] time = 0.03, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{2b^2(d+ex)^{3/2}(bd-ae)}{e^4}+\frac{6b\sqrt{d+ex}\,(bd-ae)^2}{e^4}+\frac{2(bd-ae)^3}{e^4\sqrt{d+ex}}+\frac{2b^3(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3)/(e^4*Sqrt[d + e*x]) + (6*b*(b*d - a*e)^2*Sqrt[d + e*x])/e
^4 - (2*b^2*(b*d - a*e)*(d + e*x)^(3/2))/e^4 + (2*b^3*(d + e*x)^(5/2))/(5*e
^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^{3/2}}+\frac{3b(bd-ae)^2}{e^3\sqrt{d+ex}}-\frac{3b^2(bd-ae)\sqrt{d+ex}}{e^3}+\frac{b^3(d+ex)^{3/2}}{e^3}\right)dx\\ &= \frac{2(bd-ae)^3}{e^4\sqrt{d+ex}}+\frac{6b(bd-ae)^2\sqrt{d+ex}}{e^4}-\frac{2b^2(bd-ae)(d+ex)^{3/2}}{e^4}+\frac{2b^3(d+ex)^{5/2}}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 78, normalized size = 0.83

$$\frac{2\left(-5b^2(d+ex)^2(bd-ae)+15b(d+ex)(bd-ae)^2+5(bd-ae)^3+b^3(d+ex)^3\right)}{5e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*(b*d - a*e)^3 + 15*b*(b*d - a*e)^2*(d + e*x) - 5*b^2*(b*d - a*e)*(d +
 e*x)^2 + b^3*(d + e*x)^3))/(5*e^4*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.07, size = 131, normalized size = 1.39

$$\frac{2\left(-5a^3e^3+15a^2be^2(d+ex)+15a^2bde^2-15ab^2d^2e+5ab^2e(d+ex)^2-30ab^2de(d+ex)+5b^3d^3+15b^3d^2(d+ex)+b^3(d+ex)^3-5b^3d(d+ex)^2\right)}{5e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*b^3*d^3 - 15*a*b^2*d^2*e + 15*a^2*b*d*e^2 - 5*a^3*e^3 + 15*b^3*d^2*(d
 + e*x) - 30*a*b^2*d*e*(d + e*x) + 15*a^2*b*e^2*(d + e*x) - 5*b^3*d*(d + e*
x)^2 + 5*a*b^2*e*(d + e*x)^2 + b^3*(d + e*x)^3))/(5*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.44, size = 124, normalized size = 1.32

$$\frac{2\left(b^3e^3x^3+16\,b^3d^3-40\,ab^2d^2e+30\,a^2bde^2-5\,a^3e^3-\left(2\,b^3de^2-5\,ab^2e^3\right)x^2+\left(8\,b^3d^2e-20\,ab^2de^2+15\,a^2be^3\right)x\right)\sqrt{ex+d}}{5\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/5*(b^3*e^3*x^3 + 16*b^3*d^3 - 40*a*b^2*d^2*e + 30*a^2*b*d*e^2 - 5*a^3*e^3
 - (2*b^3*d*e^2 - 5*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 20*a*b^2*d*e^2 + 15*a^2
*b*e^3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.19, size = 150, normalized size = 1.60

$$\frac{2}{5}\left((xe+d)^{\frac{5}{2}}b^3e^{16}-5\,(xe+d)^{\frac{3}{2}}b^3de^{16}+15\,\sqrt{xe+d}\,b^3d^2e^{16}+5\,(xe+d)^{\frac{3}{2}}ab^2e^{17}-30\,\sqrt{xe+d}\,ab^2de^{17}+15\,\sqrt{xe+d}\,a^2be^{18}\right)e^{(-20)}+\frac{2\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)e^{(-4)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*((x*e + d)^(5/2)*b^3*e^16 - 5*(x*e + d)^(3/2)*b^3*d*e^16 + 15*sqrt(x*e
+ d)*b^3*d^2*e^16 + 5*(x*e + d)^(3/2)*a*b^2*e^17 - 30*sqrt(x*e + d)*a*b^2*d
*e^17 + 15*sqrt(x*e + d)*a^2*b*e^18)*e^(-20) + 2*(b^3*d^3 - 3*a*b^2*d^2*e +
 3*a^2*b*d*e^2 - a^3*e^3)*e^(-4)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 116, normalized size = 1.23

$$-\frac{2\left(-b^3e^3x^3-5a\,b^2e^3x^2+2b^3d\,e^2x^2-15a^2b\,e^3x+20a\,b^2d\,e^2x-8b^3d^2ex+5a^3e^3-30a^2bd\,e^2+40a\,b^2d^2e-16b^3d^3\right)}{5\sqrt{ex+d}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/5*(-b^3*e^3*x^3-5*a*b^2*e^3*x^2+2*b^3*d*e^2*x^2-15*a^2*b*e^3*x+20*a*b^2*
d*e^2*x-8*b^3*d^2*e*x+5*a^3*e^3-30*a^2*b*d*e^2+40*a*b^2*d^2*e-16*b^3*d^3)/(
e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.59, size = 125, normalized size = 1.33

$$\frac{2\left(\frac{(ex+d)^{\frac{5}{2}}b^3-5\left(b^3d-ab^2e\right)(ex+d)^{\frac{3}{2}}+15\left(b^3d^2-2\,ab^2de+a^2be^2\right)\sqrt{ex+d}}{e^3}+\frac{5\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)}{\sqrt{ex+d}\,e^3}\right)}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/5*(((e*x + d)^(5/2)*b^3 - 5*(b^3*d - a*b^2*e)*(e*x + d)^(3/2) + 15*(b^3*d
^2 - 2*a*b^2*d*e + a^2*b*e^2)*sqrt(e*x + d))/e^3 + 5*(b^3*d^3 - 3*a*b^2*d^2
*e + 3*a^2*b*d*e^2 - a^3*e^3)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 2.07, size = 114, normalized size = 1.21

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,e^4}-\frac{2\,a^3\,e^3-6\,a^2\,b\,d\,e^2+6\,a\,b^2\,d^2\,e-2\,b^3\,d^3}{e^4\,\sqrt{d+e\,x}}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,\sqrt{d+e\,x}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(3/2),x)
```

```
[Out] (2*b^3*(d + e*x)^(5/2))/(5*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(3/2))/(
3*e^4) - (2*a^3*e^3 - 2*b^3*d^3 + 6*a*b^2*d^2*e - 6*a^2*b*d*e^2)/(e^4*(d +
e*x)^(1/2)) + (6*b*(a*e - b*d)^2*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 22.10, size = 109, normalized size = 1.16

$$\frac{2b^3\left(d+ex\right)^{\frac{5}{2}}}{5e^4}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(6ab^2e-6b^3d\right)}{3e^4}+\frac{\sqrt{d+ex}\left(6a^2be^2-12ab^2de+6b^3d^2\right)}{e^4}-\frac{2\left(ae-bd\right)^3}{e^4\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(3/2),x)
```

```
[Out] 2*b**3*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(6*a*b**2*e - 6*b**3*d)
/(3*e**4) + sqrt(d + e*x)*(6*a**2*b*e**2 - 12*a*b**2*d*e + 6*b**3*d**2)/e**
4 - 2*(a*e - b*d)**3/(e**4*sqrt(d + e*x))
```

3.1823 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=96

$$-\frac{6b^2\sqrt{d+ex}\,(bd-ae)}{e^4}-\frac{6b(bd-ae)^2}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^3}{3e^4(d+ex)^{3/2}}+\frac{2b^3(d+ex)^{3/2}}{3e^4}$$

Rubi [A] time = 0.03, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{6b^2\sqrt{d+ex}\,(bd-ae)}{e^4}-\frac{6b(bd-ae)^2}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^3}{3e^4(d+ex)^{3/2}}+\frac{2b^3(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^3)/(3*e^4*(d + e*x)^(3/2)) - (6*b*(b*d - a*e)^2)/(e^4*Sqrt[d
 + e*x]) - (6*b^2*(b*d - a*e)*Sqrt[d + e*x])/e^4 + (2*b^3*(d + e*x)^(3/2))/
(3*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^{5/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^{5/2}}+\frac{3b(bd-ae)^2}{e^3(d+ex)^{3/2}}-\frac{3b^2(bd-ae)}{e^3\sqrt{d+ex}}+\frac{b^3\sqrt{d+ex}}{e^3}\right)dx\\
&= \frac{2(bd-ae)^3}{3e^4(d+ex)^{3/2}}-\frac{6b(bd-ae)^2}{e^4\sqrt{d+ex}}-\frac{6b^2(bd-ae)\sqrt{d+ex}}{e^4}+\frac{2b^3(d+ex)^{3/2}}{3e^4}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 76, normalized size = 0.79

$$\frac{2\left(-9b^2(d+ex)^2(bd-ae)-9b(d+ex)(bd-ae)^2+(bd-ae)^3+b^3(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*((b*d - a*e)^3 - 9*b*(b*d - a*e)^2*(d + e*x) - 9*b^2*(b*d - a*e)*(d + e*
x)^2 + b^3*(d + e*x)^3))/(3*e^4*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.07, size = 130, normalized size = 1.35

$$\frac{2\left(-a^3e^3-9a^2be^2(d+ex)+3a^2bde^2-3ab^2d^2e+9ab^2e(d+ex)^2+18ab^2de(d+ex)+b^3d^3-9b^3d^2(d+ex)+b^3(d+ex)^3-9b^3d(d+ex)^2\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3 - 9*b^3*d^2*(d + e*x)
 + 18*a*b^2*d*e*(d + e*x) - 9*a^2*b*e^2*(d + e*x) - 9*b^3*d*(d + e*x)^2 + 9
*a*b^2*e*(d + e*x)^2 + b^3*(d + e*x)^3))/(3*e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.42, size = 136, normalized size = 1.42

$$\frac{2\left(b^3e^3x^3-16\,b^3d^3+24\,ab^2d^2e-6\,a^2bde^2-a^3e^3-3\left(2\,b^3de^2-3\,ab^2e^3\right)x^2-3\left(8\,b^3d^2e-12\,ab^2de^2+3\,a^2be^3\right)x\right)\sqrt{ex+d}}{3\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/3*(b^3*e^3*x^3 - 16*b^3*d^3 + 24*a*b^2*d^2*e - 6*a^2*b*d*e^2 - a^3*e^3 -
3*(2*b^3*d*e^2 - 3*a*b^2*e^3)*x^2 - 3*(8*b^3*d^2*e - 12*a*b^2*d*e^2 + 3*a^2
*b*e^3)*x)*sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.18, size = 142, normalized size = 1.48

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}b^3e^8-9\sqrt{xe+d}\,b^3de^8+9\sqrt{xe+d}\,ab^2e^9\right)e^{(-12)}-\frac{2\left(9\,(xe+d)b^3d^2-b^3d^3-18\,(xe+d)ab^2de+3\,ab^2d^2e+9\,(xe+d)a^2be^2-3\,a^2bde^2+a^3e^3\right)e^{(-4)}}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^3*e^8 - 9*sqrt(x*e + d)*b^3*d*e^8 + 9*sqrt(x*e + d)*
a*b^2*e^9)*e^(-12) - 2/3*(9*(x*e + d)*b^3*d^2 - b^3*d^3 - 18*(x*e + d)*a*b^
2*d*e + 3*a*b^2*d^2*e + 9*(x*e + d)*a^2*b*e^2 - 3*a^2*b*d*e^2 + a^3*e^3)*e^
(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 115, normalized size = 1.20

$$-\frac{2\left(-b^3e^3x^3-9a\,b^2e^3x^2+6b^3d\,e^2x^2+9a^2b\,e^3x-36a\,b^2d\,e^2x+24b^3d^2ex+a^3e^3+6a^2bd\,e^2-24a\,b^2d^2e+16b^3d^3\right)}{3\,(ex+d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3*(-b^3*e^3*x^3-9*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+9*a^2*b*e^3*x-36*a*b^2*d
*e^2*x+24*b^3*d^2*e*x+a^3*e^3+6*a^2*b*d*e^2-24*a*b^2*d^2*e+16*b^3*d^3)/(e*x
+d)^(3/2)/e^4
```

maxima [A] time = 0.51, size = 122, normalized size = 1.27

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}}b^3-9\left(b^3d-ab^2e\right)\sqrt{ex+d}}{e^3}+\frac{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3-9\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/3*(((e*x + d)^(3/2)*b^3 - 9*(b^3*d - a*b^2*e)*sqrt(e*x + d))/e^3 + (b^3*d
^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3 - 9*(b^3*d^2 - 2*a*b^2*d*e + a
^2*b*e^2)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 0.07, size = 128, normalized size = 1.33

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^3-2\,a^3\,e^3+2\,b^3\,d^3-18\,b^3\,d\,{\left(d+e\,x\right)}^2-18\,b^3\,d^2\,\left(d+e\,x\right)+18\,a\,b^2\,e\,{\left(d+e\,x\right)}^2-18\,a^2\,b\,e^2\,\left(d+e\,x\right)-6\,a\,b^2\,d^2\,e+6\,a^2\,b\,d\,e^2+36\,a\,b^2\,d\,e\,\left(d+e\,x\right)}{3\,e^4\,{\left(d+e\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*b^3*(d + e*x)^3 - 2*a^3*e^3 + 2*b^3*d^3 - 18*b^3*d*(d + e*x)^2 - 18*b^3*
d^2*(d + e*x) + 18*a*b^2*e*(d + e*x)^2 - 18*a^2*b*e^2*(d + e*x) - 6*a*b^2*d
^2*e + 6*a^2*b*d*e^2 + 36*a*b^2*d*e*(d + e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.55, size = 461, normalized size = 4.80

$$\begin{cases} - \frac{2 a^{3} e^{3}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{12 a^{2} b d e^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{18 a^{2} b e^{3} x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{48 a b^{2} d^{2} e}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{72 a b^{2} d e^{2} x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{18 a b^{2} e^{3} x^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{32 b^{3} d^{3}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{48 b^{3} d^{2} e x}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} - \frac{12 b^{3} d e^{2} x^{2}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} + \frac{2 b^{3} e^{3} x^{3}}{3 d e^{4} \sqrt{d + e x} + 3 e^{5} x \sqrt{d + e x}} & \text{for}\: e \neq 0 \\ \frac{a^{3} x + \frac{3 a^{2} b x^{2}}{2} + a b^{2} x^{3} + \frac{b^{3} x^{4}}{4}}{d^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*a**3*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) -
 12*a**2*b*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 18*a*
*2*b*e**3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 48*a*b**2*d
**2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 72*a*b**2*d*e**2*
x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 18*a*b**2*e**3*x**2/(
3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 32*b**3*d**3/(3*d*e**4*s
qrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 48*b**3*d**2*e*x/(3*d*e**4*sqrt(d
+ e*x) + 3*e**5*x*sqrt(d + e*x)) - 12*b**3*d*e**2*x**2/(3*d*e**4*sqrt(d + e
*x) + 3*e**5*x*sqrt(d + e*x)) + 2*b**3*e**3*x**3/(3*d*e**4*sqrt(d + e*x) +
3*e**5*x*sqrt(d + e*x)), Ne(e, 0)), ((a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**
3 + b**3*x**4/4)/d**(5/2), True))
```

3.1824 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=94

$$\frac{6b^2(bd-ae)}{e^4\sqrt{d+ex}}-\frac{2b(bd-ae)^2}{e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^3}{5e^4(d+ex)^{5/2}}+\frac{2b^3\sqrt{d+ex}}{e^4}$$

Rubi [A] time = 0.03, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{6b^2(bd-ae)}{e^4\sqrt{d+ex}}-\frac{2b(bd-ae)^2}{e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^3}{5e^4(d+ex)^{5/2}}+\frac{2b^3\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^3)/(5*e^4*(d + e*x)^(5/2)) - (2*b*(b*d - a*e)^2)/(e^4*(d + e
*x)^(3/2)) + (6*b^2*(b*d - a*e))/(e^4*Sqrt[d + e*x]) + (2*b^3*Sqrt[d + e*x]
)/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^{7/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^{7/2}}+\frac{3b(bd-ae)^2}{e^3(d+ex)^{5/2}}-\frac{3b^2(bd-ae)}{e^3(d+ex)^{3/2}}+\frac{b^3}{e^3\sqrt{d+ex}}\right)dx\\
&= \frac{2(bd-ae)^3}{5e^4(d+ex)^{5/2}}-\frac{2b(bd-ae)^2}{e^4(d+ex)^{3/2}}+\frac{6b^2(bd-ae)}{e^4\sqrt{d+ex}}+\frac{2b^3\sqrt{d+ex}}{e^4}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 77, normalized size = 0.82

$$\frac{2\left(15b^2(d+ex)^2(bd-ae)-5b(d+ex)(bd-ae)^2+(bd-ae)^3+5b^3(d+ex)^3\right)}{5e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*((b*d - a*e)^3 - 5*b*(b*d - a*e)^2*(d + e*x) + 15*b^2*(b*d - a*e)*(d + e
*x)^2 + 5*b^3*(d + e*x)^3))/(5*e^4*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.07, size = 131, normalized size = 1.39

$$\frac{2\left(-a^3e^3-5a^2be^2(d+ex)+3a^2bde^2-3ab^2d^2e-15ab^2e(d+ex)^2+10ab^2de(d+ex)+b^3d^3-5b^3d^2(d+ex)+5b^3(d+ex)^3+15b^3d(d+ex)^2\right)}{5e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3 - 5*b^3*d^2*(d + e*x)
 + 10*a*b^2*d*e*(d + e*x) - 5*a^2*b*e^2*(d + e*x) + 15*b^3*d*(d + e*x)^2 -
15*a*b^2*e*(d + e*x)^2 + 5*b^3*(d + e*x)^3))/(5*e^4*(d + e*x)^(5/2))
```

fricas [A] time = 0.42, size = 148, normalized size = 1.57

$$\frac{2\left(5\,b^3e^3x^3+16\,b^3d^3-8\,ab^2d^2e-2\,a^2bde^2-a^3e^3+15\left(2\,b^3de^2-ab^2e^3\right)x^2+5\left(8\,b^3d^2e-4\,ab^2de^2-a^2be^3\right)x\right)\sqrt{ex+d}}{5\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/5*(5*b^3*e^3*x^3 + 16*b^3*d^3 - 8*a*b^2*d^2*e - 2*a^2*b*d*e^2 - a^3*e^3 +
 15*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 5*(8*b^3*d^2*e - 4*a*b^2*d*e^2 - a^2*b*
e^3)*x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.19, size = 136, normalized size = 1.45

$$2\sqrt{xe+d}\,b^3e^{(-4)}+\frac{2\left(15\,(xe+d)^2b^3d-5\,(xe+d)b^3d^2+b^3d^3-15\,(xe+d)^2ab^2e+10\,(xe+d)ab^2de-3\,ab^2d^2e-5\,(xe+d)a^2be^2+3\,a^2bde^2-a^3e^3\right)e^{(-4)}}{5\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*b^3*e^(-4) + 2/5*(15*(x*e + d)^2*b^3*d - 5*(x*e + d)*b^3*d^
2 + b^3*d^3 - 15*(x*e + d)^2*a*b^2*e + 10*(x*e + d)*a*b^2*d*e - 3*a*b^2*d^2
*e - 5*(x*e + d)*a^2*b*e^2 + 3*a^2*b*d*e^2 - a^3*e^3)*e^(-4)/(x*e + d)^(5/2
)
```

maple [A] time = 0.05, size = 115, normalized size = 1.22

$$-\frac{2\left(-5b^3e^3x^3+15a\,b^2e^3x^2-30b^3d\,e^2x^2+5a^2b\,e^3x+20a\,b^2d\,e^2x-40b^3d^2ex+a^3e^3+2a^2bd\,e^2+8a\,b^2d^2e-16b^3d^3\right)}{5\,(ex+d)^{\frac{5}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/5*(-5*b^3*e^3*x^3+15*a*b^2*e^3*x^2-30*b^3*d*e^2*x^2+5*a^2*b*e^3*x+20*a*b
^2*d*e^2*x-40*b^3*d^2*e*x+a^3*e^3+2*a^2*b*d*e^2+8*a*b^2*d^2*e-16*b^3*d^3)/(
e*x+d)^(5/2)/e^4
```

maxima [A] time = 0.71, size = 121, normalized size = 1.29

$$\frac{2\left(\frac{5\sqrt{ex+d}\,b^3}{e^3}+\frac{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3+15\left(b^3d-ab^2e\right)(ex+d)^2-5\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^3}\right)}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/5*(5*sqrt(e*x + d)*b^3/e^3 + (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a
^3*e^3 + 15*(b^3*d - a*b^2*e)*(e*x + d)^2 - 5*(b^3*d^2 - 2*a*b^2*d*e + a^2*
b*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 2.06, size = 114, normalized size = 1.21

$$-\frac{2\,\left(a^3\,e^3+2\,a^2\,b\,d\,e^2+5\,a^2\,b\,e^3\,x+8\,a\,b^2\,d^2\,e+20\,a\,b^2\,d\,e^2\,x+15\,a\,b^2\,e^3\,x^2-16\,b^3\,d^3-40\,b^3\,d^2\,e\,x-30\,b^3\,d\,e^2\,x^2-5\,b^3\,e^3\,x^3\right)}{5\,e^4\,{\left(d+e\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(a^3*e^3 - 16*b^3*d^3 - 5*b^3*e^3*x^3 + 15*a*b^2*e^3*x^2 - 30*b^3*d*e^2
*x^2 + 8*a*b^2*d^2*e + 2*a^2*b*d*e^2 + 5*a^2*b*e^3*x - 40*b^3*d^2*e*x + 20*
a*b^2*d*e^2*x))/(5*e^4*(d + e*x)^(5/2))
```

sympy [A] time = 3.45, size = 665, normalized size = 7.07

$$\begin{cases} - \frac{2 a^{3} e^{3}}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} - \frac{4 a^{2} b d e^{2}}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} - \frac{10 a^{2} b e^{3} x}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} - \frac{16 a b^{2} d^{2} e}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} - \frac{40 a b^{2} d e^{2} x}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} - \frac{30 a b^{2} e^{3} x^{2}}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} + \frac{32 b^{3} d^{3}}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} + \frac{80 b^{3} d^{2} e x}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} + \frac{60 b^{3} d e^{2} x^{2}}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} + \frac{10 b^{3} e^{3} x^{3}}{5 d^{2} e^{4} \sqrt{d + e x} + 10 d e^{5} x \sqrt{d + e x} + 5 e^{6} x^{2} \sqrt{d + e x}} & \text{for}\: e \neq 0 \\ \frac{a^{3} x + \frac{3 a^{2} b x^{2}}{2} + a b^{2} x^{3} + \frac{b^{3} x^{4}}{4}}{d^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-2*a**3*e**3/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e
*x) + 5*e**6*x**2*sqrt(d + e*x)) - 4*a**2*b*d*e**2/(5*d**2*e**4*sqrt(d + e*
x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) - 10*a**2*b*e**
3*x/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sq
rt(d + e*x)) - 16*a*b**2*d**2*e/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sq
rt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) - 40*a*b**2*d*e**2*x/(5*d**2*e**4*
sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) - 30
*a*b**2*e**3*x**2/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) +
5*e**6*x**2*sqrt(d + e*x)) + 32*b**3*d**3/(5*d**2*e**4*sqrt(d + e*x) + 10*d
*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) + 80*b**3*d**2*e*x/(5*d*
*2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*
x)) + 60*b**3*d*e**2*x**2/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d +
 e*x) + 5*e**6*x**2*sqrt(d + e*x)) + 10*b**3*e**3*x**3/(5*d**2*e**4*sqrt(d
+ e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)), Ne(e, 0)),
 ((a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4)/d**(7/2), True))
```

3.1825 $\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=158

$$-\frac{10b^4(d+ex)^{17/2}(bd-ae)}{17e^6}+\frac{4b^3(d+ex)^{15/2}(bd-ae)^2}{3e^6}-\frac{20b^2(d+ex)^{13/2}(bd-ae)^3}{13e^6}+\frac{10b(d+ex)^{11/2}(bd-ae)^4}{11e^6}-$$

Rubi [A] time = 0.07, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{10b^4(d+ex)^{17/2}(bd-ae)}{17e^6}+\frac{4b^3(d+ex)^{15/2}(bd-ae)^2}{3e^6}-\frac{20b^2(d+ex)^{13/2}(bd-ae)^3}{13e^6}+\frac{10b(d+ex)^{11/2}(bd-ae)^4}{11e^6}-\frac{2(d+ex)^{9/2}(bd-ae)^5}{9e^6}+\frac{2b^5(d+ex)^{19/2}}{19e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(9/2))/(9*e^6) + (10*b*(b*d - a*e)^4*(d + e*x)^
(11/2))/(11*e^6) - (20*b^2*(b*d - a*e)^3*(d + e*x)^(13/2))/(13*e^6) + (4*b^
3*(b*d - a*e)^2*(d + e*x)^(15/2))/(3*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(
17/2))/(17*e^6) + (2*b^5*(d + e*x)^(19/2))/(19*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^{7/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^{7/2}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{9/2}}{e^5}-\frac{10b^2(bd\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{9/2}}{9e^6}+\frac{10b(bd-ae)^4(d+ex)^{11/2}}{11e^6}-\frac{20b^2(bd\end{aligned}$$

Mathematica [A] time = 0.11, size = 123, normalized size = 0.78

$$\frac{2(d+ex)^{9/2}\left(-122265b^4(d+ex)^4(bd-ae)+277134b^3(d+ex)^3(bd-ae)^2-319770b^2(d+ex)^2(bd-ae)^3+188955b(d+ex)(bd-ae)^4-46189(bd-ae)^5+21879b^5(d+ex)^5\right)}{415701e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-46189*(b*d - a*e)^5 + 188955*b*(b*d - a*e)^4*(d + e*x)
 - 319770*b^2*(b*d - a*e)^3*(d + e*x)^2 + 277134*b^3*(b*d - a*e)^2*(d + e*x
)^3 - 122265*b^4*(b*d - a*e)*(d + e*x)^4 + 21879*b^5*(d + e*x)^5))/(415701*
e^6)
```

IntegrateAlgebraic [A] time = 0.12, size = 315, normalized size = 1.99

$$\frac{2(d+ex)^{9/2}\left(46189a^5e^5+188955a^4be^4(d+ex)-230945a^4bde^4+461890a^3b^2d^2e^3+319770a^3b^2e^3(d+ex)^2-755820a^3b^2de^3(d+ex)-461890a^2b^3d^3e^2+1133730a^2b^3d^2e^2(d+ex)+277134a^2b^3e^2(d+ex)^3-959310a^2b^3de^2(d+ex)^2+230945ab^4d^4e-755820ab^4d^3e(d+ex)+959310ab^4d^2e(d+ex)^2+122265ab^4e(d+ex)^4-554268ab^4de(d+ex)^3-46189b^5d^5+188955b^5d^4(d+ex)-319770b^5d^3(d+ex)^2+277134b^5d^2(d+ex)^3+21879b^5(d+ex)^5-122265b^5d(d+ex)^4\right)}{415701e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-46189*b^5*d^5 + 230945*a*b^4*d^4*e - 461890*a^2*b^3*d^
3*e^2 + 461890*a^3*b^2*d^2*e^3 - 230945*a^4*b*d*e^4 + 46189*a^5*e^5 + 18895
5*b^5*d^4*(d + e*x) - 755820*a*b^4*d^3*e*(d + e*x) + 1133730*a^2*b^3*d^2*e^
2*(d + e*x) - 755820*a^3*b^2*d*e^3*(d + e*x) + 188955*a^4*b*e^4*(d + e*x) -
 319770*b^5*d^3*(d + e*x)^2 + 959310*a*b^4*d^2*e*(d + e*x)^2 - 959310*a^2*b
^3*d*e^2*(d + e*x)^2 + 319770*a^3*b^2*e^3*(d + e*x)^2 + 277134*b^5*d^2*(d +
 e*x)^3 - 554268*a*b^4*d*e*(d + e*x)^3 + 277134*a^2*b^3*e^2*(d + e*x)^3 - 1
22265*b^5*d*(d + e*x)^4 + 122265*a*b^4*e*(d + e*x)^4 + 21879*b^5*(d + e*x)^
5))/(415701*e^6)
```

fricas [B] time = 0.44, size = 579, normalized size = 3.66

$$\frac{2\left(21879b^5e^9x^9-256b^5d^9+2432ab^4d^8e-10336a^2b^3d^7e^2+25840a^3b^2d^6e^3-41990a^4bd^5e^4+46189a^5d^4e^5+1287\left(58b^5de^8+95ab^4e^9\right)x^8+858\left(101b^5d^2e^7+494ab^4de^8+323a^2b^3e^9\right)x^7+66\left(524b^5d^3e^6+7619ab^4d^2e^7+14858a^2b^3de^8+4845a^3b^2e^9\right)x^6+9\left(7b^5d^4e^5+23028ab^4d^3e^6+133076a^2b^3d^2e^7+129200a^3b^2de^8+20995a^4be^9\right)x^5-\left(70b^5d^5e^4-665ab^4d^4e^5-516800a^2b^3d^3e^6-1479340a^3b^2d^2e^7-713830a^4bde^8-46189a^5e^9\right)x^4+2\left(40b^5d^6e^3-380ab^4d^5e^4+1615a^2b^3d^4e^5+342380a^3b^2d^3e^6+482885a^4bd^2e^7+92378a^5de^8\right)x^3-6\left(16b^5d^7e^2-152ab^4d^6e^3+646a^2b^3d^5e^4-1615a^3b^2d^4e^5-83980a^4bd^3e^6-46189a^5d^2e^7\right)x^2+\left(128b^5d^8e-1216ab^4d^7e^2+5168a^2b^3d^6e^3-12920a^3b^2d^5e^4+20995a^4bd^4e^5+184756a^5d^3e^6\right)x\right)\sqrt{ex+d}}{415701e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/415701*(21879*b^5*e^9*x^9 - 256*b^5*d^9 + 2432*a*b^4*d^8*e - 10336*a^2*b^
3*d^7*e^2 + 25840*a^3*b^2*d^6*e^3 - 41990*a^4*b*d^5*e^4 + 46189*a^5*d^4*e^5
 + 1287*(58*b^5*d*e^8 + 95*a*b^4*e^9)*x^8 + 858*(101*b^5*d^2*e^7 + 494*a*b^
4*d*e^8 + 323*a^2*b^3*e^9)*x^7 + 66*(524*b^5*d^3*e^6 + 7619*a*b^4*d^2*e^7 +
 14858*a^2*b^3*d*e^8 + 4845*a^3*b^2*e^9)*x^6 + 9*(7*b^5*d^4*e^5 + 23028*a*b
^4*d^3*e^6 + 133076*a^2*b^3*d^2*e^7 + 129200*a^3*b^2*d*e^8 + 20995*a^4*b*e^
9)*x^5 - (70*b^5*d^5*e^4 - 665*a*b^4*d^4*e^5 - 516800*a^2*b^3*d^3*e^6 - 147
9340*a^3*b^2*d^2*e^7 - 713830*a^4*b*d*e^8 - 46189*a^5*e^9)*x^4 + 2*(40*b^5*
d^6*e^3 - 380*a*b^4*d^5*e^4 + 1615*a^2*b^3*d^4*e^5 + 342380*a^3*b^2*d^3*e^6
 + 482885*a^4*b*d^2*e^7 + 92378*a^5*d*e^8)*x^3 - 6*(16*b^5*d^7*e^2 - 152*a*
b^4*d^6*e^3 + 646*a^2*b^3*d^5*e^4 - 1615*a^3*b^2*d^4*e^5 - 83980*a^4*b*d^3*
e^6 - 46189*a^5*d^2*e^7)*x^2 + (128*b^5*d^8*e - 1216*a*b^4*d^7*e^2 + 5168*a
^2*b^3*d^6*e^3 - 12920*a^3*b^2*d^5*e^4 + 20995*a^4*b*d^4*e^5 + 184756*a^5*d
^3*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.31, size = 2325, normalized size = 14.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(24249225*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d^4*e^(-1)
 + 9699690*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*a^3*b^2*d^4*e^(-2) + 4157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d^4*e^(-3) + 230945*
(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420
*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^4*d^4*e^(-4) + 20995*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*
d^4*e^(-5) + 19399380*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x
*e + d)*d^2)*a^4*b*d^3*e^(-1) + 16628040*(5*(x*e + d)^(7/2) - 21*(x*e + d)^
(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^2*d^3*e^(-2)
 + 1847560*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
```

```
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^3*d^3*e^(-3)
 + 419900*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*a*b^4*d^3*e^(-4) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^5*d^3*
e^(-5) + 14549535*sqrt(x*e + d)*a^5*d^4 + 19399380*((x*e + d)^(3/2) - 3*sqr
t(x*e + d)*d)*a^5*d^3 + 12471030*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b*d^2*e^(-1) + 2771340
*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 42
0*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^2*d^2*e^(-2) + 1259700
*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1
386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)
*a^2*b^3*d^2*e^(-3) + 145350*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*
d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5
/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^4*d^2*e^(-
4) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d
)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 2702
7*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)
*b^5*d^2*e^(-5) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*a^5*d^2 + 923780*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*a^4*b*d*e^(-1) + 839800*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^2*d*e^(-2) + 193800*(231*(x*e + d)^(13/2
) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/
2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*
e + d)*d^6)*a^2*b^3*d*e^(-3) + 45220*(429*(x*e + d)^(15/2) - 3465*(x*e + d)
^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*
(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6
 - 6435*sqrt(x*e + d)*d^7)*a*b^4*d*e^(-4) + 532*(6435*(x*e + d)^(17/2) - 58
344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11
/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*
(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8
)*b^5*d*e^(-5) + 1662804*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*
e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*d + 104975*(63*(x*e + d)^(11/2
) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*
d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b*e^(-1) + 4845
0*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^
2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3
/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^3*b^2*e^(-2) + 22610*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2*b^3*e^(-3) + 665*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*a*b^4*e^(-4) + 63*(12155*(x*e + d)^(19/2) - 122265*(x
*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d
^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(
x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d
^8 - 230945*sqrt(x*e + d)*d^9)*b^5*e^(-5) + 46189*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*a^5)*e^(-1)
```

maple [B] time = 0.05, size = 273, normalized size = 1.73

$$\frac{2 (ex+d)^{\frac{9}{2}} \left(21879 b^{5} e^{5} x^{5}+122265 a \,b^{4} e^{5} x^{4}-12870 b^{5} d \,e^{4} x^{4}+277134 a^{2} b^{3} e^{5} x^{3}-65208 a \,b^{4} d \,e^{4} x^{3}+6864 b^{5} d^{2} e^{3} x^{3}+319770 a^{3} b^{2} e^{5} x^{2}-127908 a^{2} b^{3} d \,e^{4} x^{2}+30096 a \,b^{4} d^{2} e^{3} x^{2}-3168 b^{5} d^{3} e^{2} x^{2}+188955 a^{4} b \,e^{5} x -116280 a^{3} b^{2} d \,e^{4} x +46512 a^{2} b^{3} d^{2} e^{3} x -10944 a \,b^{4} d^{3} e^{2} x +1152 b^{5} d^{4} e x +46189 a^{5} e^{5}-41990 a^{4} b d \,e^{4}+25840 a^{3} b^{2} d^{2} e^{3}-10336 a^{2} b^{3} d^{3} e^{2}+2432 a \,b^{4} d^{4} e -256 b^{5} d^{5}\right)}{415701 e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/415701*(e*x+d)^(9/2)*(21879*b^5*e^5*x^5+122265*a*b^4*e^5*x^4-12870*b^5*d*
e^4*x^4+277134*a^2*b^3*e^5*x^3-65208*a*b^4*d*e^4*x^3+6864*b^5*d^2*e^3*x^3+3
19770*a^3*b^2*e^5*x^2-127908*a^2*b^3*d*e^4*x^2+30096*a*b^4*d^2*e^3*x^2-3168
*b^5*d^3*e^2*x^2+188955*a^4*b*e^5*x-116280*a^3*b^2*d*e^4*x+46512*a^2*b^3*d^
2*e^3*x-10944*a*b^4*d^3*e^2*x+1152*b^5*d^4*e*x+46189*a^5*e^5-41990*a^4*b*d*
e^4+25840*a^3*b^2*d^2*e^3-10336*a^2*b^3*d^3*e^2+2432*a*b^4*d^4*e-256*b^5*d^
5)/e^6
```

maxima [A] time = 0.51, size = 259, normalized size = 1.64

$$\frac{2\left(21879\,(ex+d)^{\frac{19}{2}}b^5-122265\left(b^5d-ab^4e\right)(ex+d)^{\frac{17}{2}}+277134\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)(ex+d)^{\frac{15}{2}}-319770\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)(ex+d)^{\frac{13}{2}}+188955\left(b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4\right)(ex+d)^{\frac{11}{2}}-46189\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)(ex+d)^{\frac{9}{2}}\right)}{415701\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/415701*(21879*(e*x + d)^(19/2)*b^5 - 122265*(b^5*d - a*b^4*e)*(e*x + d)^(
17/2) + 277134*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(15/2) - 319
770*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(13
/2) + 188955*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
 + a^4*b*e^4)*(e*x + d)^(11/2) - 46189*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^
3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(9/2))/
e^6
```

mupad [B] time = 0.07, size = 137, normalized size = 0.87

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{19/2}}{19\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{17/2}}{17\,e^6}+\frac{2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{9/2}}{9\,e^6}+\frac{20\,b^2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{13/2}}{13\,e^6}+\frac{4\,b^3\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{15/2}}{3\,e^6}+\frac{10\,b\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{11/2}}{11\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(19/2))/(19*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(17/
2))/(17*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(9/2))/(9*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(13/2))/(13*e^6) + (4*b^3*(a*e - b*d)^2*(d + e*x)^(15/2))/(
3*e^6) + (10*b*(a*e - b*d)^4*(d + e*x)^(11/2))/(11*e^6)
```

sympy [A] time = 15.96, size = 1187, normalized size = 7.51

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((2*a**5*d**4*sqrt(d + e*x)/(9*e) + 8*a**5*d**3*x*sqrt(d + e*x)/9
+ 4*a**5*d**2*e*x**2*sqrt(d + e*x)/3 + 8*a**5*d*e**2*x**3*sqrt(d + e*x)/9 +
 2*a**5*e**3*x**4*sqrt(d + e*x)/9 - 20*a**4*b*d**5*sqrt(d + e*x)/(99*e**2)
+ 10*a**4*b*d**4*x*sqrt(d + e*x)/(99*e) + 80*a**4*b*d**3*x**2*sqrt(d + e*x)
/33 + 460*a**4*b*d**2*e*x**3*sqrt(d + e*x)/99 + 340*a**4*b*d*e**2*x**4*sqrt
(d + e*x)/99 + 10*a**4*b*e**3*x**5*sqrt(d + e*x)/11 + 160*a**3*b**2*d**6*sq
rt(d + e*x)/(1287*e**3) - 80*a**3*b**2*d**5*x*sqrt(d + e*x)/(1287*e**2) + 2
0*a**3*b**2*d**4*x**2*sqrt(d + e*x)/(429*e) + 4240*a**3*b**2*d**3*x**3*sqrt
(d + e*x)/1287 + 9160*a**3*b**2*d**2*e*x**4*sqrt(d + e*x)/1287 + 800*a**3*b
**2*d*e**2*x**5*sqrt(d + e*x)/143 + 20*a**3*b**2*e**3*x**6*sqrt(d + e*x)/13
 - 64*a**2*b**3*d**7*sqrt(d + e*x)/(1287*e**4) + 32*a**2*b**3*d**6*x*sqrt(d
 + e*x)/(1287*e**3) - 8*a**2*b**3*d**5*x**2*sqrt(d + e*x)/(429*e**2) + 20*a
**2*b**3*d**4*x**3*sqrt(d + e*x)/(1287*e) + 3200*a**2*b**3*d**3*x**4*sqrt(d
 + e*x)/1287 + 824*a**2*b**3*d**2*e*x**5*sqrt(d + e*x)/143 + 184*a**2*b**3*
```

```
d*e**2*x**6*sqrt(d + e*x)/39 + 4*a**2*b**3*e**3*x**7*sqrt(d + e*x)/3 + 256*
a*b**4*d**8*sqrt(d + e*x)/(21879*e**5) - 128*a*b**4*d**7*x*sqrt(d + e*x)/(2
1879*e**4) + 32*a*b**4*d**6*x**2*sqrt(d + e*x)/(7293*e**3) - 80*a*b**4*d**5
*x**3*sqrt(d + e*x)/(21879*e**2) + 70*a*b**4*d**4*x**4*sqrt(d + e*x)/(21879
*e) + 2424*a*b**4*d**3*x**5*sqrt(d + e*x)/2431 + 1604*a*b**4*d**2*e*x**6*sq
rt(d + e*x)/663 + 104*a*b**4*d*e**2*x**7*sqrt(d + e*x)/51 + 10*a*b**4*e**3*
x**8*sqrt(d + e*x)/17 - 512*b**5*d**9*sqrt(d + e*x)/(415701*e**6) + 256*b**
5*d**8*x*sqrt(d + e*x)/(415701*e**5) - 64*b**5*d**7*x**2*sqrt(d + e*x)/(138
567*e**4) + 160*b**5*d**6*x**3*sqrt(d + e*x)/(415701*e**3) - 140*b**5*d**5*
x**4*sqrt(d + e*x)/(415701*e**2) + 14*b**5*d**4*x**5*sqrt(d + e*x)/(46189*e
) + 2096*b**5*d**3*x**6*sqrt(d + e*x)/12597 + 404*b**5*d**2*e*x**7*sqrt(d +
 e*x)/969 + 116*b**5*d*e**2*x**8*sqrt(d + e*x)/323 + 2*b**5*e**3*x**9*sqrt(
d + e*x)/19, Ne(e, 0)), (d**(7/2)*(a**5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*
x**3/3 + 5*a**2*b**3*x**4/2 + a*b**4*x**5 + b**5*x**6/6), True))
```

3.1826 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2 dx$

Optimal. Leaf size=158

$$-\frac{2b^4(d+ex)^{15/2}(bd-ae)}{3e^6}+\frac{20b^3(d+ex)^{13/2}(bd-ae)^2}{13e^6}-\frac{20b^2(d+ex)^{11/2}(bd-ae)^3}{11e^6}+\frac{10b(d+ex)^{9/2}(bd-ae)^4}{9e^6}-\frac{2(d$$

Rubi [A] time = 0.06, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{2b^4(d+ex)^{15/2}(bd-ae)}{3e^6}+\frac{20b^3(d+ex)^{13/2}(bd-ae)^2}{13e^6}-\frac{20b^2(d+ex)^{11/2}(bd-ae)^3}{11e^6}+\frac{10b(d+ex)^{9/2}(bd-ae)^4}{9e^6}-\frac{2(d+ex)^{7/2}(bd-ae)^5}{7e^6}+\frac{2b^5(d+ex)^{17/2}}{17e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(7/2))/(7*e^6) + (10*b*(b*d - a*e)^4*(d + e*x)^
(9/2))/(9*e^6) - (20*b^2*(b*d - a*e)^3*(d + e*x)^(11/2))/(11*e^6) + (20*b^3
*(b*d - a*e)^2*(d + e*x)^(13/2))/(13*e^6) - (2*b^4*(b*d - a*e)*(d + e*x)^(1
5/2))/(3*e^6) + (2*b^5*(d + e*x)^(17/2))/(17*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2 dx &= \int (a+bx)^5(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^{5/2}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{7/2}}{e^5}-\frac{10b^2(bd-\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{7/2}}{7e^6}+\frac{10b(bd-ae)^4(d+ex)^{9/2}}{9e^6}-\frac{20b^2(bd-a}{1}\end{aligned}$$

Mathematica [A] time = 0.08, size = 123, normalized size = 0.78

$$\frac{2(d+ex)^{7/2}\left(-51051b^4(d+ex)^4(bd-ae)+117810b^3(d+ex)^3(bd-ae)^2-139230b^2(d+ex)^2(bd-ae)^3+85085b(d+ex)(bd-ae)^4-21879(bd-ae)^5+9009b^5(d+ex)^5\right)}{153153e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-21879*(b*d - a*e)^5 + 85085*b*(b*d - a*e)^4*(d + e*x)
- 139230*b^2*(b*d - a*e)^3*(d + e*x)^2 + 117810*b^3*(b*d - a*e)^2*(d + e*x)
^3 - 51051*b^4*(b*d - a*e)*(d + e*x)^4 + 9009*b^5*(d + e*x)^5))/(153153*e^6
)
```

IntegrateAlgebraic [A] time = 0.12, size = 315, normalized size = 1.99

$$\frac{2(d+ex)^{7/2}\left(21879a^5e^5+85085a^4be^4(d+ex)-109395a^4bde^4+218790a^3b^2d^2e^3+139230a^3b^2e^3(d+ex)^2-340340a^3b^2de^3(d+ex)-218790a^2b^3d^3e^2+510510a^2b^3d^2e^2(d+ex)+117810a^2b^3e^2(d+ex)^3-417690a^2b^3de^2(d+ex)^2+109395ab^4d^4e-340340ab^4d^3e(d+ex)+417690ab^4d^2e(d+ex)^2+51051ab^4e(d+ex)^4-235620ab^4de(d+ex)^3-21879b^5d^5+85085b^5d^4(d+ex)-139230b^5d^3(d+ex)^2+117810b^5d^2(d+ex)^3+9009b^5(d+ex)^5-51051b^5d(d+ex)^4\right)}{153153e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-21879*b^5*d^5 + 109395*a*b^4*d^4*e - 218790*a^2*b^3*d^
3*e^2 + 218790*a^3*b^2*d^2*e^3 - 109395*a^4*b*d*e^4 + 21879*a^5*e^5 + 85085
*b^5*d^4*(d + e*x) - 340340*a*b^4*d^3*e*(d + e*x) + 510510*a^2*b^3*d^2*e^2*
(d + e*x) - 340340*a^3*b^2*d*e^3*(d + e*x) + 85085*a^4*b*e^4*(d + e*x) - 13
9230*b^5*d^3*(d + e*x)^2 + 417690*a*b^4*d^2*e*(d + e*x)^2 - 417690*a^2*b^3*
d*e^2*(d + e*x)^2 + 139230*a^3*b^2*e^3*(d + e*x)^2 + 117810*b^5*d^2*(d + e*
x)^3 - 235620*a*b^4*d*e*(d + e*x)^3 + 117810*a^2*b^3*e^2*(d + e*x)^3 - 5105
1*b^5*d*(d + e*x)^4 + 51051*a*b^4*e*(d + e*x)^4 + 9009*b^5*(d + e*x)^5))/(1
53153*e^6)
```

fricas [B] time = 0.44, size = 497, normalized size = 3.15

$$\frac{2\left(9009\,b^5e^8x^8-256\,b^5d^8+2176\,ab^4d^7e-8160\,a^2b^3d^6e^2+17680\,a^3b^2d^5e^3-24310\,a^4bd^4e^4+21879\,a^5d^3e^5+3003\left(7\,b^5de^7+17\,ab^4e^8\right)x^7+231\left(55\,b^5d^2e^6+527\,ab^4de^7+510\,a^2b^3e^8\right)x^6+63\left(b^5d^3e^5+1207\,ab^4d^2e^6+4590\,a^2b^3de^7+2210\,a^3b^2e^8\right)x^5-35\left(2\,b^5d^4e^4-17\,ab^4d^3e^5-5406\,a^2b^3d^2e^6-10166\,a^3b^2de^7-2431\,a^4be^8\right)x^4+\left(80\,b^5d^5e^3-680\,ab^4d^4e^4+2550\,a^2b^3d^3e^5+249730\,a^3b^2d^2e^6+230945\,a^4bde^7+21879\,a^5e^8\right)x^3-3\left(32\,b^5d^6e^2-272\,ab^4d^5e^3+1020\,a^2b^3d^4e^4-2210\,a^3b^2d^3e^5-60775\,a^4bd^2e^6-21879\,a^5de^7\right)x^2+\left(128\,b^5d^7e-1088\,ab^4d^6e^2+4080\,a^2b^3d^5e^3-8840\,a^3b^2d^4e^4+12155\,a^4bd^3e^5+65637\,a^5d^2e^6\right)x\right)\sqrt{ex+d}}{153153\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/153153*(9009*b^5*e^8*x^8 - 256*b^5*d^8 + 2176*a*b^4*d^7*e - 8160*a^2*b^3*
d^6*e^2 + 17680*a^3*b^2*d^5*e^3 - 24310*a^4*b*d^4*e^4 + 21879*a^5*d^3*e^5 +
 3003*(7*b^5*d*e^7 + 17*a*b^4*e^8)*x^7 + 231*(55*b^5*d^2*e^6 + 527*a*b^4*d*
e^7 + 510*a^2*b^3*e^8)*x^6 + 63*(b^5*d^3*e^5 + 1207*a*b^4*d^2*e^6 + 4590*a^
2*b^3*d*e^7 + 2210*a^3*b^2*e^8)*x^5 - 35*(2*b^5*d^4*e^4 - 17*a*b^4*d^3*e^5
- 5406*a^2*b^3*d^2*e^6 - 10166*a^3*b^2*d*e^7 - 2431*a^4*b*e^8)*x^4 + (80*b^
5*d^5*e^3 - 680*a*b^4*d^4*e^4 + 2550*a^2*b^3*d^3*e^5 + 249730*a^3*b^2*d^2*e
^6 + 230945*a^4*b*d*e^7 + 21879*a^5*e^8)*x^3 - 3*(32*b^5*d^6*e^2 - 272*a*b^
4*d^5*e^3 + 1020*a^2*b^3*d^4*e^4 - 2210*a^3*b^2*d^3*e^5 - 60775*a^4*b*d^2*e
^6 - 21879*a^5*d*e^7)*x^2 + (128*b^5*d^7*e - 1088*a*b^4*d^6*e^2 + 4080*a^2*
b^3*d^5*e^3 - 8840*a^3*b^2*d^4*e^4 + 12155*a^4*b*d^3*e^5 + 65637*a^5*d^2*e^
6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.27, size = 1698, normalized size = 10.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/765765*(1276275*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d^3*e^(-1) +
510510*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^
3*b^2*d^3*e^(-2) + 218790*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d^3*e^(-3) + 12155*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^4*d^3*e^(-4) + 1105*(63*(x*e +
d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d
)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*d^3*e^(
-5) + 765765*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*a^4*b*d^2*e^(-1) + 656370*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^2*d^2*e^(-2) + 72930*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^3*d^2*e^(-3) + 16575*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
```

```
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^
4*d^2*e^(-4) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^5*d^2*e^(-5) + 765765*
sqrt(x*e + d)*a^5*d^3 + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*d^
2 + 328185*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*a^4*b*d*e^(-1) + 72930*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*a^3*b^2*d*e^(-2) + 33150*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^3*d*e^(-3) + 3825*(231*
(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 858
0*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
 + 3003*sqrt(x*e + d)*d^6)*a*b^4*d*e^(-4) + 357*(429*(x*e + d)^(15/2) - 346
5*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d
^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d
)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^5*d*e^(-5) + 153153*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*d + 12155*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b*e^(-1) + 11050*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^2*e^(-2) + 2
550*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*
d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^
(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*b^3*e^(-3) + 595*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^4*e^(-4) + 7*(6435*(x*e
+ d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 5569
20*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/
2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*s
qrt(x*e + d)*d^8)*b^5*e^(-5) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5)*e^(-1)
```

maple [B] time = 0.05, size = 273, normalized size = 1.73

$$\frac{2 (ex+d)^{\frac{7}{2}} \left(9009 b^5 e^5 x^5 + 51051 a b^4 e^5 x^4 - 6006 b^5 d e^4 x^4 + 117810 a^2 b^3 e^5 x^3 - 31416 a b^4 d e^4 x^3 + 3696 b^5 d^2 e^3 x^3 + 139230 a^3 b^2 e^5 x^2 - 64260 a^2 b^3 d e^4 x^2 + 17136 a b^4 d^2 e^3 x^2 - 2016 b^5 d^3 e^2 x^2 + 85085 a^4 b e^5 x - 61880 a^3 b^2 d e^4 x + 28560 a^2 b^3 d^2 e^3 x - 7616 a b^4 d^3 e^2 x + 896 b^5 d^4 e x + 21879 a^5 e^5 - 24310 a^4 b d e^4 + 17680 a^3 b^2 d^2 e^3 - 8160 a^2 b^3 d^3 e^2 + 2176 a b^4 d^4 e - 256 b^5 d^5\right)}{153153 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/153153*(e*x+d)^(7/2)*(9009*b^5*e^5*x^5+51051*a*b^4*e^5*x^4-6006*b^5*d*e^4
*x^4+117810*a^2*b^3*e^5*x^3-31416*a*b^4*d*e^4*x^3+3696*b^5*d^2*e^3*x^3+1392
30*a^3*b^2*e^5*x^2-64260*a^2*b^3*d*e^4*x^2+17136*a*b^4*d^2*e^3*x^2-2016*b^5
*d^3*e^2*x^2+85085*a^4*b*e^5*x-61880*a^3*b^2*d*e^4*x+28560*a^2*b^3*d^2*e^3*
x-7616*a*b^4*d^3*e^2*x+896*b^5*d^4*e*x+21879*a^5*e^5-24310*a^4*b*d*e^4+1768
0*a^3*b^2*d^2*e^3-8160*a^2*b^3*d^3*e^2+2176*a*b^4*d^4*e-256*b^5*d^5)/e^6
```

maxima [A] time = 0.53, size = 259, normalized size = 1.64

$$\frac{2 \left(9009 (ex+d)^{\frac{17}{2}} b^5 - 51051 \left(b^5 d - a b^4 e\right) (ex+d)^{\frac{15}{2}} + 117810 \left(b^5 d^2 - 2 a b^4 d e + a^2 b^3 e^2\right) (ex+d)^{\frac{13}{2}} - 139230 \left(b^5 d^3 - 3 a b^4 d^2 e + 3 a^2 b^3 d e^2 - a^3 b^2 e^3\right) (ex+d)^{\frac{11}{2}} + 85085 \left(b^5 d^4 - 4 a b^4 d^3 e + 6 a^2 b^3 d^2 e^2 - 4 a^3 b^2 d e^3 + a^4 b e^4\right) (ex+d)^{\frac{9}{2}} - 21879 \left(b^5 d^5 - 5 a b^4 d^4 e + 10 a^2 b^3 d^3 e^2 - 10 a^3 b^2 d^2 e^3 + 5 a^4 b d e^4 - a^5 e^5\right) (ex+d)^{\frac{7}{2}}\right)}{153153 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/153153*(9009*(e*x + d)^(17/2)*b^5 - 51051*(b^5*d - a*b^4*e)*(e*x + d)^(15
/2) + 117810*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(13/2) - 13923
0*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(11/2
```

```
) + 85085*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 +
a^4*b*e^4)*(e*x + d)^(9/2) - 21879*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^
3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(7/2))/e^6
```

mupad [B] time = 2.05, size = 137, normalized size = 0.87

$$\frac{2 b^5 (d+e x)^{17/2}}{17 e^6} - \frac{\left(10 b^5 d - 10 a b^4 e\right) (d+e x)^{15/2}}{15 e^6} + \frac{2 (a e - b d)^5 (d+e x)^{7/2}}{7 e^6} + \frac{20 b^2 (a e - b d)^3 (d+e x)^{11/2}}{11 e^6} + \frac{20 b^3 (a e - b d)^2 (d+e x)^{13/2}}{13 e^6} + \frac{10 b (a e - b d)^4 (d+e x)^{9/2}}{9 e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(17/2))/(17*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(15/
2))/(15*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(7/2))/(7*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(11/2))/(11*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(13/2))/
(13*e^6) + (10*b*(a*e - b*d)^4*(d + e*x)^(9/2))/(9*e^6)
```

sympy [A] time = 48.32, size = 1292, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)
) + 4*a**5*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**5*(d**2*
(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e + 10*a*
*4*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 20*a**4*b*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2
 + 10*a**4*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 20*a**3*b**2*d**2*(d**2*(d +
e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 40*a**3
*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*
x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 20*a**3*b**2*(d**4*(d + e*x)**(3/2
)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)
**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 20*a**2*b**3*d**2*(-d**3*(d + e*x)
**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)*
*(9/2)/9)/e**4 + 40*a**2*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)
**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)*
*(11/2)/11)/e**4 + 20*a**2*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)*
*(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d +
 e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 10*a*b**4*d**2*(d**4*(d + e
*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*
(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 20*a*b**4*d*(-d**5*(d + e
*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2
*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5
 + 10*a*b**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4
*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2
)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*b**5*d**2*
(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2
)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(1
3/2)/13)/e**6 + 4*b**5*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)
/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d +
 e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 +
2*b**5*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d +
e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 2
1*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/
17)/e**6
```

3.1827 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=158

$$-\frac{10b^4(d+ex)^{13/2}(bd-ae)}{13e^6}+\frac{20b^3(d+ex)^{11/2}(bd-ae)^2}{11e^6}-\frac{20b^2(d+ex)^{9/2}(bd-ae)^3}{9e^6}+\frac{10b(d+ex)^{7/2}(bd-ae)^4}{7e^6}-\frac{2(d$$

Rubi [A] time = 0.06, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{10b^4(d+ex)^{13/2}(bd-ae)}{13e^6}+\frac{20b^3(d+ex)^{11/2}(bd-ae)^2}{11e^6}-\frac{20b^2(d+ex)^{9/2}(bd-ae)^3}{9e^6}+\frac{10b(d+ex)^{7/2}(bd-ae)^4}{7e^6}-\frac{2(d+ex)^{5/2}(bd-ae)^5}{5e^6}+\frac{2b^5(d+ex)^{15/2}}{15e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(5/2))/(5*e^6) + (10*b*(b*d - a*e)^4*(d + e*x)^
(7/2))/(7*e^6) - (20*b^2*(b*d - a*e)^3*(d + e*x)^(9/2))/(9*e^6) + (20*b^3*(
b*d - a*e)^2*(d + e*x)^(11/2))/(11*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(13
/2))/(13*e^6) + (2*b^5*(d + e*x)^(15/2))/(15*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^{3/2}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{5/2}}{e^5}-\frac{10b^2(bd-\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{5/2}}{5e^6}+\frac{10b(bd-ae)^4(d+ex)^{7/2}}{7e^6}-\frac{20b^2(bd-a}{9}\end{aligned}$$

Mathematica [A] time = 0.11, size = 123, normalized size = 0.78

$$\frac{2(d+ex)^{5/2}\left(-17325b^4(d+ex)^4(bd-ae)+40950b^3(d+ex)^3(bd-ae)^2-50050b^2(d+ex)^2(bd-ae)^3+32175b(d+ex)(bd-ae)^4-9009(bd-ae)^5+3003b^5(d+ex)^5\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*(b*d - a*e)^5 + 32175*b*(b*d - a*e)^4*(d + e*x) -
 50050*b^2*(b*d - a*e)^3*(d + e*x)^2 + 40950*b^3*(b*d - a*e)^2*(d + e*x)^3
- 17325*b^4*(b*d - a*e)*(d + e*x)^4 + 3003*b^5*(d + e*x)^5))/(45045*e^6)
```

IntegrateAlgebraic [A] time = 0.11, size = 315, normalized size = 1.99

$$\frac{2(d+ex)^{5/2}\left(9009a^5e^5+32175a^4be^4(d+ex)-45045a^4bde^4+90090a^3b^2d^2e^3+50050a^3b^2e^3(d+ex)^2-128700a^3b^2de^3(d+ex)-90090a^2b^3d^3e^2+193050a^2b^3d^2e^2(d+ex)+40950a^2b^3e^2(d+ex)^3-150150a^2b^3de^2(d+ex)^2+45045ab^4d^4e-128700ab^4d^3e(d+ex)+150150ab^4d^2e(d+ex)^2+17325ab^4e(d+ex)^4-81900ab^4de(d+ex)^3-9009b^5d^5+32175b^5d^4(d+ex)-50050b^5d^3(d+ex)^2+40950b^5d^2(d+ex)^3+3003b^5(d+ex)^5-17325b^5d(d+ex)^4\right)}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*b^5*d^5 + 45045*a*b^4*d^4*e - 90090*a^2*b^3*d^3*e
^2 + 90090*a^3*b^2*d^2*e^3 - 45045*a^4*b*d*e^4 + 9009*a^5*e^5 + 32175*b^5*d
^4*(d + e*x) - 128700*a*b^4*d^3*e*(d + e*x) + 193050*a^2*b^3*d^2*e^2*(d + e
*x) - 128700*a^3*b^2*d*e^3*(d + e*x) + 32175*a^4*b*e^4*(d + e*x) - 50050*b^
5*d^3*(d + e*x)^2 + 150150*a*b^4*d^2*e*(d + e*x)^2 - 150150*a^2*b^3*d*e^2*(
d + e*x)^2 + 50050*a^3*b^2*e^3*(d + e*x)^2 + 40950*b^5*d^2*(d + e*x)^3 - 81
900*a*b^4*d*e*(d + e*x)^3 + 40950*a^2*b^3*e^2*(d + e*x)^3 - 17325*b^5*d*(d
+ e*x)^4 + 17325*a*b^4*e*(d + e*x)^4 + 3003*b^5*(d + e*x)^5))/(45045*e^6)
```

fricas [B] time = 0.41, size = 418, normalized size = 2.65

$$\frac{2\left(3003b^5e^7x^7-256b^5d^7+1920ab^4d^6e-6240a^2b^3d^5e^2+11440a^3b^2d^4e^3-12870a^4bd^3e^4+9009a^5d^2e^5+231\left(16b^5de^6+75ab^4e^7\right)x^6+63\left(b^5d^2e^5+350ab^4de^6+650a^2b^3e^7\right)x^5-35\left(2b^5d^3e^4-15ab^4d^2e^5-1560a^2b^3de^6-1430a^3b^2e^7\right)x^4+5\left(16b^5d^4e^3-120ab^4d^3e^4+390a^2b^3d^2e^5+14300a^3b^2de^6+6435a^4be^7\right)x^3-3\left(32b^5d^5e^2-240ab^4d^4e^3+780a^2b^3d^3e^4-1430a^3b^2d^2e^5-17160a^4bde^6-3003a^5e^7\right)x^2+\left(128b^5d^6e-960ab^4d^5e^2+3120a^2b^3d^4e^3-5720a^3b^2d^3e^4+6435a^4bd^2e^5+18018a^5de^6\right)x\right)\sqrt{ex+d}}{45045e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/45045*(3003*b^5*e^7*x^7 - 256*b^5*d^7 + 1920*a*b^4*d^6*e - 6240*a^2*b^3*d
^5*e^2 + 11440*a^3*b^2*d^4*e^3 - 12870*a^4*b*d^3*e^4 + 9009*a^5*d^2*e^5 + 2
31*(16*b^5*d*e^6 + 75*a*b^4*e^7)*x^6 + 63*(b^5*d^2*e^5 + 350*a*b^4*d*e^6 +
650*a^2*b^3*e^7)*x^5 - 35*(2*b^5*d^3*e^4 - 15*a*b^4*d^2*e^5 - 1560*a^2*b^3*
d*e^6 - 1430*a^3*b^2*e^7)*x^4 + 5*(16*b^5*d^4*e^3 - 120*a*b^4*d^3*e^4 + 390
*a^2*b^3*d^2*e^5 + 14300*a^3*b^2*d*e^6 + 6435*a^4*b*e^7)*x^3 - 3*(32*b^5*d^
5*e^2 - 240*a*b^4*d^4*e^3 + 780*a^2*b^3*d^3*e^4 - 1430*a^3*b^2*d^2*e^5 - 17
160*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (128*b^5*d^6*e - 960*a*b^4*d^5*e^2 +
3120*a^2*b^3*d^4*e^3 - 5720*a^3*b^2*d^3*e^4 + 6435*a^4*b*d^2*e^5 + 18018*a^
5*d*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.23, size = 1149, normalized size = 7.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/45045*(75075*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d^2*e^(-1) + 300
30*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b^
2*d^2*e^(-2) + 12870*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d^2*e^(-3) + 715*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^4*d^2*e^(-4) + 65*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*d^2*e^(-5) + 300
30*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^4*b*
d*e^(-1) + 25740*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^2*d*e^(-2) + 2860*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^3*d*e^(-3) + 650*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^4*d*e^(-4) + 30*(231
*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 85
80*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^
```

```
5 + 3003*sqrt(x*e + d)*d^6)*b^5*d*e^(-5) + 45045*sqrt(x*e + d)*a^5*d^2 + 30
030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*d + 6435*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*
b*e^(-1) + 1430*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^2*e^(-2
) + 650*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*
d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
d)*d^5)*a^2*b^3*e^(-3) + 75*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d
 + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/
2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^4*e^(-4) +
7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*
d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^5*e^(-
5) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*a^5)*e^(-1)
```

maple [**B**] time = 0.05, size = 273, normalized size = 1.73

$$\frac{2\left(ex+d\right)^{\frac{5}{2}}\left(3003b^{5}e^{5}x^{5}+17325a\,b^{4}e^{5}x^{4}-2310b^{5}d\,e^{4}x^{4}+40950a^{2}b^{3}e^{5}x^{3}-12600a\,b^{4}d\,e^{4}x^{3}+1680b^{5}d^{2}e^{3}x^{3}+50050a^{3}b^{2}e^{5}x^{2}-27300a^{2}b^{3}d\,e^{4}x^{2}+8400a\,b^{4}d^{2}e^{3}x^{2}-1120b^{5}d^{3}e^{2}x^{2}+32175a^{4}b\,e^{5}x-28600a^{3}b^{2}d\,e^{4}x+15600a^{2}b^{3}d^{2}e^{3}x-4800a\,b^{4}d^{3}e^{2}x+640b^{5}d^{4}ex+9009a^{5}e^{5}-12870a^{4}bd\,e^{4}+11440a^{3}b^{2}d^{2}e^{3}-6240a^{2}b^{3}d^{3}e^{2}+1920a\,b^{4}d^{4}e-256b^{5}d^{5}\right)}{45045e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(3003*b^5*e^5*x^5+17325*a*b^4*e^5*x^4-2310*b^5*d*e^4*
x^4+40950*a^2*b^3*e^5*x^3-12600*a*b^4*d*e^4*x^3+1680*b^5*d^2*e^3*x^3+50050*
a^3*b^2*e^5*x^2-27300*a^2*b^3*d*e^4*x^2+8400*a*b^4*d^2*e^3*x^2-1120*b^5*d^3
*e^2*x^2+32175*a^4*b*e^5*x-28600*a^3*b^2*d*e^4*x+15600*a^2*b^3*d^2*e^3*x-48
00*a*b^4*d^3*e^2*x+640*b^5*d^4*e*x+9009*a^5*e^5-12870*a^4*b*d*e^4+11440*a^3
*b^2*d^2*e^3-6240*a^2*b^3*d^3*e^2+1920*a*b^4*d^4*e-256*b^5*d^5)/e^6
```

maxima [**A**] time = 0.56, size = 259, normalized size = 1.64

$$\frac{2\left(3003\left(ex+d\right)^{\frac{15}{2}}b^{5}-17325\left(b^{5}d-ab^{4}e\right)\left(ex+d\right)^{\frac{13}{2}}+40950\left(b^{5}d^{2}-2\,ab^{4}de+a^{2}b^{3}e^{2}\right)\left(ex+d\right)^{\frac{11}{2}}-50050\left(b^{5}d^{3}-3\,ab^{4}d^{2}e+3\,a^{2}b^{3}de^{2}-a^{3}b^{2}e^{3}\right)\left(ex+d\right)^{\frac{9}{2}}+32175\left(b^{5}d^{4}-4\,ab^{4}d^{3}e+6\,a^{2}b^{3}d^{2}e^{2}-4\,a^{3}b^{2}de^{3}+a^{4}be^{4}\right)\left(ex+d\right)^{\frac{7}{2}}-9009\left(b^{5}d^{5}-5\,ab^{4}d^{4}e+10\,a^{2}b^{3}d^{3}e^{2}-10\,a^{3}b^{2}d^{2}e^{3}+5\,a^{4}bde^{4}-a^{5}e^{5}\right)\left(ex+d\right)^{\frac{5}{2}}\right)}{45045\,e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*b^5 - 17325*(b^5*d - a*b^4*e)*(e*x + d)^(13/
2) + 40950*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(11/2) - 50050*(
b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(9/2) +
32175*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*
b*e^4)*(e*x + d)^(7/2) - 9009*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2
 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(5/2))/e^6
```

mupad [**B**] time = 0.05, size = 137, normalized size = 0.87

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{15/2}}{15\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{13/2}}{13\,e^6}+\frac{2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{5/2}}{5\,e^6}+\frac{20\,b^2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^6}+\frac{20\,b^3\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{11/2}}{11\,e^6}+\frac{10\,b\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(15/2))/(15*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(13/
2))/(13*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(5/2))/(5*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(9/2))/(9*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(11/2))/(1
1*e^6) + (10*b*(a*e - b*d)^4*(d + e*x)^(7/2))/(7*e^6)
```

sympy [**A**] time = 30.56, size = 763, normalized size = 4.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
 2*a**5*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 10*a**4*b*d*(-d*(d
 + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 10*a**4*b*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 20*a**3*b**2*d*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**
3 + 20*a**3*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*
d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 20*a**2*b**3*d*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**4 + 20*a**2*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**4 + 10*a*b**4*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e
*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*
x)**(11/2)/11)/e**5 + 10*a*b**4*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)*
*(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d +
 e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*b**5*d*(-d**5*(d + e*x)**
(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d +
 e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 2*
b**5*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*
x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6
*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1828 $\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=156

$$-\frac{10b^4(d+ex)^{11/2}(bd-ae)}{11e^6}+\frac{20b^3(d+ex)^{9/2}(bd-ae)^2}{9e^6}-\frac{20b^2(d+ex)^{7/2}(bd-ae)^3}{7e^6}+\frac{2b(d+ex)^{5/2}(bd-ae)^4}{e^6}-\frac{2(d+$$

Rubi [A] time = 0.05, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{10b^4(d+ex)^{11/2}(bd-ae)}{11e^6}+\frac{20b^3(d+ex)^{9/2}(bd-ae)^2}{9e^6}-\frac{20b^2(d+ex)^{7/2}(bd-ae)^3}{7e^6}+\frac{2b(d+ex)^{5/2}(bd-ae)^4}{e^6}-\frac{2(d+ex)^{3/2}(bd-ae)^5}{3e^6}+\frac{2b^5(d+ex)^{13/2}}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(3/2))/(3*e^6) + (2*b*(b*d - a*e)^4*(d + e*x)^(
5/2))/e^6 - (20*b^2*(b*d - a*e)^3*(d + e*x)^(7/2))/(7*e^6) + (20*b^3*(b*d -
 a*e)^2*(d + e*x)^(9/2))/(9*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(11/2))/(1
1*e^6) + (2*b^5*(d + e*x)^(13/2))/(13*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^5\sqrt{d+ex}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{3/2}}{e^5}-\frac{10b^2(bd-ae)}{e^5}\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{3/2}}{3e^6}+\frac{2b(bd-ae)^4(d+ex)^{5/2}}{e^6}-\frac{20b^2(bd-ae)^3}{7e^6}\end{aligned}$$

Mathematica [A] time = 0.11, size = 123, normalized size = 0.79

$$\frac{2(d+ex)^{3/2}\left(-4095b^4(d+ex)^4(bd-ae)+10010b^3(d+ex)^3(bd-ae)^2-12870b^2(d+ex)^2(bd-ae)^3+9009b(d+ex)(bd-ae)^4-3003(bd-ae)^5+693b^5(d+ex)^5\right)}{9009e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-3003*(b*d - a*e)^5 + 9009*b*(b*d - a*e)^4*(d + e*x) -
12870*b^2*(b*d - a*e)^3*(d + e*x)^2 + 10010*b^3*(b*d - a*e)^2*(d + e*x)^3 -
 4095*b^4*(b*d - a*e)*(d + e*x)^4 + 693*b^5*(d + e*x)^5))/(9009*e^6)
```

IntegrateAlgebraic [B] time = 0.10, size = 315, normalized size = 2.02

$$\frac{2(d+ex)^{3/2}\left(3003a^5e^5+9009a^4be^4(d+ex)-15015a^4bde^4+30030a^3b^2d^2e^3+12870a^3b^2e^3(d+ex)^2-36036a^3b^2de^3(d+ex)-30030a^2b^3d^3e^2+54054a^2b^3d^2e^2(d+ex)+10010a^2b^3e^2(d+ex)^3-38610a^2b^3de^2(d+ex)^2+15015ab^4d^4e-36036ab^4d^3e(d+ex)+38610ab^4d^2e(d+ex)^2+4095ab^4e(d+ex)^4-20020ab^4de(d+ex)^3-3003b^5d^5+9009b^5d^4(d+ex)-12870b^5d^3(d+ex)^2+10010b^5d^2(d+ex)^3+693b^5(d+ex)^5-4095b^5d(d+ex)^4\right)}{9009e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-3003*b^5*d^5 + 15015*a*b^4*d^4*e - 30030*a^2*b^3*d^3*e
^2 + 30030*a^3*b^2*d^2*e^3 - 15015*a^4*b*d*e^4 + 3003*a^5*e^5 + 9009*b^5*d^
4*(d + e*x) - 36036*a*b^4*d^3*e*(d + e*x) + 54054*a^2*b^3*d^2*e^2*(d + e*x)
 - 36036*a^3*b^2*d*e^3*(d + e*x) + 9009*a^4*b*e^4*(d + e*x) - 12870*b^5*d^3
*(d + e*x)^2 + 38610*a*b^4*d^2*e*(d + e*x)^2 - 38610*a^2*b^3*d*e^2*(d + e*x
)^2 + 12870*a^3*b^2*e^3*(d + e*x)^2 + 10010*b^5*d^2*(d + e*x)^3 - 20020*a*b
^4*d*e*(d + e*x)^3 + 10010*a^2*b^3*e^2*(d + e*x)^3 - 4095*b^5*d*(d + e*x)^4
 + 4095*a*b^4*e*(d + e*x)^4 + 693*b^5*(d + e*x)^5))/(9009*e^6)
```

fricas [B] time = 0.43, size = 338, normalized size = 2.17

$$\frac{2\left(693\,b^5e^6x^6-256\,b^5d^6+1664\,ab^4d^5e-4576\,a^2b^3d^4e^2+6864\,a^3b^2d^3e^3-6006\,a^4bd^2e^4+3003\,a^5de^5+63\left(b^5de^5+65\,ab^4e^6\right)x^5-35\left(2\,b^5d^2e^4-13\,ab^4de^5-286\,a^2b^3e^6\right)x^4+10\left(8\,b^5d^3e^3-52\,ab^4d^2e^4+143\,a^2b^3de^5+1287\,a^3b^2e^6\right)x^3-3\left(32\,b^5d^4e^2-208\,ab^4d^3e^3+572\,a^2b^3d^2e^4-858\,a^3b^2de^5-3003\,a^4be^6\right)x^2+\left(128\,b^5d^5e-832\,ab^4d^4e^2+2288\,a^2b^3d^3e^3-3432\,a^3b^2d^2e^4+3003\,a^4bde^5+3003\,a^5e^6\right)x\right)\sqrt{ex+d}}{9009\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/9009*(693*b^5*e^6*x^6 - 256*b^5*d^6 + 1664*a*b^4*d^5*e - 4576*a^2*b^3*d^4
*e^2 + 6864*a^3*b^2*d^3*e^3 - 6006*a^4*b*d^2*e^4 + 3003*a^5*d*e^5 + 63*(b^5
*d*e^5 + 65*a*b^4*e^6)*x^5 - 35*(2*b^5*d^2*e^4 - 13*a*b^4*d*e^5 - 286*a^2*b
^3*e^6)*x^4 + 10*(8*b^5*d^3*e^3 - 52*a*b^4*d^2*e^4 + 143*a^2*b^3*d*e^5 + 12
87*a^3*b^2*e^6)*x^3 - 3*(32*b^5*d^4*e^2 - 208*a*b^4*d^3*e^3 + 572*a^2*b^3*d
^2*e^4 - 858*a^3*b^2*d*e^5 - 3003*a^4*b*e^6)*x^2 + (128*b^5*d^5*e - 832*a*b
^4*d^4*e^2 + 2288*a^2*b^3*d^3*e^3 - 3432*a^3*b^2*d^2*e^4 + 3003*a^4*b*d*e^5
 + 3003*a^5*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.19, size = 678, normalized size = 4.35

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/9009*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d*e^(-1) + 6006*(
3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b^2*d*
e^(-2) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2
)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d*e^(-3) + 143*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*a*b^4*d*e^(-4) + 13*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*d*e^(-5) + 3003*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^4*b*e^(-1) + 2574*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*a^3*b^2*e^(-2) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a^2*b^3*e^(-3) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*a*b^4*e^(-4) + 3*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
```

```
)*b^5*e^(-5) + 9009*sqrt(x*e + d)*a^5*d + 3003*((x*e + d)^(3/2) - 3*sqrt(x*
e + d)*d)*a^5)*e^(-1)
```

maple [B] time = 0.05, size = 273, normalized size = 1.75

$$\frac{2 \left(e x + d\right)^{\frac{3}{2}} \left(693 b^{5} e^{5} x^{5}+4095 a \,b^{4} e^{5} x^{4}-630 b^{5} d \,e^{4} x^{4}+10010 a^{2} b^{3} e^{5} x^{3}-3640 a \,b^{4} d \,e^{4} x^{3}+560 b^{5} d^{2} e^{3} x^{3}+12870 a^{3} b^{2} e^{5} x^{2}-8580 a^{2} b^{3} d \,e^{4} x^{2}+3120 a \,b^{4} d^{2} e^{3} x^{2}-480 b^{5} d^{3} e^{2} x^{2}+9009 a^{4} b \,e^{5} x -10296 a^{3} b^{2} d \,e^{4} x +6864 a^{2} b^{3} d^{2} e^{3} x -2496 a \,b^{4} d^{3} e^{2} x +384 b^{5} d^{4} e x +3003 a^{5} e^{5}-6006 a^{4} b d \,e^{4}+6864 a^{3} b^{2} d^{2} e^{3}-4576 a^{2} b^{3} d^{3} e^{2}+1664 a \,b^{4} d^{4} e -256 b^{5} d^{5}\right)}{9009 e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/9009*(e*x+d)^(3/2)*(693*b^5*e^5*x^5+4095*a*b^4*e^5*x^4-630*b^5*d*e^4*x^4+
10010*a^2*b^3*e^5*x^3-3640*a*b^4*d*e^4*x^3+560*b^5*d^2*e^3*x^3+12870*a^3*b^
2*e^5*x^2-8580*a^2*b^3*d*e^4*x^2+3120*a*b^4*d^2*e^3*x^2-480*b^5*d^3*e^2*x^2
+9009*a^4*b*e^5*x-10296*a^3*b^2*d*e^4*x+6864*a^2*b^3*d^2*e^3*x-2496*a*b^4*d
^3*e^2*x+384*b^5*d^4*e*x+3003*a^5*e^5-6006*a^4*b*d*e^4+6864*a^3*b^2*d^2*e^3
-4576*a^2*b^3*d^3*e^2+1664*a*b^4*d^4*e-256*b^5*d^5)/e^6
```

maxima [A] time = 0.49, size = 259, normalized size = 1.66

$$\frac{2 \left(693 \left(e x + d\right)^{\frac{13}{2}} b^{5} - 4095 \left(b^{5} d - a b^{4} e\right) \left(e x + d\right)^{\frac{11}{2}} + 10010 \left(b^{5} d^{2} - 2 \, a b^{4} d e + a^{2} b^{3} e^{2}\right) \left(e x + d\right)^{\frac{9}{2}} - 12870 \left(b^{5} d^{3} - 3 \, a b^{4} d^{2} e + 3 \, a^{2} b^{3} d e^{2} - a^{3} b^{2} e^{3}\right) \left(e x + d\right)^{\frac{7}{2}} + 9009 \left(b^{5} d^{4} - 4 \, a b^{4} d^{3} e + 6 \, a^{2} b^{3} d^{2} e^{2} - 4 \, a^{3} b^{2} d e^{3} + a^{4} b e^{4}\right) \left(e x + d\right)^{\frac{5}{2}} - 3003 \left(b^{5} d^{5} - 5 \, a b^{4} d^{4} e + 10 \, a^{2} b^{3} d^{3} e^{2} - 10 \, a^{3} b^{2} d^{2} e^{3} + 5 \, a^{4} b d e^{4} - a^{5} e^{5}\right) \left(e x + d\right)^{\frac{3}{2}}\right)}{9009 \, e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/9009*(693*(e*x + d)^(13/2)*b^5 - 4095*(b^5*d - a*b^4*e)*(e*x + d)^(11/2)
+ 10010*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(9/2) - 12870*(b^5*
d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(7/2) + 9009
*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4
)*(e*x + d)^(5/2) - 3003*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10
*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(3/2))/e^6
```

mupad [B] time = 0.05, size = 137, normalized size = 0.88

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{13/2}}{13\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{11/2}}{11\,e^6}+\frac{2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{3/2}}{3\,e^6}+\frac{20\,b^2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}+\frac{20\,b^3\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{9/2}}{9\,e^6}+\frac{2\,b\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{5/2}}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(13/2))/(13*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(11/
2))/(11*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(3/2))/(3*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(7/2))/(7*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(9/2))/(9*
e^6) + (2*b*(a*e - b*d)^4*(d + e*x)^(5/2))/e^6
```

sympy [B] time = 7.70, size = 314, normalized size = 2.01

$$\frac{2 \left(\frac{b^{5} \left(d + e x\right)^{\frac{13}{2}}}{13 e^{5}} + \frac{\left(d + e x\right)^{\frac{11}{2}} \left(5 a b^{4} e - 5 b^{5} d\right)}{11 e^{5}} + \frac{\left(d + e x\right)^{\frac{9}{2}} \left(10 a^{2} b^{3} e^{2} - 20 a b^{4} d e + 10 b^{5} d^{2}\right)}{9 e^{5}} + \frac{\left(d + e x\right)^{\frac{7}{2}} \left(10 a^{3} b^{2} e^{3} - 30 a^{2} b^{3} d e^{2} + 30 a b^{4} d^{2} e - 10 b^{5} d^{3}\right)}{7 e^{5}} + \frac{\left(d + e x\right)^{\frac{5}{2}} \left(5 a^{4} b e^{4} - 20 a^{3} b^{2} d e^{3} + 30 a^{2} b^{3} d^{2} e^{2} - 20 a b^{4} d^{3} e + 5 b^{5} d^{4}\right)}{5 e^{5}} + \frac{\left(d + e x\right)^{\frac{3}{2}} \left(a^{5} e^{5} - 5 a^{4} b d e^{4} + 10 a^{3} b^{2} d^{2} e^{3} - 10 a^{2} b^{3} d^{3} e^{2} + 5 a b^{4} d^{4} e - b^{5} d^{5}\right)}{3 e^{5}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(b**5*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(5*a*b**4*e - 5*b**
5*d)/(11*e**5) + (d + e*x)**(9/2)*(10*a**2*b**3*e**2 - 20*a*b**4*d*e + 10*b
**5*d**2)/(9*e**5) + (d + e*x)**(7/2)*(10*a**3*b**2*e**3 - 30*a**2*b**3*d*e
**2 + 30*a*b**4*d**2*e - 10*b**5*d**3)/(7*e**5) + (d + e*x)**(5/2)*(5*a**4*
b*e**4 - 20*a**3*b**2*d*e**3 + 30*a**2*b**3*d**2*e**2 - 20*a*b**4*d**3*e +
5*b**5*d**4)/(5*e**5) + (d + e*x)**(3/2)*(a**5*e**5 - 5*a**4*b*d*e**4 + 10*
a**3*b**2*d**2*e**3 - 10*a**2*b**3*d**3*e**2 + 5*a*b**4*d**4*e - b**5*d**5)
/(3*e**5))/e
```

3.1829 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=154

$$-\frac{10b^4(d+ex)^{9/2}(bd-ae)}{9e^6}+\frac{20b^3(d+ex)^{7/2}(bd-ae)^2}{7e^6}-\frac{4b^2(d+ex)^{5/2}(bd-ae)^3}{e^6}+\frac{10b(d+ex)^{3/2}(bd-ae)^4}{3e^6}-\frac{2\sqrt{d+ex}(bd-ae)^5}{e^6}+\frac{2b^5(d+ex)^{11/2}}{11e^6}$$

Rubi [A] time = 0.06, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 43}

$$-\frac{10b^4(d+ex)^{9/2}(bd-ae)}{9e^6}+\frac{20b^3(d+ex)^{7/2}(bd-ae)^2}{7e^6}-\frac{4b^2(d+ex)^{5/2}(bd-ae)^3}{e^6}+\frac{10b(d+ex)^{3/2}(bd-ae)^4}{3e^6}-\frac{2\sqrt{d+ex}(bd-ae)^5}{e^6}+\frac{2b^5(d+ex)^{11/2}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^5*Sqrt[d + e*x])/e^6 + (10*b*(b*d - a*e)^4*(d + e*x)^(3/2))
/(3*e^6) - (4*b^2*(b*d - a*e)^3*(d + e*x)^(5/2))/e^6 + (20*b^3*(b*d - a*e)^
2*(d + e*x)^(7/2))/(7*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(9/2))/(9*e^6) +
 (2*b^5*(d + e*x)^(11/2))/(11*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^5}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^5}{e^5\sqrt{d+ex}}+\frac{5b(bd-ae)^4\sqrt{d+ex}}{e^5}-\frac{10b^2(bd-ae)^3(d+ex)^{3/2}}{e^5}+\ldots\right)\\ &= -\frac{2(bd-ae)^5\sqrt{d+ex}}{e^6}+\frac{10b(bd-ae)^4(d+ex)^{3/2}}{3e^6}-\frac{4b^2(bd-ae)^3(d+ex)^{5/2}}{e^6}\ldots\end{aligned}$$

Mathematica [A] time = 0.07, size = 123, normalized size = 0.80

$$\frac{2\sqrt{d+ex}\left(-385b^4(d+ex)^4(bd-ae)+990b^3(d+ex)^3(bd-ae)^2-1386b^2(d+ex)^2(bd-ae)^3+1155b(d+ex)(bd-ae)^4-693(bd-ae)^5+63b^5(d+ex)^5\right)}{693e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-693*(b*d - a*e)^5 + 1155*b*(b*d - a*e)^4*(d + e*x) - 138
6*b^2*(b*d - a*e)^3*(d + e*x)^2 + 990*b^3*(b*d - a*e)^2*(d + e*x)^3 - 385*b
^4*(b*d - a*e)*(d + e*x)^4 + 63*b^5*(d + e*x)^5))/(693*e^6)
```

IntegrateAlgebraic [B] time = 0.10, size = 315, normalized size = 2.05

$$\frac{2\sqrt{d+ex}\left(693a^5e^5+1155a^4be^4(d+ex)-3465a^4bde^4+6930a^3b^2d^2e^3+1386a^3b^2e^3(d+ex)^2-4620a^3b^2de^3(d+ex)-6930a^2b^3d^3e^2+6930a^2b^3d^2e^2(d+ex)+990a^2b^3e^2(d+ex)^3-4158a^2b^3de^2(d+ex)^2+3465ab^4d^4e-4620ab^4d^3e(d+ex)+4158ab^4d^2e(d+ex)^2+385ab^4e(d+ex)^4-1980ab^4de(d+ex)^3-693b^5d^5+1155b^5d^4(d+ex)-1386b^5d^3(d+ex)^2+990b^5d^2(d+ex)^3+63b^5(d+ex)^5-385b^5d(d+ex)^4\right)}{693e^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-693*b^5*d^5 + 3465*a*b^4*d^4*e - 6930*a^2*b^3*d^3*e^2 +
6930*a^3*b^2*d^2*e^3 - 3465*a^4*b*d*e^4 + 693*a^5*e^5 + 1155*b^5*d^4*(d + e
*x) - 4620*a*b^4*d^3*e*(d + e*x) + 6930*a^2*b^3*d^2*e^2*(d + e*x) - 4620*a^
3*b^2*d*e^3*(d + e*x) + 1155*a^4*b*e^4*(d + e*x) - 1386*b^5*d^3*(d + e*x)^2
 + 4158*a*b^4*d^2*e*(d + e*x)^2 - 4158*a^2*b^3*d*e^2*(d + e*x)^2 + 1386*a^3
*b^2*e^3*(d + e*x)^2 + 990*b^5*d^2*(d + e*x)^3 - 1980*a*b^4*d*e*(d + e*x)^3
 + 990*a^2*b^3*e^2*(d + e*x)^3 - 385*b^5*d*(d + e*x)^4 + 385*a*b^4*e*(d + e
*x)^4 + 63*b^5*(d + e*x)^5))/(693*e^6)
```

fricas [A] time = 0.43, size = 261, normalized size = 1.69

$$\frac{2\left(63b^5e^5x^5-256b^5d^5+1408ab^4d^4e-3168a^2b^3d^3e^2+3696a^3b^2d^2e^3-2310a^4bde^4+693a^5e^5-35\left(2b^5de^4-11ab^4e^5\right)x^4+10\left(8b^5d^2e^3-44ab^4de^4+99a^2b^3e^5\right)x^3-6\left(16b^5d^3e^2-88ab^4d^2e^3+198a^2b^3de^4-231a^3b^2e^5\right)x^2+\left(128b^5d^4e-704ab^4d^3e^2+1584a^2b^3d^2e^3-1848a^3b^2de^4+1155a^4be^5\right)x\right)\sqrt{ex+d}}{693e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/693*(63*b^5*e^5*x^5 - 256*b^5*d^5 + 1408*a*b^4*d^4*e - 3168*a^2*b^3*d^3*e
^2 + 3696*a^3*b^2*d^2*e^3 - 2310*a^4*b*d*e^4 + 693*a^5*e^5 - 35*(2*b^5*d*e^
4 - 11*a*b^4*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 44*a*b^4*d*e^4 + 99*a^2*b^3*e^5
)*x^3 - 6*(16*b^5*d^3*e^2 - 88*a*b^4*d^2*e^3 + 198*a^2*b^3*d*e^4 - 231*a^3*
b^2*e^5)*x^2 + (128*b^5*d^4*e - 704*a*b^4*d^3*e^2 + 1584*a^2*b^3*d^2*e^3 -
1848*a^3*b^2*d*e^4 + 1155*a^4*b*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.17, size = 298, normalized size = 1.94

$$\frac{2}{693}\left(1155\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^4be^{(-1)}+462\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^3b^2e^{(-2)}+198\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)a^2b^3e^{(-3)}+11\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)ab^4e^{(-4)}+\left(63(xe+d)^{\frac{11}{2}}-385(xe+d)^{\frac{9}{2}}d+990(xe+d)^{\frac{7}{2}}d^2-1386(xe+d)^{\frac{5}{2}}d^3+1155(xe+d)^{\frac{3}{2}}d^4-693\sqrt{xe+d}\,d^5\right)b^5e^{(-5)}+693\sqrt{xe+d}\,a^5\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/693*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*e^(-1) + 462*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b^2*e^(-2)
+ 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a^2*b^3*e^(-3) + 11*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*a*b^4*e^(-4) + (63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*b^5*e^(-5) + 693*sqrt(x*e + d)*a^5)*e^(-1)
```

maple [B] time = 0.04, size = 273, normalized size = 1.77

$$\frac{2\left(63b^5e^5x^5+385ab^4e^5x^4-70b^5de^4x^4+990a^2b^3e^5x^3-440ab^4de^4x^3+80b^5d^2e^3x^3+1386a^3b^2e^5x^2-1188a^2b^3de^4x^2+528ab^4d^2e^3x^2-96b^5d^3e^2x^2+1155a^4be^5x-1848a^3b^2de^4x+1584a^2b^3d^2e^3x-704ab^4d^3e^2x+128b^5d^4ex+693a^5e^5-2310a^4bde^4+3696a^3b^2d^2e^3-3168a^2b^3d^3e^2+1408ab^4d^4e-256b^5d^5\right)\sqrt{ex+d}}{693e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/693*(63*b^5*e^5*x^5+385*a*b^4*e^5*x^4-70*b^5*d*e^4*x^4+990*a^2*b^3*e^5*x^
3-440*a*b^4*d*e^4*x^3+80*b^5*d^2*e^3*x^3+1386*a^3*b^2*e^5*x^2-1188*a^2*b^3*
d*e^4*x^2+528*a*b^4*d^2*e^3*x^2-96*b^5*d^3*e^2*x^2+1155*a^4*b*e^5*x-1848*a^
```

```
3*b^2*d*e^4*x+1584*a^2*b^3*d^2*e^3*x-704*a*b^4*d^3*e^2*x+128*b^5*d^4*e*x+69
3*a^5*e^5-2310*a^4*b*d*e^4+3696*a^3*b^2*d^2*e^3-3168*a^2*b^3*d^3*e^2+1408*a
*b^4*d^4*e-256*b^5*d^5)*(e*x+d)^(1/2)/e^6
```

maxima [A] time = 0.56, size = 259, normalized size = 1.68

$$\frac{2\left(63(ex+d)^{\frac{11}{2}}b^5 - 385\left(b^5d - ab^4e\right)(ex+d)^{\frac{9}{2}} + 990\left(b^5d^2 - 2ab^4de + a^2b^3e^2\right)(ex+d)^{\frac{7}{2}} - 1386\left(b^5d^3 - 3ab^4d^2e + 3a^2b^3de^2 - a^3b^2e^3\right)(ex+d)^{\frac{5}{2}} + 1155\left(b^5d^4 - 4ab^4d^3e + 6a^2b^3d^2e^2 - 4a^3b^2de^3 + a^4be^4\right)(ex+d)^{\frac{3}{2}} - 693\left(b^5d^5 - 5ab^4d^4e + 10a^2b^3d^3e^2 - 10a^3b^2d^2e^3 + 5a^4bde^4 - a^5e^5\right)\sqrt{ex+d}\right)}{693\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/693*(63*(e*x + d)^(11/2)*b^5 - 385*(b^5*d - a*b^4*e)*(e*x + d)^(9/2) + 99
0*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(7/2) - 1386*(b^5*d^3 - 3
*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(5/2) + 1155*(b^5*d
^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4)*(e*x
+ d)^(3/2) - 693*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2
*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*sqrt(e*x + d))/e^6
```

mupad [B] time = 0.05, size = 137, normalized size = 0.89

$$\frac{2\,b^5\,(d+e\,x)^{11/2}}{11\,e^6} - \frac{\left(10\,b^5\,d - 10\,a\,b^4\,e\right)\,(d+e\,x)^{9/2}}{9\,e^6} + \frac{2\,(a\,e-b\,d)^5\,\sqrt{d+e\,x}}{e^6} + \frac{4\,b^2\,(a\,e-b\,d)^3\,(d+e\,x)^{5/2}}{e^6} + \frac{20\,b^3\,(a\,e-b\,d)^2\,(d+e\,x)^{7/2}}{7\,e^6} + \frac{10\,b\,(a\,e-b\,d)^4\,(d+e\,x)^{3/2}}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(1/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(11/2))/(11*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(9/2
))/(9*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(1/2))/e^6 + (4*b^2*(a*e - b*d)^3*(
d + e*x)^(5/2))/e^6 + (20*b^3*(a*e - b*d)^2*(d + e*x)^(7/2))/(7*e^6) + (10*
b*(a*e - b*d)^4*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A] time = 84.60, size = 740, normalized size = 4.81

$$\begin{cases} \frac{-\frac{2a^5d}{\sqrt{d+ex}} - 2a^5\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{10a^4bd\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{10a^4b\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{3/2}}{3}\right)}{e} - \frac{20a^3b^2d\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{3/2}}{3}\right)}{e^2} - \frac{20a^3b^2\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{3/2} - \frac{(d+ex)^{5/2}}{5}\right)}{e^2} - \frac{20a^2b^3d\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{3/2} - \frac{(d+ex)^{5/2}}{5}\right)}{e^3} - \frac{20a^2b^3\left(\frac{d^4}{\sqrt{d+ex}} + 4d^3\sqrt{d+ex} - 2d^2(d+ex)^{3/2} + \frac{4d(d+ex)^{5/2}}{5} - \frac{(d+ex)^{7/2}}{7}\right)}{e^3} - \frac{10ab^4d\left(\frac{d^4}{\sqrt{d+ex}} + 4d^3\sqrt{d+ex} - 2d^2(d+ex)^{3/2} + \frac{4d(d+ex)^{5/2}}{5} - \frac{(d+ex)^{7/2}}{7}\right)}{e^4} - \frac{10ab^4\left(-\frac{d^5}{\sqrt{d+ex}} - 5d^4\sqrt{d+ex} + \frac{10d^3(d+ex)^{3/2}}{3} - 2d^2(d+ex)^{5/2} + \frac{5d(d+ex)^{7/2}}{7} - \frac{(d+ex)^{9/2}}{9}\right)}{e^4} - \frac{2b^5d\left(-\frac{d^5}{\sqrt{d+ex}} - 5d^4\sqrt{d+ex} + \frac{10d^3(d+ex)^{3/2}}{3} - 2d^2(d+ex)^{5/2} + \frac{5d(d+ex)^{7/2}}{7} - \frac{(d+ex)^{9/2}}{9}\right)}{e^5} - \frac{2b^5\left(\frac{d^6}{\sqrt{d+ex}} + 6d^5\sqrt{d+ex} - 5d^4(d+ex)^{3/2} + 4d^3(d+ex)^{5/2} - \frac{15d^2(d+ex)^{7/2}}{7} + \frac{2d(d+ex)^{9/2}}{3} - \frac{(d+ex)^{11/2}}{11}\right)}{e^5}}{e} & \text{for } e \neq 0 \\ \frac{\begin{cases} a^5x & \text{for } b = 0 \\ \frac{(a^2+2abx+b^2x^2)^3}{6b} & \text{otherwise} \end{cases}}{\sqrt{d}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**5*d/sqrt(d + e*x) - 2*a**5*(-d/sqrt(d + e*x) - sqrt(d + e
*x)) - 10*a**4*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 10*a**4*b*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 20*a**3*b**2*d*(
d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 20*a**3
*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d
 + e*x)**(5/2)/5)/e**2 - 20*a**2*b**3*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(
d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 20*a**2*b**3*(d*
*4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d
+ e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 10*a*b**4*d*(d**4/sqrt(d + e*x
) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5
 - (d + e*x)**(7/2)/7)/e**4 - 10*a*b**4*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(
d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d +
e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*b**5*d*(-d**5/sqrt(d + e*x) -
5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2)
 + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 2*b**5*(d**6/sqrt(d
+ e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)*
*(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(
11/2)/11)/e**5)/e, Ne(e, 0)), (Piecewise((a**5*x, Eq(b, 0)), ((a**2 + 2*a*b
*x + b**2*x**2)**3/(6*b), True))/sqrt(d), True))
```

3.1830 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{10b^4(d+ex)^{7/2}(bd-ae)}{7e^6}+\frac{4b^3(d+ex)^{5/2}(bd-ae)^2}{e^6}-\frac{20b^2(d+ex)^{3/2}(bd-ae)^3}{3e^6}+\frac{10b\sqrt{d+ex}\,(bd-ae)^4}{e^6}+\frac{2(bd-a\cdots}{e^6\sqrt{d+\cdots}}$$

Rubi [A] time = 0.06, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{10b^4(d+ex)^{7/2}(bd-ae)}{7e^6}+\frac{4b^3(d+ex)^{5/2}(bd-ae)^2}{e^6}-\frac{20b^2(d+ex)^{3/2}(bd-ae)^3}{3e^6}+\frac{10b\sqrt{d+ex}\,(bd-ae)^4}{e^6}+\frac{2(bd-ae)^5}{e^6\sqrt{d+ex}}+\frac{2b^5(d+ex)^{9/2}}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^5)/(e^6*Sqrt[d + e*x]) + (10*b*(b*d - a*e)^4*Sqrt[d + e*x])/
e^6 - (20*b^2*(b*d - a*e)^3*(d + e*x)^(3/2))/(3*e^6) + (4*b^3*(b*d - a*e)^2
*(d + e*x)^(5/2))/e^6 - (10*b^4*(b*d - a*e)*(d + e*x)^(7/2))/(7*e^6) + (2*b
^5*(d + e*x)^(9/2))/(9*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^{3/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^5}{e^5(d+ex)^{3/2}}+\frac{5b(bd-ae)^4}{e^5\sqrt{d+ex}}-\frac{10b^2(bd-ae)^3\sqrt{d+ex}}{e^5}+\frac{10b^3(bd-ae)^{\cdots}}{e^5}\cdots\right.\\
&= \frac{2(bd-ae)^5}{e^6\sqrt{d+ex}}+\frac{10b(bd-ae)^4\sqrt{d+ex}}{e^6}-\frac{20b^2(bd-ae)^3(d+ex)^{3/2}}{3e^6}+\frac{4b^3(bd\cdots}{\cdots}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 0.81

$$\frac{2\left(-45b^4(d+ex)^4(bd-ae)+126b^3(d+ex)^3(bd-ae)^2-210b^2(d+ex)^2(bd-ae)^3+315b(d+ex)(bd-ae)^4+63(bd-ae)^5+7b^5(d+ex)^5\right)}{63e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(63*(b*d - a*e)^5 + 315*b*(b*d - a*e)^4*(d + e*x) - 210*b^2*(b*d - a*e)^
3*(d + e*x)^2 + 126*b^3*(b*d - a*e)^2*(d + e*x)^3 - 45*b^4*(b*d - a*e)*(d +
 e*x)^4 + 7*b^5*(d + e*x)^5))/(63*e^6*Sqrt[d + e*x])
```

IntegrateAlgebraic [B] time = 0.08, size = 315, normalized size = 2.07

$$\frac{2\left(-63a^5e^5+315a^4be^4(d+ex)+315a^4bde^4-630a^3b^2d^2e^3+210a^3b^2e^3(d+ex)^2-1260a^3b^2de^3(d+ex)+630a^2b^3d^3e^2+1890a^2b^3d^2e^2(d+ex)+126a^2b^3e^2(d+ex)^3-630a^2b^3de^2(d+ex)^2-315ab^4d^4e-1260ab^4d^3e(d+ex)+630ab^4d^2e(d+ex)^2+45ab^4e(d+ex)^4-252ab^4de(d+ex)^3+63b^5d^5+315b^5d^4(d+ex)-210b^5d^3(d+ex)^2+126b^5d^2(d+ex)^3+7b^5(d+ex)^5-45b^5d(d+ex)^4\right)}{63e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),
x]
```

```
[Out] (2*(63*b^5*d^5 - 315*a*b^4*d^4*e + 630*a^2*b^3*d^3*e^2 - 630*a^3*b^2*d^2*e^
3 + 315*a^4*b*d*e^4 - 63*a^5*e^5 + 315*b^5*d^4*(d + e*x) - 1260*a*b^4*d^3*e
*(d + e*x) + 1890*a^2*b^3*d^2*e^2*(d + e*x) - 1260*a^3*b^2*d*e^3*(d + e*x)
+ 315*a^4*b*e^4*(d + e*x) - 210*b^5*d^3*(d + e*x)^2 + 630*a*b^4*d^2*e*(d +
e*x)^2 - 630*a^2*b^3*d*e^2*(d + e*x)^2 + 210*a^3*b^2*e^3*(d + e*x)^2 + 126*
b^5*d^2*(d + e*x)^3 - 252*a*b^4*d*e*(d + e*x)^3 + 126*a^2*b^3*e^2*(d + e*x)
^3 - 45*b^5*d*(d + e*x)^4 + 45*a*b^4*e*(d + e*x)^4 + 7*b^5*(d + e*x)^5))/(6
3*e^6*Sqrt[d + e*x])
```

fricas [B] time = 0.43, size = 271, normalized size = 1.78

$$\frac{2\left(7b^5e^5x^5+256b^5d^5-1152ab^4d^4e+2016a^2b^3d^3e^2-1680a^3b^2d^2e^3+630a^4bde^4-63a^5e^5-5\left(2b^5de^4-9ab^4e^5\right)x^4+2\left(8b^5d^2e^3-36ab^4de^4+63a^2b^3e^5\right)x^3-2\left(16b^5d^3e^2-72ab^4d^2e^3+126a^2b^3de^4-105a^3b^2e^5\right)x^2+\left(128b^5d^4e-576ab^4d^3e^2+1008a^2b^3d^2e^3-840a^3b^2de^4+315a^4be^5\right)x\right)\sqrt{ex+d}}{63\left(e^7x+de^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/63*(7*b^5*e^5*x^5 + 256*b^5*d^5 - 1152*a*b^4*d^4*e + 2016*a^2*b^3*d^3*e^2
 - 1680*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 - 63*a^5*e^5 - 5*(2*b^5*d*e^4 - 9
*a*b^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 36*a*b^4*d*e^4 + 63*a^2*b^3*e^5)*x^3 -
 2*(16*b^5*d^3*e^2 - 72*a*b^4*d^2*e^3 + 126*a^2*b^3*d*e^4 - 105*a^3*b^2*e^5
)*x^2 + (128*b^5*d^4*e - 576*a*b^4*d^3*e^2 + 1008*a^2*b^3*d^2*e^3 - 840*a^3
*b^2*d*e^4 + 315*a^4*b*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [B] time = 0.20, size = 346, normalized size = 2.28

$$\frac{2}{63}\left(7(xe+d)^{9/2}b^5e^{48}-45(xe+d)^{7/2}b^5de^{48}+126(xe+d)^{5/2}b^5d^2e^{48}-210(xe+d)^{3/2}b^5d^3e^{48}+315\sqrt{xe+d}\,b^5d^4e^{48}+45(xe+d)^{7/2}ab^4e^{49}-252(xe+d)^{5/2}ab^4de^{49}+630(xe+d)^{3/2}ab^4d^2e^{49}-1260\sqrt{xe+d}\,ab^4d^3e^{49}+126(xe+d)^{5/2}a^2b^3e^{50}-630(xe+d)^{3/2}a^2b^3de^{50}+1890\sqrt{xe+d}\,a^2b^3d^2e^{50}+210(xe+d)^{3/2}a^3b^2e^{51}-1260\sqrt{xe+d}\,a^3b^2de^{51}+315\sqrt{xe+d}\,a^4be^{52}\right)e^{(-54)}+\frac{2\left(b^5d^5-5ab^4d^4e+10a^2b^3d^3e^2-10a^3b^2d^2e^3+5a^4bde^4-a^5e^5\right)e^{(-6)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/63*(7*(x*e + d)^(9/2)*b^5*e^48 - 45*(x*e + d)^(7/2)*b^5*d*e^48 + 126*(x*e
 + d)^(5/2)*b^5*d^2*e^48 - 210*(x*e + d)^(3/2)*b^5*d^3*e^48 + 315*sqrt(x*e
+ d)*b^5*d^4*e^48 + 45*(x*e + d)^(7/2)*a*b^4*e^49 - 252*(x*e + d)^(5/2)*a*b
^4*d*e^49 + 630*(x*e + d)^(3/2)*a*b^4*d^2*e^49 - 1260*sqrt(x*e + d)*a*b^4*d
^3*e^49 + 126*(x*e + d)^(5/2)*a^2*b^3*e^50 - 630*(x*e + d)^(3/2)*a^2*b^3*d*
e^50 + 1890*sqrt(x*e + d)*a^2*b^3*d^2*e^50 + 210*(x*e + d)^(3/2)*a^3*b^2*e^
51 - 1260*sqrt(x*e + d)*a^3*b^2*d*e^51 + 315*sqrt(x*e + d)*a^4*b*e^52)*e^(-
54) + 2*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3
+ 5*a^4*b*d*e^4 - a^5*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [B] time = 0.05, size = 273, normalized size = 1.80

$$-\frac{2\left(-7b^5e^5x^5-45ab^4e^5x^4+10b^5de^4x^4-126a^2b^3e^5x^3+72ab^4de^4x^3-16b^5d^2e^3x^3-210a^3b^2e^5x^2+252a^2b^3de^4x^2-144ab^4d^2e^3x^2+32b^5d^3e^2x^2-315a^4be^5x+840a^3b^2de^4x-1008a^2b^3d^2e^3x+576ab^4d^3e^2x-128b^5d^4ex+63a^5e^5-630a^4bde^4+1680a^3b^2d^2e^3-2016a^2b^3d^3e^2+1152ab^4d^4e-256b^5d^5\right)}{63\sqrt{ex+d}\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/63*(-7*b^5*e^5*x^5-45*a*b^4*e^5*x^4+10*b^5*d*e^4*x^4-126*a^2*b^3*e^5*x^3
+72*a*b^4*d*e^4*x^3-16*b^5*d^2*e^3*x^3-210*a^3*b^2*e^5*x^2+252*a^2*b^3*d*e^
4*x^2-144*a*b^4*d^2*e^3*x^2+32*b^5*d^3*e^2*x^2-315*a^4*b*e^5*x+840*a^3*b^2*
d*e^4*x-1008*a^2*b^3*d^2*e^3*x+576*a*b^4*d^3*e^2*x-128*b^5*d^4*e*x+63*a^5*e
^5-630*a^4*b*d*e^4+1680*a^3*b^2*d^2*e^3-2016*a^2*b^3*d^3*e^2+1152*a*b^4*d^4
*e-256*b^5*d^5)/(e*x+d)^(1/2)/e^6
```

maxima [A] time = 0.52, size = 267, normalized size = 1.76

$$\frac{2\left(\frac{7\,(ex+d)^{\frac{9}{2}}b^5-45\left(b^5d-ab^4e\right)(ex+d)^{\frac{7}{2}}+126\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)(ex+d)^{\frac{5}{2}}-210\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)(ex+d)^{\frac{3}{2}}+315\left(b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4\right)\sqrt{ex+d}}{e^5}+\frac{63\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)}{\sqrt{ex+d}\,e^5}\right)}{63\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/63*((7*(e*x + d)^(9/2)*b^5 - 45*(b^5*d - a*b^4*e)*(e*x + d)^(7/2) + 126*(
b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(5/2) - 210*(b^5*d^3 - 3*a*b
^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(3/2) + 315*(b^5*d^4 -
4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4)*sqrt(e*x +
 d))/e^5 + 63*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^
2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 2.04, size = 192, normalized size = 1.26

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{9/2}}{9\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}-\frac{2\,a^5\,e^5-10\,a^4\,b\,d\,e^4+20\,a^3\,b^2\,d^2\,e^3-20\,a^2\,b^3\,d^3\,e^2+10\,a\,b^4\,d^4\,e-2\,b^5\,d^5}{e^6\,\sqrt{d+e\,x}}+\frac{20\,b^2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{3/2}}{3\,e^6}+\frac{4\,b^3\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{5/2}}{e^6}+\frac{10\,b\,{\left(a\,e-b\,d\right)}^4\,\sqrt{d+e\,x}}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(3/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(9/2))/(9*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(7/2))
/(7*e^6) - (2*a^5*e^5 - 2*b^5*d^5 - 20*a^2*b^3*d^3*e^2 + 20*a^3*b^2*d^2*e^3
 + 10*a*b^4*d^4*e - 10*a^4*b*d*e^4)/(e^6*(d + e*x)^(1/2)) + (20*b^2*(a*e -
b*d)^3*(d + e*x)^(3/2))/(3*e^6) + (4*b^3*(a*e - b*d)^2*(d + e*x)^(5/2))/e^6
 + (10*b*(a*e - b*d)^4*(d + e*x)^(1/2))/e^6
```

sympy [A] time = 49.19, size = 243, normalized size = 1.60

$$\frac{2b^5\left(d+ex\right)^{\frac{9}{2}}}{9e^6}+\frac{\left(d+ex\right)^{\frac{7}{2}}\left(10ab^4e-10b^5d\right)}{7e^6}+\frac{\left(d+ex\right)^{\frac{5}{2}}\left(20a^2b^3e^2-40ab^4de+20b^5d^2\right)}{5e^6}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(20a^3b^2e^3-60a^2b^3de^2+60ab^4d^2e-20b^5d^3\right)}{3e^6}+\frac{\sqrt{d+ex}\left(10a^4be^4-40a^3b^2de^3+60a^2b^3d^2e^2-40ab^4d^3e+10b^5d^4\right)}{e^6}-\frac{2\left(ae-bd\right)^5}{e^6\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*b**5*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(10*a*b**4*e - 10*b**5*
d)/(7*e**6) + (d + e*x)**(5/2)*(20*a**2*b**3*e**2 - 40*a*b**4*d*e + 20*b**5
*d**2)/(5*e**6) + (d + e*x)**(3/2)*(20*a**3*b**2*e**3 - 60*a**2*b**3*d*e**2
 + 60*a*b**4*d**2*e - 20*b**5*d**3)/(3*e**6) + sqrt(d + e*x)*(10*a**4*b*e**
4 - 40*a**3*b**2*d*e**3 + 60*a**2*b**3*d**2*e**2 - 40*a*b**4*d**3*e + 10*b*
*5*d**4)/e**6 - 2*(a*e - b*d)**5/(e**6*sqrt(d + e*x))
```

3.1831 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{2b^4(d+ex)^{5/2}(bd-ae)}{e^6}+\frac{20b^3(d+ex)^{3/2}(bd-ae)^2}{3e^6}-\frac{20b^2\sqrt{d+ex}\,(bd-ae)^3}{e^6}-\frac{10b(bd-ae)^4}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^5}{3e^6(d+ex)^{3/2}}+$$

Rubi [A] time = 0.06, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{2b^4(d+ex)^{5/2}(bd-ae)}{e^6}+\frac{20b^3(d+ex)^{3/2}(bd-ae)^2}{3e^6}-\frac{20b^2\sqrt{d+ex}\,(bd-ae)^3}{e^6}-\frac{10b(bd-ae)^4}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^5}{3e^6(d+ex)^{3/2}}+\frac{2b^5(d+ex)^{7/2}}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5)/(3*e^6*(d + e*x)^(3/2)) - (10*b*(b*d - a*e)^4)/(e^6*Sqrt[
d + e*x]) - (20*b^2*(b*d - a*e)^3*Sqrt[d + e*x])/e^6 + (20*b^3*(b*d - a*e)^
2*(d + e*x)^(3/2))/(3*e^6) - (2*b^4*(b*d - a*e)*(d + e*x)^(5/2))/e^6 + (2*b
^5*(d + e*x)^(7/2))/(7*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^5}{e^5(d+ex)^{5/2}}+\frac{5b(bd-ae)^4}{e^5(d+ex)^{3/2}}-\frac{10b^2(bd-ae)^3}{e^5\sqrt{d+ex}}+\frac{10b^3(bd-ae)^2\sqrt{d+}}{e^5}\right.\\ &= \frac{2(bd-ae)^5}{3e^6(d+ex)^{3/2}}-\frac{10b(bd-ae)^4}{e^6\sqrt{d+ex}}-\frac{20b^2(bd-ae)^3\sqrt{d+ex}}{e^6}+\frac{20b^3(bd-a}{3}\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 0.81

$$\frac{2\left(-21b^4(d+ex)^4(bd-ae)+70b^3(d+ex)^3(bd-ae)^2-210b^2(d+ex)^2(bd-ae)^3-105b(d+ex)(bd-ae)^4+7(bd-ae)^5+3b^5(d+ex)^5\right)}{21e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(7*(b*d - a*e)^5 - 105*b*(b*d - a*e)^4*(d + e*x) - 210*b^2*(b*d - a*e)^3
*(d + e*x)^2 + 70*b^3*(b*d - a*e)^2*(d + e*x)^3 - 21*b^4*(b*d - a*e)*(d + e
*x)^4 + 3*b^5*(d + e*x)^5))/(21*e^6*(d + e*x)^(3/2))
```

IntegrateAlgebraic [B] time = 0.09, size = 315, normalized size = 2.07

$$\frac{2\left(-7a^5e^5-105a^4be^4(d+ex)+35a^4bde^4-70a^3b^2d^2e^3+210a^3b^2e^3(d+ex)^2+420a^3b^2de^3(d+ex)+70a^2b^3d^3e^2-630a^2b^3d^2e^2(d+ex)+70a^2b^3e^2(d+ex)^3-630a^2b^3de^2(d+ex)^2-35ab^4d^4e+420ab^4d^3e(d+ex)+630ab^4d^2e(d+ex)^2+21ab^4e(d+ex)^4-140ab^4de(d+ex)^3+7b^5d^5-105b^5d^4(d+ex)-210b^5d^3(d+ex)^2+70b^5d^2(d+ex)^3+3b^5(d+ex)^5-21b^5d(d+ex)^4\right)}{21e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),
x]
```

```
[Out] (2*(7*b^5*d^5 - 35*a*b^4*d^4*e + 70*a^2*b^3*d^3*e^2 - 70*a^3*b^2*d^2*e^3 +
35*a^4*b*d*e^4 - 7*a^5*e^5 - 105*b^5*d^4*(d + e*x) + 420*a*b^4*d^3*e*(d + e
*x) - 630*a^2*b^3*d^2*e^2*(d + e*x) + 420*a^3*b^2*d*e^3*(d + e*x) - 105*a^4
*b*e^4*(d + e*x) - 210*b^5*d^3*(d + e*x)^2 + 630*a*b^4*d^2*e*(d + e*x)^2 -
630*a^2*b^3*d*e^2*(d + e*x)^2 + 210*a^3*b^2*e^3*(d + e*x)^2 + 70*b^5*d^2*(d
 + e*x)^3 - 140*a*b^4*d*e*(d + e*x)^3 + 70*a^2*b^3*e^2*(d + e*x)^3 - 21*b^5
*d*(d + e*x)^4 + 21*a*b^4*e*(d + e*x)^4 + 3*b^5*(d + e*x)^5))/(21*e^6*(d +
e*x)^(3/2))
```

fricas [B] time = 0.43, size = 283, normalized size = 1.86

$$\frac{2\left(3b^5e^5x^5-256b^5d^5+896ab^4d^4e-1120a^2b^3d^3e^2+560a^3b^2d^2e^3-70a^4bde^4-7a^5e^5-3\left(2b^5de^4-7ab^4e^5\right)x^4+2\left(8b^5d^2e^3-28ab^4de^4+35a^2b^3e^5\right)x^3-6\left(16b^5d^3e^2-56ab^4d^2e^3+70a^2b^3de^4-35a^3b^2e^5\right)x^2-3\left(128b^5d^4e-448ab^4d^3e^2+560a^2b^3d^2e^3-280a^3b^2de^4+35a^4be^5\right)x\right)\sqrt{ex+d}}{21\left(e^8x^2+2de^7x+d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/21*(3*b^5*e^5*x^5 - 256*b^5*d^5 + 896*a*b^4*d^4*e - 1120*a^2*b^3*d^3*e^2
+ 560*a^3*b^2*d^2*e^3 - 70*a^4*b*d*e^4 - 7*a^5*e^5 - 3*(2*b^5*d*e^4 - 7*a*b
^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 28*a*b^4*d*e^4 + 35*a^2*b^3*e^5)*x^3 - 6*(
16*b^5*d^3*e^2 - 56*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 - 35*a^3*b^2*e^5)*x^2
- 3*(128*b^5*d^4*e - 448*a*b^4*d^3*e^2 + 560*a^2*b^3*d^2*e^3 - 280*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
```

giac [B] time = 0.21, size = 334, normalized size = 2.20

$$\frac{2}{21}\left(3(xe+d)^{\frac{7}{2}}b^5e^{36}-21(xe+d)^{\frac{5}{2}}b^5de^{36}+70(xe+d)^{\frac{3}{2}}b^5d^2e^{36}-210\sqrt{xe+d}\,b^5d^3e^{36}+21(xe+d)^{\frac{5}{2}}ab^4e^{37}-140(xe+d)^{\frac{3}{2}}ab^4de^{37}+630\sqrt{xe+d}\,ab^4d^2e^{37}+70(xe+d)^{\frac{3}{2}}a^2b^3e^{38}-630\sqrt{xe+d}\,a^2b^3de^{38}+210\sqrt{xe+d}\,a^3b^2e^{39}\right)e^{(-42)}-\frac{2\left(15(xe+d)b^5d^4-b^5d^5-60(xe+d)ab^4d^3e+5ab^4d^4e+90(xe+d)a^2b^3d^2e^2-10a^2b^3d^3e^2-60(xe+d)a^3b^2de^3+10a^3b^2d^2e^3+15(xe+d)a^4be^4-5a^4bde^4+a^5e^5\right)e^{(-6)}}{3(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/21*(3*(x*e + d)^(7/2)*b^5*e^36 - 21*(x*e + d)^(5/2)*b^5*d*e^36 + 70*(x*e
+ d)^(3/2)*b^5*d^2*e^36 - 210*sqrt(x*e + d)*b^5*d^3*e^36 + 21*(x*e + d)^(5/
2)*a*b^4*e^37 - 140*(x*e + d)^(3/2)*a*b^4*d*e^37 + 630*sqrt(x*e + d)*a*b^4*
d^2*e^37 + 70*(x*e + d)^(3/2)*a^2*b^3*e^38 - 630*sqrt(x*e + d)*a^2*b^3*d*e^
38 + 210*sqrt(x*e + d)*a^3*b^2*e^39)*e^(-42) - 2/3*(15*(x*e + d)*b^5*d^4 -
b^5*d^5 - 60*(x*e + d)*a*b^4*d^3*e + 5*a*b^4*d^4*e + 90*(x*e + d)*a^2*b^3*d
^2*e^2 - 10*a^2*b^3*d^3*e^2 - 60*(x*e + d)*a^3*b^2*d*e^3 + 10*a^3*b^2*d^2*e
^3 + 15*(x*e + d)*a^4*b*e^4 - 5*a^4*b*d*e^4 + a^5*e^5)*e^(-6)/(x*e + d)^(3/
2)
```

maple [B] time = 0.06, size = 273, normalized size = 1.80

$$-\frac{2\left(-3b^5e^5x^5-21a\,b^4e^5x^4+6b^5d\,e^4x^4-70a^2b^3e^5x^3+56a\,b^4d\,e^4x^3-16b^5d^2e^3x^3-210a^3b^2e^5x^2+420a^2b^3d\,e^4x^2-336a\,b^4d^2e^3x^2+96b^5d^3e^2x^2+105a^4b\,e^5x-840a^3b^2d\,e^4x+1680a^2b^3d^2e^3x-1344a\,b^4d^3e^2x+384b^5d^4ex+7a^5e^5+70a^4bd\,e^4-560a^3b^2d^2e^3+1120a^2b^3d^3e^2-896a\,b^4d^4e+256b^5d^5\right)}{21(ex+d)^{\frac{3}{2}}e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/21*(-3*b^5*e^5*x^5-21*a*b^4*e^5*x^4+6*b^5*d*e^4*x^4-70*a^2*b^3*e^5*x^3+5
6*a*b^4*d*e^4*x^3-16*b^5*d^2*e^3*x^3-210*a^3*b^2*e^5*x^2+420*a^2*b^3*d*e^4*
x^2-336*a*b^4*d^2*e^3*x^2+96*b^5*d^3*e^2*x^2+105*a^4*b*e^5*x-840*a^3*b^2*d*
e^4*x+1680*a^2*b^3*d^2*e^3*x-1344*a*b^4*d^3*e^2*x+384*b^5*d^4*e*x+7*a^5*e^5
+70*a^4*b*d*e^4-560*a^3*b^2*d^2*e^3+1120*a^2*b^3*d^3*e^2-896*a*b^4*d^4*e+25
6*b^5*d^5)/(e*x+d)^(3/2)/e^6
```

maxima [A] time = 0.52, size = 265, normalized size = 1.74

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{7}{2}}b^5-21\left(b^5d-ab^4e\right)(ex+d)^{\frac{5}{2}}+70\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)(ex+d)^{\frac{3}{2}}-210\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)\sqrt{ex+d}}{e^5}+\frac{7\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5-15\left(b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4\right)(ex+d)\right)}{(ex+d)^{\frac{3}{2}}e^5}\right)}{21\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/21*((3*(e*x + d)^(7/2)*b^5 - 21*(b^5*d - a*b^4*e)*(e*x + d)^(5/2) + 70*(b
^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(3/2) - 210*(b^5*d^3 - 3*a*b^
4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*sqrt(e*x + d))/e^5 + 7*(b^5*d^5 -
5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a
^5*e^5 - 15*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
+ a^4*b*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 2.02, size = 229, normalized size = 1.51

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^6}-\frac{\left(d+e\,x\right)\,\left(10\,a^4\,b\,e^4-40\,a^3\,b^2\,d\,e^3+60\,a^2\,b^3\,d^2\,e^2-40\,a\,b^4\,d^3\,e+10\,b^5\,d^4\right)+\frac{2\,a^5\,e^5}{3}-\frac{2\,b^5\,d^5}{3}-\frac{20\,a^2\,b^3\,d^3\,e^2}{3}+\frac{20\,a^3\,b^2\,d^2\,e^3}{3}+\frac{10\,a\,b^4\,d^4\,e}{3}-\frac{10\,a^4\,b\,d\,e^4}{3}}{e^6\,{\left(d+e\,x\right)}^{3/2}}+\frac{20\,b^2\,{\left(a\,e-b\,d\right)}^3\,\sqrt{d+e\,x}}{e^6}+\frac{20\,b^3\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{3/2}}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(5/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(7/2))/(7*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(5/2))
/(5*e^6) - ((d + e*x)*(10*b^5*d^4 + 10*a^4*b*e^4 - 40*a^3*b^2*d*e^3 + 60*a^
2*b^3*d^2*e^2 - 40*a*b^4*d^3*e) + (2*a^5*e^5)/3 - (2*b^5*d^5)/3 - (20*a^2*b
^3*d^3*e^2)/3 + (20*a^3*b^2*d^2*e^3)/3 + (10*a*b^4*d^4*e)/3 - (10*a^4*b*d*e
^4)/3)/(e^6*(d + e*x)^(3/2)) + (20*b^2*(a*e - b*d)^3*(d + e*x)^(1/2))/e^6 +
 (20*b^3*(a*e - b*d)^2*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A] time = 59.86, size = 196, normalized size = 1.29

$$\frac{2b^5\left(d+ex\right)^{\frac{7}{2}}}{7e^6}-\frac{10b\left(ae-bd\right)^4}{e^6\sqrt{d+ex}}+\frac{\left(d+ex\right)^{\frac{5}{2}}\left(10ab^4e-10b^5d\right)}{5e^6}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(20a^2b^3e^2-40ab^4de+20b^5d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\left(20a^3b^2e^3-60a^2b^3de^2+60ab^4d^2e-20b^5d^3\right)}{e^6}-\frac{2\left(ae-bd\right)^5}{3e^6\left(d+ex\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*b**5*(d + e*x)**(7/2)/(7*e**6) - 10*b*(a*e - b*d)**4/(e**6*sqrt(d + e*x))
 + (d + e*x)**(5/2)*(10*a*b**4*e - 10*b**5*d)/(5*e**6) + (d + e*x)**(3/2)*(
20*a**2*b**3*e**2 - 40*a*b**4*d*e + 20*b**5*d**2)/(3*e**6) + sqrt(d + e*x)*
(20*a**3*b**2*e**3 - 60*a**2*b**3*d*e**2 + 60*a*b**4*d**2*e - 20*b**5*d**3)
/e**6 - 2*(a*e - b*d)**5/(3*e**6*(d + e*x)**(3/2))
```

3.1832 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}} \, dx$

Optimal. Leaf size=154

$$-\frac{10b^4(d+ex)^{3/2}(bd-ae)}{3e^6}+\frac{20b^3\sqrt{d+ex}\,(bd-ae)^2}{e^6}+\frac{20b^2(bd-ae)^3}{e^6\sqrt{d+ex}}-\frac{10b(bd-ae)^4}{3e^6(d+ex)^{3/2}}+\frac{2(bd-ae)^5}{5e^6(d+ex)^{5/2}}+\frac{2b^5(d+ex)^5}{5e^6}$$

Rubi [A] time = 0.05, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{10b^4(d+ex)^{3/2}(bd-ae)}{3e^6}+\frac{20b^3\sqrt{d+ex}\,(bd-ae)^2}{e^6}+\frac{20b^2(bd-ae)^3}{e^6\sqrt{d+ex}}-\frac{10b(bd-ae)^4}{3e^6(d+ex)^{3/2}}+\frac{2(bd-ae)^5}{5e^6(d+ex)^{5/2}}+\frac{2b^5(d+ex)^{5/2}}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^5)/(5*e^6*(d + e*x)^(5/2)) - (10*b*(b*d - a*e)^4)/(3*e^6*(d
+ e*x)^(3/2)) + (20*b^2*(b*d - a*e)^3)/(e^6*Sqrt[d + e*x]) + (20*b^3*(b*d -
 a*e)^2*Sqrt[d + e*x])/e^6 - (10*b^4*(b*d - a*e)*(d + e*x)^(3/2))/(3*e^6) +
 (2*b^5*(d + e*x)^(5/2))/(5*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}} \, dx &= \int \frac{(a+bx)^5}{(d+ex)^{7/2}} \, dx \\
&= \int \left(\frac{(-bd+ae)^5}{e^5(d+ex)^{7/2}}+\frac{5b(bd-ae)^4}{e^5(d+ex)^{5/2}}-\frac{10b^2(bd-ae)^3}{e^5(d+ex)^{3/2}}+\frac{10b^3(bd-ae)^2}{e^5\sqrt{d+ex}}-\frac{5b^4(\cdots}{} \right. \\
&= \frac{2(bd-ae)^5}{5e^6(d+ex)^{5/2}}-\frac{10b(bd-ae)^4}{3e^6(d+ex)^{3/2}}+\frac{20b^2(bd-ae)^3}{e^6\sqrt{d+ex}}+\frac{20b^3(bd-ae)^2\sqrt{d+ex}}{e^6}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 0.80

$$\frac{2\left(-25b^4(d+ex)^4(bd-ae)+150b^3(d+ex)^3(bd-ae)^2+150b^2(d+ex)^2(bd-ae)^3-25b(d+ex)(bd-ae)^4+3(bd-ae)^5+3b^5(d+ex)^5\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*(b*d - a*e)^5 - 25*b*(b*d - a*e)^4*(d + e*x) + 150*b^2*(b*d - a*e)^3*
(d + e*x)^2 + 150*b^3*(b*d - a*e)^2*(d + e*x)^3 - 25*b^4*(b*d - a*e)*(d + e
*x)^4 + 3*b^5*(d + e*x)^5))/(15*e^6*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 0.09, size = 315, normalized size = 2.05

$$\frac{2\left(-3a^5e^5-25a^4be^4(d+ex)+15a^4bde^4-30a^3b^2d^2e^3-150a^3b^2e^3(d+ex)^2+100a^3b^2de^3(d+ex)+30a^2b^3d^3e^2-150a^2b^3d^2e^2(d+ex)+150a^2b^3e^2(d+ex)^3+450a^2b^3de^2(d+ex)^2-15ab^4d^4e+100ab^4d^3e(d+ex)-450ab^4d^2e(d+ex)^2+25ab^4e(d+ex)^4-300ab^4de(d+ex)^3+3b^5d^5-25b^5d^4(d+ex)+150b^5d^3(d+ex)^2+150b^5d^2(d+ex)^3+3b^5(d+ex)^5-25b^5d(d+ex)^4\right)}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),
x]
```

```
[Out] (2*(3*b^5*d^5 - 15*a*b^4*d^4*e + 30*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 +
15*a^4*b*d*e^4 - 3*a^5*e^5 - 25*b^5*d^4*(d + e*x) + 100*a*b^4*d^3*e*(d + e*
x) - 150*a^2*b^3*d^2*e^2*(d + e*x) + 100*a^3*b^2*d*e^3*(d + e*x) - 25*a^4*b
*e^4*(d + e*x) + 150*b^5*d^3*(d + e*x)^2 - 450*a*b^4*d^2*e*(d + e*x)^2 + 45
0*a^2*b^3*d*e^2*(d + e*x)^2 - 150*a^3*b^2*e^3*(d + e*x)^2 + 150*b^5*d^2*(d
+ e*x)^3 - 300*a*b^4*d*e*(d + e*x)^3 + 150*a^2*b^3*e^2*(d + e*x)^3 - 25*b^5
*d*(d + e*x)^4 + 25*a*b^4*e*(d + e*x)^4 + 3*b^5*(d + e*x)^5))/(15*e^6*(d +
e*x)^(5/2))
```

fricas [B] time = 0.43, size = 294, normalized size = 1.91

$$\frac{2\left(3b^5e^5x^5+256b^5d^5-640ab^4d^4e+480a^2b^3d^3e^2-80a^3b^2d^2e^3-10a^4bde^4-3a^5e^5-5\left(2b^5de^4-5ab^4e^5\right)x^4+10\left(8b^5d^2e^3-20ab^4de^4+15a^2b^3e^5\right)x^3+30\left(16b^5d^3e^2-40ab^4d^2e^3+30a^2b^3de^4-5a^3b^2e^5\right)x^2+5\left(128b^5d^4e-320ab^4d^3e^2+240a^2b^3d^2e^3-40a^3b^2de^4-5a^4be^5\right)x\right)\sqrt{ex+d}}{15\left(e^9x^3+3de^8x^2+3d^2e^7x+d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/15*(3*b^5*e^5*x^5 + 256*b^5*d^5 - 640*a*b^4*d^4*e + 480*a^2*b^3*d^3*e^2 -
 80*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(2*b^5*d*e^4 - 5*a*b^4
*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 20*a*b^4*d*e^4 + 15*a^2*b^3*e^5)*x^3 + 30*(
16*b^5*d^3*e^2 - 40*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 - 5*a^3*b^2*e^5)*x^2 +
 5*(128*b^5*d^4*e - 320*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^3 - 40*a^3*b^2*d*
e^4 - 5*a^4*b*e^5)*x)*sqrt(e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x +
d^3*e^6)
```

giac [B] time = 0.20, size = 333, normalized size = 2.16

$$\frac{2}{15}\left(3(xe+d)^{\frac{5}{2}}b^5e^{24}-25(xe+d)^{\frac{3}{2}}b^5de^{24}+150\sqrt{xe+d}\,b^5d^2e^{24}+25(xe+d)^{\frac{3}{2}}ab^4e^{25}-300\sqrt{xe+d}\,ab^4de^{25}+150\sqrt{xe+d}\,a^2b^3e^{26}\right)e^{(-30)}+\frac{2\left(150(xe+d)^2b^5d^3-25(xe+d)b^5d^4+3b^5d^5-450(xe+d)^2ab^4d^2e+100(xe+d)ab^4d^3e-15ab^4d^4e+450(xe+d)^2a^2b^3de^2-150(xe+d)a^2b^3d^2e^2+30a^2b^3d^3e^2-150(xe+d)^2a^3b^2e^3+100(xe+d)a^3b^2de^3-30a^3b^2d^2e^3-25(xe+d)a^4be^4+15a^4bde^4-3a^5e^5\right)e^{(-6)}}{15(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*b^5*e^24 - 25*(x*e + d)^(3/2)*b^5*d*e^24 + 150*sqrt
(x*e + d)*b^5*d^2*e^24 + 25*(x*e + d)^(3/2)*a*b^4*e^25 - 300*sqrt(x*e + d)*
a*b^4*d*e^25 + 150*sqrt(x*e + d)*a^2*b^3*e^26)*e^(-30) + 2/15*(150*(x*e + d
)^2*b^5*d^3 - 25*(x*e + d)*b^5*d^4 + 3*b^5*d^5 - 450*(x*e + d)^2*a*b^4*d^2*
e + 100*(x*e + d)*a*b^4*d^3*e - 15*a*b^4*d^4*e + 450*(x*e + d)^2*a^2*b^3*d*
e^2 - 150*(x*e + d)*a^2*b^3*d^2*e^2 + 30*a^2*b^3*d^3*e^2 - 150*(x*e + d)^2*
a^3*b^2*e^3 + 100*(x*e + d)*a^3*b^2*d*e^3 - 30*a^3*b^2*d^2*e^3 - 25*(x*e +
d)*a^4*b*e^4 + 15*a^4*b*d*e^4 - 3*a^5*e^5)*e^(-6)/(x*e + d)^(5/2)
```

maple [B] time = 0.06, size = 273, normalized size = 1.77

$$-\frac{2\left(-3b^5e^5x^5-25ab^4e^5x^4+10b^5de^4x^4-150a^2b^3e^5x^3+200ab^4de^4x^3-80b^5d^2e^3x^3+150a^3b^2e^5x^2-900a^2b^3de^4x^2+1200ab^4d^2e^3x^2-480b^5d^3e^2x^2+25a^4be^5x+200a^3b^2de^4x-1200a^2b^3d^2e^3x+1600ab^4d^3e^2x-640b^5d^4ex+3a^5e^5+10a^4bde^4+80a^3b^2d^2e^3-480a^2b^3d^3e^2+640ab^4d^4e-256b^5d^5\right)}{15(ex+d)^{\frac{5}{2}}e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-3*b^5*e^5*x^5-25*a*b^4*e^5*x^4+10*b^5*d*e^4*x^4-150*a^2*b^3*e^5*x^3
+200*a*b^4*d*e^4*x^3-80*b^5*d^2*e^3*x^3+150*a^3*b^2*e^5*x^2-900*a^2*b^3*d*e
^4*x^2+1200*a*b^4*d^2*e^3*x^2-480*b^5*d^3*e^2*x^2+25*a^4*b*e^5*x+200*a^3*b^
2*d*e^4*x-1200*a^2*b^3*d^2*e^3*x+1600*a*b^4*d^3*e^2*x-640*b^5*d^4*e*x+3*a^5
*e^5+10*a^4*b*d*e^4+80*a^3*b^2*d^2*e^3-480*a^2*b^3*d^3*e^2+640*a*b^4*d^4*e-
256*b^5*d^5)/(e*x+d)^(5/2)/e^6
```

maxima [A] time = 0.54, size = 265, normalized size = 1.72

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}b^5-25\left(b^5d-ab^4e\right)(ex+d)^{\frac{3}{2}}+150\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)\sqrt{ex+d}}{e^5}+\frac{3\,b^5d^5-15\,ab^4d^4e+30\,a^2b^3d^3e^2-30\,a^3b^2d^2e^3+15\,a^4bde^4-3\,a^5e^5+150\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)(ex+d)^2-25\left(b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^5}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*b^5 - 25*(b^5*d - a*b^4*e)*(e*x + d)^(3/2) + 150*(
b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*sqrt(e*x + d))/e^5 + (3*b^5*d^5 - 15*a
*b^4*d^4*e + 30*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 + 15*a^4*b*d*e^4 - 3*a
^5*e^5 + 150*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x
 + d)^2 - 25*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
 + a^4*b*e^4)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [B] time = 0.08, size = 255, normalized size = 1.66

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{5/2}}{5\,e^6}-\frac{\left(d+e\,x\right)\,\left(\frac{10\,a^4\,b\,e^4}{3}-\frac{40\,a^3\,b^2\,d\,e^3}{3}+20\,a^2\,b^3\,d^2\,e^2-\frac{40\,a\,b^4\,d^3\,e}{3}+\frac{10\,b^5\,d^4}{3}\right)-{\left(d+e\,x\right)}^2\,\left(-20\,a^3\,b^2\,e^3+60\,a^2\,b^3\,d\,e^2-60\,a\,b^4\,d^2\,e+20\,b^5\,d^3\right)+\frac{2\,a^5\,e^5}{5}-\frac{2\,b^5\,d^5}{5}-4\,a^2\,b^3\,d^3\,e^2+4\,a^3\,b^2\,d^2\,e^3+2\,a\,b^4\,d^4\,e-2\,a^4\,b\,d\,e^4}{e^6\,{\left(d+e\,x\right)}^{5/2}}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,e^6}+\frac{20\,b^3\,{\left(a\,e-b\,d\right)}^2\,\sqrt{d+e\,x}}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(7/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(5/2))/(5*e^6) - ((d + e*x)*((10*b^5*d^4)/3 + (10*a^4*b*e^
4)/3 - (40*a^3*b^2*d*e^3)/3 + 20*a^2*b^3*d^2*e^2 - (40*a*b^4*d^3*e)/3) - (d
 + e*x)^2*(20*b^5*d^3 - 20*a^3*b^2*e^3 + 60*a^2*b^3*d*e^2 - 60*a*b^4*d^2*e)
 + (2*a^5*e^5)/5 - (2*b^5*d^5)/5 - 4*a^2*b^3*d^3*e^2 + 4*a^3*b^2*d^2*e^3 +
2*a*b^4*d^4*e - 2*a^4*b*d*e^4)/(e^6*(d + e*x)^(5/2)) - ((10*b^5*d - 10*a*b^
4*e)*(d + e*x)^(3/2))/(3*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(1/2))/e^6
```

sympy [A] time = 4.35, size = 1428, normalized size = 9.27

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*a**5*e**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d +
e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*a**4*b*d*e**4/(15*d**2*e**6*sqrt(d
+ e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 50*a**4*
b*e**5*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*
x**2*sqrt(d + e*x)) - 160*a**3*b**2*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) +
 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 400*a**3*b**2*d*
e**4*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) - 300*a**3*b**2*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 3
0*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*a**2*b**3*d**3
*e**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**
2*sqrt(d + e*x)) + 2400*a**2*b**3*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) +
 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1800*a**2*b**3*d
*e**4*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**
8*x**2*sqrt(d + e*x)) + 300*a**2*b**3*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x)
```

```
 + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1280*a*b**4*d*
*4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2
*sqrt(d + e*x)) - 3200*a*b**4*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*
d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 2400*a*b**4*d**2*e**
3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) - 400*a*b**4*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30
*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 50*a*b**4*e**5*x**4
/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqr
t(d + e*x)) + 512*b**5*d**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(
d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1280*b**5*d**4*e*x/(15*d**2*e**6*s
qrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 96
0*b**5*d**3*e**2*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*
x) + 15*e**8*x**2*sqrt(d + e*x)) + 160*b**5*d**2*e**3*x**3/(15*d**2*e**6*sq
rt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*
b**5*d*e**4*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
15*e**8*x**2*sqrt(d + e*x)) + 6*b**5*e**5*x**5/(15*d**2*e**6*sqrt(d + e*x)
+ 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((a**
5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*x**3/3 + 5*a**2*b**3*x**4/2 + a*b**4*x
**5 + b**5*x**6/6)/d**(7/2), True))
```

3.1833 $\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=216

$$-\frac{2b^6(d+ex)^{21/2}(bd-ae)}{3e^8}+\frac{42b^5(d+ex)^{19/2}(bd-ae)^2}{19e^8}-\frac{70b^4(d+ex)^{17/2}(bd-ae)^3}{17e^8}+\frac{14b^3(d+ex)^{15/2}(bd-ae)^4}{3e^8}-\frac{42\cdots}{}$$

Rubi [A] time = 0.11, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{2b^6(d+ex)^{21/2}(bd-ae)}{3e^8}+\frac{42b^5(d+ex)^{19/2}(bd-ae)^2}{19e^8}-\frac{70b^4(d+ex)^{17/2}(bd-ae)^3}{17e^8}+\frac{14b^3(d+ex)^{15/2}(bd-ae)^4}{3e^8}-\frac{42b^2(d+ex)^{13/2}(bd-ae)^5}{13e^8}+\frac{14b(d+ex)^{11/2}(bd-ae)^6}{11e^8}-\frac{2(d+ex)^{9/2}(bd-ae)^7}{9e^8}+\frac{2b^7(d+ex)^{23/2}}{23e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(9/2))/(9*e^8) + (14*b*(b*d - a*e)^6*(d + e*x)^
(11/2))/(11*e^8) - (42*b^2*(b*d - a*e)^5*(d + e*x)^(13/2))/(13*e^8) + (14*b
^3*(b*d - a*e)^4*(d + e*x)^(15/2))/(3*e^8) - (70*b^4*(b*d - a*e)^3*(d + e*x
)^(17/2))/(17*e^8) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(19/2))/(19*e^8) - (2*
b^6*(b*d - a*e)*(d + e*x)^(21/2))/(3*e^8) + (2*b^7*(d + e*x)^(23/2))/(23*e^
8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^{7/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^7(d+ex)^{7/2}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{9/2}}{e^7}-\frac{21b^2(bd-\cdots}{}\right.\\
&= -\frac{2(bd-ae)^7(d+ex)^{9/2}}{9e^8}+\frac{14b(bd-ae)^6(d+ex)^{11/2}}{11e^8}-\frac{42b^2(bd-\cdots}{}
\end{aligned}$$

Mathematica [A] time = 0.18, size = 167, normalized size = 0.77

$$\frac{2(d+ex)^{9/2}\left(-3187041b^6(d+ex)^6(bd-ae)+10567557b^5(d+ex)^5(bd-ae)^2-19684665b^4(d+ex)^4(bd-ae)^3+22309287b^3(d+ex)^3(bd-ae)^4-15444891b^2(d+ex)^2(bd-ae)^5+6084351b(d+ex)(bd-ae)^6-1062347(bd-ae)^7+415701b^7(d+ex)^7\right)}{9561123e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-1062347*(b*d - a*e)^7 + 6084351*b*(b*d - a*e)^6*(d + e
*x) - 15444891*b^2*(b*d - a*e)^5*(d + e*x)^2 + 22309287*b^3*(b*d - a*e)^4*(
d + e*x)^3 - 19684665*b^4*(b*d - a*e)^3*(d + e*x)^4 + 10567557*b^5*(b*d - a
```

```
*e)^2*(d + e*x)^5 - 3187041*b^6*(b*d - a*e)*(d + e*x)^6 + 415701*b^7*(d + e
*x)^7))/(9561123*e^8)
```

IntegrateAlgebraic [B] time = 0.21, size = 582, normalized size = 2.69

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-1062347*b^7*d^7 + 7436429*a*b^6*d^6*e - 22309287*a^2*b
^5*d^5*e^2 + 37182145*a^3*b^4*d^4*e^3 - 37182145*a^4*b^3*d^3*e^4 + 22309287
*a^5*b^2*d^2*e^5 - 7436429*a^6*b*d*e^6 + 1062347*a^7*e^7 + 6084351*b^7*d^6*
(d + e*x) - 36506106*a*b^6*d^5*e*(d + e*x) + 91265265*a^2*b^5*d^4*e^2*(d +
e*x) - 121687020*a^3*b^4*d^3*e^3*(d + e*x) + 91265265*a^4*b^3*d^2*e^4*(d +
e*x) - 36506106*a^5*b^2*d*e^5*(d + e*x) + 6084351*a^6*b*e^6*(d + e*x) - 154
44891*b^7*d^5*(d + e*x)^2 + 77224455*a*b^6*d^4*e*(d + e*x)^2 - 154448910*a^
2*b^5*d^3*e^2*(d + e*x)^2 + 154448910*a^3*b^4*d^2*e^3*(d + e*x)^2 - 7722445
5*a^4*b^3*d*e^4*(d + e*x)^2 + 15444891*a^5*b^2*e^5*(d + e*x)^2 + 22309287*b
^7*d^4*(d + e*x)^3 - 89237148*a*b^6*d^3*e*(d + e*x)^3 + 133855722*a^2*b^5*d
^2*e^2*(d + e*x)^3 - 89237148*a^3*b^4*d*e^3*(d + e*x)^3 + 22309287*a^4*b^3*
e^4*(d + e*x)^3 - 19684665*b^7*d^3*(d + e*x)^4 + 59053995*a*b^6*d^2*e*(d +
e*x)^4 - 59053995*a^2*b^5*d*e^2*(d + e*x)^4 + 19684665*a^3*b^4*e^3*(d + e*x
)^4 + 10567557*b^7*d^2*(d + e*x)^5 - 21135114*a*b^6*d*e*(d + e*x)^5 + 10567
557*a^2*b^5*e^2*(d + e*x)^5 - 3187041*b^7*d*(d + e*x)^6 + 3187041*a*b^6*e*(
d + e*x)^6 + 415701*b^7*(d + e*x)^7))/(9561123*e^8)
```

fricas [B] time = 0.45, size = 891, normalized size = 4.12

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/9561123*(415701*b^7*e^11*x^11 - 2048*b^7*d^11 + 23552*a*b^6*d^10*e - 1236
48*a^2*b^5*d^9*e^2 + 391552*a^3*b^4*d^8*e^3 - 832048*a^4*b^3*d^7*e^4 + 1248
072*a^5*b^2*d^6*e^5 - 1352078*a^6*b*d^5*e^6 + 1062347*a^7*d^4*e^7 + 138567*
(10*b^7*d*e^10 + 23*a*b^6*e^11)*x^10 + 7293*(214*b^7*d^2*e^9 + 1472*a*b^6*d
*e^10 + 1449*a^2*b^5*e^11)*x^9 + 1287*(464*b^7*d^3*e^8 + 9522*a*b^6*d^2*e^9
 + 28014*a^2*b^5*d*e^10 + 15295*a^3*b^4*e^11)*x^8 + 429*(b^7*d^4*e^7 + 1113
2*a*b^6*d^3*e^8 + 97566*a^2*b^5*d^2*e^9 + 159068*a^3*b^4*d*e^10 + 52003*a^4
*b^3*e^11)*x^7 - 231*(2*b^7*d^5*e^6 - 23*a*b^6*d^4*e^7 - 72312*a^2*b^5*d^3*
e^8 - 350474*a^3*b^4*d^2*e^9 - 341734*a^4*b^3*d*e^10 - 66861*a^5*b^2*e^11)*
x^6 + 63*(8*b^7*d^6*e^5 - 92*a*b^6*d^5*e^6 + 483*a^2*b^5*d^4*e^7 + 529644*a
^3*b^4*d^3*e^8 + 1530374*a^4*b^3*d^2*e^9 + 891480*a^5*b^2*d*e^10 + 96577*a^
6*b*e^11)*x^5 - (560*b^7*d^7*e^4 - 6440*a*b^6*d^6*e^5 + 33810*a^2*b^5*d^5*e
^6 - 107065*a^3*b^4*d^4*e^7 - 41602400*a^4*b^3*d^3*e^8 - 71452122*a^5*b^2*d
^2*e^9 - 22985326*a^6*b*d*e^10 - 1062347*a^7*e^11)*x^4 + (640*b^7*d^8*e^3 -
 7360*a*b^6*d^7*e^4 + 38640*a^2*b^5*d^6*e^5 - 122360*a^3*b^4*d^5*e^6 + 2600
15*a^4*b^3*d^4*e^7 + 33073908*a^5*b^2*d^3*e^8 + 31097794*a^6*b*d^2*e^9 + 42
49388*a^7*d*e^10)*x^3 - 3*(256*b^7*d^9*e^2 - 2944*a*b^6*d^8*e^3 + 15456*a^2
*b^5*d^7*e^4 - 48944*a^3*b^4*d^6*e^5 + 104006*a^4*b^3*d^5*e^6 - 156009*a^5*
b^2*d^4*e^7 - 5408312*a^6*b*d^3*e^8 - 2124694*a^7*d^2*e^9)*x^2 + (1024*b^7*
d^10*e - 11776*a*b^6*d^9*e^2 + 61824*a^2*b^5*d^8*e^3 - 195776*a^3*b^4*d^7*e
^4 + 416024*a^4*b^3*d^6*e^5 - 624036*a^5*b^2*d^5*e^6 + 676039*a^6*b*d^4*e^7
 + 4249388*a^7*d^3*e^8)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.41, size = 3640, normalized size = 16.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/334639305*(780825045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d^4*e^(-
1) + 468495027*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*a^5*b^2*d^4*e^(-2) + 334639305*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d^4*e^(-3) + 3
7182145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d
^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d^4*e^(-4) +
10140585*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a^2*b^5*d^4*e^(-5) + 780045*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*
d^4*e^(-6) + 52003*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*
(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^
4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e +
 d)*d^7)*b^7*d^4*e^(-7) + 624660036*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)
*d + 15*sqrt(x*e + d)*d^2)*a^6*b*d^3*e^(-1) + 803134332*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5
*b^2*d^3*e^(-2) + 148728580*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a
^4*b^3*d^3*e^(-3) + 67603900*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^4*d^3*e^(-4) + 9360540*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*a^2*b^5*d^3*e^(-5) + 1456084*(429*(x*e + d)^(15/2) - 3465*(x
*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 +
 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3
/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^6*d^3*e^(-6) + 12236*(6435*(x*e + d)^
(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x
*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^
5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x
*e + d)*d^8)*b^7*d^3*e^(-7) + 334639305*sqrt(x*e + d)*a^7*d^4 + 446185740*(
(x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^7*d^3 + 401567166*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^
6*b*d^2*e^(-1) + 133855722*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^
5*b^2*d^2*e^(-2) + 101405850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b^3*d^2*e^(-3) + 23401350*(231*(x*e + d)^(
13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)
^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqr
t(x*e + d)*d^6)*a^3*b^4*d^2*e^(-4) + 6552378*(429*(x*e + d)^(15/2) - 3465*(
x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
+ 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(
3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2*b^5*d^2*e^(-5) + 128478*(6435*(x*e +
 d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 55692
0*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2
)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sq
rt(x*e + d)*d^8)*a*b^6*d^2*e^(-6) + 8694*(12155*(x*e + d)^(19/2) - 122265*(
x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*
d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*
(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*
d^8 - 230945*sqrt(x*e + d)*d^9)*b^7*d^2*e^(-7) + 133855722*(3*(x*e + d)^(5/
2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^7*d^2 + 29745716*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
```

```
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^6*b*d*e^(-1) + 40562340*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^5*b^2*d
*e^(-2) + 15600900*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^4*b^3*d*e^(-3) + 72804
20*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^3*b^4
*d*e^(-4) + 256956*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 2356
20*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9
/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*
(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a^2*b^5*d*e^(-5) + 40572*(1
2155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)
*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 323323
0*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/
2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*a*b^6*d*e^(
-6) + 1380*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x
*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/
2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 166
28040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)
^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*b^7*d*e^(-7) + 38244492*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*a^7*d + 3380195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*a^6*b*e^(-1) + 2340135*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*a^5*b^2*e^(-2) + 1820105*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d +
 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(
7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqr
t(x*e + d)*d^7)*a^4*b^3*e^(-3) + 107065*(6435*(x*e + d)^(17/2) - 58344*(x*e
 + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
+ 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d
)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a^3*b^
4*e^(-4) + 30429*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 5542
68*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^
(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 16
62804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e +
d)*d^9)*a^2*b^5*e^(-5) + 2415*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(1
9/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 1566
8730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e +
 d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8
- 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*a*b^6*e^(-6) + 1
65*(88179*(x*e + d)^(23/2) - 1062347*(x*e + d)^(21/2)*d + 5870865*(x*e + d)
^(19/2)*d^2 - 19684665*(x*e + d)^(17/2)*d^3 + 44618574*(x*e + d)^(15/2)*d^4
 - 72076158*(x*e + d)^(13/2)*d^5 + 85180914*(x*e + d)^(11/2)*d^6 - 74364290
*(x*e + d)^(9/2)*d^7 + 47805615*(x*e + d)^(7/2)*d^8 - 22309287*(x*e + d)^(5
/2)*d^9 + 7436429*(x*e + d)^(3/2)*d^10 - 2028117*sqrt(x*e + d)*d^11)*b^7*e^
(-7) + 1062347*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/9561123*(e*x+d)^(9/2)*(415701*b^7*e^7*x^7+3187041*a*b^6*e^7*x^6-277134*b^
```

```
7*d*e^6*x^6+10567557*a^2*b^5*e^7*x^5-2012868*a*b^6*d*e^6*x^5+175032*b^7*d^2
*e^5*x^5+19684665*a^3*b^4*e^7*x^4-6216210*a^2*b^5*d*e^6*x^4+1184040*a*b^6*d
^2*e^5*x^4-102960*b^7*d^3*e^4*x^4+22309287*a^4*b^3*e^7*x^3-10498488*a^3*b^4
*d*e^6*x^3+3315312*a^2*b^5*d^2*e^5*x^3-631488*a*b^6*d^3*e^4*x^3+54912*b^7*d
^4*e^3*x^3+15444891*a^5*b^2*e^7*x^2-10296594*a^4*b^3*d*e^6*x^2+4845456*a^3*
b^4*d^2*e^5*x^2-1530144*a^2*b^5*d^3*e^4*x^2+291456*a*b^6*d^4*e^3*x^2-25344*
b^7*d^5*e^2*x^2+6084351*a^6*b*e^7*x-5616324*a^5*b^2*d*e^6*x+3744216*a^4*b^3
*d^2*e^5*x-1761984*a^3*b^4*d^3*e^4*x+556416*a^2*b^5*d^4*e^3*x-105984*a*b^6*
d^5*e^2*x+9216*b^7*d^6*e*x+1062347*a^7*e^7-1352078*a^6*b*d*e^6+1248072*a^5*
b^2*d^2*e^5-832048*a^4*b^3*d^3*e^4+391552*a^3*b^4*d^4*e^3-123648*a^2*b^5*d^
5*e^2+23552*a*b^6*d^6*e-2048*b^7*d^7)/e^8
```

maxima [B] time = 0.58, size = 456, normalized size = 2.11

$$\frac{2\left(415701\,(ex+d)^{\frac{23}{2}} b^7 - 3187041\,(b^7 d - ab^6 e)(ex+d)^{\frac{21}{2}} + 10567557\,(b^7 d^2 - 2\,ab^6 de + a^2 b^5 e^2)(ex+d)^{\frac{19}{2}} - 19684665\,(b^7 d^3 - 3\,ab^6 d^2 e + 3\,a^2 b^5 de^2 - a^3 b^4 e^3)(ex+d)^{\frac{17}{2}} + 22309287\,(b^7 d^4 - 4\,ab^6 d^3 e + 6\,a^2 b^5 d^2 e^2 - 4\,a^3 b^4 de^3 + a^4 b^3 e^4)(ex+d)^{\frac{15}{2}} - 15444891\,(b^7 d^5 - 5\,ab^6 d^4 e + 10\,a^2 b^5 d^3 e^2 - 10\,a^3 b^4 d^2 e^3 + 5\,a^4 b^3 de^4 - a^5 b^2 e^5)(ex+d)^{\frac{13}{2}} + 6084351\,(b^7 d^6 - 6\,ab^6 d^5 e + 15\,a^2 b^5 d^4 e^2 - 20\,a^3 b^4 d^3 e^3 + 15\,a^4 b^3 d^2 e^4 - 6\,a^5 b^2 de^5 + a^6 b e^6)(ex+d)^{\frac{11}{2}} - 1062347\,(b^7 d^7 - 7\,ab^6 d^6 e + 21\,a^2 b^5 d^5 e^2 - 35\,a^3 b^4 d^4 e^3 + 35\,a^4 b^3 d^3 e^4 - 21\,a^5 b^2 d^2 e^5 + 7\,a^6 b de^6 - a^7 e^7)(ex+d)^{\frac{9}{2}}\right)}{9561123\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/9561123*(415701*(e*x + d)^(23/2)*b^7 - 3187041*(b^7*d - a*b^6*e)*(e*x + d
)^(21/2) + 10567557*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(19/2)
- 19684665*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x +
 d)^(17/2) + 22309287*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*
b^4*d*e^3 + a^4*b^3*e^4)*(e*x + d)^(15/2) - 15444891*(b^7*d^5 - 5*a*b^6*d^4
*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^
5)*(e*x + d)^(13/2) + 6084351*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2
 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(
e*x + d)^(11/2) - 1062347*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 3
5*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6
 - a^7*e^7)*(e*x + d)^(9/2))/e^8
```

mupad [B] time = 2.08, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{23/2}}{23\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{21/2}}{21\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,{\left(d+e\,x\right)}^{9/2}}{9\,e^8}+\frac{42\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{13/2}}{13\,e^8}+\frac{14\,b^3\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{15/2}}{3\,e^8}+\frac{70\,b^4\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{17/2}}{17\,e^8}+\frac{42\,b^5\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{19/2}}{19\,e^8}+\frac{14\,b\,{\left(a\,e-b\,d\right)}^6\,{\left(d+e\,x\right)}^{11/2}}{11\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(23/2))/(23*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(21/
2))/(21*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(9/2))/(9*e^8) + (42*b^2*(a*e - b
*d)^5*(d + e*x)^(13/2))/(13*e^8) + (14*b^3*(a*e - b*d)^4*(d + e*x)^(15/2))/
(3*e^8) + (70*b^4*(a*e - b*d)^3*(d + e*x)^(17/2))/(17*e^8) + (42*b^5*(a*e -
 b*d)^2*(d + e*x)^(19/2))/(19*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(11/2))/
(11*e^8)
```

sympy [A] time = 101.43, size = 3046, normalized size = 14.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**3*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)
) + 6*a**7*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 6*a**7*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
2*a**7*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x
)**(7/2)/7 + (d + e*x)**(9/2)/9)/e + 14*a**6*b*d**3*(-d*(d + e*x)**(3/2)/3
+ (d + e*x)**(5/2)/5)/e**2 + 42*a**6*b*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*
(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 42*a**6*b*d*(-d**3*(d + e*x
```

```
)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)
**(9/2)/9)/e**2 + 14*a**6*b*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5
/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11
/2)/11)/e**2 + 42*a**5*b**2*d**3*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**
(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 126*a**5*b**2*d**2*(-d**3*(d + e*x)**(
3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9
/2)/9)/e**3 + 126*a**5*b**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**
(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(
11/2)/11)/e**3 + 42*a**5*b**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(
5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e
*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**3 + 70*a**4*b**3*d**3*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**4 + 210*a**4*b**3*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*
(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (
d + e*x)**(11/2)/11)/e**4 + 210*a**4*b**3*d*(-d**5*(d + e*x)**(3/2)/3 + d**
4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/
9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 70*a**4*b**3*(d
**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/
2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d +
 e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**4 + 70*a**3*b**4*d**3*(d**4*(d
+ e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4
*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 210*a**3*b**4*d**2*(-d
**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2
)/13)/e**5 + 210*a**3*b**4*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(
5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*
(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**
5 + 70*a**3*b**4*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*
d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11
/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x
)**(17/2)/17)/e**5 + 42*a**2*b**5*d**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d
+ e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5
*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 126*a**2*b**5*d**2*(
d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7
/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d
+ e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 126*a**2*b**5*d*(-d**7*(d
+ e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*
d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)*
*(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 42*a**
2*b**5*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e
*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56
*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**
(17/2)/17 + (d + e*x)**(19/2)/19)/e**6 + 14*a*b**6*d**3*(d**6*(d + e*x)**(3
/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d
 + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13
+ (d + e*x)**(15/2)/15)/e**7 + 42*a*b**6*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7
*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/
2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d
 + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 42*a*b**6*d*(d**8*(d + e*
x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5
*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13
/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x
)**(19/2)/19)/e**7 + 14*a*b**6*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)
**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d
**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x
)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d
+ e*x)**(21/2)/21)/e**7 + 2*b**7*d**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d
 + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 3
5*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)*
```

```
*(15/2)/15 + (d + e*x)**(17/2)/17)/e**8 + 6*b**7*d**2*(d**8*(d + e*x)**(3/2
)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*
x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 +
 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2
)/19)/e**8 + 6*b**7*d*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5
 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d +
e*x)**(11/2)/11 + 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)
/5 + 36*d**2*(d + e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(
21/2)/21)/e**8 + 2*b**7*(d**10*(d + e*x)**(3/2)/3 - 2*d**9*(d + e*x)**(5/2)
 + 45*d**8*(d + e*x)**(7/2)/7 - 40*d**7*(d + e*x)**(9/2)/3 + 210*d**6*(d +
e*x)**(11/2)/11 - 252*d**5*(d + e*x)**(13/2)/13 + 14*d**4*(d + e*x)**(15/2)
 - 120*d**3*(d + e*x)**(17/2)/17 + 45*d**2*(d + e*x)**(19/2)/19 - 10*d*(d +
 e*x)**(21/2)/21 + (d + e*x)**(23/2)/23)/e**8
```

3.1834 $\int (a+bx)(d+ex)^{5/2} \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=216

$$-\frac{14b^6(d+ex)^{19/2}(bd-ae)}{19e^8}+\frac{42b^5(d+ex)^{17/2}(bd-ae)^2}{17e^8}-\frac{14b^4(d+ex)^{15/2}(bd-ae)^3}{3e^8}+\frac{70b^3(d+ex)^{13/2}(bd-ae)^4}{13e^8}$$

Rubi [A] time = 0.08, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{14b^6(d+ex)^{19/2}(bd-ae)}{19e^8}+\frac{42b^5(d+ex)^{17/2}(bd-ae)^2}{17e^8}-\frac{14b^4(d+ex)^{15/2}(bd-ae)^3}{3e^8}+\frac{70b^3(d+ex)^{13/2}(bd-ae)^4}{13e^8}-\frac{42b^2(d+ex)^{11/2}(bd-ae)^5}{11e^8}+\frac{14b(d+ex)^{9/2}(bd-ae)^6}{9e^8}-\frac{2(d+ex)^{7/2}(bd-ae)^7}{7e^8}+\frac{2b^7(d+ex)^{21/2}}{21e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(7/2))/(7*e^8) + (14*b*(b*d - a*e)^6*(d + e*x)^
(9/2))/(9*e^8) - (42*b^2*(b*d - a*e)^5*(d + e*x)^(11/2))/(11*e^8) + (70*b^3
*(b*d - a*e)^4*(d + e*x)^(13/2))/(13*e^8) - (14*b^4*(b*d - a*e)^3*(d + e*x)
^(15/2))/(3*e^8) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(17/2))/(17*e^8) - (14*b
^6*(b*d - a*e)*(d + e*x)^(19/2))/(19*e^8) + (2*b^7*(d + e*x)^(21/2))/(21*e^
8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned} \int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^7(d+ex)^{5/2} \, dx \\ &= \int \left(\frac{(-bd+ae)^7(d+ex)^{5/2}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{7/2}}{e^7}-\frac{21b^2(bc\right. \\ &= -\frac{2(bd-ae)^7(d+ex)^{7/2}}{7e^8}+\frac{14b(bd-ae)^6(d+ex)^{9/2}}{9e^8}-\frac{42b^2(bd\,-\right. \end{aligned}$$

Mathematica [A] time = 0.13, size = 167, normalized size = 0.77

$$\frac{2(d+ex)^{7/2}\left(-1072071b^6(d+ex)^6(bd-ae)+3594591b^5(d+ex)^5(bd-ae)^2-6789783b^4(d+ex)^4(bd-ae)^3+7834365b^3(d+ex)^3(bd-ae)^4-5555277b^2(d+ex)^2(bd-ae)^5+2263261b(d+ex)(bd-ae)^6-415701(bd-ae)^7+138567b^7(d+ex)^7\right)}{2909907e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-415701*(b*d - a*e)^7 + 2263261*b*(b*d - a*e)^6*(d + e*
x) - 5555277*b^2*(b*d - a*e)^5*(d + e*x)^2 + 7834365*b^3*(b*d - a*e)^4*(d +
 e*x)^3 - 6789783*b^4*(b*d - a*e)^3*(d + e*x)^4 + 3594591*b^5*(b*d - a*e)^2
```

```
*(d + e*x)^5 - 1072071*b^6*(b*d - a*e)*(d + e*x)^6 + 138567*b^7*(d + e*x)^7
))/(2909907*e^8)
```

IntegrateAlgebraic [B] time = 0.20, size = 582, normalized size = 2.69

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-415701*b^7*d^7 + 2909907*a*b^6*d^6*e - 8729721*a^2*b^5
*d^5*e^2 + 14549535*a^3*b^4*d^4*e^3 - 14549535*a^4*b^3*d^3*e^4 + 8729721*a^
5*b^2*d^2*e^5 - 2909907*a^6*b*d*e^6 + 415701*a^7*e^7 + 2263261*b^7*d^6*(d +
 e*x) - 13579566*a*b^6*d^5*e*(d + e*x) + 33948915*a^2*b^5*d^4*e^2*(d + e*x)
 - 45265220*a^3*b^4*d^3*e^3*(d + e*x) + 33948915*a^4*b^3*d^2*e^4*(d + e*x)
- 13579566*a^5*b^2*d*e^5*(d + e*x) + 2263261*a^6*b*e^6*(d + e*x) - 5555277*
b^7*d^5*(d + e*x)^2 + 27776385*a*b^6*d^4*e*(d + e*x)^2 - 55552770*a^2*b^5*d
^3*e^2*(d + e*x)^2 + 55552770*a^3*b^4*d^2*e^3*(d + e*x)^2 - 27776385*a^4*b^
3*d*e^4*(d + e*x)^2 + 5555277*a^5*b^2*e^5*(d + e*x)^2 + 7834365*b^7*d^4*(d
+ e*x)^3 - 31337460*a*b^6*d^3*e*(d + e*x)^3 + 47006190*a^2*b^5*d^2*e^2*(d +
 e*x)^3 - 31337460*a^3*b^4*d*e^3*(d + e*x)^3 + 7834365*a^4*b^3*e^4*(d + e*x
)^3 - 6789783*b^7*d^3*(d + e*x)^4 + 20369349*a*b^6*d^2*e*(d + e*x)^4 - 2036
9349*a^2*b^5*d*e^2*(d + e*x)^4 + 6789783*a^3*b^4*e^3*(d + e*x)^4 + 3594591*
b^7*d^2*(d + e*x)^5 - 7189182*a*b^6*d*e*(d + e*x)^5 + 3594591*a^2*b^5*e^2*(
d + e*x)^5 - 1072071*b^7*d*(d + e*x)^6 + 1072071*a*b^6*e*(d + e*x)^6 + 1385
67*b^7*(d + e*x)^7))/(2909907*e^8)
```

fricas [B] time = 0.43, size = 783, normalized size = 3.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/2909907*(138567*b^7*e^10*x^10 - 2048*b^7*d^10 + 21504*a*b^6*d^9*e - 10214
4*a^2*b^5*d^8*e^2 + 289408*a^3*b^4*d^7*e^3 - 542640*a^4*b^3*d^6*e^4 + 70543
2*a^5*b^2*d^5*e^5 - 646646*a^6*b*d^4*e^6 + 415701*a^7*d^3*e^7 + 7293*(43*b^
7*d*e^9 + 147*a*b^6*e^10)*x^9 + 3861*(47*b^7*d^2*e^8 + 637*a*b^6*d*e^9 + 93
1*a^2*b^5*e^10)*x^8 + 429*(b^7*d^3*e^7 + 3381*a*b^6*d^2*e^8 + 19551*a^2*b^5
*d*e^9 + 15827*a^3*b^4*e^10)*x^7 - 231*(2*b^7*d^4*e^6 - 21*a*b^6*d^3*e^7 -
21945*a^2*b^5*d^2*e^8 - 70091*a^3*b^4*d*e^9 - 33915*a^4*b^3*e^10)*x^6 + 63*
(8*b^7*d^5*e^5 - 84*a*b^6*d^4*e^6 + 399*a^2*b^5*d^3*e^7 + 160531*a^3*b^4*d^
2*e^8 + 305235*a^4*b^3*d*e^9 + 88179*a^5*b^2*e^10)*x^5 - 7*(80*b^7*d^6*e^4
- 840*a*b^6*d^5*e^5 + 3990*a^2*b^5*d^4*e^6 - 11305*a^3*b^4*d^3*e^7 - 179749
5*a^4*b^3*d^2*e^8 - 2028117*a^5*b^2*d*e^9 - 323323*a^6*b*e^10)*x^4 + (640*b
^7*d^7*e^3 - 6720*a*b^6*d^6*e^4 + 31920*a^2*b^5*d^5*e^5 - 90440*a^3*b^4*d^4
*e^6 + 169575*a^4*b^3*d^3*e^7 + 9964227*a^5*b^2*d^2*e^8 + 6143137*a^6*b*d*e
^9 + 415701*a^7*e^10)*x^3 - 3*(256*b^7*d^8*e^2 - 2688*a*b^6*d^7*e^3 + 12768
*a^2*b^5*d^6*e^4 - 36176*a^3*b^4*d^5*e^5 + 67830*a^4*b^3*d^4*e^6 - 88179*a^
5*b^2*d^3*e^7 - 1616615*a^6*b*d^2*e^8 - 415701*a^7*d*e^9)*x^2 + (1024*b^7*d
^9*e - 10752*a*b^6*d^8*e^2 + 51072*a^2*b^5*d^7*e^3 - 144704*a^3*b^4*d^6*e^4
 + 271320*a^4*b^3*d^5*e^5 - 352716*a^5*b^2*d^4*e^6 + 323323*a^6*b*d^3*e^7 +
 1247103*a^7*d^2*e^8)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.43, size = 2696, normalized size = 12.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)

[Out] 2/14549535*(33948915*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d^3*e^(-1)
 + 20369349*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^
2)*a^5*b^2*d^3*e^(-2) + 14549535*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d^3*e^(-3) + 16166
15*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d^3*e^(-4) + 44089
5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 -
1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5
)*a^2*b^5*d^3*e^(-5) + 33915*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*
d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5
/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*d^3*e^(-
6) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)
^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027
*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*
b^7*d^3*e^(-7) + 20369349*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*a^6*b*d^2*e^(-1) + 26189163*(5*(x*e + d)^(7/2) - 21*(x*e +
 d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*b^2*d^2*e^
(-2) + 4849845*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b^3*d^2*e^
(-3) + 2204475*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*a^3*b^4*d^2*e^(-4) + 305235*(231*(x*e + d)^(13/2) - 1638*(x*
e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 900
9*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*
a^2*b^5*d^2*e^(-5) + 47481*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
+ 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^
(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sq
rt(x*e + d)*d^7)*a*b^6*d^2*e^(-6) + 399*(6435*(x*e + d)^(17/2) - 58344*(x*e
 + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
+ 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d
)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^7*d^
2*e^(-7) + 14549535*sqrt(x*e + d)*a^7*d^3 + 14549535*((x*e + d)^(3/2) - 3*s
qrt(x*e + d)*d)*a^7*d^2 + 8729721*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^6*b*d*e^(-1) + 2909907*
(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420
*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^5*b^2*d*e^(-2) + 2204475*(6
3*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386
*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^
4*b^3*d*e^(-3) + 508725*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5
005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d
^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^3*b^4*d*e^(-4) +
142443*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(1
1/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x
*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2
*b^5*d*e^(-5) + 2793*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 23
5620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^
(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 29172
0*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a*b^6*d*e^(-6) + 189*(121
55*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d
^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*
(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)
*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*b^7*d*e^(-7)
+ 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*a^7*d + 323323*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^6*b*e^(-1)
+ 440895*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
```

```
 d)*d^5)*a^5*b^2*e^(-2) + 169575*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11
/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d
)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^4*b^3*e^
(-3) + 79135*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
 d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27
027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^
7)*a^3*b^4*e^(-4) + 2793*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d
+ 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e +
 d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 2
91720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a^2*b^5*e^(-5) + 441*
(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/
2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233
230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(
5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*a*b^6*e^(
-6) + 15*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e
 + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)
*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628
040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(
3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*b^7*e^(-7) + 415701*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a
^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(138567*b^7*e^7*x^7+1072071*a*b^6*e^7*x^6-102102*b^
7*d*e^6*x^6+3594591*a^2*b^5*e^7*x^5-756756*a*b^6*d*e^6*x^5+72072*b^7*d^2*e^
5*x^5+6789783*a^3*b^4*e^7*x^4-2396394*a^2*b^5*d*e^6*x^4+504504*a*b^6*d^2*e^
5*x^4-48048*b^7*d^3*e^4*x^4+7834365*a^4*b^3*e^7*x^3-4178328*a^3*b^4*d*e^6*x
^3+1474704*a^2*b^5*d^2*e^5*x^3-310464*a*b^6*d^3*e^4*x^3+29568*b^7*d^4*e^3*x
^3+5555277*a^5*b^2*e^7*x^2-4273290*a^4*b^3*d*e^6*x^2+2279088*a^3*b^4*d^2*e^
5*x^2-804384*a^2*b^5*d^3*e^4*x^2+169344*a*b^6*d^4*e^3*x^2-16128*b^7*d^5*e^2
*x^2+2263261*a^6*b*e^7*x-2469012*a^5*b^2*d*e^6*x+1899240*a^4*b^3*d^2*e^5*x-
1012928*a^3*b^4*d^3*e^4*x+357504*a^2*b^5*d^4*e^3*x-75264*a*b^6*d^5*e^2*x+71
68*b^7*d^6*e*x+415701*a^7*e^7-646646*a^6*b*d*e^6+705432*a^5*b^2*d^2*e^5-542
640*a^4*b^3*d^3*e^4+289408*a^3*b^4*d^4*e^3-102144*a^2*b^5*d^5*e^2+21504*a*b
^6*d^6*e-2048*b^7*d^7)/e^8
```

maxima [B] time = 0.65, size = 456, normalized size = 2.11

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/2909907*(138567*(e*x + d)^(21/2)*b^7 - 1072071*(b^7*d - a*b^6*e)*(e*x + d
)^(19/2) + 3594591*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(17/2) -
 6789783*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d
)^(15/2) + 7834365*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4
*d*e^3 + a^4*b^3*e^4)*(e*x + d)^(13/2) - 5555277*(b^7*d^5 - 5*a*b^6*d^4*e +
 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(
e*x + d)^(11/2) + 2263261*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 2
0*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x
+ d)^(9/2) - 415701*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*
```

```
b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7
*e^7)*(e*x + d)^(7/2))/e^8
```

mupad [B] time = 0.06, size = 187, normalized size = 0.87

$$\frac{2b^7(d+ex)^{21/2}}{21e^8}-\frac{\left(14b^7d-14ab^6e\right)(d+ex)^{19/2}}{19e^8}+\frac{2(ae-bd)^7(d+ex)^{7/2}}{7e^8}+\frac{42b^2(ae-bd)^5(d+ex)^{11/2}}{11e^8}+\frac{70b^3(ae-bd)^4(d+ex)^{13/2}}{13e^8}+\frac{14b^4(ae-bd)^3(d+ex)^{15/2}}{3e^8}+\frac{42b^5(ae-bd)^2(d+ex)^{17/2}}{17e^8}+\frac{14b(ae-bd)^6(d+ex)^{9/2}}{9e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(21/2))/(21*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(19/
2))/(19*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(7/2))/(7*e^8) + (42*b^2*(a*e - b
*d)^5*(d + e*x)^(11/2))/(11*e^8) + (70*b^3*(a*e - b*d)^4*(d + e*x)^(13/2))/
(13*e^8) + (14*b^4*(a*e - b*d)^3*(d + e*x)^(15/2))/(3*e^8) + (42*b^5*(a*e -
 b*d)^2*(d + e*x)^(17/2))/(17*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(9/2))/(
9*e^8)
```

sympy [A] time = 70.41, size = 2096, normalized size = 9.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)
) + 4*a**7*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**7*(d**2*
(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e + 14*a*
*6*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 28*a**6*b*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2
 + 14*a**6*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 42*a**5*b**2*d**2*(d**2*(d +
e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 84*a**5
*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*
x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 42*a**5*b**2*(d**4*(d + e*x)**(3/2
)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)
**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 70*a**4*b**3*d**2*(-d**3*(d + e*x)
**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)*
*(9/2)/9)/e**4 + 140*a**4*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x
)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)
**(11/2)/11)/e**4 + 70*a**4*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)
**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
+ e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 70*a**3*b**4*d**2*(d**4*(d
 + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 -
4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 140*a**3*b**4*d*(-d**
5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 +
 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/
13)/e**5 + 70*a**3*b**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/
5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d +
e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 4
2*a**2*b**5*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**
3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/1
1 + (d + e*x)**(13/2)/13)/e**6 + 84*a**2*b**5*d*(d**6*(d + e*x)**(3/2)/3 -
6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)*
*(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e
*x)**(15/2)/15)/e**6 + 42*a**2*b**5*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d +
 e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*
d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(
15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 14*a*b**6*d**2*(d**6*(d + e*x)**(3/
2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d
+ e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 +
```

```
 (d + e*x)**(15/2)/15)/e**7 + 28*a*b**6*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**
6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9
 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e
*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 14*a*b**6*(d**8*(d + e*x)**(3
/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d +
e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13
 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19
/2)/19)/e**7 + 2*b**7*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5
/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d +
 e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15
+ (d + e*x)**(17/2)/17)/e**8 + 4*b**7*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(
d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 +
70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d +
e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 + 2
*b**7*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d +
e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11
+ 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d
+ e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8
```

3.1835 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=214

$$-\frac{14b^6(d+ex)^{17/2}(bd-ae)}{17e^8}+\frac{14b^5(d+ex)^{15/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{13/2}(bd-ae)^3}{13e^8}+\frac{70b^3(d+ex)^{11/2}(bd-ae)^4}{11e^8}$$

Rubi [A] time = 0.07, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{14b^6(d+ex)^{17/2}(bd-ae)}{17e^8}+\frac{14b^5(d+ex)^{15/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{13/2}(bd-ae)^3}{13e^8}+\frac{70b^3(d+ex)^{11/2}(bd-ae)^4}{11e^8}-\frac{14b^2(d+ex)^{9/2}(bd-ae)^5}{3e^8}+\frac{2b(d+ex)^{7/2}(bd-ae)^6}{e^8}-\frac{2(d+ex)^{5/2}(bd-ae)^7}{5e^8}+\frac{2b^7(d+ex)^{19/2}}{19e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(5/2))/(5*e^8) + (2*b*(b*d - a*e)^6*(d + e*x)^(
7/2))/e^8 - (14*b^2*(b*d - a*e)^5*(d + e*x)^(9/2))/(3*e^8) + (70*b^3*(b*d -
 a*e)^4*(d + e*x)^(11/2))/(11*e^8) - (70*b^4*(b*d - a*e)^3*(d + e*x)^(13/2)
)/(13*e^8) + (14*b^5*(b*d - a*e)^2*(d + e*x)^(15/2))/(5*e^8) - (14*b^6*(b*d
 - a*e)*(d + e*x)^(17/2))/(17*e^8) + (2*b^7*(d + e*x)^(19/2))/(19*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^7(d+ex)^{3/2}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{5/2}}{e^7}-\frac{21b^2(bd\end{aligned}$$

$$= -\frac{2(bd-ae)^7(d+ex)^{5/2}}{5e^8}+\frac{2b(bd-ae)^6(d+ex)^{7/2}}{e^8}-\frac{14b^2(bd-$$

Mathematica [A] time = 0.12, size = 167, normalized size = 0.78

$$\frac{2(d+ex)^{5/2}\left(-285285b^6(d+ex)^6(bd-ae)+969969b^5(d+ex)^5(bd-ae)^2-1865325b^4(d+ex)^4(bd-ae)^3+2204475b^3(d+ex)^3(bd-ae)^4-1616615b^2(d+ex)^2(bd-ae)^5+692835b(d+ex)(bd-ae)^6-138567(bd-ae)^7+36465b^7(d+ex)^7\right)}{692835e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-138567*(b*d - a*e)^7 + 692835*b*(b*d - a*e)^6*(d + e*x
) - 1616615*b^2*(b*d - a*e)^5*(d + e*x)^2 + 2204475*b^3*(b*d - a*e)^4*(d +
e*x)^3 - 1865325*b^4*(b*d - a*e)^3*(d + e*x)^4 + 969969*b^5*(b*d - a*e)^2*(
d + e*x)^5 - 285285*b^6*(b*d - a*e)*(d + e*x)^6 + 36465*b^7*(d + e*x)^7))/(
692835*e^8)
```

IntegrateAlgebraic [B] time = 0.18, size = 582, normalized size = 2.72

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-138567*b^7*d^7 + 969969*a*b^6*d^6*e - 2909907*a^2*b^5*
d^5*e^2 + 4849845*a^3*b^4*d^4*e^3 - 4849845*a^4*b^3*d^3*e^4 + 2909907*a^5*b
^2*d^2*e^5 - 969969*a^6*b*d*e^6 + 138567*a^7*e^7 + 692835*b^7*d^6*(d + e*x)
 - 4157010*a*b^6*d^5*e*(d + e*x) + 10392525*a^2*b^5*d^4*e^2*(d + e*x) - 138
56700*a^3*b^4*d^3*e^3*(d + e*x) + 10392525*a^4*b^3*d^2*e^4*(d + e*x) - 4157
010*a^5*b^2*d*e^5*(d + e*x) + 692835*a^6*b*e^6*(d + e*x) - 1616615*b^7*d^5*
(d + e*x)^2 + 8083075*a*b^6*d^4*e*(d + e*x)^2 - 16166150*a^2*b^5*d^3*e^2*(d
 + e*x)^2 + 16166150*a^3*b^4*d^2*e^3*(d + e*x)^2 - 8083075*a^4*b^3*d*e^4*(d
 + e*x)^2 + 1616615*a^5*b^2*e^5*(d + e*x)^2 + 2204475*b^7*d^4*(d + e*x)^3 -
 8817900*a*b^6*d^3*e*(d + e*x)^3 + 13226850*a^2*b^5*d^2*e^2*(d + e*x)^3 - 8
817900*a^3*b^4*d*e^3*(d + e*x)^3 + 2204475*a^4*b^3*e^4*(d + e*x)^3 - 186532
5*b^7*d^3*(d + e*x)^4 + 5595975*a*b^6*d^2*e*(d + e*x)^4 - 5595975*a^2*b^5*d
*e^2*(d + e*x)^4 + 1865325*a^3*b^4*e^3*(d + e*x)^4 + 969969*b^7*d^2*(d + e*
x)^5 - 1939938*a*b^6*d*e*(d + e*x)^5 + 969969*a^2*b^5*e^2*(d + e*x)^5 - 285
285*b^7*d*(d + e*x)^6 + 285285*a*b^6*e*(d + e*x)^6 + 36465*b^7*(d + e*x)^7)
)/(692835*e^8)
```

fricas [B] time = 0.42, size = 676, normalized size = 3.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/692835*(36465*b^7*e^9*x^9 - 2048*b^7*d^9 + 19456*a*b^6*d^8*e - 82688*a^2*
b^5*d^7*e^2 + 206720*a^3*b^4*d^6*e^3 - 335920*a^4*b^3*d^5*e^4 + 369512*a^5*
b^2*d^4*e^5 - 277134*a^6*b*d^3*e^6 + 138567*a^7*d^2*e^7 + 2145*(20*b^7*d*e^
8 + 133*a*b^6*e^9)*x^8 + 429*(b^7*d^2*e^7 + 798*a*b^6*d*e^8 + 2261*a^2*b^5*
e^9)*x^7 - 231*(2*b^7*d^3*e^6 - 19*a*b^6*d^2*e^7 - 5168*a^2*b^5*d*e^8 - 807
5*a^3*b^4*e^9)*x^6 + 21*(24*b^7*d^4*e^5 - 228*a*b^6*d^3*e^6 + 969*a^2*b^5*d
^2*e^7 + 113050*a^3*b^4*d*e^8 + 104975*a^4*b^3*e^9)*x^5 - 35*(16*b^7*d^5*e^
4 - 152*a*b^6*d^4*e^5 + 646*a^2*b^5*d^3*e^6 - 1615*a^3*b^4*d^2*e^7 - 83980*
a^4*b^3*d*e^8 - 46189*a^5*b^2*e^9)*x^4 + 5*(128*b^7*d^6*e^3 - 1216*a*b^6*d^
5*e^4 + 5168*a^2*b^5*d^4*e^5 - 12920*a^3*b^4*d^3*e^6 + 20995*a^4*b^3*d^2*e^
7 + 461890*a^5*b^2*d*e^8 + 138567*a^6*b*e^9)*x^3 - 3*(256*b^7*d^7*e^2 - 243
2*a*b^6*d^6*e^3 + 10336*a^2*b^5*d^5*e^4 - 25840*a^3*b^4*d^4*e^5 + 41990*a^4
*b^3*d^3*e^6 - 46189*a^5*b^2*d^2*e^7 - 369512*a^6*b*d*e^8 - 46189*a^7*e^9)*
x^2 + (1024*b^7*d^8*e - 9728*a*b^6*d^7*e^2 + 41344*a^2*b^5*d^6*e^3 - 103360
*a^3*b^4*d^5*e^4 + 167960*a^4*b^3*d^4*e^5 - 184756*a^5*b^2*d^3*e^6 + 138567
*a^6*b*d^2*e^7 + 277134*a^7*d*e^8)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.27, size = 1856, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/2078505*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d^2*e^(-1) +
 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
a^5*b^2*d^2*e^(-2) + 2078505*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
```

```
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d^2*e^(-3) + 230945*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d^2*e^(-4) + 62985*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*
b^5*d^2*e^(-5) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 500
5*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4
 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*d^2*e^(-6) + 32
3*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*
d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^7*d^2*
e^(-7) + 1939938*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
d)*d^2)*a^6*b*d*e^(-1) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*b^2*d*e^(-2) + 461890*
(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420
*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b^3*d*e^(-3) + 209950*(63
*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*
(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3
*b^4*d*e^(-4) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 500
5*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4
 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*b^5*d*e^(-5) + 45
22*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^6*d
*e^(-6) + 38*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*
e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^
4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e +
 d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^7*d*e^(-7) + 2078505*sqrt(x*e +
 d)*a^7*d^2 + 1385670*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^7*d + 415701*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*a^6*b*e^(-1) + 138567*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*a^5*b^2*e^(-2) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b^3*e^(-3) + 24225*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*a^3*b^4*e^(-4) + 6783*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(
13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x
*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
 6435*sqrt(x*e + d)*d^7)*a^2*b^5*e^(-5) + 133*(6435*(x*e + d)^(17/2) - 5834
4*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2
)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x
*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*
a*b^6*e^(-6) + 9*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 5542
68*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^
(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 16
62804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e +
d)*d^9)*b^7*e^(-7) + 138567*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*a^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/692835*(e*x+d)^(5/2)*(36465*b^7*e^7*x^7+285285*a*b^6*e^7*x^6-30030*b^7*d*
e^6*x^6+969969*a^2*b^5*e^7*x^5-228228*a*b^6*d*e^6*x^5+24024*b^7*d^2*e^5*x^5
```

```
+1865325*a^3*b^4*e^7*x^4-746130*a^2*b^5*d*e^6*x^4+175560*a*b^6*d^2*e^5*x^4-
18480*b^7*d^3*e^4*x^4+2204475*a^4*b^3*e^7*x^3-1356600*a^3*b^4*d*e^6*x^3+542
640*a^2*b^5*d^2*e^5*x^3-127680*a*b^6*d^3*e^4*x^3+13440*b^7*d^4*e^3*x^3+1616
615*a^5*b^2*e^7*x^2-1469650*a^4*b^3*d*e^6*x^2+904400*a^3*b^4*d^2*e^5*x^2-36
1760*a^2*b^5*d^3*e^4*x^2+85120*a*b^6*d^4*e^3*x^2-8960*b^7*d^5*e^2*x^2+69283
5*a^6*b*e^7*x-923780*a^5*b^2*d*e^6*x+839800*a^4*b^3*d^2*e^5*x-516800*a^3*b^
4*d^3*e^4*x+206720*a^2*b^5*d^4*e^3*x-48640*a*b^6*d^5*e^2*x+5120*b^7*d^6*e*x
+138567*a^7*e^7-277134*a^6*b*d*e^6+369512*a^5*b^2*d^2*e^5-335920*a^4*b^3*d^
3*e^4+206720*a^3*b^4*d^4*e^3-82688*a^2*b^5*d^5*e^2+19456*a*b^6*d^6*e-2048*b
^7*d^7)/e^8
```

maxima [B] time = 0.60, size = 456, normalized size = 2.13

$$\frac{2\left(36465\,(ex+d)^{\frac{19}{2}}b^7 - 285285\,(b^7d - ab^6e)(ex+d)^{\frac{17}{2}} + 969969\,(b^7d^2 - 2\,ab^6de + a^2b^5e^2)(ex+d)^{\frac{15}{2}} - 1865325\,(b^7d^3 - 3\,ab^6d^2e + 3\,a^2b^5de^2 - a^3b^4e^3)(ex+d)^{\frac{13}{2}} + 2204475\,(b^7d^4 - 4\,ab^6d^3e + 6\,a^2b^5d^2e^2 - 4\,a^3b^4de^3 + a^4b^3e^4)(ex+d)^{\frac{11}{2}} - 1616615\,(b^7d^5 - 5\,ab^6d^4e + 10\,a^2b^5d^3e^2 - 10\,a^3b^4d^2e^3 + 5\,a^4b^3de^4 - a^5b^2e^5)(ex+d)^{\frac{9}{2}} + 692835\,(b^7d^6 - 6\,ab^6d^5e + 15\,a^2b^5d^4e^2 - 20\,a^3b^4d^3e^3 + 15\,a^4b^3d^2e^4 - 6\,a^5b^2de^5 + a^6be^6)(ex+d)^{\frac{7}{2}} - 138567\,(b^7d^7 - 7\,ab^6d^6e + 21\,a^2b^5d^5e^2 - 35\,a^3b^4d^4e^3 + 35\,a^4b^3d^3e^4 - 21\,a^5b^2d^2e^5 + 7\,a^6bde^6 - a^7e^7)(ex+d)^{\frac{5}{2}}\right)}{692835\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/692835*(36465*(e*x + d)^(19/2)*b^7 - 285285*(b^7*d - a*b^6*e)*(e*x + d)^(
17/2) + 969969*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(15/2) - 186
5325*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(1
3/2) + 2204475*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e
^3 + a^4*b^3*e^4)*(e*x + d)^(11/2) - 1616615*(b^7*d^5 - 5*a*b^6*d^4*e + 10*
a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x
+ d)^(9/2) + 692835*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*
b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d)^(
7/2) - 138567*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^
4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*
(e*x + d)^(5/2))/e^8
```

mupad [B] time = 2.04, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{19/2}}{19\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{17/2}}{17\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,{\left(d+e\,x\right)}^{5/2}}{5\,e^8}+\frac{14\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{9/2}}{3\,e^8}+\frac{70\,b^3\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{11/2}}{11\,e^8}+\frac{70\,b^4\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{13/2}}{13\,e^8}+\frac{14\,b^5\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{15/2}}{5\,e^8}+\frac{2\,b\,{\left(a\,e-b\,d\right)}^6\,{\left(d+e\,x\right)}^{7/2}}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(19/2))/(19*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(17/
2))/(17*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(5/2))/(5*e^8) + (14*b^2*(a*e - b
*d)^5*(d + e*x)^(9/2))/(3*e^8) + (70*b^3*(a*e - b*d)^4*(d + e*x)^(11/2))/(1
1*e^8) + (70*b^4*(a*e - b*d)^3*(d + e*x)^(13/2))/(13*e^8) + (14*b^5*(a*e -
b*d)^2*(d + e*x)^(15/2))/(5*e^8) + (2*b*(a*e - b*d)^6*(d + e*x)^(7/2))/e^8
```

sympy [A] time = 45.36, size = 1265, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
 2*a**7*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 14*a**6*b*d*(-d*(d
 + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 14*a**6*b*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 42*a**5*b**2*d*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**
3 + 42*a**5*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*
d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 70*a**4*b**3*d*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**4 + 70*a**4*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
```

```
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**4 + 70*a**3*b**4*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d
+ e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d +
 e*x)**(11/2)/11)/e**5 + 70*a**3*b**4*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d +
 e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*
d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 42*a**2*b**5*d*(-d**5
*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 +
10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/1
3)/e**6 + 42*a**2*b**5*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5
 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e
*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 14
*a*b**6*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
 + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/1
1 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 14*a*b**6*(-d**
7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2)
+ 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d +
e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 2
*b**7*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d +
 e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 +
21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)
/17)/e**8 + 2*b**7*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4
*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(1
1/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d
*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8
```

3.1836 $\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=214

$$-\frac{14b^6(d+ex)^{15/2}(bd-ae)}{15e^8}+\frac{42b^5(d+ex)^{13/2}(bd-ae)^2}{13e^8}-\frac{70b^4(d+ex)^{11/2}(bd-ae)^3}{11e^8}+\frac{70b^3(d+ex)^{9/2}(bd-ae)^4}{9e^8}-6b$$

Rubi [A] time = 0.07, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 43}

$$-\frac{14b^6(d+ex)^{15/2}(bd-ae)}{15e^8}+\frac{42b^5(d+ex)^{13/2}(bd-ae)^2}{13e^8}-\frac{70b^4(d+ex)^{11/2}(bd-ae)^3}{11e^8}+\frac{70b^3(d+ex)^{9/2}(bd-ae)^4}{9e^8}-\frac{6b^2(d+ex)^{7/2}(bd-ae)^5}{e^8}+\frac{14b(d+ex)^{5/2}(bd-ae)^6}{5e^8}-\frac{2(d+ex)^{3/2}(bd-ae)^7}{3e^8}+\frac{2b^7(d+ex)^{17/2}}{17e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(3/2))/(3*e^8) + (14*b*(b*d - a*e)^6*(d + e*x)^
(5/2))/(5*e^8) - (6*b^2*(b*d - a*e)^5*(d + e*x)^(7/2))/e^8 + (70*b^3*(b*d -
 a*e)^4*(d + e*x)^(9/2))/(9*e^8) - (70*b^4*(b*d - a*e)^3*(d + e*x)^(11/2))/
(11*e^8) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(13/2))/(13*e^8) - (14*b^6*(b*d
- a*e)*(d + e*x)^(15/2))/(15*e^8) + (2*b^7*(d + e*x)^(17/2))/(17*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^7\sqrt{d+ex}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{3/2}}{e^7}-\frac{21b^2(bd-ae)^5}{e^7}\right.\\ &= -\frac{2(bd-ae)^7(d+ex)^{3/2}}{3e^8}+\frac{14b(bd-ae)^6(d+ex)^{5/2}}{5e^8}-\frac{6b^2(bd-ae)^5(}{e^8}\end{aligned}$$

Mathematica [A] time = 0.11, size = 167, normalized size = 0.78

$$\frac{2(d+ex)^{3/2}\left(-51051b^6(d+ex)^6(bd-ae)+176715b^5(d+ex)^5(bd-ae)^2-348075b^4(d+ex)^4(bd-ae)^3+425425b^3(d+ex)^3(bd-ae)^4-328185b^2(d+ex)^2(bd-ae)^5+153153b(d+ex)(bd-ae)^6-36465(bd-ae)^7+6435b^7(d+ex)^7\right)}{109395e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-36465*(b*d - a*e)^7 + 153153*b*(b*d - a*e)^6*(d + e*x)
 - 328185*b^2*(b*d - a*e)^5*(d + e*x)^2 + 425425*b^3*(b*d - a*e)^4*(d + e*x
)^3 - 348075*b^4*(b*d - a*e)^3*(d + e*x)^4 + 176715*b^5*(b*d - a*e)^2*(d +
```

```
e*x)^5 - 51051*b^6*(b*d - a*e)*(d + e*x)^6 + 6435*b^7*(d + e*x)^7))/(109395
*e^8)
```

IntegrateAlgebraic [B] time = 0.17, size = 582, normalized size = 2.72

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-36465*b^7*d^7 + 255255*a*b^6*d^6*e - 765765*a^2*b^5*d^
5*e^2 + 1276275*a^3*b^4*d^4*e^3 - 1276275*a^4*b^3*d^3*e^4 + 765765*a^5*b^2*
d^2*e^5 - 255255*a^6*b*d*e^6 + 36465*a^7*e^7 + 153153*b^7*d^6*(d + e*x) - 9
18918*a*b^6*d^5*e*(d + e*x) + 2297295*a^2*b^5*d^4*e^2*(d + e*x) - 3063060*a
^3*b^4*d^3*e^3*(d + e*x) + 2297295*a^4*b^3*d^2*e^4*(d + e*x) - 918918*a^5*b
^2*d*e^5*(d + e*x) + 153153*a^6*b*e^6*(d + e*x) - 328185*b^7*d^5*(d + e*x)^
2 + 1640925*a*b^6*d^4*e*(d + e*x)^2 - 3281850*a^2*b^5*d^3*e^2*(d + e*x)^2 +
 3281850*a^3*b^4*d^2*e^3*(d + e*x)^2 - 1640925*a^4*b^3*d*e^4*(d + e*x)^2 +
328185*a^5*b^2*e^5*(d + e*x)^2 + 425425*b^7*d^4*(d + e*x)^3 - 1701700*a*b^6
*d^3*e*(d + e*x)^3 + 2552550*a^2*b^5*d^2*e^2*(d + e*x)^3 - 1701700*a^3*b^4*
d*e^3*(d + e*x)^3 + 425425*a^4*b^3*e^4*(d + e*x)^3 - 348075*b^7*d^3*(d + e*
x)^4 + 1044225*a*b^6*d^2*e*(d + e*x)^4 - 1044225*a^2*b^5*d*e^2*(d + e*x)^4
+ 348075*a^3*b^4*e^3*(d + e*x)^4 + 176715*b^7*d^2*(d + e*x)^5 - 353430*a*b^
6*d*e*(d + e*x)^5 + 176715*a^2*b^5*e^2*(d + e*x)^5 - 51051*b^7*d*(d + e*x)^
6 + 51051*a*b^6*e*(d + e*x)^6 + 6435*b^7*(d + e*x)^7))/(109395*e^8)
```

fricas [B] time = 0.43, size = 568, normalized size = 2.65

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/109395*(6435*b^7*e^8*x^8 - 2048*b^7*d^8 + 17408*a*b^6*d^7*e - 65280*a^2*b
^5*d^6*e^2 + 141440*a^3*b^4*d^5*e^3 - 194480*a^4*b^3*d^4*e^4 + 175032*a^5*b
^2*d^3*e^5 - 102102*a^6*b*d^2*e^6 + 36465*a^7*d*e^7 + 429*(b^7*d*e^7 + 119*
a*b^6*e^8)*x^7 - 231*(2*b^7*d^2*e^6 - 17*a*b^6*d*e^7 - 765*a^2*b^5*e^8)*x^6
 + 63*(8*b^7*d^3*e^5 - 68*a*b^6*d^2*e^6 + 255*a^2*b^5*d*e^7 + 5525*a^3*b^4*
e^8)*x^5 - 35*(16*b^7*d^4*e^4 - 136*a*b^6*d^3*e^5 + 510*a^2*b^5*d^2*e^6 - 1
105*a^3*b^4*d*e^7 - 12155*a^4*b^3*e^8)*x^4 + 5*(128*b^7*d^5*e^3 - 1088*a*b^
6*d^4*e^4 + 4080*a^2*b^5*d^3*e^5 - 8840*a^3*b^4*d^2*e^6 + 12155*a^4*b^3*d*e
^7 + 65637*a^5*b^2*e^8)*x^3 - 3*(256*b^7*d^6*e^2 - 2176*a*b^6*d^5*e^3 + 816
0*a^2*b^5*d^4*e^4 - 17680*a^3*b^4*d^3*e^5 + 24310*a^4*b^3*d^2*e^6 - 21879*a
^5*b^2*d*e^7 - 51051*a^6*b*e^8)*x^2 + (1024*b^7*d^7*e - 8704*a*b^6*d^6*e^2
+ 32640*a^2*b^5*d^5*e^3 - 70720*a^3*b^4*d^4*e^4 + 97240*a^4*b^3*d^3*e^5 - 8
7516*a^5*b^2*d^2*e^6 + 51051*a^6*b*d*e^7 + 36465*a^7*e^8)*x)*sqrt(e*x + d)/
e^8
```

giac [B] time = 0.22, size = 1119, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/109395*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d*e^(-1) + 153
153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b
^2*d*e^(-2) + 109395*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
```

```
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d*e^(-3) + 12155*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d*e^(-4) + 3315*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^5*d*e^(-5) +
 255*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)
*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)
^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*d*e^(-6) + 17*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^7*d*e^(-7) + 51051*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^6*b*e^(-1) + 6
5637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 3
5*sqrt(x*e + d)*d^3)*a^5*b^2*e^(-2) + 12155*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*a^4*b^3*e^(-3) + 5525*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^4*e^(-4) + 765*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*a^2*b^5*e^(-5) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^
(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(
x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6
- 6435*sqrt(x*e + d)*d^7)*a*b^6*e^(-6) + (6435*(x*e + d)^(17/2) - 58344*(x*
e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e +
d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^7*e
^(-7) + 109395*sqrt(x*e + d)*a^7*d + 36465*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*a^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.33

$$\frac{2 (ex+d)^{\frac{3}{2}} \left(6435 b^7 x^7 e^7 + 51051 a b^6 e^7 x^6 - 6006 b^7 d e^6 x^6 + 176715 a^2 b^5 e^7 x^5 - 47124 a b^6 d e^6 x^5 + 5544 b^7 d^2 e^5 x^5 + 348075 a^3 b^4 e^7 x^4 - 160650 a^2 b^5 d e^6 x^4 + 42840 a b^6 d^2 e^5 x^4 - 5040 b^7 d^3 e^4 x^4 + 425425 a^4 b^3 e^7 x^3 - 309400 a^3 b^4 d e^6 x^3 + 142800 a^2 b^5 d^2 e^5 x^3 - 38080 a b^6 d^3 e^4 x^3 + 4480 b^7 d^4 e^3 x^3 + 328185 a^5 b^2 e^7 x^2 - 364650 a^4 b^3 d e^6 x^2 + 265200 a^3 b^4 d^2 e^5 x^2 - 122400 a^2 b^5 d^3 e^4 x^2 + 32640 a b^6 d^4 e^3 x^2 - 3840 b^7 d^5 e^2 x^2 + 153153 a^6 b e^7 x - 262548 a^5 b^2 d e^6 x + 291720 a^4 b^3 d^2 e^5 x - 212160 a^3 b^4 d^3 e^4 x + 97920 a^2 b^5 d^4 e^3 x - 26112 a b^6 d^5 e^2 x + 3072 b^7 d^6 e x + 36465 a^7 e^7 - 102102 a^6 b d e^6 + 175032 a^5 b^2 d^2 e^5 - 194480 a^4 b^3 d^3 e^4 + 141440 a^3 b^4 d^4 e^3 - 65280 a^2 b^5 d^5 e^2 + 17408 a b^6 d^6 e - 2048 b^7 d^7\right)}{109395 e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x)
```

```
[Out] 2/109395*(e*x+d)^(3/2)*(6435*b^7*e^7*x^7+51051*a*b^6*e^7*x^6-6006*b^7*d*e^6
*x^6+176715*a^2*b^5*e^7*x^5-47124*a*b^6*d*e^6*x^5+5544*b^7*d^2*e^5*x^5+3480
75*a^3*b^4*e^7*x^4-160650*a^2*b^5*d*e^6*x^4+42840*a*b^6*d^2*e^5*x^4-5040*b^
7*d^3*e^4*x^4+425425*a^4*b^3*e^7*x^3-309400*a^3*b^4*d*e^6*x^3+142800*a^2*b^
5*d^2*e^5*x^3-38080*a*b^6*d^3*e^4*x^3+4480*b^7*d^4*e^3*x^3+328185*a^5*b^2*e
^7*x^2-364650*a^4*b^3*d*e^6*x^2+265200*a^3*b^4*d^2*e^5*x^2-122400*a^2*b^5*d
^3*e^4*x^2+32640*a*b^6*d^4*e^3*x^2-3840*b^7*d^5*e^2*x^2+153153*a^6*b*e^7*x-
262548*a^5*b^2*d*e^6*x+291720*a^4*b^3*d^2*e^5*x-212160*a^3*b^4*d^3*e^4*x+97
920*a^2*b^5*d^4*e^3*x-26112*a*b^6*d^5*e^2*x+3072*b^7*d^6*e*x+36465*a^7*e^7-
102102*a^6*b*d*e^6+175032*a^5*b^2*d^2*e^5-194480*a^4*b^3*d^3*e^4+141440*a^3
*b^4*d^4*e^3-65280*a^2*b^5*d^5*e^2+17408*a*b^6*d^6*e-2048*b^7*d^7)/e^8
```

maxima [B] time = 0.60, size = 456, normalized size = 2.13

$$\frac{2 \left(6435 (ex+d)^{\frac{17}{2}} b^7 - 51051 \left(b^7 d - a b^6 e\right) (ex+d)^{\frac{15}{2}} + 176715 \left(b^7 d^2 - 2 a b^6 d e + a^2 b^5 e^2\right) (ex+d)^{\frac{13}{2}} - 348075 \left(b^7 d^3 - 3 a b^6 d^2 e + 3 a^2 b^5 d e^2 - a^3 b^4 e^3\right) (ex+d)^{\frac{11}{2}} + 425425 \left(b^7 d^4 - 4 a b^6 d^3 e + 6 a^2 b^5 d^2 e^2 - 4 a^3 b^4 d e^3 + a^4 b^3 e^4\right) (ex+d)^{\frac{9}{2}} - 328185 \left(b^7 d^5 - 5 a b^6 d^4 e + 10 a^2 b^5 d^3 e^2 - 10 a^3 b^4 d^2 e^3 + 5 a^4 b^3 d e^4 - a^5 b^2 e^5\right) (ex+d)^{\frac{7}{2}} + 153153 \left(b^7 d^6 - 6 a b^6 d^5 e + 15 a^2 b^5 d^4 e^2 - 20 a^3 b^4 d^3 e^3 + 15 a^4 b^3 d^2 e^4 - 6 a^5 b^2 d e^5 + a^6 b e^6\right) (ex+d)^{\frac{5}{2}} - 36465 \left(b^7 d^7 - 7 a b^6 d^6 e + 21 a^2 b^5 d^5 e^2 - 35 a^3 b^4 d^4 e^3 + 35 a^4 b^3 d^3 e^4 - 21 a^5 b^2 d^2 e^5 + 7 a^6 b d e^6 - a^7 e^7\right) (ex+d)^{\frac{3}{2}}\right)}{109395 e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/109395*(6435*(e*x + d)^(17/2)*b^7 - 51051*(b^7*d - a*b^6*e)*(e*x + d)^(15
/2) + 176715*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(13/2) - 34807
```

```
5*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(11/2
) + 425425*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 +
 a^4*b^3*e^4)*(e*x + d)^(9/2) - 328185*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^
5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^(
7/2) + 153153*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^
3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d)^(5/2) -
 36465*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 +
 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*(e*x +
d)^(3/2))/e^8
```

mupad [B] time = 2.05, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{17/2}}{17\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{15/2}}{15\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,{\left(d+e\,x\right)}^{3/2}}{3\,e^8}+\frac{6\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{7/2}}{e^8}+\frac{70\,b^3\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{9/2}}{9\,e^8}+\frac{70\,b^4\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{11/2}}{11\,e^8}+\frac{42\,b^5\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{13/2}}{13\,e^8}+\frac{14\,b\,{\left(a\,e-b\,d\right)}^6\,{\left(d+e\,x\right)}^{5/2}}{5\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(17/2))/(17*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(15/
2))/(15*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(3/2))/(3*e^8) + (6*b^2*(a*e - b*
d)^5*(d + e*x)^(7/2))/e^8 + (70*b^3*(a*e - b*d)^4*(d + e*x)^(9/2))/(9*e^8)
+ (70*b^4*(a*e - b*d)^3*(d + e*x)^(11/2))/(11*e^8) + (42*b^5*(a*e - b*d)^2*
(d + e*x)^(13/2))/(13*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(5/2))/(5*e^8)
```

sympy [B] time = 10.16, size = 544, normalized size = 2.54

$$\frac{2\left(\frac{b^7(d+ex)^{\frac{17}{2}}}{17e^7}+\frac{(d+ex)^{\frac{15}{2}}\left(7ab^6e-7b^7d\right)}{15e^7}+\frac{(d+ex)^{\frac{13}{2}}\left(21a^2b^5e^2-42ab^6de+21b^7d^2\right)}{13e^7}+\frac{(d+ex)^{\frac{11}{2}}\left(35a^3b^4e^3-105a^2b^5de^2+105ab^6d^2e-35b^7d^3\right)}{11e^7}+\frac{(d+ex)^{\frac{9}{2}}\left(35a^4b^3e^4-140a^3b^4de^3+210a^2b^5d^2e^2-140ab^6d^3e+35b^7d^4\right)}{9e^7}+\frac{(d+ex)^{\frac{7}{2}}\left(21a^5b^2e^5-105a^4b^3de^4+210a^3b^4d^2e^3-210a^2b^5d^3e^2+105ab^6d^4e-21b^7d^5\right)}{7e^7}+\frac{(d+ex)^{\frac{5}{2}}\left(7a^6be^6-42a^5b^2de^5+105a^4b^3d^2e^4-140a^3b^4d^3e^3+105a^2b^5d^4e^2-42ab^6d^5e+7b^7d^6\right)}{5e^7}+\frac{(d+ex)^{\frac{3}{2}}\left(a^7e^7-7a^6bde^6+21a^5b^2d^2e^5-35a^4b^3d^3e^4+35a^3b^4d^4e^3-21a^2b^5d^5e^2+7ab^6d^6e-b^7d^7\right)}{3e^7}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3*(e*x+d)**(1/2),x)
```

```
[Out] 2*(b**7*(d + e*x)**(17/2)/(17*e**7) + (d + e*x)**(15/2)*(7*a*b**6*e - 7*b**
7*d)/(15*e**7) + (d + e*x)**(13/2)*(21*a**2*b**5*e**2 - 42*a*b**6*d*e + 21*
b**7*d**2)/(13*e**7) + (d + e*x)**(11/2)*(35*a**3*b**4*e**3 - 105*a**2*b**5
*d*e**2 + 105*a*b**6*d**2*e - 35*b**7*d**3)/(11*e**7) + (d + e*x)**(9/2)*(3
5*a**4*b**3*e**4 - 140*a**3*b**4*d*e**3 + 210*a**2*b**5*d**2*e**2 - 140*a*b
**6*d**3*e + 35*b**7*d**4)/(9*e**7) + (d + e*x)**(7/2)*(21*a**5*b**2*e**5 -
 105*a**4*b**3*d*e**4 + 210*a**3*b**4*d**2*e**3 - 210*a**2*b**5*d**3*e**2 +
 105*a*b**6*d**4*e - 21*b**7*d**5)/(7*e**7) + (d + e*x)**(5/2)*(7*a**6*b*e*
*6 - 42*a**5*b**2*d*e**5 + 105*a**4*b**3*d**2*e**4 - 140*a**3*b**4*d**3*e**
3 + 105*a**2*b**5*d**4*e**2 - 42*a*b**6*d**5*e + 7*b**7*d**6)/(5*e**7) + (d
 + e*x)**(3/2)*(a**7*e**7 - 7*a**6*b*d*e**6 + 21*a**5*b**2*d**2*e**5 - 35*a
**4*b**3*d**3*e**4 + 35*a**3*b**4*d**4*e**3 - 21*a**2*b**5*d**5*e**2 + 7*a*
b**6*d**6*e - b**7*d**7)/(3*e**7))/e
```

3.1837 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=212

$$-\frac{14b^6(d+ex)^{13/2}(bd-ae)}{13e^8}+\frac{42b^5(d+ex)^{11/2}(bd-ae)^2}{11e^8}-\frac{70b^4(d+ex)^{9/2}(bd-ae)^3}{9e^8}+\frac{10b^3(d+ex)^{7/2}(bd-ae)^4}{e^8}-\frac{42\cdots}{}$$

Rubi [A] time = 0.07, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 43}

$$-\frac{14b^6(d+ex)^{13/2}(bd-ae)}{13e^8}+\frac{42b^5(d+ex)^{11/2}(bd-ae)^2}{11e^8}-\frac{70b^4(d+ex)^{9/2}(bd-ae)^3}{9e^8}+\frac{10b^3(d+ex)^{7/2}(bd-ae)^4}{e^8}-\frac{42b^2(d+ex)^{5/2}(bd-ae)^5}{5e^8}+\frac{14b(d+ex)^{3/2}(bd-ae)^6}{3e^8}-\frac{2\sqrt{d+ex}(bd-ae)^7}{e^8}+\frac{2b^7(d+ex)^{15/2}}{15e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^7*Sqrt[d + e*x])/e^8 + (14*b*(b*d - a*e)^6*(d + e*x)^(3/2))
/(3*e^8) - (42*b^2*(b*d - a*e)^5*(d + e*x)^(5/2))/(5*e^8) + (10*b^3*(b*d -
a*e)^4*(d + e*x)^(7/2))/e^8 - (70*b^4*(b*d - a*e)^3*(d + e*x)^(9/2))/(9*e^8
) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(11/2))/(11*e^8) - (14*b^6*(b*d - a*e)*
(d + e*x)^(13/2))/(13*e^8) + (2*b^7*(d + e*x)^(15/2))/(15*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^7}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^7}{e^7\sqrt{d+ex}}+\frac{7b(bd-ae)^6\sqrt{d+ex}}{e^7}-\frac{21b^2(bd-ae)^5(d+ex)^{3/2}}{e^7}+\frac{35b^{\cdots}}{}\right.\\ &= -\frac{2(bd-ae)^7\sqrt{d+ex}}{e^8}+\frac{14b(bd-ae)^6(d+ex)^{3/2}}{3e^8}-\frac{42b^2(bd-ae)^5(d+ex)^{5\cdots}}{5e^8}\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.79

$$\frac{2\sqrt{d+ex}\left(-3465b^6(d+ex)^6(bd-ae)+12285b^5(d+ex)^5(bd-ae)^2-25025b^4(d+ex)^4(bd-ae)^3+32175b^3(d+ex)^3(bd-ae)^4-27027b^2(d+ex)^2(bd-ae)^5+15015b(d+ex)(bd-ae)^6-6435(bd-ae)^7+429b^7(d+ex)^7\right)}{6435e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-6435*(b*d - a*e)^7 + 15015*b*(b*d - a*e)^6*(d + e*x) - 2
7027*b^2*(b*d - a*e)^5*(d + e*x)^2 + 32175*b^3*(b*d - a*e)^4*(d + e*x)^3 -
```

```
25025*b^4*(b*d - a*e)^3*(d + e*x)^4 + 12285*b^5*(b*d - a*e)^2*(d + e*x)^5 -
 3465*b^6*(b*d - a*e)*(d + e*x)^6 + 429*b^7*(d + e*x)^7))/(6435*e^8)
```

IntegrateAlgebraic [B] time = 0.16, size = 582, normalized size = 2.75

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-6435*b^7*d^7 + 45045*a*b^6*d^6*e - 135135*a^2*b^5*d^5*e^
2 + 225225*a^3*b^4*d^4*e^3 - 225225*a^4*b^3*d^3*e^4 + 135135*a^5*b^2*d^2*e^
5 - 45045*a^6*b*d*e^6 + 6435*a^7*e^7 + 15015*b^7*d^6*(d + e*x) - 90090*a*b^
6*d^5*e*(d + e*x) + 225225*a^2*b^5*d^4*e^2*(d + e*x) - 300300*a^3*b^4*d^3*e
^3*(d + e*x) + 225225*a^4*b^3*d^2*e^4*(d + e*x) - 90090*a^5*b^2*d*e^5*(d +
e*x) + 15015*a^6*b*e^6*(d + e*x) - 27027*b^7*d^5*(d + e*x)^2 + 135135*a*b^6
*d^4*e*(d + e*x)^2 - 270270*a^2*b^5*d^3*e^2*(d + e*x)^2 + 270270*a^3*b^4*d^
2*e^3*(d + e*x)^2 - 135135*a^4*b^3*d*e^4*(d + e*x)^2 + 27027*a^5*b^2*e^5*(d
 + e*x)^2 + 32175*b^7*d^4*(d + e*x)^3 - 128700*a*b^6*d^3*e*(d + e*x)^3 + 19
3050*a^2*b^5*d^2*e^2*(d + e*x)^3 - 128700*a^3*b^4*d*e^3*(d + e*x)^3 + 32175
*a^4*b^3*e^4*(d + e*x)^3 - 25025*b^7*d^3*(d + e*x)^4 + 75075*a*b^6*d^2*e*(d
 + e*x)^4 - 75075*a^2*b^5*d*e^2*(d + e*x)^4 + 25025*a^3*b^4*e^3*(d + e*x)^4
 + 12285*b^7*d^2*(d + e*x)^5 - 24570*a*b^6*d*e*(d + e*x)^5 + 12285*a^2*b^5*
e^2*(d + e*x)^5 - 3465*b^7*d*(d + e*x)^6 + 3465*a*b^6*e*(d + e*x)^6 + 429*b
^7*(d + e*x)^7))/(6435*e^8)
```

fricas [B] time = 0.42, size = 463, normalized size = 2.18

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/6435*(429*b^7*e^7*x^7 - 2048*b^7*d^7 + 15360*a*b^6*d^6*e - 49920*a^2*b^5*
d^5*e^2 + 91520*a^3*b^4*d^4*e^3 - 102960*a^4*b^3*d^3*e^4 + 72072*a^5*b^2*d^
2*e^5 - 30030*a^6*b*d*e^6 + 6435*a^7*e^7 - 231*(2*b^7*d*e^6 - 15*a*b^6*e^7)
*x^6 + 63*(8*b^7*d^2*e^5 - 60*a*b^6*d*e^6 + 195*a^2*b^5*e^7)*x^5 - 35*(16*b
^7*d^3*e^4 - 120*a*b^6*d^2*e^5 + 390*a^2*b^5*d*e^6 - 715*a^3*b^4*e^7)*x^4 +
 5*(128*b^7*d^4*e^3 - 960*a*b^6*d^3*e^4 + 3120*a^2*b^5*d^2*e^5 - 5720*a^3*b
^4*d*e^6 + 6435*a^4*b^3*e^7)*x^3 - 3*(256*b^7*d^5*e^2 - 1920*a*b^6*d^4*e^3
+ 6240*a^2*b^5*d^3*e^4 - 11440*a^3*b^4*d^2*e^5 + 12870*a^4*b^3*d*e^6 - 9009
*a^5*b^2*e^7)*x^2 + (1024*b^7*d^6*e - 7680*a*b^6*d^5*e^2 + 24960*a^2*b^5*d^
4*e^3 - 45760*a^3*b^4*d^3*e^4 + 51480*a^4*b^3*d^2*e^5 - 36036*a^5*b^2*d*e^6
 + 15015*a^6*b*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.19, size = 505, normalized size = 2.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/6435*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*e^(-1) + 9009*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b^2*e^(-
2) + 6435*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^
2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*e^(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
```

```
qrt(x*e + d)*d^4)*a^3*b^4*e^(-4) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^5*e^(-5) + 15*(231*(x*e + d)^(
13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)
^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqr
t(x*e + d)*d^6)*a*b^6*e^(-6) + (429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2
)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
 d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 643
5*sqrt(x*e + d)*d^7)*b^7*e^(-7) + 6435*sqrt(x*e + d)*a^7)*e^(-1)
```

maple [B] time = 0.06, size = 498, normalized size = 2.35

$$\frac{2\left(429b^7x^7e^7+3465a\,b^6e^7x^6-462b^7d\,e^6x^6+12285a^2b^5e^7x^5-3780a\,b^6d\,e^6x^5+504b^7d^2e^5x^5+25025a^3b^4e^7x^4-13650a^2b^5d\,e^6x^4+4200a\,b^6d^2e^5x^4-560b^7d^3e^4x^4+32175a^4b^3e^7x^3-28600a^3b^4d\,e^6x^3+15600a^2b^5d^2e^5x^3-4800a\,b^6d^3e^4x^3+640b^7d^4e^3x^3+27027a^5b^2e^7x^2-38610a^4b^3d\,e^6x^2+34320a^3b^4d^2e^5x^2-18720a^2b^5d^3e^4x^2+5760a\,b^6d^4e^3x^2-768b^7d^5e^2x^2+15015a^6b\,e^7x-36036a^5b^2d\,e^6x+51480a^4b^3d^2e^5x-45760a^3b^4d^3e^4x+24960a^2b^5d^4e^3x-7680a\,b^6d^5e^2x+1024b^7d^6ex+6435a^7e^7-30030a^6bd\,e^6+72072a^5b^2d^2e^5-102960a^4b^3d^3e^4+91520a^3b^4d^4e^3-49920a^2b^5d^5e^2+15360a\,b^6d^6e-2048b^7d^7\right)\sqrt{ex+d}}{6435e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/6435*(429*b^7*e^7*x^7+3465*a*b^6*e^7*x^6-462*b^7*d*e^6*x^6+12285*a^2*b^5*
e^7*x^5-3780*a*b^6*d*e^6*x^5+504*b^7*d^2*e^5*x^5+25025*a^3*b^4*e^7*x^4-1365
0*a^2*b^5*d*e^6*x^4+4200*a*b^6*d^2*e^5*x^4-560*b^7*d^3*e^4*x^4+32175*a^4*b^
3*e^7*x^3-28600*a^3*b^4*d*e^6*x^3+15600*a^2*b^5*d^2*e^5*x^3-4800*a*b^6*d^3*
e^4*x^3+640*b^7*d^4*e^3*x^3+27027*a^5*b^2*e^7*x^2-38610*a^4*b^3*d*e^6*x^2+3
4320*a^3*b^4*d^2*e^5*x^2-18720*a^2*b^5*d^3*e^4*x^2+5760*a*b^6*d^4*e^3*x^2-7
68*b^7*d^5*e^2*x^2+15015*a^6*b*e^7*x-36036*a^5*b^2*d*e^6*x+51480*a^4*b^3*d^
2*e^5*x-45760*a^3*b^4*d^3*e^4*x+24960*a^2*b^5*d^4*e^3*x-7680*a*b^6*d^5*e^2*
x+1024*b^7*d^6*e*x+6435*a^7*e^7-30030*a^6*b*d*e^6+72072*a^5*b^2*d^2*e^5-102
960*a^4*b^3*d^3*e^4+91520*a^3*b^4*d^4*e^3-49920*a^2*b^5*d^5*e^2+15360*a*b^6
*d^6*e-2048*b^7*d^7)*(e*x+d)^(1/2)/e^8
```

maxima [B] time = 0.71, size = 456, normalized size = 2.15

$$\frac{2\left(429\left(ex+d\right)^{\frac{15}{2}}b^7-3465\left(b^7d-ab^6e\right)\left(ex+d\right)^{\frac{13}{2}}+12285\left(b^7d^2-2\,ab^6de+a^2b^5e^2\right)\left(ex+d\right)^{\frac{11}{2}}-25025\left(b^7d^3-3\,ab^6d^2e+3\,a^2b^5de^2-a^3b^4e^3\right)\left(ex+d\right)^{\frac{9}{2}}+32175\left(b^7d^4-4\,ab^6d^3e+6\,a^2b^5d^2e^2-4\,a^3b^4de^3+a^4b^3e^4\right)\left(ex+d\right)^{\frac{7}{2}}-27027\left(b^7d^5-5\,ab^6d^4e+10\,a^2b^5d^3e^2-10\,a^3b^4d^2e^3+5\,a^4b^3de^4-a^5b^2e^5\right)\left(ex+d\right)^{\frac{5}{2}}+15015\left(b^7d^6-6\,ab^6d^5e+15\,a^2b^5d^4e^2-20\,a^3b^4d^3e^3+15\,a^4b^3d^2e^4-6\,a^5b^2de^5+a^6be^6\right)\left(ex+d\right)^{\frac{3}{2}}-6435\left(b^7d^7-7\,ab^6d^6e+21\,a^2b^5d^5e^2-35\,a^3b^4d^4e^3+35\,a^4b^3d^3e^4-21\,a^5b^2d^2e^5+7\,a^6bde^6-a^7e^7\right)\sqrt{ex+d}\right)}{6435\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*b^7 - 3465*(b^7*d - a*b^6*e)*(e*x + d)^(13/2)
+ 12285*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(11/2) - 25025*(b^7
*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(9/2) + 321
75*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3
*e^4)*(e*x + d)^(7/2) - 27027*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2
 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^(5/2) + 15
015*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15
*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d)^(3/2) - 6435*(b^7
*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3
*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*sqrt(e*x + d))/e^8
```

mupad [B] time = 2.07, size = 187, normalized size = 0.88

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{15/2}}{15\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{13/2}}{13\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,\sqrt{d+e\,x}}{e^8}+\frac{42\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{5/2}}{5\,e^8}+\frac{10\,b^3\,{\left(a\,e-b\,d\right)}^4\,{\left(d+e\,x\right)}^{7/2}}{e^8}+\frac{70\,b^4\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^8}+\frac{42\,b^5\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{11/2}}{11\,e^8}+\frac{14\,b\,{\left(a\,e-b\,d\right)}^6\,{\left(d+e\,x\right)}^{3/2}}{3\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(1/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(15/2))/(15*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(13/
2))/(13*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(1/2))/e^8 + (42*b^2*(a*e - b*d)^
5*(d + e*x)^(5/2))/(5*e^8) + (10*b^3*(a*e - b*d)^4*(d + e*x)^(7/2))/e^8 + (
70*b^4*(a*e - b*d)^3*(d + e*x)^(9/2))/(9*e^8) + (42*b^5*(a*e - b*d)^2*(d +
e*x)^(11/2))/(11*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(3/2))/(3*e^8)
```

sympy [A] time = 140.05, size = 1217, normalized size = 5.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**7*d/sqrt(d + e*x) - 2*a**7*(-d/sqrt(d + e*x) - sqrt(d + e
*x)) - 14*a**6*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 14*a**6*b*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 42*a**5*b**2*d*(
d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 42*a**5
*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d
 + e*x)**(5/2)/5)/e**2 - 70*a**4*b**3*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(
d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 70*a**4*b**3*(d*
*4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d
+ e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 70*a**3*b**4*d*(d**4/sqrt(d +
e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2
)/5 - (d + e*x)**(7/2)/7)/e**4 - 70*a**3*b**4*(-d**5/sqrt(d + e*x) - 5*d**4
*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d
*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 42*a**2*b**5*d*(-d**5/sqrt
(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d +
 e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 42*a**2*
b**5*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) +
 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2
)/3 - (d + e*x)**(11/2)/11)/e**5 - 14*a*b**6*d*(d**6/sqrt(d + e*x) + 6*d**5
*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**
2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**6
- 14*a*b**6*(-d**7/sqrt(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5*(d + e*x)*
*(3/2) - 7*d**4*(d + e*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d**2*(d + e*
x)**(9/2)/3 + 7*d*(d + e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e**6 - 2*b**
7*d*(-d**7/sqrt(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5*(d + e*x)**(3/2) -
 7*d**4*(d + e*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d**2*(d + e*x)**(9/2
)/3 + 7*d*(d + e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e**7 - 2*b**7*(d**8/
sqrt(d + e*x) + 8*d**7*sqrt(d + e*x) - 28*d**6*(d + e*x)**(3/2)/3 + 56*d**5
*(d + e*x)**(5/2)/5 - 10*d**4*(d + e*x)**(7/2) + 56*d**3*(d + e*x)**(9/2)/9
 - 28*d**2*(d + e*x)**(11/2)/11 + 8*d*(d + e*x)**(13/2)/13 - (d + e*x)**(15
/2)/15)/e**7)/e, Ne(e, 0)), (Piecewise((a**7*x, Eq(b, 0)), ((a**2 + 2*a*b*x
 + b**2*x**2)**4/(8*b), True))/sqrt(d), True))
```

3.1838 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=206

$$-\frac{14b^6(d+ex)^{11/2}(bd-ae)}{11e^8}+\frac{14b^5(d+ex)^{9/2}(bd-ae)^2}{3e^8}-\frac{10b^4(d+ex)^{7/2}(bd-ae)^3}{e^8}+\frac{14b^3(d+ex)^{5/2}(bd-ae)^4}{e^8}-\frac{14b^2 \cdots}{\cdots}$$

Rubi [A] time = 0.08, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{14b^6(d+ex)^{11/2}(bd-ae)}{11e^8}+\frac{14b^5(d+ex)^{9/2}(bd-ae)^2}{3e^8}-\frac{10b^4(d+ex)^{7/2}(bd-ae)^3}{e^8}+\frac{14b^3(d+ex)^{5/2}(bd-ae)^4}{e^8}-\frac{14b^2(d+ex)^{3/2}(bd-ae)^5}{e^8}+\frac{14b\sqrt{d+ex}\,(bd-ae)^6}{e^8}+\frac{2(bd-ae)^7}{e^8\sqrt{d+ex}}+\frac{2b^7(d+ex)^{13/2}}{13e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^7)/(e^8*Sqrt[d + e*x]) + (14*b*(b*d - a*e)^6*Sqrt[d + e*x])/
e^8 - (14*b^2*(b*d - a*e)^5*(d + e*x)^(3/2))/e^8 + (14*b^3*(b*d - a*e)^4*(d
 + e*x)^(5/2))/e^8 - (10*b^4*(b*d - a*e)^3*(d + e*x)^(7/2))/e^8 + (14*b^5*(
b*d - a*e)^2*(d + e*x)^(9/2))/(3*e^8) - (14*b^6*(b*d - a*e)*(d + e*x)^(11/2
))/(11*e^8) + (2*b^7*(d + e*x)^(13/2))/(13*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^{3/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^7}{e^7(d+ex)^{3/2}}+\frac{7b(bd-ae)^6}{e^7\sqrt{d+ex}}-\frac{21b^2(bd-ae)^5\sqrt{d+ex}}{e^7}+\frac{35b^3(bd-ae)\cdots}{e^7}\cdots\right.\\
&= \frac{2(bd-ae)^7}{e^8\sqrt{d+ex}}+\frac{14b(bd-ae)^6\sqrt{d+ex}}{e^8}-\frac{14b^2(bd-ae)^5(d+ex)^{3/2}}{e^8}+\frac{14b^3(b\cdots}{\cdots}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.81

$$\frac{2\left(-273b^6(d+ex)^6(bd-ae)+1001b^5(d+ex)^5(bd-ae)^2-2145b^4(d+ex)^4(bd-ae)^3+3003b^3(d+ex)^3(bd-ae)^4-3003b^2(d+ex)^2(bd-ae)^5+3003b(d+ex)(bd-ae)^6+429(bd-ae)^7+33b^7(d+ex)^7\right)}{429e^8\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(429*(b*d - a*e)^7 + 3003*b*(b*d - a*e)^6*(d + e*x) - 3003*b^2*(b*d - a*
e)^5*(d + e*x)^2 + 3003*b^3*(b*d - a*e)^4*(d + e*x)^3 - 2145*b^4*(b*d - a*e
```

```
)^3*(d + e*x)^4 + 1001*b^5*(b*d - a*e)^2*(d + e*x)^5 - 273*b^6*(b*d - a*e)*
(d + e*x)^6 + 33*b^7*(d + e*x)^7))/(429*e^8*Sqrt[d + e*x])
```

IntegrateAlgebraic [B] time = 0.11, size = 582, normalized size = 2.83

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),
x]
```

```
[Out] (2*(429*b^7*d^7 - 3003*a*b^6*d^6*e + 9009*a^2*b^5*d^5*e^2 - 15015*a^3*b^4*d
^4*e^3 + 15015*a^4*b^3*d^3*e^4 - 9009*a^5*b^2*d^2*e^5 + 3003*a^6*b*d*e^6 -
429*a^7*e^7 + 3003*b^7*d^6*(d + e*x) - 18018*a*b^6*d^5*e*(d + e*x) + 45045*
a^2*b^5*d^4*e^2*(d + e*x) - 60060*a^3*b^4*d^3*e^3*(d + e*x) + 45045*a^4*b^3
*d^2*e^4*(d + e*x) - 18018*a^5*b^2*d*e^5*(d + e*x) + 3003*a^6*b*e^6*(d + e*
x) - 3003*b^7*d^5*(d + e*x)^2 + 15015*a*b^6*d^4*e*(d + e*x)^2 - 30030*a^2*b
^5*d^3*e^2*(d + e*x)^2 + 30030*a^3*b^4*d^2*e^3*(d + e*x)^2 - 15015*a^4*b^3*
d*e^4*(d + e*x)^2 + 3003*a^5*b^2*e^5*(d + e*x)^2 + 3003*b^7*d^4*(d + e*x)^3
 - 12012*a*b^6*d^3*e*(d + e*x)^3 + 18018*a^2*b^5*d^2*e^2*(d + e*x)^3 - 1201
2*a^3*b^4*d*e^3*(d + e*x)^3 + 3003*a^4*b^3*e^4*(d + e*x)^3 - 2145*b^7*d^3*(
d + e*x)^4 + 6435*a*b^6*d^2*e*(d + e*x)^4 - 6435*a^2*b^5*d*e^2*(d + e*x)^4
+ 2145*a^3*b^4*e^3*(d + e*x)^4 + 1001*b^7*d^2*(d + e*x)^5 - 2002*a*b^6*d*e*
(d + e*x)^5 + 1001*a^2*b^5*e^2*(d + e*x)^5 - 273*b^7*d*(d + e*x)^6 + 273*a*
b^6*e*(d + e*x)^6 + 33*b^7*(d + e*x)^7))/(429*e^8*Sqrt[d + e*x])
```

fricas [B] time = 0.43, size = 472, normalized size = 2.29

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/429*(33*b^7*e^7*x^7 + 2048*b^7*d^7 - 13312*a*b^6*d^6*e + 36608*a^2*b^5*d^
5*e^2 - 54912*a^3*b^4*d^4*e^3 + 48048*a^4*b^3*d^3*e^4 - 24024*a^5*b^2*d^2*e
^5 + 6006*a^6*b*d*e^6 - 429*a^7*e^7 - 21*(2*b^7*d*e^6 - 13*a*b^6*e^7)*x^6 +
 7*(8*b^7*d^2*e^5 - 52*a*b^6*d*e^6 + 143*a^2*b^5*e^7)*x^5 - 5*(16*b^7*d^3*e
^4 - 104*a*b^6*d^2*e^5 + 286*a^2*b^5*d*e^6 - 429*a^3*b^4*e^7)*x^4 + (128*b^
7*d^4*e^3 - 832*a*b^6*d^3*e^4 + 2288*a^2*b^5*d^2*e^5 - 3432*a^3*b^4*d*e^6 +
 3003*a^4*b^3*e^7)*x^3 - (256*b^7*d^5*e^2 - 1664*a*b^6*d^4*e^3 + 4576*a^2*b
^5*d^3*e^4 - 6864*a^3*b^4*d^2*e^5 + 6006*a^4*b^3*d*e^6 - 3003*a^5*b^2*e^7)*
x^2 + (1024*b^7*d^6*e - 6656*a*b^6*d^5*e^2 + 18304*a^2*b^5*d^4*e^3 - 27456*
a^3*b^4*d^3*e^4 + 24024*a^4*b^3*d^2*e^5 - 12012*a^5*b^2*d*e^6 + 3003*a^6*b*
e^7)*x)*sqrt(e*x + d)/(e^9*x + d*e^8)
```

giac [B] time = 0.23, size = 625, normalized size = 3.03

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/429*(33*(x*e + d)^(13/2)*b^7*e^96 - 273*(x*e + d)^(11/2)*b^7*d*e^96 + 100
1*(x*e + d)^(9/2)*b^7*d^2*e^96 - 2145*(x*e + d)^(7/2)*b^7*d^3*e^96 + 3003*(
x*e + d)^(5/2)*b^7*d^4*e^96 - 3003*(x*e + d)^(3/2)*b^7*d^5*e^96 + 3003*sqrt
(x*e + d)*b^7*d^6*e^96 + 273*(x*e + d)^(11/2)*a*b^6*e^97 - 2002*(x*e + d)^(
9/2)*a*b^6*d*e^97 + 6435*(x*e + d)^(7/2)*a*b^6*d^2*e^97 - 12012*(x*e + d)^(
```

```
5/2)*a*b^6*d^3*e^97 + 15015*(x*e + d)^(3/2)*a*b^6*d^4*e^97 - 18018*sqrt(x*e
 + d)*a*b^6*d^5*e^97 + 1001*(x*e + d)^(9/2)*a^2*b^5*e^98 - 6435*(x*e + d)^(
7/2)*a^2*b^5*d*e^98 + 18018*(x*e + d)^(5/2)*a^2*b^5*d^2*e^98 - 30030*(x*e +
 d)^(3/2)*a^2*b^5*d^3*e^98 + 45045*sqrt(x*e + d)*a^2*b^5*d^4*e^98 + 2145*(x
*e + d)^(7/2)*a^3*b^4*e^99 - 12012*(x*e + d)^(5/2)*a^3*b^4*d*e^99 + 30030*(
x*e + d)^(3/2)*a^3*b^4*d^2*e^99 - 60060*sqrt(x*e + d)*a^3*b^4*d^3*e^99 + 30
03*(x*e + d)^(5/2)*a^4*b^3*e^100 - 15015*(x*e + d)^(3/2)*a^4*b^3*d*e^100 +
45045*sqrt(x*e + d)*a^4*b^3*d^2*e^100 + 3003*(x*e + d)^(3/2)*a^5*b^2*e^101
- 18018*sqrt(x*e + d)*a^5*b^2*d*e^101 + 3003*sqrt(x*e + d)*a^6*b*e^102)*e^(
-104) + 2*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^
3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*e^(-
8)/sqrt(x*e + d)
```

maple [B]   time = 0.05, size = 498, normalized size = 2.42

$$-\frac{2\left(-33b^7x^7e^7-273ab^6e^7x^6+42b^7de^6x^6-1001a^2b^5e^7x^5+364ab^6de^6x^5-56b^7d^2e^5x^5-2145a^3b^4e^7x^4+1430a^2b^5de^6x^4-520ab^6d^2e^5x^4+80b^7d^3e^4x^4-3003a^4b^3e^7x^3+3432a^3b^4de^6x^3-2288a^2b^5d^2e^5x^3+832ab^6d^3e^4x^3-128b^7d^4e^3x^3-3003a^5b^2e^7x^2+6006a^4b^3de^6x^2-6864a^3b^4d^2e^5x^2+4576a^2b^5d^3e^4x^2-1664ab^6d^4e^3x^2+256b^7d^5e^2x^2-3003a^6be^7x+12012a^5b^2de^6x-24024a^4b^3d^2e^5x+27456a^3b^4d^3e^4x-18304a^2b^5d^4e^3x+6656ab^6d^5e^2x-1024b^7d^6ex+429a^7e^7-6006a^6bde^6+24024a^5b^2d^2e^5-48048a^4b^3d^3e^4+54912a^3b^4d^4e^3-36608a^2b^5d^5e^2+13312ab^6d^6e-2048b^7d^7\right)}{429\sqrt{ex+d}\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/429*(-33*b^7*e^7*x^7-273*a*b^6*e^7*x^6+42*b^7*d*e^6*x^6-1001*a^2*b^5*e^7
*x^5+364*a*b^6*d*e^6*x^5-56*b^7*d^2*e^5*x^5-2145*a^3*b^4*e^7*x^4+1430*a^2*b
^5*d*e^6*x^4-520*a*b^6*d^2*e^5*x^4+80*b^7*d^3*e^4*x^4-3003*a^4*b^3*e^7*x^3+
3432*a^3*b^4*d*e^6*x^3-2288*a^2*b^5*d^2*e^5*x^3+832*a*b^6*d^3*e^4*x^3-128*b
^7*d^4*e^3*x^3-3003*a^5*b^2*e^7*x^2+6006*a^4*b^3*d*e^6*x^2-6864*a^3*b^4*d^2
*e^5*x^2+4576*a^2*b^5*d^3*e^4*x^2-1664*a*b^6*d^4*e^3*x^2+256*b^7*d^5*e^2*x^
2-3003*a^6*b*e^7*x+12012*a^5*b^2*d*e^6*x-24024*a^4*b^3*d^2*e^5*x+27456*a^3*
b^4*d^3*e^4*x-18304*a^2*b^5*d^4*e^3*x+6656*a*b^6*d^5*e^2*x-1024*b^7*d^6*e*x
+429*a^7*e^7-6006*a^6*b*d*e^6+24024*a^5*b^2*d^2*e^5-48048*a^4*b^3*d^3*e^4+5
4912*a^3*b^4*d^4*e^3-36608*a^2*b^5*d^5*e^2+13312*a*b^6*d^6*e-2048*b^7*d^7)/
(e*x+d)^(1/2)/e^8
```

maxima [B]   time = 0.50, size = 464, normalized size = 2.25

$$\frac{2\left(\frac{33(ex+d)^{\frac{13}{2}}b^7-273\left(b^7d-ab^6e\right)(ex+d)^{\frac{11}{2}}+1001\left(b^7d^2-2ab^6de+a^2b^5e^2\right)(ex+d)^{\frac{9}{2}}-2145\left(b^7d^3-3ab^6d^2e+3a^2b^5de^2-a^3b^4e^3\right)(ex+d)^{\frac{7}{2}}+3003\left(b^7d^4-4ab^6d^3e+6a^2b^5d^2e^2-4a^3b^4de^3+a^4b^3e^4\right)(ex+d)^{\frac{5}{2}}-3003\left(b^7d^5-5ab^6d^4e+10a^2b^5d^3e^2-10a^3b^4d^2e^3+5a^4b^3de^4-a^5b^2e^5\right)(ex+d)^{\frac{3}{2}}+3003\left(b^7d^6-6ab^6d^5e+15a^2b^5d^4e^2-20a^3b^4d^3e^3+15a^4b^3d^2e^4-6a^5b^2de^5+a^6be^6\right)\sqrt{ex+d}}{e^7}+\frac{429\left(b^7d^7-7ab^6d^6e+21a^2b^5d^5e^2-35a^3b^4d^4e^3+35a^4b^3d^3e^4-21a^5b^2d^2e^5+7a^6bde^6-a^7e^7\right)}{\sqrt{ex+d}\,e^7}\right)}{429e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/429*((33*(e*x + d)^(13/2)*b^7 - 273*(b^7*d - a*b^6*e)*(e*x + d)^(11/2) +
1001*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(9/2) - 2145*(b^7*d^3
- 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(7/2) + 3003*(b^
7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*
(e*x + d)^(5/2) - 3003*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a
^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^(3/2) + 3003*(b^7
*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3
*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*sqrt(e*x + d))/e^7 + 429*(b^7*d^7 -
 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e
^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)/(sqrt(e*x + d)*e^7))/e
```

mupad [B]   time = 2.07, size = 270, normalized size = 1.31

$$\frac{2b^7(d+ex)^{13/2}}{13e^8}-\frac{\left(14b^7d-14ab^6e\right)(d+ex)^{11/2}}{11e^8}-\frac{2a^7e^7-14a^6bde^6+42a^5b^2d^2e^5-70a^4b^3d^3e^4+70a^3b^4d^4e^3-42a^2b^5d^5e^2+14ab^6d^6e-2b^7d^7}{e^8\sqrt{d+ex}}+\frac{14b^2(ae-bd)^5(d+ex)^{3/2}}{e^8}+\frac{14b^3(ae-bd)^4(d+ex)^{5/2}}{e^8}+\frac{10b^4(ae-bd)^3(d+ex)^{7/2}}{e^8}+\frac{14b^5(ae-bd)^2(d+ex)^{9/2}}{3e^8}+\frac{14b(ae-bd)^6\sqrt{d+ex}}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(3/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(13/2))/(13*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(11/
2))/(11*e^8) - (2*a^7*e^7 - 2*b^7*d^7 - 42*a^2*b^5*d^5*e^2 + 70*a^3*b^4*d^4
```

```
*e^3 - 70*a^4*b^3*d^3*e^4 + 42*a^5*b^2*d^2*e^5 + 14*a*b^6*d^6*e - 14*a^6*b*
d*e^6)/(e^8*(d + e*x)^(1/2)) + (14*b^2*(a*e - b*d)^5*(d + e*x)^(3/2))/e^8 +
 (14*b^3*(a*e - b*d)^4*(d + e*x)^(5/2))/e^8 + (10*b^4*(a*e - b*d)^3*(d + e*
x)^(7/2))/e^8 + (14*b^5*(a*e - b*d)^2*(d + e*x)^(9/2))/(3*e^8) + (14*b*(a*e
 - b*d)^6*(d + e*x)^(1/2))/e^8
```

sympy [B] time = 99.36, size = 439, normalized size = 2.13

$$\frac{2b^7(d+ex)^{\frac{13}{2}}}{13e^8}+\frac{(d+ex)^{\frac{11}{2}}\left(14ab^6e-14b^7d\right)}{11e^8}+\frac{(d+ex)^{\frac{9}{2}}\left(42a^2b^5e^2-84ab^6de+42b^7d^2\right)}{9e^8}+\frac{(d+ex)^{\frac{7}{2}}\left(70a^3b^4e^3-210a^2b^5de^2+210ab^6d^2e-70b^7d^3\right)}{7e^8}+\frac{(d+ex)^{\frac{5}{2}}\left(70a^4b^3e^4-280a^3b^4de^3+420a^2b^5d^2e^2-280ab^6d^3e+70b^7d^4\right)}{5e^8}+\frac{(d+ex)^{\frac{3}{2}}\left(42a^5b^2e^5-210a^4b^3de^4+420a^3b^4d^2e^3-420a^2b^5d^3e^2+210ab^6d^4e-42b^7d^5\right)}{3e^8}+\frac{\sqrt{d+ex}\left(14a^6be^6-84a^5b^2de^5+210a^4b^3d^2e^4-280a^3b^4d^3e^3+210a^2b^5d^4e^2-84ab^6d^5e+14b^7d^6\right)}{e^8}-\frac{2(ae-bd)^7}{e^8\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(3/2),x)
```

```
[Out] 2*b**7*(d + e*x)**(13/2)/(13*e**8) + (d + e*x)**(11/2)*(14*a*b**6*e - 14*b*
*7*d)/(11*e**8) + (d + e*x)**(9/2)*(42*a**2*b**5*e**2 - 84*a*b**6*d*e + 42*
b**7*d**2)/(9*e**8) + (d + e*x)**(7/2)*(70*a**3*b**4*e**3 - 210*a**2*b**5*d
*e**2 + 210*a*b**6*d**2*e - 70*b**7*d**3)/(7*e**8) + (d + e*x)**(5/2)*(70*a
**4*b**3*e**4 - 280*a**3*b**4*d*e**3 + 420*a**2*b**5*d**2*e**2 - 280*a*b**6
*d**3*e + 70*b**7*d**4)/(5*e**8) + (d + e*x)**(3/2)*(42*a**5*b**2*e**5 - 21
0*a**4*b**3*d*e**4 + 420*a**3*b**4*d**2*e**3 - 420*a**2*b**5*d**3*e**2 + 21
0*a*b**6*d**4*e - 42*b**7*d**5)/(3*e**8) + sqrt(d + e*x)*(14*a**6*b*e**6 -
84*a**5*b**2*d*e**5 + 210*a**4*b**3*d**2*e**4 - 280*a**3*b**4*d**3*e**3 + 2
10*a**2*b**5*d**4*e**2 - 84*a*b**6*d**5*e + 14*b**7*d**6)/e**8 - 2*(a*e - b
*d)**7/(e**8*sqrt(d + e*x))
```

3.1839 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{14b^6(d+ex)^{9/2}(bd-ae)}{9e^8}+\frac{6b^5(d+ex)^{7/2}(bd-ae)^2}{e^8}-\frac{14b^4(d+ex)^{5/2}(bd-ae)^3}{e^8}+\frac{70b^3(d+ex)^{3/2}(bd-ae)^4}{3e^8}-\frac{42b^2\sqrt{}}{}$$

Rubi [A] time = 0.08, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{9/2}(bd-ae)}{9e^8}+\frac{6b^5(d+ex)^{7/2}(bd-ae)^2}{e^8}-\frac{14b^4(d+ex)^{5/2}(bd-ae)^3}{e^8}+\frac{70b^3(d+ex)^{3/2}(bd-ae)^4}{3e^8}-\frac{42b^2\sqrt{d+ex}(bd-ae)^5}{e^8}-\frac{14b(bd-ae)^6}{e^8\sqrt{d+ex}}+\frac{2(bd-ae)^7}{3e^8(d+ex)^{3/2}}+\frac{2b^7(d+ex)^{11/2}}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^7)/(3*e^8*(d + e*x)^(3/2)) - (14*b*(b*d - a*e)^6)/(e^8*Sqrt[
d + e*x]) - (42*b^2*(b*d - a*e)^5*Sqrt[d + e*x])/e^8 + (70*b^3*(b*d - a*e)^
4*(d + e*x)^(3/2))/(3*e^8) - (14*b^4*(b*d - a*e)^3*(d + e*x)^(5/2))/e^8 + (
6*b^5*(b*d - a*e)^2*(d + e*x)^(7/2))/e^8 - (14*b^6*(b*d - a*e)*(d + e*x)^(9
/2))/(9*e^8) + (2*b^7*(d + e*x)^(11/2))/(11*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^{5/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^7}{e^7(d+ex)^{5/2}}+\frac{7b(bd-ae)^6}{e^7(d+ex)^{3/2}}-\frac{21b^2(bd-ae)^5}{e^7\sqrt{d+ex}}+\frac{35b^3(bd-ae)^4\sqrt{d+ex}}{e^7}\right.\\
&= \frac{2(bd-ae)^7}{3e^8(d+ex)^{3/2}}-\frac{14b(bd-ae)^6}{e^8\sqrt{d+ex}}-\frac{42b^2(bd-ae)^5\sqrt{d+ex}}{e^8}+\frac{70b^3(bd-ae)^4(}{3e^8}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.80

$$\frac{2\left(-77b^6(d+ex)^6(bd-ae)+297b^5(d+ex)^5(bd-ae)^2-693b^4(d+ex)^4(bd-ae)^3+1155b^3(d+ex)^3(bd-ae)^4-2079b^2(d+ex)^2(bd-ae)^5-693b(d+ex)(bd-ae)^6+33(bd-ae)^7+9b^7(d+ex)^7\right)}{99e^8(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(33*(b*d - a*e)^7 - 693*b*(b*d - a*e)^6*(d + e*x) - 2079*b^2*(b*d - a*e)
^5*(d + e*x)^2 + 1155*b^3*(b*d - a*e)^4*(d + e*x)^3 - 693*b^4*(b*d - a*e)^3
```

```
*(d + e*x)^4 + 297*b^5*(b*d - a*e)^2*(d + e*x)^5 - 77*b^6*(b*d - a*e)*(d +
e*x)^6 + 9*b^7*(d + e*x)^7))/(99*e^8*(d + e*x)^(3/2))
```

IntegrateAlgebraic [B] time = 0.12, size = 582, normalized size = 2.80

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),
x]
```

```
[Out] (2*(33*b^7*d^7 - 231*a*b^6*d^6*e + 693*a^2*b^5*d^5*e^2 - 1155*a^3*b^4*d^4*e
^3 + 1155*a^4*b^3*d^3*e^4 - 693*a^5*b^2*d^2*e^5 + 231*a^6*b*d*e^6 - 33*a^7*
e^7 - 693*b^7*d^6*(d + e*x) + 4158*a*b^6*d^5*e*(d + e*x) - 10395*a^2*b^5*d^
4*e^2*(d + e*x) + 13860*a^3*b^4*d^3*e^3*(d + e*x) - 10395*a^4*b^3*d^2*e^4*(
d + e*x) + 4158*a^5*b^2*d*e^5*(d + e*x) - 693*a^6*b*e^6*(d + e*x) - 2079*b^
7*d^5*(d + e*x)^2 + 10395*a*b^6*d^4*e*(d + e*x)^2 - 20790*a^2*b^5*d^3*e^2*(
d + e*x)^2 + 20790*a^3*b^4*d^2*e^3*(d + e*x)^2 - 10395*a^4*b^3*d*e^4*(d + e
*x)^2 + 2079*a^5*b^2*e^5*(d + e*x)^2 + 1155*b^7*d^4*(d + e*x)^3 - 4620*a*b^
6*d^3*e*(d + e*x)^3 + 6930*a^2*b^5*d^2*e^2*(d + e*x)^3 - 4620*a^3*b^4*d*e^3
*(d + e*x)^3 + 1155*a^4*b^3*e^4*(d + e*x)^3 - 693*b^7*d^3*(d + e*x)^4 + 207
9*a*b^6*d^2*e*(d + e*x)^4 - 2079*a^2*b^5*d*e^2*(d + e*x)^4 + 693*a^3*b^4*e^
3*(d + e*x)^4 + 297*b^7*d^2*(d + e*x)^5 - 594*a*b^6*d*e*(d + e*x)^5 + 297*a
^2*b^5*e^2*(d + e*x)^5 - 77*b^7*d*(d + e*x)^6 + 77*a*b^6*e*(d + e*x)^6 + 9*
b^7*(d + e*x)^7))/(99*e^8*(d + e*x)^(3/2))
```

fricas [B] time = 0.43, size = 484, normalized size = 2.33

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/99*(9*b^7*e^7*x^7 - 2048*b^7*d^7 + 11264*a*b^6*d^6*e - 25344*a^2*b^5*d^5*
e^2 + 29568*a^3*b^4*d^4*e^3 - 18480*a^4*b^3*d^3*e^4 + 5544*a^5*b^2*d^2*e^5
- 462*a^6*b*d*e^6 - 33*a^7*e^7 - 7*(2*b^7*d*e^6 - 11*a*b^6*e^7)*x^6 + 3*(8*
b^7*d^2*e^5 - 44*a*b^6*d*e^6 + 99*a^2*b^5*e^7)*x^5 - 3*(16*b^7*d^3*e^4 - 88
*a*b^6*d^2*e^5 + 198*a^2*b^5*d*e^6 - 231*a^3*b^4*e^7)*x^4 + (128*b^7*d^4*e^
3 - 704*a*b^6*d^3*e^4 + 1584*a^2*b^5*d^2*e^5 - 1848*a^3*b^4*d*e^6 + 1155*a^
4*b^3*e^7)*x^3 - 3*(256*b^7*d^5*e^2 - 1408*a*b^6*d^4*e^3 + 3168*a^2*b^5*d^3
*e^4 - 3696*a^3*b^4*d^2*e^5 + 2310*a^4*b^3*d*e^6 - 693*a^5*b^2*e^7)*x^2 - 3
*(1024*b^7*d^6*e - 5632*a*b^6*d^5*e^2 + 12672*a^2*b^5*d^4*e^3 - 14784*a^3*b
^4*d^3*e^4 + 9240*a^4*b^3*d^2*e^5 - 2772*a^5*b^2*d*e^6 + 231*a^6*b*e^7)*x)*
sqrt(e*x + d)/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [B] time = 0.34, size = 609, normalized size = 2.93

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/99*(9*(x*e + d)^(11/2)*b^7*e^80 - 77*(x*e + d)^(9/2)*b^7*d*e^80 + 297*(x*
e + d)^(7/2)*b^7*d^2*e^80 - 693*(x*e + d)^(5/2)*b^7*d^3*e^80 + 1155*(x*e +
d)^(3/2)*b^7*d^4*e^80 - 2079*sqrt(x*e + d)*b^7*d^5*e^80 + 77*(x*e + d)^(9/2
)*a*b^6*e^81 - 594*(x*e + d)^(7/2)*a*b^6*d*e^81 + 2079*(x*e + d)^(5/2)*a*b^
6*d^2*e^81 - 4620*(x*e + d)^(3/2)*a*b^6*d^3*e^81 + 10395*sqrt(x*e + d)*a*b^
```

```
6*d^4*e^81 + 297*(x*e + d)^(7/2)*a^2*b^5*e^82 - 2079*(x*e + d)^(5/2)*a^2*b^
5*d*e^82 + 6930*(x*e + d)^(3/2)*a^2*b^5*d^2*e^82 - 20790*sqrt(x*e + d)*a^2*
b^5*d^3*e^82 + 693*(x*e + d)^(5/2)*a^3*b^4*e^83 - 4620*(x*e + d)^(3/2)*a^3*
b^4*d*e^83 + 20790*sqrt(x*e + d)*a^3*b^4*d^2*e^83 + 1155*(x*e + d)^(3/2)*a^
4*b^3*e^84 - 10395*sqrt(x*e + d)*a^4*b^3*d*e^84 + 2079*sqrt(x*e + d)*a^5*b^
2*e^85)*e^(-88) - 2/3*(21*(x*e + d)*b^7*d^6 - b^7*d^7 - 126*(x*e + d)*a*b^6
*d^5*e + 7*a*b^6*d^6*e + 315*(x*e + d)*a^2*b^5*d^4*e^2 - 21*a^2*b^5*d^5*e^2
 - 420*(x*e + d)*a^3*b^4*d^3*e^3 + 35*a^3*b^4*d^4*e^3 + 315*(x*e + d)*a^4*b
^3*d^2*e^4 - 35*a^4*b^3*d^3*e^4 - 126*(x*e + d)*a^5*b^2*d*e^5 + 21*a^5*b^2*
d^2*e^5 + 21*(x*e + d)*a^6*b*e^6 - 7*a^6*b*d*e^6 + a^7*e^7)*e^(-8)/(x*e + d
)^(3/2)
```

maple [B] time = 0.05, size = 498, normalized size = 2.39

$$-\frac{2\left(-9b^7x^7e^7-77ab^6e^7x^6+14b^7de^6x^6-297a^2b^5e^7x^5+132ab^6de^6x^5-24b^7d^2e^5x^5-693a^3b^4e^7x^4+594a^2b^5de^6x^4-264ab^6d^2e^5x^4+48b^7d^3e^4x^4-1155a^4b^3e^7x^3+1848a^3b^4de^6x^3-1584a^2b^5d^2e^5x^3+704ab^6d^3e^4x^3-128b^7d^4e^3x^3-2079a^5b^2e^7x^2+6930a^4b^3de^6x^2-11088a^3b^4d^2e^5x^2+9504a^2b^5d^3e^4x^2-4224ab^6d^4e^3x^2+768b^7d^5e^2x^2+693a^6be^7x-8316a^5b^2de^6x+27720a^4b^3d^2e^5x-44352a^3b^4d^3e^4x+38016a^2b^5d^4e^3x-16896ab^6d^5e^2x+3072b^7d^6ex+33a^7e^7+462a^6bde^6-5544a^5b^2d^2e^5+18480a^4b^3d^3e^4-29568a^3b^4d^4e^3+25344a^2b^5d^5e^2-11264ab^6d^6e+2048b^7d^7\right)}{99(ex+d)^{\frac{3}{2}}e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/99*(-9*b^7*e^7*x^7-77*a*b^6*e^7*x^6+14*b^7*d*e^6*x^6-297*a^2*b^5*e^7*x^5
+132*a*b^6*d*e^6*x^5-24*b^7*d^2*e^5*x^5-693*a^3*b^4*e^7*x^4+594*a^2*b^5*d*e
^6*x^4-264*a*b^6*d^2*e^5*x^4+48*b^7*d^3*e^4*x^4-1155*a^4*b^3*e^7*x^3+1848*a
^3*b^4*d*e^6*x^3-1584*a^2*b^5*d^2*e^5*x^3+704*a*b^6*d^3*e^4*x^3-128*b^7*d^4
*e^3*x^3-2079*a^5*b^2*e^7*x^2+6930*a^4*b^3*d*e^6*x^2-11088*a^3*b^4*d^2*e^5*
x^2+9504*a^2*b^5*d^3*e^4*x^2-4224*a*b^6*d^4*e^3*x^2+768*b^7*d^5*e^2*x^2+693
*a^6*b*e^7*x-8316*a^5*b^2*d*e^6*x+27720*a^4*b^3*d^2*e^5*x-44352*a^3*b^4*d^3
*e^4*x+38016*a^2*b^5*d^4*e^3*x-16896*a*b^6*d^5*e^2*x+3072*b^7*d^6*e*x+33*a^
7*e^7+462*a^6*b*d*e^6-5544*a^5*b^2*d^2*e^5+18480*a^4*b^3*d^3*e^4-29568*a^3*
b^4*d^4*e^3+25344*a^2*b^5*d^5*e^2-11264*a*b^6*d^6*e+2048*b^7*d^7)/(e*x+d)^(
3/2)/e^8
```

maxima [B] time = 0.58, size = 462, normalized size = 2.22

$$\frac{2\left(\frac{9(ex+d)^{\frac{11}{2}}b^7-77(b^7d-ab^6e)(ex+d)^{\frac{9}{2}}+297(b^7d^2-2ab^6de+a^2b^5e^2)(ex+d)^{\frac{7}{2}}-693(b^7d^3-3ab^6d^2e+3a^2b^5de^2-a^3b^4e^3)(ex+d)^{\frac{5}{2}}+1155(b^7d^4-4ab^6d^3e+6a^2b^5d^2e^2-4a^3b^4de^3+a^4b^3e^4)(ex+d)^{\frac{3}{2}}-2079(b^7d^5-5ab^6d^4e+10a^2b^5d^3e^2-10a^3b^4d^2e^3+5a^4b^3de^4-a^5b^2e^5)\sqrt{ex+d}}{e^7}+\frac{33(b^7d^7-7ab^6d^6e+21a^2b^5d^5e^2-35a^3b^4d^4e^3+35a^4b^3d^3e^4-21a^5b^2d^2e^5+7a^6bde^6-a^7e^7-21(b^7d^6-6ab^6d^5e+15a^2b^5d^4e^2-20a^3b^4d^3e^3+15a^4b^3d^2e^4-6a^5b^2de^5+a^6be^6)(ex+d))}{(ex+d)^{\frac{3}{2}}e^7}\right)}{99e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/99*((9*(e*x + d)^(11/2)*b^7 - 77*(b^7*d - a*b^6*e)*(e*x + d)^(9/2) + 297*
(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(7/2) - 693*(b^7*d^3 - 3*a*
b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(5/2) + 1155*(b^7*d^4
- 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*(e*x +
 d)^(3/2) - 2079*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4
*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*sqrt(e*x + d))/e^7 + 33*(b^7*d^7
- 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*
e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7 - 21*(b^7*d^6 - 6*a*b^6*
d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^
5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d))/((e*x + d)^(3/2)*e^7))/e
```

mupad [B] time = 2.05, size = 335, normalized size = 1.61

$$\frac{2b^7(d+ex)^{11/2}}{11e^8}-\frac{(14b^7d-14ab^6e)(d+ex)^{9/2}}{9e^8}-\frac{(d+ex)(14a^6be^6-84a^5b^2de^5+210a^4b^3d^2e^4-280a^3b^4d^3e^3+210a^2b^5d^4e^2-84ab^6d^5e+14b^7d^6)+\frac{2a^7e^7}{3}-\frac{2b^7d^7}{3}-14a^2b^5d^5e^2+\frac{70a^3b^4d^4e^3}{3}-\frac{70a^4b^3d^3e^4}{3}+14a^5b^2d^2e^5+\frac{14ab^6d^6e}{3}-\frac{14a^6bde^6}{3}}{e^8(d+ex)^{3/2}}+\frac{42b^2(ae-bd)^5\sqrt{d+ex}}{e^8}+\frac{70b^3(ae-bd)^4(d+ex)^{3/2}}{3e^8}+\frac{14b^4(ae-bd)^3(d+ex)^{5/2}}{e^8}+\frac{6b^5(ae-bd)^2(d+ex)^{7/2}}{e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(5/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(11/2))/(11*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(9/2
))/(9*e^8) - ((d + e*x)*(14*b^7*d^6 + 14*a^6*b*e^6 - 84*a^5*b^2*d*e^5 + 210
```

```
*a^2*b^5*d^4*e^2 - 280*a^3*b^4*d^3*e^3 + 210*a^4*b^3*d^2*e^4 - 84*a*b^6*d^5
*e) + (2*a^7*e^7)/3 - (2*b^7*d^7)/3 - 14*a^2*b^5*d^5*e^2 + (70*a^3*b^4*d^4*
e^3)/3 - (70*a^4*b^3*d^3*e^4)/3 + 14*a^5*b^2*d^2*e^5 + (14*a*b^6*d^6*e)/3 -
 (14*a^6*b*d*e^6)/3)/(e^8*(d + e*x)^(3/2)) + (42*b^2*(a*e - b*d)^5*(d + e*x
)^(1/2))/e^8 + (70*b^3*(a*e - b*d)^4*(d + e*x)^(3/2))/(3*e^8) + (14*b^4*(a*
e - b*d)^3*(d + e*x)^(5/2))/e^8 + (6*b^5*(a*e - b*d)^2*(d + e*x)^(7/2))/e^8
```

sympy [A] time = 113.69, size = 360, normalized size = 1.73

$$\frac{2b^7(d+ex)^{\frac{11}{2}}}{11e^8}-\frac{14b(ae-bd)^6}{e^8\sqrt{d+ex}}+\frac{(d+ex)^{\frac{9}{2}}\left(14ab^6e-14b^7d\right)}{9e^8}+\frac{(d+ex)^{\frac{7}{2}}\left(42a^2b^5e^2-84ab^6de+42b^7d^2\right)}{7e^8}+\frac{(d+ex)^{\frac{5}{2}}\left(70a^3b^4e^3-210a^2b^5de^2+210ab^6d^2e-70b^7d^3\right)}{5e^8}+\frac{(d+ex)^{\frac{3}{2}}\left(70a^4b^3e^4-280a^3b^4de^3+420a^2b^5d^2e^2-280ab^6d^3e+70b^7d^4\right)}{3e^8}+\frac{\sqrt{d+ex}\left(42a^5b^2e^5-210a^4b^3de^4+420a^3b^4d^2e^3-420a^2b^5d^3e^2+210ab^6d^4e-42b^7d^5\right)}{e^8}-\frac{2(ae-bd)^7}{3e^8(d+ex)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(5/2),x)
```

```
[Out] 2*b**7*(d + e*x)**(11/2)/(11*e**8) - 14*b*(a*e - b*d)**6/(e**8*sqrt(d + e*x
)) + (d + e*x)**(9/2)*(14*a*b**6*e - 14*b**7*d)/(9*e**8) + (d + e*x)**(7/2)
*(42*a**2*b**5*e**2 - 84*a*b**6*d*e + 42*b**7*d**2)/(7*e**8) + (d + e*x)**(
5/2)*(70*a**3*b**4*e**3 - 210*a**2*b**5*d*e**2 + 210*a*b**6*d**2*e - 70*b**
7*d**3)/(5*e**8) + (d + e*x)**(3/2)*(70*a**4*b**3*e**4 - 280*a**3*b**4*d*e*
*3 + 420*a**2*b**5*d**2*e**2 - 280*a*b**6*d**3*e + 70*b**7*d**4)/(3*e**8) +
 sqrt(d + e*x)*(42*a**5*b**2*e**5 - 210*a**4*b**3*d*e**4 + 420*a**3*b**4*d*
*2*e**3 - 420*a**2*b**5*d**3*e**2 + 210*a*b**6*d**4*e - 42*b**7*d**5)/e**8
- 2*(a*e - b*d)**7/(3*e**8*(d + e*x)**(3/2))
```

3.1840 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{2b^6(d+ex)^{7/2}(bd-ae)}{e^8}+\frac{42b^5(d+ex)^{5/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{3/2}(bd-ae)^3}{3e^8}+\frac{70b^3\sqrt{d+ex}\,(bd-ae)^4}{e^8}+\frac{42b^2(bd}{e^8\sqrt{d}}$$

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 43}

$$-\frac{2b^6(d+ex)^{7/2}(bd-ae)}{e^8}+\frac{42b^5(d+ex)^{5/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{3/2}(bd-ae)^3}{3e^8}+\frac{70b^3\sqrt{d+ex}\,(bd-ae)^4}{e^8}+\frac{42b^2(bd-ae)^5}{e^8\sqrt{d+ex}}-\frac{14b(bd-ae)^6}{3e^8(d+ex)^{3/2}}+\frac{2(bd-ae)^7}{5e^8(d+ex)^{5/2}}+\frac{2b^7(d+ex)^{9/2}}{9e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^7)/(5*e^8*(d + e*x)^(5/2)) - (14*b*(b*d - a*e)^6)/(3*e^8*(d
+ e*x)^(3/2)) + (42*b^2*(b*d - a*e)^5)/(e^8*Sqrt[d + e*x]) + (70*b^3*(b*d -
 a*e)^4*Sqrt[d + e*x])/e^8 - (70*b^4*(b*d - a*e)^3*(d + e*x)^(3/2))/(3*e^8)
 + (42*b^5*(b*d - a*e)^2*(d + e*x)^(5/2))/(5*e^8) - (2*b^6*(b*d - a*e)*(d +
 e*x)^(7/2))/e^8 + (2*b^7*(d + e*x)^(9/2))/(9*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^7}{e^7(d+ex)^{7/2}}+\frac{7b(bd-ae)^6}{e^7(d+ex)^{5/2}}-\frac{21b^2(bd-ae)^5}{e^7(d+ex)^{3/2}}+\frac{35b^3(bd-ae)^4}{e^7\sqrt{d+ex}}-\frac{35b^4}{}\right.\\ &= \frac{2(bd-ae)^7}{5e^8(d+ex)^{5/2}}-\frac{14b(bd-ae)^6}{3e^8(d+ex)^{3/2}}+\frac{42b^2(bd-ae)^5}{e^8\sqrt{d+ex}}+\frac{70b^3(bd-ae)^4\sqrt{d+ex}}{e^8}\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.80

$$\frac{2\left(-45b^6(d+ex)^6(bd-ae)+189b^5(d+ex)^5(bd-ae)^2-525b^4(d+ex)^4(bd-ae)^3+1575b^3(d+ex)^3(bd-ae)^4+945b^2(d+ex)^2(bd-ae)^5-105b(d+ex)(bd-ae)^6+9(bd-ae)^7+5b^7(d+ex)^7\right)}{45e^8(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(9*(b*d - a*e)^7 - 105*b*(b*d - a*e)^6*(d + e*x) + 945*b^2*(b*d - a*e)^5
*(d + e*x)^2 + 1575*b^3*(b*d - a*e)^4*(d + e*x)^3 - 525*b^4*(b*d - a*e)^3*(
```

```
d + e*x)^4 + 189*b^5*(b*d - a*e)^2*(d + e*x)^5 - 45*b^6*(b*d - a*e)*(d + e*
x)^6 + 5*b^7*(d + e*x)^7))/(45*e^8*(d + e*x)^(5/2))
```

IntegrateAlgebraic [B] time = 0.12, size = 582, normalized size = 2.77

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),
x]
```

```
[Out] (2*(9*b^7*d^7 - 63*a*b^6*d^6*e + 189*a^2*b^5*d^5*e^2 - 315*a^3*b^4*d^4*e^3
+ 315*a^4*b^3*d^3*e^4 - 189*a^5*b^2*d^2*e^5 + 63*a^6*b*d*e^6 - 9*a^7*e^7 -
105*b^7*d^6*(d + e*x) + 630*a*b^6*d^5*e*(d + e*x) - 1575*a^2*b^5*d^4*e^2*(d
 + e*x) + 2100*a^3*b^4*d^3*e^3*(d + e*x) - 1575*a^4*b^3*d^2*e^4*(d + e*x) +
 630*a^5*b^2*d*e^5*(d + e*x) - 105*a^6*b*e^6*(d + e*x) + 945*b^7*d^5*(d + e
*x)^2 - 4725*a*b^6*d^4*e*(d + e*x)^2 + 9450*a^2*b^5*d^3*e^2*(d + e*x)^2 - 9
450*a^3*b^4*d^2*e^3*(d + e*x)^2 + 4725*a^4*b^3*d*e^4*(d + e*x)^2 - 945*a^5*
b^2*e^5*(d + e*x)^2 + 1575*b^7*d^4*(d + e*x)^3 - 6300*a*b^6*d^3*e*(d + e*x)
^3 + 9450*a^2*b^5*d^2*e^2*(d + e*x)^3 - 6300*a^3*b^4*d*e^3*(d + e*x)^3 + 15
75*a^4*b^3*e^4*(d + e*x)^3 - 525*b^7*d^3*(d + e*x)^4 + 1575*a*b^6*d^2*e*(d
+ e*x)^4 - 1575*a^2*b^5*d*e^2*(d + e*x)^4 + 525*a^3*b^4*e^3*(d + e*x)^4 + 1
89*b^7*d^2*(d + e*x)^5 - 378*a*b^6*d*e*(d + e*x)^5 + 189*a^2*b^5*e^2*(d + e
*x)^5 - 45*b^7*d*(d + e*x)^6 + 45*a*b^6*e*(d + e*x)^6 + 5*b^7*(d + e*x)^7))
/(45*e^8*(d + e*x)^(5/2))
```

fricas [B] time = 0.43, size = 496, normalized size = 2.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/45*(5*b^7*e^7*x^7 + 2048*b^7*d^7 - 9216*a*b^6*d^6*e + 16128*a^2*b^5*d^5*e
^2 - 13440*a^3*b^4*d^4*e^3 + 5040*a^4*b^3*d^3*e^4 - 504*a^5*b^2*d^2*e^5 - 4
2*a^6*b*d*e^6 - 9*a^7*e^7 - 5*(2*b^7*d*e^6 - 9*a*b^6*e^7)*x^6 + 3*(8*b^7*d^
2*e^5 - 36*a*b^6*d*e^6 + 63*a^2*b^5*e^7)*x^5 - 5*(16*b^7*d^3*e^4 - 72*a*b^6
*d^2*e^5 + 126*a^2*b^5*d*e^6 - 105*a^3*b^4*e^7)*x^4 + 5*(128*b^7*d^4*e^3 -
576*a*b^6*d^3*e^4 + 1008*a^2*b^5*d^2*e^5 - 840*a^3*b^4*d*e^6 + 315*a^4*b^3*
e^7)*x^3 + 15*(256*b^7*d^5*e^2 - 1152*a*b^6*d^4*e^3 + 2016*a^2*b^5*d^3*e^4
- 1680*a^3*b^4*d^2*e^5 + 630*a^4*b^3*d*e^6 - 63*a^5*b^2*e^7)*x^2 + 5*(1024*
b^7*d^6*e - 4608*a*b^6*d^5*e^2 + 8064*a^2*b^5*d^4*e^3 - 6720*a^3*b^4*d^3*e^
4 + 2520*a^4*b^3*d^2*e^5 - 252*a^5*b^2*d*e^6 - 21*a^6*b*e^7)*x)*sqrt(e*x +
d)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.23, size = 608, normalized size = 2.90

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/45*(5*(x*e + d)^(9/2)*b^7*e^64 - 45*(x*e + d)^(7/2)*b^7*d*e^64 + 189*(x*e
 + d)^(5/2)*b^7*d^2*e^64 - 525*(x*e + d)^(3/2)*b^7*d^3*e^64 + 1575*sqrt(x*e
 + d)*b^7*d^4*e^64 + 45*(x*e + d)^(7/2)*a*b^6*e^65 - 378*(x*e + d)^(5/2)*a*
b^6*d*e^65 + 1575*(x*e + d)^(3/2)*a*b^6*d^2*e^65 - 6300*sqrt(x*e + d)*a*b^6
*d^3*e^65 + 189*(x*e + d)^(5/2)*a^2*b^5*e^66 - 1575*(x*e + d)^(3/2)*a^2*b^5
```

```
*d*e^66 + 9450*sqrt(x*e + d)*a^2*b^5*d^2*e^66 + 525*(x*e + d)^(3/2)*a^3*b^4
*e^67 - 6300*sqrt(x*e + d)*a^3*b^4*d*e^67 + 1575*sqrt(x*e + d)*a^4*b^3*e^68
)*e^(-72) + 2/15*(315*(x*e + d)^2*b^7*d^5 - 35*(x*e + d)*b^7*d^6 + 3*b^7*d^
7 - 1575*(x*e + d)^2*a*b^6*d^4*e + 210*(x*e + d)*a*b^6*d^5*e - 21*a*b^6*d^6
*e + 3150*(x*e + d)^2*a^2*b^5*d^3*e^2 - 525*(x*e + d)*a^2*b^5*d^4*e^2 + 63*
a^2*b^5*d^5*e^2 - 3150*(x*e + d)^2*a^3*b^4*d^2*e^3 + 700*(x*e + d)*a^3*b^4*
d^3*e^3 - 105*a^3*b^4*d^4*e^3 + 1575*(x*e + d)^2*a^4*b^3*d*e^4 - 525*(x*e +
 d)*a^4*b^3*d^2*e^4 + 105*a^4*b^3*d^3*e^4 - 315*(x*e + d)^2*a^5*b^2*e^5 + 2
10*(x*e + d)*a^5*b^2*d*e^5 - 63*a^5*b^2*d^2*e^5 - 35*(x*e + d)*a^6*b*e^6 +
21*a^6*b*d*e^6 - 3*a^7*e^7)*e^(-8)/(x*e + d)^(5/2)
```

maple [B] time = 0.05, size = 498, normalized size = 2.37

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x)
```

```
[Out] -2/45*(-5*b^7*e^7*x^7-45*a*b^6*e^7*x^6+10*b^7*d*e^6*x^6-189*a^2*b^5*e^7*x^5
+108*a*b^6*d*e^6*x^5-24*b^7*d^2*e^5*x^5-525*a^3*b^4*e^7*x^4+630*a^2*b^5*d*e
^6*x^4-360*a*b^6*d^2*e^5*x^4+80*b^7*d^3*e^4*x^4-1575*a^4*b^3*e^7*x^3+4200*a
^3*b^4*d*e^6*x^3-5040*a^2*b^5*d^2*e^5*x^3+2880*a*b^6*d^3*e^4*x^3-640*b^7*d^
4*e^3*x^3+945*a^5*b^2*e^7*x^2-9450*a^4*b^3*d*e^6*x^2+25200*a^3*b^4*d^2*e^5*
x^2-30240*a^2*b^5*d^3*e^4*x^2+17280*a*b^6*d^4*e^3*x^2-3840*b^7*d^5*e^2*x^2+
105*a^6*b*e^7*x+1260*a^5*b^2*d*e^6*x-12600*a^4*b^3*d^2*e^5*x+33600*a^3*b^4*
d^3*e^4*x-40320*a^2*b^5*d^4*e^3*x+23040*a*b^6*d^5*e^2*x-5120*b^7*d^6*e*x+9*
a^7*e^7+42*a^6*b*d*e^6+504*a^5*b^2*d^2*e^5-5040*a^4*b^3*d^3*e^4+13440*a^3*b
^4*d^4*e^3-16128*a^2*b^5*d^5*e^2+9216*a*b^6*d^6*e-2048*b^7*d^7)/(e*x+d)^(5/
2)/e^8
```

maxima [B] time = 0.55, size = 463, normalized size = 2.20

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/45*((5*(e*x + d)^(9/2)*b^7 - 45*(b^7*d - a*b^6*e)*(e*x + d)^(7/2) + 189*(
b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(5/2) - 525*(b^7*d^3 - 3*a*b
^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(3/2) + 1575*(b^7*d^4 -
 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*sqrt(e*
x + d))/e^7 + 3*(3*b^7*d^7 - 21*a*b^6*d^6*e + 63*a^2*b^5*d^5*e^2 - 105*a^3*
b^4*d^4*e^3 + 105*a^4*b^3*d^3*e^4 - 63*a^5*b^2*d^2*e^5 + 21*a^6*b*d*e^6 - 3
*a^7*e^7 + 315*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d
^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^2 - 35*(b^7*d^6 - 6*a*b^6
*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a
^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d))/((e*x + d)^(5/2)*e^7))/e
```

mupad [B] time = 0.08, size = 388, normalized size = 1.85

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(7/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(9/2))/(9*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(7/2))
/(7*e^8) + ((d + e*x)^2*(42*b^7*d^5 - 42*a^5*b^2*e^5 + 210*a^4*b^3*d*e^4 +
420*a^2*b^5*d^3*e^2 - 420*a^3*b^4*d^2*e^3 - 210*a*b^6*d^4*e) - (d + e*x)*((
```

```
14*b^7*d^6)/3 + (14*a^6*b*e^6)/3 - 28*a^5*b^2*d*e^5 + 70*a^2*b^5*d^4*e^2 -
(280*a^3*b^4*d^3*e^3)/3 + 70*a^4*b^3*d^2*e^4 - 28*a*b^6*d^5*e) - (2*a^7*e^7
)/5 + (2*b^7*d^7)/5 + (42*a^2*b^5*d^5*e^2)/5 - 14*a^3*b^4*d^4*e^3 + 14*a^4*
b^3*d^3*e^4 - (42*a^5*b^2*d^2*e^5)/5 - (14*a*b^6*d^6*e)/5 + (14*a^6*b*d*e^6
)/5)/(e^8*(d + e*x)^(5/2)) + (70*b^3*(a*e - b*d)^4*(d + e*x)^(1/2))/e^8 + (
70*b^4*(a*e - b*d)^3*(d + e*x)^(3/2))/(3*e^8) + (42*b^5*(a*e - b*d)^2*(d +
e*x)^(5/2))/(5*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1841 $\int \frac{(a+bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=138

$$-\frac{2(bd-ae)^{7/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}+\frac{2\sqrt{d+ex}\,(bd-ae)^3}{b^4}+\frac{2(d+ex)^{3/2}(bd-ae)^2}{3b^3}+\frac{2(d+ex)^{5/2}(bd-ae)}{5b^2}+\frac{2(d+ex)^{7/2}}{7b}$$

Rubi [A] time = 0.12, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 50, 63, 208}

$$\frac{2\sqrt{d+ex}\,(bd-ae)^3}{b^4}+\frac{2(d+ex)^{3/2}(bd-ae)^2}{3b^3}+\frac{2(d+ex)^{5/2}(bd-ae)}{5b^2}-\frac{2(bd-ae)^{7/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}+\frac{2(d+ex)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(b*d - a*e)^3*Sqrt[d + e*x])/b^4 + (2*(b*d - a*e)^2*(d + e*x)^(3/2))/(3*
b^3) + (2*(b*d - a*e)*(d + e*x)^(5/2))/(5*b^2) + (2*(d + e*x)^(7/2))/(7*b)
- (2*(b*d - a*e)^(7/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^
(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx = \int \frac{(d+ex)^{7/2}}{a+bx}\,dx$$
$$= \frac{2(d+ex)^{7/2}}{7b} + \frac{(bd-ae)\int \frac{(d+ex)^{5/2}}{a+bx}\,dx}{b}$$
$$= \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/2}}{7b} + \frac{(bd-ae)^2\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{b^2}$$
$$= \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/2}}{7b} + \frac{(bd-ae)^3\int \frac{\sqrt{d+ex}}{a+bx}}{b^3}$$
$$= \frac{2(bd-ae)^3\sqrt{d+ex}}{b^4} + \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/}}{7b}$$
$$= \frac{2(bd-ae)^3\sqrt{d+ex}}{b^4} + \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/}}{7b}$$
$$= \frac{2(bd-ae)^3\sqrt{d+ex}}{b^4} + \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/}}{7b}$$

Mathematica [A] time = 0.22, size = 132, normalized size = 0.96

$$\frac{2(bd-ae)\left(5(bd-ae)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)}{15b^{9/2}}+\frac{2(d+ex)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2))/(7*b) + (2*(b*d - a*e)*(3*b^(5/2)*(d + e*x)^(5/2) + 5*(
b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(
3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])))/(15*b^(9/2))
```

IntegrateAlgebraic [A] time = 0.14, size = 190, normalized size = 1.38

$$\frac{2\sqrt{d+ex}\left(-105a^3e^3+35a^2be^2(d+ex)+315a^2bde^2-315ab^2d^2e-21ab^2e(d+ex)^2-70ab^2de(d+ex)+105b^3d^3+35b^3d^2(d+ex)+15b^3(d+ex)^3+21b^3d(d+ex)^2\right)}{105b^4}-\frac{2(ae-bd)^{7/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(105*b^3*d^3 - 315*a*b^2*d^2*e + 315*a^2*b*d*e^2 - 105*a^3
*e^3 + 35*b^3*d^2*(d + e*x) - 70*a*b^2*d*e*(d + e*x) + 35*a^2*b*e^2*(d + e*
x) + 21*b^3*d*(d + e*x)^2 - 21*a*b^2*e*(d + e*x)^2 + 15*b^3*(d + e*x)^3))/(
105*b^4) - (2*(-(b*d) + a*e)^(7/2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[
d + e*x])/(b*d - a*e)])/b^(9/2)
```

fricas [A] time = 0.44, size = 424, normalized size = 3.07

$$\left[-\frac{105\left(b^3d^3-3ab^2d^2e+3a^2bde^2-a^3e^3\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2bd-ae+2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(15b^3e^3x^3+176b^3d^3-406ab^2d^2e+350a^2bde^2-105a^3e^3+3\left(22b^3de^2-7ab^2e^3\right)x^2+\left(122b^3d^2e-112ab^2de^2+35a^2be^3\right)x\right)\sqrt{ex+d}}{105b^4}, -\frac{2\left(105\left(b^3d^3-3ab^2d^2e+3a^2bde^2-a^3e^3\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(15b^3e^3x^3+176b^3d^3-406ab^2d^2e+350a^2bde^2-105a^3e^3+3\left(22b^3de^2-7ab^2e^3\right)x^2+\left(122b^3d^2e-112ab^2de^2+35a^2be^3\right)x\right)\sqrt{ex+d}\right)}{105b^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/105*(105*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt((b*d
- a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))
```

```
/(b*x + a)) - 2*(15*b^3*e^3*x^3 + 176*b^3*d^3 - 406*a*b^2*d^2*e + 350*a^2*b
*d*e^2 - 105*a^3*e^3 + 3*(22*b^3*d*e^2 - 7*a*b^2*e^3)*x^2 + (122*b^3*d^2*e
- 112*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sqrt(e*x + d))/b^4, -2/105*(105*(b^3*d
^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-(b*d - a*e)/b)*arctan(-
sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (15*b^3*e^3*x^3 + 176*b
^3*d^3 - 406*a*b^2*d^2*e + 350*a^2*b*d*e^2 - 105*a^3*e^3 + 3*(22*b^3*d*e^2
- 7*a*b^2*e^3)*x^2 + (122*b^3*d^2*e - 112*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sq
rt(e*x + d))/b^4]
```

giac [B] time = 0.19, size = 264, normalized size = 1.91

$$\frac{2\left(b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^4} + \frac{2\left(15\,(xe+d)^{\frac{7}{2}}b^6 + 21\,(xe+d)^{\frac{5}{2}}b^6d + 35\,(xe+d)^{\frac{3}{2}}b^6d^2 + 105\,\sqrt{xe+d}\,b^6d^3 - 21\,(xe+d)^{\frac{5}{2}}ab^5e - 70\,(xe+d)^{\frac{3}{2}}ab^5de - 315\,\sqrt{xe+d}\,ab^5d^2e + 35\,(xe+d)^{\frac{3}{2}}a^2b^4e^2 + 315\,\sqrt{xe+d}\,a^2b^4de^2 - 105\,\sqrt{xe+d}\,a^3b^3e^3\right)}{105\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*a
rctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) + 2/
105*(15*(x*e + d)^(7/2)*b^6 + 21*(x*e + d)^(5/2)*b^6*d + 35*(x*e + d)^(3/2)
*b^6*d^2 + 105*sqrt(x*e + d)*b^6*d^3 - 21*(x*e + d)^(5/2)*a*b^5*e - 70*(x*e
 + d)^(3/2)*a*b^5*d*e - 315*sqrt(x*e + d)*a*b^5*d^2*e + 35*(x*e + d)^(3/2)*
a^2*b^4*e^2 + 315*sqrt(x*e + d)*a^2*b^4*d*e^2 - 105*sqrt(x*e + d)*a^3*b^3*e
^3)/b^7
```

maple [B] time = 0.06, size = 380, normalized size = 2.75

$$\frac{2a^4e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^4} - \frac{8a^3d\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^3} + \frac{12a^2d^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b^2} - \frac{8a\,d^3e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}\,b} + \frac{2d^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)b}} - \frac{2\sqrt{ex+d}\,a^3e^3}{b^4} + \frac{6\sqrt{ex+d}\,a^2d\,e^2}{b^3} - \frac{6\sqrt{ex+d}\,a\,d^2e}{b^2} + \frac{2\sqrt{ex+d}\,d^3}{b} + \frac{2\,(ex+d)^{\frac{3}{2}}\,a^2e^2}{3b^3} - \frac{4\,(ex+d)^{\frac{3}{2}}\,ade}{3b^2} + \frac{2\,(ex+d)^{\frac{3}{2}}\,d^2}{3b} - \frac{2\,(ex+d)^{\frac{5}{2}}\,ae}{5b^2} + \frac{2\,(ex+d)^{\frac{5}{2}}\,d}{5b} + \frac{2\,(ex+d)^{\frac{7}{2}}}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/7*(e*x+d)^(7/2)/b-2/5/b^2*(e*x+d)^(5/2)*a*e+2/5/b*(e*x+d)^(5/2)*d+2/3/b^3
*(e*x+d)^(3/2)*a^2*e^2-4/3/b^2*(e*x+d)^(3/2)*a*d*e+2/3/b*(e*x+d)^(3/2)*d^2-
2/b^4*a^3*e^3*(e*x+d)^(1/2)+6/b^3*a^2*d*e^2*(e*x+d)^(1/2)-6/b^2*a*d^2*e*(e*
x+d)^(1/2)+2/b*d^3*(e*x+d)^(1/2)+2/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*e^4-8/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*d*e^3+12/b^2/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*d^2*e^2-8/b/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d^3*e+2/((a*e-b*d)*b)^(1/2)*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.06, size = 165, normalized size = 1.20

$$\frac{2\,{\left(d+e\,x\right)}^{7/2}}{7\,b}-\frac{2\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,b^2}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{7/2}\,\sqrt{d+e\,x}}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}\right)\,{\left(a\,e-b\,d\right)}^{7/2}}{b^{9/2}}+\frac{2\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{3/2}}{3\,b^3}-\frac{2\,{\left(a\,e-b\,d\right)}^3\,\sqrt{d+e\,x}}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(7/2))/(7*b) - (2*(a*e - b*d)*(d + e*x)^(5/2))/(5*b^2) + (2*at
an((b^(1/2)*(a*e - b*d)^(7/2)*(d + e*x)^(1/2))/(a^4*e^4 + b^4*d^4 + 6*a^2*b
^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))*(a*e - b*d)^(7/2))/b^(9/2) + (
2*(a*e - b*d)^2*(d + e*x)^(3/2))/(3*b^3) - (2*(a*e - b*d)^3*(d + e*x)^(1/2)
)/b^4
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1842 $\int \frac{(a+bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=112

$$-\frac{2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}+\frac{2\sqrt{d+ex}\,(bd-ae)^2}{b^3}+\frac{2(d+ex)^{3/2}(bd-ae)}{3b^2}+\frac{2(d+ex)^{5/2}}{5b}$$

Rubi [A] time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 50, 63, 208}

$$\frac{2\sqrt{d+ex}\,(bd-ae)^2}{b^3}+\frac{2(d+ex)^{3/2}(bd-ae)}{3b^2}-\frac{2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}+\frac{2(d+ex)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(b*d - a*e)^2*Sqrt[d + e*x])/b^3 + (2*(b*d - a*e)*(d + e*x)^(3/2))/(3*b^
2) + (2*(d + e*x)^(5/2))/(5*b) - (2*(b*d - a*e)^(5/2)*ArcTanh[(Sqrt[b]*Sqrt
[d + e*x])/Sqrt[b*d - a*e]])/b^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^{5/2}}{a+bx}\,dx \\
&= \frac{2(d+ex)^{5/2}}{5b} + \frac{(bd-ae)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{b} \\
&= \frac{2(bd-ae)(d+ex)^{3/2}}{3b^2} + \frac{2(d+ex)^{5/2}}{5b} + \frac{(bd-ae)^2\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{b^2} \\
&= \frac{2(bd-ae)^2\sqrt{d+ex}}{b^3} + \frac{2(bd-ae)(d+ex)^{3/2}}{3b^2} + \frac{2(d+ex)^{5/2}}{5b} + \frac{(bd-ae)^3\int \frac{1}{(a+bx)\sqrt{d}}}{b^3} \\
&= \frac{2(bd-ae)^2\sqrt{d+ex}}{b^3} + \frac{2(bd-ae)(d+ex)^{3/2}}{3b^2} + \frac{2(d+ex)^{5/2}}{5b} + \frac{\left(2(bd-ae)^3\right)\text{Subst}\Big(}{} \\
&= \frac{2(bd-ae)^2\sqrt{d+ex}}{b^3} + \frac{2(bd-ae)(d+ex)^{3/2}}{3b^2} + \frac{2(d+ex)^{5/2}}{5b} - \frac{2(bd-ae)^{5/2}\tanh^{-1}}{b^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.12, size = 105, normalized size = 0.94

$$
\frac{2(bd-ae)\left(\sqrt{b}\sqrt{d+ex}\,(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{7/2}}+\frac{2(d+ex)^{5/2}}{5b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2))/(5*b) + (2*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d -
3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b
*d - a*e]]))/(3*b^(7/2))
```

IntegrateAlgebraic [A] time = 0.12, size = 130, normalized size = 1.16

$$
\frac{2\sqrt{d+ex}\left(15a^2e^2-5abe(d+ex)-30abde+15b^2d^2+3b^2(d+ex)^2+5b^2d(d+ex)\right)}{15b^3}+\frac{2(ae-bd)^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(15*b^2*d^2 - 30*a*b*d*e + 15*a^2*e^2 + 5*b^2*d*(d + e*x)
- 5*a*b*e*(d + e*x) + 3*b^2*(d + e*x)^2))/(15*b^3) + (2*(-(b*d) + a*e)^(5/2
)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/b^(7/2)
```

fricas [A] time = 0.49, size = 290, normalized size = 2.59

$$
\left[\frac{15\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(3\,b^2e^2x^2+23\,b^2d^2-35\,abde+15\,a^2e^2+\left(11\,b^2de-5\,abe^2\right)x\right)\sqrt{ex+d}}{15\,b^3},-\frac{2\left(15\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(3\,b^2e^2x^2+23\,b^2d^2-35\,abde+15\,a^2e^2+\left(11\,b^2de-5\,abe^2\right)x\right)\sqrt{ex+d}\right)}{15\,b^3}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/15*(15*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt((b*d - a*e)/b)*log((b*e*x +
2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(3*b^2*
e^2*x^2 + 23*b^2*d^2 - 35*a*b*d*e + 15*a^2*e^2 + (11*b^2*d*e - 5*a*b*e^2)*x
)*sqrt(e*x + d))/b^3, -2/15*(15*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt(-(b*d
```

```
- a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (3*b^
2*e^2*x^2 + 23*b^2*d^2 - 35*a*b*d*e + 15*a^2*e^2 + (11*b^2*d*e - 5*a*b*e^2)
*x)*sqrt(e*x + d))/b^3]
```

giac [A] time = 0.17, size = 180, normalized size = 1.61

$$\frac{2\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{\sqrt{-b^{2}d+abe}\,b^{3}}+\frac{2\left(3\,(xe+d)^{\frac{5}{2}}b^{4}+5\,(xe+d)^{\frac{3}{2}}b^{4}d+15\,\sqrt{xe+d}\,b^{4}d^{2}-5\,(xe+d)^{\frac{3}{2}}ab^{3}e-30\,\sqrt{xe+d}\,ab^{3}de+15\,\sqrt{xe+d}\,a^{2}b^{2}e^{2}\right)}{15\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*arctan(sqrt(x*e + d)*
b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^3) + 2/15*(3*(x*e + d)^(5/2
)*b^4 + 5*(x*e + d)^(3/2)*b^4*d + 15*sqrt(x*e + d)*b^4*d^2 - 5*(x*e + d)^(3
/2)*a*b^3*e - 30*sqrt(x*e + d)*a*b^3*d*e + 15*sqrt(x*e + d)*a^2*b^2*e^2)/b^
5
```

maple [B] time = 0.05, size = 263, normalized size = 2.35

$$-\frac{2a^{3}e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^{3}}+\frac{6a^{2}d\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^{2}}-\frac{6a\,d^{2}e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{2d^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}+\frac{2\sqrt{ex+d}\,a^{2}e^{2}}{b^{3}}-\frac{4\sqrt{ex+d}\,ade}{b^{2}}+\frac{2\sqrt{ex+d}\,d^{2}}{b}-\frac{2\,(ex+d)^{\frac{3}{2}}\,ae}{3b^{2}}+\frac{2\,(ex+d)^{\frac{3}{2}}\,d}{3b}+\frac{2\,(ex+d)^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/5*(e*x+d)^(5/2)/b-2/3/b^2*(e*x+d)^(3/2)*a*e+2/3/b*(e*x+d)^(3/2)*d+2/b^3*a
^2*e^2*(e*x+d)^(1/2)-4/b^2*a*d*e*(e*x+d)^(1/2)+2/b*d^2*(e*x+d)^(1/2)-2/b^3/
((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*e^3+6/b
^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*d*e^
2-6/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d^2
*e+2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.07, size = 130, normalized size = 1.16

$$\frac{2\,{\left(d+e\,x\right)}^{5/2}}{5\,b}-\frac{2\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,b^2}+\frac{2\,{\left(a\,e-b\,d\right)}^2\,\sqrt{d+e\,x}}{b^3}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{5/2}\,\sqrt{d+e\,x}}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}\right)\,{\left(a\,e-b\,d\right)}^{5/2}}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(5/2))/(5*b) - (2*(a*e - b*d)*(d + e*x)^(3/2))/(3*b^2) + (2*(a
*e - b*d)^2*(d + e*x)^(1/2))/b^3 - (2*atan((b^(1/2)*(a*e - b*d)^(5/2)*(d +
e*x)^(1/2))/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))*(a*e - b*d
)^(5/2))/b^(7/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] Timed out
```

3.1843 $\int \frac{(a+bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=86

$$-\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}+\frac{2\sqrt{d+ex}\,(bd-ae)}{b^2}+\frac{2(d+ex)^{3/2}}{3b}$$

Rubi [A] time = 0.04, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 50, 63, 208}

$$\frac{2\sqrt{d+ex}\,(bd-ae)}{b^2}-\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}+\frac{2(d+ex)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(b*d - a*e)*Sqrt[d + e*x])/b^2 + (2*(d + e*x)^(3/2))/(3*b) - (2*(b*d - a
*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(5/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^{3/2}}{a+bx}\,dx \\
&= \frac{2(d+ex)^{3/2}}{3b} + \frac{(bd-ae)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{b} \\
&= \frac{2(bd-ae)\sqrt{d+ex}}{b^2} + \frac{2(d+ex)^{3/2}}{3b} + \frac{(bd-ae)^2\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{b^2} \\
&= \frac{2(bd-ae)\sqrt{d+ex}}{b^2} + \frac{2(d+ex)^{3/2}}{3b} + \frac{\left(2(bd-ae)^2\right)\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{b^2e} \\
&= \frac{2(bd-ae)\sqrt{d+ex}}{b^2} + \frac{2(d+ex)^{3/2}}{3b} - \frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 77, normalized size = 0.90

$$
\frac{2\sqrt{d+ex}\,(-3ae+4bd+bex)}{3b^2} - \frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x))/(3*b^2) - (2*(b*d - a*e)^(3/2)*Ar
cTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(5/2)
```

IntegrateAlgebraic [A] time = 0.13, size = 90, normalized size = 1.05

$$
\frac{2\sqrt{d+ex}\,(-3ae+b(d+ex)+3bd)}{3b^2} - \frac{2(ae-bd)^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(3*b*d - 3*a*e + b*(d + e*x)))/(3*b^2) - (2*(-(b*d) + a*e)
^(3/2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/b^(5
/2)
```

fricas [A] time = 0.47, size = 188, normalized size = 2.19

$$
\left[-\frac{3\,(bd-ae)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\,(bex+4\,bd-3\,ae)\sqrt{ex+d}}{3\,b^2}, -\frac{2\left(3\,(bd-ae)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-(bex+4\,bd-3\,ae)\sqrt{ex+d}\right)}{3\,b^2}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/3*(3*(b*d - a*e)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(
e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(b*e*x + 4*b*d - 3*a*e)*sqrt
(e*x + d))/b^2, -2/3*(3*(b*d - a*e)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
 d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (b*e*x + 4*b*d - 3*a*e)*sqrt(e*x
+ d))/b^2]
```

giac [A] time = 0.19, size = 112, normalized size = 1.30

$$\frac{2\left(b^2d^2-2\,abde+a^2e^2\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^2}+\frac{2\left((xe+d)^{\frac{3}{2}}b^2+3\,\sqrt{xe+d}\,b^2d-3\,\sqrt{xe+d}\,abe\right)}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*
e))/(sqrt(-b^2*d + a*b*e)*b^2) + 2/3*((x*e + d)^(3/2)*b^2 + 3*sqrt(x*e + d)
*b^2*d - 3*sqrt(x*e + d)*a*b*e)/b^3
```

maple [B] time = 0.05, size = 167, normalized size = 1.94

$$\frac{2a^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^2}-\frac{4ade\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{2d^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}-\frac{2\sqrt{ex+d}\,ae}{b^2}+\frac{2\sqrt{ex+d}\,d}{b}+\frac{2\,(ex+d)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3*(e*x+d)^(3/2)/b-2/b^2*a*e*(e*x+d)^(1/2)+2/b*(e*x+d)^(1/2)*d+2/b^2/((a*e
-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*e^2-4/b/((a*
e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d*e+2/((a*e-b
*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.07, size = 93, normalized size = 1.08

$$\frac{2\,{\left(d+e\,x\right)}^{3/2}}{3\,b}-\frac{2\,\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}}{b^2}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{3/2}\,\sqrt{d+e\,x}}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}\right)\,{\left(a\,e-b\,d\right)}^{3/2}}{b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(3/2))/(3*b) - (2*(a*e - b*d)*(d + e*x)^(1/2))/b^2 + (2*atan((
b^(1/2)*(a*e - b*d)^(3/2)*(d + e*x)^(1/2))/(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))
*(a*e - b*d)^(3/2))/b^(5/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1844 $\int \frac{(a+bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=62

$$\frac{2\sqrt{d+ex}}{b}-\frac{2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

Rubi [A] time = 0.03, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 50, 63, 208}

$$\frac{2\sqrt{d+ex}}{b}-\frac{2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x])/b - (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/b^(3/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx = \int \frac{\sqrt{d+ex}}{a+bx}\,dx$$
$$= \frac{2\sqrt{d+ex}}{b} + \frac{(bd-ae)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{b}$$
$$= \frac{2\sqrt{d+ex}}{b} + \frac{(2(bd-ae))\,\mathrm{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{be}$$
$$= \frac{2\sqrt{d+ex}}{b} - \frac{2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

Mathematica [A] time = 0.02, size = 62, normalized size = 1.00

$$\frac{2\sqrt{d+ex}}{b} - \frac{2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x])/b - (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/b^(3/2)
```

IntegrateAlgebraic [A] time = 0.07, size = 72, normalized size = 1.16

$$\frac{2\sqrt{ae-bd}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{3/2}} + \frac{2\sqrt{d+ex}}{b}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x])/b + (2*Sqrt[-(b*d) + a*e]*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a
*e]*Sqrt[d + e*x])/(b*d - a*e)])/b^(3/2)
```

fricas [A] time = 0.45, size = 143, normalized size = 2.31

$$\left[\frac{\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\,\sqrt{ex+d}}{b}, -\frac{2\left(\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\sqrt{ex+d}\right)}{b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [(sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*
d - a*e)/b))/(b*x + a)) + 2*sqrt(e*x + d))/b, -2*(sqrt(-(b*d - a*e)/b)*arct
an(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - sqrt(e*x + d))/b]
```

giac [A] time = 0.16, size = 67, normalized size = 1.08

$$\frac{2\,(bd-ae)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b} + \frac{2\,\sqrt{xe+d}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b*d - a*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a
*b*e)*b) + 2*sqrt(x*e + d)/b
```

maple [A] time = 0.05, size = 92, normalized size = 1.48

$$-\frac{2ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b}+\frac{2d\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}+\frac{2\sqrt{ex+d}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*(e*x+d)^(1/2)/b-2/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*a*e+2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/
2)*b)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.06, size = 50, normalized size = 0.81

$$\frac{2\,\sqrt{d+e\,x}}{b}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)\,\sqrt{a\,e-b\,d}}{b^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(1/2))/b - (2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)
)*(a*e - b*d)^(1/2))/b^(3/2)
```

sympy [A] time = 58.92, size = 61, normalized size = 0.98

$$\frac{2\left(\frac{e\sqrt{d+ex}}{b}-\frac{e(ae-bd)\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{b^{2}\sqrt{\frac{ae-bd}{b}}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*(e*sqrt(d + e*x)/b - e*(a*e - b*d)*atan(sqrt(d + e*x)/sqrt((a*e - b*d)/b)
)/(b**2*sqrt((a*e - b*d)/b)))/e
```

3.1845 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=47

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {27, 63, 208}

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*Sqrt[b*d - a
*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx\\
&= \frac{2\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{e}\\
&= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.00

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*Sqrt[b*d - a
*e])
```

IntegrateAlgebraic [A] time = 0.06, size = 57, normalized size = 1.21

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{\sqrt{b}\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(Sqrt[b
]*Sqrt[-(b*d) + a*e])
```

fricas [A] time = 0.47, size = 119, normalized size = 2.53

$$\left[\frac{\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)}{\sqrt{b^2d-abe}}, \frac{2\,\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)}{b^2d-abe}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] [log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a))
/sqrt(b^2*d - a*b*e), 2*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sq
rt(e*x + d)/(b*e*x + b*d))/(b^2*d - a*b*e)]
```

giac [A] time = 0.23, size = 41, normalized size = 0.87

$$\frac{2\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/sqrt(-b^2*d + a*b*e)
```

maple [A] time = 0.05, size = 37, normalized size = 0.79

$$\frac{2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.05, size = 38, normalized size = 0.81

$$\frac{2\,\mathrm{atan}\left(\frac{b\,\sqrt{d+e\,x}}{\sqrt{a\,b\,e-b^2\,d}}\right)}{\sqrt{a\,b\,e-b^2\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*atan((b*(d + e*x)^(1/2))/(a*b*e - b^2*d)^(1/2)))/(a*b*e - b^2*d)^(1/2)
```

sympy [A] time = 96.51, size = 44, normalized size = 0.94

$$-\frac{2\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{b}{ae-bd}}\,\sqrt{d+ex}}\right)}{\sqrt{\frac{b}{ae-bd}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] -2*atan(1/(sqrt(b/(a*e - b*d))*sqrt(d + e*x)))/(sqrt(b/(a*e - b*d))*(a*e -
b*d))
```

3.1846 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=69

$$\frac{2}{\sqrt{d+ex}\,(bd-ae)}-\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}$$

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{2}{\sqrt{d+ex}\,(bd-ae)}-\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/((b*d - a*e)*Sqrt[d + e*x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/
Sqrt[b*d - a*e]])/(b*d - a*e)^(3/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx$$
$$= \frac{2}{(bd-ae)\sqrt{d+ex}} + \frac{b\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{bd-ae}$$
$$= \frac{2}{(bd-ae)\sqrt{d+ex}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{e(bd-ae)}$$
$$= \frac{2}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}$$

Mathematica [C] time = 0.01, size = 46, normalized size = 0.67

$$-\frac{2\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{\sqrt{d+ex}\,(ae-bd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*Hypergeometric2F1[-1/2, 1, 1/2, (b*(d + e*x))/(b*d - a*e)])/((-(b*d) +
a*e)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.10, size = 79, normalized size = 1.14

$$\frac{2}{\sqrt{d+ex}\,(bd-ae)} + \frac{2\sqrt{b}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/((b*d - a*e)*Sqrt[d + e*x]) + (2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*
e]*Sqrt[d + e*x])/(b*d - a*e)])/(-(b*d) + a*e)^(3/2)
```

fricas [A] time = 0.46, size = 214, normalized size = 3.10

$$\left[-\frac{(ex+d)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2\,bd-ae+2\,(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\sqrt{ex+d}}{bd^2-ade+\left(bde-ae^2\right)x}, -\frac{2\left((ex+d)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-\sqrt{ex+d}\right)}{bd^2-ade+\left(bde-ae^2\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-((e*x + d)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*s
qrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*sqrt(e*x + d))/(b*d^2 - a*
d*e + (b*d*e - a*e^2)*x), -2*((e*x + d)*sqrt(-b/(b*d - a*e))*arctan(-(b*d -
 a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - sqrt(e*x + d))/(b
*d^2 - a*d*e + (b*d*e - a*e^2)*x)]
```

giac [A] time = 0.18, size = 75, normalized size = 1.09

$$\frac{2\,b\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,(bd-ae)}+\frac{2}{(bd-ae)\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*(b*d
 - a*e)) + 2/((b*d - a*e)*sqrt(x*e + d))
```

maple [A] time = 0.06, size = 68, normalized size = 0.99

$$-\frac{2b\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}}-\frac{2}{(ae-bd)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -2*b/(a*e-b*d)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)-2/(a*e-b*d)/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.07, size = 57, normalized size = 0.83

$$-\frac{2}{(a\,e-b\,d)\,\sqrt{d+e\,x}}-\frac{2\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{(a\,e-b\,d)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - 2/((a*e - b*d)*(d + e*x)^(1/2)) - (2*b^(1/2)*atan((b^(1/2)*(d + e*x)^(1/2
))/(a*e - b*d)^(1/2)))/(a*e - b*d)^(3/2)
```

sympy [A] time = 121.04, size = 60, normalized size = 0.87

$$-\frac{2}{\sqrt{d+ex}\,(ae-bd)}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{\sqrt{\frac{ae-bd}{b}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -2/(sqrt(d + e*x)*(a*e - b*d)) - 2*atan(sqrt(d + e*x)/sqrt((a*e - b*d)/b))/
(sqrt((a*e - b*d)/b)*(a*e - b*d))
```

3.1847 $\int \frac{a+bx}{(d+ex)^{5/2}(a^2+2abx+b^2x^2)}\,dx$

Optimal. Leaf size=93

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}+\frac{2b}{\sqrt{d+ex}\,(bd-ae)^2}+\frac{2}{3(d+ex)^{3/2}(bd-ae)}$$

Rubi [A] time = 0.05, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}+\frac{2b}{\sqrt{d+ex}\,(bd-ae)^2}+\frac{2}{3(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/(3*(b*d - a*e)*(d + e*x)^(3/2)) + (2*b)/((b*d - a*e)^2*Sqrt[d + e*x]) - (
2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(5/
2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{1}{(a+bx)(d+ex)^{5/2}}\,dx$$
$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{b\int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx}{bd-ae}$$
$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b}{(bd-ae)^2\sqrt{d+ex}} + \frac{b^2\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{(bd-ae)^2}$$
$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b}{(bd-ae)^2\sqrt{d+ex}} + \frac{\left(2b^2\right)\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,d\right.}{e(bd-ae)^2}$$
$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}$$

Mathematica [C] time = 0.01, size = 48, normalized size = 0.52

$$\frac{2\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{3(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*Hypergeometric2F1[-3/2, 1, -1/2, (b*(d + e*x))/(b*d - a*e)])/(3*(b*d - a
*e)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.15, size = 97, normalized size = 1.04

$$\frac{2(-ae+3b(d+ex)+bd)}{3(d+ex)^{3/2}(bd-ae)^2} - \frac{2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*(b*d - a*e + 3*b*(d + e*x)))/(3*(b*d - a*e)^2*(d + e*x)^(3/2)) - (2*b^(3
/2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(-(b*d)
 + a*e)^(5/2)
```

fricas [B] time = 0.43, size = 398, normalized size = 4.28

$$\left[\frac{3\left(be^2x^2+2\,bdex+bd^2\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2\,bd-ae-2\,(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)+2\,(3\,bex+4\,bd-ae)\sqrt{ex+d}}{3\left(b^2d^4-2\,abd^3e+a^2d^2e^2+\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)x^2+2\left(b^2d^3e-2\,abd^2e^2+a^2de^3\right)x\right)}, -\frac{2\left(3\left(be^2x^2+2\,bdex+bd^2\right)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-(3\,bex+4\,bd-ae)\sqrt{ex+d}\right)}{3\left(b^2d^4-2\,abd^3e+a^2d^2e^2+\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)x^2+2\left(b^2d^3e-2\,abd^2e^2+a^2de^3\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/3*(3*(b*e^2*x^2 + 2*b*d*e*x + b*d^2)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*
b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2
*(3*b*e*x + 4*b*d - a*e)*sqrt(e*x + d))/(b^2*d^4 - 2*a*b*d^3*e + a^2*d^2*e^
2 + (b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*x^2 + 2*(b^2*d^3*e - 2*a*b*d^2*e^
2 + a^2*d*e^3)*x), -2/3*(3*(b*e^2*x^2 + 2*b*d*e*x + b*d^2)*sqrt(-b/(b*d - a
```

```
*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d))
- (3*b*e*x + 4*b*d - a*e)*sqrt(e*x + d))/(b^2*d^4 - 2*a*b*d^3*e + a^2*d^2*e
^2 + (b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*x^2 + 2*(b^2*d^3*e - 2*a*b*d^2*e
^2 + a^2*d*e^3)*x)]
```

giac [A] time = 0.18, size = 119, normalized size = 1.28

$$\frac{2\,b^2\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-b^2d+abe}}+\frac{2\,(3\,(xe+d)b+bd-ae)}{3\left(b^2d^2-2\,abde+a^2e^2\right)(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((b^2*d^2 - 2*a*b*d*e +
a^2*e^2)*sqrt(-b^2*d + a*b*e)) + 2/3*(3*(x*e + d)*b + b*d - a*e)/((b^2*d^2
- 2*a*b*d*e + a^2*e^2)*(x*e + d)^(3/2))
```

maple [A] time = 0.06, size = 90, normalized size = 0.97

$$\frac{2b^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}}+\frac{2b}{(ae-bd)^2\sqrt{ex+d}}-\frac{2}{3\,(ae-bd)\,(ex+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*b^2/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)-2/3/(a*e-b*d)/(e*x+d)^(3/2)+2*b/(a*e-b*d)^2/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.09, size = 100, normalized size = 1.08

$$\frac{2\,b^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^{5/2}}\right)}{{\left(a\,e-b\,d\right)}^{5/2}}-\frac{\frac{2}{3\,\left(a\,e-b\,d\right)}-\frac{2\,b\,\left(d+e\,x\right)}{{\left(a\,e-b\,d\right)}^2}}{{\left(d+e\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b^(3/2)*atan((b^(1/2)*(d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(
a*e - b*d)^(5/2)))/(a*e - b*d)^(5/2) - (2/(3*(a*e - b*d)) - (2*b*(d + e*x))
/(a*e - b*d)^2)/(d + e*x)^(3/2)
```

sympy [A] time = 136.91, size = 83, normalized size = 0.89

$$\frac{2b}{\sqrt{d+ex}\,(ae-bd)^2}+\frac{2b\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{\sqrt{\frac{ae-bd}{b}}\,(ae-bd)^2}-\frac{2}{3\,(d+ex)^{\frac{3}{2}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*b/(sqrt(d + e*x)*(a*e - b*d)**2) + 2*b*atan(sqrt(d + e*x)/sqrt((a*e - b*d
)/b))/(sqrt((a*e - b*d)/b)*(a*e - b*d)**2) - 2/(3*(d + e*x)**(3/2)*(a*e - b
*d))
```

3.1848 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=119

$$-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{7/2}}+\frac{2b^2}{\sqrt{d+ex}\,(bd-ae)^3}+\frac{2b}{3(d+ex)^{3/2}(bd-ae)^2}+\frac{2}{5(d+ex)^{5/2}(bd-ae)}$$

Rubi [A] time = 0.06, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{2b^2}{\sqrt{d+ex}\,(bd-ae)^3}-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{7/2}}+\frac{2b}{3(d+ex)^{3/2}(bd-ae)^2}+\frac{2}{5(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/(5*(b*d - a*e)*(d + e*x)^(5/2)) + (2*b)/(3*(b*d - a*e)^2*(d + e*x)^(3/2))
 + (2*b^2)/((b*d - a*e)^3*Sqrt[d + e*x]) - (2*b^(5/2)*ArcTanh[(Sqrt[b]*Sqrt
[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{1}{(a+bx)(d+ex)^{7/2}}\,dx$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{b\int \frac{1}{(a+bx)(d+ex)^{5/2}}\,dx}{bd-ae}$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{b^2\int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx}{(bd-ae)^2}$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{2b^2}{(bd-ae)^3\sqrt{d+ex}} + \cdots$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{2b^2}{(bd-ae)^3\sqrt{d+ex}} + \cdots$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{2b^2}{(bd-ae)^3\sqrt{d+ex}} - \cdots$$

Mathematica [C] time = 0.01, size = 48, normalized size = 0.40

$$\frac{2\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{5(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*Hypergeometric2F1[-5/2, 1, -3/2, (b*(d + e*x))/(b*d - a*e)])/(5*(b*d - a
*e)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.23, size = 137, normalized size = 1.15

$$\frac{2\left(3a^2e^2-5abe(d+ex)-6abde+3b^2d^2+15b^2(d+ex)^2+5b^2d(d+ex)\right)}{15(d+ex)^{5/2}(bd-ae)^3}+\frac{2b^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*(3*b^2*d^2 - 6*a*b*d*e + 3*a^2*e^2 + 5*b^2*d*(d + e*x) - 5*a*b*e*(d + e*
x) + 15*b^2*(d + e*x)^2))/(15*(b*d - a*e)^3*(d + e*x)^(5/2)) + (2*b^(5/2)*A
rcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(-(b*d) + a*
e)^(7/2)
```

fricas [B] time = 0.44, size = 706, normalized size = 5.93

$$\left[-\frac{15\left(b^2e^3x^3+3b^2de^2x^2+3b^2d^2ex+b^2d^3\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2bd-ae+2(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\left(15b^2e^2x^2+23b^2d^2-11abde+3a^2e^2+5\left(7b^2de-abe^2\right)x\right)\sqrt{ex+d}}{15\left(b^3d^6-3ab^2d^5e+3a^2bd^4e^2-a^3d^3e^3+\left(b^3d^3e^3-3ab^2d^2e^4+3a^2bde^5-a^3e^6\right)x^3+3\left(b^3d^4e^2-3ab^2d^3e^3+3a^2bd^2e^4-a^3de^5\right)x^2+3\left(b^3d^5e-3ab^2d^4e^2+3a^2bd^3e^3-a^3d^2e^4\right)x\right)},\ -\frac{2\left(15\left(b^2e^3x^3+3b^2de^2x^2+3b^2d^2ex+b^2d^3\right)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-\left(15b^2e^2x^2+23b^2d^2-11abde+3a^2e^2+5\left(7b^2de-abe^2\right)x\right)\sqrt{ex+d}\right)}{15\left(b^3d^6-3ab^2d^5e+3a^2bd^4e^2-a^3d^3e^3+\left(b^3d^3e^3-3ab^2d^2e^4+3a^2bde^5-a^3e^6\right)x^3+3\left(b^3d^4e^2-3ab^2d^3e^3+3a^2bd^2e^4-a^3de^5\right)x^2+3\left(b^3d^5e-3ab^2d^4e^2+3a^2bd^3e^3-a^3d^2e^4\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/15*(15*(b^2*e^3*x^3 + 3*b^2*d*e^2*x^2 + 3*b^2*d^2*e*x + b^2*d^3)*sqrt(b
/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b
```

```
/(b*d - a*e)))/(b*x + a)) - 2*(15*b^2*e^2*x^2 + 23*b^2*d^2 - 11*a*b*d*e + 3
*a^2*e^2 + 5*(7*b^2*d*e - a*b*e^2)*x)*sqrt(e*x + d))/(b^3*d^6 - 3*a*b^2*d^5
*e + 3*a^2*b*d^4*e^2 - a^3*d^3*e^3 + (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2
*b*d*e^5 - a^3*e^6)*x^3 + 3*(b^3*d^4*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^
4 - a^3*d*e^5)*x^2 + 3*(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3
*d^2*e^4)*x), -2/15*(15*(b^2*e^3*x^3 + 3*b^2*d*e^2*x^2 + 3*b^2*d^2*e*x + b^
2*d^3)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d
- a*e))/(b*e*x + b*d)) - (15*b^2*e^2*x^2 + 23*b^2*d^2 - 11*a*b*d*e + 3*a^2*
e^2 + 5*(7*b^2*d*e - a*b*e^2)*x)*sqrt(e*x + d))/(b^3*d^6 - 3*a*b^2*d^5*e +
3*a^2*b*d^4*e^2 - a^3*d^3*e^3 + (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2*b*d*
e^5 - a^3*e^6)*x^3 + 3*(b^3*d^4*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^4 - a
^3*d*e^5)*x^2 + 3*(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3*d^2*
e^4)*x)]
```

giac [A] time = 0.21, size = 189, normalized size = 1.59

$$\frac{2\,b^3\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{-b^2d+abe}}+\frac{2\left(15\,(xe+d)^2b^2+5\,(xe+d)b^2d+3\,b^2d^2-5\,(xe+d)abe-6\,abde+3\,a^2e^2\right)}{15\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((b^3*d^3 - 3*a*b^2*d^2*
e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-b^2*d + a*b*e)) + 2/15*(15*(x*e + d)^2*b
^2 + 5*(x*e + d)*b^2*d + 3*b^2*d^2 - 5*(x*e + d)*a*b*e - 6*a*b*d*e + 3*a^2*
e^2)/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(x*e + d)^(5/2))
```

maple [A] time = 0.06, size = 112, normalized size = 0.94

$$-\frac{2b^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^3\sqrt{(ae-bd)\,b}}-\frac{2b^2}{(ae-bd)^3\sqrt{ex+d}}+\frac{2b}{3\,(ae-bd)^2\,(ex+d)^{\frac{3}{2}}}-\frac{2}{5\,(ae-bd)\,(ex+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -2*b^3/(a*e-b*d)^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)-2/5/(a*e-b*d)/(e*x+d)^(5/2)-2/(a*e-b*d)^3*b^2/(e*x+d)^(1/2)+2/3*b/(
a*e-b*d)^2/(e*x+d)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.12, size = 137, normalized size = 1.15

$$-\frac{\frac{2}{5\,(a\,e-b\,d)}+\frac{2\,b^2\,(d+e\,x)^2}{(a\,e-b\,d)^3}-\frac{2\,b\,(d+e\,x)}{3\,(a\,e-b\,d)^2}}{(d+e\,x)^{5/2}}-\frac{2\,b^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{(a\,e-b\,d)^{7/2}}\right)}{(a\,e-b\,d)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - (2/(5*(a*e - b*d)) + (2*b^2*(d + e*x)^2)/(a*e - b*d)^3 - (2*b*(d + e*x))/
(3*(a*e - b*d)^2))/(d + e*x)^(5/2) - (2*b^(5/2)*atan((b^(1/2)*(d + e*x)^(1/
2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(a*e - b*d)^(7/2)))
/(a*e - b*d)^(7/2)
```

sympy [A] time = 140.18, size = 109, normalized size = 0.92

$$-\frac{2b^2}{\sqrt{d+ex}\,(ae-bd)^3}-\frac{2b^2\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{\sqrt{\frac{ae-bd}{b}}\,(ae-bd)^3}+\frac{2b}{3\,(d+ex)^{\frac{3}{2}}\,(ae-bd)^2}-\frac{2}{5\,(d+ex)^{\frac{5}{2}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -2*b**2/(sqrt(d + e*x)*(a*e - b*d)**3) - 2*b**2*atan(sqrt(d + e*x)/sqrt((a*
e - b*d)/b))/(sqrt((a*e - b*d)/b)*(a*e - b*d)**3) + 2*b/(3*(d + e*x)**(3/2)
*(a*e - b*d)**2) - 2/(5*(d + e*x)**(5/2)*(a*e - b*d))
```

3.1849 $\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=175

$$-\frac{63e^2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{11/2}}+\frac{63e^2\sqrt{d+ex}\,(bd-ae)^2}{4b^5}+\frac{21e^2(d+ex)^{3/2}(bd-ae)}{4b^4}-\frac{9e(d+ex)^{7/2}}{4b^2(a+bx)}-\frac{(d+ex)^{9}}{2b(a+bx}$$

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 50, 63, 208}

$$\frac{21e^2(d+ex)^{3/2}(bd-ae)}{4b^4}+\frac{63e^2\sqrt{d+ex}\,(bd-ae)^2}{4b^5}-\frac{63e^2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{11/2}}-\frac{9e(d+ex)^{7/2}}{4b^2(a+bx)}-\frac{(d+ex)^{9/2}}{2b(a+bx)^2}+\frac{63e^2(d+ex)^{5/2}}{20b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (63*e^2*(b*d - a*e)^2*Sqrt[d + e*x])/(4*b^5) + (21*e^2*(b*d - a*e)*(d + e*x
)^(3/2))/(4*b^4) + (63*e^2*(d + e*x)^(5/2))/(20*b^3) - (9*e*(d + e*x)^(7/2)
)/(4*b^2*(a + b*x)) - (d + e*x)^(9/2)/(2*b*(a + b*x)^2) - (63*e^2*(b*d - a*
e)^(5/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(d+ex)^{9/2}}{(a+bx)^3}\,dx$$

$$= -\frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{(9e)\int \frac{(d+ex)^{7/2}}{(a+bx)^2}\,dx}{4b}$$

$$= -\frac{9e(d+ex)^{7/2}}{4b^2(a+bx)} - \frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{\left(63e^2\right)\int \frac{(d+ex)^{5/2}}{a+bx}\,dx}{8b^2}$$

$$= \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex)^{7/2}}{4b^2(a+bx)} - \frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{\left(63e^2(bd-ae)\right)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{8b^3}$$

$$= \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex)^{7/2}}{4b^2(a+bx)} - \frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{\left(63e^2 \cdots\right.}{}$$

$$= \frac{63e^2(bd-ae)^2\sqrt{d+ex}}{4b^5} + \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex \cdots}{4b^2(a+b \cdots}$$

$$= \frac{63e^2(bd-ae)^2\sqrt{d+ex}}{4b^5} + \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex \cdots}{4b^2(a+b \cdots}$$

$$= \frac{63e^2(bd-ae)^2\sqrt{d+ex}}{4b^5} + \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex \cdots}{4b^2(a+b \cdots}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.30

$$\frac{2e^2(d+ex)^{11/2}\,{}_2F_1\left(3,\frac{11}{2};\frac{13}{2};-\frac{b(d+ex)}{ae-bd}\right)}{11(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(11/2)*Hypergeometric2F1[3, 11/2, 13/2, -((b*(d + e*x))/(-
(b*d) + a*e))])/(11*(-(b*d) + a*e)^3)
```

IntegrateAlgebraic [A] time = 0.80, size = 306, normalized size = 1.75

$$\frac{e^2\sqrt{d+ex}\left(315a^4e^4+525a^3be^3(d+ex)-1260a^3bde^3+1890a^2b^2d^2e^2+168a^2b^2e^2(d+ex)^2-1575a^2b^2de^2(d+ex)-1260ab^3d^3e+1575ab^3d^2e(d+ex)-24ab^3e(d+ex)^3-336ab^3de(d+ex)^2+315b^4d^4-525b^4d^3(d+ex)+168b^4d^2(d+ex)^2+8b^4(d+ex)^4+24b^4d(d+ex)^3\right)}{20b^5(ae+b(d+ex)-bd)^2}-\frac{63e^2(bd-ae)^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{11/2}\sqrt{ae-bd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(315*b^4*d^4 - 1260*a*b^3*d^3*e + 1890*a^2*b^2*d^2*e^2 -
 1260*a^3*b*d*e^3 + 315*a^4*e^4 - 525*b^4*d^3*(d + e*x) + 1575*a*b^3*d^2*e*
(d + e*x) - 1575*a^2*b^2*d*e^2*(d + e*x) + 525*a^3*b*e^3*(d + e*x) + 168*b^
4*d^2*(d + e*x)^2 - 336*a*b^3*d*e*(d + e*x)^2 + 168*a^2*b^2*e^2*(d + e*x)^2
 + 24*b^4*d*(d + e*x)^3 - 24*a*b^3*e*(d + e*x)^3 + 8*b^4*(d + e*x)^4))/(20*
b^5*(-(b*d) + a*e + b*(d + e*x))^2) - (63*e^2*(b*d - a*e)^3*ArcTan[(Sqrt[b]
```

```
*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*b^(11/2)*Sqrt[-(b*d) +
a*e])
```

fricas [B] time = 0.44, size = 730, normalized size = 4.17

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/40*(315*(a^2*b^2*d^2*e^2 - 2*a^3*b*d*e^3 + a^4*e^4 + (b^4*d^2*e^2 - 2*a*
b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 - 2*a^2*b^2*d*e^3 + a^3*b*e
^4)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqr
t((b*d - a*e)/b))/(b*x + a)) + 2*(8*b^4*e^4*x^4 - 10*b^4*d^4 - 45*a*b^3*d^3
*e + 483*a^2*b^2*d^2*e^2 - 735*a^3*b*d*e^3 + 315*a^4*e^4 + 8*(7*b^4*d*e^3 -
 3*a*b^3*e^4)*x^3 + 24*(12*b^4*d^2*e^2 - 17*a*b^3*d*e^3 + 7*a^2*b^2*e^4)*x^
2 - (85*b^4*d^3*e - 831*a*b^3*d^2*e^2 + 1239*a^2*b^2*d*e^3 - 525*a^3*b*e^4)
*x)*sqrt(e*x + d))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5), -1/20*(315*(a^2*b^2*d^2
*e^2 - 2*a^3*b*d*e^3 + a^4*e^4 + (b^4*d^2*e^2 - 2*a*b^3*d*e^3 + a^2*b^2*e^4
)*x^2 + 2*(a*b^3*d^2*e^2 - 2*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*sqrt(-(b*d - a*e
)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (8*b^4*e^4
*x^4 - 10*b^4*d^4 - 45*a*b^3*d^3*e + 483*a^2*b^2*d^2*e^2 - 735*a^3*b*d*e^3
+ 315*a^4*e^4 + 8*(7*b^4*d*e^3 - 3*a*b^3*e^4)*x^3 + 24*(12*b^4*d^2*e^2 - 17
*a*b^3*d*e^3 + 7*a^2*b^2*e^4)*x^2 - (85*b^4*d^3*e - 831*a*b^3*d^2*e^2 + 123
9*a^2*b^2*d*e^3 - 525*a^3*b*e^4)*x)*sqrt(e*x + d))/(b^7*x^2 + 2*a*b^6*x + a
^2*b^5)]
```

giac [B] time = 0.22, size = 374, normalized size = 2.14

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 63/4*(b^3*d^3*e^2 - 3*a*b^2*d^2*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*arctan(sqrt(
x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^5) - 1/4*(17*(x*e
+ d)^(3/2)*b^4*d^3*e^2 - 15*sqrt(x*e + d)*b^4*d^4*e^2 - 51*(x*e + d)^(3/2)*
a*b^3*d^2*e^3 + 60*sqrt(x*e + d)*a*b^3*d^3*e^3 + 51*(x*e + d)^(3/2)*a^2*b^2
*d*e^4 - 90*sqrt(x*e + d)*a^2*b^2*d^2*e^4 - 17*(x*e + d)^(3/2)*a^3*b*e^5 +
60*sqrt(x*e + d)*a^3*b*d*e^5 - 15*sqrt(x*e + d)*a^4*e^6)/(((x*e + d)*b - b*
d + a*e)^2*b^5) + 2/5*((x*e + d)^(5/2)*b^12*e^2 + 5*(x*e + d)^(3/2)*b^12*d*
e^2 + 30*sqrt(x*e + d)*b^12*d^2*e^2 - 5*(x*e + d)^(3/2)*a*b^11*e^3 - 60*sqr
t(x*e + d)*a*b^11*d*e^3 + 30*sqrt(x*e + d)*a^2*b^10*e^4)/b^15
```

maple [B] time = 0.10, size = 543, normalized size = 3.10

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/5*e^2*(e*x+d)^(5/2)/b^3-2*e^3/b^4*(e*x+d)^(3/2)*a+2*e^2/b^3*(e*x+d)^(3/2)
*d+12*e^4/b^5*a^2*(e*x+d)^(1/2)-24*e^3/b^4*a*d*(e*x+d)^(1/2)+12*e^2/b^3*d^2
*(e*x+d)^(1/2)+17/4*e^5/b^4/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a^3-51/4*e^4/b^3/(b
*e*x+a*e)^2*(e*x+d)^(3/2)*a^2*d+51/4*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a*
d^2-17/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)^(3/2)*d^3+15/4*e^6/b^5/(b*e*x+a*e)^2*(
e*x+d)^(1/2)*a^4-15*e^5/b^4/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^3*d+45/2*e^4/b^3/
```

```
(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^2*d^2-15*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*
a*d^3+15/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)^(1/2)*d^4-63/4*e^5/b^5/((a*e-b*d)*b)
^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3+189/4*e^4/b^4/((a*e-
b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*d-189/4*e^3/b
^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d^2+63
/4*e^2/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.14, size = 361, normalized size = 2.06

$$\left(\frac{2e^2\left(3b^3d-3ab^2e\right)^2}{b^9}-\frac{6e^2\left(ae-bd\right)^2}{b^5}\right)\sqrt{d+ex}+\frac{(d+ex)^{3/2}\left(\frac{17a^3be^5}{4}-\frac{51a^2b^2de^4}{4}+\frac{51ab^3d^2e^3}{4}-\frac{17b^4d^3e^2}{4}\right)+\sqrt{d+ex}\left(\frac{15a^4e^6}{4}-15a^3bde^5+\frac{45a^2b^2d^2e^4}{2}-15ab^3d^3e^3+\frac{15b^4d^4e^2}{4}\right)}{b^7(d+ex)^2-\left(2b^7d-2ab^6e\right)(d+ex)+b^7d^2+a^2b^5e^2-2ab^6de}+\frac{2e^2(d+ex)^{5/2}}{5b^3}+\frac{2e^2\left(3b^3d-3ab^2e\right)(d+ex)^{3/2}}{3b^6}-\frac{63e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2(ae-bd)^{5/2}\sqrt{d+ex}}{a^3e^5-3a^2bde^4+3ab^2d^2e^3-b^3d^3e^2}\right)(ae-bd)^{5/2}}{4b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((2*e^2*(3*b^3*d - 3*a*b^2*e)^2)/b^9 - (6*e^2*(a*e - b*d)^2)/b^5)*(d + e*x)
^(1/2) + ((d + e*x)^(3/2)*((17*a^3*b*e^5)/4 - (17*b^4*d^3*e^2)/4 + (51*a*b^
3*d^2*e^3)/4 - (51*a^2*b^2*d*e^4)/4) + (d + e*x)^(1/2)*((15*a^4*e^6)/4 + (1
5*b^4*d^4*e^2)/4 - 15*a*b^3*d^3*e^3 + (45*a^2*b^2*d^2*e^4)/2 - 15*a^3*b*d*e
^5))/(b^7*(d + e*x)^2 - (2*b^7*d - 2*a*b^6*e)*(d + e*x) + b^7*d^2 + a^2*b^5
*e^2 - 2*a*b^6*d*e) + (2*e^2*(d + e*x)^(5/2))/(5*b^3) + (2*e^2*(3*b^3*d - 3
*a*b^2*e)*(d + e*x)^(3/2))/(3*b^6) - (63*e^2*atan((b^(1/2)*e^2*(a*e - b*d)^
(5/2)*(d + e*x)^(1/2))/(a^3*e^5 - b^3*d^3*e^2 + 3*a*b^2*d^2*e^3 - 3*a^2*b*d
*e^4))*(a*e - b*d)^(5/2))/(4*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1850 $\int \frac{(a+bx)(d+ex)^{7/2}}{(a^2+2abx+b^2x^2)^2}\,dx$

Optimal. Leaf size=146

$$-\frac{35e^2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{9/2}}+\frac{35e^2\sqrt{d+ex}\,(bd-ae)}{4b^4}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{35e^2(d+ex)^{3/2}}{12b^3}$$

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 50, 63, 208}

$$\frac{35e^2\sqrt{d+ex}\,(bd-ae)}{4b^4}-\frac{35e^2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{9/2}}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{35e^2(d+ex)^{3/2}}{12b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (35*e^2*(b*d - a*e)*Sqrt[d + e*x])/(4*b^4) + (35*e^2*(d + e*x)^(3/2))/(12*b
^3) - (7*e*(d + e*x)^(5/2))/(4*b^2*(a + b*x)) - (d + e*x)^(7/2)/(2*b*(a + b
*x)^2) - (35*e^2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d
 - a*e]])/(4*b^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^{7/2}}{(a+bx)^3}\,dx \\
&= -\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{(7e)\int \frac{(d+ex)^{5/2}}{(a+bx)^2}\,dx}{4b} \\
&= -\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e^2\right)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{8b^2} \\
&= \frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e^2(bd-ae)\right)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{8b^3} \\
&= \frac{35e^2(bd-ae)\sqrt{d+ex}}{4b^4}+\frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e^2(\cdots\right.}{\cdots} \\
&= \frac{35e^2(bd-ae)\sqrt{d+ex}}{4b^4}+\frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e(b\cdots\right.}{\cdots} \\
&= \frac{35e^2(bd-ae)\sqrt{d+ex}}{4b^4}+\frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}-\frac{35e^2(b\cdots}{\cdots}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.36

$$\frac{2e^2(d+ex)^{9/2}\,{}_2F_1\left(3,\frac{9}{2};\frac{11}{2};-\frac{b(d+ex)}{ae-bd}\right)}{9(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(9/2)*Hypergeometric2F1[3, 9/2, 11/2, -((b*(d + e*x))/(-(b
*d) + a*e))])/(9*(-(b*d) + a*e)^3)
```

IntegrateAlgebraic [A] time = 0.73, size = 253, normalized size = 1.73

$$\frac{35\left(-a^3e^5+3a^2bde^4-3ab^2d^2e^3+b^3d^3e^2\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{9/2}(ae-bd)^{3/2}}+\frac{e^2\sqrt{d+ex}\left(-105a^3e^3-175a^2be^2(d+ex)+315a^2bde^2-315ab^2d^2e-56ab^2e(d+ex)^2+350ab^2de(d+ex)+105b^3d^3-175b^3d^2(d+ex)+8b^3(d+ex)^3+56b^3d(d+ex)^2\right)}{12b^4(ae+b(d+ex)-bd)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(105*b^3*d^3 - 315*a*b^2*d^2*e + 315*a^2*b*d*e^2 - 105*a
^3*e^3 - 175*b^3*d^2*(d + e*x) + 350*a*b^2*d*e*(d + e*x) - 175*a^2*b*e^2*(d
 + e*x) + 56*b^3*d*(d + e*x)^2 - 56*a*b^2*e*(d + e*x)^2 + 8*b^3*(d + e*x)^3
))/(12*b^4*(-(b*d) + a*e + b*(d + e*x))^2) + (35*(b^3*d^3*e^2 - 3*a*b^2*d^2
*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d +
 e*x])/(b*d - a*e)])/(4*b^(9/2)*(-(b*d) + a*e)^(3/2))
```

fricas [B] time = 0.45, size = 520, normalized size = 3.56

$$\left[-\frac{105\left(a^2bde^2-a^3e^3+\left(b^3de^2-ab^2e^3\right)x^2+2\left(ab^2de^2-a^2be^3\right)x\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2\,bd-ae+2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(8\,b^3e^3x^3-6\,b^3d^3-21\,ab^2d^2e+140\,a^2bde^2-105\,a^3e^3+8\left(10\,b^3de^2-7\,ab^2e^3\right)x^2-\left(39\,b^3d^2e-238\,ab^2de^2+175\,a^2be^3\right)x\right)\sqrt{ex+d}}{24\left(b^6x^2+2\,ab^5x+a^2b^4\right)},\ -\frac{105\left(a^2bde^2-a^3e^3+\left(b^3de^2-ab^2e^3\right)x^2+2\left(ab^2de^2-a^2be^3\right)x\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(8\,b^3e^3x^3-6\,b^3d^3-21\,ab^2d^2e+140\,a^2bde^2-105\,a^3e^3+8\left(10\,b^3de^2-7\,ab^2e^3\right)x^2-\left(39\,b^3d^2e-238\,ab^2de^2+175\,a^2be^3\right)x\right)\sqrt{ex+d}}{12\left(b^6x^2+2\,ab^5x+a^2b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/24*(105*(a^2*b*d*e^2 - a^3*e^3 + (b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(a*b^2
*d*e^2 - a^2*b*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqr
t(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(8*b^3*e^3*x^3 - 6*b^3*d^3
 - 21*a*b^2*d^2*e + 140*a^2*b*d*e^2 - 105*a^3*e^3 + 8*(10*b^3*d*e^2 - 7*a*b
^2*e^3)*x^2 - (39*b^3*d^2*e - 238*a*b^2*d*e^2 + 175*a^2*b*e^3)*x)*sqrt(e*x
+ d))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4), -1/12*(105*(a^2*b*d*e^2 - a^3*e^3 +
(b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(a*b^2*d*e^2 - a^2*b*e^3)*x)*sqrt(-(b*d - a
*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (8*b^3*e
^3*x^3 - 6*b^3*d^3 - 21*a*b^2*d^2*e + 140*a^2*b*d*e^2 - 105*a^3*e^3 + 8*(10
*b^3*d*e^2 - 7*a*b^2*e^3)*x^2 - (39*b^3*d^2*e - 238*a*b^2*d*e^2 + 175*a^2*b
*e^3)*x)*sqrt(e*x + d))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)]
```

giac [B] time = 0.20, size = 265, normalized size = 1.82

$$\frac{35\left(b^{2}d^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{4\sqrt{-b^{2}d+abe}\,b^{4}}-\frac{13\,(xe+d)^{\frac{3}{2}}b^{3}d^{2}e^{2}-11\sqrt{xe+d}\,b^{3}d^{3}e^{2}-26\,(xe+d)^{\frac{3}{2}}ab^{2}de^{3}+33\sqrt{xe+d}\,ab^{2}d^{2}e^{3}+13\,(xe+d)^{\frac{3}{2}}a^{2}be^{4}-33\sqrt{xe+d}\,a^{2}bde^{4}+11\sqrt{xe+d}\,a^{3}e^{5}}{4\,((xe+d)b-bd+ae)^{2}b^{4}}+\frac{2\left((xe+d)^{\frac{3}{2}}b^{6}e^{2}+9\sqrt{xe+d}\,b^{6}de^{2}-9\sqrt{xe+d}\,ab^{5}e^{3}\right)}{3\,b^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/4*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) - 1/4*(13*(x*e + d)^(3/2)*b^3*d^2*e
^2 - 11*sqrt(x*e + d)*b^3*d^3*e^2 - 26*(x*e + d)^(3/2)*a*b^2*d*e^3 + 33*sqr
t(x*e + d)*a*b^2*d^2*e^3 + 13*(x*e + d)^(3/2)*a^2*b*e^4 - 33*sqrt(x*e + d)*
a^2*b*d*e^4 + 11*sqrt(x*e + d)*a^3*e^5)/(((x*e + d)*b - b*d + a*e)^2*b^4) +
 2/3*((x*e + d)^(3/2)*b^6*e^2 + 9*sqrt(x*e + d)*b^6*d*e^2 - 9*sqrt(x*e + d)
*a*b^5*e^3)/b^9
```

maple [B] time = 0.07, size = 380, normalized size = 2.60

$$-\frac{11\sqrt{ex+d}\;a^{3}e^{5}}{4\,(bex+ae)^{2}\,b^{4}}+\frac{33\sqrt{ex+d}\;a^{2}d\,e^{4}}{4\,(bex+ae)^{2}\,b^{3}}-\frac{33\sqrt{ex+d}\;a\,d^{2}e^{3}}{4\,(bex+ae)^{2}\,b^{2}}+\frac{11\sqrt{ex+d}\;d^{3}e^{2}}{4\,(bex+ae)^{2}\,b}-\frac{13\,(ex+d)^{\frac{3}{2}}\,a^{2}e^{4}}{4\,(bex+ae)^{2}\,b^{3}}+\frac{35a^{2}e^{4}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\;b^{4}}+\frac{13\,(ex+d)^{\frac{3}{2}}\,ad\,e^{3}}{2\,(bex+ae)^{2}\,b^{2}}-\frac{35ad\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{2\sqrt{(ae-bd)\,b}\;b^{3}}-\frac{13\,(ex+d)^{\frac{3}{2}}\,d^{2}e^{2}}{4\,(bex+ae)^{2}\,b}+\frac{35d^{2}e^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\;b^{2}}-\frac{6\sqrt{ex+d}\;a\,e^{3}}{b^{4}}+\frac{6\sqrt{ex+d}\;d\,e^{2}}{b^{3}}+\frac{2\,(ex+d)^{\frac{3}{2}}\,e^{2}}{3b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/3*e^2*(e*x+d)^(3/2)/b^3-6*e^3/b^4*a*(e*x+d)^(1/2)+6*e^2/b^3*(e*x+d)^(1/2)
*d-13/4*e^4/b^3/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a^2+13/2*e^3/b^2/(b*e*x+a*e)^2*
(e*x+d)^(3/2)*a*d-13/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)^(3/2)*d^2-11/4*e^5/b^4/(
b*e*x+a*e)^2*(e*x+d)^(1/2)*a^3+33/4*e^4/b^3/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^2
*d-33/4*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a*d^2+11/4*e^2/b/(b*e*x+a*e)^2*
(e*x+d)^(1/2)*d^3+35/4*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)*a^2-35/2*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*a*d+35/4*e^2/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.14, size = 268, normalized size = 1.84

$$\frac{2e^2(d+ex)^{3/2}}{3b^3}-\frac{\sqrt{d+ex}\left(\frac{11a^3e^5}{4}-\frac{33a^2bde^4}{4}+\frac{33ab^2d^2e^3}{4}-\frac{11b^3d^3e^2}{4}\right)+(d+ex)^{3/2}\left(\frac{13a^2be^4}{4}-\frac{13ab^2de^3}{2}+\frac{13b^3d^2e^2}{4}\right)}{b^6(d+ex)^2-\left(2b^6d-2ab^5e\right)(d+ex)+b^6d^2+a^2b^4e^2-2ab^5de}+\frac{2e^2\left(3b^3d-3ab^2e\right)\sqrt{d+ex}}{b^6}+\frac{35e^2\operatorname{atan}\left(\frac{\sqrt{b}\,e^2(ae-bd)^{3/2}\sqrt{d+ex}}{a^2e^4-2abde^3+b^2d^2e^2}\right)(ae-bd)^{3/2}}{4b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*e^2*(d + e*x)^(3/2))/(3*b^3) - ((d + e*x)^(1/2)*((11*a^3*e^5)/4 - (11*b^
3*d^3*e^2)/4 + (33*a*b^2*d^2*e^3)/4 - (33*a^2*b*d*e^4)/4) + (d + e*x)^(3/2)
*((13*a^2*b*e^4)/4 + (13*b^3*d^2*e^2)/4 - (13*a*b^2*d*e^3)/2))/(b^6*(d + e*
x)^2 - (2*b^6*d - 2*a*b^5*e)*(d + e*x) + b^6*d^2 + a^2*b^4*e^2 - 2*a*b^5*d*
e) + (2*e^2*(3*b^3*d - 3*a*b^2*e)*(d + e*x)^(1/2))/b^6 + (35*e^2*atan((b^(1
/2)*e^2*(a*e - b*d)^(3/2)*(d + e*x)^(1/2))/(a^2*e^4 + b^2*d^2*e^2 - 2*a*b*d
*e^3))*(a*e - b*d)^(3/2))/(4*b^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1851 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2} dx$

Optimal. Leaf size=119

$$-\frac{15e^2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{15e^2\sqrt{d+ex}}{4b^3}$$

Rubi [A] time = 0.06, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {27, 47, 50, 63, 208}

$$-\frac{15e^2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{15e^2\sqrt{d+ex}}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (15*e^2*Sqrt[d + e*x])/(4*b^3) - (5*e*(d + e*x)^(3/2))/(4*b^2*(a + b*x)) -
(d + e*x)^(5/2)/(2*b*(a + b*x)^2) - (15*e^2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b
]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^{5/2}}{(a+bx)^3}\,dx \\
&= -\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{(5e)\int \frac{(d+ex)^{3/2}}{(a+bx)^2}\,dx}{4b} \\
&= -\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{\left(15e^2\right)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{8b^2} \\
&= \frac{15e^2\sqrt{d+ex}}{4b^3}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{\left(15e^2(bd-ae)\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8b^3} \\
&= \frac{15e^2\sqrt{d+ex}}{4b^3}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{(15e(bd-ae))\,\mathrm{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,d\right.}{4b^3} \\
&= \frac{15e^2\sqrt{d+ex}}{4b^3}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}-\frac{15e^2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.44

$$
\frac{2e^2(d+ex)^{7/2}\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};-\frac{b(d+ex)}{ae-bd}\right)}{7(ae-bd)^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(7/2)*Hypergeometric2F1[3, 7/2, 9/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(7*(-(b*d) + a*e)^3)
```

IntegrateAlgebraic [A] time = 0.51, size = 155, normalized size = 1.30

$$
\frac{e^2\sqrt{d+ex}\left(15a^2e^2+25abe(d+ex)-30abde+15b^2d^2+8b^2(d+ex)^2-25b^2d(d+ex)\right)}{4b^3(ae+b(d+ex)-bd)^2}+\frac{15e^2\sqrt{ae-bd}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(15*b^2*d^2 - 30*a*b*d*e + 15*a^2*e^2 - 25*b^2*d*(d + e*
x) + 25*a*b*e*(d + e*x) + 8*b^2*(d + e*x)^2))/(4*b^3*(-(b*d) + a*e + b*(d +
 e*x))^2) + (15*e^2*Sqrt[-(b*d) + a*e]*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*S
qrt[d + e*x])/(b*d - a*e)])/(4*b^(7/2))
```

fricas [A] time = 0.43, size = 344, normalized size = 2.89

$$
\left[\frac{15\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(8\,b^2e^2x^2-2\,b^2d^2-5\,abde+15\,a^2e^2-\left(9\,b^2de-25\,abe^2\right)x\right)\sqrt{ex+d}}{8\left(b^5x^2+2\,ab^4x+a^2b^3\right)},-\frac{15\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{-\frac{bd-ae}{b}}\,\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(8\,b^2e^2x^2-2\,b^2d^2-5\,abde+15\,a^2e^2-\left(9\,b^2de-25\,abe^2\right)x\right)\sqrt{ex+d}}{4\left(b^5x^2+2\,ab^4x+a^2b^3\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/8*(15*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt((b*d - a*e)/b)*log((b*e
*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(8
*b^2*e^2*x^2 - 2*b^2*d^2 - 5*a*b*d*e + 15*a^2*e^2 - (9*b^2*d*e - 25*a*b*e^2
)*x)*sqrt(e*x + d))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3), -1/4*(15*(b^2*e^2*x^2
+ 2*a*b*e^2*x + a^2*e^2)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(
-(b*d - a*e)/b)/(b*d - a*e)) - (8*b^2*e^2*x^2 - 2*b^2*d^2 - 5*a*b*d*e + 15*
a^2*e^2 - (9*b^2*d*e - 25*a*b*e^2)*x)*sqrt(e*x + d))/(b^5*x^2 + 2*a*b^4*x +
 a^2*b^3)]
```

giac [**A**] time = 0.23, size = 174, normalized size = 1.46

$$\frac{15\left(bde^2-ae^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{4\sqrt{-b^2d+abe}\,b^3}+\frac{2\sqrt{xe+d}\,e^2}{b^3}-\frac{9\,(xe+d)^{\frac{3}{2}}b^2de^2-7\sqrt{xe+d}\,b^2d^2e^2-9\,(xe+d)^{\frac{3}{2}}abe^3+14\sqrt{xe+d}\,abde^3-7\sqrt{xe+d}\,a^2e^4}{4\left((xe+d)b-bd+ae\right)^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 15/4*(b*d*e^2 - a*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-
b^2*d + a*b*e)*b^3) + 2*sqrt(x*e + d)*e^2/b^3 - 1/4*(9*(x*e + d)^(3/2)*b^2*
d*e^2 - 7*sqrt(x*e + d)*b^2*d^2*e^2 - 9*(x*e + d)^(3/2)*a*b*e^3 + 14*sqrt(x
*e + d)*a*b*d*e^3 - 7*sqrt(x*e + d)*a^2*e^4)/(((x*e + d)*b - b*d + a*e)^2*b
^3)
```

maple [**B**] time = 0.07, size = 238, normalized size = 2.00

$$\frac{7\sqrt{ex+d}\;a^2e^4}{4\left(bex+ae\right)^2b^3}-\frac{7\sqrt{ex+d}\;ad\,e^3}{2\left(bex+ae\right)^2b^2}+\frac{7\sqrt{ex+d}\;d^2e^2}{4\left(bex+ae\right)^2b}+\frac{9\,(ex+d)^{\frac{3}{2}}\,a\,e^3}{4\left(bex+ae\right)^2b^2}-\frac{15a\,e^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\;b^3}-\frac{9\,(ex+d)^{\frac{3}{2}}\,d\,e^2}{4\left(bex+ae\right)^2b}+\frac{15d\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\;b^2}+\frac{2\sqrt{ex+d}\;e^2}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*e^2*(e*x+d)^(1/2)/b^3+9/4*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a-9/4*e^2/b
/(b*e*x+a*e)^2*(e*x+d)^(3/2)*d+7/4*e^4/b^3/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^2-
7/2*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a*d+7/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)
^(1/2)*d^2-15/4*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)*a+15/4*e^2/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.16, size = 199, normalized size = 1.67

$$\frac{2\,e^2\,\sqrt{d+e\,x}}{b^3}-\frac{\left(\frac{9\,b^2\,d\,e^2}{4}-\frac{9\,a\,b\,e^3}{4}\right)\,{\left(d+e\,x\right)}^{3/2}-\sqrt{d+e\,x}\,\left(\frac{7\,a^2\,e^4}{4}-\frac{7\,a\,b\,d\,e^3}{2}+\frac{7\,b^2\,d^2\,e^2}{4}\right)}{b^5\,{\left(d+e\,x\right)}^2-\left(2\,b^5\,d-2\,a\,b^4\,e\right)\,\left(d+e\,x\right)+b^5\,d^2+a^2\,b^3\,e^2-2\,a\,b^4\,d\,e}-\frac{15\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{a\,e-b\,d}\,\sqrt{d+e\,x}}{a\,e^3-b\,d\,e^2}\right)\,\sqrt{a\,e-b\,d}}{4\,b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*e^2*(d + e*x)^(1/2))/b^3 - (((9*b^2*d*e^2)/4 - (9*a*b*e^3)/4)*(d + e*x)^
(3/2) - (d + e*x)^(1/2)*((7*a^2*e^4)/4 + (7*b^2*d^2*e^2)/4 - (7*a*b*d*e^3)/
2))/(b^5*(d + e*x)^2 - (2*b^5*d - 2*a*b^4*e)*(d + e*x) + b^5*d^2 + a^2*b^3*
e^2 - 2*a*b^4*d*e) - (15*e^2*atan((b^(1/2)*e^2*(a*e - b*d)^(1/2)*(d + e*x)^
(1/2))/(a*e^3 - b*d*e^2))*(a*e - b*d)^(1/2))/(4*b^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1852 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=100

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{bd-ae}}-\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}$$

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 47, 63, 208}

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{bd-ae}}-\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-3*e*Sqrt[d + e*x])/(4*b^2*(a + b*x)) - (d + e*x)^(3/2)/(2*b*(a + b*x)^2)
- (3*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(5/2)*Sqrt[
b*d - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(d+ex)^{3/2}}{(a+bx)^3}\,dx$$

$$= -\frac{(d+ex)^{3/2}}{2b(a+bx)^2} + \frac{(3e)\int \frac{\sqrt{d+ex}}{(a+bx)^2}\,dx}{4b}$$

$$= -\frac{3e\sqrt{d+ex}}{4b^2(a+bx)} - \frac{(d+ex)^{3/2}}{2b(a+bx)^2} + \frac{\left(3e^2\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8b^2}$$

$$= -\frac{3e\sqrt{d+ex}}{4b^2(a+bx)} - \frac{(d+ex)^{3/2}}{2b(a+bx)^2} + \frac{(3e)\,\mathrm{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{4b^2}$$

$$= -\frac{3e\sqrt{d+ex}}{4b^2(a+bx)} - \frac{(d+ex)^{3/2}}{2b(a+bx)^2} - \frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{bd-ae}}$$

Mathematica [A] time = 0.09, size = 90, normalized size = 0.90

$$\frac{3e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{4b^{5/2}\sqrt{ae-bd}} - \frac{\sqrt{d+ex}\,(3ae+2bd+5bex)}{4b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/4*(Sqrt[d + e*x]*(2*b*d + 3*a*e + 5*b*e*x))/(b^2*(a + b*x)^2) + (3*e^2*A
rcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]])/(4*b^(5/2)*Sqrt[-(b*d) +
 a*e])
```

IntegrateAlgebraic [A] time = 0.41, size = 116, normalized size = 1.16

$$-\frac{3e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{5/2}\sqrt{ae-bd}} - \frac{e^2\sqrt{d+ex}\,(3ae+5b(d+ex)-3bd)}{4b^2(ae+b(d+ex)-bd)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,
x]
```

```
[Out] -1/4*(e^2*Sqrt[d + e*x]*(-3*b*d + 3*a*e + 5*b*(d + e*x)))/(b^2*(-(b*d) + a*
e + b*(d + e*x))^2) - (3*e^2*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*
x])/(b*d - a*e)])/(4*b^(5/2)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.43, size = 383, normalized size = 3.83

$$\left[\frac{3\left(b^2e^2x^2+2abe^2x+a^2e^2\right)\sqrt{b^2d-abe}\log\left(\frac{bex+2bd-ae-2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)-2\left(2b^3d^2+ab^2de-3a^2be^2+5\left(b^3de-ab^2e^2\right)x\right)\sqrt{ex+d}}{8\left(a^2b^4d-a^3b^3e+\left(b^6d-ab^5e\right)x^2+2\left(ab^5d-a^2b^4e\right)x\right)}, \frac{3\left(b^2e^2x^2+2abe^2x+a^2e^2\right)\sqrt{-b^2d+abe}\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)-\left(2b^3d^2+ab^2de-3a^2be^2+5\left(b^3de-ab^2e^2\right)x\right)\sqrt{ex+d}}{4\left(a^2b^4d-a^3b^3e+\left(b^6d-ab^5e\right)x^2+2\left(ab^5d-a^2b^4e\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/8*(3*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(b^2*d - a*b*e)*log((b*e*
x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(2*b^
3*d^2 + a*b^2*d*e - 3*a^2*b*e^2 + 5*(b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))
```

```
/(a^2*b^4*d - a^3*b^3*e + (b^6*d - a*b^5*e)*x^2 + 2*(a*b^5*d - a^2*b^4*e)*x
), 1/4*(3*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(-b^2*d + a*b*e)*arctan
(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (2*b^3*d^2 + a*b^2*d*e
 - 3*a^2*b*e^2 + 5*(b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))/(a^2*b^4*d - a^3
*b^3*e + (b^6*d - a*b^5*e)*x^2 + 2*(a*b^5*d - a^2*b^4*e)*x)]
```

giac [A] time = 0.18, size = 112, normalized size = 1.12

$$\frac{3\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\sqrt{-b^2d+abe}\,b^2}-\frac{5\,(xe+d)^{\frac{3}{2}}be^2-3\,\sqrt{xe+d}\,bde^2+3\,\sqrt{xe+d}\,ae^3}{4\,((xe+d)b-bd+ae)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 3/4*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/(sqrt(-b^2*d + a*b*e)*
b^2) - 1/4*(5*(x*e + d)^(3/2)*b*e^2 - 3*sqrt(x*e + d)*b*d*e^2 + 3*sqrt(x*e
+ d)*a*e^3)/(((x*e + d)*b - b*d + a*e)^2*b^2)
```

maple [A] time = 0.07, size = 121, normalized size = 1.21

$$-\frac{3\sqrt{ex+d}\;a\,e^3}{4\,(bex+ae)^2\,b^2}+\frac{3\sqrt{ex+d}\;d\,e^2}{4\,(bex+ae)^2\,b}-\frac{5\,(ex+d)^{\frac{3}{2}}\,e^2}{4\,(bex+ae)^2\,b}+\frac{3e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\;b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -5/4*e^2/(b*e*x+a*e)^2/b*(e*x+d)^(3/2)-3/4*e^3/(b*e*x+a*e)^2/b^2*(e*x+d)^(1
/2)*a+3/4*e^2/(b*e*x+a*e)^2/b*(e*x+d)^(1/2)*d+3/4*e^2/b^2/((a*e-b*d)*b)^(1/
2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.12, size = 135, normalized size = 1.35

$$\frac{3\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{4\,b^{5/2}\,\sqrt{a\,e-b\,d}}-\frac{\frac{5\,e^2\,{(d+e\,x)}^{3/2}}{4\,b}+\frac{3\,e^2\,(a\,e-b\,d)\,\sqrt{d+e\,x}}{4\,b^2}}{b^2\,{(d+e\,x)}^2-\left(2\,b^2\,d-2\,a\,b\,e\right)\,(d+e\,x)+a^2\,e^2+b^2\,d^2-2\,a\,b\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (3*e^2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(4*b^(5/2)*(a*e -
 b*d)^(1/2)) - ((5*e^2*(d + e*x)^(3/2))/(4*b) + (3*e^2*(a*e - b*d)*(d + e*x
)^(1/2))/(4*b^2))/(b^2*(d + e*x)^2 - (2*b^2*d - 2*a*b*e)*(d + e*x) + a^2*e^
2 + b^2*d^2 - 2*a*b*d*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
[Out] Timed out
```

3.1853 $\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=110

$$\frac{e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}}{4b(a+bx)(bd-ae)}-\frac{\sqrt{d+ex}}{2b(a+bx)^2}$$

Rubi [A] time = 0.06, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 51, 63, 208}

$$\frac{e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}}{4b(a+bx)(bd-ae)}-\frac{\sqrt{d+ex}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -Sqrt[d + e*x]/(2*b*(a + b*x)^2) - (e*Sqrt[d + e*x])/(4*b*(b*d - a*e)*(a +
b*x)) + (e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(3/2)*(
b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{\sqrt{d+ex}}{(a+bx)^3}\,dx\\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}+\frac{e\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{4b}\\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}-\frac{e\sqrt{d+ex}}{4b(bd-ae)(a+bx)}-\frac{e^2\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8b(bd-ae)}\\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}-\frac{e\sqrt{d+ex}}{4b(bd-ae)(a+bx)}-\frac{e\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d+ex}\right)}{4b(bd-ae)}\\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}-\frac{e\sqrt{d+ex}}{4b(bd-ae)(a+bx)}+\frac{e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}(bd-ae)^{3/2}}
\end{aligned}$$

Mathematica [C] time = 0.01, size = 52, normalized size = 0.47

$$\frac{2e^2(d+ex)^{3/2}\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(3/2)*Hypergeometric2F1[3/2, 3, 5/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(3*(-(b*d) + a*e)^3)
```

IntegrateAlgebraic [A] time = 0.42, size = 125, normalized size = 1.14

$$-\frac{e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4b^{3/2}(ae-bd)^{3/2}}-\frac{e^2\sqrt{d+ex}\,(-ae+b(d+ex)+bd)}{4b(bd-ae)(-ae-b(d+ex)+bd)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/4*(e^2*Sqrt[d + e*x]*(b*d - a*e + b*(d + e*x)))/(b*(b*d - a*e)*(b*d - a*
e - b*(d + e*x))^2) - (e^2*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x]
)/(b*d - a*e)])/(4*b^(3/2)*(-(b*d) + a*e)^(3/2))
```

fricas [B] time = 0.44, size = 456, normalized size = 4.15

$$\left[-\frac{\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(2\,b^3d^2-3\,ab^2de+a^2be^2+\left(b^3de-ab^2e^2\right)x\right)\sqrt{ex+d}}{8\left(a^2b^4d^2-2\,a^3b^3de+a^4b^2e^2+\left(b^6d^2-2\,ab^5de+a^2b^4e^2\right)x^2+2\left(ab^5d^2-2\,a^2b^4de+a^3b^3e^2\right)x\right)},-\frac{\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)+\left(2\,b^3d^2-3\,ab^2de+a^2be^2+\left(b^3de-ab^2e^2\right)x\right)\sqrt{ex+d}}{4\left(a^2b^4d^2-2\,a^3b^3de+a^4b^2e^2+\left(b^6d^2-2\,ab^5de+a^2b^4e^2\right)x^2+2\left(ab^5d^2-2\,a^2b^4de+a^3b^3e^2\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/8*((b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(b^2*d - a*b*e)*log((b*e*x
 + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(2*b^3
*d^2 - 3*a*b^2*d*e + a^2*b*e^2 + (b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))/(a
^2*b^4*d^2 - 2*a^3*b^3*d*e + a^4*b^2*e^2 + (b^6*d^2 - 2*a*b^5*d*e + a^2*b^4
*e^2)*x^2 + 2*(a*b^5*d^2 - 2*a^2*b^4*d*e + a^3*b^3*e^2)*x), -1/4*((b^2*e^2*
x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*
e)*sqrt(e*x + d)/(b*e*x + b*d)) + (2*b^3*d^2 - 3*a*b^2*d*e + a^2*b*e^2 + (b
^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))/(a^2*b^4*d^2 - 2*a^3*b^3*d*e + a^4*b^
2*e^2 + (b^6*d^2 - 2*a*b^5*d*e + a^2*b^4*e^2)*x^2 + 2*(a*b^5*d^2 - 2*a^2*b^
4*d*e + a^3*b^3*e^2)*x)]
```

giac [A] time = 0.18, size = 132, normalized size = 1.20

$$-\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^2d-abe\right)\sqrt{-b^2d+abe}}-\frac{(xe+d)^{\frac{3}{2}}be^2+\sqrt{xe+d}\,bde^2-\sqrt{xe+d}\,ae^3}{4\left(b^2d-abe\right)\left((xe+d)b-bd+ae\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] -1/4*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^2*d - a*b*e)*sqrt
(-b^2*d + a*b*e)) - 1/4*((x*e + d)^(3/2)*b*e^2 + sqrt(x*e + d)*b*d*e^2 - sq
rt(x*e + d)*a*e^3)/((b^2*d - a*b*e)*((x*e + d)*b - b*d + a*e)^2)
```

maple [A] time = 0.06, size = 111, normalized size = 1.01

$$\frac{e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)\,\sqrt{(ae-bd)\,b}\;b}+\frac{(ex+d)^{\frac{3}{2}}\,e^2}{4\,(bex+ae)^2\,(ae-bd)}-\frac{\sqrt{ex+d}\;e^2}{4\,(bex+ae)^2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/4*e^2/(b*e*x+a*e)^2/(a*e-b*d)*(e*x+d)^(3/2)-1/4*e^2/(b*e*x+a*e)^2/b*(e*x+
d)^(1/2)+1/4*e^2/(a*e-b*d)/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.10, size = 135, normalized size = 1.23

$$\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{4\,b^{3/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{e^2\,\sqrt{d+e\,x}}{4\,b}-\frac{e^2\,{\left(d+e\,x\right)}^{3/2}}{4\,\left(a\,e-b\,d\right)}}{b^2\,{\left(d+e\,x\right)}^2-\left(2\,b^2\,d-2\,a\,b\,e\right)\,\left(d+e\,x\right)+a^2\,e^2+b^2\,d^2-2\,a\,b\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(4*b^(3/2)*(a*e - b
*d)^(3/2)) - ((e^2*(d + e*x)^(1/2))/(4*b) - (e^2*(d + e*x)^(3/2))/(4*(a*e -
 b*d)))/(b^2*(d + e*x)^2 - (2*b^2*d - 2*a*b*e)*(d + e*x) + a^2*e^2 + b^2*d^
2 - 2*a*b*d*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1854 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=114

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\,(bd-ae)^{5/2}}+\frac{3e\sqrt{d+ex}}{4(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}}{2(a+bx)^2(bd-ae)}$$

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\,(bd-ae)^{5/2}}+\frac{3e\sqrt{d+ex}}{4(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}}{2(a+bx)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -Sqrt[d + e*x]/(2*(b*d - a*e)*(a + b*x)^2) + (3*e*Sqrt[d + e*x])/(4*(b*d -
a*e)^2*(a + b*x)) - (3*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
)/(4*Sqrt[b]*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx \\
&= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2}-\frac{(3e)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{4(bd-ae)} \\
&= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2}+\frac{3e\sqrt{d+ex}}{4(bd-ae)^2(a+bx)}+\frac{\left(3e^2\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8(bd-ae)^2} \\
&= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2}+\frac{3e\sqrt{d+ex}}{4(bd-ae)^2(a+bx)}+\frac{(3e)\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx\right.}{4(bd-ae)^2} \\
&= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2}+\frac{3e\sqrt{d+ex}}{4(bd-ae)^2(a+bx)}-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\,(bd-ae)^{5/2}}
\end{aligned}
$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.44

$$
\frac{2e^2\sqrt{d+ex}\;{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{(ae-bd)^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (2*e^2*Sqrt[d + e*x]*Hypergeometric2F1[1/2, 3, 3/2, -((b*(d + e*x))/(-(b*d)
 + a*e))])/(-(b*d) + a*e)^3
```

IntegrateAlgebraic [A] time = 0.25, size = 124, normalized size = 1.09

$$
\frac{e^2\sqrt{d+ex}\,(5ae+3b(d+ex)-5bd)}{4(bd-ae)^2(-ae-b(d+ex)+bd)^2}-\frac{3e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4\sqrt{b}\,(ae-bd)^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (e^2*Sqrt[d + e*x]*(-5*b*d + 5*a*e + 3*b*(d + e*x)))/(4*(b*d - a*e)^2*(b*d
- a*e - b*(d + e*x))^2) - (3*e^2*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d
+ e*x])/(b*d - a*e)])/(4*Sqrt[b]*(-(b*d) + a*e)^(5/2))
```

fricas [B] time = 0.43, size = 549, normalized size = 4.82

$$
\left[\frac{3\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(2\,b^3d^2-7\,ab^2de+5\,a^2be^2-3\left(b^3de-ab^2e^2\right)x\right)\sqrt{ex+d}}{8\left(a^2b^4d^3-3\,a^3b^3d^2e+3\,a^4b^2de^2-a^5be^3+\left(b^6d^3-3\,ab^5d^2e+3\,a^2b^4de^2-a^3b^3e^3\right)x^2+2\left(ab^5d^3-3\,a^2b^4d^2e+3\,a^3b^3de^2-a^4b^2e^3\right)x\right)},\frac{3\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)-\left(2\,b^3d^2-7\,ab^2de+5\,a^2be^2-3\left(b^3de-ab^2e^2\right)x\right)\sqrt{ex+d}}{4\left(a^2b^4d^3-3\,a^3b^3d^2e+3\,a^4b^2de^2-a^5be^3+\left(b^6d^3-3\,ab^5d^2e+3\,a^2b^4de^2-a^3b^3e^3\right)x^2+2\left(ab^5d^3-3\,a^2b^4d^2e+3\,a^3b^3de^2-a^4b^2e^3\right)x\right)}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/8*(3*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(b^2*d - a*b*e)*log((b*e*
x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(2*b^
3*d^2 - 7*a*b^2*d*e + 5*a^2*b*e^2 - 3*(b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d
))/(a^2*b^4*d^3 - 3*a^3*b^3*d^2*e + 3*a^4*b^2*d*e^2 - a^5*b*e^3 + (b^6*d^3
- 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^3*e^3)*x^2 + 2*(a*b^5*d^3 - 3*a^2
*b^4*d^2*e + 3*a^3*b^3*d*e^2 - a^4*b^2*e^3)*x), 1/4*(3*(b^2*e^2*x^2 + 2*a*b
```

```
*e^2*x + a^2*e^2)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x
 + d)/(b*e*x + b*d)) - (2*b^3*d^2 - 7*a*b^2*d*e + 5*a^2*b*e^2 - 3*(b^3*d*e
- a*b^2*e^2)*x)*sqrt(e*x + d))/(a^2*b^4*d^3 - 3*a^3*b^3*d^2*e + 3*a^4*b^2*d
*e^2 - a^5*b*e^3 + (b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^3*e^3
)*x^2 + 2*(a*b^5*d^3 - 3*a^2*b^4*d^2*e + 3*a^3*b^3*d*e^2 - a^4*b^2*e^3)*x)]
```

giac [A] time = 0.17, size = 152, normalized size = 1.33

$$\frac{3 \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-b^2d+abe}}+\frac{3\,(xe+d)^{\frac{3}{2}}be^2-5\,\sqrt{xe+d}\,bde^2+5\,\sqrt{xe+d}\,ae^3}{4\left(b^2d^2-2\,abde+a^2e^2\right)\left((xe+d)b-bd+ae\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 3/4*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^2*d^2 - 2*a*b*d*e
+ a^2*e^2)*sqrt(-b^2*d + a*b*e)) + 1/4*(3*(x*e + d)^(3/2)*b*e^2 - 5*sqrt(x*
e + d)*b*d*e^2 + 5*sqrt(x*e + d)*a*e^3)/((b^2*d^2 - 2*a*b*d*e + a^2*e^2)*((
x*e + d)*b - b*d + a*e)^2)
```

maple [A] time = 0.05, size = 115, normalized size = 1.01

$$\frac{3e^2 \arctan\left(\frac{\sqrt{ex+d}\ b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)^2\,\sqrt{(ae-bd)\,b}}+\frac{\sqrt{ex+d}\ e^2}{2\,(ae-bd)\,(bex+ae)^2}+\frac{3\sqrt{ex+d}\ e^2}{4\,(ae-bd)^2\,(bex+ae)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 1/2*e^2*(e*x+d)^(1/2)/(a*e-b*d)/(b*e*x+a*e)^2+3/4*e^2/(a*e-b*d)^2*(e*x+d)^(
1/2)/(b*e*x+a*e)+3/4*e^2/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.15, size = 142, normalized size = 1.25

$$\frac{\frac{5\,e^2\,\sqrt{d+e\,x}}{4\,(a\,e-b\,d)}+\frac{3\,b\,e^2\,(d+e\,x)^{3/2}}{4\,(a\,e-b\,d)^2}}{b^2\,(d+e\,x)^2-\left(2\,b^2\,d-2\,a\,b\,e\right)\,(d+e\,x)+a^2\,e^2+b^2\,d^2-2\,a\,b\,d\,e}+\frac{3\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{4\,\sqrt{b}\,(a\,e-b\,d)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((5*e^2*(d + e*x)^(1/2))/(4*(a*e - b*d)) + (3*b*e^2*(d + e*x)^(3/2))/(4*(a*
e - b*d)^2))/(b^2*(d + e*x)^2 - (2*b^2*d - 2*a*b*e)*(d + e*x) + a^2*e^2 + b
```

```
^2*d^2 - 2*a*b*d*e) + (3*e^2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/
2)))/(4*b^(1/2)*(a*e - b*d)^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1855 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=140

$$\frac{15e^2}{4\sqrt{d+ex}\,(bd-ae)^3}-\frac{15\sqrt{b}\,e^2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{7/2}}+\frac{5e}{4(a+bx)\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{2(a+bx)^2\sqrt{d+ex}\,(bd-ae)}$$

Rubi [A] time = 0.06, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{15e^2}{4\sqrt{d+ex}\,(bd-ae)^3}-\frac{15\sqrt{b}\,e^2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{7/2}}+\frac{5e}{4(a+bx)\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{2(a+bx)^2\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (15*e^2)/(4*(b*d - a*e)^3*Sqrt[d + e*x]) - 1/(2*(b*d - a*e)*(a + b*x)^2*Sqr
t[d + e*x]) + (5*e)/(4*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x]) - (15*Sqrt[b]
*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d - a*e)^(7/2)
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{1}{(a+bx)^3(d+ex)^{3/2}}\,dx$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} - \frac{(5e)\int \frac{1}{(a+bx)^2(d+ex)^{3/2}}\,dx}{4(bd-ae)}$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+bx)\sqrt{d+ex}} + \frac{\left(15e^2\right)}{}$$

$$= \frac{15e^2}{4(bd-ae)^3\sqrt{d+ex}} - \frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+}$$

$$= \frac{15e^2}{4(bd-ae)^3\sqrt{d+ex}} - \frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+}$$

$$= \frac{15e^2}{4(bd-ae)^3\sqrt{d+ex}} - \frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+}$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.36

$$-\frac{2e^2\, {}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{d+ex}\,(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-2*e^2*Hypergeometric2F1[-1/2, 3, 1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/(
(-(b*d) + a*e)^3*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.54, size = 163, normalized size = 1.16

$$\frac{e^2\left(8a^2e^2+25abe(d+ex)-16abde+8b^2d^2+15b^2(d+ex)^2-25b^2d(d+ex)\right)}{4\sqrt{d+ex}\,(bd-ae)^3(-ae-b(d+ex)+bd)^2} + \frac{15\sqrt{b}\,e^2\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\sqrt{ae-bd}}{bd-ae}\right)}{4(ae-bd)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),
x]
```

```
[Out] (e^2*(8*b^2*d^2 - 16*a*b*d*e + 8*a^2*e^2 - 25*b^2*d*(d + e*x) + 25*a*b*e*(d
 + e*x) + 15*b^2*(d + e*x)^2))/(4*(b*d - a*e)^3*Sqrt[d + e*x]*(b*d - a*e -
b*(d + e*x))^2) + (15*Sqrt[b]*e^2*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d
 + e*x])/(b*d - a*e)])/(4*(-(b*d) + a*e)^(7/2))
```

fricas [B] time = 0.45, size = 782, normalized size = 5.59

$$\left[-\frac{15\left(b^2e^3x^3+a^2de^2+\left(b^2de^2+2abe^3\right)x^2+\left(2abde^2+a^2e^3\right)x\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2bd-ae+2(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\left(15b^2e^2x^2-2b^2d^2+9abde+8a^2e^2+5\left(b^2de+5abe^2\right)x\right)\sqrt{ex+d}}{8\left(a^2b^3d^4-3a^3b^2d^3e+3a^4bd^2e^2-a^5de^3+\left(b^5d^3e-3ab^4d^2e^2+3a^2b^3de^3-a^3b^2e^4\right)x^3+\left(b^5d^4-ab^4d^3e-3a^2b^3d^2e^2+5a^3b^2de^3-2a^4be^4\right)x^2+\left(2ab^4d^4-5a^2b^3d^3e+3a^3b^2d^2e^2+a^4bde^3-a^5e^4\right)x\right)}, -\frac{15\left(b^2e^3x^3+a^2de^2+\left(b^2de^2+2abe^3\right)x^2+\left(2abde^2+a^2e^3\right)x\right)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-\left(15b^2e^2x^2-2b^2d^2+9abde+8a^2e^2+5\left(b^2de+5abe^2\right)x\right)\sqrt{ex+d}}{4\left(a^2b^3d^4-3a^3b^2d^3e+3a^4bd^2e^2-a^5de^3+\left(b^5d^3e-3ab^4d^2e^2+3a^2b^3de^3-a^3b^2e^4\right)x^3+\left(b^5d^4-ab^4d^3e-3a^2b^3d^2e^2+5a^3b^2de^3-2a^4be^4\right)x^2+\left(2ab^4d^4-5a^2b^3d^3e+3a^3b^2d^2e^2+a^4bde^3-a^5e^4\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/8*(15*(b^2*e^3*x^3 + a^2*d*e^2 + (b^2*d*e^2 + 2*a*b*e^3)*x^2 + (2*a*b*d
*e^2 + a^2*e^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d -
a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(15*b^2*e^2*x^2 - 2*
b^2*d^2 + 9*a*b*d*e + 8*a^2*e^2 + 5*(b^2*d*e + 5*a*b*e^2)*x)*sqrt(e*x + d))
/(a^2*b^3*d^4 - 3*a^3*b^2*d^3*e + 3*a^4*b*d^2*e^2 - a^5*d*e^3 + (b^5*d^3*e
- 3*a*b^4*d^2*e^2 + 3*a^2*b^3*d*e^3 - a^3*b^2*e^4)*x^3 + (b^5*d^4 - a*b^4*d
^3*e - 3*a^2*b^3*d^2*e^2 + 5*a^3*b^2*d*e^3 - 2*a^4*b*e^4)*x^2 + (2*a*b^4*d^
4 - 5*a^2*b^3*d^3*e + 3*a^3*b^2*d^2*e^2 + a^4*b*d*e^3 - a^5*e^4)*x), -1/4*(
15*(b^2*e^3*x^3 + a^2*d*e^2 + (b^2*d*e^2 + 2*a*b*e^3)*x^2 + (2*a*b*d*e^2 +
a^2*e^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/
(b*d - a*e))/(b*e*x + b*d)) - (15*b^2*e^2*x^2 - 2*b^2*d^2 + 9*a*b*d*e + 8*a
^2*e^2 + 5*(b^2*d*e + 5*a*b*e^2)*x)*sqrt(e*x + d))/(a^2*b^3*d^4 - 3*a^3*b^2
*d^3*e + 3*a^4*b*d^2*e^2 - a^5*d*e^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2
*b^3*d*e^3 - a^3*b^2*e^4)*x^3 + (b^5*d^4 - a*b^4*d^3*e - 3*a^2*b^3*d^2*e^2
+ 5*a^3*b^2*d*e^3 - 2*a^4*b*e^4)*x^2 + (2*a*b^4*d^4 - 5*a^2*b^3*d^3*e + 3*a
^3*b^2*d^2*e^2 + a^4*b*d*e^3 - a^5*e^4)*x)]
```

giac [B] time = 0.18, size = 235, normalized size = 1.68

$$\frac{15\,b\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{-b^2d+abe}}+\frac{2\,e^2}{\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{xe+d}}+\frac{7\,(xe+d)^{\frac{3}{2}}b^2e^2-9\,\sqrt{xe+d}\,b^2de^2+9\,\sqrt{xe+d}\,abe^3}{4\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)((xe+d)b-bd+ae)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 15/4*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^3*d^3 - 3*a*b^2
*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-b^2*d + a*b*e)) + 2*e^2/((b^3*d^3 -
 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(x*e + d)) + 1/4*(7*(x*e + d)
^(3/2)*b^2*e^2 - 9*sqrt(x*e + d)*b^2*d*e^2 + 9*sqrt(x*e + d)*a*b*e^3)/((b^3
*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*((x*e + d)*b - b*d + a*e)^2
)
```

maple [A] time = 0.11, size = 179, normalized size = 1.28

$$-\frac{9\sqrt{ex+d}\;ab\,e^3}{4\,(ae-bd)^3\,(bex+ae)^2}+\frac{9\sqrt{ex+d}\;b^2d\,e^2}{4\,(ae-bd)^3\,(bex+ae)^2}-\frac{7\,(ex+d)^{\frac{3}{2}}\,b^2e^2}{4\,(ae-bd)^3\,(bex+ae)^2}-\frac{15b\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)^3\sqrt{(ae-bd)\,b}}-\frac{2e^2}{(ae-bd)^3\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -7/4*e^2/(a*e-b*d)^3*b^2/(b*e*x+a*e)^2*(e*x+d)^(3/2)-9/4*e^3/(a*e-b*d)^3*b/
(b*e*x+a*e)^2*(e*x+d)^(1/2)*a+9/4*e^2/(a*e-b*d)^3*b^2/(b*e*x+a*e)^2*(e*x+d)
^(1/2)*d-15/4*e^2/(a*e-b*d)^3*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)-2*e^2/(a*e-b*d)^3/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.32, size = 205, normalized size = 1.46

$$-\frac{\frac{2e^2}{ae-bd}+\frac{15b^2e^2(d+ex)^2}{4(ae-bd)^3}+\frac{25be^2(d+ex)}{4(ae-bd)^2}}{b^2(d+ex)^{5/2}-\left(2b^2d-2abe\right)(d+ex)^{3/2}+\sqrt{d+ex}\,\left(a^2e^2-2abde+b^2d^2\right)}-\frac{15\sqrt{b}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\left(a^3e^3-3a^2bde^2+3ab^2d^2e-b^3d^3\right)}{(ae-bd)^{7/2}}\right)}{4(ae-bd)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*e^2)/(a*e - b*d) + (15*b^2*e^2*(d + e*x)^2)/(4*(a*e - b*d)^3) + (25*b
*e^2*(d + e*x))/(4*(a*e - b*d)^2))/(b^2*(d + e*x)^(5/2) - (2*b^2*d - 2*a*b*
e)*(d + e*x)^(3/2) + (d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) - (15
*b^(1/2)*e^2*atan((b^(1/2)*(d + e*x)^(1/2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2
*e - 3*a^2*b*d*e^2))/(a*e - b*d)^(7/2)))/(4*(a*e - b*d)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1856 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=167

$$-\frac{35b^{3/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{9/2}}+\frac{35be^2}{4\sqrt{d+ex}\,(bd-ae)^4}+\frac{35e^2}{12(d+ex)^{3/2}(bd-ae)^3}+\frac{7e}{4(a+bx)(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{2(a+bx)^2(d+ex)^{3/2}(bd-ae)}$$

Rubi [A] time = 0.08, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$-\frac{35b^{3/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{9/2}}+\frac{35be^2}{4\sqrt{d+ex}\,(bd-ae)^4}+\frac{35e^2}{12(d+ex)^{3/2}(bd-ae)^3}+\frac{7e}{4(a+bx)(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{2(a+bx)^2(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (35*e^2)/(12*(b*d - a*e)^3*(d + e*x)^(3/2)) - 1/(2*(b*d - a*e)*(a + b*x)^2*
(d + e*x)^(3/2)) + (7*e)/(4*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(3/2)) + (35*
b*e^2)/(4*(b*d - a*e)^4*Sqrt[d + e*x]) - (35*b^(3/2)*e^2*ArcTanh[(Sqrt[b]*S
qrt[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{1}{(a+bx)^3(d+ex)^{5/2}}\,dx$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} - \frac{(7e)\int \frac{1}{(a+bx)^2(d+ex)^{5/2}}\,dx}{4(bd-ae)}$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{7e}{4(bd-ae)^2(a+bx)(d+ex)^{3/2}} + \frac{(3}{}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{}{4(bd-ae)^2}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{}{4(bd-ae)^2}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{}{4(bd-ae)^2}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{}{4(bd-ae)^2}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.31

$$-\frac{2e^2\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(d+ex)^{3/2}(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-2*e^2*Hypergeometric2F1[-3/2, 3, -1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/
(3*(-(b*d) + a*e)^3*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.66, size = 223, normalized size = 1.34

$$-\frac{e^2\left(8a^3e^3-56a^2be^2(d+ex)-24a^2bde^2+24ab^2d^2e-175ab^2e(d+ex)^2+112ab^2de(d+ex)-8b^3d^3-56b^3d^2(d+ex)-105b^3(d+ex)^3+175b^3d(d+ex)^2\right)}{12(d+ex)^{3/2}(bd-ae)^4(-ae-b(d+ex)+bd)^2}-\frac{35b^{3/2}e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4(ae-bd)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),
x]
```

```
[Out] -1/12*(e^2*(-8*b^3*d^3 + 24*a*b^2*d^2*e - 24*a^2*b*d*e^2 + 8*a^3*e^3 - 56*b
^3*d^2*(d + e*x) + 112*a*b^2*d*e*(d + e*x) - 56*a^2*b*e^2*(d + e*x) + 175*b
^3*d*(d + e*x)^2 - 175*a*b^2*e*(d + e*x)^2 - 105*b^3*(d + e*x)^3))/((b*d -
a*e)^4*(d + e*x)^(3/2)*(b*d - a*e - b*(d + e*x))^2) - (35*b^(3/2)*e^2*ArcTa
n[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*(-(b*d) + a*e
)^(9/2))
```

fricas [B] time = 0.47, size = 1226, normalized size = 7.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/24*(105*(b^3*e^4*x^4 + a^2*b*d^2*e^2 + 2*(b^3*d*e^3 + a*b^2*e^4)*x^3 + (
b^3*d^2*e^2 + 4*a*b^2*d*e^3 + a^2*b*e^4)*x^2 + 2*(a*b^2*d^2*e^2 + a^2*b*d*e
^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*
x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(105*b^3*e^3*x^3 - 6*b^3*d^3 + 3
9*a*b^2*d^2*e + 80*a^2*b*d*e^2 - 8*a^3*e^3 + 35*(4*b^3*d*e^2 + 5*a*b^2*e^3)
*x^2 + 7*(3*b^3*d^2*e + 34*a*b^2*d*e^2 + 8*a^2*b*e^3)*x)*sqrt(e*x + d))/(a^
2*b^4*d^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^6*d^2
*e^4 + (b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5
 + a^4*b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e^3 +
2*a^3*b^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^2*b^4
*d^4*e^2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(a*b^5
*d^6 - 3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5*b*d^
2*e^4 + a^6*d*e^5)*x), -1/12*(105*(b^3*e^4*x^4 + a^2*b*d^2*e^2 + 2*(b^3*d*e
^3 + a*b^2*e^4)*x^3 + (b^3*d^2*e^2 + 4*a*b^2*d*e^3 + a^2*b*e^4)*x^2 + 2*(a*
b^2*d^2*e^2 + a^2*b*d*e^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt
(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (105*b^3*e^3*x^3 - 6*b^3*d^
3 + 39*a*b^2*d^2*e + 80*a^2*b*d*e^2 - 8*a^3*e^3 + 35*(4*b^3*d*e^2 + 5*a*b^2
*e^3)*x^2 + 7*(3*b^3*d^2*e + 34*a*b^2*d*e^2 + 8*a^2*b*e^3)*x)*sqrt(e*x + d)
)/(a^2*b^4*d^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^
6*d^2*e^4 + (b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*
d*e^5 + a^4*b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e
^3 + 2*a^3*b^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^
2*b^4*d^4*e^2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(
a*b^5*d^6 - 3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5
*b*d^2*e^4 + a^6*d*e^5)*x)]
```

giac [B] time = 0.21, size = 295, normalized size = 1.77

$$\frac{35\,b^2\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{-b^2d+abe}}+\frac{2\left(9\,(xe+d)be^2+bde^2-ae^3\right)}{3\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)(xe+d)^{\frac{3}{2}}}+\frac{11\,(xe+d)^{\frac{3}{2}}b^3e^2-13\,\sqrt{xe+d}\,b^3de^2+13\,\sqrt{xe+d}\,ab^2e^3}{4\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)((xe+d)b-bd+ae)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/4*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^4*d^4 - 4*a*b
^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*sqrt(-b^2*d + a*b*e
)) + 2/3*(9*(x*e + d)*b*e^2 + b*d*e^2 - a*e^3)/((b^4*d^4 - 4*a*b^3*d^3*e +
6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*(x*e + d)^(3/2)) + 1/4*(11*(x*
e + d)^(3/2)*b^3*e^2 - 13*sqrt(x*e + d)*b^3*d*e^2 + 13*sqrt(x*e + d)*a*b^2*
e^3)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^
4)*((x*e + d)*b - b*d + a*e)^2)
```

maple [A] time = 0.07, size = 206, normalized size = 1.23

$$\frac{13\sqrt{ex+d}\;a\,b^2e^3}{4\,(ae-bd)^4\,(bex+ae)^2}-\frac{13\sqrt{ex+d}\;b^3d\,e^2}{4\,(ae-bd)^4\,(bex+ae)^2}+\frac{11\,(ex+d)^{\frac{3}{2}}\,b^3e^2}{4\,(ae-bd)^4\,(bex+ae)^2}+\frac{35b^2e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)^4\,\sqrt{(ae-bd)\,b}}+\frac{6b\,e^2}{(ae-bd)^4\,\sqrt{ex+d}}-\frac{2e^2}{3\,(ae-bd)^3\,(ex+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 11/4*e^2/(a*e-b*d)^4*b^3/(b*e*x+a*e)^2*(e*x+d)^(3/2)+13/4*e^3/(a*e-b*d)^4*b
^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a-13/4*e^2/(a*e-b*d)^4*b^3/(b*e*x+a*e)^2*(e*
x+d)^(1/2)*d+35/4*e^2/(a*e-b*d)^4*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)-2/3*e^2/(a*e-b*d)^3/(e*x+d)^(3/2)+6*e^2/(a*e-b*d
)^4*b/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.54, size = 243, normalized size = 1.46

$$\frac{\frac{175\,b^2\,e^2\,{\left(d+e\,x\right)}^2}{12\,{\left(a\,e-b\,d\right)}^3}-\frac{2\,e^2}{3\,\left(a\,e-b\,d\right)}+\frac{35\,b^3\,e^2\,{\left(d+e\,x\right)}^3}{4\,{\left(a\,e-b\,d\right)}^4}+\frac{14\,b\,e^2\,\left(d+e\,x\right)}{3\,{\left(a\,e-b\,d\right)}^2}}{b^2\,{\left(d+e\,x\right)}^{7/2}-\left(2\,b^2\,d-2\,a\,b\,e\right)\,{\left(d+e\,x\right)}^{5/2}+{\left(d+e\,x\right)}^{3/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}+\frac{35\,b^{3/2}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}{{\left(a\,e-b\,d\right)}^{9/2}}\right)}{4\,{\left(a\,e-b\,d\right)}^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((175*b^2*e^2*(d + e*x)^2)/(12*(a*e - b*d)^3) - (2*e^2)/(3*(a*e - b*d)) + (
35*b^3*e^2*(d + e*x)^3)/(4*(a*e - b*d)^4) + (14*b*e^2*(d + e*x))/(3*(a*e -
b*d)^2))/(b^2*(d + e*x)^(7/2) - (2*b^2*d - 2*a*b*e)*(d + e*x)^(5/2) + (d +
e*x)^(3/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) + (35*b^(3/2)*e^2*atan((b^(1/2)
*(d + e*x)^(1/2)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4
*a^3*b*d*e^3))/(a*e - b*d)^(9/2)))/(4*(a*e - b*d)^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1857 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=196

$$-\frac{63b^{5/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{11/2}}+\frac{63b^2e^2}{4\sqrt{d+ex}\,(bd-ae)^5}+\frac{21be^2}{4(d+ex)^{3/2}(bd-ae)^4}+\frac{63e^2}{20(d+ex)^{5/2}(bd-ae)^3}+\frac{}{4(a+bx)(d}$$

Rubi [A] time = 0.14, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{63b^2e^2}{4\sqrt{d+ex}\,(bd-ae)^5}-\frac{63b^{5/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{11/2}}+\frac{21be^2}{4(d+ex)^{3/2}(bd-ae)^4}+\frac{63e^2}{20(d+ex)^{5/2}(bd-ae)^3}+\frac{9e}{4(a+bx)(d+ex)^{5/2}(bd-ae)^2}-\frac{1}{2(a+bx)^2(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (63*e^2)/(20*(b*d - a*e)^3*(d + e*x)^(5/2)) - 1/(2*(b*d - a*e)*(a + b*x)^2*
(d + e*x)^(5/2)) + (9*e)/(4*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(5/2)) + (21*
b*e^2)/(4*(b*d - a*e)^4*(d + e*x)^(3/2)) + (63*b^2*e^2)/(4*(b*d - a*e)^5*Sq
rt[d + e*x]) - (63*b^(5/2)*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a
*e]])/(4*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{1}{(a+bx)^3(d+ex)^{7/2}}\,dx$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} - \frac{(9e)\int \frac{1}{(a+bx)^2(d+ex)^{7/2}}\,dx}{4(bd-ae)}$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} + \frac{9e}{4(bd-ae)^2(a+bx)(d+ex)^{5/2}} + \frac{(6\ldots}{\ldots}$$

$$= \frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} + \frac{\ldots}{4(bd-ae)^2\ldots}$$

$$= \frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} + \frac{\ldots}{4(bd-ae)^2\ldots}$$

$$= \frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} + \frac{\ldots}{4(bd-ae)^2\ldots}$$

$$= \frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} + \frac{\ldots}{4(bd-ae)^2\ldots}$$

$$= \frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}} + \frac{\ldots}{4(bd-ae)^2\ldots}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.27

$$-\frac{2e^2\,{}_2F_1\left(-\frac{5}{2},3;-\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5(d+ex)^{5/2}(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-2*e^2*Hypergeometric2F1[-5/2, 3, -3/2, -((b*(d + e*x))/(-(b*d) + a*e))])/
(5*(-(b*d) + a*e)^3*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.77, size = 304, normalized size = 1.55

$$\frac{e^2\left(8a^4e^4-24a^3be^3(d+ex)-32a^3bde^3+48a^2b^2d^2e^2+168a^2b^2e^2(d+ex)^2+72a^2b^2de^2(d+ex)-32ab^3d^3e-72ab^3d^2e(d+ex)+525ab^3e(d+ex)^3-336ab^3de(d+ex)^2+8b^4d^4+24b^4d^3(d+ex)+168b^4d^2(d+ex)^2+315b^4(d+ex)^4-525b^4d(d+ex)^3\right)}{20(d+ex)^{5/2}(bd-ae)^5(-ae-b(d+ex)+bd)^2}+\frac{63b^{5/2}e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{4(ae-bd)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),
x]
```

```
[Out] (e^2*(8*b^4*d^4 - 32*a*b^3*d^3*e + 48*a^2*b^2*d^2*e^2 - 32*a^3*b*d*e^3 + 8*
a^4*e^4 + 24*b^4*d^3*(d + e*x) - 72*a*b^3*d^2*e*(d + e*x) + 72*a^2*b^2*d*e^
2*(d + e*x) - 24*a^3*b*e^3*(d + e*x) + 168*b^4*d^2*(d + e*x)^2 - 336*a*b^3*
d*e*(d + e*x)^2 + 168*a^2*b^2*e^2*(d + e*x)^2 - 525*b^4*d*(d + e*x)^3 + 525
*a*b^3*e*(d + e*x)^3 + 315*b^4*(d + e*x)^4))/(20*(b*d - a*e)^5*(d + e*x)^(5
/2)*(b*d - a*e - b*(d + e*x))^2) + (63*b^(5/2)*e^2*ArcTan[(Sqrt[b]*Sqrt[-(b
*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(4*(-(b*d) + a*e)^(11/2))
```

fricas [B] time = 0.47, size = 1858, normalized size = 9.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/40*(315*(b^4*e^5*x^5 + a^2*b^2*d^3*e^2 + (3*b^4*d*e^4 + 2*a*b^3*e^5)*x^
4 + (3*b^4*d^2*e^3 + 6*a*b^3*d*e^4 + a^2*b^2*e^5)*x^3 + (b^4*d^3*e^2 + 6*a*
b^3*d^2*e^3 + 3*a^2*b^2*d*e^4)*x^2 + (2*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3)*
x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x +
d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(315*b^4*e^4*x^4 - 10*b^4*d^4 + 85*a
*b^3*d^3*e + 288*a^2*b^2*d^2*e^2 - 56*a^3*b*d*e^3 + 8*a^4*e^4 + 105*(7*b^4*
d*e^3 + 5*a*b^3*e^4)*x^3 + 21*(23*b^4*d^2*e^2 + 59*a*b^3*d*e^3 + 8*a^2*b^2*
e^4)*x^2 + 3*(15*b^4*d^3*e + 277*a*b^3*d^2*e^2 + 136*a^2*b^2*d*e^3 - 8*a^3*
b*e^4)*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 10*a^4*b^3*d^6*e^
2 - 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b^7*d^5*e^3 - 5*a
*b^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*a^4*b^3*d*e^7 -
a^5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a^2*b^5*d^4*e^4 -
 10*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 - 2*a^6*b*e^8)*x^
4 + (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a^3*b^4*d^4*e^4 -
 35*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^7*e^8)*x^3 + (b^
7*d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e^3 - 25*a^4*b^3*
d^4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*x^2 + (2*a*b^6*d
^8 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e^3 - 20*a^5*b^2*
d^4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x), -1/20*(315*(b^4*e^5*x^5 + a
^2*b^2*d^3*e^2 + (3*b^4*d*e^4 + 2*a*b^3*e^5)*x^4 + (3*b^4*d^2*e^3 + 6*a*b^3
*d*e^4 + a^2*b^2*e^5)*x^3 + (b^4*d^3*e^2 + 6*a*b^3*d^2*e^3 + 3*a^2*b^2*d*e^
4)*x^2 + (2*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3)*x)*sqrt(-b/(b*d - a*e))*arct
an(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (315*b^
4*e^4*x^4 - 10*b^4*d^4 + 85*a*b^3*d^3*e + 288*a^2*b^2*d^2*e^2 - 56*a^3*b*d*
e^3 + 8*a^4*e^4 + 105*(7*b^4*d*e^3 + 5*a*b^3*e^4)*x^3 + 21*(23*b^4*d^2*e^2
+ 59*a*b^3*d*e^3 + 8*a^2*b^2*e^4)*x^2 + 3*(15*b^4*d^3*e + 277*a*b^3*d^2*e^2
 + 136*a^2*b^2*d*e^3 - 8*a^3*b*e^4)*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*
b^4*d^7*e + 10*a^4*b^3*d^6*e^2 - 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7
*d^3*e^5 + (b^7*d^5*e^3 - 5*a*b^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4
*d^2*e^6 + 5*a^4*b^3*d*e^7 - a^5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d
^5*e^3 + 20*a^2*b^5*d^4*e^4 - 10*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^
5*b^2*d*e^7 - 2*a^6*b*e^8)*x^4 + (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d
^5*e^3 + 25*a^3*b^4*d^4*e^4 - 35*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6
*b*d*e^7 - a^7*e^8)*x^3 + (b^7*d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*
a^3*b^4*d^5*e^3 - 25*a^4*b^3*d^4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 -
3*a^7*d*e^7)*x^2 + (2*a*b^6*d^8 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*
a^4*b^3*d^5*e^3 - 20*a^5*b^2*d^4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x)
]
```

giac [B] time = 0.23, size = 379, normalized size = 1.93

$$\frac{63\,b^3\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)\sqrt{-b^2d+abe}}+\frac{15\,(xe+d)^{\frac{3}{2}}b^4e^2-17\,\sqrt{xe+d}\,b^4de^2+17\,\sqrt{xe+d}\,ab^3e^3}{4\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)\left((xe+d)b-bd+ae\right)^2}+\frac{2\left(30\,(xe+d)^2b^2e^2+5\,(xe+d)b^2de^2+b^2d^2e^2-5\,(xe+d)abe^3-2\,abde^3+a^2e^4\right)}{5\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 63/4*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^5*d^5 - 5*a*b
^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^
5)*sqrt(-b^2*d + a*b*e)) + 1/4*(15*(x*e + d)^(3/2)*b^4*e^2 - 17*sqrt(x*e +
d)*b^4*d*e^2 + 17*sqrt(x*e + d)*a*b^3*e^3)/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a
^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*((x*e + d)*b
 - b*d + a*e)^2) + 2/5*(30*(x*e + d)^2*b^2*e^2 + 5*(x*e + d)*b^2*d*e^2 + b^
2*d^2*e^2 - 5*(x*e + d)*a*b*e^3 - 2*a*b*d*e^3 + a^2*e^4)/((b^5*d^5 - 5*a*b^
```

```
4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5
)*(x*e + d)^(5/2))
```

maple [A] time = 0.07, size = 231, normalized size = 1.18

$$-\frac{17\sqrt{ex+d}\,a\,b^{3}e^{3}}{4\left(ae-bd\right)^{5}\left(bex+ae\right)^{2}}+\frac{17\sqrt{ex+d}\,b^{4}d\,e^{2}}{4\left(ae-bd\right)^{5}\left(bex+ae\right)^{2}}-\frac{15\left(ex+d\right)^{\frac{3}{2}}b^{4}e^{2}}{4\left(ae-bd\right)^{5}\left(bex+ae\right)^{2}}-\frac{63b^{3}e^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)}{4\left(ae-bd\right)^{5}\sqrt{\left(ae-bd\right)b}}-\frac{12b^{2}e^{2}}{\left(ae-bd\right)^{5}\sqrt{ex+d}}+\frac{2b\,e^{2}}{\left(ae-bd\right)^{4}\left(ex+d\right)^{\frac{3}{2}}}-\frac{2e^{2}}{5\left(ae-bd\right)^{3}\left(ex+d\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -15/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^2*(e*x+d)^(3/2)-17/4*e^3/(a*e-b*d)^5*
b^3/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a+17/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^2*(e
*x+d)^(1/2)*d-63/4*e^2/(a*e-b*d)^5*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)-2/5*e^2/(a*e-b*d)^3/(e*x+d)^(5/2)-12*e^2/(a*e-b
*d)^5*b^2/(e*x+d)^(1/2)+2*e^2/(a*e-b*d)^4*b/(e*x+d)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.54, size = 284, normalized size = 1.45

$$-\frac{\frac{2\,e^2}{5\,\left(a\,e-b\,d\right)}+\frac{42\,b^2\,e^2\,{\left(d+e\,x\right)}^2}{5\,{\left(a\,e-b\,d\right)}^3}+\frac{105\,b^3\,e^2\,{\left(d+e\,x\right)}^3}{4\,{\left(a\,e-b\,d\right)}^4}+\frac{63\,b^4\,e^2\,{\left(d+e\,x\right)}^4}{4\,{\left(a\,e-b\,d\right)}^5}-\frac{6\,b\,e^2\,\left(d+e\,x\right)}{5\,{\left(a\,e-b\,d\right)}^2}}{b^2\,{\left(d+e\,x\right)}^{9/2}-\left(2\,b^2\,d-2\,a\,b\,e\right)\,{\left(d+e\,x\right)}^{7/2}+{\left(d+e\,x\right)}^{5/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}-\frac{63\,b^{5/2}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5\right)}{{\left(a\,e-b\,d\right)}^{11/2}}\right)}{4\,{\left(a\,e-b\,d\right)}^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*e^2)/(5*(a*e - b*d)) + (42*b^2*e^2*(d + e*x)^2)/(5*(a*e - b*d)^3) + (
105*b^3*e^2*(d + e*x)^3)/(4*(a*e - b*d)^4) + (63*b^4*e^2*(d + e*x)^4)/(4*(a
*e - b*d)^5) - (6*b*e^2*(d + e*x))/(5*(a*e - b*d)^2))/(b^2*(d + e*x)^(9/2)
- (2*b^2*d - 2*a*b*e)*(d + e*x)^(7/2) + (d + e*x)^(5/2)*(a^2*e^2 + b^2*d^2
- 2*a*b*d*e)) - (63*b^(5/2)*e^2*atan((b^(1/2)*(d + e*x)^(1/2)*(a^5*e^5 - b^
5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d
*e^4))/(a*e - b*d)^(11/2)))/(4*(a*e - b*d)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1858 $\int \frac{(a+bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=198

$$-\frac{1155e^4(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{13/2}}+\frac{1155e^4\sqrt{d+ex}\,(bd-ae)}{64b^6}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{11e(d+ex)^{\cdot}}{24b^2(a+b\cdot}$$

Rubi [A] time = 0.12, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {27, 47, 50, 63, 208}

$$-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}+\frac{1155e^4\sqrt{d+ex}\,(bd-ae)}{64b^6}-\frac{1155e^4(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{13/2}}-\frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{11/2}}{4b(a+bx)^4}+\frac{385e^4(d+ex)^{3/2}}{64b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (1155*e^4*(b*d - a*e)*Sqrt[d + e*x])/(64*b^6) + (385*e^4*(d + e*x)^(3/2))/(
64*b^5) - (231*e^3*(d + e*x)^(5/2))/(64*b^4*(a + b*x)) - (33*e^2*(d + e*x)^
(7/2))/(32*b^3*(a + b*x)^2) - (11*e*(d + e*x)^(9/2))/(24*b^2*(a + b*x)^3) -
 (d + e*x)^(11/2)/(4*b*(a + b*x)^4) - (1155*e^4*(b*d - a*e)^(3/2)*ArcTanh[(
Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(d+ex)^{11/2}}{(a+bx)^5}\,dx$$

$$= -\frac{(d+ex)^{11/2}}{4b(a+bx)^4} + \frac{(11e)\int \frac{(d+ex)^{9/2}}{(a+bx)^4}\,dx}{8b}$$

$$= -\frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{11/2}}{4b(a+bx)^4} + \frac{\left(33e^2\right)\int \frac{(d+ex)^{7/2}}{(a+bx)^3}\,dx}{16b^2}$$

$$= -\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2} - \frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{11/2}}{4b(a+bx)^4} + \frac{\left(231e^3\right)\int \frac{(d+ex)^{5/2}}{(a+bx)^2}\,dx}{64b^3}$$

$$= -\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)} - \frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2} - \frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{11/2}}{4b(a+bx)^4} + \frac{\left(1155e^4\right)\int}{12}$$

$$= \frac{385e^4(d+ex)^{3/2}}{64b^5} - \frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)} - \frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2} - \frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3} - \frac{(d+ex}{4b(a+}$$

$$= \frac{1155e^4(bd-ae)\sqrt{d+ex}}{64b^6} + \frac{385e^4(d+ex)^{3/2}}{64b^5} - \frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)} - \frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}$$

$$= \frac{1155e^4(bd-ae)\sqrt{d+ex}}{64b^6} + \frac{385e^4(d+ex)^{3/2}}{64b^5} - \frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)} - \frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}$$

$$= \frac{1155e^4(bd-ae)\sqrt{d+ex}}{64b^6} + \frac{385e^4(d+ex)^{3/2}}{64b^5} - \frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)} - \frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}$$

Mathematica [C] time = 0.03, size = 52, normalized size = 0.26

$$\frac{2e^4(d+ex)^{13/2}\,{}_2F_1\left(5,\frac{13}{2};\frac{15}{2};-\frac{b(d+ex)}{ae-bd}\right)}{13(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(13/2)*Hypergeometric2F1[5, 13/2, 15/2, -((b*(d + e*x))/(-
(b*d) + a*e))])/(13*(-(b*d) + a*e)^5)
```

IntegrateAlgebraic [B] time = 1.81, size = 436, normalized size = 2.20

$$\frac{1155\left(-a^3e^7+3a^2bde^6-3ab^2d^2e^5+b^3d^3e^4\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{13/2}(ae-bd)^{3/2}} + \frac{e^4\sqrt{d+ex}\left(-3465a^5e^5-12705a^4be^4(d+ex)+17325a^4bde^4-34650a^3b^2d^2e^3-16863a^3b^2e^3(d+ex)^2+50820a^3b^2de^3(d+ex)+34650a^2b^3d^3e^2-76230a^2b^3d^2e^2(d+ex)-9207a^2b^3e^2(d+ex)^3+50589a^2b^3de^2(d+ex)^2-17325ab^4d^4e+50820ab^4d^3e(d+ex)-50589ab^4d^2e(d+ex)^2-1408ab^4e(d+ex)^4+18414ab^4de(d+ex)^3+3465b^5d^5-12705b^5d^4(d+ex)+16863b^5d^3(d+ex)^2-9207b^5d^2(d+ex)^3+128b^5(d+ex)^5+1408b^5d(d+ex)^4\right)}{192b^6(ae+b(d+ex)-bd)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3
,x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(3465*b^5*d^5 - 17325*a*b^4*d^4*e + 34650*a^2*b^3*d^3*e^
2 - 34650*a^3*b^2*d^2*e^3 + 17325*a^4*b*d*e^4 - 3465*a^5*e^5 - 12705*b^5*d^
```

```
4*(d + e*x) + 50820*a*b^4*d^3*e*(d + e*x) - 76230*a^2*b^3*d^2*e^2*(d + e*x)
 + 50820*a^3*b^2*d*e^3*(d + e*x) - 12705*a^4*b*e^4*(d + e*x) + 16863*b^5*d^
3*(d + e*x)^2 - 50589*a*b^4*d^2*e*(d + e*x)^2 + 50589*a^2*b^3*d*e^2*(d + e*
x)^2 - 16863*a^3*b^2*e^3*(d + e*x)^2 - 9207*b^5*d^2*(d + e*x)^3 + 18414*a*b
^4*d*e*(d + e*x)^3 - 9207*a^2*b^3*e^2*(d + e*x)^3 + 1408*b^5*d*(d + e*x)^4
- 1408*a*b^4*e*(d + e*x)^4 + 128*b^5*(d + e*x)^5))/(192*b^6*(-(b*d) + a*e +
 b*(d + e*x))^4) + (1155*(b^3*d^3*e^4 - 3*a*b^2*d^2*e^5 + 3*a^2*b*d*e^6 - a
^3*e^7)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64
*b^(13/2)*(-(b*d) + a*e)^(3/2))
```

fricas [**B**] time = 0.46, size = 968, normalized size = 4.89

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fric
as")
```

```
[Out] [-1/384*(3465*(a^4*b*d*e^4 - a^5*e^5 + (b^5*d*e^4 - a*b^4*e^5)*x^4 + 4*(a*b
^4*d*e^4 - a^2*b^3*e^5)*x^3 + 6*(a^2*b^3*d*e^4 - a^3*b^2*e^5)*x^2 + 4*(a^3*
b^2*d*e^4 - a^4*b*e^5)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*
sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(128*b^5*e^5*x^5 - 48*b
^5*d^5 - 88*a*b^4*d^4*e - 198*a^2*b^3*d^3*e^2 - 693*a^3*b^2*d^2*e^3 + 4620*
a^4*b*d*e^4 - 3465*a^5*e^5 + 128*(16*b^5*d*e^4 - 11*a*b^4*e^5)*x^4 - (2295*
b^5*d^2*e^3 - 12782*a*b^4*d*e^4 + 9207*a^2*b^3*e^5)*x^3 - (1030*b^5*d^3*e^2
 + 3795*a*b^4*d^2*e^3 - 22968*a^2*b^3*d*e^4 + 16863*a^3*b^2*e^5)*x^2 - (328
*b^5*d^4*e + 748*a*b^4*d^3*e^2 + 2673*a^2*b^3*d^2*e^3 - 17094*a^3*b^2*d*e^4
 + 12705*a^4*b*e^5)*x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x
^2 + 4*a^3*b^7*x + a^4*b^6), -1/192*(3465*(a^4*b*d*e^4 - a^5*e^5 + (b^5*d*e
^4 - a*b^4*e^5)*x^4 + 4*(a*b^4*d*e^4 - a^2*b^3*e^5)*x^3 + 6*(a^2*b^3*d*e^4
- a^3*b^2*e^5)*x^2 + 4*(a^3*b^2*d*e^4 - a^4*b*e^5)*x)*sqrt(-(b*d - a*e)/b)*
arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (128*b^5*e^5*x^
5 - 48*b^5*d^5 - 88*a*b^4*d^4*e - 198*a^2*b^3*d^3*e^2 - 693*a^3*b^2*d^2*e^3
 + 4620*a^4*b*d*e^4 - 3465*a^5*e^5 + 128*(16*b^5*d*e^4 - 11*a*b^4*e^5)*x^4
- (2295*b^5*d^2*e^3 - 12782*a*b^4*d*e^4 + 9207*a^2*b^3*e^5)*x^3 - (1030*b^5
*d^3*e^2 + 3795*a*b^4*d^2*e^3 - 22968*a^2*b^3*d*e^4 + 16863*a^3*b^2*e^5)*x^
2 - (328*b^5*d^4*e + 748*a*b^4*d^3*e^2 + 2673*a^2*b^3*d^2*e^3 - 17094*a^3*b
^2*d*e^4 + 12705*a^4*b*e^5)*x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a
^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6)]
```

giac [**B**] time = 0.24, size = 476, normalized size = 2.40

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac
")
```

```
[Out] 1155/64*(b^2*d^2*e^4 - 2*a*b*d*e^5 + a^2*e^6)*arctan(sqrt(x*e + d)*b/sqrt(-
b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^6) - 1/192*(2295*(x*e + d)^(7/2)*b^
5*d^2*e^4 - 5855*(x*e + d)^(5/2)*b^5*d^3*e^4 + 5153*(x*e + d)^(3/2)*b^5*d^4
*e^4 - 1545*sqrt(x*e + d)*b^5*d^5*e^4 - 4590*(x*e + d)^(7/2)*a*b^4*d*e^5 +
17565*(x*e + d)^(5/2)*a*b^4*d^2*e^5 - 20612*(x*e + d)^(3/2)*a*b^4*d^3*e^5 +
 7725*sqrt(x*e + d)*a*b^4*d^4*e^5 + 2295*(x*e + d)^(7/2)*a^2*b^3*e^6 - 1756
5*(x*e + d)^(5/2)*a^2*b^3*d*e^6 + 30918*(x*e + d)^(3/2)*a^2*b^3*d^2*e^6 - 1
5450*sqrt(x*e + d)*a^2*b^3*d^3*e^6 + 5855*(x*e + d)^(5/2)*a^3*b^2*e^7 - 206
12*(x*e + d)^(3/2)*a^3*b^2*d*e^7 + 15450*sqrt(x*e + d)*a^3*b^2*d^2*e^7 + 51
53*(x*e + d)^(3/2)*a^4*b*e^8 - 7725*sqrt(x*e + d)*a^4*b*d*e^8 + 1545*sqrt(x
*e + d)*a^5*e^9)/(((x*e + d)*b - b*d + a*e)^4*b^6) + 2/3*((x*e + d)^(3/2)*b
^10*e^4 + 15*sqrt(x*e + d)*b^10*d*e^4 - 15*sqrt(x*e + d)*a*b^9*e^5)/b^15
```

maple [B] time = 0.07, size = 701, normalized size = 3.54

$$-\frac{515\sqrt{ex+d}\,a^5e^9}{64\,(bex+ae)^4\,b^6}+\frac{2575\sqrt{ex+d}\,a^4de^8}{64\,(bex+ae)^4\,b^5}-\frac{2575\sqrt{ex+d}\,a^3d^2e^7}{32\,(bex+ae)^4\,b^4}+\frac{2575\sqrt{ex+d}\,a^2d^3e^6}{32\,(bex+ae)^4\,b^3}-\frac{2575\sqrt{ex+d}\,a\,d^4e^5}{64\,(bex+ae)^4\,b^2}+\frac{515\sqrt{ex+d}\,d^5e^4}{64\,(bex+ae)^4\,b}-\frac{5153\,(ex+d)^{\frac{3}{2}}a^4e^8}{192\,(bex+ae)^4\,b^5}+\frac{5153\,(ex+d)^{\frac{3}{2}}a^3de^7}{48\,(bex+ae)^4\,b^4}-\frac{5153\,(ex+d)^{\frac{3}{2}}a^2d^2e^6}{32\,(bex+ae)^4\,b^3}+\frac{5153\,(ex+d)^{\frac{3}{2}}a\,d^3e^5}{48\,(bex+ae)^4\,b^2}-\frac{5153\,(ex+d)^{\frac{3}{2}}d^4e^4}{192\,(bex+ae)^4\,b}-\frac{5855\,(ex+d)^{\frac{5}{2}}a^3e^7}{192\,(bex+ae)^4\,b^4}+\frac{5855\,(ex+d)^{\frac{5}{2}}a^2de^6}{64\,(bex+ae)^4\,b^3}-\frac{5855\,(ex+d)^{\frac{5}{2}}a\,d^2e^5}{64\,(bex+ae)^4\,b^2}+\frac{5855\,(ex+d)^{\frac{5}{2}}d^3e^4}{192\,(bex+ae)^4\,b}-\frac{765\,(ex+d)^{\frac{7}{2}}a^2e^6}{64\,(bex+ae)^4\,b^3}+\frac{765\,(ex+d)^{\frac{7}{2}}ade^5}{32\,(bex+ae)^4\,b^2}-\frac{765\,(ex+d)^{\frac{7}{2}}d^2e^4}{64\,(bex+ae)^4\,b}+\frac{1155a^2e^6\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{64\sqrt{(ae-bd)\,b}\,b^6}-\frac{1155ade^5\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{32\sqrt{(ae-bd)\,b}\,b^5}+\frac{1155d^2e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{64\sqrt{(ae-bd)\,b}\,b^4}-\frac{10\sqrt{ex+d}\,a\,e^5}{b^6}+\frac{10\sqrt{ex+d}\,d\,e^4}{b^5}+\frac{2\,(ex+d)^{\frac{3}{2}}e^4}{3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3*e^4*(e*x+d)^(3/2)/b^5-10*e^5/b^6*a*(e*x+d)^(1/2)+10*e^4/b^5*(e*x+d)^(1/
2)*d-765/64*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(7/2)*a^2+765/32*e^5/b^2/(b*e*x+a
*e)^4*(e*x+d)^(7/2)*a*d-765/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(7/2)*d^2-5855/1
92*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a^3+5855/64*e^6/b^3/(b*e*x+a*e)^4*(e
*x+d)^(5/2)*a^2*d-5855/64*e^5/b^2/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a*d^2+5855/19
2*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(5/2)*d^3-5153/192*e^8/b^5/(b*e*x+a*e)^4*(e*x
+d)^(3/2)*a^4+5153/48*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a^3*d-5153/32*e^6
/b^3/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^2*a^2+5153/48*e^5/b^2/(b*e*x+a*e)^4*(e*x
+d)^(3/2)*a*d^3-5153/192*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^4-515/64*e^9/b
^6/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^5+2575/64*e^8/b^5/(b*e*x+a*e)^4*(e*x+d)^(1
/2)*a^4*d-2575/32*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^3*d^2+2575/32*e^6/b
^3/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^2*d^3-2575/64*e^5/b^2/(b*e*x+a*e)^4*(e*x+d
)^(1/2)*a*d^4+515/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(1/2)*d^5+1155/64*e^6/b^6/
((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2-1155/32
*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*
d+1155/64*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.25, size = 535, normalized size = 2.70

$$\frac{2e^4(d+ex)^{3/2}}{3b^5}-\frac{(d+ex)^{7/2}\left(\frac{765a^2b^3e^6}{64}-\frac{765ab^4de^5}{32}+\frac{765b^5d^2e^4}{64}\right)+\sqrt{d+ex}\left(\frac{515a^5e^9}{64}-\frac{2575a^4bde^8}{64}+\frac{2575a^3b^2d^2e^7}{32}-\frac{2575a^2b^3d^3e^6}{32}+\frac{2575ab^4d^4e^5}{64}-\frac{515b^5d^5e^4}{64}\right)+(d+ex)^{5/2}\left(\frac{5855a^3b^2e^7}{192}-\frac{5855a^2b^3de^6}{64}+\frac{5855ab^4d^2e^5}{64}-\frac{5855b^5d^3e^4}{192}\right)+(d+ex)^{3/2}\left(\frac{5153a^4be^8}{192}-\frac{5153a^3b^2de^7}{48}+\frac{5153a^2b^3d^2e^6}{32}-\frac{5153ab^4d^3e^5}{48}+\frac{5153b^5d^4e^4}{192}\right)}{b^{10}(d+ex)^4-\left(4b^{10}d-4ab^9e\right)(d+ex)^3+b^{10}d^4+(d+ex)^2\left(6a^2b^8e^2-12ab^9de+6b^{10}d^2\right)-(d+ex)\left(-4a^3b^7e^3+12a^2b^8de^2-12ab^9d^2e+4b^{10}d^3\right)+a^4b^6e^4-4a^3b^7de^3+6a^2b^8d^2e^2-4ab^9d^3e}+\frac{2e^4\left(5b^5d-5ab^4e\right)\sqrt{d+ex}}{b^{10}}+\frac{1155e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4(ae-bd)^{3/2}\sqrt{d+ex}}{a^2e^6-2abde^5+b^2d^2e^4}\right)(ae-bd)^{3/2}}{64\,b^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*e^4*(d + e*x)^(3/2))/(3*b^5) - ((d + e*x)^(7/2)*((765*a^2*b^3*e^6)/64 +
(765*b^5*d^2*e^4)/64 - (765*a*b^4*d*e^5)/32) + (d + e*x)^(1/2)*((515*a^5*e^
9)/64 - (515*b^5*d^5*e^4)/64 + (2575*a*b^4*d^4*e^5)/64 - (2575*a^2*b^3*d^3*
e^6)/32 + (2575*a^3*b^2*d^2*e^7)/32 - (2575*a^4*b*d*e^8)/64) + (d + e*x)^(5
/2)*((5855*a^3*b^2*e^7)/192 - (5855*b^5*d^3*e^4)/192 + (5855*a*b^4*d^2*e^5)
/64 - (5855*a^2*b^3*d*e^6)/64) + (d + e*x)^(3/2)*((5153*a^4*b*e^8)/192 + (5
153*b^5*d^4*e^4)/192 - (5153*a*b^4*d^3*e^5)/48 - (5153*a^3*b^2*d*e^7)/48 +
(5153*a^2*b^3*d^2*e^6)/32))/(b^10*(d + e*x)^4 - (4*b^10*d - 4*a*b^9*e)*(d +
 e*x)^3 + b^10*d^4 + (d + e*x)^2*(6*b^10*d^2 + 6*a^2*b^8*e^2 - 12*a*b^9*d*e
) - (d + e*x)*(4*b^10*d^3 - 4*a^3*b^7*e^3 + 12*a^2*b^8*d*e^2 - 12*a*b^9*d^2
*e) + a^4*b^6*e^4 - 4*a^3*b^7*d*e^3 + 6*a^2*b^8*d^2*e^2 - 4*a*b^9*d^3*e) +
(2*e^4*(5*b^5*d - 5*a*b^4*e)*(d + e*x)^(1/2))/b^10 + (1155*e^4*atan((b^(1/2
)*e^4*(a*e - b*d)^(3/2)*(d + e*x)^(1/2))/(a^2*e^6 + b^2*d^2*e^4 - 2*a*b*d*e
^5))*(a*e - b*d)^(3/2))/(64*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(11/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1859 $\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=171

$$-\frac{315e^4\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{11/2}}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{315e^4\sqrt{d+ex}}{64b^5}$$

Rubi [A] time = 0.08, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 50, 63, 208}

$$-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{315e^4\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{11/2}}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{315e^4\sqrt{d+ex}}{64b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (315*e^4*Sqrt[d + e*x])/(64*b^5) - (105*e^3*(d + e*x)^(3/2))/(64*b^4*(a + b
*x)) - (21*e^2*(d + e*x)^(5/2))/(32*b^3*(a + b*x)^2) - (3*e*(d + e*x)^(7/2)
)/(8*b^2*(a + b*x)^3) - (d + e*x)^(9/2)/(4*b*(a + b*x)^4) - (315*e^4*Sqrt[b
*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^{9/2}}{(a+bx)^5}\,dx \\
&= -\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{(9e)\int \frac{(d+ex)^{7/2}}{(a+bx)^4}\,dx}{8b} \\
&= -\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{\left(21e^2\right)\int \frac{(d+ex)^{5/2}}{(a+bx)^3}\,dx}{16b^2} \\
&= -\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{\left(105e^3\right)\int \frac{(d+ex)^{3/2}}{(a+bx)^2}\,dx}{64b^3} \\
&= -\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{\left(315e^4\right)\int \frac{\sqrt{d+e}}{a+b}}{128b^4} \\
&= \frac{315e^4\sqrt{d+ex}}{64b^5}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+ \\
&= \frac{315e^4\sqrt{d+ex}}{64b^5}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+ \\
&= \frac{315e^4\sqrt{d+ex}}{64b^5}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}-
\end{aligned}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.30

$$\frac{2e^4(d+ex)^{11/2}\,{}_2F_1\left(5,\frac{11}{2};\frac{13}{2};-\frac{b(d+ex)}{ae-bd}\right)}{11(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(11/2)*Hypergeometric2F1[5, 11/2, 13/2, -((b*(d + e*x))/(-
(b*d) + a*e))])/(11*(-(b*d) + a*e)^5)
```

IntegrateAlgebraic [A] time = 1.34, size = 296, normalized size = 1.73

$$\frac{e^4\sqrt{d+ex}\left(315a^4e^4+1155a^3be^3(d+ex)-1260a^3bde^3+1890a^2b^2d^2e^2+1533a^2b^2e^2(d+ex)^2-3465a^2b^2de^2(d+ex)-1260ab^3d^3e+3465ab^3d^2e(d+ex)+837ab^3e(d+ex)^3-3066ab^3de(d+ex)^2+315b^4d^4-1155b^4d^3(d+ex)+1533b^4d^2(d+ex)^2+128b^4(d+ex)^4-837b^4d(d+ex)^3\right)}{64b^5(ae+b(d+ex)-bd)^4}+\frac{315e^4\sqrt{ae-bd}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(315*b^4*d^4 - 1260*a*b^3*d^3*e + 1890*a^2*b^2*d^2*e^2 -
 1260*a^3*b*d*e^3 + 315*a^4*e^4 - 1155*b^4*d^3*(d + e*x) + 3465*a*b^3*d^2*e
*(d + e*x) - 3465*a^2*b^2*d*e^2*(d + e*x) + 1155*a^3*b*e^3*(d + e*x) + 1533
*b^4*d^2*(d + e*x)^2 - 3066*a*b^3*d*e*(d + e*x)^2 + 1533*a^2*b^2*e^2*(d + e
*x)^2 - 837*b^4*d*(d + e*x)^3 + 837*a*b^3*e*(d + e*x)^3 + 128*b^4*(d + e*x)
```

```
^4))/(64*b^5*(-(b*d) + a*e + b*(d + e*x))^4) + (315*e^4*Sqrt[-(b*d) + a*e]*
ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(11/2
))
```

fricas [B] time = 0.44, size = 680, normalized size = 3.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/128*(315*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x +
d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(128*b^4*e^4*x^4 - 16*b^4*d^4 - 24
*a*b^3*d^3*e - 42*a^2*b^2*d^2*e^2 - 105*a^3*b*d*e^3 + 315*a^4*e^4 - (325*b^
4*d*e^3 - 837*a*b^3*e^4)*x^3 - 3*(70*b^4*d^2*e^2 + 185*a*b^3*d*e^3 - 511*a^
2*b^2*e^4)*x^2 - (88*b^4*d^3*e + 156*a*b^3*d^2*e^2 + 399*a^2*b^2*d*e^3 - 11
55*a^3*b*e^4)*x)*sqrt(e*x + d))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*
a^3*b^6*x + a^4*b^5), -1/64*(315*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2
*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
 d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (128*b^4*e^4*x^4 - 16*b^4*d^4 - 2
4*a*b^3*d^3*e - 42*a^2*b^2*d^2*e^2 - 105*a^3*b*d*e^3 + 315*a^4*e^4 - (325*b
^4*d*e^3 - 837*a*b^3*e^4)*x^3 - 3*(70*b^4*d^2*e^2 + 185*a*b^3*d*e^3 - 511*a
^2*b^2*e^4)*x^2 - (88*b^4*d^3*e + 156*a*b^3*d^2*e^2 + 399*a^2*b^2*d*e^3 - 1
155*a^3*b*e^4)*x)*sqrt(e*x + d))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4
*a^3*b^6*x + a^4*b^5)]
```

giac [B] time = 0.23, size = 343, normalized size = 2.01

$$\frac{315 \left(bde^4 - ae^5\right) \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2 d+abe}}\right)}{64 \sqrt{-b^2 d + abe}\, b^5} + \frac{2 \sqrt{xe+d}\, e^4}{b^5} - \frac{325 (xe+d)^{\frac{7}{2}} b^4 de^4 - 765 (xe+d)^{\frac{5}{2}} b^4 d^2 e^4 + 643 (xe+d)^{\frac{3}{2}} b^4 d^3 e^4 - 187 \sqrt{xe+d}\, b^4 d^4 e^4 - 325 (xe+d)^{\frac{7}{2}} ab^3 e^5 + 1530 (xe+d)^{\frac{5}{2}} ab^3 de^5 - 1929 (xe+d)^{\frac{3}{2}} ab^3 d^2 e^5 + 748 \sqrt{xe+d}\, ab^3 d^3 e^5 - 765 (xe+d)^{\frac{5}{2}} a^2 b^2 e^6 + 1929 (xe+d)^{\frac{3}{2}} a^2 b^2 de^6 - 1122 \sqrt{xe+d}\, a^2 b^2 d^2 e^6 - 643 (xe+d)^{\frac{3}{2}} a^3 be^7 + 748 \sqrt{xe+d}\, a^3 bde^7 - 187 \sqrt{xe+d}\, a^4 e^8}{64 \left((xe+d)b - bd + ae\right)^4 b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 315/64*(b*d*e^4 - a*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt
(-b^2*d + a*b*e)*b^5) + 2*sqrt(x*e + d)*e^4/b^5 - 1/64*(325*(x*e + d)^(7/2)
*b^4*d*e^4 - 765*(x*e + d)^(5/2)*b^4*d^2*e^4 + 643*(x*e + d)^(3/2)*b^4*d^3*
e^4 - 187*sqrt(x*e + d)*b^4*d^4*e^4 - 325*(x*e + d)^(7/2)*a*b^3*e^5 + 1530*
(x*e + d)^(5/2)*a*b^3*d*e^5 - 1929*(x*e + d)^(3/2)*a*b^3*d^2*e^5 + 748*sqrt
(x*e + d)*a*b^3*d^3*e^5 - 765*(x*e + d)^(5/2)*a^2*b^2*e^6 + 1929*(x*e + d)^
(3/2)*a^2*b^2*d*e^6 - 1122*sqrt(x*e + d)*a^2*b^2*d^2*e^6 - 643*(x*e + d)^(3
/2)*a^3*b*e^7 + 748*sqrt(x*e + d)*a^3*b*d*e^7 - 187*sqrt(x*e + d)*a^4*e^8)/
(((x*e + d)*b - b*d + a*e)^4*b^5)
```

maple [B] time = 0.07, size = 497, normalized size = 2.91

$$\frac{187\sqrt{ex+d}\, a^4 e^8}{64 (bex+ae)^4 b^5} - \frac{187\sqrt{ex+d}\, a^3 d e^7}{16 (bex+ae)^4 b^4} + \frac{561\sqrt{ex+d}\, a^2 d^2 e^6}{32 (bex+ae)^4 b^3} - \frac{187\sqrt{ex+d}\, a d^3 e^5}{16 (bex+ae)^4 b^2} + \frac{187\sqrt{ex+d}\, d^4 e^4}{64 (bex+ae)^4 b} + \frac{643 (ex+d)^{\frac{3}{2}} a^3 e^7}{64 (bex+ae)^4 b^4} - \frac{1929 (ex+d)^{\frac{3}{2}} a^2 d e^6}{64 (bex+ae)^4 b^3} + \frac{1929 (ex+d)^{\frac{3}{2}} a d^2 e^5}{64 (bex+ae)^4 b^2} - \frac{643 (ex+d)^{\frac{3}{2}} d^3 e^4}{64 (bex+ae)^4 b} + \frac{765 (ex+d)^{\frac{5}{2}} a^2 e^6}{64 (bex+ae)^4 b^3} - \frac{765 (ex+d)^{\frac{5}{2}} a d e^5}{32 (bex+ae)^4 b^2} + \frac{765 (ex+d)^{\frac{5}{2}} d^2 e^4}{64 (bex+ae)^4 b} + \frac{325 (ex+d)^{\frac{7}{2}} a e^5}{64 (bex+ae)^4 b^2} - \frac{325 (ex+d)^{\frac{7}{2}} d e^4}{64 (bex+ae)^4 b} - \frac{315 a e^5 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right)}{64\sqrt{(ae-bd)b}\, b^5} + \frac{315 d e^4 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right)}{64\sqrt{(ae-bd)b}\, b^4} + \frac{2\sqrt{ex+d}\, e^4}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*e^4*(e*x+d)^(1/2)/b^5+325/64*e^5/b^2/(b*e*x+a*e)^4*(e*x+d)^(7/2)*a-325/64
*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(7/2)*d+765/64*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(
5/2)*a^2-765/32*e^5/b^2/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a*d+765/64*e^4/b/(b*e*x
+a*e)^4*(e*x+d)^(5/2)*d^2+643/64*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a^3-19
29/64*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a^2*d+1929/64*e^5/b^2/(b*e*x+a*e)
^4*(e*x+d)^(3/2)*a*d^2-643/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^3+187/64*
```

```
e^8/b^5/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^4-187/16*e^7/b^4/(b*e*x+a*e)^4*(e*x+d
)^(1/2)*a^3*d+561/32*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^2*d^2-187/16*e^5
/b^2/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a*d^3+187/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(
1/2)*d^4-315/64*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)*a+315/64*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.25, size = 436, normalized size = 2.55

$$\frac{(d+e\,x)^{5/2}\,\left(\frac{765\,a^2\,b^2\,e^6}{64}-\frac{765\,a\,b^3\,d\,e^5}{32}+\frac{765\,b^4\,d^2\,e^4}{64}\right)+(d+e\,x)^{3/2}\,\left(\frac{643\,a^3\,b\,e^7}{64}-\frac{1929\,a^2\,b^2\,d\,e^6}{64}+\frac{1929\,a\,b^3\,d^2\,e^5}{64}-\frac{643\,b^4\,d^3\,e^4}{64}\right)+\left(\frac{325\,a\,b^3\,e^5}{64}-\frac{325\,b^4\,d\,e^4}{64}\right)\,(d+e\,x)^{7/2}+\sqrt{d+e\,x}\,\left(\frac{187\,a^4\,e^8}{64}-\frac{187\,a^3\,b\,d\,e^7}{16}+\frac{561\,a^2\,b^2\,d^2\,e^6}{32}-\frac{187\,a\,b^3\,d^3\,e^5}{16}+\frac{187\,b^4\,d^4\,e^4}{64}\right)}{b^9\,(d+e\,x)^4-\left(4\,b^9\,d-4\,a\,b^8\,e\right)\,(d+e\,x)^3+b^9\,d^4+(d+e\,x)^2\,\left(6\,a^2\,b^7\,e^2-12\,a\,b^8\,d\,e+6\,b^9\,d^2\right)-(d+e\,x)\,\left(-4\,a^3\,b^6\,e^3+12\,a^2\,b^7\,d\,e^2-12\,a\,b^8\,d^2\,e+4\,b^9\,d^3\right)+a^4\,b^5\,e^4-4\,a^3\,b^6\,d\,e^3+6\,a^2\,b^7\,d^2\,e^2-4\,a\,b^8\,d^3\,e}+\frac{2\,e^4\,\sqrt{d+e\,x}}{b^5}-\frac{315\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{a\,e-b\,d}\,\sqrt{d+e\,x}}{a\,e^5-b\,d\,e^4}\right)\,\sqrt{a\,e-b\,d}}{64\,b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(5/2)*((765*a^2*b^2*e^6)/64 + (765*b^4*d^2*e^4)/64 - (765*a*b^3*
d*e^5)/32) + (d + e*x)^(3/2)*((643*a^3*b*e^7)/64 - (643*b^4*d^3*e^4)/64 + (
1929*a*b^3*d^2*e^5)/64 - (1929*a^2*b^2*d*e^6)/64) + ((325*a*b^3*e^5)/64 - (
325*b^4*d*e^4)/64)*(d + e*x)^(7/2) + (d + e*x)^(1/2)*((187*a^4*e^8)/64 + (1
87*b^4*d^4*e^4)/64 - (187*a*b^3*d^3*e^5)/16 + (561*a^2*b^2*d^2*e^6)/32 - (1
87*a^3*b*d*e^7)/16))/(b^9*(d + e*x)^4 - (4*b^9*d - 4*a*b^8*e)*(d + e*x)^3 +
 b^9*d^4 + (d + e*x)^2*(6*b^9*d^2 + 6*a^2*b^7*e^2 - 12*a*b^8*d*e) - (d + e*
x)*(4*b^9*d^3 - 4*a^3*b^6*e^3 + 12*a^2*b^7*d*e^2 - 12*a*b^8*d^2*e) + a^4*b^
5*e^4 - 4*a^3*b^6*d*e^3 + 6*a^2*b^7*d^2*e^2 - 4*a*b^8*d^3*e) + (2*e^4*(d +
e*x)^(1/2))/b^5 - (315*e^4*atan((b^(1/2)*e^4*(a*e - b*d)^(1/2)*(d + e*x)^(1
/2))/(a*e^5 - b*d*e^4))*(a*e - b*d)^(1/2))/(64*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1860 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=152

$$-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{9/2}\sqrt{bd-ae}}-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}$$

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 47, 63, 208}

$$-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{9/2}\sqrt{bd-ae}}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-35*e^3*Sqrt[d + e*x])/(64*b^4*(a + b*x)) - (35*e^2*(d + e*x)^(3/2))/(96*b
^3*(a + b*x)^2) - (7*e*(d + e*x)^(5/2))/(24*b^2*(a + b*x)^3) - (d + e*x)^(7
/2)/(4*b*(a + b*x)^4) - (35*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
a*e]])/(64*b^(9/2)*Sqrt[b*d - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^{7/2}}{(a+bx)^5}\,dx \\
&= -\frac{(d+ex)^{7/2}}{4b(a+bx)^4} + \frac{(7e)\int \frac{(d+ex)^{5/2}}{(a+bx)^4}\,dx}{8b} \\
&= -\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{7/2}}{4b(a+bx)^4} + \frac{\left(35e^2\right)\int \frac{(d+ex)^{3/2}}{(a+bx)^3}\,dx}{48b^2} \\
&= -\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2} - \frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{7/2}}{4b(a+bx)^4} + \frac{\left(35e^3\right)\int \frac{\sqrt{d+ex}}{(a+bx)^2}\,dx}{64b^3} \\
&= -\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)} - \frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2} - \frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{7/2}}{4b(a+bx)^4} + \frac{\left(35e^4\right)\int \frac{1}{(a+bx)\sqrt{\cdots}}}{128b^4} \\
&= -\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)} - \frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2} - \frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{7/2}}{4b(a+bx)^4} + \frac{\left(35e^3\right)\text{Subst}\left(\int \cdots\right.}{\cdots} \\
&= -\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)} - \frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2} - \frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{7/2}}{4b(a+bx)^4} - \frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\cdots}{\sqrt{\cdots}}\right)}{64b^{9/2}\sqrt{bd-\cdots}}
\end{aligned}
$$

Mathematica [**A**] time = 0.21, size = 152, normalized size = 1.00

$$
\frac{35e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{64b^{9/2}\sqrt{ae-bd}} - \frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)} - \frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2} - \frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3} - \frac{(d+ex)^{7/2}}{4b(a+bx)^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-35*e^3*Sqrt[d + e*x])/(64*b^4*(a + b*x)) - (35*e^2*(d + e*x)^(3/2))/(96*b
^3*(a + b*x)^2) - (7*e*(d + e*x)^(5/2))/(24*b^2*(a + b*x)^3) - (d + e*x)^(7
/2)/(4*b*(a + b*x)^4) + (35*e^4*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d)
+ a*e]])/(64*b^(9/2)*Sqrt[-(b*d) + a*e])
```

IntegrateAlgebraic [**A**] time = 1.14, size = 215, normalized size = 1.41

$$
-\frac{e^4\sqrt{d+ex}\left(105a^3e^3+385a^2be^2(d+ex)-315a^2bde^2+315ab^2d^2e+511ab^2e(d+ex)^2-770ab^2de(d+ex)-105b^3d^3+385b^3d^2(d+ex)+279b^3(d+ex)^3-511b^3d(d+ex)^2\right)}{192b^4(ae+b(d+ex)-bd)^4} - \frac{35e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{9/2}\sqrt{ae-bd}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] -1/192*(e^4*Sqrt[d + e*x]*(-105*b^3*d^3 + 315*a*b^2*d^2*e - 315*a^2*b*d*e^2
 + 105*a^3*e^3 + 385*b^3*d^2*(d + e*x) - 770*a*b^2*d*e*(d + e*x) + 385*a^2*
b*e^2*(d + e*x) - 511*b^3*d*(d + e*x)^2 + 511*a*b^2*e*(d + e*x)^2 + 279*b^3
*(d + e*x)^3))/(b^4*(-(b*d) + a*e + b*(d + e*x))^4) - (35*e^4*ArcTan[(Sqrt[
b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(9/2)*Sqrt[-(b*d)
+ a*e])
```

fricas [**B**] time = 0.45, size = 765, normalized size = 5.03

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/384*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(48*b^5*d^4 + 8*a*b^4*d^3*e + 14*a^2
*b^3*d^2*e^2 + 35*a^3*b^2*d*e^3 - 105*a^4*b*e^4 + 279*(b^5*d*e^3 - a*b^4*e^
4)*x^3 + (326*b^5*d^2*e^2 + 185*a*b^4*d*e^3 - 511*a^2*b^3*e^4)*x^2 + (200*b
^5*d^3*e + 52*a*b^4*d^2*e^2 + 133*a^2*b^3*d*e^3 - 385*a^3*b^2*e^4)*x)*sqrt(
e*x + d))/(a^4*b^6*d - a^5*b^5*e + (b^10*d - a*b^9*e)*x^4 + 4*(a*b^9*d - a^
2*b^8*e)*x^3 + 6*(a^2*b^8*d - a^3*b^7*e)*x^2 + 4*(a^3*b^7*d - a^4*b^6*e)*x)
, 1/192*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e
^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x +
 d)/(b*e*x + b*d)) - (48*b^5*d^4 + 8*a*b^4*d^3*e + 14*a^2*b^3*d^2*e^2 + 35*
a^3*b^2*d*e^3 - 105*a^4*b*e^4 + 279*(b^5*d*e^3 - a*b^4*e^4)*x^3 + (326*b^5*
d^2*e^2 + 185*a*b^4*d*e^3 - 511*a^2*b^3*e^4)*x^2 + (200*b^5*d^3*e + 52*a*b^
4*d^2*e^2 + 133*a^2*b^3*d*e^3 - 385*a^3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*b^6
*d - a^5*b^5*e + (b^10*d - a*b^9*e)*x^4 + 4*(a*b^9*d - a^2*b^8*e)*x^3 + 6*(
a^2*b^8*d - a^3*b^7*e)*x^2 + 4*(a^3*b^7*d - a^4*b^6*e)*x)]
```

giac [**A**] time = 0.22, size = 239, normalized size = 1.57

$$\frac{35\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\sqrt{-b^2d+abe}\,b^4}-\frac{279\,(xe+d)^{\frac{7}{2}}b^3e^4-511\,(xe+d)^{\frac{5}{2}}b^3de^4+385\,(xe+d)^{\frac{3}{2}}b^3d^2e^4-105\,\sqrt{xe+d}\,b^3d^3e^4+511\,(xe+d)^{\frac{5}{2}}ab^2e^5-770\,(xe+d)^{\frac{3}{2}}ab^2de^5+315\,\sqrt{xe+d}\,ab^2d^2e^5+385\,(xe+d)^{\frac{3}{2}}a^2be^6-315\,\sqrt{xe+d}\,a^2bde^6+105\,\sqrt{xe+d}\,a^3e^7}{192\,((xe+d)b-bd+ae)^4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 35/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/(sqrt(-b^2*d + a*b*e
)*b^4) - 1/192*(279*(x*e + d)^(7/2)*b^3*e^4 - 511*(x*e + d)^(5/2)*b^3*d*e^4
 + 385*(x*e + d)^(3/2)*b^3*d^2*e^4 - 105*sqrt(x*e + d)*b^3*d^3*e^4 + 511*(x
*e + d)^(5/2)*a*b^2*e^5 - 770*(x*e + d)^(3/2)*a*b^2*d*e^5 + 315*sqrt(x*e +
d)*a*b^2*d^2*e^5 + 385*(x*e + d)^(3/2)*a^2*b*e^6 - 315*sqrt(x*e + d)*a^2*b*
d*e^6 + 105*sqrt(x*e + d)*a^3*e^7)/(((x*e + d)*b - b*d + a*e)^4*b^4)
```

maple [**B**] time = 0.07, size = 318, normalized size = 2.09

$$-\frac{35\sqrt{ex+d}\;a^3e^7}{64\,(bex+ae)^4\,b^4}+\frac{105\sqrt{ex+d}\;a^2d\,e^6}{64\,(bex+ae)^4\,b^3}-\frac{105\sqrt{ex+d}\;a\,d^2e^5}{64\,(bex+ae)^4\,b^2}+\frac{35\sqrt{ex+d}\;d^3e^4}{64\,(bex+ae)^4\,b}-\frac{385\,(ex+d)^{\frac{3}{2}}\,a^2e^6}{192\,(bex+ae)^4\,b^3}+\frac{385\,(ex+d)^{\frac{3}{2}}\,ad\,e^5}{96\,(bex+ae)^4\,b^2}-\frac{385\,(ex+d)^{\frac{3}{2}}\,d^2e^4}{192\,(bex+ae)^4\,b}-\frac{511\,(ex+d)^{\frac{5}{2}}\,a\,e^5}{192\,(bex+ae)^4\,b^2}+\frac{511\,(ex+d)^{\frac{5}{2}}\,d\,e^4}{192\,(bex+ae)^4\,b}-\frac{93\,(ex+d)^{\frac{7}{2}}\,e^4}{64\,(bex+ae)^4\,b}+\frac{35e^4\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{64\sqrt{(ae-bd)\,b}\;b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -93/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(7/2)-511/192*e^5/(b*e*x+a*e)^4/b^2*(e*x
+d)^(5/2)*a+511/192*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(5/2)*d-385/192*e^6/(b*e*x+
a*e)^4/b^3*(e*x+d)^(3/2)*a^2+385/96*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(3/2)*a*d
-385/192*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(3/2)*d^2-35/64*e^7/(b*e*x+a*e)^4/b^4*
(e*x+d)^(1/2)*a^3+105/64*e^6/(b*e*x+a*e)^4/b^3*(e*x+d)^(1/2)*a^2*d-105/64*e
^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(1/2)*a*d^2+35/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^
(1/2)*d^3+35/64*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.18, size = 337, normalized size = 2.22

$$\frac{35\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{9/2}\,\sqrt{a\,e-b\,d}}-\frac{\frac{93\,e^4\,{\left(d+e\,x\right)}^{7/2}}{64\,b}+\frac{385\,e^4\,{\left(d+e\,x\right)}^{3/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{192\,b^3}+\frac{35\,e^4\,\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{64\,b^4}+\frac{511\,e^4\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{5/2}}{192\,b^2}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4+b^4\,d^4+{\left(d+e\,x\right)}^2\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e-4\,a^3\,b\,d\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (35*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(9/2)*(a*e
 - b*d)^(1/2)) - ((93*e^4*(d + e*x)^(7/2))/(64*b) + (385*e^4*(d + e*x)^(3/2
)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(192*b^3) + (35*e^4*(d + e*x)^(1/2)*(a^3
*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(64*b^4) + (511*e^4*(a*e -
 b*d)*(d + e*x)^(5/2))/(192*b^2))/(b^4*(d + e*x)^4 - (4*b^4*d - 4*a*b^3*e)*
(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 12*a*
b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2*b^2*e^2 - 1
2*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1861 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=162

$$\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{7/2}(bd-ae)^{3/2}}-\frac{5e^3\sqrt{d+ex}}{64b^3(a+bx)(bd-ae)}-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}$$

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 51, 63, 208}

$$-\frac{5e^3\sqrt{d+ex}}{64b^3(a+bx)(bd-ae)}-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}+\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{7/2}(bd-ae)^{3/2}}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-5*e^2*Sqrt[d + e*x])/(32*b^3*(a + b*x)^2) - (5*e^3*Sqrt[d + e*x])/(64*b^3
*(b*d - a*e)*(a + b*x)) - (5*e*(d + e*x)^(3/2))/(24*b^2*(a + b*x)^3) - (d +
 e*x)^(5/2)/(4*b*(a + b*x)^4) + (5*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt
[b*d - a*e]])/(64*b^(7/2)*(b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{(d+ex)^{5/2}}{(a+bx)^5}\,dx$$

$$=-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{(5e)\int \frac{(d+ex)^{3/2}}{(a+bx)^4}\,dx}{8b}$$

$$=-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{\left(5e^2\right)\int \frac{\sqrt{d+ex}}{(a+bx)^3}\,dx}{16b^2}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{\left(5e^3\right)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{64b^3}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e^3\sqrt{d+ex}}{64b^3(bd-ae)(a+bx)}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}-\frac{\left(5e^4\right)\int \cdots}{128b^3 \cdots}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e^3\sqrt{d+ex}}{64b^3(bd-ae)(a+bx)}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}-\frac{\left(5e^3\right)\text{Sub}\cdots}{\cdots}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e^3\sqrt{d+ex}}{64b^3(bd-ae)(a+bx)}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{5e^4\tanh\cdots}{64b^{7/2}\cdots}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.32

$$\frac{2e^4(d+ex)^{7/2}\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};-\frac{b(d+ex)}{ae-bd}\right)}{7(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(7/2)*Hypergeometric2F1[7/2, 5, 9/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(7*(-(b*d) + a*e)^5)
```

IntegrateAlgebraic [A] time = 1.21, size = 226, normalized size = 1.40

$$-\frac{e^4\sqrt{d+ex}\left(-15a^3e^3-55a^2be^2(d+ex)+45a^2bde^2-45ab^2d^2e-73ab^2e(d+ex)^2+110ab^2de(d+ex)+15b^3d^3-55b^3d^2(d+ex)+15b^3(d+ex)^3+73b^3d(d+ex)^2\right)}{192b^3(bd-ae)(-ae-b(d+ex)+bd)^4}-\frac{5e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{7/2}(ae-bd)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] -1/192*(e^4*Sqrt[d + e*x]*(15*b^3*d^3 - 45*a*b^2*d^2*e + 45*a^2*b*d*e^2 - 1
5*a^3*e^3 - 55*b^3*d^2*(d + e*x) + 110*a*b^2*d*e*(d + e*x) - 55*a^2*b*e^2*(
d + e*x) + 73*b^3*d*(d + e*x)^2 - 73*a*b^2*e*(d + e*x)^2 + 15*b^3*(d + e*x)
^3))/(b^3*(b*d - a*e)*(b*d - a*e - b*(d + e*x))^4) - (5*e^4*ArcTan[(Sqrt[b]
*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(7/2)*(-(b*d) + a*e)
^(3/2))
```

fricas [B] time = 0.46, size = 894, normalized size = 5.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/384*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(48*b^5*d^4 - 56*a*b^4*d^3*e - 2*a^2
*b^3*d^2*e^2 - 5*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*e^4)*
x^3 + (118*b^5*d^2*e^2 - 191*a*b^4*d*e^3 + 73*a^2*b^3*e^4)*x^2 + (136*b^5*d
^3*e - 172*a*b^4*d^2*e^2 - 19*a^2*b^3*d*e^3 + 55*a^3*b^2*e^4)*x)*sqrt(e*x +
 d))/(a^4*b^6*d^2 - 2*a^5*b^5*d*e + a^6*b^4*e^2 + (b^10*d^2 - 2*a*b^9*d*e +
 a^2*b^8*e^2)*x^4 + 4*(a*b^9*d^2 - 2*a^2*b^8*d*e + a^3*b^7*e^2)*x^3 + 6*(a^
2*b^8*d^2 - 2*a^3*b^7*d*e + a^4*b^6*e^2)*x^2 + 4*(a^3*b^7*d^2 - 2*a^4*b^6*d
*e + a^5*b^5*e^2)*x), -1/192*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2
*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d
 + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (48*b^5*d^4 - 56*a*b^4*d^3*e - 2*a
^2*b^3*d^2*e^2 - 5*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*e^4
)*x^3 + (118*b^5*d^2*e^2 - 191*a*b^4*d*e^3 + 73*a^2*b^3*e^4)*x^2 + (136*b^5
*d^3*e - 172*a*b^4*d^2*e^2 - 19*a^2*b^3*d*e^3 + 55*a^3*b^2*e^4)*x)*sqrt(e*x
 + d))/(a^4*b^6*d^2 - 2*a^5*b^5*d*e + a^6*b^4*e^2 + (b^10*d^2 - 2*a*b^9*d*e
 + a^2*b^8*e^2)*x^4 + 4*(a*b^9*d^2 - 2*a^2*b^8*d*e + a^3*b^7*e^2)*x^3 + 6*(
a^2*b^8*d^2 - 2*a^3*b^7*d*e + a^4*b^6*e^2)*x^2 + 4*(a^3*b^7*d^2 - 2*a^4*b^6
*d*e + a^5*b^5*e^2)*x)]
```

giac [A] time = 0.21, size = 265, normalized size = 1.64

$$-\frac{5 \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2 d+abe}}\right) e^4}{64 \left(b^4 d - ab^3 e\right)\sqrt{-b^2 d + abe}} - \frac{15 (xe+d)^{\frac{7}{2}} b^3 e^4 + 73 (xe+d)^{\frac{5}{2}} b^3 d e^4 - 55 (xe+d)^{\frac{3}{2}} b^3 d^2 e^4 + 15 \sqrt{xe+d}\, b^3 d^3 e^4 - 73 (xe+d)^{\frac{5}{2}} a b^2 e^5 + 110 (xe+d)^{\frac{3}{2}} a b^2 d e^5 - 45 \sqrt{xe+d}\, a b^2 d^2 e^5 - 55 (xe+d)^{\frac{3}{2}} a^2 b e^6 + 45 \sqrt{xe+d}\, a^2 b d e^6 - 15 \sqrt{xe+d}\, a^3 e^7}{192 \left(b^4 d - ab^3 e\right)\left((xe+d)b - bd + ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -5/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d - a*b^3*e)*s
qrt(-b^2*d + a*b*e)) - 1/192*(15*(x*e + d)^(7/2)*b^3*e^4 + 73*(x*e + d)^(5/
2)*b^3*d*e^4 - 55*(x*e + d)^(3/2)*b^3*d^2*e^4 + 15*sqrt(x*e + d)*b^3*d^3*e^
4 - 73*(x*e + d)^(5/2)*a*b^2*e^5 + 110*(x*e + d)^(3/2)*a*b^2*d*e^5 - 45*sqr
t(x*e + d)*a*b^2*d^2*e^5 - 55*(x*e + d)^(3/2)*a^2*b*e^6 + 45*sqrt(x*e + d)*
a^2*b*d*e^6 - 15*sqrt(x*e + d)*a^3*e^7)/((b^4*d - a*b^3*e)*((x*e + d)*b - b
*d + a*e)^4)
```

maple [A] time = 0.07, size = 246, normalized size = 1.52

$$-\frac{5\sqrt{ex+d}\; a^2 e^6}{64 \left(bex+ae\right)^4 b^3} + \frac{5\sqrt{ex+d}\; a d\, e^5}{32 \left(bex+ae\right)^4 b^2} - \frac{5\sqrt{ex+d}\; d^2 e^4}{64 \left(bex+ae\right)^4 b} - \frac{55 \left(ex+d\right)^{\frac{3}{2}} a\, e^5}{192 \left(bex+ae\right)^4 b^2} + \frac{55 \left(ex+d\right)^{\frac{3}{2}} d\, e^4}{192 \left(bex+ae\right)^4 b} + \frac{5 \left(ex+d\right)^{\frac{7}{2}} e^4}{64 \left(bex+ae\right)^4 \left(ae-bd\right)} - \frac{73 \left(ex+d\right)^{\frac{5}{2}} e^4}{192 \left(bex+ae\right)^4 b} + \frac{5 e^4 \arctan\left(\frac{\sqrt{ex+d}\; b}{\sqrt{(ae-bd)b}}\right)}{64 \left(ae-bd\right) \sqrt{\left(ae-bd\right) b}\; b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 5/64*e^4/(b*e*x+a*e)^4/(a*e-b*d)*(e*x+d)^(7/2)-73/192*e^4/(b*e*x+a*e)^4/b*(
e*x+d)^(5/2)-55/192*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(3/2)*a+55/192*e^4/(b*e*x
+a*e)^4/b*(e*x+d)^(3/2)*d-5/64*e^6/(b*e*x+a*e)^4/b^3*(e*x+d)^(1/2)*a^2+5/32
*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(1/2)*a*d-5/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(
1/2)*d^2+5/64*e^4/(a*e-b*d)/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.12, size = 309, normalized size = 1.91

$$\frac{5\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{7/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{73\,e^4\,{\left(d+e\,x\right)}^{5/2}}{192\,b}-\frac{5\,e^4\,{\left(d+e\,x\right)}^{7/2}}{64\,\left(a\,e-b\,d\right)}+\frac{5\,e^4\,\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{64\,b^3}+\frac{55\,e^4\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{3/2}}{192\,b^2}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4+b^4\,d^4+{\left(d+e\,x\right)}^2\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e-4\,a^3\,b\,d\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (5*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(7/2)*(a*e
- b*d)^(3/2)) - ((73*e^4*(d + e*x)^(5/2))/(192*b) - (5*e^4*(d + e*x)^(7/2))
/(64*(a*e - b*d)) + (5*e^4*(d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))
/(64*b^3) + (55*e^4*(a*e - b*d)*(d + e*x)^(3/2))/(192*b^2))/(b^4*(d + e*x)^
4 - (4*b^4*d - 4*a*b^3*e)*(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3
+ 12*a^2*b^2*d*e^2 - 12*a*b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b
^4*d^2 + 6*a^2*b^2*e^2 - 12*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e
- 4*a^3*b*d*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1862 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=172

$$-\frac{3e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{5/2}(bd-ae)^{5/2}}+\frac{3e^3\sqrt{d+ex}}{64b^2(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}}{32b^2(a+bx)^2(bd-ae)}-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

Rubi [A] time = 0.09, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 51, 63, 208}

$$\frac{3e^3\sqrt{d+ex}}{64b^2(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}}{32b^2(a+bx)^2(bd-ae)}-\frac{3e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{5/2}(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(e*Sqrt[d + e*x])/(8*b^2*(a + b*x)^3) - (e^2*Sqrt[d + e*x])/(32*b^2*(b*d -
 a*e)*(a + b*x)^2) + (3*e^3*Sqrt[d + e*x])/(64*b^2*(b*d - a*e)^2*(a + b*x))
 - (d + e*x)^(3/2)/(4*b*(a + b*x)^4) - (3*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]])/(64*b^(5/2)*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{(d+ex)^{3/2}}{(a+bx)^5}\,dx$$

$$=-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}+\frac{(3e)\int \frac{\sqrt{d+ex}}{(a+bx)^4}\,dx}{8b}$$

$$=-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}+\frac{e^2\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{16b^2}$$

$$=-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}-\frac{\left(3e^3\right)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{64b^2(bd-ae)}$$

$$=-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2}+\frac{3e^3\sqrt{d+ex}}{64b^2(bd-ae)^2(a+bx)}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}+$$

$$=-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2}+\frac{3e^3\sqrt{d+ex}}{64b^2(bd-ae)^2(a+bx)}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}+$$

$$=-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2}+\frac{3e^3\sqrt{d+ex}}{64b^2(bd-ae)^2(a+bx)}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}-$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.30

$$\frac{2e^4(d+ex)^{5/2}\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(5/2)*Hypergeometric2F1[5/2, 5, 7/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(5*(-(b*d) + a*e)^5)
```

IntegrateAlgebraic [A] time = 1.12, size = 226, normalized size = 1.31

$$\frac{e^4\sqrt{d+ex}\left(-3a^3e^3-11a^2be^2(d+ex)+9a^2bde^2-9ab^2d^2e+11ab^2e(d+ex)^2+22ab^2de(d+ex)+3b^3d^3-11b^3d^2(d+ex)+3b^3(d+ex)^3-11b^3d(d+ex)^2\right)}{64b^2(bd-ae)^2(-ae-b(d+ex)+bd)^4}-\frac{3e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{5/2}(ae-bd)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(3*b^3*d^3 - 9*a*b^2*d^2*e + 9*a^2*b*d*e^2 - 3*a^3*e^3 -
 11*b^3*d^2*(d + e*x) + 22*a*b^2*d*e*(d + e*x) - 11*a^2*b*e^2*(d + e*x) - 1
1*b^3*d*(d + e*x)^2 + 11*a*b^2*e*(d + e*x)^2 + 3*b^3*(d + e*x)^3))/(64*b^2*
(b*d - a*e)^2*(b*d - a*e - b*(d + e*x))^4) - (3*e^4*ArcTan[(Sqrt[b]*Sqrt[-(
b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(5/2)*(-(b*d) + a*e)^(5/2))
```

fricas [B] time = 0.45, size = 1043, normalized size = 6.06

$$\left[\frac{3\left(b^4e^4x^4+4ab^3e^4x^3+6a^2b^2e^4x^2+4a^3be^4x+a^4e^4\right)\sqrt{b^2d-abe}\log\left(\frac{bex+2bd-ae-2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)-2\left(16b^5d^4-40ab^4d^3e+26a^2b^3d^2e^2+a^3b^2de^3-3a^4be^4-3\left(b^5de^3-ab^4e^4\right)x^3+\left(2b^5d^2e^2-13ab^4de^3+11a^2b^3e^4\right)x^2+\left(24b^5d^3e-68ab^4d^2e^2+55a^2b^3de^3-11a^3b^2e^4\right)x\right)\sqrt{ex+d}}{128\left(a^4b^6d^3-3a^5b^5d^2e+3a^6b^4de^2-a^7b^3e^3+\left(b^{10}d^3-3ab^9d^2e+3a^2b^8de^2-a^3b^7e^3\right)x^4+4\left(ab^9d^3-3a^2b^8d^2e+3a^3b^7de^2-a^4b^6e^3\right)x^3+6\left(a^2b^8d^3-3a^3b^7d^2e+3a^4b^6de^2-a^5b^5e^3\right)x^2+4\left(a^3b^7d^3-3a^4b^6d^2e+3a^5b^5de^2-a^6b^4e^3\right)x\right)},\frac{3\left(b^4e^4x^4+4ab^3e^4x^3+6a^2b^2e^4x^2+4a^3be^4x+a^4e^4\right)\sqrt{-b^2d+abe}\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)-\left(16b^5d^4-40ab^4d^3e+26a^2b^3d^2e^2+a^3b^2de^3-3a^4be^4-3\left(b^5de^3-ab^4e^4\right)x^3+\left(2b^5d^2e^2-13ab^4de^3+11a^2b^3e^4\right)x^2+\left(24b^5d^3e-68ab^4d^2e^2+55a^2b^3de^3-11a^3b^2e^4\right)x\right)\sqrt{ex+d}}{64\left(a^4b^6d^3-3a^5b^5d^2e+3a^6b^4de^2-a^7b^3e^3+\left(b^{10}d^3-3ab^9d^2e+3a^2b^8de^2-a^3b^7e^3\right)x^4+4\left(ab^9d^3-3a^2b^8d^2e+3a^3b^7de^2-a^4b^6e^3\right)x^3+6\left(a^2b^8d^3-3a^3b^7d^2e+3a^4b^6de^2-a^5b^5e^3\right)x^2+4\left(a^3b^7d^3-3a^4b^6d^2e+3a^5b^5de^2-a^6b^4e^3\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/128*(3*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*
x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d -
a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(16*b^5*d^4 - 40*a*b^4*d^3*e + 26*a^2*
b^3*d^2*e^2 + a^3*b^2*d*e^3 - 3*a^4*b*e^4 - 3*(b^5*d*e^3 - a*b^4*e^4)*x^3 +
 (2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (24*b^5*d^3*e - 68
*a*b^4*d^2*e^2 + 55*a^2*b^3*d*e^3 - 11*a^3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*
b^6*d^3 - 3*a^5*b^5*d^2*e + 3*a^6*b^4*d*e^2 - a^7*b^3*e^3 + (b^10*d^3 - 3*a
*b^9*d^2*e + 3*a^2*b^8*d*e^2 - a^3*b^7*e^3)*x^4 + 4*(a*b^9*d^3 - 3*a^2*b^8*
d^2*e + 3*a^3*b^7*d*e^2 - a^4*b^6*e^3)*x^3 + 6*(a^2*b^8*d^3 - 3*a^3*b^7*d^2
*e + 3*a^4*b^6*d*e^2 - a^5*b^5*e^3)*x^2 + 4*(a^3*b^7*d^3 - 3*a^4*b^6*d^2*e
+ 3*a^5*b^5*d*e^2 - a^6*b^4*e^3)*x), 1/64*(3*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3
 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan
(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (16*b^5*d^4 - 40*a*b^4
*d^3*e + 26*a^2*b^3*d^2*e^2 + a^3*b^2*d*e^3 - 3*a^4*b*e^4 - 3*(b^5*d*e^3 -
a*b^4*e^4)*x^3 + (2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (2
4*b^5*d^3*e - 68*a*b^4*d^2*e^2 + 55*a^2*b^3*d*e^3 - 11*a^3*b^2*e^4)*x)*sqrt
(e*x + d))/(a^4*b^6*d^3 - 3*a^5*b^5*d^2*e + 3*a^6*b^4*d*e^2 - a^7*b^3*e^3 +
 (b^10*d^3 - 3*a*b^9*d^2*e + 3*a^2*b^8*d*e^2 - a^3*b^7*e^3)*x^4 + 4*(a*b^9*
d^3 - 3*a^2*b^8*d^2*e + 3*a^3*b^7*d*e^2 - a^4*b^6*e^3)*x^3 + 6*(a^2*b^8*d^3
 - 3*a^3*b^7*d^2*e + 3*a^4*b^6*d*e^2 - a^5*b^5*e^3)*x^2 + 4*(a^3*b^7*d^3 -
3*a^4*b^6*d^2*e + 3*a^5*b^5*d*e^2 - a^6*b^4*e^3)*x)]
```

giac [B] time = 0.20, size = 289, normalized size = 1.68

$$\frac{3 \arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)\sqrt{-b^2d+abe}}+\frac{3\,(xe+d)^{\frac{7}{2}}b^3e^4-11\,(xe+d)^{\frac{5}{2}}b^3de^4-11\,(xe+d)^{\frac{3}{2}}b^3d^2e^4+3\,\sqrt{xe+d}\,b^3d^3e^4+11\,(xe+d)^{\frac{5}{2}}ab^2e^5+22\,(xe+d)^{\frac{3}{2}}ab^2de^5-9\,\sqrt{xe+d}\,ab^2d^2e^5-11\,(xe+d)^{\frac{3}{2}}a^2be^6+9\,\sqrt{xe+d}\,a^2bde^6-3\,\sqrt{xe+d}\,a^3e^7}{64\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)\left((xe+d)b-bd+ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 3/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d^2 - 2*a*b^3*d
*e + a^2*b^2*e^2)*sqrt(-b^2*d + a*b*e)) + 1/64*(3*(x*e + d)^(7/2)*b^3*e^4 -
 11*(x*e + d)^(5/2)*b^3*d*e^4 - 11*(x*e + d)^(3/2)*b^3*d^2*e^4 + 3*sqrt(x*e
 + d)*b^3*d^3*e^4 + 11*(x*e + d)^(5/2)*a*b^2*e^5 + 22*(x*e + d)^(3/2)*a*b^2
*d*e^5 - 9*sqrt(x*e + d)*a*b^2*d^2*e^5 - 11*(x*e + d)^(3/2)*a^2*b*e^6 + 9*s
qrt(x*e + d)*a^2*b*d*e^6 - 3*sqrt(x*e + d)*a^3*e^7)/((b^4*d^2 - 2*a*b^3*d*e
 + a^2*b^2*e^2)*((x*e + d)*b - b*d + a*e)^4)
```

maple [A] time = 0.07, size = 222, normalized size = 1.29

$$\frac{3\,(ex+d)^{\frac{7}{2}}\,b\,e^4}{64\,(bex+ae)^4\left(a^2e^2-2abde+b^2d^2\right)}-\frac{3\sqrt{ex+d}\;a\,e^5}{64\,(bex+ae)^4\,b^2}+\frac{3\sqrt{ex+d}\;d\,e^4}{64\,(bex+ae)^4\,b}+\frac{11\,(ex+d)^{\frac{5}{2}}\,e^4}{64\,(bex+ae)^4\,(ae-bd)}-\frac{11\,(ex+d)^{\frac{3}{2}}\,e^4}{64\,(bex+ae)^4\,b}+\frac{3e^4\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{64\left(a^2e^2-2abde+b^2d^2\right)\sqrt{(ae-bd)\,b}\;b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3/64*e^4/(b*e*x+a*e)^4*b/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(7/2)+11/64*e^
4/(b*e*x+a*e)^4/(a*e-b*d)*(e*x+d)^(5/2)-11/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(
3/2)-3/64*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(1/2)*a+3/64*e^4/(b*e*x+a*e)^4/b*(e
*x+d)^(1/2)*d+3/64*e^4/b^2/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.14, size = 296, normalized size = 1.72

$$\frac{3\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{5/2}\,{\left(a\,e-b\,d\right)}^{5/2}}-\frac{\frac{11\,e^4\,{\left(d+e\,x\right)}^{3/2}}{64\,b}-\frac{11\,e^4\,{\left(d+e\,x\right)}^{5/2}}{64\,\left(a\,e-b\,d\right)}+\frac{3\,e^4\,\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}}{64\,b^2}-\frac{3\,b\,e^4\,{\left(d+e\,x\right)}^{7/2}}{64\,{\left(a\,e-b\,d\right)}^2}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4+b^4\,d^4+{\left(d+e\,x\right)}^2\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e-4\,a^3\,b\,d\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (3*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(5/2)*(a*e
- b*d)^(5/2)) - ((11*e^4*(d + e*x)^(3/2))/(64*b) - (11*e^4*(d + e*x)^(5/2))
/(64*(a*e - b*d)) + (3*e^4*(a*e - b*d)*(d + e*x)^(1/2))/(64*b^2) - (3*b*e^4
*(d + e*x)^(7/2))/(64*(a*e - b*d)^2))/(b^4*(d + e*x)^4 - (4*b^4*d - 4*a*b^3
*e)*(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 1
2*a*b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2*b^2*e^2
 - 12*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1863 $\int \frac{(a+bx)\sqrt{d+ex}}{(a^2+2abx+b^2x^2)^3}\,dx$

Optimal. Leaf size=182

$$\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{3/2}(bd-ae)^{7/2}}-\frac{5e^3\sqrt{d+ex}}{64b(a+bx)(bd-ae)^3}+\frac{5e^2\sqrt{d+ex}}{96b(a+bx)^2(bd-ae)^2}-\frac{e\sqrt{d+ex}}{24b(a+bx)^3(bd-ae)}-\frac{\sqrt{d+ex}}{4b(a+bx)^4}$$

Rubi [A] time = 0.09, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 51, 63, 208}

$$\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{3/2}(bd-ae)^{7/2}}-\frac{5e^3\sqrt{d+ex}}{64b(a+bx)(bd-ae)^3}+\frac{5e^2\sqrt{d+ex}}{96b(a+bx)^2(bd-ae)^2}-\frac{e\sqrt{d+ex}}{24b(a+bx)^3(bd-ae)}-\frac{\sqrt{d+ex}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -Sqrt[d + e*x]/(4*b*(a + b*x)^4) - (e*Sqrt[d + e*x])/(24*b*(b*d - a*e)*(a +
 b*x)^3) + (5*e^2*Sqrt[d + e*x])/(96*b*(b*d - a*e)^2*(a + b*x)^2) - (5*e^3*
Sqrt[d + e*x])/(64*b*(b*d - a*e)^3*(a + b*x)) + (5*e^4*ArcTanh[(Sqrt[b]*Sqr
t[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(3/2)*(b*d - a*e)^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{\sqrt{d+ex}}{(a+bx)^5}\,dx$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} + \frac{e\int \frac{1}{(a+bx)^4\sqrt{d+ex}}\,dx}{8b}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} - \frac{\left(5e^2\right)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{48b(bd-ae)}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} + \frac{\left(5e^3\right)\int \frac{1}{(a+bx)^2\sqrt{d}}}{64b(bd-ae}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} - \frac{5e^3\sqrt{d+ex}}{64b(bd-ae)^3(a}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} - \frac{5e^3\sqrt{d+ex}}{64b(bd-ae)^3(a}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} - \frac{5e^3\sqrt{d+ex}}{64b(bd-ae)^3(a}$$

Mathematica [C] time = 0.01, size = 52, normalized size = 0.29

$$\frac{2e^4(d+ex)^{3/2}\,{}_2F_1\left(\frac{3}{2},5;\frac{5}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(3/2)*Hypergeometric2F1[3/2, 5, 5/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(3*(-(b*d) + a*e)^5)
```

IntegrateAlgebraic [A] time = 1.16, size = 226, normalized size = 1.24

$$-\frac{e^4\sqrt{d+ex}\left(-15a^3e^3+73a^2be^2(d+ex)+45a^2bde^2-45ab^2d^2e+55ab^2e(d+ex)^2-146ab^2de(d+ex)+15b^3d^3+73b^3d^2(d+ex)+15b^3(d+ex)^3-55b^3d(d+ex)^2\right)}{192b(bd-ae)^3(-ae-b(d+ex)+bd)^4}-\frac{5e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64b^{3/2}(ae-bd)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/192*(e^4*Sqrt[d + e*x]*(15*b^3*d^3 - 45*a*b^2*d^2*e + 45*a^2*b*d*e^2 - 1
5*a^3*e^3 + 73*b^3*d^2*(d + e*x) - 146*a*b^2*d*e*(d + e*x) + 73*a^2*b*e^2*(
d + e*x) - 55*b^3*d*(d + e*x)^2 + 55*a*b^2*e*(d + e*x)^2 + 15*b^3*(d + e*x)
^3))/(b*(b*d - a*e)^3*(b*d - a*e - b*(d + e*x))^4) - (5*e^4*ArcTan[(Sqrt[b]
*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*b^(3/2)*(-(b*d) + a*e)
^(7/2))
```

fricas [B] time = 0.46, size = 1176, normalized size = 6.46

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/384*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(48*b^5*d^4 - 184*a*b^4*d^3*e + 254*
a^2*b^3*d^2*e^2 - 133*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*
e^4)*x^3 - 5*(2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (8*b^5
*d^3*e - 44*a*b^4*d^2*e^2 + 109*a^2*b^3*d*e^3 - 73*a^3*b^2*e^4)*x)*sqrt(e*x
 + d))/(a^4*b^6*d^4 - 4*a^5*b^5*d^3*e + 6*a^6*b^4*d^2*e^2 - 4*a^7*b^3*d*e^3
 + a^8*b^2*e^4 + (b^10*d^4 - 4*a*b^9*d^3*e + 6*a^2*b^8*d^2*e^2 - 4*a^3*b^7*
d*e^3 + a^4*b^6*e^4)*x^4 + 4*(a*b^9*d^4 - 4*a^2*b^8*d^3*e + 6*a^3*b^7*d^2*e
^2 - 4*a^4*b^6*d*e^3 + a^5*b^5*e^4)*x^3 + 6*(a^2*b^8*d^4 - 4*a^3*b^7*d^3*e
+ 6*a^4*b^6*d^2*e^2 - 4*a^5*b^5*d*e^3 + a^6*b^4*e^4)*x^2 + 4*(a^3*b^7*d^4 -
 4*a^4*b^6*d^3*e + 6*a^5*b^5*d^2*e^2 - 4*a^6*b^4*d*e^3 + a^7*b^3*e^4)*x), -
1/192*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*
x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + (48*b^5*d^4 - 184*a*b^4*d^3*e + 254*a^2*b^3*d^2*e^2 - 133
*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*e^4)*x^3 - 5*(2*b^5*d
^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (8*b^5*d^3*e - 44*a*b^4*d^2
*e^2 + 109*a^2*b^3*d*e^3 - 73*a^3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*b^6*d^4 -
 4*a^5*b^5*d^3*e + 6*a^6*b^4*d^2*e^2 - 4*a^7*b^3*d*e^3 + a^8*b^2*e^4 + (b^1
0*d^4 - 4*a*b^9*d^3*e + 6*a^2*b^8*d^2*e^2 - 4*a^3*b^7*d*e^3 + a^4*b^6*e^4)*
x^4 + 4*(a*b^9*d^4 - 4*a^2*b^8*d^3*e + 6*a^3*b^7*d^2*e^2 - 4*a^4*b^6*d*e^3
+ a^5*b^5*e^4)*x^3 + 6*(a^2*b^8*d^4 - 4*a^3*b^7*d^3*e + 6*a^4*b^6*d^2*e^2 -
 4*a^5*b^5*d*e^3 + a^6*b^4*e^4)*x^2 + 4*(a^3*b^7*d^4 - 4*a^4*b^6*d^3*e + 6*
a^5*b^5*d^2*e^2 - 4*a^6*b^4*d*e^3 + a^7*b^3*e^4)*x)]
```

giac [B] time = 0.19, size = 313, normalized size = 1.72

$$-\frac{5 \arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\left(b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3\right)\sqrt{-b^2d+abe}}-\frac{15\,(xe+d)^{\frac{7}{2}}b^3e^4-55\,(xe+d)^{\frac{5}{2}}b^3de^4+73\,(xe+d)^{\frac{3}{2}}b^3d^2e^4+15\,\sqrt{xe+d}\,b^3d^3e^4+55\,(xe+d)^{\frac{5}{2}}ab^2e^5-146\,(xe+d)^{\frac{3}{2}}ab^2de^5-45\,\sqrt{xe+d}\,ab^2d^2e^5+73\,(xe+d)^{\frac{3}{2}}a^2be^6+45\,\sqrt{xe+d}\,a^2bde^6-15\,\sqrt{xe+d}\,a^3e^7}{192\left(b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3\right)((xe+d)b-bd+ae)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -5/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d^3 - 3*a*b^3*
d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*sqrt(-b^2*d + a*b*e)) - 1/192*(15*(x*e
 + d)^(7/2)*b^3*e^4 - 55*(x*e + d)^(5/2)*b^3*d*e^4 + 73*(x*e + d)^(3/2)*b^3
*d^2*e^4 + 15*sqrt(x*e + d)*b^3*d^3*e^4 + 55*(x*e + d)^(5/2)*a*b^2*e^5 - 14
6*(x*e + d)^(3/2)*a*b^2*d*e^5 - 45*sqrt(x*e + d)*a*b^2*d^2*e^5 + 73*(x*e +
d)^(3/2)*a^2*b*e^6 + 45*sqrt(x*e + d)*a^2*b*d*e^6 - 15*sqrt(x*e + d)*a^3*e^
7)/((b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*((x*e + d)*b -
b*d + a*e)^4)
```

maple [A] time = 0.06, size = 248, normalized size = 1.36

$$\frac{5\,(ex+d)^{\frac{7}{2}}\,b^2e^4}{64\,(bex+ae)^4\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}+\frac{55\,(ex+d)^{\frac{5}{2}}\,b\,e^4}{192\,(bex+ae)^4\left(a^2e^2-2abde+b^2d^2\right)}+\frac{5e^4\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{64\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)\sqrt{(ae-bd)\,b}\;b}+\frac{73\,(ex+d)^{\frac{3}{2}}\,e^4}{192\,(bex+ae)^4\,(ae-bd)}-\frac{5\sqrt{ex+d}\;e^4}{64\,(bex+ae)^4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 5/64*e^4/(b*e*x+a*e)^4*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e
*x+d)^(7/2)+55/192*e^4/(b*e*x+a*e)^4*b/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^
(5/2)+73/192*e^4/(b*e*x+a*e)^4/(a*e-b*d)*(e*x+d)^(3/2)-5/64*e^4/(b*e*x+a*e)
^4/b*(e*x+d)^(1/2)+5/64*e^4/b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)
/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.15, size = 297, normalized size = 1.63

$$\frac{\frac{73\,e^4\,{\left(d+e\,x\right)}^{3/2}}{192\,\left(a\,e-b\,d\right)}-\frac{5\,e^4\,\sqrt{d+e\,x}}{64\,b}+\frac{5\,b^2\,e^4\,{\left(d+e\,x\right)}^{7/2}}{64\,{\left(a\,e-b\,d\right)}^3}+\frac{55\,b\,e^4\,{\left(d+e\,x\right)}^{5/2}}{192\,{\left(a\,e-b\,d\right)}^2}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4+b^4\,d^4+{\left(d+e\,x\right)}^2\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e-4\,a^3\,b\,d\,e^3}+\frac{5\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{3/2}\,{\left(a\,e-b\,d\right)}^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((73*e^4*(d + e*x)^(3/2))/(192*(a*e - b*d)) - (5*e^4*(d + e*x)^(1/2))/(64*b
) + (5*b^2*e^4*(d + e*x)^(7/2))/(64*(a*e - b*d)^3) + (55*b*e^4*(d + e*x)^(5
/2))/(192*(a*e - b*d)^2))/(b^4*(d + e*x)^4 - (4*b^4*d - 4*a*b^3*e)*(d + e*x
)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 12*a*b^3*d^2*
e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2*b^2*e^2 - 12*a*b^3*
d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + (5*e^4*atan((b^
(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(3/2)*(a*e - b*d)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1864 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=180

$$-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\,(bd-ae)^{9/2}}+\frac{35e^3\sqrt{d+ex}}{64(a+bx)(bd-ae)^4}-\frac{35e^2\sqrt{d+ex}}{96(a+bx)^2(bd-ae)^3}+\frac{7e\sqrt{d+ex}}{24(a+bx)^3(bd-ae)^2}-\frac{\sqrt{d+ex}}{4(a+bx)^4(bd$$

Rubi [A] time = 0.09, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{35e^3\sqrt{d+ex}}{64(a+bx)(bd-ae)^4}-\frac{35e^2\sqrt{d+ex}}{96(a+bx)^2(bd-ae)^3}-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\,(bd-ae)^{9/2}}+\frac{7e\sqrt{d+ex}}{24(a+bx)^3(bd-ae)^2}-\frac{\sqrt{d+ex}}{4(a+bx)^4(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -Sqrt[d + e*x]/(4*(b*d - a*e)*(a + b*x)^4) + (7*e*Sqrt[d + e*x])/(24*(b*d -
 a*e)^2*(a + b*x)^3) - (35*e^2*Sqrt[d + e*x])/(96*(b*d - a*e)^3*(a + b*x)^2
) + (35*e^3*Sqrt[d + e*x])/(64*(b*d - a*e)^4*(a + b*x)) - (35*e^4*ArcTanh[(
Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*Sqrt[b]*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{1}{(a+bx)^5\sqrt{d+ex}}\,dx$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} - \frac{(7e)\int \frac{1}{(a+bx)^4\sqrt{d+ex}}\,dx}{8(bd-ae)}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} + \frac{\left(35e^2\right)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{48(bd-ae)^2}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2} - \ldots$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2} + \ldots$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2} + \ldots$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2} + \ldots$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.28

$$\frac{2e^4\sqrt{d+ex}\,{}_2F_1\left(\frac{1}{2},5;\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (2*e^4*Sqrt[d + e*x]*Hypergeometric2F1[1/2, 5, 3/2, -((b*(d + e*x))/(-(b*d)
 + a*e))])/(-(b*d) + a*e)^5
```

IntegrateAlgebraic [A] time = 0.52, size = 223, normalized size = 1.24

$$\frac{e^4\sqrt{d+ex}\left(279a^3e^3+511a^2be^2(d+ex)-837a^2bde^2+837ab^2d^2e+385ab^2e(d+ex)^2-1022ab^2de(d+ex)-279b^3d^3+511b^3d^2(d+ex)+105b^3(d+ex)^3-385b^3d(d+ex)^2\right)}{192(bd-ae)^4(-ae-b(d+ex)+bd)^4}-\frac{35e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64\sqrt{b}(ae-bd)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (e^4*Sqrt[d + e*x]*(-279*b^3*d^3 + 837*a*b^2*d^2*e - 837*a^2*b*d*e^2 + 279*
a^3*e^3 + 511*b^3*d^2*(d + e*x) - 1022*a*b^2*d*e*(d + e*x) + 511*a^2*b*e^2*
(d + e*x) - 385*b^3*d*(d + e*x)^2 + 385*a*b^2*e*(d + e*x)^2 + 105*b^3*(d +
e*x)^3))/(192*(b*d - a*e)^4*(b*d - a*e - b*(d + e*x))^4) - (35*e^4*ArcTan[(
Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*Sqrt[b]*(-(b*d)
 + a*e)^(9/2))
```

fricas [B] time = 0.46, size = 1325, normalized size = 7.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/384*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(48*b^5*d^4 - 248*a*b^4*d^3*e + 526*
a^2*b^3*d^2*e^2 - 605*a^3*b^2*d*e^3 + 279*a^4*b*e^4 - 105*(b^5*d*e^3 - a*b^
4*e^4)*x^3 + 35*(2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 - 7*(
8*b^5*d^3*e - 44*a*b^4*d^2*e^2 + 109*a^2*b^3*d*e^3 - 73*a^3*b^2*e^4)*x)*sqr
t(e*x + d))/(a^4*b^6*d^5 - 5*a^5*b^5*d^4*e + 10*a^6*b^4*d^3*e^2 - 10*a^7*b^
3*d^2*e^3 + 5*a^8*b^2*d*e^4 - a^9*b*e^5 + (b^10*d^5 - 5*a*b^9*d^4*e + 10*a^
2*b^8*d^3*e^2 - 10*a^3*b^7*d^2*e^3 + 5*a^4*b^6*d*e^4 - a^5*b^5*e^5)*x^4 + 4
*(a*b^9*d^5 - 5*a^2*b^8*d^4*e + 10*a^3*b^7*d^3*e^2 - 10*a^4*b^6*d^2*e^3 + 5
*a^5*b^5*d*e^4 - a^6*b^4*e^5)*x^3 + 6*(a^2*b^8*d^5 - 5*a^3*b^7*d^4*e + 10*a
^4*b^6*d^3*e^2 - 10*a^5*b^5*d^2*e^3 + 5*a^6*b^4*d*e^4 - a^7*b^3*e^5)*x^2 +
4*(a^3*b^7*d^5 - 5*a^4*b^6*d^4*e + 10*a^5*b^5*d^3*e^2 - 10*a^6*b^4*d^2*e^3
+ 5*a^7*b^3*d*e^4 - a^8*b^2*e^5)*x), 1/192*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*
x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arc
tan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (48*b^5*d^4 - 248*a
*b^4*d^3*e + 526*a^2*b^3*d^2*e^2 - 605*a^3*b^2*d*e^3 + 279*a^4*b*e^4 - 105*
(b^5*d*e^3 - a*b^4*e^4)*x^3 + 35*(2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b
^3*e^4)*x^2 - 7*(8*b^5*d^3*e - 44*a*b^4*d^2*e^2 + 109*a^2*b^3*d*e^3 - 73*a^
3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*b^6*d^5 - 5*a^5*b^5*d^4*e + 10*a^6*b^4*d^
3*e^2 - 10*a^7*b^3*d^2*e^3 + 5*a^8*b^2*d*e^4 - a^9*b*e^5 + (b^10*d^5 - 5*a*
b^9*d^4*e + 10*a^2*b^8*d^3*e^2 - 10*a^3*b^7*d^2*e^3 + 5*a^4*b^6*d*e^4 - a^5
*b^5*e^5)*x^4 + 4*(a*b^9*d^5 - 5*a^2*b^8*d^4*e + 10*a^3*b^7*d^3*e^2 - 10*a^
4*b^6*d^2*e^3 + 5*a^5*b^5*d*e^4 - a^6*b^4*e^5)*x^3 + 6*(a^2*b^8*d^5 - 5*a^3
*b^7*d^4*e + 10*a^4*b^6*d^3*e^2 - 10*a^5*b^5*d^2*e^3 + 5*a^6*b^4*d*e^4 - a^
7*b^3*e^5)*x^2 + 4*(a^3*b^7*d^5 - 5*a^4*b^6*d^4*e + 10*a^5*b^5*d^3*e^2 - 10
*a^6*b^4*d^2*e^3 + 5*a^7*b^3*d*e^4 - a^8*b^2*e^5)*x)]
```

giac [**B**] time = 0.18, size = 331, normalized size = 1.84

$$\frac{35 \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2 d+abe}}\right) e^4}{64\left(b^4 d^4 - 4\, a b^3 d^3 e + 6\, a^2 b^2 d^2 e^2 - 4\, a^3 b d e^3 + a^4 e^4\right)\sqrt{-b^2 d + abe}} + \frac{105\,(xe+d)^{\frac{7}{2}} b^3 e^4 - 385\,(xe+d)^{\frac{5}{2}} b^3 d e^4 + 511\,(xe+d)^{\frac{3}{2}} b^3 d^2 e^4 - 279\,\sqrt{xe+d}\, b^3 d^3 e^4 + 385\,(xe+d)^{\frac{5}{2}} a b^2 e^5 - 1022\,(xe+d)^{\frac{3}{2}} a b^2 d e^5 + 837\,\sqrt{xe+d}\, a b^2 d^2 e^5 + 511\,(xe+d)^{\frac{3}{2}} a^2 b e^6 - 837\,\sqrt{xe+d}\, a^2 b d e^6 + 279\,\sqrt{xe+d}\, a^3 e^7}{192\left(b^4 d^4 - 4\, a b^3 d^3 e + 6\, a^2 b^2 d^2 e^2 - 4\, a^3 b d e^3 + a^4 e^4\right)\left((xe+d) b - bd + ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 35/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d^4 - 4*a*b^3*
d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*sqrt(-b^2*d + a*b*e))
+ 1/192*(105*(x*e + d)^(7/2)*b^3*e^4 - 385*(x*e + d)^(5/2)*b^3*d*e^4 + 511*
(x*e + d)^(3/2)*b^3*d^2*e^4 - 279*sqrt(x*e + d)*b^3*d^3*e^4 + 385*(x*e + d)
^(5/2)*a*b^2*e^5 - 1022*(x*e + d)^(3/2)*a*b^2*d*e^5 + 837*sqrt(x*e + d)*a*b
^2*d^2*e^5 + 511*(x*e + d)^(3/2)*a^2*b*e^6 - 837*sqrt(x*e + d)*a^2*b*d*e^6
+ 279*sqrt(x*e + d)*a^3*e^7)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2
- 4*a^3*b*d*e^3 + a^4*e^4)*((x*e + d)*b - b*d + a*e)^4)
```

maple [**A**] time = 0.06, size = 179, normalized size = 0.99

$$\frac{35 e^4 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd) b}}\right)}{64\,(ae-bd)^4 \sqrt{(ae-bd)\, b}} + \frac{\sqrt{ex+d}\; e^4}{4\,(ae-bd)\,(bex+ae)^4} + \frac{7\sqrt{ex+d}\; e^4}{24\,(ae-bd)^2\,(bex+ae)^3} + \frac{35\sqrt{ex+d}\; e^4}{96\,(ae-bd)^3\,(bex+ae)^2} + \frac{35\sqrt{ex+d}\; e^4}{64\,(ae-bd)^4\,(bex+ae)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 1/4*e^4*(e*x+d)^(1/2)/(a*e-b*d)/(b*e*x+a*e)^4+7/24*e^4/(a*e-b*d)^2*(e*x+d)^
(1/2)/(b*e*x+a*e)^3+35/96*e^4/(a*e-b*d)^3*(e*x+d)^(1/2)/(b*e*x+a*e)^2+35/64
*e^4/(a*e-b*d)^4*(e*x+d)^(1/2)/(b*e*x+a*e)+35/64*e^4/(a*e-b*d)^4/((a*e-b*d)
*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.15, size = 307, normalized size = 1.71

$$\frac{\frac{93\,e^4\,\sqrt{d+e\,x}}{64\,\left(a\,e-b\,d\right)}+\frac{385\,b^2\,e^4\,{\left(d+e\,x\right)}^{5/2}}{192\,{\left(a\,e-b\,d\right)}^3}+\frac{35\,b^3\,e^4\,{\left(d+e\,x\right)}^{7/2}}{64\,{\left(a\,e-b\,d\right)}^4}+\frac{511\,b\,e^4\,{\left(d+e\,x\right)}^{3/2}}{192\,{\left(a\,e-b\,d\right)}^2}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4+b^4\,d^4+{\left(d+e\,x\right)}^2\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e-4\,a^3\,b\,d\,e^3}+\frac{35\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,\sqrt{b}\,{\left(a\,e-b\,d\right)}^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((93*e^4*(d + e*x)^(1/2))/(64*(a*e - b*d)) + (385*b^2*e^4*(d + e*x)^(5/2))/
(192*(a*e - b*d)^3) + (35*b^3*e^4*(d + e*x)^(7/2))/(64*(a*e - b*d)^4) + (51
1*b*e^4*(d + e*x)^(3/2))/(192*(a*e - b*d)^2))/(b^4*(d + e*x)^4 - (4*b^4*d -
 4*a*b^3*e)*(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d
*e^2 - 12*a*b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2
*b^2*e^2 - 12*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^
3) + (35*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(1/2)
*(a*e - b*d)^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1865 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=206

$$\frac{315e^4}{64\sqrt{d+ex}\,(bd-ae)^5}-\frac{315\sqrt{b}\,e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{11/2}}+\frac{105e^3}{64(a+bx)\sqrt{d+ex}\,(bd-ae)^4}-\frac{21e^2}{32(a+bx)^2\sqrt{d+ex}\,(bd-$$

Rubi [A] time = 0.12, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {27, 51, 63, 208}

$$\frac{315e^4}{64\sqrt{d+ex}\,(bd-ae)^5}+\frac{105e^3}{64(a+bx)\sqrt{d+ex}\,(bd-ae)^4}-\frac{21e^2}{32(a+bx)^2\sqrt{d+ex}\,(bd-ae)^3}-\frac{315\sqrt{b}\,e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{11/2}}+\frac{3e}{8(a+bx)^3\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{4(a+bx)^4\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (315*e^4)/(64*(b*d - a*e)^5*Sqrt[d + e*x]) - 1/(4*(b*d - a*e)*(a + b*x)^4*S
qrt[d + e*x]) + (3*e)/(8*(b*d - a*e)^2*(a + b*x)^3*Sqrt[d + e*x]) - (21*e^2
)/(32*(b*d - a*e)^3*(a + b*x)^2*Sqrt[d + e*x]) + (105*e^3)/(64*(b*d - a*e)^
4*(a + b*x)*Sqrt[d + e*x]) - (315*Sqrt[b]*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]])/(64*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{1}{(a+bx)^5(d+ex)^{3/2}}\,dx$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} - \frac{(9e)\int \frac{1}{(a+bx)^4(d+ex)^{3/2}}\,dx}{8(bd-ae)}$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} + \frac{3e}{8(bd-ae)^2(a+bx)^3\sqrt{d+ex}} + \frac{\left(21e^2\right)\int}{1\ldots}$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} + \frac{3e}{8(bd-ae)^2(a+bx)^3\sqrt{d+ex}} - \frac{}{32(bd-\ldots}$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} + \frac{3e}{8(bd-ae)^2(a+bx)^3\sqrt{d+ex}} - \frac{}{32(bd-\ldots}$$

$$= \frac{315e^4}{64(bd-ae)^5\sqrt{d+ex}} - \frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} + \frac{3e}{8(bd-ae)^2(a+b\ldots}$$

$$= \frac{315e^4}{64(bd-ae)^5\sqrt{d+ex}} - \frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} + \frac{3e}{8(bd-ae)^2(a+b\ldots}$$

$$= \frac{315e^4}{64(bd-ae)^5\sqrt{d+ex}} - \frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}} + \frac{3e}{8(bd-ae)^2(a+b\ldots}$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.24

$$-\frac{2e^4\,{}_2F_1\left(-\frac{1}{2},5;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{d+ex}\,(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-2*e^4*Hypergeometric2F1[-1/2, 5, 1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/(
(-(b*d) + a*e)^5*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 1.41, size = 304, normalized size = 1.48

$$\frac{e^4\left(128a^4e^4+837a^3be^3(d+ex)-512a^3bde^3+768a^2b^2d^2e^2+1533a^2b^2e^2(d+ex)^2-2511a^2b^2de^2(d+ex)-512ab^3d^3e+2511ab^3d^2e(d+ex)+1155ab^3e(d+ex)^3-3066ab^3de(d+ex)^2+128b^4d^4-837b^4d^3(d+ex)+1533b^4d^2(d+ex)^2+315b^4(d+ex)^4-1155b^4d(d+ex)^3\right)}{64\sqrt{d+ex}\,(bd-ae)^5(-ae-b(d+ex)+bd)^4}+\frac{315\sqrt{b}\,e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64(ae-bd)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),
x]
```

```
[Out] (e^4*(128*b^4*d^4 - 512*a*b^3*d^3*e + 768*a^2*b^2*d^2*e^2 - 512*a^3*b*d*e^3
 + 128*a^4*e^4 - 837*b^4*d^3*(d + e*x) + 2511*a*b^3*d^2*e*(d + e*x) - 2511*
a^2*b^2*d*e^2*(d + e*x) + 837*a^3*b*e^3*(d + e*x) + 1533*b^4*d^2*(d + e*x)^
2 - 3066*a*b^3*d*e*(d + e*x)^2 + 1533*a^2*b^2*e^2*(d + e*x)^2 - 1155*b^4*d*
(d + e*x)^3 + 1155*a*b^3*e*(d + e*x)^3 + 315*b^4*(d + e*x)^4))/(64*(b*d - a
*e)^5*Sqrt[d + e*x]*(b*d - a*e - b*(d + e*x))^4) + (315*Sqrt[b]*e^4*ArcTan[
(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(64*(-(b*d) + a*e)
^(11/2))
```

fricas [B] time = 0.48, size = 1734, normalized size = 8.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/128*(315*(b^4*e^5*x^5 + a^4*d*e^4 + (b^4*d*e^4 + 4*a*b^3*e^5)*x^4 + 2*(
2*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*x^3 + 2*(3*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*x^2
+ (4*a^3*b*d*e^4 + a^4*e^5)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e
 + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(315*b^4
*e^4*x^4 - 16*b^4*d^4 + 88*a*b^3*d^3*e - 210*a^2*b^2*d^2*e^2 + 325*a^3*b*d*
e^3 + 128*a^4*e^4 + 105*(b^4*d*e^3 + 11*a*b^3*e^4)*x^3 - 21*(2*b^4*d^2*e^2
- 19*a*b^3*d*e^3 - 73*a^2*b^2*e^4)*x^2 + 3*(8*b^4*d^3*e - 52*a*b^3*d^2*e^2
+ 185*a^2*b^2*d*e^3 + 279*a^3*b*e^4)*x)*sqrt(e*x + d))/(a^4*b^5*d^6 - 5*a^5
*b^4*d^5*e + 10*a^6*b^3*d^4*e^2 - 10*a^7*b^2*d^3*e^3 + 5*a^8*b*d^2*e^4 - a^
9*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2*b^7*d^3*e^3 - 10*a^3*b^6*d^
2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^5 + (b^9*d^6 - a*b^8*d^5*e - 10*a^
2*b^7*d^4*e^2 + 30*a^3*b^6*d^3*e^3 - 35*a^4*b^5*d^2*e^4 + 19*a^5*b^4*d*e^5
- 4*a^6*b^3*e^6)*x^4 + 2*(2*a*b^8*d^6 - 7*a^2*b^7*d^5*e + 5*a^3*b^6*d^4*e^2
 + 10*a^4*b^5*d^3*e^3 - 20*a^5*b^4*d^2*e^4 + 13*a^6*b^3*d*e^5 - 3*a^7*b^2*e
^6)*x^3 + 2*(3*a^2*b^7*d^6 - 13*a^3*b^6*d^5*e + 20*a^4*b^5*d^4*e^2 - 10*a^5
*b^4*d^3*e^3 - 5*a^6*b^3*d^2*e^4 + 7*a^7*b^2*d*e^5 - 2*a^8*b*e^6)*x^2 + (4*
a^3*b^6*d^6 - 19*a^4*b^5*d^5*e + 35*a^5*b^4*d^4*e^2 - 30*a^6*b^3*d^3*e^3 +
10*a^7*b^2*d^2*e^4 + a^8*b*d*e^5 - a^9*e^6)*x), -1/64*(315*(b^4*e^5*x^5 + a
^4*d*e^4 + (b^4*d*e^4 + 4*a*b^3*e^5)*x^4 + 2*(2*a*b^3*d*e^4 + 3*a^2*b^2*e^5
)*x^3 + 2*(3*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*x^2 + (4*a^3*b*d*e^4 + a^4*e^5)*x
)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e
))/(b*e*x + b*d)) - (315*b^4*e^4*x^4 - 16*b^4*d^4 + 88*a*b^3*d^3*e - 210*a^
2*b^2*d^2*e^2 + 325*a^3*b*d*e^3 + 128*a^4*e^4 + 105*(b^4*d*e^3 + 11*a*b^3*e
^4)*x^3 - 21*(2*b^4*d^2*e^2 - 19*a*b^3*d*e^3 - 73*a^2*b^2*e^4)*x^2 + 3*(8*b
^4*d^3*e - 52*a*b^3*d^2*e^2 + 185*a^2*b^2*d*e^3 + 279*a^3*b*e^4)*x)*sqrt(e*
x + d))/(a^4*b^5*d^6 - 5*a^5*b^4*d^5*e + 10*a^6*b^3*d^4*e^2 - 10*a^7*b^2*d^
3*e^3 + 5*a^8*b*d^2*e^4 - a^9*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2
*b^7*d^3*e^3 - 10*a^3*b^6*d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^5 + (b
^9*d^6 - a*b^8*d^5*e - 10*a^2*b^7*d^4*e^2 + 30*a^3*b^6*d^3*e^3 - 35*a^4*b^5
*d^2*e^4 + 19*a^5*b^4*d*e^5 - 4*a^6*b^3*e^6)*x^4 + 2*(2*a*b^8*d^6 - 7*a^2*b
^7*d^5*e + 5*a^3*b^6*d^4*e^2 + 10*a^4*b^5*d^3*e^3 - 20*a^5*b^4*d^2*e^4 + 13
*a^6*b^3*d*e^5 - 3*a^7*b^2*e^6)*x^3 + 2*(3*a^2*b^7*d^6 - 13*a^3*b^6*d^5*e +
 20*a^4*b^5*d^4*e^2 - 10*a^5*b^4*d^3*e^3 - 5*a^6*b^3*d^2*e^4 + 7*a^7*b^2*d*
e^5 - 2*a^8*b*e^6)*x^2 + (4*a^3*b^6*d^6 - 19*a^4*b^5*d^5*e + 35*a^5*b^4*d^4
*e^2 - 30*a^6*b^3*d^3*e^3 + 10*a^7*b^2*d^2*e^4 + a^8*b*d*e^5 - a^9*e^6)*x)]
```

giac [B] time = 0.25, size = 440, normalized size = 2.14

$$\frac{315\, b \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2 d+abe}}\right) e^4}{64 \left(b^5 d^5 - 5\, a b^4 d^4 e + 10\, a^2 b^3 d^3 e^2 - 10\, a^3 b^2 d^2 e^3 + 5\, a^4 b d e^4 - a^5 e^5\right) \sqrt{-b^2 d + abe}} + \frac{2\, e^4}{\left(b^5 d^5 - 5\, a b^4 d^4 e + 10\, a^2 b^3 d^3 e^2 - 10\, a^3 b^2 d^2 e^3 + 5\, a^4 b d e^4 - a^5 e^5\right) \sqrt{xe+d}} + \frac{187\, (xe+d)^{\frac{7}{2}} b^4 e^4 - 643\, (xe+d)^{\frac{5}{2}} b^4 d e^4 + 765\, (xe+d)^{\frac{3}{2}} b^4 d^2 e^4 - 325\, \sqrt{xe+d}\, b^4 d^3 e^4 + 643\, (xe+d)^{\frac{5}{2}} a b^3 e^5 - 1530\, (xe+d)^{\frac{3}{2}} a b^3 d e^5 + 975\, \sqrt{xe+d}\, a b^3 d^2 e^5 + 765\, (xe+d)^{\frac{3}{2}} a^2 b^2 e^6 - 975\, \sqrt{xe+d}\, a^2 b^2 d e^6 + 325\, \sqrt{xe+d}\, a^3 b e^7}{64 \left(b^5 d^5 - 5\, a b^4 d^4 e + 10\, a^2 b^3 d^3 e^2 - 10\, a^3 b^2 d^2 e^3 + 5\, a^4 b d e^4 - a^5 e^5\right) \left((xe+d) b - bd + ae\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 315/64*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^5*d^5 - 5*a*b
^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^
5)*sqrt(-b^2*d + a*b*e)) + 2*e^4/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3
*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*sqrt(x*e + d)) + 1/64*
(187*(x*e + d)^(7/2)*b^4*e^4 - 643*(x*e + d)^(5/2)*b^4*d*e^4 + 765*(x*e + d
)^(3/2)*b^4*d^2*e^4 - 325*sqrt(x*e + d)*b^4*d^3*e^4 + 643*(x*e + d)^(5/2)*a
*b^3*e^5 - 1530*(x*e + d)^(3/2)*a*b^3*d*e^5 + 975*sqrt(x*e + d)*a*b^3*d^2*e
^5 + 765*(x*e + d)^(3/2)*a^2*b^2*e^6 - 975*sqrt(x*e + d)*a^2*b^2*d*e^6 + 32
5*sqrt(x*e + d)*a^3*b*e^7)/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 -
 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*((x*e + d)*b - b*d + a*e)^4)
```

maple [**B**] time = 0.07, size = 446, normalized size = 2.17

$$-\frac{325\sqrt{ex+d}\,a^3 b e^7}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}+\frac{975\sqrt{ex+d}\,a^2 b^2 d e^6}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{975\sqrt{ex+d}\,a b^3 d^2 e^5}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}+\frac{325\sqrt{ex+d}\,b^4 d^3 e^4}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{765\left(ex+d\right)^{\frac{3}{2}} a^2 b^2 e^6}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}+\frac{765\left(ex+d\right)^{\frac{3}{2}} a b^3 d e^5}{32\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{765\left(ex+d\right)^{\frac{3}{2}} b^4 d^2 e^4}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{643\left(ex+d\right)^{\frac{5}{2}} a b^3 e^5}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}+\frac{643\left(ex+d\right)^{\frac{5}{2}} b^4 d e^4}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{187\left(ex+d\right)^{\frac{7}{2}} b^4 e^4}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{315 b e^4 \arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)}{64\left(ae-bd\right)^5\sqrt{\left(ae-bd\right)b}}-\frac{2e^4}{\left(ae-bd\right)^5\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -187/64*e^4/(a*e-b*d)^5*b^4/(b*e*x+a*e)^4*(e*x+d)^(7/2)-643/64*e^5/(a*e-b*d
)^5*b^3/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a+643/64*e^4/(a*e-b*d)^5*b^4/(b*e*x+a*e
)^4*(e*x+d)^(5/2)*d-765/64*e^6/(a*e-b*d)^5*b^2/(b*e*x+a*e)^4*(e*x+d)^(3/2)*
a^2+765/32*e^5/(a*e-b*d)^5*b^3/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a*d-765/64*e^4/(
a*e-b*d)^5*b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^2-325/64*e^7/(a*e-b*d)^5*b/(b*
e*x+a*e)^4*(e*x+d)^(1/2)*a^3+975/64*e^6/(a*e-b*d)^5*b^2/(b*e*x+a*e)^4*(e*x+
d)^(1/2)*a^2*d-975/64*e^5/(a*e-b*d)^5*b^3/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a*d^2
+325/64*e^4/(a*e-b*d)^5*b^4/(b*e*x+a*e)^4*(e*x+d)^(1/2)*d^3-315/64*e^4/(a*e
-b*d)^5*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-2
*e^4/(a*e-b*d)^5/(e*x+d)^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.39, size = 398, normalized size = 1.93

$$-\frac{\frac{2e^4}{a\,e-b\,d}+\frac{1533\,b^2\,e^4\,{\left(d+e\,x\right)}^2}{64\,{\left(a\,e-b\,d\right)}^3}+\frac{1155\,b^3\,e^4\,{\left(d+e\,x\right)}^3}{64\,{\left(a\,e-b\,d\right)}^4}+\frac{315\,b^4\,e^4\,{\left(d+e\,x\right)}^4}{64\,{\left(a\,e-b\,d\right)}^5}+\frac{837\,b\,e^4\,\left(d+e\,x\right)}{64\,{\left(a\,e-b\,d\right)}^2}}{b^4\,{\left(d+e\,x\right)}^{9/2}-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^{7/2}+\sqrt{d+e\,x}\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)+{\left(d+e\,x\right)}^{5/2}\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)-{\left(d+e\,x\right)}^{3/2}\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)}-\frac{315\,\sqrt{b}\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5\right)}{{\left(a\,e-b\,d\right)}^{11/2}}\right)}{64\,{\left(a\,e-b\,d\right)}^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] - ((2*e^4)/(a*e - b*d) + (1533*b^2*e^4*(d + e*x)^2)/(64*(a*e - b*d)^3) + (1
155*b^3*e^4*(d + e*x)^3)/(64*(a*e - b*d)^4) + (315*b^4*e^4*(d + e*x)^4)/(64
*(a*e - b*d)^5) + (837*b*e^4*(d + e*x))/(64*(a*e - b*d)^2))/(b^4*(d + e*x)^
(9/2) - (4*b^4*d - 4*a*b^3*e)*(d + e*x)^(7/2) + (d + e*x)^(1/2)*(a^4*e^4 +
b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + (d + e*x)^(5
/2)*(6*b^4*d^2 + 6*a^2*b^2*e^2 - 12*a*b^3*d*e) - (d + e*x)^(3/2)*(4*b^4*d^3
 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 12*a*b^3*d^2*e)) - (315*b^(1/2)*e^4*ata
n((b^(1/2)*(d + e*x)^(1/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3
*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/(a*e - b*d)^(11/2)))/(64*(a*
e - b*d)^(11/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1866 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=233

$$-\frac{1155b^{3/2}e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{13/2}}+\frac{1155be^4}{64\sqrt{d+ex}\,(bd-ae)^6}+\frac{385e^4}{64(d+ex)^{3/2}(bd-ae)^5}+\frac{231e^3}{64(a+bx)(d+ex)^{3/2}(bd-ae}$$

Rubi [A] time = 0.20, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 51, 63, 208\}$

$$-\frac{1155b^{3/2}e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{13/2}}+\frac{1155be^4}{64\sqrt{d+ex}\,(bd-ae)^6}+\frac{385e^4}{64(d+ex)^{3/2}(bd-ae)^5}+\frac{231e^3}{64(a+bx)(d+ex)^{3/2}(bd-ae)^4}-\frac{33e^2}{32(a+bx)^2(d+ex)^{3/2}(bd-ae)^3}+\frac{11e}{24(a+bx)^3(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{4(a+bx)^4(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (385*e^4)/(64*(b*d - a*e)^5*(d + e*x)^(3/2)) - 1/(4*(b*d - a*e)*(a + b*x)^4
*(d + e*x)^(3/2)) + (11*e)/(24*(b*d - a*e)^2*(a + b*x)^3*(d + e*x)^(3/2)) -
 (33*e^2)/(32*(b*d - a*e)^3*(a + b*x)^2*(d + e*x)^(3/2)) + (231*e^3)/(64*(b
*d - a*e)^4*(a + b*x)*(d + e*x)^(3/2)) + (1155*b*e^4)/(64*(b*d - a*e)^6*Sqr
t[d + e*x]) - (1155*b^(3/2)*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
a*e]])/(64*(b*d - a*e)^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{1}{(a+bx)^5(d+ex)^{5/2}}\,dx$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}-\frac{(11e)\int \frac{1}{(a+bx)^4(d+ex)^{5/2}}\,dx}{8(bd-ae)}$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{11e}{24(bd-ae)^2(a+bx)^3(d+ex)^{3/2}}+\frac{(33}{}$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{11e}{24(bd-ae)^2(a+bx)^3(d+ex)^{3/2}}-\frac{}{32(}$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{11e}{24(bd-ae)^2(a+bx)^3(d+ex)^{3/2}}-\frac{}{32(}$$

$$=\frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}}-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{}{24(bd-ae)^2(a}$$

$$=\frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}}-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{}{24(bd-ae)^2(a}$$

$$=\frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}}-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{}{24(bd-ae)^2(a}$$

$$=\frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}}-\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}}+\frac{}{24(bd-ae)^2(a}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.22

$$-\frac{2e^4\,{}_2F_1\left(-\frac{3}{2},5;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(d+ex)^{3/2}(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-2*e^4*Hypergeometric2F1[-3/2, 5, -1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/
(3*(-(b*d) + a*e)^5*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 1.58, size = 406, normalized size = 1.74

$$-\frac{e^4\left(128a^5e^5-1408a^4be^4(d+ex)-640a^4bde^4+1280a^3b^2d^2e^3-9207a^3b^2e^3(d+ex)^2+5632a^3b^2de^3(d+ex)-1280a^2b^3d^3e^2-8448a^2b^3d^2e^2(d+ex)-16863a^2b^3e^2(d+ex)^3+27621a^2b^3de^2(d+ex)^2+640ab^4d^4e+5632ab^4d^3e(d+ex)-27621ab^4d^2e(d+ex)^2-12705ab^4e(d+ex)^4+33726ab^4de(d+ex)^3-128b^5d^5-1408b^5d^4(d+ex)+9207b^5d^3(d+ex)^2-16863b^5d^2(d+ex)^3-3465b^5(d+ex)^5+12705b^5d(d+ex)^4\right)}{192(d+ex)^{3/2}(bd-ae)^6(-ae-b(d+ex)+bd)^4}-\frac{1155b^{3/2}e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{64(ae-bd)^{13/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),
x]
```

```
[Out] -1/192*(e^4*(-128*b^5*d^5 + 640*a*b^4*d^4*e - 1280*a^2*b^3*d^3*e^2 + 1280*a
^3*b^2*d^2*e^3 - 640*a^4*b*d*e^4 + 128*a^5*e^5 - 1408*b^5*d^4*(d + e*x) + 5
632*a*b^4*d^3*e*(d + e*x) - 8448*a^2*b^3*d^2*e^2*(d + e*x) + 5632*a^3*b^2*d
*e^3*(d + e*x) - 1408*a^4*b*e^4*(d + e*x) + 9207*b^5*d^3*(d + e*x)^2 - 2762
1*a*b^4*d^2*e*(d + e*x)^2 + 27621*a^2*b^3*d*e^2*(d + e*x)^2 - 9207*a^3*b^2*
e^3*(d + e*x)^2 - 16863*b^5*d^2*(d + e*x)^3 + 33726*a*b^4*d*e*(d + e*x)^3 -
 16863*a^2*b^3*e^2*(d + e*x)^3 + 12705*b^5*d*(d + e*x)^4 - 12705*a*b^4*e*(d
```

```
 + e*x)^4 - 3465*b^5*(d + e*x)^5))/((b*d - a*e)^6*(d + e*x)^(3/2)*(b*d - a*
e - b*(d + e*x))^4) - (1155*b^(3/2)*e^4*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*
Sqrt[d + e*x])/(b*d - a*e)])/(64*(-(b*d) + a*e)^(13/2))
```

fricas [B] time = 0.49, size = 2494, normalized size = 10.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/384*(3465*(b^5*e^6*x^6 + a^4*b*d^2*e^4 + 2*(b^5*d*e^5 + 2*a*b^4*e^6)*x^5
 + (b^5*d^2*e^4 + 8*a*b^4*d*e^5 + 6*a^2*b^3*e^6)*x^4 + 4*(a*b^4*d^2*e^4 + 3
*a^2*b^3*d*e^5 + a^3*b^2*e^6)*x^3 + (6*a^2*b^3*d^2*e^4 + 8*a^3*b^2*d*e^5 +
a^4*b*e^6)*x^2 + 2*(2*a^3*b^2*d^2*e^4 + a^4*b*d*e^5)*x)*sqrt(b/(b*d - a*e))
*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e))
)/(b*x + a)) + 2*(3465*b^5*e^5*x^5 - 48*b^5*d^5 + 328*a*b^4*d^4*e - 1030*a^
2*b^3*d^3*e^2 + 2295*a^3*b^2*d^2*e^3 + 2048*a^4*b*d*e^4 - 128*a^5*e^5 + 115
5*(4*b^5*d*e^4 + 11*a*b^4*e^5)*x^4 + 231*(3*b^5*d^2*e^3 + 74*a*b^4*d*e^4 +
73*a^2*b^3*e^5)*x^3 - 99*(2*b^5*d^3*e^2 - 27*a*b^4*d^2*e^3 - 232*a^2*b^3*d*
e^4 - 93*a^3*b^2*e^5)*x^2 + 11*(8*b^5*d^4*e - 68*a*b^4*d^3*e^2 + 345*a^2*b^
3*d^2*e^3 + 1162*a^3*b^2*d*e^4 + 128*a^4*b*e^5)*x)*sqrt(e*x + d))/(a^4*b^6*
d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^6*e^2 - 20*a^7*b^3*d^5*e^3 + 15*a^8*b^
2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^2*e^6 + (b^10*d^6*e^2 - 6*a*b^9*d^5*e^
3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d^3*e^5 + 15*a^4*b^6*d^2*e^6 - 6*a^5*b^
5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*d^7*e - 4*a*b^9*d^6*e^2 + 3*a^2*b^8*d^
5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b^6*d^3*e^5 + 24*a^5*b^5*d^2*e^6 - 11*a
^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (b^10*d^8 + 2*a*b^9*d^7*e - 27*a^2*b^8*
d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4*b^6*d^4*e^4 - 6*a^5*b^5*d^3*e^5 + 43*
a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 + 6*a^8*b^2*e^8)*x^4 + 4*(a*b^9*d^8 - 3*
a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 19*a^4*b^6*d^5*e^3 - 30*a^5*b^5*d^4*e^4
 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2*e^6 - 3*a^8*b^2*d*e^7 + a^9*b*e^8)*x^
3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e + 43*a^4*b^6*d^6*e^2 - 6*a^5*b^5*d^5*
e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3*d^3*e^5 - 27*a^8*b^2*d^2*e^6 + 2*a^9*
b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^7*d^8 - 11*a^4*b^6*d^7*e + 24*a^5*b^5*
d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7*b^3*d^4*e^4 + 3*a^8*b^2*d^3*e^5 - 4*a
^9*b*d^2*e^6 + a^10*d*e^7)*x), -1/192*(3465*(b^5*e^6*x^6 + a^4*b*d^2*e^4 +
2*(b^5*d*e^5 + 2*a*b^4*e^6)*x^5 + (b^5*d^2*e^4 + 8*a*b^4*d*e^5 + 6*a^2*b^3*
e^6)*x^4 + 4*(a*b^4*d^2*e^4 + 3*a^2*b^3*d*e^5 + a^3*b^2*e^6)*x^3 + (6*a^2*b
^3*d^2*e^4 + 8*a^3*b^2*d*e^5 + a^4*b*e^6)*x^2 + 2*(2*a^3*b^2*d^2*e^4 + a^4*
b*d*e^5)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/
(b*d - a*e))/(b*e*x + b*d)) - (3465*b^5*e^5*x^5 - 48*b^5*d^5 + 328*a*b^4*d^
4*e - 1030*a^2*b^3*d^3*e^2 + 2295*a^3*b^2*d^2*e^3 + 2048*a^4*b*d*e^4 - 128*
a^5*e^5 + 1155*(4*b^5*d*e^4 + 11*a*b^4*e^5)*x^4 + 231*(3*b^5*d^2*e^3 + 74*a
*b^4*d*e^4 + 73*a^2*b^3*e^5)*x^3 - 99*(2*b^5*d^3*e^2 - 27*a*b^4*d^2*e^3 - 2
32*a^2*b^3*d*e^4 - 93*a^3*b^2*e^5)*x^2 + 11*(8*b^5*d^4*e - 68*a*b^4*d^3*e^2
 + 345*a^2*b^3*d^2*e^3 + 1162*a^3*b^2*d*e^4 + 128*a^4*b*e^5)*x)*sqrt(e*x +
d))/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^6*e^2 - 20*a^7*b^3*d^5*e^
3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^2*e^6 + (b^10*d^6*e^2 - 6
*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d^3*e^5 + 15*a^4*b^6*d^2*e
^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*d^7*e - 4*a*b^9*d^6*e^2 +
 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b^6*d^3*e^5 + 24*a^5*b^5*d
^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (b^10*d^8 + 2*a*b^9*d^7*e
- 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4*b^6*d^4*e^4 - 6*a^5*b^5*
d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 + 6*a^8*b^2*e^8)*x^4 + 4*(a
*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 19*a^4*b^6*d^5*e^3 - 30*a^
5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2*e^6 - 3*a^8*b^2*d*e^7 +
a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e + 43*a^4*b^6*d^6*e^2 - 6
*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3*d^3*e^5 - 27*a^8*b^2*d^2
```

```
*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^7*d^8 - 11*a^4*b^6*d^7*e
+ 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7*b^3*d^4*e^4 + 3*a^8*b^2*
d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x)]
```

giac [B] time = 0.27, size = 500, normalized size = 2.15

$$\frac{1155\,b^2\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\left(b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4-6\,a^5bde^5+a^6e^6\right)\sqrt{-b^2d+abe}}+\frac{2\left(15\,(xe+d)be^4+bde^4-ae^5\right)}{3\left(b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4-6\,a^5bde^5+a^6e^6\right)(xe+d)^{\frac{3}{2}}}+\frac{1545\,(xe+d)^{\frac{7}{2}}b^5e^4-5153\,(xe+d)^{\frac{5}{2}}b^5de^4+5855\,(xe+d)^{\frac{3}{2}}b^5d^2e^4-2295\,\sqrt{xe+d}\,b^5d^3e^4+5153\,(xe+d)^{\frac{5}{2}}ab^4e^5-11710\,(xe+d)^{\frac{3}{2}}ab^4de^5+6885\,\sqrt{xe+d}\,ab^4d^2e^5+5855\,(xe+d)^{\frac{3}{2}}a^2b^3e^6-6885\,\sqrt{xe+d}\,a^2b^3de^6+2295\,\sqrt{xe+d}\,a^3b^2e^7}{192\left(b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4-6\,a^5bde^5+a^6e^6\right)((xe+d)b-bd+ae)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 1155/64*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^6*d^6 - 6*
a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4
- 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(-b^2*d + a*b*e)) + 2/3*(15*(x*e + d)*b*e^4
+ b*d*e^4 - a*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*
b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*(x*e + d)^(3/2)
) + 1/192*(1545*(x*e + d)^(7/2)*b^5*e^4 - 5153*(x*e + d)^(5/2)*b^5*d*e^4 +
5855*(x*e + d)^(3/2)*b^5*d^2*e^4 - 2295*sqrt(x*e + d)*b^5*d^3*e^4 + 5153*(x
*e + d)^(5/2)*a*b^4*e^5 - 11710*(x*e + d)^(3/2)*a*b^4*d*e^5 + 6885*sqrt(x*e
 + d)*a*b^4*d^2*e^5 + 5855*(x*e + d)^(3/2)*a^2*b^3*e^6 - 6885*sqrt(x*e + d)
*a^2*b^3*d*e^6 + 2295*sqrt(x*e + d)*a^3*b^2*e^7)/((b^6*d^6 - 6*a*b^5*d^5*e
+ 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*
e^5 + a^6*e^6)*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.08, size = 473, normalized size = 2.03

$$\frac{765\sqrt{ex+d}\;a^3b^2e^7}{64\,(ae-bd)^6\,(bex+ae)^4}-\frac{2295\sqrt{ex+d}\;a^2b^3d\,e^6}{64\,(ae-bd)^6\,(bex+ae)^4}+\frac{2295\sqrt{ex+d}\;a\,b^4d^2e^5}{64\,(ae-bd)^6\,(bex+ae)^4}-\frac{765\sqrt{ex+d}\;b^5d^3e^4}{64\,(ae-bd)^6\,(bex+ae)^4}+\frac{5855\,(ex+d)^{\frac{3}{2}}\,a^2b^3e^6}{192\,(ae-bd)^6\,(bex+ae)^4}-\frac{5855\,(ex+d)^{\frac{3}{2}}\,a\,b^4d\,e^5}{96\,(ae-bd)^6\,(bex+ae)^4}+\frac{5855\,(ex+d)^{\frac{3}{2}}\,b^5d^2e^4}{192\,(ae-bd)^6\,(bex+ae)^4}+\frac{5153\,(ex+d)^{\frac{5}{2}}\,a\,b^4e^5}{192\,(ae-bd)^6\,(bex+ae)^4}-\frac{5153\,(ex+d)^{\frac{5}{2}}\,b^5d\,e^4}{192\,(ae-bd)^6\,(bex+ae)^4}+\frac{515\,(ex+d)^{\frac{7}{2}}\,b^5e^4}{64\,(ae-bd)^6\,(bex+ae)^4}+\frac{1155b^2e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{64\,(ae-bd)^6\,\sqrt{(ae-bd)\,b}}+\frac{10b\,e^4}{(ae-bd)^6\,\sqrt{ex+d}}-\frac{2e^4}{3\,(ae-bd)^5\,(ex+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 515/64*e^4/(a*e-b*d)^6*b^5/(b*e*x+a*e)^4*(e*x+d)^(7/2)+5153/192*e^5/(a*e-b*
d)^6*b^4/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a-5153/192*e^4/(a*e-b*d)^6*b^5/(b*e*x+
a*e)^4*(e*x+d)^(5/2)*d+5855/192*e^6/(a*e-b*d)^6*b^3/(b*e*x+a*e)^4*(e*x+d)^(
3/2)*a^2-5855/96*e^5/(a*e-b*d)^6*b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a*d+5855/1
92*e^4/(a*e-b*d)^6*b^5/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^2+765/64*e^7/(a*e-b*d)
^6*b^2/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^3-2295/64*e^6/(a*e-b*d)^6*b^3/(b*e*x+a
*e)^4*(e*x+d)^(1/2)*a^2*d+2295/64*e^5/(a*e-b*d)^6*b^4/(b*e*x+a*e)^4*(e*x+d)
^(1/2)*a*d^2-765/64*e^4/(a*e-b*d)^6*b^5/(b*e*x+a*e)^4*(e*x+d)^(1/2)*d^3+115
5/64*e^4/(a*e-b*d)^6*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)-2/3*e^4/(a*e-b*d)^5/(e*x+d)^(3/2)+10*e^4/(a*e-b*d)^6*b/(e*x+d
)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.64, size = 436, normalized size = 1.87

$$\frac{\frac{3069\,b^2\,e^4\,(d+e\,x)^2}{64\,(a\,e-b\,d)^3}-\frac{2\,e^4}{3\,(a\,e-b\,d)}+\frac{5621\,b^3\,e^4\,(d+e\,x)^3}{64\,(a\,e-b\,d)^4}+\frac{4235\,b^4\,e^4\,(d+e\,x)^4}{64\,(a\,e-b\,d)^5}+\frac{1155\,b^5\,e^4\,(d+e\,x)^5}{64\,(a\,e-b\,d)^6}+\frac{22\,b\,e^4\,(d+e\,x)}{3\,(a\,e-b\,d)^2}}{b^4\,(d+e\,x)^{11/2}-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,(d+e\,x)^{9/2}+(d+e\,x)^{3/2}\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)+(d+e\,x)^{7/2}\,\left(6\,a^2\,b^2\,e^2-12\,a\,b^3\,d\,e+6\,b^4\,d^2\right)-(d+e\,x)^{5/2}\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)}+\frac{1155\,b^{3/2}\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^6\,e^6-6\,a^5\,b\,d\,e^5+15\,a^4\,b^2\,d^2\,e^4-20\,a^3\,b^3\,d^3\,e^3+15\,a^2\,b^4\,d^4\,e^2-6\,a\,b^5\,d^5\,e+b^6\,d^6\right)}{(a\,e-b\,d)^{13/2}}\right)}{64\,(a\,e-b\,d)^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((3069*b^2*e^4*(d + e*x)^2)/(64*(a*e - b*d)^3) - (2*e^4)/(3*(a*e - b*d)) +
(5621*b^3*e^4*(d + e*x)^3)/(64*(a*e - b*d)^4) + (4235*b^4*e^4*(d + e*x)^4)/
(64*(a*e - b*d)^5) + (1155*b^5*e^4*(d + e*x)^5)/(64*(a*e - b*d)^6) + (22*b*
e^4*(d + e*x))/(3*(a*e - b*d)^2))/(b^4*(d + e*x)^(11/2) - (4*b^4*d - 4*a*b^
3*e)*(d + e*x)^(9/2) + (d + e*x)^(3/2)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e
^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + (d + e*x)^(7/2)*(6*b^4*d^2 + 6*a^2*b^
2*e^2 - 12*a*b^3*d*e) - (d + e*x)^(5/2)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b
^2*d*e^2 - 12*a*b^3*d^2*e)) + (1155*b^(3/2)*e^4*atan((b^(1/2)*(d + e*x)^(1/
2)*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^
2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5))/(a*e - b*d)^(13/2)))/(64*(a*e -
 b*d)^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1867 $\int (a+bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(b}{9e^3(a+bx)}$$

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2}{9e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
11*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(13*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^{7/2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^{7/2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^{7/2}}{e^2}-\frac{2b(bd-ae)(d+ex)^{9/2}}{e^2}+\frac{b^2(d+}{e}\right.}{ab+b^2x}\\ &= \frac{2(bd-ae)^2(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{11/2}}{11e^3(a+}\end{aligned}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{9/2}\left(143a^2e^2+26abe(9ex-2d)+b^2\left(8d^2-36dex+99e^2x^2\right)\right)}{1287e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(9/2)*(143*a^2*e^2 + 26*a*b*e*(-2*d + 9*e*x)
 + b^2*(8*d^2 - 36*d*e*x + 99*e^2*x^2)))/(1287*e^3*(a + b*x))
```

IntegrateAlgebraic [A] time = 51.00, size = 100, normalized size = 0.66

$$\frac{2(d+ex)^{9/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(143a^2e^2+234abe(d+ex)-286abde+143b^2d^2+99b^2(d+ex)^2-234b^2d(d+ex)\right)}{1287e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] (2*(d + e*x)^(9/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(143*b^2*d^2 - 286*a*b*d*e + 1
43*a^2*e^2 - 234*b^2*d*(d + e*x) + 234*a*b*e*(d + e*x) + 99*b^2*(d + e*x)^2
))/(1287*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 212, normalized size = 1.39

$$\frac{2\left(99b^2e^6x^6+8b^2d^6-52abd^5e+143a^2d^4e^2+18\left(20b^2de^5+13abe^6\right)x^5+\left(458b^2d^2e^4+884abde^5+143a^2e^6\right)x^4+4\left(53b^2d^3e^3+299abd^2e^4+143a^2de^5\right)x^3+3\left(b^2d^4e^2+208abd^3e^3+286a^2d^2e^4\right)x^2-2\left(2b^2d^5e-13abd^4e^2-286a^2d^3e^3\right)x\right)\sqrt{ex+d}}{1287e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*b^2*e^6*x^6 + 8*b^2*d^6 - 52*a*b*d^5*e + 143*a^2*d^4*e^2 + 18*(2
0*b^2*d*e^5 + 13*a*b*e^6)*x^5 + (458*b^2*d^2*e^4 + 884*a*b*d*e^5 + 143*a^2*
e^6)*x^4 + 4*(53*b^2*d^3*e^3 + 299*a*b*d^2*e^4 + 143*a^2*d*e^5)*x^3 + 3*(b^
2*d^4*e^2 + 208*a*b*d^3*e^3 + 286*a^2*d^2*e^4)*x^2 - 2*(2*b^2*d^5*e - 13*a*
b*d^4*e^2 - 286*a^2*d^3*e^3)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.27, size = 930, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d^4*e^(-1)*sgn(b*x
 + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*b^2*d^4*e^(-2)*sgn(b*x + a) + 24024*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(
3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*d^3*e^(-1)*sgn(b*x + a) + 5148*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*b^2*d^3*e^(-2)*sgn(b*x + a) + 45045*sqrt(x*e + d)*a^2*d^4*sgn(b*x +
a) + 60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*d^3*sgn(b*x + a) + 154
44*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*a*b*d^2*e^(-1)*sgn(b*x + a) + 858*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*b^2*d^2*e^(-2)*sgn(b*x + a) + 18018*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*d^2*sgn(b*x + a) + 1
144*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*d*e^(-1)*sgn(b*x + a)
 + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
```

```
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*b^2*d*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*d*sgn(b*x + a)
+ 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^
2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)
*d^5)*a*b*e^(-1)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^2*e^(-
2)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*sgn
(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 79, normalized size = 0.52

$$\frac{2\left(ex+d\right)^{\frac{9}{2}}\left(99b^{2}x^{2}e^{2}+234ab\,e^{2}x-36b^{2}dex+143a^{2}e^{2}-52abde+8b^{2}d^{2}\right)\sqrt{\left(bx+a\right)^{2}}}{1287\left(bx+a\right)e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/1287*(e*x+d)^(9/2)*(99*b^2*e^2*x^2+234*a*b*e^2*x-36*b^2*d*e*x+143*a^2*e^2
-52*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [B] time = 0.66, size = 263, normalized size = 1.73

$$\frac{2\left(9\,be^{5}x^{5}-2\,bd^{5}+11\,ad^{4}e+\left(34\,bde^{4}+11\,ae^{5}\right)x^{4}+2\left(23\,bd^{2}e^{3}+22\,ade^{4}\right)x^{3}+6\left(4\,bd^{3}e^{2}+11\,ad^{2}e^{3}\right)x^{2}+\left(bd^{4}e+44\,ad^{3}e^{2}\right)x\right)\sqrt{ex+d}\,a}{99\,e^{2}}+\frac{2\left(99\,be^{6}x^{6}+8\,bd^{6}-26\,ad^{5}e+9\left(40\,bde^{5}+13\,ae^{6}\right)x^{5}+2\left(229\,bd^{2}e^{4}+221\,ade^{5}\right)x^{4}+2\left(106\,bd^{3}e^{3}+299\,ad^{2}e^{4}\right)x^{3}+3\left(bd^{4}e^{2}+104\,ad^{3}e^{3}\right)x^{2}-\left(4\,bd^{5}e-13\,ad^{4}e^{2}\right)x\right)\sqrt{ex+d}\,b}{1287\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/99*(9*b*e^5*x^5 - 2*b*d^5 + 11*a*d^4*e + (34*b*d*e^4 + 11*a*e^5)*x^4 + 2*
(23*b*d^2*e^3 + 22*a*d*e^4)*x^3 + 6*(4*b*d^3*e^2 + 11*a*d^2*e^3)*x^2 + (b*d
^4*e + 44*a*d^3*e^2)*x)*sqrt(e*x + d)*a/e^2 + 2/1287*(99*b*e^6*x^6 + 8*b*d^
6 - 26*a*d^5*e + 9*(40*b*d*e^5 + 13*a*e^6)*x^5 + 2*(229*b*d^2*e^4 + 221*a*d
*e^5)*x^4 + 2*(106*b*d^3*e^3 + 299*a*d^2*e^4)*x^3 + 3*(b*d^4*e^2 + 104*a*d^
3*e^3)*x^2 - (4*b*d^5*e - 13*a*d^4*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{7/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(7/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1868 $\int (a+bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^3(a+bx)}$$

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2}{7e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9
*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(1
1*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)(d+ex)^{5/2}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^{5/2}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^{5/2}}{e^2}-\frac{2b(bd-ae)(d+ex)^{7/2}}{e^2}+\frac{b^2 \cdots}{}\right.}{ab+b^2x}\\
&= \frac{2(bd-ae)^2(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{\cdots}}{9e^3(\cdots}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\left(99a^2e^2+22abe(7ex-2d)+b^2\left(8d^2-28dex+63e^2x^2\right)\right)}{693e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(99*a^2*e^2 + 22*a*b*e*(-2*d + 7*e*x)
+ b^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2)))/(693*e^3*(a + b*x))
```

IntegrateAlgebraic [A] time = 48.84, size = 100, normalized size = 0.66

$$\frac{2(d+ex)^{7/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(99a^2e^2+154abe(d+ex)-198abde+99b^2d^2+63b^2(d+ex)^2-154b^2d(d+ex)\right)}{693e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] (2*(d + e*x)^(7/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(99*b^2*d^2 - 198*a*b*d*e + 99
*a^2*e^2 - 154*b^2*d*(d + e*x) + 154*a*b*e*(d + e*x) + 63*b^2*(d + e*x)^2))
/(693*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 174, normalized size = 1.14

$$\frac{2\left(63\,b^2e^5x^5+8\,b^2d^5-44\,abd^4e+99\,a^2d^3e^2+7\left(23\,b^2de^4+22\,abe^5\right)x^4+\left(113\,b^2d^2e^3+418\,abde^4+99\,a^2e^5\right)x^3+3\left(b^2d^3e^2+110\,abd^2e^3+99\,a^2de^4\right)x^2-\left(4\,b^2d^4e-22\,abd^3e^2-297\,a^2d^2e^3\right)x\right)\sqrt{ex+d}}{693\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*b^2*e^5*x^5 + 8*b^2*d^5 - 44*a*b*d^4*e + 99*a^2*d^3*e^2 + 7*(23*b
^2*d*e^4 + 22*a*b*e^5)*x^4 + (113*b^2*d^2*e^3 + 418*a*b*d*e^4 + 99*a^2*e^5)
*x^3 + 3*(b^2*d^3*e^2 + 110*a*b*d^2*e^3 + 99*a^2*d*e^4)*x^2 - (4*b^2*d^4*e
- 22*a*b*d^3*e^2 - 297*a^2*d^2*e^3)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.24, size = 663, normalized size = 4.36

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d^3*e^(-1)*sgn(b*x +
 a) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*b^2*d^3*e^(-2)*sgn(b*x + a) + 1386*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)
*d + 15*sqrt(x*e + d)*d^2)*a*b*d^2*e^(-1)*sgn(b*x + a) + 297*(5*(x*e + d)^(
7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3
)*b^2*d^2*e^(-2)*sgn(b*x + a) + 3465*sqrt(x*e + d)*a^2*d^3*sgn(b*x + a) + 3
465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*d^2*sgn(b*x + a) + 594*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*a*b*d*e^(-1)*sgn(b*x + a) + 33*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*b^2*d*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e +
d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*d*sgn(b*x + a) + 22*(35*(x*e + d)^(9
/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)
*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*e^(-1)*sgn(b*x + a) + 5*(63*(x*e + d)^(11
/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2
```

```
)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^2*e^(-2)*sgn(b*
x + a) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*a^2*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(63b^2x^2e^2+154ab\,e^2x-28b^2dex+99a^2e^2-44abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{693\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/693*(e*x+d)^(7/2)*(63*b^2*e^2*x^2+154*a*b*e^2*x-28*b^2*d*e*x+99*a^2*e^2-4
4*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.71, size = 214, normalized size = 1.41

$$\frac{2\left(7\,be^4x^4-2\,bd^4+9\,ad^3e+\left(19\,bde^3+9\,ae^4\right)x^3+3\left(5\,bd^2e^2+9\,ade^3\right)x^2+\left(bd^3e+27\,ad^2e^2\right)x\right)\sqrt{ex+d}\,a}{63\,e^2}+\frac{2\left(63\,be^5x^5+8\,bd^5-22\,ad^4e+7\left(23\,bde^4+11\,ae^5\right)x^4+\left(113\,bd^2e^3+209\,ade^4\right)x^3+3\left(bd^3e^2+55\,ad^2e^3\right)x^2-\left(4\,bd^4e-11\,ad^3e^2\right)x\right)\sqrt{ex+d}\,b}{693\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*b*e^4*x^4 - 2*b*d^4 + 9*a*d^3*e + (19*b*d*e^3 + 9*a*e^4)*x^3 + 3*(5
*b*d^2*e^2 + 9*a*d*e^3)*x^2 + (b*d^3*e + 27*a*d^2*e^2)*x)*sqrt(e*x + d)*a/e
^2 + 2/693*(63*b*e^5*x^5 + 8*b*d^5 - 22*a*d^4*e + 7*(23*b*d*e^4 + 11*a*e^5)
*x^4 + (113*b*d^2*e^3 + 209*a*d*e^4)*x^3 + 3*(b*d^3*e^2 + 55*a*d^2*e^3)*x^2
 - (4*b*d^4*e - 11*a*d^3*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\;\,(a+b\,x)\;(d+e\,x)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(5/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1869 $\int (a+bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd$$

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}{5e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*
e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^{3/2}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^{3/2}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(-bd+ae)^2(d+ex)^{3/2}}{e^2}-\frac{2b(bd-ae)(d+ex)^{5/2}}{e^2}+\frac{b^2(d+}{e^2}\right.}{ab+b^2x}$$

$$=\frac{2(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{7/2}\sqrt{}}{7e^3(a+}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{5/2}\left(63a^2e^2+18abe(5ex-2d)+b^2\left(8d^2-20dex+35e^2x^2\right)\right)}{315e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(63*a^2*e^2 + 18*a*b*e*(-2*d + 5*e*x)
+ b^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2)))/(315*e^3*(a + b*x))
```

IntegrateAlgebraic [A] time = 33.67, size = 100, normalized size = 0.66

$$\frac{2(d+ex)^{5/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(63a^2e^2+90abe(d+ex)-126abde+63b^2d^2+35b^2(d+ex)^2-90b^2d(d+ex)\right)}{315e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] (2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(63*b^2*d^2 - 126*a*b*d*e + 63
*a^2*e^2 - 90*b^2*d*(d + e*x) + 90*a*b*e*(d + e*x) + 35*b^2*(d + e*x)^2))/(
315*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.40, size = 137, normalized size = 0.90

$$\frac{2\left(35\,b^2e^4x^4+8\,b^2d^4-36\,abd^3e+63\,a^2d^2e^2+10\left(5\,b^2de^3+9\,abe^4\right)x^3+3\left(b^2d^2e^2+48\,abde^3+21\,a^2e^4\right)x^2-2\left(2\,b^2d^3e-9\,abd^2e^2-63\,a^2de^3\right)x\right)\sqrt{ex+d}}{315\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^2*e^4*x^4 + 8*b^2*d^4 - 36*a*b*d^3*e + 63*a^2*d^2*e^2 + 10*(5*b
^2*d*e^3 + 9*a*b*e^4)*x^3 + 3*(b^2*d^2*e^2 + 48*a*b*d*e^3 + 21*a^2*e^4)*x^2
 - 2*(2*b^2*d^3*e - 9*a*b*d^2*e^2 - 63*a^2*d*e^3)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.21, size = 434, normalized size = 2.86

$$\frac{2}{315}\left(210\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)abd^2e^{(-1)}\mathrm{sgn}(bx+a)+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)b^2d^2e^{(-2)}\mathrm{sgn}(bx+a)+84\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)abde^{(-1)}\mathrm{sgn}(bx+a)+18\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)b^2de^{(-2)}\mathrm{sgn}(bx+a)+315\sqrt{xe+d}\,a^2d^2\mathrm{sgn}(bx+a)+210\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^2d\,\mathrm{sgn}(bx+a)+18\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)abe^{(-1)}\mathrm{sgn}(bx+a)+\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)b^2e^{(-2)}\mathrm{sgn}(bx+a)+21\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^2\mathrm{sgn}(bx+a)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(210*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d^2*e^(-1)*sgn(b*x + a
) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^
2*d^2*e^(-2)*sgn(b*x + a) + 84*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d +
15*sqrt(x*e + d)*d^2)*a*b*d*e^(-1)*sgn(b*x + a) + 18*(5*(x*e + d)^(7/2) - 2
1*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*d*
e^(-2)*sgn(b*x + a) + 315*sqrt(x*e + d)*a^2*d^2*sgn(b*x + a) + 210*((x*e +
d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*d*sgn(b*x + a) + 18*(5*(x*e + d)^(7/2) -
21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b*e
^(-1)*sgn(b*x + a) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
 + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^2*e^(-
2)*sgn(b*x + a) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^2*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\left(ex+d\right)^{\frac{5}{2}}\left(35b^2x^2e^2+90ab\,e^2x-20b^2dex+63a^2e^2-36abde+8b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{315\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(5/2)*(35*b^2*e^2*x^2+90*a*b*e^2*x-20*b^2*d*e*x+63*a^2*e^2-36
*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.62, size = 167, normalized size = 1.10

$$\frac{2\left(5\,be^3x^3 - 2\,bd^3 + 7\,ad^2e + \left(8\,bde^2 + 7\,ae^3\right)x^2 + \left(bd^2e + 14\,ade^2\right)x\right)\sqrt{ex+d}\,a}{35\,e^2} + \frac{2\left(35\,be^4x^4 + 8\,bd^4 - 18\,ad^3e + 5\left(10\,bde^3 + 9\,ae^4\right)x^3 + 3\left(bd^2e^2 + 24\,ade^3\right)x^2 - \left(4\,bd^3e - 9\,ad^2e^2\right)x\right)\sqrt{ex+d}\,b}{315\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*b*e^3*x^3 - 2*b*d^3 + 7*a*d^2*e + (8*b*d*e^2 + 7*a*e^3)*x^2 + (b*d^
2*e + 14*a*d*e^2)*x)*sqrt(e*x + d)*a/e^2 + 2/315*(35*b*e^4*x^4 + 8*b*d^4 -
18*a*d^3*e + 5*(10*b*d*e^3 + 9*a*e^4)*x^3 + 3*(b*d^2*e^2 + 24*a*d*e^3)*x^2
- (4*b*d^3*e - 9*a*d^2*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\;(a+b\,x)\;(d+e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(3/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1870 $\int (a+bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(}{3e^3(a+bx)}$$

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}{3e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5
*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*
e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)\sqrt{d+ex}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2\sqrt{d+ex}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2\sqrt{d+ex}}{e^2}-\frac{2b(bd-ae)(d+ex)^{3/2}}{e^2}+\frac{b^2(d+}{e^2}\right.}{ab+b^2x}\\
&= \frac{2(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{5/2}}{5e^3(a}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(35a^2e^2+14abe(3ex-2d)+b^2\left(8d^2-12dex+15e^2x^2\right)\right)}{105e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(35*a^2*e^2 + 14*a*b*e*(-2*d + 3*e*x)
+ b^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2)))/(105*e^3*(a + b*x))
```

IntegrateAlgebraic [A] time = 20.43, size = 100, normalized size = 0.66

$$\frac{2(d+ex)^{3/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(35a^2e^2+42abe(d+ex)-70abde+35b^2d^2+15b^2(d+ex)^2-42b^2d(d+ex)\right)}{105e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(35*b^2*d^2 - 70*a*b*d*e + 35*
a^2*e^2 - 42*b^2*d*(d + e*x) + 42*a*b*e*(d + e*x) + 15*b^2*(d + e*x)^2))/(1
05*e^2*(a*e + b*e*x))
```

fricas [A] time = 0.41, size = 99, normalized size = 0.65

$$\frac{2\left(15\,b^2e^3x^3+8\,b^2d^3-28\,abd^2e+35\,a^2de^2+3\left(b^2de^2+14\,abe^3\right)x^2-\left(4\,b^2d^2e-14\,abde^2-35\,a^2e^3\right)x\right)\sqrt{ex+d}}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*b^2*e^3*x^3 + 8*b^2*d^3 - 28*a*b*d^2*e + 35*a^2*d*e^2 + 3*(b^2*d*
e^2 + 14*a*b*e^3)*x^2 - (4*b^2*d^2*e - 14*a*b*d*e^2 - 35*a^2*e^3)*x)*sqrt(e
*x + d)/e^3
```

giac [B] time = 0.17, size = 246, normalized size = 1.62

$$\frac{2}{105}\left(70\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)abde^{(-1)}\mathrm{sgn}\left(bx+a\right)+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)b^2de^{(-2)}\mathrm{sgn}\left(bx+a\right)+14\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)abe^{(-1)}\mathrm{sgn}\left(bx+a\right)+3\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)b^2e^{(-2)}\mathrm{sgn}\left(bx+a\right)+105\sqrt{xe+d}\,a^2d\mathrm{sgn}\left(bx+a\right)+35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(70*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d*e^(-1)*sgn(b*x + a) +
 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^2*d*
e^(-2)*sgn(b*x + a) + 14*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqr
t(x*e + d)*d^2)*a*b*e^(-1)*sgn(b*x + a) + 3*(5*(x*e + d)^(7/2) - 21*(x*e +
d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*e^(-2)*sgn(
b*x + a) + 105*sqrt(x*e + d)*a^2*d*sgn(b*x + a) + 35*((x*e + d)^(3/2) - 3*s
qrt(x*e + d)*d)*a^2*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(15b^2x^2e^2+42ab\,e^2x-12b^2dex+35a^2e^2-28abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{105\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(3/2)*(15*b^2*e^2*x^2+42*a*b*e^2*x-12*b^2*d*e*x+35*a^2*e^2-28
*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.67, size = 120, normalized size = 0.79

$$\frac{2\left(3\,be^2x^2 - 2\,bd^2 + 5\,ade + \left(bde + 5\,ae^2\right)x\right)\sqrt{ex+d}\,a}{15\,e^2} + \frac{2\left(15\,be^3x^3 + 8\,bd^3 - 14\,ad^2e + 3\left(bde^2 + 7\,ae^3\right)x^2 - \left(4\,bd^2e - 7\,ade^2\right)x\right)\sqrt{ex+d}\,b}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*b*e^2*x^2 - 2*b*d^2 + 5*a*d*e + (b*d*e + 5*a*e^2)*x)*sqrt(e*x + d)*
a/e^2 + 2/105*(15*b*e^3*x^3 + 8*b*d^3 - 14*a*d^2*e + 3*(b*d*e^2 + 7*a*e^3)*
x^2 - (4*b*d^2*e - 7*a*d*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)\,\sqrt{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(1/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + bx\right) \sqrt{d + ex} \sqrt{\left(a + bx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)*sqrt((a + b*x)**2), x)
```

3.1871 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=150

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-$$

Rubi [A] time = 0.07, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x
)) - (4*b*(b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3
*(a + b*x)) + (2*b^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*
(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{\sqrt{d+ex}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{\sqrt{d+ex}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2\sqrt{d+ex}}-\frac{2b(bd-ae)\sqrt{d+ex}}{e^2}+\frac{b^2(d+ex)^{3/2}}{e^2}\right)dx}{ab+b^2x}\\
&= \frac{2(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx}}{3e^3(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 78, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\sqrt{d+ex}\left(15a^2e^2+10abe(ex-2d)+b^2\left(8d^2-4dex+3e^2x^2\right)\right)}{15e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(15*a^2*e^2 + 10*a*b*e*(-2*d + e*x) + b^
2*(8*d^2 - 4*d*e*x + 3*e^2*x^2)))/(15*e^3*(a + b*x))
```

IntegrateAlgebraic [A] time = 14.94, size = 100, normalized size = 0.67

$$\frac{2\sqrt{d+ex}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(15a^2e^2+10abe(d+ex)-30abde+15b^2d^2+3b^2(d+ex)^2-10b^2d(d+ex)\right)}{15e^2(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],
x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2]*(15*b^2*d^2 - 30*a*b*d*e + 15*a^
2*e^2 - 10*b^2*d*(d + e*x) + 10*a*b*e*(d + e*x) + 3*b^2*(d + e*x)^2))/(15*e
^2*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 64, normalized size = 0.43

$$\frac{2\left(3\,b^2e^2x^2+8\,b^2d^2-20\,abde+15\,a^2e^2-2\left(2\,b^2de-5\,abe^2\right)x\right)\sqrt{ex+d}}{15\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^2*e^2*x^2 + 8*b^2*d^2 - 20*a*b*d*e + 15*a^2*e^2 - 2*(2*b^2*d*e -
5*a*b*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [A] time = 0.19, size = 103, normalized size = 0.69

$$\frac{2}{15}\left(10\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)abe^{(-1)}\mathrm{sgn}\left(bx+a\right)+\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)b^2e^{(-2)}\mathrm{sgn}\left(bx+a\right)+15\sqrt{xe+d}\,a^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*(10*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*e^(-1)*sgn(b*x + a) + (3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^2*e^(-2)*
sgn(b*x + a) + 15*sqrt(x*e + d)*a^2*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 79, normalized size = 0.53

$$\frac{2\sqrt{ex+d}\,\left(3b^2x^2e^2+10ab\,e^2x-4b^2dex+15a^2e^2-20abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{15\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/15*(e*x+d)^(1/2)*(3*b^2*e^2*x^2+10*a*b*e^2*x-4*b^2*d*e*x+15*a^2*e^2-20*a*
b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.66, size = 119, normalized size = 0.79

$$\frac{2\left(be^2x^2-2\,bd^2+3\,ade-\left(bde-3\,ae^2\right)x\right)a}{3\,\sqrt{ex+d}\,e^2}+\frac{2\left(3\,be^3x^3+8\,bd^3-10\,ad^2e-\left(bde^2-5\,ae^3\right)x^2+\left(4\,bd^2e-5\,ade^2\right)x\right)b}{15\,\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*e^2*x^2 - 2*b*d^2 + 3*a*d*e - (b*d*e - 3*a*e^2)*x)*a/(sqrt(e*x + d)*
e^2) + 2/15*(3*b*e^3*x^3 + 8*b*d^3 - 10*a*d^2*e - (b*d*e^2 - 5*a*e^3)*x^2 +
 (4*b*d^2*e - 5*a*d*e^2)*x)*b/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.41, size = 127, normalized size = 0.85

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,b\,x^3}{5}+\frac{2\,x^2\,(10\,a\,e-b\,d)}{15\,e}+\frac{30\,a^2\,d\,e^2-40\,a\,b\,d^2\,e+16\,b^2\,d^3}{15\,b\,e^3}+\frac{x\,\left(30\,a^2\,e^3-20\,a\,b\,d\,e^2+8\,b^2\,d^2\,e\right)}{15\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(1/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*b*x^3)/5 + (2*x^2*(10*a*e - b*d))/(15*e) + (16*b^2
*d^3 + 30*a^2*d*e^2 - 40*a*b*d^2*e)/(15*b*e^3) + (x*(30*a^2*e^3 + 8*b^2*d^2
*e - 20*a*b*d*e^2))/(15*b*e^3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{(a+bx)^2}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt((a + b*x)**2)/sqrt(d + e*x), x)
```

3.1872 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)\sqrt{d+ex}}$$

Rubi [A] time = 0.07, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*Sqrt[d + e*
x]) - (4*b*(b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a
 + b*x)) + (2*b^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a
+ b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^{3/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^{3/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^{3/2}}-\frac{2b(bd-ae)}{e^2\sqrt{d+ex}}+\frac{b^2\sqrt{d+ex}}{e^2}\right)dx}{ab+b^2x}\\
&= -\frac{2(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}-\frac{4b(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x}}{e^3(a+bx)}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 78, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\left(3a^2e^2-6abe(2d+ex)+b^2\left(8d^2+4dex-e^2x^2\right)\right)}{3e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a^2*e^2 - 6*a*b*e*(2*d + e*x) + b^2*(8*d^2 + 4*d*e
*x - e^2*x^2)))/(3*e^3*(a + b*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 10.07, size = 99, normalized size = 0.67

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-3a^2e^2+6abe(d+ex)+6abde-3b^2d^2+b^2(d+ex)^2-6b^2d(d+ex)\right)}{3e^2\sqrt{d+ex}\,(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2
),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-3*b^2*d^2 + 6*a*b*d*e - 3*a^2*e^2 - 6*b^2*d*
(d + e*x) + 6*a*b*e*(d + e*x) + b^2*(d + e*x)^2))/(3*e^2*Sqrt[d + e*x]*(a*e
 + b*e*x))
```

fricas [A] time = 0.41, size = 73, normalized size = 0.49

$$\frac{2\left(b^2e^2x^2-8\,b^2d^2+12\,abde-3\,a^2e^2-2\left(2\,b^2de-3\,abe^2\right)x\right)\sqrt{ex+d}}{3\left(e^4x+de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b^2*e^2*x^2 - 8*b^2*d^2 + 12*a*b*d*e - 3*a^2*e^2 - 2*(2*b^2*d*e - 3*a*
b*e^2)*x)*sqrt(e*x + d)/(e^4*x + d*e^3)
```

giac [A] time = 0.18, size = 119, normalized size = 0.80

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}b^2e^6\mathrm{sgn}\,(bx+a)-6\,\sqrt{xe+d}\,b^2de^6\mathrm{sgn}\,(bx+a)+6\,\sqrt{xe+d}\,abe^7\mathrm{sgn}\,(bx+a)\right)e^{(-9)}-\frac{2\left(b^2d^2\mathrm{sgn}\,(bx+a)-2\,abde\mathrm{sgn}\,(bx+a)+a^2e^2\mathrm{sgn}\,(bx+a)\right)e^{(-3)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^2*e^6*sgn(b*x + a) - 6*sqrt(x*e + d)*b^2*d*e^6*sgn(b
*x + a) + 6*sqrt(x*e + d)*a*b*e^7*sgn(b*x + a))*e^(-9) - 2*(b^2*d^2*sgn(b*x
 + a) - 2*a*b*d*e*sgn(b*x + a) + a^2*e^2*sgn(b*x + a))*e^(-3)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 79, normalized size = 0.53

$$-\frac{2\left(-b^2x^2e^2-6ab\,e^2x+4b^2dex+3a^2e^2-12abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{3\sqrt{ex+d}\,\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/3/(e*x+d)^(1/2)*(-b^2*e^2*x^2-6*a*b*e^2*x+4*b^2*d*e*x+3*a^2*e^2-12*a*b*d
*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.66, size = 75, normalized size = 0.51

$$\frac{2\,(bex+2\,bd-ae)a}{\sqrt{ex+d}\,e^2}+\frac{2\left(be^2x^2-8\,bd^2+6\,ade-\left(4\,bde-3\,ae^2\right)x\right)b}{3\,\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*(b*e*x + 2*b*d - a*e)*a/(sqrt(e*x + d)*e^2) + 2/3*(b*e^2*x^2 - 8*b*d^2 +
6*a*d*e - (4*b*d*e - 3*a*e^2)*x)*b/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.65, size = 90, normalized size = 0.61

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{4\,x\,(3\,a\,e-2\,b\,d)}{3\,e^2}+\frac{2\,b\,x^2}{3\,e}-\frac{6\,a^2\,e^2-24\,a\,b\,d\,e+16\,b^2\,d^2}{3\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(3/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((4*x*(3*a*e - 2*b*d))/(3*e^2) + (2*b*x^2)/(3*e) - (6*
a^2*e^2 + 16*b^2*d^2 - 24*a*b*d*e)/(3*b*e^3)))/(x*(d + e*x)^(1/2) + (a*(d +
 e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{(a+bx)^2}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((a + b*x)*sqrt((a + b*x)**2)/(d + e*x)**(3/2), x)
```

3.1873 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}}{e^3(a+bx)}+\frac{4b\sqrt{a^2+2abx+b^2x^2}(bd-ae)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}(bd-ae)^2}{3e^3(a+bx)(d+ex)^{3/2}}$$

Rubi [A] time = 0.07, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}}{e^3(a+bx)}+\frac{4b\sqrt{a^2+2abx+b^2x^2}(bd-ae)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}(bd-ae)^2}{3e^3(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e*x)
^(3/2)) + (4*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*Sq
rt[d + e*x]) + (2*b^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a
+ b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^{5/2}}-\frac{2b(bd-ae)}{e^2(d+ex)^{3/2}}+\frac{b^2}{e^2\sqrt{d+ex}}\right)dx}{ab+b^2x}\\
&= -\frac{2(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{4b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}+\frac{2b^2\sqrt{d}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\left(a^2e^2+2abe(2d+3ex)-\left(b^2\left(8d^2+12dex+3e^2x^2\right)\right)\right)}{3e^3(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(a^2*e^2 + 2*a*b*e*(2*d + 3*e*x) - b^2*(8*d^2 + 12*d*
e*x + 3*e^2*x^2)))/(3*e^3*(a + b*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 13.88, size = 100, normalized size = 0.68

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-a^2e^2-6abe(d+ex)+2abde+b^2\left(-d^2\right)+3b^2(d+ex)^2+6b^2d(d+ex)\right)}{3e^2(d+ex)^{3/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2
),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-(b^2*d^2) + 2*a*b*d*e - a^2*e^2 + 6*b^2*d*(d
 + e*x) - 6*a*b*e*(d + e*x) + 3*b^2*(d + e*x)^2))/(3*e^2*(d + e*x)^(3/2)*(a
*e + b*e*x))
```

fricas [A] time = 0.40, size = 85, normalized size = 0.57

$$\frac{2\left(3\,b^2e^2x^2+8\,b^2d^2-4\,abde-a^2e^2+6\left(2\,b^2de-abe^2\right)x\right)\sqrt{ex+d}}{3\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*b^2*e^2*x^2 + 8*b^2*d^2 - 4*a*b*d*e - a^2*e^2 + 6*(2*b^2*d*e - a*b*e
^2)*x)*sqrt(e*x + d)/(e^5*x^2 + 2*d*e^4*x + d^2*e^3)
```

giac [A] time = 0.20, size = 111, normalized size = 0.75

$$2\sqrt{xe+d}\,b^2e^{(-3)}\mathrm{sgn}\,(bx+a)+\frac{2\left(6\,(xe+d)b^2d\mathrm{sgn}\,(bx+a)-b^2d^2\mathrm{sgn}\,(bx+a)-6\,(xe+d)abe\mathrm{sgn}\,(bx+a)+2\,abde\mathrm{sgn}\,(bx+a)-a^2e^2\mathrm{sgn}\,(bx+a)\right)e^{(-3)}}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*b^2*e^(-3)*sgn(b*x + a) + 2/3*(6*(x*e + d)*b^2*d*sgn(b*x +
a) - b^2*d^2*sgn(b*x + a) - 6*(x*e + d)*a*b*e*sgn(b*x + a) + 2*a*b*d*e*sgn(
b*x + a) - a^2*e^2*sgn(b*x + a))*e^(-3)/(x*e + d)^(3/2)
```

maple [A] time = 0.07, size = 78, normalized size = 0.53

$$-\frac{2\left(-3b^2x^2e^2+6ab\,e^2x-12b^2dex+a^2e^2+4abde-8b^2d^2\right)\sqrt{(bx+a)^2}}{3\,(ex+d)^{\frac{3}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-3*b^2*e^2*x^2+6*a*b*e^2*x-12*b^2*d*e*x+a^2*e^2+4*a*b*d
*e-8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.81, size = 96, normalized size = 0.65

$$-\frac{2\,(3\,bex + 2\,bd + ae)a}{3\,\left(e^3x + de^2\right)\sqrt{ex + d}} + \frac{2\,\left(3\,be^2x^2 + 8\,bd^2 - 2\,ade + 3\,\left(4\,bde - ae^2\right)x\right)b}{3\,\left(e^4x + de^3\right)\sqrt{ex + d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*e*x + 2*b*d + a*e)*a/((e^3*x + d*e^2)*sqrt(e*x + d)) + 2/3*(3*b*e
^2*x^2 + 8*b*d^2 - 2*a*d*e + 3*(4*b*d*e - a*e^2)*x)*b/((e^4*x + d*e^3)*sqrt
(e*x + d))
```

mupad [B] time = 2.72, size = 126, normalized size = 0.85

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{4\,x\,(a\,e-2\,b\,d)}{e^3}-\frac{2\,b\,x^2}{e^2}+\frac{2\,a^2\,e^2+8\,a\,b\,d\,e-16\,b^2\,d^2}{3\,b\,e^4}\right)}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(3\,a\,e^4+3\,b\,d\,e^3\right)\,\sqrt{d+e\,x}}{3\,b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(5/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((4*x*(a*e - 2*b*d))/e^3 - (2*b*x^2)/e^2 + (2*a^2*e^2
 - 16*b^2*d^2 + 8*a*b*d*e)/(3*b*e^4)))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x
)^(1/2))/(b*e) + (x*(3*a*e^4 + 3*b*d*e^3)*(d + e*x)^(1/2))/(3*b*e^4))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1874 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=150

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^{5/2}}$$

Rubi [A] time = 0.07, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e*x)
^(5/2)) + (4*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*
(d + e*x)^(3/2)) - (2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*Sqr
t[d + e*x])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^{7/2}}-\frac{2b(bd-ae)}{e^2(d+ex)^{5/2}}+\frac{b^2}{e^2(d+ex)^{3/2}}\right)dx}{ab+b^2x}\\
&= -\frac{2(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^{5/2}}+\frac{4b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2b^2\cdots}{e^3\cdots}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\left(3a^2e^2+2abe(2d+5ex)+b^2\left(8d^2+20dex+15e^2x^2\right)\right)}{15e^3(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a^2*e^2 + 2*a*b*e*(2*d + 5*e*x) + b^2*(8*d^2 + 20*
d*e*x + 15*e^2*x^2)))/(15*e^3*(a + b*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 22.69, size = 100, normalized size = 0.67

$$-\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(3a^2e^2+10abe(d+ex)-6abde+3b^2d^2+15b^2(d+ex)^2-10b^2d(d+ex)\right)}{15e^2(d+ex)^{5/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2
),x]
```

```
[Out] (-2*Sqrt[(a*e + b*e*x)^2/e^2]*(3*b^2*d^2 - 6*a*b*d*e + 3*a^2*e^2 - 10*b^2*d
*(d + e*x) + 10*a*b*e*(d + e*x) + 15*b^2*(d + e*x)^2))/(15*e^2*(d + e*x)^(5
/2)*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 95, normalized size = 0.63

$$-\frac{2\left(15\,b^2e^2x^2+8\,b^2d^2+4\,abde+3\,a^2e^2+10\left(2\,b^2de+abe^2\right)x\right)\sqrt{ex+d}}{15\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*b^2*e^2*x^2 + 8*b^2*d^2 + 4*a*b*d*e + 3*a^2*e^2 + 10*(2*b^2*d*e +
 a*b*e^2)*x)*sqrt(e*x + d)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

giac [A] time = 0.20, size = 108, normalized size = 0.72

$$-\frac{2\left(15\,(xe+d)^2b^2\mathrm{sgn}\,(bx+a)-10\,(xe+d)b^2d\mathrm{sgn}\,(bx+a)+3\,b^2d^2\mathrm{sgn}\,(bx+a)+10\,(xe+d)abe\mathrm{sgn}\,(bx+a)-6\,abde\mathrm{sgn}\,(bx+a)+3\,a^2e^2\mathrm{sgn}\,(bx+a)\right)e^{(-3)}}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*(x*e + d)^2*b^2*sgn(b*x + a) - 10*(x*e + d)*b^2*d*sgn(b*x + a) +
3*b^2*d^2*sgn(b*x + a) + 10*(x*e + d)*a*b*e*sgn(b*x + a) - 6*a*b*d*e*sgn(b*
x + a) + 3*a^2*e^2*sgn(b*x + a))*e^(-3)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 79, normalized size = 0.53

$$-\frac{2\left(15b^2x^2e^2+10ab\,e^2x+20b^2dex+3a^2e^2+4abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{15\,(ex+d)^{\frac{5}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(15*b^2*e^2*x^2+10*a*b*e^2*x+20*b^2*d*e*x+3*a^2*e^2+4*a
*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.61, size = 118, normalized size = 0.79

$$-\frac{2\,(5\,bex+2\,bd+3\,ae)a}{15\,\left(e^4x^2+2\,de^3x+d^2e^2\right)\sqrt{ex+d}}-\frac{2\left(15\,be^2x^2+8\,bd^2+2\,ade+5\left(4\,bde+ae^2\right)x\right)b}{15\,\left(e^5x^2+2\,de^4x+d^2e^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/15*(5*b*e*x + 2*b*d + 3*a*e)*a/((e^4*x^2 + 2*d*e^3*x + d^2*e^2)*sqrt(e*x
 + d)) - 2/15*(15*b*e^2*x^2 + 8*b*d^2 + 2*a*d*e + 5*(4*b*d*e + a*e^2)*x)*b/
((e^5*x^2 + 2*d*e^4*x + d^2*e^3)*sqrt(e*x + d))
```

mupad [B] time = 2.63, size = 151, normalized size = 1.01

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{4\,x\,(a\,e+2\,b\,d)}{3\,e^4}+\frac{2\,b\,x^2}{e^3}+\frac{\frac{2\,a^2\,e^2}{5}+\frac{8\,a\,b\,d\,e}{15}+\frac{16\,b^2\,d^2}{15}}{b\,e^5}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(a\,e^5+2\,b\,d\,e^4\right)\,\sqrt{d+e\,x}}{b\,e^5}+\frac{d\,x\,(2\,a\,e+b\,d)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((4*x*(a*e + 2*b*d))/(3*e^4) + (2*b*x^2)/e^3 + ((2*a^
2*e^2)/5 + (16*b^2*d^2)/15 + (8*a*b*d*e)/15)/(b*e^5)))/(x^3*(d + e*x)^(1/2)
 + (a*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(a*e^5 + 2*b*d*e^4)*(d + e*x)^(1/
2))/(b*e^5) + (d*x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1875 $\int (a+bx)(d+ex)^{5/2} \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=264

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2}{11e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^3}{9e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(\cdots}{7e^5(a+\cdots}$$

Rubi [A] time = 0.13, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}}{15e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)}{13e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2}{11e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^3}{9e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^4}{7e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a +
 b*x)) - (8*b*(b*d - a*e)^3*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(9*e^5*(a + b*x)) + (12*b^2*(b*d - a*e)^2*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(11*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(13/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(15/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^{5/2}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^{5/2}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^{5/2}}{e^4}-\frac{4b(bd-ae)^3(d+ex)^{7/2}}{e^4}+\cdots\right.}{ab+b^2x}\\
&= \frac{2(bd-ae)^4(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)}-\frac{8b(bd-ae)^3(d+ex\cdots}{9e^5(\cdots}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 172, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{7/2}\left(6435a^4e^4+2860a^3be^3(7ex-2d)+390a^2b^2e^2\left(8d^2-28dex+63e^2x^2\right)+60ab^3e\left(-16d^3+56d^2ex-126de^2x^2+231e^3x^3\right)+b^4\left(128d^4-448d^3ex+1008d^2e^2x^2-1848de^3x^3+3003e^4x^4\right)\right)}{45045e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(6435*a^4*e^4 + 2860*a^3*b*e^3*(-2*d +
 7*e*x) + 390*a^2*b^2*e^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 60*a*b^3*e*(-16
*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + b^4*(128*d^4 - 448*d^3*e
*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4)))/(45045*e^5*(a + b*
x))
```

IntegrateAlgebraic [A] time = 51.19, size = 241, normalized size = 0.91

$$\frac{2(d+ex)^{7/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(6435a^4e^4+20020a^3be^3(d+ex)-25740a^3bde^3+38610a^2b^2d^2e^2+24570a^2b^2e^2(d+ex)^2-60060a^2b^2de^2(d+ex)-25740ab^3d^3e+60060ab^3d^2e(d+ex)+13860ab^3e(d+ex)^3-49140ab^3de(d+ex)^2+6435b^4d^4-20020b^4d^3(d+ex)+24570b^4d^2(d+ex)^2+3003b^4(d+ex)^4-13860b^4d(d+ex)^3\right)}{45045e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] (2*(d + e*x)^(7/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(6435*b^4*d^4 - 25740*a*b^3*d^
3*e + 38610*a^2*b^2*d^2*e^2 - 25740*a^3*b*d*e^3 + 6435*a^4*e^4 - 20020*b^4*
d^3*(d + e*x) + 60060*a*b^3*d^2*e*(d + e*x) - 60060*a^2*b^2*d*e^2*(d + e*x)
 + 20020*a^3*b*e^3*(d + e*x) + 24570*b^4*d^2*(d + e*x)^2 - 49140*a*b^3*d*e*
(d + e*x)^2 + 24570*a^2*b^2*e^2*(d + e*x)^2 - 13860*b^4*d*(d + e*x)^3 + 138
60*a*b^3*e*(d + e*x)^3 + 3003*b^4*(d + e*x)^4))/(45045*e^4*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 377, normalized size = 1.43

$$\frac{2\left(3003b^4e^7x^7+128b^4d^7-960ab^3d^6e+3120a^2b^2d^5e^2-5720a^3bd^4e^3+6435a^4d^3e^4+231\left(31b^4de^6+60ab^3e^7\right)x^6+63\left(71b^4d^2e^5+540ab^3de^6+390a^2b^2e^7\right)x^5+35\left(b^4d^3e^4+636ab^3d^2e^5+1794a^2b^2de^6+572a^3be^7\right)x^4-5\left(8b^4d^4e^3-60ab^3d^3e^4-8814a^2b^2d^2e^5-10868a^3bde^6-1287a^4e^7\right)x^3+3\left(16b^4d^5e^2-120ab^3d^4e^3+390a^2b^2d^3e^4+14300a^3bd^2e^5+6435a^4de^6\right)x^2-\left(64b^4d^6e-480ab^3d^5e^2+1560a^2b^2d^4e^3-2860a^3bd^3e^4-19305a^4d^2e^5\right)x\right)\sqrt{ex+d}}{45045e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*b^4*e^7*x^7 + 128*b^4*d^7 - 960*a*b^3*d^6*e + 3120*a^2*b^2*d^
5*e^2 - 5720*a^3*b*d^4*e^3 + 6435*a^4*d^3*e^4 + 231*(31*b^4*d*e^6 + 60*a*b^
3*e^7)*x^6 + 63*(71*b^4*d^2*e^5 + 540*a*b^3*d*e^6 + 390*a^2*b^2*e^7)*x^5 +
35*(b^4*d^3*e^4 + 636*a*b^3*d^2*e^5 + 1794*a^2*b^2*d*e^6 + 572*a^3*b*e^7)*x
^4 - 5*(8*b^4*d^4*e^3 - 60*a*b^3*d^3*e^4 - 8814*a^2*b^2*d^2*e^5 - 10868*a^3
*b*d*e^6 - 1287*a^4*e^7)*x^3 + 3*(16*b^4*d^5*e^2 - 120*a*b^3*d^4*e^3 + 390*
a^2*b^2*d^3*e^4 + 14300*a^3*b*d^2*e^5 + 6435*a^4*d*e^6)*x^2 - (64*b^4*d^6*e
 - 480*a*b^3*d^5*e^2 + 1560*a^2*b^2*d^4*e^3 - 2860*a^3*b*d^3*e^4 - 19305*a^
4*d^2*e^5)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.32, size = 1397, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d^3*e^(-1)*sgn(b
*x + a) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*a^2*b^2*d^3*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d^3*e^(
-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*d^
```

```
3*e^(-4)*sgn(b*x + a) + 36036*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 1
5*sqrt(x*e + d)*d^2)*a^3*b*d^2*e^(-1)*sgn(b*x + a) + 23166*(5*(x*e + d)^(7/
2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*
a^2*b^2*d^2*e^(-2)*sgn(b*x + a) + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*a*b^3*d^2*e^(-3)*sgn(b*x + a) + 195*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^4*d^2*e^(-4)*sgn(b*x + a) +
 45045*sqrt(x*e + d)*a^4*d^3*sgn(b*x + a) + 45045*((x*e + d)^(3/2) - 3*sqrt
(x*e + d)*d)*a^4*d^2*sgn(b*x + a) + 15444*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b*d*e^(-1)*sg
n(b*x + a) + 2574*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^2*d*e
^(-2)*sgn(b*x + a) + 780*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*a*b^3*d*e^(-3)*sgn(b*x + a) + 45*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*b^4*d*e^(-4)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^4*d*sgn(b*x + a) + 572*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b*e^(-1)*sgn(b*x + a) + 390*(63*(x*e
 + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
+ d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^2*
e^(-2)*sgn(b*x + a) + 60*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d +
5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*
d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^3*e^(-3)*sgn(b
*x + a) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*b^4*e^(-4)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$\frac{2 (ex+d)^{\frac{7}{2}} \left(3003b^4e^4x^4+13860a\,b^3e^4x^3-1848b^4d\,e^3x^3+24570a^2b^2e^4x^2-7560a\,b^3d\,e^3x^2+1008b^4d^2e^2x^2+20020a^3b\,e^4x-10920a^2b^2d\,e^3x+3360a\,b^3d^2e^2x-448b^4d^3ex+6435a^4e^4-5720a^3bd\,e^3+3120a^2b^2d^2e^2-960a\,b^3d^3e+128b^4d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{45045 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/45045*(e*x+d)^(7/2)*(3003*b^4*e^4*x^4+13860*a*b^3*e^4*x^3-1848*b^4*d*e^3*
x^3+24570*a^2*b^2*e^4*x^2-7560*a*b^3*d*e^3*x^2+1008*b^4*d^2*e^2*x^2+20020*a
^3*b*e^4*x-10920*a^2*b^2*d*e^3*x+3360*a*b^3*d^2*e^2*x-448*b^4*d^3*e*x+6435*
a^4*e^4-5720*a^3*b*d*e^3+3120*a^2*b^2*d^2*e^2-960*a*b^3*d^3*e+128*b^4*d^4)*
((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.85, size = 592, normalized size = 2.24

$$\frac{2 \left(231 b^3e^6x^6-16 b^3d^6+104 ab^2d^5e-286 a^2bd^4e^2+429 a^3d^3e^3+63 \left(9 b^3de^5+13 ab^2e^6\right)x^5+7 \left(53 b^3d^2e^4+299 ab^2de^5+143 a^2be^6\right)x^4+\left(5 b^3d^3e^3+1469 ab^2d^2e^4+2717 a^2bde^5+429 a^3e^6\right)x^3-3 \left(2 b^3d^4e^2-13 ab^2d^3e^3-715 a^2bd^2e^4-429 a^3de^5\right)x^2+\left(8 b^3d^5e-52 ab^2d^4e^2+143 a^2bd^3e^3+1287 a^3d^2e^4\right)x\right)\sqrt{ex+d}\,a}{3003 e^4}+\frac{2 \left(3003 b^3e^7x^7+128 b^3d^7-720 ab^2d^6e+1560 a^2bd^5e^2-1430 a^3d^4e^3+231 \left(31 b^3de^6+45 ab^2e^7\right)x^6+63 \left(71 b^3d^2e^5+405 ab^2de^6+195 a^2be^7\right)x^5+35 \left(b^3d^3e^4+477 ab^2d^2e^5+897 a^2bde^6+143 a^3e^7\right)x^4-5 \left(8 b^3d^4e^3-45 ab^2d^3e^4-4407 a^2bd^2e^5-2717 a^3de^6\right)x^3+3 \left(16 b^3d^5e^2-90 ab^2d^4e^3+195 a^2bd^3e^4+3575 a^3d^2e^5\right)x^2-\left(64 b^3d^6e-360 ab^2d^5e^2+780 a^2bd^4e^3-715 a^3d^3e^4\right)x\right)\sqrt{ex+d}\,b}{45045 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/3003*(231*b^3*e^6*x^6 - 16*b^3*d^6 + 104*a*b^2*d^5*e - 286*a^2*b*d^4*e^2
+ 429*a^3*d^3*e^3 + 63*(9*b^3*d*e^5 + 13*a*b^2*e^6)*x^5 + 7*(53*b^3*d^2*e^4
 + 299*a*b^2*d*e^5 + 143*a^2*b*e^6)*x^4 + (5*b^3*d^3*e^3 + 1469*a*b^2*d^2*e
^4 + 2717*a^2*b*d*e^5 + 429*a^3*e^6)*x^3 - 3*(2*b^3*d^4*e^2 - 13*a*b^2*d^3*
e^3 - 715*a^2*b*d^2*e^4 - 429*a^3*d*e^5)*x^2 + (8*b^3*d^5*e - 52*a*b^2*d^4*
```

```
e^2 + 143*a^2*b*d^3*e^3 + 1287*a^3*d^2*e^4)*x)*sqrt(e*x + d)*a/e^4 + 2/4504
5*(3003*b^3*e^7*x^7 + 128*b^3*d^7 - 720*a*b^2*d^6*e + 1560*a^2*b*d^5*e^2 -
1430*a^3*d^4*e^3 + 231*(31*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 63*(71*b^3*d^2*e
^5 + 405*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 35*(b^3*d^3*e^4 + 477*a*b^2*d^2
*e^5 + 897*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 - 5*(8*b^3*d^4*e^3 - 45*a*b^2*d^3
*e^4 - 4407*a^2*b*d^2*e^5 - 2717*a^3*d*e^6)*x^3 + 3*(16*b^3*d^5*e^2 - 90*a*
b^2*d^4*e^3 + 195*a^2*b*d^3*e^4 + 3575*a^3*d^2*e^5)*x^2 - (64*b^3*d^6*e - 3
60*a*b^2*d^5*e^2 + 780*a^2*b*d^4*e^3 - 715*a^3*d^3*e^4)*x)*sqrt(e*x + d)*b/
e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^{5/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Timed out
```

3.1876 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=264

$$\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2}{3e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3}{7e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d\ \cdots}{5e^5(a+b\ \cdots}$$

Rubi [A] time = 0.10, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^5(a+bx)}+\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2}{3e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3}{7e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4}{5e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a +
 b*x)) - (8*b*(b*d - a*e)^3*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(7*e^5*(a + b*x)) + (4*b^2*(b*d - a*e)^2*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(3*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(11/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(13/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^{3/2}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^{3/2}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^{3/2}}{e^4}-\frac{4b(bd-ae)^3(d+ex)^{5/2}}{e^4}+\cdots\right.}{ab+b^2x}\\
&= \frac{2(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)}-\frac{8b(bd-ae)^3(d+ex\cdots}{7e^5(\cdots}
\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 172, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{5/2}\left(3003a^4e^4+1716a^3be^3(5ex-2d)+286a^2b^2e^2\left(8d^2-20dex+35e^2x^2\right)+52ab^3e\left(-16d^3+40d^2ex-70de^2x^2+105e^3x^3\right)+b^4\left(128d^4-320d^3ex+560d^2e^2x^2-840de^3x^3+1155e^4x^4\right)\right)}{15015e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(3003*a^4*e^4 + 1716*a^3*b*e^3*(-2*d +
 5*e*x) + 286*a^2*b^2*e^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 52*a*b^3*e*(-16
*d^3 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + b^4*(128*d^4 - 320*d^3*e*
x + 560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4)))/(15015*e^5*(a + b*x))
```

IntegrateAlgebraic [**A**] time = 49.35, size = 241, normalized size = 0.91

$$\frac{2(d+ex)^{5/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(3003a^4e^4+8580a^3be^3(d+ex)-12012a^3bde^3+18018a^2b^2d^2e^2+10010a^2b^2e^2(d+ex)^2-25740a^2b^2de^2(d+ex)-12012ab^3d^3e+25740ab^3d^2e(d+ex)+5460ab^3e(d+ex)^3-20020ab^3de(d+ex)^2+3003b^4d^4-8580b^4d^3(d+ex)+10010b^4d^2(d+ex)^2+1155b^4(d+ex)^4-5460b^4d(d+ex)^3\right)}{15015e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] (2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(3003*b^4*d^4 - 12012*a*b^3*d^
3*e + 18018*a^2*b^2*d^2*e^2 - 12012*a^3*b*d*e^3 + 3003*a^4*e^4 - 8580*b^4*d
^3*(d + e*x) + 25740*a*b^3*d^2*e*(d + e*x) - 25740*a^2*b^2*d*e^2*(d + e*x)
+ 8580*a^3*b*e^3*(d + e*x) + 10010*b^4*d^2*(d + e*x)^2 - 20020*a*b^3*d*e*(d
 + e*x)^2 + 10010*a^2*b^2*e^2*(d + e*x)^2 - 5460*b^4*d*(d + e*x)^3 + 5460*a
*b^3*e*(d + e*x)^3 + 1155*b^4*(d + e*x)^4))/(15015*e^4*(a*e + b*e*x))
```

fricas [**A**] time = 0.44, size = 311, normalized size = 1.18

$$\frac{2\left(1155b^4e^6x^6+128b^4d^6-832ab^3d^5e+2288a^2b^2d^4e^2-3432a^3bd^3e^3+3003a^4d^2e^4+210\left(7b^4de^5+26ab^3e^6\right)x^5+35\left(b^4d^2e^4+208ab^3de^5+286a^2b^2e^6\right)x^4-20\left(2b^4d^3e^3-13ab^3d^2e^4-715a^2b^2de^5-429a^3be^6\right)x^3+3\left(16b^4d^4e^2-104ab^3d^3e^3+286a^2b^2d^2e^4+4576a^3bde^5+1001a^4e^6\right)x^2-2\left(32b^4d^5e-208ab^3d^4e^2+572a^2b^2d^3e^3-858a^3bd^2e^4-3003a^4de^5\right)x\right)\sqrt{ex+d}}{15015e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/15015*(1155*b^4*e^6*x^6 + 128*b^4*d^6 - 832*a*b^3*d^5*e + 2288*a^2*b^2*d^
4*e^2 - 3432*a^3*b*d^3*e^3 + 3003*a^4*d^2*e^4 + 210*(7*b^4*d*e^5 + 26*a*b^3
*e^6)*x^5 + 35*(b^4*d^2*e^4 + 208*a*b^3*d*e^5 + 286*a^2*b^2*e^6)*x^4 - 20*(
2*b^4*d^3*e^3 - 13*a*b^3*d^2*e^4 - 715*a^2*b^2*d*e^5 - 429*a^3*b*e^6)*x^3 +
 3*(16*b^4*d^4*e^2 - 104*a*b^3*d^3*e^3 + 286*a^2*b^2*d^2*e^4 + 4576*a^3*b*d
*e^5 + 1001*a^4*e^6)*x^2 - 2*(32*b^4*d^5*e - 208*a*b^3*d^4*e^2 + 572*a^2*b^
2*d^3*e^3 - 858*a^3*b*d^2*e^4 - 3003*a^4*d*e^5)*x)*sqrt(e*x + d)/e^5
```

giac [**B**] time = 0.27, size = 944, normalized size = 3.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d^2*e^(-1)*sgn(b
*x + a) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*a^2*b^2*d^2*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d^2*e^(
-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*d^
2*e^(-4)*sgn(b*x + a) + 24024*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 1
5*sqrt(x*e + d)*d^2)*a^3*b*d*e^(-1)*sgn(b*x + a) + 15444*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^
```

```
2*b^2*d*e^(-2)*sgn(b*x + a) + 1144*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*a*b^3*d*e^(-3)*sgn(b*x + a) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^4*d*e^(-4)*sgn(b*x + a) + 45045*s
qrt(x*e + d)*a^4*d^2*sgn(b*x + a) + 30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d
)*d)*a^4*d*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b*e^(-1)*sgn(b*x + a) +
858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^2*e^(-2)*sgn(b*x +
a) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a*b^3*e^(-3)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^4
*e^(-4)*sgn(b*x + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(1155 b^4 e^4 x^4 + 5460 a b^3 e^4 x^3 - 840 b^4 d e^3 x^3 + 10010 a^2 b^2 e^4 x^2 - 3640 a b^3 d e^3 x^2 + 560 b^4 d^2 e^2 x^2 + 8580 a^3 b e^4 x - 5720 a^2 b^2 d e^3 x + 2080 a b^3 d^2 e^2 x - 320 b^4 d^3 e x + 3003 a^4 e^4 - 3432 a^3 b d e^3 + 2288 a^2 b^2 d^2 e^2 - 832 a b^3 d^3 e + 128 b^4 d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{15015 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/15015*(e*x+d)^(5/2)*(1155*b^4*e^4*x^4+5460*a*b^3*e^4*x^3-840*b^4*d*e^3*x^
3+10010*a^2*b^2*e^4*x^2-3640*a*b^3*d*e^3*x^2+560*b^4*d^2*e^2*x^2+8580*a^3*b
*e^4*x-5720*a^2*b^2*d*e^3*x+2080*a*b^3*d^2*e^2*x-320*b^4*d^3*e*x+3003*a^4*e
^4-3432*a^3*b*d*e^3+2288*a^2*b^2*d^2*e^2-832*a*b^3*d^3*e+128*b^4*d^4)*((b*x
+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.70, size = 488, normalized size = 1.85

$$\frac{2 \left(105 b^3 e^5 x^5 - 16 b^3 d^5 + 88 a b^2 d^4 e - 198 a^2 b d^3 e^2 + 231 a^3 d^2 e^3 + 35 \left(4 b^3 d e^4 + 11 a b^2 e^5\right) x^4 + 5 \left(b^3 d^2 e^3 + 110 a b^2 d e^4 + 99 a^2 b e^5\right) x^3 - 3 \left(2 b^3 d^3 e^2 - 11 a b^2 d^2 e^3 - 264 a^2 b d e^4 - 77 a^3 e^5\right) x^2 + \left(8 b^3 d^4 e - 44 a b^2 d^3 e^2 + 99 a^2 b d^2 e^3 + 462 a^3 d e^4\right) x\right) \sqrt{ex+d}\, a}{1155 e^4} + \frac{2 \left(1155 b^3 e^6 x^6 + 128 b^3 d^6 - 624 a b^2 d^5 e + 1144 a^2 b d^4 e^2 - 858 a^3 d^3 e^3 + 105 \left(14 b^3 d e^5 + 39 a b^2 e^6\right) x^5 + 35 \left(b^3 d^2 e^4 + 156 a b^2 d e^5 + 143 a^2 b e^6\right) x^4 - 5 \left(8 b^3 d^3 e^3 - 39 a b^2 d^2 e^4 - 1430 a^2 b d e^5 - 429 a^3 e^6\right) x^3 + 3 \left(16 b^3 d^4 e^2 - 78 a b^2 d^3 e^3 + 143 a^2 b d^2 e^4 + 1144 a^3 d e^5\right) x^2 - \left(64 b^3 d^5 e - 312 a b^2 d^4 e^2 + 572 a^2 b d^3 e^3 - 429 a^3 d^2 e^4\right) x\right) \sqrt{ex+d}\, b}{15015 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/1155*(105*b^3*e^5*x^5 - 16*b^3*d^5 + 88*a*b^2*d^4*e - 198*a^2*b*d^3*e^2 +
 231*a^3*d^2*e^3 + 35*(4*b^3*d*e^4 + 11*a*b^2*e^5)*x^4 + 5*(b^3*d^2*e^3 + 1
10*a*b^2*d*e^4 + 99*a^2*b*e^5)*x^3 - 3*(2*b^3*d^3*e^2 - 11*a*b^2*d^2*e^3 -
264*a^2*b*d*e^4 - 77*a^3*e^5)*x^2 + (8*b^3*d^4*e - 44*a*b^2*d^3*e^2 + 99*a^
2*b*d^2*e^3 + 462*a^3*d*e^4)*x)*sqrt(e*x + d)*a/e^4 + 2/15015*(1155*b^3*e^6
*x^6 + 128*b^3*d^6 - 624*a*b^2*d^5*e + 1144*a^2*b*d^4*e^2 - 858*a^3*d^3*e^3
 + 105*(14*b^3*d*e^5 + 39*a*b^2*e^6)*x^5 + 35*(b^3*d^2*e^4 + 156*a*b^2*d*e^
5 + 143*a^2*b*e^6)*x^4 - 5*(8*b^3*d^3*e^3 - 39*a*b^2*d^2*e^4 - 1430*a^2*b*d
*e^5 - 429*a^3*e^6)*x^3 + 3*(16*b^3*d^4*e^2 - 78*a*b^2*d^3*e^3 + 143*a^2*b*
d^2*e^4 + 1144*a^3*d*e^5)*x^2 - (64*b^3*d^5*e - 312*a*b^2*d^4*e^2 + 572*a^2
*b*d^3*e^3 - 429*a^3*d^2*e^4)*x)*sqrt(e*x + d)*b/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1877 $\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=264

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2}{7e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}{5e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d}{3e^5(a+}$$

Rubi [A] time = 0.10, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{9e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2}{7e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}{5e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}{3e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a +
 b*x)) - (8*b*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(5*e^5*(a + b*x)) + (12*b^2*(b*d - a*e)^2*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(7*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(9/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(11/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3\sqrt{d+ex}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4\sqrt{d+ex}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4\sqrt{d+ex}}{e^4}-\frac{4b(bd-ae)^3(d+ex)^{3/2}}{e^4}+\frac{6b^2(b}{}\right.}{ab+b^2x}\\
&= \frac{2(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)}-\frac{8b(bd-ae)^3(d+ex)^{5/}}{5e^5(a}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 172, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{3/2}\left(1155a^4e^4+924a^3be^3(3ex-2d)+198a^2b^2e^2\left(8d^2-12dex+15e^2x^2\right)+44ab^3e\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)+b^4\left(128d^4-192d^3ex+240d^2e^2x^2-280de^3x^3+315e^4x^4\right)\right)}{3465e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(1155*a^4*e^4 + 924*a^3*b*e^3*(-2*d +
3*e*x) + 198*a^2*b^2*e^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + 44*a*b^3*e*(-16*
d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + b^4*(128*d^4 - 192*d^3*e*x
+ 240*d^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4)))/(3465*e^5*(a + b*x))
```

IntegrateAlgebraic [A] time = 34.98, size = 241, normalized size = 0.91

$$\frac{2(d+ex)^{3/2}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(1155a^4e^4+2772a^3be^3(d+ex)-4620a^3bde^3+6930a^2b^2d^2e^2+2970a^2b^2e^2(d+ex)^2-8316a^2b^2de^2(d+ex)-4620ab^3d^3e+8316ab^3d^2e(d+ex)+1540ab^3e(d+ex)^3-5940ab^3de(d+ex)^2+1155b^4d^4-2772b^4d^3(d+ex)+2970b^4d^2(d+ex)^2+315b^4(d+ex)^4-1540b^4d(d+ex)^3\right)}{3465e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),
x]
```

```
[Out] (2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(1155*b^4*d^4 - 4620*a*b^3*d^3
*e + 6930*a^2*b^2*d^2*e^2 - 4620*a^3*b*d*e^3 + 1155*a^4*e^4 - 2772*b^4*d^3*
(d + e*x) + 8316*a*b^3*d^2*e*(d + e*x) - 8316*a^2*b^2*d*e^2*(d + e*x) + 277
2*a^3*b*e^3*(d + e*x) + 2970*b^4*d^2*(d + e*x)^2 - 5940*a*b^3*d*e*(d + e*x)
^2 + 2970*a^2*b^2*e^2*(d + e*x)^2 - 1540*b^4*d*(d + e*x)^3 + 1540*a*b^3*e*(
d + e*x)^3 + 315*b^4*(d + e*x)^4))/(3465*e^4*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 245, normalized size = 0.93

$$\frac{2\left(315\,b^4e^5x^5+128\,b^4d^5-704\,ab^3d^4e+1584\,a^2b^2d^3e^2-1848\,a^3bd^2e^3+1155\,a^4de^4+35\left(b^4de^4+44\,ab^3e^5\right)x^4-10\left(4\,b^4d^2e^3-22\,ab^3de^4-297\,a^2b^2e^5\right)x^3+6\left(8\,b^4d^3e^2-44\,ab^3d^2e^3+99\,a^2b^2de^4+462\,a^3be^5\right)x^2-\left(64\,b^4d^4e-352\,ab^3d^3e^2+792\,a^2b^2d^2e^3-924\,a^3bde^4-1155\,a^4e^5\right)x\right)\sqrt{ex+d}}{3465\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/3465*(315*b^4*e^5*x^5 + 128*b^4*d^5 - 704*a*b^3*d^4*e + 1584*a^2*b^2*d^3*
e^2 - 1848*a^3*b*d^2*e^3 + 1155*a^4*d*e^4 + 35*(b^4*d*e^4 + 44*a*b^3*e^5)*x
^4 - 10*(4*b^4*d^2*e^3 - 22*a*b^3*d*e^4 - 297*a^2*b^2*e^5)*x^3 + 6*(8*b^4*d
^3*e^2 - 44*a*b^3*d^2*e^3 + 99*a^2*b^2*d*e^4 + 462*a^3*b*e^5)*x^2 - (64*b^4
*d^4*e - 352*a*b^3*d^3*e^2 + 792*a^2*b^2*d^2*e^3 - 924*a^3*b*d*e^4 - 1155*a
^4*e^5)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.21, size = 556, normalized size = 2.11

$$\frac{2}{3465}\left(4620\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^3bde^{(-1)}\mathrm{sgn}\left(bx+a\right)+1386\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^2b^2de^{(-2)}\mathrm{sgn}\left(bx+a\right)+\ldots\right)$$ [illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/3465*(4620*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d*e^(-1)*sgn(b*x +
 a) + 1386*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*a^2*b^2*d*e^(-2)*sgn(b*x + a) + 396*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d*e^(-3)*sgn(b*
x + a) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/
2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*d*e^(-4)*sgn(
b*x + a) + 924*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*a^3*b*e^(-1)*sgn(b*x + a) + 594*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
```

```
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^2*e^(-2)*sgn(b*
x + a) + 44*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/
2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^3*e^(-3)*sgn(
b*x + a) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(
7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x
*e + d)*d^5)*b^4*e^(-4)*sgn(b*x + a) + 3465*sqrt(x*e + d)*a^4*d*sgn(b*x + a
) + 1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$\frac{2 (ex+d)^{\frac{3}{2}} \left(315b^4e^4x^4+1540a\,b^3e^4x^3-280b^4d\,e^3x^3+2970a^2b^2e^4x^2-1320a\,b^3d\,e^3x^2+240b^4d^2e^2x^2+2772a^3b\,e^4x-2376a^2b^2d\,e^3x+1056a\,b^3d^2e^2x-192b^4d^3ex+1155a^4e^4-1848a^3bd\,e^3+1584a^2b^2d^2e^2-704a\,b^3d^3e+128b^4d^4\right) \left((bx+a)^2\right)^{\frac{3}{2}}}{3465 (bx+a)^3 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(3/2)*(315*b^4*e^4*x^4+1540*a*b^3*e^4*x^3-280*b^4*d*e^3*x^3+
2970*a^2*b^2*e^4*x^2-1320*a*b^3*d*e^3*x^2+240*b^4*d^2*e^2*x^2+2772*a^3*b*e^
4*x-2376*a^2*b^2*d*e^3*x+1056*a*b^3*d^2*e^2*x-192*b^4*d^3*e*x+1155*a^4*e^4-
1848*a^3*b*d*e^3+1584*a^2*b^2*d^2*e^2-704*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)
^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.65, size = 384, normalized size = 1.45

$$\frac{2 \left(35 b^3e^4x^4-16 b^3d^4+72 ab^2d^3e-126 a^2bd^2e^2+105 a^3de^3+5 \left(b^3de^3+27 ab^2e^4\right)x^3-3 \left(2 b^3d^2e^2-9 ab^2de^3-63 a^2be^4\right)x^2+\left(8 b^3d^3e-36 ab^2d^2e^2+63 a^2bde^3+105 a^3e^4\right)x\right)\sqrt{ex+d}\,a}{315 e^4}+\frac{2 \left(315 b^3e^5x^5+128 b^3d^5-528 ab^2d^4e+792 a^2bd^3e^2-462 a^3d^2e^3+35 \left(b^3de^4+33 ab^2e^5\right)x^4-5 \left(8 b^3d^2e^3-33 ab^2de^4-297 a^2be^5\right)x^3+3 \left(16 b^3d^3e^2-66 ab^2d^2e^3+99 a^2bde^4+231 a^3e^5\right)x^2-\left(64 b^3d^4e-264 ab^2d^3e^2+396 a^2bd^2e^3-231 a^3de^4\right)x\right)\sqrt{ex+d}\,b}{3465 e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/315*(35*b^3*e^4*x^4 - 16*b^3*d^4 + 72*a*b^2*d^3*e - 126*a^2*b*d^2*e^2 + 1
05*a^3*d*e^3 + 5*(b^3*d*e^3 + 27*a*b^2*e^4)*x^3 - 3*(2*b^3*d^2*e^2 - 9*a*b^
2*d*e^3 - 63*a^2*b*e^4)*x^2 + (8*b^3*d^3*e - 36*a*b^2*d^2*e^2 + 63*a^2*b*d*
e^3 + 105*a^3*e^4)*x)*sqrt(e*x + d)*a/e^4 + 2/3465*(315*b^3*e^5*x^5 + 128*b
^3*d^5 - 528*a*b^2*d^4*e + 792*a^2*b*d^3*e^2 - 462*a^3*d^2*e^3 + 35*(b^3*d*
e^4 + 33*a*b^2*e^5)*x^4 - 5*(8*b^3*d^2*e^3 - 33*a*b^2*d*e^4 - 297*a^2*b*e^5
)*x^3 + 3*(16*b^3*d^3*e^2 - 66*a*b^2*d^2*e^3 + 99*a^2*b*d*e^4 + 231*a^3*e^5
)*x^2 - (64*b^3*d^4*e - 264*a*b^2*d^3*e^2 + 396*a^2*b*d^2*e^3 - 231*a^3*d*e
^4)*x)*sqrt(e*x + d)*b/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + bx\right) \sqrt{d + ex} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)*(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1878 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=262

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}{5e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}{3e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}}{e^5(a}$$

Rubi [A] time = 0.10, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}{5e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}{3e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x
)) - (8*b*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e
^5*(a + b*x)) + (12*b^2*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(5*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(7/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(9/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{\sqrt{d+ex}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{\sqrt{d+ex}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4\sqrt{d+ex}} - \frac{4b(bd-ae)^3\sqrt{d+ex}}{e^4} + \frac{6b^2(bd-ae)^2(d+ex)^{3/2}}{e^4} - \right.}{ab+b^2x}$$
$$= \frac{2(bd-ae)^4\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)} - \frac{8b(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2a}}{3e^5(a+bx)}$$

Mathematica [A] time = 0.09, size = 171, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}\sqrt{d+ex}\left(315a^4e^4+420a^3be^3(ex-2d)+126a^2b^2e^2\left(8d^2-4dex+3e^2x^2\right)+36ab^3e\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)+b^4\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right)\right)}{315e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(315*a^4*e^4 + 420*a^3*b*e^3*(-2*d + e*x
) + 126*a^2*b^2*e^2*(8*d^2 - 4*d*e*x + 3*e^2*x^2) + 36*a*b^3*e*(-16*d^3 + 8
*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3) + b^4*(128*d^4 - 64*d^3*e*x + 48*d^2*e^
2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4)))/(315*e^5*(a + b*x))
```

IntegrateAlgebraic [A] time = 21.79, size = 241, normalized size = 0.92

$$\frac{2\sqrt{d+ex}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(315a^4e^4+420a^3be^3(d+ex)-1260a^3bde^3+1890a^2b^2d^2e^2+378a^2b^2e^2(d+ex)^2-1260a^2b^2de^2(d+ex)-1260ab^3d^3e+1260ab^3d^2e(d+ex)+180ab^3e(d+ex)^3-756ab^3de(d+ex)^2+315b^4d^4-420b^4d^3(d+ex)+378b^4d^2(d+ex)^2+35b^4(d+ex)^4-180b^4d(d+ex)^3\right)}{315e^4(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x
],x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2]*(315*b^4*d^4 - 1260*a*b^3*d^3*e
+ 1890*a^2*b^2*d^2*e^2 - 1260*a^3*b*d*e^3 + 315*a^4*e^4 - 420*b^4*d^3*(d +
e*x) + 1260*a*b^3*d^2*e*(d + e*x) - 1260*a^2*b^2*d*e^2*(d + e*x) + 420*a^3*
b*e^3*(d + e*x) + 378*b^4*d^2*(d + e*x)^2 - 756*a*b^3*d*e*(d + e*x)^2 + 378
*a^2*b^2*e^2*(d + e*x)^2 - 180*b^4*d*(d + e*x)^3 + 180*a*b^3*e*(d + e*x)^3
+ 35*b^4*(d + e*x)^4))/(315*e^4*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 182, normalized size = 0.69

$$\frac{2\left(35\,b^4e^4x^4+128\,b^4d^4-576\,ab^3d^3e+1008\,a^2b^2d^2e^2-840\,a^3bde^3+315\,a^4e^4-20\left(2\,b^4de^3-9\,ab^3e^4\right)x^3+6\left(8\,b^4d^2e^2-36\,ab^3de^3+63\,a^2b^2e^4\right)x^2-4\left(16\,b^4d^3e-72\,ab^3d^2e^2+126\,a^2b^2de^3-105\,a^3be^4\right)x\right)\sqrt{ex+d}}{315\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/315*(35*b^4*e^4*x^4 + 128*b^4*d^4 - 576*a*b^3*d^3*e + 1008*a^2*b^2*d^2*e^
2 - 840*a^3*b*d*e^3 + 315*a^4*e^4 - 20*(2*b^4*d*e^3 - 9*a*b^3*e^4)*x^3 + 6*
(8*b^4*d^2*e^2 - 36*a*b^3*d*e^3 + 63*a^2*b^2*e^4)*x^2 - 4*(16*b^4*d^3*e - 7
2*a*b^3*d^2*e^2 + 126*a^2*b^2*d*e^3 - 105*a^3*b*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [A] time = 0.19, size = 244, normalized size = 0.93

$$\frac{2}{315}\left(420\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^3be^{(-1)}\mathrm{sgn}\left(bx+a\right)+126\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^2b^2e^{(-2)}\mathrm{sgn}\left(bx+a\right)+36\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)ab^3e^{(-3)}\mathrm{sgn}\left(bx+a\right)+\left(35\,(xe+d)^{\frac{9}{2}}-180\,(xe+d)^{\frac{7}{2}}d+378\,(xe+d)^{\frac{5}{2}}d^2-420\,(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)b^4e^{(-4)}\mathrm{sgn}\left(bx+a\right)+315\sqrt{xe+d}\,a^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/315*(420*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*e^(-1)*sgn(b*x + a)
+ 126*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2
*b^2*e^(-2)*sgn(b*x + a) + 36*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*e^(-3)*sgn(b*x + a) + (
35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*
(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*e^(-4)*sgn(b*x + a) + 315*
sqrt(x*e + d)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 202, normalized size = 0.77

$$\frac{2\sqrt{ex+d}\,\left(35b^4e^4x^4+180a\,b^3e^4x^3-40b^4d\,e^3x^3+378a^2b^2e^4x^2-216a\,b^3d\,e^3x^2+48b^4d^2e^2x^2+420a^3b\,e^4x-504a^2b^2d\,e^3x+288a\,b^3d^2e^2x-64b^4d^3ex+315a^4e^4-840a^3bd\,e^3+1008a^2b^2d^2e^2-576a\,b^3d^3e+128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{315\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(1/2)*(35*b^4*e^4*x^4+180*a*b^3*e^4*x^3-40*b^4*d*e^3*x^3+378*
a^2*b^2*e^4*x^2-216*a*b^3*d*e^3*x^2+48*b^4*d^2*e^2*x^2+420*a^3*b*e^4*x-504*
a^2*b^2*d*e^3*x+288*a*b^3*d^2*e^2*x-64*b^4*d^3*e*x+315*a^4*e^4-840*a^3*b*d*
e^3+1008*a^2*b^2*d^2*e^2-576*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5
/(b*x+a)^3
```

maxima [B] time = 0.63, size = 382, normalized size = 1.46

$$\frac{2\left(5\,b^3e^4x^4-16\,b^3d^4+56\,ab^2d^3e-70\,a^2bd^2e^2+35\,a^3de^3-\left(b^3de^3-21\,ab^2e^4\right)x^3+\left(2\,b^3d^2e^2-7\,ab^2de^3+35\,a^2be^4\right)x^2-\left(8\,b^3d^3e-28\,ab^2d^2e^2+35\,a^2bde^3-35\,a^3e^4\right)x\right)a}{35\,\sqrt{ex+d}\,e^4}+\frac{2\left(35\,b^3e^5x^5+128\,b^3d^5-432\,ab^2d^4e+504\,a^2bd^3e^2-210\,a^3d^2e^3-5\left(b^3de^4-27\,ab^2e^5\right)x^4+\left(8\,b^3d^2e^3-27\,ab^2de^4+189\,a^2be^5\right)x^3-\left(16\,b^3d^3e^2-54\,ab^2d^2e^3+63\,a^2bde^4-105\,a^3e^5\right)x^2+\left(64\,b^3d^4e-216\,ab^2d^3e^2+252\,a^2bd^2e^3-105\,a^3de^4\right)x\right)b}{315\,\sqrt{ex+d}\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/35*(5*b^3*e^4*x^4 - 16*b^3*d^4 + 56*a*b^2*d^3*e - 70*a^2*b*d^2*e^2 + 35*a
^3*d*e^3 - (b^3*d*e^3 - 21*a*b^2*e^4)*x^3 + (2*b^3*d^2*e^2 - 7*a*b^2*d*e^3
+ 35*a^2*b*e^4)*x^2 - (8*b^3*d^3*e - 28*a*b^2*d^2*e^2 + 35*a^2*b*d*e^3 - 35
*a^3*e^4)*x)*a/(sqrt(e*x + d)*e^4) + 2/315*(35*b^3*e^5*x^5 + 128*b^3*d^5 -
432*a*b^2*d^4*e + 504*a^2*b*d^3*e^2 - 210*a^3*d^2*e^3 - 5*(b^3*d*e^4 - 27*a
*b^2*e^5)*x^4 + (8*b^3*d^2*e^3 - 27*a*b^2*d*e^4 + 189*a^2*b*e^5)*x^3 - (16*
b^3*d^3*e^2 - 54*a*b^2*d^2*e^3 + 63*a^2*b*d*e^4 - 105*a^3*e^5)*x^2 + (64*b^
3*d^4*e - 216*a*b^2*d^3*e^2 + 252*a^2*b*d^2*e^3 - 105*a^3*d*e^4)*x)*b/(sqrt
(e*x + d)*e^5)
```

mupad [B] time = 2.50, size = 285, normalized size = 1.09

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^3\,x^5}{9}+\frac{630\,a^4\,d\,e^4-1680\,a^3\,b\,d^2\,e^3+2016\,a^2\,b^2\,d^3\,e^2-1152\,a\,b^3\,d^4\,e+256\,b^4\,d^5}{315\,b\,e^5}+\frac{x\,\left(630\,a^4\,e^5-840\,a^3\,b\,d\,e^4+1008\,a^2\,b^2\,d^2\,e^3-576\,a\,b^3\,d^3\,e^2+128\,b^4\,d^4\,e\right)}{315\,b\,e^5}+\frac{x^2\,\left(840\,a^3\,b\,e^5-252\,a^2\,b^2\,d\,e^4+144\,a\,b^3\,d^2\,e^3-32\,b^4\,d^3\,e^2\right)}{315\,b\,e^5}+\frac{2\,b^2\,x^4\,(36\,a\,e-b\,d)}{63\,e}+\frac{4\,b\,x^3\,\left(189\,a^2\,e^2-18\,a\,b\,d\,e+4\,b^2\,d^2\right)}{315\,e^2}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^3*x^5)/9 + (256*b^4*d^5 + 630*a^4*d*
e^4 - 1680*a^3*b*d^2*e^3 + 2016*a^2*b^2*d^3*e^2 - 1152*a*b^3*d^4*e)/(315*b*
e^5) + (x*(630*a^4*e^5 + 128*b^4*d^4*e - 576*a*b^3*d^3*e^2 + 1008*a^2*b^2*d
^2*e^3 - 840*a^3*b*d*e^4))/(315*b*e^5) + (x^2*(840*a^3*b*e^5 - 32*b^4*d^3*e
^2 + 144*a*b^3*d^2*e^3 - 252*a^2*b^2*d*e^4))/(315*b*e^5) + (2*b^2*x^4*(36*a
*e - b*d))/(63*e) + (4*b*x^3*(189*a^2*e^2 + 4*b^2*d^2 - 18*a*b*d*e))/(315*e
^2)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
[Out] Timed out
```

3.1879 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=258

$$\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}{e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}{e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(b}{e^5(a+bx)\sqrt{d+e}}$$

Rubi [A] time = 0.11, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^5(a+bx)}+\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}{e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}{e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^5(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*Sqrt[d + e*
x]) - (8*b*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*
(a + b*x)) + (4*b^2*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(5*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(7*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{3/2}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{3/2}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{3/2}} - \frac{4b(bd-ae)^3}{e^4\sqrt{d+ex}} + \frac{6b^2(bd-ae)^2\sqrt{d+ex}}{e^4} - \frac{4b^3(bd-\cdots}{\cdots}\right.}{ab+b^2x}$$
$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}} - \frac{8b(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x\cdots}}{e^5(a+bx)}$$

Mathematica [A] time = 0.10, size = 169, normalized size = 0.66

$$\frac{2\sqrt{(a+bx)^2}\left(-35a^4e^4+140a^3be^3(2d+ex)+70a^2b^2e^2\left(-8d^2-4dex+e^2x^2\right)+28ab^3e\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+b^4\left(-128d^4-64d^3ex+16d^2e^2x^2-8de^3x^3+5e^4x^4\right)\right)}{35e^5(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-35*a^4*e^4 + 140*a^3*b*e^3*(2*d + e*x) + 70*a^2*b^2*
e^2*(-8*d^2 - 4*d*e*x + e^2*x^2) + 28*a*b^3*e*(16*d^3 + 8*d^2*e*x - 2*d*e^2
*x^2 + e^3*x^3) + b^4*(-128*d^4 - 64*d^3*e*x + 16*d^2*e^2*x^2 - 8*d*e^3*x^3
 + 5*e^4*x^4)))/(35*e^5*(a + b*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 20.00, size = 241, normalized size = 0.93

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-35a^4e^4+140a^3be^3(d+ex)+140a^3bde^3-210a^2b^2d^2e^2+70a^2b^2e^2(d+ex)^2-420a^2b^2de^2(d+ex)+140ab^3d^3e+420ab^3d^2e(d+ex)+28ab^3e(d+ex)^3-140ab^3de(d+ex)^2-35b^4d^4-140b^4d^3(d+ex)+70b^4d^2(d+ex)^2+5b^4(d+ex)^4-28b^4d(d+ex)^3\right)}{35e^4\sqrt{d+ex}\,(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-35*b^4*d^4 + 140*a*b^3*d^3*e - 210*a^2*b^2*d
^2*e^2 + 140*a^3*b*d*e^3 - 35*a^4*e^4 - 140*b^4*d^3*(d + e*x) + 420*a*b^3*d
^2*e*(d + e*x) - 420*a^2*b^2*d*e^2*(d + e*x) + 140*a^3*b*e^3*(d + e*x) + 70
*b^4*d^2*(d + e*x)^2 - 140*a*b^3*d*e*(d + e*x)^2 + 70*a^2*b^2*e^2*(d + e*x)
^2 - 28*b^4*d*(d + e*x)^3 + 28*a*b^3*e*(d + e*x)^3 + 5*b^4*(d + e*x)^4))/(3
5*e^4*Sqrt[d + e*x]*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 192, normalized size = 0.74

$$\frac{2\left(5\,b^4e^4x^4-128\,b^4d^4+448\,ab^3d^3e-560\,a^2b^2d^2e^2+280\,a^3bde^3-35\,a^4e^4-4\left(2\,b^4de^3-7\,ab^3e^4\right)x^3+2\left(8\,b^4d^2e^2-28\,ab^3de^3+35\,a^2b^2e^4\right)x^2-4\left(16\,b^4d^3e-56\,ab^3d^2e^2+70\,a^2b^2de^3-35\,a^3be^4\right)x\right)\sqrt{ex+d}}{35\left(e^6x+de^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(5*b^4*e^4*x^4 - 128*b^4*d^4 + 448*a*b^3*d^3*e - 560*a^2*b^2*d^2*e^2 +
 280*a^3*b*d*e^3 - 35*a^4*e^4 - 4*(2*b^4*d*e^3 - 7*a*b^3*e^4)*x^3 + 2*(8*b^
4*d^2*e^2 - 28*a*b^3*d*e^3 + 35*a^2*b^2*e^4)*x^2 - 4*(16*b^4*d^3*e - 56*a*b
^3*d^2*e^2 + 70*a^2*b^2*d*e^3 - 35*a^3*b*e^4)*x)*sqrt(e*x + d)/(e^6*x + d*e
^5)
```

giac [A] time = 0.22, size = 327, normalized size = 1.27

$$\frac{2}{35}\left(5\,(xe+d)^{\frac{7}{2}}b^4e^{30}\mathrm{sgn}\,(bx+a)-28\,(xe+d)^{\frac{5}{2}}b^4de^{30}\mathrm{sgn}\,(bx+a)+70\,(xe+d)^{\frac{3}{2}}b^4d^2e^{30}\mathrm{sgn}\,(bx+a)-140\,\sqrt{xe+d}\,b^4d^3e^{30}\mathrm{sgn}\,(bx+a)+28\,(xe+d)^{\frac{5}{2}}ab^3e^{31}\mathrm{sgn}\,(bx+a)-140\,(xe+d)^{\frac{3}{2}}ab^3de^{31}\mathrm{sgn}\,(bx+a)+420\,\sqrt{xe+d}\,ab^3d^2e^{31}\mathrm{sgn}\,(bx+a)+70\,(xe+d)^{\frac{3}{2}}a^2b^2e^{32}\mathrm{sgn}\,(bx+a)-420\,\sqrt{xe+d}\,a^2b^2de^{32}\mathrm{sgn}\,(bx+a)+140\,\sqrt{xe+d}\,a^3be^{33}\mathrm{sgn}\,(bx+a)\right)e^{(-35)}-\frac{2\left(b^4d^4\mathrm{sgn}\,(bx+a)-4\,ab^3d^3e\mathrm{sgn}\,(bx+a)+6\,a^2b^2d^2e^2\mathrm{sgn}\,(bx+a)-4\,a^3bde^3\mathrm{sgn}\,(bx+a)+a^4e^4\mathrm{sgn}\,(bx+a)\right)e^{(-5)}}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*b^4*e^30*sgn(b*x + a) - 28*(x*e + d)^(5/2)*b^4*d*e^
30*sgn(b*x + a) + 70*(x*e + d)^(3/2)*b^4*d^2*e^30*sgn(b*x + a) - 140*sqrt(x
*e + d)*b^4*d^3*e^30*sgn(b*x + a) + 28*(x*e + d)^(5/2)*a*b^3*e^31*sgn(b*x +
 a) - 140*(x*e + d)^(3/2)*a*b^3*d*e^31*sgn(b*x + a) + 420*sqrt(x*e + d)*a*b
^3*d^2*e^31*sgn(b*x + a) + 70*(x*e + d)^(3/2)*a^2*b^2*e^32*sgn(b*x + a) - 4
20*sqrt(x*e + d)*a^2*b^2*d*e^32*sgn(b*x + a) + 140*sqrt(x*e + d)*a^3*b*e^33
*sgn(b*x + a))*e^(-35) - 2*(b^4*d^4*sgn(b*x + a) - 4*a*b^3*d^3*e*sgn(b*x +
a) + 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) + a^4*e^4*
sgn(b*x + a))*e^(-5)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2\left(-5b^4e^4x^4-28a\,b^3e^4x^3+8b^4d\,e^3x^3-70a^2b^2e^4x^2+56a\,b^3d\,e^3x^2-16b^4d^2e^2x^2-140a^3b\,e^4x+280a^2b^2d\,e^3x-224a\,b^3d^2e^2x+64b^4d^3ex+35a^4e^4-280a^3bd\,e^3+560a^2b^2d^2e^2-448a\,b^3d^3e+128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{35\sqrt{ex+d}\,\left(bx+a\right)^3e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35/(e*x+d)^(1/2)*(-5*b^4*e^4*x^4-28*a*b^3*e^4*x^3+8*b^4*d*e^3*x^3-70*a^2
*b^2*e^4*x^2+56*a*b^3*d*e^3*x^2-16*b^4*d^2*e^2*x^2-140*a^3*b*e^4*x+280*a^2*
b^2*d*e^3*x-224*a*b^3*d^2*e^2*x+64*b^4*d^3*e*x+35*a^4*e^4-280*a^3*b*d*e^3+5
60*a^2*b^2*d^2*e^2-448*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+
a)^3
```

maxima [A] time = 0.81, size = 282, normalized size = 1.09

$$\frac{2\left(b^3e^3x^3+16\,b^3d^3-40\,ab^2d^2e+30\,a^2bde^2-5\,a^3e^3-\left(2\,b^3de^2-5\,ab^2e^3\right)x^2+\left(8\,b^3d^2e-20\,ab^2de^2+15\,a^2be^3\right)x\right)a}{5\,\sqrt{ex+d}\,e^4}+\frac{2\left(5\,b^3e^4x^4-128\,b^3d^4+336\,ab^2d^3e-280\,a^2bd^2e^2+70\,a^3de^3-\left(8\,b^3de^3-21\,ab^2e^4\right)x^3+\left(16\,b^3d^2e^2-42\,ab^2de^3+35\,a^2be^4\right)x^2-\left(64\,b^3d^3e-168\,ab^2d^2e^2+140\,a^2bde^3-35\,a^3e^4\right)x\right)b}{35\,\sqrt{ex+d}\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(b^3*e^3*x^3 + 16*b^3*d^3 - 40*a*b^2*d^2*e + 30*a^2*b*d*e^2 - 5*a^3*e^3
 - (2*b^3*d*e^2 - 5*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 20*a*b^2*d*e^2 + 15*a^2
*b*e^3)*x)*a/(sqrt(e*x + d)*e^4) + 2/35*(5*b^3*e^4*x^4 - 128*b^3*d^4 + 336*
a*b^2*d^3*e - 280*a^2*b*d^2*e^2 + 70*a^3*d*e^3 - (8*b^3*d*e^3 - 21*a*b^2*e^
4)*x^3 + (16*b^3*d^2*e^2 - 42*a*b^2*d*e^3 + 35*a^2*b*e^4)*x^2 - (64*b^3*d^3
*e - 168*a*b^2*d^2*e^2 + 140*a^2*b*d*e^3 - 35*a^3*e^4)*x)*b/(sqrt(e*x + d)*
e^5)
```

mupad [B] time = 2.81, size = 218, normalized size = 0.84

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^3\,x^4}{7\,e}-\frac{70\,a^4\,e^4-560\,a^3\,b\,d\,e^3+1120\,a^2\,b^2\,d^2\,e^2-896\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{35\,b\,e^5}+\frac{x\,\left(280\,a^3\,b\,e^4-560\,a^2\,b^2\,d\,e^3+448\,a\,b^3\,d^2\,e^2-128\,b^4\,d^3\,e\right)}{35\,b\,e^5}+\frac{8\,b^2\,x^3\,\left(7\,a\,e-2\,b\,d\right)}{35\,e^2}+\frac{4\,b\,x^2\,\left(35\,a^2\,e^2-28\,a\,b\,d\,e+8\,b^2\,d^2\right)}{35\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^3*x^4)/(7*e) - (70*a^4*e^4 + 256*b^4
*d^4 + 1120*a^2*b^2*d^2*e^2 - 896*a*b^3*d^3*e - 560*a^3*b*d*e^3)/(35*b*e^5)
 + (x*(280*a^3*b*e^4 - 128*b^4*d^3*e + 448*a*b^3*d^2*e^2 - 560*a^2*b^2*d*e^
3))/(35*b*e^5) + (8*b^2*x^3*(7*a*e - 2*b*d))/(35*e^2) + (4*b*x^2*(35*a^2*e^
2 + 8*b^2*d^2 - 28*a*b*d*e))/(35*e^3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(
1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(3/2),x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**(3/2), x)
```

3.1880 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=260

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}{e^5(a+bx)}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^{3/2}}+$$

Rubi [A] time = 0.10, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{3e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}{e^5(a+bx)}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)
^(3/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*
Sqrt[d + e*x]) + (12*b^2*(b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(5*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{5/2}}dx}{b^2\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{5/2}}dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{5/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{3/2}} + \frac{6b^2(bd-ae)^2}{e^4\sqrt{d+ex}} - \frac{4b^3(bd-ae)\sqrt{d+}}{e^4}\right.}{ab+b^2x} \\
&= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}} + \frac{12b}{}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 171, normalized size = 0.66

$$
\frac{2\sqrt{(a+bx)^2}\left(-5a^4e^4-20a^3be^3(2d+3ex)+30a^2b^2e^2\left(8d^2+12dex+3e^2x^2\right)+20ab^3e\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)+b^4\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)\right)}{15e^5(a+bx)(d+ex)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*a^4*e^4 - 20*a^3*b*e^3*(2*d + 3*e*x) + 30*a^2*b^2*
e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 20*a*b^3*e*(-16*d^3 - 24*d^2*e*x - 6*d
*e^2*x^2 + e^3*x^3) + b^4*(128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3
*x^3 + 3*e^4*x^4)))/(15*e^5*(a + b*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 21.38, size = 241, normalized size = 0.93

$$
\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-5a^4e^4-60a^3be^3(d+ex)+20a^3bde^3-30a^2b^2d^2e^2+90a^2b^2e^2(d+ex)^2+180a^2b^2de^2(d+ex)+20ab^3d^3e-180ab^3d^2e(d+ex)+20ab^3e(d+ex)^3-180ab^3de(d+ex)^2-5b^4d^4+60b^4d^3(d+ex)+90b^4d^2(d+ex)^2+3b^4(d+ex)^4-20b^4d(d+ex)^3\right)}{15e^4(d+ex)^{3/2}(ae+bex)}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-5*b^4*d^4 + 20*a*b^3*d^3*e - 30*a^2*b^2*d^2*
e^2 + 20*a^3*b*d*e^3 - 5*a^4*e^4 + 60*b^4*d^3*(d + e*x) - 180*a*b^3*d^2*e*(
d + e*x) + 180*a^2*b^2*d*e^2*(d + e*x) - 60*a^3*b*e^3*(d + e*x) + 90*b^4*d^
2*(d + e*x)^2 - 180*a*b^3*d*e*(d + e*x)^2 + 90*a^2*b^2*e^2*(d + e*x)^2 - 20
*b^4*d*(d + e*x)^3 + 20*a*b^3*e*(d + e*x)^3 + 3*b^4*(d + e*x)^4))/(15*e^4*(
d + e*x)^(3/2)*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 203, normalized size = 0.78

$$
\frac{2\left(3b^4e^4x^4+128b^4d^4-320ab^3d^3e+240a^2b^2d^2e^2-40a^3bde^3-5a^4e^4-4\left(2b^4de^3-5ab^3e^4\right)x^3+6\left(8b^4d^2e^2-20ab^3de^3+15a^2b^2e^4\right)x^2+12\left(16b^4d^3e-40ab^3d^2e^2+30a^2b^2de^3-5a^3be^4\right)x\right)\sqrt{ex+d}}{15\left(e^7x^2+2de^6x+d^2e^5\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(3*b^4*e^4*x^4 + 128*b^4*d^4 - 320*a*b^3*d^3*e + 240*a^2*b^2*d^2*e^2 -
 40*a^3*b*d*e^3 - 5*a^4*e^4 - 4*(2*b^4*d*e^3 - 5*a*b^3*e^4)*x^3 + 6*(8*b^4*
d^2*e^2 - 20*a*b^3*d*e^3 + 15*a^2*b^2*e^4)*x^2 + 12*(16*b^4*d^3*e - 40*a*b^
3*d^2*e^2 + 30*a^2*b^2*d*e^3 - 5*a^3*b*e^4)*x)*sqrt(e*x + d)/(e^7*x^2 + 2*d
*e^6*x + d^2*e^5)
```

giac [A] time = 0.26, size = 319, normalized size = 1.23

$$
\frac{2}{15}\left(3(xe+d)^{\frac{5}{2}}b^4e^{20}\mathrm{sgn}(bx+a)-20(xe+d)^{\frac{3}{2}}b^4de^{20}\mathrm{sgn}(bx+a)+90\sqrt{xe+d}\,b^4d^2e^{20}\mathrm{sgn}(bx+a)+20(xe+d)^{\frac{3}{2}}ab^3e^{21}\mathrm{sgn}(bx+a)-180\sqrt{xe+d}\,ab^3de^{21}\mathrm{sgn}(bx+a)+90\sqrt{xe+d}\,a^2b^2e^{22}\mathrm{sgn}(bx+a)\right)e^{(-25)}+\frac{2\left(12(xe+d)b^4d^3\mathrm{sgn}(bx+a)-b^4d^4\mathrm{sgn}(bx+a)-36(xe+d)ab^3d^2e\,\mathrm{sgn}(bx+a)+4ab^3d^3e\,\mathrm{sgn}(bx+a)+36(xe+d)a^2b^2de^2\mathrm{sgn}(bx+a)-6a^2b^2d^2e^2\mathrm{sgn}(bx+a)-12(xe+d)a^3be^3\mathrm{sgn}(bx+a)+4a^3bde^3\mathrm{sgn}(bx+a)-a^4e^4\mathrm{sgn}(bx+a)\right)e^{(-5)}}{3(xe+d)^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*b^4*e^20*sgn(b*x + a) - 20*(x*e + d)^(3/2)*b^4*d*e^
20*sgn(b*x + a) + 90*sqrt(x*e + d)*b^4*d^2*e^20*sgn(b*x + a) + 20*(x*e + d)
^(3/2)*a*b^3*e^21*sgn(b*x + a) - 180*sqrt(x*e + d)*a*b^3*d*e^21*sgn(b*x + a
) + 90*sqrt(x*e + d)*a^2*b^2*e^22*sgn(b*x + a))*e^(-25) + 2/3*(12*(x*e + d)
*b^4*d^3*sgn(b*x + a) - b^4*d^4*sgn(b*x + a) - 36*(x*e + d)*a*b^3*d^2*e*sgn
(b*x + a) + 4*a*b^3*d^3*e*sgn(b*x + a) + 36*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x
 + a) - 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 12*(x*e + d)*a^3*b*e^3*sgn(b*x + a
) + 4*a^3*b*d*e^3*sgn(b*x + a) - a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(3/
2)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2\left(-3b^4e^4x^4-20a\,b^3e^4x^3+8b^4d\,e^3x^3-90a^2b^2e^4x^2+120a\,b^3d\,e^3x^2-48b^4d^2e^2x^2+60a^3b\,e^4x-360a^2b^2d\,e^3x+480a\,b^3d^2e^2x-192b^4d^3ex+5a^4e^4+40a^3bd\,e^3-240a^2b^2d^2e^2+320a\,b^3d^3e-128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{15\,(ex+d)^{\frac{3}{2}}\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15/(e*x+d)^(3/2)*(-3*b^4*e^4*x^4-20*a*b^3*e^4*x^3+8*b^4*d*e^3*x^3-90*a^2
*b^2*e^4*x^2+120*a*b^3*d*e^3*x^2-48*b^4*d^2*e^2*x^2+60*a^3*b*e^4*x-360*a^2*
b^2*d*e^3*x+480*a*b^3*d^2*e^2*x-192*b^4*d^3*e*x+5*a^4*e^4+40*a^3*b*d*e^3-24
0*a^2*b^2*d^2*e^2+320*a*b^3*d^3*e-128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a
)^3
```

maxima [A] time = 0.73, size = 304, normalized size = 1.17

$$\frac{2\left(b^3e^3x^3-16\,b^3d^3+24\,ab^2d^2e-6\,a^2bde^2-a^3e^3-3\left(2\,b^3de^2-3\,ab^2e^3\right)x^2-3\left(8\,b^3d^2e-12\,ab^2de^2+3\,a^2be^3\right)x\right)a}{3\left(e^5x+de^4\right)\sqrt{ex+d}}+\frac{2\left(3\,b^3e^4x^4+128\,b^3d^4-240\,ab^2d^3e+120\,a^2bd^2e^2-10\,a^3de^3-\left(8\,b^3de^3-15\,ab^2e^4\right)x^3+3\left(16\,b^3d^2e^2-30\,ab^2de^3+15\,a^2be^4\right)x^2+3\left(64\,b^3d^3e-120\,ab^2d^2e^2+60\,a^2bde^3-5\,a^3e^4\right)x\right)b}{15\left(e^6x+de^5\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/3*(b^3*e^3*x^3 - 16*b^3*d^3 + 24*a*b^2*d^2*e - 6*a^2*b*d*e^2 - a^3*e^3 -
3*(2*b^3*d*e^2 - 3*a*b^2*e^3)*x^2 - 3*(8*b^3*d^2*e - 12*a*b^2*d*e^2 + 3*a^2
*b*e^3)*x)*a/((e^5*x + d*e^4)*sqrt(e*x + d)) + 2/15*(3*b^3*e^4*x^4 + 128*b^
3*d^4 - 240*a*b^2*d^3*e + 120*a^2*b*d^2*e^2 - 10*a^3*d*e^3 - (8*b^3*d*e^3 -
 15*a*b^2*e^4)*x^3 + 3*(16*b^3*d^2*e^2 - 30*a*b^2*d*e^3 + 15*a^2*b*e^4)*x^2
 + 3*(64*b^3*d^3*e - 120*a*b^2*d^2*e^2 + 60*a^2*b*d*e^3 - 5*a^3*e^4)*x)*b/(
(e^6*x + d*e^5)*sqrt(e*x + d))
```

mupad [B] time = 2.89, size = 254, normalized size = 0.98

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^3\,x^4}{5\,e^2}-\frac{10\,a^4\,e^4+80\,a^3\,b\,d\,e^3-480\,a^2\,b^2\,d^2\,e^2+640\,a\,b^3\,d^3\,e-256\,b^4\,d^4}{15\,b\,e^6}-\frac{x\,\left(120\,a^3\,b\,e^4-720\,a^2\,b^2\,d\,e^3+960\,a\,b^3\,d^2\,e^2-384\,b^4\,d^3\,e\right)}{15\,b\,e^6}+\frac{8\,b^2\,x^3\,\left(5\,a\,e-2\,b\,d\right)}{15\,e^3}+\frac{4\,b\,x^2\,\left(15\,a^2\,e^2-20\,a\,b\,d\,e+8\,b^2\,d^2\right)}{5\,e^4}\right)}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(15\,a\,e^6+15\,b\,d\,e^5\right)\,\sqrt{d+e\,x}}{15\,b\,e^6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^3*x^4)/(5*e^2) - (10*a^4*e^4 - 256*b
^4*d^4 - 480*a^2*b^2*d^2*e^2 + 640*a*b^3*d^3*e + 80*a^3*b*d*e^3)/(15*b*e^6)
 - (x*(120*a^3*b*e^4 - 384*b^4*d^3*e + 960*a*b^3*d^2*e^2 - 720*a^2*b^2*d*e^
3))/(15*b*e^6) + (8*b^2*x^3*(5*a*e - 2*b*d))/(15*e^3) + (4*b*x^2*(15*a^2*e^
2 + 8*b^2*d^2 - 20*a*b*d*e))/(5*e^4)))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x
)^(1/2))/(b*e) + (x*(15*a*e^6 + 15*b*d*e^5)*(d + e*x)^(1/2))/(15*b*e^6))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(5/2),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**(5/2), x)
```

3.1881 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=260

$$-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)\sqrt{d+ex}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{2b^4\sqrt{a}\ldots}{}$$

Rubi [A] time = 0.10, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^5(a+bx)}-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)\sqrt{d+ex}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{5e^5(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)*(d + e*x)
^(5/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x
)*(d + e*x)^(3/2)) - (12*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^5*(a + b*x)*Sqrt[d + e*x]) - (8*b^3*(b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) + (2*b^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(3*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{7/2}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{7/2}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{7/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{5/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{3/2}} - \frac{4b^3(bd-ae)}{e^4\sqrt{d+ex}} + \right.}{ab+b^2x}$$
$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{5/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}} - 12b$$

Mathematica [A] time = 0.08, size = 172, normalized size = 0.66

$$-\frac{2\sqrt{(a+bx)^2}\left(3a^4e^4+4a^3be^3(2d+5ex)+6a^2b^2e^2\left(8d^2+20dex+15e^2x^2\right)-12ab^3e\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)+b^4\left(128d^4+320d^3ex+240d^2e^2x^2+40de^3x^3-5e^4x^4\right)\right)}{15e^5(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a^4*e^4 + 4*a^3*b*e^3*(2*d + 5*e*x) + 6*a^2*b^2*e^
2*(8*d^2 + 20*d*e*x + 15*e^2*x^2) - 12*a*b^3*e*(16*d^3 + 40*d^2*e*x + 30*d*
e^2*x^2 + 5*e^3*x^3) + b^4*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*
e^3*x^3 - 5*e^4*x^4)))/(15*e^5*(a + b*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 23.23, size = 241, normalized size = 0.93

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-3a^4e^4-20a^3be^3(d+ex)+12a^3bde^3-18a^2b^2d^2e^2-90a^2b^2e^2(d+ex)^2+60a^2b^2de^2(d+ex)+12ab^3d^3e-60ab^3d^2e(d+ex)+60ab^3e(d+ex)^3+180ab^3de(d+ex)^2-3b^4d^4+20b^4d^3(d+ex)-90b^4d^2(d+ex)^2+5b^4(d+ex)^4-60b^4d(d+ex)^3\right)}{15e^4(d+ex)^{5/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-3*b^4*d^4 + 12*a*b^3*d^3*e - 18*a^2*b^2*d^2*
e^2 + 12*a^3*b*d*e^3 - 3*a^4*e^4 + 20*b^4*d^3*(d + e*x) - 60*a*b^3*d^2*e*(d
 + e*x) + 60*a^2*b^2*d*e^2*(d + e*x) - 20*a^3*b*e^3*(d + e*x) - 90*b^4*d^2*
(d + e*x)^2 + 180*a*b^3*d*e*(d + e*x)^2 - 90*a^2*b^2*e^2*(d + e*x)^2 - 60*b
^4*d*(d + e*x)^3 + 60*a*b^3*e*(d + e*x)^3 + 5*b^4*(d + e*x)^4))/(15*e^4*(d
+ e*x)^(5/2)*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 213, normalized size = 0.82

$$\frac{2\left(5b^4e^4x^4-128b^4d^4+192ab^3d^3e-48a^2b^2d^2e^2-8a^3bde^3-3a^4e^4-20\left(2b^4de^3-3ab^3e^4\right)x^3-30\left(8b^4d^2e^2-12ab^3de^3+3a^2b^2e^4\right)x^2-20\left(16b^4d^3e-24ab^3d^2e^2+6a^2b^2de^3+a^3be^4\right)x\right)\sqrt{ex+d}}{15\left(e^8x^3+3de^7x^2+3d^2e^6x+d^3e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(5*b^4*e^4*x^4 - 128*b^4*d^4 + 192*a*b^3*d^3*e - 48*a^2*b^2*d^2*e^2 -
8*a^3*b*d*e^3 - 3*a^4*e^4 - 20*(2*b^4*d*e^3 - 3*a*b^3*e^4)*x^3 - 30*(8*b^4*
d^2*e^2 - 12*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 - 20*(16*b^4*d^3*e - 24*a*b^3
*d^2*e^2 + 6*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*sqrt(e*x + d)/(e^8*x^3 + 3*d*e^7
*x^2 + 3*d^2*e^6*x + d^3*e^5)
```

giac [A] time = 0.22, size = 316, normalized size = 1.22

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}b^4e^{10}\mathrm{sgn}(bx+a)-12\sqrt{xe+d}\,b^4de^{10}\mathrm{sgn}(bx+a)+12\sqrt{xe+d}\,ab^3e^{11}\mathrm{sgn}(bx+a)\right)e^{(-15)}-\frac{2\left(90(xe+d)^2b^4d^2\mathrm{sgn}(bx+a)-20(xe+d)b^4d^3\mathrm{sgn}(bx+a)+3b^4d^4\mathrm{sgn}(bx+a)-180(xe+d)^2ab^3de\,\mathrm{sgn}(bx+a)+60(xe+d)ab^3d^2e\,\mathrm{sgn}(bx+a)-12ab^3d^3e\,\mathrm{sgn}(bx+a)+90(xe+d)^2a^2b^2e^2\mathrm{sgn}(bx+a)-60(xe+d)a^2b^2de^2\mathrm{sgn}(bx+a)+18a^2b^2d^2e^2\mathrm{sgn}(bx+a)+20(xe+d)a^3be^3\mathrm{sgn}(bx+a)-12a^3bde^3\mathrm{sgn}(bx+a)+3a^4e^4\mathrm{sgn}(bx+a)\right)e^{(-5)}}{15(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^4*e^10*sgn(b*x + a) - 12*sqrt(x*e + d)*b^4*d*e^10*sg
n(b*x + a) + 12*sqrt(x*e + d)*a*b^3*e^11*sgn(b*x + a))*e^(-15) - 2/15*(90*(
x*e + d)^2*b^4*d^2*sgn(b*x + a) - 20*(x*e + d)*b^4*d^3*sgn(b*x + a) + 3*b^4
*d^4*sgn(b*x + a) - 180*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) + 60*(x*e + d)*a
*b^3*d^2*e*sgn(b*x + a) - 12*a*b^3*d^3*e*sgn(b*x + a) + 90*(x*e + d)^2*a^2*
b^2*e^2*sgn(b*x + a) - 60*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) + 18*a^2*b^2
*d^2*e^2*sgn(b*x + a) + 20*(x*e + d)*a^3*b*e^3*sgn(b*x + a) - 12*a^3*b*d*e^
3*sgn(b*x + a) + 3*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2\left(-5b^4e^4x^4-60a\,b^3e^4x^3+40b^4d\,e^3x^3+90a^2b^2e^4x^2-360a\,b^3d\,e^3x^2+240b^4d^2e^2x^2+20a^3b\,e^4x+120a^2b^2d\,e^3x-480a\,b^3d^2e^2x+320b^4d^3ex+3a^4e^4+8a^3bd\,e^3+48a^2b^2d^2e^2-192a\,b^3d^3e+128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{15\,(ex+d)^{\frac{5}{2}}\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-5*b^4*e^4*x^4-60*a*b^3*e^4*x^3+40*b^4*d*e^3*x^3+90*a^
2*b^2*e^4*x^2-360*a*b^3*d*e^3*x^2+240*b^4*d^2*e^2*x^2+20*a^3*b*e^4*x+120*a^
2*b^2*d*e^3*x-480*a*b^3*d^2*e^2*x+320*b^4*d^3*e*x+3*a^4*e^4+8*a^3*b*d*e^3+4
8*a^2*b^2*d^2*e^2-192*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a
)^3
```

maxima [A] time = 0.69, size = 326, normalized size = 1.25

$$\frac{2\left(5\,b^3e^3x^3+16\,b^3d^3-8\,ab^2d^2e-2\,a^2bde^2-a^3e^3+15\left(2\,b^3de^2-ab^2e^3\right)x^2+5\left(8\,b^3d^2e-4\,ab^2de^2-a^2be^3\right)x\right)a}{5\left(e^6x^2+2\,de^5x+d^2e^4\right)\sqrt{ex+d}}+\frac{2\left(5\,b^3e^4x^4-128\,b^3d^4+144\,ab^2d^3e-24\,a^2bd^2e^2-2\,a^3de^3-5\left(8\,b^3de^3-9\,ab^2e^4\right)x^3-15\left(16\,b^3d^2e^2-18\,ab^2de^3+3\,a^2be^4\right)x^2-5\left(64\,b^3d^3e-72\,ab^2d^2e^2+12\,a^2bde^3+a^3e^4\right)x\right)b}{15\left(e^7x^2+2\,de^6x+d^2e^5\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(5*b^3*e^3*x^3 + 16*b^3*d^3 - 8*a*b^2*d^2*e - 2*a^2*b*d*e^2 - a^3*e^3 +
 15*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 5*(8*b^3*d^2*e - 4*a*b^2*d*e^2 - a^2*b*
e^3)*x)*a/((e^6*x^2 + 2*d*e^5*x + d^2*e^4)*sqrt(e*x + d)) + 2/15*(5*b^3*e^4
*x^4 - 128*b^3*d^4 + 144*a*b^2*d^3*e - 24*a^2*b*d^2*e^2 - 2*a^3*d*e^3 - 5*(
8*b^3*d*e^3 - 9*a*b^2*e^4)*x^3 - 15*(16*b^3*d^2*e^2 - 18*a*b^2*d*e^3 + 3*a^
2*b*e^4)*x^2 - 5*(64*b^3*d^3*e - 72*a*b^2*d^2*e^2 + 12*a^2*b*d*e^3 + a^3*e^
4)*x)*b/((e^7*x^2 + 2*d*e^6*x + d^2*e^5)*sqrt(e*x + d))
```

mupad [B] time = 2.98, size = 283, normalized size = 1.09

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{6\,a^4\,e^4+16\,a^3\,b\,d\,e^3+96\,a^2\,b^2\,d^2\,e^2-384\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{15\,b\,e^7}-\frac{2\,b^3\,x^4}{3\,e^3}+\frac{x\,\left(40\,a^3\,b\,e^4+240\,a^2\,b^2\,d\,e^3-960\,a\,b^3\,d^2\,e^2+640\,b^4\,d^3\,e\right)}{15\,b\,e^7}-\frac{8\,b^2\,x^3\,(3\,a\,e-2\,b\,d)}{3\,e^4}+\frac{4\,b\,x^2\,\left(3\,a^2\,e^2-12\,a\,b\,d\,e+8\,b^2\,d^2\right)}{e^5}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(15\,a\,e^7+30\,b\,d\,e^6\right)\,\sqrt{d+e\,x}}{15\,b\,e^7}+\frac{d\,x\,(2\,a\,e+b\,d)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(7/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((6*a^4*e^4 + 256*b^4*d^4 + 96*a^2*b^2*d^
2*e^2 - 384*a*b^3*d^3*e + 16*a^3*b*d*e^3)/(15*b*e^7) - (2*b^3*x^4)/(3*e^3)
+ (x*(40*a^3*b*e^4 + 640*b^4*d^3*e - 960*a*b^3*d^2*e^2 + 240*a^2*b^2*d*e^3)
)/(15*b*e^7) - (8*b^2*x^3*(3*a*e - 2*b*d))/(3*e^4) + (4*b*x^2*(3*a^2*e^2 +
8*b^2*d^2 - 12*a*b*d*e))/e^5))/(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)^(1/2
))/(b*e^2) + (x^2*(15*a*e^7 + 30*b*d*e^6)*(d + e*x)^(1/2))/(15*b*e^7) + (d*
x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(7/2),x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**(7/2), x)
```

3.1882 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=258

$$-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^{3/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{5e^5(a+bx)(d+ex)^{5/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{7e^5(a+bx)(d+ex)^{7/2}}+\frac{2b^4\sqrt{a^2}}{}$$

Rubi [A] time = 0.10, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^5(a+bx)}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)\sqrt{d+ex}}-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^{3/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{5e^5(a+bx)(d+ex)^{5/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{7e^5(a+bx)(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(9/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)*(d + e*x)
^(7/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x
)*(d + e*x)^(5/2)) - (4*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e
^5*(a + b*x)*(d + e*x)^(3/2)) + (8*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(e^5*(a + b*x)*Sqrt[d + e*x]) + (2*b^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{9/2}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{9/2}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{9/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{7/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{5/2}} - \frac{4b^3(bd-ae)}{e^4(d+ex)^{3/2}} + \right.}{ab+b^2x}$$
$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^{7/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{5/2}} - \frac{4b^2}{}$$

Mathematica [A] time = 0.09, size = 173, normalized size = 0.67

$$-\frac{2\sqrt{(a+bx)^2}\left(5a^4e^4+4a^3be^3(2d+7ex)+2a^2b^2e^2\left(8d^2+28dex+35e^2x^2\right)+4ab^3e\left(16d^3+56d^2ex+70de^2x^2+35e^3x^3\right)-\left(b^4\left(128d^4+448d^3ex+560d^2e^2x^2+280de^3x^3+35e^4x^4\right)\right)\right)}{35e^5(a+bx)(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(5*a^4*e^4 + 4*a^3*b*e^3*(2*d + 7*e*x) + 2*a^2*b^2*e^
2*(8*d^2 + 28*d*e*x + 35*e^2*x^2) + 4*a*b^3*e*(16*d^3 + 56*d^2*e*x + 70*d*e
^2*x^2 + 35*e^3*x^3) - b^4*(128*d^4 + 448*d^3*e*x + 560*d^2*e^2*x^2 + 280*d
*e^3*x^3 + 35*e^4*x^4)))/(35*e^5*(a + b*x)*(d + e*x)^(7/2))
```

IntegrateAlgebraic [A] time = 26.60, size = 241, normalized size = 0.93

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-5a^4e^4-28a^3be^3(d+ex)+20a^3bde^3-30a^2b^2d^2e^2-70a^2b^2e^2(d+ex)^2+84a^2b^2de^2(d+ex)+20ab^3d^3e-84ab^3d^2e(d+ex)-140ab^3e(d+ex)^3+140ab^3de(d+ex)^2-5b^4d^4+28b^4d^3(d+ex)-70b^4d^2(d+ex)^2+35b^4(d+ex)^4+140b^4d(d+ex)^3\right)}{35e^4(d+ex)^{7/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(9
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-5*b^4*d^4 + 20*a*b^3*d^3*e - 30*a^2*b^2*d^2*
e^2 + 20*a^3*b*d*e^3 - 5*a^4*e^4 + 28*b^4*d^3*(d + e*x) - 84*a*b^3*d^2*e*(d
 + e*x) + 84*a^2*b^2*d*e^2*(d + e*x) - 28*a^3*b*e^3*(d + e*x) - 70*b^4*d^2*
(d + e*x)^2 + 140*a*b^3*d*e*(d + e*x)^2 - 70*a^2*b^2*e^2*(d + e*x)^2 + 140*
b^4*d*(d + e*x)^3 - 140*a*b^3*e*(d + e*x)^3 + 35*b^4*(d + e*x)^4))/(35*e^4*
(d + e*x)^(7/2)*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 225, normalized size = 0.87

$$\frac{2\left(35b^4e^4x^4+128b^4d^4-64ab^3d^3e-16a^2b^2d^2e^2-8a^3bde^3-5a^4e^4+140\left(2b^4de^3-ab^3e^4\right)x^3+70\left(8b^4d^2e^2-4ab^3de^3-a^2b^2e^4\right)x^2+28\left(16b^4d^3e-8ab^3d^2e^2-2a^2b^2de^3-a^3be^4\right)x\right)\sqrt{ex+d}}{35\left(e^9x^4+4de^8x^3+6d^2e^7x^2+4d^3e^6x+d^4e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(35*b^4*e^4*x^4 + 128*b^4*d^4 - 64*a*b^3*d^3*e - 16*a^2*b^2*d^2*e^2 -
8*a^3*b*d*e^3 - 5*a^4*e^4 + 140*(2*b^4*d*e^3 - a*b^3*e^4)*x^3 + 70*(8*b^4*d
^2*e^2 - 4*a*b^3*d*e^3 - a^2*b^2*e^4)*x^2 + 28*(16*b^4*d^3*e - 8*a*b^3*d^2*
e^2 - 2*a^2*b^2*d*e^3 - a^3*b*e^4)*x)*sqrt(e*x + d)/(e^9*x^4 + 4*d*e^8*x^3
+ 6*d^2*e^7*x^2 + 4*d^3*e^6*x + d^4*e^5)
```

giac [A] time = 0.23, size = 310, normalized size = 1.20

$$2\sqrt{xe+d}\,b^4e^{(-5)}\mathrm{sgn}(bx+a)+\frac{2\left(140(xe+d)^3b^4d\,\mathrm{sgn}(bx+a)-70(xe+d)^2b^4d^2\mathrm{sgn}(bx+a)+28(xe+d)b^4d^3\mathrm{sgn}(bx+a)-5b^4d^4\mathrm{sgn}(bx+a)-140(xe+d)^3ab^3e\,\mathrm{sgn}(bx+a)+140(xe+d)^2ab^3de\,\mathrm{sgn}(bx+a)-84(xe+d)ab^3d^2e\,\mathrm{sgn}(bx+a)+20ab^3d^3e\,\mathrm{sgn}(bx+a)-70(xe+d)^2a^2b^2e^2\mathrm{sgn}(bx+a)+84(xe+d)a^2b^2de^2\mathrm{sgn}(bx+a)-30a^2b^2d^2e^2\mathrm{sgn}(bx+a)-28(xe+d)a^3be^3\mathrm{sgn}(bx+a)+20a^3bde^3\mathrm{sgn}(bx+a)-5a^4e^4\mathrm{sgn}(bx+a)\right)e^{(-5)}}{35(xe+d)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x, algorithm="g
iac")
```

```
[Out] 2*sqrt(x*e + d)*b^4*e^(-5)*sgn(b*x + a) + 2/35*(140*(x*e + d)^3*b^4*d*sgn(b
*x + a) - 70*(x*e + d)^2*b^4*d^2*sgn(b*x + a) + 28*(x*e + d)*b^4*d^3*sgn(b*
x + a) - 5*b^4*d^4*sgn(b*x + a) - 140*(x*e + d)^3*a*b^3*e*sgn(b*x + a) + 14
0*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) - 84*(x*e + d)*a*b^3*d^2*e*sgn(b*x + a
) + 20*a*b^3*d^3*e*sgn(b*x + a) - 70*(x*e + d)^2*a^2*b^2*e^2*sgn(b*x + a) +
 84*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) - 30*a^2*b^2*d^2*e^2*sgn(b*x + a)
- 28*(x*e + d)*a^3*b*e^3*sgn(b*x + a) + 20*a^3*b*d*e^3*sgn(b*x + a) - 5*a^4
*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(7/2)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2\left(-35b^4e^4x^4+140a\,b^3e^4x^3-280b^4d\,e^3x^3+70a^2b^2e^4x^2+280a\,b^3d\,e^3x^2-560b^4d^2e^2x^2+28a^3b\,e^4x+56a^2b^2d\,e^3x+224a\,b^3d^2e^2x-448b^4d^3ex+5a^4e^4+8a^3bd\,e^3+16a^2b^2d^2e^2+64a\,b^3d^3e-128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{35\,(ex+d)^{\frac{7}{2}}\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x)
```

```
[Out] -2/35/(e*x+d)^(7/2)*(-35*b^4*e^4*x^4+140*a*b^3*e^4*x^3-280*b^4*d*e^3*x^3+70
*a^2*b^2*e^4*x^2+280*a*b^3*d*e^3*x^2-560*b^4*d^2*e^2*x^2+28*a^3*b*e^4*x+56*
a^2*b^2*d*e^3*x+224*a*b^3*d^2*e^2*x-448*b^4*d^3*e*x+5*a^4*e^4+8*a^3*b*d*e^3
+16*a^2*b^2*d^2*e^2+64*a*b^3*d^3*e-128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+
a)^3
```

maxima [A] time = 0.73, size = 348, normalized size = 1.35

$$-\frac{2\left(35\,b^3e^3x^3+16\,b^3d^3+8\,ab^2d^2e+6\,a^2bde^2+5\,a^3e^3+35\left(2\,b^3de^2+ab^2e^3\right)x^2+7\left(8\,b^3d^2e+4\,ab^2de^2+3\,a^2be^3\right)x\right)a}{35\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)\sqrt{ex+d}}+\frac{2\left(35\,b^3e^4x^4+128\,b^3d^4-48\,ab^2d^3e-8\,a^2bd^2e^2-2\,a^3de^3+35\left(8\,b^3de^3-3\,ab^2e^4\right)x^3+35\left(16\,b^3d^2e^2-6\,ab^2de^3-a^2be^4\right)x^2+7\left(64\,b^3d^3e-24\,ab^2d^2e^2-4\,a^2bde^3-a^3e^4\right)x\right)b}{35\left(e^8x^3+3\,de^7x^2+3\,d^2e^6x+d^3e^5\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x, algorithm="m
axima")
```

```
[Out] -2/35*(35*b^3*e^3*x^3 + 16*b^3*d^3 + 8*a*b^2*d^2*e + 6*a^2*b*d*e^2 + 5*a^3*
e^3 + 35*(2*b^3*d*e^2 + a*b^2*e^3)*x^2 + 7*(8*b^3*d^2*e + 4*a*b^2*d*e^2 + 3
*a^2*b*e^3)*x)*a/((e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)*sqrt(e*x
+ d)) + 2/35*(35*b^3*e^4*x^4 + 128*b^3*d^4 - 48*a*b^2*d^3*e - 8*a^2*b*d^2*e
^2 - 2*a^3*d*e^3 + 35*(8*b^3*d*e^3 - 3*a*b^2*e^4)*x^3 + 35*(16*b^3*d^2*e^2
- 6*a*b^2*d*e^3 - a^2*b*e^4)*x^2 + 7*(64*b^3*d^3*e - 24*a*b^2*d^2*e^2 - 4*a
^2*b*d*e^3 - a^3*e^4)*x)*b/((e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6*x + d^3*e^5)
*sqrt(e*x + d))
```

mupad [B] time = 3.00, size = 309, normalized size = 1.20

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{10\,a^4\,e^4+16\,a^3\,b\,d\,e^3+32\,a^2\,b^2\,d^2\,e^2+128\,a\,b^3\,d^3\,e-256\,b^4\,d^4}{35\,b\,e^8}-\frac{2\,b^3\,x^4}{e^4}+\frac{x\,\left(56\,a^3\,b\,e^4+112\,a^2\,b^2\,d\,e^3+448\,a\,b^3\,d^2\,e^2-896\,b^4\,d^3\,e\right)}{35\,b\,e^8}+\frac{8\,b^2\,x^3\,\left(a\,e-2\,b\,d\right)}{e^5}+\frac{4\,b\,x^2\,\left(a^2\,e^2+4\,a\,b\,d\,e-8\,b^2\,d^2\right)}{e^6}\right)}{x^4\,\sqrt{d+e\,x}+\frac{a\,d^3\,\sqrt{d+e\,x}}{b\,e^3}+\frac{x^3\,\left(35\,a\,e^8+105\,b\,d\,e^7\right)\,\sqrt{d+e\,x}}{35\,b\,e^8}+\frac{3\,d\,x^2\,\left(a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^2\,x\,\left(3\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(9/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((10*a^4*e^4 - 256*b^4*d^4 + 32*a^2*b^2*d
^2*e^2 + 128*a*b^3*d^3*e + 16*a^3*b*d*e^3)/(35*b*e^8) - (2*b^3*x^4)/e^4 + (
x*(56*a^3*b*e^4 - 896*b^4*d^3*e + 448*a*b^3*d^2*e^2 + 112*a^2*b^2*d*e^3))/(
35*b*e^8) + (8*b^2*x^3*(a*e - 2*b*d))/e^5 + (4*b*x^2*(a^2*e^2 - 8*b^2*d^2 +
 4*a*b*d*e))/e^6))/(x^4*(d + e*x)^(1/2) + (a*d^3*(d + e*x)^(1/2))/(b*e^3) +
 (x^3*(35*a*e^8 + 105*b*d*e^7)*(d + e*x)^(1/2))/(35*b*e^8) + (3*d*x^2*(a*e
```

```
+ b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^2*x*(3*a*e + b*d)*(d + e*x)^(1/2))/(b*
e^3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(9/2),x)
[Out] Timed out
```

3.1883 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=262

$$-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^5(a+bx)(d+ex)^{7/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{9e^5(a+bx)(d+ex)^{9/2}}-\frac{2b^4\sqrt{a}}{e^5(a}$$

Rubi [A] time = 0.10, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^5(a+bx)(d+ex)^{3/2}}-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^5(a+bx)(d+ex)^{7/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{9e^5(a+bx)(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(11/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d + e*x)
^(9/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x
)*(d + e*x)^(7/2)) - (12*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
5*e^5*(a + b*x)*(d + e*x)^(5/2)) + (8*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^(3/2)) - (2*b^4*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(e^5*(a + b*x)*Sqrt[d + e*x])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{11/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{11/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{11/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{9/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{7/2}} - \frac{4b^3(bd-ae)}{e^4(d+ex)^{5/2}} + \right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^{9/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^{7/2}} - \frac{12b}{}$$

Mathematica [A] time = 0.08, size = 172, normalized size = 0.66

$$-\frac{2\sqrt{(a+bx)^2}\left(35a^4e^4+20a^3be^3(2d+9ex)+6a^2b^2e^2\left(8d^2+36dex+63e^2x^2\right)+4ab^3e\left(16d^3+72d^2ex+126de^2x^2+105e^3x^3\right)+b^4\left(128d^4+576d^3ex+1008d^2e^2x^2+840de^3x^3+315e^4x^4\right)\right)}{315e^5(a+bx)(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(11/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(35*a^4*e^4 + 20*a^3*b*e^3*(2*d + 9*e*x) + 6*a^2*b^2*
e^2*(8*d^2 + 36*d*e*x + 63*e^2*x^2) + 4*a*b^3*e*(16*d^3 + 72*d^2*e*x + 126*
d*e^2*x^2 + 105*e^3*x^3) + b^4*(128*d^4 + 576*d^3*e*x + 1008*d^2*e^2*x^2 +
840*d*e^3*x^3 + 315*e^4*x^4)))/(315*e^5*(a + b*x)*(d + e*x)^(9/2))
```

IntegrateAlgebraic [A] time = 36.39, size = 241, normalized size = 0.92

$$-\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(35a^4e^4+180a^3be^3(d+ex)-140a^3bde^3+210a^2b^2d^2e^2+378a^2b^2e^2(d+ex)^2-540a^2b^2de^2(d+ex)-140ab^3d^3e+540ab^3d^2e(d+ex)+420ab^3e(d+ex)^3-756ab^3de(d+ex)^2+35b^4d^4-180b^4d^3(d+ex)+378b^4d^2(d+ex)^2+315b^4(d+ex)^4-420b^4d(d+ex)^3\right)}{315e^4(d+ex)^{9/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(1
1/2),x]
```

```
[Out] (-2*Sqrt[(a*e + b*e*x)^2/e^2]*(35*b^4*d^4 - 140*a*b^3*d^3*e + 210*a^2*b^2*d
^2*e^2 - 140*a^3*b*d*e^3 + 35*a^4*e^4 - 180*b^4*d^3*(d + e*x) + 540*a*b^3*d
^2*e*(d + e*x) - 540*a^2*b^2*d*e^2*(d + e*x) + 180*a^3*b*e^3*(d + e*x) + 37
8*b^4*d^2*(d + e*x)^2 - 756*a*b^3*d*e*(d + e*x)^2 + 378*a^2*b^2*e^2*(d + e*
x)^2 - 420*b^4*d*(d + e*x)^3 + 420*a*b^3*e*(d + e*x)^3 + 315*b^4*(d + e*x)^
4))/(315*e^4*(d + e*x)^(9/2)*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 235, normalized size = 0.90

$$-\frac{2\left(315\,b^4e^4x^4+128\,b^4d^4+64\,ab^3d^3e+48\,a^2b^2d^2e^2+40\,a^3bde^3+35\,a^4e^4+420\left(2\,b^4de^3+ab^3e^4\right)x^3+126\left(8\,b^4d^2e^2+4\,ab^3de^3+3\,a^2b^2e^4\right)x^2+36\left(16\,b^4d^3e+8\,ab^3d^2e^2+6\,a^2b^2de^3+5\,a^3be^4\right)x\right)\sqrt{ex+d}}{315\left(e^{10}x^5+5\,de^9x^4+10\,d^2e^8x^3+10\,d^3e^7x^2+5\,d^4e^6x+d^5e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x, algorithm="
fricas")
```

```
[Out] -2/315*(315*b^4*e^4*x^4 + 128*b^4*d^4 + 64*a*b^3*d^3*e + 48*a^2*b^2*d^2*e^2
 + 40*a^3*b*d*e^3 + 35*a^4*e^4 + 420*(2*b^4*d*e^3 + a*b^3*e^4)*x^3 + 126*(8
*b^4*d^2*e^2 + 4*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 + 36*(16*b^4*d^3*e + 8*a*
b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 + 5*a^3*b*e^4)*x)*sqrt(e*x + d)/(e^10*x^5 + 5
*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2 + 5*d^4*e^6*x + d^5*e^5)
```

giac [A] time = 0.23, size = 307, normalized size = 1.17

$$-\frac{2\left(315\,(xe+d)^4b^4\mathrm{sgn}\,(bx+a)-420\,(xe+d)^3b^4d\mathrm{sgn}\,(bx+a)+378\,(xe+d)^2b^4d^2\mathrm{sgn}\,(bx+a)-180\,(xe+d)b^4d^3\mathrm{sgn}\,(bx+a)+35\,b^4d^4\mathrm{sgn}\,(bx+a)+420\,(xe+d)^3ab^3e\mathrm{sgn}\,(bx+a)-756\,(xe+d)^2ab^3de\mathrm{sgn}\,(bx+a)+540\,(xe+d)ab^3d^2e\mathrm{sgn}\,(bx+a)-140\,ab^3d^3e\mathrm{sgn}\,(bx+a)+378\,(xe+d)^2a^2b^2e^2\mathrm{sgn}\,(bx+a)-540\,(xe+d)a^2b^2de^2\mathrm{sgn}\,(bx+a)+210\,a^2b^2d^2e^2\mathrm{sgn}\,(bx+a)+180\,(xe+d)a^3be^3\mathrm{sgn}\,(bx+a)-140\,a^3bde^3\mathrm{sgn}\,(bx+a)+35\,a^4e^4\mathrm{sgn}\,(bx+a)\right)e^{(-5)}}{315\,(xe+d)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x, algorithm="giac")

[Out] -2/315*(315*(x*e + d)^4*b^4*sgn(b*x + a) - 420*(x*e + d)^3*b^4*d*sgn(b*x + a) + 378*(x*e + d)^2*b^4*d^2*sgn(b*x + a) - 180*(x*e + d)*b^4*d^3*sgn(b*x + a) + 35*b^4*d^4*sgn(b*x + a) + 420*(x*e + d)^3*a*b^3*e*sgn(b*x + a) - 756*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) + 540*(x*e + d)*a*b^3*d^2*e*sgn(b*x + a) - 140*a*b^3*d^3*e*sgn(b*x + a) + 378*(x*e + d)^2*a^2*b^2*e^2*sgn(b*x + a) - 540*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) + 210*a^2*b^2*d^2*e^2*sgn(b*x + a) + 180*(x*e + d)*a^3*b*e^3*sgn(b*x + a) - 140*a^3*b*d*e^3*sgn(b*x + a) + 35*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(9/2)

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$-\frac{2\left(315b^4e^4x^4+420a\,b^3e^4x^3+840b^4d\,e^3x^3+378a^2b^2e^4x^2+504a\,b^3d\,e^3x^2+1008b^4d^2e^2x^2+180a^3b\,e^4x+216a^2b^2d\,e^3x+288a\,b^3d^2e^2x+576b^4d^3ex+35a^4e^4+40a^3bd\,e^3+48a^2b^2d^2e^2+64a\,b^3d^3e+128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{315\,(ex+d)^{\frac{9}{2}}\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x)

[Out] -2/315/(e*x+d)^(9/2)*(315*b^4*e^4*x^4+420*a*b^3*e^4*x^3+840*b^4*d*e^3*x^3+378*a^2*b^2*e^4*x^2+504*a*b^3*d*e^3*x^2+1008*b^4*d^2*e^2*x^2+180*a^3*b*e^4*x+216*a^2*b^2*d*e^3*x+288*a*b^3*d^2*e^2*x+576*b^4*d^3*e*x+35*a^4*e^4+40*a^3*b*d*e^3+48*a^2*b^2*d^2*e^2+64*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3

maxima [A] time = 0.78, size = 371, normalized size = 1.42

$$-\frac{2\left(105\,b^3e^3x^3+16\,b^3d^3+24\,ab^2d^2e+30\,a^2bde^2+35\,a^3e^3+63\left(2\,b^3de^2+3\,ab^2e^3\right)x^2+9\left(8\,b^3d^2e+12\,ab^2de^2+15\,a^2be^3\right)x\right)a}{315\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)\sqrt{ex+d}}-\frac{2\left(315\,b^3e^4x^4+128\,b^3d^4+48\,ab^2d^3e+24\,a^2bd^2e^2+10\,a^3de^3+105\left(8\,b^3de^3+3\,ab^2e^4\right)x^3+63\left(16\,b^3d^2e^2+6\,ab^2de^3+3\,a^2be^4\right)x^2+9\left(64\,b^3d^3e+24\,ab^2d^2e^2+12\,a^2bde^3+5\,a^3e^4\right)x\right)b}{315\left(e^9x^4+4\,de^8x^3+6\,d^2e^7x^2+4\,d^3e^6x+d^4e^5\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x, algorithm="maxima")

[Out] -2/315*(105*b^3*e^3*x^3 + 16*b^3*d^3 + 24*a*b^2*d^2*e + 30*a^2*b*d*e^2 + 35*a^3*e^3 + 63*(2*b^3*d*e^2 + 3*a*b^2*e^3)*x^2 + 9*(8*b^3*d^2*e + 12*a*b^2*d*e^2 + 15*a^2*b*e^3)*x)*a/((e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)*sqrt(e*x + d)) - 2/315*(315*b^3*e^4*x^4 + 128*b^3*d^4 + 48*a*b^2*d^3*e + 24*a^2*b*d^2*e^2 + 10*a^3*d*e^3 + 105*(8*b^3*d*e^3 + 3*a*b^2*e^4)*x^3 + 63*(16*b^3*d^2*e^2 + 6*a*b^2*d*e^3 + 3*a^2*b*e^4)*x^2 + 9*(64*b^3*d^3*e + 24*a*b^2*d^2*e^2 + 12*a^2*b*d*e^3 + 5*a^3*e^4)*x)*b/((e^9*x^4 + 4*d*e^8*x^3 + 6*d^2*e^7*x^2 + 4*d^3*e^6*x + d^4*e^5)*sqrt(e*x + d))

mupad [B] time = 2.93, size = 333, normalized size = 1.27

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{8\,x\,\left(5\,a^3\,e^3+6\,a^2\,b\,d\,e^2+8\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{35\,e^8}+\frac{2\,b^3\,x^4}{e^5}+\frac{70\,a^4\,e^4+80\,a^3\,b\,d\,e^3+96\,a^2\,b^2\,d^2\,e^2+128\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{315\,b\,e^9}+\frac{8\,b^2\,x^3\,\left(a\,e+2\,b\,d\right)}{3\,e^6}+\frac{4\,b\,x^2\,\left(3\,a^2\,e^2+4\,a\,b\,d\,e+8\,b^2\,d^2\right)}{5\,e^7}\right)}{x^5\,\sqrt{d+e\,x}+\frac{a\,d^4\,\sqrt{d+e\,x}}{b\,e^4}+\frac{x^4\,\left(315\,a\,e^9+1260\,b\,d\,e^8\right)\,\sqrt{d+e\,x}}{315\,b\,e^9}+\frac{2\,d\,x^3\,\left(2\,a\,e+3\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^3\,x\,\left(4\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^4}+\frac{2\,d^2\,x^2\,\left(3\,a\,e+2\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(11/2),x)

[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((8*x*(5*a^3*e^3 + 16*b^3*d^3 + 8*a*b^2*d^2*e + 6*a^2*b*d*e^2))/(35*e^8) + (2*b^3*x^4)/e^5 + (70*a^4*e^4 + 256*b^4*d^4 + 96*a^2*b^2*d^2*e^2 + 128*a*b^3*d^3*e + 80*a^3*b*d*e^3)/(315*b*e^9) + (8*b^2*x^3*(a*e + 2*b*d))/(3*e^6) + (4*b*x^2*(3*a^2*e^2 + 8*b^2*d^2 + 4*a*b*d*e))/(5*e^7)))/(x^5*(d + e*x)^(1/2) + (a*d^4*(d + e*x)^(1/2))/(b*e^4) + (x^4*(315*a*e^9 + 1260*b*d*e^8)*(d + e*x)^(1/2))/(315*b*e^9) + (2*d*x^3*(2*a*

```
e + 3*b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^3*x*(4*a*e + b*d)*(d + e*x)^(1/2))
/(b*e^4) + (2*d^2*x^2*(3*a*e + 2*b*d)*(d + e*x)^(1/2))/(b*e^3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(11/2),x)
```

```
[Out] Timed out
```

3.1884 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=264

$$-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^{7/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^5(a+bx)(d+ex)^{9/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^5(a+bx)(d+ex)^{11/2}}-\frac{2b^4\sqrt{a}}{3e^5(a}$$

Rubi [A] time = 0.10, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^5(a+bx)(d+ex)^{5/2}}-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^{7/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^5(a+bx)(d+ex)^{9/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^5(a+bx)(d+ex)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(13/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)*(d + e*x
)^(11/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b
*x)*(d + e*x)^(9/2)) - (12*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^5*(a + b*x)*(d + e*x)^(7/2)) + (8*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(5*e^5*(a + b*x)*(d + e*x)^(5/2)) - (2*b^4*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^(3/2))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{13/2}}\,dx}{b^2\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{13/2}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{13/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{11/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{9/2}} - \frac{4b^3(bd-ae)}{e^4(d+ex)^{7/2}}\right.}{ab+b^2x}$$
$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{11e^5(a+bx)(d+ex)^{11/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^{9/2}} - \frac{12b}{}$$

Mathematica [A] time = 0.09, size = 172, normalized size = 0.65

$$-\frac{2\sqrt{(a+bx)^2}\left(315a^4e^4+140a^3be^3(2d+11ex)+30a^2b^2e^2\left(8d^2+44dex+99e^2x^2\right)+12ab^3e\left(16d^3+88d^2ex+198de^2x^2+231e^3x^3\right)+b^4\left(128d^4+704d^3ex+1584d^2e^2x^2+1848de^3x^3+1155e^4x^4\right)\right)}{3465e^5(a+bx)(d+ex)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(13/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(315*a^4*e^4 + 140*a^3*b*e^3*(2*d + 11*e*x) + 30*a^2*
b^2*e^2*(8*d^2 + 44*d*e*x + 99*e^2*x^2) + 12*a*b^3*e*(16*d^3 + 88*d^2*e*x +
 198*d*e^2*x^2 + 231*e^3*x^3) + b^4*(128*d^4 + 704*d^3*e*x + 1584*d^2*e^2*x
^2 + 1848*d*e^3*x^3 + 1155*e^4*x^4)))/(3465*e^5*(a + b*x)*(d + e*x)^(11/2))
```

IntegrateAlgebraic [A] time = 42.95, size = 241, normalized size = 0.91

$$-\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(315a^4e^4+1540a^3be^3(d+ex)-1260a^3bde^3+1890a^2b^2d^2e^2+2970a^2b^2e^2(d+ex)^2-4620a^2b^2de^2(d+ex)-1260ab^3d^3e+4620ab^3d^2e(d+ex)+2772ab^3e(d+ex)^3-5940ab^3de(d+ex)^2+315b^4d^4-1540b^4d^3(d+ex)+2970b^4d^2(d+ex)^2+1155b^4(d+ex)^4-2772b^4d(d+ex)^3\right)}{3465e^4(d+ex)^{11/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(1
3/2),x]
```

```
[Out] (-2*Sqrt[(a*e + b*e*x)^2/e^2]*(315*b^4*d^4 - 1260*a*b^3*d^3*e + 1890*a^2*b^
2*d^2*e^2 - 1260*a^3*b*d*e^3 + 315*a^4*e^4 - 1540*b^4*d^3*(d + e*x) + 4620*
a*b^3*d^2*e*(d + e*x) - 4620*a^2*b^2*d*e^2*(d + e*x) + 1540*a^3*b*e^3*(d +
e*x) + 2970*b^4*d^2*(d + e*x)^2 - 5940*a*b^3*d*e*(d + e*x)^2 + 2970*a^2*b^2
*e^2*(d + e*x)^2 - 2772*b^4*d*(d + e*x)^3 + 2772*a*b^3*e*(d + e*x)^3 + 1155
*b^4*(d + e*x)^4))/(3465*e^4*(d + e*x)^(11/2)*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 247, normalized size = 0.94

$$-\frac{2\left(1155\,b^4e^4x^4+128\,b^4d^4+192\,ab^3d^3e+240\,a^2b^2d^2e^2+280\,a^3bde^3+315\,a^4e^4+924\left(2\,b^4de^3+3\,ab^3e^4\right)x^3+198\left(8\,b^4d^2e^2+12\,ab^3de^3+15\,a^2b^2e^4\right)x^2+44\left(16\,b^4d^3e+24\,ab^3d^2e^2+30\,a^2b^2de^3+35\,a^3be^4\right)x\right)\sqrt{ex+d}}{3465\left(e^{11}x^6+6\,de^{10}x^5+15\,d^2e^9x^4+20\,d^3e^8x^3+15\,d^4e^7x^2+6\,d^5e^6x+d^6e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x, algorithm="
fricas")
```

```
[Out] -2/3465*(1155*b^4*e^4*x^4 + 128*b^4*d^4 + 192*a*b^3*d^3*e + 240*a^2*b^2*d^2
*e^2 + 280*a^3*b*d*e^3 + 315*a^4*e^4 + 924*(2*b^4*d*e^3 + 3*a*b^3*e^4)*x^3
+ 198*(8*b^4*d^2*e^2 + 12*a*b^3*d*e^3 + 15*a^2*b^2*e^4)*x^2 + 44*(16*b^4*d^
3*e + 24*a*b^3*d^2*e^2 + 30*a^2*b^2*d*e^3 + 35*a^3*b*e^4)*x)*sqrt(e*x + d)/
(e^11*x^6 + 6*d*e^10*x^5 + 15*d^2*e^9*x^4 + 20*d^3*e^8*x^3 + 15*d^4*e^7*x^2
 + 6*d^5*e^6*x + d^6*e^5)
```

giac [A] time = 0.24, size = 307, normalized size = 1.16

$$-\frac{2\left(1155\,(xe+d)^4b^4\mathrm{sgn}\,(bx+a)-2772\,(xe+d)^3b^4d\mathrm{sgn}\,(bx+a)+2970\,(xe+d)^2b^4d^2\mathrm{sgn}\,(bx+a)-1540\,(xe+d)b^4d^3\mathrm{sgn}\,(bx+a)+315\,b^4d^4\mathrm{sgn}\,(bx+a)+2772\,(xe+d)^3ab^3e\mathrm{sgn}\,(bx+a)-5940\,(xe+d)^2ab^3de\mathrm{sgn}\,(bx+a)+4620\,(xe+d)ab^3d^2e\mathrm{sgn}\,(bx+a)-1260\,ab^3d^3e\mathrm{sgn}\,(bx+a)+2970\,(xe+d)^2a^2b^2e^2\mathrm{sgn}\,(bx+a)-4620\,(xe+d)a^2b^2de^2\mathrm{sgn}\,(bx+a)+1890\,a^2b^2d^2e^2\mathrm{sgn}\,(bx+a)+1540\,(xe+d)a^3be^3\mathrm{sgn}\,(bx+a)-1260\,a^3bde^3\mathrm{sgn}\,(bx+a)+315\,a^4e^4\mathrm{sgn}\,(bx+a)\right)e^{(-5)}}{3465\,(xe+d)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x, algorithm="
giac")
```

```
[Out] -2/3465*(1155*(x*e + d)^4*b^4*sgn(b*x + a) - 2772*(x*e + d)^3*b^4*d*sgn(b*x
 + a) + 2970*(x*e + d)^2*b^4*d^2*sgn(b*x + a) - 1540*(x*e + d)*b^4*d^3*sgn(
b*x + a) + 315*b^4*d^4*sgn(b*x + a) + 2772*(x*e + d)^3*a*b^3*e*sgn(b*x + a)
 - 5940*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) + 4620*(x*e + d)*a*b^3*d^2*e*sgn
(b*x + a) - 1260*a*b^3*d^3*e*sgn(b*x + a) + 2970*(x*e + d)^2*a^2*b^2*e^2*sg
n(b*x + a) - 4620*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) + 1890*a^2*b^2*d^2*e
^2*sgn(b*x + a) + 1540*(x*e + d)*a^3*b*e^3*sgn(b*x + a) - 1260*a^3*b*d*e^3*
sgn(b*x + a) + 315*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(11/2)
```

maple [A] time = 0.06, size = 202, normalized size = 0.77

$$-\frac{2\left(1155b^4e^4x^4+2772a\,b^3e^4x^3+1848b^4d\,e^3x^3+2970a^2b^2e^4x^2+2376a\,b^3d\,e^3x^2+1584b^4d^2e^2x^2+1540a^3b\,e^4x+1320a^2b^2d\,e^3x+1056a\,b^3d^2e^2x+704b^4d^3ex+315a^4e^4+280a^3bd\,e^3+240a^2b^2d^2e^2+192a\,b^3d^3e+128b^4d^4\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{3465\,(ex+d)^{\frac{11}{2}}\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x)
```

```
[Out] -2/3465/(e*x+d)^(11/2)*(1155*b^4*e^4*x^4+2772*a*b^3*e^4*x^3+1848*b^4*d*e^3*
x^3+2970*a^2*b^2*e^4*x^2+2376*a*b^3*d*e^3*x^2+1584*b^4*d^2*e^2*x^2+1540*a^3
*b*e^4*x+1320*a^2*b^2*d*e^3*x+1056*a*b^3*d^2*e^2*x+704*b^4*d^3*e*x+315*a^4*
e^4+280*a^3*b*d*e^3+240*a^2*b^2*d^2*e^2+192*a*b^3*d^3*e+128*b^4*d^4)*((b*x+
a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.77, size = 393, normalized size = 1.49

$$-\frac{2\left(231\,b^3e^3x^3+16\,b^3d^3+40\,ab^2d^2e+70\,a^2bde^2+105\,a^3e^3+99\left(2\,b^3de^2+5\,ab^2e^3\right)x^2+11\left(8\,b^3d^2e+20\,ab^2de^2+35\,a^2be^3\right)x\right)a}{1155\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)\sqrt{ex+d}}-\frac{2\left(1155\,b^3e^4x^4+128\,b^3d^4+144\,ab^2d^3e+120\,a^2bd^2e^2+70\,a^3de^3+231\left(8\,b^3de^3+9\,ab^2e^4\right)x^3+99\left(16\,b^3d^2e^2+18\,ab^2de^3+15\,a^2be^4\right)x^2+11\left(64\,b^3d^3e+72\,ab^2d^2e^2+60\,a^2bde^3+35\,a^3e^4\right)x\right)b}{3465\left(e^{10}x^5+5\,de^9x^4+10\,d^2e^8x^3+10\,d^3e^7x^2+5\,d^4e^6x+d^5e^5\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x, algorithm="
maxima")
```

```
[Out] -2/1155*(231*b^3*e^3*x^3 + 16*b^3*d^3 + 40*a*b^2*d^2*e + 70*a^2*b*d*e^2 + 1
05*a^3*e^3 + 99*(2*b^3*d*e^2 + 5*a*b^2*e^3)*x^2 + 11*(8*b^3*d^2*e + 20*a*b^
2*d*e^2 + 35*a^2*b*e^3)*x)*a/((e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*
d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)*sqrt(e*x + d)) - 2/3465*(1155*b^3*e^4*
x^4 + 128*b^3*d^4 + 144*a*b^2*d^3*e + 120*a^2*b*d^2*e^2 + 70*a^3*d*e^3 + 23
1*(8*b^3*d*e^3 + 9*a*b^2*e^4)*x^3 + 99*(16*b^3*d^2*e^2 + 18*a*b^2*d*e^3 + 1
5*a^2*b*e^4)*x^2 + 11*(64*b^3*d^3*e + 72*a*b^2*d^2*e^2 + 60*a^2*b*d*e^3 + 3
5*a^3*e^4)*x)*b/((e^10*x^5 + 5*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2
+ 5*d^4*e^6*x + d^5*e^5)*sqrt(e*x + d))
```

mupad [B] time = 2.95, size = 353, normalized size = 1.34

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{8\,x\,\left(35\,a^3\,e^3+30\,a^2\,b\,d\,e^2+24\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{315\,e^9}+\frac{2\,b^3\,x^4}{3\,e^6}+\frac{630\,a^4\,e^4+560\,a^3\,b\,d\,e^3+480\,a^2\,b^2\,d^2\,e^2+384\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{3465\,b\,e^{10}}+\frac{8\,b^2\,x^3\,\left(3\,a\,e+2\,b\,d\right)}{15\,e^7}+\frac{4\,b\,x^2\,\left(15\,a^2\,e^2+12\,a\,b\,d\,e+8\,b^2\,d^2\right)}{35\,e^8}\right)}{x^6\,\sqrt{d+e\,x}+\frac{a\,d^5\,\sqrt{d+e\,x}}{b\,e^5}+\frac{x^5\,\left(a\,e+5\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e}+\frac{5\,d\,x^4\,\left(a\,e+2\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^4\,x\,\left(5\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^5}+\frac{10\,d^2\,x^3\,\left(a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}+\frac{5\,d^3\,x^2\,\left(2\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(13/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((8*x*(35*a^3*e^3 + 16*b^3*d^3 + 24*a*b^2
*d^2*e + 30*a^2*b*d*e^2))/(315*e^9) + (2*b^3*x^4)/(3*e^6) + (630*a^4*e^4 +
```

```
256*b^4*d^4 + 480*a^2*b^2*d^2*e^2 + 384*a*b^3*d^3*e + 560*a^3*b*d*e^3)/(346
5*b*e^10) + (8*b^2*x^3*(3*a*e + 2*b*d))/(15*e^7) + (4*b*x^2*(15*a^2*e^2 + 8
*b^2*d^2 + 12*a*b*d*e))/(35*e^8)))/(x^6*(d + e*x)^(1/2) + (a*d^5*(d + e*x)^
(1/2))/(b*e^5) + (x^5*(a*e + 5*b*d)*(d + e*x)^(1/2))/(b*e) + (5*d*x^4*(a*e
+ 2*b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^4*x*(5*a*e + b*d)*(d + e*x)^(1/2))/(
b*e^5) + (10*d^2*x^3*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^3) + (5*d^3*x^2*(2*a
*e + b*d)*(d + e*x)^(1/2))/(b*e^4))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(13/2),x)
```

```
[Out] Timed out
```

3.1885 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=374

$$\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^4}{11e^7(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^5}{3e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2}}{7e^7(}$$

Rubi [A] time = 0.17, antiderivative size = 374, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{19/2}}{19e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}(bd-ae)}{17e^7(a+bx)}+\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)^2}{e^7(a+bx)}-\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^3}{13e^7(a+bx)}+\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^4}{11e^7(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^5}{3e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^6}{7e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a +
 b*x)) - (4*b*(b*d - a*e)^5*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(3*e^7*(a + b*x)) + (30*b^2*(b*d - a*e)^4*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(11*e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(13/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (2*b^4*(b*d - a*e)^2*(d
 + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (12*b^5*(b*
d - a*e)*(d + e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x))
 + (2*b^6*(d + e*x)^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*e^7*(a + b*x)
)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^{5/2}dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^{5/2}dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^{5/2}}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{7/2}}{e^6} + 1\right.}{}$$
$$= \frac{2(bd-ae)^6(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)} - \frac{4b(bd-ae)^5(d+ex}{3e^7(}$$

Mathematica [A] time = 0.20, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{7/2}\left(-342342b^5(d+ex)^5(bd-ae)+969969b^4(d+ex)^4(bd-ae)^2-1492260b^3(d+ex)^3(bd-ae)^3+1322685b^2(d+ex)^2(bd-ae)^4-646646b(d+ex)(bd-ae)^5+138567(bd-ae)^6+51051b^6(d+ex)^6\right)}{969969e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(138567*(b*d - a*e)^6 - 646646*b*(b*d
- a*e)^5*(d + e*x) + 1322685*b^2*(b*d - a*e)^4*(d + e*x)^2 - 1492260*b^3*(b
*d - a*e)^3*(d + e*x)^3 + 969969*b^4*(b*d - a*e)^2*(d + e*x)^4 - 342342*b^5
*(b*d - a*e)*(d + e*x)^5 + 51051*b^6*(d + e*x)^6))/(969969*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 51.97, size = 466, normalized size = 1.25

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] (2*(d + e*x)^(7/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(138567*b^6*d^6 - 831402*a*b^5
*d^5*e + 2078505*a^2*b^4*d^4*e^2 - 2771340*a^3*b^3*d^3*e^3 + 2078505*a^4*b^
2*d^2*e^4 - 831402*a^5*b*d*e^5 + 138567*a^6*e^6 - 646646*b^6*d^5*(d + e*x)
+ 3233230*a*b^5*d^4*e*(d + e*x) - 6466460*a^2*b^4*d^3*e^2*(d + e*x) + 64664
60*a^3*b^3*d^2*e^3*(d + e*x) - 3233230*a^4*b^2*d*e^4*(d + e*x) + 646646*a^5
*b*e^5*(d + e*x) + 1322685*b^6*d^4*(d + e*x)^2 - 5290740*a*b^5*d^3*e*(d + e
*x)^2 + 7936110*a^2*b^4*d^2*e^2*(d + e*x)^2 - 5290740*a^3*b^3*d*e^3*(d + e*
x)^2 + 1322685*a^4*b^2*e^4*(d + e*x)^2 - 1492260*b^6*d^3*(d + e*x)^3 + 4476
780*a*b^5*d^2*e*(d + e*x)^3 - 4476780*a^2*b^4*d*e^2*(d + e*x)^3 + 1492260*a
^3*b^3*e^3*(d + e*x)^3 + 969969*b^6*d^2*(d + e*x)^4 - 1939938*a*b^5*d*e*(d
+ e*x)^4 + 969969*a^2*b^4*e^2*(d + e*x)^4 - 342342*b^6*d*(d + e*x)^5 + 3423
42*a*b^5*e*(d + e*x)^5 + 51051*b^6*(d + e*x)^6))/(969969*e^6*(a*e + b*e*x))
```

fricas [B] time = 0.43, size = 635, normalized size = 1.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/969969*(51051*b^6*e^9*x^9 + 1024*b^6*d^9 - 9728*a*b^5*d^8*e + 41344*a^2*b
^4*d^7*e^2 - 103360*a^3*b^3*d^6*e^3 + 167960*a^4*b^2*d^5*e^4 - 184756*a^5*b
```

```
*d^4*e^5 + 138567*a^6*d^3*e^6 + 9009*(13*b^6*d*e^8 + 38*a*b^5*e^9)*x^8 + 30
03*(23*b^6*d^2*e^7 + 266*a*b^5*d*e^8 + 323*a^2*b^4*e^9)*x^7 + 231*(b^6*d^3*
e^6 + 2090*a*b^5*d^2*e^7 + 10013*a^2*b^4*d*e^8 + 6460*a^3*b^3*e^9)*x^6 - 63
*(4*b^6*d^4*e^5 - 38*a*b^5*d^3*e^6 - 22933*a^2*b^4*d^2*e^7 - 58140*a^3*b^3*
d*e^8 - 20995*a^4*b^2*e^9)*x^5 + 7*(40*b^6*d^5*e^4 - 380*a*b^5*d^4*e^5 + 16
15*a^2*b^4*d^3*e^6 + 342380*a^3*b^3*d^2*e^7 + 482885*a^4*b^2*d*e^8 + 92378*
a^5*b*e^9)*x^4 - (320*b^6*d^6*e^3 - 3040*a*b^5*d^5*e^4 + 12920*a^2*b^4*d^4*
e^5 - 32300*a^3*b^3*d^3*e^6 - 2372435*a^4*b^2*d^2*e^7 - 1755182*a^5*b*d*e^8
 - 138567*a^6*e^9)*x^3 + 3*(128*b^6*d^7*e^2 - 1216*a*b^5*d^6*e^3 + 5168*a^2
*b^4*d^5*e^4 - 12920*a^3*b^3*d^4*e^5 + 20995*a^4*b^2*d^3*e^6 + 461890*a^5*b
*d^2*e^7 + 138567*a^6*d*e^8)*x^2 - (512*b^6*d^8*e - 4864*a*b^5*d^7*e^2 + 20
672*a^2*b^4*d^6*e^3 - 51680*a^3*b^3*d^5*e^4 + 83980*a^4*b^2*d^4*e^5 - 92378
*a^5*b*d^3*e^6 - 415701*a^6*d^2*e^7)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.46, size = 2339, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/4849845*(9699690*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*d^3*e^(-1)*s
gn(b*x + a) + 4849845*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x
*e + d)*d^2)*a^4*b^2*d^3*e^(-2)*sgn(b*x + a) + 2771340*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*
b^3*d^3*e^(-3)*sgn(b*x + a) + 230945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a^2*b^4*d^3*e^(-4)*sgn(b*x + a) + 41990*(63*(x*e + d)^(11/2) - 385*
(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 11
55*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^5*d^3*e^(-5)*sgn(b*x +
a) + 1615*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^
(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
 + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^6*d^3*e^(-6)*sgn(b*x + a) + 581
9814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*
b*d^2*e^(-1)*sgn(b*x + a) + 6235515*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)
*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^2*d^2*e^(-2)*sgn(
b*x + a) + 923780*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^3*d^2
*e^(-3)*sgn(b*x + a) + 314925*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^4*d^2*e^(-4)*sgn(b*x + a) + 29070*(231*
(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 858
0*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
 + 3003*sqrt(x*e + d)*d^6)*a*b^5*d^2*e^(-5)*sgn(b*x + a) + 2261*(429*(x*e +
 d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(
x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5
+ 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^6*d^2*e^(-6)*sgn(b*
x + a) + 4849845*sqrt(x*e + d)*a^6*d^3*sgn(b*x + a) + 4849845*((x*e + d)^(3
/2) - 3*sqrt(x*e + d)*d)*a^6*d^2*sgn(b*x + a) + 2494206*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5
*b*d*e^(-1)*sgn(b*x + a) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*a^4*b^2*d*e^(-2)*sgn(b*x + a) + 419900*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^3*d*e^(-3)*sgn(b*x + a) +
 72675*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/
2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*b^4*d*e^(-4)*sgn(b*x + a) + 1356
6*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*
```

```
d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^5*d*
e^(-5)*sgn(b*x + a) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d
 + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e
+ d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 -
291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^6*d*e^(-6)*sgn(b*x
 + a) + 969969*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*a^6*d*sgn(b*x + a) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*a^5*b*e^(-1)*sgn(b*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b^2*e^(-2)*sgn(b*x + a) + 32300*
(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2
- 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2
)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^3*b^3*e^(-3)*sgn(b*x + a) + 11305*(429*(x
*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 250
25*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*
d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2*b^4*e^(-4)*sg
n(b*x + a) + 266*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620
*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2
)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x
*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a*b^5*e^(-5)*sgn(b*x + a) + 2
1*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(1
5/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 32
33230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)
^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*b^6*e^(
-6)*sgn(b*x + a) + 138567*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^6*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.04, size = 393, normalized size = 1.05

$$\frac{2(ex+d)^{\frac{7}{2}}\left(51051b^6e^6x^6+342342ab^5e^6x^5-36036b^6de^5x^5+969969a^2b^4e^6x^4-228228ab^5de^5x^4+24024b^6d^2e^4x^4+1492260a^3b^3e^6x^3-596904a^2b^4de^5x^3+140448ab^5d^2e^4x^3-14784b^6d^3e^3x^3+1322685a^4b^2e^6x^2-813960a^3b^3de^5x^2+325584a^2b^4d^2e^4x^2-76608ab^5d^3e^3x^2+8064b^6d^4e^2x^2+646646a^5be^6x-587860a^4b^2de^5x+361760a^3b^3d^2e^4x-144704a^2b^4d^3e^3x+34048ab^5d^4e^2x-3584b^6d^5ex+138567a^6e^6-184756a^5bde^5+167960a^4b^2d^2e^4-103360a^3b^3d^3e^3+41344a^2b^4d^4e^2-9728ab^5d^5e+1024b^6d^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{969969(bx+a)^5e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/969969*(e*x+d)^(7/2)*(51051*b^6*e^6*x^6+342342*a*b^5*e^6*x^5-36036*b^6*d*
e^5*x^5+969969*a^2*b^4*e^6*x^4-228228*a*b^5*d*e^5*x^4+24024*b^6*d^2*e^4*x^4
+1492260*a^3*b^3*e^6*x^3-596904*a^2*b^4*d*e^5*x^3+140448*a*b^5*d^2*e^4*x^3-
14784*b^6*d^3*e^3*x^3+1322685*a^4*b^2*e^6*x^2-813960*a^3*b^3*d*e^5*x^2+3255
84*a^2*b^4*d^2*e^4*x^2-76608*a*b^5*d^3*e^3*x^2+8064*b^6*d^4*e^2*x^2+646646*
a^5*b*e^6*x-587860*a^4*b^2*d*e^5*x+361760*a^3*b^3*d^2*e^4*x-144704*a^2*b^4*
d^3*e^3*x+34048*a*b^5*d^4*e^2*x-3584*b^6*d^5*e*x+138567*a^6*e^6-184756*a^5*
b*d*e^5+167960*a^4*b^2*d^2*e^4-103360*a^3*b^3*d^3*e^3+41344*a^2*b^4*d^4*e^2
-9728*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.78, size = 1080, normalized size = 2.89

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/153153*(9009*b^5*e^8*x^8 - 256*b^5*d^8 + 2176*a*b^4*d^7*e - 8160*a^2*b^3*
d^6*e^2 + 17680*a^3*b^2*d^5*e^3 - 24310*a^4*b*d^4*e^4 + 21879*a^5*d^3*e^5 +
 3003*(7*b^5*d*e^7 + 17*a*b^4*e^8)*x^7 + 231*(55*b^5*d^2*e^6 + 527*a*b^4*d*
e^7 + 510*a^2*b^3*e^8)*x^6 + 63*(b^5*d^3*e^5 + 1207*a*b^4*d^2*e^6 + 4590*a^
2*b^3*d*e^7 + 2210*a^3*b^2*e^8)*x^5 - 35*(2*b^5*d^4*e^4 - 17*a*b^4*d^3*e^5
```

```
- 5406*a^2*b^3*d^2*e^6 - 10166*a^3*b^2*d*e^7 - 2431*a^4*b*e^8)*x^4 + (80*b^
5*d^5*e^3 - 680*a*b^4*d^4*e^4 + 2550*a^2*b^3*d^3*e^5 + 249730*a^3*b^2*d^2*e
^6 + 230945*a^4*b*d*e^7 + 21879*a^5*e^8)*x^3 - 3*(32*b^5*d^6*e^2 - 272*a*b^
4*d^5*e^3 + 1020*a^2*b^3*d^4*e^4 - 2210*a^3*b^2*d^3*e^5 - 60775*a^4*b*d^2*e
^6 - 21879*a^5*d*e^7)*x^2 + (128*b^5*d^7*e - 1088*a*b^4*d^6*e^2 + 4080*a^2*
b^3*d^5*e^3 - 8840*a^3*b^2*d^4*e^4 + 12155*a^4*b*d^3*e^5 + 65637*a^5*d^2*e^
6)*x)*sqrt(e*x + d)*a/e^6 + 2/2909907*(153153*b^5*e^9*x^9 + 3072*b^5*d^9 -
24320*a*b^4*d^8*e + 82688*a^2*b^3*d^7*e^2 - 155040*a^3*b^2*d^6*e^3 + 167960
*a^4*b*d^5*e^4 - 92378*a^5*d^4*e^5 + 9009*(39*b^5*d*e^8 + 95*a*b^4*e^9)*x^8
 + 3003*(69*b^5*d^2*e^7 + 665*a*b^4*d*e^8 + 646*a^2*b^3*e^9)*x^7 + 231*(3*b
^5*d^3*e^6 + 5225*a*b^4*d^2*e^7 + 20026*a^2*b^3*d*e^8 + 9690*a^3*b^2*e^9)*x
^6 - 63*(12*b^5*d^4*e^5 - 95*a*b^4*d^3*e^6 - 45866*a^2*b^3*d^2*e^7 - 87210*
a^3*b^2*d*e^8 - 20995*a^4*b*e^9)*x^5 + 7*(120*b^5*d^5*e^4 - 950*a*b^4*d^4*e
^5 + 3230*a^2*b^3*d^3*e^6 + 513570*a^3*b^2*d^2*e^7 + 482885*a^4*b*d*e^8 + 4
6189*a^5*e^9)*x^4 - (960*b^5*d^6*e^3 - 7600*a*b^4*d^5*e^4 + 25840*a^2*b^3*d
^4*e^5 - 48450*a^3*b^2*d^3*e^6 - 2372435*a^4*b*d^2*e^7 - 877591*a^5*d*e^8)*
x^3 + 3*(384*b^5*d^7*e^2 - 3040*a*b^4*d^6*e^3 + 10336*a^2*b^3*d^5*e^4 - 193
80*a^3*b^2*d^4*e^5 + 20995*a^4*b*d^3*e^6 + 230945*a^5*d^2*e^7)*x^2 - (1536*
b^5*d^8*e - 12160*a*b^4*d^7*e^2 + 41344*a^2*b^3*d^6*e^3 - 77520*a^3*b^2*d^5
*e^4 + 83980*a^4*b*d^4*e^5 - 46189*a^5*d^3*e^6)*x)*sqrt(e*x + d)*b/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^{5/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1886 $\int (a+bx)(d+ex)^{3/2} \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=376

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^4}{3e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^5}{7e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(}{5e^7(a-}$$

Rubi [A] time = 0.14, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}}{17e^7(a+bx)}-\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)}{5e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^2}{13e^7(a+bx)}-\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^3}{11e^7(a+bx)}+\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^4}{3e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^5}{7e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^6}{5e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a +
 b*x)) - (12*b*(b*d - a*e)^5*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^7*(a + b*x)) + (10*b^2*(b*d - a*e)^4*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(3*e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(11/2)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (30*b^4*(b*d - a*e)^2*(d
 + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) - (4*b^5*(
b*d - a*e)*(d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)
) + (2*b^6*(d + e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x
))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^{3/2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^{3/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^{3/2}}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{5/2}}{e^6}\right.}{}$$

$$= \frac{2(bd-ae)^6(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)} - \frac{12b(bd-ae)^5(d}{}$$

Mathematica [A] time = 0.16, size = 163, normalized size = 0.43

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{5/2}\left(-102102b^5(d+ex)^5(bd-ae)+294525b^4(d+ex)^4(bd-ae)^2-464100b^3(d+ex)^3(bd-ae)^3+425425b^2(d+ex)^2(bd-ae)^4-218790b(d+ex)(bd-ae)^5+51051(bd-ae)^6+15015b^6(d+ex)^6\right)}{255255e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(51051*(b*d - a*e)^6 - 218790*b*(b*d -
 a*e)^5*(d + e*x) + 425425*b^2*(b*d - a*e)^4*(d + e*x)^2 - 464100*b^3*(b*d
- a*e)^3*(d + e*x)^3 + 294525*b^4*(b*d - a*e)^2*(d + e*x)^4 - 102102*b^5*(b
*d - a*e)*(d + e*x)^5 + 15015*b^6*(d + e*x)^6))/(255255*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 50.75, size = 466, normalized size = 1.24

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] (2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(51051*b^6*d^6 - 306306*a*b^5*
d^5*e + 765765*a^2*b^4*d^4*e^2 - 1021020*a^3*b^3*d^3*e^3 + 765765*a^4*b^2*d
^2*e^4 - 306306*a^5*b*d*e^5 + 51051*a^6*e^6 - 218790*b^6*d^5*(d + e*x) + 10
93950*a*b^5*d^4*e*(d + e*x) - 2187900*a^2*b^4*d^3*e^2*(d + e*x) + 2187900*a
^3*b^3*d^2*e^3*(d + e*x) - 1093950*a^4*b^2*d*e^4*(d + e*x) + 218790*a^5*b*e
^5*(d + e*x) + 425425*b^6*d^4*(d + e*x)^2 - 1701700*a*b^5*d^3*e*(d + e*x)^2
 + 2552550*a^2*b^4*d^2*e^2*(d + e*x)^2 - 1701700*a^3*b^3*d*e^3*(d + e*x)^2
+ 425425*a^4*b^2*e^4*(d + e*x)^2 - 464100*b^6*d^3*(d + e*x)^3 + 1392300*a*b
^5*d^2*e*(d + e*x)^3 - 1392300*a^2*b^4*d*e^2*(d + e*x)^3 + 464100*a^3*b^3*e
^3*(d + e*x)^3 + 294525*b^6*d^2*(d + e*x)^4 - 589050*a*b^5*d*e*(d + e*x)^4
+ 294525*a^2*b^4*e^2*(d + e*x)^4 - 102102*b^6*d*(d + e*x)^5 + 102102*a*b^5*
e*(d + e*x)^5 + 15015*b^6*(d + e*x)^6))/(255255*e^6*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 541, normalized size = 1.44

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/255255*(15015*b^6*e^8*x^8 + 1024*b^6*d^8 - 8704*a*b^5*d^7*e + 32640*a^2*b
^4*d^6*e^2 - 70720*a^3*b^3*d^5*e^3 + 97240*a^4*b^2*d^4*e^4 - 87516*a^5*b*d^
```

```
3*e^5 + 51051*a^6*d^2*e^6 + 6006*(3*b^6*d*e^7 + 17*a*b^5*e^8)*x^7 + 231*(b^
6*d^2*e^6 + 544*a*b^5*d*e^7 + 1275*a^2*b^4*e^8)*x^6 - 42*(6*b^6*d^3*e^5 - 5
1*a*b^5*d^2*e^6 - 8925*a^2*b^4*d*e^7 - 11050*a^3*b^3*e^8)*x^5 + 35*(8*b^6*d
^4*e^4 - 68*a*b^5*d^3*e^5 + 255*a^2*b^4*d^2*e^6 + 17680*a^3*b^3*d*e^7 + 121
55*a^4*b^2*e^8)*x^4 - 10*(32*b^6*d^5*e^3 - 272*a*b^5*d^4*e^4 + 1020*a^2*b^4
*d^3*e^5 - 2210*a^3*b^3*d^2*e^6 - 60775*a^4*b^2*d*e^7 - 21879*a^5*b*e^8)*x^
3 + 3*(128*b^6*d^6*e^2 - 1088*a*b^5*d^5*e^3 + 4080*a^2*b^4*d^4*e^4 - 8840*a
^3*b^3*d^3*e^5 + 12155*a^4*b^2*d^2*e^6 + 116688*a^5*b*d*e^7 + 17017*a^6*e^8
)*x^2 - 2*(256*b^6*d^7*e - 2176*a*b^5*d^6*e^2 + 8160*a^2*b^4*d^5*e^3 - 1768
0*a^3*b^3*d^4*e^4 + 24310*a^4*b^2*d^3*e^5 - 21879*a^5*b*d^2*e^6 - 51051*a^6
*d*e^7)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.38, size = 1609, normalized size = 4.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/765765*(1531530*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*d^2*e^(-1)*sg
n(b*x + a) + 765765*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
 + d)*d^2)*a^4*b^2*d^2*e^(-2)*sgn(b*x + a) + 437580*(5*(x*e + d)^(7/2) - 21
*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^3
*d^2*e^(-3)*sgn(b*x + a) + 36465*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*a^2*b^4*d^2*e^(-4)*sgn(b*x + a) + 6630*(63*(x*e + d)^(11/2) - 385*(x*e
+ d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x
*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^5*d^2*e^(-5)*sgn(b*x + a) +
255*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*
d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^
(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^6*d^2*e^(-6)*sgn(b*x + a) + 612612*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b*d*e^(
-1)*sgn(b*x + a) + 656370*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^2*d*e^(-2)*sgn(b*x + a) + 9
7240*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^3*d*e^(-3)*sgn(b*x
 + a) + 33150*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^
(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(
x*e + d)*d^5)*a^2*b^4*d*e^(-4)*sgn(b*x + a) + 3060*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d
^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*a*b^5*d*e^(-5)*sgn(b*x + a) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e
 + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3
2175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2
)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^6*d*e^(-6)*sgn(b*x + a) + 765765*sqrt(x*e
 + d)*a^6*d^2*sgn(b*x + a) + 510510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a
^6*d*sgn(b*x + a) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*b*e^(-1)*sgn(b*x + a) + 3646
5*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 4
20*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b^2*e^(-2)*sgn(b*x + a)
 + 22100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a^3*b^3*e^(-3)*sgn(b*x + a) + 3825*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*a^2*b^4*e^(-4)*sgn(b*x + a) + 714*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(
13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x
*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
 6435*sqrt(x*e + d)*d^7)*a*b^5*e^(-5)*sgn(b*x + a) + 7*(6435*(x*e + d)^(17/
```

```
2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e +
 d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 +
612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e +
 d)*d^8)*b^6*e^(-6)*sgn(b*x + a) + 51051*(3*(x*e + d)^(5/2) - 10*(x*e + d)^
(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^6*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 393, normalized size = 1.05

$$\frac{2 (ex+d)^{\frac{5}{2}} \left(15015 b^6 e^6 x^6+102102 a b^5 e^6 x^5-12012 b^6 d e^5 x^5+294525 a^2 b^4 e^6 x^4-78540 a b^5 d e^5 x^4+9240 b^6 d^2 e^4 x^4+464100 a^3 b^3 e^6 x^3-214200 a^2 b^4 d e^5 x^3+57120 a b^5 d^2 e^4 x^3-6720 b^6 d^3 e^3 x^3+425425 a^4 b^2 e^6 x^2-309400 a^3 b^3 d e^5 x^2+142800 a^2 b^4 d^2 e^4 x^2-38080 a b^5 d^3 e^3 x^2+4480 b^6 d^4 e^2 x^2+218790 a^5 b e^6 x-243100 a^4 b^2 d e^5 x+176800 a^3 b^3 d^2 e^4 x-81600 a^2 b^4 d^3 e^3 x+21760 a b^5 d^4 e^2 x-2560 b^6 d^5 e x+51051 a^6 e^6-87516 a^5 b d e^5+97240 a^4 b^2 d^2 e^4-70720 a^3 b^3 d^3 e^3+32640 a^2 b^4 d^4 e^2-8704 a b^5 d^5 e+1024 b^6 d^6\right) \left((bx+a)^2\right)^{\frac{5}{2}}}{255255 (bx+a)^5 e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/255255*(e*x+d)^(5/2)*(15015*b^6*e^6*x^6+102102*a*b^5*e^6*x^5-12012*b^6*d*
e^5*x^5+294525*a^2*b^4*e^6*x^4-78540*a*b^5*d*e^5*x^4+9240*b^6*d^2*e^4*x^4+4
64100*a^3*b^3*e^6*x^3-214200*a^2*b^4*d*e^5*x^3+57120*a*b^5*d^2*e^4*x^3-6720
*b^6*d^3*e^3*x^3+425425*a^4*b^2*e^6*x^2-309400*a^3*b^3*d*e^5*x^2+142800*a^2
*b^4*d^2*e^4*x^2-38080*a*b^5*d^3*e^3*x^2+4480*b^6*d^4*e^2*x^2+218790*a^5*b*
e^6*x-243100*a^4*b^2*d*e^5*x+176800*a^3*b^3*d^2*e^4*x-81600*a^2*b^4*d^3*e^3
*x+21760*a*b^5*d^4*e^2*x-2560*b^6*d^5*e*x+51051*a^6*e^6-87516*a^5*b*d*e^5+9
7240*a^4*b^2*d^2*e^4-70720*a^3*b^3*d^3*e^3+32640*a^2*b^4*d^4*e^2-8704*a*b^5
*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.82, size = 921, normalized size = 2.45

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/45045*(3003*b^5*e^7*x^7 - 256*b^5*d^7 + 1920*a*b^4*d^6*e - 6240*a^2*b^3*d
^5*e^2 + 11440*a^3*b^2*d^4*e^3 - 12870*a^4*b*d^3*e^4 + 9009*a^5*d^2*e^5 + 2
31*(16*b^5*d*e^6 + 75*a*b^4*e^7)*x^6 + 63*(b^5*d^2*e^5 + 350*a*b^4*d*e^6 +
650*a^2*b^3*e^7)*x^5 - 35*(2*b^5*d^3*e^4 - 15*a*b^4*d^2*e^5 - 1560*a^2*b^3*
d*e^6 - 1430*a^3*b^2*e^7)*x^4 + 5*(16*b^5*d^4*e^3 - 120*a*b^4*d^3*e^4 + 390
*a^2*b^3*d^2*e^5 + 14300*a^3*b^2*d*e^6 + 6435*a^4*b*e^7)*x^3 - 3*(32*b^5*d^
5*e^2 - 240*a*b^4*d^4*e^3 + 780*a^2*b^3*d^3*e^4 - 1430*a^3*b^2*d^2*e^5 - 17
160*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (128*b^5*d^6*e - 960*a*b^4*d^5*e^2 +
3120*a^2*b^3*d^4*e^3 - 5720*a^3*b^2*d^3*e^4 + 6435*a^4*b*d^2*e^5 + 18018*a^
5*d*e^6)*x)*sqrt(e*x + d)*a/e^6 + 2/765765*(45045*b^5*e^8*x^8 + 3072*b^5*d^
8 - 21760*a*b^4*d^7*e + 65280*a^2*b^3*d^6*e^2 - 106080*a^3*b^2*d^5*e^3 + 97
240*a^4*b*d^4*e^4 - 43758*a^5*d^3*e^5 + 3003*(18*b^5*d*e^7 + 85*a*b^4*e^8)*
x^7 + 231*(3*b^5*d^2*e^6 + 1360*a*b^4*d*e^7 + 2550*a^2*b^3*e^8)*x^6 - 63*(1
2*b^5*d^3*e^5 - 85*a*b^4*d^2*e^6 - 11900*a^2*b^3*d*e^7 - 11050*a^3*b^2*e^8)
*x^5 + 35*(24*b^5*d^4*e^4 - 170*a*b^4*d^3*e^5 + 510*a^2*b^3*d^2*e^6 + 26520
*a^3*b^2*d*e^7 + 12155*a^4*b*e^8)*x^4 - 5*(192*b^5*d^5*e^3 - 1360*a*b^4*d^4
*e^4 + 4080*a^2*b^3*d^3*e^5 - 6630*a^3*b^2*d^2*e^6 - 121550*a^4*b*d*e^7 - 2
1879*a^5*e^8)*x^3 + 3*(384*b^5*d^6*e^2 - 2720*a*b^4*d^5*e^3 + 8160*a^2*b^3*
d^4*e^4 - 13260*a^3*b^2*d^3*e^5 + 12155*a^4*b*d^2*e^6 + 58344*a^5*d*e^7)*x^
2 - (1536*b^5*d^7*e - 10880*a*b^4*d^6*e^2 + 32640*a^2*b^3*d^5*e^3 - 53040*a
^3*b^2*d^4*e^4 + 48620*a^4*b*d^3*e^5 - 21879*a^5*d^2*e^6)*x)*sqrt(e*x + d)*
b/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1887 $\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=376

$$\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^4}{7e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^5}{5e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2}}{3e^7}$$

Rubi [A] time = 0.14, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}}{15e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)}{13e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2}{11e^7(a+bx)}-\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^3}{9e^7(a+bx)}+\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^4}{7e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^5}{5e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^6}{3e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a +
 b*x)) - (12*b*(b*d - a*e)^5*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^7*(a + b*x)) + (30*b^2*(b*d - a*e)^4*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(7*e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(9/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (30*b^4*(b*d - a*e)^2*(d +
 e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) - (12*b^5*(b
*d - a*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)
) + (2*b^6*(d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x
))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5\sqrt{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6\sqrt{d+ex}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6\sqrt{d+ex}}{e^6}-\frac{6b(bd-ae)^5(d+ex)^{3/2}}{e^6}+\frac{15b^2(\ldots}{}\right.}{}$$
$$= \frac{2(bd-ae)^6(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)}-\frac{12b(bd-ae)^5(d+ex)\ldots}{5e^7(a\ldots}$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.43

$$\frac{2\sqrt{(a+bx)^2}(d+ex)^{3/2}\left(-20790b^5(d+ex)^5(bd-ae)+61425b^4(d+ex)^4(bd-ae)^2-100100b^3(d+ex)^3(bd-ae)^3+96525b^2(d+ex)^2(bd-ae)^4-54054b(d+ex)(bd-ae)^5+15015(bd-ae)^6+3003b^6(d+ex)^6\right)}{45045e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(15015*(b*d - a*e)^6 - 54054*b*(b*d -
a*e)^5*(d + e*x) + 96525*b^2*(b*d - a*e)^4*(d + e*x)^2 - 100100*b^3*(b*d -
a*e)^3*(d + e*x)^3 + 61425*b^4*(b*d - a*e)^2*(d + e*x)^4 - 20790*b^5*(b*d -
 a*e)*(d + e*x)^5 + 3003*b^6*(d + e*x)^6))/(45045*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 49.74, size = 466, normalized size = 1.24

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),
x]
```

```
[Out] (2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2]*(15015*b^6*d^6 - 90090*a*b^5*d
^5*e + 225225*a^2*b^4*d^4*e^2 - 300300*a^3*b^3*d^3*e^3 + 225225*a^4*b^2*d^2
*e^4 - 90090*a^5*b*d*e^5 + 15015*a^6*e^6 - 54054*b^6*d^5*(d + e*x) + 270270
*a*b^5*d^4*e*(d + e*x) - 540540*a^2*b^4*d^3*e^2*(d + e*x) + 540540*a^3*b^3*
d^2*e^3*(d + e*x) - 270270*a^4*b^2*d*e^4*(d + e*x) + 54054*a^5*b*e^5*(d + e
*x) + 96525*b^6*d^4*(d + e*x)^2 - 386100*a*b^5*d^3*e*(d + e*x)^2 + 579150*a
^2*b^4*d^2*e^2*(d + e*x)^2 - 386100*a^3*b^3*d*e^3*(d + e*x)^2 + 96525*a^4*b
^2*e^4*(d + e*x)^2 - 100100*b^6*d^3*(d + e*x)^3 + 300300*a*b^5*d^2*e*(d + e
*x)^3 - 300300*a^2*b^4*d*e^2*(d + e*x)^3 + 100100*a^3*b^3*e^3*(d + e*x)^3 +
 61425*b^6*d^2*(d + e*x)^4 - 122850*a*b^5*d*e*(d + e*x)^4 + 61425*a^2*b^4*e
^2*(d + e*x)^4 - 20790*b^6*d*(d + e*x)^5 + 20790*a*b^5*e*(d + e*x)^5 + 3003
*b^6*(d + e*x)^6))/(45045*e^6*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 447, normalized size = 1.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*b^6*e^7*x^7 + 1024*b^6*d^7 - 7680*a*b^5*d^6*e + 24960*a^2*b^4
*d^5*e^2 - 45760*a^3*b^3*d^4*e^3 + 51480*a^4*b^2*d^3*e^4 - 36036*a^5*b*d^2*
```

```
e^5 + 15015*a^6*d*e^6 + 231*(b^6*d*e^6 + 90*a*b^5*e^7)*x^6 - 63*(4*b^6*d^2*
e^5 - 30*a*b^5*d*e^6 - 975*a^2*b^4*e^7)*x^5 + 35*(8*b^6*d^3*e^4 - 60*a*b^5*
d^2*e^5 + 195*a^2*b^4*d*e^6 + 2860*a^3*b^3*e^7)*x^4 - 5*(64*b^6*d^4*e^3 - 4
80*a*b^5*d^3*e^4 + 1560*a^2*b^4*d^2*e^5 - 2860*a^3*b^3*d*e^6 - 19305*a^4*b^
2*e^7)*x^3 + 3*(128*b^6*d^5*e^2 - 960*a*b^5*d^4*e^3 + 3120*a^2*b^4*d^3*e^4
- 5720*a^3*b^3*d^2*e^5 + 6435*a^4*b^2*d*e^6 + 18018*a^5*b*e^7)*x^2 - (512*b
^6*d^6*e - 3840*a*b^5*d^5*e^2 + 12480*a^2*b^4*d^4*e^3 - 22880*a^3*b^3*d^3*e
^4 + 25740*a^4*b^2*d^2*e^5 - 18018*a^5*b*d*e^6 - 15015*a^6*e^7)*x)*sqrt(e*x
 + d)/e^7
```

giac [B] time = 0.27, size = 970, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(90090*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*d*e^(-1)*sgn(b*x
 + a) + 45045*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*
d^2)*a^4*b^2*d*e^(-2)*sgn(b*x + a) + 25740*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^3*d*e^(-3)
*sgn(b*x + a) + 2145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
 + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^4*
d*e^(-4)*sgn(b*x + a) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*a*b^5*d*e^(-5)*sgn(b*x + a) + 15*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*b^6*d*e^(-6)*sgn(b*x + a) + 18018*(3*(x*e + d)^(5/2) - 10
*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b*e^(-1)*sgn(b*x + a) + 1930
5*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*s
qrt(x*e + d)*d^3)*a^4*b^2*e^(-2)*sgn(b*x + a) + 2860*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*a^3*b^3*e^(-3)*sgn(b*x + a) + 975*(63*(x*e + d)^(11
/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2
)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^4*e^(-4)*sg
n(b*x + a) + 90*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
 + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 600
6*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^5*e^(-5)*sgn(b*x + a) +
 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^6*e^(
-6)*sgn(b*x + a) + 45045*sqrt(x*e + d)*a^6*d*sgn(b*x + a) + 15015*((x*e + d
)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 393, normalized size = 1.05

$$\frac{2 (ex+d)^{\frac{3}{2}} \left(3003 b^6 e^6 x^6 + 20790 a b^5 e^6 x^5 - 2772 b^6 d e^5 x^5 + 61425 a^2 b^4 e^6 x^4 - 18900 a b^5 d e^5 x^4 + 2520 b^6 d^2 e^4 x^4 + 100100 a^3 b^3 e^6 x^3 - 54600 a^2 b^4 d e^5 x^3 + 16800 a b^5 d^2 e^4 x^3 - 2240 b^6 d^3 e^3 x^3 + 96525 a^4 b^2 e^6 x^2 - 85800 a^3 b^3 d e^5 x^2 + 46800 a^2 b^4 d^2 e^4 x^2 - 14400 a b^5 d^3 e^3 x^2 + 1920 b^6 d^4 e^2 x^2 + 54054 a^5 b e^6 x - 77220 a^4 b^2 d e^5 x + 68640 a^3 b^3 d^2 e^4 x - 37440 a^2 b^4 d^3 e^3 x + 11520 a b^5 d^4 e^2 x - 1536 b^6 d^5 e x + 15015 a^6 e^6 - 36036 a^5 b d e^5 + 51480 a^4 b^2 d^2 e^4 - 45760 a^3 b^3 d^3 e^3 + 24960 a^2 b^4 d^4 e^2 - 7680 a b^5 d^5 e + 1024 b^6 d^6\right) \left((bx+a)^2\right)^{\frac{5}{2}}}{45045 (bx+a)^5 e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3003*b^6*e^6*x^6+20790*a*b^5*e^6*x^5-2772*b^6*d*e^5*
x^5+61425*a^2*b^4*e^6*x^4-18900*a*b^5*d*e^5*x^4+2520*b^6*d^2*e^4*x^4+100100
*a^3*b^3*e^6*x^3-54600*a^2*b^4*d*e^5*x^3+16800*a*b^5*d^2*e^4*x^3-2240*b^6*d
^3*e^3*x^3+96525*a^4*b^2*e^6*x^2-85800*a^3*b^3*d*e^5*x^2+46800*a^2*b^4*d^2*
e^4*x^2-14400*a*b^5*d^3*e^3*x^2+1920*b^6*d^4*e^2*x^2+54054*a^5*b*e^6*x-7722
0*a^4*b^2*d*e^5*x+68640*a^3*b^3*d^2*e^4*x-37440*a^2*b^4*d^3*e^3*x+11520*a*b
^5*d^4*e^2*x-1536*b^6*d^5*e*x+15015*a^6*e^6-36036*a^5*b*d*e^5+51480*a^4*b^2
```

```
*d^2*e^4-45760*a^3*b^3*d^3*e^3+24960*a^2*b^4*d^4*e^2-7680*a*b^5*d^5*e+1024*
b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.95, size = 760, normalized size = 2.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/9009*(693*b^5*e^6*x^6 - 256*b^5*d^6 + 1664*a*b^4*d^5*e - 4576*a^2*b^3*d^4
*e^2 + 6864*a^3*b^2*d^3*e^3 - 6006*a^4*b*d^2*e^4 + 3003*a^5*d*e^5 + 63*(b^5
*d*e^5 + 65*a*b^4*e^6)*x^5 - 35*(2*b^5*d^2*e^4 - 13*a*b^4*d*e^5 - 286*a^2*b
^3*e^6)*x^4 + 10*(8*b^5*d^3*e^3 - 52*a*b^4*d^2*e^4 + 143*a^2*b^3*d*e^5 + 12
87*a^3*b^2*e^6)*x^3 - 3*(32*b^5*d^4*e^2 - 208*a*b^4*d^3*e^3 + 572*a^2*b^3*d
^2*e^4 - 858*a^3*b^2*d*e^5 - 3003*a^4*b*e^6)*x^2 + (128*b^5*d^5*e - 832*a*b
^4*d^4*e^2 + 2288*a^2*b^3*d^3*e^3 - 3432*a^3*b^2*d^2*e^4 + 3003*a^4*b*d*e^5
 + 3003*a^5*e^6)*x)*sqrt(e*x + d)*a/e^6 + 2/45045*(3003*b^5*e^7*x^7 + 1024*
b^5*d^7 - 6400*a*b^4*d^6*e + 16640*a^2*b^3*d^5*e^2 - 22880*a^3*b^2*d^4*e^3
+ 17160*a^4*b*d^3*e^4 - 6006*a^5*d^2*e^5 + 231*(b^5*d*e^6 + 75*a*b^4*e^7)*x
^6 - 63*(4*b^5*d^2*e^5 - 25*a*b^4*d*e^6 - 650*a^2*b^3*e^7)*x^5 + 70*(4*b^5*
d^3*e^4 - 25*a*b^4*d^2*e^5 + 65*a^2*b^3*d*e^6 + 715*a^3*b^2*e^7)*x^4 - 5*(6
4*b^5*d^4*e^3 - 400*a*b^4*d^3*e^4 + 1040*a^2*b^3*d^2*e^5 - 1430*a^3*b^2*d*e
^6 - 6435*a^4*b*e^7)*x^3 + 3*(128*b^5*d^5*e^2 - 800*a*b^4*d^4*e^3 + 2080*a^
2*b^3*d^3*e^4 - 2860*a^3*b^2*d^2*e^5 + 2145*a^4*b*d*e^6 + 3003*a^5*e^7)*x^2
 - (512*b^5*d^6*e - 3200*a*b^4*d^5*e^2 + 8320*a^2*b^3*d^4*e^3 - 11440*a^3*b
^2*d^3*e^4 + 8580*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*sqrt(e*x + d)*b/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\sqrt{d+ex}\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)*(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1888 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=370

$$\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4}{e^7(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}{e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}}{e^7(a+}$$

Rubi [A] time = 0.14, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^7(a+bx)}+\frac{10b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2}{3e^7(a+bx)}-\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3}{7e^7(a+bx)}+\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4}{e^7(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}{e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^6*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x
)) - (4*b*(b*d - a*e)^5*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7
*(a + b*x)) + (6*b^2*(b*d - a*e)^4*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (10*b^4*(b*d - a*e)^2*(d + e*x)^(9/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) - (12*b^5*(b*d - a*e)*(d
 + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (2*b^6*(
d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{\sqrt{d+ex}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{\sqrt{d+ex}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6\sqrt{d+ex}} - \frac{6b(bd-ae)^5\sqrt{d+ex}}{e^6} + \frac{15b^2(bd-ae)^4(d+ex)^{3/2}}{e^6} - \ldots\right.}{ab+\ldots}$$

$$= \frac{2(bd-ae)^6\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)} - \frac{4b(bd-ae)^5(d+ex)^{3/2}\sqrt{a^2+2a\ldots}}{e^7(a+bx)}$$

Mathematica [A] time = 0.10, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\sqrt{d+ex}\left(-1638b^5(d+ex)^5(bd-ae)+5005b^4(d+ex)^4(bd-ae)^2-8580b^3(d+ex)^3(bd-ae)^3+9009b^2(d+ex)^2(bd-ae)^4-6006b(d+ex)(bd-ae)^5+3003(bd-ae)^6+231b^6(d+ex)^6\right)}{3003e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(3003*(b*d - a*e)^6 - 6006*b*(b*d - a*e)
^5*(d + e*x) + 9009*b^2*(b*d - a*e)^4*(d + e*x)^2 - 8580*b^3*(b*d - a*e)^3*
(d + e*x)^3 + 5005*b^4*(b*d - a*e)^2*(d + e*x)^4 - 1638*b^5*(b*d - a*e)*(d
+ e*x)^5 + 231*b^6*(d + e*x)^6))/(3003*e^7*(a + b*x))
```

IntegrateAlgebraic [A] time = 35.21, size = 466, normalized size = 1.26

$$\frac{2\sqrt{d+ex}\sqrt{\frac{(ae+bex)^2}{e^2}}\left(3003a^6e^6+6006a^5be^5(d+ex)-18018a^5bde^5+45045a^4b^2d^2e^4+9009a^4b^2e^4(d+ex)^2-30030a^4b^2de^4(d+ex)-60060a^3b^3d^3e^3+60060a^3b^3d^2e^3(d+ex)+8580a^3b^3e^3(d+ex)^3-36036a^3b^3de^3(d+ex)^2+45045a^2b^4d^4e^2-60060a^2b^4d^3e^2(d+ex)+54054a^2b^4d^2e^2(d+ex)^2+5005a^2b^4e^2(d+ex)^4-25740a^2b^4de^2(d+ex)^3-18018ab^5d^5e+30030ab^5d^4e(d+ex)-36036ab^5d^3e(d+ex)^2+25740ab^5d^2e(d+ex)^3+1638ab^5e(d+ex)^5-10010ab^5de(d+ex)^4+3003b^6d^6-6006b^6d^5(d+ex)+9009b^6d^4(d+ex)^2-8580b^6d^3(d+ex)^3+5005b^6d^2(d+ex)^4+231b^6(d+ex)^6-1638b^6d(d+ex)^5\right)}{3003e^6(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x
],x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2]*(3003*b^6*d^6 - 18018*a*b^5*d^5*
e + 45045*a^2*b^4*d^4*e^2 - 60060*a^3*b^3*d^3*e^3 + 45045*a^4*b^2*d^2*e^4 -
 18018*a^5*b*d*e^5 + 3003*a^6*e^6 - 6006*b^6*d^5*(d + e*x) + 30030*a*b^5*d^
4*e*(d + e*x) - 60060*a^2*b^4*d^3*e^2*(d + e*x) + 60060*a^3*b^3*d^2*e^3*(d
+ e*x) - 30030*a^4*b^2*d*e^4*(d + e*x) + 6006*a^5*b*e^5*(d + e*x) + 9009*b^
6*d^4*(d + e*x)^2 - 36036*a*b^5*d^3*e*(d + e*x)^2 + 54054*a^2*b^4*d^2*e^2*(
d + e*x)^2 - 36036*a^3*b^3*d*e^3*(d + e*x)^2 + 9009*a^4*b^2*e^4*(d + e*x)^2
 - 8580*b^6*d^3*(d + e*x)^3 + 25740*a*b^5*d^2*e*(d + e*x)^3 - 25740*a^2*b^4
*d*e^2*(d + e*x)^3 + 8580*a^3*b^3*e^3*(d + e*x)^3 + 5005*b^6*d^2*(d + e*x)^
4 - 10010*a*b^5*d*e*(d + e*x)^4 + 5005*a^2*b^4*e^2*(d + e*x)^4 - 1638*b^6*d
*(d + e*x)^5 + 1638*a*b^5*e*(d + e*x)^5 + 231*b^6*(d + e*x)^6))/(3003*e^6*(
a*e + b*e*x))
```

fricas [A] time = 0.42, size = 356, normalized size = 0.96

$$\frac{2\left(231b^6e^6x^6+1024b^6d^6-6656ab^5d^5e+18304a^2b^4d^4e^2-27456a^3b^3d^3e^3+24024a^4b^2d^2e^4-12012a^5bde^5+3003a^6e^6-126\left(2b^6de^5-13ab^5e^6\right)x^5+35\left(8b^6d^2e^4-52ab^5de^5+143a^2b^4e^6\right)x^4-20\left(16b^6d^3e^3-104ab^5d^2e^4+286a^2b^4de^5-429a^3b^3e^6\right)x^3+3\left(128b^6d^4e^2-832ab^5d^3e^3+2288a^2b^4d^2e^4-3432a^3b^3de^5+3003a^4b^2e^6\right)x^2-2\left(256b^6d^5e-1664ab^5d^4e^2+4576a^2b^4d^3e^3-6864a^3b^3d^2e^4+6006a^4b^2de^5-3003a^5be^6\right)x\right)\sqrt{ex+d}}{3003e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/3003*(231*b^6*e^6*x^6 + 1024*b^6*d^6 - 6656*a*b^5*d^5*e + 18304*a^2*b^4*d
^4*e^2 - 27456*a^3*b^3*d^3*e^3 + 24024*a^4*b^2*d^2*e^4 - 12012*a^5*b*d*e^5
```

```
+ 3003*a^6*e^6 - 126*(2*b^6*d*e^5 - 13*a*b^5*e^6)*x^5 + 35*(8*b^6*d^2*e^4 -
 52*a*b^5*d*e^5 + 143*a^2*b^4*e^6)*x^4 - 20*(16*b^6*d^3*e^3 - 104*a*b^5*d^2
*e^4 + 286*a^2*b^4*d*e^5 - 429*a^3*b^3*e^6)*x^3 + 3*(128*b^6*d^4*e^2 - 832*
a*b^5*d^3*e^3 + 2288*a^2*b^4*d^2*e^4 - 3432*a^3*b^3*d*e^5 + 3003*a^4*b^2*e^
6)*x^2 - 2*(256*b^6*d^5*e - 1664*a*b^5*d^4*e^2 + 4576*a^2*b^4*d^3*e^3 - 686
4*a^3*b^3*d^2*e^4 + 6006*a^4*b^2*d*e^5 - 3003*a^5*b*e^6)*x)*sqrt(e*x + d)/e
^7
```

giac [A] time = 0.23, size = 437, normalized size = 1.18

$$\frac{2}{3003}\left(6006\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^5be^{(-1)}\mathrm{sgn}(bx+a)+3003\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^4b^2e^{(-2)}\mathrm{sgn}(bx+a)+1716\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)a^3b^3e^{(-3)}\mathrm{sgn}(bx+a)+143\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)a^2b^4e^{(-4)}\mathrm{sgn}(bx+a)+26\left(63(xe+d)^{\frac{11}{2}}-385(xe+d)^{\frac{9}{2}}d+990(xe+d)^{\frac{7}{2}}d^2-1386(xe+d)^{\frac{5}{2}}d^3+1155(xe+d)^{\frac{3}{2}}d^4-693\sqrt{xe+d}\,d^5\right)ab^5e^{(-5)}\mathrm{sgn}(bx+a)+\left(231(xe+d)^{\frac{13}{2}}-1638(xe+d)^{\frac{11}{2}}d+5005(xe+d)^{\frac{9}{2}}d^2-8580(xe+d)^{\frac{7}{2}}d^3+9009(xe+d)^{\frac{5}{2}}d^4-6006(xe+d)^{\frac{3}{2}}d^5+3003\sqrt{xe+d}\,d^6\right)b^6e^{(-6)}\mathrm{sgn}(bx+a)+3003\sqrt{xe+d}\,a^6\mathrm{sgn}(bx+a)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/3003*(6006*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*e^(-1)*sgn(b*x + a
) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
a^4*b^2*e^(-2)*sgn(b*x + a) + 1716*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*
d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^3*e^(-3)*sgn(b*x +
 a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)
*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^4*e^(-4)*sgn(
b*x + a) + 26*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^
(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(
x*e + d)*d^5)*a*b^5*e^(-5)*sgn(b*x + a) + (231*(x*e + d)^(13/2) - 1638*(x*e
 + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009
*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b
^6*e^(-6)*sgn(b*x + a) + 3003*sqrt(x*e + d)*a^6*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

$$\frac{2\sqrt{ex+d}\,\left(231b^6e^6x^6+1638a\,b^5e^6x^5-252b^6d\,e^5x^5+5005a^2b^4e^6x^4-1820a\,b^5d\,e^5x^4+280b^6d^2e^4x^4+8580a^3b^3e^6x^3-5720a^2b^4d\,e^5x^3+2080a\,b^5d^2e^4x^3-320b^6d^3e^3x^3+9009a^4b^2e^6x^2-10296a^3b^3d\,e^5x^2+6864a^2b^4d^2e^4x^2-2496a\,b^5d^3e^3x^2+384b^6d^4e^2x^2+6006a^5b\,e^6x-12012a^4b^2d\,e^5x+13728a^3b^3d^2e^4x-9152a^2b^4d^3e^3x+3328a\,b^5d^4e^2x-512b^6d^5ex+3003a^6e^6-12012a^5bd\,e^5+24024a^4b^2d^2e^4-27456a^3b^3d^3e^3+18304a^2b^4d^4e^2-6656a\,b^5d^5e+1024b^6d^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{3003\,(bx+a)^5\,e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/3003*(e*x+d)^(1/2)*(231*b^6*e^6*x^6+1638*a*b^5*e^6*x^5-252*b^6*d*e^5*x^5+
5005*a^2*b^4*e^6*x^4-1820*a*b^5*d*e^5*x^4+280*b^6*d^2*e^4*x^4+8580*a^3*b^3*
e^6*x^3-5720*a^2*b^4*d*e^5*x^3+2080*a*b^5*d^2*e^4*x^3-320*b^6*d^3*e^3*x^3+9
009*a^4*b^2*e^6*x^2-10296*a^3*b^3*d*e^5*x^2+6864*a^2*b^4*d^2*e^4*x^2-2496*a
*b^5*d^3*e^3*x^2+384*b^6*d^4*e^2*x^2+6006*a^5*b*e^6*x-12012*a^4*b^2*d*e^5*x
+13728*a^3*b^3*d^2*e^4*x-9152*a^2*b^4*d^3*e^3*x+3328*a*b^5*d^4*e^2*x-512*b^
6*d^5*e*x+3003*a^6*e^6-12012*a^5*b*d*e^5+24024*a^4*b^2*d^2*e^4-27456*a^3*b^
3*d^3*e^3+18304*a^2*b^4*d^4*e^2-6656*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^
(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.70, size = 758, normalized size = 2.05

$$\frac{2\left(63b^5e^6x^6-256b^5d^6+1408ab^4d^5e-3168a^2b^3d^4e^2+3696a^3b^2d^3e^3-2310a^4bd^2e^4+693a^5de^5-7\left(b^5de^5-55ab^4e^6\right)x^5+5\left(2b^5d^2e^4-11ab^4de^5+198a^2b^3e^6\right)x^4-2\left(8b^5d^3e^3-44ab^4d^2e^4+99a^2b^3de^5-693a^3b^2e^6\right)x^3+\left(32b^5d^4e^2-176ab^4d^3e^3+396a^2b^3d^2e^4-462a^3b^2de^5+1155a^4be^6\right)x^2-\left(128b^5d^5e-704ab^4d^4e^2+1584a^2b^3d^3e^3-1848a^3b^2d^2e^4+1155a^4bde^5-693a^5e^6\right)x\right)a}{693\sqrt{ex+d}\,e^6}+\frac{2\left(693b^5e^7x^7+3072b^5d^7-16640ab^4d^6e+36608a^2b^3d^5e^2-41184a^3b^2d^4e^3+24024a^4bd^3e^4-6006a^5d^2e^5-63\left(b^5de^6-65ab^4e^7\right)x^6+7\left(12b^5d^2e^5-65ab^4de^6+1430a^2b^3e^7\right)x^5-10\left(12b^5d^3e^4-65ab^4d^2e^5+143a^2b^3de^6-1287a^3b^2e^7\right)x^4+\left(192b^5d^4e^3-1040ab^4d^3e^4+2288a^2b^3d^2e^5-2574a^3b^2de^6+9009a^4be^7\right)x^3-\left(384b^5d^5e^2-2080ab^4d^4e^3+4576a^2b^3d^3e^4-5148a^3b^2d^2e^5+3003a^4bde^6-3003a^5e^7\right)x^2+\left(1536b^5d^6e-8320ab^4d^5e^2+18304a^2b^3d^4e^3-20592a^3b^2d^3e^4+12012a^4bd^2e^5-3003a^5de^6\right)x\right)b}{9009\sqrt{ex+d}\,e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/693*(63*b^5*e^6*x^6 - 256*b^5*d^6 + 1408*a*b^4*d^5*e - 3168*a^2*b^3*d^4*e
^2 + 3696*a^3*b^2*d^3*e^3 - 2310*a^4*b*d^2*e^4 + 693*a^5*d*e^5 - 7*(b^5*d*e
^5 - 55*a*b^4*e^6)*x^5 + 5*(2*b^5*d^2*e^4 - 11*a*b^4*d*e^5 + 198*a^2*b^3*e^
6)*x^4 - 2*(8*b^5*d^3*e^3 - 44*a*b^4*d^2*e^4 + 99*a^2*b^3*d*e^5 - 693*a^3*b
^2*e^6)*x^3 + (32*b^5*d^4*e^2 - 176*a*b^4*d^3*e^3 + 396*a^2*b^3*d^2*e^4 - 4
```

```
62*a^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (128*b^5*d^5*e - 704*a*b^4*d^4*e^2
 + 1584*a^2*b^3*d^3*e^3 - 1848*a^3*b^2*d^2*e^4 + 1155*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*a/(sqrt(e*x + d)*e^6) + 2/9009*(693*b^5*e^7*x^7 + 3072*b^5*d^7 - 1
6640*a*b^4*d^6*e + 36608*a^2*b^3*d^5*e^2 - 41184*a^3*b^2*d^4*e^3 + 24024*a^
4*b*d^3*e^4 - 6006*a^5*d^2*e^5 - 63*(b^5*d*e^6 - 65*a*b^4*e^7)*x^6 + 7*(12*
b^5*d^2*e^5 - 65*a*b^4*d*e^6 + 1430*a^2*b^3*e^7)*x^5 - 10*(12*b^5*d^3*e^4 -
 65*a*b^4*d^2*e^5 + 143*a^2*b^3*d*e^6 - 1287*a^3*b^2*e^7)*x^4 + (192*b^5*d^
4*e^3 - 1040*a*b^4*d^3*e^4 + 2288*a^2*b^3*d^2*e^5 - 2574*a^3*b^2*d*e^6 + 90
09*a^4*b*e^7)*x^3 - (384*b^5*d^5*e^2 - 2080*a*b^4*d^4*e^3 + 4576*a^2*b^3*d^
3*e^4 - 5148*a^3*b^2*d^2*e^5 + 3003*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (1536
*b^5*d^6*e - 8320*a*b^4*d^5*e^2 + 18304*a^2*b^3*d^4*e^3 - 20592*a^3*b^2*d^3
*e^4 + 12012*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*b/(sqrt(e*x + d)*e^7)
```

mupad [B] time = 2.78, size = 491, normalized size = 1.33

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^7}{13}+\frac{6006\,a^6\,d\,e^6-24024\,a^5\,b\,d^2\,e^5+48048\,a^4\,b^2\,d^3\,e^4-54912\,a^3\,b^3\,d^4\,e^3+36608\,a^2\,b^4\,d^5\,e^2-13312\,a\,b^5\,d^6\,e+2048\,b^6\,d^7}{3003\,b\,e^7}+\frac{10\,b^2\,x^4\,\left(1716\,a^3\,e^3-143\,a^2\,b\,d\,e^2+52\,a\,b^2\,d^2\,e-8\,b^3\,d^3\right)}{3003\,e^3}+\frac{2\,b^4\,x^6\,\left(78\,a\,e-b\,d\right)}{143\,e}+\frac{2\,b^3\,x^5\,\left(715\,a^2\,e^2-26\,a\,b\,d\,e+4\,b^2\,d^2\right)}{429\,e^2}+\frac{x\,\left(6006\,a^6\,e^7-12012\,a^5\,b\,d\,e^6+24024\,a^4\,b^2\,d^2\,e^5-27456\,a^3\,b^3\,d^3\,e^4+18304\,a^2\,b^4\,d^4\,e^3-6656\,a\,b^5\,d^5\,e^2+1024\,b^6\,d^6\,e\right)}{3003\,b\,e^7}+\frac{x^3\,\left(18018\,a^4\,b^2\,e^7-3432\,a^3\,b^3\,d\,e^6+2288\,a^2\,b^4\,d^2\,e^5-832\,a\,b^5\,d^3\,e^4+128\,b^6\,d^4\,e^3\right)}{3003\,b\,e^7}+\frac{x^2\,\left(12012\,a^5\,b\,e^7-6006\,a^4\,b^2\,d\,e^6+6864\,a^3\,b^3\,d^2\,e^5-4576\,a^2\,b^4\,d^3\,e^4+1664\,a\,b^5\,d^4\,e^3-256\,b^6\,d^5\,e^2\right)}{3003\,b\,e^7}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^7)/13 + (2048*b^6*d^7 + 6006*a^6
*d*e^6 - 24024*a^5*b*d^2*e^5 + 36608*a^2*b^4*d^5*e^2 - 54912*a^3*b^3*d^4*e^
3 + 48048*a^4*b^2*d^3*e^4 - 13312*a*b^5*d^6*e)/(3003*b*e^7) + (10*b^2*x^4*(
1716*a^3*e^3 - 8*b^3*d^3 + 52*a*b^2*d^2*e - 143*a^2*b*d*e^2))/(3003*e^3) +
(2*b^4*x^6*(78*a*e - b*d))/(143*e) + (2*b^3*x^5*(715*a^2*e^2 + 4*b^2*d^2 -
26*a*b*d*e))/(429*e^2) + (x*(6006*a^6*e^7 + 1024*b^6*d^6*e - 6656*a*b^5*d^5
*e^2 + 18304*a^2*b^4*d^4*e^3 - 27456*a^3*b^3*d^3*e^4 + 24024*a^4*b^2*d^2*e^
5 - 12012*a^5*b*d*e^6))/(3003*b*e^7) + (x^3*(18018*a^4*b^2*e^7 + 128*b^6*d^
4*e^3 - 832*a*b^5*d^3*e^4 - 3432*a^3*b^3*d*e^6 + 2288*a^2*b^4*d^2*e^5))/(30
03*b*e^7) + (x^2*(12012*a^5*b*e^7 - 256*b^6*d^5*e^2 + 1664*a*b^5*d^4*e^3 -
6006*a^4*b^2*d*e^6 - 4576*a^2*b^4*d^3*e^4 + 6864*a^3*b^3*d^2*e^5))/(3003*b*
e^7)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1889 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=368

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}{e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}{e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d-}}$$

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^7(a+bx)}-\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{3e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2}{7e^7(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}{e^7(a+bx)}+\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}{e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}{e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{e^7(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*
x]) - (12*b*(b*d - a*e)^5*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7
*(a + b*x)) + (10*b^2*(b*d - a*e)^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(e^7*(a + b*x)) - (8*b^3*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (30*b^4*(b*d - a*e)^2*(d + e*x)^(7/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) - (4*b^5*(b*d - a*e)*(d +
e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (2*b^6*(d + e
*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{3/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{3/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{3/2}} - \frac{6b(bd-ae)^5}{e^6\sqrt{d+ex}} + \frac{15b^2(bd-ae)^4\sqrt{d+ex}}{e^6} - \frac{20b^3(b\cdots}{\cdots}\right.}{ab+b^2\cdots}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}} - \frac{12b(bd-ae)^5\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2\cdots}}{e^7(a+bx)}$$

Mathematica [A] time = 0.14, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-154b^5(d+ex)^5(bd-ae)+495b^4(d+ex)^4(bd-ae)^2-924b^3(d+ex)^3(bd-ae)^3+1155b^2(d+ex)^2(bd-ae)^4-1386b(d+ex)(bd-ae)^5-231(bd-ae)^6+21b^6(d+ex)^6\right)}{231e^7(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-231*(b*d - a*e)^6 - 1386*b*(b*d - a*e)^5*(d + e*x) +
 1155*b^2*(b*d - a*e)^4*(d + e*x)^2 - 924*b^3*(b*d - a*e)^3*(d + e*x)^3 + 4
95*b^4*(b*d - a*e)^2*(d + e*x)^4 - 154*b^5*(b*d - a*e)*(d + e*x)^5 + 21*b^6
*(d + e*x)^6))/(231*e^7*(a + b*x)*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 22.29, size = 466, normalized size = 1.27

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-231a^6e^6+1386a^5be^5(d+ex)+1386a^5bde^5-3465a^4b^2d^2e^4+1155a^4b^2e^4(d+ex)^2-6930a^4b^2de^4(d+ex)+4620a^3b^3d^3e^3+13860a^3b^3d^2e^3(d+ex)+924a^3b^3e^3(d+ex)^3-4620a^3b^3de^3(d+ex)^2-3465a^2b^4d^4e^2-13860a^2b^4d^3e^2(d+ex)+6930a^2b^4d^2e^2(d+ex)^2+495a^2b^4e^2(d+ex)^4-2772a^2b^4de^2(d+ex)^3+1386ab^5d^5e+6930ab^5d^4e(d+ex)-4620ab^5d^3e(d+ex)^2+2772ab^5d^2e(d+ex)^3+154ab^5e(d+ex)^5-990ab^5de(d+ex)^4-231b^6d^6-1386b^6d^5(d+ex)+1155b^6d^4(d+ex)^2-924b^6d^3(d+ex)^3+495b^6d^2(d+ex)^4+21b^6(d+ex)^6-154b^6d(d+ex)^5\right)}{231e^6\sqrt{d+ex}\,(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-231*b^6*d^6 + 1386*a*b^5*d^5*e - 3465*a^2*b^
4*d^4*e^2 + 4620*a^3*b^3*d^3*e^3 - 3465*a^4*b^2*d^2*e^4 + 1386*a^5*b*d*e^5
- 231*a^6*e^6 - 1386*b^6*d^5*(d + e*x) + 6930*a*b^5*d^4*e*(d + e*x) - 13860
*a^2*b^4*d^3*e^2*(d + e*x) + 13860*a^3*b^3*d^2*e^3*(d + e*x) - 6930*a^4*b^2
*d*e^4*(d + e*x) + 1386*a^5*b*e^5*(d + e*x) + 1155*b^6*d^4*(d + e*x)^2 - 46
20*a*b^5*d^3*e*(d + e*x)^2 + 6930*a^2*b^4*d^2*e^2*(d + e*x)^2 - 4620*a^3*b^
3*d*e^3*(d + e*x)^2 + 1155*a^4*b^2*e^4*(d + e*x)^2 - 924*b^6*d^3*(d + e*x)^
3 + 2772*a*b^5*d^2*e*(d + e*x)^3 - 2772*a^2*b^4*d*e^2*(d + e*x)^3 + 924*a^3
*b^3*e^3*(d + e*x)^3 + 495*b^6*d^2*(d + e*x)^4 - 990*a*b^5*d*e*(d + e*x)^4
+ 495*a^2*b^4*e^2*(d + e*x)^4 - 154*b^6*d*(d + e*x)^5 + 154*a*b^5*e*(d + e*
x)^5 + 21*b^6*(d + e*x)^6))/(231*e^6*Sqrt[d + e*x]*(a*e + b*e*x))
```

fricas [A] time = 0.41, size = 365, normalized size = 0.99

$$\frac{2\left(21b^6e^6x^6-1024b^6d^6+5632ab^5d^5e-12672a^2b^4d^4e^2+14784a^3b^3d^3e^3-9240a^4b^2d^2e^4+2772a^5bde^5-231a^6e^6-14\left(2b^6de^5-11ab^5e^6\right)x^5+5\left(8b^6d^2e^4-44ab^5de^5+99a^2b^4e^6\right)x^4-4\left(16b^6d^3e^3-88ab^5d^2e^4+198a^2b^4de^5-231a^3b^3e^6\right)x^3+\left(128b^6d^4e^2-704ab^5d^3e^3+1584a^2b^4d^2e^4-1848a^3b^3de^5+1155a^4b^2e^6\right)x^2-2\left(256b^6d^5e-1408ab^5d^4e^2+3168a^2b^4d^3e^3-3696a^3b^3d^2e^4+2310a^4b^2de^5-693a^5be^6\right)x\right)\sqrt{ex+d}}{231\left(e^8x+de^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/231*(21*b^6*e^6*x^6 - 1024*b^6*d^6 + 5632*a*b^5*d^5*e - 12672*a^2*b^4*d^4
*e^2 + 14784*a^3*b^3*d^3*e^3 - 9240*a^4*b^2*d^2*e^4 + 2772*a^5*b*d*e^5 - 23
```

```
1*a^6*e^6 - 14*(2*b^6*d*e^5 - 11*a*b^5*e^6)*x^5 + 5*(8*b^6*d^2*e^4 - 44*a*b
^5*d*e^5 + 99*a^2*b^4*e^6)*x^4 - 4*(16*b^6*d^3*e^3 - 88*a*b^5*d^2*e^4 + 198
*a^2*b^4*d*e^5 - 231*a^3*b^3*e^6)*x^3 + (128*b^6*d^4*e^2 - 704*a*b^5*d^3*e^
3 + 1584*a^2*b^4*d^2*e^4 - 1848*a^3*b^3*d*e^5 + 1155*a^4*b^2*e^6)*x^2 - 2*(
256*b^6*d^5*e - 1408*a*b^5*d^4*e^2 + 3168*a^2*b^4*d^3*e^3 - 3696*a^3*b^3*d^
2*e^4 + 2310*a^4*b^2*d*e^5 - 693*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^8*x + d*e^7
)
```

giac [B] time = 0.28, size = 642, normalized size = 1.74

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/231*(21*(x*e + d)^(11/2)*b^6*e^70*sgn(b*x + a) - 154*(x*e + d)^(9/2)*b^6*
d*e^70*sgn(b*x + a) + 495*(x*e + d)^(7/2)*b^6*d^2*e^70*sgn(b*x + a) - 924*(
x*e + d)^(5/2)*b^6*d^3*e^70*sgn(b*x + a) + 1155*(x*e + d)^(3/2)*b^6*d^4*e^7
0*sgn(b*x + a) - 1386*sqrt(x*e + d)*b^6*d^5*e^70*sgn(b*x + a) + 154*(x*e +
d)^(9/2)*a*b^5*e^71*sgn(b*x + a) - 990*(x*e + d)^(7/2)*a*b^5*d*e^71*sgn(b*x
 + a) + 2772*(x*e + d)^(5/2)*a*b^5*d^2*e^71*sgn(b*x + a) - 4620*(x*e + d)^(
3/2)*a*b^5*d^3*e^71*sgn(b*x + a) + 6930*sqrt(x*e + d)*a*b^5*d^4*e^71*sgn(b*
x + a) + 495*(x*e + d)^(7/2)*a^2*b^4*e^72*sgn(b*x + a) - 2772*(x*e + d)^(5/
2)*a^2*b^4*d*e^72*sgn(b*x + a) + 6930*(x*e + d)^(3/2)*a^2*b^4*d^2*e^72*sgn(
b*x + a) - 13860*sqrt(x*e + d)*a^2*b^4*d^3*e^72*sgn(b*x + a) + 924*(x*e + d
)^(5/2)*a^3*b^3*e^73*sgn(b*x + a) - 4620*(x*e + d)^(3/2)*a^3*b^3*d*e^73*sgn
(b*x + a) + 13860*sqrt(x*e + d)*a^3*b^3*d^2*e^73*sgn(b*x + a) + 1155*(x*e +
 d)^(3/2)*a^4*b^2*e^74*sgn(b*x + a) - 6930*sqrt(x*e + d)*a^4*b^2*d*e^74*sgn
(b*x + a) + 1386*sqrt(x*e + d)*a^5*b*e^75*sgn(b*x + a))*e^(-77) - 2*(b^6*d^
6*sgn(b*x + a) - 6*a*b^5*d^5*e*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn(b*x +
a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x + a) - 6*
a^5*b*d*e^5*sgn(b*x + a) + a^6*e^6*sgn(b*x + a))*e^(-7)/sqrt(x*e + d)
```

maple [A] time = 0.06, size = 393, normalized size = 1.07

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/231/(e*x+d)^(1/2)*(-21*b^6*e^6*x^6-154*a*b^5*e^6*x^5+28*b^6*d*e^5*x^5-49
5*a^2*b^4*e^6*x^4+220*a*b^5*d*e^5*x^4-40*b^6*d^2*e^4*x^4-924*a^3*b^3*e^6*x^
3+792*a^2*b^4*d*e^5*x^3-352*a*b^5*d^2*e^4*x^3+64*b^6*d^3*e^3*x^3-1155*a^4*b
^2*e^6*x^2+1848*a^3*b^3*d*e^5*x^2-1584*a^2*b^4*d^2*e^4*x^2+704*a*b^5*d^3*e^
3*x^2-128*b^6*d^4*e^2*x^2-1386*a^5*b*e^6*x+4620*a^4*b^2*d*e^5*x-7392*a^3*b^
3*d^2*e^4*x+6336*a^2*b^4*d^3*e^3*x-2816*a*b^5*d^4*e^2*x+512*b^6*d^5*e*x+231
*a^6*e^6-2772*a^5*b*d*e^5+9240*a^4*b^2*d^2*e^4-14784*a^3*b^3*d^3*e^3+12672*
a^2*b^4*d^4*e^2-5632*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a
)^5
```

maxima [B] time = 0.63, size = 603, normalized size = 1.64

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

[Out] 2/63*(7*b^5*e^5*x^5 + 256*b^5*d^5 - 1152*a*b^4*d^4*e + 2016*a^2*b^3*d^3*e^2 - 1680*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 - 63*a^5*e^5 - 5*(2*b^5*d*e^4 - 9*a*b^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 36*a*b^4*d*e^4 + 63*a^2*b^3*e^5)*x^3 - 2*(16*b^5*d^3*e^2 - 72*a*b^4*d^2*e^3 + 126*a^2*b^3*d*e^4 - 105*a^3*b^2*e^5)*x^2 + (128*b^5*d^4*e - 576*a*b^4*d^3*e^2 + 1008*a^2*b^3*d^2*e^3 - 840*a^3*b^2*d*e^4 + 315*a^4*b*e^5)*x)*a/(sqrt(e*x + d)*e^6) + 2/693*(63*b^5*e^6*x^6 - 3072*b^5*d^6 + 14080*a*b^4*d^5*e - 25344*a^2*b^3*d^4*e^2 + 22176*a^3*b^2*d^3*e^3 - 9240*a^4*b*d^2*e^4 + 1386*a^5*d*e^5 - 7*(12*b^5*d*e^5 - 55*a*b^4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 55*a*b^4*d*e^5 + 99*a^2*b^3*e^6)*x^4 - 2*(96*b^5*d^3*e^3 - 440*a*b^4*d^2*e^4 + 792*a^2*b^3*d*e^5 - 693*a^3*b^2*e^6)*x^3 + (384*b^5*d^4*e^2 - 1760*a*b^4*d^3*e^3 + 3168*a^2*b^3*d^2*e^4 - 2772*a^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (1536*b^5*d^5*e - 7040*a*b^4*d^4*e^2 + 12672*a^2*b^3*d^3*e^3 - 11088*a^3*b^2*d^2*e^4 + 4620*a^4*b*d*e^5 - 693*a^5*e^6)*x)*b/(sqrt(e*x + d)*e^7)

mupad [B] time = 3.09, size = 396, normalized size = 1.08

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^6}{11\,e}-\frac{462\,a^6\,e^6-5544\,a^5\,b\,d\,e^5+18480\,a^4\,b^2\,d^2\,e^4-29568\,a^3\,b^3\,d^3\,e^3+25344\,a^2\,b^4\,d^4\,e^2-11264\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{231\,b\,e^7}+\frac{x\,\left(2772\,a^5\,b\,e^6-9240\,a^4\,b^2\,d\,e^5+14784\,a^3\,b^3\,d^2\,e^4-12672\,a^2\,b^4\,d^3\,e^3+5632\,a\,b^5\,d^4\,e^2-1024\,b^6\,d^5\,e\right)}{231\,b\,e^7}+\frac{8\,b^2\,x^3\,\left(231\,a^3\,e^3-198\,a^2\,b\,d\,e^2+88\,a\,b^2\,d^2\,e-16\,b^3\,d^3\right)}{231\,e^4}+\frac{4\,b^4\,x^5\,\left(11\,a\,e-2\,b\,d\right)}{33\,e^2}+\frac{10\,b^3\,x^4\,\left(99\,a^2\,e^2-44\,a\,b\,d\,e+8\,b^2\,d^2\right)}{231\,e^3}+\frac{x^2\,\left(2310\,a^4\,b^2\,e^6-3696\,a^3\,b^3\,d\,e^5+3168\,a^2\,b^4\,d^2\,e^4-1408\,a\,b^5\,d^3\,e^3+256\,b^6\,d^4\,e^2\right)}{231\,b\,e^7}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(3/2),x)

[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^6)/(11*e) - (462*a^6*e^6 + 2048*b^6*d^6 + 25344*a^2*b^4*d^4*e^2 - 29568*a^3*b^3*d^3*e^3 + 18480*a^4*b^2*d^2*e^4 - 11264*a*b^5*d^5*e - 5544*a^5*b*d*e^5)/(231*b*e^7) + (x*(2772*a^5*b*e^6 - 1024*b^6*d^5*e + 5632*a*b^5*d^4*e^2 - 9240*a^4*b^2*d*e^5 - 12672*a^2*b^4*d^3*e^3 + 14784*a^3*b^3*d^2*e^4))/(231*b*e^7) + (8*b^2*x^3*(231*a^3*e^3 - 16*b^3*d^3 + 88*a*b^2*d^2*e - 198*a^2*b*d*e^2))/(231*e^4) + (4*b^4*x^5*(11*a*e - 2*b*d))/(33*e^2) + (10*b^3*x^4*(99*a^2*e^2 + 8*b^2*d^2 - 44*a*b*d*e))/(231*e^3) + (x^2*(2310*a^4*b^2*e^6 + 256*b^6*d^4*e^2 - 1408*a*b^5*d^3*e^3 - 3696*a^3*b^3*d*e^5 + 3168*a^2*b^4*d^2*e^4))/(231*b*e^7)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(3/2),x)

[Out] Timed out

3.1890 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=370

$$\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}{e^7(a+bx)}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{3e^7(a+bx)(d+ex)^{3/2}}$$

Rubi [A] time = 0.14, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^7(a+bx)}+\frac{6b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}{e^7(a+bx)}-\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}{3e^7(a+bx)}+\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}{e^7(a+bx)}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{3e^7(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)
^(3/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)
*Sqrt[d + e*x]) + (30*b^2*(b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (6*b^4*(b*d - a*e)^2*(d + e*x)^(5
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (12*b^5*(b*d - a*e)*(d
 + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (2*b^6*(d
+ e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{5/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{5/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{5/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{3/2}} + \frac{15b^2(bd-ae)^4}{e^6\sqrt{d+ex}} - \frac{20b^3(bd-ae)^3}{e^6}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{3/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}} + 30$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-54b^5(d+ex)^5(bd-ae)+189b^4(d+ex)^4(bd-ae)^2-420b^3(d+ex)^3(bd-ae)^3+945b^2(d+ex)^2(bd-ae)^4+378b(d+ex)(bd-ae)^5-21(bd-ae)^6+7b^6(d+ex)^6\right)}{63e^7(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^6 + 378*b*(b*d - a*e)^5*(d + e*x) + 9
45*b^2*(b*d - a*e)^4*(d + e*x)^2 - 420*b^3*(b*d - a*e)^3*(d + e*x)^3 + 189*
b^4*(b*d - a*e)^2*(d + e*x)^4 - 54*b^5*(b*d - a*e)*(d + e*x)^5 + 7*b^6*(d +
 e*x)^6))/(63*e^7*(a + b*x)*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 25.51, size = 466, normalized size = 1.26

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-21a^6e^6-378a^5be^5(d+ex)+126a^5bde^5-315a^4b^2d^2e^4+945a^4b^2e^4(d+ex)^2+1890a^4b^2de^4(d+ex)+420a^3b^3d^3e^3-3780a^3b^3d^2e^3(d+ex)+420a^3b^3e^3(d+ex)^3-3780a^3b^3de^3(d+ex)^2-315a^2b^4d^4e^2+3780a^2b^4d^3e^2(d+ex)+5670a^2b^4d^2e^2(d+ex)^2+189a^2b^4e^2(d+ex)^4-1260a^2b^4de^2(d+ex)^3+126ab^5d^5e-1890ab^5d^4e(d+ex)-3780ab^5d^3e(d+ex)^2+1260ab^5d^2e(d+ex)^3+54ab^5e(d+ex)^5-378ab^5de(d+ex)^4-21b^6d^6+378b^6d^5(d+ex)+945b^6d^4(d+ex)^2-420b^6d^3(d+ex)^3+189b^6d^2(d+ex)^4+7b^6(d+ex)^6-54b^6d(d+ex)^5\right)}{63e^6(d+ex)^{3/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-21*b^6*d^6 + 126*a*b^5*d^5*e - 315*a^2*b^4*d
^4*e^2 + 420*a^3*b^3*d^3*e^3 - 315*a^4*b^2*d^2*e^4 + 126*a^5*b*d*e^5 - 21*a
^6*e^6 + 378*b^6*d^5*(d + e*x) - 1890*a*b^5*d^4*e*(d + e*x) + 3780*a^2*b^4*
d^3*e^2*(d + e*x) - 3780*a^3*b^3*d^2*e^3*(d + e*x) + 1890*a^4*b^2*d*e^4*(d
+ e*x) - 378*a^5*b*e^5*(d + e*x) + 945*b^6*d^4*(d + e*x)^2 - 3780*a*b^5*d^3
*e*(d + e*x)^2 + 5670*a^2*b^4*d^2*e^2*(d + e*x)^2 - 3780*a^3*b^3*d*e^3*(d +
 e*x)^2 + 945*a^4*b^2*e^4*(d + e*x)^2 - 420*b^6*d^3*(d + e*x)^3 + 1260*a*b^
5*d^2*e*(d + e*x)^3 - 1260*a^2*b^4*d*e^2*(d + e*x)^3 + 420*a^3*b^3*e^3*(d +
 e*x)^3 + 189*b^6*d^2*(d + e*x)^4 - 378*a*b^5*d*e*(d + e*x)^4 + 189*a^2*b^4
*e^2*(d + e*x)^4 - 54*b^6*d*(d + e*x)^5 + 54*a*b^5*e*(d + e*x)^5 + 7*b^6*(d
 + e*x)^6))/(63*e^6*(d + e*x)^(3/2)*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 377, normalized size = 1.02

$$\frac{2\left(7b^6e^6x^6+1024b^6d^6-4608ab^5d^5e+8064a^2b^4d^4e^2-6720a^3b^3d^3e^3+2520a^4b^2d^2e^4-252a^5bde^5-21a^6e^6-6\left(2b^6de^5-9ab^5e^6\right)x^5+3\left(8b^6d^2e^4-36ab^5de^5+63a^2b^4e^6\right)x^4-4\left(16b^6d^3e^3-72ab^5d^2e^4+126a^2b^4de^5-105a^3b^3e^6\right)x^3+3\left(128b^6d^4e^2-576ab^5d^3e^3+1008a^2b^4d^2e^4-840a^3b^3de^5+315a^4b^2e^6\right)x^2+6\left(256b^6d^5e-1152ab^5d^4e^2+2016a^2b^4d^3e^3-1680a^3b^3d^2e^4+630a^4b^2de^5-63a^5be^6\right)x\right)\sqrt{ex+d}}{63\left(e^9x^2+2de^8x+d^2e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/63*(7*b^6*e^6*x^6 + 1024*b^6*d^6 - 4608*a*b^5*d^5*e + 8064*a^2*b^4*d^4*e^
2 - 6720*a^3*b^3*d^3*e^3 + 2520*a^4*b^2*d^2*e^4 - 252*a^5*b*d*e^5 - 21*a^6*
```

```
e^6 - 6*(2*b^6*d*e^5 - 9*a*b^5*e^6)*x^5 + 3*(8*b^6*d^2*e^4 - 36*a*b^5*d*e^5
 + 63*a^2*b^4*e^6)*x^4 - 4*(16*b^6*d^3*e^3 - 72*a*b^5*d^2*e^4 + 126*a^2*b^4
*d*e^5 - 105*a^3*b^3*e^6)*x^3 + 3*(128*b^6*d^4*e^2 - 576*a*b^5*d^3*e^3 + 10
08*a^2*b^4*d^2*e^4 - 840*a^3*b^3*d*e^5 + 315*a^4*b^2*e^6)*x^2 + 6*(256*b^6*
d^5*e - 1152*a*b^5*d^4*e^2 + 2016*a^2*b^4*d^3*e^3 - 1680*a^3*b^3*d^2*e^4 +
630*a^4*b^2*d*e^5 - 63*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^9*x^2 + 2*d*e^8*x + d
^2*e^7)
```

giac [B] time = 0.28, size = 630, normalized size = 1.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/63*(7*(x*e + d)^(9/2)*b^6*e^56*sgn(b*x + a) - 54*(x*e + d)^(7/2)*b^6*d*e^
56*sgn(b*x + a) + 189*(x*e + d)^(5/2)*b^6*d^2*e^56*sgn(b*x + a) - 420*(x*e
+ d)^(3/2)*b^6*d^3*e^56*sgn(b*x + a) + 945*sqrt(x*e + d)*b^6*d^4*e^56*sgn(b
*x + a) + 54*(x*e + d)^(7/2)*a*b^5*e^57*sgn(b*x + a) - 378*(x*e + d)^(5/2)*
a*b^5*d*e^57*sgn(b*x + a) + 1260*(x*e + d)^(3/2)*a*b^5*d^2*e^57*sgn(b*x + a
) - 3780*sqrt(x*e + d)*a*b^5*d^3*e^57*sgn(b*x + a) + 189*(x*e + d)^(5/2)*a^
2*b^4*e^58*sgn(b*x + a) - 1260*(x*e + d)^(3/2)*a^2*b^4*d*e^58*sgn(b*x + a)
+ 5670*sqrt(x*e + d)*a^2*b^4*d^2*e^58*sgn(b*x + a) + 420*(x*e + d)^(3/2)*a^
3*b^3*e^59*sgn(b*x + a) - 3780*sqrt(x*e + d)*a^3*b^3*d*e^59*sgn(b*x + a) +
945*sqrt(x*e + d)*a^4*b^2*e^60*sgn(b*x + a))*e^(-63) + 2/3*(18*(x*e + d)*b^
6*d^5*sgn(b*x + a) - b^6*d^6*sgn(b*x + a) - 90*(x*e + d)*a*b^5*d^4*e*sgn(b*
x + a) + 6*a*b^5*d^5*e*sgn(b*x + a) + 180*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x
 + a) - 15*a^2*b^4*d^4*e^2*sgn(b*x + a) - 180*(x*e + d)*a^3*b^3*d^2*e^3*sgn
(b*x + a) + 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 90*(x*e + d)*a^4*b^2*d*e^4*sg
n(b*x + a) - 15*a^4*b^2*d^2*e^4*sgn(b*x + a) - 18*(x*e + d)*a^5*b*e^5*sgn(b
*x + a) + 6*a^5*b*d*e^5*sgn(b*x + a) - a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e +
d)^(3/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/63/(e*x+d)^(3/2)*(-7*b^6*e^6*x^6-54*a*b^5*e^6*x^5+12*b^6*d*e^5*x^5-189*a
^2*b^4*e^6*x^4+108*a*b^5*d*e^5*x^4-24*b^6*d^2*e^4*x^4-420*a^3*b^3*e^6*x^3+5
04*a^2*b^4*d*e^5*x^3-288*a*b^5*d^2*e^4*x^3+64*b^6*d^3*e^3*x^3-945*a^4*b^2*e
^6*x^2+2520*a^3*b^3*d*e^5*x^2-3024*a^2*b^4*d^2*e^4*x^2+1728*a*b^5*d^3*e^3*x
^2-384*b^6*d^4*e^2*x^2+378*a^5*b*e^6*x-3780*a^4*b^2*d*e^5*x+10080*a^3*b^3*d
^2*e^4*x-12096*a^2*b^4*d^3*e^3*x+6912*a*b^5*d^4*e^2*x-1536*b^6*d^5*e*x+21*a
^6*e^6+252*a^5*b*d*e^5-2520*a^4*b^2*d^2*e^4+6720*a^3*b^3*d^3*e^3-8064*a^2*b
^4*d^4*e^2+4608*a*b^5*d^5*e-1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.88, size = 625, normalized size = 1.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/21*(3*b^5*e^5*x^5 - 256*b^5*d^5 + 896*a*b^4*d^4*e - 1120*a^2*b^3*d^3*e^2
+ 560*a^3*b^2*d^2*e^3 - 70*a^4*b*d*e^4 - 7*a^5*e^5 - 3*(2*b^5*d*e^4 - 7*a*b
```

```
^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 28*a*b^4*d*e^4 + 35*a^2*b^3*e^5)*x^3 - 6*(
16*b^5*d^3*e^2 - 56*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 - 35*a^3*b^2*e^5)*x^2
- 3*(128*b^5*d^4*e - 448*a*b^4*d^3*e^2 + 560*a^2*b^3*d^2*e^3 - 280*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*a/((e^7*x + d*e^6)*sqrt(e*x + d)) + 2/63*(7*b^5*e^
6*x^6 + 1024*b^5*d^6 - 3840*a*b^4*d^5*e + 5376*a^2*b^3*d^4*e^2 - 3360*a^3*b
^2*d^3*e^3 + 840*a^4*b*d^2*e^4 - 42*a^5*d*e^5 - 3*(4*b^5*d*e^5 - 15*a*b^4*e
^6)*x^5 + 6*(4*b^5*d^2*e^4 - 15*a*b^4*d*e^5 + 21*a^2*b^3*e^6)*x^4 - 2*(32*b
^5*d^3*e^3 - 120*a*b^4*d^2*e^4 + 168*a^2*b^3*d*e^5 - 105*a^3*b^2*e^6)*x^3 +
 3*(128*b^5*d^4*e^2 - 480*a*b^4*d^3*e^3 + 672*a^2*b^3*d^2*e^4 - 420*a^3*b^2
*d*e^5 + 105*a^4*b*e^6)*x^2 + 3*(512*b^5*d^5*e - 1920*a*b^4*d^4*e^2 + 2688*
a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 420*a^4*b*d*e^5 - 21*a^5*e^6)*x)*b
/((e^8*x + d*e^7)*sqrt(e*x + d))
```

mupad [**B**] time = 3.15, size = 432, normalized size = 1.17

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^6}{9\,e^2}-\frac{42\,a^6\,e^6+504\,a^5\,b\,d\,e^5-5040\,a^4\,b^2\,d^2\,e^4+13440\,a^3\,b^3\,d^3\,e^3-16128\,a^2\,b^4\,d^4\,e^2+9216\,a\,b^5\,d^5\,e-2048\,b^6\,d^6}{63\,b\,e^8}-\frac{x\,\left(756\,a^5\,b\,e^6-7560\,a^4\,b^2\,d\,e^5+20160\,a^3\,b^3\,d^2\,e^4-24192\,a^2\,b^4\,d^3\,e^3+13824\,a\,b^5\,d^4\,e^2-3072\,b^6\,d^5\,e\right)}{63\,b\,e^8}+\frac{8\,b^2\,x^3\,\left(105\,a^3\,e^3-126\,a^2\,b\,d\,e^2+72\,a\,b^2\,d^2\,e-16\,b^3\,d^3\right)}{63\,e^5}+\frac{4\,b^4\,x^5\,\left(9\,a\,e-2\,b\,d\right)}{21\,e^3}+\frac{2\,b^3\,x^4\,\left(63\,a^2\,e^2-36\,a\,b\,d\,e+8\,b^2\,d^2\right)}{21\,e^4}+\frac{x^2\,\left(1890\,a^4\,b^2\,e^6-5040\,a^3\,b^3\,d\,e^5+6048\,a^2\,b^4\,d^2\,e^4-3456\,a\,b^5\,d^3\,e^3+768\,b^6\,d^4\,e^2\right)}{63\,b\,e^8}\right)}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(63\,a\,e^8+63\,b\,d\,e^7\right)\,\sqrt{d+e\,x}}{63\,b\,e^8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^6)/(9*e^2) - (42*a^6*e^6 - 2048*
b^6*d^6 - 16128*a^2*b^4*d^4*e^2 + 13440*a^3*b^3*d^3*e^3 - 5040*a^4*b^2*d^2*
e^4 + 9216*a*b^5*d^5*e + 504*a^5*b*d*e^5)/(63*b*e^8) - (x*(756*a^5*b*e^6 -
3072*b^6*d^5*e + 13824*a*b^5*d^4*e^2 - 7560*a^4*b^2*d*e^5 - 24192*a^2*b^4*d
^3*e^3 + 20160*a^3*b^3*d^2*e^4))/(63*b*e^8) + (8*b^2*x^3*(105*a^3*e^3 - 16*
b^3*d^3 + 72*a*b^2*d^2*e - 126*a^2*b*d*e^2))/(63*e^5) + (4*b^4*x^5*(9*a*e -
 2*b*d))/(21*e^3) + (2*b^3*x^4*(63*a^2*e^2 + 8*b^2*d^2 - 36*a*b*d*e))/(21*e
^4) + (x^2*(1890*a^4*b^2*e^6 + 768*b^6*d^4*e^2 - 3456*a*b^5*d^3*e^3 - 5040*
a^3*b^3*d*e^5 + 6048*a^2*b^4*d^2*e^4))/(63*b*e^8)))/(x^2*(d + e*x)^(1/2) +
(a*d*(d + e*x)^(1/2))/(b*e) + (x*(63*a*e^8 + 63*b*d*e^7)*(d + e*x)^(1/2))/(
63*b*e^8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1891 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{5e^7(a+bx)(d+ex)^{5/2}}+2b^6\sqrt{a\ldots}$$

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^7(a+bx)}+\frac{10b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}{e^7(a+bx)}-\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}{e^7(a+bx)}-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{5e^7(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)
^(5/2)) + (4*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*
(d + e*x)^(3/2)) - (30*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
7*(a + b*x)*Sqrt[d + e*x]) - (40*b^3*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b^4*(b*d - a*e)^2*(d + e*x)^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (12*b^5*(b*d - a*e)*(d +
 e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (2*b^6*(d +
e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{7/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{7/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{7/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{5/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{3/2}} - \frac{20b^3(bd-ae)^3}{e^6\sqrt{d+ex}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{5/2}} + \frac{4b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)(d+ex)^{3/2}} - \frac{30b}{}$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-42b^5(d+ex)^5(bd-ae)+175b^4(d+ex)^4(bd-ae)^2-700b^3(d+ex)^3(bd-ae)^3-525b^2(d+ex)^2(bd-ae)^4+70b(d+ex)(bd-ae)^5-7(bd-ae)^6+5b^6(d+ex)^6\right)}{35e^7(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-7*(b*d - a*e)^6 + 70*b*(b*d - a*e)^5*(d + e*x) - 525
*b^2*(b*d - a*e)^4*(d + e*x)^2 - 700*b^3*(b*d - a*e)^3*(d + e*x)^3 + 175*b^
4*(b*d - a*e)^2*(d + e*x)^4 - 42*b^5*(b*d - a*e)*(d + e*x)^5 + 5*b^6*(d + e
*x)^6))/(35*e^7*(a + b*x)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 31.48, size = 466, normalized size = 1.27

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-7b^6d^6+42ab^5d^5e-105a^2b^4d^4e^2+140a^3b^3d^3e^3-105a^4b^2d^2e^4+42a^5bde^5-7a^6e^6+70b^6d^5(d+ex)-350ab^5d^4e(d+ex)+700a^2b^4d^3e^2(d+ex)-700a^3b^3d^2e^3(d+ex)+350a^4b^2de^4(d+ex)-70a^5be^5(d+ex)-525b^6d^4(d+ex)^2+2100ab^5d^3e(d+ex)^2-3150a^2b^4d^2e^2(d+ex)^2+2100a^3b^3de^3(d+ex)^2-525a^4b^2e^4(d+ex)^2-700b^6d^3(d+ex)^3+2100ab^5d^2e(d+ex)^3-2100a^2b^4de^2(d+ex)^3+700a^3b^3e^3(d+ex)^3+175b^6d^2(d+ex)^4-350ab^5de(d+ex)^4+175a^2b^4e^2(d+ex)^4-42b^6d(d+ex)^5+42ab^5e(d+ex)^5+5b^6(d+ex)^6\right)}{35e^6(d+ex)^{5/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-7*b^6*d^6 + 42*a*b^5*d^5*e - 105*a^2*b^4*d^4
*e^2 + 140*a^3*b^3*d^3*e^3 - 105*a^4*b^2*d^2*e^4 + 42*a^5*b*d*e^5 - 7*a^6*e
^6 + 70*b^6*d^5*(d + e*x) - 350*a*b^5*d^4*e*(d + e*x) + 700*a^2*b^4*d^3*e^2
*(d + e*x) - 700*a^3*b^3*d^2*e^3*(d + e*x) + 350*a^4*b^2*d*e^4*(d + e*x) -
70*a^5*b*e^5*(d + e*x) - 525*b^6*d^4*(d + e*x)^2 + 2100*a*b^5*d^3*e*(d + e*
x)^2 - 3150*a^2*b^4*d^2*e^2*(d + e*x)^2 + 2100*a^3*b^3*d*e^3*(d + e*x)^2 -
525*a^4*b^2*e^4*(d + e*x)^2 - 700*b^6*d^3*(d + e*x)^3 + 2100*a*b^5*d^2*e*(d
 + e*x)^3 - 2100*a^2*b^4*d*e^2*(d + e*x)^3 + 700*a^3*b^3*e^3*(d + e*x)^3 +
175*b^6*d^2*(d + e*x)^4 - 350*a*b^5*d*e*(d + e*x)^4 + 175*a^2*b^4*e^2*(d +
e*x)^4 - 42*b^6*d*(d + e*x)^5 + 42*a*b^5*e*(d + e*x)^5 + 5*b^6*(d + e*x)^6)
)/(35*e^6*(d + e*x)^(5/2)*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 388, normalized size = 1.05

$$\frac{2\left(5b^6e^6x^6-1024b^6d^6+3584ab^5d^5e-4480a^2b^4d^4e^2+2240a^3b^3d^3e^3-280a^4b^2d^2e^4-28a^5bde^5-7a^6e^6-6\left(2b^6de^5-7ab^5e^6\right)x^5+5\left(8b^6d^2e^4-28ab^5de^5+35a^2b^4e^6\right)x^4-20\left(16b^6d^3e^3-56ab^5d^2e^4+70a^2b^4de^5-35a^3b^3e^6\right)x^3-15\left(128b^6d^4e^2-448ab^5d^3e^3+560a^2b^4d^2e^4-280a^3b^3de^5+35a^4b^2e^6\right)x^2-10\left(256b^6d^5e-896ab^5d^4e^2+1120a^2b^4d^3e^3-560a^3b^3d^2e^4+70a^4b^2de^5+7a^5be^6\right)x\right)\sqrt{ex+d}}{35\left(e^{10}x^3+3de^9x^2+3d^2e^8x+d^3e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(5*b^6*e^6*x^6 - 1024*b^6*d^6 + 3584*a*b^5*d^5*e - 4480*a^2*b^4*d^4*e^
2 + 2240*a^3*b^3*d^3*e^3 - 280*a^4*b^2*d^2*e^4 - 28*a^5*b*d*e^5 - 7*a^6*e^6
```

```
 - 6*(2*b^6*d*e^5 - 7*a*b^5*e^6)*x^5 + 5*(8*b^6*d^2*e^4 - 28*a*b^5*d*e^5 +
35*a^2*b^4*e^6)*x^4 - 20*(16*b^6*d^3*e^3 - 56*a*b^5*d^2*e^4 + 70*a^2*b^4*d*
e^5 - 35*a^3*b^3*e^6)*x^3 - 15*(128*b^6*d^4*e^2 - 448*a*b^5*d^3*e^3 + 560*a
^2*b^4*d^2*e^4 - 280*a^3*b^3*d*e^5 + 35*a^4*b^2*e^6)*x^2 - 10*(256*b^6*d^5*
e - 896*a*b^5*d^4*e^2 + 1120*a^2*b^4*d^3*e^3 - 560*a^3*b^3*d^2*e^4 + 70*a^4
*b^2*d*e^5 + 7*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^10*x^3 + 3*d*e^9*x^2 + 3*d^2*
e^8*x + d^3*e^7)
```

giac [B] time = 0.30, size = 626, normalized size = 1.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*b^6*e^42*sgn(b*x + a) - 42*(x*e + d)^(5/2)*b^6*d*e^
42*sgn(b*x + a) + 175*(x*e + d)^(3/2)*b^6*d^2*e^42*sgn(b*x + a) - 700*sqrt(
x*e + d)*b^6*d^3*e^42*sgn(b*x + a) + 42*(x*e + d)^(5/2)*a*b^5*e^43*sgn(b*x
+ a) - 350*(x*e + d)^(3/2)*a*b^5*d*e^43*sgn(b*x + a) + 2100*sqrt(x*e + d)*a
*b^5*d^2*e^43*sgn(b*x + a) + 175*(x*e + d)^(3/2)*a^2*b^4*e^44*sgn(b*x + a)
- 2100*sqrt(x*e + d)*a^2*b^4*d*e^44*sgn(b*x + a) + 700*sqrt(x*e + d)*a^3*b^
3*e^45*sgn(b*x + a))*e^(-49) - 2/5*(75*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 1
0*(x*e + d)*b^6*d^5*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) - 300*(x*e + d)^2*a
*b^5*d^3*e*sgn(b*x + a) + 50*(x*e + d)*a*b^5*d^4*e*sgn(b*x + a) - 6*a*b^5*d
^5*e*sgn(b*x + a) + 450*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 100*(x*e
 + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn(b*x + a) - 300*
(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a) + 100*(x*e + d)*a^3*b^3*d^2*e^3*sgn(
b*x + a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 75*(x*e + d)^2*a^4*b^2*e^4*sgn
(b*x + a) - 50*(x*e + d)*a^4*b^2*d*e^4*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sg
n(b*x + a) + 10*(x*e + d)*a^5*b*e^5*sgn(b*x + a) - 6*a^5*b*d*e^5*sgn(b*x +
a) + a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.07

$$-\frac{2\left(-5b^6e^6x^6-42ab^5e^6x^5+12b^6de^5x^5-175a^2b^4e^6x^4+140ab^5de^5x^4-40b^6d^2e^4x^4-700a^3b^3e^6x^3+1400a^2b^4de^5x^3-1120ab^5d^2e^4x^3+320b^6d^3e^3x^3+525a^4b^2e^6x^2-4200a^3b^3de^5x^2+8400a^2b^4d^2e^4x^2-6720ab^5d^3e^3x^2+1920b^6d^4e^2x^2+70a^5be^6x+700a^4b^2de^5x-5600a^3b^3d^2e^4x+11200a^2b^4d^3e^3x-8960ab^5d^4e^2x+2560b^6d^5ex+7a^6e^6+28a^5bde^5+280a^4b^2d^2e^4-2240a^3b^3d^3e^3+4480a^2b^4d^4e^2-3584ab^5d^5e+1024b^6d^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{35\left(ex+d\right)^{\frac{5}{2}}\left(bx+a\right)^5e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/35/(e*x+d)^(5/2)*(-5*b^6*e^6*x^6-42*a*b^5*e^6*x^5+12*b^6*d*e^5*x^5-175*a
^2*b^4*e^6*x^4+140*a*b^5*d*e^5*x^4-40*b^6*d^2*e^4*x^4-700*a^3*b^3*e^6*x^3+1
400*a^2*b^4*d*e^5*x^3-1120*a*b^5*d^2*e^4*x^3+320*b^6*d^3*e^3*x^3+525*a^4*b^
2*e^6*x^2-4200*a^3*b^3*d*e^5*x^2+8400*a^2*b^4*d^2*e^4*x^2-6720*a*b^5*d^3*e^
3*x^2+1920*b^6*d^4*e^2*x^2+70*a^5*b*e^6*x+700*a^4*b^2*d*e^5*x-5600*a^3*b^3*
d^2*e^4*x+11200*a^2*b^4*d^3*e^3*x-8960*a*b^5*d^4*e^2*x+2560*b^6*d^5*e*x+7*a
^6*e^6+28*a^5*b*d*e^5+280*a^4*b^2*d^2*e^4-2240*a^3*b^3*d^3*e^3+4480*a^2*b^4
*d^4*e^2-3584*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.86, size = 647, normalized size = 1.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/15*(3*b^5*e^5*x^5 + 256*b^5*d^5 - 640*a*b^4*d^4*e + 480*a^2*b^3*d^3*e^2 -
 80*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(2*b^5*d*e^4 - 5*a*b^4
```

```
*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 20*a*b^4*d*e^4 + 15*a^2*b^3*e^5)*x^3 + 30*(
16*b^5*d^3*e^2 - 40*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 - 5*a^3*b^2*e^5)*x^2 +
 5*(128*b^5*d^4*e - 320*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^3 - 40*a^3*b^2*d*
e^4 - 5*a^4*b*e^5)*x)*a/((e^8*x^2 + 2*d*e^7*x + d^2*e^6)*sqrt(e*x + d)) + 2
/105*(15*b^5*e^6*x^6 - 3072*b^5*d^6 + 8960*a*b^4*d^5*e - 8960*a^2*b^3*d^4*e
^2 + 3360*a^3*b^2*d^3*e^3 - 280*a^4*b*d^2*e^4 - 14*a^5*d*e^5 - 3*(12*b^5*d*
e^5 - 35*a*b^4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 35*a*b^4*d*e^5 + 35*a^2*b^3*
e^6)*x^4 - 10*(96*b^5*d^3*e^3 - 280*a*b^4*d^2*e^4 + 280*a^2*b^3*d*e^5 - 105
*a^3*b^2*e^6)*x^3 - 15*(384*b^5*d^4*e^2 - 1120*a*b^4*d^3*e^3 + 1120*a^2*b^3
*d^2*e^4 - 420*a^3*b^2*d*e^5 + 35*a^4*b*e^6)*x^2 - 5*(1536*b^5*d^5*e - 4480
*a*b^4*d^4*e^2 + 4480*a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 140*a^4*b*d*
e^5 + 7*a^5*e^6)*x)*b/((e^9*x^2 + 2*d*e^8*x + d^2*e^7)*sqrt(e*x + d))
```

mupad [B] time = 3.18, size = 455, normalized size = 1.24

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^6}{7\,e^3}-\frac{\frac{2\,a^6\,e^6}{5}+\frac{8\,a^5\,b\,d\,e^5}{5}+16\,a^4\,b^2\,d^2\,e^4-128\,a^3\,b^3\,d^3\,e^3+256\,a^2\,b^4\,d^4\,e^2-\frac{1024\,a\,b^5\,d^5\,e}{5}+\frac{2048\,b^6\,d^6}{35}}{b\,e^9}-\frac{x\,\left(140\,a^5\,b\,e^6+1400\,a^4\,b^2\,d\,e^5-11200\,a^3\,b^3\,d^2\,e^4+22400\,a^2\,b^4\,d^3\,e^3-17920\,a\,b^5\,d^4\,e^2+5120\,b^6\,d^5\,e\right)}{35\,b\,e^9}+\frac{b^2\,x^3\,\left(40\,a^3\,e^3-80\,a^2\,b\,d\,e^2+64\,a\,b^2\,d^2\,e-\frac{128\,b^3\,d^3}{7}\right)}{e^6}+\frac{b^4\,x^5\,\left(\frac{12\,a\,e}{5}-\frac{24\,b\,d}{35}\right)}{e^4}+\frac{b^3\,x^4\,\left(10\,a^2\,e^2-8\,a\,b\,d\,e+\frac{16\,b^2\,d^2}{7}\right)}{e^5}-\frac{x^2\,\left(30\,a^4\,b^2\,e^6-240\,a^3\,b^3\,d\,e^5+480\,a^2\,b^4\,d^2\,e^4-384\,a\,b^5\,d^3\,e^3+\frac{768\,b^6\,d^4\,e^2}{7}\right)}{b\,e^9}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(a\,e^9+2\,b\,d\,e^8\right)\,\sqrt{d+e\,x}}{b\,e^9}+\frac{d\,x\,\left(2\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(7/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^6)/(7*e^3) - ((2*a^6*e^6)/5 + (2
048*b^6*d^6)/35 + 256*a^2*b^4*d^4*e^2 - 128*a^3*b^3*d^3*e^3 + 16*a^4*b^2*d^
2*e^4 - (1024*a*b^5*d^5*e)/5 + (8*a^5*b*d*e^5)/5)/(b*e^9) - (x*(140*a^5*b*e
^6 + 5120*b^6*d^5*e - 17920*a*b^5*d^4*e^2 + 1400*a^4*b^2*d*e^5 + 22400*a^2*
b^4*d^3*e^3 - 11200*a^3*b^3*d^2*e^4))/(35*b*e^9) + (b^2*x^3*(40*a^3*e^3 - (
128*b^3*d^3)/7 + 64*a*b^2*d^2*e - 80*a^2*b*d*e^2))/e^6 + (b^4*x^5*((12*a*e)
/5 - (24*b*d)/35))/e^4 + (b^3*x^4*(10*a^2*e^2 + (16*b^2*d^2)/7 - 8*a*b*d*e)
)/e^5 - (x^2*(30*a^4*b^2*e^6 + (768*b^6*d^4*e^2)/7 - 384*a*b^5*d^3*e^3 - 24
0*a^3*b^3*d*e^5 + 480*a^2*b^4*d^2*e^4))/(b*e^9)))/(x^3*(d + e*x)^(1/2) + (a
*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(a*e^9 + 2*b*d*e^8)*(d + e*x)^(1/2))/(
b*e^9) + (d*x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1892 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^{3/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{5/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{7e^7(a+bx)(d+ex)^{7/2}}+\frac{2b^6\sqrt{}}{}$$

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^7(a+bx)}-\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}{e^7(a+bx)}+\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)\sqrt{d+ex}}-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^{3/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{5/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{7e^7(a+bx)(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(9/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)
^(7/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*
x)*(d + e*x)^(5/2)) - (10*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(e^7*(a + b*x)*(d + e*x)^(3/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) + (30*b^4*(b*d - a*e)^2*Sqrt[d +
e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (4*b^5*(b*d - a*e)*(d
 + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (2*b^6*(d +
e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{9/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{9/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{9/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{7/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{5/2}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{3/2}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^{7/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{5/2}} - \frac{10}{}$$

Mathematica [A] time = 0.16, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-70b^5(d+ex)^5(bd-ae)+525b^4(d+ex)^4(bd-ae)^2+700b^3(d+ex)^3(bd-ae)^3-175b^2(d+ex)^2(bd-ae)^4+42b(d+ex)(bd-ae)^5-5(bd-ae)^6+7b^6(d+ex)^6\right)}{35e^7(a+bx)(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(9/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*(b*d - a*e)^6 + 42*b*(b*d - a*e)^5*(d + e*x) - 175
*b^2*(b*d - a*e)^4*(d + e*x)^2 + 700*b^3*(b*d - a*e)^3*(d + e*x)^3 + 525*b^
4*(b*d - a*e)^2*(d + e*x)^4 - 70*b^5*(b*d - a*e)*(d + e*x)^5 + 7*b^6*(d + e
*x)^6))/(35*e^7*(a + b*x)*(d + e*x)^(7/2))
```

IntegrateAlgebraic [A] time = 31.37, size = 466, normalized size = 1.27

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-5a^6e^6-42a^5be^5(d+ex)+30a^5bde^5-75a^4b^2d^2e^4-175a^4b^2e^4(d+ex)^2+210a^4b^2de^4(d+ex)+100a^3b^3d^3e^3-420a^3b^3d^2e^3(d+ex)-700a^3b^3e^3(d+ex)^3+700a^3b^3de^3(d+ex)^2-75a^2b^4d^4e^2+420a^2b^4d^3e^2(d+ex)-1050a^2b^4d^2e^2(d+ex)^2+525a^2b^4e^2(d+ex)^4+2100a^2b^4de^2(d+ex)^3+30ab^5d^5e-210ab^5d^4e(d+ex)+700ab^5d^3e(d+ex)^2-2100ab^5d^2e(d+ex)^3+70ab^5e(d+ex)^5-1050ab^5de(d+ex)^4-5b^6d^6+42b^6d^5(d+ex)-175b^6d^4(d+ex)^2+700b^6d^3(d+ex)^3+525b^6d^2(d+ex)^4+7b^6(d+ex)^6-70b^6d(d+ex)^5\right)}{35e^6(d+ex)^{7/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(9
/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-5*b^6*d^6 + 30*a*b^5*d^5*e - 75*a^2*b^4*d^4*
e^2 + 100*a^3*b^3*d^3*e^3 - 75*a^4*b^2*d^2*e^4 + 30*a^5*b*d*e^5 - 5*a^6*e^6
 + 42*b^6*d^5*(d + e*x) - 210*a*b^5*d^4*e*(d + e*x) + 420*a^2*b^4*d^3*e^2*(
d + e*x) - 420*a^3*b^3*d^2*e^3*(d + e*x) + 210*a^4*b^2*d*e^4*(d + e*x) - 42
*a^5*b*e^5*(d + e*x) - 175*b^6*d^4*(d + e*x)^2 + 700*a*b^5*d^3*e*(d + e*x)^
2 - 1050*a^2*b^4*d^2*e^2*(d + e*x)^2 + 700*a^3*b^3*d*e^3*(d + e*x)^2 - 175*
a^4*b^2*e^4*(d + e*x)^2 + 700*b^6*d^3*(d + e*x)^3 - 2100*a*b^5*d^2*e*(d + e
*x)^3 + 2100*a^2*b^4*d*e^2*(d + e*x)^3 - 700*a^3*b^3*e^3*(d + e*x)^3 + 525*
b^6*d^2*(d + e*x)^4 - 1050*a*b^5*d*e*(d + e*x)^4 + 525*a^2*b^4*e^2*(d + e*x
)^4 - 70*b^6*d*(d + e*x)^5 + 70*a*b^5*e*(d + e*x)^5 + 7*b^6*(d + e*x)^6))/(
35*e^6*(d + e*x)^(7/2)*(a*e + b*e*x))
```

fricas [A] time = 0.42, size = 399, normalized size = 1.08

$$\frac{2\left(7b^6e^6x^6+1024b^6d^6-2560ab^5d^5e+1920a^2b^4d^4e^2-320a^3b^3d^3e^3-40a^4b^2d^2e^4-12a^5bde^5-5a^6e^6-14\left(2b^6de^5-5ab^5e^6\right)x^5+35\left(8b^6d^2e^4-20ab^5de^5+15a^2b^4e^6\right)x^4+140\left(16b^6d^3e^3-40ab^5d^2e^4+30a^2b^4de^5-5a^3b^3e^6\right)x^3+35\left(128b^6d^4e^2-320ab^5d^3e^3+240a^2b^4d^2e^4-40a^3b^3de^5-5a^4b^2e^6\right)x^2+14\left(256b^6d^5e-640ab^5d^4e^2+480a^2b^4d^3e^3-80a^3b^3d^2e^4-10a^4b^2de^5-3a^5be^6\right)x\right)\sqrt{ex+d}}{35\left(e^{11}x^4+4de^{10}x^3+6d^2e^9x^2+4d^3e^8x+d^4e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(7*b^6*e^6*x^6 + 1024*b^6*d^6 - 2560*a*b^5*d^5*e + 1920*a^2*b^4*d^4*e^
2 - 320*a^3*b^3*d^3*e^3 - 40*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 5*a^6*e^6 -
```

```
 14*(2*b^6*d*e^5 - 5*a*b^5*e^6)*x^5 + 35*(8*b^6*d^2*e^4 - 20*a*b^5*d*e^5 +
15*a^2*b^4*e^6)*x^4 + 140*(16*b^6*d^3*e^3 - 40*a*b^5*d^2*e^4 + 30*a^2*b^4*d
*e^5 - 5*a^3*b^3*e^6)*x^3 + 35*(128*b^6*d^4*e^2 - 320*a*b^5*d^3*e^3 + 240*a
^2*b^4*d^2*e^4 - 40*a^3*b^3*d*e^5 - 5*a^4*b^2*e^6)*x^2 + 14*(256*b^6*d^5*e
- 640*a*b^5*d^4*e^2 + 480*a^2*b^4*d^3*e^3 - 80*a^3*b^3*d^2*e^4 - 10*a^4*b^2
*d*e^5 - 3*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^11*x^4 + 4*d*e^10*x^3 + 6*d^2*e^9
*x^2 + 4*d^3*e^8*x + d^4*e^7)
```

giac [B] time = 0.28, size = 625, normalized size = 1.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x, algorithm="g
iac")
```

```
[Out] 2/5*((x*e + d)^(5/2)*b^6*e^28*sgn(b*x + a) - 10*(x*e + d)^(3/2)*b^6*d*e^28*
sgn(b*x + a) + 75*sqrt(x*e + d)*b^6*d^2*e^28*sgn(b*x + a) + 10*(x*e + d)^(3
/2)*a*b^5*e^29*sgn(b*x + a) - 150*sqrt(x*e + d)*a*b^5*d*e^29*sgn(b*x + a) +
 75*sqrt(x*e + d)*a^2*b^4*e^30*sgn(b*x + a))*e^(-35) + 2/35*(700*(x*e + d)^
3*b^6*d^3*sgn(b*x + a) - 175*(x*e + d)^2*b^6*d^4*sgn(b*x + a) + 42*(x*e + d
)*b^6*d^5*sgn(b*x + a) - 5*b^6*d^6*sgn(b*x + a) - 2100*(x*e + d)^3*a*b^5*d^
2*e*sgn(b*x + a) + 700*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) - 210*(x*e + d)
*a*b^5*d^4*e*sgn(b*x + a) + 30*a*b^5*d^5*e*sgn(b*x + a) + 2100*(x*e + d)^3*
a^2*b^4*d*e^2*sgn(b*x + a) - 1050*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a)
+ 420*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) - 75*a^2*b^4*d^4*e^2*sgn(b*x +
 a) - 700*(x*e + d)^3*a^3*b^3*e^3*sgn(b*x + a) + 700*(x*e + d)^2*a^3*b^3*d*
e^3*sgn(b*x + a) - 420*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) + 100*a^3*b^3
*d^3*e^3*sgn(b*x + a) - 175*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) + 210*(x*e
 + d)*a^4*b^2*d*e^4*sgn(b*x + a) - 75*a^4*b^2*d^2*e^4*sgn(b*x + a) - 42*(x*
e + d)*a^5*b*e^5*sgn(b*x + a) + 30*a^5*b*d*e^5*sgn(b*x + a) - 5*a^6*e^6*sgn
(b*x + a))*e^(-7)/(x*e + d)^(7/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x)
```

```
[Out] -2/35/(e*x+d)^(7/2)*(-7*b^6*e^6*x^6-70*a*b^5*e^6*x^5+28*b^6*d*e^5*x^5-525*a
^2*b^4*e^6*x^4+700*a*b^5*d*e^5*x^4-280*b^6*d^2*e^4*x^4+700*a^3*b^3*e^6*x^3-
4200*a^2*b^4*d*e^5*x^3+5600*a*b^5*d^2*e^4*x^3-2240*b^6*d^3*e^3*x^3+175*a^4*
b^2*e^6*x^2+1400*a^3*b^3*d*e^5*x^2-8400*a^2*b^4*d^2*e^4*x^2+11200*a*b^5*d^3
*e^3*x^2-4480*b^6*d^4*e^2*x^2+42*a^5*b*e^6*x+140*a^4*b^2*d*e^5*x+1120*a^3*b
^3*d^2*e^4*x-6720*a^2*b^4*d^3*e^3*x+8960*a*b^5*d^4*e^2*x-3584*b^6*d^5*e*x+5
*a^6*e^6+12*a^5*b*d*e^5+40*a^4*b^2*d^2*e^4+320*a^3*b^3*d^3*e^3-1920*a^2*b^4
*d^4*e^2+2560*a*b^5*d^5*e-1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.82, size = 668, normalized size = 1.82

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x, algorithm="m
axima")
```

```
[Out] 2/21*(7*b^5*e^5*x^5 - 256*b^5*d^5 + 384*a*b^4*d^4*e - 96*a^2*b^3*d^3*e^2 -
16*a^3*b^2*d^2*e^3 - 6*a^4*b*d*e^4 - 3*a^5*e^5 - 35*(2*b^5*d*e^4 - 3*a*b^4*
```

```
e^5)*x^4 - 70*(8*b^5*d^2*e^3 - 12*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 - 70*(16
*b^5*d^3*e^2 - 24*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 + a^3*b^2*e^5)*x^2 - 7*(1
28*b^5*d^4*e - 192*a*b^4*d^3*e^2 + 48*a^2*b^3*d^2*e^3 + 8*a^3*b^2*d*e^4 + 3
*a^4*b*e^5)*x)*a/((e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)*sqrt(e*x
+ d)) + 2/105*(21*b^5*e^6*x^6 + 3072*b^5*d^6 - 6400*a*b^4*d^5*e + 3840*a^2*
b^3*d^4*e^2 - 480*a^3*b^2*d^3*e^3 - 40*a^4*b*d^2*e^4 - 6*a^5*d*e^5 - 7*(12*
b^5*d*e^5 - 25*a*b^4*e^6)*x^5 + 70*(12*b^5*d^2*e^4 - 25*a*b^4*d*e^5 + 15*a^
2*b^3*e^6)*x^4 + 70*(96*b^5*d^3*e^3 - 200*a*b^4*d^2*e^4 + 120*a^2*b^3*d*e^5
 - 15*a^3*b^2*e^6)*x^3 + 35*(384*b^5*d^4*e^2 - 800*a*b^4*d^3*e^3 + 480*a^2*
b^3*d^2*e^4 - 60*a^3*b^2*d*e^5 - 5*a^4*b*e^6)*x^2 + 7*(1536*b^5*d^5*e - 320
0*a*b^4*d^4*e^2 + 1920*a^2*b^3*d^3*e^3 - 240*a^3*b^2*d^2*e^4 - 20*a^4*b*d*e
^5 - 3*a^5*e^6)*x)*b/((e^10*x^3 + 3*d*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7)*sqrt
(e*x + d))
```

mupad [**B**] time = 3.23, size = 489, normalized size = 1.33

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{10\,a^6\,e^6+24\,a^5\,b\,d\,e^5+80\,a^4\,b^2\,d^2\,e^4+640\,a^3\,b^3\,d^3\,e^3-3840\,a^2\,b^4\,d^4\,e^2+5120\,a\,b^5\,d^5\,e-2048\,b^6\,d^6}{35\,b\,e^{10}}-\frac{2\,b^5\,x^6}{5\,e^4}+\frac{x\,\left(84\,a^5\,b\,e^6+280\,a^4\,b^2\,d\,e^5+2240\,a^3\,b^3\,d^2\,e^4-13440\,a^2\,b^4\,d^3\,e^3+17920\,a\,b^5\,d^4\,e^2-7168\,b^6\,d^5\,e\right)}{35\,b\,e^{10}}+\frac{8\,b^2\,x^3\,\left(5\,a^3\,e^3-30\,a^2\,b\,d\,e^2+40\,a\,b^2\,d^2\,e-16\,b^3\,d^3\right)}{e^7}-\frac{4\,b^4\,x^5\,\left(5\,a\,e-2\,b\,d\right)}{5\,e^5}-\frac{2\,b^3\,x^4\,\left(15\,a^2\,e^2-20\,a\,b\,d\,e+8\,b^2\,d^2\right)}{e^6}+\frac{x^2\,\left(350\,a^4\,b^2\,e^6+2800\,a^3\,b^3\,d\,e^5-16800\,a^2\,b^4\,d^2\,e^4+22400\,a\,b^5\,d^3\,e^3-8960\,b^6\,d^4\,e^2\right)}{35\,b\,e^{10}}\right)}{x^4\,\sqrt{d+e\,x}+\frac{a\,d^3\,\sqrt{d+e\,x}}{b\,e^3}+\frac{x^3\,\left(35\,a\,e^{10}+105\,b\,d\,e^9\right)\,\sqrt{d+e\,x}}{35\,b\,e^{10}}+\frac{3\,d\,x^2\,\left(a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^2\,x\,\left(3\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(9/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((10*a^6*e^6 - 2048*b^6*d^6 - 3840*a^2*b^
4*d^4*e^2 + 640*a^3*b^3*d^3*e^3 + 80*a^4*b^2*d^2*e^4 + 5120*a*b^5*d^5*e + 2
4*a^5*b*d*e^5)/(35*b*e^10) - (2*b^5*x^6)/(5*e^4) + (x*(84*a^5*b*e^6 - 7168*
b^6*d^5*e + 17920*a*b^5*d^4*e^2 + 280*a^4*b^2*d*e^5 - 13440*a^2*b^4*d^3*e^3
 + 2240*a^3*b^3*d^2*e^4))/(35*b*e^10) + (8*b^2*x^3*(5*a^3*e^3 - 16*b^3*d^3
+ 40*a*b^2*d^2*e - 30*a^2*b*d*e^2))/e^7 - (4*b^4*x^5*(5*a*e - 2*b*d))/(5*e^
5) - (2*b^3*x^4*(15*a^2*e^2 + 8*b^2*d^2 - 20*a*b*d*e))/e^6 + (x^2*(350*a^4*
b^2*e^6 - 8960*b^6*d^4*e^2 + 22400*a*b^5*d^3*e^3 + 2800*a^3*b^3*d*e^5 - 168
00*a^2*b^4*d^2*e^4))/(35*b*e^10)))/(x^4*(d + e*x)^(1/2) + (a*d^3*(d + e*x)^
(1/2))/(b*e^3) + (x^3*(35*a*e^10 + 105*b*d*e^9)*(d + e*x)^(1/2))/(35*b*e^10
) + (3*d*x^2*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^2*x*(3*a*e + b*d)*(d
 + e*x)^(1/2))/(b*e^3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(9/2),x)
```

```
[Out] Timed out
```

3.1893 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=370

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^{5/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{7e^7(a+bx)(d+ex)^{7/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{9e^7(a+bx)(d+ex)^{9/2}}+\frac{2b^6\sqrt{a}\cdots}{}$$

Rubi [A] time = 0.15, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^7(a+bx)}-\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)\sqrt{d+ex}}+\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^{3/2}}-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^{5/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{7e^7(a+bx)(d+ex)^{7/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{9e^7(a+bx)(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(11/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)
^(9/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*
x)*(d + e*x)^(7/2)) - (6*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(a + b*x)*(d + e*x)^(5/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^(3/2)) - (30*b^4*(b*d - a*e)^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) - (12*b^5*(b*d - a*e
)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (2*b^6*(d
+ e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{11/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{11/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{11/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{9/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{7/2}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{5/2}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)(d+ex)^{9/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^{7/2}} - 6b$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-378b^5(d+ex)^5(bd-ae)-945b^4(d+ex)^4(bd-ae)^2+420b^3(d+ex)^3(bd-ae)^3-189b^2(d+ex)^2(bd-ae)^4+54b(d+ex)(bd-ae)^5-7(bd-ae)^6+21b^6(d+ex)^6\right)}{63e^7(a+bx)(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(11/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-7*(b*d - a*e)^6 + 54*b*(b*d - a*e)^5*(d + e*x) - 189
*b^2*(b*d - a*e)^4*(d + e*x)^2 + 420*b^3*(b*d - a*e)^3*(d + e*x)^3 - 945*b^
4*(b*d - a*e)^2*(d + e*x)^4 - 378*b^5*(b*d - a*e)*(d + e*x)^5 + 21*b^6*(d +
 e*x)^6))/(63*e^7*(a + b*x)*(d + e*x)^(9/2))
```

IntegrateAlgebraic [A] time = 28.74, size = 466, normalized size = 1.26

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-7a^6e^6-54a^5be^5(d+ex)+42a^5bde^5-105a^4b^2d^2e^4-189a^4b^2e^4(d+ex)^2+270a^4b^2de^4(d+ex)+140a^3b^3d^3e^3-540a^3b^3d^2e^3(d+ex)-420a^3b^3e^3(d+ex)^3+756a^3b^3de^3(d+ex)^2-105a^2b^4d^4e^2+540a^2b^4d^3e^2(d+ex)-1134a^2b^4d^2e^2(d+ex)^2-945a^2b^4e^2(d+ex)^4+1260a^2b^4de^2(d+ex)^3+42ab^5d^5e-270ab^5d^4e(d+ex)+756ab^5d^3e(d+ex)^2-1260ab^5d^2e(d+ex)^3+378ab^5e(d+ex)^5+1890ab^5de(d+ex)^4-7b^6d^6+54b^6d^5(d+ex)-189b^6d^4(d+ex)^2+420b^6d^3(d+ex)^3-945b^6d^2(d+ex)^4+21b^6(d+ex)^6-378b^6d(d+ex)^5\right)}{63e^6(d+ex)^{9/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(1
1/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-7*b^6*d^6 + 42*a*b^5*d^5*e - 105*a^2*b^4*d^4
*e^2 + 140*a^3*b^3*d^3*e^3 - 105*a^4*b^2*d^2*e^4 + 42*a^5*b*d*e^5 - 7*a^6*e
^6 + 54*b^6*d^5*(d + e*x) - 270*a*b^5*d^4*e*(d + e*x) + 540*a^2*b^4*d^3*e^2
*(d + e*x) - 540*a^3*b^3*d^2*e^3*(d + e*x) + 270*a^4*b^2*d*e^4*(d + e*x) -
54*a^5*b*e^5*(d + e*x) - 189*b^6*d^4*(d + e*x)^2 + 756*a*b^5*d^3*e*(d + e*x
)^2 - 1134*a^2*b^4*d^2*e^2*(d + e*x)^2 + 756*a^3*b^3*d*e^3*(d + e*x)^2 - 18
9*a^4*b^2*e^4*(d + e*x)^2 + 420*b^6*d^3*(d + e*x)^3 - 1260*a*b^5*d^2*e*(d +
 e*x)^3 + 1260*a^2*b^4*d*e^2*(d + e*x)^3 - 420*a^3*b^3*e^3*(d + e*x)^3 - 94
5*b^6*d^2*(d + e*x)^4 + 1890*a*b^5*d*e*(d + e*x)^4 - 945*a^2*b^4*e^2*(d + e
*x)^4 - 378*b^6*d*(d + e*x)^5 + 378*a*b^5*e*(d + e*x)^5 + 21*b^6*(d + e*x)^
6))/(63*e^6*(d + e*x)^(9/2)*(a*e + b*e*x))
```

fricas [A] time = 0.43, size = 409, normalized size = 1.11

$$\frac{2\left(21b^6e^6x^6-1024b^6d^6+1536ab^5d^5e-384a^2b^4d^4e^2-64a^3b^3d^3e^3-24a^4b^2d^2e^4-12a^5bde^5-7a^6e^6-126\left(2b^6de^5-3ab^5e^6\right)x^5-315\left(8b^6d^2e^4-12ab^5de^5+3a^2b^4e^6\right)x^4-420\left(16b^6d^3e^3-24ab^5d^2e^4+6a^2b^4de^5+a^3b^3e^6\right)x^3-63\left(128b^6d^4e^2-192ab^5d^3e^3+48a^2b^4d^2e^4+8a^3b^3de^5+3a^4b^2e^6\right)x^2-18\left(256b^6d^5e-384ab^5d^4e^2+96a^2b^4d^3e^3+16a^3b^3d^2e^4+6a^4b^2de^5+3a^5be^6\right)x\right)\sqrt{ex+d}}{63\left(e^{12}x^5+5de^{11}x^4+10d^2e^{10}x^3+10d^3e^9x^2+5d^4e^8x+d^5e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x, algorithm="
fricas")
```

```
[Out] 2/63*(21*b^6*e^6*x^6 - 1024*b^6*d^6 + 1536*a*b^5*d^5*e - 384*a^2*b^4*d^4*e^
2 - 64*a^3*b^3*d^3*e^3 - 24*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 7*a^6*e^6 -
```

126*(2*b^6*d*e^5 - 3*a*b^5*e^6)*x^5 - 315*(8*b^6*d^2*e^4 - 12*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x^4 - 420*(16*b^6*d^3*e^3 - 24*a*b^5*d^2*e^4 + 6*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 - 63*(128*b^6*d^4*e^2 - 192*a*b^5*d^3*e^3 + 48*a^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + 3*a^4*b^2*e^6)*x^2 - 18*(256*b^6*d^5*e - 384*a*b^5*d^4*e^2 + 96*a^2*b^4*d^3*e^3 + 16*a^3*b^3*d^2*e^4 + 6*a^4*b^2*d*e^5 + 3*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^12*x^5 + 5*d*e^11*x^4 + 10*d^2*e^10*x^3 + 10*d^3*e^9*x^2 + 5*d^4*e^8*x + d^5*e^7)

giac [B] time = 0.27, size = 623, normalized size = 1.68

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x, algorithm="giac")

[Out] 2/3*((x*e + d)^(3/2)*b^6*e^14*sgn(b*x + a) - 18*sqrt(x*e + d)*b^6*d*e^14*sgn(b*x + a) + 18*sqrt(x*e + d)*a*b^5*e^15*sgn(b*x + a))*e^(-21) - 2/63*(945*(x*e + d)^4*b^6*d^2*sgn(b*x + a) - 420*(x*e + d)^3*b^6*d^3*sgn(b*x + a) + 189*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 54*(x*e + d)*b^6*d^5*sgn(b*x + a) + 7*b^6*d^6*sgn(b*x + a) - 1890*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) + 1260*(x*e + d)^3*a*b^5*d^2*e*sgn(b*x + a) - 756*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) + 270*(x*e + d)*a*b^5*d^4*e*sgn(b*x + a) - 42*a*b^5*d^5*e*sgn(b*x + a) + 945*(x*e + d)^4*a^2*b^4*e^2*sgn(b*x + a) - 1260*(x*e + d)^3*a^2*b^4*d*e^2*sgn(b*x + a) + 1134*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 540*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) + 105*a^2*b^4*d^4*e^2*sgn(b*x + a) + 420*(x*e + d)^3*a^3*b^3*e^3*sgn(b*x + a) - 756*(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a) + 540*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) - 140*a^3*b^3*d^3*e^3*sgn(b*x + a) + 189*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) - 270*(x*e + d)*a^4*b^2*d*e^4*sgn(b*x + a) + 105*a^4*b^2*d^2*e^4*sgn(b*x + a) + 54*(x*e + d)*a^5*b*e^5*sgn(b*x + a) - 42*a^5*b*d*e^5*sgn(b*x + a) + 7*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(9/2)

maple [A] time = 0.05, size = 393, normalized size = 1.06

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x)

[Out] -2/63/(e*x+d)^(9/2)*(-21*b^6*e^6*x^6-378*a*b^5*e^6*x^5+252*b^6*d*e^5*x^5+945*a^2*b^4*e^6*x^4-3780*a*b^5*d*e^5*x^4+2520*b^6*d^2*e^4*x^4+420*a^3*b^3*e^6*x^3+2520*a^2*b^4*d*e^5*x^3-10080*a*b^5*d^2*e^4*x^3+6720*b^6*d^3*e^3*x^3+189*a^4*b^2*e^6*x^2+504*a^3*b^3*d*e^5*x^2+3024*a^2*b^4*d^2*e^4*x^2-12096*a*b^5*d^3*e^3*x^2+8064*b^6*d^4*e^2*x^2+54*a^5*b*e^6*x+108*a^4*b^2*d*e^5*x+288*a^3*b^3*d^2*e^4*x+1728*a^2*b^4*d^3*e^3*x-6912*a*b^5*d^4*e^2*x+4608*b^6*d^5*e*x+7*a^6*e^6+12*a^5*b*d*e^5+24*a^4*b^2*d^2*e^4+64*a^3*b^3*d^3*e^3+384*a^2*b^4*d^4*e^2-1536*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5

maxima [B] time = 0.92, size = 687, normalized size = 1.86

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x, algorithm="maxima")

[Out] 2/63*(63*b^5*e^5*x^5 + 256*b^5*d^5 - 128*a*b^4*d^4*e - 32*a^2*b^3*d^3*e^2 - 16*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 7*a^5*e^5 + 315*(2*b^5*d*e^4 - a*b^4

```
*e^5)*x^4 + 210*(8*b^5*d^2*e^3 - 4*a*b^4*d*e^4 - a^2*b^3*e^5)*x^3 + 126*(16
*b^5*d^3*e^2 - 8*a*b^4*d^2*e^3 - 2*a^2*b^3*d*e^4 - a^3*b^2*e^5)*x^2 + 9*(12
8*b^5*d^4*e - 64*a*b^4*d^3*e^2 - 16*a^2*b^3*d^2*e^3 - 8*a^3*b^2*d*e^4 - 5*a
^4*b*e^5)*x)*a/((e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4
*e^6)*sqrt(e*x + d)) + 2/63*(21*b^5*e^6*x^6 - 1024*b^5*d^6 + 1280*a*b^4*d^5
*e - 256*a^2*b^3*d^4*e^2 - 32*a^3*b^2*d^3*e^3 - 8*a^4*b*d^2*e^4 - 2*a^5*d*e
^5 - 63*(4*b^5*d*e^5 - 5*a*b^4*e^6)*x^5 - 630*(4*b^5*d^2*e^4 - 5*a*b^4*d*e^
5 + a^2*b^3*e^6)*x^4 - 210*(32*b^5*d^3*e^3 - 40*a*b^4*d^2*e^4 + 8*a^2*b^3*d
*e^5 + a^3*b^2*e^6)*x^3 - 63*(128*b^5*d^4*e^2 - 160*a*b^4*d^3*e^3 + 32*a^2*
b^3*d^2*e^4 + 4*a^3*b^2*d*e^5 + a^4*b*e^6)*x^2 - 9*(512*b^5*d^5*e - 640*a*b
^4*d^4*e^2 + 128*a^2*b^3*d^3*e^3 + 16*a^3*b^2*d^2*e^4 + 4*a^4*b*d*e^5 + a^5
*e^6)*x)*b/((e^11*x^4 + 4*d*e^10*x^3 + 6*d^2*e^9*x^2 + 4*d^3*e^8*x + d^4*e^
7)*sqrt(e*x + d))
```

mupad [B] time = 3.28, size = 508, normalized size = 1.37

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{14\,a^6\,e^6+24\,a^5\,b\,d\,e^5+48\,a^4\,b^2\,d^2\,e^4+128\,a^3\,b^3\,d^3\,e^3+768\,a^2\,b^4\,d^4\,e^2-3072\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{63\,b\,e^{11}}-\frac{2\,b^5\,x^6}{3\,e^5}+\frac{x\,\left(108\,a^5\,b\,e^6+216\,a^4\,b^2\,d\,e^5+576\,a^3\,b^3\,d^2\,e^4+3456\,a^2\,b^4\,d^3\,e^3-13824\,a\,b^5\,d^4\,e^2+9216\,b^6\,d^5\,e\right)}{63\,b\,e^{11}}+\frac{40\,b^2\,x^3\,\left(a^3\,e^3+6\,a^2\,b\,d\,e^2-24\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{3\,e^8}+\frac{2\,b\,x^2\,\left(3\,a^4\,e^4+8\,a^3\,b\,d\,e^3+48\,a^2\,b^2\,d^2\,e^2-192\,a\,b^3\,d^3\,e+128\,b^4\,d^4\right)}{e^9}-\frac{4\,b^4\,x^5\,\left(3\,a\,e-2\,b\,d\right)}{e^6}+\frac{10\,b^3\,x^4\,\left(3\,a^2\,e^2-12\,a\,b\,d\,e+8\,b^2\,d^2\right)}{e^7}\right)}{x^5\,\sqrt{d+e\,x}+\frac{a\,d^4\,\sqrt{d+e\,x}}{b\,e^4}+\frac{x^4\,\left(63\,a\,e^{11}+252\,b\,d\,e^{10}\right)\,\sqrt{d+e\,x}}{63\,b\,e^{11}}+\frac{2\,d\,x^3\,\left(2\,a\,e+3\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^3\,x\,\left(4\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^4}+\frac{2\,d^2\,x^2\,\left(3\,a\,e+2\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(11/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((14*a^6*e^6 + 2048*b^6*d^6 + 768*a^2*b^4
*d^4*e^2 + 128*a^3*b^3*d^3*e^3 + 48*a^4*b^2*d^2*e^4 - 3072*a*b^5*d^5*e + 24
*a^5*b*d*e^5)/(63*b*e^11) - (2*b^5*x^6)/(3*e^5) + (x*(108*a^5*b*e^6 + 9216*
b^6*d^5*e - 13824*a*b^5*d^4*e^2 + 216*a^4*b^2*d*e^5 + 3456*a^2*b^4*d^3*e^3
+ 576*a^3*b^3*d^2*e^4))/(63*b*e^11) + (40*b^2*x^3*(a^3*e^3 + 16*b^3*d^3 - 2
4*a*b^2*d^2*e + 6*a^2*b*d*e^2))/(3*e^8) + (2*b*x^2*(3*a^4*e^4 + 128*b^4*d^4
 + 48*a^2*b^2*d^2*e^2 - 192*a*b^3*d^3*e + 8*a^3*b*d*e^3))/e^9 - (4*b^4*x^5*
(3*a*e - 2*b*d))/e^6 + (10*b^3*x^4*(3*a^2*e^2 + 8*b^2*d^2 - 12*a*b*d*e))/e^
7))/(x^5*(d + e*x)^(1/2) + (a*d^4*(d + e*x)^(1/2))/(b*e^4) + (x^4*(63*a*e^1
1 + 252*b*d*e^10)*(d + e*x)^(1/2))/(63*b*e^11) + (2*d*x^3*(2*a*e + 3*b*d)*(
d + e*x)^(1/2))/(b*e^2) + (d^3*x*(4*a*e + b*d)*(d + e*x)^(1/2))/(b*e^4) + (
2*d^2*x^2*(3*a*e + 2*b*d)*(d + e*x)^(1/2))/(b*e^3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(11/2),x)
```

```
[Out] Timed out
```

3.1894 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{7e^7(a+bx)(d+ex)^{7/2}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{3e^7(a+bx)(d+ex)^{9/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{11e^7(a+bx)(d+ex)^{11/2}}+2b^6\sqrt{a}$$

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}}{e^7(a+bx)}+\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)\sqrt{d+ex}}-\frac{10b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)^{3/2}}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)(d+ex)^{5/2}}-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{7e^7(a+bx)(d+ex)^{7/2}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{3e^7(a+bx)(d+ex)^{9/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{11e^7(a+bx)(d+ex)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(13/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x
)^(11/2)) + (4*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b
*x)*(d + e*x)^(9/2)) - (30*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^7*(a + b*x)*(d + e*x)^(7/2)) + (8*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(5/2)) - (10*b^4*(b*d - a*e)^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(3/2)) + (12*b^5*(b*d -
a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) + (2*b^6*
Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{13/2}}dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{13/2}}dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{13/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{11/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{9/2}} - \frac{20b^3(bd-ae)}{e^6(d+ex)^{7/2}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11/2}} + \frac{4b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{9/2}} - \frac{30b}{}$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(1386b^5(d+ex)^5(bd-ae)-1155b^4(d+ex)^4(bd-ae)^2+924b^3(d+ex)^3(bd-ae)^3-495b^2(d+ex)^2(bd-ae)^4+154b(d+ex)(bd-ae)^5-21(bd-ae)^6+231b^6(d+ex)^6\right)}{231e^7(a+bx)(d+ex)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(13/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^6 + 154*b*(b*d - a*e)^5*(d + e*x) - 4
95*b^2*(b*d - a*e)^4*(d + e*x)^2 + 924*b^3*(b*d - a*e)^3*(d + e*x)^3 - 1155
*b^4*(b*d - a*e)^2*(d + e*x)^4 + 1386*b^5*(b*d - a*e)*(d + e*x)^5 + 231*b^6
*(d + e*x)^6))/(231*e^7*(a + b*x)*(d + e*x)^(11/2))
```

IntegrateAlgebraic [A] time = 36.78, size = 466, normalized size = 1.27

$$\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(-21a^6e^6-154a^5be^5(d+ex)+126a^5bde^5-315a^4b^2d^2e^4-495a^4b^2e^4(d+ex)^2+770a^4b^2de^4(d+ex)+420a^3b^3d^3e^3-1540a^3b^3d^2e^3(d+ex)-924a^3b^3e^3(d+ex)^3+1980a^3b^3de^3(d+ex)^2-315a^2b^4d^4e^2+1540a^2b^4d^3e^2(d+ex)-2970a^2b^4d^2e^2(d+ex)^2-1155a^2b^4e^2(d+ex)^4+2772a^2b^4de^2(d+ex)^3+126ab^5d^5e-770ab^5d^4e(d+ex)+1980ab^5d^3e(d+ex)^2-2772ab^5d^2e(d+ex)^3-1386ab^5e(d+ex)^5+2310ab^5de(d+ex)^4-21b^6d^6+154b^6d^5(d+ex)-495b^6d^4(d+ex)^2+924b^6d^3(d+ex)^3-1155b^6d^2(d+ex)^4+231b^6(d+ex)^6+1386b^6d(d+ex)^5\right)}{231e^6(d+ex)^{11/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(1
3/2),x]
```

```
[Out] (2*Sqrt[(a*e + b*e*x)^2/e^2]*(-21*b^6*d^6 + 126*a*b^5*d^5*e - 315*a^2*b^4*d
^4*e^2 + 420*a^3*b^3*d^3*e^3 - 315*a^4*b^2*d^2*e^4 + 126*a^5*b*d*e^5 - 21*a
^6*e^6 + 154*b^6*d^5*(d + e*x) - 770*a*b^5*d^4*e*(d + e*x) + 1540*a^2*b^4*d
^3*e^2*(d + e*x) - 1540*a^3*b^3*d^2*e^3*(d + e*x) + 770*a^4*b^2*d*e^4*(d +
e*x) - 154*a^5*b*e^5*(d + e*x) - 495*b^6*d^4*(d + e*x)^2 + 1980*a*b^5*d^3*e
*(d + e*x)^2 - 2970*a^2*b^4*d^2*e^2*(d + e*x)^2 + 1980*a^3*b^3*d*e^3*(d + e
*x)^2 - 495*a^4*b^2*e^4*(d + e*x)^2 + 924*b^6*d^3*(d + e*x)^3 - 2772*a*b^5*
d^2*e*(d + e*x)^3 + 2772*a^2*b^4*d*e^2*(d + e*x)^3 - 924*a^3*b^3*e^3*(d + e
*x)^3 - 1155*b^6*d^2*(d + e*x)^4 + 2310*a*b^5*d*e*(d + e*x)^4 - 1155*a^2*b^
4*e^2*(d + e*x)^4 + 1386*b^6*d*(d + e*x)^5 - 1386*a*b^5*e*(d + e*x)^5 + 231
*b^6*(d + e*x)^6))/(231*e^6*(d + e*x)^(11/2)*(a*e + b*e*x))
```

fricas [A] time = 0.44, size = 421, normalized size = 1.14

$$\frac{2\left(231b^6e^6x^6+1024b^6d^6-512ab^5d^5e-128a^2b^4d^4e^2-64a^3b^3d^3e^3-40a^4b^2d^2e^4-28a^5bde^5-21a^6e^6+1386\left(2b^6de^5-ab^5e^6\right)x^5+1155\left(8b^6d^2e^4-4ab^5de^5-a^2b^4e^6\right)x^4+924\left(16b^6d^3e^3-8ab^5d^2e^4-2a^2b^4de^5-a^3b^3e^6\right)x^3+99\left(128b^6d^4e^2-64ab^5d^3e^3-16a^2b^4d^2e^4-8a^3b^3de^5-5a^4b^2e^6\right)x^2+22\left(256b^6d^5e-128ab^5d^4e^2-32a^2b^4d^3e^3-16a^3b^3d^2e^4-10a^4b^2de^5-7a^5be^6\right)x\right)\sqrt{ex+d}}{231\left(e^{13}x^6+6de^{12}x^5+15d^2e^{11}x^4+20d^3e^{10}x^3+15d^4e^9x^2+6d^5e^8x+d^6e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x, algorithm="
fricas")
```

```
[Out] 2/231*(231*b^6*e^6*x^6 + 1024*b^6*d^6 - 512*a*b^5*d^5*e - 128*a^2*b^4*d^4*e
^2 - 64*a^3*b^3*d^3*e^3 - 40*a^4*b^2*d^2*e^4 - 28*a^5*b*d*e^5 - 21*a^6*e^6
```

```
+ 1386*(2*b^6*d*e^5 - a*b^5*e^6)*x^5 + 1155*(8*b^6*d^2*e^4 - 4*a*b^5*d*e^5
- a^2*b^4*e^6)*x^4 + 924*(16*b^6*d^3*e^3 - 8*a*b^5*d^2*e^4 - 2*a^2*b^4*d*e^
5 - a^3*b^3*e^6)*x^3 + 99*(128*b^6*d^4*e^2 - 64*a*b^5*d^3*e^3 - 16*a^2*b^4*
d^2*e^4 - 8*a^3*b^3*d*e^5 - 5*a^4*b^2*e^6)*x^2 + 22*(256*b^6*d^5*e - 128*a*
b^5*d^4*e^2 - 32*a^2*b^4*d^3*e^3 - 16*a^3*b^3*d^2*e^4 - 10*a^4*b^2*d*e^5 -
7*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^13*x^6 + 6*d*e^12*x^5 + 15*d^2*e^11*x^4 +
20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 + 6*d^5*e^8*x + d^6*e^7)
```

giac [B] time = 0.28, size = 617, normalized size = 1.68

$$2\sqrt{ex+d}\,b^6e^{-7}\mathrm{sgn}(bx+a)+\frac{2\,\big(1386(ex+d)^5b^6d\,\mathrm{sgn}(bx+a)-1155(ex+d)^4b^6d^2\mathrm{sgn}(bx+a)+924(ex+d)^3b^6d^3\mathrm{sgn}(bx+a)-495(ex+d)^2b^6d^4\mathrm{sgn}(bx+a)+154(ex+d)b^6d^5\mathrm{sgn}(bx+a)-21b^6d^6\mathrm{sgn}(bx+a)-1386(ex+d)^5ab^5e\,\mathrm{sgn}(bx+a)+2310(ex+d)^4ab^5de\,\mathrm{sgn}(bx+a)-2772(ex+d)^3ab^5d^2e\,\mathrm{sgn}(bx+a)+1980(ex+d)^2ab^5d^3e\,\mathrm{sgn}(bx+a)-770(ex+d)ab^5d^4e\,\mathrm{sgn}(bx+a)+126ab^5d^5e\,\mathrm{sgn}(bx+a)-1155(ex+d)^4a^2b^4e^2\mathrm{sgn}(bx+a)+2772(ex+d)^3a^2b^4de^2\mathrm{sgn}(bx+a)-2970(ex+d)^2a^2b^4d^2e^2\mathrm{sgn}(bx+a)+1540(ex+d)a^2b^4d^3e^2\mathrm{sgn}(bx+a)-315a^2b^4d^4e^2\mathrm{sgn}(bx+a)-924(ex+d)^3a^3b^3e^3\mathrm{sgn}(bx+a)+1980(ex+d)^2a^3b^3de^3\mathrm{sgn}(bx+a)-1540(ex+d)a^3b^3d^2e^3\mathrm{sgn}(bx+a)+420a^3b^3d^3e^3\mathrm{sgn}(bx+a)-495(ex+d)^2a^4b^2e^4\mathrm{sgn}(bx+a)+770(ex+d)a^4b^2de^4\mathrm{sgn}(bx+a)-315a^4b^2d^2e^4\mathrm{sgn}(bx+a)-154(ex+d)a^5be^5\mathrm{sgn}(bx+a)+126a^5bde^5\mathrm{sgn}(bx+a)-21a^6e^6\mathrm{sgn}(bx+a)\big)e^{(-7)}}{231\,(ex+d)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x, algorithm="
giac")
```

```
[Out] 2*sqrt(x*e + d)*b^6*e^(-7)*sgn(b*x + a) + 2/231*(1386*(x*e + d)^5*b^6*d*sgn
(b*x + a) - 1155*(x*e + d)^4*b^6*d^2*sgn(b*x + a) + 924*(x*e + d)^3*b^6*d^3
*sgn(b*x + a) - 495*(x*e + d)^2*b^6*d^4*sgn(b*x + a) + 154*(x*e + d)*b^6*d^
5*sgn(b*x + a) - 21*b^6*d^6*sgn(b*x + a) - 1386*(x*e + d)^5*a*b^5*e*sgn(b*x
 + a) + 2310*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) - 2772*(x*e + d)^3*a*b^5*d^
2*e*sgn(b*x + a) + 1980*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) - 770*(x*e + d
)*a*b^5*d^4*e*sgn(b*x + a) + 126*a*b^5*d^5*e*sgn(b*x + a) - 1155*(x*e + d)^
4*a^2*b^4*e^2*sgn(b*x + a) + 2772*(x*e + d)^3*a^2*b^4*d*e^2*sgn(b*x + a) -
2970*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) + 1540*(x*e + d)*a^2*b^4*d^3*
e^2*sgn(b*x + a) - 315*a^2*b^4*d^4*e^2*sgn(b*x + a) - 924*(x*e + d)^3*a^3*b
^3*e^3*sgn(b*x + a) + 1980*(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a) - 1540*(x
*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) + 420*a^3*b^3*d^3*e^3*sgn(b*x + a) - 4
95*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) + 770*(x*e + d)*a^4*b^2*d*e^4*sgn(b
*x + a) - 315*a^4*b^2*d^2*e^4*sgn(b*x + a) - 154*(x*e + d)*a^5*b*e^5*sgn(b*
x + a) + 126*a^5*b*d*e^5*sgn(b*x + a) - 21*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*
e + d)^(11/2)
```

maple [A] time = 0.06, size = 393, normalized size = 1.07

$$-\frac{2\left(-231b^6e^6x^6+1386ab^5e^6x^5-2772b^6de^5x^5+1155a^2b^4e^6x^4+4620ab^5de^5x^4-9240b^6d^2e^4x^4+924a^3b^3e^6x^3+1848a^2b^4de^5x^3+7392ab^5d^2e^4x^3-14784b^6d^3e^3x^3+495a^4b^2e^6x^2+792a^3b^3de^5x^2+1584a^2b^4d^2e^4x^2+6336ab^5d^3e^3x^2-12672b^6d^4e^2x^2+154a^5be^6x+220a^4b^2de^5x+352a^3b^3d^2e^4x+704a^2b^4d^3e^3x+2816ab^5d^4e^2x-5632b^6d^5ex+21a^6e^6+28a^5bde^5+40a^4b^2d^2e^4+64a^3b^3d^3e^3+128a^2b^4d^4e^2+512ab^5d^5e-1024b^6d^6\right)\left((bx+a)^2\right)^{\frac{5}{2}}}{231\,(ex+d)^{\frac{11}{2}}\,(bx+a)^5e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x)
```

```
[Out] -2/231/(e*x+d)^(11/2)*(-231*b^6*e^6*x^6+1386*a*b^5*e^6*x^5-2772*b^6*d*e^5*x
^5+1155*a^2*b^4*e^6*x^4+4620*a*b^5*d*e^5*x^4-9240*b^6*d^2*e^4*x^4+924*a^3*b
^3*e^6*x^3+1848*a^2*b^4*d*e^5*x^3+7392*a*b^5*d^2*e^4*x^3-14784*b^6*d^3*e^3*
x^3+495*a^4*b^2*e^6*x^2+792*a^3*b^3*d*e^5*x^2+1584*a^2*b^4*d^2*e^4*x^2+6336
*a*b^5*d^3*e^3*x^2-12672*b^6*d^4*e^2*x^2+154*a^5*b*e^6*x+220*a^4*b^2*d*e^5*
x+352*a^3*b^3*d^2*e^4*x+704*a^2*b^4*d^3*e^3*x+2816*a*b^5*d^4*e^2*x-5632*b^6
*d^5*e*x+21*a^6*e^6+28*a^5*b*d*e^5+40*a^4*b^2*d^2*e^4+64*a^3*b^3*d^3*e^3+12
8*a^2*b^4*d^4*e^2+512*a*b^5*d^5*e-1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+
a)^5
```

maxima [B] time = 0.98, size = 712, normalized size = 1.93

$$-\frac{2\left(693b^5e^5x^5+256b^5d^5+128ab^4d^4e+96a^2b^3d^3e^2+80a^3b^2d^2e^3+70a^4bde^4+63a^5e^5+1155\left(2b^5de^4+ab^4e^5\right)x^4+462\left(8b^5d^2e^3+4ab^4de^4+3a^2b^3e^5\right)x^3+198\left(16b^5d^3e^2+8ab^4d^2e^3+6a^2b^3de^4+5a^3b^2e^5\right)x^2+11\left(128b^5d^4e+64ab^4d^3e^2+48a^2b^3d^2e^3+40a^3b^2de^4+35a^4be^5\right)x\right)a}{693\left(e^{11}x^5+5de^{10}x^4+10d^2e^9x^3+10d^3e^8x^2+5d^4e^7x+d^5e^6\right)\sqrt{ex+d}}+\frac{2\left(693b^5e^6x^6+3072b^5d^6-1280ab^4d^5e-256a^2b^3d^4e^2-96a^3b^2d^3e^3-40a^4bd^2e^4-14a^5de^5+693\left(12b^5de^5-5ab^4e^6\right)x^5+2310\left(12b^5d^2e^4-5ab^4de^5-a^2b^3e^6\right)x^4+462\left(96b^5d^3e^3-40ab^4d^2e^4-8a^2b^3de^5-3a^3b^2e^6\right)x^3+99\left(384b^5d^4e^2-160ab^4d^3e^3-32a^2b^3d^2e^4-12a^3b^2de^5-5a^4be^6\right)x^2+11\left(1536b^5d^5e-640ab^4d^4e^2-128a^2b^3d^3e^3-48a^3b^2d^2e^4-20a^4bde^5-7a^5e^6\right)x\right)b}{693\left(e^{12}x^5+5de^{11}x^4+10d^2e^{10}x^3+10d^3e^9x^2+5d^4e^8x+d^5e^7\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x, algorithm="
maxima")
```

```
[Out] -2/693*(693*b^5*e^5*x^5 + 256*b^5*d^5 + 128*a*b^4*d^4*e + 96*a^2*b^3*d^3*e^
2 + 80*a^3*b^2*d^2*e^3 + 70*a^4*b*d*e^4 + 63*a^5*e^5 + 1155*(2*b^5*d*e^4 +
```

```
a*b^4*e^5)*x^4 + 462*(8*b^5*d^2*e^3 + 4*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 +
198*(16*b^5*d^3*e^2 + 8*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 + 5*a^3*b^2*e^5)*x^
2 + 11*(128*b^5*d^4*e + 64*a*b^4*d^3*e^2 + 48*a^2*b^3*d^2*e^3 + 40*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*a/((e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*
d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)*sqrt(e*x + d)) + 2/693*(693*b^5*e^6*x^
6 + 3072*b^5*d^6 - 1280*a*b^4*d^5*e - 256*a^2*b^3*d^4*e^2 - 96*a^3*b^2*d^3*
e^3 - 40*a^4*b*d^2*e^4 - 14*a^5*d*e^5 + 693*(12*b^5*d*e^5 - 5*a*b^4*e^6)*x^
5 + 2310*(12*b^5*d^2*e^4 - 5*a*b^4*d*e^5 - a^2*b^3*e^6)*x^4 + 462*(96*b^5*d
^3*e^3 - 40*a*b^4*d^2*e^4 - 8*a^2*b^3*d*e^5 - 3*a^3*b^2*e^6)*x^3 + 99*(384*
b^5*d^4*e^2 - 160*a*b^4*d^3*e^3 - 32*a^2*b^3*d^2*e^4 - 12*a^3*b^2*d*e^5 - 5
*a^4*b*e^6)*x^2 + 11*(1536*b^5*d^5*e - 640*a*b^4*d^4*e^2 - 128*a^2*b^3*d^3*
e^3 - 48*a^3*b^2*d^2*e^4 - 20*a^4*b*d*e^5 - 7*a^5*e^6)*x)*b/((e^12*x^5 + 5*
d*e^11*x^4 + 10*d^2*e^10*x^3 + 10*d^3*e^9*x^2 + 5*d^4*e^8*x + d^5*e^7)*sqrt
(e*x + d))
```

mupad [B] time = 3.37, size = 532, normalized size = 1.45

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{42\,a^6\,e^6+56\,a^5\,b\,d\,e^5+80\,a^4\,b^2\,d^2\,e^4+128\,a^3\,b^3\,d^3\,e^3+256\,a^2\,b^4\,d^4\,e^2+1024\,a\,b^5\,d^5\,e-2048\,b^6\,d^6}{231\,b\,e^{12}}-\frac{2\,b^5\,x^6}{e^6}+\frac{x\,\left(308\,a^5\,b\,e^6+440\,a^4\,b^2\,d\,e^5+704\,a^3\,b^3\,d^2\,e^4+1408\,a^2\,b^4\,d^3\,e^3+5632\,a\,b^5\,d^4\,e^2-11264\,b^6\,d^5\,e\right)}{231\,b\,e^{12}}+\frac{8\,b^2\,x^3\,\left(a^3\,e^3+2\,a^2\,b\,d\,e^2+8\,a\,b^2\,d^2\,e-16\,b^3\,d^3\right)}{e^9}+\frac{6\,b\,x^2\,\left(5\,a^4\,e^4+8\,a^3\,b\,d\,e^3+16\,a^2\,b^2\,d^2\,e^2+64\,a\,b^3\,d^3\,e-128\,b^4\,d^4\right)}{7\,e^{10}}+\frac{12\,b^4\,x^5\,\left(a\,e-2\,b\,d\right)}{e^7}+\frac{10\,b^3\,x^4\,\left(a^2\,e^2+4\,a\,b\,d\,e-8\,b^2\,d^2\right)}{e^8}\right)}{x^6\,\sqrt{d+e\,x}+\frac{a\,d^5\,\sqrt{d+e\,x}}{b\,e^5}+\frac{x^5\,\left(231\,a\,e^{12}+1155\,b\,d\,e^{11}\right)\,\sqrt{d+e\,x}}{231\,b\,e^{12}}+\frac{5\,d\,x^4\,\left(a\,e+2\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^4\,x\,\left(5\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^5}+\frac{10\,d^2\,x^3\,\left(a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}+\frac{5\,d^3\,x^2\,\left(2\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(13/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((42*a^6*e^6 - 2048*b^6*d^6 + 256*a^2*b^4
*d^4*e^2 + 128*a^3*b^3*d^3*e^3 + 80*a^4*b^2*d^2*e^4 + 1024*a*b^5*d^5*e + 56
*a^5*b*d*e^5)/(231*b*e^12) - (2*b^5*x^6)/e^6 + (x*(308*a^5*b*e^6 - 11264*b^
6*d^5*e + 5632*a*b^5*d^4*e^2 + 440*a^4*b^2*d*e^5 + 1408*a^2*b^4*d^3*e^3 + 7
04*a^3*b^3*d^2*e^4))/(231*b*e^12) + (8*b^2*x^3*(a^3*e^3 - 16*b^3*d^3 + 8*a*
b^2*d^2*e + 2*a^2*b*d*e^2))/e^9 + (6*b*x^2*(5*a^4*e^4 - 128*b^4*d^4 + 16*a^
2*b^2*d^2*e^2 + 64*a*b^3*d^3*e + 8*a^3*b*d*e^3))/(7*e^10) + (12*b^4*x^5*(a*
e - 2*b*d))/e^7 + (10*b^3*x^4*(a^2*e^2 - 8*b^2*d^2 + 4*a*b*d*e))/e^8))/(x^6
*(d + e*x)^(1/2) + (a*d^5*(d + e*x)^(1/2))/(b*e^5) + (x^5*(231*a*e^12 + 115
5*b*d*e^11)*(d + e*x)^(1/2))/(231*b*e^12) + (5*d*x^4*(a*e + 2*b*d)*(d + e*x
)^(1/2))/(b*e^2) + (d^4*x*(5*a*e + b*d)*(d + e*x)^(1/2))/(b*e^5) + (10*d^2*
x^3*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^3) + (5*d^3*x^2*(2*a*e + b*d)*(d + e*
x)^(1/2))/(b*e^4))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(13/2),x)
```

```
[Out] Timed out
```

3.1895 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx$

Optimal. Leaf size=370

$$-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^7(a+bx)(d+ex)^{9/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{11e^7(a+bx)(d+ex)^{11/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{13e^7(a+bx)(d+ex)^{13/2}}-\frac{2b^6\sqrt{}}{e^7(}$$

Rubi [A] time = 0.14, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^6\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}}+\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)^{3/2}}-\frac{6b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)^{5/2}}+\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^7(a+bx)(d+ex)^{7/2}}-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^7(a+bx)(d+ex)^{9/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{11e^7(a+bx)(d+ex)^{11/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{13e^7(a+bx)(d+ex)^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(15/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)*(d + e*x
)^(13/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a +
 b*x)*(d + e*x)^(11/2)) - (10*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(3*e^7*(a + b*x)*(d + e*x)^(9/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^(7/2)) - (6*b^4*(b*d - a*e)^2*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(5/2)) + (4*b^5*(b*
d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(3/2)) - (
2*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{15/2}}\,dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{15/2}}\,dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{15/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{13/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{11/2}} - \frac{20b^3(bd-ae)}{e^6(d+ex)^{9/2}}\right.}{ab+b^2x}$$
$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11/2}} - 10$$

Mathematica [A] time = 0.16, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(6006b^5(d+ex)^5(bd-ae) - 9009b^4(d+ex)^4(bd-ae)^2 + 8580b^3(d+ex)^3(bd-ae)^3 - 5005b^2(d+ex)^2(bd-ae)^4 + 1638b(d+ex)(bd-ae)^5 - 231(bd-ae)^6 - 3003b^6(d+ex)^6\right)}{3003e^7(a+bx)(d+ex)^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(15/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-231*(b*d - a*e)^6 + 1638*b*(b*d - a*e)^5*(d + e*x) -
 5005*b^2*(b*d - a*e)^4*(d + e*x)^2 + 8580*b^3*(b*d - a*e)^3*(d + e*x)^3 -
9009*b^4*(b*d - a*e)^2*(d + e*x)^4 + 6006*b^5*(b*d - a*e)*(d + e*x)^5 - 300
3*b^6*(d + e*x)^6))/(3003*e^7*(a + b*x)*(d + e*x)^(13/2))
```

IntegrateAlgebraic [A] time = 42.88, size = 466, normalized size = 1.26

$$-\frac{2\sqrt{\frac{(ae+bex)^2}{e^2}}\left(231a^6e^6 + 1638a^5be^5(d+ex) - 1386a^5bde^5 + 3465a^4b^2d^2e^4 + 5005a^4b^2e^4(d+ex)^2 - 8190a^4b^2de^4(d+ex) - 4620a^3b^3d^3e^3 + 16380a^3b^3d^2e^3(d+ex) + 8580a^3b^3e^3(d+ex)^3 - 20020a^3b^3de^3(d+ex)^2 + 3465a^2b^4d^4e^2 - 16380a^2b^4d^3e^2(d+ex) + 30030a^2b^4d^2e^2(d+ex)^2 + 9009a^2b^4e^2(d+ex)^4 - 25740a^2b^4de^2(d+ex)^3 - 1386ab^5d^5e + 8190ab^5d^4e(d+ex) - 20020ab^5d^3e(d+ex)^2 + 25740ab^5d^2e(d+ex)^3 + 6006ab^5e(d+ex)^5 - 18018ab^5de(d+ex)^4 + 231b^6d^6 - 1638b^6d^5(d+ex) + 5005b^6d^4(d+ex)^2 - 8580b^6d^3(d+ex)^3 + 9009b^6d^2(d+ex)^4 + 3003b^6(d+ex)^6 - 6006b^6d(d+ex)^5\right)}{3003e^6(d+ex)^{13/2}(ae+bex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(1
5/2),x]
```

```
[Out] (-2*Sqrt[(a*e + b*e*x)^2/e^2]*(231*b^6*d^6 - 1386*a*b^5*d^5*e + 3465*a^2*b^
4*d^4*e^2 - 4620*a^3*b^3*d^3*e^3 + 3465*a^4*b^2*d^2*e^4 - 1386*a^5*b*d*e^5
+ 231*a^6*e^6 - 1638*b^6*d^5*(d + e*x) + 8190*a*b^5*d^4*e*(d + e*x) - 16380
*a^2*b^4*d^3*e^2*(d + e*x) + 16380*a^3*b^3*d^2*e^3*(d + e*x) - 8190*a^4*b^2
*d*e^4*(d + e*x) + 1638*a^5*b*e^5*(d + e*x) + 5005*b^6*d^4*(d + e*x)^2 - 20
020*a*b^5*d^3*e*(d + e*x)^2 + 30030*a^2*b^4*d^2*e^2*(d + e*x)^2 - 20020*a^3
*b^3*d*e^3*(d + e*x)^2 + 5005*a^4*b^2*e^4*(d + e*x)^2 - 8580*b^6*d^3*(d + e
*x)^3 + 25740*a*b^5*d^2*e*(d + e*x)^3 - 25740*a^2*b^4*d*e^2*(d + e*x)^3 + 8
580*a^3*b^3*e^3*(d + e*x)^3 + 9009*b^6*d^2*(d + e*x)^4 - 18018*a*b^5*d*e*(d
 + e*x)^4 + 9009*a^2*b^4*e^2*(d + e*x)^4 - 6006*b^6*d*(d + e*x)^5 + 6006*a*
b^5*e*(d + e*x)^5 + 3003*b^6*(d + e*x)^6))/(3003*e^6*(d + e*x)^(13/2)*(a*e
+ b*e*x))
```

fricas [A] time = 0.44, size = 431, normalized size = 1.16

$$-\frac{2\left(3003b^6e^6x^6 + 1024b^6d^6 + 512ab^5d^5e + 384a^2b^4d^4e^2 + 320a^3b^3d^3e^3 + 280a^4b^2d^2e^4 + 252a^5bde^5 + 231a^6e^6 + 6006\left(2b^6de^5 + ab^5e^6\right)x^5 + 3003\left(8b^6d^2e^4 + 4ab^5de^5 + 3a^2b^4e^6\right)x^4 + 1716\left(16b^6d^3e^3 + 8ab^5d^2e^4 + 6a^2b^4de^5 + 5a^3b^3e^6\right)x^3 + 143\left(128b^6d^4e^2 + 64ab^5d^3e^3 + 48a^2b^4d^2e^4 + 40a^3b^3de^5 + 35a^4b^2e^6\right)x^2 + 26\left(256b^6d^5e + 128ab^5d^4e^2 + 96a^2b^4d^3e^3 + 80a^3b^3d^2e^4 + 70a^4b^2de^5 + 63a^5be^6\right)x\right)\sqrt{ex+d}}{3003\left(e^{14}x^7 + 7de^{13}x^6 + 21d^2e^{12}x^5 + 35d^3e^{11}x^4 + 35d^4e^{10}x^3 + 21d^5e^9x^2 + 7d^6e^8x + d^7e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x, algorithm="
fricas")
```

```
[Out] -2/3003*(3003*b^6*e^6*x^6 + 1024*b^6*d^6 + 512*a*b^5*d^5*e + 384*a^2*b^4*d^
4*e^2 + 320*a^3*b^3*d^3*e^3 + 280*a^4*b^2*d^2*e^4 + 252*a^5*b*d*e^5 + 231*a
```

```
^6*e^6 + 6006*(2*b^6*d*e^5 + a*b^5*e^6)*x^5 + 3003*(8*b^6*d^2*e^4 + 4*a*b^5
*d*e^5 + 3*a^2*b^4*e^6)*x^4 + 1716*(16*b^6*d^3*e^3 + 8*a*b^5*d^2*e^4 + 6*a^
2*b^4*d*e^5 + 5*a^3*b^3*e^6)*x^3 + 143*(128*b^6*d^4*e^2 + 64*a*b^5*d^3*e^3
+ 48*a^2*b^4*d^2*e^4 + 40*a^3*b^3*d*e^5 + 35*a^4*b^2*e^6)*x^2 + 26*(256*b^6
*d^5*e + 128*a*b^5*d^4*e^2 + 96*a^2*b^4*d^3*e^3 + 80*a^3*b^3*d^2*e^4 + 70*a
^4*b^2*d*e^5 + 63*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^14*x^7 + 7*d*e^13*x^6 + 21
*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 35*d^4*e^10*x^3 + 21*d^5*e^9*x^2 + 7*d^6*
e^8*x + d^7*e^7)
```

giac [B] time = 0.29, size = 614, normalized size = 1.66

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x, algorithm="
giac")
```

```
[Out] -2/3003*(3003*(x*e + d)^6*b^6*sgn(b*x + a) - 6006*(x*e + d)^5*b^6*d*sgn(b*x
 + a) + 9009*(x*e + d)^4*b^6*d^2*sgn(b*x + a) - 8580*(x*e + d)^3*b^6*d^3*sg
n(b*x + a) + 5005*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 1638*(x*e + d)*b^6*d^5
*sgn(b*x + a) + 231*b^6*d^6*sgn(b*x + a) + 6006*(x*e + d)^5*a*b^5*e*sgn(b*x
 + a) - 18018*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) + 25740*(x*e + d)^3*a*b^5*
d^2*e*sgn(b*x + a) - 20020*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) + 8190*(x*e
 + d)*a*b^5*d^4*e*sgn(b*x + a) - 1386*a*b^5*d^5*e*sgn(b*x + a) + 9009*(x*e
+ d)^4*a^2*b^4*e^2*sgn(b*x + a) - 25740*(x*e + d)^3*a^2*b^4*d*e^2*sgn(b*x +
 a) + 30030*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 16380*(x*e + d)*a^2*
b^4*d^3*e^2*sgn(b*x + a) + 3465*a^2*b^4*d^4*e^2*sgn(b*x + a) + 8580*(x*e +
d)^3*a^3*b^3*e^3*sgn(b*x + a) - 20020*(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a
) + 16380*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) - 4620*a^3*b^3*d^3*e^3*sgn
(b*x + a) + 5005*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) - 8190*(x*e + d)*a^4*
b^2*d*e^4*sgn(b*x + a) + 3465*a^4*b^2*d^2*e^4*sgn(b*x + a) + 1638*(x*e + d)
*a^5*b*e^5*sgn(b*x + a) - 1386*a^5*b*d*e^5*sgn(b*x + a) + 231*a^6*e^6*sgn(b
*x + a))*e^(-7)/(x*e + d)^(13/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x)
```

```
[Out] -2/3003/(e*x+d)^(13/2)*(3003*b^6*e^6*x^6+6006*a*b^5*e^6*x^5+12012*b^6*d*e^5
*x^5+9009*a^2*b^4*e^6*x^4+12012*a*b^5*d*e^5*x^4+24024*b^6*d^2*e^4*x^4+8580*
a^3*b^3*e^6*x^3+10296*a^2*b^4*d*e^5*x^3+13728*a*b^5*d^2*e^4*x^3+27456*b^6*d
^3*e^3*x^3+5005*a^4*b^2*e^6*x^2+5720*a^3*b^3*d*e^5*x^2+6864*a^2*b^4*d^2*e^4
*x^2+9152*a*b^5*d^3*e^3*x^2+18304*b^6*d^4*e^2*x^2+1638*a^5*b*e^6*x+1820*a^4
*b^2*d*e^5*x+2080*a^3*b^3*d^2*e^4*x+2496*a^2*b^4*d^3*e^3*x+3328*a*b^5*d^4*e
^2*x+6656*b^6*d^5*e*x+231*a^6*e^6+252*a^5*b*d*e^5+280*a^4*b^2*d^2*e^4+320*a
^3*b^3*d^3*e^3+384*a^2*b^4*d^4*e^2+512*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2
)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.90, size = 735, normalized size = 1.99

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x, algorithm="
maxima")
```

```
[Out] -2/9009*(3003*b^5*e^5*x^5 + 256*b^5*d^5 + 384*a*b^4*d^4*e + 480*a^2*b^3*d^3
*e^2 + 560*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 + 693*a^5*e^5 + 3003*(2*b^5*d*
e^4 + 3*a*b^4*e^5)*x^4 + 858*(8*b^5*d^2*e^3 + 12*a*b^4*d*e^4 + 15*a^2*b^3*e
^5)*x^3 + 286*(16*b^5*d^3*e^2 + 24*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 + 35*a^
3*b^2*e^5)*x^2 + 13*(128*b^5*d^4*e + 192*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^
3 + 280*a^3*b^2*d*e^4 + 315*a^4*b*e^5)*x)*a/((e^12*x^6 + 6*d*e^11*x^5 + 15*
d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x + d^6*e^6)*sqr
t(e*x + d)) - 2/9009*(9009*b^5*e^6*x^6 + 3072*b^5*d^6 + 1280*a*b^4*d^5*e +
768*a^2*b^3*d^4*e^2 + 480*a^3*b^2*d^3*e^3 + 280*a^4*b*d^2*e^4 + 126*a^5*d*e
^5 + 3003*(12*b^5*d*e^5 + 5*a*b^4*e^6)*x^5 + 6006*(12*b^5*d^2*e^4 + 5*a*b^4
*d*e^5 + 3*a^2*b^3*e^6)*x^4 + 858*(96*b^5*d^3*e^3 + 40*a*b^4*d^2*e^4 + 24*a
^2*b^3*d*e^5 + 15*a^3*b^2*e^6)*x^3 + 143*(384*b^5*d^4*e^2 + 160*a*b^4*d^3*e
^3 + 96*a^2*b^3*d^2*e^4 + 60*a^3*b^2*d*e^5 + 35*a^4*b*e^6)*x^2 + 13*(1536*b
^5*d^5*e + 640*a*b^4*d^4*e^2 + 384*a^2*b^3*d^3*e^3 + 240*a^3*b^2*d^2*e^4 +
140*a^4*b*d*e^5 + 63*a^5*e^6)*x)*b/((e^13*x^6 + 6*d*e^12*x^5 + 15*d^2*e^11*
x^4 + 20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 + 6*d^5*e^8*x + d^6*e^7)*sqrt(e*x +
d))
```

mupad [B] time = 3.49, size = 561, normalized size = 1.52

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{462\,a^6\,e^6+504\,a^5\,b\,d\,e^5+560\,a^4\,b^2\,d^2\,e^4+640\,a^3\,b^3\,d^3\,e^3+768\,a^2\,b^4\,d^4\,e^2+1024\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{3003\,b\,e^{13}}+\frac{2\,b^5\,x^6}{e^7}+\frac{x\,\left(3276\,a^5\,b\,e^6+3640\,a^4\,b^2\,d\,e^5+4160\,a^3\,b^3\,d^2\,e^4+4992\,a^2\,b^4\,d^3\,e^3+6656\,a\,b^5\,d^4\,e^2+13312\,b^6\,d^5\,e\right)}{3003\,b\,e^{13}}+\frac{8\,b^2\,x^3\,\left(5\,a^3\,e^3+6\,a^2\,b\,d\,e^2+8\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{7\,e^{10}}+\frac{2\,b\,x^2\,\left(35\,a^4\,e^4+40\,a^3\,b\,d\,e^3+48\,a^2\,b^2\,d^2\,e^2+64\,a\,b^3\,d^3\,e+128\,b^4\,d^4\right)}{21\,e^{11}}+\frac{4\,b^4\,x^5\,\left(a\,e+2\,b\,d\right)}{e^8}+\frac{2\,b^3\,x^4\,\left(3\,a^2\,e^2+4\,a\,b\,d\,e+8\,b^2\,d^2\right)}{e^9}\right)}{x^7\,\sqrt{d+e\,x}+\frac{a\,d^6\,\sqrt{d+e\,x}}{b\,e^6}+\frac{x^6\,\left(a\,e+6\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e}+\frac{3\,d\,x^5\,\left(2\,a\,e+5\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^5\,x\,\left(6\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^6}+\frac{5\,d^2\,x^4\,\left(3\,a\,e+4\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}+\frac{5\,d^3\,x^3\,\left(4\,a\,e+3\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^4}+\frac{3\,d^4\,x^2\,\left(5\,a\,e+2\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(15/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((462*a^6*e^6 + 2048*b^6*d^6 + 768*a^2*b^
4*d^4*e^2 + 640*a^3*b^3*d^3*e^3 + 560*a^4*b^2*d^2*e^4 + 1024*a*b^5*d^5*e +
504*a^5*b*d*e^5)/(3003*b*e^13) + (2*b^5*x^6)/e^7 + (x*(3276*a^5*b*e^6 + 133
12*b^6*d^5*e + 6656*a*b^5*d^4*e^2 + 3640*a^4*b^2*d*e^5 + 4992*a^2*b^4*d^3*e
^3 + 4160*a^3*b^3*d^2*e^4))/(3003*b*e^13) + (8*b^2*x^3*(5*a^3*e^3 + 16*b^3*
d^3 + 8*a*b^2*d^2*e + 6*a^2*b*d*e^2))/(7*e^10) + (2*b*x^2*(35*a^4*e^4 + 128
*b^4*d^4 + 48*a^2*b^2*d^2*e^2 + 64*a*b^3*d^3*e + 40*a^3*b*d*e^3))/(21*e^11)
 + (4*b^4*x^5*(a*e + 2*b*d))/e^8 + (2*b^3*x^4*(3*a^2*e^2 + 8*b^2*d^2 + 4*a*
b*d*e))/e^9))/(x^7*(d + e*x)^(1/2) + (a*d^6*(d + e*x)^(1/2))/(b*e^6) + (x^6
*(a*e + 6*b*d)*(d + e*x)^(1/2))/(b*e) + (3*d*x^5*(2*a*e + 5*b*d)*(d + e*x)^
(1/2))/(b*e^2) + (d^5*x*(6*a*e + b*d)*(d + e*x)^(1/2))/(b*e^6) + (5*d^2*x^4
*(3*a*e + 4*b*d)*(d + e*x)^(1/2))/(b*e^3) + (5*d^3*x^3*(4*a*e + 3*b*d)*(d +
 e*x)^(1/2))/(b*e^4) + (3*d^4*x^2*(5*a*e + 2*b*d)*(d + e*x)^(1/2))/(b*e^5))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(15/2),x)
```

```
[Out] Timed out
```

3.1896 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx$

Optimal. Leaf size=376

$$-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^7(a+bx)(d+ex)^{11/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{13e^7(a+bx)(d+ex)^{13/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{15e^7(a+bx)(d+ex)^{15/2}}-\frac{2b^6\sqrt{\ldots}}{3e^7(\ldots}$$

Rubi [A] time = 0.14, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^6\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{3/2}}+\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^7(a+bx)(d+ex)^{5/2}}-\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^7(a+bx)(d+ex)^{7/2}}+\frac{40b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^7(a+bx)(d+ex)^{9/2}}-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^7(a+bx)(d+ex)^{11/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{13e^7(a+bx)(d+ex)^{13/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{15e^7(a+bx)(d+ex)^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(17/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x)*(d + e*x
)^(15/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a +
 b*x)*(d + e*x)^(13/2)) - (30*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(11*e^7*(a + b*x)*(d + e*x)^(11/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^(9/2)) - (30*b^4*(b*d - a*e)
^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^(7/2)) + (12*b
^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^(5
/2)) - (2*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^(3/
2))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{17/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{17/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{17/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{15/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{13/2}} - \frac{20b^3(bd-ae)}{e^6(d+ex)^{11/}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{15e^7(a+bx)(d+ex)^{15/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13/2}} - \frac{30}{}$$

Mathematica [A] time = 0.16, size = 163, normalized size = 0.43

$$\frac{2\sqrt{(a+bx)^2}\left(54054b^5(d+ex)^5(bd-ae)-96525b^4(d+ex)^4(bd-ae)^2+100100b^3(d+ex)^3(bd-ae)^3-61425b^2(d+ex)^2(bd-ae)^4+20790b(d+ex)(bd-ae)^5-3003(bd-ae)^6-15015b^6(d+ex)^6\right)}{45045e^7(a+bx)(d+ex)^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(17/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-3003*(b*d - a*e)^6 + 20790*b*(b*d - a*e)^5*(d + e*x)
 - 61425*b^2*(b*d - a*e)^4*(d + e*x)^2 + 100100*b^3*(b*d - a*e)^3*(d + e*x)
^3 - 96525*b^4*(b*d - a*e)^2*(d + e*x)^4 + 54054*b^5*(b*d - a*e)*(d + e*x)^
5 - 15015*b^6*(d + e*x)^6))/(45045*e^7*(a + b*x)*(d + e*x)^(15/2))
```

IntegrateAlgebraic [A] time = 0.32, size = 398, normalized size = 1.06

$$-\frac{2\sqrt{(a+bx)^2}\left(3003a^6e^6+2772a^5bde^5+20790a^5be^6x+2520a^4b^2d^2e^4+18900a^4b^2de^5x+61425a^4b^2e^6x^2+2240a^3b^3d^3e^3+16800a^3b^3d^2e^4x+54600a^3b^3de^5x^2+100100a^3b^3e^6x^3+1920a^2b^4d^4e^2+14400a^2b^4d^3e^3x+46800a^2b^4d^2e^4x^2+85800a^2b^4de^5x^3+96525a^2b^4e^6x^4+1536ab^5d^5e+11520ab^5d^4e^2x+37440ab^5d^3e^3x^2+68640ab^5d^2e^4x^3+77220ab^5de^5x^4+54054ab^5e^6x^5+1024b^6d^6+7680b^6d^5ex+24960b^6d^4e^2x^2+45760b^6d^3e^3x^3+51480b^6d^2e^4x^4+36036b^6de^5x^5+15015b^6e^6x^6\right)}{45045e^7(a+bx)(d+ex)^{15/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(1
7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(1024*b^6*d^6 + 1536*a*b^5*d^5*e + 1920*a^2*b^4*d^4*e
^2 + 2240*a^3*b^3*d^3*e^3 + 2520*a^4*b^2*d^2*e^4 + 2772*a^5*b*d*e^5 + 3003*
a^6*e^6 + 7680*b^6*d^5*e*x + 11520*a*b^5*d^4*e^2*x + 14400*a^2*b^4*d^3*e^3*
x + 16800*a^3*b^3*d^2*e^4*x + 18900*a^4*b^2*d*e^5*x + 20790*a^5*b*e^6*x + 2
4960*b^6*d^4*e^2*x^2 + 37440*a*b^5*d^3*e^3*x^2 + 46800*a^2*b^4*d^2*e^4*x^2
+ 54600*a^3*b^3*d*e^5*x^2 + 61425*a^4*b^2*e^6*x^2 + 45760*b^6*d^3*e^3*x^3 +
 68640*a*b^5*d^2*e^4*x^3 + 85800*a^2*b^4*d*e^5*x^3 + 100100*a^3*b^3*e^6*x^3
 + 51480*b^6*d^2*e^4*x^4 + 77220*a*b^5*d*e^5*x^4 + 96525*a^2*b^4*e^6*x^4 +
36036*b^6*d*e^5*x^5 + 54054*a*b^5*e^6*x^5 + 15015*b^6*e^6*x^6))/(45045*e^7*
(a + b*x)*(d + e*x)^(15/2))
```

fricas [A] time = 0.43, size = 443, normalized size = 1.18

$$-\frac{2\left(15015b^6e^6x^6+1024b^6d^6+1536ab^5d^5e+1920a^2b^4d^4e^2+2240a^3b^3d^3e^3+2520a^4b^2d^2e^4+2772a^5bde^5+3003a^6e^6+18018\left(2b^6de^5+3ab^5e^6\right)x^5+6435\left(8b^6d^2e^4+12ab^5de^5+15a^2b^4e^6\right)x^4+2860\left(16b^6d^3e^3+24ab^5d^2e^4+30a^2b^4de^5+35a^3b^3e^6\right)x^3+195\left(128b^6d^4e^2+192ab^5d^3e^3+240a^2b^4d^2e^4+280a^3b^3de^5+315a^4b^2e^6\right)x^2+30\left(256b^6d^5e+384ab^5d^4e^2+480a^2b^4d^3e^3+560a^3b^3d^2e^4+630a^4b^2de^5+693a^5be^6\right)x\right)\sqrt{ex+d}}{45045\left(e^{15}x^8+8de^{14}x^7+28d^2e^{13}x^6+56d^3e^{12}x^5+70d^4e^{11}x^4+56d^5e^{10}x^3+28d^6e^9x^2+8d^7e^8x+d^8e^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x, algorithm="
fricas")
```

```
[Out] -2/45045*(15015*b^6*e^6*x^6 + 1024*b^6*d^6 + 1536*a*b^5*d^5*e + 1920*a^2*b^
4*d^4*e^2 + 2240*a^3*b^3*d^3*e^3 + 2520*a^4*b^2*d^2*e^4 + 2772*a^5*b*d*e^5
+ 3003*a^6*e^6 + 18018*(2*b^6*d*e^5 + 3*a*b^5*e^6)*x^5 + 6435*(8*b^6*d^2*e^
4 + 12*a*b^5*d*e^5 + 15*a^2*b^4*e^6)*x^4 + 2860*(16*b^6*d^3*e^3 + 24*a*b^5*
```

```
d^2*e^4 + 30*a^2*b^4*d*e^5 + 35*a^3*b^3*e^6)*x^3 + 195*(128*b^6*d^4*e^2 + 1
92*a*b^5*d^3*e^3 + 240*a^2*b^4*d^2*e^4 + 280*a^3*b^3*d*e^5 + 315*a^4*b^2*e^
6)*x^2 + 30*(256*b^6*d^5*e + 384*a*b^5*d^4*e^2 + 480*a^2*b^4*d^3*e^3 + 560*
a^3*b^3*d^2*e^4 + 630*a^4*b^2*d*e^5 + 693*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^15
*x^8 + 8*d*e^14*x^7 + 28*d^2*e^13*x^6 + 56*d^3*e^12*x^5 + 70*d^4*e^11*x^4 +
 56*d^5*e^10*x^3 + 28*d^6*e^9*x^2 + 8*d^7*e^8*x + d^8*e^7)
```

giac [B]   time = 0.29, size = 614, normalized size = 1.63

$$-\frac{2\left(15015\left(xe+d\right)^{6}b^{6}\mathrm{sgn}\left(bx+a\right)-54054\left(xe+d\right)^{5}b^{6}d\,\mathrm{sgn}\left(bx+a\right)+96525\left(xe+d\right)^{4}b^{6}d^{2}\mathrm{sgn}\left(bx+a\right)-100100\left(xe+d\right)^{3}b^{6}d^{3}\mathrm{sgn}\left(bx+a\right)+61425\left(xe+d\right)^{2}b^{6}d^{4}\mathrm{sgn}\left(bx+a\right)-20790\left(xe+d\right)b^{6}d^{5}\mathrm{sgn}\left(bx+a\right)+3003\,b^{6}d^{6}\mathrm{sgn}\left(bx+a\right)+54054\left(xe+d\right)^{5}ab^{5}e\,\mathrm{sgn}\left(bx+a\right)-193050\left(xe+d\right)^{4}ab^{5}de\,\mathrm{sgn}\left(bx+a\right)+300300\left(xe+d\right)^{3}ab^{5}d^{2}e\,\mathrm{sgn}\left(bx+a\right)-245700\left(xe+d\right)^{2}ab^{5}d^{3}e\,\mathrm{sgn}\left(bx+a\right)+103950\left(xe+d\right)ab^{5}d^{4}e\,\mathrm{sgn}\left(bx+a\right)-18018\,ab^{5}d^{5}e\,\mathrm{sgn}\left(bx+a\right)+96525\left(xe+d\right)^{4}a^{2}b^{4}e^{2}\mathrm{sgn}\left(bx+a\right)-300300\left(xe+d\right)^{3}a^{2}b^{4}de^{2}\mathrm{sgn}\left(bx+a\right)+368550\left(xe+d\right)^{2}a^{2}b^{4}d^{2}e^{2}\mathrm{sgn}\left(bx+a\right)-207900\left(xe+d\right)a^{2}b^{4}d^{3}e^{2}\mathrm{sgn}\left(bx+a\right)+45045\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left(bx+a\right)+100100\left(xe+d\right)^{3}a^{3}b^{3}e^{3}\mathrm{sgn}\left(bx+a\right)-245700\left(xe+d\right)^{2}a^{3}b^{3}de^{3}\mathrm{sgn}\left(bx+a\right)+207900\left(xe+d\right)a^{3}b^{3}d^{2}e^{3}\mathrm{sgn}\left(bx+a\right)-60060\,a^{3}b^{3}d^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+61425\left(xe+d\right)^{2}a^{4}b^{2}e^{4}\mathrm{sgn}\left(bx+a\right)-103950\left(xe+d\right)a^{4}b^{2}de^{4}\mathrm{sgn}\left(bx+a\right)+45045\,a^{4}b^{2}d^{2}e^{4}\mathrm{sgn}\left(bx+a\right)+20790\left(xe+d\right)a^{5}be^{5}\mathrm{sgn}\left(bx+a\right)-18018\,a^{5}bde^{5}\mathrm{sgn}\left(bx+a\right)+3003\,a^{6}e^{6}\mathrm{sgn}\left(bx+a\right)\right)e^{\left(-7\right)}}{45045\left(xe+d\right)^{\frac{15}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x, algorithm="
giac")
```

```
[Out] -2/45045*(15015*(x*e + d)^6*b^6*sgn(b*x + a) - 54054*(x*e + d)^5*b^6*d*sgn(
b*x + a) + 96525*(x*e + d)^4*b^6*d^2*sgn(b*x + a) - 100100*(x*e + d)^3*b^6*
d^3*sgn(b*x + a) + 61425*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 20790*(x*e + d)
*b^6*d^5*sgn(b*x + a) + 3003*b^6*d^6*sgn(b*x + a) + 54054*(x*e + d)^5*a*b^5
*e*sgn(b*x + a) - 193050*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) + 300300*(x*e +
 d)^3*a*b^5*d^2*e*sgn(b*x + a) - 245700*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a
) + 103950*(x*e + d)*a*b^5*d^4*e*sgn(b*x + a) - 18018*a*b^5*d^5*e*sgn(b*x +
 a) + 96525*(x*e + d)^4*a^2*b^4*e^2*sgn(b*x + a) - 300300*(x*e + d)^3*a^2*b
^4*d*e^2*sgn(b*x + a) + 368550*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 2
07900*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) + 45045*a^2*b^4*d^4*e^2*sgn(b*
x + a) + 100100*(x*e + d)^3*a^3*b^3*e^3*sgn(b*x + a) - 245700*(x*e + d)^2*a
^3*b^3*d*e^3*sgn(b*x + a) + 207900*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) -
 60060*a^3*b^3*d^3*e^3*sgn(b*x + a) + 61425*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x
 + a) - 103950*(x*e + d)*a^4*b^2*d*e^4*sgn(b*x + a) + 45045*a^4*b^2*d^2*e^4
*sgn(b*x + a) + 20790*(x*e + d)*a^5*b*e^5*sgn(b*x + a) - 18018*a^5*b*d*e^5*
sgn(b*x + a) + 3003*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(15/2)
```

maple [A]   time = 0.05, size = 393, normalized size = 1.05

$$-\frac{2\left(15015b^{6}e^{6}x^{6}+54054a\,b^{5}e^{6}x^{5}+36036b^{6}d\,e^{5}x^{5}+96525a^{2}b^{4}e^{6}x^{4}+77220a\,b^{5}d\,e^{5}x^{4}+51480b^{6}d^{2}e^{4}x^{4}+100100a^{3}b^{3}e^{6}x^{3}+85800a^{2}b^{4}d\,e^{5}x^{3}+68640a\,b^{5}d^{2}e^{4}x^{3}+45760b^{6}d^{3}e^{3}x^{3}+61425a^{4}b^{2}e^{6}x^{2}+54600a^{3}b^{3}d\,e^{5}x^{2}+46800a^{2}b^{4}d^{2}e^{4}x^{2}+37440a\,b^{5}d^{3}e^{3}x^{2}+24960b^{6}d^{4}e^{2}x^{2}+20790a^{5}b\,e^{6}x+18900a^{4}b^{2}d\,e^{5}x+16800a^{3}b^{3}d^{2}e^{4}x+14400a^{2}b^{4}d^{3}e^{3}x+11520a\,b^{5}d^{4}e^{2}x+7680b^{6}d^{5}ex+3003a^{6}e^{6}+2772a^{5}bd\,e^{5}+2520a^{4}b^{2}d^{2}e^{4}+2240a^{3}b^{3}d^{3}e^{3}+1920a^{2}b^{4}d^{4}e^{2}+1536a\,b^{5}d^{5}e+1024b^{6}d^{6}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}}{45045\left(ex+d\right)^{\frac{15}{2}}\left(bx+a\right)^{5}e^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x)
```

```
[Out] -2/45045/(e*x+d)^(15/2)*(15015*b^6*e^6*x^6+54054*a*b^5*e^6*x^5+36036*b^6*d*
e^5*x^5+96525*a^2*b^4*e^6*x^4+77220*a*b^5*d*e^5*x^4+51480*b^6*d^2*e^4*x^4+1
00100*a^3*b^3*e^6*x^3+85800*a^2*b^4*d*e^5*x^3+68640*a*b^5*d^2*e^4*x^3+45760
*b^6*d^3*e^3*x^3+61425*a^4*b^2*e^6*x^2+54600*a^3*b^3*d*e^5*x^2+46800*a^2*b^
4*d^2*e^4*x^2+37440*a*b^5*d^3*e^3*x^2+24960*b^6*d^4*e^2*x^2+20790*a^5*b*e^6
*x+18900*a^4*b^2*d*e^5*x+16800*a^3*b^3*d^2*e^4*x+14400*a^2*b^4*d^3*e^3*x+11
520*a*b^5*d^4*e^2*x+7680*b^6*d^5*e*x+3003*a^6*e^6+2772*a^5*b*d*e^5+2520*a^4
*b^2*d^2*e^4+2240*a^3*b^3*d^3*e^3+1920*a^2*b^4*d^4*e^2+1536*a*b^5*d^5*e+102
4*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B]   time = 0.97, size = 757, normalized size = 2.01

$$-\frac{2\left(9009\,b^{5}e^{5}x^{5}+256\,b^{5}d^{5}+640\,ab^{4}d^{4}e+1120\,a^{2}b^{3}d^{3}e^{2}+1680\,a^{3}b^{2}d^{2}e^{3}+2310\,a^{4}bde^{4}+3003\,a^{5}e^{5}+6435\left(2\,b^{5}de^{4}+5\,ab^{4}e^{5}\right)x^{4}+1430\left(8\,b^{5}d^{2}e^{3}+20\,ab^{4}de^{4}+35\,a^{2}b^{3}e^{5}\right)x^{3}+390\left(16\,b^{5}d^{3}e^{2}+40\,ab^{4}d^{2}e^{3}+70\,a^{2}b^{3}de^{4}+105\,a^{3}b^{2}e^{5}\right)x^{2}+15\left(128\,b^{5}d^{4}e+320\,ab^{4}d^{3}e^{2}+560\,a^{2}b^{3}d^{2}e^{3}+840\,a^{3}b^{2}de^{4}+1155\,a^{4}be^{5}\right)x\right)a}{45045\left(e^{13}x^{7}+7\,de^{12}x^{6}+21\,d^{2}e^{11}x^{5}+35\,d^{3}e^{10}x^{4}+35\,d^{4}e^{9}x^{3}+21\,d^{5}e^{8}x^{2}+7\,d^{6}e^{7}x+d^{7}e^{6}\right)\sqrt{ex+d}}-\frac{2\left(15015\,b^{5}e^{6}x^{6}+1024\,b^{5}d^{6}+1280\,ab^{4}d^{5}e+1280\,a^{2}b^{3}d^{4}e^{2}+1120\,a^{3}b^{2}d^{3}e^{3}+840\,a^{4}bd^{2}e^{4}+462\,a^{5}de^{5}+9009\left(4\,b^{5}de^{5}+5\,ab^{4}e^{6}\right)x^{5}+12870\left(4\,b^{5}d^{2}e^{4}+5\,ab^{4}de^{5}+5\,a^{2}b^{3}e^{6}\right)x^{4}+1430\left(32\,b^{5}d^{3}e^{3}+40\,ab^{4}d^{2}e^{4}+40\,a^{2}b^{3}de^{5}+35\,a^{3}b^{2}e^{6}\right)x^{3}+195\left(128\,b^{5}d^{4}e^{2}+160\,ab^{4}d^{3}e^{3}+160\,a^{2}b^{3}d^{2}e^{4}+140\,a^{3}b^{2}de^{5}+105\,a^{4}be^{6}\right)x^{2}+15\left(512\,b^{5}d^{5}e+640\,ab^{4}d^{4}e^{2}+640\,a^{2}b^{3}d^{3}e^{3}+560\,a^{3}b^{2}d^{2}e^{4}+420\,a^{4}bde^{5}+231\,a^{5}e^{6}\right)x\right)b}{45045\left(e^{14}x^{7}+7\,de^{13}x^{6}+21\,d^{2}e^{12}x^{5}+35\,d^{3}e^{11}x^{4}+35\,d^{4}e^{10}x^{3}+21\,d^{5}e^{9}x^{2}+7\,d^{6}e^{8}x+d^{7}e^{7}\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x, algorithm="
maxima")
```

```
[Out] -2/45045*(9009*b^5*e^5*x^5 + 256*b^5*d^5 + 640*a*b^4*d^4*e + 1120*a^2*b^3*d
^3*e^2 + 1680*a^3*b^2*d^2*e^3 + 2310*a^4*b*d*e^4 + 3003*a^5*e^5 + 6435*(2*b
```

```
^5*d*e^4 + 5*a*b^4*e^5)*x^4 + 1430*(8*b^5*d^2*e^3 + 20*a*b^4*d*e^4 + 35*a^2
*b^3*e^5)*x^3 + 390*(16*b^5*d^3*e^2 + 40*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 +
 105*a^3*b^2*e^5)*x^2 + 15*(128*b^5*d^4*e + 320*a*b^4*d^3*e^2 + 560*a^2*b^3
*d^2*e^3 + 840*a^3*b^2*d*e^4 + 1155*a^4*b*e^5)*x)*a/((e^13*x^7 + 7*d*e^12*x
^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 +
7*d^6*e^7*x + d^7*e^6)*sqrt(e*x + d)) - 2/45045*(15015*b^5*e^6*x^6 + 1024*b
^5*d^6 + 1280*a*b^4*d^5*e + 1280*a^2*b^3*d^4*e^2 + 1120*a^3*b^2*d^3*e^3 + 8
40*a^4*b*d^2*e^4 + 462*a^5*d*e^5 + 9009*(4*b^5*d*e^5 + 5*a*b^4*e^6)*x^5 + 1
2870*(4*b^5*d^2*e^4 + 5*a*b^4*d*e^5 + 5*a^2*b^3*e^6)*x^4 + 1430*(32*b^5*d^3
*e^3 + 40*a*b^4*d^2*e^4 + 40*a^2*b^3*d*e^5 + 35*a^3*b^2*e^6)*x^3 + 195*(128
*b^5*d^4*e^2 + 160*a*b^4*d^3*e^3 + 160*a^2*b^3*d^2*e^4 + 140*a^3*b^2*d*e^5
+ 105*a^4*b*e^6)*x^2 + 15*(512*b^5*d^5*e + 640*a*b^4*d^4*e^2 + 640*a^2*b^3*
d^3*e^3 + 560*a^3*b^2*d^2*e^4 + 420*a^4*b*d*e^5 + 231*a^5*e^6)*x)*b/((e^14*
x^7 + 7*d*e^13*x^6 + 21*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 35*d^4*e^10*x^3 +
21*d^5*e^9*x^2 + 7*d^6*e^8*x + d^7*e^7)*sqrt(e*x + d))
```

mupad [B] time = 3.53, size = 588, normalized size = 1.56

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{6006\,a^6\,e^6+5544\,a^5\,b\,d\,e^5+5040\,a^4\,b^2\,d^2\,e^4+4480\,a^3\,b^3\,d^3\,e^3+3840\,a^2\,b^4\,d^4\,e^2+3072\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{45045\,b\,e^{14}}+\frac{2\,b^5\,x^6}{3\,e^8}+\frac{x\,\left(41580\,a^5\,b\,e^6+37800\,a^4\,b^2\,d\,e^5+33600\,a^3\,b^3\,d^2\,e^4+28800\,a^2\,b^4\,d^3\,e^3+23040\,a\,b^5\,d^4\,e^2+15360\,b^6\,d^5\,e\right)}{45045\,b\,e^{14}}+\frac{8\,b^2\,x^3\,\left(35\,a^3\,e^3+30\,a^2\,b\,d\,e^2+24\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{63\,e^{11}}+\frac{2\,b\,x^2\,\left(315\,a^4\,e^4+280\,a^3\,b\,d\,e^3+240\,a^2\,b^2\,d^2\,e^2+192\,a\,b^3\,d^3\,e+128\,b^4\,d^4\right)}{231\,e^{12}}+\frac{4\,b^4\,x^5\,\left(3\,a\,e+2\,b\,d\right)}{5\,e^9}+\frac{2\,b^3\,x^4\,\left(15\,a^2\,e^2+12\,a\,b\,d\,e+8\,b^2\,d^2\right)}{7\,e^{10}}\right)}{x^8\,\sqrt{d+e\,x}+\frac{a\,d^7\,\sqrt{d+e\,x}}{b\,e^7}+\frac{x^7\,\left(a\,e+7\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e}+\frac{7\,d\,x^6\,\left(a\,e+3\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^6\,x\,\left(7\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^7}+\frac{35\,d^3\,x^4\,\left(a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^4}+\frac{7\,d^5\,x^2\,\left(3\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^6}+\frac{7\,d^2\,x^5\,\left(3\,a\,e+5\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^3}+\frac{7\,d^4\,x^3\,\left(5\,a\,e+3\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(17/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((6006*a^6*e^6 + 2048*b^6*d^6 + 3840*a^2*
b^4*d^4*e^2 + 4480*a^3*b^3*d^3*e^3 + 5040*a^4*b^2*d^2*e^4 + 3072*a*b^5*d^5*
e + 5544*a^5*b*d*e^5)/(45045*b*e^14) + (2*b^5*x^6)/(3*e^8) + (x*(41580*a^5*
b*e^6 + 15360*b^6*d^5*e + 23040*a*b^5*d^4*e^2 + 37800*a^4*b^2*d*e^5 + 28800
*a^2*b^4*d^3*e^3 + 33600*a^3*b^3*d^2*e^4))/(45045*b*e^14) + (8*b^2*x^3*(35*
a^3*e^3 + 16*b^3*d^3 + 24*a*b^2*d^2*e + 30*a^2*b*d*e^2))/(63*e^11) + (2*b*x
^2*(315*a^4*e^4 + 128*b^4*d^4 + 240*a^2*b^2*d^2*e^2 + 192*a*b^3*d^3*e + 280
*a^3*b*d*e^3))/(231*e^12) + (4*b^4*x^5*(3*a*e + 2*b*d))/(5*e^9) + (2*b^3*x^
4*(15*a^2*e^2 + 8*b^2*d^2 + 12*a*b*d*e))/(7*e^10)))/(x^8*(d + e*x)^(1/2) +
(a*d^7*(d + e*x)^(1/2))/(b*e^7) + (x^7*(a*e + 7*b*d)*(d + e*x)^(1/2))/(b*e)
 + (7*d*x^6*(a*e + 3*b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^6*x*(7*a*e + b*d)*(
d + e*x)^(1/2))/(b*e^7) + (35*d^3*x^4*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^4)
+ (7*d^5*x^2*(3*a*e + b*d)*(d + e*x)^(1/2))/(b*e^6) + (7*d^2*x^5*(3*a*e + 5
*b*d)*(d + e*x)^(1/2))/(b*e^3) + (7*d^4*x^3*(5*a*e + 3*b*d)*(d + e*x)^(1/2)
)/(b*e^5))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(17/2),x)
```

```
[Out] Timed out
```

3.1897 $\int \frac{(a+bx)(d+ex)^{7/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$\frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(9/2))/(9*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^{7/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^{7/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^{7/2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(9/2))/(9*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 46.56, size = 44, normalized size = 1.07

$$-\frac{2(d+ex)^{9/2}(-ae-bex)}{9e^2\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(7/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2
],x]
```

```
[Out] (-2*(d + e*x)^(9/2)*(-(a*e) - b*e*x))/(9*e^2*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.40, size = 50, normalized size = 1.22

$$\frac{2\left(e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4\right)\sqrt{ex+d}}{9\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/9*(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)*sqrt(e*x + d)
/e
```

giac [B] time = 0.18, size = 226, normalized size = 5.51

$$\frac{2}{315}\left(315\sqrt{xe+d}\,d^4\mathrm{sgn}(bx+a)+420\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)d^3\mathrm{sgn}(bx+a)+126\left(3(xe+d)^{\frac{5}{2}}-10(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)d^2\mathrm{sgn}(bx+a)+36\left(5(xe+d)^{\frac{7}{2}}-21(xe+d)^{\frac{5}{2}}d+35(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)d\,\mathrm{sgn}(bx+a)+\left(35(xe+d)^{\frac{9}{2}}-180(xe+d)^{\frac{7}{2}}d+378(xe+d)^{\frac{5}{2}}d^2-420(xe+d)^{\frac{3}{2}}d^3+315\sqrt{xe+d}\,d^4\right)\mathrm{sgn}(bx+a)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(315*sqrt(x*e + d)*d^4*sgn(b*x + a) + 420*((x*e + d)^(3/2) - 3*sqrt(x
*e + d)*d)*d^3*sgn(b*x + a) + 126*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*d^2*sgn(b*x + a) + 36*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*d*sgn(b*x +
a) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.04, size = 27, normalized size = 0.66

$$\frac{2\,(bx+a)\,(ex+d)^{\frac{9}{2}}}{9\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/9*(b*x+a)*(e*x+d)^(9/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 1.01, size = 50, normalized size = 1.22

$$\frac{2\left(e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4\right)\sqrt{ex+d}}{9\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)*sqrt(e*x + d)
/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+bx)\,(d+ex)^{7/2}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^(7/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.1898 $\int \frac{(a+bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$\frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(7/2))/(7*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^{5/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^{5/2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(7/2))/(7*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 35.02, size = 44, normalized size = 1.07

$$-\frac{2(d+ex)^{7/2}(-ae-bex)}{7e^2\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2
],x]
```

```
[Out] (-2*(d + e*x)^(7/2)*(-(a*e) - b*e*x))/(7*e^2*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.41, size = 39, normalized size = 0.95

$$\frac{2\left(e^3x^3+3\,de^2x^2+3\,d^2ex+d^3\right)\sqrt{ex+d}}{7\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/7*(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*sqrt(e*x + d)/e
```

giac [B] time = 0.24, size = 154, normalized size = 3.76

$$\frac{2}{35}\left(35\sqrt{xe+d}\,d^3\mathrm{sgn}\left(bx+a\right)+35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)d^2\mathrm{sgn}\left(bx+a\right)+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)d\mathrm{sgn}\left(bx+a\right)+\left(5\,(xe+d)^{\frac{7}{2}}-21\,(xe+d)^{\frac{5}{2}}d+35\,(xe+d)^{\frac{3}{2}}d^2-35\sqrt{xe+d}\,d^3\right)\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/35*(35*sqrt(x*e + d)*d^3*sgn(b*x + a) + 35*((x*e + d)^(3/2) - 3*sqrt(x*e
+ d)*d)*d^2*sgn(b*x + a) + 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*d*sgn(b*x + a) + (5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$\frac{2\,(bx+a)\,(ex+d)^{\frac{7}{2}}}{7\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/7*(b*x+a)*(e*x+d)^(7/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.97, size = 39, normalized size = 0.95

$$\frac{2\left(e^3x^3+3\,de^2x^2+3\,d^2ex+d^3\right)\sqrt{ex+d}}{7\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*sqrt(e*x + d)/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+bx)\,(d+ex)^{5/2}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.1899 $\int \frac{(a+bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 32}

$$\frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(5/2))/(5*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^{3/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int (d+ex)^{3/2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]

[Out] (2*(a + b*x)*(d + e*x)^(5/2))/(5*e*Sqrt[(a + b*x)^2])

IntegrateAlgebraic [A] time = 16.16, size = 44, normalized size = 1.07

$$-\frac{2(d+ex)^{5/2}(-ae-bex)}{5e^2\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2
],x]

[Out] (-2*(d + e*x)^(5/2)*(-(a*e) - b*e*x))/(5*e^2*Sqrt[(a*e + b*e*x)^2/e^2])

fricas [A] time = 0.43, size = 28, normalized size = 0.68

$$\frac{2\left(e^2x^2+2\,dex+d^2\right)\sqrt{ex+d}}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")

[Out] 2/5*(e^2*x^2 + 2*d*e*x + d^2)*sqrt(e*x + d)/e

giac [B] time = 0.16, size = 95, normalized size = 2.32

$$\frac{2}{15}\left(15\sqrt{xe+d}\,d^2\mathrm{sgn}\left(bx+a\right)+10\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)d\mathrm{sgn}\left(bx+a\right)+\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")

[Out] 2/15*(15*sqrt(x*e + d)*d^2*sgn(b*x + a) + 10*((x*e + d)^(3/2) - 3*sqrt(x*e
+ d)*d)*d*sgn(b*x + a) + (3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqr
t(x*e + d)*d^2)*sgn(b*x + a))*e^(-1)

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$\frac{2\,(bx+a)\,(ex+d)^{\frac{5}{2}}}{5\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)

[Out] 2/5*(b*x+a)*(e*x+d)^(5/2)/e/((b*x+a)^2)^(1/2)

maxima [A] time = 0.95, size = 28, normalized size = 0.68

$$\frac{2\left(e^2x^2+2\,dex+d^2\right)\sqrt{ex+d}}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")

[Out] 2/5*(e^2*x^2 + 2*d*e*x + d^2)*sqrt(e*x + d)/e

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,(d+e\,x)^{3/2}}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^{\frac{3}{2}}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
[Out] Integral((a + b*x)*(d + e*x)**(3/2)/sqrt((a + b*x)**2), x)
```

3.1900 $\int \frac{(a+bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$\frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(3/2))/(3*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)\sqrt{d+ex}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \sqrt{d+ex}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(3/2))/(3*e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 11.45, size = 44, normalized size = 1.07

$$-\frac{2(d+ex)^{3/2}(-ae-bex)}{3e^2\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],
x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(-(a*e) - b*e*x))/(3*e^2*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.41, size = 12, normalized size = 0.29

$$\frac{2\,(ex+d)^{\frac{3}{2}}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*(e*x + d)^(3/2)/e
```

giac [A] time = 0.17, size = 49, normalized size = 1.20

$$\frac{2}{3}\left(3\sqrt{xe+d}\,d\mathrm{sgn}\,(bx+a)+\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)\mathrm{sgn}\,(bx+a)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3*(3*sqrt(x*e + d)*d*sgn(b*x + a) + ((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)
*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$\frac{2\,(bx+a)\,(ex+d)^{\frac{3}{2}}}{3\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(e*x+d)^(3/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.84, size = 12, normalized size = 0.29

$$\frac{2\,(ex+d)^{\frac{3}{2}}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(e*x + d)^(3/2)/e
```

<u>**mupad**</u> **[F]** time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,\sqrt{d+e\,x}}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2), x)
```

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,\sqrt{d+ex}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
[Out] Integral((a + b*x)*sqrt(d + e*x)/sqrt((a + b*x)**2), x)
```

3.1901 $\int \frac{a+bx}{\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$\frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$\frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*Sqrt[d + e*x])/(e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{\sqrt{d+ex}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$\frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*Sqrt[d + e*x])/(e*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [B] time = 1.82, size = 105, normalized size = 2.69

$$\frac{2\sqrt{a^2+\frac{2ab(d+ex)}{e}-\frac{2abd}{e}+\frac{b^2d^2}{e^2}+\frac{b^2(d+ex)^2}{e^2}-\frac{2b^2d(d+ex)}{e^2}}}{\sqrt{b}\left(\sqrt{b}\sqrt{d+ex}-\sqrt{bd-ae}\right)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),
x]
```

```
[Out] (2*Sqrt[a^2 + (b^2*d^2)/e^2 - (2*a*b*d)/e - (2*b^2*d*(d + e*x))/e^2 + (2*a*
b*(d + e*x))/e + (b^2*(d + e*x)^2)/e^2])/(Sqrt[b]*(-Sqrt[b*d - a*e] + Sqrt[
b]*Sqrt[d + e*x]))
```

fricas [A] time = 0.41, size = 12, normalized size = 0.31

$$\frac{2\sqrt{ex+d}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(e*x + d)/e
```

giac [A] time = 0.16, size = 18, normalized size = 0.46

$$2\sqrt{xe+d}\,e^{(-1)}\mathrm{sgn}\,(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*e^(-1)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 27, normalized size = 0.69

$$\frac{2\,(bx+a)\sqrt{ex+d}}{\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2*(b*x+a)*(e*x+d)^(1/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.74, size = 12, normalized size = 0.31

$$\frac{2\sqrt{ex+d}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(e*x + d)/e
```

mupad [B] time = 2.42, size = 50, normalized size = 1.28

$$\frac{\left(\frac{2x}{b}+\frac{2d}{be}\right)\sqrt{(a+bx)^2}}{x\sqrt{d+ex}+\frac{a\sqrt{d+ex}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(1/2)),x)
```

```
[Out] (((2*x)/b + (2*d)/(b*e))*((a + b*x)^2)^(1/2))/(x*(d + e*x)^(1/2) + (a*(d +
e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{\sqrt{d+ex}\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)/(sqrt(d + e*x)*sqrt((a + b*x)**2)), x)
```

3.1902 $\int \frac{a+bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$-\frac{2(a+bx)}{e\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}$$

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$-\frac{2(a+bx)}{e\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(e*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^{3/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2(a+bx)}{e\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$-\frac{2(a+bx)}{e\sqrt{(a+bx)^2}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(e*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 9.59, size = 42, normalized size = 1.08

$$\frac{2(-ae-bex)}{e^2\sqrt{d+ex}\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
),x]
```

```
[Out] (2*(-(a*e) - b*e*x))/(e^2*Sqrt[d + e*x]*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.42, size = 20, normalized size = 0.51

$$-\frac{2\sqrt{ex+d}}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(e*x + d)/(e^2*x + d*e)
```

giac [A] time = 0.16, size = 18, normalized size = 0.46

$$-\frac{2\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*e^(-1)*sgn(b*x + a)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 27, normalized size = 0.69

$$-\frac{2\left(bx+a\right)}{\sqrt{ex+d}\,\sqrt{\left(bx+a\right)^2}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2*(b*x+a)/e/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.80, size = 20, normalized size = 0.51

$$-\frac{2\sqrt{ex+d}}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2*sqrt(e*x + d)/(e^2*x + d*e)
```

mupad [B] time = 2.50, size = 41, normalized size = 1.05

$$-\frac{2\sqrt{{\left(a+b\,x\right)}^2}}{b\,e\,\left(x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(3/2)),x)
[Out] -(2*((a + b*x)^2)^(1/2))/(b*e*(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^{\frac{3}{2}}\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
[Out] Integral((a + b*x)/((d + e*x)**(3/2)*sqrt((a + b*x)**2)), x)
```

3.1903 $\int \frac{a+bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2(a+bx)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$-\frac{2(a+bx)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(3*e*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^{5/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2(a+bx)}{3e(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$-\frac{2(a+bx)}{3e\sqrt{(a+bx)^2}\,(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(3*e*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 20.55, size = 44, normalized size = 1.07

$$\frac{2(-ae-bex)}{3e^2(d+ex)^{3/2}\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
),x]
```

```
[Out] (2*(-(a*e) - b*e*x))/(3*e^2*(d + e*x)^(3/2)*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.41, size = 31, normalized size = 0.76

$$-\frac{2\sqrt{ex+d}}{3\left(e^3x^2+2\,de^2x+d^2e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(e*x + d)/(e^3*x^2 + 2*d*e^2*x + d^2*e)
```

giac [A] time = 0.16, size = 18, normalized size = 0.44

$$-\frac{2\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2/3*e^(-1)*sgn(b*x + a)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$-\frac{2\,(bx+a)}{3\,(ex+d)^{\frac{3}{2}}\,\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2/3*(b*x+a)/e/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.82, size = 31, normalized size = 0.76

$$-\frac{2\sqrt{ex+d}}{3\left(e^3x^2+2\,de^2x+d^2e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(e*x + d)/(e^3*x^2 + 2*d*e^2*x + d^2*e)
```

mupad [B] time = 2.56, size = 75, normalized size = 1.83

$$-\frac{2\sqrt{(a+b\,x)^2}}{3\,b\,e^2\,\left(x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(3\,a\,e^2+3\,b\,d\,e\right)\,\sqrt{d+e\,x}}{3\,b\,e^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(5/2)),x)
```

```
[Out] -(2*((a + b*x)^2)^(1/2))/(3*b*e^2*(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x)^(1/
2))/(b*e) + (x*(3*a*e^2 + 3*b*d*e)*(d + e*x)^(1/2))/(3*b*e^2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1904 $\int \frac{a+bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2(a+bx)}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}$$

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$-\frac{2(a+bx)}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(5*e*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^{7/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2(a+bx)}{5e(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.78

$$-\frac{2(a+bx)}{5e\sqrt{(a+bx)^2}\,(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] (-2*(a + b*x))/(5*e*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 36.68, size = 44, normalized size = 1.07

$$\frac{2(-ae-bex)}{5e^2(d+ex)^{5/2}\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
),x]
[Out] (2*(-(a*e) - b*e*x))/(5*e^2*(d + e*x)^(5/2)*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.42, size = 42, normalized size = 1.02

$$-\frac{2\sqrt{ex+d}}{5\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] -2/5*sqrt(e*x + d)/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e)
```

giac [A] time = 0.17, size = 18, normalized size = 0.44

$$-\frac{2\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{5\left(xe+d\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] -2/5*e^(-1)*sgn(b*x + a)/(x*e + d)^(5/2)
```

maple [A] time = 0.04, size = 27, normalized size = 0.66

$$-\frac{2\left(bx+a\right)}{5\left(ex+d\right)^{\frac{5}{2}}\sqrt{\left(bx+a\right)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x)
[Out] -2/5*(b*x+a)/e/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.83, size = 42, normalized size = 1.02

$$-\frac{2\sqrt{ex+d}}{5\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] -2/5*sqrt(e*x + d)/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e)
```

mupad [B] time = 2.56, size = 103, normalized size = 2.51

$$-\frac{2\sqrt{{\left(a+b\,x\right)}^2}}{5\,b\,e^3\,\left(x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(a\,e^3+2\,b\,d\,e^2\right)\,\sqrt{d+e\,x}}{b\,e^3}+\frac{d\,x\,\left(2\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(7/2)),x)
```

```
[Out] -(2*((a + b*x)^2)^(1/2))/(5*b*e^3*(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)^(
1/2))/(b*e^2) + (x^2*(a*e^3 + 2*b*d*e^2)*(d + e*x)^(1/2))/(b*e^3) + (d*x*(2
*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1905 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=250

$$-\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{7e(a+bx)(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx}}$$

Rubi [A] time = 0.17, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 50, 63, 208}

$$-\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{3/2}(bd-ae)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)\sqrt{d+ex}\,(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{7e(a+bx)(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (7*e*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + (7*e*(b*d - a*e)*(a + b*x)*(d + e*x)^(3/2))/(3*b^3*Sqrt[a^2 + 2*a*b*
x + b^2*x^2]) + (7*e*(a + b*x)*(d + e*x)^(5/2))/(5*b^2*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) - (d + e*x)^(7/2)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*(b*d
- a*e)^(5/2)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(7e)\int \frac{(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(7e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{5/2}}{ab+b^2x}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(7e\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\int \frac{(d+}{ab}}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{7e(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(a+bx)(d+e}{5b^2\sqrt{a^2+2abx+}}$$

$$= \frac{7e(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(a+bx)(d+e}{5b^2\sqrt{a^2+2abx+}}$$

$$= \frac{7e(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{7e(a+bx)(d+e}{5b^2\sqrt{a^2+2abx+}}$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.26

$$\frac{2e(a+bx)(d+ex)^{9/2}\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};-\frac{b(d+ex)}{ae-bd}\right)}{9\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*e*(a + b*x)*(d + e*x)^(9/2)*Hypergeometric2F1[2, 9/2, 11/2, -((b*(d + e*
x))/(-(b*d) + a*e))])/(9*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 51.18, size = 241, normalized size = 0.96

$$\frac{(-ae-bex)\left(-\frac{e\sqrt{d+ex}\left(105a^3e^3+70a^2be^2(d+ex)-315a^2bde^2+315ab^2d^2e-14ab^2e(d+ex)^2-140ab^2de(d+ex)-105b^3d^3+70b^3d^2(d+ex)+6b^3(d+ex)^3+14b^3d(d+ex)^2\right)}{15b^4(ae+b(d+ex)-bd)}-\frac{7e(ae-bd)^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{9/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/15*(e*Sqrt[d + e*x]*(-105*b^3*d^3 + 315*a*b^2*d^2*e -
 315*a^2*b*d*e^2 + 105*a^3*e^3 + 70*b^3*d^2*(d + e*x) - 140*a*b^2*d*e*(d +
e*x) + 70*a^2*b*e^2*(d + e*x) + 14*b^3*d*(d + e*x)^2 - 14*a*b^2*e*(d + e*x)
```

```
^2 + 6*b^3*(d + e*x)^3))/(b^4*(-(b*d) + a*e + b*(d + e*x))) - (7*e*(-(b*d)
+ a*e)^(5/2)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)]
)/b^(9/2)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.47, size = 486, normalized size = 1.94

$$\left[\frac{105\left(ab^2d^2e - 2a^2bde^2 + a^3e^3 + (b^3d^2e - 2ab^2de^2 + a^2be^3)x\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex + 2bd - ae - 2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right) + 2\left(6b^3e^3x^3 - 15b^3d^3 + 161ab^2d^2e - 245a^2bde^2 + 105a^3e^3 + 2(16b^3de^2 - 7ab^2e^3)x^2 + 2(58b^3d^2e - 84ab^2de^2 + 35a^2be^3)x\right)\sqrt{ex+d}}{30(b^5x + ab^4)},\ -\frac{105\left(ab^2d^2e - 2a^2bde^2 + a^3e^3 + (b^3d^2e - 2ab^2de^2 + a^2be^3)x\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right) - \left(6b^3e^3x^3 - 15b^3d^3 + 161ab^2d^2e - 245a^2bde^2 + 105a^3e^3 + 2(16b^3de^2 - 7ab^2e^3)x^2 + 2(58b^3d^2e - 84ab^2de^2 + 35a^2be^3)x\right)\sqrt{ex+d}}{15(b^5x + ab^4)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/30*(105*(a*b^2*d^2*e - 2*a^2*b*d*e^2 + a^3*e^3 + (b^3*d^2*e - 2*a*b^2*d*
e^2 + a^2*b*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e
*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(6*b^3*e^3*x^3 - 15*b^3*d^3 +
 161*a*b^2*d^2*e - 245*a^2*b*d*e^2 + 105*a^3*e^3 + 2*(16*b^3*d*e^2 - 7*a*b^
2*e^3)*x^2 + 2*(58*b^3*d^2*e - 84*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sqrt(e*x +
 d))/(b^5*x + a*b^4), -1/15*(105*(a*b^2*d^2*e - 2*a^2*b*d*e^2 + a^3*e^3 + (
b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt
(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (6*b^3*e^3*x^3 - 15*b^3*d^3
 + 161*a*b^2*d^2*e - 245*a^2*b*d*e^2 + 105*a^3*e^3 + 2*(16*b^3*d*e^2 - 7*a*
b^2*e^3)*x^2 + 2*(58*b^3*d^2*e - 84*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sqrt(e*x
 + d))/(b^5*x + a*b^4)]
```

giac [B] time = 0.30, size = 359, normalized size = 1.44

$$\frac{7\left(b^3d^3e^2 - 3ab^2d^2e^3 + 3a^2bde^4 - a^3e^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{\sqrt{-b^2d+abe}\,b^4\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)} - \frac{\left(\sqrt{xe+d}\,b^3d^3e^2 - 3\sqrt{xe+d}\,ab^2d^2e^3 + 3\sqrt{xe+d}\,a^2bde^4 - \sqrt{xe+d}\,a^3e^5\right)e^{(-1)}}{((xe+d)b - bd + ae)b^4\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)} + \frac{2\left(3(xe+d)^{\frac{5}{2}}b^8e^6 + 10(xe+d)^{\frac{3}{2}}b^8de^6 + 45\sqrt{xe+d}\,b^8d^2e^6 - 10(xe+d)^{\frac{3}{2}}ab^7e^7 - 90\sqrt{xe+d}\,ab^7de^7 + 45\sqrt{xe+d}\,a^2b^6e^8\right)e^{(-5)}}{15b^{10}\mathrm{sgn}\left((xe+d)be - bde + ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 7*(b^3*d^3*e^2 - 3*a*b^2*d^2*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*arctan(sqrt(x*e
 + d)*b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sqrt(-b^2*d + a*b*e)*b^4*sgn((x*e + d
)*b*e - b*d*e + a*e^2)) - (sqrt(x*e + d)*b^3*d^3*e^2 - 3*sqrt(x*e + d)*a*b^
2*d^2*e^3 + 3*sqrt(x*e + d)*a^2*b*d*e^4 - sqrt(x*e + d)*a^3*e^5)*e^(-1)/(((
x*e + d)*b - b*d + a*e)*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/15*(3*(
x*e + d)^(5/2)*b^8*e^6 + 10*(x*e + d)^(3/2)*b^8*d*e^6 + 45*sqrt(x*e + d)*b^
8*d^2*e^6 - 10*(x*e + d)^(3/2)*a*b^7*e^7 - 90*sqrt(x*e + d)*a*b^7*d*e^7 + 4
5*sqrt(x*e + d)*a^2*b^6*e^8)*e^(-5)/(b^10*sgn((x*e + d)*b*e - b*d*e + a*e^2
))
```

maple [B] time = 0.08, size = 662, normalized size = 2.65

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/15*(6*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x*b^3*e+6*(e*x+d)^(5/2)*((a*e-b*d
)*b)^(1/2)*a*b^2*e-20*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a*b^2*e^2+20*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*b^3*d*e-105*a^3*b*e^4*x*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)+315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*
a^2*b^2*d*e^3-315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^3*d^2*e
^2+105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b^4*d^3*e-20*(e*x+d)^(
3/2)*((a*e-b*d)*b)^(1/2)*a^2*b*e^2+20*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*a*b
^2*d*e+90*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^2*b*e^3-180*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*x*a*b^2*d*e^2+90*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*b^3
*d^2*e-105*a^4*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+315*arctan((
```

```
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*b*d*e^3-315*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*a^2*b^2*d^2*e^2+105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*a*b^3*d^3*e+105*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a^3*e^3-225*(e*
x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2+135*(e*x+d)^(1/2)*((a*e-b*d)*b)^
(1/2)*a*b^2*d^2*e-15*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/(
(a*e-b*d)*b)^(1/2)/b^4/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{7}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,(d+e\,x)^{7/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1906 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=198

$$-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(a+bx)(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx}}$$

Rubi [A] time = 0.12, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 50, 63, 208}

$$-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)\sqrt{d+ex}\,(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(a+bx)(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (5*e*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (5*e*(a + b*x)*(d + e*x)^(3/2))/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
- (d + e*x)^(5/2)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(b*d - a*e)^(3/2
)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(7/2)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(5e)\int \frac{(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(5e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{3/2}}{ab+b^2x}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(5e\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\int \frac{\sqrt{d}}{ab+}$$

$$= \frac{5e(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}} + $$

$$= \frac{5e(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}} + $$

$$= \frac{5e(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}} - $$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.33

$$\frac{2e(a+bx)(d+ex)^{7/2}\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};-\frac{b(d+ex)}{ae-bd}\right)}{7\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*e*(a + b*x)*(d + e*x)^(7/2)*Hypergeometric2F1[2, 7/2, 9/2, -((b*(d + e*x
))/(-(b*d) + a*e))])/(7*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 38.57, size = 181, normalized size = 0.91

$$\frac{(-ae-bex)\left(\frac{5e(ae-bd)^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{7/2}} - \frac{e\sqrt{d+ex}\left(-15a^2e^2-10abe(d+ex)+30abde-15b^2d^2+2b^2(d+ex)^2+10b^2d(d+ex)\right)}{3b^3(ae+b(d+ex)-bd)}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/3*(e*Sqrt[d + e*x]*(-15*b^2*d^2 + 30*a*b*d*e - 15*a^2
*e^2 + 10*b^2*d*(d + e*x) - 10*a*b*e*(d + e*x) + 2*b^2*(d + e*x)^2))/(b^3*(
-(b*d) + a*e + b*(d + e*x))) + (5*e*(-(b*d) + a*e)^(3/2)*ArcTan[(Sqrt[b]*Sq
rt[-(b*d) + a*e]*Sqrt[d + e*x]])/(b*d - a*e)])/b^(7/2)))/(e*Sqrt[(a*e + b*e*
x)^2/e^2])
```

fricas [A] time = 0.44, size = 330, normalized size = 1.67

$$\left[-\frac{15\left(abde-a^{2}e^{2}+\left(b^{2}de-abe^{2}\right)x\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(2\,b^{2}e^{2}x^{2}-3\,b^{2}d^{2}+20\,abde-15\,a^{2}e^{2}+2\left(7\,b^{2}de-5\,abe^{2}\right)x\right)\sqrt{ex+d}}{6\left(b^{4}x+ab^{3}\right)},\ -\frac{15\left(abde-a^{2}e^{2}+\left(b^{2}de-abe^{2}\right)x\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(2\,b^{2}e^{2}x^{2}-3\,b^{2}d^{2}+20\,abde-15\,a^{2}e^{2}+2\left(7\,b^{2}de-5\,abe^{2}\right)x\right)\sqrt{ex+d}}{3\left(b^{4}x+ab^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/6*(15*(a*b*d*e - a^2*e^2 + (b^2*d*e - a*b*e^2)*x)*sqrt((b*d - a*e)/b)*l
og((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a))
 - 2*(2*b^2*e^2*x^2 - 3*b^2*d^2 + 20*a*b*d*e - 15*a^2*e^2 + 2*(7*b^2*d*e -
5*a*b*e^2)*x)*sqrt(e*x + d))/(b^4*x + a*b^3), -1/3*(15*(a*b*d*e - a^2*e^2 +
 (b^2*d*e - a*b*e^2)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-
(b*d - a*e)/b)/(b*d - a*e)) - (2*b^2*e^2*x^2 - 3*b^2*d^2 + 20*a*b*d*e - 15*
a^2*e^2 + 2*(7*b^2*d*e - 5*a*b*e^2)*x)*sqrt(e*x + d))/(b^4*x + a*b^3)]
```

giac [A] time = 0.28, size = 269, normalized size = 1.36

$$\frac{5\left(b^{2}d^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)e^{(-1)}}{\sqrt{-b^{2}d+abe}\,b^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}-\frac{\left(\sqrt{xe+d}\,b^{2}d^{2}e^{2}-2\,\sqrt{xe+d}\,abde^{3}+\sqrt{xe+d}\,a^{2}e^{4}\right)e^{(-1)}}{((xe+d)b-bd+ae)b^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}+\frac{2\left((xe+d)^{\frac{3}{2}}b^{4}e^{4}+6\,\sqrt{xe+d}\,b^{4}de^{4}-6\,\sqrt{xe+d}\,ab^{3}e^{5}\right)e^{(-3)}}{3\,b^{6}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 5*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))*e^(-1)/(sqrt(-b^2*d + a*b*e)*b^3*sgn((x*e + d)*b*e - b*d*e + a*e^
2)) - (sqrt(x*e + d)*b^2*d^2*e^2 - 2*sqrt(x*e + d)*a*b*d*e^3 + sqrt(x*e + d
)*a^2*e^4)*e^(-1)/(((x*e + d)*b - b*d + a*e)*b^3*sgn((x*e + d)*b*e - b*d*e
+ a*e^2)) + 2/3*((x*e + d)^(3/2)*b^4*e^4 + 6*sqrt(x*e + d)*b^4*d*e^4 - 6*sq
rt(x*e + d)*a*b^3*e^5)*e^(-3)/(b^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.06, size = 409, normalized size = 2.07

$$\frac{\left(15a^{2}be^{3}x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-30ab^{2}de^{2}x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15b^{3}d^{2}ex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15a^{3}e^{3}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-30a^{2}bde^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15ab^{2}d^{2}e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-12\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,abe^{2}x+12\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,b^{2}dex-15\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,a^{2}e^{2}+18\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,abde-3\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,b^{2}d^{2}+2\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}b^{2}ex+2\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}abe\right)(bx+a)^{2}}{3\sqrt{(ae-bd)b}\,\left((bx+a)^{2}\right)^{\frac{3}{2}}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/3*(2*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*b^2*e+15*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*x*a^2*b*e^3-30*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2
)*b)*x*a*b^2*d*e^2+15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b^3*d^2
*e+2*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e-12*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*x*a*b*e^2+12*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*b^2*d*e+15*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*e^3-30*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*a^2*b*d*e^2+15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
a*b^2*d^2*e-15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2+18*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*a*b*d*e-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*
x+a)^2/((a*e-b*d)*b)^(1/2)/b^3/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{5}{2}}}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,(d+e\,x)^{5/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1907 $\int \frac{(a+bx)(d+ex)^{3/2}}{(a^2+2abx+b^2x^2)^{3/2}}\,dx$

Optimal. Leaf size=148

$$-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{3e(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 50, 63, 208}

$$-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{3e(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*e*(a + b*x)*Sqrt[d + e*x])/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (d + e*
x)^(3/2)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*e*Sqrt[b*d - a*e]*(a + b*x)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(3e)\int \frac{\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3e\left(ab+b^2x\right)\right)\int \frac{\sqrt{d+ex}}{ab+b^2x}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3e\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\int \frac{}{(ab+}}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\text{Subst}\Big(}{b^3\sqrt{a^2+2ab}}$$

$$= \frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}} - \frac{3e\sqrt{bd-ae}\,(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{}}{\sqrt{bd}}\right.}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.45

$$\frac{2e(a+bx)(d+ex)^{5/2}\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*e*(a + b*x)*(d + e*x)^(5/2)*Hypergeometric2F1[2, 5/2, 7/2, -((b*(d + e*x
))/(-(b*d) + a*e))])/(5*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 21.40, size = 140, normalized size = 0.95

$$\frac{(-ae-bex)\left(-\frac{3e\sqrt{ae-bd}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{b^{5/2}} - \frac{e\sqrt{d+ex}\,(3ae+2b(d+ex)-3bd)}{b^2(ae+b(d+ex)-bd)}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-((e*Sqrt[d + e*x]*(-3*b*d + 3*a*e + 2*b*(d + e*x)))/(b^
2*(-(b*d) + a*e + b*(d + e*x)))) - (3*e*Sqrt[-(b*d) + a*e]*ArcTan[(Sqrt[b]*
Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/b^(5/2)))/(e*Sqrt[(a*e + b*
e*x)^2/e^2])
```

fricas [A] time = 0.43, size = 210, normalized size = 1.42

$$\left[\frac{3\,(bex+ae)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\,(2\,bex-bd+3\,ae)\sqrt{ex+d}}{2\left(b^3x+ab^2\right)}, -\frac{3\,(bex+ae)\sqrt{-\frac{bd-ae}{b}}\,\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-(2\,bex-bd+3\,ae)\sqrt{ex+d}}{b^3x+ab^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/2*(3*(b*e*x + a*e)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt
(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(2*b*e*x - b*d + 3*a*e)*sqr
t(e*x + d))/(b^3*x + a*b^2), -(3*(b*e*x + a*e)*sqrt(-(b*d - a*e)/b)*arctan(
-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (2*b*e*x - b*d + 3*a*e
)*sqrt(e*x + d))/(b^3*x + a*b^2)]
```

giac [A] time = 0.33, size = 198, normalized size = 1.34

$$\frac{3\left(bde^2-ae^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{\sqrt{-b^2d+abe}\,b^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{2\sqrt{xe+d}\,e}{b^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\left(\sqrt{xe+d}\,bde^2-\sqrt{xe+d}\,ae^3\right)e^{(-1)}}{((xe+d)b-bd+ae)b^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 3*(b*d*e^2 - a*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sq
rt(-b^2*d + a*b*e)*b^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2*sqrt(x*e + d
)*e/(b^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - (sqrt(x*e + d)*b*d*e^2 - sqr
t(x*e + d)*a*e^3)*e^(-1)/(((x*e + d)*b - b*d + a*e)*b^2*sgn((x*e + d)*b*e -
 b*d*e + a*e^2))
```

maple [B] time = 0.07, size = 222, normalized size = 1.50

$$\frac{\left(-3ab\,e^2x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+3b^2dex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-3a^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+3abde\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+2\sqrt{ex+d}\,\sqrt{(ae-bd)b}\,bex+3\sqrt{ex+d}\,\sqrt{(ae-bd)b}\,ae-\sqrt{ex+d}\,\sqrt{(ae-bd)b}\,bd\right)(bx+a)^2}{\sqrt{(ae-bd)b}\,\left((bx+a)^2\right)^{\frac{3}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (-3*a*b*e^2*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b^2*d*e+2*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*
b*e*x-3*a^2*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b*d*e+3*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*
a*e-(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*b*d)*(b*x+a)^2/((a*e-b*d)*b)^(1/2)/b^
2/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{3}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,{(d+e\,x)}^{3/2}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^{\frac{3}{2}}}{\left((a+bx)^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**(3/2)/((a + b*x)**2)**(3/2), x)
```

3.1908 $\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=108

$$-\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}$$

Rubi [A] time = 0.07, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {768, 646, 63, 208}

$$-\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(Sqrt[d + e*x]/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x)*ArcTanh[(
Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2)*Sqrt[b*d - a*e]*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{e\int \frac{1}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(e\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(ab+b^2x\right)\text{Subst}\left(\int \frac{1}{ab-\frac{b^2d}{e}+\frac{b^2x^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}} - \frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{bd-ae}\,\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.08, size = 81, normalized size = 0.75

$$\frac{\frac{e(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{\sqrt{ae-bd}} - \sqrt{b}\,\sqrt{d+ex}}{b^{3/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[b]*Sqrt[d + e*x]) + (e*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqr
t[-(b*d) + a*e]])/Sqrt[-(b*d) + a*e])/(b^(3/2)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 13.45, size = 121, normalized size = 1.12

$$\frac{(-ae-bex)\left(\frac{e\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}\,\sqrt{ae-bd}}{bd-ae}\right)}{b^{3/2}\sqrt{ae-bd}} + \frac{e\sqrt{d+ex}}{b(ae+b(d+ex)-bd)}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e*Sqrt[d + e*x])/(b*(-(b*d) + a*e + b*(d + e*x))) + (e*
ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(b^(3/2)*Sq
rt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.45, size = 232, normalized size = 2.15

$$\left[\frac{\sqrt{b^2d-abe}\,(bex+ae)\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right) - 2\left(b^2d-abe\right)\sqrt{ex+d}}{2\left(ab^3d-a^2b^2e+\left(b^4d-ab^3e\right)x\right)}, \frac{\sqrt{-b^2d+abe}\,(bex+ae)\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right) - \left(b^2d-abe\right)\sqrt{ex+d}}{ab^3d-a^2b^2e+\left(b^4d-ab^3e\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/2*(sqrt(b^2*d - a*b*e)*(b*e*x + a*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b
^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(b^2*d - a*b*e)*sqrt(e*x + d))/
```

```
(a*b^3*d - a^2*b^2*e + (b^4*d - a*b^3*e)*x), (sqrt(-b^2*d + a*b*e)*(b*e*x +
 a*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (b^2*d - a
*b*e)*sqrt(e*x + d))/(a*b^3*d - a^2*b^2*e + (b^4*d - a*b^3*e)*x)]
```

giac [A] time = 0.22, size = 128, normalized size = 1.19

$$\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e}{\sqrt{-b^2d+abe}\,b\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\sqrt{xe+d}\,e}{((xe+d)b-bd+ae)b\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e/(sqrt(-b^2*d + a*b*e)*b*sgn(
(x*e + d)*b*e - b*d*e + a*e^2)) - sqrt(x*e + d)*e/(((x*e + d)*b - b*d + a*e
)*b*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [A] time = 0.06, size = 108, normalized size = 1.00

$$-\frac{\left(-bex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+\sqrt{ex+d}\,\sqrt{(ae-bd)\,b}\right)(bx+a)^2}{\sqrt{(ae-bd)\,b}\,\left((bx+a)^2\right)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(-arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b*e-arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)*a*e+(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2))*(b*x+a)^2/((a*
e-b*d)*b)^(1/2)/b/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)\sqrt{ex+d}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,\sqrt{d+e\,x}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{d+ex}}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.1909 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=114

$$\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Rubi [A] time = 0.09, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(Sqrt[d + e*x]/((b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (e*(a + b*x)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*(b*d - a*e)^(3/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{\sqrt{d+ex}}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{\sqrt{d+ex}}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(ab+b^2x\right)\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d+
\end{aligned}
$$

$$
\begin{aligned}
&\qquad b(bd-ae)\sqrt{a^2+2abx+b^2x^2}\\
&= -\frac{\sqrt{d+ex}}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,(bd-ae)^{3/2}\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 85, normalized size = 0.75

$$
\frac{\frac{\sqrt{d+ex}}{ae-bd}+\frac{e(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{\sqrt{b}\,(ae-bd)^{3/2}}}{\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[d + e*x]/(-(b*d) + a*e) + (e*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[d + e*x])
/Sqrt[-(b*d) + a*e]])/(Sqrt[b]*(-(b*d) + a*e)^(3/2)))/Sqrt[(a + b*x)^2]
```

IntegrateAlgebraic [A] time = 13.88, size = 130, normalized size = 1.14

$$
\frac{(-ae-bex)\left(\frac{e\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{\sqrt{b}\,(ae-bd)^{3/2}}-\frac{e\sqrt{d+ex}}{(bd-ae)(-ae-b(d+ex)+bd)}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)
),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-((e*Sqrt[d + e*x])/((b*d - a*e)*(b*d - a*e - b*(d + e*x
)))) + (e*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(
Sqrt[b]*(-(b*d) + a*e)^(3/2))))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.45, size = 280, normalized size = 2.46

$$
\left[-\frac{\sqrt{b^2d-abe}\,(bex+ae)\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(b^2d-abe\right)\sqrt{ex+d}}{2\left(ab^3d^2-2\,a^2b^2de+a^3be^2+\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)x\right)},-\frac{\sqrt{-b^2d+abe}\,(bex+ae)\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)+\left(b^2d-abe\right)\sqrt{ex+d}}{ab^3d^2-2\,a^2b^2de+a^3be^2+\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)x}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/2*(sqrt(b^2*d - a*b*e)*(b*e*x + a*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(
b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(b^2*d - a*b*e)*sqrt(e*x + d))
/(a*b^3*d^2 - 2*a^2*b^2*d*e + a^3*b*e^2 + (b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*
e^2)*x), -(sqrt(-b^2*d + a*b*e)*(b*e*x + a*e)*arctan(sqrt(-b^2*d + a*b*e)*s
qrt(e*x + d)/(b*e*x + b*d)) + (b^2*d - a*b*e)*sqrt(e*x + d))/(a*b^3*d^2 - 2
*a^2*b^2*d*e + a^3*b*e^2 + (b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*e^2)*x)]
```

giac [B] time = 0.24, size = 189, normalized size = 1.66

$$-\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{\left(bde\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)-ae^2\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}-\frac{\sqrt{xe+d}\,e^2}{\left(bde\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)-ae^2\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)\right)\left((xe+d)b-bd+ae\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b*d*e*sgn((x*e + d)*b*e
 - b*d*e + a*e^2) - a*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d +
 a*b*e)) - sqrt(x*e + d)*e^2/((b*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a
*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e))
```

maple [A] time = 0.06, size = 112, normalized size = 0.98

$$\frac{\left(bex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+\sqrt{ex+d}\,\sqrt{(ae-bd)\,b}\right)(bx+a)^2}{\sqrt{(ae-bd)\,b}\,\,(ae-bd)\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] (b*e*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+a*e*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)+(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2))*(b*x+a)^2/((a*e-
b*d)*b)^(1/2)/(a*e-b*d)/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,x}{\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{\sqrt{d+ex}\,\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)/(sqrt(d + e*x)*((a + b*x)**2)**(3/2)), x)
```

3.1910 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=162

$$-\frac{3e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)}+\frac{3\sqrt{b}\,e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}$$

Rubi [A] time = 0.10, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 21, 51, 63, 208\}$

$$-\frac{3e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)}+\frac{3\sqrt{b}\,e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (3*e*(a + b*x))/((b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*Sqrt[b]*e*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/((b*d - a*e)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^{3/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{(bd-ae)\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(3e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)(d+ex)^{3/2}}}{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{(bd-ae)\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(a+bx)}{(bd-ae)^2\sqrt{d+ex}\sqrt{a^2+2abx}}$$

$$= -\frac{1}{(bd-ae)\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(a+bx)}{(bd-ae)^2\sqrt{d+ex}\sqrt{a^2+2abx}}$$

$$= -\frac{1}{(bd-ae)\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(a+bx)}{(bd-ae)^2\sqrt{d+ex}\sqrt{a^2+2abx}}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.40

$$-\frac{2e(a+bx)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{(a+bx)^2}\sqrt{d+ex}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-2*e*(a + b*x)*Hypergeometric2F1[-1/2, 2, 1/2, -((b*(d + e*x))/(-(b*d) + a
*e))])/((-(b*d) + a*e)^2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 28.00, size = 148, normalized size = 0.91

$$\frac{(-ae-bex)\left(-\frac{e(2ae+3b(d+ex)-2bd)}{\sqrt{d+ex}\,(bd-ae)^2(-ae-b(d+ex)+bd)}-\frac{3\sqrt{b}\,e\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{5/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-((e*(-2*b*d + 2*a*e + 3*b*(d + e*x)))/((b*d - a*e)^2*Sq
rt[d + e*x]*(b*d - a*e - b*(d + e*x)))) - (3*Sqrt[b]*e*ArcTan[(Sqrt[b]*Sqrt
[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(-(b*d) + a*e)^(5/2)))/(e*Sqrt[
(a*e + b*e*x)^2/e^2])
```

fricas [A]   time = 0.45, size = 423, normalized size = 2.61

$$\left[\frac{3\left(be^2x^2 + ade + \left(bde + ae^2\right)x\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2\,bd-ae+2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{b}{bd-ae}}}{bx+a}\right) - 2\,(3\,bex + bd + 2\,ae)\sqrt{ex + d}}{2\left(ab^2d^3 - 2\,a^2bd^2e + a^3de^2 + \left(b^3d^2e - 2\,ab^2de^2 + a^2be^3\right)x^2 + \left(b^3d^3 - ab^2d^2e - a^2bde^2 + a^3e^3\right)x\right)}, \frac{3\left(be^2x^2 + ade + \left(bde + ae^2\right)x\right)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\,\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right) - (3\,bex + bd + 2\,ae)\sqrt{ex + d}}{ab^2d^3 - 2\,a^2bd^2e + a^3de^2 + \left(b^3d^2e - 2\,ab^2de^2 + a^2be^3\right)x^2 + \left(b^3d^3 - ab^2d^2e - a^2bde^2 + a^3e^3\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/2*(3*(b*e^2*x^2 + a*d*e + (b*d*e + a*e^2)*x)*sqrt(b/(b*d - a*e))*log((b*
e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x +
 a)) - 2*(3*b*e*x + b*d + 2*a*e)*sqrt(e*x + d))/(a*b^2*d^3 - 2*a^2*b*d^2*e
+ a^3*d*e^2 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x^2 + (b^3*d^3 - a*b^
2*d^2*e - a^2*b*d*e^2 + a^3*e^3)*x), (3*(b*e^2*x^2 + a*d*e + (b*d*e + a*e^2
)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d -
a*e))/(b*e*x + b*d)) - (3*b*e*x + b*d + 2*a*e)*sqrt(e*x + d))/(a*b^2*d^3 -
2*a^2*b*d^2*e + a^3*d*e^2 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x^2 + (
b^3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2 + a^3*e^3)*x)]
```

giac [B]   time = 0.27, size = 289, normalized size = 1.78

$$-\frac{3\,b\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{\left(b^2d^2e\,\mathrm{sgn}\left((xe + d)be - bde + ae^2\right) - 2\,abde^2\mathrm{sgn}\left((xe + d)be - bde + ae^2\right) + a^2e^3\mathrm{sgn}\left((xe + d)be - bde + ae^2\right)\right)\sqrt{-b^2d + abe}} - \frac{3\,(xe + d)be^2 - 2\,bde^2 + 2\,ae^3}{\left(b^2d^2e\,\mathrm{sgn}\left((xe + d)be - bde + ae^2\right) - 2\,abde^2\mathrm{sgn}\left((xe + d)be - bde + ae^2\right) + a^2e^3\mathrm{sgn}\left((xe + d)be - bde + ae^2\right)\right)\left((xe + d)^{\frac{3}{2}}b - \sqrt{xe + d}\,bd + \sqrt{xe + d}\,ae\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -3*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^2*d^2*e*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) - 2*a*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ a^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - (3*(x
*e + d)*b*e^2 - 2*b*d*e^2 + 2*a*e^3)/((b^2*d^2*e*sgn((x*e + d)*b*e - b*d*e
+ a*e^2) - 2*a*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*e^3*sgn((x*
e + d)*b*e - b*d*e + a*e^2))*((x*e + d)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(
x*e + d)*a*e))
```

maple [A]   time = 0.07, size = 167, normalized size = 1.03

$$-\frac{\left(3\sqrt{ex+d}\,b^2ex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 3\sqrt{ex+d}\,abe\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right) + 3\sqrt{(ae-bd)\,b}\,bex + 2\sqrt{(ae-bd)\,b}\,ae + \sqrt{(ae-bd)\,b}\,bd\right)(bx+a)^2}{\sqrt{ex+d}\,\sqrt{(ae-bd)\,b}\,\left(ae-bd\right)^2\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*b^2*e+3*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a*b*e+3*((a*e-b*d)*b
)^(1/2)*x*b*e+2*((a*e-b*d)*b)^(1/2)*a*e+((a*e-b*d)*b)^(1/2)*b*d)*(b*x+a)^2/
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^2/((b*x+a)^2)^(3/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
[Out] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)^{\frac{3}{2}}\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)/((d + e*x)**(3/2)*((a + b*x)**2)**(3/2)), x)
```

3.1911 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=212

$$-\frac{5be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}(bd-ae)^3}-\frac{5e(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}(d+e}$$

Rubi [A] time = 0.11, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$-\frac{5be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}(bd-ae)^3}-\frac{5e(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}(d+ex)^{3/2}(bd-ae)}+\frac{5b^{3/2}e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}(bd-ae)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (5*e*(a
+ b*x))/(3*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
5*b*e*(a + b*x))/((b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (5*b^(3/2)*e*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
)/((b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^{5/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(5e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)(d+ex)}}{2b(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

Mathematica [C] time = 0.02, size = 66, normalized size = 0.31

$$-\frac{2e(a+bx)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-2*e*(a + b*x)*Hypergeometric2F1[-3/2, 2, -1/2, -((b*(d + e*x))/(-(b*d) + 
a*e))])/(3*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 45.55, size = 189, normalized size = 0.89

$$\frac{(-ae-bex)\left(\frac{e\left(2a^2e^2-10abe(d+ex)-4abde+2b^2d^2-15b^2(d+ex)^2+10b^2d(d+ex)\right)}{3(d+ex)^{3/2}(bd-ae)^3(-ae-b(d+ex)+bd)}+\frac{5b^{3/2}e\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{7/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e*(2*b^2*d^2 - 4*a*b*d*e + 2*a^2*e^2 + 10*b^2*d*(d + e*
x) - 10*a*b*e*(d + e*x) - 15*b^2*(d + e*x)^2))/(3*(b*d - a*e)^3*(d + e*x)^(
3/2)*(b*d - a*e - b*(d + e*x))) + (5*b^(3/2)*e*ArcTan[(Sqrt[b]*Sqrt[-(b*d)
```

```
+ a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(-(b*d) + a*e)^(7/2)))/(e*Sqrt[(a*e + b
*e*x)^2/e^2])
```

fricas [B] time = 0.46, size = 782, normalized size = 3.69

$$\left[-\frac{15\left(b^{2}e^{3}x^{3}+abd^{2}e+\left(2\,b^{2}de^{2}+abe^{3}\right)x^{2}+\left(b^{2}d^{2}e+2\,abde^{2}\right)x\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2\,bd-ae-2\,(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)+2\left(15\,b^{2}e^{2}x^{2}+3\,b^{2}d^{2}+14\,abde-2\,a^{2}e^{2}+10\left(2\,b^{2}de+abe^{2}\right)x\right)\sqrt{ex+d}}{6\left(ab^{3}d^{5}-3\,a^{2}b^{2}d^{4}e+3\,a^{3}bd^{3}e^{2}-a^{4}d^{2}e^{3}+\left(b^{4}d^{3}e^{2}-3\,ab^{3}d^{2}e^{3}+3\,a^{2}b^{2}de^{4}-a^{3}be^{5}\right)x^{3}+\left(2\,b^{4}d^{4}e-5\,ab^{3}d^{3}e^{2}+3\,a^{2}b^{2}d^{2}e^{3}+a^{3}bde^{4}-a^{4}e^{5}\right)x^{2}+\left(b^{4}d^{5}-ab^{3}d^{4}e-3\,a^{2}b^{2}d^{3}e^{2}+5\,a^{3}bd^{2}e^{3}-2\,a^{4}de^{4}\right)x\right)},\ \frac{15\left(b^{2}e^{3}x^{3}+abd^{2}e+\left(2\,b^{2}de^{2}+abe^{3}\right)x^{2}+\left(b^{2}d^{2}e+2\,abde^{2}\right)x\right)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-\left(15\,b^{2}e^{2}x^{2}+3\,b^{2}d^{2}+14\,abde-2\,a^{2}e^{2}+10\left(2\,b^{2}de+abe^{2}\right)x\right)\sqrt{ex+d}}{3\left(ab^{3}d^{5}-3\,a^{2}b^{2}d^{4}e+3\,a^{3}bd^{3}e^{2}-a^{4}d^{2}e^{3}+\left(b^{4}d^{3}e^{2}-3\,ab^{3}d^{2}e^{3}+3\,a^{2}b^{2}de^{4}-a^{3}be^{5}\right)x^{3}+\left(2\,b^{4}d^{4}e-5\,ab^{3}d^{3}e^{2}+3\,a^{2}b^{2}d^{2}e^{3}+a^{3}bde^{4}-a^{4}e^{5}\right)x^{2}+\left(b^{4}d^{5}-ab^{3}d^{4}e-3\,a^{2}b^{2}d^{3}e^{2}+5\,a^{3}bd^{2}e^{3}-2\,a^{4}de^{4}\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/6*(15*(b^2*e^3*x^3 + a*b*d^2*e + (2*b^2*d*e^2 + a*b*e^3)*x^2 + (b^2*d^2
*e + 2*a*b*d*e^2)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d
- a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(15*b^2*e^2*x^2 +
3*b^2*d^2 + 14*a*b*d*e - 2*a^2*e^2 + 10*(2*b^2*d*e + a*b*e^2)*x)*sqrt(e*x +
 d))/(a*b^3*d^5 - 3*a^2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^
3*e^2 - 3*a*b^3*d^2*e^3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e -
 5*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^
5 - a*b^3*d^4*e - 3*a^2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x), 1/
3*(15*(b^2*e^3*x^3 + a*b*d^2*e + (2*b^2*d*e^2 + a*b*e^3)*x^2 + (b^2*d^2*e +
 2*a*b*d*e^2)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqr
t(-b/(b*d - a*e))/(b*e*x + b*d)) - (15*b^2*e^2*x^2 + 3*b^2*d^2 + 14*a*b*d*e
 - 2*a^2*e^2 + 10*(2*b^2*d*e + a*b*e^2)*x)*sqrt(e*x + d))/(a*b^3*d^5 - 3*a^
2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d^2*e^
3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2 + 3*a
^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e - 3*a^
2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x)]
```

giac [B] time = 0.36, size = 494, normalized size = 2.33

$$-\frac{5\,b^{2}\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)e^{2}}{\left(b^{3}d^{3}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-3\,ab^{2}d^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+3\,a^{2}bde^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{3}e^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{-b^{2}d+abe}}-\frac{\sqrt{xe+d}\,b^{2}e^{2}}{\left(b^{3}d^{3}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-3\,ab^{2}d^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+3\,a^{2}bde^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{3}e^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\left((xe+d)b-bd+ae\right)}-\frac{2\left(6\,(xe+d)be^{2}+bde^{2}-ae^{3}\right)}{3\left(b^{3}d^{3}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-3\,ab^{2}d^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+3\,a^{2}bde^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{3}e^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -5*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^3*d^3*e*sgn((x*
e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 3*a^2*b*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e
 + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - sqrt(x*e + d)*b^2*e^2/(
(b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e^2*sgn((x*e +
d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)
- a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)) -
2/3*(6*(x*e + d)*b*e^2 + b*d*e^2 - a*e^3)/((b^3*d^3*e*sgn((x*e + d)*b*e - b
*d*e + a*e^2) - 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*
b*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*
d*e + a*e^2))*(x*e + d)^(3/2))
```

maple [A] time = 0.07, size = 242, normalized size = 1.14

$$\frac{\left(15\,(ex+d)^{\frac{3}{2}}\,b^{3}ex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15\sqrt{(ae-bd)\,b}\;b^{2}e^{2}x^{2}+15\,(ex+d)^{\frac{3}{2}}\,ab^{2}e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+10\sqrt{(ae-bd)\,b}\;abe^{2}x+20\sqrt{(ae-bd)\,b}\;b^{2}dex-2\sqrt{(ae-bd)\,b}\;a^{2}e^{2}+14\sqrt{(ae-bd)\,b}\;abde+3\sqrt{(ae-bd)\,b}\;b^{2}d^{2}\right)(bx+a)^{2}}{3\,(ex+d)^{\frac{3}{2}}\sqrt{(ae-bd)\,b}\;(ae-bd)^{3}\left((bx+a)^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/3*(15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*b^3*e+1
5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a*b^2*e+15*((a*
e-b*d)*b)^(1/2)*x^2*b^2*e^2+10*((a*e-b*d)*b)^(1/2)*x*a*b*e^2+20*((a*e-b*d)*
```

```
b)^(1/2)*x*b^2*d*e-2*((a*e-b*d)*b)^(1/2)*a^2*e^2+14*((a*e-b*d)*b)^(1/2)*a*b
*d*e+3*((a*e-b*d)*b)^(1/2)*b^2*d^2)*(b*x+a)^2/(e*x+d)^(3/2)/((a*e-b*d)*b)^(
1/2)/(a*e-b*d)^3/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,x}{(d + e\,x)^{5/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{(d + ex)^{\frac{5}{2}}\left((a + bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**(5/2)*((a + b*x)**2)**(3/2)), x)
```

3.1912 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=264

$$-\frac{7b^2e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{7be(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}-\frac{7e(a+bx)}{5\sqrt{a^2+2abx+b^2x^2}\,(d+\cdots}$$

Rubi [A] time = 0.13, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$-\frac{7b^2e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{7be(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}-\frac{7e(a+bx)}{5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}+\frac{7b^{5/2}e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (7*e*(a
+ b*x))/(5*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
7*b*e*(a + b*x))/(3*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) - (7*b^2*e*(a + b*x))/((b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (7*b^(5/2)*e*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[
b*d - a*e]])/((b*d - a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^{7/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)(d+ex)}}{2b(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.25

$$-\frac{2e(a+bx)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-2*e*(a + b*x)*Hypergeometric2F1[-5/2, 2, -3/2, -((b*(d + e*x))/(-(b*d) +
a*e))])/(5*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 60.86, size = 249, normalized size = 0.94

$$\frac{(-ae-bex)\left(-\frac{e\left(6a^3e^3-14a^2be^2(d+ex)-18a^2bde^2+18ab^2d^2e+70ab^2e(d+ex)^2+28ab^2de(d+ex)-6b^3d^3-14b^3d^2(d+ex)+105b^3(d+ex)^3-70b^3d(d+ex)^2\right)}{15(d+ex)^{5/2}(bd-ae)^4(-ae-b(d+ex)+bd)}-\frac{7b^{5/2}e\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{(ae-bd)^{9/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/15*(e*(-6*b^3*d^3 + 18*a*b^2*d^2*e - 18*a^2*b*d*e^2 +
 6*a^3*e^3 - 14*b^3*d^2*(d + e*x) + 28*a*b^2*d*e*(d + e*x) - 14*a^2*b*e^2*(
```

```
d + e*x) - 70*b^3*d*(d + e*x)^2 + 70*a*b^2*e*(d + e*x)^2 + 105*b^3*(d + e*x
)^3))/((b*d - a*e)^4*(d + e*x)^(5/2)*(b*d - a*e - b*(d + e*x))) - (7*b^(5/2
)*e*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(-(b*d)
 + a*e)^(9/2)))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.46, size = 1218, normalized size = 4.61

$$\left[\frac{105\left(b^3e^4x^4+ab^2d^3e+\left(3b^3de^3+ab^2e^4\right)x^3+3\left(b^3d^2e^2+ab^2de^3\right)x^2+\left(b^3d^3e+3ab^2d^2e^2\right)x\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2bd-ae+2(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\left(105b^3e^3x^3+15b^3d^3+116ab^2d^2e-32a^2bde^2+6a^3e^3+35\left(7b^3de^2+2ab^2e^3\right)x^2+7\left(23b^3d^2e+24ab^2de^2-2a^2be^3\right)x\right)\sqrt{ex+d}}{30\left(ab^4d^7-4a^2b^3d^6e+6a^3b^2d^5e^2-4a^4bd^4e^3+a^5d^3e^4+\left(b^5d^4e^3-4ab^4d^3e^4+6a^2b^3d^2e^5-4a^3b^2de^6+a^4be^7\right)x^4+\left(3b^5d^5e^2-11ab^4d^4e^3+14a^2b^3d^3e^4-6a^3b^2d^2e^5-a^4bde^6+a^5e^7\right)x^3+3\left(b^5d^6e-3ab^4d^5e^2+2a^2b^3d^4e^3+2a^3b^2d^3e^4-3a^4bd^2e^5+a^5de^6\right)x^2+\left(b^5d^7-ab^4d^6e-6a^2b^3d^5e^2+14a^3b^2d^4e^3-11a^4bd^3e^4+3a^5d^2e^5\right)x\right)},\ \frac{105\left(b^3e^4x^4+ab^2d^3e+\left(3b^3de^3+ab^2e^4\right)x^3+3\left(b^3d^2e^2+ab^2de^3\right)x^2+\left(b^3d^3e+3ab^2d^2e^2\right)x\right)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+d}\sqrt{-\frac{b}{bd-ae}}}{bex+bd}\right)-\left(105b^3e^3x^3+15b^3d^3+116ab^2d^2e-32a^2bde^2+6a^3e^3+35\left(7b^3de^2+2ab^2e^3\right)x^2+7\left(23b^3d^2e+24ab^2de^2-2a^2be^3\right)x\right)\sqrt{ex+d}}{15\left(ab^4d^7-4a^2b^3d^6e+6a^3b^2d^5e^2-4a^4bd^4e^3+a^5d^3e^4+\left(b^5d^4e^3-4ab^4d^3e^4+6a^2b^3d^2e^5-4a^3b^2de^6+a^4be^7\right)x^4+\left(3b^5d^5e^2-11ab^4d^4e^3+14a^2b^3d^3e^4-6a^3b^2d^2e^5-a^4bde^6+a^5e^7\right)x^3+3\left(b^5d^6e-3ab^4d^5e^2+2a^2b^3d^4e^3+2a^3b^2d^3e^4-3a^4bd^2e^5+a^5de^6\right)x^2+\left(b^5d^7-ab^4d^6e-6a^2b^3d^5e^2+14a^3b^2d^4e^3-11a^4bd^3e^4+3a^5d^2e^5\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/30*(105*(b^3*e^4*x^4 + a*b^2*d^3*e + (3*b^3*d*e^3 + a*b^2*e^4)*x^3 + 3*(
b^3*d^2*e^2 + a*b^2*d*e^3)*x^2 + (b^3*d^3*e + 3*a*b^2*d^2*e^2)*x)*sqrt(b/(b
*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b
*d - a*e)))/(b*x + a)) - 2*(105*b^3*e^3*x^3 + 15*b^3*d^3 + 116*a*b^2*d^2*e
- 32*a^2*b*d*e^2 + 6*a^3*e^3 + 35*(7*b^3*d*e^2 + 2*a*b^2*e^3)*x^2 + 7*(23*b
^3*d^2*e + 24*a*b^2*d*e^2 - 2*a^2*b*e^3)*x)*sqrt(e*x + d))/(a*b^4*d^7 - 4*a
^2*b^3*d^6*e + 6*a^3*b^2*d^5*e^2 - 4*a^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5*d^4
*e^3 - 4*a*b^4*d^3*e^4 + 6*a^2*b^3*d^2*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^7)*x
^4 + (3*b^5*d^5*e^2 - 11*a*b^4*d^4*e^3 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2*d^2
*e^5 - a^4*b*d*e^6 + a^5*e^7)*x^3 + 3*(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*a^2*
b^3*d^4*e^3 + 2*a^3*b^2*d^3*e^4 - 3*a^4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b^5*d
^7 - a*b^4*d^6*e - 6*a^2*b^3*d^5*e^2 + 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^3*e^
4 + 3*a^5*d^2*e^5)*x), 1/15*(105*(b^3*e^4*x^4 + a*b^2*d^3*e + (3*b^3*d*e^3
+ a*b^2*e^4)*x^3 + 3*(b^3*d^2*e^2 + a*b^2*d*e^3)*x^2 + (b^3*d^3*e + 3*a*b^2
*d^2*e^2)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b
/(b*d - a*e))/(b*e*x + b*d)) - (105*b^3*e^3*x^3 + 15*b^3*d^3 + 116*a*b^2*d^
2*e - 32*a^2*b*d*e^2 + 6*a^3*e^3 + 35*(7*b^3*d*e^2 + 2*a*b^2*e^3)*x^2 + 7*(
23*b^3*d^2*e + 24*a*b^2*d*e^2 - 2*a^2*b*e^3)*x)*sqrt(e*x + d))/(a*b^4*d^7 -
 4*a^2*b^3*d^6*e + 6*a^3*b^2*d^5*e^2 - 4*a^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5
*d^4*e^3 - 4*a*b^4*d^3*e^4 + 6*a^2*b^3*d^2*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^
7)*x^4 + (3*b^5*d^5*e^2 - 11*a*b^4*d^4*e^3 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2
*d^2*e^5 - a^4*b*d*e^6 + a^5*e^7)*x^3 + 3*(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*
a^2*b^3*d^4*e^3 + 2*a^3*b^2*d^3*e^4 - 3*a^4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b
^5*d^7 - a*b^4*d^6*e - 6*a^2*b^3*d^5*e^2 + 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^
3*e^4 + 3*a^5*d^2*e^5)*x)]
```

giac [B] time = 0.40, size = 640, normalized size = 2.42

$$-\frac{7b^3\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{\left(b^4d^4e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4ab^3d^3e^2\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+6a^2b^2d^2e^3\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4a^3bde^4\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^4e^5\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}-\frac{\sqrt{xe+d}\,b^3e^2}{\left(b^4d^4e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4ab^3d^3e^2\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+6a^2b^2d^2e^3\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4a^3bde^4\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^4e^5\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\left((xe+d)b-bd+ae\right)}-\frac{2\left(45(xe+d)^2b^2e^2+10(xe+d)b^2de^2+3b^2d^2e^2-10(xe+d)abe^3-6abde^3+3a^2e^4\right)}{15\left(b^4d^4e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4ab^3d^3e^2\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+6a^2b^2d^2e^3\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4a^3bde^4\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^4e^5\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -7*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^4*d^4*e*sgn((x*
e + d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^
4*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e +
a*e^2))*sqrt(-b^2*d + a*b*e)) - sqrt(x*e + d)*b^3*e^2/((b^4*d^4*e*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e
^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*
sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*
e^2))*((x*e + d)*b - b*d + a*e)) - 2/15*(45*(x*e + d)^2*b^2*e^2 + 10*(x*e +
 d)*b^2*d*e^2 + 3*b^2*d^2*e^2 - 10*(x*e + d)*a*b*e^3 - 6*a*b*d*e^3 + 3*a^2*
e^4)/((b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((
x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e
```

```
 + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^5*sgn(
(x*e + d)*b*e - b*d*e + a*e^2))*(x*e + d)^(5/2))
```

maple [A] time = 0.07, size = 343, normalized size = 1.30

$$-\frac{\left(105\sqrt{(ae-bd)b}\,b^3e^3x^3+70\sqrt{(ae-bd)b}\,a\,b^2e^3x^2+245\sqrt{(ae-bd)b}\,b^3d\,e^2x^2-14\sqrt{(ae-bd)b}\,a^2b\,e^3x+168\sqrt{(ae-bd)b}\,a\,b^2d\,e^2x+105\,(ex+d)^{\frac{5}{2}}\,b^4ex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+161\sqrt{(ae-bd)b}\,b^3d^2ex+6\sqrt{(ae-bd)b}\,a^3e^3-32\sqrt{(ae-bd)b}\,a^2bd\,e^2+105\,(ex+d)^{\frac{5}{2}}\,a\,b^3e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+116\sqrt{(ae-bd)b}\,a\,b^2d^2e+15\sqrt{(ae-bd)b}\,b^3d^3\right)(bx+a)^2}{15\,(ex+d)^{\frac{5}{2}}\sqrt{(ae-bd)b}\,(ae-bd)^4\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/15*(105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*b^4*
e+105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a*b^3*e+105
*((a*e-b*d)*b)^(1/2)*x^3*b^3*e^3+70*((a*e-b*d)*b)^(1/2)*x^2*a*b^2*e^3+245*(
(a*e-b*d)*b)^(1/2)*x^2*b^3*d*e^2-14*((a*e-b*d)*b)^(1/2)*x*a^2*b*e^3+168*((a
*e-b*d)*b)^(1/2)*x*a*b^2*d*e^2+161*((a*e-b*d)*b)^(1/2)*x*b^3*d^2*e+6*((a*e-
b*d)*b)^(1/2)*a^3*e^3-32*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2+116*((a*e-b*d)*b)^
(1/2)*a*b^2*d^2*e+15*((a*e-b*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/(e*x+d)^(5/2)/(
(a*e-b*d)*b)^(1/2)/(a*e-b*d)^4/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{(d+e\,x)^{7/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1913 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=241

$$-\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^3(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{35e^3}{8b^4\sqrt{}}$$

Rubi [A] time = 0.14, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {768, 646, 47, 50, 63, 208}

$$-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^3(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^(7/2)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) + (35*e^3*(a + b*x)*
Sqrt[d + e*x])/(8*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^2*(d + e*x)^(3
/2))/(24*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*(d + e*x)^(5/2))/(12*b^2
*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^3*Sqrt[b*d - a*e]*(a + b*
x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(9/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{(7e)\int \frac{(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{6b}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(7be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{5/2}}{\left(ab+b^2x\right)^3}\,dx}{6\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(35e^2\left(ab+b^2x\right)\right)}{24b\sqrt{a^2+2al}}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-$$

Mathematica [C] time = 0.04, size = 68, normalized size = 0.28

$$\frac{2e^3(a+bx)(d+ex)^{9/2}\,{}_2F_1\left(4,\frac{9}{2};\frac{11}{2};-\frac{b(d+ex)}{ae-bd}\right)}{9\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*e^3*(a + b*x)*(d + e*x)^(9/2)*Hypergeometric2F1[4, 9/2, 11/2, -((b*(d +
e*x))/(-(b*d) + a*e))])/(9*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 48.23, size = 257, normalized size = 1.07

$$\frac{(-ae-bex)\left(\frac{35\left(bde^3-ae^4\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{9/2}\sqrt{ae-bd}}-\frac{e^3\sqrt{d+ex}\left(105a^3e^3+280a^2be^2(d+ex)-315a^2bde^2+315ab^2d^2e+231ab^2e(d+ex)^2-560ab^2de(d+ex)-105b^3d^3+280b^3d^2(d+ex)+48b^3(d+ex)^3-231b^3d(d+ex)^2\right)}{24b^4(ae+b(d+ex)-bd)^3}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/24*(e^3*Sqrt[d + e*x]*(-105*b^3*d^3 + 315*a*b^2*d^2*e
 - 315*a^2*b*d*e^2 + 105*a^3*e^3 + 280*b^3*d^2*(d + e*x) - 560*a*b^2*d*e*(d
 + e*x) + 280*a^2*b*e^2*(d + e*x) - 231*b^3*d*(d + e*x)^2 + 231*a*b^2*e*(d
+ e*x)^2 + 48*b^3*(d + e*x)^3))/(b^4*(-(b*d) + a*e + b*(d + e*x))^3) + (35*
(b*d*e^3 - a*e^4)*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d -
a*e)])/(8*b^(9/2)*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [A] time = 0.46, size = 498, normalized size = 2.07

$$\left[\frac{105\left(b^3e^3x^3+3ab^2e^3x^2+3a^2be^3x+a^3e^3\right)\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2bd-ae-2\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(48b^3e^3x^3-8b^3d^3-14ab^2d^2e-35a^2bde^2+105a^3e^3-3\left(29b^3de^2-77ab^2e^3\right)x^2-2\left(19b^3d^2e+49ab^2de^2-140a^2be^3\right)x\right)\sqrt{ex+d}}{48\left(b^7x^3+3ab^6x^2+3a^2b^5x+a^3b^4\right)}, -\frac{105\left(b^3e^3x^3+3ab^2e^3x^2+3a^2be^3x+a^3e^3\right)\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\left(48b^3e^3x^3-8b^3d^3-14ab^2d^2e-35a^2bde^2+105a^3e^3-3\left(29b^3de^2-77ab^2e^3\right)x^2-2\left(19b^3d^2e+49ab^2de^2-140a^2be^3\right)x\right)\sqrt{ex+d}}{24\left(b^7x^3+3ab^6x^2+3a^2b^5x+a^3b^4\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(105*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt((
b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)
/b))/(b*x + a)) + 2*(48*b^3*e^3*x^3 - 8*b^3*d^3 - 14*a*b^2*d^2*e - 35*a^2*b
*d*e^2 + 105*a^3*e^3 - 3*(29*b^3*d*e^2 - 77*a*b^2*e^3)*x^2 - 2*(19*b^3*d^2*
e + 49*a*b^2*d*e^2 - 140*a^2*b*e^3)*x)*sqrt(e*x + d))/(b^7*x^3 + 3*a*b^6*x^
2 + 3*a^2*b^5*x + a^3*b^4), -1/24*(105*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a
^2*b*e^3*x + a^3*e^3)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b
*d - a*e)/b)/(b*d - a*e)) - (48*b^3*e^3*x^3 - 8*b^3*d^3 - 14*a*b^2*d^2*e -
35*a^2*b*d*e^2 + 105*a^3*e^3 - 3*(29*b^3*d*e^2 - 77*a*b^2*e^3)*x^2 - 2*(19*
b^3*d^2*e + 49*a*b^2*d*e^2 - 140*a^2*b*e^3)*x)*sqrt(e*x + d))/(b^7*x^3 + 3*
a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)]
```

giac [A] time = 0.35, size = 320, normalized size = 1.33

$$\frac{35\left(bde^3-ae^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\sqrt{-b^2d+abe}\,b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{2\sqrt{xe+d}\,e^3}{b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{87(xe+d)^{\frac{5}{2}}b^3de^3-136(xe+d)^{\frac{3}{2}}b^3d^2e^3+57\sqrt{xe+d}\,b^3d^3e^3-87(xe+d)^{\frac{5}{2}}ab^2e^4+272(xe+d)^{\frac{3}{2}}ab^2de^4-171\sqrt{xe+d}\,ab^2d^2e^4-136(xe+d)^{\frac{3}{2}}a^2be^5+171\sqrt{xe+d}\,a^2bde^5-57\sqrt{xe+d}\,a^3e^6}{24\left((xe+d)b-bd+ae\right)^3b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 35/8*(b*d*e^3 - a*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-
b^2*d + a*b*e)*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2*sqrt(x*e + d)*e^
3/(b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/24*(87*(x*e + d)^(5/2)*b^3*d
*e^3 - 136*(x*e + d)^(3/2)*b^3*d^2*e^3 + 57*sqrt(x*e + d)*b^3*d^3*e^3 - 87*
(x*e + d)^(5/2)*a*b^2*e^4 + 272*(x*e + d)^(3/2)*a*b^2*d*e^4 - 171*sqrt(x*e
+ d)*a*b^2*d^2*e^4 - 136*(x*e + d)^(3/2)*a^2*b*e^5 + 171*sqrt(x*e + d)*a^2*
b*d*e^5 - 57*sqrt(x*e + d)*a^3*e^6)/(((x*e + d)*b - b*d + a*e)^3*b^4*sgn((x
*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.07, size = 638, normalized size = 2.65

$$\frac{\left(-105ab^3e^4x^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+105b^4de^3x^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-315a^2b^2e^4x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+315ab^3de^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-315a^3be^4x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+315a^2b^2de^3x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-105a^4e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+105a^3bde^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+48\sqrt{(ae-bd)b}\sqrt{ex+d}\,b^3e^3x^3+144\sqrt{(ae-bd)b}\sqrt{ex+d}\,ab^2e^3x^2+144\sqrt{(ae-bd)b}\sqrt{ex+d}\,a^2be^3x+105\sqrt{ex+d}\sqrt{(ae-bd)b}\,a^3e^3-171\sqrt{ex+d}\sqrt{(ae-bd)b}\,a^2bde^2+171\sqrt{ex+d}\sqrt{(ae-bd)b}\,ab^2d^2e-57\sqrt{ex+d}\sqrt{(ae-bd)b}\,b^3d^3+136(ex+d)^{\frac{3}{2}}\sqrt{(ae-bd)b}\,a^2be^2-272(ex+d)^{\frac{3}{2}}\sqrt{(ae-bd)b}\,ab^2de+136(ex+d)^{\frac{3}{2}}\sqrt{(ae-bd)b}\,b^3d^2+87(ex+d)^{\frac{5}{2}}\sqrt{(ae-bd)b}\,ab^2e-87(ex+d)^{\frac{5}{2}}\sqrt{(ae-bd)b}\,b^3d\right)(bx+a)^2}{24\sqrt{(ae-bd)b}\left((bx+a)^2\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(-105*a*b^3*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*b^4*d*e^3+48*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(1/2)*x^3*b^3*e^3-315*a^2*b^2*e^4*x^2*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)+315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^
3*d*e^3+87*(e*x+d)^(5/2)*((a*e-b*d)*b)^(1/2)*a*b^2*e-87*(e*x+d)^(5/2)*((a*e
-b*d)*b)^(1/2)*b^3*d+144*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a*b^2*e^3-31
5*a^3*b*e^4*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+315*a^2*b^2*d*e^3
*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+136*(e*x+d)^(3/2)*((a*e-b*d)
*b)^(1/2)*a^2*b*e^2-272*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*a*b^2*d*e+136*(e*
x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*b^3*d^2+144*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2
)*a^2*b*e^3*x-105*a^4*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*a
^3*b*d*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*(e*x+d)^(1/2)*((
a*e-b*d)*b)^(1/2)*a^3*e^3-171*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2
+171*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a*b^2*d^2*e-57*(e*x+d)^(1/2)*((a*e-b
*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/((a*e-b*d)*b)^(1/2)/b^4/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{7}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,(d+e\,x)^{7/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1914 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=197

$$-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}-\frac{5e^2\sqrt{d}}{8b^3\sqrt{a^2+2a}}$$

Rubi [A] time = 0.11, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 47, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^(5/2)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (5*e^2*Sqrt[d + e*
x])/(8*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(d + e*x)^(3/2))/(12*b^2*(
a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e^3*(a + b*x)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(7/2)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{(5e)\int \frac{(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{6b}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(5be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{3/2}}{\left(ab+b^2x\right)^3}\,dx}{6\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(5e^2\left(ab+b^2x\right)\right)\int}{8b\sqrt{a^2+2abx}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

Mathematica [A] time = 0.16, size = 132, normalized size = 0.67

$$\frac{\frac{15e^3(a+bx)^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{\sqrt{ae-bd}}-\sqrt{b}\sqrt{d+ex}\left(15a^2e^2+10abe(d+4ex)+b^2\left(8d^2+26dex+33e^2x^2\right)\right)}{24b^{7/2}\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[b]*Sqrt[d + e*x]*(15*a^2*e^2 + 10*a*b*e*(d + 4*e*x) + b^2*(8*d^2 +
26*d*e*x + 33*e^2*x^2))) + (15*e^3*(a + b*x)^3*ArcTan[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[-(b*d) + a*e]])/Sqrt[-(b*d) + a*e])/(24*b^(7/2)*((a + b*x)^2)^(3/2)
)
```

IntegrateAlgebraic [A] time = 36.53, size = 187, normalized size = 0.95

$$\frac{(-ae-bex)\left(\frac{e^3\sqrt{d+ex}\left(15a^2e^2+40abe(d+ex)-30abde+15b^2d^2+33b^2(d+ex)^2-40b^2d(d+ex)\right)}{24b^3(ae+b(d+ex)-bd)^3}+\frac{5e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{7/2}\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*Sqrt[d + e*x]*(15*b^2*d^2 - 30*a*b*d*e + 15*a^2*e^2
 - 40*b^2*d*(d + e*x) + 40*a*b*e*(d + e*x) + 33*b^2*(d + e*x)^2))/(24*b^3*(
-(b*d) + a*e + b*(d + e*x))^3) + (5*e^3*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*
Sqrt[d + e*x]])/(b*d - a*e)])/(8*b^(7/2)*Sqrt[-(b*d) + a*e])))/(e*Sqrt[(a*e
+ b*e*x)^2/e^2])
```

fricas [A] time = 0.45, size = 563, normalized size = 2.86

$$\left[\frac{15\,\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\sqrt{b^2d-abe}\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\,\left(8\,b^4d^3+2\,ab^3d^2e+5\,a^2b^2de^2-15\,a^3be^3+33\,\left(b^4de^2-ab^3e^3\right)x^2+2\,\left(13\,b^4d^2e+7\,ab^3de^2-20\,a^2b^2e^3\right)x\right)\sqrt{ex+d}}{48\,\left(a^3b^5d-a^4b^4e+\left(b^8d-ab^7e\right)x^3+3\,\left(ab^7d-a^2b^6e\right)x^2+3\,\left(a^2b^6d-a^3b^5e\right)x\right)},\ \frac{15\,\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\sqrt{-b^2d+abe}\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)-\left(8\,b^4d^3+2\,ab^3d^2e+5\,a^2b^2de^2-15\,a^3be^3+33\,\left(b^4de^2-ab^3e^3\right)x^2+2\,\left(13\,b^4d^2e+7\,ab^3de^2-20\,a^2b^2e^3\right)x\right)\sqrt{ex+d}}{24\,\left(a^3b^5d-a^4b^4e+\left(b^8d-ab^7e\right)x^3+3\,\left(ab^7d-a^2b^6e\right)x^2+3\,\left(a^2b^6d-a^3b^5e\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(15*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b^
2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d)
)/(b*x + a)) - 2*(8*b^4*d^3 + 2*a*b^3*d^2*e + 5*a^2*b^2*d*e^2 - 15*a^3*b*e^
3 + 33*(b^4*d*e^2 - a*b^3*e^3)*x^2 + 2*(13*b^4*d^2*e + 7*a*b^3*d*e^2 - 20*a
^2*b^2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d - a^4*b^4*e + (b^8*d - a*b^7*e)*x^
3 + 3*(a*b^7*d - a^2*b^6*e)*x^2 + 3*(a^2*b^6*d - a^3*b^5*e)*x), 1/24*(15*(b
^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(-b^2*d + a*b*e
)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (8*b^4*d^3 + 2
*a*b^3*d^2*e + 5*a^2*b^2*d*e^2 - 15*a^3*b*e^3 + 33*(b^4*d*e^2 - a*b^3*e^3)*
x^2 + 2*(13*b^4*d^2*e + 7*a*b^3*d*e^2 - 20*a^2*b^2*e^3)*x)*sqrt(e*x + d))/(
a^3*b^5*d - a^4*b^4*e + (b^8*d - a*b^7*e)*x^3 + 3*(a*b^7*d - a^2*b^6*e)*x^2
 + 3*(a^2*b^6*d - a^3*b^5*e)*x)]
```

giac [A] time = 0.29, size = 213, normalized size = 1.08

$$\frac{5\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\,\sqrt{-b^2d+abe}\,b^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{33\,(xe+d)^{\frac{5}{2}}b^2e^3-40\,(xe+d)^{\frac{3}{2}}b^2de^3+15\,\sqrt{xe+d}\,b^2d^2e^3+40\,(xe+d)^{\frac{3}{2}}abe^4-30\,\sqrt{xe+d}\,abde^4+15\,\sqrt{xe+d}\,a^2e^5}{24\,((xe+d)b-bd+ae)^3b^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 5/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/(sqrt(-b^2*d + a*b*e)*
b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/24*(33*(x*e + d)^(5/2)*b^2*e^3
- 40*(x*e + d)^(3/2)*b^2*d*e^3 + 15*sqrt(x*e + d)*b^2*d^2*e^3 + 40*(x*e + d
)^(3/2)*a*b*e^4 - 30*sqrt(x*e + d)*a*b*d*e^4 + 15*sqrt(x*e + d)*a^2*e^5)/((
(x*e + d)*b - b*d + a*e)^3*b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.11, size = 316, normalized size = 1.60

$$-\frac{\left(-15b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-45a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-45a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-15a^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15\sqrt{(ae-bd)\,b}\,\sqrt{ex+d}\,a^2e^2-30\sqrt{(ae-bd)\,b}\,\sqrt{ex+d}\,abde+15\sqrt{(ae-bd)\,b}\,\sqrt{ex+d}\,b^2d^2+40\sqrt{(ae-bd)\,b}\,(ex+d)^{\frac{3}{2}}abe-40\sqrt{(ae-bd)\,b}\,(ex+d)^{\frac{3}{2}}b^2d+33\sqrt{(ae-bd)\,b}\,(ex+d)^{\frac{5}{2}}b^2\right)(bx+a)^2}{24\sqrt{(ae-bd)\,b}\,\left((bx+a)^2\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/24*(-15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*b^3*e^3-45*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^2*e^3+33*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(5/2)*b^2-45*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)+40*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e-40*((a*e-b*d)*b)^(1/2)*(e*x+d
)^(3/2)*b^2*d-15*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2-30*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*a*b*d*e+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*x+a)^2/((a*e-b*d)
*b)^(1/2)/b^3/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{5}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,(d+e\,x)^{5/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1915 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=207

$$-\frac{e^2\sqrt{d+ex}}{8b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e\sqrt{d+ex}}{4b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^3(a+bx)\,\mathrm{ta}}{8b^{5/2}\sqrt{a^2+2ab}}$$

Rubi [A] time = 0.14, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {768, 646, 47, 51, 63, 208}

$$-\frac{e^2\sqrt{d+ex}}{8b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}}{4b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^(3/2)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (e^2*Sqrt[d + e*x]
)/(8*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*Sqrt[d + e*x])/(4*
b^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(a + b*x)*ArcTanh[(Sqrt
[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(5/2)*(b*d - a*e)^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e\int \frac{\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(be\left(ab+b^2x\right)\right)\int \frac{\sqrt{d+ex}}{\left(ab+b^2x\right)^3}\,dx}{2\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e\sqrt{d+ex}}{4b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(e^2\left(ab+b^2x\right)\right)\int -}{8b\sqrt{a^2+2ab}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^2\sqrt{d+ex}}{8b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{d+e}}{4b^2(a+bx)\sqrt{a^2+}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^2\sqrt{d+ex}}{8b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{d+e}}{4b^2(a+bx)\sqrt{a^2+}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^2\sqrt{d+ex}}{8b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{d+e}}{4b^2(a+bx)\sqrt{a^2+}}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.33

$$\frac{2e^3(a+bx)(d+ex)^{5/2}\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*e^3*(a + b*x)*(d + e*x)^(5/2)*Hypergeometric2F1[5/2, 4, 7/2, -((b*(d + e
*x))/(-(b*d) + a*e))])/(5*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 32.12, size = 198, normalized size = 0.96

$$\frac{(-ae-bex)\left(\frac{e^3\sqrt{d+ex}\left(3a^2e^2+8abe(d+ex)-6abde+3b^2d^2-3b^2(d+ex)^2-8b^2d(d+ex)\right)}{24b^2(bd-ae)(-ae-b(d+ex)+bd)^3}+\frac{e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{5/2}(ae-bd)^{3/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5
/2),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*Sqrt[d + e*x]*(3*b^2*d^2 - 6*a*b*d*e + 3*a^2*e^2 -
8*b^2*d*(d + e*x) + 8*a*b*e*(d + e*x) - 3*b^2*(d + e*x)^2))/(24*b^2*(b*d -
a*e)*(b*d - a*e - b*(d + e*x))^3) + (e^3*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]
*Sqrt[d + e*x])/(b*d - a*e)])/(8*b^(5/2)*(-(b*d) + a*e)^(3/2))))/(e*Sqrt[(a
*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.45, size = 666, normalized size = 3.22

$$\left[-\frac{3\left(b^3e^3x^3+3ab^2e^3x^2+3a^2be^3x+a^3e^3\right)\sqrt{b^2d-abe}\log\left(\frac{bex+2bd-ae-2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)+2\left(8b^4d^3-10ab^3d^2e-a^2b^2de^2+3a^3be^3+3\left(b^4de^2-ab^3e^3\right)x^2+2\left(7b^4d^2e-11ab^3de^2+4a^2b^2e^3\right)x\right)\sqrt{ex+d}}{48\left(a^3b^5d^2-2a^4b^4de+a^5b^3e^2+\left(b^8d^2-2ab^7de+a^2b^6e^2\right)x^3+3\left(ab^7d^2-2a^2b^6de+a^3b^5e^2\right)x^2+3\left(a^2b^6d^2-2a^3b^5de+a^4b^4e^2\right)x\right)}, -\frac{3\left(b^3e^3x^3+3ab^2e^3x^2+3a^2be^3x+a^3e^3\right)\sqrt{-b^2d+abe}\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)+\left(8b^4d^3-10ab^3d^2e-a^2b^2de^2+3a^3be^3+3\left(b^4de^2-ab^3e^3\right)x^2+2\left(7b^4d^2e-11ab^3de^2+4a^2b^2e^3\right)x\right)\sqrt{ex+d}}{24\left(a^3b^5d^2-2a^4b^4de+a^5b^3e^2+\left(b^8d^2-2ab^7de+a^2b^6e^2\right)x^3+3\left(ab^7d^2-2a^2b^6de+a^3b^5e^2\right)x^2+3\left(a^2b^6d^2-2a^3b^5de+a^4b^4e^2\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/48*(3*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b^
2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d)
)/(b*x + a)) + 2*(8*b^4*d^3 - 10*a*b^3*d^2*e - a^2*b^2*d*e^2 + 3*a^3*b*e^3
+ 3*(b^4*d*e^2 - a*b^3*e^3)*x^2 + 2*(7*b^4*d^2*e - 11*a*b^3*d*e^2 + 4*a^2*b
^2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d^2 - 2*a^4*b^4*d*e + a^5*b^3*e^2 + (b^8
*d^2 - 2*a*b^7*d*e + a^2*b^6*e^2)*x^3 + 3*(a*b^7*d^2 - 2*a^2*b^6*d*e + a^3*
b^5*e^2)*x^2 + 3*(a^2*b^6*d^2 - 2*a^3*b^5*d*e + a^4*b^4*e^2)*x), -1/24*(3*(
b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(-b^2*d + a*b*
e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (8*b^4*d^3 -
10*a*b^3*d^2*e - a^2*b^2*d*e^2 + 3*a^3*b*e^3 + 3*(b^4*d*e^2 - a*b^3*e^3)*x^
2 + 2*(7*b^4*d^2*e - 11*a*b^3*d*e^2 + 4*a^2*b^2*e^3)*x)*sqrt(e*x + d))/(a^3
*b^5*d^2 - 2*a^4*b^4*d*e + a^5*b^3*e^2 + (b^8*d^2 - 2*a*b^7*d*e + a^2*b^6*e
^2)*x^3 + 3*(a*b^7*d^2 - 2*a^2*b^6*d*e + a^3*b^5*e^2)*x^2 + 3*(a^2*b^6*d^2
- 2*a^3*b^5*d*e + a^4*b^4*e^2)*x)]
```

giac [A] time = 0.28, size = 279, normalized size = 1.35

$$-\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\left(b^3d\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-ab^2e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}-\frac{3\,(xe+d)^{\frac{5}{2}}b^2e^3+8\,(xe+d)^{\frac{3}{2}}b^2de^3-3\,\sqrt{xe+d}\,b^2d^2e^3-8\,(xe+d)^{\frac{3}{2}}abe^4+6\,\sqrt{xe+d}\,abde^4-3\,\sqrt{xe+d}\,a^2e^5}{24\left(b^3d\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-ab^2e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)((xe+d)b-bd+ae)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -1/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^3*d*sgn((x*e + d)
*b*e - b*d*e + a*e^2) - a*b^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b
^2*d + a*b*e)) - 1/24*(3*(x*e + d)^(5/2)*b^2*e^3 + 8*(x*e + d)^(3/2)*b^2*d*
e^3 - 3*sqrt(x*e + d)*b^2*d^2*e^3 - 8*(x*e + d)^(3/2)*a*b*e^4 + 6*sqrt(x*e
+ d)*a*b*d*e^4 - 3*sqrt(x*e + d)*a^2*e^5)/((b^3*d*sgn((x*e + d)*b*e - b*d*e
 + a*e^2) - a*b^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d
+ a*e)^3)
```

maple [B] time = 0.07, size = 326, normalized size = 1.57

$$\frac{\left(3b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+9a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+9a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+3a^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-3\sqrt{(ae-bd)\,b}\,\sqrt{ex+d}\,a^2e^2+6\sqrt{(ae-bd)\,b}\,\sqrt{ex+d}\,abde-3\sqrt{(ae-bd)\,b}\,\sqrt{ex+d}\,b^2d^2-8\sqrt{(ae-bd)\,b}\,(ex+d)^{\frac{3}{2}}abe+8\sqrt{(ae-bd)\,b}\,(ex+d)^{\frac{3}{2}}b^2d+3\sqrt{(ae-bd)\,b}\,(ex+d)^{\frac{5}{2}}b^2\right)(bx+a)^2}{24\sqrt{(ae-bd)\,b}\,(ae-bd)\left((bx+a)^2\right)^{\frac{5}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(3*b^3*e^3*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9*a*b^2*e^3
*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*b)^(1/2)*(e*x
+d)^(5/2)*b^2+9*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-8*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e+8*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*
b^2*d+3*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-3*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*a^2*e^2+6*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b*d*e-3*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*x+a)^2/((a*e-b*d)*b)^(1/2)/b^
2/(a*e-b*d)/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{3}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,(d+e\,x)^{3/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1916 $\int \frac{(a+bx)\sqrt{d+ex}}{(a^2+2abx+b^2x^2)^{5/2}}\,dx$

Optimal. Leaf size=217

$$\frac{e^2\sqrt{d+ex}}{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e\sqrt{d+ex}}{12b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^3(a}{8b^{3/2}\sqrt{a}}$$

Rubi [A] time = 0.15, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 51, 63, 208}

$$\frac{e^2\sqrt{d+ex}}{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}}{12b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -Sqrt[d + e*x]/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) + (e^2*Sqrt[d + e*x])/
(8*b*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*Sqrt[d + e*x])/(12*b
*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x)*ArcT
anh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(3/2)*(b*d - a*e)^(5/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
```

```
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e\int \frac{1}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{6b}$$

$$= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(be\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)^3\sqrt{d+ex}}\,dx}{6\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e\sqrt{d+ex}}{12b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(e^2\left(ab+b\right.\right.}{8(bd-a}$$

$$= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^2\sqrt{d+ex}}{8b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{}}{12b(bd-ae)(a+b}$$

$$= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^2\sqrt{d+ex}}{8b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{}}{12b(bd-ae)(a+b}$$

$$= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^2\sqrt{d+ex}}{8b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{}}{12b(bd-ae)(a+b}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.31

$$\frac{2e^3(a+bx)(d+ex)^{3/2}\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*e^3*(a + b*x)*(d + e*x)^(3/2)*Hypergeometric2F1[3/2, 4, 5/2, -((b*(d + e
*x))/(-(b*d) + a*e))])/(3*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 38.47, size = 198, normalized size = 0.91

$$\frac{(-ae-bex)\left(\frac{e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8b^{3/2}(ae-bd)^{5/2}}-\frac{e^3\sqrt{d+ex}\left(3a^2e^2-8abe(d+ex)-6abde+3b^2d^2-3b^2(d+ex)^2+8b^2d(d+ex)\right)}{24b(bd-ae)^2(-ae-b(d+ex)+bd)^3}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2
),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/24*(e^3*Sqrt[d + e*x]*(3*b^2*d^2 - 6*a*b*d*e + 3*a^2*
e^2 + 8*b^2*d*(d + e*x) - 8*a*b*e*(d + e*x) - 3*b^2*(d + e*x)^2))/(b*(b*d -
```

```
a*e)^2*(b*d - a*e - b*(d + e*x))^3) + (e^3*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a
*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*b^(3/2)*(-(b*d) + a*e)^(5/2))))/(e*Sqrt
[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.46, size = 785, normalized size = 3.62

$$\left[\frac{3\left(b^3e^3x^3+3ab^2e^3x^2+3a^2be^3x+a^3e^3\right)\sqrt{b^2d-abe}\log\left(\frac{bex+2bd-ae-2\sqrt{b^2d-abe}\sqrt{ex+d}}{bx+a}\right)-2\left(8b^4d^3-22ab^3d^2e+17a^2b^2de^2-3a^3be^3-3\left(b^4de^2-ab^3e^3\right)x^2+2\left(b^4d^2e-5ab^3de^2+4a^2b^2e^3\right)x\right)\sqrt{ex+d}}{48\left(a^3b^5d^3-3a^4b^4d^2e+3a^5b^3de^2-a^6b^2e^3+\left(b^8d^3-3ab^7d^2e+3a^2b^6de^2-a^3b^5e^3\right)x^3+3\left(ab^7d^3-3a^2b^6d^2e+3a^3b^5de^2-a^4b^4e^3\right)x^2+3\left(a^2b^6d^3-3a^3b^5d^2e+3a^4b^4de^2-a^5b^3e^3\right)x\right)},\ \frac{3\left(b^3e^3x^3+3ab^2e^3x^2+3a^2be^3x+a^3e^3\right)\sqrt{-b^2d+abe}\arctan\left(\frac{\sqrt{-b^2d+abe}\sqrt{ex+d}}{bex+bd}\right)-\left(8b^4d^3-22ab^3d^2e+17a^2b^2de^2-3a^3be^3-3\left(b^4de^2-ab^3e^3\right)x^2+2\left(b^4d^2e-5ab^3de^2+4a^2b^2e^3\right)x\right)\sqrt{ex+d}}{24\left(a^3b^5d^3-3a^4b^4d^2e+3a^5b^3de^2-a^6b^2e^3+\left(b^8d^3-3ab^7d^2e+3a^2b^6de^2-a^3b^5e^3\right)x^3+3\left(ab^7d^3-3a^2b^6d^2e+3a^3b^5de^2-a^4b^4e^3\right)x^2+3\left(a^2b^6d^3-3a^3b^5d^2e+3a^4b^4de^2-a^5b^3e^3\right)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(3*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b^2
*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))
/(b*x + a)) - 2*(8*b^4*d^3 - 22*a*b^3*d^2*e + 17*a^2*b^2*d*e^2 - 3*a^3*b*e^
3 - 3*(b^4*d*e^2 - a*b^3*e^3)*x^2 + 2*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a^2*b^
2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d^3 - 3*a^4*b^4*d^2*e + 3*a^5*b^3*d*e^2 -
 a^6*b^2*e^3 + (b^8*d^3 - 3*a*b^7*d^2*e + 3*a^2*b^6*d*e^2 - a^3*b^5*e^3)*x^
3 + 3*(a*b^7*d^3 - 3*a^2*b^6*d^2*e + 3*a^3*b^5*d*e^2 - a^4*b^4*e^3)*x^2 + 3
*(a^2*b^6*d^3 - 3*a^3*b^5*d^2*e + 3*a^4*b^4*d*e^2 - a^5*b^3*e^3)*x), 1/24*(
3*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(-b^2*d + a
*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (8*b^4*d^3
 - 22*a*b^3*d^2*e + 17*a^2*b^2*d*e^2 - 3*a^3*b*e^3 - 3*(b^4*d*e^2 - a*b^3*e
^3)*x^2 + 2*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a^2*b^2*e^3)*x)*sqrt(e*x + d))/(
a^3*b^5*d^3 - 3*a^4*b^4*d^2*e + 3*a^5*b^3*d*e^2 - a^6*b^2*e^3 + (b^8*d^3 -
3*a*b^7*d^2*e + 3*a^2*b^6*d*e^2 - a^3*b^5*e^3)*x^3 + 3*(a*b^7*d^3 - 3*a^2*b
^6*d^2*e + 3*a^3*b^5*d*e^2 - a^4*b^4*e^3)*x^2 + 3*(a^2*b^6*d^3 - 3*a^3*b^5*
d^2*e + 3*a^4*b^4*d*e^2 - a^5*b^3*e^3)*x)]
```

giac [B] time = 0.29, size = 343, normalized size = 1.58

$$\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\left(b^3d^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-2ab^2de\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^2be^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}+\frac{3(xe+d)^{\frac{5}{2}}b^2e^3-8(xe+d)^{\frac{3}{2}}b^2de^3-3\sqrt{xe+d}\,b^2d^2e^3+8(xe+d)^{\frac{3}{2}}abe^4+6\sqrt{xe+d}\,abde^4-3\sqrt{xe+d}\,a^2e^5}{24\left(b^3d^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-2ab^2de\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^2be^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)((xe+d)b-bd+ae)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 1/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^3*d^2*sgn((x*e + d
)*b*e - b*d*e + a*e^2) - 2*a*b^2*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a
^2*b*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) + 1/24*(
3*(x*e + d)^(5/2)*b^2*e^3 - 8*(x*e + d)^(3/2)*b^2*d*e^3 - 3*sqrt(x*e + d)*b
^2*d^2*e^3 + 8*(x*e + d)^(3/2)*a*b*e^4 + 6*sqrt(x*e + d)*a*b*d*e^4 - 3*sqrt
(x*e + d)*a^2*e^5)/((b^3*d^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 2*a*b^2*d
*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b*e^2*sgn((x*e + d)*b*e - b*d*e
 + a*e^2))*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.07, size = 326, normalized size = 1.50

$$\frac{(bx+a)^2\left(3b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+9a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+9a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+3a^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-3\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,a^2e^2+6\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,abde-3\sqrt{(ae-bd)b}\,\sqrt{ex+d}\,b^2d^2+8\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}abe-8\sqrt{(ae-bd)b}\,(ex+d)^{\frac{3}{2}}b^2d+3\sqrt{(ae-bd)b}\,(ex+d)^{\frac{5}{2}}b^2\right)}{24\sqrt{(ae-bd)b}\,(ae-bd)^2\left((bx+a)^2\right)^{\frac{5}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(b*x+a)^2*(3*b^3*e^3*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9
*a*b^2*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(5/2)*b^2+9*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)+8*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e-8*((a*e-b*d)*b)^(1/2)*(e*x
+d)^(3/2)*b^2*d+3*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-3*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2+6*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*
```

```
a*b*d*e-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)/((a*e-b*d)*b)^(1/2)/b/
(a*e-b*d)^2/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)\sqrt{ex+d}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\sqrt{d+e\,x}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1917 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=225

$$\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\sqrt{a^2+2abx+b^2x^2}(bd-ae)^{7/2}}-\frac{5e^2\sqrt{d+ex}}{8\sqrt{a^2+2abx+b^2x^2}(bd-ae)^3}+\frac{5e\sqrt{d+ex}}{12(a+bx)\sqrt{a^2+2abx+b^2x^2}(bd-ae)^2}$$

Rubi [A] time = 0.14, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}}{8\sqrt{a^2+2abx+b^2x^2}(bd-ae)^3}+\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\sqrt{a^2+2abx+b^2x^2}(bd-ae)^{7/2}}+\frac{5e\sqrt{d+ex}}{12(a+bx)\sqrt{a^2+2abx+b^2x^2}(bd-ae)^2}-\frac{\sqrt{d+ex}}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-5*e^2*Sqrt[d + e*x])/(8*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - Sq
rt[d + e*x]/(3*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*
e*Sqrt[d + e*x])/(12*(b*d - a*e)^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (5*e^3*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*Sq
rt[b]*(b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4\sqrt{d+ex}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(5e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}}{6b(bd-ae)\sqrt{a^2+2abx+b^2x}}$$

$$= -\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{5e\sqrt{d+ex}}{12(bd-ae)^2(a+bx)\sqrt{a^2+2a}}$$

$$= -\frac{5e^2\sqrt{d+ex}}{8(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{5e^2\sqrt{d+ex}}{8(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{5e^2\sqrt{d+ex}}{8(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [C] time = 0.02, size = 66, normalized size = 0.29

$$\frac{2e^3(a+bx)\sqrt{d+ex}\;{}_2F_1\left(\frac{1}{2},4;\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (2*e^3*(a + b*x)*Sqrt[d + e*x]*Hypergeometric2F1[1/2, 4, 3/2, -((b*(d + e*x
))/(-(b*d) + a*e))])/((-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [A] time = 40.41, size = 205, normalized size = 0.91

$$\frac{(-ae-bex)\left(-\frac{e^3\sqrt{d+ex}\left(33a^2e^2+40abe(d+ex)-66abde+33b^2d^2+15b^2(d+ex)^2-40b^2d(d+ex)\right)}{24(bd-ae)^3(-ae-b(d+ex)+bd)^3}-\frac{5e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8\sqrt{b}\,(bd-ae)^3\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)
),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/24*(e^3*Sqrt[d + e*x]*(33*b^2*d^2 - 66*a*b*d*e + 33*a
^2*e^2 - 40*b^2*d*(d + e*x) + 40*a*b*e*(d + e*x) + 15*b^2*(d + e*x)^2))/((b
*d - a*e)^3*(b*d - a*e - b*(d + e*x))^3) - (5*e^3*ArcTan[(Sqrt[b]*Sqrt[-(b*
```

```
d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*Sqrt[b]*(b*d - a*e)^3*Sqrt[-(b*d)
 + a*e])))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.45, size = 884, normalized size = 3.93

$$\left[-\frac{15\,\left(b^{3} e^{3} x^{3} + 3\,a b^{2} e^{3} x^{2} + 3\,a^{2} b e^{3} x + a^{3} e^{3}\right)\sqrt{b^{2} d - a b e}\,\log\left(\frac{b e x + 2\,b d - a e - 2\,\sqrt{b^{2} d - a b e}\,\sqrt{e x + d}}{b x + a}\right) + 2\,\left(8\,b^{4} d^{3} - 34\,a b^{3} d^{2} e + 59\,a^{2} b^{2} d e^{2} - 33\,a^{3} b e^{3} + 15\,\left(b^{4} d e^{2} - a b^{3} e^{3}\right) x^{2} - 10\,\left(b^{4} d^{2} e - 5\,a b^{3} d e^{2} + 4\,a^{2} b^{2} e^{3}\right) x\right)\sqrt{e x + d}}{48\,\left(a^{3} b^{5} d^{4} - 4\,a^{4} b^{4} d^{3} e + 6\,a^{5} b^{3} d^{2} e^{2} - 4\,a^{6} b^{2} d e^{3} + a^{7} b e^{4} + \left(b^{8} d^{4} - 4\,a b^{7} d^{3} e + 6\,a^{2} b^{6} d^{2} e^{2} - 4\,a^{3} b^{5} d e^{3} + a^{4} b^{4} e^{4}\right) x^{3} + 3\,\left(a b^{7} d^{4} - 4\,a^{2} b^{6} d^{3} e + 6\,a^{3} b^{5} d^{2} e^{2} - 4\,a^{4} b^{4} d e^{3} + a^{5} b^{3} e^{4}\right) x^{2} + 3\,\left(a^{2} b^{6} d^{4} - 4\,a^{3} b^{5} d^{3} e + 6\,a^{4} b^{4} d^{2} e^{2} - 4\,a^{5} b^{3} d e^{3} + a^{6} b^{2} e^{4}\right) x\right)}, -\frac{15\,\left(b^{3} e^{3} x^{3} + 3\,a b^{2} e^{3} x^{2} + 3\,a^{2} b e^{3} x + a^{3} e^{3}\right)\sqrt{-b^{2} d + a b e}\,\arctan\left(\frac{\sqrt{-b^{2} d + a b e}\,\sqrt{e x + d}}{b e x + b d}\right) + \left(8\,b^{4} d^{3} - 34\,a b^{3} d^{2} e + 59\,a^{2} b^{2} d e^{2} - 33\,a^{3} b e^{3} + 15\,\left(b^{4} d e^{2} - a b^{3} e^{3}\right) x^{2} - 10\,\left(b^{4} d^{2} e - 5\,a b^{3} d e^{2} + 4\,a^{2} b^{2} e^{3}\right) x\right)\sqrt{e x + d}}{24\,\left(a^{3} b^{5} d^{4} - 4\,a^{4} b^{4} d^{3} e + 6\,a^{5} b^{3} d^{2} e^{2} - 4\,a^{6} b^{2} d e^{3} + a^{7} b e^{4} + \left(b^{8} d^{4} - 4\,a b^{7} d^{3} e + 6\,a^{2} b^{6} d^{2} e^{2} - 4\,a^{3} b^{5} d e^{3} + a^{4} b^{4} e^{4}\right) x^{3} + 3\,\left(a b^{7} d^{4} - 4\,a^{2} b^{6} d^{3} e + 6\,a^{3} b^{5} d^{2} e^{2} - 4\,a^{4} b^{4} d e^{3} + a^{5} b^{3} e^{4}\right) x^{2} + 3\,\left(a^{2} b^{6} d^{4} - 4\,a^{3} b^{5} d^{3} e + 6\,a^{4} b^{4} d^{2} e^{2} - 4\,a^{5} b^{3} d e^{3} + a^{6} b^{2} e^{4}\right) x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/48*(15*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b
^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d
))/(b*x + a)) + 2*(8*b^4*d^3 - 34*a*b^3*d^2*e + 59*a^2*b^2*d*e^2 - 33*a^3*b
*e^3 + 15*(b^4*d*e^2 - a*b^3*e^3)*x^2 - 10*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a
^2*b^2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d^4 - 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^
2*e^2 - 4*a^6*b^2*d*e^3 + a^7*b*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*
d^2*e^2 - 4*a^3*b^5*d*e^3 + a^4*b^4*e^4)*x^3 + 3*(a*b^7*d^4 - 4*a^2*b^6*d^3
*e + 6*a^3*b^5*d^2*e^2 - 4*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^2 + 3*(a^2*b^6*d^
4 - 4*a^3*b^5*d^3*e + 6*a^4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x)
, -1/24*(15*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(
-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) +
(8*b^4*d^3 - 34*a*b^3*d^2*e + 59*a^2*b^2*d*e^2 - 33*a^3*b*e^3 + 15*(b^4*d*e
^2 - a*b^3*e^3)*x^2 - 10*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a^2*b^2*e^3)*x)*sqr
t(e*x + d))/(a^3*b^5*d^4 - 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^2*e^2 - 4*a^6*b^2*
d*e^3 + a^7*b*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*d^2*e^2 - 4*a^3*b^
5*d*e^3 + a^4*b^4*e^4)*x^3 + 3*(a*b^7*d^4 - 4*a^2*b^6*d^3*e + 6*a^3*b^5*d^2
*e^2 - 4*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^2 + 3*(a^2*b^6*d^4 - 4*a^3*b^5*d^3*
e + 6*a^4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x)]
```

giac [B] time = 0.30, size = 409, normalized size = 1.82

$$-\frac{5\,\arctan\left(\frac{\sqrt{x e + d}\,b}{\sqrt{-b^{2} d + a b e}}\right) e^{3}}{8\,\left(b^{3} d^{3} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) - 3\,a b^{2} d^{2} e \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) + 3\,a^{2} b d e^{2} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) - a^{3} e^{3} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right)\right)\sqrt{-b^{2} d + a b e}} - \frac{15\,(x e + d)^{\frac{5}{2}} b^{2} e^{3} - 40\,(x e + d)^{\frac{3}{2}} b^{2} d e^{3} + 33\,\sqrt{x e + d}\,b^{2} d^{2} e^{3} + 40\,(x e + d)^{\frac{3}{2}} a b e^{4} - 66\,\sqrt{x e + d}\,a b d e^{4} + 33\,\sqrt{x e + d}\,a^{2} e^{5}}{24\,\left(b^{3} d^{3} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) - 3\,a b^{2} d^{2} e \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) + 3\,a^{2} b d e^{2} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right) - a^{3} e^{3} \mathrm{sgn}\left((x e + d) b e - b d e + a e^{2}\right)\right)\left((x e + d) b - b d + a e\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -5/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^3*d^3*sgn((x*e +
d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ 3*a^2*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^3*sgn((x*e + d)*
b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/24*(15*(x*e + d)^(5/2)*b^2*
e^3 - 40*(x*e + d)^(3/2)*b^2*d*e^3 + 33*sqrt(x*e + d)*b^2*d^2*e^3 + 40*(x*e
 + d)^(3/2)*a*b*e^4 - 66*sqrt(x*e + d)*a*b*d*e^4 + 33*sqrt(x*e + d)*a^2*e^5
)/((b^3*d^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e*sgn((x*e + d
)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) -
 a^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.06, size = 334, normalized size = 1.48

$$\frac{\left(15 b^{3} e^{3} x^{3} \arctan\left(\frac{\sqrt{e x + d}\, b}{\sqrt{(a e - b d) b}}\right) + 45 a\, b^{2} e^{3} x^{2} \arctan\left(\frac{\sqrt{e x + d}\, b}{\sqrt{(a e - b d) b}}\right) + 45 a^{2} b\, e^{3} x \arctan\left(\frac{\sqrt{e x + d}\, b}{\sqrt{(a e - b d) b}}\right) + 15 a^{3} e^{3} \arctan\left(\frac{\sqrt{e x + d}\, b}{\sqrt{(a e - b d) b}}\right) + 15 \sqrt{(a e - b d) b}\, \sqrt{e x + d}\, b^{2} e^{2} x^{2} + 40 \sqrt{(a e - b d) b}\, \sqrt{e x + d}\, a b\, e^{2} x - 10 \sqrt{(a e - b d) b}\, \sqrt{e x + d}\, b^{2} d e x + 33 \sqrt{(a e - b d) b}\, \sqrt{e x + d}\, a^{2} e^{2} - 26 \sqrt{(a e - b d) b}\, \sqrt{e x + d}\, a b d e + 8 \sqrt{(a e - b d) b}\, \sqrt{e x + d}\, b^{2} d^{2}\right) (b x + a)^{2}}{24 \sqrt{(a e - b d) b}\, (a e - b d)^{3} \left((b x + a)^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 1/24*(15*b^3*e^3*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+45*a*b^2*e
^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*x^2*b^2*e^2+45*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^
(1/2)*b)+40*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b*e^2*x-10*((a*e-b*d)*b)^(1
```

```
/2)*(e*x+d)^(1/2)*b^2*d*e*x+15*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)+33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2-26*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(1/2)*a*b*d*e+8*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*x+a)
^2/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^3/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1918 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=276

$$-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}+\frac{35\sqrt{b}\,e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}-\frac{35e^2}{24\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}$$

Rubi [A] time = 0.18, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{35e^2}{24\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{35\sqrt{b}\,e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}+\frac{7e}{12(a+bx)\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-35*e^2)/(24*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
1/(3*(b*d - a*e)*(a + b*x)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (7*e)/(12*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - (35*e^3*(a + b*x))/(8*(b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (35*Sqrt[b]*e^3*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/(8*(b*d - a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
```

```
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^{3/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7e\left(ab+b^2x\right)\right)\int \frac{}{(a}}{6b(bd-ae)\sqrt{a^2+}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} + \frac{}{12(bd-ae)^2(a+bx}$$

$$= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}$$

$$= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}$$

$$= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}$$

$$= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.24

$$-\frac{2e^3(a+bx)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{(a+bx)^2}\sqrt{d+ex}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*e^3*(a + b*x)*Hypergeometric2F1[-1/2, 4, 1/2, -((b*(d + e*x))/(-(b*d) +
 a*e))])/((-(b*d) + a*e)^4*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 50.23, size = 255, normalized size = 0.92

$$\frac{(-ae-bex)\left(-\frac{e^3\left(48a^3e^3+231a^2be^2(d+ex)-144a^2bde^2+144ab^2d^2e+280ab^2e(d+ex)^2-462ab^2de(d+ex)-48b^3d^3+231b^3d^2(d+ex)+105b^3(d+ex)^3-280b^3d(d+ex)^2\right)}{24\sqrt{d+ex}\,(bd-ae)^4(-ae-b(d+ex)+bd)^3}-\frac{35\sqrt{b}\,e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8(ae-bd)^{9/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/24*(e^3*(-48*b^3*d^3 + 144*a*b^2*d^2*e - 144*a^2*b*d*
e^2 + 48*a^3*e^3 + 231*b^3*d^2*(d + e*x) - 462*a*b^2*d*e*(d + e*x) + 231*a^
```

```
2*b*e^2*(d + e*x) - 280*b^3*d*(d + e*x)^2 + 280*a*b^2*e*(d + e*x)^2 + 105*b
^3*(d + e*x)^3))/((b*d - a*e)^4*Sqrt[d + e*x]*(b*d - a*e - b*(d + e*x))^3)
- (35*Sqrt[b]*e^3*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x]])/(b*d -
a*e)])/(8*(-(b*d) + a*e)^(9/2))))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.47, size = 1204, normalized size = 4.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(105*(b^3*e^4*x^4 + a^3*d*e^3 + (b^3*d*e^3 + 3*a*b^2*e^4)*x^3 + 3*(a*
b^2*d*e^3 + a^2*b*e^4)*x^2 + (3*a^2*b*d*e^3 + a^3*e^4)*x)*sqrt(b/(b*d - a*e
))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e
)))/(b*x + a)) - 2*(105*b^3*e^3*x^3 + 8*b^3*d^3 - 38*a*b^2*d^2*e + 87*a^2*b
*d*e^2 + 48*a^3*e^3 + 35*(b^3*d*e^2 + 8*a*b^2*e^3)*x^2 - 7*(2*b^3*d^2*e - 1
4*a*b^2*d*e^2 - 33*a^2*b*e^3)*x)*sqrt(e*x + d))/(a^3*b^4*d^5 - 4*a^4*b^3*d^
4*e + 6*a^5*b^2*d^3*e^2 - 4*a^6*b*d^2*e^3 + a^7*d*e^4 + (b^7*d^4*e - 4*a*b^
6*d^3*e^2 + 6*a^2*b^5*d^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^4 + (b^7*d
^5 - a*b^6*d^4*e - 6*a^2*b^5*d^3*e^2 + 14*a^3*b^4*d^2*e^3 - 11*a^4*b^3*d*e^
4 + 3*a^5*b^2*e^5)*x^3 + 3*(a*b^6*d^5 - 3*a^2*b^5*d^4*e + 2*a^3*b^4*d^3*e^2
 + 2*a^4*b^3*d^2*e^3 - 3*a^5*b^2*d*e^4 + a^6*b*e^5)*x^2 + (3*a^2*b^5*d^5 -
11*a^3*b^4*d^4*e + 14*a^4*b^3*d^3*e^2 - 6*a^5*b^2*d^2*e^3 - a^6*b*d*e^4 + a
^7*e^5)*x), 1/24*(105*(b^3*e^4*x^4 + a^3*d*e^3 + (b^3*d*e^3 + 3*a*b^2*e^4)*
x^3 + 3*(a*b^2*d*e^3 + a^2*b*e^4)*x^2 + (3*a^2*b*d*e^3 + a^3*e^4)*x)*sqrt(-
b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*
x + b*d)) - (105*b^3*e^3*x^3 + 8*b^3*d^3 - 38*a*b^2*d^2*e + 87*a^2*b*d*e^2
+ 48*a^3*e^3 + 35*(b^3*d*e^2 + 8*a*b^2*e^3)*x^2 - 7*(2*b^3*d^2*e - 14*a*b^2
*d*e^2 - 33*a^2*b*e^3)*x)*sqrt(e*x + d))/(a^3*b^4*d^5 - 4*a^4*b^3*d^4*e + 6
*a^5*b^2*d^3*e^2 - 4*a^6*b*d^2*e^3 + a^7*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*e
^2 + 6*a^2*b^5*d^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^4 + (b^7*d^5 - a*
b^6*d^4*e - 6*a^2*b^5*d^3*e^2 + 14*a^3*b^4*d^2*e^3 - 11*a^4*b^3*d*e^4 + 3*a
^5*b^2*e^5)*x^3 + 3*(a*b^6*d^5 - 3*a^2*b^5*d^4*e + 2*a^3*b^4*d^3*e^2 + 2*a^
4*b^3*d^2*e^3 - 3*a^5*b^2*d*e^4 + a^6*b*e^5)*x^2 + (3*a^2*b^5*d^5 - 11*a^3*
b^4*d^4*e + 14*a^4*b^3*d^3*e^2 - 6*a^5*b^2*d^2*e^3 - a^6*b*d*e^4 + a^7*e^5)
*x)]
```

giac [B] time = 0.41, size = 654, normalized size = 2.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -35/8*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^4*d^4*sgn((x*e
 + d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^
2) + 6*a^2*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^3*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^4*sgn((x*e + d)*b*e - b*d*e + a*e
^2))*sqrt(-b^2*d + a*b*e)) - 2*e^3/((b^4*d^4*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - 4*a*b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^2*e^2
*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^3*sgn((x*e + d)*b*e - b*d
*e + a*e^2) + a^4*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(x*e + d)) -
1/24*(57*(x*e + d)^(5/2)*b^3*e^3 - 136*(x*e + d)^(3/2)*b^3*d*e^3 + 87*sqrt(
x*e + d)*b^3*d^2*e^3 + 136*(x*e + d)^(3/2)*a*b^2*e^4 - 174*sqrt(x*e + d)*a*
b^2*d*e^4 + 87*sqrt(x*e + d)*a^2*b*e^5)/((b^4*d^4*sgn((x*e + d)*b*e - b*d*e
 + a*e^2) - 4*a*b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^
```

```
2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^3*sgn((x*e + d)*b*e
- b*d*e + a*e^2) + a^4*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b
 - b*d + a*e)^3)
```

maple [B] time = 0.07, size = 431, normalized size = 1.56

$$-\frac{\left(105\sqrt{ex+d}\, b^4e^3x^3 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right)+315\sqrt{ex+d}\, a b^3e^3x^2 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right)+315\sqrt{ex+d}\, a^2b^2e^3x \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right)+105\sqrt{(ae-bd)b}\, b^3e^3x^3+105\sqrt{ex+d}\, a^3b e^3 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right)+280\sqrt{(ae-bd)b}\, a b^2e^3x^2+35\sqrt{(ae-bd)b}\, b^3d e^2x^2+231\sqrt{(ae-bd)b}\, a^2b e^3x+98\sqrt{(ae-bd)b}\, a b^2d e^2x-14\sqrt{(ae-bd)b}\, b^3d^2ex+48\sqrt{(ae-bd)b}\, a^3e^3+87\sqrt{(ae-bd)b}\, a^2bd e^2-38\sqrt{(ae-bd)b}\, a b^2d^2e+8\sqrt{(ae-bd)b}\, b^3d^3\right)(bx+a)^2}{24\sqrt{ex+d}\,\sqrt{(ae-bd)b}\,(ae-bd)^4\left((bx+a)^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/24*(105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*b^
4*e^3+315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a*b
^3*e^3+105*((a*e-b*d)*b)^(1/2)*b^3*e^3*x^3+315*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^2*b^2*e^3+280*((a*e-b*d)*b)^(1/2)*a*b^2*e
^3*x^2+35*((a*e-b*d)*b)^(1/2)*b^3*d*e^2*x^2+105*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^3*b*e^3+231*((a*e-b*d)*b)^(1/2)*a^2*b*e^3*
x+98*((a*e-b*d)*b)^(1/2)*a*b^2*d*e^2*x-14*((a*e-b*d)*b)^(1/2)*b^3*d^2*e*x+4
8*((a*e-b*d)*b)^(1/2)*a^3*e^3+87*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2-38*((a*e-b
*d)*b)^(1/2)*a*b^2*d^2*e+8*((a*e-b*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/(e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^4/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1919 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=328

$$-\frac{105be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}-\frac{21e^2}{8\sqrt{a^2+2abx+b^2x^2}\,(d+\cdots}$$

Rubi [A] time = 0.24, antiderivative size = 328, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {770, 21, 51, 63, 208}

$$-\frac{105be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}-\frac{21e^2}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}+\frac{105b^{3/2}e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{11/2}}+\frac{3e}{4(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-21*e^2)/(8*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 1/(3*(b*d - a*e)*(a + b*x)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (3*e)/(4*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) - (35*e^3*(a + b*x))/(8*(b*d - a*e)^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]) - (105*b*e^3*(a + b*x))/(8*(b*d - a*e)^5*Sqrt[d + e*x]*S
qrt[a^2 + 2*a*b*x + b^2*x^2]) + (105*b^(3/2)*e^3*(a + b*x)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*(b*d - a*e)^(11/2)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
```

```
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^{5/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(3e\left(ab+b^2x\right)\right)\int}{2b(bd-ae)\sqrt{a^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{}{4(bd-ae)^2(a+b}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.21

$$-\frac{2e^3(a+bx)\,{}_2F_1\left(-\frac{3}{2},4;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*e^3*(a + b*x)*Hypergeometric2F1[-3/2, 4, -1/2, -((b*(d + e*x))/(-(b*d)
+ a*e))])/(3*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

IntegrateAlgebraic [A] time = 59.24, size = 336, normalized size = 1.02

$$\frac{(-ae-bex)\left(\frac{e^3\left(16a^4e^4-144a^3be^3(d+ex)-64a^3bde^3+96a^2b^2d^2e^2-693a^2b^2e^2(d+ex)^2+432a^2b^2de^2(d+ex)-64ab^3d^3e-432ab^3d^2e(d+ex)-840ab^3e(d+ex)^3+1386ab^3de(d+ex)^2+16b^4d^4+144b^4d^3(d+ex)-693b^4d^2(d+ex)^2-315b^4(d+ex)^4+840b^4d(d+ex)^3\right)}{24(d+ex)^{3/2}(bd-ae)^5(-ae-b(d+ex)+bd)^3}+\frac{105b^{3/2}e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8(ae-bd)^{11/2}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*((e^3*(16*b^4*d^4 - 64*a*b^3*d^3*e + 96*a^2*b^2*d^2*e^2 -
 64*a^3*b*d*e^3 + 16*a^4*e^4 + 144*b^4*d^3*(d + e*x) - 432*a*b^3*d^2*e*(d +
 e*x) + 432*a^2*b^2*d*e^2*(d + e*x) - 144*a^3*b*e^3*(d + e*x) - 693*b^4*d^2
*(d + e*x)^2 + 1386*a*b^3*d*e*(d + e*x)^2 - 693*a^2*b^2*e^2*(d + e*x)^2 + 8
40*b^4*d*(d + e*x)^3 - 840*a*b^3*e*(d + e*x)^3 - 315*b^4*(d + e*x)^4))/(24*
(b*d - a*e)^5*(d + e*x)^(3/2)*(b*d - a*e - b*(d + e*x))^3) + (105*b^(3/2)*e
^3*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*(-(b*
d) + a*e)^(11/2))))/(e*Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.48, size = 1840, normalized size = 5.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/48*(315*(b^4*e^5*x^5 + a^3*b*d^2*e^3 + (2*b^4*d*e^4 + 3*a*b^3*e^5)*x^4
+ (b^4*d^2*e^3 + 6*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*x^3 + (3*a*b^3*d^2*e^3 + 6*
a^2*b^2*d*e^4 + a^3*b*e^5)*x^2 + (3*a^2*b^2*d^2*e^3 + 2*a^3*b*d*e^4)*x)*sqr
t(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqr
t(b/(b*d - a*e)))/(b*x + a)) + 2*(315*b^4*e^4*x^4 + 8*b^4*d^4 - 50*a*b^3*d^
3*e + 165*a^2*b^2*d^2*e^2 + 208*a^3*b*d*e^3 - 16*a^4*e^4 + 420*(b^4*d*e^3 +
 2*a*b^3*e^4)*x^3 + 63*(b^4*d^2*e^2 + 18*a*b^3*d*e^3 + 11*a^2*b^2*e^4)*x^2
- 18*(b^4*d^3*e - 10*a*b^3*d^2*e^2 - 53*a^2*b^2*d*e^3 - 8*a^3*b*e^4)*x)*sqr
t(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^6*e + 10*a^5*b^3*d^5*e^2 - 10*a^6*b^
2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e^5 + (b^8*d^5*e^2 - 5*a*b^7*d^4*e^3
+ 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e^5 + 5*a^4*b^4*d*e^6 - a^5*b^3*e^7)*
x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 + 5*a^2*b^6*d^4*e^3 + 10*a^3*b^5*d^3*e
^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*e^6 - 3*a^6*b^2*e^7)*x^4 + (b^8*d^7
+ a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35*a^3*b^5*d^4*e^3 - 25*a^4*b^4*d^3*e^
4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 - 3*a^7*b*e^7)*x^3 + (3*a*b^7*d^7 - 9
*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a^4*b^4*d^4*e^3 - 35*a^5*b^3*d^3*e^4
+ 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^8*e^7)*x^2 + (3*a^2*b^6*d^7 - 13*a^3
*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^5*b^3*d^4*e^3 - 5*a^6*b^2*d^3*e^4 +
7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x), 1/24*(315*(b^4*e^5*x^5 + a^3*b*d^2*e^3 +
 (2*b^4*d*e^4 + 3*a*b^3*e^5)*x^4 + (b^4*d^2*e^3 + 6*a*b^3*d*e^4 + 3*a^2*b^2
*e^5)*x^3 + (3*a*b^3*d^2*e^3 + 6*a^2*b^2*d*e^4 + a^3*b*e^5)*x^2 + (3*a^2*b^
2*d^2*e^3 + 2*a^3*b*d*e^4)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt
(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (315*b^4*e^4*x^4 + 8*b^4*d^
4 - 50*a*b^3*d^3*e + 165*a^2*b^2*d^2*e^2 + 208*a^3*b*d*e^3 - 16*a^4*e^4 + 4
20*(b^4*d*e^3 + 2*a*b^3*e^4)*x^3 + 63*(b^4*d^2*e^2 + 18*a*b^3*d*e^3 + 11*a^
2*b^2*e^4)*x^2 - 18*(b^4*d^3*e - 10*a*b^3*d^2*e^2 - 53*a^2*b^2*d*e^3 - 8*a^
3*b*e^4)*x)*sqrt(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^6*e + 10*a^5*b^3*d^5*
e^2 - 10*a^6*b^2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e^5 + (b^8*d^5*e^2 - 5
*a*b^7*d^4*e^3 + 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e^5 + 5*a^4*b^4*d*e^6
- a^5*b^3*e^7)*x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 + 5*a^2*b^6*d^4*e^3 + 1
0*a^3*b^5*d^3*e^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*e^6 - 3*a^6*b^2*e^7)*
x^4 + (b^8*d^7 + a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35*a^3*b^5*d^4*e^3 - 25
*a^4*b^4*d^3*e^4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 - 3*a^7*b*e^7)*x^3 + (
3*a*b^7*d^7 - 9*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a^4*b^4*d^4*e^3 - 35*a
^5*b^3*d^3*e^4 + 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^8*e^7)*x^2 + (3*a^2*b
^6*d^7 - 13*a^3*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^5*b^3*d^4*e^3 - 5*a^6
*b^2*d^3*e^4 + 7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x)]
```

giac [B] time = 0.47, size = 691, normalized size = 2.11

$$-\frac{105\,b^{2}\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)e^{3}}{8\left(b^{5}d^{5}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-5\,ab^{4}d^{4}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+10\,a^{2}b^{3}d^{3}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-10\,a^{3}b^{2}d^{2}e^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+5\,a^{4}bde^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{5}e^{5}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{-b^{2}d+abe}}-\frac{315\,(xe+d)^{4}b^{4}e^{3}-840\,(xe+d)^{3}b^{4}de^{3}+693\,(xe+d)^{2}b^{4}d^{2}e^{3}-144\,(xe+d)b^{4}d^{3}e^{3}-16\,b^{4}d^{4}e^{3}+840\,(xe+d)^{3}ab^{3}e^{4}-1386\,(xe+d)^{2}ab^{3}de^{4}+432\,(xe+d)ab^{3}d^{2}e^{4}+64\,ab^{3}d^{3}e^{4}+693\,(xe+d)^{2}a^{2}b^{2}e^{5}-432\,(xe+d)a^{2}b^{2}de^{5}-96\,a^{2}b^{2}d^{2}e^{5}+144\,(xe+d)a^{3}be^{6}+64\,a^{3}bde^{6}-16\,a^{4}e^{7}}{24\left(b^{5}d^{5}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-5\,ab^{4}d^{4}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+10\,a^{2}b^{3}d^{3}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-10\,a^{3}b^{2}d^{2}e^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+5\,a^{4}bde^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-a^{5}e^{5}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\left((xe+d)^{\frac{3}{2}}b-\sqrt{xe+d}\,bd+\sqrt{xe+d}\,ae\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -105/8*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^5*d^5*sgn((
x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^2*
d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^4*sgn((x*e + d)*b*
e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*
d + a*b*e)) - 1/24*(315*(x*e + d)^4*b^4*e^3 - 840*(x*e + d)^3*b^4*d*e^3 + 6
93*(x*e + d)^2*b^4*d^2*e^3 - 144*(x*e + d)*b^4*d^3*e^3 - 16*b^4*d^4*e^3 + 8
40*(x*e + d)^3*a*b^3*e^4 - 1386*(x*e + d)^2*a*b^3*d*e^4 + 432*(x*e + d)*a*b
^3*d^2*e^4 + 64*a*b^3*d^3*e^4 + 693*(x*e + d)^2*a^2*b^2*e^5 - 432*(x*e + d)
*a^2*b^2*d*e^5 - 96*a^2*b^2*d^2*e^5 + 144*(x*e + d)*a^3*b*e^6 + 64*a^3*b*d*
e^6 - 16*a^4*e^7)/((b^5*d^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^
4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b
*e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)
 + 5*a^4*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)
*b*e - b*d*e + a*e^2))*((x*e + d)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(x*e +
d)*a*e)^3)
```

maple [B] time = 0.09, size = 563, normalized size = 1.72

$$\frac{\left(315 (ex+d)^{\frac{3}{2}} b^5 e^3 x^3 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right) + 315\sqrt{(ae-bd)b}\, b^4 e^4 x^4 + 945 (ex+d)^{\frac{3}{2}} a b^4 e^3 x^2 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right) + 840\sqrt{(ae-bd)b}\, a b^3 e^4 x^3 + 420\sqrt{(ae-bd)b}\, b^4 d e^3 x^3 + 945 (ex+d)^{\frac{3}{2}} a^2 b^3 e^3 x \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right) + 693\sqrt{(ae-bd)b}\, a^2 b^2 e^4 x^2 + 1134\sqrt{(ae-bd)b}\, a b^3 d e^3 x^2 + 63\sqrt{(ae-bd)b}\, b^4 d^2 e^2 x^2 + 315 (ex+d)^{\frac{3}{2}} a^3 b^2 e^3 \arctan\left(\frac{\sqrt{ex+d}\, b}{\sqrt{(ae-bd)b}}\right) + 144\sqrt{(ae-bd)b}\, a^3 b e^4 x + 954\sqrt{(ae-bd)b}\, a^2 b^2 d e^3 x + 180\sqrt{(ae-bd)b}\, a b^3 d^2 e^2 x - 18\sqrt{(ae-bd)b}\, b^4 d^3 e x - 16\sqrt{(ae-bd)b}\, a^4 e^4 + 208\sqrt{(ae-bd)b}\, a^3 b d e^3 + 165\sqrt{(ae-bd)b}\, a^2 b^2 d^2 e^2 - 50\sqrt{(ae-bd)b}\, a b^3 d^3 e + 8\sqrt{(ae-bd)b}\, b^4 d^4\right)(bx+a)^2}{24 (ex+d)^{\frac{3}{2}} \sqrt{(ae-bd)b}\, (ae-bd)^5 \left((bx+a)^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^3*b^5
*e^3+945*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a*b^
4*e^3+315*((a*e-b*d)*b)^(1/2)*x^4*b^4*e^4+945*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a^2*b^3*e^3+840*((a*e-b*d)*b)^(1/2)*x^3*a*b^
3*e^4+420*((a*e-b*d)*b)^(1/2)*x^3*b^4*d*e^3+315*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^3*b^2*e^3+693*((a*e-b*d)*b)^(1/2)*x^2*a^2*
b^2*e^4+1134*((a*e-b*d)*b)^(1/2)*x^2*a*b^3*d*e^3+63*((a*e-b*d)*b)^(1/2)*x^2
*b^4*d^2*e^2+144*((a*e-b*d)*b)^(1/2)*x*a^3*b*e^4+954*((a*e-b*d)*b)^(1/2)*x*
a^2*b^2*d*e^3+180*((a*e-b*d)*b)^(1/2)*x*a*b^3*d^2*e^2-18*((a*e-b*d)*b)^(1/2
)*x*b^4*d^3*e-16*((a*e-b*d)*b)^(1/2)*a^4*e^4+208*((a*e-b*d)*b)^(1/2)*a^3*b*
d*e^3+165*((a*e-b*d)*b)^(1/2)*a^2*b^2*d^2*e^2-50*((a*e-b*d)*b)^(1/2)*a*b^3*
d^3*e+8*((a*e-b*d)*b)^(1/2)*b^4*d^4)*(b*x+a)^2/(e*x+d)^(3/2)/((a*e-b*d)*b)^
(1/2)/(a*e-b*d)^5/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{(d+e\,x)^{5/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
[Out] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1920 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=382

$$-\frac{231b^2e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}-\frac{77be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}-\frac{231e^3(a+bx)}{40\sqrt{a^2+2abx+b^2x^2}\,(d+e}$$

Rubi [A] time = 0.25, antiderivative size = 382, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$-\frac{231b^2e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}-\frac{77be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}-\frac{231e^3(a+bx)}{40\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4}-\frac{33e^2}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}+\frac{231b^{5/2}e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{13/2}}+\frac{11e}{12(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}-\frac{1}{3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-33*e^2)/(8*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 1/(3*(b*d - a*e)*(a + b*x)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (11*e)/(12*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) - (231*e^3*(a + b*x))/(40*(b*d - a*e)^4*(d + e*x)^(5/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) - (77*b*e^3*(a + b*x))/(8*(b*d - a*e)^5*(d + e*x)^(3
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*b^2*e^3*(a + b*x))/(8*(b*d - a*e)
^6*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (231*b^(5/2)*e^3*(a + b*x
)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*(b*d - a*e)^(13/2)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^{7/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(11e\left(ab+b^2x\right.\right.}{6b(bd-ae)\sqrt{}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{}{12(bd-ae)^2(a}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

Mathematica [C] time = 0.04, size = 68, normalized size = 0.18

$$-\frac{2e^3(a+bx)\,{}_2F_1\left(-\frac{5}{2},4;-\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*e^3*(a + b*x)*Hypergeometric2F1[-5/2, 4, -3/2, -((b*(d + e*x))/(-(b*d)
+ a*e))])/(5*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 65.86, size = 448, normalized size = 1.17

$$\frac{(-ae-bex)\left(-\frac{e^3\left(48a^5e^5-176a^4be^4(d+ex)-240a^4bde^4+480a^3b^2d^2e^3+1584a^3b^2e^3(d+ex)^2+704a^3b^2de^3(d+ex)-480a^2b^3d^3e^2-1056a^2b^3d^2e^2(d+ex)+7623a^2b^3e^2(d+ex)^3-4752a^2b^3de^2(d+ex)^2+240ab^4d^4e+704ab^4d^3e(d+ex)+4752ab^4d^2e(d+ex)^2+9240ab^4e(d+ex)^4-15246ab^4de(d+ex)^3-48b^5d^5-176b^5d^4(d+ex)-1584b^5d^3(d+ex)^2+7623b^5d^2(d+ex)^3+3465b^5(d+ex)^5-9240b^5d(d+ex)^4\right)}{120(d+ex)^{5/2}(bd-ae)^6(-ae-b(d+ex)+bd)^3}-\frac{231b^{5/2}e^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}\sqrt{ae-bd}}{bd-ae}\right)}{8(bd-ae)^6\sqrt{ae-bd}}\right)}{e\sqrt{\frac{(ae+bex)^2}{e^2}}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/
2)),x]
```

```
[Out] ((-(a*e) - b*e*x)*(-1/120*(e^3*(-48*b^5*d^5 + 240*a*b^4*d^4*e - 480*a^2*b^3
*d^3*e^2 + 480*a^3*b^2*d^2*e^3 - 240*a^4*b*d*e^4 + 48*a^5*e^5 - 176*b^5*d^4
*(d + e*x) + 704*a*b^4*d^3*e*(d + e*x) - 1056*a^2*b^3*d^2*e^2*(d + e*x) + 7
04*a^3*b^2*d*e^3*(d + e*x) - 176*a^4*b*e^4*(d + e*x) - 1584*b^5*d^3*(d + e*
x)^2 + 4752*a*b^4*d^2*e*(d + e*x)^2 - 4752*a^2*b^3*d*e^2*(d + e*x)^2 + 1584
*a^3*b^2*e^3*(d + e*x)^2 + 7623*b^5*d^2*(d + e*x)^3 - 15246*a*b^4*d*e*(d +
e*x)^3 + 7623*a^2*b^3*e^2*(d + e*x)^3 - 9240*b^5*d*(d + e*x)^4 + 9240*a*b^4
*e*(d + e*x)^4 + 3465*b^5*(d + e*x)^5))/((b*d - a*e)^6*(d + e*x)^(5/2)*(b*d
 - a*e - b*(d + e*x))^3) - (231*b^(5/2)*e^3*ArcTan[(Sqrt[b]*Sqrt[-(b*d) + a
*e]*Sqrt[d + e*x])/(b*d - a*e)])/(8*(b*d - a*e)^6*Sqrt[-(b*d) + a*e])))/(e*
Sqrt[(a*e + b*e*x)^2/e^2])
```

fricas [B] time = 0.50, size = 2550, normalized size = 6.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/240*(3465*(b^5*e^6*x^6 + a^3*b^2*d^3*e^3 + 3*(b^5*d*e^5 + a*b^4*e^6)*x^5
 + 3*(b^5*d^2*e^4 + 3*a*b^4*d*e^5 + a^2*b^3*e^6)*x^4 + (b^5*d^3*e^3 + 9*a*b
^4*d^2*e^4 + 9*a^2*b^3*d*e^5 + a^3*b^2*e^6)*x^3 + 3*(a*b^4*d^3*e^3 + 3*a^2*
b^3*d^2*e^4 + a^3*b^2*d*e^5)*x^2 + 3*(a^2*b^3*d^3*e^3 + a^3*b^2*d^2*e^4)*x)
*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)
*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(3465*b^5*e^5*x^5 + 40*b^5*d^5 - 310*a
*b^4*d^4*e + 1335*a^2*b^3*d^3*e^2 + 2768*a^3*b^2*d^2*e^3 - 416*a^4*b*d*e^4
+ 48*a^5*e^5 + 1155*(7*b^5*d*e^4 + 8*a*b^4*e^5)*x^4 + 231*(23*b^5*d^2*e^3 +
 94*a*b^4*d*e^4 + 33*a^2*b^3*e^5)*x^3 + 99*(5*b^5*d^3*e^2 + 146*a*b^4*d^2*e
^3 + 183*a^2*b^3*d*e^4 + 16*a^3*b^2*e^5)*x^2 - 11*(10*b^5*d^4*e - 130*a*b^4
*d^3*e^2 - 1119*a^2*b^3*d^2*e^3 - 352*a^3*b^2*d*e^4 + 16*a^4*b*e^5)*x)*sqrt
(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e + 15*a^5*b^4*d^7*e^2 - 20*a^6*b^3
*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^4*e^5 + a^9*d^3*e^6 + (b^9*d^6*e^
3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 - 20*a^3*b^6*d^3*e^6 + 15*a^4*b^5*
d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x^6 + 3*(b^9*d^7*e^2 - 5*a*b^8*d^6
*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e^5 - 5*a^4*b^5*d^3*e^6 + 9*a^5*b^
4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)*x^5 + 3*(b^9*d^8*e - 3*a*b^8*d^7
*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*e^4 - 30*a^4*b^5*d^4*e^5 + 19*a^5
*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b^2*d*e^8 + a^8*b*e^9)*x^4 + (b^9*
d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 + 62*a^3*b^6*d^6*e^3 - 36*a^4*b^5*
d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*d^3*e^6 - 30*a^7*b^2*d^2*e^7 + 3*
a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9 - 3*a^2*b^7*d^8*e - 2*a^3*b^6*d^7
*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5*e^4 + 19*a^6*b^3*d^4*e^5 - 2*a^7
*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8)*x^2 + 3*(a^2*b^7*d^9 - 5*a^3*b^
6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^6*e^3 - 5*a^6*b^3*d^5*e^4 + 9*a^7
*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e^7)*x), 1/120*(3465*(b^5*e^6*x^6
+ a^3*b^2*d^3*e^3 + 3*(b^5*d*e^5 + a*b^4*e^6)*x^5 + 3*(b^5*d^2*e^4 + 3*a*b^
4*d*e^5 + a^2*b^3*e^6)*x^4 + (b^5*d^3*e^3 + 9*a*b^4*d^2*e^4 + 9*a^2*b^3*d*e
^5 + a^3*b^2*e^6)*x^3 + 3*(a*b^4*d^3*e^3 + 3*a^2*b^3*d^2*e^4 + a^3*b^2*d*e^
5)*x^2 + 3*(a^2*b^3*d^3*e^3 + a^3*b^2*d^2*e^4)*x)*sqrt(-b/(b*d - a*e))*arct
an(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (3465*b
^5*e^5*x^5 + 40*b^5*d^5 - 310*a*b^4*d^4*e + 1335*a^2*b^3*d^3*e^2 + 2768*a^3
*b^2*d^2*e^3 - 416*a^4*b*d*e^4 + 48*a^5*e^5 + 1155*(7*b^5*d*e^4 + 8*a*b^4*e
^5)*x^4 + 231*(23*b^5*d^2*e^3 + 94*a*b^4*d*e^4 + 33*a^2*b^3*e^5)*x^3 + 99*(
5*b^5*d^3*e^2 + 146*a*b^4*d^2*e^3 + 183*a^2*b^3*d*e^4 + 16*a^3*b^2*e^5)*x^2
 - 11*(10*b^5*d^4*e - 130*a*b^4*d^3*e^2 - 1119*a^2*b^3*d^2*e^3 - 352*a^3*b^
```

```
2*d*e^4 + 16*a^4*b*e^5)*x)*sqrt(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e +
15*a^5*b^4*d^7*e^2 - 20*a^6*b^3*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^4*
e^5 + a^9*d^3*e^6 + (b^9*d^6*e^3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 - 2
0*a^3*b^6*d^3*e^6 + 15*a^4*b^5*d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x^6
 + 3*(b^9*d^7*e^2 - 5*a*b^8*d^6*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e^5
 - 5*a^4*b^5*d^3*e^6 + 9*a^5*b^4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)*x
^5 + 3*(b^9*d^8*e - 3*a*b^8*d^7*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*e^
4 - 30*a^4*b^5*d^4*e^5 + 19*a^5*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b^2
*d*e^8 + a^8*b*e^9)*x^4 + (b^9*d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 + 6
2*a^3*b^6*d^6*e^3 - 36*a^4*b^5*d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*d^
3*e^6 - 30*a^7*b^2*d^2*e^7 + 3*a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9 -
3*a^2*b^7*d^8*e - 2*a^3*b^6*d^7*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5*e
^4 + 19*a^6*b^3*d^4*e^5 - 2*a^7*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8)*
x^2 + 3*(a^2*b^7*d^9 - 5*a^3*b^6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^6*
e^3 - 5*a^6*b^3*d^5*e^4 + 9*a^7*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e^7
)*x)]
```

giac [B] time = 0.55, size = 932, normalized size = 2.44

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -231/8*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^6*d^6*sgn((
x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3*
d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e +
d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 2/15*
(150*(x*e + d)^2*b^2*e^3 + 20*(x*e + d)*b^2*d*e^3 + 3*b^2*d^2*e^3 - 20*(x*e
 + d)*a*b*e^4 - 6*a*b*d*e^4 + 3*a^2*e^5)/((b^6*d^6*sgn((x*e + d)*b*e - b*d*
e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*
d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e +
d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e
+ d)*b*e - b*d*e + a*e^2))*(x*e + d)^(5/2)) - 1/24*(213*(x*e + d)^(5/2)*b^5
*e^3 - 472*(x*e + d)^(3/2)*b^5*d*e^3 + 267*sqrt(x*e + d)*b^5*d^2*e^3 + 472*
(x*e + d)^(3/2)*a*b^4*e^4 - 534*sqrt(x*e + d)*a*b^4*d*e^4 + 267*sqrt(x*e +
d)*a^2*b^3*e^5)/((b^6*d^6*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*
e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e
 - b*d*e + a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) +
 15*a^4*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn(
(x*e + d)*b*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2)
)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.08, size = 722, normalized size = 1.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/120*(12309*((a*e-b*d)*b)^(1/2)*x*a^2*b^3*d^2*e^3-416*((a*e-b*d)*b)^(1/2)
*a^4*b*d*e^4+2768*((a*e-b*d)*b)^(1/2)*a^3*b^2*d^2*e^3+40*((a*e-b*d)*b)^(1/2
)*b^5*d^5+9240*((a*e-b*d)*b)^(1/2)*x^4*a*b^4*e^5+7623*((a*e-b*d)*b)^(1/2)*x
^3*a^2*b^3*e^5-176*((a*e-b*d)*b)^(1/2)*x*a^4*b*e^5-110*((a*e-b*d)*b)^(1/2)*
x*b^5*d^4*e+5313*((a*e-b*d)*b)^(1/2)*x^3*b^5*d^2*e^3+1584*((a*e-b*d)*b)^(1/
```

```
2)*x^2*a^3*b^2*e^5+3465*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*x^3*b^6*e^3+3465*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*a^3*b^3*e^3+495*((a*e-b*d)*b)^(1/2)*x^2*b^5*d^3*e^2+8085*((a*e-b*d)*
b)^(1/2)*x^4*b^5*d*e^4+10395*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*x^2*a*b^5*e^3+10395*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*x*a^2*b^4*e^3+1430*((a*e-b*d)*b)^(1/2)*x*a*b^4*d^3*e^2+48*((
a*e-b*d)*b)^(1/2)*a^5*e^5+3465*((a*e-b*d)*b)^(1/2)*x^5*b^5*e^5+18117*((a*e-
b*d)*b)^(1/2)*x^2*a^2*b^3*d*e^4+14454*((a*e-b*d)*b)^(1/2)*x^2*a*b^4*d^2*e^3
+3872*((a*e-b*d)*b)^(1/2)*x*a^3*b^2*d*e^4+21714*((a*e-b*d)*b)^(1/2)*x^3*a*b
^4*d*e^4+1335*((a*e-b*d)*b)^(1/2)*a^2*b^3*d^3*e^2-310*((a*e-b*d)*b)^(1/2)*a
*b^4*d^4*e)*(b*x+a)^2/(e*x+d)^(5/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^6/((b*x+a
)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,x}{{\left(d + e\,x\right)}^{7/2}\,{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1921 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=239

$$-\frac{7b^6(bd-ae)(d+ex)^{m+7}}{e^8(m+7)}+\frac{21b^5(bd-ae)^2(d+ex)^{m+6}}{e^8(m+6)}-\frac{35b^4(bd-ae)^3(d+ex)^{m+5}}{e^8(m+5)}+\frac{35b^3(bd-ae)^4(d+ex)^{m+4}}{e^8(m+4)}$$

Rubi [A] time = 0.14, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{21b^2(bd-ae)^5(d+ex)^{m+3}}{e^8(m+3)}+\frac{35b^3(bd-ae)^4(d+ex)^{m+4}}{e^8(m+4)}-\frac{35b^4(bd-ae)^3(d+ex)^{m+5}}{e^8(m+5)}+\frac{21b^5(bd-ae)^2(d+ex)^{m+6}}{e^8(m+6)}-\frac{7b^6(bd-ae)(d+ex)^{m+7}}{e^8(m+7)}-\frac{(bd-ae)^7(d+ex)^{m+1}}{e^8(m+1)}+\frac{7b(bd-ae)^6(d+ex)^{m+2}}{e^8(m+2)}+\frac{b^7(d+ex)^{m+8}}{e^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(((b*d - a*e)^7*(d + e*x)^(1 + m))/(e^8*(1 + m))) + (7*b*(b*d - a*e)^6*(d
+ e*x)^(2 + m))/(e^8*(2 + m)) - (21*b^2*(b*d - a*e)^5*(d + e*x)^(3 + m))/(e
^8*(3 + m)) + (35*b^3*(b*d - a*e)^4*(d + e*x)^(4 + m))/(e^8*(4 + m)) - (35*
b^4*(b*d - a*e)^3*(d + e*x)^(5 + m))/(e^8*(5 + m)) + (21*b^5*(b*d - a*e)^2*
(d + e*x)^(6 + m))/(e^8*(6 + m)) - (7*b^6*(b*d - a*e)*(d + e*x)^(7 + m))/(e
^8*(7 + m)) + (b^7*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx = \int (a+bx)^7(d+ex)^m \, dx$$
$$= \int \left(\frac{(-bd+ae)^7(d+ex)^m}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{1+m}}{e^7}-\frac{21b^2(bd\right.$$
$$= -\frac{(bd-ae)^7(d+ex)^{1+m}}{e^8(1+m)}+\frac{7b(bd-ae)^6(d+ex)^{2+m}}{e^8(2+m)}-\frac{21b^2(bd-}{e^8}$$

Mathematica [A] time = 0.21, size = 203, normalized size = 0.85

$$\frac{(d+ex)^{m+1}\left(-\frac{7b^6(d+ex)^6(bd-ae)}{m+7}+\frac{21b^5(d+ex)^5(bd-ae)^2}{m+6}-\frac{35b^4(d+ex)^4(bd-ae)^3}{m+5}+\frac{35b^3(d+ex)^3(bd-ae)^4}{m+4}-\frac{21b^2(d+ex)^2(bd-ae)^5}{m+3}+\frac{7b(d+ex)(bd-ae)^6}{m+2}-\frac{(bd-ae)^7}{m+1}+\frac{b^7(d+ex)^7}{m+8}\right)}{e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((b*d - a*e)^7/(1 + m)) + (7*b*(b*d - a*e)^6*(d + e*x)
)/(2 + m) - (21*b^2*(b*d - a*e)^5*(d + e*x)^2)/(3 + m) + (35*b^3*(b*d - a*e
```

```
)^4*(d + e*x)^3)/(4 + m) - (35*b^4*(b*d - a*e)^3*(d + e*x)^4)/(5 + m) + (21
*b^5*(b*d - a*e)^2*(d + e*x)^5)/(6 + m) - (7*b^6*(b*d - a*e)*(d + e*x)^6)/(
7 + m) + (b^7*(d + e*x)^7)/(8 + m)))/e^8
```

IntegrateAlgebraic [F] time = 0.79, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3
, x]
```

fricas [B] time = 0.48, size = 3201, normalized size = 13.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] (a^7*d*e^7*m^7 - 5040*b^7*d^8 + 40320*a*b^6*d^7*e - 141120*a^2*b^5*d^6*e^2
+ 282240*a^3*b^4*d^5*e^3 - 352800*a^4*b^3*d^4*e^4 + 282240*a^5*b^2*d^3*e^5
- 141120*a^6*b*d^2*e^6 + 40320*a^7*d*e^7 + (b^7*e^8*m^7 + 28*b^7*e^8*m^6 +
322*b^7*e^8*m^5 + 1960*b^7*e^8*m^4 + 6769*b^7*e^8*m^3 + 13132*b^7*e^8*m^2 +
 13068*b^7*e^8*m + 5040*b^7*e^8)*x^8 + (40320*a*b^6*e^8 + (b^7*d*e^7 + 7*a*
b^6*e^8)*m^7 + 7*(3*b^7*d*e^7 + 29*a*b^6*e^8)*m^6 + 7*(25*b^7*d*e^7 + 343*a
*b^6*e^8)*m^5 + 245*(3*b^7*d*e^7 + 61*a*b^6*e^8)*m^4 + 56*(29*b^7*d*e^7 + 9
38*a*b^6*e^8)*m^3 + 196*(9*b^7*d*e^7 + 527*a*b^6*e^8)*m^2 + 144*(5*b^7*d*e^
7 + 721*a*b^6*e^8)*m)*x^7 - 7*(a^6*b*d^2*e^6 - 5*a^7*d*e^7)*m^6 + 7*(20160*
a^2*b^5*e^8 + (a*b^6*d*e^7 + 3*a^2*b^5*e^8)*m^7 - (b^7*d^2*e^6 - 23*a*b^6*d
*e^7 - 90*a^2*b^5*e^8)*m^6 - (15*b^7*d^2*e^6 - 205*a*b^6*d*e^7 - 1098*a^2*b
^5*e^8)*m^5 - 5*(17*b^7*d^2*e^6 - 181*a*b^6*d*e^7 - 1404*a^2*b^5*e^8)*m^4 -
 (225*b^7*d^2*e^6 - 2074*a*b^6*d*e^7 - 25227*a^2*b^5*e^8)*m^3 - 2*(137*b^7*
d^2*e^6 - 1156*a*b^6*d*e^7 - 25245*a^2*b^5*e^8)*m^2 - 24*(5*b^7*d^2*e^6 - 4
0*a*b^6*d*e^7 - 2143*a^2*b^5*e^8)*m)*x^6 + 7*(6*a^5*b^2*d^3*e^5 - 33*a^6*b*
d^2*e^6 + 73*a^7*d*e^7)*m^5 + 7*(40320*a^3*b^4*e^8 + (3*a^2*b^5*d*e^7 + 5*a
^3*b^4*e^8)*m^7 - (6*a*b^6*d^2*e^6 - 75*a^2*b^5*d*e^7 - 155*a^3*b^4*e^8)*m^
6 + (6*b^7*d^3*e^5 - 108*a*b^6*d^2*e^6 + 723*a^2*b^5*d*e^7 + 1955*a^3*b^4*e
^8)*m^5 + 5*(12*b^7*d^3*e^5 - 138*a*b^6*d^2*e^6 + 681*a^2*b^5*d*e^7 + 2581*
a^3*b^4*e^8)*m^4 + 2*(105*b^7*d^3*e^5 - 990*a*b^6*d^2*e^6 + 4101*a^2*b^5*d*
e^7 + 23860*a^3*b^4*e^8)*m^3 + 4*(75*b^7*d^3*e^5 - 636*a*b^6*d^2*e^6 + 2370
*a^2*b^5*d*e^7 + 24455*a^3*b^4*e^8)*m^2 + 144*(b^7*d^3*e^5 - 8*a*b^6*d^2*e^
6 + 28*a^2*b^5*d*e^7 + 705*a^3*b^4*e^8)*m)*x^5 - 35*(6*a^4*b^3*d^4*e^4 - 36
*a^5*b^2*d^3*e^5 + 89*a^6*b*d^2*e^6 - 115*a^7*d*e^7)*m^4 + 35*(10080*a^4*b^
3*e^8 + (a^3*b^4*d*e^7 + a^4*b^3*e^8)*m^7 - (3*a^2*b^5*d^2*e^6 - 27*a^3*b^4
*d*e^7 - 32*a^4*b^3*e^8)*m^6 + (6*a*b^6*d^3*e^5 - 63*a^2*b^5*d^2*e^6 + 283*
a^3*b^4*d*e^7 + 418*a^4*b^3*e^8)*m^5 - (6*b^7*d^4*e^4 - 84*a*b^6*d^3*e^5 +
471*a^2*b^5*d^2*e^6 - 1449*a^3*b^4*d*e^7 - 2864*a^4*b^3*e^8)*m^4 - (36*b^7*
d^4*e^4 - 354*a*b^6*d^3*e^5 + 1521*a^2*b^5*d^2*e^6 - 3748*a^3*b^4*d*e^7 - 1
0993*a^4*b^3*e^8)*m^3 - 2*(33*b^7*d^4*e^4 - 282*a*b^6*d^3*e^5 + 1059*a^2*b^
5*d^2*e^6 - 2286*a^3*b^4*d*e^7 - 11656*a^4*b^3*e^8)*m^2 - 36*(b^7*d^4*e^4 -
 8*a*b^6*d^3*e^5 + 28*a^2*b^5*d^2*e^6 - 56*a^3*b^4*d*e^7 - 691*a^4*b^3*e^8)
*m)*x^4 + 7*(120*a^3*b^4*d^5*e^3 - 780*a^4*b^3*d^4*e^4 + 2130*a^5*b^2*d^3*e
^5 - 3135*a^6*b*d^2*e^6 + 2632*a^7*d*e^7)*m^3 + 7*(40320*a^5*b^2*e^8 + (5*a
^4*b^3*d*e^7 + 3*a^5*b^2*e^8)*m^7 - (20*a^3*b^4*d^2*e^6 - 145*a^4*b^3*d*e^7
 - 99*a^5*b^2*e^8)*m^6 + (60*a^2*b^5*d^3*e^5 - 480*a^3*b^4*d^2*e^6 + 1655*a
^4*b^3*d*e^7 + 1341*a^5*b^2*e^8)*m^5 - 5*(24*a*b^6*d^4*e^4 - 216*a^2*b^5*d^
3*e^5 + 844*a^3*b^4*d^2*e^6 - 1871*a^4*b^3*d*e^7 - 1917*a^5*b^2*e^8)*m^4 +
4*(30*b^7*d^5*e^3 - 330*a*b^6*d^4*e^4 + 1545*a^2*b^5*d^3*e^5 - 4080*a^3*b^4
```

```
*d^2*e^6 + 6725*a^4*b^3*d*e^7 + 9648*a^5*b^2*e^8)*m^3 + 4*(90*b^7*d^5*e^3 -
 780*a*b^6*d^4*e^4 + 2970*a^2*b^5*d^3*e^5 - 6500*a^3*b^4*d^2*e^6 + 8965*a^4
*b^3*d*e^7 + 21519*a^5*b^2*e^8)*m^2 + 48*(5*b^7*d^5*e^3 - 40*a*b^6*d^4*e^4
+ 140*a^2*b^5*d^3*e^5 - 280*a^3*b^4*d^2*e^6 + 350*a^4*b^3*d*e^7 + 2003*a^5*
b^2*e^8)*m)*x^3 - 14*(180*a^2*b^5*d^6*e^2 - 1260*a^3*b^4*d^5*e^3 + 3765*a^4
*b^3*d^4*e^4 - 6210*a^5*b^2*d^3*e^5 + 6077*a^6*b*d^2*e^6 - 3490*a^7*d*e^7)*
m^2 + 7*(20160*a^6*b*e^8 + (3*a^5*b^2*d*e^7 + a^6*b*e^8)*m^7 - (15*a^4*b^3*
d^2*e^6 - 93*a^5*b^2*d*e^7 - 34*a^6*b*e^8)*m^6 + (60*a^3*b^4*d^3*e^5 - 405*
a^4*b^3*d^2*e^6 + 1155*a^5*b^2*d*e^7 + 478*a^6*b*e^8)*m^5 - 5*(36*a^2*b^5*d
^4*e^4 - 264*a^3*b^4*d^3*e^5 + 831*a^4*b^3*d^2*e^6 - 1455*a^5*b^2*d*e^7 - 7
16*a^6*b*e^8)*m^4 + (360*a*b^6*d^5*e^3 - 2880*a^2*b^5*d^4*e^4 + 10020*a^3*b
^4*d^3*e^5 - 19755*a^4*b^3*d^2*e^6 + 24042*a^5*b^2*d*e^7 + 15289*a^6*b*e^8)
*m^3 - 2*(180*b^7*d^6*e^2 - 1620*a*b^6*d^5*e^3 + 6390*a^2*b^5*d^4*e^4 - 144
60*a^3*b^4*d^3*e^5 + 20595*a^4*b^3*d^2*e^6 - 18996*a^5*b^2*d*e^7 - 18353*a^
6*b*e^8)*m^2 - 72*(5*b^7*d^6*e^2 - 40*a*b^6*d^5*e^3 + 140*a^2*b^5*d^4*e^4 -
 280*a^3*b^4*d^3*e^5 + 350*a^4*b^3*d^2*e^6 - 280*a^5*b^2*d*e^7 - 621*a^6*b*
e^8)*m)*x^2 + 12*(420*a*b^6*d^7*e - 3150*a^2*b^5*d^6*e^2 + 10220*a^3*b^4*d^
5*e^3 - 18655*a^4*b^3*d^4*e^4 + 20804*a^5*b^2*d^3*e^5 - 14322*a^6*b*d^2*e^6
 + 5772*a^7*d*e^7)*m + (40320*a^7*e^8 + (7*a^6*b*d*e^7 + a^7*e^8)*m^7 - 7*(
6*a^5*b^2*d^2*e^6 - 33*a^6*b*d*e^7 - 5*a^7*e^8)*m^6 + 7*(30*a^4*b^3*d^3*e^5
 - 180*a^5*b^2*d^2*e^6 + 445*a^6*b*d*e^7 + 73*a^7*e^8)*m^5 - 35*(24*a^3*b^4
*d^4*e^4 - 156*a^4*b^3*d^3*e^5 + 426*a^5*b^2*d^2*e^6 - 627*a^6*b*d*e^7 - 11
5*a^7*e^8)*m^4 + 14*(180*a^2*b^5*d^5*e^3 - 1260*a^3*b^4*d^4*e^4 + 3765*a^4*
b^3*d^3*e^5 - 6210*a^5*b^2*d^2*e^6 + 6077*a^6*b*d*e^7 + 1316*a^7*e^8)*m^3 -
 28*(180*a*b^6*d^6*e^2 - 1350*a^2*b^5*d^5*e^3 + 4380*a^3*b^4*d^4*e^4 - 7995
*a^4*b^3*d^3*e^5 + 8916*a^5*b^2*d^2*e^6 - 6138*a^6*b*d*e^7 - 1745*a^7*e^8)*
m^2 + 144*(35*b^7*d^7*e - 280*a*b^6*d^6*e^2 + 980*a^2*b^5*d^5*e^3 - 1960*a^
3*b^4*d^4*e^4 + 2450*a^4*b^3*d^3*e^5 - 1960*a^5*b^2*d^2*e^6 + 980*a^6*b*d*e
^7 + 481*a^7*e^8)*m)*x)*(e*x + d)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4
536*e^8*m^5 + 22449*e^8*m^4 + 67284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m
 + 40320*e^8)
```

giac [B] time = 0.37, size = 5639, normalized size = 23.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*b^7*m^7*x^8*e^8 + (x*e + d)^m*b^7*d*m^7*x^7*e^7 + 7*(x*e + d)^
m*a*b^6*m^7*x^7*e^8 + 28*(x*e + d)^m*b^7*m^6*x^8*e^8 + 7*(x*e + d)^m*a*b^6*
d*m^7*x^6*e^7 + 21*(x*e + d)^m*b^7*d*m^6*x^7*e^7 - 7*(x*e + d)^m*b^7*d^2*m^
6*x^6*e^6 + 21*(x*e + d)^m*a^2*b^5*m^7*x^6*e^8 + 203*(x*e + d)^m*a*b^6*m^6*
x^7*e^8 + 322*(x*e + d)^m*b^7*m^5*x^8*e^8 + 21*(x*e + d)^m*a^2*b^5*d*m^7*x^
5*e^7 + 161*(x*e + d)^m*a*b^6*d*m^6*x^6*e^7 + 175*(x*e + d)^m*b^7*d*m^5*x^7
*e^7 - 42*(x*e + d)^m*a*b^6*d^2*m^6*x^5*e^6 - 105*(x*e + d)^m*b^7*d^2*m^5*x
^6*e^6 + 42*(x*e + d)^m*b^7*d^3*m^5*x^5*e^5 + 35*(x*e + d)^m*a^3*b^4*m^7*x^
5*e^8 + 630*(x*e + d)^m*a^2*b^5*m^6*x^6*e^8 + 2401*(x*e + d)^m*a*b^6*m^5*x^
7*e^8 + 1960*(x*e + d)^m*b^7*m^4*x^8*e^8 + 35*(x*e + d)^m*a^3*b^4*d*m^7*x^4
*e^7 + 525*(x*e + d)^m*a^2*b^5*d*m^6*x^5*e^7 + 1435*(x*e + d)^m*a*b^6*d*m^5
*x^6*e^7 + 735*(x*e + d)^m*b^7*d*m^4*x^7*e^7 - 105*(x*e + d)^m*a^2*b^5*d^2*
m^6*x^4*e^6 - 756*(x*e + d)^m*a*b^6*d^2*m^5*x^5*e^6 - 595*(x*e + d)^m*b^7*d
^2*m^4*x^6*e^6 + 210*(x*e + d)^m*a*b^6*d^3*m^5*x^4*e^5 + 420*(x*e + d)^m*b^
7*d^3*m^4*x^5*e^5 - 210*(x*e + d)^m*b^7*d^4*m^4*x^4*e^4 + 35*(x*e + d)^m*a^
4*b^3*m^7*x^4*e^8 + 1085*(x*e + d)^m*a^3*b^4*m^6*x^5*e^8 + 7686*(x*e + d)^m
*a^2*b^5*m^5*x^6*e^8 + 14945*(x*e + d)^m*a*b^6*m^4*x^7*e^8 + 6769*(x*e + d)
^m*b^7*m^3*x^8*e^8 + 35*(x*e + d)^m*a^4*b^3*d*m^7*x^3*e^7 + 945*(x*e + d)^m
*a^3*b^4*d*m^6*x^4*e^7 + 5061*(x*e + d)^m*a^2*b^5*d*m^5*x^5*e^7 + 6335*(x*e
 + d)^m*a*b^6*d*m^4*x^6*e^7 + 1624*(x*e + d)^m*b^7*d*m^3*x^7*e^7 - 140*(x*e
 + d)^m*a^3*b^4*d^2*m^6*x^3*e^6 - 2205*(x*e + d)^m*a^2*b^5*d^2*m^5*x^4*e^6
```

- 4830*(x*e + d)^m*a*b^6*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*b^7*d^2*m^3*x^6
e^6 + 420(x*e + d)^m*a^2*b^5*d^3*m^5*x^3*e^5 + 2940*(x*e + d)^m*a*b^6*d^3
*m^4*x^4*e^5 + 1470*(x*e + d)^m*b^7*d^3*m^3*x^5*e^5 - 840*(x*e + d)^m*a*b^6
*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*b^7*d^4*m^3*x^4*e^4 + 840*(x*e + d)^m*b
^7*d^5*m^3*x^3*e^3 + 21*(x*e + d)^m*a^5*b^2*m^7*x^3*e^8 + 1120*(x*e + d)^m*
a^4*b^3*m^6*x^4*e^8 + 13685*(x*e + d)^m*a^3*b^4*m^5*x^5*e^8 + 49140*(x*e +
d)^m*a^2*b^5*m^4*x^6*e^8 + 52528*(x*e + d)^m*a*b^6*m^3*x^7*e^8 + 13132*(x*e
 + d)^m*b^7*m^2*x^8*e^8 + 21*(x*e + d)^m*a^5*b^2*d*m^7*x^2*e^7 + 1015*(x*e
+ d)^m*a^4*b^3*d*m^6*x^3*e^7 + 9905*(x*e + d)^m*a^3*b^4*d*m^5*x^4*e^7 + 238
35*(x*e + d)^m*a^2*b^5*d*m^4*x^5*e^7 + 14518*(x*e + d)^m*a*b^6*d*m^3*x^6*e^
7 + 1764*(x*e + d)^m*b^7*d*m^2*x^7*e^7 - 105*(x*e + d)^m*a^4*b^3*d^2*m^6*x^
2*e^6 - 3360*(x*e + d)^m*a^3*b^4*d^2*m^5*x^3*e^6 - 16485*(x*e + d)^m*a^2*b^
5*d^2*m^4*x^4*e^6 - 13860*(x*e + d)^m*a*b^6*d^2*m^3*x^5*e^6 - 1918*(x*e + d
)^m*b^7*d^2*m^2*x^6*e^6 + 420*(x*e + d)^m*a^3*b^4*d^3*m^5*x^2*e^5 + 7560*(x
*e + d)^m*a^2*b^5*d^3*m^4*x^3*e^5 + 12390*(x*e + d)^m*a*b^6*d^3*m^3*x^4*e^5
 + 2100*(x*e + d)^m*b^7*d^3*m^2*x^5*e^5 - 1260*(x*e + d)^m*a^2*b^5*d^4*m^4*
x^2*e^4 - 9240*(x*e + d)^m*a*b^6*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*b^7*d^4
*m^2*x^4*e^4 + 2520*(x*e + d)^m*a*b^6*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*b^
7*d^5*m^2*x^3*e^3 - 2520*(x*e + d)^m*b^7*d^6*m^2*x^2*e^2 + 7*(x*e + d)^m*a^
6*b*m^7*x^2*e^8 + 693*(x*e + d)^m*a^5*b^2*m^6*x^3*e^8 + 14630*(x*e + d)^m*a
^4*b^3*m^5*x^4*e^8 + 90335*(x*e + d)^m*a^3*b^4*m^4*x^5*e^8 + 176589*(x*e +
d)^m*a^2*b^5*m^3*x^6*e^8 + 103292*(x*e + d)^m*a*b^6*m^2*x^7*e^8 + 13068*(x*
e + d)^m*b^7*m*x^8*e^8 + 7*(x*e + d)^m*a^6*b*d*m^7*x*e^7 + 651*(x*e + d)^m*
a^5*b^2*d*m^6*x^2*e^7 + 11585*(x*e + d)^m*a^4*b^3*d*m^5*x^3*e^7 + 50715*(x*
e + d)^m*a^3*b^4*d*m^4*x^4*e^7 + 57414*(x*e + d)^m*a^2*b^5*d*m^3*x^5*e^7 +
16184*(x*e + d)^m*a*b^6*d*m^2*x^6*e^7 + 720*(x*e + d)^m*b^7*d*m*x^7*e^7 - 4
2*(x*e + d)^m*a^5*b^2*d^2*m^6*x*e^6 - 2835*(x*e + d)^m*a^4*b^3*d^2*m^5*x^2*
e^6 - 29540*(x*e + d)^m*a^3*b^4*d^2*m^4*x^3*e^6 - 53235*(x*e + d)^m*a^2*b^5
*d^2*m^3*x^4*e^6 - 17808*(x*e + d)^m*a*b^6*d^2*m^2*x^5*e^6 - 840*(x*e + d)^
m*b^7*d^2*m*x^6*e^6 + 210*(x*e + d)^m*a^4*b^3*d^3*m^5*x*e^5 + 9240*(x*e + d
)^m*a^3*b^4*d^3*m^4*x^2*e^5 + 43260*(x*e + d)^m*a^2*b^5*d^3*m^3*x^3*e^5 + 1
9740*(x*e + d)^m*a*b^6*d^3*m^2*x^4*e^5 + 1008*(x*e + d)^m*b^7*d^3*m*x^5*e^5
 - 840*(x*e + d)^m*a^3*b^4*d^4*m^4*x*e^4 - 20160*(x*e + d)^m*a^2*b^5*d^4*m^
3*x^2*e^4 - 21840*(x*e + d)^m*a*b^6*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*b^7*
d^4*m*x^4*e^4 + 2520*(x*e + d)^m*a^2*b^5*d^5*m^3*x*e^3 + 22680*(x*e + d)^m*
a*b^6*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*b^7*d^5*m*x^3*e^3 - 5040*(x*e + d)
^m*a*b^6*d^6*m^2*x*e^2 - 2520*(x*e + d)^m*b^7*d^6*m*x^2*e^2 + 5040*(x*e + d
)^m*b^7*d^7*m*x*e + (x*e + d)^m*a^7*m^7*x*e^8 + 238*(x*e + d)^m*a^6*b*m^6*x
^2*e^8 + 9387*(x*e + d)^m*a^5*b^2*m^5*x^3*e^8 + 100240*(x*e + d)^m*a^4*b^3*
m^4*x^4*e^8 + 334040*(x*e + d)^m*a^3*b^4*m^3*x^5*e^8 + 353430*(x*e + d)^m*a
^2*b^5*m^2*x^6*e^8 + 103824*(x*e + d)^m*a*b^6*m*x^7*e^8 + 5040*(x*e + d)^m*
b^7*x^8*e^8 + (x*e + d)^m*a^7*d*m^7*e^7 + 231*(x*e + d)^m*a^6*b*d*m^6*x*e^7
 + 8085*(x*e + d)^m*a^5*b^2*d*m^5*x^2*e^7 + 65485*(x*e + d)^m*a^4*b^3*d*m^4
*x^3*e^7 + 131180*(x*e + d)^m*a^3*b^4*d*m^3*x^4*e^7 + 66360*(x*e + d)^m*a^2
*b^5*d*m^2*x^5*e^7 + 6720*(x*e + d)^m*a*b^6*d*m*x^6*e^7 - 7*(x*e + d)^m*a^6
*b*d^2*m^6*e^6 - 1260*(x*e + d)^m*a^5*b^2*d^2*m^5*x*e^6 - 29085*(x*e + d)^m
*a^4*b^3*d^2*m^4*x^2*e^6 - 114240*(x*e + d)^m*a^3*b^4*d^2*m^3*x^3*e^6 - 741
30*(x*e + d)^m*a^2*b^5*d^2*m^2*x^4*e^6 - 8064*(x*e + d)^m*a*b^6*d^2*m*x^5*e
^6 + 42*(x*e + d)^m*a^5*b^2*d^3*m^5*e^5 + 5460*(x*e + d)^m*a^4*b^3*d^3*m^4*
x*e^5 + 70140*(x*e + d)^m*a^3*b^4*d^3*m^3*x^2*e^5 + 83160*(x*e + d)^m*a^2*b
^5*d^3*m^2*x^3*e^5 + 10080*(x*e + d)^m*a*b^6*d^3*m*x^4*e^5 - 210*(x*e + d)^
m*a^4*b^3*d^4*m^4*e^4 - 17640*(x*e + d)^m*a^3*b^4*d^4*m^3*x*e^4 - 89460*(x*
e + d)^m*a^2*b^5*d^4*m^2*x^2*e^4 - 13440*(x*e + d)^m*a*b^6*d^4*m*x^3*e^4 +
840*(x*e + d)^m*a^3*b^4*d^5*m^3*e^3 + 37800*(x*e + d)^m*a^2*b^5*d^5*m^2*x*e
^3 + 20160*(x*e + d)^m*a*b^6*d^5*m*x^2*e^3 - 2520*(x*e + d)^m*a^2*b^5*d^6*m
^2*e^2 - 40320*(x*e + d)^m*a*b^6*d^6*m*x*e^2 + 5040*(x*e + d)^m*a*b^6*d^7*m
e - 5040(x*e + d)^m*b^7*d^8 + 35*(x*e + d)^m*a^7*m^6*x*e^8 + 3346*(x*e +
d)^m*a^6*b*m^5*x^2*e^8 + 67095*(x*e + d)^m*a^5*b^2*m^4*x^3*e^8 + 384755*(x*
e + d)^m*a^4*b^3*m^3*x^4*e^8 + 684740*(x*e + d)^m*a^3*b^4*m^2*x^5*e^8 + 360

```
024*(x*e + d)^m*a^2*b^5*m*x^6*e^8 + 40320*(x*e + d)^m*a*b^6*x^7*e^8 + 35*(x
*e + d)^m*a^7*d*m^6*e^7 + 3115*(x*e + d)^m*a^6*b*d*m^5*x*e^7 + 50925*(x*e +
 d)^m*a^5*b^2*d*m^4*x^2*e^7 + 188300*(x*e + d)^m*a^4*b^3*d*m^3*x^3*e^7 + 16
0020*(x*e + d)^m*a^3*b^4*d*m^2*x^4*e^7 + 28224*(x*e + d)^m*a^2*b^5*d*m*x^5*
e^7 - 231*(x*e + d)^m*a^6*b*d^2*m^5*e^6 - 14910*(x*e + d)^m*a^5*b^2*d^2*m^4
*x*e^6 - 138285*(x*e + d)^m*a^4*b^3*d^2*m^3*x^2*e^6 - 182000*(x*e + d)^m*a^
3*b^4*d^2*m^2*x^3*e^6 - 35280*(x*e + d)^m*a^2*b^5*d^2*m*x^4*e^6 + 1260*(x*e
 + d)^m*a^5*b^2*d^3*m^4*e^5 + 52710*(x*e + d)^m*a^4*b^3*d^3*m^3*x*e^5 + 202
440*(x*e + d)^m*a^3*b^4*d^3*m^2*x^2*e^5 + 47040*(x*e + d)^m*a^2*b^5*d^3*m*x
^3*e^5 - 5460*(x*e + d)^m*a^4*b^3*d^4*m^3*e^4 - 122640*(x*e + d)^m*a^3*b^4*
d^4*m^2*x*e^4 - 70560*(x*e + d)^m*a^2*b^5*d^4*m*x^2*e^4 + 17640*(x*e + d)^m
*a^3*b^4*d^5*m^2*e^3 + 141120*(x*e + d)^m*a^2*b^5*d^5*m*x*e^3 - 37800*(x*e
+ d)^m*a^2*b^5*d^6*m*e^2 + 40320*(x*e + d)^m*a*b^6*d^7*e + 511*(x*e + d)^m*
a^7*m^5*x*e^8 + 25060*(x*e + d)^m*a^6*b*m^4*x^2*e^8 + 270144*(x*e + d)^m*a^
5*b^2*m^3*x^3*e^8 + 815920*(x*e + d)^m*a^4*b^3*m^2*x^4*e^8 + 710640*(x*e +
d)^m*a^3*b^4*m*x^5*e^8 + 141120*(x*e + d)^m*a^2*b^5*x^6*e^8 + 511*(x*e + d)
^m*a^7*d*m^5*e^7 + 21945*(x*e + d)^m*a^6*b*d*m^4*x*e^7 + 168294*(x*e + d)^m
*a^5*b^2*d*m^3*x^2*e^7 + 251020*(x*e + d)^m*a^4*b^3*d*m^2*x^3*e^7 + 70560*(
x*e + d)^m*a^3*b^4*d*m*x^4*e^7 - 3115*(x*e + d)^m*a^6*b*d^2*m^4*e^6 - 86940
*(x*e + d)^m*a^5*b^2*d^2*m^3*x*e^6 - 288330*(x*e + d)^m*a^4*b^3*d^2*m^2*x^2
*e^6 - 94080*(x*e + d)^m*a^3*b^4*d^2*m*x^3*e^6 + 14910*(x*e + d)^m*a^5*b^2*
d^3*m^3*e^5 + 223860*(x*e + d)^m*a^4*b^3*d^3*m^2*x*e^5 + 141120*(x*e + d)^m
*a^3*b^4*d^3*m*x^2*e^5 - 52710*(x*e + d)^m*a^4*b^3*d^4*m^2*e^4 - 282240*(x*
e + d)^m*a^3*b^4*d^4*m*x*e^4 + 122640*(x*e + d)^m*a^3*b^4*d^5*m*e^3 - 14112
0*(x*e + d)^m*a^2*b^5*d^6*e^2 + 4025*(x*e + d)^m*a^7*m^4*x*e^8 + 107023*(x*
e + d)^m*a^6*b*m^3*x^2*e^8 + 602532*(x*e + d)^m*a^5*b^2*m^2*x^3*e^8 + 87066
0*(x*e + d)^m*a^4*b^3*m*x^4*e^8 + 282240*(x*e + d)^m*a^3*b^4*x^5*e^8 + 4025
*(x*e + d)^m*a^7*d*m^4*e^7 + 85078*(x*e + d)^m*a^6*b*d*m^3*x*e^7 + 265944*(
x*e + d)^m*a^5*b^2*d*m^2*x^2*e^7 + 117600*(x*e + d)^m*a^4*b^3*d*m*x^3*e^7 -
 21945*(x*e + d)^m*a^6*b*d^2*m^3*e^6 - 249648*(x*e + d)^m*a^5*b^2*d^2*m^2*x
*e^6 - 176400*(x*e + d)^m*a^4*b^3*d^2*m*x^2*e^6 + 86940*(x*e + d)^m*a^5*b^2
*d^3*m^2*e^5 + 352800*(x*e + d)^m*a^4*b^3*d^3*m*x*e^5 - 223860*(x*e + d)^m*
a^4*b^3*d^4*m*e^4 + 282240*(x*e + d)^m*a^3*b^4*d^5*e^3 + 18424*(x*e + d)^m*
a^7*m^3*x*e^8 + 256942*(x*e + d)^m*a^6*b*m^2*x^2*e^8 + 673008*(x*e + d)^m*a
^5*b^2*m*x^3*e^8 + 352800*(x*e + d)^m*a^4*b^3*x^4*e^8 + 18424*(x*e + d)^m*a
^7*d*m^3*e^7 + 171864*(x*e + d)^m*a^6*b*d*m^2*x*e^7 + 141120*(x*e + d)^m*a^
5*b^2*d*m*x^2*e^7 - 85078*(x*e + d)^m*a^6*b*d^2*m^2*e^6 - 282240*(x*e + d)^
m*a^5*b^2*d^2*m*x*e^6 + 249648*(x*e + d)^m*a^5*b^2*d^3*m*e^5 - 352800*(x*e
+ d)^m*a^4*b^3*d^4*e^4 + 48860*(x*e + d)^m*a^7*m^2*x*e^8 + 312984*(x*e + d)
^m*a^6*b*m*x^2*e^8 + 282240*(x*e + d)^m*a^5*b^2*x^3*e^8 + 48860*(x*e + d)^m
*a^7*d*m^2*e^7 + 141120*(x*e + d)^m*a^6*b*d*m*x*e^7 - 171864*(x*e + d)^m*a^
6*b*d^2*m*e^6 + 282240*(x*e + d)^m*a^5*b^2*d^3*e^5 + 69264*(x*e + d)^m*a^7*
m*x*e^8 + 141120*(x*e + d)^m*a^6*b*x^2*e^8 + 69264*(x*e + d)^m*a^7*d*m*e^7
- 141120*(x*e + d)^m*a^6*b*d^2*e^6 + 40320*(x*e + d)^m*a^7*x*e^8 + 40320*(x
*e + d)^m*a^7*d*e^7)/(m^8*e^8 + 36*m^7*e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 2
2449*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.07, size = 3244, normalized size = 13.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (e*x+d)^(m+1)*(b^7*e^7*m^7*x^7+7*a*b^6*e^7*m^7*x^6+28*b^7*e^7*m^6*x^7+21*a^
2*b^5*e^7*m^7*x^5+203*a*b^6*e^7*m^6*x^6-7*b^7*d*e^6*m^6*x^6+322*b^7*e^7*m^5
*x^7+35*a^3*b^4*e^7*m^7*x^4+630*a^2*b^5*e^7*m^6*x^5-42*a*b^6*d*e^6*m^6*x^5+
2401*a*b^6*e^7*m^5*x^6-147*b^7*d*e^6*m^5*x^6+1960*b^7*e^7*m^4*x^7+35*a^4*b^
3*e^7*m^7*x^3+1085*a^3*b^4*e^7*m^6*x^4-105*a^2*b^5*d*e^6*m^6*x^4+7686*a^2*b
^5*e^7*m^5*x^5-966*a*b^6*d*e^6*m^5*x^5+14945*a*b^6*e^7*m^4*x^6+42*b^7*d^2*e
```

^5*m^5*x^5-1225*b^7*d*e^6*m^4*x^6+6769*b^7*e^7*m^3*x^7+21*a^5*b^2*e^7*m^7*x
^2+1120*a^4*b^3*e^7*m^6*x^3-140*a^3*b^4*d*e^6*m^6*x^3+13685*a^3*b^4*e^7*m^5
*x^4-2625*a^2*b^5*d*e^6*m^5*x^4+49140*a^2*b^5*e^7*m^4*x^5+210*a*b^6*d^2*e^5
*m^5*x^4-8610*a*b^6*d*e^6*m^4*x^5+52528*a*b^6*e^7*m^3*x^6+630*b^7*d^2*e^5*m
^4*x^5-5145*b^7*d*e^6*m^3*x^6+13132*b^7*e^7*m^2*x^7+7*a^6*b*e^7*m^7*x+693*a
^5*b^2*e^7*m^6*x^2-105*a^4*b^3*d*e^6*m^6*x^2+14630*a^4*b^3*e^7*m^5*x^3-3780
*a^3*b^4*d*e^6*m^5*x^3+90335*a^3*b^4*e^7*m^4*x^4+420*a^2*b^5*d^2*e^5*m^5*x^
3-25305*a^2*b^5*d*e^6*m^4*x^4+176589*a^2*b^5*e^7*m^3*x^5+3780*a*b^6*d^2*e^5
*m^4*x^4-38010*a*b^6*d*e^6*m^3*x^5+103292*a*b^6*e^7*m^2*x^6-210*b^7*d^3*e^4
*m^4*x^4+3570*b^7*d^2*e^5*m^3*x^5-11368*b^7*d*e^6*m^2*x^6+13068*b^7*e^7*m*x
^7+a^7*e^7*m^7+238*a^6*b*e^7*m^6*x-42*a^5*b^2*d*e^6*m^6*x+9387*a^5*b^2*e^7*
m^5*x^2-3045*a^4*b^3*d*e^6*m^5*x^2+100240*a^4*b^3*e^7*m^4*x^3+420*a^3*b^4*d
^2*e^5*m^5*x^2-39620*a^3*b^4*d*e^6*m^4*x^3+334040*a^3*b^4*e^7*m^3*x^4+8820*
a^2*b^5*d^2*e^5*m^4*x^3-119175*a^2*b^5*d*e^6*m^3*x^4+353430*a^2*b^5*e^7*m^2
*x^5-840*a*b^6*d^3*e^4*m^4*x^3+24150*a*b^6*d^2*e^5*m^3*x^4-87108*a*b^6*d*e^
6*m^2*x^5+103824*a*b^6*e^7*m*x^6-2100*b^7*d^3*e^4*m^3*x^4+9450*b^7*d^2*e^5*
m^2*x^5-12348*b^7*d*e^6*m*x^6+5040*b^7*e^7*x^7+35*a^7*e^7*m^6-7*a^6*b*d*e^6
*m^6+3346*a^6*b*e^7*m^5*x-1302*a^5*b^2*d*e^6*m^5*x+67095*a^5*b^2*e^7*m^4*x^
2+210*a^4*b^3*d^2*e^5*m^5*x-34755*a^4*b^3*d*e^6*m^4*x^2+384755*a^4*b^3*e^7*
m^3*x^3+10080*a^3*b^4*d^2*e^5*m^4*x^2-202860*a^3*b^4*d*e^6*m^3*x^3+684740*a
^3*b^4*e^7*m^2*x^4-1260*a^2*b^5*d^3*e^4*m^4*x^2+65940*a^2*b^5*d^2*e^5*m^3*x
^3-287070*a^2*b^5*d*e^6*m^2*x^4+360024*a^2*b^5*e^7*m*x^5-11760*a*b^6*d^3*e^
4*m^3*x^3+69300*a*b^6*d^2*e^5*m^2*x^4-97104*a*b^6*d*e^6*m*x^5+40320*a*b^6*e
^7*x^6+840*b^7*d^4*e^3*m^3*x^3-7350*b^7*d^3*e^4*m^2*x^4+11508*b^7*d^2*e^5*m
*x^5-5040*b^7*d*e^6*x^6+511*a^7*e^7*m^5-231*a^6*b*d*e^6*m^5+25060*a^6*b*e^7
*m^4*x+42*a^5*b^2*d^2*e^5*m^5-16170*a^5*b^2*d*e^6*m^4*x+270144*a^5*b^2*e^7*
m^3*x^2+5670*a^4*b^3*d^2*e^5*m^4*x-196455*a^4*b^3*d*e^6*m^3*x^2+815920*a^4*
b^3*e^7*m^2*x^3-840*a^3*b^4*d^3*e^4*m^4*x+88620*a^3*b^4*d^2*e^5*m^3*x^2-524
720*a^3*b^4*d*e^6*m^2*x^3+710640*a^3*b^4*e^7*m*x^4-22680*a^2*b^5*d^3*e^4*m^
3*x^2+212940*a^2*b^5*d^2*e^5*m^2*x^3-331800*a^2*b^5*d*e^6*m*x^4+141120*a^2*
b^5*e^7*x^5+2520*a*b^6*d^4*e^3*m^3*x^2-49560*a*b^6*d^3*e^4*m^2*x^3+89040*a*
b^6*d^2*e^5*m*x^4-40320*a*b^6*d*e^6*x^5+5040*b^7*d^4*e^3*m^2*x^3-10500*b^7*
d^3*e^4*m*x^4+5040*b^7*d^2*e^5*x^5+4025*a^7*e^7*m^4-3115*a^6*b*d*e^6*m^4+10
7023*a^6*b*e^7*m^3*x+1260*a^5*b^2*d^2*e^5*m^4-101850*a^5*b^2*d*e^6*m^3*x+60
2532*a^5*b^2*e^7*m^2*x^2-210*a^4*b^3*d^3*e^4*m^4+58170*a^4*b^3*d^2*e^5*m^3*
x-564900*a^4*b^3*d*e^6*m^2*x^2+870660*a^4*b^3*e^7*m*x^3-18480*a^3*b^4*d^3*e
^4*m^3*x+342720*a^3*b^4*d^2*e^5*m^2*x^2-640080*a^3*b^4*d*e^6*m*x^3+282240*a
^3*b^4*e^7*x^4+2520*a^2*b^5*d^4*e^3*m^3*x-129780*a^2*b^5*d^3*e^4*m^2*x^2+29
6520*a^2*b^5*d^2*e^5*m*x^3-141120*a^2*b^5*d*e^6*x^4+27720*a*b^6*d^4*e^3*m^2
*x^2-78960*a*b^6*d^3*e^4*m*x^3+40320*a*b^6*d^2*e^5*x^4-2520*b^7*d^5*e^2*m^2
*x^2+9240*b^7*d^4*e^3*m*x^3-5040*b^7*d^3*e^4*x^4+18424*a^7*e^7*m^3-21945*a^
6*b*d*e^6*m^3+256942*a^6*b*e^7*m^2*x+14910*a^5*b^2*d^2*e^5*m^3-336588*a^5*b
^2*d*e^6*m^2*x+673008*a^5*b^2*e^7*m*x^2-5460*a^4*b^3*d^3*e^4*m^3+276570*a^4
*b^3*d^2*e^5*m^2*x-753060*a^4*b^3*d*e^6*m*x^2+352800*a^4*b^3*e^7*x^3+840*a^
3*b^4*d^4*e^3*m^3-140280*a^3*b^4*d^3*e^4*m^2*x+546000*a^3*b^4*d^2*e^5*m*x^2
-282240*a^3*b^4*d*e^6*x^3+40320*a^2*b^5*d^4*e^3*m^2*x-249480*a^2*b^5*d^3*e^
4*m*x^2+141120*a^2*b^5*d^2*e^5*x^3-5040*a*b^6*d^5*e^2*m^2*x+65520*a*b^6*d^4
*e^3*m*x^2-40320*a*b^6*d^3*e^4*x^3-7560*b^7*d^5*e^2*m*x^2+5040*b^7*d^4*e^3*
x^3+48860*a^7*e^7*m^2-85078*a^6*b*d*e^6*m^2+312984*a^6*b*e^7*m*x+86940*a^5*
b^2*d^2*e^5*m^2-531888*a^5*b^2*d*e^6*m*x+282240*a^5*b^2*e^7*x^2-52710*a^4*b
^3*d^3*e^4*m^2+576660*a^4*b^3*d^2*e^5*m*x-352800*a^4*b^3*d*e^6*x^2+17640*a^
3*b^4*d^4*e^3*m^2-404880*a^3*b^4*d^3*e^4*m*x+282240*a^3*b^4*d^2*e^5*x^2-252
0*a^2*b^5*d^5*e^2*m^2+178920*a^2*b^5*d^4*e^3*m*x-141120*a^2*b^5*d^3*e^4*x^2
-45360*a*b^6*d^5*e^2*m*x+40320*a*b^6*d^4*e^3*x^2+5040*b^7*d^6*e*m*x-5040*b^
7*d^5*e^2*x^2+69264*a^7*e^7*m-171864*a^6*b*d*e^6*m+141120*a^6*b*e^7*x+24964
8*a^5*b^2*d^2*e^5*m-282240*a^5*b^2*d*e^6*x-223860*a^4*b^3*d^3*e^4*m+352800*
a^4*b^3*d^2*e^5*x+122640*a^3*b^4*d^4*e^3*m-282240*a^3*b^4*d^3*e^4*x-37800*a
^2*b^5*d^5*e^2*m+141120*a^2*b^5*d^4*e^3*x+5040*a*b^6*d^6*e*m-40320*a*b^6*d^
5*e^2*x+5040*b^7*d^6*e*x+40320*a^7*e^7-141120*a^6*b*d*e^6+282240*a^5*b^2*d^

```
2*e^5-352800*a^4*b^3*d^3*e^4+282240*a^3*b^4*d^4*e^3-141120*a^2*b^5*d^5*e^2+
40320*a*b^6*d^6*e-5040*b^7*d^7)/e^8/(m^8+36*m^7+546*m^6+4536*m^5+22449*m^4+
67284*m^3+118124*m^2+109584*m+40320)
```

maxima [B] time = 0.84, size = 1108, normalized size = 4.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 7*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^6*b/((m^2 + 3*m + 2)*e^2)
 + (e*x + d)^(m + 1)*a^7/(e*(m + 1)) + 21*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
 m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a^5*b^2/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + 35*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d
*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a^4*b
^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 35*((m^4 + 10*m^3 + 35*m^2 +
 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m
^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(
e*x + d)^m*a^3*b^4/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) +
21*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4
 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e
^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 12
0*d^5*e*m*x - 120*d^6)*(e*x + d)^m*a^2*b^5/((m^6 + 21*m^5 + 175*m^4 + 735*m
^3 + 1624*m^2 + 1764*m + 720)*e^6) + 7*((m^6 + 21*m^5 + 175*m^4 + 735*m^3 +
 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*
m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*
x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)
*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*x + 720*d^7)*(e*x +
d)^m*a*b^6/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 130
68*m + 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*
m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5 + 735*m^4 + 1624*m^
3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*
m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^3*e
^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 + 840*(m^3 + 3*m^2 +
2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^7*e*m*x - 5040*d^8)*
(e*x + d)^m*b^7/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3
 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 3.67, size = 2653, normalized size = 11.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^m*(40320*a^7*d*e^7 - 5040*b^7*d^8 - 141120*a^6*b*d^2*e^6 + 48860
*a^7*d*e^7*m^2 + 18424*a^7*d*e^7*m^3 + 4025*a^7*d*e^7*m^4 + 511*a^7*d*e^7*m
^5 + 35*a^7*d*e^7*m^6 + a^7*d*e^7*m^7 - 141120*a^2*b^5*d^6*e^2 + 282240*a^3
*b^4*d^5*e^3 - 352800*a^4*b^3*d^4*e^4 + 282240*a^5*b^2*d^3*e^5 + 40320*a*b^
6*d^7*e + 69264*a^7*d*e^7*m + 5040*a*b^6*d^7*e*m - 2520*a^2*b^5*d^6*e^2*m^2
 + 17640*a^3*b^4*d^5*e^3*m^2 - 52710*a^4*b^3*d^4*e^4*m^2 + 86940*a^5*b^2*d^
3*e^5*m^2 + 840*a^3*b^4*d^5*e^3*m^3 - 5460*a^4*b^3*d^4*e^4*m^3 + 14910*a^5*
b^2*d^3*e^5*m^3 - 210*a^4*b^3*d^4*e^4*m^4 + 1260*a^5*b^2*d^3*e^5*m^4 + 42*a
^5*b^2*d^3*e^5*m^5 - 171864*a^6*b*d^2*e^6*m - 37800*a^2*b^5*d^6*e^2*m + 122
640*a^3*b^4*d^5*e^3*m - 223860*a^4*b^3*d^4*e^4*m + 249648*a^5*b^2*d^3*e^5*m
 - 85078*a^6*b*d^2*e^6*m^2 - 21945*a^6*b*d^2*e^6*m^3 - 3115*a^6*b*d^2*e^6*m
^4 - 231*a^6*b*d^2*e^6*m^5 - 7*a^6*b*d^2*e^6*m^6))/(e^8*(109584*m + 118124*
m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) +
 (x*(d + e*x)^m*(40320*a^7*e^8 + 69264*a^7*e^8*m + 48860*a^7*e^8*m^2 + 1842
4*a^7*e^8*m^3 + 4025*a^7*e^8*m^4 + 511*a^7*e^8*m^5 + 35*a^7*e^8*m^6 + a^7*e
```

```
^8*m^7 + 5040*b^7*d^7*e*m + 141120*a^6*b*d*e^7*m + 37800*a^2*b^5*d^5*e^3*m^
2 - 122640*a^3*b^4*d^4*e^4*m^2 + 223860*a^4*b^3*d^3*e^5*m^2 - 249648*a^5*b^
2*d^2*e^6*m^2 + 2520*a^2*b^5*d^5*e^3*m^3 - 17640*a^3*b^4*d^4*e^4*m^3 + 5271
0*a^4*b^3*d^3*e^5*m^3 - 86940*a^5*b^2*d^2*e^6*m^3 - 840*a^3*b^4*d^4*e^4*m^4
 + 5460*a^4*b^3*d^3*e^5*m^4 - 14910*a^5*b^2*d^2*e^6*m^4 + 210*a^4*b^3*d^3*e
^5*m^5 - 1260*a^5*b^2*d^2*e^6*m^5 - 42*a^5*b^2*d^2*e^6*m^6 - 40320*a*b^6*d^
6*e^2*m + 171864*a^6*b*d*e^7*m^2 + 85078*a^6*b*d*e^7*m^3 + 21945*a^6*b*d*e^
7*m^4 + 3115*a^6*b*d*e^7*m^5 + 231*a^6*b*d*e^7*m^6 + 7*a^6*b*d*e^7*m^7 + 14
1120*a^2*b^5*d^5*e^3*m - 282240*a^3*b^4*d^4*e^4*m + 352800*a^4*b^3*d^3*e^5*
m - 282240*a^5*b^2*d^2*e^6*m - 5040*a*b^6*d^6*e^2*m^2))/(e^8*(109584*m + 11
8124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 4032
0)) + (b^7*x^8*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322
*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (7*b^5*x^6*(d + e*x)^m*(274
*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(168*a^2*e^2 + 45*a^2*e^2*m - b
^2*d^2*m + 3*a^2*e^2*m^2 + 8*a*b*d*e*m + a*b*d*e*m^2))/(e^2*(109584*m + 118
124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320
)) + (7*b*x^2*(m + 1)*(d + e*x)^m*(20160*a^6*e^6 + 24552*a^6*e^6*m - 360*b^
6*d^6*m + 12154*a^6*e^6*m^2 + 3135*a^6*e^6*m^3 + 445*a^6*e^6*m^4 + 33*a^6*e
^6*m^5 + a^6*e^6*m^6 + 2880*a*b^5*d^5*e*m + 20160*a^5*b*d*e^5*m - 2700*a^2*
b^4*d^4*e^2*m^2 + 8760*a^3*b^3*d^3*e^3*m^2 - 15990*a^4*b^2*d^2*e^4*m^2 - 18
0*a^2*b^4*d^4*e^2*m^3 + 1260*a^3*b^3*d^3*e^3*m^3 - 3765*a^4*b^2*d^2*e^4*m^3
 + 60*a^3*b^3*d^3*e^3*m^4 - 390*a^4*b^2*d^2*e^4*m^4 - 15*a^4*b^2*d^2*e^4*m^
5 + 360*a*b^5*d^5*e*m^2 + 17832*a^5*b*d*e^5*m^2 + 6210*a^5*b*d*e^5*m^3 + 10
65*a^5*b*d*e^5*m^4 + 90*a^5*b*d*e^5*m^5 + 3*a^5*b*d*e^5*m^6 - 10080*a^2*b^4
*d^4*e^2*m + 20160*a^3*b^3*d^3*e^3*m - 25200*a^4*b^2*d^2*e^4*m))/(e^6*(1095
84*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m
^8 + 40320)) + (7*b^4*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(
1680*a^3*e^3 + 730*a^3*e^3*m + 6*b^3*d^3*m + 105*a^3*e^3*m^2 + 5*a^3*e^3*m^
3 - 48*a*b^2*d^2*e*m + 168*a^2*b*d*e^2*m - 6*a*b^2*d^2*e*m^2 + 45*a^2*b*d*e
^2*m^2 + 3*a^2*b*d*e^2*m^3))/(e^3*(109584*m + 118124*m^2 + 67284*m^3 + 2244
9*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (b^6*x^7*(d + e*x)^m*
(56*a*e + 7*a*e*m + b*d*m)*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5
+ m^6 + 720))/(e*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
+ 546*m^6 + 36*m^7 + m^8 + 40320)) + (35*b^3*x^4*(d + e*x)^m*(11*m + 6*m^2
+ m^3 + 6)*(1680*a^4*e^4 + 1066*a^4*e^4*m - 6*b^4*d^4*m + 251*a^4*e^4*m^2 +
 26*a^4*e^4*m^3 + a^4*e^4*m^4 + 48*a*b^3*d^3*e*m + 336*a^3*b*d*e^3*m - 45*a
^2*b^2*d^2*e^2*m^2 - 3*a^2*b^2*d^2*e^2*m^3 + 6*a*b^3*d^3*e*m^2 + 146*a^3*b*
d*e^3*m^2 + 21*a^3*b*d*e^3*m^3 + a^3*b*d*e^3*m^4 - 168*a^2*b^2*d^2*e^2*m))/
(e^4*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 +
36*m^7 + m^8 + 40320)) + (7*b^2*x^3*(d + e*x)^m*(3*m + m^2 + 2)*(20160*a^5*
e^5 + 17832*a^5*e^5*m + 120*b^5*d^5*m + 6210*a^5*e^5*m^2 + 1065*a^5*e^5*m^3
 + 90*a^5*e^5*m^4 + 3*a^5*e^5*m^5 - 960*a*b^4*d^4*e*m + 8400*a^4*b*d*e^4*m
+ 900*a^2*b^3*d^3*e^2*m^2 - 2920*a^3*b^2*d^2*e^3*m^2 + 60*a^2*b^3*d^3*e^2*m
^3 - 420*a^3*b^2*d^2*e^3*m^3 - 20*a^3*b^2*d^2*e^3*m^4 - 120*a*b^4*d^4*e*m^2
 + 5330*a^4*b*d*e^4*m^2 + 1255*a^4*b*d*e^4*m^3 + 130*a^4*b*d*e^4*m^4 + 5*a^
4*b*d*e^4*m^5 + 3360*a^2*b^3*d^3*e^2*m - 6720*a^3*b^2*d^2*e^3*m))/(e^5*(109
584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 +
m^8 + 40320))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1922 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=175

$$-\frac{5b^4(bd-ae)(d+ex)^{m+5}}{e^6(m+5)}+\frac{10b^3(bd-ae)^2(d+ex)^{m+4}}{e^6(m+4)}-\frac{10b^2(bd-ae)^3(d+ex)^{m+3}}{e^6(m+3)}-\frac{(bd-ae)^5(d+ex)^{m+1}}{e^6(m+1)}+\frac{5b\cdots}{}$$

Rubi [A] time = 0.09, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{10b^2(bd-ae)^3(d+ex)^{m+3}}{e^6(m+3)}+\frac{10b^3(bd-ae)^2(d+ex)^{m+4}}{e^6(m+4)}-\frac{5b^4(bd-ae)(d+ex)^{m+5}}{e^6(m+5)}-\frac{(bd-ae)^5(d+ex)^{m+1}}{e^6(m+1)}+\frac{5b(bd-ae)^4(d+ex)^{m+2}}{e^6(m+2)}+\frac{b^5(d+ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(((b*d - a*e)^5*(d + e*x)^(1 + m))/(e^6*(1 + m))) + (5*b*(b*d - a*e)^4*(d
+ e*x)^(2 + m))/(e^6*(2 + m)) - (10*b^2*(b*d - a*e)^3*(d + e*x)^(3 + m))/(e
^6*(3 + m)) + (10*b^3*(b*d - a*e)^2*(d + e*x)^(4 + m))/(e^6*(4 + m)) - (5*b
^4*(b*d - a*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (b^5*(d + e*x)^(6 + m))/(
e^6*(6 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^5(d+ex)^m \, dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^m}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{1+m}}{e^5}-\frac{10b^2(bd\cdots}{}\right.\\ &= -\frac{(bd-ae)^5(d+ex)^{1+m}}{e^6(1+m)}+\frac{5b(bd-ae)^4(d+ex)^{2+m}}{e^6(2+m)}-\frac{10b^2(bd-\cdots}{e^6\cdots}\end{aligned}$$

Mathematica [A] time = 0.13, size = 149, normalized size = 0.85

$$\frac{(d+ex)^{m+1}\left(-\frac{5b^4(d+ex)^4(bd-ae)}{m+5}+\frac{10b^3(d+ex)^3(bd-ae)^2}{m+4}-\frac{10b^2(d+ex)^2(bd-ae)^3}{m+3}+\frac{5b(d+ex)(bd-ae)^4}{m+2}-\frac{(bd-ae)^5}{m+1}+\frac{b^5(d+ex)^5}{m+6}\right)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((b*d - a*e)^5/(1 + m)) + (5*b*(b*d - a*e)^4*(d + e*x)
)/(2 + m) - (10*b^2*(b*d - a*e)^3*(d + e*x)^2)/(3 + m) + (10*b^3*(b*d - a*e
```

```
)^2*(d + e*x)^3)/(4 + m) - (5*b^4*(b*d - a*e)*(d + e*x)^4)/(5 + m) + (b^5*(
d + e*x)^5)/(6 + m)))/e^6
```

IntegrateAlgebraic [F] time = 0.46, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2
, x]
```

fricas [B] time = 0.47, size = 1460, normalized size = 8.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] (a^5*d*e^5*m^5 - 120*b^5*d^6 + 720*a*b^4*d^5*e - 1800*a^2*b^3*d^4*e^2 + 240
0*a^3*b^2*d^3*e^3 - 1800*a^4*b*d^2*e^4 + 720*a^5*d*e^5 + (b^5*e^6*m^5 + 15*
b^5*e^6*m^4 + 85*b^5*e^6*m^3 + 225*b^5*e^6*m^2 + 274*b^5*e^6*m + 120*b^5*e^
6)*x^6 + (720*a*b^4*e^6 + (b^5*d*e^5 + 5*a*b^4*e^6)*m^5 + 10*(b^5*d*e^5 + 8
*a*b^4*e^6)*m^4 + 5*(7*b^5*d*e^5 + 95*a*b^4*e^6)*m^3 + 50*(b^5*d*e^5 + 26*a
*b^4*e^6)*m^2 + 12*(2*b^5*d*e^5 + 135*a*b^4*e^6)*m)*x^5 - 5*(a^4*b*d^2*e^4
- 4*a^5*d*e^5)*m^4 + 5*(360*a^2*b^3*e^6 + (a*b^4*d*e^5 + 2*a^2*b^3*e^6)*m^5
 - (b^5*d^2*e^4 - 12*a*b^4*d*e^5 - 34*a^2*b^3*e^6)*m^4 - (6*b^5*d^2*e^4 - 4
7*a*b^4*d*e^5 - 214*a^2*b^3*e^6)*m^3 - (11*b^5*d^2*e^4 - 72*a*b^4*d*e^5 - 6
14*a^2*b^3*e^6)*m^2 - 6*(b^5*d^2*e^4 - 6*a*b^4*d*e^5 - 132*a^2*b^3*e^6)*m)*
x^4 + 5*(4*a^3*b^2*d^3*e^3 - 18*a^4*b*d^2*e^4 + 31*a^5*d*e^5)*m^3 + 10*(240
*a^3*b^2*e^6 + (a^2*b^3*d*e^5 + a^3*b^2*e^6)*m^5 - 2*(a*b^4*d^2*e^4 - 7*a^2
*b^3*d*e^5 - 9*a^3*b^2*e^6)*m^4 + (2*b^5*d^3*e^3 - 18*a*b^4*d^2*e^4 + 65*a^
2*b^3*d*e^5 + 121*a^3*b^2*e^6)*m^3 + 2*(3*b^5*d^3*e^3 - 20*a*b^4*d^2*e^4 +
56*a^2*b^3*d*e^5 + 186*a^3*b^2*e^6)*m^2 + 4*(b^5*d^3*e^3 - 6*a*b^4*d^2*e^4
+ 15*a^2*b^3*d*e^5 + 127*a^3*b^2*e^6)*m)*x^3 - 5*(12*a^2*b^3*d^4*e^2 - 60*a
^3*b^2*d^3*e^3 + 119*a^4*b*d^2*e^4 - 116*a^5*d*e^5)*m^2 + 5*(360*a^4*b*e^6
+ (2*a^3*b^2*d*e^5 + a^4*b*e^6)*m^5 - (6*a^2*b^3*d^2*e^4 - 32*a^3*b^2*d*e^5
 - 19*a^4*b*e^6)*m^4 + (12*a*b^4*d^3*e^3 - 72*a^2*b^3*d^2*e^4 + 178*a^3*b^2
*d*e^5 + 137*a^4*b*e^6)*m^3 - (12*b^5*d^4*e^2 - 84*a*b^4*d^3*e^3 + 246*a^2*
b^3*d^2*e^4 - 388*a^3*b^2*d*e^5 - 461*a^4*b*e^6)*m^2 - 6*(2*b^5*d^4*e^2 - 1
2*a*b^4*d^3*e^3 + 30*a^2*b^3*d^2*e^4 - 40*a^3*b^2*d*e^5 - 117*a^4*b*e^6)*m)
*x^2 + 2*(60*a*b^4*d^5*e - 330*a^2*b^3*d^4*e^2 + 740*a^3*b^2*d^3*e^3 - 855*
a^4*b*d^2*e^4 + 522*a^5*d*e^5)*m + (720*a^5*e^6 + (5*a^4*b*d*e^5 + a^5*e^6)
*m^5 - 10*(2*a^3*b^2*d^2*e^4 - 9*a^4*b*d*e^5 - 2*a^5*e^6)*m^4 + 5*(12*a^2*b
^3*d^3*e^3 - 60*a^3*b^2*d^2*e^4 + 119*a^4*b*d*e^5 + 31*a^5*e^6)*m^3 - 10*(1
2*a*b^4*d^4*e^2 - 66*a^2*b^3*d^3*e^3 + 148*a^3*b^2*d^2*e^4 - 171*a^4*b*d*e^
5 - 58*a^5*e^6)*m^2 + 12*(10*b^5*d^5*e - 60*a*b^4*d^4*e^2 + 150*a^2*b^3*d^3
*e^3 - 200*a^3*b^2*d^2*e^4 + 150*a^4*b*d*e^5 + 87*a^5*e^6)*m)*x)*(e*x + d)^
m/(e^6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e
^6*m + 720*e^6)
```

giac [B] time = 0.25, size = 2525, normalized size = 14.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*b^5*m^5*x^6*e^6 + (x*e + d)^m*b^5*d*m^5*x^5*e^5 + 5*(x*e + d)^
m*a*b^4*m^5*x^5*e^6 + 15*(x*e + d)^m*b^5*m^4*x^6*e^6 + 5*(x*e + d)^m*a*b^4*
```

```
d*m^5*x^4*e^5 + 10*(x*e + d)^m*b^5*d*m^4*x^5*e^5 - 5*(x*e + d)^m*b^5*d^2*m^
4*x^4*e^4 + 10*(x*e + d)^m*a^2*b^3*m^5*x^4*e^6 + 80*(x*e + d)^m*a*b^4*m^4*x
^5*e^6 + 85*(x*e + d)^m*b^5*m^3*x^6*e^6 + 10*(x*e + d)^m*a^2*b^3*d*m^5*x^3*
e^5 + 60*(x*e + d)^m*a*b^4*d*m^4*x^4*e^5 + 35*(x*e + d)^m*b^5*d*m^3*x^5*e^5
 - 20*(x*e + d)^m*a*b^4*d^2*m^4*x^3*e^4 - 30*(x*e + d)^m*b^5*d^2*m^3*x^4*e^
4 + 20*(x*e + d)^m*b^5*d^3*m^3*x^3*e^3 + 10*(x*e + d)^m*a^3*b^2*m^5*x^3*e^6
 + 170*(x*e + d)^m*a^2*b^3*m^4*x^4*e^6 + 475*(x*e + d)^m*a*b^4*m^3*x^5*e^6
+ 225*(x*e + d)^m*b^5*m^2*x^6*e^6 + 10*(x*e + d)^m*a^3*b^2*d*m^5*x^2*e^5 +
140*(x*e + d)^m*a^2*b^3*d*m^4*x^3*e^5 + 235*(x*e + d)^m*a*b^4*d*m^3*x^4*e^5
 + 50*(x*e + d)^m*b^5*d*m^2*x^5*e^5 - 30*(x*e + d)^m*a^2*b^3*d^2*m^4*x^2*e^
4 - 180*(x*e + d)^m*a*b^4*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*b^5*d^2*m^2*x^4*
e^4 + 60*(x*e + d)^m*a*b^4*d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*b^5*d^3*m^2*x^3
*e^3 - 60*(x*e + d)^m*b^5*d^4*m^2*x^2*e^2 + 5*(x*e + d)^m*a^4*b*m^5*x^2*e^6
 + 180*(x*e + d)^m*a^3*b^2*m^4*x^3*e^6 + 1070*(x*e + d)^m*a^2*b^3*m^3*x^4*e
^6 + 1300*(x*e + d)^m*a*b^4*m^2*x^5*e^6 + 274*(x*e + d)^m*b^5*m*x^6*e^6 + 5
*(x*e + d)^m*a^4*b*d*m^5*x*e^5 + 160*(x*e + d)^m*a^3*b^2*d*m^4*x^2*e^5 + 65
0*(x*e + d)^m*a^2*b^3*d*m^3*x^3*e^5 + 360*(x*e + d)^m*a*b^4*d*m^2*x^4*e^5 +
 24*(x*e + d)^m*b^5*d*m*x^5*e^5 - 20*(x*e + d)^m*a^3*b^2*d^2*m^4*x*e^4 - 36
0*(x*e + d)^m*a^2*b^3*d^2*m^3*x^2*e^4 - 400*(x*e + d)^m*a*b^4*d^2*m^2*x^3*e
^4 - 30*(x*e + d)^m*b^5*d^2*m*x^4*e^4 + 60*(x*e + d)^m*a^2*b^3*d^3*m^3*x*e^
3 + 420*(x*e + d)^m*a*b^4*d^3*m^2*x^2*e^3 + 40*(x*e + d)^m*b^5*d^3*m*x^3*e^
3 - 120*(x*e + d)^m*a*b^4*d^4*m^2*x*e^2 - 60*(x*e + d)^m*b^5*d^4*m*x^2*e^2
+ 120*(x*e + d)^m*b^5*d^5*m*x*e + (x*e + d)^m*a^5*m^5*x*e^6 + 95*(x*e + d)^
m*a^4*b*m^4*x^2*e^6 + 1210*(x*e + d)^m*a^3*b^2*m^3*x^3*e^6 + 3070*(x*e + d)
^m*a^2*b^3*m^2*x^4*e^6 + 1620*(x*e + d)^m*a*b^4*m*x^5*e^6 + 120*(x*e + d)^m
*b^5*x^6*e^6 + (x*e + d)^m*a^5*d*m^5*e^5 + 90*(x*e + d)^m*a^4*b*d*m^4*x*e^5
 + 890*(x*e + d)^m*a^3*b^2*d*m^3*x^2*e^5 + 1120*(x*e + d)^m*a^2*b^3*d*m^2*x
^3*e^5 + 180*(x*e + d)^m*a*b^4*d*m*x^4*e^5 - 5*(x*e + d)^m*a^4*b*d^2*m^4*e^
4 - 300*(x*e + d)^m*a^3*b^2*d^2*m^3*x*e^4 - 1230*(x*e + d)^m*a^2*b^3*d^2*m^
2*x^2*e^4 - 240*(x*e + d)^m*a*b^4*d^2*m*x^3*e^4 + 20*(x*e + d)^m*a^3*b^2*d^
3*m^3*e^3 + 660*(x*e + d)^m*a^2*b^3*d^3*m^2*x*e^3 + 360*(x*e + d)^m*a*b^4*d
^3*m*x^2*e^3 - 60*(x*e + d)^m*a^2*b^3*d^4*m^2*e^2 - 720*(x*e + d)^m*a*b^4*d
^4*m*x*e^2 + 120*(x*e + d)^m*a*b^4*d^5*m*e - 120*(x*e + d)^m*b^5*d^6 + 20*(
x*e + d)^m*a^5*m^4*x*e^6 + 685*(x*e + d)^m*a^4*b*m^3*x^2*e^6 + 3720*(x*e +
d)^m*a^3*b^2*m^2*x^3*e^6 + 3960*(x*e + d)^m*a^2*b^3*m*x^4*e^6 + 720*(x*e +
d)^m*a*b^4*x^5*e^6 + 20*(x*e + d)^m*a^5*d*m^4*e^5 + 595*(x*e + d)^m*a^4*b*d
*m^3*x*e^5 + 1940*(x*e + d)^m*a^3*b^2*d*m^2*x^2*e^5 + 600*(x*e + d)^m*a^2*b
^3*d*m*x^3*e^5 - 90*(x*e + d)^m*a^4*b*d^2*m^3*e^4 - 1480*(x*e + d)^m*a^3*b^
2*d^2*m^2*x*e^4 - 900*(x*e + d)^m*a^2*b^3*d^2*m*x^2*e^4 + 300*(x*e + d)^m*a
^3*b^2*d^3*m^2*e^3 + 1800*(x*e + d)^m*a^2*b^3*d^3*m*x*e^3 - 660*(x*e + d)^m
*a^2*b^3*d^4*m*e^2 + 720*(x*e + d)^m*a*b^4*d^5*e + 155*(x*e + d)^m*a^5*m^3*
x*e^6 + 2305*(x*e + d)^m*a^4*b*m^2*x^2*e^6 + 5080*(x*e + d)^m*a^3*b^2*m*x^3
*e^6 + 1800*(x*e + d)^m*a^2*b^3*x^4*e^6 + 155*(x*e + d)^m*a^5*d*m^3*e^5 + 1
710*(x*e + d)^m*a^4*b*d*m^2*x*e^5 + 1200*(x*e + d)^m*a^3*b^2*d*m*x^2*e^5 -
595*(x*e + d)^m*a^4*b*d^2*m^2*e^4 - 2400*(x*e + d)^m*a^3*b^2*d^2*m*x*e^4 +
1480*(x*e + d)^m*a^3*b^2*d^3*m*e^3 - 1800*(x*e + d)^m*a^2*b^3*d^4*e^2 + 580
*(x*e + d)^m*a^5*m^2*x*e^6 + 3510*(x*e + d)^m*a^4*b*m*x^2*e^6 + 2400*(x*e +
 d)^m*a^3*b^2*x^3*e^6 + 580*(x*e + d)^m*a^5*d*m^2*e^5 + 1800*(x*e + d)^m*a^
4*b*d*m*x*e^5 - 1710*(x*e + d)^m*a^4*b*d^2*m*e^4 + 2400*(x*e + d)^m*a^3*b^2
*d^3*e^3 + 1044*(x*e + d)^m*a^5*m*x*e^6 + 1800*(x*e + d)^m*a^4*b*x^2*e^6 +
1044*(x*e + d)^m*a^5*d*m*e^5 - 1800*(x*e + d)^m*a^4*b*d^2*e^4 + 720*(x*e +
d)^m*a^5*x*e^6 + 720*(x*e + d)^m*a^5*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^4
*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1345, normalized size = 7.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(b^5*e^5*m^5*x^5+5*a*b^4*e^5*m^5*x^4+15*b^5*e^5*m^4*x^5+10*a^
2*b^3*e^5*m^5*x^3+80*a*b^4*e^5*m^4*x^4-5*b^5*d*e^4*m^4*x^4+85*b^5*e^5*m^3*x
^5+10*a^3*b^2*e^5*m^5*x^2+170*a^2*b^3*e^5*m^4*x^3-20*a*b^4*d*e^4*m^4*x^3+47
5*a*b^4*e^5*m^3*x^4-50*b^5*d*e^4*m^3*x^4+225*b^5*e^5*m^2*x^5+5*a^4*b*e^5*m^
5*x+180*a^3*b^2*e^5*m^4*x^2-30*a^2*b^3*d*e^4*m^4*x^2+1070*a^2*b^3*e^5*m^3*x
^3-240*a*b^4*d*e^4*m^3*x^3+1300*a*b^4*e^5*m^2*x^4+20*b^5*d^2*e^3*m^3*x^3-17
5*b^5*d*e^4*m^2*x^4+274*b^5*e^5*m*x^5+a^5*e^5*m^5+95*a^4*b*e^5*m^4*x-20*a^3
*b^2*d*e^4*m^4*x+1210*a^3*b^2*e^5*m^3*x^2-420*a^2*b^3*d*e^4*m^3*x^2+3070*a^
2*b^3*e^5*m^2*x^3+60*a*b^4*d^2*e^3*m^3*x^2-940*a*b^4*d*e^4*m^2*x^3+1620*a*b
^4*e^5*m*x^4+120*b^5*d^2*e^3*m^2*x^3-250*b^5*d*e^4*m*x^4+120*b^5*e^5*x^5+20
*a^5*e^5*m^4-5*a^4*b*d*e^4*m^4+685*a^4*b*e^5*m^3*x-320*a^3*b^2*d*e^4*m^3*x+
3720*a^3*b^2*e^5*m^2*x^2+60*a^2*b^3*d^2*e^3*m^3*x-1950*a^2*b^3*d*e^4*m^2*x^
2+3960*a^2*b^3*e^5*m*x^3+540*a*b^4*d^2*e^3*m^2*x^2-1440*a*b^4*d*e^4*m*x^3+7
20*a*b^4*e^5*x^4-60*b^5*d^3*e^2*m^2*x^2+220*b^5*d^2*e^3*m*x^3-120*b^5*d*e^4
*x^4+155*a^5*e^5*m^3-90*a^4*b*d*e^4*m^3+2305*a^4*b*e^5*m^2*x+20*a^3*b^2*d^2
*e^3*m^3-1780*a^3*b^2*d*e^4*m^2*x+5080*a^3*b^2*e^5*m*x^2+720*a^2*b^3*d^2*e^
3*m^2*x-3360*a^2*b^3*d*e^4*m*x^2+1800*a^2*b^3*e^5*x^3-120*a*b^4*d^3*e^2*m^2
*x+1200*a*b^4*d^2*e^3*m*x^2-720*a*b^4*d*e^4*x^3-180*b^5*d^3*e^2*m*x^2+120*b
^5*d^2*e^3*x^3+580*a^5*e^5*m^2-595*a^4*b*d*e^4*m^2+3510*a^4*b*e^5*m*x+300*a
^3*b^2*d^2*e^3*m^2-3880*a^3*b^2*d*e^4*m*x+2400*a^3*b^2*e^5*x^2-60*a^2*b^3*d
^3*e^2*m^2+2460*a^2*b^3*d^2*e^3*m*x-1800*a^2*b^3*d*e^4*x^2-840*a*b^4*d^3*e^
2*m*x+720*a*b^4*d^2*e^3*x^2+120*b^5*d^4*e*m*x-120*b^5*d^3*e^2*x^2+1044*a^5*
e^5*m-1710*a^4*b*d*e^4*m+1800*a^4*b*e^5*x+1480*a^3*b^2*d^2*e^3*m-2400*a^3*b
^2*d*e^4*x-660*a^2*b^3*d^3*e^2*m+1800*a^2*b^3*d^2*e^3*x+120*a*b^4*d^4*e*m-7
20*a*b^4*d^3*e^2*x+120*b^5*d^4*e*x+720*a^5*e^5-1800*a^4*b*d*e^4+2400*a^3*b^
2*d^2*e^3-1800*a^2*b^3*d^3*e^2+720*a*b^4*d^4*e-120*b^5*d^5)/e^6/(m^6+21*m^5
+175*m^4+735*m^3+1624*m^2+1764*m+720)
```

maxima [B] time = 0.67, size = 581, normalized size = 3.32

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 5*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^4*b/((m^2 + 3*m + 2)*e^2)
 + (e*x + d)^(m + 1)*a^5/(e*(m + 1)) + 10*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
 m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a^3*b^2/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + 10*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d
*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a^2*b
^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 5*((m^4 + 10*m^3 + 35*m^2 +
50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^
2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e
*x + d)^m*a*b^4/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m
^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*
m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4
 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*
e*m*x - 120*d^6)*(e*x + d)^m*b^5/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*
m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 2.78, size = 1291, normalized size = 7.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^m*(720*a^5*d*e^5 - 120*b^5*d^6 - 1800*a^4*b*d^2*e^4 + 580*a^5*d*
e^5*m^2 + 155*a^5*d*e^5*m^3 + 20*a^5*d*e^5*m^4 + a^5*d*e^5*m^5 - 1800*a^2*b
```

```
^3*d^4*e^2 + 2400*a^3*b^2*d^3*e^3 + 720*a*b^4*d^5*e + 1044*a^5*d*e^5*m + 12
0*a*b^4*d^5*e*m - 60*a^2*b^3*d^4*e^2*m^2 + 300*a^3*b^2*d^3*e^3*m^2 + 20*a^3
*b^2*d^3*e^3*m^3 - 1710*a^4*b*d^2*e^4*m - 660*a^2*b^3*d^4*e^2*m + 1480*a^3*
b^2*d^3*e^3*m - 595*a^4*b*d^2*e^4*m^2 - 90*a^4*b*d^2*e^4*m^3 - 5*a^4*b*d^2*
e^4*m^4))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)
) + (b^5*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(
1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (x*(d + e*x)^
m*(720*a^5*e^6 + 1044*a^5*e^6*m + 580*a^5*e^6*m^2 + 155*a^5*e^6*m^3 + 20*a^
5*e^6*m^4 + a^5*e^6*m^5 + 120*b^5*d^5*e*m + 1800*a^4*b*d*e^5*m + 660*a^2*b^
3*d^3*e^3*m^2 - 1480*a^3*b^2*d^2*e^4*m^2 + 60*a^2*b^3*d^3*e^3*m^3 - 300*a^3
*b^2*d^2*e^4*m^3 - 20*a^3*b^2*d^2*e^4*m^4 - 720*a*b^4*d^4*e^2*m + 1710*a^4*
b*d*e^5*m^2 + 595*a^4*b*d*e^5*m^3 + 90*a^4*b*d*e^5*m^4 + 5*a^4*b*d*e^5*m^5
+ 1800*a^2*b^3*d^3*e^3*m - 2400*a^3*b^2*d^2*e^4*m - 120*a*b^4*d^4*e^2*m^2))
/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (5*b*
x^2*(m + 1)*(d + e*x)^m*(360*a^4*e^4 + 342*a^4*e^4*m - 12*b^4*d^4*m + 119*a
^4*e^4*m^2 + 18*a^4*e^4*m^3 + a^4*e^4*m^4 + 72*a*b^3*d^3*e*m + 240*a^3*b*d*
e^3*m - 66*a^2*b^2*d^2*e^2*m^2 - 6*a^2*b^2*d^2*e^2*m^3 + 12*a*b^3*d^3*e*m^2
 + 148*a^3*b*d*e^3*m^2 + 30*a^3*b*d*e^3*m^3 + 2*a^3*b*d*e^3*m^4 - 180*a^2*b
^2*d^2*e^2*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 +
 720)) + (5*b^3*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(60*a^2*e^2 + 22*a
^2*e^2*m - b^2*d^2*m + 2*a^2*e^2*m^2 + 6*a*b*d*e*m + a*b*d*e*m^2))/(e^2*(17
64*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (10*b^2*x^3*(d
 + e*x)^m*(3*m + m^2 + 2)*(120*a^3*e^3 + 74*a^3*e^3*m + 2*b^3*d^3*m + 15*a^
3*e^3*m^2 + a^3*e^3*m^3 - 12*a*b^2*d^2*e*m + 30*a^2*b*d*e^2*m - 2*a*b^2*d^2
*e*m^2 + 11*a^2*b*d*e^2*m^2 + a^2*b*d*e^2*m^3))/(e^3*(1764*m + 1624*m^2 + 7
35*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (b^4*x^5*(d + e*x)^m*(30*a*e + 5*
a*e*m + b*d*m)*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))/(e*(1764*m + 1624*m^2 +
 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1923 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=111

$$-\frac{3b^2(bd-ae)(d+ex)^{m+3}}{e^4(m+3)}-\frac{(bd-ae)^3(d+ex)^{m+1}}{e^4(m+1)}+\frac{3b(bd-ae)^2(d+ex)^{m+2}}{e^4(m+2)}+\frac{b^3(d+ex)^{m+4}}{e^4(m+4)}$$

Rubi [A] time = 0.05, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {27, 43}

$$-\frac{3b^2(bd-ae)(d+ex)^{m+3}}{e^4(m+3)}-\frac{(bd-ae)^3(d+ex)^{m+1}}{e^4(m+1)}+\frac{3b(bd-ae)^2(d+ex)^{m+2}}{e^4(m+2)}+\frac{b^3(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((b*d - a*e)^3*(d + e*x)^(1 + m))/(e^4*(1 + m))) + (3*b*(b*d - a*e)^2*(d
+ e*x)^(2 + m))/(e^4*(2 + m)) - (3*b^2*(b*d - a*e)*(d + e*x)^(3 + m))/(e^4*
(3 + m)) + (b^3*(d + e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^3(d+ex)^m\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^m}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{1+m}}{e^3}-\frac{3b^2(bd-ae)}{e}\right.\\ &= -\frac{(bd-ae)^3(d+ex)^{1+m}}{e^4(1+m)}+\frac{3b(bd-ae)^2(d+ex)^{2+m}}{e^4(2+m)}-\frac{3b^2(bd-ae)(}{e^4(3+}\end{aligned}$$

Mathematica [A] time = 0.07, size = 95, normalized size = 0.86

$$\frac{(d+ex)^{m+1}\left(-\frac{3b^2(d+ex)^2(bd-ae)}{m+3}+\frac{3b(d+ex)(bd-ae)^2}{m+2}-\frac{(bd-ae)^3}{m+1}+\frac{b^3(d+ex)^3}{m+4}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((b*d - a*e)^3/(1 + m)) + (3*b*(b*d - a*e)^2*(d + e*x)
)/(2 + m) - (3*b^2*(b*d - a*e)*(d + e*x)^2)/(3 + m) + (b^3*(d + e*x)^3)/(4
+ m)))/e^4
```

IntegrateAlgebraic [F] time = 0.15, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),
x]
```

fricas [B] time = 0.44, size = 496, normalized size = 4.47

$$\frac{\left(a^3de^3m^3 - 6\,b^3d^4 + 24\,ab^2d^3e - 36\,a^2bd^2e^2 + 24\,a^3de^3 + \left(b^3e^4m^3 + 6\,b^3e^4m^2 + 11\,b^3e^4m + 6\,b^3e^4\right)x^4 + \left(24\,ab^2e^4 + \left(b^3de^3 + 3\,ab^2e^4\right)m^3 + 3\left(b^3de^3 + 7\,ab^2e^4\right)m^2 + 2\left(b^3de^3 + 21\,ab^2e^4\right)m\right)x^3 - 3\left(a^2bd^2e^2 - 3\,a^3de^3\right)m^2 + 3\left(12\,a^2be^4 + \left(ab^2de^3 + a^2be^4\right)m^3 - \left(b^3d^2e^2 - 5\,ab^2de^3 - 8\,a^2be^4\right)m^2 - \left(b^3d^2e^2 - 4\,ab^2de^3 - 19\,a^2be^4\right)m\right)x^2 + \left(6\,ab^2d^3e - 21\,a^2bd^2e^2 + 26\,a^3de^3\right)m + \left(24\,a^3e^4 + \left(3\,a^2bde^3 + a^3e^4\right)m^3 - 3\left(2\,ab^2d^2e^2 - 7\,a^2bde^3 - 3\,a^3e^4\right)m^2 + 2\left(3\,b^3d^3e - 12\,ab^2d^2e^2 + 18\,a^2bde^3 + 13\,a^3e^4\right)m\right)x\right)(ex+d)^m}{e^4m^4 + 10\,e^4m^3 + 35\,e^4m^2 + 50\,e^4m + 24\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (a^3*d*e^3*m^3 - 6*b^3*d^4 + 24*a*b^2*d^3*e - 36*a^2*b*d^2*e^2 + 24*a^3*d*e
^3 + (b^3*e^4*m^3 + 6*b^3*e^4*m^2 + 11*b^3*e^4*m + 6*b^3*e^4)*x^4 + (24*a*b
^2*e^4 + (b^3*d*e^3 + 3*a*b^2*e^4)*m^3 + 3*(b^3*d*e^3 + 7*a*b^2*e^4)*m^2 +
2*(b^3*d*e^3 + 21*a*b^2*e^4)*m)*x^3 - 3*(a^2*b*d^2*e^2 - 3*a^3*d*e^3)*m^2 +
 3*(12*a^2*b*e^4 + (a*b^2*d*e^3 + a^2*b*e^4)*m^3 - (b^3*d^2*e^2 - 5*a*b^2*d
*e^3 - 8*a^2*b*e^4)*m^2 - (b^3*d^2*e^2 - 4*a*b^2*d*e^3 - 19*a^2*b*e^4)*m)*x
^2 + (6*a*b^2*d^3*e - 21*a^2*b*d^2*e^2 + 26*a^3*d*e^3)*m + (24*a^3*e^4 + (3
*a^2*b*d*e^3 + a^3*e^4)*m^3 - 3*(2*a*b^2*d^2*e^2 - 7*a^2*b*d*e^3 - 3*a^3*e^
4)*m^2 + 2*(3*b^3*d^3*e - 12*a*b^2*d^2*e^2 + 18*a^2*b*d*e^3 + 13*a^3*e^4)*m
)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.18, size = 835, normalized size = 7.52

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*b^3*m^3*x^4*e^4 + (x*e + d)^m*b^3*d*m^3*x^3*e^3 + 3*(x*e + d)^
m*a*b^2*m^3*x^3*e^4 + 6*(x*e + d)^m*b^3*m^2*x^4*e^4 + 3*(x*e + d)^m*a*b^2*d
*m^3*x^2*e^3 + 3*(x*e + d)^m*b^3*d*m^2*x^3*e^3 - 3*(x*e + d)^m*b^3*d^2*m^2*
x^2*e^2 + 3*(x*e + d)^m*a^2*b*m^3*x^2*e^4 + 21*(x*e + d)^m*a*b^2*m^2*x^3*e^
4 + 11*(x*e + d)^m*b^3*m*x^4*e^4 + 3*(x*e + d)^m*a^2*b*d*m^3*x*e^3 + 15*(x*
e + d)^m*a*b^2*d*m^2*x^2*e^3 + 2*(x*e + d)^m*b^3*d*m*x^3*e^3 - 6*(x*e + d)^
m*a*b^2*d^2*m^2*x*e^2 - 3*(x*e + d)^m*b^3*d^2*m*x^2*e^2 + 6*(x*e + d)^m*b^3
*d^3*m*x*e + (x*e + d)^m*a^3*m^3*x*e^4 + 24*(x*e + d)^m*a^2*b*m^2*x^2*e^4 +
 42*(x*e + d)^m*a*b^2*m*x^3*e^4 + 6*(x*e + d)^m*b^3*x^4*e^4 + (x*e + d)^m*a
^3*d*m^3*e^3 + 21*(x*e + d)^m*a^2*b*d*m^2*x*e^3 + 12*(x*e + d)^m*a*b^2*d*m*
x^2*e^3 - 3*(x*e + d)^m*a^2*b*d^2*m^2*e^2 - 24*(x*e + d)^m*a*b^2*d^2*m*x*e^
2 + 6*(x*e + d)^m*a*b^2*d^3*m*e - 6*(x*e + d)^m*b^3*d^4 + 9*(x*e + d)^m*a^3
*m^2*x*e^4 + 57*(x*e + d)^m*a^2*b*m*x^2*e^4 + 24*(x*e + d)^m*a*b^2*x^3*e^4
+ 9*(x*e + d)^m*a^3*d*m^2*e^3 + 36*(x*e + d)^m*a^2*b*d*m*x*e^3 - 21*(x*e +
d)^m*a^2*b*d^2*m*e^2 + 24*(x*e + d)^m*a*b^2*d^3*e + 26*(x*e + d)^m*a^3*m*x*
e^4 + 36*(x*e + d)^m*a^2*b*x^2*e^4 + 26*(x*e + d)^m*a^3*d*m*e^3 - 36*(x*e +
 d)^m*a^2*b*d^2*e^2 + 24*(x*e + d)^m*a^3*x*e^4 + 24*(x*e + d)^m*a^3*d*e^3)/
(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.05, size = 386, normalized size = 3.48

$$\frac{\left(b^3e^3m^3x^3 + 3a\,b^2e^3m^3x^2 + 6b^3e^3m^2x^3 + 3a^2b\,e^3m^3x + 21a\,b^2e^3m^2x^2 - 3b^3d\,e^2m^2x^2 + 11b^3e^3m\,x^3 + a^3e^3m^3 + 24a^2b\,e^3m^2x - 6a\,b^2d\,e^2m^2x + 42a\,b^2e^3m\,x^2 - 9b^3d\,e^2m\,x^2 + 6b^3e^3x^3 + 9a^3e^3m^2 - 3a^2bd\,e^2m^2 + 57a^2b\,e^3mx - 30a\,b^2d\,e^2mx + 24a\,b^2e^3x^2 + 6b^3d^2emx - 6b^3d\,e^2x^2 + 26a^3e^3m - 21a^2bd\,e^2m + 36a^2b\,e^3x + 6a\,b^2d^2em - 24a\,b^2d\,e^2x + 6b^3d^2ex + 24a^3e^3 - 36a^2bd\,e^2 + 24a\,b^2d^2e - 6b^3d^3\right)(ex+d)^{m+1}}{\left(m^4+10m^3+35m^2+50m+24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^3*e^3*m^3*x^3+3*a*b^2*e^3*m^3*x^2+6*b^3*e^3*m^2*x^3+3*a^2*
b*e^3*m^3*x+21*a*b^2*e^3*m^2*x^2-3*b^3*d*e^2*m^2*x^2+11*b^3*e^3*m*x^3+a^3*e
^3*m^3+24*a^2*b*e^3*m^2*x-6*a*b^2*d*e^2*m^2*x+42*a*b^2*e^3*m*x^2-9*b^3*d*e^
2*m*x^2+6*b^3*e^3*x^3+9*a^3*e^3*m^2-3*a^2*b*d*e^2*m^2+57*a^2*b*e^3*m*x-30*a
*b^2*d*e^2*m*x+24*a*b^2*e^3*x^2+6*b^3*d^2*e*m*x-6*b^3*d*e^2*x^2+26*a^3*e^3*
m-21*a^2*b*d*e^2*m+36*a^2*b*e^3*x+6*a*b^2*d^2*e*m-24*a*b^2*d*e^2*x+6*b^3*d^
2*e*x+24*a^3*e^3-36*a^2*b*d*e^2+24*a*b^2*d^2*e-6*b^3*d^3)/e^4/(m^4+10*m^3+3
5*m^2+50*m+24)
```

maxima [B] time = 0.66, size = 246, normalized size = 2.22

$$\frac{3\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}a^{2}b}{\left(m^{2}+3m+2\right)e^{2}}+\frac{(ex+d)^{m+1}a^{3}}{e(m+1)}+\frac{3\left(\left(m^{2}+3m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2d^{2}emx+2d^{3}\right)(ex+d)^{m}ab^{2}}{\left(m^{3}+6m^{2}+11m+6\right)e^{3}}+\frac{\left(\left(m^{3}+6m^{2}+11m+6\right)e^{4}x^{4}+\left(m^{3}+3m^{2}+2m\right)de^{3}x^{3}-3\left(m^{2}+m\right)d^{2}e^{2}x^{2}+6d^{3}emx-6d^{4}\right)(ex+d)^{m}b^{3}}{\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 3*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^2*b/((m^2 + 3*m + 2)*e^2)
 + (e*x + d)^(m + 1)*a^3/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a*b^2/((m^3 + 6*m^2 + 11*m
+ 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x
^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*b^3/((m^4 +
 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.43, size = 478, normalized size = 4.31

$$\frac{x\,(d+e\,x)^m\,\left(a^3\,e^4\,m^3+9\,a^3\,e^4\,m^2+26\,a^3\,e^4\,m+24\,a^3\,e^4+3\,a^2\,b\,d\,e^3\,m^3+21\,a^2\,b\,d\,e^3\,m^2+36\,a^2\,b\,d\,e^3\,m-6\,a\,b^2\,d^2\,e^2\,m^2-24\,a\,b^2\,d^2\,e^2\,m+6\,b^3\,d^3\,e\,m\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{b^3\,x^4\,(d+e\,x)^m\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{d\,(d+e\,x)^m\,\left(a^3\,e^3\,m^3+9\,a^3\,e^3\,m^2+26\,a^3\,e^3\,m+24\,a^3\,e^3-3\,a^2\,b\,d\,e^2\,m^2-21\,a^2\,b\,d\,e^2\,m-36\,a^2\,b\,d\,e^2+6\,a\,b^2\,d^2\,e\,m+24\,a\,b^2\,d^2\,e-6\,b^3\,d^3\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{3\,b\,x^2\,(m+1)\,(d+e\,x)^m\,\left(a^2\,e^2\,m^2+7\,a^2\,e^2\,m+12\,a^2\,e^2+a\,b\,d\,e\,m^2+4\,a\,b\,d\,e\,m-b^2\,d^2\,m\right)}{e^2\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{b^2\,x^3\,(d+e\,x)^m\,(12\,a\,e+3\,a\,e\,m+b\,d\,m)\,\left(m^2+3\,m+2\right)}{e\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (x*(d + e*x)^m*(24*a^3*e^4 + 26*a^3*e^4*m + 9*a^3*e^4*m^2 + a^3*e^4*m^3 + 6
*b^3*d^3*e*m + 36*a^2*b*d*e^3*m - 24*a*b^2*d^2*e^2*m + 21*a^2*b*d*e^3*m^2 +
 3*a^2*b*d*e^3*m^3 - 6*a*b^2*d^2*e^2*m^2))/(e^4*(50*m + 35*m^2 + 10*m^3 + m
^4 + 24)) + (b^3*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 +
 10*m^3 + m^4 + 24) + (d*(d + e*x)^m*(24*a^3*e^3 - 6*b^3*d^3 + 26*a^3*e^3*m
 + 9*a^3*e^3*m^2 + a^3*e^3*m^3 + 24*a*b^2*d^2*e - 36*a^2*b*d*e^2 + 6*a*b^2*
d^2*e*m - 21*a^2*b*d*e^2*m - 3*a^2*b*d*e^2*m^2))/(e^4*(50*m + 35*m^2 + 10*m
^3 + m^4 + 24)) + (3*b*x^2*(m + 1)*(d + e*x)^m*(12*a^2*e^2 + 7*a^2*e^2*m -
b^2*d^2*m + a^2*e^2*m^2 + 4*a*b*d*e*m + a*b*d*e*m^2))/(e^2*(50*m + 35*m^2 +
 10*m^3 + m^4 + 24)) + (b^2*x^3*(d + e*x)^m*(12*a*e + 3*a*e*m + b*d*m)*(3*m
 + m^2 + 2))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.73, size = 4058, normalized size = 36.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((d**m*(a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4), Eq(
e, 0)), (-2*a**3*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e*
*7*x**3) - 3*a**2*b*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
 6*e**7*x**3) - 9*a**2*b*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x
**2 + 6*e**7*x**3) - 6*a*b**2*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e
**6*x**2 + 6*e**7*x**3) - 18*a*b**2*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x
+ 18*d*e**6*x**2 + 6*e**7*x**3) - 18*a*b**2*e**3*x**2/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*b**3*d**3*log(d/e + x)/(6*d**3
*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*b**3*d**3/(6*d*
*3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*b**3*d**2*e*x
```

```
*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
 + 27*b**3*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7
*x**3) + 18*b**3*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 1
8*d*e**6*x**2 + 6*e**7*x**3) + 18*b**3*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e
**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*b**3*e**3*x**3*log(d/e + x)/(6*d*
*3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-a**
3*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 3*a**2*b*d*e**2/(2*d**2*e
**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*a**2*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x
 + 2*e**6*x**2) + 6*a*b**2*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x +
2*e**6*x**2) + 9*a*b**2*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 1
2*a*b**2*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 1
2*a*b**2*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 6*a*b**2*e**3*
x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*b**3*d**3*lo
g(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*b**3*d**3/(2*d**2*e
**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*b**3*d**2*e*x*log(d/e + x)/(2*d**2*e**
4 + 4*d*e**5*x + 2*e**6*x**2) - 12*b**3*d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) - 6*b**3*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) + 2*b**3*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2),
 Eq(m, -3)), (-2*a**3*e**3/(2*d*e**4 + 2*e**5*x) + 6*a**2*b*d*e**2*log(d/e
+ x)/(2*d*e**4 + 2*e**5*x) + 6*a**2*b*d*e**2/(2*d*e**4 + 2*e**5*x) + 6*a**2
*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 12*a*b**2*d**2*e*log(d/e + x
)/(2*d*e**4 + 2*e**5*x) - 12*a*b**2*d**2*e/(2*d*e**4 + 2*e**5*x) - 12*a*b**
2*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6*a*b**2*e**3*x**2/(2*d*e**
4 + 2*e**5*x) + 6*b**3*d**3*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6*b**3*d**
3/(2*d*e**4 + 2*e**5*x) + 6*b**3*d**2*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x
) - 3*b**3*d*e**2*x**2/(2*d*e**4 + 2*e**5*x) + b**3*e**3*x**3/(2*d*e**4 + 2
*e**5*x), Eq(m, -2)), (a**3*log(d/e + x)/e - 3*a**2*b*d*log(d/e + x)/e**2 +
 3*a**2*b*x/e + 3*a*b**2*d**2*log(d/e + x)/e**3 - 3*a*b**2*d*x/e**2 + 3*a*b
**2*x**2/(2*e) - b**3*d**3*log(d/e + x)/e**4 + b**3*d**2*x/e**3 - b**3*d*x*
*2/(2*e**2) + b**3*x**3/(3*e), Eq(m, -1)), (a**3*d*e**3*m**3*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9*a**3*d*e
**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) + 26*a**3*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 24*a**3*d*e**3*(d + e*x)**m/(e**4*m**4 +
10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a**3*e**4*m**3*x*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9
*a**3*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 26*a**3*e**4*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a**3*e**4*x*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*a**2*b*d**2
*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) - 21*a**2*b*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 36*a**2*b*d**2*e**2*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a**2*b*d
*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 21*a**2*b*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 36*a**2*b*d*e**3*m*x*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a**
2*b*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 24*a**2*b*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 57*a**2*b*e**4*m*x**2*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
 + 36*a**2*b*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 6*a*b**2*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*b**2*d**3*e*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*a*b
**2*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) - 24*a*b**2*d**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 +
10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a*b**2*d*e**3*m**3*x
```

```
**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + 15*a*b**2*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*a*b**2*d*e**3*m*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a*b**2
*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 21*a*b**2*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 42*a*b**2*e**4*m*x**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
24*a*b**2*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) - 6*b**3*d**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*b**3*d**3*e*m*x*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*b**3*d**2*e
**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) - 3*b**3*d**2*e**2*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**3*d*e**3*m**3*x**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*b
**3*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 2*b**3*d*e**3*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**3*e**4*m**3*x**4*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6
*b**3*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 11*b**3*e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*b**3*e**4*x**4*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.1924 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=395

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(d+ex)^{m+2}}{e^7(m+2)(a+bx)}+\frac{15b^2\sqrt{a^2+2abx+b^2}}{e^7(m+}$$

Rubi [A] time = 0.22, antiderivative size = 395, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(d+ex)^{m+2}}{e^7(m+2)(a+bx)}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+3}}{e^7(m+3)(a+bx)}-\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(d+ex)^{m+4}}{e^7(m+4)(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+5}}{e^7(m+5)(a+bx)}-\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+6}}{e^7(m+6)(a+bx)}+\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+7}}{e^7(m+7)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(1 + m
)*(a + b*x)) - (6*b*(b*d - a*e)^5*(d + e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(e^7*(2 + m)*(a + b*x)) + (15*b^2*(b*d - a*e)^4*(d + e*x)^(3 + m)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(3 + m)*(a + b*x)) - (20*b^3*(b*d - a*e)
^3*(d + e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(4 + m)*(a + b*x))
 + (15*b^4*(b*d - a*e)^2*(d + e*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(5 + m)*(a + b*x)) - (6*b^5*(b*d - a*e)*(d + e*x)^(6 + m)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(e^7*(6 + m)*(a + b*x)) + (b^6*(d + e*x)^(7 + m)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(e^7*(7 + m)*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^m dx}{b^4\left(ab+b^2x\right)}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int (a+bx)^6(d+ex)^m dx}{ab+b^2x}$$
$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int \left(\frac{(-bd+ae)^6(d+ex)^m}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{1+m}}{e^6} + 15\right.}{}$$
$$= \frac{(bd-ae)^6(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^7(1+m)(a+bx)} - \frac{6b(bd-ae)^5(d+ex)^2}{e^7(2+n}$$

Mathematica [A] time = 0.18, size = 193, normalized size = 0.49

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(-\frac{6b^5(d+ex)^5(bd-ae)}{m+6}+\frac{15b^4(d+ex)^4(bd-ae)^2}{m+5}-\frac{20b^3(d+ex)^3(bd-ae)^3}{m+4}+\frac{15b^2(d+ex)^2(bd-ae)^4}{m+3}-\frac{6b(d+ex)(bd-ae)^5}{m+2}+\frac{(bd-ae)^6}{m+1}+\frac{b^6(d+ex)^6}{m+7}\right)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*((b*d - a*e)^6/(1 + m) - (6*b*(b*d - a
*e)^5*(d + e*x))/(2 + m) + (15*b^2*(b*d - a*e)^4*(d + e*x)^2)/(3 + m) - (20
*b^3*(b*d - a*e)^3*(d + e*x)^3)/(4 + m) + (15*b^4*(b*d - a*e)^2*(d + e*x)^4
)/(5 + m) - (6*b^5*(b*d - a*e)*(d + e*x)^5)/(6 + m) + (b^6*(d + e*x)^6)/(7
+ m)))/(e^7*(a + b*x))
```

IntegrateAlgebraic [F] time = 1.92, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(
5/2), x]
```

fricas [B] time = 0.47, size = 2230, normalized size = 5.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] (a^6*d*e^6*m^6 + 720*b^6*d^7 - 5040*a*b^5*d^6*e + 15120*a^2*b^4*d^5*e^2 - 2
5200*a^3*b^3*d^4*e^3 + 25200*a^4*b^2*d^3*e^4 - 15120*a^5*b*d^2*e^5 + 5040*a
^6*d*e^6 + (b^6*e^7*m^6 + 21*b^6*e^7*m^5 + 175*b^6*e^7*m^4 + 735*b^6*e^7*m^
3 + 1624*b^6*e^7*m^2 + 1764*b^6*e^7*m + 720*b^6*e^7)*x^7 + (5040*a*b^5*e^7
+ (b^6*d*e^6 + 6*a*b^5*e^7)*m^6 + 3*(5*b^6*d*e^6 + 44*a*b^5*e^7)*m^5 + 5*(1
7*b^6*d*e^6 + 228*a*b^5*e^7)*m^4 + 15*(15*b^6*d*e^6 + 328*a*b^5*e^7)*m^3 +
2*(137*b^6*d*e^6 + 5547*a*b^5*e^7)*m^2 + 12*(10*b^6*d*e^6 + 1019*a*b^5*e^7)
*m)*x^6 - 3*(2*a^5*b*d^2*e^5 - 9*a^6*d*e^6)*m^5 + 3*(5040*a^2*b^4*e^7 + (2*
a*b^5*d*e^6 + 5*a^2*b^4*e^7)*m^6 - (2*b^6*d^2*e^5 - 34*a*b^5*d*e^6 - 115*a^
2*b^4*e^7)*m^5 - 5*(4*b^6*d^2*e^5 - 42*a*b^5*d*e^6 - 207*a^2*b^4*e^7)*m^4 -
 5*(14*b^6*d^2*e^5 - 118*a*b^5*d*e^6 - 925*a^2*b^4*e^7)*m^3 - 4*(25*b^6*d^2
*e^5 - 187*a*b^5*d*e^6 - 2680*a^2*b^4*e^7)*m^2 - 12*(4*b^6*d^2*e^5 - 28*a*b
```

```
^5*d*e^6 - 1005*a^2*b^4*e^7)*m)*x^5 + 5*(6*a^4*b^2*d^3*e^4 - 30*a^5*b*d^2*e
^5 + 59*a^6*d*e^6)*m^4 + 5*(5040*a^3*b^3*e^7 + (3*a^2*b^4*d*e^6 + 4*a^3*b^3
*e^7)*m^6 - 3*(2*a*b^5*d^2*e^5 - 19*a^2*b^4*d*e^6 - 32*a^3*b^3*e^7)*m^5 + (
6*b^6*d^3*e^4 - 78*a*b^5*d^2*e^5 + 393*a^2*b^4*d*e^6 + 904*a^3*b^3*e^7)*m^4
 + 3*(12*b^6*d^3*e^4 - 106*a*b^5*d^2*e^5 + 401*a^2*b^4*d*e^6 + 1408*a^3*b^3
*e^7)*m^3 + 2*(33*b^6*d^3*e^4 - 249*a*b^5*d^2*e^5 + 810*a^2*b^4*d*e^6 + 509
0*a^3*b^3*e^7)*m^2 + 36*(b^6*d^3*e^4 - 7*a*b^5*d^2*e^5 + 21*a^2*b^4*d*e^6 +
 328*a^3*b^3*e^7)*m)*x^4 - 15*(8*a^3*b^3*d^4*e^3 - 44*a^4*b^2*d^3*e^4 + 98*
a^5*b*d^2*e^5 - 111*a^6*d*e^6)*m^3 + 5*(5040*a^4*b^2*e^7 + (4*a^3*b^3*d*e^6
 + 3*a^4*b^2*e^7)*m^6 - 3*(4*a^2*b^4*d^2*e^5 - 28*a^3*b^3*d*e^6 - 25*a^4*b^
2*e^7)*m^5 + (24*a*b^5*d^3*e^4 - 192*a^2*b^4*d^2*e^5 + 652*a^3*b^3*d*e^6 +
741*a^4*b^2*e^7)*m^4 - 3*(8*b^6*d^4*e^3 - 80*a*b^5*d^3*e^4 + 332*a^2*b^4*d^
2*e^5 - 756*a^3*b^3*d*e^6 - 1219*a^4*b^2*e^7)*m^3 - 8*(9*b^6*d^4*e^3 - 69*a
*b^5*d^3*e^4 + 228*a^2*b^4*d^2*e^5 - 422*a^3*b^3*d*e^6 - 1167*a^4*b^2*e^7)*
m^2 - 12*(4*b^6*d^4*e^3 - 28*a*b^5*d^3*e^4 + 84*a^2*b^4*d^2*e^5 - 140*a^3*b
^3*d*e^6 - 949*a^4*b^2*e^7)*m)*x^3 + 2*(180*a^2*b^4*d^5*e^2 - 1080*a^3*b^3*
d^4*e^3 + 2685*a^4*b^2*d^3*e^4 - 3525*a^5*b*d^2*e^5 + 2552*a^6*d*e^6)*m^2 +
 3*(5040*a^5*b*e^7 + (5*a^4*b^2*d*e^6 + 2*a^5*b*e^7)*m^6 - (20*a^3*b^3*d^2*
e^5 - 115*a^4*b^2*d*e^6 - 52*a^5*b*e^7)*m^5 + 5*(12*a^2*b^4*d^3*e^4 - 76*a^
3*b^3*d^2*e^5 + 201*a^4*b^2*d*e^6 + 108*a^5*b*e^7)*m^4 - 5*(24*a*b^5*d^4*e^
3 - 168*a^2*b^4*d^3*e^4 + 500*a^3*b^3*d^2*e^5 - 817*a^4*b^2*d*e^6 - 568*a^5
*b*e^7)*m^3 + 2*(60*b^6*d^5*e^2 - 480*a*b^5*d^4*e^3 + 1650*a^2*b^4*d^3*e^4
- 3170*a^3*b^3*d^2*e^5 + 3695*a^4*b^2*d*e^6 + 3929*a^5*b*e^7)*m^2 + 12*(10*
b^6*d^5*e^2 - 70*a*b^5*d^4*e^3 + 210*a^2*b^4*d^3*e^4 - 350*a^3*b^3*d^2*e^5
+ 350*a^4*b^2*d*e^6 + 879*a^5*b*e^7)*m)*x^2 - 12*(60*a*b^5*d^6*e - 390*a^2*
b^4*d^5*e^2 + 1070*a^3*b^3*d^4*e^3 - 1595*a^4*b^2*d^3*e^4 + 1377*a^5*b*d^2*
e^5 - 669*a^6*d*e^6)*m + (5040*a^6*e^7 + (6*a^5*b*d*e^6 + a^6*e^7)*m^6 - 3*
(10*a^4*b^2*d^2*e^5 - 50*a^5*b*d*e^6 - 9*a^6*e^7)*m^5 + 5*(24*a^3*b^3*d^3*e
^4 - 132*a^4*b^2*d^2*e^5 + 294*a^5*b*d*e^6 + 59*a^6*e^7)*m^4 - 15*(24*a^2*b
^4*d^4*e^3 - 144*a^3*b^3*d^3*e^4 + 358*a^4*b^2*d^2*e^5 - 470*a^5*b*d*e^6 -
111*a^6*e^7)*m^3 + 4*(180*a*b^5*d^5*e^2 - 1170*a^2*b^4*d^4*e^3 + 3210*a^3*b
^3*d^3*e^4 - 4785*a^4*b^2*d^2*e^5 + 4131*a^5*b*d*e^6 + 1276*a^6*e^7)*m^2 -
36*(20*b^6*d^6*e - 140*a*b^5*d^5*e^2 + 420*a^2*b^4*d^4*e^3 - 700*a^3*b^3*d^
3*e^4 + 700*a^4*b^2*d^2*e^5 - 420*a^5*b*d*e^6 - 223*a^6*e^7)*m)*x)*(e*x + d
)^m/(e^7*m^7 + 28*e^7*m^6 + 322*e^7*m^5 + 1960*e^7*m^4 + 6769*e^7*m^3 + 131
32*e^7*m^2 + 13068*e^7*m + 5040*e^7)
```

giac [B] time = 0.66, size = 4885, normalized size = 12.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*b^6*m^6*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*b^6*d*m^6*x^6*e^6*s
gn(b*x + a) + 6*(x*e + d)^m*a*b^5*m^6*x^6*e^7*sgn(b*x + a) + 21*(x*e + d)^m
*b^6*m^5*x^7*e^7*sgn(b*x + a) + 6*(x*e + d)^m*a*b^5*d*m^6*x^5*e^6*sgn(b*x +
 a) + 15*(x*e + d)^m*b^6*d*m^5*x^6*e^6*sgn(b*x + a) - 6*(x*e + d)^m*b^6*d^2
*m^5*x^5*e^5*sgn(b*x + a) + 15*(x*e + d)^m*a^2*b^4*m^6*x^5*e^7*sgn(b*x + a)
 + 132*(x*e + d)^m*a*b^5*m^5*x^6*e^7*sgn(b*x + a) + 175*(x*e + d)^m*b^6*m^4
*x^7*e^7*sgn(b*x + a) + 15*(x*e + d)^m*a^2*b^4*d*m^6*x^4*e^6*sgn(b*x + a) +
 102*(x*e + d)^m*a*b^5*d*m^5*x^5*e^6*sgn(b*x + a) + 85*(x*e + d)^m*b^6*d*m^
4*x^6*e^6*sgn(b*x + a) - 30*(x*e + d)^m*a*b^5*d^2*m^5*x^4*e^5*sgn(b*x + a)
- 60*(x*e + d)^m*b^6*d^2*m^4*x^5*e^5*sgn(b*x + a) + 30*(x*e + d)^m*b^6*d^3*
m^4*x^4*e^4*sgn(b*x + a) + 20*(x*e + d)^m*a^3*b^3*m^6*x^4*e^7*sgn(b*x + a)
+ 345*(x*e + d)^m*a^2*b^4*m^5*x^5*e^7*sgn(b*x + a) + 1140*(x*e + d)^m*a*b^5
*m^4*x^6*e^7*sgn(b*x + a) + 735*(x*e + d)^m*b^6*m^3*x^7*e^7*sgn(b*x + a) +
20*(x*e + d)^m*a^3*b^3*d*m^6*x^3*e^6*sgn(b*x + a) + 285*(x*e + d)^m*a^2*b^4
*d*m^5*x^4*e^6*sgn(b*x + a) + 630*(x*e + d)^m*a*b^5*d*m^4*x^5*e^6*sgn(b*x +
```

a) + 225*(x*e + d)^m*b^6*d*m^3*x^6*e^6*sgn(b*x + a) - 60*(x*e + d)^m*a^2*b
^4*d^2*m^5*x^3*e^5*sgn(b*x + a) - 390*(x*e + d)^m*a*b^5*d^2*m^4*x^4*e^5*sgn
(b*x + a) - 210*(x*e + d)^m*b^6*d^2*m^3*x^5*e^5*sgn(b*x + a) + 120*(x*e + d
)^m*a*b^5*d^3*m^4*x^3*e^4*sgn(b*x + a) + 180*(x*e + d)^m*b^6*d^3*m^3*x^4*e^
4*sgn(b*x + a) - 120*(x*e + d)^m*b^6*d^4*m^3*x^3*e^3*sgn(b*x + a) + 15*(x*e
 + d)^m*a^4*b^2*m^6*x^3*e^7*sgn(b*x + a) + 480*(x*e + d)^m*a^3*b^3*m^5*x^4*
e^7*sgn(b*x + a) + 3105*(x*e + d)^m*a^2*b^4*m^4*x^5*e^7*sgn(b*x + a) + 4920
*(x*e + d)^m*a*b^5*m^3*x^6*e^7*sgn(b*x + a) + 1624*(x*e + d)^m*b^6*m^2*x^7*
e^7*sgn(b*x + a) + 15*(x*e + d)^m*a^4*b^2*d*m^6*x^2*e^6*sgn(b*x + a) + 420*
(x*e + d)^m*a^3*b^3*d*m^5*x^3*e^6*sgn(b*x + a) + 1965*(x*e + d)^m*a^2*b^4*d
*m^4*x^4*e^6*sgn(b*x + a) + 1770*(x*e + d)^m*a*b^5*d*m^3*x^5*e^6*sgn(b*x +
a) + 274*(x*e + d)^m*b^6*d*m^2*x^6*e^6*sgn(b*x + a) - 60*(x*e + d)^m*a^3*b^
3*d^2*m^5*x^2*e^5*sgn(b*x + a) - 960*(x*e + d)^m*a^2*b^4*d^2*m^4*x^3*e^5*sg
n(b*x + a) - 1590*(x*e + d)^m*a*b^5*d^2*m^3*x^4*e^5*sgn(b*x + a) - 300*(x*e
 + d)^m*b^6*d^2*m^2*x^5*e^5*sgn(b*x + a) + 180*(x*e + d)^m*a^2*b^4*d^3*m^4*
x^2*e^4*sgn(b*x + a) + 1200*(x*e + d)^m*a*b^5*d^3*m^3*x^3*e^4*sgn(b*x + a)
+ 330*(x*e + d)^m*b^6*d^3*m^2*x^4*e^4*sgn(b*x + a) - 360*(x*e + d)^m*a*b^5*
d^4*m^3*x^2*e^3*sgn(b*x + a) - 360*(x*e + d)^m*b^6*d^4*m^2*x^3*e^3*sgn(b*x
+ a) + 360*(x*e + d)^m*b^6*d^5*m^2*x^2*e^2*sgn(b*x + a) + 6*(x*e + d)^m*a^5
*b*m^6*x^2*e^7*sgn(b*x + a) + 375*(x*e + d)^m*a^4*b^2*m^5*x^3*e^7*sgn(b*x +
 a) + 4520*(x*e + d)^m*a^3*b^3*m^4*x^4*e^7*sgn(b*x + a) + 13875*(x*e + d)^m
*a^2*b^4*m^3*x^5*e^7*sgn(b*x + a) + 11094*(x*e + d)^m*a*b^5*m^2*x^6*e^7*sgn
(b*x + a) + 1764*(x*e + d)^m*b^6*m*x^7*e^7*sgn(b*x + a) + 6*(x*e + d)^m*a^5
*b*d*m^6*x*e^6*sgn(b*x + a) + 345*(x*e + d)^m*a^4*b^2*d*m^5*x^2*e^6*sgn(b*x
 + a) + 3260*(x*e + d)^m*a^3*b^3*d*m^4*x^3*e^6*sgn(b*x + a) + 6015*(x*e + d
)^m*a^2*b^4*d*m^3*x^4*e^6*sgn(b*x + a) + 2244*(x*e + d)^m*a*b^5*d*m^2*x^5*e
^6*sgn(b*x + a) + 120*(x*e + d)^m*b^6*d*m*x^6*e^6*sgn(b*x + a) - 30*(x*e +
d)^m*a^4*b^2*d^2*m^5*x*e^5*sgn(b*x + a) - 1140*(x*e + d)^m*a^3*b^3*d^2*m^4*
x^2*e^5*sgn(b*x + a) - 4980*(x*e + d)^m*a^2*b^4*d^2*m^3*x^3*e^5*sgn(b*x + a
) - 2490*(x*e + d)^m*a*b^5*d^2*m^2*x^4*e^5*sgn(b*x + a) - 144*(x*e + d)^m*b
^6*d^2*m*x^5*e^5*sgn(b*x + a) + 120*(x*e + d)^m*a^3*b^3*d^3*m^4*x*e^4*sgn(b
x + a) + 2520(x*e + d)^m*a^2*b^4*d^3*m^3*x^2*e^4*sgn(b*x + a) + 2760*(x*e
 + d)^m*a*b^5*d^3*m^2*x^3*e^4*sgn(b*x + a) + 180*(x*e + d)^m*b^6*d^3*m*x^4*
e^4*sgn(b*x + a) - 360*(x*e + d)^m*a^2*b^4*d^4*m^3*x*e^3*sgn(b*x + a) - 288
0*(x*e + d)^m*a*b^5*d^4*m^2*x^2*e^3*sgn(b*x + a) - 240*(x*e + d)^m*b^6*d^4*
m*x^3*e^3*sgn(b*x + a) + 720*(x*e + d)^m*a*b^5*d^5*m^2*x*e^2*sgn(b*x + a) +
 360*(x*e + d)^m*b^6*d^5*m*x^2*e^2*sgn(b*x + a) - 720*(x*e + d)^m*b^6*d^6*m
*x*e*sgn(b*x + a) + (x*e + d)^m*a^6*m^6*x*e^7*sgn(b*x + a) + 156*(x*e + d)^
m*a^5*b*m^5*x^2*e^7*sgn(b*x + a) + 3705*(x*e + d)^m*a^4*b^2*m^4*x^3*e^7*sgn
(b*x + a) + 21120*(x*e + d)^m*a^3*b^3*m^3*x^4*e^7*sgn(b*x + a) + 32160*(x*e
 + d)^m*a^2*b^4*m^2*x^5*e^7*sgn(b*x + a) + 12228*(x*e + d)^m*a*b^5*m*x^6*e^
7*sgn(b*x + a) + 720*(x*e + d)^m*b^6*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*a^6
*d*m^6*e^6*sgn(b*x + a) + 150*(x*e + d)^m*a^5*b*d*m^5*x*e^6*sgn(b*x + a) +
3015*(x*e + d)^m*a^4*b^2*d*m^4*x^2*e^6*sgn(b*x + a) + 11340*(x*e + d)^m*a^3
*b^3*d*m^3*x^3*e^6*sgn(b*x + a) + 8100*(x*e + d)^m*a^2*b^4*d*m^2*x^4*e^6*sg
n(b*x + a) + 1008*(x*e + d)^m*a*b^5*d*m*x^5*e^6*sgn(b*x + a) - 6*(x*e + d)^
m*a^5*b*d^2*m^5*e^5*sgn(b*x + a) - 660*(x*e + d)^m*a^4*b^2*d^2*m^4*x*e^5*sg
n(b*x + a) - 7500*(x*e + d)^m*a^3*b^3*d^2*m^3*x^2*e^5*sgn(b*x + a) - 9120*(
x*e + d)^m*a^2*b^4*d^2*m^2*x^3*e^5*sgn(b*x + a) - 1260*(x*e + d)^m*a*b^5*d^
2*m*x^4*e^5*sgn(b*x + a) + 30*(x*e + d)^m*a^4*b^2*d^3*m^4*e^4*sgn(b*x + a)
+ 2160*(x*e + d)^m*a^3*b^3*d^3*m^3*x*e^4*sgn(b*x + a) + 9900*(x*e + d)^m*a^
2*b^4*d^3*m^2*x^2*e^4*sgn(b*x + a) + 1680*(x*e + d)^m*a*b^5*d^3*m*x^3*e^4*s
gn(b*x + a) - 120*(x*e + d)^m*a^3*b^3*d^4*m^3*e^3*sgn(b*x + a) - 4680*(x*e
+ d)^m*a^2*b^4*d^4*m^2*x*e^3*sgn(b*x + a) - 2520*(x*e + d)^m*a*b^5*d^4*m*x^
2*e^3*sgn(b*x + a) + 360*(x*e + d)^m*a^2*b^4*d^5*m^2*e^2*sgn(b*x + a) + 504
0*(x*e + d)^m*a*b^5*d^5*m*x*e^2*sgn(b*x + a) - 720*(x*e + d)^m*a*b^5*d^6*m*
e*sgn(b*x + a) + 720*(x*e + d)^m*b^6*d^7*sgn(b*x + a) + 27*(x*e + d)^m*a^6*
m^5*x*e^7*sgn(b*x + a) + 1620*(x*e + d)^m*a^5*b*m^4*x^2*e^7*sgn(b*x + a) +
18285*(x*e + d)^m*a^4*b^2*m^3*x^3*e^7*sgn(b*x + a) + 50900*(x*e + d)^m*a^3*

```
b^3*m^2*x^4*e^7*sgn(b*x + a) + 36180*(x*e + d)^m*a^2*b^4*m*x^5*e^7*sgn(b*x
+ a) + 5040*(x*e + d)^m*a*b^5*x^6*e^7*sgn(b*x + a) + 27*(x*e + d)^m*a^6*d*m
^5*e^6*sgn(b*x + a) + 1470*(x*e + d)^m*a^5*b*d*m^4*x*e^6*sgn(b*x + a) + 122
55*(x*e + d)^m*a^4*b^2*d*m^3*x^2*e^6*sgn(b*x + a) + 16880*(x*e + d)^m*a^3*b
^3*d*m^2*x^3*e^6*sgn(b*x + a) + 3780*(x*e + d)^m*a^2*b^4*d*m*x^4*e^6*sgn(b*
x + a) - 150*(x*e + d)^m*a^5*b*d^2*m^4*e^5*sgn(b*x + a) - 5370*(x*e + d)^m*
a^4*b^2*d^2*m^3*x*e^5*sgn(b*x + a) - 19020*(x*e + d)^m*a^3*b^3*d^2*m^2*x^2*
e^5*sgn(b*x + a) - 5040*(x*e + d)^m*a^2*b^4*d^2*m*x^3*e^5*sgn(b*x + a) + 66
0*(x*e + d)^m*a^4*b^2*d^3*m^3*e^4*sgn(b*x + a) + 12840*(x*e + d)^m*a^3*b^3*
d^3*m^2*x*e^4*sgn(b*x + a) + 7560*(x*e + d)^m*a^2*b^4*d^3*m*x^2*e^4*sgn(b*x
 + a) - 2160*(x*e + d)^m*a^3*b^3*d^4*m^2*e^3*sgn(b*x + a) - 15120*(x*e + d)
^m*a^2*b^4*d^4*m*x*e^3*sgn(b*x + a) + 4680*(x*e + d)^m*a^2*b^4*d^5*m*e^2*sg
n(b*x + a) - 5040*(x*e + d)^m*a*b^5*d^6*e*sgn(b*x + a) + 295*(x*e + d)^m*a^
6*m^4*x*e^7*sgn(b*x + a) + 8520*(x*e + d)^m*a^5*b*m^3*x^2*e^7*sgn(b*x + a)
+ 46680*(x*e + d)^m*a^4*b^2*m^2*x^3*e^7*sgn(b*x + a) + 59040*(x*e + d)^m*a^
3*b^3*m*x^4*e^7*sgn(b*x + a) + 15120*(x*e + d)^m*a^2*b^4*x^5*e^7*sgn(b*x +
a) + 295*(x*e + d)^m*a^6*d*m^4*e^6*sgn(b*x + a) + 7050*(x*e + d)^m*a^5*b*d*
m^3*x*e^6*sgn(b*x + a) + 22170*(x*e + d)^m*a^4*b^2*d*m^2*x^2*e^6*sgn(b*x +
a) + 8400*(x*e + d)^m*a^3*b^3*d*m*x^3*e^6*sgn(b*x + a) - 1470*(x*e + d)^m*a
^5*b*d^2*m^3*e^5*sgn(b*x + a) - 19140*(x*e + d)^m*a^4*b^2*d^2*m^2*x*e^5*sgn
(b*x + a) - 12600*(x*e + d)^m*a^3*b^3*d^2*m*x^2*e^5*sgn(b*x + a) + 5370*(x*
e + d)^m*a^4*b^2*d^3*m^2*e^4*sgn(b*x + a) + 25200*(x*e + d)^m*a^3*b^3*d^3*m
*x*e^4*sgn(b*x + a) - 12840*(x*e + d)^m*a^3*b^3*d^4*m*e^3*sgn(b*x + a) + 15
120*(x*e + d)^m*a^2*b^4*d^5*e^2*sgn(b*x + a) + 1665*(x*e + d)^m*a^6*m^3*x*e
^7*sgn(b*x + a) + 23574*(x*e + d)^m*a^5*b*m^2*x^2*e^7*sgn(b*x + a) + 56940*
(x*e + d)^m*a^4*b^2*m*x^3*e^7*sgn(b*x + a) + 25200*(x*e + d)^m*a^3*b^3*x^4*
e^7*sgn(b*x + a) + 1665*(x*e + d)^m*a^6*d*m^3*e^6*sgn(b*x + a) + 16524*(x*e
 + d)^m*a^5*b*d*m^2*x*e^6*sgn(b*x + a) + 12600*(x*e + d)^m*a^4*b^2*d*m*x^2*
e^6*sgn(b*x + a) - 7050*(x*e + d)^m*a^5*b*d^2*m^2*e^5*sgn(b*x + a) - 25200*
(x*e + d)^m*a^4*b^2*d^2*m*x*e^5*sgn(b*x + a) + 19140*(x*e + d)^m*a^4*b^2*d^
3*m*e^4*sgn(b*x + a) - 25200*(x*e + d)^m*a^3*b^3*d^4*e^3*sgn(b*x + a) + 510
4*(x*e + d)^m*a^6*m^2*x*e^7*sgn(b*x + a) + 31644*(x*e + d)^m*a^5*b*m*x^2*e^
7*sgn(b*x + a) + 25200*(x*e + d)^m*a^4*b^2*x^3*e^7*sgn(b*x + a) + 5104*(x*e
 + d)^m*a^6*d*m^2*e^6*sgn(b*x + a) + 15120*(x*e + d)^m*a^5*b*d*m*x*e^6*sgn(
b*x + a) - 16524*(x*e + d)^m*a^5*b*d^2*m*e^5*sgn(b*x + a) + 25200*(x*e + d)
^m*a^4*b^2*d^3*e^4*sgn(b*x + a) + 8028*(x*e + d)^m*a^6*m*x*e^7*sgn(b*x + a)
 + 15120*(x*e + d)^m*a^5*b*x^2*e^7*sgn(b*x + a) + 8028*(x*e + d)^m*a^6*d*m*
e^6*sgn(b*x + a) - 15120*(x*e + d)^m*a^5*b*d^2*e^5*sgn(b*x + a) + 5040*(x*e
 + d)^m*a^6*x*e^7*sgn(b*x + a) + 5040*(x*e + d)^m*a^6*d*e^6*sgn(b*x + a))/(
m^7*e^7 + 28*m^6*e^7 + 322*m^5*e^7 + 1960*m^4*e^7 + 6769*m^3*e^7 + 13132*m^
2*e^7 + 13068*m*e^7 + 5040*e^7)
```

maple [B] time = 0.07, size = 2173, normalized size = 5.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^6*e^6*m^6*x^6+6*a*b^5*e^6*m^6*x^5+21*b^6*e^6*m^5*x^6+15*a^
2*b^4*e^6*m^6*x^4+132*a*b^5*e^6*m^5*x^5-6*b^6*d*e^5*m^5*x^5+175*b^6*e^6*m^4
*x^6+20*a^3*b^3*e^6*m^6*x^3+345*a^2*b^4*e^6*m^5*x^4-30*a*b^5*d*e^5*m^5*x^4+
1140*a*b^5*e^6*m^4*x^5-90*b^6*d*e^5*m^4*x^5+735*b^6*e^6*m^3*x^6+15*a^4*b^2*
e^6*m^6*x^2+480*a^3*b^3*e^6*m^5*x^3-60*a^2*b^4*d*e^5*m^5*x^3+3105*a^2*b^4*e
^6*m^4*x^4-510*a*b^5*d*e^5*m^4*x^4+4920*a*b^5*e^6*m^3*x^5+30*b^6*d^2*e^4*m^
4*x^4-510*b^6*d*e^5*m^3*x^5+1624*b^6*e^6*m^2*x^6+6*a^5*b*e^6*m^6*x+375*a^4*
b^2*e^6*m^5*x^2-60*a^3*b^3*d*e^5*m^5*x^2+4520*a^3*b^3*e^6*m^4*x^3-1140*a^2*
b^4*d*e^5*m^4*x^3+13875*a^2*b^4*e^6*m^3*x^4+120*a*b^5*d^2*e^4*m^4*x^3-3150*
a*b^5*d*e^5*m^3*x^4+11094*a*b^5*e^6*m^2*x^5+300*b^6*d^2*e^4*m^3*x^4-1350*b^
6*d*e^5*m^2*x^5+1764*b^6*e^6*m*x^6+a^6*e^6*m^6+156*a^5*b*e^6*m^5*x-30*a^4*b
```

```
^2*d*e^5*m^5*x+3705*a^4*b^2*e^6*m^4*x^2-1260*a^3*b^3*d*e^5*m^4*x^2+21120*a^
3*b^3*e^6*m^3*x^3+180*a^2*b^4*d^2*e^4*m^4*x^2-7860*a^2*b^4*d*e^5*m^3*x^3+32
160*a^2*b^4*e^6*m^2*x^4+1560*a*b^5*d^2*e^4*m^3*x^3-8850*a*b^5*d*e^5*m^2*x^4
+12228*a*b^5*e^6*m*x^5-120*b^6*d^3*e^3*m^3*x^3+1050*b^6*d^2*e^4*m^2*x^4-164
4*b^6*d*e^5*m*x^5+720*b^6*e^6*x^6+27*a^6*e^6*m^5-6*a^5*b*d*e^5*m^5+1620*a^5
*b*e^6*m^4*x-690*a^4*b^2*d*e^5*m^4*x+18285*a^4*b^2*e^6*m^3*x^2+120*a^3*b^3*
d^2*e^4*m^4*x-9780*a^3*b^3*d*e^5*m^3*x^2+50900*a^3*b^3*e^6*m^2*x^3+2880*a^2
*b^4*d^2*e^4*m^3*x^2-24060*a^2*b^4*d*e^5*m^2*x^3+36180*a^2*b^4*e^6*m*x^4-36
0*a*b^5*d^3*e^3*m^3*x^2+6360*a*b^5*d^2*e^4*m^2*x^3-11220*a*b^5*d*e^5*m*x^4+
5040*a*b^5*e^6*x^5-720*b^6*d^3*e^3*m^2*x^3+1500*b^6*d^2*e^4*m*x^4-720*b^6*d
*e^5*x^5+295*a^6*e^6*m^4-150*a^5*b*d*e^5*m^4+8520*a^5*b*e^6*m^3*x+30*a^4*b^
2*d^2*e^4*m^4-6030*a^4*b^2*d*e^5*m^3*x+46680*a^4*b^2*e^6*m^2*x^2+2280*a^3*b
^3*d^2*e^4*m^3*x-34020*a^3*b^3*d*e^5*m^2*x^2+59040*a^3*b^3*e^6*m*x^3-360*a^
2*b^4*d^3*e^3*m^3*x+14940*a^2*b^4*d^2*e^4*m^2*x^2-32400*a^2*b^4*d*e^5*m*x^3
+15120*a^2*b^4*e^6*x^4-3600*a*b^5*d^3*e^3*m^2*x^2+9960*a*b^5*d^2*e^4*m*x^3-
5040*a*b^5*d*e^5*x^4+360*b^6*d^4*e^2*m^2*x^2-1320*b^6*d^3*e^3*m*x^3+720*b^6
*d^2*e^4*x^4+1665*a^6*e^6*m^3-1470*a^5*b*d*e^5*m^3+23574*a^5*b*e^6*m^2*x+66
0*a^4*b^2*d^2*e^4*m^3-24510*a^4*b^2*d*e^5*m^2*x+56940*a^4*b^2*e^6*m*x^2-120
*a^3*b^3*d^3*e^3*m^3+15000*a^3*b^3*d^2*e^4*m^2*x-50640*a^3*b^3*d*e^5*m*x^2+
25200*a^3*b^3*e^6*x^3-5040*a^2*b^4*d^3*e^3*m^2*x+27360*a^2*b^4*d^2*e^4*m*x^
2-15120*a^2*b^4*d*e^5*x^3+720*a*b^5*d^4*e^2*m^2*x-8280*a*b^5*d^3*e^3*m*x^2+
5040*a*b^5*d^2*e^4*x^3+1080*b^6*d^4*e^2*m*x^2-720*b^6*d^3*e^3*x^3+5104*a^6*
e^6*m^2-7050*a^5*b*d*e^5*m^2+31644*a^5*b*e^6*m*x+5370*a^4*b^2*d^2*e^4*m^2-4
4340*a^4*b^2*d*e^5*m*x+25200*a^4*b^2*e^6*x^2-2160*a^3*b^3*d^3*e^3*m^2+38040
*a^3*b^3*d^2*e^4*m*x-25200*a^3*b^3*d*e^5*x^2+360*a^2*b^4*d^4*e^2*m^2-19800*
a^2*b^4*d^3*e^3*m*x+15120*a^2*b^4*d^2*e^4*x^2+5760*a*b^5*d^4*e^2*m*x-5040*a
*b^5*d^3*e^3*x^2-720*b^6*d^5*e*m*x+720*b^6*d^4*e^2*x^2+8028*a^6*e^6*m-16524
*a^5*b*d*e^5*m+15120*a^5*b*e^6*x+19140*a^4*b^2*d^2*e^4*m-25200*a^4*b^2*d*e^
5*x-12840*a^3*b^3*d^3*e^3*m+25200*a^3*b^3*d^2*e^4*x+4680*a^2*b^4*d^4*e^2*m-
15120*a^2*b^4*d^3*e^3*x-720*a*b^5*d^5*e*m+5040*a*b^5*d^4*e^2*x-720*b^6*d^5*
e*x+5040*a^6*e^6-15120*a^5*b*d*e^5+25200*a^4*b^2*d^2*e^4-25200*a^3*b^3*d^3*
e^3+15120*a^2*b^4*d^4*e^2-5040*a*b^5*d^5*e+720*b^6*d^6)*((b*x+a)^2)^(5/2)/(
b*x+a)^5/e^7/(m^7+28*m^6+322*m^5+1960*m^4+6769*m^3+13132*m^2+13068*m+5040)
```

maxima [B] time = 0.85, size = 1864, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^5*e^6*x^6 - 60*(m^2 + 11
*m + 30)*a^2*b^3*d^4*e^2 + 20*(m^3 + 15*m^2 + 74*m + 120)*a^3*b^2*d^3*e^3 -
 5*(m^4 + 18*m^3 + 119*m^2 + 342*m + 360)*a^4*b*d^2*e^4 + (m^5 + 20*m^4 + 1
55*m^3 + 580*m^2 + 1044*m + 720)*a^5*d*e^5 + 120*a*b^4*d^5*e*(m + 6) - 120*
b^5*d^6 + ((m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d*e^5 + 5*(m^5 + 16*
m^4 + 95*m^3 + 260*m^2 + 324*m + 144)*a*b^4*e^6)*x^5 - 5*((m^4 + 6*m^3 + 11
*m^2 + 6*m)*b^5*d^2*e^4 - (m^5 + 12*m^4 + 47*m^3 + 72*m^2 + 36*m)*a*b^4*d*e
^5 - 2*(m^5 + 17*m^4 + 107*m^3 + 307*m^2 + 396*m + 180)*a^2*b^3*e^6)*x^4 +
10*(2*(m^3 + 3*m^2 + 2*m)*b^5*d^3*e^3 - 2*(m^4 + 9*m^3 + 20*m^2 + 12*m)*a*b
^4*d^2*e^4 + (m^5 + 14*m^4 + 65*m^3 + 112*m^2 + 60*m)*a^2*b^3*d*e^5 + (m^5
+ 18*m^4 + 121*m^3 + 372*m^2 + 508*m + 240)*a^3*b^2*e^6)*x^3 - 5*(12*(m^2 +
 m)*b^5*d^4*e^2 - 12*(m^3 + 7*m^2 + 6*m)*a*b^4*d^3*e^3 + 6*(m^4 + 12*m^3 +
41*m^2 + 30*m)*a^2*b^3*d^2*e^4 - 2*(m^5 + 16*m^4 + 89*m^3 + 194*m^2 + 120*m
)*a^3*b^2*d*e^5 - (m^5 + 19*m^4 + 137*m^3 + 461*m^2 + 702*m + 360)*a^4*b*e^
6)*x^2 - (120*(m^2 + 6*m)*a*b^4*d^4*e^2 - 60*(m^3 + 11*m^2 + 30*m)*a^2*b^3*
d^3*e^3 + 20*(m^4 + 15*m^3 + 74*m^2 + 120*m)*a^3*b^2*d^2*e^4 - 5*(m^5 + 18*
m^4 + 119*m^3 + 342*m^2 + 360*m)*a^4*b*d*e^5 - (m^5 + 20*m^4 + 155*m^3 + 58
0*m^2 + 1044*m + 720)*a^5*e^6 - 120*b^5*d^5*e*m)*x)*(e*x + d)^m*a/((m^6 + 2
```

```
1*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + ((m^6 + 21*m^5
+ 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^5*e^7*x^7 + 240*(m^2 + 13*
m + 42)*a^2*b^3*d^5*e^2 - 60*(m^3 + 18*m^2 + 107*m + 210)*a^3*b^2*d^4*e^3 +
 10*(m^4 + 22*m^3 + 179*m^2 + 638*m + 840)*a^4*b*d^3*e^4 - (m^5 + 25*m^4 +
245*m^3 + 1175*m^2 + 2754*m + 2520)*a^5*d^2*e^5 - 600*a*b^4*d^6*e*(m + 7) +
 720*b^5*d^7 + ((m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*b^5*d*e
^6 + 5*(m^6 + 22*m^5 + 190*m^4 + 820*m^3 + 1849*m^2 + 2038*m + 840)*a*b^4*e
^7)*x^6 - (6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d^2*e^5 - 5*(m^6 +
 17*m^5 + 105*m^4 + 295*m^3 + 374*m^2 + 168*m)*a*b^4*d*e^6 - 10*(m^6 + 23*m
^5 + 207*m^4 + 925*m^3 + 2144*m^2 + 2412*m + 1008)*a^2*b^3*e^7)*x^5 + 5*(6*
(m^4 + 6*m^3 + 11*m^2 + 6*m)*b^5*d^3*e^4 - 5*(m^5 + 13*m^4 + 53*m^3 + 83*m^
2 + 42*m)*a*b^4*d^2*e^5 + 2*(m^6 + 19*m^5 + 131*m^4 + 401*m^3 + 540*m^2 + 2
52*m)*a^2*b^3*d*e^6 + 2*(m^6 + 24*m^5 + 226*m^4 + 1056*m^3 + 2545*m^2 + 295
2*m + 1260)*a^3*b^2*e^7)*x^4 - 5*(24*(m^3 + 3*m^2 + 2*m)*b^5*d^4*e^3 - 20*(
m^4 + 10*m^3 + 23*m^2 + 14*m)*a*b^4*d^3*e^4 + 8*(m^5 + 16*m^4 + 83*m^3 + 15
2*m^2 + 84*m)*a^2*b^3*d^2*e^5 - 2*(m^6 + 21*m^5 + 163*m^4 + 567*m^3 + 844*m
^2 + 420*m)*a^3*b^2*d*e^6 - (m^6 + 25*m^5 + 247*m^4 + 1219*m^3 + 3112*m^2 +
 3796*m + 1680)*a^4*b*e^7)*x^3 + (360*(m^2 + m)*b^5*d^5*e^2 - 300*(m^3 + 8*
m^2 + 7*m)*a*b^4*d^4*e^3 + 120*(m^4 + 14*m^3 + 55*m^2 + 42*m)*a^2*b^3*d^3*e
^4 - 30*(m^5 + 19*m^4 + 125*m^3 + 317*m^2 + 210*m)*a^3*b^2*d^2*e^5 + 5*(m^6
 + 23*m^5 + 201*m^4 + 817*m^3 + 1478*m^2 + 840*m)*a^4*b*d*e^6 + (m^6 + 26*m
^5 + 270*m^4 + 1420*m^3 + 3929*m^2 + 5274*m + 2520)*a^5*e^7)*x^2 + (600*(m^
2 + 7*m)*a*b^4*d^5*e^2 - 240*(m^3 + 13*m^2 + 42*m)*a^2*b^3*d^4*e^3 + 60*(m^
4 + 18*m^3 + 107*m^2 + 210*m)*a^3*b^2*d^3*e^4 - 10*(m^5 + 22*m^4 + 179*m^3
+ 638*m^2 + 840*m)*a^4*b*d^2*e^5 + (m^6 + 25*m^5 + 245*m^4 + 1175*m^3 + 275
4*m^2 + 2520*m)*a^5*d*e^6 - 720*b^5*d^6*e*m)*x)*(e*x + d)^m*b/((m^7 + 28*m^
6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^m\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Exception raised: HeuristicGCDFailed
```

3.1925 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=277

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(d+ex)^{m+2}}{e^5(m+2)(a+bx)}+\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(b}{e^5(m+3)(a}$$

Rubi [A] time = 0.15, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(d+ex)^{m+2}}{e^5(m+2)(a+bx)}+\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+3}}{e^5(m+3)(a+bx)}-\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+4}}{e^5(m+4)(a+bx)}+\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+5}}{e^5(m+5)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(1 + m
)*(a + b*x)) - (4*b*(b*d - a*e)^3*(d + e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(e^5*(2 + m)*(a + b*x)) + (6*b^2*(b*d - a*e)^2*(d + e*x)^(3 + m)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(3 + m)*(a + b*x)) - (4*b^3*(b*d - a*e)*(
d + e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(4 + m)*(a + b*x)) + (
b^4*(d + e*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(5 + m)*(a + b*x)
)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^m \, dx}{b^2\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^m \, dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^m}{e^4}-\frac{4b(bd-ae)^3(d+ex)^{1+m}}{e^4}+\frac{6b}{}\right.}{ab+b^2x} \\
&= \frac{(bd-ae)^4(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^5(1+m)(a+bx)}-\frac{4b(bd-ae)^3(d+ex)^{2}}{e^5(2+n}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 139, normalized size = 0.50

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(-\frac{4b^3(d+ex)^3(bd-ae)}{m+4}+\frac{6b^2(d+ex)^2(bd-ae)^2}{m+3}-\frac{4b(d+ex)(bd-ae)^3}{m+2}+\frac{(bd-ae)^4}{m+1}+\frac{b^4(d+ex)^4}{m+5}\right)}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*((b*d - a*e)^4/(1 + m) - (4*b*(b*d - a
*e)^3*(d + e*x))/(2 + m) + (6*b^2*(b*d - a*e)^2*(d + e*x)^2)/(3 + m) - (4*b
^3*(b*d - a*e)*(d + e*x)^3)/(4 + m) + (b^4*(d + e*x)^4)/(5 + m)))/(e^5*(a +
 b*x))
```

IntegrateAlgebraic [F] time = 1.42, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(
3/2), x]
```

fricas [B] time = 0.45, size = 901, normalized size = 3.25

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] (a^4*d*e^4*m^4 + 24*b^4*d^5 - 120*a*b^3*d^4*e + 240*a^2*b^2*d^3*e^2 - 240*a
^3*b*d^2*e^3 + 120*a^4*d*e^4 + (b^4*e^5*m^4 + 10*b^4*e^5*m^3 + 35*b^4*e^5*m
^2 + 50*b^4*e^5*m + 24*b^4*e^5)*x^5 + (120*a*b^3*e^5 + (b^4*d*e^4 + 4*a*b^3
*e^5)*m^4 + 2*(3*b^4*d*e^4 + 22*a*b^3*e^5)*m^3 + (11*b^4*d*e^4 + 164*a*b^3*
e^5)*m^2 + 2*(3*b^4*d*e^4 + 122*a*b^3*e^5)*m)*x^4 - 2*(2*a^3*b*d^2*e^3 - 7*
a^4*d*e^4)*m^3 + 2*(120*a^2*b^2*e^5 + (2*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*m^4 -
 2*(b^4*d^2*e^3 - 8*a*b^3*d*e^4 - 18*a^2*b^2*e^5)*m^3 - (6*b^4*d^2*e^3 - 34
*a*b^3*d*e^4 - 147*a^2*b^2*e^5)*m^2 - 2*(2*b^4*d^2*e^3 - 10*a*b^3*d*e^4 - 1
17*a^2*b^2*e^5)*m)*x^3 + (12*a^2*b^2*d^3*e^2 - 48*a^3*b*d^2*e^3 + 71*a^4*d*
e^4)*m^2 + 2*(120*a^3*b*e^5 + (3*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*m^4 - 2*(3*a*
b^3*d^2*e^3 - 15*a^2*b^2*d*e^4 - 13*a^3*b*e^5)*m^3 + (6*b^4*d^3*e^2 - 36*a*
b^3*d^2*e^3 + 87*a^2*b^2*d*e^4 + 118*a^3*b*e^5)*m^2 + 2*(3*b^4*d^3*e^2 - 15
*a*b^3*d^2*e^3 + 30*a^2*b^2*d*e^4 + 107*a^3*b*e^5)*m)*x^2 - 2*(12*a*b^3*d^4
*e - 54*a^2*b^2*d^3*e^2 + 94*a^3*b*d^2*e^3 - 77*a^4*d*e^4)*m + (120*a^4*e^5
 + (4*a^3*b*d*e^4 + a^4*e^5)*m^4 - 2*(6*a^2*b^2*d^2*e^3 - 24*a^3*b*d*e^4 -
7*a^4*e^5)*m^3 + (24*a*b^3*d^3*e^2 - 108*a^2*b^2*d^2*e^3 + 188*a^3*b*d*e^4
+ 71*a^4*e^5)*m^2 - 2*(12*b^4*d^4*e - 60*a*b^3*d^3*e^2 + 120*a^2*b^2*d^2*e^
3 - 120*a^3*b*d*e^4 - 77*a^4*e^5)*m)*x)*(e*x + d)^m/(e^5*m^5 + 15*e^5*m^4 +
 85*e^5*m^3 + 225*e^5*m^2 + 274*e^5*m + 120*e^5)
```

giac [B] time = 0.33, size = 1949, normalized size = 7.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*b^4*m^4*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*b^4*d*m^4*x^4*e^4*s
gn(b*x + a) + 4*(x*e + d)^m*a*b^3*m^4*x^4*e^5*sgn(b*x + a) + 10*(x*e + d)^m
*b^4*m^3*x^5*e^5*sgn(b*x + a) + 4*(x*e + d)^m*a*b^3*d*m^4*x^3*e^4*sgn(b*x +
 a) + 6*(x*e + d)^m*b^4*d*m^3*x^4*e^4*sgn(b*x + a) - 4*(x*e + d)^m*b^4*d^2*
m^3*x^3*e^3*sgn(b*x + a) + 6*(x*e + d)^m*a^2*b^2*m^4*x^3*e^5*sgn(b*x + a) +
 44*(x*e + d)^m*a*b^3*m^3*x^4*e^5*sgn(b*x + a) + 35*(x*e + d)^m*b^4*m^2*x^5
*e^5*sgn(b*x + a) + 6*(x*e + d)^m*a^2*b^2*d*m^4*x^2*e^4*sgn(b*x + a) + 32*(
x*e + d)^m*a*b^3*d*m^3*x^3*e^4*sgn(b*x + a) + 11*(x*e + d)^m*b^4*d*m^2*x^4*
e^4*sgn(b*x + a) - 12*(x*e + d)^m*a*b^3*d^2*m^3*x^2*e^3*sgn(b*x + a) - 12*(
x*e + d)^m*b^4*d^2*m^2*x^3*e^3*sgn(b*x + a) + 12*(x*e + d)^m*b^4*d^3*m^2*x^
2*e^2*sgn(b*x + a) + 4*(x*e + d)^m*a^3*b*m^4*x^2*e^5*sgn(b*x + a) + 72*(x*e
 + d)^m*a^2*b^2*m^3*x^3*e^5*sgn(b*x + a) + 164*(x*e + d)^m*a*b^3*m^2*x^4*e^
5*sgn(b*x + a) + 50*(x*e + d)^m*b^4*m*x^5*e^5*sgn(b*x + a) + 4*(x*e + d)^m*
a^3*b*d*m^4*x*e^4*sgn(b*x + a) + 60*(x*e + d)^m*a^2*b^2*d*m^3*x^2*e^4*sgn(b
*x + a) + 68*(x*e + d)^m*a*b^3*d*m^2*x^3*e^4*sgn(b*x + a) + 6*(x*e + d)^m*b
^4*d*m*x^4*e^4*sgn(b*x + a) - 12*(x*e + d)^m*a^2*b^2*d^2*m^3*x*e^3*sgn(b*x
+ a) - 72*(x*e + d)^m*a*b^3*d^2*m^2*x^2*e^3*sgn(b*x + a) - 8*(x*e + d)^m*b^
4*d^2*m*x^3*e^3*sgn(b*x + a) + 24*(x*e + d)^m*a*b^3*d^3*m^2*x*e^2*sgn(b*x +
 a) + 12*(x*e + d)^m*b^4*d^3*m*x^2*e^2*sgn(b*x + a) - 24*(x*e + d)^m*b^4*d^
4*m*x*e*sgn(b*x + a) + (x*e + d)^m*a^4*m^4*x*e^5*sgn(b*x + a) + 52*(x*e + d
)^m*a^3*b*m^3*x^2*e^5*sgn(b*x + a) + 294*(x*e + d)^m*a^2*b^2*m^2*x^3*e^5*sg
n(b*x + a) + 244*(x*e + d)^m*a*b^3*m*x^4*e^5*sgn(b*x + a) + 24*(x*e + d)^m*
b^4*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*a^4*d*m^4*e^4*sgn(b*x + a) + 48*(x*e
 + d)^m*a^3*b*d*m^3*x*e^4*sgn(b*x + a) + 174*(x*e + d)^m*a^2*b^2*d*m^2*x^2*
e^4*sgn(b*x + a) + 40*(x*e + d)^m*a*b^3*d*m*x^3*e^4*sgn(b*x + a) - 4*(x*e +
 d)^m*a^3*b*d^2*m^3*e^3*sgn(b*x + a) - 108*(x*e + d)^m*a^2*b^2*d^2*m^2*x*e^
3*sgn(b*x + a) - 60*(x*e + d)^m*a*b^3*d^2*m*x^2*e^3*sgn(b*x + a) + 12*(x*e
+ d)^m*a^2*b^2*d^3*m^2*e^2*sgn(b*x + a) + 120*(x*e + d)^m*a*b^3*d^3*m*x*e^2
*sgn(b*x + a) - 24*(x*e + d)^m*a*b^3*d^4*m*e*sgn(b*x + a) + 24*(x*e + d)^m*
b^4*d^5*sgn(b*x + a) + 14*(x*e + d)^m*a^4*m^3*x*e^5*sgn(b*x + a) + 236*(x*e
 + d)^m*a^3*b*m^2*x^2*e^5*sgn(b*x + a) + 468*(x*e + d)^m*a^2*b^2*m*x^3*e^5*
sgn(b*x + a) + 120*(x*e + d)^m*a*b^3*x^4*e^5*sgn(b*x + a) + 14*(x*e + d)^m*
a^4*d*m^3*e^4*sgn(b*x + a) + 188*(x*e + d)^m*a^3*b*d*m^2*x*e^4*sgn(b*x + a)
 + 120*(x*e + d)^m*a^2*b^2*d*m*x^2*e^4*sgn(b*x + a) - 48*(x*e + d)^m*a^3*b*
d^2*m^2*e^3*sgn(b*x + a) - 240*(x*e + d)^m*a^2*b^2*d^2*m*x*e^3*sgn(b*x + a)
 + 108*(x*e + d)^m*a^2*b^2*d^3*m*e^2*sgn(b*x + a) - 120*(x*e + d)^m*a*b^3*d
^4*e*sgn(b*x + a) + 71*(x*e + d)^m*a^4*m^2*x*e^5*sgn(b*x + a) + 428*(x*e +
d)^m*a^3*b*m*x^2*e^5*sgn(b*x + a) + 240*(x*e + d)^m*a^2*b^2*x^3*e^5*sgn(b*x
 + a) + 71*(x*e + d)^m*a^4*d*m^2*e^4*sgn(b*x + a) + 240*(x*e + d)^m*a^3*b*d
*m*x*e^4*sgn(b*x + a) - 188*(x*e + d)^m*a^3*b*d^2*m*e^3*sgn(b*x + a) + 240*
(x*e + d)^m*a^2*b^2*d^3*e^2*sgn(b*x + a) + 154*(x*e + d)^m*a^4*m*x*e^5*sgn(
b*x + a) + 240*(x*e + d)^m*a^3*b*x^2*e^5*sgn(b*x + a) + 154*(x*e + d)^m*a^4
*d*m*e^4*sgn(b*x + a) - 240*(x*e + d)^m*a^3*b*d^2*e^3*sgn(b*x + a) + 120*(x
*e + d)^m*a^4*x*e^5*sgn(b*x + a) + 120*(x*e + d)^m*a^4*d*e^4*sgn(b*x + a))/
(m^5*e^5 + 15*m^4*e^5 + 85*m^3*e^5 + 225*m^2*e^5 + 274*m*e^5 + 120*e^5)
```

maple [B] time = 0.05, size = 784, normalized size = 2.83

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^4*e^4*m^4*x^4+4*a*b^3*e^4*m^4*x^3+10*b^4*e^4*m^3*x^4+6*a^2
*b^2*e^4*m^4*x^2+44*a*b^3*e^4*m^3*x^3-4*b^4*d*e^3*m^3*x^3+35*b^4*e^4*m^2*x^
4+4*a^3*b*e^4*m^4*x+72*a^2*b^2*e^4*m^3*x^2-12*a*b^3*d*e^3*m^3*x^2+164*a*b^3
*e^4*m^2*x^3-24*b^4*d*e^3*m^2*x^3+50*b^4*e^4*m*x^4+a^4*e^4*m^4+52*a^3*b*e^4
*m^3*x-12*a^2*b^2*d*e^3*m^3*x+294*a^2*b^2*e^4*m^2*x^2-96*a*b^3*d*e^3*m^2*x^
2+244*a*b^3*e^4*m*x^3+12*b^4*d^2*e^2*m^2*x^2-44*b^4*d*e^3*m*x^3+24*b^4*e^4*
x^4+14*a^4*e^4*m^3-4*a^3*b*d*e^3*m^3+236*a^3*b*e^4*m^2*x-120*a^2*b^2*d*e^3*
```

```
m^2*x+468*a^2*b^2*e^4*m*x^2+24*a*b^3*d^2*e^2*m^2*x-204*a*b^3*d*e^3*m*x^2+12
0*a*b^3*e^4*x^3+36*b^4*d^2*e^2*m*x^2-24*b^4*d*e^3*x^3+71*a^4*e^4*m^2-48*a^3
*b*d*e^3*m^2+428*a^3*b*e^4*m*x+12*a^2*b^2*d^2*e^2*m^2-348*a^2*b^2*d*e^3*m*x
+240*a^2*b^2*e^4*x^2+144*a*b^3*d^2*e^2*m*x-120*a*b^3*d*e^3*x^2-24*b^4*d^3*e
*m*x+24*b^4*d^2*e^2*x^2+154*a^4*e^4*m-188*a^3*b*d*e^3*m+240*a^3*b*e^4*x+108
*a^2*b^2*d^2*e^2*m-240*a^2*b^2*d*e^3*x-24*a*b^3*d^3*e*m+120*a*b^3*d^2*e^2*x
-24*b^4*d^3*e*x+120*a^4*e^4-240*a^3*b*d*e^3+240*a^2*b^2*d^2*e^2-120*a*b^3*d
^3*e+24*b^4*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3/e^5/(m^5+15*m^4+85*m^3+225*m^2
+274*m+120)
```

maxima [B] time = 0.76, size = 756, normalized size = 2.73

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] ((m^3 + 6*m^2 + 11*m + 6)*b^3*e^4*x^4 - 3*(m^2 + 7*m + 12)*a^2*b*d^2*e^2 +
(m^3 + 9*m^2 + 26*m + 24)*a^3*d*e^3 + 6*a*b^2*d^3*e*(m + 4) - 6*b^3*d^4 + (
(m^3 + 3*m^2 + 2*m)*b^3*d*e^3 + 3*(m^3 + 7*m^2 + 14*m + 8)*a*b^2*e^4)*x^3 -
 3*((m^2 + m)*b^3*d^2*e^2 - (m^3 + 5*m^2 + 4*m)*a*b^2*d*e^3 - (m^3 + 8*m^2
+ 19*m + 12)*a^2*b*e^4)*x^2 - (6*(m^2 + 4*m)*a*b^2*d^2*e^2 - 3*(m^3 + 7*m^2
 + 12*m)*a^2*b*d*e^3 - (m^3 + 9*m^2 + 26*m + 24)*a^3*e^4 - 6*b^3*d^3*e*m)*x
)*(e*x + d)^m*a/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*b^3*e^5*x^5 + 6*(m^2 + 9*m + 20)*a^2*b*d^3*e^2 - (m^3
 + 12*m^2 + 47*m + 60)*a^3*d^2*e^3 - 18*a*b^2*d^4*e*(m + 5) + 24*b^3*d^5 +
((m^4 + 6*m^3 + 11*m^2 + 6*m)*b^3*d*e^4 + 3*(m^4 + 11*m^3 + 41*m^2 + 61*m +
 30)*a*b^2*e^5)*x^4 - (4*(m^3 + 3*m^2 + 2*m)*b^3*d^2*e^3 - 3*(m^4 + 8*m^3 +
 17*m^2 + 10*m)*a*b^2*d*e^4 - 3*(m^4 + 12*m^3 + 49*m^2 + 78*m + 40)*a^2*b*e
^5)*x^3 + (12*(m^2 + m)*b^3*d^3*e^2 - 9*(m^3 + 6*m^2 + 5*m)*a*b^2*d^2*e^3 +
 3*(m^4 + 10*m^3 + 29*m^2 + 20*m)*a^2*b*d*e^4 + (m^4 + 13*m^3 + 59*m^2 + 10
7*m + 60)*a^3*e^5)*x^2 + (18*(m^2 + 5*m)*a*b^2*d^3*e^2 - 6*(m^3 + 9*m^2 + 2
0*m)*a^2*b*d^2*e^3 + (m^4 + 12*m^3 + 47*m^2 + 60*m)*a^3*d*e^4 - 24*b^3*d^4*
e*m)*x)*(e*x + d)^m*b/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^m\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m \left((a+bx)^2\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**m*((a + b*x)**2)**(3/2), x)
```

3.1926 $\int (a+bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=159

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+2}}{e^3(m+2)(a+bx)}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+$$

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+2}}{e^3(m+2)(a+bx)}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+3}}{e^3(m+3)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(1 + m
)*(a + b*x)) - (2*b*(b*d - a*e)*(d + e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(e^3*(2 + m)*(a + b*x)) + (b^2*(d + e*x)^(3 + m)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(e^3*(3 + m)*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^m\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^m\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^m}{e^2}-\frac{2b(bd-ae)(d+ex)^{1+m}}{e^2}+\frac{b^2(d+e}{e^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)^2(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^3(1+m)(a+bx)}-\frac{2b(bd-ae)(d+ex)^{2+m}}{e^3(2+m)(a}\end{aligned}$$

Mathematica [A] time = 0.09, size = 113, normalized size = 0.71

$$\frac{\sqrt{(a+bx)^2}(d+ex)^{m+1}\left(a^2e^2\left(m^2+5m+6\right)+2abe(m+3)(e(m+1)x-d)+b^2\left(2d^2-2de(m+1)x+e^2\left(m^2+3m+2\right)x^2\right)\right)}{e^3(m+1)(m+2)(m+3)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*(a^2*e^2*(6 + 5*m + m^2) + 2*a*b*e*(3
+ m)*(-d + e*(1 + m)*x) + b^2*(2*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2
)*x^2)))/(e^3*(1 + m)*(2 + m)*(3 + m)*(a + b*x))
```

IntegrateAlgebraic [F] time = 0.89, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^
2], x]
```

fricas [A] time = 0.44, size = 237, normalized size = 1.49

$$\frac{\left(a^2de^2m^2+2b^2d^3-6abd^2e+6a^2de^2+\left(b^2e^3m^2+3b^2e^3m+2b^2e^3\right)x^3+\left(6abe^3+\left(b^2de^2+2abe^3\right)m^2+\left(b^2de^2+8abe^3\right)m\right)x^2-\left(2abd^2e-5a^2de^2\right)m+\left(6a^2e^3+\left(2abde^2+a^2e^3\right)m^2-\left(2b^2d^2e-6abde^2-5a^2e^3\right)m\right)x\right)(ex+d)^m}{e^3m^3+6e^3m^2+11e^3m+6e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] (a^2*d*e^2*m^2 + 2*b^2*d^3 - 6*a*b*d^2*e + 6*a^2*d*e^2 + (b^2*e^3*m^2 + 3*b
^2*e^3*m + 2*b^2*e^3)*x^3 + (6*a*b*e^3 + (b^2*d*e^2 + 2*a*b*e^3)*m^2 + (b^2
*d*e^2 + 8*a*b*e^3)*m)*x^2 - (2*a*b*d^2*e - 5*a^2*d*e^2)*m + (6*a^2*e^3 + (
2*a*b*d*e^2 + a^2*e^3)*m^2 - (2*b^2*d^2*e - 6*a*b*d*e^2 - 5*a^2*e^3)*m)*x)*
(e*x + d)^m/(e^3*m^3 + 6*e^3*m^2 + 11*e^3*m + 6*e^3)
```

giac [B] time = 0.22, size = 508, normalized size = 3.19

$$\frac{(xe+d)^m b^2m^2x^3e^3\,\mathrm{sgn}(bx+a)+(xe+d)^m b^2dm^2x^2e^2\,\mathrm{sgn}(bx+a)+2(xe+d)^m abm^2x^2e^3\,\mathrm{sgn}(bx+a)+3(xe+d)^m b^2mx^3e^3\,\mathrm{sgn}(bx+a)+2(xe+d)^m abdm^2xe^2\,\mathrm{sgn}(bx+a)+(xe+d)^m b^2dmx^2e^2\,\mathrm{sgn}(bx+a)-2(xe+d)^m b^2d^2mxe\,\mathrm{sgn}(bx+a)+(xe+d)^m a^2m^2xe^3\,\mathrm{sgn}(bx+a)+8(xe+d)^m abmx^2e^3\,\mathrm{sgn}(bx+a)+2(xe+d)^m b^2x^3e^3\,\mathrm{sgn}(bx+a)+(xe+d)^m a^2dm^2e^2\,\mathrm{sgn}(bx+a)+6(xe+d)^m abdmxe^2\,\mathrm{sgn}(bx+a)-2(xe+d)^m abd^2me\,\mathrm{sgn}(bx+a)+2(xe+d)^m b^2d^3\,\mathrm{sgn}(bx+a)+5(xe+d)^m a^2mxe^3\,\mathrm{sgn}(bx+a)+6(xe+d)^m abx^2e^3\,\mathrm{sgn}(bx+a)+5(xe+d)^m a^2dme^2\,\mathrm{sgn}(bx+a)-6(xe+d)^m abd^2e\,\mathrm{sgn}(bx+a)+6(xe+d)^m a^2xe^3\,\mathrm{sgn}(bx+a)+6(xe+d)^m a^2de^2\,\mathrm{sgn}(bx+a)}{m^3e^3+6m^2e^3+11me^3+6e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*b^2*m^2*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*b^2*d*m^2*x^2*e^2*s
gn(b*x + a) + 2*(x*e + d)^m*a*b*m^2*x^2*e^3*sgn(b*x + a) + 3*(x*e + d)^m*b^
2*m*x^3*e^3*sgn(b*x + a) + 2*(x*e + d)^m*a*b*d*m^2*x*e^2*sgn(b*x + a) + (x*
e + d)^m*b^2*d*m*x^2*e^2*sgn(b*x + a) - 2*(x*e + d)^m*b^2*d^2*m*x*e*sgn(b*x
 + a) + (x*e + d)^m*a^2*m^2*x*e^3*sgn(b*x + a) + 8*(x*e + d)^m*a*b*m*x^2*e^
3*sgn(b*x + a) + 2*(x*e + d)^m*b^2*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*a^2*d
*m^2*e^2*sgn(b*x + a) + 6*(x*e + d)^m*a*b*d*m*x*e^2*sgn(b*x + a) - 2*(x*e +
 d)^m*a*b*d^2*m*e*sgn(b*x + a) + 2*(x*e + d)^m*b^2*d^3*sgn(b*x + a) + 5*(x*
e + d)^m*a^2*m*x*e^3*sgn(b*x + a) + 6*(x*e + d)^m*a*b*x^2*e^3*sgn(b*x + a)
+ 5*(x*e + d)^m*a^2*d*m*e^2*sgn(b*x + a) - 6*(x*e + d)^m*a*b*d^2*e*sgn(b*x
+ a) + 6*(x*e + d)^m*a^2*x*e^3*sgn(b*x + a) + 6*(x*e + d)^m*a^2*d*e^2*sgn(b
*x + a))/(m^3*e^3 + 6*m^2*e^3 + 11*m*e^3 + 6*e^3)
```

maple [A] time = 0.06, size = 175, normalized size = 1.10

$$\frac{\left(b^{2}e^{2}m^{2}x^{2}+2ab\,e^{2}m^{2}x+3b^{2}e^{2}m\,x^{2}+a^{2}e^{2}m^{2}+8ab\,e^{2}mx-2b^{2}demx+2b^{2}x^{2}e^{2}+5a^{2}e^{2}m-2abdem+6ab\,e^{2}x-2b^{2}dex+6a^{2}e^{2}-6abde+2b^{2}d^{2}\right)\sqrt{(bx+a)^{2}}\ (ex+d)^{m+1}}{(bx+a)\left(m^{3}+6m^{2}+11m+6\right)e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^2*e^2*m^2*x^2+2*a*b*e^2*m^2*x+3*b^2*e^2*m*x^2+a^2*e^2*m^2+
8*a*b*e^2*m*x-2*b^2*d*e*m*x+2*b^2*e^2*x^2+5*a^2*e^2*m-2*a*b*d*e*m+6*a*b*e^2
*x-2*b^2*d*e*x+6*a^2*e^2-6*a*b*d*e+2*b^2*d^2)*((b*x+a)^2)^(1/2)/(b*x+a)/e^3
/(m^3+6*m^2+11*m+6)
```

maxima [A] time = 0.58, size = 177, normalized size = 1.11

$$\frac{\left(be^{2}(m+1)x^{2}+ade(m+2)-bd^{2}+\left(ae^{2}(m+2)+bdem\right)x\right)(ex+d)^{m}a}{\left(m^{2}+3\,m+2\right)e^{2}}+\frac{\left(\left(m^{2}+3\,m+2\right)be^{3}x^{3}-ad^{2}e(m+3)+2\,bd^{3}+\left(\left(m^{2}+m\right)bde^{2}+\left(m^{2}+4\,m+3\right)ae^{3}\right)x^{2}+\left(\left(m^{2}+3\,m\right)ade^{2}-2\,bd^{2}em\right)x\right)(ex+d)^{m}b}{\left(m^{3}+6\,m^{2}+11\,m+6\right)e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] (b*e^2*(m + 1)*x^2 + a*d*e*(m + 2) - b*d^2 + (a*e^2*(m + 2) + b*d*e*m)*x)*(
e*x + d)^m*a/((m^2 + 3*m + 2)*e^2) + ((m^2 + 3*m + 2)*b*e^3*x^3 - a*d^2*e*(
m + 3) + 2*b*d^3 + ((m^2 + m)*b*d*e^2 + (m^2 + 4*m + 3)*a*e^3)*x^2 + ((m^2
+ 3*m)*a*d*e^2 - 2*b*d^2*e*m)*x)*(e*x + d)^m*b/((m^3 + 6*m^2 + 11*m + 6)*e^
3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,\left(d+e\,x\right)^{m}\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^{m}\,\sqrt{(a+bx)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**m*sqrt((a + b*x)**2), x)
```

3.1927 $\int \frac{(a+bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=43

$$\frac{(a+bx)(d+ex)^{m+1}}{e(m+1)\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.03, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$\frac{(a+bx)(d+ex)^{m+1}}{e(m+1)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^(1 + m))/(e*(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^m}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^m\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)(d+ex)^{1+m}}{e(1+m)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 34, normalized size = 0.79

$$\frac{(a+bx)(d+ex)^{m+1}}{e(m+1)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^(1 + m))/(e*(1 + m)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*
x^2], x]
```

fricas [A] time = 0.44, size = 20, normalized size = 0.47

$$\frac{(ex+d)(ex+d)^m}{em+e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] (e*x + d)*(e*x + d)^m/(e*m + e)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{\sqrt{b^2x^2+2\,abx+a^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/sqrt(b^2*x^2 + 2*a*b*x + a^2), x)
```

maple [A] time = 0.04, size = 33, normalized size = 0.77

$$\frac{(bx+a)\,(ex+d)^{m+1}}{(m+1)\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] (b*x+a)*(e*x+d)^(m+1)/e/(m+1)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.75, size = 21, normalized size = 0.49

$$\frac{(ex+d)(ex+d)^m}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] (e*x + d)*(e*x + d)^m/(e*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^m}{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^m}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
[Out] Integral((a + b*x)*(d + e*x)**m/sqrt((a + b*x)**2), x)
```

3.1928 $\int (ac+bcx)(d+ex)^{-3-2p}\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=51

$$\frac{c\left(a^2+2abx+b^2x^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)}$$

Rubi [A] time = 0.03, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.026, Rules used = {767}

$$\frac{c\left(a^2+2abx+b^2x^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*c + b*c*x)*(d + e*x)^(-3 - 2*p)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (c*(a^2 + 2*a*b*x + b^2*x^2)^(1 + p))/(2*(b*d - a*e)*(1 + p)*(d + e*x)^(2*(
1 + p)))
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int (ac+bcx)(d+ex)^{-3-2p}\left(a^2+2abx+b^2x^2\right)^p\,dx=\frac{c(d+ex)^{-2(1+p)}\left(a^2+2abx+b^2x^2\right)^{1+p}}{2(bd-ae)(1+p)}$$

Mathematica [A] time = 0.03, size = 42, normalized size = 0.82

$$\frac{c\left((a+bx)^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c + b*c*x)*(d + e*x)^(-3 - 2*p)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (c*((a + b*x)^2)^(1 + p))/(2*(b*d - a*e)*(1 + p)*(d + e*x)^(2*(1 + p)))
```

IntegrateAlgebraic [F] time = 0.22, size = 0, normalized size = 0.00

$$\int (ac+bcx)(d+ex)^{-3-2p}\left(a^2+2abx+b^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a*c + b*c*x)*(d + e*x)^(-3 - 2*p)*(a^2 + 2*a*b*x + b^2*
x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a*c + b*c*x)*(d + e*x)^(-3 - 2*p)*(a^2 + 2*a*b*x
 + b^2*x^2)^p, x]
```

fricas [A] time = 0.46, size = 99, normalized size = 1.94

$$\frac{\left(b^2cex^3 + a^2cd + \left(b^2cd + 2\,abce\right)x^2 + \left(2\,abcd + a^2ce\right)x\right)\left(b^2x^2 + 2\,abx + a^2\right)^p (ex+d)^{-2\,p-3}}{2\left(bd - ae + (bd - ae)p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)^(-3-2*p)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="fricas")
```

```
[Out] 1/2*(b^2*c*e*x^3 + a^2*c*d + (b^2*c*d + 2*a*b*c*e)*x^2 + (2*a*b*c*d + a^2*c
*e)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3)/(b*d - a*e + (b*d -
 a*e)*p)
```

giac [B] time = 0.27, size = 305, normalized size = 5.98

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^p b^2cx^3e^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d) + 1\right)} + \left(b^2x^2 + 2\,abx + a^2\right)^p b^2cdx^2e^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d)\right)} + 2\left(b^2x^2 + 2\,abx + a^2\right)^p abcx^2e^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d) + 1\right)} + 2\left(b^2x^2 + 2\,abx + a^2\right)^p abcdxe^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d)\right)} + \left(b^2x^2 + 2\,abx + a^2\right)^p a^2cxe^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d) + 1\right)} + \left(b^2x^2 + 2\,abx + a^2\right)^p a^2cde^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d)\right)}}{2\left(bdp - ape + bd - ae\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)^(-3-2*p)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="giac")
```

```
[Out] 1/2*((b^2*x^2 + 2*a*b*x + a^2)^p*b^2*c*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e
 + d) + 1) + (b^2*x^2 + 2*a*b*x + a^2)^p*b^2*c*d*x^2*e^(-2*p*log(x*e + d) -
 3*log(x*e + d)) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*c*x^2*e^(-2*p*log(x*e
+ d) - 3*log(x*e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*c*d*x*e^(-2*
p*log(x*e + d) - 3*log(x*e + d)) + (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*c*x*e^(-
2*p*log(x*e + d) - 3*log(x*e + d) + 1) + (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*c*
d*e^(-2*p*log(x*e + d) - 3*log(x*e + d)))/(b*d*p - a*p*e + b*d - a*e)
```

maple [A] time = 0.05, size = 59, normalized size = 1.16

$$-\frac{(bx+a)^2\, c\,(ex+d)^{-2p-2}\left(b^2x^2 + 2abx + a^2\right)^p}{2\left(aep - bdp + ae - bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c*x+a*c)*(e*x+d)^(-2*p-3)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b*x+a)^2*(e*x+d)^(-2*p-2)*c*(b^2*x^2+2*a*b*x+a^2)^p/(a*e*p-b*d*p+a*e-
b*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bcx + ac)\left(b^2x^2 + 2\,abx + a^2\right)^p (ex+d)^{-2\,p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)^(-3-2*p)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="maxima")
```

```
[Out] integrate((b*c*x + a*c)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3), x
)
```

mupad [B] time = 2.25, size = 178, normalized size = 3.49

$$-\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^p\left(\frac{a^2\,c\,d}{2\,(a\,e - b\,d)\,\left(p+1\right)\,(d + e\,x)^{2\,p+3}} + \frac{a\,c\,x\,(a\,e + 2\,b\,d)}{2\,(a\,e - b\,d)\,\left(p+1\right)\,(d + e\,x)^{2\,p+3}} + \frac{b\,c\,x^2\,(2\,a\,e + b\,d)}{2\,(a\,e - b\,d)\,\left(p+1\right)\,(d + e\,x)^{2\,p+3}} + \frac{b^2\,c\,e\,x^3}{2\,(a\,e - b\,d)\,\left(p+1\right)\,(d + e\,x)^{2\,p+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] -(a^2 + b^2*x^2 + 2*a*b*x)^p*((a^2*c*d)/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2
*p + 3)) + (a*c*x*(a*e + 2*b*d))/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2*p + 3)
) + (b*c*x^2*(2*a*e + b*d))/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2*p + 3)) + (
b^2*c*e*x^3)/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2*p + 3)))
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)**(-3-2*p)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1929 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^p \, dx$

Optimal. Leaf size=183

$$\frac{3e^2(a+bx)^4(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^4(p+2)}+\frac{3e(a+bx)^3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{b^4(2p+3)}+\frac{(a+bx)^2(bd-ae)^3\left(a^2\right.}{2b^4(p+}$$

Rubi [A] time = 0.12, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = {770, 21, 43}

$$\frac{3e^2(a+bx)^4(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^4(p+2)}+\frac{3e(a+bx)^3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{b^4(2p+3)}+\frac{(a+bx)^2(bd-ae)^3\left(a^2+2abx+b^2x^2\right)^p}{2b^4(p+1)}+\frac{e^3(a+bx)^5\left(a^2+2abx+b^2x^2\right)^p}{b^4(2p+5)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^4*(1 + p)) + (
3*e*(b*d - a*e)^2*(a + b*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^4*(3 + 2*p))
+ (3*e^2*(b*d - a*e)*(a + b*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^4*(2 + p
)) + (e^3*(a + b*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^4*(5 + 2*p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (a+bx)\left(ab+b^2x\right)^{2p}(d\\ &= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{1+2p}(d+ex)^3}{b}\\ &= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int\left(\frac{(bd-ae)^3\left(ab+b^2x\right)^{1+2p}}{b^3}+\frac{3e(b}{}\right.}{b}\\ &= \frac{(bd-ae)^3(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^4(1+p)}+\frac{3e(bd-ae)^2(a+bx)^3}{b^4(3}\end{aligned}$$

Mathematica [A] time = 0.09, size = 104, normalized size = 0.57

$$\frac{\left((a+bx)^2\right)^{p+1}\left(\frac{3e^2(a+bx)^2(bd-ae)}{p+2}+\frac{6e(a+bx)(bd-ae)^2}{2p+3}+\frac{(bd-ae)^3}{p+1}+\frac{2e^3(a+bx)^3}{2p+5}\right)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*((b*d - a*e)^3/(1 + p) + (6*e*(b*d - a*e)^2*(a + b*x
))/(3 + 2*p) + (3*e^2*(b*d - a*e)*(a + b*x)^2)/(2 + p) + (2*e^3*(a + b*x)^3
)/(5 + 2*p)))/(2*b^4)
```

IntegrateAlgebraic [F] time = 0.69, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p
, x]
```

fricas [B] time = 0.47, size = 715, normalized size = 3.91

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(4*a^2*b^3*d^3*p^3 + 30*a^2*b^3*d^3 - 30*a^3*b^2*d^2*e + 15*a^4*b*d*e^2
 - 3*a^5*e^3 + 2*(2*b^5*e^3*p^3 + 9*b^5*e^3*p^2 + 13*b^5*e^3*p + 6*b^5*e^3)
*x^5 + (45*b^5*d*e^2 + 15*a*b^4*e^3 + 4*(3*b^5*d*e^2 + 2*a*b^4*e^3)*p^3 + 3
0*(2*b^5*d*e^2 + a*b^4*e^3)*p^2 + (93*b^5*d*e^2 + 37*a*b^4*e^3)*p)*x^4 + 2*
(30*b^5*d^2*e + 30*a*b^4*d*e^2 + 2*(3*b^5*d^2*e + 6*a*b^4*d*e^2 + a^2*b^3*e
^3)*p^3 + 3*(11*b^5*d^2*e + 18*a*b^4*d*e^2 + a^2*b^3*e^3)*p^2 + (57*b^5*d^2
*e + 72*a*b^4*d*e^2 + a^2*b^3*e^3)*p)*x^3 + 6*(4*a^2*b^3*d^3 - a^3*b^2*d^2*
e)*p^2 + (30*b^5*d^3 + 90*a*b^4*d^2*e + 4*(b^5*d^3 + 6*a*b^4*d^2*e + 3*a^2*
b^3*d*e^2)*p^3 + 6*(4*b^5*d^3 + 21*a*b^4*d^2*e + 6*a^2*b^3*d*e^2 - a^3*b^2*
e^3)*p^2 + (47*b^5*d^3 + 201*a*b^4*d^2*e + 15*a^2*b^3*d*e^2 - 3*a^3*b^2*e^3
)*p)*x^2 + (47*a^2*b^3*d^3 - 27*a^3*b^2*d^2*e + 6*a^4*b*d*e^2)*p + 2*(30*a*
b^4*d^3 + 2*(2*a*b^4*d^3 + 3*a^2*b^3*d^2*e)*p^3 + 3*(8*a*b^4*d^3 + 9*a^2*b^
3*d^2*e - 2*a^3*b^2*d*e^2)*p^2 + (47*a*b^4*d^3 + 30*a^2*b^3*d^2*e - 15*a^3*
b^2*d*e^2 + 3*a^4*b*e^3)*p)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p/(4*b^4*p^4 + 28*
b^4*p^3 + 71*b^4*p^2 + 77*b^4*p + 30*b^4)
```

giac [B] time = 0.29, size = 1805, normalized size = 9.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(4*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*p^3*x^5*e^3 + 12*(b^2*x^2 + 2*a*b*x
+ a^2)^p*b^5*d*p^3*x^4*e^2 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^2*p^3*x^3
*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^3*p^3*x^2 + 8*(b^2*x^2 + 2*a*b*x +
 a^2)^p*a*b^4*p^3*x^4*e^3 + 18*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*p^2*x^5*e^3
+ 24*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d*p^3*x^3*e^2 + 60*(b^2*x^2 + 2*a*b*
x + a^2)^p*b^5*d*p^2*x^4*e^2 + 24*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^2*p^3
```

```
*x^2*e + 66*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^2*p^2*x^3*e + 8*(b^2*x^2 + 2*
a*b*x + a^2)^p*a*b^4*d^3*p^3*x + 24*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^3*p^2
*x^2 + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*p^3*x^3*e^3 + 30*(b^2*x^2 + 2*
a*b*x + a^2)^p*a*b^4*p^2*x^4*e^3 + 26*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*p*x^5
*e^3 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d*p^3*x^2*e^2 + 108*(b^2*x^2
+ 2*a*b*x + a^2)^p*a*b^4*d*p^2*x^3*e^2 + 93*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5
*d*p*x^4*e^2 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^2*p^3*x*e + 126*(b^
2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^2*p^2*x^2*e + 114*(b^2*x^2 + 2*a*b*x + a^2
)^p*b^5*d^2*p*x^3*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3*p^3 + 48*(b
^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^3*p^2*x + 47*(b^2*x^2 + 2*a*b*x + a^2)^p*
b^5*d^3*p*x^2 + 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*p^2*x^3*e^3 + 37*(b^2
*x^2 + 2*a*b*x + a^2)^p*a*b^4*p*x^4*e^3 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*b^
5*x^5*e^3 + 36*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d*p^2*x^2*e^2 + 144*(b^2
*x^2 + 2*a*b*x + a^2)^p*a*b^4*d*p*x^3*e^2 + 45*(b^2*x^2 + 2*a*b*x + a^2)^p*
b^5*d*x^4*e^2 + 54*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^2*p^2*x*e + 201*(b
^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^2*p*x^2*e + 60*(b^2*x^2 + 2*a*b*x + a^2)^
p*b^5*d^2*x^3*e + 24*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3*p^2 + 94*(b^2*
x^2 + 2*a*b*x + a^2)^p*a*b^4*d^3*p*x + 30*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d
^3*x^2 - 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*p^2*x^2*e^3 + 2*(b^2*x^2 + 2
*a*b*x + a^2)^p*a^2*b^3*p*x^3*e^3 + 15*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*x^
4*e^3 - 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d*p^2*x*e^2 + 15*(b^2*x^2 +
2*a*b*x + a^2)^p*a^2*b^3*d*p*x^2*e^2 + 60*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4
*d*x^3*e^2 - 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d^2*p^2*e + 60*(b^2*x^2
+ 2*a*b*x + a^2)^p*a^2*b^3*d^2*p*x*e + 90*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4
*d^2*x^2*e + 47*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3*p + 60*(b^2*x^2 + 2
*a*b*x + a^2)^p*a*b^4*d^3*x - 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*p*x^2*e
^3 - 30*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d*p*x*e^2 - 27*(b^2*x^2 + 2*a*b
*x + a^2)^p*a^3*b^2*d^2*p*e + 30*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3 +
6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^4*b*p*x*e^3 + 6*(b^2*x^2 + 2*a*b*x + a^2)^p
*a^4*b*d*p*e^2 - 30*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d^2*e + 15*(b^2*x^2
 + 2*a*b*x + a^2)^p*a^4*b*d*e^2 - 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a^5*e^3)/(4
*b^4*p^4 + 28*b^4*p^3 + 71*b^4*p^2 + 77*b^4*p + 30*b^4)
```

maple [B] time = 0.05, size = 407, normalized size = 2.22

$$-\frac{\left(-4b^3e^3p^3x^3-12b^3de^2p^3x^2-18b^3e^3p^2x^3+6ab^2e^3p^2x^2-12b^3d^2ep^3x-60b^3de^2p^2x^2-26b^3e^3px^3+12ab^2de^2p^2x+15ab^2e^3px^2-4b^3d^3p^3-66b^3d^2ep^2x-93b^3de^2px^2-12b^3e^3x^3-6a^2be^3px+6ab^2d^2ep^2+42ab^2de^2px+9ab^2e^3x^2-24b^3d^3p^2-114b^3d^2epx-45b^3de^2x^2-6a^2bde^2p-6a^2be^3x+27ab^2d^2ep+30ab^2de^2x-47b^3d^3p-60b^3d^2ex+3a^3e^3-15a^2bde^2+30ab^2d^2e-30b^3d^3\right)(bx+a)^2\left(b^2x^2+2abx+a^2\right)^p}{2\left(4p^4+28p^3+71p^2+77p+30\right)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b^2*x^2+2*a*b*x+a^2)^p*(-4*b^3*e^3*p^3*x^3-12*b^3*d*e^2*p^3*x^2-18*b^
3*e^3*p^2*x^3+6*a*b^2*e^3*p^2*x^2-12*b^3*d^2*e*p^3*x-60*b^3*d*e^2*p^2*x^2-2
6*b^3*e^3*p*x^3+12*a*b^2*d*e^2*p^2*x+15*a*b^2*e^3*p*x^2-4*b^3*d^3*p^3-66*b^
3*d^2*e*p^2*x-93*b^3*d*e^2*p*x^2-12*b^3*e^3*x^3-6*a^2*b*e^3*p*x+6*a*b^2*d^2
*e*p^2+42*a*b^2*d*e^2*p*x+9*a*b^2*e^3*x^2-24*b^3*d^3*p^2-114*b^3*d^2*e*p*x-
45*b^3*d*e^2*x^2-6*a^2*b*d*e^2*p-6*a^2*b*e^3*x+27*a*b^2*d^2*e*p+30*a*b^2*d*
e^2*x-47*b^3*d^3*p-60*b^3*d^2*e*x+3*a^3*e^3-15*a^2*b*d*e^2+30*a*b^2*d^2*e-3
0*b^3*d^3)*(b*x+a)^2/b^4/(4*p^4+28*p^3+71*p^2+77*p+30)
```

maxima [B] time = 0.75, size = 679, normalized size = 3.71

$$\frac{(bx+a)(bx+a)^{2p}ad^3}{b(2p+1)}+\frac{\left(b^2(2p+1)x^2+2abpx-a^2\right)(bx+a)^{2p}d^3}{2\left(2p^2+3p+1\right)b}+\frac{3\left(b^2(2p+1)x^2+2abpx-a^2\right)(bx+a)^{2p}ad^2e}{2\left(2p^2+3p+1\right)b^2}+\frac{3\left(\left(2p^2+3p+1\right)b^3x^3+\left(2p^2+p\right)ab^2x^2-2a^2bpx+a^3\right)(bx+a)^{2p}d^2e}{\left(4p^3+12p^2+11p+3\right)b^2}+\frac{3\left(\left(2p^2+3p+1\right)b^3x^3+\left(2p^2+p\right)ab^2x^2-2a^2bpx+a^3\right)(bx+a)^{2p}ade^2}{\left(4p^3+12p^2+11p+3\right)b^3}+\frac{3\left(\left(4p^3+12p^2+11p+3\right)b^4x^4+2\left(2p^3+3p^2+p\right)ab^3x^3-3\left(2p^2+p\right)a^2b^2x^2+6a^3bpx-3a^4\right)(bx+a)^{2p}de^2}{2\left(4p^4+20p^3+35p^2+25p+6\right)b^3}+\frac{\left(\left(4p^3+12p^2+11p+3\right)b^4x^4+2\left(2p^3+3p^2+p\right)ab^3x^3-3\left(2p^2+p\right)a^2b^2x^2+6a^3bpx-3a^4\right)(bx+a)^{2p}ae^3}{2\left(4p^4+20p^3+35p^2+25p+6\right)b^4}+\frac{\left(\left(4p^4+20p^3+35p^2+25p+6\right)b^5x^5+\left(4p^4+12p^3+11p^2+3p\right)ab^4x^4-4\left(2p^3+3p^2+p\right)a^2b^3x^3+6\left(2p^2+p\right)a^3b^2x^2-12a^4bpx+6a^5\right)(bx+a)^{2p}e^3}{\left(8p^5+60p^4+170p^3+225p^2+137p+30\right)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(b*x + a)^(2*p)*a*d^3/(b*(2*p + 1)) + 1/2*(b^2*(2*p + 1)*x^2 + 2*
a*b*p*x - a^2)*(b*x + a)^(2*p)*d^3/((2*p^2 + 3*p + 1)*b) + 3/2*(b^2*(2*p +
1)*x^2 + 2*a*b*p*x - a^2)*(b*x + a)^(2*p)*a*d^2*e/((2*p^2 + 3*p + 1)*b^2) +
```

```
3*((2*p^2 + 3*p + 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*
(b*x + a)^(2*p)*d^2*e/((4*p^3 + 12*p^2 + 11*p + 3)*b^2) + 3*((2*p^2 + 3*p +
 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x + a)^(2*p)*a*
d*e^2/((4*p^3 + 12*p^2 + 11*p + 3)*b^3) + 3/2*((4*p^3 + 12*p^2 + 11*p + 3)*
b^4*x^4 + 2*(2*p^3 + 3*p^2 + p)*a*b^3*x^3 - 3*(2*p^2 + p)*a^2*b^2*x^2 + 6*a
^3*b*p*x - 3*a^4)*(b*x + a)^(2*p)*d*e^2/((4*p^4 + 20*p^3 + 35*p^2 + 25*p +
6)*b^3) + 1/2*((4*p^3 + 12*p^2 + 11*p + 3)*b^4*x^4 + 2*(2*p^3 + 3*p^2 + p)*
a*b^3*x^3 - 3*(2*p^2 + p)*a^2*b^2*x^2 + 6*a^3*b*p*x - 3*a^4)*(b*x + a)^(2*p
)*a*e^3/((4*p^4 + 20*p^3 + 35*p^2 + 25*p + 6)*b^4) + ((4*p^4 + 20*p^3 + 35*
p^2 + 25*p + 6)*b^5*x^5 + (4*p^4 + 12*p^3 + 11*p^2 + 3*p)*a*b^4*x^4 - 4*(2*
p^3 + 3*p^2 + p)*a^2*b^3*x^3 + 6*(2*p^2 + p)*a^3*b^2*x^2 - 12*a^4*b*p*x + 6
*a^5)*(b*x + a)^(2*p)*e^3/((8*p^5 + 60*p^4 + 170*p^3 + 225*p^2 + 137*p + 30
)*b^4)
```

mupad [B] time = 2.49, size = 683, normalized size = 3.73

$$\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\,\left(\frac{x^2\,\left(-6\,a^3\,b^2\,e^3\,p^2-3\,a^3\,b^2\,e^3\,p+12\,a^2\,b^3\,d\,e^2\,p^3+36\,a^2\,b^3\,d\,e^2\,p^2+15\,a^2\,b^3\,d\,e^2\,p+24\,a\,b^4\,d^2\,e\,p^3+126\,a\,b^4\,d^2\,e\,p^2+201\,a\,b^4\,d^2\,e\,p+90\,a\,b^4\,d^2\,e+4\,b^5\,d^3\,p^3+24\,b^5\,d^3\,p^2+47\,b^5\,d^3\,p+30\,b^5\,d^3\right)}{2\,b^4\,\left(4\,p^4+28\,p^3+71\,p^2+77\,p+30\right)}+\frac{a^2\,\left(-3\,a^3\,e^3+6\,a^2\,b\,d\,e^2\,p+15\,a^2\,b\,d\,e^2-6\,a\,b^2\,d^2\,e\,p^2-27\,a\,b^2\,d^2\,e\,p-30\,a\,b^2\,d^2\,e+4\,b^3\,d^3\,p^3+24\,b^3\,d^3\,p^2+47\,b^3\,d^3\,p+30\,b^3\,d^3\right)}{2\,b^4\,\left(4\,p^4+28\,p^3+71\,p^2+77\,p+30\right)}+\frac{b\,e^3\,x^5\,\left(2\,p^3+9\,p^2+13\,p+6\right)}{4\,p^4+28\,p^3+71\,p^2+77\,p+30}+\frac{a\,x\,\left(3\,a^3\,e^3\,p-6\,a^2\,b\,d\,e^2\,p^2-15\,a^2\,b\,d\,e^2\,p+6\,a\,b^2\,d^2\,e\,p^3+27\,a\,b^2\,d^2\,e\,p^2+30\,a\,b^2\,d^2\,e\,p+4\,b^3\,d^3\,p^3+24\,b^3\,d^3\,p^2+47\,b^3\,d^3\,p+30\,b^3\,d^3\right)}{b^3\,\left(4\,p^4+28\,p^3+71\,p^2+77\,p+30\right)}+\frac{e^2\,x^4\,\left(2\,p^2+5\,p+3\right)\,\left(5\,a\,e+15\,b\,d+4\,a\,e\,p+6\,b\,d\,p\right)}{2\,\left(4\,p^4+28\,p^3+71\,p^2+77\,p+30\right)}+\frac{e\,x^3\,\left(p+1\right)\,\left(2\,a^2\,e^2\,p^2+a^2\,e^2\,p+12\,a\,b\,d\,e\,p^2+42\,a\,b\,d\,e\,p+30\,a\,b\,d\,e+6\,b^2\,d^2\,p^2+27\,b^2\,d^2\,p+30\,b^2\,d^2\right)}{b\,\left(4\,p^4+28\,p^3+71\,p^2+77\,p+30\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((x^2*(30*b^5*d^3 + 47*b^5*d^3*p + 24*b^5*d^3*p
^2 + 4*b^5*d^3*p^3 - 3*a^3*b^2*e^3*p - 6*a^3*b^2*e^3*p^2 + 90*a*b^4*d^2*e +
 201*a*b^4*d^2*e*p + 15*a^2*b^3*d*e^2*p + 126*a*b^4*d^2*e*p^2 + 24*a*b^4*d^
2*e*p^3 + 36*a^2*b^3*d*e^2*p^2 + 12*a^2*b^3*d*e^2*p^3))/(2*b^4*(77*p + 71*p
^2 + 28*p^3 + 4*p^4 + 30)) + (a^2*(30*b^3*d^3 - 3*a^3*e^3 + 47*b^3*d^3*p +
24*b^3*d^3*p^2 + 4*b^3*d^3*p^3 - 30*a*b^2*d^2*e + 15*a^2*b*d*e^2 - 27*a*b^2
*d^2*e*p + 6*a^2*b*d*e^2*p - 6*a*b^2*d^2*e*p^2))/(2*b^4*(77*p + 71*p^2 + 28
*p^3 + 4*p^4 + 30)) + (b*e^3*x^5*(13*p + 9*p^2 + 2*p^3 + 6))/(77*p + 71*p^2
 + 28*p^3 + 4*p^4 + 30) + (a*x*(30*b^3*d^3 + 3*a^3*e^3*p + 47*b^3*d^3*p + 2
4*b^3*d^3*p^2 + 4*b^3*d^3*p^3 + 30*a*b^2*d^2*e*p - 15*a^2*b*d*e^2*p + 27*a*
b^2*d^2*e*p^2 - 6*a^2*b*d*e^2*p^2 + 6*a*b^2*d^2*e*p^3))/(b^3*(77*p + 71*p^2
 + 28*p^3 + 4*p^4 + 30)) + (e^2*x^4*(5*p + 2*p^2 + 3)*(5*a*e + 15*b*d + 4*a
*e*p + 6*b*d*p))/(2*(77*p + 71*p^2 + 28*p^3 + 4*p^4 + 30)) + (e*x^3*(p + 1)
*(30*b^2*d^2 + a^2*e^2*p + 27*b^2*d^2*p + 2*a^2*e^2*p^2 + 6*b^2*d^2*p^2 + 3
0*a*b*d*e + 42*a*b*d*e*p + 12*a*b*d*e*p^2))/(b*(77*p + 71*p^2 + 28*p^3 + 4*
p^4 + 30)))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((a*(d**3*x + 3*d**2*e*x**2/2 + d*e**2*x**3 + e**3*x**4/4)*(a**2)*
*p, Eq(b, 0)), (Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(5/2), x),
Eq(p, -5/2)), (-6*a**3*e**3*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6
*x**2) - 11*a**3*e**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 6*a**2*b*d
*e**2*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 9*a**2*b*d*e*
*2/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 12*a**2*b*e**3*x*log(a/b + x)
/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 16*a**2*b*e**3*x/(2*a**2*b**4 +
 4*a*b**5*x + 2*b**6*x**2) - 3*a*b**2*d**2*e/(2*a**2*b**4 + 4*a*b**5*x + 2*
b**6*x**2) + 12*a*b**2*d*e**2*x*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*
b**6*x**2) + 12*a*b**2*d*e**2*x/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) -
6*a*b**2*e**3*x**2*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) -
2*a*b**2*e**3*x**2/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - b**3*d**3/(2*
a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 6*b**3*d**2*e*x/(2*a**2*b**4 + 4*a*
b**5*x + 2*b**6*x**2) + 6*b**3*d*e**2*x**2*log(a/b + x)/(2*a**2*b**4 + 4*a*
b**5*x + 2*b**6*x**2) + 2*b**3*e**3*x**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6
```

*x**2), Eq(p, -2)), (Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(3/2), x), Eq(p, -3/2)), (-a**3*e**3*log(a/b + x)/b**4 + 3*a**2*d*e**2*log(a/b + x)/b**3 + a**2*e**3*x/b**3 - 3*a*d**2*e*log(a/b + x)/b**2 - 3*a*d*e**2*x/b**2 - a*e**3*x**2/(2*b**2) + d**3*log(a/b + x)/b + 3*d**2*e*x/b + 3*d*e**2*x**2/(2*b) + e**3*x**3/(3*b), Eq(p, -1)), (-3*a**5*e**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 6*a**4*b*d*e**2*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 15*a**4*b*d*e**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 6*a**4*b*e**3*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 6*a**3*b**2*d**2*e*p**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 27*a**3*b**2*d**2*e*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 30*a**3*b**2*d**2*e*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 12*a**3*b**2*d*e**2*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 30*a**3*b**2*d*e**2*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 6*a**3*b**2*e**3*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 3*a**3*b**2*e**3*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 4*a**2*b**3*d**3*p**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 24*a**2*b**3*d**3*p**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 47*a**2*b**3*d**3*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 30*a**2*b**3*d**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 12*a**2*b**3*d**2*e*p**3*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 54*a**2*b**3*d**2*e*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 60*a**2*b**3*d**2*e*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 12*a**2*b**3*d*e**2*p**3*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 36*a**2*b**3*d*e**2*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 15*a**2*b**3*d*e**2*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 4*a**2*b**3*e**3*p**3*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 6*a**2*b**3*e**3*p**2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 2*a**2*b**3*e**3*p*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 8*a*b**4*d**3*p**3*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 48*a*b**4*d**3*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 94*a*b**4*d**3*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 60*a*b**4*d**3*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 24*a*b**4*d**2*e*p**3*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 126*a*b**4*d**2*e*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 201*a*b**4*d**2*e*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 90*a*b**4*d**2*e*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 24*a*b**4*d*e**2*p**3*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b

```
**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 108*a*b**4*d*e**2*p**2*x
**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*
p**2 + 154*b**4*p + 60*b**4) + 144*a*b**4*d*e**2*p*x**3*(a**2 + 2*a*b*x + b
**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*
b**4) + 60*a*b**4*d*e**2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4
+ 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 8*a*b**4*e**3*p**3
*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**
4*p**2 + 154*b**4*p + 60*b**4) + 30*a*b**4*e**3*p**2*x**4*(a**2 + 2*a*b*x +
 b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 6
0*b**4) + 37*a*b**4*e**3*p*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**
4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 15*a*b**4*e**3*x
**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*
p**2 + 154*b**4*p + 60*b**4) + 4*b**5*d**3*p**3*x**2*(a**2 + 2*a*b*x + b**2
*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**
4) + 24*b**5*d**3*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 +
56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 47*b**5*d**3*p*x**2*
(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2
 + 154*b**4*p + 60*b**4) + 30*b**5*d**3*x**2*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 12*
b**5*d**2*e*p**3*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**
4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 66*b**5*d**2*e*p**2*x**3*(
a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2
+ 154*b**4*p + 60*b**4) + 114*b**5*d**2*e*p*x**3*(a**2 + 2*a*b*x + b**2*x**
2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) +
 60*b**5*d**2*e*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4
*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 12*b**5*d*e**2*p**3*x**4*(a
**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 +
 154*b**4*p + 60*b**4) + 60*b**5*d*e**2*p**2*x**4*(a**2 + 2*a*b*x + b**2*x*
*2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4)
+ 93*b**5*d*e**2*p*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b
**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 45*b**5*d*e**2*x**4*(a**
2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 1
54*b**4*p + 60*b**4) + 4*b**5*e**3*p**3*x**5*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 18*
b**5*e**3*p**2*x**5*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*
p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 26*b**5*e**3*p*x**5*(a**2 +
2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b
**4*p + 60*b**4) + 12*b**5*e**3*x**5*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**
4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4), True))
```

3.1930 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^p \, dx$

Optimal. Leaf size=134

$$\frac{2e(a+bx)^3(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{b^3(2p+3)}+\frac{(a+bx)^2(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^3(p+1)}+\frac{e^2(a+bx)^4\left(a^2+2abx+\right.}{2b^3(p+2)}$$

Rubi [A] time = 0.09, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {770, 21, 43}

$$\frac{2e(a+bx)^3(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{b^3(2p+3)}+\frac{(a+bx)^2(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^3(p+1)}+\frac{e^2(a+bx)^4\left(a^2+2abx+b^2x^2\right)^p}{2b^3(p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^3*(1 + p)) + (
2*e*(b*d - a*e)*(a + b*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^3*(3 + 2*p)) +
(e^2*(a + b*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^3*(2 + p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (a+bx)\left(ab+b^2x\right)^{2p}(d\\
&= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{1+2p}(d+ex)^2}{b}\\
&= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(\frac{(bd-ae)^2\left(ab+b^2x\right)^{1+2p}}{b^2}+\frac{2e(b}{}\right.}{b}\\
&= \frac{(bd-ae)^2(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^3(1+p)}+\frac{2e(bd-ae)(a+bx)^3}{b^3(3+}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 109, normalized size = 0.81

$$\frac{\left((a+bx)^2\right)^{p+1}\left(a^2e^2-2abe(d(p+2)+e(p+1)x)+b^2\left(d^2\left(2p^2+7p+6\right)+4de\left(p^2+3p+2\right)x+e^2\left(2p^2+5p+3\right)x^2\right)\right)}{2b^3(p+1)(p+2)(2p+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*(a^2*e^2 - 2*a*b*e*(d*(2 + p) + e*(1 + p)*x) + b^2*(
d^2*(6 + 7*p + 2*p^2) + 4*d*e*(2 + 3*p + p^2)*x + e^2*(3 + 5*p + 2*p^2)*x^2
)))/(2*b^3*(1 + p)*(2 + p)*(3 + 2*p))
```

IntegrateAlgebraic [F] time = 0.34, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p
, x]
```

fricas [B] time = 0.45, size = 353, normalized size = 2.63

$$\frac{\left(2a^2b^2d^2p^2+6a^2b^2d^2-4a^3bde+a^4e^2+\left(2b^4e^2p^2+5b^4e^2p+3b^4e^2\right)x^4+4\left(2b^4de+ab^3e^2+\left(b^4de+ab^3e^2\right)p^2+\left(3b^4de+2ab^3e^2\right)p\right)x^3+\left(6b^4d^2+12ab^3de+2\left(b^4d^2+4ab^3de+a^2b^2e^2\right)p^2+\left(7b^4d^2+22ab^3de+a^2b^2e^2\right)p\right)x^2+\left(7a^2b^2d^2-2a^3bde\right)p+2\left(6ab^3d^2+2\left(ab^3d^2+a^2b^2de\right)p^2+\left(7ab^3d^2+4a^2b^2de-a^3be^2\right)p\right)x\right)\left(b^2x^2+2abx+a^2\right)^p}{2\left(2b^3p^3+9b^3p^2+13b^3p+6b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^2*b^2*d^2*p^2 + 6*a^2*b^2*d^2 - 4*a^3*b*d*e + a^4*e^2 + (2*b^4*e^2
*p^2 + 5*b^4*e^2*p + 3*b^4*e^2)*x^4 + 4*(2*b^4*d*e + a*b^3*e^2 + (b^4*d*e +
 a*b^3*e^2)*p^2 + (3*b^4*d*e + 2*a*b^3*e^2)*p)*x^3 + (6*b^4*d^2 + 12*a*b^3*
d*e + 2*(b^4*d^2 + 4*a*b^3*d*e + a^2*b^2*e^2)*p^2 + (7*b^4*d^2 + 22*a*b^3*d
*e + a^2*b^2*e^2)*p)*x^2 + (7*a^2*b^2*d^2 - 2*a^3*b*d*e)*p + 2*(6*a*b^3*d^2
 + 2*(a*b^3*d^2 + a^2*b^2*d*e)*p^2 + (7*a*b^3*d^2 + 4*a^2*b^2*d*e - a^3*b*e
^2)*p)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p/(2*b^3*p^3 + 9*b^3*p^2 + 13*b^3*p + 6
*b^3)
```

giac [B] time = 0.32, size = 903, normalized size = 6.74

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*p^2*x^4*e^2 + 4*(b^2*x^2 + 2*a*b*x +
 a^2)^p*b^4*d*p^2*x^3*e + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*d^2*p^2*x^2 + 4
*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*p^2*x^3*e^2 + 5*(b^2*x^2 + 2*a*b*x + a^2
)^p*b^4*p*x^4*e^2 + 8*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d*p^2*x^2*e + 12*(b
^2*x^2 + 2*a*b*x + a^2)^p*b^4*d*p*x^3*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b
^3*d^2*p^2*x + 7*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*d^2*p*x^2 + 2*(b^2*x^2 + 2
*a*b*x + a^2)^p*a^2*b^2*p^2*x^2*e^2 + 8*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*p
*x^3*e^2 + 3*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*x^4*e^2 + 4*(b^2*x^2 + 2*a*b*x
 + a^2)^p*a^2*b^2*d*p^2*x*e + 22*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d*p*x^2*
e + 8*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*d*x^3*e + 2*(b^2*x^2 + 2*a*b*x + a^2)
^p*a^2*b^2*d^2*p^2 + 14*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d^2*p*x + 6*(b^2*
x^2 + 2*a*b*x + a^2)^p*b^4*d^2*x^2 + (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^2*p*
x^2*e^2 + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*x^3*e^2 + 8*(b^2*x^2 + 2*a*b*
```

```
x + a^2)^p*a^2*b^2*d*p*x*e + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d*x^2*e +
 7*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^2*d^2*p + 12*(b^2*x^2 + 2*a*b*x + a^2)
^p*a*b^3*d^2*x - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b*p*x*e^2 - 2*(b^2*x^2 +
 2*a*b*x + a^2)^p*a^3*b*d*p*e + 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^2*d^2 -
 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b*d*e + (b^2*x^2 + 2*a*b*x + a^2)^p*a^4*
e^2)/(2*b^3*p^3 + 9*b^3*p^2 + 13*b^3*p + 6*b^3)
```

maple [A] time = 0.05, size = 179, normalized size = 1.34

$$\frac{(bx+a)^2\left(2b^2e^2p^2x^2+4b^2de\,p^2x+5b^2e^2p\,x^2-2ab\,e^2px+2b^2d^2p^2+12b^2depx+3e^2x^2b^2-2abdep-2ab\,e^2x+7b^2d^2p+8b^2dex+a^2e^2-4abde+6b^2d^2\right)\left(b^2x^2+2abx+a^2\right)^p}{2\left(2p^3+9p^2+13p+6\right)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] 1/2*(b*x+a)^2*(2*b^2*e^2*p^2*x^2+4*b^2*d*e*p^2*x+5*b^2*e^2*p*x^2-2*a*b*e^2*
p*x+2*b^2*d^2*p^2+12*b^2*d*e*p*x+3*b^2*e^2*x^2-2*a*b*d*e*p-2*a*b*e^2*x+7*b^
2*d^2*p+8*b^2*d*e*x+a^2*e^2-4*a*b*d*e+6*b^2*d^2)*(b^2*x^2+2*a*b*x+a^2)^p/b^
3/(2*p^3+9*p^2+13*p+6)
```

maxima [B] time = 0.64, size = 404, normalized size = 3.01

$$\frac{(bx+a)(bx+a)^{2p}ad^2}{b(2p+1)}+\frac{\left(b^2(2p+1)x^2+2abpx-a^2\right)(bx+a)^{2p}d^2}{2\left(2p^2+3p+1\right)b}+\frac{\left(b^2(2p+1)x^2+2abpx-a^2\right)(bx+a)^{2p}ade}{\left(2p^2+3p+1\right)b^2}+\frac{2\left(\left(2p^2+3p+1\right)b^3x^3+\left(2p^2+p\right)ab^2x^2-2a^2bpx+a^3\right)(bx+a)^{2p}de}{\left(4p^3+12p^2+11p+3\right)b^2}+\frac{\left(\left(2p^2+3p+1\right)b^3x^3+\left(2p^2+p\right)ab^2x^2-2a^2bpx+a^3\right)(bx+a)^{2p}ae^2}{\left(4p^3+12p^2+11p+3\right)b^3}+\frac{\left(\left(4p^3+12p^2+11p+3\right)b^4x^4+2\left(2p^3+3p^2+p\right)ab^3x^3-3\left(2p^2+p\right)a^2b^2x^2+6a^3bpx-3a^4\right)(bx+a)^{2p}e^2}{2\left(4p^4+20p^3+35p^2+25p+6\right)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(b*x + a)^(2*p)*a*d^2/(b*(2*p + 1)) + 1/2*(b^2*(2*p + 1)*x^2 + 2*
a*b*p*x - a^2)*(b*x + a)^(2*p)*d^2/((2*p^2 + 3*p + 1)*b) + (b^2*(2*p + 1)*x
^2 + 2*a*b*p*x - a^2)*(b*x + a)^(2*p)*a*d*e/((2*p^2 + 3*p + 1)*b^2) + 2*((2
*p^2 + 3*p + 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x +
 a)^(2*p)*d*e/((4*p^3 + 12*p^2 + 11*p + 3)*b^2) + ((2*p^2 + 3*p + 1)*b^3*x^
3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x + a)^(2*p)*a*e^2/((4*p^
3 + 12*p^2 + 11*p + 3)*b^3) + 1/2*((4*p^3 + 12*p^2 + 11*p + 3)*b^4*x^4 + 2*
(2*p^3 + 3*p^2 + p)*a*b^3*x^3 - 3*(2*p^2 + p)*a^2*b^2*x^2 + 6*a^3*b*p*x - 3
*a^4)*(b*x + a)^(2*p)*e^2/((4*p^4 + 20*p^3 + 35*p^2 + 25*p + 6)*b^3)
```

mupad [B] time = 2.27, size = 355, normalized size = 2.65

$$\left(a^2+2abx+b^2x^2\right)^p\left(\frac{a^2\left(a^2e^2-2abdep-4abde+2b^2d^2p^2+7b^2d^2p+6b^2d^2\right)}{2b^3\left(2p^3+9p^2+13p+6\right)}+\frac{x^2\left(2a^2b^2e^2p^2+a^2b^2e^2p+8ab^3dep^2+22ab^3dep+12ab^3de+2b^4d^2p^2+7b^4d^2p+6b^4d^2\right)}{2b^3\left(2p^3+9p^2+13p+6\right)}+\frac{2ex^3\left(p+1\right)\left(ae+2bd+aep+bdp\right)}{2p^3+9p^2+13p+6}+\frac{ax\left(-a^2e^2p+2abdep^2+4abdep+2b^2d^2p^2+7b^2d^2p+6b^2d^2\right)}{b^2\left(2p^3+9p^2+13p+6\right)}+\frac{be^2x^4\left(2p^2+5p+3\right)}{2\left(2p^3+9p^2+13p+6\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((a^2*(a^2*e^2 + 6*b^2*d^2 + 7*b^2*d^2*p + 2*b^
2*d^2*p^2 - 4*a*b*d*e - 2*a*b*d*e*p))/(2*b^3*(13*p + 9*p^2 + 2*p^3 + 6)) +
(x^2*(6*b^4*d^2 + 7*b^4*d^2*p + 2*b^4*d^2*p^2 + a^2*b^2*e^2*p + 12*a*b^3*d*
e + 2*a^2*b^2*e^2*p^2 + 8*a*b^3*d*e*p^2 + 22*a*b^3*d*e*p))/(2*b^3*(13*p + 9
*p^2 + 2*p^3 + 6)) + (2*e*x^3*(p + 1)*(a*e + 2*b*d + a*e*p + b*d*p))/(13*p
+ 9*p^2 + 2*p^3 + 6) + (a*x*(6*b^2*d^2 - a^2*e^2*p + 7*b^2*d^2*p + 2*b^2*d^
2*p^2 + 4*a*b*d*e*p + 2*a*b*d*e*p^2))/(b^2*(13*p + 9*p^2 + 2*p^3 + 6)) + (b
*e^2*x^4*(5*p + 2*p^2 + 3))/(2*(13*p + 9*p^2 + 2*p^3 + 6)))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((a*(d**2*x + d*e*x**2 + e**2*x**3/3)*(a**2)**p, Eq(b, 0)), (2*a**
2*e**2*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) + 3*a**2*e**2/
(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - 2*a*b*d*e/(2*a**2*b**3 + 4*a*b**
4*x + 2*b**5*x**2) + 4*a*b*e**2*x*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x +
2*b**5*x**2) + 4*a*b*e**2*x/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - b**2
*d**2/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - 4*b**2*d*e*x/(2*a**2*b**3
+ 4*a*b**4*x + 2*b**5*x**2) + 2*b**2*e**2*x**2*log(a/b + x)/(2*a**2*b**3 +
4*a*b**4*x + 2*b**5*x**2), Eq(p, -2)), (Integral((a + b*x)*(d + e*x)**2/((a
 + b*x)**2)**(3/2), x), Eq(p, -3/2)), (a**2*e**2*log(a/b + x)/b**3 - 2*a*d*
e*log(a/b + x)/b**2 - a*e**2*x/b**2 + d**2*log(a/b + x)/b + 2*d*e*x/b + e**
2*x**2/(2*b), Eq(p, -1)), (a**4*e**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**
3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) - 2*a**3*b*d*e*p*(a**2 + 2*a*b
*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) - 4*a
**3*b*d*e*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*
b**3*p + 12*b**3) - 2*a**3*b*e**2*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b*
*3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 2*a**2*b**2*d**2*p**2*(a**2
 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**
3) + 7*a**2*b**2*d**2*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b
**3*p**2 + 26*b**3*p + 12*b**3) + 6*a**2*b**2*d**2*(a**2 + 2*a*b*x + b**2*x
**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*a**2*b**2*d*
e*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b
**3*p + 12*b**3) + 8*a**2*b**2*d*e*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b
**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 2*a**2*b**2*e**2*p**2*x**2
*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p +
12*b**3) + a**2*b**2*e**2*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p*
*3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*a*b**3*d**2*p**2*x*(a**2 + 2*a
*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 1
4*a*b**3*d**2*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p*
*2 + 26*b**3*p + 12*b**3) + 12*a*b**3*d**2*x*(a**2 + 2*a*b*x + b**2*x**2)**
p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 8*a*b**3*d*e*p**2*x*
*2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p
+ 12*b**3) + 22*a*b**3*d*e*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p
**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 12*a*b**3*d*e*x**2*(a**2 + 2*a*
b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*
a*b**3*e**2*p**2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**
3*p**2 + 26*b**3*p + 12*b**3) + 8*a*b**3*e**2*p*x**3*(a**2 + 2*a*b*x + b**2
*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*a*b**3*e**
2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**
3*p + 12*b**3) + 2*b**4*d**2*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b
**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 7*b**4*d**2*p*x**2*(a**2 +
 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3)
 + 6*b**4*d**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*
p**2 + 26*b**3*p + 12*b**3) + 4*b**4*d*e*p**2*x**3*(a**2 + 2*a*b*x + b**2*x
**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 12*b**4*d*e*p*
x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*
p + 12*b**3) + 8*b**4*d*e*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3
 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 2*b**4*e**2*p**2*x**4*(a**2 + 2*a*
b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 5*
b**4*e**2*p*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**
2 + 26*b**3*p + 12*b**3) + 3*b**4*e**2*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p
/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3), True))
```

3.1931 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=83

$$\frac{(a+bx)^2(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^2(p+1)}+\frac{e(a+bx)^3\left(a^2+2abx+b^2x^2\right)^p}{b^2(2p+3)}$$

Rubi [A] time = 0.05, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = {770, 21, 43}

$$\frac{(a+bx)^2(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^2(p+1)}+\frac{e(a+bx)^3\left(a^2+2abx+b^2x^2\right)^p}{b^2(2p+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^2*(1 + p)) + (e*
(a + b*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^2*(3 + 2*p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^p\,dx = \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (a+bx)\left(ab+b^2x\right)^{2p}(d+$$

$$=\frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{1+2p}(d+ex)\,dx}{b}$$

$$=\frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(\frac{(bd-ae)\left(ab+b^2x\right)^{1+2p}}{b}+\frac{e(ab+b}{l}\right.}{b}$$

$$=\frac{(bd-ae)(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^2(1+p)}+\frac{e(a+bx)^3\left(a^2+2abx+\right.}{b^2(3+2p)}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.61

$$\frac{\left((a+bx)^2\right)^{p+1}(-ae+bd(2p+3)+2be(p+1)x)}{2b^2(p+1)(2p+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*(-(a*e) + b*d*(3 + 2*p) + 2*b*e*(1 + p)*x))/(2*b^2*(
1 + p)*(3 + 2*p))
```

IntegrateAlgebraic [F] time = 0.16, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^p\, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,
x]
```

fricas [A] time = 0.45, size = 142, normalized size = 1.71

$$\frac{\left(2\,a^2bdp+3\,a^2bd-a^3e+2\left(b^3ep+b^3e\right)x^3+\left(3\,b^3d+3\,ab^2e+2\left(b^3d+2\,ab^2e\right)p\right)x^2+2\left(3\,ab^2d+\left(2\,ab^2d+a^2be\right)p\right)x\right)\left(b^2x^2+2\,abx+a^2\right)^p}{2\left(2\,b^2p^2+5\,b^2p+3\,b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^2*b*d*p + 3*a^2*b*d - a^3*e + 2*(b^3*e*p + b^3*e)*x^3 + (3*b^3*d +
 3*a*b^2*e + 2*(b^3*d + 2*a*b^2*e)*p)*x^2 + 2*(3*a*b^2*d + (2*a*b^2*d + a^2
*b*e)*p)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p/(2*b^2*p^2 + 5*b^2*p + 3*b^2)
```

giac [B] time = 0.22, size = 353, normalized size = 4.25

$$\frac{2\left(b^2x^2+2\,abx+a^2\right)^p b^3px^3e+2\left(b^2x^2+2\,abx+a^2\right)^p b^3dpx^2+4\left(b^2x^2+2\,abx+a^2\right)^p ab^2px^2e+2\left(b^2x^2+2\,abx+a^2\right)^p b^3x^3e+4\left(b^2x^2+2\,abx+a^2\right)^p ab^2dpx+3\left(b^2x^2+2\,abx+a^2\right)^p b^3dx^2+2\left(b^2x^2+2\,abx+a^2\right)^p a^2bpxe+3\left(b^2x^2+2\,abx+a^2\right)^p ab^2x^2e+2\left(b^2x^2+2\,abx+a^2\right)^p a^2bdp+6\left(b^2x^2+2\,abx+a^2\right)^p ab^2dx+3\left(b^2x^2+2\,abx+a^2\right)^p a^2bd-\left(b^2x^2+2\,abx+a^2\right)^p a^3e}{2\left(2\,b^2p^2+5\,b^2p+3\,b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^3*p*x^3*e + 2*(b^2*x^2 + 2*a*b*x + a^2
)^p*b^3*d*p*x^2 + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*p*x^2*e + 2*(b^2*x^2
+ 2*a*b*x + a^2)^p*b^3*x^3*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*d*p*x +
3*(b^2*x^2 + 2*a*b*x + a^2)^p*b^3*d*x^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2
*b*p*x*e + 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*x^2*e + 2*(b^2*x^2 + 2*a*b*x
 + a^2)^p*a^2*b*d*p + 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*d*x + 3*(b^2*x^2
+ 2*a*b*x + a^2)^p*a^2*b*d - (b^2*x^2 + 2*a*b*x + a^2)^p*a^3*e)/(2*b^2*p^2
+ 5*b^2*p + 3*b^2)
```

maple [A] time = 0.05, size = 67, normalized size = 0.81

$$-\frac{\left(-2bepx-2bdp-2bex+ae-3bd\right)(bx+a)^2\left(b^2x^2+2abx+a^2\right)^p}{2\left(2p^2+5p+3\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b^2*x^2+2*a*b*x+a^2)^p*(-2*b*e*p*x-2*b*d*p-2*b*e*x+a*e-3*b*d)*(b*x+a)
^2/b^2/(2*p^2+5*p+3)
```

maxima [B] time = 0.54, size = 206, normalized size = 2.48

$$\frac{(bx+a)(bx+a)^{2p}ad}{b(2p+1)} + \frac{\left(b^2(2p+1)x^2 + 2abpx - a^2\right)(bx+a)^{2p}d}{2\left(2p^2+3p+1\right)b} + \frac{\left(b^2(2p+1)x^2 + 2abpx - a^2\right)(bx+a)^{2p}ae}{2\left(2p^2+3p+1\right)b^2} + \frac{\left(\left(2p^2+3p+1\right)b^3x^3 + \left(2p^2+p\right)ab^2x^2 - 2a^2bpx + a^3\right)(bx+a)^{2p}e}{\left(4p^3+12p^2+11p+3\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(b*x + a)^(2*p)*a*d/(b*(2*p + 1)) + 1/2*(b^2*(2*p + 1)*x^2 + 2*a*
b*p*x - a^2)*(b*x + a)^(2*p)*d/((2*p^2 + 3*p + 1)*b) + 1/2*(b^2*(2*p + 1)*x
^2 + 2*a*b*p*x - a^2)*(b*x + a)^(2*p)*a*e/((2*p^2 + 3*p + 1)*b^2) + ((2*p^2
 + 3*p + 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x + a)^
(2*p)*e/((4*p^3 + 12*p^2 + 11*p + 3)*b^2)
```

mupad [B] time = 2.15, size = 142, normalized size = 1.71

$$\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\,\left(\frac{x^2\,\left(3\,a\,e+3\,b\,d+4\,a\,e\,p+2\,b\,d\,p\right)}{2\,\left(2\,p^2+5\,p+3\right)}+\frac{a^2\,\left(3\,b\,d-a\,e+2\,b\,d\,p\right)}{2\,b^2\,\left(2\,p^2+5\,p+3\right)}+\frac{a\,x\,\left(3\,b\,d+a\,e\,p+2\,b\,d\,p\right)}{b\,\left(2\,p^2+5\,p+3\right)}+\frac{b\,e\,x^3\,\left(p+1\right)}{2\,p^2+5\,p+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((x^2*(3*a*e + 3*b*d + 4*a*e*p + 2*b*d*p))/(2*(
5*p + 2*p^2 + 3)) + (a^2*(3*b*d - a*e + 2*b*d*p))/(2*b^2*(5*p + 2*p^2 + 3))
 + (a*x*(3*b*d + a*e*p + 2*b*d*p))/(b*(5*p + 2*p^2 + 3)) + (b*e*x^3*(p + 1)
)/(5*p + 2*p^2 + 3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\begin{cases} a\left(dx+\frac{ex^2}{2}\right)\left(a^2\right)^p & \text{for}\: b=0 \\ \int \frac{(a+bx)(d+ex)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx & \text{for}\: p=-\frac{3}{2} \\ -\frac{ae\log\left(\frac{a}{b}+x\right)}{b^2}+\frac{d\log\left(\frac{a}{b}+x\right)}{b}+\frac{ex}{b} & \text{for}\: p=-1 \\ -\frac{a^3e\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2a^2bdp\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{3a^2bd\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2a^2bepx\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{4ab^2dpx\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{6ab^2dx\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{4ab^2epx^2\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{3ab^2ex^2\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2b^3dpx^2\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{3b^3dx^2\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2b^3epx^3\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2b^3ex^3\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((a*(d*x + e*x**2/2)*(a**2)**p, Eq(b, 0)), (Integral((a + b*x)*(d
+ e*x)/((a + b*x)**2)**(3/2), x), Eq(p, -3/2)), (-a*e*log(a/b + x)/b**2 + d
*log(a/b + x)/b + e*x/b, Eq(p, -1)), (-a**3*e*(a**2 + 2*a*b*x + b**2*x**2)*
*p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*a**2*b*d*p*(a**2 + 2*a*b*x + b**2
*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 3*a**2*b*d*(a**2 + 2*a*b*x +
 b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*a**2*b*e*p*x*(a**2 +
2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 4*a*b**2*d*p*x
*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 6*a*b
**2*d*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2)
+ 4*a*b**2*e*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*
p + 6*b**2) + 3*a*b**2*e*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2
+ 10*b**2*p + 6*b**2) + 2*b**3*d*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*
b**2*p**2 + 10*b**2*p + 6*b**2) + 3*b**3*d*x**2*(a**2 + 2*a*b*x + b**2*x**2
)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*b**3*e*p*x**3*(a**2 + 2*a*b*x +
 b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*b**3*e*x**3*(a**2 + 2
*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2), True))
```

3.1932 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=32

$$\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}}{2b(p+1)}$$

Rubi [A] time = 0.01, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}}{2b(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(1 + p)/(2*b*(1 + p))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^p\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{1+p}}{2b(1+p)}$$

Mathematica [A] time = 0.01, size = 23, normalized size = 0.72

$$\frac{\left((a+bx)^2\right)^{p+1}}{2b(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a + b*x)^2)^(1 + p)/(2*b*(1 + p))
```

IntegrateAlgebraic [F] time = 0.06, size = 0, normalized size = 0.00

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p, x]
```

fricas [A] time = 0.44, size = 43, normalized size = 1.34

$$\frac{\left(b^2x^2+2\,abx+a^2\right)\left(b^2x^2+2\,abx+a^2\right)^p}{2\left(bp+b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
[Out] 1/2*(b^2*x^2 + 2*a*b*x + a^2)*(b^2*x^2 + 2*a*b*x + a^2)^p/(b*p + b)
```

giac [A] time = 0.16, size = 30, normalized size = 0.94

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{p+1}}{2\,b\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
[Out] 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(p + 1)/(b*(p + 1))
```

maple [A] time = 0.05, size = 36, normalized size = 1.12

$$\frac{(bx+a)^2\left(b^2x^2+2abx+a^2\right)^p}{2\left(p+1\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x)
[Out] 1/2*(b*x+a)^2/b/(p+1)*(b^2*x^2+2*a*b*x+a^2)^p
```

maxima [A] time = 0.65, size = 30, normalized size = 0.94

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{p+1}}{2\,b\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
[Out] 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(p + 1)/(b*(p + 1))
```

mupad [B] time = 2.07, size = 53, normalized size = 1.66

$$\left(\frac{a^2}{2\,b\,\left(p+1\right)}+\frac{a\,x}{p+1}+\frac{b\,x^2}{2\,\left(p+1\right)}\right)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
[Out] (a^2/(2*b*(p + 1)) + (a*x)/(p + 1) + (b*x^2)/(2*(p + 1)))*(a^2 + b^2*x^2 +
2*a*b*x)^p
```

sympy [A] time = 0.48, size = 119, normalized size = 3.72

$$\begin{cases} \frac{x}{a} & \text{for}\: b = 0 \wedge p = -1 \\ ax\left(a^2\right)^p & \text{for}\: b = 0 \\ \frac{\log\left(\frac{a}{b}+x\right)}{b} & \text{for}\: p = -1 \\ \frac{a^2\left(a^2+2abx+b^2x^2\right)^p}{2bp+2b} + \frac{2abx\left(a^2+2abx+b^2x^2\right)^p}{2bp+2b} + \frac{b^2x^2\left(a^2+2abx+b^2x^2\right)^p}{2bp+2b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((x/a, Eq(b, 0) & Eq(p, -1)), (a*x*(a**2)**p, Eq(b, 0)), (log(a/b
+ x)/b, Eq(p, -1)), (a**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(2*b*p + 2*b) + 2
*a*b*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(2*b*p + 2*b) + b**2*x**2*(a**2 + 2*
a*b*x + b**2*x**2)**p/(2*b*p + 2*b), True))
```

3.1933 $\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=58

$$\frac{(Ab-aB)(ac+bcx)^{m+7}}{b^2c^7(m+7)}+\frac{B(ac+bcx)^{m+8}}{b^2c^8(m+8)}$$

Rubi [A] time = 0.04, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {27, 21, 43}

$$\frac{(Ab-aB)(ac+bcx)^{m+7}}{b^2c^7(m+7)}+\frac{B(ac+bcx)^{m+8}}{b^2c^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*(a*c + b*c*x)^(7 + m))/(b^2*c^7*(7 + m)) + (B*(a*c + b*c*x)^(8
 + m))/(b^2*c^8*(8 + m))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^6(A+Bx)(ac+bcx)^m \, dx\\ &= \frac{\int (A+Bx)(ac+bcx)^{6+m} \, dx}{c^6}\\ &= \frac{\int \left(\frac{(Ab-aB)(ac+bcx)^{6+m}}{b}+\frac{B(ac+bcx)^{7+m}}{bc}\right) dx}{c^6}\\ &= \frac{(Ab-aB)(ac+bcx)^{7+m}}{b^2c^7(7+m)}+\frac{B(ac+bcx)^{8+m}}{b^2c^8(8+m)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 48, normalized size = 0.83

$$\frac{(a+bx)^7(c(a+bx))^m(-aB+Ab(m+8)+bB(m+7)x)}{b^2(m+7)(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((a + b*x)^7*(c*(a + b*x))^m*(-(a*B) + A*b*(8 + m) + b*B*(7 + m)*x))/(b^2*(
7 + m)*(8 + m))
```

IntegrateAlgebraic [F] time = 0.27, size = 0, normalized size = 0.00

$$\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^
2)^3, x]
```

fricas [B] time = 0.44, size = 350, normalized size = 6.03

$$\frac{\left(Aa^7bm - Ba^8 + 8\,Aa^7b + \left(Bb^8m + 7\,Bb^8\right)x^8 + \left(48\,Bab^7 + 8\,Ab^8 + \left(7\,Bab^7 + Ab^8\right)m\right)x^7 + 7\left(20\,Ba^2b^6 + 8\,Aab^7 + \left(3\,Ba^2b^6 + Aab^7\right)m\right)x^6 + 7\left(32\,Ba^3b^5 + 24\,Aa^2b^6 + \left(5\,Ba^3b^5 + 3\,Aa^2b^6\right)m\right)x^5 + 35\left(6\,Ba^4b^4 + 8\,Aa^3b^5 + \left(Ba^4b^4 + Aa^3b^5\right)m\right)x^4 + 7\left(16\,Ba^5b^3 + 40\,Aa^4b^4 + \left(3\,Ba^5b^3 + 5\,Aa^4b^4\right)m\right)x^3 + 7\left(4\,Ba^6b^2 + 24\,Aa^5b^3 + \left(Ba^6b^2 + 3\,Aa^5b^3\right)m\right)x^2 + \left(56\,Aa^6b^2 + \left(Ba^7b + 7\,Aa^6b^2\right)m\right)x\right)(bcx + ac)^m}{b^2m^2 + 15\,b^2m + 56\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (A*a^7*b*m - B*a^8 + 8*A*a^7*b + (B*b^8*m + 7*B*b^8)*x^8 + (48*B*a*b^7 + 8*
A*b^8 + (7*B*a*b^7 + A*b^8)*m)*x^7 + 7*(20*B*a^2*b^6 + 8*A*a*b^7 + (3*B*a^2
*b^6 + A*a*b^7)*m)*x^6 + 7*(32*B*a^3*b^5 + 24*A*a^2*b^6 + (5*B*a^3*b^5 + 3*
A*a^2*b^6)*m)*x^5 + 35*(6*B*a^4*b^4 + 8*A*a^3*b^5 + (B*a^4*b^4 + A*a^3*b^5)
*m)*x^4 + 7*(16*B*a^5*b^3 + 40*A*a^4*b^4 + (3*B*a^5*b^3 + 5*A*a^4*b^4)*m)*x
^3 + 7*(4*B*a^6*b^2 + 24*A*a^5*b^3 + (B*a^6*b^2 + 3*A*a^5*b^3)*m)*x^2 + (56
*A*a^6*b^2 + (B*a^7*b + 7*A*a^6*b^2)*m)*x)*(b*c*x + a*c)^m/(b^2*m^2 + 15*b^
2*m + 56*b^2)
```

giac [B] time = 0.28, size = 695, normalized size = 11.98

$$\frac{(bcx+ac)^m Bb^8mx^8 + 7\,(bcx+ac)^m Bab^7mx^7 + (bcx+ac)^m Ab^8mx^7 + 7\,(bcx+ac)^m Bb^8x^8 + 21\,(bcx+ac)^m Ba^2b^6mx^6 + 7\,(bcx+ac)^m Aab^7mx^6 + 48\,(bcx+ac)^m Bab^7x^7 + 8\,(bcx+ac)^m Ab^8x^7 + 35\,(bcx+ac)^m Ba^3b^5mx^5 + 21\,(bcx+ac)^m Aa^2b^6mx^5 + 140\,(bcx+ac)^m Ba^2b^6x^6 + 56\,(bcx+ac)^m Aab^7x^6 + 35\,(bcx+ac)^m Ba^4b^4mx^4 + 35\,(bcx+ac)^m Aa^3b^5mx^4 + 224\,(bcx+ac)^m Ba^3b^5x^5 + 168\,(bcx+ac)^m Aa^2b^6x^5 + 21\,(bcx+ac)^m Ba^5b^3mx^3 + 35\,(bcx+ac)^m Aa^4b^4mx^3 + 210\,(bcx+ac)^m Ba^4b^4x^4 + 280\,(bcx+ac)^m Aa^3b^5x^4 + 7\,(bcx+ac)^m Ba^6b^2mx^2 + 21\,(bcx+ac)^m Aa^5b^3mx^2 + 112\,(bcx+ac)^m Ba^5b^3x^3 + 280\,(bcx+ac)^m Aa^4b^4x^3 + (bcx+ac)^m Ba^7bmx + 7\,(bcx+ac)^m Aa^6b^2mx + 28\,(bcx+ac)^m Ba^6b^2x^2 + 168\,(bcx+ac)^m Aa^5b^3x^2 + (bcx+ac)^m Aa^7bm + 56\,(bcx+ac)^m Aa^6b^2x - (bcx+ac)^m Ba^8 + 8\,(bcx+ac)^m Aa^7b}{b^2m^2 + 15\,b^2m + 56\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] ((b*c*x + a*c)^m*B*b^8*m*x^8 + 7*(b*c*x + a*c)^m*B*a*b^7*m*x^7 + (b*c*x + a
*c)^m*A*b^8*m*x^7 + 7*(b*c*x + a*c)^m*B*b^8*x^8 + 21*(b*c*x + a*c)^m*B*a^2*
b^6*m*x^6 + 7*(b*c*x + a*c)^m*A*a*b^7*m*x^6 + 48*(b*c*x + a*c)^m*B*a*b^7*x^
7 + 8*(b*c*x + a*c)^m*A*b^8*x^7 + 35*(b*c*x + a*c)^m*B*a^3*b^5*m*x^5 + 21*(
b*c*x + a*c)^m*A*a^2*b^6*m*x^5 + 140*(b*c*x + a*c)^m*B*a^2*b^6*x^6 + 56*(b*
c*x + a*c)^m*A*a*b^7*x^6 + 35*(b*c*x + a*c)^m*B*a^4*b^4*m*x^4 + 35*(b*c*x +
 a*c)^m*A*a^3*b^5*m*x^4 + 224*(b*c*x + a*c)^m*B*a^3*b^5*x^5 + 168*(b*c*x +
a*c)^m*A*a^2*b^6*x^5 + 21*(b*c*x + a*c)^m*B*a^5*b^3*m*x^3 + 35*(b*c*x + a*c
)^m*A*a^4*b^4*m*x^3 + 210*(b*c*x + a*c)^m*B*a^4*b^4*x^4 + 280*(b*c*x + a*c)
^m*A*a^3*b^5*x^4 + 7*(b*c*x + a*c)^m*B*a^6*b^2*m*x^2 + 21*(b*c*x + a*c)^m*A
*a^5*b^3*m*x^2 + 112*(b*c*x + a*c)^m*B*a^5*b^3*x^3 + 280*(b*c*x + a*c)^m*A*
a^4*b^4*x^3 + (b*c*x + a*c)^m*B*a^7*b*m*x + 7*(b*c*x + a*c)^m*A*a^6*b^2*m*x
 + 28*(b*c*x + a*c)^m*B*a^6*b^2*x^2 + 168*(b*c*x + a*c)^m*A*a^5*b^3*x^2 + (
b*c*x + a*c)^m*A*a^7*b*m + 56*(b*c*x + a*c)^m*A*a^6*b^2*x - (b*c*x + a*c)^m
*B*a^8 + 8*(b*c*x + a*c)^m*A*a^7*b)/(b^2*m^2 + 15*b^2*m + 56*b^2)
```

maple [A] time = 0.05, size = 71, normalized size = 1.22

$$\frac{\left(b^{2}x^{2}+2abx+a^{2}\right)^{3}\left(Bbmx+Abm+7Bbx+8Ab-Ba\right)\left(bx+a\right)\left(bcx+ac\right)^{m}}{\left(m^{2}+15m+56\right)b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (b^2*x^2+2*a*b*x+a^2)^3*(b*c*x+a*c)^m*(B*b*m*x+A*b*m+7*B*b*x+8*A*b-B*a)*(b*
x+a)/b^2/(m^2+15*m+56)
```

maxima [B] time = 1.01, size = 2113, normalized size = 36.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] (b^2*c^m*(m + 1)*x^2 + a*b*c^m*m*x - a^2*c^m)*(b*x + a)^m*B*a^6/((m^2 + 3*m
 + 2)*b^2) + 6*(b^2*c^m*(m + 1)*x^2 + a*b*c^m*m*x - a^2*c^m)*(b*x + a)^m*A*
a^5/((m^2 + 3*m + 2)*b) + 6*((m^2 + 3*m + 2)*b^3*c^m*x^3 + (m^2 + m)*a*b^2*
c^m*x^2 - 2*a^2*b*c^m*m*x + 2*a^3*c^m)*(b*x + a)^m*B*a^5/((m^3 + 6*m^2 + 11
*m + 6)*b^2) + 15*((m^2 + 3*m + 2)*b^3*c^m*x^3 + (m^2 + m)*a*b^2*c^m*x^2 -
2*a^2*b*c^m*m*x + 2*a^3*c^m)*(b*x + a)^m*A*a^4/((m^3 + 6*m^2 + 11*m + 6)*b)
 + (b*c*x + a*c)^(m + 1)*A*a^6/(b*c*(m + 1)) + 15*((m^3 + 6*m^2 + 11*m + 6)
*b^4*c^m*x^4 + (m^3 + 3*m^2 + 2*m)*a*b^3*c^m*x^3 - 3*(m^2 + m)*a^2*b^2*c^m*
x^2 + 6*a^3*b*c^m*m*x - 6*a^4*c^m)*(b*x + a)^m*B*a^4/((m^4 + 10*m^3 + 35*m^
2 + 50*m + 24)*b^2) + 20*((m^3 + 6*m^2 + 11*m + 6)*b^4*c^m*x^4 + (m^3 + 3*m
^2 + 2*m)*a*b^3*c^m*x^3 - 3*(m^2 + m)*a^2*b^2*c^m*x^2 + 6*a^3*b*c^m*m*x - 6
*a^4*c^m)*(b*x + a)^m*A*a^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*b) + 20*((
m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*b^5*c^m*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*
m)*a*b^4*c^m*x^4 - 4*(m^3 + 3*m^2 + 2*m)*a^2*b^3*c^m*x^3 + 12*(m^2 + m)*a^3
*b^2*c^m*x^2 - 24*a^4*b*c^m*m*x + 24*a^5*c^m)*(b*x + a)^m*B*a^3/((m^5 + 15*
m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^2) + 15*((m^4 + 10*m^3 + 35*m^2 + 5
0*m + 24)*b^5*c^m*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*a*b^4*c^m*x^4 - 4*(m^3
 + 3*m^2 + 2*m)*a^2*b^3*c^m*x^3 + 12*(m^2 + m)*a^3*b^2*c^m*x^2 - 24*a^4*b*c
^m*m*x + 24*a^5*c^m)*(b*x + a)^m*A*a^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 +
274*m + 120)*b) + 15*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^6*c
^m*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a*b^5*c^m*x^5 - 5*(m^4 + 6
*m^3 + 11*m^2 + 6*m)*a^2*b^4*c^m*x^4 + 20*(m^3 + 3*m^2 + 2*m)*a^3*b^3*c^m*x
^3 - 60*(m^2 + m)*a^4*b^2*c^m*x^2 + 120*a^5*b*c^m*m*x - 120*a^6*c^m)*(b*x +
 a)^m*B*a^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b
^2) + 6*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^6*c^m*x^6 + (m^5
 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a*b^5*c^m*x^5 - 5*(m^4 + 6*m^3 + 11*m^2
 + 6*m)*a^2*b^4*c^m*x^4 + 20*(m^3 + 3*m^2 + 2*m)*a^3*b^3*c^m*x^3 - 60*(m^2
+ m)*a^4*b^2*c^m*x^2 + 120*a^5*b*c^m*m*x - 120*a^6*c^m)*(b*x + a)^m*A*a/((m
^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b) + 6*((m^6 + 2
1*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^7*c^m*x^7 + (m^6 + 1
5*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*a*b^6*c^m*x^6 - 6*(m^5 + 10*m^4
 + 35*m^3 + 50*m^2 + 24*m)*a^2*b^5*c^m*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m
)*a^3*b^4*c^m*x^4 - 120*(m^3 + 3*m^2 + 2*m)*a^4*b^3*c^m*x^3 + 360*(m^2 + m)
*a^5*b^2*c^m*x^2 - 720*a^6*b*c^m*m*x + 720*a^7*c^m)*(b*x + a)^m*B*a/((m^7 +
 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*b^2)
+ ((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^7*c^m*x^7
 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*a*b^6*c^m*x^6 - 6*(m
^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a^2*b^5*c^m*x^5 + 30*(m^4 + 6*m^3 + 1
1*m^2 + 6*m)*a^3*b^4*c^m*x^4 - 120*(m^3 + 3*m^2 + 2*m)*a^4*b^3*c^m*x^3 + 36
0*(m^2 + m)*a^5*b^2*c^m*x^2 - 720*a^6*b*c^m*m*x + 720*a^7*c^m)*(b*x + a)^m*
```

```
A/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 50
40)*b) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068
*m + 5040)*b^8*c^m*x^8 + (m^7 + 21*m^6 + 175*m^5 + 735*m^4 + 1624*m^3 + 176
4*m^2 + 720*m)*a*b^7*c^m*x^7 - 7*(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2
 + 120*m)*a^2*b^6*c^m*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a^3*
b^5*c^m*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*a^4*b^4*c^m*x^4 + 840*(m^3 +
 3*m^2 + 2*m)*a^5*b^3*c^m*x^3 - 2520*(m^2 + m)*a^6*b^2*c^m*x^2 + 5040*a^7*b
*c^m*m*x - 5040*a^8*c^m)*(b*x + a)^m*B/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5
+ 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*b^2)
```

mupad [B] time = 2.55, size = 319, normalized size = 5.50

$$(a\,c+b\,c\,x)^m\,\left(\frac{a^7\,\left(8\,A\,b-B\,a+A\,b\,m\right)}{b^2\,\left(m^2+15\,m+56\right)}+\frac{7\,a^5\,x^2\,\left(24\,A\,b+4\,B\,a+3\,A\,b\,m+B\,a\,m\right)}{m^2+15\,m+56}+\frac{b^5\,x^7\,\left(8\,A\,b+48\,B\,a+A\,b\,m+7\,B\,a\,m\right)}{m^2+15\,m+56}+\frac{35\,a^3\,b^2\,x^4\,\left(8\,A\,b+6\,B\,a+A\,b\,m+B\,a\,m\right)}{m^2+15\,m+56}+\frac{7\,a^2\,b^3\,x^5\,\left(24\,A\,b+32\,B\,a+3\,A\,b\,m+5\,B\,a\,m\right)}{m^2+15\,m+56}+\frac{B\,b^6\,x^8\,\left(m+7\right)}{m^2+15\,m+56}+\frac{a^6\,x\,\left(56\,A\,b+7\,A\,b\,m+B\,a\,m\right)}{b\,\left(m^2+15\,m+56\right)}+\frac{7\,a\,b^4\,x^6\,\left(8\,A\,b+20\,B\,a+A\,b\,m+3\,B\,a\,m\right)}{m^2+15\,m+56}+\frac{7\,a^4\,b\,x^3\,\left(40\,A\,b+16\,B\,a+5\,A\,b\,m+3\,B\,a\,m\right)}{m^2+15\,m+56}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (a*c + b*c*x)^m*((a^7*(8*A*b - B*a + A*b*m))/(b^2*(15*m + m^2 + 56)) + (7*a
^5*x^2*(24*A*b + 4*B*a + 3*A*b*m + B*a*m))/(15*m + m^2 + 56) + (b^5*x^7*(8*
A*b + 48*B*a + A*b*m + 7*B*a*m))/(15*m + m^2 + 56) + (35*a^3*b^2*x^4*(8*A*b
 + 6*B*a + A*b*m + B*a*m))/(15*m + m^2 + 56) + (7*a^2*b^3*x^5*(24*A*b + 32*
B*a + 3*A*b*m + 5*B*a*m))/(15*m + m^2 + 56) + (B*b^6*x^8*(m + 7))/(15*m + m
^2 + 56) + (a^6*x*(56*A*b + 7*A*b*m + B*a*m))/(b*(15*m + m^2 + 56)) + (7*a*
b^4*x^6*(8*A*b + 20*B*a + A*b*m + 3*B*a*m))/(15*m + m^2 + 56) + (7*a^4*b*x^
3*(40*A*b + 16*B*a + 5*A*b*m + 3*B*a*m))/(15*m + m^2 + 56))
```

sympy [A] time = 7.82, size = 1488, normalized size = 25.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((a**6*(a*c)**m*(A*x + B*x**2/2), Eq(b, 0)), (-A*b/(a*b**2*c**8 +
b**3*c**8*x) + B*a*log(a/b + x)/(a*b**2*c**8 + b**3*c**8*x) + B*a/(a*b**2*c
**8 + b**3*c**8*x) + B*b*x*log(a/b + x)/(a*b**2*c**8 + b**3*c**8*x), Eq(m,
-8)), (A*log(a/b + x)/(b*c**7) - B*a*log(a/b + x)/(b**2*c**7) + B*x/(b*c**7
), Eq(m, -7)), (A*a**7*b*m*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**
2) + 8*A*a**7*b*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 7*A*a*
*6*b**2*m*x*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 56*A*a**6*
b**2*x*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 21*A*a**5*b**3*
m*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 168*A*a**5*b**3
*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 35*A*a**4*b**4*m
*x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 280*A*a**4*b**4*
x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 35*A*a**3*b**5*m*
x**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 280*A*a**3*b**5*x
**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 21*A*a**2*b**6*m*x
**5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 168*A*a**2*b**6*x*
*5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 7*A*a*b**7*m*x**6*(
a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 56*A*a*b**7*x**6*(a*c +
 b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + A*b**8*m*x**7*(a*c + b*c*x)*
*m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 8*A*b**8*x**7*(a*c + b*c*x)**m/(b**2
*m**2 + 15*b**2*m + 56*b**2) - B*a**8*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2
*m + 56*b**2) + B*a**7*b*m*x*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b
**2) + 7*B*a**6*b**2*m*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b*
*2) + 28*B*a**6*b**2*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2
) + 21*B*a**5*b**3*m*x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2
) + 112*B*a**5*b**3*x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
 + 35*B*a**4*b**4*m*x**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
 + 210*B*a**4*b**4*x**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
```

```
+ 35*B*a**3*b**5*m*x**5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
+ 224*B*a**3*b**5*x**5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) +
 21*B*a**2*b**6*m*x**6*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) +
 140*B*a**2*b**6*x**6*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) +
7*B*a*b**7*m*x**7*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 48*B
*a*b**7*x**7*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + B*b**8*m*
x**8*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 7*B*b**8*x**8*(a*
c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2), True))
```

3.1934 $\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=64

$$-\frac{c^5(Ab-aB)(ac+bcx)^{m-5}}{b^2(5-m)}-\frac{Bc^4(ac+bcx)^{m-4}}{b^2(4-m)}$$

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {27, 21, 43}

$$-\frac{c^5(Ab-aB)(ac+bcx)^{m-5}}{b^2(5-m)}-\frac{Bc^4(ac+bcx)^{m-4}}{b^2(4-m)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(((A*b - a*B)*c^5*(a*c + b*c*x)^(-5 + m))/(b^2*(5 - m))) - (B*c^4*(a*c + b
*c*x)^(-4 + m))/(b^2*(4 - m))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(A+Bx)(ac+bcx)^m}{(a+bx)^6}\,dx\\
&= c^6\int (A+Bx)(ac+bcx)^{-6+m}\,dx\\
&= c^6\int \left(\frac{(Ab-aB)(ac+bcx)^{-6+m}}{b}+\frac{B(ac+bcx)^{-5+m}}{bc}\right)dx\\
&= -\frac{(Ab-aB)c^5(ac+bcx)^{-5+m}}{b^2(5-m)}-\frac{Bc^4(ac+bcx)^{-4+m}}{b^2(4-m)}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 48, normalized size = 0.75

$$\frac{(c(a+bx))^m(-aB+Ab(m-4)+bB(m-5)x)}{b^2(m-5)(m-4)(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((c*(a + b*x))^m*(-(a*B) + A*b*(-4 + m) + b*B*(-5 + m)*x))/(b^2*(-5 + m)*(-
4 + m)*(a + b*x)^5)
```

IntegrateAlgebraic [F] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*
x^2)^3, x]
```

fricas [B] time = 0.45, size = 212, normalized size = 3.31

$$\frac{(Abm-Ba-4\,Ab+(Bbm-5\,Bb)x)(bcx+ac)^m}{a^5b^2m^2-9\,a^5b^2m+20\,a^5b^2+\left(b^7m^2-9\,b^7m+20\,b^7\right)x^5+5\left(ab^6m^2-9\,ab^6m+20\,ab^6\right)x^4+10\left(a^2b^5m^2-9\,a^2b^5m+20\,a^2b^5\right)x^3+10\left(a^3b^4m^2-9\,a^3b^4m+20\,a^3b^4\right)x^2+5\left(a^4b^3m^2-9\,a^4b^3m+20\,a^4b^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (A*b*m - B*a - 4*A*b + (B*b*m - 5*B*b)*x)*(b*c*x + a*c)^m/(a^5*b^2*m^2 - 9*
a^5*b^2*m + 20*a^5*b^2 + (b^7*m^2 - 9*b^7*m + 20*b^7)*x^5 + 5*(a*b^6*m^2 -
9*a*b^6*m + 20*a*b^6)*x^4 + 10*(a^2*b^5*m^2 - 9*a^2*b^5*m + 20*a^2*b^5)*x^3
 + 10*(a^3*b^4*m^2 - 9*a^3*b^4*m + 20*a^3*b^4)*x^2 + 5*(a^4*b^3*m^2 - 9*a^4
*b^3*m + 20*a^4*b^3)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(bcx+ac)^m}{\left(b^2x^2+2\,abx+a^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] integrate((B*x + A)*(b*c*x + a*c)^m/(b^2*x^2 + 2*a*b*x + a^2)^3, x)
```

maple [A] time = 0.04, size = 73, normalized size = 1.14

$$\frac{(Bbmx+Abm-5Bbx-4Ab-Ba)\,(bcx+ac)^m}{(bx+a)\left(b^2x^2+2abx+a^2\right)^2\left(m^2-9m+20\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (B*b*m*x+A*b*m-5*B*b*x-4*A*b-B*a)*(b*c*x+a*c)^m/(b*x+a)/(b^2*x^2+2*a*b*x+a^
2)^2/b^2/(m^2-9*m+20)
```

maxima [B] time = 0.74, size = 216, normalized size = 3.38

$$\frac{(bc^m(m-5)x-ac^m)(bx+a)^mB}{\left(m^2-9\,m+20\right)b^7x^5+5\left(m^2-9\,m+20\right)ab^6x^4+10\left(m^2-9\,m+20\right)a^2b^5x^3+10\left(m^2-9\,m+20\right)a^3b^4x^2+5\left(m^2-9\,m+20\right)a^4b^3x+\left(m^2-9\,m+20\right)a^5b^2}+\frac{(bx+a)^mAc^m}{b^6(m-5)x^5+5\,ab^5(m-5)x^4+10\,a^2b^4(m-5)x^3+10\,a^3b^3(m-5)x^2+5\,a^4b^2(m-5)x+a^5b(m-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*(m - 5)*x - a*c^m)*(b*x + a)^m*B/((m^2 - 9*m + 20)*b^7*x^5 + 5*(m^2
- 9*m + 20)*a*b^6*x^4 + 10*(m^2 - 9*m + 20)*a^2*b^5*x^3 + 10*(m^2 - 9*m + 2
0)*a^3*b^4*x^2 + 5*(m^2 - 9*m + 20)*a^4*b^3*x + (m^2 - 9*m + 20)*a^5*b^2) +
 (b*x + a)^m*A*c^m/(b^6*(m - 5)*x^5 + 5*a*b^5*(m - 5)*x^4 + 10*a^2*b^4*(m -
 5)*x^3 + 10*a^3*b^3*(m - 5)*x^2 + 5*a^4*b^2*(m - 5)*x + a^5*b*(m - 5))
```

mupad [B] time = 2.20, size = 113, normalized size = 1.77

$$-\frac{(a\,c+b\,c\,x)^m\,\left(\frac{4\,A\,b+B\,a-A\,b\,m}{b^7\,\left(m^2-9\,m+20\right)}-\frac{B\,x\,(m-5)}{b^6\,\left(m^2-9\,m+20\right)}\right)}{x^5+\frac{a^5}{b^5}+\frac{5\,a\,x^4}{b}+\frac{5\,a^4\,x}{b^4}+\frac{10\,a^2\,x^3}{b^2}+\frac{10\,a^3\,x^2}{b^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a*c + b*c*x)^m*((4*A*b + B*a - A*b*m)/(b^7*(m^2 - 9*m + 20)) - (B*x*(m -
 5))/(b^6*(m^2 - 9*m + 20))))/(x^5 + a^5/b^5 + (5*a*x^4)/b + (5*a^4*x)/b^4
+ (10*a^2*x^3)/b^2 + (10*a^3*x^2)/b^3)
```

sympy [A] time = 5.73, size = 1268, normalized size = 19.81

$$\begin{cases} \frac{(ac)^m\left(Ax+\frac{Bx^2}{2}\right)}{a^6} & \text{for}\ b=0 \\ -\frac{Abc^4}{ab^2+b^3x}+\frac{Bac^4\log\left(\frac{a}{b}+x\right)}{ab^2+b^3x}+\frac{Bac^4}{ab^2+b^3x}+\frac{Bbc^4x\log\left(\frac{a}{b}+x\right)}{ab^2+b^3x} & \text{for}\ m=4 \\ \frac{Ac^5\log\left(\frac{a}{b}+x\right)}{b}-\frac{Bac^5\log\left(\frac{a}{b}+x\right)}{b^2}+\frac{Bc^5x}{b} & \text{for}\ m=5 \\ \frac{Abm(ac+bcx)^m}{a^5b^2m^2-9a^5b^2m+20a^5b^2+5a^4b^3m^2x-45a^4b^3mx+100a^4b^3x+10a^3b^4m^2x^2-90a^3b^4mx^2+200a^3b^4x^2+10a^2b^5m^2x^3-90a^2b^5mx^3+200a^2b^5x^3+5ab^6m^2x^4-45ab^6mx^4+100ab^6x^4+b^7m^2x^5-9b^7mx^5+20b^7x^5}-\frac{4Ab(ac+bcx)^m}{a^5b^2m^2-9a^5b^2m+20a^5b^2+5a^4b^3m^2x-45a^4b^3mx+100a^4b^3x+10a^3b^4m^2x^2-90a^3b^4mx^2+200a^3b^4x^2+10a^2b^5m^2x^3-90a^2b^5mx^3+200a^2b^5x^3+5ab^6m^2x^4-45ab^6mx^4+100ab^6x^4+b^7m^2x^5-9b^7mx^5+20b^7x^5}-\frac{Ba(ac+bcx)^m}{a^5b^2m^2-9a^5b^2m+20a^5b^2+5a^4b^3m^2x-45a^4b^3mx+100a^4b^3x+10a^3b^4m^2x^2-90a^3b^4mx^2+200a^3b^4x^2+10a^2b^5m^2x^3-90a^2b^5mx^3+200a^2b^5x^3+5ab^6m^2x^4-45ab^6mx^4+100ab^6x^4+b^7m^2x^5-9b^7mx^5+20b^7x^5}+\frac{Bbmx(ac+bcx)^m}{a^5b^2m^2-9a^5b^2m+20a^5b^2+5a^4b^3m^2x-45a^4b^3mx+100a^4b^3x+10a^3b^4m^2x^2-90a^3b^4mx^2+200a^3b^4x^2+10a^2b^5m^2x^3-90a^2b^5mx^3+200a^2b^5x^3+5ab^6m^2x^4-45ab^6mx^4+100ab^6x^4+b^7m^2x^5-9b^7mx^5+20b^7x^5}-\frac{5Bbx(ac+bcx)^m}{a^5b^2m^2-9a^5b^2m+20a^5b^2+5a^4b^3m^2x-45a^4b^3mx+100a^4b^3x+10a^3b^4m^2x^2-90a^3b^4mx^2+200a^3b^4x^2+10a^2b^5m^2x^3-90a^2b^5mx^3+200a^2b^5x^3+5ab^6m^2x^4-45ab^6mx^4+100ab^6x^4+b^7m^2x^5-9b^7mx^5+20b^7x^5} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise(((a*c)**m*(A*x + B*x**2/2)/a**6, Eq(b, 0)), (-A*b*c**4/(a*b**2 +
b**3*x) + B*a*c**4*log(a/b + x)/(a*b**2 + b**3*x) + B*a*c**4/(a*b**2 + b**3
*x) + B*b*c**4*x*log(a/b + x)/(a*b**2 + b**3*x), Eq(m, 4)), (A*c**5*log(a/b
 + x)/b - B*a*c**5*log(a/b + x)/b**2 + B*c**5*x/b, Eq(m, 5)), (A*b*m*(a*c +
 b*c*x)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**
2*x - 45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3
*b**4*m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m
*x**3 + 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*
b**6*x**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) - 4*A*b*(a*c + b
*c*x)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*
x - 45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b
**4*m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x
**3 + 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b*
*6*x**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) - B*a*(a*c + b*c*x
)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*x -
45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b**4*
m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x**3
+ 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b**6*x
**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) + B*b*m*x*(a*c + b*c*x
)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*x -
45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b**4*
m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x**3
+ 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b**6*x
**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) - 5*B*b*x*(a*c + b*c*x
)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*x -
45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b**4*
m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x**3
+ 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b**6*x
**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5), True))
```

3.1935 $\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=112

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)(ac+bcx)^{m+4}}{b^2c^4(m+4)(a+bx)}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(ac+bcx)^{m+5}}{b^2c^5(m+5)(a+bx)}$$

Rubi [A] time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)(ac+bcx)^{m+4}}{b^2c^4(m+4)(a+bx)}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(ac+bcx)^{m+5}}{b^2c^5(m+5)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(a*c + b*c*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(b^2*c^4*
(4 + m)*(a + b*x)) + (B*(a*c + b*c*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(b^2*c^5*(5 + m)*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(ac+bcx)^m\left(a^2+2abx+b^2x^2\right)^{3/2}dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(ab+b^2x\right)^3(A+Bx)(ac+bcx)^m\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int(A+Bx)(ac+bcx)^{3+m}\,dx}{c^3\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(Ab-aB)(ac+bcx)^{3+m}}{b}+\frac{B(ac+bcx)^{4+m}}{bc}\right)}{c^3\left(ab+b^2x\right)}\\ &= \frac{(Ab-aB)(ac+bcx)^{4+m}\sqrt{a^2+2abx+b^2x^2}}{b^2c^4(4+m)(a+bx)}+\frac{B(ac+bcx)^{5}}{b^2c^{5}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 59, normalized size = 0.53

$$\frac{(a+bx)^3\sqrt{(a+bx)^2}\,(c(a+bx))^m(-aB+Ab(m+5)+bB(m+4)x)}{b^2(m+4)(m+5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)^3*(c*(a + b*x))^m*Sqrt[(a + b*x)^2]*(-(a*B) + A*b*(5 + m) + b*B*
(4 + m)*x))/(b^2*(4 + m)*(5 + m))
```

IntegrateAlgebraic [F] time = 3.04, size = 0, normalized size = 0.00

$$\int (A+Bx)(ac+bcx)^m\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2
),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^
2)^(3/2), x]
```

fricas [B] time = 0.45, size = 219, normalized size = 1.96

$$\frac{\left(Aa^4bm-Ba^5+5\,Aa^4b+\left(Bb^5m+4\,Bb^5\right)x^5+\left(15\,Bab^4+5\,Ab^5+\left(4\,Bab^4+Ab^5\right)m\right)x^4+2\left(10\,Ba^2b^3+10\,Aab^4+\left(3\,Ba^2b^3+2\,Aab^4\right)m\right)x^3+2\left(5\,Ba^3b^2+15\,Aa^2b^3+\left(2\,Ba^3b^2+3\,Aa^2b^3\right)m\right)x^2+\left(20\,Aa^3b^2+\left(Ba^4b+4\,Aa^3b^2\right)m\right)x\right)(bcx+ac)^m}{b^2m^2+9\,b^2m+20\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] (A*a^4*b*m - B*a^5 + 5*A*a^4*b + (B*b^5*m + 4*B*b^5)*x^5 + (15*B*a*b^4 + 5*
A*b^5 + (4*B*a*b^4 + A*b^5)*m)*x^4 + 2*(10*B*a^2*b^3 + 10*A*a*b^4 + (3*B*a^
2*b^3 + 2*A*a*b^4)*m)*x^3 + 2*(5*B*a^3*b^2 + 15*A*a^2*b^3 + (2*B*a^3*b^2 +
3*A*a^2*b^3)*m)*x^2 + (20*A*a^3*b^2 + (B*a^4*b + 4*A*a^3*b^2)*m)*x)*(b*c*x
+ a*c)^m/(b^2*m^2 + 9*b^2*m + 20*b^2)
```

giac [B] time = 0.27, size = 545, normalized size = 4.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] ((b*c*x + a*c)^m*B*b^5*m*x^5*sgn(b*x + a) + 4*(b*c*x + a*c)^m*B*a*b^4*m*x^4
*sgn(b*x + a) + (b*c*x + a*c)^m*A*b^5*m*x^4*sgn(b*x + a) + 4*(b*c*x + a*c)^
m*B*b^5*x^5*sgn(b*x + a) + 6*(b*c*x + a*c)^m*B*a^2*b^3*m*x^3*sgn(b*x + a) +
 4*(b*c*x + a*c)^m*A*a*b^4*m*x^3*sgn(b*x + a) + 15*(b*c*x + a*c)^m*B*a*b^4*
x^4*sgn(b*x + a) + 5*(b*c*x + a*c)^m*A*b^5*x^4*sgn(b*x + a) + 4*(b*c*x + a*
c)^m*B*a^3*b^2*m*x^2*sgn(b*x + a) + 6*(b*c*x + a*c)^m*A*a^2*b^3*m*x^2*sgn(b
*x + a) + 20*(b*c*x + a*c)^m*B*a^2*b^3*x^3*sgn(b*x + a) + 20*(b*c*x + a*c)^
m*A*a*b^4*x^3*sgn(b*x + a) + (b*c*x + a*c)^m*B*a^4*b*m*x*sgn(b*x + a) + 4*(
b*c*x + a*c)^m*A*a^3*b^2*m*x*sgn(b*x + a) + 10*(b*c*x + a*c)^m*B*a^3*b^2*x^
2*sgn(b*x + a) + 30*(b*c*x + a*c)^m*A*a^2*b^3*x^2*sgn(b*x + a) + (b*c*x + a
*c)^m*A*a^4*b*m*sgn(b*x + a) + 20*(b*c*x + a*c)^m*A*a^3*b^2*x*sgn(b*x + a)
- (b*c*x + a*c)^m*B*a^5*sgn(b*x + a) + 5*(b*c*x + a*c)^m*A*a^4*b*sgn(b*x +
a))/(b^2*m^2 + 9*b^2*m + 20*b^2)
```

maple [A] time = 0.05, size = 62, normalized size = 0.55

$$\frac{\left((bx+a)^{2}\right)^{\frac{3}{2}} (Bbmx + Abm + 4Bbx + 5Ab - Ba)(bx+a)(bcx+ac)^{m}}{\left(m^{2}+9m+20\right) b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] ((b*x+a)^2)^(3/2)*(b*c*x+a*c)^m*(B*b*m*x+A*b*m+4*B*b*x+5*A*b-B*a)*(b*x+a)/b
^2/(m^2+9*m+20)
```

maxima [A] time = 0.68, size = 180, normalized size = 1.61

$$\frac{\left(b^{4}c^{m}x^{4} + 4\,ab^{3}c^{m}x^{3} + 6\,a^{2}b^{2}c^{m}x^{2} + 4\,a^{3}bc^{m}x + a^{4}c^{m}\right)(bx+a)^{m}A}{b(m+4)} + \frac{\left(b^{5}c^{m}(m+4)x^{5} + ab^{4}c^{m}(4\,m+15)x^{4} + 2\,a^{2}b^{3}c^{m}(3\,m+10)x^{3} + 2\,a^{3}b^{2}c^{m}(2\,m+5)x^{2} + a^{4}bc^{m}mx - a^{5}c^{m}\right)(bx+a)^{m}B}{\left(m^{2}+9\,m+20\right)b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] (b^4*c^m*x^4 + 4*a*b^3*c^m*x^3 + 6*a^2*b^2*c^m*x^2 + 4*a^3*b*c^m*x + a^4*c^
m)*(b*x + a)^m*A/(b*(m + 4)) + (b^5*c^m*(m + 4)*x^5 + a*b^4*c^m*(4*m + 15)*
x^4 + 2*a^2*b^3*c^m*(3*m + 10)*x^3 + 2*a^3*b^2*c^m*(2*m + 5)*x^2 + a^4*b*c^
m*m*x - a^5*c^m)*(b*x + a)^m*B/((m^2 + 9*m + 20)*b^2)
```

mupad [B] time = 2.30, size = 254, normalized size = 2.27

$$(a\,c+b\,c\,x)^{m}\left(\frac{a^{3}\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,\left(5\,A\,b-B\,a+A\,b\,m\right)}{b^{2}\,\left(m^{2}+9\,m+20\right)}+\frac{3\,a\,x^{2}\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,\left(5\,A\,b+3\,B\,a+A\,b\,m+B\,a\,m\right)}{m^{2}+9\,m+20}+\frac{b\,x^{3}\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,\left(5\,A\,b+11\,B\,a+A\,b\,m+3\,B\,a\,m\right)}{m^{2}+9\,m+20}+\frac{a^{2}\,x\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,\left(15\,A\,b+B\,a+3\,A\,b\,m+B\,a\,m\right)}{b\,\left(m^{2}+9\,m+20\right)}+\frac{B\,b^{2}\,x^{4}\,\left(m+4\right)\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}}{m^{2}+9\,m+20}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] (a*c + b*c*x)^m*((a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(5*A*b - B*a + A*b*m)
)/(b^2*(9*m + m^2 + 20)) + (3*a*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(5*A*b
+ 3*B*a + A*b*m + B*a*m))/(9*m + m^2 + 20) + (b*x^3*(a^2 + b^2*x^2 + 2*a*b*
x)^(1/2)*(5*A*b + 11*B*a + A*b*m + 3*B*a*m))/(9*m + m^2 + 20) + (a^2*x*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2)*(15*A*b + B*a + 3*A*b*m + B*a*m))/(b*(9*m + m^2
 + 20)) + (B*b^2*x^4*(m + 4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*m + m^2 +
20))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (c\,(a+bx))^{m}\,(A+Bx)\left((a+bx)^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((c*(a + b*x))**m*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.1936 $\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}} \, dx$

Optimal. Leaf size=112

$$-\frac{c^2(a+bx)(Ab-aB)(ac+bcx)^{m-2}}{b^2(2-m)\sqrt{a^2+2abx+b^2x^2}}-\frac{Bc(a+bx)(ac+bcx)^{m-1}}{b^2(1-m)\sqrt{a^2+2abx+b^2x^2}}$$

Rubi [A] time = 0.09, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {770, 21, 43}

$$-\frac{c^2(a+bx)(Ab-aB)(ac+bcx)^{m-2}}{b^2(2-m)\sqrt{a^2+2abx+b^2x^2}}-\frac{Bc(a+bx)(ac+bcx)^{m-1}}{b^2(1-m)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((A*b - a*B)*c^2*(a + b*x)*(a*c + b*c*x)^(-2 + m))/(b^2*(2 - m)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])) - (B*c*(a + b*x)*(a*c + b*c*x)^(-1 + m))/(b^2*(1 - m
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}} \, dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(ac+bcx)^m}{\left(ab+b^2x\right)^3} \, dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(c^3\left(ab+b^2x\right)\right)\int (A+Bx)(ac+bcx)^{-3+m} \, dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(c^3\left(ab+b^2x\right)\right)\int \left(\frac{(Ab-aB)(ac+bcx)^{-3+m}}{b}+\frac{B(ac+bcx)^{-2+m}}{bc}\right) dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(Ab-aB)c^2(a+bx)(ac+bcx)^{-2+m}}{b^2(2-m)\sqrt{a^2+2abx+b^2x^2}}-\frac{Bc(a+bx)(ac+bcx)^{-1+m}}{b^2(1-m)\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 55, normalized size = 0.49

$$\frac{c(c(a+bx))^{m-1}(-aB+Ab(m-1)+bB(m-2)x)}{b^2(m-2)(m-1)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (c*(c*(a + b*x))^(-1 + m)*(-(a*B) + A*b*(-1 + m) + b*B*(-2 + m)*x))/(b^2*(-
2 + m)*(-1 + m)*Sqrt[(a + b*x)^2])
```

IntegrateAlgebraic [F] time = 2.10, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(ac+bcx)^m}{(a^2+2abx+b^2x^2)^{3/2}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3
/2),x]
```

```
[Out] Defer[IntegrateAlgebraic][((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*
x^2)^(3/2), x]
```

fricas [A] time = 0.44, size = 113, normalized size = 1.01

$$\frac{(Abm-Ba-Ab+(Bbm-2\,Bb)x)(bcx+ac)^m}{a^2b^2m^2-3\,a^2b^2m+2\,a^2b^2+\left(b^4m^2-3\,b^4m+2\,b^4\right)x^2+2\left(ab^3m^2-3\,ab^3m+2\,ab^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] (A*b*m - B*a - A*b + (B*b*m - 2*B*b)*x)*(b*c*x + a*c)^m/(a^2*b^2*m^2 - 3*a^
2*b^2*m + 2*a^2*b^2 + (b^4*m^2 - 3*b^4*m + 2*b^4)*x^2 + 2*(a*b^3*m^2 - 3*a*
b^3*m + 2*a*b^3)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(bcx+ac)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] integrate((B*x + A)*(b*c*x + a*c)^m/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

maple [A] time = 0.05, size = 62, normalized size = 0.55

$$\frac{(Bbmx+Abm-2Bbx-Ab-Ba)\,(bx+a)\,(bcx+ac)^m}{\left((bx+a)^2\right)^{\frac{3}{2}}\left(m^2-3m+2\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (b*c*x+a*c)^m*(B*b*m*x+A*b*m-2*B*b*x-A*b-B*a)*(b*x+a)/((b*x+a)^2)^(3/2)/b^2
/(m^2-3*m+2)
```

maxima [A] time = 0.75, size = 117, normalized size = 1.04

$$\frac{(bc^m(m-2)x - ac^m)(bx+a)^m B}{(m^2-3m+2)b^4x^2 + 2(m^2-3m+2)ab^3x + (m^2-3m+2)a^2b^2} + \frac{(bx+a)^m Ac^m}{b^3(m-2)x^2 + 2ab^2(m-2)x + a^2b(m-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] (b*c^m*(m - 2)*x - a*c^m)*(b*x + a)^m*B/((m^2 - 3*m + 2)*b^4*x^2 + 2*(m^2 -
 3*m + 2)*a*b^3*x + (m^2 - 3*m + 2)*a^2*b^2) + (b*x + a)^m*A*c^m/(b^3*(m -
2)*x^2 + 2*a*b^2*(m - 2)*x + a^2*b*(m - 2))
```

mupad [B] time = 2.30, size = 105, normalized size = 0.94

$$-\frac{(a\,c+b\,c\,x)^m\left(\frac{A\,b+B\,a-A\,b\,m}{b^3\left(m^2-3\,m+2\right)}-\frac{B\,x\,(m-2)}{b^2\left(m^2-3\,m+2\right)}\right)}{x\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{a\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] -((a*c + b*c*x)^m*((A*b + B*a - A*b*m)/(b^3*(m^2 - 3*m + 2)) - (B*x*(m - 2)
)/(b^2*(m^2 - 3*m + 2))))/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (a*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c(a+bx))^m (A+Bx)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((c*(a + b*x))**m*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.1937 $\int (ac+bcx)^m(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=100

$$\frac{g\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+2}}{b^2c^2(m+2p+2)}+\frac{(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+1}}{b^2c(m+2p+1)}$$

Rubi [A] time = 0.08, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {770, 23, 43}

$$\frac{g\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+2}}{b^2c^2(m+2p+2)}+\frac{(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+1}}{b^2c(m+2p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*c + b*c*x)^m*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*f - a*g)*(a*c + b*c*x)^(1 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^2*c*(1 +
 m + 2*p)) + (g*(a*c + b*c*x)^(2 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^2*c^2
*(2 + m + 2*p))
```

Rule 23

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_)*((c_) + (d_.)*(v_))^(n_), x_Symbol] :> D
ist[(a + b*v)^m/(c + d*v)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b
, c, d, m, n}, x] && EqQ[b*c - a*d, 0] &&  !(IntegerQ[m] || IntegerQ[n] ||
GtQ[b/d, 0])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (ac+bcx)^m(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx=\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int\left(ab+b^2x\right)^{2p}(ac+bc$$

$$=\left((ac+bcx)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int(ac+bcx)^{m+2p}(f+gx$$

$$=\left((ac+bcx)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int\left(\frac{(bf-ag)(ac+bcx)^{m}}{b}\right.$$

$$=\frac{(bf-ag)(ac+bcx)^{1+m}\left(a^2+2abx+b^2x^2\right)^p}{b^2c(1+m+2p)}+\frac{g(ac+bcx)^{2+}}{b^2c^2}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 0.67

$$\frac{(a+bx)\left((a+bx)^2\right)^p(c(a+bx))^m(-ag+bf(m+2p+2)+bgx(m+2p+1))}{b^2(m+2p+1)(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c + b*c*x)^m*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a + b*x)*(c*(a + b*x))^m*((a + b*x)^2)^p*(-(a*g) + b*f*(2 + m + 2*p) + b*
g*(1 + m + 2*p)*x))/(b^2*(1 + m + 2*p)*(2 + m + 2*p))
```

IntegrateAlgebraic [F] time = 0.19, size = 0, normalized size = 0.00

$$\int (ac+bcx)^m(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a*c + b*c*x)^m*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a*c + b*c*x)^m*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^
2)^p, x]
```

fricas [A] time = 0.43, size = 155, normalized size = 1.55

$$\frac{\left(abfm+2abfp+2abf-a^2g+\left(b^2gm+2b^2gp+b^2g\right)x^2+\left(2b^2f+\left(b^2f+abg\right)m+2\left(b^2f+abg\right)p\right)x\right)(bcx+ac)^m e^{\left(2p\log(bcx+ac)+p\log\left(\frac{1}{c^2}\right)\right)}}{b^2m^2+4b^2p^2+3b^2m+2b^2+2\left(2b^2m+3b^2\right)p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="frica
s")
```

```
[Out] (a*b*f*m + 2*a*b*f*p + 2*a*b*f - a^2*g + (b^2*g*m + 2*b^2*g*p + b^2*g)*x^2
+ (2*b^2*f + (b^2*f + a*b*g)*m + 2*(b^2*f + a*b*g)*p)*x)*(b*c*x + a*c)^m*e^
(2*p*log(b*c*x + a*c) + p*log(c^(-2)))/(b^2*m^2 + 4*b^2*p^2 + 3*b^2*m + 2*b
^2 + 2*(2*b^2*m + 3*b^2)*p)
```

giac [B] time = 0.21, size = 404, normalized size = 4.04

$$\frac{(bx+a)^{2p}b^2gmx^2e^{(m\log(bx+a)+m\log(c))}+2(bx+a)^{2p}b^2gpx^2e^{(m\log(bx+a)+m\log(c))}+(bx+a)^{2p}b^2fmxe^{(m\log(bx+a)+m\log(c))}+(bx+a)^{2p}abgmxe^{(m\log(bx+a)+m\log(c))}+2(bx+a)^{2p}b^2fpxe^{(m\log(bx+a)+m\log(c))}+2(bx+a)^{2p}abgpxe^{(m\log(bx+a)+m\log(c))}+(bx+a)^{2p}b^2gx^2e^{(m\log(bx+a)+m\log(c))}+(bx+a)^{2p}abfme^{(m\log(bx+a)+m\log(c))}+2(bx+a)^{2p}abfpe^{(m\log(bx+a)+m\log(c))}+2(bx+a)^{2p}b^2fxe^{(m\log(bx+a)+m\log(c))}+2(bx+a)^{2p}abfe^{(m\log(bx+a)+m\log(c))}-(bx+a)^{2p}a^2ge^{(m\log(bx+a)+m\log(c))}}{b^2m^2+4b^2mp+4b^2p^2+3b^2m+6b^2p+2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac"
)
```

```
[Out] ((b*x + a)^(2*p)*b^2*g*m*x^2*e^(m*log(b*x + a) + m*log(c)) + 2*(b*x + a)^(2
*p)*b^2*g*p*x^2*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*b^2*f*m*x*e
^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*a*b*g*m*x*e^(m*log(b*x + a)
+ m*log(c)) + 2*(b*x + a)^(2*p)*b^2*f*p*x*e^(m*log(b*x + a) + m*log(c)) + 2
*(b*x + a)^(2*p)*a*b*g*p*x*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*
b^2*g*x^2*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*a*b*f*m*e^(m*log(
b*x + a) + m*log(c)) + 2*(b*x + a)^(2*p)*a*b*f*p*e^(m*log(b*x + a) + m*log(
c)) + 2*(b*x + a)^(2*p)*b^2*f*x*e^(m*log(b*x + a) + m*log(c)) + 2*(b*x + a)
^(2*p)*a*b*f*e^(m*log(b*x + a) + m*log(c)) - (b*x + a)^(2*p)*a^2*g*e^(m*log
(b*x + a) + m*log(c)))/(b^2*m^2 + 4*b^2*m*p + 4*b^2*p^2 + 3*b^2*m + 6*b^2*p
 + 2*b^2)
```

maple [A] time = 0.05, size = 96, normalized size = 0.96

$$-\frac{\left(-bgmx-2bgpx-bfm-2bfp-bgx+ag-2bf\right)(bx+a)(bcx+ac)^m\left(b^2x^2+2abx+a^2\right)^p}{\left(m^2+4mp+4p^2+3m+6p+2\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -(b^2*x^2+2*a*b*x+a^2)^p*(b*c*x+a*c)^m*(-b*g*m*x-2*b*g*p*x-b*f*m-2*b*f*p-b*
g*x+a*g-2*b*f)*(b*x+a)/b^2/(m^2+4*m*p+4*p^2+3*m+6*p+2)
```

maxima [A] time = 0.67, size = 128, normalized size = 1.28

$$\frac{(bc^m x + ac^m) f e^{\left(m \log(bx+a) + 2\, p \log(bx+a)\right)}}{b\left(m + 2\, p + 1\right)} + \frac{\left(b^2 c^m \left(m + 2\, p + 1\right) x^2 + abc^m \left(m + 2\, p\right) x - a^2 c^m\right) g e^{\left(m \log(bx+a) + 2\, p \log(bx+a)\right)}}{\left(m^2 + m\left(4\, p + 3\right) + 4\, p^2 + 6\, p + 2\right) b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*x + a*c^m)*f*e^(m*log(b*x + a) + 2*p*log(b*x + a))/(b*(m + 2*p + 1))
 + (b^2*c^m*(m + 2*p + 1)*x^2 + a*b*c^m*(m + 2*p)*x - a^2*c^m)*g*e^(m*log(b
*x + a) + 2*p*log(b*x + a))/((m^2 + m*(4*p + 3) + 4*p^2 + 6*p + 2)*b^2)
```

mupad [B] time = 2.21, size = 178, normalized size = 1.78

$$\left(a^2 + 2\, a\, b\, x + b^2\, x^2\right)^p \left(\frac{g\, x^2\, (a\, c + b\, c\, x)^m\, \left(m + 2\, p + 1\right)}{m^2 + 4\, m\, p + 3\, m + 4\, p^2 + 6\, p + 2} + \frac{a\, (a\, c + b\, c\, x)^m\, \left(2\, b\, f - a\, g + b\, f\, m + 2\, b\, f\, p\right)}{b^2\, \left(m^2 + 4\, m\, p + 3\, m + 4\, p^2 + 6\, p + 2\right)} + \frac{x\, (a\, c + b\, c\, x)^m\, \left(2\, b\, f + a\, g\, m + b\, f\, m + 2\, a\, g\, p + 2\, b\, f\, p\right)}{b\, \left(m^2 + 4\, m\, p + 3\, m + 4\, p^2 + 6\, p + 2\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a*c + b*c*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((g*x^2*(a*c + b*c*x)^m*(m + 2*p + 1))/(3*m + 6
*p + 4*m*p + m^2 + 4*p^2 + 2) + (a*(a*c + b*c*x)^m*(2*b*f - a*g + b*f*m + 2
*b*f*p))/(b^2*(3*m + 6*p + 4*m*p + m^2 + 4*p^2 + 2)) + (x*(a*c + b*c*x)^m*(
2*b*f + a*g*m + b*f*m + 2*a*g*p + 2*b*f*p))/(b*(3*m + 6*p + 4*m*p + m^2 + 4
*p^2 + 2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)**m*(g*x+f)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Timed out
```

3.1938 $\int (ac+bcx)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=61

$$-\frac{(f+gx)^2\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{-2p}}{2c^3(a+bx)^2(bf-ag)}$$

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.079, Rules used = {770, 23, 37}

$$-\frac{(f+gx)^2\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{-2p}}{2c^3(a+bx)^2(bf-ag)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*c + b*c*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] -((f + g*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*c^3*(b*f - a*g)*(a + b*x)^2*(
a*c + b*c*x)^(2*p))
```

Rule 23

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_)*((c_) + (d_.)*(v_))^(n_), x_Symbol] :> D
ist[(a + b*v)^m/(c + d*v)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b
, c, d, m, n}, x] && EqQ[b*c - a*d, 0] &&  !(IntegerQ[m] || IntegerQ[n] ||
GtQ[b/d, 0])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (ac+bcx)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{2p}(ac+bc\\ &= \left((ac+bcx)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \frac{f+gx}{(ac+bcx)^3}\,dx\\ &= -\frac{(ac+bcx)^{-2p}(f+gx)^2\left(a^2+2abx+b^2x^2\right)^p}{2c^3(bf-ag)(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.80

$$-\frac{\left((a+bx)^2\right)^p(c(a+bx))^{-2p}(ag+b(f+2gx))}{2b^2c^3(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c + b*c*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] -1/2*(((a + b*x)^2)^p*(a*g + b*(f + 2*g*x)))/(b^2*c^3*(a + b*x)^2*(c*(a + b
*x))^(2*p))
```

IntegrateAlgebraic [A] time = 0.77, size = 49, normalized size = 0.80

$$-\frac{\left((a+bx)^2\right)^p (c(a+bx))^{-2p}(ag+bf+2bgx)}{2b^2c^3(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(a*c + b*c*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*
x^2)^p,x]
```

```
[Out] -1/2*(((a + b*x)^2)^p*(b*f + a*g + 2*b*g*x))/(b^2*c^3*(a + b*x)^2*(c*(a + b
*x))^(2*p))
```

fricas [A] time = 0.44, size = 52, normalized size = 0.85

$$-\frac{\left(2\,bgx+bf+ag\right)\frac{1}{c^2}^p}{2\left(b^4c^3x^2+2\,ab^3c^3x+a^2b^2c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="fricas")
```

```
[Out] -1/2*(2*b*g*x + b*f + a*g)*(c^(-2))^p/(b^4*c^3*x^2 + 2*a*b^3*c^3*x + a^2*b^
2*c^3)
```

giac [B] time = 0.26, size = 221, normalized size = 3.62

$$-\frac{2\,(bx+a)^{2p}b^2gx^2e^{\left(-2p\log(bx+a)-2p\log(c)-3\log(bx+a)-3\log(c)\right)}+(bx+a)^{2p}b^2fxe^{\left(-2p\log(bx+a)-2p\log(c)-3\log(bx+a)-3\log(c)\right)}+3\,(bx+a)^{2p}abgxe^{\left(-2p\log(bx+a)-2p\log(c)-3\log(bx+a)-3\log(c)\right)}+(bx+a)^{2p}abfe^{\left(-2p\log(bx+a)-2p\log(c)-3\log(bx+a)-3\log(c)\right)}+(bx+a)^{2p}a^2ge^{\left(-2p\log(bx+a)-2p\log(c)-3\log(bx+a)-3\log(c)\right)}}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="giac")
```

```
[Out] -1/2*(2*(b*x + a)^(2*p)*b^2*g*x^2*e^(-2*p*log(b*x + a) - 2*p*log(c) - 3*log
(b*x + a) - 3*log(c)) + (b*x + a)^(2*p)*b^2*f*x*e^(-2*p*log(b*x + a) - 2*p*
log(c) - 3*log(b*x + a) - 3*log(c)) + 3*(b*x + a)^(2*p)*a*b*g*x*e^(-2*p*log
(b*x + a) - 2*p*log(c) - 3*log(b*x + a) - 3*log(c)) + (b*x + a)^(2*p)*a*b*f
*e^(-2*p*log(b*x + a) - 2*p*log(c) - 3*log(b*x + a) - 3*log(c)) + (b*x + a)
^(2*p)*a^2*g*e^(-2*p*log(b*x + a) - 2*p*log(c) - 3*log(b*x + a) - 3*log(c))
)/b^2
```

maple [A] time = 0.05, size = 55, normalized size = 0.90

$$-\frac{(bx+a)\left(2bgx+ag+bf\right)(bcx+ac)^{-2p-3}\left(b^2x^2+2abx+a^2\right)^p}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c*x+a*c)^(-2*p-3)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b*x+a)*(2*b*g*x+a*g+b*f)*(b*c*x+a*c)^(-2*p-3)*(b^2*x^2+2*a*b*x+a^2)^p
/b^2
```

maxima [**A**] time = 0.58, size = 101, normalized size = 1.66

$$-\frac{(2\,bx+a)g}{2\,\left(b^4c^{2\,p+3}x^2+2\,ab^3c^{2\,p+3}x+a^2b^2c^{2\,p+3}\right)}-\frac{f}{2\,\left(b^3c^{2\,p+3}x^2+2\,ab^2c^{2\,p+3}x+a^2bc^{2\,p+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="maxima")
```

```
[Out] -1/2*(2*b*x + a)*g/(b^4*c^(2*p + 3)*x^2 + 2*a*b^3*c^(2*p + 3)*x + a^2*b^2*c
^(2*p + 3)) - 1/2*f/(b^3*c^(2*p + 3)*x^2 + 2*a*b^2*c^(2*p + 3)*x + a^2*b*c^
(2*p + 3))
```

mupad [**B**] time = 2.14, size = 106, normalized size = 1.74

$$-\left(\frac{g\,a^2+b\,f\,a}{2\,b^2\,(a\,c+b\,c\,x)^{2\,p+3}}+\frac{g\,x^2}{(a\,c+b\,c\,x)^{2\,p+3}}+\frac{x\,\left(f\,b^2+3\,a\,g\,b\right)}{2\,b^2\,(a\,c+b\,c\,x)^{2\,p+3}}\right)\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(a*c + b*c*x)^(2*p + 3),x)
```

```
[Out] -((a^2*g + a*b*f)/(2*b^2*(a*c + b*c*x)^(2*p + 3)) + (g*x^2)/(a*c + b*c*x)^(
2*p + 3) + (x*(b^2*f + 3*a*b*g))/(2*b^2*(a*c + b*c*x)^(2*p + 3)))*(a^2 + b^
2*x^2 + 2*a*b*x)^p
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)**(-3-2*p)*(g*x+f)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Timed out
```

3.1939 $\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^p \, dx$

Optimal. Leaf size=45

$$\frac{\left(a^2+2abx+b^2x^2\right)^p (ac+bcx)^{m+2}}{bc^2(m+2p+2)}$$

Rubi [A] time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 644, 32}

$$\frac{\left(a^2+2abx+b^2x^2\right)^p (ac+bcx)^{m+2}}{bc^2(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a*c + b*c*x)^(2 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b*c^2*(2 + m + 2*p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 644

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[(a + b*x + c*x^2)^p/(d + e*x)^(2*p), Int[(d + e*x)^(m + 2*p),
x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !Integ
erQ[p] && EqQ[2*c*d - b*e, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^p \, dx &= \frac{\int (ac+bcx)^{1+m} \left(a^2+2abx+b^2x^2\right)^p \, dx}{c}\\
&= \frac{\left((ac+bcx)^{-2p} \left(a^2+2abx+b^2x^2\right)^p\right) \int (ac+bcx)^{1+m+2p} \, dx}{c}\\
&= \frac{(ac+bcx)^{2+m} \left(a^2+2abx+b^2x^2\right)^p}{bc^2(2+m+2p)}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.71

$$\frac{\left((a+bx)^2\right)^{p+1} (c(a+bx))^m}{b(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((c*(a + b*x))^m*((a + b*x)^2)^(1 + p))/(b*(2 + m + 2*p))
```

IntegrateAlgebraic [F] time = 0.12, size = 0, normalized size = 0.00

$$\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^p \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^
2)^p, x]
```

fricas [A] time = 0.45, size = 60, normalized size = 1.33

$$\frac{\left(b^2x^2+2\,abx+a^2\right)(bcx+ac)^m e^{\left(2\,p\log(bcx+ac)+p\log\left(\frac{1}{c^2}\right)\right)}}{bm+2\,bp+2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="frica
s")
```

```
[Out] (b^2*x^2 + 2*a*b*x + a^2)*(b*c*x + a*c)^m*e^(2*p*log(b*c*x + a*c) + p*log(c
^(-2)))/(b*m + 2*b*p + 2*b)
```

giac [B] time = 0.19, size = 100, normalized size = 2.22

$$\frac{(bx+a)^{2\,p}b^2x^2e^{\left(m\log(bx+a)+m\log(c)\right)}+2\,(bx+a)^{2\,p}abxe^{\left(m\log(bx+a)+m\log(c)\right)}+(bx+a)^{2\,p}a^2e^{\left(m\log(bx+a)+m\log(c)\right)}}{bm+2\,bp+2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac"
)
```

```
[Out] ((b*x + a)^(2*p)*b^2*x^2*e^(m*log(b*x + a) + m*log(c)) + 2*(b*x + a)^(2*p)*
a*b*x*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*a^2*e^(m*log(b*x + a)
 + m*log(c)))/(b*m + 2*b*p + 2*b)
```

maple [A] time = 0.04, size = 48, normalized size = 1.07

$$\frac{(bx+a)^2\,(bcx+ac)^m\left(b^2x^2+2abx+a^2\right)^p}{\left(m+2p+2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] (b*x+a)^2/b/(2+m+2*p)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p
```

maxima [B] time = 0.57, size = 127, normalized size = 2.82

$$\frac{(bc^mx+ac^m)ae^{\left(m\log(bx+a)+2\,p\log(bx+a)\right)}}{b\left(m+2\,p+1\right)}+\frac{\left(b^2c^m\left(m+2\,p+1\right)x^2+abc^m\left(m+2\,p\right)x-a^2c^m\right)e^{\left(m\log(bx+a)+2\,p\log(bx+a)\right)}}{\left(m^2+m\left(4\,p+3\right)+4\,p^2+6\,p+2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*x + a*c^m)*a*e^(m*log(b*x + a) + 2*p*log(b*x + a))/(b*(m + 2*p + 1))
 + (b^2*c^m*(m + 2*p + 1)*x^2 + a*b*c^m*(m + 2*p)*x - a^2*c^m)*e^(m*log(b*x
 + a) + 2*p*log(b*x + a))/((m^2 + m*(4*p + 3) + 4*p^2 + 6*p + 2)*b)
```

mupad [B] time = 2.12, size = 90, normalized size = 2.00

$$\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\,\left(\frac{2\,a\,x\,{\left(a\,c+b\,c\,x\right)}^m}{m+2\,p+2}+\frac{b\,x^2\,{\left(a\,c+b\,c\,x\right)}^m}{m+2\,p+2}+\frac{a^2\,{\left(a\,c+b\,c\,x\right)}^m}{b\,\left(m+2\,p+2\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((2*a*x*(a*c + b*c*x)^m)/(m + 2*p + 2) + (b*x^2
*(a*c + b*c*x)^m)/(m + 2*p + 2) + (a^2*(a*c + b*c*x)^m)/(b*(m + 2*p + 2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Timed out
```

3.1940 $\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=24

$$\frac{(ac+bcx)^{m+8}}{bc^8(m+8)}$$

Rubi [A] time = 0.02, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 27, 32}

$$\frac{(ac+bcx)^{m+8}}{bc^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a*c + b*c*x)^(8 + m)/(b*c^8*(8 + m))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \frac{\int (ac+bcx)^{1+m} \left(a^2+2abx+b^2x^2\right)^3 \, dx}{c} \\
&= \frac{\int (a+bx)^6(ac+bcx)^{1+m} \, dx}{c} \\
&= \frac{\int (ac+bcx)^{7+m} \, dx}{c^7} \\
&= \frac{(ac+bcx)^{8+m}}{bc^8(8+m)}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 25, normalized size = 1.04

$$\frac{(a+bx)^8(c(a+bx))^m}{b(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((a + b*x)^8*(c*(a + b*x))^m)/(b*(8 + m))
```

IntegrateAlgebraic [F] time = 0.15, size = 0, normalized size = 0.00

$$\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^
2)^3, x]
```

fricas [B] time = 0.42, size = 102, normalized size = 4.25

$$\frac{\left(b^8x^8 + 8\,ab^7x^7 + 28\,a^2b^6x^6 + 56\,a^3b^5x^5 + 70\,a^4b^4x^4 + 56\,a^5b^3x^3 + 28\,a^6b^2x^2 + 8\,a^7bx + a^8\right)(bcx+ac)^m}{bm+8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (b^8*x^8 + 8*a*b^7*x^7 + 28*a^2*b^6*x^6 + 56*a^3*b^5*x^5 + 70*a^4*b^4*x^4 +
 56*a^5*b^3*x^3 + 28*a^6*b^2*x^2 + 8*a^7*b*x + a^8)*(b*c*x + a*c)^m/(b*m +
8*b)
```

giac [B] time = 0.21, size = 183, normalized size = 7.62

$$\frac{(bcx+ac)^m b^8x^8 + 8\,(bcx+ac)^m ab^7x^7 + 28\,(bcx+ac)^m a^2b^6x^6 + 56\,(bcx+ac)^m a^3b^5x^5 + 70\,(bcx+ac)^m a^4b^4x^4 + 56\,(bcx+ac)^m a^5b^3x^3 + 28\,(bcx+ac)^m a^6b^2x^2 + 8\,(bcx+ac)^m a^7bx + (bcx+ac)^m a^8}{bm+8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] ((b*c*x + a*c)^m*b^8*x^8 + 8*(b*c*x + a*c)^m*a*b^7*x^7 + 28*(b*c*x + a*c)^m
*a^2*b^6*x^6 + 56*(b*c*x + a*c)^m*a^3*b^5*x^5 + 70*(b*c*x + a*c)^m*a^4*b^4*
x^4 + 56*(b*c*x + a*c)^m*a^5*b^3*x^3 + 28*(b*c*x + a*c)^m*a^6*b^2*x^2 + 8*(
b*c*x + a*c)^m*a^7*b*x + (b*c*x + a*c)^m*a^8)/(b*m + 8*b)
```

maple [A] time = 0.05, size = 45, normalized size = 1.88

$$\frac{(bx+a)^2\left(b^2x^2+2abx+a^2\right)^3(bcx+ac)^m}{(m+8)\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (b*x+a)^2/b/(m+8)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3
```

maxima [B] time = 0.91, size = 1221, normalized size = 50.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 7*(b^2*c^m*(m + 1)*x^2 + a*b*c^m*m*x - a^2*c^m)*(b*x + a)^m*a^6/((m^2 + 3*m
 + 2)*b) + 21*((m^2 + 3*m + 2)*b^3*c^m*x^3 + (m^2 + m)*a*b^2*c^m*x^2 - 2*a^
2*b*c^m*m*x + 2*a^3*c^m)*(b*x + a)^m*a^5/((m^3 + 6*m^2 + 11*m + 6)*b) + (b*
```

```
c*x + a*c)^(m + 1)*a^7/(b*c*(m + 1)) + 35*((m^3 + 6*m^2 + 11*m + 6)*b^4*c^m
*x^4 + (m^3 + 3*m^2 + 2*m)*a*b^3*c^m*x^3 - 3*(m^2 + m)*a^2*b^2*c^m*x^2 + 6*
a^3*b*c^m*m*x - 6*a^4*c^m)*(b*x + a)^m*a^4/((m^4 + 10*m^3 + 35*m^2 + 50*m +
 24)*b) + 35*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*b^5*c^m*x^5 + (m^4 + 6*m^
3 + 11*m^2 + 6*m)*a*b^4*c^m*x^4 - 4*(m^3 + 3*m^2 + 2*m)*a^2*b^3*c^m*x^3 + 1
2*(m^2 + m)*a^3*b^2*c^m*x^2 - 24*a^4*b*c^m*m*x + 24*a^5*c^m)*(b*x + a)^m*a^
3/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b) + 21*((m^5 + 15*m^4 +
 85*m^3 + 225*m^2 + 274*m + 120)*b^6*c^m*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*
m^2 + 24*m)*a*b^5*c^m*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*a^2*b^4*c^m*x^4
 + 20*(m^3 + 3*m^2 + 2*m)*a^3*b^3*c^m*x^3 - 60*(m^2 + m)*a^4*b^2*c^m*x^2 + 1
20*a^5*b*c^m*m*x - 120*a^6*c^m)*(b*x + a)^m*a^2/((m^6 + 21*m^5 + 175*m^4 +
735*m^3 + 1624*m^2 + 1764*m + 720)*b) + 7*((m^6 + 21*m^5 + 175*m^4 + 735*m^
3 + 1624*m^2 + 1764*m + 720)*b^7*c^m*x^7 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3
 + 274*m^2 + 120*m)*a*b^6*c^m*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*
m)*a^2*b^5*c^m*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*a^3*b^4*c^m*x^4 - 120*
(m^3 + 3*m^2 + 2*m)*a^4*b^3*c^m*x^3 + 360*(m^2 + m)*a^5*b^2*c^m*x^2 - 720*a
^6*b*c^m*m*x + 720*a^7*c^m)*(b*x + a)^m*a/((m^7 + 28*m^6 + 322*m^5 + 1960*m
^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*b) + ((m^7 + 28*m^6 + 322*m^5 +
 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*b^8*c^m*x^8 + (m^7 + 21*
m^6 + 175*m^5 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*a*b^7*c^m*x^7 - 7*(m
^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*a^2*b^6*c^m*x^6 + 42*(m^5
 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a^3*b^5*c^m*x^5 - 210*(m^4 + 6*m^3 + 11
*m^2 + 6*m)*a^4*b^4*c^m*x^4 + 840*(m^3 + 3*m^2 + 2*m)*a^5*b^3*c^m*x^3 - 252
0*(m^2 + m)*a^6*b^2*c^m*x^2 + 5040*a^7*b*c^m*m*x - 5040*a^8*c^m)*(b*x + a)^
m/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2
+ 109584*m + 40320)*b)
```

mupad [B] time = 2.18, size = 139, normalized size = 5.79

$$(a\,c+b\,c\,x)^m\,\left(\frac{a^8}{b\,(m+8)}+\frac{b^7\,x^8}{m+8}+\frac{8\,a^7\,x}{m+8}+\frac{28\,a^6\,b\,x^2}{m+8}+\frac{8\,a\,b^6\,x^7}{m+8}+\frac{56\,a^5\,b^2\,x^3}{m+8}+\frac{70\,a^4\,b^3\,x^4}{m+8}+\frac{56\,a^3\,b^4\,x^5}{m+8}+\frac{28\,a^2\,b^5\,x^6}{m+8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (a*c + b*c*x)^m*(a^8/(b*(m + 8)) + (b^7*x^8)/(m + 8) + (8*a^7*x)/(m + 8) +
(28*a^6*b*x^2)/(m + 8) + (8*a*b^6*x^7)/(m + 8) + (56*a^5*b^2*x^3)/(m + 8) +
 (70*a^4*b^3*x^4)/(m + 8) + (56*a^3*b^4*x^5)/(m + 8) + (28*a^2*b^5*x^6)/(m
+ 8))
```

sympy [A] time = 3.92, size = 270, normalized size = 11.25

$$\begin{cases} \frac{x}{ac^8} & \text{for}\: b = 0 \wedge m = -8 \\ a^7 x (ac)^m & \text{for}\: b = 0 \\ \frac{\log{\left(\frac{a}{b}+x \right)}}{bc^8} & \text{for}\: m = -8 \\ \frac{a^8(ac+bcx)^m}{bm+8b} + \frac{8a^7bx(ac+bcx)^m}{bm+8b} + \frac{28a^6b^2x^2(ac+bcx)^m}{bm+8b} + \frac{56a^5b^3x^3(ac+bcx)^m}{bm+8b} + \frac{70a^4b^4x^4(ac+bcx)^m}{bm+8b} + \frac{56a^3b^5x^5(ac+bcx)^m}{bm+8b} + \frac{28a^2b^6x^6(ac+bcx)^m}{bm+8b} + \frac{8ab^7x^7(ac+bcx)^m}{bm+8b} + \frac{b^8x^8(ac+bcx)^m}{bm+8b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((x/(a*c**8), Eq(b, 0) & Eq(m, -8)), (a**7*x*(a*c)**m, Eq(b, 0)),
(log(a/b + x)/(b*c**8), Eq(m, -8)), (a**8*(a*c + b*c*x)**m/(b*m + 8*b) + 8*
a**7*b*x*(a*c + b*c*x)**m/(b*m + 8*b) + 28*a**6*b**2*x**2*(a*c + b*c*x)**m/
(b*m + 8*b) + 56*a**5*b**3*x**3*(a*c + b*c*x)**m/(b*m + 8*b) + 70*a**4*b**4
*x**4*(a*c + b*c*x)**m/(b*m + 8*b) + 56*a**3*b**5*x**5*(a*c + b*c*x)**m/(b*
m + 8*b) + 28*a**2*b**6*x**6*(a*c + b*c*x)**m/(b*m + 8*b) + 8*a*b**7*x**7*(
a*c + b*c*x)**m/(b*m + 8*b) + b**8*x**8*(a*c + b*c*x)**m/(b*m + 8*b), True)
)
```

3.1941 $\int \frac{(a+bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=27

$$-\frac{c^4(ac+bcx)^{m-4}}{b(4-m)}$$

Rubi [A] time = 0.02, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 27, 32}

$$-\frac{c^4(ac+bcx)^{m-4}}{b(4-m)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -((c^4*(a*c + b*c*x)^(-4 + m))/(b*(4 - m)))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \frac{\int \frac{(ac+bcx)^{1+m}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx}{c} \\
&= \frac{\int \frac{(ac+bcx)^{1+m}}{(a+bx)^6}\,dx}{c} \\
&= c^5 \int (ac+bcx)^{-5+m}\,dx \\
&= -\frac{c^4(ac+bcx)^{-4+m}}{b(4-m)}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.93

$$\frac{(c(a+bx))^m}{b(m-4)(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (c*(a + b*x))^m/(b*(-4 + m)*(a + b*x)^4)
```

IntegrateAlgebraic [F] time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((a + b*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,
x]
```

```
[Out] Defer[IntegrateAlgebraic][((a + b*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*
x^2)^3, x]
```

fricas [B] time = 0.43, size = 101, normalized size = 3.74

$$\frac{(bcx+ac)^m}{a^4bm-4\,a^4b+\left(b^5m-4\,b^5\right)x^4+4\left(ab^4m-4\,ab^4\right)x^3+6\left(a^2b^3m-4\,a^2b^3\right)x^2+4\left(a^3b^2m-4\,a^3b^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (b*c*x + a*c)^m/(a^4*b*m - 4*a^4*b + (b^5*m - 4*b^5)*x^4 + 4*(a*b^4*m - 4*a
*b^4)*x^3 + 6*(a^2*b^3*m - 4*a^2*b^3)*x^2 + 4*(a^3*b^2*m - 4*a^3*b^2)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(bcx+ac)^m}{\left(b^2x^2+2\,abx+a^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(b*c*x + a*c)^m/(b^2*x^2 + 2*a*b*x + a^2)^3, x)
```

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$\frac{(bcx+ac)^m}{(bx+a)^2\left(b^2x^2+2abx+a^2\right)(m-4)\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (b*c*x+a*c)^m/(b*x+a)^2/(b^2*x^2+2*a*b*x+a^2)/b/(-4+m)
```

maxima [B] time = 0.85, size = 216, normalized size = 8.00

$$\frac{(bc^m(m-5)x-ac^m)(bx+a)^m b}{\left(m^2-9\,m+20\right)b^7x^5+5\left(m^2-9\,m+20\right)ab^6x^4+10\left(m^2-9\,m+20\right)a^2b^5x^3+10\left(m^2-9\,m+20\right)a^3b^4x^2+5\left(m^2-9\,m+20\right)a^4b^3x+\left(m^2-9\,m+20\right)a^5b^2}+\frac{(bx+a)^m ac^m}{b^6(m-5)x^5+5\,ab^5(m-5)x^4+10\,a^2b^4(m-5)x^3+10\,a^3b^3(m-5)x^2+5\,a^4b^2(m-5)x+a^5b(m-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*(m - 5)*x - a*c^m)*(b*x + a)^m*b/((m^2 - 9*m + 20)*b^7*x^5 + 5*(m^2
- 9*m + 20)*a*b^6*x^4 + 10*(m^2 - 9*m + 20)*a^2*b^5*x^3 + 10*(m^2 - 9*m + 2
0)*a^3*b^4*x^2 + 5*(m^2 - 9*m + 20)*a^4*b^3*x + (m^2 - 9*m + 20)*a^5*b^2) +
 (b*x + a)^m*a*c^m/(b^6*(m - 5)*x^5 + 5*a*b^5*(m - 5)*x^4 + 10*a^2*b^4*(m -
 5)*x^3 + 10*a^3*b^3*(m - 5)*x^2 + 5*a^4*b^2*(m - 5)*x + a^5*b*(m - 5))
```

mupad [B] time = 2.18, size = 61, normalized size = 2.26

$$\frac{(a\,c+b\,c\,x)^m}{b^5\,(m-4)\,\left(x^4+\frac{a^4}{b^4}+\frac{4\,a\,x^3}{b}+\frac{4\,a^3\,x}{b^3}+\frac{6\,a^2\,x^2}{b^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)^m*(a + b*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (a*c + b*c*x)^m/(b^5*(m - 4)*(x^4 + a^4/b^4 + (4*a*x^3)/b + (4*a^3*x)/b^3 +
 (6*a^2*x^2)/b^2))
```

sympy [A] time = 4.18, size = 136, normalized size = 5.04

$$\begin{cases} \frac{c^4 x}{a} & \text{for}\: b = 0 \wedge m = 4 \\ \frac{x (ac)^m}{a^5} & \text{for}\: b = 0 \\ \frac{c^4 \log\left(\frac{a}{b}+x\right)}{b} & \text{for}\: m = 4 \\ \frac{(ac+bcx)^m}{a^4bm-4a^4b+4a^3b^2mx-16a^3b^2x+6a^2b^3mx^2-24a^2b^3x^2+4ab^4mx^3-16ab^4x^3+b^5mx^4-4b^5x^4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)**m/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((c**4*x/a, Eq(b, 0) & Eq(m, 4)), (x*(a*c)**m/a**5, Eq(b, 0)), (c*
*4*log(a/b + x)/b, Eq(m, 4)), ((a*c + b*c*x)**m/(a**4*b*m - 4*a**4*b + 4*a*
*3*b**2*m*x - 16*a**3*b**2*x + 6*a**2*b**3*m*x**2 - 24*a**2*b**3*x**2 + 4*a
*b**4*m*x**3 - 16*a*b**4*x**3 + b**5*m*x**4 - 4*b**5*x**4), True))
```

3.1942 $\int (d+ex)^3(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=414

$$\frac{7(2cd-be)^5(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{11/2}e^2}+\frac{7(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2}}{512c^5e}$$

Rubi [A] time = 0.83, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {794, 670, 640, 612, 621, 204}

$$\frac{7(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}(-3beg+2cdg+4cef)}{512c^5e}-\frac{7(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+2cdg+4cef)}{192c^4e^2}-\frac{7(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+2cdg+4cef)}{160c^3e^2}-\frac{(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+2cdg+4cef)}{20c^2e^2}+\frac{7(2cd-be)^5(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{11/2}e^2}-\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{6ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (7*(2*c*d - b*e)^3*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2])/(512*c^5*e) - (7*(2*c*d - b*e)^2*(4*c*e*f + 2*
c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(192*c^4*e^2)
 - (7*(2*c*d - b*e)*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(d + e*x)*(d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2)^(3/2))/(160*c^3*e^2) - ((4*c*e*f + 2*c*d*g - 3*b*e*g
)*(d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(20*c^2*e^2) - (
g*(d + e*x)^3*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(6*c*e^2) + (7*(
2*c*d - b*e)^5*(4*c*e*f + 2*c*d*g - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt
[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(1024*c^(11/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
```

```
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^3(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{6ce^2} - \frac{\left(\frac{3}{2}e\left(-2ce^2f\right.\right.}{}$$

$$= -\frac{(4cef+2cdg-3beg)(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right.}{20c^2e^2}$$

$$= -\frac{7(2cd-be)(4cef+2cdg-3beg)(d+ex)\left(d(cd-be)-be\right.}{160c^3e^2}$$

$$= -\frac{7(2cd-be)^2(4cef+2cdg-3beg)\left(d(cd-be)-be^2x-ce\right.}{192c^4e^2}$$

$$= \frac{7(2cd-be)^3(4cef+2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-b}}{512c^5e}$$

$$= \frac{7(2cd-be)^3(4cef+2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-b}}{512c^5e}$$

$$= \frac{7(2cd-be)^3(4cef+2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-b}}{512c^5e}$$

Mathematica [A] time = 5.93, size = 527, normalized size = 1.27

$$\frac{(d+ex)^3((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{9(-3beg+2cdg+4cef)\left(-384c^5e^{12}(d+ex)^5\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}-48c^4e^{12}(d+ex)^4\sqrt{e(2cd-be)}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}+56c^3e^{12}(d+ex)^3\sqrt{e(2cd-be)}(be-2cd)^3\sqrt{\frac{be-cd+cex}{be-2cd}}-70c^2e^{12}(d+ex)^2\sqrt{e(2cd-be)}(be-2cd)^4\sqrt{\frac{be-cd+cex}{be-2cd}}+105\sqrt{c}e^{25/2}\sqrt{d+ex}(be-2cd)^6\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+105ce^{12}(d+ex)\sqrt{e(2cd-be)}(be-2cd)^5\sqrt{\frac{be-cd+cex}{be-2cd}}\right)}{1280c^5e^{11}(d+ex)^5\sqrt{e(2cd-be)}(be-2cd)^2\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}}-9eg\right)}{54ce^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] ((d + e*x)^3*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-9*e*g + (9*(4*c*e*f
 + 2*c*d*g - 3*b*e*g)*(105*c*e^12*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^5*(d
 + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 70*c^2*e^12*Sqrt[e*(2
*c*d - b*e)]*(-2*c*d + b*e)^4*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c
*d + b*e)] + 56*c^3*e^12*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^3*(d + e*x)^3
*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 48*c^4*e^12*Sqrt[e*(2*c*d -
b*e)]*(-2*c*d + b*e)^2*(d + e*x)^4*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*
e)] - 384*c^5*e^12*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^5*Sqrt[(-
(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 105*Sqrt[c]*e^(25/2)*(-2*c*d + b*e)^
6*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)
]]))/(1280*c^5*e^11*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)^5*((-(
c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2))))/(54*c*e^3)
```

IntegrateAlgebraic [F] time = 180.06, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^3*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2],x]
```

```
[Out] $Aborted
```

fricas [A] time = 1.59, size = 1469, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [-1/30720*(105*(4*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 4
0*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 256*b*c
^5*d^5*e + 400*b^2*c^4*d^4*e^2 - 320*b^3*c^3*d^3*e^3 + 140*b^4*c^2*d^2*e^4
- 32*b^5*c*d*e^5 + 3*b^6*e^6)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x -
 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f
+ (36*c^6*d*e^4 + b*c^5*e^5)*g)*x^4 + 16*(12*(30*c^6*d*e^4 + b*c^5*e^5)*f +
 (340*c^6*d^2*e^3 + 56*b*c^5*d*e^4 - 9*b^2*c^4*e^5)*g)*x^3 + 8*(4*(224*c^6*
d^2*e^3 + 46*b*c^5*d*e^4 - 7*b^2*c^4*e^5)*f + (128*c^6*d^3*e^2 + 380*b*c^5*
d^2*e^3 - 152*b^2*c^4*d*e^4 + 21*b^3*c^3*e^5)*g)*x^2 - 4*(2176*c^6*d^4*e -
4472*b*c^5*d^3*e^2 + 2996*b^2*c^4*d^2*e^3 - 910*b^3*c^3*d*e^4 + 105*b^4*c^2
*e^5)*f - (5632*c^6*d^5 - 16752*b*c^5*d^4*e + 19408*b^2*c^4*d^3*e^2 - 10808
*b^3*c^3*d^2*e^3 + 2940*b^4*c^2*d*e^4 - 315*b^5*c*e^5)*g + 2*(4*(120*c^6*d^
3*e^2 + 716*b*c^5*d^2*e^3 - 266*b^2*c^4*d*e^4 + 35*b^3*c^3*e^5)*f - (1680*c
^6*d^4*e - 3632*b*c^5*d^3*e^2 + 2680*b^2*c^4*d^2*e^3 - 868*b^3*c^3*d*e^4 +
105*b^4*c^2*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2
), -1/15360*(105*(4*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 -
 40*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 256*b
*c^5*d^5*e + 400*b^2*c^4*d^4*e^2 - 320*b^3*c^3*d^3*e^3 + 140*b^4*c^2*d^2*e^
4 - 32*b^5*c*d*e^5 + 3*b^6*e^6)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^
2*d^2 + b*c*d*e)) - 2*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f + (36*c^6*d*e
^4 + b*c^5*e^5)*g)*x^4 + 16*(12*(30*c^6*d*e^4 + b*c^5*e^5)*f + (340*c^6*d^2
*e^3 + 56*b*c^5*d*e^4 - 9*b^2*c^4*e^5)*g)*x^3 + 8*(4*(224*c^6*d^2*e^3 + 46*
b*c^5*d*e^4 - 7*b^2*c^4*e^5)*f + (128*c^6*d^3*e^2 + 380*b*c^5*d^2*e^3 - 152
*b^2*c^4*d*e^4 + 21*b^3*c^3*e^5)*g)*x^2 - 4*(2176*c^6*d^4*e - 4472*b*c^5*d^
3*e^2 + 2996*b^2*c^4*d^2*e^3 - 910*b^3*c^3*d*e^4 + 105*b^4*c^2*e^5)*f - (56
32*c^6*d^5 - 16752*b*c^5*d^4*e + 19408*b^2*c^4*d^3*e^2 - 10808*b^3*c^3*d^2*
e^3 + 2940*b^4*c^2*d*e^4 - 315*b^5*c*e^5)*g + 2*(4*(120*c^6*d^3*e^2 + 716*b
*c^5*d^2*e^3 - 266*b^2*c^4*d*e^4 + 35*b^3*c^3*e^5)*f - (1680*c^6*d^4*e - 36
32*b*c^5*d^3*e^2 + 2680*b^2*c^4*d^2*e^3 - 868*b^3*c^3*d*e^4 + 105*b^4*c^2*e
^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2)]
```

giac [A] time = 0.47, size = 699, normalized size = 1.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] 1/7680*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*g*x*e^3 +
 (36*c^5*d*g*e^10 + 12*c^5*f*e^11 + b*c^4*g*e^11)*e^(-8)/c^5)*x + (340*c^5*
d^2*g*e^9 + 360*c^5*d*f*e^10 + 56*b*c^4*d*g*e^10 + 12*b*c^4*f*e^11 - 9*b^2*
c^3*g*e^11)*e^(-8)/c^5)*x + (128*c^5*d^3*g*e^8 + 896*c^5*d^2*f*e^9 + 380*b*
c^4*d^2*g*e^9 + 184*b*c^4*d*f*e^10 - 152*b^2*c^3*d*g*e^10 - 28*b^2*c^3*f*e^
11 + 21*b^3*c^2*g*e^11)*e^(-8)/c^5)*x - (1680*c^5*d^4*g*e^7 - 480*c^5*d^3*f
*e^8 - 3632*b*c^4*d^3*g*e^8 - 2864*b*c^4*d^2*f*e^9 + 2680*b^2*c^3*d^2*g*e^9
 + 1064*b^2*c^3*d*f*e^10 - 868*b^3*c^2*d*g*e^10 - 140*b^3*c^2*f*e^11 + 105*
b^4*c*g*e^11)*e^(-8)/c^5)*x - (5632*c^5*d^5*g*e^6 + 8704*c^5*d^4*f*e^7 - 16
752*b*c^4*d^4*g*e^7 - 17888*b*c^4*d^3*f*e^8 + 19408*b^2*c^3*d^3*g*e^8 + 119
84*b^2*c^3*d^2*f*e^9 - 10808*b^3*c^2*d^2*g*e^9 - 3640*b^3*c^2*d*f*e^10 + 29
40*b^4*c*d*g*e^10 + 420*b^4*c*f*e^11 - 315*b^5*g*e^11)*e^(-8)/c^5) + 7/1024
*(64*c^6*d^6*g + 128*c^6*d^5*f*e - 256*b*c^5*d^5*g*e - 320*b*c^5*d^4*f*e^2
+ 400*b^2*c^4*d^4*g*e^2 + 320*b^2*c^4*d^3*f*e^3 - 320*b^3*c^3*d^3*g*e^3 - 1
60*b^3*c^3*d^2*f*e^4 + 140*b^4*c^2*d^2*g*e^4 + 40*b^4*c^2*d*f*e^5 - 32*b^5*
c*d*g*e^5 - 4*b^5*c*f*e^6 + 3*b^6*g*e^6)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sq
rt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)
*b))/c^6
```

maple [B] time = 0.11, size = 2217, normalized size = 5.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -21/16*b/c*e*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-35/64*e^2*g*b^3
/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+35/128*b^4/c^3*e^4/(c*e^2)^
(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2))*d*f+21/32*b^2/c^2*e^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-7/32
*e^4*g*b^5/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(1/2))*d+21/16*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*d^2-35/16*e^2*g*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+
1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3+35/16*b^2/c*e^2/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))*d^3*f-35/32*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*e^3*f+175/64*e*g*b^2/c/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
)*d^4+245/256*e^3*g*b^4/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+7/8*x*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*d^3*f-3/4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c*d*f+7/16
/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3*f+7/8*c/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*f-7
7/120*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-21/32*g/c^2*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^3-1/6*e*g*x^3*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(3/2)/c+7/16/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4+91
/120/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d*f-3/5*x^2*(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(3/2)/c*d*g-1/5*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3
/2)/c*e*f-7/48*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e*f-7/128*b^4
/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*f-7/4*g/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^5+7
/64*e*g*b^3/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)-11/15/e^2/c*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^3*g-17/15/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*d^2*f+21/512*e^3*g*b^5/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
)-7/8/e*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+7/40*b/c^2*x*(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e*f-7/64*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*e^3*f-21/32*b^2/c^2*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*d^2*f-35/16*b*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*f+21/64*b^3/c^3*e^2*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2)*d*f-7/256*b^5/c^4*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
```

```
*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f-21/16*g/c*x*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3+13/20*g/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(3/2)*b*d+3/20*e*g*b/c^2*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2
)-21/160*e*g*b^2/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+21/1024*e^5*g
*b^6/c^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2))+21/256*e^3*g*b^4/c^4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)-35/128*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+21/32
*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+59/48/e*g*b/c^2*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+7/32/e*g/c*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*b*d^4+7/16/e*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 8.14, size = 3311, normalized size = 8.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] d^3*f*(x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (3*d*f*
(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) +
2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c
) - (7*b*e^3*f*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d
+ c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c
*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^
4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + ((
c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
 - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2
*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*
e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c) +
 (3*b*e^3*g*((7*b*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c
*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*
(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c
*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) +
 ((c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2)
+ 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4
*c*e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c
) + ((2*c*d^2 - 2*b*d*e)*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e -
c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16
*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*
c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*c*e
^2) + (x^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(5*c*e^2)))/(4*c) -
 (d^3*f*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2)
 + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2)) - (
3*d*g*(2*c*d^2 - 2*b*d*e)*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e -
 c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(1
```

```
6*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b
*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*c)
 - (e*f*(2*c*d^2 - 2*b*d*e)*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e
 - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/
(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2
*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*
c) - (3*d*f*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c) - (d^3*g*l
og(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^
2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) + (e*g*(3*c
*d^2 - 3*b*d*e)*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d
 + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-
c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e
^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + (
(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) +
2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c
*e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(6*c) -
 (3*d*g*x^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(5*c) - (e*f*x^2*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(5*c) - (e*g*x^3*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(3/2))/(6*c) + (15*b*d*e^2*f*((log(b*e^2 - 2*(-c*e^
2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b
*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2
 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(24*c^2*e^4)))/(8*c) + (15*b*d^2*e*g*((log(b*e^2 - 2*(-c*e^2)^(1/2)*
(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c
*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e)
 - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(2
4*c^2*e^4)))/(8*c) - (3*d^2*e*f*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b
*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e))
)/(16*(-c*e^2)^(5/2)) + (d^2*f*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2
*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(8*c^2*e^3
) + (d^3*g*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4) + (3*d^2*g*(c*d^2
 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (l
og(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^
2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*e) -
(21*b*d*e^2*g*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d +
 c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*
e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4
*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + ((c
*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
- (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*
c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*e
^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c) -
(3*d^2*g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^3\left(f+gx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**3*(f + g*x), x)
```

3.1943 $\int (d+ex)^2(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=339

$$\frac{(2cd-be)^4(-7beg+4cdg+10cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{256c^{9/2}e^2}+\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x}}{128c^4e}$$

Rubi [A] time = 0.46, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.159, Rules used = {1638, 12, 670, 640, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+4cdg+10cef)}{128c^4e}-\frac{(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+4cdg+10cef)}{48c^3e^2}-\frac{(d+ex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+4cdg+10cef)}{40c^2e^2}+\frac{(2cd-be)^4(-7beg+4cdg+10cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{256c^{9/2}e^2}-\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((2*c*d - b*e)^2*(10*c*e*f + 4*c*d*g - 7*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(128*c^4*e) - ((2*c*d - b*e)*(10*c*e*f + 4*c*d*
g - 7*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(48*c^3*e^2) - ((
10*c*e*f + 4*c*d*g - 7*b*e*g)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(3/2))/(40*c^2*e^2) - (g*(d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(3/2))/(5*c*e^2) + ((2*c*d - b*e)^4*(10*c*e*f + 4*c*d*g - 7*b*e*g)*ArcTa
n[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(
256*c^(9/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2} - \frac{\int -\frac{1}{2}e^2(10cef \ldots}{\ldots}$$

$$= -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2} + \frac{(10cef+4cd \ldots}{\ldots}$$

$$= -\frac{(10cef+4cdg-7beg)(d+ex)\left(d(cd-be)-be^2x-ce^2x^2 \ldots\right.}{40c^2e^2}$$

$$= -\frac{(2cd-be)(10cef+4cdg-7beg)\left(d(cd-be)-be^2x-ce^2 \ldots\right.}{48c^3e^2}$$

$$= \frac{(2cd-be)^2(10cef+4cdg-7beg)(b+2cx)\sqrt{d(cd-be)-b \ldots}}{128c^4e}$$

$$= \frac{(2cd-be)^2(10cef+4cdg-7beg)(b+2cx)\sqrt{d(cd-be)-b \ldots}}{128c^4e}$$

$$= \frac{(2cd-be)^2(10cef+4cdg-7beg)(b+2cx)\sqrt{d(cd-be)-b \ldots}}{128c^4e}$$

Mathematica [A] time = 3.93, size = 464, normalized size = 1.37

$$\frac{(d+ex)^2((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{7(-7beg+4cdg+10cef)\left(-48c^4e^{10}(d+ex)^4\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}-e^4(be-2cd)^2\left(8c^3e^6(d+ex)^3\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}-10c^2e^6(d+ex)^2\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}+15\sqrt{c}e^{13/2}\sqrt{d+ex}(be-2cd)^3\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+15ce^6(d+ex)\sqrt{e(2cd-be)}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\right)\right)}{384c^4e^9(d+ex)^4\sqrt{e(2cd-be)}(be-2cd)^2\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}}-7eg\right)}{35ce^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] ((d + e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-7*e*g + (7*(10*c*e*
f + 4*c*d*g - 7*b*e*g)*(-48*c^4*e^10*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(
d + e*x)^4*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - e^4*(-2*c*d + b*e)
^2*(15*c*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)*Sqrt[(-(c*d)
+ b*e + c*e*x)/(-2*c*d + b*e)] - 10*c^2*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d +
 b*e)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 8*c^3*e^6*S
```

```
qrt[e*(2*c*d - b*e)]*(d + e*x)^3*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)
] + 15*Sqrt[c]*e^(13/2)*(-2*c*d + b*e)^3*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt
[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])))/(384*c^4*e^9*Sqrt[e*(2*c*d - b
*e)]*(-2*c*d + b*e)^2*(d + e*x)^4*((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(
3/2))))/(35*c*e^3)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^2*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2],x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.90, size = 1117, normalized size = 3.29

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [1/7680*(15*(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3 - 8*b
^3*c^2*d*e^4 + b^4*c*e^5)*f + (64*c^5*d^5 - 240*b*c^4*d^4*e + 320*b^2*c^3*d
^3*e^2 - 200*b^3*c^2*d^2*e^3 + 60*b^4*c*d*e^4 - 7*b^5*e^5)*g)*sqrt(-c)*log(
8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(384*c^5*e^
4*g*x^4 + 48*(10*c^5*e^4*f + (20*c^5*d*e^3 + b*c^4*e^4)*g)*x^3 + 8*(10*(16*
c^5*d*e^3 + b*c^4*e^4)*f + (64*c^5*d^2*e^2 + 36*b*c^4*d*e^3 - 7*b^2*c^3*e^4
)*g)*x^2 - 10*(128*c^5*d^3*e - 228*b*c^4*d^2*e^2 + 100*b^2*c^3*d*e^3 - 15*b
^3*c^2*e^4)*f - (896*c^5*d^4 - 2192*b*c^4*d^3*e + 1996*b^2*c^3*d^2*e^2 - 76
0*b^3*c^2*d*e^3 + 105*b^4*c*e^4)*g + 2*(10*(36*c^5*d^2*e^2 + 28*b*c^4*d*e^3
 - 5*b^2*c^3*e^4)*f - (240*c^5*d^3*e - 436*b*c^4*d^2*e^2 + 216*b^2*c^3*d*e^
3 - 35*b^3*c^2*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*
e^2), -1/3840*(15*(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3
 - 8*b^3*c^2*d*e^4 + b^4*c*e^5)*f + (64*c^5*d^5 - 240*b*c^4*d^4*e + 320*b^2
*c^3*d^3*e^2 - 200*b^3*c^2*d^2*e^3 + 60*b^4*c*d*e^4 - 7*b^5*e^5)*g)*sqrt(c)
*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt
(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(384*c^5*e^4*g*x^4 +
 48*(10*c^5*e^4*f + (20*c^5*d*e^3 + b*c^4*e^4)*g)*x^3 + 8*(10*(16*c^5*d*e^3
 + b*c^4*e^4)*f + (64*c^5*d^2*e^2 + 36*b*c^4*d*e^3 - 7*b^2*c^3*e^4)*g)*x^2
- 10*(128*c^5*d^3*e - 228*b*c^4*d^2*e^2 + 100*b^2*c^3*d*e^3 - 15*b^3*c^2*e^
4)*f - (896*c^5*d^4 - 2192*b*c^4*d^3*e + 1996*b^2*c^3*d^2*e^2 - 760*b^3*c^2
*d*e^3 + 105*b^4*c*e^4)*g + 2*(10*(36*c^5*d^2*e^2 + 28*b*c^4*d*e^3 - 5*b^2*
c^3*e^4)*f - (240*c^5*d^3*e - 436*b*c^4*d^2*e^2 + 216*b^2*c^3*d*e^3 - 35*b^
3*c^2*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2)]
```

giac [A] time = 0.35, size = 526, normalized size = 1.55

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] 1/1920*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(6*(8*g*x*e^2 + (20
*c^4*d*g*e^7 + 10*c^4*f*e^8 + b*c^3*g*e^8)*e^(-6)/c^4)*x + (64*c^4*d^2*g*e^
```

```
6 + 160*c^4*d*f*e^7 + 36*b*c^3*d*g*e^7 + 10*b*c^3*f*e^8 - 7*b^2*c^2*g*e^8)*
e^(-6)/c^4)*x - (240*c^4*d^3*g*e^5 - 360*c^4*d^2*f*e^6 - 436*b*c^3*d^2*g*e^
6 - 280*b*c^3*d*f*e^7 + 216*b^2*c^2*d*g*e^7 + 50*b^2*c^2*f*e^8 - 35*b^3*c*g
*e^8)*e^(-6)/c^4)*x - (896*c^4*d^4*g*e^4 + 1280*c^4*d^3*f*e^5 - 2192*b*c^3*
d^3*g*e^5 - 2280*b*c^3*d^2*f*e^6 + 1996*b^2*c^2*d^2*g*e^6 + 1000*b^2*c^2*d*
f*e^7 - 760*b^3*c*d*g*e^7 - 150*b^3*c*f*e^8 + 105*b^4*g*e^8)*e^(-6)/c^4) +
1/256*(64*c^5*d^5*g + 160*c^5*d^4*f*e - 240*b*c^4*d^4*g*e - 320*b*c^4*d^3*f
*e^2 + 320*b^2*c^3*d^3*g*e^2 + 240*b^2*c^3*d^2*f*e^3 - 200*b^3*c^2*d^2*g*e^
3 - 80*b^3*c^2*d*f*e^4 + 60*b^4*c*d*g*e^4 + 10*b^4*c*f*e^5 - 7*b^5*g*e^5)*s
qrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b
*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^5
```

maple [B] time = 0.07, size = 1618, normalized size = 4.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 15/64*e^3*g*b^4/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d+7/40*g*b/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)-7/128*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-5/4
*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2))*b*d^3*f+1/4/e*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/
c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*g+5/128*b^4/c^3*e^4/(c*e^2)^
(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2))*f-5/16*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d*f+1/8/e/c*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3*g-1/2*x*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)/c/e*d*g+15/16*b^2/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2
*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*e^2*f-5/8*e/c*x*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d*f-5/16*b^3/c^2*e^3/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-25/32*
e^2*g*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*d^2+1/2*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2)*d+5/4*e*g*b^2/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-1/5*g*x^2*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)/c-7/48*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)-1
/4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c*f+5/24*b/c^2*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(3/2)*f+5/8*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f
+11/20/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d-11/16*g*b/c*x*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+1/4*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*d-7/64*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)-7/256*e^4*g*b^5/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+5/32*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*e^2*f-11/32*g*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*d^2-15/16*g*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-7/15/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*d^2-2/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c/e*d*f+5/16/c*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^2*f+5/8*c/(c*e^2)^(1/2)*arctan((c*
e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*f+5/64*b
^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^2*f+1/4/e*x*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2)*d^3*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 5.55, size = 1732, normalized size = 5.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] d^2*f*(x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (f*x*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c) - (g*x^2*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(3/2))/(5*c) + (f*(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-
(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d
^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c) - (g*(2*c*d^2 - 2*b*d*e)*((log(b*e
^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(
b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^
2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*c) - (7*b*e^2*g*((5*b*((log(b*e^2 - 2
*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^
6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2
 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + ((c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(
d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^
2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c) - (d^2*f*log(b*e^2 - 2*(-c*e^2)^(1/2)
*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(
c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2)) + (5*b*e^2*f*((log(b*e^2 - 2*(-c*e^2)^(
1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e
^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b
*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(24*c^2*e^4)))/(8*c) - (d^2*g*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(
b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)
))/(16*(-c*e^2)^(5/2)) + (d^2*g*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^
2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e
^4) - (d*g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(2*c*e) + (5*b*d*
e*g*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) +
 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((
8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(4*c) - (d*e*f*log(b*e^2 -
2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e
^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(8*(-c*e^2)^(5/2)) + (d*f*(8*c*e^2*(c*e^2*
x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(12*c^2*e^3) + (d*g*(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(
d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^
2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(2*c*e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^2\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**2*(f + g*x), x)
```

3.1944 $\int (d+ex)(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=223

$$\frac{(2cd-be)^3(-5beg+2cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{7/2}e^2}+\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2}}{64c^3e}$$

Rubi [A] time = 0.28, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$, Rules used = {779, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}(-5beg+2cdg+8cef)}{64c^3e}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(5beg-8c(dg+ef)-6cegx)}{24c^2e^2}+\frac{(2cd-be)^3(-5beg+2cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{7/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((2*c*d - b*e)*(8*c*e*f + 2*c*d*g - 5*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])/(64*c^3*e) + ((5*b*e*g - 8*c*(e*f + d*g) - 6*c*e*g
*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*c^2*e^2) + ((2*c*d - b
*e)^3*(8*c*e*f + 2*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[
d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(128*c^(7/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (d+ex)(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = \frac{(5beg-8c(ef+dg)-6cegx)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24c^2e^2} +$$

$$= \frac{(2cd-be)(8cef+2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-}}{64c^3e}$$

$$= \frac{(2cd-be)(8cef+2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-}}{64c^3e}$$

$$= \frac{(2cd-be)(8cef+2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-}}{64c^3e}$$

Mathematica [A] time = 2.44, size = 391, normalized size = 1.75

$$\frac{(d+ex)((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{5(-5beg+2cdg+8cef)\left(-8c^3e^8(d+ex)^3\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}-2c^2e^8(d+ex)^2\sqrt{e(2cd-be)}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}+3\sqrt{c}e^{17/2}\sqrt{d+ex}(be-2cd)^4\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+3ce^8(d+ex)\sqrt{e(2cd-be)}(be-2cd)^3\sqrt{\frac{be-cd+cex}{be-2cd}}\right)}{48c^3e^7(d+ex)^3\sqrt{e(2cd-be)}(be-2cd)^2\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}}-5eg\right)}{20ce^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((d + e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-5*e*g + (5*(8*c*e*f +
 2*c*d*g - 5*b*e*g)*(3*c*e^8*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^3*(d + e*
x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 2*c^2*e^8*Sqrt[e*(2*c*d -
b*e)]*(-2*c*d + b*e)^2*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*
e)] - 8*c^3*e^8*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^3*Sqrt[(-(c*
d) + b*e + c*e*x)/(-2*c*d + b*e)] + 3*Sqrt[c]*e^(17/2)*(-2*c*d + b*e)^4*Sqr
t[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/
(48*c^3*e^7*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)^3*((-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e))^(3/2))))/(20*c*e^3)
```

IntegrateAlgebraic [F] time = 180.03, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2],x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.60, size = 825, normalized size = 3.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="fricas")
```

```
[Out] [-1/768*(3*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4
)*f + (16*c^4*d^4 - 64*b*c^3*d^3*e + 72*b^2*c^2*d^2*e^2 - 32*b^3*c*d*e^3 +
5*b^4*e^4)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*
d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e
)*sqrt(-c)) - 4*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f + (8*c^4*d*e^2 + b*c^3*e
^3)*g)*x^2 - 8*(8*c^4*d^2*e - 14*b*c^3*d*e^2 + 3*b^2*c^2*e^3)*f - (64*c^4*d
^3 - 116*b*c^3*d^2*e + 76*b^2*c^2*d*e^2 - 15*b^3*c*e^3)*g + 2*(8*(6*c^4*d*e
```

```
^2 + b*c^3*e^3)*f - (12*c^4*d^2*e - 20*b*c^3*d*e^2 + 5*b^2*c^2*e^3)*g)*x)*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^2), -1/384*(3*(8*(8*c^4*d
^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f + (16*c^4*d^4 - 64
*b*c^3*d^3*e + 72*b^2*c^2*d^2*e^2 - 32*b^3*c*d*e^3 + 5*b^4*e^4)*g)*sqrt(c)*
arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(
c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(48*c^4*e^3*g*x^3 + 8
*(8*c^4*e^3*f + (8*c^4*d*e^2 + b*c^3*e^3)*g)*x^2 - 8*(8*c^4*d^2*e - 14*b*c^
3*d*e^2 + 3*b^2*c^2*e^3)*f - (64*c^4*d^3 - 116*b*c^3*d^2*e + 76*b^2*c^2*d*e
^2 - 15*b^3*c*e^3)*g + 2*(8*(6*c^4*d*e^2 + b*c^3*e^3)*f - (12*c^4*d^2*e - 2
0*b*c^3*d*e^2 + 5*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e))/(c^4*e^2)]
```

giac [A] time = 0.39, size = 381, normalized size = 1.71

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="giac")
```

```
[Out] 1/192*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(6*g*x*e + (8*c^3*d*
g*e^4 + 8*c^3*f*e^5 + b*c^2*g*e^5)*e^(-4)/c^3)*x - (12*c^3*d^2*g*e^3 - 48*c
^3*d*f*e^4 - 20*b*c^2*d*g*e^4 - 8*b*c^2*f*e^5 + 5*b^2*c*g*e^5)*e^(-4)/c^3)*
x - (64*c^3*d^3*g*e^2 + 64*c^3*d^2*f*e^3 - 116*b*c^2*d^2*g*e^3 - 112*b*c^2*
d*f*e^4 + 76*b^2*c*d*g*e^4 + 24*b^2*c*f*e^5 - 15*b^3*g*e^5)*e^(-4)/c^3) + 1
/128*(16*c^4*d^4*g + 64*c^4*d^3*f*e - 64*b*c^3*d^3*g*e - 96*b*c^3*d^2*f*e^2
 + 72*b^2*c^2*d^2*g*e^2 + 48*b^2*c^2*d*f*e^3 - 32*b^3*c*d*g*e^3 - 8*b^3*c*f
*e^4 + 5*b^4*g*e^4)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-
c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^4
```

maple [B] time = 0.07, size = 1114, normalized size = 5.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/4*b/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e*f-1/16*b^3/c^2*e^3/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))*f-3/4*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*e*f+3/8*b^2/c*e^2/(c*e^2)^(1/2)*arctan((c*e
^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-1/4*e^2*g
*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2))*d+9/16*e*g*b^2/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x
+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+5/32*e*g*b^2/c^2*x*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+5/128*e^3*g*b^4/c^3/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-3/8*g/
c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d+1/16/e*g/c*(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2)*b*d^2+1/8/e*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x
+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4+1/2*d*f*x*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c/e*
f+1/2*d^3*f*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))+1/8/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*
d^2-1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c/e^2*d*g-1/8*b^2/c^2*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e*f+1/4*d*f/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(1/2)*b+5/64*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/4/e*
g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c+5/24/e*g*b/c^2*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(3/2)-3/16*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b
^2*d-1/2*g/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2))*b*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.16, size = 801, normalized size = 3.59

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] d*f*(x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (5*b*e*g*
((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c
*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*
e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) - (d*g*log(b*e^2 - 2*(-c*
e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4
*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - (e*f*log(b*e^2 - 2*(-c*e^2
)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*
c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) + (f*(8*c*e^2*(c*e^2*x^2 - c*d^
2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(24*c^2*e^3) + (g*(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*
e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))
/(2*(-c*e^2)^(3/2))))/(4*c*e) - (d*f*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*
x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*
d*e)))/(2*(-c*e^2)^(3/2)) - (g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2
))/(4*c*e) + (d*g*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*
e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)\left(f+gx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)*(f + g*x), x)
```

3.1945 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{d+ex}\,dx$

Optimal. Leaf size=192

$$\frac{(2cd-be)(-beg-2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{3/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-beg-2cdg+4ce}{4ce^2}$$

Rubi [A] time = 0.22, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {794, 664, 621, 204}

$$\frac{(2cd-be)(-beg-2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{3/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-beg-2cdg+4cef)}{4ce^2}-\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2ce^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x),x]
```

```
[Out] ((4*c*e*f - 2*c*d*g - b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(4*
c*e^2) - (g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(2*c*e^2*(d + e*x)
) + ((2*c*d - b*e)*(4*c*e*f - 2*c*d*g - b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sq
rt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*c^(3/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{d+ex}\,dx = -\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2ce^2(d+ex)} - \frac{\left(ce^3f-\left(-cde^2+be^3\right)g+\frac{3}{2}e\left(-2\right.\right.}{}$$

$$= \frac{(4cef-2cdg-beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{g\left(d(cd-be)-be^2\right.}{2ce^2(d+}$$

$$= \frac{(4cef-2cdg-beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{g\left(d(cd-be)-be^2\right.}{2ce^2(d+}$$

$$= \frac{(4cef-2cdg-beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{g\left(d(cd-be)-be^2\right.}{2ce^2(d+}$$

Mathematica [A] time = 0.51, size = 174, normalized size = 0.91

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\sqrt{c}\sqrt{e}\,(beg+2c(-2dg+2ef+egx))+\frac{\sqrt{e(2cd-be)}\,(-beg-2cdg+4cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{4c^{3/2}e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x),x
]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(Sqrt[c]*Sqrt[e]*(b*e*g + 2*c*(2*e*
f - 2*d*g + e*g*x)) + (Sqrt[e*(2*c*d - b*e)]*(4*c*e*f - 2*c*d*g - b*e*g)*Ar
cSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt[d + e*x]
*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(4*c^(3/2)*e^(5/2))
```

IntegrateAlgebraic [A] time = 2.69, size = 312, normalized size = 1.62

$$-\frac{\sqrt{-ce^2}\left(-b^2e^2g+4bce^2f+4c^2d^2g-8c^2def\right)\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{16c^2e^3}+\frac{\left(-b^2e^2g+4bce^2f+4c^2d^2g-8c^2def\right)\tan^{-1}\left(\frac{\sqrt{c}\left(2\sqrt{-bde-be^2x+cd^2-ce^2x^2}-2x\sqrt{-ce^2}\right)}{be}\right)}{8c^{3/2}e^2}+\frac{\sqrt{-bde-be^2x+cd^2-ce^2x^2}\,(beg-4cdg+4cef+2cegx)}{4ce^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x),x]
```

```
[Out] ((4*c*e*f - 4*c*d*g + b*e*g + 2*c*e*g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2])/(4*c*e^2) + ((-8*c^2*d*e*f + 4*b*c*e^2*f + 4*c^2*d^2*g - b^2*e^2*g
)*ArcTan[(Sqrt[c]*(-2*Sqrt[-(c*e^2)]*x + 2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2]))/(b*e)])/(8*c^(3/2)*e^2) - (Sqrt[-(c*e^2)]*(-8*c^2*d*e*f + 4*b*c
*e^2*f + 4*c^2*d^2*g - b^2*e^2*g)*Log[4*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4*b
*c*e^2*x - 8*c^2*e^2*x^2 - 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^2*
x - c*e^2*x^2]])/(16*c^2*e^3)
```

fricas [A] time = 0.47, size = 395, normalized size = 2.06

$$\left[-\frac{\left(4\left(2c^2de-bce^2\right)f-\left(4c^2d^2-b^2e^2\right)g\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2cex+be)\sqrt{-c}\right)-4\left(2c^2egx+4c^2ef-\left(4c^2d-bce\right)g\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{16c^2e^2},\ -\frac{\left(4\left(2c^2de-bce^2\right)f-\left(4c^2d^2-b^2e^2\right)g\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2cex+be)\sqrt{c}}{2\left(c^2e^2x^2+bce^2x-c^2d^2+bcde\right)}\right)-2\left(2c^2egx+4c^2ef-\left(4c^2d-bce\right)g\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{8c^2e^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x, algorit
hm="fricas")
```

```
[Out] [-1/16*((4*(2*c^2*d*e - b*c*e^2)*f - (4*c^2*d^2 - b^2*e^2)*g)*sqrt(-c)*log(
8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e
```

```
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(2*c^2*e*g*
x + 4*c^2*e*f - (4*c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e))/(c^2*e^2), -1/8*((4*(2*c^2*d*e - b*c*e^2)*f - (4*c^2*d^2 - b^2*e^2)*g
)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x +
b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(2*c^2*e*g*
x + 4*c^2*e*f - (4*c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e))/(c^2*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [**B**] time = 0.06, size = 697, normalized size = 3.63

$$\frac{b^2 e g \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c e^2 x^2-b e^2 x-b d e+c d^2}}\right)}{8\sqrt{c e^2}\, c}-\frac{b d g \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c e^2 x^2-b e^2 x-b d e+c d^2}}\right)}{2\sqrt{c e^2}}+\frac{b d g \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{d}{e}-\frac{-b e^2+2 c d e}{2 c e^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2 c e^2+\left(-b e^2+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{2\sqrt{c e^2}}-\frac{b e f \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{d}{e}-\frac{-b e^2+2 c d e}{2 c e^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2 c e^2+\left(-b e^2+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{2\sqrt{c e^2}}+\frac{c d^2 g \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c e^2 x^2-b e^2 x-b d e+c d^2}}\right)}{2\sqrt{c e^2}\, e}-\frac{c d^2 g \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{d}{e}-\frac{-b e^2+2 c d e}{2 c e^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2 c e^2+\left(-b e^2+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{\sqrt{c e^2}\, e}+\frac{c d f \arctan\left(\frac{\sqrt{c e^2}\left(x+\frac{d}{e}-\frac{-b e^2+2 c d e}{2 c e^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2 c e^2+\left(-b e^2+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{\sqrt{c e^2}}+\frac{\sqrt{-c e^2 x^2-b e^2 x-b d e+c d^2}\, g x}{2e}+\frac{\sqrt{-c e^2 x^2-b e^2 x-b d e+c d^2}\, b g}{4 c e}-\frac{\sqrt{-\left(x+\frac{d}{e}\right)^2 c e^2+\left(-b e^2+2 c d e\right)\left(x+\frac{d}{e}\right)}\, d g}{e^2}+\frac{\sqrt{-\left(x+\frac{d}{e}\right)^2 c e^2+\left(-b e^2+2 c d e\right)\left(x+\frac{d}{e}\right)}\, f}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+1/4*g/e/c*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)*b+1/8*g*e/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^2-1/2*g/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d+1/
2*g/e*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d^2-1/e^2*(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2)*d*g+1/e*(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+1/2/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-c*(x+d/e)
^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*b*d*g-1/2*e/(c*e^2)^(1/2)*arctan((c
*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-c*(x+d/e)^2*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2))*b*f-1/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/
2*(-b*e^2+2*c*d*e)/c/e^2)/(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)
)*c*d^2*g+1/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*c*d*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x),x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,(f+gx)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d),x)
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x), x)
```

3.1946 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=200

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^2(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(beg-4cdg+2cef)}{e^2(2cd-be)}-\frac{(beg-4cdg+2ce$$

Rubi [A] time = 0.34, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^2(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(beg-4cdg+2cef)}{e^2(2cd-be)}-\frac{(beg-4cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2\sqrt{c}\,e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^2,x]
```

```
[Out] -(((2*c*e*f - 4*c*d*g + b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(
e^2*(2*c*d - b*e))) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^
(3/2))/(e^2*(2*c*d - b*e)*(d + e*x)^2) - ((2*c*e*f - 4*c*d*g + b*e*g)*ArcTa
n[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(
2*Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^2}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(2cd-be)(d+ex)^2} - \frac{(2cef-4cdg+beg)\int \frac{\sqrt{\cdots}}{\cdots}}{e(2cd-\cdots}$$

$$= -\frac{(2cef-4cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2(ef-dg)\left(d(cd\cdots\right.}{e^2(2cd\cdots}$$

$$= -\frac{(2cef-4cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2(ef-dg)\left(d(cd\cdots\right.}{e^2(2cd\cdots}$$

$$= -\frac{(2cef-4cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2(ef-dg)\left(d(cd\cdots\right.}{e^2(2cd\cdots}$$

Mathematica [A] time = 0.71, size = 185, normalized size = 0.92

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{\sqrt{e}(be-2cd)(3dg-2ef+egx)}{d+ex}-\frac{\sqrt{e(2cd-be)}(beg-4cdg+2cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{c}\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{e^{5/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^2
,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((Sqrt[e]*(-2*c*d + b*e)*(-2*e*f
+ 3*d*g + e*g*x))/(d + e*x)) - (Sqrt[e*(2*c*d - b*e)]*(2*c*e*f - 4*c*d*g +
b*e*g)*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt
[c]*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(e^(5/2)*(
2*c*d - b*e))
```

IntegrateAlgebraic [A] time = 2.29, size = 265, normalized size = 1.32

$$-\frac{\sqrt{-ce^2}(beg-4cdg+2cef)\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{4ce^3}+\frac{\sqrt{-bde-be^2x+cd^2-ce^2x^2}(3dg-2ef+egx)}{e^2(d+ex)}+\frac{(beg-4cdg+2cef)\tan^{-1}\left(\frac{\sqrt{c}\left(2\sqrt{-bde-be^2x+cd^2-ce^2x^2}-2x\sqrt{-ce^2}\right)}{be}\right)}{2\sqrt{c}e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^2,x]
```

```
[Out] ((-2*e*f + 3*d*g + e*g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(e^2*(
d + e*x)) + ((2*c*e*f - 4*c*d*g + b*e*g)*ArcTan[(Sqrt[c]*(-2*Sqrt[-(c*e^2)]
*x + 2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]))/(b*e)])/(2*Sqrt[c]*e^2)
- (Sqrt[-(c*e^2)]*(2*c*e*f - 4*c*d*g + b*e*g)*Log[4*c^2*d^2 - 4*b*c*d*e + b
^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x^2 - 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2 - b*
d*e - b*e^2*x - c*e^2*x^2]])/(4*c*e^3)
```

fricas [A] time = 0.97, size = 399, normalized size = 2.00

$$\left[-\frac{\left(2cdef-\left(4cd^2-bde\right)g+\left(2ce^2f-\left(4cde-be^2\right)g\right)x\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2+4\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{-c}\right)-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx-2cef+3cdg\right)}{4\left(ce^3x+cde^2\right)}, \frac{\left(2cdef-\left(4cd^2-bde\right)g+\left(2ce^2f-\left(4cde-be^2\right)g\right)x\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{c}}{2\left(c^2e^2x^2+bce^2x-c^2d^2+bcde\right)}\right)+2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx-2cef+3cdg\right)}{2\left(ce^3x+cde^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x, algor
ithm="fricas")
```

```
[Out] [-1/4*((2*c*d*e*f - (4*c*d^2 - b*d*e)*g + (2*c*e^2*f - (4*c*d*e - b*e^2)*g)
*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*
```

```
e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)
) - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x - 2*c*e*f + 3*c*d
*g))/(c*e^3*x + c*d*e^2), 1/2*((2*c*d*e*f - (4*c*d^2 - b*d*e)*g + (2*c*e^2*
f - (4*c*d*e - b*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x +
c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 +
 b*c*d*e)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x - 2*c*e*
f + 3*c*d*g))/(c*e^3*x + c*d*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 880, normalized size = 4.40

$$-\frac{bcdeg\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{d}{e}-\frac{-be^2+2cde}{2ce^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-be^2+2cde\right)\sqrt{ce^2}}+\frac{bce^2f\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{d}{e}-\frac{-be^2+2cde}{2ce^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-be^2+2cde\right)\sqrt{ce^2}}+\frac{2c^2d^2g\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{d}{e}-\frac{-be^2+2cde}{2ce^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-be^2+2cde\right)\sqrt{ce^2}}-\frac{2c^2def\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{d}{e}-\frac{-be^2+2cde}{2ce^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-be^2+2cde\right)\sqrt{ce^2}}-\frac{bg\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{d}{e}-\frac{-be^2+2cde}{2ce^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{2\sqrt{ce^2}}+\frac{cdg\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{d}{e}-\frac{-be^2+2cde}{2ce^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\sqrt{ce^2}\,e}+\frac{2\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}\,cdg}{\left(-be^2+2cde\right)e}-\frac{2\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}\,cf}{-be^2+2cde}+\frac{2\left(-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)\right)^{\frac{3}{2}}dg}{\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)^2e^3}-\frac{2\left(-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)\right)^{\frac{3}{2}}f}{\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)^2e^2}+\frac{\sqrt{-\left(x+\frac{d}{e}\right)^2ce^2+\left(-be^2+2cde\right)\left(x+\frac{d}{e}\right)}\,g}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x)
```

```
[Out] 2/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e)
)^(3/2)*d*g-2/e^2/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(3/2)*f+2/e*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*d*g-2*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*f-e*c/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))*b*d*g+e^2*c/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))*b*f+2*c^2/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(1/2))*d^2*g-2*e*c^2/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))*d*f+g/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)-1
/2*g/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*b+g/e/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e
^2+2*c*d*e)*(x+d/e))^(1/2))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,(f+gx)}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**2,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**2, x)
```

3.1947 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=168

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3(2cd-be)}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{\sqrt{c}\,g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}$$

Rubi [A] time = 0.32, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 662, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3(2cd-be)}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{\sqrt{c}\,g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^3,x]
```

```
[Out] (-2*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(d + e*x)) - (2*(e*f
- d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d
 + e*x)^3) - (Sqrt[c]*g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e
) - b*e^2*x - c*e^2*x^2])])/e^2
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^3}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^3}+\frac{g\int \frac{\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^2}d}{e}$$

$$= -\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2\right.}{3e^2(2cd-be)(d+ex)^3}$$

$$= -\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2\right.}{3e^2(2cd-be)(d+ex)^3}$$

$$= -\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2\right.}{3e^2(2cd-be)(d+ex)^3}$$

Mathematica [C] time = 0.22, size = 146, normalized size = 0.87

$$\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\left((be-cd+cex)(-beg+cdg+cef)+\frac{g(be-2cd)^2\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{3ce^2(d+ex)^2(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^3
,x]
```

```
[Out] (2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*((c*e*f + c*d*g - b*e*g)*(-(c*d)
+ b*e + c*e*x) + ((-2*c*d + b*e)^2*g*Hypergeometric2F1[-3/2, -3/2, -1/2, (c
*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]))/(
3*c*e^2*(2*c*d - b*e)*(d + e*x)^2)
```

IntegrateAlgebraic [A] time = 2.41, size = 290, normalized size = 1.73

$$-\frac{g\sqrt{-ce^2}\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{2e^3}-\frac{2\sqrt{-bde-be^2x+cd^2-ce^2x^2}\left(2bdeg+be^2f+3be^2gx-5cd^2g-cdef-7cdegx+ce^2fx\right)}{3e^2(d+ex)^2(be-2cd)}-\frac{\sqrt{c}\,g\tan^{-1}\left(\frac{2\sqrt{c}x\sqrt{-ce^2}}{be}-\frac{2\sqrt{c}\sqrt{-bde-be^2x+cd^2-ce^2x^2}}{be}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^3,x]
```

```
[Out] (-2*(-(c*d*e*f) + b*e^2*f - 5*c*d^2*g + 2*b*d*e*g + c*e^2*f*x - 7*c*d*e*g*x
 + 3*b*e^2*g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(3*e^2*(-2*c*d +
 b*e)*(d + e*x)^2) - (Sqrt[c]*g*ArcTan[(2*Sqrt[c]*Sqrt[-(c*e^2)]*x)/(b*e) -
 (2*Sqrt[c]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(b*e)])/e^2 - (Sqrt[
-(c*e^2)]*g*Log[4*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x
^2 - 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]])/(2*e^
3)
```

fricas [A] time = 1.50, size = 579, normalized size = 3.45

$$\left[\frac{3\left((2cde^2-be^3)gx^2+2(2cd^2e-bde^2)gx+(2cd^3-bd^2e)g\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{-c}\right)-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left((cde-be^2)f+(5cd^2-2bde)g-(ce^2f-(7cde-3be^2)g)x\right)}{6\left(2cd^3e^2-bd^2e^3+(2cde^4-be^5)x^2+2(2cd^2e^3-bde^4)x\right)}, \frac{3\left((2cde^2-be^3)gx^2+2(2cd^2e-bde^2)gx+(2cd^3-bd^2e)g\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{c}}{2(c^2e^2x^2+bce^2x-c^2d^2+bcde)}\right)-2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left((cde-be^2)f+(5cd^2-2bde)g-(ce^2f-(7cde-3be^2)g)x\right)}{3\left(2cd^3e^2-bd^2e^3+(2cde^4-be^5)x^2+2(2cd^2e^3-bde^4)x\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x, algor
ithm="fricas")
```

```
[Out] [1/6*(3*((2*c*d*e^2 - b*e^3)*g*x^2 + 2*(2*c*d^2*e - b*d*e^2)*g*x + (2*c*d^3
 - b*d^2*e)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c
```

```
*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*
e)*sqrt(-c)) - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((c*d*e - b*e^2
)*f + (5*c*d^2 - 2*b*d*e)*g - (c*e^2*f - (7*c*d*e - 3*b*e^2)*g)*x))/(2*c*d^
3*e^2 - b*d^2*e^3 + (2*c*d*e^4 - b*e^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^4)*x),
 1/3*(3*((2*c*d*e^2 - b*e^3)*g*x^2 + 2*(2*c*d^2*e - b*d*e^2)*g*x + (2*c*d^3
 - b*d^2*e)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e
)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) -
2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((c*d*e - b*e^2)*f + (5*c*d^2
- 2*b*d*e)*g - (c*e^2*f - (7*c*d*e - 3*b*e^2)*g)*x))/(2*c*d^3*e^2 - b*d^2*e
^3 + (2*c*d*e^4 - b*e^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*(-c
*sqrt(-c*exp(2))*g/2/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(4*exp(2)*g*ex
p(1)^4*b^2*d-16*c*exp(2)*g*exp(1)^3*b*d^2-3*exp(2)^2*g*exp(1)^2*b^2*d+12*c^
2*exp(2)*g*exp(1)^2*d^3+12*c*exp(2)^2*g*exp(1)*b*d^2-8*c^2*exp(2)^2*g*d^3+4
*c*exp(2)*exp(1)^4*b*d*f-exp(2)^2*exp(1)^3*b^2*f-4*c^2*exp(2)*exp(1)^3*d^2*
f)/2/(-4*exp(1)^6*b*d+4*c*exp(1)^5*d^2+4*exp(2)*exp(1)^4*b*d-4*c*exp(2)*exp
(1)^3*d^2)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))
*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*
d*exp(1)*exp(2)))+(4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^3*g*exp(1)^5*b^2*d-16*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^4*b*d^2-5*exp(2)^2*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp
(1)^3*b^2*d+12*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)^3*g*exp(1)^3*d^3+20*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^2*b*d^2-16*c^2*exp(2)
^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*
exp(1)*d^3+4*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^3*exp(1)^5*b*d*f+exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^4*b^2*f-4*c^2*exp(2)*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^4*d^2*f-8
*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^3*exp(1)^3*b*d*f+8*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^2*d^2*f-8*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^6*b^2*
d^2+16*c*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^2*g*exp(1)^5*b*d^3+12*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^4*b^2*d^
2-8*c^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*g*exp(1)^4*d^4-8*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^3*b*d^3-ex
p(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*g*exp(1)^2*b^2*d^2-4*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^2*d^4
-20*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)*b*d^3+24*c^2*exp(2)^2*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*d^4-8
*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*exp(1)^5*b^2*d*f+12*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^4*b*d^2*f
```

```
+5*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^2*exp(1)^3*b^2*d*f-4*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^3*d^
3*f-8*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)*d^3*f+4*exp(2)*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^6*b^3*d^2-28*c*exp(2)
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(
1)^5*b^2*d^3-7*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*g*exp(1)^4*b^3*d^2+44*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^4*b*d^4+55*c*exp(2)^2*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)
^3*b^2*d^3-20*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)*g*exp(1)^3*d^5+3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^2*b^3*d^2-80*c^2*exp(2)^2*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^2
*b*d^4-24*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*g*exp(1)*b^2*d^3+32*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)*d^5+24*c^2*exp(2)^3*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b*d^4-4*c*e
xp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*e
xp(1)^6*b^2*d^2*f-exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)*exp(1)^5*b^3*d*f+8*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^5*b*d^3*f-3*c*exp(2)^2*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^4*
b^2*d^2*f-4*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)*exp(1)^4*d^4*f+exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^3*b^3*d*f+12*c^2*exp(2)^2*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^3*b*d^3*f
+4*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*exp(1)^2*b^2*d^2*f-8*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^2*d^4*f-8*c^2*exp(2)^3*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)*b*d^3*f-8*s
qrt(-c*exp(2))*g*exp(1)^7*b^3*d^3+24*c*sqrt(-c*exp(2))*g*exp(1)^6*b^2*d^4+2
0*exp(2)*sqrt(-c*exp(2))*g*exp(1)^5*b^3*d^3-24*c^2*sqrt(-c*exp(2))*g*exp(1)
^5*b*d^5-52*c*exp(2)*sqrt(-c*exp(2))*g*exp(1)^4*b^2*d^4+8*c^3*sqrt(-c*exp(2
))*g*exp(1)^4*d^6-17*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)^3*b^3*d^3+44*c^2*exp
(2)*sqrt(-c*exp(2))*g*exp(1)^3*b*d^5+33*c*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)
^2*b^2*d^4-12*c^3*exp(2)*sqrt(-c*exp(2))*g*exp(1)^2*d^6+5*exp(2)^3*sqrt(-c*
exp(2))*g*exp(1)*b^3*d^3-16*c^2*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)*b*d^5-6*c
*exp(2)^3*sqrt(-c*exp(2))*g*b^2*d^4+4*c*exp(2)*sqrt(-c*exp(2))*exp(1)^5*b^2
*d^3*f+exp(2)^2*sqrt(-c*exp(2))*exp(1)^4*b^3*d^2*f-8*c^2*exp(2)*sqrt(-c*exp
(2))*exp(1)^4*b*d^4*f-5*c*exp(2)^2*sqrt(-c*exp(2))*exp(1)^3*b^2*d^3*f+4*c^3
*exp(2)*sqrt(-c*exp(2))*exp(1)^3*d^5*f-exp(2)^3*sqrt(-c*exp(2))*exp(1)^2*b^
3*d^2*f+4*c^2*exp(2)^2*sqrt(-c*exp(2))*exp(1)^2*b*d^4*f+2*c*exp(2)^3*sqrt(-
c*exp(2))*exp(1)*b^2*d^3*f)/(8*exp(1)^6*b*d-8*c*exp(1)^5*d^2-8*exp(2)*exp(1
)^4*b*d+8*c*exp(2)*exp(1)^3*d^2)/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+exp(1)^2*b*d-c*exp(1)*d^2-
exp(2)*b*d)^2)
```

maple [B] time = 0.07, size = 404, normalized size = 2.40

$$\frac{bceg\arctan\left(\frac{\sqrt{c e^{2}}\left(x+\frac{d}{e}-\frac{-b e^{2}+2cde}{2c e^{2}}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-b e^{2}+2cde\right)\sqrt{c e^{2}}}-\frac{2c^{2}dg\arctan\left(\frac{\sqrt{c e^{2}}\left(x+\frac{d}{e}-\frac{-b e^{2}+2cde}{2c e^{2}}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-b e^{2}+2cde\right)\sqrt{c e^{2}}}-\frac{2\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)}\, cg}{\left(-b e^{2}+2cde\right)e}-\frac{2\left(-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)\right)^{\frac{3}{2}} g}{\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)^{2} e^{3}}-\frac{2\left(-dg+ef\right)\left(-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)\right)^{\frac{3}{2}}}{3\left(-b e^{2}+2cde\right)\left(x+\frac{d}{e}\right)^{3} e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x)
```

```
[Out] -2*g/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)-2*g/e*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
```

```
/e))^(1/2)+g*e*c/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*b-2*g*c^2/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1
/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2
))*d-2/3*(-d*g+e*f)/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\left(f+gx\right)}{\left(d+ex\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**3,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**3, x)
```

3.1948 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=137

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-5beg+8cdg+2cef)}{15e^2(d+ex)^3(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(d+ex)^4(2cd-be)}$$

Rubi [A] time = 0.21, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-5beg+8cdg+2cef)}{15e^2(d+ex)^3(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(d+ex)^4(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^4,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(5*e^2*(2*c*d
- b*e)*(d + e*x)^4) - (2*(2*c*e*f + 8*c*d*g - 5*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(15*e^2*(2*c*d - b*e)^2*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^4}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(2cd-be)(d+ex)^4}+\frac{(2cef+8cdg-5beg)\int}{5e(2cd}$$
$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(2cd-be)(d+ex)^4}-\frac{2(2cef+8cdg-5beg)(}{15e^2(2cd}$$

Mathematica [A] time = 0.06, size = 102, normalized size = 0.74

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\left(2c\left(d^2g+4de(f+gx)+e^2fx\right)-be(2dg+3ef+5egx)\right)}{15e^2(d+ex)^3(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^4
,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(b*e*(3*
e*f + 2*d*g + 5*e*g*x)) + 2*c*(d^2*g + e^2*f*x + 4*d*e*(f + g*x))))/(15*e^2
*(-2*c*d + b*e)^2*(d + e*x)^3)
```

IntegrateAlgebraic [B] time = 26.20, size = 5369, normalized size = 39.19

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^4,x]
```

```
[Out] Result too large to show
```

fricas [B] time = 7.01, size = 307, normalized size = 2.24

$$\frac{2\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(\left(2c^2e^3f + \left(8c^2de^2 - 5bce^3\right)g\right)x^2 - \left(8c^2d^2e - 11bcde^2 + 3b^2e^3\right)f - 2\left(c^2d^3 - 2bcd^2e + b^2de^2\right)g + \left(\left(6c^2de^2 - bce^3\right)f - \left(6c^2d^2e - 11bcde^2 + 5b^2e^3\right)g\right)x\right)}{15\left(4c^2d^5e^2 - 4bcd^4e^3 + b^2d^3e^4 + \left(4c^2d^2e^5 - 4bcde^6 + b^2e^7\right)x^3 + 3\left(4c^2d^3e^4 - 4bcd^2e^5 + b^2de^6\right)x^2 + 3\left(4c^2d^4e^3 - 4bcd^3e^4 + b^2d^2e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x, algor
ithm="fricas")
```

```
[Out] 2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c^2*e^3*f + (8*c^2*d*e^
2 - 5*b*c*e^3)*g)*x^2 - (8*c^2*d^2*e - 11*b*c*d*e^2 + 3*b^2*e^3)*f - 2*(c^2
*d^3 - 2*b*c*d^2*e + b^2*d*e^2)*g + ((6*c^2*d*e^2 - b*c*e^3)*f - (6*c^2*d^2
*e - 11*b*c*d*e^2 + 5*b^2*e^3)*g)*x)/(4*c^2*d^5*e^2 - 4*b*c*d^4*e^3 + b^2*d
^3*e^4 + (4*c^2*d^2*e^5 - 4*b*c*d*e^6 + b^2*e^7)*x^3 + 3*(4*c^2*d^3*e^4 - 4
*b*c*d^2*e^5 + b^2*d*e^6)*x^2 + 3*(4*c^2*d^4*e^3 - 4*b*c*d^3*e^4 + b^2*d^2*
e^5)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((1
00663296*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^5*g*b^3*d*exp(1)^7-50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b^3*d*exp(1)^5+402653184*c*exp
(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g
*b^2*d^2*exp(1)^8-1509949440*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b^2*d^2*exp(1)^6+805306368*c*exp(2)^3*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b^2
*d^2*exp(1)^4-805306368*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^5*g*b*d^3*exp(1)^7+3019898880*c^2*exp(2)^2*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b*d^3*e
xp(1)^5-1610612736*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^5*g*b*d^3*exp(1)^3+402653184*c^3*exp(2)*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^6-
1610612736*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^5*g*d^4*exp(1)^4+805306368*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^2-50331648
*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
```

x)^5*b^3*f*exp(1)^6+201326592*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*f*d*exp(1)^7+100663296*c*exp(2)^3*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*f*
d*exp(1)^5-603979776*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^5*b*f*d^2*exp(1)^6+402653184*c^3*exp(2)^2*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*f*d^3*exp(1
)^5-805306368*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b^3*d^2*exp(1)^8+1107296256*exp(2)^2*sqrt
(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^4*g*b^3*d^2*exp(1)^6-553648128*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b^3*d^2*exp(1)^4+
2013265920*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b^2*d^3*exp(1)^7-503316480*c*exp(2)^2*sqrt
(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^4*g*b^2*d^3*exp(1)^5-1610612736*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b*d^4*exp(1)^6
-3825205248*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b*d^4*exp(1)^4+2415919104*c^2*exp(2)^
3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^4*g*b*d^4*exp(1)^2+402653184*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*d^5*exp(1)^
5+3221225472*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*d^5*exp(1)^3-1610612736*c^3*exp(2)^3
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^4*g*d^5*exp(1)+251658240*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*f*d*exp(1)^5-805
306368*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^4*b^2*f*d^2*exp(1)^8+603979776*c*exp(2)^2*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^4*b^2*f*d^2*exp(1)^6-1308622848*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*f*d^2*exp(1)^4+1
610612736*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*f*d^3*exp(1)^7-201326592*c^2*exp(2)^2*sqr
t(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^4*b*f*d^3*exp(1)^5+1610612736*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*f*d^3*exp(1)^
3-805306368*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*f*d^4*exp(1)^6-402653184*c^3*exp(2)^2*sqr
t(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^4*f*d^4*exp(1)^4-805306368*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*f*d^4*exp(1)^2+134
217728*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^3*g*b^4*d^2*exp(1)^6-134217728*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^4*d^2*exp(1)^4-2415919104*c
exp(2)^2(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*g*b^3*d^3*exp(1)^7+2885681152*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^5-973078528*c*exp
(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3
*g*b^3*d^3*exp(1)^3+8858370048*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^2*d^4*exp(1)^6-8254390272*c^2*ex
p(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
3*g*b^2*d^4*exp(1)^4+2415919104*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^2*d^4*exp(1)^2-10468982784*c^3*
exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^3*g*b*d^5*exp(1)^5+4160749568*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b*d^5*exp(1)^3+268435456*c^3*exp(
2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
g*b*d^5*exp(1)+4026531840*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6*exp(1)^4+1073741824*c^4*exp(2)^3*(s

qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6*e
xp(1)^2-1073741824*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*g*d^6-134217728*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*f*d*exp(1)^7+134217728*e
xp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^3*b^4*f*d*exp(1)^5-805306368*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^8+2550136832*c*exp(2)^
3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3
*f*d^2*exp(1)^6-1241513984*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^4-4429185024*c^2*exp(2)^3
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*
f*d^3*exp(1)^5+1409286144*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*f*d^3*exp(1)^3+2415919104*c^3*exp(2)^
2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*f
*d^4*exp(1)^6+3892314112*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*f*d^4*exp(1)^4-268435456*c^3*exp(2)^4*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*f*d^4
*exp(1)^2-1610612736*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)^5-1879048192*c^4*exp(2)^3*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)
^3-536870912*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)-805306368*exp(2)*sqrt(-c*exp(2))*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp
(1)^9+1610612736*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp(1)^7-1207959552*exp(2)^3
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^2*g*b^4*d^3*exp(1)^5+402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp(
1)^3+4026531840*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^8-4831838208*c*exp(2)^
2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^2*g*b^3*d^4*exp(1)^6+1409286144*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*
exp(1)^4-100663296*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^2-7247757312*c^2*
exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^7+805306368*c^2*exp(2)^2*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^
2*d^5*exp(1)^5+5838471168*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^3-241591
9104*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)+5637144576*c^3*exp(2)*sqrt(-c
exp(2))(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^2*g*b*d^6*exp(1)^6+6442450944*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^4-76
50410496*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^2+1610612736*c^3*exp(2)^4*s
qrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)^2*g*b*d^6-1610612736*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)^5-402653184
0*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)^3+1610612736*c^4*exp(2)^3*sqrt(-c*ex
p(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2
*g*d^7*exp(1)+805306368*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*f*d^2*exp(1)^8-1207959552*e
xp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*b^4*f*d^2*exp(1)^6+402653184*exp(2)^4*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*f*d
^2*exp(1)^4-2415919104*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp

(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^7+2013265920*
c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^5-100663296*c*exp(2)^4*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^
3*f*d^3*exp(1)^3+5637144576*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^6-2013
265920*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^4-603979776*c^2*exp(2)^4*sq
rt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^2*b^2*f*d^4*exp(1)^2-7247757312*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(
1)^5+402653184*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(1)^3+805306368*c^3*exp(2
)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)^2*b*f*d^5*exp(1)+3221225472*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(
1)^4+805306368*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(1)^2-100663296*exp(2)^2*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^5*d^3
*exp(1)^9+251658240*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^7-201326592*exp(2)^4*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^5+503
31648*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)*g*b^5*d^3*exp(1)^3-402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^10+100663296*c*exp(
2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*
b^4*d^4*exp(1)^8+905969664*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^6-905969664*c*exp(2)^4*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^4*d^4*e
xp(1)^4+301989888*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^2+1610612736*c^2*exp(2)*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^9+
2717908992*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^7-8606711808*c^2*exp(2)^3*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^5+593
9134464*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*g*b^3*d^5*exp(1)^3-1409286144*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)-24159191
04*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*g*b^2*d^6*exp(1)^8-7751073792*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^6+14294188032*c
^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)*g*b^2*d^6*exp(1)^4-6442450944*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^2+805306368*c^3*e
xp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
*g*b^2*d^6+1610612736*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^7+7449083904*c^4*exp(2)^2*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^
5-7650410496*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^3+1610612736*c^4*exp(2)^4*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)-4026531
84*c^5*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*g*d^8*exp(1)^6-2415919104*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*d^8*exp(1)^4+805306368*c^5*exp(2)^
3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*d^8
*exp(1)^2+50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp(1)^8-100663296*exp(2)^4*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp(1)^6+5033
1648*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(

2))*x)*b^5*f*d^2*exp(1)^4+603979776*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^9-603979776*c*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^
4*f*d^3*exp(1)^7-201326592*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^5+201326592*c*exp(2)^5*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*f*d^3*e
xp(1)^3-3019898880*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^8+3070230528*c^2*exp(2)^3*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(
1)^6+100663296*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^4-402653184*c^2*exp(2)^5*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^2+
5435817984*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*b^2*f*d^5*exp(1)^7-3724541952*c^3*exp(2)^3*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)^5-603
979776*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)*b^2*f*d^5*exp(1)^3+402653184*c^3*exp(2)^5*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)-4227858432
*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b*f*d^6*exp(1)^6+402653184*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*f*d^6*exp(1)^4+805306368*c^4*exp(
2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*
f*d^6*exp(1)^2+1207959552*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*f*d^7*exp(1)^5+805306368*c^5*exp(2)^3*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*f*d^7*exp(1)
^3+100663296*exp(2)^2*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^8-251658240*exp(2)^3
*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^6+201326592*exp(2)^4*sqrt(-c*exp(2))*g*b^
5*d^4*exp(1)^4-50331648*exp(2)^5*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^2+6710886
40*c*exp(2)*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^9-1979711488*c*exp(2)^2*sqrt(-
c*exp(2))*g*b^4*d^5*exp(1)^7+2315255808*c*exp(2)^3*sqrt(-c*exp(2))*g*b^4*d^
5*exp(1)^5-1241513984*c*exp(2)^4*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^3+2348810
24*c*exp(2)^5*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)-2684354560*c^2*exp(2)*sqrt(-
c*exp(2))*g*b^3*d^6*exp(1)^8+5603590144*c^2*exp(2)^2*sqrt(-c*exp(2))*g*b^3*
d^6*exp(1)^6-4278190080*c^2*exp(2)^3*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^4+144
2840576*c^2*exp(2)^4*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^2-134217728*c^2*exp(2
)^5*sqrt(-c*exp(2))*g*b^3*d^6+4026531840*c^3*exp(2)*sqrt(-c*exp(2))*g*b^2*d
^7*exp(1)^7-5939134464*c^3*exp(2)^2*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)^5+2617
245696*c^3*exp(2)^3*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)^3-402653184*c^3*exp(2)
^4*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)-2684354560*c^4*exp(2)*sqrt(-c*exp(2))*g
*b*d^8*exp(1)^6+2483027968*c^4*exp(2)^2*sqrt(-c*exp(2))*g*b*d^8*exp(1)^4-40
2653184*c^4*exp(2)^3*sqrt(-c*exp(2))*g*b*d^8*exp(1)^2+671088640*c^5*exp(2)*
sqrt(-c*exp(2))*g*d^9*exp(1)^5-268435456*c^5*exp(2)^2*sqrt(-c*exp(2))*g*d^9
*exp(1)^3-50331648*exp(2)^3*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^7+100663296*ex
p(2)^4*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^5-50331648*exp(2)^5*sqrt(-c*exp(2))
*b^5*f*d^3*exp(1)^3-268435456*c*exp(2)*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^10+
469762048*c*exp(2)^2*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^8-201326592*c*exp(2)^
3*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^6-67108864*c*exp(2)^4*sqrt(-c*exp(2))*b^
4*f*d^4*exp(1)^4+67108864*c*exp(2)^5*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^2+107
3741824*c^2*exp(2)*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^9-1275068416*c^2*exp(2)
^2*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^7+150994944*c^2*exp(2)^3*sqrt(-c*exp(2)
)*b^3*f*d^5*exp(1)^5+167772160*c^2*exp(2)^4*sqrt(-c*exp(2))*b^3*f*d^5*exp(1
)^3-67108864*c^2*exp(2)^5*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)-1610612736*c^3*e
xp(2)*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^8+1006632960*c^3*exp(2)^2*sqrt(-c*ex
p(2))*b^2*f*d^6*exp(1)^6+503316480*c^3*exp(2)^3*sqrt(-c*exp(2))*b^2*f*d^6*e
xp(1)^4-201326592*c^3*exp(2)^4*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^2+107374182
4*c^4*exp(2)*sqrt(-c*exp(2))*b*f*d^7*exp(1)^7-67108864*c^4*exp(2)^2*sqrt(-c
*exp(2))*b*f*d^7*exp(1)^5-402653184*c^4*exp(2)^3*sqrt(-c*exp(2))*b*f*d^7*ex
p(1)^3-268435456*c^5*exp(2)*sqrt(-c*exp(2))*f*d^8*exp(1)^6-134217728*c^5*ex
p(2)^2*sqrt(-c*exp(2))*f*d^8*exp(1)^4)/(805306368*b^2*d^2*exp(1)^9-16106127

```
36*exp(2)*b^2*d^2*exp(1)^7+805306368*exp(2)^2*b^2*d^2*exp(1)^5-1610612736*c
*b*d^3*exp(1)^8+3221225472*c*exp(2)*b*d^3*exp(1)^6-1610612736*c*exp(2)^2*b*
d^3*exp(1)^4+805306368*c^2*d^4*exp(1)^7-1610612736*c^2*exp(2)*d^4*exp(1)^5+
805306368*c^2*exp(2)^2*d^4*exp(1)^3)/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+b*d*exp(1)^2-exp(2)*b*
d-c*d^2*exp(1))^3+(4*exp(2)^2*g*b^3*d*exp(1)^2-2*exp(2)^3*g*b^3*d-16*c*exp(
2)*g*b^2*d^2*exp(1)^3+4*c*exp(2)^2*g*b^2*d^2*exp(1)+32*c^2*exp(2)*g*b*d^3*e
xp(1)^2-8*c^2*exp(2)^2*g*b*d^3-16*c^3*exp(2)*g*d^4*exp(1)-2*exp(2)^3*b^3*f*
exp(1)+8*c*exp(2)^2*b^2*f*d*exp(1)^2+4*c*exp(2)^3*b^2*f*d-24*c^2*exp(2)^2*b
*f*d^2*exp(1)+16*c^3*exp(2)^2*f*d^3)/32/(b^2*d^2*exp(1)^6-2*exp(2)*b^2*d^2*
exp(1)^4+exp(2)^2*b^2*d^2*exp(1)^2-2*c*b*d^3*exp(1)^5+4*c*exp(2)*b*d^3*exp(
1)^3-2*c*exp(2)^2*b*d^3*exp(1)+c^2*d^4*exp(1)^4-2*c^2*exp(2)*d^4*exp(1)^2+c
^2*exp(2)^2*d^4)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*e
xp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp
(2)-b*d*exp(1)*exp(2))))
```

maple [A] time = 0.07, size = 128, normalized size = 0.93

$$-\frac{2\left(cex+be-cd\right)\left(5b\,e^{2}gx-8cdegx-2c\,e^{2}fx+2bdeg+3b\,e^{2}f-2c\,d^{2}g-8cdef\right)\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}{15\left(ex+d\right)^{3}\left(b^{2}e^{2}-4bcde+4c^{2}d^{2}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(5*b*e^2*g*x-8*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+3*b*e^
2*f-2*c*d^2*g-8*c*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3/e
^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.29, size = 1022, normalized size = 7.46

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4,x)
```

```
[Out] (((48*c^3*d^2*g - 16*c^3*d*e*f + 12*b*c^2*e^2*f + 20*b^2*c*e^2*g - 64*b*c^2
*d*e*g)/(15*e^2*(b*e - 2*c*d)^3) - (d*((4*c^2*(7*b*e*g - 12*c*d*g + 2*c*e*f
))/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*e*(b*e - 2*c*d)^3)))/e)*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2*f*(b*e - c*d))/(5*b*
e^2 - 10*c*d*e) - (d*((2*b*e*g - 2*c*d*g + 2*c*e*f)/(5*b*e^2 - 10*c*d*e) -
(2*c*d*g)/(5*b*e^2 - 10*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^3 - (((d*((4*c^2*e*f - 8*c^2*d*g + 6*b*c*e*g)/(5*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
)))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f))/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
```

```
)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((8*c^2
*(6*b*e*g - 11*c*d*g + c*e*f))/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*e*(
b*e - 2*c*d)^3)))/e - (8*c*(b*e - c*d)*(5*b*e*g - 10*c*d*g + c*e*f))/(15*e^
2*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
+ (((d*((4*c*(4*b*e*g - 7*c*d*g + c*e*f))/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)) - (4*c^2*d*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*
d)*(3*b*e*g - 6*c*d*g + c*e*f))/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((8*c^3*e*f -
 24*c^3*d*g + 16*b*c^2*e*g)/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*e*(b*e
 - 2*c*d)^3)))/e - (2*b*c*(3*b*e*g - 6*c*d*g + 2*c*e*f))/(15*e*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((8*c^3
*e*f - 64*c^3*d*g + 36*b*c^2*e*g)/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*
e*(b*e - 2*c*d)^3)))/e - (4*b*c*(4*b*e*g - 8*c*d*g + c*e*f))/(15*e*(b*e - 2
*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,(f+gx)}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**4,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**4, x)
```

3.1949 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=210

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+4cef)}{105e^2(d+ex)^3(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+4ce}{35e^2(d+ex)^4(2cd-be)^2}$$

Rubi [A] time = 0.34, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+4cef)}{105e^2(d+ex)^3(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+4cef)}{35e^2(d+ex)^4(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(d+ex)^5(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^5,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(7*e^2*(2*c*d
 - b*e)*(d + e*x)^5) - (2*(4*c*e*f + 10*c*d*g - 7*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^4) - (4*c*(4*c*
e*f + 10*c*d*g - 7*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(105
*e^2*(2*c*d - b*e)^3*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^5}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(2cd-be)(d+ex)^5} + \frac{(4cef+10cdg-7be\ldots}{7e(2\ldots}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(2cd-be)(d+ex)^5} - \frac{2(4cef+10cdg-7b\ldots}{35e^2(2\ldots}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(2cd-be)(d+ex)^5} - \frac{2(4cef+10cdg-7b\ldots}{35e^2(2\ldots}$$

Mathematica [A] time = 0.12, size = 154, normalized size = 0.73

$$\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(3b^2e^2(2dg+5ef+7egx)-2bce\left(13d^2g+de(36f+50gx)+e^2x(6f+7gx)\right)+4c^2\left(5d^3g+d^2e(23f+25gx)+5de^2x(2f+gx)+2e^3fx^2\right)\right)}{105e^2(d+ex)^5(be-2cd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^5
,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(3*b^2*e^2*(5*e*f + 2*d*g + 7*e
*g*x) + 4*c^2*(5*d^3*g + 2*e^3*f*x^2 + 5*d*e^2*x*(2*f + g*x) + d^2*e*(23*f
+ 25*g*x)) - 2*b*c*e*(13*d^2*g + e^2*x*(6*f + 7*g*x) + d*e*(36*f + 50*g*x))
))/(105*e^2*(-2*c*d + b*e)^3*(d + e*x)^5)
```

IntegrateAlgebraic [B] time = 53.11, size = 9683, normalized size = 46.11

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^5,x]
```

```
[Out] Result too large to show
```

fricas [B] time = 47.06, size = 540, normalized size = 2.57

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(2\left(4c^3e^4f+\left(10c^3de^3-7bc^2e^4\right)g\right)x^3+\left(4\left(8c^3de^3-bc^2e^4\right)f+\left(80c^3d^2e^2-66bc^2de^3+7b^2ce^4\right)g\right)x^2-\left(92c^3d^3e-164bc^2d^2e^2+87b^2cde^3-15b^3e^4\right)f-2\left(10c^3d^4-23bc^2d^3e+16b^2cd^2e^2-3b^3de^3\right)g+\left(\left(52c^3d^2e^2-20bc^2de^3+3b^2ce^4\right)f-\left(80c^3d^3e-174bc^2d^2e^2+115b^2cde^3-21b^3e^4\right)g\right)x\right)}{105\left(8c^3d^7e^2-12bc^2d^6e^3+6b^2cd^5e^4-b^3d^4e^5+\left(8c^3d^3e^6-12bc^2d^2e^7+6b^2cde^8-b^3e^9\right)x^4+4\left(8c^3d^4e^5-12bc^2d^3e^6+6b^2cd^2e^7-b^3de^8\right)x^3+6\left(8c^3d^5e^4-12bc^2d^4e^5+6b^2cd^3e^6-b^3d^2e^7\right)x^2+4\left(8c^3d^6e^3-12bc^2d^5e^4+6b^2cd^4e^5-b^3d^3e^6\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x, algor
ithm="fricas")
```

```
[Out] 2/105*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^3*e^4*f + (10*c^3*
d*e^3 - 7*b*c^2*e^4)*g)*x^3 + (4*(8*c^3*d*e^3 - b*c^2*e^4)*f + (80*c^3*d^2*
e^2 - 66*b*c^2*d*e^3 + 7*b^2*c*e^4)*g)*x^2 - (92*c^3*d^3*e - 164*b*c^2*d^2*
e^2 + 87*b^2*c*d*e^3 - 15*b^3*e^4)*f - 2*(10*c^3*d^4 - 23*b*c^2*d^3*e + 16*
b^2*c*d^2*e^2 - 3*b^3*d*e^3)*g + ((52*c^3*d^2*e^2 - 20*b*c^2*d*e^3 + 3*b^2*
c*e^4)*f - (80*c^3*d^3*e - 174*b*c^2*d^2*e^2 + 115*b^2*c*d*e^3 - 21*b^3*e^4
)*g)*x)/(8*c^3*d^7*e^2 - 12*b*c^2*d^6*e^3 + 6*b^2*c*d^5*e^4 - b^3*d^4*e^5 +
 (8*c^3*d^3*e^6 - 12*b*c^2*d^2*e^7 + 6*b^2*c*d*e^8 - b^3*e^9)*x^4 + 4*(8*c^
3*d^4*e^5 - 12*b*c^2*d^3*e^6 + 6*b^2*c*d^2*e^7 - b^3*d*e^8)*x^3 + 6*(8*c^3*
d^5*e^4 - 12*b*c^2*d^4*e^5 + 6*b^2*c*d^3*e^6 - b^3*d^2*e^7)*x^2 + 4*(8*c^3*
d^6*e^3 - 12*b*c^2*d^5*e^4 + 6*b^2*c*d^4*e^5 - b^3*d^3*e^6)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Warni
ng, choosing root of [1,0,%%%{2,[1,0,1,0,3,0]%%%}+%%%{-2,[1,0,1,0,1,1]%%%}+
%%%{2,[1,0,1,0,1,0]%%%}+%%%{2,[1,0,0,1,0,1]%%%}+%%%{-2,[0,1,2,0,2,0]%%%}+%%
%{2,[0,1,2,0,0,1]%%%}+%%%{-2,[0,1,2,0,0,0]%%%}+%%%{2,[0,1,0,2,0,1]%%%},0,%%
%{1,[2,0,2,0,6,0]%%%}+%%%{-2,[2,0,2,0,4,1]%%%}+%%%{-2,[2,0,2,0,4,0]%%%}+%%%
{1,[2,0,2,0,2,2]%%%}+%%%{2,[2,0,2,0,2,1]%%%}+%%%{1,[2,0,2,0,2,0]%%%}+%%%{-2
,[2,0,1,1,3,1]%%%}+%%%{2,[2,0,1,1,1,2]%%%}+%%%{2,[2,0,1,1,1,1]%%%}+%%%{1,[2
,0,0,2,0,2]%%%}+%%%{-2,[1,1,3,0,5,0]%%%}+%%%{4,[1,1,3,0,3,1]%%%}+%%%{4,[1,1
,3,0,3,0]%%%}+%%%{-2,[1,1,3,0,1,2]%%%}+%%%{-4,[1,1,3,0,1,1]%%%}+%%%{-2,[1,1
,3,0,1,0]%%%}+%%%{2,[1,1,2,1,2,1]%%%}+%%%{-2,[1,1,2,1,0,2]%%%}+%%%{-2,[1,1,
2,1,0,1]%%%}+%%%{-2,[1,1,1,2,3,1]%%%}+%%%{2,[1,1,1,2,1,2]%%%}+%%%{2,[1,1,1,
2,1,1]%%%}+%%%{2,[1,1,0,3,0,2]%%%}+%%%{1,[0,2,4,0,4,0]%%%}+%%%{-2,[0,2,4,0,
2,1]%%%}+%%%{-2,[0,2,4,0,2,0]%%%}+%%%{1,[0,2,4,0,0,2]%%%}+%%%{2,[0,2,4,0,0,
1]%%%}+%%%{1,[0,2,4,0,0,0]%%%}+%%%{2,[0,2,2,2,2,1]%%%}+%%%{-2,[0,2,2,2,0,2]
%%%}+%%%{-2,[0,2,2,2,0,1]%%%}+%%%{1,[0,2,0,4,0,2]%%%}] at parameters values
 [-62,52,82,66,20,-30]exp(1)^2*(2*(-(exp(1)*x+d)^-1/exp(1)*(-(exp(1)*x+d)^-
1/exp(1)*(-(21*b^3*g*sign((exp(1)*x+d)^-1)*exp(1)^12+3*b^2*c*f*sign((exp(1)
*x+d)^-1)*exp(1)^12+12*c^3*d^2*f*sign((exp(1)*x+d)^-1)*exp(1)^10-180*c^3*d^
3*g*sign((exp(1)*x+d)^-1)*exp(1)^9-12*b*c^2*d*f*sign((exp(1)*x+d)^-1)*exp(1
)^11+264*b*c^2*d^2*g*sign((exp(1)*x+d)^-1)*exp(1)^10-129*b^2*c*d*g*sign((ex
p(1)*x+d)^-1)*exp(1)^11)/(105*b^3*exp(1)^15-840*c^3*d^3*exp(1)^12+1260*b*c^
2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14)+(exp(1)*x+d)^-1/exp(1)*(-15*b^3*f*si
gn((exp(1)*x+d)^-1)*exp(1)^14+15*b^3*d*g*sign((exp(1)*x+d)^-1)*exp(1)^13+12
0*c^3*d^3*f*sign((exp(1)*x+d)^-1)*exp(1)^11-120*c^3*d^4*g*sign((exp(1)*x+d)
^-1)*exp(1)^10-180*b*c^2*d^2*f*sign((exp(1)*x+d)^-1)*exp(1)^12+180*b*c^2*d^
3*g*sign((exp(1)*x+d)^-1)*exp(1)^11+90*b^2*c*d*f*sign((exp(1)*x+d)^-1)*exp(
1)^13-90*b^2*c*d^2*g*sign((exp(1)*x+d)^-1)*exp(1)^12)/(105*b^3*exp(1)^15-84
0*c^3*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14))-(4*b*c
^2*f*sign((exp(1)*x+d)^-1)*exp(1)^10-7*b^2*c*g*sign((exp(1)*x+d)^-1)*exp(1)
^10-8*c^3*d*f*sign((exp(1)*x+d)^-1)*exp(1)^9-20*c^3*d^2*g*sign((exp(1)*x+d)
^-1)*exp(1)^8+24*b*c^2*d*g*sign((exp(1)*x+d)^-1)*exp(1)^9)/(105*b^3*exp(1)^
15-840*c^3*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14))-(
8*c^3*f*sign((exp(1)*x+d)^-1)*exp(1)^8-14*b*c^2*g*sign((exp(1)*x+d)^-1)*exp
(1)^8+20*c^3*d*g*sign((exp(1)*x+d)^-1)*exp(1)^7)/(105*b^3*exp(1)^15-840*c^3
*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14)-C_0*(210*b^2
*exp(1)^11+840*c^2*d^2*exp(1)^9-840*b*c*d*exp(1)^10)/(105*b^3*exp(1)^15-840
*c^3*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14))*sqrt(-c
*exp(2)-b*d*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^5-b*(exp(1)*x+d)^-1/exp(1)*e
xp(1)^2*exp(2)+c*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^4+b*d*(-(exp(1)*x+d
)^-1/exp(1))^2*exp(1)^3*exp(2)+2*c*d*(exp(1)*x+d)^-1/exp(1)*exp(1)*exp(2)-c
*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^2*exp(2))-2*C_0*ln(abs(-2*((exp(1)*
x+d)^-1/exp(1)*sqrt(-b*d*exp(1)^5+c*d^2*exp(1)^4+b*d*exp(1)^3*exp(2)-c*d^2*
exp(1)^2*exp(2))+sqrt(-c*exp(2)-b*d*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^5-b*
(exp(1)*x+d)^-1/exp(1)*exp(1)^2*exp(2)+c*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*ex
p(1)^4+b*d*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^3*exp(2)+2*c*d*(exp(1)*x+d)^-
1/exp(1)*exp(1)*exp(2)-c*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^2*exp(2)))*
sqrt(-b*d*exp(1)^3+c*d^2*exp(1)^2-c*d^2*exp(2)+b*d*exp(1)*exp(2))+b*exp(1)*
exp(2)-2*c*d*exp(2)))/sqrt(-b*d*exp(1)^3+c*d^2*exp(1)^2-c*d^2*exp(2)+b*d*ex
p(1)*exp(2))/exp(1)-(28*b*c^2*g*sqrt(-c*exp(2))*exp(1)-40*c^3*d*g*sqrt(-c*e
xp(2))-16*c^3*f*sqrt(-c*exp(2))*exp(1))/(105*b^3*exp(1)^8-630*b^2*c*d*exp(1
)^7+1260*b*c^2*d^2*exp(1)^6-840*c^3*d^3*exp(1)^5)*sign((exp(1)*x+d)^-1))
```

maple [A] time = 0.06, size = 236, normalized size = 1.12

$$-\frac{2 (c e x + b e - c d) \left(-14 b c e^{3} g x^{2} + 20 c^{2} d e^{2} g x^{2} + 8 c^{2} e^{3} f x^{2} + 21 b^{2} e^{3} g x - 100 b c d e^{2} g x - 12 b c e^{3} f x + 100 c^{2} d^{2} e g x + 40 c^{2} d e^{2} f x + 6 b^{2} d e^{2} g + 15 b^{2} e^{3} f - 26 b c d^{2} e g - 72 b c d e^{2} f + 20 c^{2} d^{3} g + 92 c^{2} d^{2} e f\right) \sqrt{-c e^{2} x^{2} - b e^{2} x - b d e + c d^{2}}}{105 (e x + d)^{4} \left(b^{3} e^{3} - 6 b^{2} c d e^{2} + 12 b c^{2} d^{2} e - 8 c^{3} d^{3}\right) e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(-14*b*c*e^3*g*x^2+20*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^
2+21*b^2*e^3*g*x-100*b*c*d*e^2*g*x-12*b*c*e^3*f*x+100*c^2*d^2*e*g*x+40*c^2*
d*e^2*f*x+6*b^2*d*e^2*g+15*b^2*e^3*f-26*b*c*d^2*e*g-72*b*c*d*e^2*f+20*c^2*d
^3*g+92*c^2*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4/(b^3*
e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 6.89, size = 2325, normalized size = 11.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5,x)
```

```
[Out] (((d*((16*c^4*e*f - 144*c^4*d*g + 80*b*c^3*e*g)/(105*e*(b*e - 2*c*d)^4) - (
16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e - (4*b*c^2*(9*b*e*g - 18*c*d*g + 2*
c*e*f))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((d*((16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/(105*e*(b*e -
 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e - (8*b*c^2*(2*b*e*g -
 4*c*d*g + c*e*f))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) + (((d*((16*c^4*e*f - 176*c^4*d*g + 96*b*c^3*e*g)/(
105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e - (4*b*c^
2*(11*b*e*g - 22*c*d*g + 2*c*e*f))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((16*c^4*e*f - 256*c^4*d*g +
 136*b*c^3*e*g)/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)
^4)))/e - (8*b*c^2*(8*b*e*g - 16*c*d*g + c*e*f))/(105*e*(b*e - 2*c*d)^4))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4*c^2*e*f -
8*c^2*d*g + 6*b*c*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)
/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f
))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^3 - (((2*f*(b*e - c*d))/(7*b*e^2 - 14*c*d*e) - (d*((
2*b*e*g - 2*c*d*g + 2*c*e*f)/(7*b*e^2 - 14*c*d*e) - (2*c*d*g)/(7*b*e^2 - 14
*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((
d*((4*c^2*(9*b*e*g - 16*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^2) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (72*c^
3*d^2*g - 24*c^3*d*e*f + 16*b*c^2*e^2*f + 28*b^2*c*e^2*g - 92*b*c^2*d*e*g)/
(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^2 + (((d*((8*c^2*(8*b*e*g - 15*c*d*g + c*e*f))/(35*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(7*b*e*g - 14*c*d*g + c*e*f))/(35*e
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)^2 + (((d*((4*c*(5*b*e*g - 9*c*d*g + c*e*f))/(7*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d))))/e - (4*(b*e - c*d)*(4*b*e*g - 8*c*d*g + c*e*f))/(7*e*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
```

```
)^3 - (((128*c^4*d^2*g + 52*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f -
 168*b*c^3*d*e*g)/(105*e^2*(b*e - 2*c*d)^4) - (d*((16*c^3*(4*b*e*g - 7*c*d*
g + c*e*f))/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((352*c^4*d^
2*g + 136*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 448*b*c^3*d*e*g)/
(105*e^2*(b*e - 2*c*d)^4) - (d*((8*c^3*(15*b*e*g - 28*c*d*g + 2*c*e*f))/(10
5*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((16*c^3*(10*b*e*g - 19
*c*d*g + c*e*f))/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d
)^4)))/e - (16*c^2*(b*e - c*d)*(9*b*e*g - 18*c*d*g + c*e*f))/(105*e^2*(b*e
- 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*
((8*c^3*e*f - 24*c^3*d*g + 16*b*c^2*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^2) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (2*b*c*
(3*b*e*g - 6*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((8*c^3*e*f -
 80*c^3*d*g + 44*b*c^2*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c
^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(5*b*e*g - 10
*c*d*g + c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((8*c^3*(13*b*e*g - 24*c*d*
g + 2*c*e*f))/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4
)))/e - (144*c^4*d^2*g + 88*b^2*c^2*e^2*g + 16*c^4*d*e*f - 248*b*c^3*d*e*g)
/(105*e^2*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,(f+gx)}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**5,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**5, x)
```

3.1950 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2cef)}{315e^2(d+ex)^3(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+$$

Rubi [A] time = 0.46, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2cef)}{315e^2(d+ex)^3(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2cef)}{105e^2(d+ex)^4(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2cef)}{21e^2(d+ex)^5(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(d+ex)^6(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^6,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^6) - (2*(2*c*e*f + 4*c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(21*e^2*(2*c*d - b*e)^2*(d + e*x)^5) - (8*c*(2*c*e
*f + 4*c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(105*e
^2*(2*c*d - b*e)^3*(d + e*x)^4) - (16*c^2*(2*c*e*f + 4*c*d*g - 3*b*e*g)*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(315*e^2*(2*c*d - b*e)^4*(d + e*x
)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^6}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} + \frac{(2cef+4cdg-3beg)\int}{3e(2cd}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} - \frac{2(2cef+4cdg-3beg)\,(}{21e^2(2cd}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} - \frac{2(2cef+4cdg-3beg)\,(}{21e^2(2cd}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} - \frac{2(2cef+4cdg-3beg)\,(}{21e^2(2cd}$$

Mathematica [A] time = 0.17, size = 232, normalized size = 0.81

$$-\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(-5b^3e^3(2dg+7ef+9egx)+6b^2ce^2\left(11d^2g+de(40f+52gx)+e^2x(5f+6gx)\right)-12bc^2e\left(12d^3g+d^2e(47f+61gx)+2de^2x(7f+8gx)+2e^3x^2(f+gx)\right)+8c^3\left(11d^4g+d^3e(58f+66gx)+3d^2e^2x(11f+8gx)+4de^3x^2(3f+gx)+2e^4fx^3\right)\right)}{315e^2(d+ex)^6(be-2cd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^6
,x]
```

```
[Out] (-2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-5*b^3*e^3*(7*e*f + 2*d*g + 9
*e*g*x) + 6*b^2*c*e^2*(11*d^2*g + e^2*x*(5*f + 6*g*x) + d*e*(40*f + 52*g*x)
) - 12*b*c^2*e*(12*d^3*g + 2*e^3*x^2*(f + g*x) + 2*d*e^2*x*(7*f + 8*g*x) +
d^2*e*(47*f + 61*g*x)) + 8*c^3*(11*d^4*g + 2*e^4*f*x^3 + 4*d*e^3*x^2*(3*f +
 g*x) + 3*d^2*e^2*x*(11*f + 8*g*x) + d^3*e*(58*f + 66*g*x))))/(315*e^2*(-2*
c*d + b*e)^4*(d + e*x)^6)
```

IntegrateAlgebraic [B] time = 108.88, size = 15269, normalized size = 53.58

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^6,x]
```

```
[Out] Result too large to show
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 382, normalized size = 1.34

$$-\frac{2\left(cex+be-cd\right)\left(24b\,c^{2}e^{4}g\,x^{3}-32c^{3}d\,e^{3}g\,x^{3}-16c^{3}e^{4}f\,x^{3}-36b^{2}c\,e^{4}g\,x^{2}+192b\,c^{2}d\,e^{3}g\,x^{2}+24b\,c^{2}e^{4}f\,x^{2}-192c^{3}d^{2}e^{2}g\,x^{2}-96c^{3}d\,e^{3}f\,x^{2}+45b^{3}e^{4}gx-312b^{2}cd\,e^{3}gx-30b^{2}c\,e^{4}fx+732b\,c^{2}d^{2}e^{2}gx+168b\,c^{2}d\,e^{3}fx-528c^{3}d^{3}egx-264c^{3}d^{2}e^{2}fx+10b^{3}d\,e^{3}g+35b^{3}e^{4}f-66b^{2}c\,d^{2}e^{2}g-240b^{2}cd\,e^{3}f+144b\,c^{2}d^{3}eg+564b\,c^{2}d^{2}e^{2}f-88c^{3}d^{4}g-464c^{3}d^{3}ef\right)\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}{315\left(ex+d\right)^{5}\left(b^{4}e^{4}-8b^{3}cd\,e^{3}+24b^{2}c^{2}d^{2}e^{2}-32b\,c^{3}d^{3}e+16c^{4}d^{4}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(24*b*c^2*e^4*g*x^3-32*c^3*d*e^3*g*x^3-16*c^3*e^4*f*
x^3-36*b^2*c*e^4*g*x^2+192*b*c^2*d*e^3*g*x^2+24*b*c^2*e^4*f*x^2-192*c^3*d^2
*e^2*g*x^2-96*c^3*d*e^3*f*x^2+45*b^3*e^4*g*x-312*b^2*c*d*e^3*g*x-30*b^2*c*e
^4*f*x+732*b*c^2*d^2*e^2*g*x+168*b*c^2*d*e^3*f*x-528*c^3*d^3*e*g*x-264*c^3*
d^2*e^2*f*x+10*b^3*d*e^3*g+35*b^3*e^4*f-66*b^2*c*d^2*e^2*g-240*b^2*c*d*e^3*
f+144*b*c^2*d^3*e*g+564*b*c^2*d^2*e^2*f-88*c^3*d^4*g-464*c^3*d^3*e*f)*(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5/e^2/(b^4*e^4-8*b^3*c*d*e^3+24*b
^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 13.95, size = 4962, normalized size = 17.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6,x)
```

```
[Out] (((d*((32*c^5*e*f - 160*c^5*d*g + 96*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (
32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(5*b*e*g - 10*c*d*g + 2*
c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((d*((32*c^5*e*f - 320*c^5*d*g + 176*b*c^4*e*g)/(945*e*(b*e
 - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (16*b*c^3*(5*b*e*
g - 10*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*e*f - 384*c^5*d*g + 208*b*c^4*e
*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (1
6*b*c^3*(6*b*e*g - 12*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*e*f - 448*c^5*d*
g + 240*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c
*d)^5)))/e - (16*b*c^3*(7*b*e*g - 14*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((32*c^5*e
*f - 544*c^5*d*g + 288*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(9
45*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(945*
e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
+ (((d*((32*c^5*e*f - 608*c^5*d*g + 320*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5)
- (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(19*b*e*g - 38*c*d*g
+ 2*c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x) + (((d*((32*c^5*e*f - 672*c^5*d*g + 352*b*c^4*e*g)/(945*e*
(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(21*
b*e*g - 42*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
```

b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*e*f - 832*c^5*d*g + 432*b
*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/
e - (16*b*c^3*(13*b*e*g - 26*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4*c^2*e*f - 8*c^
2*d*g + 6*b*c*e*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(9*
(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f))/(
9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)^4 - (((2*f*(b*e - c*d))/(9*b*e^2 - 18*c*d*e) - (d*((2*b*
e*g - 2*c*d*g + 2*c*e*f)/(9*b*e^2 - 18*c*d*e) - (2*c*d*g)/(9*b*e^2 - 18*c*d
e)))/e)(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((
4*c^2*(11*b*e*g - 20*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^2) - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (96*c^3
*d^2*g - 32*c^3*d*e*f + 20*b*c^2*e^2*f + 36*b^2*c*e^2*g - 120*b*c^2*d*e*g)/
(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((8*c^2*(10*b*e*g - 19*c*d*g + c*e*f))/(6
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d
e)(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(9*b*e*g - 18*c*d*g + c*e*f))/(
63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/
(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^3)))/e - (8*b*c^2*(2*b*e*g - 4*c*d*g + c*e*f))/(315*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((16*c^4*e*f - 176*c^4*d*g + 96*b*c^3*e*g)/(315*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^3)))/e - (4*b*c^2*(11*b*e*g - 22*c*d*g + 2*c*e*f))/(315*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^2 + (((d*((16*c^4*e*f - 208*c^4*d*g + 112*b*c^3*e*g)/(315*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^3)))/e - (4*b*c^2*(13*b*e*g - 26*c*d*g + 2*c*e*f))/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 - (((d*((16*c^4*e*f - 320*c^4*d*g + 168*b*c^3*e*g)/(315*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3)))/e - (8*b*c^2*(10*b*e*g - 20*c*d*g + c*e*f))/(315*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^2 + (((d*((4*c*(6*b*e*g - 11*c*d*g + c*e*f))/(9*(7*b*e^2 - 14*c*d*e)
*(b*e - 2*c*d)) - (4*c^2*d*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e -
(4*(b*e - c*d)*(5*b*e*g - 10*c*d*g + c*e*f))/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e
 - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d
*((16*c^3*(5*b*e*g - 9*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (192*c
^4*d^2*g + 72*b^2*c^2*e^2*g - 48*c^4*d*e*f + 32*b*c^3*e^2*f - 240*b*c^3*d*e
*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((8*c^3*(17*b*e*g - 32*c*d*g + 2*c*e*
f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (144*c^4*d^2*g + 120*b^2*c^2*e^2*g + 80*c
^4*d*e*f - 32*b*c^3*e^2*f - 312*b*c^3*d*e*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (
((d*((8*c^3*(19*b*e*g - 36*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e -
(624*c^4*d^2*g + 216*b^2*c^2*e^2*g - 48*c^4*d*e*f + 32*b*c^3*e^2*f - 744*b*
c^3*d*e*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((16*c^3*(13*b*e*g - 25*c*d*g
+ c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(12*b*e*g - 24*
c*d*g + c*e*f))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((320*c^5*d^2*g + 128*b^2*c^3
*e^2*g - 64*c^5*d*e*f + 48*b*c^4*e^2*f - 416*b*c^4*d*e*g)/(945*e^2*(b*e - 2
*c*d)^5) - (d*((16*c^4*(9*b*e*g - 16*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)
^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e

```
- b*e^2*x)^(1/2))/(d + e*x) - (((768*c^5*d^2*g + 296*b^2*c^3*e^2*g - 64*c^5
*d*e*f + 48*b*c^4*e^2*f - 976*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*(
(32*c^4*(8*b*e*g - 15*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g
)/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) + (((800*c^5*d^2*g + 304*b^2*c^3*e^2*g - 224*c^5*d*e*f + 128*b*c
^4*e^2*f - 1008*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^4*(21*b*
e*g - 40*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b
*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
- (((896*c^5*d^2*g + 344*b^2*c^3*e^2*g - 64*c^5*d*e*f + 48*b*c^4*e^2*f - 11
36*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((32*c^4*(9*b*e*g - 17*c*d*g
 + c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))
/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1344*c^5*d^
2*g + 512*b^2*c^3*e^2*g - 64*c^5*d*e*f + 48*b*c^4*e^2*f - 1696*b*c^4*d*e*g)
/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^4*(25*b*e*g - 48*c*d*g + 2*c*e*f))/(
945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((32*c^4*(15*b*e*g -
29*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c
*d)^5)))/e - (32*c^3*(b*e - c*d)*(14*b*e*g - 28*c*d*g + c*e*f))/(945*e^2*(b
*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + ((
(d*((8*c^3*e*f - 24*c^3*d*g + 16*b*c^2*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^2) - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (2
*b*c*(3*b*e*g - 6*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((8*c^3
*e*f - 96*c^3*d*g + 52*b*c^2*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)
 - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(6*b*
e*g - 12*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(23*b*e*g
 - 44*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e
- 2*c*d)^5)))/e + (32*c^5*d^2*g - 176*b^2*c^3*e^2*g - 32*c^5*d*e*f + 336*b*
c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) + (((d*((32*c^4*(7*b*e*g - 13*c*d*g + c*e*f))/(945*e*(b*e
 - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (256*c^5*d^2*g +
176*b^2*c^3*e^2*g + 32*c^5*d*e*f - 480*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^
5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\left(f+gx\right)}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**6,x)
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**6, x)
```

3.1951 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{3465e^2(d+ex)^3(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cd$$

Rubi [A] time = 0.58, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{3465e^2(d+ex)^3(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{1155e^2(d+ex)^4(2cd-be)^4}-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{231e^2(d+ex)^5(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{99e^2(d+ex)^6(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(d+ex)^7(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^7,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(11*e^2*(2*c*d
 - b*e)*(d + e*x)^7) - (2*(8*c*e*f + 14*c*d*g - 11*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(3/2))/(99*e^2*(2*c*d - b*e)^2*(d + e*x)^6) - (4*c*(8*
c*e*f + 14*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(
231*e^2*(2*c*d - b*e)^3*(d + e*x)^5) - (16*c^2*(8*c*e*f + 14*c*d*g - 11*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(1155*e^2*(2*c*d - b*e)^4*
(d + e*x)^4) - (32*c^3*(8*c*e*f + 14*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(3465*e^2*(2*c*d - b*e)^5*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^7}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7} + \frac{(8cef+14cdg-11be\cdots}{11e(\cdots}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7} - \frac{2(8cef+14cdg-11b\cdots}{99e^2(2\cdots}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7} - \frac{2(8cef+14cdg-11b\cdots}{99e^2(2\cdots}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7} - \frac{2(8cef+14cdg-11b\cdots}{99e^2(2\cdots}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7} - \frac{2(8cef+14cdg-11b\cdots}{99e^2(2\cdots}$$

Mathematica [A] time = 0.26, size = 335, normalized size = 0.93

$$\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(35b^4e^4(2dg+9ef+11egx)-10b^3ce^3\left(61d^2g+de(280f+346gx)+e^2x(28f+33gx)\right)+12b^2c^2e^2\left(167d^3g+d^2e(790f+986gx)+de^2x(180f+211gx)+2e^3x^2(10f+11gx)\right)-8bc^3e\left(365d^4g+2d^3e(912f+1141gx)+3d^2e^2x(244f+277gx)+4de^3x^2(48f+49gx)+2e^4x^3(12f+11gx)\right)+16c^4\left(91d^5g+d^4e(547f+637gx)+7d^3e^2x(52f+45gx)+2d^2e^3x^2(90f+49gx)+14de^4x^3(4f+gx)+8e^5fx^4\right)\right)}{3465e^2(d+ex)^7(be-2cd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^7
,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(35*b^4*e^4*(9*e*f + 2*d*g + 11
*e*g*x) - 10*b^3*c*e^3*(61*d^2*g + e^2*x*(28*f + 33*g*x) + d*e*(280*f + 346
*g*x)) + 16*c^4*(91*d^5*g + 8*e^5*f*x^4 + 14*d*e^4*x^3*(4*f + g*x) + 7*d^3*
e^2*x*(52*f + 45*g*x) + 2*d^2*e^3*x^2*(90*f + 49*g*x) + d^4*e*(547*f + 637*
g*x)) + 12*b^2*c^2*e^2*(167*d^3*g + 2*e^3*x^2*(10*f + 11*g*x) + d*e^2*x*(18
0*f + 211*g*x) + d^2*e*(790*f + 986*g*x)) - 8*b*c^3*e*(365*d^4*g + 2*e^4*x^
3*(12*f + 11*g*x) + 4*d*e^3*x^2*(48*f + 49*g*x) + 3*d^2*e^2*x*(244*f + 277*
g*x) + 2*d^3*e*(912*f + 1141*g*x))))/(3465*e^2*(-2*c*d + b*e)^5*(d + e*x)^7
)
```

IntegrateAlgebraic [F] time = 180.04, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^7,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 564, normalized size = 1.57

$$-\frac{2\left(cex+be-cd\right)\left(-176b\,c^{3}e^{5}g\,x^{4}+224c^{4}d\,e^{4}g\,x^{4}+128c^{4}e^{5}f\,x^{4}+264b^{2}c^{2}e^{5}g\,x^{3}-1568b\,c^{3}d\,e^{4}g\,x^{3}-192b\,c^{3}e^{5}f\,x^{3}+1568c^{4}d^{2}e^{3}g\,x^{3}+896c^{4}d\,e^{4}f\,x^{3}-330b^{3}c\,e^{5}g\,x^{2}+2532b^{2}c^{2}d\,e^{4}g\,x^{2}+240b^{2}c^{2}e^{5}f\,x^{2}-6648b\,c^{3}d^{2}e^{3}g\,x^{2}-1536b\,c^{3}d\,e^{4}f\,x^{2}+5040c^{4}d^{3}e^{2}g\,x^{2}+2880c^{4}d^{2}e^{3}f\,x^{2}+385b^{4}e^{5}gx-3460b^{3}cd\,e^{4}gx-280b^{3}c\,e^{5}fx+11832b^{2}c^{2}d^{2}e^{3}gx+2160b^{2}c^{2}d\,e^{4}fx-18256b\,c^{3}d^{3}e^{2}gx-5856b\,c^{3}d^{2}e^{3}fx+10192c^{4}d^{4}egx+5824c^{4}d^{3}e^{2}fx+70b^{4}d\,e^{4}g+315b^{4}e^{5}f-610b^{3}c\,d^{2}e^{3}g-2800b^{3}cd\,e^{4}f+2004b^{2}c^{2}d^{3}e^{2}g+9480b^{2}c^{2}d^{2}e^{3}f-2920b\,c^{3}d^{4}eg-14592b\,c^{3}d^{3}e^{2}f+1456c^{4}d^{5}g+8752c^{4}d^{4}ef\right)\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}{3465\left(ex+d\right)^{6}\left(b^{5}e^{5}-10b^{4}cd\,e^{4}+40b^{3}c^{2}d^{2}e^{3}-80b^{2}c^{3}d^{3}e^{2}+80b\,c^{4}d^{4}e-32c^{5}d^{5}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x)
```

```
[Out] -2/3465*(c*e*x+b*e-c*d)*(-176*b*c^3*e^5*g*x^4+224*c^4*d*e^4*g*x^4+128*c^4*e
^5*f*x^4+264*b^2*c^2*e^5*g*x^3-1568*b*c^3*d*e^4*g*x^3-192*b*c^3*e^5*f*x^3+1
568*c^4*d^2*e^3*g*x^3+896*c^4*d*e^4*f*x^3-330*b^3*c*e^5*g*x^2+2532*b^2*c^2*
d*e^4*g*x^2+240*b^2*c^2*e^5*f*x^2-6648*b*c^3*d^2*e^3*g*x^2-1536*b*c^3*d*e^4
*f*x^2+5040*c^4*d^3*e^2*g*x^2+2880*c^4*d^2*e^3*f*x^2+385*b^4*e^5*g*x-3460*b
^3*c*d*e^4*g*x-280*b^3*c*e^5*f*x+11832*b^2*c^2*d^2*e^3*g*x+2160*b^2*c^2*d*e
^4*f*x-18256*b*c^3*d^3*e^2*g*x-5856*b*c^3*d^2*e^3*f*x+10192*c^4*d^4*e*g*x+5
824*c^4*d^3*e^2*f*x+70*b^4*d*e^4*g+315*b^4*e^5*f-610*b^3*c*d^2*e^3*g-2800*b
^3*c*d*e^4*f+2004*b^2*c^2*d^3*e^2*g+9480*b^2*c^2*d^2*e^3*f-2920*b*c^3*d^4*e
*g-14592*b*c^3*d^3*e^2*f+1456*c^4*d^5*g+8752*c^4*d^4*e*f)*(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6/e^2/(b^5*e^5-10*b^4*c*d*e^4+40*b^3*c^2*d^2*
e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 28.09, size = 10084, normalized size = 28.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^7,x)
```

```
[Out] (((d*((8*c^2*(12*b*e*g - 23*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^2) - (8*c^3*d*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (8
*c*(b*e - c*d)*(11*b*e*g - 22*c*d*g + c*e*f))/(99*e*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 -
(((d*((64*c^6*e*f - 1152*c^6*d*g + 608*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6)
 - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b*c^4*(9*b*e*g - 18*c*d
*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((64*c^6*e*f - 1280*c^6*d*g + 672*b*c^5*e*g)/(10
395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b
*c^4*(10*b*e*g - 20*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (2*((d*((64*c^6*e*f - 1408*c^6
*d*g + 736*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*
e - 2*c*d)^6)))/e - (32*b*c^4*(11*b*e*g - 22*c*d*g + c*e*f))/(10395*e*(b*e
- 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
```

((64*c^6*e*f - 1536*c^6*d*g + 800*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (6
4*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b*c^4*(12*b*e*g - 24*c*d*g +
 c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x) - (((d*((64*c^6*e*f - 1664*c^6*d*g + 864*b*c^5*e*g)/(10395*
e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b*c^4
*(13*b*e*g - 26*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*e*f - 2432*c^6*d*g +
 1248*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2
*c*d)^6)))/e - (32*b*c^4*(19*b*e*g - 38*c*d*g + c*e*f))/(10395*e*(b*e - 2*c
d)^6))(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4*c
^2*e*f - 8*c^2*d*g + 6*b*c*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (
4*c^2*d*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*
d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((2*f*(b*e - c*d))/(11*b*e^2 - 22*c
*d*e) - (d*((2*b*e*g - 2*c*d*g + 2*c*e*f)/(11*b*e^2 - 22*c*d*e) - (2*c*d*g)
/(11*b*e^2 - 22*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^6 - (((d*((4*c^2*(13*b*e*g - 24*c*d*g + 2*c*e*f))/(99*(7*b*e^2 - 14
*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*
d)^2)))/e - (120*c^3*d^2*g - 40*c^3*d*e*f + 24*b*c^2*e^2*f + 44*b^2*c*e^2*g
 - 148*b*c^2*d*e*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((64*c^6*e*f - 384*c^
6*d*g + 224*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b
*e - 2*c*d)^6)))/e - (32*b*c^4*(3*b*e*g - 6*c*d*g + c*e*f))/(10395*e*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*(
(16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8
*b*c^2*(2*b*e*g - 4*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)
^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((16*c
^4*e*f - 208*c^4*d*g + 112*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*b*
c^2*(13*b*e*g - 26*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((16*
c^4*e*f - 240*c^4*d*g + 128*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*b
c^2(15*b*e*g - 30*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16
*c^4*e*f - 384*c^4*d*g + 200*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*
b*c^2*(12*b*e*g - 24*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*
c^5*e*f - 160*c^5*d*g + 96*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*
c^3*(5*b*e*g - 10*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c
^5*e*f - 384*c^5*d*g + 208*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b
c^3(6*b*e*g - 12*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^
5*e*f - 448*c^5*d*g + 240*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*
c^3*(7*b*e*g - 14*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5
*e*f - 512*c^5*d*g + 272*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c
^3*(8*b*e*g - 16*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^5*
e*f - 672*c^5*d*g + 352*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^3
*(21*b*e*g - 42*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4

))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^5
*e*f - 736*c^5*d*g + 384*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^
3*(23*b*e*g - 46*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^
5*e*f - 800*c^5*d*g + 416*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c
^3*(25*b*e*g - 50*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c
^5*e*f - 1024*c^5*d*g + 528*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*
b*c^3*(16*b*e*g - 32*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*
c^5*(6*b*e*g - 11*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/
(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(11*b*e*g - 22*c*d*g + 2*c*e*f))/
(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) + (((d*((64*c^5*(7*b*e*g - 13*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)
^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(13*b*e*g - 26
*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(8*b*e*g - 15*c*d*g + c*e*f))/(10
395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b
c^4(15*b*e*g - 30*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(9*b*e*g - 17*
c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*
c*d)^6)))/e - (16*b*c^4*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*
c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64
c^5(14*b*e*g - 27*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g
)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(27*b*e*g - 54*c*d*g + 2*c*e*f)
)/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) + (((d*((64*c^5*(15*b*e*g - 29*c*d*g + c*e*f))/(10395*e*(b*e - 2*c
*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(29*b*e*g -
 58*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(16*b*e*g - 31*c*d*g + c*e*f))
/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (
16*b*c^4*(31*b*e*g - 62*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(17*b*e*g
- 33*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e
 - 2*c*d)^6)))/e - (16*b*c^4*(33*b*e*g - 66*c*d*g + 2*c*e*f))/(10395*e*(b*e
 - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((4*c*(7*b*e*g - 13*c*d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)
) - (4*c^2*d*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*d
)*(6*b*e*g - 12*c*d*g + c*e*f))/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((16*c^3*(6
*b*e*g - 11*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (1
6*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (256*c^4*d^2*g
+ 92*b^2*c^2*e^2*g - 64*c^4*d*e*f + 40*b*c^3*e^2*f - 312*b*c^3*d*e*g)/(693*
e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^3 - (((d*((8*c^3*(21*b*e*g - 40*c*d*g + 2*c*e*f))/(693
*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*
d*e)*(b*e - 2*c*d)^3)))/e - (112*c^4*d^2*g + 152*b^2*c^2*e^2*g + 176*c^4*d*
e*f - 80*b*c^3*e^2*f - 360*b*c^3*d*e*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*
((8*c^3*(23*b*e*g - 44*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (9
60*c^4*d^2*g + 312*b^2*c^2*e^2*g - 64*c^4*d*e*f + 40*b*c^3*e^2*f - 1104*b*c
^3*d*e*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^4*(9*b*e*g - 17*c*d*g +
 c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (128*c^5*d^2*g + 208*b^2*c^3*e^2*g

+ 160*c^5*d*e*f - 64*b*c^4*e^2*f - 480*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16*c^4*(11*b*e*g - 20*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (480*c^5*d^2*g + 176*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*b*c^4*e^2*f - 592*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16*c^4*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (1632*c^5*d^2*g + 144*b^2*c^3*e^2*g - 160*c^5*d*e*f + 64*b*c^4*e^2*f - 1104*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^4*(10*b*e*g - 19*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1344*c^5*d^2*g + 464*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*b*c^4*e^2*f - 1600*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^4*(11*b*e*g - 21*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1536*c^5*d^2*g + 528*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*b*c^4*e^2*f - 1824*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16*c^4*(27*b*e*g - 52*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1568*c^5*d^2*g + 400*b^2*c^3*e^2*g - 800*c^5*d*e*f + 416*b*c^4*e^2*f - 1584*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16*c^4*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2400*c^5*d^2*g + 816*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*b*c^4*e^2*f - 2832*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((16*c^3*(16*b*e*g - 31*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(15*b*e*g - 30*c*d*g + c*e*f))/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^4*(19*b*e*g - 37*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^3*(b*e - c*d)*(18*b*e*g - 36*c*d*g + c*e*f))/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((768*c^6*d^2*g + 304*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 992*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((64*c^5*(5*b*e*g - 9*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1664*c^6*d^2*g + 640*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 2112*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(17*b*e*g - 32*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1920*c^6*d^2*g + 736*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 2432*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(19*b*e*g - 36*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((320*c^6*d^2*g + 928*b^2*c^4*e^2*g + 1472*c^6*d*e*f - 704*b*c^5*e^2*f - 2016*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2176*c^6*d^2*g + 832*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 2752*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(21*b*e*g - 40*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2048*c^6*d^2*g + 736*b^2*c^4*e^2*g - 448*c^6*d*e*f + 256*b*c^5*e^2*f - 2496*b*c^5*d*e*g)/(10395*e^2

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*(b*e - 2*c*d)^6) - (d*((64*c^5*(11*b*e*g - 21*c*d*g + c*e*f))/(10395*e*(b*
e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2816*c^6*d^2*g + 1072*b^2*c^4*
e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 3552*b*c^5*d*e*g)/(10395*e^2*(b*e
- 2*c*d)^6) - (d*((64*c^5*(13*b*e*g - 25*c*d*g + c*e*f))/(10395*e*(b*e - 2*
c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((3072*c^6*d^2*g + 1168*b^2*c^4*e^2*g
- 128*c^6*d*e*f + 96*b*c^5*e^2*f - 3872*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*
d)^6) - (d*((64*c^5*(14*b*e*g - 27*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6
) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((3328*c^6*d^2*g + 1264*b^2*c^4*e^2*g - 128*
c^6*d*e*f + 96*b*c^5*e^2*f - 4192*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6)
- (d*((64*c^5*(15*b*e*g - 29*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (6
4*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((4224*c^6*d^2*g + 1600*b^2*c^4*e^2*g - 128*c^6*d*
e*f + 96*b*c^5*e^2*f - 5312*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*(
(32*c^5*(37*b*e*g - 72*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^
6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) + (((6976*c^6*d^2*g + 2144*b^2*c^4*e^2*g - 448*c^6*d*e*f
+ 256*b*c^5*e^2*f - 7776*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32
*c^5*(33*b*e*g - 64*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d
*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) + (((d*((64*c^5*(21*b*e*g - 41*c*d*g + c*e*f))/(10395*e*(b*e
 - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (64*c^4*(b*e -
c*d)*(20*b*e*g - 40*c*d*g + c*e*f))/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8*c^3*e*f - 24*c^3*d*
g + 16*b*c^2*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(
99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (2*b*c*(3*b*e*g - 6*c*d*g +
2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((8*c^3*e*f - 112*c^3*d*g + 60*b*
c^2*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(99*(7*b*e
^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(7*b*e*g - 14*c*d*g + c*e*f))/
(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^4 + (((d*((64*c^5*(12*b*e*g - 23*c*d*g + c*e*f))/(10
395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (128*
c^6*d^2*g - 352*b^2*c^4*e^2*g - 64*c^6*d*e*f + 640*b*c^5*d*e*g)/(10395*e^2*
(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) +
(((d*((64*c^5*(13*b*e*g - 25*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (6
4*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (256*c^6*d^2*g - 352*b^2*c^4*e^2
*g - 64*c^6*d*e*f + 576*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*(35*b*e*g - 6
8*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e
- 2*c*d)^6)))/e + (832*c^6*d^2*g - 352*b^2*c^4*e^2*g - 64*c^6*d*e*f + 288*b
*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x) - (((d*((32*c^5*(15*b*e*g - 28*c*d*g + 2*c*e*f))/(1039
5*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (448*c^
6*d^2*g + 352*b^2*c^4*e^2*g + 64*c^6*d*e*f - 928*b*c^5*d*e*g)/(10395*e^2*(b
*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,(f+gx)}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**7,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**7, x)
```

3.1952 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=439

$$-\frac{256c^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+16cdg+10cef)}{45045e^2(d+ex)^3(2cd-be)^6}+\frac{128c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(13beg-}{15015e^2(d+ex)^4(2cd-be)^5}$$

Rubi [A] time = 0.72, antiderivative size = 439, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+16cdg+10cef)}{45045e^2(d+ex)^3(2cd-be)^6}+\frac{128c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(13beg-2c(8dg+5ef))}{15015e^2(d+ex)^4(2cd-be)^5}-\frac{32c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+16cdg+10cef)}{3003e^2(d+ex)^5(2cd-be)^4}+\frac{16c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(13beg-2c(8dg+5ef))}{1287e^2(d+ex)^6(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+16cdg+10cef)}{143e^2(d+ex)^7(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(d+ex)^8(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^8,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(13*e^2*(2*c*d
 - b*e)*(d + e*x)^8) - (2*(10*c*e*f + 16*c*d*g - 13*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(3/2))/(143*e^2*(2*c*d - b*e)^2*(d + e*x)^7) + (16*c*
(13*b*e*g - 2*c*(5*e*f + 8*d*g))*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2
))/(1287*e^2*(2*c*d - b*e)^3*(d + e*x)^6) - (32*c^2*(10*c*e*f + 16*c*d*g -
13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3003*e^2*(2*c*d - b
*e)^4*(d + e*x)^5) + (128*c^3*(13*b*e*g - 2*c*(5*e*f + 8*d*g))*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2))/(15015*e^2*(2*c*d - b*e)^5*(d + e*x)^4) -
(256*c^4*(10*c*e*f + 16*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*
x^2)^(3/2))/(45045*e^2*(2*c*d - b*e)^6*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^8}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8} + \frac{(10cef+16cdg-13beg}{13e(2c}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8} - \frac{2(10cef+16cdg-13be}{143e^2(2c}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8} - \frac{2(10cef+16cdg-13be}{143e^2(2c}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8} - \frac{2(10cef+16cdg-13be}{143e^2(2c}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8} - \frac{2(10cef+16cdg-13be}{143e^2(2c}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8} - \frac{2(10cef+16cdg-13be}{143e^2(2c}$$

Mathematica [A] time = 0.45, size = 176, normalized size = 0.40

$$-\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(2(d+ex)\left(8c(d+ex)\left(2c(d+ex)\left(4c(d+ex)(-3be+8cd+2cex)+15(be-2cd)^2\right)+35(2cd-be)^3\right)+315(be-2cd)^4\right)\left(ce(8dg+5ef)-\frac{13}{2}be^2g\right)-3465e(be-2cd)^5(ef-dg)\right)}{45045e^3(d+ex)^8(be-2cd)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^8
,x]
```

```
[Out] (-2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3465*e*(-2*c*d + b*e)^5*(e*f
 - d*g) + 2*((-13*b*e^2*g)/2 + c*e*(5*e*f + 8*d*g))*(d + e*x)*(315*(-2*c*d
+ b*e)^4 + 8*c*(d + e*x)*(35*(2*c*d - b*e)^3 + 2*c*(d + e*x)*(15*(-2*c*d +
b*e)^2 + 4*c*(d + e*x)*(8*c*d - 3*b*e + 2*c*e*x))))))/(45045*e^3*(-2*c*d +
b*e)^6*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 180.04, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^8,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.07, size = 782, normalized size = 1.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x)
```

```
[Out] -2/45045*(c*e*x+b*e-c*d)*(1664*b*c^4*e^6*g*x^5-2048*c^5*d*e^5*g*x^5-1280*c^
5*e^6*f*x^5-2496*b^2*c^3*e^6*g*x^4+16384*b*c^4*d*e^5*g*x^4+1920*b*c^4*e^6*f
*x^4-16384*c^5*d^2*e^4*g*x^4-10240*c^5*d*e^5*f*x^4+3120*b^3*c^2*e^6*g*x^3-2
6304*b^2*c^3*d*e^5*g*x^3-2400*b^2*c^3*e^6*f*x^3+76736*b*c^4*d^2*e^4*g*x^3+1
7280*b*c^4*d*e^5*f*x^3-60416*c^5*d^3*e^3*g*x^3-37760*c^5*d^2*e^4*f*x^3-3640
*b^4*c*e^6*g*x^2+35680*b^3*c^2*d*e^5*g*x^2+2800*b^3*c^2*e^6*f*x^2-134496*b^
2*c^3*d^2*e^4*g*x^2-24000*b^2*c^3*d*e^5*f*x^2+231424*b*c^4*d^3*e^3*g*x^2+73
920*b*c^4*d^2*e^4*f*x^2-139264*c^5*d^4*e^2*g*x^2-87040*c^5*d^3*e^3*f*x^2+40
95*b^5*e^6*g*x-45080*b^4*c*d*e^5*g*x-3150*b^4*c*e^6*f*x+200600*b^3*c^2*d^2*
e^4*g*x+30800*b^3*c^2*d*e^5*f*x-452064*b^2*c^3*d^3*e^3*g*x-116400*b^2*c^3*d
^2*e^4*f*x+516656*b*c^4*d^4*e^2*g*x+204480*b*c^4*d^3*e^3*f*x-233216*c^5*d^5
*e*g*x-145760*c^5*d^4*e^2*f*x+630*b^5*d*e^5*g+3465*b^5*e^6*f-6790*b^4*c*d^2
*e^4*g-37800*b^4*c*d*e^5*f+29440*b^3*c^2*d^3*e^3*g+166600*b^3*c^2*d^2*e^4*f
-64176*b^2*c^3*d^4*e^2*g-372000*b^2*c^3*d^3*e^3*f+70048*b*c^4*d^5*e*g+42312
0*b*c^4*d^4*e^2*f-29152*c^5*d^6*g-198400*c^5*d^5*e*f)*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)/(e*x+d)^7/e^2/(b^6*e^6-12*b^5*c*d*e^5+60*b^4*c^2*d^2*e^4-
160*b^3*c^3*d^3*e^3+240*b^2*c^4*d^4*e^2-192*b*c^5*d^5*e+64*c^6*d^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 55.43, size = 19572, normalized size = 44.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^8,x)
```

```
[Out] (((d*((8*c^2*(14*b*e*g - 27*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e
- 2*c*d)^2) - (8*c^3*d*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e -
(8*c*(b*e - c*d)*(13*b*e*g - 26*c*d*g + c*e*f))/(143*e*(9*b*e^2 - 18*c*d*e)
*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5
 - (((2*f*(b*e - c*d))/(13*b*e^2 - 26*c*d*e) - (d*((2*b*e*g - 2*c*d*g + 2*c
*e*f)/(13*b*e^2 - 26*c*d*e) - (2*c*d*g)/(13*b*e^2 - 26*c*d*e)))/e)*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^7 - (((d*((4*c^2*(15*b*e*g -
 28*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d
*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (144*c^3*d^2*g - 48*c^
```

3*d*e*f + 28*b*c^2*e^2*f + 52*b^2*c*e^2*g - 176*b*c^2*d*e*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((4*c^2*e*f - 8*c^2*d*g + 6*b*c*e*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 - (((d*((16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*b*c^2*(2*b*e*g - 4*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((16*c^4*e*f - 240*c^4*d*g + 128*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*b*c^2*(15*b*e*g - 30*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((16*c^4*e*f - 272*c^4*d*g + 144*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*b*c^2*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((16*c^4*e*f - 448*c^4*d*g + 232*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*b*c^2*(14*b*e*g - 28*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((32*c^5*e*f - 160*c^5*d*g + 96*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^3*(5*b*e*g - 10*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((32*c^5*e*f - 448*c^5*d*g + 240*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c^3*(7*b*e*g - 14*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((32*c^5*e*f - 512*c^5*d*g + 272*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c^3*(8*b*e*g - 16*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((32*c^5*e*f - 576*c^5*d*g + 304*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c^3*(9*b*e*g - 18*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^5*e*f - 800*c^5*d*g + 416*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^3*(25*b*e*g - 50*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^5*e*f - 864*c^5*d*g + 448*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^3*(27*b*e*g - 54*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^5*e*f - 928*c^5*d*g + 480*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^3*(29*b*e*g - 58*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((32*c^5*e*f - 1216*c^5*d*g + 624*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c^3*(19*b*e*g - 38*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((64*c^6*e*f - 384*c^6*d*g + 224*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(3*b*e*g - 6*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1408*c^6*d*g + 736*b*c^5*e*g)

/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(11*b*e*g - 22*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1536*c^6*d*g + 800*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(12*b*e*g - 24*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (2*((d*((64*c^6*e*f - 1664*c^6*d*g + 864*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(13*b*e*g - 26*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1792*c^6*d*g + 928*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(14*b*e*g - 28*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1920*c^6*d*g + 992*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(15*b*e*g - 30*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 2944*c^6*d*g + 1504*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(23*b*e*g - 46*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*(13*b*e*g - 24*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(6*b*e*g - 12*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(15*b*e*g - 28*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(7*b*e*g - 14*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(4*b*e*g - 7*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(7*b*e*g - 14*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(17*b*e*g - 32*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(8*b*e*g - 16*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(19*b*e*g - 36*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(9*b*e*g - 18*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(21*b*e*g - 40*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(10*b*e*g - 20*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(10*b*e*g - 19*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(19*b*e*g - 38*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(14*b*e*g - 28*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(11*b*e*g - 21*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(21*b*e*g - 42*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(15*b*e*g - 30*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((d*((128*c^6*(12*b*e*g - 23*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(23*b*e*g - 46*c*d*g + 2*c*

e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x) - (2*((d*((64*c^6*(33*b*e*g - 64*c*d*g + 2*c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5
*(16*b*e*g - 32*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((d*((128*c^6*(13*b*e*g - 25*c
*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e -
2*c*d)^7)))/e - (32*b*c^5*(25*b*e*g - 50*c*d*g + 2*c*e*f))/(135135*e*(b*e -
2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((d
*((128*c^6*(14*b*e*g - 27*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128
*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(27*b*e*g - 54*c*d*g +
2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) - (2*((d*((64*c^6*(35*b*e*g - 68*c*d*g + 2*c*e*f))/(1351
35*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*
b*c^5*(17*b*e*g - 34*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(15*b*e*g - 2
9*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e - (32*b*c^5*(29*b*e*g - 58*c*d*g + 2*c*e*f))/(135135*e*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (2*
((d*((64*c^6*(37*b*e*g - 72*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) -
(128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(18*b*e*g - 36*c*d
*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(16*b*e*g - 31*c*d*g + c*e*f))/(13513
5*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b
c^5(31*b*e*g - 62*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(39*b*e*g - 7
6*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b
*e - 2*c*d)^7)))/e - (64*b*c^5*(19*b*e*g - 38*c*d*g + c*e*f))/(135135*e*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((
d*((64*c^6*(41*b*e*g - 80*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (1
28*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(20*b*e*g - 40*c*d*g
+ c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) + (((d*((128*c^6*(20*b*e*g - 39*c*d*g + c*e*f))/(135135*
e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c
^5*(39*b*e*g - 78*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(21*b*e*g - 41
*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e - (32*b*c^5*(41*b*e*g - 82*c*d*g + 2*c*e*f))/(135135*e*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((128*c^6*(22*b*e*g - 43*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128
*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(43*b*e*g - 86*c*d*g +
2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) + (((d*((128*c^6*(23*b*e*g - 45*c*d*g + c*e*f))/(135135*
e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c
^5*(45*b*e*g - 90*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(53*b*e*g - 104
*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*
e - 2*c*d)^7)))/e - (64*b*c^5*(26*b*e*g - 52*c*d*g + c*e*f))/(135135*e*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((128*c^6*(24*b*e*g - 47*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128
*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(47*b*e*g - 94*c*d*g +
2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) + (((d*((4*c*(8*b*e*g - 15*c*d*g + c*e*f))/(13*(11*b*e^2
- 22*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e -
2*c*d))))/e - (4*(b*e - c*d)*(7*b*e*g - 14*c*d*g + c*e*f))/(13*e*(11*b*e^2
- 22*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^6 + (((d*((64*c^5*(7*b*e*g - 13*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e - (16*b*c^4*(13*b*e*g - 26*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d

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 + e*x)^2 + (((d*((64*c^5*(8*b*e*g - 15*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e - (16*b*c^4*(15*b*e*g - 30*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 + (((d*((64*c^5*(9*b*e*g - 17*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e - (16*b*c^4*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 + (((d*((64*c^5*(10*b*e*g - 19*c*d*g + c*e*f))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5)))/e - (16*b*c^4*(19*b*e*g - 38*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^2 + (((d*((64*c^5*(17*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5)))/e - (16*b*c^4*(33*b*e*g - 66*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x)^2 + (((d*((64*c^5*(18*b*e*g - 35*c*d*g + c*e*f))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5)))/e - (16*b*c^4*(35*b*e*g - 70*c*d*g + 2*c*e*f))/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 + (((d*((64*c^5*(19*b*e*g - 37*c*d*g + c*e*f))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5)))/e - (16*b*c^4*(37*b*e*g - 74*c*d*g + 2*c*e*f))/(45045*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^2 + (((d*((64*c^5*(20*b*e*g - 39*c*d*g + c*e*f))/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5)))/e - (16*b*c^4*(39*b*e*g - 78*c*d*g + 2*c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^2 + (((d*((16*c^3*(7*b*e*g - 13*c*d*g + c*e*f))/(1287*(7*b*e^2
 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*
e - 2*c*d)^3)))/e - (320*c^4*d^2*g + 112*b^2*c^2*e^2*g - 80*c^4*d*e*f + 48*
b*c^3*e^2*f - 384*b*c^3*d*e*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((8*c^3*
(25*b*e*g - 48*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (48*c^4*
d^2*g + 184*b^2*c^2*e^2*g + 304*c^4*d*e*f - 144*b*c^3*e^2*f - 392*b*c^3*d*e
*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((8*c^3*(27*b*e*g - 52*c*d*g + 2*c*
e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (1360*c^4*d^2*g + 424*b^2*c^2*e^2*g
 - 80*c^4*d*e*f + 48*b*c^3*e^2*f - 1528*b*c^3*d*e*g)/(1287*e*(7*b*e^2 - 14*
c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^4 + (((d*((32*c^4*(11*b*e*g - 21*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^4)))/e + (128*c^5*d^2*g - 224*b^2*c^3*e^2*g - 352*c^5*d*e*f + 160*b*c^4
*e^2*f + 384*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(13*
b*e*g - 24*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) -
(32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (640*c^5*d^2
*g + 224*b^2*c^3*e^2*g - 128*c^5*d*e*f + 80*b*c^4*e^2*f - 768*b*c^4*d*e*g)/
(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^4*(12*b*e*g - 23*c*d*g + c*e*f))
/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2048*c^5*d^2*g + 664*b^2*c^3*e^2*g - 12
8*c^5*d*e*f + 80*b*c^4*e^2*f - 2352*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*
e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^3 + (((d*((32*c^4*(13*b*e*g - 25*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e
)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
4)))/e - (2304*c^5*d^2*g + 744*b^2*c^3*e^2*g - 128*c^5*d*e*f + 80*b*c^4*e^2
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*f - 2640*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(33*b*e
*g - 64*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32
*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2912*c^5*d^2*g
 + 496*b^2*c^3*e^2*g - 1952*c^5*d*e*f + 992*b*c^4*e^2*f - 2448*b*c^4*d*e*g)
/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(37*b*e*g - 72*c*d*g + 2*c*e*
f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (3712*c^5*d^2*g + 1184*b^2*c^3*e^2*g
- 128*c^5*d*e*f + 80*b*c^4*e^2*f - 4224*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^3 - (((d*((16*c^4*(35*b*e*g - 68*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^4)))/e + (4704*c^5*d^2*g + 816*b^2*c^3*e^2*g - 352*c^5*d*e*f + 160*b*
c^4*e^2*f - 3984*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((32*c^5*
(19*b*e*g - 36*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (64*c^6*
d^2*g - 352*b^2*c^4*e^2*g - 320*c^6*d*e*f + 128*b*c^5*e^2*f + 672*b*c^5*d*e
*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(6*b*e*g - 11*c*d*g + c*e*
f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (1152*c^6*d^2*g + 416*b^2*c^4*e^2*g -
 192*c^6*d*e*f + 128*b*c^5*e^2*f - 1408*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^2 + (((d*((64*c^5*(15*b*e*g - 29*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^5)))/e + (3584*c^6*d^2*g + 352*b^2*c^4*e^2*g - 320*c^6*d*e*f + 128*b*c^
5*e^2*f - 2496*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(2
1*b*e*g - 40*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
- (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (2880*c^6*
d^2*g + 992*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 3424*b*c^5*d*
e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(16*b*e*g - 31*c*d*g + c*
e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (4224*c^6*d^2*g + 480*b^2*c^4*e^2*g
 - 320*c^6*d*e*f + 128*b*c^5*e^2*f - 3072*b*c^5*d*e*g)/(45045*e*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^2 - (((d*((32*c^5*(23*b*e*g - 44*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5)))/e - (3264*c^6*d^2*g + 1120*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128
*b*c^5*e^2*f - 3872*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c
^5*(25*b*e*g - 48*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (3648
*c^6*d^2*g + 1248*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 4320*b*
c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(16*b*e*g - 31*c*d*
g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(450
45*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (4992*c^6*d^2*g + 1696*b^2*c^
4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 5888*b*c^5*d*e*g)/(45045*e*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^2 + (((d*((64*c^5*(14*b*e*g - 27*c*d*g + c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^5)))/e - (4736*c^6*d^2*g + 1216*b^2*c^4*e^2*g - 1600*c^6*d*e*f
 + 832*b*c^5*e^2*f - 4800*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*
((64*c^5*(17*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2

*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (
5376*c^6*d^2*g + 1824*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 633
6*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(18*b*e*g - 35*
c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (5760*c^6*d^2*g + 1952*b^
2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 6784*b*c^5*d*e*g)/(45045*e*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(43*b*e*g - 84*c*d*g + 2*c*e*f))/(45045
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^5)))/e + (7744*c^6*d^2*g + 1184*b^2*c^4*e^2*g - 320*c^6*
d*e*f + 128*b*c^5*e^2*f - 6240*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 -
(((d*((32*c^5*(39*b*e*g - 76*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))
)/e - (1184*b^2*c^4*e^2*g - 5312*c^6*d^2*g + 7616*c^6*d*e*f - 3776*b*c^5*e^
2*f + 288*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(45*b*e
*g - 88*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64
*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (7488*c^6*d^2*g
 + 2528*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 8800*b*c^5*d*e*g)
/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(41*b*e*g - 80*c*d*g + 2*c*e*
f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (25536*c^6*d^2*g + 6624*b^2*c^4*e^2*g
 - 1600*c^6*d*e*f + 832*b*c^5*e^2*f - 26016*b*c^5*d*e*g)/(45045*e*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^2 + (((d*((16*c^3*(19*b*e*g - 37*c*d*g + c*e*f))/(1287*(7*b*e^2 -
14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(18*b*e*g - 36*c*d*g + c*e*f))/(1287*e
*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x)^4 + (((d*((32*c^4*(23*b*e*g - 45*c*d*g + c*e*f))/(9009*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*
d*e)*(b*e - 2*c*d)^4)))/e - (32*c^3*(b*e - c*d)*(22*b*e*g - 44*c*d*g + c*e*
f))/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((64*c^5*(26*b*e*g - 51*c*d*g + c*e
f))/(45045(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (64*c^4*(b*e - c*d)*(25*b*e*g - 50*c
*d*g + c*e*f))/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((1792*c^7*d^2*g + 704*b^2*c
^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 2304*b*c^6*d*e*g)/(135135*e^2*
(b*e - 2*c*d)^7) - (d*((64*c^6*(11*b*e*g - 20*c*d*g + 2*c*e*f))/(135135*e*(
b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2304*c^7*d^2*g - 1152*b^2*
c^5*e^2*g - 2944*c^7*d*e*f + 1408*b*c^6*e^2*f + 1152*b*c^6*d*e*g)/(135135*e
^2*(b*e - 2*c*d)^7) + (d*((128*c^6*(16*b*e*g - 31*c*d*g + c*e*f))/(135135*e
*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((3584*c^7*d^2*g + 1376*b^
2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 4544*b*c^6*d*e*g)/(135135*e
^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(9*b*e*g - 17*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4096*c^7*d^2*g + 1568*b^2
*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 5184*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((128*c^6*(10*b*e*g - 19*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4608*c^7*d^2*g + 1760*b^2
*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 5824*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((128*c^6*(11*b*e*g - 21*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c

*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((5120*c^7*d^2*g + 1952*b^2
*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 6464*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((128*c^6*(12*b*e*g - 23*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4992*c^7*d^2*g + 1728*b^2
*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 5952*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((64*c^6*(23*b*e*g - 44*c*d*g + 2*c*e*f))/(135135*e
*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((5888*c^7*d^2*g + 2240*b^
2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 7424*b*c^6*d*e*g)/(135135*e
^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(27*b*e*g - 52*c*d*g + 2*c*e*f))/(135135*
e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((6400*c^7*d^2*g + 2432*b
^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 8064*b*c^6*d*e*g)/(135135*
e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(135135
e(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((6912*c^7*d^2*g + 262
4*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 8704*b*c^6*d*e*g)/(1351
35*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(135
135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((7424*c^7*d^2*g + 28
16*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 9344*b*c^6*d*e*g)/(135
135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(33*b*e*g - 64*c*d*g + 2*c*e*f))/(13
5135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((7936*c^7*d^2*g + 3
008*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 9984*b*c^6*d*e*g)/(13
5135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(35*b*e*g - 68*c*d*g + 2*c*e*f))/(1
35135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((8704*c^7*d^2*g +
3296*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 10944*b*c^6*d*e*g)/(
135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(19*b*e*g - 37*c*d*g + c*e*f))/(
135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((9216*c^7*d^2*g +
 3488*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 11584*b*c^6*d*e*g)/
(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(20*b*e*g - 39*c*d*g + c*e*f))/
(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((9728*c^7*d^2*g
 + 3680*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 12224*b*c^6*d*e*g)
/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(21*b*e*g - 41*c*d*g + c*e*f))
/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((10240*c^7*d^2*
g + 3872*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 12864*b*c^6*d*e*
g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(22*b*e*g - 43*c*d*g + c*e*f
))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/
e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((12032*c^7*d^
2*g + 4544*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 15104*b*c^6*d*
e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(51*b*e*g - 100*c*d*g + 2*c
*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7
)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((14848*c^
7*d^2*g + 4544*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 16512*b*c^
6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(17*b*e*g - 33*c*d*g +
 c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)
^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((16640*
c^7*d^2*g + 5056*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 18432*b*
c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(18*b*e*g - 35*c*d*g
 + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*
d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2060
8*c^7*d^2*g + 2624*b^2*c^5*e^2*g - 15488*c^7*d*e*f + 7808*b*c^6*e^2*f - 155
52*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(43*b*e*g - 84*c

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*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (
((26496*c^7*d^2*g + 7872*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f -
28992*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(47*b*e*g - 9
2*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b
*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
- (((40576*c^7*d^2*g + 8000*b^2*c^5*e^2*g - 2944*c^7*d*e*f + 1408*b*c^6*e^2
*f - 36288*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((64*c^6*(45*b*e*
g - 88*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135
*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) + (((d*((128*c^6*(28*b*e*g - 55*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d
)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (128*c^5*(b*e - c*d)*
(27*b*e*g - 54*c*d*g + c*e*f))/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8*c^3*e*f - 24*c^3*d*g +
16*b*c^2*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(143
*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (2*b*c*(3*b*e*g - 6*c*d*g + 2*
c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((8*c^3*e*f - 128*c^3*d*g + 68*b*c
^2*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(143*(9*b*
e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(8*b*e*g - 16*c*d*g + c*e*f))
/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((64*c^6*(25*b*e*g - 48*c*d*g + 2*c*e*f))
/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e
+ (384*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 1216*b*c^6*d*e*g)/(1
35135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x) - (((d*((64*c^6*(27*b*e*g - 52*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2
*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (640*c^7*d^2*g -
704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 1088*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*
c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64
*c^6*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7
*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (896*c^7*d^2*g - 704*b^2*c^5*e^2*g -
 128*c^7*d*e*f + 960*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(18*b*e*g - 35
*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e + (1792*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 512
*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(19*b*e*g - 37*c*d*g + c*e*f))/(13
5135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (2
048*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 384*b*c^6*d*e*g)/(13513
5*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) + (((d*((128*c^6*(8*b*e*g - 15*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^
7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (768*c^7*d^2*g + 704*b^
2*c^5*e^2*g + 128*c^7*d*e*f - 1792*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*
(20*b*e*g - 39*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(
135135*e*(b*e - 2*c*d)^7)))/e + (2304*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c
^7*d*e*f + 256*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(49*b*e*g - 96*c*d*g
+ 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c
*d)^7)))/e - (704*b^2*c^5*e^2*g - 3456*c^7*d^2*g + 128*c^7*d*e*f + 320*b*c^
6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\left(f+gx\right)}{(d+ex)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**8,x)
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**8, x)
```

3.1953 $\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=488

$$\frac{9(2cd-be)^7(-11beg+6cdg+16cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{32768c^{13/2}e^2}+\frac{9(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x}}{16384c^6}$$

Rubi [A] time = 1.07, antiderivative size = 488, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {794, 670, 640, 612, 621, 204}

$$\frac{9(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}(-11beg+6cdg+16cef)}{16384c^6e}+\frac{3(b+2cx)(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+6cdg+16cef)}{2048c^5e}-\frac{3(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+6cdg+16cef)}{640c^4e^2}-\frac{3(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+6cdg+16cef)}{448c^3e^2}-\frac{(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+6cdg+16cef)}{112c^2e^2}+\frac{9(2cd-be)^7(-11beg+6cdg+16cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{32768c^{13/2}e^2}-\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{8ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (9*(2*c*d - b*e)^5*(16*c*e*f + 6*c*d*g - 11*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2])/(16384*c^6*e) + (3*(2*c*d - b*e)^3*(16*c*e*f
 + 6*c*d*g - 11*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3
/2))/(2048*c^5*e) - (3*(2*c*d - b*e)^2*(16*c*e*f + 6*c*d*g - 11*b*e*g)*(d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(640*c^4*e^2) - (3*(2*c*d - b*e)*(
16*c*e*f + 6*c*d*g - 11*b*e*g)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x
^2)^(5/2))/(448*c^3*e^2) - ((16*c*e*f + 6*c*d*g - 11*b*e*g)*(d + e*x)^2*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(112*c^2*e^2) - (g*(d + e*x)^3*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(8*c*e^2) + (9*(2*c*d - b*e)^7*(
16*c*e*f + 6*c*d*g - 11*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2])])/(32768*c^(13/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
```

```
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{8ce^2} - \frac{\left(\frac{5}{2}e\left(-2ce^2f \cdots\right.\right.}{\cdots}$$

$$= -\frac{(16cef+6cdg-11beg)(d+ex)^2\left(d(cd-be)-be^2x-ce^2\cdots\right.}{112c^2e^2}$$

$$= -\frac{3(2cd-be)(16cef+6cdg-11beg)(d+ex)\left(d(cd-be)-\cdots\right.}{448c^3e^2}$$

$$= -\frac{3(2cd-be)^2(16cef+6cdg-11beg)\left(d(cd-be)-be^2x-\cdots\right.}{640c^4e^2}$$

$$= \frac{3(2cd-be)^3(16cef+6cdg-11beg)(b+2cx)\left(d(cd-be)-\cdots\right.}{2048c^5e}$$

$$= \frac{9(2cd-be)^5(16cef+6cdg-11beg)(b+2cx)\sqrt{d(cd-be)-\cdots}}{16384c^6e}$$

$$= \frac{9(2cd-be)^5(16cef+6cdg-11beg)(b+2cx)\sqrt{d(cd-be)-\cdots}}{16384c^6e}$$

$$= \frac{9(2cd-be)^5(16cef+6cdg-11beg)(b+2cx)\sqrt{d(cd-be)-\cdots}}{16384c^6e}$$

Mathematica [B] time = 6.48, size = 1418, normalized size = 2.91

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] -1/8*(g*(d + e*x)^4*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(3/2))/(c*e^2) - ((c*d*e + e*(c*d - b*e))*(-8*c*e^2*f - ((-5*c*d*e)/2 + (11
*e*(c*d - b*e))/2)*g)*(d + e*x)^4*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*
(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
- b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(5/2)*((11*(1/(4*(1
- (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b
*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e
```

```
*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*
d - b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/14 + (99*(c*d*e + e*(c*d - b*e)
)^6*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d
- b*e)))^6*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
 + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^
4*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*
e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)
^3)/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2
*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c
*d*e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*
e))/(c*d*e + e*(c*d - b*e)))^4) - (256*c^5*e^10*(d + e*x)^5)/(315*(c*d*e +
e*(c*d - b*e))^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*
d*e + e*(c*d - b*e)))^5) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqr
t[d + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b
*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))]])])/(Sqrt[c*d*e + e*(c*d -
 b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e +
e*(c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e
^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))])
))/(4096*c^6*e^12*(d + e*x)^6*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e
))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d -
 b*e)))))^2)))/(44*c*e^4*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d
- b*e))/(c*d*e + e*(c*d - b*e))))^(3/2)*(c*d - b*e - c*e*x)*Sqrt[(e*(c*d -
b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

IntegrateAlgebraic [F] time = 180.12, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2)^(3/2),x]
```

```
[Out] $Aborted
```

fricas [B] time = 6.77, size = 2337, normalized size = 4.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [-1/2293760*(315*(16*(128*c^8*d^7*e - 448*b*c^7*d^6*e^2 + 672*b^2*c^6*d^5*e
^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3*e^5 - 84*b^5*c^3*d^2*e^6 + 14*b^
6*c^2*d*e^7 - b^7*c*e^8)*f + (768*c^8*d^8 - 4096*b*c^7*d^7*e + 8960*b^2*c^6
*d^6*e^2 - 10752*b^3*c^5*d^5*e^3 + 7840*b^4*c^4*d^4*e^4 - 3584*b^5*c^3*d^3*
e^5 + 1008*b^6*c^2*d^2*e^6 - 160*b^7*c*d*e^7 + 11*b^8*e^8)*g)*sqrt(-c)*log(
8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(71680*c^8*
e^7*g*x^7 + 5120*(16*c^8*e^7*f + (48*c^8*d*e^6 + 17*b*c^7*e^7)*g)*x^6 + 128
0*(16*(14*c^8*d*e^6 + 5*b*c^7*e^7)*f + (140*c^8*d^2*e^5 + 324*b*c^7*d*e^6 +
 b^2*c^6*e^7)*g)*x^5 + 128*(16*(104*c^8*d^2*e^5 + 246*b*c^7*d*e^6 + b^2*c^6
*e^7)*f - (2176*c^8*d^3*e^4 - 5932*b*c^7*d^2*e^5 - 100*b^2*c^6*d*e^6 + 11*b
^3*c^5*e^7)*g)*x^4 - 16*(16*(1400*c^8*d^3*e^4 - 3764*b*c^7*d^2*e^5 - 86*b^2
*c^6*d*e^6 + 9*b^3*c^5*e^7)*f + (30800*c^8*d^4*e^3 - 37984*b*c^7*d^3*e^4 -
3912*b^2*c^6*d^2*e^5 + 1000*b^3*c^5*d*e^6 - 99*b^4*c^4*e^7)*g)*x^3 - 8*(16*
(5248*c^8*d^4*e^3 - 6296*b*c^7*d^3*e^4 - 924*b^2*c^6*d^2*e^5 + 222*b^3*c^5*
d*e^6 - 21*b^4*c^4*e^7)*f + (22528*c^8*d^5*e^2 - 5904*b*c^7*d^4*e^3 - 25888
*b^2*c^6*d^3*e^4 + 11496*b^3*c^5*d^2*e^5 - 2568*b^4*c^4*d*e^6 + 231*b^5*c^3
*e^7)*g)*x^2 + 16*(23552*c^8*d^6*e - 78496*b*c^7*d^5*e^2 + 97424*b^2*c^6*d^
```

```
4*e^3 - 60288*b^3*c^5*d^3*e^4 + 21168*b^4*c^4*d^2*e^5 - 3990*b^5*c^3*d*e^6
+ 315*b^6*c^2*e^7)*f + (212992*c^8*d^7 - 873408*b*c^7*d^6*e + 1519680*b^2*c
^6*d^5*e^2 - 1433392*b^3*c^5*d^4*e^3 + 790176*b^4*c^4*d^3*e^4 - 256788*b^5*
c^3*d^2*e^5 + 45780*b^6*c^2*d*e^6 - 3465*b^7*c*e^7)*g - 2*(16*(7840*c^8*d^5
*e^2 + 1392*b*c^7*d^4*e^3 - 13984*b^2*c^6*d^3*e^4 + 5760*b^3*c^5*d^2*e^5 -
1218*b^4*c^4*d*e^6 + 105*b^5*c^3*e^7)*f - (60480*c^8*d^6*e - 208832*b*c^7*d
^5*e^2 + 278416*b^2*c^6*d^4*e^3 - 188384*b^3*c^5*d^3*e^4 + 70668*b^4*c^4*d^
2*e^5 - 14028*b^5*c^3*d*e^6 + 1155*b^6*c^2*e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e))/(c^7*e^2), -1/1146880*(315*(16*(128*c^8*d^7*e - 448*
b*c^7*d^6*e^2 + 672*b^2*c^6*d^5*e^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3
*e^5 - 84*b^5*c^3*d^2*e^6 + 14*b^6*c^2*d*e^7 - b^7*c*e^8)*f + (768*c^8*d^8
- 4096*b*c^7*d^7*e + 8960*b^2*c^6*d^6*e^2 - 10752*b^3*c^5*d^5*e^3 + 7840*b^
4*c^4*d^4*e^4 - 3584*b^5*c^3*d^3*e^5 + 1008*b^6*c^2*d^2*e^6 - 160*b^7*c*d*e
^7 + 11*b^8*e^8)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 -
b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e
)) + 2*(71680*c^8*e^7*g*x^7 + 5120*(16*c^8*e^7*f + (48*c^8*d*e^6 + 17*b*c^7
*e^7)*g)*x^6 + 1280*(16*(14*c^8*d*e^6 + 5*b*c^7*e^7)*f + (140*c^8*d^2*e^5 +
 324*b*c^7*d*e^6 + b^2*c^6*e^7)*g)*x^5 + 128*(16*(104*c^8*d^2*e^5 + 246*b*c
^7*d*e^6 + b^2*c^6*e^7)*f - (2176*c^8*d^3*e^4 - 5932*b*c^7*d^2*e^5 - 100*b^
2*c^6*d*e^6 + 11*b^3*c^5*e^7)*g)*x^4 - 16*(16*(1400*c^8*d^3*e^4 - 3764*b*c^
7*d^2*e^5 - 86*b^2*c^6*d*e^6 + 9*b^3*c^5*e^7)*f + (30800*c^8*d^4*e^3 - 3798
4*b*c^7*d^3*e^4 - 3912*b^2*c^6*d^2*e^5 + 1000*b^3*c^5*d*e^6 - 99*b^4*c^4*e^
7)*g)*x^3 - 8*(16*(5248*c^8*d^4*e^3 - 6296*b*c^7*d^3*e^4 - 924*b^2*c^6*d^2*
e^5 + 222*b^3*c^5*d*e^6 - 21*b^4*c^4*e^7)*f + (22528*c^8*d^5*e^2 - 5904*b*c
^7*d^4*e^3 - 25888*b^2*c^6*d^3*e^4 + 11496*b^3*c^5*d^2*e^5 - 2568*b^4*c^4*d
*e^6 + 231*b^5*c^3*e^7)*g)*x^2 + 16*(23552*c^8*d^6*e - 78496*b*c^7*d^5*e^2
+ 97424*b^2*c^6*d^4*e^3 - 60288*b^3*c^5*d^3*e^4 + 21168*b^4*c^4*d^2*e^5 - 3
990*b^5*c^3*d*e^6 + 315*b^6*c^2*e^7)*f + (212992*c^8*d^7 - 873408*b*c^7*d^6
*e + 1519680*b^2*c^6*d^5*e^2 - 1433392*b^3*c^5*d^4*e^3 + 790176*b^4*c^4*d^3
*e^4 - 256788*b^5*c^3*d^2*e^5 + 45780*b^6*c^2*d*e^6 - 3465*b^7*c*e^7)*g - 2
*(16*(7840*c^8*d^5*e^2 + 1392*b*c^7*d^4*e^3 - 13984*b^2*c^6*d^3*e^4 + 5760*
b^3*c^5*d^2*e^5 - 1218*b^4*c^4*d*e^6 + 105*b^5*c^3*e^7)*f - (60480*c^8*d^6*
e - 208832*b*c^7*d^5*e^2 + 278416*b^2*c^6*d^4*e^3 - 188384*b^3*c^5*d^3*e^4
+ 70668*b^4*c^4*d^2*e^5 - 14028*b^5*c^3*d*e^6 + 1155*b^6*c^2*e^7)*g)*x)*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*e^2)]
```

giac [B] time = 0.64, size = 1138, normalized size = 2.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] -1/573440*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*(4*(14
*c*g*x*e^5 + (48*c^8*d*g*e^16 + 16*c^8*f*e^17 + 17*b*c^7*g*e^17)*e^(-12)/c^
7)*x + (140*c^8*d^2*g*e^15 + 224*c^8*d*f*e^16 + 324*b*c^7*d*g*e^16 + 80*b*c
^7*f*e^17 + b^2*c^6*g*e^17)*e^(-12)/c^7)*x - (2176*c^8*d^3*g*e^14 - 1664*c^
8*d^2*f*e^15 - 5932*b*c^7*d^2*g*e^15 - 3936*b*c^7*d*f*e^16 - 100*b^2*c^6*d*
g*e^16 - 16*b^2*c^6*f*e^17 + 11*b^3*c^5*g*e^17)*e^(-12)/c^7)*x - (30800*c^8
*d^4*g*e^13 + 22400*c^8*d^3*f*e^14 - 37984*b*c^7*d^3*g*e^14 - 60224*b*c^7*d
^2*f*e^15 - 3912*b^2*c^6*d^2*g*e^15 - 1376*b^2*c^6*d*f*e^16 + 1000*b^3*c^5*
d*g*e^16 + 144*b^3*c^5*f*e^17 - 99*b^4*c^4*g*e^17)*e^(-12)/c^7)*x - (22528*
c^8*d^5*g*e^12 + 83968*c^8*d^4*f*e^13 - 5904*b*c^7*d^4*g*e^13 - 100736*b*c^
7*d^3*f*e^14 - 25888*b^2*c^6*d^3*g*e^14 - 14784*b^2*c^6*d^2*f*e^15 + 11496*
b^3*c^5*d^2*g*e^15 + 3552*b^3*c^5*d*f*e^16 - 2568*b^4*c^4*d*g*e^16 - 336*b^
4*c^4*f*e^17 + 231*b^5*c^3*g*e^17)*e^(-12)/c^7)*x + (60480*c^8*d^6*g*e^11 -
 125440*c^8*d^5*f*e^12 - 208832*b*c^7*d^5*g*e^12 - 22272*b*c^7*d^4*f*e^13 +
 278416*b^2*c^6*d^4*g*e^13 + 223744*b^2*c^6*d^3*f*e^14 - 188384*b^3*c^5*d^3
*g*e^14 - 92160*b^3*c^5*d^2*f*e^15 + 70668*b^4*c^4*d^2*g*e^15 + 19488*b^4*c
```

```
^4*d*f*e^16 - 14028*b^5*c^3*d*g*e^16 - 1680*b^5*c^3*f*e^17 + 1155*b^6*c^2*g
*e^17)*e^(-12)/c^7)*x + (212992*c^8*d^7*g*e^10 + 376832*c^8*d^6*f*e^11 - 87
3408*b*c^7*d^6*g*e^11 - 1255936*b*c^7*d^5*f*e^12 + 1519680*b^2*c^6*d^5*g*e^
12 + 1558784*b^2*c^6*d^4*f*e^13 - 1433392*b^3*c^5*d^4*g*e^13 - 964608*b^3*c
^5*d^3*f*e^14 + 790176*b^4*c^4*d^3*g*e^14 + 338688*b^4*c^4*d^2*f*e^15 - 256
788*b^5*c^3*d^2*g*e^15 - 63840*b^5*c^3*d*f*e^16 + 45780*b^6*c^2*d*g*e^16 +
5040*b^6*c^2*f*e^17 - 3465*b^7*c*g*e^17)*e^(-12)/c^7) + 9/32768*(768*c^8*d^
8*g + 2048*c^8*d^7*f*e - 4096*b*c^7*d^7*g*e - 7168*b*c^7*d^6*f*e^2 + 8960*b
^2*c^6*d^6*g*e^2 + 10752*b^2*c^6*d^5*f*e^3 - 10752*b^3*c^5*d^5*g*e^3 - 8960
*b^3*c^5*d^4*f*e^4 + 7840*b^4*c^4*d^4*g*e^4 + 4480*b^4*c^4*d^3*f*e^5 - 3584
*b^5*c^3*d^3*g*e^5 - 1344*b^5*c^3*d^2*f*e^6 + 1008*b^6*c^2*d^2*g*e^6 + 224*
b^6*c^2*d*f*e^7 - 160*b^7*c*d*g*e^7 - 16*b^7*c*f*e^8 + 11*b^8*g*e^8)*sqrt(-
c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^
2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^7
```

maple [B] time = 0.08, size = 3576, normalized size = 7.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 9/32*b^2/c^2*e^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f+45/256*b^4/c^
3*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f+63/1024*b^6/c^4*e^6/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))*d*f+315/256*b^4/c^2*e^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-189/512*b^5/c^3*e^5/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2))*d^2*f-63/32*b*c*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6*f+45/32*b^2/c*e^2*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)*x*d^3*f+3/8*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
*d^3*f+9/32*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^5*f+3/16/c*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^3*f+567/2048*e^5*g*b^6/c^4/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^
2-63/64*e^4*g*b^5/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-45/64*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*x*d^2*e^3*f+63/128*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*d^2+765/512*e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x
*d^4-27/128*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-189/64
*e^2*g*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2))*d^5-315/256*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*x*d^3+1125/2048*e^3*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2)*x*d^2+2205/1024*e^3*g*b^4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-315/128*b^3/c/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))*d^4*e^3*f-261/2048*e^4*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*x*d-45/1024*e^6*g*b^7/c^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d+33/2048*e^3*g*b^5/c^5*(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(3/2)-1/8*e*g*x^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
5/2)/c+9/64/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^4+27/256/e*g*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^6-69/224*g*b^2/c^3*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(5/2)*d-117/128*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x
*d^5*b-117/256*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^5-13/35/e^2
/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^3*g-23/35/e/c*(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(5/2)*d^2*f-1/7*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/
c*e*f-3/128*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^3*f-15/64*g/c^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d^3+9/16*c*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*x*d^5*f+9/16*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+
1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^7*f-1/2*x*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(5/2)/c*d*f-3/40*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
```

```
)^(5/2)*e*f-9/1024*b^6/c^5*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-3/7
*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c*d*g+57/140/c^2*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(5/2)*b*d*f+33/640*e*g*b^3/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(5/2)+99/16384*e^5*g*b^7/c^6*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
-9/16*b/c*e*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*f-261/4096*e^4*g*b
^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+99/32768*e^7*g*b^8/c^6/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))+99/8192*e^5*g*b^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-33/4
48*e*g*b^2/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)+11/112*e*g*b/c^2*x^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)+45/64*b^3/c^2*e^2*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)*d^3*f+765/1024*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*d^4-315/512*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*d^3+677/1120/e*g*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-45/32
*b*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4*f-3/64*b^3/c^3*x*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^3*f-45/128*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*d^2*e^3*f-9/32*b^2/c^2*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
3/2)*d^2*f-45/64*b^2/c*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4*f-27/25
6*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d+9/64*b^3/c^3*e^2*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f-9/16/e*g/c*x*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(5/2)*d^2+43/112*g/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2
)*b*d-9/8*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*d^7*b-15/32*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(3/2)*d^3*b+9/128/e*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^4+27/1
28/e*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6+27/128/e*g*c^2/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))*d^8+189/64*b^2*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*f+3/28*b/c^2*x*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(5/2)*e*f-9/512*b^5/c^4*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)*x*f+45/512*b^5/c^4*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-9/2
048*b^7/c^5*e^7/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2))*f+63/256*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*d^2+33/1024*e^3*g*b^4/c^4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
3/2)+315/128*e*g*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6+1125/4096*e^3*g*b^5/c^4*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (f+g\,x)\,(d+e\,x)^3\,\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{3}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**3*(f + g*x), x)
```

3.1954 $\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=413

$$\frac{(2cd-be)^6(-9beg+4cdg+14cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2048c^{11/2}e^2}+\frac{(b+2cx)(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x}}{1024c^5e}$$

Rubi [A] time = 0.60, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.159, Rules used = {1638, 12, 670, 640, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}(-9beg+4cdg+14cef)}{1024c^5e}+\frac{(b+2cx)(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-9beg+4cdg+14cef)}{384c^4e}-\frac{(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+4cdg+14cef)}{120c^3e^2}-\frac{(d+ex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+4cdg+14cef)}{84c^2e^2}+\frac{(2cd-be)^6(-9beg+4cdg+14cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2048c^{11/2}e^2}-\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] ((2*c*d - b*e)^4*(14*c*e*f + 4*c*d*g - 9*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(1024*c^5*e) + ((2*c*d - b*e)^2*(14*c*e*f + 4*c
*d*g - 9*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3
84*c^4*e) - ((2*c*d - b*e)*(14*c*e*f + 4*c*d*g - 9*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(120*c^3*e^2) - ((14*c*e*f + 4*c*d*g - 9*b*e*g)
*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(84*c^2*e^2) - (g*(
d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(7*c*e^2) + ((2*c*d
 - b*e)^6*(14*c*e*f + 4*c*d*g - 9*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*
Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]])])/(2048*c^(11/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2} - \frac{\int -\frac{1}{2}e^2(14\cdots}{\cdots}$$

$$= -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2} + \frac{(14cef+\cdots}{\cdots}$$

$$= -\frac{(14cef+4cdg-9beg)(d+ex)\left(d(cd-be)-be^2x-ce\cdots\right.}{84c^2e^2}$$

$$= -\frac{(2cd-be)(14cef+4cdg-9beg)\left(d(cd-be)-be^2x-\cdots\right.}{120c^3e^2}$$

$$= \frac{(2cd-be)^2(14cef+4cdg-9beg)(b+2cx)\left(d(cd-be)\cdots\right.}{384c^4e}$$

$$= \frac{(2cd-be)^4(14cef+4cdg-9beg)(b+2cx)\sqrt{d(cd-be)\cdots}}{1024c^5e}$$

$$= \frac{(2cd-be)^4(14cef+4cdg-9beg)(b+2cx)\sqrt{d(cd-be)\cdots}}{1024c^5e}$$

$$= \frac{(2cd-be)^4(14cef+4cdg-9beg)(b+2cx)\sqrt{d(cd-be)\cdots}}{1024c^5e}$$

Mathematica [B] time = 6.30, size = 1329, normalized size = 3.22

$$-\frac{g(cd-be-cex)((d+ex)(c(d-ex)-be))^{3/2}(d+ex)^3}{7ce^2} - \text{[illegible]}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] -1/7*(g*(d + e*x)^3*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(3/2))/(c*e^2) - (2*(c*d*e + e*(c*d - b*e))*(-7*c*e^2*f - ((-5*c*d*e)/2 + (
```

```
9*e*(c*d - b*e))/2)*g)*(d + e*x)^3*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)
*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
 - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(5/2)*((3*(3/(10*(1
 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d -
b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d +
e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c
*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/4 + (63*(c*d*e + e*(c*d - b*e)
)^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d
- b*e)))^5*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
 + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^
4*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*
e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)
^3)/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2
*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c
*d*e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*
e))/(c*d*e + e*(c*d - b*e)))^4) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c
]*e*Sqrt[d + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e
*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c
*d*e + e*(c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*
((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*
e))))]))))/(2048*c^5*e^10*(d + e*x)^5*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*
d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e
*(c*d - b*e)))))^2)))/(63*c*e^4*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^
2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))^(3/2)*(c*d - b*e - c*e*x)*Sqrt[(e*
(c*d - b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

IntegrateAlgebraic [F] time = 180.22, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2)^(3/2),x]
```

```
[Out] $Aborted
```

fricas [B] time = 3.35, size = 1877, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [1/430080*(105*(14*(64*c^7*d^6*e - 192*b*c^6*d^5*e^2 + 240*b^2*c^5*d^4*e^3
- 160*b^3*c^4*d^3*e^4 + 60*b^4*c^3*d^2*e^5 - 12*b^5*c^2*d*e^6 + b^6*c*e^7)*
f + (256*c^7*d^7 - 1344*b*c^6*d^6*e + 2688*b^2*c^5*d^5*e^2 - 2800*b^3*c^4*d
^4*e^3 + 1680*b^4*c^3*d^3*e^4 - 588*b^5*c^2*d^2*e^5 + 112*b^6*c*d*e^6 - 9*b
^7*e^7)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e
 + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*s
qrt(-c)) - 4*(15360*c^7*e^6*g*x^6 + 1280*(14*c^7*e^6*f + (28*c^7*d*e^5 + 15
*b*c^6*e^6)*g)*x^5 + 128*(14*(24*c^7*d*e^5 + 13*b*c^6*e^6)*f - (24*c^7*d^2*
e^4 - 556*b*c^6*d*e^5 - 3*b^2*c^5*e^6)*g)*x^4 - 16*(14*(20*c^7*d^2*e^4 - 40
4*b*c^6*d*e^5 - 3*b^2*c^5*e^6)*f + (3920*c^7*d^3*e^3 - 5636*b*c^6*d^2*e^4 -
 216*b^2*c^5*d*e^5 + 27*b^3*c^4*e^6)*g)*x^3 - 8*(14*(768*c^7*d^3*e^3 - 1092
*b*c^6*d^2*e^4 - 60*b^2*c^5*d*e^5 + 7*b^3*c^4*e^6)*f + (4992*c^7*d^4*e^2 -
3600*b*c^6*d^3*e^3 - 1932*b^2*c^5*d^2*e^4 + 568*b^3*c^4*d*e^5 - 63*b^4*c^3*
e^6)*g)*x^2 + 14*(3072*c^7*d^5*e - 9840*b*c^6*d^4*e^2 + 10464*b^2*c^5*d^3*e
^3 - 4816*b^3*c^4*d^2*e^4 + 1120*b^4*c^3*d*e^5 - 105*b^5*c^2*e^6)*f + (2764
```

```
8*c^7*d^6 - 97728*b*c^6*d^5*e + 145776*b^2*c^5*d^4*e^2 - 113440*b^3*c^4*d^3
*e^3 + 47824*b^4*c^3*d^2*e^4 - 10500*b^5*c^2*d*e^5 + 945*b^6*c*e^6)*g - 2*(
14*(2160*c^7*d^4*e^2 - 1248*b*c^6*d^3*e^3 - 1248*b^2*c^5*d^2*e^4 + 336*b^3*
c^4*d*e^5 - 35*b^4*c^3*e^6)*f - (6720*c^7*d^5*e - 21648*b*c^6*d^4*e^2 + 244
80*b^2*c^5*d^3*e^3 - 12576*b^3*c^4*d^2*e^4 + 3164*b^4*c^3*d*e^5 - 315*b^5*c
^2*e^6)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2), -1/215
040*(105*(14*(64*c^7*d^6*e - 192*b*c^6*d^5*e^2 + 240*b^2*c^5*d^4*e^3 - 160*
b^3*c^4*d^3*e^4 + 60*b^4*c^3*d^2*e^5 - 12*b^5*c^2*d*e^6 + b^6*c*e^7)*f + (2
56*c^7*d^7 - 1344*b*c^6*d^6*e + 2688*b^2*c^5*d^5*e^2 - 2800*b^3*c^4*d^4*e^3
 + 1680*b^4*c^3*d^3*e^4 - 588*b^5*c^2*d^2*e^5 + 112*b^6*c*d*e^6 - 9*b^7*e^7
)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x
 + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(15360*c
^7*e^6*g*x^6 + 1280*(14*c^7*e^6*f + (28*c^7*d*e^5 + 15*b*c^6*e^6)*g)*x^5 +
128*(14*(24*c^7*d*e^5 + 13*b*c^6*e^6)*f - (24*c^7*d^2*e^4 - 556*b*c^6*d*e^5
 - 3*b^2*c^5*e^6)*g)*x^4 - 16*(14*(20*c^7*d^2*e^4 - 404*b*c^6*d*e^5 - 3*b^2
*c^5*e^6)*f + (3920*c^7*d^3*e^3 - 5636*b*c^6*d^2*e^4 - 216*b^2*c^5*d*e^5 +
27*b^3*c^4*e^6)*g)*x^3 - 8*(14*(768*c^7*d^3*e^3 - 1092*b*c^6*d^2*e^4 - 60*b
^2*c^5*d*e^5 + 7*b^3*c^4*e^6)*f + (4992*c^7*d^4*e^2 - 3600*b*c^6*d^3*e^3 -
1932*b^2*c^5*d^2*e^4 + 568*b^3*c^4*d*e^5 - 63*b^4*c^3*e^6)*g)*x^2 + 14*(307
2*c^7*d^5*e - 9840*b*c^6*d^4*e^2 + 10464*b^2*c^5*d^3*e^3 - 4816*b^3*c^4*d^2
*e^4 + 1120*b^4*c^3*d*e^5 - 105*b^5*c^2*e^6)*f + (27648*c^7*d^6 - 97728*b*c
^6*d^5*e + 145776*b^2*c^5*d^4*e^2 - 113440*b^3*c^4*d^3*e^3 + 47824*b^4*c^3*
d^2*e^4 - 10500*b^5*c^2*d*e^5 + 945*b^6*c*e^6)*g - 2*(14*(2160*c^7*d^4*e^2
- 1248*b*c^6*d^3*e^3 - 1248*b^2*c^5*d^2*e^4 + 336*b^3*c^4*d*e^5 - 35*b^4*c^
3*e^6)*f - (6720*c^7*d^5*e - 21648*b*c^6*d^4*e^2 + 24480*b^2*c^5*d^3*e^3 -
12576*b^3*c^4*d^2*e^4 + 3164*b^4*c^3*d*e^5 - 315*b^5*c^2*e^6)*g)*x)*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2)]
```

giac [B] time = 0.47, size = 910, normalized size = 2.20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] -1/107520*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*(12*c*
g*x*e^4 + (28*c^7*d*g*e^13 + 14*c^7*f*e^14 + 15*b*c^6*g*e^14)*e^(-10)/c^6)*
x - (24*c^7*d^2*g*e^12 - 336*c^7*d*f*e^13 - 556*b*c^6*d*g*e^13 - 182*b*c^6*
f*e^14 - 3*b^2*c^5*g*e^14)*e^(-10)/c^6)*x - (3920*c^7*d^3*g*e^11 + 280*c^7*
d^2*f*e^12 - 5636*b*c^6*d^2*g*e^12 - 5656*b*c^6*d*f*e^13 - 216*b^2*c^5*d*g*
e^13 - 42*b^2*c^5*f*e^14 + 27*b^3*c^4*g*e^14)*e^(-10)/c^6)*x - (4992*c^7*d^
4*g*e^10 + 10752*c^7*d^3*f*e^11 - 3600*b*c^6*d^3*g*e^11 - 15288*b*c^6*d^2*f
*e^12 - 1932*b^2*c^5*d^2*g*e^12 - 840*b^2*c^5*d*f*e^13 + 568*b^3*c^4*d*g*e^
13 + 98*b^3*c^4*f*e^14 - 63*b^4*c^3*g*e^14)*e^(-10)/c^6)*x + (6720*c^7*d^5*
g*e^9 - 30240*c^7*d^4*f*e^10 - 21648*b*c^6*d^4*g*e^10 + 17472*b*c^6*d^3*f*e
^11 + 24480*b^2*c^5*d^3*g*e^11 + 17472*b^2*c^5*d^2*f*e^12 - 12576*b^3*c^4*d
^2*g*e^12 - 4704*b^3*c^4*d*f*e^13 + 3164*b^4*c^3*d*g*e^13 + 490*b^4*c^3*f*e
^14 - 315*b^5*c^2*g*e^14)*e^(-10)/c^6)*x + (27648*c^7*d^6*g*e^8 + 43008*c^7
*d^5*f*e^9 - 97728*b*c^6*d^5*g*e^9 - 137760*b*c^6*d^4*f*e^10 + 145776*b^2*c
^5*d^4*g*e^10 + 146496*b^2*c^5*d^3*f*e^11 - 113440*b^3*c^4*d^3*g*e^11 - 674
24*b^3*c^4*d^2*f*e^12 + 47824*b^4*c^3*d^2*g*e^12 + 15680*b^4*c^3*d*f*e^13 -
 10500*b^5*c^2*d*g*e^13 - 1470*b^5*c^2*f*e^14 + 945*b^6*c*g*e^14)*e^(-10)/c
^6) + 1/2048*(256*c^7*d^7*g + 896*c^7*d^6*f*e - 1344*b*c^6*d^6*g*e - 2688*b
*c^6*d^5*f*e^2 + 2688*b^2*c^5*d^5*g*e^2 + 3360*b^2*c^5*d^4*f*e^3 - 2800*b^3
*c^4*d^4*g*e^3 - 2240*b^3*c^4*d^3*f*e^4 + 1680*b^4*c^3*d^3*g*e^4 + 840*b^4*
c^3*d^2*f*e^5 - 588*b^5*c^2*d^2*g*e^5 - 168*b^5*c^2*d*f*e^6 + 112*b^6*c*d*g
*e^6 + 14*b^6*c*f*e^7 - 9*b^7*g*e^7)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-
c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))
/c^6
```

maple [B] time = 0.07, size = 2799, normalized size = 6.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -1/6*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c*f+7/60*b/c^2*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(5/2)*f+7/32*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^
4*f-21/256*b^5/c^3*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f+19/128*e^3*g*b^4/c^3*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2)*x*d+5/24*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*d+105/128*e^3*g*b^4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-175/128*e^2*g*b^3/c/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))*d^4-147/512*e^4*g*b^5/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2
*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+7/128*e^5*g*b^6/c^4/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2))*d-31/64*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+7
/24*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*f-3/40*g*b^2/c^3*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-1/7*g*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5
/2)/c-3/128*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)-9/1024*e^4
*g*b^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+105/256*b^4/c^2*e^4/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2))*d^2*f-35/32*b^3/c*e^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-7/32*b^3/c^2*e^3*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f-21/16*e*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1
/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^5*f-7/24*e/c*x*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d*f+21/32*b^2/c*(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2)*x*d^2*e^2*f+3/4*e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(1/2)*x*d^3-7/64*b^4/c^3*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*
f+7/1024*b^6/c^4*e^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+7/256*b^4/c^3*e^4*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*x*f+105/64*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*e^2*f-7/8*e*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2)*x*b*d^3*f-1/3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5
/2)/c/e*d*g-21/32*g*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6-13/48*g*b/c*x*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*d^2-3/64*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)+21/16*e*g*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5+3/8*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*d^3+5/48*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2
)*d-9/35/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-2/5*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(5/2)/c/e*d*f-17/64*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*d^4+3/28*g*b/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-13/
96*g*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2-17/32*g*b*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4+7/16*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*x*d^4*f+7/16*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6*f+7/48/c*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*b*d^2*f+7/512*b^5/c^4*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*f+7/192*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^2*f+1/16/e*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^5*g+1/12/e*x*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(3/2)*d^3*g-31/128*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*d^2+19/256*e^3*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d-9/
2048*e^6*g*b^7/c^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-9/512*e^4*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*x+61/210/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d+
7/96*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^2*f+21/64*b^3/c^2*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*e^2*f+1/8/e*c*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*x*d^5*g-7/16*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

```
*b^2*d^3*f+1/8/e*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^7*g-7/48*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)*b^2*d*f+1/24/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^3
*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^2\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{2}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**2*(f + g*x), x)
```

3.1955 $\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=297

$$\frac{(2cd-be)^5(-7beg+2cdg+12cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{9/2}e^2}+\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x}}{512c^4e}$$

Rubi [A] time = 0.44, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {779, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+2cdg+12cef)}{512c^4e}+\frac{(b+2cx)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+2cdg+12cef)}{192c^3e}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(7beg-12c(dg+ef)-10cegx)}{60c^2e^2}+\frac{(2cd-be)^5(-7beg+2cdg+12cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{9/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] ((2*c*d - b*e)^3*(12*c*e*f + 2*c*d*g - 7*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(512*c^4*e) + ((2*c*d - b*e)*(12*c*e*f + 2*c*d*
g - 7*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(192*
c^3*e) + ((7*b*e*g - 12*c*(e*f + d*g) - 10*c*e*g*x)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(5/2))/(60*c^2*e^2) + ((2*c*d - b*e)^5*(12*c*e*f + 2*c*d*g -
 7*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2])])/(1024*c^(9/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = \frac{(7beg-12c(ef+dg)-10cegx)\left(d(cd-be)-be^2x-ce^2\right.}{60c^2e^2}$$

$$= \frac{(2cd-be)(12cef+2cdg-7beg)(b+2cx)\left(d(cd-be)-\right.}{192c^3e}$$

$$= \frac{(2cd-be)^3(12cef+2cdg-7beg)(b+2cx)\sqrt{d(cd-be)-}}{512c^4e}$$

$$= \frac{(2cd-be)^3(12cef+2cdg-7beg)(b+2cx)\sqrt{d(cd-be)-}}{512c^4e}$$

$$= \frac{(2cd-be)^3(12cef+2cdg-7beg)(b+2cx)\sqrt{d(cd-be)-}}{512c^4e}$$

Mathematica [A] time = 5.72, size = 504, normalized size = 1.70

$$\frac{(d+ex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{7\sqrt{e(2cd-be)}\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}\left(ce(dg+6ef)-\frac{7}{2}be^2g\right)\left(16c^4e^{12}(d+ex)^4\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}(11be-14cd+8cex)-e^6(2cd-be)^3\left(8c^3e^6(d+ex)^3\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}-10c^2e^6(d+ex)^2\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}+15\sqrt{c}e^{13/2}\sqrt{d+ex}(be-2cd)^3\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+15ce^6(d+ex)\sqrt{e(2cd-be)}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\right)\right)}{640c^4e^{12}(d+ex)^4(be-cd+cex)^2}-7e^2g(be-cd+cex)^2\right)}{42ce^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] ((d + e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-7*e^2*g*(-(c*d) + b*e
 + c*e*x)^2 + (7*Sqrt[e*(2*c*d - b*e)]*((-7*b*e^2*g)/2 + c*e*(6*e*f + d*g))
*((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*(16*c^4*e^12*Sqrt[e*(2*c*d -
 b*e)]*(-2*c*d + b*e)*(d + e*x)^4*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e
)]*(-14*c*d + 11*b*e + 8*c*e*x) - e^6*(2*c*d - b*e)^3*(15*c*e^6*Sqrt[e*(2*c
*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d +
 b*e)] - 10*c^2*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^2*Sqrt[(
-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 8*c^3*e^6*Sqrt[e*(2*c*d - b*e)]*(d
+ e*x)^3*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 15*Sqrt[c]*e^(13/2)*
(-2*c*d + b*e)^3*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[
e*(2*c*d - b*e)]])))/(640*c^4*e^12*(d + e*x)^4*(-(c*d) + b*e + c*e*x)^2)))/
(42*c*e^4)
```

IntegrateAlgebraic [F] time = 180.13, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
)^(3/2),x]
```

```
[Out] $Aborted
```

fricas [B] time = 1.58, size = 1473, normalized size = 4.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="fricas")
```

```
[Out] [-1/30720*(15*(12*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 4
0*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 384*b*c
```

```
^5*d^5*e + 720*b^2*c^4*d^4*e^2 - 640*b^3*c^3*d^3*e^3 + 300*b^4*c^2*d^2*e^4
- 72*b^5*c*d*e^5 + 7*b^6*e^6)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x -
 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f
+ (12*c^6*d*e^4 + 13*b*c^5*e^5)*g)*x^4 + 16*(12*(10*c^6*d*e^4 + 11*b*c^5*e^
5)*f - (140*c^6*d^2*e^3 - 272*b*c^5*d*e^4 - 3*b^2*c^4*e^5)*g)*x^3 - 8*(12*(
32*c^6*d^2*e^3 - 62*b*c^5*d*e^4 - b^2*c^4*e^5)*f + (384*c^6*d^3*e^2 - 348*b
*c^5*d^2*e^3 - 48*b^2*c^4*d*e^4 + 7*b^3*c^3*e^5)*g)*x^2 + 12*(128*c^6*d^4*e
 - 456*b*c^5*d^3*e^2 + 428*b^2*c^4*d^2*e^3 - 130*b^3*c^3*d*e^4 + 15*b^4*c^2
*e^5)*f + (1536*c^6*d^5 - 4368*b*c^5*d^4*e + 5328*b^2*c^4*d^3*e^2 - 3256*b^
3*c^3*d^2*e^3 + 940*b^4*c^2*d*e^4 - 105*b^5*c*e^5)*g - 2*(12*(200*c^6*d^3*e
^2 - 172*b*c^5*d^2*e^3 - 38*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*f - (240*c^6*d^4
*e - 816*b*c^5*d^3*e^2 + 792*b^2*c^4*d^2*e^3 - 276*b^3*c^3*d*e^4 + 35*b^4*c
^2*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2), -1/153
60*(15*(12*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 40*b^3*c
^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 384*b*c^5*d^5*
e + 720*b^2*c^4*d^4*e^2 - 640*b^3*c^3*d^3*e^3 + 300*b^4*c^2*d^2*e^4 - 72*b^
5*c*d*e^5 + 7*b^6*e^6)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*
d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b
*c*d*e)) + 2*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f + (12*c^6*d*e^4 + 13*b
*c^5*e^5)*g)*x^4 + 16*(12*(10*c^6*d*e^4 + 11*b*c^5*e^5)*f - (140*c^6*d^2*e^
3 - 272*b*c^5*d*e^4 - 3*b^2*c^4*e^5)*g)*x^3 - 8*(12*(32*c^6*d^2*e^3 - 62*b*
c^5*d*e^4 - b^2*c^4*e^5)*f + (384*c^6*d^3*e^2 - 348*b*c^5*d^2*e^3 - 48*b^2*
c^4*d*e^4 + 7*b^3*c^3*e^5)*g)*x^2 + 12*(128*c^6*d^4*e - 456*b*c^5*d^3*e^2 +
 428*b^2*c^4*d^2*e^3 - 130*b^3*c^3*d*e^4 + 15*b^4*c^2*e^5)*f + (1536*c^6*d^
5 - 4368*b*c^5*d^4*e + 5328*b^2*c^4*d^3*e^2 - 3256*b^3*c^3*d^2*e^3 + 940*b^
4*c^2*d*e^4 - 105*b^5*c*e^5)*g - 2*(12*(200*c^6*d^3*e^2 - 172*b*c^5*d^2*e^3
 - 38*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*f - (240*c^6*d^4*e - 816*b*c^5*d^3*e^2
 + 792*b^2*c^4*d^2*e^3 - 276*b^3*c^3*d*e^4 + 35*b^4*c^2*e^5)*g)*x)*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2)]
```

giac [B] time = 0.45, size = 708, normalized size = 2.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="giac")
```

```
[Out] -1/7680*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*c*g*x*e^
3 + (12*c^6*d*g*e^10 + 12*c^6*f*e^11 + 13*b*c^5*g*e^11)*e^(-8)/c^5)*x - (14
0*c^6*d^2*g*e^9 - 120*c^6*d*f*e^10 - 272*b*c^5*d*g*e^10 - 132*b*c^5*f*e^11
- 3*b^2*c^4*g*e^11)*e^(-8)/c^5)*x - (384*c^6*d^3*g*e^8 + 384*c^6*d^2*f*e^9
- 348*b*c^5*d^2*g*e^9 - 744*b*c^5*d*f*e^10 - 48*b^2*c^4*d*g*e^10 - 12*b^2*c
^4*f*e^11 + 7*b^3*c^3*g*e^11)*e^(-8)/c^5)*x + (240*c^6*d^4*g*e^7 - 2400*c^6
*d^3*f*e^8 - 816*b*c^5*d^3*g*e^8 + 2064*b*c^5*d^2*f*e^9 + 792*b^2*c^4*d^2*g
*e^9 + 456*b^2*c^4*d*f*e^10 - 276*b^3*c^3*d*g*e^10 - 60*b^3*c^3*f*e^11 + 35
*b^4*c^2*g*e^11)*e^(-8)/c^5)*x + (1536*c^6*d^5*g*e^6 + 1536*c^6*d^4*f*e^7 -
 4368*b*c^5*d^4*g*e^7 - 5472*b*c^5*d^3*f*e^8 + 5328*b^2*c^4*d^3*g*e^8 + 513
6*b^2*c^4*d^2*f*e^9 - 3256*b^3*c^3*d^2*g*e^9 - 1560*b^3*c^3*d*f*e^10 + 940*
b^4*c^2*d*g*e^10 + 180*b^4*c^2*f*e^11 - 105*b^5*c*g*e^11)*e^(-8)/c^5) + 1/1
024*(64*c^6*d^6*g + 384*c^6*d^5*f*e - 384*b*c^5*d^5*g*e - 960*b*c^5*d^4*f*e
^2 + 720*b^2*c^4*d^4*g*e^2 + 960*b^2*c^4*d^3*f*e^3 - 640*b^3*c^3*d^3*g*e^3
- 480*b^3*c^3*d^2*f*e^4 + 300*b^4*c^2*d^2*g*e^4 + 120*b^4*c^2*d*f*e^5 - 72*
b^5*c*d*g*e^5 - 12*b^5*c*f*e^6 + 7*b^6*g*e^6)*sqrt(-c*e^2)*e^(-3)*log(abs(-
2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c
*e^2)*b))/c^5
```

maple [B] time = 0.07, size = 2117, normalized size = 7.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -1/6*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d-1/8*b/c*x*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(3/2)*e*f-5/8*e^2*g*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2
)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3+7/256*e^3*g
*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+1/48/e*g/c*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)*b*d^2+15/16*b^2*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f+9/64*b^3/c^2
*e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-1/5*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(5/2)/c/e*f+1/4*d*f*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+3/16
*d^3*f*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b+1/16/e*g*c^2/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^
6-11/128*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+1/16/e*g*c*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4-5/16*g*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*x*b*d^3+1/24/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d
^2+1/32/e*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^4-5/32*g/c*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^3-1/12*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*b^2*d+7/192*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
+1/8*d*f/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b+3/8*e*g*b^2/c*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+15/128*b^4/c^2*e^4/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-15/3
2*b^3/c*e^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2))*d^2*f-15/16*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*
(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*e*f+75/256*e^3*g*b^
4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2))*d^2+9/32*b^2/c*e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
*x*d*f-11/64*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d-9/128
*e^4*g*b^5/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(1/2))*d+3/8*d^3*f*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2)*x+3/8*d^5*f*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-1/16*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d
^2)^(3/2)*e*f-3/128*b^4/c^3*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+7/
512*e^3*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+7/60/e*g*b/c^2*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-9/32*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(1/2)*d^2*e*f-3/8*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^5+7/1024*e^5*g*b^6/c^4/(c*e^2)^(
1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
))+45/64*e*g*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-3/64*b^3/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*x*f-9/16*b*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2*e*f-3
/256*b^5/c^3*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+7/96*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)+3/16*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-1
/6/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c-1/5*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(5/2)/c/e^2*d*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,\left(d+e\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
[Out] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(d + e x\right) \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)*(f + g*x), x)
```

3.1956 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=266

$$\frac{(2cd-be)^3(-3beg-2cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{5/2}e^2}+\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2}}{64c^2e}$$

Rubi [A] time = 0.33, antiderivative size = 266, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {794, 664, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}(-3beg-2cdg+8cef)}{64c^2e}+\frac{(2cd-be)^3(-3beg-2cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{5/2}e^2}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg-2cdg+8cef)}{24ce^2}-\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4ce^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] ((2*c*d - b*e)*(8*c*e*f - 2*c*d*g - 3*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])/(64*c^2*e) + ((8*c*e*f - 2*c*d*g - 3*b*e*g)*(d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*c*e^2) - (g*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(5/2))/(4*c*e^2*(d + e*x)) + ((2*c*d - b*e)^3*(8*c*e*f -
2*c*d*g - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])])/(128*c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
```

```
/; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{d+ex}\,dx = -\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4ce^2(d+ex)} - \frac{\left(ce^3f-\left(-cde^2+be^3\right)g+\frac{5}{2}e\left(\cdots\right.\right.}{\cdots}$$

$$= \frac{(8cef-2cdg-3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24ce^2} - \frac{g\left(d(cd-be\cdots\right.}{4ce\cdots}$$

$$= \frac{(2cd-be)(8cef-2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^{\cdots}}}{64c^2e}\cdots$$

$$= \frac{(2cd-be)(8cef-2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^{\cdots}}}{64c^2e}\cdots$$

$$= \frac{(2cd-be)(8cef-2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^{\cdots}}}{64c^2e}\cdots$$

Mathematica [A] time = 2.57, size = 361, normalized size = 1.36

$$\frac{(d+ex)\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{\sqrt{e(2cd-be)}\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}(-3beg-2cdg+8cef)\left(2c^2e^8(d+ex)^2\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\,(7be-10cd+4cex)-3e^6(2cd-be)^3\left(\sqrt{c}\,e^{5/2}\sqrt{d+ex}\,(be-2cd)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+ce^2(d+ex)\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}\right)\right)}{16c^2e^7(d+ex)^2(be-cd+cex)^2}-3e^2g(be-cd+cex)^2\right)}{12ce^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
,x]
```

```
[Out] ((d + e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-3*e^2*g*(-(c*d) + b*e +
 c*e*x)^2 + (Sqrt[e*(2*c*d - b*e)]*(8*c*e*f - 2*c*d*g - 3*b*e*g)*((-(c*d) +
 b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*(2*c^2*e^8*Sqrt[e*(2*c*d - b*e)]*(-2*c*
d + b*e)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*(-10*c*d +
 7*b*e + 4*c*e*x) - 3*e^6*(2*c*d - b*e)^3*(c*e^2*Sqrt[e*(2*c*d - b*e)]*(d +
 e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + Sqrt[c]*e^(5/2)*(-2*c*d
 + b*e)*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d
- b*e)]])))/(16*c^2*e^7*(d + e*x)^2*(-(c*d) + b*e + c*e*x)^2)))/(12*c*e^4)
```

IntegrateAlgebraic [F] time = 180.26, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x),x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.59, size = 809, normalized size = 3.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x, algorit
hm="fricas")
```

```
[Out] [-1/768*(3*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4
)*f - (16*c^4*d^4 - 24*b^2*c^2*d^2*e^2 + 16*b^3*c*d*e^3 - 3*b^4*e^4)*g)*sqr
t(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4
*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(
48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (8*c^4*d*e^2 - 9*b*c^3*e^3)*g)*x^2 - 8*
(8*c^4*d^2*e - 2*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*f + (64*c^4*d^3 - 76*b*c^3*d^
2*e + 36*b^2*c^2*d*e^2 - 9*b^3*c*e^3)*g - 2*(8*(6*c^4*d*e^2 - 7*b*c^3*e^3)*
f + (12*c^4*d^2*e - 4*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 -
b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2), -1/384*(3*(8*(8*c^4*d^3*e - 12*b*c^3*d
^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f - (16*c^4*d^4 - 24*b^2*c^2*d^2*e^2
+ 16*b^3*c*d*e^3 - 3*b^4*e^4)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2
*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*
d^2 + b*c*d*e)) + 2*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (8*c^4*d*e^2 - 9*b
*c^3*e^3)*g)*x^2 - 8*(8*c^4*d^2*e - 2*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*f + (64*
c^4*d^3 - 76*b*c^3*d^2*e + 36*b^2*c^2*d*e^2 - 9*b^3*c*e^3)*g - 2*(8*(6*c^4*
d*e^2 - 7*b*c^3*e^3)*f + (12*c^4*d^2*e - 4*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*g)*
x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 1817, normalized size = 6.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x)
```

```
[Out] 3/4*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^
2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g-1/2/e*c*d^2*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g-1/2/e*c^2*d^4/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-1/16*e^3*b^3/c/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2))*f-3/8*e*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d
/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(1/2))*d^2*g+3/8*e^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f+
3/8*g/e*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2))*d^4-1/3/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)*d*g+1/4*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f+
1/4*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x-1/8*e*b^2/c*(-(x+d/e)^2*c*
e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+1/2*c*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*f+1/16*e^2*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*
(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2))*d*g-3/4*e*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*
f+3/64*g*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^3-1/4*e*b*(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+1/8*b^2/c*(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g+3/16*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*b*d^2-1/4/e*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*
g+1/2*c^2*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e
```

```
)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+1/8*g/e/c*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b-3/8*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)*x*b*d+1/4*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g
-3/16*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d-3/16*g*e^2/c/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2))*b^3*d+1/3/e*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-3/4*g*
c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2))*b*d^3+3/128*g*e^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1
/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^4+9/16*g*e/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^
2*d^2+3/32*g*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b^2+3/8*g/e*c*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x), x)
```

3.1957 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=278

$$\frac{(2cd-be)^2(-beg-4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^2(2cd-be)}+\frac{(d\cdots}{}$$

Rubi [A] time = 0.42, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {792, 664, 612, 621, 204}

$$\frac{(2cd-be)^2(-beg-4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^2(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-beg-4cdg+6cef)}{3e^2(2cd-be)}+\frac{(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}(-beg-4cdg+6cef)}{8ce}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] ((6*c*e*f - 4*c*d*g - b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(8*c*e) + ((6*c*e*f - 4*c*d*g - b*e*g)*(d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)) + (2*(e*f - d*g)*(d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x)^2) + ((2*c*d - b*e)
^2*(6*c*e*f - 4*c*d*g - b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2])])/(16*c^(3/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
```

```
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^2} + \frac{(6cef-4cdg-beg)\int}{e(2cd}$$

$$= \frac{(6cef-4cdg-beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)} + \frac{2(ef-dg)\left(d\right.}{e^2(2}$$

$$= \frac{(6cef-4cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8ce} + \frac{(6cef}{}$$

$$= \frac{(6cef-4cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8ce} + \frac{(6cef}{}$$

$$= \frac{(6cef-4cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8ce} + \frac{(6cef}{}$$

Mathematica [A] time = 0.87, size = 228, normalized size = 0.82

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\sqrt{c}\sqrt{e}\left(3b^2e^2g+2bce(-14dg+15ef+7egx)+4c^2\left(10d^2g-6de(2f+gx)+e^2x(3f+2gx)\right)\right)-\frac{3\sqrt{e(2cd-be)}(be-2cd)(-beg-4cdg+6cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{24c^{3/2}e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^2,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(Sqrt[c]*Sqrt[e]*(3*b^2*e^2*g + 2
*b*c*e*(15*e*f - 14*d*g + 7*e*g*x) + 4*c^2*(10*d^2*g - 6*d*e*(2*f + g*x) +
e^2*x*(3*f + 2*g*x)))) - (3*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(6*c*e*f -
 4*c*d*g - b*e*g)*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*
e)]])/(Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(24*c^(
3/2)*e^(5/2))
```

IntegrateAlgebraic [B] time = 23.18, size = 21808, normalized size = 78.45

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^2,x]
```

```
[Out] Result too large to show
```

fricas [A] time = 0.58, size = 567, normalized size = 2.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x, algor
ithm="fricas")
```

```
[Out] [1/96*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e^3)*f - (16*c^3*d^3 - 12*
b*c^2*d^2*e + b^3*e^3)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*
d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2
*c*e*x + b*e)*sqrt(-c)) - 4*(8*c^3*e^2*g*x^2 - 6*(8*c^3*d*e - 5*b*c^2*e^2)*
f + (40*c^3*d^2 - 28*b*c^2*d*e + 3*b^2*c*e^2)*g + 2*(6*c^3*e^2*f - (12*c^3*
d*e - 7*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e
^2), -1/48*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e^3)*f - (16*c^3*d^3
- 12*b*c^2*d^2*e + b^3*e^3)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^
2 + b*c*d*e)) + 2*(8*c^3*e^2*g*x^2 - 6*(8*c^3*d*e - 5*b*c^2*e^2)*f + (40*c^
3*d^2 - 28*b*c^2*d*e + 3*b^2*c*e^2)*g + 2*(6*c^3*e^2*f - (12*c^3*d*e - 7*b*
c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 2174, normalized size = 7.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x)
```

```
[Out] -3*c^3/(-b*e^2+2*c*d*e)*d^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(
-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g
-3/8*e^4/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2
*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))
*f-3*c^2/(-b*e^2+2*c*d*e)*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2)*x*g+1/2*g/e*c*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+1/
2*g/e*c^2*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e
)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-3/4*g*b*c/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2-3/2*c/(-b*e^2+2*c*d*e)*d^2*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g-2/e*c/(-b*e^2+2*c*d*e)*(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-2/e^3/(-b*e^2+2*c*d*e)
/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g-1/16*g*e^2
*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2
)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))+3/8*g*e*b^2/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d+1/4*g/e*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2)*b-9/2*e^2*c^2/(-b*e^2+2*c*d*e)*b/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-9/4*e^2*c/(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/
2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+9/4*e^3*c/(-b*e^2+2*c*d*e)*b^2/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f+9/2*e*c^2/(-b*e^2+2*c*d*e)*b
/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g+3/2*e*c/(-b*e^2+2*c*d*
e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g-1/4*g*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-1/8*g*b^2/c*(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+2*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b
*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+1/3*g/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
```

```
*(x+d/e))^(3/2)+3/4*e/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(1/2)*d*g-3/4*e^2/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2)*f+2/e^2/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*
e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-3/2*e^2*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+3/8*e^3/(-b*e^2+2*c*d*e)*b^3/
(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g+3*e*c^2/(-b*e^2+2*c*d*e)*
d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+3/2*e*c/(-b*e^2+2*c
*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f+3*e*c^3/(-b*e
^2+2*c*d*e)*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d
*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(f + g x\right)}{\left(d + e x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**2, x)
```

3.1958 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=271

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^3(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(beg-6cdg+4cef)}{2e^2(d+ex)(2cd-be)}-\frac{3\sqrt{d(cd-be)-}}{}$$

Rubi [A] time = 0.47, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^3(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(beg-6cdg+4cef)}{2e^2(d+ex)(2cd-be)}-\frac{3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(beg-6cdg+4cef)}{4e^2}-\frac{3(2cd-be)(beg-6cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8\sqrt{c}\,e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (-3*(4*c*e*f - 6*c*d*g + b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(4*e^2) - ((4*c*e*f - 6*c*d*g + b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
)^(3/2))/(2*e^2*(2*c*d - b*e)*(d + e*x)) - (2*(e*f - d*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x)^3) - (3*(2*c*d - b
*e)*(4*c*e*f - 6*c*d*g + b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^3}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^3} - \frac{(4cef-6cdg+beg)\int}{e(2c}$$

$$= -\frac{(4cef-6cdg+beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(2cd-be)(d+ex)} - \frac{2(ef-dg)\big(}{e^2}$$

$$= -\frac{3(4cef-6cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} - \frac{(4cef-6cdg}{}$$

$$= -\frac{3(4cef-6cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} - \frac{(4cef-6cdg}{}$$

$$= -\frac{3(4cef-6cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} - \frac{(4cef-6cdg}{}$$

Mathematica [A] time = 0.85, size = 208, normalized size = 0.77

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{\sqrt{e}\left(be(13dg-8ef+5egx)+c\left(-28d^2g+10de(2f-gx)+2e^2x(2f+gx)\right)\right)}{d+ex}-\frac{3\sqrt{e(2cd-be)}\,(beg-6cdg+4cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{c}\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{4e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^3,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((Sqrt[e]*(b*e*(-8*e*f + 13*d*g +
 5*e*g*x) + c*(-28*d^2*g + 10*d*e*(2*f - g*x) + 2*e^2*x*(2*f + g*x))))/(d +
 e*x)) - (3*Sqrt[e*(2*c*d - b*e)]*(4*c*e*f - 6*c*d*g + b*e*g)*ArcSin[(Sqrt[
c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt[c]*Sqrt[d + e*x]*Sq
rt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(4*e^(5/2))
```

IntegrateAlgebraic [B] time = 53.95, size = 14673, normalized size = 54.14

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^3,x]
```

```
[Out] Result too large to show
```

fricas [A] time = 1.28, size = 635, normalized size = 2.34

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x, algor
ithm="fricas")
```

```
[Out] [1/16*(3*(4*(2*c^2*d^2*e - b*c*d*e^2)*f - (12*c^2*d^3 - 8*b*c*d^2*e + b^2*d
*e^2)*g + (4*(2*c^2*d*e^2 - b*c*e^3)*f - (12*c^2*d^2*e - 8*b*c*d*e^2 + b^2*
e^3)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e
 + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*s
qrt(-c)) - 4*(2*c^2*e^2*g*x^2 + 4*(5*c^2*d*e - 2*b*c*e^2)*f - (28*c^2*d^2 -
```

```
 13*b*c*d*e)*g + (4*c^2*e^2*f - 5*(2*c^2*d*e - b*c*e^2)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e))/(c*e^3*x + c*d*e^2), 1/8*(3*(4*(2*c^2*d^2*e
- b*c*d*e^2)*f - (12*c^2*d^3 - 8*b*c*d^2*e + b^2*d*e^2)*g + (4*(2*c^2*d*e^2
 - b*c*e^3)*f - (12*c^2*d^2*e - 8*b*c*d*e^2 + b^2*e^3)*g)*x)*sqrt(c)*arctan
(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^
2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(2*c^2*e^2*g*x^2 + 4*(5*c^2
*d*e - 2*b*c*e^2)*f - (28*c^2*d^2 - 13*b*c*d*e)*g + (4*c^2*e^2*f - 5*(2*c^2
*d*e - b*c*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c*e^3*x
+ c*d*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*(-4
*exp(1)^3*c^2*g*1/16/exp(1)^4/c*x+(-8*exp(1)^3*c^2*f-10*exp(1)^3*c*g*b+24*e
xp(1)^2*c^2*g*d)*1/16/exp(1)^4/c)*sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))+2*((3*sqrt(-c*exp(2))*b^2*g*exp(1)^2-24*c*sqrt(-c*exp(2))*b*g*exp(1)
*d+12*c*sqrt(-c*exp(2))*b*exp(1)^2*f+36*c^2*sqrt(-c*exp(2))*g*d^2-24*c^2*sq
rt(-c*exp(2))*exp(1)*d*f)/16/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(12*ex
p(2)*b^2*g*exp(1)^4*d-15*exp(2)^2*b^2*g*exp(1)^2*d+3*exp(2)^2*b^2*exp(1)^3*
f-48*c*exp(2)*b*g*exp(1)^3*d^2+60*c*exp(2)^2*b*g*exp(1)*d^2+12*c*exp(2)*b*e
xp(1)^4*d*f-24*c*exp(2)^2*b*exp(1)^2*d*f+36*c^2*exp(2)*g*exp(1)^2*d^3-48*c^
2*exp(2)^2*g*d^3-12*c^2*exp(2)*exp(1)^3*d^2*f+24*c^2*exp(2)^2*exp(1)*d^2*f)
/4/exp(1)^5/2/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(
2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)
-b*d*exp(1)*exp(2)))-(4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^5*d-9*exp(2)^2*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^3*d+5*exp(2)^
2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2
*exp(1)^4*f-16*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^3*b*g*exp(1)^4*d^2+36*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^2*d^2+4*c*exp(2)*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1
)^5*d*f-24*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^3*b*exp(1)^3*d*f+12*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^3*d^3-32*c^2*exp(2)^2*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)
*d^3-4*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^3*exp(1)^4*d^2*f+24*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^2*d^2*f-8*sqrt(-c*exp(2))*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*ex
p(1)^6*d^2+20*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^4*d^2+3*exp(2)^2*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^
2*g*exp(1)^2*d^2-16*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^5*d*f+exp(2)^2*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*
b^2*exp(1)^3*d*f+16*c*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^5*d^3-32*c*exp(2)*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*
g*exp(1)^3*d^3-44*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)*d^3+36*c*exp(2)*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
```

```
^2*b*exp(1)^4*d^2*f+24*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^2*d^2*f-8*c^2*sqrt(-c
*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^2*g*exp(1)^4*d^4+12*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^2*d^4+56*c^2*exp(2)^2*
sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^2*g*d^4-20*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^3*d^3*f-40*c^2*exp(2)^2*sq
rt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^2*exp(1)*d^3*f+4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^6*d^2-11*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^4*d^2+7*exp(2)
^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*
g*exp(1)^2*d^2+3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*b^3*exp(1)^5*d*f-3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^3*d*f-28*c*exp(2)*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^
5*d^3+91*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)*b^2*g*exp(1)^3*d^3-48*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)*d^3-4*c*exp(2)*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^6*d^
2*f-39*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)*b^2*exp(1)^4*d^2*f+28*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^2*d^2*f+44*c^2*exp(2)*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^4
*d^4-160*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)*b*g*exp(1)^2*d^4+56*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*d^4+8*c^2*exp(2)*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^5*d^3*f+92*
c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b*exp(1)^3*d^3*f-40*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)*d^3*f-20*c^3*exp(2)*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^3*d^5+80*c^3
*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)*g*exp(1)*d^5-4*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*exp(1)^4*d^4*f-56*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^2*d^4*f-8*sqrt(-c*exp(
2))*b^3*g*exp(1)^7*d^3+28*exp(2)*sqrt(-c*exp(2))*b^3*g*exp(1)^5*d^3-29*exp(
2)^2*sqrt(-c*exp(2))*b^3*g*exp(1)^3*d^3+9*exp(2)^3*sqrt(-c*exp(2))*b^3*g*ex
p(1)*d^3-8*exp(2)*sqrt(-c*exp(2))*b^3*exp(1)^6*d^2*f+13*exp(2)^2*sqrt(-c*ex
p(2))*b^3*exp(1)^4*d^2*f-5*exp(2)^3*sqrt(-c*exp(2))*b^3*exp(1)^2*d^2*f+24*c
*sqrt(-c*exp(2))*b^2*g*exp(1)^6*d^4-84*c*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1
)^4*d^4+69*c*exp(2)^2*sqrt(-c*exp(2))*b^2*g*exp(1)^2*d^4-14*c*exp(2)^3*sqrt
(-c*exp(2))*b^2*g*d^4+36*c*exp(2)*sqrt(-c*exp(2))*b^2*exp(1)^5*d^3*f-41*c*e
xp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^3*d^3*f+10*c*exp(2)^3*sqrt(-c*exp(2))*b^
2*exp(1)*d^3*f-24*c^2*sqrt(-c*exp(2))*b*g*exp(1)^5*d^5+84*c^2*exp(2)*sqrt(-
c*exp(2))*b*g*exp(1)^3*d^5-40*c^2*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(1)*d^5-4
8*c^2*exp(2)*sqrt(-c*exp(2))*b*exp(1)^4*d^4*f+28*c^2*exp(2)^2*sqrt(-c*exp(2
))*b*exp(1)^2*d^4*f+8*c^3*sqrt(-c*exp(2))*g*exp(1)^4*d^6-28*c^3*exp(2)*sqrt
(-c*exp(2))*g*exp(1)^2*d^6+20*c^3*exp(2)*sqrt(-c*exp(2))*exp(1)^3*d^5*f)/8/
exp(1)^5/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)*d+b*exp(1)^2*d-exp(2)*b*d-c*exp(1)*d^2)^2)
```

maple [B] time = 0.07, size = 2535, normalized size = 9.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x)
```

```
[Out] -9*e^4*c^2/(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*d*f-18*e^2*c^3/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(1/2))*d^3*g-6*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2)*x*d*g+18*e^3*c^3/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)
*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-3/2*e^4*c/(-b*e^2+2*c*d*e)^2*b^3/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g+9*e^3*c^2/(-b*e^2+2*c*d*e)^2
*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g-9/2*g*e*c^2/(-b*e^
2+2*c*d*e)*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)
/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+9/4*g*e^2*c/
(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+
2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d+3*g*c^
3/(-b*e^2+2*c*d*e)*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^
2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))+3*g*c^
2/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+3/
2*g*c/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*
b-3/8*g*e^3/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-
1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2))+2/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(5/2)*d*g-8/e*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(5/2)*f+3*e^3*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+2*g/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+2*g/e*c/(-b*e^2+2*c*d*e)*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-3/4*g*e/(-b*e^2+2*c*d*e)*b^2*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)-2/e^3/(-b*e^2+2*c*d*e)/(x
+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f+8*c^2/(-b*e^2+2
*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-8*e*c^2/(-b
*e^2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+6*e*c^2
/(-b*e^2+2*c*d*e)^2*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b
*g-6*e^2*c^2/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2)*b*f+12*e*c^4/(-b*e^2+2*c*d*e)^2*d^4/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2))*g-12*e^2*c^4/(-b*e^2+2*c*d*e)^2*d^3/(c*e^2)^(1/2)*arctan((c
*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2))*f+12*e*c^3/(-b*e^2+2*c*d*e)^2*d^2*(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g-3/2*g*e*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-12*e^2*c^3/(-b*e^2+2*c*d*e)^2*d*(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+8/e^2*c/(-b*e^2+2*c*d*
e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g+6*e^3*
c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*
x*f-3*e^2*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2)*d*g+3/2*e^5*c/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e
)*(x+d/e))^(1/2))*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^3,x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**3,x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**3, x)
```

3.1959 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=276

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^4(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(3beg-8cdg+2cef)}{3e^2(d+ex)^2(2cd-be)}+\frac{c\sqrt{d(cd-b}}{}$$

Rubi [A] time = 0.45, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {792, 662, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^4(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(3beg-8cdg+2cef)}{3e^2(d+ex)^2(2cd-be)}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(3beg-8cdg+2cef)}{e^2(2cd-be)}+\frac{\sqrt{c}\,(3beg-8cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] (c*(2*c*e*f - 8*c*d*g + 3*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(e^2*(2*c*d - b*e)) + (2*(2*c*e*f - 8*c*d*g + 3*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^2) - (2*(e*f - d*g
)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3*e^2*(2*c*d - b*e)*(d + e*
x)^4) + (Sqrt[c]*(2*c*e*f - 8*c*d*g + 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sq
rt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(2*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^4}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(2cd-be)(d+ex)^4} - \frac{(2cef-8cdg+3beg)}{3e(2}$$

$$= \frac{2(2cef-8cdg+3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^2} - \frac{2(ef-dg)}{3e}$$

$$= \frac{c(2cef-8cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} + \frac{2(2cef-8cdg}{}$$

$$= \frac{c(2cef-8cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} + \frac{2(2cef-8cdg}{}$$

$$= \frac{c(2cef-8cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} + \frac{2(2cef-8cdg}{}$$

Mathematica [C] time = 0.20, size = 150, normalized size = 0.54

$$\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{e(d+ex)(3beg-8cdg+2cef)\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}+\frac{e(ef-dg)(be-cd+cex)^2}{be-2cd}\right)}{3e^3(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^4,x]
```

```
[Out] (2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*((e*(e*f - d*g)*(-(c*d) + b*e + c
*e*x)^2)/(-2*c*d + b*e) + (e*(2*c*e*f - 8*c*d*g + 3*b*e*g)*(d + e*x)*Hyperg
eometric2F1[-3/2, -1/2, 1/2, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)]))/(3*e^3*(d + e*x)^2)
```

IntegrateAlgebraic [A] time = 4.55, size = 322, normalized size = 1.17

$$\frac{\sqrt{-ce^2}(3beg-8cdg+2cef)\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{4e^3}+\frac{\left(-3b\sqrt{c}eg+8c^{3/2}dg-2c^{3/2}ef\right)\tan^{-1}\left(\frac{\sqrt{c}\left(2\sqrt{-bde-be^2x+cd^2-ce^2x^2}-2x\sqrt{-ce^2}\right)}{be}\right)}{2e^2}+\frac{\sqrt{-bde-be^2x+cd^2-ce^2x^2}\left(4bdeg+2be^2f+6be^2gx-19cd^2g+4cdef-26cdegx+8ce^2fx-3ce^2gx^2\right)}{3e^2(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^4,x]
```

```
[Out] (Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]*(4*c*d*e*f + 2*b*e^2*f - 19*c*d^
2*g + 4*b*d*e*g + 8*c*e^2*f*x - 26*c*d*e*g*x + 6*b*e^2*g*x - 3*c*e^2*g*x^2)
)/(3*e^2*(d + e*x)^2) + ((-2*c^(3/2)*e*f + 8*c^(3/2)*d*g - 3*b*Sqrt[c]*e*g)
*ArcTan[(Sqrt[c]*(-2*Sqrt[-(c*e^2)]*x + 2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2]))/(b*e)])/(2*e^2) + (Sqrt[-(c*e^2)]*(2*c*e*f - 8*c*d*g + 3*b*e*g)*
Log[4*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x^2 - 8*c*Sqr
t[-(c*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]])/(4*e^3)
```

fricas [A] time = 2.15, size = 593, normalized size = 2.15

$$\left[\frac{3\left(2\,cd^{2}ef+\left(2\,ce^{3}f-\left(8\,cde^{2}-3\,be^{3}\right)g\right)x^{2}-\left(8\,cd^{3}-3\,bd^{2}e\right)g+2\left(2\,cde^{2}f-\left(8\,cd^{2}e-3\,bde^{2}\right)g\right)x\right)\sqrt{-c}\log\left(8\,c^{2}e^{2}x^{2}+8\,bce^{2}x-4\,c^{2}d^{2}+4\,bcde+b^{2}e^{2}+4\,\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\left(2\,cex+be\right)\sqrt{-c}\right)-4\left(3\,ce^{2}gx^{2}-2\left(2\,cde+be^{2}\right)f+\left(19\,cd^{2}-4\,bde\right)g-2\left(4\,ce^{2}f-\left(13\,cde-3\,be^{2}\right)g\right)x\right)\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}}{12\left(e^{4}x^{2}+2\,de^{3}x+d^{2}e^{2}\right)},-\frac{3\left(2\,cd^{2}ef+\left(2\,ce^{3}f-\left(8\,cde^{2}-3\,be^{3}\right)g\right)x^{2}-\left(8\,cd^{3}-3\,bd^{2}e\right)g+2\left(2\,cde^{2}f-\left(8\,cd^{2}e-3\,bde^{2}\right)g\right)x\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\left(2\,cex+be\right)\sqrt{c}}{2\left(c^{2}e^{2}x^{2}+bce^{2}x-c^{2}d^{2}+bcde\right)}\right)+2\left(3\,ce^{2}gx^{2}-2\left(2\,cde+be^{2}\right)f+\left(19\,cd^{2}-4\,bde\right)g-2\left(4\,ce^{2}f-\left(13\,cde-3\,be^{2}\right)g\right)x\right)\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}}{6\left(e^{4}x^{2}+2\,de^{3}x+d^{2}e^{2}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x, algor
ithm="fricas")
```

```
[Out] [1/12*(3*(2*c*d^2*e*f + (2*c*e^3*f - (8*c*d*e^2 - 3*b*e^3)*g)*x^2 - (8*c*d^
3 - 3*b*d^2*e)*g + 2*(2*c*d*e^2*f - (8*c*d^2*e - 3*b*d*e^2)*g)*x)*sqrt(-c)*
log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(3*c*e^
2*g*x^2 - 2*(2*c*d*e + b*e^2)*f + (19*c*d^2 - 4*b*d*e)*g - 2*(4*c*e^2*f - (
13*c*d*e - 3*b*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(e^4*
x^2 + 2*d*e^3*x + d^2*e^2), -1/6*(3*(2*c*d^2*e*f + (2*c*e^3*f - (8*c*d*e^2
- 3*b*e^3)*g)*x^2 - (8*c*d^3 - 3*b*d^2*e)*g + 2*(2*c*d*e^2*f - (8*c*d^2*e -
 3*b*d*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e))
 + 2*(3*c*e^2*g*x^2 - 2*(2*c*d*e + b*e^2)*f + (19*c*d^2 - 4*b*d*e)*g - 2*(4
*c*e^2*f - (13*c*d*e - 3*b*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: -4*ex
p(1)*c*g*1/4/exp(1)^3*sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))+2*((3
*c*sqrt(-c*exp(2))*b*g*exp(1)-8*c^2*sqrt(-c*exp(2))*g*d+2*c^2*sqrt(-c*exp(2
))*exp(1)*f)/4/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(12*exp(2)^2*b^3*g*e
xp(1)^5*d-10*exp(2)^3*b^3*g*exp(1)^3*d-2*exp(2)^3*b^3*exp(1)^4*f+48*c*exp(2
)*b^2*g*exp(1)^6*d^2-180*c*exp(2)^2*b^2*g*exp(1)^4*d^2+120*c*exp(2)^3*b^2*g
*exp(1)^2*d^2+24*c*exp(2)^2*b^2*exp(1)^5*d*f-12*c*exp(2)^3*b^2*exp(1)^3*d*f
-96*c^2*exp(2)*b*g*exp(1)^5*d^3+360*c^2*exp(2)^2*b*g*exp(1)^3*d^3-240*c^2*e
xp(2)^3*b*g*exp(1)*d^3-72*c^2*exp(2)^2*b*exp(1)^4*d^2*f+48*c^2*exp(2)^3*b*e
xp(1)^2*d^2*f+48*c^3*exp(2)*g*exp(1)^4*d^4-192*c^3*exp(2)^2*g*exp(1)^2*d^4+
128*c^3*exp(2)^3*g*d^4+48*c^3*exp(2)^2*exp(1)^3*d^3*f-32*c^3*exp(2)^3*exp(1
)*d^3*f)/32/(b*exp(1)^8*d-exp(2)*b*exp(1)^6*d-c*exp(1)^7*d^2+c*exp(2)*exp(1
)^5*d^2)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))*a
tan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*
exp(1)*exp(2)))+(503316480*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*g*exp(1)^7*d-553648128*exp(2)^3*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*g*exp(1)^
5*d+50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^5*b^3*exp(1)^6*f+402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*g*exp(1)^8*d^2-4328521728
*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^5*b^2*g*exp(1)^6*d^2+4227858432*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*g*exp(1)^4*d^2+1006632960*c*
exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^5*b^2*exp(1)^7*d*f-1308622848*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*exp(1)^5*d*f-805306368*c^2*exp(2)
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*
```

exp(1)^7*d^3+8657043456*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp(1)^5*d^3-8455716864*c^2*exp(2)^3*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp
(1)^3*d^3-3019898880*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^5*b*exp(1)^6*d^2*f+3623878656*c^2*exp(2)^3*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*exp(1)^4
*d^2*f+402653184*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^5*g*exp(1)^6*d^4-4831838208*c^3*exp(2)^2*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)^4*d^4+483
1838208*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)^5*g*exp(1)^2*d^4+2013265920*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*exp(1)^5*d^3*f-2415919104
*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^5*exp(1)^3*d^3*f-1610612736*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^8*d^2+150
9949440*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^6*d^2+352321536*exp(2)^3*sqrt(-c*e
xp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
4*b^3*g*exp(1)^4*d^2-805306368*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*exp(1)^7*d*f+5536481
28*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^4*b^3*exp(1)^5*d*f+6039797760*c*exp(2)*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*
g*exp(1)^7*d^3+1509949440*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*g*exp(1)^5*d^3-90596966
40*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^4*b^2*g*exp(1)^3*d^3-1610612736*c*exp(2)*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*
b^2*exp(1)^8*d^2*f+2214592512*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^6*d^2*f+9059
69664*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^4*d^2*f-7247757312*c^2*exp(2)*sqrt(-
c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^4*b*g*exp(1)^6*d^4-14294188032*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^4*d^4+
24561844224*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^2*d^4+3221225472*c^2*exp(2)*
sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^4*b*exp(1)^7*d^3*f+2214592512*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^5*d
^3*f-8455716864*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^3*d^3*f+2818572288*c^3*exp
(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)^4*g*exp(1)^5*d^5+11274289152*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)^
3*d^5-16106127360*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)*d^5-1610612736*c^3*exp(2
)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^4*exp(1)^6*d^4*f-3623878656*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^4*d^4
*f+7247757312*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^2*d^4*f+805306368*exp(2)^2*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*ex
p(1)^8*d^2-1476395008*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^6*d^2+671088640*exp(2)^4*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^4*d
^2-134217728*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^3*b^4*exp(1)^7*d*f+134217728*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*exp(1)^5*d*f-1127428915

2*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^3*b^3*g*exp(1)^7*d^3+19797114880*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^5*d^3-8019509248*
c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^3*b^3*g*exp(1)^3*d^3-2281701376*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^6*d^2*f+1778384896*c*e
xp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^3*b^3*exp(1)^4*d^2*f+38654705664*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^6*d^4-55767465984*c^
2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^3*b^2*g*exp(1)^4*d^4+14092861440*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^2*d^4-6442450944*
c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^3*b^2*exp(1)^7*d^3*f+16508780544*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^5*d^3*f-704643072
0*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)^3*b^2*exp(1)^3*d^3*f-46707769344*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^5*d^5+460366807
04*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^3*b*g*exp(1)^3*d^5+6710886400*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)*d^5+12884901888*c
^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^3*b*exp(1)^6*d^4*f-18656264192*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^4*d^4*f-268435456*c^3*
exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^3*b*exp(1)^2*d^4*f+18522046464*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^4*d^6-8589934592*c^4*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
g*exp(1)^2*d^6-13958643712*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6-6442450944*c^4*exp(2)^2*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^5*d^5*f+
4563402752*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^3*exp(1)^3*d^5*f+5905580032*c^4*exp(2)^4*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)*d^5*f-241591910
4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^2*b^4*g*exp(1)^9*d^3+4831838208*exp(2)^2*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g
*exp(1)^7*d^3-2818572288*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^5*d^3+402653184*e
xp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*b^4*g*exp(1)^3*d^3+402653184*exp(2)^3*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*exp
(1)^6*d^2*f-402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*exp(1)^4*d^2*f+13690208256*c*
exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*b^3*g*exp(1)^8*d^4-16911433728*c*exp(2)^2*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*
g*exp(1)^6*d^4-4227858432*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^4*d^4+69457674
24*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^2*d^4-1610612736*c*exp(2)*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*
b^3*exp(1)^9*d^3*f+4831838208*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^7*d^3*f-2818
572288*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^5*d^3*f+100663296*c*exp(2)^4*sqrt(-
c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^2*b^3*exp(1)^3*d^3*f-26575110144*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^7*d^

5+4026531840*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^5*d^5+53351546880*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^3*d^5-27783069696*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)*d^5+4831838208*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^8*d^4*f-4831838208*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^6*d^4*f-11676942336*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^4*d^4*f+8657043456*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^2*d^4*f+21743271936*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^6*d^6+23353884672*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^4*d^6-72074919936*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^2*d^6+20937965568*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*d^6-4831838208*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^7*d^5*f-4831838208*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^5*d^5*f+24561844224*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^3*d^5*f-8858370048*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)*d^5*f-6442450944*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^5*d^7-15300820992*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^3*d^7+25769803776*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)*d^7+1610612736*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^6*d^6*f+4831838208*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^4*d^6*f-10468982784*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^2*d^6*f+301989888*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^9*d^3-855638016*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^7*d^3+805306368*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^5*d^3-251658240*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^3*d^3-50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^8*d^2*f+100663296*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^6*d^2*f-50331648*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^4*d^2*f-402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^10*d^4-5939134464*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^8*d^4+17414750208*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^6*d^4-15804137472*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^4*d^4+4731174912*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^2*d^4+603979776*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^9*d^3*f-1409286144*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^7*d^3*f+1409286144*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^5*d^3*f-603979776*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^3*d^3*f+1610612736*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2

)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^9*d^5+29695672320*c^2
exp(2)^2(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)*b^3*g*exp(1)^7*d^5-76554436608*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^5*d^5+59693334528*c^2*
exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)*b^3*g*exp(1)^3*d^5-14696841216*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)*d^5-6241124352*c^2*exp(
2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^
3*exp(1)^8*d^4*f+17465081856*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^6*d^4*f-15804137472*c^2*exp(2
)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3
*exp(1)^4*d^4*f+4831838208*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^2*d^4*f-2415919104*c^3*exp(2)*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*ex
p(1)^8*d^6-56472109056*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^6*d^6+120393302016*c^3*exp(2)^3*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*ex
p(1)^4*d^6-70464307200*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^2*d^6+10468982784*c^3*exp(2)^5*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*d^6
+15099494400*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*b^2*exp(1)^7*d^5*f-36943429632*c^3*exp(2)^3*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^5*d^5*f+
24763170816*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)*b^2*exp(1)^3*d^5*f-4429185024*c^3*exp(2)^5*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)*d^5*f+1610
612736*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)*b*g*exp(1)^7*d^7+46103789568*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^5*d^7-76504104960*
c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b*g*exp(1)^3*d^7+25769803776*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)*d^7-13891534848*c^4*exp
(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b
*exp(1)^6*d^6*f+27380416512*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^4*d^6*f-10468982784*c^4*exp(2)^4
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(
1)^2*d^6*f-402653184*c^5*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)*g*exp(1)^6*d^8-13690208256*c^5*exp(2)^2*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^4*d^8+16
106127360*c^5*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)*g*exp(1)^2*d^8+4429185024*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^5*d^7*f-6442450944*c
^5*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)*exp(1)^3*d^7*f-805306368*exp(2)*sqrt(-c*exp(2))*b^5*g*exp(1)^10*d^4+29
19235584*exp(2)^2*sqrt(-c*exp(2))*b^5*g*exp(1)^8*d^4-3976200192*exp(2)^3*sq
rt(-c*exp(2))*b^5*g*exp(1)^6*d^4+2415919104*exp(2)^4*sqrt(-c*exp(2))*b^5*g*
exp(1)^4*d^4-553648128*exp(2)^5*sqrt(-c*exp(2))*b^5*g*exp(1)^2*d^4+50331648
*exp(2)^3*sqrt(-c*exp(2))*b^5*exp(1)^7*d^3*f-100663296*exp(2)^4*sqrt(-c*exp
(2))*b^5*exp(1)^5*d^3*f+50331648*exp(2)^5*sqrt(-c*exp(2))*b^5*exp(1)^3*d^3*
f+6308233216*c*exp(2)*sqrt(-c*exp(2))*b^4*g*exp(1)^9*d^5-20099104768*c*exp(
2)^2*sqrt(-c*exp(2))*b^4*g*exp(1)^7*d^5+23655874560*c*exp(2)^3*sqrt(-c*exp(
2))*b^4*g*exp(1)^5*d^5-12113149952*c*exp(2)^4*sqrt(-c*exp(2))*b^4*g*exp(1)^
3*d^5+2248146944*c*exp(2)^5*sqrt(-c*exp(2))*b^4*g*exp(1)*d^5-1073741824*c*e
xp(2)*sqrt(-c*exp(2))*b^4*exp(1)^10*d^4*f+3690987520*c*exp(2)^2*sqrt(-c*exp
(2))*b^4*exp(1)^8*d^4*f-5033164800*c*exp(2)^3*sqrt(-c*exp(2))*b^4*exp(1)^6*
d^4*f+3154116608*c*exp(2)^4*sqrt(-c*exp(2))*b^4*exp(1)^4*d^4*f-738197504*c*
exp(2)^5*sqrt(-c*exp(2))*b^4*exp(1)^2*d^4*f-17179869184*c^2*exp(2)*sqrt(-c*
exp(2))*b^3*g*exp(1)^8*d^6+46271561728*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*g*e
xp(1)^6*d^6-43436212224*c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*g*exp(1)^4*d^6+161

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39681792*c^2*exp(2)^4*sqrt(-c*exp(2))*b^3*g*exp(1)^2*d^6-1744830464*c^2*exp
(2)^5*sqrt(-c*exp(2))*b^3*g*d^6+4294967296*c^2*exp(2)*sqrt(-c*exp(2))*b^3*e
xp(1)^9*d^5*f-12549357568*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*exp(1)^7*d^5*f+1
3136560128*c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*exp(1)^5*d^5*f-5670699008*c^2*e
xp(2)^4*sqrt(-c*exp(2))*b^3*exp(1)^3*d^5*f+738197504*c^2*exp(2)^5*sqrt(-c*e
xp(2))*b^3*exp(1)*d^5*f+21743271936*c^3*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1)
^7*d^7-47412412416*c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*g*exp(1)^5*d^7+31809601
536*c^3*exp(2)^3*sqrt(-c*exp(2))*b^2*g*exp(1)^3*d^7-6442450944*c^3*exp(2)^4
*sqrt(-c*exp(2))*b^2*g*exp(1)*d^7-6442450944*c^3*exp(2)*sqrt(-c*exp(2))*b^2
*exp(1)^8*d^6*f+15502147584*c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^6*d^6*f
-11374952448*c^3*exp(2)^3*sqrt(-c*exp(2))*b^2*exp(1)^4*d^6*f+2617245696*c^3
*exp(2)^4*sqrt(-c*exp(2))*b^2*exp(1)^2*d^6*f-13153337344*c^4*exp(2)*sqrt(-c
*exp(2))*b*g*exp(1)^6*d^8+21810380800*c^4*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(
1)^4*d^8-8053063680*c^4*exp(2)^3*sqrt(-c*exp(2))*b*g*exp(1)^2*d^8+429496729
6*c^4*exp(2)*sqrt(-c*exp(2))*b*exp(1)^7*d^7*f-8120172544*c^4*exp(2)^2*sqrt(
-c*exp(2))*b*exp(1)^5*d^7*f+3221225472*c^4*exp(2)^3*sqrt(-c*exp(2))*b*exp(1
)^3*d^7*f+3087007744*c^5*exp(2)*sqrt(-c*exp(2))*g*exp(1)^5*d^9-3489660928*c
^5*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)^3*d^9-1073741824*c^5*exp(2)*sqrt(-c*ex
p(2))*exp(1)^6*d^8*f+1476395008*c^5*exp(2)^2*sqrt(-c*exp(2))*exp(1)^4*d^8*f
)/(-805306368*b*exp(1)^8*d+805306368*exp(2)*b*exp(1)^6*d+805306368*c*exp(1)
^7*d^2-805306368*c*exp(2)*exp(1)^5*d^2)/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+b*exp(1)^2*d-exp(2)
*b*d-c*exp(1)*d^2)^3)
```

maple [B] time = 0.07, size = 2773, normalized size = 10.05

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x)
```

```
[Out] -12*e^4*c^4/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-
1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2))*d^2*f+4*e^3*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(1/2)*x*d*g+12*e^3*c^4/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2))*d^3*g+16/3*e^2*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-2*g/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)-8*g*c^2/(-b*e^2+2*c*d*e)^
2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-2/3/e^4/(-b*e^2+2*c*d*e
)/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f+16/3*c^2/(-
b*e^2+2*c*d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2
)*f-9*g*e^3*c^2/(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2))*d+18*g*e^2*c^3/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^
(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(1/2))*d^2+6*e^5*c^3/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2))*d*f+e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g-6*e^4*c^3/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g-8*g/e^2*c/(-b*e^2+2*c*d*e)^2/(
x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+3*g*e^2*c/(-b*e^
2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+2/3/e^5/
(-b*e^2+2*c*d*e)/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2
)*d*g+4/3/e^2*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(5/2)*f-16/3*e*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*c*e^2+(-b*e
^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-2*e^4*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2
```

```
*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+8*e^3*c^5/(-b*e^2+2*c*d*e)^3*d^3/(
c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-12*g*e*c^4/(-b*e^2+2*c*d*e)^
2*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)
/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-12*g*e*c^3/(-b*e^2+2*c*
d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-6*g*e*c^2/(-b*
e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b+2*e^3*
c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2
)*d*g-e^6*c^2/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+
d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2))*f-8*e^2*c^4/(-b*e^2+2*c*d*e)^3*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(1/2)*x*g+8*e^3*c^4/(-b*e^2+2*c*d*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f-4*e^2*c^3/(-b*e^2+2*c*d*e)^3*d^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g+4*e^3*c^3/(-b*e^2+2*c*d*e)^3*d*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f-8*e^2*c^5/(-b*e^2+2*c
*d*e)^3*d^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g+3/2*g*e^4*c/(-b
*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2
*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-4/3/e^3*c
/(-b*e^2+2*c*d*e)^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
5/2)*d*g-16/3/e*c^2/(-b*e^2+2*c*d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(5/2)*d*g-4*e^4*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+6*g*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**4, x)
```

3.1960 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=214

$$\frac{c^{3/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5(2cd-be)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}+$$

Rubi [A] time = 0.44, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 662, 621, 204}

$$\frac{c^{3/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5(2cd-be)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}+\frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] (2*c*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(d + e*x)) - (2*g*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^3) - (2*(e*f -
d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(2*c*d - b*e)*(d +
 e*x)^5) + (c^(3/2)*g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2])])/e^2
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^5}dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(2cd-be)(d+ex)^5}+\frac{g\int\frac{\left(cd^2-bde-be^2x-ce^2\ldots\right.}{(d+ex)^4}}{e}$$

$$= -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}-\frac{2(ef-dg)\left(d(cd-be)-be\ldots\right.}{5e^2(2cd-be)(d+\ldots}$$

$$= \frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\ldots\right.}{3e^2(d+ex)^3}$$

$$= \frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\ldots\right.}{3e^2(d+ex)^3}$$

$$= \frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\ldots\right.}{3e^2(d+ex)^3}$$

Mathematica [C] time = 0.28, size = 150, normalized size = 0.70

$$\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{g(2cd-be)^3\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}-(be-cd+cex)^2(-beg+cdg+cef)\right)}{5ce^2(d+ex)^3(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^5,x]
```

```
[Out] (2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((c*e*f + c*d*g - b*e*g)*(-(c*d
) + b*e + c*e*x)^2) + ((2*c*d - b*e)^3*g*Hypergeometric2F1[-5/2, -5/2, -3/2
, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]
))/(5*c*e^2*(2*c*d - b*e)*(d + e*x)^3)
```

IntegrateAlgebraic [B] time = 153.13, size = 13691, normalized size = 63.98

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^5,x]
```

```
[Out] Result too large to show
```

fricas [B] time = 9.81, size = 879, normalized size = 4.11

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x, algor
ithm="fricas")
```

```
[Out] [1/30*(15*((2*c^2*d*e^3 - b*c*e^4)*g*x^3 + 3*(2*c^2*d^2*e^2 - b*c*d*e^3)*g*
x^2 + 3*(2*c^2*d^3*e - b*c*d^2*e^2)*g*x + (2*c^2*d^4 - b*c*d^3*e)*g)*sqrt(-
c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sq
rt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((3*c^2*e^3*f - (43*c^2*d*e^2 - 20*b
```

```
*c*e^3)*g)*x^2 + 3*(c^2*d^2*e - 2*b*c*d*e^2 + b^2*e^3)*f - (23*c^2*d^3 - 6*
b*c*d^2*e - 2*b^2*d*e^2)*g - (6*(c^2*d*e^2 - b*c*e^3)*f + (54*c^2*d^2*e - 1
4*b*c*d*e^2 - 5*b^2*e^3)*g)*x))/(2*c*d^4*e^2 - b*d^3*e^3 + (2*c*d*e^5 - b*e
^6)*x^3 + 3*(2*c*d^2*e^4 - b*d*e^5)*x^2 + 3*(2*c*d^3*e^3 - b*d^2*e^4)*x), -
1/15*(15*((2*c^2*d*e^3 - b*c*e^4)*g*x^3 + 3*(2*c^2*d^2*e^2 - b*c*d*e^3)*g*x
^2 + 3*(2*c^2*d^3*e - b*c*d^2*e^2)*g*x + (2*c^2*d^4 - b*c*d^3*e)*g)*sqrt(c)
*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt
(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e)*((3*c^2*e^3*f - (43*c^2*d*e^2 - 20*b*c*e^3)*g)*x^2 +
 3*(c^2*d^2*e - 2*b*c*d*e^2 + b^2*e^3)*f - (23*c^2*d^3 - 6*b*c*d^2*e - 2*b^
2*d*e^2)*g - (6*(c^2*d*e^2 - b*c*e^3)*f + (54*c^2*d^2*e - 14*b*c*d*e^2 - 5*
b^2*e^3)*g)*x))/(2*c*d^4*e^2 - b*d^3*e^3 + (2*c*d*e^5 - b*e^6)*x^3 + 3*(2*c
*d^2*e^4 - b*d*e^5)*x^2 + 3*(2*c*d^3*e^3 - b*d^2*e^4)*x)]
```

giac [B] time = 1.75, size = 849, normalized size = 3.97

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x, algor
ithm="giac")
```

```
[Out] 2/15*(sqrt(-c*e^2 + 2*c*d*e^2/(x*e + d) - b*e^3/(x*e + d))*(30*(4*c^2*d^2*e
^9 - 4*b*c*d*e^10 + b^2*e^11)*C_0/(8*c^3*d^3*e^12 - 12*b*c^2*d^2*e^13 + 6*b
^2*c*d*e^14 - b^3*e^15) - ((128*c^4*d^4*g*e^8*sgn(1/(x*e + d)) - 48*c^4*d^3
*f*e^9*sgn(1/(x*e + d)) - 232*b*c^3*d^3*g*e^9*sgn(1/(x*e + d)) + 72*b*c^3*d
^2*f*e^10*sgn(1/(x*e + d)) + 156*b^2*c^2*d^2*g*e^10*sgn(1/(x*e + d)) - 36*b
^2*c^2*d*f*e^11*sgn(1/(x*e + d)) - 46*b^3*c*d*g*e^11*sgn(1/(x*e + d)) + 6*b
^3*c*f*e^12*sgn(1/(x*e + d)) + 5*b^4*g*e^12*sgn(1/(x*e + d)))/(8*c^3*d^3*e^
12 - 12*b*c^2*d^2*e^13 + 6*b^2*c*d*e^14 - b^3*e^15) - 3*(16*c^4*d^5*g*e^9*s
gn(1/(x*e + d)) - 16*c^4*d^4*f*e^10*sgn(1/(x*e + d)) - 32*b*c^3*d^4*g*e^10*
sgn(1/(x*e + d)) + 32*b*c^3*d^3*f*e^11*sgn(1/(x*e + d)) + 24*b^2*c^2*d^3*g*
e^11*sgn(1/(x*e + d)) - 24*b^2*c^2*d^2*f*e^12*sgn(1/(x*e + d)) - 8*b^3*c*d^
2*g*e^12*sgn(1/(x*e + d)) + 8*b^3*c*d*f*e^13*sgn(1/(x*e + d)) + b^4*d*g*e^1
3*sgn(1/(x*e + d)) - b^4*f*e^14*sgn(1/(x*e + d)))*e^(-1)/((8*c^3*d^3*e^12 -
 12*b*c^2*d^2*e^13 + 6*b^2*c*d*e^14 - b^3*e^15)*(x*e + d)))*e^(-1)/(x*e + d
) + (172*c^4*d^3*g*e^7*sgn(1/(x*e + d)) - 12*c^4*d^2*f*e^8*sgn(1/(x*e + d))
 - 252*b*c^3*d^2*g*e^8*sgn(1/(x*e + d)) + 12*b*c^3*d*f*e^9*sgn(1/(x*e + d))
 + 123*b^2*c^2*d*g*e^9*sgn(1/(x*e + d)) - 3*b^2*c^2*f*e^10*sgn(1/(x*e + d))
 - 20*b^3*c*g*e^10*sgn(1/(x*e + d)))/(8*c^3*d^3*e^12 - 12*b*c^2*d^2*e^13 +
6*b^2*c*d*e^14 - b^3*e^15)) - (43*sqrt(-c*e^2)*c^2*d*g - 3*sqrt(-c*e^2)*c^2
*f*e - 20*sqrt(-c*e^2)*b*c*g*e)*sgn(1/(x*e + d))/(2*c*d*e^5 - b*e^6))*e^2
```

maple [B] time = 0.07, size = 1023, normalized size = 4.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x)
```

```
[Out] -2/5*(-d*g+e*f)/e^6/(-b*e^2+2*c*d*e)/(x+d/e)^5*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(5/2)-2/3*g/e^5/(-b*e^2+2*c*d*e)/(x+d/e)^4*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+4/3*g/e^3*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^3*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+16/3*g/e*c^2/(-b*e^2+2*c*
d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+16/3*g*e
*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-4
*g*e^3*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2)*x-2*g*e^3*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d
*e)*(x+d/e))^(1/2)-g*e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*arctan((c
*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*
```

```
c*d*e)*(x+d/e))^(1/2))+6*g*e^4*c^3/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2))*d-12*g*e^3*c^4/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+8*g*e^2*c^4/(-b*e^2+2*c*d*e)^3*d*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+4*g*e^2*c^3/(-b*e^2+2*c*d
*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b+8*g*e^2*c^5/(-b
*e^2+2*c*d*e)^3*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2
*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^5,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**5, x)
```

3.1961 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=138

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(7beg-2c(6dg+ef))}{35e^2(d+ex)^5(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(d+ex)^6(2cd-be)}$$

Rubi [A] time = 0.23, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(7beg-2c(6dg+ef))}{35e^2(d+ex)^5(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(d+ex)^6(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(7*e^2*(2*c*d
- b*e)*(d + e*x)^6) + (2*(7*b*e*g - 2*c*(e*f + 6*d*g))*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(5/2))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^6}\,dx=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(2cd-be)(d+ex)^6}-\frac{\left(2\left(\frac{5}{2}e\left(-2ce^2f+be^2g\right.\right.\right.}{}$$

$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(2cd-be)(d+ex)^6}+\frac{2(7beg-2c(ef+6dg}{35e^2(2c}$$

Mathematica [A] time = 0.08, size = 104, normalized size = 0.75

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(2c\left(d^2g+6de(f+gx)+e^2fx\right)-be(2dg+5ef+7egx)\right)}{35e^2(d+ex)^4(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^6,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(b*e*
(5*e*f + 2*d*g + 7*e*g*x)) + 2*c*(d^2*g + e^2*f*x + 6*d*e*(f + g*x))))/(35*
e^2*(-2*c*d + b*e)^2*(d + e*x)^4)
```

IntegrateAlgebraic [B] time = 80.88, size = 10737, normalized size = 77.80

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^6,x]
```

```
[Out] Result too large to show
```

fricas [B] time = 47.46, size = 464, normalized size = 3.36

$$-\frac{2 \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(\left(2c^3e^4f + \left(12c^3de^3 - 7bc^2e^4\right)g\right)x^3 + \left(\left(8c^3de^3 - bc^2e^4\right)f - 2\left(11c^3d^2e^2 - 18bc^2de^3 + 7b^2ce^4\right)g\right)x^2 + \left(12c^3d^3e - 29bc^2d^2e^2 + 22b^2cde^3 - 5b^3e^4\right)f + 2\left(c^3d^4 - 3bc^2d^3e + 3b^2cd^2e^2 - b^3de^3\right)g - \left(2\left(11c^3d^2e^2 - 15bc^2de^3 + 4b^2ce^4\right)f - \left(8c^3d^3e - 23bc^2d^2e^2 + 22b^2cde^3 - 7b^3e^4\right)g\right)x\right)}{35\left(4c^2d^6e^2 - 4bcd^5e^3 + b^2d^4e^4 + \left(4c^2d^2e^6 - 4bcde^7 + b^2e^8\right)x^4 + 4\left(4c^2d^3e^5 - 4bcd^2e^6 + b^2de^7\right)x^3 + 6\left(4c^2d^4e^4 - 4bcd^3e^5 + b^2d^2e^6\right)x^2 + 4\left(4c^2d^5e^3 - 4bcd^4e^4 + b^2d^3e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x, algor
ithm="fricas")
```

```
[Out] -2/35*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c^3*e^4*f + (12*c^3*d*
e^3 - 7*b*c^2*e^4)*g)*x^3 + ((8*c^3*d*e^3 - b*c^2*e^4)*f - 2*(11*c^3*d^2*e^
2 - 18*b*c^2*d*e^3 + 7*b^2*c*e^4)*g)*x^2 + (12*c^3*d^3*e - 29*b*c^2*d^2*e^2
 + 22*b^2*c*d*e^3 - 5*b^3*e^4)*f + 2*(c^3*d^4 - 3*b*c^2*d^3*e + 3*b^2*c*d^2
*e^2 - b^3*d*e^3)*g - (2*(11*c^3*d^2*e^2 - 15*b*c^2*d*e^3 + 4*b^2*c*e^4)*f
- (8*c^3*d^3*e - 23*b*c^2*d^2*e^2 + 22*b^2*c*d*e^3 - 7*b^3*e^4)*g)*x)/(4*c^
2*d^6*e^2 - 4*b*c*d^5*e^3 + b^2*d^4*e^4 + (4*c^2*d^2*e^6 - 4*b*c*d*e^7 + b^
2*e^8)*x^4 + 4*(4*c^2*d^3*e^5 - 4*b*c*d^2*e^6 + b^2*d*e^7)*x^3 + 6*(4*c^2*d
^4*e^4 - 4*b*c*d^3*e^5 + b^2*d^2*e^6)*x^2 + 4*(4*c^2*d^5*e^3 - 4*b*c*d^4*e^
4 + b^2*d^3*e^5)*x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$-\frac{2\left(cex + be - cd\right)\left(7b\,e^2gx - 12cdegx - 2c\,e^2fx + 2bdeg + 5b\,e^2f - 2c\,d^2g - 12cdef\right)\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{3}{2}}}{35\left(ex + d\right)^5\left(b^2e^2 - 4bcde + 4c^2d^2\right)e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(7*b*e^2*g*x-12*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+5*b*e
^2*f-2*c*d^2*g-12*c*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5
/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 9.50, size = 3763, normalized size = 27.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^6,x)
```

```
[Out] (((d*((d*((16*c^4*(6*b*e*g - 10*c*d*g + c*e*f))/(105*(b*e - 2*c*d)^4) - (16
*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e - (608*c^5*d^2*g + 196*b^2*c^3*e^2*g -
160*c^5*d*e*f + 96*b*c^4*e^2*f - 688*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^4)))
/e + (4*b*c^2*(19*b^2*e^2*g + 76*c^2*d^2*g + 11*b*c*e^2*f - 20*c^2*d*e*f -
76*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((8*c^4*(7*b*e*g - 10*c*d*g + 2*c*e*f))/(105
*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e - (208*c^5*d^2*g
 + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c^4*d*e*g)/(105
*e*(b*e - 2*c*d)^4)))/e + (2*b*c^2*(13*b^2*e^2*g + 52*c^2*d^2*g + 12*b*c*e^
2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((16*c^4*(7*b*e*g - 12*
c*d*g + c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4))
)/e - (768*c^5*d^2*g + 244*b^2*c^3*e^2*g - 192*c^5*d*e*f + 112*b*c^4*e^2*f
- 864*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^4)))/e + (4*b*c^2*(24*b^2*e^2*g + 9
6*c^2*d^2*g + 13*b*c*e^2*f - 24*c^2*d*e*f - 96*b*c*d*e*g))/(105*e*(b*e - 2*
c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*
((8*c^4*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*
g)/(105*(b*e - 2*c*d)^4)))/e - (1728*c^5*d^2*g + 504*b^2*c^3*e^2*g - 272*c^
5*d*e*f + 152*b*c^4*e^2*f - 1864*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^4)))/e +
 (8*b*c^2*(27*b^2*e^2*g + 108*c^2*d^2*g + 9*b*c*e^2*f - 17*c^2*d*e*f - 108*
b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x) + (((d*((d*((8*c^3*e*(9*b*e*g - 16*c*d*g + c*e*f))/(35*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^2)))/e - (216*b^2*c^2*e^3*g + 72*b*c^3*e^3*f - 128*c^4*d*e^2*f
 + 728*c^4*d^2*e*g - 792*b*c^3*d*e^2*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^2)))/e + (8*c*(b*e - c*d)*(19*b^2*e^2*g + 76*c^2*d^2*g + 8*b*c*e^2*f -
 15*c^2*d*e*f - 76*b*c*d*e*g))/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((8*c^3
*e*(3*b*e*g - 4*c*d*g + c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) -
(8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d^2*g
+ 26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(35*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^2*d^2*g
 + 5*b*c*e^2*f - 8*c^2*d*e*f - 16*b*c*d*e*g))/(35*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((
d*((d*((4*c^3*e*(13*b*e*g - 22*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^2) - (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e
 - (288*c^4*d^2*g + 96*b^2*c^2*e^2*g - 88*c^4*d*e*f + 52*b*c^3*e^2*f - 332*
b*c^3*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e + (4*b*c*(9*b^2*e
^2*g + 36*c^2*d^2*g + 6*b*c*e^2*f - 11*c^2*d*e*f - 36*b*c*d*e*g))/(35*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
```

```
))/(d + e*x)^2 + (((76*b^2*c^3*e^3*f - 416*c^5*d^3*g + 88*b^3*c^2*e^3*g + 1
60*c^5*d^2*e*f - 224*b*c^4*d*e^2*f + 768*b*c^4*d^2*e*g - 456*b^2*c^3*d*e^2*
g)/(105*e^2*(b*e - 2*c*d)^4) + (d*((d*((16*c^4*(5*b*e*g - 8*c*d*g + c*e*f))
/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e - (148*b^2*
c^3*e^3*g + 80*b*c^4*e^3*f - 128*c^5*d*e^2*f + 448*c^5*d^2*e*g - 512*b*c^4*
d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((88*b^2*c^3*e^3*f - 832*c^5*d^3*g + 224*b^3*c^2*e^3
*g + 128*c^5*d^2*e*f - 232*b*c^4*d*e^2*f + 1728*b*c^4*d^2*e*g - 1104*b^2*c^
3*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4) + (d*((d*((8*c^4*(15*b*e*g - 26*c*d*g
+ 2*c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e
- (328*b^2*c^3*e^3*g + 120*b*c^4*e^3*f - 208*c^5*d*e^2*f + 1088*c^5*d^2*e*g
 - 1192*b*c^4*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4)))/e)*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((160*b^2*c^3*e^3*f - 1536*c^5*d^3*g +
 312*b^3*c^2*e^3*g + 384*c^5*d^2*e*f - 504*b*c^4*d*e^2*f + 2784*b*c^4*d^2*e
*g - 1632*b^2*c^3*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4) + (d*((d*((8*c^4*(17*b
*e*g - 30*c*d*g + 2*c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e
- 2*c*d)^4)))/e - (400*b^2*c^3*e^3*g + 136*b*c^4*e^3*f - 240*c^5*d*e^2*f +
1344*c^5*d^2*e*g - 1464*b*c^4*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4)))/e)*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(6*b
*e*g - 10*c*d*g + c*e*f))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d
*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e - (4*c*(3*b*e - 5*c*d)*(3*
b*e*g - 5*c*d*g + 2*c*e*f))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e + (4
*(b*e - c*d)*(4*b^2*e^2*g + 16*c^2*d^2*g + 5*b*c*e^2*f - 9*c^2*d*e*f - 16*b
*c*d*e*g))/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((2*b^3*e^2*g + 8*b*c^2*d^2*g + 4*b^2
*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*e^2*f + 8*b^2*c*e^2*g -
 22*b*c^2*d*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (d*((2*c^2*e*(5*b
*e*g - 6*c*d*g + 2*c*e*f))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c^3*
d*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4*(11*b*e*g - 20*c*d
*g + c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e
 - (16*c^3*(45*b^2*e^2*g + 159*c^2*d^2*g + 11*b*c*e^2*f - 20*c^2*d*e*f - 16
9*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4)))/e + (16*c^2*(b*e - c*d)*(35*b^2*e^2
*g + 140*c^2*d^2*g + 10*b*c*e^2*f - 19*c^2*d*e*f - 140*b*c*d*e*g))/(105*e^2
*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) +
 (((2*f*(b*e - c*d)^2)/(7*b*e^2 - 14*c*d*e) + (d*((d*((2*c*e*(2*b*e*g - 2*c
*d*g + c*e*f))/(7*b*e^2 - 14*c*d*e) - (2*c^2*d*e*g)/(7*b*e^2 - 14*c*d*e)))/
e - (2*(b*e - c*d)*(b*e*g - c*d*g + 2*c*e*f))/(7*b*e^2 - 14*c*d*e)))/e)*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((4*c^3*e*
(11*b*e*g - 18*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) -
 (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (76*b^2*c^2*e
^3*g + 44*b*c^3*e^3*f - 72*c^4*d*e^2*f + 224*c^4*d^2*e*g - 260*b*c^3*d*e^2*
g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e + (44*b^2*c^2*e^3*f - 192
*c^4*d^3*g + 40*b^3*c*e^3*g + 96*c^4*d^2*e*f - 132*b*c^3*d*e^2*f + 352*b*c^
3*d^2*e*g - 208*b^2*c^2*d*e^2*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**6, x)
```

3.1962 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=210

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+4cef)}{315e^2(d+ex)^5(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+4ce}{63e^2(d+ex)^6(2cd-be)^2}$$

Rubi [A] time = 0.35, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+4cef)}{315e^2(d+ex)^5(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+4cef)}{63e^2(d+ex)^6(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9e^2(d+ex)^7(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(9*e^2*(2*c*d
 - b*e)*(d + e*x)^7) - (2*(4*c*e*f + 14*c*d*g - 9*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(5/2))/(63*e^2*(2*c*d - b*e)^2*(d + e*x)^6) - (4*c*(4*c*
e*f + 14*c*d*g - 9*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(315
*e^2*(2*c*d - b*e)^3*(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^7}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9e^2(2cd-be)(d+ex)^7} + \frac{(4cef+14cdg-9\cdots}{9\cdots}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9e^2(2cd-be)(d+ex)^7} - \frac{2(4cef+14cdg-\cdots}{63e^{\cdots}}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9e^2(2cd-be)(d+ex)^7} - \frac{2(4cef+14cdg-\cdots}{63e^{\cdots}}$$

Mathematica [A] time = 0.12, size = 168, normalized size = 0.80

$$\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(5b^2e^2(2dg+7ef+9egx)-2bce\left(19d^2g+de(80f+98gx)+e^2x(10f+9gx)\right)+4c^2\left(7d^3g+d^2e(47f+49gx)+7de^2x(2f+gx)+2e^3fx^2\right)\right)}{315e^2(d+ex)^5(be-2cd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^7,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(5*b^2*e
^2*(7*e*f + 2*d*g + 9*e*g*x) + 4*c^2*(7*d^3*g + 2*e^3*f*x^2 + 7*d*e^2*x*(2*
f + g*x) + d^2*e*(47*f + 49*g*x)) - 2*b*c*e*(19*d^2*g + e^2*x*(10*f + 9*g*x
) + d*e*(80*f + 98*g*x))))/(315*e^2*(-2*c*d + b*e)^3*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 180.20, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^7,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 236, normalized size = 1.12

$$-\frac{2(cex+be-cd)\left(-18bce^3gx^2+28c^2de^2gx^2+8c^2e^3fx^2+45b^2e^3gx-196bcde^2gx-20bce^3fx+196c^2d^2egx+56c^2de^2fx+10b^2de^2g+35b^2e^3f-38bcd^2eg-160bcde^2f+28c^2d^3g+188c^2d^2ef\right)\left(-ce^2x^2-be^2x-bde+cd^2\right)^{\frac{3}{2}}}{315(ex+d)^6\left(b^3e^3-6b^2cde^2+12bc^2d^2e-8c^3d^3\right)e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(-18*b*c*e^3*g*x^2+28*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^
2+45*b^2*e^3*g*x-196*b*c*d*e^2*g*x-20*b*c*e^3*f*x+196*c^2*d^2*e*g*x+56*c^2*
d*e^2*f*x+10*b^2*d*e^2*g+35*b^2*e^3*f-38*b*c*d^2*e*g-160*b*c*d*e^2*f+28*c^2
*d^3*g+188*c^2*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6/(b
^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 19.83, size = 8039, normalized size = 38.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^7,x)
```

```
[Out] (((d*((d*((32*c^5*(4*b*e*g - 6*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*
c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (608*c^6*d^2*g + 208*b^2*c^4*e^2*g - 1
92*c^6*d*e*f + 128*b*c^5*e^2*f - 704*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))
/e + (4*b*c^3*(19*b^2*e^2*g + 76*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f -
76*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(13*b*e*g - 22*c*d*g + 2*c*e*f))/(9
45*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (1568*c^6*d^
2*g + 488*b^2*c^4*e^2*g - 352*c^6*d*e*f + 208*b*c^5*e^2*f - 1744*b*c^5*d*e*
g)/(945*e*(b*e - 2*c*d)^5)))/e + (4*b*c^3*(49*b^2*e^2*g + 196*c^2*d^2*g + 2
4*b*c*e^2*f - 44*c^2*d*e*f - 196*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(15*b
*e*g - 26*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e
- 2*c*d)^5)))/e - (1952*c^6*d^2*g + 600*b^2*c^4*e^2*g - 416*c^6*d*e*f + 240
*b*c^5*e^2*f - 2160*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e + (4*b*c^3*(61
*b^2*e^2*g + 244*c^2*d^2*g + 28*b*c*e^2*f - 52*c^2*d*e*f - 244*b*c*d*e*g))/
(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) - (((d*((d*((16*c^5*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d
)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (2336*c^6*d^2*g + 712*b^2*c
^4*e^2*g - 480*c^6*d*e*f + 272*b*c^5*e^2*f - 2576*b*c^5*d*e*g)/(945*e*(b*e
- 2*c*d)^5)))/e + (4*b*c^3*(73*b^2*e^2*g + 292*c^2*d^2*g + 32*b*c*e^2*f - 6
0*c^2*d*e*f - 292*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((32*c^5*(10*b*e*g - 18*c*d*g
 + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e -
 (4032*c^6*d^2*g + 1160*b^2*c^4*e^2*g - 576*c^6*d*e*f + 320*b*c^5*e^2*f - 4
320*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e + (8*b*c^3*(63*b^2*e^2*g + 252
*c^2*d^2*g + 19*b*c*e^2*f - 36*c^2*d*e*f - 252*b*c*d*e*g))/(945*e*(b*e - 2*
c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*
((32*c^5*(11*b*e*g - 20*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g
)/(945*(b*e - 2*c*d)^5)))/e - (4736*c^6*d^2*g + 1352*b^2*c^4*e^2*g - 640*c^
6*d*e*f + 352*b*c^5*e^2*f - 5056*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e +
 (8*b*c^3*(74*b^2*e^2*g + 296*c^2*d^2*g + 21*b*c*e^2*f - 40*c^2*d*e*f - 296
```

*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) + (((d*((d*((32*c^5*(12*b*e*g - 22*c*d*g + c*e*f))/(945*(
b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (5696*c^6*d^2*g
+ 1608*b^2*c^4*e^2*g - 704*c^6*d*e*f + 384*b*c^5*e^2*f - 6048*b*c^5*d*e*g)/
(945*e*(b*e - 2*c*d)^5)))/e + (8*b*c^3*(89*b^2*e^2*g + 356*c^2*d^2*g + 23*b
*c*e^2*f - 44*c^2*d*e*f - 356*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(29*b*e*
g - 54*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2
*c*d)^5)))/e - (9216*c^6*d^2*g + 2528*b^2*c^4*e^2*g - 864*c^6*d*e*f + 464*b
*c^5*e^2*f - 9648*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e + (16*b*c^3*(72*
b^2*e^2*g + 288*c^2*d^2*g + 14*b*c*e^2*f - 27*c^2*d*e*f - 288*b*c*d*e*g))/(
945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
x) + (((d((d*((8*c^3*e*(11*b*e*g - 20*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^2)))/e - (312*b^2*c^2*e^3*g + 88*b*c^3*e^3*f - 160*c^4*d*e^2*f + 1080*c^
4*d^2*e*g - 1160*b*c^3*d*e^2*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)
))/e + (8*c*(b*e - c*d)*(29*b^2*e^2*g + 116*c^2*d^2*g + 10*b*c*e^2*f - 19*c
^2*d*e*f - 116*b*c*d*e*g))/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((8*c^3*e*
(3*b*e*g - 4*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8
*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d^2*g +
26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(63*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^2*d^2*g
+ 5*b*c*e^2*f - 8*c^2*d*e*f - 16*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e
- 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - ((
(d*((d*((4*c^3*e*(15*b*e*g - 26*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*
(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))
)/e - (352*c^4*d^2*g + 116*b^2*c^2*e^2*g - 104*c^4*d*e*f + 60*b*c^3*e^2*f -
404*b*c^3*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e + (4*b*c*(1
1*b^2*e^2*g + 44*c^2*d^2*g + 7*b*c*e^2*f - 13*c^2*d*e*f - 44*b*c*d*e*g))/(6
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^3 - (((176*b^2*c^4*e^3*f - 1216*c^6*d^3*g + 252*b^3*c^
3*e^3*g + 384*c^6*d^2*e*f - 528*b*c^5*d*e^2*f + 2224*b*c^5*d^2*e*g - 1312*b
^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) + (d*((d*((16*c^5*(11*b*e*g - 18*
c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5
)))/e - (376*b^2*c^4*e^3*g + 176*b*c^5*e^3*f - 288*c^6*d*e^2*f + 1184*c^6*d
^2*e*g - 1328*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((176*b^2*c^4*e^3*f - 1888*c^6*d
^3*g + 536*b^3*c^3*e^3*g + 224*c^6*d^2*e*f - 448*b*c^5*d*e^2*f + 4032*b*c^5
*d^2*e*g - 2616*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) + (d*((d*((32*c^
5*(8*b*e*g - 14*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(
b*e - 2*c*d)^5)))/e - (776*b^2*c^4*e^3*g + 256*b*c^5*e^3*f - 448*c^6*d*e^2*
f + 2624*c^6*d^2*e*g - 2848*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5)))/e)*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((344*b^2*c^4*e^3*
f - 3904*c^6*d^3*g + 784*b^3*c^3*e^3*g + 832*c^6*d^2*e*f - 1088*b*c^5*d*e^2
*f + 7040*b*c^5*d^2*e*g - 4112*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) +
(d*((d*((32*c^5*(9*b*e*g - 16*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*
c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (936*b^2*c^4*e^3*g + 288*b*c^5*e^3*f -
512*c^6*d*e^2*f + 3200*c^6*d^2*e*g - 3456*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2
*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((3
92*b^2*c^4*e^3*f - 4672*c^6*d^3*g + 936*b^3*c^3*e^3*g + 960*c^6*d^2*e*f - 1
248*b*c^5*d*e^2*f + 8416*b*c^5*d^2*e*g - 4912*b^2*c^4*d*e^2*g)/(945*e^2*(b*
e - 2*c*d)^5) + (d*((d*((32*c^5*(10*b*e*g - 18*c*d*g + c*e*f))/(945*(b*e -
2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (1096*b^2*c^4*e^3*g +
320*b*c^5*e^3*f - 576*c^6*d*e^2*f + 3776*c^6*d^2*e*g - 4064*b*c^5*d*e^2*g)/
(945*e^2*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) + (((d*((d*((16*c^4*e*(6*b*e*g - 10*c*d*g + c*e*f))/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^3)))/e - (196*b^2*c^3*e^3*g + 96*b*c^4*e^3*f - 160*c^5*d*e^2*f +

608*c^5*d^2*e*g - 688*b*c^4*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^3)))/e + (104*b^2*c^3*e^3*f - 624*c^5*d^3*g + 124*b^3*c^2*e^3*g + 240*c
^5*d^2*e*f - 320*b*c^4*d*e^2*f + 1120*b*c^4*d^2*e*g - 652*b^2*c^3*d*e^2*g)/
(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((8*c^4*e*(19*b*e*g - 34*c*d*g + 2*c*
e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (504*b^2*c^3*e^3*g + 152*b*c^4*e^3*f
- 272*c^5*d*e^2*f + 1728*c^5*d^2*e*g - 1864*b*c^4*d*e^2*g)/(315*e*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (88*b^2*c^3*e^3*f - 1280*c^5*d^3*g + 368*
b^3*c^2*e^3*g + 64*c^5*d^2*e*f - 200*b*c^4*d*e^2*f + 2752*b*c^4*d^2*e*g - 1
792*b^2*c^3*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((8*c^4*e*(21*b*
e*g - 38*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*
c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (592*b^2*c^3*e^3
*g + 168*b*c^4*e^3*f - 304*c^5*d*e^2*f + 2048*c^5*d^2*e*g - 2200*b*c^4*d*e^
2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (248*b^2*c^3*e^3*f -
2784*c^5*d^3*g + 520*b^3*c^2*e^3*g + 672*c^5*d^2*e*f - 824*b*c^4*d*e^2*f +
4864*b*c^4*d^2*e*g - 2776*b^2*c^3*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + ((
(3904*c^6*d^3*g - 176*b^2*c^4*e^3*f - 1328*b^3*c^3*e^3*g + 64*c^6*d^2*e*f +
304*b*c^5*d*e^2*f - 9216*b*c^5*d^2*e*g + 6288*b^2*c^4*d*e^2*g)/(945*e^2*(b
*e - 2*c*d)^5) - (d*((d*((16*c^5*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(945*(b*e
- 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (16*c^4*(116*b^2*e^
2*g + 416*c^2*d^2*g + 25*b*c*e^2*f - 46*c^2*d*e*f - 439*b*c*d*e*g))/(945*e*
(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) - (((432*b^2*c^4*e^3*f - 5504*c^6*d^3*g + 1280*b^3*c^3*e^3*g + 1024*c^6*d
^2*e*f - 1360*b*c^5*d*e^2*f + 10624*b*c^5*d^2*e*g - 6496*b^2*c^4*d*e^2*g)/(
945*e^2*(b*e - 2*c*d)^5) + (d*((d*((16*c^5*(23*b*e*g - 42*c*d*g + 2*c*e*f))
/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (16*c^4*(
101*b^2*e^2*g + 360*c^2*d^2*g + 23*b*c*e^2*f - 42*c^2*d*e*f - 381*b*c*d*e*g
))/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((560*b^2*c^4*e^3*f - 11392*c^6*d^3*g + 2224*b^3*c^3*e^3*g +
1408*c^6*d^2*e*f - 1808*b*c^5*d*e^2*f + 20288*b*c^5*d^2*e*g - 11744*b^2*c^
4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) + (d*((d*((16*c^5*(27*b*e*g - 50*c*d*g
+ 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e
- (16*c^4*(135*b^2*e^2*g + 488*c^2*d^2*g + 27*b*c*e^2*f - 50*c^2*d*e*f - 5
13*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(7*b*e*g - 12*c*d*g + c*e*f))/
(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(9*(7*b*e^2 - 14*c*d
e)(b*e - 2*c*d))))/e - (28*b*c^2*e^3*f + 44*b^2*c*e^3*g - 48*c^3*d*e^2*f
+ 124*c^3*d^2*e*g - 148*b*c^2*d*e^2*g)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c
d))))/e + (4(b*e - c*d)*(5*b^2*e^2*g + 20*c^2*d^2*g + 6*b*c*e^2*f - 11*c^
2*d*e*f - 20*b*c*d*e*g))/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((2*b^3*e^2*g + 8*b*c^2
*d^2*g + 4*b^2*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(9*(7*b*e^2 - 14*c*
d*e)*(b*e - 2*c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*e^2*f + 8
*b^2*c*e^2*g - 22*b*c^2*d*e*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (d*
((2*c^2*e*(5*b*e*g - 6*c*d*g + 2*c*e*f))/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c
*d)) - (4*c^3*d*e*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((8*c^4*e*(7*
b*e*g - 10*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (1
6*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (208*c^5*d^2*g
+ 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c^4*d*e*g)/(315
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (2*b*c^2*(13*b^2*e^2*g + 52*c^2
*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d
e)(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 + (((d*((d*((16*c^4*e*(7*b*e*g - 12*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^3)))/e - (768*c^5*d^2*g + 244*b^2*c^3*e^2*g - 192*c^5*d*e*f + 112*b*c^4

```
*e^2*f - 864*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (
4*b*c^2*(24*b^2*e^2*g + 96*c^2*d^2*g + 13*b*c*e^2*f - 24*c^2*d*e*f - 96*b*c
*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((16*c^4*e*(8*b*e*g - 14*c*d*g
 + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (928*c^5*d^2*g + 292*b^2*c^3*e^2
*g - 224*c^5*d*e*f + 128*b*c^4*e^2*f - 1040*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^3)))/e + (4*b*c^2*(29*b^2*e^2*g + 116*c^2*d^2*g + 15*b
*c*e^2*f - 28*c^2*d*e*f - 116*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*(
(d*((8*c^4*e*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e
 - (2496*c^5*d^2*g + 712*b^2*c^3*e^2*g - 336*c^5*d*e*f + 184*b*c^4*e^2*f -
2664*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (8*b*c^2*
(39*b^2*e^2*g + 156*c^2*d^2*g + 11*b*c*e^2*f - 21*c^2*d*e*f - 156*b*c*d*e*g
))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((32*c^5*(16*b*e*g - 30*c*d*g + c*e*
f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (32*c^
4*(100*b^2*e^2*g + 369*c^2*d^2*g + 16*b*c*e^2*f - 30*c^2*d*e*f - 384*b*c*d*
e*g))/(945*e*(b*e - 2*c*d)^5)))/e + (32*c^3*(b*e - c*d)*(85*b^2*e^2*g + 340
*c^2*d^2*g + 15*b*c*e^2*f - 29*c^2*d*e*f - 340*b*c*d*e*g))/(945*e^2*(b*e -
2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*f*
(b*e - c*d)^2)/(9*b*e^2 - 18*c*d*e) + (d*((d*((2*c*e*(2*b*e*g - 2*c*d*g + c
*e*f))/(9*b*e^2 - 18*c*d*e) - (2*c^2*d*e*g)/(9*b*e^2 - 18*c*d*e)))/e - (2*(
b*e - c*d)*(b*e*g - c*d*g + 2*c*e*f))/(9*b*e^2 - 18*c*d*e)))/e)*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((d*((4*c^3*e*(13*b*e*
g - 22*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4
*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (96*b^2*c^2*e^3*g +
 52*b*c^3*e^3*f - 88*c^4*d*e^2*f + 288*c^4*d^2*e*g - 332*b*c^3*d*e^2*g)/(63
*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e + (56*b^2*c^2*e^3*f - 256*c^4*
d^3*g + 52*b^3*c*e^3*g + 128*c^4*d^2*e*f - 172*b*c^3*d*e^2*f + 464*b*c^3*d^
2*e*g - 272*b^2*c^2*d*e^2*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4
*e*(14*b*e*g - 26*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)
 - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^3*(
72*b^2*e^2*g + 261*c^2*d^2*g + 14*b*c*e^2*f - 26*c^2*d*e*f - 274*b*c*d*e*g)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (16*c^2*(b*e - c*d)*(59*b
^2*e^2*g + 236*c^2*d^2*g + 13*b*c*e^2*f - 25*c^2*d*e*f - 236*b*c*d*e*g))/(3
15*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-(d+ex)(be-cd+cex))^{\frac{3}{2}}(f+gx)}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**7, x)
```

3.1963 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg+6cef)}{3465e^2(d+ex)^5(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg}{693e^2(d+ex)^6(2cd-be)^3}$$

Rubi [A] time = 0.45, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg+6cef)}{3465e^2(d+ex)^5(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg+6cef)}{693e^2(d+ex)^6(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg+6cef)}{99e^2(d+ex)^7(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(d+ex)^8(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(11*e^2*(2*c*d
 - b*e)*(d + e*x)^8) - (2*(6*c*e*f + 16*c*d*g - 11*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(99*e^2*(2*c*d - b*e)^2*(d + e*x)^7) - (8*c*(6*
c*e*f + 16*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(
693*e^2*(2*c*d - b*e)^3*(d + e*x)^6) - (16*c^2*(6*c*e*f + 16*c*d*g - 11*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3465*e^2*(2*c*d - b*e)^4*
(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^8}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8} + \frac{(6cef+16cdg-1}{1}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8} - \frac{2(6cef+16cdg-}{99e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8} - \frac{2(6cef+16cdg-}{99e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8} - \frac{2(6cef+16cdg-}{99e}$$

Mathematica [A] time = 0.18, size = 249, normalized size = 0.87

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(-35b^3e^3(2dg+9ef+11egx)+10b^2ce^2\left(43d^2g+de(210f+254gx)+e^2x(21f+22gx)\right)-4bc^2e\left(212d^3g+d^2e(1185f+1391gx)+2de^2x(135f+128gx)+2e^3x^2(15f+11gx)\right)+8c^3\left(61d^4g+8d^3e(57f+61gx)+d^2e^2x(183f+128gx)+16de^3x^2(3f+gx)+6e^4fx^3\right)\right)}{3465e^2(d+ex)^6(be-2cd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^8,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-35*b^
3*e^3*(9*e*f + 2*d*g + 11*e*g*x) + 8*c^3*(61*d^4*g + 6*e^4*f*x^3 + 16*d*e^3
*x^2*(3*f + g*x) + 8*d^3*e*(57*f + 61*g*x) + d^2*e^2*x*(183*f + 128*g*x)) +
 10*b^2*c*e^2*(43*d^2*g + e^2*x*(21*f + 22*g*x) + d*e*(210*f + 254*g*x)) -
4*b*c^2*e*(212*d^3*g + 2*e^3*x^2*(15*f + 11*g*x) + 2*d*e^2*x*(135*f + 128*g
*x) + d^2*e*(1185*f + 1391*g*x))))/(3465*e^2*(-2*c*d + b*e)^4*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 180.17, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^8,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 382, normalized size = 1.34

$$-\frac{2\left(c e x+b e-c d\right)\left(88 b\,c^{2} e^{4} g\,x^{3}-128 c^{3} d\,e^{3} g\,x^{3}-48 c^{3} e^{4} f\,x^{3}-220 b^{2} c\,e^{4} g\,x^{2}+1024 b\,c^{2} d\,e^{3} g\,x^{2}+120 b\,c^{2} e^{4} f\,x^{2}-1024 c^{3} d^{2} e^{2} g\,x^{2}-384 c^{3} d\,e^{3} f\,x^{2}+385 b^{3} e^{4} g x-2540 b^{2} c d\,e^{3} g x-210 b^{2} c\,e^{4} f x+5564 b\,c^{2} d^{2} e^{2} g x+1080 b\,c^{2} d\,e^{3} f x-3904 c^{3} d^{3} e g x-1464 c^{3} d^{2} e^{2} f x+70 b^{3} d\,e^{3} g+315 b^{3} e^{4} f-430 b^{2} c\,d^{2} e^{2} g-2100 b^{2} c d\,e^{3} f+848 b\,c^{2} d^{3} e g+4740 b\,c^{2} d^{2} e^{2} f-488 c^{3} d^{4} g-3648 c^{3} d^{3} e f\right)\left(-c\,e^{2} x^{2}-b\,e^{2} x-b d e+c\,d^{2}\right)^{\frac{3}{2}}}{3465\left(e x+d\right)^{7}\left(b^{4} e^{4}-8 b^{3} c d\,e^{3}+24 b^{2} c^{2} d^{2} e^{2}-32 b\,c^{3} d^{3} e+16 c^{4} d^{4}\right) e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x)
```

```
[Out] -2/3465*(c*e*x+b*e-c*d)*(88*b*c^2*e^4*g*x^3-128*c^3*d*e^3*g*x^3-48*c^3*e^4*
f*x^3-220*b^2*c*e^4*g*x^2+1024*b*c^2*d*e^3*g*x^2+120*b*c^2*e^4*f*x^2-1024*c
^3*d^2*e^2*g*x^2-384*c^3*d*e^3*f*x^2+385*b^3*e^4*g*x-2540*b^2*c*d*e^3*g*x-2
10*b^2*c*e^4*f*x+5564*b*c^2*d^2*e^2*g*x+1080*b*c^2*d*e^3*f*x-3904*c^3*d^3*e
*g*x-1464*c^3*d^2*e^2*f*x+70*b^3*d*e^3*g+315*b^3*e^4*f-430*b^2*c*d^2*e^2*g-
2100*b^2*c*d*e^3*f+848*b*c^2*d^3*e*g+4740*b*c^2*d^2*e^2*f-488*c^3*d^4*g-364
8*c^3*d^3*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7/e^2/(b^4*e^
4-8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 42.70, size = 16485, normalized size = 57.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^8,x)
```

```
[Out] (((d*((d*((64*c^6*(7*b*e*g - 12*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (
64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (3904*c^7*d^2*g + 1184*b^2*c^5*e^
2*g - 768*c^7*d*e*f + 448*b*c^6*e^2*f - 4288*b*c^6*d*e*g)/(10395*e*(b*e - 2
*c*d)^6)))/e + (8*b*c^4*(61*b^2*e^2*g + 244*c^2*d^2*g + 26*b*c*e^2*f - 48*c
^2*d*e*f - 244*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(9*b*e*g - 14*c*d*g +
 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))
/e - (1664*c^7*d^2*g + 544*b^2*c^5*e^2*g - 448*c^7*d*e*f + 288*b*c^6*e^2*f
- 1888*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4*(13*b^2*e^2*g
 + 52*c^2*d^2*g + 8*b*c*e^2*f - 14*c^2*d*e*f - 52*b*c*d*e*g))/(10395*e*(b*e
 - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((d*((64*c^6*(8*b*e*g - 14*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c
^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (4800*c^7*d^2*g + 1440*b^2*c^5*e^2*g
- 896*c^7*d*e*f + 512*b*c^6*e^2*f - 5248*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d
)^6)))/e + (8*b*c^4*(75*b^2*e^2*g + 300*c^2*d^2*g + 30*b*c*e^2*f - 56*c^2*d
*e*f - 300*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(9*b*e*g - 16*c*d*g + c*e
*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (
5696*c^7*d^2*g + 1696*b^2*c^5*e^2*g - 1024*c^7*d*e*f + 576*b*c^6*e^2*f - 62
08*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(89*b^2*e^2*g + 35
6*c^2*d^2*g + 34*b*c*e^2*f - 64*c^2*d*e*f - 356*b*c*d*e*g))/(10395*e*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*(
```

(d*((64*c^6*(10*b*e*g - 18*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (6592*c^7*d^2*g + 1952*b^2*c^5*e^2*g - 1152*c^7*d*e*f + 640*b*c^6*e^2*f - 7168*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(103*b^2*e^2*g + 412*c^2*d^2*g + 38*b*c*e^2*f - 72*c^2*d*e*f - 412*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (9280*c^7*d^2*g + 2640*b^2*c^5*e^2*g - 1216*c^7*d*e*f + 672*b*c^6*e^2*f - 9888*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(145*b^2*e^2*g + 580*c^2*d^2*g + 40*b*c*e^2*f - 76*c^2*d*e*f - 580*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (10816*c^7*d^2*g + 3056*b^2*c^5*e^2*g - 1344*c^7*d*e*f + 736*b*c^6*e^2*f - 11488*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(169*b^2*e^2*g + 676*c^2*d^2*g + 44*b*c*e^2*f - 84*c^2*d*e*f - 676*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (12352*c^7*d^2*g + 3472*b^2*c^5*e^2*g - 1472*c^7*d*e*f + 800*b*c^6*e^2*f - 13088*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(193*b^2*e^2*g + 772*c^2*d^2*g + 48*b*c*e^2*f - 92*c^2*d*e*f - 772*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (12864*c^7*d^2*g + 3600*b^2*c^5*e^2*g - 1472*c^7*d*e*f + 800*b*c^6*e^2*f - 13600*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(201*b^2*e^2*g + 804*c^2*d^2*g + 48*b*c*e^2*f - 92*c^2*d*e*f - 804*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (14656*c^7*d^2*g + 4080*b^2*c^5*e^2*g - 1600*c^7*d*e*f + 864*b*c^6*e^2*f - 15456*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(229*b^2*e^2*g + 916*c^2*d^2*g + 52*b*c*e^2*f - 100*c^2*d*e*f - 916*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16960*c^7*d^2*g + 4688*b^2*c^5*e^2*g - 1728*c^7*d*e*f + 928*b*c^6*e^2*f - 17824*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(265*b^2*e^2*g + 1060*c^2*d^2*g + 56*b*c*e^2*f - 108*c^2*d*e*f - 1060*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(15*b*e*g - 28*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (20224*c^7*d^2*g + 5520*b^2*c^5*e^2*g - 1792*c^7*d*e*f + 960*b*c^6*e^2*f - 21120*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4*(158*b^2*e^2*g + 632*c^2*d^2*g + 29*b*c*e^2*f - 56*c^2*d*e*f - 632*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(16*b*e*g - 30*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (22656*c^7*d^2*g + 6160*b^2*c^5*e^2*g - 1920*c^7*d*e*f + 1024*b*c^6*e^2*f - 23616*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4*(177*b^2*e^2*g + 708*c^2*d^2*g + 31*b*c*e^2*f - 60*c^2*d*e*f - 708*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(17*b*e*g - 32*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (25600*c^7*d^2*g + 6928*b^2*c^5*e^2*g - 2048*c^7*d*e*f + 1088*b*c^6*e^2*f - 26624*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4*(200*b^2*e^2*g + 800*c^2*d^2*g + 33*b*c*e^2*f - 64*c^2*d*e*f - 800*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(18*b*e*g - 34*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (29056*c^7*d^2*g + 7824*b^2*c^5*e^2*g - 2176*c^7*d*e*f + 1152*b*c^6*e^2*f - 30144*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4

*(227*b^2*e^2*g + 908*c^2*d^2*g + 35*b*c*e^2*f - 68*c^2*d*e*f - 908*b*c*d*e *g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(41*b*e*g - 78*c*d*g + 2*c*e*f))/(10395*(b* e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (39936*c^7*d^2*g + 10624*b^2*c^5*e^2*g - 2496*c^7*d*e*f + 1312*b*c^6*e^2*f - 41184*b*c^6*d* e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (32*b*c^4*(156*b^2*e^2*g + 624*c^2*d^2 *g + 20*b*c*e^2*f - 39*c^2*d*e*f - 624*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((8*c^ 3*e*(13*b*e*g - 24*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (424*b^2* c^2*e^3*g + 104*b*c^3*e^3*f - 192*c^4*d*e^2*f + 1496*c^4*d^2*e*g - 1592*b*c ^3*d*e^2*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (8*c*(b*e - c *d)*(41*b^2*e^2*g + 164*c^2*d^2*g + 12*b*c*e^2*f - 23*c^2*d*e*f - 164*b*c*d *e*g))/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b* d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((8*c^3*e*(3*b*e*g - 4*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(99*(7*b *e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d^2*g + 26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b *e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^2*d^2*g + 5*b*c*e^2*f - 8*c ^2*d*e*f - 16*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((4*c^3*e*(17 *b*e*g - 30*c*d*g + 2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (416*c^4*d^2*g + 136*b^2*c^2*e^2*g - 120*c^4*d*e*f + 68*b*c^3*e^2*f - 476*b*c^3*d*e*g)/(9 9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (4*b*c*(13*b^2*e^2*g + 52*c^2 *d^2*g + 8*b*c*e^2*f - 15*c^2*d*e*f - 52*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d* e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) ^4 + (((d*((d*((16*c^4*e*(7*b*e*g - 12*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c *d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2* c*d)^3)))/e - (244*b^2*c^3*e^3*g + 112*b*c^4*e^3*f - 192*c^5*d*e^2*f + 768* c^5*d^2*e*g - 864*b*c^4*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^ 3)))/e + (132*b^2*c^3*e^3*f - 832*c^5*d^3*g + 160*b^3*c^2*e^3*g + 320*c^5*d ^2*e*f - 416*b*c^4*d*e^2*f + 1472*b*c^4*d^2*e*g - 848*b^2*c^3*d*e^2*g)/(693 *e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^ 2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((8*c^4*e*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^ 2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (712*b^2*c^3*e^3*g + 184*b*c^4*e^3*f - 336*c^5*d*e^2*f + 2496*c^5*d^2*e*g - 2664*b*c^4*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (1792*c^5*d^3*g - 72*b^2*c^3*e^3*f - 544* b^3*c^2*e^3*g + 64*c^5*d^2*e*f + 104*b*c^4*d*e^2*f - 3968*b*c^4*d^2*e*g + 2 624*b^2*c^3*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(13* b*e*g - 22*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (488*b^2*c^4 *e^3*g + 208*b*c^5*e^3*f - 352*c^6*d*e^2*f + 1568*c^6*d^2*e*g - 1744*b*c^5* d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (240*b^2*c^4*e^ 3*f - 1824*c^6*d^3*g + 352*b^3*c^3*e^3*g + 576*c^6*d^2*e*f - 752*b*c^5*d*e^ 2*f + 3232*b*c^5*d^2*e*g - 1864*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^ 2 - (((d*((d*((8*c^4*e*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10* c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2 *c*d)^3)))/e - (816*b^2*c^3*e^3*g + 200*b*c^4*e^3*f - 368*c^5*d*e^2*f + 288 0*c^5*d^2*e*g - 3064*b*c^4*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c* d)^3)))/e + (352*b^2*c^3*e^3*f - 4352*c^5*d^3*g + 776*b^3*c^2*e^3*g + 1024* c^5*d^2*e*f - 1208*b*c^4*d*e^2*f + 7456*b*c^4*d^2*e*g - 4192*b^2*c^3*d*e^2* g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(10*b*e*g - 18*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465* (3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1160*b^2*c^4*e^3*g + 320*b*c^5*

e^3*f - 576*c^6*d*e^2*f + 4032*c^6*d^2*e*g - 4320*b*c^5*d*e^2*g)/(3465*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2528*c^6*d^3*g - 144*b^2*c^4*e^3*
f - 824*b^3*c^3*e^3*g + 32*c^6*d^2*e*f + 256*b*c^5*d*e^2*f - 5824*b*c^5*d^2
*e*g + 3928*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((32*c^
5*e*(11*b*e*g - 20*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1352*
b^2*c^4*e^3*g + 352*b*c^5*e^3*f - 640*c^6*d*e^2*f + 4736*c^6*d^2*e*g - 5056
*b*c^5*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (528*b^2
*c^4*e^3*f - 7008*c^6*d^3*g + 1288*b^3*c^3*e^3*g + 1440*c^6*d^2*e*f - 1760*
b*c^5*d*e^2*f + 12160*b*c^5*d^2*e*g - 6904*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 + (((d*((d*((32*c^5*e*(12*b*e*g - 22*c*d*g + c*e*f))/(3465*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^4)))/e - (1544*b^2*c^4*e^3*g + 384*b*c^5*e^3*f - 704*c^6*d*
e^2*f + 5440*c^6*d^2*e*g - 5792*b*c^5*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^4)))/e + (592*b^2*c^4*e^3*f - 8160*c^6*d^3*g + 1496*b^3*c^3*e
^3*g + 1632*c^6*d^2*e*f - 1984*b*c^5*d*e^2*f + 14144*b*c^5*d^2*e*g - 8024*b
^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((400*b^2*c^5*e^3*f - 3328*c
^7*d^3*g + 680*b^3*c^4*e^3*g + 896*c^7*d^2*e*f - 1216*b*c^6*d*e^2*f + 6048*
b*c^6*d^2*e*g - 3552*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*
((64*c^6*(6*b*e*g - 10*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*
g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(29*b^2*e^2*g + 94*c^2*d^2*g + 12*
b*c*e^2*f - 20*c^2*d*e*f - 104*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((352*b^2*c^5*e^3*
f - 4160*c^7*d^3*g + 1248*b^3*c^4*e^3*g + 384*c^7*d^2*e*f - 864*b*c^6*d*e^2
*f + 9152*b*c^6*d^2*e*g - 6032*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6)
 + (d*((d*((32*c^6*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6)
 - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(113*b^2*e^2*g + 388*
c^2*d^2*g + 34*b*c*e^2*f - 60*c^2*d*e*f - 418*b*c*d*e*g))/(10395*e*(b*e - 2
*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((7
36*b^2*c^5*e^3*f - 9600*c^7*d^3*g + 1912*b^3*c^4*e^3*g + 1792*c^7*d^2*e*f -
 2336*b*c^6*d*e^2*f + 17248*b*c^6*d^2*e*g - 10048*b^2*c^5*d*e^2*g)/(10395*e
^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(103
95*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(1
35*b^2*e^2*g + 468*c^2*d^2*g + 38*b*c*e^2*f - 68*c^2*d*e*f - 502*b*c*d*e*g)
)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((7616*c^7*d^3*g - 352*b^2*c^5*e^3*f - 2832*b^3*c^4*e^3*g +
 192*c^7*d^2*e*f + 576*b*c^6*d*e^2*f - 18944*b*c^6*d^2*e*g + 13232*b^2*c^5*
d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((d*((64*c^6*(13*b*e*g - 24*c*d*g
 + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))
/e - (16*c^5*(257*b^2*e^2*g + 928*c^2*d^2*g + 52*b*c*e^2*f - 96*c^2*d*e*f -
 976*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((8384*c^7*d^3*g - 352*b^2*c^5*e^3*f - 3184*
b^3*c^4*e^3*g + 320*c^7*d^2*e*f + 512*b*c^6*d*e^2*f - 21120*b*c^6*d^2*e*g +
 14832*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((d*((64*c^6*(14*b
*e*g - 26*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*
e - 2*c*d)^6)))/e - (16*c^5*(289*b^2*e^2*g + 1048*c^2*d^2*g + 56*b*c*e^2*f
- 104*c^2*d*e*f - 1100*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((832*b^2*c^5*e^3*f - 1139
2*c^7*d^3*g + 2264*b^3*c^4*e^3*g + 2048*c^7*d^2*e*f - 2656*b*c^6*d*e^2*f +
20448*b*c^6*d^2*e*g - 11904*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) +
(d*((d*((32*c^6*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) -
(64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(157*b^2*e^2*g + 548*c^2
*d^2*g + 42*b*c*e^2*f - 76*c^2*d*e*f - 586*b*c*d*e*g))/(10395*e*(b*e - 2*c*
d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((5504
*c^7*d^3*g - 352*b^2*c^5*e^3*f - 4768*b^3*c^4*e^3*g + 896*c^7*d^2*e*f + 224
*b*c^6*d*e^2*f - 24576*b*c^6*d^2*e*g + 20448*b^2*c^5*d*e^2*g)/(10395*e^2*(b

*e - 2*c*d)^6) - (d*((d*((32*c^6*(37*b*e*g - 70*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(266*b^2*e^2*g + 992*c^2*d^2*g + 37*b*c*e^2*f - 70*c^2*d*e*f - 1027*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((928*b^2*c^5*e^3*f - 13184*c^7*d^3*g + 2616*b^3*c^4*e^3*g + 2304*c^7*d^2*e*f - 2976*b*c^6*d*e^2*f + 23648*b*c^6*d^2*e*g - 13760*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(179*b^2*e^2*g + 628*c^2*d^2*g + 46*b*c*e^2*f - 84*c^2*d*e*f - 670*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((992*b^2*c^5*e^3*f - 13504*c^7*d^3*g + 2992*b^3*c^4*e^3*g + 2496*c^7*d^2*e*f - 3200*b*c^6*d*e^2*f + 25472*b*c^6*d^2*e*g - 15344*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(12*b*e*g - 22*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(225*b^2*e^2*g + 808*c^2*d^2*g + 48*b*c*e^2*f - 88*c^2*d*e*f - 852*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((224*b^2*c^5*e^3*f - 20608*c^7*d^3*g + 5920*b^3*c^4*e^3*g - 1152*c^7*d^2*e*f + 160*b*c^6*d*e^2*f + 44288*b*c^6*d^2*e*g - 28832*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(216*b^2*e^2*g + 800*c^2*d^2*g + 33*b*c*e^2*f - 62*c^2*d*e*f - 831*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1168*b^2*c^5*e^3*f - 25728*c^7*d^3*g + 5008*b^3*c^4*e^3*g + 2944*c^7*d^2*e*f - 3776*b*c^6*d*e^2*f + 45760*b*c^6*d^2*e*g - 26464*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(14*b*e*g - 26*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(297*b^2*e^2*g + 1080*c^2*d^2*g + 56*b*c*e^2*f - 104*c^2*d*e*f - 1132*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1264*b^2*c^5*e^3*f - 29312*c^7*d^3*g + 5696*b^3*c^4*e^3*g + 3200*c^7*d^2*e*f - 4096*b*c^6*d*e^2*f + 52096*b*c^6*d^2*e*g - 30112*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(15*b*e*g - 28*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(333*b^2*e^2*g + 1216*c^2*d^2*g + 60*b*c*e^2*f - 112*c^2*d*e*f - 1272*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1360*b^2*c^5*e^3*f - 33920*c^7*d^3*g + 6576*b^3*c^4*e^3*g + 3456*c^7*d^2*e*f - 4416*b*c^6*d*e^2*f + 60224*b*c^6*d^2*e*g - 34784*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(16*b*e*g - 30*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(377*b^2*e^2*g + 1384*c^2*d^2*g + 64*b*c*e^2*f - 120*c^2*d*e*f - 1444*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2400*b^2*c^5*e^3*f - 40960*c^7*d^3*g + 7744*b^3*c^4*e^3*g + 7424*c^7*d^2*e*f - 8480*b*c^6*d*e^2*f + 71936*b*c^6*d^2*e*g - 41216*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(239*b^2*e^2*g + 888*c^2*d^2*g + 35*b*c*e^2*f - 66*c^2*d*e*f - 921*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((1696*b^2*c^5*e^3*f - 58112*c^7*d^3*g + 11168*b^3*c^4*e^3*g + 4352*c^7*d^2*e*f - 5536*b*c^6*d*e^2*f + 102784*b*c^6*d^2*e*g - 59200*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(39*b*e*g - 74*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(297*b^2*e^2*g + 1112*c^2*d^2*g + 39*b*c*e^2*f - 74*c^2*d*e*f - 1149*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(8*b*e*g - 14*c*d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (32*b*c^2*e^3*f + 52*b^2*c*e^3*g - 56*c^3*d*e^2*f + 148*c^3*d^2*e*g - 176*b*c^2*d*e^2*g)/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e + (4*(b*e - c*d)*(6*b^2*e^2*g + 24*c^2*d^2*g + 7*b*c*e^2*f

- 13*c^2*d*e*f - 24*b*c*d*e*g))/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((2*b^3*e^2*g +
8*b*c^2*d^2*g + 4*b^2*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(11*(9*b*e^
2 - 18*c*d*e)*(b*e - 2*c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*
e^2*f + 8*b^2*c*e^2*g - 22*b*c^2*d*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c
d)) - (d((2*c^2*e*(5*b*e*g - 6*c*d*g + 2*c*e*f))/(11*(9*b*e^2 - 18*c*d*e)
*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((d*(
(8*c^4*e*(7*b*e*g - 10*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e -
(208*c^5*d^2*g + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c
^4*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (2*b*c^2*(13*b^2
*e^2*g + 52*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(693*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4*e*(8*b*e*g - 14*c*d*g + c*e*f))/(69
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^3)))/e - (928*c^5*d^2*g + 292*b^2*c^3*e^2*g - 224*c^5
*d*e*f + 128*b*c^4*e^2*f - 1040*b*c^4*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e
- 2*c*d)^3)))/e + (4*b*c^2*(29*b^2*e^2*g + 116*c^2*d^2*g + 15*b*c*e^2*f -
28*c^2*d*e*f - 116*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^
4*e*(9*b*e*g - 16*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (1088*c
^5*d^2*g + 340*b^2*c^3*e^2*g - 256*c^5*d*e*f + 144*b*c^4*e^2*f - 1216*b*c^4
*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (4*b*c^2*(34*b^2*e
^2*g + 136*c^2*d^2*g + 17*b*c*e^2*f - 32*c^2*d*e*f - 136*b*c*d*e*g))/(693*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^3 - (((d*((d*((8*c^4*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(
693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^3)))/e - (3392*c^5*d^2*g + 952*b^2*c^3*e^2*g - 400*
c^5*d*e*f + 216*b*c^4*e^2*f - 3592*b*c^4*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^3)))/e + (8*b*c^2*(53*b^2*e^2*g + 212*c^2*d^2*g + 13*b*c*e^2*f
- 25*c^2*d*e*f - 212*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32
*c^5*e*(4*b*e*g - 6*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (608*
c^6*d^2*g + 208*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 704*b*c^5
*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(19*b^2*e
^2*g + 76*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 76*b*c*d*e*g))/(3465*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(15*b*e*g - 26*c*d*g + 2*c*e*f))/(3
465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1952*c^6*d^2*g + 600*b^2*c^4*e^2*g - 416*c
^6*d*e*f + 240*b*c^5*e^2*f - 2160*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^4)))/e + (4*b*c^3*(61*b^2*e^2*g + 244*c^2*d^2*g + 28*b*c*e^2*f
- 52*c^2*d*e*f - 244*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*
c^5*e*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2
336*c^6*d^2*g + 712*b^2*c^4*e^2*g - 480*c^6*d*e*f + 272*b*c^5*e^2*f - 2576*
b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(73*
b^2*e^2*g + 292*c^2*d^2*g + 32*b*c*e^2*f - 60*c^2*d*e*f - 292*b*c*d*e*g))/(
3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(19*b*e*g - 34*c*d*g + 2*c*e
f))/(3465(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2720*c^6*d^2*g + 824*b^2*c^4*e^2*g
- 544*c^6*d*e*f + 304*b*c^5*e^2*f - 2992*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(85*b^2*e^2*g + 340*c^2*d^2*g + 36*b*c
*e^2*f - 68*c^2*d*e*f - 340*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*

c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((
d*((32*c^5*e*(12*b*e*g - 22*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e
- (5696*c^6*d^2*g + 1608*b^2*c^4*e^2*g - 704*c^6*d*e*f + 384*b*c^5*e^2*f -
6048*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^
3*(89*b^2*e^2*g + 356*c^2*d^2*g + 23*b*c*e^2*f - 44*c^2*d*e*f - 356*b*c*d*e
g))/(3465(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((32*c^5*e*(13*b*e*g - 24*c*d*g +
c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (6528*c^6*d^2*g + 1832*b^2*c^4*e
^2*g - 768*c^6*d*e*f + 416*b*c^5*e^2*f - 6912*b*c^5*d*e*g)/(3465*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3*(102*b^2*e^2*g + 408*c^2*d^2*g +
25*b*c*e^2*f - 48*c^2*d*e*f - 408*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (
((d*((d*((32*c^5*e*(14*b*e*g - 26*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4)))/e - (7616*c^6*d^2*g + 2120*b^2*c^4*e^2*g - 832*c^6*d*e*f + 448*b*c^5*e
^2*f - 8032*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (
8*b*c^3*(119*b^2*e^2*g + 476*c^2*d^2*g + 27*b*c*e^2*f - 52*c^2*d*e*f - 476*
b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(35*b*e*g - 66*
c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*
g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (13440*c^6*d^2*g + 3632
*b^2*c^4*e^2*g - 1056*c^6*d*e*f + 560*b*c^5*e^2*f - 13968*b*c^5*d*e*g)/(346
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (16*b*c^3*(105*b^2*e^2*g + 420
*c^2*d^2*g + 17*b*c*e^2*f - 33*c^2*d*e*f - 420*b*c*d*e*g))/(3465*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^2 - (((d*((d*((16*c^5*e*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(3465*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^4)))/e - (16*c^4*(177*b^2*e^2*g + 648*c^2*d^2*g + 31*b*c*e^2
*f - 58*c^2*d*e*f - 677*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4)))/e - (2176*c^6*d^3*g + 208*b^2*c^4*e^3*f - 1792*b^3*c^3*e^3*g + 1792*c
^6*d^2*e*f - 1328*b*c^5*d*e^2*f - 9344*b*c^5*d^2*e*g + 7712*b^2*c^4*d*e^2*g
)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(29*b*e*g - 54*c*d*g +
2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(158*b^2*e^2*g + 576*c^
2*d^2*g + 29*b*c*e^2*f - 54*c^2*d*e*f - 603*b*c*d*e*g))/(3465*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^4)))/e + (816*b^2*c^4*e^3*f - 9920*c^6*d^3*g + 2096*b^
3*c^3*e^3*g + 2368*c^6*d^2*e*f - 2800*b*c^5*d*e^2*f + 18304*b*c^5*d^2*e*g -
10864*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(
33*b*e*g - 62*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
- (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(
200*b^2*e^2*g + 736*c^2*d^2*g + 33*b*c*e^2*f - 62*c^2*d*e*f - 767*b*c*d*e*g
))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (880*b^2*c^4*e^3*f - 22
848*c^6*d^3*g + 4016*b^3*c^3*e^3*g + 2496*c^6*d^2*e*f - 2992*b*c^5*d*e^2*f
+ 38912*b*c^5*d^2*e*g - 21776*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
+ (((d*((d*((64*c^6*(22*b*e*g - 42*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6)
- (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (64*c^5*(196*b^2*e^2*g + 741*c
^2*d^2*g + 22*b*c*e^2*f - 42*c^2*d*e*f - 762*b*c*d*e*g))/(10395*e*(b*e - 2*
c*d)^6)))/e + (64*c^4*(b*e - c*d)*(175*b^2*e^2*g + 700*c^2*d^2*g + 21*b*c*e
^2*f - 41*c^2*d*e*f - 700*b*c*d*e*g))/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*f*(b*e - c*d)^2)/(11*
b*e^2 - 22*c*d*e) + (d*((d*((2*c*e*(2*b*e*g - 2*c*d*g + c*e*f))/(11*b*e^2 -
22*c*d*e) - (2*c^2*d*e*g)/(11*b*e^2 - 22*c*d*e)))/e - (2*(b*e - c*d)*(b*e*
g - c*d*g + 2*c*e*f))/(11*b*e^2 - 22*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^6 - (((d*((d*((4*c^3*e*(15*b*e*g - 26*c*d*g +

```
2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(99*(7*
b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (116*b^2*c^2*e^3*g + 60*b*c^3*e^3*
f - 104*c^4*d*e^2*f + 352*c^4*d^2*e*g - 404*b*c^3*d*e^2*g)/(99*e*(7*b*e^2 -
 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (68*b^2*c^2*e^3*f - 320*c^4*d^3*g + 64*b^
3*c*e^3*g + 160*c^4*d^2*e*f - 212*b*c^3*d*e^2*f + 576*b*c^3*d^2*e*g - 336*b
^2*c^2*d*e^2*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((16*c^4*e*(17*b*e*g
- 32*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d
*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^3*(105*b^2*e^2
*g + 387*c^2*d^2*g + 17*b*c*e^2*f - 32*c^2*d*e*f - 403*b*c*d*e*g))/(693*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (16*c^2*(b*e - c*d)*(89*b^2*e^2*g
+ 356*c^2*d^2*g + 16*b*c*e^2*f - 31*c^2*d*e*f - 356*b*c*d*e*g))/(693*e*(5*b
*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(20*b*e*g - 38*c*d*g + c*e*f))/(3465
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^4*(156*b^2*e^2*g + 585*c^2*d^2*g + 20*b*
c*e^2*f - 38*c^2*d*e*f - 604*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4)))/e + (32*c^3*(b*e - c*d)*(137*b^2*e^2*g + 548*c^2*d^2*g + 19*b*c*
e^2*f - 37*c^2*d*e*f - 548*b*c*d*e*g))/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-(d+ex)(be-cd+cex))^{\frac{3}{2}}\left(f+gx\right)}{(d+ex)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**8, x)
```

3.1964 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{15015e^2(d+ex)^5(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cd$$

Rubi [A] time = 0.57, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{15015e^2(d+ex)^5(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{3003e^2(d+ex)^6(2cd-be)^4}-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{429e^2(d+ex)^7(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{143e^2(d+ex)^8(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13e^2(d+ex)^9(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(13*e^2*(2*c*d
 - b*e)*(d + e*x)^9) - (2*(8*c*e*f + 18*c*d*g - 13*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(143*e^2*(2*c*d - b*e)^2*(d + e*x)^8) - (4*c*(8
*c*e*f + 18*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/
(429*e^2*(2*c*d - b*e)^3*(d + e*x)^7) - (16*c^2*(8*c*e*f + 18*c*d*g - 13*b*
e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3003*e^2*(2*c*d - b*e)^4
*(d + e*x)^6) - (32*c^3*(8*c*e*f + 18*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(5/2))/(15015*e^2*(2*c*d - b*e)^5*(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^9}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13e^2(2cd-be)(d+ex)^9} + \frac{(8cef+18cdg-1}{1}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-}{143}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-}{143}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-}{143}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-}{143}$$

Mathematica [A] time = 0.26, size = 349, normalized size = 0.97

$$\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(105b^4e^4(2dg+11ef+13egx)-70b^3ce^3\left(25d^2g+2de(72f+85gx)+e^2x(12f+13gx)\right)+20b^2c^2e^2\left(271d^3g+2d^2e(833f+977gx)+de^2x(308f+323gx)+2e^3x^2(14f+13gx)\right)-8bc^3e\left(911d^4g+d^3e(6200f+7134gx)+d^2e^2x(1940f+1901gx)+4de^3x^2(100f+81gx)+2e^4x^3(20f+13gx)\right)+16c^4\left(213d^5g+d^4e(1763f+1917gx)+3d^3e^2x(284f+231gx)+2d^2e^3x^2(154f+81gx)+18de^4x^3(4f+gx)+8e^5fx^4\right)\right)}{15015e^2(d+ex)^7(be-2cd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^9,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(105*b^4
*e^4*(11*e*f + 2*d*g + 13*e*g*x) - 70*b^3*c*e^3*(25*d^2*g + e^2*x*(12*f + 1
3*g*x) + 2*d*e*(72*f + 85*g*x)) + 20*b^2*c^2*e^2*(271*d^3*g + 2*e^3*x^2*(14
*f + 13*g*x) + d*e^2*x*(308*f + 323*g*x) + 2*d^2*e*(833*f + 977*g*x)) + 16*
c^4*(213*d^5*g + 8*e^5*f*x^4 + 18*d*e^4*x^3*(4*f + g*x) + 2*d^2*e^3*x^2*(15
4*f + 81*g*x) + 3*d^3*e^2*x*(284*f + 231*g*x) + d^4*e*(1763*f + 1917*g*x))
- 8*b*c^3*e*(911*d^4*g + 2*e^4*x^3*(20*f + 13*g*x) + 4*d*e^3*x^2*(100*f + 8
1*g*x) + d^2*e^2*x*(1940*f + 1901*g*x) + d^3*e*(6200*f + 7134*g*x))))/(1501
5*e^2*(-2*c*d + b*e)^5*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 180.14, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^9,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 564, normalized size = 1.57

$$-\frac{2\left(c e x+b e-c d\right)\left(-208 b c^{3} e^{5} g x^{4}+288 c^{4} d e^{4} g x^{4}+128 c^{4} e^{5} f x^{4}+520 b^{2} c^{2} e^{5} g x^{3}-2592 b c^{3} d e^{4} g x^{3}-320 b c^{3} e^{5} f x^{3}+2592 c^{4} d^{2} e^{3} g x^{3}+1152 c^{4} d e^{4} f x^{3}-910 b^{3} c e^{5} g x^{2}+6460 b^{2} c^{2} d e^{4} g x^{2}+560 b^{2} c^{2} e^{5} f x^{2}-15208 b c^{3} d^{2} e^{3} g x^{2}-3200 b c^{3} d e^{4} f x^{2}+11088 c^{4} d^{3} e^{2} g x^{2}+4928 c^{4} d^{2} e^{3} f x^{2}+1365 b^{4} e^{5} g x-11900 b^{3} c d e^{4} g x-840 b^{3} c e^{5} f x+39080 b^{2} c^{2} d^{2} e^{3} g x+6160 b^{2} c^{2} d e^{4} f x-57072 b c^{3} d^{3} e^{2} g x-15520 b c^{3} d^{2} e^{3} f x+30672 c^{4} d^{4} e g x+13632 c^{4} d^{3} e^{2} f x+210 b^{4} d e^{4} g+1155 b^{4} e^{5} f-1750 b^{3} c d^{2} e^{3} g-10080 b^{3} c d e^{4} f+5420 b^{2} c^{2} d^{3} e^{2} g+33320 b^{2} c^{2} d^{2} e^{3} f-7288 b c^{3} d^{4} e g-49600 b c^{3} d^{3} e^{2} f+3408 c^{4} d^{5} g+28208 c^{4} d^{4} e f\right)\left(-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}\right)^{\frac{3}{2}}}{15015\left(e x+d\right)^{8}\left(b^{5} e^{5}-10 b^{4} c d e^{4}+40 b^{3} c^{2} d^{2} e^{3}-80 b^{2} c^{3} d^{3} e^{2}+80 b c^{4} d^{4} e-32 c^{5} d^{5}\right) e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x)
```

```
[Out] -2/15015*(c*e*x+b*e-c*d)*(-208*b*c^3*e^5*g*x^4+288*c^4*d*e^4*g*x^4+128*c^4*
e^5*f*x^4+520*b^2*c^2*e^5*g*x^3-2592*b*c^3*d*e^4*g*x^3-320*b*c^3*e^5*f*x^3+
2592*c^4*d^2*e^3*g*x^3+1152*c^4*d*e^4*f*x^3-910*b^3*c*e^5*g*x^2+6460*b^2*c^
2*d*e^4*g*x^2+560*b^2*c^2*e^5*f*x^2-15208*b*c^3*d^2*e^3*g*x^2-3200*b*c^3*d*
e^4*f*x^2+11088*c^4*d^3*e^2*g*x^2+4928*c^4*d^2*e^3*f*x^2+1365*b^4*e^5*g*x-1
1900*b^3*c*d*e^4*g*x-840*b^3*c*e^5*f*x+39080*b^2*c^2*d^2*e^3*g*x+6160*b^2*c
^2*d*e^4*f*x-57072*b*c^3*d^3*e^2*g*x-15520*b*c^3*d^2*e^3*f*x+30672*c^4*d^4*
e*g*x+13632*c^4*d^3*e^2*f*x+210*b^4*d*e^4*g+1155*b^4*e^5*f-1750*b^3*c*d^2*e
^3*g-10080*b^3*c*d*e^4*f+5420*b^2*c^2*d^3*e^2*g+33320*b^2*c^2*d^2*e^3*f-728
8*b*c^3*d^4*e*g-49600*b*c^3*d^3*e^2*f+3408*c^4*d^5*g+28208*c^4*d^4*e*f)*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8/e^2/(b^5*e^5-10*b^4*c*d*e^4+4
0*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 82.71, size = 33375, normalized size = 92.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^9,x)
```

```
[Out] (((d*((d*((128*c^7*(5*b*e*g - 8*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) -
(128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (4352*c^8*d^2*g + 1376*b^2*c^6
*e^2*g - 1024*c^8*d*e*f + 640*b*c^7*e^2*f - 4864*b*c^7*d*e*g)/(135135*e*(b*
e - 2*c*d)^7)))/e + (32*b*c^5*(17*b^2*e^2*g + 68*c^2*d^2*g + 9*b*c*e^2*f -
16*c^2*d*e*f - 68*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(15*b*e*g - 26*c*
d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c
*d)^7)))/e - (9472*c^8*d^2*g + 2816*b^2*c^6*e^2*g - 1664*c^8*d*e*f + 960*b*
c^7*e^2*f - 10304*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(
```

37*b^2*e^2*g + 148*c^2*d^2*g + 14*b*c*e^2*f - 26*c^2*d*e*f - 148*b*c*d*e*g)
)/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) - (((d*((d*((64*c^7*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (11520*c^8*d^2*
g + 3392*b^2*c^6*e^2*g - 1920*c^8*d*e*f + 1088*b*c^7*e^2*f - 12480*b*c^7*d*
e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(45*b^2*e^2*g + 180*c^2*d^2
*g + 16*b*c*e^2*f - 30*c^2*d*e*f - 180*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^
7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*
c^7*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*
g)/(135135*(b*e - 2*c*d)^7)))/e - (13568*c^8*d^2*g + 3968*b^2*c^6*e^2*g - 2
176*c^8*d*e*f + 1216*b*c^7*e^2*f - 14656*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*
d)^7)))/e + (32*b*c^5*(53*b^2*e^2*g + 212*c^2*d^2*g + 18*b*c*e^2*f - 34*c^2
*d*e*f - 212*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(21*b*e*g - 38*c*d*g +
 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7
)))/e - (15616*c^8*d^2*g + 4544*b^2*c^6*e^2*g - 2432*c^8*d*e*f + 1344*b*c^7
*e^2*f - 16832*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(61*
b^2*e^2*g + 244*c^2*d^2*g + 20*b*c*e^2*f - 38*c^2*d*e*f - 244*b*c*d*e*g))/(
135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) - (((d*((d*((64*c^7*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(135135*(b*e -
2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (17664*c^8*d^2*g +
 5120*b^2*c^6*e^2*g - 2688*c^8*d*e*f + 1472*b*c^7*e^2*f - 19008*b*c^7*d*e*g
)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(69*b^2*e^2*g + 276*c^2*d^2*g
+ 22*b*c*e^2*f - 42*c^2*d*e*f - 276*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^
7*(11*b*e*g - 20*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(
135135*(b*e - 2*c*d)^7)))/e - (21120*c^8*d^2*g + 5952*b^2*c^6*e^2*g - 2560*
c^8*d*e*f + 1408*b*c^7*e^2*f - 22400*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7
)))/e + (16*b*c^5*(165*b^2*e^2*g + 660*c^2*d^2*g + 42*b*c*e^2*f - 80*c^2*d*
e*f - 660*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(12*b*e*g - 22*c*d*g + c
*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/
e - (24448*c^8*d^2*g + 6848*b^2*c^6*e^2*g - 2816*c^8*d*e*f + 1536*b*c^7*e^2
*f - 25856*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(191*b^2
*e^2*g + 764*c^2*d^2*g + 46*b*c*e^2*f - 88*c^2*d*e*f - 764*b*c*d*e*g))/(135
135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
x) + (((d((d*((128*c^7*(13*b*e*g - 24*c*d*g + c*e*f))/(135135*(b*e - 2*c*
d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (27776*c^8*d^2*g + 774
4*b^2*c^6*e^2*g - 3072*c^8*d*e*f + 1664*b*c^7*e^2*f - 29312*b*c^7*d*e*g)/(1
35135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(217*b^2*e^2*g + 868*c^2*d^2*g + 5
0*b*c*e^2*f - 96*c^2*d*e*f - 868*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(
13*b*e*g - 24*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135
135*(b*e - 2*c*d)^7)))/e - (28800*c^8*d^2*g + 8000*b^2*c^6*e^2*g - 3072*c^8
*d*e*f + 1664*b*c^7*e^2*f - 30336*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))
/e + (16*b*c^5*(225*b^2*e^2*g + 900*c^2*d^2*g + 50*b*c*e^2*f - 96*c^2*d*e*f
 - 900*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(14*b*e*g - 26*c*d*g + c*e*
f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e -
 (31104*c^8*d^2*g + 8640*b^2*c^6*e^2*g - 3328*c^8*d*e*f + 1792*b*c^7*e^2*f
- 32768*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(243*b^2*e^
2*g + 972*c^2*d^2*g + 54*b*c*e^2*f - 104*c^2*d*e*f - 972*b*c*d*e*g))/(13513
5*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) + (((d*((d*((128*c^7*(14*b*e*g - 26*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)
^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32640*c^8*d^2*g + 9024*
b^2*c^6*e^2*g - 3328*c^8*d*e*f + 1792*b*c^7*e^2*f - 34304*b*c^7*d*e*g)/(135
135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(255*b^2*e^2*g + 1020*c^2*d^2*g + 54
*b*c*e^2*f - 104*c^2*d*e*f - 1020*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*

```
(15*b*e*g - 28*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(13
5135*(b*e - 2*c*d)^7)))/e - (36480*c^8*d^2*g + 10048*b^2*c^6*e^2*g - 3584*c
^8*d*e*f + 1920*b*c^7*e^2*f - 38272*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)
))/e + (16*b*c^5*(285*b^2*e^2*g + 1140*c^2*d^2*g + 58*b*c*e^2*f - 112*c^2*d
*e*f - 1140*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(15*b*e*g - 28*c*d*g +
 c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7))
)/e - (37504*c^8*d^2*g + 10304*b^2*c^6*e^2*g - 3584*c^8*d*e*f + 1920*b*c^7*
e^2*f - 39296*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(293*
b^2*e^2*g + 1172*c^2*d^2*g + 58*b*c*e^2*f - 112*c^2*d*e*f - 1172*b*c*d*e*g)
)/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) + (((d*((d*((128*c^7*(16*b*e*g - 30*c*d*g + c*e*f))/(135135*(b*e
- 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (41856*c^8*d^2*g
 + 11456*b^2*c^6*e^2*g - 3840*c^8*d*e*f + 2048*b*c^7*e^2*f - 43776*b*c^7*d*
e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(327*b^2*e^2*g + 1308*c^2*d
^2*g + 62*b*c*e^2*f - 120*c^2*d*e*f - 1308*b*c*d*e*g))/(135135*e*(b*e - 2*c
*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*(
(64*c^7*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^
8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (44160*c^8*d^2*g + 12000*b^2*c^6*e^2*
g - 3712*c^8*d*e*f + 1984*b*c^7*e^2*f - 46016*b*c^7*d*e*g)/(135135*e*(b*e -
 2*c*d)^7)))/e + (16*b*c^5*(345*b^2*e^2*g + 1380*c^2*d^2*g + 60*b*c*e^2*f -
 116*c^2*d*e*f - 1380*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(17*b*e*g -
32*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e -
2*c*d)^7)))/e - (47232*c^8*d^2*g + 12864*b^2*c^6*e^2*g - 4096*c^8*d*e*f + 2
176*b*c^7*e^2*f - 49280*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b
*c^5*(369*b^2*e^2*g + 1476*c^2*d^2*g + 66*b*c*e^2*f - 128*c^2*d*e*f - 1476*
b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(1
35135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (4928
0*c^8*d^2*g + 13344*b^2*c^6*e^2*g - 3968*c^8*d*e*f + 2112*b*c^7*e^2*f - 512
64*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(385*b^2*e^2*g +
 1540*c^2*d^2*g + 64*b*c*e^2*f - 124*c^2*d*e*f - 1540*b*c*d*e*g))/(135135*e
*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((d*((64*c^7*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7
) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (54400*c^8*d^2*g + 14688*b
^2*c^6*e^2*g - 4224*c^8*d*e*f + 2240*b*c^7*e^2*f - 56512*b*c^7*d*e*g)/(1351
35*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(425*b^2*e^2*g + 1700*c^2*d^2*g + 68*
b*c*e^2*f - 132*c^2*d*e*f - 1700*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(3
5*b*e*g - 66*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(13
5135*(b*e - 2*c*d)^7)))/e - (55424*c^8*d^2*g + 14944*b^2*c^6*e^2*g - 4224*c
^8*d*e*f + 2240*b*c^7*e^2*f - 57536*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)
))/e + (16*b*c^5*(433*b^2*e^2*g + 1732*c^2*d^2*g + 68*b*c*e^2*f - 132*c^2*d
*e*f - 1732*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(37*b*e*g - 70*c*d*g +
2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)
))/e - (61056*c^8*d^2*g + 16416*b^2*c^6*e^2*g - 4480*c^8*d*e*f + 2368*b*c^7
*e^2*f - 63296*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(477
*b^2*e^2*g + 1908*c^2*d^2*g + 72*b*c*e^2*f - 140*c^2*d*e*f - 1908*b*c*d*e*g
))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) - (((d*((d*((64*c^7*(37*b*e*g - 70*c*d*g + 2*c*e*f))/(135135*(b*
e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (62592*c^8*d^2
*g + 16800*b^2*c^6*e^2*g - 4480*c^8*d*e*f + 2368*b*c^7*e^2*f - 64832*b*c^7*
d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(489*b^2*e^2*g + 1956*c^2
*d^2*g + 72*b*c*e^2*f - 140*c^2*d*e*f - 1956*b*c*d*e*g))/(135135*e*(b*e - 2
*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d
*((64*c^7*(39*b*e*g - 74*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*
c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (67712*c^8*d^2*g + 18144*b^2*c^6*e^
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2*g - 4736*c^8*d*e*f + 2496*b*c^7*e^2*f - 70080*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(529*b^2*e^2*g + 2116*c^2*d^2*g + 76*b*c*e^2*f - 148*c^2*d*e*f - 2116*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(39*b*e*g - 74*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (68736*c^8*d^2*g + 18400*b^2*c^6*e^2*g - 4736*c^8*d*e*f + 2496*b*c^7*e^2*f - 71104*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(537*b^2*e^2*g + 2148*c^2*d^2*g + 76*b*c*e^2*f - 148*c^2*d*e*f - 2148*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(41*b*e*g - 78*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (75904*c^8*d^2*g + 20256*b^2*c^6*e^2*g - 4992*c^8*d*e*f + 2624*b*c^7*e^2*f - 78400*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(593*b^2*e^2*g + 2372*c^2*d^2*g + 80*b*c*e^2*f - 156*c^2*d*e*f - 2372*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(21*b*e*g - 40*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (84992*c^8*d^2*g + 22560*b^2*c^6*e^2*g - 5120*c^8*d*e*f + 2688*b*c^7*e^2*f - 87552*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(332*b^2*e^2*g + 1328*c^2*d^2*g + 41*b*c*e^2*f - 80*c^2*d*e*f - 1328*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(43*b*e*g - 82*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (84096*c^8*d^2*g + 22368*b^2*c^6*e^2*g - 5248*c^8*d*e*f + 2752*b*c^7*e^2*f - 86720*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(657*b^2*e^2*g + 2628*c^2*d^2*g + 84*b*c*e^2*f - 164*c^2*d*e*f - 2628*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(22*b*e*g - 42*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (92416*c^8*d^2*g + 24480*b^2*c^6*e^2*g - 5376*c^8*d*e*f + 2816*b*c^7*e^2*f - 95104*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(361*b^2*e^2*g + 1444*c^2*d^2*g + 43*b*c*e^2*f - 84*c^2*d*e*f - 1444*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(23*b*e*g - 44*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (100864*c^8*d^2*g + 26656*b^2*c^6*e^2*g - 5632*c^8*d*e*f + 2944*b*c^7*e^2*f - 103680*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(394*b^2*e^2*g + 1576*c^2*d^2*g + 45*b*c*e^2*f - 88*c^2*d*e*f - 1576*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(24*b*e*g - 46*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (110336*c^8*d^2*g + 29088*b^2*c^6*e^2*g - 5888*c^8*d*e*f + 3072*b*c^7*e^2*f - 113280*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(431*b^2*e^2*g + 1724*c^2*d^2*g + 47*b*c*e^2*f - 92*c^2*d*e*f - 1724*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(25*b*e*g - 48*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (120832*c^8*d^2*g + 31776*b^2*c^6*e^2*g - 6144*c^8*d*e*f + 3200*b*c^7*e^2*f - 123904*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(472*b^2*e^2*g + 1888*c^2*d^2*g + 49*b*c*e^2*f - 96*c^2*d*e*f - 1888*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(55*b*e*g - 106*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (151552*c^8*d^2*g + 39616*b^2*c^6*e^2*g - 6784*c^8*d*e*f + 3520*b*c^7*e^2*f - 154944*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (64*b*c^5*(296*b^2*e^2*g + 1184*c^2*d^2*g + 27*b*c*e^2*f - 53*c^2*d*e*f - 1184*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((8*c^3*e*(15*b*e*g - 28*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (552*b^2*c^2*e^3*g + 120*b*c^3*e^3*f - 224*c^4*d*e^2*f + 1976*c^4*d^2*e*g - 2088*b*c^3*d*e^2*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)

^2)))/e + (8*c*(b*e - c*d)*(55*b^2*e^2*g + 220*c^2*d^2*g + 14*b*c*e^2*f - 2
7*c^2*d*e*f - 220*b*c*d*e*g))/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((8*c^
3*e*(3*b*e*g - 4*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)
 - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d
^2*g + 26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(
143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^
2*d^2*g + 5*b*c*e^2*f - 8*c^2*d*e*f - 16*b*c*d*e*g))/(143*(9*b*e^2 - 18*c*d
e)(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^5 - (((d*((d*((4*c^3*e*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 1
8*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)^2)))/e - (480*c^4*d^2*g + 156*b^2*c^2*e^2*g - 136*c^4*d*e*f + 76*b*c
^3*e^2*f - 548*b*c^3*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e
 + (4*b*c*(15*b^2*e^2*g + 60*c^2*d^2*g + 9*b*c*e^2*f - 17*c^2*d*e*f - 60*b*c
*d*e*g))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((16*c^4*e*(8*b*e*g - 14*c*d*
g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1
287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (292*b^2*c^3*e^3*g + 128*b*
c^4*e^3*f - 224*c^5*d*e^2*f + 928*c^5*d^2*e*g - 1040*b*c^4*d*e^2*g)/(1287*e
*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (160*b^2*c^3*e^3*f - 1040*c^5*
d^3*g + 196*b^3*c^2*e^3*g + 400*c^5*d^2*e*f - 512*b*c^4*d*e^2*f + 1824*b*c^
4*d^2*e*g - 1044*b^2*c^3*d*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*(
(8*c^4*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e
 - (952*b^2*c^3*e^3*g + 216*b*c^4*e^3*f - 400*c^5*d*e^2*f + 3392*c^5*d^2*e*
g - 3592*b*c^4*d*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e +
 (40*b^2*c^3*e^3*f - 2368*c^5*d^3*g + 752*b^3*c^2*e^3*g - 256*c^5*d^2*e*f +
 56*b*c^4*d*e^2*f + 5376*b*c^4*d^2*e*g - 3600*b^2*c^3*d*e^2*g)/(1287*e*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^4 - (((d*((d*((8*c^4*e*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(128
7*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 1
4*c*d*e)*(b*e - 2*c*d)^3)))/e - (1072*b^2*c^3*e^3*g + 232*b*c^4*e^3*f - 432
*c^5*d*e^2*f + 3840*c^5*d^2*e*g - 4056*b*c^4*d*e^2*g)/(1287*e*(7*b*e^2 - 14
*c*d*e)*(b*e - 2*c*d)^3)))/e + (472*b^2*c^3*e^3*f - 6240*c^5*d^3*g + 1080*b
^3*c^2*e^3*g + 1440*c^5*d^2*e*f - 1656*b*c^4*d*e^2*f + 10560*b*c^4*d^2*e*g
 - 5880*b^2*c^3*d*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((16*c^5*e*
(15*b*e*g - 26*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (600*b
^2*c^4*e^3*g + 240*b*c^5*e^3*f - 416*c^6*d*e^2*f + 1952*c^6*d^2*e*g - 2160*
b*c^5*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (304*b^2
*c^4*e^3*f - 2432*c^6*d^3*g + 452*b^3*c^3*e^3*g + 768*c^6*d^2*e*f - 976*b*c
^5*d*e^2*f + 4240*b*c^5*d^2*e*g - 2416*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^3 + (((d*((d*((32*c^5*e*(12*b*e*g - 22*c*d*g + c*e*f))/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4)))/e - (1608*b^2*c^4*e^3*g + 384*b*c^5*e^3*f - 704*c^6*d*e
^2*f + 5696*c^6*d^2*e*g - 6048*b*c^5*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*
(b*e - 2*c*d)^4)))/e + (64*b^2*c^4*e^3*f - 3104*c^6*d^3*g + 1160*b^3*c^3*e^
3*g - 480*c^6*d^2*e*f + 128*b*c^5*d*e^2*f + 7744*b*c^5*d^2*e*g - 5416*b^2*c
^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(13*b*e*g -
24*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*
e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (1832*b^2*c^4*e^3*g
+ 416*b*c^5*e^3*f - 768*c^6*d*e^2*f + 6528*c^6*d^2*e*g - 6912*b*c^5*d*e^2*g
)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (744*b^2*c^4*e^3*f -
10880*c^6*d^3*g + 1904*b^3*c^3*e^3*g + 2176*c^6*d^2*e*f - 2560*b*c^5*d*e^2*
f + 18496*b*c^5*d^2*e*g - 10336*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*

e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^3 + (((d*((d*((32*c^5*e*(14*b*e*g - 26*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^4)))/e - (2056*b^2*c^4*e^3*g + 448*b*c^5*e^3*f - 832*c^6*d*e^2*f +
7360*c^6*d^2*e*g - 7776*b*c^5*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^4)))/e + (824*b^2*c^4*e^3*f - 12416*c^6*d^3*g + 2168*b^3*c^3*e^3*g +
 2432*c^6*d^2*e*f - 2848*b*c^5*d*e^2*f + 21088*b*c^5*d^2*e*g - 11776*b^2*c^
4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((896*b^2*c^6*e^3*f - 8704*c^8*d
^3*g + 1760*b^3*c^5*e^3*g + 2048*c^8*d^2*e*f - 2752*b*c^7*d*e^2*f + 15744*b
*c^7*d^2*e*g - 9216*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*
((64*c^7*(13*b*e*g - 22*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c
^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(35*b^2*e^2*g + 116*c^2*d^2*
g + 13*b*c*e^2*f - 22*c^2*d*e*f - 127*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7
)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((704*b^2*
c^6*e^3*f - 8960*c^8*d^3*g + 2848*b^3*c^5*e^3*g + 640*c^8*d^2*e*f - 1664*b*
c^7*d*e^2*f + 20352*b*c^7*d^2*e*g - 13632*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7) + (d*((d*((128*c^7*(9*b*e*g - 16*c*d*g + c*e*f))/(135135*(b*e
- 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(65*b^2*
e^2*g + 226*c^2*d^2*g + 18*b*c*e^2*f - 32*c^2*d*e*f - 242*b*c*d*e*g))/(1351
35*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) + (((14720*c^8*d^3*g - 704*b^2*c^6*e^3*f - 6016*b^3*c^5*e^3*g + 512*
c^8*d^2*e*f + 1088*b*c^7*d*e^2*f - 38784*b*c^7*d^2*e*g + 27744*b^2*c^6*d*e^
2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((64*c^7*(27*b*e*g - 50*c*d*g +
2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)
))/e - (32*c^6*(283*b^2*e^2*g + 1028*c^2*d^2*g + 54*b*c*e^2*f - 100*c^2*d*e
*f - 1078*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((16000*c^8*d^3*g - 704*b^2*c^6*e^3*f
- 6720*b^3*c^5*e^3*g + 768*c^8*d^2*e*f + 960*b*c^7*d*e^2*f - 42880*b*c^7*d^
2*e*g + 30880*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((64*c
^7*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g
)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(317*b^2*e^2*g + 1156*c^2*d^2*g +
58*b*c*e^2*f - 108*c^2*d*e*f - 1210*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1568*b^2*c
^6*e^3*f - 23040*c^8*d^3*g + 4560*b^3*c^5*e^3*g + 3840*c^8*d^2*e*f - 4992*b
*c^7*d*e^2*f + 41280*b*c^7*d^2*e*g - 24000*b^2*c^6*d*e^2*g)/(135135*e^2*(b*
e - 2*c*d)^7) + (d*((d*((128*c^7*(10*b*e*g - 18*c*d*g + c*e*f))/(135135*(b*
e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(77*b^
2*e^2*g + 270*c^2*d^2*g + 20*b*c*e^2*f - 36*c^2*d*e*f - 288*b*c*d*e*g))/(13
5135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) + (((17280*c^8*d^3*g - 704*b^2*c^6*e^3*f - 7424*b^3*c^5*e^3*g + 10
24*c^8*d^2*e*f + 832*b*c^7*d*e^2*f - 46976*b*c^7*d^2*e*g + 34016*b^2*c^6*d*
e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((64*c^7*(31*b*e*g - 58*c*d*g
+ 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^
7)))/e - (32*c^6*(351*b^2*e^2*g + 1284*c^2*d^2*g + 62*b*c*e^2*f - 116*c^2*d
*e*f - 1342*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((9088*c^8*d^3*g - 704*b^2*c^6*e^3*f
 - 9888*b^3*c^5*e^3*g + 1920*c^8*d^2*e*f + 384*b*c^7*d*e^2*f - 48640*b*c^7*
d^2*e*g + 41824*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((12
8*c^7*(19*b*e*g - 36*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*
g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(569*b^2*e^2*g + 2128*c^2*d^2*g +
 76*b*c*e^2*f - 144*c^2*d*e*f - 2200*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1760*b^2*
c^6*e^3*f - 27136*c^8*d^3*g + 5360*b^3*c^5*e^3*g + 4352*c^8*d^2*e*f - 5632*
b*c^7*d*e^2*f + 48576*b*c^7*d^2*e*g - 28224*b^2*c^6*d*e^2*g)/(135135*e^2*(b
*e - 2*c*d)^7) + (d*((d*((128*c^7*(11*b*e*g - 20*c*d*g + c*e*f))/(135135*(b
*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(89*b
^2*e^2*g + 314*c^2*d^2*g + 22*b*c*e^2*f - 40*c^2*d*e*f - 334*b*c*d*e*g))/(1
35135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/

(d + e*x) - (((8064*c^8*d^3*g - 704*b^2*c^6*e^3*f - 10592*b^3*c^5*e^3*g + 2176*c^8*d^2*e*f + 256*b*c^7*d*e^2*f - 50432*b*c^7*d^2*e*g + 44384*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((128*c^7*(20*b*e*g - 38*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(621*b^2*e^2*g + 2328*c^2*d^2*g + 80*b*c*e^2*f - 152*c^2*d*e*f - 2404*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((6016*c^8*d^3*g - 704*b^2*c^6*e^3*f - 11296*b^3*c^5*e^3*g + 2432*c^8*d^2*e*f + 128*b*c^7*d*e^2*f - 51200*b*c^7*d^2*e*g + 46688*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((128*c^7*(21*b*e*g - 40*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(681*b^2*e^2*g + 2560*c^2*d^2*g + 84*b*c*e^2*f - 160*c^2*d*e*f - 2640*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((15872*c^8*d^3*g + 704*b^2*c^6*e^3*f + 14464*b^3*c^5*e^3*g - 3584*c^8*d^2*e*f + 448*b*c^7*d*e^2*f + 41984*b*c^7*d^2*e*g - 53888*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(51*b*e*g - 98*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(525*b^2*e^2*g + 2000*c^2*d^2*g + 51*b*c*e^2*f - 98*c^2*d*e*f - 2049*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1952*b^2*c^6*e^3*f - 31232*c^8*d^3*g + 6160*b^3*c^5*e^3*g + 4864*c^8*d^2*e*f - 6272*b*c^7*d*e^2*f + 55872*b*c^7*d^2*e*g - 32448*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(12*b*e*g - 22*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(101*b^2*e^2*g + 358*c^2*d^2*g + 24*b*c*e^2*f - 44*c^2*d*e*f - 380*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2240*b^2*c^6*e^3*f - 32896*c^8*d^3*g + 6976*b^3*c^5*e^3*g + 5888*c^8*d^2*e*f - 7360*b*c^7*d*e^2*f + 60800*b*c^7*d^2*e*g - 36128*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(249*b^2*e^2*g + 900*c^2*d^2*g + 50*b*c*e^2*f - 92*c^2*d*e*f - 946*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2144*b^2*c^6*e^3*f - 35328*c^8*d^3*g + 6960*b^3*c^5*e^3*g + 5376*c^8*d^2*e*f - 6912*b*c^7*d*e^2*f + 63168*b*c^7*d^2*e*g - 36672*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(13*b*e*g - 24*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(113*b^2*e^2*g + 402*c^2*d^2*g + 26*b*c*e^2*f - 48*c^2*d*e*f - 426*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((35968*c^8*d^3*g + 256*b^2*c^6*e^3*f - 12064*b^3*c^5*e^3*g + 5248*c^8*d^2*e*f - 3200*b*c^7*d*e^2*f - 84224*b*c^7*d^2*e*g + 57248*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((128*c^7*(17*b*e*g - 32*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(465*b^2*e^2*g + 1728*c^2*d^2*g + 68*b*c*e^2*f - 128*c^2*d*e*f - 1792*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((32256*c^8*d^3*g - 9408*b^2*c^6*e^3*f + 14976*b^3*c^5*e^3*g - 43520*c^8*d^2*e*f + 40640*b*c^7*d*e^2*f + 27648*b*c^7*d^2*e*g - 51840*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(47*b*e*g - 90*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(447*b^2*e^2*g + 1696*c^2*d^2*g + 47*b*c*e^2*f - 90*c^2*d*e*f - 1741*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2432*b^2*c^6*e^3*f - 57600*c^8*d^3*g + 11184*b^3*c^5*e^3*g + 6144*c^8*d^2*e*f - 7872*b*c^7*d*e^2*f + 102336*b*c^7*d^2*e*g - 59136*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(325*b^2*e^2*g + 1188*c^2*d^2*g + 58*b*c*e^2*f - 108*c^2*d*e*f - 1242*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2624*b^2*c^6*e^3*f - 65280*c^8*d^3*g + 12656*b^3*c^5*e^3*g + 6656*c^8*d^2*e*f - 8512*b*c^7*d*e^2*f + 115904*b*c^7*d

^2*e*g - 66944*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*
c^7*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*
g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(363*b^2*e^2*g + 1332*c^2*d^2*g +
 62*b*c*e^2*f - 116*c^2*d*e*f - 1390*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2816*b^2*
c^6*e^3*f - 72960*c^8*d^3*g + 14128*b^3*c^5*e^3*g + 7168*c^8*d^2*e*f - 9152
*b*c^7*d*e^2*f + 129472*b*c^7*d^2*e*g - 74752*b^2*c^6*d*e^2*g)/(135135*e^2*
(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(135135
*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(4
01*b^2*e^2*g + 1476*c^2*d^2*g + 66*b*c*e^2*f - 124*c^2*d*e*f - 1538*b*c*d*e
*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x) - (((2816*b^2*c^6*e^3*f - 75008*c^8*d^3*g + 14512*b^3*c^5*
e^3*g + 7168*c^8*d^2*e*f - 9152*b*c^7*d*e^2*f + 133056*b*c^7*d^2*e*g - 7680
0*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(33*b*e*g
 - 62*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b
*e - 2*c*d)^7)))/e - (32*c^6*(409*b^2*e^2*g + 1508*c^2*d^2*g + 66*b*c*e^2*f
 - 124*c^2*d*e*f - 1570*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((3008*b^2*c^6*e^3*f - 8
3712*c^8*d^3*g + 16176*b^3*c^5*e^3*g + 7680*c^8*d^2*e*f - 9792*b*c^7*d*e^2*
f + 148416*b*c^7*d^2*e*g - 85632*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)
^7) + (d*((d*((64*c^7*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d
)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(451*b^2*e^2*g
+ 1668*c^2*d^2*g + 70*b*c*e^2*f - 132*c^2*d*e*f - 1734*b*c*d*e*g))/(135135*
e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) - (((3200*b^2*c^6*e^3*f - 94464*c^8*d^3*g + 18224*b^3*c^5*e^3*g + 8192*
c^8*d^2*e*f - 10432*b*c^7*d*e^2*f + 167360*b*c^7*d^2*e*g - 96512*b^2*c^6*d*
e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(37*b*e*g - 70*c*d*g
+ 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^
7)))/e - (32*c^6*(501*b^2*e^2*g + 1860*c^2*d^2*g + 74*b*c*e^2*f - 140*c^2*d
*e*f - 1930*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((5056*b^2*c^6*e^3*f - 97664*c^8*d^3
*g + 17888*b^3*c^5*e^3*g + 15744*c^8*d^2*e*f - 17920*b*c^7*d*e^2*f + 169216
*b*c^7*d^2*e*g - 95968*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*(
(d*((128*c^7*(18*b*e*g - 34*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128
*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(513*b^2*e^2*g + 1912*c^2*
d^2*g + 72*b*c*e^2*f - 136*c^2*d*e*f - 1980*b*c*d*e*g))/(135135*e*(b*e - 2*
c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((55
68*b^2*c^6*e^3*f - 109440*c^8*d^3*g + 19872*b^3*c^5*e^3*g + 17536*c^8*d^2*e
*f - 19840*b*c^7*d*e^2*f + 188928*b*c^7*d^2*e*g - 106848*b^2*c^6*d*e^2*g)/(
135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(19*b*e*g - 36*c*d*g + c*e*f
))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e -
(32*c^6*(561*b^2*e^2*g + 2096*c^2*d^2*g + 76*b*c*e^2*f - 144*c^2*d*e*f - 21
68*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((3488*b^2*c^6*e^3*f - 125184*c^8*d^3*g + 240
32*b^3*c^5*e^3*g + 8960*c^8*d^2*e*f - 11392*b*c^7*d*e^2*f + 221312*b*c^7*d^
2*e*g - 127424*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128
c^7(20*b*e*g - 38*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g
)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(633*b^2*e^2*g + 2376*c^2*d^2*g +
80*b*c*e^2*f - 152*c^2*d*e*f - 2452*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((3680*b^2*c
^6*e^3*f - 137472*c^8*d^3*g + 26368*b^3*c^5*e^3*g + 9472*c^8*d^2*e*f - 1203
2*b*c^7*d*e^2*f + 242944*b*c^7*d^2*e*g - 139840*b^2*c^6*d*e^2*g)/(135135*e^
2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(21*b*e*g - 40*c*d*g + c*e*f))/(13513
5*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(
689*b^2*e^2*g + 2592*c^2*d^2*g + 84*b*c*e^2*f - 160*c^2*d*e*f - 2672*b*c*d*
e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) - (((10432*b^2*c^6*e^3*f - 125696*c^8*d^3*g + 23744*b^3*c
^5*e^3*g + 36096*c^8*d^2*e*f - 38848*b*c^7*d*e^2*f + 220672*b*c^7*d^2*e*g -
 126400*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(45

*b*e*g - 86*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(414*b^2*e^2*g + 1568*c^2*d^2*g + 45*b*c*e^2*f - 86*c^2*d*e*f - 1611*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((3872*b^2*c^6*e^3*f - 151808*c^8*d^3*g + 29088*b^3*c^5*e^3*g + 9984*c^8*d^2*e*f - 12672*b*c^7*d*e^2*f + 268160*b*c^7*d^2*e*g - 154304*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(22*b*e*g - 42*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(753*b^2*e^2*g + 2840*c^2*d^2*g + 88*b*c*e^2*f - 168*c^2*d*e*f - 2924*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4064*b^2*c^6*e^3*f - 168192*c^8*d^3*g + 32192*b^3*c^5*e^3*g + 10496*c^8*d^2*e*f - 13312*b*c^7*d*e^2*f + 296960*b*c^7*d^2*e*g - 170816*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(23*b*e*g - 44*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(825*b^2*e^2*g + 3120*c^2*d^2*g + 92*b*c*e^2*f - 176*c^2*d*e*f - 3208*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4736*b^2*c^6*e^3*f - 241664*c^8*d^3*g + 46080*b^3*c^5*e^3*g + 12288*c^8*d^2*e*f - 15552*b*c^7*d*e^2*f + 425984*b*c^7*d^2*e*g - 244736*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(53*b*e*g - 102*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(570*b^2*e^2*g + 2176*c^2*d^2*g + 53*b*c*e^2*f - 102*c^2*d*e*f - 2227*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((8384*b^2*c^6*e^3*f - 302336*c^8*d^3*g + 49088*b^3*c^5*e^3*g + 27392*c^8*d^2*e*f - 30400*b*c^7*d*e^2*f + 498688*b*c^7*d^2*e*g - 271936*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(49*b*e*g - 94*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(484*b^2*e^2*g + 1840*c^2*d^2*g + 49*b*c*e^2*f - 94*c^2*d*e*f - 1887*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(9*b*e*g - 16*c*d*g + c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (36*b*c^2*e^3*f + 60*b^2*c*e^3*g - 64*c^3*d*e^2*f + 172*c^3*d^2*e*g - 204*b*c^2*d*e^2*g)/(13*e*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e + (4*(b*e - c*d)*(7*b^2*e^2*g + 28*c^2*d^2*g + 8*b*c*e^2*f - 15*c^2*d*e*f - 28*b*c*d*e*g))/(13*e*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 - (((2*b^3*e^2*g + 8*b*c^2*d^2*g + 4*b^2*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*e^2*f + 8*b^2*c*e^2*g - 22*b*c^2*d*e*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (d*((2*c^2*e*(5*b*e*g - 6*c*d*g + 2*c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 - (((d*((d*((8*c^4*e*(7*b*e*g - 10*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (208*c^5*d^2*g + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (2*b*c^2*(13*b^2*e^2*g + 52*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((16*c^4*e*(9*b*e*g - 16*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (1088*c^5*d^2*g + 340*b^2*c^3*e^2*g - 256*c^5*d*e*f + 144*b*c^4*e^2*f - 1216*b*c^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (4*b*c^2*(34*b^2*e^2*g + 136*c^2*d^2*g + 17*b*c*e^2*f - 32*c^2*d*e*f - 136*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((16*c^4*e*(10*b*e*g - 18*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (1248*c^5*d^2*g + 388*b^2*c^3*e^2*g - 288*c^5*d*e*f + 160*b*c^4*e^2*f - 1392*b*c^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2 *c*d)^3)))/e + (4*b*c^2*(39*b^2*e^2*g + 156*c^2*d^2*g + 19*b*c*e^2*f - 36*c^2*d*e*f - 156*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((8*c^4*e*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (4416*c^5*d^2*g + 1224*b^2*c^3*e^2*g - 464*c^5*d*e*f + 248*b*c^4*e^2*f - 4648*b*c^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (8*b*c^2*(69*b^2*e^2*g + 276*c^2*d^2*g + 15*b*c*e^2*f - 29*c^2*d*e*f - 276*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((32*c^5*e*(4*b*e*g - 6*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (608*c^6*d^2*g + 208*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 704*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(19*b^2*e^2*g + 76*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 76*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2336*c^6*d^2*g + 712*b^2*c^4*e^2*g - 480*c^6*d*e*f + 272*b*c^5*e^2*f - 2576*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(73*b^2*e^2*g + 292*c^2*d^2*g + 32*b*c*e^2*f - 60*c^2*d*e*f - 292*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2720*c^6*d^2*g + 824*b^2*c^4*e^2*g - 544*c^6*d*e*f + 304*b*c^5*e^2*f - 2992*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(85*b^2*e^2*g + 340*c^2*d^2*g + 36*b*c*e^2*f - 68*c^2*d*e*f - 340*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (3104*c^6*d^2*g + 936*b^2*c^4*e^2*g - 608*c^6*d*e*f + 336*b*c^5*e^2*f - 3408*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(97*b^2*e^2*g + 388*c^2*d^2*g + 40*b*c*e^2*f - 76*c^2*d*e*f - 388*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(14*b*e*g - 26*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (7616*c^6*d^2*g + 2120*b^2*c^4*e^2*g - 832*c^6*d*e*f + 448*b*c^5*e^2*f - 8032*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3*(119*b^2*e^2*g + 476*c^2*d^2*g + 27*b*c*e^2*f - 52*c^2*d*e*f - 476*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(15*b*e*g - 28*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8576*c^6*d^2*g + 2376*b^2*c^4*e^2*g - 896*c^6*d*e*f + 480*b*c^5*e^2*f - 9024*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3*(134*b^2*e^2*g + 536*c^2*d^2*g + 29*b*c*e^2*f - 56*c^2*d*e*f - 536*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(16*b*e*g - 30*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (9792*c^6*d^2*g + 2696*b^2*c^4*e^2*g - 960*c^6*d*e*f + 512*b*c^5*e^2*f - 10272*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3*(153*b^2*e^2*g + 612*c^2*d^2*g + 31*b*c*e^2*f - 60*c^2*d*e*f - 612*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(41*b*e*g - 78*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (18432*c^6*d^2*g + 4928*b^2*c^4*e^2*g - 1248*c^6*d*e*f + 656*b*c^5*e^2*f - 19056*b*c^5*d*e*g)/(9009*(5 *b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (16*b*c^3*(144*b^2*e^2*g + 576*c^2*d^2*g + 20*b*c*e^2*f - 39*c^2*d*e*f - 576*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((32*c^6*e*(9*b*e*g - 14*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (1664*c^7*d^2*g + 544*b^2*c^5*e^2*g - 448*c^7*d*e*f + 288*b*c^6*e^2*f - 1888*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(13*b^2*e^2*g + 52*c^2*d^2*g + 8*b*c*e^2*f - 14*c^2*d*e*f - 52*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(8*b*e*g - 14*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (4800*c^7*d^2*g + 1440*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 5248*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(75*b^2*e^2*g + 300*c^2*d^2*g + 30*b*c*e^2*f - 56*c^2*d*e*f - 300*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(9*b*e*g - 16*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (5696*c^7*d^2*g + 1696*b^2*c^5*e^2*g - 1024*c^7*d*e*f + 576*b*c^6*e^2*f - 6208*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(89*b^2*e^2*g + 356*c^2*d^2*g + 34*b*c*e^2*f - 64*c^2*d*e*f - 356*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(10*b*e*g - 18*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (6592*c^7*d^2*g + 1952*b^2*c^5*e^2*g - 1152*c^7*d*e*f + 640*b*c^6*e^2*f - 7168*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(103*b^2*e^2*g + 412*c^2*d^2*g + 38*b*c*e^2*f - 72*c^2*d*e*f - 412*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(11*b*e*g - 20*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (7488*c^7*d^2*g + 2208*b^2*c^5*e^2*g - 1280*c^7*d*e*f + 704*b*c^6*e^2*f - 8128*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(117*b^2*e^2*g + 468*c^2*d^2*g + 42*b*c*e^2*f - 80*c^2*d*e*f - 468*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (12864*c^7*d^2*g + 3600*b^2*c^5*e^2*g - 1472*c^7*d*e*f + 800*b*c^6*e^2*f - 13600*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(201*b^2*e^2*g + 804*c^2*d^2*g + 48*b*c*e^2*f - 92*c^2*d*e*f - 804*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (14656*c^7*d^2*g + 4080*b^2*c^5*e^2*g - 1600*c^7*d*e*f + 864*b*c^6*e^2*f - 15456*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(229*b^2*e^2*g + 916*c^2*d^2*g + 52*b*c*e^2*f - 100*c^2*d*e*f - 916*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16448*c^7*d^2*g + 4560*b^2*c^5*e^2*g - 1728*c^7*d*e*f + 928*b*c^6*e^2*f - 17312*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(257*b^2*e^2*g + 1028*c^2*d^2*g + 56*b*c*e^2*f - 108*c^2*d*e*f - 1028*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16960*c^7*d^2*g + 4688*b^2*c^5*e^2*g - 1728*c^7*d* e*f + 928*b*c^6*e^2*f - 17824*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(265*b^2*e^2*g + 1060*c^2*d^2*g + 56*b*c*e^2*f - 108*c^2*d*e*f - 1060*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (19008*c^7*d^2*g + 5232*b^2*c^5*e^2*g - 1856*c^7*d*e*f + 992*b*c^6*e^2*f - 19936*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(297*b^2*e^2*g + 1188*c^2*d^2*g + 60*b*c*e^2*f - 116*c^2*d*e*f - 1188*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (21568*c^7*d^2*g + 5904*b^2*c^5*e^2*g - 1984*c^7*d*e*f + 1056*b*c^6*e^2*f - 22560*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(337*b^2*e^2*g + 1348*c^2*d^2*g + 64*b*c*e^2*f - 124*c^2*d*e*f - 1348*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(18*b*e*g - 34*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (29056*c^7*d^2*g + 7824*b^2*c^5*e^2*g - 2176*c^7*d*e*f + 1152*b*c^6*e^2*f - 30144*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(227*b^2*e^2*g + 908*c^2*d^2*g + 35*b*c*e^2*f - 68*c^2*d*e*f - 908*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(19*b*e*g - 36*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32000*c^7*d^2*g + 8592*b^2*c^5*e^2*g - 2304*c^7*d*e*f + 1216*b*c^6*e^2*f - 33152*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(250*b^2*e^2*g + 1000*c^2*d^2*g + 37*b*c*e^2*f - 72*c^2*d*e*f - 1000*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(20*b*e*g - 38*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (35456*c^7*d^2*g + 9488*b^2*c^5*e^2*g - 2432*c^7*d*e*f + 1280*b*c^6*e^2*f - 36672*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(277*b^2*e^2*g + 1108*c^2*d^2*g + 39*b*c*e^2*f - 76*c^2*d*e*f - 1108*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(21*b*e*g - 40*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (39424*c^7*d^2*g + 10512*b^2*c^5*e^2*g - 2560*c^7*d*e*f + 1344*b*c^6*e^2*f - 40704*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(308*b^2*e^2*g + 1232*c^2*d^2*g + 41*b*c*e^2*f - 80*c^2*d*e*f - 1232*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(49*b*e*g - 94*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (57344*c^7*d^2*g + 15104*b^2*c^5*e^2*g - 3008*c^7*d*e*f + 1568*b*c^6*e^2*f - 58848*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (32*b*c^4*(224*b^2*e^2*g + 896*c^2*d^2*g + 24*b*c*e^2*f - 47*c^2*d*e*f - 896*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(37*b*e*g - 70*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(250*b^2*e^2*g + 928*c^2*d^2*g + 37*b*c*e^2*f - 70*c^2*d*e*f - 963*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (3136*c^6*d^3*g - 976*b^2*c^4*e^3*f + 2096*b^3*c^3*e^3*g - 5056*c^6*d^2*e*f + 4496*b*c^5*d*e^2*f + 5248*b*c^5*d^2*e*g - 7600*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 1

0*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(227*b^2*e^2*g + 840*c^2*d^2*g + 35*b*c*e^2*f - 66*c^2*d*e*f - 873*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))) /e + (1488*b^2*c^4*e^3*f - 16256*c^6*d^3*g + 3104*b^3*c^3*e^3*g + 4864*c^6*d^2*e*f - 5392*b*c^5*d*e^2*f + 28672*b*c^5*d^2*e*g - 16480*b^2*c^4*d*e^2*g) /(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(39*b*e*g - 74*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(277*b^2*e^2*g + 1032*c^2*d^2*g + 39*b*c*e^2*f - 74*c^2*d*e*f - 1069*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (1264*b^2*c^4*e^3*f - 39168*c^6*d^3*g + 6480*b^3*c^3*e^3*g + 3840*c^6*d^2*e*f - 4432*b*c^5*d*e^2*f + 65088*b*c^5*d^2*e*g - 35712*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((64*c^6*e*(7*b*e*g - 12*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^5*(37*b^2*e^2*g + 122*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 134*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (544*b^2*c^5*e^3*f - 4992*c^7*d^3*g + 944*b^3*c^4*e^3*g + 1344*c^7*d^2*e*f - 1728*b*c^6*d*e^2*f + 8768*b*c^6*d^2*e*g - 5024*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(165*b^2*e^2*g + 580*c^2*d^2*g + 42*b*c*e^2*f - 76*c^2*d*e*f - 618*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (4672*c^7*d^3*g - 224*b^2*c^5*e^3*f - 1792*b^3*c^4*e^3*g + 384*c^7*d^2*e*f + 224*b*c^6*d*e^2*f - 11840*b*c^6*d^2*e*g + 8336*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(16*b*e*g - 30*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(385*b^2*e^2*g + 1416*c^2*d^2*g + 64*b*c*e^2*f - 120*c^2*d*e*f - 1476*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (448*c^7*d^3*g + 480*b^2*c^5*e^3*f - 3376*b^3*c^4*e^3*g + 3904*c^7*d^2*e*f - 2944*b*c^6*d*e^2*f - 13952*b*c^6*d^2*e*g + 13616*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(17*b*e*g - 32*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(425*b^2*e^2*g + 1568*c^2*d^2*g + 68*b*c*e^2*f - 128*c^2*d*e*f - 1632*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (320*c^7*d^3*g - 608*b^2*c^5*e^3*f + 3664*b^3*c^4*e^3*g - 4544*c^7*d^2*e*f + 3520*b*c^6*d*e^2*f + 14336*b*c^6*d^2*e*g - 14576*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(191*b^2*e^2*g + 676*c^2*d^2*g + 46*b*c*e^2*f - 84*c^2*d*e*f - 718*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1120*b^2*c^5*e^3*f - 17088*c^7*d^3*g + 3104*b^3*c^4*e^3*g + 3072*c^7*d^2*e*f - 3744*b*c^6*d*e^2*f + 29504*b*c^6*d^2*e*g - 16688*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(217*b^2*e^2*g + 772*c^2*d^2*g + 50*b*c*e^2*f - 92*c^2*d*e*f - 818*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1248*b^2*c^5*e^3*f - 19776*c^7*d^3*g + 3584*b^3*c^4*e^3*g + 3456*c^7*d^2*e*f - 4192*b*c^6*d*e^2*f + 34112*b*c^6*d^2*e*g - 19280*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2 *c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(243*b^2*e^2*g + 868*c^2*d^2*g + 54*b*c*e^2*f - 100*c^2*d*e*f - 918*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1376*b^2*c^5*e^3*f - 22464*c^7*d^3*g + 4064*b^3*c^4*e^3*g + 3840*c^7*d^2*e*f - 4640*b*c^6*d*e^2*f + 38720*b*c^6*d^2*e*g - 21872*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(15*b*e*g - 28*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(345*b^2*e^2*g + 1264*c^2*d^2*g + 60*b*c*e^2*f - 112*c^2*d*e*f - 1320*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (2048*b^2*c^5*e^3*f - 26176*c^7*d^3*g + 5008*b^3*c^4*e^3*g + 6336*c^7*d^2*e*f - 7232*b*c^6*d*e^2*f + 46208*b*c^6*d^2*e*g - 26576*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(45*b*e*g - 86*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^5*(394*b^2*e^2*g + 1488*c^2*d^2*g + 45*b*c*e^2*f - 86*c^2*d*e*f - 1531*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (50304*c^7*d^3*g - 1312*b^2*c^5*e^3*f + 672*b^3*c^4*e^3*g - 8064*c^7*d^2*e*f + 6688*b*c^6*d*e^2*f - 47616*b*c^6*d^2*e*g + 9888*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(41*b*e*g - 78*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^5*(332*b^2*e^2*g + 1248*c^2*d^2*g + 41*b*c*e^2*f - 78*c^2*d*e*f - 1287*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (22144*c^7*d^3*g + 2592*b^2*c^5*e^3*f - 9376*b^3*c^4*e^3*g + 12928*c^7*d^2*e*f - 11680*b*c^6*d*e^2*f - 59648*b*c^6*d^2*e*g + 43040*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(17*b*e*g - 32*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(433*b^2*e^2*g + 1600*c^2*d^2*g + 68*b*c*e^2*f - 128*c^2*d*e*f - 1664*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1824*b^2*c^5*e^3*f - 50880*c^7*d^3*g + 8912*b^3*c^4*e^3*g + 5184*c^7*d^2*e*f - 6208*b*c^6*d*e^2*f + 86528*b*c^6*d^2*e*g - 48368*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(18*b*e*g - 34*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(477*b^2*e^2*g + 1768*c^2*d^2*g + 72*b*c*e^2*f - 136*c^2*d*e*f - 1836*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1952*b^2*c^5*e^3*f - 57024*c^7*d^3*g + 9968*b^3*c^4*e^3*g + 5568*c^7*d^2*e*f - 6656*b*c^6*d*e^2*f + 96896*b*c^6*d^2*e*g - 54128*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(19*b*e*g - 36*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(529*b^2*e^2*g + 1968*c^2*d^2*g + 76*b*c*e^2*f - 144*c^2*d*e*f - 2040*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (2080*b^2*c^5*e^3*f - 64704*c^7*d^3*g + 11280*b^3*c^4*e^3*g + 5952*c^7*d^2*e*f - 7104*b*c^6*d*e^2*f + 109824*b*c^6*d^2*e*g - 61296*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(43*b*e*g - 82*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^5*(361*b^2*e^2*g + 1360*c^2*d^2*g + 43*b*c*e^2*f - 82*c^2*d*e*f - 1401*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (7456*b^2*c^5*e^3*f - 108544*c^7*d^3*g + 15616*b^3*c^4*e^3*g + 27136*c^7*d^2*e*f - 28448*b*c^6*d*e^2*f + 171008*b*c^6*d^2*e*g - 89600*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(47*b*e*g - 90*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -

```
6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5)))/e - (32*c^5*(431*b^2*e^2*g + 1632*c^2*d^2*g + 47*b*c*e^2*f -
90*c^2*d*e*f - 1677*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
))/e + (2656*b^2*c^5*e^3*f - 118272*c^7*d^3*g + 20352*b^3*c^4*e^3*g + 7680*
c^7*d^2*e*f - 9120*b*c^6*d*e^2*f + 199680*b*c^6*d^2*e*g - 110976*b^2*c^5*d*
e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((128*c^7*(29*b*e*g - 56*c*d
*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)
^7)))/e - (128*c^6*(350*b^2*e^2*g + 1343*c^2*d^2*g + 29*b*c*e^2*f - 56*c^2*
d*e*f - 1371*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e + (128*c^5*(b*e - c
*d)*(322*b^2*e^2*g + 1288*c^2*d^2*g + 28*b*c*e^2*f - 55*c^2*d*e*f - 1288*b*
c*d*e*g))/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) + (((2*f*(b*e - c*d)^2)/(13*b*e^2 - 26*c*d*e) + (d*((d*
((2*c*e*(2*b*e*g - 2*c*d*g + c*e*f))/(13*b*e^2 - 26*c*d*e) - (2*c^2*d*e*g)/
(13*b*e^2 - 26*c*d*e)))/e - (2*(b*e - c*d)*(b*e*g - c*d*g + 2*c*e*f))/(13*b
*e^2 - 26*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^7 - (((d*((d*((4*c^3*e*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 1
8*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)^2)))/e - (136*b^2*c^2*e^3*g + 68*b*c^3*e^3*f - 120*c^4*d*e^2*f + 416
*c^4*d^2*e*g - 476*b*c^3*d*e^2*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)
^2)))/e + (80*b^2*c^2*e^3*f - 384*c^4*d^3*g + 76*b^3*c*e^3*g + 192*c^4*d^2*
e*f - 252*b*c^3*d*e^2*f + 688*b*c^3*d^2*e*g - 400*b^2*c^2*d*e^2*g)/(143*e*(
9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^5 + (((d*((d*((16*c^4*e*(20*b*e*g - 38*c*d*g + c*e*f))/(1
287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 -
 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^3*(144*b^2*e^2*g + 537*c^2*d^2*g +
20*b*c*e^2*f - 38*c^2*d*e*f - 556*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^3)))/e + (16*c^2*(b*e - c*d)*(125*b^2*e^2*g + 500*c^2*d^2*g + 1
9*b*c*e^2*f - 37*c^2*d*e*f - 500*b*c*d*e*g))/(1287*e*(7*b*e^2 - 14*c*d*e)*(
b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 +
 (((d*((d*((32*c^5*e*(24*b*e*g - 46*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^4)))/e - (32*c^4*(224*b^2*e^2*g + 849*c^2*d^2*g + 24*b*c*e^2*f - 46*c^2
*d*e*f - 872*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e +
(32*c^3*(b*e - c*d)*(201*b^2*e^2*g + 804*c^2*d^2*g + 23*b*c*e^2*f - 45*c^2*
d*e*f - 804*b*c*d*e*g))/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((64*c^6*e*
(27*b*e*g - 52*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
- (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (64*c^5*
(296*b^2*e^2*g + 1131*c^2*d^2*g + 27*b*c*e^2*f - 52*c^2*d*e*f - 1157*b*c*d*
e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (64*c^4*(b*e - c*d)
*(270*b^2*e^2*g + 1080*c^2*d^2*g + 26*b*c*e^2*f - 51*c^2*d*e*f - 1080*b*c*d
*e*g))/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1965 $\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=562

$$\frac{11(2cd-be)^9(-13beg+6cdg+20cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{262144c^{15/2}e^2}+\frac{11(b+2cx)(2cd-be)^7\sqrt{d(cd-be)-be}}{131072}$$

Rubi [A] time = 1.21, antiderivative size = 562, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {794, 670, 640, 612, 621, 204}

$$\frac{11(b+2cx)(2cd-be)^7\sqrt{d(cd-be)-be^2x-ce^2x^2}(-13beg+6cdg+20cef)}{131072c^7e}+\frac{11(b+2cx)(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+6cdg+20cef)}{49152c^6e}+\frac{11(b+2cx)(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+6cdg+20cef)}{15360c^5e}-\frac{11(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+6cdg+20cef)}{4480c^4e^2}-\frac{11(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+6cdg+20cef)}{2880c^3e^2}-\frac{(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+6cdg+20cef)}{180c^2e^2}+\frac{11(2cd-be)^9(-13beg+6cdg+20cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{262144c^{15/2}e^2}-\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{10ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (11*(2*c*d - b*e)^7*(20*c*e*f + 6*c*d*g - 13*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2])/(131072*c^7*e) + (11*(2*c*d - b*e)^5*(20*c*
e*f + 6*c*d*g - 13*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(3/2))/(49152*c^6*e) + (11*(2*c*d - b*e)^3*(20*c*e*f + 6*c*d*g - 13*b*e*g)
*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(15360*c^5*e) - (
11*(2*c*d - b*e)^2*(20*c*e*f + 6*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2)^(7/2))/(4480*c^4*e^2) - (11*(2*c*d - b*e)*(20*c*e*f + 6*c*d*g
 - 13*b*e*g)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(2880*c
^3*e^2) - ((20*c*e*f + 6*c*d*g - 13*b*e*g)*(d + e*x)^2*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(180*c^2*e^2) - (g*(d + e*x)^3*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(7/2))/(10*c*e^2) + (11*(2*c*d - b*e)^9*(20*c*e*f + 6*c*
d*g - 13*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2])])/(262144*c^(15/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{10ce^2} - \frac{\left(\frac{7}{2}e\left(-2ce^2f \cdots\right.\right.}{\cdots}$$

$$= -\frac{(20cef+6cdg-13beg)(d+ex)^2\left(d(cd-be)-be^2x-ce^2 \cdots\right.}{180c^2e^2}$$

$$= -\frac{11(2cd-be)(20cef+6cdg-13beg)(d+ex)\left(d(cd-be) \cdots\right.}{2880c^3e^2}$$

$$= -\frac{11(2cd-be)^2(20cef+6cdg-13beg)\left(d(cd-be)-be^2x \cdots\right.}{4480c^4e^2}$$

$$= \frac{11(2cd-be)^3(20cef+6cdg-13beg)(b+2cx)\left(d(cd-be) \cdots\right.}{15360c^5e}$$

$$= \frac{11(2cd-be)^5(20cef+6cdg-13beg)(b+2cx)\left(d(cd-be) \cdots\right.}{49152c^6e}$$

$$= \frac{11(2cd-be)^7(20cef+6cdg-13beg)(b+2cx)\sqrt{d(cd-be) \cdots}}{131072c^7e}$$

$$= \frac{11(2cd-be)^7(20cef+6cdg-13beg)(b+2cx)\sqrt{d(cd-be) \cdots}}{131072c^7e}$$

$$= \frac{11(2cd-be)^7(20cef+6cdg-13beg)(b+2cx)\sqrt{d(cd-be) \cdots}}{131072c^7e}$$

Mathematica [B] time = 6.78, size = 1600, normalized size = 2.85

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] -1/10*(g*(d + e*x)^4*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))
^(5/2))/(c*e^2) - ((c*d*e + e*(c*d - b*e))^2*(-10*c*e^2*f - ((-7*c*d*e)/2 +
```

```
(13*e*(c*d - b*e))/2)*g)*(d + e*x)^4*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5
/2)*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((13*(15/(
224*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3) + 5/(16*(1 -
(c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e
)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x
))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d
- b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/18 + (715*(c*d*e + e*(c*d - b*e))
^7*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d -
 b*e)))^7*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
+ e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4
*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e
)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)^
3)/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*
(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c*
d*e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e
))/(c*d*e + e*(c*d - b*e)))^4) - (256*c^5*e^10*(d + e*x)^5)/(315*(c*d*e + e
*(c*d - b*e))^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d
*e + e*(c*d - b*e)))^5) - (512*c^6*e^12*(d + e*x)^6)/(693*(c*d*e + e*(c*d -
 b*e))^6*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*
(c*d - b*e)))^6) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[d + e*
x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (
e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d - b*e)]*S
qrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d -
 b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d
*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))])))/(1310
72*c^7*e^14*(d + e*x)^7*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c
*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))
)))^3)))/(65*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e)
)/(c*d*e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d - b*e
- c*e*x))/(c*d*e + e*(c*d - b*e))]])
```

IntegrateAlgebraic [F] time = 180.65, size = 0, normalized size = 0.00

$$\text{\$Aborted}$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2)^(5/2),x]
```

```
[Out] $Aborted
```

fricas [B] time = 25.58, size = 3437, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [-1/165150720*(3465*(20*(512*c^10*d^9*e - 2304*b*c^9*d^8*e^2 + 4608*b^2*c^8
*d^7*e^3 - 5376*b^3*c^7*d^6*e^4 + 4032*b^4*c^6*d^5*e^5 - 2016*b^5*c^5*d^4*e
^6 + 672*b^6*c^4*d^3*e^7 - 144*b^7*c^3*d^2*e^8 + 18*b^8*c^2*d*e^9 - b^9*c*e
^10)*f + (3072*c^10*d^10 - 20480*b*c^9*d^9*e + 57600*b^2*c^8*d^8*e^2 - 9216
0*b^3*c^7*d^7*e^3 + 94080*b^4*c^6*d^6*e^4 - 64512*b^5*c^5*d^5*e^5 + 30240*b
^6*c^4*d^4*e^6 - 9600*b^7*c^3*d^3*e^7 + 1980*b^8*c^2*d^2*e^8 - 240*b^9*c*d*
e^9 + 13*b^10*e^10)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2
 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*
e*x + b*e)*sqrt(-c)) - 4*(4128768*c^10*e^9*g*x^9 + 229376*(20*c^10*e^9*f +
```

(60*c^10*d*e^8 + 41*b*c^9*e^9)*g)*x^8 + 14336*(20*(54*c^10*d*e^8 + 37*b*c^9*e^9)*f + (324*c^10*d^2*e^7 + 2976*b*c^9*d*e^8 + 383*b^2*c^8*e^9)*g)*x^7 + 1024*(20*(256*c^10*d^2*e^7 + 2390*b*c^9*d*e^8 + 309*b^2*c^8*e^9)*f - (30720*c^10*d^3*e^6 - 59396*b*c^9*d^2*e^7 - 31264*b^2*c^8*d*e^8 - 15*b^3*c^7*e^9)*g)*x^6 - 256*(20*(7224*c^10*d^3*e^6 - 13908*b*c^9*d^2*e^7 - 7386*b^2*c^8*d*e^8 - 5*b^3*c^7*e^9)*f + (140112*c^10*d^4*e^5 + 16176*b*c^9*d^3*e^6 - 298968*b^2*c^8*d^2*e^7 - 780*b^3*c^7*d*e^8 + 65*b^4*c^6*e^9)*g)*x^5 - 128*(20*(16896*c^10*d^4*e^5 + 2328*b*c^9*d^3*e^6 - 36516*b^2*c^8*d^2*e^7 - 138*b^3*c^7*d*e^8 + 11*b^4*c^6*e^9)*f - (92160*c^10*d^5*e^4 - 762000*b*c^9*d^4*e^5 + 733200*b^2*c^8*d^3*e^6 + 9960*b^3*c^7*d^2*e^7 - 1860*b^4*c^6*d*e^8 + 143*b^5*c^5*e^9)*g)*x^4 + 16*(20*(49056*c^10*d^5*e^4 - 392976*b*c^9*d^4*e^5 + 374352*b^2*c^8*d^3*e^6 + 7576*b^3*c^7*d^2*e^7 - 1342*b^4*c^6*d*e^8 + 99*b^5*c^5*e^9)*f + (2358720*c^10*d^6*e^3 - 6092160*b*c^9*d^5*e^4 + 3484080*b^2*c^8*d^4*e^5 + 339840*b^3*c^7*d^3*e^6 - 106540*b^4*c^6*d^2*e^7 + 18040*b^5*c^5*d*e^8 - 1287*b^6*c^4*e^9)*g)*x^3 + 8*(20*(327680*c^10*d^6*e^3 - 835872*b*c^9*d^5*e^4 + 455376*b^2*c^8*d^4*e^5 + 70768*b^3*c^7*d^3*e^6 - 20856*b^4*c^6*d^2*e^7 + 3366*b^5*c^5*d*e^8 - 231*b^6*c^4*e^9)*f + (1966080*c^10*d^7*e^2 - 3081920*b*c^9*d^6*e^3 - 336000*b^2*c^8*d^5*e^4 + 2246160*b^3*c^7*d^4*e^5 - 1045120*b^4*c^6*d^3*e^6 + 291324*b^5*c^5*d^2*e^7 - 45144*b^6*c^4*d*e^8 + 3003*b^7*c^3*e^9)*g)*x^2 - 20*(950272*c^10*d^8*e - 4389760*b*c^9*d^7*e^2 + 8056896*b^2*c^8*d^6*e^3 - 7874464*b^3*c^7*d^5*e^4 + 4655728*b^4*c^6*d^4*e^5 - 1770120*b^5*c^5*d^3*e^6 + 422268*b^6*c^4*d^2*e^7 - 57750*b^7*c^3*d*e^8 + 3465*b^8*c^2*e^9)*f - (9830400*c^10*d^9 - 51078400*b*c^9*d^8*e + 117794560*b^2*c^8*d^7*e^2 - 156115200*b^3*c^7*d^6*e^3 + 130302400*b^4*c^6*d^5*e^4 - 71145184*b^5*c^5*d^4*e^5 + 25545168*b^6*c^4*d^3*e^6 - 5835984*b^7*c^3*d^2*e^7 + 771540*b^8*c^2*d*e^8 - 45045*b^9*c*e^9)*g + 2*(20*(588672*c^10*d^7*e^2 - 749632*b*c^9*d^6*e^3 - 547296*b^2*c^8*d^5*e^4 + 1063248*b^3*c^7*d^4*e^5 - 460856*b^4*c^6*d^3*e^6 + 121572*b^5*c^5*d^2*e^7 - 18018*b^6*c^4*d*e^8 + 1155*b^7*c^3*e^9)*f - (2661120*c^10*d^8*e - 12622080*b*c^9*d^7*e^2 + 24504320*b^2*c^8*d^6*e^3 - 25880640*b^3*c^7*d^5*e^4 + 16587360*b^4*c^6*d^4*e^5 - 6720560*b^5*c^5*d^3*e^6 + 1688544*b^6*c^4*d^2*e^7 - 241164*b^7*c^3*d*e^8 + 15015*b^8*c^2*e^9)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^8*e^2), -1/82575360*(3465*(20*(512*c^10*d^9*e - 2304*b*c^9*d^8*e^2 + 4608*b^2*c^8*d^7*e^3 - 5376*b^3*c^7*d^6*e^4 + 4032*b^4*c^6*d^5*e^5 - 2016*b^5*c^5*d^4*e^6 + 672*b^6*c^4*d^3*e^7 - 144*b^7*c^3*d^2*e^8 + 18*b^8*c^2*d*e^9 - b^9*c*e^10)*f + (3072*c^10*d^10 - 20480*b*c^9*d^9*e + 57600*b^2*c^8*d^8*e^2 - 92160*b^3*c^7*d^7*e^3 + 94080*b^4*c^6*d^6*e^4 - 64512*b^5*c^5*d^5*e^5 + 30240*b^6*c^4*d^4*e^6 - 9600*b^7*c^3*d^3*e^7 + 1980*b^8*c^2*d^2*e^8 - 240*b^9*c*d*e^9 + 13*b^10*e^10)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(4128768*c^10*e^9*g*x^9 + 229376*(20*c^10*e^9*f + (60*c^10*d*e^8 + 41*b*c^9*e^9)*g)*x^8 + 14336*(20*(54*c^10*d*e^8 + 37*b*c^9*e^9)*f + (324*c^10*d^2*e^7 + 2976*b*c^9*d*e^8 + 383*b^2*c^8*e^9)*g)*x^7 + 1024*(20*(256*c^10*d^2*e^7 + 2390*b*c^9*d*e^8 + 309*b^2*c^8*e^9)*f - (30720*c^10*d^3*e^6 - 59396*b*c^9*d^2*e^7 - 31264*b^2*c^8*d*e^8 - 15*b^3*c^7*e^9)*g)*x^6 - 256*(20*(7224*c^10*d^3*e^6 - 13908*b*c^9*d^2*e^7 - 7386*b^2*c^8*d*e^8 - 5*b^3*c^7*e^9)*f + (140112*c^10*d^4*e^5 + 16176*b*c^9*d^3*e^6 - 298968*b^2*c^8*d^2*e^7 - 780*b^3*c^7*d*e^8 + 65*b^4*c^6*e^9)*g)*x^5 - 128*(20*(16896*c^10*d^4*e^5 + 2328*b*c^9*d^3*e^6 - 36516*b^2*c^8*d^2*e^7 - 138*b^3*c^7*d*e^8 + 11*b^4*c^6*e^9)*f - (92160*c^10*d^5*e^4 - 762000*b*c^9*d^4*e^5 + 733200*b^2*c^8*d^3*e^6 + 9960*b^3*c^7*d^2*e^7 - 1860*b^4*c^6*d*e^8 + 143*b^5*c^5*e^9)*g)*x^4 + 16*(20*(49056*c^10*d^5*e^4 - 392976*b*c^9*d^4*e^5 + 374352*b^2*c^8*d^3*e^6 + 7576*b^3*c^7*d^2*e^7 - 1342*b^4*c^6*d*e^8 + 99*b^5*c^5*e^9)*f + (2358720*c^10*d^6*e^3 - 6092160*b*c^9*d^5*e^4 + 3484080*b^2*c^8*d^4*e^5 + 339840*b^3*c^7*d^3*e^6 - 106540*b^4*c^6*d^2*e^7 + 18040*b^5*c^5*d*e^8 - 1287*b^6*c^4*e^9)*g)*x^3 + 8*(20*(327680*c^10*d^6*e^3 - 835872*b*c^9*d^5*e^4 + 455376*b^2*c^8*d^4*e^5 + 70768*b^3*c^7*d^3*e^6 - 20856*b^4*c^6*d^2*e^7 + 3366*b^5*c^5*d*e^8 - 231*b^6*c^4*e^9)*f + (1966080*c^10*d^7*e^2 - 3081920*b*c^9*d^6*e^3 - 336000*b^2*c^8*d^5*e^4 + 2246160*b^3*c^7*d^4*e^5 - 1045120*b^4*c

```
^6*d^3*e^6 + 291324*b^5*c^5*d^2*e^7 - 45144*b^6*c^4*d*e^8 + 3003*b^7*c^3*e^
9)*g)*x^2 - 20*(950272*c^10*d^8*e - 4389760*b*c^9*d^7*e^2 + 8056896*b^2*c^8
*d^6*e^3 - 7874464*b^3*c^7*d^5*e^4 + 4655728*b^4*c^6*d^4*e^5 - 1770120*b^5*
c^5*d^3*e^6 + 422268*b^6*c^4*d^2*e^7 - 57750*b^7*c^3*d*e^8 + 3465*b^8*c^2*e
^9)*f - (9830400*c^10*d^9 - 51078400*b*c^9*d^8*e + 117794560*b^2*c^8*d^7*e^
2 - 156115200*b^3*c^7*d^6*e^3 + 130302400*b^4*c^6*d^5*e^4 - 71145184*b^5*c^
5*d^4*e^5 + 25545168*b^6*c^4*d^3*e^6 - 5835984*b^7*c^3*d^2*e^7 + 771540*b^8
*c^2*d*e^8 - 45045*b^9*c*e^9)*g + 2*(20*(588672*c^10*d^7*e^2 - 749632*b*c^9
*d^6*e^3 - 547296*b^2*c^8*d^5*e^4 + 1063248*b^3*c^7*d^4*e^5 - 460856*b^4*c^
6*d^3*e^6 + 121572*b^5*c^5*d^2*e^7 - 18018*b^6*c^4*d*e^8 + 1155*b^7*c^3*e^9
)*f - (2661120*c^10*d^8*e - 12622080*b*c^9*d^7*e^2 + 24504320*b^2*c^8*d^6*e
^3 - 25880640*b^3*c^7*d^5*e^4 + 16587360*b^4*c^6*d^4*e^5 - 6720560*b^5*c^5*
d^3*e^6 + 1688544*b^6*c^4*d^2*e^7 - 241164*b^7*c^3*d*e^8 + 15015*b^8*c^2*e^
9)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^8*e^2)]
```

giac [B] time = 0.94, size = 1686, normalized size = 3.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] 1/41287680*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(2*(4*(14
*(16*(18*c^2*g*x*e^7 + (60*c^11*d*g*e^22 + 20*c^11*f*e^23 + 41*b*c^10*g*e^2
3)*e^(-16)/c^9)*x + (324*c^11*d^2*g*e^21 + 1080*c^11*d*f*e^22 + 2976*b*c^10
*d*g*e^22 + 740*b*c^10*f*e^23 + 383*b^2*c^9*g*e^23)*e^(-16)/c^9)*x - (30720
*c^11*d^3*g*e^20 - 5120*c^11*d^2*f*e^21 - 59396*b*c^10*d^2*g*e^21 - 47800*b
*c^10*d*f*e^22 - 31264*b^2*c^9*d*g*e^22 - 6180*b^2*c^9*f*e^23 - 15*b^3*c^8*
g*e^23)*e^(-16)/c^9)*x - (140112*c^11*d^4*g*e^19 + 144480*c^11*d^3*f*e^20 +
 16176*b*c^10*d^3*g*e^20 - 278160*b*c^10*d^2*f*e^21 - 298968*b^2*c^9*d^2*g*
e^21 - 147720*b^2*c^9*d*f*e^22 - 780*b^3*c^8*d*g*e^22 - 100*b^3*c^8*f*e^23
+ 65*b^4*c^7*g*e^23)*e^(-16)/c^9)*x + (92160*c^11*d^5*g*e^18 - 337920*c^11*
d^4*f*e^19 - 762000*b*c^10*d^4*g*e^19 - 46560*b*c^10*d^3*f*e^20 + 733200*b^
2*c^9*d^3*g*e^20 + 730320*b^2*c^9*d^2*f*e^21 + 9960*b^3*c^8*d^2*g*e^21 + 27
60*b^3*c^8*d*f*e^22 - 1860*b^4*c^7*d*g*e^22 - 220*b^4*c^7*f*e^23 + 143*b^5*
c^6*g*e^23)*e^(-16)/c^9)*x + (2358720*c^11*d^6*g*e^17 + 981120*c^11*d^5*f*e
^18 - 6092160*b*c^10*d^5*g*e^18 - 7859520*b*c^10*d^4*f*e^19 + 3484080*b^2*c
^9*d^4*g*e^19 + 7487040*b^2*c^9*d^3*f*e^20 + 339840*b^3*c^8*d^3*g*e^20 + 15
1520*b^3*c^8*d^2*f*e^21 - 106540*b^4*c^7*d^2*g*e^21 - 26840*b^4*c^7*d*f*e^2
2 + 18040*b^5*c^6*d*g*e^22 + 1980*b^5*c^6*f*e^23 - 1287*b^6*c^5*g*e^23)*e^(
-16)/c^9)*x + (1966080*c^11*d^7*g*e^16 + 6553600*c^11*d^6*f*e^17 - 3081920*
b*c^10*d^6*g*e^17 - 16717440*b*c^10*d^5*f*e^18 - 336000*b^2*c^9*d^5*g*e^18
+ 9107520*b^2*c^9*d^4*f*e^19 + 2246160*b^3*c^8*d^4*g*e^19 + 1415360*b^3*c^8
*d^3*f*e^20 - 1045120*b^4*c^7*d^3*g*e^20 - 417120*b^4*c^7*d^2*f*e^21 + 2913
24*b^5*c^6*d^2*g*e^21 + 67320*b^5*c^6*d*f*e^22 - 45144*b^6*c^5*d*g*e^22 - 4
620*b^6*c^5*f*e^23 + 3003*b^7*c^4*g*e^23)*e^(-16)/c^9)*x - (2661120*c^11*d^
8*g*e^15 - 11773440*c^11*d^7*f*e^16 - 12622080*b*c^10*d^7*g*e^16 + 14992640
*b*c^10*d^6*f*e^17 + 24504320*b^2*c^9*d^6*g*e^17 + 10945920*b^2*c^9*d^5*f*e
^18 - 25880640*b^3*c^8*d^5*g*e^18 - 21264960*b^3*c^8*d^4*f*e^19 + 16587360*
b^4*c^7*d^4*g*e^19 + 9217120*b^4*c^7*d^3*f*e^20 - 6720560*b^5*c^6*d^3*g*e^2
0 - 2431440*b^5*c^6*d^2*f*e^21 + 1688544*b^6*c^5*d^2*g*e^21 + 360360*b^6*c^
5*d*f*e^22 - 241164*b^7*c^4*d*g*e^22 - 23100*b^7*c^4*f*e^23 + 15015*b^8*c^3
*g*e^23)*e^(-16)/c^9)*x - (9830400*c^11*d^9*g*e^14 + 19005440*c^11*d^8*f*e^
15 - 51078400*b*c^10*d^8*g*e^15 - 87795200*b*c^10*d^7*f*e^16 + 117794560*b^
2*c^9*d^7*g*e^16 + 161137920*b^2*c^9*d^6*f*e^17 - 156115200*b^3*c^8*d^6*g*e
^17 - 157489280*b^3*c^8*d^5*f*e^18 + 130302400*b^4*c^7*d^5*g*e^18 + 9311456
0*b^4*c^7*d^4*f*e^19 - 71145184*b^5*c^6*d^4*g*e^19 - 35402400*b^5*c^6*d^3*f
*e^20 + 25545168*b^6*c^5*d^3*g*e^20 + 8445360*b^6*c^5*d^2*f*e^21 - 5835984*
b^7*c^4*d^2*g*e^21 - 1155000*b^7*c^4*d*f*e^22 + 771540*b^8*c^3*d*g*e^22 + 6
```

```
9300*b^8*c^3*f*e^23 - 45045*b^9*c^2*g*e^23)*e^(-16)/c^9) + 11/262144*(3072*
c^10*d^10*g + 10240*c^10*d^9*f*e - 20480*b*c^9*d^9*g*e - 46080*b*c^9*d^8*f*
e^2 + 57600*b^2*c^8*d^8*g*e^2 + 92160*b^2*c^8*d^7*f*e^3 - 92160*b^3*c^7*d^7
*g*e^3 - 107520*b^3*c^7*d^6*f*e^4 + 94080*b^4*c^6*d^6*g*e^4 + 80640*b^4*c^6
*d^5*f*e^5 - 64512*b^5*c^5*d^5*g*e^5 - 40320*b^5*c^5*d^4*f*e^6 + 30240*b^6*
c^4*d^4*g*e^6 + 13440*b^6*c^4*d^3*f*e^7 - 9600*b^7*c^3*d^3*g*e^7 - 2880*b^7
*c^3*d^2*f*e^8 + 1980*b^8*c^2*d^2*g*e^8 + 360*b^8*c^2*d*f*e^9 - 240*b^9*c*d
*g*e^9 - 20*b^9*c*f*e^10 + 13*b^10*g*e^10)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(
sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^
2)*b))/c^8
```

maple [B] time = 0.12, size = 5287, normalized size = 9.41

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^3\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(d + e x\right)^{3} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)**3*(f + g*x), x)
```

3.1966 $\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=487

$$\frac{5(2cd-be)^8(-11beg+4cdg+18cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{65536c^{13/2}e^2}+\frac{5(b+2cx)(2cd-be)^6\sqrt{d(cd-be)-be^2x}}{32768c^6}$$

Rubi [A] time = 0.81, antiderivative size = 487, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.159, Rules used = {1638, 12, 670, 640, 612, 621, 204}

$$\frac{5(b+2cx)(2cd-be)^6\sqrt{d(cd-be)-be^2x-ce^2x^2}(-11beg+4cdg+18cef)}{32768c^6e}+\frac{5(b+2cx)(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+4cdg+18cef)}{12288c^5e}+\frac{(b+2cx)(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+4cdg+18cef)}{768c^4e}-\frac{(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+4cdg+18cef)}{224c^3e^2}-\frac{(d+ex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+4cdg+18cef)}{144c^2e^2}+\frac{5(2cd-be)^8(-11beg+4cdg+18cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{65536c^{13/2}e^2}-\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (5*(2*c*d - b*e)^6*(18*c*e*f + 4*c*d*g - 11*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2])/(32768*c^6*e) + (5*(2*c*d - b*e)^4*(18*c*e*f
 + 4*c*d*g - 11*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3
/2))/(12288*c^5*e) + ((2*c*d - b*e)^2*(18*c*e*f + 4*c*d*g - 11*b*e*g)*(b +
2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(768*c^4*e) - ((2*c*d -
 b*e)*(18*c*e*f + 4*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(7/2))/(224*c^3*e^2) - ((18*c*e*f + 4*c*d*g - 11*b*e*g)*(d + e*x)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(144*c^2*e^2) - (g*(d + e*x)^2*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(9*c*e^2) + (5*(2*c*d - b*e)^8*(18*c*
e*f + 4*c*d*g - 11*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])])/(65536*c^(13/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
```

```
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2} - \frac{\int -\frac{1}{2}e^2(18ce\cdots}{\cdots}$$

$$= -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2} + \frac{(18cef+4cd\cdots}{\cdots}$$

$$= -\frac{(18cef+4cdg-11beg)(d+ex)\left(d(cd-be)-be^2x-ce^2x\cdots\right.}{144c^2e^2}$$

$$= -\frac{(2cd-be)(18cef+4cdg-11beg)\left(d(cd-be)-be^2x-ce\cdots\right.}{224c^3e^2}$$

$$= \frac{(2cd-be)^2(18cef+4cdg-11beg)(b+2cx)\left(d(cd-be)-\cdots\right.}{768c^4e}$$

$$= \frac{5(2cd-be)^4(18cef+4cdg-11beg)(b+2cx)\left(d(cd-be)-\cdots\right.}{12288c^5e}$$

$$= \frac{5(2cd-be)^6(18cef+4cdg-11beg)(b+2cx)\sqrt{d(cd-be)\cdots}}{32768c^6e}$$

$$= \frac{5(2cd-be)^6(18cef+4cdg-11beg)(b+2cx)\sqrt{d(cd-be)\cdots}}{32768c^6e}$$

$$= \frac{5(2cd-be)^6(18cef+4cdg-11beg)(b+2cx)\sqrt{d(cd-be)\cdots}}{32768c^6e}$$

Mathematica [B] time = 6.56, size = 1511, normalized size = 3.10

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] -1/9*(g*(d + e*x)^3*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(5/2))/(c*e^2) - (2*(c*d*e + e*(c*d - b*e))^2*(-9*c*e^2*f - ((-7*c*d*e)/2 +
 (11*e*(c*d - b*e))/2)*g)*(d + e*x)^3*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5
/2)*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((11*(5/(5
6*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*
d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3) + 5/(14*(1 - (c
*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e))
 + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x))
/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d -
b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/16 + (495*(c*d*e + e*(c*d - b*e))^6
*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b
*e)))^6*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e +
e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4*(
d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e))
 + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)^3)
/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c
*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c*d*
e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))
/(c*d*e + e*(c*d - b*e)))^4) - (256*c^5*e^10*(d + e*x)^5)/(315*(c*d*e + e*(
c*d - b*e))^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e
 + e*(c*d - b*e)))^5) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[d
 + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)
) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d - b*
e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(
c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)
/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))]))))/
(65536*c^6*e^12*(d + e*x)^6*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))
*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b
*e)))))^3)))/(99*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d -
b*e))/(c*d*e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d -
b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

IntegrateAlgebraic [F] time = 180.31, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2)^(5/2),x]
```

```
[Out] $Aborted
```

fricas [B] time = 12.06, size = 2861, normalized size = 5.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [1/8257536*(315*(18*(256*c^9*d^8*e - 1024*b*c^8*d^7*e^2 + 1792*b^2*c^7*d^6*
e^3 - 1792*b^3*c^6*d^5*e^4 + 1120*b^4*c^5*d^4*e^5 - 448*b^5*c^4*d^3*e^6 + 1
12*b^6*c^3*d^2*e^7 - 16*b^7*c^2*d*e^8 + b^8*c*e^9)*f + (1024*c^9*d^9 - 6912
*b*c^8*d^8*e + 18432*b^2*c^7*d^7*e^2 - 26880*b^3*c^6*d^6*e^3 + 24192*b^4*c^
5*d^5*e^4 - 14112*b^5*c^4*d^4*e^5 + 5376*b^6*c^3*d^3*e^6 - 1296*b^7*c^2*d^2
*e^7 + 180*b^8*c*d*e^8 - 11*b^9*e^9)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*
e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d
```

^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(229376*c^9*e^8*g*x^8 + 14336*(18
*c^9*e^8*f + (36*c^9*d*e^7 + 37*b*c^8*e^8)*g)*x^7 + 1024*(18*(32*c^9*d*e^7
 + 33*b*c^8*e^8)*f - (320*c^9*d^2*e^6 - 1796*b*c^8*d*e^7 - 309*b^2*c^7*e^8)*
g)*x^6 - 256*(54*(28*c^9*d^2*e^6 - 156*b*c^8*d*e^7 - 27*b^2*c^7*e^8)*f + (5
712*c^9*d^3*e^5 - 5484*b*c^8*d^2*e^6 - 5928*b^2*c^7*d*e^7 - 5*b^3*c^6*e^8)*
g)*x^5 - 128*(18*(768*c^9*d^3*e^5 - 732*b*c^8*d^2*e^6 - 804*b^2*c^7*d*e^7 -
 b^3*c^6*e^8)*f + (3072*c^9*d^4*e^4 + 15504*b*c^8*d^3*e^5 - 22044*b^2*c^7*d
^2*e^6 - 120*b^3*c^6*d*e^7 + 11*b^4*c^5*e^8)*g)*x^4 - 16*(18*(1680*c^9*d^4*
e^4 + 8928*b*c^8*d^3*e^5 - 12552*b^2*c^7*d^2*e^6 - 104*b^3*c^6*d*e^7 + 9*b^
4*c^5*e^8)*f - (79296*c^9*d^5*e^3 - 232272*b*c^8*d^4*e^4 + 148416*b^2*c^7*d
^3*e^5 + 5704*b^3*c^6*d^2*e^6 - 1180*b^4*c^5*d*e^7 + 99*b^5*c^4*e^8)*g)*x^3
 + 8*(54*(4096*c^9*d^5*e^3 - 11920*b*c^8*d^4*e^4 + 7456*b^2*c^7*d^3*e^5 + 4
56*b^3*c^6*d^2*e^6 - 88*b^4*c^5*d*e^7 + 7*b^5*c^4*e^8)*f + (106496*c^9*d^6*
e^2 - 192192*b*c^8*d^5*e^3 + 52752*b^2*c^7*d^4*e^4 + 46144*b^3*c^6*d^3*e^5
 - 16104*b^4*c^5*d^2*e^6 + 2988*b^5*c^4*d*e^7 - 231*b^6*c^3*e^8)*g)*x^2 - 18
*(32768*c^9*d^7*e - 151872*b*c^8*d^6*e^2 + 259008*b^2*c^7*d^5*e^3 - 218000*
b^3*c^6*d^4*e^4 + 102624*b^4*c^5*d^3*e^5 - 29148*b^5*c^4*d^2*e^6 + 4620*b^6
*c^3*d*e^7 - 315*b^7*c^2*e^8)*f - (360448*c^9*d^8 - 1656064*b*c^8*d^7*e + 3
394752*b^2*c^7*d^6*e^2 - 3950464*b^3*c^6*d^5*e^3 + 2808496*b^4*c^5*d^4*e^4
 - 1245456*b^5*c^4*d^3*e^5 + 339108*b^6*c^3*d^2*e^6 - 52080*b^7*c^2*d*e^7 +
3465*b^8*c*e^8)*g + 2*(18*(37184*c^9*d^6*e^2 - 62400*b*c^8*d^5*e^3 + 6480*b
^2*c^7*d^4*e^4 + 25504*b^3*c^6*d^3*e^5 - 8196*b^4*c^5*d^2*e^6 + 1428*b^5*c^
4*d*e^7 - 105*b^6*c^3*e^8)*f - (80640*c^9*d^7*e - 373568*b*c^8*d^6*e^2 + 66
3936*b^2*c^7*d^5*e^3 - 604176*b^3*c^6*d^4*e^4 + 313328*b^4*c^5*d^3*e^5 - 95
868*b^5*c^4*d^2*e^6 + 16128*b^6*c^3*d*e^7 - 1155*b^7*c^2*e^8)*g)*x)*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*e^2), -1/4128768*(315*(18*(256*c^
9*d^8*e - 1024*b*c^8*d^7*e^2 + 1792*b^2*c^7*d^6*e^3 - 1792*b^3*c^6*d^5*e^4
 + 1120*b^4*c^5*d^4*e^5 - 448*b^5*c^4*d^3*e^6 + 112*b^6*c^3*d^2*e^7 - 16*b^7
*c^2*d*e^8 + b^8*c*e^9)*f + (1024*c^9*d^9 - 6912*b*c^8*d^8*e + 18432*b^2*c^
7*d^7*e^2 - 26880*b^3*c^6*d^6*e^3 + 24192*b^4*c^5*d^5*e^4 - 14112*b^5*c^4*d
^4*e^5 + 5376*b^6*c^3*d^3*e^6 - 1296*b^7*c^2*d^2*e^7 + 180*b^8*c*d*e^8 - 11
*b^9*e^9)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*
(229376*c^9*e^8*g*x^8 + 14336*(18*c^9*e^8*f + (36*c^9*d*e^7 + 37*b*c^8*e^8)
*g)*x^7 + 1024*(18*(32*c^9*d*e^7 + 33*b*c^8*e^8)*f - (320*c^9*d^2*e^6 - 179
6*b*c^8*d*e^7 - 309*b^2*c^7*e^8)*g)*x^6 - 256*(54*(28*c^9*d^2*e^6 - 156*b*c
^8*d*e^7 - 27*b^2*c^7*e^8)*f + (5712*c^9*d^3*e^5 - 5484*b*c^8*d^2*e^6 - 592
8*b^2*c^7*d*e^7 - 5*b^3*c^6*e^8)*g)*x^5 - 128*(18*(768*c^9*d^3*e^5 - 732*b*
c^8*d^2*e^6 - 804*b^2*c^7*d*e^7 - b^3*c^6*e^8)*f + (3072*c^9*d^4*e^4 + 1550
4*b*c^8*d^3*e^5 - 22044*b^2*c^7*d^2*e^6 - 120*b^3*c^6*d*e^7 + 11*b^4*c^5*e^
8)*g)*x^4 - 16*(18*(1680*c^9*d^4*e^4 + 8928*b*c^8*d^3*e^5 - 12552*b^2*c^7*d
^2*e^6 - 104*b^3*c^6*d*e^7 + 9*b^4*c^5*e^8)*f - (79296*c^9*d^5*e^3 - 232272
*b*c^8*d^4*e^4 + 148416*b^2*c^7*d^3*e^5 + 5704*b^3*c^6*d^2*e^6 - 1180*b^4*c
^5*d*e^7 + 99*b^5*c^4*e^8)*g)*x^3 + 8*(54*(4096*c^9*d^5*e^3 - 11920*b*c^8*d
^4*e^4 + 7456*b^2*c^7*d^3*e^5 + 456*b^3*c^6*d^2*e^6 - 88*b^4*c^5*d*e^7 + 7*
b^5*c^4*e^8)*f + (106496*c^9*d^6*e^2 - 192192*b*c^8*d^5*e^3 + 52752*b^2*c^7
*d^4*e^4 + 46144*b^3*c^6*d^3*e^5 - 16104*b^4*c^5*d^2*e^6 + 2988*b^5*c^4*d*e
^7 - 231*b^6*c^3*e^8)*g)*x^2 - 18*(32768*c^9*d^7*e - 151872*b*c^8*d^6*e^2 +
 259008*b^2*c^7*d^5*e^3 - 218000*b^3*c^6*d^4*e^4 + 102624*b^4*c^5*d^3*e^5 -
 29148*b^5*c^4*d^2*e^6 + 4620*b^6*c^3*d*e^7 - 315*b^7*c^2*e^8)*f - (360448*
c^9*d^8 - 1656064*b*c^8*d^7*e + 3394752*b^2*c^7*d^6*e^2 - 3950464*b^3*c^6*d
^5*e^3 + 2808496*b^4*c^5*d^4*e^4 - 1245456*b^5*c^4*d^3*e^5 + 339108*b^6*c^3
*d^2*e^6 - 52080*b^7*c^2*d*e^7 + 3465*b^8*c*e^8)*g + 2*(18*(37184*c^9*d^6*e
^2 - 62400*b*c^8*d^5*e^3 + 6480*b^2*c^7*d^4*e^4 + 25504*b^3*c^6*d^3*e^5 - 8
196*b^4*c^5*d^2*e^6 + 1428*b^5*c^4*d*e^7 - 105*b^6*c^3*e^8)*f - (80640*c^9*
d^7*e - 373568*b*c^8*d^6*e^2 + 663936*b^2*c^7*d^5*e^3 - 604176*b^3*c^6*d^4*
e^4 + 313328*b^4*c^5*d^3*e^5 - 95868*b^5*c^4*d^2*e^6 + 16128*b^6*c^3*d*e^7
 - 1155*b^7*c^2*e^8)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*
e^2)]

giac [B] time = 0.72, size = 1402, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] 1/2064384*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(2*(4*(14*
(16*c^2*g*x*e^6 + (36*c^10*d*g*e^19 + 18*c^10*f*e^20 + 37*b*c^9*g*e^20)*e^(
-14)/c^8)*x - (320*c^10*d^2*g*e^18 - 576*c^10*d*f*e^19 - 1796*b*c^9*d*g*e^1
9 - 594*b*c^9*f*e^20 - 309*b^2*c^8*g*e^20)*e^(-14)/c^8)*x - (5712*c^10*d^3*
g*e^17 + 1512*c^10*d^2*f*e^18 - 5484*b*c^9*d^2*g*e^18 - 8424*b*c^9*d*f*e^19
 - 5928*b^2*c^8*d*g*e^19 - 1458*b^2*c^8*f*e^20 - 5*b^3*c^7*g*e^20)*e^(-14)/
c^8)*x - (3072*c^10*d^4*g*e^16 + 13824*c^10*d^3*f*e^17 + 15504*b*c^9*d^3*g*
e^17 - 13176*b*c^9*d^2*f*e^18 - 22044*b^2*c^8*d^2*g*e^18 - 14472*b^2*c^8*d*
f*e^19 - 120*b^3*c^7*d*g*e^19 - 18*b^3*c^7*f*e^20 + 11*b^4*c^6*g*e^20)*e^(-
14)/c^8)*x + (79296*c^10*d^5*g*e^15 - 30240*c^10*d^4*f*e^16 - 232272*b*c^9*
d^4*g*e^16 - 160704*b*c^9*d^3*f*e^17 + 148416*b^2*c^8*d^3*g*e^17 + 225936*b
^2*c^8*d^2*f*e^18 + 5704*b^3*c^7*d^2*g*e^18 + 1872*b^3*c^7*d*f*e^19 - 1180*
b^4*c^6*d*g*e^19 - 162*b^4*c^6*f*e^20 + 99*b^5*c^5*g*e^20)*e^(-14)/c^8)*x +
 (106496*c^10*d^6*g*e^14 + 221184*c^10*d^5*f*e^15 - 192192*b*c^9*d^5*g*e^15
 - 643680*b*c^9*d^4*f*e^16 + 52752*b^2*c^8*d^4*g*e^16 + 402624*b^2*c^8*d^3*
f*e^17 + 46144*b^3*c^7*d^3*g*e^17 + 24624*b^3*c^7*d^2*f*e^18 - 16104*b^4*c^
6*d^2*g*e^18 - 4752*b^4*c^6*d*f*e^19 + 2988*b^5*c^5*d*g*e^19 + 378*b^5*c^5*
f*e^20 - 231*b^6*c^4*g*e^20)*e^(-14)/c^8)*x - (80640*c^10*d^7*g*e^13 - 6693
12*c^10*d^6*f*e^14 - 373568*b*c^9*d^6*g*e^14 + 1123200*b*c^9*d^5*f*e^15 + 6
63936*b^2*c^8*d^5*g*e^15 - 116640*b^2*c^8*d^4*f*e^16 - 604176*b^3*c^7*d^4*g
*e^16 - 459072*b^3*c^7*d^3*f*e^17 + 313328*b^4*c^6*d^3*g*e^17 + 147528*b^4*
c^6*d^2*f*e^18 - 95868*b^5*c^5*d^2*g*e^18 - 25704*b^5*c^5*d*f*e^19 + 16128*
b^6*c^4*d*g*e^19 + 1890*b^6*c^4*f*e^20 - 1155*b^7*c^3*g*e^20)*e^(-14)/c^8)*
x - (360448*c^10*d^8*g*e^12 + 589824*c^10*d^7*f*e^13 - 1656064*b*c^9*d^7*g*
e^13 - 2733696*b*c^9*d^6*f*e^14 + 3394752*b^2*c^8*d^6*g*e^14 + 4662144*b^2*
c^8*d^5*f*e^15 - 3950464*b^3*c^7*d^5*g*e^15 - 3924000*b^3*c^7*d^4*f*e^16 +
2808496*b^4*c^6*d^4*g*e^16 + 1847232*b^4*c^6*d^3*f*e^17 - 1245456*b^5*c^5*d
^3*g*e^17 - 524664*b^5*c^5*d^2*f*e^18 + 339108*b^6*c^4*d^2*g*e^18 + 83160*b
^6*c^4*d*f*e^19 - 52080*b^7*c^3*d*g*e^19 - 5670*b^7*c^3*f*e^20 + 3465*b^8*c
^2*g*e^20)*e^(-14)/c^8) + 5/65536*(1024*c^9*d^9*g + 4608*c^9*d^8*f*e - 6912
*b*c^8*d^8*g*e - 18432*b*c^8*d^7*f*e^2 + 18432*b^2*c^7*d^7*g*e^2 + 32256*b^
2*c^7*d^6*f*e^3 - 26880*b^3*c^6*d^6*g*e^3 - 32256*b^3*c^6*d^5*f*e^4 + 24192
*b^4*c^5*d^5*g*e^4 + 20160*b^4*c^5*d^4*f*e^5 - 14112*b^5*c^4*d^4*g*e^5 - 80
64*b^5*c^4*d^3*f*e^6 + 5376*b^6*c^3*d^3*g*e^6 + 2016*b^6*c^3*d^2*f*e^7 - 12
96*b^7*c^2*d^2*g*e^7 - 288*b^7*c^2*d*f*e^8 + 180*b^8*c*d*g*e^8 + 18*b^8*c*f
*e^9 - 11*b^9*g*e^9)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(
-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^7
```

maple [B] time = 0.07, size = 4332, normalized size = 8.90

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 5/192/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^5*g+3/128*b^3/c^3*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e^2*f-1/9*g*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(7/2)/c-11/224*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)-115/
512*g*b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^6-1/8*x*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(7/2)/c*f+9/112*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/
2)*f+3/16*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2*f+15/128*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^4*f+15/64*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
```

)^(3/2)*x*d^4*f+3/32/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d^2*f+45/12
8*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6*f+45/256*c*(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^6*f+45/128*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^8*f-2/7*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e*d*f-135/256*e*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*b^2*d^5*f+15/2048*b^5/c^4*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)*f+45/16384*b^7/c^5*e^6*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+1/24
/e*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^3*g-11/768*e^2*g*b^4/c^4*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-11/63/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(7/2)*d^2-55/12288*e^4*g*b^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3
/2)-55/32768*e^6*g*b^8/c^6*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-95/768*g*
b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^4-5/64*g*b^2/c^2*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-95/384*g*b*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)*x*d^4+11/144*g*b/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)+945/51
2*e^3*g*b^4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*d^5-2205/2048*e^4*g*b^5/c^2/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-885/4
096*e^4*g*b^5/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+115/1536*e^3
*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d+225/16384*e^7*g*b^8/c
^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2))*d+625/1024*e^3*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*x*d^3-1025/1024*e^2*g*b^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^
4+105/256*e^5*g*b^6/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-405/4096*e^6*g*b^7/c^4/(c*e^2)^(1/2
)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*
d^2+85/2048*e^5*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+35/96*
e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^3+1/8*e*g*b^2/c^2*x*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d-185/768*e^2*g*b^3/c^2*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+45/32*e*g*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^7-55/16384*e^6
*g*b^7/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+625/2048*e^3*g*b^5/c^3*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3+5/64/e*c^3/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^9*g+5/9
6/e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^5*g+675/4096*b^5/c^3*e^4*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-5/32*g*b/c*x*(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(5/2)*d^2-135/256*g*b*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^8-115/256*g*b*c*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6-525/256*e^2*g*b^3/(c*e^2)^(1/2)*ar
ctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6-
55/65536*e^8*g*b^9/c^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+97/504/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(7/2)*b*d-11/384*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
5/2)-1025/2048*e^2*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4-185
/1536*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+15/16*e*g*b^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^5+15/32*e*g*b^3/c*(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*d^5+35/192*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)*d^3+1/16*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d
+85/4096*e^5*g*b^7/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d-885/8192*e^
4*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+115/3072*e^3*g*b^5/c
^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-55/6144*e^4*g*b^5/c^4*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x-15/32*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3
/2)*x*b*d^3*f-15/64*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d^3*f-3/
32*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b^2*d*f-315/128*b^3*e^3/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2))*d^5*f-1/4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e*d*g+3/64*b^
2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e^2*f+675/1024*b^3/c*(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4*e^2*f+45/256*b^3/c^2*(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(3/2)*d^2*e^2*f-135/4096*b^6/c^4*e^5*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*d*f+1/48/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d^3*g

```
+5/64/e*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^7*g-15/256*b^4/c^3*e
^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f+15/1024*b^4/c^3*e^4*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*f+45/8192*b^6/c^4*e^6*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*x*f+675/512*b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*
d^4*e^2*f-225/512*b^4/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*f+
45/32768*b^8/c^5*e^8/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+5/128/e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2)*b*d^7*g+675/2048*b^4/c^2*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
)*x*d^2*f-315/512*b^5/c^2*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c
)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-45/32*e*c^2/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d
^7*f-135/2048*b^5/c^3*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f+315/
128*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2))*d^6*e^2*f+45/128*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(3/2)*x*d^2*e^2*f+315/2048*b^6/c^3*e^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*f+1575/1024*b^4/c
*e^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^4*f-225/256*b^3/c*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2)*x*d^3*f-15/128*b^3/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d*
f-45/2048*b^7/c^4*e^7/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-3/16*e/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(5/2)*b*d*f-135/128*e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b*d
^5*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^2\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(d + e x\right)^{2} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)**2*(f + g*x), x)
```

3.1967 $\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=371

$$\frac{5(2cd-be)^7(-9beg+2cdg+16cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{32768c^{11/2}e^2}+\frac{5(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x-c}}{16384c^5e}$$

Rubi [A] time = 0.62, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {779, 612, 621, 204}

$$\frac{5(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}(-9beg+2cdg+16cef)}{16384c^5e}+\frac{5(b+2cx)(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-9beg+2cdg+16cef)}{6144c^4e}+\frac{(b+2cx)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+2cdg+16cef)}{384c^3e}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(9beg-16c(dg+ef)-14cegx)}{112c^2e^2}+\frac{5(2cd-be)^7(-9beg+2cdg+16cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{32768c^{11/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (5*(2*c*d - b*e)^5*(16*c*e*f + 2*c*d*g - 9*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2])/(16384*c^5*e) + (5*(2*c*d - b*e)^3*(16*c*e*f
+ 2*c*d*g - 9*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2
))/(6144*c^4*e) + ((2*c*d - b*e)*(16*c*e*f + 2*c*d*g - 9*b*e*g)*(b + 2*c*x)
*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(384*c^3*e) + ((9*b*e*g - 16*
c*(e*f + d*g) - 14*c*e*g*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(1
12*c^2*e^2) + (5*(2*c*d - b*e)^7*(16*c*e*f + 2*c*d*g - 9*b*e*g)*ArcTan[(e*(
b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(32768*
c^(11/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}dx = \frac{(9beg-16c(ef+dg)-14cegx)\left(d(cd-be)-be^2x-ce^2\right.}{112c^2e^2}$$

$$= \frac{(2cd-be)(16cef+2cdg-9beg)(b+2cx)\left(d(cd-be)-\right.}{384c^3e}$$

$$= \frac{5(2cd-be)^3(16cef+2cdg-9beg)(b+2cx)\left(d(cd-be)\right.}{6144c^4e}$$

$$= \frac{5(2cd-be)^5(16cef+2cdg-9beg)(b+2cx)\sqrt{d(cd-be)}}{16384c^5e}$$

$$= \frac{5(2cd-be)^5(16cef+2cdg-9beg)(b+2cx)\sqrt{d(cd-be)}}{16384c^5e}$$

$$= \frac{5(2cd-be)^5(16cef+2cdg-9beg)(b+2cx)\sqrt{d(cd-be)}}{16384c^5e}$$

Mathematica [B] time = 6.38, size = 1422, normalized size = 3.83

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] -1/8*(g*(d + e*x)^2*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(5/2))/(c*e^2) - ((c*d*e + e*(c*d - b*e))^2*(-8*c*e^2*f - ((-7*c*d*e)/2 + (
9*e*(c*d - b*e))/2)*g)*(d + e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)
*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
 - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((9*(1/(8*(1
- (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b
*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3) + 5/(12*(1 - (c*e^2*
(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e
^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x))/((c*
d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))
/(c*d*e + e*(c*d - b*e)))))^(-1)))/14 + (45*(c*d*e + e*(c*d - b*e))^5*((c*d
*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^
5*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
 - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4*(d + e*
x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^
2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)^3)/(15*(
c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b
*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c*d*e + e*
(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*
e + e*(c*d - b*e)))^4) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[
d + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e
)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d - b
*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*
(c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2
)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))])))
/(4096*c^5*e^10*(d + e*x)^5*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))
*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b
*e)))))^3)))/(36*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d -
```

```
b*e))/(c*d*e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d -
b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

IntegrateAlgebraic [F] time = 180.31, size = 0, normalized size = 0.00

$\$Aborted$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
)^(5/2),x]
```

```
[Out] $Aborted
```

fricas [B] time = 6.59, size = 2345, normalized size = 6.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="fricas")
```

```
[Out] [-1/1376256*(105*(16*(128*c^8*d^7*e - 448*b*c^7*d^6*e^2 + 672*b^2*c^6*d^5*e
^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3*e^5 - 84*b^5*c^3*d^2*e^6 + 14*b^
6*c^2*d*e^7 - b^7*c*e^8)*f + (256*c^8*d^8 - 2048*b*c^7*d^7*e + 5376*b^2*c^6
*d^6*e^2 - 7168*b^3*c^5*d^5*e^3 + 5600*b^4*c^4*d^4*e^4 - 2688*b^5*c^3*d^3*e
^5 + 784*b^6*c^2*d^2*e^6 - 128*b^7*c*d*e^7 + 9*b^8*e^8)*g)*sqrt(-c)*log(8*c
^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(43008*c^8*e^7
*g*x^7 + 3072*(16*c^8*e^7*f + (16*c^8*d*e^6 + 33*b*c^7*e^7)*g)*x^6 + 256*(1
6*(14*c^8*d*e^6 + 29*b*c^7*e^7)*f - (476*c^8*d^2*e^5 - 940*b*c^7*d*e^6 - 24
3*b^2*c^6*e^7)*g)*x^5 - 128*(16*(72*c^8*d^2*e^5 - 142*b*c^7*d*e^6 - 37*b^2*
c^6*e^7)*f + (1152*c^8*d^3*e^4 + 76*b*c^7*d^2*e^5 - 1820*b^2*c^6*d*e^6 - 3*
b^3*c^5*e^7)*g)*x^4 - 16*(16*(728*c^8*d^3*e^4 + 60*b*c^7*d^2*e^5 - 1166*b^2
*c^6*d*e^6 - 3*b^3*c^5*e^7)*f - (6608*c^8*d^4*e^3 - 25824*b*c^7*d^3*e^4 + 1
9000*b^2*c^6*d^2*e^5 + 264*b^3*c^5*d*e^6 - 27*b^4*c^4*e^7)*g)*x^3 + 8*(16*(
1152*c^8*d^4*e^3 - 4488*b*c^7*d^3*e^4 + 3276*b^2*c^6*d^2*e^5 + 74*b^3*c^5*d
*e^6 - 7*b^4*c^4*e^7)*f + (18432*c^8*d^5*e^2 - 35472*b*c^7*d^4*e^3 + 14688*
b^2*c^6*d^3*e^4 + 2920*b^3*c^5*d^2*e^5 - 680*b^4*c^4*d*e^6 + 63*b^5*c^3*e^7
)*g)*x^2 - 16*(3072*c^8*d^6*e - 16608*b*c^7*d^5*e^2 + 27696*b^2*c^6*d^4*e^3
 - 20096*b^3*c^5*d^3*e^4 + 7056*b^4*c^4*d^2*e^5 - 1330*b^5*c^3*d*e^6 + 105*
b^6*c^2*e^7)*f - (49152*c^8*d^7 - 189888*b*c^7*d^6*e + 333888*b^2*c^6*d^5*e
^2 - 332464*b^3*c^5*d^4*e^3 + 194976*b^4*c^4*d^3*e^4 - 66164*b^5*c^3*d^2*e^
5 + 12180*b^6*c^2*d*e^6 - 945*b^7*c*e^7)*g + 2*(16*(7392*c^8*d^5*e^2 - 1387
2*b*c^7*d^4*e^3 + 4896*b^2*c^6*d^3*e^4 + 1920*b^3*c^5*d^2*e^5 - 406*b^4*c^4
*d*e^6 + 35*b^5*c^3*e^7)*f - (6720*c^8*d^6*e - 34752*b*c^7*d^5*e^2 + 58896*
b^2*c^6*d^4*e^3 - 45792*b^3*c^5*d^3*e^4 + 18092*b^4*c^4*d^2*e^5 - 3724*b^5*
c^3*d*e^6 + 315*b^6*c^2*e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e))/(c^6*e^2), -1/688128*(105*(16*(128*c^8*d^7*e - 448*b*c^7*d^6*e^2 + 672*
b^2*c^6*d^5*e^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3*e^5 - 84*b^5*c^3*d^
2*e^6 + 14*b^6*c^2*d*e^7 - b^7*c*e^8)*f + (256*c^8*d^8 - 2048*b*c^7*d^7*e +
 5376*b^2*c^6*d^6*e^2 - 7168*b^3*c^5*d^5*e^3 + 5600*b^4*c^4*d^4*e^4 - 2688*
b^5*c^3*d^3*e^5 + 784*b^6*c^2*d^2*e^6 - 128*b^7*c*d*e^7 + 9*b^8*e^8)*g)*sqr
t(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*
sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(43008*c^8*e^7*g
*x^7 + 3072*(16*c^8*e^7*f + (16*c^8*d*e^6 + 33*b*c^7*e^7)*g)*x^6 + 256*(16*
(14*c^8*d*e^6 + 29*b*c^7*e^7)*f - (476*c^8*d^2*e^5 - 940*b*c^7*d*e^6 - 243*
b^2*c^6*e^7)*g)*x^5 - 128*(16*(72*c^8*d^2*e^5 - 142*b*c^7*d*e^6 - 37*b^2*c^
6*e^7)*f + (1152*c^8*d^3*e^4 + 76*b*c^7*d^2*e^5 - 1820*b^2*c^6*d*e^6 - 3*b^
3*c^5*e^7)*g)*x^4 - 16*(16*(728*c^8*d^3*e^4 + 60*b*c^7*d^2*e^5 - 1166*b^2*c
^6*d*e^6 - 3*b^3*c^5*e^7)*f - (6608*c^8*d^4*e^3 - 25824*b*c^7*d^3*e^4 + 190
```

```
00*b^2*c^6*d^2*e^5 + 264*b^3*c^5*d*e^6 - 27*b^4*c^4*e^7)*g)*x^3 + 8*(16*(11
52*c^8*d^4*e^3 - 4488*b*c^7*d^3*e^4 + 3276*b^2*c^6*d^2*e^5 + 74*b^3*c^5*d*e
^6 - 7*b^4*c^4*e^7)*f + (18432*c^8*d^5*e^2 - 35472*b*c^7*d^4*e^3 + 14688*b^
2*c^6*d^3*e^4 + 2920*b^3*c^5*d^2*e^5 - 680*b^4*c^4*d*e^6 + 63*b^5*c^3*e^7)*
g)*x^2 - 16*(3072*c^8*d^6*e - 16608*b*c^7*d^5*e^2 + 27696*b^2*c^6*d^4*e^3 -
 20096*b^3*c^5*d^3*e^4 + 7056*b^4*c^4*d^2*e^5 - 1330*b^5*c^3*d*e^6 + 105*b^
6*c^2*e^7)*f - (49152*c^8*d^7 - 189888*b*c^7*d^6*e + 333888*b^2*c^6*d^5*e^2
 - 332464*b^3*c^5*d^4*e^3 + 194976*b^4*c^4*d^3*e^4 - 66164*b^5*c^3*d^2*e^5
+ 12180*b^6*c^2*d*e^6 - 945*b^7*c*e^7)*g + 2*(16*(7392*c^8*d^5*e^2 - 13872*
b*c^7*d^4*e^3 + 4896*b^2*c^6*d^3*e^4 + 1920*b^3*c^5*d^2*e^5 - 406*b^4*c^4*d
*e^6 + 35*b^5*c^3*e^7)*f - (6720*c^8*d^6*e - 34752*b*c^7*d^5*e^2 + 58896*b^
2*c^6*d^4*e^3 - 45792*b^3*c^5*d^3*e^4 + 18092*b^4*c^4*d^2*e^5 - 3724*b^5*c^
3*d*e^6 + 315*b^6*c^2*e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)
)/(c^6*e^2)]
```

giac [B] time = 0.66, size = 1144, normalized size = 3.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="giac")
```

```
[Out] 1/344064*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(2*(12*(14*
c^2*g*x*e^5 + (16*c^9*d*g*e^16 + 16*c^9*f*e^17 + 33*b*c^8*g*e^17)*e^(-12)/c
^7)*x - (476*c^9*d^2*g*e^15 - 224*c^9*d*f*e^16 - 940*b*c^8*d*g*e^16 - 464*b
*c^8*f*e^17 - 243*b^2*c^7*g*e^17)*e^(-12)/c^7)*x - (1152*c^9*d^3*g*e^14 + 1
152*c^9*d^2*f*e^15 + 76*b*c^8*d^2*g*e^15 - 2272*b*c^8*d*f*e^16 - 1820*b^2*c
^7*d*g*e^16 - 592*b^2*c^7*f*e^17 - 3*b^3*c^6*g*e^17)*e^(-12)/c^7)*x + (6608
*c^9*d^4*g*e^13 - 11648*c^9*d^3*f*e^14 - 25824*b*c^8*d^3*g*e^14 - 960*b*c^8
*d^2*f*e^15 + 19000*b^2*c^7*d^2*g*e^15 + 18656*b^2*c^7*d*f*e^16 + 264*b^3*c
^6*d*g*e^16 + 48*b^3*c^6*f*e^17 - 27*b^4*c^5*g*e^17)*e^(-12)/c^7)*x + (1843
2*c^9*d^5*g*e^12 + 18432*c^9*d^4*f*e^13 - 35472*b*c^8*d^4*g*e^13 - 71808*b*
c^8*d^3*f*e^14 + 14688*b^2*c^7*d^3*g*e^14 + 52416*b^2*c^7*d^2*f*e^15 + 2920
*b^3*c^6*d^2*g*e^15 + 1184*b^3*c^6*d*f*e^16 - 680*b^4*c^5*d*g*e^16 - 112*b^
4*c^5*f*e^17 + 63*b^5*c^4*g*e^17)*e^(-12)/c^7)*x - (6720*c^9*d^6*g*e^11 - 1
18272*c^9*d^5*f*e^12 - 34752*b*c^8*d^5*g*e^12 + 221952*b*c^8*d^4*f*e^13 + 5
8896*b^2*c^7*d^4*g*e^13 - 78336*b^2*c^7*d^3*f*e^14 - 45792*b^3*c^6*d^3*g*e^
14 - 30720*b^3*c^6*d^2*f*e^15 + 18092*b^4*c^5*d^2*g*e^15 + 6496*b^4*c^5*d*f
*e^16 - 3724*b^5*c^4*d*g*e^16 - 560*b^5*c^4*f*e^17 + 315*b^6*c^3*g*e^17)*e^
(-12)/c^7)*x - (49152*c^9*d^7*g*e^10 + 49152*c^9*d^6*f*e^11 - 189888*b*c^8*
d^6*g*e^11 - 265728*b*c^8*d^5*f*e^12 + 333888*b^2*c^7*d^5*g*e^12 + 443136*b
^2*c^7*d^4*f*e^13 - 332464*b^3*c^6*d^4*g*e^13 - 321536*b^3*c^6*d^3*f*e^14 +
 194976*b^4*c^5*d^3*g*e^14 + 112896*b^4*c^5*d^2*f*e^15 - 66164*b^5*c^4*d^2*
g*e^15 - 21280*b^5*c^4*d*f*e^16 + 12180*b^6*c^3*d*g*e^16 + 1680*b^6*c^3*f*e
^17 - 945*b^7*c^2*g*e^17)*e^(-12)/c^7) + 5/32768*(256*c^8*d^8*g + 2048*c^8*
d^7*f*e - 2048*b*c^7*d^7*g*e - 7168*b*c^7*d^6*f*e^2 + 5376*b^2*c^6*d^6*g*e^
2 + 10752*b^2*c^6*d^5*f*e^3 - 7168*b^3*c^5*d^5*g*e^3 - 8960*b^3*c^5*d^4*f*e
^4 + 5600*b^4*c^4*d^4*g*e^4 + 4480*b^4*c^4*d^3*f*e^5 - 2688*b^5*c^3*d^3*g*e
^5 - 1344*b^5*c^3*d^2*f*e^6 + 784*b^6*c^2*d^2*g*e^6 + 224*b^6*c^2*d*f*e^7 -
 128*b^7*c*d*g*e^7 - 16*b^7*c*f*e^8 + 9*b^8*g*e^8)*sqrt(-c*e^2)*e^(-3)*log(
abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sq
rt(-c*e^2)*b))/c^6
```

maple [B] time = 0.07, size = 3472, normalized size = 9.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

[Out] 9/112/e*g*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)+15/2048*e^3*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+5/48*d^3*f*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b+1/6*d*f*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-1/7*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e*f-35/256*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^5-1/24*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e*f-5/96*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b^2*d-5/32*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^3*b+45/16384*e^5*g*b^7/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+5/384/e*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^4+1/48/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-1/8/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c+5/16*d^7*f*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+5/24*d^3*f*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x+5/16*d^5*f*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+1/12*d*f/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b+5/32*d^5*f*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b+3/128*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-5/64*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d^3-1/7*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e^2*d*g-25/64*b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4*e*f-5/384*b^4/c^3*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*f-5/1024*b^6/c^4*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-25/32*b*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4*e*f-25/64*b^3/c*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2*f+25/256*b^4/c^2*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f+105/64*b^2*c*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*f+5/32*b^2/c*e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d*f-35/32*b*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6*e*f-35/384*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d+875/1024*e^3*g*b^4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-105/512*b^5/c^2*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*f+35/1024*b^6/c^3*e^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f+175/256*b^4/c*e^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-125/256*e^2*g*b^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3+245/2048*e^5*g*b^6/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2-5/256*e^6*g*b^7/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d+475/2048*e^3*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+25/128*e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+105/128*e*g*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6-105/256*e^4*g*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-115/2048*e^4*g*b^5/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+275/512*e*g*b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4+1/96/e*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d^2+5/128/e*g*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6+275/1024*e*g*b^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4+25/256*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+3/64*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)+15/1024*e^3*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x+5/256/e*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^6+5/128/e*g*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^8+5/192/e*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^4+45/8192*e^5*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-25/128*b^4/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-35/32*e^2*g*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5-35/768*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-1/12*b/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e*f-5/48*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d-5/16*g*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^7-35/128*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^5*b+475/4096*e^3*g*b^5/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-125/512*e^2*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3+45/32768*e^7*g*b^8/c^5/(c*e^2)^(1/2)*a

```
rctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-115
/4096*e^4*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+25/64*b^3/c*e^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*f-5/2048*b^7/c^4*e^7/(c*e^2)^(
1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
))*f-5/192*b^3/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*f-5/16*b*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2*e*f+5/64*b^3/c^2*e^2*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f-5/512*b^5/c^3*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*x*f+25/512*b^5/c^3*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
*d*f-175/128*b^3*e^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*f+25/32*b^2*e^2*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*x*d^3*f-5/32*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*
d^2*e*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,\left(d+e\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(d + e x\right) \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)*(f + g*x), x)
```

3.1968 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=346

$$-\frac{(2cd-be)^5(5beg-2c(6ef-dg))\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{7/2}e^2}-\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}{512c^3e}$$

Rubi [A] time = 0.53, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {794, 664, 612, 621, 204}

$$-\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}(5beg-2c(6ef-dg))}{512c^3e}-\frac{(b+2cx)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(5beg-2c(6ef-dg))}{192c^2e}-\frac{(2cd-be)^5(5beg-2c(6ef-dg))\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{7/2}e^2}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-5beg-2cdg+12cef)}{60ce^2}-\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{6ce^2(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((2*c*d - b*e)^3*(5*b*e*g - 2*c*(6*e*f - d*g))*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(512*c^3*e) - ((2*c*d - b*e)*(5*b*e*g - 2*c*(6*
e*f - d*g))*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(192*c
^2*e) + ((12*c*e*f - 2*c*d*g - 5*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(5/2))/(60*c*e^2) - (g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(6*c
*e^2*(d + e*x)) - ((2*c*d - b*e)^5*(5*b*e*g - 2*c*(6*e*f - d*g))*ArcTan[(e*
(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(1024*
c^(7/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
```

```
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{d+ex}\,dx = -\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{6ce^2(d+ex)} - \frac{\left(ce^3f-\left(-cde^2+be^3\right)g+\frac{7}{2}\right.}{}$$

$$= \frac{(12cef-2cdg-5beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{60ce^2} - \frac{g\left(d(cd\right.}{}$$

$$= \frac{(2cd-be)(12cef-2cdg-5beg)(b+2cx)\left(d(cd-be)-be^2x-c\right.}{192c^2e}$$

$$= \frac{(2cd-be)^3(12cef-2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-}}{512c^3e}$$

$$= \frac{(2cd-be)^3(12cef-2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-}}{512c^3e}$$

$$= \frac{(2cd-be)^3(12cef-2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-}}{512c^3e}$$

Mathematica [B] time = 6.20, size = 1230, normalized size = 3.55

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
,x]
```

```
[Out] -1/6*(g*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2))/(c*e^
2) - ((c*d*e + e*(c*d - b*e))^2*(-6*c*e^2*f - ((-7*c*d*e)/2 + (5*e*(c*d - b
*e))/2)*g)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(1 - (c*e^2*(d + e*x))/
((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b
*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((5/(16*(1 - (c*e^2*(d + e*x))/((c*d*
e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(
c*d*e + e*(c*d - b*e)))))^3) + 5/(8*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d
 - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*
(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*
e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))
^(-1))/2 + (15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e))
 + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3*((-2*c*e^2*(d + e*x))/((c*d
*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/
(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*
e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*
d - b*e)))^2) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[d + e*x])
/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2
*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt
[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*
```

```
e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
+ e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))]))))/(512*c^3
*e^6*(d + e*x)^3*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)
/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3))
)/(15*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*
e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d - b*e - c*e*x
))/(c*d*e + e*(c*d - b*e))]])
```

IntegrateAlgebraic [F] time = 180.08, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x),x]
```

```
[Out] $Aborted
```

fricas [B] time = 1.59, size = 1457, normalized size = 4.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x, algorit
hm="fricas")
```

```
[Out] [-1/30720*(15*(12*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 4
0*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f - (64*c^6*d^6 - 240*b^2
*c^4*d^4*e^2 + 320*b^3*c^3*d^3*e^3 - 180*b^4*c^2*d^2*e^4 + 48*b^5*c*d*e^5 -
 5*b^6*e^6)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c
*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*
e)*sqrt(-c)) - 4*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f - (12*c^6*d*e^4 -
25*b*c^5*e^5)*g)*x^4 - 16*(12*(10*c^6*d*e^4 - 21*b*c^5*e^5)*f + (140*c^6*d^
2*e^3 - 8*b*c^5*d*e^4 - 135*b^2*c^4*e^5)*g)*x^3 - 8*(12*(32*c^6*d^2*e^3 - 2
*b*c^5*d*e^4 - 31*b^2*c^4*e^5)*f - (384*c^6*d^3*e^2 - 804*b*c^5*d^2*e^3 + 4
08*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*g)*x^2 + 12*(128*c^6*d^4*e - 56*b*c^5*d^3
*e^2 - 172*b^2*c^4*d^2*e^3 + 130*b^3*c^3*d*e^4 - 15*b^4*c^2*e^5)*f - (1536*
c^6*d^5 - 3312*b*c^5*d^4*e + 3216*b^2*c^4*d^3*e^2 - 1880*b^3*c^3*d^2*e^3 +
620*b^4*c^2*d*e^4 - 75*b^5*c*e^5)*g + 2*(12*(200*c^6*d^3*e^2 - 428*b*c^5*d^
2*e^3 + 218*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*f + (240*c^6*d^4*e - 144*b*c^5*d
^3*e^2 - 216*b^2*c^4*d^2*e^3 + 180*b^3*c^3*d*e^4 - 25*b^4*c^2*e^5)*g)*x)*sq
rt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^2), -1/15360*(15*(12*(32*c
^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 40*b^3*c^3*d^2*e^4 + 10*
b^4*c^2*d*e^5 - b^5*c*e^6)*f - (64*c^6*d^6 - 240*b^2*c^4*d^4*e^2 + 320*b^3*
c^3*d^3*e^3 - 180*b^4*c^2*d^2*e^4 + 48*b^5*c*d*e^5 - 5*b^6*e^6)*g)*sqrt(c)*
arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(
c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(1280*c^6*e^5*g*x^5 +
 128*(12*c^6*e^5*f - (12*c^6*d*e^4 - 25*b*c^5*e^5)*g)*x^4 - 16*(12*(10*c^6*
d*e^4 - 21*b*c^5*e^5)*f + (140*c^6*d^2*e^3 - 8*b*c^5*d*e^4 - 135*b^2*c^4*e^
5)*g)*x^3 - 8*(12*(32*c^6*d^2*e^3 - 2*b*c^5*d*e^4 - 31*b^2*c^4*e^5)*f - (38
4*c^6*d^3*e^2 - 804*b*c^5*d^2*e^3 + 408*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*g)*x
^2 + 12*(128*c^6*d^4*e - 56*b*c^5*d^3*e^2 - 172*b^2*c^4*d^2*e^3 + 130*b^3*c
^3*d*e^4 - 15*b^4*c^2*e^5)*f - (1536*c^6*d^5 - 3312*b*c^5*d^4*e + 3216*b^2*
c^4*d^3*e^2 - 1880*b^3*c^3*d^2*e^3 + 620*b^4*c^2*d*e^4 - 75*b^5*c*e^5)*g +
2*(12*(200*c^6*d^3*e^2 - 428*b*c^5*d^2*e^3 + 218*b^2*c^4*d*e^4 + 5*b^3*c^3*
e^5)*f + (240*c^6*d^4*e - 144*b*c^5*d^3*e^2 - 216*b^2*c^4*d^2*e^3 + 180*b^3
*c^3*d*e^4 - 25*b^4*c^2*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e))/(c^4*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.42Error: Bad Argument Typ
e
```

maple [B] time = 0.06, size = 3533, normalized size = 10.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x)
```

```
[Out] -1/8/e*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*g-1/16*e*b^2
/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-3/128*e^3*b^4/c^2*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+1/4*c*d*(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+1/8*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(3/2)*x*d*g+1/16*b^2/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(3/2)*d*g+3/8*c^3*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b
*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-5
/48*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d-5/24*g*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(3/2)*x*b*d+5/192*g*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(3/2)*b^3+5/512*g*e^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^5+9/32
*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^3*g+1/8*d*(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*f+1/6*g/e*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(5/2)*x-5/16*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^3-1
/5/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g-1/8*e*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+3/8*c^2*d^3*(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+3/16*c*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*b*f+1/12*g/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5
/2)*b+5/48*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^2+5/24*g/e*c*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+5/16*g/e*c^2*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*x*d^4+15/64*g*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*
b^3*d^2-25/32*g*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^3*d^3-5/64*g*e^2/c^2*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2)*b^4*d+15/32*e^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2))*d^3*g-15/256*g*e^4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*
b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^5*d-5/32*g*e^2/c*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b^3*d-15/128*e^3*b^4/c/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2))*d^2*g+1/5/e*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(5/2)*f-9/32*e*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d
^2*f-5/8*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b*d^3+5/96*g*e/c*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*b^2+75/64*g*e*c/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^2*d^4+75
/256*g*e^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2))*b^4*d^2+5/256*g*e^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*x*b^4-9/64*e*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2)*d^2*g+9/64*e^2*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2)*d*f-3/256*e^5*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-15
/16*g*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2))*b*d^5+15/32*g*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
)*x*b^2*d^2+9/16*b*c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^
3*g-3/16/e*c*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g-3/8/
e*c^3*d^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/
```

```
e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-15/32*e^3*b^3/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-3/8/e*c^2*d^4*(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g+15/16*b*c^2/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2))*d^5*g+5/32*g/e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)*b*d^4+5/16*g/e*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6+5/1024*g*e^5/c^3/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^6-3
/64*e^3*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f-9/32*e*
b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2*g+9/32*e^2*b^2*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*f+3/128*e^2*b^4/c^2*(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g-1/4/e*c*d^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g-15/16*e*b^2*c/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*g-9/16*e*b*c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*d^2*f+3/256*e^4*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e
)*(x+d/e))^(1/2))*d*g-15/16*e*b*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d
/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(1/2))*d^4*f+15/16*e^2*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*
(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*
d^3*f+3/64*e^2*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*
g+15/128*e^4*b^4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*
c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{d+ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x), x)
```

3.1969 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=354

$$\frac{(2cd-be)^4(-3beg-4cdg+10cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{256c^{5/2}e^2}+\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-c}}{128c^2e}$$

Rubi [A] time = 0.61, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {792, 664, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg-4cdg+10cef)}{128c^2e}+\frac{(2cd-be)^4(-3beg-4cdg+10cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{256c^{5/2}e^2}+\frac{(b+2cx)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg-4cdg+10cef)}{48ce}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(d+ex)^2(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-3beg-4cdg+10cef)}{15e^2(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] ((2*c*d - b*e)^2*(10*c*e*f - 4*c*d*g - 3*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(128*c^2*e) + ((10*c*e*f - 4*c*d*g - 3*b*e*g)*(
b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(48*c*e) + ((10*c*e
*f - 4*c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(15*e^
2*(2*c*d - b*e)) + (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/
2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^2) + ((2*c*d - b*e)^4*(10*c*e*f - 4*c*d*
g - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])])/(256*c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
```

```
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(2cd-be)(d+ex)^2} + \frac{(10cef-4cdg-3beg)}{3e(2c}$$

$$= \frac{(10cef-4cdg-3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15e^2(2cd-be)} + \frac{2(ef-dg)}{3e}$$

$$= \frac{(10cef-4cdg-3beg)(b+2cx)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{48ce} + \frac{(1}{}$$

$$= \frac{(2cd-be)^2(10cef-4cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2}}{128c^2e}$$

$$= \frac{(2cd-be)^2(10cef-4cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2}}{128c^2e}$$

$$= \frac{(2cd-be)^2(10cef-4cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2}}{128c^2e}$$

Mathematica [A] time = 4.41, size = 379, normalized size = 1.07

$$\frac{(be-cd+cex)^2((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{\sqrt{\frac{be-cd+cex}{be-2cd}}(-3beg-4cdg+10cef)\left(2c^2e^9(d+ex)^2(e(2cd-be))^{3/2}\sqrt{\frac{be-cd+cex}{be-2cd}}\left(59b^2e^2+4bce(17ex-42d)+4c^2\left(31d^2-22dex+6e^2x^2\right)\right)-15e^8(be-2cd)^4\left(\sqrt{c}e^{5/2}\sqrt{d+ex}(be-2cd)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+ce^2(d+ex)\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}\right)\right)}{128c^2e^7(d+ex)^2\sqrt{e(2cd-be)}(be-cd+cex)^4}-3e^3g\right)}{15ce^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^2,x]
```

```
[Out] ((-(c*d) + b*e + c*e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*e^3*
g + ((10*c*e*f - 4*c*d*g - 3*b*e*g)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b
*e)]*(2*c^2*e^9*(e*(2*c*d - b*e))^(3/2)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*
e*x)/(-2*c*d + b*e)]*(59*b^2*e^2 + 4*b*c*e*(-42*d + 17*e*x) + 4*c^2*(31*d^2
 - 22*d*e*x + 6*e^2*x^2)) - 15*e^8*(-2*c*d + b*e)^4*(c*e^2*Sqrt[e*(2*c*d -
b*e)]*(d + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + Sqrt[c]*e^(5/
2)*(-2*c*d + b*e)*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt
[e*(2*c*d - b*e)]])))/(128*c^2*e^7*Sqrt[e*(2*c*d - b*e)]*(d + e*x)^2*(-(c*d
) + b*e + c*e*x)^4)))/(15*c*e^5)
```

IntegrateAlgebraic [F] time = 180.21, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^2,x]
```

```
[Out] $Aborted
```

fricas [A] time = 0.92, size = 1097, normalized size = 3.10

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x, algor
ithm="fricas")
```

```
[Out] [1/7680*(15*(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3 - 8*b
^3*c^2*d*e^4 + b^4*c*e^5)*f - (64*c^5*d^5 - 80*b*c^4*d^4*e + 40*b^3*c^2*d^2
*e^3 - 20*b^4*c*d*e^4 + 3*b^5*e^5)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^
2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(384*c^5*e^4*g*x^4 + 48*(10*c^5*e^4
*f - (20*c^5*d*e^3 - 21*b*c^4*e^4)*g)*x^3 - 8*(10*(16*c^5*d*e^3 - 17*b*c^4*
e^4)*f - (64*c^5*d^2*e^2 - 164*b*c^4*d*e^3 + 93*b^2*c^3*e^4)*g)*x^2 + 10*(1
28*c^5*d^3*e - 156*b*c^4*d^2*e^2 + 28*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4)*f - (
896*c^5*d^4 - 1392*b*c^4*d^3*e + 796*b^2*c^3*d^2*e^2 - 240*b^3*c^2*d*e^3 +
45*b^4*c*e^4)*g + 2*(10*(36*c^5*d^2*e^2 - 100*b*c^4*d*e^3 + 59*b^2*c^3*e^4)
*f + (240*c^5*d^3*e - 284*b*c^4*d^2*e^2 + 64*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4
)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2), -1/3840*(15*
(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3 - 8*b^3*c^2*d*e^4
 + b^4*c*e^5)*f - (64*c^5*d^5 - 80*b*c^4*d^4*e + 40*b^3*c^2*d^2*e^3 - 20*b^
4*c*d*e^4 + 3*b^5*e^5)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*
d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b
*c*d*e)) - 2*(384*c^5*e^4*g*x^4 + 48*(10*c^5*e^4*f - (20*c^5*d*e^3 - 21*b*c
^4*e^4)*g)*x^3 - 8*(10*(16*c^5*d*e^3 - 17*b*c^4*e^4)*f - (64*c^5*d^2*e^2 -
164*b*c^4*d*e^3 + 93*b^2*c^3*e^4)*g)*x^2 + 10*(128*c^5*d^3*e - 156*b*c^4*d^
2*e^2 + 28*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4)*f - (896*c^5*d^4 - 1392*b*c^4*d^
3*e + 796*b^2*c^3*d^2*e^2 - 240*b^3*c^2*d*e^3 + 45*b^4*c*e^4)*g + 2*(10*(36
*c^5*d^2*e^2 - 100*b*c^4*d*e^3 + 59*b^2*c^3*e^4)*f + (240*c^5*d^3*e - 284*b
*c^4*d^2*e^2 + 64*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b
*e^2*x + c*d^2 - b*d*e))/(c^3*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 4215, normalized size = 11.91

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x)
```

```
[Out] 5/128*e^5/c/(-b*e^2+2*c*d*e)*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-
1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2))*d*g-1/16*g*b^2/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-9/32
*g*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-1/8*g*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+2/3*c/(-b*e^2+2*c*d*e)*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-5/24*e^2/(-b*e^2+2*c*d*e)*b^2
*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+25/8*e^3*c^2/(-b*e^2+2
*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*f-15/8*e^2*c^
```

2/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^
2*f+15/8*e*c^2/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2)*x*d^3*g+15/16*e^3*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*x*d*f+5/12*e*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*d*g+25/8*e*c^3/(-b*e^2+2*c*d*e)*b/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^5*g+25/16*e^3*c/(-b*e^2+2*c*d*e)
*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g-25/8*e^2*c^3/(-b*e
^2+2*c*d*e)*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e
)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*f-25/16*e^4
*c/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e
^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f
-25/8*e^2*c^2/(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/
e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2))*d^4*g-15/16*e^2*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*x*d^2*g-15/32*e^2/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2*g+15/32*e^3/(-b*e^2+2*c*d*e)*b^3*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*f-15/16*g*b*c^2/(c*e^2)^(1/
2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4-9/16*g*b*c*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*x*d^2+9/64*g*e*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*d-3/256*g*e^4*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))-15/32*g*e^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2
*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))
*d^2-3/64*g*e^2*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+9
/32*g*e*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d+1/4*g/e*c
d(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+3/8*g/e*c^2*d^3*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+5/24*e/(-b*e^2+2*c*d*e)*b^2
*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-5/64*e^4/c/(-b*e^2+2
*c*d*e)*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f-5/32*e^4/(-
b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+2/
3/e^2/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e)
)^(7/2)*f+1/5*g/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+3/16*
g/e*c*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b-3/128*g*e^2*b
^4/c^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+1/8*g/e*d*(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b+3/8*g/e*c^3*d^5/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2))-2/3/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g-5/4*c^4/(-b*e^2+2*c*d*e)*d^6/(
c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-2/3/e*c/(-b*e^2+2*c*d*e)*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g-5/8*c^2/(-b*e^2+2*c*d*e)
d^4(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g-5/6*c^2/(-b*e^2+
2*c*d*e)*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g-5/4*c^3/
(-b*e^2+2*c*d*e)*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g-
5/12*c/(-b*e^2+2*c*d*e)*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/
2)*b*g+15/16*e*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2)*d^3*g+5/4*e*c^3/(-b*e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*x*f+5/12*e*c/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*f+5/4*e*c^4/(-b*e^2+2*c*d*e)*d^5/(c*e^2)^
(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+25/64*e^5/(-b*e^2+2*c*d*e)*b^4/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f-5/128*e^6/c/(-b*e^2+2*c*d*e)*
b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-25/64*e^4/(-b*e^2+2*c*d
*e)*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^

```
2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+15/128*g*e^3*b^
4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d-5/12*e^2*c/(-b*e^2+2*c*
d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+5/8*e*c^2/(-b*
e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f+5/6*
e*c^2/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*
x*f-15/16*e^2*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(1/2)*d^2*f+5/64*e^3/c/(-b*e^2+2*c*d*e)*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*d*g+5/32*e^3/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g+15/16*g*e*b^2*c/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2))*d^3
```

maxima [B] time = 1.76, size = 1751, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x, algor
ithm="maxima")
```

```
[Out] 5/4*b*c^3*d^3*f*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2
*c*d - b*e))/(-c)^(3/2) - 5/8*c^4*d^4*f*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*
d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/((-c)^(3/2)*e) - 15/16*b^2*c^2*d^2*e*f
*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/(-
c)^(3/2) + 5/16*b^3*c*d*e^2*f*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d -
 b*e) - b*e/(2*c*d - b*e))/(-c)^(3/2) - 5/128*b^4*e^3*f*arcsin(2*c*e*x/(2*c
*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/(-c)^(3/2) + 1/4*c^4*d
^5*g*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e)
)/((-c)^(3/2)*e^2) - 5/16*b*c^3*d^4*g*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/
(2*c*d - b*e) - b*e/(2*c*d - b*e))/((-c)^(3/2)*e) + 5/32*b^3*c*d^2*e*g*arcs
in(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/(-c)^(3
/2) - 5/64*b^4*d*e^2*g*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) -
 b*e/(2*c*d - b*e))/(-c)^(3/2) + 3/256*b^5*e^3*g*arcsin(2*c*e*x/(2*c*d - b*
e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/((-c)^(3/2)*c) + 5/8*sqrt(c*e
^2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^2*f*x - 5/8*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d*e*f*x + 5/32*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*e^2*f*x + 1/16*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d^2*g*x - 1/4*sqrt(c*e^2
*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^3*g*x/e + 1/8*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*d*e*g*x - 3/64*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^3*e^2*g*x/c - 25/16*sqrt(c
*e^2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d^2*f + 5/4*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^3*f/e + 5/8*sqrt(c*e^2
*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*d*e*f - 5/64*sqrt(c*e^2*x
^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^3*e^2*f/c + 7/32*sqrt(c*e^2*x
^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*d^2*g - 1/2*sqrt(c*e^2*x^2
+ 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^4*g/e^2 + 1/4*sqrt(c*e^2*x^2
 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d^3*g/e - 5/32*sqrt(c*e^2*x^2
 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^3*d*e*g/c + 3/128*sqrt(c*e^2*x^
2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^4*e^2*g/c^2 - 1/8*(-c*e^2*x^2
- b*e^2*x + c*d^2 - b*d*e)^(3/2)*b*g*x + 1/4*(-c*e^2*x^2 - b*e^2*x + c*d^2
- b*d*e)^(3/2)*c*d*g*x/e - 5/24*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2
)*b*f + 5/12*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*c*d*f/e - 1/16*(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*b^2*g/c - 1/4*(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e)^(5/2)*d*g/(e^3*x + d*e^2) - 5/12*(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)^(3/2)*c*d^2*g/e^2 + 1/3*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e)^(3/2)*b*d*g/e + 1/4*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*f/(e
^2*x + d*e) + 1/5*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*g/e^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^2,x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(f + g x\right)}{\left(d + e x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**2,x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**2, x)
```

3.1970 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=354

$$\frac{5(2cd-be)^3(-beg-6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^3(2cd-be)}+\frac{5}{}$$

Rubi [A] time = 0.75, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.159, Rules used = {792, 654, 670, 640, 612, 621, 204}

$$\frac{5(2cd-be)^3(-beg-6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^3(2cd-be)}+\frac{5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-beg-6cdg+8cef)}{24e^2}+\frac{(-be+cd-cex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-beg-6cdg+8cef)}{4e^2(2cd-be)}+\frac{5(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}(-beg-6cdg+8cef)}{64ce}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (5*(2*c*d - b*e)*(8*c*e*f - 6*c*d*g - b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])/(64*c*e) + (5*(8*c*e*f - 6*c*d*g - b*e*g)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*e^2) + ((8*c*e*f - 6*c*d*g - b*e*g
)*(c*d - b*e - c*e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(4*e^2*(
2*c*d - b*e)) + (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))
/(e^2*(2*c*d - b*e)*(d + e*x)^3) + (5*(2*c*d - b*e)^3*(8*c*e*f - 6*c*d*g -
b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])])/(128*c^(3/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 654

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Int[(a + b*x + c*x^2)^(m + p)/(a/d + (c*x)/e)^m, x] /; FreeQ[{a, b
, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&
!IntegerQ[p] && IntegerQ[m] && RationalQ[p] && (LtQ[0, -m, p] || LtQ[p, -m,
```

```
0]) && NeQ[m, 2] && NeQ[m, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^3} + \frac{(8cef-6cdg-beg)\int}{e(2cd}$$

$$= \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^3} + \frac{(8cef-6cdg-beg)\int}{}$$

$$= \frac{(8cef-6cdg-beg)(cd-be-cex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(2cd-be)} +$$

$$= \frac{5(8cef-6cdg-beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24e^2} + \frac{(8cef-6cd}{}$$

$$= \frac{5(2cd-be)(8cef-6cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x}}{64ce}$$

$$= \frac{5(2cd-be)(8cef-6cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x}}{64ce}$$

$$= \frac{5(2cd-be)(8cef-6cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x}}{64ce}$$

Mathematica [A] time = 1.37, size = 294, normalized size = 0.83

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\sqrt{c}\sqrt{e}\left(15b^3e^3g+2b^2ce^2(-118dg+132ef+59egx)+4bc^2e\left(173d^2g-2de(106f+51gx)+2e^2x(26f+17gx)\right)-8c^3\left(72d^3g-d^2e(88f+45gx)+12de^2x(3f+2gx)-2e^3x^2(4f+3gx)\right)\right)+\frac{15\sqrt{e(2cd-be)}(be-2cd)^2(-beg-6cdg+8cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{192c^{3/2}e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^3,x]
```

[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(Sqrt[c]*Sqrt[e]*(15*b^3*e^3*g + 2*b^2*c*e^2*(132*e*f - 118*d*g + 59*e*g*x) - 8*c^3*(72*d^3*g + 12*d*e^2*x*(3*f + 2*g*x) - 2*e^3*x^2*(4*f + 3*g*x) - d^2*e*(88*f + 45*g*x)) + 4*b*c^2*e*(173*d^2*g + 2*e^2*x*(26*f + 17*g*x) - 2*d*e*(106*f + 51*g*x))) + (15*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(8*c*e*f - 6*c*d*g - b*e*g)*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(192*c^(3/2)*e^(5/2))

IntegrateAlgebraic [F] time = 180.14, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^3,x]

[Out] $Aborted

fricas [A] time = 0.97, size = 813, normalized size = 2.30

$$\left[-\frac{15\left(8\left(8c^4d^3e-12bc^3d^2e^2+6b^2c^2de^3-b^3ce^4\right)f-\left(48c^4d^4-64bc^3d^3e+24b^2c^2d^2e^2-b^4e^4\right)g\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{-c}\right)-4\left(48c^4e^3gx^3+8\left(8c^4e^3f-\left(24c^4de^2-17bc^3e^3\right)g\right)x^2+8\left(88c^4d^2e-106bc^3de^2+33b^2c^2e^3\right)f-\left(576c^4d^3-692bc^3d^2e+236b^2c^2de^2-15b^3ce^3\right)g-2\left(8\left(18c^4de^2-13bc^3e^3\right)f-\left(180c^4d^2e-204bc^3de^2+59b^2c^2e^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{768c^2e^2}, -\frac{15\left(8\left(8c^4d^3e-12bc^3d^2e^2+6b^2c^2de^3-b^3ce^4\right)f-\left(48c^4d^4-64bc^3d^3e+24b^2c^2d^2e^2-b^4e^4\right)g\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{c}}{2\left(c^2e^2x^2+bce^2x-c^2d^2+bcde\right)}\right)-2\left(48c^4e^3gx^3+8\left(8c^4e^3f-\left(24c^4de^2-17bc^3e^3\right)g\right)x^2+8\left(88c^4d^2e-106bc^3de^2+33b^2c^2e^3\right)f-\left(576c^4d^3-692bc^3d^2e+236b^2c^2de^2-15b^3ce^3\right)g-2\left(8\left(18c^4de^2-13bc^3e^3\right)f-\left(180c^4d^2e-204bc^3de^2+59b^2c^2e^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{384c^2e^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x, algorithm="fricas")

[Out] [-1/768*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f - (48*c^4*d^4 - 64*b*c^3*d^3*e + 24*b^2*c^2*d^2*e^2 - b^4*e^4)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (24*c^4*d*e^2 - 17*b*c^3*e^3)*g)*x^2 + 8*(88*c^4*d^2*e - 106*b*c^3*d*e^2 + 33*b^2*c^2*e^3)*f - (576*c^4*d^3 - 692*b*c^3*d^2*e + 236*b^2*c^2*d*e^2 - 15*b^3*c*e^3)*g - 2*(8*(18*c^4*d*e^2 - 13*b*c^3*e^3)*f - (180*c^4*d^2*e - 204*b*c^3*d*e^2 + 59*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e^2), -1/384*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f - (48*c^4*d^4 - 64*b*c^3*d^3*e + 24*b^2*c^2*d^2*e^2 - b^4*e^4)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (24*c^4*d*e^2 - 17*b*c^3*e^3)*g)*x^2 + 8*(88*c^4*d^2*e - 106*b*c^3*d*e^2 + 33*b^2*c^2*e^3)*f - (576*c^4*d^3 - 692*b*c^3*d^2*e + 236*b^2*c^2*d*e^2 - 15*b^3*c*e^3)*g - 2*(8*(18*c^4*d*e^2 - 13*b*c^3*e^3)*f - (180*c^4*d^2*e - 204*b*c^3*d*e^2 + 59*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e^2)]

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x, algorithm="giac")

[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*(((96*exp(1)^5*c^5*g*1/768/exp(1)^4/c^3*x+(128*exp(1)^5*c^5*f+272*exp(1)^5*c^4*g*b-384*exp(1)^4*c^5*g*d)*1/768/exp(1)^4/c^3)*x+(416*exp(1)^5*c^4*b*f+236*exp(1)^5*c^3*g*b^2-576*exp(1)^4*c^5*d*f-816*exp(1)^4*c^4*g*b*d+720*exp(1)^3*c^5*g*d^2)*1/768/exp(1)^4/c^3)*x+(528*exp(1)^5*c^3*b^2*f+30*exp(1)^5*c^2*g*b^3-1696*exp(1)^4*c^4*b*d*f-472*exp(1)^4*c^3*g*b^2*d+1408*exp(1)^3*c^5*d^2

*f+1384*exp(1)^3*c^4*g*b*d^2-1152*exp(1)^2*c^5*g*d^3)*1/768/exp(1)^4/c^3)*s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))+2*(-(5*b^4*g*exp(1)^4-40*c*b
^3*exp(1)^4*f-120*c^2*b^2*g*exp(1)^2*d^2+240*c^2*b^2*exp(1)^3*f*d+320*c^3*b
*g*exp(1)*d^3-480*c^3*b*exp(1)^2*f*d^2-240*c^4*g*d^4+320*c^4*exp(1)*f*d^3)/
256/c/sqrt(-c*exp(2))/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(-20*exp(2)*b^3*g*exp(
1)^7*d^2+55*exp(2)^2*b^3*g*exp(1)^5*d^2-35*exp(2)^3*b^3*g*exp(1)^3*d^2-15*e
xp(2)^2*b^3*exp(1)^6*f*d+15*exp(2)^3*b^3*exp(1)^4*f*d+100*c*exp(2)*b^2*g*ex
p(1)^6*d^3-275*c*exp(2)^2*b^2*g*exp(1)^4*d^3+175*c*exp(2)^3*b^2*g*exp(1)^2*
d^3-20*c*exp(2)*b^2*exp(1)^7*f*d^2+115*c*exp(2)^2*b^2*exp(1)^5*f*d^2-95*c*e
xp(2)^3*b^2*exp(1)^3*f*d^2-140*c^2*exp(2)*b*g*exp(1)^5*d^4+400*c^2*exp(2)^2
*b*g*exp(1)^3*d^4-260*c^2*exp(2)^3*b*g*exp(1)*d^4+40*c^2*exp(2)*b*exp(1)^6*
f*d^3-200*c^2*exp(2)^2*b*exp(1)^4*f*d^3+160*c^2*exp(2)^3*b*exp(1)^2*f*d^3+6
0*c^3*exp(2)*g*exp(1)^4*d^5-180*c^3*exp(2)^2*g*exp(1)^2*d^5+120*c^3*exp(2)^
3*g*d^5-20*c^3*exp(2)*exp(1)^5*f*d^4+100*c^3*exp(2)^2*exp(1)^3*f*d^4-80*c^3
*exp(2)^3*exp(1)*f*d^4)/4/exp(1)^7/2/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2
*exp(2)-b*d*exp(1)*exp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^
2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2)))-(-4*exp(2)*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^8*d^2+17*exp
(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3
*b^3*g*exp(1)^6*d^2-13*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^4*d^2-9*exp(2)^2*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^7*f*d+9*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
b^3*exp(1)^5*f*d+20*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^7*d^3-85*c*exp(2)^2*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^5*d^3+65*c
exp(2)^3(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*b^2*g*exp(1)^3*d^3-4*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^8*f*d^2+53*c*exp(2)^2*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^6*f*d^
2-49*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^3*b^2*exp(1)^4*f*d^2-28*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^6*d^4+128*c^2*exp(2)^2*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp
(1)^4*d^4-100*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^2*d^4+8*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^7*f*d^3-88*c^2*exp(
2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
b*exp(1)^5*f*d^3+80*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^3*f*d^3+12*c^3*exp(2)*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^5*d^5-60*c^3
exp(2)^2(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*g*exp(1)^3*d^5+48*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)*d^5-4*c^3*exp(2)*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^6*f*d^4+44*c^3*e
xp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^3*exp(1)^4*f*d^4-40*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^2*f*d^4+8*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^9*d^3
-36*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^7*d^3+21*exp(2)^2*sqrt(-c*exp(2))*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1
)^5*d^3+7*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^3*d^3+24*exp(2)*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*e
xp(1)^8*f*d^2-21*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^6*f*d^2-3*exp(2)^3*sqrt(-c*

exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^2*b^3*exp(1)^4*f*d^2-24*c*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^8*d^4+108*c*exp(2)*sqrt(
-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^2*b^2*g*exp(1)^6*d^4-9*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^4*d^4-75*c*ex
p(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*b^2*g*exp(1)^2*d^4-84*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^7*f*
d^3+33*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^5*f*d^3+51*c*exp(2)^3*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^
2*exp(1)^3*f*d^3+24*c^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^7*d^5-108*c^2*exp(2)*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^2*b*g*exp(1)^5*d^5-72*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^3*d^5+156*c^2*exp
(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^2*b*g*exp(1)*d^5+96*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^6*f*d^4+2
4*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^4*f*d^4-120*c^2*exp(2)^3*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*ex
p(1)^2*f*d^4-8*c^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^6*d^6+36*c^3*exp(2)*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp
(1)^4*d^6+60*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^2*d^6-88*c^3*exp(2)^3*sqrt(-c
exp(2))(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^2*g*d^6-36*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^5*f*d^5-36*c^3*exp(2)^2*sqrt(-c*e
xp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
2*exp(1)^3*f*d^5+72*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)*f*d^5-4*exp(2)*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^9*d
^3+19*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)*b^4*g*exp(1)^7*d^3-26*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^5*d^3+11*exp(2)^4*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^3*d^3-
7*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)*b^4*exp(1)^8*f*d^2+14*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^6*f*d^2-7*exp(2)^4*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^4*f*d^2+32*c*
exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*
b^3*g*exp(1)^8*d^4-174*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^6*d^4+225*c*exp(2)^3*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^4*d^4-83
*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)*b^3*g*exp(1)^2*d^4+4*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^9*f*d^3+78*c*exp(2)^2*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^7*f*d^3-14
1*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b^3*exp(1)^5*f*d^3+59*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^3*f*d^3-72*c^2*exp(2)*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^7*d^
5+439*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c
*exp(2))*x)*b^2*g*exp(1)^5*d^5-527*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^3*d^5+160*c^2*exp(2)^
4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g

```
*exp(1)*d^5-12*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*b^2*exp(1)^8*f*d^4-235*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^6*f*d^4+371*c^2*
exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)*b^2*exp(1)^4*f*d^4-124*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^2*f*d^4+64*c^3*exp(2)*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^6*d^6-4
32*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)*b*g*exp(1)^4*d^6+456*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^2*d^6-88*c^3*exp(2)^4*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*d^6+12*c^
3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)*b*exp(1)^7*f*d^5+264*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^5*f*d^5-348*c^3*exp(2)^3*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^3*f*d^5+72
*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b*exp(1)*f*d^5-20*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^5*d^7+148*c^4*exp(2)^2*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^3*d^7-128*c^
4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)*g*exp(1)*d^7-4*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)*exp(1)^6*f*d^6-100*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^4*f*d^6+104*c^4*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*ex
p(1)^2*f*d^6+8*sqrt(-c*exp(2))*b^4*g*exp(1)^10*d^4-44*exp(2)*sqrt(-c*exp(2)
)*b^4*g*exp(1)^8*d^4+77*exp(2)^2*sqrt(-c*exp(2))*b^4*g*exp(1)^6*d^4-54*exp(
2)^3*sqrt(-c*exp(2))*b^4*g*exp(1)^4*d^4+13*exp(2)^4*sqrt(-c*exp(2))*b^4*g*e
xp(1)^2*d^4+16*exp(2)*sqrt(-c*exp(2))*b^4*exp(1)^9*f*d^3-41*exp(2)^2*sqrt(-
c*exp(2))*b^4*exp(1)^7*f*d^3+34*exp(2)^3*sqrt(-c*exp(2))*b^4*exp(1)^5*f*d^3
-9*exp(2)^4*sqrt(-c*exp(2))*b^4*exp(1)^3*f*d^3-32*c*sqrt(-c*exp(2))*b^3*g*e
xp(1)^9*d^5+184*c*exp(2)*sqrt(-c*exp(2))*b^3*g*exp(1)^7*d^5-298*c*exp(2)^2*
sqrt(-c*exp(2))*b^3*g*exp(1)^5*d^5+181*c*exp(2)^3*sqrt(-c*exp(2))*b^3*g*exp
(1)^3*d^5-35*c*exp(2)^4*sqrt(-c*exp(2))*b^3*g*exp(1)*d^5-84*c*exp(2)*sqrt(-
c*exp(2))*b^3*exp(1)^8*f*d^4+186*c*exp(2)^2*sqrt(-c*exp(2))*b^3*exp(1)^6*f*
d^4-129*c*exp(2)^3*sqrt(-c*exp(2))*b^3*exp(1)^4*f*d^4+27*c*exp(2)^4*sqrt(-c
*exp(2))*b^3*exp(1)^2*f*d^4+48*c^2*sqrt(-c*exp(2))*b^2*g*exp(1)^8*d^6-288*c
^2*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1)^6*d^6+409*c^2*exp(2)^2*sqrt(-c*exp(2
))*b^2*g*exp(1)^4*d^6-191*c^2*exp(2)^3*sqrt(-c*exp(2))*b^2*g*exp(1)^2*d^6+2
2*c^2*exp(2)^4*sqrt(-c*exp(2))*b^2*g*d^6+156*c^2*exp(2)*sqrt(-c*exp(2))*b^2
*exp(1)^7*f*d^5-285*c^2*exp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^5*f*d^5+147*c^2
*exp(2)^3*sqrt(-c*exp(2))*b^2*exp(1)^3*f*d^5-18*c^2*exp(2)^4*sqrt(-c*exp(2)
)*b^2*exp(1)*f*d^5-32*c^3*sqrt(-c*exp(2))*b*g*exp(1)^7*d^7+200*c^3*exp(2)*s
qrt(-c*exp(2))*b*g*exp(1)^5*d^7-232*c^3*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(1)
^3*d^7+64*c^3*exp(2)^3*sqrt(-c*exp(2))*b*g*exp(1)*d^7-124*c^3*exp(2)*sqrt(-
c*exp(2))*b*exp(1)^6*f*d^6+176*c^3*exp(2)^2*sqrt(-c*exp(2))*b*exp(1)^4*f*d^
6-52*c^3*exp(2)^3*sqrt(-c*exp(2))*b*exp(1)^2*f*d^6+8*c^4*sqrt(-c*exp(2))*g*
exp(1)^6*d^8-52*c^4*exp(2)*sqrt(-c*exp(2))*g*exp(1)^4*d^8+44*c^4*exp(2)^2*s
qrt(-c*exp(2))*g*exp(1)^2*d^8+36*c^4*exp(2)*sqrt(-c*exp(2))*exp(1)^5*f*d^7-
36*c^4*exp(2)^2*sqrt(-c*exp(2))*exp(1)^3*f*d^7)/8/exp(1)^7/((sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+
b*exp(1)^2*d-exp(2)*b*d-c*exp(1)*d^2)^2)
```

maple [B] time = 0.07, size = 4726, normalized size = 13.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x)
```

[Out] 2/3*g/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)+2/3*g/e*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)-15*e^3*c^3/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2*f-25*e^3*c^4/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*f-25*e^3*c^3/(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*g+10/3*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*d*g+25*e^4*c^3/(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*f-25/8*e^5*c/(-b*e^2+2*c*d*e)^2*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+25/2*e^4*c^2/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g+15/2*e^4*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*f+25/8*e^6*c/(-b*e^2+2*c*d*e)^2*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f+25*e^2*c^4/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^5*g-25/8*g*e*c^3/(-b*e^2+2*c*d*e)*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4+5/4*e^4*c/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g-15/2*e^3*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2*g+25/8*g*e^2*c^2/(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3+15/16*g*e^2*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d-25/16*g*e^3*c/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+15*e^2*c^3/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^3*g-25/2*e^5*c^2/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-15/8*g*e*c^2/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2-16/3*c^2/(-b*e^2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g+5/4*g*c^4/(-b*e^2+2*c*d*e)*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-5/24*g*e/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)+16/3*e*c^2/(-b*e^2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-5/8*e^5/(-b*e^2+2*c*d*e)^2*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+2/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f+5/12*g*c/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b-5/64*g*e^3/c/(-b*e^2+2*c*d*e)*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+5/6*g*c^2/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+5/4*g*c^3/(-b*e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+5/8*g*c^2/(-b*e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b+15/4*e^4*c/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*f+5/16*e^6/(-b*e^2+2*c*d*e)^2*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g-16/3/e^2*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g+15/2*e^2*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^3*g+10*e^2*c^5/(-b*e^2+2*c*d*e)^2*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-10/3*e^3*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+5/3*e^2*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-20/3*e*c^3/(-b*e^2+2*c*d*e)^2*d^2*(-(

```
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g+20/3*e^2*c^3/(-b*e^2+2*c
*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f-10/3*e*c^2/
(-b*e^2+2*c*d*e)^2*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*
g+10/3*e^2*c^2/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)*b*f-10*e*c^4/(-b*e^2+2*c*d*e)^2*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2)*x*g+10*e^2*c^4/(-b*e^2+2*c*d*e)^2*d^3*(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f-5*e*c^3/(-b*e^2+2*c*d*e)^2*d^4*(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g+5*e^2*c^3/(-b*e^2+2*c*d*e)
^2*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f-10*e*c^5/(-b*e
^2+2*c*d*e)^2*d^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c
*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-5/4*e^5*c
/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x
*f-15/4*e^3*c/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(1/2)*d^2*g+25/64*g*e^4/(-b*e^2+2*c*d*e)*b^4/(c*e^2)^(1/2)*arctan((c*
e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2))*d-15/16*g*e*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-5/12*g*e*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x-5/128*g*e^5/c/(-b*e^2+2*c*d*e)*b
^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-15/2*e^3*c^2/(-b*e^2+2*c*d
*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2*f+5/8*e^4/(
-b*e^2+2*c*d*e)^2*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g
-5/32*g*e^3/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e)
)^(1/2)*x+15/32*g*e^2/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(1/2)*d-2/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g-5/3*e^3*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-5/16*e^7/(-b*e^2+2*c*d*e)^2*b^5/(
c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+16/3/e*c/(-b*e^2+2*c*d*e)^2/
(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(f + g x\right)}{\left(d + e x\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**3, x)
```

3.1971 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=342

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^4(2cd-be)}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(beg-8cdg+6cef)}{e^2(d+ex)^2(2cd-be)}-\frac{5c\left(d(cd-be)-\right.}{}$$

Rubi [A] time = 0.60, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 662, 664, 612, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^4(2cd-be)}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(beg-8cdg+6cef)}{e^2(d+ex)^2(2cd-be)}-\frac{5c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(beg-8cdg+6cef)}{3e^2(2cd-be)}-\frac{5(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(beg-8cdg+6cef)}{8e}-\frac{5(2cd-be)^2(beg-8cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16\sqrt{c}\,e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (-5*(6*c*e*f - 8*c*d*g + b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2])/(8*e) - (5*c*(6*c*e*f - 8*c*d*g + b*e*g)*(d*(c*d - b*e) - b*e^2
*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)) - (2*(6*c*e*f - 8*c*d*g + b*e*
g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x
)^2) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(e^2*(2*
c*d - b*e)*(d + e*x)^4) - (5*(2*c*d - b*e)^2*(6*c*e*f - 8*c*d*g + b*e*g)*Ar
cTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])]
)/(16*Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
```

```
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^4}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^4} - \frac{(6cef-8cdg+be\ldots}{e\ldots}$$

$$= -\frac{2(6cef-8cdg+beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^2} - \frac{2(ef-\ldots}{\ldots}$$

$$= -\frac{5c(6cef-8cdg+beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)} - \frac{2(6cef\ldots}{\ldots}$$

$$= -\frac{5(6cef-8cdg+beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e} - \frac{5\ldots}{\ldots}$$

$$= -\frac{5(6cef-8cdg+beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e} - \frac{5\ldots}{\ldots}$$

$$= -\frac{5(6cef-8cdg+beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e} - \frac{5\ldots}{\ldots}$$

Mathematica [A] time = 1.89, size = 309, normalized size = 0.90

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(e^3(ef-dg)(be-cd+cex)^3-\frac{e^{5/2}\sqrt{d+ex}(beg-8cdg+6cef)\left(\sqrt{c}\sqrt{e}\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}\left(33b^2e^2+2bce(13ex-53d)+4c^2\left(22d^2-9dex+2e^2x^2\right)\right)+15\sqrt{e(2cd-be)}(be-2cd)^2\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)\right)}{48\sqrt{c}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{e^5(d+ex)^3(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^4,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(e^3*(e*f - d*g)*(-(c*d) + b*e
+ c*e*x)^3 - (e^(5/2)*(6*c*e*f - 8*c*d*g + b*e*g)*Sqrt[d + e*x]*(Sqrt[c]*Sq
rt[e]*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*(33*b^2*e^2
 + 2*b*c*e*(-53*d + 13*e*x) + 4*c^2*(22*d^2 - 9*d*e*x + 2*e^2*x^2)) + 15*Sq
rt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])
/Sqrt[e*(2*c*d - b*e)]]))/(48*Sqrt[c]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d +
 b*e)])))/(e^5*(2*c*d - b*e)*(d + e*x)^3*(-(c*d) + b*e + c*e*x)^2)
```

IntegrateAlgebraic [F] time = 180.10, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^4,x]
```

```
[Out] $Aborted
```

fricas [A] time = 2.17, size = 931, normalized size = 2.72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x, algor
ithm="fricas")
```

```
[Out] [-1/96*(15*(6*(4*c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^3)*f - (32*c^3*d^4
 - 36*b*c^2*d^3*e + 12*b^2*c*d^2*e^2 - b^3*d*e^3)*g + (6*(4*c^3*d^2*e^2 - 4
*b*c^2*d*e^3 + b^2*c*e^4)*f - (32*c^3*d^3*e - 36*b*c^2*d^2*e^2 + 12*b^2*c*d
*e^3 - b^3*e^4)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2
+ 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e
*x + b*e)*sqrt(-c)) - 4*(8*c^3*e^3*g*x^3 + 2*(6*c^3*e^3*f - (20*c^3*d*e^2 -
 13*b*c^2*e^3)*g)*x^2 - 6*(48*c^3*d^2*e - 41*b*c^2*d*e^2 + 8*b^2*c*e^3)*f +
 (376*c^3*d^3 - 352*b*c^2*d^2*e + 81*b^2*c*d*e^2)*g - (6*(14*c^3*d*e^2 - 9*
b*c^2*e^3)*f - (136*c^3*d^2*e - 134*b*c^2*d*e^2 + 33*b^2*c*e^3)*g)*x)*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c*e^3*x + c*d*e^2), 1/48*(15*(6*(4*
c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^3)*f - (32*c^3*d^4 - 36*b*c^2*d^3*e
 + 12*b^2*c*d^2*e^2 - b^3*d*e^3)*g + (6*(4*c^3*d^2*e^2 - 4*b*c^2*d*e^3 + b^
2*c*e^4)*f - (32*c^3*d^3*e - 36*b*c^2*d^2*e^2 + 12*b^2*c*d*e^3 - b^3*e^4)*g
)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x
 + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(8*c^3*e
^3*g*x^3 + 2*(6*c^3*e^3*f - (20*c^3*d*e^2 - 13*b*c^2*e^3)*g)*x^2 - 6*(48*c^
3*d^2*e - 41*b*c^2*d*e^2 + 8*b^2*c*e^3)*f + (376*c^3*d^3 - 352*b*c^2*d^2*e
+ 81*b^2*c*d*e^2)*g - (6*(14*c^3*d*e^2 - 9*b*c^2*e^3)*f - (136*c^3*d^2*e -
134*b*c^2*d*e^2 + 33*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e))/(c*e^3*x + c*d*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((1
6*exp(1)^4*c^4*g*1/96/exp(1)^4/c^2*x-(-24*exp(1)^4*c^4*f-52*exp(1)^4*c^3*g*
b+96*exp(1)^3*c^4*g*d)*1/96/exp(1)^4/c^2)*x-(-108*exp(1)^4*c^3*b*f-66*exp(1
)^4*c^2*g*b^2+192*exp(1)^3*c^4*d*f+320*exp(1)^3*c^3*g*b*d-368*exp(1)^2*c^4*
g*d^2)*1/96/exp(1)^4/c^2)*sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))+2
*((-5*sqrt(-c*exp(2))*b^3*g*exp(1)^3+60*c*sqrt(-c*exp(2))*b^2*g*exp(1)^2*d-
30*c*sqrt(-c*exp(2))*b^2*exp(1)^3*f-180*c^2*sqrt(-c*exp(2))*b*g*exp(1)*d^2+
120*c^2*sqrt(-c*exp(2))*b*exp(1)^2*d*f+160*c^3*sqrt(-c*exp(2))*g*d^3-120*c^
3*sqrt(-c*exp(2))*exp(1)*d^2*f)/32/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))-
(30*exp(2)^2*b^3*g*exp(1)^5*d-35*exp(2)^3*b^3*g*exp(1)^3*d+5*exp(2)^3*b^3*e
xp(1)^4*f+40*c*exp(2)*b^2*g*exp(1)^6*d^2-290*c*exp(2)^2*b^2*g*exp(1)^4*d^2+
280*c*exp(2)^3*b^2*g*exp(1)^2*d^2+60*c*exp(2)^2*b^2*exp(1)^5*d*f-90*c*exp(2
)^3*b^2*exp(1)^3*d*f-80*c^2*exp(2)*b*g*exp(1)^5*d^3+580*c^2*exp(2)^2*b*g*ex
p(1)^3*d^3-560*c^2*exp(2)^3*b*g*exp(1)*d^3-180*c^2*exp(2)^2*b*exp(1)^4*d^2*
f+240*c^2*exp(2)^3*b*exp(1)^2*d^2*f+40*c^3*exp(2)*g*exp(1)^4*d^4-320*c^3*ex
```

p(2)^2*g*exp(1)^2*d^4+320*c^3*exp(2)^3*g*d^4+120*c^3*exp(2)^2*exp(1)^3*d^3*
f-160*c^3*exp(2)^3*exp(1)*d^3*f)/8/exp(1)^7/2/sqrt(b*d*exp(1)^3-c*d^2*exp(1
)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(
1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2)))-(-905969664*exp(2)^2*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*g*
exp(1)^7*d+1459617792*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^5*b^3*g*exp(1)^5*d-553648128*exp(2)^3*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*exp(1)^6*f-402
653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^5*b^2*g*exp(1)^8*d^2+7147094016*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*g*exp(1)^6*d^2-100663296
00*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^5*b^2*g*exp(1)^4*d^2-1811939328*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*exp(1)^7*d*f+5133828096*c*
exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^5*b^2*exp(1)^5*d*f+805306368*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp(1)^7*d^3-14294188032*c^2*exp(2
)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b
*g*exp(1)^5*d^3+20132659200*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp(1)^3*d^3+5435817984*c^2*exp(2)^
2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*e
xp(1)^6*d^2*f-12079595520*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*exp(1)^4*d^2*f-402653184*c^3*exp(2)*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)
^6*d^4+8053063680*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)^4*d^4-12079595520*c^3*exp(2)^3*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)^2*d^4
-3623878656*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^5*exp(1)^5*d^3*f+8053063680*c^3*exp(2)^3*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*exp(1)^3*d^3*f+241591
9104*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^8*d^2-2717908992*exp(2)^2*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^
3*g*exp(1)^6*d^2-2466250752*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^4*d^2+24159191
04*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^4*b^3*exp(1)^7*d*f+352321536*exp(2)^3*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*e
xp(1)^5*d*f-10066329600*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*g*exp(1)^7*d^3+503316480*c*
exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^4*b^2*g*exp(1)^5*d^3+26172456960*c*exp(2)^3*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^
2*g*exp(1)^3*d^3+2415919104*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^8*d^2*f-78517370
88*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^6*d^2*f-11173625856*c*exp(2)^3*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^4*b^2*exp(1)^4*d^2*f+12884901888*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^6*d^4+18
320719872*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^4*d^4-64424509440*c^2*exp(2)^3
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^4*b*g*exp(1)^2*d^4-4831838208*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^7*d^
3*f+1811939328*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^5*d^3*f+36238786560*c^2*exp
(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt

(-c*exp(2))*x)^4*b*exp(1)^3*d^3*f-5234491392*c^3*exp(2)*sqrt(-c*exp(2))*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)
^5*d^5-16106127360*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)^3*d^5+43486543872*c^3*e
xp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^4*g*exp(1)*d^5+2415919104*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^6*d
^4*f+3623878656*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^4*d^4*f-28185722880*c^3*exp(
2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)^4*exp(1)^2*d^4*f-1610612736*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^8*d^2+3892314112
exp(2)^3(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*b^4*g*exp(1)^6*d^2-2281701376*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^4*d^2-671088640*exp(2)^
3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4
*exp(1)^7*d*f+671088640*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^3*b^4*exp(1)^5*d*f+20132659200*c*exp(2)^2*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)
^7*d^3-45566918656*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^5*d^3+19897778176*c*exp(2)^4*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^
3*d^3-805306368*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^8*d^2*f+15971909632*c*exp(2)^3*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^6*d^2
*f-9630121984*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^3*b^3*exp(1)^4*d^2*f-68451041280*c^2*exp(2)^2*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^6*d
^4+133882183680*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^4*d^4-32212254720*c^2*exp(2)^4*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)
^2*d^4+12884901888*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^7*d^3*f-68048388096*c^2*exp(2)^3*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1
)^5*d^3*f+21944598528*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^3*d^3*f+82946555904*c^3*exp(2)^2*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*ex
p(1)^5*d^5-129788542976*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^3*d^5-19595788288*c^3*exp(2)^4*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*ex
p(1)*d^5-23353884672*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^6*d^4*f+83080773632*c^3*exp(2)^3*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^
4*d^4*f+6710886400*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^2*d^4*f-33017561088*c^4*exp(2)^2*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^4*
d^6+37580963840*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)^3*g*exp(1)^2*d^6+39728447488*c^4*exp(2)^4*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6+1127428915
2*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)^3*exp(1)^5*d^5*f-30333206528*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^3*d^5*f-25232932864*c^4
exp(2)^4(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*exp(1)*d^5*f+4026531840*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^9*d^3-966367641
6*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^7*d^3+5234491392*exp(2)^3*sqrt(-c*exp(2)
)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4
*g*exp(1)^5*d^3+402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*ex

p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^3*d^3+2415919104 *exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))- sqrt(-c*exp(2))*x)^2*b^4*exp(1)^8*d^2*f-2818572288*exp(2)^3*sqrt(-c*exp(2)) *(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4* exp(1)^6*d^2*f+402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp (2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*exp(1)^4*d^2*f-23353884672 *c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))- sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^8*d^4+38654705664*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b ^3*g*exp(1)^6*d^4+12280922112*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)- b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^4*d^4-2204 5261824*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2 *exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^2*d^4+3221225472*c*exp(2)*sqrt(- c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))* x)^2*b^3*exp(1)^9*d^3*f-21743271936*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*e xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^7*d^3* f+5234491392*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2- c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^5*d^3*f+7751073792*c*exp(2)^4 *sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e xp(2))*x)^2*b^3*exp(1)^3*d^3*f+45902462976*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt (-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^7*d^5-28185722880*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp (2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^5*d^5-12663442636 8*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp (2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^3*d^5+75698798592*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)) *x)^2*b^2*g*exp(1)*d^5-9663676416*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp (1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^8*d^4*f+ 36238786560*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2 -c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^6*d^4*f+47110422528*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^4*d^4*f-40466644992*c^2*exp(2)^4*sqrt(-c*exp(2)) *(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2* exp(1)^2*d^4*f-37849399296*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x *exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^6*d^6-209379655 68*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex p(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^4*d^6+184817811456*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)) *x)^2*b*g*exp(1)^2*d^6-59592671232*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d* exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*d^6+96636764 16*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^7*d^5*f-16911433728*c^3*exp(2)^2*sqrt(-c* exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x) ^2*b*exp(1)^5*d^5*f-97039417344*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp (1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^3*d^5*f+37 849399296*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c *x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)*d^5*f+11274289152*c^4*exp(2)*sqr t(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^5*d^7+20132659200*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d* exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^3*d^7-7 5698798592*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2- c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)*d^7-3221225472*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)) *x)^2*exp(1)^6*d^6*f+47513075712*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*ex p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^2*d^6*f-704 643072*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex p(2))*x)*b^5*g*exp(1)^9*d^3+2365587456*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^7*d^3-2617245696*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^

5*g*exp(1)^5*d^3+956301312*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^3*d^3-251658240*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^8*d^2*f+503316480*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^6*d^2*f-251658240*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^4*d^2*f+402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^10*d^4+11978932224*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^8*d^4-40365981696*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^6*d^4+41171288064*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^4*d^4-13186891776*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^2*d^4-603979776*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^9*d^3*f+8657043456*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^7*d^3*f-13488881664*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^5*d^3*f+5435817984*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^3*d^3*f-1610612736*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^9*d^5-56673435648*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^7*d^5+173895843840*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^5*d^5-152102240256*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^3*d^5+39258685440*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)*d^5+9462349824*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^8*d^4*f-61253615616*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^6*d^4*f+70363643904*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^4*d^4*f-21340618752*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^2*d^4*f+2415919104*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^8*d^6+105193144320*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^6*d^6-283669168128*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^4*d^6+189246996480*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^2*d^6-29796335616*c^3*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*d^6-24763170816*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^7*d^5*f+127339069440*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^5*d^5*f-104891154432*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^3*d^5*f+18924699648*c^3*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)*d^5*f-1610612736*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^7*d^7-84758495232*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^5*d^7+195286794240*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^3*d^7-75698798592*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)*d^7+23555211264*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^6*d^6*f-104287174656*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^4*d^6*f+47513075712*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^2*d^6*f+402653184*c^5*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^6*d^8+24964497408*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^4*d^8-47513075712*c^5*exp

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(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g
*exp(1)^2*d^8-7650410496*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^5*d^7*f+29796335616*c^5*exp(2)^3*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^3*d^
7*f+1610612736*exp(2)*sqrt(-c*exp(2))*b^5*g*exp(1)^10*d^4-6543114240*exp(2)
^2*sqrt(-c*exp(2))*b^5*g*exp(1)^8*d^4+9714008064*exp(2)^3*sqrt(-c*exp(2))*b
^5*g*exp(1)^6*d^4-6241124352*exp(2)^4*sqrt(-c*exp(2))*b^5*g*exp(1)^4*d^4+14
59617792*exp(2)^5*sqrt(-c*exp(2))*b^5*g*exp(1)^2*d^4+805306368*exp(2)^2*sqr
t(-c*exp(2))*b^5*exp(1)^9*d^3*f-2164260864*exp(2)^3*sqrt(-c*exp(2))*b^5*exp
(1)^7*d^3*f+1912602624*exp(2)^4*sqrt(-c*exp(2))*b^5*exp(1)^5*d^3*f-55364812
8*exp(2)^5*sqrt(-c*exp(2))*b^5*exp(1)^3*d^3*f-11945377792*c*exp(2)*sqrt(-c*
exp(2))*b^4*g*exp(1)^9*d^5+43855642624*c*exp(2)^2*sqrt(-c*exp(2))*b^4*g*exp
(1)^7*d^5-57076088832*c*exp(2)^3*sqrt(-c*exp(2))*b^4*g*exp(1)^5*d^5+3103784
9600*c*exp(2)^4*sqrt(-c*exp(2))*b^4*g*exp(1)^3*d^5-5872025600*c*exp(2)^5*sq
rt(-c*exp(2))*b^4*g*exp(1)*d^5+1879048192*c*exp(2)*sqrt(-c*exp(2))*b^4*exp(
1)^10*d^4*f-12549357568*c*exp(2)^2*sqrt(-c*exp(2))*b^4*exp(1)^8*d^4*f+21944
598528*c*exp(2)^3*sqrt(-c*exp(2))*b^4*exp(1)^6*d^4*f-14428405760*c*exp(2)^4
*sqrt(-c*exp(2))*b^4*exp(1)^4*d^4*f+3154116608*c*exp(2)^5*sqrt(-c*exp(2))*b
^4*exp(1)^2*d^4*f+31675383808*c^2*exp(2)*sqrt(-c*exp(2))*b^3*g*exp(1)^8*d^6
-102240354304*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*g*exp(1)^6*d^6+108766691328*
c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*g*exp(1)^4*d^6-43721424896*c^2*exp(2)^4*sq
rt(-c*exp(2))*b^3*g*exp(1)^2*d^6+4966055936*c^2*exp(2)^5*sqrt(-c*exp(2))*b^
3*g*d^6-7516192768*c^2*exp(2)*sqrt(-c*exp(2))*b^3*exp(1)^9*d^5*f+3912446771
2*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*exp(1)^7*d^5*f-52294582272*c^2*exp(2)^3*
sqrt(-c*exp(2))*b^3*exp(1)^5*d^5*f+24394072064*c^2*exp(2)^4*sqrt(-c*exp(2))
*b^3*exp(1)^3*d^5*f-3154116608*c^2*exp(2)^5*sqrt(-c*exp(2))*b^3*exp(1)*d^5*
f-39460012032*c^3*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1)^7*d^7+109018349568*c^
3*exp(2)^2*sqrt(-c*exp(2))*b^2*g*exp(1)^5*d^7-85161148416*c^3*exp(2)^3*sqrt
(-c*exp(2))*b^2*g*exp(1)^3*d^7+18924699648*c^3*exp(2)^4*sqrt(-c*exp(2))*b^2
*g*exp(1)*d^7+11274289152*c^3*exp(2)*sqrt(-c*exp(2))*b^2*exp(1)^8*d^6*f-501
30321408*c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^6*d^6*f+47412412416*c^3*ex
p(2)^3*sqrt(-c*exp(2))*b^2*exp(1)^4*d^6*f-11878268928*c^3*exp(2)^4*sqrt(-c*
exp(2))*b^2*exp(1)^2*d^6*f+23622320128*c^4*exp(2)*sqrt(-c*exp(2))*b*g*exp(1
)^6*d^8-54022635520*c^4*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(1)^4*d^8+237565378
56*c^4*exp(2)^3*sqrt(-c*exp(2))*b*g*exp(1)^2*d^8-7516192768*c^4*exp(2)*sqrt
(-c*exp(2))*b*exp(1)^7*d^7*f+29058138112*c^4*exp(2)^2*sqrt(-c*exp(2))*b*exp
(1)^5*d^7*f-14898167808*c^4*exp(2)^3*sqrt(-c*exp(2))*b*exp(1)^3*d^7*f-55029
26848*c^5*exp(2)*sqrt(-c*exp(2))*g*exp(1)^5*d^9+9932111872*c^5*exp(2)^2*sqr
t(-c*exp(2))*g*exp(1)^3*d^9+1879048192*c^5*exp(2)*sqrt(-c*exp(2))*exp(1)^6*
d^8*f-6308233216*c^5*exp(2)^2*sqrt(-c*exp(2))*exp(1)^4*d^8*f)/805306368/exp
(1)^7/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)*d+b*exp(1)^2*d-exp(2)*b*d-c*exp(1)*d^2)^3)
```

maple [B] time = 0.07, size = 4987, normalized size = 14.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x)
```

```
[Out] -15/8*e^7*c/(-b*e^2+2*c*d*e)^3*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/
e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2))*d*g+45*e^4*c^3/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d
*e)*(x+d/e))^(1/2)*x*d^2*g-15/2*e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g-75/4*e^7*c^2/(-b*e^2+2*c*d*e)^3
*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f-20*e^3*c^3/(-b*e^2+2
*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*d*g-75*e^5*
c^3/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-
```

b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^
3*g+150*e^4*c^4/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2))*d^4*g-150*e^5*c^4/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arctan((c*
e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2))*d^3*f-150*e^3*c^5/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^5*g+150*e^4*c^5/(-b*e^2+2*c*d*e)^3*b/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*f+25*g*e^3*c^3/(-b*e^2+2*c*d*
e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e
^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3-45*e^5*c^3/(-b*e
^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*f-9
0*e^3*c^4/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(1/2)*x*d^3*g+90*e^4*c^4/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*d^2*f+75/4*e^6*c^2/(-b*e^2+2*c*d*e)^3*b^4/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+75*e^6*c^3/(-b*e^2+2*c*d*e)^3*b^3
/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-25*g*e^2*c^4/(-b*e^2+2
*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4-25/2*g*e^4*c^
2/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+
15/2*g*e^3*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2)*x*d-15*g*e^2*c^3/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2+25/8*g*e^5*c/(-b*e^2+2*c*d*e)^2*b^4/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d-32*e^2*c^3/(-b*e^2+2*c*d*e)^3*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-2/e^4/(-b*e^2+2*c*d*e)/(x+d
/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f+16/3*g*c^2/(-b*e^
2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)-60*e^3*c^5/(
-b*e^2+2*c*d*e)^3*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f
+30*e^2*c^4/(-b*e^2+2*c*d*e)^3*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2)*b*g-30*e^3*c^4/(-b*e^2+2*c*d*e)^3*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2)*b*f+60*e^2*c^6/(-b*e^2+2*c*d*e)^3*d^6/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-60*e^3*c^6/(-b*e^2+2*c*d*e)^3*d^5/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+40*e^2*c^4/(-b*e^2+2*c*d*e)^3*d^2*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g-40*e^3*c^4/(-b*e^2+2*
c*d*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+20*e^2*c^3
/(-b*e^2+2*c*d*e)^3*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b
*g-20*e^3*c^3/(-b*e^2+2*c*d*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(3/2)*b*f-10/3*g*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(3/2)*x-15/2*g*e^2*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-5/4*g*e^4*c/(-b*e^2+2*c*d*e)^2*
b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+15/4*g*e^3*c/(-b*e^
2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d+10*g*e
*c^4/(-b*e^2+2*c*d*e)^2*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2)*x+20*e^4*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(3/2)*x*f-10*e^3*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(3/2)*d*g+5*g*e*c^3/(-b*e^2+2*c*d*e)^2*d^3*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b-15/4*e^5*c/(-b*e^2+2*c*d*e)^3*b^4*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g-45*e^3*c^3/(-b*e^2+2*c*
d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^3*g+45*e^4*c
^3/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)
*d^2*f+15/8*e^8*c/(-b*e^2+2*c*d*e)^3*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
(x+d/e-1/2(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d

```
/e))^(1/2))*f-32*c^2/(-b*e^2+2*c*d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(7/2)*f+2*g/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)-5/8*g*e^4/(-b*e^2+2*c*d*e)^2*b^4*(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+32/e*c^2/(-b*e^2+2*c*d*e)^3/(x
+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g+12/e^3*c/(-b*
e^2+2*c*d*e)^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*
d*g+15/2*e^6*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2)*x*f+45/2*e^4*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2*g-45/2*e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*f+60*e^2*c^5/(-b*e^2+2*c*d
*e)^3*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g+16/3*g/e^2*
c/(-b*e^2+2*c*d*e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(7/2)-5/3*g*e^2*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(3/2)-5/16*g*e^6/(-b*e^2+2*c*d*e)^2*b^5/(c*e^2)^(1/2)*arctan((c*e
^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2))+32*e*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(5/2)*d*g+10*e^4*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+15/4*e^6*c/(-b*e^2+2*c*d*e)^3*b^4*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f-12/e^2*c/(-b*e^2+2*c*d*e)
^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f+2/e^5/(-b*
e^2+2*c*d*e)/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*
g+20/3*g*e*c^3/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)*x+10/3*g*e*c^2/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(3/2)*b+10*g*e*c^5/(-b*e^2+2*c*d*e)^2*d^5/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**4, x)
```

3.1972 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^5} \, dx$

Optimal. Leaf size=350

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(d+ex)^5(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(3beg-10cdg+4cef)}{3e^2(d+ex)^3(2cd-be)}+\frac{5c\left(d(cd-be)\right.}{}$$

Rubi [A] time = 0.63, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {792, 662, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(d+ex)^5(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(3beg-10cdg+4cef)}{3e^2(d+ex)^3(2cd-be)}+\frac{5c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(3beg-10cdg+4cef)}{6e^2(d+ex)(2cd-be)}+\frac{5c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(3beg-10cdg+4cef)}{4e^2}+\frac{5\sqrt{c}(2cd-be)(3beg-10cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] (5*c*(4*c*e*f - 10*c*d*g + 3*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(4*e^2) + (5*c*(4*c*e*f - 10*c*d*g + 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(3/2))/(6*e^2*(2*c*d - b*e)*(d + e*x)) + (2*(4*c*e*f - 10*c*d*
g + 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3*e^2*(2*c*d - b
*e)*(d + e*x)^3) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/
2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^5) + (5*Sqrt[c]*(2*c*d - b*e)*(4*c*e*f -
 10*c*d*g + 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2])])/(8*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^5}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(2cd-be)(d+ex)^5} - \frac{(4cef-10cdg+3\ldots}{3\ldots}$$

$$= \frac{2(4cef-10cdg+3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(2cd-be)(d+ex)^3} - \frac{2(ef-\ldots}{\ldots}$$

$$= \frac{5c(4cef-10cdg+3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{6e^2(2cd-be)(d+ex)} + \frac{2(4ce\ldots}{\ldots}$$

$$= \frac{5c(4cef-10cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} + \frac{5c(4cef\ldots}{\ldots}$$

$$= \frac{5c(4cef-10cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} + \frac{5c(4cef\ldots}{\ldots}$$

$$= \frac{5c(4cef-10cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} + \frac{5c(4cef\ldots}{\ldots}$$

Mathematica [C] time = 0.20, size = 173, normalized size = 0.49

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{(d+ex)(be-2cd)^2(3beg-10cdg+4cef)\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}+(ef-dg)(be-cd+cex)^3\right)}{3e^2(d+ex)^4(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^5,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((e*f - d*g)*(-(c*d) + b*e + c*
e*x)^3 + ((-2*c*d + b*e)^2*(4*c*e*f - 10*c*d*g + 3*b*e*g)*(d + e*x)*Hyperge
ometric2F1[-5/2, -1/2, 1/2, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*
e + c*e*x)/(-2*c*d + b*e)]))/(3*e^2*(2*c*d - b*e)*(d + e*x)^4*(-(c*d) + b*e
 + c*e*x)^2)
```

IntegrateAlgebraic [B] time = 56.66, size = 41121, normalized size = 117.49

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^5,x]
```

```
[Out] Result too large to show
```

fricas [**A**] time = 3.72, size = 951, normalized size = 2.72

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x, algor
ithm="fricas")
```

```
[Out] [-1/48*(15*((4*(2*c^2*d*e^3 - b*c*e^4)*f - (20*c^2*d^2*e^2 - 16*b*c*d*e^3 +
 3*b^2*e^4)*g)*x^2 + 4*(2*c^2*d^3*e - b*c*d^2*e^2)*f - (20*c^2*d^4 - 16*b*c
*d^3*e + 3*b^2*d^2*e^2)*g + 2*(4*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (20*c^2*d^
3*e - 16*b*c*d^2*e^2 + 3*b^2*d*e^3)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*
c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c
*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(6*c^2*e^3*g*x^3 + 3*(4*c^2*e^3
*f - (16*c^2*d*e^2 - 9*b*c*e^3)*g)*x^2 + 4*(23*c^2*d^2*e - 6*b*c*d*e^2 - 2*
b^2*e^3)*f - (236*c^2*d^3 - 147*b*c*d^2*e + 16*b^2*d*e^2)*g + 2*(4*(17*c^2*
d*e^2 - 7*b*c*e^3)*f - (161*c^2*d^2*e - 103*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2),
 -1/24*(15*((4*(2*c^2*d*e^3 - b*c*e^4)*f - (20*c^2*d^2*e^2 - 16*b*c*d*e^3 +
 3*b^2*e^4)*g)*x^2 + 4*(2*c^2*d^3*e - b*c*d^2*e^2)*f - (20*c^2*d^4 - 16*b*c
*d^3*e + 3*b^2*d^2*e^2)*g + 2*(4*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (20*c^2*d^
3*e - 16*b*c*d^2*e^2 + 3*b^2*d*e^3)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^
2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2
*x - c^2*d^2 + b*c*d*e)) - 2*(6*c^2*e^3*g*x^3 + 3*(4*c^2*e^3*f - (16*c^2*d*
e^2 - 9*b*c*e^3)*g)*x^2 + 4*(23*c^2*d^2*e - 6*b*c*d*e^2 - 2*b^2*e^3)*f - (2
36*c^2*d^3 - 147*b*c*d^2*e + 16*b^2*d*e^2)*g + 2*(4*(17*c^2*d*e^2 - 7*b*c*e
^3)*f - (161*c^2*d^2*e - 103*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2
- b*e^2*x + c*d^2 - b*d*e))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.07, size = 5227, normalized size = 14.93

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^5,x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**5,x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**5, x)
```

3.1973 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=352

$$-\frac{c^{3/2}(5beg-12cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2e^2}-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(5beg-12cdg+2cef)}{e^2(2cd-be)}-$$

Rubi [A] time = 0.57, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {792, 662, 664, 621, 204}

$$-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(5beg-12cdg+2cef)}{e^2(2cd-be)}-\frac{c^{3/2}(5beg-12cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{5e^2(d+ex)^6(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(5beg-12cdg+2cef)}{15e^2(d+ex)^4(2cd-be)}-\frac{2c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(5beg-12cdg+2cef)}{3e^2(d+ex)^2(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] -((c^2*(2*c*e*f - 12*c*d*g + 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*
x^2])/(e^2*(2*c*d - b*e))) - (2*c*(2*c*e*f - 12*c*d*g + 5*b*e*g)*(d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^2) + (2*(
2*c*e*f - 12*c*d*g + 5*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/
(15*e^2*(2*c*d - b*e)*(d + e*x)^4) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(7/2))/(5*e^2*(2*c*d - b*e)*(d + e*x)^6) - (c^(3/2)*(2*c*e*f
 - 12*c*d*g + 5*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])])/(2*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^6}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{5e^2(2cd-be)(d+ex)^6} - \frac{(2cef-12cdg+5\ldots}{5\ldots}$$

$$= \frac{2(2cef-12cdg+5beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15e^2(2cd-be)(d+ex)^4} - \frac{2(ef-\ldots}{\ldots}$$

$$= -\frac{2c(2cef-12cdg+5beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^2} + \frac{2(2c\ldots}{\ldots}$$

$$= -\frac{c^2(2cef-12cdg+5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2c(2ce\ldots}{\ldots}$$

$$= -\frac{c^2(2cef-12cdg+5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2c(2ce\ldots}{\ldots}$$

$$= -\frac{c^2(2cef-12cdg+5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2c(2ce\ldots}{\ldots}$$

Mathematica [C] time = 0.20, size = 175, normalized size = 0.50

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{(d+ex)(be-2cd)^2(5beg+2c(ef-6dg))\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}+3(ef-dg)(be-cd+cex)^3\right)}{15e^2(d+ex)^5(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^6,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(3*(e*f - d*g)*(-(c*d) + b*e +
c*e*x)^3 + ((-2*c*d + b*e)^2*(5*b*e*g + 2*c*(e*f - 6*d*g))*(d + e*x)*Hyperg
eometric2F1[-5/2, -3/2, -1/2, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) +
b*e + c*e*x)/(-2*c*d + b*e)]))/(15*e^2*(2*c*d - b*e)*(d + e*x)^5*(-(c*d) +
b*e + c*e*x)^2)
```

IntegrateAlgebraic [F] time = 181.09, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^6,x]
```

```
[Out] $Aborted
```

fricas [A] time = 13.90, size = 917, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x, algor
ithm="fricas")
```

```
[Out] [1/60*(15*(2*c^2*d^3*e*f + (2*c^2*e^4*f - (12*c^2*d*e^3 - 5*b*c*e^4)*g)*x^3
 + 3*(2*c^2*d*e^3*f - (12*c^2*d^2*e^2 - 5*b*c*d*e^3)*g)*x^2 - (12*c^2*d^4 -
 5*b*c*d^3*e)*g + 3*(2*c^2*d^2*e^2*f - (12*c^2*d^3*e - 5*b*c*d^2*e^2)*g)*x)
*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2
 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) +
 4*(15*c^2*e^3*g*x^3 - (46*c^2*e^3*f - 7*(33*c^2*d*e^2 - 10*b*c*e^3)*g)*x^2
 - 2*(13*c^2*d^2*e - b*c*d*e^2 + 3*b^2*e^3)*f + (141*c^2*d^3 - 32*b*c*d^2*e
 - 4*b^2*d*e^2)*g - (2*(24*c^2*d*e^2 + 11*b*c*e^3)*f - (333*c^2*d^2*e - 78*
b*c*d*e^2 - 10*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(
e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2), 1/30*(15*(2*c^2*d^3*e*f + (
2*c^2*e^4*f - (12*c^2*d*e^3 - 5*b*c*e^4)*g)*x^3 + 3*(2*c^2*d*e^3*f - (12*c^
2*d^2*e^2 - 5*b*c*d*e^3)*g)*x^2 - (12*c^2*d^4 - 5*b*c*d^3*e)*g + 3*(2*c^2*d
^2*e^2*f - (12*c^2*d^3*e - 5*b*c*d^2*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b
*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(15*c^2*e^3*g*x^3 - (46*c^2*e^3*f - 7*(3
3*c^2*d*e^2 - 10*b*c*e^3)*g)*x^2 - 2*(13*c^2*d^2*e - b*c*d*e^2 + 3*b^2*e^3)
*f + (141*c^2*d^3 - 32*b*c*d^2*e - 4*b^2*d*e^2)*g - (2*(24*c^2*d*e^2 + 11*b
*c*e^3)*f - (333*c^2*d^2*e - 78*b*c*d*e^2 - 10*b^2*e^3)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e
^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.12, size = 5440, normalized size = 15.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^6,x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**6,x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**6, x)
```

3.1974 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=264

$$-\frac{c^{5/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7e^2(d+ex)^7(2cd-be)}$$

Rubi [A] time = 0.57, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 662, 621, 204}

$$-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{c^{5/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7e^2(d+ex)^7(2cd-be)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5}+\frac{2cg\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] (-2*c^2*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(d + e*x)) + (2*c
*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^3) - (2*g*
(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(d + e*x)^5) - (2*(e*f
- d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(7*e^2*(2*c*d - b*e)*(d
 + e*x)^7) - (c^(5/2)*g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e
) - b*e^2*x - c*e^2*x^2])])/e^2
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^7}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7e^2(2cd-be)(d+ex)^7}+\frac{g\int\frac{\left(cd^2-bde-be^2x-ce^2\right.}{(d+ex)^6}}{e}$$

$$=-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5}-\frac{2(ef-dg)\left(d(cd-be)-be\right.}{7e^2(2cd-be)(d+}$$

$$=\frac{2cg\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}-\frac{2g\left(d(cd-be)-be^2x-ce^2\right.}{5e^2(d+ex)^5}$$

$$=-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}+\frac{2cg\left(d(cd-be)-be^2x-ce\right.}{3e^2(d+ex)^3}$$

$$=-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}+\frac{2cg\left(d(cd-be)-be^2x-ce\right.}{3e^2(d+ex)^3}$$

$$=-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}+\frac{2cg\left(d(cd-be)-be^2x-ce\right.}{3e^2(d+ex)^3}$$

Mathematica [C] time = 0.38, size = 162, normalized size = 0.61

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left((be-cd+cex)^3(-beg+cdg+cef)+\frac{g(be-2cd)^4\,{}_2F_1\left(-\frac{7}{2},-\frac{7}{2};-\frac{5}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{7ce^2(d+ex)^6(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^7,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((c*e*f + c*d*g - b*e*g)*(-(c*d
) + b*e + c*e*x)^3 + ((-2*c*d + b*e)^4*g*Hypergeometric2F1[-7/2, -7/2, -5/2
, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]
))/(7*c*e^2*(2*c*d - b*e)*(d + e*x)^6*(-(c*d) + b*e + c*e*x)^2)
```

IntegrateAlgebraic [F] time = 180.19, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^7,x]
```

```
[Out] $Aborted
```

fricas [B] time = 64.62, size = 1239, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x, algor
ithm="fricas")
```

```
[Out] [1/210*(105*((2*c^3*d*e^4 - b*c^2*e^5)*g*x^4 + 4*(2*c^3*d^2*e^3 - b*c^2*d*e
^4)*g*x^3 + 6*(2*c^3*d^3*e^2 - b*c^2*d^2*e^3)*g*x^2 + 4*(2*c^3*d^4*e - b*c^
2*d^3*e^2)*g*x + (2*c^3*d^5 - b*c^2*d^4*e)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 +
```

```
8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*sqrt(-c*e^2*x^2 - b*e^2*x +
 c*d^2 - b*d*e)*((15*c^3*e^4*f - (337*c^3*d*e^3 - 161*b*c^2*e^4)*g)*x^3 - (
45*(c^3*d*e^3 - b*c^2*e^4)*f + (613*c^3*d^2*e^2 - 130*b*c^2*d*e^3 - 77*b^2*
c*e^4)*g)*x^2 - 15*(c^3*d^3*e - 3*b*c^2*d^2*e^2 + 3*b^2*c*d*e^3 - b^3*e^4)*
f - (167*c^3*d^4 - 60*b*c^2*d^3*e + 4*b^2*c*d^2*e^2 - 6*b^3*d*e^3)*g + (45*
(c^3*d^2*e^2 - 2*b*c^2*d*e^3 + b^2*c*e^4)*f - (563*c^3*d^3*e - 209*b*c^2*d^
2*e^2 + 17*b^2*c*d*e^3 - 21*b^3*e^4)*g)*x))/(2*c*d^5*e^2 - b*d^4*e^3 + (2*c
*d*e^6 - b*e^7)*x^4 + 4*(2*c*d^2*e^5 - b*d*e^6)*x^3 + 6*(2*c*d^3*e^4 - b*d^
2*e^5)*x^2 + 4*(2*c*d^4*e^3 - b*d^3*e^4)*x), 1/105*(105*((2*c^3*d*e^4 - b*c
^2*e^5)*g*x^4 + 4*(2*c^3*d^2*e^3 - b*c^2*d*e^4)*g*x^3 + 6*(2*c^3*d^3*e^2 -
b*c^2*d^2*e^3)*g*x^2 + 4*(2*c^3*d^4*e - b*c^2*d^3*e^2)*g*x + (2*c^3*d^5 - b
*c^2*d^4*e)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e
)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) +
2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((15*c^3*e^4*f - (337*c^3*d*e^
3 - 161*b*c^2*e^4)*g)*x^3 - (45*(c^3*d*e^3 - b*c^2*e^4)*f + (613*c^3*d^2*e^
2 - 130*b*c^2*d*e^3 - 77*b^2*c*e^4)*g)*x^2 - 15*(c^3*d^3*e - 3*b*c^2*d^2*e^
2 + 3*b^2*c*d*e^3 - b^3*e^4)*f - (167*c^3*d^4 - 60*b*c^2*d^3*e + 4*b^2*c*d^
2*e^2 - 6*b^3*d*e^3)*g + (45*(c^3*d^2*e^2 - 2*b*c^2*d*e^3 + b^2*c*e^4)*f -
(563*c^3*d^3*e - 209*b*c^2*d^2*e^2 + 17*b^2*c*d*e^3 - 21*b^3*e^4)*g)*x))/(2
*c*d^5*e^2 - b*d^4*e^3 + (2*c*d*e^6 - b*e^7)*x^4 + 4*(2*c*d^2*e^5 - b*d*e^6
)*x^3 + 6*(2*c*d^3*e^4 - b*d^2*e^5)*x^2 + 4*(2*c*d^4*e^3 - b*d^3*e^4)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 1905, normalized size = 7.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x)
```

```
[Out] 80*g*e^5*c^7/(-b*e^2+2*c*d*e)^5*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*d^4+40*g*e^7*c^5/(-b*e^2+2*c*d*e)^5*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2))*d^2-24*g*e^6*c^5/(-b*e^2+2*c*d*e)^5*b^2*(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d+48*g*e^5*c^6/(-b*e^2+2*c*d*e)^5*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2-80*g*e^6*c^6/(-b*e^2+2*c*
d*e)^5*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c
/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3-10*g*e^8*c^4/(
-b*e^2+2*c*d*e)^5*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2
+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d-2/7*(
-d*g+e*f)/e^8/(-b*e^2+2*c*d*e)/(x+d/e)^7*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(7/2)-2/5*g/e^7/(-b*e^2+2*c*d*e)/(x+d/e)^6*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(7/2)-256/15*g*e^3*c^5/(-b*e^2+2*c*d*e)^5*(-(x+d/e)^2
*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+32/3*g*e^5*c^5/(-b*e^2+2*c*d*e)^5*b*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+24*g*e^5*c^5/(-b*e^2+2*
c*d*e)^5*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-16/15*g/
e^3*c^2/(-b*e^2+2*c*d*e)^3/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(7/2)-32/5*g/e*c^3/(-b*e^2+2*c*d*e)^4/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b
*e^2+2*c*d*e)*(x+d/e))^(7/2)-256/15*g*e*c^4/(-b*e^2+2*c*d*e)^5/(x+d/e)^2*(-
```

```
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)+16/3*g*e^5*c^4/(-b*e^2+2*c*
d*e)^5*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)+2*g*e^7*c^3/(-
b*e^2+2*c*d*e)^5*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+4/15
*g/e^5*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^5*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(7/2)-64/3*g*e^4*c^6/(-b*e^2+2*c*d*e)^5*d*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(3/2)*x-32/3*g*e^4*c^5/(-b*e^2+2*c*d*e)^5*d*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b-32*g*e^4*c^7/(-b*e^2+2*c*d*e)^5*d^3*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-16*g*e^4*c^6/(-b*e^2+2*
c*d*e)^5*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b-32*g*e^4*c
^8/(-b*e^2+2*c*d*e)^5*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b
*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))+4*g
*e^7*c^4/(-b*e^2+2*c*d*e)^5*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2)*x-12*g*e^6*c^4/(-b*e^2+2*c*d*e)^5*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*d+g*e^9*c^3/(-b*e^2+2*c*d*e)^5*b^5/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+g\,x)\,\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)^{5/2}}{(d+e\,x)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^7,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^7, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.1975 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=138

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(9beg-2c(8dg+ef))}{63e^2(d+ex)^7(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(d+ex)^8(2cd-be)}$$

Rubi [A] time = 0.22, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(9beg-2c(8dg+ef))}{63e^2(d+ex)^7(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(d+ex)^8(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^8) + (2*(9*b*e*g - 2*c*(e*f + 8*d*g))*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(63*e^2*(2*c*d - b*e)^2*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^8}\,dx=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(2cd-be)(d+ex)^8}-\frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right.\right.\right.}{}$$

$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(2cd-be)(d+ex)^8}+\frac{2(9beg-2c(ef+8dg}{63e^2(2}$$

Mathematica [A] time = 0.10, size = 104, normalized size = 0.75

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(2c\left(d^2g+8de(f+gx)+e^2fx\right)-be(2dg+7ef+9egx)\right)}{63e^2(d+ex)^5(be-2cd)^2}$$

Antiderivative was successfully verified.

[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^8,x]

[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(b*e*(7*e*f + 2*d*g + 9*e*g*x)) + 2*c*(d^2*g + e^2*f*x + 8*d*e*(f + g*x))))/(63*e^2*(-2*c*d + b*e)^2*(d + e*x)^5)

IntegrateAlgebraic [F] time = 180.17, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^8,x]

[Out] $Aborted

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x, algorithm="fricas")

[Out] Timed out

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$-\frac{2\left(cex+be-cd\right)\left(9b\,e^{2}gx-16cdegx-2c\,e^{2}fx+2bdeg+7b\,e^{2}f-2c\,d^{2}g-16cdef\right)\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{5}{2}}}{63\left(ex+d\right)^{7}\left(b^{2}e^{2}-4bcde+4c^{2}d^{2}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x)

[Out] -2/63*(c*e*x+b*e-c*d)*(9*b*e^2*g*x-16*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+7*b*e^2*f-2*c*d^2*g-16*c*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation *may* h

```
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 26.34, size = 12294, normalized size = 89.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^8,x)
```

```
[Out] (((d*((336*b^2*c^5*e^3*f - 2016*c^7*d^3*g + 384*b^3*c^4*e^3*g + 800*c^7*d^2
*e*f - 1024*b*c^6*d*e^2*f + 3424*b*c^6*d^2*e*g - 1968*b^2*c^5*d*e^2*g)/(945
*e*(b*e - 2*c*d)^5) - (d*((16*c^5*(21*b^2*e^2*g + 50*c^2*d^2*g + 10*b*c*e^2
*f - 14*c^2*d*e*f - 64*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(5
*b*e*g - 7*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e
 - 2*c*d)^5)))/e))/e))/e - (132*b^3*c^4*e^3*f + 126*b^4*c^3*e^3*g - 1008*b*
c^6*d^3*g + 400*b*c^6*d^2*e*f - 456*b^2*c^5*d*e^2*f + 1512*b^2*c^5*d^2*e*g
- 756*b^3*c^4*d*e^2*g)/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((d*((696*b^2*c^5*e^3*f - 6016*c^7*d^3*g + 1
044*b^3*c^4*e^3*g + 1920*c^7*d^2*e*f - 2304*b*c^6*d*e^2*f + 9984*b*c^6*d^2*
e*g - 5568*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((8*c^5*(29*b^2*e^
2*g + 80*c^2*d^2*g + 10*b*c*e^2*f - 16*c^2*d*e*f - 96*b*c*d*e*g))/(315*(b*e
 - 2*c*d)^5) - (d*((16*c^6*e*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(945*(b*e - 2
*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (292*b^3*c^4*
e^3*f + 376*b^4*c^3*e^3*g - 3008*b*c^6*d^3*g + 960*b*c^6*d^2*e*f - 1056*b^2
*c^5*d*e^2*f + 4512*b^2*c^5*d^2*e*g - 2256*b^3*c^4*d*e^2*g)/(945*e*(b*e - 2
*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((8
40*b^2*c^5*e^3*f - 7616*c^7*d^3*g + 1308*b^3*c^4*e^3*g + 2368*c^7*d^2*e*f -
 2816*b*c^6*d*e^2*f + 12608*b*c^6*d^2*e*g - 7008*b^2*c^5*d*e^2*g)/(945*e*(b
*e - 2*c*d)^5) - (d*((8*c^5*(105*b^2*e^2*g + 296*c^2*d^2*g + 34*b*c*e^2*f -
 56*c^2*d*e*f - 352*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(17*b
*e*g - 28*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*
e - 2*c*d)^5)))/e))/e))/e - (356*b^3*c^4*e^3*f + 476*b^4*c^3*e^3*g - 3808*b
*c^6*d^3*g + 1184*b*c^6*d^2*e*f - 1296*b^2*c^5*d*e^2*f + 5712*b^2*c^5*d^2*e
*g - 2856*b^3*c^4*d*e^2*g)/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((984*b^2*c^5*e^3*f - 9216*c^7*d^3*g
 + 1572*b^3*c^4*e^3*g + 2816*c^7*d^2*e*f - 3328*b*c^6*d*e^2*f + 15232*b*c^6
*d^2*e*g - 8448*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((8*c^5*(123*
b^2*e^2*g + 352*c^2*d^2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 416*b*c*d*e*g))/(
945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(19*b*e*g - 32*c*d*g + 2*c*e*f))/(945*
(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (420*
b^3*c^4*e^3*f + 576*b^4*c^3*e^3*g - 4608*b*c^6*d^3*g + 1408*b*c^6*d^2*e*f -
 1536*b^2*c^5*d*e^2*f + 6912*b^2*c^5*d^2*e*g - 3456*b^3*c^4*d*e^2*g)/(945*e
*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((d*((d*((4*c^4*e^2*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^2)))/e - (4*c^3*e*(37*b^2*e^2*g + 94*c^2*d^2*g + 15*b*c*e^2*f - 24*
c^2*d*e*f - 118*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e +
 (148*b^2*c^3*e^4*f + 164*b^3*c^2*e^4*g + 376*c^5*d^2*e^2*f - 832*c^5*d^3*e
*g - 472*b*c^4*d*e^3*f + 1436*b*c^4*d^2*e^2*g - 836*b^2*c^3*d*e^3*g)/(63*e*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (640*c^5*d^4*g + 108*b^3*c^2*e^
4*f + 68*b^4*c*e^4*g - 384*c^5*d^3*e*f - 1504*b*c^4*d^3*e*g + 764*b*c^4*d^2
*e^2*f - 500*b^2*c^3*d*e^3*f - 488*b^3*c^2*d*e^3*g + 1296*b^2*c^3*d^2*e^2*g
)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((1480*b^2*c^5*e^3*f - 19456*c^7*d^3*g
+ 3088*b^3*c^4*e^3*g + 4608*c^7*d^2*e*f - 5216*b*c^6*d*e^2*f + 31488*b*c^6*
d^2*e*g - 17048*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((8*c^5*(185*
b^2*e^2*g + 576*c^2*d^2*g + 44*b*c*e^2*f - 76*c^2*d*e*f - 652*b*c*d*e*g))/(
945*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(11*b*e*g - 19*c*d*g + c*e*f))/(945*(b
*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (8*b*c^
```

```
3*(152*b^3*e^3*g - 1216*c^3*d^3*g + 82*b^2*c*e^3*f + 288*c^3*d^2*e*f - 307*
b*c^2*d*e^2*f + 1824*b*c^2*d^2*e*g - 912*b^2*c*d*e^2*g))/(945*e*(b*e - 2*c*
d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((1704
*b^2*c^5*e^3*f - 23296*c^7*d^3*g + 3672*b^3*c^4*e^3*g + 5376*c^7*d^2*e*f -
6048*b*c^6*d*e^2*f + 37632*b*c^6*d^2*e*g - 20328*b^2*c^5*d*e^2*g)/(945*e*(b
*e - 2*c*d)^5) - (d*((8*c^5*(71*b^2*e^2*g + 224*c^2*d^2*g + 16*b*c*e^2*f -
28*c^2*d*e*f - 252*b*c*d*e*g))/(315*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(12*b*
e*g - 21*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e -
 2*c*d)^5)))/e))/e))/e - (8*b*c^3*(182*b^3*e^3*g - 1456*c^3*d^3*g + 95*b^2*
c*e^3*f + 336*c^3*d^2*e*f - 357*b*c^2*d*e^2*f + 2184*b*c^2*d^2*e*g - 1092*b
^2*c*d*e^2*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((2992*b^2*c^5*e^3*f - 60928*c^7*d^3*g + 8992*b^
3*c^4*e^3*g + 10080*c^7*d^2*e*f - 10976*b*c^6*d*e^2*f + 96432*b*c^6*d^2*e*g
 - 50960*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((16*c^5*(187*b^2*e^
2*g + 630*c^2*d^2*g + 31*b*c*e^2*f - 56*c^2*d*e*f - 686*b*c*d*e*g))/(945*(b
*e - 2*c*d)^5) - (d*((16*c^6*e*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(945*(b*e -
 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (16*b*c^3*(
238*b^3*e^3*g - 1904*c^3*d^3*g + 86*b^2*c*e^3*f + 315*c^3*d^2*e*f - 329*b*c
^2*d*e^2*f + 2856*b*c^2*d^2*e*g - 1428*b^2*c*d*e^2*g))/(945*e*(b*e - 2*c*d)
^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((356*b^
2*c^4*e^3*f - 2624*c^6*d^3*g + 476*b^3*c^3*e^3*g + 960*c^6*d^2*e*f - 1168*b
*c^5*d*e^2*f + 4416*b*c^5*d^2*e*g - 2500*b^2*c^4*d*e^2*g)/(315*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(8*b*e*g - 13*c*d*g + c*e*f)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (356*b^2*c^4*e^3*g + 128*b*c^5*e^3*f -
208*c^6*d*e^2*f + 960*c^6*d^2*e*g - 1168*b*c^5*d*e^2*g)/(315*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^3)))/e))/e - (148*b^3*c^3*e^3*f + 164*b^4*c^2*e^3*g - 1
312*b*c^5*d^3*g + 480*b*c^5*d^2*e*f - 532*b^2*c^4*d*e^2*f + 1968*b^2*c^4*d^
2*e*g - 984*b^3*c^3*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((552*b^2*c^5*
e^4*f + 780*b^3*c^4*e^4*g + 1472*c^7*d^2*e^2*f - 4416*c^7*d^3*e*g - 1792*b*
c^6*d*e^3*f + 7360*b*c^6*d^2*e^2*g - 4128*b^2*c^5*d*e^3*g)/(945*e^2*(b*e -
2*c*d)^5) - (d*((8*c^5*(69*b^2*e^2*g + 184*c^2*d^2*g + 26*b*c*e^2*f - 40*c^
2*d*e*f - 224*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(13*b*e*g -
 20*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*
c*d)^5)))/e))/e))/e - (4032*c^7*d^4*g + 428*b^3*c^4*e^4*f + 428*b^4*c^3*e^4
*g - 1600*c^7*d^3*e*f - 9472*b*c^6*d^3*e*g + 3136*b*c^6*d^2*e^2*f - 2016*b^
2*c^5*d*e^3*f - 3072*b^3*c^4*d*e^3*g + 8160*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*
e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((
d*((1032*b^2*c^5*e^4*f + 1920*b^3*c^4*e^4*g + 3072*c^7*d^2*e^2*f - 11776*c^
7*d^3*e*g - 3552*b*c^6*d*e^3*f + 19200*b*c^6*d^2*e^2*g - 10488*b^2*c^5*d*e^
3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((8*c^5*(43*b^2*e^2*g + 128*c^2*d^2*g +
 12*b*c*e^2*f - 20*c^2*d*e*f - 148*b*c*d*e*g))/(315*(b*e - 2*c*d)^5) - (d*(
(32*c^6*e*(9*b*e*g - 15*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e
*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (8384*c^7*d^4*g + 712*b^3*c^4*e^4*f
 + 1128*b^4*c^3*e^4*g - 2112*c^7*d^3*e*f - 21600*b*c^6*d^3*e*g + 4704*b*c^6
*d^2*e^2*f - 3240*b^2*c^5*d*e^3*f - 7816*b^3*c^4*d*e^3*g + 19824*b^2*c^5*d^
2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x) + (((d*((1224*b^2*c^5*e^4*f + 2376*b^3*c^4*e^4*g + 3712*c^7
*d^2*e^2*f - 14720*c^7*d^3*e*g - 4256*b*c^6*d*e^3*f + 23936*b*c^6*d^2*e^2*g
 - 13032*b^2*c^5*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((8*c^5*(153*b^2*e
^2*g + 464*c^2*d^2*g + 40*b*c*e^2*f - 68*c^2*d*e*f - 532*b*c*d*e*g))/(945*(
b*e - 2*c*d)^5) - (d*((32*c^6*e*(10*b*e*g - 17*c*d*g + c*e*f))/(945*(b*e -
2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (15232*c^7*d
^4*g + 1128*b^3*c^4*e^4*f + 1576*b^4*c^3*e^4*g - 4736*c^7*d^3*e*f - 35456*b
*c^6*d^3*e*g + 8960*b*c^6*d^2*e^2*f - 5544*b^2*c^5*d*e^3*f - 11360*b^3*c^4*
d*e^3*g + 30336*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((1416*b^2*c^5*e^4*f + 283
2*b^3*c^4*e^4*g + 4352*c^7*d^2*e^2*f - 17664*c^7*d^3*e*g - 4960*b*c^6*d*e^3
```

*f + 28672*b*c^6*d^2*e^2*g - 15576*b^2*c^5*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^
5) - (d*((8*c^5*(177*b^2*e^2*g + 544*c^2*d^2*g + 44*b*c*e^2*f - 76*c^2*d*e*
f - 620*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(11*b*e*g - 19*c*
d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5))
)/e))/e))/e - (18432*c^7*d^4*g + 1328*b^3*c^4*e^4*f + 1904*b^4*c^3*e^4*g -
5632*c^7*d^3*e*f - 42880*b*c^6*d^3*e*g + 10624*b*c^6*d^2*e^2*f - 6552*b^2*c
^5*d*e^3*f - 13728*b^3*c^4*d*e^3*g + 36672*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*e
 - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d
*((1984*b^2*c^5*e^4*f + 5056*b^3*c^4*e^4*g + 6432*c^7*d^2*e^2*f - 33280*c^7
*d^3*e*g - 7136*b*c^6*d*e^3*f + 53136*b*c^6*d^2*e^2*g - 28352*b^2*c^5*d*e^3
*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^5*(124*b^2*e^2*g + 402*c^2*d^2*g
+ 25*b*c*e^2*f - 44*c^2*d*e*f - 446*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*
((16*c^6*e*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7
*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (28288*c^7*d^4*g + 1712*b^3*c^4
*e^4*f + 3440*b^4*c^3*e^4*g - 6528*c^7*d^3*e*f - 69952*b*c^6*d^3*e*g + 1300
8*b*c^6*d^2*e^2*f - 8288*b^2*c^5*d*e^3*f - 24176*b^3*c^4*d*e^3*g + 62496*b^
2*c^5*d^2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((2256*b^2*c^5*e^4*f + 5952*b^3*c^4*e^4*g +
7392*c^7*d^2*e^2*f - 39424*c^7*d^3*e*g - 8160*b*c^6*d*e^3*f + 62832*b*c^6*d
^2*e^2*g - 33456*b^2*c^5*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^5*(
47*b^2*e^2*g + 154*c^2*d^2*g + 9*b*c*e^2*f - 16*c^2*d*e*f - 170*b*c*d*e*g))
/(315*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(94
5*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (27
392*c^7*d^4*g + 1504*b^3*c^4*e^4*f + 3936*b^4*c^3*e^4*g - 3840*c^7*d^3*e*f
 - 72576*b*c^6*d^3*e*g + 9456*b*c^6*d^2*e^2*f - 6768*b^2*c^5*d*e^3*f - 27040
*b^3*c^4*d*e^3*g + 67776*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((2592*b^2*c^5*e^
4*f + 7200*b^3*c^4*e^4*g + 8608*c^7*d^2*e^2*f - 48128*c^7*d^3*e*g - 9440*b*
c^6*d*e^3*f + 76496*b*c^6*d^2*e^2*g - 40608*b^2*c^5*d*e^3*g)/(945*e^2*(b*e
 - 2*c*d)^5) - (d*((16*c^5*(162*b^2*e^2*g + 538*c^2*d^2*g + 29*b*c*e^2*f - 5
2*c^2*d*e*f - 590*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(29*b*e
*g - 52*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e
 - 2*c*d)^5)))/e))/e))/e - (57856*c^7*d^4*g + 2784*b^3*c^4*e^4*f + 5824*b^4*
c^3*e^4*g - 12800*c^7*d^3*e*f - 133376*b*c^6*d^3*e*g + 23504*b*c^6*d^2*e^2*
f - 14112*b^2*c^5*d*e^3*f - 42176*b^3*c^4*d*e^3*g + 113280*b^2*c^5*d^2*e^2*
g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) + (((2*b^4*e^3*g - 16*b*c^3*d^3*g + 6*b^3*c*e^3*f + 14*b*c^3*d^2*
e*f - 12*b^3*c*d*e^2*g - 18*b^2*c^2*d*e^2*f + 24*b^2*c^2*d^2*e*g)/(9*(7*b*e
^2 - 14*c*d*e)*(b*e - 2*c*d)) - (d*((18*b^2*c^2*e^3*f - 32*c^4*d^3*g + 10*b
^3*c*e^3*g + 28*c^4*d^2*e*f - 44*b*c^3*d*e^2*f + 62*b*c^3*d^2*e*g - 42*b^2*
c^2*d*e^2*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) + (d*((d*((2*c^3*e^2*(7
*b*e*g - 8*c*d*g + 2*c*e*f))/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c^
4*d*e^2*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e - (18*b^2*c^2*e^3*g +
 14*b*c^3*e^3*f - 16*c^4*d*e^2*f + 28*c^4*d^2*e*g - 44*b*c^3*d*e^2*g)/(9*(7
*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^4 - (((d*((896*b^2*c^4*e^3*f - 11264*c^6*d^3*g + 180
8*b^3*c^3*e^3*g + 2832*c^6*d^2*e*f - 3184*b*c^5*d*e^2*f + 18312*b*c^5*d^2*e
*g - 9952*b^2*c^4*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (d*(
(d*((8*c^5*e^2*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)
))/e - (896*b^2*c^4*e^3*g + 200*b*c^5*e^3*f - 352*c^6*d*e^2*f + 2832*c^6*d^
2*e*g - 3184*b*c^5*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e))
/e - (8*b*c^2*(88*b^3*e^3*g - 704*c^3*d^3*g + 50*b^2*c*e^3*f + 177*c^3*d^2*
e*f - 188*b*c^2*d*e^2*f + 1056*b*c^2*d^2*e*g - 528*b^2*c*d*e^2*g))/(315*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^2 + (((d*((d*((d*((8*c^4*e^2*(12*b*e*g - 21*c*d*g + c*e*f))/
(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(63*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c^3*e*(50*b^2*e^2*g + 155*c^2*d^2*g + 1
2*b*c*e^2*f - 21*c^2*d*e*f - 176*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e

- 2*c*d)^2)))/e + (400*b^2*c^3*e^4*f + 704*b^3*c^2*e^4*g + 1240*c^5*d^2*e^2
*f - 4216*c^5*d^3*e*g - 1408*b*c^4*d*e^3*f + 6944*b*c^4*d^2*e^2*g - 3824*b^
2*c^3*d*e^3*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e
- c*d)*(49*b^3*e^3*g - 392*c^3*d^3*g + 39*b^2*c*e^3*f + 135*c^3*d^2*e*f - 1
45*b*c^2*d*e^2*f + 588*b*c^2*d^2*e*g - 294*b^2*c*d*e^2*g))/(63*e*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^3 + (((d*((d*((d*((16*c^5*e^2*(7*b*e*g - 11*c*d*g + c*e*f))/(315*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(73*b^2*e^2*g + 192*c^2*d^2*g + 28*b*c
*e^2*f - 44*c^2*d*e*f - 236*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^3)))/e + (292*b^2*c^4*e^4*f + 376*b^3*c^3*e^4*g + 768*c^6*d^2*e^2*f - 2
048*c^6*d^3*e*g - 944*b*c^5*d*e^3*f + 3456*b*c^5*d^2*e^2*g - 1964*b^2*c^4*d
*e^3*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (1824*c^6*d^4*g +
228*b^3*c^3*e^4*f + 188*b^4*c^2*e^4*g - 864*c^6*d^3*e*f - 4240*b*c^5*d^3*e
*g + 1680*b*c^5*d^2*e^2*f - 1076*b^2*c^4*d*e^3*f - 1356*b^3*c^3*d*e^3*g + 3
624*b^2*c^4*d^2*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((8*c^5*e^
2*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4
e(82*b^2*e^2*g + 250*c^2*d^2*g + 21*b*c*e^2*f - 36*c^2*d*e*f - 286*b*c*d*
e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (656*b^2*c^4*e^4*f +
1216*b^3*c^3*e^4*g + 2000*c^6*d^2*e^2*f - 7424*c^6*d^3*e*g - 2288*b*c^5*d*e
^3*f + 12136*b*c^5*d^2*e^2*g - 6640*b^2*c^4*d*e^3*g)/(315*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^3)))/e - (5312*c^6*d^4*g + 456*b^3*c^3*e^4*f + 712*b^4*c
^2*e^4*g - 1344*c^6*d^3*e*f - 13664*b*c^5*d^3*e*g + 3016*b*c^5*d^2*e^2*f -
2080*b^2*c^4*d*e^3*f - 4936*b^3*c^3*d*e^3*g + 12528*b^2*c^4*d^2*e^2*g)/(315
e(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((8*c^5*e^2*(23*b*e*g - 40*c*d*g + 2*
c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(95*b^2*e^2*g + 294*c^2*
d^2*g + 23*b*c*e^2*f - 40*c^2*d*e*f - 334*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d
e)(b*e - 2*c*d)^3)))/e + (760*b^2*c^4*e^4*f + 1456*b^3*c^3*e^4*g + 2352*c
^6*d^2*e^2*f - 8960*c^6*d^3*e*g - 2672*b*c^5*d*e^3*f + 14616*b*c^5*d^2*e^2*
g - 7976*b^2*c^4*d*e^3*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e -
(9600*c^6*d^4*g + 768*b^3*c^3*e^4*f + 944*b^4*c^2*e^4*g - 3456*c^6*d^3*e*f
- 21952*b*c^5*d^3*e*g + 6360*b*c^5*d^2*e^2*f - 3848*b^2*c^4*d*e^3*f - 6864
*b^3*c^3*d*e^3*g + 18528*b^2*c^4*d^2*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + ((
(d*((3712*b^2*c^5*e^4*f + 13120*b^3*c^4*e^4*g + 12768*c^7*d^2*e^2*f - 91168
*c^7*d^3*e*g - 13760*b*c^6*d*e^3*f + 143136*b*c^6*d^2*e^2*g - 75008*b^2*c^5
*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((32*c^5*(116*b^2*e^2*g + 399*c^2*
d^2*g + 17*b*c*e^2*f - 31*c^2*d*e*f - 430*b*c*d*e*g))/(945*(b*e - 2*c*d)^5)
- (d*((32*c^6*e*(17*b*e*g - 31*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32
*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (32*c^3*(b*e - c*d)*(310*b^
3*e^3*g - 2480*c^3*d^3*g + 100*b^2*c*e^3*f + 369*c^3*d^2*e*f - 384*b*c^2*d*
e^2*f + 3720*b*c^2*d^2*e*g - 1860*b^2*c*d*e^2*g))/(945*e^2*(b*e - 2*c*d)^5)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((d*((4
*c^3*e^2*(8*b*e*g - 13*c*d*g + c*e*f))/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d
)) - (4*c^4*d*e^2*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e - (4*c^2*e*
(18*b^2*e^2*g + 43*c^2*d^2*g + 8*b*c*e^2*f - 13*c^2*d*e*f - 56*b*c*d*e*g))/
(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e + (72*b^2*c^2*e^4*f + 172*c^4*d^
2*e^2*f + 64*b^3*c*e^4*g - 284*c^4*d^3*e*g - 224*b*c^3*d*e^3*f + 512*b*c^3*
d^2*e^2*g - 312*b^2*c^2*d*e^3*g)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))
/e - (4*(b*e - c*d)*(5*b^3*e^3*g - 40*c^3*d^3*g + 11*b^2*c*e^3*f + 31*c^3*d
^2*e*f - 37*b*c^2*d*e^2*f + 60*b*c^2*d^2*e*g - 30*b^2*c*d*e^2*g))/(9*e*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^4 - (((d*((132*b^2*c^4*e^3*f - 608*c^6*d^3*g + 126*b^3*c^3*e^3
*g + 288*c^6*d^2*e*f - 384*b*c^5*d*e^2*f + 1056*b*c^5*d^2*e*g - 624*b^2*c^4
*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(9

*b*e*g - 12*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (
16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(1
1*b^2*e^2*g + 24*c^2*d^2*g + 6*b*c*e^2*f - 8*c^2*d*e*f - 32*b*c*d*e*g))/(10
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (50*b^3*c^3*e^3*f + 38*b^4
*c^2*e^3*g - 304*b*c^5*d^3*g + 144*b*c^5*d^2*e*f - 168*b^2*c^4*d*e^2*f + 45
6*b^2*c^4*d^2*e*g - 228*b^3*c^3*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((
420*b^2*c^4*e^3*f - 3200*c^6*d^3*g + 576*b^3*c^3*e^3*g + 1152*c^6*d^2*e*f -
 1392*b*c^5*d*e^2*f + 5376*b*c^5*d^2*e*g - 3036*b^2*c^4*d*e^2*g)/(315*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(9*b*e*g - 15*c*d*g +
 c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(35*b^2*e^2*g + 96*c^2*
d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 116*b*c*d*e*g))/(105*(3*b*e^2 - 6*c*d
e)(b*e - 2*c*d)^3)))/e))/e - (176*b^3*c^3*e^3*f + 200*b^4*c^2*e^3*g - 160
0*b*c^5*d^3*g + 576*b*c^5*d^2*e*f - 636*b^2*c^4*d*e^2*f + 2400*b^2*c^4*d^2*
e*g - 1200*b^3*c^3*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((2*f*(b*e - c*d)^3
)/(9*b*e^2 - 18*c*d*e) - (d*((2*(b*e - c*d)^2*(b*e*g - c*d*g + 3*c*e*f))/(9
*b*e^2 - 18*c*d*e) + (d*((d*((2*c^2*e^2*(3*b*e*g - 3*c*d*g + c*e*f))/(9*b*e
^2 - 18*c*d*e) - (2*c^3*d*e^2*g)/(9*b*e^2 - 18*c*d*e)))/e - (6*c*e*(b*e - c
d)(b*e*g - c*d*g + c*e*f))/(9*b*e^2 - 18*c*d*e)))/e))/e)*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((d*((16*c^5*e^2*(15*b*
e*g - 27*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^
6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^4*e*(86*b^
2*e^2*g + 287*c^2*d^2*g + 15*b*c*e^2*f - 27*c^2*d*e*f - 314*b*c*d*e*g))/(31
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (1376*b^2*c^4*e^4*f + 3808*b^3
*c^3*e^4*g + 4592*c^6*d^2*e^2*f - 25424*c^6*d^3*e*g - 5024*b*c^5*d*e^3*f +
40432*b*c^5*d^2*e^2*g - 21472*b^2*c^4*d*e^3*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(166*b^3*e^3*g - 1328*c^3*d^3*g +
 72*b^2*c*e^3*f + 261*c^3*d^2*e*f - 274*b*c^2*d*e^2*f + 1992*b*c^2*d^2*e*g
- 996*b^2*c*d*e^2*g))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((1992*b^2*c^5*e^3*
f - 28928*c^7*d^3*g + 4512*b^3*c^4*e^3*g + 6400*c^7*d^2*e*f - 7136*b*c^6*d*
e^2*f + 46592*b*c^6*d^2*e*g - 25080*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5
) - (d*((1992*b^2*c^5*e^3*g + 416*b*c^6*e^3*f - 736*c^7*d*e^2*f + 6400*c^7*
d^2*e*g - 7136*b*c^6*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(13*b
*e*g - 23*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e
- 2*c*d)^5)))/e))/e))/e - (8*b*c^3*(226*b^3*e^3*g - 1808*c^3*d^3*g + 112*b^
2*c*e^3*f + 400*c^3*d^2*e*f - 423*b*c^2*d*e^2*f + 2712*b*c^2*d^2*e*g - 1356
*b^2*c*d*e^2*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((d*((50*b^2*c^3*e^3*f - 160*c^5*d^3*g + 38*b^3*c^
2*e^3*g + 96*c^5*d^2*e*f - 136*b*c^4*d*e^2*f + 288*b*c^4*d^2*e*g - 178*b^2*
c^3*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((8*c^4*e^2
*(4*b*e*g - 5*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (
8*c^5*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (50*b^2*c^3*
e^3*g + 32*b*c^4*e^3*f - 40*c^5*d*e^2*f + 96*c^5*d^2*e*g - 136*b*c^4*d*e^2*
g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (18*b^3*c^2*e^3*f -
80*b*c^4*d^3*g + 10*b^4*c*e^3*g + 48*b*c^4*d^2*e*f - 58*b^2*c^3*d*e^2*f + 1
20*b^2*c^3*d^2*e*g - 60*b^3*c^2*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((
176*b^2*c^3*e^3*f - 1024*c^5*d^3*g + 200*b^3*c^2*e^3*g + 456*c^5*d^2*e*f -
568*b*c^4*d*e^2*f + 1764*b*c^4*d^2*e*g - 1024*b^2*c^3*d*e^2*g)/(63*(5*b*e^2
 - 10*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((4*c^4*e^2*(17*b*e*g - 28*c*d*g + 2
*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(63*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (176*b^2*c^3*e^3*g + 68*b*c^4*e^3
*f - 112*c^5*d*e^2*f + 456*c^5*d^2*e*g - 568*b*c^4*d*e^2*g)/(63*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (72*b^3*c^2*e^3*f - 512*b*c^4*d^3*g +
64*b^4*c*e^3*g + 228*b*c^4*d^2*e*f - 256*b^2*c^3*d*e^2*f + 768*b^2*c^3*d^2*
e*g - 384*b^3*c^2*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^

```
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**8,x)
[Out] Timed out
```

3.1976 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=210

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg+4cef)}{693e^2(d+ex)^7(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg+4}{99e^2(d+ex)^8(2cd-be)^2}$$

Rubi [A] time = 0.33, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg+4cef)}{693e^2(d+ex)^7(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg+4cef)}{99e^2(d+ex)^8(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(d+ex)^9(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(11*e^2*(2*c*d
 - b*e)*(d + e*x)^9) - (2*(4*c*e*f + 18*c*d*g - 11*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(7/2))/(99*e^2*(2*c*d - b*e)^2*(d + e*x)^8) - (4*c*(4*
c*e*f + 18*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(
693*e^2*(2*c*d - b*e)^3*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^9}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(2cd-be)(d+ex)^9} + \frac{(4cef+18cdg-1\ldots}{1\ldots}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(2cd-be)(d+ex)^9} - \frac{2(4cef+18cdg-\ldots}{99e\ldots}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(2cd-be)(d+ex)^9} - \frac{2(4cef+18cdg-\ldots}{99e\ldots}$$

Mathematica [**A**] time = 0.15, size = 169, normalized size = 0.80

$$-\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(7b^2e^2(2dg+9ef+11egx)-2bce\left(25d^2g+2de(70f+81gx)+e^2x(14f+11gx)\right)+4c^2\left(9d^3g+d^2e(79f+81gx)+9de^2x(2f+gx)+2e^3fx^2\right)\right)}{693e^2(d+ex)^6(be-2cd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^9,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(7*b^2*
e^2*(9*e*f + 2*d*g + 11*e*g*x) - 2*b*c*e*(25*d^2*g + e^2*x*(14*f + 11*g*x)
+ 2*d*e*(70*f + 81*g*x)) + 4*c^2*(9*d^3*g + 2*e^3*f*x^2 + 9*d*e^2*x*(2*f +
g*x) + d^2*e*(79*f + 81*g*x))))/(693*e^2*(-2*c*d + b*e)^3*(d + e*x)^6)
```

IntegrateAlgebraic [**F**] time = 180.07, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^9,x]
```

```
[Out] $Aborted
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.05, size = 236, normalized size = 1.12

$$-\frac{2\,(cex+be-cd)\left(-22bc\,e^3g\,x^2+36c^2d\,e^2g\,x^2+8c^2e^3f\,x^2+77b^2e^3gx-324bcd\,e^2gx-28bc\,e^3fx+324c^2d^2egx+72c^2d\,e^2fx+14b^2d\,e^2g+63b^2e^3f-50bc\,d^2eg-280bcd\,e^2f+36c^2d^3g+316c^2d^2ef\right)\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{5}{2}}}{693\,(ex+d)^8\left(b^3e^3-6b^2cd\,e^2+12b\,c^2d^2e-8c^3d^3\right)e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x)
```

```
[Out] -2/693*(c*e*x+b*e-c*d)*(-22*b*c*e^3*g*x^2+36*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^
2+77*b^2*e^3*g*x-324*b*c*d*e^2*g*x-28*b*c*e^3*f*x+324*c^2*d^2*e*g*x+72*c^2*
d*e^2*f*x+14*b^2*d*e^2*g+63*b^2*e^3*f-50*b*c*d^2*e*g-280*b*c*d*e^2*f+36*c^2
*d^3*g+316*c^2*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8/(b
^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 53.40, size = 25236, normalized size = 120.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^9,x)
```

```
[Out] (((d*((1632*b^2*c^6*e^3*f - 16704*c^8*d^3*g + 2784*b^3*c^5*e^3*g + 4672*c^8
*d^2*e*f - 5504*b*c^7*d*e^2*f + 27392*b*c^7*d^2*e*g - 15072*b^2*c^6*d*e^2*g
)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(51*b^2*e^2*g + 146*c^2*d^2*g + 1
6*b*c*e^2*f - 26*c^2*d*e*f - 172*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*(
(64*c^7*e*(8*b*e*g - 13*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d
*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (696*b^3*c^5*e^3*f + 1044*b^4*c
^4*e^3*g - 8352*b*c^7*d^3*g + 2336*b*c^7*d^2*e*f - 2544*b^2*c^6*d*e^2*f + 1
2528*b^2*c^6*d^2*e*g - 6264*b^3*c^5*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((1952*b^2*c^6*e
^3*f - 20928*c^8*d^3*g + 3456*b^3*c^5*e^3*g + 5696*c^8*d^2*e*f - 6656*b*c^7
*d*e^2*f + 34240*b*c^7*d^2*e*g - 18784*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c
*d)^6) - (d*((32*c^6*(61*b^2*e^2*g + 178*c^2*d^2*g + 18*b*c*e^2*f - 30*c^2*
d*e*f - 208*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(9*b*e*g -
15*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2
*c*d)^6)))/e))/e))/e - (840*b^3*c^5*e^3*f + 1308*b^4*c^4*e^3*g - 10464*b*c^
7*d^3*g + 2848*b*c^7*d^2*e*f - 3088*b^2*c^6*d*e^2*f + 15696*b^2*c^6*d^2*e*g
 - 7848*b^3*c^5*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((2272*b^2*c^6*e^3*f - 25152*c^8*d^3
*g + 4128*b^3*c^5*e^3*g + 6720*c^8*d^2*e*f - 7808*b*c^7*d*e^2*f + 41088*b*c
^7*d^2*e*g - 22496*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6
*(71*b^2*e^2*g + 210*c^2*d^2*g + 20*b*c*e^2*f - 34*c^2*d*e*f - 244*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(10*b*e*g - 17*c*d*g + c*e*f))/
(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/
e - (984*b^3*c^5*e^3*f + 1572*b^4*c^4*e^3*g - 12576*b*c^7*d^3*g + 3360*b*c^
7*d^2*e*f - 3632*b^2*c^6*d*e^2*f + 18864*b^2*c^6*d^2*e*g - 9432*b^3*c^5*d*e
^2*g)/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((d*((2592*b^2*c^6*e^3*f - 29376*c^8*d^3*g + 4800*b^3*c^5*e
^3*g + 7744*c^8*d^2*e*f - 8960*b*c^7*d*e^2*f + 47936*b*c^7*d^2*e*g - 26208*
b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(81*b^2*e^2*g + 24
2*c^2*d^2*g + 22*b*c*e^2*f - 38*c^2*d*e*f - 280*b*c*d*e*g))/(10395*(b*e - 2
*c*d)^6) - (d*((64*c^7*e*(11*b*e*g - 19*c*d*g + c*e*f))/(10395*(b*e - 2*c*d
```

)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (1128*b^3*c^5*e
^3*f + 1836*b^4*c^4*e^3*g - 14688*b*c^7*d^3*g + 3872*b*c^7*d^2*e*f - 4176*b
^2*c^6*d*e^2*f + 22032*b^2*c^6*d^2*e*g - 11016*b^3*c^5*d*e^2*g)/(10395*e*(b
*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - ((
(d*((d*((d*((4*c^4*e^2*(17*b*e*g - 28*c*d*g + 2*c*e*f))/(99*(7*b*e^2 - 14*c
*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*
c*d)^2)))/e - (4*c^3*e*(44*b^2*e^2*g + 114*c^2*d^2*g + 17*b*c*e^2*f - 28*c^
2*d*e*f - 142*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (
176*b^2*c^3*e^4*f + 200*b^3*c^2*e^4*g + 456*c^5*d^2*e^2*f - 1024*c^5*d^3*e*
g - 568*b*c^4*d*e^3*f + 1764*b*c^4*d^2*e^2*g - 1024*b^2*c^3*d*e^3*g)/(99*e*
(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (800*c^5*d^4*g + 132*b^3*c^2*e^
4*f + 84*b^4*c*e^4*g - 480*c^5*d^3*e*f - 1872*b*c^4*d^3*e*g + 948*b*c^4*d^2
*e^2*f - 616*b^2*c^3*d*e^3*f - 604*b^3*c^2*d*e^3*g + 1608*b^2*c^3*d^2*e^2*g
)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((832*b^2*c^6*e^3*f - 6144*c^8*d^3*g +
1104*b^3*c^5*e^3*g + 2112*c^8*d^2*e*f - 2624*b*c^7*d*e^2*f + 10272*b*c^7*d^
2*e*g - 5792*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(26*b
^2*e^2*g + 66*c^2*d^2*g + 11*b*c*e^2*f - 16*c^2*d*e*f - 82*b*c*d*e*g))/(103
95*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(11*b*e*g - 16*c*d*g + 2*c*e*f))/(10395
*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (1
6*b*c^4*(24*b^3*e^3*g - 192*c^3*d^3*g + 21*b^2*c*e^3*f + 66*c^3*d^2*e*f - 7
4*b*c^2*d*e^2*f + 288*b*c^2*d^2*e*g - 144*b^2*c*d*e^2*g))/(10395*e*(b*e - 2
*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((3
312*b^2*c^6*e^3*f - 49408*c^8*d^3*g + 7656*b^3*c^5*e^3*g + 10496*c^8*d^2*e*
f - 11776*b*c^7*d*e^2*f + 79360*b*c^7*d^2*e*g - 42624*b^2*c^6*d*e^2*g)/(103
95*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(207*b^2*e^2*g + 656*c^2*d^2*g + 46*b*c
*e^2*f - 80*c^2*d*e*f - 736*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c
^7*e*(23*b*e*g - 40*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e
g)/(10395(b*e - 2*c*d)^6)))/e))/e))/e - (8*b*c^4*(386*b^3*e^3*g - 3088*c^
3*d^3*g + 185*b^2*c*e^3*f + 656*c^3*d^2*e*f - 696*b*c^2*d*e^2*f + 4632*b*c^
2*d^2*e*g - 2316*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((3792*b^2*c^6*e^3*f - 58752
*c^8*d^3*g + 9048*b^3*c^5*e^3*g + 12160*c^8*d^2*e*f - 13568*b*c^7*d*e^2*f +
94208*b*c^7*d^2*e*g - 50496*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (
d*((16*c^6*(237*b^2*e^2*g + 760*c^2*d^2*g + 50*b*c*e^2*f - 88*c^2*d*e*f - 8
48*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(25*b*e*g - 44*c*d*g
+ 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^
6)))/e))/e))/e - (8*b*c^4*(459*b^3*e^3*g - 3672*c^3*d^3*g + 213*b^2*c*e^3*f
+ 760*c^3*d^2*e*f - 804*b*c^2*d*e^2*f + 5508*b*c^2*d^2*e*g - 2754*b^2*c*d*
e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) - (((d*((4272*b^2*c^6*e^3*f - 68096*c^8*d^3*g + 10440*b^3*c^
5*e^3*g + 13824*c^8*d^2*e*f - 15360*b*c^7*d*e^2*f + 109056*b*c^7*d^2*e*g -
58368*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(89*b^2*e^2*
g + 288*c^2*d^2*g + 18*b*c*e^2*f - 32*c^2*d*e*f - 320*b*c*d*e*g))/(3465*(b*
e - 2*c*d)^6) - (d*((32*c^7*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(10395*(b*e
- 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (8*b*c^4
*(532*b^3*e^3*g - 4256*c^3*d^3*g + 241*b^2*c*e^3*f + 864*c^3*d^2*e*f - 912*
b*c^2*d*e^2*f + 6384*b*c^2*d^2*e*g - 3192*b^2*c*d*e^2*g))/(10395*e*(b*e - 2
*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4
400*b^2*c^6*e^3*f - 72192*c^8*d^3*g + 11016*b^3*c^5*e^3*g + 14336*c^8*d^2*e
*f - 15872*b*c^7*d*e^2*f + 115456*b*c^7*d^2*e*g - 61696*b^2*c^6*d*e^2*g)/(1
0395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(275*b^2*e^2*g + 896*c^2*d^2*g + 54*b
*c*e^2*f - 96*c^2*d*e*f - 992*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32
*c^7*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d
*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (8*b*c^4*(564*b^3*e^3*g - 4512*
c^3*d^3*g + 249*b^2*c*e^3*f + 896*c^3*d^2*e*f - 944*b*c^2*d*e^2*f + 6768*b*
c^2*d^2*e*g - 3384*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4944*b^2*c^6*e^3*f - 835
84*c^8*d^3*g + 12696*b^3*c^5*e^3*g + 16256*c^8*d^2*e*f - 17920*b*c^7*d*e^2*

f + 133504*b*c^7*d^2*e*g - 71232*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6)
 - (d*((16*c^6*(309*b^2*e^2*g + 1016*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e
*f - 1120*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(29*b*e*g - 5
2*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e -
2*c*d)^6)))/e))/e))/e - (8*b*c^4*(653*b^3*e^3*g - 5224*c^3*d^3*g + 281*b^2*
c*e^3*f + 1016*c^3*d^2*e*f - 1068*b*c^2*d*e^2*f + 7836*b*c^2*d^2*e*g - 3918
*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((5616*b^2*c^6*e^3*f - 99072*c^8*d^3*g + 149
52*b^3*c^5*e^3*g + 18688*c^8*d^2*e*f - 20480*b*c^7*d*e^2*f + 157952*b*c^7*d
^2*e*g - 84096*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(35
1*b^2*e^2*g + 1168*c^2*d^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1280*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(31*b*e*g - 56*c*d*g + 2*c*e*f)
)/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e)
)/e - (8*b*c^4*(774*b^3*e^3*g - 6192*c^3*d^3*g + 321*b^2*c*e^3*f + 1168*c^3
*d^2*e*f - 1224*b*c^2*d*e^2*f + 9288*b*c^2*d^2*e*g - 4644*b^2*c*d*e^2*g))/(
10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x) + (((d*((6480*b^2*c^6*e^3*f - 143872*c^8*d^3*g + 20976*b^3*c^5*e^3*g
+ 22016*c^8*d^2*e*f - 23872*b*c^7*d*e^2*f + 226816*b*c^7*d^2*e*g - 119376*b
^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(405*b^2*e^2*g + 13
76*c^2*d^2*g + 64*b*c*e^2*f - 116*c^2*d*e*f - 1492*b*c*d*e*g))/(10395*(b*e
- 2*c*d)^6) - (d*((64*c^7*e*(16*b*e*g - 29*c*d*g + c*e*f))/(10395*(b*e - 2*
c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (16*b*c^4*(5
62*b^3*e^3*g - 4496*c^3*d^3*g + 187*b^2*c*e^3*f + 688*c^3*d^2*e*f - 717*b*c
^2*d*e^2*f + 6744*b*c^2*d^2*e*g - 3372*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*
d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((7184
*b^2*c^6*e^3*f - 164864*c^8*d^3*g + 23936*b^3*c^5*e^3*g + 24576*c^8*d^2*e*f
 - 26560*b*c^7*d*e^2*f + 259584*b*c^7*d^2*e*g - 136432*b^2*c^6*d*e^2*g)/(10
395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(449*b^2*e^2*g + 1536*c^2*d^2*g + 68*b
*c*e^2*f - 124*c^2*d*e*f - 1660*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((
64*c^7*e*(17*b*e*g - 31*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d
*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (16*b*c^4*(644*b^3*e^3*g - 5152
*c^3*d^3*g + 208*b^2*c*e^3*f + 768*c^3*d^2*e*f - 799*b*c^2*d*e^2*f + 7728*b
*c^2*d^2*e*g - 3864*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8016*b^2*c^6*e^3*f - 19
2512*c^8*d^3*g + 27792*b^3*c^5*e^3*g + 27648*c^8*d^2*e*f - 29760*b*c^7*d*e^
2*f + 302592*b*c^7*d^2*e*g - 158736*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)
^6) - (d*((16*c^6*(167*b^2*e^2*g + 576*c^2*d^2*g + 24*b*c*e^2*f - 44*c^2*d*
e*f - 620*b*c*d*e*g))/(3465*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(18*b*e*g - 33
*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c
*d)^6)))/e))/e))/e - (16*b*c^4*(752*b^3*e^3*g - 6016*c^3*d^3*g + 233*b^2*c*
e^3*f + 864*c^3*d^2*e*f - 897*b*c^2*d*e^2*f + 9024*b*c^2*d^2*e*g - 4512*b^2
*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) + (((d*((8976*b^2*c^6*e^3*f - 229888*c^8*d^3*g + 32928*
b^3*c^5*e^3*g + 31232*c^8*d^2*e*f - 33472*b*c^7*d*e^2*f + 360448*b*c^7*d^2*
e*g - 188592*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(561*
b^2*e^2*g + 1952*c^2*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f - 2092*b*c*d*e*g)
)/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(19*b*e*g - 35*c*d*g + c*e*f))/(1
0395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e
- (16*b*c^4*(898*b^3*e^3*g - 7184*c^3*d^3*g + 262*b^2*c*e^3*f + 976*c^3*d^2
*e*f - 1011*b*c^2*d*e^2*f + 10776*b*c^2*d^2*e*g - 5388*b^2*c*d*e^2*g))/(103
95*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x) - (((d*((11936*b^2*c^6*e^3*f - 386048*c^8*d^3*g + 53888*b^3*c^5*e^3*g +
42432*c^8*d^2*e*f - 44992*b*c^7*d*e^2*f + 600288*b*c^7*d^2*e*g - 311392*b^2
*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(373*b^2*e^2*g + 1326
*c^2*d^2*g + 43*b*c*e^2*f - 80*c^2*d*e*f - 1406*b*c*d*e*g))/(10395*(b*e - 2
*c*d)^6) - (d*((32*c^7*e*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c
*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (32*b*c^4*(75
4*b^3*e^3*g - 6032*c^3*d^3*g + 176*b^2*c*e^3*f + 663*c^3*d^2*e*f - 683*b*c^
2*d*e^2*f + 9048*b*c^2*d^2*e*g - 4524*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d

)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((484*b
^2*c^4*e^3*f - 3776*c^6*d^3*g + 676*b^3*c^3*e^3*g + 1344*c^6*d^2*e*f - 1616
*b*c^5*d*e^2*f + 6336*b*c^5*d^2*e*g - 3572*b^2*c^4*d*e^2*g)/(693*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(10*b*e*g - 17*c*d*g + c*
e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (484*b^2*c^4*e^3*g + 160*b*c^5*e^
3*f - 272*c^6*d*e^2*f + 1344*c^6*d^2*e*g - 1616*b*c^5*d*e^2*g)/(693*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (204*b^3*c^3*e^3*f + 236*b^4*c^2*e
^3*g - 1888*b*c^5*d^3*g + 672*b*c^5*d^2*e*f - 740*b^2*c^4*d*e^2*f + 2832*b^
2*c^4*d^2*e*g - 1416*b^3*c^3*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((13
12*b^2*c^6*e^4*f + 2112*b^3*c^5*e^4*g + 3648*c^8*d^2*e^2*f - 12480*c^8*d^3*
e*g - 4352*b*c^7*d*e^3*f + 20544*b*c^7*d^2*e^2*g - 11360*b^2*c^6*d*e^3*g)/(
10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(41*b^2*e^2*g + 114*c^2*d^2*g + 14
*b*c*e^2*f - 22*c^2*d*e*f - 136*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((
64*c^7*e*(7*b*e*g - 11*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*
e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (12288*c^8*d^4*g + 1080*b^3*c^5*
e^4*f + 1284*b^4*c^4*e^4*g - 4224*c^8*d^3*e*f - 28704*b*c^7*d^3*e*g + 8160*
b*c^7*d^2*e^2*f - 5168*b^2*c^6*d*e^3*f - 9240*b^3*c^5*d*e^3*g + 24624*b^2*c
^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x) - (((d*((2352*b^2*c^6*e^4*f + 4872*b^3*c^5*e^4*g + 7
168*c^8*d^2*e^2*f - 30720*c^8*d^3*e*g - 8192*b*c^7*d*e^3*f + 49664*b*c^7*d^
2*e^2*g - 26880*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*
(147*b^2*e^2*g + 448*c^2*d^2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 512*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(19*b*e*g - 32*c*d*g + 2*c*e*f)
)/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e)
)/e - (21312*c^8*d^4*g + 1600*b^3*c^5*e^4*f + 2968*b^4*c^4*e^4*g - 4544*c^8
*d^3*e*f - 55712*b*c^7*d^3*e*g + 10400*b*c^7*d^2*e^2*f - 7248*b^2*c^6*d*e^3
*f - 20472*b^3*c^5*d*e^3*g + 51600*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c
d)^6))(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((276
8*b^2*c^6*e^4*f + 5976*b^3*c^5*e^4*g + 8576*c^8*d^2*e^2*f - 38016*c^8*d^3*e
*g - 9728*b*c^7*d*e^3*f + 61312*b*c^7*d^2*e^2*g - 33088*b^2*c^6*d*e^3*g)/(1
0395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(173*b^2*e^2*g + 536*c^2*d^2*g + 42
*b*c*e^2*f - 72*c^2*d*e*f - 608*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((
32*c^7*e*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8
*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (41856*c^8*d^4*g + 2648*b^3*c
^5*e^4*f + 4280*b^4*c^4*e^4*g - 11392*c^8*d^3*e*f - 97024*b*c^7*d^3*e*g + 2
1376*b*c^7*d^2*e^2*f - 13120*b^2*c^6*d*e^3*f - 30912*b^3*c^5*d*e^3*g + 8275
2*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((3184*b^2*c^6*e^4*f + 7080*b^3*c^5*e^
4*g + 9984*c^8*d^2*e^2*f - 45312*c^8*d^3*e*g - 11264*b*c^7*d*e^3*f + 72960*
b*c^7*d^2*e^2*g - 39296*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*(
(16*c^6*(199*b^2*e^2*g + 624*c^2*d^2*g + 46*b*c*e^2*f - 80*c^2*d*e*f - 704*
b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(23*b*e*g - 40*c*d*g +
2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6))
)/e))/e))/e - (50304*c^8*d^4*g + 3096*b^3*c^5*e^4*f + 5136*b^4*c^4*e^4*g -
13440*c^8*d^3*e*f - 116544*b*c^7*d^3*e*g + 25152*b*c^7*d^2*e^2*f - 15392*b^
2*c^6*d*e^3*f - 37104*b^3*c^5*d*e^3*g + 99360*b^2*c^6*d^2*e^2*g)/(10395*e^2
*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((3600*b^2*c^6*e^4*f + 8184*b^3*c^5*e^4*g + 11392*c^8*d^2*e^2*f - 526
08*c^8*d^3*e*g - 12800*b*c^7*d*e^3*f + 84608*b*c^7*d^2*e^2*g - 45504*b^2*c^
6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(225*b^2*e^2*g + 712*c
^2*d^2*g + 50*b*c*e^2*f - 88*c^2*d*e*f - 800*b*c*d*e*g))/(10395*(b*e - 2*c*
d)^6) - (d*((32*c^7*e*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)
^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (58752*c^8*d^4*g
 + 3544*b^3*c^5*e^4*f + 5992*b^4*c^4*e^4*g - 15488*c^8*d^3*e*f - 136064*b*c
^7*d^3*e*g + 28928*b*c^7*d^2*e^2*f - 17664*b^2*c^6*d*e^3*f - 43296*b^3*c^5*
d*e^3*g + 115968*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((4368*b^2*c^6*e^4*f +

12096*b^3*c^5*e^4*g + 14336*c^8*d^2*e^2*f - 80896*c^8*d^3*e*g - 15808*b*c^7
*d*e^3*f + 128512*b*c^7*d^2*e^2*g - 68208*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e
- 2*c*d)^6) - (d*((16*c^6*(273*b^2*e^2*g + 896*c^2*d^2*g + 52*b*c*e^2*f - 9
2*c^2*d*e*f - 988*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(13*b
*e*g - 23*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(
b*e - 2*c*d)^6)))/e))/e))/e - (72576*c^8*d^4*g + 3984*b^3*c^5*e^4*f + 8592*
b^4*c^4*e^4*g - 16000*c^8*d^3*e*f - 177600*b*c^7*d^3*e*g + 31168*b*c^7*d^2*
e^2*f - 19536*b^2*c^6*d*e^3*f - 60624*b^3*c^5*d*e^3*g + 157536*b^2*c^6*d^2*
e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x) + (((d*((4944*b^2*c^6*e^4*f + 14160*b^3*c^5*e^4*g + 16384*c
^8*d^2*e^2*f - 95232*c^8*d^3*e*g - 17984*b*c^7*d*e^3*f + 151040*b*c^7*d^2*e
^2*g - 80016*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(30
9*b^2*e^2*g + 1024*c^2*d^2*g + 56*b*c*e^2*f - 100*c^2*d*e*f - 1124*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(14*b*e*g - 25*c*d*g + c*e*f))/
(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/
e - (62208*c^8*d^4*g + 3184*b^3*c^5*e^4*f + 9376*b^4*c^4*e^4*g - 7424*c^8*d
^3*e*f - 168320*b*c^7*d^3*e*g + 19328*b*c^7*d^2*e^2*f - 14160*b^2*c^6*d*e^3
*f - 64032*b^3*c^5*d*e^3*g + 159168*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*
c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((55
20*b^2*c^6*e^4*f + 16224*b^3*c^5*e^4*g + 18432*c^8*d^2*e^2*f - 109568*c^8*d
^3*e*g - 20160*b*c^7*d*e^3*f + 173568*b*c^7*d^2*e^2*g - 91824*b^2*c^6*d*e^3
*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(115*b^2*e^2*g + 384*c^2*d^2*
g + 20*b*c*e^2*f - 36*c^2*d*e*f - 420*b*c*d*e*g))/(3465*(b*e - 2*c*d)^6) -
(d*((64*c^7*e*(15*b*e*g - 27*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*
c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (71296*c^8*d^4*g + 3536*b^
3*c^5*e^4*f + 10800*b^4*c^4*e^4*g - 8064*c^8*d^3*e*f - 193344*b*c^7*d^3*e*g
 + 21312*b*c^7*d^2*e^2*f - 15696*b^2*c^6*d*e^3*f - 73712*b^3*c^5*d*e^3*g +
183072*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((5648*b^2*c^6*e^4*f + 16992*b^3*
c^5*e^4*g + 18944*c^8*d^2*e^2*f - 115200*c^8*d^3*e*g - 20672*b*c^7*d*e^3*f
+ 182272*b*c^7*d^2*e^2*g - 96304*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^
6) - (d*((16*c^6*(353*b^2*e^2*g + 1184*c^2*d^2*g + 60*b*c*e^2*f - 108*c^2*d
*e*f - 1292*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(15*b*e*g -
 27*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e -
2*c*d)^6)))/e))/e))/e - (144384*c^8*d^4*g + 6176*b^3*c^5*e^4*f + 14432*b^4*
c^4*e^4*g - 28672*c^8*d^3*e*f - 332032*b*c^7*d^3*e*g + 52480*b*c^7*d^2*e^2*
f - 31408*b^2*c^6*d*e^3*f - 104640*b^3*c^5*d*e^3*g + 281472*b^2*c^6*d^2*e^2
*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((d*((6288*b^2*c^6*e^4*f + 19440*b^3*c^5*e^4*g + 21248*c^8*
d^2*e^2*f - 132352*c^8*d^3*e*g - 23104*b*c^7*d*e^3*f + 209152*b*c^7*d^2*e^2
*g - 110352*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(393
*b^2*e^2*g + 1328*c^2*d^2*g + 64*b*c*e^2*f - 116*c^2*d*e*f - 1444*b*c*d*e*g
))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(16*b*e*g - 29*c*d*g + c*e*f))/(
10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e
 - (167168*c^8*d^4*g + 6960*b^3*c^5*e^4*f + 16688*b^4*c^4*e^4*g - 32512*c^8
*d^3*e*f - 384256*b*c^7*d^3*e*g + 59392*b*c^7*d^2*e^2*f - 35472*b^2*c^6*d*e
^3*f - 121024*b^3*c^5*d*e^3*g + 325632*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*(
(7056*b^2*c^6*e^4*f + 22656*b^3*c^5*e^4*g + 24064*c^8*d^2*e^2*f - 155136*c^
8*d^3*e*g - 26048*b*c^7*d*e^3*f + 244736*b*c^7*d^2*e^2*g - 128880*b^2*c^6*d
*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(441*b^2*e^2*g + 1504*c^2
*d^2*g + 68*b*c*e^2*f - 124*c^2*d*e*f - 1628*b*c*d*e*g))/(10395*(b*e - 2*c*
d)^6) - (d*((64*c^7*e*(17*b*e*g - 31*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6
) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (198144*c^8*d^4*g
+ 7936*b^3*c^5*e^4*f + 19744*b^4*c^4*e^4*g - 37376*c^8*d^3*e*f - 455168*b*c
^7*d^3*e*g + 68096*b*c^7*d^2*e^2*f - 40560*b^2*c^6*d*e^3*f - 143232*b^3*c^5
*d*e^3*g + 385536*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((7968*b^2*c^6*e^4*f +
 29952*b^3*c^5*e^4*g + 27584*c^8*d^2*e^2*f - 209920*c^8*d^3*e*g - 29632*b*c

^7*d*e^3*f + 328672*b*c^7*d^2*e^2*g - 171744*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(249*b^2*e^2*g + 862*c^2*d^2*g + 35*b*c*e^2*f - 64*c^2*d*e*f - 926*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(35*b*e*g - 64*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (178176*c^8*d^4*g + 6144*b^3*c^5*e^4*f + 23040*b^4*c^4*e^4*g - 19456*c^8*d^3*e*f - 451584*b*c^7*d^3*e*g + 42976*b*c^7*d^2*e^2*f - 28896*b^2*c^6*d*e^3*f - 160512*b^3*c^5*d*e^3*g + 410112*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((9696*b^2*c^6*e^4*f + 38976*b^3*c^5*e^4*g + 33984*c^8*d^2*e^2*f - 275456*c^8*d^3*e*g - 36288*b*c^7*d*e^3*f + 430176*b*c^7*d^2*e^2*g - 224160*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(101*b^2*e^2*g + 354*c^2*d^2*g + 13*b*c*e^2*f - 24*c^2*d*e*f - 378*b*c*d*e*g))/(3465*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(39*b*e*g - 72*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (143872*c^8*d^4*g + 5120*b^3*c^5*e^4*f + 25920*b^4*c^4*e^4*g - 4608*c^8*d^3*e*f - 423168*b*c^7*d^3*e*g + 23904*b*c^7*d^2*e^2*f - 21024*b^2*c^6*d*e^3*f - 173504*b^3*c^5*d*e^3*g + 418944*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((8768*b^2*c^6*e^4*f + 33920*b^3*c^5*e^4*g + 30528*c^8*d^2*e^2*f - 238592*c^8*d^3*e*g - 32704*b*c^7*d*e^3*f + 373152*b*c^7*d^2*e^2*g - 194752*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(274*b^2*e^2*g + 954*c^2*d^2*g + 37*b*c*e^2*f - 68*c^2*d*e*f - 1022*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (248576*c^8*d^4*g + 10144*b^3*c^5*e^4*f + 27424*b^4*c^4*e^4*g - 48384*c^8*d^3*e*f - 592256*b*c^7*d^3*e*g + 87840*b*c^7*d^2*e^2*f - 52096*b^2*c^6*d*e^3*f - 195616*b^3*c^5*d*e^3*g + 515520*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((10752*b^2*c^6*e^4*f + 45504*b^3*c^5*e^4*g + 37952*c^8*d^2*e^2*f - 323584*c^8*d^3*e*g - 40384*b*c^7*d*e^3*f + 504352*b*c^7*d^2*e^2*g - 262272*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(336*b^2*e^2*g + 1186*c^2*d^2*g + 41*b*c*e^2*f - 76*c^2*d*e*f - 1262*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (459776*c^8*d^4*g + 12864*b^3*c^5*e^4*f + 45056*b^4*c^4*e^4*g - 62464*c^8*d^3*e*f - 1050112*b*c^7*d^3*e*g + 112672*b*c^7*d^2*e^2*f - 66432*b^2*c^6*d*e^3*f - 327808*b^3*c^5*d*e^3*g + 885504*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*b^4*e^3*g - 16*b*c^3*d^3*g + 6*b^3*c*e^3*f + 14*b*c^3*d^2*e*f - 12*b^3*c*d*e^2*g - 18*b^2*c^2*d*e^2*f + 24*b^2*c^2*d^2*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (d*((18*b^2*c^2*e^3*f - 32*c^4*d^3*g + 10*b^3*c*e^3*g + 28*c^4*d^2*e*f - 44*b*c^3*d*e^2*f + 62*b*c^3*d^2*e*g - 42*b^2*c^2*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) + (d*((d*((2*c^3*e^2*(7*b*e*g - 8*c*d*g + 2*c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (18*b^2*c^2*e^3*g + 14*b*c^3*e^3*f - 16*c^4*d*e^2*f + 28*c^4*d^2*e*g - 44*b*c^3*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((1168*b^2*c^4*e^3*f - 15872*c^6*d^3*g + 2512*b^3*c^3*e^3*g + 3792*c^6*d^2*e*f - 4208*b*c^5*d*e^2*f + 25704*b*c^5*d^2*e*g - 13904*b^2*c^4*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(29*b*e*g - 52*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (1168*b^2*c^4*e^3*g + 232*b*c^5*e^3*f - 416*c^6*d*e^2*f + 3792*c^6*d^2*e*g - 4208*b*c^5*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (8*b*c^2*(124*b^3*e^3*g - 992*c^3*d^3*g + 66*b^2*c*e^3*f + 237*c^3*d^2*e*f - 250*b*c^2*d*e^2*f + 1488*b*c^2*d^2*e*g - 744*b^2*c*d*e^2*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((1992*b^2*c^5*e^3*f - 28928*c^7*d^3*g + 4512*b^3*c^4*e^3*g + 6400*c^7*d^2*e*f - 7136*b*c^6*d*e^2*f + 46592*b*c^6*d^2*e*g - 25080*b^2*c^5*d*e^2*g)/(3465*(3*b* e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(13*b*e*g - 23*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1992*b^2*c^5*e^3*g + 416*b*c^6*e^3*f - 736*c^7*d*e^2*f + 6400*c^7*d^2*e*g - 7136*b*c^6*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(226*b^3*e^3*g - 1808*c^3*d^3*g + 112*b^2*c*e^3*f + 400*c^3*d^2*e*f - 423*b*c^2*d*e^2*f + 2712*b*c^2*d^2*e*g - 1356*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((2248*b^2*c^5*e^3*f - 33664*c^7*d^3*g + 5224*b^3*c^4*e^3*g + 7296*c^7*d^2*e*f - 8096*b*c^6*d*e^2*f + 54144*b*c^6*d^2*e*g - 29096*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(14*b*e*g - 25*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2248*b^2*c^5*e^3*g + 448*b*c^6*e^3*f - 800*c^7*d*e^2*f + 7296*c^7*d^2*e*g - 8096*b*c^6*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(263*b^3*e^3*g - 2104*c^3*d^3*g + 127*b^2*c*e^3*f + 456*c^3*d^2*e*f - 481*b*c^2*d*e^2*f + 3156*b*c^2*d^2*e*g - 1578*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((8*c^4*e^2*(14*b*e*g - 25*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c^3*e*(66*b^2*e^2*g + 211*c^2*d^2*g + 14*b*c*e^2*f - 25*c^2*d*e*f - 236*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (528*b^2*c^3*e^4*f + 992*b^3*c^2*e^4*g + 1688*c^5*d^2*e^2*f - 6040*c^5*d^3*e*g - 1888*b*c^4*d*e^3*f + 9904*b*c^4*d^2*e^2*g - 5424*b^2*c^3*d*e^3*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(71*b^3*e^3*g - 568*c^3*d^3*g + 53*b^2*c*e^3*f + 187*c^3*d^2*e*f - 199*b*c^2*d*e^2*f + 852*b*c^2*d^2*e*g - 426*b^2*c*d*e^2*g))/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((d*((16*c^5*e^2*(8*b*e*g - 13*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(89*b^2*e^2*g + 240*c^2*d^2*g + 32*b*c*e^2*f - 52*c^2*d*e*f - 292*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (356*b^2*c^4*e^4*f + 476*b^3*c^3*e^4*g + 960*c^6*d^2*e^2*f - 2624*c^6*d^3*e*g - 1168*b*c^5*d*e^3*f + 4416*b*c^5*d^2*e^2*g - 2500*b^2*c^4*d*e^3*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (2432*c^6*d^4*g + 292*b^3*c^3*e^4*f + 244*b^4*c^2*e^4*g - 1152*c^6*d^3*e*f - 5600*b*c^5*d^3*e*g + 2208*b*c^5*d^2*e^2*f - 1396*b^2*c^4*d*e^3*f - 1768*b^3*c^3*d*e^3*g + 4752*b^2*c^4*d^2*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((16*c^6*e^2*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(29*b^2*e^2*g + 80*c^2*d^2*g + 10*b*c*e^2*f - 16*c^2*d*e*f - 96*b*c*d*e*g))/(1155*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (696*b^2*c^5*e^4*f + 1044*b^3*c^4*e^4*g + 1920*c^7*d^2*e^2*f - 6016*c^7*d^3*e*g - 2304*b*c^6*d*e^3*f + 9984*b*c^6*d^2*e^2*g - 5568*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (6048*c^7*d^4*g + 592*b^3*c^4*e^4*f + 604*b^4*c^3*e^4*g - 2400*c^7*d^3*e*f - 13904*b*c^6*d^3*e*g + 4560*b*c^6*d^2*e^2*f - 2856*b^2*c^5*d*e^3*f - 4380*b^3*c^4*d*e^3*g + 11784*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((8*c^5*e^2*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(112*b^2*e^2*g + 354*c^2*d^2*g + 25*b*c*e^2*f - 44*c^2*d*e*f - 398*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (896*b^2*c^4*e^4*f + 1808*b^3*c^3*e^4*g + 2832*c^6*d^2*e^2*f - 11264*c^6*d^3*e*g - 3184*b*c^5*d*e^3*f + 18312*b*c^5*d^2*e^2*g - 9952*b^2*c^4*d*e^3*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8000*c^6*d^4*g + 616*b^3*c^3*e^4*f + 1096*b^4*c^2*e^4*g - 1728*c^6*d^3*e*f - 20768*b*c^5*d^3*e*g + 4008*b*c^5*d^2*e^2*f - 2800*b^2*c^4*d*e^3*f - 7576*b^3*c^3*d*e^3*g + 19152*b^2*c^4*d^2*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d

)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*(
(d*((8*c^5*e^2*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
3)))/e - (8*c^4*e*(127*b^2*e^2*g + 406*c^2*d^2*g + 27*b*c*e^2*f - 48*c^2*d*
e*f - 454*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (101
6*b^2*c^4*e^4*f + 2104*b^3*c^3*e^4*g + 3248*c^6*d^2*e^2*f - 13184*c^6*d^3*e
*g - 3632*b*c^5*d*e^3*f + 21400*b*c^5*d^2*e^2*g - 11608*b^2*c^4*d*e^3*g)/(6
93*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (15104*c^6*d^4*g + 1128*b^
3*c^3*e^4*f + 1432*b^4*c^2*e^4*g - 5376*c^6*d^3*e*f - 34112*b*c^5*d^3*e*g +
 9688*b*c^5*d^2*e^2*f - 5752*b^2*c^4*d*e^3*f - 10480*b^3*c^3*d*e^3*g + 2851
2*b^2*c^4*d^2*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((32*c^6*e^
2*(11*b*e*g - 19*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
 - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5
e(185*b^2*e^2*g + 576*c^2*d^2*g + 44*b*c*e^2*f - 76*c^2*d*e*f - 652*b*c*d
*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (1480*b^2*c^5*e^4*f
 + 3088*b^3*c^4*e^4*g + 4608*c^7*d^2*e^2*f - 19456*c^7*d^3*e*g - 5216*b*c^6
*d*e^3*f + 31488*b*c^6*d^2*e^2*g - 17048*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (13120*c^7*d^4*g + 968*b^3*c^4*e^4*f + 18
80*b^4*c^3*e^4*g - 2496*c^7*d^3*e*f - 34720*b*c^6*d^3*e*g + 6048*b*c^6*d^2*
e^2*f - 4328*b^2*c^5*d*e^3*f - 12920*b^3*c^4*d*e^3*g + 32400*b^2*c^5*d^2*e^
2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((32*c^6*e^2*(12*b*e*g - 21
*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2
g)/(3465(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(71*b^2*e^2*g
 + 224*c^2*d^2*g + 16*b*c*e^2*f - 28*c^2*d*e*f - 252*b*c*d*e*g))/(1155*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (1704*b^2*c^5*e^4*f + 3672*b^3*c^4*e
^4*g + 5376*c^7*d^2*e^2*f - 23296*c^7*d^3*e*g - 6048*b*c^6*d*e^3*f + 37632*
b*c^6*d^2*e^2*g - 20328*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^4)))/e - (27648*c^7*d^4*g + 1816*b^3*c^4*e^4*f + 2656*b^4*c^3*e^4*g
 - 8448*c^7*d^3*e*f - 62720*b*c^6*d^3*e*g + 15360*b*c^6*d^2*e^2*f - 9192*b^
2*c^5*d*e^3*f - 19392*b^3*c^4*d*e^3*g + 52608*b^2*c^5*d^2*e^2*g)/(3465*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((d*((d*((32*c^6*e^2*(13*b*e*g - 23*c*d*g + c*e*f)
)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(241*b^2*e^2*g + 768*c^2*d^2
*g + 52*b*c*e^2*f - 92*c^2*d*e*f - 860*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^4)))/e + (1928*b^2*c^5*e^4*f + 4256*b^3*c^4*e^4*g + 6144*c^
7*d^2*e^2*f - 27136*c^7*d^3*e*g - 6880*b*c^6*d*e^3*f + 43776*b*c^6*d^2*e^2*
g - 23608*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e
 - (32448*c^7*d^4*g + 2088*b^3*c^4*e^4*f + 3112*b^4*c^3*e^4*g - 9792*c^7*d^
3*e*f - 73568*b*c^6*d^3*e*g + 17760*b*c^6*d^2*e^2*f - 10600*b^2*c^5*d*e^3*f
 - 22728*b^3*c^4*d*e^3*g + 61680*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x)^2 - (((d*((d*((d*((16*c^6*e^2*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(3465*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d
e)(b*e - 2*c*d)^4)))/e - (16*c^5*e*(208*b^2*e^2*g + 706*c^2*d^2*g + 33*b*
c*e^2*f - 60*c^2*d*e*f - 766*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4)))/e + (3328*b^2*c^5*e^4*f + 10304*b^3*c^4*e^4*g + 11296*c^7*d^2*e^
2*f - 70144*c^7*d^3*e*g - 12256*b*c^6*d*e^3*f + 110864*b*c^6*d^2*e^2*g - 58
496*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (40
576*c^7*d^4*g + 1584*b^3*c^4*e^4*f + 6896*b^4*c^3*e^4*g - 384*c^7*d^3*e*f -
 116032*b*c^6*d^3*e*g + 6224*b*c^6*d^2*e^2*f - 6176*b^2*c^5*d*e^3*f - 46448
*b^3*c^4*d*e^3*g + 113184*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 -
(((d*((d*((d*((16*c^6*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^4)))/e - (16*c^5*e*(187*b^2*e^2*g + 630*c^2*d^2*g + 31*b*c*e^2*f
 - 56*c^2*d*e*f - 686*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4

)))/e + (2992*b^2*c^5*e^4*f + 8992*b^3*c^4*e^4*g + 10080*c^7*d^2*e^2*f - 60928*c^7*d^3*e*g - 10976*b*c^6*d*e^3*f + 96432*b*c^6*d^2*e^2*g - 50960*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (54784*c^7*d^4*g + 2912*b^3*c^4*e^4*f + 6464*b^4*c^3*e^4*g - 12288*c^7*d^3*e*f - 133888*b*c^6*d^3*e*g + 23472*b*c^6*d^2*e^2*f - 14480*b^2*c^5*d*e^3*f - 45632*b^3*c^4*d*e^3*g + 118656*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((16*c^6*e^2*(35*b*e*g - 64*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(233*b^2*e^2*g + 798*c^2*d^2*g + 35*b*c*e^2*f - 64*c^2*d*e*f - 862*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (3728*b^2*c^5*e^4*f + 12032*b^3*c^4*e^4*g + 12768*c^7*d^2*e^2*f - 82432*c^7*d^3*e*g - 13792*b*c^6*d*e^3*f + 130032*b*c^6*d^2*e^2*g - 68464*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (120576*c^7*d^4*g + 4896*b^3*c^4*e^4*f + 11104*b^4*c^3*e^4*g - 25344*c^7*d^3*e*f - 269696*b*c^6*d^3*e*g + 44400*b*c^6*d^2*e^2*f - 25648*b^2*c^5*d*e^3*f - 81696*b^3*c^4*d*e^3*g + 223680*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((13952*b^2*c^6*e^4*f + 70784*b^3*c^5*e^4*g + 50112*c^8*d^2*e^2*f - 513344*c^8*d^3*e*g - 52864*b*c^7*d*e^3*f + 795072*b*c^7*d^2*e^2*g - 410752*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((64*c^6*(218*b^2*e^2*g + 783*c^2*d^2*g + 23*b*c*e^2*f - 43*c^2*d*e*f - 826*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(23*b*e*g - 43*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (64*c^4*(b*e - c*d)*(910*b^3*e^3*g - 7280*c^3*d^3*g + 196*b^2*c*e^3*f + 741*c^3*d^2*e*f - 762*b*c^2*d*e^2*f + 10920*b*c^2*d^2*e*g - 5460*b^2*c*d*e^2*g))/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((d*((4*c^3*e^2*(9*b*e*g - 15*c*d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (12*c^2*e*(7*b^2*e^2*g + 17*c^2*d^2*g + 3*b*c*e^2*f - 5*c^2*d*e*f - 22*b*c*d*e*g))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e + (84*b^2*c^2*e^4*f + 204*c^4*d^2*e^2*f + 76*b^3*c*e^4*g - 340*c^4*d^3*e*g - 264*b*c^3*d*e^3*f + 612*b*c^3*d^2*e^2*g - 372*b^2*c^2*d*e^3*g)/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*d)*(6*b^3*e^3*g - 48*c^3*d^3*g + 13*b^2*c*e^3*f + 37*c^3*d^2*e*f - 44*b*c^2*d*e^2*f + 72*b*c^2*d^2*e*g - 36*b^2*c*d*e^2*g))/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((132*b^2*c^4*e^3*f - 608*c^6*d^3*g + 126*b^3*c^3*e^3*g + 288*c^6*d^2*e*f - 384*b*c^5*d*e^2*f + 1056*b*c^5*d^2*e*g - 624*b^2*c^4*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(9*b*e*g - 12*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(11*b^2*e^2*g + 24*c^2*d^2*g + 6*b*c*e^2*f - 8*c^2*d*e*f - 32*b*c*d*e*g))/(231*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (50*b^3*c^3*e^3*f + 38*b^4*c^2*e^3*g - 304*b*c^5*d^3*g + 144*b*c^5*d^2*e*f - 168*b^2*c^4*d*e^2*f + 456*b^2*c^4*d^2*e*g - 228*b^3*c^3*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((420*b^2*c^4*e^3*f - 3200*c^6*d^3*g + 576*b^3*c^3*e^3*g + 1152*c^6*d^2*e*f - 1392*b*c^5*d*e^2*f + 5376*b*c^5*d^2*e*g - 3036*b^2*c^4*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(9*b*e*g - 15*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(35*b^2*e^2*g + 96*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 116*b*c*d*e*g))/(231*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (176*b^3*c^3*e^3*f + 200*b^4*c^2*e^3*g - 1600*b*c^5*d^3*g + 576*b*c^5*d^2*e*f - 636*b^2*c^4*d*e^2*f + 2400*b^2*c^4*d^2*e*g - 1200*b^3*c^3*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((336*b^2*c^5*e^3*f - 2016*c^7*d^3*g + 384*b^3*c^4*e^3*g + 800*c^7*d^2*e*f - 1024*b*c^6*d*e^2*f + 3424*b*c^6*d^2*e*g - 1968*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(5*b*e*g -

7*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(21*b^2*e^2*g + 50*c^2*d^2*g + 10*b*c*e^2*f - 14*c^2*d*e*f - 64*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (132*b^3*c^4*e^3*f + 126*b^4*c^3*e^3*g - 1008*b*c^6*d^3*g + 400*b*c^6*d^2*e*f - 456*b^2*c^5*d*e^2*f + 1512*b^2*c^5*d^2*e*g - 756*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((840*b^2*c^5*e^3*f - 7616*c^7*d^3*g + 1308*b^3*c^4*e^3*g + 2368*c^7*d^2*e*f - 2816*b*c^6*d*e^2*f + 12608*b*c^6*d^2*e*g - 7008*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(17*b*e*g - 28*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(105*b^2*e^2*g + 296*c^2*d^2*g + 34*b*c*e^2*f - 56*c^2*d*e*f - 352*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (356*b^3*c^4*e^3*f + 476*b^4*c^3*e^3*g - 3808*b*c^6*d^3*g + 1184*b*c^6*d^2*e*f - 1296*b^2*c^5*d*e^2*f + 5712*b^2*c^5*d^2*e*g - 2856*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((984*b^2*c^5*e^3*f - 9216*c^7*d^3*g + 1572*b^3*c^4*e^3*g + 2816*c^7*d^2*e*f - 3328*b*c^6*d*e^2*f + 15232*b*c^6*d^2*e*g - 8448*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(19*b*e*g - 32*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(123*b^2*e^2*g + 352*c^2*d^2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 416*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (420*b^3*c^4*e^3*f + 576*b^4*c^3*e^3*g - 4608*b*c^6*d^3*g + 1408*b*c^6*d^2*e*f - 1536*b^2*c^5*d*e^2*f + 6912*b^2*c^5*d^2*e*g - 3456*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((1128*b^2*c^5*e^3*f - 10816*c^7*d^3*g + 1836*b^3*c^4*e^3*g + 3264*c^7*d^2*e*f - 3840*b*c^6*d*e^2*f + 17856*b*c^6*d^2*e*g - 9888*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(47*b^2*e^2*g + 136*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 160*b*c*d*e*g))/(1155*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (484*b^3*c^4*e^3*f + 676*b^4*c^3*e^3*g - 5408*b*c^6*d^3*g + 1632*b*c^6*d^2*e*f - 1776*b^2*c^5*d*e^2*f + 8112*b^2*c^5*d^2*e*g - 4056*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((2*f*(b*e - c*d)^3)/(11*b*e^2 - 22*c*d*e) - (d*((2*(b*e - c*d)^2*(b*e*g - c*d*g + 3*c*e*f))/(11*b*e^2 - 22*c*d*e) + (d*((d*((2*c^2*e^2*(3*b*e*g - 3*c*d*g + c*e*f))/(11*b*e^2 - 22*c*d*e) - (2*c^3*d*e^2*g)/(11*b*e^2 - 22*c*d*e)))/e - (6*c*e*(b*e - c*d)*(b*e*g - c*d*g + c*e*f))/(11*b*e^2 - 22*c*d*e)))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 + (((d*((d*((d*((16*c^5*e^2*(18*b*e*g - 33*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^4*e*(122*b^2*e^2*g + 419*c^2*d^2*g + 18*b*c*e^2*f - 33*c^2*d*e*f - 452*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (1952*b^2*c^4*e^4*f + 6208*b^3*c^3*e^4*g + 6704*c^6*d^2*e^2*f - 42416*c^6*d^3*e*g - 7232*b*c^5*d*e^3*f + 66976*b*c^5*d^2*e^2*g - 35296*b^2*c^4*d*e^3*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(283*b^3*e^3*g - 2264*c^3*d^3*g + 105*b^2*c*e^3*f + 387*c^3*d^2*e*f - 403*b*c^2*d*e^2*f + 3396*b*c^2*d^2*e*g - 1698*b^2*c*d*e^2*g))/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((32*c^6*e^2*(21*b*e*g - 39*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^5*e*(176*b^2*e^2*g + 623*c^2*d^2*g + 21*b*c*e^2*f - 39*c^2*d*e*f - 662*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (5632*b^2*c^5*e^4*f + 24128*b^3*c^4*e^4*g + 19936*c^7*d^2*e^2*f - 171808*c^7*d^3*e*g - 21184*b*c^6*d*e^3*f + 267680*b*c^6*d^2*e^2*g - 139136*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*

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c^3*(b*e - c*d)*(598*b^3*e^3*g - 4784*c^3*d^3*g + 156*b^2*c*e^3*f + 585*c^3
*d^2*e*f - 604*b*c^2*d*e^2*f + 7176*b*c^2*d^2*e*g - 3588*b^2*c*d*e^2*g))/(3
465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^2 + (((d*((50*b^2*c^3*e^3*f - 160*c^5*d^3*g + 38*b^
3*c^2*e^3*g + 96*c^5*d^2*e*f - 136*b*c^4*d*e^2*f + 288*b*c^4*d^2*e*g - 178*
b^2*c^3*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((8*c^4
*e^2*(4*b*e*g - 5*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)
 - (8*c^5*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (50*b^2*
c^3*e^3*g + 32*b*c^4*e^3*f - 40*c^5*d*e^2*f + 96*c^5*d^2*e*g - 136*b*c^4*d*
e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (18*b^3*c^2*e^3*
f - 80*b*c^4*d^3*g + 10*b^4*c*e^3*g + 48*b*c^4*d^2*e*f - 58*b^2*c^3*d*e^2*f
 + 120*b^2*c^3*d^2*e*g - 60*b^3*c^2*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e
- 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((
d*((204*b^2*c^3*e^3*f - 1216*c^5*d^3*g + 236*b^3*c^2*e^3*g + 536*c^5*d^2*e*
f - 664*b*c^4*d*e^2*f + 2092*b*c^4*d^2*e*g - 1212*b^2*c^3*d*e^2*g)/(99*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((4*c^4*e^2*(19*b*e*g - 32*c*d*g
 + 2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(9
9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (204*b^2*c^3*e^3*g + 76*b*c^4
*e^3*f - 128*c^5*d*e^2*f + 536*c^5*d^2*e*g - 664*b*c^4*d*e^2*g)/(99*(7*b*e^
2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (84*b^3*c^2*e^3*f - 608*b*c^4*d^3*
g + 76*b^4*c*e^3*g + 268*b*c^4*d^2*e*f - 300*b^2*c^3*d*e^2*f + 912*b^2*c^3*
d^2*e*g - 456*b^3*c^2*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((2568*b^2*c
^5*e^3*f - 40192*c^7*d^3*g + 6192*b^3*c^4*e^3*g + 8448*c^7*d^2*e*f - 9312*b
*c^6*d*e^2*f + 64512*b*c^6*d^2*e*g - 34584*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(15*b*e*g - 27*c*d*g + c*
e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(107*b^2*e^2*g + 352*c^2
*d^2*g + 20*b*c*e^2*f - 36*c^2*d*e*f - 388*b*c*d*e*g))/(1155*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(314*b^3*e^3*g - 2512*c^3*d^3*g +
 146*b^2*c*e^3*f + 528*c^3*d^2*e*f - 555*b*c^2*d*e^2*f + 3768*b*c^2*d^2*e*g
 - 1884*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((4192*b^2*c^5*e^3
*f - 99328*c^7*d^3*g + 14368*b^3*c^4*e^3*g + 14496*c^7*d^2*e*f - 15584*b*c^
6*d*e^2*f + 156240*b*c^6*d^2*e*g - 82016*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(37*b*e*g - 68*c*d*g + 2*c*
e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(262*b^2*e^2*g + 906*c^
2*d^2*g + 37*b*c*e^2*f - 68*c^2*d*e*f - 974*b*c*d*e*g))/(3465*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (16*b*c^3*(388*b^3*e^3*g - 3104*c^3*d^3*g
 + 122*b^2*c*e^3*f + 453*c^3*d^2*e*f - 470*b*c^2*d*e^2*f + 4656*b*c^2*d^2*e
*g - 2328*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**9,x)
[Out] Timed out
```

3.1977 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg+6cef)}{9009e^2(d+ex)^7(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20c}{1287e^2(d+ex)^8(2cd-be)^3}$$

Rubi [A] time = 0.44, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg+6cef)}{9009e^2(d+ex)^7(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg+6cef)}{1287e^2(d+ex)^8(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg+6cef)}{143e^2(d+ex)^9(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(d+ex)^{10}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(13*e^2*(2*c*d
 - b*e)*(d + e*x)^10) - (2*(6*c*e*f + 20*c*d*g - 13*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(7/2))/(143*e^2*(2*c*d - b*e)^2*(d + e*x)^9) - (8*c*(
6*c*e*f + 20*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))
/(1287*e^2*(2*c*d - b*e)^3*(d + e*x)^8) - (16*c^2*(6*c*e*f + 20*c*d*g - 13*
b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(9009*e^2*(2*c*d - b*e)
^4*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} + \frac{(6cef+20cdg-13be}{13e}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} - \frac{2(6cef+20cdg-13b}{143e^2(}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} - \frac{2(6cef+20cdg-13b}{143e^2(}$$
$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} - \frac{2(6cef+20cdg-13b}{143e^2(}$$

Mathematica [A] time = 0.22, size = 250, normalized size = 0.88

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(-63b^3e^3(2dg+11ef+13egx)+14b^2ce^2\left(53d^2g+4de(81f+94gx)+e^2x(27f+26gx)\right)-4bc^2e\left(348d^3g+d^2e(2499f+2801gx)+2de^2x(231f+200gx)+2e^3x^2(21f+13gx)\right)+8c^3\left(97d^4g+10d^3e(93f+97gx)+d^2e^2x(291f+200gx)+20de^3x^2(3f+gx)+6e^4fx^3\right)\right)}{9009e^2(d+ex)^7(be-2cd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^10,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-63*b^3
*e^3*(11*e*f + 2*d*g + 13*e*g*x) + 14*b^2*c*e^2*(53*d^2*g + e^2*x*(27*f + 2
6*g*x) + 4*d*e*(81*f + 94*g*x)) + 8*c^3*(97*d^4*g + 6*e^4*f*x^3 + 20*d*e^3*
x^2*(3*f + g*x) + 10*d^3*e*(93*f + 97*g*x) + d^2*e^2*x*(291*f + 200*g*x)) -
 4*b*c^2*e*(348*d^3*g + 2*e^3*x^2*(21*f + 13*g*x) + 2*d*e^2*x*(231*f + 200*
g*x) + d^2*e*(2499*f + 2801*g*x))))/(9009*e^2*(-2*c*d + b*e)^4*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 180.21, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^10,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x, algo
rithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x, algo
rithm="giac")
```

[Out] Timed out

maple [A] time = 0.11, size = 382, normalized size = 1.34

$$-\frac{2 \left(c e x+b e-c d\right) \left(104 b \,c^{2} e^{4} g \,x^{3}-160 c^{3} d \,e^{3} g \,x^{3}-48 c^{3} e^{4} f \,x^{3}-364 b^{2} c \,e^{4} g \,x^{2}+1600 b \,c^{2} d \,e^{3} g \,x^{2}+168 b \,c^{2} e^{4} f \,x^{2}-1600 c^{3} d^{2} e^{2} g \,x^{2}-480 c^{3} d \,e^{3} f \,x^{2}+819 b^{3} e^{4} g x-5264 b^{2} c d \,e^{3} g x-378 b^{2} c \,e^{4} f x+11204 b \,c^{2} d^{2} e^{2} g x+1848 b \,c^{2} d \,e^{3} f x-7760 c^{3} d^{3} e g x-2328 c^{3} d^{2} e^{2} f x+126 b^{3} d \,e^{3} g+693 b^{3} e^{4} f-742 b^{2} c \,d^{2} e^{2} g-4536 b^{2} c d \,e^{3} f+1392 b \,c^{2} d^{3} e g+9996 b \,c^{2} d^{2} e^{2} f-776 c^{3} d^{4} g-7440 c^{3} d^{3} e f \right) \left(-c \,e^{2} x^{2}-b \,e^{2} x -b d e +c \,d^{2}\right)^{\frac{5}{2}}}{9009 \left(e x +d \right)^{9} \left(b^{4} e^{4}-8 b^{3} c d \,e^{3}+24 b^{2} c^{2} d^{2} e^{2}-32 b \,c^{3} d^{3} e +16 c^{4} d^{4}\right) e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x)
```

```
[Out] -2/9009*(c*e*x+b*e-c*d)*(104*b*c^2*e^4*g*x^3-160*c^3*d*e^3*g*x^3-48*c^3*e^4
*f*x^3-364*b^2*c*e^4*g*x^2+1600*b*c^2*d*e^3*g*x^2+168*b*c^2*e^4*f*x^2-1600*
c^3*d^2*e^2*g*x^2-480*c^3*d*e^3*f*x^2+819*b^3*e^4*g*x-5264*b^2*c*d*e^3*g*x-
378*b^2*c*e^4*f*x+11204*b*c^2*d^2*e^2*g*x+1848*b*c^2*d*e^3*f*x-7760*c^3*d^3
*e*g*x-2328*c^3*d^2*e^2*f*x+126*b^3*d*e^3*g+693*b^3*e^4*f-742*b^2*c*d^2*e^2
*g-4536*b^2*c*d*e^3*f+1392*b*c^2*d^3*e*g+9996*b*c^2*d^2*e^2*f-776*c^3*d^4*g
-7440*c^3*d^3*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9/e^2/(b^
4*e^4-8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x, algo
rithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 105.18, size = 51074, normalized size = 179.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^10,x)
```

```
[Out] (((d*((2016*b^2*c^7*e^3*f - 17664*c^9*d^3*g + 3040*b^3*c^6*e^3*g + 5376*c^9
*d^2*e*f - 6528*b*c^8*d*e^2*f + 29184*b*c^8*d^2*e*g - 16224*b^2*c^7*d*e^2*g
)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(21*b^2*e^2*g + 56*c^2*d^2*g + 8
*b*c*e^2*f - 12*c^2*d*e*f - 68*b*c*d*e*g))/(45045*(b*e - 2*c*d)^7) - (d*((1
28*c^8*e*(6*b*e*g - 9*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d
*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(69*b^3*e^3*g - 552*
c^3*d^3*g + 52*b^2*c*e^3*f + 168*c^3*d^2*e*f - 186*b*c^2*d*e^2*f + 828*b*c^
2*d^2*e*g - 414*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((d*((4*c^4*e^2*(19*b*e*
g - 32*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^
5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*c^3*e*(51*b^
2*e^2*g + 134*c^2*d^2*g + 19*b*c*e^2*f - 32*c^2*d*e*f - 166*b*c*d*e*g))/(14
3*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e + (204*b^2*c^3*e^4*f + 236*b^3*
c^2*e^4*g + 536*c^5*d^2*e^2*f - 1216*c^5*d^3*e*g - 664*b*c^4*d*e^3*f + 2092
*b*c^4*d^2*e^2*g - 1212*b^2*c^3*d*e^3*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e -
 2*c*d)^2)))/e - (960*c^5*d^4*g + 156*b^3*c^2*e^4*f + 100*b^4*c*e^4*g - 576
*c^5*d^3*e*f - 2240*b*c^4*d^3*e*g + 1132*b*c^4*d^2*e^2*f - 732*b^2*c^3*d*e^
3*f - 720*b^3*c^2*d*e^3*g + 1920*b^2*c^3*d^2*e^2*g)/(143*e*(9*b*e^2 - 18*c*
d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x)^5 - (((d*((3776*b^2*c^7*e^3*f - 44544*c^9*d^3*g + 7200*b^3*c^6*e^3*g + 1
1136*c^9*d^2*e*f - 12928*b*c^8*d*e^2*f + 72384*b*c^8*d^2*e*g - 39424*b^2*c^
7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(59*b^2*e^2*g + 174*c^2
```

*d^2*g + 17*b*c*e^2*f - 28*c^2*d*e*f - 202*b*c*d*e*g))/(135135*(b*e - 2*c*d
)^7) - (d*((64*c^8*e*(17*b*e*g - 28*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)
^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(87*
b^3*e^3*g - 696*c^3*d^3*g + 51*b^2*c*e^3*f + 174*c^3*d^2*e*f - 188*b*c^2*d*
e^2*f + 1044*b*c^2*d^2*e*g - 522*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((5184*b^2*
c^7*e^3*f - 66048*c^9*d^3*g + 10528*b^3*c^6*e^3*g + 15744*c^9*d^2*e*f - 180
48*b*c^8*d*e^2*f + 106944*b*c^8*d^2*e*g - 57984*b^2*c^7*d*e^2*g)/(135135*e*
(b*e - 2*c*d)^7) - (d*((64*c^7*(27*b^2*e^2*g + 82*c^2*d^2*g + 7*b*c*e^2*f -
12*c^2*d*e*f - 94*b*c*d*e*g))/(45045*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(21*
b*e*g - 36*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(13
5135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(129*b^3*e^3*g - 1032*c^3*d^3
*g + 71*b^2*c*e^3*f + 246*c^3*d^2*e*f - 264*b*c^2*d*e^2*f + 1548*b*c^2*d^2*
e*g - 774*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4480*b^2*c^7*e^3*f - 55296*c^9*d
^3*g + 8864*b^3*c^6*e^3*g + 13440*c^9*d^2*e*f - 15488*b*c^8*d*e^2*f + 89664
*b*c^8*d^2*e*g - 48704*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((6
4*c^7*(70*b^2*e^2*g + 210*c^2*d^2*g + 19*b*c*e^2*f - 32*c^2*d*e*f - 242*b*c
*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(19*b*e*g - 32*c*d*g + 2*
c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)
))/e))/e))/e - (32*b*c^5*(108*b^3*e^3*g - 864*c^3*d^3*g + 61*b^2*c*e^3*f +
210*c^3*d^2*e*f - 226*b*c^2*d*e^2*f + 1296*b*c^2*d^2*e*g - 648*b^2*c*d*e^2*
g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((d*((5888*b^2*c^7*e^3*f - 76800*c^9*d^3*g + 12192*b^3*c^6*e
^3*g + 18048*c^9*d^2*e*f - 20608*b*c^8*d*e^2*f + 124224*b*c^8*d^2*e*g - 672
64*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(92*b^2*e^2*g
+ 282*c^2*d^2*g + 23*b*c*e^2*f - 40*c^2*d*e*f - 322*b*c*d*e*g))/(135135*(b*
e - 2*c*d)^7) - (d*((64*c^8*e*(23*b*e*g - 40*c*d*g + 2*c*e*f))/(135135*(b*e
- 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b
c^5(150*b^3*e^3*g - 1200*c^3*d^3*g + 81*b^2*c*e^3*f + 282*c^3*d^2*e*f - 3
02*b*c^2*d*e^2*f + 1800*b*c^2*d^2*e*g - 900*b^2*c*d*e^2*g))/(135135*e*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((6592*b^2*c^7*e^3*f - 87552*c^9*d^3*g + 13856*b^3*c^6*e^3*g + 20352*c^9*d^
2*e*f - 23168*b*c^8*d*e^2*f + 141504*b*c^8*d^2*e*g - 76544*b^2*c^7*d*e^2*g)
/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(103*b^2*e^2*g + 318*c^2*d^2*g +
25*b*c*e^2*f - 44*c^2*d*e*f - 362*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d
*((64*c^8*e*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (12
8*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(171*b^3*e^3*
g - 1368*c^3*d^3*g + 91*b^2*c*e^3*f + 318*c^3*d^2*e*f - 340*b*c^2*d*e^2*f +
2052*b*c^2*d^2*e*g - 1026*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((7360*b^2*c^7*e^
3*f - 122496*c^9*d^3*g + 18624*b^3*c^6*e^3*g + 23680*c^9*d^2*e*f - 26368*b*
c^8*d*e^2*f + 195584*b*c^8*d^2*e*g - 104384*b^2*c^7*d*e^2*g)/(135135*e*(b*e
- 2*c*d)^7) - (d*((64*c^7*(115*b^2*e^2*g + 370*c^2*d^2*g + 24*b*c*e^2*f -
42*c^2*d*e*f - 412*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(1
2*b*e*g - 21*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(13
5135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(957*b^3*e^3*g - 7656*c^3*d^3*
g + 414*b^2*c*e^3*f + 1480*c^3*d^2*e*f - 1564*b*c^2*d*e^2*f + 11484*b*c^2*d
^2*e*g - 5742*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8384*b^2*c^7*e^3*f - 144768*
c^9*d^3*g + 21888*b^3*c^6*e^3*g + 27264*c^9*d^2*e*f - 30208*b*c^8*d*e^2*f +
230784*b*c^8*d^2*e*g - 122944*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7)
- (d*((64*c^7*(131*b^2*e^2*g + 426*c^2*d^2*g + 26*b*c*e^2*f - 46*c^2*d*e*f
- 472*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(13*b*e*g - 23*
c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2
*c*d)^7)))/e))/e))/e - (8*b*c^5*(1131*b^3*e^3*g - 9048*c^3*d^3*g + 474*b^2*
c*e^3*f + 1704*c^3*d^2*e*f - 1796*b*c^2*d*e^2*f + 13572*b*c^2*d^2*e*g - 678
6*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x) + (((d*((9408*b^2*c^7*e^3*f - 167040*c^9*d^3*g +

25152*b^3*c^6*e^3*g + 30848*c^9*d^2*e*f - 34048*b*c^8*d*e^2*f + 265984*b*c^8*d^2*e*g - 141504*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(147*b^2*e^2*g + 482*c^2*d^2*g + 28*b*c*e^2*f - 50*c^2*d*e*f - 532*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(14*b*e*g - 25*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1305*b^3*e^3*g - 10440*c^3*d^3*g + 534*b^2*c*e^3*f + 1928*c^3*d^2*e*f - 2028*b*c^2*d*e^2*f + 15660*b*c^2*d^2*e*g - 7830*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((9664*b^2*c^7*e^3*f - 176256*c^9*d^3*g + 26432*b^3*c^6*e^3*g + 31872*c^9*d^2*e*f - 35072*b*c^8*d*e^2*f + 280320*b*c^8*d^2*e*g - 148928*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(151*b^2*e^2*g + 498*c^2*d^2*g + 28*b*c*e^2*f - 50*c^2*d*e*f - 548*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(14*b*e*g - 25*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1377*b^3*e^3*g - 11016*c^3*d^3*g + 550*b^2*c*e^3*f + 1992*c^3*d^2*e*f - 2092*b*c^2*d*e^2*f + 16524*b*c^2*d^2*e*g - 8262*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((10432*b^2*c^7*e^3*f - 189312*c^9*d^3*g + 28416*b^3*c^6*e^3*g + 34432*c^9*d^2*e*f - 37888*b*c^8*d*e^2*f + 301184*b*c^8*d^2*e*g - 160064*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(163*b^2*e^2*g + 538*c^2*d^2*g + 30*b*c*e^2*f - 54*c^2*d*e*f - 592*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(15*b*e*g - 27*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1479*b^3*e^3*g - 11832*c^3*d^3*g + 594*b^2*c*e^3*f + 2152*c^3*d^2*e*f - 2260*b*c^2*d*e^2*f + 17748*b*c^2*d^2*e*g - 8874*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((10816*b^2*c^7*e^3*f - 203136*c^9*d^3*g + 30336*b^3*c^6*e^3*g + 35968*c^9*d^2*e*f - 39424*b*c^8*d*e^2*f + 322688*b*c^8*d^2*e*g - 171200*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(169*b^2*e^2*g + 562*c^2*d^2*g + 30*b*c*e^2*f - 54*c^2*d*e*f - 616*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(15*b*e*g - 27*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1587*b^3*e^3*g - 12696*c^3*d^3*g + 618*b^2*c*e^3*f + 2248*c^3*d^2*e*f - 2356*b*c^2*d*e^2*f + 19044*b*c^2*d^2*e*g - 9522*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((11968*b^2*c^7*e^3*f - 230016*c^9*d^3*g + 34240*b^3*c^6*e^3*g + 40064*c^9*d^2*e*f - 43776*b*c^8*d*e^2*f + 365056*b*c^8*d^2*e*g - 193472*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(187*b^2*e^2*g + 626*c^2*d^2*g + 32*b*c*e^2*f - 58*c^2*d*e*f - 684*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(16*b*e*g - 29*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1797*b^3*e^3*g - 14376*c^3*d^3*g + 686*b^2*c*e^3*f + 2504*c^3*d^2*e*f - 2620*b*c^2*d*e^2*f + 21564*b*c^2*d^2*e*g - 10782*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((12224*b^2*c^7*e^3*f - 239232*c^9*d^3*g + 35520*b^3*c^6*e^3*g + 41088*c^9*d^2*e*f - 44800*b*c^8*d*e^2*f + 379392*b*c^8*d^2*e*g - 200896*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(191*b^2*e^2*g + 642*c^2*d^2*g + 32*b*c*e^2*f - 58*c^2*d*e*f - 700*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(16*b*e*g - 29*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1869*b^3*e^3*g - 14952*c^3*d^3*g + 702*b^2*c*e^3*f + 2568*c^3*d^2*e*f - 2684*b*c^2*d*e^2*f + 22428*b*c^2*d^2*e*g - 11214*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((13504*b^2*c^7*e^3*f - 270720*c^9*d^3*g + 40064*b^3*c^6*e^3*g + 45696*c^9*d^2*e*f - 49664*b*c^8*d*e^2*f + 428928*b*c^8*d^2*e*g - 226880*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(211*b^2*e^2*g + 714*c^2*d^2*g + 34*b*c*e^2*f - 62*c^2*d*e*f - 776*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(17*b*e*g - 31*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(2115*b^3*e^3*g - 16920*c^3*d^3*g + 778 *b^2*c*e^3*f + 2856*c^3*d^2*e*f - 2980*b*c^2*d*e^2*f + 25380*b*c^2*d^2*e*g - 12690*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((15040*b^2*c^7*e^3*f - 311424*c^9*d^3*g + 45888*b^3*c^6*e^3*g + 51328*c^9*d^2*e*f - 55552*b*c^8*d*e^2*f + 492800*b*c^8*d^2*e*g - 260288*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(235*b^2*e^2*g + 802*c^2*d^2*g + 36*b*c*e^2*f - 66*c^2*d*e*f - 868*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(18*b*e*g - 33*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(2433*b^3*e^3*g - 19464*c^3*d^3*g + 870*b^2*c*e^3*f + 3208*c^3*d^2*e*f - 3340*b*c^2*d*e^2*f + 29196*b*c^2*d^2*e*g - 14598*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((13984*b^2*c^7*e^3*f - 335616*c^9*d^3*g + 48432*b^3*c^6*e^3*g + 47872*c^9*d^2*e*f - 51712*b*c^8*d*e^2*f + 527360*b*c^8*d^2*e*g - 276608*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(437*b^2*e^2*g + 1496*c^2*d^2*g + 66*b*c*e^2*f - 120*c^2*d*e*f - 1616*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(1311*b^3*e^3*g - 10488*c^3*d^3*g + 405*b^2*c*e^3*f + 1496*c^3*d^2*e*f - 1556*b*c^2*d*e^2*f + 15732*b*c^2*d^2*e*g - 7866*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((15456*b^2*c^7*e^3*f - 382976*c^9*d^3*g + 55056*b^3*c^6*e^3*g + 53248*c^9*d^2*e*f - 57344*b*c^8*d*e^2*f + 601088*b*c^8*d^2*e*g - 314880*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(483*b^2*e^2*g + 1664*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1792*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(35*b*e*g - 64*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(1496*b^3*e^3*g - 11968*c^3*d^3*g + 449*b^2*c*e^3*f + 1664*c^3*d^2*e*f - 1728*b*c^2*d*e^2*f + 17952*b*c^2*d^2*e*g - 8976*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((16928*b^2*c^7*e^3*f - 430336*c^9*d^3*g + 61680*b^3*c^6*e^3*g + 58624*c^9*d^2*e*f - 62976*b*c^8*d*e^2*f + 674816*b*c^8*d^2*e*g - 353152*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(529*b^2*e^2*g + 1832*c^2*d^2*g + 74*b*c*e^2*f - 136*c^2*d*e*f - 1968*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(1681*b^3*e^3*g - 13448*c^3*d^3*g + 493*b^2*c*e^3*f + 1832*c^3*d^2*e*f - 1900*b*c^2*d*e^2*f + 20172*b*c^2*d^2*e*g - 10086*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((17184*b^2*c^7*e^3*f - 444672*c^9*d^3*g + 63600*b^3*c^6*e^3*g + 59648*c^9*d^2*e*f - 64000*b*c^8*d*e^2*f + 696832*b*c^8*d^2*e*g - 364416*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(537*b^2*e^2*g + 1864*c^2*d^2*g + 74*b*c*e^2*f - 136*c^2*d*e*f - 2000*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(1737*b^3*e^3*g - 13896*c^3*d^3*g + 501*b^2*c*e^3*f + 1864*c^3*d^2*e*f - 1932*b*c^2*d*e^2*f + 20844*b*c^2*d^2*e*g - 10422*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((18784*b^2*c^7*e^3*f - 499200*c^9*d^3*g + 71184*b^3*c^6*e^3*g + 65536*c^9*d^2*e*f - 70144*b*c^8*d*e^2*f + 781568*b*c^8*d^2*e*g - 408320*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(587*b^2*e^2*g + 2048*c^2*d^2*g + 78*b*c*e^2*f - 144*c^2*d*e*f - 2192*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(39*b*e*g - 72*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(1950*b^3*e^3*g - 15600*c^3*d^3*g + 549*b^2*c*e^3*f + 2048*c^3*d^2*e*f - 2120*b*c^2*d*e^2*f + 23400*b*c^2*d^2*e*g - 11700*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((19168*b^2*c^7*e^3*f - 526848*c^9*d^3*g + 74832*b^3*c^6*e^3*g + 67072*c^9*d^2*e*f - 71680*b*c^8*d*e^2*f + 823808*b*c^8*d^2*e*g - 429824*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(599*b^2*e^2*g + 2096*

c^2*d^2*g + 78*b*c*e^2*f - 144*c^2*d*e*f - 2240*b*c*d*e*g))/(135135*(b*e -
2*c*d)^7) - (d*((64*c^8*e*(39*b*e*g - 72*c*d*g + 2*c*e*f))/(135135*(b*e - 2
*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5
*(2058*b^3*e^3*g - 16464*c^3*d^3*g + 561*b^2*c*e^3*f + 2096*c^3*d^2*e*f - 2
168*b*c^2*d*e^2*f + 24696*b*c^2*d^2*e*g - 12348*b^2*c*d*e^2*g))/(135135*e*(
b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (
((d*((20640*b^2*c^7*e^3*f - 568064*c^9*d^3*g + 80688*b^3*c^6*e^3*g + 72448*
c^9*d^2*e*f - 77312*b*c^8*d*e^2*f + 888320*b*c^8*d^2*e*g - 463488*b^2*c^7*d
*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(645*b^2*e^2*g + 2264*c^2*
d^2*g + 82*b*c*e^2*f - 152*c^2*d*e*f - 2416*b*c*d*e*g))/(135135*(b*e - 2*c*
d)^7) - (d*((64*c^8*e*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d
)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(22
19*b^3*e^3*g - 17752*c^3*d^3*g + 605*b^2*c*e^3*f + 2264*c^3*d^2*e*f - 2340*
b*c^2*d*e^2*f + 26628*b*c^2*d^2*e*g - 13314*b^2*c*d*e^2*g))/(135135*e*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((20896*b^2*c^7*e^3*f - 590592*c^9*d^3*g + 83632*b^3*c^6*e^3*g + 73472*c^9*
d^2*e*f - 78336*b*c^8*d*e^2*f + 922624*b*c^8*d^2*e*g - 480896*b^2*c^7*d*e^2
*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(653*b^2*e^2*g + 2296*c^2*d^2*
g + 82*b*c*e^2*f - 152*c^2*d*e*f - 2448*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7
) - (d*((64*c^8*e*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7)
 - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(2307*b
^3*e^3*g - 18456*c^3*d^3*g + 613*b^2*c*e^3*f + 2296*c^3*d^2*e*f - 2372*b*c^
2*d*e^2*f + 27684*b*c^2*d^2*e*g - 13842*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*
c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((22
880*b^2*c^7*e^3*f - 670720*c^9*d^3*g + 94608*b^3*c^6*e^3*g + 80896*c^9*d^2*
e*f - 86016*b*c^8*d*e^2*f + 1046528*b*c^8*d^2*e*g - 544768*b^2*c^7*d*e^2*g)
/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(715*b^2*e^2*g + 2528*c^2*d^2*g +
 86*b*c*e^2*f - 160*c^2*d*e*f - 2688*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
 (d*((64*c^8*e*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) -
(128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(2620*b^3*
e^3*g - 20960*c^3*d^3*g + 673*b^2*c*e^3*f + 2528*c^3*d^2*e*f - 2608*b*c^2*d
*e^2*f + 31440*b*c^2*d^2*e*g - 15720*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d
)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((25120
*b^2*c^7*e^3*f - 773376*c^9*d^3*g + 108528*b^3*c^6*e^3*g + 89344*c^9*d^2*e*
f - 94720*b*c^8*d*e^2*f + 1204736*b*c^8*d^2*e*g - 626048*b^2*c^7*d*e^2*g)/(
135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(785*b^2*e^2*g + 2792*c^2*d^2*g + 9
0*b*c*e^2*f - 168*c^2*d*e*f - 2960*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (
d*((64*c^8*e*(45*b*e*g - 84*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (1
28*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(3021*b^3*e^
3*g - 24168*c^3*d^3*g + 741*b^2*c*e^3*f + 2792*c^3*d^2*e*f - 2876*b*c^2*d*e
^2*f + 36252*b*c^2*d^2*e*g - 18126*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^
7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((25248*b
^2*c^7*e^3*f - 862208*c^9*d^3*g + 119712*b^3*c^6*e^3*g + 90112*c^9*d^2*e*f
- 95360*b*c^8*d*e^2*f + 1338368*b*c^8*d^2*e*g - 693024*b^2*c^7*d*e^2*g)/(13
5135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(789*b^2*e^2*g + 2816*c^2*d^2*g + 88*
b*c*e^2*f - 164*c^2*d*e*f - 2980*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*
((128*c^8*e*(22*b*e*g - 41*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*
c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(1684*b^3*e^3*g
 - 13472*c^3*d^3*g + 373*b^2*c*e^3*f + 1408*c^3*d^2*e*f - 1449*b*c^2*d*e^2*
f + 20208*b*c^2*d^2*e*g - 10104*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((27296*b^2*
c^7*e^3*f - 957952*c^9*d^3*g + 132672*b^3*c^6*e^3*g + 97792*c^9*d^2*e*f - 1
03296*b*c^8*d*e^2*f + 1485824*b*c^8*d^2*e*g - 768736*b^2*c^7*d*e^2*g)/(1351
35*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(853*b^2*e^2*g + 3056*c^2*d^2*g + 92*b*
c*e^2*f - 172*c^2*d*e*f - 3228*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((
128*c^8*e*(23*b*e*g - 43*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^
9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(1871*b^3*e^3*g -
 14968*c^3*d^3*g + 404*b^2*c*e^3*f + 1528*c^3*d^2*e*f - 1571*b*c^2*d*e^2*f
+ 22452*b*c^2*d^2*e*g - 11226*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(

c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((29600*b^2*c^7*e^3*f - 1075200*c^9*d^3*g + 148448*b^3*c^6*e^3*g + 106496*c^9*d^2*e*f - 112256*b*c^8*d*e^2*f + 1666048*b*c^8*d^2*e*g - 861088*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(925*b^2*e^2*g + 3328*c^2*d^2*g + 96*b*c*e^2*f - 180*c^2*d*e*f - 3508*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(24*b*e*g - 45*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(2100*b^3*e^3*g - 16800*c^3*d^3*g + 439*b^2*c*e^3*f + 1664*c^3*d^2*e*f - 1709*b*c^2*d*e^2*f + 25200*b*c^2*d^2*e*g - 12600*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((32160*b^2*c^7*e^3*f - 1220096*c^9*d^3*g + 167808*b^3*c^6*e^3*g + 116224*c^9*d^2*e*f - 122240*b*c^8*d*e^2*f + 1888256*b*c^8*d^2*e*g - 974688*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(1005*b^2*e^2*g + 3632*c^2*d^2*g + 100*b*c*e^2*f - 188*c^2*d*e*f - 3820*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(25*b*e*g - 47*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(2383*b^3*e^3*g - 19064*c^3*d^3*g + 478*b^2*c*e^3*f + 1816*c^3*d^2*e*f - 1863*b*c^2*d*e^2*f + 28596*b*c^2*d^2*e*g - 14298*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((34976*b^2*c^7*e^3*f - 1398784*c^9*d^3*g + 191520*b^3*c^6*e^3*g + 126976*c^9*d^2*e*f - 133248*b*c^8*d*e^2*f + 2161664*b*c^8*d^2*e*g - 1114144*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(1093*b^2*e^2*g + 3968*c^2*d^2*g + 104*b*c*e^2*f - 196*c^2*d*e*f - 4164*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(26*b*e*g - 49*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(2732*b^3*e^3*g - 21856*c^3*d^3*g + 521*b^2*c*e^3*f + 1984*c^3*d^2*e*f - 2033*b*c^2*d*e^2*f + 32784*b*c^2*d^2*e*g - 16392*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((43136*b^2*c^7*e^3*f - 2033664*c^9*d^3*g + 274880*b^3*c^6*e^3*g + 158336*c^9*d^2*e*f - 165248*b*c^8*d*e^2*f + 3129664*b*c^8*d^2*e*g - 1606144*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(674*b^2*e^2*g + 2474*c^2*d^2*g + 57*b*c*e^2*f - 108*c^2*d*e*f - 2582*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(57*b*e*g - 108*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (64*b*c^5*(1986*b^3*e^3*g - 15888*c^3*d^3*g + 323*b^2*c*e^3*f + 1237*c^3*d^2*e*f - 1264*b*c^2*d*e^2*f + 23832*b*c^2*d^2*e*g - 11916*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((484*b^2*c^4*e^3*f - 3776*c^6*d^3*g + 676*b^3*c^3*e^3*g + 1344*c^6*d^2*e*f - 1616*b*c^5*d*e^2*f + 6336*b*c^5*d^2*e*g - 3572*b^2*c^4*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(10*b*e*g - 17*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (484*b^2*c^4*e^3*g + 160*b*c^5*e^3*f - 272*c^6*d*e^2*f + 1344*c^6*d^2*e*g - 1616*b*c^5*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (204*b^3*c^3*e^3*f + 236*b^4*c^2*e^3*g - 1888*b*c^5*d^3*g + 672*b*c^5*d^2*e*f - 740*b^2*c^4*d*e^2*f + 2832*b^2*c^4*d^2*e*g - 1416*b^3*c^3*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((548*b^2*c^4*e^3*f - 4352*c^6*d^3*g + 776*b^3*c^3*e^3*g + 1536*c^6*d^2*e*f - 1840*b*c^5*d*e^2*f + 7296*b*c^5*d^2*e*g - 4108*b^2*c^4*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(11*b*e*g - 19*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (548*b^2*c^4*e^3*g + 176*b*c^5*e^3*f - 304*c^6*d*e^2*f + 1536*c^6*d^2*e*g - 1840*b*c^5*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (232*b^3*c^3*e^3*f + 272*b^4*c^2*e^3*g - 2176*b*c^5*d^3*g + 768*b*c^5*d^2*e*f - 844*b^2*c^4*d*e^2*f + 3264*b^2*c^4*d^2*e*g - 1632*b^3*c^3*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((3072*b^2*c^7*e^4*f + 5536*b^3*c^6*e^4*g + 8832*c^9*d^2*e^2*f - 33792*c^9*d^3*e*g - 10368*b*c^8*d*e^3*f + 55104*b*c^8*d^2*e^2*g - 30144*b^2 *c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(16*b^2*e^2*g + 46*c^2*d^2*g + 5*b*c*e^2*f - 8*c^2*d*e*f - 54*b*c*d*e*g))/(45045*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (35328*c^9*d^4*g + 2656*b^3*c^6*e^4*f + 3648*b^4*c^5*e^4*g - 10752*c^9*d^3*e*f - 82176*b*c^8*d^3*e*g + 20544*b*c^8*d^2*e^2*f - 12864*b^2*c^7*d*e^3*f - 26304*b^3*c^6*d*e^3*g + 70272*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((5312*b^2*c^7*e^4*f + 12096*b^3*c^6*e^4*g + 16512*c^9*d^2*e^2*f - 77952*c^9*d^3*e*g - 18688*b*c^8*d*e^3*f + 125184*b*c^8*d^2*e^2*g - 67264*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(83*b^2*e^2*g + 258*c^2*d^2*g + 20*b*c*e^2*f - 34*c^2*d*e*f - 292*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(10*b*e*g - 17*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (52224*c^9*d^4*g + 3552*b^3*c^6*e^4*f + 7536*b^4*c^5*e^4*g - 9600*c^9*d^3*e*f - 138624*b*c^8*d^3*e*g + 22656*b*c^8*d^2*e^2*f - 16000*b^2*c^7*d*e^3*f - 51744*b^3*c^6*d*e^3*g + 129600*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((6208*b^2*c^7*e^4*f + 14720*b^3*c^6*e^4*g + 19584*c^9*d^2*e^2*f - 95616*c^9*d^3*e*g - 22016*b*c^8*d*e^3*f + 153216*b*c^8*d^2*e^2*g - 82112*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(97*b^2*e^2*g + 306*c^2*d^2*g + 22*b*c*e^2*f - 38*c^2*d*e*f - 344*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(11*b*e*g - 19*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (110592*c^9*d^4*g + 6128*b^3*c^6*e^4*f + 11208*b^4*c^5*e^4*g - 26880*c^9*d^3*e*f - 255552*b*c^8*d^3*e*g + 50112*b*c^8*d^2*e^2*f - 30560*b^2*c^7*d*e^3*f - 81072*b^3*c^6*d*e^3*g + 217440*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((7104*b^2*c^7*e^4*f + 17344*b^3*c^6*e^4*g + 22656*c^9*d^2*e^2*f - 113280*c^9*d^3*e*g - 25344*b*c^8*d*e^3*f + 181248*b*c^8*d^2*e^2*g - 96960*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(37*b^2*e^2*g + 118*c^2*d^2*g + 8*b*c*e^2*f - 14*c^2*d*e*f - 132*b*c*d*e*g))/(45045*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(12*b*e*g - 21*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (132096*c^9*d^4*g + 7120*b^3*c^6*e^4*f + 13368*b^4*c^5*e^4*g - 31488*c^9*d^3*e*f - 305088*b*c^8*d^3*e*g + 58560*b*c^8*d^2*e^2*f - 35616*b^2*c^7*d*e^3*f - 96720*b^3*c^6*d*e^3*g + 259488*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8000*b^2*c^7*e^4*f + 19968*b^3*c^6*e^4*g + 25728*c^9*d^2*e^2*f - 130944*c^9*d^3*e*g - 28672*b*c^8*d*e^3*f + 209280*b*c^8*d^2*e^2*g - 111808*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(125*b^2*e^2*g + 402*c^2*d^2*g + 26*b*c*e^2*f - 46*c^2*d*e*f - 448*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(13*b*e*g - 23*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (153600*c^9*d^4*g + 8112*b^3*c^6*e^4*f + 15528*b^4*c^5*e^4*g - 36096*c^9*d^3*e*f - 354624*b*c^8*d^3*e*g + 67008*b*c^8*d^2*e^2*f - 40672*b^2*c^7*d*e^3*f - 112368*b^3*c^6*d*e^3*g + 301536*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8896*b^2*c^7*e^4*f + 22592*b^3*c^6*e^4*g + 28800*c^9*d^2*e^2*f - 148608*c^9*d^3*e*g - 32000*b*c^8*d*e^3*f + 237312*b*c^8*d^2*e^2*g - 126656*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(139*b^2*e^2*g + 450*c^2*d^2*g + 28*b*c*e^2*f - 50*c^2*d*e*f - 500*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(14*b*e*g - 25*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (175104*c^9*d^4*g + 9104*b^3*c^6*e^4*f + 17688*b^4*c^5*e^4*g - 40704*c^9*d^3*e*f - 404160*b*c^8*d^3*e*g + 75456*b*c^8*d^2*e^2*f - 45728*b^2*c^7*d*e^3*f - 128016*b^3*c^6*d*e^3*g + 343584*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((10784*b^2*c^7*e^4*f + 33264*b^3*c^6*e^4*g + 36096*c^9*d^2*e^2*f - 226560*c^9*d^3*e*g - 39424*b*c^8*d*e^3*f + 357888*b*c^8*d^2*e^2*g - 188800*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32

c^7(337*b^2*e^2*g + 1128*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e*f - 1232*
b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(29*b*e*g - 52*c*d*g +
2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)
^7)))/e))/e))/e - (138624*c^9*d^4*g + 6720*b^3*c^6*e^4*f + 21936*b^4*c^5*e^
4*g - 14208*c^9*d^3*e*f - 383424*b*c^8*d^3*e*g + 39360*b*c^8*d^2*e^2*f - 29
536*b^2*c^7*d*e^3*f - 148944*b^3*c^6*d*e^3*g + 367200*b^2*c^7*d^2*e^2*g)/(1
35135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) - (((d*((9568*b^2*c^7*e^4*f + 28560*b^3*c^6*e^4*g + 31744*c^9*d^2*e
^2*f - 193536*c^9*d^3*e*g - 34816*b*c^8*d*e^3*f + 306176*b*c^8*d^2*e^2*g -
161792*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(299*b^2
*e^2*g + 992*c^2*d^2*g + 54*b*c*e^2*f - 96*c^2*d*e*f - 1088*b*c*d*e*g))/(13
5135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
- (183936*c^9*d^4*g + 9216*b^3*c^6*e^4*f + 21168*b^4*c^5*e^4*g - 38784*c^9
*d^3*e*f - 445248*b*c^8*d^3*e*g + 74048*b*c^8*d^2*e^2*f - 45728*b^2*c^7*d*e
^3*f - 150000*b^3*c^6*d*e^3*g + 391968*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((12000*b^2*c^7*e^4*f + 37968*b^3*c^6*e^4*g + 40448*c^9*d^2*e^2*f - 259584*
c^9*d^3*e*g - 44032*b*c^8*d*e^3*f + 409600*b*c^8*d^2*e^2*g - 215808*b^2*c^7
*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(375*b^2*e^2*g + 1264*
c^2*d^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1376*b*c*d*e*g))/(135135*(b*e -
2*c*d)^7) - (d*((64*c^8*e*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*(b*e - 2
*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (157824*c
^9*d^4*g + 7424*b^3*c^6*e^4*f + 25136*b^4*c^5*e^4*g - 15232*c^9*d^3*e*f - 4
37824*b*c^8*d^3*e*g + 43072*b*c^8*d^2*e^2*f - 32544*b^2*c^7*d*e^3*f - 17054
4*b^3*c^6*d*e^3*g + 420000*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((13216*b^2*
c^7*e^4*f + 42672*b^3*c^6*e^4*g + 44800*c^9*d^2*e^2*f - 292608*c^9*d^3*e*g
- 48640*b*c^8*d*e^3*f + 461312*b*c^8*d^2*e^2*g - 242816*b^2*c^7*d*e^3*g)/(1
35135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(413*b^2*e^2*g + 1400*c^2*d^2*g +
66*b*c*e^2*f - 120*c^2*d*e*f - 1520*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
(d*((64*c^8*e*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (
128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (177024*c^9*d^4*g + 8
128*b^3*c^6*e^4*f + 28336*b^4*c^5*e^4*g - 16256*c^9*d^3*e*f - 492224*b*c^8*
d^3*e*g + 46784*b*c^8*d^2*e^2*f - 35552*b^2*c^7*d*e^3*f - 192144*b^3*c^6*d*
e^3*g + 472800*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((12256*b^2*c^7*e^4*f +
39632*b^3*c^6*e^4*g + 41472*c^9*d^2*e^2*f - 271872*c^9*d^3*e*g - 45056*b*c^
8*d*e^3*f + 428544*b*c^8*d^2*e^2*g - 225536*b^2*c^7*d*e^3*g)/(135135*e^2*(b
*e - 2*c*d)^7) - (d*((32*c^7*(383*b^2*e^2*g + 1296*c^2*d^2*g + 62*b*c*e^2*f
- 112*c^2*d*e*f - 1408*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*
e*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*
g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (352512*c^9*d^4*g + 13616*b^3*c^6
*e^4*f + 35040*b^4*c^5*e^4*g - 63744*c^9*d^3*e*f - 809088*b*c^8*d^3*e*g + 1
16352*b*c^8*d^2*e^2*f - 69440*b^2*c^7*d*e^3*f - 254304*b^3*c^6*d*e^3*g + 68
4864*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((13600*b^2*c^7*e^4*f + 45168*b^3*
c^6*e^4*g + 46336*c^9*d^2*e^2*f - 311040*c^9*d^3*e*g - 50176*b*c^8*d*e^3*f
+ 489728*b*c^8*d^2*e^2*g - 257408*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d
)^7) - (d*((32*c^7*(425*b^2*e^2*g + 1448*c^2*d^2*g + 66*b*c*e^2*f - 120*c^2
*d*e*f - 1568*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(33*b*e*
g - 60*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135
*(b*e - 2*c*d)^7)))/e))/e))/e - (406272*c^9*d^4*g + 15280*b^3*c^6*e^4*f + 4
0336*b^4*c^5*e^4*g - 71936*c^9*d^3*e*f - 932096*b*c^8*d^3*e*g + 131072*b*c^
8*d^2*e^2*f - 78080*b^2*c^7*d*e^3*f - 292800*b^3*c^6*d*e^3*g + 788736*b^2*c
^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((14944*b^2*c^7*e^4*f + 50704*b^3*c^6*e^4*g
+ 51200*c^9*d^2*e^2*f - 350208*c^9*d^3*e*g - 55296*b*c^8*d*e^3*f + 550912*b
*c^8*d^2*e^2*g - 289280*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*

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((32*c^7*(467*b^2*e^2*g + 1600*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1
728*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(35*b*e*g - 64*c*d
*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*
c*d)^7)))/e))/e))/e - (460032*c^9*d^4*g + 16944*b^3*c^6*e^4*f + 45632*b^4*c
^5*e^4*g - 80128*c^9*d^3*e*f - 1055104*b*c^8*d^3*e*g + 145792*b*c^8*d^2*e^2
*f - 86720*b^2*c^7*d*e^3*f - 331296*b^3*c^6*d*e^3*g + 892608*b^2*c^7*d^2*e^
2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) - (((d*((15200*b^2*c^7*e^4*f + 52368*b^3*c^6*e^4*g + 52224*c
^9*d^2*e^2*f - 362496*c^9*d^3*e*g - 56320*b*c^8*d*e^3*f + 569856*b*c^8*d^2*
e^2*g - 299008*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*
(475*b^2*e^2*g + 1632*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1760*b*c*d
*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(35*b*e*g - 64*c*d*g + 2*c*
e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))
/e))/e))/e - (478464*c^9*d^4*g + 17328*b^3*c^6*e^4*f + 47424*b^4*c^5*e^4*g
- 82176*c^9*d^3*e*f - 1097088*b*c^8*d^3*e*g + 149376*b*c^8*d^2*e^2*f - 8876
8*b^2*c^7*d*e^3*f - 344352*b^3*c^6*d*e^3*g + 927936*b^2*c^7*d^2*e^2*g)/(135
135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x) + (((d*((17056*b^2*c^7*e^4*f + 67872*b^3*c^6*e^4*g + 59392*c^9*d^2*e^
2*f - 479232*c^9*d^3*e*g - 63616*b*c^8*d*e^3*f + 748544*b*c^8*d^2*e^2*g - 3
90176*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(533*b^2*
e^2*g + 1856*c^2*d^2*g + 72*b*c*e^2*f - 132*c^2*d*e*f - 1988*b*c*d*e*g))/(1
35135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(18*b*e*g - 33*c*d*g + c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (387072*c^9*d^4*g + 11808*b^3*c^6*e^4*f + 52224*b^4*c^5*e^4*g - 30720*c^
9*d^3*e*f - 998400*b*c^8*d^3*e*g + 75776*b*c^8*d^2*e^2*f - 53792*b^2*c^7*d*
e^3*f - 361728*b^3*c^6*d*e^3*g + 916992*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((20640*b^2*c^7*e^4*f + 87648*b^3*c^6*e^4*g + 72704*c^9*d^2*e^2*f - 623616
*c^9*d^3*e*g - 77440*b*c^8*d*e^3*f + 971776*b*c^8*d^2*e^2*g - 505248*b^2*c^
7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(645*b^2*e^2*g + 2272
*c^2*d^2*g + 80*b*c*e^2*f - 148*c^2*d*e*f - 2420*b*c*d*e*g))/(135135*(b*e -
 2*c*d)^7) - (d*((128*c^8*e*(20*b*e*g - 37*c*d*g + c*e*f))/(135135*(b*e - 2
*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (294912*c
^9*d^4*g + 10592*b^3*c^6*e^4*f + 56960*b^4*c^5*e^4*g - 7168*c^9*d^3*e*f - 8
98048*b*c^8*d^3*e*g + 47104*b*c^8*d^2*e^2*f - 42912*b^2*c^7*d*e^3*f - 37862
4*b^3*c^6*d*e^3*g + 904704*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((16672*b^2*
c^7*e^4*f + 58736*b^3*c^6*e^4*g + 57600*c^9*d^2*e^2*f - 407808*c^9*d^3*e*g
- 61952*b*c^8*d*e^3*f + 640512*b*c^8*d^2*e^2*g - 335744*b^2*c^7*d*e^3*g)/(1
35135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(521*b^2*e^2*g + 1800*c^2*d^2*g +
74*b*c*e^2*f - 136*c^2*d*e*f - 1936*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
(d*((64*c^8*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (
128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (541440*c^9*d^4*g + 1
9184*b^3*c^6*e^4*f + 53616*b^4*c^5*e^4*g - 91392*c^9*d^3*e*f - 1241088*b*c^
8*d^3*e*g + 165888*b*c^8*d^2*e^2*f - 98432*b^2*c^7*d*e^3*f - 389376*b^3*c^6
*d*e^3*g + 1049472*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((22432*b^2*c^7*e^4*
f + 97536*b^3*c^6*e^4*g + 79360*c^9*d^2*e^2*f - 695808*c^9*d^3*e*g - 84352*
b*c^8*d*e^3*f + 1083392*b*c^8*d^2*e^2*g - 562784*b^2*c^7*d*e^3*g)/(135135*e
^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(701*b^2*e^2*g + 2480*c^2*d^2*g + 84*b*c*
e^2*f - 156*c^2*d*e*f - 2636*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((12
8*c^8*e*(21*b*e*g - 39*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*
d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (323328*c^9*d^4*g + 11296*b^3
*c^6*e^4*f + 63328*b^4*c^5*e^4*g - 5888*c^9*d^3*e*f - 991616*b*c^8*d^3*e*g
+ 48512*b*c^8*d^2*e^2*f - 45344*b^2*c^7*d*e^3*f - 420384*b^3*c^6*d*e^3*g +
1002432*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((18400*b^2*c^7*e^4*f + 66768*b
^3*c^6*e^4*g + 64000*c^9*d^2*e^2*f - 465408*c^9*d^3*e*g - 68608*b*c^8*d*e^3
*f + 730112*b*c^8*d^2*e^2*g - 382208*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*
```

c*d)^7) - (d*((32*c^7*(575*b^2*e^2*g + 2000*c^2*d^2*g + 78*b*c*e^2*f - 144*
c^2*d*e*f - 2144*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(39*b
*e*g - 72*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135
135*(b*e - 2*c*d)^7)))/e))/e))/e - (622848*c^9*d^4*g + 21424*b^3*c^6*e^4*f
+ 61600*b^4*c^5*e^4*g - 102656*c^9*d^3*e*f - 1427072*b*c^8*d^3*e*g + 185984
*b*c^8*d^2*e^2*f - 110144*b^2*c^7*d*e^3*f - 447456*b^3*c^6*d*e^3*g + 120633
6*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((24480*b^2*c^7*e^4*f + 109728*b^3*c^
6*e^4*g + 87040*c^9*d^2*e^2*f - 785408*c^9*d^3*e*g - 92288*b*c^8*d*e^3*f +
1221632*b*c^8*d^2*e^2*g - 633888*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)
^7) - (d*((32*c^7*(765*b^2*e^2*g + 2720*c^2*d^2*g + 88*b*c*e^2*f - 164*c^2*
d*e*f - 2884*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(22*b*e*
g - 41*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(
b*e - 2*c*d)^7)))/e))/e))/e - (355840*c^9*d^4*g + 12000*b^3*c^6*e^4*f + 711
04*b^4*c^5*e^4*g - 3584*c^9*d^3*e*f - 1102592*b*c^8*d^3*e*g + 48896*b*c^8*d
^2*e^2*f - 47520*b^2*c^7*d*e^3*f - 471104*b^3*c^6*d*e^3*g + 1120128*b^2*c^7
*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((d*((18720*b^2*c^7*e^4*f + 76608*b^3*c^6*e^4*g +
65536*c^9*d^2*e^2*f - 542720*c^9*d^3*e*g - 70016*b*c^8*d*e^3*f + 846848*b*c
^8*d^2*e^2*g - 440928*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((
32*c^7*(585*b^2*e^2*g + 2048*c^2*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f - 218
8*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(19*b*e*g - 35*c*d*
g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d
)^7)))/e))/e))/e - (610560*c^9*d^4*g + 22944*b^3*c^6*e^4*f + 64992*b^4*c^5*
e^4*g - 113408*c^9*d^3*e*f - 1435776*b*c^8*d^3*e*g + 202880*b*c^8*d^2*e^2*f
 - 118944*b^2*c^7*d*e^3*f - 466272*b^3*c^6*d*e^3*g + 1237824*b^2*c^7*d^2*e^
2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) + (((d*((20384*b^2*c^7*e^4*f + 85344*b^3*c^6*e^4*g + 71680*c
^9*d^2*e^2*f - 606208*c^9*d^3*e*g - 76416*b*c^8*d*e^3*f + 945152*b*c^8*d^2*
e^2*g - 491680*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*
(637*b^2*e^2*g + 2240*c^2*d^2*g + 80*b*c*e^2*f - 148*c^2*d*e*f - 2388*b*c*d
*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(20*b*e*g - 37*c*d*g + c*e
f))/(135135(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/
e))/e))/e - (688128*c^9*d^4*g + 25440*b^3*c^6*e^4*f + 72960*b^4*c^5*e^4*g -
 126976*c^9*d^3*e*f - 1615872*b*c^8*d^3*e*g + 226304*b*c^8*d^2*e^2*f - 1322
56*b^2*c^7*d*e^3*f - 523776*b^3*c^6*d*e^3*g + 1391616*b^2*c^7*d^2*e^2*g)/(1
35135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x) + (((d*((22816*b^2*c^7*e^4*f + 101760*b^3*c^6*e^4*g + 80896*c^9*d^2
*e^2*f - 728064*c^9*d^3*e*g - 85888*b*c^8*d*e^3*f + 1132544*b*c^8*d^2*e^2*g
 - 587744*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(713*
b^2*e^2*g + 2528*c^2*d^2*g + 84*b*c*e^2*f - 156*c^2*d*e*f - 2684*b*c*d*e*g)
)/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(21*b*e*g - 39*c*d*g + c*e*f))/
(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e
))/e - (1053696*c^9*d^4*g + 27520*b^3*c^6*e^4*f + 102976*b^4*c^5*e^4*g - 13
4144*c^9*d^3*e*f - 2404352*b*c^8*d^3*e*g + 241664*b*c^8*d^2*e^2*f - 142304*
b^2*c^7*d*e^3*f - 749568*b^3*c^6*d*e^3*g + 2025984*b^2*c^7*d^2*e^2*g)/(1351
35*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) - (((d*((36864*b^2*c^7*e^4*f + 213696*b^3*c^6*e^4*g + 134272*c^9*d^2*e
^2*f - 1568768*c^9*d^3*e*g - 140672*b*c^8*d*e^3*f + 2420288*b*c^8*d^2*e^2*g
 - 1245312*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(576
*b^2*e^2*g + 2098*c^2*d^2*g + 53*b*c*e^2*f - 100*c^2*d*e*f - 2198*b*c*d*e*g
))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(53*b*e*g - 100*c*d*g + 2*c*e*f
))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e)
)/e))/e - (388096*c^9*d^4*g + 15168*b^3*c^6*e^4*f + 123520*b^4*c^5*e^4*g +
19456*c^9*d^3*e*f - 1570304*b*c^8*d^3*e*g + 37952*b*c^8*d^2*e^2*f - 54144*b
^2*c^7*d*e^3*f - 789632*b^3*c^6*d*e^3*g + 1773312*b^2*c^7*d^2*e^2*g)/(13513
5*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
x) + (((d((24736*b^2*c^7*e^4*f + 113056*b^3*c^6*e^4*g + 88064*c^9*d^2*e^2
*f - 811008*c^9*d^3*e*g - 93312*b*c^8*d*e^3*f + 1260544*b*c^8*d^2*e^2*g - 6

53600*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(773*b^2*
e^2*g + 2752*c^2*d^2*g + 88*b*c*e^2*f - 164*c^2*d*e*f - 2916*b*c*d*e*g))/(1
35135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(22*b*e*g - 41*c*d*g + c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (1181184*c^9*d^4*g + 30048*b^3*c^6*e^4*f + 115328*b^4*c^5*e^4*g - 146944
*c^9*d^3*e*f - 2694400*b*c^8*d^3*e*g + 264448*b*c^8*d^2*e^2*f - 155552*b^2*
c^7*d*e^3*f - 839616*b^3*c^6*d*e^3*g + 2269824*b^2*c^7*d^2*e^2*g)/(135135*e
^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
 - (((d*((31616*b^2*c^7*e^4*f + 171456*b^3*c^6*e^4*g + 114304*c^9*d^2*e^2*f
 - 1251328*c^9*d^3*e*g - 120192*b*c^8*d*e^3*f + 1934144*b*c^8*d^2*e^2*g - 9
97120*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(494*b^2*
e^2*g + 1786*c^2*d^2*g + 49*b*c*e^2*f - 92*c^2*d*e*f - 1878*b*c*d*e*g))/(13
5135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(49*b*e*g - 92*c*d*g + 2*c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (786432*c^9*d^4*g + 5568*b^3*c^6*e^4*f + 132096*b^4*c^5*e^4*g + 75776*c^
9*d^3*e*f - 2236416*b*c^8*d^3*e*g - 56512*b*c^8*d^2*e^2*f - 1792*b^2*c^7*d*
e^3*f - 890880*b^3*c^6*d*e^3*g + 2174976*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((
d*((29376*b^2*c^7*e^4*f + 155520*b^3*c^6*e^4*g + 105856*c^9*d^2*e^2*f - 113
2544*c^9*d^3*e*g - 111488*b*c^8*d*e^3*f + 1751744*b*c^8*d^2*e^2*g - 903744*
b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(459*b^2*e^2*g
+ 1654*c^2*d^2*g + 47*b*c*e^2*f - 88*c^2*d*e*f - 1742*b*c*d*e*g))/(135135*(
b*e - 2*c*d)^7) - (d*((64*c^8*e*(47*b*e*g - 88*c*d*g + 2*c*e*f))/(135135*(b
*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (10
93632*c^9*d^4*g + 34176*b^3*c^6*e^4*f + 129024*b^4*c^5*e^4*g - 161792*c^9*d
^3*e*f - 2672640*b*c^8*d^3*e*g + 295616*b*c^8*d^2*e^2*f - 175680*b^2*c^7*d*
e^3*f - 910848*b^3*c^6*d*e^3*g + 2368512*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((
d*((26912*b^2*c^7*e^4*f + 126912*b^3*c^6*e^4*g + 96256*c^9*d^2*e^2*f - 9134
08*c^9*d^3*e*g - 101760*b*c^8*d*e^3*f + 1418240*b*c^8*d^2*e^2*g - 734560*b^
2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(841*b^2*e^2*g +
3008*c^2*d^2*g + 92*b*c*e^2*f - 172*c^2*d*e*f - 3180*b*c*d*e*g))/(135135*(b
*e - 2*c*d)^7) - (d*((128*c^8*e*(23*b*e*g - 43*c*d*g + c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (1341
440*c^9*d^4*g + 32960*b^3*c^6*e^4*f + 130816*b^4*c^5*e^4*g - 161792*c^9*d^3
*e*f - 3058688*b*c^8*d^3*e*g + 290816*b*c^8*d^2*e^2*f - 170848*b^2*c^7*d*e^
3*f - 952576*b^3*c^6*d*e^3*g + 2575872*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*
((29344*b^2*c^7*e^4*f + 144096*b^3*c^6*e^4*g + 105472*c^9*d^2*e^2*f - 10414
08*c^9*d^3*e*g - 111232*b*c^8*d*e^3*f + 1614848*b*c^8*d^2*e^2*g - 835232*b^
2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(917*b^2*e^2*g +
3296*c^2*d^2*g + 96*b*c*e^2*f - 180*c^2*d*e*f - 3476*b*c*d*e*g))/(135135*(b
*e - 2*c*d)^7) - (d*((128*c^8*e*(24*b*e*g - 45*c*d*g + c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (1546
752*c^9*d^4*g + 36256*b^3*c^6*e^4*f + 150592*b^4*c^5*e^4*g - 178688*c^9*d^3
*e*f - 3524864*b*c^8*d^3*e*g + 320768*b*c^8*d^2*e^2*f - 188192*b^2*c^7*d*e^
3*f - 1096896*b^3*c^6*d*e^3*g + 2967168*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d
*((34112*b^2*c^7*e^4*f + 190592*b^3*c^6*e^4*g + 123776*c^9*d^2*e^2*f - 1394
688*c^9*d^3*e*g - 129920*b*c^8*d*e^3*f + 2153920*b*c^8*d^2*e^2*g - 1109440*
b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(533*b^2*e^2*g
+ 1934*c^2*d^2*g + 51*b*c*e^2*f - 96*c^2*d*e*f - 2030*b*c*d*e*g))/(135135*(
b*e - 2*c*d)^7) - (d*((64*c^8*e*(51*b*e*g - 96*c*d*g + 2*c*e*f))/(135135*(b
*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (20
84864*c^9*d^4*g + 57472*b^3*c^6*e^4*f + 196864*b^4*c^5*e^4*g - 329728*c^9*d
^3*e*f - 4702208*b*c^8*d^3*e*g + 556480*b*c^8*d^2*e^2*f - 310720*b^2*c^7*d*
e^3*f - 1441792*b^3*c^6*d*e^3*g + 3926016*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b
*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - ((
(d*((39872*b^2*c^7*e^4*f + 241536*b^3*c^6*e^4*g + 145792*c^9*d^2*e^2*f - 17

79712*c^9*d^3*e*g - 152448*b*c^8*d*e^3*f + 2742464*b*c^8*d^2*e^2*g - 140934
4*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(623*b^2*e^2*
g + 2278*c^2*d^2*g + 55*b*c*e^2*f - 104*c^2*d*e*f - 2382*b*c*d*e*g))/(13513
5*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(55*b*e*g - 104*c*d*g + 2*c*e*f))/(13513
5*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e -
(2797568*c^9*d^4*g + 50816*b^3*c^6*e^4*f + 270208*b^4*c^5*e^4*g - 253952*c
^9*d^3*e*f - 6358016*b*c^8*d^3*e*g + 453824*b*c^8*d^2*e^2*f - 265024*b^2*c^
7*d*e^3*f - 1970944*b^3*c^6*d*e^3*g + 5340672*b^2*c^7*d^2*e^2*g)/(135135*e^
2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
+ (((2*b^4*e^3*g - 16*b*c^3*d^3*g + 6*b^3*c*e^3*f + 14*b*c^3*d^2*e*f - 12*b
^3*c*d*e^2*g - 18*b^2*c^2*d*e^2*f + 24*b^2*c^2*d^2*e*g)/(13*(11*b*e^2 - 22*
c*d*e)*(b*e - 2*c*d)) - (d*((18*b^2*c^2*e^3*f - 32*c^4*d^3*g + 10*b^3*c*e^3
*g + 28*c^4*d^2*e*f - 44*b*c^3*d*e^2*f + 62*b*c^3*d^2*e*g - 42*b^2*c^2*d*e^
2*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) + (d*((d*((2*c^3*e^2*(7*b*e*g
- 8*c*d*g + 2*c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*
e^2*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (18*b^2*c^2*e^3*g + 1
4*b*c^3*e^3*f - 16*c^4*d*e^2*f + 28*c^4*d^2*e*g - 44*b*c^3*d*e^2*g)/(13*(11
*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^6 - (((d*((1472*b^2*c^4*e^3*f - 21248*c^6*d^3*g + 33
28*b^3*c^3*e^3*g + 4880*c^6*d^2*e*f - 5360*b*c^5*d*e^2*f + 34312*b*c^5*d^2*
e*g - 18496*b^2*c^4*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) +
(d*((d*((8*c^5*e^2*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d
e)(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2
*c*d)^3)))/e - (1472*b^2*c^4*e^3*g + 264*b*c^5*e^3*f - 480*c^6*d*e^2*f + 48
80*c^6*d^2*e*g - 5360*b*c^5*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*
d)^3)))/e))/e - (8*b*c^2*(166*b^3*e^3*g - 1328*c^3*d^3*g + 84*b^2*c*e^3*f +
305*c^3*d^2*e*f - 320*b*c^2*d*e^2*f + 1992*b*c^2*d^2*e*g - 996*b^2*c*d*e^2
g))/(1287(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((2856*b^2*c^5*e^3*f - 45824*c^7*d^3
*g + 7032*b^3*c^4*e^3*g + 9472*c^7*d^2*e*f - 10400*b*c^6*d*e^2*f + 73472*b*
c^6*d^2*e*g - 39336*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^4) + (d*((d*((32*c^6*e^2*(16*b*e*g - 29*c*d*g + c*e*f))/(9009*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^4)))/e - (2856*b^2*c^5*e^3*g + 512*b*c^6*e^3*f - 928*c^7*d*e^2
*f + 9472*c^7*d^2*e*g - 10400*b*c^6*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*
e - 2*c*d)^4)))/e))/e - (8*b*c^3*(358*b^3*e^3*g - 2864*c^3*d^3*g + 163*b^2*
c*e^3*f + 592*c^3*d^2*e*f - 621*b*c^2*d*e^2*f + 4296*b*c^2*d^2*e*g - 2148*b
^2*c*d*e^2*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((3208*b^2*c^5*e^3*f - 532
48*c^7*d^3*g + 8128*b^3*c^4*e^3*g + 10752*c^7*d^2*e*f - 11744*b*c^6*d*e^2*f
+ 85248*b*c^6*d^2*e*g - 45560*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*
(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(17*b*e*g - 31*c*d*g + c*e*f))/(9009
*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4)))/e - (3208*b^2*c^5*e^3*g + 544*b*c^6*e^3*f - 99
2*c^7*d*e^2*f + 10752*c^7*d^2*e*g - 11744*b*c^6*d*e^2*g)/(9009*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(416*b^3*e^3*g - 3328*c^3*d^3*
g + 184*b^2*c*e^3*f + 672*c^3*d^2*e*f - 703*b*c^2*d*e^2*f + 4992*b*c^2*d^2*
e*g - 2496*b^2*c*d*e^2*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((8*c^
4*e^2*(16*b*e*g - 29*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d
)^2) - (8*c^5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*
c^3*e*(84*b^2*e^2*g + 275*c^2*d^2*g + 16*b*c*e^2*f - 29*c^2*d*e*f - 304*b*c
*d*e*g))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e + (672*b^2*c^3*e^4*
f + 1328*b^3*c^2*e^4*g + 2200*c^5*d^2*e^2*f - 8184*c^5*d^3*e*g - 2432*b*c^4
*d*e^3*f + 13376*b*c^4*d^2*e^2*g - 7296*b^2*c^3*d*e^3*g)/(143*e*(9*b*e^2 -
18*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(97*b^3*e^3*g - 776*c^3*d
^3*g + 69*b^2*c*e^3*f + 247*c^3*d^2*e*f - 261*b*c^2*d*e^2*f + 1164*b*c^2*d^
2*e*g - 582*b^2*c*d*e^2*g))/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((d*((16

*c^5*e^2*(9*b*e*g - 15*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*
c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e
- (4*c^4*e*(35*b^2*e^2*g + 96*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 116
*b*c*d*e*g))/(429*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (420*b^2*c^4*
e^4*f + 576*b^3*c^3*e^4*g + 1152*c^6*d^2*e^2*f - 3200*c^6*d^3*e*g - 1392*b*
c^5*d*e^3*f + 5376*b*c^5*d^2*e^2*g - 3036*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2
 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (3040*c^6*d^4*g + 356*b^3*c^3*e^4*f + 3
00*b^4*c^2*e^4*g - 1440*c^6*d^3*e*f - 6960*b*c^5*d^3*e*g + 2736*b*c^5*d^2*e
^2*f - 1716*b^2*c^4*d*e^3*f - 2180*b^3*c^3*d*e^3*g + 5880*b^2*c^4*d^2*e^2*g
)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((d*((16*c^6*e^2*(17*b*e*g - 28*c
*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^
2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(105*b^2*e^
2*g + 296*c^2*d^2*g + 34*b*c*e^2*f - 56*c^2*d*e*f - 352*b*c*d*e*g))/(9009*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (840*b^2*c^5*e^4*f + 1308*b^3*c^
4*e^4*g + 2368*c^7*d^2*e^2*f - 7616*c^7*d^3*e*g - 2816*b*c^6*d*e^3*f + 1260
8*b*c^6*d^2*e^2*g - 7008*b^2*c^5*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^4)))/e - (8064*c^7*d^4*g + 756*b^3*c^4*e^4*f + 780*b^4*c^3*e^4*g
- 3200*c^7*d^3*e*f - 18336*b*c^6*d^3*e*g + 5984*b*c^6*d^2*e^2*f - 3696*b^2*
c^5*d*e^3*f - 5688*b^3*c^4*d*e^3*g + 15408*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^3 - (((d*((d*((d*((8*c^5*e^2*(29*b*e*g - 52*c*d*g + 2*c*e*f))
/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*
e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(146*b^2*e^2*g + 474*c^2*d^
2*g + 29*b*c*e^2*f - 52*c^2*d*e*f - 526*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d
e)(b*e - 2*c*d)^3)))/e + (1168*b^2*c^4*e^4*f + 2512*b^3*c^3*e^4*g + 3792*
c^6*d^2*e^2*f - 15872*c^6*d^3*e*g - 4208*b*c^5*d*e^3*f + 25704*b*c^5*d^2*e^
2*g - 13904*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))
)/e - (11200*c^6*d^4*g + 792*b^3*c^3*e^4*f + 1560*b^4*c^2*e^4*g - 2112*c^6*
d^3*e*f - 29280*b*c^5*d^3*e*g + 5064*b*c^5*d^2*e^2*f - 3584*b^2*c^4*d*e^3*f
 - 10760*b^3*c^3*d*e^3*g + 27120*b^2*c^4*d^2*e^2*g)/(1287*e*(7*b*e^2 - 14*c
*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
x)^4 - (((d((d*((d*((8*c^5*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(1287*(7*
b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c
*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(163*b^2*e^2*g + 534*c^2*d^2*g + 31*b
*c*e^2*f - 56*c^2*d*e*f - 590*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^3)))/e + (1304*b^2*c^4*e^4*f + 2864*b^3*c^3*e^4*g + 4272*c^6*d^2*e^
2*f - 18176*c^6*d^3*e*g - 4720*b*c^5*d*e^3*f + 29400*b*c^5*d^2*e^2*g - 1588
0*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (217
60*c^6*d^4*g + 1552*b^3*c^3*e^4*f + 2016*b^4*c^2*e^4*g - 7680*c^6*d^3*e*f -
 48768*b*c^5*d^3*e*g + 13656*b*c^5*d^2*e^2*f - 8008*b^2*c^4*d*e^3*f - 14816
*b^3*c^3*d*e^3*g + 40512*b^2*c^4*d^2*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 +
(((d*((d*((d*((32*c^6*e^2*(13*b*e*g - 23*c*d*g + c*e*f))/(9009*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*
e - 2*c*d)^4)))/e - (8*c^5*e*(249*b^2*e^2*g + 800*c^2*d^2*g + 52*b*c*e^2*f
- 92*c^2*d*e*f - 892*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
)))/e + (1992*b^2*c^5*e^4*f + 4512*b^3*c^4*e^4*g + 6400*c^7*d^2*e^2*f - 289
28*c^7*d^3*e*g - 7136*b*c^6*d*e^3*f + 46592*b*c^6*d^2*e^2*g - 25080*b^2*c^5
*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (18624*c^7*d^
4*g + 1224*b^3*c^4*e^4*f + 2808*b^4*c^3*e^4*g - 2624*c^7*d^3*e*f - 50400*b*
c^6*d^3*e*g + 7136*b*c^6*d^2*e^2*f - 5352*b^2*c^5*d*e^3*f - 19176*b^3*c^4*d
*e^3*g + 47664*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*(
(d*((64*c^7*e^2*(8*b*e*g - 13*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
5)))/e - (32*c^6*e*(51*b^2*e^2*g + 146*c^2*d^2*g + 16*b*c*e^2*f - 26*c^2*d*
e*f - 172*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16
32*b^2*c^6*e^4*f + 2784*b^3*c^5*e^4*g + 4672*c^8*d^2*e^2*f - 16704*c^8*d^3*

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e*g - 5504*b*c^7*d*e^3*f + 27392*b*c^7*d^2*e^2*g - 15072*b^2*c^6*d*e^3*g)/(
45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (18432*c^8*d^4*g + 1488*
b^3*c^5*e^4*f + 1800*b^4*c^4*e^4*g - 6336*c^8*d^3*e*f - 42048*b*c^7*d^3*e*g
 + 11840*b*c^7*d^2*e^2*f - 7296*b^2*c^6*d*e^3*f - 13104*b^3*c^5*d*e^3*g + 3
5424*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((32*c^
6*e^2*(14*b*e*g - 25*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e -
(8*c^5*e*(281*b^2*e^2*g + 912*c^2*d^2*g + 56*b*c*e^2*f - 100*c^2*d*e*f - 10
12*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (2248*b^2*
c^5*e^4*f + 5224*b^3*c^4*e^4*g + 7296*c^7*d^2*e^2*f - 33664*c^7*d^3*e*g - 8
096*b*c^6*d*e^3*f + 54144*b*c^6*d^2*e^2*g - 29096*b^2*c^5*d*e^3*g)/(9009*e*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (43264*c^7*d^4*g + 2648*b^3*c^4
*e^4*f + 3992*b^4*c^3*e^4*g - 13056*c^7*d^3*e*f - 96832*b*c^6*d^3*e*g + 232
32*b*c^6*d^2*e^2*f - 13640*b^2*c^5*d*e^3*f - 29360*b^3*c^4*d*e^3*g + 80352*
b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((32*c^6*e^2
*(15*b*e*g - 27*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)
 - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^
5*e*(313*b^2*e^2*g + 1024*c^2*d^2*g + 60*b*c*e^2*f - 108*c^2*d*e*f - 1132*b
*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (2504*b^2*c^5*
e^4*f + 5936*b^3*c^4*e^4*g + 8192*c^7*d^2*e^2*f - 38400*c^7*d^3*e*g - 9056*
b*c^6*d*e^3*f + 61696*b*c^6*d^2*e^2*g - 33112*b^2*c^5*d*e^3*g)/(9009*e*(5*b
*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (49664*c^7*d^4*g + 2992*b^3*c^4*e^4
*f + 4576*b^4*c^3*e^4*g - 14848*c^7*d^3*e*f - 111104*b*c^6*d^3*e*g + 26368*
b*c^6*d^2*e^2*f - 15448*b^2*c^5*d*e^3*f - 33664*b^3*c^4*d*e^3*g + 92160*b^2
*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((32*c^7*e^2*(2
3*b*e*g - 40*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
 - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^
6*e*(207*b^2*e^2*g + 656*c^2*d^2*g + 46*b*c*e^2*f - 80*c^2*d*e*f - 736*b*c*
d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (3312*b^2*c^6*e^4
*f + 7656*b^3*c^5*e^4*g + 10496*c^8*d^2*e^2*f - 49408*c^8*d^3*e*g - 11776*b
*c^7*d*e^3*f + 79360*b*c^7*d^2*e^2*g - 42624*b^2*c^6*d*e^3*g)/(45045*e*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (30528*c^8*d^4*g + 2016*b^3*c^5*e^4*
f + 4728*b^4*c^4*e^4*g - 4288*c^8*d^3*e*f - 83616*b*c^7*d^3*e*g + 11680*b*c
^7*d^2*e^2*f - 8784*b^2*c^6*d*e^3*f - 32184*b^3*c^5*d*e^3*g + 79632*b^2*c^6
*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((16*c^6*e^2*(39*b*
e*g - 72*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (3
2*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*
(287*b^2*e^2*g + 998*c^2*d^2*g + 39*b*c*e^2*f - 72*c^2*d*e*f - 1070*b*c*d*e
*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4592*b^2*c^5*e^4*f
 + 16160*b^3*c^4*e^4*g + 15968*c^7*d^2*e^2*f - 112128*c^7*d^3*e*g - 17120*b*
c^6*d*e^3*f + 176176*b*c^6*d^2*e^2*g - 92368*b^2*c^5*d*e^3*g)/(9009*e*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (52736*c^7*d^4*g + 1120*b^3*c^4*e^4*
f + 10816*b^4*c^3*e^4*g + 8192*c^7*d^3*e*f - 165632*b*c^6*d^3*e*g - 4304*b*
c^6*d^2*e^2*f - 2128*b^2*c^5*d*e^3*f - 71488*b^3*c^4*d*e^3*g + 169344*b^2*c
^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((32*c^7*e^2*(25*
b*e*g - 44*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) -
(64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*
e*(237*b^2*e^2*g + 760*c^2*d^2*g + 50*b*c*e^2*f - 88*c^2*d*e*f - 848*b*c*d*
e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (3792*b^2*c^6*e^4*f
 + 9048*b^3*c^5*e^4*g + 12160*c^8*d^2*e^2*f - 58752*c^8*d^3*e*g - 13568*b*c
^7*d*e^3*f + 94208*b*c^7*d^2*e^2*g - 50496*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (75456*c^8*d^4*g + 4224*b^3*c^5*e^4*f
+ 7128*b^4*c^4*e^4*g - 20160*c^8*d^3*e*f - 170208*b*c^7*d^3*e*g + 36320*b*c
^7*d^2*e^2*f - 21552*b^2*c^6*d*e^3*f - 52200*b^3*c^5*d*e^3*g + 142128*b^2*c
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^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(89*b^2*e^2*g + 288*c^2*d^2*g + 18*b*c*e^2*f - 32*c^2*d*e*f - 320*b*c*d*e*g))/(15015*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (4272*b^2*c^6*e^4*f + 10440*b^3*c^5*e^4*g + 13824*c^8*d^2*e^2*f - 68096*c^8*d^3*e*g - 15360*b*c^7*d*e^3*f + 109056*b*c^7*d^2*e^2*g - 58368*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (88128*c^8*d^4*g + 4832*b^3*c^5*e^4*f + 8312*b^4*c^4*e^4*g - 23232*c^8*d^3*e*f - 198688*b*c^7*d^3*e*g + 41760*b*c^7*d^2*e^2*f - 24720*b^2*c^6*d*e^3*f - 60888*b^3*c^5*d*e^3*g + 165840*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((16*c^6*e^2*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(262*b^2*e^2*g + 906*c^2*d^2*g + 37*b*c*e^2*f - 68*c^2*d*e*f - 974*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4192*b^2*c^5*e^4*f + 14368*b^3*c^4*e^4*g + 14496*c^7*d^2*e^2*f - 99328*c^7*d^3*e*g - 15584*b*c^6*d*e^3*f + 156240*b*c^6*d^2*e^2*g - 82016*b^2*c^5*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (93568*c^7*d^4*g + 4592*b^3*c^4*e^4*f + 10736*b^4*c^3*e^4*g - 21120*c^7*d^3*e*f - 226240*b*c^6*d^3*e*g + 38928*b*c^6*d^2*e^2*f - 23360*b^2*c^5*d*e^3*f - 76112*b^3*c^4*d*e^3*g + 199008*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((32*c^7*e^2*(29*b*e*g - 52*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(297*b^2*e^2*g + 968*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e*f - 1072*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (4752*b^2*c^6*e^4*f + 11832*b^3*c^5*e^4*g + 15488*c^8*d^2*e^2*f - 77440*c^8*d^3*e*g - 17152*b*c^7*d*e^3*f + 123904*b*c^7*d^2*e^2*g - 66240*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (100800*c^8*d^4*g + 5440*b^3*c^5*e^4*f + 9496*b^4*c^4*e^4*g - 26304*c^8*d^3*e*f - 227168*b*c^7*d^3*e*g + 47200*b*c^7*d^2*e^2*f - 27888*b^2*c^6*d*e^3*f - 69576*b^3*c^5*d*e^3*g + 189552*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(17*b*e*g - 31*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(449*b^2*e^2*g + 1536*c^2*d^2*g + 68*b*c*e^2*f - 124*c^2*d*e*f - 1660*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (7184*b^2*c^6*e^4*f + 23936*b^3*c^5*e^4*g + 24576*c^8*d^2*e^2*f - 164864*c^8*d^3*e*g - 26560*b*c^7*d*e^3*f + 259584*b*c^7*d^2*e^2*g - 136432*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (77696*c^8*d^4*g + 2896*b^3*c^5*e^4*f + 15376*b^4*c^4*e^4*g + 3456*c^8*d^3*e*f - 239552*b*c^7*d^3*e*g + 7104*b*c^7*d^2*e^2*f - 10192*b^2*c^6*d*e^3*f - 101968*b^3*c^5*d*e^3*g + 242784*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(18*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(493*b^2*e^2*g + 1696*c^2*d^2*g + 72*b*c*e^2*f - 132*c^2*d*e*f - 1828*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (7888*b^2*c^6*e^4*f + 26896*b^3*c^5*e^4*g + 27136*c^8*d^2*e^2*f - 185856*c^8*d^3*e*g - 29248*b*c^7*d*e^3*f + 292352*b*c^7*d^2*e^2*g - 153488*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (86272*c^8*d^4*g + 3056*b^3*c^5*e^4*f + 17312*b^4*c^4*e^4*g + 4864*c^8*d^3*e*f - 267904*b*c^7*d^3*e*g + 6272*b*c^7*d^2*e^2*f - 10448*b^2*c^6*d*e^3*f - 114656*b^3*c^5*d*e^3*g + 272448*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(16*b*e*g - 29*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^

5)))/e - (16*c^6*e*(405*b^2*e^2*g + 1376*c^2*d^2*g + 64*b*c*e^2*f - 116*c^2
*d*e*f - 1492*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e +
 (6480*b^2*c^6*e^4*f + 20976*b^3*c^5*e^4*g + 22016*c^8*d^2*e^2*f - 143872*c
^8*d^3*e*g - 23872*b*c^7*d*e^3*f + 226816*b*c^7*d^2*e^2*g - 119376*b^2*c^6*
d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (142080*c^8*d^
4*g + 7056*b^3*c^5*e^4*f + 15840*b^4*c^4*e^4*g - 32512*c^8*d^3*e*f - 339840
*b*c^7*d^3*e*g + 59776*b*c^7*d^2*e^2*f - 35856*b^2*c^6*d*e^3*f - 112800*b^3
*c^5*d*e^3*g + 296640*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((
d*((d*((d*((16*c^6*e^2*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^4)))/e - (16*c^5*e*(316*b^2*e^2*g + 1106*c^2*d^2*g + 41*b*c*e^2*f
 - 76*c^2*d*e*f - 1182*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)
^4)))/e + (5056*b^2*c^5*e^4*f + 18432*b^3*c^4*e^4*g + 17696*c^7*d^2*e^2*f -
 128512*c^7*d^3*e*g - 18912*b*c^6*d*e^3*f + 201616*b*c^6*d^2*e^2*g - 105536
*b^2*c^5*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2129
92*c^7*d^4*g + 7744*b^3*c^4*e^4*f + 18656*b^4*c^3*e^4*g - 43008*c^7*d^3*e*f
 - 468736*b*c^6*d^3*e*g + 73360*b*c^6*d^2*e^2*f - 41408*b^2*c^5*d*e^3*f - 1
38560*b^3*c^4*d*e^3*g + 383616*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d
e)(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^3 + (((d*((d*((d*((64*c^7*e^2*(18*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(167*b^2*e^2*g + 576*c^2*d^2*g + 24*b*c
*e^2*f - 44*c^2*d*e*f - 620*b*c*d*e*g))/(15015*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e + (8016*b^2*c^6*e^4*f + 27792*b^3*c^5*e^4*g + 27648*c^8*d^2*e^
2*f - 192512*c^8*d^3*e*g - 29760*b*c^7*d*e^3*f + 302592*b*c^7*d^2*e^2*g - 1
58736*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e -
(297216*c^8*d^4*g + 10736*b^3*c^5*e^4*f + 27104*b^4*c^4*e^4*g - 56064*c^8*d
^3*e*f - 662656*b*c^7*d^3*e*g + 97920*b*c^7*d^2*e^2*f - 56400*b^2*c^6*d*e^3
*f - 199776*b^3*c^5*d*e^3*g + 548160*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(47*b*e*g - 88*c*d*g + 2*c*e*f))/(450
45*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(439*b^2*e^2*g + 1574*c^2*d^2*g
 + 47*b*c*e^2*f - 88*c^2*d*e*f - 1662*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^5)))/e + (14048*b^2*c^6*e^4*f + 67200*b^3*c^5*e^4*g + 50368
*c^8*d^2*e^2*f - 484352*c^8*d^3*e*g - 53184*b*c^7*d*e^3*f + 751712*b*c^7*d^
2*e^2*g - 389152*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5)))/e - (32768*c^8*d^4*g - 640*b^3*c^5*e^4*f + 35968*b^4*c^4*e^4*g + 583
68*c^8*d^3*e*f - 336896*b*c^7*d^3*e*g - 62368*b*c^7*d^2*e^2*f + 17888*b^2*c
^6*d*e^3*f - 219904*b^3*c^5*d*e^3*g + 456192*b^2*c^6*d^2*e^2*g)/(45045*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(19*b*e*g - 35*c*d*g + c*e*f)
)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(549*b^2*e^2*g + 1904*c^2
*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f - 2044*b*c*d*e*g))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8784*b^2*c^6*e^4*f + 31200*b^3*c^5*e^4*g +
 30464*c^8*d^2*e^2*f - 216832*c^8*d^3*e*g - 32704*b*c^7*d*e^3*f + 340480*b*
c^7*d^2*e^2*g - 178416*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5)))/e - (337536*c^8*d^4*g + 11920*b^3*c^5*e^4*f + 30736*b^4*c^4*e^
4*g - 62592*c^8*d^3*e*f - 752192*b*c^7*d^3*e*g + 109120*b*c^7*d^2*e^2*f - 6
2736*b^2*c^6*d*e^3*f - 226608*b^3*c^5*d*e^3*g + 621984*b^2*c^6*d^2*e^2*g)/(
45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(20*b*e*g - 37*c*d*
g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(605*b^2*e^2*g
+ 2112*c^2*d^2*g + 80*b*c*e^2*f - 148*c^2*d*e*f - 2260*b*c*d*e*g))/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (9680*b^2*c^6*e^4*f + 35504*b^3*c
^5*e^4*g + 33792*c^8*d^2*e^2*f - 247808*c^8*d^3*e*g - 36160*b*c^7*d*e^3*f +

388608*b*c^7*d^2*e^2*g - 203344*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (390144*c^8*d^4*g + 13360*b^3*c^5*e^4*f + 35456*b^4*c^4*e^4*g - 70656*c^8*d^3*e*f - 868864*b*c^7*d^3*e*g + 122880*b*c^7*d^2*e^2*f - 70480*b^2*c^6*d*e^3*f - 261504*b^3*c^5*d*e^3*g + 718080*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(373*b^2*e^2*g + 1326*c^2*d^2*g + 43*b*c*e^2*f - 80*c^2*d*e*f - 1406*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (11936*b^2*c^6*e^4*f + 53888*b^3*c^5*e^4*g + 42432*c^8*d^2*e^2*f - 386048*c^8*d^3*e*g - 44992*b*c^7*d*e^3*f + 600288*b*c^7*d^2*e^2*g - 311392*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (315392*c^8*d^4*g + 6784*b^3*c^5*e^4*f + 43264*b^4*c^4*e^4*g - 9216*c^8*d^3*e*f - 819200*b*c^7*d^3*e*g + 35040*b*c^7*d^2*e^2*f - 28768*b^2*c^6*d*e^3*f - 299008*b^3*c^5*d*e^3*g + 755712*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(45*b*e*g - 84*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(404*b^2*e^2*g + 1442*c^2*d^2*g + 45*b*c*e^2*f - 84*c^2*d*e*f - 1526*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (12928*b^2*c^6*e^4*f + 59872*b^3*c^5*e^4*g + 46144*c^8*d^2*e^2*f - 430080*c^8*d^3*e*g - 48832*b*c^7*d*e^3*f + 668192*b*c^7*d^2*e^2*g - 346304*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (564736*c^8*d^4*g + 23072*b^3*c^5*e^4*f + 53696*b^4*c^4*e^4*g - 135680*c^8*d^3*e*f - 1276672*b*c^7*d^3*e*g + 226592*b*c^7*d^2*e^2*f - 125504*b^2*c^6*d*e^3*f - 392768*b^3*c^5*d*e^3*g + 1067904*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(49*b*e*g - 92*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(478*b^2*e^2*g + 1722*c^2*d^2*g + 49*b*c*e^2*f - 92*c^2*d*e*f - 1814*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (15296*b^2*c^6*e^4*f + 76256*b^3*c^5*e^4*g + 55104*c^8*d^2*e^2*f - 551936*c^8*d^3*e*g - 58048*b*c^7*d*e^3*f + 855456*b*c^7*d^2*e^2*g - 442240*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (1026048*c^8*d^4*g + 23008*b^3*c^5*e^4*f + 90752*b^4*c^4*e^4*g - 125952*c^8*d^3*e*f - 2265088*b*c^7*d^3*e*g + 216480*b*c^7*d^2*e^2*f - 122752*b^2*c^6*d*e^3*f - 672768*b^3*c^5*d*e^3*g + 1858560*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((48512*b^2*c^7*e^4*f + 336896*b^3*c^6*e^4*g + 179072*c^9*d^2*e^2*f - 2508672*c^9*d^3*e*g - 186368*b*c^8*d*e^3*f + 3852544*b*c^8*d^2*e^2*g - 1972864*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^7*(379*b^2*e^2*g + 1399*c^2*d^2*g + 30*b*c*e^2*f - 57*c^2*d*e*f - 1456*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(30*b*e*g - 57*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (128*c^5*(b*e - c*d)*(2282*b^3*e^3*g - 18256*c^3*d^3*g + 350*b^2*c*e^3*f + 1343*c^3*d^2*e*f - 1371*b*c^2*d*e^2*f + 27384*b*c^2*d^2*e*g - 13692*b^2*c*d*e^2*g))/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((d*((4*c^3*e^2*(10*b*e*g - 17*c*d*g + c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*e^2*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (4*c^2*e*(24*b^2*e^2*g + 59*c^2*d^2*g + 10*b*c*e^2*f - 17*c^2*d*e*f - 76*b*c*d*e*g))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e + (96*b^2*c^2*e^4*f + 236*c^4*d^2*e^2*f + 88*b^3*c*e^4*g - 396*c^4*d^3*e*g - 304*b*c^3*d*e^3*f + 712*b*c^3*d^2*e^2*g - 432*b^2*c^2*d*e^3*g)/(13*e*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*d)*(7*b^3*e^3*g - 56*c^3*d^3*g + 15*b^2*c*e^3*f + 43*c^3*d^2*e*f - 51*b*c^2*d*e^2*f + 84*b*c^2*d^2*e*g - 42*b^2*c*d*e^2*g))/(13*e*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 - (((d*((132*b^2*c^4*e^3*f - 608*c^6*d^3*g + 126*b^3*c^3*e^3*g + 288*c^6*d^2*e

*f - 384*b*c^5*d*e^2*f + 1056*b*c^5*d^2*e*g - 624*b^2*c^4*d*e^2*g)/(1287*(7
*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(9*b*e*g - 12*c*d*
g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g
)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(11*b^2*e^2*g
+ 24*c^2*d^2*g + 6*b*c*e^2*f - 8*c^2*d*e*f - 32*b*c*d*e*g))/(429*(7*b*e^2 -
14*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (50*b^3*c^3*e^3*f + 38*b^4*c^2*e^3*g
- 304*b*c^5*d^3*g + 144*b*c^5*d^2*e*f - 168*b^2*c^4*d*e^2*f + 456*b^2*c^4*d
^2*e*g - 228*b^3*c^3*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((336*b^2*c
^5*e^3*f - 2016*c^7*d^3*g + 384*b^3*c^4*e^3*g + 800*c^7*d^2*e*f - 1024*b*c^
6*d*e^2*f + 3424*b*c^6*d^2*e*g - 1968*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(5*b*e*g - 7*c*d*g + c*e*f))/
(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(21*b^2*e^2*g + 50*c^2*d^2*
g + 10*b*c*e^2*f - 14*c^2*d*e*f - 64*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4)))/e))/e - (132*b^3*c^4*e^3*f + 126*b^4*c^3*e^3*g - 1008*b
*c^6*d^3*g + 400*b*c^6*d^2*e*f - 456*b^2*c^5*d*e^2*f + 1512*b^2*c^5*d^2*e*g
- 756*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((984*b^2*c^5*e^3
*f - 9216*c^7*d^3*g + 1572*b^3*c^4*e^3*g + 2816*c^7*d^2*e*f - 3328*b*c^6*d*
e^2*f + 15232*b*c^6*d^2*e*g - 8448*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d
e)(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(19*b*e*g - 32*c*d*g + 2*c*e*f))
/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(123*b^2*e^2*g + 352*c^2*d^
2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 416*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d
e)(b*e - 2*c*d)^4)))/e))/e - (420*b^3*c^4*e^3*f + 576*b^4*c^3*e^3*g - 460
8*b*c^6*d^3*g + 1408*b*c^6*d^2*e*f - 1536*b^2*c^5*d*e^2*f + 6912*b^2*c^5*d^
2*e*g - 3456*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((1128*b^2*
c^5*e^3*f - 10816*c^7*d^3*g + 1836*b^3*c^4*e^3*g + 3264*c^7*d^2*e*f - 3840*
b*c^6*d*e^2*f + 17856*b*c^6*d^2*e*g - 9888*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(21*b*e*g - 36*c*d*g + 2
*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(90
09*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(47*b^2*e^2*g + 136
*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 160*b*c*d*e*g))/(3003*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (484*b^3*c^4*e^3*f + 676*b^4*c^3*e^3*
g - 5408*b*c^6*d^3*g + 1632*b*c^6*d^2*e*f - 1776*b^2*c^5*d*e^2*f + 8112*b^2
*c^5*d^2*e*g - 4056*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((12
72*b^2*c^5*e^3*f - 12416*c^7*d^3*g + 2100*b^3*c^4*e^3*g + 3712*c^7*d^2*e*f
- 4352*b*c^6*d*e^2*f + 20480*b*c^6*d^2*e*g - 11328*b^2*c^5*d*e^2*g)/(9009*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(23*b*e*g - 40*c
*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^
2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(159*b^2*e^
2*g + 464*c^2*d^2*g + 46*b*c*e^2*f - 80*c^2*d*e*f - 544*b*c*d*e*g))/(9009*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (548*b^3*c^4*e^3*f + 776*b^4
*c^3*e^3*g - 6208*b*c^6*d^3*g + 1856*b*c^6*d^2*e*f - 2016*b^2*c^5*d*e^2*f +
9312*b^2*c^5*d^2*e*g - 4656*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b
*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 +
(((d*((1952*b^2*c^6*e^3*f - 20928*c^8*d^3*g + 3456*b^3*c^5*e^3*g + 5696*c^8
*d^2*e*f - 6656*b*c^7*d*e^2*f + 34240*b*c^7*d^2*e*g - 18784*b^2*c^6*d*e^2*g
)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(9*b*e*
g - 15*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^
8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(61*
b^2*e^2*g + 178*c^2*d^2*g + 18*b*c*e^2*f - 30*c^2*d*e*f - 208*b*c*d*e*g))/(
45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (840*b^3*c^5*e^3*f + 1
308*b^4*c^4*e^3*g - 10464*b*c^7*d^3*g + 2848*b*c^7*d^2*e*f - 3088*b^2*c^6*d
*e^2*f + 15696*b^2*c^6*d^2*e*g - 7848*b^3*c^5*d*e^2*g)/(45045*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +

e*x)^2 + (((d*((2272*b^2*c^6*e^3*f - 25152*c^8*d^3*g + 4128*b^3*c^5*e^3*g + 6720*c^8*d^2*e*f - 7808*b*c^7*d*e^2*f + 41088*b*c^7*d^2*e*g - 22496*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(10*b*e*g - 17*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(71*b^2*e^2*g + 210*c^2*d^2*g + 20*b*c*e^2*f - 34*c^2*d*e*f - 244*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (984*b^3*c^5*e^3*f + 1572*b^4*c^4*e^3*g - 12576*b*c^7*d^3*g + 3360*b*c^7*d^2*e*f - 3632*b^2*c^6*d*e^2*f + 18864*b^2*c^6*d^2*e*g - 9432*b^3*c^5*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((2592*b^2*c^6*e^3*f - 29376*c^8*d^3*g + 4800*b^3*c^5*e^3*g + 7744*c^8*d^2*e*f - 8960*b*c^7*d*e^2*f + 47936*b*c^7*d^2*e*g - 26208*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(11*b*e*g - 19*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(81*b^2*e^2*g + 242*c^2*d^2*g + 22*b*c*e^2*f - 38*c^2*d*e*f - 280*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (1128*b^3*c^5*e^3*f + 1836*b^4*c^4*e^3*g - 14688*b*c^7*d^3*g + 3872*b*c^7*d^2*e*f - 4176*b^2*c^6*d*e^2*f + 22032*b^2*c^6*d^2*e*g - 11016*b^3*c^5*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((2912*b^2*c^6*e^3*f - 33600*c^8*d^3*g + 5472*b^3*c^5*e^3*g + 8768*c^8*d^2*e*f - 10112*b*c^7*d*e^2*f + 54784*b*c^7*d^2*e*g - 29920*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(12*b*e*g - 21*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(91*b^2*e^2*g + 274*c^2*d^2*g + 24*b*c*e^2*f - 42*c^2*d*e*f - 316*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (1272*b^3*c^5*e^3*f + 2100*b^4*c^4*e^3*g - 16800*b*c^7*d^3*g + 4384*b*c^7*d^2*e*f - 4720*b^2*c^6*d*e^2*f + 25200*b^2*c^6*d^2*e*g - 12600*b^3*c^5*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((2*f*(b*e - c*d)^3)/(13*b*e^2 - 26*c*d*e) - (d*((2*(b*e - c*d)^2*(b*e*g - c*d*g + 3*c*e*f))/(13*b*e^2 - 26*c*d*e) + (d*((d*((2*c^2*e^2*(3*b*e*g - 3*c*d*g + c*e*f))/(13*b*e^2 - 26*c*d*e) - (2*c^3*d*e^2*g)/(13*b*e^2 - 26*c*d*e)))/e - (6*c*e*(b*e - c*d)*(b*e*g - c*d*g + c*e*f))/(13*b*e^2 - 26*c*d*e)))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^7 + (((d*((d*((d*((16*c^5*e^2*(21*b*e*g - 39*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^4*e*(164*b^2*e^2*g + 575*c^2*d^2*g + 21*b*c*e^2*f - 39*c^2*d*e*f - 614*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (2624*b^2*c^4*e^4*f + 9376*b^3*c^3*e^4*g + 9200*c^6*d^2*e^2*f - 65168*c^6*d^3*e*g - 9824*b*c^5*d*e^3*f + 102352*b*c^5*d^2*e^2*g - 53632*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(442*b^3*e^3*g - 3536*c^3*d^3*g + 144*b^2*c*e^3*f + 537*c^3*d^2*e*f - 556*b*c^2*d*e^2*f + 5304*b*c^2*d^2*e*g - 2652*b^2*c*d*e^2*g))/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((d*((32*c^6*e^2*(25*b*e*g - 47*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^5*e*(248*b^2*e^2*g + 895*c^2*d^2*g + 25*b*c*e^2*f - 47*c^2*d*e*f - 942*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (7936*b^2*c^5*e^4*f + 39744*b^3*c^4*e^4*g + 28640*c^7*d^2*e^2*f - 287776*c^7*d^3*e*g - 30144*b*c^6*d*e^3*f + 445984*b*c^6*d^2*e^2*g - 230528*b^2*c^5*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^3*(b*e - c*d)*(1018*b^3*e^3*g - 8144*c^3*d^3*g + 224*b^2*c*e^3*f + 849*c^3*d^2*e*f - 872*b*c^2*d*e^2*f + 12216*b*c^2*d^2*e*g - 6108*b^2*c*d*e^2*g))/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((64*c^7*e^2*(28*b*e*g - 53*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (64*c^6*e*(323*b^2*e^2*g + 1183*c^2*d^2*g

+ 28*b*c*e^2*f - 53*c^2*d*e*f - 1236*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^5)))/e + (20672*b^2*c^6*e^4*f + 127104*b^3*c^5*e^4*g + 75712
*c^8*d^2*e^2*f - 937664*c^8*d^3*e*g - 79104*b*c^7*d*e^3*f + 1444352*b*c^7*d
^2*e^2*g - 741952*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5)))/e - (64*c^4*(b*e - c*d)*(1690*b^3*e^3*g - 13520*c^3*d^3*g + 296*b^2
*c*e^3*f + 1131*c^3*d^2*e*f - 1157*b*c^2*d*e^2*f + 20280*b*c^2*d^2*e*g - 10
140*b^2*c*d*e^2*g))/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((50*b^2*c^3*e^3*f
- 160*c^5*d^3*g + 38*b^3*c^2*e^3*g + 96*c^5*d^2*e*f - 136*b*c^4*d*e^2*f + 2
88*b*c^4*d^2*e*g - 178*b^2*c^3*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*
c*d)^2) + (d*((d*((8*c^4*e^2*(4*b*e*g - 5*c*d*g + c*e*f))/(143*(9*b*e^2 - 1
8*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e
- 2*c*d)^2)))/e - (50*b^2*c^3*e^3*g + 32*b*c^4*e^3*f - 40*c^5*d*e^2*f + 96*
c^5*d^2*e*g - 136*b*c^4*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)
))/e))/e - (18*b^3*c^2*e^3*f - 80*b*c^4*d^3*g + 10*b^4*c*e^3*g + 48*b*c^4*d
^2*e*f - 58*b^2*c^3*d*e^2*f + 120*b^2*c^3*d^2*e*g - 60*b^3*c^2*d*e^2*g)/(14
3*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^5 - (((d*((232*b^2*c^3*e^3*f - 1408*c^5*d^3*g + 272*b^
3*c^2*e^3*g + 616*c^5*d^2*e*f - 760*b*c^4*d*e^2*f + 2420*b*c^4*d^2*e*g - 14
00*b^2*c^3*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((4
*c^4*e^2*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)^2) - (8*c^5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e
- (232*b^2*c^3*e^3*g + 84*b*c^4*e^3*f - 144*c^5*d*e^2*f + 616*c^5*d^2*e*g -
760*b*c^4*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (9
6*b^3*c^2*e^3*f - 704*b*c^4*d^3*g + 88*b^4*c*e^3*g + 308*b*c^4*d^2*e*f - 34
4*b^2*c^3*d*e^2*f + 1056*b^2*c^3*d^2*e*g - 528*b^3*c^2*d*e^2*g)/(143*(9*b*e
^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^5 + (((d*((2568*b^2*c^5*e^3*f - 40192*c^7*d^3*g + 6192*b^3*c^4
*e^3*g + 8448*c^7*d^2*e*f - 9312*b*c^6*d*e^2*f + 64512*b*c^6*d^2*e*g - 3458
4*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((3
2*c^6*e^2*(15*b*e*g - 27*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/
e - (8*c^5*e*(107*b^2*e^2*g + 352*c^2*d^2*g + 20*b*c*e^2*f - 36*c^2*d*e*f -
388*b*c*d*e*g))/(3003*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b
c^3(314*b^3*e^3*g - 2512*c^3*d^3*g + 146*b^2*c*e^3*f + 528*c^3*d^2*e*f -
555*b*c^2*d*e^2*f + 3768*b*c^2*d^2*e*g - 1884*b^2*c*d*e^2*g))/(9009*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^3 - (((d*((832*b^2*c^6*e^3*f - 6144*c^8*d^3*g + 1104*b^3*c^5*e^
3*g + 2112*c^8*d^2*e*f - 2624*b*c^7*d*e^2*f + 10272*b*c^7*d^2*e*g - 5792*b^
2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^
7*e^2*(11*b*e*g - 16*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
- (32*c^6*e*(26*b^2*e^2*g + 66*c^2*d^2*g + 11*b*c*e^2*f - 16*c^2*d*e*f - 82
*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (16*b*c^
4*(24*b^3*e^3*g - 192*c^3*d^3*g + 21*b^2*c*e^3*f + 66*c^3*d^2*e*f - 74*b*c^
2*d*e^2*f + 288*b*c^2*d^2*e*g - 144*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d
e)(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 - (((d*((4400*b^2*c^6*e^3*f - 72192*c^8*d^3*g + 11016*b^3*c^5*e^3*g + 1
4336*c^8*d^2*e*f - 15872*b*c^7*d*e^2*f + 115456*b*c^7*d^2*e*g - 61696*b^2*c
^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e
^2*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (
16*c^6*e*(275*b^2*e^2*g + 896*c^2*d^2*g + 54*b*c*e^2*f - 96*c^2*d*e*f - 992
*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4
*(564*b^3*e^3*g - 4512*c^3*d^3*g + 249*b^2*c*e^3*f + 896*c^3*d^2*e*f - 944*
b*c^2*d*e^2*f + 6768*b*c^2*d^2*e*g - 3384*b^2*c*d*e^2*g))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^2 - (((d*((4944*b^2*c^6*e^3*f - 83584*c^8*d^3*g + 12696*b^3*c^5*e^3
*g + 16256*c^8*d^2*e*f - 17920*b*c^7*d*e^2*f + 133504*b*c^7*d^2*e*g - 71232

*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(29*b*e*g - 52*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(309*b^2*e^2*g + 1016*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e*f - 1120*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(653*b^3*e^3*g - 5224*c^3*d^3*g + 281*b^2*c*e^3*f + 1016*c^3*d^2*e*f - 1068*b*c^2*d*e^2*f + 7836*b*c^2*d^2*e*g - 3918*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((5488*b^2*c^6*e^3*f - 94976*c^8*d^3*g + 14376*b^3*c^5*e^3*g + 18176*c^8*d^2*e*f - 19968*b*c^7*d*e^2*f + 151552*b*c^7*d^2*e*g - 80768*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(343*b^2*e^2*g + 1136*c^2*d^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1248*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(742*b^3*e^3*g - 5936*c^3*d^3*g + 313*b^2*c*e^3*f + 1136*c^3*d^2*e*f - 1192*b*c^2*d*e^2*f + 8904*b*c^2*d^2*e*g - 4452*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((5584*b^2*c^5*e^3*f - 150016*c^7*d^3*g + 21376*b^3*c^4*e^3*g + 19680*c^7*d^2*e*f - 20960*b*c^6*d*e^2*f + 234864*b*c^6*d^2*e*g - 122672*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(349*b^2*e^2*g + 1230*c^2*d^2*g + 43*b*c*e^2*f - 80*c^2*d*e*f - 1310*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (16*b*c^3*(586*b^3*e^3*g - 4688*c^3*d^3*g + 164*b^2*c*e^3*f + 615*c^3*d^2*e*f - 635*b*c^2*d*e^2*f + 7032*b*c^2*d^2*e*g - 3516*b^2*c*d*e^2*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((5616*b^2*c^6*e^3*f - 99072*c^8*d^3*g + 14952*b^3*c^5*e^3*g + 18688*c^8*d^2*e*f - 20480*b*c^7*d*e^2*f + 157952*b*c^7*d^2*e*g - 84096*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(351*b^2*e^2*g + 1168*c^2*d^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1280*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(774*b^3*e^3*g - 6192*c^3*d^3*g + 321*b^2*c*e^3*f + 1168*c^3*d^2*e*f - 1224*b*c^2*d*e^2*f + 9288*b*c^2*d^2*e*g - 4644*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((6224*b^2*c^6*e^3*f - 112512*c^8*d^3*g + 16920*b^3*c^5*e^3*g + 20864*c^8*d^2*e*f - 22784*b*c^7*d*e^2*f + 179200*b*c^7*d^2*e*g - 95296*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(389*b^2*e^2*g + 1304*c^2*d^2*g + 66*b*c*e^2*f - 120*c^2*d*e*f - 1424*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(879*b^3*e^3*g - 7032*c^3*d^3*g + 357*b^2*c*e^3*f + 1304*c^3*d^2*e*f - 1364*b*c^2*d*e^2*f + 10548*b*c^2*d^2*e*g - 5274*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((6960*b^2*c^6*e^3*f - 130048*c^8*d^3*g + 19464*b^3*c^5*e^3*g + 23552*c^8*d^2*e*f - 25600*b*c^7*d*e^2*f + 206848*b*c^7*d^2*e*g - 109824*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(35*b*e*g - 64*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(435*b^2*e^2*g + 1472*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1600*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(1016*b^3*e^3*g - 8128*c^3*d^3*g + 401*b^2*c*e^3*f + 1472*c^3*d^2*e*f - 1536*b*c^2*d*e^2*f + 12192*b*c^2*d^2*e*g - 6096*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +

```
e*x)^2 + (((d*((8976*b^2*c^6*e^3*f - 229888*c^8*d^3*g + 32928*b^3*c^5*e^3*g
 + 31232*c^8*d^2*e*f - 33472*b*c^7*d*e^2*f + 360448*b*c^7*d^2*e*g - 188592*
b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*
c^7*e^2*(19*b*e*g - 35*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
- (16*c^6*e*(561*b^2*e^2*g + 1952*c^2*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f
- 2092*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (1
6*b*c^4*(898*b^3*e^3*g - 7184*c^3*d^3*g + 262*b^2*c*e^3*f + 976*c^3*d^2*e*f
 - 1011*b*c^2*d*e^2*f + 10776*b*c^2*d^2*e*g - 5388*b^2*c*d*e^2*g))/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x)^2 + (((d*((9808*b^2*c^6*e^3*f - 258560*c^8*d^3*g + 36912*b
^3*c^5*e^3*g + 34304*c^8*d^2*e*f - 36672*b*c^7*d*e^2*f + 404992*b*c^7*d^2*e
*g - 211664*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) +
(d*((d*((64*c^7*e^2*(20*b*e*g - 37*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5)))/e - (16*c^6*e*(613*b^2*e^2*g + 2144*c^2*d^2*g + 80*b*c*e^2*f - 14
8*c^2*d*e*f - 2292*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))
)/e))/e - (16*b*c^4*(1010*b^3*e^3*g - 8080*c^3*d^3*g + 287*b^2*c*e^3*f + 10
72*c^3*d^2*e*f - 1109*b*c^2*d*e^2*f + 12120*b*c^2*d^2*e*g - 6060*b^2*c*d*e^
2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((10768*b^2*c^6*e^3*f - 294912*c^8*
d^3*g + 41920*b^3*c^5*e^3*g + 37888*c^8*d^2*e*f - 40384*b*c^7*d*e^2*f + 461
312*b*c^7*d^2*e*g - 240752*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(21*b*e*g - 39*c*d*g + c*e*f))/(45045*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(673*b^2*e^2*g + 2368*c^2*d^2*g + 84
*b*c*e^2*f - 156*c^2*d*e*f - 2524*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5)))/e))/e - (16*b*c^4*(1152*b^3*e^3*g - 9216*c^3*d^3*g + 316*b
^2*c*e^3*f + 1184*c^3*d^2*e*f - 1223*b*c^2*d*e^2*f + 13824*b*c^2*d^2*e*g -
6912*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((11856*b^2*c^6*e^3*
f - 342016*c^8*d^3*g + 48336*b^3*c^5*e^3*g + 41984*c^8*d^2*e*f - 44608*b*c^
7*d*e^2*f + 534016*b*c^7*d^2*e*g - 278160*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(22*b*e*g - 41*c*d*g + c*
e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(741*b^2*e^2*g + 2624
*c^2*d^2*g + 88*b*c*e^2*f - 164*c^2*d*e*f - 2788*b*c*d*e*g))/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (16*b*c^4*(1336*b^3*e^3*g - 10688*c
^3*d^3*g + 349*b^2*c*e^3*f + 1312*c^3*d^2*e*f - 1353*b*c^2*d*e^2*f + 16032*
b*c^2*d^2*e*g - 8016*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16
672*b^2*c^6*e^3*f - 635904*c^8*d^3*g + 87424*b^3*c^5*e^3*g + 60352*c^8*d^2*
e*f - 63424*b*c^7*d*e^2*f + 984032*b*c^7*d^2*e*g - 507872*b^2*c^6*d*e^2*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(51*b*e*g
 - 96*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c
^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(52
1*b^2*e^2*g + 1886*c^2*d^2*g + 51*b*c*e^2*f - 96*c^2*d*e*f - 1982*b*c*d*e*g
))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (32*b*c^4*(1242*b^
3*e^3*g - 9936*c^3*d^3*g + 248*b^2*c*e^3*f + 943*c^3*d^2*e*f - 967*b*c^2*d*
e^2*f + 14904*b*c^2*d^2*e*g - 7452*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^2
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**10,x
)
```

```
[Out] Timed out
```

3.1978 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{45045e^2(d+ex)^7(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22c}{6435e^2(d+ex)^8(2cd-be)^4}$$

Rubi [A] time = 0.58, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{45045e^2(d+ex)^7(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{6435e^2(d+ex)^8(2cd-be)^4}-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{715e^2(d+ex)^9(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{195e^2(d+ex)^{10}(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(d+ex)^{11}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(15*e^2*(2*c*d
 - b*e)*(d + e*x)^11) - (2*(8*c*e*f + 22*c*d*g - 15*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(7/2))/(195*e^2*(2*c*d - b*e)^2*(d + e*x)^10) - (4*c*
(8*c*e*f + 22*c*d*g - 15*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2)
)/(715*e^2*(2*c*d - b*e)^3*(d + e*x)^9) - (16*c^2*(8*c*e*f + 22*c*d*g - 15*
b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(6435*e^2*(2*c*d - b*e)
^4*(d + e*x)^8) - (32*c^3*(8*c*e*f + 22*c*d*g - 15*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(7/2))/(45045*e^2*(2*c*d - b*e)^5*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} + \frac{(8cef+22cdg-1}{}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

Mathematica [A] time = 0.30, size = 351, normalized size = 0.98

$$-\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(231b^4e^4(2dg+13ef+15egx)-42b^3ce^3\left(89d^2g+de(616f+706gx)+e^2x(44f+45gx)\right)+84b^2c^2e^2\left(133d^3g+6d^2e(167f+189gx)+3de^2x(52f+51gx)+2e^3x^2(6f+5gx)\right)-8bc^3e\left(1801d^4g+2d^3e(7672f+8481gx)+3d^2e^2x(1316f+1201gx)+4de^3x^2(168f+121gx)+2e^4x^3(28f+15gx)\right)+16c^4\left(407d^5g+d^4e(4243f+4477gx)+11d^3e^2x(148f+117gx)+2d^2e^3x^2(234f+121gx)+22de^4x^3(4f+gx)+8e^5fx^4\right)\right)}{45045e^2(d+ex)^8(be-2cd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^11,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(231*b^
4*e^4*(13*e*f + 2*d*g + 15*e*g*x) + 84*b^2*c^2*e^2*(133*d^3*g + 2*e^3*x^2*(
6*f + 5*g*x) + 3*d*e^2*x*(52*f + 51*g*x) + 6*d^2*e*(167*f + 189*g*x)) - 42*
b^3*c*e^3*(89*d^2*g + e^2*x*(44*f + 45*g*x) + d*e*(616*f + 706*g*x)) + 16*c
^4*(407*d^5*g + 8*e^5*f*x^4 + 22*d*e^4*x^3*(4*f + g*x) + 11*d^3*e^2*x*(148*
f + 117*g*x) + 2*d^2*e^3*x^2*(234*f + 121*g*x) + d^4*e*(4243*f + 4477*g*x))
 - 8*b*c^3*e*(1801*d^4*g + 2*e^4*x^3*(28*f + 15*g*x) + 4*d*e^3*x^2*(168*f +
 121*g*x) + 3*d^2*e^2*x*(1316*f + 1201*g*x) + 2*d^3*e*(7672*f + 8481*g*x)))
)/(45045*e^2*(-2*c*d + b*e)^5*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 180.61, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^11,x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x, algo
rithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x, algo
rithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.06, size = 564, normalized size = 1.57

$$-\frac{2\left(c e x+b e-c d\right)\left(-240 b c^{3} e^{5} g x^{4}+352 c^{4} d e^{4} g x^{4}+128 c^{4} e^{5} f x^{4}+840 b^{2} c^{2} e^{5} g x^{3}-3872 b c^{3} d e^{4} g x^{3}-448 b c^{3} e^{5} f x^{3}+3872 c^{4} d^{2} e^{3} g x^{3}+1408 c^{4} d e^{4} f x^{3}-1890 b^{3} c e^{5} g x^{2}+12852 b^{2} c^{2} d e^{4} g x^{2}+1008 b^{2} c^{2} e^{5} f x^{2}-28824 b c^{3} d^{2} e^{3} g x^{2}-5376 b c^{3} d e^{4} f x^{2}+20592 c^{4} d^{3} e^{2} g x^{2}+7488 c^{4} d^{2} e^{3} f x^{2}+3465 b^{4} e^{5} g x-29652 b^{3} c d e^{4} g x-1848 b^{3} c e^{5} f x+95256 b^{2} c^{2} d^{2} e^{3} g x+13104 b^{2} c^{2} d e^{4} f x-135696 b c^{3} d^{3} e^{2} g x-31584 b c^{3} d^{2} e^{3} f x+71632 c^{4} d^{4} e g x+26048 c^{4} d^{3} e^{2} f x+462 b^{4} d e^{4} g+3003 b^{4} e^{5} f-3738 b^{3} c d^{2} e^{3} g-25872 b^{3} c d e^{4} f+11172 b^{2} c^{2} d^{3} e^{2} g+84168 b^{2} c^{2} d^{2} e^{3} f-14408 b c^{3} d^{4} e g-122752 b c^{3} d^{3} e^{2} f+6512 c^{4} d^{5} g+67888 c^{4} d^{4} e f\right)\left(-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}\right)^{\frac{5}{2}}}{45045\left(e x+d\right)^{10}\left(b^{5} e^{5}-10 b^{4} c d e^{4}+40 b^{3} c^{2} d^{2} e^{3}-80 b^{2} c^{3} d^{3} e^{2}+80 b c^{4} d^{4} e-32 c^{5} d^{5}\right) e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x)
```

```
[Out] -2/45045*(c*e*x+b*e-c*d)*(-240*b*c^3*e^5*g*x^4+352*c^4*d*e^4*g*x^4+128*c^4*
e^5*f*x^4+840*b^2*c^2*e^5*g*x^3-3872*b*c^3*d*e^4*g*x^3-448*b*c^3*e^5*f*x^3+
3872*c^4*d^2*e^3*g*x^3+1408*c^4*d*e^4*f*x^3-1890*b^3*c*e^5*g*x^2+12852*b^2*
c^2*d*e^4*g*x^2+1008*b^2*c^2*e^5*f*x^2-28824*b*c^3*d^2*e^3*g*x^2-5376*b*c^3
*d*e^4*f*x^2+20592*c^4*d^3*e^2*g*x^2+7488*c^4*d^2*e^3*f*x^2+3465*b^4*e^5*g*
x-29652*b^3*c*d*e^4*g*x-1848*b^3*c*e^5*f*x+95256*b^2*c^2*d^2*e^3*g*x+13104*
b^2*c^2*d*e^4*f*x-135696*b*c^3*d^3*e^2*g*x-31584*b*c^3*d^2*e^3*f*x+71632*c^
4*d^4*e*g*x+26048*c^4*d^3*e^2*f*x+462*b^4*d*e^4*g+3003*b^4*e^5*f-3738*b^3*c
*d^2*e^3*g-25872*b^3*c*d*e^4*f+11172*b^2*c^2*d^3*e^2*g+84168*b^2*c^2*d^2*e^
3*f-14408*b*c^3*d^4*e*g-122752*b*c^3*d^3*e^2*f+6512*c^4*d^5*g+67888*c^4*d^4
*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10/e^2/(b^5*e^5-10*b^4
*c*d*e^4+40*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x, algo
rithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^11,x)
```

```
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**11,x
)
```

```
[Out] Timed out
```

3.1979 $\int \frac{(d+ex)^3(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=340

$$\frac{5(2cd-be)^3(-7beg+6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{9/2}e^2}-\frac{5(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7}{64c^4e^2}$$

Rubi [A] time = 0.61, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {794, 670, 640, 621, 204}

$$-\frac{5(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+6cdg+8cef)}{64c^4e^2}-\frac{5(d+ex)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+6cdg+8cef)}{96c^3e^2}-\frac{(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+6cdg+8cef)}{24c^2e^2}+\frac{5(2cd-be)^3(-7beg+6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{9/2}e^2}-\frac{g(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-5*(2*c*d - b*e)^2*(8*c*e*f + 6*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2])/(64*c^4*e^2) - (5*(2*c*d - b*e)*(8*c*e*f + 6*c*d*g - 7*b*
e*g)*(d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(96*c^3*e^2) - ((
8*c*e*f + 6*c*d*g - 7*b*e*g)*(d + e*x)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(24*c^2*e^2) - (g*(d + e*x)^3*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2
*x^2])/(4*c*e^2) + (5*(2*c*d - b*e)^3*(8*c*e*f + 6*c*d*g - 7*b*e*g)*ArcTan[
(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(12
8*c^(9/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
```

```
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{g(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+3\left(-ce^3f+\right.\right.}{}$$

$$= -\frac{(8cef+6cdg-7beg)(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24c^2e^2} - \frac{g(d+ex)^3\sqrt{d(c}}{}$$

$$= -\frac{5(2cd-be)(8cef+6cdg-7beg)(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{96c^3e^2} - \frac{(8ce}{}$$

$$= -\frac{5(2cd-be)^2(8cef+6cdg-7beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^4e^2} - \frac{5(2cd-be)(}{}$$

$$= -\frac{5(2cd-be)^2(8cef+6cdg-7beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^4e^2} - \frac{5(2cd-be)(}{}$$

$$= -\frac{5(2cd-be)^2(8cef+6cdg-7beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^4e^2} - \frac{5(2cd-be)(}{}$$

Mathematica [A] time = 1.74, size = 375, normalized size = 1.10

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{e^3(-7beg+6cdg+8cef)\left(8c^3e^6(d+ex)^3\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}-10c^2e^6(d+ex)^2\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}+15\sqrt{c}e^{13/2}\sqrt{d+ex}(be-2cd)^3\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)+15ce^6(d+ex)\sqrt{e(2cd-be)}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\right)}{3\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}}-16c^4e^9g(d+ex)^4\right)}{64c^5e^{11}(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-16*c^4*e^9*g*(d + e*x)^4 - (e^3*(
8*c*e*f + 6*c*d*g - 7*b*e*g)*(15*c*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)
^2*(d + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 10*c^2*e^6*Sqrt[
e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2
*c*d + b*e)] + 8*c^3*e^6*Sqrt[e*(2*c*d - b*e)]*(d + e*x)^3*Sqrt[(-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)] + 15*Sqrt[c]*e^(13/2)*(-2*c*d + b*e)^3*Sqrt[d +
 e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/(3*Sq
rt[e*(2*c*d - b*e)]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(64*c^5*
e^11*(d + e*x))
```

IntegrateAlgebraic [F] time = 180.92, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^3*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2],x]
```

```
[Out] $Aborted
```

fricas [A] time = 1.15, size = 825, normalized size = 2.43

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [-1/768*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^
4)*f + (48*c^4*d^4 - 128*b*c^3*d^3*e + 120*b^2*c^2*d^2*e^2 - 48*b^3*c*d*e^3
 + 7*b^4*e^4)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b
*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x +
b*e)*sqrt(-c)) + 4*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f + (24*c^4*d*e^2 - 7*b
*c^3*e^3)*g)*x^2 + 8*(88*c^4*d^2*e - 70*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (
576*c^4*d^3 - 1036*b*c^3*d^2*e + 580*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g + 2*(
8*(18*c^4*d*e^2 - 5*b*c^3*e^3)*f + (180*c^4*d^2*e - 156*b*c^3*d*e^2 + 35*b^
2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2), -1/
384*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f
 + (48*c^4*d^4 - 128*b*c^3*d^3*e + 120*b^2*c^2*d^2*e^2 - 48*b^3*c*d*e^3 + 7
*b^4*e^4)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*
(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f + (24*c^4*d*e^2 - 7*b*c^3*e^3)*g)*x^2 +
8*(88*c^4*d^2*e - 70*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (576*c^4*d^3 - 1036*
b*c^3*d^2*e + 580*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g + 2*(8*(18*c^4*d*e^2 - 5
*b*c^3*e^3)*f + (180*c^4*d^2*e - 156*b*c^3*d*e^2 + 35*b^2*c^2*e^3)*g)*x)*sq
rt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2)]
```

giac [A] time = 1.13, size = 383, normalized size = 1.13

$$-\frac{1}{192}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(2\left(4\left(\frac{6gxe}{c}+\frac{(24c^3dge^4+8c^3fe^5-7bc^2ge^5)e^{(-4)}}{c^4}\right)x+\frac{(180c^3d^2ge^3+144c^3dfe^4-156bc^2dge^4-40bc^2fe^5+35b^2cge^5)e^{(-4)}}{c^4}\right)x+\frac{(576c^3d^3ge^2+704c^3d^2fe^3-1036bc^2d^2ge^3-560bc^2dfe^4+580b^2cdge^4+120b^2cfe^5-105b^3ge^5)e^{(-4)}}{c^4}\right)+\frac{5(48c^4d^4g+64c^4d^3fe-128bc^3d^3ge-96bc^3d^2fe^2+120b^2c^2d^2ge^2+48b^2c^2dfe^3-48b^3cdge^3-8b^3cfe^4+7b^4ge^4)\sqrt{-ce^2}e^{(-3)}\log\left(\left|-2\left(\sqrt{-ce^2}x-\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\right)c-\sqrt{-ce^2}b\right|\right)}{128c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] -1/192*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(6*g*x*e/c + (24*c^
3*d*g*e^4 + 8*c^3*f*e^5 - 7*b*c^2*g*e^5)*e^(-4)/c^4)*x + (180*c^3*d^2*g*e^3
 + 144*c^3*d*f*e^4 - 156*b*c^2*d*g*e^4 - 40*b*c^2*f*e^5 + 35*b^2*c*g*e^5)*e
^(-4)/c^4)*x + (576*c^3*d^3*g*e^2 + 704*c^3*d^2*f*e^3 - 1036*b*c^2*d^2*g*e^
3 - 560*b*c^2*d*f*e^4 + 580*b^2*c*d*g*e^4 + 120*b^2*c*f*e^5 - 105*b^3*g*e^5
)*e^(-4)/c^4) + 5/128*(48*c^4*d^4*g + 64*c^4*d^3*f*e - 128*b*c^3*d^3*g*e -
96*b*c^3*d^2*f*e^2 + 120*b^2*c^2*d^2*g*e^2 + 48*b^2*c^2*d*f*e^3 - 48*b^3*c*
d*g*e^3 - 8*b^3*c*f*e^4 + 7*b^4*g*e^4)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt
(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b
))/c^5
```

maple [B] time = 0.07, size = 1208, normalized size = 3.55

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -5/16*b^3/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*e^3*f+5/2*d^3*f/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+5/12*b/c^2*x*e*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-3/2*x/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*d*f-5/8*b^2/c^3*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+15/8*b^2/
c^2*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d*f+75/16*e*g*b^2/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+35/12/c^2*(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d*f-3/e^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d
^2)^(1/2)*d^3*g-11/3/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-x^2/c
```

```
*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-1/3*x^2/c*e*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*f-1/4*e*g*x^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+
35/64*e*g*b^3/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-145/48*g*b^2/c^3*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+15/8/e*g/(c*e^2)^(1/2)*arctan((c*e^
2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4+259/48/e*g
*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+13/8*g/c^2*x*(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d-15/8/e*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)*d^2-5*g/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^3+7/24*e*g*b/c^2*x^2*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2)-35/96*e*g*b^2/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)+35/128*e^3*g*b^4/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-15/8*e^2*g*b^3/c^3/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d-15/4*b
/c*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^2*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^3}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{3} \left(f + g x\right)}{\sqrt{- \left(d + e x\right) \left(b e - c d + c e x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)**3*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.1980 $\int \frac{(d+ex)^2(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=265

$$\frac{(2cd-be)^2(-5beg+4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{7/2}e^2}-\frac{(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg}{8c^3e^2}$$

Rubi [A] time = 0.35, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {1638, 12, 670, 640, 621, 204}

$$-\frac{(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+4cdg+6cef)}{8c^3e^2}-\frac{(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+4cdg+6cef)}{12c^2e^2}+\frac{(2cd-be)^2(-5beg+4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{7/2}e^2}-\frac{g(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] -((2*c*d - b*e)*(6*c*e*f + 4*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2])/(8*c^3*e^2) - ((6*c*e*f + 4*c*d*g - 5*b*e*g)*(d + e*x)*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(12*c^2*e^2) - (g*(d + e*x)^2*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2])/(3*c*e^2) + ((2*c*d - b*e)^2*(6*c*e*f +
4*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])])/(16*c^(7/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int \frac{(d+ex)^2(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{g(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2} - \frac{\int -\frac{e^2(6cef+4cdg-5beg)(d+ex)^2}{2\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx}{3ce^3}$$

$$= -\frac{g(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2} + \frac{(6cef+4cdg-5beg)\int \frac{(d+ex)}{\sqrt{cd^2-bde-be^2 \cdots}}}{6ce}$$

$$= -\frac{(6cef+4cdg-5beg)(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{12c^2e^2} - \frac{g(d+ex)^2\sqrt{d(cd \cdots}}{}$$

$$= -\frac{(2cd-be)(6cef+4cdg-5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8c^3e^2} - \frac{(6cef+4cdg \cdots}{}$$

$$= -\frac{(2cd-be)(6cef+4cdg-5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8c^3e^2} - \frac{(6cef+4cdg \cdots}{}$$

$$= -\frac{(2cd-be)(6cef+4cdg-5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8c^3e^2} - \frac{(6cef+4cdg \cdots}{}$$

Mathematica [A] time = 1.28, size = 251, normalized size = 0.95

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{e^7(-5beg+4cdg+6cef)\left(3\sqrt{c}\sqrt{e}\sqrt{d+ex}(be-2cd)^2\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)-c(d+ex)\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}(-3be+8cd+2cex)\right)}{\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}}-8c^3e^7g(d+ex)^3\right)}{24c^4e^9(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-8*c^3*e^7*g*(d + e*x)^3 + (e^7*(6
*c*e*f + 4*c*d*g - 5*b*e*g)*(-(c*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*Sqrt[(-(c*
d) + b*e + c*e*x)/(-2*c*d + b*e)]*(8*c*d - 3*b*e + 2*c*e*x)) + 3*Sqrt[c]*Sq
rt[e]*(-2*c*d + b*e)^2*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])
/Sqrt[e*(2*c*d - b*e)]]))/(Sqrt[e*(2*c*d - b*e)]*Sqrt[(-(c*d) + b*e + c*e*x
)/(-2*c*d + b*e)])))/(24*c^4*e^9*(d + e*x))
```

IntegrateAlgebraic [B] time = 26.40, size = 22293, normalized size = 84.12

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2],x]
```

```
[Out] Result too large to show
```

fricas [A]   time = 0.87, size = 585, normalized size = 2.21

$$\left[\frac{3 \, {\left(6 \, {\left(4 \, c^{3} d^{2} e - 4 \, b c^{2} d e^{2} + b^{2} c e^{3}\right)} f + {\left(16 \, c^{3} d^{3} - 36 \, b c^{2} d^{2} e + 24 \, b^{2} c d e^{2} - 5 \, b^{3} e^{3}\right)} g\right)} \sqrt{-c} \log\left(8 \, c^{2} e^{2} x^{2} + 8 \, b c e^{2} x - 4 \, c^{2} d^{2} + 4 \, b c d e + b^{2} e^{2} + 4 \, \sqrt{-c e^{2} x^{2} - b e^{2} x + c d^{2} - b d e} {\left(2 \, c e x + b e\right)} \sqrt{-c}\right) - 4 \, {\left(8 \, c^{3} e^{2} g x^{2} + 6 \, {\left(8 \, c^{3} d e - 3 \, b c^{2} e^{2}\right)} f + {\left(40 \, c^{3} d^{2} - 52 \, b c^{2} d e + 15 \, b^{2} c e^{2}\right)} g + 2 \, {\left(6 \, c^{3} e^{2} f + {\left(12 \, c^{3} d e - 5 \, b c^{2} e^{2}\right)} g\right)} x\right)} \sqrt{-c e^{2} x^{2} - b e^{2} x + c d^{2} - b d e}}{96 \, c^{4} e^{2}}, -\frac{3 \, {\left(6 \, {\left(4 \, c^{3} d^{2} e - 4 \, b c^{2} d e^{2} + b^{2} c e^{3}\right)} f + {\left(16 \, c^{3} d^{3} - 36 \, b c^{2} d^{2} e + 24 \, b^{2} c d e^{2} - 5 \, b^{3} e^{3}\right)} g\right)} \sqrt{c} \arctan\left(\frac{\sqrt{-c e^{2} x^{2} - b e^{2} x + c d^{2} - b d e} {\left(2 \, c e x + b e\right)} \sqrt{c}}{2 \, {\left(c^{2} e^{2} x^{2} + b c e^{2} x - c^{2} d^{2} + b c d e\right)}}\right) + 2 \, {\left(8 \, c^{3} e^{2} g x^{2} + 6 \, {\left(8 \, c^{3} d e - 3 \, b c^{2} e^{2}\right)} f + {\left(40 \, c^{3} d^{2} - 52 \, b c^{2} d e + 15 \, b^{2} c e^{2}\right)} g + 2 \, {\left(6 \, c^{3} e^{2} f + {\left(12 \, c^{3} d e - 5 \, b c^{2} e^{2}\right)} g\right)} x\right)} \sqrt{-c e^{2} x^{2} - b e^{2} x + c d^{2} - b d e}}{48 \, c^{4} e^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [1/96*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e^3)*f + (16*c^3*d^3 - 36*
b*c^2*d^2*e + 24*b^2*c*d*e^2 - 5*b^3*e^3)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8
*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x
+ c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(8*c^3*e^2*g*x^2 + 6*(8*c^3*
d*e - 3*b*c^2*e^2)*f + (40*c^3*d^2 - 52*b*c^2*d*e + 15*b^2*c*e^2)*g + 2*(6*
c^3*e^2*f + (12*c^3*d*e - 5*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*
d^2 - b*d*e))/(c^4*e^2), -1/48*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e
^3)*f + (16*c^3*d^3 - 36*b*c^2*d^2*e + 24*b^2*c*d*e^2 - 5*b^3*e^3)*g)*sqrt(
c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sq
rt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(8*c^3*e^2*g*x^2 +
 6*(8*c^3*d*e - 3*b*c^2*e^2)*f + (40*c^3*d^2 - 52*b*c^2*d*e + 15*b^2*c*e^2)
*g + 2*(6*c^3*e^2*f + (12*c^3*d*e - 5*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e))/(c^4*e^2)]
```

giac [A]   time = 0.55, size = 264, normalized size = 1.00

$$-\frac{1}{24} \, \sqrt{-c x^{2} e^{2} + c d^{2} - b x e^{2} - b d e} {\left(2 \, {\left(\frac{4 \, g x}{c} + \frac{{\left(12 \, c^{2} d g e^{2} + 6 \, c^{2} f e^{3} - 5 \, b c g e^{3}\right)} e^{\left(-3\right)}}{c^{3}}\right)} x + \frac{{\left(40 \, c^{2} d^{2} g e + 48 \, c^{2} d f e^{2} - 52 \, b c d g e^{2} - 18 \, b c f e^{3} + 15 \, b^{2} g e^{3}\right)} e^{\left(-3\right)}}{c^{3}}\right)} + \frac{{\left(16 \, c^{3} d^{3} g + 24 \, c^{3} d^{2} f e - 36 \, b c^{2} d^{2} g e - 24 \, b c^{2} d f e^{2} + 24 \, b^{2} c d g e^{2} + 6 \, b^{2} c f e^{3} - 5 \, b^{3} g e^{3}\right)} \sqrt{-c e^{2}} e^{\left(-3\right)} \log\left({\left| -2 \, {\left(\sqrt{-c e^{2}} x - \sqrt{-c x^{2} e^{2} + c d^{2} - b x e^{2} - b d e}\right)} c - \sqrt{-c e^{2}} b \right|}\right)}{16 \, c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] -1/24*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*g*x/c + (12*c^2*d*g*
e^2 + 6*c^2*f*e^3 - 5*b*c*g*e^3)*e^(-3)/c^3)*x + (40*c^2*d^2*g*e + 48*c^2*d
*f*e^2 - 52*b*c*d*g*e^2 - 18*b*c*f*e^3 + 15*b^2*g*e^3)*e^(-3)/c^3) + 1/16*(
16*c^3*d^3*g + 24*c^3*d^2*f*e - 36*b*c^2*d^2*g*e - 24*b*c^2*d*f*e^2 + 24*b^
2*c*d*g*e^2 + 6*b^2*c*f*e^3 - 5*b^3*g*e^3)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(
sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^
2)*b))/c^4
```

maple [B]   time = 0.06, size = 786, normalized size = 2.97

$$-\frac{5 b^{3} e^{2} g \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{16 \sqrt{c e^{2}}\, c^{3}}+\frac{3 b^{2} d e g \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{2 \sqrt{c e^{2}}\, c^{2}}+\frac{3 b^{2} e^{2} f \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{8 \sqrt{c e^{2}}\, c^{2}}-\frac{9 b d^{2} g \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{4 \sqrt{c e^{2}}\, c}-\frac{3 b d e f \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{2 \sqrt{c e^{2}}\, c}+\frac{d^{3} g \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{\sqrt{c e^{2}}\, e}+\frac{3 d^{2} f \arctan\left(\frac{\sqrt{c e^{2}}\, \left(x+\frac{b}{2 c}\right)}{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}}\right)}{2 \sqrt{c e^{2}}}-\frac{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, g x^{2}}{3 c}+\frac{5 \sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, b g x}{12 c^{2}}-\frac{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, d g x}{c e}-\frac{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, f x}{2 c}-\frac{5 \sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, b^{2} g}{8 c^{3}}+\frac{13 \sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, b d g}{6 c^{2} e}+\frac{3 \sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, b f}{4 c^{2}}-\frac{5 \sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, d^{2} g}{3 c e}-\frac{2 \sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, d f}{c e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/3*g*x^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+5/12*g*b/c^2*x*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-5/8*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2)-5/16*e^2*g*b^3/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+3/2*e*g*b^2/c^2/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d-9/4*g
*b/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^2+13/6/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*
d-5/3/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-x/c/e*(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-1/2*x/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*f+3/4*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+3/8*b^2/c^2/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2))*e^2*f-3/2/c*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x
```

```
^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d*f+1/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*g+3/2*d^2*f/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))-2/c/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+gx)\,(d+ex)^2}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^2\,(f+gx)}{\sqrt{-(d+ex)\,(be-cd+cex)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)**2*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.1981 $\int \frac{(d+ex)(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=149

$$\frac{(2cd-be)(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{5/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(3beg-4c(dg+e$$

Rubi [A] time = 0.16, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.071$, Rules used = {779, 621, 204}

$$\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(3beg-4c(dg+ef)-2cegx)}{4c^2e^2}+\frac{(2cd-be)(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{5/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((3*b*e*g - 4*c*(e*f + d*g) - 2*c*e*g*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(4*c^2*e^2) + ((2*c*d - b*e)*(4*c*e*f + 2*c*d*g - 3*b*e*g)*ArcTan[
(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*
c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx &= \frac{(3beg-4c(ef+dg)-2cegx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4c^2e^2}+\frac{((2cd-be)(4ce\\ &= \frac{(3beg-4c(ef+dg)-2cegx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4c^2e^2}+\frac{((2cd-be)(4ce\\ &= \frac{(3beg-4c(ef+dg)-2cegx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4c^2e^2}+\frac{(2cd-be)(4ce\end{aligned}$$

Mathematica [A] time = 0.79, size = 218, normalized size = 1.46

$$\frac{\sqrt{c}\sqrt{e}(d+ex)\sqrt{e(2cd-be)}(be-cd+cex)(2c(2dg+2ef+egx)-3beg)+e\sqrt{d+ex}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}(-3beg+2cdg+4cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{4c^{5/2}e^{5/2}\sqrt{e(2cd-be)}\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] (Sqrt[c]*Sqrt[e]*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*(-(c*d) + b*e + c*e*x)*(-3
*b*e*g + 2*c*(2*e*f + 2*d*g + e*g*x)) + e*(-2*c*d + b*e)^2*(4*c*e*f + 2*c*d
*g - 3*b*e*g)*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*Arc
Sin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(4*c^(5/2)*e^(5
/2)*Sqrt[e*(2*c*d - b*e)]*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 3.64, size = 327, normalized size = 2.19

$$\frac{(-3b^2e^2g+8bcdeg+4bce^2f-4c^2d^2g-8c^2def)\tan^{-1}\left(\frac{\sqrt{c}\left(2\sqrt{-bde-be^2x+cd^2-ce^2x^2}-2x\sqrt{-ce^2}\right)}{be}\right)}{8c^{5/2}e^2}+\frac{\sqrt{-ce^2}\left(3b^2e^2g-8bcdeg-4bce^2f+4c^2d^2g+8c^2def\right)\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{16c^3e^3}+\frac{\sqrt{-bde-be^2x+cd^2-ce^2x^2}(3beg-4cdg-4cef-2cegx)}{4c^2e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2],x]
```

```
[Out] ((-4*c*e*f - 4*c*d*g + 3*b*e*g - 2*c*e*g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x -
c*e^2*x^2])/(4*c^2*e^2) + ((-8*c^2*d*e*f + 4*b*c*e^2*f - 4*c^2*d^2*g + 8*b*
c*d*e*g - 3*b^2*e^2*g)*ArcTan[(Sqrt[c]*(-2*Sqrt[-(c*e^2)]*x + 2*Sqrt[c*d^2
- b*d*e - b*e^2*x - c*e^2*x^2]))/(b*e)])/(8*c^(5/2)*e^2) + (Sqrt[-(c*e^2)]*
(8*c^2*d*e*f - 4*b*c*e^2*f + 4*c^2*d^2*g - 8*b*c*d*e*g + 3*b^2*e^2*g)*Log[4
*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x^2 - 8*c*Sqrt[-(c
*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]])/(16*c^3*e^3)
```

fricas [A] time = 0.63, size = 403, normalized size = 2.70

$$\left[-\frac{\left(4\left(2c^2de-bce^2\right)f+\left(4c^2d^2-8bcde+3b^2e^2\right)g\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{-c}\right)+4\left(2c^2egx+4c^2ef+\left(4c^2d-3bce\right)g\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{16c^3e^2},-\frac{\left(4\left(2c^2de-bce^2\right)f+\left(4c^2d^2-8bcde+3b^2e^2\right)g\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{c}}{2\left(c^2e^2x^2+bce^2x-c^2d^2+bcde\right)}\right)+2\left(2c^2egx+4c^2ef+\left(4c^2d-3bce\right)g\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{8c^3e^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="fricas")
```

```
[Out] [-1/16*((4*(2*c^2*d*e - b*c*e^2)*f + (4*c^2*d^2 - 8*b*c*d*e + 3*b^2*e^2)*g)
*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2
 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) +
 4*(2*c^2*e*g*x + 4*c^2*e*f + (4*c^2*d - 3*b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e))/(c^3*e^2), -1/8*((4*(2*c^2*d*e - b*c*e^2)*f + (4*c^2*
d^2 - 8*b*c*d*e + 3*b^2*e^2)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*
x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d
^2 + b*c*d*e)) + 2*(2*c^2*e*g*x + 4*c^2*e*f + (4*c^2*d - 3*b*c*e)*g)*sqrt(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2)]
```

giac [A] time = 0.54, size = 179, normalized size = 1.20

$$-\frac{1}{4}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(\frac{2gxe^{(-1)}}{c}+\frac{\left(4cdge+4cfe^2-3bge^2\right)e^{(-3)}}{c^2}\right)+\frac{\left(4c^2d^2g+8c^2dfe-8bcdge-4bcfe^2+3b^2ge^2\right)\sqrt{-ce^2}e^{(-3)}\log\left(\left|-2\left(\sqrt{-ce^2}x-\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\right)c-\sqrt{-ce^2}b\right|\right)}{8c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="giac")
```

```
[Out] -1/4*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*g*x*e^(-1)/c + (4*c*d*g*
e + 4*c*f*e^2 - 3*b*g*e^2)*e^(-3)/c^2) + 1/8*(4*c^2*d^2*g + 8*c^2*d*f*e - 8
*b*c*d*g*e - 4*b*c*f*e^2 + 3*b^2*g*e^2)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqr
t(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*
b))/c^3
```

maple [B] time = 0.06, size = 460, normalized size = 3.09

$$\frac{3b^{2}eg\arctan\left(\frac{\sqrt{c\,e^{2}}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{8\sqrt{c\,e^{2}}\;c^{2}}-\frac{bdg\arctan\left(\frac{\sqrt{c\,e^{2}}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{\sqrt{c\,e^{2}}\;c}-\frac{bef\arctan\left(\frac{\sqrt{c\,e^{2}}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{2\sqrt{c\,e^{2}}\;c}+\frac{d^{2}g\arctan\left(\frac{\sqrt{c\,e^{2}}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{2\sqrt{c\,e^{2}}\;e}+\frac{df\arctan\left(\frac{\sqrt{c\,e^{2}}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{\sqrt{c\,e^{2}}}-\frac{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,gx}{2ce}+\frac{3\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,bg}{4c^{2}e}-\frac{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,dg}{c\,e^{2}}-\frac{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,f}{ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/2/e*g*x/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/4/e*g*b/c^2*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/8*e*g*b^2/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^
(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-g/c/(c*e^2)^(1/2)
*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b
*d+1/2/e*g/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2))*d^2-1/c/e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d
*g-1/c/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/2*b/c/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*e*f+d
*f/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\left(d+e\,x\right)}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right) \left(f + g x\right)}{\sqrt{- \left(d + e x\right) \left(b e - c d + c e x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.1982 $\int \frac{f+gx}{(d+ex)\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=121

$$\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{\sqrt{c}\,e^2}-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)(2cd-be)}$$

Rubi [A] time = 0.16, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 621, 204}

$$\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{\sqrt{c}\,e^2}-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(2*c*d - b*
e)*(d + e*x)) + (g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])])/(Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)}+\frac{g\int\frac{1}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx}{e}$$

$$=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)}+\frac{(2g)\,\text{Subst}\left(\int\frac{1}{-4ce^2-x^2}\,dx,x\right.}{e}$$

$$=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)}+\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-c}}\right.}{\sqrt{c}\,e^2}$$

Mathematica [A] time = 0.47, size = 189, normalized size = 1.56

$$-\frac{2\left(\sqrt{c}\sqrt{e(2cd-be)}(ef-dg)(be-cd+cex)+\sqrt{e}g\sqrt{d+ex}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)\right)}{\sqrt{c}e^2\sqrt{e(2cd-be)}(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x
]
```

```
[Out] (-2*(Sqrt[c]*Sqrt[e*(2*c*d - b*e)]*(e*f - d*g)*(-(c*d) + b*e + c*e*x) + Sqr
t[e]*(-2*c*d + b*e)^2*g*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d +
 b*e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/(Sqr
t[c]*e^2*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d
 - e*x))])
```

IntegrateAlgebraic [B] time = 1.63, size = 250, normalized size = 2.07

$$\frac{g\sqrt{-ce^2}\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{2ce^3}+\frac{2(ef-dg)\sqrt{-bde-be^2x+cd^2-ce^2x^2}}{e^2(d+ex)(be-2cd)}+\frac{g\tan^{-1}\left(\frac{2\sqrt{c}x\sqrt{-ce^2}}{be}-\frac{2\sqrt{c}\sqrt{-bde-be^2x+cd^2-ce^2x^2}}{be}\right)}{\sqrt{c}e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^
2*x^2]),x]
```

```
[Out] (2*(e*f - d*g)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(e^2*(-2*c*d + b*
e)*(d + e*x)) + (g*ArcTan[(2*Sqrt[c]*Sqrt[-(c*e^2)]*x)/(b*e) - (2*Sqrt[c]*S
qrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(b*e)])/(Sqrt[c]*e^2) + (Sqrt[-(c
*e^2)]*g*Log[4*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x^2
- 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]])/(2*c*e^3
)
```

fricas [A] time = 1.22, size = 405, normalized size = 3.35

$$\left[-\frac{\left(\left(2cde-be^2\right)gx+\left(2cd^2-bde\right)g\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{-c}\right)+4\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cef-cdg\right)}{2\left(2c^2d^2e^2-bcde^3+\left(2c^2de^3-bce^4\right)x\right)},-\frac{\left(\left(2cde-be^2\right)gx+\left(2cd^2-bde\right)g\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{c}}{2\left(c^2e^2x^2+bce^2x-c^2d^2+bcde\right)}\right)+2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cef-cdg\right)}{2c^2d^2e^2-bcde^3+\left(2c^2de^3-bce^4\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="fricas")
```

```
[Out] [-1/2*(((2*c*d*e - b*e^2)*g*x + (2*c*d^2 - b*d*e)*g)*sqrt(-c)*log(8*c^2*e^2
*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 -
b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e)*(c*e*f - c*d*g))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c^2
*d*e^3 - b*c*e^4)*x), -(((2*c*d*e - b*e^2)*g*x + (2*c*d^2 - b*d*e)*g)*sqrt(
c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sq
rt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*sqrt(-c*e^2*x^2 -
b*e^2*x + c*d^2 - b*d*e)*(c*e*f - c*d*g))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c
^2*d*e^3 - b*c*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [A] time = 0.06, size = 134, normalized size = 1.11

$$\frac{g\arctan\left(\frac{\sqrt{c\,e^{2}}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{\sqrt{c\,e^{2}}\;e}-\frac{2\left(-dg+ef\right)\sqrt{-\left(x+\frac{d}{e}\right)^{2}c\,e^{2}+\left(-b\,e^{2}+2cde\right)\left(x+\frac{d}{e}\right)}}{\left(-b\,e^{2}+2cde\right)\left(x+\frac{d}{e}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] g/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2))-2*(-d*g+e*f)/e^2/(-b*e^2+2*c*d*e)/(x+d/e)*(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{\left(d+e\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)), x)
```

3.1983 $\int \frac{f+gx}{(d+ex)^2\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=137

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(d+ex)^2(2cd-be)}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{3e^2(d+ex)(2cd-be)^2}$$

Rubi [A] time = 0.20, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(d+ex)^2(2cd-be)}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{3e^2(d+ex)(2cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(3*e^2*(2*c*d -
b*e)*(d + e*x)^2) - (2*(2*c*e*f + 4*c*d*g - 3*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(3*e^2*(2*c*d - b*e)^2*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(2cd-be)(d+ex)^2}+\frac{(2cef+4cdg-3beg)\int}{3e(2}$$
$$=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(2cd-be)(d+ex)^2}-\frac{2(2cef+4cdg-3beg)}{3e^2(2cd-}$$

Mathematica [A] time = 0.07, size = 89, normalized size = 0.65

$$-\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\,\left(2c\left(d^2g+2de(f+gx)+e^2fx\right)-be(2dg+e(f+3gx))\right)}{3e^2(d+ex)^2(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (-2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(2*c*(d^2*g + e^2*f*x + 2*d*e*(f
 + g*x)) - b*e*(2*d*g + e*(f + 3*g*x))))/(3*e^2*(-2*c*d + b*e)^2*(d + e*x)^
2)
```

IntegrateAlgebraic [A] time = 1.06, size = 105, normalized size = 0.77

$$-\frac{2\sqrt{-bde-be^2x+cd^2-ce^2x^2}\left(-2bdeg-be^2f-3be^2gx+2cd^2g+4cdef+4cdegx+2ce^2fx\right)}{3e^2(d+ex)^2(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2]),x]
```

```
[Out] (-2*(4*c*d*e*f - b*e^2*f + 2*c*d^2*g - 2*b*d*e*g + 2*c*e^2*f*x + 4*c*d*e*g*
x - 3*b*e^2*g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(3*e^2*(-2*c*d
+ b*e)^2*(d + e*x)^2)
```

fricas [A] time = 2.44, size = 182, normalized size = 1.33

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(\left(4\,cde-be^2\right)f+2\left(cd^2-bde\right)g+\left(2\,ce^2f+\left(4\,cde-3\,be^2\right)g\right)x\right)}{3\left(4\,c^2d^4e^2-4\,bcd^3e^3+b^2d^2e^4+\left(4\,c^2d^2e^4-4\,bcde^5+b^2e^6\right)x^2+2\left(4\,c^2d^3e^3-4\,bcd^2e^4+b^2de^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] -2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((4*c*d*e - b*e^2)*f + 2*(c
*d^2 - b*d*e)*g + (2*c*e^2*f + (4*c*d*e - 3*b*e^2)*g)*x)/(4*c^2*d^4*e^2 - 4
*b*c*d^3*e^3 + b^2*d^2*e^4 + (4*c^2*d^2*e^4 - 4*b*c*d*e^5 + b^2*e^6)*x^2 +
2*(4*c^2*d^3*e^3 - 4*b*c*d^2*e^4 + b^2*d*e^5)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 127, normalized size = 0.93

$$-\frac{2\left(cex+be-cd\right)\left(3b\,e^2gx-4cdegx-2c\,e^2fx+2bdeg+b\,e^2f-2c\,d^2g-4cdef\right)}{3\left(ex+d\right)\left(b^2e^2-4bcde+4c^2d^2\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(3*b*e^2*g*x-4*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+b*e^2*f
-2*c*d^2*g-4*c*d*e*f)/(e*x+d)/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 2.79, size = 101, normalized size = 0.74

$$-\frac{2\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(2\,c\,d^2\,g-b\,e^2\,f-3\,b\,e^2\,g\,x+2\,c\,e^2\,f\,x-2\,b\,d\,e\,g+4\,c\,d\,e\,f+4\,c\,d\,e\,g\,x\right)}{3\,e^2\,{\left(b\,e-2\,c\,d\right)}^2\,{\left(d+e\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] -(2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(2*c*d^2*g - b*e^2*f - 3*b*
e^2*g*x + 2*c*e^2*f*x - 2*b*d*e*g + 4*c*d*e*f + 4*c*d*e*g*x))/(3*e^2*(b*e -
 2*c*d)^2*(d + e*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\sqrt{-\left(d + ex\right)\left(be - cd + cex\right)}\,\left(d + ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**2), x)
```

3.1984 $\int \frac{f+gx}{(d+ex)^3\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=210

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(d+ex)^3(2cd-be)}-\frac{4c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{15e^2(d+ex)(2cd-be)^3}-\frac{2\sqrt{d(cd-be)-be}}{15e^2}$$

Rubi [A] time = 0.33, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(d+ex)^3(2cd-be)}-\frac{4c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{15e^2(d+ex)(2cd-be)^3}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{15e^2(d+ex)^2(2cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^3*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(5*e^2*(2*c*d -
b*e)*(d + e*x)^3) - (2*(4*c*e*f + 6*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(15*e^2*(2*c*d - b*e)^2*(d + e*x)^2) - (4*c*(4*c*e*f +
 6*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(15*e^2*(2*c
*d - b*e)^3*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^3\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(2cd-be)(d+ex)^3} + \frac{(4cef+6cdg-5beg)\int}{5e(}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(2cd-be)(d+ex)^3} - \frac{2(4cef+6cdg-5beg)}{15e^2(2cd-}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(2cd-be)(d+ex)^3} - \frac{2(4cef+6cdg-5beg)}{15e^2(2cd-}$$

Mathematica [A] time = 0.10, size = 166, normalized size = 0.79

$$-\frac{2(be-cd+cex)\left(b^2e^2(2dg+3ef+5egx)-2bce\left(7d^2g+2de(4f+9gx)+e^2x(2f+5gx)\right)+4c^2\left(3d^3g+d^2e(7f+9gx)+3de^2x(2f+gx)+2e^3fx^2\right)\right)}{15e^2(d+ex)^2(be-2cd)^3\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^3*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)*(b^2*e^2*(3*e*f + 2*d*g + 5*e*g*x) - 2*b*c*e*(7*
d^2*g + e^2*x*(2*f + 5*g*x) + 2*d*e*(4*f + 9*g*x)) + 4*c^2*(3*d^3*g + 2*e^3
*f*x^2 + 3*d*e^2*x*(2*f + g*x) + d^2*e*(7*f + 9*g*x))))/(15*e^2*(-2*c*d + b
*e)^3*(d + e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 18.38, size = 4603, normalized size = 21.92

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^3*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2]),x]
```

```
[Out] (-2*Sqrt[-(c*e^2)]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]*(-112*c^5*d^10
*e*f + 176*b*c^4*d^9*e^2*f - 104*b^2*c^3*d^8*e^3*f + 28*b^3*c^2*d^7*e^4*f -
 3*b^4*c*d^6*e^5*f - 48*c^5*d^11*g + 104*b*c^4*d^10*e*g - 76*b^2*c^3*d^9*e^
2*g + 22*b^3*c^2*d^8*e^3*g - 2*b^4*c*d^7*e^4*g + 400*c^5*d^9*e^2*f*x - 216*
b*c^4*d^8*e^3*f*x - 508*b^2*c^3*d^7*e^4*f*x + 590*b^3*c^2*d^6*e^5*f*x - 226
*b^4*c*d^5*e^6*f*x + 30*b^5*d^4*e^7*f*x + 2640*c^5*d^10*e*g*x - 7424*b*c^4*
d^9*e^2*g*x + 8208*b^2*c^3*d^8*e^3*g*x - 4480*b^3*c^2*d^7*e^4*g*x + 1211*b^
4*c*d^6*e^5*g*x - 130*b^5*d^5*e^6*g*x + 1264*c^5*d^8*e^3*f*x^2 - 2528*b*c^4
*d^7*e^4*f*x^2 + 928*b^2*c^3*d^6*e^5*f*x^2 + 816*b^3*c^2*d^5*e^6*f*x^2 - 64
3*b^4*c*d^4*e^7*f*x^2 + 120*b^5*d^3*e^8*f*x^2 + 816*c^5*d^9*e^2*g*x^2 - 687
2*b*c^4*d^8*e^3*g*x^2 + 13252*b^2*c^3*d^7*e^4*g*x^2 - 10586*b^3*c^2*d^6*e^5
*g*x^2 + 3828*b^4*c*d^5*e^6*g*x^2 - 520*b^5*d^4*e^7*g*x^2 - 3920*c^5*d^7*e^
4*f*x^3 + 1736*b*c^4*d^6*e^5*f*x^3 + 3604*b^2*c^3*d^5*e^6*f*x^3 - 2226*b^3*
c^2*d^4*e^7*f*x^3 - 120*b^4*c*d^3*e^8*f*x^3 + 180*b^5*d^2*e^9*f*x^3 - 16080
*c^5*d^8*e^3*g*x^3 + 38704*b*c^4*d^7*e^4*g*x^3 - 30664*b^2*c^3*d^6*e^5*g*x^
3 + 6556*b^3*c^2*d^5*e^6*g*x^3 + 2115*b^4*c*d^4*e^7*g*x^3 - 780*b^5*d^3*e^8
*g*x^3 - 832*c^5*d^6*e^5*f*x^4 + 5632*b*c^4*d^5*e^6*f*x^4 + 272*b^2*c^3*d^4
*e^7*f*x^4 - 4480*b^3*c^2*d^3*e^8*f*x^4 + 1280*b^4*c*d^2*e^9*f*x^4 + 120*b^
5*d*e^10*f*x^4 - 3648*c^5*d^7*e^4*g*x^4 + 32288*b*c^4*d^6*e^5*g*x^4 - 52832
*b^2*c^3*d^5*e^6*g*x^4 + 29840*b^3*c^2*d^4*e^7*g*x^4 - 4480*b^4*c*d^3*e^8*g
*x^4 - 520*b^5*d^2*e^9*g*x^4 + 6784*c^5*d^5*e^6*f*x^5 - 832*b*c^4*d^4*e^7*f
*x^5 - 7328*b^2*c^3*d^3*e^8*f*x^5 + 336*b^3*c^2*d^2*e^9*f*x^5 + 1460*b^4*c*
d*e^10*f*x^5 + 30*b^5*e^11*f*x^5 + 35136*c^5*d^6*e^5*g*x^5 - 63968*b*c^4*d^
5*e^6*g*x^5 + 24608*b^2*c^3*d^4*e^7*g*x^5 + 11344*b^3*c^2*d^3*e^8*g*x^5 - 6
060*b^4*c*d^2*e^9*g*x^5 - 130*b^5*d*e^10*g*x^5 - 1280*c^5*d^4*e^7*f*x^6 - 4
```

608*b*c^4*d^3*e^8*f*x^6 - 4224*b^2*c^3*d^2*e^9*f*x^6 + 4352*b^3*c^2*d*e^10*f*x^6 + 480*b^4*c*e^11*f*x^6 + 3840*c^5*d^5*e^6*g*x^6 - 44672*b*c^4*d^4*e^7*g*x^6 + 54144*b^2*c^3*d^3*e^8*g*x^6 - 14592*b^3*c^2*d^2*e^9*g*x^6 - 2080*b^4*c*d*e^10*g*x^6 - 3328*c^5*d^3*e^8*f*x^7 - 2944*b*c^4*d^2*e^9*f*x^7 + 4416*b^2*c^3*d*e^10*f*x^7 + 2016*b^3*c^2*e^11*f*x^7 - 31872*c^5*d^4*e^7*g*x^7 + 40064*b*c^4*d^3*e^8*g*x^7 - 1216*b^2*c^3*d^2*e^9*g*x^7 - 8736*b^3*c^2*d*e^10*g*x^7 + 2048*b*c^4*d*e^10*f*x^8 + 3072*b^2*c^3*e^11*f*x^8 + 18432*b*c^4*d^2*e^9*g*x^8 - 13312*b^2*c^3*d*e^10*g*x^8 + 1024*c^5*d*e^10*f*x^9 + 1536*b*c^4*e^11*f*x^9 + 9216*c^5*d^2*e^9*g*x^9 - 6656*b*c^4*d*e^10*g*x^9) - 2*(-32*c^6*d^11*e^2*f + 32*b*c^5*d^10*e^3*f + 88*b^2*c^4*d^9*e^4*f - 160*b^3*c^3*d^8*e^5*f + 100*b^4*c^2*d^7*e^6*f - 28*b^5*c*d^6*e^7*f + 3*b^6*d^5*e^8*f - 528*c^6*d^12*e*g + 1768*b*c^5*d^11*e^2*g - 2428*b^2*c^4*d^10*e^3*g + 1750*b^3*c^3*d^9*e^4*g - 700*b^4*c^2*d^8*e^5*g + 148*b^5*c*d^7*e^6*g - 13*b^6*d^6*e^7*g - 560*c^6*d^10*e^3*f*x + 1240*b*c^5*d^9*e^4*f*x - 860*b^2*c^4*d^8*e^5*f*x + 10*b^3*c^3*d^7*e^6*f*x + 250*b^4*c^2*d^6*e^7*f*x - 110*b^5*c*d^5*e^8*f*x + 15*b^6*d^4*e^9*f*x - 240*c^6*d^11*e^2*g*x + 1960*b*c^5*d^10*e^3*g*x - 4340*b^2*c^4*d^9*e^4*g*x + 4390*b^3*c^3*d^8*e^5*g*x - 2300*b^4*c^2*d^7*e^6*g*x + 610*b^5*c*d^6*e^7*g*x - 65*b^6*d^5*e^8*g*x + 1680*c^6*d^9*e^4*f*x^2 - 1400*b*c^5*d^8*e^5*f*x^2 - 1780*b^2*c^4*d^7*e^6*f*x^2 + 2430*b^3*c^3*d^6*e^7*f*x^2 - 800*b^4*c^2*d^5*e^8*f*x^2 - 10*b^5*c*d^4*e^9*f*x^2 + 30*b^6*d^3*e^10*f*x^2 + 7920*c^6*d^10*e^3*g*x^2 - 24600*b*c^5*d^9*e^4*g*x^2 + 28780*b^2*c^4*d^8*e^5*g*x^2 - 15130*b^3*c^3*d^7*e^6*g*x^2 + 2850*b^4*c^2*d^6*e^7*g*x^2 + 310*b^5*c*d^5*e^8*g*x^2 - 130*b^6*d^4*e^9*g*x^2 + 1840*c^6*d^8*e^5*f*x^3 - 6360*b*c^5*d^7*e^6*f*x^3 + 3100*b^2*c^4*d^6*e^7*f*x^3 + 3230*b^3*c^3*d^5*e^8*f*x^3 - 2830*b^4*c^2*d^4*e^9*f*x^3 + 500*b^5*c*d^3*e^10*f*x^3 + 30*b^6*d^2*e^11*f*x^3 + 2160*c^6*d^9*e^4*g*x^3 - 23240*b*c^5*d^8*e^5*g*x^3 + 50100*b^2*c^4*d^7*e^6*g*x^3 - 43430*b^3*c^3*d^6*e^7*g*x^3 + 16280*b^4*c^2*d^5*e^8*g*x^3 - 1900*b^5*c*d^4*e^9*g*x^3 - 130*b^6*d^3*e^10*g*x^3 - 6960*c^6*d^7*e^6*f*x^4 + 4440*b*c^5*d^6*e^7*f*x^4 + 7980*b^2*c^4*d^5*e^8*f*x^4 - 4950*b^3*c^3*d^4*e^9*f*x^4 - 1460*b^4*c^2*d^3*e^10*f*x^4 + 880*b^5*c*d^2*e^11*f*x^4 + 15*b^6*d*e^12*f*x^4 - 30240*c^6*d^8*e^5*g*x^4 + 76560*b*c^5*d^7*e^6*g*x^4 - 56880*b^2*c^4*d^6*e^7*g*x^4 + 300*b^3*c^3*d^5*e^8*g*x^4 + 14010*b^4*c^2*d^4*e^9*g*x^4 - 3680*b^5*c*d^3*e^10*g*x^4 - 65*b^6*d^2*e^11*g*x^4 - 192*c^6*d^6*e^7*f*x^5 + 9792*b*c^5*d^5*e^8*f*x^5 - 48*b^2*c^4*d^4*e^9*f*x^5 - 10320*b^3*c^3*d^3*e^10*f*x^5 + 2920*b^4*c^2*d^2*e^11*f*x^5 + 602*b^5*c*d*e^12*f*x^5 + 3*b^6*e^13*f*x^5 - 5568*c^6*d^7*e^6*g*x^5 + 65568*b*c^5*d^6*e^7*g*x^5 - 115152*b^2*c^4*d^5*e^8*g*x^5 + 66360*b^3*c^3*d^4*e^9*g*x^5 - 7320*b^4*c^2*d^3*e^10*g*x^5 - 2582*b^5*c*d^2*e^11*g*x^5 - 13*b^6*d*e^12*g*x^5 + 8320*c^6*d^5*e^8*f*x^6 - 1600*b*c^5*d^4*e^9*f*x^6 - 12320*b^2*c^4*d^3*e^10*f*x^6 - 240*b^3*c^3*d^2*e^11*f*x^6 + 3700*b^4*c^2*d*e^12*f*x^6 + 150*b^5*c*e^13*f*x^6 + 49920*c^6*d^6*e^7*g*x^6 - 94880*b*c^5*d^5*e^8*g*x^6 + 26960*b^2*c^4*d^4*e^9*g*x^6 + 33040*b^3*c^3*d^3*e^10*g*x^6 - 14700*b^4*c^2*d^2*e^11*g*x^6 - 650*b^5*c*d*e^12*g*x^6 - 1280*c^6*d^4*e^9*f*x^7 - 7040*b*c^5*d^3*e^10*f*x^7 - 6080*b^2*c^4*d^2*e^11*f*x^7 + 7520*b^3*c^3*d*e^12*f*x^7 + 1200*b^4*c^2*e^13*f*x^7 + 3840*c^6*d^5*e^8*g*x^7 - 67520*b*c^5*d^4*e^9*g*x^7 + 86080*b^2*c^4*d^3*e^10*g*x^7 - 21920*b^3*c^3*d^2*e^11*g*x^7 - 5200*b^4*c^2*d*e^12*g*x^7 - 3840*c^6*d^3*e^10*f*x^8 - 3200*b*c^5*d^2*e^11*f*x^8 + 6080*b^2*c^4*d*e^12*f*x^8 + 3360*b^3*c^3*e^13*f*x^8 - 36480*c^6*d^4*e^9*g*x^8 + 48000*b*c^5*d^3*e^10*g*x^8 + 3520*b^2*c^4*d^2*e^11*g*x^8 - 14560*b^3*c^3*d*e^12*g*x^8 + 2560*b*c^5*d*e^12*f*x^9 + 3840*b^2*c^4*e^13*f*x^9 + 23040*b*c^5*d^2*e^11*g*x^9 - 16640*b^2*c^4*d*e^12*g*x^9 + 1024*c^6*d*e^12*f*x^10 + 1536*b*c^5*e^13*f*x^10 + 9216*c^6*d^2*e^11*g*x^10 - 6656*b*c^5*d*e^12*g*x^10))/(15*c*d^4*e^2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]*(-160*c^5*d^8*e^2*x + 320*b*c^4*d^7*e^3*x - 240*b^2*c^3*d^6*e^4*x + 80*b^3*c^2*d^5*e^5*x - 10*b^4*c*d^4*e^6*x + 320*b*c^4*d^6*e^4*x^2 - 480*b^2*c^3*d^5*e^5*x^2 + 240*b^3*c^2*d^4*e^6*x^2 - 40*b^4*c*d^3*e^7*x^2 + 960*c^5*d^6*e^4*x^3 - 1600*b*c^4*d^5*e^5*x^3 + 640*b^2*c^3*d^4*e^6*x^3 + 80*b^3*c^2*d^3*e^7*x^3 - 60*b^4*c*d^2*e^8*x^3 - 1600*b*c^4*d^4*e^6*x^4 + 1760*b^2*c^3*d^3*e^7*x^4 - 400*b^3*c^2*d^2*e^8*x^4 - 40*b^4*c*d*e^9*x^4 - 1952*c^5*d^4*e^6*x^5 + 2304*b*c^

```
4*d^3*e^7*x^5 + 208*b^2*c^3*d^2*e^8*x^5 - 480*b^3*c^2*d*e^9*x^5 - 10*b^4*c*
e^10*x^5 + 2304*b*c^4*d^2*e^8*x^6 - 1344*b^2*c^3*d*e^9*x^6 - 160*b^3*c^2*e^
10*x^6 + 1664*c^5*d^2*e^8*x^7 - 1024*b*c^4*d*e^9*x^7 - 672*b^2*c^3*e^10*x^7
 - 1024*b*c^4*e^10*x^8 - 512*c^5*e^10*x^9) + 15*c*d^4*e^2*Sqrt[-(c*e^2)]*(-
32*c^5*d^10 + 80*b*c^4*d^9*e - 80*b^2*c^3*d^8*e^2 + 40*b^3*c^2*d^7*e^3 - 10
*b^4*c*d^6*e^4 + b^5*d^5*e^5 + 80*b*c^4*d^8*e^2*x - 160*b^2*c^3*d^7*e^3*x +
 120*b^3*c^2*d^6*e^4*x - 40*b^4*c*d^5*e^5*x + 5*b^5*d^4*e^6*x + 480*c^5*d^8
*e^2*x^2 - 1120*b*c^4*d^7*e^3*x^2 + 880*b^2*c^3*d^6*e^4*x^2 - 240*b^3*c^2*d
^5*e^5*x^2 - 10*b^4*c*d^4*e^6*x^2 + 10*b^5*d^3*e^7*x^2 - 1120*b*c^4*d^6*e^4
*x^3 + 1920*b^2*c^3*d^5*e^5*x^3 - 1040*b^3*c^2*d^4*e^6*x^3 + 160*b^4*c*d^3*
e^7*x^3 + 10*b^5*d^2*e^8*x^3 - 1760*c^5*d^6*e^4*x^4 + 3280*b*c^4*d^5*e^5*x^
4 - 1040*b^2*c^3*d^4*e^6*x^4 - 680*b^3*c^2*d^3*e^7*x^4 + 290*b^4*c*d^2*e^8*
x^4 + 5*b^5*d*e^9*x^4 + 3280*b*c^4*d^4*e^6*x^5 - 4000*b^2*c^3*d^3*e^7*x^5 +
 840*b^3*c^2*d^2*e^8*x^5 + 200*b^4*c*d*e^9*x^5 + b^5*e^10*x^5 + 2720*c^5*d^
4*e^6*x^6 - 3520*b*c^4*d^3*e^7*x^6 - 880*b^2*c^3*d^2*e^8*x^6 + 1200*b^3*c^2
*d*e^9*x^6 + 50*b^4*c*e^10*x^6 - 3520*b*c^4*d^2*e^8*x^7 + 2240*b^2*c^3*d*e^
9*x^7 + 400*b^3*c^2*e^10*x^7 - 1920*c^5*d^2*e^8*x^8 + 1280*b*c^4*d*e^9*x^8
+ 1120*b^2*c^3*e^10*x^8 + 1280*b*c^4*e^10*x^9 + 512*c^5*e^10*x^10))
```

fricas [**A**] time = 8.45, size = 368, normalized size = 1.75

$$-\frac{2 \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(2\left(4c^2e^3f + \left(6c^2de^2 - 5bce^3\right)g\right)x^2 + \left(28c^2d^2e - 16bcde^2 + 3b^2e^3\right)f + 2\left(6c^2d^3 - 7bcd^2e + b^2de^2\right)g + \left(4\left(6c^2de^2 - bce^3\right)f + \left(36c^2d^2e - 36bcde^2 + 5b^2e^3\right)g\right)x\right)}{15\left(8c^3d^6e^2 - 12bc^2d^5e^3 + 6b^2cd^4e^4 - b^3d^3e^5 + \left(8c^3d^3e^5 - 12bc^2d^2e^6 + 6b^2cde^7 - b^3e^8\right)x^3 + 3\left(8c^3d^4e^4 - 12bc^2d^3e^5 + 6b^2cd^2e^6 - b^3de^7\right)x^2 + 3\left(8c^3d^5e^3 - 12bc^2d^4e^4 + 6b^2cd^3e^5 - b^3d^2e^6\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] -2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^2*e^3*f + (6*c^2*d
*e^2 - 5*b*c*e^3)*g)*x^2 + (28*c^2*d^2*e - 16*b*c*d*e^2 + 3*b^2*e^3)*f + 2*
(6*c^2*d^3 - 7*b*c*d^2*e + b^2*d*e^2)*g + (4*(6*c^2*d*e^2 - b*c*e^3)*f + (3
6*c^2*d^2*e - 36*b*c*d*e^2 + 5*b^2*e^3)*g)*x)/(8*c^3*d^6*e^2 - 12*b*c^2*d^5
*e^3 + 6*b^2*c*d^4*e^4 - b^3*d^3*e^5 + (8*c^3*d^3*e^5 - 12*b*c^2*d^2*e^6 +
6*b^2*c*d*e^7 - b^3*e^8)*x^3 + 3*(8*c^3*d^4*e^4 - 12*b*c^2*d^3*e^5 + 6*b^2*
c*d^2*e^6 - b^3*d*e^7)*x^2 + 3*(8*c^3*d^5*e^3 - 12*b*c^2*d^4*e^4 + 6*b^2*c*
d^3*e^5 - b^3*d^2*e^6)*x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((-
1024*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2)
)*x)^3*g*b^2*d*exp(1)^5+256*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b
*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^2*d*exp(1)^3+4096*c*exp(2)*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b*d^2*exp(1)^4-
1024*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)^3*g*b*d^2*exp(1)^2-3072*c^2*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+
c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*d^3*exp(1)^3+768*exp(2)^2*(sqrt(-c
*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^2*f*exp(1)^
4-1024*c*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)^3*b*f*d*exp(1)^5-2048*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*
d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b*f*d*exp(1)^3+1024*c^2*exp(2)*(sqrt(-
c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*f*d^2*exp(1)
^4+2048*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)^3*f*d^2*exp(1)^2+2048*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*e
```

xp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^2*exp(1)^6-1024*exp(
2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c
*exp(2))*x)^2*g*b^2*d^2*exp(1)^4+1280*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^2*exp(1)^
2-4096*c*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)^2*g*b*d^3*exp(1)^5-4096*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c
*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^3*exp(1
)^3-1024*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^3*exp(1)+2048*c^2*sqrt(-c*exp(2))*(sqr
t(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^4*exp
(1)^4+5120*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-
b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^4*exp(1)^2+2048*c^2*exp(2)^2*sqrt(-c*e
xp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^
2*g*d^4-2304*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-
b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d*exp(1)^3+3072*c*exp(2)*sqrt(-c*exp
(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*
b*f*d^2*exp(1)^4+6144*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b*f*d^2*exp(1)^2-3072*c^2*exp(2
)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)^2*f*d^3*exp(1)^3-6144*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(
2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*f*d^3*exp(1)-1024*
exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*
g*b^3*d^2*exp(1)^6+768*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*ex
p(1))-sqrt(-c*exp(2))*x)*g*b^3*d^2*exp(1)^4+256*exp(2)^3*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^2*exp(1)^2+7168*c
exp(2)(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
*g*b^2*d^3*exp(1)^5-4864*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^3*exp(1)^3-11264*c^2*exp(2)*(sqrt(-c*e
xp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b*d^4*exp(1)^4+
2048*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)*g*b*d^4+5120*c^3*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d
*exp(1))-sqrt(-c*exp(2))*x)*g*d^5*exp(1)^3+4096*c^3*exp(2)^2*(sqrt(-c*exp(2
)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*d^5*exp(1)+1280*exp
(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b
^3*f*d*exp(1)^5-1280*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)*b^3*f*d*exp(1)^3+1024*c*exp(2)*(sqrt(-c*exp(2)*x^2-b
*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^2*exp(1)^6-8448*c*ex
p(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*
b^2*f*d^2*exp(1)^4+5120*c*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d
*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^2*exp(1)^2-2048*c^2*exp(2)*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^3*exp(1)^5+17
408*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*e
xp(2))*x)*b*f*d^3*exp(1)^3-6144*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^3*exp(1)+1024*c^3*exp(2)*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*f*d^4*exp(1)^
4-10240*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)*f*d^4*exp(1)^2+2048*sqrt(-c*exp(2))*g*b^3*d^3*exp(1)^7-3072*e
xp(2)*sqrt(-c*exp(2))*g*b^3*d^3*exp(1)^5+1280*exp(2)^2*sqrt(-c*exp(2))*g*b^
3*d^3*exp(1)^3-256*exp(2)^3*sqrt(-c*exp(2))*g*b^3*d^3*exp(1)-6144*c*sqrt(-c
*exp(2))*g*b^2*d^4*exp(1)^6+5120*c*exp(2)*sqrt(-c*exp(2))*g*b^2*d^4*exp(1)^
4+768*c*exp(2)^2*sqrt(-c*exp(2))*g*b^2*d^4*exp(1)^2-512*c*exp(2)^3*sqrt(-c*
exp(2))*g*b^2*d^4+6144*c^2*sqrt(-c*exp(2))*g*b*d^5*exp(1)^5-1024*c^2*exp(2)
*sqrt(-c*exp(2))*g*b*d^5*exp(1)^3-2048*c^2*exp(2)^2*sqrt(-c*exp(2))*g*b*d^5
*exp(1)-2048*c^3*sqrt(-c*exp(2))*g*d^6*exp(1)^4-1024*c^3*exp(2)*sqrt(-c*exp
(2))*g*d^6*exp(1)^2-2048*exp(2)*sqrt(-c*exp(2))*b^3*f*d^2*exp(1)^6+2816*exp
(2)^2*sqrt(-c*exp(2))*b^3*f*d^2*exp(1)^4-768*exp(2)^3*sqrt(-c*exp(2))*b^3*f
*d^2*exp(1)^2+7168*c*exp(2)*sqrt(-c*exp(2))*b^2*f*d^3*exp(1)^5-7936*c*exp(2
)^2*sqrt(-c*exp(2))*b^2*f*d^3*exp(1)^3+1536*c*exp(2)^3*sqrt(-c*exp(2))*b^2*
f*d^3*exp(1)-8192*c^2*exp(2)*sqrt(-c*exp(2))*b*f*d^4*exp(1)^4+5120*c^2*exp(

```
2)^2*sqrt(-c*exp(2))*b*f*d^4*exp(1)^2+3072*c^3*exp(2)*sqrt(-c*exp(2))*f*d^5
*exp(1)^3)/(2048*b^2*d^2*exp(1)^7-4096*exp(2)*b^2*d^2*exp(1)^5+2048*exp(2)^
2*b^2*d^2*exp(1)^3-4096*c*b*d^3*exp(1)^6+8192*c*exp(2)*b*d^3*exp(1)^4-4096*
c*exp(2)^2*b*d^3*exp(1)^2+2048*c^2*d^4*exp(1)^5-4096*c^2*exp(2)*d^4*exp(1)^
3+2048*c^2*exp(2)^2*d^4*exp(1))/((sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*
exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*d+b*d*exp(1)^2-exp(2)*b*d-c*d
^2*exp(1))^2+(-8*exp(2)*g*b^2*d*exp(1)^3+2*exp(2)^2*g*b^2*d*exp(1)+32*c*exp
(2)*g*b*d^2*exp(1)^2-8*c*exp(2)^2*g*b*d^2-24*c^2*exp(2)*g*d^3*exp(1)+6*exp(
2)^2*b^2*f*exp(1)^2-8*c*exp(2)*b*f*d*exp(1)^3-16*c*exp(2)^2*b*f*d*exp(1)+8*
c^2*exp(2)*f*d^2*exp(1)^2+16*c^2*exp(2)^2*f*d^2)/16/(b^2*d^2*exp(1)^6-2*exp
(2)*b^2*d^2*exp(1)^4+exp(2)^2*b^2*d^2*exp(1)^2-2*c*b*d^3*exp(1)^5+4*c*exp(2
)*b*d^3*exp(1)^3-2*c*exp(2)^2*b*d^3*exp(1)+c^2*d^4*exp(1)^4-2*c^2*exp(2)*d^
4*exp(1)^2+c^2*exp(2)^2*d^4)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-
b*d*exp(1)*exp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-c*exp(2)*x^2-b*exp(2)*x+
c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)
^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))))
```

maple [A] time = 0.06, size = 236, normalized size = 1.12

$$-\frac{2 \left(c e x+b e-c d\right) \left(-10 b c \,e^{3} g \,x^{2}+12 c^{2} d \,e^{2} g \,x^{2}+8 c^{2} e^{3} f \,x^{2}+5 b^{2} e^{3} g x-36 b c d \,e^{2} g x-4 b c \,e^{3} f x+36 c^{2} d^{2} e g x+24 c^{2} d \,e^{2} f x+2 b^{2} d \,e^{2} g+3 b^{2} e^{3} f-14 b c \,d^{2} e g-16 b c d \,e^{2} f+12 c^{2} d^{3} g+28 c^{2} d^{2} e f\right)}{15 \left(e x+d\right)^{2} \left(b^{3} e^{3}-6 b^{2} c d \,e^{2}+12 b \,c^{2} d^{2} e-8 c^{3} d^{3}\right) \sqrt{-c \,e^{2} x^{2}-b \,e^{2} x-b d e+c \,d^{2}}\, e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-10*b*c*e^3*g*x^2+12*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^2
+5*b^2*e^3*g*x-36*b*c*d*e^2*g*x-4*b*c*e^3*f*x+36*c^2*d^2*e*g*x+24*c^2*d*e^2
*f*x+2*b^2*d*e^2*g+3*b^2*e^3*f-14*b*c*d^2*e*g-16*b*c*d*e^2*f+12*c^2*d^3*g+2
8*c^2*d^2*e*f)/(e*x+d)^2/(b^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e
^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.32, size = 471, normalized size = 2.24

$$\frac{\left(\frac{8 c^2 d g+16 c^2 e f-8 b c e g}{15 e^2 (b e-2 c d)^3}-\frac{8 c^2 d g}{15 e^2 (b e-2 c d)^3}\right) \sqrt{c d^2-b d e-c e^2 x^2-b e^2 x}}{d+e x}-\frac{\left(\frac{2 b g}{5 \left(3 b e^2-6 c d e\right) (b e-2 c d)}-\frac{4 c d g}{5 e \left(3 b e^2-6 c d e\right) (b e-2 c d)}\right) \sqrt{c d^2-b d e-c e^2 x^2-b e^2 x}}{(d+e x)^2}-\frac{\left(\frac{12 c d g-12 b e g+8 c e f}{5 e \left(3 b e^2-6 c d e\right) (b e-2 c d)}+\frac{4 c d g}{5 e \left(3 b e^2-6 c d e\right) (b e-2 c d)}\right) \sqrt{c d^2-b d e-c e^2 x^2-b e^2 x}}{(d+e x)^2}+\frac{\left(\frac{2 f}{5 b e^2-10 c d e}-\frac{2 d g}{e \left(5 b e^2-10 c d e\right)}\right) \sqrt{c d^2-b d e-c e^2 x^2-b e^2 x}}{(d+e x)^3}-\frac{\left(\frac{4 c g (3 b e-4 c d)}{15 e^2 (b e-2 c d)^3}-\frac{8 c^2 d g}{15 e^2 (b e-2 c d)^3}\right) \sqrt{c d^2-b d e-c e^2 x^2-b e^2 x}}{d+e x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] (((8*c^2*d*g + 16*c^2*e*f - 8*b*c*e*g)/(15*e^2*(b*e - 2*c*d)^3) - (8*c^2*d*
g)/(15*e^2*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) - (((2*b*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)) - (4*c*d*g)/(5*e
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x)^2 - (((12*c*d*g - 12*b*e*g + 8*c*e*f)/(5*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)) + (4*c*d*g)/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((2*f)/(5*b*e^2 -
 10*c*d*e) - (2*d*g)/(e*(5*b*e^2 - 10*c*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e -
```

```
b*e^2*x)^(1/2))/(d + e*x)^3 - (((4*c*g*(3*b*e - 4*c*d))/(15*e^2*(b*e - 2*c
*d)^3) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\left(d+ex\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**3/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**3), x)
```

3.1985 $\int \frac{f+gx}{(d+ex)^4\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)(2cd-be)^4}-\frac{8c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)^2(2cd-be)^3}$$

Rubi [A] time = 0.44, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)(2cd-be)^4}-\frac{8c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)^2(2cd-be)^3}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{35e^2(d+ex)^3(2cd-be)^2}-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(d+ex)^4(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^4*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(7*e^2*(2*c*d - 
b*e)*(d + e*x)^4) - (2*(6*c*e*f + 8*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^3) - (8*c*(6*c*e*f +
 8*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(105*e^2*(2*
c*d - b*e)^3*(d + e*x)^2) - (16*c^2*(6*c*e*f + 8*c*d*g - 7*b*e*g)*Sqrt[d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2])/(105*e^2*(2*c*d - b*e)^4*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^4\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} + \frac{(6cef+8cdg-7beg)\int \frac{}{(d}}{7e(2cd}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} - \frac{2(6cef+8cdg-7beg)\sqrt{d}}{35e^2(2cd-be}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} - \frac{2(6cef+8cdg-7beg)\sqrt{d}}{35e^2(2cd-be}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} - \frac{2(6cef+8cdg-7beg)\sqrt{d}}{35e^2(2cd-be}$$

Mathematica [A] time = 0.14, size = 247, normalized size = 0.87

$$\frac{2(be-cd+cex)\left(-3b^3e^3(2dg+5ef+7egx)+2b^2ce^2\left(23d^2g+de(54f+82gx)+e^2x(9f+14gx)\right)-4bc^2e\left(36d^3g+d^2e(69f+131gx)+2de^2x(15f+32gx)+2e^3x^2(3f+7gx)\right)+8c^3\left(13d^4g+4d^3e(9f+13gx)+d^2e^2x(39f+32gx)+8de^3x^2(3f+gx)+6e^4fx^3\right)\right)}{105e^2(d+ex)^3(be-2cd)^4\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^4*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*(-3*b^3*e^3*(5*e*f + 2*d*g + 7*e*g*x) + 8*c^3*(13
*d^4*g + 6*e^4*f*x^3 + 8*d*e^3*x^2*(3*f + g*x) + 4*d^3*e*(9*f + 13*g*x) + d
^2*e^2*x*(39*f + 32*g*x)) + 2*b^2*c*e^2*(23*d^2*g + e^2*x*(9*f + 14*g*x) +
d*e*(54*f + 82*g*x)) - 4*b*c^2*e*(36*d^3*g + 2*e^3*x^2*(3*f + 7*g*x) + 2*d*
e^2*x*(15*f + 32*g*x) + d^2*e*(69*f + 131*g*x))))/(105*e^2*(-2*c*d + b*e)^4
*(d + e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 43.86, size = 8629, normalized size = 30.28

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^4*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2]),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 59.83, size = 606, normalized size = 2.13

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(8\left(6c^3e^4f+\left(8c^3de^3-7bc^2e^4\right)g\right)x^3+4\left(6\left(8c^3de^3-bc^2e^4\right)f+\left(64c^3d^2e^2-64bc^2de^3+7b^2ce^4\right)g\right)x^2+3\left(96c^3d^3e-92bc^2d^2e^2+36b^2cde^3-5b^3e^4\right)f+2\left(52c^3d^4-72bc^2d^3e+23b^2cd^2e^2-3b^3de^3\right)g+\left(6\left(52c^3d^2e^2-20bc^2de^3+3b^2ce^4\right)f+\left(416c^3d^3e-524bc^2d^2e^2+164b^2cde^3-21b^3e^4\right)g\right)x\right)}{105\left(16c^4d^8e^2-32bc^3d^7e^3+24b^2c^2d^6e^4-8b^3cd^5e^5+b^4d^4e^6+\left(16c^4d^4e^6-32bc^3d^3e^7+24b^2c^2d^2e^8-8b^3cde^9+b^4e^{10}\right)x^4+4\left(16c^4d^5e^5-32bc^3d^4e^6+24b^2c^2d^3e^7-8b^3cd^2e^8+b^4de^9\right)x^3+6\left(16c^4d^6e^4-32bc^3d^5e^5+24b^2c^2d^4e^6-8b^3cd^3e^7+b^4d^2e^8\right)x^2+4\left(16c^4d^7e^3-32bc^3d^6e^4+24b^2c^2d^5e^5-8b^3cd^4e^6+b^4d^3e^7\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] -2/105*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(6*c^3*e^4*f + (8*c^3*
d*e^3 - 7*b*c^2*e^4)*g)*x^3 + 4*(6*(8*c^3*d*e^3 - b*c^2*e^4)*f + (64*c^3*d^
2*e^2 - 64*b*c^2*d*e^3 + 7*b^2*c*e^4)*g)*x^2 + 3*(96*c^3*d^3*e - 92*b*c^2*d
^2*e^2 + 36*b^2*c*d*e^3 - 5*b^3*e^4)*f + 2*(52*c^3*d^4 - 72*b*c^2*d^3*e + 2
3*b^2*c*d^2*e^2 - 3*b^3*d*e^3)*g + (6*(52*c^3*d^2*e^2 - 20*b*c^2*d*e^3 + 3*
b^2*c*e^4)*f + (416*c^3*d^3*e - 524*b*c^2*d^2*e^2 + 164*b^2*c*d*e^3 - 21*b^
3*e^4)*g)*x)/(16*c^4*d^8*e^2 - 32*b*c^3*d^7*e^3 + 24*b^2*c^2*d^6*e^4 - 8*b^
3*c*d^5*e^5 + b^4*d^4*e^6 + (16*c^4*d^4*e^6 - 32*b*c^3*d^3*e^7 + 24*b^2*c^2
*d^2*e^8 - 8*b^3*c*d*e^9 + b^4*e^10)*x^4 + 4*(16*c^4*d^5*e^5 - 32*b*c^3*d^4
*e^6 + 24*b^2*c^2*d^3*e^7 - 8*b^3*c*d^2*e^8 + b^4*d*e^9)*x^3 + 6*(16*c^4*d^
```

```
6*e^4 - 32*b*c^3*d^5*e^5 + 24*b^2*c^2*d^4*e^6 - 8*b^3*c*d^3*e^7 + b^4*d^2*e
^8)*x^2 + 4*(16*c^4*d^7*e^3 - 32*b*c^3*d^6*e^4 + 24*b^2*c^2*d^5*e^5 - 8*b^3
*c*d^4*e^6 + b^4*d^3*e^7)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((-
73728*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)^5*g*b^3*d*exp(1)^7+12288*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*
d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b^3*d*exp(1)^5+98304*c*exp(2)*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b^2*d^2*e
xp(1)^8+319488*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^5*g*b^2*d^2*exp(1)^6-49152*c*exp(2)^3*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b^2*d^2*exp(1)^4-1966
08*c^2*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(
2))*x)^5*g*b*d^3*exp(1)^7-638976*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*
x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b*d^3*exp(1)^5+98304*c^2*exp(2)^
3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b
*d^3*exp(1)^3+98304*c^3*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^6+393216*c^3*exp(2)^2*(sqrt(-c*exp(2
)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^4+6144
0*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))
*x)^5*b^3*f*exp(1)^6-147456*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2
-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*b^2*f*d*exp(1)^7-221184*c*exp(2)^3*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*b^2*f*d*exp
(1)^5+442368*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^5*b*f*d^2*exp(1)^6+294912*c^2*exp(2)^3*(sqrt(-c*exp(2)*x
^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*b*f*d^2*exp(1)^4-29491
2*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)^5*f*d^3*exp(1)^5-196608*c^3*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*f*d^3*exp(1)^3+368640*exp(2)^2*sqrt
(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2)
)*x)^4*g*b^3*d^2*exp(1)^6-61440*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b^3*d^2*exp(1)^4-4915
20*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1)
)-sqrt(-c*exp(2))*x)^4*g*b^2*d^3*exp(1)^7-1597440*c*exp(2)^2*sqrt(-c*exp(2)
)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b
^2*d^3*exp(1)^5+245760*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp
(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b^2*d^3*exp(1)^3+983040*c^2*
exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqr
t(-c*exp(2))*x)^4*g*b*d^4*exp(1)^6+3194880*c^2*exp(2)^2*sqrt(-c*exp(2))*(sq
rt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b*d^4*
exp(1)^4-491520*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b*d^4*exp(1)^2-491520*c^3*exp(2)*
sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)^4*g*d^5*exp(1)^5-1966080*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*d^5*exp(1)^3-30
7200*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)^4*b^3*f*d*exp(1)^5+737280*c*exp(2)^2*sqrt(-c*exp(2))
*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*b^2*
f*d^2*exp(1)^6+1105920*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp
(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*b^2*f*d^2*exp(1)^4-2211840*c^2
*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^4*b*f*d^3*exp(1)^5-1474560*c^2*exp(2)^3*sqrt(-c*exp(2))*
```

(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*b*f*d
^3*exp(1)^3+1474560*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*f*d^4*exp(1)^4+983040*c^3*exp(2
)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-
c*exp(2))*x)^4*f*d^4*exp(1)^2-196608*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*
x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^4*d^2*exp(1)^8+229376*exp(2)^3
*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^
4*d^2*exp(1)^6-32768*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)^3*g*b^4*d^2*exp(1)^4+1572864*c*exp(2)^2*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^
7-1261568*c*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^5+303104*c*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*
exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^3-5111808*
c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2
))*x)^3*g*b^2*d^4*exp(1)^6+2113536*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^2*d^4*exp(1)^4-688128*c^2*ex
p(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^
3*g*b^2*d^4*exp(1)^2+6291456*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*
d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b*d^5*exp(1)^5+1015808*c^3*exp(2)^3*
(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b*d
^5*exp(1)^3+65536*c^3*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)^3*g*b*d^5*exp(1)-2555904*c^4*exp(2)^2*(sqrt(-c*exp(
2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*d^6*exp(1)^4-209
7152*c^4*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)^3*g*d^6*exp(1)^2-262144*c^4*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*d^6+163840*exp(2)^3*(sqrt(-c*e
xp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^4*f*d*exp(1)^
7-163840*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)^3*b^4*f*d*exp(1)^5-393216*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^8-360448*c*exp(
2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*
b^3*f*d^2*exp(1)^6+139264*c*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b
*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^4+1572864*c^2*exp(2)^2*(sq
rt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^2*f*d^
3*exp(1)^7+1277952*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*ex
p(1))-sqrt(-c*exp(2))*x)^3*b^2*f*d^3*exp(1)^5+835584*c^2*exp(2)^4*(sqrt(-c*
exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^2*f*d^3*exp(
1)^3-1966080*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^3*b*f*d^4*exp(1)^6-3768320*c^3*exp(2)^3*(sqrt(-c*exp(2)*
x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b*f*d^4*exp(1)^4-1638
400*c^3*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*e
xp(2))*x)^3*b*f*d^4*exp(1)^2+786432*c^4*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)^5+2686976*c^4*exp(
2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*
f*d^5*exp(1)^3+1441792*c^4*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)+196608*exp(2)*sqrt(-c*exp(2))*(
sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^4*
d^3*exp(1)^9-98304*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+
c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp(1)^5-98304*exp(2)^4*sq
rt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(
2))*x)^2*g*b^4*d^3*exp(1)^3-1376256*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2
)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^8-
589824*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*
exp(1))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^6+1130496*c*exp(2)^3*sqrt(-c*
exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
^2*g*b^3*d^4*exp(1)^4+221184*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2
-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^2+29491
20*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^7+4521984*c^2*exp(2)^2*sqrt(-c*ex

p(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2
*g*b^2*d^5*exp(1)^5-3883008*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^3+9830
4*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)-2555904*c^3*exp(2)*sqrt(-c*exp(2
))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*
b*d^6*exp(1)^6-7274496*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*e
xp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^4+2064384*c^3
*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^2+393216*c^3*exp(2)^4*sqrt(-c*exp(2))*(
sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^
6+786432*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)^5+3342336*c^4*exp(2)^2*sqrt(-c*
exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
^2*g*d^7*exp(1)^3+786432*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b
*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)-491520*exp(2)
^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c
*exp(2))*x)^2*b^4*f*d^2*exp(1)^6+491520*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*e
xp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^4*f*d^2*exp(1
)^4+393216*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^9+2260992*c*exp(2)^3*sqrt(-
c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*
x)^2*b^3*f*d^3*exp(1)^5-2039808*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*
x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^3-11
79648*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^8-1179648*c^2*exp(2)^2*sqrt(-c
exp(2))(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x
)^2*b^2*f*d^4*exp(1)^6-4423680*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)
*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^4+3
096576*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^2+1179648*c^3*exp(2)*sqrt(-
c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*
x)^2*b*f*d^5*exp(1)^7+2359296*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*
x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(1)^5+5996
544*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(1)^3-2162688*c^3*exp(2)^4*sqrt(-c*e
xp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^
2*b*f*d^5*exp(1)-393216*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*ex
p(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(1)^6-1179648*c^4*ex
p(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqr
t(-c*exp(2))*x)^2*f*d^6*exp(1)^4-3342336*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt
(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(
1)^2-122880*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)*g*b^5*d^3*exp(1)^9+233472*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^7-98304*exp(2)^4
*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^5*
d^3*exp(1)^5-12288*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1)
)-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^3-98304*c*exp(2)*(sqrt(-c*exp(2)*x^2-
b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^10+1499136
*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2)
)*x)*g*b^4*d^4*exp(1)^8-2236416*c*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c
*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^6+860160*c*exp(2)^4*(s
qrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^4*d^4
*exp(1)^4-24576*c*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))
-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^2+393216*c^2*exp(2)*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^9-592281
6*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)*g*b^3*d^5*exp(1)^7+7311360*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^5-2236416*c^2*exp

(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g
*b^3*d^5*exp(1)^3+147456*c^2*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-
b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)-589824*c^3*exp(2)*(sqrt(-c*
exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)
^8+10002432*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^6-8454144*c^3*exp(2)^3*(sqrt(-c*exp(2)*x
^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^4+68812
8*c^3*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)*g*b^2*d^6*exp(1)^2+196608*c^3*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)
*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^6+393216*c^4*exp(2)*(sqrt(-
c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)
^7-7618560*c^4*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sq
rt(-c*exp(2))*x)*g*b*d^7*exp(1)^5+2752512*c^4*exp(2)^3*(sqrt(-c*exp(2)*x^2-
b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^3+786432*c^4
exp(2)^4(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*
x)*g*b*d^7*exp(1)-98304*c^5*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d
*exp(1))-sqrt(-c*exp(2))*x)*g*d^8*exp(1)^6+2162688*c^5*exp(2)^2*(sqrt(-c*ex
p(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*d^8*exp(1)^4+393
216*c^5*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*e
xp(2))*x)*g*d^8*exp(1)^2+135168*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d
^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp(1)^8-270336*exp(2)^4*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp
(1)^6+135168*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt
(-c*exp(2))*x)*b^5*f*d^2*exp(1)^4+147456*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*e
xp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^9-1523712*c*e
xp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
*b^4*f*d^3*exp(1)^7+2113536*c*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2
-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^5-737280*c*exp(2)^5*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp
(1)^3+49152*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^8+4411392*c^2*exp(2)^3*(sqrt(-c*exp(2)*x
^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^6-55296
00*c^2*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)*b^3*f*d^4*exp(1)^4+1376256*c^2*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^2-1032192*c^3*ex
p(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*
b^2*f*d^5*exp(1)^7-6758400*c^3*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^
2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)^5+7028736*c^3*exp(2)^4*(s
qrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^5
*exp(1)^3-1081344*c^3*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)+1327104*c^4*exp(2)^2*(sqrt(-c*exp(
2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^6*exp(1)^6+570
1632*c^4*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)*b*f*d^6*exp(1)^4-3342336*c^4*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^6*exp(1)^2-491520*c^5*exp(2
)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*f*d
^7*exp(1)^5-1966080*c^5*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)*f*d^7*exp(1)^3+196608*exp(2)*sqrt(-c*exp(2))*g*b^
5*d^4*exp(1)^10-466944*exp(2)^2*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^8+356352*e
xp(2)^3*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^6-98304*exp(2)^4*sqrt(-c*exp(2))*g
*b^5*d^4*exp(1)^4+12288*exp(2)^5*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^2-1212416
*c*exp(2)*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^9+2564096*c*exp(2)^2*sqrt(-c*exp
(2))*g*b^4*d^5*exp(1)^7-1695744*c*exp(2)^3*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)
^5+385024*c*exp(2)^4*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^3-40960*c*exp(2)^5*sq
rt(-c*exp(2))*g*b^4*d^5*exp(1)+2883584*c^2*exp(2)*sqrt(-c*exp(2))*g*b^3*d^6
*exp(1)^8-4825088*c^2*exp(2)^2*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^6+2125824*c
^2*exp(2)^3*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^4-90112*c^2*exp(2)^4*sqrt(-c*e
xp(2))*g*b^3*d^6*exp(1)^2-32768*c^2*exp(2)^5*sqrt(-c*exp(2))*g*b^3*d^6-3342
336*c^3*exp(2)*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)^7+3760128*c^3*exp(2)^2*sqrt

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(-c*exp(2))*g*b^2*d^7*exp(1)^5-589824*c^3*exp(2)^3*sqrt(-c*exp(2))*g*b^2*d^
7*exp(1)^3-196608*c^3*exp(2)^4*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)+1900544*c^4
*exp(2)*sqrt(-c*exp(2))*g*b*d^8*exp(1)^6-966656*c^4*exp(2)^2*sqrt(-c*exp(2)
)*g*b*d^8*exp(1)^4-196608*c^4*exp(2)^3*sqrt(-c*exp(2))*g*b*d^8*exp(1)^2-425
984*c^5*exp(2)*sqrt(-c*exp(2))*g*d^9*exp(1)^5-65536*c^5*exp(2)^2*sqrt(-c*ex
p(2))*g*d^9*exp(1)^3-196608*exp(2)^2*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^9+454
656*exp(2)^3*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^7-319488*exp(2)^4*sqrt(-c*exp
(2))*b^5*f*d^3*exp(1)^5+61440*exp(2)^5*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^3+1
31072*c*exp(2)*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^10+704512*c*exp(2)^2*sqrt(-
c*exp(2))*b^4*f*d^4*exp(1)^8-1818624*c*exp(2)^3*sqrt(-c*exp(2))*b^4*f*d^4*e
xp(1)^6+1163264*c*exp(2)^4*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^4-180224*c*exp(
2)^5*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^2-524288*c^2*exp(2)*sqrt(-c*exp(2))*b
^3*f*d^5*exp(1)^9-1294336*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^7+3
256320*c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^5-1679360*c^2*exp(2)^4
*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^3+180224*c^2*exp(2)^5*sqrt(-c*exp(2))*b^3
*f*d^5*exp(1)+786432*c^3*exp(2)*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^8+1622016*
c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^6-2875392*c^3*exp(2)^3*sqrt(-
c*exp(2))*b^2*f*d^6*exp(1)^4+835584*c^3*exp(2)^4*sqrt(-c*exp(2))*b^2*f*d^6*
exp(1)^2-524288*c^4*exp(2)*sqrt(-c*exp(2))*b*f*d^7*exp(1)^7-1196032*c^4*exp
(2)^2*sqrt(-c*exp(2))*b*f*d^7*exp(1)^5+983040*c^4*exp(2)^3*sqrt(-c*exp(2))*
b*f*d^7*exp(1)^3+131072*c^5*exp(2)*sqrt(-c*exp(2))*f*d^8*exp(1)^6+360448*c^
5*exp(2)^2*sqrt(-c*exp(2))*f*d^8*exp(1)^4)/(-196608*b^3*d^3*exp(1)^10+58982
4*exp(2)*b^3*d^3*exp(1)^8-589824*exp(2)^2*b^3*d^3*exp(1)^6+196608*exp(2)^3*
b^3*d^3*exp(1)^4+589824*c*b^2*d^4*exp(1)^9-1769472*c*exp(2)*b^2*d^4*exp(1)^
7+1769472*c*exp(2)^2*b^2*d^4*exp(1)^5-589824*c*exp(2)^3*b^2*d^4*exp(1)^3-58
9824*c^2*b*d^5*exp(1)^8+1769472*c^2*exp(2)*b*d^5*exp(1)^6-1769472*c^2*exp(2
)^2*b*d^5*exp(1)^4+589824*c^2*exp(2)^3*b*d^5*exp(1)^2+196608*c^3*d^6*exp(1)
^7-589824*c^3*exp(2)*d^6*exp(1)^5+589824*c^3*exp(2)^2*d^6*exp(1)^3-196608*c
^3*exp(2)^3*d^6*exp(1))/((sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*d+b*d*exp(1)^2-exp(2)*b*d-c*d^2*exp(1
))^3+(12*exp(2)^2*g*b^3*d*exp(1)^4-2*exp(2)^3*g*b^3*d*exp(1)^2-16*c*exp(2)*
g*b^2*d^2*exp(1)^5-52*c*exp(2)^2*g*b^2*d^2*exp(1)^3+8*c*exp(2)^3*g*b^2*d^2*
exp(1)+32*c^2*exp(2)*g*b*d^3*exp(1)^4+104*c^2*exp(2)^2*g*b*d^3*exp(1)^2-16*
c^2*exp(2)^3*g*b*d^3-16*c^3*exp(2)*g*d^4*exp(1)^3-64*c^3*exp(2)^2*g*d^4*exp
(1)-10*exp(2)^3*b^3*f*exp(1)^3+24*c*exp(2)^2*b^2*f*d*exp(1)^4+36*c*exp(2)^3
*b^2*f*d*exp(1)^2-72*c^2*exp(2)^2*b*f*d^2*exp(1)^3-48*c^2*exp(2)^3*b*f*d^2*
exp(1)+48*c^3*exp(2)^2*f*d^3*exp(1)^2+32*c^3*exp(2)^3*f*d^3)/32/(b^3*d^3*ex
p(1)^9-3*exp(2)*b^3*d^3*exp(1)^7+3*exp(2)^2*b^3*d^3*exp(1)^5-exp(2)^3*b^3*d
^3*exp(1)^3-3*c*b^2*d^4*exp(1)^8+9*c*exp(2)*b^2*d^4*exp(1)^6-9*c*exp(2)^2*b
^2*d^4*exp(1)^4+3*c*exp(2)^3*b^2*d^4*exp(1)^2+3*c^2*b*d^5*exp(1)^7-9*c^2*ex
p(2)*b*d^5*exp(1)^5+9*c^2*exp(2)^2*b*d^5*exp(1)^3-3*c^2*exp(2)^3*b*d^5*exp(
1)-c^3*d^6*exp(1)^6+3*c^3*exp(2)*d^6*exp(1)^4-3*c^3*exp(2)^2*d^6*exp(1)^2+c
^3*exp(2)^3*d^6)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*e
xp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*ex
p(1))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp
(2)-b*d*exp(1)*exp(2))))
```

maple [A]   time = 0.05, size = 382, normalized size = 1.34

$$-\frac{2\,(cex+be-cd)\left(56b\,c^2e^4g\,x^3-64c^3d\,e^3g\,x^3-48c^3e^4f\,x^3-28b^2c\,e^4g\,x^2+256b\,c^2d\,e^3g\,x^2+24b\,c^2e^4f\,x^2-256c^3d^2e^2g\,x^2-192c^3d\,e^3f\,x^2+21b^3e^4gx-164b^2cd\,e^3gx-18b^2c\,e^4fx+524b\,c^2d^2e^2gx+120b\,c^2d\,e^3fx-416c^3d^3egx-312c^3d^2e^2fx+6b^3d\,e^3g+15b^3e^4f-46b^2c\,d^2e^2g-108b^2cd\,e^3f+144b\,c^2d^3eg+276b\,c^2d^2e^2f-104c^3d^4g-288c^3d^3ef\right)}{105\,(ex+d)^3\left(b^4e^4-8b^3cd\,e^3+24b^2c^2d^2e^2-32b\,c^3d^3e+16c^4d^4\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(56*b*c^2*e^4*g*x^3-64*c^3*d*e^3*g*x^3-48*c^3*e^4*f*
x^3-28*b^2*c*e^4*g*x^2+256*b*c^2*d*e^3*g*x^2+24*b*c^2*e^4*f*x^2-256*c^3*d^2
*e^2*g*x^2-192*c^3*d*e^3*f*x^2+21*b^3*e^4*g*x-164*b^2*c*d*e^3*g*x-18*b^2*c*
e^4*f*x+524*b*c^2*d^2*e^2*g*x+120*b*c^2*d*e^3*f*x-416*c^3*d^3*e*g*x-312*c^3
*d^2*e^2*f*x+6*b^3*d*e^3*g+15*b^3*e^4*f-46*b^2*c*d^2*e^2*g-108*b^2*c*d*e^3*
```

```
f+144*b*c^2*d^3*e*g+276*b*c^2*d^2*e^2*f-104*c^3*d^4*g-288*c^3*d^3*e*f)/(e*x
+d)^3/e^2/(b^4*e^4-8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d
^4)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.75, size = 624, normalized size = 2.19

$$\frac{\left(\frac{40c^2dg+48c^2ef-40bceg}{35e\left(3be^2-6cde\right)(be-2cd)^2}-\frac{8c^2dg}{35e\left(3be^2-6cde\right)(be-2cd)^2}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)^2}-\frac{\left(\frac{8cg(2be-3cd)}{35e\left(3be^2-6cde\right)(be-2cd)^2}-\frac{8c^2dg}{35e\left(3be^2-6cde\right)(be-2cd)^2}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)^2}-\frac{\left(\frac{2bg}{7\left(5be^2-10cde\right)(be-2cd)}-\frac{4cdg}{7e\left(5be^2-10cde\right)(be-2cd)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)^3}-\frac{\left(\frac{16cdg-16beg+12cef}{7e\left(5be^2-10cde\right)(be-2cd)}+\frac{4cdg}{7e\left(5be^2-10cde\right)(be-2cd)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)^3}+\frac{\left(\frac{2f}{7be^2-14cde}-\frac{2dg}{e\left(7be^2-14cde\right)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)^4}-\frac{\left(\frac{112c^3dg+96c^3ef-112bc^2eg}{105e^2(be-2cd)^4}+\frac{16c^3dg}{105e^2(be-2cd)^4}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{d+ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^4*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] (((40*c^2*d*g + 48*c^2*e*f - 40*b*c*e*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^2) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((8*c*g*(2*b*e - 3*c*d)
)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c^2*d*g)/(35*e*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 - (((2*b*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c*d*g)/(7
*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x)^3 - (((16*c*d*g - 16*b*e*g + 12*c*e*f)/(7*e*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)) + (4*c*d*g)/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((2*f)/(7*b
*e^2 - 14*c*d*e) - (2*d*g)/(e*(7*b*e^2 - 14*c*d*e)))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((112*c^3*d*g + 96*c^3*e*f - 112*b*c^
2*e*g)/(105*e^2*(b*e - 2*c*d)^4) + (16*c^3*d*g)/(105*e^2*(b*e - 2*c*d)^4))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**4/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**4), x)
```

3.1986 $\int \frac{f+gx}{(d+ex)^5\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{315e^2(d+ex)(2cd-be)^5}-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8$$

Rubi [A] time = 0.56, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{32c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{315e^2(d+ex)(2cd-be)^5}-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{315e^2(d+ex)^2(2cd-be)^4}-\frac{4c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{105e^2(d+ex)^3(2cd-be)^3}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{63e^2(d+ex)^4(2cd-be)^2}-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(d+ex)^5(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^5*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(9*e^2*(2*c*d - 
b*e)*(d + e*x)^5) - (2*(8*c*e*f + 10*c*d*g - 9*b*e*g)*Sqrt[d*(c*d - b*e) - 
b*e^2*x - c*e^2*x^2])/(63*e^2*(2*c*d - b*e)^2*(d + e*x)^4) - (4*c*(8*c*e*f
 + 10*c*d*g - 9*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(105*e^2*(
2*c*d - b*e)^3*(d + e*x)^3) - (16*c^2*(8*c*e*f + 10*c*d*g - 9*b*e*g)*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(315*e^2*(2*c*d - b*e)^4*(d + e*x)^2)
 - (32*c^3*(8*c*e*f + 10*c*d*g - 9*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(315*e^2*(2*c*d - b*e)^5*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^5\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5} + \frac{(8cef+10cdg-9beg)\int \cdots}{9e(2cd \cdots}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5} - \frac{2(8cef+10cdg-9beg)\sqrt{\cdots}}{63e^2(2cd-b \cdots}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5} - \frac{2(8cef+10cdg-9beg)\sqrt{\cdots}}{63e^2(2cd-b \cdots}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5} - \frac{2(8cef+10cdg-9beg)\sqrt{\cdots}}{63e^2(2cd-b \cdots}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5} - \frac{2(8cef+10cdg-9beg)\sqrt{\cdots}}{63e^2(2cd-b \cdots}$$

Mathematica [A] time = 0.21, size = 348, normalized size = 0.97

$$-\frac{2(be-cd+cex)\left(5b^4e^4(2dg+7ef+9egx)-2b^3ce^3\left(47d^2g+2de(80f+107gx)+e^2x(20f+27gx)\right)+12b^2c^2e^2\left(29d^3g+2d^2e(47f+67gx)+de^2x(28f+41gx)+2e^3x^2(2f+3gx)\right)-8bc^3e\left(83d^4g+d^3e(232f+390gx)+3d^2e^2x(44f+83gx)+4de^3x^2(12f+25gx)+2e^4x^3(4f+9gx)\right)+16c^4\left(25d^5g+d^4e(83f+125gx)+5d^3e^2x(20f+21gx)+2d^2e^3x^2(42f+25gx)+10de^4x^3(4f+gx)+8e^5fx^4\right)\right)}{315e^2(d+ex)^4(be-2cd)^5\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^5*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)*(5*b^4*e^4*(7*e*f + 2*d*g + 9*e*g*x) + 12*b^2*c^
2*e^2*(29*d^3*g + 2*e^3*x^2*(2*f + 3*g*x) + d*e^2*x*(28*f + 41*g*x) + 2*d^2
*e*(47*f + 67*g*x)) - 2*b^3*c*e^3*(47*d^2*g + e^2*x*(20*f + 27*g*x) + 2*d*e
*(80*f + 107*g*x)) + 16*c^4*(25*d^5*g + 8*e^5*f*x^4 + 10*d*e^4*x^3*(4*f + g
*x) + 5*d^3*e^2*x*(20*f + 21*g*x) + 2*d^2*e^3*x^2*(42*f + 25*g*x) + d^4*e*(
83*f + 125*g*x)) - 8*b*c^3*e*(83*d^4*g + 2*e^4*x^3*(4*f + 9*g*x) + 4*d*e^3*
x^2*(12*f + 25*g*x) + 3*d^2*e^2*x*(44*f + 83*g*x) + d^3*e*(232*f + 390*g*x)
)))/(315*e^2*(-2*c*d + b*e)^5*(d + e*x)^4*Sqrt[(d + e*x)*(-(b*e) + c*(d - e
*x))])
```

IntegrateAlgebraic [B] time = 111.18, size = 13927, normalized size = 38.69

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^5*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2]),x]
```

```
[Out] Result too large to show
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 564, normalized size = 1.57

$$-\frac{2 \left(c e x+b e-c d\right) \left(-144 b \,c^{3} e^{5} g \,x^{4}+160 c^{4} d \,e^{4} g \,x^{4}+128 c^{4} e^{5} f \,x^{4}+72 b^{2} c^{2} e^{5} g \,x^{3}-800 b \,c^{3} d \,e^{4} g \,x^{3}-64 b \,c^{3} e^{5} f \,x^{3}+800 c^{4} d^{2} e^{3} g \,x^{3}+640 c^{4} d \,e^{4} f \,x^{3}-54 b^{3} c \,e^{5} g \,x^{2}+492 b^{2} c^{2} d \,e^{4} g \,x^{2}+48 b^{2} c^{2} e^{5} f \,x^{2}-1992 b \,c^{3} d^{2} e^{3} g \,x^{2}-384 b \,c^{3} d \,e^{4} f \,x^{2}+1680 c^{4} d^{3} e^{2} g \,x^{2}+1344 c^{4} d^{2} e^{3} f \,x^{2}+45 b^{4} e^{5} g x-428 b^{3} c d \,e^{4} g x-40 b^{3} c \,e^{5} f x+1608 b^{2} c^{2} d^{2} e^{3} g x+336 b^{2} c^{2} d \,e^{4} f x-3120 b \,c^{3} d^{3} e^{2} g x-1056 b \,c^{3} d^{2} e^{3} f x+2000 c^{4} d^{4} e g x+1600 c^{4} d^{3} e^{2} f x+10 b^{4} d \,e^{4} g+35 b^{4} e^{5} f-94 b^{3} c \,d^{2} e^{3} g-320 b^{3} c d \,e^{4} f+348 b^{2} c^{2} d^{3} e^{2} g+1128 b^{2} c^{2} d^{2} e^{3} f-664 b \,c^{3} d^{4} e g-1856 b \,c^{3} d^{3} e^{2} f+400 c^{4} d^{5} g+1328 c^{4} d^{4} e f \right)}{315 \left(e x+d\right)^{4} \left(b^{5} e^{5}-10 b^{4} c d \,e^{4}+40 b^{3} c^{2} d^{2} e^{3}-80 b^{2} c^{3} d^{3} e^{2}+80 b \,c^{4} d^{4} e-32 c^{5} d^{5}\right) \sqrt{-c \,e^{2} x^{2}-b x \,e^{2}-b d e+c \,d^{2}}\, e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(-144*b*c^3*e^5*g*x^4+160*c^4*d*e^4*g*x^4+128*c^4*e^
5*f*x^4+72*b^2*c^2*e^5*g*x^3-800*b*c^3*d*e^4*g*x^3-64*b*c^3*e^5*f*x^3+800*c
^4*d^2*e^3*g*x^3+640*c^4*d*e^4*f*x^3-54*b^3*c*e^5*g*x^2+492*b^2*c^2*d*e^4*g
*x^2+48*b^2*c^2*e^5*f*x^2-1992*b*c^3*d^2*e^3*g*x^2-384*b*c^3*d*e^4*f*x^2+16
80*c^4*d^3*e^2*g*x^2+1344*c^4*d^2*e^3*f*x^2+45*b^4*e^5*g*x-428*b^3*c*d*e^4*
g*x-40*b^3*c*e^5*f*x+1608*b^2*c^2*d^2*e^3*g*x+336*b^2*c^2*d*e^4*f*x-3120*b*
c^3*d^3*e^2*g*x-1056*b*c^3*d^2*e^3*f*x+2000*c^4*d^4*e*g*x+1600*c^4*d^3*e^2*
f*x+10*b^4*d*e^4*g+35*b^4*e^5*f-94*b^3*c*d^2*e^3*g-320*b^3*c*d*e^4*f+348*b^
2*c^2*d^3*e^2*g+1128*b^2*c^2*d^2*e^3*f-664*b*c^3*d^4*e*g-1856*b*c^3*d^3*e^2
*f+400*c^4*d^5*g+1328*c^4*d^4*e*f)/(e*x+d)^4/e^2/(b^5*e^5-10*b^4*c*d*e^4+40
*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 8.01, size = 949, normalized size = 2.64

$$\frac{\left(\frac{88c^2dg+96c^2ef-88bceg}{63e\left(5be^2-10cde\right)\left(be-2cd\right)^2}-\frac{8c^2dg}{63e\left(5be^2-10cde\right)\left(be-2cd\right)^2}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^3}-\frac{\left(\frac{32c^3g\left(4be-7cd\right)}{945e^2\left(be-2cd\right)^5}-\frac{32c^4dg}{945e^2\left(be-2cd\right)^5}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{d+ex}-\frac{\left(\frac{4cg\left(5be-8cd\right)}{63e\left(5be^2-10cde\right)\left(be-2cd\right)^2}-\frac{8c^2dg}{63e\left(5be^2-10cde\right)\left(be-2cd\right)^2}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^3}-\frac{\left(\frac{400c^3dg+384c^3ef-400bc^2eg}{315e\left(3be^2-6cde\right)\left(be-2cd\right)^3}+\frac{16c^3dg}{315e\left(3be^2-6cde\right)\left(be-2cd\right)^3}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^2}-\frac{\left(\frac{2bg}{9\left(7be^2-14cde\right)\left(be-2cd\right)}-\frac{4cdg}{9e\left(7be^2-14cde\right)\left(be-2cd\right)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^4}-\frac{\left(\frac{20cdg-20beg+16cef}{9e\left(7be^2-14cde\right)\left(be-2cd\right)}+\frac{4cdg}{9e\left(7be^2-14cde\right)\left(be-2cd\right)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^4}+\frac{\left(\frac{2f}{9be^2-18cde}-\frac{2dg}{e\left(9be^2-18cde\right)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^5}+\frac{\left(\frac{16c^3dg}{315e\left(3be^2-6cde\right)\left(be-2cd\right)^3}+\frac{16c^2g\left(2be-5cd\right)}{315e\left(3be^2-6cde\right)\left(be-2cd\right)^3}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{\left(d+ex\right)^2}+\frac{\left(\frac{736c^4dg+768c^4ef-736bc^3eg}{945e^2\left(be-2cd\right)^5}-\frac{32c^4dg}{945e^2\left(be-2cd\right)^5}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{d+ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^5*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] (((88*c^2*d*g + 96*c^2*e*f - 88*b*c*e*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^2) - (8*c^2*d*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((32*c^3*g*(4*b*e - 7
*c*d))/(945*e^2*(b*e - 2*c*d)^5) - (32*c^4*d*g)/(945*e^2*(b*e - 2*c*d)^5))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4*c*g*(5*b*e -
8*c*d))/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^2*d*g)/(63*e*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^3 - (((400*c^3*d*g + 384*c^3*e*f - 400*b*c^2*e*g)/(315*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^
2 - (((2*b*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c*d*g)/(9*e*(7*b*
e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^4 - (((20*c*d*g - 20*b*e*g + 16*c*e*f)/(9*e*(7*b*e^2 - 14*c*d*e
```

```
)*(b*e - 2*c*d)) + (4*c*d*g)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((2*f)/(9*b*e^2 - 1
8*c*d*e) - (2*d*g)/(e*(9*b*e^2 - 18*c*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^5 + (((16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3) + (16*c^2*g*(2*b*e - 5*c*d))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((7
36*c^4*d*g + 768*c^4*e*f - 736*b*c^3*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (32*c
^4*d*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\sqrt{-(d + ex)(be - cd + cex)}\,(d + ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**5/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**5), x)
```

3.1987 $\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=287

$$-\frac{3(2cd-be)(-5beg+6cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{7/2}e^2}+\frac{3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cd$$

Rubi [A] time = 0.44, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {788, 670, 640, 621, 204}

$$\frac{(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{2c^2e^2(2cd-be)}+\frac{3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{4c^3e^2}-\frac{3(2cd-be)(-5beg+6cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{7/2}e^2}+\frac{2(d+ex)^3(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^3)/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2]) + (3*(4*c*e*f + 6*c*d*g - 5*b*e*g)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2])/(4*c^3*e^2) + ((4*c*e*f + 6*c*d*g - 5*b*e*g
)*(d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(2*c^2*e^2*(2*c*d -
b*e)) - (3*(2*c*d - b*e)*(4*c*e*f + 6*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c*x
))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*c^(7/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
```

```
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(4cef+6cdg-5beg)\int \frac{(d\cdots}{\sqrt{cd^2-bde\cdots}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(4cef+6cdg-5beg)(d+ex)\sqrt{\cdots}}{2c^2e^2(2cd-\cdots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{3(4cef+6cdg-5beg)\sqrt{d(cd-\cdots}}{4c^3e^2}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{3(4cef+6cdg-5beg)\sqrt{d(cd-\cdots}}{4c^3e^2}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{3(4cef+6cdg-5beg)\sqrt{d(cd-\cdots}}{4c^3e^2}$$

Mathematica [A] time = 0.90, size = 250, normalized size = 0.87

$$\frac{\sqrt{c}\sqrt{e}(d+ex)\sqrt{e(2cd-be)}\left(15b^2e^2g+bce(-43dg-12ef+5egx)+2c^2\left(14d^2g+5de(2f-gx)-e^2x(2f+gx)\right)\right)-3e\sqrt{d+ex}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}(-5beg+6cdg+4cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{4c^{7/2}e^{5/2}\sqrt{e(2cd-be)}\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (Sqrt[c]*Sqrt[e]*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*(15*b^2*e^2*g + b*c*e*(-12
*e*f - 43*d*g + 5*e*g*x) + 2*c^2*(14*d^2*g + 5*d*e*(2*f - g*x) - e^2*x*(2*f
 + g*x))) - 3*e*(-2*c*d + b*e)^2*(4*c*e*f + 6*c*d*g - 5*b*e*g)*Sqrt[d + e*x
]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[
d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(4*c^(7/2)*e^(5/2)*Sqrt[e*(2*c*d - b*e)]*
Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [F] time = 180.19, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(3/2),x]
```

```
[Out] $Aborted
```

fricas [A] time = 1.33, size = 745, normalized size = 2.60

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [1/16*(3*(4*(2*c^3*d^2*e - 3*b*c^2*d*e^2 + b^2*c*e^3)*f + (12*c^3*d^3 - 28*
b*c^2*d^2*e + 21*b^2*c*d*e^2 - 5*b^3*e^3)*g - (4*(2*c^3*d*e^2 - b*c^2*e^3)*
f + (12*c^3*d^2*e - 16*b*c^2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(-c)*log(8*c^2*
e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(2*c^3*e^2*g*x^2
- 4*(5*c^3*d*e - 3*b*c^2*e^2)*f - (28*c^3*d^2 - 43*b*c^2*d*e + 15*b^2*c*e^2
)*g + (4*c^3*e^2*f + 5*(2*c^3*d*e - b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e))/(c^5*e^3*x - c^5*d*e^2 + b*c^4*e^3), -1/8*(3*(4*(2*c^
3*d^2*e - 3*b*c^2*d*e^2 + b^2*c*e^3)*f + (12*c^3*d^3 - 28*b*c^2*d^2*e + 21*
b^2*c*d*e^2 - 5*b^3*e^3)*g - (4*(2*c^3*d*e^2 - b*c^2*e^3)*f + (12*c^3*d^2*e
 - 16*b*c^2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x
- c^2*d^2 + b*c*d*e)) - 2*(2*c^3*e^2*g*x^2 - 4*(5*c^3*d*e - 3*b*c^2*e^2)*f
- (28*c^3*d^2 - 43*b*c^2*d*e + 15*b^2*c*e^2)*g + (4*c^3*e^2*f + 5*(2*c^3*d*
e - b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^3*x
 - c^5*d*e^2 + b*c^4*e^3)]
```

giac [B] time = 0.60, size = 623, normalized size = 2.17

$$\frac{\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(\left(\left(\frac{2\left(4c^4d^2ge^5-4bc^3dge^6+b^2c^2ge^7\right)x}{4c^5d^2e^4-4bc^4de^5+b^2c^3e^6}+\frac{48c^4d^3ge^4+16c^4d^2fe^5-68bc^3d^2ge^5-16bc^3dfe^6+32b^2c^2dge^6+4b^2c^2fe^7-5b^3cge^7}{4c^5d^2e^4-4bc^4de^5+b^2c^3e^6}\right)x-\frac{72c^4d^4ge^3+64c^4d^3fe^4-224bc^3d^3ge^4-112bc^3d^2fe^5+230b^2c^2d^2ge^5+64b^2c^2dfe^6-98b^3cdge^6-12b^3cfe^7+15b^4ge^7}{4c^5d^2e^4-4bc^4de^5+b^2c^3e^6}\right)x-\frac{112c^4d^5ge^2+80c^4d^4fe^3-284bc^3d^4ge^3-128bc^3d^3fe^4+260b^2c^2d^3ge^4+68b^2c^2d^2fe^5-103b^3cd^2ge^5-12b^3cdfe^6+15b^4dge^6}{4c^5d^2e^4-4bc^4de^5+b^2c^3e^6}\right)}{4\left(cx^2e^2-cd^2+bxe^2+bde\right)}-\frac{3\left(12c^2d^2g+8c^2dfe-16bcdge-4bcfe^2+5b^2ge^2\right)\sqrt{-ce^2}e^{(-3)}\log\left(\left|-2\left(\sqrt{-ce^2}x-\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\right)c-\sqrt{-ce^2}b\right|\right)}{8c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] 1/4*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(((2*(4*c^4*d^2*g*e^5 - 4*b*
c^3*d*g*e^6 + b^2*c^2*g*e^7)*x/(4*c^5*d^2*e^4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6
) + (48*c^4*d^3*g*e^4 + 16*c^4*d^2*f*e^5 - 68*b*c^3*d^2*g*e^5 - 16*b*c^3*d*
f*e^6 + 32*b^2*c^2*d*g*e^6 + 4*b^2*c^2*f*e^7 - 5*b^3*c*g*e^7)/(4*c^5*d^2*e^
4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6))*x - (72*c^4*d^4*g*e^3 + 64*c^4*d^3*f*e^4
- 224*b*c^3*d^3*g*e^4 - 112*b*c^3*d^2*f*e^5 + 230*b^2*c^2*d^2*g*e^5 + 64*b^
2*c^2*d*f*e^6 - 98*b^3*c*d*g*e^6 - 12*b^3*c*f*e^7 + 15*b^4*g*e^7)/(4*c^5*d^
2*e^4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6))*x - (112*c^4*d^5*g*e^2 + 80*c^4*d^4*f
*e^3 - 284*b*c^3*d^4*g*e^3 - 128*b*c^3*d^3*f*e^4 + 260*b^2*c^2*d^3*g*e^4 +
68*b^2*c^2*d^2*f*e^5 - 103*b^3*c*d^2*g*e^5 - 12*b^3*c*d*f*e^6 + 15*b^4*d*g*
e^6)/(4*c^5*d^2*e^4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6))/(c*x^2*e^2 - c*d^2 + b*
x*e^2 + b*d*e) - 3/8*(12*c^2*d^2*g + 8*c^2*d*f*e - 16*b*c*d*g*e - 4*b*c*f*e
^2 + 5*b^2*g*e^2)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*
x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^4
```

maple [B] time = 0.06, size = 2032, normalized size = 7.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 15/8*e*g*b^2/c^3*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-15/16*e^5*g*b^5/c
^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)-15/8*e*g*b^2/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-43/4/e*g*b/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2)*d^2-6*g/c^2*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d+9/2/e*
g/c*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+6*g/c^2/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d-9/
2/e*g/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d^2+5/4*e*g*b/c^2*x^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)+3/2*b/c^2*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+3/4*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2
```

```
*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^5*f-3/2*b/c^2*x*e/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+11*e^4*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2
*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d-7*e^4/c*b^2/(-b^2*e^4+
4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f-43/
2*e^3*g*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*x*d^2+7/e^2/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*g+5
/e/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f+3*x/c/(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*d*f-3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-43/4*e^3*g*b^3/c^2/(-b^2*e^4+4*
b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+3/2*b^3
/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)*e^5*x*f+2*d^3*f*(-2*c*e^2*x-b*e^2)/(-4*c*e^2*(-b*d*e+c*d^2)-b^2*e^4)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/2*e*g*x^3/c/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)-15/16*e*g*b^3/c^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+1
1/2*g*b^2/c^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d-3*x^2/c/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-x^2/c*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*f+3/4*b^2/c^3*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-7/2/c^2/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d*f+5/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d
^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*e^3*f-7/2*e^4/c^2*b^3/(-
b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d
*f+7/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2)*d^3*e^2*g-15/8*e^5*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^
2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+14*b/(-b^2*e^4+4*b*c*d*e^3-4*c^
2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3*e^2*g+10*b/(-b^2*e^
4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2*e
^3*f+11/2*e^4*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{3} \left(f + g x\right)}{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((d + e*x)**3*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.1988 $\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=213

$$-\frac{(-3beg+4cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{5/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{c^2e^2(2cd-be)}+$$

Rubi [A] time = 0.28, antiderivative size = 213, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {788, 640, 621, 204}

$$\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{c^2e^2(2cd-be)}-\frac{(-3beg+4cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{5/2}e^2}+\frac{2(d+ex)^2(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^2)/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2]) + ((2*c*e*f + 4*c*d*g - 3*b*e*g)*Sqrt[d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2])/(c^2*e^2*(2*c*d - b*e)) - ((2*c*e*f + 4*c*d*g
 - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2])])/(2*c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(2cef+4cdg-3beg)\int \frac{d}{\sqrt{cd^2-bde}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2cef+4cdg-3beg)\sqrt{d(cd-b}}{c^2e^2(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2cef+4cdg-3beg)\sqrt{d(cd-b}}{c^2e^2(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2cef+4cdg-3beg)\sqrt{d(cd-b}}{c^2e^2(2cd-be)}$$

Mathematica [**A**] time = 0.58, size = 201, normalized size = 0.94

$$\frac{\sqrt{c}\sqrt{e}(d+ex)\sqrt{e(2cd-be)}\,(c(3dg+2ef-egx)-3beg)+e\sqrt{d+ex}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\,(-3beg+4cdg+2cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{c^{5/2}e^{5/2}\sqrt{e(2cd-be)}\,\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (Sqrt[c]*Sqrt[e]*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*(-3*b*e*g + c*(2*e*f + 3*d
*g - e*g*x)) + e*(-2*c*d + b*e)*(2*c*e*f + 4*c*d*g - 3*b*e*g)*Sqrt[d + e*x]
*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d
 + e*x])/Sqrt[e*(2*c*d - b*e)]])/(c^(5/2)*e^(5/2)*Sqrt[e*(2*c*d - b*e)]*Sqr
t[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [**A**] time = 6.38, size = 285, normalized size = 1.34

$$-\frac{\sqrt{-ce^2}\,(-3beg+4cdg+2cef)\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{4c^3e^3}+\frac{(-3beg+4cdg+2cef)\tan^{-1}\left(\frac{\sqrt{c}\left(2\sqrt{-bde-be^2x+cd^2-ce^2x^2}-2x\sqrt{-ce^2}\right)}{be}\right)}{2c^{5/2}e^2}+\frac{\sqrt{-bde-be^2x+cd^2-ce^2x^2}\,(3beg-3cdg-2cef+cegx)}{c^2e^2(be-cd+cex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(3/2),x]
```

```
[Out] ((-2*c*e*f - 3*c*d*g + 3*b*e*g + c*e*g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2])/(c^2*e^2*(-(c*d) + b*e + c*e*x)) + ((2*c*e*f + 4*c*d*g - 3*b*e*g)
*ArcTan[(Sqrt[c]*(-2*Sqrt[-(c*e^2)]*x + 2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2]))/(b*e)])/(2*c^(5/2)*e^2) - (Sqrt[-(c*e^2)]*(2*c*e*f + 4*c*d*g - 3
*b*e*g)*Log[4*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x^2 -
 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]])/(4*c^3*e^
3)
```

fricas [**A**] time = 0.95, size = 503, normalized size = 2.36

$$\left[-\frac{\left(2\left(c^2de-bce^2\right)f+\left(4c^2d^2-7bcde+3b^2e^2\right)g-\left(2c^2e^2f+\left(4c^2de-3bce^2\right)g\right)x\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2cex+be)\sqrt{-c}\right)-4\left(c^2egx-2c^2ef-3\left(c^2d-bce\right)g\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{4\left(c^4e^3x-c^4de^2+bc^3e^3\right)},\ -\frac{\left(2\left(c^2de-bce^2\right)f+\left(4c^2d^2-7bcde+3b^2e^2\right)g-\left(2c^2e^2f+\left(4c^2de-3bce^2\right)g\right)x\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2cex+be)\sqrt{c}}{2\left(c^2e^2x^2+bce^2x-c^2d^2+bcde\right)}\right)-2\left(c^2egx-2c^2ef-3\left(c^2d-bce\right)g\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}}{2\left(c^4e^3x-c^4de^2+bc^3e^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [-1/4*((2*(c^2*d*e - b*c*e^2)*f + (4*c^2*d^2 - 7*b*c*d*e + 3*b^2*e^2)*g - (
2*c^2*e^2*f + (4*c^2*d*e - 3*b*c*e^2)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*
```

b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(c^2*e*g*x - 2*c^2*e*f - 3*(c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^3*x - c^4*d*e^2 + b*c^3*e^3), -1/2*((2*(c^2*d*e - b*c*e^2)*f + (4*c^2*d^2 - 7*b*c*d*e + 3*b^2*e^2)*g - (2*c^2*e^2*f + (4*c^2*d*e - 3*b*c*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(c^2*e*g*x - 2*c^2*e*f - 3*(c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^3*x - c^4*d*e^2 + b*c^3*e^3)]

giac [**B**] time = 0.62, size = 427, normalized size = 2.00

$$\frac{\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(\left(\frac{\left(4c^3d^2ge^3-4bc^2dge^4+b^2cge^5\right)x}{4c^4d^2e^3-4bc^3de^4+b^2c^2e^5}-\frac{8c^3d^3ge^2+8c^3d^2fe^3-20bc^2d^2ge^3-8bc^2dfe^4+14b^2cdge^4+2b^2cfe^5-3b^3ge^5}{4c^4d^2e^3-4bc^3de^4+b^2c^2e^5}\right)x-\frac{12c^3d^4ge+8c^3d^3fe^2-24bc^2d^3ge^2-8bc^2d^2fe^3+15b^2cd^2ge^3+2b^2cdfe^4-3b^3dge^4}{4c^4d^2e^3-4bc^3de^4+b^2c^2e^5}\right)}{cx^2e^2-cd^2+bxe^2+bde}-\frac{\left(4cdg+2cfe-3bge\right)\sqrt{-ce^2}e^{(-3)}\log\left(\left|-2\left(\sqrt{-ce^2}x-\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\right)c-\sqrt{-ce^2}b\right|\right)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorithm="giac")

[Out] sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(((4*c^3*d^2*g*e^3 - 4*b*c^2*d*g*e^4 + b^2*c*g*e^5)*x/(4*c^4*d^2*e^3 - 4*b*c^3*d*e^4 + b^2*c^2*e^5) - (8*c^3*d^3*g*e^2 + 8*c^3*d^2*f*e^3 - 20*b*c^2*d^2*g*e^3 - 8*b*c^2*d*f*e^4 + 14*b^2*c*d*g*e^4 + 2*b^2*c*f*e^5 - 3*b^3*g*e^5)/(4*c^4*d^2*e^3 - 4*b*c^3*d*e^4 + b^2*c^2*e^5))*x - (12*c^3*d^4*g*e + 8*c^3*d^3*f*e^2 - 24*b*c^2*d^3*g*e^2 - 8*b*c^2*d^2*f*e^3 + 15*b^2*c*d^2*g*e^3 + 2*b^2*c*d*f*e^4 - 3*b^3*d*g*e^4)/(4*c^4*d^2*e^3 - 4*b*c^3*d*e^4 + b^2*c^2*e^5))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d*e) - 1/2*(4*c*d*g + 2*c*f*e - 3*b*g*e)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^3

maple [**B**] time = 0.06, size = 1320, normalized size = 6.20

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)

[Out] 2*x/c/e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-1/2*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^4*f-2/c/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*g-3/e*g/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d+3/4*e^4*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-6*e^3*g/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+3/2*e^4*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+6*e^2*g*b/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2-g*x^2/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/4*g*b^2/c^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+2/c/e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-3/2*g*b/c^2*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/2*g*b/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+3/e^2*g/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+2*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*d*f+2*d^2*f*(-2*c*e^2*x-b*e^2)/(-b^2*e^4-4*(-b*d*e+c*d^2)*c*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-3*e^3*g/c^2*b^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+3*e^2*g/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^4*x*f+4*b/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*x*d*f+x/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/2*b/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\left(d+e\,x\right)^2}{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^2\left(f+gx\right)}{(-(d+ex)(be-cd+cex))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((d + e*x)**2*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.1989 $\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=129

$$\frac{2(d+ex)(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{3/2}e^2}$$

Rubi [A] time = 0.17, antiderivative size = 148, normalized size of antiderivative = 1.15, number of steps used = 3, number of rules used = 3, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {777, 621, 204}

$$\frac{2(ex(2cd-be)+d(2cd-be))(-beg+cdg+cef)}{ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{3/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d*(2*c*d - b*e) + e*(2*c*d - b*e)*x))/(c*e^2*(2
*c*d - b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (g*ArcTan[(e*(b
+ 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(c^(3/2)*
e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{g\int \frac{1}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx}{ce}$$

$$= \frac{2(cef+cdg-beg)(d+ex)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(2g)\,\mathrm{Subst}\left(\int \frac{1}{-4ce^2-x^2}\,dx, x, \frac{\quad}{\sqrt{cd}}\right.}{ce}$$

$$= \frac{2(cef+cdg-beg)(d+ex)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{3/2}e^2}$$

Mathematica [A] time = 0.44, size = 173, normalized size = 1.34

$$-\frac{2\left(\sqrt{c}\sqrt{e}(d+ex)(-beg+cdg+cef)+g\sqrt{d+ex}\sqrt{e(2cd-be)}(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)\right)}{c^{3/2}e^{5/2}(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (-2*(Sqrt[c]*Sqrt[e]*(c*e*f + c*d*g - b*e*g)*(d + e*x) + Sqrt[e*(2*c*d - b*
e)]*(-2*c*d + b*e)*g*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*
e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/(c^(3/2
)*e^(5/2)*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 1.70, size = 267, normalized size = 2.07

$$-\frac{g\sqrt{-ce^2}\log\left(b^2e^2-8cx\sqrt{-ce^2}\sqrt{-bde-be^2x+cd^2-ce^2x^2}-4bcde-4bce^2x+4c^2d^2-8c^2e^2x^2\right)}{2c^2e^3}-\frac{g\tan^{-1}\left(\frac{2\sqrt{c}x\sqrt{-ce^2}}{be}-\frac{2\sqrt{c}\sqrt{-bde-be^2x+cd^2-ce^2x^2}}{be}\right)}{c^{3/2}e^2}+\frac{2\sqrt{-bde-be^2x+cd^2-ce^2x^2}(-beg+cdg+cef)}{ce^2(be-2cd)(be-cd+cex)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(c*e^
2*(-2*c*d + b*e)*(-(c*d) + b*e + c*e*x)) - (g*ArcTan[(2*Sqrt[c]*Sqrt[-(c*e^
2)]*x)/(b*e) - (2*Sqrt[c]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(b*e)]
)/(c^(3/2)*e^2) - (Sqrt[-(c*e^2)]*g*Log[4*c^2*d^2 - 4*b*c*d*e + b^2*e^2 - 4
*b*c*e^2*x - 8*c^2*e^2*x^2 - 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2 - b*d*e - b*e^
2*x - c*e^2*x^2]])/(2*c^2*e^3)
```

fricas [A] time = 0.89, size = 483, normalized size = 3.74

$$\left[\frac{\left((2c^2de-bce^2)gx-(2c^2d^2-3bcde+b^2e^2)g\right)\sqrt{-c}\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2+4\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{-c}\right)+4\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(c^2ef+(c^2d-bce)g\right)}{2\left(2c^4d^2e^2-3bc^3de^3+b^2c^2e^4-(2c^4de^3-bc^3e^4)x\right)}, -\frac{\left((2c^2de-bce^2)gx-(2c^2d^2-3bcde+b^2e^2)g\right)\sqrt{c}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}(2cex+be)\sqrt{c}}{2(c^2e^2x^2+bce^2x-c^2d^2+bcde)}\right)-2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(c^2ef+(c^2d-bce)g\right)}{2c^4d^2e^2-3bc^3de^3+b^2c^2e^4-(2c^4de^3-bc^3e^4)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="fricas")
```

```
[Out] [1/2*(((2*c^2*d*e - b*c*e^2)*g*x - (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqr
t(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4
*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c^2*e*f + (c^2*d - b*c*e)*g))/(2
*c^4*d^2*e^2 - 3*b*c^3*d*e^3 + b^2*c^2*e^4 - (2*c^4*d*e^3 - b*c^3*e^4)*x),
-(((2*c^2*d*e - b*c*e^2)*g*x - (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqrt(c)
```

```
*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt
(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e)*(c^2*e*f + (c^2*d - b*c*e)*g))/(2*c^4*d^2*e^2 - 3*b*
c^3*d*e^3 + b^2*c^2*e^4 - (2*c^4*d*e^3 - b*c^3*e^4)*x)]
```

giac [B] time = 0.56, size = 282, normalized size = 2.19

$$-\frac{\sqrt{-ce^{2}}ge^{(-3)}\log\left(\left|-2\left(\sqrt{-ce^{2}}x-\sqrt{-cx^{2}e^{2}+cd^{2}-bxe^{2}-bde}\right)c-\sqrt{-ce^{2}}b\right|\right)}{c^{2}}-\frac{2\sqrt{-cx^{2}e^{2}+cd^{2}-bxe^{2}-bde}\left(\frac{\left(2c^{2}d^{2}ge^{2}+2c^{2}dfe^{3}-3bcdge^{3}-bcfe^{4}+b^{2}ge^{4}\right)x}{4c^{3}d^{2}e^{3}-4bc^{2}de^{4}+b^{2}ce^{5}}+\frac{2c^{2}d^{3}ge+2c^{2}d^{2}fe^{2}-3bcd^{2}ge^{2}-bcdfe^{3}+b^{2}dge^{3}}{4c^{3}d^{2}e^{3}-4bc^{2}de^{4}+b^{2}ce^{5}}\right)}{cx^{2}e^{2}-cd^{2}+bxe^{2}+bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="giac")
```

```
[Out] -sqrt(-c*e^2)*g*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2
 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^2 - 2*sqrt(-c*x^2*e^2 + c*d^2 -
 b*x*e^2 - b*d*e)*((2*c^2*d^2*g*e^2 + 2*c^2*d*f*e^3 - 3*b*c*d*g*e^3 - b*c*f
*e^4 + b^2*g*e^4)*x/(4*c^3*d^2*e^3 - 4*b*c^2*d*e^4 + b^2*c*e^5) + (2*c^2*d^
3*g*e + 2*c^2*d^2*f*e^2 - 3*b*c*d^2*g*e^2 - b*c*d*f*e^3 + b^2*d*g*e^3)/(4*c
^3*d^2*e^3 - 4*b*c^2*d*e^4 + b^2*c*e^5))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d
*e)
```

maple [B] time = 0.06, size = 710, normalized size = 5.50

$$-\frac{b^{2}e^{3}gx}{\left(-b^{2}e^{4}+4bcde^{3}-4d^{2}e^{2}c^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,c}+\frac{2bde^{2}gx}{\left(-b^{2}e^{4}+4bcde^{3}-4d^{2}e^{2}c^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}}+\frac{2be^{3}fx}{\left(-b^{2}e^{4}+4bcde^{3}-4d^{2}e^{2}c^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}}-\frac{b^{3}e^{3}g}{2\left(-b^{2}e^{4}+4bcde^{3}-4d^{2}e^{2}c^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,c^{2}}+\frac{b^{2}de^{2}g}{\left(-b^{2}e^{4}+4bcde^{3}-4d^{2}e^{2}c^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,c}+\frac{b^{2}e^{3}f}{\left(-b^{2}e^{4}+4bcde^{3}-4d^{2}e^{2}c^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,c}+\frac{2\left(-2ce^{2}x-be^{2}\right)df}{\left(-b^{2}e^{4}-4\left(-bde+cd^{2}\right)ce^{2}\right)\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}}+\frac{gx}{\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,ce}-\frac{g\arctan\left(\frac{\sqrt{ce^{2}}\left(x+\frac{b}{2c}\right)}{\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}}\right)}{\sqrt{ce^{2}}\,ce}-\frac{bg}{2\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,c^{2}e}+\frac{dg}{\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,ce^{2}}+\frac{f}{\sqrt{-ce^{2}x^{2}-be^{2}x-bde+cd^{2}}\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 1/e*g*x/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/2/e*g*b/c^2/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)-e^3*g*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-1/2*e^3*g*b^3/c^2/(-b^2*e^4+4*b*c
*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/e*g/c/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))+1/c/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g+1/c/e/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*f+2*b/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^2*x*d*g+2*b/(-b^2*e^4+4*b*c*d*e^3-4*c^2
*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*x*f+b^2/c/(-b^2*e^4+4*
b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^2*d*g+b^2
/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*e^3*f+2*d*f*(-2*c*e^2*x-b*e^2)/(-b^2*e^4-4*(-b*d*e+c*d^2)*c*e^2)/(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.04, size = 344, normalized size = 2.67

$$\frac{4cd^{3}g+2bde^{2}f-4bd^{2}eg-2bde^{2}gx+4cde^{2}fx}{\left(b^{2}e^{4}+4ce^{2}\left(cd^{2}-bde\right)\right)\sqrt{cd^{2}-bde-ce^{2}x^{2}-be^{2}x}}+\frac{eg\ln\left(be^{2}-2\sqrt{-ce^{2}}\sqrt{-(d+ex)(be-cd+cex)}+2ce^{2}x\right)}{\left(-ce^{2}\right)^{3/2}}-\frac{ef\left(-4cd^{2}+4bde+2bxe^{2}\right)}{\left(b^{2}e^{4}+4ce^{2}\left(cd^{2}-bde\right)\right)\sqrt{cd^{2}-bde-ce^{2}x^{2}-be^{2}x}}+\frac{g\left(x\left(\frac{b^{2}e^{4}}{2}+ce^{2}\left(cd^{2}-bde\right)\right)-\frac{be^{2}\left(cd^{2}-bde\right)}{2}\right)}{ce\left(\frac{b^{2}e^{4}}{4}+ce^{2}\left(cd^{2}-bde\right)\right)\sqrt{cd^{2}-bde-ce^{2}x^{2}-be^{2}x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] (4*c*d^3*g + 2*b*d*e^2*f - 4*b*d^2*e*g - 2*b*d*e^2*g*x + 4*c*d*e^2*f*x)/((b
^2*e^4 + 4*c*e^2*(c*d^2 - b*d*e))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2)) + (e*g*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1
/2) + 2*c*e^2*x))/(-c*e^2)^(3/2) - (e*f*(4*b*d*e - 4*c*d^2 + 2*b*e^2*x))/((
b^2*e^4 + 4*c*e^2*(c*d^2 - b*d*e))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2)) + (g*(x*((b^2*e^4)/2 + c*e^2*(c*d^2 - b*d*e)) - (b*e^2*(c*d^2 - b*d*e)
)/2))/(c*e*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.1990 $\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=136

$$\frac{2(b+2cx)(-3beg+2cdg+4cef)}{3e(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)}{3e^2(d+ex)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Rubi [A] time = 0.14, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 613}

$$\frac{2(b+2cx)(-3beg+2cdg+4cef)}{3e(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)}{3e^2(d+ex)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x]
```

```
[Out] (2*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x))/(3*e*(2*c*d - b*e)^3*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g))/(3*e^2*(2*c*d - b*e)*(
d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx=-\frac{2(ef-dg)}{3e^2(2cd-be)(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{(4cef+2c}{}$$
$$=\frac{2(4cef+2cdg-3beg)(b+2cx)}{3e(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2}{3e^2(2cd-be)(d+ex}$$

Mathematica [A] time = 0.10, size = 149, normalized size = 1.10

$$\frac{2b^2e^2(2dg+e(f+3gx))+4bce\left(d^2g+de(2gx-4f)+e^2x(3gx-2f)\right)-8c^2\left(d^3g+d^2e(gx-f)+de^2x(2f+gx)+2e^3fx^2\right)}{3e^2(d+ex)(be-2cd)^3\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))
,x]
```

```
[Out] (-8*c^2*(d^3*g + 2*e^3*f*x^2 + d^2*e*(-f + g*x) + d*e^2*x*(2*f + g*x)) + 4*
b*c*e*(d^2*g + d*e*(-4*f + 2*g*x) + e^2*x*(-2*f + 3*g*x)) + 2*b^2*e^2*(2*d*
g + e*(f + 3*g*x)))/(3*e^2*(-2*c*d + b*e)^3*(d + e*x)*Sqrt[(d + e*x)*(-(b*e
) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 127.73, size = 20130, normalized size = 148.01

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2)^(3/2)),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 7.16, size = 407, normalized size = 2.99

$$\frac{2\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(2\left(4c^2e^3f + \left(2c^2de^2 - 3bce^3\right)g\right)x^2 - \left(4c^2d^2e - 8bcde^2 + b^2e^3\right)f + 2\left(2c^2d^3 - bcd^2e - b^2de^2\right)g + \left(4\left(2c^2de^2 + bce^3\right)f + \left(4c^2d^2e - 4bcde^2 - 3b^2e^3\right)g\right)x\right)}{3\left(8c^4d^6e^2 - 20bc^3d^5e^3 + 18b^2c^2d^4e^4 - 7b^3cd^3e^5 + b^4d^2e^6 - \left(8c^4d^3e^5 - 12bc^3d^2e^6 + 6b^2c^2de^7 - b^3ce^8\right)x^3 - \left(8c^4d^4e^4 - 4bc^3d^3e^5 - 6b^2c^2d^2e^6 + 5b^3cde^7 - b^4e^8\right)x^2 + \left(8c^4d^5e^3 - 28bc^3d^4e^4 + 30b^2c^2d^3e^5 - 13b^3cd^2e^6 + 2b^4de^7\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="fricas")
```

```
[Out] 2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^2*e^3*f + (2*c^2*d*e
^2 - 3*b*c*e^3)*g)*x^2 - (4*c^2*d^2*e - 8*b*c*d*e^2 + b^2*e^3)*f + 2*(2*c^2
*d^3 - b*c*d^2*e - b^2*d*e^2)*g + (4*(2*c^2*d*e^2 + b*c*e^3)*f + (4*c^2*d^2
*e - 4*b*c*d*e^2 - 3*b^2*e^3)*g)*x)/(8*c^4*d^6*e^2 - 20*b*c^3*d^5*e^3 + 18*
b^2*c^2*d^4*e^4 - 7*b^3*c*d^3*e^5 + b^4*d^2*e^6 - (8*c^4*d^3*e^5 - 12*b*c^3
*d^2*e^6 + 6*b^2*c^2*d*e^7 - b^3*c*e^8)*x^3 - (8*c^4*d^4*e^4 - 4*b*c^3*d^3*
e^5 - 6*b^2*c^2*d^2*e^6 + 5*b^3*c*d*e^7 - b^4*e^8)*x^2 + (8*c^4*d^5*e^3 - 2
8*b*c^3*d^4*e^4 + 30*b^2*c^2*d^3*e^5 - 13*b^3*c*d^2*e^6 + 2*b^4*d*e^7)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to transpose Error: Bad Argument Valu
e
```

maple [A] time = 0.05, size = 228, normalized size = 1.68

$$-\frac{2\left(cex + be - cd\right)\left(6bce^3gx^2 - 4c^2de^2gx^2 - 8c^2e^3fx^2 + 3b^2e^3gx + 4bcde^2gx - 4bce^3fx - 4c^2d^2egx - 8c^2de^2fx + 2b^2de^2g + b^2e^3f + 2bcd^2eg - 8bcde^2f - 4c^2d^3g + 4c^2d^2ef\right)}{3\left(b^3e^3 - 6b^2cde^2 + 12bc^2d^2e - 8c^3d^3\right)\left(-ce^2x^2 - be^2x - bde + cd^2\right)^{\frac{3}{2}}e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(6*b*c*e^3*g*x^2-4*c^2*d*e^2*g*x^2-8*c^2*e^3*f*x^2+3*b
^2*e^3*g*x+4*b*c*d*e^2*g*x-4*b*c*e^3*f*x-4*c^2*d^2*e*g*x-8*c^2*d*e^2*f*x+2*
b^2*d*e^2*g+b^2*e^3*f+2*b*c*d^2*e*g-8*b*c*d*e^2*f-4*c^2*d^3*g+4*c^2*d^2*e*f
)/(b^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.20, size = 872, normalized size = 6.41

$$\frac{\left(\frac{2bg}{3e(be-2cd)^3}-\frac{4cdg}{3e^2(be-2cd)^3}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{d+ex}+\frac{\left(\frac{2dg}{3b^2e^4-12bcde^3+12c^2d^2e^2}-\frac{2ef}{3b^2e^4-12bcde^3+12c^2d^2e^2}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)^2}+\frac{\left(x\left(\frac{(e(be-cd)+cde)\left(\frac{4c^3e(3bg-2cf)}{3(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}+\frac{4bc^3eg}{3(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}-\frac{8c^3g(e(be-cd)+cde)}{3e(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}\right)}{ce^2}-\frac{2c^2(8gb^2e^2-16gbcde-10fbce^2+8gc^2d^2+16fc^2de)}{3e(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}-\frac{2bc^2e(3bg-2cf)}{3(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}+\frac{8c^3dg(be-cd)}{3e(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}\right)+\frac{d(be-cd)\left(\frac{4c^3e(3bg-2cf)}{3(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}+\frac{4bc^3eg}{3(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}-\frac{8c^3g(e(be-cd)+cde)}{3e(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}\right)}{ce^2}-\frac{bc(8gb^2e^2-16gbcde-10fbce^2+8gc^2d^2+16fc^2de)}{3e(be-2cd)^2(b^2ce^2-4bc^2de+4c^3d^2)}\right)\sqrt{cd^2-bde-ce^2x^2-be^2x}}{(d+ex)(be-cd+cex)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)
```

```
[Out] (((2*b*g)/(3*e*(b*e - 2*c*d)^3) - (4*c*d*g)/(3*e^2*(b*e - 2*c*d)^3))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*d*g)/(3*b^2*e^4 + 1
2*c^2*d^2*e^2 - 12*b*c*d*e^3) - (2*e*f)/(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*
c*d*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + ((x*((
(e*(b*e - c*d) + c*d*e)*((4*c^3*e*(3*b*g - 2*c*f))/(3*(b*e - 2*c*d)^2*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (4*b*c^3*e*g)/(3*(b*e - 2*c*d)^2*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^3*g*(e*(b*e - c*d) + c*d*e))/(3*e*(
b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(8
*b^2*e^2*g + 8*c^2*d^2*g - 10*b*c*e^2*f + 16*c^2*d*e*f - 16*b*c*d*e*g))/(3*
e*(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (2*b*c^2*e*(3*b*
g - 2*c*f))/(3*(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (8*
c^3*d*g*(b*e - c*d))/(3*e*(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e))) + (d*(b*e - c*d)*((4*c^3*e*(3*b*g - 2*c*f))/(3*(b*e - 2*c*d)^2*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (4*b*c^3*e*g)/(3*(b*e - 2*c*d)^2*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^3*g*(e*(b*e - c*d) + c*d*e))/(3*e*(
b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(8*b
^2*e^2*g + 8*c^2*d^2*g - 10*b*c*e^2*f + 16*c^2*d*e*f - 16*b*c*d*e*g))/(3*e*
(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{(-(d+ex)(be-cd+cex))^{\frac{3}{2}}(d+ex)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)), x)
```

3.1991 $\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=209

$$-\frac{2(ef-dg)}{5e^2(d+ex)^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8c(b+2cx)(-5beg+4cdg+6cef)}{15e(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(-}{15e^2(d+ex)(2cd}$$

Rubi [A] time = 0.28, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 613}

$$-\frac{2(ef-dg)}{5e^2(d+ex)^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8c(b+2cx)(-5beg+4cdg+6cef)}{15e(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(-5beg+4cdg+6cef)}{15e^2(d+ex)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x]
```

```
[Out] (8*c*(6*c*e*f + 4*c*d*g - 5*b*e*g)*(b + 2*c*x))/(15*e*(2*c*d - b*e)^4*Sqrt[
d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g))/(5*e^2*(2*c*d - b*e
)*(d + e*x)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(6*c*e*f + 4*
c*d*g - 5*b*e*g))/(15*e^2*(2*c*d - b*e)^2*(d + e*x)*Sqrt[d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{2(ef-dg)}{5e^2(2cd-be)(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(6cef+\cdots}{\cdots}$$

$$= -\frac{2(ef-dg)}{5e^2(2cd-be)(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{15e^2(2cd\cdots}$$

$$= \frac{8c(6cef+4cdg-5beg)(b+2cx)}{15e(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{5e^2(2cd-be)(d+\cdots}$$

Mathematica [A] time = 0.13, size = 233, normalized size = 1.11

$$\frac{2\left(b^3e^3(2dg+3ef+5egx)-2b^2ce^2\left(13d^2g+4de(3f+8gx)+e^2x(3f+10gx)\right)+4bc^2e\left(4d^3g+7d^2e(3f+gx)+2de^2x(9f-8gx)+2e^3x^2(3f-5gx)\right)+8c^3\left(d^4g+d^3e(2gx-6f)+d^2e^2x(3f+8gx)+4de^3x^2(3f+gx)+6e^4fx^3\right)\right)}{15e^2(d+ex)^2(be-2cd)^4\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2
)),x]
```

```
[Out] (2*(b^3*e^3*(3*e*f + 2*d*g + 5*e*g*x) + 4*b*c^2*e*(4*d^3*g + 2*d*e^2*x*(9*f
 - 8*g*x) + 2*e^3*x^2*(3*f - 5*g*x) + 7*d^2*e*(3*f + g*x)) + 8*c^3*(d^4*g +
 6*e^4*f*x^3 + 4*d*e^3*x^2*(3*f + g*x) + d^3*e*(-6*f + 2*g*x) + d^2*e^2*x*(
3*f + 8*g*x)) - 2*b^2*c*e^2*(13*d^2*g + 4*d*e*(3*f + 8*g*x) + e^2*x*(3*f +
10*g*x))))/(15*e^2*(-2*c*d + b*e)^4*(d + e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*
(d - e*x))])
```

IntegrateAlgebraic [F] time = 180.16, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2)^(3/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 28.90, size = 649, normalized size = 3.11

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(8\left(6c^3e^4f+\left(4c^3de^3-5bc^2e^4\right)g\right)x^3+4\left(6\left(4c^3de^3+bc^2e^4\right)f+\left(16c^3d^2e^2-16bc^2de^3-5b^2ce^4\right)g\right)x^2-3\left(16c^3d^3e-28bc^2d^2e^2+8b^2cde^3-b^3e^4\right)f+2\left(4c^3d^4+8bc^2d^3e-13b^2cd^2e^2+b^3de^3\right)g+\left(6\left(4c^3d^2e^2+12bc^2de^3-b^2ce^4\right)f+\left(16c^3d^3e+28bc^2d^2e^2-64b^2cde^3+5b^3e^4\right)g\right)x\right)}{15\left(16c^5d^8e^2-48bc^4d^7e^3+56b^2c^3d^6e^4-32b^3c^2d^5e^5+9b^4cd^4e^6-b^5d^3e^7-\left(16c^5d^4e^6-32bc^4d^3e^7+24b^2c^3d^2e^8-8b^3c^2de^9+b^4ce^{10}\right)x^4-\left(32c^5d^5e^5-48bc^4d^4e^6+16b^2c^3d^3e^7+8b^3c^2d^2e^8-6b^4cde^9+b^5e^{10}\right)x^3-3\left(16bc^4d^5e^5-32b^2c^3d^4e^6+24b^3c^2d^3e^7-8b^4cd^2e^8+b^5de^9\right)x^2+\left(32c^5d^7e^3-112bc^4d^6e^4+144b^2c^3d^5e^5-88b^3c^2d^4e^6+26b^4cd^3e^7-3b^5d^2e^8\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] 2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(6*c^3*e^4*f + (4*c^3*d*
e^3 - 5*b*c^2*e^4)*g)*x^3 + 4*(6*(4*c^3*d*e^3 + b*c^2*e^4)*f + (16*c^3*d^2*
e^2 - 16*b*c^2*d*e^3 - 5*b^2*c*e^4)*g)*x^2 - 3*(16*c^3*d^3*e - 28*b*c^2*d^2
*e^2 + 8*b^2*c*d*e^3 - b^3*e^4)*f + 2*(4*c^3*d^4 + 8*b*c^2*d^3*e - 13*b^2*c
*d^2*e^2 + b^3*d*e^3)*g + (6*(4*c^3*d^2*e^2 + 12*b*c^2*d*e^3 - b^2*c*e^4)*f
 + (16*c^3*d^3*e + 28*b*c^2*d^2*e^2 - 64*b^2*c*d*e^3 + 5*b^3*e^4)*g)*x)/(16
*c^5*d^8*e^2 - 48*b*c^4*d^7*e^3 + 56*b^2*c^3*d^6*e^4 - 32*b^3*c^2*d^5*e^5 +
 9*b^4*c*d^4*e^6 - b^5*d^3*e^7 - (16*c^5*d^4*e^6 - 32*b*c^4*d^3*e^7 + 24*b^
2*c^3*d^2*e^8 - 8*b^3*c^2*d*e^9 + b^4*c*e^10)*x^4 - (32*c^5*d^5*e^5 - 48*b*
c^4*d^4*e^6 + 16*b^2*c^3*d^3*e^7 + 8*b^3*c^2*d^2*e^8 - 6*b^4*c*d*e^9 + b^5*
e^10)*x^3 - 3*(16*b*c^4*d^5*e^5 - 32*b^2*c^3*d^4*e^6 + 24*b^3*c^2*d^3*e^7 -
 8*b^4*c*d^2*e^8 + b^5*d*e^9)*x^2 + (32*c^5*d^7*e^3 - 112*b*c^4*d^6*e^4 + 1
```

```
44*b^2*c^3*d^5*e^5 - 88*b^3*c^2*d^4*e^6 + 26*b^4*c*d^3*e^7 - 3*b^5*d^2*e^8)
*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 382, normalized size = 1.83

$$-\frac{2 \left(c e x + b e - c d\right) \left(-40 b \,c^{2} e^{4} g \,x^{3}+32 c^{3} d \,e^{3} g \,x^{3}+48 c^{3} e^{4} f \,x^{3}-20 b^{2} c \,e^{4} g \,x^{2}-64 b \,c^{2} d \,e^{3} g \,x^{2}+24 b \,c^{2} e^{4} f \,x^{2}+64 c^{3} d^{2} e^{2} g \,x^{2}+96 c^{3} d \,e^{3} f \,x^{2}+5 b^{3} e^{4} g x -64 b^{2} c d \,e^{3} g x -6 b^{2} c \,e^{4} f x +28 b \,c^{2} d^{2} e^{2} g x +72 b \,c^{2} d \,e^{3} f x +16 c^{3} d^{3} e g x +24 c^{3} d^{2} e^{2} f x +2 b^{3} d \,e^{3} g +3 b^{3} e^{4} f -26 b^{2} c \,d^{2} e^{2} g -24 b^{2} c d \,e^{3} f +16 b \,c^{2} d^{3} e g +84 b \,c^{2} d^{2} e^{2} f +8 c^{3} d^{4} g -48 c^{3} d^{3} e f \right)}{15 \left(e x +d \right) \left(b^{4} e^{4}-8 b^{3} c d \,e^{3}+24 b^{2} c^{2} d^{2} e^{2}-32 b \,c^{3} d^{3} e +16 c^{4} d^{4}\right) \left(-c \,e^{2} x^{2}-b \,e^{2} x -b d e +c \,d^{2}\right)^{\frac{3}{2}} e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-40*b*c^2*e^4*g*x^3+32*c^3*d*e^3*g*x^3+48*c^3*e^4*f*
x^3-20*b^2*c*e^4*g*x^2-64*b*c^2*d*e^3*g*x^2+24*b*c^2*e^4*f*x^2+64*c^3*d^2*e
^2*g*x^2+96*c^3*d*e^3*f*x^2+5*b^3*e^4*g*x-64*b^2*c*d*e^3*g*x-6*b^2*c*e^4*f*
x+28*b*c^2*d^2*e^2*g*x+72*b*c^2*d*e^3*f*x+16*c^3*d^3*e*g*x+24*c^3*d^2*e^2*f
*x+2*b^3*d*e^3*g+3*b^3*e^4*f-26*b^2*c*d^2*e^2*g-24*b^2*c*d*e^3*f+16*b*c^2*d
^3*e*g+84*b*c^2*d^2*e^2*f+8*c^3*d^4*g-48*c^3*d^3*e*f)/(e*x+d)/e^2/(b^4*e^4-
8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.59, size = 2126, normalized size = 10.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)
```

```
[Out] (((d*((16*c^3*f - 16*b*c^2*g)/(15*(b*e - 2*c*d)^5) + (8*c^3*d*g)/(15*e*(b*e
 - 2*c*d)^5)))/e + (2*b*c*(3*b*g - 4*c*f))/(15*(b*e - 2*c*d)^5))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4*b*c*g)/(15*e*(b*e - 2*c
*d)^4) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((2*b*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^2) - (4*c*d*g)/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((4*c*g*(3*b*e - 4*c*d))/(15*e^
2*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*d*g)/(5*b^2*e^4 + 20*c^2*d^2*
e^2 - 20*b*c*d*e^3) - (2*e*f)/(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((2*c*e*(3*
```

```
b*e*g + 2*c*d*g - 4*c*e*f))/(5*(b*e - 2*c*d)^2*(3*b^2*e^4 + 12*c^2*d^2*e^2
- 12*b*c*d*e^3)) - (4*c^2*d*e*g)/(5*(b*e - 2*c*d)^2*(3*b^2*e^4 + 12*c^2*d^2
*e^2 - 12*b*c*d*e^3))))/e - (12*b^2*e^2*g + 12*c^2*d^2*g - 18*b*c*e^2*f + 2
8*c^2*d*e*f - 24*b*c*d*e*g)/(5*(b*e - 2*c*d)^2*(3*b^2*e^4 + 12*c^2*d^2*e^2
- 12*b*c*d*e^3)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
- ((x*((d*(b*e - c*d)*((16*c^5*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)
^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^5*e*(c*d*g - 3*b*e*g + 2*
c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c
^5*e^2*g)/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e
^2) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*c^5*g*(e*(b*e
 - c*d) + c*d*e))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
) + (16*c^5*e*(c*d*g - 3*b*e*g + 2*c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^4*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(10*b^2*c^2*e^3*g + 12*b*c^
3*e^3*f - 56*c^4*d*e^2*f + 24*c^4*d^2*e*g - 4*b*c^3*d*e^2*g))/(15*e*(b*e -
2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^4*e*(c*d*g - 3*b*e
*g + 2*c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) -
 (16*c^5*d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))))/(c*e^2) + (2*c^2*(96*c^4*d^3*g + 58*b^2*c^2*e^3*f - 36*b^3*c*e^
3*g + 192*c^4*d^2*e*f - 220*b*c^3*d*e^2*f - 228*b*c^3*d^2*e*g + 168*b^2*c^2
*d*e^2*g))/(15*e*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (
b*c*(10*b^2*c^2*e^3*g + 12*b*c^3*e^3*f - 56*c^4*d*e^2*f + 24*c^4*d^2*e*g -
4*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e))) - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((16*c^5*g*(e*(b*e - c*d) +
 c*d*e))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c
^5*e*(c*d*g - 3*b*e*g + 2*c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e)) - (8*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(10*b^2*c^2*e^3*g + 12*b*c^3*e^3*f -
 56*c^4*d*e^2*f + 24*c^4*d^2*e*g - 4*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^4*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^4*e*(c*d*g - 3*b*e*g + 2*c*
e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*c^5*
d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
))/(c*e^2) + (b*c*(96*c^4*d^3*g + 58*b^2*c^2*e^3*f - 36*b^3*c*e^3*g + 192*c
^4*d^2*e*f - 220*b*c^3*d*e^2*f - 228*b*c^3*d^2*e*g + 168*b^2*c^2*d*e^2*g))/
(15*e*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**2),
x)
```

3.1992 $\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=284

$$\frac{16c^2(b+2cx)(-7beg+6cdg+8cef)}{35e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{4c(-7beg+6cdg+8cef)}{35e^2(d+ex)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(-}{35e^2(d+ex)^2(2c}$$

Rubi [A] time = 0.39, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 613}

$$\frac{16c^2(b+2cx)(-7beg+6cdg+8cef)}{35e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{4c(-7beg+6cdg+8cef)}{35e^2(d+ex)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(-7beg+6cdg+8cef)}{35e^2(d+ex)^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)}{7e^2(d+ex)^3(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x]
```

```
[Out] (16*c^2*(8*c*e*f + 6*c*d*g - 7*b*e*g)*(b + 2*c*x))/(35*e*(2*c*d - b*e)^5*Sq
rt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g))/(7*e^2*(2*c*d -
b*e)*(d + e*x)^3*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(8*c*e*f +
 6*c*d*g - 7*b*e*g))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^2*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2]) - (4*c*(8*c*e*f + 6*c*d*g - 7*b*e*g))/(35*e^2*(2*c
*d - b*e)^3*(d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(8cef+\cdots}{\cdots}$$

$$= -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{35e^2(2cd\cdots}$$

$$= -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{35e^2(2cd\cdots}$$

$$= \frac{16c^2(8cef+6cdg-7beg)(b+2cx)}{35e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{7e^2(2cd-be)(d+\cdots}$$

Mathematica [A] time = 0.20, size = 331, normalized size = 1.17

$$\frac{2\left(b^4e^4(2dg+5ef+7egx)-2b^3ce^3\left(11d^2g+de(24f+38gx)+e^2x(4f+7gx)\right)+4b^2c^2e^2\left(31d^3g+2d^2e(23f+53gx)+de^2x(20f+59gx)+2e^3x^2(2f+7gx)\right)-8bc^3e\left(15d^4g+d^3e(48f+46gx)+d^2e^2x(52f-11gx)+4de^3x^2(8f-9gx)+2e^4x^3(4f-7gx)\right)+16c^4\left(d^5g+d^4e(13f+3gx)+d^3e^2x(4f-15gx)-2d^2e^3x^2(10f+9gx)-6de^4x^3(4f+gx)-8e^5fx^4\right)\right)}{35e^2(d+ex)^3(be-2cd)^5\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2
)),x]
```

```
[Out] (2*(b^4*e^4*(5*e*f + 2*d*g + 7*e*g*x) + 16*c^4*(d^5*g - 8*e^5*f*x^4 + d^3*e
^2*x*(4*f - 15*g*x) - 6*d*e^4*x^3*(4*f + g*x) + d^4*e*(13*f + 3*g*x) - 2*d^
2*e^3*x^2*(10*f + 9*g*x)) - 2*b^3*c*e^3*(11*d^2*g + e^2*x*(4*f + 7*g*x) + d
*e*(24*f + 38*g*x)) - 8*b*c^3*e*(15*d^4*g + d^2*e^2*x*(52*f - 11*g*x) + 4*d
*e^3*x^2*(8*f - 9*g*x) + 2*e^4*x^3*(4*f - 7*g*x) + d^3*e*(48*f + 46*g*x)) +
 4*b^2*c^2*e^2*(31*d^3*g + 2*e^3*x^2*(2*f + 7*g*x) + 2*d^2*e*(23*f + 53*g*x
) + d*e^2*x*(20*f + 59*g*x))))/(35*e^2*(-2*c*d + b*e)^5*(d + e*x)^3*Sqrt[(d
 + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [F] time = 180.24, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2)^(3/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 137.52, size = 974, normalized size = 3.43

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(16\left(8c^4e^5f+\left(6c^4de^4-7bc^3e^5\right)g\right)x^4+8\left(8\left(6c^4de^4+bc^3e^5\right)f+\left(36c^4d^2e^3-36bc^3de^4-7b^2c^2e^5\right)g\right)x^3+2\left(8\left(20c^4d^2e^3+16bc^3de^4-b^2c^2e^5\right)f+\left(120c^4d^3e^2-44bc^3d^2e^3-118b^2c^2de^4+7b^3ce^5\right)g\right)x^2-\left(208c^4d^4e-384bc^3d^3e^2+184b^2c^2d^2e^3-48b^3cde^4+5b^4e^5\right)f-2\left(8c^4d^5-60bc^3d^4e+62b^2c^2d^3e^2-11b^3cd^2e^3+b^4de^4\right)g-\left(8\left(8c^4d^3e^2-52bc^3d^2e^3+10b^2c^2de^4-b^3ce^5\right)f+\left(48c^4d^4e-368bc^3d^3e^2+424b^2c^2d^2e^3-76b^3cde^4+7b^4e^5\right)g\right)x\right)}{35\left(32c^6d^{10}e^2-112bc^5d^9e^3+160b^2c^4d^8e^4-120b^3c^3d^7e^5+50b^4c^2d^6e^6-11b^5cd^5e^7+b^6d^4e^8-\left(32c^6d^5e^7-80bc^5d^4e^8+80b^2c^4d^3e^9-40b^3c^3d^2e^{10}+10b^4c^2de^{11}-b^5ce^{12}\right)x^5-\left(96c^6d^6e^6-208bc^5d^5e^7+160b^2c^4d^4e^8-40b^3c^3d^3e^9-10b^4c^2d^2e^{10}+7b^5cde^{11}-b^6e^{12}\right)x^4-2\left(32c^6d^7e^5-16bc^5d^6e^6-80b^2c^4d^5e^7+120b^3c^3d^4e^8-70b^4c^2d^3e^9+19b^5cd^2e^{10}-2b^6de^{11}\right)x^3+2\left(32c^6d^8e^4-176bc^5d^7e^5+320b^2c^4d^6e^6-280b^3c^3d^5e^7+130b^4c^2d^4e^8-31b^5cd^3e^9+3b^6d^2e^{10}\right)x^2+\left(96c^6d^9e^3-368bc^5d^8e^4+560b^2c^4d^7e^5-440b^3c^3d^6e^6+190b^4c^2d^5e^7-43b^5cd^4e^8+4b^6d^3e^9\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] 2/35*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(16*(8*c^4*e^5*f + (6*c^4*d
*e^4 - 7*b*c^3*e^5)*g)*x^4 + 8*(8*(6*c^4*d*e^4 + b*c^3*e^5)*f + (36*c^4*d^2
*e^3 - 36*b*c^3*d*e^4 - 7*b^2*c^2*e^5)*g)*x^3 + 2*(8*(20*c^4*d^2*e^3 + 16*b
*c^3*d*e^4 - b^2*c^2*e^5)*f + (120*c^4*d^3*e^2 - 44*b*c^3*d^2*e^3 - 118*b^2
*c^2*d*e^4 + 7*b^3*c*e^5)*g)*x^2 - (208*c^4*d^4*e - 384*b*c^3*d^3*e^2 + 184
*b^2*c^2*d^2*e^3 - 48*b^3*c*d*e^4 + 5*b^4*e^5)*f - 2*(8*c^4*d^5 - 60*b*c^3*
```

```
d^4*e + 62*b^2*c^2*d^3*e^2 - 11*b^3*c*d^2*e^3 + b^4*d*e^4)*g - (8*(8*c^4*d^
3*e^2 - 52*b*c^3*d^2*e^3 + 10*b^2*c^2*d*e^4 - b^3*c*e^5)*f + (48*c^4*d^4*e
- 368*b*c^3*d^3*e^2 + 424*b^2*c^2*d^2*e^3 - 76*b^3*c*d*e^4 + 7*b^4*e^5)*g)*
x)/(32*c^6*d^10*e^2 - 112*b*c^5*d^9*e^3 + 160*b^2*c^4*d^8*e^4 - 120*b^3*c^3
*d^7*e^5 + 50*b^4*c^2*d^6*e^6 - 11*b^5*c*d^5*e^7 + b^6*d^4*e^8 - (32*c^6*d^
5*e^7 - 80*b*c^5*d^4*e^8 + 80*b^2*c^4*d^3*e^9 - 40*b^3*c^3*d^2*e^10 + 10*b^
4*c^2*d*e^11 - b^5*c*e^12)*x^5 - (96*c^6*d^6*e^6 - 208*b*c^5*d^5*e^7 + 160*
b^2*c^4*d^4*e^8 - 40*b^3*c^3*d^3*e^9 - 10*b^4*c^2*d^2*e^10 + 7*b^5*c*d*e^11
 - b^6*e^12)*x^4 - 2*(32*c^6*d^7*e^5 - 16*b*c^5*d^6*e^6 - 80*b^2*c^4*d^5*e^
7 + 120*b^3*c^3*d^4*e^8 - 70*b^4*c^2*d^3*e^9 + 19*b^5*c*d^2*e^10 - 2*b^6*d*
e^11)*x^3 + 2*(32*c^6*d^8*e^4 - 176*b*c^5*d^7*e^5 + 320*b^2*c^4*d^6*e^6 - 2
80*b^3*c^3*d^5*e^7 + 130*b^4*c^2*d^4*e^8 - 31*b^5*c*d^3*e^9 + 3*b^6*d^2*e^1
0)*x^2 + (96*c^6*d^9*e^3 - 368*b*c^5*d^8*e^4 + 560*b^2*c^4*d^7*e^5 - 440*b^
3*c^3*d^6*e^6 + 190*b^4*c^2*d^5*e^7 - 43*b^5*c*d^4*e^8 + 4*b^6*d^3*e^9)*x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to transpose Error: Bad Argument Valu
e
```

maple [**B**] time = 0.06, size = 564, normalized size = 1.99

$$-\frac{2 (cex+be-cd) \left(112 b c^3 e^5 g x^4-96 c^4 d e^4 g x^4-128 c^4 e^5 f x^4+56 b^2 c^2 e^5 g x^3+288 b c^3 d e^4 g x^3-64 b c^3 e^5 f x^3-288 c^4 d^2 e^3 g x^3-384 c^4 d e^4 f x^3-14 b^3 c e^5 g x^2+236 b^2 c^2 d e^4 g x^2+16 b^2 c^2 e^5 f x^2+88 b c^3 d^2 e^3 g x^2-256 b c^3 d e^4 f x^2-240 c^4 d^3 e^2 g x^2-320 c^4 d^2 e^3 f x^2+7 b^4 e^5 g x-76 b^3 c d e^4 g x-8 b^3 c e^5 f x+424 b^2 c^2 d^2 e^3 g x+80 b^2 c^2 d e^4 f x-368 b c^3 d^3 e^2 g x-416 b c^3 d^2 e^3 f x+48 c^4 d^4 e g x+64 c^4 d^3 e^2 f x+2 b^4 d e^4 g+5 b^4 e^5 f-22 b^3 c d^2 e^3 g-48 b^3 c d e^4 f+124 b^2 c^2 d^3 e^2 g+184 b^2 c^2 d^2 e^3 f-120 b c^3 d^4 e g-384 b c^3 d^3 e^2 f+16 c^4 d^5 g+208 c^4 d^4 e f\right)}{35 (ex+d)^2 \left(b^5 e^5-10 b^4 c d e^4+40 b^3 c^2 d^2 e^3-80 b^2 c^3 d^3 e^2+80 b c^4 d^4 e-32 c^5 d^5\right) \left(-c e^2 x^2-b e^2 x-b d e+c d^2\right)^{\frac{3}{2}} e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(112*b*c^3*e^5*g*x^4-96*c^4*d*e^4*g*x^4-128*c^4*e^5*f
*x^4+56*b^2*c^2*e^5*g*x^3+288*b*c^3*d*e^4*g*x^3-64*b*c^3*e^5*f*x^3-288*c^4*
d^2*e^3*g*x^3-384*c^4*d*e^4*f*x^3-14*b^3*c*e^5*g*x^2+236*b^2*c^2*d*e^4*g*x^
2+16*b^2*c^2*e^5*f*x^2+88*b*c^3*d^2*e^3*g*x^2-256*b*c^3*d*e^4*f*x^2-240*c^4
*d^3*e^2*g*x^2-320*c^4*d^2*e^3*f*x^2+7*b^4*e^5*g*x-76*b^3*c*d*e^4*g*x-8*b^3
*c*e^5*f*x+424*b^2*c^2*d^2*e^3*g*x+80*b^2*c^2*d*e^4*f*x-368*b*c^3*d^3*e^2*g
*x-416*b*c^3*d^2*e^3*f*x+48*c^4*d^4*e*g*x+64*c^4*d^3*e^2*f*x+2*b^4*d*e^4*g+
5*b^4*e^5*f-22*b^3*c*d^2*e^3*g-48*b^3*c*d*e^4*f+124*b^2*c^2*d^3*e^2*g+184*b
^2*c^2*d^2*e^3*f-120*b*c^3*d^4*e*g-384*b*c^3*d^3*e^2*f+16*c^4*d^5*g+208*c^4
*d^4*e*f)/(e*x+d)^2/(b^5*e^5-10*b^4*c*d*e^4+40*b^3*c^2*d^2*e^3-80*b^2*c^3*d
^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2
)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 7.86, size = 4339, normalized size = 15.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)
```

```
[Out] (((8*c*g*(2*b*e - 3*c*d))/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (8*c
^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((8*c^4*(2*c*d*g - 7*b*e*g + 6
*c*e*f))/(105*(b*e - 2*c*d)^7) + (16*c^5*d*g)/(105*(b*e - 2*c*d)^7)))/e + (
64*c^5*d^2*g - 20*b^2*c^3*e^2*g - 320*c^5*d*e*f + 112*b*c^4*e^2*f + 80*b*c^
4*d*e*g)/(105*e*(b*e - 2*c*d)^7)))/e - (2*b*c^2*(16*c^2*d^2*g - 11*b^2*e^2*
g + 34*b*c*e^2*f - 80*c^2*d*e*f + 22*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4*b*c*g)/(35*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 -
 (((8*c^2*g*(3*b*e - 4*c*d))/(105*e^2*(b*e - 2*c*d)^5) - (16*c^3*d*g)/(105*
e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) - (((d*((48*c^4*f - 40*b*c^3*g)/(105*(b*e - 2*c*d)^6) + (16*c^4*d*g)/(105
*e*(b*e - 2*c*d)^6)))/e + (8*b*c^2*(2*b*g - 3*c*f))/(105*(b*e - 2*c*d)^6))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((48*c^4*d*g
+ 48*c^4*e*f - 64*b*c^3*e*g)/(105*e*(b*e - 2*c*d)^6) + (16*c^4*d*g)/(105*e*
(b*e - 2*c*d)^6)))/e + (96*c^4*d*f - 72*b*c^3*d*g - 72*b*c^3*e*f + 52*b^2*c
^2*e*g)/(105*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((2*b*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (4*c*d*
g)/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((8*c^3*d*g - 24*c^3*e*f + 16*b*c^2*e*g
)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4)))/e - (2*b*c*(3*b*e*g + 2*c*d*g - 6*c*e*f))/(35*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^2 + (((2*d*g)/(7*b^2*e^4 + 28*c^2*d^2*e^2 - 28*b*c*d*e^3) - (
2*e*f)/(7*b^2*e^4 + 28*c^2*d^2*e^2 - 28*b*c*d*e^3))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((2*c*e*(3*b*e*g + 4*c*d*g - 6*c*e
*f))/(7*(b*e - 2*c*d)^2*(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3)) - (4*c
^2*d*e*g)/(7*(b*e - 2*c*d)^2*(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3))))
/e - (16*b^2*e^2*g + 16*c^2*d^2*g - 26*b*c*e^2*f + 40*c^2*d*e*f - 32*b*c*d*
e*g)/(7*(b*e - 2*c*d)^2*(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3)))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((248*c^4*d^3*g + 16
2*b^2*c^2*e^3*f - 108*b^3*c*e^3*g + 488*c^4*d^2*e*f - 580*b*c^3*d*e^2*f - 6
04*b*c^3*d^2*e*g + 464*b^2*c^2*d*e^2*g)/(35*(b*e - 2*c*d)^4*(3*b^2*e^4 + 12
*c^2*d^2*e^2 - 12*b*c*d*e^3)) + (d*((d*((24*c^3*e^3*(b*g - c*f))/(35*(b*e -
 2*c*d)^4*(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*c*d*e^3)) - (8*c^4*d*e^2*g)/(3
5*(b*e - 2*c*d)^4*(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*c*d*e^3))))/e - (68*b*
c^3*e^3*f - 22*b^2*c^2*e^3*g - 184*c^4*d*e^2*f + 24*c^4*d^2*e*g + 68*b*c^3*
d*e^2*g)/(35*(b*e - 2*c*d)^4*(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*c*d*e^3))))
/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - ((x*(((e*(b*
e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*
c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e -
2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e^3*g)/(105*(b*
e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*c^6*e*(1
5*b^2*e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22*b*c*d*e*g))/(
105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(
4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
 4*b*c^2*d*e)) - (32*c^7*d*e*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((16*c^7*e^2*(4*c*d
*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e^3*g)/(105*(b*e - 2*c*d)^6*(
```

```
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(216*b^2*c^4*e^4*f
 - 246*b^3*c^3*e^4*g + 1264*c^6*d^2*e^2*f + 592*c^6*d^3*e*g - 992*b*c^5*d*e
^3*f - 1696*b*c^5*d^2*e^2*g + 1140*b^2*c^4*d*e^3*g))/(105*e*(b*e - 2*c*d)^6
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^5*e*(15*b^2*e^2*g + 44*c^2
*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22*b*c*d*e*g))/(105*(b*e - 2*c*d)^6*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*(((e*(b*e
 - c*d) + c*d*e)*((16*c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*
c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d)
+ c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16
*b*c^7*e^3*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) + (8*c^6*e*(15*b^2*e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*
e*f - 22*b*c*d*e*g))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - (8*b*c^6*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^7*d*e*g*(b*e - c*d))/(105*(b*e
 - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(2112
*c^6*d^4*g - 538*b^3*c^3*e^4*f + 452*b^4*c^2*e^4*g + 3264*c^6*d^3*e*f - 615
2*b*c^5*d^3*e*g - 5528*b*c^5*d^2*e^2*f + 3012*b^2*c^4*d*e^3*f - 2832*b^3*c^
3*d*e^3*g + 6420*b^2*c^4*d^2*e^2*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) - (b*c*(216*b^2*c^4*e^4*f - 246*b^3*c^3*e^4*g + 126
4*c^6*d^2*e^2*f + 592*c^6*d^3*e*g - 992*b*c^5*d*e^3*f - 1696*b*c^5*d^2*e^2*
g + 1140*b^2*c^4*d*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d)
+ c*d*e)*((16*c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e)
)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e
^3*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (8*c^6*e*(15*b^2*e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22
*b*c*d*e*g))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) -
(8*b*c^6*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^7*d*e*g*(b*e - c*d))/(105*(b*e - 2*c*d
)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((16*
c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e -
2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e^3*g)/(105*(b*
e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(216
*b^2*c^4*e^4*f - 246*b^3*c^3*e^4*g + 1264*c^6*d^2*e^2*f + 592*c^6*d^3*e*g -
 992*b*c^5*d*e^3*f - 1696*b*c^5*d^2*e^2*g + 1140*b^2*c^4*d*e^3*g))/(105*e*(
b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^5*e*(15*b^2*
e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22*b*c*d*e*g))/(105*(b
*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(2112
*c^6*d^4*g - 538*b^3*c^3*e^4*f + 452*b^4*c^2*e^4*g + 3264*c^6*d^3*e*f - 615
2*b*c^5*d^3*e*g - 5528*b*c^5*d^2*e^2*f + 3012*b^2*c^4*d*e^3*f - 2832*b^3*c^
3*d*e^3*g + 6420*b^2*c^4*d^2*e^2*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d +
 e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**3/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**3),
x)
```

3.1993 $\int \frac{(d+ex)^5(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=364

$$\frac{5(2cd-be)(-7beg+10cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{9/2}e^2}-\frac{5\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+10cc}{4c^4e^2}$$

Rubi [A] time = 0.56, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {788, 668, 670, 640, 621, 204}

$$-\frac{2(d+ex)^3(-7beg+10cdg+4cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+10cdg+4cef)}{6c^3e^2(2cd-be)}-\frac{5\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+10cdg+4cef)}{4c^4e^2}+\frac{5(2cd-be)(-7beg+10cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{9/2}e^2}+\frac{2(d+ex)^5(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^5*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^5)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(4*c*e*f + 10*c*d*g - 7*b*e*g)*(d + e
*x)^3)/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
- (5*(4*c*e*f + 10*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(4*c^4*e^2) - (5*(4*c*e*f + 10*c*d*g - 7*b*e*g)*(d + e*x)*Sqrt[d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2])/(6*c^3*e^2*(2*c*d - b*e)) + (5*(2*c*d - b*e)*
(4*c*e*f + 10*c*d*g - 7*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*c^(9/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
```

```
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^5(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(4cef+10cdg-7beg)\int \frac{\ldots}{(cd\ldots}}{3ce(2cd-\ldots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7beg\ldots}{3c^2e^2(2cd-be)\sqrt{d(cd-be)\ldots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7beg\ldots}{3c^2e^2(2cd-be)\sqrt{d(cd-be)\ldots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7beg\ldots}{3c^2e^2(2cd-be)\sqrt{d(cd-be)\ldots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7beg\ldots}{3c^2e^2(2cd-be)\sqrt{d(cd-be)\ldots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7beg\ldots}{3c^2e^2(2cd-be)\sqrt{d(cd-be)\ldots}}$$

Mathematica [C] time = 0.29, size = 139, normalized size = 0.38

$$\frac{2(d+ex)^5\left(\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}(-7beg+10cdg+4cef)\,{}_2F_1\left(\frac{3}{2},\frac{7}{2};\frac{9}{2};\frac{c(d+ex)}{2cd-be}\right)-7(-beg+cdg+cef)\right)}{21ce^2(be-2cd)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^5*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)^5*(-7*(c*e*f + c*d*g - b*e*g) + (4*c*e*f + 10*c*d*g - 7*b*e*g)
*((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*Hypergeometric2F1[3/2, 7/2,
9/2, (c*(d + e*x))/(2*c*d - b*e)]))/(21*c*e^2*(-2*c*d + b*e)*((d + e*x)*(-(
b*e) + c*(d - e*x)))^(3/2))
```

IntegrateAlgebraic [F] time = 180.85, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^5*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(5/2),x]
```

```
[Out] $Aborted
```

fricas [A] time = 5.80, size = 1233, normalized size = 3.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [-1/48*(15*((4*(2*c^4*d*e^3 - b*c^3*e^4)*f + (20*c^4*d^2*e^2 - 24*b*c^3*d*e
^3 + 7*b^2*c^2*e^4)*g)*x^2 + 4*(2*c^4*d^3*e - 5*b*c^3*d^2*e^2 + 4*b^2*c^2*d
*e^3 - b^3*c*e^4)*f + (20*c^4*d^4 - 64*b*c^3*d^3*e + 75*b^2*c^2*d^2*e^2 - 3
8*b^3*c*d*e^3 + 7*b^4*e^4)*g - 2*(4*(2*c^4*d^2*e^2 - 3*b*c^3*d*e^3 + b^2*c^
2*e^4)*f + (20*c^4*d^3*e - 44*b*c^3*d^2*e^2 + 31*b^2*c^2*d*e^3 - 7*b^3*c*e^
4)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e +
 b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqr
t(-c)) + 4*(6*c^4*e^3*g*x^3 + 3*(4*c^4*e^3*f + (16*c^4*d*e^2 - 7*b*c^3*e^3)
*g)*x^2 + 4*(23*c^4*d^2*e - 40*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (236*c^4*d
^3 - 561*b*c^3*d^2*e + 430*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g - 2*(4*(17*c^4*
d*e^2 - 10*b*c^3*e^3)*f + (161*c^4*d^2*e - 219*b*c^3*d*e^2 + 70*b^2*c^2*e^3
)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*e^4*x^2 + c^7*d^2*
e^2 - 2*b*c^6*d*e^3 + b^2*c^5*e^4 - 2*(c^7*d*e^3 - b*c^6*e^4)*x), -1/24*(15
*((4*(2*c^4*d*e^3 - b*c^3*e^4)*f + (20*c^4*d^2*e^2 - 24*b*c^3*d*e^3 + 7*b^2
*c^2*e^4)*g)*x^2 + 4*(2*c^4*d^3*e - 5*b*c^3*d^2*e^2 + 4*b^2*c^2*d*e^3 - b^3
*c*e^4)*f + (20*c^4*d^4 - 64*b*c^3*d^3*e + 75*b^2*c^2*d^2*e^2 - 38*b^3*c*d*
e^3 + 7*b^4*e^4)*g - 2*(4*(2*c^4*d^2*e^2 - 3*b*c^3*d*e^3 + b^2*c^2*e^4)*f +
 (20*c^4*d^3*e - 44*b*c^3*d^2*e^2 + 31*b^2*c^2*d*e^3 - 7*b^3*c*e^4)*g)*x)*s
qrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e
)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(6*c^4*e^3*g*x
^3 + 3*(4*c^4*e^3*f + (16*c^4*d*e^2 - 7*b*c^3*e^3)*g)*x^2 + 4*(23*c^4*d^2*e
 - 40*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (236*c^4*d^3 - 561*b*c^3*d^2*e + 43
0*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g - 2*(4*(17*c^4*d*e^2 - 10*b*c^3*e^3)*f +
 (161*c^4*d^2*e - 219*b*c^3*d*e^2 + 70*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e))/(c^7*e^4*x^2 + c^7*d^2*e^2 - 2*b*c^6*d*e^3 + b^2
*c^5*e^4 - 2*(c^7*d*e^3 - b*c^6*e^4)*x)]
```

giac [B] time = 0.94, size = 1460, normalized size = 4.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] -1/12*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*((((3*(2*(16*c^7*d^4*g*e^1
1 - 32*b*c^6*d^3*g*e^12 + 24*b^2*c^5*d^2*g*e^13 - 8*b^3*c^4*d*g*e^14 + b^4*
c^3*g*e^15)*x/(16*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*
b^3*c^5*d*e^11 + b^4*c^4*e^12) + (320*c^7*d^5*g*e^10 + 64*c^7*d^4*f*e^11 -
752*b*c^6*d^4*g*e^11 - 128*b*c^6*d^3*f*e^12 + 704*b^2*c^5*d^3*g*e^12 + 96*b
^2*c^5*d^2*f*e^13 - 328*b^3*c^4*d^2*g*e^13 - 32*b^3*c^4*d*f*e^14 + 76*b^4*c
^3*d*g*e^14 + 4*b^4*c^3*f*e^15 - 7*b^5*c^2*g*e^15)/(16*c^8*d^4*e^8 - 32*b*c
^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^11 + b^4*c^4*e^12))*x - 4*
```

```
(880*c^7*d^6*g*e^9 + 448*c^7*d^5*f*e^10 - 3344*b*c^6*d^5*g*e^10 - 1216*b*c^
6*d^4*f*e^11 + 5048*b^2*c^5*d^4*g*e^11 + 1312*b^2*c^5*d^3*f*e^12 - 3936*b^3
*c^4*d^3*g*e^12 - 704*b^3*c^4*d^2*f*e^13 + 1687*b^4*c^3*d^2*g*e^13 + 188*b^
4*c^3*d*f*e^14 - 379*b^5*c^2*d*g*e^14 - 20*b^5*c^2*f*e^15 + 35*b^6*c*g*e^15
)/(16*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^
11 + b^4*c^4*e^12))*x - 3*(1920*c^7*d^7*g*e^8 + 896*c^7*d^6*f*e^9 - 5408*b*
c^6*d^6*g*e^9 - 1792*b*c^6*d^5*f*e^10 + 5216*b^2*c^5*d^5*g*e^10 + 1024*b^2*
c^5*d^4*f*e^11 - 1152*b^3*c^4*d^4*g*e^11 + 192*b^3*c^4*d^3*f*e^12 - 1416*b^
4*c^3*d^3*g*e^12 - 424*b^4*c^3*d^2*f*e^13 + 1142*b^5*c^2*d^2*g*e^13 + 160*b
^5*c^2*d*f*e^14 - 330*b^6*c*d*g*e^14 - 20*b^6*c*f*e^15 + 35*b^7*g*e^15)/(16
*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^11 +
b^4*c^4*e^12))*x + 6*(400*c^7*d^8*g*e^7 + 128*c^7*d^7*f*e^8 - 2624*b*c^6*d^
7*g*e^8 - 896*b*c^6*d^6*f*e^9 + 6168*b^2*c^5*d^6*g*e^9 + 1792*b^2*c^5*d^5*f
*e^10 - 7336*b^3*c^4*d^5*g*e^10 - 1664*b^3*c^4*d^4*f*e^11 + 4937*b^4*c^3*d^
4*g*e^11 + 808*b^4*c^3*d^3*f*e^12 - 1914*b^5*c^2*d^3*g*e^12 - 200*b^5*c^2*d
^2*f*e^13 + 400*b^6*c*d^2*g*e^13 + 20*b^6*c*d*f*e^14 - 35*b^7*d*g*e^14)/(16
*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^11 +
b^4*c^4*e^12))*x + (3776*c^7*d^9*g*e^6 + 1472*c^7*d^8*f*e^7 - 16528*b*c^6*d
^8*g*e^7 - 5504*b*c^6*d^7*f*e^8 + 30496*b^2*c^5*d^7*g*e^8 + 8288*b^2*c^5*d^
6*f*e^9 - 30792*b^3*c^4*d^6*g*e^9 - 6496*b^3*c^4*d^5*f*e^10 + 18404*b^4*c^3
*d^5*g*e^10 + 2812*b^4*c^3*d^4*f*e^11 - 6521*b^5*c^2*d^4*g*e^11 - 640*b^5*c
^2*d^3*f*e^12 + 1270*b^6*c*d^3*g*e^12 + 60*b^6*c*d^2*f*e^13 - 105*b^7*d^2*g
*e^13)/(16*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5
*d*e^11 + b^4*c^4*e^12))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d*e)^2 + 5/8*(20*
c^2*d^2*g + 8*c^2*d*f*e - 24*b*c*d*g*e - 4*b*c*f*e^2 + 7*b^2*g*e^2)*sqrt(-c
*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2
 - b*d*e))*c - sqrt(-c*e^2)*b))/c^5
```

maple [B] time = 0.09, size = 6704, normalized size = 18.42

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^5}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^5)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^5)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^5 \left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**5*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
[Out] Integral((d + e*x)**5*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.1994 $\int \frac{(d+ex)^4(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=291

$$\frac{(-5beg+8cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{7/2}e^2}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+8cdg+2cef)}{c^3e^2(2cd-be)}-\frac{2}{3c^2e^2(}$$

Rubi [A] time = 0.43, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {788, 668, 640, 621, 204}

$$-\frac{2(d+ex)^2(-5beg+8cdg+2cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+8cdg+2cef)}{c^3e^2(2cd-be)}+\frac{(-5beg+8cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{7/2}e^2}+\frac{2(d+ex)^4(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^4*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^4)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(2*c*e*f + 8*c*d*g - 5*b*e*g)*(d + e*
x)^2)/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) -
 ((2*c*e*f + 8*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(c^3*e^2*(2*c*d - b*e)) + ((2*c*e*f + 8*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c
*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(2*c^(7/2)*e^2
)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
```

```
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^4(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(2cef+8cdg-5beg)\int \cdots}{3ce(2cd \cdots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5b\cdots}{3c^2e^2(2cd-be)\sqrt{d(cd-\cdots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5b\cdots}{3c^2e^2(2cd-be)\sqrt{d(cd-\cdots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5b\cdots}{3c^2e^2(2cd-be)\sqrt{d(cd-\cdots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5b\cdots}{3c^2e^2(2cd-be)\sqrt{d(cd-\cdots}}$$

Mathematica [C] time = 0.25, size = 139, normalized size = 0.48

$$\frac{2(d+ex)^4\left(\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}(-5beg+8cdg+2cef)\,{}_2F_1\left(\frac{3}{2},\frac{5}{2};\frac{7}{2};\frac{c(d+ex)}{2cd-be}\right)-5(-beg+cdg+cef)\right)}{15ce^2(be-2cd)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^4*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)^4*(-5*(c*e*f + c*d*g - b*e*g) + (2*c*e*f + 8*c*d*g - 5*b*e*g)*
((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*Hypergeometric2F1[3/2, 5/2, 7
/2, (c*(d + e*x))/(2*c*d - b*e)]))/(15*c*e^2*(-2*c*d + b*e)*((d + e*x)*(-(b
*e) + c*(d - e*x)))^(3/2))
```

IntegrateAlgebraic [B] time = 39.87, size = 24206, normalized size = 83.18

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^4*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(5/2),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 3.55, size = 881, normalized size = 3.03

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [1/12*(3*((2*c^3*e^3*f + (8*c^3*d*e^2 - 5*b*c^2*e^3)*g)*x^2 + 2*(c^3*d^2*e
- 2*b*c^2*d*e^2 + b^2*c*e^3)*f + (8*c^3*d^3 - 21*b*c^2*d^2*e + 18*b^2*c*d*e
^2 - 5*b^3*e^3)*g - 2*(2*(c^3*d*e^2 - b*c^2*e^3)*f + (8*c^3*d^2*e - 13*b*c^
2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c
^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)
*(2*c*e*x + b*e)*sqrt(-c)) - 4*(3*c^3*e^2*g*x^2 + 2*(2*c^3*d*e - 3*b*c^2*e^
2)*f + (19*c^3*d^2 - 34*b*c^2*d*e + 15*b^2*c*e^2)*g - 2*(4*c^3*e^2*f + (13*
c^3*d*e - 10*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(
c^6*e^4*x^2 + c^6*d^2*e^2 - 2*b*c^5*d*e^3 + b^2*c^4*e^4 - 2*(c^6*d*e^3 - b*
c^5*e^4)*x), -1/6*(3*((2*c^3*e^3*f + (8*c^3*d*e^2 - 5*b*c^2*e^3)*g)*x^2 + 2
*(c^3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*f + (8*c^3*d^3 - 21*b*c^2*d^2*e +
18*b^2*c*d*e^2 - 5*b^3*e^3)*g - 2*(2*(c^3*d*e^2 - b*c^2*e^3)*f + (8*c^3*d^2
*e - 13*b*c^2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*
x - c^2*d^2 + b*c*d*e)) + 2*(3*c^3*e^2*g*x^2 + 2*(2*c^3*d*e - 3*b*c^2*e^2)*
f + (19*c^3*d^2 - 34*b*c^2*d*e + 15*b^2*c*e^2)*g - 2*(4*c^3*e^2*f + (13*c^3
*d*e - 10*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6
*e^4*x^2 + c^6*d^2*e^2 - 2*b*c^5*d*e^3 + b^2*c^4*e^4 - 2*(c^6*d*e^3 - b*c^5
*e^4)*x)]
```

giac [B] time = 0.87, size = 1116, normalized size = 3.84

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] -1/3*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*((((3*(16*c^6*d^4*g*e^8 - 3
2*b*c^5*d^3*g*e^9 + 24*b^2*c^4*d^2*g*e^10 - 8*b^3*c^3*d*g*e^11 + b^4*c^2*g*
e^12)*x/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2*c^5*d^2*e^8 - 8*b^3*c^4
*d*e^9 + b^4*c^3*e^10) - 4*(80*c^6*d^5*g*e^7 + 32*c^6*d^4*f*e^8 - 240*b*c^5
*d^4*g*e^8 - 64*b*c^5*d^3*f*e^9 + 280*b^2*c^4*d^3*g*e^9 + 48*b^2*c^4*d^2*f*
e^10 - 160*b^3*c^3*d^2*g*e^10 - 16*b^3*c^3*d*f*e^11 + 45*b^4*c^2*d*g*e^11 +
 2*b^4*c^2*f*e^12 - 5*b^5*c*g*e^12)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24
*b^2*c^5*d^2*e^8 - 8*b^3*c^4*d*e^9 + b^4*c^3*e^10))*x - 3*(160*c^6*d^6*g*e^
6 + 64*c^6*d^5*f*e^7 - 352*b*c^5*d^5*g*e^7 - 96*b*c^5*d^4*f*e^8 + 224*b^2*c
^4*d^4*g*e^8 + 32*b^2*c^4*d^3*f*e^9 + 32*b^3*c^3*d^3*g*e^9 + 16*b^3*c^3*d^2
*f*e^10 - 94*b^4*c^2*d^2*g*e^10 - 12*b^4*c^2*d*f*e^11 + 38*b^5*c*d*g*e^11 +
 2*b^5*c*f*e^12 - 5*b^6*g*e^12)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2
*c^5*d^2*e^8 - 8*b^3*c^4*d*e^9 + b^4*c^3*e^10))*x + 6*(32*c^6*d^7*g*e^5 - 1
92*b*c^5*d^6*g*e^6 - 32*b*c^5*d^5*f*e^7 + 384*b^2*c^4*d^5*g*e^7 + 64*b^2*c^
4*d^4*f*e^8 - 368*b^3*c^3*d^4*g*e^8 - 48*b^3*c^3*d^3*f*e^9 + 186*b^4*c^2*d^
3*g*e^9 + 16*b^4*c^2*d^2*f*e^10 - 48*b^5*c*d^2*g*e^10 - 2*b^5*c*d*f*e^11 +
5*b^6*d*g*e^11)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2*c^5*d^2*e^8 - 8
*b^3*c^4*d*e^9 + b^4*c^3*e^10))*x + (304*c^6*d^8*g*e^4 + 64*c^6*d^7*f*e^5 -
 1152*b*c^5*d^7*g*e^5 - 224*b*c^5*d^6*f*e^6 + 1784*b^2*c^4*d^6*g*e^6 + 288*
b^2*c^4*d^5*f*e^7 - 1448*b^3*c^3*d^5*g*e^7 - 176*b^3*c^3*d^4*f*e^8 + 651*b^
4*c^2*d^4*g*e^8 + 52*b^4*c^2*d^3*f*e^9 - 154*b^5*c*d^3*g*e^9 - 6*b^5*c*d^2*
f*e^10 + 15*b^6*d^2*g*e^10)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2*c^5
*d^2*e^8 - 8*b^3*c^4*d*e^9 + b^4*c^3*e^10))/(c*x^2*e^2 - c*d^2 + b*x*e^2 +
b*d*e)^2 + 1/2*(8*c*d*g + 2*c*f*e - 5*b*g*e)*sqrt(-c*e^2)*e^(-3)*log(abs(-2
*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*
e^2)*b))/c^4
```

maple [B] time = 0.08, size = 5032, normalized size = 17.29

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^4}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^4)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^4)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{4} \left(f + g x\right)}{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**4*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)**4*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.1995 $\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=177

$$\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{5/2}e^2}-\frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^3(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Rubi [A] time = 0.30, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {788, 652, 621, 204}

$$-\frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{5/2}e^2}+\frac{2(d+ex)^3(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^3)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*g*(d + e*x))/(c^2*e^2*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2]) + (g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 652

```
Int[((d_.) + (e_.)*(x_))^2*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symb
ol] :> Simp[(e*(d + e*x)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[
(e^2*(p + 2))/(c*(p + 1)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{
a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{g\int \frac{(d+ex)^2}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,d}{ce}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-}}$$

Mathematica [A] time = 1.23, size = 228, normalized size = 1.29

$$\frac{2\left(-\frac{\sqrt{c}(d+ex)\left(3b^2e^2g+4bceg(ex-2d)+c^2\left(5d^2g-de(f+7gx)-e^2fx\right)\right)}{be-cd+cex}-\frac{3\sqrt{e}g\sqrt{d+ex}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{e(2cd-be)}}\right)}{3c^{5/2}e^2(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(-((Sqrt[c]*(d + e*x)*(3*b^2*e^2*g + 4*b*c*e*g*(-2*d + e*x) + c^2*(5*d^2
*g - e^2*f*x - d*e*(f + 7*g*x))))/(-(c*d) + b*e + c*e*x)) - (3*Sqrt[e]*(-2*
c*d + b*e)^2*g*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*Ar
cSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/Sqrt[e*(2*c*d
- b*e)]))/(3*c^(5/2)*e^2*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x
))])
```

IntegrateAlgebraic [B] time = 29.22, size = 2956, normalized size = 16.70

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]*(4*b^4*c^5*d^4*e^6*f - 8*b^5*c
^4*d^3*e^7*f + 5*b^6*c^3*d^2*e^8*f - b^7*c^2*d*e^9*f - 20*b^4*c^5*d^5*e^5*g
 + 72*b^5*c^4*d^4*e^6*g - 101*b^6*c^3*d^3*e^7*g + 69*b^7*c^2*d^2*e^8*g - 23
*b^8*c*d*e^9*g + 3*b^9*e^10*g + 48*b^2*c^7*d^5*e^5*f*x - 120*b^3*c^6*d^4*e^
6*f*x + 108*b^4*c^5*d^3*e^7*f*x - 46*b^5*c^4*d^2*e^8*f*x + 10*b^6*c^3*d*e^9
*f*x - b^7*c^2*e^10*f*x - 144*c^9*d^8*e^2*g*x + 720*b*c^8*d^7*e^3*g*x - 138
0*b^2*c^7*d^6*e^4*g*x + 1272*b^3*c^6*d^5*e^5*g*x - 576*b^4*c^5*d^4*e^6*g*x
+ 158*b^5*c^4*d^3*e^7*g*x - 94*b^6*c^3*d^2*e^8*g*x + 55*b^7*c^2*d*e^9*g*x -
 11*b^8*c*e^10*g*x - 48*b^3*c^6*d^3*e^7*f*x^2 + 44*b^4*c^5*d^2*e^8*f*x^2 -
20*b^5*c^4*d*e^9*f*x^2 + 5*b^6*c^3*e^10*f*x^2 + 144*b*c^8*d^6*e^4*g*x^2 - 5
04*b^2*c^7*d^5*e^5*g*x^2 + 552*b^3*c^6*d^4*e^6*g*x^2 - 76*b^4*c^5*d^3*e^7*g
*x^2 - 196*b^5*c^4*d^2*e^8*g*x^2 + 79*b^6*c^3*d*e^9*g*x^2 - 2*b^7*c^2*e^10*
g*x^2 - 112*b^2*c^7*d^3*e^7*f*x^3 + 104*b^3*c^6*d^2*e^8*f*x^3 - 28*b^4*c^5*
```

d*e^9*f*x^3 - 6*b^5*c^4*e^10*f*x^3 + 336*c^9*d^6*e^4*g*x^3 - 1152*b*c^8*d^5
*e^5*g*x^3 + 1180*b^2*c^7*d^4*e^6*g*x^3 - 320*b^3*c^6*d^3*e^7*g*x^3 + 60*b^
4*c^5*d^2*e^8*g*x^3 - 218*b^5*c^4*d*e^9*g*x^3 + 72*b^6*c^3*e^10*g*x^3 + 64*
b^3*c^6*d*e^9*f*x^4 - 16*b^4*c^5*e^10*f*x^4 - 192*b*c^8*d^4*e^6*g*x^4 + 384
*b^2*c^7*d^3*e^7*g*x^4 - 64*b^3*c^6*d^2*e^8*g*x^4 - 176*b^4*c^5*d*e^9*g*x^4
 - 32*b^5*c^4*e^10*g*x^4 + 64*b^2*c^7*d*e^9*f*x^5 + 32*b^3*c^6*e^10*f*x^5 -
 192*c^9*d^4*e^6*g*x^5 + 384*b*c^8*d^3*e^7*g*x^5 - 64*b^2*c^7*d^2*e^8*g*x^5
 - 32*b^3*c^6*d*e^9*g*x^5 - 128*b^4*c^5*e^10*g*x^5) + 2*Sqrt[-(c*e^2)]*(16*
b^2*c^7*d^7*e^3*f - 64*b^3*c^6*d^6*e^4*f + 100*b^4*c^5*d^5*e^5*f - 76*b^5*c
^4*d^4*e^6*f + 28*b^6*c^3*d^3*e^7*f - 4*b^7*c^2*d^2*e^8*f - 48*c^9*d^10*g +
 312*b*c^8*d^9*e*g - 844*b^2*c^7*d^8*e^2*g + 1234*b^3*c^6*d^7*e^3*g - 1054*
b^4*c^5*d^6*e^4*g + 526*b^5*c^4*d^5*e^5*g - 142*b^6*c^3*d^4*e^6*g + 16*b^7*
c^2*d^3*e^7*g - 24*b^3*c^6*d^5*e^5*f*x + 48*b^4*c^5*d^4*e^6*f*x - 30*b^5*c^
4*d^3*e^7*f*x + 6*b^6*c^3*d^2*e^8*f*x + 72*b*c^8*d^8*e^2*g*x - 360*b^2*c^7*
d^7*e^3*g*x + 690*b^3*c^6*d^6*e^4*g*x - 576*b^4*c^5*d^5*e^5*g*x + 96*b^5*c^
4*d^4*e^6*g*x + 162*b^6*c^3*d^3*e^7*g*x - 102*b^7*c^2*d^2*e^8*g*x + 18*b^8*
c*d*e^9*g*x - 96*b^2*c^7*d^5*e^5*f*x^2 + 216*b^3*c^6*d^4*e^6*f*x^2 - 168*b^
4*c^5*d^3*e^7*f*x^2 + 66*b^5*c^4*d^2*e^8*f*x^2 - 12*b^6*c^3*d*e^9*f*x^2 + 2
88*c^9*d^8*e^2*g*x^2 - 1368*b*c^8*d^7*e^3*g*x^2 + 2400*b^2*c^7*d^6*e^4*g*x^
2 - 1890*b^3*c^6*d^5*e^5*g*x^2 + 654*b^4*c^5*d^4*e^6*g*x^2 - 246*b^5*c^4*d^
3*e^7*g*x^2 + 276*b^6*c^3*d^2*e^8*g*x^2 - 132*b^7*c^2*d*e^9*g*x^2 + 18*b^8*
c*e^10*g*x^2 + 120*b^3*c^6*d^3*e^7*f*x^3 - 128*b^4*c^5*d^2*e^8*f*x^3 + 54*b
^5*c^4*d*e^9*f*x^3 - 6*b^6*c^3*e^10*f*x^3 - 360*b*c^8*d^6*e^4*g*x^3 + 1224*
b^2*c^7*d^5*e^5*g*x^3 - 1266*b^3*c^6*d^4*e^6*g*x^3 + 196*b^4*c^5*d^3*e^7*g*
x^3 + 258*b^5*c^4*d^2*e^8*g*x^3 - 6*b^6*c^3*d*e^9*g*x^3 - 30*b^7*c^2*e^10*g
*x^3 + 144*b^2*c^7*d^3*e^7*f*x^4 - 120*b^3*c^6*d^2*e^8*f*x^4 - 12*b^4*c^5*d
*e^9*f*x^4 + 18*b^5*c^4*e^10*f*x^4 - 432*c^9*d^6*e^4*g*x^4 + 1440*b*c^8*d^5
*e^5*g*x^4 - 1332*b^2*c^7*d^4*e^6*g*x^4 + 192*b^3*c^6*d^3*e^7*g*x^4 - 84*b^
4*c^5*d^2*e^8*g*x^4 + 366*b^5*c^4*d*e^9*g*x^4 - 72*b^6*c^3*e^10*g*x^4 - 96*
b^3*c^6*d*e^9*f*x^5 + 288*b*c^8*d^4*e^6*g*x^5 - 576*b^2*c^7*d^3*e^7*g*x^5 +
 96*b^3*c^6*d^2*e^8*g*x^5 + 192*b^4*c^5*d*e^9*g*x^5 + 96*b^5*c^4*e^10*g*x^5
 - 64*b^2*c^7*d*e^9*f*x^6 - 32*b^3*c^6*e^10*f*x^6 + 192*c^9*d^4*e^6*g*x^6 -
 384*b*c^8*d^3*e^7*g*x^6 + 64*b^2*c^7*d^2*e^8*g*x^6 + 32*b^3*c^6*d*e^9*g*x^
6 + 128*b^4*c^5*e^10*g*x^6))/(3*b^4*c^2*e^7*Sqrt[-(c*e^2)]*Sqrt[c*d^2 - b*d
*e - b*e^2*x - c*e^2*x^2]*(-24*c^5*d^4*x + 72*b*c^4*d^3*e*x - 78*b^2*c^3*d^
2*e^2*x + 36*b^3*c^2*d*e^3*x - 6*b^4*c*e^4*x + 24*b*c^4*d^2*e^2*x^2 - 36*b^
2*c^3*d*e^3*x^2 + 12*b^3*c^2*e^4*x^2 + 56*c^5*d^2*e^2*x^3 - 80*b*c^4*d*e^3*
x^3 + 18*b^2*c^3*e^4*x^3 - 32*b*c^4*e^4*x^4 - 32*c^5*e^4*x^5) + 3*b^4*c^2*e
^7*(8*c^6*d^6 - 36*b*c^5*d^5*e + 66*b^2*c^4*d^4*e^2 - 63*b^3*c^3*d^3*e^3 +
33*b^4*c^2*d^2*e^4 - 9*b^5*c*d*e^5 + b^6*e^6 - 12*b*c^5*d^4*e^2*x + 36*b^2*
c^4*d^3*e^3*x - 39*b^3*c^3*d^2*e^4*x + 18*b^4*c^2*d*e^5*x - 3*b^5*c*e^6*x -
 48*c^6*d^4*e^2*x^2 + 132*b*c^5*d^3*e^3*x^2 - 120*b^2*c^4*d^2*e^4*x^2 + 39*
b^3*c^3*d*e^5*x^2 - 3*b^4*c^2*e^6*x^2 + 60*b*c^5*d^2*e^4*x^3 - 84*b^2*c^4*d
*e^5*x^3 + 23*b^3*c^3*e^6*x^3 + 72*c^6*d^2*e^4*x^4 - 96*b*c^5*d*e^5*x^4 + 6
*b^2*c^4*e^6*x^4 - 48*b*c^5*e^6*x^5 - 32*c^6*e^6*x^6)) + (g*ArcTan[(2*Sqrt[
c]*Sqrt[-(c*e^2)]*x)/(b*e) - (2*Sqrt[c]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^
2*x^2])/(b*e)]])/(c^(5/2)*e^2) + (Sqrt[-(c*e^2)]*g*Log[4*c^2*d^2 - 4*b*c*d*e
 + b^2*e^2 - 4*b*c*e^2*x - 8*c^2*e^2*x^2 - 8*c*Sqrt[-(c*e^2)]*x*Sqrt[c*d^2
- b*d*e - b*e^2*x - c*e^2*x^2]])/(2*c^3*e^3)

fricas [B] time = 2.39, size = 785, normalized size = 4.44

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorithm="fricas")

[Out] [-1/6*(3*((2*c^3*d*e^2 - b*c^2*e^3)*g*x^2 - 2*(2*c^3*d^2*e - 3*b*c^2*d*e^2 + b^2*c*e^3)*g*x + (2*c^3*d^3 - 5*b*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3)*g)

```
*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2
 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) -
 4*(c^3*d*e*f - (5*c^3*d^2 - 8*b*c^2*d*e + 3*b^2*c*e^2)*g + (c^3*e^2*f + (7
*c^3*d*e - 4*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(
2*c^6*d^3*e^2 - 5*b*c^5*d^2*e^3 + 4*b^2*c^4*d*e^4 - b^3*c^3*e^5 + (2*c^6*d*
e^4 - b*c^5*e^5)*x^2 - 2*(2*c^6*d^2*e^3 - 3*b*c^5*d*e^4 + b^2*c^4*e^5)*x),
-1/3*(3*((2*c^3*d*e^2 - b*c^2*e^3)*g*x^2 - 2*(2*c^3*d^2*e - 3*b*c^2*d*e^2 +
 b^2*c*e^3)*g*x + (2*c^3*d^3 - 5*b*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3)*g)*
sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*
e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(c^3*d*e*f -
(5*c^3*d^2 - 8*b*c^2*d*e + 3*b^2*c*e^2)*g + (c^3*e^2*f + (7*c^3*d*e - 4*b*c
^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(2*c^6*d^3*e^2 -
5*b*c^5*d^2*e^3 + 4*b^2*c^4*d*e^4 - b^3*c^3*e^5 + (2*c^6*d*e^4 - b*c^5*e^5)
*x^2 - 2*(2*c^6*d^2*e^3 - 3*b*c^5*d*e^4 + b^2*c^4*e^5)*x)]
```

giac [B] time = 0.89, size = 841, normalized size = 4.75

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] sqrt(-c*e^2)*g*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2
- b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^3 + 2/3*sqrt(-c*x^2*e^2 + c*d^2
- b*x*e^2 - b*d*e)*((((56*c^5*d^4*g*e^4 + 8*c^5*d^3*f*e^5 - 116*b*c^4*d^3*g
*e^5 - 12*b*c^4*d^2*f*e^6 + 90*b^2*c^3*d^2*g*e^6 + 6*b^2*c^3*d*f*e^7 - 31*b
^3*c^2*d*g*e^7 - b^3*c^2*f*e^8 + 4*b^4*c*g*e^8)*x/(16*c^6*d^4*e^3 - 32*b*c^
5*d^3*e^4 + 24*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7) + 3*(24*c^5
*d^5*g*e^3 + 8*c^5*d^4*f*e^4 - 36*b*c^4*d^4*g*e^4 - 12*b*c^4*d^3*f*e^5 + 10
*b^2*c^3*d^3*g*e^5 + 6*b^2*c^3*d^2*f*e^6 + 9*b^3*c^2*d^2*g*e^6 - b^3*c^2*d*
f*e^7 - 6*b^4*c*d*g*e^7 + b^5*g*e^8)/(16*c^6*d^4*e^3 - 32*b*c^5*d^3*e^4 + 2
4*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7))*x - 3*(8*c^5*d^6*g*e^2
- 8*c^5*d^5*f*e^3 - 44*b*c^4*d^5*g*e^3 + 12*b*c^4*d^4*f*e^4 + 70*b^2*c^3*d^
4*g*e^4 - 6*b^2*c^3*d^3*f*e^5 - 49*b^3*c^2*d^3*g*e^5 + b^3*c^2*d^2*f*e^6 +
16*b^4*c*d^2*g*e^6 - 2*b^5*d*g*e^7)/(16*c^6*d^4*e^3 - 32*b*c^5*d^3*e^4 + 24
*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7))*x - (40*c^5*d^7*g*e - 8*
c^5*d^6*f*e^2 - 124*b*c^4*d^6*g*e^2 + 12*b*c^4*d^5*f*e^3 + 150*b^2*c^3*d^5*
g*e^3 - 6*b^2*c^3*d^4*f*e^4 - 89*b^3*c^2*d^4*g*e^4 + b^3*c^2*d^3*f*e^5 + 26
*b^4*c*d^3*g*e^5 - 3*b^5*d^2*g*e^6)/(16*c^6*d^4*e^3 - 32*b*c^5*d^3*e^4 + 24
*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7))/(c*x^2*e^2 - c*d^2 + b*x
*e^2 + b*d*e)^2
```

maple [B] time = 0.08, size = 3485, normalized size = 19.69

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 8*b*c*e^5/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*x*d^2*f+104/3*b*c*e^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3*g+6*e^6*g*b^3/c/(-b^2*e^4+4*b*c
*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+1/2*b^2/
c*e^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)*x*d*f-3/4*e^4*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d+3*e^3*g*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c
^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+1/3*e*g*x^3/c/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+1/48*e*g*b^3/c^4/(-c*e^2*x^2-b*e^2*x-b*d
```

```
*e+c*d^2)^(3/2)-1/12*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^5*x*f-11/24*g*b^2/c^3/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*d-1/e*g/c^2*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+1/2/
e*g/c^3*b/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/2*x/c/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(3/2)*d*f+1/e*g/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+3/4*b/c^2*x/(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(3/2)*d*g+3/2*x/c/e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
*d^2*g+1/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d
^2)^(3/2)*b*d^4*e*g+1/3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)*b*d^3*e^2*f-1/6*e^7*g*b^5/c^3/(-b^2*e^4+4*b*c*d*e^
3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/2*e*g*b/c^2*x^2
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+1/2*e^3*g/c^3*b^3/(-b^2*e^4+4*b*c*d
*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+25/12/e*g*b/c^2/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2-1/8*e*g*b^2/c^3*x/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)+1/48*e^5*g*b^5/c^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2
*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+52/3*b^2*e^4/(-b^2*e^4+4*b*c*d
*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*g+4*b^2*e^
5/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2)*d^2*f+1/4*b/c^2*x*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*f-1/24*b^4/
c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
3/2)*e^5*f+1/3*b^4/c^2*e^7/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/24*b^2/c^3*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*f-5/3/e^2/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^3*g+1/3/e/c
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*f+3*x^2/c/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*d*g+5/12/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d*f
+x^2/c*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*f+2/3*b^3/c*e^7/(-b^2*e^4+4
*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*f+1/4*
b^3/c^2*e^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*d*f-4*b^2*e^6/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f-24*e^5*g*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^
2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+e^3*g/c^2*b^2/(-b
^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+
3/2*e^3*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(3/2)*d^2-8*e^3*c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^4*g-2*b^3/c*e^6/(-b^2*e^4+4*b*c*d*e^3
-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-12*e^5*g*b^3/c
/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*d^2-1/3*e^7*g*b^4/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-3/8*e^4*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^
2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d+3*e^6*g*b^4/c^2/(-b^2*e
^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+1/
24*e^5*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*x-13/6*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^3*e^2*g-1/2*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4
*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*e^3*f-13/3*b/(-b^2
*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^
3*e^2*g-b/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*x*d^2*e^3*f-8/3*e^4*c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3*f+2*c/(-b^2*e^4+4*b*c*d*e^3-4*c^2
*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^4*e*g+2/3*c/(-b^2*e^4+
4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^3*e^2
*f-16*e^3*c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*x*d^4*g-16/3*e^4*c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^
2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + ex\right)^{3} \left(f + gx\right)}{\left(- \left(d + ex\right) \left(be - cd + cex\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)**3*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.1996 $\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=146

$$\frac{2(d+ex)^2(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(d+ex)(beg-4cdg+2cef)}{3ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Rubi [A] time = 0.17, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {788, 636}

$$\frac{2(d+ex)^2(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(d+ex)(beg-4cdg+2cef)}{3ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^2)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(2*c*e*f - 4*c*d*g + b*e*g)*(d + e*x)
)/(3*c*e^2*(2*c*d - b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx &= \frac{2(cef+cdg-beg)(d+ex)^2}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(2cef-4cdg+beg)\int \frac{\quad}{\left(cd^2-b\right.}}{3ce(2cd-be}\\ &= \frac{2(cef+cdg-beg)(d+ex)^2}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(2cef-4cdg+beg)}{3ce^2(2cd-be)^2\sqrt{d(cd-be)}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 100, normalized size = 0.68

$$\frac{2(d+ex)\left(be(-2dg+3ef+egx)+2c\left(d^2g-2de(f+gx)+e^2fx\right)\right)}{3e^2(be-2cd)^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)*(b*e*(3*e*f - 2*d*g + e*g*x) + 2*c*(d^2*g + e^2*f*x - 2*d*e*(f
 + g*x))))/(3*e^2*(-2*c*d + b*e)^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-
(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 10.03, size = 1380, normalized size = 9.45

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]*(8*c^5*d^3*e^2*f - 18*b*c^4*d
^2*e^3*f + 13*b^2*c^3*d*e^4*f - 3*b^3*c^2*e^5*f - 4*c^5*d^4*e*g + 10*b*c^4*
d^3*e^2*g - 8*b^2*c^3*d^2*e^3*g + 2*b^3*c^2*d*e^4*g - 2*b*c^4*d*e^4*f*x + b
^2*c^3*e^5*f*x + 24*c^5*d^3*e^2*g*x - 50*b*c^4*d^2*e^3*g*x + 33*b^2*c^3*d*e
^4*g*x - 7*b^3*c^2*e^5*g*x - 32*c^5*d*e^4*f*x^2 + 16*b*c^4*e^5*f*x^2 + 28*c
^5*d^2*e^3*g*x^2 - 48*b*c^4*d*e^4*g*x^2 + 17*b^2*c^3*e^5*g*x^2 - 24*c^5*e^5
*f*x^3 - 48*c^5*d*e^4*g*x^3 + 12*b*c^4*e^5*g*x^3 - 48*c^5*e^5*g*x^4) - 2*Sq
rt[-(c*e^2)]*(-4*c^5*d^4*e*f + 14*b*c^4*d^3*e^2*f - 18*b^2*c^3*d^2*e^3*f +
10*b^3*c^2*d*e^4*f - 2*b^4*c*e^5*f + 8*c^5*d^5*g - 30*b*c^4*d^4*e*g + 43*b^
2*c^3*d^3*e^2*g - 29*b^3*c^2*d^2*e^3*g + 9*b^4*c*d*e^4*g - b^5*e^5*g - 24*c
^5*d^3*e^2*f*x + 48*b*c^4*d^2*e^3*f*x - 30*b^2*c^3*d*e^4*f*x + 6*b^3*c^2*e^
5*f*x + 12*c^5*d^4*e*g*x - 36*b*c^4*d^3*e^2*g*x + 39*b^2*c^3*d^2*e^3*g*x -
18*b^3*c^2*d*e^4*g*x + 3*b^4*c*e^5*g*x - 12*c^5*d^2*e^3*f*x^2 + 30*b*c^4*d*
e^4*f*x^2 - 12*b^2*c^3*e^5*f*x^2 - 48*c^5*d^3*e^2*g*x^2 + 78*b*c^4*d^2*e^3*
g*x^2 - 33*b^2*c^3*d*e^4*g*x^2 + 3*b^3*c^2*e^5*g*x^2 + 32*c^5*d*e^4*f*x^3 -
 4*b*c^4*e^5*f*x^3 - 52*c^5*d^2*e^3*g*x^3 + 96*b*c^4*d*e^4*g*x^3 - 29*b^2*c
^3*e^5*g*x^3 + 24*c^5*e^5*f*x^4 + 48*c^5*d*e^4*g*x^4 + 12*b*c^4*e^5*g*x^4 +
 48*c^5*e^5*g*x^5))/(3*c^2*e^3*Sqrt[-(c*e^2)]*Sqrt[c*d^2 - b*d*e - b*e^2*x
- c*e^2*x^2]*(24*c^5*d^4*x - 72*b*c^4*d^3*e*x + 78*b^2*c^3*d^2*e^2*x - 36*b
^3*c^2*d*e^3*x + 6*b^4*c*e^4*x - 24*b*c^4*d^2*e^2*x^2 + 36*b^2*c^3*d*e^3*x^
2 - 12*b^3*c^2*e^4*x^2 - 56*c^5*d^2*e^2*x^3 + 80*b*c^4*d*e^3*x^3 - 18*b^2*c
^3*e^4*x^3 + 32*b*c^4*e^4*x^4 + 32*c^5*e^4*x^5) + 3*c^2*e^3*(-8*c^6*d^6 + 3
6*b*c^5*d^5*e - 66*b^2*c^4*d^4*e^2 + 63*b^3*c^3*d^3*e^3 - 33*b^4*c^2*d^2*e^
4 + 9*b^5*c*d*e^5 - b^6*e^6 + 12*b*c^5*d^4*e^2*x - 36*b^2*c^4*d^3*e^3*x + 3
9*b^3*c^3*d^2*e^4*x - 18*b^4*c^2*d*e^5*x + 3*b^5*c*e^6*x + 48*c^6*d^4*e^2*x
^2 - 132*b*c^5*d^3*e^3*x^2 + 120*b^2*c^4*d^2*e^4*x^2 - 39*b^3*c^3*d*e^5*x^2
 + 3*b^4*c^2*e^6*x^2 - 60*b*c^5*d^2*e^4*x^3 + 84*b^2*c^4*d*e^5*x^3 - 23*b^3
*c^3*e^6*x^3 - 72*c^6*d^2*e^4*x^4 + 96*b*c^5*d*e^5*x^4 - 6*b^2*c^4*e^6*x^4
+ 48*b*c^5*e^6*x^5 + 32*c^6*e^6*x^6))
```

fricas [A] time = 2.46, size = 227, normalized size = 1.55

$$\frac{2\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(\left(4cde - 3be^2\right)f - 2\left(cd^2 - bde\right)g - \left(2ce^2f - \left(4cde - be^2\right)g\right)x\right)}{3\left(4c^4d^4e^2 - 12bc^3d^3e^3 + 13b^2c^2d^2e^4 - 6b^3cde^5 + b^4e^6 + \left(4c^4d^2e^4 - 4bc^3de^5 + b^2c^2e^6\right)x^2 - 2\left(4c^4d^3e^3 - 8bc^3d^2e^4 + 5b^2c^2de^5 - b^3ce^6\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] 2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((4*c*d*e - 3*b*e^2)*f - 2*(
c*d^2 - b*d*e)*g - (2*c*e^2*f - (4*c*d*e - b*e^2)*g)*x)/(4*c^4*d^4*e^2 - 12
*b*c^3*d^3*e^3 + 13*b^2*c^2*d^2*e^4 - 6*b^3*c*d*e^5 + b^4*e^6 + (4*c^4*d^2*
e^4 - 4*b*c^3*d*e^5 + b^2*c^2*e^6)*x^2 - 2*(4*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4
 + 5*b^2*c^2*d*e^5 - b^3*c*e^6)*x)
```

giac [B] time = 0.73, size = 587, normalized size = 4.02

$$\frac{2\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(\left(\left(\frac{\left(16c^3d^3ge^3-8c^3d^2fe^4-20bc^2d^2ge^4+8bc^2dfe^5+8b^2cdge^5-2b^2cfe^6-b^3ge^6\right)x}{16c^4d^4e^2-32bc^3d^3e^3+24b^2c^2d^2e^4-8b^3cde^5+b^4e^6}+\frac{3\left(8c^3d^4ge^2-8bc^2d^3ge^3-4bc^2d^2fe^4+2b^2cd^2ge^4+4b^2cdfe^5-b^3fe^6\right)}{16c^4d^4e^2-32bc^3d^3e^3+24b^2c^2d^2e^4-8b^3cde^5+b^4e^6}\right)x+\frac{3\left(8c^3d^4fe^2+4bc^2d^4ge^2-16bc^2d^3fe^3-4b^2cd^3ge^3+10b^2cd^2fe^4+b^3d^2ge^4-2b^3dfe^5\right)}{16c^4d^4e^2-32bc^3d^3e^3+24b^2c^2d^2e^4-8b^3cde^5+b^4e^6}\right)x-\frac{8c^3d^6g-16c^3d^5fe-16bc^2d^5ge+28bc^2d^4fe^2+10b^2cd^4ge^2-16b^2cd^3fe^3-2b^3d^3ge^3+3b^3d^2fe^4}{16c^4d^4e^2-32bc^3d^3e^3+24b^2c^2d^2e^4-8b^3cde^5+b^4e^6}\right)}{3\left(cx^2e^2-cd^2+bxe^2+bde\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] 2/3*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*((((16*c^3*d^3*g*e^3 - 8*c^3
*d^2*f*e^4 - 20*b*c^2*d^2*g*e^4 + 8*b*c^2*d*f*e^5 + 8*b^2*c*d*g*e^5 - 2*b^2
*c*f*e^6 - b^3*g*e^6)*x/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2
*e^4 - 8*b^3*c*d*e^5 + b^4*e^6) + 3*(8*c^3*d^4*g*e^2 - 8*b*c^2*d^3*g*e^3 -
4*b*c^2*d^2*f*e^4 + 2*b^2*c*d^2*g*e^4 + 4*b^2*c*d*f*e^5 - b^3*f*e^6)/(16*c^
4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6
))*x + 3*(8*c^3*d^4*f*e^2 + 4*b*c^2*d^4*g*e^2 - 16*b*c^2*d^3*f*e^3 - 4*b^2*
c*d^3*g*e^3 + 10*b^2*c*d^2*f*e^4 + b^3*d^2*g*e^4 - 2*b^3*d*f*e^5)/(16*c^4*d
^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))*
x - (8*c^3*d^6*g - 16*c^3*d^5*f*e - 16*b*c^2*d^5*g*e + 28*b*c^2*d^4*f*e^2 +
 10*b^2*c*d^4*g*e^2 - 16*b^2*c*d^3*f*e^3 - 2*b^3*d^3*g*e^3 + 3*b^3*d^2*f*e^
4)/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5
+ b^4*e^6))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d*e)^2
```

maple [A] time = 0.05, size = 128, normalized size = 0.88

$$-\frac{2\left(ex+d\right)^{3}\left(cex+be-cd\right)\left(-b\,e^{2}gx+4cdegx-2c\,e^{2}fx+2bdeg-3b\,e^{2}f-2c\,d^{2}g+4cdef\right)}{3\left(b^{2}e^{2}-4bcde+4c^{2}d^{2}\right)\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{5}{2}}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/3*(e*x+d)^3*(c*e*x+b*e-c*d)*(-b*e^2*g*x+4*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*
g-3*b*e^2*f-2*c*d^2*g+4*c*d*e*f)/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.30, size = 107, normalized size = 0.73

$$-\frac{2\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(3\,b\,e^2\,f+2\,c\,d^2\,g+b\,e^2\,g\,x+2\,c\,e^2\,f\,x-2\,b\,d\,e\,g-4\,c\,d\,e\,f-4\,c\,d\,e\,g\,x\right)}{3\,e^2\,{\left(b\,e-2\,c\,d\right)}^2\,{\left(b\,e-c\,d+c\,e\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] -(2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(3*b*e^2*f + 2*c*d^2*g + b*
e^2*g*x + 2*c*e^2*f*x - 2*b*d*e*g - 4*c*d*e*f - 4*c*d*e*g*x))/(3*e^2*(b*e -
 2*c*d)^2*(b*e - c*d + c*e*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^2 \left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
[Out] Integral((d + e*x)**2*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.1997 $\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=165

$$\frac{2(b+2cx)(-beg-2cdg+4cef)}{3ce(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(ex(2cd-be)+d(2cd-be))(-beg+cdg+cef)}{3ce^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Rubi [A] time = 0.18, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {777, 613}

$$\frac{2(b+2cx)(-beg-2cdg+4cef)}{3ce(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(ex(2cd-be)+d(2cd-be))(-beg+cdg+cef)}{3ce^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d*(2*c*d - b*e) + e*(2*c*d - b*e)*x))/(3*c*e^2*
(2*c*d - b*e)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(4*c*e*f
- 2*c*d*g - b*e*g)*(b + 2*c*x))/(3*c*e*(2*c*d - b*e)^3*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx&=\frac{2(cef+cdg-beg)(d+ex)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(4cef-2cdg-beg)\int \frac{}{(cd^2-b}}{3ce(2cd-be}\\&=\frac{2(cef+cdg-beg)(d+ex)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(4cef-2cdg-beg)(}{3ce(2cd-be)^3\sqrt{d(cd-be)-}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 151, normalized size = 0.92

$$\frac{6b^2e^2(2dg-ef+egx)-4bce\left(5d^2g-2degx+e^2x(6f-gx)\right)+8c^2\left(d^3g+d^2e(f-gx)+de^2x(2f+gx)-2e^3fx^2\right)}{3e^2(be-2cd)^3(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (6*b^2*e^2*(-(e*f) + 2*d*g + e*g*x) - 4*b*c*e*(5*d^2*g - 2*d*e*g*x + e^2*x*
(6*f - g*x)) + 8*c^2*(d^3*g - 2*e^3*f*x^2 + d^2*e*(f - g*x) + d*e^2*x*(2*f
+ g*x)))/(3*e^2*(-2*c*d + b*e)^3*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b
*e) + c*(d - e*x))])
```

IntegrateAlgebraic [B] time = 43.04, size = 7201, normalized size = 43.64

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2)^(5/2),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 9.47, size = 431, normalized size = 2.61

$$-\frac{2 \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(2\left(4c^2e^3f - \left(2c^2de^2 + bce^3\right)g\right)x^2 - \left(4c^2d^2e - 3b^2e^3\right)f - 2\left(2c^2d^3 - 5bcd^2e + 3b^2de^2\right)g - \left(4\left(2c^2de^2 - 3bce^3\right)f - \left(4c^2d^2e - 4bcde^2 - 3b^2e^3\right)g\right)x\right)}{3\left(8c^5d^6e^2 - 28bc^4d^5e^3 + 38b^2c^3d^4e^4 - 25b^3c^2d^3e^5 + 8b^4cd^2e^6 - b^5de^7 + \left(8c^5d^3e^5 - 12bc^4d^2e^6 + 6b^2c^3de^7 - b^3c^2e^8\right)x^3 - \left(8c^5d^4e^4 - 28bc^4d^3e^5 + 30b^2c^3d^2e^6 - 13b^3c^2de^7 + 2b^4ce^8\right)x^2 - \left(8c^5d^5e^3 - 12bc^4d^4e^4 - 2b^2c^3d^3e^5 + 11b^3c^2d^2e^6 - 6b^4cde^7 + b^5e^8\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="fricas")
```

```
[Out] -2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^2*e^3*f - (2*c^2*d*
e^2 + b*c*e^3)*g)*x^2 - (4*c^2*d^2*e - 3*b^2*e^3)*f - 2*(2*c^2*d^3 - 5*b*c*
d^2*e + 3*b^2*d*e^2)*g - (4*(2*c^2*d*e^2 - 3*b*c*e^3)*f - (4*c^2*d^2*e - 4*
b*c*d*e^2 - 3*b^2*e^3)*g)*x)/(8*c^5*d^6*e^2 - 28*b*c^4*d^5*e^3 + 38*b^2*c^3
*d^4*e^4 - 25*b^3*c^2*d^3*e^5 + 8*b^4*c*d^2*e^6 - b^5*d*e^7 + (8*c^5*d^3*e^
5 - 12*b*c^4*d^2*e^6 + 6*b^2*c^3*d*e^7 - b^3*c^2*e^8)*x^3 - (8*c^5*d^4*e^4
- 28*b*c^4*d^3*e^5 + 30*b^2*c^3*d^2*e^6 - 13*b^3*c^2*d*e^7 + 2*b^4*c*e^8)*x
^2 - (8*c^5*d^5*e^3 - 12*b*c^4*d^4*e^4 - 2*b^2*c^3*d^3*e^5 + 11*b^3*c^2*d^2
*e^6 - 6*b^4*c*d*e^7 + b^5*e^8)*x)
```

giac [B] time = 0.67, size = 521, normalized size = 3.16

$$\frac{2 \sqrt{-cx^2e^2 + cd^2 - bxe^2 - bde}\left(\left(\left(\frac{2\left(4c^3d^2ge^3 - 8c^3dfe^4 + 4bc^2fe^5 - b^2cge^5\right)x}{16c^4d^4e^2 - 32bc^3d^3e^3 + 24b^2c^2d^2e^4 - 8b^3cde^5 + b^4e^6} + \frac{3\left(4bc^2d^2ge^3 - 8bc^2dfe^4 + 4b^2cfe^5 - b^3ge^5\right)}{16c^4d^4e^2 - 32bc^3d^3e^3 + 24b^2c^2d^2e^4 - 8b^3cde^5 + b^4e^6}\right)x + \frac{3\left(8c^3d^3fe^2 - 4bc^2d^3ge^2 - 12bc^2d^2fe^3 + 8b^2cd^2ge^3 + 2b^2cdfe^4 - 3b^3dge^4 + b^3fe^5\right)}{16c^4d^4e^2 - 32bc^3d^3e^3 + 24b^2c^2d^2e^4 - 8b^3cde^5 + b^4e^6}\right)x + \frac{8c^3d^5g + 8c^3d^4fe - 24bc^2d^4ge - 4bc^2d^3fe^2 + 22b^2cd^3ge^2 - 6b^2cd^2fe^3 - 6b^3d^2ge^3 + 3b^3dfe^4}{16c^4d^4e^2 - 32bc^3d^3e^3 + 24b^2c^2d^2e^4 - 8b^3cde^5 + b^4e^6}\right)}{3\left(cx^2e^2 - cd^2 + bxe^2 + bde\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="giac")
```

```
[Out] 2/3*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(((2*(4*c^3*d^2*g*e^3 - 8*c^
3*d*f*e^4 + 4*b*c^2*f*e^5 - b^2*c*g*e^5)*x/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e
^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6) + 3*(4*b*c^2*d^2*g*e^3 -
 8*b*c^2*d*f*e^4 + 4*b^2*c*f*e^5 - b^3*g*e^5)/(16*c^4*d^4*e^2 - 32*b*c^3*d^
3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))*x + 3*(8*c^3*d^3*f*e
^2 - 4*b*c^2*d^3*g*e^2 - 12*b*c^2*d^2*f*e^3 + 8*b^2*c*d^2*g*e^3 + 2*b^2*c*d
*f*e^4 - 3*b^3*d*g*e^4 + b^3*f*e^5)/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24
*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))*x + (8*c^3*d^5*g + 8*c^3*d^4*f
*e - 24*b*c^2*d^4*g*e - 4*b*c^2*d^3*f*e^2 + 22*b^2*c*d^3*g*e^2 - 6*b^2*c*d^
2*f*e^3 - 6*b^3*d^2*g*e^3 + 3*b^3*d*f*e^4)/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e
^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))/(c*x^2*e^2 - c*d^2 + b*
x*e^2 + b*d*e)^2
```

maple [A] time = 0.06, size = 227, normalized size = 1.38

$$\frac{2\left(ex+d\right)^2\left(cex+be-cd\right)\left(2bce^3gx^2+4c^2de^2gx^2-8c^2e^3fx^2+3b^2e^3gx+4bcde^2gx-12bce^3fx-4c^2d^2egx+8c^2de^2fx+6b^2de^2g-3b^2e^3f-10bcd^2eg+4c^2d^3g+4c^2d^2ef\right)}{3\left(b^3e^3-6b^2cde^2+12bc^2d^2e-8c^3d^3\right)\left(-ce^2x^2-be^2x-bde+cd^2\right)^{\frac{5}{2}}e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/3*(e*x+d)^2*(c*e*x+b*e-c*d)*(2*b*c*e^3*g*x^2+4*c^2*d*e^2*g*x^2-8*c^2*e^3*
f*x^2+3*b^2*e^3*g*x+4*b*c*d*e^2*g*x-12*b*c*e^3*f*x-4*c^2*d^2*e*g*x+8*c^2*d*
e^2*f*x+6*b^2*d*e^2*g-3*b^2*e^3*f-10*b*c*d^2*e*g+4*c^2*d^3*g+4*c^2*d^2*e*f)
/(b^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.44, size = 795, normalized size = 4.82

$$-\frac{8c^2d^3g\sqrt{cd^2-bde-ce^2x^2-be^2x}-6b^2e^3f\sqrt{cd^2-bde-ce^2x^2-be^2x}-16c^2e^3fx^2\sqrt{cd^2-bde-ce^2x^2-be^2x}+12b^2de^2g\sqrt{cd^2-bde-ce^2x^2-be^2x}+8c^2d^2ef\sqrt{cd^2-bde-ce^2x^2-be^2x}+6b^2e^3gx\sqrt{cd^2-bde-ce^2x^2-be^2x}+4bce^3gx^2\sqrt{cd^2-bde-ce^2x^2-be^2x}+16c^2de^2fx\sqrt{cd^2-bde-ce^2x^2-be^2x}-8c^2d^2egx\sqrt{cd^2-bde-ce^2x^2-be^2x}+8c^2de^2gx^2\sqrt{cd^2-bde-ce^2x^2-be^2x}-20bcd^2eg\sqrt{cd^2-bde-ce^2x^2-be^2x}-24bce^3fx\sqrt{cd^2-bde-ce^2x^2-be^2x}+8bcde^2gx\sqrt{cd^2-bde-ce^2x^2-be^2x}}{3b^5de^7+3b^5e^8x-24b^4cd^2e^6-18b^4cde^7x+6b^4ce^8x^2+75b^3c^2d^3e^5+33b^3c^2d^2e^6x-39b^3c^2de^7x^2+3b^3c^2e^8x^3-114b^2c^3d^4e^4-6b^2c^3d^3e^5x+90b^2c^3d^2e^6x^2-18b^2c^3de^7x^3+84bc^4d^5e^3-36bc^4d^4e^4x-84bc^4d^3e^5x^2+36bc^4d^2e^6x^3-24c^5d^6e^2+24c^5d^5e^3x+24c^5d^4e^4x^2-24c^5d^3e^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] -(8*c^2*d^3*g*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 6*b^2*e^3*f*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 16*c^2*e^3*f*x^2*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2) + 12*b^2*d*e^2*g*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2) + 8*c^2*d^2*e*f*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
+ 6*b^2*e^3*g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + 4*b*c*e^3*g*x
^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + 16*c^2*d*e^2*f*x*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 8*c^2*d^2*e*g*x*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2) + 8*c^2*d*e^2*g*x^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2) - 20*b*c*d^2*e*g*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 2
4*b*c*e^3*f*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + 8*b*c*d*e^2*g*x
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(3*b^5*d*e^7 + 3*b^5*e^8*x -
24*c^5*d^6*e^2 + 84*b*c^4*d^5*e^3 - 24*b^4*c*d^2*e^6 + 6*b^4*c*e^8*x^2 + 24
*c^5*d^5*e^3*x - 114*b^2*c^3*d^4*e^4 + 75*b^3*c^2*d^3*e^5 + 3*b^3*c^2*e^8*x
^3 + 24*c^5*d^4*e^4*x^2 - 24*c^5*d^3*e^5*x^3 - 18*b^4*c*d*e^7*x + 90*b^2*c^
3*d^2*e^6*x^2 - 36*b*c^4*d^4*e^4*x - 6*b^2*c^3*d^3*e^5*x + 33*b^3*c^2*d^2*e
^6*x - 84*b*c^4*d^3*e^5*x^2 - 39*b^3*c^2*d*e^7*x^2 + 36*b*c^4*d^2*e^6*x^3 -
 18*b^2*c^3*d*e^7*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.1998 $\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{2(ef-dg)}{5e^2(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{16c(b+2cx)(-5beg+2cdg+8cef)}{15e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(b+\cdots}{15e(2cd-b\cdots}$$

Rubi [A] time = 0.20, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 614, 613}

$$-\frac{2(ef-dg)}{5e^2(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{16c(b+2cx)(-5beg+2cdg+8cef)}{15e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(b+2cx)(-5beg+2cdg+8cef)}{15e(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x]
```

```
[Out] (2*(8*c*e*f + 2*c*d*g - 5*b*e*g)*(b + 2*c*x))/(15*e*(2*c*d - b*e)^3*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(e*f - d*g))/(5*e^2*(2*c*d - b*e
)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (16*c*(8*c*e*f +
 2*c*d*g - 5*b*e*g)*(b + 2*c*x))/(15*e*(2*c*d - b*e)^5*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{2(ef-dg)}{5e^2(2cd-be)(d+ex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(8cef+2c\ldots}{\ldots}$$

$$= \frac{2(8cef+2cdg-5beg)(b+2cx)}{15e(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{\ldots}{5e^2(2cd-be)(d+e\ldots}$$

$$= \frac{2(8cef+2cdg-5beg)(b+2cx)}{15e(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{\ldots}{5e^2(2cd-be)(d+e\ldots}$$

Mathematica [A] time = 0.19, size = 345, normalized size = 1.66

$$-\frac{2\left(b^4e^4(2dg+3ef+5egx)-2b^3ce^3\left(19d^2g+2de(8f+23gx)+e^2x(4f+15gx)\right)+12b^2c^2e^2\left(d^3g+2d^2e(7f-gx)+de^2x(12f-19gx)+2e^3x^2(2f-5gx)\right)+8bc^3e\left(9d^4g-6d^3e(4f-3gx)+3d^2e^2x(4f+9gx)-4de^3x^2(gx-12f)+2e^4x^3(12f-5gx)\right)-16c^4\left(3d^5g-3d^4e(f-gx)+3d^3e^2x(4f+gx)-2d^2e^3x^2(gx-6f)-2de^4x^3(4f+gx)-8e^5fx^4\right)\right)}{15e^2(d+ex)^2(be-2cd)^5(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))
,x]
```

```
[Out] (-2*(b^4*e^4*(3*e*f + 2*d*g + 5*e*g*x) + 12*b^2*c^2*e^2*(d^3*g + d*e^2*x*(1
2*f - 19*g*x) + 2*e^3*x^2*(2*f - 5*g*x) + 2*d^2*e*(7*f - g*x)) - 16*c^4*(3*
d^5*g - 8*e^5*f*x^4 - 3*d^4*e*(f - g*x) - 2*d^2*e^3*x^2*(-6*f + g*x) + 3*d^
3*e^2*x*(4*f + g*x) - 2*d*e^4*x^3*(4*f + g*x)) + 8*b*c^3*e*(9*d^4*g + 2*e^4
*x^3*(12*f - 5*g*x) - 6*d^3*e*(4*f - 3*g*x) - 4*d*e^3*x^2*(-12*f + g*x) + 3
*d^2*e^2*x*(4*f + 9*g*x)) - 2*b^3*c*e^3*(19*d^2*g + e^2*x*(4*f + 15*g*x) +
2*d*e*(8*f + 23*g*x))))/(15*e^2*(-2*c*d + b*e)^5*(d + e*x)^2*(-(c*d) + b*e
+ c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [F] time = 180.26, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 93.10, size = 1028, normalized size = 4.94

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="fricas")
```

```
[Out] -2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(16*(8*c^4*e^5*f + (2*c^4*
d*e^4 - 5*b*c^3*e^5)*g)*x^4 + 8*(8*(2*c^4*d*e^4 + 3*b*c^3*e^5)*f + (4*c^4*d
^2*e^3 - 4*b*c^3*d*e^4 - 15*b^2*c^2*e^5)*g)*x^3 - 6*(8*(4*c^4*d^2*e^3 - 8*b
*c^3*d*e^4 - b^2*c^2*e^5)*f + (8*c^4*d^3*e^2 - 36*b*c^3*d^2*e^3 + 38*b^2*c^
2*d*e^4 + 5*b^3*c*e^5)*g)*x^2 + (48*c^4*d^4*e - 192*b*c^3*d^3*e^2 + 168*b^2
*c^2*d^2*e^3 - 32*b^3*c*d*e^4 + 3*b^4*e^5)*f - 2*(24*c^4*d^5 - 36*b*c^3*d^4
*e - 6*b^2*c^2*d^3*e^2 + 19*b^3*c*d^2*e^3 - b^4*d*e^4)*g - (8*(24*c^4*d^3*e
^2 - 12*b*c^3*d^2*e^3 - 18*b^2*c^2*d*e^4 + b^3*c*e^5)*f + (48*c^4*d^4*e - 1
44*b*c^3*d^3*e^2 + 24*b^2*c^2*d^2*e^3 + 92*b^3*c*d*e^4 - 5*b^4*e^5)*g)*x)/(
```

```
32*c^7*d^10*e^2 - 144*b*c^6*d^9*e^3 + 272*b^2*c^5*d^8*e^4 - 280*b^3*c^4*d^7
*e^5 + 170*b^4*c^3*d^6*e^6 - 61*b^5*c^2*d^5*e^7 + 12*b^6*c*d^4*e^8 - b^7*d^
3*e^9 + (32*c^7*d^5*e^7 - 80*b*c^6*d^4*e^8 + 80*b^2*c^5*d^3*e^9 - 40*b^3*c^
4*d^2*e^10 + 10*b^4*c^3*d*e^11 - b^5*c^2*e^12)*x^5 + (32*c^7*d^6*e^6 - 16*b
*c^6*d^5*e^7 - 80*b^2*c^5*d^4*e^8 + 120*b^3*c^4*d^3*e^9 - 70*b^4*c^3*d^2*e^
10 + 19*b^5*c^2*d*e^11 - 2*b^6*c*e^12)*x^4 - (64*c^7*d^7*e^5 - 288*b*c^6*d^
6*e^6 + 448*b^2*c^5*d^5*e^7 - 320*b^3*c^4*d^4*e^8 + 100*b^4*c^3*d^3*e^9 - 2
*b^5*c^2*d^2*e^10 - 6*b^6*c*d*e^11 + b^7*e^12)*x^3 - (64*c^7*d^8*e^4 - 160*
b*c^6*d^7*e^5 + 64*b^2*c^5*d^6*e^6 + 160*b^3*c^4*d^5*e^7 - 220*b^4*c^3*d^4*
e^8 + 118*b^5*c^2*d^3*e^9 - 30*b^6*c*d^2*e^10 + 3*b^7*d*e^11)*x^2 + (32*c^7
*d^9*e^3 - 208*b*c^6*d^8*e^4 + 496*b^2*c^5*d^7*e^5 - 600*b^3*c^4*d^6*e^6 +
410*b^4*c^3*d^5*e^7 - 161*b^5*c^2*d^4*e^8 + 34*b^6*c*d^3*e^9 - 3*b^7*d^2*e^
10)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.55Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.06, size = 557, normalized size = 2.68

$$-\frac{2\left(cex+be-cd\right)\left(-80b\,c^{3}e^{5}g\,x^{4}+32c^{4}d\,e^{4}g\,x^{4}+128c^{4}e^{5}f\,x^{4}-120b^{2}c^{2}e^{5}g\,x^{3}-32b\,c^{3}d\,e^{4}g\,x^{3}+192b\,c^{3}e^{5}f\,x^{3}+32c^{4}d^{2}e^{3}g\,x^{3}+128c^{4}d\,e^{4}f\,x^{3}-30b^{3}c\,e^{5}g\,x^{2}-228b^{2}c^{2}d\,e^{4}g\,x^{2}+48b^{2}c^{2}e^{5}f\,x^{2}+216b\,c^{3}d^{2}e^{3}g\,x^{2}+384b\,c^{3}d\,e^{4}f\,x^{2}-48c^{4}d^{3}e^{2}g\,x^{2}-192c^{4}d^{2}e^{3}f\,x^{2}+5b^{4}e^{5}gx-92b^{3}cd\,e^{4}gx-8b^{3}c\,e^{5}fx-24b^{2}c^{2}d^{2}e^{3}gx+144b^{2}c^{2}d\,e^{4}fx+144b\,c^{3}d^{3}e^{2}gx+96b\,c^{3}d^{2}e^{3}fx-48c^{4}d^{4}egx-192c^{4}d^{3}e^{2}fx+2b^{4}d\,e^{4}g+3b^{4}e^{5}f-38b^{3}c\,d^{2}e^{3}g-32b^{3}cd\,e^{4}f+12b^{2}c^{2}d^{3}e^{2}g+168b^{2}c^{2}d^{2}e^{3}f+72b\,c^{3}d^{4}eg-192b\,c^{3}d^{3}e^{2}f-48c^{4}d^{5}g+48c^{4}d^{4}ef\right)}{15\left(b^{5}e^{5}-10b^{4}cd\,e^{4}+40b^{3}c^{2}d^{2}e^{3}-80b^{2}c^{3}d^{3}e^{2}+80b\,c^{4}d^{4}e-32c^{5}d^{5}\right)\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{5}{2}}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-80*b*c^3*e^5*g*x^4+32*c^4*d*e^4*g*x^4+128*c^4*e^5*f
*x^4-120*b^2*c^2*e^5*g*x^3-32*b*c^3*d*e^4*g*x^3+192*b*c^3*e^5*f*x^3+32*c^4*
d^2*e^3*g*x^3+128*c^4*d*e^4*f*x^3-30*b^3*c*e^5*g*x^2-228*b^2*c^2*d*e^4*g*x^
2+48*b^2*c^2*e^5*f*x^2+216*b*c^3*d^2*e^3*g*x^2+384*b*c^3*d*e^4*f*x^2-48*c^4
*d^3*e^2*g*x^2-192*c^4*d^2*e^3*f*x^2+5*b^4*e^5*g*x-92*b^3*c*d*e^4*g*x-8*b^3
*c*e^5*f*x-24*b^2*c^2*d^2*e^3*g*x+144*b^2*c^2*d*e^4*f*x+144*b*c^3*d^3*e^2*g
*x+96*b*c^3*d^2*e^3*f*x-48*c^4*d^4*e*g*x-192*c^4*d^3*e^2*f*x+2*b^4*d*e^4*g+
3*b^4*e^5*f-38*b^3*c*d^2*e^3*g-32*b^3*c*d*e^4*f+12*b^2*c^2*d^3*e^2*g+168*b^
2*c^2*d^2*e^3*f+72*b*c^3*d^4*e*g-192*b*c^3*d^3*e^2*f-48*c^4*d^5*g+48*c^4*d^
4*e*f)/(b^5*e^5-10*b^4*c*d*e^4+40*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c
^4*d^4*e-32*c^5*d^5)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 5.13, size = 3326, normalized size = 15.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)),x)
```

```
[Out] (x*((16*c^2*(b*g - c*f))/(15*(b*e - 2*c*d)^5) - (8*b*c^2*g)/(15*(b*e - 2*c*
d)^5)) + (72*c^3*d*e*f - 56*c^3*d^2*g - 44*b*c^2*e^2*f + 10*b^2*c*e^2*g + 2
0*b*c^2*d*e*g)/(15*e^2*(b*e - 2*c*d)^5) + (8*c^2*g*(c*d^2 - b*d*e))/(15*e^2
*(b*e - 2*c*d)^5))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (((4*b*c*g
)/(15*e*(b*e - 2*c*d)^5) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*e^2*f)/(5*b^3*e^6 - 40*
c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5) - (2*d*e*g)/(5*b^3*e^6 - 4
0*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((2*b*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^3) - (4*c*d*g)/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((4*c*g*(3*b*e - 4*c*d))
/(15*e^2*(b*e - 2*c*d)^5) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^5))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + ((x*(((e*(b*e - c*d) + c*d*
e)*(((e*(b*e - c*d) + c*d*e)*((4*c^4*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)
^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^4*g*(e*(b*e - c*d) + c*d*e
))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (4*b*c^4*e^
2*g)/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) -
 (2*c^2*(8*b^2*c*e^3*g - 26*b*c^2*e^3*f + 36*c^3*d*e^2*f - 32*c^3*d^2*e*g +
 14*b*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - (2*b*c^3*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) + (8*c^4*d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^3*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((4*c^4*e^2*(5*b
*g - 4*c*f))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
8*c^4*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e)) + (4*b*c^4*e^2*g)/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(12*c^3*d^3*g - 12*b^3*e^3*g + 28*b^2
*c*e^3*f + 68*c^3*d^2*e*f - 86*b*c^2*d*e^2*f - 36*b*c^2*d^2*e*g + 36*b^2*c*
d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b
*c*(8*b^2*c*e^3*g - 26*b*c^2*e^3*f + 36*c^3*d*e^2*f - 32*c^3*d^2*e*g + 14*b
*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((4*c^4*e^2*(5*b*g - 4*c*f))/(
15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^4*g*(e*(b*
e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
)) + (4*b*c^4*e^2*g)/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) - (2*c^2*(8*b^2*c*e^3*g - 26*b*c^2*e^3*f + 36*c^3*d*e^2*f -
32*c^3*d^2*e*g + 14*b*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) - (2*b*c^3*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^3*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (8*c^4*d*g*(b*e - c*d))/(15*(b*e -
2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(12*c^3*d^
3*g - 12*b^3*e^3*g + 28*b^2*c*e^3*f + 68*c^3*d^2*e*f - 86*b*c^2*d*e^2*f - 3
6*b*c^2*d^2*e*g + 36*b^2*c*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d +
e*x)^2*(b*e - c*d + c*e*x)^2) + ((x*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c
*d) + c*d*e)*((16*c^5*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^5*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e -
2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*b*c^5*e^2*g)/(15*(b*e
 - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(104*
b*c^3*e^3*f - 48*b^2*c^2*e^3*g - 144*c^4*d*e^2*f + 64*c^4*d^2*e*g + 8*b*c^3
*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
8*b*c^4*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) + (32*c^5*d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((16*c^5*e^2*(5*b*g - 4*
c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^5*
g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b
```

```
*c^2*d*e)) + (16*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(96*c^4*d^3*g + 84*b^2*c^2*e^3*f - 60*b^3*
c*e^3*g + 512*c^4*d^2*e*f - 440*b*c^3*d*e^2*f - 432*b*c^3*d^2*e*g + 324*b^2
*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - (b*c*(104*b*c^3*e^3*f - 48*b^2*c^2*e^3*g - 144*c^4*d*e^2*f + 64*c^4*d^2*
e*g + 8*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((16*c^5*e^2*(5*b*g -
 4*c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c
^5*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) + (16*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(104*b*c^3*e^3*f - 48*b^2*c^2*e^3*g - 1
44*c^4*d*e^2*f + 64*c^4*d^2*e*g + 8*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^4*e^2*(5*b*g - 4*c*f))/(15*(
b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^5*d*g*(b*e -
c*d))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
+ (b*c*(96*c^4*d^3*g + 84*b^2*c^2*e^3*f - 60*b^3*c*e^3*g + 512*c^4*d^2*e*f
- 440*b*c^3*d*e^2*f - 432*b*c^3*d^2*e*g + 324*b^2*c^2*d*e^2*g))/(15*e*(b*e
- 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{5}{2}}\left(d + ex\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)), x)
```

3.1999 $\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=283

$$\frac{128c^2(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^6\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16c(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(-7be}{35e^2(d+ex)(2cd-b}$$

Rubi [A] time = 0.40, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 658, 614, 613}

$$\frac{128c^2(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^6\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16c(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(-7beg+4cdg+10cef)}{35e^2(d+ex)(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(ef-dg)}{7e^2(d+ex)^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x]
```

```
[Out] (16*c*(10*c*e*f + 4*c*d*g - 7*b*e*g)*(b + 2*c*x))/(105*e*(2*c*d - b*e)^4*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(e*f - d*g))/(7*e^2*(2*c*d
- b*e)*(d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(10*c*
e*f + 4*c*d*g - 7*b*e*g))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)*(d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2)^(3/2)) + (128*c^2*(10*c*e*f + 4*c*d*g - 7*b*e*g)*(b
+ 2*c*x))/(105*e*(2*c*d - b*e)^6*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(10ce}{}$$

$$= -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{35e^2(2}$$

$$= \frac{16c(10cef+4cdg-7beg)(b+2cx)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{7e^2(2cd-be)(}$$

$$= \frac{16c(10cef+4cdg-7beg)(b+2cx)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{7e^2(2cd-be)(}$$

Mathematica [A] time = 0.30, size = 468, normalized size = 1.65

$$\frac{-6b^5e^5(2dg+5ef+7egx)+4b^4ce^4\left(43d^2g+2de(45f+73gx)+e^2x(15f+28gx)\right)-16b^3c^2e^3\left(88d^3g+d^2e(115f+293gx)+2de^2x(25f+86gx)+2e^3x^2(5f+21gx)\right)+96b^2c^3e^2\left(17d^4g+20d^3e(3f+2gx)+d^2e^2x(65f-54gx)+40de^3x^2(f-2gx)+2e^4x^3(5f-14gx)\right)+32bc^4e\left(6d^5g-39d^4e(5f-gx)+12d^3e^2x(24gx-5f)+4d^2e^3x^2(75f+43gx)+8de^4x^3(45f-8gx)+8e^5x^4(15f-7gx)\right)-64c^5\left(9d^6g-6d^5e(5f-3gx)+3d^4e^2x(15f+16gx)+8d^3e^3x^2(15f+gx)+4d^2e^4x^3(5f-8gx)-16de^5x^4(5f+gx)-40e^6fx^5\right)}{105e^2(d+ex)^3(be-2cd)^6(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
)),x]
```

```
[Out] (-6*b^5*e^5*(5*e*f + 2*d*g + 7*e*g*x) + 96*b^2*c^3*e^2*(17*d^4*g + d^2*e^2*
x*(65*f - 54*g*x) + 2*e^4*x^3*(5*f - 14*g*x) + 40*d*e^3*x^2*(f - 2*g*x) + 2
0*d^3*e*(3*f + 2*g*x)) - 64*c^5*(9*d^6*g - 40*e^6*f*x^5 + 4*d^2*e^4*x^3*(5*
f - 8*g*x) - 6*d^5*e*(5*f - 3*g*x) - 16*d*e^5*x^4*(5*f + g*x) + 8*d^3*e^3*x
^2*(15*f + g*x) + 3*d^4*e^2*x*(15*f + 16*g*x)) + 32*b*c^4*e*(6*d^5*g + 8*d*
e^4*x^3*(45*f - 8*g*x) + 8*e^5*x^4*(15*f - 7*g*x) - 39*d^4*e*(5*f - g*x) +
12*d^3*e^2*x*(-5*f + 24*g*x) + 4*d^2*e^3*x^2*(75*f + 43*g*x)) + 4*b^4*c*e^4
*(43*d^2*g + e^2*x*(15*f + 28*g*x) + 2*d*e*(45*f + 73*g*x)) - 16*b^3*c^2*e^
3*(88*d^3*g + 2*e^3*x^2*(5*f + 21*g*x) + 2*d*e^2*x*(25*f + 86*g*x) + d^2*e*
(115*f + 293*g*x))))/(105*e^2*(-2*c*d + b*e)^6*(d + e*x)^3*(-(c*d) + b*e + c
*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [F] time = 180.84, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.05, size = 782, normalized size = 2.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(896*b*c^4*e^6*g*x^5-512*c^5*d*e^5*g*x^5-1280*c^5*e^
6*f*x^5+1344*b^2*c^3*e^6*g*x^4+1024*b*c^4*d*e^5*g*x^4-1920*b*c^4*e^6*f*x^4-
1024*c^5*d^2*e^4*g*x^4-2560*c^5*d*e^5*f*x^4+336*b^3*c^2*e^6*g*x^3+3840*b^2*
c^3*d*e^5*g*x^3-480*b^2*c^3*e^6*f*x^3-2752*b*c^4*d^2*e^4*g*x^3-5760*b*c^4*d
*e^5*f*x^3+256*c^5*d^3*e^3*g*x^3+640*c^5*d^2*e^4*f*x^3-56*b^4*c*e^6*g*x^2+1
376*b^3*c^2*d*e^5*g*x^2+80*b^3*c^2*e^6*f*x^2+2592*b^2*c^3*d^2*e^4*g*x^2-192
0*b^2*c^3*d*e^5*f*x^2-4608*b*c^4*d^3*e^3*g*x^2-4800*b*c^4*d^2*e^4*f*x^2+153
6*c^5*d^4*e^2*g*x^2+3840*c^5*d^3*e^3*f*x^2+21*b^5*e^6*g*x-292*b^4*c*d*e^5*g
*x-30*b^4*c*e^6*f*x+2344*b^3*c^2*d^2*e^4*g*x+400*b^3*c^2*d*e^5*f*x-1920*b^2
*c^3*d^3*e^3*g*x-3120*b^2*c^3*d^2*e^4*f*x-624*b*c^4*d^4*e^2*g*x+960*b*c^4*d
^3*e^3*f*x+576*c^5*d^5*e*g*x+1440*c^5*d^4*e^2*f*x+6*b^5*d*e^5*g+15*b^5*e^6*
f-86*b^4*c*d^2*e^4*g-180*b^4*c*d*e^5*f+704*b^3*c^2*d^3*e^3*g+920*b^3*c^2*d^
2*e^4*f-816*b^2*c^3*d^4*e^2*g-2880*b^2*c^3*d^3*e^3*f-96*b*c^4*d^5*e*g+3120*
b*c^4*d^4*e^2*f+288*c^5*d^6*g-960*c^5*d^5*e*f)/(e*x+d)/(b^6*e^6-12*b^5*c*d*
e^5+60*b^4*c^2*d^2*e^4-160*b^3*c^3*d^3*e^3+240*b^2*c^4*d^4*e^2-192*b*c^5*d^
5*e+64*c^6*d^6)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 10.35, size = 11539, normalized size = 40.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)),x)
```

```
[Out] ((800*c^6*d^4*g + 558*b^3*c^3*e^4*f - 222*b^4*c^2*e^4*g - 4192*c^6*d^3*e*f
+ 384*b*c^5*d^3*e*g + 6624*b*c^5*d^2*e^2*f - 3392*b^2*c^4*d*e^3*f + 1248*b^
3*c^3*d*e^3*g - 1984*b^2*c^4*d^2*e^2*g)/(105*e^2*(b*e - 2*c*d)^8) - x*((b*(
(b*((8*c^5*e*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*b*c
^5*e^2*g)/(105*(b*e - 2*c*d)^8)))/c - (4*c^4*(40*c^2*d^2*g - 33*b^2*e^2*g +
```

62*b*c*e^2*f - 88*c^2*d*e*f + 16*b*c*d*e*g))/(105*(b*e - 2*c*d)^8) + (16*c^5*g*(c*d^2 - b*d*e))/(105*(b*e - 2*c*d)^8)))/c + (44*b^2*c^4*e^4*f - 30*b^3*c^3*e^4*g - 672*c^6*d^2*e^2*f + 224*c^6*d^3*e*g + 320*b*c^5*d*e^3*f + 160*b*c^5*d^2*e^2*g - 128*b^2*c^4*d*e^3*g)/(105*e^2*(b*e - 2*c*d)^8) + ((c*d^2 - b*d*e)*((8*c^5*e*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*b*c^5*e^2*g)/(105*(b*e - 2*c*d)^8)))/(c*e^2)) + ((c*d^2 - b*d*e)*((b*((8*c^5*e*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*b*c^5*e^2*g)/(105*(b*e - 2*c*d)^8)))/c - (4*c^4*(40*c^2*d^2*g - 33*b^2*e^2*g + 62*b*c*e^2*f - 88*c^2*d*e*f + 16*b*c*d*e*g))/(105*(b*e - 2*c*d)^8) + (16*c^5*g*(c*d^2 - b*d*e))/(105*(b*e - 2*c*d)^8)))/(c*e^2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (((8*c^2*g*(3*b*e - 4*c*d))/(105*e^2*(b*e - 2*c*d)^6) - (16*c^3*d*g)/(105*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((8*c^4*(2*c*d*g - 7*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*c^5*d*g)/(105*(b*e - 2*c*d)^8)))/e + (76*b^2*c^3*e^2*g - 176*c^5*d^2*g + 304*c^5*d*e*f - 200*b*c^4*e^2*f + 8*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^8)))/e - (2*b*c^2*(13*b^2*e^2*g - 44*c^2*d^2*g - 44*b*c*e^2*f + 76*c^2*d*e*f + 4*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^8))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4*b*c*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((276*b^2*c^3*e^3*f - 352*c^5*d^3*g - 88*b^3*c^2*e^3*g + 608*c^5*d^2*e*f - 832*b*c^4*d*e^2*f + 288*b*c^4*d^2*e*g + 104*b^2*c^3*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^8) + (d*((d*((16*c^4*(4*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*c^5*d*g)/(105*(b*e - 2*c*d)^8)))/e - (272*b*c^4*e^3*f - 148*b^2*c^3*e^3*g - 448*c^5*d*e^2*f + 128*c^5*d^2*e*g + 160*b*c^4*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^8)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((2*c^2*e^3*(5*b*e*g + 2*c*d*g - 6*c*e*f))/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5)) - (4*c^3*d*e^3*g)/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e - (e*(8*b^2*c*e^3*g - 38*b*c^2*e^3*f + 52*c^3*d*e^2*f - 48*c^3*d^2*e*g + 26*b*c^2*d*e^2*g))/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e - (e*(16*c^3*d^3*g - 16*b^3*e^3*g + 40*b^2*c*e^3*f + 96*c^3*d^2*e*f - 122*b*c^2*d*e^2*f - 48*b*c^2*d^2*e*g + 48*b^2*c*d*e^2*g))/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((8*c*g*(2*b*e - 3*c*d))/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((24*c^3*e^2*(b*g - c*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6) - (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6)))/e - (26*b^2*c^2*e^2*g - 96*c^4*d^2*g + 128*c^4*d*e*f - 88*b*c^3*e^2*f + 32*b*c^3*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6)))/e + (2*b*c*(4*b^2*e^2*g - 24*c^2*d^2*g - 19*b*c*e^2*f + 32*c^2*d*e*f + 8*b*c*d*e*g))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((2*e^2*f)/(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5) - (2*d*e*g)/(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((2*b*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (4*c*d*g)/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + ((x*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))

))/(c*e^2) + (d*(b*e - c*d)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(10
5*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2*g*(e
*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b
*c^2*d*e))))/(c*e^2) - (2*c^2*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 360*c^
6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*g - 8
4*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) - (b*c*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*
c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(296*b^3*c^3*e^5*f - 116*b^4*c^2*e^5
*g - 2272*c^6*d^3*e^2*f + 480*c^6*d^4*e*g + 3768*b*c^5*d^2*e^3*f - 1932*b^2
*c^4*d*e^4*f + 80*b*c^5*d^3*e^2*g + 712*b^3*c^3*d*e^4*g - 1086*b^2*c^4*d^2*
e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*
(b*e - c*d)*((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f
- 176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g
- 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) + (16*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b
*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
) + (16*c^7*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 3
60*c^6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*
g - 84*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e))))/(c*e^2) + (2*c^2*(832*c^6*d^5*g + 332*b^4*c^2*e^5*f - 176*b^5
*c*e^5*g + 2880*c^6*d^4*e*f - 3280*b*c^5*d^4*e*g - 6896*b*c^5*d^3*e^2*f - 2
360*b^3*c^3*d*e^4*f + 1312*b^4*c^2*d*e^4*g + 6114*b^2*c^4*d^2*e^3*f + 5024*
b^2*c^4*d^3*e^2*g - 3712*b^3*c^3*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*
((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^6*d*
e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g +
3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16
*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e*g + 3*c*e
f))/(105(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*
d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f)
)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2
g(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 3
60*c^6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*
g - 84*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e)) - (b*c*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f -
 176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(296*b^3*c^3*e^5*f - 116*b^4*c^2*
e^5*g - 2272*c^6*d^3*e^2*f + 480*c^6*d^4*e*g + 3768*b*c^5*d^2*e^3*f - 1932*
b^2*c^4*d*e^4*f + 80*b*c^5*d^3*e^2*g + 712*b^3*c^3*d*e^4*g - 1086*b^2*c^4*d
^2*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))) +
 (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((2*c^2
*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^6*d*e^4*f +
 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f
))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^
2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2

 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(1
05*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*d*e^2*g
*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) + (d*(b*e - c*d)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*
(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2*g*(e*(
b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) - (2*c^2*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 360*c^6*
d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*g - 84*
b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) - (b*c*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^
6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(296*b^3*c^3*e^5*f - 116*b^4*c^2*e^5*g
 - 2272*c^6*d^3*e^2*f + 480*c^6*d^4*e*g + 3768*b*c^5*d^2*e^3*f - 1932*b^2*c
^4*d*e^4*f + 80*b*c^5*d^3*e^2*g + 712*b^3*c^3*d*e^4*g - 1086*b^2*c^4*d^2*e^
3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b
*e - c*d)*((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f -
176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g -
5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) + (16*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e
*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
+ (16*c^7*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e))))/(c*e^2) + (b*c*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 360
*c^6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*g
- 84*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))))/(c*e^2) + (b*c*(832*c^6*d^5*g + 332*b^4*c^2*e^5*f - 176*b^5*c*e
^5*g + 2880*c^6*d^4*e*f - 3280*b*c^5*d^4*e*g - 6896*b*c^5*d^3*e^2*f - 2360*
b^3*c^3*d*e^4*f + 1312*b^4*c^2*d*e^4*g + 6114*b^2*c^4*d^2*e^3*f + 5024*b^2*
c^4*d^3*e^2*g - 3712*b^3*c^3*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
(d + e*x)^2*(b*e - c*d + c*e*x)^2) + ((x*(((e*(b*e - c*d) + c*d*e)*(((e*(b*
e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*c^7*e^2*(28*c^2*d^2*g - 45
*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d
)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*
c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e
- 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(
b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7
e^3(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^8*e^
3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*
d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e -
2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(408*b^2
*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 9
6*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g +
68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^
2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(736*b^3*c^4*e^5*f - 264*b
^4*c^3*e^5*g - 6272*c^7*d^3*e^2*f + 640*c^7*d^4*e*g + 10464*b*c^6*d^2*e^3*f
 - 5232*b^2*c^5*d*e^4*f + 1216*b*c^6*d^3*e^2*g + 1952*b^3*c^4*d*e^4*g - 348
0*b^2*c^5*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - (d*(b*e - c*d)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*
c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g -

5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(7104*c^7*d^5*g + 948*b^4*c^3*e^5*f - 732*b^5*c^2*e^5*g + 21696*c^7*d^4*e*f - 28928*b*c^6*d^4*e*g - 40256*b*c^6*d^3*e^2*f - 8320*b^3*c^4*d*e^4*f + 6636*b^4*c^3*d*e^4*g + 27576*b^2*c^5*d^2*e^3*f + 38688*b^2*c^5*d^3*e^2*g - 23360*b^3*c^4*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(736*b^3*c^4*e^5*f - 264*b^4*c^3*e^5*g - 6272*c^7*d^3*e^2*f + 640*c^7*d^4*e*g + 10464*b*c^6*d^2*e^3*f - 5232*b^2*c^5*d*e^4*f + 1216*b*c^6*d^3*e^2*g + 1952*b^3*c^4*d*e^4*g - 3480*b^2*c^5*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(736*b^3*c^4*e^5*f - 264*b^4*c^3*e^5*g - 6272*c^7*d^3*e^2*f + 640*c^7*d^4*e*g + 10464*b*c^6*d^2*e^3*f - 5232*b^2*c^5*d*e^4*f + 1216*b*c^6*d^3*e^2*g + 1952*b^3*c^4*d*e^4*g - 3480*b^2*c^5*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b*e - c*d)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2

```
*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e
*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*
e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f)
)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e
^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
))))/(c*e^2) + (b*c*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e
^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*
e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(
7104*c^7*d^5*g + 948*b^4*c^3*e^5*f - 732*b^5*c^2*e^5*g + 21696*c^7*d^4*e*f
- 28928*b*c^6*d^4*e*g - 40256*b*c^6*d^3*e^2*f - 8320*b^3*c^4*d*e^4*f + 6636
*b^4*c^3*d*e^4*g + 27576*b^2*c^5*d^2*e^3*f + 38688*b^2*c^5*d^3*e^2*g - 2336
0*b^3*c^4*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*
d + c*e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2000 $\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=358

$$\frac{256c^3(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^7\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32c^2(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{4c(-3beg}{21e^2(d+ex)(2cd-be)^3}$$

Rubi [A] time = 0.51, antiderivative size = 358, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 658, 614, 613}

$$\frac{256c^3(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^7\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32c^2(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{4c(-3beg+2cdg+4cef)}{21e^2(d+ex)(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(-3beg+2cdg+4cef)}{21e^2(d+ex)^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(ef-dg)}{9e^2(d+ex)^3(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x]
```

```
[Out] (32*c^2*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x))/(63*e*(2*c*d - b*e)^5*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(e*f - d*g))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^3*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(4*c*e
*f + 2*c*d*g - 3*b*e*g))/(21*e^2*(2*c*d - b*e)^2*(d + e*x)^2*(d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2)^(3/2)) - (4*c*(4*c*e*f + 2*c*d*g - 3*b*e*g))/(21*e^
2*(2*c*d - b*e)^3*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) +
(256*c^3*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x))/(63*e*(2*c*d - b*e)^7*S
qrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
```

```
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{2(ef-dg)}{9e^2(2cd-be)(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(4cef\ \cdots}{\cdots}$$

$$= -\frac{2(ef-dg)}{9e^2(2cd-be)(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{\cdots}{21e^2(2\cdots}$$

$$= -\frac{2(ef-dg)}{9e^2(2cd-be)(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{\cdots}{21e^2(2\cdots}$$

$$= \frac{32c^2(4cef+2cdg-3beg)(b+2cx)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{\cdots}{9e^2(2cd-be)(d\cdots}$$

$$= \frac{32c^2(4cef+2cdg-3beg)(b+2cx)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{\cdots}{9e^2(2cd-be)(d\cdots}$$

Mathematica [A] time = 0.36, size = 598, normalized size = 1.67

$$\frac{2(-be+cd-cex)(-g(cd-be)-cef)}{3ce(d+ex)^2(-e(cd-be)-cde)((d+ex)(c(d-ex)-be))^{5/2}}-\frac{2(d+ex)^{5/2}(-be+cd-cex)^{5/2}\left(\frac{10ce\left(\frac{8ce\left(\frac{6ce\left(\frac{4ce\left(\frac{2}{\sqrt{d+ex}(-e(cd-be)-cde)\sqrt{-be+cd-cex}}-\frac{4ce\sqrt{d+ex}}{(-e(cd-be)-cde)(e(cd-be)+cde)\sqrt{-be+cd-cex}}\right)}{3(e(cd-be)+cde)}-\frac{2}{3(d+ex)^{3/2}(e(cd-be)+cde)\sqrt{-be+cd-cex}}\right)}{5(e(cd-be)+cde)}-\frac{2}{5(d+ex)^{5/2}(e(cd-be)+cde)\sqrt{-be+cd-cex}}\right)}{7(e(cd-be)+cde)}-\frac{2}{7(d+ex)^{7/2}(e(cd-be)+cde)\sqrt{-be+cd-cex}}\right)}{9(e(cd-be)+cde)}-\frac{2}{9(d+ex)^{9/2}(e(cd-be)+cde)\sqrt{-be+cd-cex}}\right)\left(6ce^2f-g\left(\frac{3cde}{2}-\frac{9}{2}e(cd-be)\right)\right)}{3ce(-e(cd-be)-cde)((d+ex)(c(d-ex)-be))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
)),x]
```

```
[Out] (2*(-(c*e*f) - (c*d - b*e)*g)*(c*d - b*e - c*e*x))/(3*c*e*(-(c*d*e) - e*(c*
d - b*e))*(d + e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)) - (2*(6*c*e
^2*f - ((3*c*d*e)/2 - (9*e*(c*d - b*e))/2)*g)*(d + e*x)^(5/2)*(c*d - b*e -
c*e*x)^(5/2)*(-2/(9*(c*d*e + e*(c*d - b*e))*(d + e*x)^(9/2)*Sqrt[c*d - b*e
- c*e*x]) + (10*c*e*(-2/(7*(c*d*e + e*(c*d - b*e))*(d + e*x)^(7/2)*Sqrt[c*d
 - b*e - c*e*x]) + (8*c*e*(-2/(5*(c*d*e + e*(c*d - b*e))*(d + e*x)^(5/2)*Sq
rt[c*d - b*e - c*e*x]) + (6*c*e*(-2/(3*(c*d*e + e*(c*d - b*e))*(d + e*x)^(3
/2)*Sqrt[c*d - b*e - c*e*x]) + (4*c*e*(2/((-(c*d*e) - e*(c*d - b*e))*Sqrt[d
 + e*x]*Sqrt[c*d - b*e - c*e*x]) - (4*c*e*Sqrt[d + e*x])/((-(c*d*e) - e*(c*
d - b*e))*(c*d*e + e*(c*d - b*e))*Sqrt[c*d - b*e - c*e*x])))/(3*(c*d*e + e*
(c*d - b*e)))))/(5*(c*d*e + e*(c*d - b*e)))))/(7*(c*d*e + e*(c*d - b*e)))))
/(9*(c*d*e + e*(c*d - b*e)))))/(3*c*e*(-(c*d*e) - e*(c*d - b*e))*((d + e*x)
*(-(b*e) + c*(d - e*x)))^(5/2))
```

IntegrateAlgebraic [F] time = 180.26, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.74Unable to transpose Err
or: Bad Argument Value
```

maple [**B**] time = 0.06, size = 1036, normalized size = 2.89

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/63*(c*e*x+b*e-c*d)*(-768*b*c^5*e^7*g*x^6+512*c^6*d*e^6*g*x^6+1024*c^6*e^
7*f*x^6-1152*b^2*c^4*e^7*g*x^5-1536*b*c^5*d*e^6*g*x^5+1536*b*c^5*e^7*f*x^5+
1536*c^6*d^2*e^5*g*x^5+3072*c^6*d*e^6*f*x^5-288*b^3*c^3*e^7*g*x^4-4416*b^2*
c^4*d*e^6*g*x^4+384*b^2*c^4*e^7*f*x^4+1920*b*c^5*d^2*e^5*g*x^4+6144*b*c^5*d
*e^6*f*x^4+768*c^6*d^3*e^4*g*x^4+1536*c^6*d^2*e^5*f*x^4+48*b^4*c^2*e^7*g*x^
3-1472*b^3*c^3*d*e^6*g*x^3-64*b^3*c^3*e^7*f*x^3-5376*b^2*c^4*d^2*e^5*g*x^3+
1920*b^2*c^4*d*e^6*f*x^3+6912*b*c^5*d^3*e^4*g*x^3+8448*b*c^5*d^2*e^5*f*x^3-
1792*c^6*d^4*e^3*g*x^3-3584*c^6*d^3*e^4*f*x^3-18*b^5*c*e^7*g*x^2+300*b^4*c^
2*d*e^6*g*x^2+24*b^4*c^2*e^7*f*x^2-3216*b^3*c^3*d^2*e^5*g*x^2-384*b^3*c^3*d
*e^6*f*x^2-288*b^2*c^4*d^3*e^4*g*x^2+4032*b^2*c^4*d^2*e^5*f*x^2+4704*b*c^5*
d^4*e^3*g*x^2+3072*b*c^5*d^3*e^4*f*x^2-2112*c^6*d^5*e^2*g*x^2-4224*c^6*d^4*
e^3*f*x^2+9*b^6*e^7*g*x-132*b^5*c*d*e^6*g*x-12*b^5*c*e^7*f*x+876*b^4*c^2*d^
2*e^5*g*x+168*b^4*c^2*d*e^6*f*x-4128*b^3*c^3*d^3*e^4*g*x-1056*b^3*c^3*d^2*e
^5*f*x+4848*b^2*c^4*d^4*e^3*g*x+4800*b^2*c^4*d^3*e^4*f*x-1344*b*c^5*d^5*e^2
*g*x-3264*b*c^5*d^4*e^3*f*x-192*c^6*d^6*e*g*x-384*c^6*d^5*e^2*f*x+2*b^6*d*e
^6*g+7*b^6*e^7*f-30*b^5*c*d^2*e^5*g-96*b^5*c*d*e^6*f+204*b^4*c^2*d^3*e^4*g+
564*b^4*c^2*d^2*e^5*f-976*b^3*c^3*d^4*e^3*g-1856*b^3*c^3*d^3*e^4*f+1344*b^2
*c^4*d^5*e^2*g+3984*b^2*c^4*d^4*e^3*f-480*b*c^5*d^6*e*g-3840*b*c^5*d^5*e^2*
f-64*c^6*d^7*g+1216*c^6*d^6*e*f)/(e*x+d)^2/(b^7*e^7-14*b^6*c*d*e^6+84*b^5*c
^2*d^2*e^5-280*b^4*c^3*d^3*e^4+560*b^3*c^4*d^4*e^3-672*b^2*c^5*d^5*e^2+448*
b*c^6*d^6*e-128*c^7*d^7)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 22.91, size = 33819, normalized size = 94.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)),x)
```

```
[Out] ((35968*c^9*d^6*g - 10062*b^5*c^4*e^6*f + 5714*b^6*c^3*e^6*g + 279680*c^9*d
^5*e*f - 248960*b*c^8*d^5*e*g - 729600*b*c^8*d^4*e^2*f + 98950*b^4*c^5*d*e^
5*f - 57260*b^5*c^4*d*e^5*g + 755040*b^2*c^7*d^3*e^3*f - 387748*b^3*c^6*d^2
*e^4*f + 504032*b^2*c^7*d^4*e^2*g - 473132*b^3*c^6*d^3*e^3*g + 231104*b^4*c
^5*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^11) - x*((b*((b*((b*((b*((32*c^8*e^3*(
4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(94
5*(b*e - 2*c*d)^11)))/c - (16*c^7*e^2*(20*c^2*d^2*g - 43*b^2*e^2*g + 61*b*c
*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945*(b*e - 2*c*d)^11) + (32*c^8*e^2
*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11)))/c + (1608*b^2*c^7*e^6*f - 912*
b^3*c^6*e^6*g - 96*c^9*d^2*e^4*f + 224*c^9*d^3*e^3*g - 2528*b*c^8*d*e^5*f +
 352*b*c^8*d^2*e^4*g + 1112*b^2*c^7*d*e^5*g)/(945*e^2*(b*e - 2*c*d)^11) + (
((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*
c^8*e^4*g)/(945*(b*e - 2*c*d)^11))*(c*d^2 - b*d*e))/(c*e^2)))/c - (326*b^4*
c^5*e^6*g - 1372*b^3*c^6*e^6*f + 19840*c^9*d^3*e^3*f - 5248*c^9*d^4*e^2*g -
 29904*b*c^8*d^2*e^4*f + 13056*b^2*c^7*d*e^5*f + 912*b*c^8*d^3*e^3*g - 3972
*b^3*c^6*d*e^5*g + 7056*b^2*c^7*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^11) + ((c
*d^2 - b*d*e)*((b*((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2
*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7*e^2*(20*c
^2*d^2*g - 43*b^2*e^2*g + 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945
*(b*e - 2*c*d)^11) + (32*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11))
)/(c*e^2)))/c + (1670*b^4*c^5*e^6*f - 1246*b^5*c^4*e^6*g + 60800*c^9*d^4*e^
2*f + 2432*c^9*d^5*e*g - 101760*b*c^8*d^3*e^3*f - 16104*b^3*c^6*d*e^5*f - 4
1728*b*c^8*d^4*e^2*g + 11442*b^4*c^5*d*e^5*g + 61368*b^2*c^7*d^2*e^4*f + 67
624*b^2*c^7*d^3*e^3*g - 41688*b^3*c^6*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^11)
 + ((c*d^2 - b*d*e)*((b*((b*((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(94
5*(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7
*e^2*(20*c^2*d^2*g - 43*b^2*e^2*g + 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*
e*g))/(945*(b*e - 2*c*d)^11) + (32*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2
*c*d)^11)))/c + (1608*b^2*c^7*e^6*f - 912*b^3*c^6*e^6*g - 96*c^9*d^2*e^4*f
+ 224*c^9*d^3*e^3*g - 2528*b*c^8*d*e^5*f + 352*b*c^8*d^2*e^4*g + 1112*b^2*c
^7*d*e^5*g)/(945*e^2*(b*e - 2*c*d)^11) + (((32*c^8*e^3*(4*c*d*g - 7*b*e*g +
 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)
)*(c*d^2 - b*d*e))/(c*e^2)))/(c*e^2)) + ((c*d^2 - b*d*e)*((b*((b*((b*((32*c
^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*c^8*e^
4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7*e^2*(20*c^2*d^2*g - 43*b^2*e^2*g
+ 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945*(b*e - 2*c*d)^11) + (32
*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11)))/c + (1608*b^2*c^7*e^6*
f - 912*b^3*c^6*e^6*g - 96*c^9*d^2*e^4*f + 224*c^9*d^3*e^3*g - 2528*b*c^8*d
*e^5*f + 352*b*c^8*d^2*e^4*g + 1112*b^2*c^7*d*e^5*g)/(945*e^2*(b*e - 2*c*d)
^11) + (((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11)
+ (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11))*(c*d^2 - b*d*e))/(c*e^2)))/c - (
326*b^4*c^5*e^6*g - 1372*b^3*c^6*e^6*f + 19840*c^9*d^3*e^3*f - 5248*c^9*d^4
*e^2*g - 29904*b*c^8*d^2*e^4*f + 13056*b^2*c^7*d*e^5*f + 912*b*c^8*d^3*e^3*
g - 3972*b^3*c^6*d*e^5*g + 7056*b^2*c^7*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^1
1) + ((c*d^2 - b*d*e)*((b*((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*
(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7*e
```

^2*(20*c^2*d^2*g - 43*b^2*e^2*g + 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945*(b*e - 2*c*d)^11) + (32*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11)))/(c*e^2)))/(c*e^2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (((32*c^3*g*(4*b*e - 7*c*d))/(945*e^2*(b*e - 2*c*d)^7) - (32*c^4*d*g)/(945*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((32*c^5*(c*d*g - 4*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))/e + (208*b^2*c^4*e^2*g - 512*c^6*d^2*g + 928*c^6*d*e*f - 592*b*c^5*e^2*f + 16*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^9)))/e - (4*b*c^3*(19*b^2*e^2*g - 64*c^2*d^2*g - 66*b*c*e^2*f + 116*c^2*d*e*f + 4*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^9))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(12*c*d*g - 13*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))/e - (352*c^6*d^2*g - 488*b^2*c^4*e^2*g - 1568*c^6*d*e*f + 912*b*c^5*e^2*f + 624*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^9)))/e + (4*b*c^3*(44*c^2*d^2*g - 49*b^2*e^2*g + 106*b*c*e^2*f - 196*c^2*d*e*f + 66*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^9))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4*b*c*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((8*c^3*e*(3*b*e*g + c*d*g - 4*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6) - (8*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6)))/e - (26*b^2*c^2*e^2*g - 136*c^4*d^2*g + 168*c^4*d*e*f - 116*b*c^3*e^2*f + 60*b*c^3*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6)))/e + (2*b*c*(4*b^2*e^2*g - 34*c^2*d^2*g - 25*b*c*e^2*f + 42*c^2*d*e*f + 14*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((824*b^2*c^4*e^3*f - 1024*c^6*d^3*g - 252*b^3*c^3*e^3*g + 1856*c^6*d^2*e*f - 2512*b*c^5*d*e^2*f + 816*b*c^5*d^2*e*g + 312*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9) + (d*((d*((16*c^5*(8*c*d*g - 11*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))/e - (784*b*c^5*e^3*f - 376*b^2*c^4*e^3*g - 1312*c^6*d*e^2*f + 416*c^6*d^2*e*g + 368*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((928*c^6*d^3*g + 704*b^2*c^4*e^3*f - 536*b^3*c^3*e^3*g + 736*c^6*d^2*e*f - 1712*b*c^5*d*e^2*f - 1872*b*c^5*d^2*e*g + 1736*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9) + (d*((d*((32*c^5*(9*c*d*g - 8*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))/e + (776*b^2*c^4*e^3*g - 1104*b*c^5*e^3*f + 1952*c^6*d*e^2*f + 224*c^6*d^2*e*g - 1488*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((2*c^2*e^3*(5*b*e*g + 4*c*d*g - 8*c*e*f))/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5)) - (4*c^3*d*e^3*g)/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5))))/e - (e*(8*b^2*c*e^3*g - 50*b*c^2*e^3*f + 68*c^3*d*e^2*f - 64*c^3*d^2*e*g + 38*b*c^2*d*e^2*g))/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5))))/e - (e*(20*c^3*d^3*g - 20*b^3*e^3*g + 52*b^2*c*e^3*f + 124*c^3*d^2*e*f - 158*b*c^2*d*e^2*f - 60*b*c^2*d^2*e*g + 60*b^2*c*d*e^2*g))/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((4*c*g*(5*b*e - 8*c*d))/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4*e*(5*c*d*g - 6*b*e*g + 4*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7) + (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7)))/e - (424*b*c^4*e^3*f - 196*b^2*c^3*e^3*g - 720*c^5*d*e^2*f + 272*c^5*d^2*e*g + 168*b*c^4*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7)))/e + (496*b^2*c^3*e^3*f - 816*c^5*d^3*g - 124*b^3*c^2*e^3*g + 1200*c^5*d^2*e*f - 1560*b*c^4*d*e^2*f + 760*b*c^4*d^2*e*g + 52*b^2*c^3*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((d*((8*c^5*e^5*(c*d*g - 5*b*e*g + 4*c*e*f))/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5)) + (8*c^6*d*e^5*g)/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d

e^5))))/e + (e(82*b^2*c^4*e^5*g - 144*c^6*d^2*e^3*g - 180*b*c^5*e^5*f + 2
32*c^6*d*e^4*f + 12*b*c^5*d*e^4*g))/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3
*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e + (e*(2*b^2*c^4*e^5*f +
8*b^3*c^3*e^5*g - 880*c^6*d^2*e^3*f + 232*c^6*d^3*e^2*g + 532*b*c^5*d*e^4*f
 + 308*b*c^5*d^2*e^3*g - 296*b^2*c^4*d*e^4*g))/(63*(b*e - 2*c*d)^6*(5*b^3*e
^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e + (e*(660*b^3
*c^3*e^5*f - 268*b^4*c^2*e^5*g - 4344*c^6*d^3*e^2*f + 888*c^6*d^4*e*g + 739
6*b*c^5*d^2*e^3*f - 3964*b^2*c^4*d*e^4*f + 164*b*c^5*d^3*e^2*g + 1468*b^3*c
^3*d*e^4*g - 2126*b^2*c^4*d^2*e^3*g))/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c
^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e - (e*(1504*c^6*d^5*g +
 640*b^4*c^2*e^5*f - 336*b^5*c*e^5*g + 5280*c^6*d^4*e*f - 5956*b*c^5*d^4*e*
g - 12732*b*c^5*d^3*e^2*f - 4460*b^3*c^3*d*e^4*f + 2452*b^4*c^2*d*e^4*g + 1
1398*b^2*c^4*d^2*e^3*f + 9180*b^2*c^4*d^3*e^2*g - 6844*b^3*c^3*d^2*e^3*g))/
(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2
*c*d*e^5)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((2
*e^2*f)/(9*b^3*e^6 - 72*c^3*d^3*e^3 + 108*b*c^2*d^2*e^4 - 54*b^2*c*d*e^5) -
 (2*d*e*g)/(9*b^3*e^6 - 72*c^3*d^3*e^3 + 108*b*c^2*d^2*e^4 - 54*b^2*c*d*e^5
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((3952*b^4*c
^4*e^5*f - 7936*c^8*d^5*g - 1640*b^5*c^3*e^5*g + 42240*c^8*d^4*e*f + 704*b*
c^7*d^4*e*g - 96960*b*c^7*d^3*e^2*f - 29716*b^3*c^5*d*e^4*f + 11624*b^4*c^4
*d*e^4*g + 81512*b^2*c^6*d^2*e^3*f + 24984*b^2*c^6*d^3*e^2*g - 28344*b^3*c^
5*d^2*e^3*g)/(945*e^2*(b*e - 2*c*d)^11) - (d*((1900*b^3*c^5*e^5*f - 824*b^4
*c^4*e^5*g - 24960*c^8*d^3*e^2*f + 3968*c^8*d^4*e*g + 35168*b*c^7*d^2*e^3*f
 - 15272*b^2*c^6*d*e^4*f + 5792*b*c^7*d^3*e^2*g + 6588*b^3*c^5*d*e^4*g - 13
600*b^2*c^6*d^2*e^3*g)/(945*e^2*(b*e - 2*c*d)^11) + (d*((d*((d*((16*c^7*e^2
*(12*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*c^8*d*e^2*g)
/(945*(b*e - 2*c*d)^11)))/e - (8*c^6*e*(16*c^2*d^2*g - 95*b^2*e^2*g + 130*b
*c*e^2*f - 196*c^2*d*e*f + 130*b*c*d*e*g))/(945*(b*e - 2*c*d)^11)))/e + (19
36*b^2*c^6*e^5*f - 948*b^3*c^5*e^5*g + 2272*c^8*d^2*e^3*f - 1248*c^8*d^3*e^
2*g - 4624*b*c^7*d*e^4*f + 928*b*c^7*d^2*e^3*g + 1472*b^2*c^6*d*e^4*g)/(945
e^2(b*e - 2*c*d)^11)))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((2*b*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (4*c*d*g
)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^4 - (((16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5) - (16*c^2*g*(2*b*e - 3*c*d))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((
16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (16*c^2*g*(2*b*e
- 5*c*d))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((8*c^4*e^2*(7*b*g - 8*c*f)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7) - (16*c^5*d*e*g)/(315*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^7)))/e - (76*b^2*c^3*e^2*g - 272*c^5*d^2*g + 400*c
^5*d*e*f - 264*b*c^4*e^2*f + 72*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^7)))/e + (2*b*c^2*(13*b^2*e^2*g - 68*c^2*d^2*g - 58*b*c*e^2*f + 10
0*c^2*d*e*f + 18*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((d*((
32*c^7*e^2*(3*c*d*g - 6*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*c^8*
d*e^2*g)/(945*(b*e - 2*c*d)^11)))/e - (16*c^6*e*(26*c^2*d^2*g - 31*b^2*e^2*
g + 53*b*c*e^2*f - 74*c^2*d*e*f + 23*b*c*d*e*g))/(945*(b*e - 2*c*d)^11)))/e
 - (8*c^5*e*(160*c^3*d^2*f + 42*b^3*e^2*g - 158*b*c^2*d^2*g - 95*b^2*c*e^2*
f + 62*b*c^2*d*e*f + 29*b^2*c*d*e*g))/(945*(b*e - 2*c*d)^11)))/e + (3968*c^
8*d^4*g + 2452*b^3*c^5*e^4*f - 1022*b^4*c^4*e^4*g - 21120*c^8*d^3*e*f + 262
4*b*c^7*d^3*e*g + 32960*b*c^7*d^2*e^2*f - 16232*b^2*c^6*d*e^3*f + 6396*b^3*
c^5*d*e^3*g - 10840*b^2*c^6*d^2*e^2*g)/(945*e*(b*e - 2*c*d)^11)))/e - (1318
*b^4*c^4*e^4*f - 544*b^5*c^3*e^4*g + 1984*b*c^7*d^4*g - 10560*b*c^7*d^3*e*f
 - 8092*b^3*c^5*d*e^3*f + 1312*b^2*c^6*d^3*e*g + 3100*b^4*c^4*d*e^3*g + 161
60*b^2*c^6*d^2*e^2*f - 5156*b^3*c^5*d^2*e^2*g)/(945*e*(b*e - 2*c*d)^11))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((184*b^2*c
^5*e^4*f - 66*b^3*c^4*e^4*g - 1232*c^7*d^2*e^2*f + 208*c^7*d^3*e*g + 440*b*
c^6*d*e^3*f + 688*b*c^6*d^2*e^2*g - 400*b^2*c^5*d*e^3*g)/(315*(3*b*e^2 - 6*

c*d*e)*(b*e - 2*c*d)^9) + (d*((d*((8*c^6*e^3*(4*c*d*g - 11*b*e*g + 8*c*e*f)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^9) + (16*c^7*d*e^3*g)/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^9)))/e - (4*c^5*e^2*(64*c^2*d^2*g - 51*b^2*e^2*g
 + 98*b*c*e^2*f - 132*c^2*d*e*f + 18*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^9)))/e))/e + (1984*c^7*d^4*g + 1318*b^3*c^4*e^4*f - 544*b^4*c^
3*e^4*g - 9920*c^7*d^3*e*f + 784*b*c^6*d^3*e*g + 16112*b*c^6*d^2*e^2*f - 82
76*b^2*c^5*d*e^3*f + 3166*b^3*c^4*d*e^3*g - 4960*b^2*c^5*d^2*e^2*g)/(315*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^9)))/e - (660*b^4*c^3*e^4*f - 268*b^5*c^2*e
^4*g + 992*b*c^6*d^4*g - 4960*b*c^6*d^3*e*f - 3962*b^3*c^4*d*e^3*f + 444*b^
2*c^5*d^3*e*g + 1476*b^4*c^3*d*e^3*g + 7748*b^2*c^5*d^2*e^2*f - 2340*b^3*c^
4*d^2*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^9))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - ((x*(((e*(b*e - c*d) + c*d*e)*(((e*
(b*e - c*d) + c*d*e)*((2*c^2*(348*b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448
*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*
d*e^6*f - 22160*b*c^8*d^4*e^3*g + 4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*
e^5*f + 33700*b^2*c^7*d^3*e^4*g - 18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2
*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(
((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*
g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e
 - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*
e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))
/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e
^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e
 - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d
)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/
(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^
6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c
^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6
*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c
^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*
c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*
e^2) - (d*(b*e - c*d)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^
2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 1
5*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15
*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*
f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516
*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^
7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 + (b*c*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^
9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*
g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*
b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*
d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16
*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(
b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(
945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b

*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d
)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*
c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b
*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(9
45*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^
2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*
e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(9
45*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*
(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g
))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) +
(b*c*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*
d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^
4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(3248*b^6*c^3*e
^7*g - 5692*b^5*c^4*e^7*f + 149760*c^9*d^5*e^2*f + 15360*c^9*d^6*e*g - 4048
48*b*c^8*d^4*e^3*f + 56224*b^4*c^5*d*e^6*f - 122064*b*c^8*d^5*e^2*g - 32356
*b^5*c^4*d*e^6*g + 427364*b^2*c^7*d^3*e^4*f - 220918*b^3*c^6*d^2*e^5*f + 26
4872*b^2*c^7*d^4*e^3*g - 259042*b^3*c^6*d^3*e^4*g + 129352*b^4*c^5*d^2*e^5*
g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e
 - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44
*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/
(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*
d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d
)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d)
+ c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16
*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
)/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(
945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(
b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) +
 c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*
b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5
*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*
c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*
f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e))))/(c*e^2) - (d*(b*e - c*d)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 1
30*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*
c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*
c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c
*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^
2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3
*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5
*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 41
64*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*
f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c
^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
)/(c*e^2) - (b*c*(348*b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3
*f + 1104*c^9*d^5*e^2*g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22
160*b*c^8*d^4*e^3*g + 4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 3370

0*b^2*c^7*d^3*e^4*g - 18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((2*c^2*(348*b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22160*b*c^8*d^4*e^3*g + 4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 33700*b^2*c^7*d^3*e^4*g - 18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130 *b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(57088*c^9*d^7*g + 5000*b^6*c^3*e^7*f - 3096*b^7*c^2*e^7*g + 149760*c^9*d^6*e*f - 282368*b*c^8*d^6*e*g - 524160*b*c^8*d^5*e^2*f - 54308*b^5*c^4*d*e^6*f + 35096*b^6*c^3*d*e^6*g + 756412*b^2*c^7*d^4*e^3*f - 575502*b^3*c^6*d^3*e^4*f + 243428*b^4*c^5*d^2*e^5*f + 585108*b^2*c^7*d^5*e^2*g - 657804*b^3*c^6*d^4*e^3*g + 433220*b^4*c^5*d^3*e^4*g - 167244*b^5*c^4*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (b*c*(3248*b^6*c^3*e^7*g - 5692*b^5*c^4*e^7*f + 149760*c^9*d^5*e^2*f + 15360*c^9*d^6*e*g - 404848*b*c^8*d^4*e^3*f + 56224*b^4*c^5*d*e^6*f - 122064*b*c^8*d^5*e^2*g - 32356*b^5*c^4*d*e^6*g + 427364*b^2*c^7*d^3*e^4*f - 220918*b^3*c^6*d^2*e^5*f + 264872*b^2*c^7*d^4*e^3*g - 259042*b^3*c^6*d^3*e^4*g + 129352*b^4*c^5*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(348*b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22160*b*c^8*d^4*e^3*g + 4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 33700*b^2*c^7*d^3*e^4*g - 18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*

c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*
c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c
^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c
*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^
10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c
*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^
10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^
6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b
*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130
*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(8*b^4*c^5*e^7*g - 398*b^3*c^
6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f
+ 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*
b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e))))/(c*e^2) + (2*c^2*(3248*b^6*c^3*e^7*g - 5692*b^5*c^4*e^7*f + 149760
*c^9*d^5*e^2*f + 15360*c^9*d^6*e*g - 404848*b*c^8*d^4*e^3*f + 56224*b^4*c^5
*d*e^6*f - 122064*b*c^8*d^5*e^2*g - 32356*b^5*c^4*d*e^6*g + 427364*b^2*c^7*
d^3*e^4*f - 220918*b^3*c^6*d^2*e^5*f + 264872*b^2*c^7*d^4*e^3*g - 259042*b^
3*c^6*d^3*e^4*g + 129352*b^4*c^5*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*
(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*
c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g
 - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g
 - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g
 - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c
^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^
7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8
*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99
*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c
d)^9(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((8
*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*
b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
(e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*
(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*
(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(
b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b
*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c
*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f -
 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*
c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e
 - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7
*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*

d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(348*b^4*c^5*e^7*
f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*g - 45032*b*
c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22160*b*c^8*d^4*e^3*g + 4316*b^4*c^5
*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 33700*b^2*c^7*d^3*e^4*g - 18386*b^3*c^
6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
))/(c*e^2) + (b*c*(57088*c^9*d^7*g + 5000*b^6*c^3*e^7*f - 3096*b^7*c^2*e^7*
g + 149760*c^9*d^6*e*f - 282368*b*c^8*d^6*e*g - 524160*b*c^8*d^5*e^2*f - 54
308*b^5*c^4*d*e^6*f + 35096*b^6*c^3*d*e^6*g + 756412*b^2*c^7*d^4*e^3*f - 57
5502*b^3*c^6*d^3*e^4*f + 243428*b^4*c^5*d^2*e^5*f + 585108*b^2*c^7*d^5*e^2*
g - 657804*b^3*c^6*d^4*e^3*g + 433220*b^4*c^5*d^3*e^4*g - 167244*b^5*c^4*d^
2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d + e*x)^2*(b*e - c*d + c*e*x)
^2) + ((x*((d*(b*e - c*d)*((2*c^2*(3696*b^4*c^6*e^7*f - 3096*b^5*c^5*e^7*g
+ 121024*c^10*d^4*e^3*f + 6208*c^10*d^5*e^2*g - 194336*b*c^9*d^3*e^4*f - 28
872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^4*e^3*g + 23856*b^4*c^6*d*e^6*g + 11083
2*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8*d^3*e^4*g - 84648*b^3*c^7*d^2*e^5*g))/
(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e -
 c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^1
0*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b
*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
(e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(
e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/
(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*
e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f
))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11
*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c
^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f -
992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^
2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^1
0*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b
*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
(e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(
e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/
(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*
e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^1
0*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d
*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5
*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*
(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d
^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g)
)/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
+ (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 10
3*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2
*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*
((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/

(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e
^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2
) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e
 - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) +
c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*
b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
)/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*
e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 43
20*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 16
4*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g +
31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*
b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^
8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
)))/(c*e^2) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(3
696*b^4*c^6*e^7*f - 3096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f + 6208*c^10*
d^5*e^2*g - 194336*b*c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^
4*e^3*g + 23856*b^4*c^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8
*d^3*e^4*g - 84648*b^3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*
d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g
+ 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^
5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e -
2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^
10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64
*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945
*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g
)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) -
(2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216
*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d
*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f
+ 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g
+ 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^
5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e -
2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^
10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7
*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g -
46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440
*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e
^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*
b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2

+ b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(11720*b^6*c^4*e^7*g - 18872*b^5*c^5*e^7*f + 440320*c^10*d^5*e^2*f + 103424*c^10*d^6*e*g - 1221824*b*c^9*d^4*e^3*f + 181328*b^4*c^6*d*e^6*f - 536640*b*c^9*d^5*e^2*g - 115576*b^5*c^5*d*e^6*g + 1318992*b^2*c^8*d^3*e^4*f - 696440*b^3*c^7*d^2*e^5*f + 1020704*b^2*c^8*d^4*e^3*g - 947048*b^3*c^7*d^3*e^4*g + 463360*b^4*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808

```
*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c
^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2
*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (
b*c*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^
10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^
6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e
^2) - (b*c*(3696*b^4*c^6*e^7*f - 3096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f
 + 6208*c^10*d^5*e^2*g - 194336*b*c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 8
8896*b*c^9*d^4*e^3*g + 23856*b^4*c^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 1
40240*b^2*c^8*d^3*e^4*g - 84648*b^3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(451840*c^10*d^7
*g + 8492*b^6*c^4*e^7*f - 6844*b^7*c^3*e^7*g + 1076480*c^10*d^6*e*f - 20679
68*b*c^9*d^6*e*g - 3009280*b*c^9*d^5*e^2*f - 120776*b^5*c^5*d*e^6*f + 99044
*b^6*c^4*d*e^6*g + 3456144*b^2*c^8*d^4*e^3*f - 2084264*b^3*c^7*d^3*e^4*f +
694544*b^4*c^6*d^2*e^5*f + 3720112*b^2*c^8*d^5*e^2*g - 3506000*b^3*c^7*d^4*
e^3*g + 1895152*b^4*c^6*d^3*e^4*g - 591664*b^5*c^5*d^2*e^5*g))/(945*e*(b*e
- 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(11720*b^6*c^4*e^
7*g - 18872*b^5*c^5*e^7*f + 440320*c^10*d^5*e^2*f + 103424*c^10*d^6*e*g - 1
221824*b*c^9*d^4*e^3*f + 181328*b^4*c^6*d*e^6*f - 536640*b*c^9*d^5*e^2*g -
115576*b^5*c^5*d*e^6*g + 1318992*b^2*c^8*d^3*e^4*f - 696440*b^3*c^7*d^2*e^5
*f + 1020704*b^2*c^8*d^4*e^3*g - 947048*b^3*c^7*d^3*e^4*g + 463360*b^4*c^6*
d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
 - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(3696*b^4*c^6*e^7*f - 3
096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f + 6208*c^10*d^5*e^2*g - 194336*b*
c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^4*e^3*g + 23856*b^4*c
^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8*d^3*e^4*g - 84648*b^
3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d)
 + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164
*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 -
 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g
 + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*
b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g -
15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^
11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*
e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 713
6*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e
- 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*
d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(94
5*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b
*e - c*d)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164
*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 -
 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g
 + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*
b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6
*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f
 + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 78
```

88*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(11720*b^6*c^4*e^7*g - 18872*b^5*c^5*e^7*f + 440320*c^10*d^5*e^2*f + 103424*c^10*d^6*e*g - 1221824*b*c^9*d^4*e^3*f + 181328*b^4*c^6*d*e^6*f - 536640*b*c^9*d^5*e^2*g - 115576*b^5*c^5*d*e^6*g + 1318992*b^2*c^8*d^3*e^4*f - 696440*b^3*c^7*d^2*e^5*f + 1020704*b^2*c^8*d^4*e^3*g - 947048*b^3*c^7*d^3*e^4*g + 463360*b^4*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))

```
/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d)
)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) +
(2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 857
6*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c
^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e
- 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(4384*b^2*c^8*e^7
*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b
*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2
*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(3696*b^4*
c^6*e^7*f - 3096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f + 6208*c^10*d^5*e^2*
g - 194336*b*c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^4*e^3*g
+ 23856*b^4*c^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8*d^3*e^4
*g - 84648*b^3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(451840*c^10*d^7*g + 8492*b^6*c^4*e^7*f
 - 6844*b^7*c^3*e^7*g + 1076480*c^10*d^6*e*f - 2067968*b*c^9*d^6*e*g - 3009
280*b*c^9*d^5*e^2*f - 120776*b^5*c^5*d*e^6*f + 99044*b^6*c^4*d*e^6*g + 3456
144*b^2*c^8*d^4*e^3*f - 2084264*b^3*c^7*d^3*e^4*f + 694544*b^4*c^6*d^2*e^5*
f + 3720112*b^2*c^8*d^5*e^2*g - 3506000*b^3*c^7*d^4*e^3*g + 1895152*b^4*c^6
*d^3*e^4*g - 591664*b^5*c^5*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
(d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**3/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2001 $\int (d+ex)^{5/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=347

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{3465c^5e^2(d+ex)^{3/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right.}{1155c^4e^2\sqrt{d+}}$$

Rubi [A] time = 0.62, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{3465c^5e^2(d+ex)^{3/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{1155c^4e^2\sqrt{d+ex}}-\frac{4\sqrt{d+ex}(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{231c^3e^2}-\frac{2(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{99c^2e^2}-\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(5/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-32*(2*c*d - b*e)^3*(11*c*e*f + 5*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(3/2))/(3465*c^5*e^2*(d + e*x)^(3/2)) - (16*(2*c*d - b*e)^2*
(11*c*e*f + 5*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))
/(1155*c^4*e^2*Sqrt[d + e*x]) - (4*(2*c*d - b*e)*(11*c*e*f + 5*c*d*g - 8*b*
e*g)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(231*c^3*e^
2) - (2*(11*c*e*f + 5*c*d*g - 8*b*e*g)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(99*c^2*e^2) - (2*g*(d + e*x)^(5/2)*(d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2)^(3/2))/(11*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{5/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11ce^2} - \frac{\left(2\left(\frac{3}{2}e\left(-2ce\right.\right.\right.}{}$$
$$= -\frac{2(11cef+5cdg-8beg)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2\right.}{99c^2e^2}$$
$$= -\frac{4(2cd-be)(11cef+5cdg-8beg)\sqrt{d+ex}\left(d(cd-be)-be\right.}{231c^3e^2}$$
$$= -\frac{16(2cd-be)^2(11cef+5cdg-8beg)\left(d(cd-be)-be^2x-c\right.}{1155c^4e^2\sqrt{d+ex}}$$
$$= -\frac{32(2cd-be)^3(11cef+5cdg-8beg)\left(d(cd-be)-be^2x-c\right.}{3465c^5e^2(d+ex)^{3/2}}$$

Mathematica [A] time = 0.23, size = 262, normalized size = 0.76

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\left(128b^4e^4g-16b^3ce^3(65dg+11ef+12egx)+24b^2c^2e^2\left(131d^2g+de(55f+57gx)+e^2x(11f+10gx)\right)-2bc^3e\left(2071d^3g+3d^2e(583f+558gx)+3de^2x(286f+245gx)+5e^3x^2(33f+28gx)\right)+c^4\left(1910d^4g+d^3e(3509f+2865gx)+3d^2e^2x(1177f+905gx)+5de^3x^2(363f+287gx)+35e^4x^3(11f+9gx)\right)\right)}{3465c^5e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(5/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(128*b^4*e
^4*g - 16*b^3*c*e^3*(11*e*f + 65*d*g + 12*e*g*x) + 24*b^2*c^2*e^2*(131*d^2*
g + e^2*x*(11*f + 10*g*x) + d*e*(55*f + 57*g*x)) - 2*b*c^3*e*(2071*d^3*g +
5*e^3*x^2*(33*f + 28*g*x) + 3*d*e^2*x*(286*f + 245*g*x) + 3*d^2*e*(583*f +
558*g*x)) + c^4*(1910*d^4*g + 35*e^4*x^3*(11*f + 9*g*x) + 5*d*e^3*x^2*(363*
f + 287*g*x) + 3*d^2*e^2*x*(1177*f + 905*g*x) + d^3*e*(3509*f + 2865*g*x)))
)/(3465*c^5*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.88, size = 401, normalized size = 1.16

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}\left(128b^4e^4g-192b^3ce^3g(d+ex)-848b^3cde^3g-176b^3ce^4f+2016b^2c^2d^2e^2g+264b^2c^2e^3f(d+ex)+1056b^2c^2de^3f+240b^2c^2e^2g(d+ex)^2+888b^2c^2de^2g(d+ex)-1984bc^3d^3eg-2112bc^3d^2e^2f-1248bc^3d^2eg(d+ex)-330bc^3e^2f(d+ex)^2-1056bc^3de^2f(d+ex)-280bc^3eg(d+ex)^3-630bc^3deg(d+ex)^2+640c^4d^4g+1408c^4d^3ef+480c^4d^3g(d+ex)+1056c^4d^2ef(d+ex)+300c^4d^2g(d+ex)^2+385c^4ef(d+ex)^3+660c^4def(d+ex)^2+315c^4g(d+ex)^4+175c^4dg(d+ex)^3\right)}{3465c^5e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)^(5/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x -
 c*e^2*x^2],x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(3/2)*(1408*c^4*d^3*e*f - 211
2*b*c^3*d^2*e^2*f + 1056*b^2*c^2*d*e^3*f - 176*b^3*c*e^4*f + 640*c^4*d^4*g
- 1984*b*c^3*d^3*e*g + 2016*b^2*c^2*d^2*e^2*g - 848*b^3*c*d*e^3*g + 128*b^4
*e^4*g + 1056*c^4*d^2*e*f*(d + e*x) - 1056*b*c^3*d*e^2*f*(d + e*x) + 264*b^
2*c^2*e^3*f*(d + e*x) + 480*c^4*d^3*g*(d + e*x) - 1248*b*c^3*d^2*e*g*(d + e
*x) + 888*b^2*c^2*d*e^2*g*(d + e*x) - 192*b^3*c*e^3*g*(d + e*x) + 660*c^4*d
*e*f*(d + e*x)^2 - 330*b*c^3*e^2*f*(d + e*x)^2 + 300*c^4*d^2*g*(d + e*x)^2
- 630*b*c^3*d*e*g*(d + e*x)^2 + 240*b^2*c^2*e^2*g*(d + e*x)^2 + 385*c^4*e*f
*(d + e*x)^3 + 175*c^4*d*g*(d + e*x)^3 - 280*b*c^3*e*g*(d + e*x)^3 + 315*c^
4*g*(d + e*x)^4))/(3465*c^5*e^2*(d + e*x)^(3/2))
```

fricas [A] time = 0.49, size = 499, normalized size = 1.44

$$\frac{2\left(315c^5e^5gx^5+35\left(11c^5e^5f+\left(32c^5de^4+bc^4e^5\right)g\right)x^4+5\left(11\left(26c^5de^4+bc^4e^5\right)f+\left(256c^5d^2e^3+49bc^4de^4-8b^2c^3e^5\right)g\right)x^3+3\left(11\left(52c^5d^2e^3+13bc^4de^4-2b^2c^3e^5\right)f+\left(50c^5d^3e^2+279bc^4d^2e^3-114b^2c^3de^4+16b^3c^2e^5\right)g\right)x^2-11\left(319c^5d^4e-637bc^4d^3e^2+438b^2c^3d^2e^3-136b^3c^2de^4+16b^4ce^5\right)f-2\left(955c^5d^5-3026bc^4d^4e+3643b^2c^3d^3e^2-2092b^3c^2d^2e^3+584b^4cde^4-64b^5e^5\right)g-\left(11\left(2c^5d^3e^2-159bc^4d^2e^3+60b^2c^3de^4-8b^3c^2e^5\right)f+\left(955c^5d^4e-2071bc^4d^3e^2+1572b^2c^3d^2e^3-520b^3c^2de^4+64b^4ce^5\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{3465\left(c^5e^3x+c^5de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/3465*(315*c^5*e^5*g*x^5 + 35*(11*c^5*e^5*f + (32*c^5*d*e^4 + b*c^4*e^5)*g
)*x^4 + 5*(11*(26*c^5*d*e^4 + b*c^4*e^5)*f + (256*c^5*d^2*e^3 + 49*b*c^4*d*
e^4 - 8*b^2*c^3*e^5)*g)*x^3 + 3*(11*(52*c^5*d^2*e^3 + 13*b*c^4*d*e^4 - 2*b^
2*c^3*e^5)*f + (50*c^5*d^3*e^2 + 279*b*c^4*d^2*e^3 - 114*b^2*c^3*d*e^4 + 16
*b^3*c^2*e^5)*g)*x^2 - 11*(319*c^5*d^4*e - 637*b*c^4*d^3*e^2 + 438*b^2*c^3*
d^2*e^3 - 136*b^3*c^2*d*e^4 + 16*b^4*c*e^5)*f - 2*(955*c^5*d^5 - 3026*b*c^4
*d^4*e + 3643*b^2*c^3*d^3*e^2 - 2092*b^3*c^2*d^2*e^3 + 584*b^4*c*d*e^4 - 64
*b^5*e^5)*g - (11*(2*c^5*d^3*e^2 - 159*b*c^4*d^2*e^3 + 60*b^2*c^3*d*e^4 - 8
*b^3*c^2*e^5)*f + (955*c^5*d^4*e - 2071*b*c^4*d^3*e^2 + 1572*b^2*c^3*d^2*e^
3 - 520*b^3*c^2*d*e^4 + 64*b^4*c*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d
^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^3*x + c^5*d*e^2)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(ex+d)^{\frac{5}{2}}\left(gx+f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(5/2)*(g*x +
 f), x)
```

maple [A]   time = 0.05, size = 367, normalized size = 1.06

$$\frac{2\,(cex+be-cd)\left(315g\,e^4x^4c^4-280b\,c^3e^4g\,x^3+1435c^4d\,e^3g\,x^3+385c^4e^4f\,x^3+240b^2c^2e^4g\,x^2-1470b\,c^3d\,e^3g\,x^2-330b\,c^3e^4f\,x^2+2715c^4d^2e^2g\,x^2+1815c^4d\,e^3f\,x^2-192b^3c\,e^4gx+1368b^2c^2d\,e^3gx+264b^2c^2e^4fx-3348b\,c^3d^2e^2gx-1716b\,c^3d\,e^3fx+2865c^4d^3egx+3531c^4d^2e^2fx+128b^4e^4g-1040b^3cd\,e^3g-176b^3c\,e^4f+3144b^2c^2d^2e^2g+1320b^2c^2d\,e^3f-4142b\,c^3d^3eg-3498b\,c^3d^2e^2f+1910c^4d^4g+3509f\,d^3c^4e\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}{3465\sqrt{ex+d}\;c^5e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 2/3465*(c*e*x+b*e-c*d)*(315*c^4*e^4*g*x^4-280*b*c^3*e^4*g*x^3+1435*c^4*d*e^
3*g*x^3+385*c^4*e^4*f*x^3+240*b^2*c^2*e^4*g*x^2-1470*b*c^3*d*e^3*g*x^2-330*
b*c^3*e^4*f*x^2+2715*c^4*d^2*e^2*g*x^2+1815*c^4*d*e^3*f*x^2-192*b^3*c*e^4*g
*x+1368*b^2*c^2*d*e^3*g*x+264*b^2*c^2*e^4*f*x-3348*b*c^3*d^2*e^2*g*x-1716*b
*c^3*d*e^3*f*x+2865*c^4*d^3*e*g*x+3531*c^4*d^2*e^2*f*x+128*b^4*e^4*g-1040*b
^3*c*d*e^3*g-176*b^3*c*e^4*f+3144*b^2*c^2*d^2*e^2*g+1320*b^2*c^2*d*e^3*f-41
42*b*c^3*d^3*e*g-3498*b*c^3*d^2*e^2*f+1910*c^4*d^4*g+3509*c^4*d^3*e*f)*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/c^5/e^2/(e*x+d)^(1/2)
```

maxima [A]   time = 1.02, size = 501, normalized size = 1.44

$$\frac{2\left(35\,c^4e^4x^4-319\,c^4d^4+637\,bc^3d^3e-438\,b^2c^2d^2e^2+136\,b^3cde^3-16\,b^4e^4+5\left(26\,c^4de^3+bc^3e^4\right)x^3+3\left(52\,c^4d^2e^2+13\,bc^3de^3-2\,b^2c^2e^4\right)x^2-\left(2\,c^4d^3e-159\,bc^3d^2e^2+60\,b^2c^2de^3-8\,b^3ce^4\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)f}{315\left(c^4e^2x+c^4de\right)}+\frac{2\left(315\,c^5e^5x^5-1910\,c^5d^5+6052\,bc^4d^4e-7286\,b^2c^3d^3e^2+4184\,b^3c^2d^2e^3-1168\,b^4cde^4+128\,b^5e^5+35\left(32\,c^5de^4+bc^4e^5\right)x^4+5\left(256\,c^5d^2e^3+49\,bc^4de^4-8\,b^2c^3e^5\right)x^3+3\left(50\,c^5d^3e^2+279\,bc^4d^2e^3-114\,b^2c^3de^4+16\,b^3c^2e^5\right)x^2-\left(955\,c^5d^4e-2071\,bc^4d^3e^2+1572\,b^2c^3d^2e^3-520\,b^3c^2de^4+64\,b^4ce^5\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)g}{3465\left(c^5e^3x+c^5de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/315*(35*c^4*e^4*x^4 - 319*c^4*d^4 + 637*b*c^3*d^3*e - 438*b^2*c^2*d^2*e^2
 + 136*b^3*c*d*e^3 - 16*b^4*e^4 + 5*(26*c^4*d*e^3 + b*c^3*e^4)*x^3 + 3*(52*
c^4*d^2*e^2 + 13*b*c^3*d*e^3 - 2*b^2*c^2*e^4)*x^2 - (2*c^4*d^3*e - 159*b*c^
3*d^2*e^2 + 60*b^2*c^2*d*e^3 - 8*b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*(e*
x + d)*f/(c^4*e^2*x + c^4*d*e) + 2/3465*(315*c^5*e^5*x^5 - 1910*c^5*d^5 + 6
052*b*c^4*d^4*e - 7286*b^2*c^3*d^3*e^2 + 4184*b^3*c^2*d^2*e^3 - 1168*b^4*c*
d*e^4 + 128*b^5*e^5 + 35*(32*c^5*d*e^4 + b*c^4*e^5)*x^4 + 5*(256*c^5*d^2*e^
3 + 49*b*c^4*d*e^4 - 8*b^2*c^3*e^5)*x^3 + 3*(50*c^5*d^3*e^2 + 279*b*c^4*d^2
*e^3 - 114*b^2*c^3*d*e^4 + 16*b^3*c^2*e^5)*x^2 - (955*c^5*d^4*e - 2071*b*c^
```

```
4*d^3*e^2 + 1572*b^2*c^3*d^2*e^3 - 520*b^3*c^2*d*e^4 + 64*b^4*c*e^5)*x)*sqr
t(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^5*e^3*x + c^5*d*e^2)
```

mupad [B] time = 3.09, size = 501, normalized size = 1.44

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(-8\,g\,b^2\,e^2+49\,g\,b\,c\,d\,e+11\,f\,b\,c\,e^2+256\,g\,c^2\,d^2+286\,f\,c^2\,d\,e\right)}{693\,c^2}+\frac{2\,e^2\,g\,x^5\,\sqrt{d+e\,x}}{11}+\frac{2\,\left(b\,e-c\,d\right)\,\sqrt{d+e\,x}\,\left(128\,g\,b^4\,e^4-1040\,g\,b^3\,c\,d\,e^3-176\,f\,b^3\,c\,e^4+3144\,g\,b^2\,c^2\,d^2\,e^2+1320\,f\,b^2\,c^2\,d\,e^3-4142\,g\,b\,c^3\,d^3\,e-3498\,f\,b\,c^3\,d^2\,e^2+1910\,g\,c^4\,d^4+3509\,f\,c^4\,d^3\,e\right)}{3465\,c^5\,e^3}-\frac{x\,\sqrt{d+e\,x}\,\left(128\,g\,b^4\,c\,e^5-1040\,g\,b^3\,c^2\,d\,e^4-176\,f\,b^3\,c^2\,e^5+3144\,g\,b^2\,c^3\,d^2\,e^3+1320\,f\,b^2\,c^3\,d\,e^4-4142\,g\,b\,c^4\,d^3\,e^2-3498\,f\,b\,c^4\,d^2\,e^3+1910\,g\,c^5\,d^4\,e+44\,f\,c^5\,d^3\,e^2\right)}{3465\,c^5\,e^3}+\frac{x^2\,\sqrt{d+e\,x}\,\left(96\,g\,b^3\,c^2\,e^5-684\,g\,b^2\,c^3\,d\,e^4-132\,f\,b^2\,c^3\,e^5+1674\,g\,b\,c^4\,d^2\,e^3+858\,f\,b\,c^4\,d\,e^4+300\,g\,c^5\,d^3\,e^2+3432\,f\,c^5\,d^2\,e^3\right)}{3465\,c^5\,e^3}+\frac{2\,e\,x^4\,\sqrt{d+e\,x}\,\left(b\,e\,g+32\,c\,d\,g+11\,c\,e\,f\right)}{99\,c}\right)}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^3*(d + e*x)^(1/2)*(256*c
^2*d^2*g - 8*b^2*e^2*g + 11*b*c*e^2*f + 286*c^2*d*e*f + 49*b*c*d*e*g))/(693
*c^2) + (2*e^2*g*x^5*(d + e*x)^(1/2))/11 + (2*(b*e - c*d)*(d + e*x)^(1/2)*(
128*b^4*e^4*g + 1910*c^4*d^4*g - 176*b^3*c*e^4*f + 3509*c^4*d^3*e*f - 4142*
b*c^3*d^3*e*g - 1040*b^3*c*d*e^3*g - 3498*b*c^3*d^2*e^2*f + 1320*b^2*c^2*d*
e^3*f + 3144*b^2*c^2*d^2*e^2*g))/(3465*c^5*e^3) - (x*(d + e*x)^(1/2)*(44*c^
5*d^3*e^2*f - 176*b^3*c^2*e^5*f + 128*b^4*c*e^5*g + 1910*c^5*d^4*e*g - 3498
*b*c^4*d^2*e^3*f + 1320*b^2*c^3*d*e^4*f - 4142*b*c^4*d^3*e^2*g - 1040*b^3*c
^2*d*e^4*g + 3144*b^2*c^3*d^2*e^3*g))/(3465*c^5*e^3) + (x^2*(d + e*x)^(1/2)
*(96*b^3*c^2*e^5*g - 132*b^2*c^3*e^5*f + 3432*c^5*d^2*e^3*f + 300*c^5*d^3*e
^2*g + 858*b*c^4*d*e^4*f + 1674*b*c^4*d^2*e^3*g - 684*b^2*c^3*d*e^4*g))/(34
65*c^5*e^3) + (2*e*x^4*(d + e*x)^(1/2)*(b*e*g + 32*c*d*g + 11*c*e*f))/(99*c
)))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{- \left(d + e x\right) \left(b e - c d + c e x\right)} \left(d + e x\right)^{\frac{5}{2}} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(5/2)*(f + g*x), x
)
```

3.2002 $\int (d+ex)^{3/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=267

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg+cdg+3cef)}{315c^4e^2(d+ex)^{3/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{105c^3e^2\sqrt{d+ex}}$$

Rubi [A] time = 0.44, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg+cdg+3cef)}{315c^4e^2(d+ex)^{3/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg+cdg+3cef)}{105c^3e^2\sqrt{d+ex}}-\frac{2\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg+cdg+3cef)}{21c^2e^2}-\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(3/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-16*(2*c*d - b*e)^2*(3*c*e*f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x -
 c*e^2*x^2)^(3/2))/(315*c^4*e^2*(d + e*x)^(3/2)) - (8*(2*c*d - b*e)*(3*c*e*
f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(105*c^3*
e^2*Sqrt[d + e*x]) - (2*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x]*(d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(21*c^2*e^2) - (2*g*(d + e*x)^(3/2)*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(9*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{3/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9ce^2} - \frac{\left(2\left(\frac{3}{2}e\left(-2ce\right.\right.\right.}{}$$
$$= -\frac{2(3cef+cdg-2beg)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3}}{21c^2e^2}$$
$$= -\frac{8(2cd-be)(3cef+cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right.}{105c^3e^2\sqrt{d+ex}}$$
$$= -\frac{16(2cd-be)^2(3cef+cdg-2beg)\left(d(cd-be)-be^2x-ce^2\right.}{315c^4e^2(d+ex)^{3/2}}$$

Mathematica [A] time = 0.16, size = 179, normalized size = 0.67

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\left(-16b^3e^3g+24b^2ce^2(4dg+e(f+gx))-6bc^2e\left(31d^2g+de(22f+20gx)+e^2x(6f+5gx)\right)+c^3\left(106d^3g+3d^2e(71f+53gx)+6de^2x(27f+20gx)+5e^3x^2(9f+7gx)\right)\right)}{315c^4e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(3/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-16*b^3*e
^3*g + 24*b^2*c*e^2*(4*d*g + e*(f + g*x)) - 6*b*c^2*e*(31*d^2*g + e^2*x*(6*
f + 5*g*x) + d*e*(22*f + 20*g*x)) + c^3*(106*d^3*g + 5*e^3*x^2*(9*f + 7*g*x
) + 6*d*e^2*x*(27*f + 20*g*x) + 3*d^2*e*(71*f + 53*g*x))))/(315*c^4*e^2*Sqr
t[d + e*x])
```

IntegrateAlgebraic [A] time = 0.45, size = 248, normalized size = 0.93

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}\left(-16b^3e^3g+24b^2ce^2g(d+ex)+72b^2cde^2g+24b^2ce^3f-96bc^2d^2eg-36bc^2e^2f(d+ex)-96bc^2de^2f-30bc^2eg(d+ex)^2-60bc^2deg(d+ex)+32c^3d^3g+96c^3d^2ef+24c^3d^2g(d+ex)+45c^3ef(d+ex)^2+72c^3def(d+ex)+35c^3g(d+ex)^3+15c^3dg(d+ex)^2\right)}{315c^4e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)^(3/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x -
 c*e^2*x^2],x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(3/2)*(96*c^3*d^2*e*f - 96*b*
c^2*d*e^2*f + 24*b^2*c*e^3*f + 32*c^3*d^3*g - 96*b*c^2*d^2*e*g + 72*b^2*c*d
*e^2*g - 16*b^3*e^3*g + 72*c^3*d*e*f*(d + e*x) - 36*b*c^2*e^2*f*(d + e*x) +
 24*c^3*d^2*g*(d + e*x) - 60*b*c^2*d*e*g*(d + e*x) + 24*b^2*c*e^2*g*(d + e*
x) + 45*c^3*e*f*(d + e*x)^2 + 15*c^3*d*g*(d + e*x)^2 - 30*b*c^2*e*g*(d + e*
x)^2 + 35*c^3*g*(d + e*x)^3))/(315*c^4*e^2*(d + e*x)^(3/2))
```

fricas [A] time = 0.71, size = 352, normalized size = 1.32

$$\frac{2\left(35c^4e^4gx^4+5\left(9c^4e^4f+\left(17c^4de^3+bc^3e^4\right)g\right)x^3+3\left(3\left(13c^4de^3+bc^3e^4\right)f+\left(13c^4d^2e^2+10bc^3de^3-2b^2c^2e^4\right)g\right)x^2-3\left(71c^4d^3e-115bc^3d^2e^2+52b^2c^2de^3-8b^3ce^4\right)f-2\left(53c^4d^4-146bc^3d^3e+141b^2c^2d^2e^2-56b^3cde^3+8b^4e^4\right)g+\left(3\left(17c^4d^2e^2+22bc^3de^3-4b^2c^2e^4\right)f-\left(53c^4d^3e-93bc^3d^2e^2+48b^2c^2de^3-8b^3ce^4\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{315\left(c^4e^3x+c^4de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/315*(35*c^4*e^4*g*x^4 + 5*(9*c^4*e^4*f + (17*c^4*d*e^3 + b*c^3*e^4)*g)*x^
3 + 3*(3*(13*c^4*d*e^3 + b*c^3*e^4)*f + (13*c^4*d^2*e^2 + 10*b*c^3*d*e^3 -
2*b^2*c^2*e^4)*g)*x^2 - 3*(71*c^4*d^3*e - 115*b*c^3*d^2*e^2 + 52*b^2*c^2*d*
e^3 - 8*b^3*c*e^4)*f - 2*(53*c^4*d^4 - 146*b*c^3*d^3*e + 141*b^2*c^2*d^2*e^
2 - 56*b^3*c*d*e^3 + 8*b^4*e^4)*g + (3*(17*c^4*d^2*e^2 + 22*b*c^3*d*e^3 - 4
*b^2*c^2*e^4)*f - (53*c^4*d^3*e - 93*b*c^3*d^2*e^2 + 48*b^2*c^2*d*e^3 - 8*b
```

```
^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c
^4*e^3*x + c^4*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(ex + d)^{\frac{3}{2}}\left(gx + f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(3/2)*(g*x +
 f), x)
```

maple [A] time = 0.05, size = 235, normalized size = 0.88

$$-\frac{2\,(cex+be-cd)\left(-35g\,e^3x^3c^3+30b\,c^2e^3g\,x^2-120c^3d\,e^2g\,x^2-45c^3e^3f\,x^2-24b^2c\,e^3gx+120b\,c^2d\,e^2gx+36b\,c^2e^3fx-159c^3d^2egx-162c^3d\,e^2fx+16b^3e^3g-96b^2cd\,e^2g-24b^2c\,e^3f+186b\,c^2d^2eg+132b\,c^2d\,e^2f-106c^3d^3g-213f\,d^2c^3e\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}{315\sqrt{ex+d}\;c^4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(-35*c^3*e^3*g*x^3+30*b*c^2*e^3*g*x^2-120*c^3*d*e^2*
g*x^2-45*c^3*e^3*f*x^2-24*b^2*c*e^3*g*x+120*b*c^2*d*e^2*g*x+36*b*c^2*e^3*f*
x-159*c^3*d^2*e*g*x-162*c^3*d*e^2*f*x+16*b^3*e^3*g-96*b^2*c*d*e^2*g-24*b^2*
c*e^3*f+186*b*c^2*d^2*e*g+132*b*c^2*d*e^2*f-106*c^3*d^3*g-213*c^3*d^2*e*f)*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/c^4/e^2/(e*x+d)^(1/2)
```

maxima [A] time = 0.82, size = 354, normalized size = 1.33

$$\frac{2\left(15\,c^3e^3x^3-71\,c^3d^3+115\,bc^2d^2e-52\,b^2cde^2+8\,b^3e^3+3\left(13\,c^3de^2+bc^2e^3\right)x^2+\left(17\,c^3d^2e+22\,bc^2de^2-4\,b^2ce^3\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)f}{105\left(c^3e^2x+c^3de\right)}+\frac{2\left(35\,c^4e^4x^4-106\,c^4d^4+292\,bc^3d^3e-282\,b^2c^2d^2e^2+112\,b^3cde^3-16\,b^4e^4+5\left(17\,c^4de^3+bc^3e^4\right)x^3+3\left(13\,c^4d^2e^2+10\,bc^3de^3-2\,b^2c^2e^4\right)x^2-\left(53\,c^4d^3e-93\,bc^3d^2e^2+48\,b^2c^2de^3-8\,b^3ce^4\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)g}{315\left(c^4e^3x+c^4de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/105*(15*c^3*e^3*x^3 - 71*c^3*d^3 + 115*b*c^2*d^2*e - 52*b^2*c*d*e^2 + 8*b
^3*e^3 + 3*(13*c^3*d*e^2 + b*c^2*e^3)*x^2 + (17*c^3*d^2*e + 22*b*c^2*d*e^2
- 4*b^2*c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^3*e^2*x + c^3*d*e
) + 2/315*(35*c^4*e^4*x^4 - 106*c^4*d^4 + 292*b*c^3*d^3*e - 282*b^2*c^2*d^2
*e^2 + 112*b^3*c*d*e^3 - 16*b^4*e^4 + 5*(17*c^4*d*e^3 + b*c^3*e^4)*x^3 + 3*
(13*c^4*d^2*e^2 + 10*b*c^3*d*e^3 - 2*b^2*c^2*e^4)*x^2 - (53*c^4*d^3*e - 93*
b*c^3*d^2*e^2 + 48*b^2*c^2*d*e^3 - 8*b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)
*(e*x + d)*g/(c^4*e^3*x + c^4*d*e^2)
```

mupad [B] time = 2.89, size = 337, normalized size = 1.26

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(b\,e\,g+17\,c\,d\,g+9\,c\,e\,f\right)}{63\,c}+\frac{2\,e\,g\,x^4\,\sqrt{d+e\,x}}{9}+\frac{2\,x^2\,\sqrt{d+e\,x}\,\left(-2\,g\,b^2\,e^2+10\,g\,b\,c\,d\,e+3\,f\,b\,c\,e^2+13\,g\,c^2\,d^2+39\,f\,c^2\,d\,e\right)}{105\,c^2\,e}+\frac{2\,\left(b\,e-c\,d\right)\,\sqrt{d+e\,x}\,\left(-16\,g\,b^3\,e^3+96\,g\,b^2\,c\,d\,e^2+24\,f\,b^2\,c\,e^3-186\,g\,b\,c^2\,d^2\,e-132\,f\,b\,c^2\,d\,e^2+106\,g\,c^3\,d^3+213\,f\,c^3\,d^2\,e\right)}{315\,c^4\,e^3}+\frac{x\,\sqrt{d+e\,x}\,\left(16\,g\,b^3\,c\,e^4-96\,g\,b^2\,c^2\,d\,e^3-24\,f\,b^2\,c^2\,e^4+186\,g\,b\,c^3\,d^2\,e^2+132\,f\,b\,c^3\,d\,e^3-106\,g\,c^4\,d^3\,e+102\,f\,c^4\,d^2\,e^2\right)}{315\,c^4\,e^3}\right)}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^3*(d + e*x)^(1/2)*(b*e*g
 + 17*c*d*g + 9*c*e*f))/(63*c) + (2*e*g*x^4*(d + e*x)^(1/2))/9 + (2*x^2*(d
+ e*x)^(1/2)*(13*c^2*d^2*g - 2*b^2*e^2*g + 3*b*c*e^2*f + 39*c^2*d*e*f + 10*
b*c*d*e*g))/(105*c^2*e) + (2*(b*e - c*d)*(d + e*x)^(1/2)*(106*c^3*d^3*g - 1
6*b^3*e^3*g + 24*b^2*c*e^3*f + 213*c^3*d^2*e*f - 132*b*c^2*d*e^2*f - 186*b*
c^2*d^2*e*g + 96*b^2*c*d*e^2*g))/(315*c^4*e^3) + (x*(d + e*x)^(1/2)*(102*c^
```

```
4*d^2*e^2*f - 24*b^2*c^2*e^4*f + 16*b^3*c*e^4*g - 106*c^4*d^3*e*g + 132*b*c
^3*d*e^3*f + 186*b*c^3*d^2*e^2*g - 96*b^2*c^2*d*e^3*g))/(315*c^4*e^3)))/(x
+ d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^{\frac{3}{2}}\left(f+gx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(3/2)*(f + g*x), x
)
```

3.2003 $\int \sqrt{d+ex}\,(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=191

$$-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cdg+7cef)}{105c^3e^2(d+ex)^{3/2}}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cd}{35c^2e^2\sqrt{d+ex}}$$

Rubi [A] time = 0.30, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cdg+7cef)}{35c^2e^2\sqrt{d+ex}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cdg+7cef)}{105c^3e^2(d+ex)^{3/2}}-\frac{2g\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + e*x]*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-4*(2*c*d - b*e)*(7*c*e*f + c*d*g - 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*
e^2*x^2)^(3/2))/(105*c^3*e^2*(d + e*x)^(3/2)) - (2*(7*c*e*f + c*d*g - 4*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(35*c^2*e^2*Sqrt[d + e*x])
 - (2*g*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(7*c*e^2
)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{d+ex}\,(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{2g\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7ce^2} - \frac{\left(2\left(\frac{3}{2}e\left(-2ce^2f\right.\right.\right.}{}$$

$$= -\frac{2(7cef+cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{35c^2e^2\sqrt{d+ex}} - 2g\sqrt{d}$$

$$= -\frac{4(2cd-be)(7cef+cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3}}{105c^3e^2(d+ex)^{3/2}}$$

Mathematica [A] time = 0.10, size = 119, normalized size = 0.62

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\left(8b^2e^2g-2bce(15dg+7ef+6egx)+c^2\left(22d^2g+de(49f+33gx)+3e^2x(7f+5gx)\right)\right)}{105c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + e*x]*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(8*b^2*e^2
*g - 2*b*c*e*(7*e*f + 15*d*g + 6*e*g*x) + c^2*(22*d^2*g + 3*e^2*x*(7*f + 5*
g*x) + d*e*(49*f + 33*g*x))))/(105*c^3*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.30, size = 139, normalized size = 0.73

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}\left(8b^2e^2g-12bceg(d+ex)-18bcdeg-14bce^2f+4c^2d^2g+21c^2ef(d+ex)+28c^2def+15c^2g(d+ex)^2+3c^2dg(d+ex)\right)}{105c^3e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[d + e*x]*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2],x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(3/2)*(28*c^2*d*e*f - 14*b*c*
e^2*f + 4*c^2*d^2*g - 18*b*c*d*e*g + 8*b^2*e^2*g + 21*c^2*e*f*(d + e*x) + 3
*c^2*d*g*(d + e*x) - 12*b*c*e*g*(d + e*x) + 15*c^2*g*(d + e*x)^2))/(105*c^3
*e^2*(d + e*x)^(3/2))
```

fricas [A] time = 0.67, size = 233, normalized size = 1.22

$$\frac{2\left(15c^3e^3gx^3+3\left(7c^3e^3f+\left(6c^3de^2+bc^2e^3\right)g\right)x^2-7\left(7c^3d^2e-9bc^2de^2+2b^2ce^3\right)f-2\left(11c^3d^3-26bc^2d^2e+19b^2cde^2-4b^3e^3\right)g+\left(7\left(4c^3de^2+bc^2e^3\right)f-\left(11c^3d^2e-15bc^2de^2+4b^2ce^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{105\left(c^3e^3x+c^3de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/105*(15*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f + (6*c^3*d*e^2 + b*c^2*e^3)*g)*x^2
 - 7*(7*c^3*d^2*e - 9*b*c^2*d*e^2 + 2*b^2*c*e^3)*f - 2*(11*c^3*d^3 - 26*b*c
^2*d^2*e + 19*b^2*c*d*e^2 - 4*b^3*e^3)*g + (7*(4*c^3*d*e^2 + b*c^2*e^3)*f -
 (11*c^3*d^2*e - 15*b*c^2*d*e^2 + 4*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^3*e^3*x + c^3*d*e^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 139, normalized size = 0.73

$$\frac{2 (cex + be - cd) \left(15g x^2c^2e^2 - 12bc e^2gx + 33c^2degx + 21c^2e^2fx + 8b^2e^2g - 30bcdeg - 14bc e^2f + 22c^2d^2g + 49c^2def\right) \sqrt{-c e^2x^2 - b e^2x - bde + c d^2}}{105\sqrt{ex + d}\, c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 2/105*(c*e*x+b*e-c*d)*(15*c^2*e^2*g*x^2-12*b*c*e^2*g*x+33*c^2*d*e*g*x+21*c^
2*e^2*f*x+8*b^2*e^2*g-30*b*c*d*e*g-14*b*c*e^2*f+22*c^2*d^2*g+49*c^2*d*e*f)*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/c^3/e^2/(e*x+d)^(1/2)
```

maxima [A] time = 0.79, size = 236, normalized size = 1.24

$$\frac{2 \left(3 c^2e^2x^2 - 7 c^2d^2 + 9 bcde - 2 b^2e^2 + \left(4 c^2de + bce^2\right)x\right) \sqrt{-cex + cd - be}\,(ex + d)f}{15 \left(c^2e^2x + c^2de\right)} + \frac{2 \left(15 c^3e^3x^3 - 22 c^3d^3 + 52 bc^2d^2e - 38 b^2cde^2 + 8 b^3e^3 + 3 \left(6 c^3de^2 + bc^2e^3\right)x^2 - \left(11 c^3d^2e - 15 bc^2de^2 + 4 b^2ce^3\right)x\right) \sqrt{-cex + cd - be}\,(ex + d)g}{105 \left(c^3e^3x + c^3de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/15*(3*c^2*e^2*x^2 - 7*c^2*d^2 + 9*b*c*d*e - 2*b^2*e^2 + (4*c^2*d*e + b*c*
e^2)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^2*e^2*x + c^2*d*e) + 2/105*
(15*c^3*e^3*x^3 - 22*c^3*d^3 + 52*b*c^2*d^2*e - 38*b^2*c*d*e^2 + 8*b^3*e^3
+ 3*(6*c^3*d*e^2 + b*c^2*e^3)*x^2 - (11*c^3*d^2*e - 15*b*c^2*d*e^2 + 4*b^2*
c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^3*e^3*x + c^3*d*e^2)
```

mupad [B] time = 2.65, size = 219, normalized size = 1.15

$$\frac{\left(\frac{2 g x^3 \sqrt{d+e x}}{7} + \frac{2 x^2 \sqrt{d+e x}\,\left(b e g+6 c d g+7 c e f\right)}{35 c e} + \frac{2 (b e-c d) \sqrt{d+e x}\,\left(8 g b^2 e^2-30 g b c d e-14 f b c e^2+22 g c^2 d^2+49 f c^2 d e\right)}{105 c^3 e^3} + \frac{x \sqrt{d+e x}\,\left(-8 g b^2 c e^3+30 g b c^2 d e^2+14 f b c^2 e^3-22 g c^3 d^2 e+56 f c^3 d e^2\right)}{105 c^3 e^3}\right) \sqrt{c d^2 - b d e - c e^2 x^2 - b e^2 x}}{x + \frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x
)
```

```
[Out] (((2*g*x^3*(d + e*x)^(1/2))/7 + (2*x^2*(d + e*x)^(1/2)*(b*e*g + 6*c*d*g + 7
*c*e*f))/(35*c*e) + (2*(b*e - c*d)*(d + e*x)^(1/2)*(8*b^2*e^2*g + 22*c^2*d^
2*g - 14*b*c*e^2*f + 49*c^2*d*e*f - 30*b*c*d*e*g))/(105*c^3*e^3) + (x*(d +
e*x)^(1/2)*(14*b*c^2*e^3*f - 8*b^2*c*e^3*g + 56*c^3*d*e^2*f - 22*c^3*d^2*e*
g + 30*b*c^2*d*e^2*g))/(105*c^3*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{- (d + ex) (be - cd + cex)} \sqrt{d + ex} \left(f + gx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*sqrt(d + e*x)*(f + g*x), x)
```

3.2004 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg-cdg+5cef)}{15c^2e^2(d+ex)^{3/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2\sqrt{d+ex}}$$

Rubi [A] time = 0.17, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg-cdg+5cef)}{15c^2e^2(d+ex)^{3/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (-2*(5*c*e*f - c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)
)/(15*c^2*e^2*(d + e*x)^(3/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(3/2))/(5*c*e^2*Sqrt[d + e*x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{\sqrt{d+ex}}\,dx=-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2\sqrt{d+ex}}-\frac{\left(2\left(\frac{3}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\left(ce^3\right.\right.\right.}{}$$

$$=-\frac{2(5cef-cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{15c^2e^2(d+ex)^{3/2}}-\frac{2g\left(d(cd-be\right.}{5ce}$$

Mathematica [A] time = 0.06, size = 76, normalized size = 0.64

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+5ef+3egx)-2beg)}{15c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/Sqrt[d + e*
x],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e*g
+ c*(5*e*f + 2*d*g + 3*e*g*x)))/(15*c^2*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 0.25, size = 74, normalized size = 0.63

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}(-2beg+3cg(d+ex)-cdg+5cef)}{15c^2e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/Sq
rt[d + e*x],x]
```

```
[Out] (-2*(5*c*e*f - c*d*g - 2*b*e*g + 3*c*g*(d + e*x))*((2*c*d - b*e)*(d + e*x)
- c*(d + e*x)^2)^(3/2))/(15*c^2*e^2*(d + e*x)^(3/2))
```

fricas [A] time = 0.57, size = 140, normalized size = 1.19

$$\frac{2\left(3c^2e^2gx^2-5\left(c^2de-bce^2\right)f-2\left(c^2d^2-2bcde+b^2e^2\right)g+\left(5c^2e^2f-\left(c^2de-bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{15\left(c^2e^3x+c^2de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/15*(3*c^2*e^2*g*x^2 - 5*(c^2*d*e - b*c*e^2)*f - 2*(c^2*d^2 - 2*b*c*d*e +
b^2*e^2)*g + (5*c^2*e^2*f - (c^2*d*e - b*c*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(gx+f\right)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/sqrt(e*x + d
), x)
```

maple [A] time = 0.04, size = 79, normalized size = 0.67

$$-\frac{2\left(cex+be-cd\right)\left(-3cegx+2beg-2cdg-5cef\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}{15\sqrt{ex+d}\;c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-3*c*e*g*x+2*b*e*g-2*c*d*g-5*c*e*f)*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)/c^2/e^2/(e*x+d)^(1/2)
```

maxima [A] time = 0.67, size = 112, normalized size = 0.95

$$\frac{2\left(cex-cd+be\right)\sqrt{-cex+cd-be}\,f}{3\,ce}+\frac{2\left(3\,c^2e^2x^2-2\,c^2d^2+4\,bcde-2\,b^2e^2-\left(c^2de-bce^2\right)x\right)\sqrt{-cex+cd-be}\,g}{15\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3*(c*e*x - c*d + b*e)*sqrt(-c*e*x + c*d - b*e)*f/(c*e) + 2/15*(3*c^2*e^2*
x^2 - 2*c^2*d^2 + 4*b*c*d*e - 2*b^2*e^2 - (c^2*d*e - b*c*e^2)*x)*sqrt(-c*e*
x + c*d - b*e)*g/(c^2*e^2)
```

mupad [B] time = 2.50, size = 100, normalized size = 0.85

$$\frac{\left(\frac{2\,g\,x^2}{5}+\frac{2\,x\,\left(b\,e\,g-c\,d\,g+5\,c\,e\,f\right)}{15\,c\,e}+\frac{2\,\left(b\,e-c\,d\right)\,\left(2\,c\,d\,g-2\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^2\,e^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(1/2)
,x)
```

```
[Out] (((2*g*x^2)/5 + (2*x*(b*e*g - c*d*g + 5*c*e*f))/(15*c*e) + (2*(b*e - c*d)*(
2*c*d*g - 2*b*e*g + 5*c*e*f))/(15*c^2*e^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/sqrt(d + e*x), x)
```

3.2005 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=186

$$\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2\sqrt{2cd-be}\,(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3ce^2(d+ex)^{3/2}}$$

Rubi [A] time = 0.35, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {794, 664, 660, 208}

$$\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2\sqrt{2cd-be}\,(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3ce^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(3/2),x
]
```

```
[Out] (2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*Sqrt[d + e*x
]) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*c*e^2*(d + e*x)^(
3/2)) - (2*Sqrt[2*c*d - b*e]*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2
*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{3/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3ce^2(d+ex)^{3/2}} - \frac{\left(2\left(\frac{3}{2}e\left(-2ce^2f+be^2g\right)-\frac{3}{2}\left(-ce\right.\right.\right.}{}$$

$$= \frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{2g\left(d(cd-be)-be^2x-ce^2x\right.}{3ce^2(d+ex)^{3/2}}$$

$$= \frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{2g\left(d(cd-be)-be^2x-ce^2x\right.}{3ce^2(d+ex)^{3/2}}$$

$$= \frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{2g\left(d(cd-be)-be^2x-ce^2x\right.}{3ce^2(d+ex)^{3/2}}$$

Mathematica [A] time = 0.19, size = 154, normalized size = 0.83

$$\frac{2\sqrt{d+ex}\sqrt{c(d-ex)-be}\left(\sqrt{c(d-ex)-be}\,(beg+c(-4dg+3ef+egx))+3c\sqrt{2cd-be}\,(dg-ef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{3ce^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[-(b*e) + c*(d - e*x)]*(Sqrt[-(b*e) + c*(d - e*x)]*(b*
e*g + c*(3*e*f - 4*d*g + e*g*x)) + 3*c*Sqrt[2*c*d - b*e]*(-(e*f) + d*g)*Arc
Tanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(3*c*e^2*Sqrt[(d + e*x)*(
-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 0.89, size = 171, normalized size = 0.92

$$\frac{2\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\,(beg+cg(d+ex)-5cdg+3cef)}{3ce^2\sqrt{d+ex}} + \frac{2\sqrt{be-2cd}\,(dg-ef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^(3/2),x]
```

```
[Out] (2*(3*c*e*f - 5*c*d*g + b*e*g + c*g*(d + e*x))*Sqrt[2*c*d*(d + e*x) - b*e*(
d + e*x) - c*(d + e*x)^2])/(3*c*e^2*Sqrt[d + e*x]) + (2*Sqrt[-2*c*d + b*e]*
(-(e*f) + d*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*
(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/e^2
```

fricas [A] time = 0.81, size = 419, normalized size = 2.25

$$\left[-\frac{3\left(cdef-cd^2g+\left(ce^2f-cdeg\right)x\right)\sqrt{2cd-be}\log\left(-\frac{ce^2x^2-3cd^2+2bde-2\left(cde-be^2\right)x-2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{2cd-be}\sqrt{ex+d}}{e^2x^2+2dex+d^2}\right)-2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx+3cef-(4cd-be)g\right)\sqrt{ex+d}}{3\left(ce^3x+cde^2\right)}, -\frac{2\left(3\left(cdef-cd^2g+\left(ce^2f-cdeg\right)x\right)\sqrt{-2cd+be}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{-2cd+be}\sqrt{ex+d}}{ce^2x^2+be^2x-cd^2+bde}\right)-\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx+3cef-(4cd-be)g\right)\sqrt{ex+d}\right)}{3\left(ce^3x+cde^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/3*(3*(c*d*e*f - c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(2*c*d - b*e)*log(
-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e
*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x + 3*c*e*
f - (4*c*d - b*e)*g)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2), -2/3*(3*(c*d*e*f -
 c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2
```

```
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b
*e^2*x - c*d^2 + b*d*e)) - sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*
g*x + 3*c*e*f - (4*c*d - b*e)*g)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(gx + f)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(3
/2), x)
```

maple [A] time = 0.09, size = 330, normalized size = 1.77

$$\frac{2\sqrt{-c\,e^2x^2 - b\,e^2x - bde + c\,d^2}\,\left(3bcdeg \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) - 3bc\,e^2 f \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) - 6c^2d^2g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) + 6c^2def \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) + \sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cegx + \sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,beg - 4\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cdg + 3\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cef\right)}{3\sqrt{ex+d}\,\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] 2/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(3*arctan((-c*e*x-b*e+c*d)^(1/2)
/(b*e-2*c*d)^(1/2))*b*c*d*e*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))*b*c*e^2*f-6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*
g+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d*e*f+x*c*e*g*(-c*
e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+b*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)-4*c*d*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+3*c*e*f*(-c*e*x-b
*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))/(e*x+d)^(1/2)/(-c*e*x-b*e+c*d)^(1/2)/c/e^2
/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(gx + f)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(3
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f + g\,x\right)\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}}{{\left(d + e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(3/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(3/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(3/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(3/2), x
)
```

3.2006 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(2beg-5cdg+cef)}{e^2\sqrt{d+ex}\,(2cd-be)}+\frac{(2beg-5cdg+ce}{}$$

Rubi [A] time = 0.36, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(2beg-5cdg+cef)}{e^2\sqrt{d+ex}\,(2cd-be)}+\frac{(2beg-5cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2\sqrt{2cd-be}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(5/2),x
]
```

```
[Out] -(((c*e*f - 5*c*d*g + 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(
e^2*(2*c*d - b*e)*Sqrt[d + e*x])) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x -
 c*e^2*x^2)^(3/2))/(e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) + ((c*e*f - 5*c*d*g
+ 2*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d -
b*e]*Sqrt[d + e*x])])/(e^2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{5/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(2cd-be)(d+ex)^{5/2}} - \frac{(cef-5cdg+2beg)\int \frac{\sqrt{c}}{}}{2e(2cd-}$$

$$= -\frac{(cef-5cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)\sqrt{d+ex}} - \frac{(ef-dg)\left(d(cd-\right.}{e^2(2cd-}$$

$$= -\frac{(cef-5cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)\sqrt{d+ex}} - \frac{(ef-dg)\left(d(cd-\right.}{e^2(2cd-}$$

$$= -\frac{(cef-5cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)\sqrt{d+ex}} - \frac{(ef-dg)\left(d(cd-\right.}{e^2(2cd-}$$

Mathematica [A] time = 0.23, size = 173, normalized size = 0.78

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left((d+ex)\sqrt{2cd-be}(-2beg+5cdg-cef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)-(2cd-be)\sqrt{c(d-ex)-be}(3dg-ef+2egx)\right)}{e^2(d+ex)^{3/2}(be-2cd)\sqrt{c(d-ex)-be}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
5/2),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((2*c*d - b*e)*(-(e*f) + 3*d*g +
2*e*g*x)*Sqrt[-(b*e) + c*(d - e*x)]) + Sqrt[2*c*d - b*e]*(-(c*e*f) + 5*c*d*
g - 2*b*e*g)*(d + e*x)*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))
/(e^2*(-2*c*d + b*e)*(d + e*x)^(3/2)*Sqrt[-(b*e) + c*(d - e*x)])
```

IntegrateAlgebraic [A] time = 0.87, size = 165, normalized size = 0.74

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\,(2g(d+ex)+dg-ef)}{e^2(d+ex)^{3/2}}+\frac{(-2beg+5cdg-cef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^(5/2),x]
```

```
[Out] ((-(e*f) + d*g + 2*g*(d + e*x))*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d
 + e*x)^2])/(e^2*(d + e*x)^(3/2)) + ((-(c*e*f) + 5*c*d*g - 2*b*e*g)*ArcTan[
(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d
+ e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(e^2*Sqrt[-2*c*d + b*e])
```

fricas [A] time = 0.55, size = 659, normalized size = 2.96

$$\left[\frac{\left(cd^2ef+\left(ce^3f-\left(5cde^2-2be^3\right)g\right)x^2-\left(5cd^3-2bd^2e\right)g+2\left(cde^2f-\left(5cd^2e-2bde^2\right)g\right)x\right)\sqrt{2cd-be}\log\left(-\frac{ce^2x^2-3cd^2+2bde-2\left(cde-be^2\right)x-2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{2cd-be}\sqrt{ex+d}}{e^2x^2+2dex+d^2}\right)+2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(2\left(2cde-be^2\right)gx-\left(2cde-be^2\right)f+3\left(2cd^2-bde\right)g\right)\sqrt{ex+d}}{2\left(2cd^3e^2-bd^2e^3+\left(2cde^4-be^5\right)x^2+2\left(2cd^2e^3-bde^4\right)x\right)}, \frac{\left(cd^2ef+\left(ce^3f-\left(5cde^2-2be^3\right)g\right)x^2-\left(5cd^3-2bd^2e\right)g+2\left(cde^2f-\left(5cd^2e-2bde^2\right)g\right)x\right)\sqrt{-2cd+be}\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{-2cd+be}\sqrt{ex+d}}{ce^2x^2+be^2x-cd^2+bde}\right)+\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(2\left(2cde-be^2\right)gx-\left(2cde-be^2\right)f+3\left(2cd^2-bde\right)g\right)\sqrt{ex+d}}{2cd^3e^2-bd^2e^3+\left(2cde^4-be^5\right)x^2+2\left(2cd^2e^3-bde^4\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/2*((c*d^2*e*f + (c*e^3*f - (5*c*d*e^2 - 2*b*e^3)*g)*x^2 - (5*c*d^3 - 2*b
*d^2*e)*g + 2*(c*d*e^2*f - (5*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(2*c*d - b*e)*
log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2
*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(2*c*d*e -
 b*e^2)*g*x - (2*c*d*e - b*e^2)*f + 3*(2*c*d^2 - b*d*e)*g)*sqrt(e*x + d))/(
```

```
2*c*d^3*e^2 - b*d^2*e^3 + (2*c*d*e^4 - b*e^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^
4)*x), ((c*d^2*e*f + (c*e^3*f - (5*c*d*e^2 - 2*b*e^3)*g)*x^2 - (5*c*d^3 - 2
*b*d^2*e)*g + 2*(c*d*e^2*f - (5*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(-2*c*d + b*
e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqr
t(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2
*x + c*d^2 - b*d*e)*(2*(2*c*d*e - b*e^2)*g*x - (2*c*d*e - b*e^2)*f + 3*(2*c
*d^2 - b*d*e)*g)*sqrt(e*x + d))/(2*c*d^3*e^2 - b*d^2*e^3 + (2*c*d*e^4 - b*e
^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: AttributeError >> type
```

maple [A] time = 0.07, size = 359, normalized size = 1.61

$$\frac{\sqrt{-c e^2x^2-b e^2x-bde+c d^2}\, \left(-2b e^2gx \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+5cdegx \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-c e^2 f x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-2bdeg \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+5c d^2 g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-cdef \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+2\sqrt{be-2cd}\, \sqrt{-cex-be+cd}\, egx+3\sqrt{be-2cd}\, \sqrt{-cex-be+cd}\, dg-\sqrt{be-2cd}\, \sqrt{-cex-be+cd}\, ef\right)}{(ex+d)^{\frac{3}{2}} \sqrt{-cex-be+cd}\, \sqrt{be-2cd}\, e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] (-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2)*(-2*arctan((-c*e*x-b*e
+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*e^2*g+5*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))*x*c*d*e*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
*x*c*e^2*f+2*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*x*e*g-2*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*d*e*g+5*arctan((-c*e*x-b*e+c*d)^(1/2)
/(b*e-2*c*d)^(1/2))*c*d^2*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*c*d*e*f+3*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*d*g-(b*e-2*c*d)^(1/2)*
(-c*e*x-b*e+c*d)^(1/2)*e*f)/(-c*e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,\left(gx + f\right)}{(ex + d)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(5
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}}{{\left(d + e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(5/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\left(f+gx\right)}{(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(5/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(5/2), x
)
```

3.2007 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=231

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(d+ex)^{7/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+7cdg+cef)}{4e^2(d+ex)^{3/2}(2cd-be)}+\frac{c(-4beg+7cdg}{}$$

Rubi [A] time = 0.37, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 662, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(d+ex)^{7/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+7cdg+cef)}{4e^2(d+ex)^{3/2}(2cd-be)}+\frac{c(-4beg+7cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{4e^2(2cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(7/2),x
]
```

```
[Out] -((c*e*f + 7*c*d*g - 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(4
*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2)^(3/2))/(2*e^2*(2*c*d - b*e)*(d + e*x)^(7/2)) + (c*(c*e*f + 7*
c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*
c*d - b*e]*Sqrt[d + e*x])])/(4*e^2*(2*c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{7/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(2cd-be)(d+ex)^{7/2}} + \frac{(cef+7cdg-4beg)\int \frac{\sqrt{c}}{}}{4e(2cd-}$$

$$= -\frac{(cef+7cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\left(d(cd-\right.}{2e^2(2cd-}$$

$$= -\frac{(cef+7cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\left(d(cd-\right.}{2e^2(2cd-}$$

$$= -\frac{(cef+7cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\left(d(cd-\right.}{2e^2(2cd-}$$

Mathematica [A] time = 0.60, size = 222, normalized size = 0.96

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-2e(ef-dg)(be-cd+cex)^2-\frac{e(d+ex)(-4beg+7cdg+cef)\left(c\sqrt{e}(d+ex)\sqrt{c(d-ex)-be}\tan^{-1}\left(\frac{\sqrt{e}\sqrt{c(d-ex)-be}}{\sqrt{e(be-2cd)}}\right)-\sqrt{e(be-2cd)}(be-cd+cex)\right)}{\sqrt{e(be-2cd)}}\right)}{4e^3(d+ex)^{5/2}(be-2cd)(be-cd+cex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
7/2),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*e*(e*f - d*g)*(-(c*d) + b*e + c
*e*x)^2 - (e*(c*e*f + 7*c*d*g - 4*b*e*g)*(d + e*x)*(-(Sqrt[e*(-2*c*d + b*e)
]*(-(c*d) + b*e + c*e*x)) + c*Sqrt[e]*(d + e*x)*Sqrt[-(b*e) + c*(d - e*x)]*
ArcTan[(Sqrt[e]*Sqrt[-(b*e) + c*(d - e*x)])/Sqrt[e*(-2*c*d + b*e)]]))/Sqrt[
e*(-2*c*d + b*e)]))/(4*e^3*(-2*c*d + b*e)*(d + e*x)^(5/2)*(-(c*d) + b*e + c
*e*x))
```

IntegrateAlgebraic [A] time = 1.18, size = 238, normalized size = 1.03

$$\frac{\left(4bceg-7c^2dg+c^2(-e)f\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}(be+c(d+ex)-2cd)}\right)}{4e^2(2cd-be)\sqrt{be-2cd}}+\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-4beg(d+ex)+2bdeg-2be^2f-4cd^2g-cef(d+ex)+4cdef+9cdg(d+ex)\right)}{4e^2(d+ex)^{5/2}(be-2cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^(7/2),x]
```

```
[Out] ((4*c*d*e*f - 2*b*e^2*f - 4*c*d^2*g + 2*b*d*e*g - c*e*f*(d + e*x) + 9*c*d*g
*(d + e*x) - 4*b*e*g*(d + e*x))*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d
 + e*x)^2])/(4*e^2*(-2*c*d + b*e)*(d + e*x)^(5/2)) + ((-(c^2*e*f) - 7*c^2*d
*g + 4*b*c*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c
*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(4*e^2*(2*c*d
 - b*e)*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.57, size = 1043, normalized size = 4.52

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x, a
lgorithm="fricas")
```

```
[Out] [1/8*((c^2*d^3*e*f + (c^2*e^4*f + (7*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3*(c^2
*d*e^3*f + (7*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (7*c^2*d^4 - 4*b*c*d^3*e)
```

```
*g + 3*(c^2*d^2*e^2*f + (7*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(2*c*d - b*
e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^
2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2
+ 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((6*c^2*d^
2*e - 7*b*c*d*e^2 + 2*b^2*e^3)*f + (10*c^2*d^3 - 9*b*c*d^2*e + 2*b^2*d*e^2)
*g - ((2*c^2*d*e^2 - b*c*e^3)*f - (18*c^2*d^2*e - 17*b*c*d*e^2 + 4*b^2*e^3)
*g)*x)*sqrt(e*x + d))/(4*c^2*d^5*e^2 - 4*b*c*d^4*e^3 + b^2*d^3*e^4 + (4*c^2
*d^2*e^5 - 4*b*c*d*e^6 + b^2*e^7)*x^3 + 3*(4*c^2*d^3*e^4 - 4*b*c*d^2*e^5 +
b^2*d*e^6)*x^2 + 3*(4*c^2*d^4*e^3 - 4*b*c*d^3*e^4 + b^2*d^2*e^5)*x), 1/4*((
c^2*d^3*e*f + (c^2*e^4*f + (7*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3*(c^2*d*e^3*
f + (7*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (7*c^2*d^4 - 4*b*c*d^3*e)*g + 3*
(c^2*d^2*e^2*f + (7*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arc
tan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x
+ d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - sqrt(-c*e^2*x^2 - b*e^2*x + c
*d^2 - b*d*e)*((6*c^2*d^2*e - 7*b*c*d*e^2 + 2*b^2*e^3)*f + (10*c^2*d^3 - 9*
b*c*d^2*e + 2*b^2*d*e^2)*g - ((2*c^2*d*e^2 - b*c*e^3)*f - (18*c^2*d^2*e - 1
7*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(4*c^2*d^5*e^2 - 4*b*c*d^4*e^
3 + b^2*d^3*e^4 + (4*c^2*d^2*e^5 - 4*b*c*d*e^6 + b^2*e^7)*x^3 + 3*(4*c^2*d^
3*e^4 - 4*b*c*d^2*e^5 + b^2*d*e^6)*x^2 + 3*(4*c^2*d^4*e^3 - 4*b*c*d^3*e^4 +
 b^2*d^2*e^5)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(gx + f)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(7
/2), x)
```

maple [B] time = 0.08, size = 630, normalized size = 2.73

$$-\frac{\left(4bce^3gx^2\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-7c^2de^2gx^2\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-c^2e^3fx^2\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+8bcde^2gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-14c^2d^2egx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-2c^2de^2fx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+4bcd^2eg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-7c^2d^3g\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-c^2d^2ef\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+4\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,be^2gx-9\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cdegx+\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,ce^2fx+2\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,bdeg+2\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,be^2f-5\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cd^2g-3\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cdef\right)\sqrt{-ce^2x^2-be^2x-bde+cd^2}}{4\left(be-2cd\right)^{\frac{3}{2}}\sqrt{-cex-be+cd}\,\left(ex+d\right)^{\frac{5}{2}}e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] -1/4*(4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c*e^3*g-7*ar
ctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^2*d*e^2*g-arctan((-c*e
*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^2*e^3*f+8*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c*d*e^2*g-14*arctan((-c*e*x-b*e+c*d)^(1/2)/(
b*e-2*c*d)^(1/2))*x*c^2*d^2*e*g-2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*x*c^2*d*e^2*f+4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*
c*d^2*e*g-7*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^3*g-arct
an((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*e*f+4*x*b*e^2*g*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-9*x*c*d*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-
2*c*d)^(1/2)+x*c*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+2*b*d*e*g*(
-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+2*b*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b
*e-2*c*d)^(1/2)-5*c*d^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-3*c*d*e*
f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)/(e*x+d)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(gx + f)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(7
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(7/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(7/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\left(f+gx\right)}{\left(d+ex\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(7/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(7/2), x
)
```

3.2008 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=307

$$\frac{c^2(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{5/2}}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{8e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{(ef$$

Rubi [A] time = 0.53, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 672, 660, 208}

$$\frac{c^2(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{5/2}}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{8e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{9/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{4e^2(d+ex)^{5/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(9/2),x
]
```

```
[Out] -((c*e*f + 3*c*d*g - 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(4
*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) + (c*(c*e*f + 3*c*d*g - 2*b*e*g)*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(8*e^2*(2*c*d - b*e)^2*(d + e*x)^(3/2)
) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d
 - b*e)*(d + e*x)^(9/2)) + (c^2*(c*e*f + 3*c*d*g - 2*b*e*g)*ArcTanh[Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(8*e
^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{9/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^{9/2}} + \frac{(cef+3cdg-2beg)\int \frac{\sqrt{c}}{}}{2e(2cd-}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} - \frac{(ef-dg)\left(d(cd-\right.}{3e^2(2cd-}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(cef+3cdg-2}{8e^2(2}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(cef+3cdg-2}{8e^2(2}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(cef+3cdg-2}{8e^2(2}$$

Mathematica [C] time = 0.13, size = 128, normalized size = 0.42

$$\frac{((d+ex)(c(d-ex)-be))^{3/2}\left(-\frac{3c^2(d+ex)^3(-2beg+3cdg+cef)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+3dg-3ef\right)}{9e^2(d+ex)^{9/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
9/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*e*f + 3*d*g - (3*c^2*(c*e*f +
 3*c*d*g - 2*b*e*g)*(d + e*x)^3*Hypergeometric2F1[3/2, 3, 5/2, (-(c*d) + b*
e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^3))/(9*e^2*(2*c*d - b*e)*(d + e*x
)^(9/2))
```

IntegrateAlgebraic [A] time = 1.89, size = 347, normalized size = 1.13

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-12b^2e^2g(d+ex)+8b^2de^2g-8b^2e^3f-32bcd^2eg-2bce^2f(d+ex)+32bcde^2f+50bcdeg(d+ex)-6bceg(d+ex)^2+32c^2d^3g-32c^2d^2ef-52c^2d^2g(d+ex)+4c^2def(d+ex)+3c^2ef(d+ex)^2+9c^2dg(d+ex)^2\right)}{24e^2(d+ex)^{7/2}(be-2cd)^2}+\frac{\left(2bc^2eg-3c^3dg+c^3(-e)f\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{8e^2(2cd-be)^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^(9/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-32*c^2*d^2*e*f + 3
2*b*c*d*e^2*f - 8*b^2*e^3*f + 32*c^2*d^3*g - 32*b*c*d^2*e*g + 8*b^2*d*e^2*g
 + 4*c^2*d*e*f*(d + e*x) - 2*b*c*e^2*f*(d + e*x) - 52*c^2*d^2*g*(d + e*x) +
 50*b*c*d*e*g*(d + e*x) - 12*b^2*e^2*g*(d + e*x) + 3*c^2*e*f*(d + e*x)^2 +
9*c^2*d*g*(d + e*x)^2 - 6*b*c*e*g*(d + e*x)^2))/(24*e^2*(-2*c*d + b*e)^2*(d
```

```
 + e*x)^(7/2)) + ((-(c^3*e*f) - 3*c^3*d*g + 2*b*c^2*e*g)*ArcTan[(Sqrt[-2*c*
d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*
c*d + b*e + c*(d + e*x)))]])/(8*e^2*(2*c*d - b*e)^2*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.45, size = 1604, normalized size = 5.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/48*(3*(c^3*d^4*e*f + (c^3*e^5*f + (3*c^3*d*e^4 - 2*b*c^2*e^5)*g)*x^4 +
4*(c^3*d*e^4*f + (3*c^3*d^2*e^3 - 2*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d^2*e^3*f
+ (3*c^3*d^3*e^2 - 2*b*c^2*d^2*e^3)*g)*x^2 + (3*c^3*d^5 - 2*b*c^2*d^4*e)*g
+ 4*(c^3*d^3*e^2*f + (3*c^3*d^4*e - 2*b*c^2*d^3*e^2)*g)*x)*sqrt(2*c*d - b*e
)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 +
 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*c^3*
d*e^3 - b*c^2*e^4)*f + (6*c^3*d^2*e^2 - 7*b*c^2*d*e^3 + 2*b^2*c*e^4)*g)*x^2
 - (50*c^3*d^3*e - 85*b*c^2*d^2*e^2 + 46*b^2*c*d*e^3 - 8*b^3*e^4)*f - (22*c
^3*d^4 - 35*b*c^2*d^3*e + 20*b^2*c*d^2*e^2 - 4*b^3*d*e^3)*g + 2*((10*c^3*d^
2*e^2 - 7*b*c^2*d*e^3 + b^2*c*e^4)*f - (34*c^3*d^3*e - 55*b*c^2*d^2*e^2 + 3
1*b^2*c*d*e^3 - 6*b^3*e^4)*g)*x)*sqrt(e*x + d))/(8*c^3*d^7*e^2 - 12*b*c^2*d
^6*e^3 + 6*b^2*c*d^5*e^4 - b^3*d^4*e^5 + (8*c^3*d^3*e^6 - 12*b*c^2*d^2*e^7
+ 6*b^2*c*d*e^8 - b^3*e^9)*x^4 + 4*(8*c^3*d^4*e^5 - 12*b*c^2*d^3*e^6 + 6*b^
2*c*d^2*e^7 - b^3*d*e^8)*x^3 + 6*(8*c^3*d^5*e^4 - 12*b*c^2*d^4*e^5 + 6*b^2*
c*d^3*e^6 - b^3*d^2*e^7)*x^2 + 4*(8*c^3*d^6*e^3 - 12*b*c^2*d^5*e^4 + 6*b^2*
c*d^4*e^5 - b^3*d^3*e^6)*x), 1/24*(3*(c^3*d^4*e*f + (c^3*e^5*f + (3*c^3*d*e
^4 - 2*b*c^2*e^5)*g)*x^4 + 4*(c^3*d*e^4*f + (3*c^3*d^2*e^3 - 2*b*c^2*d*e^4)
*g)*x^3 + 6*(c^3*d^2*e^3*f + (3*c^3*d^3*e^2 - 2*b*c^2*d^2*e^3)*g)*x^2 + (3*
c^3*d^5 - 2*b*c^2*d^4*e)*g + 4*(c^3*d^3*e^2*f + (3*c^3*d^4*e - 2*b*c^2*d^3*
e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)
) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*c^3*d*e^3 - b*c^2*e^4
)*f + (6*c^3*d^2*e^2 - 7*b*c^2*d*e^3 + 2*b^2*c*e^4)*g)*x^2 - (50*c^3*d^3*e
- 85*b*c^2*d^2*e^2 + 46*b^2*c*d*e^3 - 8*b^3*e^4)*f - (22*c^3*d^4 - 35*b*c^2
*d^3*e + 20*b^2*c*d^2*e^2 - 4*b^3*d*e^3)*g + 2*((10*c^3*d^2*e^2 - 7*b*c^2*d
*e^3 + b^2*c*e^4)*f - (34*c^3*d^3*e - 55*b*c^2*d^2*e^2 + 31*b^2*c*d*e^3 - 6
*b^3*e^4)*g)*x)*sqrt(e*x + d))/(8*c^3*d^7*e^2 - 12*b*c^2*d^6*e^3 + 6*b^2*c*
d^5*e^4 - b^3*d^4*e^5 + (8*c^3*d^3*e^6 - 12*b*c^2*d^2*e^7 + 6*b^2*c*d*e^8 -
 b^3*e^9)*x^4 + 4*(8*c^3*d^4*e^5 - 12*b*c^2*d^3*e^6 + 6*b^2*c*d^2*e^7 - b^3
*d*e^8)*x^3 + 6*(8*c^3*d^5*e^4 - 12*b*c^2*d^4*e^5 + 6*b^2*c*d^3*e^6 - b^3*d
^2*e^7)*x^2 + 4*(8*c^3*d^6*e^3 - 12*b*c^2*d^5*e^4 + 6*b^2*c*d^4*e^5 - b^3*d
^3*e^6)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(gx + f)}{(ex + d)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(9
/2), x)
```

maple [B] time = 0.11, size = 1033, normalized size = 3.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x)
```

```
[Out] 1/24*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-9*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*c^3*d^4*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*x^3*c^3*e^4*f+38*x*b*c*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(
1/2)-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^3*d^3*e*f-8*b^2*e
^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-11*c^2*d^3*g*(-c*e*x-b*e+c*d)
^(1/2)*(b*e-2*c*d)^(1/2)-6*x^2*b*c*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)
^(1/2)+9*x^2*c^2*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-2*x*b*c*e
^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-34*x*c^2*d^2*e*g*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)+10*x*c^2*d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2
*c*d)^(1/2)+12*b*c*d^2*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+30*b*c*
d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+18*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^2*d*e^3*g+18*arctan((-c*e*x-b*e+c*d)^(1/2
)/(b*e-2*c*d)^(1/2))*x*b*c^2*d^2*e^2*g-27*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*
e-2*c*d)^(1/2))*x^2*c^3*d^2*e^2*g-9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))*x^2*c^3*d*e^3*f-27*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2
))*x*c^3*d^3*e*g-9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^3*d
^2*e^2*f+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^3*e*g+3
*x^2*c^2*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-12*x*b^2*e^3*g*(-c*
e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-4*b^2*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(
b*e-2*c*d)^(1/2)-25*c^2*d^2*e*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+6*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^2*e^4*g-9*arctan((
-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^3*d*e^3*g)/(e*x+d)^(7/2)/(b*
e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)}{(ex + d)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(9
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}}{{\left(d + e\,x\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(9/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(9/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{- (d + ex)(be - cd + cex)}\,\left(f + gx\right)}{(d + ex)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(9/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(9/2), x
)
```

3.2009 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=387

$$\frac{c^3(-8beg+11cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{7/2}}+\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+11cdg+5cef)}{64e^2(d+ex)^{3/2}(2cd-be)^3}+\frac{c\cdots}{}$$

Rubi [A] time = 0.76, antiderivative size = 387, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 672, 660, 208}

$$\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+11cdg+5cef)}{64e^2(d+ex)^{3/2}(2cd-be)^3}+\frac{c^3(-8beg+11cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{7/2}}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+11cdg+5cef)}{96e^2(d+ex)^{5/2}(2cd-be)^2}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(d+ex)^{11/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+11cdg+5cef)}{24e^2(d+ex)^{7/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(11/2),
x]
```

```
[Out] -((5*c*e*f + 11*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(24*e^2*(2*c*d - b*e)*(d + e*x)^(7/2)) + (c*(5*c*e*f + 11*c*d*g - 8*b*e*g)
*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(96*e^2*(2*c*d - b*e)^2*(d + e*
x)^(5/2)) + (c^2*(5*c*e*f + 11*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2])/(64*e^2*(2*c*d - b*e)^3*(d + e*x)^(3/2)) - ((e*f - d*g)*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(1
1/2)) + (c^3*(5*c*e*f + 11*c*d*g - 8*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(64*e^2*(2*c*d - b*e
)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{11/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(2cd-be)(d+ex)^{11/2}} + \frac{(5cef+11cdg-8beg)}{8e(2c}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} - \frac{(ef-dg)\left(d\right.}{4e^2(}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11}{}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11}{}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11}{}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11}{}$$

Mathematica [C] time = 0.15, size = 128, normalized size = 0.33

$$\frac{((d+ex)(c(d-ex)-be))^{3/2}\left(-\frac{c^3(d+ex)^4(-8beg+11cdg+5cef)\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(be-2cd)^4}+3dg-3ef\right)}{12e^2(d+ex)^{11/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
11/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*e*f + 3*d*g - (c^3*(5*c*e*f +
 11*c*d*g - 8*b*e*g)*(d + e*x)^4*Hypergeometric2F1[3/2, 4, 5/2, (-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)])/(-2*c*d + b*e)^4))/(12*e^2*(2*c*d - b*e)*(d +
e*x)^(11/2))
```

IntegrateAlgebraic [A] time = 2.12, size = 500, normalized size = 1.29

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-64b^3e^3g(d+ex)+48b^3de^3g-48b^3e^4f-288b^2cd^2e^2g-8b^2ce^3f(d+ex)+288b^2cde^3f+392b^2cde^2g(d+ex)-16b^2ce^2g(d+ex)^2+576bc^2d^3eg-576bc^2d^2e^2f-800bc^2d^2eg(d+ex)+32bc^2de^2f(d+ex)+10bc^2e^2f(d+ex)^2+54bc^2deg(d+ex)^2+24bc^2eg(d+ex)^3-384c^3d^4g+384c^3d^3ef+544c^3d^3g(d+ex)-32c^3d^2ef(d+ex)-44c^3d^2g(d+ex)^2-20c^3def(d+ex)^2-15c^3ef(d+ex)^3-33c^3dg(d+ex)^3\right)}{192e^2(d+ex)^{9/2}(be-2cd)^3}+\frac{\left(8bc^3eg-11c^4dg-5c^4ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{64e^2(2cd-be)^3\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d
 + e*x)^(11/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(384*c^3*d^3*e*f - 5
76*b*c^2*d^2*e^2*f + 288*b^2*c*d*e^3*f - 48*b^3*e^4*f - 384*c^3*d^4*g + 576
*b*c^2*d^3*e*g - 288*b^2*c*d^2*e^2*g + 48*b^3*d*e^3*g - 32*c^3*d^2*e*f*(d +
 e*x) + 32*b*c^2*d*e^2*f*(d + e*x) - 8*b^2*c*e^3*f*(d + e*x) + 544*c^3*d^3*
g*(d + e*x) - 800*b*c^2*d^2*e*g*(d + e*x) + 392*b^2*c*d*e^2*g*(d + e*x) - 6
4*b^3*e^3*g*(d + e*x) - 20*c^3*d*e*f*(d + e*x)^2 + 10*b*c^2*e^2*f*(d + e*x)
^2 - 44*c^3*d^2*g*(d + e*x)^2 + 54*b*c^2*d*e*g*(d + e*x)^2 - 16*b^2*c*e^2*g
*(d + e*x)^2 - 15*c^3*e*f*(d + e*x)^3 - 33*c^3*d*g*(d + e*x)^3 + 24*b*c^2*e
*g*(d + e*x)^3))/(192*e^2*(-2*c*d + b*e)^3*(d + e*x)^(9/2)) + ((-5*c^4*e*f
- 11*c^4*d*g + 8*b*c^3*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(
d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(
64*e^2*(2*c*d - b*e)^3*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.51, size = 2256, normalized size = 5.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x,
algorithm="fricas")
```

```
[Out] [1/384*(3*(5*c^4*d^5*e*f + (5*c^4*e^6*f + (11*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x
^5 + 5*(5*c^4*d*e^5*f + (11*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(5*c^4
*d^2*e^4*f + (11*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(5*c^4*d^3*e^3*
f + (11*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (11*c^4*d^6 - 8*b*c^3*d^5*e
)*g + 5*(5*c^4*d^4*e^2*f + (11*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(2*c*
d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^
2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(
5*(2*c^4*d*e^4 - b*c^3*e^5)*f + (22*c^4*d^2*e^3 - 27*b*c^3*d*e^4 + 8*b^2*c^
2*e^5)*g)*x^3 + (5*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2*b^2*c^2*e^5)*f + (2
86*c^4*d^3*e^2 - 395*b*c^3*d^2*e^3 + 158*b^2*c^2*d*e^4 - 16*b^3*c*e^5)*g)*x
^2 - (634*c^4*d^4*e - 1385*b*c^3*d^3*e^2 + 1094*b^2*c^2*d^2*e^3 - 376*b^3*c
*d*e^4 + 48*b^4*e^5)*f - (166*c^4*d^5 - 375*b*c^3*d^4*e + 322*b^2*c^2*d^3*e
^2 - 120*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((234*c^4*d^3*e^2 - 221*b*c^3*d^
2*e^3 + 68*b^2*c^2*d*e^4 - 8*b^3*c*e^5)*f - (714*c^4*d^4*e - 1597*b*c^3*d^3
*e^2 + 1340*b^2*c^2*d^2*e^3 - 488*b^3*c*d*e^4 + 64*b^4*e^5)*g)*x)*sqrt(e*x
+ d))/(16*c^4*d^9*e^2 - 32*b*c^3*d^8*e^3 + 24*b^2*c^2*d^7*e^4 - 8*b^3*c*d^6
*e^5 + b^4*d^5*e^6 + (16*c^4*d^4*e^7 - 32*b*c^3*d^3*e^8 + 24*b^2*c^2*d^2*e^
9 - 8*b^3*c*d*e^10 + b^4*e^11)*x^5 + 5*(16*c^4*d^5*e^6 - 32*b*c^3*d^4*e^7 +
 24*b^2*c^2*d^3*e^8 - 8*b^3*c*d^2*e^9 + b^4*d*e^10)*x^4 + 10*(16*c^4*d^6*e^
5 - 32*b*c^3*d^5*e^6 + 24*b^2*c^2*d^4*e^7 - 8*b^3*c*d^3*e^8 + b^4*d^2*e^9)*
x^3 + 10*(16*c^4*d^7*e^4 - 32*b*c^3*d^6*e^5 + 24*b^2*c^2*d^5*e^6 - 8*b^3*c*
d^4*e^7 + b^4*d^3*e^8)*x^2 + 5*(16*c^4*d^8*e^3 - 32*b*c^3*d^7*e^4 + 24*b^2*
c^2*d^6*e^5 - 8*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x), 1/192*(3*(5*c^4*d^5*e*f +
(5*c^4*e^6*f + (11*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x^5 + 5*(5*c^4*d*e^5*f + (11
*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(5*c^4*d^2*e^4*f + (11*c^4*d^3*e^
3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(5*c^4*d^3*e^3*f + (11*c^4*d^4*e^2 - 8*b*c
^3*d^3*e^3)*g)*x^2 + (11*c^4*d^6 - 8*b*c^3*d^5*e)*g + 5*(5*c^4*d^4*e^2*f +
(11*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^
2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^
2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
(3*(5*(2*c^4*d*e^4 - b*c^3*e^5)*f + (22*c^4*d^2*e^3 - 27*b*c^3*d*e^4 + 8*b^
2*c^2*e^5)*g)*x^3 + (5*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2*b^2*c^2*e^5)*f
+ (286*c^4*d^3*e^2 - 395*b*c^3*d^2*e^3 + 158*b^2*c^2*d*e^4 - 16*b^3*c*e^5)*
g)*x^2 - (634*c^4*d^4*e - 1385*b*c^3*d^3*e^2 + 1094*b^2*c^2*d^2*e^3 - 376*b
^3*c*d*e^4 + 48*b^4*e^5)*f - (166*c^4*d^5 - 375*b*c^3*d^4*e + 322*b^2*c^2*d
^3*e^2 - 120*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((234*c^4*d^3*e^2 - 221*b*c^
3*d^2*e^3 + 68*b^2*c^2*d*e^4 - 8*b^3*c*e^5)*f - (714*c^4*d^4*e - 1597*b*c^3
*d^3*e^2 + 1340*b^2*c^2*d^2*e^3 - 488*b^3*c*d*e^4 + 64*b^4*e^5)*g)*x)*sqrt(
```

```
e*x + d))/(16*c^4*d^9*e^2 - 32*b*c^3*d^8*e^3 + 24*b^2*c^2*d^7*e^4 - 8*b^3*c
*d^6*e^5 + b^4*d^5*e^6 + (16*c^4*d^4*e^7 - 32*b*c^3*d^3*e^8 + 24*b^2*c^2*d^
2*e^9 - 8*b^3*c*d*e^10 + b^4*e^11)*x^5 + 5*(16*c^4*d^5*e^6 - 32*b*c^3*d^4*e
^7 + 24*b^2*c^2*d^3*e^8 - 8*b^3*c*d^2*e^9 + b^4*d*e^10)*x^4 + 10*(16*c^4*d^
6*e^5 - 32*b*c^3*d^5*e^6 + 24*b^2*c^2*d^4*e^7 - 8*b^3*c*d^3*e^8 + b^4*d^2*e
^9)*x^3 + 10*(16*c^4*d^7*e^4 - 32*b*c^3*d^6*e^5 + 24*b^2*c^2*d^5*e^6 - 8*b^
3*c*d^4*e^7 + b^4*d^3*e^8)*x^2 + 5*(16*c^4*d^8*e^3 - 32*b*c^3*d^7*e^4 + 24*
b^2*c^2*d^6*e^5 - 8*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,\left(gx + f\right)}{(ex + d)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x,
algorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(1
1/2), x)
```

maple [B] time = 0.09, size = 1541, normalized size = 3.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x)
```

```
[Out] -1/192*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-33*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^5*g+15*x^3*c^3*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*
(b*e-2*c*d)^(1/2)-126*x^2*b*c^2*d*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)+48*b^3*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-360*x*b^2*c*d*e
^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+620*x*b*c^2*d^2*e^2*g*(-c*e*x
-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-52*x*b*c^2*d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)-83*c^3*d^4*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-15
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^4*e^5*f-15*arctan((
-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^4*e*f+16*b^3*d*e^3*g*(-c*e*x
-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-317*c^3*d^3*e*f*(-c*e*x-b*e+c*d)^(1/2)*(b
*e-2*c*d)^(1/2)+24*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*b*c
^3*e^5*g-33*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^4*d*e^4*
g-132*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^4*d^2*e^3*g-60
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^4*d*e^4*f-198*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^4*d^3*e^2*g-90*arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^4*d^2*e^3*f-132*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^4*e*g-60*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^3*e^2*f+24*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))*b*c^3*d^4*e*g+64*x*b^3*e^4*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)+96*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^3*d
^3*e^2*g+65*x^2*c^3*d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+8*x*b^
2*c*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-357*x*c^3*d^3*e*g*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+117*x*c^3*d^2*e^2*f*(-c*e*x-b*e+c*d)^(1/
2)*(b*e-2*c*d)^(1/2)-88*b^2*c*d^2*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)-280*b^2*c*d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+146*b*c^2*
d^3*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+534*b*c^2*d^2*e^2*f*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-24*x^3*b*c^2*e^4*g*(-c*e*x-b*e+c*d)^(1/2
)*(b*e-2*c*d)^(1/2)+33*x^3*c^3*d*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(
1/2)+16*x^2*b^2*c*e^4*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-10*x^2*b*c
^2*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+143*x^2*c^3*d^2*e^2*g*(-c
*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+96*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e
-2*c*d)^(1/2))*x^3*b*c^3*d*e^4*g+144*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
```

```
*d)^(1/2))*x^2*b*c^3*d^2*e^3*g)/(e*x+d)^(9/2)/(b*e-2*c*d)^(3/2)/(b^2*e^2-4*
b*c*d*e+4*c^2*d^2)/e^2/(-c*e*x-b*e+c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)}{(ex + d)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x,
algorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(1
1/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}}{{\left(d + e\,x\right)}^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(11/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(11/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(11/
2),x)
```

```
[Out] Timed out
```

3.2010 $\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=419

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{45045c^6e^2(d+ex)^{5/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x\right.}{9009c^5e^2(d+ex}$$

Rubi [A] time = 0.73, antiderivative size = 419, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{45045c^6e^2(d+ex)^{5/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{9009c^5e^2(d+ex)^{3/2}}-\frac{32(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{1287c^4e^2\sqrt{d+ex}}-\frac{16\sqrt{d+ex}(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{429c^3e^2}-\frac{2(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{39c^2e^2}-\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] (-256*(2*c*d - b*e)^4*(3*c*e*f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(5/2))/(45045*c^6*e^2*(d + e*x)^(5/2)) - (128*(2*c*d - b*e)^3*
(3*c*e*f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(9
009*c^5*e^2*(d + e*x)^(3/2)) - (32*(2*c*d - b*e)^2*(3*c*e*f + c*d*g - 2*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(1287*c^4*e^2*Sqrt[d + e*x
]) - (16*(2*c*d - b*e)*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x]*(d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(429*c^3*e^2) - (2*(3*c*e*f + c*d*g - 2*
b*e*g)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(39*c^2
*e^2) - (2*g*(d + e*x)^(5/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(
15*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15ce^2} - \frac{\left(2\left(\frac{5}{2}e\left(-\right.\right.\right.}{}$$

$$= -\frac{2(3cef+cdg-2beg)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce\right.}{39c^2e^2}$$

$$= -\frac{16(2cd-be)(3cef+cdg-2beg)\sqrt{d+ex}\left(d(cd-be)-\right.}{429c^3e^2}$$

$$= -\frac{32(2cd-be)^2(3cef+cdg-2beg)\left(d(cd-be)-be^2x-\right.}{1287c^4e^2\sqrt{d+ex}}$$

$$= -\frac{128(2cd-be)^3(3cef+cdg-2beg)\left(d(cd-be)-be^2x-\right.}{9009c^5e^2(d+ex)^{3/2}}$$

$$= -\frac{256(2cd-be)^4(3cef+cdg-2beg)\left(d(cd-be)-be^2x-\right.}{45045c^6e^2(d+ex)^{5/2}}$$

Mathematica [A] time = 0.35, size = 364, normalized size = 0.87

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
3/2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-256*b
^5*e^5*g + 128*b^4*c*e^4*(3*e*f + 22*d*g + 5*e*g*x) - 32*b^3*c^2*e^3*(389*d
^2*g + 5*e^2*x*(6*f + 7*g*x) + 2*d*e*(63*f + 100*g*x)) + 16*b^2*c^3*e^2*(17
24*d^3*g + 105*e^3*x^2*(f + g*x) + 30*d*e^2*x*(19*f + 21*g*x) + 3*d^2*e*(34
7*f + 515*g*x)) - 2*b*c^4*e*(15191*d^4*g + 105*e^4*x^3*(12*f + 11*g*x) + 42
0*d*e^3*x^2*(17*f + 16*g*x) + 30*d^2*e^2*x*(542*f + 553*g*x) + 4*d^3*e*(413
1*f + 5530*g*x)) + c^5*(12686*d^5*g + 231*e^5*x^4*(15*f + 13*g*x) + 210*d*e
^4*x^3*(90*f + 77*g*x) + 210*d^2*e^3*x^2*(203*f + 173*g*x) + 20*d^3*e^2*x*(
2505*f + 2212*g*x) + d^4*e*(29049*f + 31715*g*x))))/(45045*c^6*e^2*Sqrt[d +
 e*x])
```

IntegrateAlgebraic [A] time = 8.65, size = 598, normalized size = 1.43

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2)^(3/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(5/2)*(6144*c^5*d^4*e*f - 122
88*b*c^4*d^3*e^2*f + 9216*b^2*c^3*d^2*e^3*f - 3072*b^3*c^2*d*e^4*f + 384*b^
4*c*e^5*f + 2048*c^5*d^5*g - 8192*b*c^4*d^4*e*g + 11264*b^2*c^3*d^3*e^2*g -
 7168*b^3*c^2*d^2*e^3*g + 2176*b^4*c*d*e^4*g - 256*b^5*e^5*g + 7680*c^5*d^3
*e*f*(d + e*x) - 11520*b*c^4*d^2*e^2*f*(d + e*x) + 5760*b^2*c^3*d*e^3*f*(d
+ e*x) - 960*b^3*c^2*e^4*f*(d + e*x) + 2560*c^5*d^4*g*(d + e*x) - 8960*b*c^
4*d^3*e*g*(d + e*x) + 9600*b^2*c^3*d^2*e^2*g*(d + e*x) - 4160*b^3*c^2*d*e^3
*g*(d + e*x) + 640*b^4*c*e^4*g*(d + e*x) + 6720*c^5*d^2*e*f*(d + e*x)^2 - 6
720*b*c^4*d*e^2*f*(d + e*x)^2 + 1680*b^2*c^3*e^3*f*(d + e*x)^2 + 2240*c^5*d
^3*g*(d + e*x)^2 - 6720*b*c^4*d^2*e*g*(d + e*x)^2 + 5040*b^2*c^3*d*e^2*g*(d
```

```
 + e*x)^2 - 1120*b^3*c^2*e^3*g*(d + e*x)^2 + 5040*c^5*d*e*f*(d + e*x)^3 - 2
520*b*c^4*e^2*f*(d + e*x)^3 + 1680*c^5*d^2*g*(d + e*x)^3 - 4200*b*c^4*d*e*g
*(d + e*x)^3 + 1680*b^2*c^3*e^2*g*(d + e*x)^3 + 3465*c^5*e*f*(d + e*x)^4 +
1155*c^5*d*g*(d + e*x)^4 - 2310*b*c^4*e*g*(d + e*x)^4 + 3003*c^5*g*(d + e*x
)^5))/(45045*c^6*e^2*(d + e*x)^(5/2))
```

fricas [B] time = 0.45, size = 880, normalized size = 2.10

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/45045*(3003*c^7*e^7*g*x^7 + 231*(15*c^7*e^7*f + 4*(11*c^7*d*e^6 + 4*b*c^
6*e^7)*g)*x^6 + 63*(10*(19*c^7*d*e^6 + 7*b*c^6*e^7)*f + (111*c^7*d^2*e^5 +
278*b*c^6*d*e^6 + b^2*c^5*e^7)*g)*x^5 + 35*(3*(79*c^7*d^2*e^5 + 206*b*c^6*d
*e^6 + b^2*c^5*e^7)*f - 2*(175*c^7*d^3*e^4 - 453*b*c^6*d^2*e^5 - 9*b^2*c^5*
d*e^6 + b^3*c^4*e^7)*g)*x^4 - 5*(12*(271*c^7*d^3*e^4 - 683*b*c^6*d^2*e^5 -
19*b^2*c^5*d*e^6 + 2*b^3*c^4*e^7)*f + (4087*c^7*d^4*e^3 - 4900*b*c^6*d^3*e^
4 - 618*b^2*c^5*d^2*e^5 + 160*b^3*c^4*d*e^6 - 16*b^4*c^3*e^7)*g)*x^3 - 3*(3
*(3169*c^7*d^4*e^3 - 3628*b*c^6*d^3*e^4 - 694*b^2*c^5*d^2*e^5 + 168*b^3*c^4
*d*e^6 - 16*b^4*c^3*e^7)*f + 4*(542*c^7*d^5*e^2 + 11*b*c^6*d^4*e^3 - 862*b^
2*c^5*d^3*e^4 + 389*b^3*c^4*d^2*e^5 - 88*b^4*c^3*d*e^6 + 8*b^5*c^2*e^7)*g)*
x^2 + 3*(9683*c^7*d^6*e - 30382*b*c^6*d^5*e^2 + 37267*b^2*c^5*d^4*e^3 - 234
64*b^3*c^4*d^3*e^4 + 8368*b^4*c^3*d^2*e^5 - 1600*b^5*c^2*d*e^6 + 128*b^6*c*
e^7)*f + 2*(6343*c^7*d^7 - 27877*b*c^6*d^6*e + 50517*b^2*c^5*d^5*e^2 - 4899
9*b^3*c^4*d^4*e^3 + 27648*b^4*c^3*d^3*e^4 - 9168*b^5*c^2*d^2*e^5 + 1664*b^6
*c*d*e^6 - 128*b^7*e^7)*g - (6*(1333*c^7*d^5*e^2 + 1421*b*c^6*d^4*e^3 - 414
2*b^2*c^5*d^3*e^4 + 1724*b^3*c^4*d^2*e^5 - 368*b^4*c^3*d*e^6 + 32*b^5*c^2*e
^7)*f - (6343*c^7*d^6*e - 21534*b*c^6*d^5*e^2 + 28983*b^2*c^5*d^4*e^3 - 200
16*b^3*c^4*d^3*e^4 + 7632*b^4*c^3*d^2*e^5 - 1536*b^5*c^2*d*e^6 + 128*b^6*c*
e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^6*e^
3*x + c^6*d*e^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 535, normalized size = 1.28

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/45045*(c*e*x+b*e-c*d)*(-3003*c^5*e^5*g*x^5+2310*b*c^4*e^5*g*x^4-16170*c^
5*d*e^4*g*x^4-3465*c^5*e^5*f*x^4-1680*b^2*c^3*e^5*g*x^3+13440*b*c^4*d*e^4*g
*x^3+2520*b*c^4*e^5*f*x^3-36330*c^5*d^2*e^3*g*x^3-18900*c^5*d*e^4*f*x^3+112
0*b^3*c^2*e^5*g*x^2-10080*b^2*c^3*d*e^4*g*x^2-1680*b^2*c^3*e^5*f*x^2+33180*
b*c^4*d^2*e^3*g*x^2+14280*b*c^4*d*e^4*f*x^2-44240*c^5*d^3*e^2*g*x^2-42630*c
^5*d^2*e^3*f*x^2-640*b^4*c*e^5*g*x+6400*b^3*c^2*d*e^4*g*x+960*b^3*c^2*e^5*f
*x-24720*b^2*c^3*d^2*e^3*g*x-9120*b^2*c^3*d*e^4*f*x+44240*b*c^4*d^3*e^2*g*x
```

```
+32520*b*c^4*d^2*e^3*f*x-31715*c^5*d^4*e*g*x-50100*c^5*d^3*e^2*f*x+256*b^5*
e^5*g-2816*b^4*c*d*e^4*g-384*b^4*c*e^5*f+12448*b^3*c^2*d^2*e^3*g+4032*b^3*c
^2*d*e^4*f-27584*b^2*c^3*d^3*e^2*g-16656*b^2*c^3*d^2*e^3*f+30382*b*c^4*d^4*
e*g+33048*b*c^4*d^3*e^2*f-12686*c^5*d^5*g-29049*c^5*d^4*e*f)*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)/c^6/e^2/(e*x+d)^(3/2)
```

maxima [B] time = 1.10, size = 875, normalized size = 2.09

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/15015*(1155*c^6*e^6*x^6 + 9683*c^6*d^6 - 30382*b*c^5*d^5*e + 37267*b^2*c
^4*d^4*e^2 - 23464*b^3*c^3*d^3*e^3 + 8368*b^4*c^2*d^2*e^4 - 1600*b^5*c*d*e^
5 + 128*b^6*e^6 + 210*(19*c^6*d*e^5 + 7*b*c^5*e^6)*x^5 + 35*(79*c^6*d^2*e^4
 + 206*b*c^5*d*e^5 + b^2*c^4*e^6)*x^4 - 20*(271*c^6*d^3*e^3 - 683*b*c^5*d^2
*e^4 - 19*b^2*c^4*d*e^5 + 2*b^3*c^3*e^6)*x^3 - 3*(3169*c^6*d^4*e^2 - 3628*b
*c^5*d^3*e^3 - 694*b^2*c^4*d^2*e^4 + 168*b^3*c^3*d*e^5 - 16*b^4*c^2*e^6)*x^
2 - 2*(1333*c^6*d^5*e + 1421*b*c^5*d^4*e^2 - 4142*b^2*c^4*d^3*e^3 + 1724*b^
3*c^3*d^2*e^4 - 368*b^4*c^2*d*e^5 + 32*b^5*c*e^6)*x)*sqrt(-c*e*x + c*d - b*
e)*(e*x + d)*f/(c^5*e^2*x + c^5*d*e) - 2/45045*(3003*c^7*e^7*x^7 + 12686*c^
7*d^7 - 55754*b*c^6*d^6*e + 101034*b^2*c^5*d^5*e^2 - 97998*b^3*c^4*d^4*e^3
+ 55296*b^4*c^3*d^3*e^4 - 18336*b^5*c^2*d^2*e^5 + 3328*b^6*c*d*e^6 - 256*b^
7*e^7 + 924*(11*c^7*d*e^6 + 4*b*c^6*e^7)*x^6 + 63*(111*c^7*d^2*e^5 + 278*b*
c^6*d*e^6 + b^2*c^5*e^7)*x^5 - 70*(175*c^7*d^3*e^4 - 453*b*c^6*d^2*e^5 - 9*
b^2*c^5*d*e^6 + b^3*c^4*e^7)*x^4 - 5*(4087*c^7*d^4*e^3 - 4900*b*c^6*d^3*e^4
 - 618*b^2*c^5*d^2*e^5 + 160*b^3*c^4*d*e^6 - 16*b^4*c^3*e^7)*x^3 - 12*(542*
c^7*d^5*e^2 + 11*b*c^6*d^4*e^3 - 862*b^2*c^5*d^3*e^4 + 389*b^3*c^4*d^2*e^5
- 88*b^4*c^3*d*e^6 + 8*b^5*c^2*e^7)*x^2 + (6343*c^7*d^6*e - 21534*b*c^6*d^5
*e^2 + 28983*b^2*c^5*d^4*e^3 - 20016*b^3*c^4*d^3*e^4 + 7632*b^4*c^3*d^2*e^5
 - 1536*b^5*c^2*d*e^6 + 128*b^6*c*e^7)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d
)*g/(c^6*e^3*x + c^6*d*e^2)
```

mupad [B] time = 3.93, size = 863, normalized size = 2.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x
)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^3*x^6*(d + e*x)^(1/2)*(
16*b*e*g + 44*c*d*g + 15*c*e*f))/195 + (2*e^2*x^5*(d + e*x)^(1/2)*(b^2*e^2*
g + 111*c^2*d^2*g + 70*b*c*e^2*f + 190*c^2*d*e*f + 278*b*c*d*e*g))/(715*c)
+ (2*c*e^4*g*x^7*(d + e*x)^(1/2))/15 + (2*(b*e - c*d)^2*(d + e*x)^(1/2)*(12
686*c^5*d^5*g - 256*b^5*e^5*g + 384*b^4*c*e^5*f + 29049*c^5*d^4*e*f - 30382
*b*c^4*d^4*e*g + 2816*b^4*c*d*e^4*g - 33048*b*c^4*d^3*e^2*f - 4032*b^3*c^2*
d*e^4*f + 16656*b^2*c^3*d^2*e^3*f + 27584*b^2*c^3*d^3*e^2*g - 12448*b^3*c^2
*d^2*e^3*g))/(45045*c^6*e^3) + (x^3*(d + e*x)^(1/2)*(160*b^4*c^3*e^7*g - 24
0*b^3*c^4*e^7*f - 32520*c^7*d^3*e^4*f - 40870*c^7*d^4*e^3*g + 81960*b*c^6*d
^2*e^5*f + 2280*b^2*c^5*d*e^6*f + 49000*b*c^6*d^3*e^4*g - 1600*b^3*c^4*d*e^
6*g + 6180*b^2*c^5*d^2*e^5*g))/(45045*c^6*e^3) + (x^4*(d + e*x)^(1/2)*(210*
b^2*c^5*e^7*f - 140*b^3*c^4*e^7*g + 16590*c^7*d^2*e^5*f - 24500*c^7*d^3*e^4
*g + 43260*b*c^6*d*e^6*f + 63420*b*c^6*d^2*e^5*g + 1260*b^2*c^5*d*e^6*g))/(
45045*c^6*e^3) - (x^2*(d + e*x)^(1/2)*(192*b^5*c^2*e^7*g - 288*b^4*c^3*e^7*
f + 57042*c^7*d^4*e^3*f + 13008*c^7*d^5*e^2*g - 65304*b*c^6*d^3*e^4*f + 302
4*b^3*c^4*d*e^6*f + 264*b*c^6*d^4*e^3*g - 2112*b^4*c^3*d*e^6*g - 12492*b^2*
```

```
c^5*d^2*e^5*f - 20688*b^2*c^5*d^3*e^4*g + 9336*b^3*c^4*d^2*e^5*g))/(45045*c
^6*e^3) + (2*x*(b*e - c*d)*(d + e*x)^(1/2)*(128*b^5*e^5*g - 6343*c^5*d^5*g
- 192*b^4*c*e^5*f + 7998*c^5*d^4*e*f + 15191*b*c^4*d^4*e*g - 1408*b^4*c*d*e
^4*g + 16524*b*c^4*d^3*e^2*f + 2016*b^3*c^2*d*e^4*f - 8328*b^2*c^3*d^2*e^3*
f - 13792*b^2*c^3*d^3*e^2*g + 6224*b^3*c^2*d^2*e^3*g))/(45045*c^5*e^2)))/(x
 + d/e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2011 $\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=347

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{15015c^5e^2(d+ex)^{5/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/}}{3003c^4e^2(d+ex)^3}$$

Rubi [A] time = 0.60, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{15015c^5e^2(d+ex)^{5/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{3003c^4e^2(d+ex)^{3/2}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{429c^3e^2\sqrt{d+ex}}-\frac{2\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{143c^2e^2}-\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] (-32*(2*c*d - b*e)^3*(13*c*e*f + 3*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(5/2))/(15015*c^5*e^2*(d + e*x)^(5/2)) - (16*(2*c*d - b*e)^2
*(13*c*e*f + 3*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2)
)/(3003*c^4*e^2*(d + e*x)^(3/2)) - (4*(2*c*d - b*e)*(13*c*e*f + 3*c*d*g - 8
*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(429*c^3*e^2*Sqrt[d +
e*x]) - (2*(13*c*e*f + 3*c*d*g - 8*b*e*g)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(5/2))/(143*c^2*e^2) - (2*g*(d + e*x)^(3/2)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(5/2))/(13*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13ce^2} - \frac{\left(2\left(\frac{5}{2}e \cdots\right.\right.}{\cdots}$$

$$= -\frac{2(13cef+3cdg-8beg)\sqrt{d+ex}\left(d(cd-be)-be^2x \cdots\right.}{143c^2e^2}$$

$$= -\frac{4(2cd-be)(13cef+3cdg-8beg)\left(d(cd-be)-be^2x \cdots\right.}{429c^3e^2\sqrt{d+ex}}$$

$$= -\frac{16(2cd-be)^2(13cef+3cdg-8beg)\left(d(cd-be)-be \cdots\right.}{3003c^4e^2(d+ex)^{3/2}}$$

$$= -\frac{32(2cd-be)^3(13cef+3cdg-8beg)\left(d(cd-be)-be \cdots\right.}{15015c^5e^2(d+ex)^{5/2}}$$

Mathematica [A] time = 0.26, size = 264, normalized size = 0.76

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(128b^4e^4g-16b^3ce^3(71dg+13ef+20egx)+8b^2c^2e^2\left(473d^2g+de(221f+315gx)+5e^2x(13f+14gx)\right)-2bc^3e\left(2765d^3g+d^2e(2743f+3470gx)+25de^2x(78f+77gx)+35e^3x^2(13f+12gx)\right)+c^4\left(2754d^4g+d^3e(6929f+6885gx)+5d^2e^2x(1963f+1659gx)+35de^3x^2(169f+141gx)+105e^4x^3(13f+11gx)\right)\right)}{15015c^5e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
3/2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(128*b^
4*e^4*g - 16*b^3*c*e^3*(13*e*f + 71*d*g + 20*e*g*x) + 8*b^2*c^2*e^2*(473*d^
2*g + 5*e^2*x*(13*f + 14*g*x) + d*e*(221*f + 315*g*x)) - 2*b*c^3*e*(2765*d^
3*g + 35*e^3*x^2*(13*f + 12*g*x) + 25*d*e^2*x*(78*f + 77*g*x) + d^2*e*(2743
*f + 3470*g*x)) + c^4*(2754*d^4*g + 105*e^4*x^3*(13*f + 11*g*x) + 35*d*e^3*
x^2*(169*f + 141*g*x) + 5*d^2*e^2*x*(1963*f + 1659*g*x) + d^3*e*(6929*f + 6
885*g*x))))/(15015*c^5*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 3.97, size = 401, normalized size = 1.16

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{5/2}\left(128b^4e^4g-320b^3ce^3g(d+ex)-816b^3cde^3g-208b^3ce^4f+1824b^2c^2d^2e^2g+520b^2c^2e^3f(d+ex)+1248b^2c^2de^3f+560b^2c^2e^2g(d+ex)^2+1400b^2c^2de^2g(d+ex)-1600bc^3d^3eg-2496bc^3d^2e^2f-1760bc^3d^2eg(d+ex)-910bc^3e^2f(d+ex)^2-2080bc^3de^2f(d+ex)-840bc^3eg(d+ex)^3-1330bc^3deg(d+ex)^2+384c^4d^4g+1664c^4d^3ef+480c^4d^3g(d+ex)+2080c^4d^2ef(d+ex)+420c^4d^2g(d+ex)^2+1365c^4ef(d+ex)^3+1820c^4def(d+ex)^2+1155c^4g(d+ex)^4+315c^4dg(d+ex)^3\right)}{15015c^5e^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2)^(3/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(5/2)*(1664*c^4*d^3*e*f - 249
6*b*c^3*d^2*e^2*f + 1248*b^2*c^2*d*e^3*f - 208*b^3*c*e^4*f + 384*c^4*d^4*g
- 1600*b*c^3*d^3*e*g + 1824*b^2*c^2*d^2*e^2*g - 816*b^3*c*d*e^3*g + 128*b^4
*e^4*g + 2080*c^4*d^2*e*f*(d + e*x) - 2080*b*c^3*d*e^2*f*(d + e*x) + 520*b^
2*c^2*e^3*f*(d + e*x) + 480*c^4*d^3*g*(d + e*x) - 1760*b*c^3*d^2*e*g*(d + e
*x) + 1400*b^2*c^2*d*e^2*g*(d + e*x) - 320*b^3*c*e^3*g*(d + e*x) + 1820*c^4
*d*e*f*(d + e*x)^2 - 910*b*c^3*e^2*f*(d + e*x)^2 + 420*c^4*d^2*g*(d + e*x)^
2 - 1330*b*c^3*d*e*g*(d + e*x)^2 + 560*b^2*c^2*e^2*g*(d + e*x)^2 + 1365*c^4
*e*f*(d + e*x)^3 + 315*c^4*d*g*(d + e*x)^3 - 840*b*c^3*e*g*(d + e*x)^3 + 11
55*c^4*g*(d + e*x)^4))/(15015*c^5*e^2*(d + e*x)^(5/2))
```

fricas [B] time = 0.42, size = 678, normalized size = 1.95

$$-\frac{2\left(1155c^6e^6gx^6+105\left(13c^6e^6f+\left(25c^6de^5+14bc^5e^6\right)g\right)x^5+35\left(13\left(7c^6de^5+4bc^5e^6\right)f-\left(12c^6d^2e^4-154bc^5de^5-b^2c^4e^6\right)g\right)x^4-5\left(13\left(10c^6d^2e^4-108bc^5de^5-b^2c^4e^6\right)f+\left(954c^6d^3e^3-1328bc^5d^2e^4-63b^2c^4de^5+8b^3c^3e^6\right)g\right)x^3-3\left(13\left(174c^6d^3e^3-236bc^5d^2e^4-17b^2c^4de^5+2b^3c^3e^6\right)f+\left(907c^6d^4e^2-560bc^5d^3e^3-473b^2c^4d^2e^4+142b^3c^3de^5-16b^4c^2e^6\right)g\right)x^2+13\left(533c^6d^5e-1488bc^5d^4e^2+1513b^2c^4d^3e^3-710b^3c^3d^2e^4+168b^4c^2de^5-16b^5ce^6\right)f+2\left(1377c^6d^6-5519bc^5d^5e+8799b^2c^4d^4e^2-7117b^3c^3d^3e^3+3092b^4c^2d^2e^4-696b^5cde^5+64b^6e^6\right)g-\left(13\left(311c^6d^4e^2-100bc^5d^3e^3-279b^2c^4d^2e^4+76b^3c^3de^5-8b^4c^2e^6\right)f-\left(1377c^6d^5e-4142bc^5d^4e^2+4657b^2c^4d^3e^3-2460b^3c^3d^2e^4+632b^4c^2de^5-64b^5ce^6\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{15015\left(c^5e^3x+c^5de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/15015*(1155*c^6*e^6*g*x^6 + 105*(13*c^6*e^6*f + (25*c^6*d*e^5 + 14*b*c^5
*e^6)*g)*x^5 + 35*(13*(7*c^6*d*e^5 + 4*b*c^5*e^6)*f - (12*c^6*d^2*e^4 - 154
*b*c^5*d*e^5 - b^2*c^4*e^6)*g)*x^4 - 5*(13*(10*c^6*d^2*e^4 - 108*b*c^5*d*e^
5 - b^2*c^4*e^6)*f + (954*c^6*d^3*e^3 - 1328*b*c^5*d^2*e^4 - 63*b^2*c^4*d*e
^5 + 8*b^3*c^3*e^6)*g)*x^3 - 3*(13*(174*c^6*d^3*e^3 - 236*b*c^5*d^2*e^4 - 1
7*b^2*c^4*d*e^5 + 2*b^3*c^3*e^6)*f + (907*c^6*d^4*e^2 - 560*b*c^5*d^3*e^3 -
 473*b^2*c^4*d^2*e^4 + 142*b^3*c^3*d*e^5 - 16*b^4*c^2*e^6)*g)*x^2 + 13*(533
*c^6*d^5*e - 1488*b*c^5*d^4*e^2 + 1513*b^2*c^4*d^3*e^3 - 710*b^3*c^3*d^2*e^
4 + 168*b^4*c^2*d*e^5 - 16*b^5*c*e^6)*f + 2*(1377*c^6*d^6 - 5519*b*c^5*d^5*
e + 8799*b^2*c^4*d^4*e^2 - 7117*b^3*c^3*d^3*e^3 + 3092*b^4*c^2*d^2*e^4 - 69
6*b^5*c*d*e^5 + 64*b^6*e^6)*g - (13*(311*c^6*d^4*e^2 - 100*b*c^5*d^3*e^3 -
279*b^2*c^4*d^2*e^4 + 76*b^3*c^3*d*e^5 - 8*b^4*c^2*e^6)*f - (1377*c^6*d^5*e
 - 4142*b*c^5*d^4*e^2 + 4657*b^2*c^4*d^3*e^3 - 2460*b^3*c^3*d^2*e^4 + 632*b
^4*c^2*d*e^5 - 64*b^5*c*e^6)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e)*sqrt(e*x + d)/(c^5*e^3*x + c^5*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}} (ex+d)^{\frac{3}{2}} \left(gx+f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(e*x + d)^(3/2)*(g*x
 + f), x)
```

maple [A] time = 0.05, size = 367, normalized size = 1.06

$$\frac{2\left(cex+be-cd\right)\left(1155g\,e^4x^4c^4-840b\,c^3e^4g\,x^3+4935c^4d\,e^3g\,x^3+1365c^4e^4f\,x^3+560b^2c^2e^4g\,x^2-3850b\,c^3d\,e^3g\,x^2-910b\,c^3e^4f\,x^2+8295c^4d^2e^2g\,x^2+5915c^4d\,e^3f\,x^2-320b^3c\,e^4gx+2520b^2c^2d\,e^3gx+520b^2c^2e^4fx-6940b\,c^3d^2e^2gx-3900b\,c^3d\,e^3fx+6885c^4d^3egx+9815c^4d^2e^2fx+128b^4e^4g-1136b^3cd\,e^3g-208b^3c\,e^4f+3784b^2c^2d^2e^2g+1768b^2c^2d\,e^3f-5530b\,c^3d^3eg-5486b\,c^3d^2e^2f+2754c^4d^4g+6929f\,d^3c^4e\right)\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{3}{2}}}{15015\left(ex+d\right)^{\frac{3}{2}}c^5e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2/15015*(c*e*x+b*e-c*d)*(1155*c^4*e^4*g*x^4-840*b*c^3*e^4*g*x^3+4935*c^4*d*
e^3*g*x^3+1365*c^4*e^4*f*x^3+560*b^2*c^2*e^4*g*x^2-3850*b*c^3*d*e^3*g*x^2-9
10*b*c^3*e^4*f*x^2+8295*c^4*d^2*e^2*g*x^2+5915*c^4*d*e^3*f*x^2-320*b^3*c*e^
4*g*x+2520*b^2*c^2*d*e^3*g*x+520*b^2*c^2*e^4*f*x-6940*b*c^3*d^2*e^2*g*x-390
0*b*c^3*d*e^3*f*x+6885*c^4*d^3*e*g*x+9815*c^4*d^2*e^2*f*x+128*b^4*e^4*g-113
6*b^3*c*d*e^3*g-208*b^3*c*e^4*f+3784*b^2*c^2*d^2*e^2*g+1768*b^2*c^2*d*e^3*f
-5530*b*c^3*d^3*e*g-5486*b*c^3*d^2*e^2*f+2754*c^4*d^4*g+6929*c^4*d^3*e*f)*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c^5/e^2/(e*x+d)^(3/2)
```

maxima [B] time = 0.99, size = 676, normalized size = 1.95

$$-\frac{2\left(105\,c^5e^5x^5+533\,c^5d^5-1488\,bc^4d^4e+1513\,b^2c^3d^3e^2-710\,b^3c^2d^2e^3+168\,b^4cde^4-16\,b^5e^5+35\left(7\,c^5de^4+4\,bc^4e^5\right)x^4-5\left(10\,c^5d^2e^3-108\,bc^4de^4-b^2c^3e^5\right)x^3-3\left(174\,c^5d^3e^2-236\,bc^4d^2e^3-17\,b^2c^3de^4+2\,b^3c^2e^5\right)x^2-\left(311\,c^5d^4e-100\,bc^4d^3e^2-279\,b^2c^3d^2e^3+76\,b^3c^2de^4-8\,b^4ce^5\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)f}{1155\left(c^4e^2x+c^4de\right)}-\frac{2\left(1155\,c^6e^6x^6+2754\,c^6d^6-11038\,bc^5d^5e+17598\,b^2c^4d^4e^2-14234\,b^3c^3d^3e^3+6184\,b^4c^2d^2e^4-1392\,b^5cde^5+128\,b^6e^6+105\left(25\,c^6de^5+14\,bc^5e^6\right)x^5-35\left(12\,c^6d^2e^4-154\,bc^5de^5-b^2c^4e^6\right)x^4-5\left(954\,c^6d^3e^3-1328\,bc^5d^2e^4-63\,b^2c^4de^5+8\,b^3c^3e^6\right)x^3-3\left(907\,c^6d^4e^2-560\,bc^5d^3e^3-473\,b^2c^4d^2e^4+142\,b^3c^3de^5-16\,b^4c^2e^6\right)x^2+\left(1377\,c^6d^5e-4142\,bc^5d^4e^2+4657\,b^2c^4d^3e^3-2460\,b^3c^3d^2e^4+632\,b^4c^2de^5-64\,b^5ce^6\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)g}{15015\left(c^5e^3x+c^5de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/1155*(105*c^5*e^5*x^5 + 533*c^5*d^5 - 1488*b*c^4*d^4*e + 1513*b^2*c^3*d^
3*e^2 - 710*b^3*c^2*d^2*e^3 + 168*b^4*c*d*e^4 - 16*b^5*e^5 + 35*(7*c^5*d*e^
4 + 4*b*c^4*e^5)*x^4 - 5*(10*c^5*d^2*e^3 - 108*b*c^4*d*e^4 - b^2*c^3*e^5)*x
^3 - 3*(174*c^5*d^3*e^2 - 236*b*c^4*d^2*e^3 - 17*b^2*c^3*d*e^4 + 2*b^3*c^2*
e^5)*x^2 - (311*c^5*d^4*e - 100*b*c^4*d^3*e^2 - 279*b^2*c^3*d^2*e^3 + 76*b^
```

```
3*c^2*d*e^4 - 8*b^4*c*e^5)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^4*e^2
*x + c^4*d*e) - 2/15015*(1155*c^6*e^6*x^6 + 2754*c^6*d^6 - 11038*b*c^5*d^5*
e + 17598*b^2*c^4*d^4*e^2 - 14234*b^3*c^3*d^3*e^3 + 6184*b^4*c^2*d^2*e^4 -
1392*b^5*c*d*e^5 + 128*b^6*e^6 + 105*(25*c^6*d*e^5 + 14*b*c^5*e^6)*x^5 - 35
*(12*c^6*d^2*e^4 - 154*b*c^5*d*e^5 - b^2*c^4*e^6)*x^4 - 5*(954*c^6*d^3*e^3
- 1328*b*c^5*d^2*e^4 - 63*b^2*c^4*d*e^5 + 8*b^3*c^3*e^6)*x^3 - 3*(907*c^6*d
^4*e^2 - 560*b*c^5*d^3*e^3 - 473*b^2*c^4*d^2*e^4 + 142*b^3*c^3*d*e^5 - 16*b
^4*c^2*e^6)*x^2 + (1377*c^6*d^5*e - 4142*b*c^5*d^4*e^2 + 4657*b^2*c^4*d^3*e
^3 - 2460*b^3*c^3*d^2*e^4 + 632*b^4*c^2*d*e^5 - 64*b^5*c*e^6)*x)*sqrt(-c*e*
x + c*d - b*e)*(e*x + d)*g/(c^5*e^3*x + c^5*d*e^2)
```

mupad [B] time = 3.63, size = 637, normalized size = 1.84

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e^2\,x^5\,\sqrt{d+e\,x}\,\left(14\,b\,e\,g+25\,c\,d\,g+13\,c\,e\,f\right)}{143}+\frac{2\,c\,e^3\,g\,x^6\,\sqrt{d+e\,x}}{13}+\frac{x^2\,\sqrt{d+e\,x}\,\left(96\,g\,b^4\,c^2\,e^6-852\,g\,b^3\,c^3\,d\,e^5-156\,f\,b^3\,c^3\,e^6+2838\,g\,b^2\,c^4\,d^2\,e^4+1326\,f\,b^2\,c^4\,d\,e^5+3360\,g\,b\,c^5\,d^3\,e^3+18408\,f\,b\,c^5\,d^2\,e^4-5442\,g\,c^6\,d^4\,e^2-13572\,f\,c^6\,d^3\,e^3\right)}{15015\,c^5\,e^3}+\frac{2\,{\left(b\,e-c\,d\right)}^2\,\sqrt{d+e\,x}\,\left(128\,g\,b^4\,e^4-1136\,g\,b^3\,c\,d\,e^3-208\,f\,b^3\,c\,e^4+3784\,g\,b^2\,c^2\,d^2\,e^2+1768\,f\,b^2\,c^2\,d\,e^3-5530\,g\,b\,c^3\,d^3\,e-5486\,f\,b\,c^3\,d^2\,e^2+2754\,g\,c^4\,d^4+6929\,f\,c^4\,d^3\,e\right)}{15015\,c^5\,e^3}+\frac{2\,e\,x^4\,\sqrt{d+e\,x}\,\left(g\,b^2\,e^2+154\,g\,b\,c\,d\,e+52\,f\,b\,c\,e^2-12\,g\,c^2\,d^2+91\,f\,c^2\,d\,e\right)}{429\,c}+\frac{x^3\,\sqrt{d+e\,x}\,\left(-80\,g\,b^3\,c^3\,e^6+630\,g\,b^2\,c^4\,d\,e^5+130\,f\,b^2\,c^4\,e^6+13280\,g\,b\,c^5\,d^2\,e^4+14040\,f\,b\,c^5\,d\,e^5-9540\,g\,c^6\,d^3\,e^3-1300\,f\,c^6\,d^2\,e^4\right)}{15015\,c^5\,e^3}+\frac{2\,x\,\left(b\,e-c\,d\right)\,\sqrt{d+e\,x}\,\left(-64\,g\,b^4\,e^4+568\,g\,b^3\,c\,d\,e^3+104\,f\,b^3\,c\,e^4-1892\,g\,b^2\,c^2\,d^2\,e^2-884\,f\,b^2\,c^2\,d\,e^3+2765\,g\,b\,c^3\,d^3\,e+2743\,f\,b\,c^3\,d^2\,e^2-1377\,g\,c^4\,d^4+4043\,f\,c^4\,d^3\,e\right)}{15015\,c^4\,e^2}\right)}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x
)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^2*x^5*(d + e*x)^(1/2)*(
14*b*e*g + 25*c*d*g + 13*c*e*f))/143 + (2*c*e^3*g*x^6*(d + e*x)^(1/2))/13 +
 (x^2*(d + e*x)^(1/2)*(96*b^4*c^2*e^6*g - 156*b^3*c^3*e^6*f - 13572*c^6*d^3
*e^3*f - 5442*c^6*d^4*e^2*g + 18408*b*c^5*d^2*e^4*f + 1326*b^2*c^4*d*e^5*f
+ 3360*b*c^5*d^3*e^3*g - 852*b^3*c^3*d*e^5*g + 2838*b^2*c^4*d^2*e^4*g))/(15
015*c^5*e^3) + (2*(b*e - c*d)^2*(d + e*x)^(1/2)*(128*b^4*e^4*g + 2754*c^4*d
^4*g - 208*b^3*c*e^4*f + 6929*c^4*d^3*e*f - 5530*b*c^3*d^3*e*g - 1136*b^3*c
*d*e^3*g - 5486*b*c^3*d^2*e^2*f + 1768*b^2*c^2*d*e^3*f + 3784*b^2*c^2*d^2*e
^2*g))/(15015*c^5*e^3) + (2*e*x^4*(d + e*x)^(1/2)*(b^2*e^2*g - 12*c^2*d^2*g
 + 52*b*c*e^2*f + 91*c^2*d*e*f + 154*b*c*d*e*g))/(429*c) + (x^3*(d + e*x)^(
1/2)*(130*b^2*c^4*e^6*f - 80*b^3*c^3*e^6*g - 1300*c^6*d^2*e^4*f - 9540*c^6*
d^3*e^3*g + 14040*b*c^5*d*e^5*f + 13280*b*c^5*d^2*e^4*g + 630*b^2*c^4*d*e^5
*g))/(15015*c^5*e^3) + (2*x*(b*e - c*d)*(d + e*x)^(1/2)*(104*b^3*c*e^4*f -
1377*c^4*d^4*g - 64*b^4*e^4*g + 4043*c^4*d^3*e*f + 2765*b*c^3*d^3*e*g + 568
*b^3*c*d*e^3*g + 2743*b*c^3*d^2*e^2*f - 884*b^2*c^2*d*e^3*f - 1892*b^2*c^2*
d^2*e^2*g))/(15015*c^4*e^2)))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(d + e x\right)^{\frac{3}{2}} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**(3/2)*(f + g*x)
, x)
```

3.2012 $\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=267

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+cdg+11cef)}{3465c^4e^2(d+ex)^{5/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-}{693c^3e^2(d+ex)^{3/2}}$$

Rubi [A] time = 0.43, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+cdg+11cef)}{99c^2e^2\sqrt{d+ex}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+cdg+11cef)}{693c^3e^2(d+ex)^{3/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+cdg+11cef)}{3465c^4e^2(d+ex)^{5/2}}-\frac{2g\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (-16*(2*c*d - b*e)^2*(11*c*e*f + c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(5/2))/(3465*c^4*e^2*(d + e*x)^(5/2)) - (8*(2*c*d - b*e)*(11*c
*e*f + c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(693*c
^3*e^2*(d + e*x)^(3/2)) - (2*(11*c*e*f + c*d*g - 6*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(99*c^2*e^2*Sqrt[d + e*x]) - (2*g*Sqrt[d + e*x]
*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(11*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{2g\sqrt{d+ex}\,\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11ce^2} - \frac{\left(2\left(\frac{5}{2}e\left(-\right.\right.\right.}{}$$

$$= -\frac{2(11cef+cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{99c^2e^2\sqrt{d+ex}}$$

$$= -\frac{8(2cd-be)(11cef+cdg-6beg)\left(d(cd-be)-be^2x-\right.}{693c^3e^2(d+ex)^{3/2}}$$

$$= -\frac{16(2cd-be)^2(11cef+cdg-6beg)\left(d(cd-be)-be^2x\right.}{3465c^4e^2(d+ex)^{5/2}}$$

Mathematica [A] time = 0.17, size = 183, normalized size = 0.69

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(-48b^3e^3g+8b^2ce^2(40dg+11ef+15egx)-2bc^2e\left(347d^2g+de(286f+340gx)+5e^2x(22f+21gx)\right)+c^3\left(422d^3g+d^2e(1177f+1055gx)+10de^2x(121f+98gx)+35e^3x^2(11f+9gx)\right)\right)}{3465c^4e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-48*b^
3*e^3*g + 8*b^2*c*e^2*(11*e*f + 40*d*g + 15*e*g*x) - 2*b*c^2*e*(347*d^2*g +
 5*e^2*x*(22*f + 21*g*x) + d*e*(286*f + 340*g*x)) + c^3*(422*d^3*g + 35*e^3
*x^2*(11*f + 9*g*x) + 10*d*e^2*x*(121*f + 98*g*x) + d^2*e*(1177*f + 1055*g*
x))))/(3465*c^4*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 7.02, size = 248, normalized size = 0.93

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{5/2}\left(-48b^3e^3g+120b^2ce^2g(d+ex)+200b^2cde^2g+88b^2ce^3f-224bc^2d^2eg-220bc^2e^2f(d+ex)-352bc^2de^2f-210bc^2eg(d+ex)^2-260bc^2deg(d+ex)+32c^3d^3g+352c^3d^2ef+40c^3d^2g(d+ex)+385c^3ef(d+ex)^2+440c^3def(d+ex)+315c^3g(d+ex)^3+35c^3dg(d+ex)^2\right)}{3465c^4e^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(3/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(5/2)*(352*c^3*d^2*e*f - 352*
b*c^2*d*e^2*f + 88*b^2*c*e^3*f + 32*c^3*d^3*g - 224*b*c^2*d^2*e*g + 200*b^2
*c*d*e^2*g - 48*b^3*e^3*g + 440*c^3*d*e*f*(d + e*x) - 220*b*c^2*e^2*f*(d +
e*x) + 40*c^3*d^2*g*(d + e*x) - 260*b*c^2*d*e*g*(d + e*x) + 120*b^2*c*e^2*g
*(d + e*x) + 385*c^3*e*f*(d + e*x)^2 + 35*c^3*d*g*(d + e*x)^2 - 210*b*c^2*e
*g*(d + e*x)^2 + 315*c^3*g*(d + e*x)^3))/(3465*c^4*e^2*(d + e*x)^(5/2))
```

fricas [B] time = 0.42, size = 505, normalized size = 1.89

$$-\frac{2\left(315\,c^5e^5gx^5+35\left(11\,c^5e^5f+2\left(5\,c^5de^4+6\,bc^4e^5\right)g\right)x^4+5\left(22\left(4\,c^5de^4+5\,bc^4e^5\right)f-\left(118\,c^5d^2e^3-214\,bc^4de^4-3\,b^2c^3e^5\right)g\right)x^3-3\left(11\left(26\,c^5d^2e^3-46\,bc^4de^4-b^2c^3e^5\right)f+2\left(118\,c^5d^3e^2-101\,bc^4d^2e^3-20\,b^2c^3de^4+3\,b^3c^2e^5\right)g\right)x^2+11\left(107\,c^5d^4e-266\,bc^4d^3e^2+219\,b^2c^3d^2e^3-68\,b^3c^2de^4+8\,b^4ce^5\right)f+2\left(211\,c^5d^5-769\,bc^4d^4e+1065\,b^2c^3d^3e^2-691\,b^3c^2d^2e^3+208\,b^4cde^4-24\,b^5e^5\right)g-\left(22\left(52\,c^5d^3e^2-39\,bc^4d^2e^3-15\,b^2c^3de^4+2\,b^3c^2e^5\right)f-\left(211\,c^5d^4e-558\,bc^4d^3e^2+507\,b^2c^3d^2e^3-184\,b^3c^2de^4+24\,b^4ce^5\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{ex+d}}{3465\left(c^4e^3x+c^4de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3465*(315*c^5*e^5*g*x^5 + 35*(11*c^5*e^5*f + 2*(5*c^5*d*e^4 + 6*b*c^4*e^
5)*g)*x^4 + 5*(22*(4*c^5*d*e^4 + 5*b*c^4*e^5)*f - (118*c^5*d^2*e^3 - 214*b*
c^4*d*e^4 - 3*b^2*c^3*e^5)*g)*x^3 - 3*(11*(26*c^5*d^2*e^3 - 46*b*c^4*d*e^4
- b^2*c^3*e^5)*f + 2*(118*c^5*d^3*e^2 - 101*b*c^4*d^2*e^3 - 20*b^2*c^3*d*e^
4 + 3*b^3*c^2*e^5)*g)*x^2 + 11*(107*c^5*d^4*e - 266*b*c^4*d^3*e^2 + 219*b^2
```

```
*c^3*d^2*e^3 - 68*b^3*c^2*d*e^4 + 8*b^4*c*e^5)*f + 2*(211*c^5*d^5 - 769*b*c
^4*d^4*e + 1065*b^2*c^3*d^3*e^2 - 691*b^3*c^2*d^2*e^3 + 208*b^4*c*d*e^4 - 2
4*b^5*e^5)*g - (22*(52*c^5*d^3*e^2 - 39*b*c^4*d^2*e^3 - 15*b^2*c^3*d*e^4 +
2*b^3*c^2*e^5)*f - (211*c^5*d^4*e - 558*b*c^4*d^3*e^2 + 507*b^2*c^3*d^2*e^3
 - 184*b^3*c^2*d*e^4 + 24*b^4*c*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(e*x + d)/(c^4*e^3*x + c^4*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}} \sqrt{ex+d}\left(gx+f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*sqrt(e*x + d)*(g*x +
 f), x)
```

maple [A] time = 0.05, size = 235, normalized size = 0.88

$$-\frac{2\left(cex+be-cd\right)\left(-315g\,c^3e^3x^3+210b\,c^2e^3g\,x^2-980c^3d\,e^2g\,x^2-385c^3e^3f\,x^2-120b^2c\,e^3gx+680b\,c^2d\,e^2gx+220b\,c^2e^3fx-1055c^3d^2egx-1210c^3d\,e^2fx+48b^3e^3g-320b^2cd\,e^2g-88b^2c\,e^3f+694b\,c^2d^2eg+572b\,c^2d\,e^2f-422c^3d^3g-1177f\,d^2c^3e\right)\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{3}{2}}}{3465\left(ex+d\right)^{\frac{3}{2}}c^4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/3465*(c*e*x+b*e-c*d)*(-315*c^3*e^3*g*x^3+210*b*c^2*e^3*g*x^2-980*c^3*d*e
^2*g*x^2-385*c^3*e^3*f*x^2-120*b^2*c*e^3*g*x+680*b*c^2*d*e^2*g*x+220*b*c^2*
e^3*f*x-1055*c^3*d^2*e*g*x-1210*c^3*d*e^2*f*x+48*b^3*e^3*g-320*b^2*c*d*e^2*
g-88*b^2*c*e^3*f+694*b*c^2*d^2*e*g+572*b*c^2*d*e^2*f-422*c^3*d^3*g-1177*c^3
*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c^4/e^2/(e*x+d)^(3/2)
```

maxima [B] time = 0.94, size = 502, normalized size = 1.88

$$-\frac{2\left(35\,c^4e^4x^4+107\,c^4d^4-266\,bc^3d^3e+219\,b^2c^2d^2e^2-68\,b^3cde^3+8\,b^4e^4+10\left(4\,c^4de^3+5\,bc^3e^4\right)x^3-3\left(26\,c^4d^2e^2-46\,bc^3de^3-b^2c^2e^4\right)x^2-2\left(52\,c^4d^3e-39\,bc^3d^2e^2-15\,b^2c^2de^3+2\,b^3ce^4\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)f}{315\left(c^3e^2x+c^3de\right)}-\frac{2\left(315\,c^5e^5x^5+422\,c^5d^5-1538\,bc^4d^4e+2130\,b^2c^3d^3e^2-1382\,b^3c^2d^2e^3+416\,b^4cde^4-48\,b^5e^5+70\left(5\,c^5de^4+6\,bc^4e^5\right)x^4-5\left(118\,c^5d^2e^3-214\,bc^4de^4-3\,b^2c^3e^5\right)x^3-6\left(118\,c^5d^3e^2-101\,bc^4d^2e^3-20\,b^2c^3de^4+3\,b^3c^2e^5\right)x^2+\left(211\,c^5d^4e-558\,bc^4d^3e^2+507\,b^2c^3d^2e^3-184\,b^3c^2de^4+24\,b^4ce^5\right)x\right)\sqrt{-cex+cd-be}\,(ex+d)g}{3465\left(c^4e^3x+c^4de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/315*(35*c^4*e^4*x^4 + 107*c^4*d^4 - 266*b*c^3*d^3*e + 219*b^2*c^2*d^2*e^
2 - 68*b^3*c*d*e^3 + 8*b^4*e^4 + 10*(4*c^4*d*e^3 + 5*b*c^3*e^4)*x^3 - 3*(26
*c^4*d^2*e^2 - 46*b*c^3*d*e^3 - b^2*c^2*e^4)*x^2 - 2*(52*c^4*d^3*e - 39*b*c
^3*d^2*e^2 - 15*b^2*c^2*d*e^3 + 2*b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*(e
*x + d)*f/(c^3*e^2*x + c^3*d*e) - 2/3465*(315*c^5*e^5*x^5 + 422*c^5*d^5 - 1
538*b*c^4*d^4*e + 2130*b^2*c^3*d^3*e^2 - 1382*b^3*c^2*d^2*e^3 + 416*b^4*c*d
*e^4 - 48*b^5*e^5 + 70*(5*c^5*d*e^4 + 6*b*c^4*e^5)*x^4 - 5*(118*c^5*d^2*e^3
 - 214*b*c^4*d*e^4 - 3*b^2*c^3*e^5)*x^3 - 6*(118*c^5*d^3*e^2 - 101*b*c^4*d^
2*e^3 - 20*b^2*c^3*d*e^4 + 3*b^3*c^2*e^5)*x^2 + (211*c^5*d^4*e - 558*b*c^4*
d^3*e^2 + 507*b^2*c^3*d^2*e^3 - 184*b^3*c^2*d*e^4 + 24*b^4*c*e^5)*x)*sqrt(-
c*e*x + c*d - b*e)*(e*x + d)*g/(c^4*e^3*x + c^4*d*e^2)
```

mupad [B] time = 3.34, size = 441, normalized size = 1.65

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e\,x^4\,\sqrt{d+e\,x}\,\left(12\,b\,e\,g+10\,c\,d\,g+11\,c\,e\,f\right)}{99}+\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(3\,g\,b^2\,e^2+214\,g\,b\,c\,d\,e+110\,f\,b\,c\,e^2-118\,g\,c^2\,d^2+88\,f\,c^2\,d\,e\right)}{693\,c}+\frac{2\,c\,e^2\,g\,x^5\,\sqrt{d+e\,x}}{11}+\frac{x^2\,\sqrt{d+e\,x}\,\left(-36\,g\,b^3\,c^2\,e^5+240\,g\,b^2\,c^3\,d\,e^4+66\,f\,b^2\,c^3\,e^5+1212\,g\,b\,c^4\,d^2\,e^3+3036\,f\,b\,c^4\,d\,e^4-1416\,g\,c^5\,d^3\,e^2-1716\,f\,c^5\,d^2\,e^3\right)}{3465\,c^4\,e^3}+\frac{2\,{\left(b\,e-c\,d\right)}^2\,\sqrt{d+e\,x}\,\left(-48\,g\,b^3\,e^3+320\,g\,b^2\,c\,d\,e^2+88\,f\,b^2\,c\,e^3-694\,g\,b\,c^2\,d^2\,e-572\,f\,b\,c^2\,d\,e^2+422\,g\,c^3\,d^3+1177\,f\,c^3\,d^2\,e\right)}{3465\,c^4\,e^3}+\frac{2\,x\,\left(b\,e-c\,d\right)\,\sqrt{d+e\,x}\,\left(24\,g\,b^3\,e^3-160\,g\,b^2\,c\,d\,e^2-44\,f\,b^2\,c\,e^3+347\,g\,b\,c^2\,d^2\,e+286\,f\,b\,c^2\,d\,e^2-211\,g\,c^3\,d^3+1144\,f\,c^3\,d^2\,e\right)}{3465\,c^3\,e^2}\right)}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x
)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e*x^4*(d + e*x)^(1/2)*(12
*b*e*g + 10*c*d*g + 11*c*e*f))/99 + (2*x^3*(d + e*x)^(1/2)*(3*b^2*e^2*g - 1
18*c^2*d^2*g + 110*b*c*e^2*f + 88*c^2*d*e*f + 214*b*c*d*e*g))/(693*c) + (2*
c*e^2*g*x^5*(d + e*x)^(1/2))/11 + (x^2*(d + e*x)^(1/2)*(66*b^2*c^3*e^5*f -
36*b^3*c^2*e^5*g - 1716*c^5*d^2*e^3*f - 1416*c^5*d^3*e^2*g + 3036*b*c^4*d*e
^4*f + 1212*b*c^4*d^2*e^3*g + 240*b^2*c^3*d*e^4*g))/(3465*c^4*e^3) + (2*(b*
e - c*d)^2*(d + e*x)^(1/2)*(422*c^3*d^3*g - 48*b^3*e^3*g + 88*b^2*c*e^3*f +
 1177*c^3*d^2*e*f - 572*b*c^2*d*e^2*f - 694*b*c^2*d^2*e*g + 320*b^2*c*d*e^2
*g))/(3465*c^4*e^3) + (2*x*(b*e - c*d)*(d + e*x)^(1/2)*(24*b^3*e^3*g - 211*
c^3*d^3*g - 44*b^2*c*e^3*f + 1144*c^3*d^2*e*f + 286*b*c^2*d*e^2*f + 347*b*c
^2*d^2*e*g - 160*b^2*c*d*e^2*g))/(3465*c^3*e^2)))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\sqrt{d+ex}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*sqrt(d + e*x)*(f + g*x), x
)
```

3.2013 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=193

$$-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cdg+9cef)}{315c^3e^2(d+ex)^{5/2}}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cdg+}{63c^2e^2(d+ex)^{3/2}}$$

Rubi [A] time = 0.31, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cdg+9cef)}{63c^2e^2(d+ex)^{3/2}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cdg+9cef)}{315c^3e^2(d+ex)^{5/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/Sqrt[d + e*x],x
]
```

```
[Out] (-4*(2*c*d - b*e)*(9*c*e*f - c*d*g - 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*
e^2*x^2)^(5/2))/(315*c^3*e^2*(d + e*x)^(5/2)) - (2*(9*c*e*f - c*d*g - 4*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(63*c^2*e^2*(d + e*x)^(3/2
)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(9*c*e^2*Sqrt[d + e*
x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9ce^2\sqrt{d+ex}} - \frac{\left(2\left(\frac{5}{2}e\left(-2ce^2f+be^2g\right)+\right.\right.}{}$$

$$= -\frac{2(9cef-cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{63c^2e^2(d+ex)^{3/2}} - \frac{2g\left(d(cd\right.}{}$$

$$= -\frac{4(2cd-be)(9cef-cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{315c^3e^2(d+ex)^{5/2}}$$

Mathematica [A] time = 0.12, size = 121, normalized size = 0.63

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(8b^2e^2g-2bce(17dg+9ef+10egx)+c^2\left(26d^2g+de(81f+65gx)+5e^2x(9f+7gx)\right)\right)}{315c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/Sqrt[d + 
e*x],x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(8*b^2*
e^2*g - 2*b*c*e*(9*e*f + 17*d*g + 10*e*g*x) + c^2*(26*d^2*g + 5*e^2*x*(9*f 
+ 7*g*x) + d*e*(81*f + 65*g*x))))/(315*c^3*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 1.30, size = 139, normalized size = 0.72

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{5/2}\left(8b^2e^2g-20bceg(d+ex)-14bcdeg-18bce^2f-4c^2d^2g+45c^2ef(d+ex)+36c^2def+35c^2g(d+ex)^2-5c^2dg(d+ex)\right)}{315c^3e^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
Sqrt[d + e*x],x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(5/2)*(36*c^2*d*e*f - 18*b*c*
e^2*f - 4*c^2*d^2*g - 14*b*c*d*e*g + 8*b^2*e^2*g + 45*c^2*e*f*(d + e*x) - 5
*c^2*d*g*(d + e*x) - 20*b*c*e*g*(d + e*x) + 35*c^2*g*(d + e*x)^2))/(315*c^3
*e^2*(d + e*x)^(5/2))
```

fricas [B] time = 0.41, size = 354, normalized size = 1.83

$$-\frac{2\left(35c^4e^4gx^4+5\left(9c^4e^4f-\left(c^4de^3-10bc^3e^4\right)g\right)x^3-3\left(3\left(c^4de^3-8bc^3e^4\right)f+\left(23c^4d^2e^2-22bc^3de^3-b^2c^2e^4\right)g\right)x^2+9\left(9c^4d^3e-20bc^3d^2e^2+13b^2c^2de^3-2b^3ce^4\right)f+2\left(13c^4d^4-43bc^3d^3e+51b^2c^2d^2e^2-25b^3cde^3+4b^4e^4\right)g-\left(9\left(13c^4d^2e^2-12bc^3de^3-b^2c^2e^4\right)f-\left(13c^4d^3e-30bc^3d^2e^2+21b^2c^2de^3-4b^3ce^4\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{315\left(c^3e^3x+c^3de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/315*(35*c^4*e^4*g*x^4 + 5*(9*c^4*e^4*f - (c^4*d*e^3 - 10*b*c^3*e^4)*g)*x
^3 - 3*(3*(c^4*d*e^3 - 8*b*c^3*e^4)*f + (23*c^4*d^2*e^2 - 22*b*c^3*d*e^3 - 
b^2*c^2*e^4)*g)*x^2 + 9*(9*c^4*d^3*e - 20*b*c^3*d^2*e^2 + 13*b^2*c^2*d*e^3 
- 2*b^3*c*e^4)*f + 2*(13*c^4*d^4 - 43*b*c^3*d^3*e + 51*b^2*c^2*d^2*e^2 - 25
*b^3*c*d*e^3 + 4*b^4*e^4)*g - (9*(13*c^4*d^2*e^2 - 12*b*c^3*d*e^3 - b^2*c^2
*e^4)*f - (13*c^4*d^3*e - 30*b*c^3*d^2*e^2 + 21*b^2*c^2*d*e^3 - 4*b^3*c*e^4
)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^3*e^3*x
 + c^3*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/sqrt(e*x +
 d), x)
```

maple [A] time = 0.05, size = 139, normalized size = 0.72

$$\frac{2 \left(cex + be - cd\right) \left(35g\,x^2c^2e^2 - 20bc\,e^2gx + 65c^2degx + 45c^2e^2fx + 8b^2e^2g - 34bcdeg - 18bc\,e^2f + 26c^2d^2g + 81c^2def\right) \left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{3}{2}}}{315 \left(ex + d\right)^{\frac{3}{2}} c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(c*e*x+b*e-c*d)*(35*c^2*e^2*g*x^2-20*b*c*e^2*g*x+65*c^2*d*e*g*x+45*c^
2*e^2*f*x+8*b^2*e^2*g-34*b*c*d*e*g-18*b*c*e^2*f+26*c^2*d^2*g+81*c^2*d*e*f)*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c^3/e^2/(e*x+d)^(3/2)
```

maxima [A] time = 0.84, size = 320, normalized size = 1.66

$$-\frac{2 \left(5\,c^3e^3x^3 + 9\,c^3d^3 - 20\,bc^2d^2e + 13\,b^2cde^2 - 2\,b^3e^3 - \left(c^3de^2 - 8\,bc^2e^3\right)x^2 - \left(13\,c^3d^2e - 12\,bc^2de^2 - b^2ce^3\right)x\right)\sqrt{-cex + cd - be}\,f}{35\,c^2e} - \frac{2 \left(35\,c^4e^4x^4 + 26\,c^4d^4 - 86\,bc^3d^3e + 102\,b^2c^2d^2e^2 - 50\,b^3cde^3 + 8\,b^4e^4 - 5\left(c^4de^3 - 10\,bc^3e^4\right)x^3 - 3\left(23\,c^4d^2e^2 - 22\,bc^3de^3 - b^2c^2e^4\right)x^2 + \left(13\,c^4d^3e - 30\,bc^3d^2e^2 + 21\,b^2c^2de^3 - 4\,b^3ce^4\right)x\right)\sqrt{-cex + cd - be}\,g}{315\,c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] -2/35*(5*c^3*e^3*x^3 + 9*c^3*d^3 - 20*b*c^2*d^2*e + 13*b^2*c*d*e^2 - 2*b^3*
e^3 - (c^3*d*e^2 - 8*b*c^2*e^3)*x^2 - (13*c^3*d^2*e - 12*b*c^2*d*e^2 - b^2*
c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*f/(c^2*e) - 2/315*(35*c^4*e^4*x^4 + 26*c
^4*d^4 - 86*b*c^3*d^3*e + 102*b^2*c^2*d^2*e^2 - 50*b^3*c*d*e^3 + 8*b^4*e^4
- 5*(c^4*d*e^3 - 10*b*c^3*e^4)*x^3 - 3*(23*c^4*d^2*e^2 - 22*b*c^3*d*e^3 - b
^2*c^2*e^4)*x^2 + (13*c^4*d^3*e - 30*b*c^3*d^2*e^2 + 21*b^2*c^2*d*e^3 - 4*b
^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^3*e^2)
```

mupad [B] time = 3.05, size = 239, normalized size = 1.24

$$-\frac{\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}\,\left(\frac{2\,e\,x^3\,\left(10\,b\,e\,g-c\,d\,g+9\,c\,e\,f\right)}{63} + \frac{2\,x^2\,\left(g\,b^2\,e^2+22\,g\,b\,c\,d\,e+24\,f\,b\,c\,e^2-23\,g\,c^2\,d^2-3\,f\,c^2\,d\,e\right)}{105\,c} + \frac{2\,c\,e^2\,g\,x^4}{9} + \frac{2\,\left(b\,e-c\,d\right)^2\,\left(8\,g\,b^2\,e^2-34\,g\,b\,c\,d\,e-18\,f\,b\,c\,e^2+26\,g\,c^2\,d^2+81\,f\,c^2\,d\,e\right)}{315\,c^3\,e^2} + \frac{2\,x\,\left(b\,e-c\,d\right)\,\left(-4\,g\,b^2\,e^2+17\,g\,b\,c\,d\,e+9\,f\,b\,c\,e^2-13\,g\,c^2\,d^2+117\,f\,c^2\,d\,e\right)}{315\,c^2\,e}\right)}{\sqrt{d + e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(1/2)
,x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e*x^3*(10*b*e*g - c*d*g +
 9*c*e*f))/63 + (2*x^2*(b^2*e^2*g - 23*c^2*d^2*g + 24*b*c*e^2*f - 3*c^2*d*e
*f + 22*b*c*d*e*g))/(105*c) + (2*c*e^2*g*x^4)/9 + (2*(b*e - c*d)^2*(8*b^2*e
^2*g + 26*c^2*d^2*g - 18*b*c*e^2*f + 81*c^2*d*e*f - 34*b*c*d*e*g))/(315*c^3
*e^2) + (2*x*(b*e - c*d)*(9*b*c*e^2*f - 13*c^2*d^2*g - 4*b^2*e^2*g + 117*c^
2*d*e*f + 17*b*c*d*e*g))/(315*c^2*e)))/(d + e*x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(1/2
),x)
```

```
[Out] Timed out
```

3.2014 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg-3cdg+7cef)}{35c^2e^2(d+ex)^{5/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2(d+ex)^{3/2}}$$

Rubi [A] time = 0.19, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg-3cdg+7cef)}{35c^2e^2(d+ex)^{5/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(3/2)
,x]
```

```
[Out] (-2*(7*c*e*f - 3*c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/
2))/(35*c^2*e^2*(d + e*x)^(5/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(5/2))/(7*c*e^2*(d + e*x)^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx=-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2(d+ex)^{3/2}}-\frac{\left(2\left(\frac{5}{2}e\left(-2ce^2f+be^2g\right)-\frac{3}{2}\left(\cdots\right.\right.\right.}{\cdots}$$

$$=-\frac{2(7cef-3cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{35c^2e^2(d+ex)^{5/2}}-\frac{2g\left(d(cd\cdots\right.}{7\cdots}$$

Mathematica [A] time = 0.08, size = 78, normalized size = 0.66

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+7ef+5egx)-2beg)}{35c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(3/2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e
*g + c*(7*e*f + 2*d*g + 5*e*g*x)))/(35*c^2*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 1.59, size = 74, normalized size = 0.63

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{5/2}(-2beg+5cg(d+ex)-3cdg+7cef)}{35c^2e^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^(3/2),x]
```

```
[Out] (-2*(7*c*e*f - 3*c*d*g - 2*b*e*g + 5*c*g*(d + e*x))*((2*c*d - b*e)*(d + e*x
) - c*(d + e*x)^2)^(5/2))/(35*c^2*e^2*(d + e*x)^(5/2))
```

fricas [B] time = 0.40, size = 229, normalized size = 1.94

$$-\frac{2\left(5c^3e^3gx^3+\left(7c^3e^3f-8\left(c^3de^2-bc^2e^3\right)g\right)x^2+7\left(c^3d^2e-2bc^2de^2+b^2ce^3\right)f+2\left(c^3d^3-3bc^2d^2e+3b^2cde^2-b^3e^3\right)g-\left(14\left(c^3de^2-bc^2e^3\right)f-\left(c^3d^2e-2bc^2de^2+b^2ce^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{35\left(c^2e^3x+c^2de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/35*(5*c^3*e^3*g*x^3 + (7*c^3*e^3*f - 8*(c^3*d*e^2 - b*c^2*e^3)*g)*x^2 +
7*(c^3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*f + 2*(c^3*d^3 - 3*b*c^2*d^2*e +
3*b^2*c*d*e^2 - b^3*e^3)*g - (14*(c^3*d*e^2 - b*c^2*e^3)*f - (c^3*d^2*e - 2
*b*c^2*d*e^2 + b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}\left(gx+f\right)}{\left(ex+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(3/2), x)
```

maple [A] time = 0.05, size = 79, normalized size = 0.67

$$-\frac{2\left(cex+be-cd\right)\left(-5cegx+2beg-2cdg-7cef\right)\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{3}{2}}}{35\left(ex+d\right)^{\frac{3}{2}}c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(-5*c*e*g*x+2*b*e*g-2*c*d*g-7*c*e*f)*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(3/2)/c^2/e^2/(e*x+d)^(3/2)
```

maxima [A] time = 0.75, size = 197, normalized size = 1.67

$$-\frac{2\left(c^2e^2x^2+c^2d^2-2bcde+b^2e^2-2\left(c^2de-bce^2\right)x\right)\sqrt{-cex+cd-be}\,f}{5ce}-\frac{2\left(5c^3e^3x^3+2c^3d^3-6bc^2d^2e+6b^2cde^2-2b^3e^3-8\left(c^3de^2-bc^2e^3\right)x^2+\left(c^3d^2e-2bc^2de^2+b^2ce^3\right)x\right)\sqrt{-cex+cd-be}\,g}{35c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/5*(c^2*e^2*x^2 + c^2*d^2 - 2*b*c*d*e + b^2*e^2 - 2*(c^2*d*e - b*c*e^2)*x
)*sqrt(-c*e*x + c*d - b*e)*f/(c*e) - 2/35*(5*c^3*e^3*x^3 + 2*c^3*d^3 - 6*b*
c^2*d^2*e + 6*b^2*c*d*e^2 - 2*b^3*e^3 - 8*(c^3*d*e^2 - b*c^2*e^3)*x^2 + (c^
3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^2*e^2
)
```

mupad [B] time = 2.81, size = 133, normalized size = 1.13

$$-\frac{\left(x^2\,\left(\frac{16\,b\,e\,g}{35}-\frac{16\,c\,d\,g}{35}+\frac{2\,c\,e\,f}{5}\right)+\frac{2\,c\,e\,g\,x^3}{7}+\frac{2\,{\left(b\,e-c\,d\right)}^2\,\left(2\,c\,d\,g-2\,b\,e\,g+7\,c\,e\,f\right)}{35\,c^2\,e^2}+\frac{2\,x\,\left(b\,e-c\,d\right)\,\left(b\,e\,g-c\,d\,g+14\,c\,e\,f\right)}{35\,c\,e}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(3/2)
,x)
```

```
[Out] -((x^2*((16*b*e*g)/35 - (16*c*d*g)/35 + (2*c*e*f)/5) + (2*c*e*g*x^3)/7 + (2
*(b*e - c*d)^2*(2*c*d*g - 2*b*e*g + 7*c*e*f))/(35*c^2*e^2) + (2*x*(b*e - c*
d)*(b*e*g - c*d*g + 14*c*e*f))/(35*c*e))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(3/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(3/2)
, x)
```

3.2015 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=250

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2(2cd-be)^{3/2}(ef-}{}$$

Rubi [A] time = 0.45, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {794, 664, 660, 208}

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2(2cd-be)^{3/2}(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5ce^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(5/2)
,x]
```

```
[Out] (2*(2*c*d - b*e)*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^
2*Sqrt[d + e*x]) + (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/
2))/(3*e^2*(d + e*x)^(3/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5
/2))/(5*c*e^2*(d + e*x)^(5/2)) - (2*(2*c*d - b*e)^(3/2)*(e*f - d*g)*ArcTanh
[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x]
)])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5ce^2(d+ex)^{5/2}} - \frac{\left(2\left(\frac{5}{2}e\left(-2ce^2f+be^2g\right)-\frac{5}{2}\left(-\right.\right.\right.}{}$$

$$= \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}} - \frac{2g\left(d(cd-be)-be^2x-\right.}{5ce^2(d+ex)^{5/2}}$$

$$= \frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(ef-dg)\left(d(c\right.}{3e}$$

$$= \frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(ef-dg)\left(d(c\right.}{3e}$$

$$= \frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(ef-dg)\left(d(c\right.}{3e}$$

Mathematica [A] time = 0.28, size = 199, normalized size = 0.80

$$-\frac{2\sqrt{d+ex}\sqrt{c(d-ex)-be}\left(\sqrt{c(d-ex)-be}\left(3b^2e^2g+2bce(-13dg+10ef+3egx)+c^2\left(38d^2g-de(35f+11gx)+e^2x(5f+3gx)\right)\right)-15c(2cd-be)^{3/2}(dg-ef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{15ce^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(5/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*Sqrt[-(b*e) + c*(d - e*x)]*(Sqrt[-(b*e) + c*(d - e*x)]*(3
*b^2*e^2*g + 2*b*c*e*(10*e*f - 13*d*g + 3*e*g*x) + c^2*(38*d^2*g + e^2*x*(5
*f + 3*g*x) - d*e*(35*f + 11*g*x))) - 15*c*(2*c*d - b*e)^(3/2)*(-(e*f) + d*
g)*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(15*c*e^2*Sqrt[(d +
 e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 4.13, size = 238, normalized size = 0.95

$$-\frac{2\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(3b^2e^2g+6bceg(d+ex)-32bcdeg+20bce^2f+52c^2d^2g+5c^2ef(d+ex)-40c^2def+3c^2g(d+ex)^2-17c^2dg(d+ex)\right)}{15ce^2\sqrt{d+ex}}-\frac{2(be-2cd)^{3/2}(dg-ef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}(be+c(d+ex)-2cd)}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-40*c^2*d*e*f +
20*b*c*e^2*f + 52*c^2*d^2*g - 32*b*c*d*e*g + 3*b^2*e^2*g + 5*c^2*e*f*(d + e
*x) - 17*c^2*d*g*(d + e*x) + 6*b*c*e*g*(d + e*x) + 3*c^2*g*(d + e*x)^2))/(1
5*c*e^2*Sqrt[d + e*x]) - (2*(-2*c*d + b*e)^(3/2)*(-(e*f) + d*g)*ArcTan[(Sqr
t[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*
x]*(-2*c*d + b*e + c*(d + e*x)))]])/e^2
```

fricas [A] time = 0.44, size = 656, normalized size = 2.62

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/15*(15*sqrt(2*c*d - b*e)*((2*c^2*d^2*e - b*c*d*e^2)*f - (2*c^2*d^3 - b*c
*d^2*e)*g + ((2*c^2*d*e^2 - b*c*e^3)*f - (2*c^2*d^2*e - b*c*d*e^2)*g)*x)*lo
```

```
g(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d
*e*x + d^2)) - 2*(3*c^2*e^2*g*x^2 - 5*(7*c^2*d*e - 4*b*c*e^2)*f + (38*c^2*d
^2 - 26*b*c*d*e + 3*b^2*e^2)*g + (5*c^2*e^2*f - (11*c^2*d*e - 6*b*c*e^2)*g)
*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(c*e^3*x + c*
d*e^2), -2/15*(15*sqrt(-2*c*d + b*e)*((2*c^2*d^2*e - b*c*d*e^2)*f - (2*c^2*
d^3 - b*c*d^2*e)*g + ((2*c^2*d*e^2 - b*c*e^3)*f - (2*c^2*d^2*e - b*c*d*e^2)
*g)*x)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)
*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + (3*c^2*e^2*g*x^2 -
5*(7*c^2*d*e - 4*b*c*e^2)*f + (38*c^2*d^2 - 26*b*c*d*e + 3*b^2*e^2)*g + (5*
c^2*e^2*f - (11*c^2*d*e - 6*b*c*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Valueindex.cc index_m operator + Error: Bad Argument Valueindex.cc inde
x_m operator + Error: Bad Argument ValueEvaluation time: 2.99Done
```

maple [**B**] time = 0.08, size = 601, normalized size = 2.40

$$-\frac{2\sqrt{-c e^2x^2-b e^2x-bde+c d^2}\,\left(15b^2cd e^2g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-15b^2c e^3f \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-60bc^2d^2eg \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+60bc^2de^2f \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+60c^3d^3g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-60c^3d^2ef \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c^2e^2gx^2+6\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,bce^2gx-11\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c^2degx+5\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c^2e^2fx+3\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,b^2e^2g-26\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,bcdeg+20\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,bce^2f+38\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c^2d^2g-35\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c^2def\right)}{15\sqrt{ex+d}\,\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(3*x^2*c^2*e^2*g*(-c*e*x-b*e+c
*d)^(1/2)*(b*e-2*c*d)^(1/2)+15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))*b^2*c*d*e^2*g-15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*
c*e^3*f-60*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^2*e*g+6
0*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d*e^2*f+60*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^3*d^3*g-60*arctan((-c*e*x-b*e+c
*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^3*d^2*e*f+6*x*b*c*e^2*g*(-c*e*x-b*e+c*d)^(1/
2)*(b*e-2*c*d)^(1/2)-11*x*c^2*d*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2
)+5*x*c^2*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+3*b^2*e^2*g*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-26*b*c*d*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)+20*b*c*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+38*c^2*
d^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-35*c^2*d*e*f*(-c*e*x-b*e+c*d
)^(1/2)*(b*e-2*c*d)^(1/2))/(e*x+d)^(1/2)/(-c*e*x-b*e+c*d)^(1/2)/c/e^2/(b*e-
2*c*d)^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(5/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(5/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(5/2)
, x)
```

3.2016 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=288

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^{7/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(2beg-7cdg+3cef)}{3e^2(d+ex)^{3/2}(2cd-be)}-\sqrt{d(cd-be)-}$$

Rubi [A] time = 0.48, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^{7/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(2beg-7cdg+3cef)}{3e^2(d+ex)^{3/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(2beg-7cdg+3cef)}{e^2\sqrt{d+ex}}+\frac{\sqrt{2cd-be}\,(2beg-7cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(7/2)
,x]
```

```
[Out] -(((3*c*e*f - 7*c*d*g + 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(e^2*Sqrt[d + e*x])) - ((3*c*e*f - 7*c*d*g + 2*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) - ((e*f - d*
g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x
)^(7/2)) + (Sqrt[2*c*d - b*e]*(3*c*e*f - 7*c*d*g + 2*b*e*g)*ArcTanh[Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^{7/2}} - \frac{(3cef-7cdg+2beg)\int}{2e(2c}$$

$$= -\frac{(3cef-7cdg+2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\big(}{e^2}$$

$$= -\frac{(3cef-7cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(3cef-7cdg}{}$$

$$= -\frac{(3cef-7cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(3cef-7cdg}{}$$

$$= -\frac{(3cef-7cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(3cef-7cdg}{}$$

Mathematica [A] time = 0.26, size = 195, normalized size = 0.68

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\sqrt{c(d-ex)-be}\left(be(-11dg+3ef-8egx)+2c\left(13d^2g+de(9gx-6f)-e^2x(3f+gx)\right)\right)-3(d+ex)\sqrt{2cd-be}\,(-2beg+7cdg-3cef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{3e^2(d+ex)^{3/2}\sqrt{c(d-ex)-be}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(7/2),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(Sqrt[-(b*e) + c*(d - e*x)]*(b*e*(3
*e*f - 11*d*g - 8*e*g*x) + 2*c*(13*d^2*g - e^2*x*(3*f + g*x) + d*e*(-6*f +
9*g*x))) - 3*Sqrt[2*c*d - b*e]*(-3*c*e*f + 7*c*d*g - 2*b*e*g)*(d + e*x)*Arc
Tanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(3*e^2*(d + e*x)^(3/2)*Sq
rt[-(b*e) + c*(d - e*x)])
```

IntegrateAlgebraic [A] time = 4.32, size = 246, normalized size = 0.85

$$\frac{\left(2b^2e^2g-11bcdeg+3bce^2f+14c^2d^2g-6c^2def\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2\sqrt{be-2cd}} + \frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-8beg(d+ex)-3bdeg+3be^2f+6cd^2g-6cef(d+ex)-6cdef+22cdg(d+ex)-2cg(d+ex)^2\right)}{3e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^(7/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-6*c*d*e*f + 3*b*e^
2*f + 6*c*d^2*g - 3*b*d*e*g - 6*c*e*f*(d + e*x) + 22*c*d*g*(d + e*x) - 8*b*
e*g*(d + e*x) - 2*c*g*(d + e*x)^2))/(3*e^2*(d + e*x)^(3/2)) + ((-6*c^2*d*e*
f + 3*b*c*e^2*f + 14*c^2*d^2*g - 11*b*c*d*e*g + 2*b^2*e^2*g)*ArcTan[(Sqrt[-
2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*
(-2*c*d + b*e + c*(d + e*x)))])/(e^2*Sqrt[-2*c*d + b*e])
```

fricas [A] time = 0.44, size = 639, normalized size = 2.22

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x, a
lgorithm="fricas")
```

```
[Out] [1/6*(3*(3*c*d^2*e*f + (3*c*e^3*f - (7*c*d*e^2 - 2*b*e^3)*g)*x^2 - (7*c*d^3
 - 2*b*d^2*e)*g + 2*(3*c*d*e^2*f - (7*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(2*c*d
```

```
 - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2
*x^2 + 2*d*e*x + d^2)) - 2*(2*c*e^2*g*x^2 + 3*(4*c*d*e - b*e^2)*f - (26*c*d
^2 - 11*b*d*e)*g + 2*(3*c*e^2*f - (9*c*d*e - 4*b*e^2)*g)*x)*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2),
 1/3*(3*(3*c*d^2*e*f + (3*c*e^3*f - (7*c*d*e^2 - 2*b*e^3)*g)*x^2 - (7*c*d^3
 - 2*b*d^2*e)*g + 2*(3*c*d*e^2*f - (7*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(-2*c*
d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*
e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - (2*c*e^2*g*x^2 +
3*(4*c*d*e - b*e^2)*f - (26*c*d^2 - 11*b*d*e)*g + 2*(3*c*e^2*f - (9*c*d*e -
 4*b*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(
e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 695, normalized size = 2.41

$$\frac{\sqrt{-c e^2x^2-b e^2x-bde+c d^2}\,\left(6b^2e^3gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-33bcde^2gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+9bce^3fx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+42c^2d^2egx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-18c^2de^2fx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+6b^2de^2g\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-33bcd^2eg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+9bcde^2f\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+42c^2d^3g\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-18c^2d^2ef\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-2\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,ce^2gx^2-8\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,be^2gx+18\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cdegx-6\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,ce^2fx-11\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,bdeg+3\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,be^2f+26\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cd^2g-12\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,cdef\right)}{3\left(ex+d\right)^{\frac{3}{2}}\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] 1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(6*arctan((-c*e*x-b*e+c*d)^(1/2)
/(b*e-2*c*d)^(1/2))*x*b^2*e^3*g-33*b*c*d*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))+9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x
*b*c*e^3*f+42*c^2*d^2*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)-18*c^2*d*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-2*x^2*c
*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+6*arctan((-c*e*x-b*e+c*d)^(
1/2)/(b*e-2*c*d)^(1/2))*b^2*d*e^2*g-33*b*c*d^2*e*g*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))+9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
*b*c*d*e^2*f+42*c^2*d^3*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-
18*c^2*d^2*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-8*(-c*e*x-b
*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*g*x+18*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*
c*d)^(1/2)*c*d*e*g*x-6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*e^2*f*x-1
1*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*d*e*g+3*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)*b*e^2*f+26*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d^
2*g-12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*f)/(e*x+d)^(3/2)/(-c*
e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(-c e^{2} x^{2} - b e^{2} x + c d^{2} - b d e\right)}^{\frac{3}{2}} {\left(g x + f\right)}}{{\left(e x + d\right)}^{\frac{7}{2}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(7/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(7/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(7/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(7/2)
, x)
```

3.2017 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=305

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{2e^2(d+ex)^{9/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(4beg-9cdg+cef)}{4e^2(d+ex)^{5/2}(2cd-be)}+\frac{3c\sqrt{d(cd-be)-\cdots}}{4\cdots}$$

Rubi [A] time = 0.48, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{2e^2(d+ex)^{9/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(4beg-9cdg+cef)}{4e^2(d+ex)^{5/2}(2cd-be)}+\frac{3c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(4beg-9cdg+cef)}{4e^2\sqrt{d+ex}\,(2cd-be)}-\frac{3c(4beg-9cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{4e^2\sqrt{2cd-be}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(9/2)
,x]
```

```
[Out] (3*c*(c*e*f - 9*c*d*g + 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(4*e^2*(2*c*d - b*e)*Sqrt[d + e*x]) + ((c*e*f - 9*c*d*g + 4*b*e*g)*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(5/2))
 - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(2*e^2*(2*c*d
- b*e)*(d + e*x)^(9/2)) - (3*c*(c*e*f - 9*c*d*g + 4*b*e*g)*ArcTanh[Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^
2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{2e^2(2cd-be)(d+ex)^{9/2}} - \frac{(cef-9cdg+4beg)\int}{4e(2cd}$$

$$= \frac{(cef-9cdg+4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(2cd-be)(d+ex)^{5/2}} - \frac{(ef-dg)\left(d(\right.}{2e^2(2}$$

$$= \frac{3c(cef-9cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)\sqrt{d+ex}} + \frac{(cef-9cdg+}{}$$

$$= \frac{3c(cef-9cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)\sqrt{d+ex}} + \frac{(cef-9cdg+}{}$$

$$= \frac{3c(cef-9cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)\sqrt{d+ex}} + \frac{(cef-9cdg+}{}$$

Mathematica [C] time = 0.18, size = 129, normalized size = 0.42

$$\frac{((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{c(d+ex)^2(4beg-9cdg+cef)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{5dg}{e}-5f\right)}{10e(d+ex)^{9/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(9/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(-5*f + (5*d*g)/e + (c*(c*e*f - 9
*c*d*g + 4*b*e*g)*(d + e*x)^2*Hypergeometric2F1[2, 5/2, 7/2, (-(c*d) + b*e
+ c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b*e)^2)))/(10*e*(2*c*d - b*e)*(d + e
*x)^(9/2))
```

IntegrateAlgebraic [A] time = 4.45, size = 228, normalized size = 0.75

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(4beg(d+ex)-2bdeg+2be^2f+4cd^2g+5cef(d+ex)-4cdef-13cdg(d+ex)-8cg(d+ex)^2\right)}{4e^2(d+ex)^{5/2}}-\frac{3\left(-4bceg+9c^2dg+c^2(-e)f\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{4e^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^(9/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-4*c*d*e*f + 2*b*e^
2*f + 4*c*d^2*g - 2*b*d*e*g + 5*c*e*f*(d + e*x) - 13*c*d*g*(d + e*x) + 4*b*
e*g*(d + e*x) - 8*c*g*(d + e*x)^2))/(4*e^2*(d + e*x)^(5/2)) - (3*(-(c^2*e*f
) + 9*c^2*d*g - 4*b*c*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d
```

```
 + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(4
*e^2*Sqrt[-2*c*d + b*e])
```

fricas [A] time = 0.46, size = 998, normalized size = 3.27

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x, a
lgorithm="fricas")
```

```
[Out] [1/8*(3*(c^2*d^3*e*f + (c^2*e^4*f - (9*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3*(c
^2*d*e^3*f - (9*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 - (9*c^2*d^4 - 4*b*c*d^3*
e)*g + 3*(c^2*d^2*e^2*f - (9*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(2*c*d -
b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^
2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(2*c^
2*d*e^2 - b*c*e^3)*g*x^2 - (2*c^2*d^2*e + 3*b*c*d*e^2 - 2*b^2*e^3)*f + (34*
c^2*d^3 - 21*b*c*d^2*e + 2*b^2*d*e^2)*g - (5*(2*c^2*d*e^2 - b*c*e^3)*f - (5
8*c^2*d^2*e - 37*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(2*c*d^4*e^2 -
 b*d^3*e^3 + (2*c*d*e^5 - b*e^6)*x^3 + 3*(2*c*d^2*e^4 - b*d*e^5)*x^2 + 3*(2
*c*d^3*e^3 - b*d^2*e^4)*x), -1/4*(3*(c^2*d^3*e*f + (c^2*e^4*f - (9*c^2*d*e^
3 - 4*b*c*e^4)*g)*x^3 + 3*(c^2*d*e^3*f - (9*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x
^2 - (9*c^2*d^4 - 4*b*c*d^3*e)*g + 3*(c^2*d^2*e^2*f - (9*c^2*d^3*e - 4*b*c*
d^2*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
- b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*
d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(2*c^2*d*e^2 - b*c*e^
3)*g*x^2 - (2*c^2*d^2*e + 3*b*c*d*e^2 - 2*b^2*e^3)*f + (34*c^2*d^3 - 21*b*c
*d^2*e + 2*b^2*d*e^2)*g - (5*(2*c^2*d*e^2 - b*c*e^3)*f - (58*c^2*d^2*e - 37
*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(2*c*d^4*e^2 - b*d^3*e^3 + (2*
c*d*e^5 - b*e^6)*x^3 + 3*(2*c*d^2*e^4 - b*d*e^5)*x^2 + 3*(2*c*d^3*e^3 - b*d
^2*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(-d*exp(1)-x*exp(
1)^2)]Evaluation time: 121.53Unable to transpose Error: Bad Argument Value
```

maple [B] time = 0.08, size = 665, normalized size = 2.18

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x)
```

```
[Out] 1/4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(12*b*c*e^3*g*x^2*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-27*c^2*d*e^2*g*x^2*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))+3*c^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(
b*e-2*c*d)^(1/2))+24*b*c*d*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-54*c^2*d^2*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+
6*c^2*d*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-8*(-c*e*x-
```

```
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*e^2*g*x^2+12*b*c*d^2*e*g*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-27*c^2*d^3*g*arctan((-c*e*x-b*e+c*d)^(1/2
)/(b*e-2*c*d)^(1/2))+3*c^2*d^2*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))+4*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*g*x-29*(-c*e*x-b*
e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*g*x+5*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*c*e^2*f*x+2*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*d*e*g+2*(-c
*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*f-17*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*c*d^2*g+(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*f)/(e
*x+d)^(5/2)/(-c*e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{3/2}}{\left(d + e\,x\right)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(9/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(9/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{3}{2}}\left(f + gx\right)}{\left(d + ex\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(9/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(9/2)
, x)
```

3.2018 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=307

$$-\frac{c^2(-6beg+11cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{3/2}}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^{11/2}(2cd-be)}-\frac{\left(d(cd-be)-\right.}{}$$

Rubi [A] time = 0.48, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 662, 660, 208}

$$-\frac{c^2(-6beg+11cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{3/2}}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^{11/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-6beg+11cdg+cef)}{12e^2(d+ex)^{7/2}(2cd-be)}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+11cdg+cef)}{8e^2(d+ex)^{3/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(11/2
),x]
```

```
[Out] (c*(c*e*f + 11*c*d*g - 6*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(8*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) - ((c*e*f + 11*c*d*g - 6*b*e*g)*(d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(12*e^2*(2*c*d - b*e)*(d + e*x)^(7/
2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3*e^2*(2*c
*d - b*e)*(d + e*x)^(11/2)) - (c^2*(c*e*f + 11*c*d*g - 6*b*e*g)*ArcTanh[Sqr
t[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/
(8*e^2*(2*c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(2cd-be)(d+ex)^{11/2}} + \frac{(cef+11cdg-6beg)\int}{6e(2c}$$

$$= -\frac{(cef+11cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{12e^2(2cd-be)(d+ex)^{7/2}} - \frac{(ef-dg)\left(\right.}{3e^2(}$$

$$= \frac{c(cef+11cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)(d+ex)^{3/2}} - \frac{(cef+11cdg}{1}$$

$$= \frac{c(cef+11cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)(d+ex)^{3/2}} - \frac{(cef+11cdg}{1}$$

$$= \frac{c(cef+11cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)(d+ex)^{3/2}} - \frac{(cef+11cdg}{1}$$

Mathematica [A] time = 1.28, size = 254, normalized size = 0.83

$$\frac{((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{e(d+ex)(-6beg+11cdg+cef)\left(\sqrt{e(be-2cd)}\left(-2b^2e^2+bce(d-7ex)+c^2\left(d^2+4dex-5e^2x^2\right)\right)+3c^2\sqrt{e}(d+ex)^2\sqrt{c(d-ex)-be}\tan^{-1}\left(\frac{\sqrt{e}\sqrt{c(d-ex)-be}}{\sqrt{e(be-2cd)}}\right)\right)}{\sqrt{e(be-2cd)}}+8e(ef-dg)(be-cd+cex)^3\right)}{24e^3(d+ex)^{9/2}(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(11/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(8*e*(e*f - d*g)*(-(c*d) + b*e +
c*e*x)^3 + (e*(c*e*f + 11*c*d*g - 6*b*e*g)*(d + e*x)*(Sqrt[e*(-2*c*d + b*e)
]*(-2*b^2*e^2 + b*c*e*(d - 7*e*x) + c^2*(d^2 + 4*d*e*x - 5*e^2*x^2)) + 3*c^
2*Sqrt[e]*(d + e*x)^2*Sqrt[-(b*e) + c*(d - e*x)]*ArcTan[(Sqrt[e]*Sqrt[-(b*e
) + c*(d - e*x)])/Sqrt[e*(-2*c*d + b*e)]]))/Sqrt[e*(-2*c*d + b*e)]))/(24*e^
3*(2*c*d - b*e)*(d + e*x)^(9/2)*(-(c*d) + b*e + c*e*x)^2)
```

IntegrateAlgebraic [A] time = 5.65, size = 346, normalized size = 1.13

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(12b^2e^2g(d+ex)-8b^2de^2g+8b^2e^3f+32bcd^2eg+14bce^2f(d+ex)-32bcde^2f-62bcdeg(d+ex)+30bceg(d+ex)^2-32c^2d^3g+32c^2d^2ef+76c^2d^2g(d+ex)-28c^2def(d+ex)+3c^2ef(d+ex)^2-63c^2dg(d+ex)^2\right)}{24e^2(d+ex)^{7/2}(be-2cd)}+\frac{\left(-6bc^2eg+11c^3dg+c^3ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}(be+c(d+ex)-2cd)}\right)}{8e^2(2cd-be)\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^(11/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(32*c^2*d^2*e*f - 32
*b*c*d*e^2*f + 8*b^2*e^3*f - 32*c^2*d^3*g + 32*b*c*d^2*e*g - 8*b^2*d*e^2*g
- 28*c^2*d*e*f*(d + e*x) + 14*b*c*e^2*f*(d + e*x) + 76*c^2*d^2*g*(d + e*x)
- 62*b*c*d*e*g*(d + e*x) + 12*b^2*e^2*g*(d + e*x) + 3*c^2*e*f*(d + e*x)^2 -
 63*c^2*d*g*(d + e*x)^2 + 30*b*c*e*g*(d + e*x)^2))/(24*e^2*(-2*c*d + b*e)*(
d + e*x)^(7/2)) + ((c^3*e*f + 11*c^3*d*g - 6*b*c^2*e*g)*ArcTan[(Sqrt[-2*c*d
 + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c
*d + b*e + c*(d + e*x)))])/(8*e^2*(2*c*d - b*e)*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.45, size = 1454, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x,
algorithm="fricas")
```

```
[Out] [1/48*(3*(c^3*d^4*e*f + (c^3*e^5*f + (11*c^3*d*e^4 - 6*b*c^2*e^5)*g)*x^4 +
4*(c^3*d*e^4*f + (11*c^3*d^2*e^3 - 6*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d^2*e^3*f
 + (11*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2 + (11*c^3*d^5 - 6*b*c^2*d^4*e)
*g + 4*(c^3*d^3*e^2*f + (11*c^3*d^4*e - 6*b*c^2*d^3*e^2)*g)*x)*sqrt(2*c*d -
 b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x
^2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*
c^3*d*e^3 - b*c^2*e^4)*f - (42*c^3*d^2*e^2 - 41*b*c^2*d*e^3 + 10*b^2*c*e^4)
*g)*x^2 + (14*c^3*d^3*e - 43*b*c^2*d^2*e^2 + 34*b^2*c*d*e^3 - 8*b^3*e^4)*f
- (38*c^3*d^4 - 19*b*c^2*d^3*e - 8*b^2*c*d^2*e^2 + 4*b^3*d*e^3)*g - 2*((22*
c^3*d^2*e^2 - 25*b*c^2*d*e^3 + 7*b^2*c*e^4)*f + (50*c^3*d^3*e - 23*b*c^2*d^
2*e^2 - 13*b^2*c*d*e^3 + 6*b^3*e^4)*g)*x)*sqrt(e*x + d))/(4*c^2*d^6*e^2 - 4
*b*c*d^5*e^3 + b^2*d^4*e^4 + (4*c^2*d^2*e^6 - 4*b*c*d*e^7 + b^2*e^8)*x^4 +
4*(4*c^2*d^3*e^5 - 4*b*c*d^2*e^6 + b^2*d*e^7)*x^3 + 6*(4*c^2*d^4*e^4 - 4*b*
c*d^3*e^5 + b^2*d^2*e^6)*x^2 + 4*(4*c^2*d^5*e^3 - 4*b*c*d^4*e^4 + b^2*d^3*e
^5)*x), -1/24*(3*(c^3*d^4*e*f + (c^3*e^5*f + (11*c^3*d*e^4 - 6*b*c^2*e^5)*g
)*x^4 + 4*(c^3*d*e^4*f + (11*c^3*d^2*e^3 - 6*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d
^2*e^3*f + (11*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2 + (11*c^3*d^5 - 6*b*c^
2*d^4*e)*g + 4*(c^3*d^3*e^2*f + (11*c^3*d^4*e - 6*b*c^2*d^3*e^2)*g)*x)*sqrt
(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*
d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*c^3*d*e^3 - b*c^2*e^4)*f - (42*c^3*d
^2*e^2 - 41*b*c^2*d*e^3 + 10*b^2*c*e^4)*g)*x^2 + (14*c^3*d^3*e - 43*b*c^2*d
^2*e^2 + 34*b^2*c*d*e^3 - 8*b^3*e^4)*f - (38*c^3*d^4 - 19*b*c^2*d^3*e - 8*b
^2*c*d^2*e^2 + 4*b^3*d*e^3)*g - 2*((22*c^3*d^2*e^2 - 25*b*c^2*d*e^3 + 7*b^2
*c*e^4)*f + (50*c^3*d^3*e - 23*b*c^2*d^2*e^2 - 13*b^2*c*d*e^3 + 6*b^3*e^4)*
g)*x)*sqrt(e*x + d))/(4*c^2*d^6*e^2 - 4*b*c*d^5*e^3 + b^2*d^4*e^4 + (4*c^2*
d^2*e^6 - 4*b*c*d*e^7 + b^2*e^8)*x^4 + 4*(4*c^2*d^3*e^5 - 4*b*c*d^2*e^6 + b
^2*d*e^7)*x^3 + 6*(4*c^2*d^4*e^4 - 4*b*c*d^3*e^5 + b^2*d^2*e^6)*x^2 + 4*(4*
c^2*d^5*e^3 - 4*b*c*d^4*e^4 + b^2*d^3*e^5)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.09, size = 999, normalized size = 3.25

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x)
```

```
[Out] 1/24*(-33*c^3*d^4*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-3*c^3*
e^4*f*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-2*(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*e^2*g*x-3*c^3*d^3*e*f*arctan((-c*e*x-b*e+c
*d)^(1/2)/(b*e-2*c*d)^(1/2))+8*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2
*e^3*f-19*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g+30*(-c*e*x-b*e
+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*g*x^2-63*(-c*e*x-b*e+c*d)^(1/2)*(b*e-
2*c*d)^(1/2)*c^2*d*e^2*g*x^2+14*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*
c*e^3*f*x-50*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*g*x-22*(-c*
e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e^2*f*x-18*(-c*e*x-b*e+c*d)^(1/2
```

```
)*(b*e-2*c*d)^(1/2)*b*c*d*e^2*f+54*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))+54*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))-99*c^3*d^2*e^2*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))-9*c^3*d*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-99*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-
9*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+18*b*c^2
*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+3*(-c*e*x-b*e+c*d
)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2+12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*b^2*e^3*g*x+4*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g
+7*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f+18*b*c^2*e^4*g*x^3*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-33*c^3*d*e^3*g*x^3*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)))*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)/(e*x+d)^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}(gx + f)}{(ex + d)^{\frac{11}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{3/2}}{(d + e\,x)^{11/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(11/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(11/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(11/
2),x)
```

```
[Out] Timed out
```

3.2019 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=387

$$-\frac{c^3(-8beg+13cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{5/2}}-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+13cdg+3cef}{64e^2(d+ex)^{3/2}(2cd-be)^2}$$

Rubi [A] time = 0.65, antiderivative size = 387, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 672, 660, 208}

$$-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+13cdg+3cef)}{64e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c^3(-8beg+13cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{5/2}}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+13cdg+3cef)}{32e^2(d+ex)^{5/2}(2cd-be)}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4e^2(d+ex)^{13/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+13cdg+3cef)}{24e^2(d+ex)^{9/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(13/2
),x]
```

```
[Out] (c*(3*c*e*f + 13*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]
)/(32*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) - (c^2*(3*c*e*f + 13*c*d*g - 8*b*e
*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(64*e^2*(2*c*d - b*e)^2*(d +
 e*x)^(3/2)) - ((3*c*e*f + 13*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c
*e^2*x^2)^(3/2))/(24*e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) - ((e*f - d*g)*(d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(13
/2)) - (c^3*(3*c*e*f + 13*c*d*g - 8*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(64*e^2*(2*c*d - b*e)
^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4e^2(2cd-be)(d+ex)^{13/2}} + \frac{(3cef+13cdg-8beg)}{8e(2c}$$

$$= -\frac{(3cef+13cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24e^2(2cd-be)(d+ex)^{9/2}} - \frac{(ef-dg)}{4e}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{(3cef+13cd}{}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{c^2(3cef+13}{}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{c^2(3cef+13}{}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{c^2(3cef+13}{}$$

Mathematica [C] time = 0.21, size = 128, normalized size = 0.33

$$\frac{((d+ex)(c(d-ex)-be))^{5/2}\left(-\frac{c^3(d+ex)^4(-8beg+13cdg+3cef)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(be-2cd)^4}+5dg-5ef\right)}{20e^2(d+ex)^{13/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(13/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(-5*e*f + 5*d*g - (c^3*(3*c*e*f +
 13*c*d*g - 8*b*e*g)*(d + e*x)^4*Hypergeometric2F1[5/2, 4, 7/2, (-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)])/(-2*c*d + b*e)^4))/(20*e^2*(2*c*d - b*e)*(d +
e*x)^(13/2))
```

IntegrateAlgebraic [A] time = 6.87, size = 500, normalized size = 1.29

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(64b^3e^3g(d+ex)-48b^3de^3g+48b^3e^4f+288b^2cd^2e^2g+72b^2ce^3f(d+ex)-288b^2cde^3f-456b^2cde^2g(d+ex)+112b^2ce^2g(d+ex)^2-576bc^2d^3eg+576bc^2d^2e^2f+1056bc^2d^2eg(d+ex)-288bc^2de^2f(d+ex)+6bc^2e^2f(d+ex)^2-454bc^2deg(d+ex)^2+24bc^2eg(d+ex)^3+384c^3d^4g-384c^3d^3ef-800c^3d^3g(d+ex)+288c^3d^2ef(d+ex)+460c^3d^2g(d+ex)^2-12c^3def(d+ex)^2-9c^3ef(d+ex)^3-39c^3dg(d+ex)^3\right)}{192e^2(d+ex)^{9/2}(be-2cd)^2}+\frac{\left(-8bc^3eg+13c^4dg+3c^4ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{64e^2(2cd-be)^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/
(d + e*x)^(13/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-384*c^3*d^3*e*f +
576*b*c^2*d^2*e^2*f - 288*b^2*c*d*e^3*f + 48*b^3*e^4*f + 384*c^3*d^4*g - 57
6*b*c^2*d^3*e*g + 288*b^2*c*d^2*e^2*g - 48*b^3*d*e^3*g + 288*c^3*d^2*e*f*(d
 + e*x) - 288*b*c^2*d*e^2*f*(d + e*x) + 72*b^2*c*e^3*f*(d + e*x) - 800*c^3*
d^3*g*(d + e*x) + 1056*b*c^2*d^2*e*g*(d + e*x) - 456*b^2*c*d*e^2*g*(d + e*x
) + 64*b^3*e^3*g*(d + e*x) - 12*c^3*d*e*f*(d + e*x)^2 + 6*b*c^2*e^2*f*(d +
e*x)^2 + 460*c^3*d^2*g*(d + e*x)^2 - 454*b*c^2*d*e*g*(d + e*x)^2 + 112*b^2*
c*e^2*g*(d + e*x)^2 - 9*c^3*e*f*(d + e*x)^3 - 39*c^3*d*g*(d + e*x)^3 + 24*b
*c^2*e*g*(d + e*x)^3))/(192*e^2*(-2*c*d + b*e)^2*(d + e*x)^(9/2)) + ((3*c^4
*e*f + 13*c^4*d*g - 8*b*c^3*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b
*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x))
)])/(64*e^2*(2*c*d - b*e)^2*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.50, size = 2104, normalized size = 5.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x,
algorithm="fricas")
```

```
[Out] [-1/384*(3*(3*c^4*d^5*e*f + (3*c^4*e^6*f + (13*c^4*d*e^5 - 8*b*c^3*e^6)*g)*
x^5 + 5*(3*c^4*d*e^5*f + (13*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(3*c^
4*d^2*e^4*f + (13*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(3*c^4*d^3*e^3
*f + (13*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (13*c^4*d^6 - 8*b*c^3*d^5*
e)*g + 5*(3*c^4*d^4*e^2*f + (13*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(2*c
*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e
^2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*
(3*(2*c^4*d*e^4 - b*c^3*e^5)*f + (26*c^4*d^2*e^3 - 29*b*c^3*d*e^4 + 8*b^2*c
^2*e^5)*g)*x^3 + (3*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2*b^2*c^2*e^5)*f - (
686*c^4*d^3*e^2 - 1107*b*c^3*d^2*e^3 + 606*b^2*c^2*d*e^4 - 112*b^3*c*e^5)*g
)*x^2 + 3*(78*c^4*d^4*e - 235*b*c^3*d^3*e^2 + 242*b^2*c^2*d^2*e^3 - 104*b^3
*c*d*e^4 + 16*b^4*e^5)*f - (10*c^4*d^5 + 95*b*c^3*d^4*e - 162*b^2*c^2*d^3*e
^2 + 88*b^3*c*d^2*e^3 - 16*b^4*d*e^4)*g - (3*(158*c^4*d^3*e^2 - 263*b*c^3*d
^2*e^3 + 140*b^2*c^2*d*e^4 - 24*b^3*c*e^5)*f + (6*c^4*d^4*e + 437*b*c^3*d^3
*e^2 - 684*b^2*c^2*d^2*e^3 + 360*b^3*c*d*e^4 - 64*b^4*e^5)*g)*x)*sqrt(e*x +
 d))/(8*c^3*d^8*e^2 - 12*b*c^2*d^7*e^3 + 6*b^2*c*d^6*e^4 - b^3*d^5*e^5 + (8
*c^3*d^3*e^7 - 12*b*c^2*d^2*e^8 + 6*b^2*c*d*e^9 - b^3*e^10)*x^5 + 5*(8*c^3*
d^4*e^6 - 12*b*c^2*d^3*e^7 + 6*b^2*c*d^2*e^8 - b^3*d*e^9)*x^4 + 10*(8*c^3*d
^5*e^5 - 12*b*c^2*d^4*e^6 + 6*b^2*c*d^3*e^7 - b^3*d^2*e^8)*x^3 + 10*(8*c^3*
d^6*e^4 - 12*b*c^2*d^5*e^5 + 6*b^2*c*d^4*e^6 - b^3*d^3*e^7)*x^2 + 5*(8*c^3*
d^7*e^3 - 12*b*c^2*d^6*e^4 + 6*b^2*c*d^5*e^5 - b^3*d^4*e^6)*x), -1/192*(3*(
3*c^4*d^5*e*f + (3*c^4*e^6*f + (13*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x^5 + 5*(3*c
^4*d*e^5*f + (13*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(3*c^4*d^2*e^4*f
+ (13*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(3*c^4*d^3*e^3*f + (13*c^4
*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (13*c^4*d^6 - 8*b*c^3*d^5*e)*g + 5*(3*
c^4*d^4*e^2*f + (13*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(-2*c*d + b*e)*a
rctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*
x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x +
 c*d^2 - b*d*e)*(3*(3*(2*c^4*d*e^4 - b*c^3*e^5)*f + (26*c^4*d^2*e^3 - 29*b*
c^3*d*e^4 + 8*b^2*c^2*e^5)*g)*x^3 + (3*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2
*b^2*c^2*e^5)*f - (686*c^4*d^3*e^2 - 1107*b*c^3*d^2*e^3 + 606*b^2*c^2*d*e^4
 - 112*b^3*c*e^5)*g)*x^2 + 3*(78*c^4*d^4*e - 235*b*c^3*d^3*e^2 + 242*b^2*c^
2*d^2*e^3 - 104*b^3*c*d*e^4 + 16*b^4*e^5)*f - (10*c^4*d^5 + 95*b*c^3*d^4*e
- 162*b^2*c^2*d^3*e^2 + 88*b^3*c*d^2*e^3 - 16*b^4*d*e^4)*g - (3*(158*c^4*d^
3*e^2 - 263*b*c^3*d^2*e^3 + 140*b^2*c^2*d*e^4 - 24*b^3*c*e^5)*f + (6*c^4*d^
4*e + 437*b*c^3*d^3*e^2 - 684*b^2*c^2*d^2*e^3 + 360*b^3*c*d*e^4 - 64*b^4*e^
5)*g)*x)*sqrt(e*x + d))/(8*c^3*d^8*e^2 - 12*b*c^2*d^7*e^3 + 6*b^2*c*d^6*e^4
 - b^3*d^5*e^5 + (8*c^3*d^3*e^7 - 12*b*c^2*d^2*e^8 + 6*b^2*c*d*e^9 - b^3*e^
```

```
10)*x^5 + 5*(8*c^3*d^4*e^6 - 12*b*c^2*d^3*e^7 + 6*b^2*c*d^2*e^8 - b^3*d*e^9
)*x^4 + 10*(8*c^3*d^5*e^5 - 12*b*c^2*d^4*e^6 + 6*b^2*c*d^3*e^7 - b^3*d^2*e^
8)*x^3 + 10*(8*c^3*d^6*e^4 - 12*b*c^2*d^5*e^5 + 6*b^2*c*d^4*e^6 - b^3*d^3*e
^7)*x^2 + 5*(8*c^3*d^7*e^3 - 12*b*c^2*d^6*e^4 + 6*b^2*c*d^5*e^5 - b^3*d^4*e
^6)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 1517, normalized size = 3.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x)
```

```
[Out] -1/192*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-39*c^4*d^5*g*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+9*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/
2)*c^3*e^4*f*x^3+382*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*g
*x^2-48*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^3*e^4*f+232*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*g*x-220*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*b*c^2*d^2*e^2*g*x+276*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/
2)*b*c^2*d*e^3*f*x-5*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^4*g-9*c
^4*e^5*f*x^4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-9*c^4*d^4*e*f
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-16*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g+117*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)
*c^3*d^3*e*f+24*b*c^3*e^5*g*x^4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))-39*c^4*d*e^4*g*x^4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-1
56*c^4*d^2*e^3*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-36*c^
4*d*e^4*f*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-234*c^4*d^3*
e^2*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-54*c^4*d^2*e^3*f
*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-156*c^4*d^4*e*g*x*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-36*c^4*d^3*e^2*f*x*arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+24*b*c^3*d^4*e*g*arctan((-c*e*x-b*e+
c*d)^(1/2)/(b*e-2*c*d)^(1/2))-64*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b
^3*e^4*g*x+96*b*c^3*d^3*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))+39*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*f*x^2-72*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*e^4*f*x-3*(-c*e*x-b*e+c*d)^(1/2)*(
b*e-2*c*d)^(1/2)*c^3*d^3*e*g*x-237*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)
*c^3*d^2*e^2*f*x+56*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*
g+216*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*f-50*(-c*e*x-b*e
+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d^3*e*g-294*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)*b*c^2*d^2*e^2*f-24*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b
*c^2*e^4*g*x^3+39*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*g*x^3-
112*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*e^4*g*x^2-6*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*e^4*f*x^2-343*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*c^3*d^2*e^2*g*x^2+96*b*c^3*d*e^4*g*x^3*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))+144*b*c^3*d^2*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2)))/(e*x+d)^(9/2)/(b*e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+
c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{3/2}}{\left(d + e\,x\right)^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(13/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(13/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(13/
2),x)
```

```
[Out] Timed out
```

3.2020 $\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=501

$$-\frac{512(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{2909907c^7e^2(d+ex)^{7/2}}-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x\right.}{415701c^6e^2(d+}$$

Rubi [A] time = 0.96, antiderivative size = 501, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{512(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{2909907c^7e^2(d+ex)^{7/2}}-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{415701c^6e^2(d+ex)^{5/2}}-\frac{64(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{46189c^5e^2(d+ex)^{3/2}}-\frac{32(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{12597c^4e^2\sqrt{d+ex}}-\frac{4\sqrt{d+ex}(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{969c^3e^2}-\frac{2(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{323c^2e^2}-\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{19ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] (-512*(2*c*d - b*e)^5*(19*c*e*f + 5*c*d*g - 12*b*e*g)*(d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2)^(7/2))/(2909907*c^7*e^2*(d + e*x)^(7/2)) - (256*(2*c*d - b
*e)^4*(19*c*e*f + 5*c*d*g - 12*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(7/2))/(415701*c^6*e^2*(d + e*x)^(5/2)) - (64*(2*c*d - b*e)^3*(19*c*e*f +
5*c*d*g - 12*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(46189*c^5
*e^2*(d + e*x)^(3/2)) - (32*(2*c*d - b*e)^2*(19*c*e*f + 5*c*d*g - 12*b*e*g)
*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(12597*c^4*e^2*Sqrt[d + e*x])
 - (4*(2*c*d - b*e)*(19*c*e*f + 5*c*d*g - 12*b*e*g)*Sqrt[d + e*x]*(d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(969*c^3*e^2) - (2*(19*c*e*f + 5*c*d*g
- 12*b*e*g)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(3
23*c^2*e^2) - (2*g*(d + e*x)^(5/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7
/2))/(19*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{19ce^2} - \frac{\left(2\left(\frac{7}{2}e\right.\right.}{}$$

$$= -\frac{2(19cef+5cdg-12beg)(d+ex)^{3/2}\left(d(cd-be)-be^2\right.}{323c^2e^2}$$

$$= -\frac{4(2cd-be)(19cef+5cdg-12beg)\sqrt{d+ex}\,\left(d(cd-\right.}{969c^3e^2}$$

$$= -\frac{32(2cd-be)^2(19cef+5cdg-12beg)\left(d(cd-be)-b\right.}{12597c^4e^2\sqrt{d+ex}}$$

$$= -\frac{64(2cd-be)^3(19cef+5cdg-12beg)\left(d(cd-be)-b\right.}{46189c^5e^2(d+ex)^{3/2}}$$

$$= -\frac{256(2cd-be)^4(19cef+5cdg-12beg)\left(d(cd-be)-\right.}{415701c^6e^2(d+ex)^{5/2}}$$

$$= -\frac{512(2cd-be)^5(19cef+5cdg-12beg)\left(d(cd-be)-\right.}{2909907c^7e^2(d+ex)^{7/2}}$$

Mathematica [A] time = 0.70, size = 284, normalized size = 0.57

$$\frac{2((d+ex)(c(d-ex)-be))^{7/2}\left(-171171(be-cd+cex)^5(-6beg+11cdg+cef)-969969(2cd-be)(be-cd+cex)^4(-3beg+5cdg+cef)-1322685(2cd-be)^3(be-cd+cex)^2(-3beg+4cdg+2cef)+2238390(be-2cd)^2(c(d-ex)-be)^3(-2beg+3cdg+cef)+323323(be-2cd)^4(c(d-ex)-be)(-6beg+7cdg+5cef)-415701(2cd-be)^5(-beg+cdg+cef)-153153g(be-cd+cex)^6\right)}{2909907c^7e^2(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
5/2),x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-415701*(2*c*d - b*e)^5*(c*e*f
 + c*d*g - b*e*g) - 1322685*(2*c*d - b*e)^3*(2*c*e*f + 4*c*d*g - 3*b*e*g)*(
-(c*d) + b*e + c*e*x)^2 - 969969*(2*c*d - b*e)*(c*e*f + 5*c*d*g - 3*b*e*g)*
(-(c*d) + b*e + c*e*x)^4 - 171171*(c*e*f + 11*c*d*g - 6*b*e*g)*(-(c*d) + b*
e + c*e*x)^5 - 153153*g*(-(c*d) + b*e + c*e*x)^6 + 323323*(-2*c*d + b*e)^4*
(5*c*e*f + 7*c*d*g - 6*b*e*g)*(-(b*e) + c*(d - e*x)) + 2238390*(-2*c*d + b*
e)^2*(c*e*f + 3*c*d*g - 2*b*e*g)*(-(b*e) + c*(d - e*x))^3))/(2909907*c^7*e^
2*(d + e*x)^(7/2))
```

IntegrateAlgebraic [A] time = 4.96, size = 839, normalized size = 1.67

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2)^(5/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(7/2)*(155648*c^6*d^5*e*f - 3
89120*b*c^5*d^4*e^2*f + 389120*b^2*c^4*d^3*e^3*f - 194560*b^3*c^3*d^2*e^4*f
 + 48640*b^4*c^2*d*e^5*f - 4864*b^5*c*e^6*f + 40960*c^6*d^6*g - 200704*b*c^
5*d^5*e*g + 348160*b^2*c^4*d^4*e^2*g - 296960*b^3*c^3*d^3*e^3*g + 135680*b^
4*c^2*d^2*e^4*g - 32000*b^5*c*d*e^5*g + 3072*b^6*e^6*g + 272384*c^6*d^4*e*f
*(d + e*x) - 544768*b*c^5*d^3*e^2*f*(d + e*x) + 408576*b^2*c^4*d^2*e^3*f*(d
 + e*x) - 136192*b^3*c^3*d*e^4*f*(d + e*x) + 17024*b^4*c^2*e^5*f*(d + e*x)
+ 71680*c^6*d^5*g*(d + e*x) - 315392*b*c^5*d^4*e*g*(d + e*x) + 451584*b^2*c
```

```
^4*d^3*e^2*g*(d + e*x) - 293888*b^3*c^3*d^2*e^3*g*(d + e*x) + 90496*b^4*c^2
*d*e^4*g*(d + e*x) - 10752*b^5*c*e^5*g*(d + e*x) + 306432*c^6*d^3*e*f*(d +
e*x)^2 - 459648*b*c^5*d^2*e^2*f*(d + e*x)^2 + 229824*b^2*c^4*d*e^3*f*(d + e
*x)^2 - 38304*b^3*c^3*e^4*f*(d + e*x)^2 + 80640*c^6*d^4*g*(d + e*x)^2 - 314
496*b*c^5*d^3*e*g*(d + e*x)^2 + 350784*b^2*c^4*d^2*e^2*g*(d + e*x)^2 - 1552
32*b^3*c^3*d*e^3*g*(d + e*x)^2 + 24192*b^4*c^2*e^4*g*(d + e*x)^2 + 280896*c
^6*d^2*e*f*(d + e*x)^3 - 280896*b*c^5*d*e^2*f*(d + e*x)^3 + 70224*b^2*c^4*e
^3*f*(d + e*x)^3 + 73920*c^6*d^3*g*(d + e*x)^3 - 251328*b*c^5*d^2*e*g*(d +
e*x)^3 + 195888*b^2*c^4*d*e^2*g*(d + e*x)^3 - 44352*b^3*c^3*e^3*g*(d + e*x)
^3 + 228228*c^6*d*e*f*(d + e*x)^4 - 114114*b*c^5*e^2*f*(d + e*x)^4 + 60060*
c^6*d^2*g*(d + e*x)^4 - 174174*b*c^5*d*e*g*(d + e*x)^4 + 72072*b^2*c^4*e^2*
g*(d + e*x)^4 + 171171*c^6*e*f*(d + e*x)^5 + 45045*c^6*d*g*(d + e*x)^5 - 10
8108*b*c^5*e*g*(d + e*x)^5 + 153153*c^6*g*(d + e*x)^6))/(2909907*c^7*e^2*(d
 + e*x)^(7/2))
```

fricas [B] time = 0.50, size = 1370, normalized size = 2.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/2909907*(153153*c^9*e^9*g*x^9 + 9009*(19*c^9*e^9*f + (56*c^9*d*e^8 + 39*b
*c^8*e^9)*g)*x^8 + 3003*(19*(10*c^9*d*e^8 + 7*b*c^8*e^9)*f + (50*c^9*d^2*e^
7 + 527*b*c^8*d*e^8 + 69*b^2*c^7*e^9)*g)*x^7 + 231*(19*(38*c^9*d^2*e^7 + 41
7*b*c^8*d*e^8 + 55*b^2*c^7*e^9)*f - (5114*c^9*d^3*e^6 - 9585*b*c^8*d^2*e^7
- 5216*b^2*c^7*d*e^8 - 3*b^3*c^6*e^9)*g)*x^6 - 63*(19*(1174*c^9*d^3*e^6 - 2
179*b*c^8*d^2*e^7 - 1204*b^2*c^7*d*e^8 - b^3*c^6*e^9)*f + (20456*c^9*d^4*e^
5 + 4189*b*c^8*d^3*e^6 - 45509*b^2*c^7*d^2*e^7 - 143*b^3*c^6*d*e^8 + 12*b^4
*c^5*e^9)*g)*x^5 - 7*(95*(2348*c^9*d^4*e^5 + 587*b*c^8*d^3*e^6 - 5343*b^2*c
^7*d^2*e^7 - 25*b^3*c^6*d*e^8 + 2*b^4*c^5*e^9)*f - (72574*c^9*d^5*e^4 - 530
165*b*c^8*d^4*e^5 + 496980*b^2*c^7*d^3*e^6 + 8230*b^3*c^6*d^2*e^7 - 1550*b^
4*c^5*d*e^8 + 120*b^5*c^4*e^9)*g)*x^4 + (19*(37354*c^9*d^5*e^4 - 257745*b*c
^8*d^4*e^5 + 237200*b^2*c^7*d^3*e^6 + 6070*b^3*c^6*d^2*e^7 - 1080*b^4*c^5*d
*e^8 + 80*b^5*c^4*e^9)*f + (1411994*c^9*d^6*e^3 - 3574809*b*c^8*d^5*e^4 + 1
981645*b^2*c^7*d^4*e^5 + 247010*b^3*c^6*d^3*e^6 - 78240*b^4*c^5*d^2*e^7 + 1
3360*b^5*c^4*d*e^8 - 960*b^6*c^3*e^9)*g)*x^3 + 3*(19*(35362*c^9*d^6*e^3 - 8
7409*b*c^8*d^5*e^4 + 44825*b^2*c^7*d^4*e^5 + 9650*b^3*c^6*d^3*e^6 - 2860*b^
4*c^5*d^2*e^7 + 464*b^5*c^4*d*e^8 - 32*b^6*c^3*e^9)*f + (176810*c^9*d^7*e^2
 - 248777*b*c^8*d^6*e^3 - 105344*b^2*c^7*d^5*e^4 + 276115*b^3*c^6*d^4*e^5 -
 130100*b^4*c^5*d^3*e^6 + 36640*b^5*c^4*d^2*e^7 - 5728*b^6*c^3*d*e^8 + 384*
b^7*c^2*e^9)*g)*x^2 - 19*(74461*c^9*d^8*e - 317517*b*c^8*d^7*e^2 + 563561*b
^2*c^7*d^6*e^3 - 549615*b^3*c^6*d^5*e^4 + 329190*b^4*c^5*d^4*e^5 - 126672*b
^5*c^4*d^3*e^6 + 30560*b^6*c^3*d^2*e^7 - 4224*b^7*c^2*d*e^8 + 256*b^8*c*e^9
)*f - 2*(262729*c^9*d^9 - 1470288*b*c^8*d^8*e + 3543734*b^2*c^7*d^7*e^2 - 4
831980*b^3*c^6*d^6*e^3 + 4120665*b^4*c^5*d^5*e^4 - 2291820*b^5*c^4*d^4*e^5
+ 836432*b^6*c^3*d^3*e^6 - 193920*b^7*c^2*d^2*e^7 + 25984*b^8*c*d*e^8 - 153
6*b^9*e^9)*g + (19*(39346*c^9*d^7*e^2 - 31625*b*c^8*d^6*e^3 - 83676*b^2*c^7
*d^5*e^4 + 114555*b^3*c^6*d^4*e^5 - 50040*b^4*c^5*d^3*e^6 + 13296*b^5*c^4*d
^2*e^7 - 1984*b^6*c^3*d*e^8 + 128*b^7*c^2*e^9)*f - (262729*c^9*d^8*e - 1207
559*b*c^8*d^7*e^2 + 2336175*b^2*c^7*d^6*e^3 - 2495805*b^3*c^6*d^5*e^4 + 162
4860*b^4*c^5*d^4*e^5 - 666960*b^5*c^4*d^3*e^6 + 169472*b^6*c^3*d^2*e^7 - 24
448*b^7*c^2*d*e^8 + 1536*b^8*c*e^9)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
 - b*d*e)*sqrt(e*x + d)/(c^7*e^3*x + c^7*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}} (ex + d)^{\frac{5}{2}} \left(gx + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(e*x + d)^(5/2)*(g*x
 + f), x)
```

maple [A] time = 0.05, size = 739, normalized size = 1.48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/2909907*(c*e*x+b*e-c*d)*(153153*c^6*e^6*g*x^6-108108*b*c^5*e^6*g*x^5+9639
63*c^6*d*e^5*g*x^5+171171*c^6*e^6*f*x^5+72072*b^2*c^4*e^6*g*x^4-714714*b*c^
5*d*e^5*g*x^4-114114*b*c^5*e^6*f*x^4+2582580*c^6*d^2*e^4*g*x^4+1084083*c^6*
d*e^5*f*x^4-44352*b^3*c^3*e^6*g*x^3+484176*b^2*c^4*d*e^5*g*x^3+70224*b^2*c^
4*e^6*f*x^3-2029104*b*c^5*d^2*e^4*g*x^3-737352*b*c^5*d*e^5*f*x^3+3827670*c^
6*d^3*e^3*g*x^3+2905518*c^6*d^2*e^4*f*x^3+24192*b^4*c^2*e^6*g*x^2-288288*b^
3*c^3*d*e^5*g*x^2-38304*b^3*c^3*e^6*f*x^2+1370880*b^2*c^4*d^2*e^4*g*x^2+440
496*b^2*c^4*d*e^5*f*x^2-3194604*b*c^5*d^3*e^3*g*x^2-1987020*b*c^5*d^2*e^4*f
*x^2+3410505*c^6*d^4*e^2*g*x^2+4230198*c^6*d^3*e^3*f*x^2-10752*b^5*c*e^6*g*
x+138880*b^4*c^2*d*e^5*g*x+17024*b^4*c^2*e^6*f*x-737408*b^3*c^3*d^2*e^4*g*x
-212800*b^3*c^3*d*e^5*f*x+2029104*b^2*c^4*d^3*e^3*g*x+1078896*b^2*c^4*d^2*e
^4*f*x-2935604*b*c^5*d^4*e^2*g*x-2763208*b*c^5*d^3*e^3*f*x+1839103*c^6*d^5*
e*g*x+3496703*c^6*d^4*e^2*f*x+3072*b^6*e^6*g-42752*b^5*c*d*e^5*g-4864*b^5*c
*e^6*f+250368*b^4*c^2*d^2*e^4*g+65664*b^4*c^2*d*e^5*f-790432*b^3*c^3*d^3*e^
3*g-369056*b^3*c^3*d^2*e^4*f+1418488*b^2*c^4*d^4*e^2*g+1097744*b^2*c^4*d^3*
e^3*f-1364202*b*c^5*d^5*e*g-1788546*b*c^5*d^4*e^2*f+525458*c^6*d^6*g+141475
9*c^6*d^5*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^7/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 1.03, size = 1364, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/153153*(9009*c^8*e^8*x^8 - 74461*c^8*d^8 + 317517*b*c^7*d^7*e - 563561*b^
2*c^6*d^6*e^2 + 549615*b^3*c^5*d^5*e^3 - 329190*b^4*c^4*d^4*e^4 + 126672*b^
5*c^3*d^3*e^5 - 30560*b^6*c^2*d^2*e^6 + 4224*b^7*c*d*e^7 - 256*b^8*e^8 + 30
03*(10*c^8*d*e^7 + 7*b*c^7*e^8)*x^7 + 231*(38*c^8*d^2*e^6 + 417*b*c^7*d*e^7
 + 55*b^2*c^6*e^8)*x^6 - 63*(1174*c^8*d^3*e^5 - 2179*b*c^7*d^2*e^6 - 1204*b
^2*c^6*d*e^7 - b^3*c^5*e^8)*x^5 - 35*(2348*c^8*d^4*e^4 + 587*b*c^7*d^3*e^5
- 5343*b^2*c^6*d^2*e^6 - 25*b^3*c^5*d*e^7 + 2*b^4*c^4*e^8)*x^4 + (37354*c^8
*d^5*e^3 - 257745*b*c^7*d^4*e^4 + 237200*b^2*c^6*d^3*e^5 + 6070*b^3*c^5*d^2
*e^6 - 1080*b^4*c^4*d*e^7 + 80*b^5*c^3*e^8)*x^3 + 3*(35362*c^8*d^6*e^2 - 87
409*b*c^7*d^5*e^3 + 44825*b^2*c^6*d^4*e^4 + 9650*b^3*c^5*d^3*e^5 - 2860*b^4
*c^4*d^2*e^6 + 464*b^5*c^3*d*e^7 - 32*b^6*c^2*e^8)*x^2 + (39346*c^8*d^7*e -
 31625*b*c^7*d^6*e^2 - 83676*b^2*c^6*d^5*e^3 + 114555*b^3*c^5*d^4*e^4 - 500
40*b^4*c^4*d^3*e^5 + 13296*b^5*c^3*d^2*e^6 - 1984*b^6*c^2*d*e^7 + 128*b^7*c
*e^8)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^6*e^2*x + c^6*d*e) + 2/290
9907*(153153*c^9*e^9*x^9 - 525458*c^9*d^9 + 2940576*b*c^8*d^8*e - 7087468*b
^2*c^7*d^7*e^2 + 9663960*b^3*c^6*d^6*e^3 - 8241330*b^4*c^5*d^5*e^4 + 458364
0*b^5*c^4*d^4*e^5 - 1672864*b^6*c^3*d^3*e^6 + 387840*b^7*c^2*d^2*e^7 - 5196
8*b^8*c*d*e^8 + 3072*b^9*e^9 + 9009*(56*c^9*d*e^8 + 39*b*c^8*e^9)*x^8 + 300
3*(50*c^9*d^2*e^7 + 527*b*c^8*d*e^8 + 69*b^2*c^7*e^9)*x^7 - 231*(5114*c^9*d
^3*e^6 - 9585*b*c^8*d^2*e^7 - 5216*b^2*c^7*d*e^8 - 3*b^3*c^6*e^9)*x^6 - 63*
(20456*c^9*d^4*e^5 + 4189*b*c^8*d^3*e^6 - 45509*b^2*c^7*d^2*e^7 - 143*b^3*c
^6*d*e^8 + 12*b^4*c^5*e^9)*x^5 + 7*(72574*c^9*d^5*e^4 - 530165*b*c^8*d^4*e^
```

```
5 + 496980*b^2*c^7*d^3*e^6 + 8230*b^3*c^6*d^2*e^7 - 1550*b^4*c^5*d*e^8 + 12
0*b^5*c^4*e^9)*x^4 + (1411994*c^9*d^6*e^3 - 3574809*b*c^8*d^5*e^4 + 1981645
*b^2*c^7*d^4*e^5 + 247010*b^3*c^6*d^3*e^6 - 78240*b^4*c^5*d^2*e^7 + 13360*b
^5*c^4*d*e^8 - 960*b^6*c^3*e^9)*x^3 + 3*(176810*c^9*d^7*e^2 - 248777*b*c^8*
d^6*e^3 - 105344*b^2*c^7*d^5*e^4 + 276115*b^3*c^6*d^4*e^5 - 130100*b^4*c^5*
d^3*e^6 + 36640*b^5*c^4*d^2*e^7 - 5728*b^6*c^3*d*e^8 + 384*b^7*c^2*e^9)*x^2
 - (262729*c^9*d^8*e - 1207559*b*c^8*d^7*e^2 + 2336175*b^2*c^7*d^6*e^3 - 24
95805*b^3*c^6*d^5*e^4 + 1624860*b^4*c^5*d^4*e^5 - 666960*b^5*c^4*d^3*e^6 +
169472*b^6*c^3*d^2*e^7 - 24448*b^7*c^2*d*e^8 + 1536*b^8*c*e^9)*x)*sqrt(-c*e
*x + c*d - b*e)*(e*x + d)*g/(c^7*e^3*x + c^7*d*e^2)
```

mupad [B] time = 5.39, size = 1307, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^4*x^7*(d + e*x)^(1/2)*(6
9*b^2*e^2*g + 50*c^2*d^2*g + 133*b*c*e^2*f + 190*c^2*d*e*f + 527*b*c*d*e*g)
)/969 + (x^5*(d + e*x)^(1/2)*(2394*b^3*c^6*e^9*f - 1512*b^4*c^5*e^9*g - 281
0556*c^9*d^3*e^6*f - 2577456*c^9*d^4*e^5*g + 5216526*b*c^8*d^2*e^7*f + 2882
376*b^2*c^7*d*e^8*f - 527814*b*c^8*d^3*e^6*g + 18018*b^3*c^6*d*e^8*g + 5734
134*b^2*c^7*d^2*e^7*g))/(2909907*c^7*e^3) + (2*c^2*e^6*g*x^9*(d + e*x)^(1/2
))/19 + (x^3*(d + e*x)^(1/2)*(3040*b^5*c^4*e^9*f - 1920*b^6*c^3*e^9*g + 141
9452*c^9*d^5*e^4*f + 2823988*c^9*d^6*e^3*g - 9794310*b*c^8*d^4*e^5*f - 4104
0*b^4*c^5*d*e^8*f - 7149618*b*c^8*d^5*e^4*g + 26720*b^5*c^4*d*e^8*g + 90136
00*b^2*c^7*d^3*e^6*f + 230660*b^3*c^6*d^2*e^7*f + 3963290*b^2*c^7*d^4*e^5*g
 + 494020*b^3*c^6*d^3*e^6*g - 156480*b^4*c^5*d^2*e^7*g))/(2909907*c^7*e^3)
+ (x^6*(d + e*x)^(1/2)*(482790*b^2*c^7*e^9*f + 1386*b^3*c^6*e^9*g + 333564*
c^9*d^2*e^7*f - 2362668*c^9*d^3*e^6*g + 3660426*b*c^8*d*e^8*f + 4428270*b*c
^8*d^2*e^7*g + 2409792*b^2*c^7*d*e^8*g))/(2909907*c^7*e^3) + (2*c*e^5*x^8*(
d + e*x)^(1/2)*(39*b*e*g + 56*c*d*g + 19*c*e*f))/323 + (2*(b*e - c*d)^3*(d
+ e*x)^(1/2)*(3072*b^6*e^6*g + 525458*c^6*d^6*g - 4864*b^5*c*e^6*f + 141475
9*c^6*d^5*e*f - 1364202*b*c^5*d^5*e*g - 42752*b^5*c*d*e^5*g - 1788546*b*c^5
*d^4*e^2*f + 65664*b^4*c^2*d*e^5*f + 1097744*b^2*c^4*d^3*e^3*f - 369056*b^3
*c^3*d^2*e^4*f + 1418488*b^2*c^4*d^4*e^2*g - 790432*b^3*c^3*d^3*e^3*g + 250
368*b^4*c^2*d^2*e^4*g))/(2909907*c^7*e^3) + (x^4*(d + e*x)^(1/2)*(1680*b^5*
c^4*e^9*g - 2660*b^4*c^5*e^9*f - 3122840*c^9*d^4*e^5*f + 1016036*c^9*d^5*e^
4*g - 780710*b*c^8*d^3*e^6*f + 33250*b^3*c^6*d*e^8*f - 7422310*b*c^8*d^4*e^
5*g - 21700*b^4*c^5*d*e^8*g + 7106190*b^2*c^7*d^2*e^7*f + 6957720*b^2*c^7*d
^3*e^6*g + 115220*b^3*c^6*d^2*e^7*g))/(2909907*c^7*e^3) + (2*x^2*(b*e - c*d
)*(d + e*x)^(1/2)*(384*b^6*e^6*g - 176810*c^6*d^6*g - 608*b^5*c*e^6*f - 671
878*c^6*d^5*e*f + 71967*b*c^5*d^5*e*g - 5344*b^5*c*d*e^5*g + 988893*b*c^5*d
^4*e^2*f + 8208*b^4*c^2*d*e^5*f + 137218*b^2*c^4*d^3*e^3*f - 46132*b^3*c^3*
d^2*e^4*f + 177311*b^2*c^4*d^4*e^2*g - 98804*b^3*c^3*d^3*e^3*g + 31296*b^4*
c^2*d^2*e^4*g))/(969969*c^5*e) + (2*x*(b*e - c*d)^2*(d + e*x)^(1/2)*(2432*b
^5*c*e^6*f - 262729*c^6*d^6*g - 1536*b^6*e^6*g + 747574*c^6*d^5*e*f + 68210
1*b*c^5*d^5*e*g + 21376*b^5*c*d*e^5*g + 894273*b*c^5*d^4*e^2*f - 32832*b^4*
c^2*d*e^5*f - 548872*b^2*c^4*d^3*e^3*f + 184528*b^3*c^3*d^2*e^4*f - 709244*
b^2*c^4*d^4*e^2*g + 395216*b^3*c^3*d^3*e^3*g - 125184*b^4*c^2*d^2*e^4*g))/(
2909907*c^6*e^2)))/(x + d/e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2021 $\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=424

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{765765c^6e^2(d+ex)^{7/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x\right.}{109395c^5e^2(d+}$$

Rubi [A] time = 0.76, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{765765c^6e^2(d+ex)^{7/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{109395c^5e^2(d+ex)^{5/2}}-\frac{32(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{12155c^4e^2(d+ex)^{3/2}}-\frac{16(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{3315c^3e^2\sqrt{d+ex}}-\frac{2\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{255c^2e^2}-\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{17ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] (-256*(2*c*d - b*e)^4*(17*c*e*f + 3*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2)^(7/2))/(765765*c^6*e^2*(d + e*x)^(7/2)) - (128*(2*c*d - b*
e)^3*(17*c*e*f + 3*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^
(7/2))/(109395*c^5*e^2*(d + e*x)^(5/2)) - (32*(2*c*d - b*e)^2*(17*c*e*f + 3
*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(12155*c^4*
e^2*(d + e*x)^(3/2)) - (16*(2*c*d - b*e)*(17*c*e*f + 3*c*d*g - 10*b*e*g)*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(3315*c^3*e^2*Sqrt[d + e*x]) - (
2*(17*c*e*f + 3*c*d*g - 10*b*e*g)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2)^(7/2))/(255*c^2*e^2) - (2*g*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(17*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{17ce^2} - \frac{\left(2\left(\frac{7}{2}e\right.\right.}{}$$

$$= -\frac{2(17cef+3cdg-10beg)\sqrt{d+ex}\left(d(cd-be)-be^2x\right.}{255c^2e^2}$$

$$= -\frac{16(2cd-be)(17cef+3cdg-10beg)\left(d(cd-be)-be\right.}{3315c^3e^2\sqrt{d+ex}}$$

$$= -\frac{32(2cd-be)^2(17cef+3cdg-10beg)\left(d(cd-be)-b\right.}{12155c^4e^2(d+ex)^{3/2}}$$

$$= -\frac{128(2cd-be)^3(17cef+3cdg-10beg)\left(d(cd-be)-\right.}{109395c^5e^2(d+ex)^{5/2}}$$

$$= -\frac{256(2cd-be)^4(17cef+3cdg-10beg)\left(d(cd-be)-\right.}{765765c^6e^2(d+ex)^{7/2}}$$

<u>**Mathematica**</u> [A] time = 0.38, size = 367, normalized size = 0.87

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
5/2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-1280*b
^5*e^5*g + 128*b^4*c*e^4*(17*e*f + 118*d*g + 35*e*g*x) - 32*b^3*c^2*e^3*(22
53*d^2*g + 7*e^2*x*(34*f + 45*g*x) + 2*d*e*(391*f + 756*g*x)) + 16*b^2*c^3*
e^2*(10864*d^3*g + 294*d*e^2*x*(17*f + 21*g*x) + 21*e^3*x^2*(51*f + 55*g*x)
 + 3*d^2*e*(2397*f + 4249*g*x)) - 2*b*c^4*e*(104843*d^4*g + 231*e^4*x^3*(68
*f + 65*g*x) + 84*d*e^3*x^2*(969*f + 968*g*x) + 42*d^2*e^2*x*(3842*f + 4287
*g*x) + 4*d^3*e*(32623*f + 50554*g*x)) + c^5*(94134*d^5*g + 3003*e^5*x^4*(1
7*f + 15*g*x) + 462*d*e^4*x^3*(578*f + 507*g*x) + 126*d^2*e^3*x^2*(4471*f +
 3949*g*x) + 28*d^3*e^2*x*(21097*f + 19638*g*x) + d^4*e*(278171*f + 329469*
g*x))))/(765765*c^6*e^2*Sqrt[d + e*x])
```

<u>**IntegrateAlgebraic**</u> [A] time = 4.44, size = 598, normalized size = 1.41

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2)^(5/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(7/2)*(34816*c^5*d^4*e*f - 69
632*b*c^4*d^3*e^2*f + 52224*b^2*c^3*d^2*e^3*f - 17408*b^3*c^2*d*e^4*f + 217
6*b^4*c*e^5*f + 6144*c^5*d^5*g - 32768*b*c^4*d^4*e*g + 50176*b^2*c^3*d^3*e^
2*g - 33792*b^3*c^2*d^2*e^3*g + 10624*b^4*c*d*e^4*g - 1280*b^5*e^5*g + 6092
8*c^5*d^3*e*f*(d + e*x) - 91392*b*c^4*d^2*e^2*f*(d + e*x) + 45696*b^2*c^3*d
*e^3*f*(d + e*x) - 7616*b^3*c^2*e^4*f*(d + e*x) + 10752*c^5*d^4*g*(d + e*x)
 - 51968*b*c^4*d^3*e*g*(d + e*x) + 61824*b^2*c^3*d^2*e^2*g*(d + e*x) - 2822
4*b^3*c^2*d*e^3*g*(d + e*x) + 4480*b^4*c*e^4*g*(d + e*x) + 68544*c^5*d^2*e*
f*(d + e*x)^2 - 68544*b*c^4*d*e^2*f*(d + e*x)^2 + 17136*b^2*c^3*e^3*f*(d +
```

```
e*x)^2 + 12096*c^5*d^3*g*(d + e*x)^2 - 52416*b*c^4*d^2*e*g*(d + e*x)^2 + 43
344*b^2*c^3*d*e^2*g*(d + e*x)^2 - 10080*b^3*c^2*e^3*g*(d + e*x)^2 + 62832*c
^5*d*e*f*(d + e*x)^3 - 31416*b*c^4*e^2*f*(d + e*x)^3 + 11088*c^5*d^2*g*(d +
 e*x)^3 - 42504*b*c^4*d*e*g*(d + e*x)^3 + 18480*b^2*c^3*e^2*g*(d + e*x)^3 +
 51051*c^5*e*f*(d + e*x)^4 + 9009*c^5*d*g*(d + e*x)^4 - 30030*b*c^4*e*g*(d
+ e*x)^4 + 45045*c^5*g*(d + e*x)^5))/(765765*c^6*e^2*(d + e*x)^(7/2))
```

fricas [B] time = 0.47, size = 1112, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/765765*(45045*c^8*e^8*g*x^8 + 3003*(17*c^8*e^8*f + (33*c^8*d*e^7 + 35*b*c
^7*e^8)*g)*x^7 + 231*(17*(29*c^8*d*e^7 + 31*b*c^7*e^8)*f - (303*c^8*d^2*e^6
 - 1558*b*c^7*d*e^7 - 275*b^2*c^6*e^8)*g)*x^6 - 63*(17*(79*c^8*d^2*e^6 - 39
8*b*c^7*d*e^7 - 71*b^2*c^6*e^8)*f + (4527*c^8*d^3*e^5 - 4129*b*c^7*d^2*e^6
- 4813*b^2*c^6*d*e^7 - 5*b^3*c^5*e^8)*g)*x^5 - 35*(17*(587*c^8*d^3*e^5 - 52
5*b*c^7*d^2*e^6 - 633*b^2*c^6*d*e^7 - b^3*c^5*e^8)*f + (1761*c^8*d^4*e^4 +
11860*b*c^7*d^3*e^5 - 15954*b^2*c^6*d^2*e^6 - 108*b^3*c^5*d*e^7 + 10*b^4*c^
4*e^8)*g)*x^4 - 5*(17*(835*c^8*d^4*e^4 + 6548*b*c^7*d^3*e^5 - 8586*b^2*c^6*
d^2*e^6 - 92*b^3*c^5*d*e^7 + 8*b^4*c^4*e^8)*f - (51549*c^8*d^5*e^3 - 146429
*b*c^7*d^4*e^4 + 91238*b^2*c^6*d^3*e^5 + 4506*b^3*c^5*d^2*e^6 - 944*b^4*c^4
*d*e^7 + 80*b^5*c^3*e^8)*g)*x^3 + 3*(17*(7339*c^8*d^5*e^3 - 20435*b*c^7*d^4
*e^4 + 12250*b^2*c^6*d^3*e^5 + 1030*b^3*c^5*d^2*e^6 - 200*b^4*c^4*d*e^7 + 1
6*b^5*c^3*e^8)*f + (52047*c^8*d^6*e^2 - 89650*b*c^7*d^5*e^3 + 15875*b^2*c^6
*d^4*e^4 + 30740*b^3*c^5*d^3*e^5 - 10900*b^4*c^4*d^2*e^6 + 2048*b^5*c^3*d*e
^7 - 160*b^6*c^2*e^8)*g)*x^2 - 17*(16363*c^8*d^7*e - 64441*b*c^7*d^6*e^2 +
101913*b^2*c^6*d^5*e^3 - 84195*b^3*c^5*d^4*e^4 + 40200*b^4*c^4*d^3*e^5 - 11
568*b^5*c^3*d^2*e^6 + 1856*b^6*c^2*d*e^7 - 128*b^7*c*e^8)*f - 2*(47067*c^8*
d^8 - 246044*b*c^7*d^7*e + 542642*b^2*c^6*d^6*e^2 - 658380*b^3*c^5*d^5*e^3
+ 481275*b^4*c^4*d^4*e^4 - 218352*b^5*c^3*d^3*e^5 + 60624*b^6*c^2*d^2*e^6 -
 9472*b^7*c*d*e^7 + 640*b^8*e^8)*g + (17*(14341*c^8*d^6*e^2 - 21006*b*c^7*d
^5*e^3 - 4395*b^2*c^6*d^4*e^4 + 15180*b^3*c^5*d^3*e^5 - 4920*b^4*c^4*d^2*e^
6 + 864*b^5*c^3*d*e^7 - 64*b^6*c^2*e^8)*f - (47067*c^8*d^7*e - 198977*b*c^7
*d^6*e^2 + 343665*b^2*c^6*d^5*e^3 - 314715*b^3*c^5*d^4*e^4 + 166560*b^4*c^4
*d^3*e^5 - 51792*b^5*c^3*d^2*e^6 + 8832*b^6*c^2*d*e^7 - 640*b^7*c*e^8)*g)*x
)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^6*e^3*x + c^6
*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}} (ex + d)^{\frac{3}{2}} \left(gx + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(e*x + d)^(3/2)*(g*x
 + f), x)
```

maple [A] time = 0.05, size = 535, normalized size = 1.26

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/765765*(c*e*x+b*e-c*d)*(-45045*c^5*e^5*g*x^5+30030*b*c^4*e^5*g*x^4-23423
4*c^5*d*e^4*g*x^4-51051*c^5*e^5*f*x^4-18480*b^2*c^3*e^5*g*x^3+162624*b*c^4*
d*e^4*g*x^3+31416*b*c^4*e^5*f*x^3-497574*c^5*d^2*e^3*g*x^3-267036*c^5*d*e^4
*f*x^3+10080*b^3*c^2*e^5*g*x^2-98784*b^2*c^3*d*e^4*g*x^2-17136*b^2*c^3*e^5*
f*x^2+360108*b*c^4*d^2*e^3*g*x^2+162792*b*c^4*d*e^4*f*x^2-549864*c^5*d^3*e^
2*g*x^2-563346*c^5*d^2*e^3*f*x^2-4480*b^4*c*e^5*g*x+48384*b^3*c^2*d*e^4*g*x
+7616*b^3*c^2*e^5*f*x-203952*b^2*c^3*d^2*e^3*g*x-79968*b^2*c^3*d*e^4*f*x+40
4432*b*c^4*d^3*e^2*g*x+322728*b*c^4*d^2*e^3*f*x-329469*c^5*d^4*e*g*x-590716
*c^5*d^3*e^2*f*x+1280*b^5*e^5*g-15104*b^4*c*d*e^4*g-2176*b^4*c*e^5*f+72096*
b^3*c^2*d^2*e^3*g+25024*b^3*c^2*d*e^4*f-173824*b^2*c^3*d^3*e^2*g-115056*b^2
*c^3*d^2*e^3*f+209686*b*c^4*d^4*e*g+260984*b*c^4*d^3*e^2*f-94134*c^5*d^5*g-
278171*c^5*d^4*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^6/e^2/(e*x+d)^
(5/2)
```

maxima [B] time = 1.03, size = 1108, normalized size = 2.61

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/45045*(3003*c^7*e^7*x^7 - 16363*c^7*d^7 + 64441*b*c^6*d^6*e - 101913*b^2*
c^5*d^5*e^2 + 84195*b^3*c^4*d^4*e^3 - 40200*b^4*c^3*d^3*e^4 + 11568*b^5*c^2
*d^2*e^5 - 1856*b^6*c*d*e^6 + 128*b^7*e^7 + 231*(29*c^7*d*e^6 + 31*b*c^6*e^
7)*x^6 - 63*(79*c^7*d^2*e^5 - 398*b*c^6*d*e^6 - 71*b^2*c^5*e^7)*x^5 - 35*(5
87*c^7*d^3*e^4 - 525*b*c^6*d^2*e^5 - 633*b^2*c^5*d*e^6 - b^3*c^4*e^7)*x^4 -
 5*(835*c^7*d^4*e^3 + 6548*b*c^6*d^3*e^4 - 8586*b^2*c^5*d^2*e^5 - 92*b^3*c^
4*d*e^6 + 8*b^4*c^3*e^7)*x^3 + 3*(7339*c^7*d^5*e^2 - 20435*b*c^6*d^4*e^3 +
12250*b^2*c^5*d^3*e^4 + 1030*b^3*c^4*d^2*e^5 - 200*b^4*c^3*d*e^6 + 16*b^5*c
^2*e^7)*x^2 + (14341*c^7*d^6*e - 21006*b*c^6*d^5*e^2 - 4395*b^2*c^5*d^4*e^3
 + 15180*b^3*c^4*d^3*e^4 - 4920*b^4*c^3*d^2*e^5 + 864*b^5*c^2*d*e^6 - 64*b^
6*c*e^7)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^5*e^2*x + c^5*d*e) + 2/
765765*(45045*c^8*e^8*x^8 - 94134*c^8*d^8 + 492088*b*c^7*d^7*e - 1085284*b^
2*c^6*d^6*e^2 + 1316760*b^3*c^5*d^5*e^3 - 962550*b^4*c^4*d^4*e^4 + 436704*b
^5*c^3*d^3*e^5 - 121248*b^6*c^2*d^2*e^6 + 18944*b^7*c*d*e^7 - 1280*b^8*e^8
+ 3003*(33*c^8*d*e^7 + 35*b*c^7*e^8)*x^7 - 231*(303*c^8*d^2*e^6 - 1558*b*c^
7*d*e^7 - 275*b^2*c^6*e^8)*x^6 - 63*(4527*c^8*d^3*e^5 - 4129*b*c^7*d^2*e^6
- 4813*b^2*c^6*d*e^7 - 5*b^3*c^5*e^8)*x^5 - 35*(1761*c^8*d^4*e^4 + 11860*b*
c^7*d^3*e^5 - 15954*b^2*c^6*d^2*e^6 - 108*b^3*c^5*d*e^7 + 10*b^4*c^4*e^8)*x
^4 + 5*(51549*c^8*d^5*e^3 - 146429*b*c^7*d^4*e^4 + 91238*b^2*c^6*d^3*e^5 +
4506*b^3*c^5*d^2*e^6 - 944*b^4*c^4*d*e^7 + 80*b^5*c^3*e^8)*x^3 + 3*(52047*c
^8*d^6*e^2 - 89650*b*c^7*d^5*e^3 + 15875*b^2*c^6*d^4*e^4 + 30740*b^3*c^5*d^
3*e^5 - 10900*b^4*c^4*d^2*e^6 + 2048*b^5*c^3*d*e^7 - 160*b^6*c^2*e^8)*x^2 -
 (47067*c^8*d^7*e - 198977*b*c^7*d^6*e^2 + 343665*b^2*c^6*d^5*e^3 - 314715*
b^3*c^5*d^4*e^4 + 166560*b^4*c^4*d^3*e^5 - 51792*b^5*c^3*d^2*e^6 + 8832*b^6
*c^2*d*e^7 - 640*b^7*c*e^8)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^6*e^
3*x + c^6*d*e^2)
```

mupad [B] time = 4.64, size = 1023, normalized size = 2.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^3*x^6*(d + e*x)^(1/2)*(2
75*b^2*e^2*g - 303*c^2*d^2*g + 527*b*c*e^2*f + 493*c^2*d*e*f + 1558*b*c*d*e
```

```
*g))/3315 + (2*(b*e - c*d)^3*(d + e*x)^(1/2)*(94134*c^5*d^5*g - 1280*b^5*e^
5*g + 2176*b^4*c*e^5*f + 278171*c^5*d^4*e*f - 209686*b*c^4*d^4*e*g + 15104*
b^4*c*d*e^4*g - 260984*b*c^4*d^3*e^2*f - 25024*b^3*c^2*d*e^4*f + 115056*b^2
*c^3*d^2*e^3*f + 173824*b^2*c^3*d^3*e^2*g - 72096*b^3*c^2*d^2*e^3*g))/(7657
65*c^6*e^3) + (x^4*(d + e*x)^(1/2)*(1190*b^3*c^5*e^8*f - 700*b^4*c^4*e^8*g
- 698530*c^8*d^3*e^5*f - 123270*c^8*d^4*e^4*g + 624750*b*c^7*d^2*e^6*f + 75
3270*b^2*c^6*d*e^7*f - 830200*b*c^7*d^3*e^5*g + 7560*b^3*c^5*d*e^7*g + 1116
780*b^2*c^6*d^2*e^6*g))/(765765*c^6*e^3) + (2*c^2*e^5*g*x^8*(d + e*x)^(1/2)
)/17 + (x^5*(d + e*x)^(1/2)*(152082*b^2*c^6*e^8*f + 630*b^3*c^5*e^8*g - 169
218*c^8*d^2*e^6*f - 570402*c^8*d^3*e^5*g + 852516*b*c^7*d*e^7*f + 520254*b*
c^7*d^2*e^6*g + 606438*b^2*c^6*d*e^7*g))/(765765*c^6*e^3) + (2*c*e^4*x^7*(d
 + e*x)^(1/2)*(35*b*e*g + 33*c*d*g + 17*c*e*f))/255 + (x^3*(d + e*x)^(1/2)*
(800*b^5*c^3*e^8*g - 1360*b^4*c^4*e^8*f - 141950*c^8*d^4*e^4*f + 515490*c^8
*d^5*e^3*g - 1113160*b*c^7*d^3*e^5*f + 15640*b^3*c^5*d*e^7*f - 1464290*b*c^
7*d^4*e^4*g - 9440*b^4*c^4*d*e^7*g + 1459620*b^2*c^6*d^2*e^6*f + 912380*b^2
*c^6*d^3*e^5*g + 45060*b^3*c^5*d^2*e^6*g))/(765765*c^6*e^3) + (2*x^2*(b*e -
 c*d)*(d + e*x)^(1/2)*(272*b^4*c*e^5*f - 52047*c^5*d^5*g - 160*b^5*e^5*g -
124763*c^5*d^4*e*f + 37603*b*c^4*d^4*e*g + 1888*b^4*c*d*e^4*g + 222632*b*c^
4*d^3*e^2*f - 3128*b^3*c^2*d*e^4*f + 14382*b^2*c^3*d^2*e^3*f + 21728*b^2*c^
3*d^3*e^2*g - 9012*b^3*c^2*d^2*e^3*g))/(255255*c^4*e) + (2*x*(b*e - c*d)^2*
(d + e*x)^(1/2)*(640*b^5*e^5*g - 47067*c^5*d^5*g - 1088*b^4*c*e^5*f + 24379
7*c^5*d^4*e*f + 104843*b*c^4*d^4*e*g - 7552*b^4*c*d*e^4*g + 130492*b*c^4*d^
3*e^2*f + 12512*b^3*c^2*d*e^4*f - 57528*b^2*c^3*d^2*e^3*f - 86912*b^2*c^3*d
^3*e^2*g + 36048*b^3*c^2*d^2*e^3*g))/(765765*c^5*e^2)))/(x + d/e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2022 $\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=343

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{45045c^5e^2(d+ex)^{7/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right.}{6435c^4e^2(d+ex)}$$

Rubi [A] time = 0.57, antiderivative size = 343, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{195c^2e^2\sqrt{d+ex}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{715c^3e^2(d+ex)^{3/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{6435c^4e^2(d+ex)^{5/2}}-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{45045c^5e^2(d+ex)^{7/2}}-\frac{2g\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (-32*(2*c*d - b*e)^3*(15*c*e*f + c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(7/2))/(45045*c^5*e^2*(d + e*x)^(7/2)) - (16*(2*c*d - b*e)^2*(
15*c*e*f + c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(6
435*c^4*e^2*(d + e*x)^(5/2)) - (4*(2*c*d - b*e)*(15*c*e*f + c*d*g - 8*b*e*g
)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(715*c^3*e^2*(d + e*x)^(3/2)
) - (2*(15*c*e*f + c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(
7/2))/(195*c^2*e^2*Sqrt[d + e*x]) - (2*g*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(15*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{2g\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15ce^2} - \frac{\left(2\left(\frac{7}{2}e\left(-2ce\right.\right.\right.}{}$$

$$= -\frac{2(15cef+cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{195c^2e^2\sqrt{d+ex}} - \frac{2}{}$$

$$= -\frac{4(2cd-be)(15cef+cdg-8beg)\left(d(cd-be)-be^2x-ce^2\right.}{715c^3e^2(d+ex)^{3/2}}$$

$$= -\frac{16(2cd-be)^2(15cef+cdg-8beg)\left(d(cd-be)-be^2x-c\right.}{6435c^4e^2(d+ex)^{5/2}}$$

$$= -\frac{32(2cd-be)^3(15cef+cdg-8beg)\left(d(cd-be)-be^2x-c\right.}{45045c^5e^2(d+ex)^{7/2}}$$

Mathematica [A] time = 0.29, size = 264, normalized size = 0.77

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(128b^4e^4g-16b^3ce^3(77dg+15ef+28egx)+24b^2c^2e^2\left(187d^2g+de(95f+161gx)+7e^2x(5f+6gx)\right)-2bc^3e\left(3611d^3g+d^2e(4065f+5922gx)+21de^2x(170f+183gx)+21e^3x^2(45f+44gx)\right)+c^4\left(3838d^4g+d^3e(12525f+13433gx)+147d^2e^2x(145f+129gx)+21de^3x^2(675f+583gx)+231e^4x^3(15f+13gx)\right)\right)}{45045c^5e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(128*b^4
*e^4*g - 16*b^3*c*e^3*(15*e*f + 77*d*g + 28*e*g*x) + 24*b^2*c^2*e^2*(187*d^
2*g + 7*e^2*x*(5*f + 6*g*x) + d*e*(95*f + 161*g*x)) - 2*b*c^3*e*(3611*d^3*g
 + 21*e^3*x^2*(45*f + 44*g*x) + 21*d*e^2*x*(170*f + 183*g*x) + d^2*e*(4065*
f + 5922*g*x)) + c^4*(3838*d^4*g + 231*e^4*x^3*(15*f + 13*g*x) + 147*d^2*e^
2*x*(145*f + 129*g*x) + 21*d*e^3*x^2*(675*f + 583*g*x) + d^3*e*(12525*f + 1
3433*g*x))))/(45045*c^5*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 7.43, size = 401, normalized size = 1.17

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2
*x^2)^(5/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(7/2)*(1920*c^4*d^3*e*f - 288
0*b*c^3*d^2*e^2*f + 1440*b^2*c^2*d*e^3*f - 240*b^3*c*e^4*f + 128*c^4*d^4*g
- 1216*b*c^3*d^3*e*g + 1632*b^2*c^2*d^2*e^2*g - 784*b^3*c*d*e^3*g + 128*b^4
*e^4*g + 3360*c^4*d^2*e*f*(d + e*x) - 3360*b*c^3*d*e^2*f*(d + e*x) + 840*b^
2*c^2*e^3*f*(d + e*x) + 224*c^4*d^3*g*(d + e*x) - 2016*b*c^3*d^2*e*g*(d + e
*x) + 1848*b^2*c^2*d*e^2*g*(d + e*x) - 448*b^3*c*e^3*g*(d + e*x) + 3780*c^4
*d*e*f*(d + e*x)^2 - 1890*b*c^3*e^2*f*(d + e*x)^2 + 252*c^4*d^2*g*(d + e*x)
^2 - 2142*b*c^3*d*e*g*(d + e*x)^2 + 1008*b^2*c^2*e^2*g*(d + e*x)^2 + 3465*c
^4*e*f*(d + e*x)^3 + 231*c^4*d*g*(d + e*x)^3 - 1848*b*c^3*e*g*(d + e*x)^3 +
 3003*c^4*g*(d + e*x)^4))/(45045*c^5*e^2*(d + e*x)^(7/2))
```

fricas [B] time = 0.43, size = 881, normalized size = 2.57

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/45045*(3003*c^7*e^7*g*x^7 + 231*(15*c^7*e^7*f + (14*c^7*d*e^6 + 31*b*c^6*
e^7)*g)*x^6 + 63*(15*(4*c^7*d*e^6 + 9*b*c^6*e^7)*f - (139*c^7*d^2*e^5 - 263
*b*c^6*d*e^6 - 71*b^2*c^5*e^7)*g)*x^5 - 35*(3*(103*c^7*d^2*e^5 - 193*b*c^6*
d*e^6 - 53*b^2*c^5*e^7)*f + (278*c^7*d^3*e^4 + 54*b*c^6*d^2*e^5 - 474*b^2*c
^5*d*e^6 - b^3*c^4*e^7)*g)*x^4 - 5*(3*(824*c^7*d^3*e^4 + 206*b*c^6*d^2*e^5
- 1454*b^2*c^5*d*e^6 - 5*b^3*c^4*e^7)*f - (1637*c^7*d^4*e^3 - 5930*b*c^6*d^
3*e^4 + 4224*b^2*c^5*d^2*e^5 + 77*b^3*c^4*d*e^6 - 8*b^4*c^3*e^7)*g)*x^3 + 3
*(15*(271*c^7*d^4*e^3 - 954*b*c^6*d^3*e^4 + 664*b^2*c^5*d^2*e^5 + 21*b^3*c^
4*d*e^6 - 2*b^4*c^3*e^7)*f + (3274*c^7*d^5*e^2 - 6125*b*c^6*d^4*e^3 + 2290*
b^2*c^5*d^3*e^4 + 715*b^3*c^4*d^2*e^5 - 170*b^4*c^3*d*e^6 + 16*b^5*c^2*e^7)
*g)*x^2 - 15*(835*c^7*d^6*e - 3047*b*c^6*d^5*e^2 + 4283*b^2*c^5*d^4*e^3 - 2
933*b^3*c^4*d^3*e^4 + 1046*b^4*c^3*d^2*e^5 - 200*b^5*c^2*d*e^6 + 16*b^6*c*e
^7)*f - 2*(1919*c^7*d^7 - 9368*b*c^6*d^6*e + 18834*b^2*c^5*d^5*e^2 - 20100*
b^3*c^4*d^4*e^3 + 12255*b^4*c^3*d^3*e^4 - 4284*b^5*c^2*d^2*e^5 + 808*b^6*c*
d*e^6 - 64*b^7*e^7)*g + (15*(1084*c^7*d^5*e^2 - 1897*b*c^6*d^4*e^3 + 466*b^
2*c^5*d^3*e^4 + 431*b^3*c^4*d^2*e^5 - 92*b^4*c^3*d*e^6 + 8*b^5*c^2*e^7)*f -
 (1919*c^7*d^6*e - 7449*b*c^6*d^5*e^2 + 11385*b^2*c^5*d^4*e^3 - 8715*b^3*c^
4*d^3*e^4 + 3540*b^4*c^3*d^2*e^5 - 744*b^5*c^2*d*e^6 + 64*b^6*c*e^7)*g)*x)*
sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^3*x + c^5*d
*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}} \sqrt{ex+d}\left(gx+f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*sqrt(e*x + d)*(g*x +
 f), x)
```

maple [A] time = 0.05, size = 367, normalized size = 1.07

$$\frac{2\left(cex+be-cd\right)\left(3003g\,e^4x^4c^4-1848b\,c^3e^4g\,x^3+12243c^4d\,e^3g\,x^3+3465c^4e^4f\,x^3+1008b^2c^2e^4g\,x^2-7686b\,c^3d\,e^3g\,x^2-1890b\,c^3e^4f\,x^2+18963c^4d^2e^2g\,x^2+14175c^4d\,e^3f\,x^2-448b^3c\,e^4gx+3864b^2c^2d\,e^3gx+840b^2c^2e^4fx-11844b\,c^3d^2e^2gx-7140b\,c^3d\,e^3fx+13433c^4d^3egx+21315c^4d^2e^2fx+128b^4e^4g-1232b^3cd\,e^3g-240b^3c\,e^4f+4488b^2c^2d^2e^2g+2280b^2c^2d\,e^3f-7222b\,c^3d^3eg-8130b\,c^3d^2e^2f+3838c^4d^4g+12525f\,d^3c^4e\right)\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{5}{2}}}{45045\left(ex+d\right)^{\frac{5}{2}}c^5e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/45045*(c*e*x+b*e-c*d)*(3003*c^4*e^4*g*x^4-1848*b*c^3*e^4*g*x^3+12243*c^4*
d*e^3*g*x^3+3465*c^4*e^4*f*x^3+1008*b^2*c^2*e^4*g*x^2-7686*b*c^3*d*e^3*g*x^
2-1890*b*c^3*e^4*f*x^2+18963*c^4*d^2*e^2*g*x^2+14175*c^4*d*e^3*f*x^2-448*b^
3*c*e^4*g*x+3864*b^2*c^2*d*e^3*g*x+840*b^2*c^2*e^4*f*x-11844*b*c^3*d^2*e^2*
g*x-7140*b*c^3*d*e^3*f*x+13433*c^4*d^3*e*g*x+21315*c^4*d^2*e^2*f*x+128*b^4*
e^4*g-1232*b^3*c*d*e^3*g-240*b^3*c*e^4*f+4488*b^2*c^2*d^2*e^2*g+2280*b^2*c^
2*d*e^3*f-7222*b*c^3*d^3*e*g-8130*b*c^3*d^2*e^2*f+3838*c^4*d^4*g+12525*c^4*
d^3*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^5/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 1.00, size = 878, normalized size = 2.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3003*(231*c^6*e^6*x^6 - 835*c^6*d^6 + 3047*b*c^5*d^5*e - 4283*b^2*c^4*d^4
*e^2 + 2933*b^3*c^3*d^3*e^3 - 1046*b^4*c^2*d^2*e^4 + 200*b^5*c*d*e^5 - 16*b
^6*e^6 + 63*(4*c^6*d*e^5 + 9*b*c^5*e^6)*x^5 - 7*(103*c^6*d^2*e^4 - 193*b*c^
5*d*e^5 - 53*b^2*c^4*e^6)*x^4 - (824*c^6*d^3*e^3 + 206*b*c^5*d^2*e^4 - 1454
*b^2*c^4*d*e^5 - 5*b^3*c^3*e^6)*x^3 + 3*(271*c^6*d^4*e^2 - 954*b*c^5*d^3*e^
3 + 664*b^2*c^4*d^2*e^4 + 21*b^3*c^3*d*e^5 - 2*b^4*c^2*e^6)*x^2 + (1084*c^6
*d^5*e - 1897*b*c^5*d^4*e^2 + 466*b^2*c^4*d^3*e^3 + 431*b^3*c^3*d^2*e^4 - 9
2*b^4*c^2*d*e^5 + 8*b^5*c*e^6)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^4
*e^2*x + c^4*d*e) + 2/45045*(3003*c^7*e^7*x^7 - 3838*c^7*d^7 + 18736*b*c^6*
d^6*e - 37668*b^2*c^5*d^5*e^2 + 40200*b^3*c^4*d^4*e^3 - 24510*b^4*c^3*d^3*e
^4 + 8568*b^5*c^2*d^2*e^5 - 1616*b^6*c*d*e^6 + 128*b^7*e^7 + 231*(14*c^7*d*
e^6 + 31*b*c^6*e^7)*x^6 - 63*(139*c^7*d^2*e^5 - 263*b*c^6*d*e^6 - 71*b^2*c^
5*e^7)*x^5 - 35*(278*c^7*d^3*e^4 + 54*b*c^6*d^2*e^5 - 474*b^2*c^5*d*e^6 - b
^3*c^4*e^7)*x^4 + 5*(1637*c^7*d^4*e^3 - 5930*b*c^6*d^3*e^4 + 4224*b^2*c^5*d
^2*e^5 + 77*b^3*c^4*d*e^6 - 8*b^4*c^3*e^7)*x^3 + 3*(3274*c^7*d^5*e^2 - 6125
*b*c^6*d^4*e^3 + 2290*b^2*c^5*d^3*e^4 + 715*b^3*c^4*d^2*e^5 - 170*b^4*c^3*d
*e^6 + 16*b^5*c^2*e^7)*x^2 - (1919*c^7*d^6*e - 7449*b*c^6*d^5*e^2 + 11385*b
^2*c^5*d^4*e^3 - 8715*b^3*c^4*d^3*e^4 + 3540*b^4*c^3*d^2*e^5 - 744*b^5*c^2*
d*e^6 + 64*b^6*c*e^7)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^5*e^3*x +
c^5*d*e^2)
```

mupad [B] time = 4.03, size = 769, normalized size = 2.24

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^2*x^5*(d + e*x)^(1/2)*(7
1*b^2*e^2*g - 139*c^2*d^2*g + 135*b*c*e^2*f + 60*c^2*d*e*f + 263*b*c*d*e*g)
)/715 + (x^3*(d + e*x)^(1/2)*(150*b^3*c^4*e^7*f - 80*b^4*c^3*e^7*g - 24720*
c^7*d^3*e^4*f + 16370*c^7*d^4*e^3*g - 6180*b*c^6*d^2*e^5*f + 43620*b^2*c^5*
d*e^6*f - 59300*b*c^6*d^3*e^4*g + 770*b^3*c^4*d*e^6*g + 42240*b^2*c^5*d^2*e
^5*g))/(45045*c^5*e^3) + (2*c^2*e^4*g*x^7*(d + e*x)^(1/2))/15 + (2*(b*e - c
*d)^3*(d + e*x)^(1/2)*(128*b^4*e^4*g + 3838*c^4*d^4*g - 240*b^3*c*e^4*f + 1
2525*c^4*d^3*e*f - 7222*b*c^3*d^3*e*g - 1232*b^3*c*d*e^3*g - 8130*b*c^3*d^2
*e^2*f + 2280*b^2*c^2*d*e^3*f + 4488*b^2*c^2*d^2*e^2*g))/(45045*c^5*e^3) +
(x^4*(d + e*x)^(1/2)*(11130*b^2*c^5*e^7*f + 70*b^3*c^4*e^7*g - 21630*c^7*d^
2*e^5*f - 19460*c^7*d^3*e^4*g + 40530*b*c^6*d*e^6*f - 3780*b*c^6*d^2*e^5*g
+ 33180*b^2*c^5*d*e^6*g))/(45045*c^5*e^3) + (2*c*e^3*x^6*(d + e*x)^(1/2)*(3
1*b*e*g + 14*c*d*g + 15*c*e*f))/195 + (2*x^2*(b*e - c*d)*(d + e*x)^(1/2)*(1
6*b^4*e^4*g - 3274*c^4*d^4*g - 30*b^3*c*e^4*f - 4065*c^4*d^3*e*f + 2851*b*c
^3*d^3*e*g - 154*b^3*c*d*e^3*g + 10245*b*c^3*d^2*e^2*f + 285*b^2*c^2*d*e^3*
f + 561*b^2*c^2*d^2*e^2*g))/(15015*c^3*e) + (2*x*(b*e - c*d)^2*(d + e*x)^(1
/2)*(120*b^3*c*e^4*f - 1919*c^4*d^4*g - 64*b^4*e^4*g + 16260*c^4*d^3*e*f +
3611*b*c^3*d^3*e*g + 616*b^3*c*d*e^3*g + 4065*b*c^3*d^2*e^2*f - 1140*b^2*c^
2*d*e^3*f - 2244*b^2*c^2*d^2*e^2*g))/(45045*c^4*e^2)))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (-(d+ex)(be-cd+cex))^{\frac{5}{2}}\sqrt{d+ex}\,\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*sqrt(d + e*x)*(f + g*x), x
)
```

3.2023 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=270

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg+13cef)}{9009c^4e^2(d+ex)^{7/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{1287c^3e^2(d+ex)^{5/}}$$

Rubi [A] time = 0.44, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg+13cef)}{143c^2e^2(d+ex)^{3/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg+13cef)}{1287c^3e^2(d+ex)^{5/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg+13cef)}{9009c^4e^2(d+ex)^{7/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/Sqrt[d + e*x],x
]
```

```
[Out] (-16*(2*c*d - b*e)^2*(13*c*e*f - c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(7/2))/(9009*c^4*e^2*(d + e*x)^(7/2)) - (8*(2*c*d - b*e)*(13*c
*e*f - c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(1287*
c^3*e^2*(d + e*x)^(5/2)) - (2*(13*c*e*f - c*d*g - 6*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(7/2))/(143*c^2*e^2*(d + e*x)^(3/2)) - (2*g*(d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(13*c*e^2*Sqrt[d + e*x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13ce^2\sqrt{d+ex}} - \frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\right(\right.\right.}{}$$

$$= -\frac{2(13cef-cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{143c^2e^2(d+ex)^{3/2}} - \frac{2g\left(d(cd\right.}{}$$

$$= -\frac{8(2cd-be)(13cef-cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{1287c^3e^2(d+ex)^{5/2}} -$$

$$= -\frac{16(2cd-be)^2(13cef-cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9009c^4e^2(d+ex)^{7/2}}$$

Mathematica [A]   time = 0.21, size = 183, normalized size = 0.68

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(-48b^3e^3g+8b^2ce^2(44dg+13ef+21egx)-2bc^2e\left(423d^2g+de(390f+532gx)+7e^2x(26f+27gx)\right)+c^3\left(542d^3g+d^2e(1963f+1897gx)+14de^2x(169f+144gx)+63e^3x^2(13f+11gx)\right)\right)}{9009c^4e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/Sqrt[d +
e*x],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-48*b^3
*e^3*g + 8*b^2*c*e^2*(13*e*f + 44*d*g + 21*e*g*x) - 2*b*c^2*e*(423*d^2*g +
7*e^2*x*(26*f + 27*g*x) + d*e*(390*f + 532*g*x)) + c^3*(542*d^3*g + 63*e^3*
x^2*(13*f + 11*g*x) + 14*d*e^2*x*(169*f + 144*g*x) + d^2*e*(1963*f + 1897*g
*x))))/(9009*c^4*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A]   time = 1.64, size = 248, normalized size = 0.92

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{7/2}\left(-48b^3e^3g+168b^2ce^2g(d+ex)+184b^2cde^2g+104b^2ce^3f-160bc^2d^2eg-364bc^2e^2f(d+ex)-416bc^2de^2f-378bc^2eg(d+ex)^2-308bc^2deg(d+ex)-32c^3d^3g+416c^3d^2ef-56c^3d^2g(d+ex)+819c^3ef(d+ex)^2+728c^3def(d+ex)+693c^3g(d+ex)^3-63c^3dg(d+ex)^2\right)}{9009c^4e^2(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
Sqrt[d + e*x],x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(7/2)*(416*c^3*d^2*e*f - 416*
b*c^2*d*e^2*f + 104*b^2*c*e^3*f - 32*c^3*d^3*g - 160*b*c^2*d^2*e*g + 184*b^
2*c*d*e^2*g - 48*b^3*e^3*g + 728*c^3*d*e*f*(d + e*x) - 364*b*c^2*e^2*f*(d +
 e*x) - 56*c^3*d^2*g*(d + e*x) - 308*b*c^2*d*e*g*(d + e*x) + 168*b^2*c*e^2*
g*(d + e*x) + 819*c^3*e*f*(d + e*x)^2 - 63*c^3*d*g*(d + e*x)^2 - 378*b*c^2*
e*g*(d + e*x)^2 + 693*c^3*g*(d + e*x)^3))/(9009*c^4*e^2*(d + e*x)^(7/2))
```

fricas [B]   time = 0.42, size = 675, normalized size = 2.50

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/9009*(693*c^6*e^6*g*x^6 + 63*(13*c^6*e^6*f - (c^6*d*e^5 - 27*b*c^5*e^6)*g
)*x^5 - 7*(13*(c^6*d*e^5 - 23*b*c^5*e^6)*f + (296*c^6*d^2*e^4 - 280*b*c^5*d
*e^5 - 159*b^2*c^4*e^6)*g)*x^4 - (13*(206*c^6*d^2*e^4 - 192*b*c^5*d*e^5 - 1
13*b^2*c^4*e^6)*f - (206*c^6*d^3*e^3 - 3114*b*c^5*d^2*e^4 + 2893*b^2*c^4*d*
```

```
e^5 + 15*b^3*c^3*e^6)*g)*x^3 + 3*(13*(10*c^6*d^3*e^3 - 118*b*c^5*d^2*e^4 +
107*b^2*c^4*d*e^5 + b^3*c^3*e^6)*f + (683*c^6*d^4*e^2 - 1328*b*c^5*d^3*e^3
+ 601*b^2*c^4*d^2*e^4 + 50*b^3*c^3*d*e^5 - 6*b^4*c^2*e^6)*g)*x^2 - 13*(151*
c^6*d^5*e - 513*b*c^5*d^4*e^2 + 641*b^2*c^4*d^3*e^3 - 355*b^3*c^3*d^2*e^4 +
 84*b^4*c^2*d*e^5 - 8*b^5*c*e^6)*f - 2*(271*c^6*d^6 - 1236*b*c^5*d^5*e + 22
58*b^2*c^4*d^4*e^2 - 2092*b^3*c^3*d^3*e^3 + 1023*b^4*c^2*d^2*e^4 - 248*b^5*
c*d*e^5 + 24*b^6*e^6)*g + (13*(271*c^6*d^4*e^2 - 512*b*c^5*d^3*e^3 + 207*b^
2*c^4*d^2*e^4 + 38*b^3*c^3*d*e^5 - 4*b^4*c^2*e^6)*f - (271*c^6*d^5*e - 965*
b*c^5*d^4*e^2 + 1293*b^2*c^4*d^3*e^3 - 799*b^3*c^3*d^2*e^4 + 224*b^4*c^2*d*
e^5 - 24*b^5*c*e^6)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e
*x + d)/(c^4*e^3*x + c^4*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/sqrt(e*x +
 d), x)
```

maple [A] time = 0.05, size = 235, normalized size = 0.87

$$-\frac{2\left(cex + be - cd\right)\left(-693g e^3x^3c^3 + 378b c^2e^3g x^2 - 2016c^3d e^2g x^2 - 819c^3e^3f x^2 - 168b^2c e^3gx + 1064b c^2d e^2gx + 364b c^2e^3fx - 1897c^3d^2egx - 2366c^3d e^2fx + 48b^3e^3g - 352b^2cd e^2g - 104b^2c e^3f + 846b c^2d^2eg + 780b c^2d e^2f - 542c^3d^3g - 1963f d^2c^3e\right)\left(-c e^2x^2 - b e^2x - bde + c d^2\right)^{\frac{5}{2}}}{9009\left(ex + d\right)^{\frac{5}{2}} c^4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/9009*(c*e*x+b*e-c*d)*(-693*c^3*e^3*g*x^3+378*b*c^2*e^3*g*x^2-2016*c^3*d*
e^2*g*x^2-819*c^3*e^3*f*x^2-168*b^2*c*e^3*g*x+1064*b*c^2*d*e^2*g*x+364*b*c^
2*e^3*f*x-1897*c^3*d^2*e*g*x-2366*c^3*d*e^2*f*x+48*b^3*e^3*g-352*b^2*c*d*e^
2*g-104*b^2*c*e^3*f+846*b*c^2*d^2*e*g+780*b*c^2*d*e^2*f-542*c^3*d^3*g-1963*
c^3*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^4/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 0.75, size = 638, normalized size = 2.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/693*(63*c^5*e^5*x^5 - 151*c^5*d^5 + 513*b*c^4*d^4*e - 641*b^2*c^3*d^3*e^2
 + 355*b^3*c^2*d^2*e^3 - 84*b^4*c*d*e^4 + 8*b^5*e^5 - 7*(c^5*d*e^4 - 23*b*c
^4*e^5)*x^4 - (206*c^5*d^2*e^3 - 192*b*c^4*d*e^4 - 113*b^2*c^3*e^5)*x^3 + 3
*(10*c^5*d^3*e^2 - 118*b*c^4*d^2*e^3 + 107*b^2*c^3*d*e^4 + b^3*c^2*e^5)*x^2
 + (271*c^5*d^4*e - 512*b*c^4*d^3*e^2 + 207*b^2*c^3*d^2*e^3 + 38*b^3*c^2*d*
e^4 - 4*b^4*c*e^5)*x)*sqrt(-c*e*x + c*d - b*e)*f/(c^3*e) + 2/9009*(693*c^6*
e^6*x^6 - 542*c^6*d^6 + 2472*b*c^5*d^5*e - 4516*b^2*c^4*d^4*e^2 + 4184*b^3*
c^3*d^3*e^3 - 2046*b^4*c^2*d^2*e^4 + 496*b^5*c*d*e^5 - 48*b^6*e^6 - 63*(c^6
*d*e^5 - 27*b*c^5*e^6)*x^5 - 7*(296*c^6*d^2*e^4 - 280*b*c^5*d*e^5 - 159*b^2
*c^4*e^6)*x^4 + (206*c^6*d^3*e^3 - 3114*b*c^5*d^2*e^4 + 2893*b^2*c^4*d*e^5
+ 15*b^3*c^3*e^6)*x^3 + 3*(683*c^6*d^4*e^2 - 1328*b*c^5*d^3*e^3 + 601*b^2*c
^4*d^2*e^4 + 50*b^3*c^3*d*e^5 - 6*b^4*c^2*e^6)*x^2 - (271*c^6*d^5*e - 965*b
*c^5*d^4*e^2 + 1293*b^2*c^4*d^3*e^3 - 799*b^3*c^3*d^2*e^4 + 224*b^4*c^2*d*e
^5 - 24*b^5*c*e^6)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^4*e^2)
```

mupad [B] time = 3.72, size = 491, normalized size = 1.82

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e^2\,x^4\,\left(159\,g\,b^2\,e^2+280\,g\,b\,c\,d\,e+299\,f\,b\,c\,e^2-296\,g\,c^2\,d^2-13\,f\,c^2\,d\,e\right)}{1287}+\frac{2\,c^2\,e^4\,g\,x^6}{13}+\frac{2\,x^2\,\left(b\,e-c\,d\right)\,\left(-6\,g\,b^3\,e^3+44\,g\,b^2\,c\,d\,e^2+13\,f\,b^2\,c\,e^3+645\,g\,b\,c^2\,d^2\,e+1404\,f\,b\,c^2\,d\,e^2-683\,g\,c^3\,d^3-130\,f\,c^3\,d^2\,e\right)}{3003\,c^2}+\frac{x^3\,\left(30\,g\,b^3\,c^3\,e^6+5786\,g\,b^2\,c^4\,d\,e^5+2938\,f\,b^2\,c^4\,e^6-6228\,g\,b\,c^5\,d^2\,e^4+4992\,f\,b\,c^5\,d\,e^5+412\,g\,c^6\,d^3\,e^3-5356\,f\,c^6\,d^2\,e^4\right)}{9009\,c^4\,e^2}+\frac{2\,c\,e^3\,x^5\,\left(27\,b\,e\,g-c\,d\,g+13\,c\,e\,f\right)}{143}+\frac{2\,{\left(b\,e-c\,d\right)}^3\,\left(-48\,g\,b^3\,e^3+352\,g\,b^2\,c\,d\,e^2+104\,f\,b^2\,c\,e^3-846\,g\,b\,c^2\,d^2\,e-780\,f\,b\,c^2\,d\,e^2+542\,g\,c^3\,d^3+1963\,f\,c^3\,d^2\,e\right)}{9009\,c^4\,e^2}+\frac{2\,x\,{\left(b\,e-c\,d\right)}^2\,\left(24\,g\,b^3\,e^3-176\,g\,b^2\,c\,d\,e^2-52\,f\,b^2\,c\,e^3+423\,g\,b\,c^2\,d^2\,e+390\,f\,b\,c^2\,d\,e^2-271\,g\,c^3\,d^3+3523\,f\,c^3\,d^2\,e\right)}{9009\,c^3\,e}\right)}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(1/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^2*x^4*(159*b^2*e^2*g - 2
96*c^2*d^2*g + 299*b*c*e^2*f - 13*c^2*d*e*f + 280*b*c*d*e*g))/1287 + (2*c^2
*e^4*g*x^6)/13 + (2*x^2*(b*e - c*d)*(13*b^2*c*e^3*f - 683*c^3*d^3*g - 6*b^3
*e^3*g - 130*c^3*d^2*e*f + 1404*b*c^2*d*e^2*f + 645*b*c^2*d^2*e*g + 44*b^2*
c*d*e^2*g))/(3003*c^2) + (x^3*(2938*b^2*c^4*e^6*f + 30*b^3*c^3*e^6*g - 5356
*c^6*d^2*e^4*f + 412*c^6*d^3*e^3*g + 4992*b*c^5*d*e^5*f - 6228*b*c^5*d^2*e^
4*g + 5786*b^2*c^4*d*e^5*g))/(9009*c^4*e^2) + (2*c*e^3*x^5*(27*b*e*g - c*d*
g + 13*c*e*f))/143 + (2*(b*e - c*d)^3*(542*c^3*d^3*g - 48*b^3*e^3*g + 104*b
^2*c*e^3*f + 1963*c^3*d^2*e*f - 780*b*c^2*d*e^2*f - 846*b*c^2*d^2*e*g + 352
*b^2*c*d*e^2*g))/(9009*c^4*e^2) + (2*x*(b*e - c*d)^2*(24*b^3*e^3*g - 271*c^
3*d^3*g - 52*b^2*c*e^3*f + 3523*c^3*d^2*e*f + 390*b*c^2*d*e^2*f + 423*b*c^2
*d^2*e*g - 176*b^2*c*d*e^2*g))/(9009*c^3*e)))/(d + e*x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(1/2
),x)
```

```
[Out] Timed out
```

3.2024 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=193

$$-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cdg+11cef)}{693c^3e^2(d+ex)^{7/2}}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3}{99c^2e^2(d+ex)^{5/2}}$$

Rubi [A] time = 0.34, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cdg+11cef)}{99c^2e^2(d+ex)^{5/2}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cdg+11cef)}{693c^3e^2(d+ex)^{7/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11ce^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(3/2)
,x]
```

```
[Out] (-4*(2*c*d - b*e)*(11*c*e*f - 3*c*d*g - 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x -
 c*e^2*x^2)^(7/2))/(693*c^3*e^2*(d + e*x)^(7/2)) - (2*(11*c*e*f - 3*c*d*g -
 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(99*c^2*e^2*(d + e*x
)^(5/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(11*c*e^2*(d +
 e*x)^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11ce^2(d+ex)^{3/2}} - \frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right)-\frac{3}{2}\left(-\right.\right.\right.}{}$$

$$= -\frac{2(11cef-3cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{99c^2e^2(d+ex)^{5/2}} - \frac{2g\left(d(cd\right.}{}$$

$$= -\frac{4(2cd-be)(11cef-3cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{693c^3e^2(d+ex)^{7/2}} -$$

Mathematica [A] time = 0.15, size = 121, normalized size = 0.63

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(8b^2e^2g-2bce(19dg+11ef+14egx)+c^2\left(30d^2g+de(121f+105gx)+7e^2x(11f+9gx)\right)\right)}{693c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(3/2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(8*b^2*e
^2*g - 2*b*c*e*(11*e*f + 19*d*g + 14*e*g*x) + c^2*(30*d^2*g + 7*e^2*x*(11*f
 + 9*g*x) + d*e*(121*f + 105*g*x))))/(693*c^3*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 2.16, size = 139, normalized size = 0.72

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{7/2}\left(8b^2e^2g-28bceg(d+ex)-10bcdeg-22bce^2f-12c^2d^2g+77c^2ef(d+ex)+44c^2def+63c^2g(d+ex)^2-21c^2dg(d+ex)\right)}{693c^3e^2(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(3/2),x]
```

```
[Out] (-2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(7/2)*(44*c^2*d*e*f - 22*b*c*
e^2*f - 12*c^2*d^2*g - 10*b*c*d*e*g + 8*b^2*e^2*g + 77*c^2*e*f*(d + e*x) -
21*c^2*d*g*(d + e*x) - 28*b*c*e*g*(d + e*x) + 63*c^2*g*(d + e*x)^2))/(693*c
^3*e^2*(d + e*x)^(7/2))
```

fricas [B] time = 0.41, size = 500, normalized size = 2.59

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/693*(63*c^5*e^5*g*x^5 + 7*(11*c^5*e^5*f - (12*c^5*d*e^4 - 23*b*c^4*e^5)*g
)*x^4 - (11*(10*c^5*d*e^4 - 19*b*c^4*e^5)*f + (96*c^5*d^2*e^3 + 17*b*c^4*d*
e^4 - 113*b^2*c^3*e^5)*g)*x^3 - 3*(11*(4*c^5*d^2*e^3 + b*c^4*d*e^4 - 5*b^2*
c^3*e^5)*f - (54*c^5*d^3*e^2 - 107*b*c^4*d^2*e^3 + 52*b^2*c^3*d*e^4 + b^3*c
^2*e^5)*g)*x^2 - 11*(11*c^5*d^4*e - 35*b*c^4*d^3*e^2 + 39*b^2*c^3*d^2*e^3 -
 17*b^3*c^2*d*e^4 + 2*b^4*c*e^5)*f - 2*(15*c^5*d^5 - 64*b*c^4*d^4*e + 106*b
^2*c^3*d^3*e^2 - 84*b^3*c^2*d^2*e^3 + 31*b^4*c*d*e^4 - 4*b^5*e^5)*g + (11*(
26*c^5*d^3*e^2 - 51*b*c^4*d^2*e^3 + 24*b^2*c^3*d*e^4 + b^3*c^2*e^5)*f - (15
*c^5*d^4*e - 49*b*c^4*d^3*e^2 + 57*b^2*c^3*d^2*e^3 - 27*b^3*c^2*d*e^4 + 4*b
^4*c*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c
^3*e^3*x + c^3*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(3/2), x)
```

maple [A] time = 0.04, size = 139, normalized size = 0.72

$$\frac{2\left(cex + be - cd\right)\left(63g\,x^2c^2e^2 - 28bc\,e^2gx + 105c^2degx + 77c^2e^2fx + 8b^2e^2g - 38bcdeg - 22bc\,e^2f + 30c^2d^2g + 121c^2def\right)\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{5}{2}}}{693\left(ex + d\right)^{\frac{5}{2}}c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x)
```

```
[Out] 2/693*(c*e*x+b*e-c*d)*(63*c^2*e^2*g*x^2-28*b*c*e^2*g*x+105*c^2*d*e*g*x+77*c
^2*e^2*f*x+8*b^2*e^2*g-38*b*c*d*e*g-22*b*c*e^2*f+30*c^2*d^2*g+121*c^2*d*e*f
)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^3/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 0.89, size = 465, normalized size = 2.41

$$\frac{2\left(7c^4e^4x^4 - 11c^4d^4 + 35bc^3d^3e - 39b^2c^2d^2e^2 + 17b^3cde^3 - 2b^4e^4 - \left(10c^4de^3 - 19bc^3e^4\right)x^3 - 3\left(4c^4d^2e^2 + bc^3de^3 - 5b^2c^2e^4\right)x^2 + \left(26c^4d^3e - 51bc^3d^2e^2 + 24b^2c^2de^3 + b^3ce^4\right)x\right)\sqrt{-cex + cd - be}\,f}{63c^2e} + \frac{2\left(63c^5e^5x^5 - 30c^5d^5 + 128bc^4d^4e - 212b^2c^3d^3e^2 + 168b^3c^2d^2e^3 - 62b^4cde^4 + 8b^5e^5 - 7\left(12c^5de^4 - 23bc^4e^5\right)x^4 - \left(96c^5d^2e^3 + 17bc^4de^4 - 113b^2c^3e^5\right)x^3 + 3\left(54c^5d^3e^2 - 107bc^4d^2e^3 + 52b^2c^3de^4 + b^3c^2e^5\right)x^2 - \left(15c^5d^4e - 49bc^4d^3e^2 + 57b^2c^3d^2e^3 - 27b^3c^2de^4 + 4b^4ce^5\right)x\right)\sqrt{-cex + cd - be}\,g}{693c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] 2/63*(7*c^4*e^4*x^4 - 11*c^4*d^4 + 35*b*c^3*d^3*e - 39*b^2*c^2*d^2*e^2 + 17
*b^3*c*d*e^3 - 2*b^4*e^4 - (10*c^4*d*e^3 - 19*b*c^3*e^4)*x^3 - 3*(4*c^4*d^2
*e^2 + b*c^3*d*e^3 - 5*b^2*c^2*e^4)*x^2 + (26*c^4*d^3*e - 51*b*c^3*d^2*e^2
+ 24*b^2*c^2*d*e^3 + b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*f/(c^2*e) + 2/6
93*(63*c^5*e^5*x^5 - 30*c^5*d^5 + 128*b*c^4*d^4*e - 212*b^2*c^3*d^3*e^2 + 1
68*b^3*c^2*d^2*e^3 - 62*b^4*c*d*e^4 + 8*b^5*e^5 - 7*(12*c^5*d*e^4 - 23*b*c^
4*e^5)*x^4 - (96*c^5*d^2*e^3 + 17*b*c^4*d*e^4 - 113*b^2*c^3*e^5)*x^3 + 3*(5
4*c^5*d^3*e^2 - 107*b*c^4*d^2*e^3 + 52*b^2*c^3*d*e^4 + b^3*c^2*e^5)*x^2 - (
15*c^5*d^4*e - 49*b*c^4*d^3*e^2 + 57*b^2*c^3*d^2*e^3 - 27*b^3*c^2*d*e^4 + 4
*b^4*c*e^5)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^3*e^2)
```

mupad [B] time = 3.23, size = 320, normalized size = 1.66

$$\frac{\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}\,\left(\frac{2\,c^2\,e^3\,g\,x^5}{11} + \frac{2\,c\,e^2\,x^4\,\left(23\,b\,e\,g - 12\,c\,d\,g + 11\,c\,e\,f\right)}{99} + \frac{2\,x^2\,\left(b\,e - c\,d\right)\,\left(g\,b^2\,e^2 + 53\,g\,b\,c\,d\,e + 55\,f\,b\,c\,e^2 - 54\,g\,c^2\,d^2 + 44\,f\,c^2\,d\,e\right)}{231\,c} - \frac{x^3\,\left(-226\,g\,b^2\,c^3\,e^5 + 34\,g\,b\,c^4\,d\,e^4 - 418\,f\,b\,c^4\,e^5 + 192\,g\,c^5\,d^2\,e^3 + 220\,f\,c^5\,d\,e^4\right)}{693\,c^3\,e^2} + \frac{2\,\left(b\,e - c\,d\right)^3\,\left(8\,g\,b^2\,e^2 - 38\,g\,b\,c\,d\,e - 22\,f\,b\,c\,e^2 + 30\,g\,c^2\,d^2 + 121\,f\,c^2\,d\,e\right)}{693\,c^3\,e^2} + \frac{2\,x\,\left(b\,e - c\,d\right)^2\,\left(-4\,g\,b^2\,e^2 + 19\,g\,b\,c\,d\,e + 11\,f\,b\,c\,e^2 - 15\,g\,c^2\,d^2 + 286\,f\,c^2\,d\,e\right)}{693\,c^2\,e}\right)}{\sqrt{d + e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(3/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*c^2*e^3*g*x^5)/11 + (2*c*e
^2*x^4*(23*b*e*g - 12*c*d*g + 11*c*e*f))/99 + (2*x^2*(b*e - c*d)*(b^2*e^2*g
 - 54*c^2*d^2*g + 55*b*c*e^2*f + 44*c^2*d*e*f + 53*b*c*d*e*g))/(231*c) - (x
^3*(192*c^5*d^2*e^3*g - 226*b^2*c^3*e^5*g - 418*b*c^4*e^5*f + 220*c^5*d*e^4
*f + 34*b*c^4*d*e^4*g))/(693*c^3*e^2) + (2*(b*e - c*d)^3*(8*b^2*e^2*g + 30*
c^2*d^2*g - 22*b*c*e^2*f + 121*c^2*d*e*f - 38*b*c*d*e*g))/(693*c^3*e^2) + (
```

```
2*x*(b*e - c*d)^2*(11*b*c*e^2*f - 15*c^2*d^2*g - 4*b^2*e^2*g + 286*c^2*d*e*
f + 19*b*c*d*e*g))/(693*c^2*e)))/(d + e*x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(3/2
),x)
```

```
[Out] Timed out
```

3.2025 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-2beg-5cdg+9cef)}{63c^2e^2(d+ex)^{7/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2(d+ex)^{5/2}}$$

Rubi [A] time = 0.19, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-2beg-5cdg+9cef)}{63c^2e^2(d+ex)^{7/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(5/2)
,x]
```

```
[Out] (-2*(9*c*e*f - 5*c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/
2))/(63*c^2*e^2*(d + e*x)^(7/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(7/2))/(9*c*e^2*(d + e*x)^(5/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx=-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2(d+ex)^{5/2}}-\frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right)-\right.\right.}{}$$
$$=-\frac{2(9cef-5cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{63c^2e^2(d+ex)^{7/2}}-\frac{2g\left(d(\right.}{}$$

Mathematica [A] time = 0.11, size = 78, normalized size = 0.66

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+9ef+7egx)-2beg)}{63c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(5/2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e*
g + c*(9*e*f + 2*d*g + 7*e*g*x)))/(63*c^2*e^2*Sqrt[d + e*x])
```

IntegrateAlgebraic [A] time = 3.66, size = 74, normalized size = 0.63

$$-\frac{2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{7/2}(-2beg+7cg(d+ex)-5cdg+9cef)}{63c^2e^2(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(5/2),x]
```

```
[Out] (-2*(9*c*e*f - 5*c*d*g - 2*b*e*g + 7*c*g*(d + e*x))*((2*c*d - b*e)*(d + e*x
) - c*(d + e*x)^2)^(7/2))/(63*c^2*e^2*(d + e*x)^(7/2))
```

fricas [B] time = 0.41, size = 345, normalized size = 2.92

$$\frac{2\left(7c^4e^4gx^4+\left(9c^4e^4f-19\left(c^4de^3-bc^3e^4\right)g\right)x^3-3\left(9\left(c^4de^3-bc^3e^4\right)f-5\left(c^4d^2e^2-2bc^3de^3+b^2c^2e^4\right)g\right)x^2-9\left(c^4d^3e-3bc^3d^2e^2+3b^2c^2de^3-b^3ce^4\right)f-2\left(c^4d^4-4bc^3d^3e+6b^2c^2d^2e^2-4b^3cde^3+b^4e^4\right)g+\left(27\left(c^4d^2e^2-2bc^3de^3+b^2c^2e^4\right)f-\left(c^4d^3e-3bc^3d^2e^2+3b^2c^2de^3-b^3ce^4\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{63\left(c^2e^3x+c^2de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/63*(7*c^4*e^4*g*x^4 + (9*c^4*e^4*f - 19*(c^4*d*e^3 - b*c^3*e^4)*g)*x^3 -
3*(9*(c^4*d*e^3 - b*c^3*e^4)*f - 5*(c^4*d^2*e^2 - 2*b*c^3*d*e^3 + b^2*c^2*e
^4)*g)*x^2 - 9*(c^4*d^3*e - 3*b*c^3*d^2*e^2 + 3*b^2*c^2*d*e^3 - b^3*c*e^4)*
f - 2*(c^4*d^4 - 4*b*c^3*d^3*e + 6*b^2*c^2*d^2*e^2 - 4*b^3*c*d*e^3 + b^4*e^
4)*g + (27*(c^4*d^2*e^2 - 2*b*c^3*d*e^3 + b^2*c^2*e^4)*f - (c^4*d^3*e - 3*b
*c^3*d^2*e^2 + 3*b^2*c^2*d*e^3 - b^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Valueindex.cc index_m operator + Error: Bad Argument Valueindex.cc inde
x_m operator + Error: Bad Argument ValueEvaluation time: 6.36Done
```

maple [A] time = 0.05, size = 79, normalized size = 0.67

$$-\frac{2\left(cex+be-cd\right)\left(-7cegx+2beg-2cdg-9cef\right)\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{5}{2}}}{63\left(ex+d\right)^{\frac{5}{2}}c^{2}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/63*(c*e*x+b*e-c*d)*(-7*c*e*g*x+2*b*e*g-2*c*d*g-9*c*e*f)*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(5/2)/c^2/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 0.74, size = 314, normalized size = 2.66

$$\frac{2\left(c^3e^3x^3 - c^3d^3 + 3\,bc^2d^2e - 3\,b^2cde^2 + b^3e^3 - 3\left(c^3de^2 - bc^2e^3\right)x^2 + 3\left(c^3d^2e - 2\,bc^2de^2 + b^2ce^3\right)x\right)\sqrt{-cex + cd - be}\,f}{7\,ce} + \frac{2\left(7\,c^4e^4x^4 - 2\,c^4d^4 + 8\,bc^3d^3e - 12\,b^2c^2d^2e^2 + 8\,b^3cde^3 - 2\,b^4e^4 - 19\left(c^4de^3 - bc^3e^4\right)x^3 + 15\left(c^4d^2e^2 - 2\,bc^3de^3 + b^2c^2e^4\right)x^2 - \left(c^4d^3e - 3\,bc^3d^2e^2 + 3\,b^2c^2de^3 - b^3ce^4\right)x\right)\sqrt{-cex + cd - be}\,g}{63\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/7*(c^3*e^3*x^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + b^3*e^3 - 3*(c
^3*d*e^2 - b*c^2*e^3)*x^2 + 3*(c^3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*x)*sq
rt(-c*e*x + c*d - b*e)*f/(c*e) + 2/63*(7*c^4*e^4*x^4 - 2*c^4*d^4 + 8*b*c^3*
d^3*e - 12*b^2*c^2*d^2*e^2 + 8*b^3*c*d*e^3 - 2*b^4*e^4 - 19*(c^4*d*e^3 - b*
c^3*e^4)*x^3 + 15*(c^4*d^2*e^2 - 2*b*c^3*d*e^3 + b^2*c^2*e^4)*x^2 - (c^4*d^
3*e - 3*b*c^3*d^2*e^2 + 3*b^2*c^2*d*e^3 - b^3*c*e^4)*x)*sqrt(-c*e*x + c*d -
 b*e)*g/(c^2*e^2)
```

mupad [B] time = 2.90, size = 170, normalized size = 1.44

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,x^2\,\left(b\,e-c\,d\right)\,\left(5\,b\,e\,g-5\,c\,d\,g+9\,c\,e\,f\right)}{21}+\frac{2\,c\,e\,x^3\,\left(19\,b\,e\,g-19\,c\,d\,g+9\,c\,e\,f\right)}{63}+\frac{2\,c^2\,e^2\,g\,x^4}{9}+\frac{2\,{\left(b\,e-c\,d\right)}^3\,\left(2\,c\,d\,g-2\,b\,e\,g+9\,c\,e\,f\right)}{63\,c^2\,e^2}+\frac{2\,x\,{\left(b\,e-c\,d\right)}^2\,\left(b\,e\,g-c\,d\,g+27\,c\,e\,f\right)}{63\,c\,e}\right)}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(5/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^2*(b*e - c*d)*(5*b*e*g -
 5*c*d*g + 9*c*e*f))/21 + (2*c*e*x^3*(19*b*e*g - 19*c*d*g + 9*c*e*f))/63 +
(2*c^2*e^2*g*x^4)/9 + (2*(b*e - c*d)^3*(2*c*d*g - 2*b*e*g + 9*c*e*f))/(63*c
^2*e^2) + (2*x*(b*e - c*d)^2*(b*e*g - c*d*g + 27*c*e*f))/(63*c*e)))/(d + e*
x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(5/2
),x)
```

```
[Out] Timed out
```

3.2026 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=316

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^{5/2}}+\frac{2(2cd-be)(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)^2(ef-$$

Rubi [A] time = 0.59, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {794, 664, 660, 208}

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^{5/2}}+\frac{2(2cd-be)(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2(2cd-be)^{5/2}(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7ce^2(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(7/2)
,x]
```

```
[Out] (2*(2*c*d - b*e)^2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(
e^2*Sqrt[d + e*x]) + (2*(2*c*d - b*e)*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^(3/2)) + (2*(e*f - d*g)*(d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(d + e*x)^(5/2)) - (2*g*(d*(c*d - b*e
) - b*e^2*x - c*e^2*x^2)^(7/2))/(7*c*e^2*(d + e*x)^(7/2)) - (2*(2*c*d - b*e
)^(5/2)*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt
[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7ce^2(d+ex)^{7/2}} - \frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right)-\right.\right.}{}$$

$$= \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^{5/2}} - \frac{2g\left(d(cd-be)-be^2\right.}{7ce^2(d+ex}$$

$$= \frac{2(2cd-be)(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}} + \frac{2(ef-dg}{}$$

$$= \frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(2cd-be)}{}$$

$$= \frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(2cd-be)}{}$$

$$= \frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(2cd-be)}{}$$

Mathematica [A] time = 0.57, size = 197, normalized size = 0.62

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{7c(ef-dg)\left(\sqrt{c(d-ex)-be}\left(23b^2e^2+bce(11ex-81d)+c^2\left(73d^2-16dex+3e^2x^2\right)\right)-15(2cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{15(c(d-ex)-be)^{5/2}}+g(be-cd+cex)\right)}{7ce^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(7/2),x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(g*(-(c*d) + b*e + c*e*x) + (7*
c*(e*f - d*g)*(Sqrt[-(b*e) + c*(d - e*x)]*(23*b^2*e^2 + b*c*e*(-81*d + 11*e
*x) + c^2*(73*d^2 - 16*d*e*x + 3*e^2*x^2)) - 15*(2*c*d - b*e)^(5/2)*ArcTanh
[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(15*(-(b*e) + c*(d - e*x))^(5
/2))))/(7*c*e^2*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 4.62, size = 347, normalized size = 1.10

$$\frac{2\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(15b^3e^3g+45b^2ce^2g(d+ex)-251b^2cde^2g+161b^2ce^3f+824bc^2d^2eg+77bc^2e^2f(d+ex)-644bc^2de^2f+45bc^2eg(d+ex)^2-257bc^2deg(d+ex)-764c^3d^3g+644c^3d^2ef+334c^3d^2g(d+ex)+21c^3ef(d+ex)^2-154c^3def(d+ex)+15c^3g(d+ex)^3-111c^3dg(d+ex)^2\right)}{105ce^2\sqrt{d+ex}}+\frac{2(be-2cd)^{5/2}(dg-ef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(7/2),x]
```

```
[Out] (2*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(644*c^3*d^2*e*f -
 644*b*c^2*d*e^2*f + 161*b^2*c*e^3*f - 764*c^3*d^3*g + 824*b*c^2*d^2*e*g -
251*b^2*c*d*e^2*g + 15*b^3*e^3*g - 154*c^3*d*e*f*(d + e*x) + 77*b*c^2*e^2*f
*(d + e*x) + 334*c^3*d^2*g*(d + e*x) - 257*b*c^2*d*e*g*(d + e*x) + 45*b^2*c
*e^2*g*(d + e*x) + 21*c^3*e*f*(d + e*x)^2 - 111*c^3*d*g*(d + e*x)^2 + 45*b*
c^2*e*g*(d + e*x)^2 + 15*c^3*g*(d + e*x)^3))/(105*c*e^2*Sqrt[d + e*x]) + (2
*(-2*c*d + b*e)^(5/2)*(-(e*f) + d*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d
 - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e
*x)))])/e^2
```

fricas [A] time = 0.43, size = 949, normalized size = 3.00

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/105*(105*sqrt(2*c*d - b*e)*((4*c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^
3)*f - (4*c^3*d^4 - 4*b*c^2*d^3*e + b^2*c*d^2*e^2)*g + ((4*c^3*d^2*e^2 - 4*
b*c^2*d*e^3 + b^2*c*e^4)*f - (4*c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^3)*
g)*x)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x
^2 + 2*d*e*x + d^2)) - 2*(15*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f - (22*c^3*d*e^2
 - 15*b*c^2*e^3)*g)*x^2 + 7*(73*c^3*d^2*e - 81*b*c^2*d*e^2 + 23*b^2*c*e^3)*
f - (526*c^3*d^3 - 612*b*c^2*d^2*e + 206*b^2*c*d*e^2 - 15*b^3*e^3)*g - (7*(
16*c^3*d*e^2 - 11*b*c^2*e^3)*f - (157*c^3*d^2*e - 167*b*c^2*d*e^2 + 45*b^2*
c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(c*e
^3*x + c*d*e^2), -2/105*(105*sqrt(-2*c*d + b*e)*((4*c^3*d^3*e - 4*b*c^2*d^2
*e^2 + b^2*c*d*e^3)*f - (4*c^3*d^4 - 4*b*c^2*d^3*e + b^2*c*d^2*e^2)*g + ((4
*c^3*d^2*e^2 - 4*b*c^2*d*e^3 + b^2*c*e^4)*f - (4*c^3*d^3*e - 4*b*c^2*d^2*e^
2 + b^2*c*d*e^3)*g)*x)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sq
rt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - (15
*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f - (22*c^3*d*e^2 - 15*b*c^2*e^3)*g)*x^2 + 7*
(73*c^3*d^2*e - 81*b*c^2*d*e^2 + 23*b^2*c*e^3)*f - (526*c^3*d^3 - 612*b*c^2
*d^2*e + 206*b^2*c*d*e^2 - 15*b^3*e^3)*g - (7*(16*c^3*d*e^2 - 11*b*c^2*e^3)
*f - (157*c^3*d^2*e - 167*b*c^2*d*e^2 + 45*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.07, size = 956, normalized size = 3.03

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x)
```

```
[Out] 2/105*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(15*x^3*c^3*e^3*g*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)+45*x^2*b*c^2*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)-66*x^2*c^3*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+2
1*x^2*c^3*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+105*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^3*c*d*e^3*g-105*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*b^3*c*e^4*f-630*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))*b^2*c^2*d^2*e^2*g+630*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2
*c*d)^(1/2))*b^2*c^2*d*e^3*f+1260*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*b*c^3*d^3*e*g-1260*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
*b*c^3*d^2*e^2*f-840*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d
^4*g+840*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^3*e*f+45*x*
b^2*c*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-167*x*b*c^2*d*e^2*g*(-
c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+77*x*b*c^2*e^3*f*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)+157*x*c^3*d^2*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)-112*x*c^3*d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+15*(b*e-2*
c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b^3*e^3*g-206*(b*e-2*c*d)^(1/2)*(-c*e*x-b
*e+c*d)^(1/2)*b^2*c*d*e^2*g+161*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b^
```

```
2*c*e^3*f+612*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d^2*e*g-567*(b
*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d*e^2*f-526*(b*e-2*c*d)^(1/2)*
(-c*e*x-b*e+c*d)^(1/2)*c^3*d^3*g+511*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/
2)*c^3*d^2*e*f)/(e*x+d)^(1/2)/(-c*e*x-b*e+c*d)^(1/2)/c/e^2/(b*e-2*c*d)^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{5/2}}{\left(d + e\,x\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(7/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(7/2)
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(7/2
),x)
```

```
[Out] Timed out
```

3.2027 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=360

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^{9/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(2beg-9cdg+5cef)}{5e^2(d+ex)^{5/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x\right.}{}$$

Rubi [A] time = 0.61, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^{9/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(2beg-9cdg+5cef)}{5e^2(d+ex)^{5/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(2beg-9cdg+5cef)}{3e^2(d+ex)^{3/2}}-\frac{(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(2beg-9cdg+5cef)}{e^2\sqrt{d+ex}}+\frac{(2cd-be)^{3/2}(2beg-9cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(9/2)
,x]
```

```
[Out] -(((2*c*d - b*e)*(5*c*e*f - 9*c*d*g + 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])/(e^2*Sqrt[d + e*x])) - ((5*c*e*f - 9*c*d*g + 2*b*e*g)*(d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^(3/2)) - ((5*c*e*f
- 9*c*d*g + 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(2
*c*d - b*e)*(d + e*x)^(5/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^
2*x^2)^(7/2))/(e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) + ((2*c*d - b*e)^(3/2)*(5
*c*e*f - 9*c*d*g + 2*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^{9/2}} - \frac{(5cef-9cdg+2beg}{2e}$$

$$= -\frac{(5cef-9cdg+2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(2cd-be)(d+ex)^{5/2}} - \frac{(ef-dg}{}$$

$$= -\frac{(5cef-9cdg+2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}} - \frac{(5cef-}{}$$

$$= -\frac{(2cd-be)(5cef-9cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} -$$

$$= -\frac{(2cd-be)(5cef-9cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} -$$

$$= -\frac{(2cd-be)(5cef-9cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} -$$

Mathematica [A] time = 0.66, size = 221, normalized size = 0.61

$$\frac{((d+ex)(c(d-ex)-be))^{5/2}\left((ef-dg)(be-cd+cex)-\frac{(d+ex)(2beg-9cdg+5cef)\left(\sqrt{c(d-ex)-be}\left(23b^2e^2+bce(11ex-81d)+c^2\left(73d^2-16dex+3e^2x^2\right)\right)-15(2cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{15(c(d-ex)-be)^{5/2}}\right)}{e^2(d+ex)^{7/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(9/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((e*f - d*g)*(-(c*d) + b*e + c*e*
x) - ((5*c*e*f - 9*c*d*g + 2*b*e*g)*(d + e*x)*(Sqrt[-(b*e) + c*(d - e*x)]*(
23*b^2*e^2 + b*c*e*(-81*d + 11*e*x) + c^2*(73*d^2 - 16*d*e*x + 3*e^2*x^2))
- 15*(2*c*d - b*e)^(5/2)*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]
))/(15*(-(b*e) + c*(d - e*x))^(5/2))))/(e^2*(2*c*d - b*e)*(d + e*x)^(7/2))
```

IntegrateAlgebraic [A] time = 4.76, size = 382, normalized size = 1.06

$$\frac{\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(46b^2e^2g(d+ex)+15b^2de^2g-15b^2e^3f-60bcd^2eg+70bce^2f(d+ex)+60bcde^2f-254bcdeg(d+ex)+22bceg(d+ex)^2+60c^2d^3g-60c^2d^2ef+324c^2d^2g(d+ex)-140c^2def(d+ex)+10c^2ef(d+ex)^2-54c^2dg(d+ex)^2+6c^2g(d+ex)^3\right)}{15e^2(d+ex)^{3/2}}+\frac{\left(-2b^3e^3g+17b^2cde^2g-5b^2ce^3f-44bc^2d^2eg+20bc^2de^2f+36c^3d^3g-20c^3d^2ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(9/2),x]
```

```
[Out] (Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(-60*c^2*d^2*e*f + 60*b*c*d*
e^2*f - 15*b^2*e^3*f + 60*c^2*d^3*g - 60*b*c*d^2*e*g + 15*b^2*d*e^2*g - 140
*c^2*d*e*f*(d + e*x) + 70*b*c*e^2*f*(d + e*x) + 324*c^2*d^2*g*(d + e*x) - 2
54*b*c*d*e*g*(d + e*x) + 46*b^2*e^2*g*(d + e*x) + 10*c^2*e*f*(d + e*x)^2 -
54*c^2*d*g*(d + e*x)^2 + 22*b*c*e*g*(d + e*x)^2 + 6*c^2*g*(d + e*x)^3))/(15
*e^2*(d + e*x)^(3/2)) + ((-20*c^3*d^2*e*f + 20*b*c^2*d*e^2*f - 5*b^2*c*e^3*
f + 36*c^3*d^3*g - 44*b*c^2*d^2*e*g + 17*b^2*c*d*e^2*g - 2*b^3*e^3*g)*ArcTa
n[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[
d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(e^2*Sqrt[-2*c*d + b*e])
```

fricas [A] time = 0.43, size = 990, normalized size = 2.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/30*(15*((5*(2*c^2*d*e^3 - b*c*e^4)*f - (18*c^2*d^2*e^2 - 13*b*c*d*e^3 +
 2*b^2*e^4)*g)*x^2 + 5*(2*c^2*d^3*e - b*c*d^2*e^2)*f - (18*c^2*d^4 - 13*b*c
*d^3*e + 2*b^2*d^2*e^2)*g + 2*(5*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (18*c^2*d^
3*e - 13*b*c*d^2*e^2 + 2*b^2*d*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2
 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 - b*e^2*x +
c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2))
- 2*(6*c^2*e^3*g*x^3 + 2*(5*c^2*e^3*f - (18*c^2*d*e^2 - 11*b*c*e^3)*g)*x^2
- 5*(38*c^2*d^2*e - 26*b*c*d*e^2 + 3*b^2*e^3)*f + (336*c^2*d^3 - 292*b*c*d^
2*e + 61*b^2*d*e^2)*g - 2*(5*(12*c^2*d*e^2 - 7*b*c*e^3)*f - (117*c^2*d^2*e
- 105*b*c*d*e^2 + 23*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d
*e)*sqrt(e*x + d))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2), 1/15*(15*((5*(2*c^2*d*e
^3 - b*c*e^4)*f - (18*c^2*d^2*e^2 - 13*b*c*d*e^3 + 2*b^2*e^4)*g)*x^2 + 5*(2
*c^2*d^3*e - b*c*d^2*e^2)*f - (18*c^2*d^4 - 13*b*c*d^3*e + 2*b^2*d^2*e^2)*g
 + 2*(5*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (18*c^2*d^3*e - 13*b*c*d^2*e^2 + 2*
b^2*d*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 +
b*d*e)) + (6*c^2*e^3*g*x^3 + 2*(5*c^2*e^3*f - (18*c^2*d*e^2 - 11*b*c*e^3)*g
)*x^2 - 5*(38*c^2*d^2*e - 26*b*c*d*e^2 + 3*b^2*e^3)*f + (336*c^2*d^3 - 292*
b*c*d^2*e + 61*b^2*d*e^2)*g - 2*(5*(12*c^2*d*e^2 - 7*b*c*e^3)*f - (117*c^2*
d^2*e - 105*b*c*d*e^2 + 23*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
 - b*d*e)*sqrt(e*x + d))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 1136, normalized size = 3.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x)
```

```
[Out] -1/15*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-540*c^3*d^4*g*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+30*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*
c*d)^(1/2))*x*b^3*e^4*g+210*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*
e^2*g*x+300*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15
*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*f-336*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g+30*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))*b^3*d*e^3*g-22*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*g*
x^2+36*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e^2*g*x^2-70*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x-234*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*c^2*d^2*e*g*x+120*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c
^2*d*e^2*f*x-130*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*e^2*f+660*b
*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+75*arctan
```

```
((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*c*d*e^3*f-300*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^2*e^2*f-6*x^3*c^2*e^3*g*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+75*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))*x*b^2*c*e^4*f-255*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*b^2*c*d^2*e^2*g-540*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))+300*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/
2))+660*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-10*(
-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2-46*(-c*e*x-b*e+c*d)^(
1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*g*x-61*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1
/2)*b^2*d*e^2*g+190*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f-30
0*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^2*d*e^3*f-255*arct
an((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*c*d*e^3*g+292*b*c*d^2*e*
g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))/(e*x+d)^(3/2)/(-c*e*x-b*e+c*d)^
(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{(ex + d)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{5/2}}{(d + e\,x)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(9/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(9/2)
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(9/2
),x)
```

```
[Out] Timed out
```

3.2028 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=372

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{2e^2(d+ex)^{11/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(4beg-11cdg+3cef)}{4e^2(d+ex)^{7/2}(2cd-be)}+\frac{5c\left(d(cd-be)-\right.}{1}$$

Rubi [A] time = 0.60, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{2e^2(d+ex)^{11/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(4beg-11cdg+3cef)}{4e^2(d+ex)^{7/2}(2cd-be)}+\frac{5c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(4beg-11cdg+3cef)}{12e^2(d+ex)^{3/2}(2cd-be)}+\frac{5c\sqrt{d(cd-be)-be^2x-ce^2x^2}(4beg-11cdg+3cef)}{4e^2\sqrt{d+ex}}-\frac{5c\sqrt{2cd-be}(4beg-11cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(11/2
),x]
```

```
[Out] (5*c*(3*c*e*f - 11*c*d*g + 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(4*e^2*Sqrt[d + e*x]) + (5*c*(3*c*e*f - 11*c*d*g + 4*b*e*g)*(d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(12*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) +
((3*c*e*f - 11*c*d*g + 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2)
)/(4*e^2*(2*c*d - b*e)*(d + e*x)^(7/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(2*e^2*(2*c*d - b*e)*(d + e*x)^(11/2)) - (5*c*Sqrt
[2*c*d - b*e]*(3*c*e*f - 11*c*d*g + 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{2e^2(2cd-be)(d+ex)^{11/2}} - \frac{(3cef-11cdg+4be\ldots}{4e\ldots}$$

$$= \frac{(3cef-11cdg+4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4e^2(2cd-be)(d+ex)^{7/2}} - \frac{(ef-dg\ldots}{2\ldots}$$

$$= \frac{5c(3cef-11cdg+4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{12e^2(2cd-be)(d+ex)^{3/2}} + \frac{(3cef\ldots}{\ldots}$$

$$= \frac{5c(3cef-11cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2\sqrt{d+ex}} + \frac{5c(3cef\ldots}{\ldots}$$

$$= \frac{5c(3cef-11cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2\sqrt{d+ex}} + \frac{5c(3cef\ldots}{\ldots}$$

$$= \frac{5c(3cef-11cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2\sqrt{d+ex}} + \frac{5c(3cef\ldots}{\ldots}$$

Mathematica [C] time = 0.25, size = 130, normalized size = 0.35

$$\frac{((d+ex)(c(d-ex)-be))^{7/2}\left(\frac{c(d+ex)^2(4beg-11cdg+3cef)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{7dg}{e}-7f\right)}{14e(d+ex)^{11/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(11/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*f + (7*d*g)/e + (c*(3*c*e*f -
 11*c*d*g + 4*b*e*g)*(d + e*x)^2*Hypergeometric2F1[2, 7/2, 9/2, (-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b*e)^2)))/(14*e*(2*c*d - b*e)*(d
+ e*x)^(11/2))
```

IntegrateAlgebraic [A] time = 5.37, size = 360, normalized size = 0.97

$$\frac{\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(-12b^2e^2g(d+ex)+6b^2de^2g-6b^2e^3f-24bcd^2eg-27bce^2f(d+ex)+24bcde^2f+75bcdeg(d+ex)+56bceg(d+ex)^2+24c^2d^3g-24c^2d^2ef-102c^2d^2g(d+ex)+54c^2def(d+ex)+24c^2ef(d+ex)^2-136c^2dg(d+ex)^2+8c^2g(d+ex)^3\right)}{12e^2(d+ex)^{5/2}}-\frac{5\left(4b^2ce^2g-19bc^2deg+3bc^2e^2f+22c^3d^2g-6c^3def\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{4e^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(11/2),x]
```

```
[Out] (Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(-24*c^2*d^2*e*f + 24*b*c*d*
e^2*f - 6*b^2*e^3*f + 24*c^2*d^3*g - 24*b*c*d^2*e*g + 6*b^2*d*e^2*g + 54*c^
```

```
2*d*e*f*(d + e*x) - 27*b*c*e^2*f*(d + e*x) - 102*c^2*d^2*g*(d + e*x) + 75*b
*c*d*e*g*(d + e*x) - 12*b^2*e^2*g*(d + e*x) + 24*c^2*e*f*(d + e*x)^2 - 136*
c^2*d*g*(d + e*x)^2 + 56*b*c*e*g*(d + e*x)^2 + 8*c^2*g*(d + e*x)^3))/(12*e^
2*(d + e*x)^(5/2)) - (5*(-6*c^3*d*e*f + 3*b*c^2*e^2*f + 22*c^3*d^2*g - 19*b
*c^2*d*e*g + 4*b^2*c*e^2*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(
d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(
4*e^2*Sqrt[-2*c*d + b*e])
```

fricas [A] time = 0.45, size = 959, normalized size = 2.58

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x,
algorithm="fricas")
```

```
[Out] [1/24*(15*(3*c^2*d^3*e*f + (3*c^2*e^4*f - (11*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3
 + 3*(3*c^2*d*e^3*f - (11*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 - (11*c^2*d^4 -
 4*b*c*d^3*e)*g + 3*(3*c^2*d^2*e^2*f - (11*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)
*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*
x + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x
 + d))/(e^2*x^2 + 2*d*e*x + d^2)) + 2*(8*c^2*e^3*g*x^3 + 8*(3*c^2*e^3*f - 7
*(2*c^2*d*e^2 - b*c*e^3)*g)*x^2 + 3*(18*c^2*d^2*e - b*c*d*e^2 - 2*b^2*e^3)*
f - (206*c^2*d^3 - 107*b*c*d^2*e + 6*b^2*d*e^2)*g + (3*(34*c^2*d*e^2 - 9*b*
c*e^3)*f - (350*c^2*d^2*e - 187*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2
*e^3*x + d^3*e^2), -1/12*(15*(3*c^2*d^3*e*f + (3*c^2*e^4*f - (11*c^2*d*e^3
- 4*b*c*e^4)*g)*x^3 + 3*(3*c^2*d*e^3*f - (11*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*
x^2 - (11*c^2*d^4 - 4*b*c*d^3*e)*g + 3*(3*c^2*d^2*e^2*f - (11*c^2*d^3*e - 4
*b*c*d^2*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c
*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2
 + b*d*e)) - (8*c^2*e^3*g*x^3 + 8*(3*c^2*e^3*f - 7*(2*c^2*d*e^2 - b*c*e^3)*
g)*x^2 + 3*(18*c^2*d^2*e - b*c*d*e^2 - 2*b^2*e^3)*f - (206*c^2*d^3 - 107*b*
c*d^2*e + 6*b^2*d*e^2)*g + (3*(34*c^2*d*e^2 - 9*b*c*e^3)*f - (350*c^2*d^2*e
 - 187*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*sqrt(e*x + d))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 1189, normalized size = 3.20

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x)
```

```
[Out] -1/12*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(330*c^3*d^4*g*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-187*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1
/2)*b*c*d*e^2*g*x-90*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^
(1/2))+6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*f+206*(-c*e*x-b*e
+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g-56*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
```

```
d)^(1/2)*b*c*e^3*g*x^2+112*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e
^2*g*x^2+27*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x+350*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*g*x-102*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)*c^2*d*e^2*f*x+3*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)
*b*c*d*e^2*f-285*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-570*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))+45*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^2*e^4*f+60
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b^2*c*e^4*g+45*b*c^2*
d^2*e^2*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-8*(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*g*x^3+60*b^2*c*d^2*e^2*g*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+330*c^3*d^2*e^2*g*x^2*arctan((-c*e*x-b*e+
c*d)^(1/2)/(b*e-2*c*d)^(1/2))-90*c^3*d*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))+660*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e
-2*c*d)^(1/2))-180*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-285*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
-24*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2+12*(-c*e*x-b*e+c
*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*g*x+6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d
)^(1/2)*b^2*d*e^2*g-54*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f
+90*b*c^2*d*e^3*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+120*b^
2*c*d*e^3*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-107*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g)/(e*x+d)^(5/2)/(-c*e*x-b*e+c*d
)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(11/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(11/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(11/
2),x)
```

```
[Out] Timed out
```

3.2029 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=383

$$-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(6beg-13cdg+cef)}{8e^2\sqrt{d+ex}\,(2cd-be)}+\frac{5c^2(6beg-13cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2\sqrt{2cd-be}}-\frac{(ef$$

Rubi [A] time = 0.59, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 662, 664, 660, 208}

$$-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(6beg-13cdg+cef)}{8e^2\sqrt{d+ex}\,(2cd-be)}+\frac{5c^2(6beg-13cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2\sqrt{2cd-be}}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(d+ex)^{13/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(6beg-13cdg+cef)}{12e^2(d+ex)^{9/2}(2cd-be)}-\frac{5c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(6beg-13cdg+cef)}{24e^2(d+ex)^{5/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(13/2
),x]
```

```
[Out] (-5*c^2*(c*e*f - 13*c*d*g + 6*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x
^2])/(8*e^2*(2*c*d - b*e)*Sqrt[d + e*x]) - (5*c*(c*e*f - 13*c*d*g + 6*b*e*g
)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*e^2*(2*c*d - b*e)*(d + e
*x)^(5/2)) + ((c*e*f - 13*c*d*g + 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2
*x^2)^(5/2))/(12*e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) - ((e*f - d*g)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^(13/2))
 + (5*c^2*(c*e*f - 13*c*d*g + 6*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(8*e^2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(2cd-be)(d+ex)^{13/2}} - \frac{(cef-13cdg+6beg}{6e}$$

$$= \frac{(cef-13cdg+6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{12e^2(2cd-be)(d+ex)^{9/2}} - \frac{(ef-dg)}{3e}$$

$$= -\frac{5c(cef-13cdg+6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24e^2(2cd-be)(d+ex)^{5/2}} + \frac{(cef}{}$$

$$= -\frac{5c^2(cef-13cdg+6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)\sqrt{d+ex}} - \frac{5c(cef}{}$$

$$= -\frac{5c^2(cef-13cdg+6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)\sqrt{d+ex}} - \frac{5c(cef}{}$$

$$= -\frac{5c^2(cef-13cdg+6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)\sqrt{d+ex}} - \frac{5c(cef}{}$$

Mathematica [C] time = 0.14, size = 127, normalized size = 0.33

$$\frac{((d+ex)(c(d-ex)-be))^{7/2}\left(\frac{c^2(d+ex)^3(6beg-13cdg+cef)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+7dg-7ef\right)}{21e^2(d+ex)^{13/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(13/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*e*f + 7*d*g + (c^2*(c*e*f - 1
3*c*d*g + 6*b*e*g)*(d + e*x)^3*Hypergeometric2F1[3, 7/2, 9/2, (-(c*d) + b*e
 + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^3))/(21*e^2*(2*c*d - b*e)*(d + e*x
)^(13/2))
```

IntegrateAlgebraic [A] time = 5.43, size = 339, normalized size = 0.89

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-12b^2e^2g(d+ex)+8b^2de^2g-8b^2e^3f-32bcd^2eg-26bce^2f(d+ex)+32bcde^2f+74bcdeg(d+ex)-54bceg(d+ex)^2+32c^2d^3g-32c^2d^2ef-100c^2d^2g(d+ex)+52c^2def(d+ex)-33c^2ef(d+ex)^2+141c^2dg(d+ex)^2+48c^2g(d+ex)^3\right)}{24e^2(d+ex)^{7/2}}+\frac{5\left(-6bc^2eg+13c^3dg+c^3(-e)f\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{8e^2\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(13/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-32*c^2*d^2*e*f + 3
2*b*c*d*e^2*f - 8*b^2*e^3*f + 32*c^2*d^3*g - 32*b*c*d^2*e*g + 8*b^2*d*e^2*g
```

```
 + 52*c^2*d*e*f*(d + e*x) - 26*b*c*e^2*f*(d + e*x) - 100*c^2*d^2*g*(d + e*x
) + 74*b*c*d*e*g*(d + e*x) - 12*b^2*e^2*g*(d + e*x) - 33*c^2*e*f*(d + e*x)^
2 + 141*c^2*d*g*(d + e*x)^2 - 54*b*c*e*g*(d + e*x)^2 + 48*c^2*g*(d + e*x)^3
))/(24*e^2*(d + e*x)^(7/2)) + (5*(-(c^3*e*f) + 13*c^3*d*g - 6*b*c^2*e*g)*Ar
cTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sq
rt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(8*e^2*Sqrt[-2*c*d + b*e])
```

fricas [A] time = 0.51, size = 1388, normalized size = 3.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x,
algorithm="fricas")
```

```
[Out] [1/48*(15*(c^3*d^4*e*f + (c^3*e^5*f - (13*c^3*d*e^4 - 6*b*c^2*e^5)*g)*x^4 +
 4*(c^3*d*e^4*f - (13*c^3*d^2*e^3 - 6*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d^2*e^3*
f - (13*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2 - (13*c^3*d^5 - 6*b*c^2*d^4*e
)*g + 4*(c^3*d^3*e^2*f - (13*c^3*d^4*e - 6*b*c^2*d^3*e^2)*g)*x)*sqrt(2*c*d
- b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*
x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(48*(2
*c^3*d*e^3 - b*c^2*e^4)*g*x^3 - 3*(11*(2*c^3*d*e^3 - b*c^2*e^4)*f - (190*c^
3*d^2*e^2 - 131*b*c^2*d*e^3 + 18*b^2*c*e^4)*g)*x^2 - (26*c^3*d^3*e - 25*b*c
^2*d^2*e^2 + 22*b^2*c*d*e^3 - 8*b^3*e^4)*f + (242*c^3*d^4 - 145*b*c^2*d^3*e
 + 4*b^2*c*d^2*e^2 + 4*b^3*d*e^3)*g - 2*((14*c^3*d^2*e^2 + 19*b*c^2*d*e^3 -
 13*b^2*c*e^4)*f - (326*c^3*d^3*e - 197*b*c^2*d^2*e^2 + 5*b^2*c*d*e^3 + 6*b
^3*e^4)*g)*x)*sqrt(e*x + d))/(2*c*d^5*e^2 - b*d^4*e^3 + (2*c*d*e^6 - b*e^7)
*x^4 + 4*(2*c*d^2*e^5 - b*d*e^6)*x^3 + 6*(2*c*d^3*e^4 - b*d^2*e^5)*x^2 + 4*
(2*c*d^4*e^3 - b*d^3*e^4)*x), 1/24*(15*(c^3*d^4*e*f + (c^3*e^5*f - (13*c^3*
d*e^4 - 6*b*c^2*e^5)*g)*x^4 + 4*(c^3*d*e^4*f - (13*c^3*d^2*e^3 - 6*b*c^2*d*
e^4)*g)*x^3 + 6*(c^3*d^2*e^3*f - (13*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2
- (13*c^3*d^5 - 6*b*c^2*d^4*e)*g + 4*(c^3*d^3*e^2*f - (13*c^3*d^4*e - 6*b*c
^2*d^3*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d
^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 +
 b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(48*(2*c^3*d*e^3 - b*
c^2*e^4)*g*x^3 - 3*(11*(2*c^3*d*e^3 - b*c^2*e^4)*f - (190*c^3*d^2*e^2 - 131
*b*c^2*d*e^3 + 18*b^2*c*e^4)*g)*x^2 - (26*c^3*d^3*e - 25*b*c^2*d^2*e^2 + 22
*b^2*c*d*e^3 - 8*b^3*e^4)*f + (242*c^3*d^4 - 145*b*c^2*d^3*e + 4*b^2*c*d^2*
e^2 + 4*b^3*d*e^3)*g - 2*((14*c^3*d^2*e^2 + 19*b*c^2*d*e^3 - 13*b^2*c*e^4)*
f - (326*c^3*d^3*e - 197*b*c^2*d^2*e^2 + 5*b^2*c*d*e^3 + 6*b^3*e^4)*g)*x)*s
qrt(e*x + d))/(2*c*d^5*e^2 - b*d^4*e^3 + (2*c*d*e^6 - b*e^7)*x^4 + 4*(2*c*d
^2*e^5 - b*d*e^6)*x^3 + 6*(2*c*d^3*e^4 - b*d^2*e^5)*x^2 + 4*(2*c*d^4*e^3 -
b*d^3*e^4)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.09, size = 1070, normalized size = 2.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x)
```

```
[Out] -1/24*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-195*c^3*d^4*g*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*c^3*e^4*f*x^3*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))+34*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d
*e^2*g*x+15*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+8*
(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*f-121*(-c*e*x-b*e+c*d)^(1/
2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g+54*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*
b*c*e^3*g*x^2-285*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e^2*g*x^2+
26*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x-326*(-c*e*x-b*e+c*d
)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*g*x+14*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*c^2*d*e^2*f*x-6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*e^2
*f+270*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+2
70*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-48*(-
c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*g*x^3-585*c^3*d^2*e^2*g*x^2*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+45*c^3*d*e^3*f*x^2*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-585*c^3*d^3*e*g*x*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+45*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))+90*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(
b*e-2*c*d)^(1/2))+33*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2
+12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*g*x+4*(-c*e*x-b*e+c*d)
^(1/2)*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g+13*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)*c^2*d^2*e*f+90*b*c^2*e^4*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))-195*c^3*d*e^3*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))+12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g)/(e*x+d)^(7/2)
/(-c*e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^{13/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(13/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(13/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(13/
2),x)
```

```
[Out] Timed out
```

3.2030 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx$

Optimal. Leaf size=383

$$\frac{5c^3(-8beg+15cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{3/2}}-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+15cdg+cef)}{64e^2(d+ex)^{3/2}(2cd-be)}-\frac{(e}{}$$

Rubi [A] time = 0.59, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 662, 660, 208}

$$-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+15cdg+cef)}{64e^2(d+ex)^{3/2}(2cd-be)}+\frac{5c^3(-8beg+15cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{3/2}}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{4e^2(d+ex)^{15/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+15cdg+cef)}{24e^2(d+ex)^{11/2}(2cd-be)}+\frac{5c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+15cdg+cef)}{96e^2(d+ex)^{7/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(15/2
),x]
```

```
[Out] (-5*c^2*(c*e*f + 15*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x
^2])/(64*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) + (5*c*(c*e*f + 15*c*d*g - 8*b*
e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(96*e^2*(2*c*d - b*e)*(d
+ e*x)^(7/2)) - ((c*e*f + 15*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*
e^2*x^2)^(5/2))/(24*e^2*(2*c*d - b*e)*(d + e*x)^(11/2)) - ((e*f - d*g)*(d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(15
/2)) + (5*c^3*(c*e*f + 15*c*d*g - 8*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(64*e^2*(2*c*d - b*e)
^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
```

```
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{4e^2(2cd-be)(d+ex)^{15/2}}+\frac{(cef+15cdg-8beg}{8e}$$

$$= -\frac{(cef+15cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{24e^2(2cd-be)(d+ex)^{11/2}}-\frac{(ef-dg}{}$$

$$= \frac{5c(cef+15cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{96e^2(2cd-be)(d+ex)^{7/2}}-\frac{(cef+}{}$$

$$= -\frac{5c^2(cef+15cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{3/2}}+\frac{5c(cef}{}$$

$$= -\frac{5c^2(cef+15cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{3/2}}+\frac{5c(cef}{}$$

$$= -\frac{5c^2(cef+15cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{3/2}}+\frac{5c(cef}{}$$

Mathematica [A] time = 3.53, size = 303, normalized size = 0.79

$$-\frac{((d+ex)(c(d-ex)-be))^{5/2}\left(-\frac{e(d+ex)(-8beg+15cdg+cef)\left(15c^3\sqrt{e}(d+ex)^3\sqrt{c(d-ex)-be}\tan^{-1}\left(\frac{\sqrt{e}\sqrt{c(d-ex)-be}}{\sqrt{e(be-2cd)}}\right)-\sqrt{e(be-2cd)}\left(8b^3e^3+2b^2ce^2(17ex-7d)+bc^2e\left(19d^2-18dex+59e^2x^2\right)-\left(c^3\left(13d^3+d^2ex+19de^2x^2-33e^3x^3\right)\right)\right)\right)}{3\sqrt{e(be-2cd)}}-16e(ef-dg)(be-cd+cex)^4\right)}{64e^3(d+ex)^{13/2}(2cd-be)(be-cd+cex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(15/2),x]
```

```
[Out] -1/64*(((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(-16*e*(e*f - d*g)*(-(c*d)
+ b*e + c*e*x)^4 - (e*(c*e*f + 15*c*d*g - 8*b*e*g)*(d + e*x)*(-(Sqrt[e*(-2*
c*d + b*e)]*(8*b^3*e^3 + 2*b^2*c*e^2*(-7*d + 17*e*x) + b*c^2*e*(19*d^2 - 18
*d*e*x + 59*e^2*x^2) - c^3*(13*d^3 + d^2*e*x + 19*d*e^2*x^2 - 33*e^3*x^3)))
 + 15*c^3*Sqrt[e]*(d + e*x)^3*Sqrt[-(b*e) + c*(d - e*x)]*ArcTan[(Sqrt[e]*Sq
rt[-(b*e) + c*(d - e*x)])/Sqrt[e*(-2*c*d + b*e)]]))/(3*Sqrt[e*(-2*c*d + b*e
)])))/(e^3*(2*c*d - b*e)*(d + e*x)^(13/2)*(-(c*d) + b*e + c*e*x)^3)
```

IntegrateAlgebraic [A] time = 6.71, size = 499, normalized size = 1.30

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(15/2),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(384*c^3*d^3*e*f - 5
76*b*c^2*d^2*e^2*f + 288*b^2*c*d*e^3*f - 48*b^3*e^4*f - 384*c^3*d^4*g + 576
*b*c^2*d^3*e*g - 288*b^2*c*d^2*e^2*g + 48*b^3*d*e^3*g - 544*c^3*d^2*e*f*(d
+ e*x) + 544*b*c^2*d*e^2*f*(d + e*x) - 136*b^2*c*e^3*f*(d + e*x) + 1056*c^3
*d^3*g*(d + e*x) - 1312*b*c^2*d^2*e*g*(d + e*x) + 520*b^2*c*d*e^2*g*(d + e*
x) - 64*b^3*e^3*g*(d + e*x) + 236*c^3*d*e*f*(d + e*x)^2 - 118*b*c^2*e^2*f*(
```

```
d + e*x)^2 - 1068*c^3*d^2*g*(d + e*x)^2 + 950*b*c^2*d*e*g*(d + e*x)^2 - 208
*b^2*c*e^2*g*(d + e*x)^2 - 15*c^3*e*f*(d + e*x)^3 + 543*c^3*d*g*(d + e*x)^3
 - 264*b*c^2*e*g*(d + e*x)^3))/(192*e^2*(-2*c*d + b*e)*(d + e*x)^(9/2)) - (
5*(c^4*e*f + 15*c^4*d*g - 8*b*c^3*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c
*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d +
 e*x)))])/(64*e^2*(2*c*d - b*e)*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.50, size = 1910, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x,
algorithm="fricas")
```

```
[Out] [1/384*(15*(c^4*d^5*e*f + (c^4*e^6*f + (15*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x^5
+ 5*(c^4*d*e^5*f + (15*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(c^4*d^2*e^
4*f + (15*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(c^4*d^3*e^3*f + (15*c
^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (15*c^4*d^6 - 8*b*c^3*d^5*e)*g + 5*(
c^4*d^4*e^2*f + (15*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(2*c*d - b*e)*lo
g(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d
*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^4*d*
e^4 - b*c^3*e^5)*f - (362*c^4*d^2*e^3 - 357*b*c^3*d*e^4 + 88*b^2*c^2*e^5)*g
)*x^3 - ((382*c^4*d^2*e^3 - 427*b*c^3*d*e^4 + 118*b^2*c^2*e^5)*f + (1122*c^
4*d^3*e^2 - 245*b*c^3*d^2*e^3 - 574*b^2*c^2*d*e^4 + 208*b^3*c*e^5)*g)*x^2 -
 (122*c^4*d^4*e - 361*b*c^3*d^3*e^2 + 454*b^2*c^2*d^2*e^3 - 248*b^3*c*d*e^4
 + 48*b^4*e^5)*f - (294*c^4*d^5 - 247*b*c^3*d^4*e + 98*b^2*c^2*d^3*e^2 - 56
*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((234*c^4*d^3*e^2 - 733*b*c^3*d^2*e^3 +
580*b^2*c^2*d*e^4 - 136*b^3*c*e^5)*f - (1098*c^4*d^4*e - 957*b*c^3*d^3*e^2
+ 412*b^2*c^2*d^2*e^3 - 232*b^3*c*d*e^4 + 64*b^4*e^5)*g)*x)*sqrt(e*x + d))/
(4*c^2*d^7*e^2 - 4*b*c*d^6*e^3 + b^2*d^5*e^4 + (4*c^2*d^2*e^7 - 4*b*c*d*e^8
 + b^2*e^9)*x^5 + 5*(4*c^2*d^3*e^6 - 4*b*c*d^2*e^7 + b^2*d*e^8)*x^4 + 10*(4
*c^2*d^4*e^5 - 4*b*c*d^3*e^6 + b^2*d^2*e^7)*x^3 + 10*(4*c^2*d^5*e^4 - 4*b*c
*d^4*e^5 + b^2*d^3*e^6)*x^2 + 5*(4*c^2*d^6*e^3 - 4*b*c*d^5*e^4 + b^2*d^4*e^
5)*x), 1/192*(15*(c^4*d^5*e*f + (c^4*e^6*f + (15*c^4*d*e^5 - 8*b*c^3*e^6)*g
)*x^5 + 5*(c^4*d*e^5*f + (15*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(c^4*
d^2*e^4*f + (15*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(c^4*d^3*e^3*f +
 (15*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (15*c^4*d^6 - 8*b*c^3*d^5*e)*g
 + 5*(c^4*d^4*e^2*f + (15*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(-2*c*d +
b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*s
qrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^4*d*e^4 - b*c^3*e^5)*f - (362*c^4*d^2*e^3
- 357*b*c^3*d*e^4 + 88*b^2*c^2*e^5)*g)*x^3 - ((382*c^4*d^2*e^3 - 427*b*c^3*
d*e^4 + 118*b^2*c^2*e^5)*f + (1122*c^4*d^3*e^2 - 245*b*c^3*d^2*e^3 - 574*b^
2*c^2*d*e^4 + 208*b^3*c*e^5)*g)*x^2 - (122*c^4*d^4*e - 361*b*c^3*d^3*e^2 +
454*b^2*c^2*d^2*e^3 - 248*b^3*c*d*e^4 + 48*b^4*e^5)*f - (294*c^4*d^5 - 247*
b*c^3*d^4*e + 98*b^2*c^2*d^3*e^2 - 56*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((2
34*c^4*d^3*e^2 - 733*b*c^3*d^2*e^3 + 580*b^2*c^2*d*e^4 - 136*b^3*c*e^5)*f -
 (1098*c^4*d^4*e - 957*b*c^3*d^3*e^2 + 412*b^2*c^2*d^2*e^3 - 232*b^3*c*d*e^
4 + 64*b^4*e^5)*g)*x)*sqrt(e*x + d))/(4*c^2*d^7*e^2 - 4*b*c*d^6*e^3 + b^2*d
^5*e^4 + (4*c^2*d^2*e^7 - 4*b*c*d*e^8 + b^2*e^9)*x^5 + 5*(4*c^2*d^3*e^6 - 4
*b*c*d^2*e^7 + b^2*d*e^8)*x^4 + 10*(4*c^2*d^4*e^5 - 4*b*c*d^3*e^6 + b^2*d^2
*e^7)*x^3 + 10*(4*c^2*d^5*e^4 - 4*b*c*d^4*e^5 + b^2*d^3*e^6)*x^2 + 5*(4*c^2
*d^6*e^3 - 4*b*c*d^5*e^4 + b^2*d^4*e^5)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.11, size = 1517, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x)
```

```
[Out] -1/192*(-225*c^4*d^5*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*
(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*e^4*f*x^3-158*(-c*e*x-b*e+c*d)
^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*g*x^2+48*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2
*c*d)^(1/2)*b^3*e^4*f-104*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*
e^3*g*x+204*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d^2*e^2*g*x-308*
(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*f*x-147*(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^4*g-15*c^4*e^5*f*x^4*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))-15*c^4*d^4*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))+16*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g-61
*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^3*e*f+120*b*c^3*e^5*g*x^4*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-225*c^4*d*e^4*g*x^4*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-900*c^4*d^2*e^3*g*x^3*arctan((-c*
e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-60*c^4*d*e^4*f*x^3*arctan((-c*e*x-b*e
+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-1350*c^4*d^3*e^2*g*x^2*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))-90*c^4*d^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))-900*c^4*d^4*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e
-2*c*d)^(1/2))-60*c^4*d^3*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))+120*b*c^3*d^4*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+
64*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^3*e^4*g*x+480*b*c^3*d^3*e^2*g
*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-191*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*f*x^2+136*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d
)^(1/2)*b^2*c*e^4*f*x-549*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^3*
e*g*x+117*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^2*e^2*f*x-24*(-c*e
*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*g-152*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*f+50*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(
1/2)*b*c^2*d^3*e*g+150*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d^2*e
^2*f+264*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*e^4*g*x^3-543*(-c*e
*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*g*x^3+208*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*b^2*c*e^4*g*x^2+118*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d
)^(1/2)*b*c^2*e^4*f*x^2-561*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^
2*e^2*g*x^2+480*b*c^3*d*e^4*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))+720*b*c^3*d^2*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2)))*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x
-b*e+c*d)^(1/2)/(e*x+d)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{15}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^{15/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(15/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(15/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(15/
2),x)
```

```
[Out] Timed out
```

3.2031 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx$

Optimal. Leaf size=464

$$\frac{c^4(-10beg+17cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{128e^2(2cd-be)^{5/2}}+\frac{c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-10beg+17cdg+3ce}{128e^2(d+ex)^{3/2}(2cd-be)^2}$$

Rubi [A] time = 0.75, antiderivative size = 464, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 662, 672, 660, 208}

$$\frac{c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-10beg+17cdg+3cef)}{128e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-10beg+17cdg+3cef)}{64e^2(d+ex)^{5/2}(2cd-be)}+\frac{c^4(-10beg+17cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{128e^2(2cd-be)^{5/2}}+\frac{c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-10beg+17cdg+3cef)}{48e^2(d+ex)^{9/2}(2cd-be)}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{5e^2(d+ex)^{17/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-10beg+17cdg+3cef)}{40e^2(d+ex)^{13/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(17/2
),x]
```

```
[Out] -(c^2*(3*c*e*f + 17*c*d*g - 10*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*
x^2])/(64*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) + (c^3*(3*c*e*f + 17*c*d*g - 1
0*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(128*e^2*(2*c*d - b*e)^
2*(d + e*x)^(3/2)) + (c*(3*c*e*f + 17*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2))/(48*e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) - ((3*c*e*
f + 17*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(40*e
^2*(2*c*d - b*e)*(d + e*x)^(13/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(7/2))/(5*e^2*(2*c*d - b*e)*(d + e*x)^(17/2)) + (c^4*(3*c*e*f
+ 17*c*d*g - 10*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(S
qrt[2*c*d - b*e]*Sqrt[d + e*x])])/(128*e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{5e^2(2cd-be)(d+ex)^{17/2}} + \frac{(3cef+17cdg-10beg}{10e(2}$$

$$= -\frac{(3cef+17cdg-10beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{40e^2(2cd-be)(d+ex)^{13/2}} - \frac{(ef-dg}{5}$$

$$= \frac{c(3cef+17cdg-10beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{48e^2(2cd-be)(d+ex)^{9/2}} - \frac{(3cef+1}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(3cef+}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c^3(3cef}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c^3(3cef}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c^3(3cef}{}$$

Mathematica [C] time = 0.16, size = 129, normalized size = 0.28

$$\frac{((d+ex)(c(d-ex)-be))^{7/2}\left(-\frac{c^4(d+ex)^5(-10beg+17cdg+3cef)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^5}+7dg-7ef\right)}{35e^2(d+ex)^{17/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(17/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*e*f + 7*d*g - (c^4*(3*c*e*f +
 17*c*d*g - 10*b*e*g)*(d + e*x)^5*Hypergeometric2F1[7/2, 5, 9/2, (-(c*d) +
b*e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^5))/(35*e^2*(2*c*d - b*e)*(d +
e*x)^(17/2))
```

IntegrateAlgebraic [A] time = 3.56, size = 897, normalized size = 1.93

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/
(d + e*x)^(17/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((c^4*Sqrt[c*d - b*e - c*e*x]*(72
0*c^5*d^4*e*f - 1440*b*c^4*d^3*e^2*f + 1080*b^2*c^3*d^2*e^3*f - 360*b^3*c^2
*d*e^4*f + 45*b^4*c*e^5*f + 4080*c^5*d^5*g - 10560*b*c^4*d^4*e*g + 10920*b^
2*c^3*d^3*e^2*g - 5640*b^3*c^2*d^2*e^3*g + 1455*b^4*c*d*e^4*g - 150*b^5*e^5
*g - 1680*c^4*d^3*e*f*(c*d - b*e - c*e*x) + 2520*b*c^3*d^2*e^2*f*(c*d - b*e
 - c*e*x) - 1260*b^2*c^2*d*e^3*f*(c*d - b*e - c*e*x) + 210*b^3*c*e^4*f*(c*d
 - b*e - c*e*x) - 9520*c^4*d^4*g*(c*d - b*e - c*e*x) + 19880*b*c^3*d^3*e*g*
(c*d - b*e - c*e*x) - 15540*b^2*c^2*d^2*e^2*g*(c*d - b*e - c*e*x) + 5390*b^
3*c*d*e^3*g*(c*d - b*e - c*e*x) - 700*b^4*e^4*g*(c*d - b*e - c*e*x) + 1536*
c^3*d^2*e*f*(c*d - b*e - c*e*x)^2 - 1536*b*c^2*d*e^2*f*(c*d - b*e - c*e*x)^
2 + 384*b^2*c*e^3*f*(c*d - b*e - c*e*x)^2 + 8704*c^3*d^3*g*(c*d - b*e - c*e
*x)^2 - 13824*b*c^2*d^2*e*g*(c*d - b*e - c*e*x)^2 + 7296*b^2*c*d*e^2*g*(c*d
 - b*e - c*e*x)^2 - 1280*b^3*e^3*g*(c*d - b*e - c*e*x)^2 + 420*c^2*d*e*f*(c
*d - b*e - c*e*x)^3 - 210*b*c*e^2*f*(c*d - b*e - c*e*x)^3 - 2740*c^2*d^2*g*
(c*d - b*e - c*e*x)^3 + 2530*b*c*d*e*g*(c*d - b*e - c*e*x)^3 - 580*b^2*e^2*
g*(c*d - b*e - c*e*x)^3 - 45*c*e*f*(c*d - b*e - c*e*x)^4 - 255*c*d*g*(c*d -
 b*e - c*e*x)^4 + 150*b*e*g*(c*d - b*e - c*e*x)^4))/(1920*e^2*(-2*c*d + b*e
)^2*(-(c*d) - c*e*x)^5) + ((3*c^5*e*f + 17*c^5*d*g - 10*b*c^4*e*g)*ArcTan[(
Sqrt[-2*c*d + b*e]*Sqrt[c*d - b*e - c*e*x])/(2*c*d - b*e)])/(128*e^2*(2*c*d
 - b*e)^2*Sqrt[-2*c*d + b*e])))/((d + e*x)^(5/2)*(-(b*e) + c*(d - e*x))^(5/
2))
```

fricas [B] time = 0.53, size = 2650, normalized size = 5.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x,
algorithm="fricas")
```

```
[Out] [-1/3840*(15*(3*c^5*d^6*e*f + (3*c^5*e^7*f + (17*c^5*d*e^6 - 10*b*c^4*e^7)*
g)*x^6 + 6*(3*c^5*d*e^6*f + (17*c^5*d^2*e^5 - 10*b*c^4*d*e^6)*g)*x^5 + 15*(
3*c^5*d^2*e^5*f + (17*c^5*d^3*e^4 - 10*b*c^4*d^2*e^5)*g)*x^4 + 20*(3*c^5*d^
3*e^4*f + (17*c^5*d^4*e^3 - 10*b*c^4*d^3*e^4)*g)*x^3 + 15*(3*c^5*d^4*e^3*f
+ (17*c^5*d^5*e^2 - 10*b*c^4*d^4*e^3)*g)*x^2 + (17*c^5*d^7 - 10*b*c^4*d^6*e
)*g + 6*(3*c^5*d^5*e^2*f + (17*c^5*d^6*e - 10*b*c^4*d^5*e^2)*g)*x)*sqrt(2*c
*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e
^2*x^2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(15
*(3*(2*c^5*d*e^5 - b*c^4*e^6)*f + (34*c^5*d^2*e^4 - 37*b*c^4*d*e^5 + 10*b^2
*c^3*e^6)*g)*x^4 + 10*(3*(16*c^5*d^2*e^4 - 10*b*c^4*d*e^5 + b^2*c^3*e^6)*f
- (752*c^5*d^3*e^3 - 1206*b*c^4*d^2*e^4 + 651*b^2*c^3*d*e^5 - 118*b^3*c^2*e
^6)*g)*x^3 - 2*(3*(842*c^5*d^3*e^3 - 1383*b*c^4*d^2*e^4 + 729*b^2*c^3*d*e^5
 - 124*b^3*c^2*e^6)*f - (1046*c^5*d^4*e^2 - 6469*b*c^4*d^3*e^3 + 8337*b^2*c
^3*d^2*e^4 - 4042*b^3*c^2*d*e^5 + 680*b^4*c*e^6)*g)*x^2 - 3*(634*c^5*d^5*e
- 2409*b*c^4*d^4*e^2 + 3654*b^2*c^3*d^3*e^3 - 2680*b^3*c^2*d^2*e^4 + 944*b^
4*c*d*e^5 - 128*b^5*e^6)*f - (538*c^5*d^6 - 1213*b*c^4*d^5*e + 1728*b^2*c^3
*d^4*e^2 - 1460*b^3*c^2*d^3*e^3 + 608*b^4*c*d^2*e^4 - 96*b^5*d*e^5)*g + 2*(
3*(824*c^5*d^4*e^2 - 2490*b*c^4*d^3*e^3 + 2559*b^2*c^3*d^2*e^4 - 1096*b^3*c
^2*d*e^5 + 168*b^4*c*e^6)*f - (1352*c^5*d^5*e - 3190*b*c^4*d^4*e^2 + 4557*b
^2*c^3*d^3*e^3 - 3778*b^3*c^2*d^2*e^4 + 1544*b^4*c*d*e^5 - 240*b^5*e^6)*g)*
x)*sqrt(e*x + d))/(8*c^3*d^9*e^2 - 12*b*c^2*d^8*e^3 + 6*b^2*c*d^7*e^4 - b^3
*d^6*e^5 + (8*c^3*d^3*e^8 - 12*b*c^2*d^2*e^9 + 6*b^2*c*d*e^10 - b^3*e^11)*x
^6 + 6*(8*c^3*d^4*e^7 - 12*b*c^2*d^3*e^8 + 6*b^2*c*d^2*e^9 - b^3*d*e^10)*x^
5 + 15*(8*c^3*d^5*e^6 - 12*b*c^2*d^4*e^7 + 6*b^2*c*d^3*e^8 - b^3*d^2*e^9)*x
^4 + 20*(8*c^3*d^6*e^5 - 12*b*c^2*d^5*e^6 + 6*b^2*c*d^4*e^7 - b^3*d^3*e^8)*
x^3 + 15*(8*c^3*d^7*e^4 - 12*b*c^2*d^6*e^5 + 6*b^2*c*d^5*e^6 - b^3*d^4*e^7)
*x^2 + 6*(8*c^3*d^8*e^3 - 12*b*c^2*d^7*e^4 + 6*b^2*c*d^6*e^5 - b^3*d^5*e^6)
```

```
*x), 1/1920*(15*(3*c^5*d^6*e*f + (3*c^5*e^7*f + (17*c^5*d*e^6 - 10*b*c^4*e^
7)*g)*x^6 + 6*(3*c^5*d*e^6*f + (17*c^5*d^2*e^5 - 10*b*c^4*d*e^6)*g)*x^5 + 1
5*(3*c^5*d^2*e^5*f + (17*c^5*d^3*e^4 - 10*b*c^4*d^2*e^5)*g)*x^4 + 20*(3*c^5
*d^3*e^4*f + (17*c^5*d^4*e^3 - 10*b*c^4*d^3*e^4)*g)*x^3 + 15*(3*c^5*d^4*e^3
*f + (17*c^5*d^5*e^2 - 10*b*c^4*d^4*e^3)*g)*x^2 + (17*c^5*d^7 - 10*b*c^4*d^
6*e)*g + 6*(3*c^5*d^5*e^2*f + (17*c^5*d^6*e - 10*b*c^4*d^5*e^2)*g)*x)*sqrt(
-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d
 + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*(15*(3*(2*c^5*d*e^5 - b*c^4*e^6)*f + (34*c^5
*d^2*e^4 - 37*b*c^4*d*e^5 + 10*b^2*c^3*e^6)*g)*x^4 + 10*(3*(16*c^5*d^2*e^4
- 10*b*c^4*d*e^5 + b^2*c^3*e^6)*f - (752*c^5*d^3*e^3 - 1206*b*c^4*d^2*e^4 +
 651*b^2*c^3*d*e^5 - 118*b^3*c^2*e^6)*g)*x^3 - 2*(3*(842*c^5*d^3*e^3 - 1383
*b*c^4*d^2*e^4 + 729*b^2*c^3*d*e^5 - 124*b^3*c^2*e^6)*f - (1046*c^5*d^4*e^2
 - 6469*b*c^4*d^3*e^3 + 8337*b^2*c^3*d^2*e^4 - 4042*b^3*c^2*d*e^5 + 680*b^4
*c*e^6)*g)*x^2 - 3*(634*c^5*d^5*e - 2409*b*c^4*d^4*e^2 + 3654*b^2*c^3*d^3*e
^3 - 2680*b^3*c^2*d^2*e^4 + 944*b^4*c*d*e^5 - 128*b^5*e^6)*f - (538*c^5*d^6
 - 1213*b*c^4*d^5*e + 1728*b^2*c^3*d^4*e^2 - 1460*b^3*c^2*d^3*e^3 + 608*b^4
*c*d^2*e^4 - 96*b^5*d*e^5)*g + 2*(3*(824*c^5*d^4*e^2 - 2490*b*c^4*d^3*e^3 +
 2559*b^2*c^3*d^2*e^4 - 1096*b^3*c^2*d*e^5 + 168*b^4*c*e^6)*f - (1352*c^5*d
^5*e - 3190*b*c^4*d^4*e^2 + 4557*b^2*c^3*d^3*e^3 - 3778*b^3*c^2*d^2*e^4 + 1
544*b^4*c*d*e^5 - 240*b^5*e^6)*g)*x)*sqrt(e*x + d))/(8*c^3*d^9*e^2 - 12*b*c
^2*d^8*e^3 + 6*b^2*c*d^7*e^4 - b^3*d^6*e^5 + (8*c^3*d^3*e^8 - 12*b*c^2*d^2*
e^9 + 6*b^2*c*d*e^10 - b^3*e^11)*x^6 + 6*(8*c^3*d^4*e^7 - 12*b*c^2*d^3*e^8
+ 6*b^2*c*d^2*e^9 - b^3*d*e^10)*x^5 + 15*(8*c^3*d^5*e^6 - 12*b*c^2*d^4*e^7
+ 6*b^2*c*d^3*e^8 - b^3*d^2*e^9)*x^4 + 20*(8*c^3*d^6*e^5 - 12*b*c^2*d^5*e^6
 + 6*b^2*c*d^4*e^7 - b^3*d^3*e^8)*x^3 + 15*(8*c^3*d^7*e^4 - 12*b*c^2*d^6*e^
5 + 6*b^2*c*d^5*e^6 - b^3*d^4*e^7)*x^2 + 6*(8*c^3*d^8*e^3 - 12*b*c^2*d^7*e^
4 + 6*b^2*c*d^6*e^5 - b^3*d^5*e^6)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.09, size = 2087, normalized size = 4.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x)
```

```
[Out] 1/1920*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-5946*x^2*b*c^3*d^2*e^3*g*(b
*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+2886*x^2*b*c^3*d*e^4*f*(b*e-2*c*d)^(
1/2)*(-c*e*x-b*e+c*d)^(1/2)-384*b^4*e^5*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d
)^(1/2)+2128*x*b^3*c*d*e^4*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-255*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^5*d^6*g-3300*x*b^2*c^2*d^
2*e^3*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+4560*x*b^2*c^2*d*e^4*f*(b*
e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+2514*x*b*c^3*d^3*e^2*g*(b*e-2*c*d)^(1
/2)*(-c*e*x-b*e+c*d)^(1/2)-6234*x*b*c^3*d^2*e^3*f*(b*e-2*c*d)^(1/2)*(-c*e*x
-b*e+c*d)^(1/2)+4150*x^3*b*c^3*d*e^4*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(
1/2)+5364*x^2*b^2*c^2*d*e^4*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-269*
c^4*d^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-45*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))*x^5*c^5*e^6*f-45*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))*c^5*d^5*e*f+240*x^3*c^4*d*e^4*f*(b*e-2*c*d)^(1/2)*(-c*e*
x-b*e+c*d)^(1/2)-1360*x^2*b^3*c*e^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1
```

```
/2)-744*x^2*b^2*c^2*e^5*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+1046*x^2
*c^4*d^3*e^2*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-2526*x^2*c^4*d^2*e^
3*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-1008*x*b^3*c*e^5*f*(b*e-2*c*d)
^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-1352*x*c^4*d^4*e*g*(b*e-2*c*d)^(1/2)*(-c*e*x-
b*e+c*d)^(1/2)+2472*x*c^4*d^3*e^2*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2
)+416*b^3*c*d^2*e^3*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+2064*b^3*c*d
*e^4*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-628*b^2*c^2*d^3*e^2*g*(b*e-
2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-3912*b^2*c^2*d^2*e^3*f*(b*e-2*c*d)^(1/2
)*(-c*e*x-b*e+c*d)^(1/2)+472*b*c^3*d^4*e*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*
d)^(1/2)+3138*b*c^3*d^3*e^2*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+750*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*b*c^4*d*e^5*g+1500*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^4*d^2*e^4*g+1500*arct
an((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^4*d^3*e^3*g+750*arctan
((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^4*d^4*e^2*g-150*x^4*b*c^3*
e^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+255*x^4*c^4*d*e^4*g*(b*e-2*c
*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-1180*x^3*b^2*c^2*e^5*g*(b*e-2*c*d)^(1/2)*(
-c*e*x-b*e+c*d)^(1/2)-30*x^3*b*c^3*e^5*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)
^(1/2)-3760*x^3*c^4*d^2*e^3*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-255*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^5*c^5*d*e^5*g-1275*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^5*d^2*e^4*g-225*arctan((-
c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^5*d*e^5*f-225*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^5*d^4*e^2*f+150*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^4*d^5*e*g+45*x^4*c^4*e^5*f*(b*e-2*c*d)^(1/2
)*(-c*e*x-b*e+c*d)^(1/2)-480*x*b^4*e^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)
^(1/2)-2550*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^5*d^3*e^
3*g-450*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^5*d^2*e^4*f-
2550*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^5*d^4*e^2*g-450
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^5*d^3*e^3*f-1275*ar
ctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^5*d^5*e*g-96*b^4*d*e^4*g
*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-951*c^4*d^4*e*f*(b*e-2*c*d)^(1/2)
*(-c*e*x-b*e+c*d)^(1/2)+150*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*x^5*b*c^4*e^6*g)/(e*x+d)^(11/2)/(b*e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+c*d)^(1
/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}(gx + f)}{(ex + d)^{\frac{17}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(17/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f + g\,x)\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{5/2}}{(d + e\,x)^{17/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(17/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(17/2
), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(17/
2),x)
```

```
[Out] Timed out
```

3.2032 $\int \frac{(d+ex)^{5/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=270

$$-\frac{16(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+5cdg+7cef)}{105c^4e^2\sqrt{d+ex}}-\frac{8\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{105c^3e^2}$$

Rubi [A] time = 0.46, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{2(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+5cdg+7cef)}{35c^2e^2}-\frac{8\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+5cdg+7cef)}{105c^3e^2}-\frac{16(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+5cdg+7cef)}{105c^4e^2\sqrt{d+ex}}-\frac{2g(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(5/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] (-16*(2*c*d - b*e)^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2])/(105*c^4*e^2*Sqrt[d + e*x]) - (8*(2*c*d - b*e)*(7*c*e*f
+ 5*c*d*g - 6*b*e*g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
])/(105*c^3*e^2) - (2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*(d + e*x)^(3/2)*Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c^2*e^2) - (2*g*(d + e*x)^(5/2)*Sqr
t[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(7*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^{5/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2g(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7ce^2} - \frac{\left(2\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+\frac{5}{2}\left(-ce\right.\right.\right.}{}$$

$$= -\frac{2(7cef+5cdg-6beg)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{35c^2e^2} - \frac{2g(d+ex)^{5/2}}{}$$

$$= -\frac{8(2cd-be)(7cef+5cdg-6beg)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{105c^3e^2} - \frac{2(7c}{}$$

$$= -\frac{16(2cd-be)^2(7cef+5cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{105c^4e^2\sqrt{d+ex}} - \frac{8(2cd-be)}{}$$

Mathematica [A] time = 0.15, size = 181, normalized size = 0.67

$$\frac{2\sqrt{d+ex}\,(be-cd+cex)\left(-48b^3e^3g+8b^2ce^2(32dg+7ef+3egx)-2bc^2e\left(219d^2g+2de(63f+26gx)+e^2x(14f+9gx)\right)+c^3\left(230d^3g+d^2e(301f+115gx)+2de^2x(49f+30gx)+3e^3x^2(7f+5gx)\right)\right)}{105c^4e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(5/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x)*(-48*b^3*e^3*g + 8*b^2*c*e^2*(7*e*f
 + 32*d*g + 3*e*g*x) - 2*b*c^2*e*(219*d^2*g + e^2*x*(14*f + 9*g*x) + 2*d*e*
(63*f + 26*g*x)) + c^3*(230*d^3*g + 3*e^3*x^2*(7*f + 5*g*x) + 2*d*e^2*x*(49
*f + 30*g*x) + d^2*e*(301*f + 115*g*x))))/(105*c^4*e^2*Sqrt[(d + e*x)*(-(b*
e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 0.31, size = 248, normalized size = 0.92

$$-\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(-48b^3e^3g+24b^2ce^2g(d+ex)+232b^2cde^2g+56b^2ce^3f-352bc^2d^2eg-28bc^2e^2f(d+ex)-224bc^2de^2f-18bc^2eg(d+ex)^2-68bc^2deg(d+ex)+160c^3d^3g+224c^3d^2ef+40c^3d^2g(d+ex)+21c^3ef(d+ex)^2+56c^3def(d+ex)+15c^3g(d+ex)^3+15c^3dg(d+ex)^2\right)}{105c^4e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(5/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x
 - c*e^2*x^2],x]
```

```
[Out] (-2*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(224*c^3*d^2*e*f - 224*b*
c^2*d*e^2*f + 56*b^2*c*e^3*f + 160*c^3*d^3*g - 352*b*c^2*d^2*e*g + 232*b^2*
c*d*e^2*g - 48*b^3*e^3*g + 56*c^3*d*e*f*(d + e*x) - 28*b*c^2*e^2*f*(d + e*x
) + 40*c^3*d^2*g*(d + e*x) - 68*b*c^2*d*e*g*(d + e*x) + 24*b^2*c*e^2*g*(d +
 e*x) + 21*c^3*e*f*(d + e*x)^2 + 15*c^3*d*g*(d + e*x)^2 - 18*b*c^2*e*g*(d +
 e*x)^2 + 15*c^3*g*(d + e*x)^3))/(105*c^4*e^2*Sqrt[d + e*x])
```

fricas [A] time = 0.40, size = 235, normalized size = 0.87

$$-\frac{2\left(15c^3e^3gx^3+3\left(7c^3e^3f+2\left(10c^3de^2-3bc^2e^3\right)g\right)x^2+7\left(43c^3d^2e-36bc^2de^2+8b^2ce^3\right)f+2\left(115c^3d^3-219bc^2d^2e+128b^2cde^2-24b^3e^3\right)g+\left(14\left(7c^3de^2-2bc^2e^3\right)f+\left(115c^3d^2e-104bc^2de^2+24b^2ce^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{105\left(c^4e^3x+c^4de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/105*(15*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f + 2*(10*c^3*d*e^2 - 3*b*c^2*e^3)*
g)*x^2 + 7*(43*c^3*d^2*e - 36*b*c^2*d*e^2 + 8*b^2*c*e^3)*f + 2*(115*c^3*d^3
 - 219*b*c^2*d^2*e + 128*b^2*c*d*e^2 - 24*b^3*e^3)*g + (14*(7*c^3*d*e^2 - 2
*b*c^2*e^3)*f + (115*c^3*d^2*e - 104*b*c^2*d*e^2 + 24*b^2*c*e^3)*g)*x)*sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^4*e^3*x + c^4*d*e^2
)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 235, normalized size = 0.87

$$-\frac{2 (cex+be-cd) \left(-15g e^3x^3c^3+18b c^2e^3g x^2-60c^3d e^2g x^2-21c^3e^3f x^2-24b^2c e^3gx+104b c^2d e^2gx+28b c^2e^3f x-115c^3d^2egx-98c^3d e^2f x+48b^3e^3g-256b^2cd e^2g-56b^2c e^3f+438b c^2d^2eg+252b c^2d e^2f-230c^3d^3g-301f d^2c^3e\right) \sqrt{ex+d}}{105\sqrt{-c e^2x^2-b e^2x-bde+c d^2}\, c^4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(-15*c^3*e^3*g*x^3+18*b*c^2*e^3*g*x^2-60*c^3*d*e^2*g
*x^2-21*c^3*e^3*f*x^2-24*b^2*c*e^3*g*x+104*b*c^2*d*e^2*g*x+28*b*c^2*e^3*f*x
-115*c^3*d^2*e*g*x-98*c^3*d*e^2*f*x+48*b^3*e^3*g-256*b^2*c*d*e^2*g-56*b^2*c
*e^3*f+438*b*c^2*d^2*e*g+252*b*c^2*d*e^2*f-230*c^3*d^3*g-301*c^3*d^2*e*f)*(
e*x+d)^(1/2)/c^4/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [A] time = 0.72, size = 319, normalized size = 1.18

$$\frac{2 \left(3 c^3e^3x^3-43 c^3d^3+79 bc^2d^2e-44 b^2cde^2+8 b^3e^3+\left(11 c^3de^2-bc^2e^3\right)x^2+\left(29 c^3d^2e-18 bc^2de^2+4 b^2ce^3\right)x\right)f}{15 \sqrt{-cex+cd-be}\, c^3e}+\frac{2 \left(15 c^4e^4x^4-230 c^4d^4+668 bc^3d^3e-694 b^2c^2d^2e^2+304 b^3cde^3-48 b^4e^4+3 \left(15 c^4de^3-bc^3e^4\right)x^3+\left(55 c^4d^2e^2-26 bc^3de^3+6 b^2c^2e^4\right)x^2+\left(115 c^4d^3e-219 bc^3d^2e^2+128 b^2c^2de^3-24 b^3ce^4\right)x\right)g}{105 \sqrt{-cex+cd-be}\, c^4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/15*(3*c^3*e^3*x^3 - 43*c^3*d^3 + 79*b*c^2*d^2*e - 44*b^2*c*d*e^2 + 8*b^3*
e^3 + (11*c^3*d*e^2 - b*c^2*e^3)*x^2 + (29*c^3*d^2*e - 18*b*c^2*d*e^2 + 4*b
^2*c*e^3)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^3*e) + 2/105*(15*c^4*e^4*x^4 - 2
30*c^4*d^4 + 668*b*c^3*d^3*e - 694*b^2*c^2*d^2*e^2 + 304*b^3*c*d*e^3 - 48*b
^4*e^4 + 3*(15*c^4*d*e^3 - b*c^3*e^4)*x^3 + (55*c^4*d^2*e^2 - 26*b*c^3*d*e^
3 + 6*b^2*c^2*e^4)*x^2 + (115*c^4*d^3*e - 219*b*c^3*d^2*e^2 + 128*b^2*c^2*d
*e^3 - 24*b^3*c*e^4)*x)*g/(sqrt(-c*e*x + c*d - b*e)*c^4*e^2)
```

mupad [B] time = 2.77, size = 246, normalized size = 0.91

$$-\frac{\left(\frac{2\,g\,x^3\,\sqrt{d+e\,x}}{7\,c}+\frac{\sqrt{d+e\,x}\,\left(-96\,g\,b^3\,e^3+512\,g\,b^2\,c\,d\,e^2+112\,f\,b^2\,c\,e^3-876\,g\,b\,c^2\,d^2\,e-504\,f\,b\,c^2\,d\,e^2+460\,g\,c^3\,d^3+602\,f\,c^3\,d^2\,e\right)}{105\,c^4\,e^3}+\frac{2\,x^2\,\sqrt{d+e\,x}\,\left(20\,c\,d\,g-6\,b\,e\,g+7\,c\,e\,f\right)}{35\,c^2\,e}+\frac{x\,\sqrt{d+e\,x}\,\left(48\,g\,b^2\,c\,e^3-208\,g\,b\,c^2\,d\,e^2-56\,f\,b\,c^2\,e^3+230\,g\,c^3\,d^2\,e+196\,f\,c^3\,d\,e^2\right)}{105\,c^4\,e^3}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(5/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
,x)
```

```
[Out] -(((2*g*x^3*(d + e*x)^(1/2))/(7*c) + ((d + e*x)^(1/2)*(460*c^3*d^3*g - 96*b
^3*e^3*g + 112*b^2*c*e^3*f + 602*c^3*d^2*e*f - 504*b*c^2*d*e^2*f - 876*b*c^
2*d^2*e*g + 512*b^2*c*d*e^2*g))/(105*c^4*e^3) + (2*x^2*(d + e*x)^(1/2)*(20*
c*d*g - 6*b*e*g + 7*c*e*f))/(35*c^2*e) + (x*(d + e*x)^(1/2)*(48*b^2*c*e^3*g
 - 56*b*c^2*e^3*f + 196*c^3*d*e^2*f + 230*c^3*d^2*e*g - 208*b*c^2*d*e^2*g))
/(105*c^4*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d+ex\right)^{\frac{5}{2}}\left(f+gx\right)}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((d + e*x)**(5/2)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x
)
```

3.2033 $\int \frac{(d+ex)^{3/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=193

$$-\frac{4(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3cdg+5cef)}{15c^3e^2\sqrt{d+ex}}-\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+\cdots}{15c^2e^2}$$

Rubi [A] time = 0.32, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3cdg+5cef)}{15c^2e^2}-\frac{4(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3cdg+5cef)}{15c^3e^2\sqrt{d+ex}}-\frac{2g(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] (-4*(2*c*d - b*e)*(5*c*e*f + 3*c*d*g - 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2])/(15*c^3*e^2*Sqrt[d + e*x]) - (2*(5*c*e*f + 3*c*d*g - 4*b*e*
g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(15*c^2*e^2) -
(2*g*(d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(5*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx=-\frac{2g(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5ce^2}-\frac{\left(2\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+\frac{3}{2}\left(\cdots\right.\right.\right.}{\cdots}$$

$$=-\frac{2(5cef+3cdg-4beg)\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}{15c^2e^2}-\frac{2g(d+ex)^{3\cdots}}{\cdots}$$

$$=-\frac{4(2cd-be)(5cef+3cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{15c^3e^2\sqrt{d+ex}}-\frac{2(5cef+\cdots}{\cdots}$$

Mathematica [A] time = 0.09, size = 118, normalized size = 0.61

$$\frac{2\sqrt{d+ex}(be-cd+cex)\left(8b^2e^2g-2bce(13dg+5ef+2egx)+c^2\left(18d^2g+de(25f+9gx)+e^2x(5f+3gx)\right)\right)}{15c^3e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x)*(8*b^2*e^2*g - 2*b*c*e*(5*e*f + 13*
d*g + 2*e*g*x) + c^2*(18*d^2*g + e^2*x*(5*f + 3*g*x) + d*e*(25*f + 9*g*x)))
)/(15*c^3*e^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 0.23, size = 139, normalized size = 0.72

$$-\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(8b^2e^2g-4bceg(d+ex)-22bcdeg-10bce^2f+12c^2d^2g+5c^2ef(d+ex)+20c^2def+3c^2g(d+ex)^2+3c^2dg(d+ex)\right)}{15c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(3/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x
 - c*e^2*x^2],x]
```

```
[Out] (-2*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(20*c^2*d*e*f - 10*b*c*e^
2*f + 12*c^2*d^2*g - 22*b*c*d*e*g + 8*b^2*e^2*g + 5*c^2*e*f*(d + e*x) + 3*c
^2*d*g*(d + e*x) - 4*b*c*e*g*(d + e*x) + 3*c^2*g*(d + e*x)^2))/(15*c^3*e^2*
Sqrt[d + e*x])
```

fricas [A] time = 0.40, size = 143, normalized size = 0.74

$$-\frac{2\left(3c^2e^2gx^2+5\left(5c^2de-2bce^2\right)f+2\left(9c^2d^2-13bcde+4b^2e^2\right)g+\left(5c^2e^2f+\left(9c^2de-4bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{15\left(c^3e^3x+c^3de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/15*(3*c^2*e^2*g*x^2 + 5*(5*c^2*d*e - 2*b*c*e^2)*f + 2*(9*c^2*d^2 - 13*b*
c*d*e + 4*b^2*e^2)*g + (5*c^2*e^2*f + (9*c^2*d*e - 4*b*c*e^2)*g)*x)*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^3*e^3*x + c^3*d*e^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 139, normalized size = 0.72

$$\frac{2(cex+be-cd)\left(3gx^2c^2e^2-4bce^2gx+9c^2degx+5c^2e^2fx+8b^2e^2g-26bcdeg-10bce^2f+18c^2d^2g+25c^2def\right)\sqrt{ex+d}}{15\sqrt{-ce^2x^2-be^2x-bde+cd^2}\,c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 2/15*(c*e*x+b*e-c*d)*(3*c^2*e^2*g*x^2-4*b*c*e^2*g*x+9*c^2*d*e*g*x+5*c^2*e^2
*f*x+8*b^2*e^2*g-26*b*c*d*e*g-10*b*c*e^2*f+18*c^2*d^2*g+25*c^2*d*e*f)*(e*x+
d)^(1/2)/c^3/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [A] time = 0.87, size = 201, normalized size = 1.04

$$\frac{2\left(c^2e^2x^2-5\,c^2d^2+7\,bcde-2\,b^2e^2+\left(4\,c^2de-bce^2\right)x\right)f}{3\,\sqrt{-cex+cd-be}\,c^2e}+\frac{2\left(3\,c^3e^3x^3-18\,c^3d^3+44\,bc^2d^2e-34\,b^2cde^2+8\,b^3e^3+\left(6\,c^3de^2-bc^2e^3\right)x^2+\left(9\,c^3d^2e-13\,bc^2de^2+4\,b^2ce^3\right)x\right)g}{15\,\sqrt{-cex+cd-be}\,c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3*(c^2*e^2*x^2 - 5*c^2*d^2 + 7*b*c*d*e - 2*b^2*e^2 + (4*c^2*d*e - b*c*e^2
)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^2*e) + 2/15*(3*c^3*e^3*x^3 - 18*c^3*d^3
+ 44*b*c^2*d^2*e - 34*b^2*c*d*e^2 + 8*b^3*e^3 + (6*c^3*d*e^2 - b*c^2*e^3)*x
^2 + (9*c^3*d^2*e - 13*b*c^2*d*e^2 + 4*b^2*c*e^3)*x)*g/(sqrt(-c*e*x + c*d -
 b*e)*c^3*e^2)
```

mupad [B] time = 2.55, size = 149, normalized size = 0.77

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(16\,g\,b^2\,e^2-52\,g\,b\,c\,d\,e-20\,f\,b\,c\,e^2+36\,g\,c^2\,d^2+50\,f\,c^2\,d\,e\right)}{15\,c^3\,e^3}+\frac{2\,g\,x^2\,\sqrt{d+e\,x}}{5\,c\,e}+\frac{2\,x\,\sqrt{d+e\,x}\,\left(9\,c\,d\,g-4\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^2\,e^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(16*b^2*e^2*g + 36*c^2*d^2*g - 20*b*c*e^2*f + 50*c^2*d*
e*f - 52*b*c*d*e*g))/(15*c^3*e^3) + (2*g*x^2*(d + e*x)^(1/2))/(5*c*e) + (2*
x*(d + e*x)^(1/2)*(9*c*d*g - 4*b*e*g + 5*c*e*f))/(15*c^2*e^2))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^{\frac{3}{2}}\left(f+gx\right)}{\sqrt{-(d+ex)\,(be-cd+cex)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((d + e*x)**(3/2)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x
)
```

3.2034 $\int \frac{\sqrt{d+ex}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=117

$$-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}(-2beg+cdg+3cef)}{3c^2e^2\sqrt{d+ex}}-\frac{2g\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}$$

Rubi [A] time = 0.18, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}(-2beg+cdg+3cef)}{3c^2e^2\sqrt{d+ex}}-\frac{2g\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-2*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(3*c^2*e^2*Sqrt[d + e*x]) - (2*g*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])/(3*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{\sqrt{d+ex}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx=-\frac{2g\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}-\frac{\left(2\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\left(-ce^3f\right.\right.\right.}{}$$

$$=-\frac{2(3cef+cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3c^2e^2\sqrt{d+ex}}-\frac{2g\sqrt{d+ex}\sqrt{d(cd-be)}}{3ce^2}$$

Mathematica [A] time = 0.07, size = 63, normalized size = 0.54

$$-\frac{2\sqrt{(d+ex)(c(d-ex)-be)}(c(2dg+3ef+egx)-2beg)}{3c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2],x]
```

[Out] (-2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e*g + c*(3*e*f + 2*d*g + e*g*x)))/(3*c^2*e^2*Sqrt[d + e*x])

IntegrateAlgebraic [A] time = 0.17, size = 72, normalized size = 0.62

$$-\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\,(-2beg+cg(d+ex)+cdg+3cef)}{3c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(Sqrt[d + e*x]*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]

[Out] (-2*(3*c*e*f + c*d*g - 2*b*e*g + c*g*(d + e*x))*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(3*c^2*e^2*Sqrt[d + e*x])

fricas [A] time = 0.39, size = 79, normalized size = 0.68

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx+3\,cef+2\,(cd-be)g\right)\sqrt{ex+d}}{3\left(c^2e^3x+c^2de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorithm="fricas")

[Out] -2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x + 3*c*e*f + 2*(c*d - b*e)*g)*sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.05, size = 79, normalized size = 0.68

$$-\frac{2\,(cex+be-cd)\left(-cegx+2beg-2cdg-3cef\right)\sqrt{ex+d}}{3\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)

[Out] -2/3*(c*e*x+b*e-c*d)*(-c*e*g*x+2*b*e*g-2*c*d*g-3*c*e*f)*(e*x+d)^(1/2)/c^2/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)

maxima [A] time = 0.74, size = 110, normalized size = 0.94

$$\frac{2\,(cex-cd+be)f}{\sqrt{-cex+cd-be}\,ce}+\frac{2\left(c^2e^2x^2-2\,c^2d^2+4\,bcde-2\,b^2e^2+\left(c^2de-bce^2\right)x\right)g}{3\sqrt{-cex+cd-be}\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorithm="maxima")

```
[Out] 2*(c*e*x - c*d + b*e)*f/(sqrt(-c*e*x + c*d - b*e)*c*e) + 2/3*(c^2*e^2*x^2 -
 2*c^2*d^2 + 4*b*c*d*e - 2*b^2*e^2 + (c^2*d*e - b*c*e^2)*x)*g/(sqrt(-c*e*x
+ c*d - b*e)*c^2*e^2)
```

mupad [B] time = 2.52, size = 89, normalized size = 0.76

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(4\,c\,d\,g-4\,b\,e\,g+6\,c\,e\,f\right)}{3\,c^2\,e^3}+\frac{2\,g\,x\,\sqrt{d+e\,x}}{3\,c\,e^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(4*c*d*g - 4*b*e*g + 6*c*e*f))/(3*c^2*e^3) + (2*g*x*(d
+ e*x)^(1/2))/(3*c*e^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x +
d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d + ex} \left(f + gx\right)}{\sqrt{- \left(d + ex\right) \left(be - cd + cex\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(d + e*x)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.2035 $\int \frac{f+gx}{\sqrt{d+ex}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=131

$$-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2\sqrt{2cd-be}}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}$$

Rubi [A] time = 0.20, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 660, 208}

$$-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2\sqrt{2cd-be}}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(Sqrt[d + e*x]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(c*e^2*Sqrt[d + e*x]) - (2
*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d
- b*e]*Sqrt[d + e*x])])/(e^2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{d+ex}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx=-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}-\frac{\left(2\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\left(ce^{\cdots}\right.\right.\right.}{\cdots}$$

$$=-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}+(2(ef-dg))\,\text{Subst}\left(\int\frac{\cdots}{-2cde^2\cdots}\right.$$

$$=-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2\cdots}}{\sqrt{2cd-be}\sqrt{\cdots}}\right.}{e^2\sqrt{2cd-be}}$$

Mathematica [A] time = 0.14, size = 148, normalized size = 1.13

$$\frac{2\sqrt{d+ex}\left(g(2cd-be)(c(d-ex)-be)-c\sqrt{2cd-be}\,(dg-ef)\sqrt{c(d-ex)-be}\,\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{ce^2(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(Sqrt[d + e*x]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
]),x]
```

```
[Out] (2*Sqrt[d + e*x]*((2*c*d - b*e)*g*(-(b*e) + c*(d - e*x)) - c*Sqrt[2*c*d - b
*e]*(-(e*f) + d*g)*Sqrt[-(b*e) + c*(d - e*x)]*ArcTanh[Sqrt[c*d - b*e - c*e*
x]/Sqrt[2*c*d - b*e]]))/(c*e^2*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d
 - e*x))])
```

IntegrateAlgebraic [A] time = 0.45, size = 144, normalized size = 1.10

$$-\frac{2(dg-ef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2\sqrt{be-2cd}}-\frac{2g\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/(Sqrt[d + e*x]*Sqrt[c*d^2 - b*d*e - b*e^2*x -
c*e^2*x^2]),x]
```

```
[Out] (-2*g*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(c*e^2*Sqrt[d + e*x])
- (2*(-(e*f) + d*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x)
 - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(e^2*Sqrt
[-2*c*d + b*e])
```

fricas [A] time = 0.43, size = 442, normalized size = 3.37

$$\left[-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2cd-be)\sqrt{ex+d}\,g+\left(cdef-cd^2g+\left(ce^2f-cdeg\right)x\right)\sqrt{2cd-be}\,\log\left(-\frac{ce^2x^2-3cd^2+2bde-2\left(cde-be^2\right)x-2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{2cd-be}\,\sqrt{ex+d}}{e^2x^2+2dex+d^2}\right)}{2c^2d^2e^2-bcde^3+\left(2c^2de^3-bce^4\right)x},\ -\frac{2\left(\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2cd-be)\sqrt{ex+d}\,g+\left(cdef-cd^2g+\left(ce^2f-cdeg\right)x\right)\sqrt{-2cd+be}\,\arctan\left(\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{-2cd+be}\,\sqrt{ex+d}}{ce^2x^2+be^2x-cd^2+bde}\right)\right)}{2c^2d^2e^2-bcde^3+\left(2c^2de^3-bce^4\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] [-(2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*d - b*e)*sqrt(e*x + d)
*g + (c*d*e*f - c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(2*c*d - b*e)*log(-(c*
e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x +
 d^2)))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c^2*d*e^3 - b*c*e^4)*x), -2*(sqrt(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*d - b*e)*sqrt(e*x + d)*g + (c*d*e
*f - c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2
 + b*e^2*x - c*d^2 + b*d*e)))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c^2*d*e^3 - b
*c*e^4)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x +
d)), x)
```

maple [A] time = 0.06, size = 161, normalized size = 1.23

$$-\frac{2\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(cdg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-cef\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,g\right)}{\sqrt{ex+d}\,\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c\,e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/(e*x+d)^(1/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(arctan((-c*e*x-b*e
+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))*c*e*f+g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))/(-c*e*x-b*e+c*
d)^(1/2)/c/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x +
d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{\sqrt{d+e\,x}\,\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-(d+ex)\,(be-cd+cex)}\,\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(1/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*sqrt(d + e*x)), x)
```

3.2036 $\int \frac{f+gx}{(d+ex)^{3/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=153

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)^{3/2}(2cd-be)}-\frac{(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

Rubi [A] time = 0.23, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {792, 660, 208}

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)^{3/2}(2cd-be)}-\frac{(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(3/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x
]
```

```
[Out] -(((e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(2*c*d - b*e
)*(d + e*x)^(3/2))) - ((c*e*f + 3*c*d*g - 2*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(e^2*(2*c*d -
 b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{3/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)^{3/2}} + \frac{(cef+3cdg-2beg)\int}{2e(2}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)^{3/2}} + \frac{(cef+3cdg-2beg)\,\mathrm{Su}}{}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)^{3/2}} - \frac{(cef+3cdg-2beg)\,\mathrm{ta}}{e^2(2c}$$

Mathematica [A] time = 0.16, size = 153, normalized size = 1.00

$$\frac{(ef-dg)(be-cd+cex)-\frac{(d+ex)\sqrt{c(d-ex)-be}\,(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)}{\sqrt{2cd-be}}}{e^2\sqrt{d+ex}\,(2cd-be)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(3/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2]),x]
```

```
[Out] ((e*f - d*g)*(-(c*d) + b*e + c*e*x) - ((c*e*f + 3*c*d*g - 2*b*e*g)*(d + e*x
)*Sqrt[-(b*e) + c*(d - e*x)]*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b
*e]])/Sqrt[2*c*d - b*e])/(e^2*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[(d + e*x)*(-
(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 0.73, size = 167, normalized size = 1.09

$$\frac{(ef-dg)\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}}{e^2(d+ex)^{3/2}(be-2cd)} + \frac{(2beg-3cdg-cef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2(be-2cd)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^(3/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x
- c*e^2*x^2]),x]
```

```
[Out] ((e*f - d*g)*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2])/(e^2*(-
2*c*d + b*e)*(d + e*x)^(3/2)) + ((-(c*e*f) - 3*c*d*g + 2*b*e*g)*ArcTan[(Sqr
t[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*
x]*(-2*c*d + b*e + c*(d + e*x)))])/(e^2*(-2*c*d + b*e)^(3/2))
```

fricas [B] time = 0.44, size = 698, normalized size = 4.56

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] [1/2*((c*d^2*e*f + (c*e^3*f + (3*c*d*e^2 - 2*b*e^3)*g)*x^2 + (3*c*d^3 - 2*b
*d^2*e)*g + 2*(c*d*e^2*f + (3*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(2*c*d - b*e)*
log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2
*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c*d*e - b
*e^2)*f - (2*c*d^2 - b*d*e)*g)*sqrt(e*x + d))/(4*c^2*d^4*e^2 - 4*b*c*d^3*e^
3 + b^2*d^2*e^4 + (4*c^2*d^2*e^4 - 4*b*c*d*e^5 + b^2*e^6)*x^2 + 2*(4*c^2*d^
```

```
3*e^3 - 4*b*c*d^2*e^4 + b^2*d*e^5)*x), -((c*d^2*e*f + (c*e^3*f + (3*c*d*e^2
 - 2*b*e^3)*g)*x^2 + (3*c*d^3 - 2*b*d^2*e)*g + 2*(c*d*e^2*f + (3*c*d^2*e -
2*b*d*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 +
b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c*d*e - b*e^2)*f -
 (2*c*d^2 - b*d*e)*g)*sqrt(e*x + d))/(4*c^2*d^4*e^2 - 4*b*c*d^3*e^3 + b^2*d
^2*e^4 + (4*c^2*d^2*e^4 - 4*b*c*d*e^5 + b^2*e^6)*x^2 + 2*(4*c^2*d^3*e^3 - 4
*b*c*d^2*e^4 + b^2*d*e^5)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx + f}{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(
3/2)), x)
```

maple [B] time = 0.08, size = 328, normalized size = 2.14

$$\frac{\left(2b\,e^2gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3cdegx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-c\,e^2fx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+2bdeg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3c\,d^2g\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-cdef\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-\sqrt{be-2cd}\,\sqrt{-cex-be+cd}\,dg+\sqrt{be-2cd}\,\sqrt{-cex-be+cd}\,ef\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}{(be-2cd)^{\frac{3}{2}}\sqrt{-cex-be+cd}\,(ex+d)^{\frac{3}{2}}e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] (2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*e^2*g-3*arctan((-c*
e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c*d*e*g-arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*x*c*e^2*f+2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*b*d*e*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d^2*g-
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d*e*f-(b*e-2*c*d)^(1/2)*
(-c*e*x-b*e+c*d)^(1/2)*d*g+(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*e*f)*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x-b*e+c*d)
^(1/2)/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx + f}{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(
3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f + g\,x}{(d + e\,x)^{3/2}\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(3/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(3/2)),
 x)
```

3.2037 $\int \frac{f+gx}{(d+ex)^{5/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=233

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{4e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c(-4beg+5cdg+3c}{4e^2}$$

Rubi [A] time = 0.37, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 672, 660, 208}

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{4e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c(-4beg+5cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{4e^2(2cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(5/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x
]
```

```
[Out] -((e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(2*e^2*(2*c*d - b*
e)*(d + e*x)^(5/2)) - ((3*c*e*f + 5*c*d*g - 4*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(4*e^2*(2*c*d - b*e)^2*(d + e*x)^(3/2)) - (c*(3*c*e*f
+ 5*c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqr
t[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{5/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}} + \frac{(3cef+5cdg-4beg)\ \ldots}{4e(\ldots}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}} - \frac{(3cef+5cdg-4beg)\sqrt{\ldots}}{4e^2(2cd-\ldots}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}} - \frac{(3cef+5cdg-4beg)\sqrt{\ldots}}{4e^2(2cd-\ldots}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}} - \frac{(3cef+5cdg-4beg)\sqrt{\ldots}}{4e^2(2cd-\ldots}$$

Mathematica [A] time = 0.54, size = 209, normalized size = 0.90

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{(d+ex)(-4beg+5cdg+3cef)\left(\sqrt{e}(2cd-be)\sqrt{c(d-ex)-be}+c(d+ex)\sqrt{e(be-2cd)}\tan^{-1}\left(\frac{\sqrt{e}\sqrt{c(d-ex)-be}}{\sqrt{e(be-2cd)}}\right)\right)}{2e^{3/2}(be-2cd)^2\sqrt{c(d-ex)-be}}+\frac{dg}{e}-f\right)}{2e(d+ex)^{5/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(5/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2]),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-f + (d*g)/e - ((3*c*e*f + 5*c*d*g
 - 4*b*e*g)*(d + e*x)*(Sqrt[e]*(2*c*d - b*e)*Sqrt[-(b*e) + c*(d - e*x)] + c
*Sqrt[e*(-2*c*d + b*e)]*(d + e*x)*ArcTan[(Sqrt[e]*Sqrt[-(b*e) + c*(d - e*x)
])/Sqrt[e*(-2*c*d + b*e)]]))/(2*e^(3/2)*(-2*c*d + b*e)^2*Sqrt[-(b*e) + c*(d
 - e*x)])))/(2*e*(2*c*d - b*e)*(d + e*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.96, size = 238, normalized size = 1.02

$$\frac{\left(-4bceg+5c^2dg+3c^2ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{4e^2(2cd-be)^2\sqrt{be-2cd}}+\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(4beg(d+ex)-2bdeg+2be^2f+4cd^2g-3cef(d+ex)-4cdef-5cdg(d+ex)\right)}{4e^2(d+ex)^{5/2}(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^(5/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x
- c*e^2*x^2]),x]
```

```
[Out] ((-4*c*d*e*f + 2*b*e^2*f + 4*c*d^2*g - 2*b*d*e*g - 3*c*e*f*(d + e*x) - 5*c*
d*g*(d + e*x) + 4*b*e*g*(d + e*x))*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c
*(d + e*x)^2])/(4*e^2*(-2*c*d + b*e)^2*(d + e*x)^(5/2)) + ((3*c^2*e*f + 5*c
^2*d*g - 4*b*c*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x)
 - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(4*e^2*(2
*c*d - b*e)^2*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.45, size = 1168, normalized size = 5.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/8*((3*c^2*d^3*e*f + (3*c^2*e^4*f + (5*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3
*(3*c^2*d*e^3*f + (5*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (5*c^2*d^4 - 4*b*c
*d^3*e)*g + 3*(3*c^2*d^2*e^2*f + (5*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(2
```

```
*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/
(e^2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(
(14*c^2*d^2*e - 11*b*c*d*e^2 + 2*b^2*e^3)*f + (2*c^2*d^3 - 5*b*c*d^2*e + 2*
b^2*d*e^2)*g + (3*(2*c^2*d*e^2 - b*c*e^3)*f + (10*c^2*d^2*e - 13*b*c*d*e^2
+ 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(8*c^3*d^6*e^2 - 12*b*c^2*d^5*e^3 + 6*b^2
*c*d^4*e^4 - b^3*d^3*e^5 + (8*c^3*d^3*e^5 - 12*b*c^2*d^2*e^6 + 6*b^2*c*d*e^
7 - b^3*e^8)*x^3 + 3*(8*c^3*d^4*e^4 - 12*b*c^2*d^3*e^5 + 6*b^2*c*d^2*e^6 -
b^3*d*e^7)*x^2 + 3*(8*c^3*d^5*e^3 - 12*b*c^2*d^4*e^4 + 6*b^2*c*d^3*e^5 - b^
3*d^2*e^6)*x), -1/4*((3*c^2*d^3*e*f + (3*c^2*e^4*f + (5*c^2*d*e^3 - 4*b*c*e
^4)*g)*x^3 + 3*(3*c^2*d*e^3*f + (5*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (5*c
^2*d^4 - 4*b*c*d^3*e)*g + 3*(3*c^2*d^2*e^2*f + (5*c^2*d^3*e - 4*b*c*d^2*e^2
)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e
)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) +
 sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((14*c^2*d^2*e - 11*b*c*d*e^2 +
 2*b^2*e^3)*f + (2*c^2*d^3 - 5*b*c*d^2*e + 2*b^2*d*e^2)*g + (3*(2*c^2*d*e^2
 - b*c*e^3)*f + (10*c^2*d^2*e - 13*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x +
d))/(8*c^3*d^6*e^2 - 12*b*c^2*d^5*e^3 + 6*b^2*c*d^4*e^4 - b^3*d^3*e^5 + (8*
c^3*d^3*e^5 - 12*b*c^2*d^2*e^6 + 6*b^2*c*d*e^7 - b^3*e^8)*x^3 + 3*(8*c^3*d^
4*e^4 - 12*b*c^2*d^3*e^5 + 6*b^2*c*d^2*e^6 - b^3*d*e^7)*x^2 + 3*(8*c^3*d^5*
e^3 - 12*b*c^2*d^4*e^4 + 6*b^2*c*d^3*e^5 - b^3*d^2*e^6)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.09, size = 630, normalized size = 2.70

$$-\frac{\sqrt{-c e^2 x^2-b e^2 x-b d e+c d^2}\,\left(4 b c e^3 g x^2 \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-5 c^2 d e^2 g x^2 \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3 c^2 e^3 f x^2 \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+8 b c d e^2 g x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-10 c^2 d^2 e g x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-6 c^2 d e^2 f x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+4 b c d^2 e g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-5 c^2 d^3 g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3 c^2 d^2 e f \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-4\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,b e^2 g x+5\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c d e g x+3\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c e^2 f x-2\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,b d e g-2\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,b e^2 f+\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c d^2 g+7\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c d e f\right)}{4 (ex+d)^{\frac{5}{2}} (be-2cd)^{\frac{5}{2}} \sqrt{-cex-be+cd}\, e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(4*b*c*e^3*g*x^2*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-5*c^2*d*e^2*g*x^2*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))-3*c^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))+8*b*c*d*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^
(1/2))-10*c^2*d^2*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-6*
c^2*d*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+4*b*c*d^2*e*
g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-5*c^2*d^3*g*arctan((-c*e
*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-3*c^2*d^2*e*f*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))-4*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*g
*x+5*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*g*x+3*(-c*e*x-b*e+c*d)^
(1/2)*(b*e-2*c*d)^(1/2)*c*e^2*f*x-2*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2
)*b*d*e*g-2*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*f+(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d^2*g+7*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/
2)*c*d*e*f)/(e*x+d)^(5/2)/(b*e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(
5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{5/2}\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\sqrt{- \left(d + ex\right) \left(be - cd + cex\right)} \left(d + ex\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(5/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(5/2)),
 x)
```

3.2038 $\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=369

$$\frac{32(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{35c^5e^2\sqrt{d+ex}}+\frac{16\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{35c^4e^2}$$

Rubi [A] time = 0.55, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{7c^2e^2(2cd-be)}+\frac{12(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{35c^3e^2}+\frac{16\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{35c^4e^2}+\frac{32(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{35c^5e^2\sqrt{d+ex}}+\frac{2(d+ex)^{9/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(9/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (32*(2*c*d - b*e)^2*(7*c*e*f + 9*c*d*g -
 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c^5*e^2*Sqrt[d + e
*x]) + (16*(2*c*d - b*e)*(7*c*e*f + 9*c*d*g - 8*b*e*g)*Sqrt[d + e*x]*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c^4*e^2) + (12*(7*c*e*f + 9*c*d*g
- 8*b*e*g)*(d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c
^3*e^2) + (2*(7*c*e*f + 9*c*d*g - 8*b*e*g)*(d + e*x)^(5/2)*Sqrt[d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2])/(7*c^2*e^2*(2*c*d - b*e))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(7cef+9cdg-8beg)\int \frac{}{\sqrt{cd^2-}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{2(7cef+9cdg-8beg)(d+e}{7c^2e^2(}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{12(7cef+9cdg-8beg)(d+}{3}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{16(2cd-be)(7cef+9cdg-}{}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{32(2cd-be)^2(7cef+9cdg-}{35c^5e}$$

Mathematica [A] time = 0.22, size = 245, normalized size = 0.66

$$-\frac{2\sqrt{d+ex}\left(-128b^4e^4g+16b^3ce^3(53dg+7ef-4egx)-8b^2c^2e^2\left(257d^2g+de(77f-45gx)-e^2x(7f+2gx)\right)-2bc^3e\left(-1075d^3g+d^2e(334gx-553f)+de^2x(126f+37gx)+e^3x^2(7f+4gx)\right)+c^4\left(-814d^4g+d^3e(407gx-637f)+d^2e^2x(301f+93gx)+de^3x^2(49f+29gx)+e^4x^3(7f+5gx)\right)\right)}{35c^5e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(-128*b^4*e^4*g + 16*b^3*c*e^3*(7*e*f + 53*d*g - 4*e*g*x)
 - 8*b^2*c^2*e^2*(257*d^2*g + d*e*(77*f - 45*g*x) - e^2*x*(7*f + 2*g*x)) -
2*b*c^3*e*(-1075*d^3*g + e^3*x^2*(7*f + 4*g*x) + d*e^2*x*(126*f + 37*g*x) +
 d^2*e*(-553*f + 334*g*x)) + c^4*(-814*d^4*g + e^4*x^3*(7*f + 5*g*x) + d*e^
3*x^2*(49*f + 29*g*x) + d^2*e^2*x*(301*f + 93*g*x) + d^3*e*(-637*f + 407*g*
x))))/(35*c^5*e^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 5.58, size = 418, normalized size = 1.13

$$\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(-128b^4e^4g-64b^3ce^3g(d+ex)+912b^3cde^3g+112b^3ce^4f-2400b^2c^2d^2e^2g+56b^2c^2e^3f(d+ex)-672b^2c^2de^3f+16b^2c^2e^2g(d+ex)^2+328b^2c^2de^2g(d+ex)+2752bc^3d^3eg+1344bc^3d^2e^2f-544bc^3d^2eg(d+ex)-14bc^3e^2f(d+ex)^2-224bc^3de^2f(d+ex)-8bc^3eg(d+ex)^3-50bc^3deg(d+ex)^2-1152c^4d^4g-896c^4d^3ef+288c^4d^3g(d+ex)+224c^4d^2ef(d+ex)+36c^4d^2g(d+ex)^2+7c^4ef(d+ex)^3+28c^4def(d+ex)^2+5c^4g(d+ex)^4+9c^4dg(d+ex)^3\right)}{35c^5e^2\sqrt{d+ex}\,(be+c(d+ex)-2cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(-896*c^4*d^3*e*f + 1344*b
*c^3*d^2*e^2*f - 672*b^2*c^2*d*e^3*f + 112*b^3*c*e^4*f - 1152*c^4*d^4*g + 2
752*b*c^3*d^3*e*g - 2400*b^2*c^2*d^2*e^2*g + 912*b^3*c*d*e^3*g - 128*b^4*e^
4*g + 224*c^4*d^2*e*f*(d + e*x) - 224*b*c^3*d*e^2*f*(d + e*x) + 56*b^2*c^2*
e^3*f*(d + e*x) + 288*c^4*d^3*g*(d + e*x) - 544*b*c^3*d^2*e*g*(d + e*x) + 3
28*b^2*c^2*d*e^2*g*(d + e*x) - 64*b^3*c*e^3*g*(d + e*x) + 28*c^4*d*e*f*(d +
 e*x)^2 - 14*b*c^3*e^2*f*(d + e*x)^2 + 36*c^4*d^2*g*(d + e*x)^2 - 50*b*c^3*
d*e*g*(d + e*x)^2 + 16*b^2*c^2*e^2*g*(d + e*x)^2 + 7*c^4*e*f*(d + e*x)^3 +
9*c^4*d*g*(d + e*x)^3 - 8*b*c^3*e*g*(d + e*x)^3 + 5*c^4*g*(d + e*x)^4))/(35
*c^5*e^2*Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))
```

fricas [A] time = 0.41, size = 374, normalized size = 1.01

$$\frac{2\left(5c^4e^4gx^4+\left(7c^4e^4f+\left(29c^4de^3-8bc^3e^4\right)g\right)x^3+\left(7\left(7c^4de^3-2bc^3e^4\right)f+\left(93c^4d^2e^2-74bc^3de^3+16b^2c^2e^4\right)g\right)x^2-7\left(91c^4d^3e-158bc^3d^2e^2+88b^2c^2de^3-16b^3ce^4\right)f-2\left(407c^4d^4-1075bc^3d^3e+1028b^2c^2d^2e^2-424b^3cde^3+64b^4e^4\right)g+\left(7\left(43c^4d^2e^2-36bc^3de^3+8b^2c^2e^4\right)f+\left(407c^4d^3e-668bc^3d^2e^2+360b^2c^2de^3-64b^3ce^4\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{ex+d}}{35\left(c^6e^4x^2+bc^5e^4x-c^6d^2e^2+bc^5de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/35*(5*c^4*e^4*g*x^4 + (7*c^4*e^4*f + (29*c^4*d*e^3 - 8*b*c^3*e^4)*g)*x^3
+ (7*(7*c^4*d*e^3 - 2*b*c^3*e^4)*f + (93*c^4*d^2*e^2 - 74*b*c^3*d*e^3 + 16*
b^2*c^2*e^4)*g)*x^2 - 7*(91*c^4*d^3*e - 158*b*c^3*d^2*e^2 + 88*b^2*c^2*d*e^
3 - 16*b^3*c*e^4)*f - 2*(407*c^4*d^4 - 1075*b*c^3*d^3*e + 1028*b^2*c^2*d^2*
e^2 - 424*b^3*c*d*e^3 + 64*b^4*e^4)*g + (7*(43*c^4*d^2*e^2 - 36*b*c^3*d*e^3
 + 8*b^2*c^2*e^4)*f + (407*c^4*d^3*e - 668*b*c^3*d^2*e^2 + 360*b^2*c^2*d*e^
3 - 64*b^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x
 + d)/(c^6*e^4*x^2 + b*c^5*e^4*x - c^6*d^2*e^2 + b*c^5*d*e^3)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[-80,76,14,-33,-32]Warning, need to choose a
 branch for the root of a polynomial with parameters. This might be wrong.T
he choice was done assuming [b,c,d,exp(1),exp(2)]=[-69,66,23,-29,45]Warning
, need to choose a branch for the root of a polynomial with parameters. Thi
s might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[66,44,
20,6,-14]Warning, need to choose a branch for the root of a polynomial with
 parameters. This might be wrong.The choice was done assuming [b,c,d,exp(1)
,exp(2)]=[87,21,9,-14,37]Evaluation time: 119.18Unable to transpose Error:
Bad Argument Value
```

maple [A] time = 0.05, size = 367, normalized size = 0.99

$$-\frac{2 \left(c e x +b e -c d \right) \left(-5 g \,e^{4} x^{4} c^{4}+8 b \,c^{3} e^{4} g \,x^{3}-29 c^{4} d \,e^{3} g \,x^{3}-7 c^{4} e^{4} f \,x^{3}-16 b^{2} c^{2} e^{4} g \,x^{2}+74 b \,c^{3} d \,e^{3} g \,x^{2}+14 b \,c^{3} e^{4} f \,x^{2}-93 c^{4} d^{2} e^{2} g \,x^{2}-49 c^{4} d \,e^{3} f \,x^{2}+64 b^{3} c \,e^{4} g x -360 b^{2} c^{2} d \,e^{3} g x -56 b^{2} c^{2} e^{4} f x +668 b \,c^{3} d^{2} e^{2} g x +252 b \,c^{3} d \,e^{3} f x -407 c^{4} d^{3} e g x -301 c^{4} d^{2} e^{2} f x +128 b^{4} e^{4} g -848 b^{3} c d \,e^{3} g -112 b^{3} c \,e^{4} f +2056 b^{2} c^{2} d^{2} e^{2} g +616 b^{2} c^{2} d \,e^{3} f -2150 b \,c^{3} d^{3} e g -1106 b \,c^{3} d^{2} e^{2} f +814 c^{4} d^{4} g +637 f \,d^{3} c^{4} e \right) \left(e x +d \right)^{\frac{3}{2}}}{35 \left(-c \,e^{2} x^{2}-b \,e^{2} x -b d e +c \,d^{2}\right)^{\frac{3}{2}} c^{5} e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(-5*c^4*e^4*g*x^4+8*b*c^3*e^4*g*x^3-29*c^4*d*e^3*g*x^
3-7*c^4*e^4*f*x^3-16*b^2*c^2*e^4*g*x^2+74*b*c^3*d*e^3*g*x^2+14*b*c^3*e^4*f*
x^2-93*c^4*d^2*e^2*g*x^2-49*c^4*d*e^3*f*x^2+64*b^3*c*e^4*g*x-360*b^2*c^2*d*
e^3*g*x-56*b^2*c^2*e^4*f*x+668*b*c^3*d^2*e^2*g*x+252*b*c^3*d*e^3*f*x-407*c^
4*d^3*e*g*x-301*c^4*d^2*e^2*f*x+128*b^4*e^4*g-848*b^3*c*d*e^3*g-112*b^3*c*e
^4*f+2056*b^2*c^2*d^2*e^2*g+616*b^2*c^2*d*e^3*f-2150*b*c^3*d^3*e*g-1106*b*c
^3*d^2*e^2*f+814*c^4*d^4*g+637*c^4*d^3*e*f)*(e*x+d)^(3/2)/c^5/e^2/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.74, size = 317, normalized size = 0.86

$$-\frac{2 \, {\left(c^{3} e^{3} x^{3} - 91 \, c^{3} d^{3} + 158 \, b c^{2} d^{2} e - 88 \, b^{2} c d e^{2} + 16 \, b^{3} e^{3} + {\left(7 \, c^{3} d e^{2} - 2 \, b c^{2} e^{3}\right)} x^{2} + {\left(43 \, c^{3} d^{2} e - 36 \, b c^{2} d e^{2} + 8 \, b^{2} c e^{3}\right)} x\right)} f}{5 \, \sqrt{-c e x + c d - b e} c^{4} e} - \frac{2 \, {\left(5 \, c^{4} e^{4} x^{4} - 814 \, c^{4} d^{4} + 2150 \, b c^{3} d^{3} e - 2056 \, b^{2} c^{2} d^{2} e^{2} + 848 \, b^{3} c d e^{3} - 128 \, b^{4} e^{4} + {\left(29 \, c^{4} d e^{3} - 8 \, b c^{3} e^{4}\right)} x^{3} + {\left(93 \, c^{4} d^{2} e^{2} - 74 \, b c^{3} d e^{3} + 16 \, b^{2} c^{2} e^{4}\right)} x^{2} + {\left(407 \, c^{4} d^{3} e - 668 \, b c^{3} d^{2} e^{2} + 360 \, b^{2} c^{2} d e^{3} - 64 \, b^{3} c e^{4}\right)} x\right)} g}{35 \, \sqrt{-c e x + c d - b e} c^{5} e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/5*(c^3*e^3*x^3 - 91*c^3*d^3 + 158*b*c^2*d^2*e - 88*b^2*c*d*e^2 + 16*b^3*
e^3 + (7*c^3*d*e^2 - 2*b*c^2*e^3)*x^2 + (43*c^3*d^2*e - 36*b*c^2*d*e^2 + 8*
b^2*c*e^3)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^4*e) - 2/35*(5*c^4*e^4*x^4 - 81
```

```
4*c^4*d^4 + 2150*b*c^3*d^3*e - 2056*b^2*c^2*d^2*e^2 + 848*b^3*c*d*e^3 - 128
*b^4*e^4 + (29*c^4*d*e^3 - 8*b*c^3*e^4)*x^3 + (93*c^4*d^2*e^2 - 74*b*c^3*d*
e^3 + 16*b^2*c^2*e^4)*x^2 + (407*c^4*d^3*e - 668*b*c^3*d^2*e^2 + 360*b^2*c^
2*d*e^3 - 64*b^3*c*e^4)*x)*g/(sqrt(-c*e*x + c*d - b*e)*c^5*e^2)
```

mupad [B] time = 3.09, size = 398, normalized size = 1.08

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,g\,x^4\,\sqrt{d+e\,x}}{7\,c^2}-\frac{\sqrt{d+e\,x}\,\left(256\,g\,b^4\,e^4-1696\,g\,b^3\,c\,d\,e^3-224\,f\,b^3\,c\,e^4+4112\,g\,b^2\,c^2\,d^2\,e^2+1232\,f\,b^2\,c^2\,d\,e^3-4300\,g\,b\,c^3\,d^3\,e-2212\,f\,b\,c^3\,d^2\,e^2+1628\,g\,c^4\,d^4+1274\,f\,c^4\,d^3\,e\right)}{35\,c^6\,e^4}+\frac{x^2\,\sqrt{d+e\,x}\,\left(32\,g\,b^2\,c^2\,e^4-148\,g\,b\,c^3\,d\,e^3-28\,f\,b\,c^3\,e^4+186\,g\,c^4\,d^2\,e^2+98\,f\,c^4\,d\,e^3\right)}{35\,c^6\,e^4}+\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(29\,c\,d\,g-8\,b\,e\,g+7\,c\,e\,f\right)}{35\,c^3\,e}+\frac{x\,\sqrt{d+e\,x}\,\left(-128\,g\,b^3\,c\,e^4+720\,g\,b^2\,c^2\,d\,e^3+112\,f\,b^2\,c^2\,e^4-1336\,g\,b\,c^3\,d^2\,e^2-504\,f\,b\,c^3\,d\,e^3+814\,g\,c^4\,d^3\,e+602\,f\,c^4\,d^2\,e^2\right)}{35\,c^6\,e^4}\right)}{x^2+\frac{b\,x}{c}+\frac{d\,\left(b\,e-c\,d\right)}{c\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(9/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*g*x^4*(d + e*x)^(1/2))/(7*
c^2) - ((d + e*x)^(1/2)*(256*b^4*e^4*g + 1628*c^4*d^4*g - 224*b^3*c*e^4*f +
 1274*c^4*d^3*e*f - 4300*b*c^3*d^3*e*g - 1696*b^3*c*d*e^3*g - 2212*b*c^3*d^
2*e^2*f + 1232*b^2*c^2*d*e^3*f + 4112*b^2*c^2*d^2*e^2*g))/(35*c^6*e^4) + (x
^2*(d + e*x)^(1/2)*(32*b^2*c^2*e^4*g + 186*c^4*d^2*e^2*g - 28*b*c^3*e^4*f +
 98*c^4*d*e^3*f - 148*b*c^3*d*e^3*g))/(35*c^6*e^4) + (2*x^3*(d + e*x)^(1/2)
*(29*c*d*g - 8*b*e*g + 7*c*e*f))/(35*c^3*e) + (x*(d + e*x)^(1/2)*(112*b^2*c
^2*e^4*f + 602*c^4*d^2*e^2*f - 128*b^3*c*e^4*g + 814*c^4*d^3*e*g - 504*b*c^
3*d*e^3*f - 1336*b*c^3*d^2*e^2*g + 720*b^2*c^2*d*e^3*g))/(35*c^6*e^4)))/(x^
2 + (b*x)/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(9/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2039 $\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=292

$$\frac{16(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7cdg+5cef)}{15c^4e^2\sqrt{d+ex}}+\frac{8\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7c}{15c^3e^2}$$

Rubi [A] time = 0.41, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7cdg+5cef)}{5c^2e^2(2cd-be)}+\frac{8\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7cdg+5cef)}{15c^3e^2}+\frac{16(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7cdg+5cef)}{15c^4e^2\sqrt{d+ex}}+\frac{2(d+ex)^{7/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(7/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (16*(2*c*d - b*e)*(5*c*e*f + 7*c*d*g - 6
*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(15*c^4*e^2*Sqrt[d + e*x
]) + (8*(5*c*e*f + 7*c*d*g - 6*b*e*g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2])/(15*c^3*e^2) + (2*(5*c*e*f + 7*c*d*g - 6*b*e*g)*(d + e*
x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(5*c^2*e^2*(2*c*d - b*e
))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(5cef+7cdg-6beg)\int \frac{\cdots}{\sqrt{cd^2-\cdots}}}{ce(2cd-be)\cdots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{2(5cef+7cdg-6beg)(d+e\cdots}{5c^2e^2(\cdots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{8(5cef+7cdg-6beg)\sqrt{d+\cdots}}{15\cdots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{16(2cd-be)(5cef+7cdg-\cdots}{15c^4e\cdots}$$

Mathematica [A] time = 0.13, size = 168, normalized size = 0.58

$$-\frac{2\sqrt{d+ex}\left(48b^3e^3g-8b^2ce^2(28dg+5ef-3egx)+2bc^2e\left(167d^2g+de(70f-44gx)-e^2x(10f+3gx)\right)+c^3\left(-158d^3g+d^2e(79gx-115f)+2de^2x(25f+8gx)+e^3x^2(5f+3gx)\right)\right)}{15c^4e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(48*b^3*e^3*g - 8*b^2*c*e^2*(5*e*f + 28*d*g - 3*e*g*x) +
2*b*c^2*e*(167*d^2*g + d*e*(70*f - 44*g*x) - e^2*x*(10*f + 3*g*x)) + c^3*(-
158*d^3*g + e^3*x^2*(5*f + 3*g*x) + 2*d*e^2*x*(25*f + 8*g*x) + d^2*e*(-115*
f + 79*g*x))))/(15*c^4*e^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 5.15, size = 265, normalized size = 0.91

$$\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(48b^3e^3g+24b^2ce^2g(d+ex)-248b^2cde^2g-40b^2ce^3f+416bc^2d^2eg-20bc^2e^2f(d+ex)+160bc^2de^2f-6bc^2eg(d+ex)^2-76bc^2deg(d+ex)-224c^3d^3g-160c^3d^2ef+56c^3d^2g(d+ex)+5c^3ef(d+ex)^2+40c^3def(d+ex)+3c^3g(d+ex)^3+7c^3dg(d+ex)^2\right)}{15c^4e^2\sqrt{d+ex}\,(be+c(d+ex)-2cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(-160*c^3*d^2*e*f + 160*b*
c^2*d*e^2*f - 40*b^2*c*e^3*f - 224*c^3*d^3*g + 416*b*c^2*d^2*e*g - 248*b^2*
c*d*e^2*g + 48*b^3*e^3*g + 40*c^3*d*e*f*(d + e*x) - 20*b*c^2*e^2*f*(d + e*x
) + 56*c^3*d^2*g*(d + e*x) - 76*b*c^2*d*e*g*(d + e*x) + 24*b^2*c*e^2*g*(d +
 e*x) + 5*c^3*e*f*(d + e*x)^2 + 7*c^3*d*g*(d + e*x)^2 - 6*b*c^2*e*g*(d + e*
x)^2 + 3*c^3*g*(d + e*x)^3))/(15*c^4*e^2*Sqrt[d + e*x]*(-2*c*d + b*e + c*(d
 + e*x)))
```

fricas [A] time = 0.41, size = 257, normalized size = 0.88

$$\frac{2\left(3c^3e^3gx^3+\left(5c^3e^3f+2\left(8c^3de^2-3bc^2e^3\right)g\right)x^2-5\left(23c^3d^2e-28bc^2de^2+8b^2ce^3\right)f-2\left(79c^3d^3-167bc^2d^2e+112b^2cde^2-24b^3e^3\right)g+\left(10\left(5c^3de^2-2bc^2e^3\right)f+\left(79c^3d^2e-88bc^2de^2+24b^2ce^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{ex+d}}{15\left(c^5e^4x^2+bc^4e^4x-c^5d^2e^2+bc^4de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/15*(3*c^3*e^3*g*x^3 + (5*c^3*e^3*f + 2*(8*c^3*d*e^2 - 3*b*c^2*e^3)*g)*x^2
 - 5*(23*c^3*d^2*e - 28*b*c^2*d*e^2 + 8*b^2*c*e^3)*f - 2*(79*c^3*d^3 - 167*
b*c^2*d^2*e + 112*b^2*c*d*e^2 - 24*b^3*e^3)*g + (10*(5*c^3*d*e^2 - 2*b*c^2*
e^3)*f + (79*c^3*d^2*e - 88*b*c^2*d*e^2 + 24*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x
```

```
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^4*x^2 + b*c^4*e^4*x - c^
5*d^2*e^2 + b*c^4*d*e^3)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[-8,-96,87,35,14]Warning, need to choose a b
ranch for the root of a polynomial with parameters. This might be wrong.The
 choice was done assuming [b,c,d,exp(1),exp(2)]=[57,18,-10,85,-42]Warning,
need to choose a branch for the root of a polynomial with parameters. This
might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[-23,67,9
7,57,86]Warning, need to choose a branch for the root of a polynomial with
parameters. This might be wrong.The choice was done assuming [b,c,d,exp(1),
exp(2)]=[45,19,-66,-61,-5]Evaluation time: 121.97Unable to transpose Error:
 Bad Argument Value
```

maple [A] time = 0.05, size = 235, normalized size = 0.80

$$\frac{2\left(cex+be-cd\right)\left(3g\,e^{3}x^{3}c^{3}-6b\,c^{2}e^{3}g\,x^{2}+16c^{3}d\,e^{2}g\,x^{2}+5c^{3}e^{3}f\,x^{2}+24b^{2}c\,e^{3}gx-88b\,c^{2}d\,e^{2}gx-20b\,c^{2}e^{3}fx+79c^{3}d^{2}egx+50c^{3}d\,e^{2}fx+48b^{3}e^{3}g-224b^{2}cd\,e^{2}g-40b^{2}c\,e^{3}f+334b\,c^{2}d^{2}eg+140b\,c^{2}d\,e^{2}f-158c^{3}d^{3}g-115f\,d^{2}c^{3}e\right)\left(ex+d\right)^{\frac{3}{2}}}{15\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{3}{2}}c^{4}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2/15*(c*e*x+b*e-c*d)*(3*c^3*e^3*g*x^3-6*b*c^2*e^3*g*x^2+16*c^3*d*e^2*g*x^2+
5*c^3*e^3*f*x^2+24*b^2*c*e^3*g*x-88*b*c^2*d*e^2*g*x-20*b*c^2*e^3*f*x+79*c^3
*d^2*e*g*x+50*c^3*d*e^2*f*x+48*b^3*e^3*g-224*b^2*c*d*e^2*g-40*b^2*c*e^3*f+3
34*b*c^2*d^2*e*g+140*b*c^2*d*e^2*f-158*c^3*d^3*g-115*c^3*d^2*e*f)*(e*x+d)^(
3/2)/c^4/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.73, size = 203, normalized size = 0.70

$$-\frac{2\left(c^{2}e^{2}x^{2}-23\,c^{2}d^{2}+28\,bcde-8\,b^{2}e^{2}+2\left(5\,c^{2}de-2\,bce^{2}\right)x\right)f}{3\sqrt{-cex+cd-be}\,c^{3}e}-\frac{2\left(3\,c^{3}e^{3}x^{3}-158\,c^{3}d^{3}+334\,bc^{2}d^{2}e-224\,b^{2}cde^{2}+48\,b^{3}e^{3}+2\left(8\,c^{3}de^{2}-3\,bc^{2}e^{3}\right)x^{2}+\left(79\,c^{3}d^{2}e-88\,bc^{2}de^{2}+24\,b^{2}ce^{3}\right)x\right)g}{15\sqrt{-cex+cd-be}\,c^{4}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*(c^2*e^2*x^2 - 23*c^2*d^2 + 28*b*c*d*e - 8*b^2*e^2 + 2*(5*c^2*d*e - 2*
b*c*e^2)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^3*e) - 2/15*(3*c^3*e^3*x^3 - 158*
c^3*d^3 + 334*b*c^2*d^2*e - 224*b^2*c*d*e^2 + 48*b^3*e^3 + 2*(8*c^3*d*e^2 -
 3*b*c^2*e^3)*x^2 + (79*c^3*d^2*e - 88*b*c^2*d*e^2 + 24*b^2*c*e^3)*x)*g/(sq
rt(-c*e*x + c*d - b*e)*c^4*e^2)
```

mupad [B] time = 2.95, size = 267, normalized size = 0.91

$$\frac{\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}\,\left(\frac{2\,x^{2}\,\sqrt{d+e\,x}\,\left(16\,c\,d\,g-6\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^{3}\,e^{2}}-\frac{\sqrt{d+e\,x}\,\left(-96\,g\,b^{3}\,e^{3}+448\,g\,b^{2}\,c\,d\,e^{2}+80\,f\,b^{2}\,c\,e^{3}-668\,g\,b\,c^{2}\,d^{2}\,e-280\,f\,b\,c^{2}\,d\,e^{2}+316\,g\,c^{3}\,d^{3}+230\,f\,c^{3}\,d^{2}\,e\right)}{15\,c^{5}\,e^{4}}+\frac{2\,g\,x^{3}\,\sqrt{d+e\,x}}{5\,c^{2}\,e}+\frac{x\,\sqrt{d+e\,x}\,\left(48\,g\,b^{2}\,c\,e^{3}-176\,g\,b\,c^{2}\,d\,e^{2}-40\,f\,b\,c^{2}\,e^{3}+158\,g\,c^{3}\,d^{2}\,e+100\,f\,c^{3}\,d\,e^{2}\right)}{15\,c^{5}\,e^{4}}\right)}{x^{2}+\frac{b\,x}{c}+\frac{d\,\left(b\,e-c\,d\right)}{c\,e^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(7/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^2*(d + e*x)^(1/2)*(16*c*
d*g - 6*b*e*g + 5*c*e*f))/(15*c^3*e^2) - ((d + e*x)^(1/2)*(316*c^3*d^3*g -
96*b^3*e^3*g + 80*b^2*c*e^3*f + 230*c^3*d^2*e*f - 280*b*c^2*d*e^2*f - 668*b
*c^2*d^2*e*g + 448*b^2*c*d*e^2*g))/(15*c^5*e^4) + (2*g*x^3*(d + e*x)^(1/2))
/(5*c^2*e) + (x*(d + e*x)^(1/2)*(48*b^2*c*e^3*g - 40*b*c^2*e^3*f + 100*c^3*
d*e^2*f + 158*c^3*d^2*e*g - 176*b*c^2*d*e^2*g))/(15*c^5*e^4)))/(x^2 + (b*x)
/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(7/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2040 $\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=217

$$\frac{4\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{3c^3e^2\sqrt{d+ex}}+\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef}{3c^2e^2(2cd-be)}$$

Rubi [A] time = 0.29, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{3c^2e^2(2cd-be)}+\frac{4\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{3c^3e^2\sqrt{d+ex}}+\frac{2(d+ex)^{5/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(5/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (4*(3*c*e*f + 5*c*d*g - 4*b*e*g)*Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(3*c^3*e^2*Sqrt[d + e*x]) + (2*(3*c*e*f
 + 5*c*d*g - 4*b*e*g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(3*c^2*e^2*(2*c*d - b*e))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(3cef+5cdg-4beg)\int \frac{}{\sqrt{cd^2-}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{2(3cef+5cdg-4beg)\sqrt{d+}}{3c^2e^2(2}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{4(3cef+5cdg-4beg)\sqrt{d(cd}}{3c^3e^2\sqrt{d+}}$$

Mathematica [A] time = 0.08, size = 105, normalized size = 0.48

$$-\frac{2\sqrt{d+ex}\left(-8b^2e^2g+2bce(11dg+3ef-2egx)+c^2\left(-14d^2g+de(7gx-9f)+e^2x(3f+gx)\right)\right)}{3c^3e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(-8*b^2*e^2*g + 2*b*c*e*(3*e*f + 11*d*g - 2*e*g*x) + c^2*
(-14*d^2*g + e^2*x*(3*f + g*x) + d*e*(-9*f + 7*g*x))))/(3*c^3*e^2*Sqrt[(d +
 e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 4.55, size = 155, normalized size = 0.71

$$\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\left(-8b^2e^2g-4bceg(d+ex)+26bcdeg+6bce^2f-20c^2d^2g+3c^2ef(d+ex)-12c^2def+c^2g(d+ex)^2+5c^2dg(d+ex)\right)}{3c^3e^2\sqrt{d+ex}\,(be+c(d+ex)-2cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2]*(-12*c^2*d*e*f + 6*b*c*e^2
*f - 20*c^2*d^2*g + 26*b*c*d*e*g - 8*b^2*e^2*g + 3*c^2*e*f*(d + e*x) + 5*c^
2*d*g*(d + e*x) - 4*b*c*e*g*(d + e*x) + c^2*g*(d + e*x)^2))/(3*c^3*e^2*Sqrt
[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))
```

fricas [A] time = 0.41, size = 165, normalized size = 0.76

$$\frac{2\left(c^2e^2gx^2-3\left(3c^2de-2bce^2\right)f-2\left(7c^2d^2-11bcde+4b^2e^2\right)g+\left(3c^2e^2f+\left(7c^2de-4bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{ex+d}}{3\left(c^4e^4x^2+bc^3e^4x-c^4d^2e^2+bc^3de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/3*(c^2*e^2*g*x^2 - 3*(3*c^2*d*e - 2*b*c*e^2)*f - 2*(7*c^2*d^2 - 11*b*c*d*
e + 4*b^2*e^2)*g + (3*c^2*e^2*f + (7*c^2*d*e - 4*b*c*e^2)*g)*x)*sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^4*e^4*x^2 + b*c^3*e^4*x -
c^4*d^2*e^2 + b*c^3*d*e^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 139, normalized size = 0.64

$$-\frac{2 (cex + be - cd) \left(-g x^2 c^2 e^2 + 4bc e^2 g x - 7c^2 d e g x - 3c^2 e^2 f x + 8b^2 e^2 g - 22bcdeg - 6bc e^2 f + 14c^2 d^2 g + 9c^2 d e f\right) (ex + d)^{\frac{3}{2}}}{3 \left(-c e^2 x^2 - b e^2 x - bde + c d^2\right)^{\frac{3}{2}} c^3 e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(-c^2*e^2*g*x^2+4*b*c*e^2*g*x-7*c^2*d*e*g*x-3*c^2*e^2*
f*x+8*b^2*e^2*g-22*b*c*d*e*g-6*b*c*e^2*f+14*c^2*d^2*g+9*c^2*d*e*f)*(e*x+d)^
(3/2)/c^3/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.72, size = 112, normalized size = 0.52

$$-\frac{2 (cex - 3cd + 2be) f}{\sqrt{-cex + cd - be}\, c^2 e} - \frac{2 \left(c^2 e^2 x^2 - 14 c^2 d^2 + 22 bcde - 8 b^2 e^2 + \left(7 c^2 de - 4 bce^2\right) x\right) g}{3 \sqrt{-cex + cd - be}\, c^3 e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2*(c*e*x - 3*c*d + 2*b*e)*f/(sqrt(-c*e*x + c*d - b*e)*c^2*e) - 2/3*(c^2*e^
2*x^2 - 14*c^2*d^2 + 22*b*c*d*e - 8*b^2*e^2 + (7*c^2*d*e - 4*b*c*e^2)*x)*g/
(sqrt(-c*e*x + c*d - b*e)*c^3*e^2)
```

mupad [B] time = 2.76, size = 167, normalized size = 0.77

$$\frac{\left(\frac{2 g x^2 \sqrt{d+e x}}{3 c^2 e^2} - \frac{\sqrt{d+e x} \left(16 g b^2 e^2 - 44 g b c d e - 12 f b c e^2 + 28 g c^2 d^2 + 18 f c^2 d e\right)}{3 c^4 e^4} + \frac{2 x \sqrt{d+e x} \left(7 c d g - 4 b e g + 3 c e f\right)}{3 c^3 e^3}\right) \sqrt{c d^2 - b d e - c e^2 x^2 - b e^2 x}}{x^2 + \frac{b x}{c} + \frac{d (b e - c d)}{c e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(5/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] (((2*g*x^2*(d + e*x)^(1/2))/(3*c^2*e^2) - ((d + e*x)^(1/2)*(16*b^2*e^2*g +
28*c^2*d^2*g - 12*b*c*e^2*f + 18*c^2*d*e*f - 44*b*c*d*e*g))/(3*c^4*e^4) + (
2*x*(d + e*x)^(1/2)*(7*c*d*g - 4*b*e*g + 3*c*e*f))/(3*c^3*e^3))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x^2 + (b*x)/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2041 $\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{c^2e^2\sqrt{d+ex}\,(2cd-be)}+\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Rubi [A] time = 0.16, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {788, 648}

$$\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{c^2e^2\sqrt{d+ex}\,(2cd-be)}+\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(3/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (2*(c*e*f + 3*c*d*g - 2*b*e*g)*Sqrt[d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2])/(c^2*e^2*(2*c*d - b*e)*Sqrt[d + e*x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx=\frac{2(cef+cdg-beg)(d+ex)^{3/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(cef+3cdg-2beg)\int \frac{}{\sqrt{cd^2-b}}}{ce(2cd-be)}$$
$$=\frac{2(cef+cdg-beg)(d+ex)^{3/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(cef+3cdg-2beg)\sqrt{d(cd}}{c^2e^2(2cd-be)\sqrt{}}$$

Mathematica [A] time = 0.05, size = 60, normalized size = 0.41

$$\frac{2\sqrt{d+ex}\,(-2beg+2cdg+ce(f-gx))}{c^2e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(2*c*d*g - 2*b*e*g + c*e*(f - g*x)))/(c^2*e^2*Sqrt[(d + e*
x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 3.68, size = 88, normalized size = 0.59

$$\frac{2\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}\,(2beg+cg(d+ex)-3cdg-cef)}{c^2e^2\sqrt{d+ex}\,(be+c(d+ex)-2cd)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(-(c*e*f) - 3*c*d*g + 2*b*e*g + c*g*(d + e*x))*Sqrt[(2*c*d - b*e)*(d + e
*x) - c*(d + e*x)^2])/(c^2*e^2*Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))
```

fricas [A] time = 0.41, size = 102, normalized size = 0.69

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx-cef-2\,(cd-be)g\right)\sqrt{ex+d}}{c^3e^4x^2+bc^2e^4x-c^3d^2e^2+bc^2de^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x - c*e*f - 2*(c*d - b*
e)*g)*sqrt(e*x + d)/(c^3*e^4*x^2 + b*c^2*e^4*x - c^3*d^2*e^2 + b*c^2*d*e^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 78, normalized size = 0.53

$$\frac{2\,(cex+be-cd)\left(cegx+2beg-2cdg-cef\right)(ex+d)^{\frac{3}{2}}}{\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{3}{2}}c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2*(c*e*x+b*e-c*d)*(c*e*g*x+2*b*e*g-2*c*d*g-c*e*f)*(e*x+d)^(3/2)/c^2/e^2/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.74, size = 62, normalized size = 0.42

$$\frac{2\,f}{\sqrt{-cex+cd-be}\,ce}-\frac{2\,(cex-2\,cd+2\,be)g}{\sqrt{-cex+cd-be}\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] 2*f/(sqrt(-c*e*x + c*d - b*e)*c*e) - 2*(c*e*x - 2*c*d + 2*b*e)*g/(sqrt(-c*e
*x + c*d - b*e)*c^2*e^2)
```

mupad [B] time = 2.78, size = 107, normalized size = 0.72

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(4\,c\,d\,g-4\,b\,e\,g+2\,c\,e\,f\right)}{c^3\,e^4}-\frac{2\,g\,x\,\sqrt{d+e\,x}}{c^2\,e^3}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x^2+\frac{b\,x}{c}+\frac{d\,\left(b\,e-c\,d\right)}{c\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(4*c*d*g - 4*b*e*g + 2*c*e*f))/(c^3*e^4) - (2*g*x*(d +
e*x)^(1/2))/(c^2*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x^2 +
(b*x)/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + ex\right)^{\frac{3}{2}} \left(f + gx\right)}{\left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((d + e*x)**(3/2)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)
, x)
```

3.2042 $\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=155

$$\frac{2\sqrt{d+ex}\,(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

Rubi [A] time = 0.17, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 660, 208}

$$\frac{2\sqrt{d+ex}\,(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*Sqrt[d + e*x])/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(e^2*(2*c*d - b*
e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)\sqrt{d+ex}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(ef-dg)\int \frac{1}{\sqrt{d+ex}\,\sqrt{cd^2-bde-be^2}}}{e(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2(ef-dg))\,\text{Subst}\left(\int \frac{}{-2cde^2+}\right.}{2c}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-}}{\sqrt{2cd-b}}\right.}{e^2(2cd-be)^{3/2}}$$

Mathematica [A] time = 0.14, size = 147, normalized size = 0.95

$$\frac{2\sqrt{d+ex}\left(c\sqrt{2cd-be}\,(dg-ef)\sqrt{c(d-ex)-be}\,\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)+(2cd-be)(-beg+cdg+cef)\right)}{ce^2(be-2cd)^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*((2*c*d - b*e)*(c*e*f + c*d*g - b*e*g) + c*Sqrt[2*c*d - b*
e]*(-(e*f) + d*g)*Sqrt[-(b*e) + c*(d - e*x)]*ArcTanh[Sqrt[c*d - b*e - c*e*x
]/Sqrt[2*c*d - b*e]]))/(c*e^2*(-2*c*d + b*e)^2*Sqrt[(d + e*x)*(-(b*e) + c*(
d - e*x))])
```

IntegrateAlgebraic [A] time = 2.80, size = 187, normalized size = 1.21

$$\frac{2\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\,(-beg+cdg+cef)}{ce^2\sqrt{d+ex}\,(be-2cd)(be+c(d+ex)-2cd)}+\frac{2(dg-ef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2(be-2cd)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*
x)^2])/(c*e^2*(-2*c*d + b*e)*Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x))) +
(2*(-(e*f) + d*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) -
 c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(e^2*(-2*c*
d + b*e)^(3/2))
```

fricas [B] time = 0.42, size = 776, normalized size = 5.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [-(((c^2*e^3*f - c^2*d*e^2*g)*x^2 - (c^2*d^2*e - b*c*d*e^2)*f + (c^2*d^3 -
b*c*d^2*e)*g + (b*c*e^3*f - b*c*d*e^2*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x
^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 - b*e^2*x
+ c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)
) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c^2*d*e - b*c*e^2)*f +
 (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqrt(e*x + d))/(4*c^4*d^4*e^2 - 8*b*c
```

```
^3*d^3*e^3 + 5*b^2*c^2*d^2*e^4 - b^3*c*d*e^5 - (4*c^4*d^2*e^4 - 4*b*c^3*d*e
^5 + b^2*c^2*e^6)*x^2 - (4*b*c^3*d^2*e^4 - 4*b^2*c^2*d*e^5 + b^3*c*e^6)*x),
 2*(((c^2*e^3*f - c^2*d*e^2*g)*x^2 - (c^2*d^2*e - b*c*d*e^2)*f + (c^2*d^3 -
 b*c*d^2*e)*g + (b*c*e^3*f - b*c*d*e^2*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*
e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e)*((2*c^2*d*e - b*c*e^2)*f + (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqrt(
e*x + d))/(4*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3 + 5*b^2*c^2*d^2*e^4 - b^3*c*d*e^
5 - (4*c^4*d^2*e^4 - 4*b*c^3*d*e^5 + b^2*c^2*e^6)*x^2 - (4*b*c^3*d^2*e^4 -
4*b^2*c^2*d*e^5 + b^3*c*e^6)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[72,91,-18,-31,46]Warning, need to choose a
branch for the root of a polynomial with parameters. This might be wrong.Th
e choice was done assuming [b,c,d,exp(1),exp(2)]=[-76,-17,63,68,98]Warning,
 need to choose a branch for the root of a polynomial with parameters. This
 might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[-95,-95
,-57,19,-77]Warning, need to choose a branch for the root of a polynomial w
ith parameters. This might be wrong.The choice was done assuming [b,c,d,exp
(1),exp(2)]=[-29,-98,-9,8,96]Evaluation time: 111.17Unable to transpose Err
or: Bad Argument Value
```

maple [A] time = 0.07, size = 207, normalized size = 1.34

$$-\frac{2\left(\sqrt{-cex-be+cd}\, cdg \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-\sqrt{-cex-be+cd}\, cef \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+\sqrt{be-2cd}\, beg-\sqrt{be-2cd}\, cdg-\sqrt{be-2cd}\, cef\right)\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}{(be-2cd)^{\frac{3}{2}}\,(cex+be-cd)\,\sqrt{ex+d}\;c\,e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2*(arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d*g*(-c*e*x-b*e+c*d)
^(1/2)-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*e*f*(-c*e*x-b*e+c
*d)^(1/2)+(b*e-2*c*d)^(1/2)*b*e*g-(b*e-2*c*d)^(1/2)*c*d*g-(b*e-2*c*d)^(1/2)
*c*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/c/(c*e
*x+b*e-c*d)/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\left(gx+f\right)}{\left(-ce^{2}x^{2}-be^{2}x+cd^{2}-bde\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(e*x + d)*(g*x + f)/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(f+g\,x)\,\sqrt{d+e\,x}}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(-(d+ex)\,(be-cd+cex)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral(sqrt(d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x
)
```

3.2043 $\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{ef-dg}{e^2\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{\sqrt{d+ex}\,(-2beg+cdg+3cef)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(-2beg+cdg+3ce}{e^2}$$

Rubi [A] time = 0.35, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 666, 660, 208}

$$-\frac{ef-dg}{e^2\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{\sqrt{d+ex}\,(-2beg+cdg+3cef)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(-2beg+cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x
]
```

```
[Out] -((e*f - d*g)/(e^2*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])) + ((3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(e^2*(2*c*d -
 b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - ((3*c*e*f + c*d*g - 2*
b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]
*Sqrt[d + e*x])])/(e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3cef+cd}{}$$

$$= -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3ce}{e^2(2cd-b}$$

$$= -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3ce}{e^2(2cd-b}$$

$$= -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3ce}{e^2(2cd-b}$$

Mathematica [C] time = 0.07, size = 117, normalized size = 0.52

$$\frac{(d+ex)(-2beg+cdg+3cef)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)+(2cd-be)(dg-ef)}{e^2\sqrt{d+ex}\,(be-2cd)^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3
/2)),x]
```

```
[Out] ((2*c*d - b*e)*(-(e*f) + d*g) + (3*c*e*f + c*d*g - 2*b*e*g)*(d + e*x)*Hyper
geometric2F1[-1/2, 1, 1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(e^2*(-2
*c*d + b*e)^2*Sqrt[d + e*x]*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 3.64, size = 231, normalized size = 1.04

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(2beg(d+ex)+bdeg-be^2f-2cd^2g-3cef(d+ex)+2cdef-cdg(d+ex)\right)}{e^2(d+ex)^{3/2}(be-2cd)^2(be+c(d+ex)-2cd)}+\frac{(-2beg+cdg+3cef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2(be-2cd)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^
2*x^2)^(3/2)),x]
```

```
[Out] ((2*c*d*e*f - b*e^2*f - 2*c*d^2*g + b*d*e*g - 3*c*e*f*(d + e*x) - c*d*g*(d
+ e*x) + 2*b*e*g*(d + e*x))*Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e
*x)^2])/(e^2*(-2*c*d + b*e)^2*(d + e*x)^(3/2)*(-2*c*d + b*e + c*(d + e*x)))
 + ((3*c*e*f + c*d*g - 2*b*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*
e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))
])/(e^2*(-2*c*d + b*e)^(5/2))
```

fricas [B] time = 0.46, size = 1351, normalized size = 6.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [1/2*(((3*c^2*e^4*f + (c^2*d*e^3 - 2*b*c*e^4)*g)*x^3 + (3*(c^2*d*e^3 + b*c*
e^4)*f + (c^2*d^2*e^2 - b*c*d*e^3 - 2*b^2*e^4)*g)*x^2 - 3*(c^2*d^3*e - b*c*
d^2*e^2)*f - (c^2*d^4 - 3*b*c*d^3*e + 2*b^2*d^2*e^2)*g - (3*(c^2*d^2*e^2 -
2*b*c*d*e^3)*f + (c^2*d^3*e - 4*b*c*d^2*e^2 + 4*b^2*d*e^3)*g)*x)*sqrt(2*c*d
```

```
 - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2
*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c
^2*d^2*e + b*c*d*e^2 - b^2*e^3)*f + 3*(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2)
*g + (3*(2*c^2*d*e^2 - b*c*e^3)*f + (2*c^2*d^2*e - 5*b*c*d*e^2 + 2*b^2*e^3)
*g)*x)*sqrt(e*x + d))/(8*c^4*d^6*e^2 - 20*b*c^3*d^5*e^3 + 18*b^2*c^2*d^4*e^
4 - 7*b^3*c*d^3*e^5 + b^4*d^2*e^6 - (8*c^4*d^3*e^5 - 12*b*c^3*d^2*e^6 + 6*b
^2*c^2*d*e^7 - b^3*c*e^8)*x^3 - (8*c^4*d^4*e^4 - 4*b*c^3*d^3*e^5 - 6*b^2*c^
2*d^2*e^6 + 5*b^3*c*d*e^7 - b^4*e^8)*x^2 + (8*c^4*d^5*e^3 - 28*b*c^3*d^4*e^
4 + 30*b^2*c^2*d^3*e^5 - 13*b^3*c*d^2*e^6 + 2*b^4*d*e^7)*x), (((3*c^2*e^4*f
 + (c^2*d*e^3 - 2*b*c*e^4)*g)*x^3 + (3*(c^2*d*e^3 + b*c*e^4)*f + (c^2*d^2*e
^2 - b*c*d*e^3 - 2*b^2*e^4)*g)*x^2 - 3*(c^2*d^3*e - b*c*d^2*e^2)*f - (c^2*d
^4 - 3*b*c*d^3*e + 2*b^2*d^2*e^2)*g - (3*(c^2*d^2*e^2 - 2*b*c*d*e^3)*f + (c
^2*d^3*e - 4*b*c*d^2*e^2 + 4*b^2*d*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c
*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 -
b*d*e)*((2*c^2*d^2*e + b*c*d*e^2 - b^2*e^3)*f + 3*(2*c^2*d^3 - 3*b*c*d^2*e
+ b^2*d*e^2)*g + (3*(2*c^2*d*e^2 - b*c*e^3)*f + (2*c^2*d^2*e - 5*b*c*d*e^2
+ 2*b^2*e^3)*g)*x)*sqrt(e*x + d))/(8*c^4*d^6*e^2 - 20*b*c^3*d^5*e^3 + 18*b^
2*c^2*d^4*e^4 - 7*b^3*c*d^3*e^5 + b^4*d^2*e^6 - (8*c^4*d^3*e^5 - 12*b*c^3*d
^2*e^6 + 6*b^2*c^2*d*e^7 - b^3*c*e^8)*x^3 - (8*c^4*d^4*e^4 - 4*b*c^3*d^3*e^
5 - 6*b^2*c^2*d^2*e^6 + 5*b^3*c*d*e^7 - b^4*e^8)*x^2 + (8*c^4*d^5*e^3 - 28*
b*c^3*d^4*e^4 + 30*b^2*c^2*d^3*e^5 - 13*b^3*c*d^2*e^6 + 2*b^4*d*e^7)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[72,91,-18,-31,46]Warning, need to choose a
branch for the root of a polynomial with parameters. This might be wrong.Th
e choice was done assuming [b,c,d,exp(1),exp(2)]=[-76,-17,63,68,98]Warning,
 need to choose a branch for the root of a polynomial with parameters. This
 might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[-95,-95
,-57,19,-77]Warning, need to choose a branch for the root of a polynomial w
ith parameters. This might be wrong.The choice was done assuming [b,c,d,exp
(1),exp(2)]=[-29,-98,-9,8,96]Evaluation time: 119.66Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.07, size = 479, normalized size = 2.15

$$\frac{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\, \left(2 \sqrt{-c e x-b e+c d}\, b e^{2} g x \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-\sqrt{-c e x-b e+c d}\, c d e g x \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-3 \sqrt{-c e x-b e+c d}\, c e^{2} f x \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+2 \sqrt{-c e x-b e+c d}\, b d e g \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+2 \sqrt{b e-2 c d}\, b e^{2} g x-\sqrt{-c e x-b e+c d}\, c d^{2} g \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-3 \sqrt{-c e x-b e+c d}\, c d e f \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-\sqrt{b e-2 c d}\, c d e g x-3 \sqrt{b e-2 c d}\, c e^{2} f x+3 \sqrt{b e-2 c d}\, b d e g-\sqrt{b e-2 c d}\, b e^{2} f-3 \sqrt{b e-2 c d}\, c d^{2} g-\sqrt{b e-2 c d}\, c d e f\right)}{\left(e x+d\right)^{\frac{3}{2}} \left(c e x+b e-c d\right) \left(b e-2 c d\right)^{\frac{5}{2}} e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 1/(e*x+d)^(3/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(2*arctan((-c*e*x-b*
e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*b*e^2*g-arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*c*d*e*g-3*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*c*
e^2*f+2*(b*e-2*c*d)^(1/2)*x*b*e^2*g-(b*e-2*c*d)^(1/2)*x*c*d*e*g-3*(b*e-2*c*
d)^(1/2)*x*c*e^2*f+2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e
*x-b*e+c*d)^(1/2)*b*d*e*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*
```

```
(-c*e*x-b*e+c*d)^(1/2)*c*d^2*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^
(1/2))*(-c*e*x-b*e+c*d)^(1/2)*c*d*e*f+3*(b*e-2*c*d)^(1/2)*b*d*e*g-(b*e-2*c*
d)^(1/2)*b*e^2*f-3*(b*e-2*c*d)^(1/2)*c*d^2*g-(b*e-2*c*d)^(1/2)*c*d*e*f)/(c*
e*x+b*e-c*d)/e^2/(b*e-2*c*d)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx + f}{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*sqrt(e*x
+ d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f + g\,x}{\sqrt{d + e\,x}\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{3}{2}}\sqrt{d + ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(1/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*sqrt(d + e*x)),
 x)
```

3.2044 $\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=308

$$\frac{dg-ef}{2e^2(d+ex)^{3/2}(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{3c\sqrt{d+ex}\,(-4beg+3cdg+5cef)}{4e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-4}{4e^2\sqrt{d+ex}\,(2cd}$$

Rubi [A] time = 0.47, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 672, 666, 660, 208}

$$-\frac{ef-dg}{2e^2(d+ex)^{3/2}(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{3c\sqrt{d+ex}\,(-4beg+3cdg+5cef)}{4e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-4beg+3cdg+5cef}{4e^2\sqrt{d+ex}\,(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{3c(-4beg+3cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{4e^2(2cd-be)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))
,x]
```

```
[Out] -(e*f - d*g)/(2*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2]) - (5*c*e*f + 3*c*d*g - 4*b*e*g)/(4*e^2*(2*c*d - b*e)^2*Sq
rt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (3*c*(5*c*e*f + 3*
c*d*g - 4*b*e*g)*Sqrt[d + e*x])/(4*e^2*(2*c*d - b*e)^3*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2]) - (3*c*(5*c*e*f + 3*c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e
^2*(2*c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(5cef}{}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

Mathematica [C] time = 0.10, size = 129, normalized size = 0.42

$$\frac{\frac{c(d+ex)^2(-4beg+3cdg+5cef)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{dg}{e}-f}{2e(d+ex)^{3/2}(2cd-be)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^
(3/2)),x]
```

```
[Out] (-f + (d*g)/e + (c*(5*c*e*f + 3*c*d*g - 4*b*e*g)*(d + e*x)^2*Hypergeometric
2F1[-1/2, 2, 1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b*e)
^2))/(2*e*(2*c*d - b*e)*(d + e*x)^(3/2)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x
))])
```

IntegrateAlgebraic [A] time = 6.52, size = 362, normalized size = 1.18

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-4b^2e^2g(d+ex)+2b^2de^2g-2b^2e^3f-8bcd^2eg+5bce^2f(d+ex)+8bcde^2f+11bcdeg(d+ex)-12bceg(d+ex)^2+8c^2d^3g-8c^2d^2ef-6c^2d^2g(d+ex)-10c^2def(d+ex)+15c^2ef(d+ex)^2+9c^2dg(d+ex)^2\right)}{4e^2(d+ex)^{5/2}(be-2cd)^3(be+c(d+ex)-2cd)}+\frac{3\left(-4bceg+3c^2dg+5c^2ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{4e^2(2cd-be)^3\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(-8*c^2*d^2*e*f + 8*
b*c*d*e^2*f - 2*b^2*e^3*f + 8*c^2*d^3*g - 8*b*c*d^2*e*g + 2*b^2*d*e^2*g - 1
0*c^2*d*e*f*(d + e*x) + 5*b*c*e^2*f*(d + e*x) - 6*c^2*d^2*g*(d + e*x) + 11*
```

```
b*c*d*e*g*(d + e*x) - 4*b^2*e^2*g*(d + e*x) + 15*c^2*e*f*(d + e*x)^2 + 9*c^
2*d*g*(d + e*x)^2 - 12*b*c*e*g*(d + e*x)^2))/(4*e^2*(-2*c*d + b*e)^3*(d + e
*x)^(5/2)*(-2*c*d + b*e + c*(d + e*x))) + (3*(5*c^2*e*f + 3*c^2*d*g - 4*b*c
*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)
^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))]])/(4*e^2*(2*c*d - b*e)^3*
Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.48, size = 1976, normalized size = 6.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/8*(3*((5*c^3*e^5*f + (3*c^3*d*e^4 - 4*b*c^2*e^5)*g)*x^4 + (5*(2*c^3*d*e
^4 + b*c^2*e^5)*f + (6*c^3*d^2*e^3 - 5*b*c^2*d*e^4 - 4*b^2*c*e^5)*g)*x^3 +
3*(5*b*c^2*d*e^4*f + (3*b*c^2*d^2*e^3 - 4*b^2*c*d*e^4)*g)*x^2 - 5*(c^3*d^4*
e - b*c^2*d^3*e^2)*f - (3*c^3*d^5 - 7*b*c^2*d^4*e + 4*b^2*c*d^3*e^2)*g - (5
*(2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3)*f + (6*c^3*d^4*e - 17*b*c^2*d^3*e^2 + 12
*b^2*c*d^2*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e
 - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(
2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2
- b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^3*d*e^3 - b*c^2*e^4)*f + (6*c^3*d^2*e
^2 - 11*b*c^2*d*e^3 + 4*b^2*c*e^4)*g)*x^2 - (6*c^3*d^3*e - 29*b*c^2*d^2*e^2
 + 17*b^2*c*d*e^3 - 2*b^3*e^4)*f + (22*c^3*d^4 - 29*b*c^2*d^3*e + 5*b^2*c*d
^2*e^2 + 2*b^3*d*e^3)*g + (5*(8*c^3*d^2*e^2 - 2*b*c^2*d*e^3 - b^2*c*e^4)*f
+ (24*c^3*d^3*e - 38*b*c^2*d^2*e^2 + 5*b^2*c*d*e^3 + 4*b^3*e^4)*g)*x)*sqrt(
e*x + d))/(16*c^5*d^8*e^2 - 48*b*c^4*d^7*e^3 + 56*b^2*c^3*d^6*e^4 - 32*b^3*
c^2*d^5*e^5 + 9*b^4*c*d^4*e^6 - b^5*d^3*e^7 - (16*c^5*d^4*e^6 - 32*b*c^4*d^
3*e^7 + 24*b^2*c^3*d^2*e^8 - 8*b^3*c^2*d*e^9 + b^4*c*e^10)*x^4 - (32*c^5*d^
5*e^5 - 48*b*c^4*d^4*e^6 + 16*b^2*c^3*d^3*e^7 + 8*b^3*c^2*d^2*e^8 - 6*b^4*c
*d*e^9 + b^5*e^10)*x^3 - 3*(16*b*c^4*d^5*e^5 - 32*b^2*c^3*d^4*e^6 + 24*b^3*
c^2*d^3*e^7 - 8*b^4*c*d^2*e^8 + b^5*d*e^9)*x^2 + (32*c^5*d^7*e^3 - 112*b*c^
4*d^6*e^4 + 144*b^2*c^3*d^5*e^5 - 88*b^3*c^2*d^4*e^6 + 26*b^4*c*d^3*e^7 - 3
*b^5*d^2*e^8)*x), 1/4*(3*((5*c^3*e^5*f + (3*c^3*d*e^4 - 4*b*c^2*e^5)*g)*x^4
 + (5*(2*c^3*d*e^4 + b*c^2*e^5)*f + (6*c^3*d^2*e^3 - 5*b*c^2*d*e^4 - 4*b^2*
c*e^5)*g)*x^3 + 3*(5*b*c^2*d*e^4*f + (3*b*c^2*d^2*e^3 - 4*b^2*c*d*e^4)*g)*x
^2 - 5*(c^3*d^4*e - b*c^2*d^3*e^2)*f - (3*c^3*d^5 - 7*b*c^2*d^4*e + 4*b^2*c
*d^3*e^2)*g - (5*(2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3)*f + (6*c^3*d^4*e - 17*b*
c^2*d^3*e^2 + 12*b^2*c*d^2*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2
 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(
3*(5*(2*c^3*d*e^3 - b*c^2*e^4)*f + (6*c^3*d^2*e^2 - 11*b*c^2*d*e^3 + 4*b^2*
c*e^4)*g)*x^2 - (6*c^3*d^3*e - 29*b*c^2*d^2*e^2 + 17*b^2*c*d*e^3 - 2*b^3*e^
4)*f + (22*c^3*d^4 - 29*b*c^2*d^3*e + 5*b^2*c*d^2*e^2 + 2*b^3*d*e^3)*g + (5
*(8*c^3*d^2*e^2 - 2*b*c^2*d*e^3 - b^2*c*e^4)*f + (24*c^3*d^3*e - 38*b*c^2*d
^2*e^2 + 5*b^2*c*d*e^3 + 4*b^3*e^4)*g)*x)*sqrt(e*x + d))/(16*c^5*d^8*e^2 -
48*b*c^4*d^7*e^3 + 56*b^2*c^3*d^6*e^4 - 32*b^3*c^2*d^5*e^5 + 9*b^4*c*d^4*e^
6 - b^5*d^3*e^7 - (16*c^5*d^4*e^6 - 32*b*c^4*d^3*e^7 + 24*b^2*c^3*d^2*e^8 -
 8*b^3*c^2*d*e^9 + b^4*c*e^10)*x^4 - (32*c^5*d^5*e^5 - 48*b*c^4*d^4*e^6 + 1
6*b^2*c^3*d^3*e^7 + 8*b^3*c^2*d^2*e^8 - 6*b^4*c*d*e^9 + b^5*e^10)*x^3 - 3*(
16*b*c^4*d^5*e^5 - 32*b^2*c^3*d^4*e^6 + 24*b^3*c^2*d^3*e^7 - 8*b^4*c*d^2*e^
8 + b^5*d*e^9)*x^2 + (32*c^5*d^7*e^3 - 112*b*c^4*d^6*e^4 + 144*b^2*c^3*d^5*
e^5 - 88*b^3*c^2*d^4*e^6 + 26*b^4*c*d^3*e^7 - 3*b^5*d^2*e^8)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorithm="giac")

[Out] Exception raised: TypeError >> An error occurred running a Giac command:INPUT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.47Unable to transpose Error: Bad Argument Value

maple [B] time = 0.09, size = 824, normalized size = 2.68

$$-\frac{\sqrt{-c e^2 x^2-b e^2 x-bde+c d^2}\,\left(12\sqrt{-cex-be+cd}\,b c e^3 g x^2 \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-9\sqrt{-cex-be+cd}\,c^2 d e^2 g x^2 \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-15\sqrt{-cex-be+cd}\,c^2 e^3 f x^2 \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+24\sqrt{-cex-be+cd}\,b c d e^2 g x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+12\sqrt{be-2cd}\,b c e^3 g x^2-18\sqrt{-cex-be+cd}\,c^2 d^2 e g x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-30\sqrt{-cex-be+cd}\,c^2 d e^2 f x \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-9\sqrt{be-2cd}\,c^2 d e^2 g x^2-15\sqrt{be-2cd}\,c^2 e^3 f x^2+4\sqrt{be-2cd}\,b^2 e^3 g x+12\sqrt{-cex-be+cd}\,b c d^2 e g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+13\sqrt{be-2cd}\,b c d e^2 g x-5\sqrt{be-2cd}\,b c e^3 f x-9\sqrt{-cex-be+cd}\,c^2 d^3 g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-15\sqrt{-cex-be+cd}\,c^2 d^2 e f \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-12\sqrt{be-2cd}\,c^2 d^2 e g x-20\sqrt{be-2cd}\,c^2 d e^2 f x+2\sqrt{be-2cd}\,b^2 d e^2 g+2\sqrt{be-2cd}\,b^2 e^3 f+9\sqrt{be-2cd}\,b c d^2 e g-13\sqrt{be-2cd}\,b c d e^2 f-11\sqrt{be-2cd}\,c^2 d^3 g+3\sqrt{be-2cd}\,c^2 d^2 e f\right)}{4\,(ex+d)^{\frac{5}{2}}\,(cex+be-cd)\,(be-2cd)^{\frac{7}{2}}\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)

[Out] -1/4/(e*x+d)^(5/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(12*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c*e^3*g-9*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^2*d*e^2*g-15*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^2*e^3*f+24*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c*d*e^2*g-18*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*d^2*e*g-30*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*d*e^2*f+12*(b*e-2*c*d)^(1/2)*x^2*b*c*e^3*g-9*(b*e-2*c*d)^(1/2)*x^2*c^2*d*e^2*g-15*(b*e-2*c*d)^(1/2)*x^2*c^2*e^3*f+12*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c*d^2*e*g-9*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^3*g-15*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*e*f+4*(b*e-2*c*d)^(1/2)*x*b^2*e^3*g+13*(b*e-2*c*d)^(1/2)*x*b*c*d*e^2*g-5*(b*e-2*c*d)^(1/2)*x*b*c*e^3*f-12*(b*e-2*c*d)^(1/2)*x*c^2*d^2*e*g-20*(b*e-2*c*d)^(1/2)*x*c^2*d*e^2*f+2*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g+2*(b*e-2*c*d)^(1/2)*b^2*e^3*f+9*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g-13*(b*e-2*c*d)^(1/2)*b*c*d*e^2*f-11*(b*e-2*c*d)^(1/2)*c^2*d^3*g+3*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f)/(c*e*x+b*e-c*d)/e^2/(b*e-2*c*d)^(7/2)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorithm="maxima")

[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(e*x + d)^(3/2)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{3/2}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)

[Out] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(3/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**(3/2
)), x)
```

3.2045 $\int \frac{f+gx}{(d+ex)^{5/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=387

$$\frac{5c^2\sqrt{d+ex}\,(-6beg+5cdg+7cef)}{8e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5c^2(-6beg+5cdg+7cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{9/2}}-\frac{}{24e^2\sqrt{d+}}$$

Rubi [A] time = 0.63, antiderivative size = 387, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 672, 666, 660, 208}

$$\frac{5c^2\sqrt{d+ex}\,(-6beg+5cdg+7cef)}{8e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5c^2(-6beg+5cdg+7cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{9/2}}-\frac{5c(-6beg+5cdg+7cef)}{24e^2\sqrt{d+ex}\,(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-6beg+5cdg+7cef}{12e^2(d+ex)^{3/2}(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{ef-dg}{3e^2(d+ex)^{5/2}(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(5/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))
,x]
```

```
[Out] -(e*f - d*g)/(3*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2]) - (7*c*e*f + 5*c*d*g - 6*b*e*g)/(12*e^2*(2*c*d - b*e)^2*(
d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (5*c*(7*c*e*f +
 5*c*d*g - 6*b*e*g))/(24*e^2*(2*c*d - b*e)^3*Sqrt[d + e*x]*Sqrt[d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2]) + (5*c^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*Sqrt[d +
e*x])/(8*e^2*(2*c*d - b*e)^4*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (
5*c^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(8*e^2*(2*c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{5/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(7cef+ \cdots}{\cdots}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{12e^2(2cd \cdots}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{12e^2(2cd \cdots}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{12e^2(2cd \cdots}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{12e^2(2cd \cdots}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\cdots}{12e^2(2cd \cdots}$$

Mathematica [C] time = 0.11, size = 127, normalized size = 0.33

$$\frac{\frac{c^2(d+ex)^3(-6beg+5cdg+7cef)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+dg-ef}{3e^2(d+ex)^{5/2}(2cd-be)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(5/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^
(3/2)),x]
```

```
[Out] (-(e*f) + d*g + (c^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*(d + e*x)^3*Hypergeometr
ic2F1[-1/2, 3, 1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^3
)/(3*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x)
)])
```

IntegrateAlgebraic [A] time = 9.20, size = 517, normalized size = 1.34

$$\frac{\sqrt{-be(d+ex)-c(d+ex)^2+2cd(d+ex)}\left(-12b^3e^3g(d+ex)+8b^3de^3g-8b^3e^4f-48b^2cd^2e^2g+14b^2ce^3f(d+ex)+48b^2cde^3f+58b^2cde^2g(d+ex)+30b^2ce^2g(d+ex)^2+96bc^2d^3eg-96bc^2d^2e^2f-88bc^2d^2eg(d+ex)-56bc^2de^2f(d+ex)-35bc^2e^2f(d+ex)^2-85bc^2deg(d+ex)^2+90bc^2eg(d+ex)^3-64c^3d^4g+64c^3d^3ef+40c^3d^3g(d+ex)+56c^3d^2ef(d+ex)+50c^3d^2g(d+ex)^2+70c^3def(d+ex)^2-105c^3ef(d+ex)^3-75c^3dg(d+ex)^3\right)}{24e^2(d+ex)^{7/2}(be-2cd)^4(be+c(d+ex)-2cd)}+\frac{5\left(-6bc^2eg+5c^3dg+7c^3ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{8e^2(2cd-be)^4\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^(5/2)*(c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(64*c^3*d^3*e*f - 96
*b*c^2*d^2*e^2*f + 48*b^2*c*d*e^3*f - 8*b^3*e^4*f - 64*c^3*d^4*g + 96*b*c^2
*d^3*e*g - 48*b^2*c*d^2*e^2*g + 8*b^3*d*e^3*g + 56*c^3*d^2*e*f*(d + e*x) -
56*b*c^2*d*e^2*f*(d + e*x) + 14*b^2*c*e^3*f*(d + e*x) + 40*c^3*d^3*g*(d + e
*x) - 88*b*c^2*d^2*e*g*(d + e*x) + 58*b^2*c*d*e^2*g*(d + e*x) - 12*b^3*e^3*
g*(d + e*x) + 70*c^3*d*e*f*(d + e*x)^2 - 35*b*c^2*e^2*f*(d + e*x)^2 + 50*c^
3*d^2*g*(d + e*x)^2 - 85*b*c^2*d*e*g*(d + e*x)^2 + 30*b^2*c*e^2*g*(d + e*x)
^2 - 105*c^3*e*f*(d + e*x)^3 - 75*c^3*d*g*(d + e*x)^3 + 90*b*c^2*e*g*(d + e
*x)^3))/(24*e^2*(-2*c*d + b*e)^4*(d + e*x)^(7/2)*(-2*c*d + b*e + c*(d + e*x
))) + (5*(7*c^3*e*f + 5*c^3*d*g - 6*b*c^2*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*S
qrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e
+ c*(d + e*x)))])/(8*e^2*(2*c*d - b*e)^4*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.54, size = 2832, normalized size = 7.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [1/48*(15*((7*c^4*e^6*f + (5*c^4*d*e^5 - 6*b*c^3*e^6)*g)*x^5 + (7*(3*c^4*d*
e^5 + b*c^3*e^6)*f + (15*c^4*d^2*e^4 - 13*b*c^3*d*e^5 - 6*b^2*c^2*e^6)*g)*x
^4 + 2*(7*(c^4*d^2*e^4 + 2*b*c^3*d*e^5)*f + (5*c^4*d^3*e^3 + 4*b*c^3*d^2*e^
4 - 12*b^2*c^2*d*e^5)*g)*x^3 - 2*(7*(c^4*d^3*e^3 - 3*b*c^3*d^2*e^4)*f + (5*
c^4*d^4*e^2 - 21*b*c^3*d^3*e^3 + 18*b^2*c^2*d^2*e^4)*g)*x^2 - 7*(c^4*d^5*e
- b*c^3*d^4*e^2)*f - (5*c^4*d^6 - 11*b*c^3*d^5*e + 6*b^2*c^2*d^4*e^2)*g - (
7*(3*c^4*d^4*e^2 - 4*b*c^3*d^3*e^3)*f + (15*c^4*d^5*e - 38*b*c^3*d^4*e^2 +
24*b^2*c^2*d^3*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b
*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*s
qrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*(15*(7*(2*c^4*d*e^4 - b*c^3*e^5)*f + (10*c^4
*d^2*e^3 - 17*b*c^3*d*e^4 + 6*b^2*c^2*e^5)*g)*x^3 + 5*(7*(14*c^4*d^2*e^3 -
5*b*c^3*d*e^4 - b^2*c^2*e^5)*f + (70*c^4*d^3*e^2 - 109*b*c^3*d^2*e^3 + 25*b
^2*c^2*d*e^4 + 6*b^3*c*e^5)*g)*x^2 - (170*c^4*d^4*e - 459*b*c^3*d^3*e^2 + 3
11*b^2*c^2*d^2*e^3 - 78*b^3*c*d*e^4 + 8*b^4*e^5)*f + (98*c^4*d^5 - 75*b*c^3
*d^4*e - 67*b^2*c^2*d^3*e^2 + 48*b^3*c*d^2*e^3 - 4*b^4*d*e^4)*g + (7*(34*c^
4*d^3*e^2 + 19*b*c^3*d^2*e^3 - 22*b^2*c^2*d*e^4 + 2*b^3*c*e^5)*f + (170*c^4
*d^4*e - 109*b*c^3*d^3*e^2 - 224*b^2*c^2*d^2*e^3 + 142*b^3*c*d*e^4 - 12*b^4
*e^5)*g)*x)*sqrt(e*x + d))/(32*c^6*d^10*e^2 - 112*b*c^5*d^9*e^3 + 160*b^2*c
^4*d^8*e^4 - 120*b^3*c^3*d^7*e^5 + 50*b^4*c^2*d^6*e^6 - 11*b^5*c*d^5*e^7 +
b^6*d^4*e^8 - (32*c^6*d^5*e^7 - 80*b*c^5*d^4*e^8 + 80*b^2*c^4*d^3*e^9 - 40*
b^3*c^3*d^2*e^10 + 10*b^4*c^2*d*e^11 - b^5*c*e^12)*x^5 - (96*c^6*d^6*e^6 -
208*b*c^5*d^5*e^7 + 160*b^2*c^4*d^4*e^8 - 40*b^3*c^3*d^3*e^9 - 10*b^4*c^2*d
^2*e^10 + 7*b^5*c*d*e^11 - b^6*e^12)*x^4 - 2*(32*c^6*d^7*e^5 - 16*b*c^5*d^6
*e^6 - 80*b^2*c^4*d^5*e^7 + 120*b^3*c^3*d^4*e^8 - 70*b^4*c^2*d^3*e^9 + 19*b
^5*c*d^2*e^10 - 2*b^6*d*e^11)*x^3 + 2*(32*c^6*d^8*e^4 - 176*b*c^5*d^7*e^5 +
 320*b^2*c^4*d^6*e^6 - 280*b^3*c^3*d^5*e^7 + 130*b^4*c^2*d^4*e^8 - 31*b^5*c
*d^3*e^9 + 3*b^6*d^2*e^10)*x^2 + (96*c^6*d^9*e^3 - 368*b*c^5*d^8*e^4 + 560*
b^2*c^4*d^7*e^5 - 440*b^3*c^3*d^6*e^6 + 190*b^4*c^2*d^5*e^7 - 43*b^5*c*d^4*
e^8 + 4*b^6*d^3*e^9)*x), 1/24*(15*((7*c^4*e^6*f + (5*c^4*d*e^5 - 6*b*c^3*e^
6)*g)*x^5 + (7*(3*c^4*d*e^5 + b*c^3*e^6)*f + (15*c^4*d^2*e^4 - 13*b*c^3*d*e
^5 - 6*b^2*c^2*e^6)*g)*x^4 + 2*(7*(c^4*d^2*e^4 + 2*b*c^3*d*e^5)*f + (5*c^4*
d^3*e^3 + 4*b*c^3*d^2*e^4 - 12*b^2*c^2*d*e^5)*g)*x^3 - 2*(7*(c^4*d^3*e^3 -
3*b*c^3*d^2*e^4)*f + (5*c^4*d^4*e^2 - 21*b*c^3*d^3*e^3 + 18*b^2*c^2*d^2*e^4
)*g)*x^2 - 7*(c^4*d^5*e - b*c^3*d^4*e^2)*f - (5*c^4*d^6 - 11*b*c^3*d^5*e +
6*b^2*c^2*d^4*e^2)*g - (7*(3*c^4*d^4*e^2 - 4*b*c^3*d^3*e^3)*f + (15*c^4*d^5
*e - 38*b*c^3*d^4*e^2 + 24*b^2*c^2*d^3*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan
(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d
)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
```

```
2 - b*d*e)*(15*(7*(2*c^4*d*e^4 - b*c^3*e^5)*f + (10*c^4*d^2*e^3 - 17*b*c^3*
d*e^4 + 6*b^2*c^2*e^5)*g)*x^3 + 5*(7*(14*c^4*d^2*e^3 - 5*b*c^3*d*e^4 - b^2*
c^2*e^5)*f + (70*c^4*d^3*e^2 - 109*b*c^3*d^2*e^3 + 25*b^2*c^2*d*e^4 + 6*b^3
*c*e^5)*g)*x^2 - (170*c^4*d^4*e - 459*b*c^3*d^3*e^2 + 311*b^2*c^2*d^2*e^3 -
 78*b^3*c*d*e^4 + 8*b^4*e^5)*f + (98*c^4*d^5 - 75*b*c^3*d^4*e - 67*b^2*c^2*
d^3*e^2 + 48*b^3*c*d^2*e^3 - 4*b^4*d*e^4)*g + (7*(34*c^4*d^3*e^2 + 19*b*c^3
*d^2*e^3 - 22*b^2*c^2*d*e^4 + 2*b^3*c*e^5)*f + (170*c^4*d^4*e - 109*b*c^3*d
^3*e^2 - 224*b^2*c^2*d^2*e^3 + 142*b^3*c*d*e^4 - 12*b^4*e^5)*g)*x)*sqrt(e*x
 + d))/(32*c^6*d^10*e^2 - 112*b*c^5*d^9*e^3 + 160*b^2*c^4*d^8*e^4 - 120*b^3
*c^3*d^7*e^5 + 50*b^4*c^2*d^6*e^6 - 11*b^5*c*d^5*e^7 + b^6*d^4*e^8 - (32*c^
6*d^5*e^7 - 80*b*c^5*d^4*e^8 + 80*b^2*c^4*d^3*e^9 - 40*b^3*c^3*d^2*e^10 + 1
0*b^4*c^2*d*e^11 - b^5*c*e^12)*x^5 - (96*c^6*d^6*e^6 - 208*b*c^5*d^5*e^7 +
160*b^2*c^4*d^4*e^8 - 40*b^3*c^3*d^3*e^9 - 10*b^4*c^2*d^2*e^10 + 7*b^5*c*d*
e^11 - b^6*e^12)*x^4 - 2*(32*c^6*d^7*e^5 - 16*b*c^5*d^6*e^6 - 80*b^2*c^4*d^
5*e^7 + 120*b^3*c^3*d^4*e^8 - 70*b^4*c^2*d^3*e^9 + 19*b^5*c*d^2*e^10 - 2*b^
6*d*e^11)*x^3 + 2*(32*c^6*d^8*e^4 - 176*b*c^5*d^7*e^5 + 320*b^2*c^4*d^6*e^6
 - 280*b^3*c^3*d^5*e^7 + 130*b^4*c^2*d^4*e^8 - 31*b^5*c*d^3*e^9 + 3*b^6*d^2
*e^10)*x^2 + (96*c^6*d^9*e^3 - 368*b*c^5*d^8*e^4 + 560*b^2*c^4*d^7*e^5 - 44
0*b^3*c^3*d^6*e^6 + 190*b^4*c^2*d^5*e^7 - 43*b^5*c*d^4*e^8 + 4*b^6*d^3*e^9)
*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 2.24Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.09, size = 1224, normalized size = 3.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 1/24/(e*x+d)^(7/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-105*(b*e-2*c*d)
^(1/2)*x^3*c^3*e^4*f+270*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(
-c*e*x-b*e+c*d)^(1/2)*x^2*b*c^2*d*e^3*g-12*(b*e-2*c*d)^(1/2)*x*b^3*e^4*g-75
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*c^
3*d^4*g+270*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*
d)^(1/2)*x*b*c^2*d^2*e^2*g-8*(b*e-2*c*d)^(1/2)*b^3*e^4*f-49*(b*e-2*c*d)^(1/
2)*c^3*d^4*g+40*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*g+62*(b*e-2*c*d)^(1/2)*b^2*
c*d*e^3*f+13*(b*e-2*c*d)^(1/2)*b*c^2*d^3*e*g-187*(b*e-2*c*d)^(1/2)*b*c^2*d^
2*e^2*f-4*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g+85*(b*e-2*c*d)^(1/2)*c^3*d^3*e*f-10
5*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x
^3*c^3*e^4*f+90*(b*e-2*c*d)^(1/2)*x^3*b*c^2*e^4*g-75*(b*e-2*c*d)^(1/2)*x^3*
c^3*d*e^3*g+30*(b*e-2*c*d)^(1/2)*x^2*b^2*c*e^4*g-35*(b*e-2*c*d)^(1/2)*x^2*b
*c^2*e^4*f-175*(b*e-2*c*d)^(1/2)*x^2*c^3*d^2*e^2*g-245*(b*e-2*c*d)^(1/2)*x^
2*c^3*d*e^3*f+14*(b*e-2*c*d)^(1/2)*x*b^2*c*e^4*f-85*(b*e-2*c*d)^(1/2)*x*c^3
*d^3*e*g-119*(b*e-2*c*d)^(1/2)*x*c^3*d^2*e^2*f-105*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*c^3*d^3*e*f-225*arctan((-c*
e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*c^3*d^3*e*g-
315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)
*x*c^3*d^2*e^2*f+118*(b*e-2*c*d)^(1/2)*x*b^2*c*d*e^3*g+12*(b*e-2*c*d)^(1/2)
```

```
*x*b*c^2*d^2*e^2*g-126*(b*e-2*c*d)^(1/2)*x*b*c^2*d*e^3*f+90*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d^3*e*g+90*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x^3*
b*c^2*e^4*g-75*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e
+c*d)^(1/2)*x^3*c^3*d*e^3*g-225*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))*(-c*e*x-b*e+c*d)^(1/2)*x^2*c^3*d^2*e^2*g-315*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x^2*c^3*d*e^3*f+185*(b*e-2*
c*d)^(1/2)*x^2*b*c^2*d*e^3*g)/(c*e*x+b*e-c*d)/e^2/(b*e-2*c*d)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(e*x + d)
^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{5/2}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(5/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2046 $\int \frac{(d+ex)^{13/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=448

$$-\frac{256\sqrt{d+ex}\,(2cd-be)^3(-10beg+13cdg+7cef)}{105c^6e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{128(d+ex)^{3/2}(2cd-be)^2(-10beg+13cdg+7cef)}{105c^5e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32(d+e\cdots}{10\cdots}$$

Rubi [A] time = 0.71, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{9/2}(-10beg+13cdg+7cef)}{21c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16(d+ex)^{7/2}(-10beg+13cdg+7cef)}{105c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32(d+ex)^{5/2}(2cd-be)(-10beg+13cdg+7cef)}{105c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{128(d+ex)^{3/2}(2cd-be)^2(-10beg+13cdg+7cef)}{105c^5e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{256\sqrt{d+ex}\,(2cd-be)^3(-10beg+13cdg+7cef)}{105c^6e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{13/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(13/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(13/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (256*(2*c*d - b*e)^3*(7*c*e*f + 13*
c*d*g - 10*b*e*g)*Sqrt[d + e*x])/(105*c^6*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2]) + (128*(2*c*d - b*e)^2*(7*c*e*f + 13*c*d*g - 10*b*e*g)*(d + e
*x)^(3/2))/(105*c^5*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (32*(2
*c*d - b*e)*(7*c*e*f + 13*c*d*g - 10*b*e*g)*(d + e*x)^(5/2))/(105*c^4*e^2*S
qrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (16*(7*c*e*f + 13*c*d*g - 10*b*
e*g)*(d + e*x)^(7/2))/(105*c^3*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
]) + (2*(7*c*e*f + 13*c*d*g - 10*b*e*g)*(d + e*x)^(9/2))/(21*c^2*e^2*(2*c*d
 - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{13/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(7cef+13cdg-10beg)\int}{3ce(2cd}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(7cef+13cdg-10}{21c^2e^2(2cd-be)\sqrt{d(cd-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{16(7cef+13cdg-10beg}{105c^3e^2\sqrt{d(cd-be)-be}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{32(2cd-be)(7cef+13cd}{105c^4e^2\sqrt{d(cd-be}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{128(2cd-be)^2(7cef+13}{105c^5e^2\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{256(2cd-be)^3(7cef+13}{105c^6e^2\sqrt{d(cd-be}}$$

Mathematica [A] time = 0.31, size = 366, normalized size = 0.82

$$\frac{2\sqrt{d+ex}\left(-1280b^5e^5g+128b^4ce^4(78dg+7ef-15egx)-32b^3c^2e^3\left(953d^2g+2de(91f-204gx)+3e^2x(5gx-14f)\right)+16b^2c^3e^2\left(2844d^3g+3d^2e(287f-681gx)+6de^2x(29gx-77f)+e^3x^2(21f+5gx)\right)-2bc^4e\left(16563d^4g+12d^3e(581f-1482gx)+6d^2e^2x(449gx-1106f)+12de^3x^2(63f+16gx)+e^4x^3(28f+15gx)\right)+c^5\left(9414d^5g+3d^4e(1687f-4707gx)+12d^3e^2x(292gx-637f)+2d^2e^3x^2(903f+257gx)+2de^4x^3(98f+57gx)+3e^5x^4(7f+5gx)\right)\right)}{105c^6e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(13/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
)^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(-1280*b^5*e^5*g + 128*b^4*c*e^4*(7*e*f + 78*d*g - 15*e*g*
x) - 32*b^3*c^2*e^3*(953*d^2*g + 2*d*e*(91*f - 204*g*x) + 3*e^2*x*(-14*f +
5*g*x)) + 16*b^2*c^3*e^2*(2844*d^3*g + 3*d^2*e*(287*f - 681*g*x) + e^3*x^2*
(21*f + 5*g*x) + 6*d*e^2*x*(-77*f + 29*g*x)) + c^5*(9414*d^5*g + 3*d^4*e*(1
687*f - 4707*g*x) + 3*e^5*x^4*(7*f + 5*g*x) + 2*d*e^4*x^3*(98*f + 57*g*x) +
 2*d^2*e^3*x^2*(903*f + 257*g*x) + 12*d^3*e^2*x*(-637*f + 292*g*x)) - 2*b*c
^4*e*(16563*d^4*g + 12*d^3*e*(581*f - 1482*g*x) + e^4*x^3*(28*f + 15*g*x) +
 12*d*e^3*x^2*(63*f + 16*g*x) + 6*d^2*e^2*x*(-1106*f + 449*g*x))))/(105*c^6
*e^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 9.48, size = 598, normalized size = 1.33

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(13/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x -
c*e^2*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(14336*c^5*d^4*e*f - 28672*b*c^4*d^3*e^2*f + 21504*b^2*
c^3*d^2*e^3*f - 7168*b^3*c^2*d*e^4*f + 896*b^4*c*e^5*f + 26624*c^5*d^5*g -
73728*b*c^4*d^4*e*g + 80896*b^2*c^3*d^3*e^2*g - 44032*b^3*c^2*d^2*e^3*g + 1
1904*b^4*c*d*e^4*g - 1280*b^5*e^5*g - 10752*c^5*d^3*e*f*(d + e*x) + 16128*b
*c^4*d^2*e^2*f*(d + e*x) - 8064*b^2*c^3*d*e^3*f*(d + e*x) + 1344*b^3*c^2*e^
4*f*(d + e*x) - 19968*c^5*d^4*g*(d + e*x) + 45312*b*c^4*d^3*e*g*(d + e*x) -
```

```
 38016*b^2*c^3*d^2*e^2*g*(d + e*x) + 14016*b^3*c^2*d*e^3*g*(d + e*x) - 1920
*b^4*c*e^4*g*(d + e*x) + 1344*c^5*d^2*e*f*(d + e*x)^2 - 1344*b*c^4*d*e^2*f*
(d + e*x)^2 + 336*b^2*c^3*e^3*f*(d + e*x)^2 + 2496*c^5*d^3*g*(d + e*x)^2 -
4416*b*c^4*d^2*e*g*(d + e*x)^2 + 2544*b^2*c^3*d*e^2*g*(d + e*x)^2 - 480*b^3
*c^2*e^3*g*(d + e*x)^2 + 112*c^5*d*e*f*(d + e*x)^3 - 56*b*c^4*e^2*f*(d + e*
x)^3 + 208*c^5*d^2*g*(d + e*x)^3 - 264*b*c^4*d*e*g*(d + e*x)^3 + 80*b^2*c^3
*e^2*g*(d + e*x)^3 + 21*c^5*e*f*(d + e*x)^4 + 39*c^5*d*g*(d + e*x)^4 - 30*b
*c^4*e*g*(d + e*x)^4 + 15*c^5*g*(d + e*x)^5))/(105*c^6*e^2*((2*c*d - b*e)*(
d + e*x) - c*(d + e*x)^2)^(3/2))
```

fricas [**A**] time = 0.42, size = 578, normalized size = 1.29

$$-\frac{2\left(15c^5e^5gx^5 + 3\left(7c^5e^5f + 2\left(19c^5de^4 - 5bc^4e^5\right)g\right)x^4 + 2\left(14\left(7c^5de^4 - 2bc^4e^5\right)f + \left(257c^5d^2e^3 - 192bc^4de^4 + 40b^2c^3e^5\right)g\right)x^3 + 6\left(7\left(43c^5d^2e^3 - 36bc^4de^4 + 8b^2c^3e^5\right)f + 2\left(292c^5d^3e^2 - 449bc^4d^2e^3 + 232b^2c^3de^4 - 40b^3c^2e^5\right)g\right)x^2 + 7\left(723c^5d^4e - 1992bc^4d^3e^2 + 1968b^2c^3d^2e^3 - 832b^3c^2de^4 + 128b^4ce^5\right)f + 2\left(4707c^5d^5 - 16563bc^4d^4e + 22752b^2c^3d^3e^2 - 15248b^3c^2d^2e^3 + 4992b^4cde^4 - 640b^5e^5\right)g - 3\left(28\left(91c^5d^3e^2 - 158bc^4d^2e^3 + 88b^2c^3de^4 - 16b^3c^2e^5\right)f + \left(4707c^5d^4e - 11856bc^4d^3e^2 + 10896b^2c^3d^2e^3 - 4352b^3c^2de^4 + 640b^4ce^5\right)g\right)x\right)\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\sqrt{ex+d}}{105\left(c^8e^5x^3 + c^8d^3e^2 - 2bc^7d^2e^3 + b^2c^6de^4 - \left(c^8de^4 - 2bc^7e^5\right)x^2 - \left(c^8d^2e^3 - b^2c^6e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="fricas")
```

```
[Out] -2/105*(15*c^5*e^5*g*x^5 + 3*(7*c^5*e^5*f + 2*(19*c^5*d*e^4 - 5*b*c^4*e^5)*
g)*x^4 + 2*(14*(7*c^5*d*e^4 - 2*b*c^4*e^5)*f + (257*c^5*d^2*e^3 - 192*b*c^4
*d*e^4 + 40*b^2*c^3*e^5)*g)*x^3 + 6*(7*(43*c^5*d^2*e^3 - 36*b*c^4*d*e^4 + 8
*b^2*c^3*e^5)*f + 2*(292*c^5*d^3*e^2 - 449*b*c^4*d^2*e^3 + 232*b^2*c^3*d*e^
4 - 40*b^3*c^2*e^5)*g)*x^2 + 7*(723*c^5*d^4*e - 1992*b*c^4*d^3*e^2 + 1968*b
^2*c^3*d^2*e^3 - 832*b^3*c^2*d*e^4 + 128*b^4*c*e^5)*f + 2*(4707*c^5*d^5 - 1
6563*b*c^4*d^4*e + 22752*b^2*c^3*d^3*e^2 - 15248*b^3*c^2*d^2*e^3 + 4992*b^4
*c*d*e^4 - 640*b^5*e^5)*g - 3*(28*(91*c^5*d^3*e^2 - 158*b*c^4*d^2*e^3 + 88*
b^2*c^3*d*e^4 - 16*b^3*c^2*e^5)*f + (4707*c^5*d^4*e - 11856*b*c^4*d^3*e^2 +
 10896*b^2*c^3*d^2*e^3 - 4352*b^3*c^2*d*e^4 + 640*b^4*c*e^5)*g)*x)*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^8*e^5*x^3 + c^8*d^3*e^2
 - 2*b*c^7*d^2*e^3 + b^2*c^6*d*e^4 - (c^8*d*e^4 - 2*b*c^7*e^5)*x^2 - (c^8*d
^2*e^3 - b^2*c^6*e^5)*x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.05, size = 535, normalized size = 1.19

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(-15*c^5*e^5*g*x^5+30*b*c^4*e^5*g*x^4-114*c^5*d*e^4*
g*x^4-21*c^5*e^5*f*x^4-80*b^2*c^3*e^5*g*x^3+384*b*c^4*d*e^4*g*x^3+56*b*c^4*
e^5*f*x^3-514*c^5*d^2*e^3*g*x^3-196*c^5*d*e^4*f*x^3+480*b^3*c^2*e^5*g*x^2-2
784*b^2*c^3*d*e^4*g*x^2-336*b^2*c^3*e^5*f*x^2+5388*b*c^4*d^2*e^3*g*x^2+1512
*b*c^4*d*e^4*f*x^2-3504*c^5*d^3*e^2*g*x^2-1806*c^5*d^2*e^3*f*x^2+1920*b^4*c
*e^5*g*x-13056*b^3*c^2*d*e^4*g*x-1344*b^3*c^2*e^5*f*x+32688*b^2*c^3*d^2*e^3
*g*x+7392*b^2*c^3*d*e^4*f*x-35568*b*c^4*d^3*e^2*g*x-13272*b*c^4*d^2*e^3*f*x
+14121*c^5*d^4*e*g*x+7644*c^5*d^3*e^2*f*x+1280*b^5*e^5*g-9984*b^4*c*d*e^4*g
-896*b^4*c*e^5*f+30496*b^3*c^2*d^2*e^3*g+5824*b^3*c^2*d*e^4*f-45504*b^2*c^3
*d^3*e^2*g-13776*b^2*c^3*d^2*e^3*f+33126*b*c^4*d^4*e*g+13944*b*c^4*d^3*e^2*
```

```
f-9414*c^5*d^5*g-5061*c^5*d^4*e*f)*(e*x+d)^(5/2)/c^6/e^2/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(5/2)
```

maxima [A] time = 1.10, size = 511, normalized size = 1.14

$$\frac{2\left(3c^4e^4x^4+723c^4d^4-1992bc^3d^3e+1968b^2c^2d^2e^2-832b^3cde^3+128b^4e^4+4\left(7c^4de^3-2bc^3e^4\right)x^3+6\left(43c^4d^2e^2-36bc^3de^3+8b^2c^2e^4\right)x^2-12\left(91c^4d^3e-158bc^3d^2e^2+88b^2c^2de^3-16b^3ce^4\right)x\right)f}{15\left(c^6e^2x-c^6de+bc^5e^2\right)\sqrt{-cex+cd-be}}+\frac{2\left(15c^5e^5x^5+9414c^5d^5-33126bc^4d^4e+45504b^2c^3d^3e^2-30496b^3c^2d^2e^3+9984b^4cde^4-1280b^5e^5+6\left(19c^5de^4-5bc^4e^5\right)x^4+2\left(257c^5d^2e^3-192bc^4de^4+40b^2c^3e^5\right)x^3+12\left(292c^5d^3e^2-449bc^4d^2e^3+232b^2c^3de^4-40b^3c^2e^5\right)x^2-3\left(4707c^5d^4e-11856bc^4d^3e^2+10896b^2c^3d^2e^3-4352b^3c^2de^4+640b^4ce^5\right)x\right)g}{105\left(c^7e^3x-c^7de^2+bc^6e^3\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="maxima")
```

```
[Out] 2/15*(3*c^4*e^4*x^4 + 723*c^4*d^4 - 1992*b*c^3*d^3*e + 1968*b^2*c^2*d^2*e^2
 - 832*b^3*c*d*e^3 + 128*b^4*e^4 + 4*(7*c^4*d*e^3 - 2*b*c^3*e^4)*x^3 + 6*(4
3*c^4*d^2*e^2 - 36*b*c^3*d*e^3 + 8*b^2*c^2*e^4)*x^2 - 12*(91*c^4*d^3*e - 15
8*b*c^3*d^2*e^2 + 88*b^2*c^2*d*e^3 - 16*b^3*c*e^4)*x)*f/((c^6*e^2*x - c^6*d
*e + b*c^5*e^2)*sqrt(-c*e*x + c*d - b*e)) + 2/105*(15*c^5*e^5*x^5 + 9414*c^
5*d^5 - 33126*b*c^4*d^4*e + 45504*b^2*c^3*d^3*e^2 - 30496*b^3*c^2*d^2*e^3 +
 9984*b^4*c*d*e^4 - 1280*b^5*e^5 + 6*(19*c^5*d*e^4 - 5*b*c^4*e^5)*x^4 + 2*(
257*c^5*d^2*e^3 - 192*b*c^4*d*e^4 + 40*b^2*c^3*e^5)*x^3 + 12*(292*c^5*d^3*e
^2 - 449*b*c^4*d^2*e^3 + 232*b^2*c^3*d*e^4 - 40*b^3*c^2*e^5)*x^2 - 3*(4707*
c^5*d^4*e - 11856*b*c^4*d^3*e^2 + 10896*b^2*c^3*d^2*e^3 - 4352*b^3*c^2*d*e^
4 + 640*b^4*c*e^5)*x)*g/((c^7*e^3*x - c^7*d*e^2 + b*c^6*e^3)*sqrt(-c*e*x +
c*d - b*e))
```

mupad [B] time = 3.50, size = 596, normalized size = 1.33

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{\sqrt{d+e\,x}\,\left(-2560\,g\,b^5\,e^5+19968\,g\,b^4\,c\,d\,e^4+1792\,f\,b^4\,c\,e^5-60992\,g\,b^3\,c^2\,d^2\,e^3-11648\,f\,b^3\,c^2\,d\,e^4+91008\,g\,b^2\,c^3\,d^3\,e^2+27552\,f\,b^2\,c^3\,d^2\,e^3-66252\,g\,b\,c^4\,d^4\,e-27888\,f\,b\,c^4\,d^3\,e^2+18828\,g\,c^5\,d^5+10122\,f\,c^5\,d^4\,e\right)}{105\,c^8\,e^5}+\frac{2\,g\,x^5\,\sqrt{d+e\,x}}{7\,c^3}+\frac{4\,x^3\,\sqrt{d+e\,x}\,\left(40\,g\,b^2\,e^2-192\,g\,b\,c\,d\,e-28\,f\,b\,c\,e^2+257\,g\,c^2\,d^2+98\,f\,c^2\,d\,e\right)}{105\,c^5\,e^2}+\frac{2\,x^4\,\sqrt{d+e\,x}\,\left(38\,c\,d\,g-10\,b\,e\,g+7\,c\,e\,f\right)}{35\,c^4\,e}-\frac{x\,\sqrt{d+e\,x}\,\left(3840\,g\,b^4\,c\,e^5-26112\,g\,b^3\,c^2\,d\,e^4-2688\,f\,b^3\,c^2\,e^5+65376\,g\,b^2\,c^3\,d^2\,e^3+14784\,f\,b^2\,c^3\,d\,e^4-71136\,g\,b\,c^4\,d^3\,e^2-26544\,f\,b\,c^4\,d^2\,e^3+28242\,g\,c^5\,d^4\,e+15288\,f\,c^5\,d^3\,e^2\right)}{105\,c^8\,e^5}+\frac{x^2\,\sqrt{d+e\,x}\,\left(-960\,g\,b^3\,c^2\,e^5+5568\,g\,b^2\,c^3\,d\,e^4+672\,f\,b^2\,c^3\,e^5-10776\,g\,b\,c^4\,d^2\,e^3-3024\,f\,b\,c^4\,d\,e^4+7008\,g\,c^5\,d^3\,e^2+3612\,f\,c^5\,d^2\,e^3\right)}{105\,c^8\,e^5}\right)}{x^3+\frac{x\,\left(105\,b^2\,c^6\,e^5-105\,c^8\,d^2\,e^3\right)}{105\,c^8\,e^5}+\frac{d\,{\left(b\,e-c\,d\right)}^2}{c^2\,e^3}+\frac{x^2\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(13/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2
),x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(((d + e*x)^(1/2)*(18828*c^5*
d^5*g - 2560*b^5*e^5*g + 1792*b^4*c*e^5*f + 10122*c^5*d^4*e*f - 66252*b*c^4
*d^4*e*g + 19968*b^4*c*d*e^4*g - 27888*b*c^4*d^3*e^2*f - 11648*b^3*c^2*d*e^
4*f + 27552*b^2*c^3*d^2*e^3*f + 91008*b^2*c^3*d^3*e^2*g - 60992*b^3*c^2*d^2
*e^3*g))/(105*c^8*e^5) + (2*g*x^5*(d + e*x)^(1/2))/(7*c^3) + (4*x^3*(d + e*
x)^(1/2)*(40*b^2*e^2*g + 257*c^2*d^2*g - 28*b*c*e^2*f + 98*c^2*d*e*f - 192*
b*c*d*e*g))/(105*c^5*e^2) + (2*x^4*(d + e*x)^(1/2)*(38*c*d*g - 10*b*e*g + 7
*c*e*f))/(35*c^4*e) - (x*(d + e*x)^(1/2)*(15288*c^5*d^3*e^2*f - 2688*b^3*c^
2*e^5*f + 3840*b^4*c*e^5*g + 28242*c^5*d^4*e*g - 26544*b*c^4*d^2*e^3*f + 14
784*b^2*c^3*d*e^4*f - 71136*b*c^4*d^3*e^2*g - 26112*b^3*c^2*d*e^4*g + 65376
*b^2*c^3*d^2*e^3*g))/(105*c^8*e^5) + (x^2*(d + e*x)^(1/2)*(672*b^2*c^3*e^5*
f - 960*b^3*c^2*e^5*g + 3612*c^5*d^2*e^3*f + 7008*c^5*d^3*e^2*g - 3024*b*c^
4*d*e^4*f - 10776*b*c^4*d^2*e^3*g + 5568*b^2*c^3*d*e^4*g))/(105*c^8*e^5)))/
(x^3 + (x*(105*b^2*c^6*e^5 - 105*c^8*d^2*e^3))/(105*c^8*e^5) + (d*(b*e - c*
d)^2)/(c^2*e^3) + (x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(13/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/
2),x)
```

```
[Out] Timed out
```

3.2047 $\int \frac{(d+ex)^{11/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=371

$$-\frac{32\sqrt{d+ex}\,(2cd-be)^2(-8beg+11cdg+5cef)}{15c^5e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16(d+ex)^{3/2}(2cd-be)(-8beg+11cdg+5cef)}{15c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{4(d+ex)^{5/2}(-8\cdots}{15c^3e^2\sqrt{d(cd-\cdots}}$$

Rubi [A] time = 0.55, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{7/2}(-8beg+11cdg+5cef)}{15c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{4(d+ex)^{5/2}(-8beg+11cdg+5cef)}{15c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16(d+ex)^{3/2}(2cd-be)(-8beg+11cdg+5cef)}{15c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{32\sqrt{d+ex}\,(2cd-be)^2(-8beg+11cdg+5cef)}{15c^5e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{11/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(11/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(11/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (32*(2*c*d - b*e)^2*(5*c*e*f + 11*c
*d*g - 8*b*e*g)*Sqrt[d + e*x])/(15*c^5*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c
*e^2*x^2]) + (16*(2*c*d - b*e)*(5*c*e*f + 11*c*d*g - 8*b*e*g)*(d + e*x)^(3/
2))/(15*c^4*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (4*(5*c*e*f +
11*c*d*g - 8*b*e*g)*(d + e*x)^(5/2))/(15*c^3*e^2*Sqrt[d*(c*d - b*e) - b*e^2
*x - c*e^2*x^2]) + (2*(5*c*e*f + 11*c*d*g - 8*b*e*g)*(d + e*x)^(7/2))/(15*c
^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{11/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(5cef+11cdg-8beg)\int}{3ce(2cd}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(5cef+11cdg-8b}{15c^2e^2(2cd-be)\sqrt{d(cd-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{4(5cef+11cdg-8beg)(}{15c^3e^2\sqrt{d(cd-be)-be^2}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{16(2cd-be)(5cef+11c}{15c^4e^2\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{32(2cd-be)^2(5cef+11c}{15c^5e^2\sqrt{d(cd-be)}}$$

Mathematica [A] time = 0.20, size = 263, normalized size = 0.71

$$\frac{2\sqrt{d+ex}\left(128b^4e^4g-16b^3ce^3(47dg+5ef-12egx)+24b^2c^2e^2\left(67d^2g+3de(5f-13gx)+e^2x(2gx-5f)\right)-2bc^3e\left(741d^3g+3d^2e(85f-246gx)+3de^2x(31gx-70f)+e^3x^2(15f+4gx)\right)+c^4\left(498d^4g+9d^3e(25f-83gx)+3d^2e^2x(61gx-115f)+de^3x^2(75f+23gx)+e^4x^3(5f+3gx)\right)\right)}{15c^5e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(11/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
)^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(128*b^4*e^4*g - 16*b^3*c*e^3*(5*e*f + 47*d*g - 12*e*g*x)
+ 24*b^2*c^2*e^2*(67*d^2*g + 3*d*e*(5*f - 13*g*x) + e^2*x*(-5*f + 2*g*x)) -
 2*b*c^3*e*(741*d^3*g + 3*d^2*e*(85*f - 246*g*x) + e^3*x^2*(15*f + 4*g*x) +
 3*d*e^2*x*(-70*f + 31*g*x)) + c^4*(498*d^4*g + 9*d^3*e*(25*f - 83*g*x) + e
^4*x^3*(5*f + 3*g*x) + d*e^3*x^2*(75*f + 23*g*x) + 3*d^2*e^2*x*(-115*f + 61
*g*x))))/(15*c^5*e^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d -
 e*x))])
```

IntegrateAlgebraic [A] time = 7.09, size = 401, normalized size = 1.08

$$-\frac{2(d+ex)^{3/2}\left(128b^4e^4g+192b^3ce^3g(d+ex)-944b^3cde^3g-80b^3ce^4f+2592b^2c^2d^2e^2g-120b^2c^2e^3f(d+ex)+480b^2c^2de^3f+48b^2c^2e^2g(d+ex)^2-1032b^2c^2de^2g(d+ex)-3136bc^3d^3eg-960bc^3d^2e^2f+1824bc^3d^2eg(d+ex)-30bc^3e^2f(d+ex)^2+480bc^3de^2f(d+ex)-8bc^3eg(d+ex)^3-162bc^3deg(d+ex)^2+1408c^4d^4g+640c^4d^3ef-1056c^4d^3g(d+ex)-480c^4d^2ef(d+ex)+132c^4d^2g(d+ex)^2+5c^4ef(d+ex)^3+60c^4def(d+ex)^2+3c^4g(d+ex)^4+11c^4dg(d+ex)^3\right)}{15c^5e^2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(11/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x -
c*e^2*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(640*c^4*d^3*e*f - 960*b*c^3*d^2*e^2*f + 480*b^2*c^2*d*
e^3*f - 80*b^3*c*e^4*f + 1408*c^4*d^4*g - 3136*b*c^3*d^3*e*g + 2592*b^2*c^2
*d^2*e^2*g - 944*b^3*c*d*e^3*g + 128*b^4*e^4*g - 480*c^4*d^2*e*f*(d + e*x)
+ 480*b*c^3*d*e^2*f*(d + e*x) - 120*b^2*c^2*e^3*f*(d + e*x) - 1056*c^4*d^3*
g*(d + e*x) + 1824*b*c^3*d^2*e*g*(d + e*x) - 1032*b^2*c^2*d*e^2*g*(d + e*x)
 + 192*b^3*c*e^3*g*(d + e*x) + 60*c^4*d*e*f*(d + e*x)^2 - 30*b*c^3*e^2*f*(d
 + e*x)^2 + 132*c^4*d^2*g*(d + e*x)^2 - 162*b*c^3*d*e*g*(d + e*x)^2 + 48*b^
2*c^2*e^2*g*(d + e*x)^2 + 5*c^4*e*f*(d + e*x)^3 + 11*c^4*d*g*(d + e*x)^3 -
8*b*c^3*e*g*(d + e*x)^3 + 3*c^4*g*(d + e*x)^4))/(15*c^5*e^2*((2*c*d - b*e)*
(d + e*x) - c*(d + e*x)^2)^(3/2))
```

fricas [A] time = 0.43, size = 428, normalized size = 1.15

$$-\frac{2\left(3c^4e^4gx^4+\left(5c^4e^4f+\left(23c^4de^3-8bc^3e^4\right)g\right)x^3+3\left(5\left(5c^4de^3-2bc^3e^4\right)f+\left(61c^4d^2e^2-62bc^3de^3+16b^2c^2e^4\right)g\right)x^2+5\left(45c^4d^3e-102bc^3d^2e^2+72b^2c^2de^3-16b^3ce^4\right)f+2\left(249c^4d^4-741bc^3d^3e+804b^2c^2d^2e^2-376b^3cde^3+64b^4e^4\right)g-3\left(5\left(23c^4d^2e^2-28bc^3de^3+8b^2c^2e^4\right)f+\left(249c^4d^3e-492bc^3d^2e^2+312b^2c^2de^3-64b^3ce^4\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{15\left(c^7e^5x^3+c^7d^3e^2-2bc^6d^2e^3+b^2c^5de^4-\left(c^7de^4-2bc^6e^5\right)x^2-\left(c^7d^2e^3-b^2c^5e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="fricas")
```

```
[Out] -2/15*(3*c^4*e^4*g*x^4 + (5*c^4*e^4*f + (23*c^4*d*e^3 - 8*b*c^3*e^4)*g)*x^3
 + 3*(5*(5*c^4*d*e^3 - 2*b*c^3*e^4)*f + (61*c^4*d^2*e^2 - 62*b*c^3*d*e^3 +
16*b^2*c^2*e^4)*g)*x^2 + 5*(45*c^4*d^3*e - 102*b*c^3*d^2*e^2 + 72*b^2*c^2*d
*e^3 - 16*b^3*c*e^4)*f + 2*(249*c^4*d^4 - 741*b*c^3*d^3*e + 804*b^2*c^2*d^2
*e^2 - 376*b^3*c*d*e^3 + 64*b^4*e^4)*g - 3*(5*(23*c^4*d^2*e^2 - 28*b*c^3*d*
e^3 + 8*b^2*c^2*e^4)*f + (249*c^4*d^3*e - 492*b*c^3*d^2*e^2 + 312*b^2*c^2*d
*e^3 - 64*b^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(
e*x + d)/(c^7*e^5*x^3 + c^7*d^3*e^2 - 2*b*c^6*d^2*e^3 + b^2*c^5*d*e^4 - (c^
7*d*e^4 - 2*b*c^6*e^5)*x^2 - (c^7*d^2*e^3 - b^2*c^5*e^5)*x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.05, size = 367, normalized size = 0.99

$$\frac{2\left(cex+be-cd\right)\left(3ge^4x^4c^4-8bc^3e^4gx^3+23c^4de^3gx^3+5c^4e^4fx^3+48b^2c^2e^4gx^2-186bc^3de^3gx^2-30bc^3e^4fx^2+183c^4d^2e^2gx^2+75c^4de^3fx^2+192b^3ce^4gx-936b^2c^2de^3gx-120b^2c^2e^4fx+1476bc^3d^2e^2gx+420bc^3de^3fx-747c^4d^3egx-345c^4d^2e^2fx+128b^4e^4g-752b^3cde^3g-80b^3ce^4f+1608b^2c^2d^2e^2g+360b^2c^2de^3f-1482bc^3d^3eg-510bc^3d^2e^2f+498c^4d^4g+225c^4d^3ef\right)\left(ex+d\right)^{\frac{5}{2}}}{15\left(-ce^2x^2-be^2x-bde+cd^2\right)^{\frac{5}{2}}c^5e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/15*(c*e*x+b*e-c*d)*(3*c^4*e^4*g*x^4-8*b*c^3*e^4*g*x^3+23*c^4*d*e^3*g*x^3+
5*c^4*e^4*f*x^3+48*b^2*c^2*e^4*g*x^2-186*b*c^3*d*e^3*g*x^2-30*b*c^3*e^4*f*x
^2+183*c^4*d^2*e^2*g*x^2+75*c^4*d*e^3*f*x^2+192*b^3*c*e^4*g*x-936*b^2*c^2*d
*e^3*g*x-120*b^2*c^2*e^4*f*x+1476*b*c^3*d^2*e^2*g*x+420*b*c^3*d*e^3*f*x-747
*c^4*d^3*e*g*x-345*c^4*d^2*e^2*f*x+128*b^4*e^4*g-752*b^3*c*d*e^3*g-80*b^3*c
*e^4*f+1608*b^2*c^2*d^2*e^2*g+360*b^2*c^2*d*e^3*f-1482*b*c^3*d^3*e*g-510*b*
c^3*d^2*e^2*f+498*c^4*d^4*g+225*c^4*d^3*e*f)*(e*x+d)^(5/2)/c^5/e^2/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [**A**] time = 0.97, size = 363, normalized size = 0.98

$$\frac{2\left(c^3e^3x^3+45c^3d^3-102bc^2d^2e+72b^2cde^2-16b^3e^3+3\left(5c^3de^2-2bc^2e^3\right)x^2-3\left(23c^3d^2e-28bc^2de^2+8b^2ce^3\right)x\right)f}{3\left(c^5e^2x-c^5de+bc^4e^2\right)\sqrt{-cex+cd-be}}+\frac{2\left(3c^4e^4x^4+498c^4d^4-1482bc^3d^3e+1608b^2c^2d^2e^2-752b^3cde^3+128b^4e^4+\left(23c^4de^3-8bc^3e^4\right)x^3+3\left(61c^4d^2e^2-62bc^3de^3+16b^2c^2e^4\right)x^2-3\left(249c^4d^3e-492bc^3d^2e^2+312b^2c^2de^3-64b^3ce^4\right)x\right)g}{15\left(c^6e^3x-c^6de^2+bc^5e^3\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="maxima")
```

```
[Out] 2/3*(c^3*e^3*x^3 + 45*c^3*d^3 - 102*b*c^2*d^2*e + 72*b^2*c*d*e^2 - 16*b^3*e
^3 + 3*(5*c^3*d*e^2 - 2*b*c^2*e^3)*x^2 - 3*(23*c^3*d^2*e - 28*b*c^2*d*e^2 +
 8*b^2*c*e^3)*x)*f/((c^5*e^2*x - c^5*d*e + b*c^4*e^2)*sqrt(-c*e*x + c*d - b
*e)) + 2/15*(3*c^4*e^4*x^4 + 498*c^4*d^4 - 1482*b*c^3*d^3*e + 1608*b^2*c^2*
d^2*e^2 - 752*b^3*c*d*e^3 + 128*b^4*e^4 + (23*c^4*d*e^3 - 8*b*c^3*e^4)*x^3
+ 3*(61*c^4*d^2*e^2 - 62*b*c^3*d*e^3 + 16*b^2*c^2*e^4)*x^2 - 3*(249*c^4*d^3
*e - 492*b*c^3*d^2*e^2 + 312*b^2*c^2*d*e^3 - 64*b^3*c*e^4)*x)*g/((c^6*e^3*x
 - c^6*d*e^2 + b*c^5*e^3)*sqrt(-c*e*x + c*d - b*e))
```

mupad [**B**] time = 3.29, size = 435, normalized size = 1.17

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{\sqrt{d+e\,x}\,\left(256\,g\,b^4\,e^4-1504\,g\,b^3\,c\,d\,e^3-160\,f\,b^3\,c\,e^4+3216\,g\,b^2\,c^2\,d^2\,e^2+720\,f\,b^2\,c^2\,d\,e^3-2964\,g\,b\,c^3\,d^3\,e-1020\,f\,b\,c^3\,d^2\,e^2+996\,g\,c^4\,d^4+450\,f\,c^4\,d^3\,e\right)}{15\,c^7\,e^5}+\frac{2\,x^2\,\sqrt{d+e\,x}\,\left(16\,g\,b^2\,e^2-62\,g\,b\,c\,d\,e-10\,f\,b\,c\,e^2+61\,g\,c^2\,d^2+25\,f\,c^2\,d\,e\right)}{5\,c^5\,e^3}+\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(23\,c\,d\,g-8\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^4\,e^2}+\frac{2\,g\,x^4\,\sqrt{d+e\,x}}{5\,c^3\,e}-\frac{x\,\sqrt{d+e\,x}\,\left(-384\,g\,b^3\,e^4+1872\,g\,b^2\,c\,d\,e^3+240\,f\,b^2\,c\,e^4-2952\,g\,b\,c^2\,d^2\,e^2-840\,f\,b\,c^2\,d\,e^3+1494\,g\,c^3\,d^3\,e+690\,f\,c^3\,d^2\,e^2\right)}{15\,c^7\,e^4}\right)}{x^3+\frac{x\,\left(15\,b^2\,c^5\,e^5-15\,c^7\,d^2\,e^3\right)}{15\,c^7\,e^5}+\frac{d\,{\left(b\,e-c\,d\right)}^2}{c^2\,e^2}+\frac{x^2\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(11/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2
),x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(((d + e*x)^(1/2)*(256*b^4*e^
4*g + 996*c^4*d^4*g - 160*b^3*c*e^4*f + 450*c^4*d^3*e*f - 2964*b*c^3*d^3*e*
g - 1504*b^3*c*d*e^3*g - 1020*b*c^3*d^2*e^2*f + 720*b^2*c^2*d*e^3*f + 3216*
b^2*c^2*d^2*e^2*g))/(15*c^7*e^5) + (2*x^2*(d + e*x)^(1/2)*(16*b^2*e^2*g + 6
1*c^2*d^2*g - 10*b*c*e^2*f + 25*c^2*d*e*f - 62*b*c*d*e*g))/(5*c^5*e^3) + (2
*x^3*(d + e*x)^(1/2)*(23*c*d*g - 8*b*e*g + 5*c*e*f))/(15*c^4*e^2) + (2*g*x^
4*(d + e*x)^(1/2))/(5*c^3*e) - (x*(d + e*x)^(1/2)*(240*b^2*c^2*e^4*f + 690*
c^4*d^2*e^2*f - 384*b^3*c*e^4*g + 1494*c^4*d^3*e*g - 840*b*c^3*d*e^3*f - 29
52*b*c^3*d^2*e^2*g + 1872*b^2*c^2*d*e^3*g))/(15*c^7*e^5)))/(x^3 + (x*(15*b^
2*c^5*e^5 - 15*c^7*d^2*e^3))/(15*c^7*e^5) + (d*(b*e - c*d)^2)/(c^2*e^3) + (
x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(11/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/
2),x)
```

```
[Out] Timed out
```

3.2048 $\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=291

$$-\frac{16\sqrt{d+ex}\,(2cd-be)(-2beg+3cdg+cef)}{3c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8(d+ex)^{3/2}(-2beg+3cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{5/2}(-2beg+3cdg}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be}}$$

Rubi [A] time = 0.41, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{5/2}(-2beg+3cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8(d+ex)^{3/2}(-2beg+3cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{16\sqrt{d+ex}\,(2cd-be)(-2beg+3cdg+cef)}{3c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{9/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(9/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (16*(2*c*d - b*e)*(c*e*f + 3*c*d*g -
 2*b*e*g)*Sqrt[d + e*x])/(3*c^4*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2]) + (8*(c*e*f + 3*c*d*g - 2*b*e*g)*(d + e*x)^(3/2))/(3*c^3*e^2*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (2*(c*e*f + 3*c*d*g - 2*b*e*g)*(d + e*x)
^(5/2))/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(cef+3cdg-2beg)\int \cdots}{ce(2cd-\cdots}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(cef+3cdg-2be\cdots}{3c^2e^2(2cd-be)\sqrt{d(cd-\cdots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{8(cef+3cdg-2beg)(d\cdots}{3c^3e^2\sqrt{d(cd-be)-be^2x\cdots}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{16(2cd-be)(cef+3cdg\cdots}{3c^4e^2\sqrt{d(cd-be)-\cdots}}$$

Mathematica [**A**] time = 0.15, size = 180, normalized size = 0.62

$$\frac{2\sqrt{d+ex}\left(-16b^3e^3g+8b^2ce^2(8dg+e(f-3gx))-2bc^2e\left(41d^2g+2de(5f-18gx)+3e^2x(gx-2f)\right)+c^3\left(34d^3g+d^2e(11f-51gx)+6de^2x(2gx-3f)+e^3x^2(3f+gx)\right)\right)}{3c^4e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(-16*b^3*e^3*g + 8*b^2*c*e^2*(8*d*g + e*(f - 3*g*x)) - 2*b
*c^2*e*(41*d^2*g + 2*d*e*(5*f - 18*g*x) + 3*e^2*x*(-2*f + g*x)) + c^3*(34*d
^3*g + d^2*e*(11*f - 51*g*x) + e^3*x^2*(3*f + g*x) + 6*d*e^2*x*(-3*f + 2*g*
x))))/(3*c^4*e^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x
))])
```

IntegrateAlgebraic [**A**] time = 5.96, size = 247, normalized size = 0.85

$$-\frac{2(d+ex)^{3/2}\left(-16b^3e^3g-24b^2ce^2g(d+ex)+88b^2cde^2g+8b^2ce^3f-160bc^2d^2eg+12bc^2e^2f(d+ex)-32bc^2de^2f-6bc^2eg(d+ex)^2+84bc^2deg(d+ex)+96c^3d^3g+32c^3d^2ef-72c^3d^2g(d+ex)+3c^3ef(d+ex)^2-24c^3def(d+ex)+c^3g(d+ex)^3+9c^3dg(d+ex)^2\right)}{3c^4e^2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(32*c^3*d^2*e*f - 32*b*c^2*d*e^2*f + 8*b^2*c*e^3*f + 96
*c^3*d^3*g - 160*b*c^2*d^2*e*g + 88*b^2*c*d*e^2*g - 16*b^3*e^3*g - 24*c^3*d
*e*f*(d + e*x) + 12*b*c^2*e^2*f*(d + e*x) - 72*c^3*d^2*g*(d + e*x) + 84*b*c
^2*d*e*g*(d + e*x) - 24*b^2*c*e^2*g*(d + e*x) + 3*c^3*e*f*(d + e*x)^2 + 9*c
^3*d*g*(d + e*x)^2 - 6*b*c^2*e*g*(d + e*x)^2 + c^3*g*(d + e*x)^3))/(3*c^4*e
^2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(3/2))
```

fricas [**A**] time = 0.41, size = 308, normalized size = 1.06

$$-\frac{2\left(c^3e^3gx^3+3\left(c^3e^3f+2\left(2c^3de^2-bc^2e^3\right)g\right)x^2+\left(11c^3d^2e-20bc^2de^2+8b^2ce^3\right)f+2\left(17c^3d^3-41bc^2d^2e+32b^2cde^2-8b^3e^3\right)g-3\left(2\left(3c^3de^2-2bc^2e^3\right)f+\left(17c^3d^2e-24bc^2de^2+8b^2ce^3\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{3\left(c^6e^5x^3+c^6d^3e^2-2bc^5d^2e^3+b^2c^4de^4-\left(c^6de^4-2bc^5e^5\right)x^2-\left(c^6d^2e^3-b^2c^4e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3*(c^3*e^3*g*x^3 + 3*(c^3*e^3*f + 2*(2*c^3*d*e^2 - b*c^2*e^3)*g)*x^2 + (
11*c^3*d^2*e - 20*b*c^2*d*e^2 + 8*b^2*c*e^3)*f + 2*(17*c^3*d^3 - 41*b*c^2*d
```

```
^2*e + 32*b^2*c*d*e^2 - 8*b^3*e^3)*g - 3*(2*(3*c^3*d*e^2 - 2*b*c^2*e^3)*f +
 (17*c^3*d^2*e - 24*b*c^2*d*e^2 + 8*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^6*e^5*x^3 + c^6*d^3*e^2 - 2*b*c^5*d^2
*e^3 + b^2*c^4*d*e^4 - (c^6*d*e^4 - 2*b*c^5*e^5)*x^2 - (c^6*d^2*e^3 - b^2*c
^4*e^5)*x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 235, normalized size = 0.81

$$-\frac{2\left(cex+be-cd\right)\left(-g e^{3} x^{3} c^{3}+6 b c^{2} e^{3} g x^{2}-12 c^{3} d e^{2} g x^{2}-3 c^{3} e^{3} f x^{2}+24 b^{2} c e^{3} g x-72 b c^{2} d e^{2} g x-12 b c^{2} e^{3} f x+51 c^{3} d^{2} e g x+18 c^{3} d e^{2} f x+16 b^{3} e^{3} g-64 b^{2} c d e^{2} g-8 b^{2} c e^{3} f+82 b c^{2} d^{2} e g+20 b c^{2} d e^{2} f-34 c^{3} d^{3} g-11 f d^{2} c^{3} e\right)\left(ex+d\right)^{\frac{5}{2}}}{3\left(-c e^{2} x^{2}-b e^{2} x-bde+c d^{2}\right)^{\frac{5}{2}} c^{4} e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(-c^3*e^3*g*x^3+6*b*c^2*e^3*g*x^2-12*c^3*d*e^2*g*x^2-3
*c^3*e^3*f*x^2+24*b^2*c*e^3*g*x-72*b*c^2*d*e^2*g*x-12*b*c^2*e^3*f*x+51*c^3*
d^2*e*g*x+18*c^3*d*e^2*f*x+16*b^3*e^3*g-64*b^2*c*d*e^2*g-8*b^2*c*e^3*f+82*b
*c^2*d^2*e*g+20*b*c^2*d*e^2*f-34*c^3*d^3*g-11*c^3*d^2*e*f)*(e*x+d)^(5/2)/c^
4/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [A] time = 0.96, size = 246, normalized size = 0.85

$$\frac{2\left(3 c^{2} e^{2} x^{2}+11 c^{2} d^{2}-20 bcde+8 b^{2} e^{2}-6\left(3 c^{2} de-2 bce^{2}\right)x\right)f}{3\left(c^{4} e^{2} x-c^{4} de+bc^{3} e^{2}\right)\sqrt{-cex+cd-be}}+\frac{2\left(c^{3} e^{3} x^{3}+34 c^{3} d^{3}-82 bc^{2} d^{2} e+64 b^{2} cde^{2}-16 b^{3} e^{3}+6\left(2 c^{3} de^{2}-bc^{2} e^{3}\right)x^{2}-3\left(17 c^{3} d^{2} e-24 bc^{2} de^{2}+8 b^{2} ce^{3}\right)x\right)g}{3\left(c^{5} e^{3} x-c^{5} de^{2}+bc^{4} e^{3}\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3*(3*c^2*e^2*x^2 + 11*c^2*d^2 - 20*b*c*d*e + 8*b^2*e^2 - 6*(3*c^2*d*e - 2
*b*c*e^2)*x)*f/((c^4*e^2*x - c^4*d*e + b*c^3*e^2)*sqrt(-c*e*x + c*d - b*e))
 + 2/3*(c^3*e^3*x^3 + 34*c^3*d^3 - 82*b*c^2*d^2*e + 64*b^2*c*d*e^2 - 16*b^3
*e^3 + 6*(2*c^3*d*e^2 - b*c^2*e^3)*x^2 - 3*(17*c^3*d^2*e - 24*b*c^2*d*e^2 +
 8*b^2*c*e^3)*x)*g/((c^5*e^3*x - c^5*d*e^2 + b*c^4*e^3)*sqrt(-c*e*x + c*d -
 b*e))
```

mupad [B] time = 3.21, size = 314, normalized size = 1.08

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{\sqrt{d+e\,x}\,\left(-32\,g\,b^3\,e^3+128\,g\,b^2\,c\,d\,e^2+16\,f\,b^2\,c\,e^3-164\,g\,b\,c^2\,d^2\,e-40\,f\,b\,c^2\,d\,e^2+68\,g\,c^3\,d^3+22\,f\,c^3\,d^2\,e\right)}{3\,c^6\,e^5}+\frac{2\,x^2\,\sqrt{d+e\,x}\,\left(4\,c\,d\,g-2\,b\,e\,g+c\,e\,f\right)}{c^4\,e^3}+\frac{2\,g\,x^3\,\sqrt{d+e\,x}}{3\,c^3\,e^2}-\frac{x\,\sqrt{d+e\,x}\,\left(48\,g\,b^2\,c\,e^3-144\,g\,b\,c^2\,d\,e^2-24\,f\,b\,c^2\,e^3+102\,g\,c^3\,d^2\,e+36\,f\,c^3\,d\,e^2\right)}{3\,c^6\,e^5}\right)}{x^3+\frac{x\,\left(3\,b^2\,c^4\,e^5-3\,c^6\,d^2\,e^3\right)}{3\,c^6\,e^5}+\frac{d\,{\left(b\,e-c\,d\right)}^2}{c^2\,e^3}+\frac{x^2\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(9/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(((d + e*x)^(1/2)*(68*c^3*d^3
*g - 32*b^3*e^3*g + 16*b^2*c*e^3*f + 22*c^3*d^2*e*f - 40*b*c^2*d*e^2*f - 16
4*b*c^2*d^2*e*g + 128*b^2*c*d*e^2*g))/(3*c^6*e^5) + (2*x^2*(d + e*x)^(1/2)*
(4*c*d*g - 2*b*e*g + c*e*f))/(c^4*e^3) + (2*g*x^3*(d + e*x)^(1/2))/(3*c^3*e
^2) - (x*(d + e*x)^(1/2)*(48*b^2*c*e^3*g - 24*b*c^2*e^3*f + 36*c^3*d*e^2*f
```

```
+ 102*c^3*d^2*e*g - 144*b*c^2*d*e^2*g))/(3*c^6*e^5)))/(x^3 + (x*(3*b^2*c^4*
e^5 - 3*c^6*d^2*e^3))/(3*c^6*e^5) + (d*(b*e - c*d)^2)/(c^2*e^3) + (x^2*(2*b
*e - c*d))/(c*e))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(9/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2049 $\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}} dx$

Optimal. Leaf size=217

$$-\frac{4\sqrt{d+ex}\,(-4beg+7cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{3/2}(-4beg+7cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{7/2}(-beg+cdg+}{3ce^2(2cd-be)\left(d(cd-be)-be^2x\right.}$$

Rubi [A] time = 0.29, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{3/2}(-4beg+7cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{4\sqrt{d+ex}\,(-4beg+7cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{7/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(7/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (4*(c*e*f + 7*c*d*g - 4*b*e*g)*Sqrt[
d + e*x])/(3*c^3*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (2*(c*e*f
 + 7*c*d*g - 4*b*e*g)*(d + e*x)^(3/2))/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(cef+7cdg-4beg)\int \frac{}{(c}}{3ce(2cd-}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(cef+7cdg-4be}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{4(cef+7cdg-4beg)\sqrt{}}{3c^3e^2\sqrt{d(cd-be)-be^2x}}$$

Mathematica [A] time = 0.09, size = 117, normalized size = 0.54

$$\frac{2\sqrt{d+ex}\left(8b^2e^2g-2bce(9dg+e(f-6gx))+c^2\left(10d^2g+de(f-15gx)+3e^2x(gx-f)\right)\right)}{3c^3e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(8*b^2*e^2*g - 2*b*c*e*(9*d*g + e*(f - 6*g*x)) + c^2*(10*d
^2*g + d*e*(f - 15*g*x) + 3*e^2*x*(-f + g*x))))/(3*c^3*e^2*(-(c*d) + b*e +
c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 5.83, size = 139, normalized size = 0.64

$$-\frac{2(d+ex)^{3/2}\left(8b^2e^2g+12bceg(d+ex)-30bcdeg-2bce^2f+28c^2d^2g-3c^2ef(d+ex)+4c^2def+3c^2g(d+ex)^2-21c^2dg(d+ex)\right)}{3c^3e^2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(4*c^2*d*e*f - 2*b*c*e^2*f + 28*c^2*d^2*g - 30*b*c*d*e*
g + 8*b^2*e^2*g - 3*c^2*e*f*(d + e*x) - 21*c^2*d*g*(d + e*x) + 12*b*c*e*g*(
d + e*x) + 3*c^2*g*(d + e*x)^2))/(3*c^3*e^2*((2*c*d - b*e)*(d + e*x) - c*(d
 + e*x)^2)^(3/2))
```

fricas [A] time = 0.40, size = 216, normalized size = 1.00

$$-\frac{2\left(3c^2e^2gx^2+\left(c^2de-2bce^2\right)f+2\left(5c^2d^2-9bcde+4b^2e^2\right)g-3\left(c^2e^2f+\left(5c^2de-4bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\sqrt{ex+d}}{3\left(c^5e^5x^3+c^5d^3e^2-2bc^4d^2e^3+b^2c^3de^4-\left(c^5de^4-2bc^4e^5\right)x^2-\left(c^5d^2e^3-b^2c^3e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3*(3*c^2*e^2*g*x^2 + (c^2*d*e - 2*b*c*e^2)*f + 2*(5*c^2*d^2 - 9*b*c*d*e
+ 4*b^2*e^2)*g - 3*(c^2*e^2*f + (5*c^2*d*e - 4*b*c*e^2)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^5*x^3 + c^5*d^3*e^2 - 2*
b*c^4*d^2*e^3 + b^2*c^3*d*e^4 - (c^5*d*e^4 - 2*b*c^4*e^5)*x^2 - (c^5*d^2*e^
3 - b^2*c^3*e^5)*x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 138, normalized size = 0.64

$$\frac{2\,(cex+be-cd)\left(3g\,x^{2}c^{2}e^{2}+12bc\,e^{2}gx-15c^{2}degx-3c^{2}e^{2}fx+8b^{2}e^{2}g-18bcdeg-2bc\,e^{2}f+10c^{2}d^{2}g+c^{2}def\right)(ex+d)^{\frac{5}{2}}}{3\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{5}{2}}c^{3}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/3*(c*e*x+b*e-c*d)*(3*c^2*e^2*g*x^2+12*b*c*e^2*g*x-15*c^2*d*e*g*x-3*c^2*e^
2*f*x+8*b^2*e^2*g-18*b*c*d*e*g-2*b*c*e^2*f+10*c^2*d^2*g+c^2*d*e*f)*(e*x+d)^
(5/2)/c^3/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [A] time = 0.93, size = 157, normalized size = 0.72

$$-\frac{2\,(3\,cex-cd+2\,be)f}{3\left(c^{3}e^{2}x-c^{3}de+bc^{2}e^{2}\right)\sqrt{-cex+cd-be}}+\frac{2\left(3\,c^{2}e^{2}x^{2}+10\,c^{2}d^{2}-18\,bcde+8\,b^{2}e^{2}-3\left(5\,c^{2}de-4\,bce^{2}\right)x\right)g}{3\left(c^{4}e^{3}x-c^{4}de^{2}+bc^{3}e^{3}\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*(3*c*e*x - c*d + 2*b*e)*f/((c^3*e^2*x - c^3*d*e + b*c^2*e^2)*sqrt(-c*e
*x + c*d - b*e)) + 2/3*(3*c^2*e^2*x^2 + 10*c^2*d^2 - 18*b*c*d*e + 8*b^2*e^2
 - 3*(5*c^2*d*e - 4*b*c*e^2)*x)*g/((c^4*e^3*x - c^4*d*e^2 + b*c^3*e^3)*sqrt
(-c*e*x + c*d - b*e))
```

mupad [B] time = 2.89, size = 214, normalized size = 0.99

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(16\,g\,b^{2}\,e^{2}-36\,g\,b\,c\,d\,e-4\,f\,b\,c\,e^{2}+20\,g\,c^{2}\,d^{2}+2\,f\,c^{2}\,d\,e\right)}{3\,c^{5}\,e^{5}}+\frac{2\,g\,x^{2}\,\sqrt{d+e\,x}}{c^{3}\,e^{3}}-\frac{2\,x\,\sqrt{d+e\,x}\,\left(5\,c\,d\,g-4\,b\,e\,g+c\,e\,f\right)}{c^{4}\,e^{4}}\right)\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}}{x^{3}+\frac{x\,\left(3\,b^{2}\,c^{3}\,e^{5}-3\,c^{5}\,d^{2}\,e^{3}\right)}{3\,c^{5}\,e^{5}}+\frac{d\,{\left(b\,e-c\,d\right)}^{2}}{c^{2}\,e^{3}}+\frac{x^{2}\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(7/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(16*b^2*e^2*g + 20*c^2*d^2*g - 4*b*c*e^2*f + 2*c^2*d*e*
f - 36*b*c*d*e*g))/(3*c^5*e^5) + (2*g*x^2*(d + e*x)^(1/2))/(c^3*e^3) - (2*x
*(d + e*x)^(1/2)*(5*c*d*g - 4*b*e*g + c*e*f))/(c^4*e^4))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(x^3 + (x*(3*b^2*c^3*e^5 - 3*c^5*d^2*e^3))/(3*c^
5*e^5) + (d*(b*e - c*d)^2)/(c^2*e^3) + (x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(7/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2050 $\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=152

$$\frac{2\sqrt{d+ex}\,(2beg-5cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{5/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Rubi [A] time = 0.16, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {788, 648}

$$\frac{2\sqrt{d+ex}\,(2beg-5cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{5/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(5/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(c*e*f - 5*c*d*g + 2*b*e*g)*Sqrt[
d + e*x])/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx=\frac{2(cef+cdg-beg)(d+ex)^{5/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(cef-5cdg+2beg)\int \frac{}{(c}}{3ce(2cd-}$$

$$=\frac{2(cef+cdg-beg)(d+ex)^{5/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(cef-5cdg+2b}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

Mathematica [A] time = 0.06, size = 76, normalized size = 0.50

$$-\frac{2\sqrt{d+ex}\,(2beg-2cdg+ce(f+3gx))}{3c^2e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(-2*c*d*g + 2*b*e*g + c*e*(f + 3*g*x)))/(3*c^2*e^2*(-(c*d
) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 6.22, size = 73, normalized size = 0.48

$$\frac{2(d+ex)^{3/2}(2beg+3cg(d+ex)-5cdg+cef)}{3c^2e^2\left((d+ex)(2cd-be)-c(d+ex)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(c*e*f - 5*c*d*g + 2*b*e*g + 3*c*g*(d + e*x)))/(3*c^2*e^
2*((2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2)^(3/2))
```

fricas [A] time = 0.40, size = 154, normalized size = 1.01

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(3\,cegx+cef-2\,(cd-be)g\right)\sqrt{ex+d}}{3\left(c^4e^5x^3+c^4d^3e^2-2\,bc^3d^2e^3+b^2c^2de^4-\left(c^4de^4-2\,bc^3e^5\right)x^2-\left(c^4d^2e^3-b^2c^2e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*c*e*g*x + c*e*f - 2*(c*d
- b*e)*g)*sqrt(e*x + d)/(c^4*e^5*x^3 + c^4*d^3*e^2 - 2*b*c^3*d^2*e^3 + b^2*
c^2*d*e^4 - (c^4*d*e^4 - 2*b*c^3*e^5)*x^2 - (c^4*d^2*e^3 - b^2*c^2*e^5)*x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 78, normalized size = 0.51

$$-\frac{2\,(cex+be-cd)\left(3cegx+2beg-2cdg+cef\right)(ex+d)^{\frac{5}{2}}}{3\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{5}{2}}c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(3*c*e*g*x+2*b*e*g-2*c*d*g+c*e*f)*(e*x+d)^(5/2)/c^2/e^
2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [A] time = 0.97, size = 103, normalized size = 0.68

$$-\frac{2\,(3\,cex-2\,cd+2\,be)g}{3\left(c^3e^3x-c^3de^2+bc^2e^3\right)\sqrt{-cex+cd-be}}-\frac{2\,f}{3\left(c^2e^2x-c^2de+bce^2\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*(3*c*e*x - 2*c*d + 2*b*e)*g/((c^3*e^3*x - c^3*d*e^2 + b*c^2*e^3)*sqrt(
-c*e*x + c*d - b*e)) - 2/3*f/((c^2*e^2*x - c^2*d*e + b*c*e^2)*sqrt(-c*e*x +
 c*d - b*e))
```

mupad [B] time = 2.85, size = 154, normalized size = 1.01

$$\frac{\left(\frac{\sqrt{d+e\,x}\,\left(4\,b\,e\,g-4\,c\,d\,g+2\,c\,e\,f\right)}{3\,c^4\,e^5}+\frac{2\,g\,x\,\sqrt{d+e\,x}}{c^3\,e^4}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x^3+\frac{x\,\left(3\,b^2\,c^2\,e^5-3\,c^4\,d^2\,e^3\right)}{3\,c^4\,e^5}+\frac{d\,{\left(b\,e-c\,d\right)}^2}{c^2\,e^3}+\frac{x^2\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(5/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] ((((d + e*x)^(1/2)*(4*b*e*g - 4*c*d*g + 2*c*e*f))/(3*c^4*e^5) + (2*g*x*(d +
 e*x)^(1/2))/(c^3*e^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x^3 +
 (x*(3*b^2*c^2*e^5 - 3*c^4*d^2*e^3))/(3*c^4*e^5) + (d*(b*e - c*d)^2)/(c^2*e
^3) + (x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2051 $\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=221

$$\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,(ef-dg)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{5/2}}$$

Rubi [A] time = 0.30, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {788, 666, 660, 208}

$$\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,(ef-dg)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(3/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(e*f - d*g)*Sqrt[d + e*x])/(e^2*(
2*c*d - b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g)*
ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d
 + e*x])])/(e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(ef-dg)\int \frac{\sqrt{d+ex}}{\left(cd^2-bde-be^2x-c\right.}}{e(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(ef-dg)\sqrt{d}}{e^2(2cd-be)^2\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(ef-dg)\sqrt{d}}{e^2(2cd-be)^2\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(ef-dg)\sqrt{d}}{e^2(2cd-be)^2\sqrt{d(cd-be)}}$$

Mathematica [C] time = 0.08, size = 146, normalized size = 0.66

$$\frac{2\sqrt{d+ex}\left(3c(ef-dg)(be-cd+cex)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)-(2cd-be)(-beg+cdg+cef)\right)}{3ce^2(be-2cd)^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(-((2*c*d - b*e)*(c*e*f + c*d*g - b*e*g)) + 3*c*(e*f - d*g
)*(-(c*d) + b*e + c*e*x)*Hypergeometric2F1[-1/2, 1, 1/2, (-(c*d) + b*e + c*
e*x)/(-2*c*d + b*e)]))/(3*c*e^2*(-2*c*d + b*e)^2*(-(c*d) + b*e + c*e*x)*Sqr
t[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 8.77, size = 252, normalized size = 1.14

$$\frac{2\left(b^2e^2g(d+ex)^{3/2}-4bce^2f(d+ex)^{3/2}-4c^2d^2g(d+ex)^{3/2}-3c^2ef(d+ex)^{5/2}+8c^2def(d+ex)^{3/2}+3c^2dg(d+ex)^{5/2}\right)}{3ce^2(2cd-be)^2\left(-be(d+ex)-c(d+ex)^2+2cd(d+ex)\right)^{3/2}}-\frac{2(dg-ef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2(be-2cd)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c
*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(8*c^2*d*e*f*(d + e*x)^(3/2) - 4*b*c*e^2*f*(d + e*x)^(3/2) - 4*c^2*d^2*g
*(d + e*x)^(3/2) + b^2*e^2*g*(d + e*x)^(3/2) - 3*c^2*e*f*(d + e*x)^(5/2) +
3*c^2*d*g*(d + e*x)^(5/2)))/(3*c*e^2*(2*c*d - b*e)^2*(2*c*d*(d + e*x) - b*e
*(d + e*x) - c*(d + e*x)^2)^(3/2)) - (2*(-(e*f) + d*g)*ArcTan[(Sqrt[-2*c*d
+ b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*
d + b*e + c*(d + e*x)))])/(e^2*(-2*c*d + b*e)^(5/2))
```

fricas [B] time = 0.44, size = 1437, normalized size = 6.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/3*(3*((c^3*e^4*f - c^3*d*e^3*g)*x^3 - ((c^3*d*e^3 - 2*b*c^2*e^4)*f - (c
^3*d^2*e^2 - 2*b*c^2*d*e^3)*g)*x^2 + (c^3*d^3*e - 2*b*c^2*d^2*e^2 + b^2*c*d
```

```
*e^3)*f - (c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2)*g - ((c^3*d^2*e^2 - b^2
*c*e^4)*f - (c^3*d^3*e - b^2*c*d*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x
^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 - b*e^2*x
+ c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)
) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((10*c^3*d^2*e - 13*b*c^2*
d*e^2 + 4*b^2*c*e^3)*f - (2*c^3*d^3 - b*c^2*d^2*e - 2*b^2*c*d*e^2 + b^3*e^3
)*g - 3*((2*c^3*d*e^2 - b*c^2*e^3)*f - (2*c^3*d^2*e - b*c^2*d*e^2)*g)*x)*sq
rt(e*x + d))/(8*c^6*d^6*e^2 - 28*b*c^5*d^5*e^3 + 38*b^2*c^4*d^4*e^4 - 25*b^
3*c^3*d^3*e^5 + 8*b^4*c^2*d^2*e^6 - b^5*c*d*e^7 + (8*c^6*d^3*e^5 - 12*b*c^5
*d^2*e^6 + 6*b^2*c^4*d*e^7 - b^3*c^3*e^8)*x^3 - (8*c^6*d^4*e^4 - 28*b*c^5*d
^3*e^5 + 30*b^2*c^4*d^2*e^6 - 13*b^3*c^3*d*e^7 + 2*b^4*c^2*e^8)*x^2 - (8*c^
6*d^5*e^3 - 12*b*c^5*d^4*e^4 - 2*b^2*c^4*d^3*e^5 + 11*b^3*c^3*d^2*e^6 - 6*b
^4*c^2*d*e^7 + b^5*c*e^8)*x), -2/3*(3*((c^3*e^4*f - c^3*d*e^3*g)*x^3 - ((c^
3*d*e^3 - 2*b*c^2*e^4)*f - (c^3*d^2*e^2 - 2*b*c^2*d*e^3)*g)*x^2 + (c^3*d^3*
e - 2*b*c^2*d^2*e^2 + b^2*c*d*e^3)*f - (c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2
*e^2)*g - ((c^3*d^2*e^2 - b^2*c*e^4)*f - (c^3*d^3*e - b^2*c*d*e^3)*g)*x)*sq
rt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*
c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((10*c^3*d^2*e - 13*b*c^2*d*e^2 + 4*b^2*c
*e^3)*f - (2*c^3*d^3 - b*c^2*d^2*e - 2*b^2*c*d*e^2 + b^3*e^3)*g - 3*((2*c^3
*d*e^2 - b*c^2*e^3)*f - (2*c^3*d^2*e - b*c^2*d*e^2)*g)*x)*sqrt(e*x + d))/(8
*c^6*d^6*e^2 - 28*b*c^5*d^5*e^3 + 38*b^2*c^4*d^4*e^4 - 25*b^3*c^3*d^3*e^5 +
 8*b^4*c^2*d^2*e^6 - b^5*c*d*e^7 + (8*c^6*d^3*e^5 - 12*b*c^5*d^2*e^6 + 6*b^
2*c^4*d*e^7 - b^3*c^3*e^8)*x^3 - (8*c^6*d^4*e^4 - 28*b*c^5*d^3*e^5 + 30*b^2
*c^4*d^2*e^6 - 13*b^3*c^3*d*e^7 + 2*b^4*c^2*e^8)*x^2 - (8*c^6*d^5*e^3 - 12*
b*c^5*d^4*e^4 - 2*b^2*c^4*d^3*e^5 + 11*b^3*c^3*d^2*e^6 - 6*b^4*c^2*d*e^7 +
b^5*c*e^8)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 485, normalized size = 2.19

$$\frac{2\left(3\sqrt{-cex-be+cd}\,c^2degx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3\sqrt{-cex-be+cd}\,c^2e^2fx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3\sqrt{-cex-be+cd}\,bcdeg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3\sqrt{-cex-be+cd}\,bce^2f\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3\sqrt{-cex-be+cd}\,c^2d^2g\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3\sqrt{-cex-be+cd}\,c^2def\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3\sqrt{be-2cd}\,c^2degx-3\sqrt{be-2cd}\,c^2e^2fx+\sqrt{be-2cd}\,b^2e^2g-4\sqrt{be-2cd}\,bce^2f-\sqrt{be-2cd}\,c^2d^2g+5\sqrt{be-2cd}\,c^2def\right)\sqrt{-ce^2x^2-be^2x-bde+cd^2}}{3\left(be-2cd\right)^{\frac{5}{2}}\left(cex+be-cd\right)^2\sqrt{ex+d}\,ce^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/3*(3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*d*e*g*(-c*e*x
-b*e+c*d)^(1/2)-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*e^
2*f*(-c*e*x-b*e+c*d)^(1/2)+3*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*b*c*d*e*g-3*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c*e^2*f-3*(-c*e*x-b*e+c*d)^(1/2)*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*g+3*(-c*e*x-b*e+c*d)^(1
/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d*e*f+3*(b*e-2*c*d
)^(1/2)*x*c^2*d*e*g-3*(b*e-2*c*d)^(1/2)*x*c^2*e^2*f+(b*e-2*c*d)^(1/2)*b^2*e
^2*g-4*(b*e-2*c*d)^(1/2)*b*c*e^2*f-(b*e-2*c*d)^(1/2)*c^2*d^2*g+5*(b*e-2*c*d
)^(1/2)*c^2*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(5/2)
/e^2/c/(c*e*x+b*e-c*d)^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)^{\frac{3}{2}}(gx+f)}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((e*x + d)^(3/2)*(g*x + f)/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^
(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^{3/2}}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2052 $\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=313

$$\frac{\sqrt{d+ex}\,(-2beg-cdg+5cef)}{e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-2beg-cdg+5cef}{3ce^2\sqrt{d+ex}\,(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2\sqrt{d+ex}\,(}{3ce^2(2cd-be)\left(d(\right.}$$

Rubi [A] time = 0.44, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {788, 672, 666, 660, 208}

$$\frac{\sqrt{d+ex}\,(-2beg-cdg+5cef)}{e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-2beg-cdg+5cef}{3ce^2\sqrt{d+ex}\,(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2\sqrt{d+ex}\,(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{(-2beg-cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*Sqrt[d + e*x])/(3*c*e^2*(2*c*d - b*e)*(d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (5*c*e*f - c*d*g - 2*b*e*g)/(3*c*e^2*(
2*c*d - b*e)^2*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (
(5*c*e*f - c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(e^2*(2*c*d - b*e)^3*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2]) - ((5*c*e*f - c*d*g - 2*b*e*g)*ArcTanh[Sqrt
[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(
e^2*(2*c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(5cef-cdg-2beg)\int \frac{}{\sqrt{a}}}{3ce(2c}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}\,\sqrt{}}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}\,\sqrt{}}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}\,\sqrt{}}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}\,\sqrt{}}$$

Mathematica [C] time = 0.08, size = 135, normalized size = 0.43

$$\frac{(d+ex)(2beg+cdg-5cef)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)-3(2cd-be)(dg-ef)}{3e^2\sqrt{d+ex}\,(be-2cd)^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
5/2),x]
```

```
[Out] (-3*(2*c*d - b*e)*(-(e*f) + d*g) + (-5*c*e*f + c*d*g + 2*b*e*g)*(d + e*x)*H
ypergeometric2F1[-3/2, 1, -1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(3*
e^2*(-2*c*d + b*e)^2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-
(b*e) + c*(d - e*x))])
```

IntegrateAlgebraic [A] time = 9.31, size = 354, normalized size = 1.13

$$\frac{\left(-be(d+ex)-c(d+ex)^2+2cd(d+ex)\right)^{3/2}\left(8b^2e^2g(d+ex)+3b^2de^2g-3b^2e^3f-12bcd^2eg-20bce^2f(d+ex)+12bcde^2f-12bcdeg(d+ex)+6bceg(d+ex)^2+12c^2d^3g-12c^2d^2ef-8c^2d^2g(d+ex)+40c^2def(d+ex)-15c^2ef(d+ex)^2+3c^2dg(d+ex)^2\right)}{3e^2(d+ex)^{5/2}(be-2cd)^3(be+c(d+ex)-2cd)^3}+\frac{(-2beg-cdg+5cef)\tan^{-1}\left(\frac{\sqrt{be-2cd}\,\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{e^2(2cd-be)^3\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e
^2*x^2)^(5/2),x]
```

```
[Out] ((2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2)^(3/2)*(-12*c^2*d^2*e*f +
 12*b*c*d*e^2*f - 3*b^2*e^3*f + 12*c^2*d^3*g - 12*b*c*d^2*e*g + 3*b^2*d*e^2
*g + 40*c^2*d*e*f*(d + e*x) - 20*b*c*e^2*f*(d + e*x) - 8*c^2*d^2*g*(d + e*x
```

```
) - 12*b*c*d*e*g*(d + e*x) + 8*b^2*e^2*g*(d + e*x) - 15*c^2*e*f*(d + e*x)^2
 + 3*c^2*d*g*(d + e*x)^2 + 6*b*c*e*g*(d + e*x)^2))/(3*e^2*(-2*c*d + b*e)^3*
(d + e*x)^(5/2)*(-2*c*d + b*e + c*(d + e*x))^3) + ((5*c*e*f - c*d*g - 2*b*e
*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2
])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(e^2*(2*c*d - b*e)^3*Sqrt
[-2*c*d + b*e])
```

fricas [B] time = 0.46, size = 2106, normalized size = 6.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/6*(3*((5*c^3*e^5*f - (c^3*d*e^4 + 2*b*c^2*e^5)*g)*x^4 + 2*(5*b*c^2*e^5*f
 - (b*c^2*d*e^4 + 2*b^2*c*e^5)*g)*x^3 - (5*(2*c^3*d^2*e^3 - 2*b*c^2*d*e^4 -
 b^2*c*e^5)*f - (2*c^3*d^3*e^2 + 2*b*c^2*d^2*e^3 - 5*b^2*c*d*e^4 - 2*b^3*e^
5)*g)*x^2 + 5*(c^3*d^4*e - 2*b*c^2*d^3*e^2 + b^2*c*d^2*e^3)*f - (c^3*d^5 -
3*b^2*c*d^3*e^2 + 2*b^3*d^2*e^3)*g - 2*(5*(b*c^2*d^2*e^3 - b^2*c*d*e^4)*f -
 (b*c^2*d^3*e^2 + b^2*c*d^2*e^3 - 2*b^3*d*e^4)*g)*x)*sqrt(2*c*d - b*e)*log(
-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e
*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^3*d*e^
3 - b*c^2*e^4)*f - (2*c^3*d^2*e^2 + 3*b*c^2*d*e^3 - 2*b^2*c*e^4)*g)*x^2 - (
26*c^3*d^3*e - 29*b*c^2*d^2*e^2 + 2*b^2*c*d*e^3 + 3*b^3*e^4)*f - (14*c^3*d^
4 - 43*b*c^2*d^3*e + 40*b^2*c*d^2*e^2 - 11*b^3*d*e^3)*g - 2*(5*(2*c^3*d^2*e
^2 - 5*b*c^2*d*e^3 + 2*b^2*c*e^4)*f - (2*c^3*d^3*e - b*c^2*d^2*e^2 - 8*b^2*
c*d*e^3 + 4*b^3*e^4)*g)*x)*sqrt(e*x + d))/(16*c^6*d^8*e^2 - 64*b*c^5*d^7*e^
3 + 104*b^2*c^4*d^6*e^4 - 88*b^3*c^3*d^5*e^5 + 41*b^4*c^2*d^4*e^6 - 10*b^5*
c*d^3*e^7 + b^6*d^2*e^8 + (16*c^6*d^4*e^6 - 32*b*c^5*d^3*e^7 + 24*b^2*c^4*d
^2*e^8 - 8*b^3*c^3*d*e^9 + b^4*c^2*e^10)*x^4 + 2*(16*b*c^5*d^4*e^6 - 32*b^2
*c^4*d^3*e^7 + 24*b^3*c^3*d^2*e^8 - 8*b^4*c^2*d*e^9 + b^5*c*e^10)*x^3 - (32
*c^6*d^6*e^4 - 96*b*c^5*d^5*e^5 + 96*b^2*c^4*d^4*e^6 - 32*b^3*c^3*d^3*e^7 -
 6*b^4*c^2*d^2*e^8 + 6*b^5*c*d*e^9 - b^6*e^10)*x^2 - 2*(16*b*c^5*d^6*e^4 -
48*b^2*c^4*d^5*e^5 + 56*b^3*c^3*d^4*e^6 - 32*b^4*c^2*d^3*e^7 + 9*b^5*c*d^2*
e^8 - b^6*d*e^9)*x), -1/3*(3*((5*c^3*e^5*f - (c^3*d*e^4 + 2*b*c^2*e^5)*g)*x
^4 + 2*(5*b*c^2*e^5*f - (b*c^2*d*e^4 + 2*b^2*c*e^5)*g)*x^3 - (5*(2*c^3*d^2*
e^3 - 2*b*c^2*d*e^4 - b^2*c*e^5)*f - (2*c^3*d^3*e^2 + 2*b*c^2*d^2*e^3 - 5*b
^2*c*d*e^4 - 2*b^3*e^5)*g)*x^2 + 5*(c^3*d^4*e - 2*b*c^2*d^3*e^2 + b^2*c*d^2
*e^3)*f - (c^3*d^5 - 3*b^2*c*d^3*e^2 + 2*b^3*d^2*e^3)*g - 2*(5*(b*c^2*d^2*e
^3 - b^2*c*d*e^4)*f - (b*c^2*d^3*e^2 + b^2*c*d^2*e^3 - 2*b^3*d*e^4)*g)*x)*s
qrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2
*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^3*d*e^3 - b*c^2*e^4)*f - (2*c
^3*d^2*e^2 + 3*b*c^2*d*e^3 - 2*b^2*c*e^4)*g)*x^2 - (26*c^3*d^3*e - 29*b*c^2
*d^2*e^2 + 2*b^2*c*d*e^3 + 3*b^3*e^4)*f - (14*c^3*d^4 - 43*b*c^2*d^3*e + 40
*b^2*c*d^2*e^2 - 11*b^3*d*e^3)*g - 2*(5*(2*c^3*d^2*e^2 - 5*b*c^2*d*e^3 + 2*
b^2*c*e^4)*f - (2*c^3*d^3*e - b*c^2*d^2*e^2 - 8*b^2*c*d*e^3 + 4*b^3*e^4)*g)
*x)*sqrt(e*x + d))/(16*c^6*d^8*e^2 - 64*b*c^5*d^7*e^3 + 104*b^2*c^4*d^6*e^4
 - 88*b^3*c^3*d^5*e^5 + 41*b^4*c^2*d^4*e^6 - 10*b^5*c*d^3*e^7 + b^6*d^2*e^8
 + (16*c^6*d^4*e^6 - 32*b*c^5*d^3*e^7 + 24*b^2*c^4*d^2*e^8 - 8*b^3*c^3*d*e^
9 + b^4*c^2*e^10)*x^4 + 2*(16*b*c^5*d^4*e^6 - 32*b^2*c^4*d^3*e^7 + 24*b^3*c
^3*d^2*e^8 - 8*b^4*c^2*d*e^9 + b^5*c*e^10)*x^3 - (32*c^6*d^6*e^4 - 96*b*c^5
*d^5*e^5 + 96*b^2*c^4*d^4*e^6 - 32*b^3*c^3*d^3*e^7 - 6*b^4*c^2*d^2*e^8 + 6*
b^5*c*d*e^9 - b^6*e^10)*x^2 - 2*(16*b*c^5*d^6*e^4 - 48*b^2*c^4*d^5*e^5 + 56
*b^3*c^3*d^4*e^6 - 32*b^4*c^2*d^3*e^7 + 9*b^5*c*d^2*e^8 - b^6*d*e^9)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 904, normalized size = 2.89

$$-\frac{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\,\left(6 \sqrt{-c e x-b e+c d}\, b c e^{3} g x^{2} \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+3 \sqrt{-c e x-b e+c d}\, c^{2} d e^{2} g x^{2} \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-15 \sqrt{-c e x-b e+c d}\, c^{2} e^{3} f x^{2} \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+6 \sqrt{-c e x-b e+c d}\, b^{2} e^{3} g x \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+3 \sqrt{-c e x-b e+c d}\, b c d e^{2} g x \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-15 \sqrt{-c e x-b e+c d}\, b c e^{3} f x \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+6 \sqrt{b e-2 c d}\, b c e^{3} g x^{2}+3 \sqrt{b e-2 c d}\, c^{2} d e^{2} g x^{2}-15 \sqrt{b e-2 c d}\, c^{2} e^{3} f x^{2}+6 \sqrt{-c e x-b e+c d}\, b^{2} d e^{2} g \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-3 \sqrt{-c e x-b e+c d}\, b c d^{2} e g \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-15 \sqrt{-c e x-b e+c d}\, b c d e^{2} f \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-3 \sqrt{-c e x-b e+c d}\, c^{2} d^{3} g \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+15 \sqrt{-c e x-b e+c d}\, c^{2} d^{2} e f \arctan \left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+8 \sqrt{b e-2 c d}\, b^{2} e^{3} g x-20 \sqrt{b e-2 c d}\, b c e^{3} f x-2 \sqrt{b e-2 c d}\, c^{2} d^{2} e g x+10 \sqrt{b e-2 c d}\, c^{2} d e^{2} f x+11 \sqrt{b e-2 c d}\, b^{2} d e^{2} g-3 \sqrt{b e-2 c d}\, b^{2} e^{3} f-18 \sqrt{b e-2 c d}\, b c d^{2} e g-8 \sqrt{b e-2 c d}\, b c d e^{2} f+7 \sqrt{b e-2 c d}\, c^{2} d^{3} g+13 \sqrt{b e-2 c d}\, c^{2} d^{2} e f\right)}{3 \left(e x+d\right)^{\frac{3}{2}} \left(c e x+b e-c d\right)^{2} \left(b e-2 c d\right)^{\frac{7}{2}} e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(6*(-c*e*x-b*e+c*d)^(1/2)*b*c*e
^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+3*(-c*e*x-b*e+c*d
)^(1/2)*c^2*d*e^2*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-15
*(-c*e*x-b*e+c*d)^(1/2)*c^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*
c*d)^(1/2))+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*e^3*g*
(-c*e*x-b*e+c*d)^(1/2)+3*(-c*e*x-b*e+c*d)^(1/2)*b*c*d*e^2*g*x*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2
*c*d)^(1/2))*x*b*c*e^3*f*(-c*e*x-b*e+c*d)^(1/2)+6*(b*e-2*c*d)^(1/2)*b*c*e^3
*g*x^2+3*(b*e-2*c*d)^(1/2)*c^2*d*e^2*g*x^2-15*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x
^2+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*d*e^2*g*(-c*e*x-b
*e+c*d)^(1/2)-3*(-c*e*x-b*e+c*d)^(1/2)*b*c*d^2*e*g*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))-15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*b*c*d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)-3*(-c*e*x-b*e+c*d)^(1/2)*c^2*d^3*g*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*(-c*e*x-b*e+c*d)^(1/2)*c^2
*d^2*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+8*(b*e-2*c*d)^(1/
2)*b^2*e^3*g*x-20*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x-2*(b*e-2*c*d)^(1/2)*c^2*d^2
*e*g*x+10*(b*e-2*c*d)^(1/2)*c^2*d*e^2*f*x+11*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g-
3*(b*e-2*c*d)^(1/2)*b^2*e^3*f-18*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g-8*(b*e-2*c*d
)^(1/2)*b*c*d*e^2*f+7*(b*e-2*c*d)^(1/2)*c^2*d^3*g+13*(b*e-2*c*d)^(1/2)*c^2*
d^2*e*f)/(e*x+d)^(3/2)/(c*e*x+b*e-c*d)^2/e^2/(b*e-2*c*d)^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\left(gx+f\right)}{\left(-ce^{2}x^{2}-be^{2}x+cd^{2}-bde\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(e*x + d)*(g*x + f)/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{d+e\,x}}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Integral(sqrt(d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x
)
```

3.2053 $\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=378

$$-\frac{ef-dg}{2e^2\sqrt{d+ex}\,(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{5c\sqrt{d+ex}\,(-4beg+cdg+7cef)}{4e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2\sqrt{d+e}}$$

Rubi [A] time = 0.59, antiderivative size = 378, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 666, 672, 660, 208}

$$-\frac{ef-dg}{2e^2\sqrt{d+ex}\,(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{5c\sqrt{d+ex}\,(-4beg+cdg+7cef)}{4e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5(-4beg+cdg+7cef)}{12e^2\sqrt{d+ex}\,(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{\sqrt{d+ex}\,(-4beg+cdg+7cef)}{6e^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{5c(-4beg+cdg+7cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{4e^2(2cd-be)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x
]
```

```
[Out] -(e*f - d*g)/(2*e^2*(2*c*d - b*e)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2)^(3/2)) + ((7*c*e*f + c*d*g - 4*b*e*g)*Sqrt[d + e*x])/(6*e^2*(2*c
*d - b*e)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (5*(7*c*e*f + c*
d*g - 4*b*e*g))/(12*e^2*(2*c*d - b*e)^3*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2]) + (5*c*(7*c*e*f + c*d*g - 4*b*e*g)*Sqrt[d + e*x])/(4*
e^2*(2*c*d - b*e)^4*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (5*c*(7*c*
e*f + c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(S
qrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^2*(2*c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(7cef+c\ldots}{\ldots}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(7\ldots}{6e^2(2cd-\ldots}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(7\ldots}{6e^2(2cd-\ldots}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(7\ldots}{6e^2(2cd-\ldots}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(7\ldots}{6e^2(2cd-\ldots}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(7\ldots}{6e^2(2cd-\ldots}$$

Mathematica [C] time = 0.11, size = 129, normalized size = 0.34

$$\frac{\frac{c(d+ex)^2(-4beg+cdg+7cef)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{3dg}{e}-3f}{6e\sqrt{d+ex}\,(2cd-be)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5
/2)),x]
```

```
[Out] (-3*f + (3*d*g)/e + (c*(7*c*e*f + c*d*g - 4*b*e*g)*(d + e*x)^2*Hypergeometr
ic2F1[-3/2, 2, -1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b
*e)^2))/(6*e*(2*c*d - b*e)*Sqrt[d + e*x]*((d + e*x)*(-(b*e) + c*(d - e*x)))
^(3/2))
```

IntegrateAlgebraic [A] time = 9.23, size = 514, normalized size = 1.36

$$\frac{\left(-be(d+ex)-c(d+ex)^2+2cd(d+ex)\right)^{3/2}\left(-12b^3e^3g(d+ex)+6b^3de^3g-6b^3e^4f-36b^2cd^2e^2g+21b^2ce^3f(d+ex)+36b^2cde^3f+51b^2cde^2g(d+ex)-80b^2ce^2g(d+ex)^2+72bc^2d^3eg-72bc^2d^2e^2f-60bc^2d^2eg(d+ex)-84bc^2de^2f(d+ex)+140bc^2e^2f(d+ex)^2+180bc^2deg(d+ex)^2-60bc^2eg(d+ex)^3-48c^3d^4g+48c^3d^3ef+12c^3d^3g(d+ex)+84c^3d^2ef(d+ex)-40c^3d^2g(d+ex)^2-280c^3def(d+ex)^2+105c^3ef(d+ex)^3+15c^3dg(d+ex)^3\right)}{12e^2(d+ex)^{7/2}(be-2cd)^4(be+c(d+ex)-2cd)^3}+\frac{5\left(-4bceg+c^2dg+7c^2ef\right)\tan^{-1}\left(\frac{\sqrt{be-2cd}\sqrt{(d+ex)(2cd-be)-c(d+ex)^2}}{\sqrt{d+ex}\,(be+c(d+ex)-2cd)}\right)}{4e^2(2cd-be)^4\sqrt{be-2cd}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^
2*x^2)^(5/2)),x]
```

```
[Out] ((2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2)^(3/2)*(48*c^3*d^3*e*f -
72*b*c^2*d^2*e^2*f + 36*b^2*c*d*e^3*f - 6*b^3*e^4*f - 48*c^3*d^4*g + 72*b*c
^2*d^3*e*g - 36*b^2*c*d^2*e^2*g + 6*b^3*d*e^3*g + 84*c^3*d^2*e*f*(d + e*x)
- 84*b*c^2*d*e^2*f*(d + e*x) + 21*b^2*c*e^3*f*(d + e*x) + 12*c^3*d^3*g*(d +
 e*x) - 60*b*c^2*d^2*e*g*(d + e*x) + 51*b^2*c*d*e^2*g*(d + e*x) - 12*b^3*e^
3*g*(d + e*x) - 280*c^3*d*e*f*(d + e*x)^2 + 140*b*c^2*e^2*f*(d + e*x)^2 - 4
0*c^3*d^2*g*(d + e*x)^2 + 180*b*c^2*d*e*g*(d + e*x)^2 - 80*b^2*c*e^2*g*(d +
 e*x)^2 + 105*c^3*e*f*(d + e*x)^3 + 15*c^3*d*g*(d + e*x)^3 - 60*b*c^2*e*g*(
d + e*x)^3))/(12*e^2*(-2*c*d + b*e)^4*(d + e*x)^(7/2)*(-2*c*d + b*e + c*(d
+ e*x))^3) + (5*(7*c^2*e*f + c^2*d*g - 4*b*c*e*g)*ArcTan[(Sqrt[-2*c*d + b*e
]*Sqrt[(2*c*d - b*e)*(d + e*x) - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b
*e + c*(d + e*x)))])/(4*e^2*(2*c*d - b*e)^4*Sqrt[-2*c*d + b*e])
```

fricas [**B**] time = 0.56, size = 3096, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/24*(15*((7*c^4*e^6*f + (c^4*d*e^5 - 4*b*c^3*e^6)*g)*x^5 + (7*(c^4*d*e^5
 + 2*b*c^3*e^6)*f + (c^4*d^2*e^4 - 2*b*c^3*d*e^5 - 8*b^2*c^2*e^6)*g)*x^4 -
(7*(2*c^4*d^2*e^4 - 4*b*c^3*d*e^5 - b^2*c^2*e^6)*f + (2*c^4*d^3*e^3 - 12*b*
c^3*d^2*e^4 + 15*b^2*c^2*d*e^5 + 4*b^3*c*e^6)*g)*x^3 - (7*(2*c^4*d^3*e^3 -
3*b^2*c^2*d*e^5)*f + (2*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3 - 3*b^2*c^2*d^2*e^4 +
 12*b^3*c*d*e^5)*g)*x^2 + 7*(c^4*d^5*e - 2*b*c^3*d^4*e^2 + b^2*c^2*d^3*e^3)
*f + (c^4*d^6 - 6*b*c^3*d^5*e + 9*b^2*c^2*d^4*e^2 - 4*b^3*c*d^3*e^3)*g + (7
*(c^4*d^4*e^2 - 4*b*c^3*d^3*e^3 + 3*b^2*c^2*d^2*e^4)*f + (c^4*d^5*e - 8*b*c
^3*d^4*e^2 + 19*b^2*c^2*d^3*e^3 - 12*b^3*c*d^2*e^4)*g)*x)*sqrt(2*c*d - b*e)
*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 +
2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(15*(7*(2*c^
4*d*e^4 - b*c^3*e^5)*f + (2*c^4*d^2*e^3 - 9*b*c^3*d*e^4 + 4*b^2*c^2*e^5)*g)
*x^3 + 5*(7*(2*c^4*d^2*e^3 + 7*b*c^3*d*e^4 - 4*b^2*c^2*e^5)*f + (2*c^4*d^3*
e^2 - b*c^3*d^2*e^3 - 32*b^2*c^2*d*e^4 + 16*b^3*c*e^5)*g)*x^2 - (86*c^4*d^4
*e - 11*b*c^3*d^3*e^2 - 130*b^2*c^2*d^2*e^3 + 69*b^3*c*d*e^4 - 6*b^4*e^5)*f
 - (122*c^4*d^5 - 325*b*c^3*d^4*e + 262*b^2*c^2*d^3*e^2 - 53*b^3*c*d^2*e^3
- 6*b^4*d*e^4)*g - (7*(46*c^4*d^3*e^2 - 79*b*c^3*d^2*e^3 + 22*b^2*c^2*d*e^4
 + 3*b^3*c*e^5)*f + (46*c^4*d^4*e - 263*b*c^3*d^3*e^2 + 338*b^2*c^2*d^2*e^3
 - 85*b^3*c*d*e^4 - 12*b^4*e^5)*g)*x)*sqrt(e*x + d))/(32*c^7*d^10*e^2 - 144
*b*c^6*d^9*e^3 + 272*b^2*c^5*d^8*e^4 - 280*b^3*c^4*d^7*e^5 + 170*b^4*c^3*d^
6*e^6 - 61*b^5*c^2*d^5*e^7 + 12*b^6*c*d^4*e^8 - b^7*d^3*e^9 + (32*c^7*d^5*e
^7 - 80*b*c^6*d^4*e^8 + 80*b^2*c^5*d^3*e^9 - 40*b^3*c^4*d^2*e^10 + 10*b^4*c
^3*d*e^11 - b^5*c^2*e^12)*x^5 + (32*c^7*d^6*e^6 - 16*b*c^6*d^5*e^7 - 80*b^2
*c^5*d^4*e^8 + 120*b^3*c^4*d^3*e^9 - 70*b^4*c^3*d^2*e^10 + 19*b^5*c^2*d*e^1
1 - 2*b^6*c*e^12)*x^4 - (64*c^7*d^7*e^5 - 288*b*c^6*d^6*e^6 + 448*b^2*c^5*d
^5*e^7 - 320*b^3*c^4*d^4*e^8 + 100*b^4*c^3*d^3*e^9 - 2*b^5*c^2*d^2*e^10 - 6
*b^6*c*d*e^11 + b^7*e^12)*x^3 - (64*c^7*d^8*e^4 - 160*b*c^6*d^7*e^5 + 64*b^
2*c^5*d^6*e^6 + 160*b^3*c^4*d^5*e^7 - 220*b^4*c^3*d^4*e^8 + 118*b^5*c^2*d^3
*e^9 - 30*b^6*c*d^2*e^10 + 3*b^7*d*e^11)*x^2 + (32*c^7*d^9*e^3 - 208*b*c^6*
d^8*e^4 + 496*b^2*c^5*d^7*e^5 - 600*b^3*c^4*d^6*e^6 + 410*b^4*c^3*d^5*e^7 -
 161*b^5*c^2*d^4*e^8 + 34*b^6*c*d^3*e^9 - 3*b^7*d^2*e^10)*x), -1/12*(15*((7
*c^4*e^6*f + (c^4*d*e^5 - 4*b*c^3*e^6)*g)*x^5 + (7*(c^4*d*e^5 + 2*b*c^3*e^6
)*f + (c^4*d^2*e^4 - 2*b*c^3*d*e^5 - 8*b^2*c^2*e^6)*g)*x^4 - (7*(2*c^4*d^2*
e^4 - 4*b*c^3*d*e^5 - b^2*c^2*e^6)*f + (2*c^4*d^3*e^3 - 12*b*c^3*d^2*e^4 +
15*b^2*c^2*d*e^5 + 4*b^3*c*e^6)*g)*x^3 - (7*(2*c^4*d^3*e^3 - 3*b^2*c^2*d*e^
5)*f + (2*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3 - 3*b^2*c^2*d^2*e^4 + 12*b^3*c*d*e^
```

```
5)*g)*x^2 + 7*(c^4*d^5*e - 2*b*c^3*d^4*e^2 + b^2*c^2*d^3*e^3)*f + (c^4*d^6
- 6*b*c^3*d^5*e + 9*b^2*c^2*d^4*e^2 - 4*b^3*c*d^3*e^3)*g + (7*(c^4*d^4*e^2
- 4*b*c^3*d^3*e^3 + 3*b^2*c^2*d^2*e^4)*f + (c^4*d^5*e - 8*b*c^3*d^4*e^2 + 1
9*b^2*c^2*d^3*e^3 - 12*b^3*c*d^2*e^4)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e
^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(15*(7*(2*c^4*d*e^4 - b*c^3*e^5)*f + (2*c^4*d^2*e^3 - 9*b*c^3*d*e^4 +
4*b^2*c^2*e^5)*g)*x^3 + 5*(7*(2*c^4*d^2*e^3 + 7*b*c^3*d*e^4 - 4*b^2*c^2*e^5
)*f + (2*c^4*d^3*e^2 - b*c^3*d^2*e^3 - 32*b^2*c^2*d*e^4 + 16*b^3*c*e^5)*g)*
x^2 - (86*c^4*d^4*e - 11*b*c^3*d^3*e^2 - 130*b^2*c^2*d^2*e^3 + 69*b^3*c*d*e
^4 - 6*b^4*e^5)*f - (122*c^4*d^5 - 325*b*c^3*d^4*e + 262*b^2*c^2*d^3*e^2 -
53*b^3*c*d^2*e^3 - 6*b^4*d*e^4)*g - (7*(46*c^4*d^3*e^2 - 79*b*c^3*d^2*e^3 +
 22*b^2*c^2*d*e^4 + 3*b^3*c*e^5)*f + (46*c^4*d^4*e - 263*b*c^3*d^3*e^2 + 33
8*b^2*c^2*d^2*e^3 - 85*b^3*c*d*e^4 - 12*b^4*e^5)*g)*x)*sqrt(e*x + d))/(32*c
^7*d^10*e^2 - 144*b*c^6*d^9*e^3 + 272*b^2*c^5*d^8*e^4 - 280*b^3*c^4*d^7*e^5
 + 170*b^4*c^3*d^6*e^6 - 61*b^5*c^2*d^5*e^7 + 12*b^6*c*d^4*e^8 - b^7*d^3*e^
9 + (32*c^7*d^5*e^7 - 80*b*c^6*d^4*e^8 + 80*b^2*c^5*d^3*e^9 - 40*b^3*c^4*d^
2*e^10 + 10*b^4*c^3*d*e^11 - b^5*c^2*e^12)*x^5 + (32*c^7*d^6*e^6 - 16*b*c^6
*d^5*e^7 - 80*b^2*c^5*d^4*e^8 + 120*b^3*c^4*d^3*e^9 - 70*b^4*c^3*d^2*e^10 +
 19*b^5*c^2*d*e^11 - 2*b^6*c*e^12)*x^4 - (64*c^7*d^7*e^5 - 288*b*c^6*d^6*e^
6 + 448*b^2*c^5*d^5*e^7 - 320*b^3*c^4*d^4*e^8 + 100*b^4*c^3*d^3*e^9 - 2*b^5
*c^2*d^2*e^10 - 6*b^6*c*d*e^11 + b^7*e^12)*x^3 - (64*c^7*d^8*e^4 - 160*b*c^
6*d^7*e^5 + 64*b^2*c^5*d^6*e^6 + 160*b^3*c^4*d^5*e^7 - 220*b^4*c^3*d^4*e^8
+ 118*b^5*c^2*d^3*e^9 - 30*b^6*c*d^2*e^10 + 3*b^7*d*e^11)*x^2 + (32*c^7*d^9
*e^3 - 208*b*c^6*d^8*e^4 + 496*b^2*c^5*d^7*e^5 - 600*b^3*c^4*d^6*e^6 + 410*
b^4*c^3*d^5*e^7 - 161*b^5*c^2*d^4*e^8 + 34*b^6*c*d^3*e^9 - 3*b^7*d^2*e^10)*
x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 1528, normalized size = 4.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 1/12*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-105*(b*e-2*c*d)^(1/2)*c^3*e^4
*f*x^3+45*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))+12*(b*e-2*c*d)^(1/2)*b^3*e^4*g*x+15*(-c*e*x-b*e+c*
d)^(1/2)*c^3*d^4*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-90*(-c*
e*x-b*e+c*d)^(1/2)*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))+6*(b*e-2*c*d)^(1/2)*b^3*e^4*f+61*(b*e-2*c*d)^(1/2)*c^3*d^4*g+120
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*c*d*e^3*g*(-c*e*x-b
*e+c*d)^(1/2)-210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^2*
d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)+65*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*g-57*(b*e
-2*c*d)^(1/2)*b^2*c*d*e^3*f-132*(b*e-2*c*d)^(1/2)*b*c^2*d^3*e*g+16*(b*e-2*c
*d)^(1/2)*b*c^2*d^2*e^2*f+6*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g+43*(b*e-2*c*d)^(1
/2)*c^3*d^3*e*f+60*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b^2
*c*e^4*g*(-c*e*x-b*e+c*d)^(1/2)-105*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))*x^2*b*c^2*e^4*f*(-c*e*x-b*e+c*d)^(1/2)+60*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*b^2*c*d^2*e^2*g*(-c*e*x-b*e+c*d)^(1/2)-105*arctan
```

```
((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^2*e^2*f*(-c*e*x-b*e+c*d)
^(1/2)-105*(-c*e*x-b*e+c*d)^(1/2)*c^3*e^4*f*x^3*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))+60*(b*e-2*c*d)^(1/2)*b*c^2*e^4*g*x^3-15*(b*e-2*c*d)^(
1/2)*c^3*d*e^3*g*x^3+80*(b*e-2*c*d)^(1/2)*b^2*c*e^4*g*x^2-140*(b*e-2*c*d)^(
1/2)*b*c^2*e^4*f*x^2-5*(b*e-2*c*d)^(1/2)*c^3*d^2*e^2*g*x^2-35*(b*e-2*c*d)^(
1/2)*c^3*d*e^3*f*x^2-21*(b*e-2*c*d)^(1/2)*b^2*c*e^4*f*x+23*(b*e-2*c*d)^(1/2
)*c^3*d^3*e*g*x+161*(b*e-2*c*d)^(1/2)*c^3*d^2*e^2*f*x+105*(-c*e*x-b*e+c*d)^
(1/2)*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*(-c*e
*x-b*e+c*d)^(1/2)*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))+105*(-c*e*x-b*e+c*d)^(1/2)*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))+109*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*g*x-120*(b*e-2*c*d
)^(1/2)*b*c^2*d^2*e^2*g*x-196*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*f*x-75*(-c*e*x-
b*e+c*d)^(1/2)*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2
))+60*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*e^4*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))-15*(-c*e*x-b*e+c*d)^(1/2)*c^3*d*e^3*g*x^3*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-15*(-c*e*x-b*e+c*d)^(1/2)*c^3*d^2*e^2*g*
x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-105*(-c*e*x-b*e+c*d)^(
1/2)*c^3*d*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)))/(e*x
+d)^(5/2)/(c*e*x+b*e-c*d)^2/e^2/(b*e-2*c*d)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*sqrt(e*x
+ d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{\sqrt{d+e\,x}\,\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(1/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2054 $\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=457

$$\frac{35c^2\sqrt{d+ex}\,(-2beg+cdg+3cef)}{8e^2(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{35c^2(-2beg+cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{11/2}}-\frac{}{24e^2\sqrt{d+ex}}$$

Rubi [A] time = 0.75, antiderivative size = 457, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 672, 666, 660, 208}

$$\frac{35c^2\sqrt{d+ex}\,(-2beg+cdg+3cef)}{8e^2(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{35c^2(-2beg+cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{11/2}}-\frac{35c(-2beg+cdg+3cef)}{24e^2\sqrt{d+ex}\,(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{7c\sqrt{d+ex}\,(-2beg+cdg+3cef)}{12e^2(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{-2beg+cdg+3cef}{4e^2\sqrt{d+ex}\,(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{ef-dg}{3e^2(d+ex)^{3/2}(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))
,x]
```

```
[Out] -(e*f - d*g)/(3*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(3/2)) - (3*c*e*f + c*d*g - 2*b*e*g)/(4*e^2*(2*c*d - b*e)^2*Sq
rt[d + e*x]*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (7*c*(3*c*e*f +
c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(12*e^2*(2*c*d - b*e)^3*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2)) - (35*c*(3*c*e*f + c*d*g - 2*b*e*g))/(24*e^2*(2*c
*d - b*e)^4*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (35*
c^2*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(8*e^2*(2*c*d - b*e)^5*Sqrt[
d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (35*c^2*(3*c*e*f + c*d*g - 2*b*e*g)
*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[
d + e*x])])/(8*e^2*(2*c*d - b*e)^(11/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
```

```
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(3c}{}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{4e^2}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{4e^2}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{4e^2}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{4e^2}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{4e^2}$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{4e^2}$$

Mathematica [C] time = 0.11, size = 128, normalized size = 0.28

$$\frac{\frac{3c^2(d+ex)^3(-2beg+cdg+3cef)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+3dg-3ef}{9e^2(d+ex)^{3/2}(2cd-be)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^
(5/2)),x]
```

```
[Out] (-3*e*f + 3*d*g + (3*c^2*(3*c*e*f + c*d*g - 2*b*e*g)*(d + e*x)^3*Hypergeome
tric2F1[-3/2, 3, -1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e
```

```
)^3)/(9*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)*((d + e*x)*(-(b*e) + c*(d - e*x))
)^(3/2))
```

IntegrateAlgebraic [A] time = 11.44, size = 713, normalized size = 1.56

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*
e^2*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[2*c*d*(d + e*x) - b*e*(d + e*x) - c*(d + e*x)^2]*(128*c^4*d^4*e*f - 2
56*b*c^3*d^3*e^2*f + 192*b^2*c^2*d^2*e^3*f - 64*b^3*c*d*e^4*f + 8*b^4*e^5*f
 - 128*c^4*d^5*g + 256*b*c^3*d^4*e*g - 192*b^2*c^2*d^3*e^2*g + 64*b^3*c*d^2
*e^3*g - 8*b^4*d*e^4*g + 144*c^4*d^3*e*f*(d + e*x) - 216*b*c^3*d^2*e^2*f*(d
 + e*x) + 108*b^2*c^2*d*e^3*f*(d + e*x) - 18*b^3*c*e^4*f*(d + e*x) + 48*c^4
*d^4*g*(d + e*x) - 168*b*c^3*d^3*e*g*(d + e*x) + 180*b^2*c^2*d^2*e^2*g*(d +
 e*x) - 78*b^3*c*d*e^3*g*(d + e*x) + 12*b^4*e^4*g*(d + e*x) + 252*c^4*d^2*e
*f*(d + e*x)^2 - 252*b*c^3*d*e^2*f*(d + e*x)^2 + 63*b^2*c^2*e^3*f*(d + e*x)
^2 + 84*c^4*d^3*g*(d + e*x)^2 - 252*b*c^3*d^2*e*g*(d + e*x)^2 + 189*b^2*c^2
*d*e^2*g*(d + e*x)^2 - 42*b^3*c*e^3*g*(d + e*x)^2 - 840*c^4*d*e*f*(d + e*x)
^3 + 420*b*c^3*e^2*f*(d + e*x)^3 - 280*c^4*d^2*g*(d + e*x)^3 + 700*b*c^3*d*
e*g*(d + e*x)^3 - 280*b^2*c^2*e^2*g*(d + e*x)^3 + 315*c^4*e*f*(d + e*x)^4 +
 105*c^4*d*g*(d + e*x)^4 - 210*b*c^3*e*g*(d + e*x)^4))/(24*e^2*(-2*c*d + b*
e)^5*(d + e*x)^(7/2)*(-2*c*d + b*e + c*(d + e*x))^2) + (35*(3*c^3*e*f + c^3
*d*g - 2*b*c^2*e*g)*ArcTan[(Sqrt[-2*c*d + b*e]*Sqrt[(2*c*d - b*e)*(d + e*x)
 - c*(d + e*x)^2])/(Sqrt[d + e*x]*(-2*c*d + b*e + c*(d + e*x)))])/(8*e^2*(2
*c*d - b*e)^5*Sqrt[-2*c*d + b*e])
```

fricas [B] time = 0.71, size = 4084, normalized size = 8.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/48*(105*((3*c^5*e^7*f + (c^5*d*e^6 - 2*b*c^4*e^7)*g)*x^6 + 2*(3*(c^5*d*e
^6 + b*c^4*e^7)*f + (c^5*d^2*e^5 - b*c^4*d*e^6 - 2*b^2*c^3*e^7)*g)*x^5 - (3
*(c^5*d^2*e^5 - 6*b*c^4*d*e^6 - b^2*c^3*e^7)*f + (c^5*d^3*e^4 - 8*b*c^4*d^2
*e^5 + 11*b^2*c^3*d*e^6 + 2*b^3*c^2*e^7)*g)*x^4 - 4*(3*(c^5*d^3*e^4 - b*c^4
*d^2*e^5 - b^2*c^3*d*e^6)*f + (c^5*d^4*e^3 - 3*b*c^4*d^3*e^4 + b^2*c^3*d^2*
e^5 + 2*b^3*c^2*d*e^6)*g)*x^3 - (3*(c^5*d^4*e^3 + 4*b*c^4*d^3*e^4 - 6*b^2*c
^3*d^2*e^5)*f + (c^5*d^5*e^2 + 2*b*c^4*d^4*e^3 - 14*b^2*c^3*d^3*e^4 + 12*b^
3*c^2*d^2*e^5)*g)*x^2 + 3*(c^5*d^6*e - 2*b*c^4*d^5*e^2 + b^2*c^3*d^4*e^3)*f
 + (c^5*d^7 - 4*b*c^4*d^6*e + 5*b^2*c^3*d^5*e^2 - 2*b^3*c^2*d^4*e^3)*g + 2*
(3*(c^5*d^5*e^2 - 3*b*c^4*d^4*e^3 + 2*b^2*c^3*d^3*e^4)*f + (c^5*d^6*e - 5*b
*c^4*d^5*e^2 + 8*b^2*c^3*d^4*e^3 - 4*b^3*c^2*d^3*e^4)*g)*x)*sqrt(2*c*d - b*
e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^
2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2
+ 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(105*(3*(2
*c^5*d*e^5 - b*c^4*e^6)*f + (2*c^5*d^2*e^4 - 5*b*c^4*d*e^5 + 2*b^2*c^3*e^6)
*g)*x^4 + 140*(3*(2*c^5*d^2*e^4 + b*c^4*d*e^5 - b^2*c^3*e^6)*f + (2*c^5*d^3
*e^3 - 3*b*c^4*d^2*e^4 - 3*b^2*c^3*d*e^5 + 2*b^3*c^2*e^6)*g)*x^3 - 21*(3*(1
2*c^5*d^3*e^3 - 38*b*c^4*d^2*e^4 + 14*b^2*c^3*d*e^5 + b^3*c^2*e^6)*f + (12*
c^5*d^4*e^2 - 62*b*c^4*d^3*e^3 + 90*b^2*c^3*d^2*e^4 - 27*b^3*c^2*d*e^5 - 2*
b^4*c*e^6)*g)*x^2 - (2*c^5*d^5*e + 607*b*c^4*d^4*e^2 - 1030*b^2*c^3*d^3*e^3
 + 527*b^3*c^2*d^2*e^4 - 98*b^4*c*d*e^5 + 8*b^5*e^6)*f - (342*c^5*d^6 - 823
*b*c^4*d^5*e + 532*b^2*c^3*d^4*e^2 + 9*b^3*c^2*d^3*e^3 - 64*b^4*c*d^2*e^4 +
 4*b^5*d*e^5)*g - 6*(3*(68*c^5*d^4*e^2 - 94*b*c^4*d^3*e^3 + 4*b^2*c^3*d^2*e
```

^4 + 15*b^3*c^2*d*e^5 - b^4*c*e^6)*f + (68*c^5*d^5*e - 230*b*c^4*d^4*e^2 + 192*b^2*c^3*d^3*e^3 + 7*b^3*c^2*d^2*e^4 - 31*b^4*c*d*e^5 + 2*b^5*e^6)*g)*x) *sqrt(e*x + d))/(64*c^8*d^12*e^2 - 320*b*c^7*d^11*e^3 + 688*b^2*c^6*d^10*e^4 - 832*b^3*c^5*d^9*e^5 + 620*b^4*c^4*d^8*e^6 - 292*b^5*c^3*d^7*e^7 + 85*b^6*c^2*d^6*e^8 - 14*b^7*c*d^5*e^9 + b^8*d^4*e^10 + (64*c^8*d^6*e^8 - 192*b*c^7*d^5*e^9 + 240*b^2*c^6*d^4*e^10 - 160*b^3*c^5*d^3*e^11 + 60*b^4*c^4*d^2*e^12 - 12*b^5*c^3*d*e^13 + b^6*c^2*e^14)*x^6 + 2*(64*c^8*d^7*e^7 - 128*b*c^7*d^6*e^8 + 48*b^2*c^6*d^5*e^9 + 80*b^3*c^5*d^4*e^10 - 100*b^4*c^4*d^3*e^11 + 48*b^5*c^3*d^2*e^12 - 11*b^6*c^2*d*e^13 + b^7*c*e^14)*x^5 - (64*c^8*d^8*e^6 - 576*b*c^7*d^7*e^7 + 1328*b^2*c^6*d^6*e^8 - 1408*b^3*c^5*d^5*e^9 + 780*b^4*c^4*d^4*e^10 - 212*b^5*c^3*d^3*e^11 + 13*b^6*c^2*d^2*e^12 + 6*b^7*c*d*e^13 - b^8*e^14)*x^4 - 4*(64*c^8*d^9*e^5 - 256*b*c^7*d^8*e^6 + 368*b^2*c^6*d^7*e^7 - 208*b^3*c^5*d^6*e^8 - 20*b^4*c^4*d^5*e^9 + 88*b^5*c^3*d^4*e^10 - 47*b^6*c^2*d^3*e^11 + 11*b^7*c*d^2*e^12 - b^8*d*e^13)*x^3 - (64*c^8*d^10*e^4 + 64*b*c^7*d^9*e^5 - 912*b^2*c^6*d^8*e^6 + 1952*b^3*c^5*d^7*e^7 - 2020*b^4*c^4*d^6*e^8 + 1188*b^5*c^3*d^5*e^9 - 407*b^6*c^2*d^4*e^10 + 76*b^7*c*d^3*e^11 - 6*b^8*d^2*e^12)*x^2 + 2*(64*c^8*d^11*e^3 - 384*b*c^7*d^10*e^4 + 944*b^2*c^6*d^9*e^5 - 1264*b^3*c^5*d^8*e^6 + 1020*b^4*c^4*d^7*e^7 - 512*b^5*c^3*d^6*e^8 + 157*b^6*c^2*d^5*e^9 - 27*b^7*c*d^4*e^10 + 2*b^8*d^3*e^11)*x), -1/24*(105*((3*c^5*e^7*f + (c^5*d*e^6 - 2*b*c^4*e^7)*g)*x^6 + 2*(3*(c^5*d*e^6 + b*c^4*e^7)*f + (c^5*d^2*e^5 - b*c^4*d*e^6 - 2*b^2*c^3*e^7)*g)*x^5 - (3*(c^5*d^2*e^5 - 6*b*c^4*d*e^6 - b^2*c^3*e^7)*f + (c^5*d^3*e^4 - 8*b*c^4*d^2*e^5 + 11*b^2*c^3*d*e^6 + 2*b^3*c^2*e^7)*g)*x^4 - 4*(3*(c^5*d^3*e^4 - b*c^4*d^2*e^5 - b^2*c^3*d*e^6)*f + (c^5*d^4*e^3 - 3*b*c^4*d^3*e^4 + b^2*c^3*d^2*e^5 + 2*b^3*c^2*d*e^6)*g)*x^3 - (3*(c^5*d^4*e^3 + 4*b*c^4*d^3*e^4 - 6*b^2*c^3*d^2*e^5)*f + (c^5*d^5*e^2 + 2*b*c^4*d^4*e^3 - 14*b^2*c^3*d^3*e^4 + 12*b^3*c^2*d^2*e^5)*g)*x^2 + 3*(c^5*d^6*e - 2*b*c^4*d^5*e^2 + b^2*c^3*d^4*e^3)*f + (c^5*d^7 - 4*b*c^4*d^6*e + 5*b^2*c^3*d^5*e^2 - 2*b^3*c^2*d^4*e^3)*g + 2*(3*(c^5*d^5*e^2 - 3*b*c^4*d^4*e^3 + 2*b^2*c^3*d^3*e^4)*f + (c^5*d^6*e - 5*b*c^4*d^5*e^2 + 8*b^2*c^3*d^4*e^3 - 4*b^3*c^2*d^3*e^4)*g)*x)*sqrt(-2*c*d + b*e) *arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(105*(3*(2*c^5*d*e^5 - b*c^4*e^6)*f + (2*c^5*d^2*e^4 - 5*b*c^4*d*e^5 + 2*b^2*c^3*e^6)*g)*x^4 + 140*(3*(2*c^5*d^2*e^4 + b*c^4*d*e^5 - b^2*c^3*e^6)*f + (2*c^5*d^3*e^3 - 3*b*c^4*d^2*e^4 - 3*b^2*c^3*d*e^5 + 2*b^3*c^2*e^6)*g)*x^3 - 21*(3*(12*c^5*d^3*e^3 - 38*b*c^4*d^2*e^4 + 14*b^2*c^3*d*e^5 + b^3*c^2*e^6)*f + (12*c^5*d^4*e^2 - 62*b*c^4*d^3*e^3 + 90*b^2*c^3*d^2*e^4 - 27*b^3*c^2*d*e^5 - 2*b^4*c*e^6)*g)*x^2 - (2*c^5*d^5*e + 607*b*c^4*d^4*e^2 - 1030*b^2*c^3*d^3*e^3 + 527*b^3*c^2*d^2*e^4 - 98*b^4*c*d*e^5 + 8*b^5*e^6)*f - (342*c^5*d^6 - 823*b*c^4*d^5*e + 532*b^2*c^3*d^4*e^2 + 9*b^3*c^2*d^3*e^3 - 64*b^4*c*d^2*e^4 + 4*b^5*d*e^5)*g - 6*(3*(68*c^5*d^4*e^2 - 94*b*c^4*d^3*e^3 + 4*b^2*c^3*d^2*e^4 + 15*b^3*c^2*d*e^5 - b^4*c*e^6)*f + (68*c^5*d^5*e - 230*b*c^4*d^4*e^2 + 192*b^2*c^3*d^3*e^3 + 7*b^3*c^2*d^2*e^4 - 31*b^4*c*d*e^5 + 2*b^5*e^6)*g)*x)*sqrt(e*x + d))/(64*c^8*d^12*e^2 - 320*b*c^7*d^11*e^3 + 688*b^2*c^6*d^10*e^4 - 832*b^3*c^5*d^9*e^5 + 620*b^4*c^4*d^8*e^6 - 292*b^5*c^3*d^7*e^7 + 85*b^6*c^2*d^6*e^8 - 14*b^7*c*d^5*e^9 + b^8*d^4*e^10 + (64*c^8*d^6*e^8 - 192*b*c^7*d^5*e^9 + 240*b^2*c^6*d^4*e^10 - 160*b^3*c^5*d^3*e^11 + 60*b^4*c^4*d^2*e^12 - 12*b^5*c^3*d*e^13 + b^6*c^2*e^14)*x^6 + 2*(64*c^8*d^7*e^7 - 128*b*c^7*d^6*e^8 + 48*b^2*c^6*d^5*e^9 + 80*b^3*c^5*d^4*e^10 - 100*b^4*c^4*d^3*e^11 + 48*b^5*c^3*d^2*e^12 - 11*b^6*c^2*d*e^13 + b^7*c*e^14)*x^5 - (64*c^8*d^8*e^6 - 576*b*c^7*d^7*e^7 + 1328*b^2*c^6*d^6*e^8 - 1408*b^3*c^5*d^5*e^9 + 780*b^4*c^4*d^4*e^10 - 212*b^5*c^3*d^3*e^11 + 13*b^6*c^2*d^2*e^12 + 6*b^7*c*d*e^13 - b^8*e^14)*x^4 - 4*(64*c^8*d^9*e^5 - 256*b*c^7*d^8*e^6 + 368*b^2*c^6*d^7*e^7 - 208*b^3*c^5*d^6*e^8 - 20*b^4*c^4*d^5*e^9 + 88*b^5*c^3*d^4*e^10 - 47*b^6*c^2*d^3*e^11 + 11*b^7*c*d^2*e^12 - b^8*d*e^13)*x^3 - (64*c^8*d^10*e^4 + 64*b*c^7*d^9*e^5 - 912*b^2*c^6*d^8*e^6 + 1952*b^3*c^5*d^7*e^7 - 2020*b^4*c^4*d^6*e^8 + 1188*b^5*c^3*d^5*e^9 - 407*b^6*c^2*d^4*e^10 + 76*b^7*c*d^3*e^11 - 6*b^8*d^2*e^12)*x^2 + 2*(64*c^8*d^11*e^3 - 384*b*c^7*d^10*e^4 + 944*b^2*c^6*d^9*e^5 - 1264*b^3*c^5*d^8*e^6 + 1020*b^

```
4*c^4*d^7*e^7 - 512*b^5*c^3*d^6*e^8 + 157*b^6*c^2*d^5*e^9 - 27*b^7*c*d^4*e^
10 + 2*b^8*d^3*e^11)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.11, size = 2011, normalized size = 4.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -1/24*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-945*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^3*d*e^4*f*(-c*e*x-b*e+c*d)^(1/2)+630*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*c^2*d^2*e^3*g*(-c*e*x-b*e
+c*d)^(1/2)-735*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^3*d^
3*e^2*g*(-c*e*x-b*e+c*d)^(1/2)-945*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))*x*b*c^3*d^2*e^3*f*(-c*e*x-b*e+c*d)^(1/2)-315*(b*e-2*c*d)^(1/2)*x^4
*c^4*e^5*f-8*(b*e-2*c*d)^(1/2)*b^4*e^5*f+171*(b*e-2*c*d)^(1/2)*c^4*d^5*g+31
5*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^3*d*e^4*g*(-c*e*
x-b*e+c*d)^(1/2)+630*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b
^2*c^2*d*e^4*g*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*
e-2*c*d)^(1/2))*x^2*b*c^3*d^2*e^3*g*(-c*e*x-b*e+c*d)^(1/2)-4*(b*e-2*c*d)^(1
/2)*b^4*d*e^4*g+(b*e-2*c*d)^(1/2)*c^4*d^4*e*f-12*(b*e-2*c*d)^(1/2)*x*b^4*e^
5*g+105*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^5*g*(-c*e*x-
b*e+c*d)^(1/2)+282*(b*e-2*c*d)^(1/2)*x*b^2*c^2*d^2*e^3*g-234*(b*e-2*c*d)^(1
/2)*x*b^2*c^2*d*e^4*f-588*(b*e-2*c*d)^(1/2)*x*b*c^3*d^3*e^2*g-540*(b*e-2*c*
d)^(1/2)*x*b*c^3*d^2*e^3*f+210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))*x^4*b*c^3*e^5*g*(-c*e*x-b*e+c*d)^(1/2)-105*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*x^4*c^4*d*e^4*g*(-c*e*x-b*e+c*d)^(1/2)+210*arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b^2*c^2*e^5*g*(-c*e*x-b*e+c*d)^(
1/2)-315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^3*e^5*f*(
-c*e*x-b*e+c*d)^(1/2)-210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*
x^3*c^4*d^2*e^3*g*(-c*e*x-b*e+c*d)^(1/2)-630*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))*x^3*c^4*d*e^4*f*(-c*e*x-b*e+c*d)^(1/2)+210*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^4*e*g*(-c*e*x-b*e+c*d)^(1/2)+63
0*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^3*e^2*f*(-c*e*x-
b*e+c*d)^(1/2)+210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*c^2
*d^3*e^2*g*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*
c*d)^(1/2))*b*c^3*d^4*e*g*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^3*d^3*e^2*f*(-c*e*x-b*e+c*d)^(1/2)+140*(b*e-
2*c*d)^(1/2)*x^3*b*c^3*d*e^4*g+651*(b*e-2*c*d)^(1/2)*x^2*b^2*c^2*d*e^4*g-58
8*(b*e-2*c*d)^(1/2)*x^2*b*c^3*d^2*e^3*g-1008*(b*e-2*c*d)^(1/2)*x^2*b*c^3*d*
e^4*f+162*(b*e-2*c*d)^(1/2)*x*b^3*c*d*e^4*g+204*(b*e-2*c*d)^(1/2)*x*c^4*d^4
*e*g+612*(b*e-2*c*d)^(1/2)*x*c^4*d^3*e^2*f+210*(b*e-2*c*d)^(1/2)*x^4*b*c^3*
e^5*g-105*(b*e-2*c*d)^(1/2)*x^4*c^4*d*e^4*g+315*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*c^4*d^4*e*f*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^4*e^5*f*(-c*e*x-b*e+c*d)^(1/2)-420
*(b*e-2*c*d)^(1/2)*x^3*c^4*d*e^4*f+42*(b*e-2*c*d)^(1/2)*x^2*b^3*c*e^5*g-63*
(b*e-2*c*d)^(1/2)*x^2*b^2*c^2*e^5*f+126*(b*e-2*c*d)^(1/2)*x^2*c^4*d^3*e^2*g
+378*(b*e-2*c*d)^(1/2)*x^2*c^4*d^2*e^3*f+18*(b*e-2*c*d)^(1/2)*x*b^3*c*e^5*f
-140*(b*e-2*c*d)^(1/2)*x^3*c^4*d^2*e^3*g+280*(b*e-2*c*d)^(1/2)*x^3*b^2*c^2*
```

```
e^5*g-420*(b*e-2*c*d)^(1/2)*x^3*b*c^3*e^5*f+56*(b*e-2*c*d)^(1/2)*b^3*c*d^2*
e^3*g+82*(b*e-2*c*d)^(1/2)*b^3*c*d*e^4*f+103*(b*e-2*c*d)^(1/2)*b^2*c^2*d^3*
e^2*g-363*(b*e-2*c*d)^(1/2)*b^2*c^2*d^2*e^3*f-326*(b*e-2*c*d)^(1/2)*b*c^3*d
^4*e*g+304*(b*e-2*c*d)^(1/2)*b*c^3*d^3*e^2*f)/(e*x+d)^(7/2)/(c*e*x+b*e-c*d)
^2/e^2/(b*e-2*c*d)^(11/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(e*x + d)
^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{3/2}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(3/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2055 $\int (d+ex)^m(cdm-be(1+m+p)-ce(2+m+2p)x)\left(cd^2-bde-be^2x-ce^2x^2\right)^p\,dx$

Optimal. Leaf size=42

$$\frac{(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{p+1}}{e}$$

Rubi [A] time = 0.05, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 61, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.016, Rules used = {786}

$$\frac{(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{p+1}}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^m*(c*d*m - b*e*(1 + m + p) - c*e*(2 + m + 2*p)*x)*(c*d^2 - b*
d*e - b*e^2*x - c*e^2*x^2)^p,x]
```

```
[Out] ((d + e*x)^m*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(1 + p))/e
```

Rule 786

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^
2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[m*(g*(c*d - b*e) + c*
e*f) + e*(p + 1)*(2*c*f - b*g), 0]
```

Rubi steps

$$\int (d+ex)^m(cdm-be(1+m+p)-ce(2+m+2p)x)\left(cd^2-bde-be^2x-ce^2x^2\right)^p\,dx=\frac{(d+ex)^m\left(d(cd-be)-be^2\right.}{e}$$

Mathematica [A] time = 0.14, size = 34, normalized size = 0.81

$$\frac{(d+ex)^m((d+ex)(c(d-ex)-be))^{p+1}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^m*(c*d*m - b*e*(1 + m + p) - c*e*(2 + m + 2*p)*x)*(c*d^
2 - b*d*e - b*e^2*x - c*e^2*x^2)^p,x]
```

```
[Out] ((d + e*x)^m*((d + e*x)*(-(b*e) + c*(d - e*x)))^(1 + p))/e
```

IntegrateAlgebraic [F] time = 0.50, size = 0, normalized size = 0.00

$$\int (d+ex)^m(cdm-be(1+m+p)-ce(2+m+2p)x)\left(cd^2-bde-be^2x-ce^2x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^m*(c*d*m - b*e*(1 + m + p) - c*e*(2 + m + 2*p)
*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(d + e*x)^m*(c*d*m - b*e*(1 + m + p) - c*e*(2 + m
 + 2*p)*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^p, x]
```

fricas [A] time = 0.44, size = 66, normalized size = 1.57

$$-\frac{\left(ce^{2}x^{2}+be^{2}x-cd^{2}+bde\right)\left(-ce^{2}x^{2}-be^{2}x+cd^{2}-bde\right)^{p}(ex+d)^{m}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^p,x, algorithm="fricas")
```

```
[Out] -(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e)^p*(e*x + d)^m/e
```

giac [B] time = 0.46, size = 173, normalized size = 4.12

$$-\left((xe+d)^{m}cx^{2}e^{\left(p\log(-cxe+cd-be)+p\log(xe+d)+2\right)}-(xe+d)^{m}cd^{2}e^{\left(p\log(-cxe+cd-be)+p\log(xe+d)\right)}+(xe+d)^{m}bxe^{\left(p\log(-cxe+cd-be)+p\log(xe+d)+2\right)}+(xe+d)^{m}bde^{\left(p\log(-cxe+cd-be)+p\log(xe+d)+1\right)}\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^p,x, algorithm="giac")
```

```
[Out] -((x*e + d)^m*c*x^2*e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d) + 2) - (x
*e + d)^m*c*d^2*e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d)) + (x*e + d)^
m*b*x*e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d) + 2) + (x*e + d)^m*b*d*
e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d) + 1))*e^(-1)
```

maple [A] time = 0.06, size = 56, normalized size = 1.33

$$-\frac{(cex+be-cd)(ex+d)^{m+1}\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{p}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(c*d*m-b*e*(m+p+1)-c*e*(m+2*p+2)*x)*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^p,x)
```

```
[Out] -(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^p*(e*x+d)^(m+1)*(c*e*x+b*e-c*d)/e
```

maxima [A] time = 0.80, size = 64, normalized size = 1.52

$$-\frac{\left(ce^{2}x^{2}+be^{2}x-cd^{2}+bde\right)e^{\left(p\log(-cex+cd-be)+m\log(ex+d)+p\log(ex+d)\right)}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^p,x, algorithm="maxima")
```

```
[Out] -(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)*e^(p*log(-c*e*x + c*d - b*e) + m*log
(e*x + d) + p*log(e*x + d))/e
```

mupad [B] time = 2.58, size = 79, normalized size = 1.88

$$-\left(b\,e\,x\,(d+e\,x)^{m}-\frac{\left(c\,d^{2}-b\,d\,e\right)\,(d+e\,x)^{m}}{e}+c\,e\,x^{2}\,(d+e\,x)^{m}\right)\,\left(c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x\right)^{p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(d + e*x)^m*(b*e*(m + p + 1) - c*d*m + c*e*x*(m + 2*p + 2))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^p,x)
```

```
[Out] -(b*e*x*(d + e*x)^m - ((c*d^2 - b*d*e)*(d + e*x)^m)/e + c*e*x^2*(d + e*x)^m
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^p
```

sympy [A] time = 16.86, size = 173, normalized size = 4.12

$$\begin{cases} -bd\,(d+ex)^m\left(-bde-be^2x+cd^2-ce^2x^2\right)^p-bex\,(d+ex)^m\left(-bde-be^2x+cd^2-ce^2x^2\right)^p+\frac{cd^2(d+ex)^m\left(-bde-be^2x+cd^2-ce^2x^2\right)^p}{e}-cex^2\,(d+ex)^m\left(-bde-be^2x+cd^2-ce^2x^2\right)^p & \text{for } e\neq 0\\ cdd^m mx\left(cd^2\right)^p & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e**2*x**2-b*e*
*2*x-b*d*e+c*d**2)**p,x)
```

```
[Out] Piecewise((-b*d*(d + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p
- b*e*x*(d + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p + c*d**2
*(d + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p/e - c*e*x**2*(d
 + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p, Ne(e, 0)), (c*d*d
**m*m*x*(c*d**2)**p, True))
```

3.2056 $\int (d+ex)^{-3-2p}(f+gx)\left(d(ef+dg+dgp)+e(ef+3dg+2dgp)x+e^2g(2+p)x^2\right)^p\,dx$

Optimal. Leaf size=64

$$-\frac{(d+ex)^{-2p-3}\left(ex(dg(2p+3)+ef)+d(dg(p+1)+ef)+e^2g(p+2)x^2\right)^{p+1}}{e^2(p+2)}$$

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 60, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.017, Rules used = {786}

$$-\frac{(d+ex)^{-2p-3}\left(ex(dg(2p+3)+ef)+d(dg(p+1)+ef)+e^2g(p+2)x^2\right)^{p+1}}{e^2(p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(-3 - 2*p)*(f + g*x)*(d*(e*f + d*g + d*g*p) + e*(e*f + 3*d*g
+ 2*d*g*p)*x + e^2*g*(2 + p)*x^2)^p,x]
```

```
[Out] -(((d + e*x)^(-3 - 2*p)*(d*(e*f + d*g*(1 + p)) + e*(e*f + d*g*(3 + 2*p))*x
+ e^2*g*(2 + p)*x^2)^(1 + p))/(e^2*(2 + p)))
```

Rule 786

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^
2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[m*(g*(c*d - b*e) + c*
e*f) + e*(p + 1)*(2*c*f - b*g), 0]
```

Rubi steps

$$\int (d+ex)^{-3-2p}(f+gx)\left(d(ef+dg+dgp)+e(ef+3dg+2dgp)x+e^2g(2+p)x^2\right)^p\,dx=-\frac{(d+ex)^{-3-2p}\left(d(ef\right.}{}$$

Mathematica [A] time = 0.13, size = 48, normalized size = 0.75

$$-\frac{(d+ex)^{-2p-3}((d+ex)(dg(p+1)+e(f+g(p+2)x)))^{p+1}}{e^2(p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(-3 - 2*p)*(f + g*x)*(d*(e*f + d*g + d*g*p) + e*(e*f +
3*d*g + 2*d*g*p)*x + e^2*g*(2 + p)*x^2)^p,x]
```

```
[Out] -(((d + e*x)^(-3 - 2*p)*((d + e*x)*(d*g*(1 + p) + e*(f + g*(2 + p)*x)))^(1
+ p))/(e^2*(2 + p)))
```

IntegrateAlgebraic [F] time = 0.53, size = 0, normalized size = 0.00

$$\int (d+ex)^{-3-2p}(f+gx)\left(d(ef+dg+dgp)+e(ef+3dg+2dgp)x+e^2g(2+p)x^2\right)^p\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(d + e*x)^(-3 - 2*p)*(f + g*x)*(d*(e*f + d*g + d*g*p) +
e*(e*f + 3*d*g + 2*d*g*p)*x + e^2*g*(2 + p)*x^2)^p,x]
```

```
[Out] Defer[IntegrateAlgebraic][(d + e*x)^(-3 - 2*p)*(f + g*x)*(d*(e*f + d*g + d*
g*p) + e*(e*f + 3*d*g + 2*d*g*p)*x + e^2*g*(2 + p)*x^2)^p, x]
```

fricas [B] time = 0.44, size = 132, normalized size = 2.06

$$-\frac{\left(d^2gp+def+d^2g+\left(e^2gp+2e^2g\right)x^2+\left(2degp+e^2f+3deg\right)x\right)\left(d^2gp+def+d^2g+\left(e^2gp+2e^2g\right)x^2+\left(2degp+e^2f+3deg\right)x\right)^p(ex+d)^{-2p-3}}{e^2p+2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)
*x+e^2*g*(2+p)*x^2)^p,x, algorithm="fricas")
```

```
[Out] -(d^2*g*p + d*e*f + d^2*g + (e^2*g*p + 2*e^2*g)*x^2 + (2*d*e*g*p + e^2*f +
3*d*e*g)*x)*(d^2*g*p + d*e*f + d^2*g + (e^2*g*p + 2*e^2*g)*x^2 + (2*d*e*g*p
 + e^2*f + 3*d*e*g)*x)^p*(e*x + d)^(-2*p - 3)/(e^2*p + 2*e^2)
```

giac [B] time = 0.51, size = 444, normalized size = 6.94

$$-\frac{gpx^2e^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)+2\right)}+2dgpxe^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)+1\right)}+d^2gpe^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)\right)}+2gx^2e^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)+2\right)}+3dgxe^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)+1\right)}+d^2ge^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)\right)}+fxe^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)+2\right)}+dfe^{\left(p\log\left(gpxe+dgp+2gxe+dg+fe\right)-p\log(xe+d)-3\log(xe+d)+1\right)}}{pe^2+2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)
*x+e^2*g*(2+p)*x^2)^p,x, algorithm="giac")
```

```
[Out] -(g*p*x^2*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d)
- 3*log(x*e + d) + 2) + 2*d*g*p*x*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g
+ f*e) - p*log(x*e + d) - 3*log(x*e + d) + 1) + d^2*g*p*e^(p*log(g*p*x*e +
d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e + d)) + 2*g*x^2*e
^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e
 + d) + 2) + 3*d*g*x*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*lo
g(x*e + d) - 3*log(x*e + d) + 1) + d^2*g*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e
 + d*g + f*e) - p*log(x*e + d) - 3*log(x*e + d)) + f*x*e^(p*log(g*p*x*e + d
*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e + d) + 2) + d*f*e^
(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e
+ d) + 1))/(p*e^2 + 2*e^2)
```

maple [A] time = 0.05, size = 98, normalized size = 1.53

$$-\frac{\left(egxp+dgp+2egx+dg+ef\right)(ex+d)^{-2p-2}\left(e^2gx^2p+2degpx+2e^2gx^2+d^2gp+3degx+e^2fx+d^2g+def\right)^p}{\left(p+2\right)e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(-2*p-3)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)*x+e^2
*g*(p+2)*x^2)^p,x)
```

```
[Out] -(e*x+d)^(-2*p-2)*(e*g*p*x+d*g*p+2*e*g*x+d*g+e*f)/e^2/(p+2)*(e^2*g*p*x^2+2*
d*e*g*p*x+2*e^2*g*x^2+d^2*g*p+3*d*e*g*x+e^2*f*x+d^2*g+d*e*f)^p
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(gx+f\right)\left(e^2g\left(p+2\right)x^2+\left(2dgp+ef+3dg\right)ex+\left(dgp+ef+dg\right)d\right)^p(ex+d)^{-2p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)
*x+e^2*g*(2+p)*x^2)^p,x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*(e^2*g*(p + 2)*x^2 + (2*d*g*p + e*f + 3*d*g)*e*x + (d*g
*p + e*f + d*g)*d)^p*(e*x + d)^(-2*p - 3), x)
```

mupad [B] time = 2.63, size = 138, normalized size = 2.16

$$-\left(d\,\left(d\,g+e\,f+d\,g\,p\right)+e\,x\,\left(3\,d\,g+e\,f+2\,d\,g\,p\right)+e^2\,g\,x^2\,\left(p+2\right)\right)^p\,\left(\frac{g\,x^2}{{\left(d+e\,x\right)}^{2\,p+3}}+\frac{d^2\,g+d\,e\,f+d^2\,g\,p}{e^2\,\left(p+2\right)\,{\left(d+e\,x\right)}^{2\,p+3}}+\frac{x\,\left(3\,d\,g+e\,f+2\,d\,g\,p\right)}{e\,\left(p+2\right)\,{\left(d+e\,x\right)}^{2\,p+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d*(d*g + e*f + d*g*p) + e*x*(3*d*g + e*f + 2*d*g*p) + e^2*g
*x^2*(p + 2))^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] -(d*(d*g + e*f + d*g*p) + e*x*(3*d*g + e*f + 2*d*g*p) + e^2*g*x^2*(p + 2))^
p*((g*x^2)/(d + e*x)^(2*p + 3) + (d^2*g + d*e*f + d^2*g*p)/(e^2*(p + 2)*(d
+ e*x)^(2*p + 3)) + (x*(3*d*g + e*f + 2*d*g*p))/(e*(p + 2)*(d + e*x)^(2*p +
 3)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f
)*x+e**2*g*(2+p)*x**2)**p,x)
```

```
[Out] Timed out
```

3.2057 $\int \frac{(d+ex)^2(f+gx)}{\left(cf^2-bfg-bg^2x-cg^2x^2\right)^2}\,dx$

Optimal. Leaf size=143

$$\frac{(-beg+cdg+cef)^2}{c^2g^3(2cf-bg)(-bg+cf-cgx)}+\frac{(-beg-cdg+3cef)(-beg+cdg+cef)\log(-bg+cf-cgx)}{c^2g^3(2cf-bg)^2}+\frac{(ef-dg)^2\log(f}{g^3(2cf-bg)}$$

Rubi [A] time = 0.21, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {798, 88}

$$\frac{(-beg+cdg+cef)^2}{c^2g^3(2cf-bg)(-bg+cf-cgx)}+\frac{(-beg-cdg+3cef)(-beg+cdg+cef)\log(-bg+cf-cgx)}{c^2g^3(2cf-bg)^2}+\frac{(ef-dg)^2\log(f+gx)}{g^3(2cf-bg)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(c*f^2 - b*f*g - b*g^2*x - c*g^2*x^2)^2,x]
```

```
[Out] (c*e*f + c*d*g - b*e*g)^2/(c^2*g^3*(2*c*f - b*g)*(c*f - b*g - c*g*x)) + ((e
*f - d*g)^2*Log[f + g*x])/(g^3*(2*c*f - b*g)^2) + ((3*c*e*f - c*d*g - b*e*g
)*(c*e*f + c*d*g - b*e*g)*Log[c*f - b*g - c*g*x])/(c^2*g^3*(2*c*f - b*g)^2)
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 798

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[(d + e*x)^m*(f + g*x)^(p + 1)*(a/f + (c*
x)/g)^p, x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
 EqQ[c*f^2 - b*f*g + a*g^2, 0] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)^2(f+gx)}{\left(cf^2-bfg-bg^2x-cg^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^2}{(f+gx)\left(\frac{cf^2-bfg}{f}-cgx\right)^2}\,dx\\
&= \int \left(\frac{(-ef+dg)^2}{g^2(-2cf+bg)^2(f+gx)}+\frac{(3cef-cdg-beg)(-cef-cdg+beg)}{cg^2(2cf-bg)^2(cf-bg-cgx)}+\frac{}{cg^2}\right.\\
&= \frac{(cef+cdg-beg)^2}{c^2g^3(2cf-bg)(cf-bg-cgx)}+\frac{(ef-dg)^2\log(f+gx)}{g^3(2cf-bg)^2}+\frac{(3cef-cdg-be}{}
\end{aligned}$$

Mathematica [A] time = 0.13, size = 153, normalized size = 1.07

$$\frac{\frac{\left(b^2e^2g^2-4bce^2fg+c^2\left(-d^2g^2+2defg+3e^2f^2\right)\right)\log(-bg+cf-cgx)}{c^2(bg-2cf)^2}+\frac{(-beg+cdg+cef)^2}{c^2(2cf-bg)(c(f-gx)-bg)}+\frac{(ef-dg)^2\log(f+gx)}{(bg-2cf)^2}}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(c*f^2 - b*f*g - b*g^2*x - c*g^2*x^2)^2,x
]
```

```
[Out] ((c*e*f + c*d*g - b*e*g)^2/(c^2*(2*c*f - b*g)*(-(b*g) + c*(f - g*x))) + ((e
*f - d*g)^2*Log[f + g*x])/(-2*c*f + b*g)^2 + ((-4*b*c*e^2*f*g + b^2*e^2*g^2
 + c^2*(3*e^2*f^2 + 2*d*e*f*g - d^2*g^2))*Log[c*f - b*g - c*g*x])/(c^2*(-2*
c*f + b*g)^2))/g^3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^2(f+gx)}{\left(cf^2-bfg-bg^2x-cg^2x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/(c*f^2 - b*f*g - b*g^2*x - c*g^2
*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/(c*f^2 - b*f*g - b*g^2*x - c*g^2
*x^2)^2, x]
```

fricas [B] time = 0.44, size = 448, normalized size = 3.13

$$\frac{2c^3e^2f^3+\left(4c^3de-5bc^2e^2\right)f^2g+2\left(c^3d^2-3bc^2de+2b^2ce^2\right)fg^2-\left(bc^2d^2-2b^2cde+b^3e^2\right)g^3+\left(3c^3e^2f^3+\left(2c^3de-7bc^2e^2\right)f^2g-\left(c^3d^2+2bc^2de-5b^2ce^2\right)fg^2+\left(bc^2d^2-b^3e^2\right)g^3-\left(3c^3e^2f^2g+2\left(c^3de-2bc^2e^2\right)fg^2-\left(c^3d^2-b^2ce^2\right)g^3\right)x\right)\log\left(cgx-cf+bg\right)+\left(c^3e^2f^3-bc^2d^2g^3-\left(2c^3de+bc^2e^2\right)f^2g+\left(c^3d^2+2bc^2de\right)fg^2-\left(c^3e^2f^2g-2c^3defg^2+c^3d^2g^3\right)x\right)\log\left(gx+f\right)}{4c^5f^3g^3-8bc^4f^2g^4+5b^2c^3fg^5-b^3c^2g^6-\left(4c^5f^2g^4-4bc^4fg^5+b^2c^3g^6\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x, algorithm
="fricas")
```

```
[Out] (2*c^3*e^2*f^3 + (4*c^3*d*e - 5*b*c^2*e^2)*f^2*g + 2*(c^3*d^2 - 3*b*c^2*d*e
 + 2*b^2*c*e^2)*f*g^2 - (b*c^2*d^2 - 2*b^2*c*d*e + b^3*e^2)*g^3 + (3*c^3*e^
2*f^3 + (2*c^3*d*e - 7*b*c^2*e^2)*f^2*g - (c^3*d^2 + 2*b*c^2*d*e - 5*b^2*c*
e^2)*f*g^2 + (b*c^2*d^2 - b^3*e^2)*g^3 - (3*c^3*e^2*f^2*g + 2*(c^3*d*e - 2*
b*c^2*e^2)*f*g^2 - (c^3*d^2 - b^2*c*e^2)*g^3)*x)*log(c*g*x - c*f + b*g) + (
c^3*e^2*f^3 - b*c^2*d^2*g^3 - (2*c^3*d*e + b*c^2*e^2)*f^2*g + (c^3*d^2 + 2*
b*c^2*d*e)*f*g^2 - (c^3*e^2*f^2*g - 2*c^3*d*e*f*g^2 + c^3*d^2*g^3)*x)*log(g
*x + f))/(4*c^5*f^3*g^3 - 8*b*c^4*f^2*g^4 + 5*b^2*c^3*f*g^5 - b^3*c^2*g^6 -
 (4*c^5*f^2*g^4 - 4*b*c^4*f*g^5 + b^2*c^3*g^6)*x)
```

giac [B] time = 0.17, size = 297, normalized size = 2.08

$$-\frac{\left(c^2d^2g^2-2c^2dfge-3c^2f^2e^2+4bcfge^2-b^2g^2e^2\right)\log\left(\left|cgx-cf+bg\right|\right)}{4c^4f^2g^3-4bc^3fg^4+b^2c^2g^5}+\frac{\left(d^2g^2-2dfge+f^2e^2\right)\log\left(\left|gx+f\right|\right)}{4c^2f^2g^3-4bcfg^4+b^2g^5}-\frac{2c^3d^2fg^2-bc^2d^2g^3+4c^3df^2ge-6bc^2dfg^2e+2b^2cdg^3e+2c^3f^3e^2-5bc^2f^2ge^2+4b^2cfg^2e^2-b^3g^3e^2}{\left(cgx-cf+bg\right)\left(2cf-bg\right)^2c^2g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x, algorithm
="giac")
```

```
[Out] -(c^2*d^2*g^2 - 2*c^2*d*f*g*e - 3*c^2*f^2*e^2 + 4*b*c*f*g*e^2 - b^2*g^2*e^2
)*log(abs(c*g*x - c*f + b*g))/(4*c^4*f^2*g^3 - 4*b*c^3*f*g^4 + b^2*c^2*g^5)
 + (d^2*g^2 - 2*d*f*g*e + f^2*e^2)*log(abs(g*x + f))/(4*c^2*f^2*g^3 - 4*b*c
*f*g^4 + b^2*g^5) - (2*c^3*d^2*f*g^2 - b*c^2*d^2*g^3 + 4*c^3*d*f^2*g*e - 6*
b*c^2*d*f*g^2*e + 2*b^2*c*d*g^3*e + 2*c^3*f^3*e^2 - 5*b*c^2*f^2*g*e^2 + 4*b
^2*c*f*g^2*e^2 - b^3*g^3*e^2)/((c*g*x - c*f + b*g)*(2*c*f - b*g)^2*c^2*g^3)
```

maple [B] time = 0.06, size = 449, normalized size = 3.14

$$\frac{b^2e^2\ln\left(cgx+bg-cf\right)}{\left(bg-2cf\right)^2c^2g}-\frac{4be^2f\ln\left(cgx+bg-cf\right)}{\left(bg-2cf\right)^2cg^2}+\frac{d^2\ln\left(gx+f\right)}{\left(bg-2cf\right)^2g}-\frac{d^2\ln\left(cgx+bg-cf\right)}{\left(bg-2cf\right)^2g}-\frac{2def\ln\left(gx+f\right)}{\left(bg-2cf\right)^2g^2}+\frac{2def\ln\left(cgx+bg-cf\right)}{\left(bg-2cf\right)^2g^2}+\frac{e^2f^2\ln\left(gx+f\right)}{\left(bg-2cf\right)^2g^3}+\frac{3e^2f^2\ln\left(cgx+bg-cf\right)}{\left(bg-2cf\right)^2g^3}+\frac{b^2e^2}{\left(bg-2cf\right)\left(cgx+bg-cf\right)c^2g}-\frac{2bde}{\left(bg-2cf\right)\left(cgx+bg-cf\right)cg}-\frac{2be^2f}{\left(bg-2cf\right)\left(cgx+bg-cf\right)cg^2}+\frac{d^2}{\left(bg-2cf\right)\left(cgx+bg-cf\right)g}+\frac{2def}{\left(bg-2cf\right)\left(cgx+bg-cf\right)g^2}+\frac{e^2f^2}{\left(bg-2cf\right)\left(cgx+bg-cf\right)g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x)
```

```
[Out] 1/g/(b*g-2*c*f)^2/c^2*ln(c*g*x+b*g-c*f)*b^2*e^2-4/g^2/(b*g-2*c*f)^2/c*ln(c*
g*x+b*g-c*f)*b*e^2*f-1/g/(b*g-2*c*f)^2*ln(c*g*x+b*g-c*f)*d^2+2/g^2/(b*g-2*c
```

```
*f)^2*ln(c*g*x+b*g-c*f)*d*e*f+3/g^3/(b*g-2*c*f)^2*ln(c*g*x+b*g-c*f)*e^2*f^2
+1/c^2/g/(b*g-2*c*f)/(c*g*x+b*g-c*f)*b^2*e^2-2/c/g/(b*g-2*c*f)/(c*g*x+b*g-c
*f)*b*d*e-2/c/g^2/(b*g-2*c*f)/(c*g*x+b*g-c*f)*b*e^2*f+1/g/(b*g-2*c*f)/(c*g*
x+b*g-c*f)*d^2+2/g^2/(b*g-2*c*f)/(c*g*x+b*g-c*f)*d*e*f+1/g^3/(b*g-2*c*f)/(c
*g*x+b*g-c*f)*e^2*f^2+1/g/(b*g-2*c*f)^2*ln(g*x+f)*d^2-2/g^2/(b*g-2*c*f)^2*l
n(g*x+f)*d*e*f+1/g^3/(b*g-2*c*f)^2*ln(g*x+f)*f^2*e^2
```

maxima [A] time = 0.65, size = 268, normalized size = 1.87

$$\frac{\left(3\,c^2e^2f^2+2\left(c^2de-2\,bce^2\right)fg-\left(c^2d^2-b^2e^2\right)g^2\right)\log\left(cgx-cf+bg\right)}{4\,c^4f^2g^3-4\,bc^3fg^4+b^2c^2g^5}+\frac{\left(e^2f^2-2\,defg+d^2g^2\right)\log\left(gx+f\right)}{4\,c^2f^2g^3-4\,bcfg^4+b^2g^5}+\frac{c^2e^2f^2+2\left(c^2de-bce^2\right)fg+\left(c^2d^2-2\,bcde+b^2e^2\right)g^2}{2\,c^4f^2g^3-3\,bc^3fg^4+b^2c^2g^5-\left(2\,c^4fg^4-bc^3g^5\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x, algorithm
="maxima")
```

```
[Out] (3*c^2*e^2*f^2 + 2*(c^2*d*e - 2*b*c*e^2)*f*g - (c^2*d^2 - b^2*e^2)*g^2)*log
(c*g*x - c*f + b*g)/(4*c^4*f^2*g^3 - 4*b*c^3*f*g^4 + b^2*c^2*g^5) + (e^2*f^
2 - 2*d*e*f*g + d^2*g^2)*log(g*x + f)/(4*c^2*f^2*g^3 - 4*b*c*f*g^4 + b^2*g^
5) + (c^2*e^2*f^2 + 2*(c^2*d*e - b*c*e^2)*f*g + (c^2*d^2 - 2*b*c*d*e + b^2*
e^2)*g^2)/(2*c^4*f^2*g^3 - 3*b*c^3*f*g^4 + b^2*c^2*g^5 - (2*c^4*f*g^4 - b*c
^3*g^5)*x)
```

mupad [B] time = 2.73, size = 224, normalized size = 1.57

$$\frac{\ln\left(f+g\,x\right)\,\left(d^2\,g^2-2\,d\,e\,f\,g+e^2\,f^2\right)}{b^2\,g^5-4\,b\,c\,f\,g^4+4\,c^2\,f^2\,g^3}+\frac{b^2\,e^2\,g^2-2\,b\,c\,d\,e\,g^2-2\,b\,c\,e^2\,f\,g+c^2\,d^2\,g^2+2\,c^2\,d\,e\,f\,g+c^2\,e^2\,f^2}{c^2\,g^3\,\left(b\,g-2\,c\,f\right)\,\left(b\,g-c\,f+c\,g\,x\right)}+\frac{\ln\left(b\,g-c\,f+c\,g\,x\right)\,\left(c^2\,\left(-d^2\,g^2+2\,d\,e\,f\,g+3\,e^2\,f^2\right)+b^2\,e^2\,g^2-4\,b\,c\,e^2\,f\,g\right)}{c^2\,g^3\,{\left(b\,g-2\,c\,f\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*g^2*x^2 - c*f^2 + b*f*g + b*g^2*x)^2,x)
```

```
[Out] (log(f + g*x)*(d^2*g^2 + e^2*f^2 - 2*d*e*f*g))/(b^2*g^5 + 4*c^2*f^2*g^3 - 4
*b*c*f*g^4) + (b^2*e^2*g^2 + c^2*d^2*g^2 + c^2*e^2*f^2 - 2*b*c*d*e*g^2 - 2*
b*c*e^2*f*g + 2*c^2*d*e*f*g)/(c^2*g^3*(b*g - 2*c*f)*(b*g - c*f + c*g*x)) +
(log(b*g - c*f + c*g*x)*(c^2*(3*e^2*f^2 - d^2*g^2 + 2*d*e*f*g) + b^2*e^2*g^
2 - 4*b*c*e^2*f*g))/(c^2*g^3*(b*g - 2*c*f)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*g**2*x**2-b*g**2*x-b*f*g+c*f**2)**2,x)
```

```
[Out] Timed out
```

3.2058 $\int (1+x)^4(a+bx)\left(1-x+x^2\right)^4\,dx$

Optimal. Leaf size=73

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^7}{7}+ax^4+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^8}{4}+\frac{4bx^5}{5}+\frac{bx^2}{2}$$

Rubi [A] time = 0.05, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^7}{7}+ax^4+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^8}{4}+\frac{4bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^4*(a + b*x)*(1 - x + x^2)^4,x]
```

```
[Out] a*x + (b*x^2)/2 + a*x^4 + (4*b*x^5)/5 + (6*a*x^7)/7 + (3*b*x^8)/4 + (2*a*x^
10)/5 + (4*b*x^11)/11 + (a*x^13)/13 + (b*x^14)/14
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)^4(a+bx)\left(1-x+x^2\right)^4\,dx&=\int \left(a+bx+4ax^3+4bx^4+6ax^6+6bx^7+4ax^9+4bx^{10}+ax^{12}+bx^{13}\right)\\&=ax+\frac{bx^2}{2}+ax^4+\frac{4bx^5}{5}+\frac{6ax^7}{7}+\frac{3bx^8}{4}+\frac{2ax^{10}}{5}+\frac{4bx^{11}}{11}+\frac{ax^{13}}{13}+\frac{bx^{14}}{14}\end{aligned}$$

Mathematica [A] time = 0.00, size = 73, normalized size = 1.00

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^7}{7}+ax^4+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^8}{4}+\frac{4bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^4*(a + b*x)*(1 - x + x^2)^4,x]
```

```
[Out] a*x + (b*x^2)/2 + a*x^4 + (4*b*x^5)/5 + (6*a*x^7)/7 + (3*b*x^8)/4 + (2*a*x^
10)/5 + (4*b*x^11)/11 + (a*x^13)/13 + (b*x^14)/14
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (1+x)^4(a+bx)\left(1-x+x^2\right)^4\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(1 + x)^4*(a + b*x)*(1 - x + x^2)^4,x]
```

```
[Out] IntegrateAlgebraic[(1 + x)^4*(a + b*x)*(1 - x + x^2)^4, x]
```

fricas [A] time = 0.35, size = 57, normalized size = 0.78

$$\frac{1}{14}x^{14}b + \frac{1}{13}x^{13}a + \frac{4}{11}x^{11}b + \frac{2}{5}x^{10}a + \frac{3}{4}x^{8}b + \frac{6}{7}x^{7}a + \frac{4}{5}x^{5}b + x^{4}a + \frac{1}{2}x^{2}b + xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^4*(b*x+a)*(x^2-x+1)^4,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*b + 1/13*x^13*a + 4/11*x^11*b + 2/5*x^10*a + 3/4*x^8*b + 6/7*x^7*
a + 4/5*x^5*b + x^4*a + 1/2*x^2*b + x*a
```

giac [A] time = 0.24, size = 57, normalized size = 0.78

$$\frac{1}{14}\,bx^{14} + \frac{1}{13}\,ax^{13} + \frac{4}{11}\,bx^{11} + \frac{2}{5}\,ax^{10} + \frac{3}{4}\,bx^{8} + \frac{6}{7}\,ax^{7} + \frac{4}{5}\,bx^{5} + ax^{4} + \frac{1}{2}\,bx^{2} + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^4*(b*x+a)*(x^2-x+1)^4,x, algorithm="giac")
```

```
[Out] 1/14*b*x^14 + 1/13*a*x^13 + 4/11*b*x^11 + 2/5*a*x^10 + 3/4*b*x^8 + 6/7*a*x^
7 + 4/5*b*x^5 + a*x^4 + 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 58, normalized size = 0.79

$$\frac{1}{14}b\,x^{14} + \frac{1}{13}a\,x^{13} + \frac{4}{11}b\,x^{11} + \frac{2}{5}a\,x^{10} + \frac{3}{4}b\,x^{8} + \frac{6}{7}a\,x^{7} + \frac{4}{5}b\,x^{5} + a\,x^{4} + \frac{1}{2}b\,x^{2} + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^4*(b*x+a)*(x^2-x+1)^4,x)
```

```
[Out] a*x+1/2*b*x^2+a*x^4+4/5*b*x^5+6/7*a*x^7+3/4*b*x^8+2/5*a*x^10+4/11*b*x^11+1/
13*a*x^13+1/14*b*x^14
```

maxima [A] time = 0.56, size = 57, normalized size = 0.78

$$\frac{1}{14}\,bx^{14} + \frac{1}{13}\,ax^{13} + \frac{4}{11}\,bx^{11} + \frac{2}{5}\,ax^{10} + \frac{3}{4}\,bx^{8} + \frac{6}{7}\,ax^{7} + \frac{4}{5}\,bx^{5} + ax^{4} + \frac{1}{2}\,bx^{2} + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^4*(b*x+a)*(x^2-x+1)^4,x, algorithm="maxima")
```

```
[Out] 1/14*b*x^14 + 1/13*a*x^13 + 4/11*b*x^11 + 2/5*a*x^10 + 3/4*b*x^8 + 6/7*a*x^
7 + 4/5*b*x^5 + a*x^4 + 1/2*b*x^2 + a*x
```

mupad [B] time = 0.06, size = 57, normalized size = 0.78

$$\frac{b\,x^{14}}{14} + \frac{a\,x^{13}}{13} + \frac{4\,b\,x^{11}}{11} + \frac{2\,a\,x^{10}}{5} + \frac{3\,b\,x^{8}}{4} + \frac{6\,a\,x^{7}}{7} + \frac{4\,b\,x^{5}}{5} + a\,x^{4} + \frac{b\,x^{2}}{2} + a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^4*(a + b*x)*(x^2 - x + 1)^4,x)
```

```
[Out] a*x + a*x^4 + (6*a*x^7)/7 + (2*a*x^10)/5 + (a*x^13)/13 + (b*x^2)/2 + (4*b*x
^5)/5 + (3*b*x^8)/4 + (4*b*x^11)/11 + (b*x^14)/14
```

sympy [A] time = 0.08, size = 70, normalized size = 0.96

$$\frac{ax^{13}}{13} + \frac{2ax^{10}}{5} + \frac{6ax^{7}}{7} + ax^{4} + ax + \frac{bx^{14}}{14} + \frac{4bx^{11}}{11} + \frac{3bx^{8}}{4} + \frac{4bx^{5}}{5} + \frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**4*(b*x+a)*(x**2-x+1)**4,x)
```

```
[Out] a*x**13/13 + 2*a*x**10/5 + 6*a*x**7/7 + a*x**4 + a*x + b*x**14/14 + 4*b*x**
11/11 + 3*b*x**8/4 + 4*b*x**5/5 + b*x**2/2
```

3.2059 $\int (1+x)^3(a+bx)\left(1-x+x^2\right)^3\,dx$

Optimal. Leaf size=60

$$\frac{ax^{10}}{10}+\frac{3ax^7}{7}+\frac{3ax^4}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^8}{8}+\frac{3bx^5}{5}+\frac{bx^2}{2}$$

Rubi [A] time = 0.04, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{ax^{10}}{10}+\frac{3ax^7}{7}+\frac{3ax^4}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^8}{8}+\frac{3bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^3*(a + b*x)*(1 - x + x^2)^3,x]
```

```
[Out] a*x + (b*x^2)/2 + (3*a*x^4)/4 + (3*b*x^5)/5 + (3*a*x^7)/7 + (3*b*x^8)/8 + (
a*x^10)/10 + (b*x^11)/11
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)^3(a+bx)\left(1-x+x^2\right)^3\,dx &= \int \left(a+bx+3ax^3+3bx^4+3ax^6+3bx^7+ax^9+bx^{10}\right)dx\\ &= ax+\frac{bx^2}{2}+\frac{3ax^4}{4}+\frac{3bx^5}{5}+\frac{3ax^7}{7}+\frac{3bx^8}{8}+\frac{ax^{10}}{10}+\frac{bx^{11}}{11}\end{aligned}$$

Mathematica [A] time = 0.00, size = 60, normalized size = 1.00

$$\frac{ax^{10}}{10}+\frac{3ax^7}{7}+\frac{3ax^4}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^8}{8}+\frac{3bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^3*(a + b*x)*(1 - x + x^2)^3,x]
```

```
[Out] a*x + (b*x^2)/2 + (3*a*x^4)/4 + (3*b*x^5)/5 + (3*a*x^7)/7 + (3*b*x^8)/8 + (
a*x^10)/10 + (b*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (1+x)^3(a+bx)\left(1-x+x^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(1 + x)^3*(a + b*x)*(1 - x + x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(1 + x)^3*(a + b*x)*(1 - x + x^2)^3, x]
```

fricas [A] time = 0.35, size = 46, normalized size = 0.77

$$\frac{1}{11}x^{11}b+\frac{1}{10}x^{10}a+\frac{3}{8}x^{8}b+\frac{3}{7}x^{7}a+\frac{3}{5}x^{5}b+\frac{3}{4}x^{4}a+\frac{1}{2}x^{2}b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^3*(b*x+a)*(x^2-x+1)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b + 1/10*x^10*a + 3/8*x^8*b + 3/7*x^7*a + 3/5*x^5*b + 3/4*x^4*a +
 1/2*x^2*b + x*a
```

giac [A] time = 0.17, size = 46, normalized size = 0.77

$$\frac{1}{11}bx^{11}+\frac{1}{10}ax^{10}+\frac{3}{8}bx^{8}+\frac{3}{7}ax^{7}+\frac{3}{5}bx^{5}+\frac{3}{4}ax^{4}+\frac{1}{2}bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^3*(b*x+a)*(x^2-x+1)^3,x, algorithm="giac")
```

```
[Out] 1/11*b*x^11 + 1/10*a*x^10 + 3/8*b*x^8 + 3/7*a*x^7 + 3/5*b*x^5 + 3/4*a*x^4 +
 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 47, normalized size = 0.78

$$\frac{1}{11}b\,x^{11}+\frac{1}{10}a\,x^{10}+\frac{3}{8}b\,x^{8}+\frac{3}{7}a\,x^{7}+\frac{3}{5}b\,x^{5}+\frac{3}{4}a\,x^{4}+\frac{1}{2}b\,x^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^3*(b*x+a)*(x^2-x+1)^3,x)
```

```
[Out] a*x+1/2*b*x^2+3/4*a*x^4+3/5*b*x^5+3/7*a*x^7+3/8*b*x^8+1/10*a*x^10+1/11*b*x^
11
```

maxima [A] time = 0.56, size = 46, normalized size = 0.77

$$\frac{1}{11}bx^{11}+\frac{1}{10}ax^{10}+\frac{3}{8}bx^{8}+\frac{3}{7}ax^{7}+\frac{3}{5}bx^{5}+\frac{3}{4}ax^{4}+\frac{1}{2}bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^3*(b*x+a)*(x^2-x+1)^3,x, algorithm="maxima")
```

```
[Out] 1/11*b*x^11 + 1/10*a*x^10 + 3/8*b*x^8 + 3/7*a*x^7 + 3/5*b*x^5 + 3/4*a*x^4 +
 1/2*b*x^2 + a*x
```

mupad [B] time = 0.03, size = 46, normalized size = 0.77

$$\frac{b\,x^{11}}{11}+\frac{a\,x^{10}}{10}+\frac{3\,b\,x^8}{8}+\frac{3\,a\,x^7}{7}+\frac{3\,b\,x^5}{5}+\frac{3\,a\,x^4}{4}+\frac{b\,x^2}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^3*(a + b*x)*(x^2 - x + 1)^3,x)
```

```
[Out] a*x + (3*a*x^4)/4 + (3*a*x^7)/7 + (a*x^10)/10 + (b*x^2)/2 + (3*b*x^5)/5 + (
3*b*x^8)/8 + (b*x^11)/11
```

sympy [A] time = 0.08, size = 56, normalized size = 0.93

$$\frac{ax^{10}}{10}+\frac{3ax^{7}}{7}+\frac{3ax^{4}}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^{8}}{8}+\frac{3bx^{5}}{5}+\frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**3*(b*x+a)*(x**2-x+1)**3,x)
```

```
[Out] a*x**10/10 + 3*a*x**7/7 + 3*a*x**4/4 + a*x + b*x**11/11 + 3*b*x**8/8 + 3*b*
x**5/5 + b*x**2/2
```

3.2060 $\int (1+x)^2(a+bx)\left(1-x+x^2\right)^2\,dx$

Optimal. Leaf size=44

$$\frac{ax^7}{7}+\frac{ax^4}{2}+ax+\frac{bx^8}{8}+\frac{2bx^5}{5}+\frac{bx^2}{2}$$

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{ax^7}{7}+\frac{ax^4}{2}+ax+\frac{bx^8}{8}+\frac{2bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^2*(a + b*x)*(1 - x + x^2)^2,x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/2 + (2*b*x^5)/5 + (a*x^7)/7 + (b*x^8)/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)^2(a+bx)\left(1-x+x^2\right)^2\,dx &= \int \left(a+bx+2ax^3+2bx^4+ax^6+bx^7\right)dx\\ &= ax+\frac{bx^2}{2}+\frac{ax^4}{2}+\frac{2bx^5}{5}+\frac{ax^7}{7}+\frac{bx^8}{8}\end{aligned}$$

Mathematica [A] time = 0.00, size = 44, normalized size = 1.00

$$\frac{ax^7}{7}+\frac{ax^4}{2}+ax+\frac{bx^8}{8}+\frac{2bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^2*(a + b*x)*(1 - x + x^2)^2,x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/2 + (2*b*x^5)/5 + (a*x^7)/7 + (b*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (1+x)^2(a+bx)\left(1-x+x^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(1 + x)^2*(a + b*x)*(1 - x + x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(1 + x)^2*(a + b*x)*(1 - x + x^2)^2, x]
```

fricas [A] time = 0.35, size = 34, normalized size = 0.77

$$\frac{1}{8}x^8b+\frac{1}{7}x^7a+\frac{2}{5}x^5b+\frac{1}{2}x^4a+\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^2*(b*x+a)*(x^2-x+1)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b + 1/7*x^7*a + 2/5*x^5*b + 1/2*x^4*a + 1/2*x^2*b + x*a
```

giac [A] time = 0.17, size = 34, normalized size = 0.77

$$\frac{1}{8}\,bx^{8}+\frac{1}{7}\,ax^{7}+\frac{2}{5}\,bx^{5}+\frac{1}{2}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^2*(b*x+a)*(x^2-x+1)^2,x, algorithm="giac")
```

```
[Out] 1/8*b*x^8 + 1/7*a*x^7 + 2/5*b*x^5 + 1/2*a*x^4 + 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 35, normalized size = 0.80

$$\frac{1}{8}b\,x^{8}+\frac{1}{7}a\,x^{7}+\frac{2}{5}b\,x^{5}+\frac{1}{2}a\,x^{4}+\frac{1}{2}b\,x^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^2*(b*x+a)*(x^2-x+1)^2,x)
```

```
[Out] a*x+1/2*b*x^2+1/2*a*x^4+2/5*b*x^5+1/7*a*x^7+1/8*b*x^8
```

maxima [A] time = 0.55, size = 34, normalized size = 0.77

$$\frac{1}{8}\,bx^{8}+\frac{1}{7}\,ax^{7}+\frac{2}{5}\,bx^{5}+\frac{1}{2}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^2*(b*x+a)*(x^2-x+1)^2,x, algorithm="maxima")
```

```
[Out] 1/8*b*x^8 + 1/7*a*x^7 + 2/5*b*x^5 + 1/2*a*x^4 + 1/2*b*x^2 + a*x
```

mupad [B] time = 0.02, size = 34, normalized size = 0.77

$$\frac{b\,x^8}{8}+\frac{a\,x^7}{7}+\frac{2\,b\,x^5}{5}+\frac{a\,x^4}{2}+\frac{b\,x^2}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^2*(a + b*x)*(x^2 - x + 1)^2,x)
```

```
[Out] a*x + (a*x^4)/2 + (a*x^7)/7 + (b*x^2)/2 + (2*b*x^5)/5 + (b*x^8)/8
```

sympy [A] time = 0.07, size = 37, normalized size = 0.84

$$\frac{ax^{7}}{7}+\frac{ax^{4}}{2}+ax+\frac{bx^{8}}{8}+\frac{2bx^{5}}{5}+\frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**2*(b*x+a)*(x**2-x+1)**2,x)
```

```
[Out] a*x**7/7 + a*x**4/2 + a*x + b*x**8/8 + 2*b*x**5/5 + b*x**2/2
```

3.2061 $\int (1+x)(a+bx)\left(1-x+x^2\right) dx$

Optimal. Leaf size=28

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

Rubi [A] time = 0.02, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {771}

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)*(a + b*x)*(1 - x + x^2),x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/4 + (b*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)(a+bx)\left(1-x+x^2\right) dx &= \int \left(a+bx+ax^3+bx^4\right) dx\\ &= ax+\frac{bx^2}{2}+\frac{ax^4}{4}+\frac{bx^5}{5}\end{aligned}$$

Mathematica [A] time = 0.00, size = 28, normalized size = 1.00

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)*(a + b*x)*(1 - x + x^2),x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/4 + (b*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (1+x)(a+bx)\left(1-x+x^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(1 + x)*(a + b*x)*(1 - x + x^2),x]
```

```
[Out] IntegrateAlgebraic[(1 + x)*(a + b*x)*(1 - x + x^2), x]
```

fricas [A] time = 0.34, size = 22, normalized size = 0.79

$$\frac{1}{5}x^5b+\frac{1}{4}x^4a+\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x^2-x+1),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b + 1/4*x^4*a + 1/2*x^2*b + x*a
```

giac [A] time = 0.17, size = 22, normalized size = 0.79

$$\frac{1}{5}\,bx^5+\frac{1}{4}\,ax^4+\frac{1}{2}\,bx^2+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x^2-x+1),x, algorithm="giac")
```

```
[Out] 1/5*b*x^5 + 1/4*a*x^4 + 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 23, normalized size = 0.82

$$\frac{1}{5}b\,x^5+\frac{1}{4}a\,x^4+\frac{1}{2}b\,x^2+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(b*x+a)*(x^2-x+1),x)
```

```
[Out] a*x+1/2*b*x^2+1/4*a*x^4+1/5*b*x^5
```

maxima [A] time = 0.52, size = 22, normalized size = 0.79

$$\frac{1}{5}\,bx^5+\frac{1}{4}\,ax^4+\frac{1}{2}\,bx^2+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x^2-x+1),x, algorithm="maxima")
```

```
[Out] 1/5*b*x^5 + 1/4*a*x^4 + 1/2*b*x^2 + a*x
```

mupad [B] time = 0.04, size = 22, normalized size = 0.79

$$\frac{b\,x^5}{5}+\frac{a\,x^4}{4}+\frac{b\,x^2}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)*(a + b*x)*(x^2 - x + 1),x)
```

```
[Out] a*x + (a*x^4)/4 + (b*x^2)/2 + (b*x^5)/5
```

sympy [A] time = 0.06, size = 22, normalized size = 0.79

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x**2-x+1),x)
```

```
[Out] a*x**4/4 + a*x + b*x**5/5 + b*x**2/2
```

3.2062 $\int \frac{a+bx}{(1+x)(1-x+x^2)}\,dx$

Optimal. Leaf size=54

$$-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(x+1)-\frac{(a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Rubi [A] time = 0.07, antiderivative size = 54, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 204, 628}

$$-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(x+1)-\frac{(a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)*(1 - x + x^2)),x]
```

```
[Out] -(((a + b)*ArcTan[(1 - 2*x)/Sqrt[3]])/Sqrt[3]) + ((a - b)*Log[1 + x])/3 - (
(a - b)*Log[1 - x + x^2])/6
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(1+x)\left(1-x+x^2\right)}\,dx &= \int \left(\frac{a-b}{3(1+x)}+\frac{2a+b-(a-b)x}{3\left(1-x+x^2\right)}\right)dx\\ &= \frac{1}{3}(a-b)\log(1+x)+\frac{1}{3}\int \frac{2a+b-(a-b)x}{1-x+x^2}\,dx\\ &= \frac{1}{3}(a-b)\log(1+x)+\frac{1}{6}(-a+b)\int \frac{-1+2x}{1-x+x^2}\,dx+\frac{1}{2}(a+b)\int \frac{1}{1-x+x^2}\,dx\\ &= \frac{1}{3}(a-b)\log(1+x)-\frac{1}{6}(a-b)\log\left(1-x+x^2\right)+(-a-b)\,\text{Subst}\left(\int \frac{1}{-3-x^2}\,dx,x,-\right.\\ &= -\frac{(a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}+\frac{1}{3}(a-b)\log(1+x)-\frac{1}{6}(a-b)\log\left(1-x+x^2\right)\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.91

$$\frac{1}{6}(a-b)\left(2\log(x+1)-\log\left(x^2-x+1\right)\right)+\frac{(a+b)\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)*(1 - x + x^2)),x]
```

```
[Out] ((a + b)*ArcTan[(-1 + 2*x)/Sqrt[3]])/Sqrt[3] + ((a - b)*(2*Log[1 + x] - Log
[1 - x + x^2]))/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(1+x)\left(1-x+x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((1 + x)*(1 - x + x^2)),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((1 + x)*(1 - x + x^2)), x]
```

fricas [A] time = 0.40, size = 47, normalized size = 0.87

$$\frac{1}{3}\sqrt{3}(a+b)\arctan\left(\frac{1}{3}\sqrt{3}(2x-1)\right)-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x^2-x+1),x, algorithm="fricas")
```

```
[Out] 1/3*sqrt(3)*(a + b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/6*(a - b)*log(x^2 - x
 + 1) + 1/3*(a - b)*log(x + 1)
```

giac [A] time = 0.15, size = 53, normalized size = 0.98

$$\frac{1}{3}\left(\sqrt{3}a+\sqrt{3}b\right)\arctan\left(\frac{1}{3}\sqrt{3}(2x-1)\right)-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(|x+1|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x^2-x+1),x, algorithm="giac")
```

```
[Out] 1/3*(sqrt(3)*a + sqrt(3)*b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/6*(a - b)*log
(x^2 - x + 1) + 1/3*(a - b)*log(abs(x + 1))
```

maple [A] time = 0.06, size = 74, normalized size = 1.37

$$\frac{\sqrt{3}\, a \arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{3}+\frac{a\ln\left(x+1\right)}{3}-\frac{a\ln\left(x^{2}-x+1\right)}{6}+\frac{\sqrt{3}\, b \arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{3}-\frac{b\ln\left(x+1\right)}{3}+\frac{b\ln\left(x^{2}-x+1\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)/(x^2-x+1),x)
```

```
[Out] 1/3*ln(x+1)*a-1/3*ln(x+1)*b-1/6*ln(x^2-x+1)*a+1/6*ln(x^2-x+1)*b+1/3*3^(1/2)
*arctan(1/3*(2*x-1)*3^(1/2))*a+1/3*3^(1/2)*arctan(1/3*(2*x-1)*3^(1/2))*b
```

maxima [A] time = 1.32, size = 47, normalized size = 0.87

$$\frac{1}{3}\,\sqrt{3}\,(a+b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{6}\,(a-b)\log\left(x^{2}-x+1\right)+\frac{1}{3}\,(a-b)\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x^2-x+1),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(3)*(a + b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/6*(a - b)*log(x^2 - x
 + 1) + 1/3*(a - b)*log(x + 1)
```

mupad [B] time = 2.34, size = 78, normalized size = 1.44

$$\ln\left(x+1\right)\,\left(\frac{a}{3}-\frac{b}{3}\right)+\ln\left(x-\frac{1}{2}+\frac{\sqrt{3}\,1{}\mathrm{i}}{2}\right)\,\left(\frac{b}{6}-\frac{a}{6}+\frac{\sqrt{3}\,a\,1{}\mathrm{i}}{6}+\frac{\sqrt{3}\,b\,1{}\mathrm{i}}{6}\right)-\ln\left(x-\frac{1}{2}-\frac{\sqrt{3}\,1{}\mathrm{i}}{2}\right)\,\left(\frac{a}{6}-\frac{b}{6}+\frac{\sqrt{3}\,a\,1{}\mathrm{i}}{6}+\frac{\sqrt{3}\,b\,1{}\mathrm{i}}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)*(x^2 - x + 1)),x)
```

```
[Out] log(x + (3^(1/2)*1i)/2 - 1/2)*(b/6 - a/6 + (3^(1/2)*a*1i)/6 + (3^(1/2)*b*1i
)/6) - log(x - (3^(1/2)*1i)/2 - 1/2)*(a/6 - b/6 + (3^(1/2)*a*1i)/6 + (3^(1/
2)*b*1i)/6) + log(x + 1)*(a/3 - b/3)
```

sympy [C] time = 0.43, size = 201, normalized size = 3.72

$$\frac{(a-b)\log\left(x+\frac{a^{2}(a-b)+2ab^{2}+b(a-b)^{2}}{a^{3}+b^{3}}\right)}{3}+\left(-\frac{a}{6}+\frac{b}{6}-\frac{\sqrt{3}\,i\,(a+b)}{6}\right)\log\left(x+\frac{3a^{2}\left(-\frac{a}{6}+\frac{b}{6}-\frac{\sqrt{3}\,i(a+b)}{6}\right)+2ab^{2}+9b\left(-\frac{a}{6}+\frac{b}{6}-\frac{\sqrt{3}\,i(a+b)}{6}\right)^{2}}{a^{3}+b^{3}}\right)+\left(-\frac{a}{6}+\frac{b}{6}+\frac{\sqrt{3}\,i\,(a+b)}{6}\right)\log\left(x+\frac{3a^{2}\left(-\frac{a}{6}+\frac{b}{6}+\frac{\sqrt{3}\,i(a+b)}{6}\right)+2ab^{2}+9b\left(-\frac{a}{6}+\frac{b}{6}+\frac{\sqrt{3}\,i(a+b)}{6}\right)^{2}}{a^{3}+b^{3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x**2-x+1),x)
```

```
[Out] (a - b)*log(x + (a**2*(a - b) + 2*a*b**2 + b*(a - b)**2)/(a**3 + b**3))/3 +
 (-a/6 + b/6 - sqrt(3)*I*(a + b)/6)*log(x + (3*a**2*(-a/6 + b/6 - sqrt(3)*I
*(a + b)/6) + 2*a*b**2 + 9*b*(-a/6 + b/6 - sqrt(3)*I*(a + b)/6)**2)/(a**3 +
 b**3)) + (-a/6 + b/6 + sqrt(3)*I*(a + b)/6)*log(x + (3*a**2*(-a/6 + b/6 +
sqrt(3)*I*(a + b)/6) + 2*a*b**2 + 9*b*(-a/6 + b/6 + sqrt(3)*I*(a + b)/6)**2
)/(a**3 + b**3))
```

3.2063 $\int \frac{a+bx}{(1+x)^2(1-x+x^2)^2} dx$

Optimal. Leaf size=79

$$\frac{x(a+bx)}{3(x^3+1)} - \frac{1}{18}(2a-b)\log\left(x^2-x+1\right) + \frac{1}{9}(2a-b)\log(x+1) - \frac{(2a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.07, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.381$, Rules used = {809, 1855, 1860, 31, 634, 618, 204, 628}

$$\frac{x(a+bx)}{3(x^3+1)} - \frac{1}{18}(2a-b)\log\left(x^2-x+1\right) + \frac{1}{9}(2a-b)\log(x+1) - \frac{(2a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)^2*(1 - x + x^2)^2),x]
```

```
[Out] (x*(a + b*x))/(3*(1 + x^3)) - ((2*a + b)*ArcTan[(1 - 2*x)/Sqrt[3]])/(3*Sqrt
[3]) + ((2*a - b)*Log[1 + x])/9 - ((2*a - b)*Log[1 - x + x^2])/18
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
```

```
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1855

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> -Simp[(x*Pq*(a + b*x
^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[1/(a*n*(p + 1)), Int[ExpandToSum[n*(p
 + 1)*Pq + D[x*Pq, x], x]*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b}, x] &
& PolyQ[Pq, x] && IGtQ[n, 0] && LtQ[p, -1] && LtQ[Expon[Pq, x], n - 1]
```

Rule 1860

```
Int[((A_) + (B_.)*(x_))/((a_) + (b_.)*(x_)^3), x_Symbol] :> With[{r = Numer
ator[Rt[a/b, 3]], s = Denominator[Rt[a/b, 3]]}, -Dist[(r*(B*r - A*s))/(3*a*
s), Int[1/(r + s*x), x], x] + Dist[r/(3*a*s), Int[(r*(B*r + 2*A*s) + s*(B*r
 - A*s)*x)/(r^2 - r*s*x + s^2*x^2), x], x]] /; FreeQ[{a, b, A, B}, x] && Ne
Q[a*B^3 - b*A^3, 0] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(1+x)^2\left(1-x+x^2\right)^2}\,dx &= \int \frac{a+bx}{\left(1+x^3\right)^2}\,dx\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)} - \frac{1}{3}\int \frac{-2a-bx}{1+x^3}\,dx\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)} - \frac{1}{9}\int \frac{-4a-b+(2a-b)x}{1-x+x^2}\,dx - \frac{1}{9}(-2a+b)\int \frac{1}{1+x}\,dx\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)} + \frac{1}{9}(2a-b)\log(1+x) - \frac{1}{6}(-2a-b)\int \frac{1}{1-x+x^2}\,dx - \frac{1}{18}(2a-b)\int\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)} + \frac{1}{9}(2a-b)\log(1+x) - \frac{1}{18}(2a-b)\log\left(1-x+x^2\right) - \frac{1}{3}(2a+b)\,\mathrm{Sub}\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)} - \frac{(2a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{3\sqrt{3}} + \frac{1}{9}(2a-b)\log(1+x) - \frac{1}{18}(2a-b)\log\left(1-\right.
\end{aligned}$$

Mathematica [A] time = 0.04, size = 72, normalized size = 0.91

$$\frac{1}{18}\left(\frac{6x(a+bx)}{x^3+1} + (b-2a)\log\left(x^2-x+1\right) + 2(2a-b)\log(x+1) + 2\sqrt{3}(2a+b)\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)^2*(1 - x + x^2)^2),x]
```

```
[Out] ((6*x*(a + b*x))/(1 + x^3) + 2*Sqrt[3]*(2*a + b)*ArcTan[(-1 + 2*x)/Sqrt[3]]
 + 2*(2*a - b)*Log[1 + x] + (-2*a + b)*Log[1 - x + x^2])/18
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(1+x)^2\left(1-x+x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((1 + x)^2*(1 - x + x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((1 + x)^2*(1 - x + x^2)^2), x]
```

fricas [A] time = 0.40, size = 103, normalized size = 1.30

$$\frac{6\,bx^2+2\,\sqrt{3}\left((2\,a+b)x^3+2\,a+b\right)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)+6\,ax-\left((2\,a-b)x^3+2\,a-b\right)\log\left(x^2-x+1\right)+2\left((2\,a-b)x^3+2\,a-b\right)\log\left(x+1\right)}{18\left(x^3+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^2/(x^2-x+1)^2,x, algorithm="fricas")
```

```
[Out] 1/18*(6*b*x^2 + 2*sqrt(3)*((2*a + b)*x^3 + 2*a + b)*arctan(1/3*sqrt(3)*(2*x
 - 1)) + 6*a*x - ((2*a - b)*x^3 + 2*a - b)*log(x^2 - x + 1) + 2*((2*a - b)*
x^3 + 2*a - b)*log(x + 1))/(x^3 + 1)
```

giac [A] time = 0.19, size = 101, normalized size = 1.28

$$\frac{1}{9}\,\sqrt{3}\,(2\,a+b)\arctan\left(-\sqrt{3}\left(\frac{2}{x+1}-1\right)\right)-\frac{1}{18}\,(2\,a-b)\log\left(-\frac{3}{x+1}+\frac{3}{(x+1)^2}+1\right)-\frac{a}{9\,(x+1)}+\frac{b}{9\,(x+1)}-\frac{b+\frac{a-b}{x+1}}{9\left(\frac{3}{x+1}-\frac{3}{(x+1)^2}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^2/(x^2-x+1)^2,x, algorithm="giac")
```

```
[Out] 1/9*sqrt(3)*(2*a + b)*arctan(-sqrt(3)*(2/(x + 1) - 1)) - 1/18*(2*a - b)*log
(-3/(x + 1) + 3/(x + 1)^2 + 1) - 1/9*a/(x + 1) + 1/9*b/(x + 1) - 1/9*(b + (
a - b)/(x + 1))/(3/(x + 1) - 3/(x + 1)^2 - 1)
```

maple [A] time = 0.06, size = 116, normalized size = 1.47

$$\frac{2\sqrt{3}\,a\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{9}+\frac{2a\ln\left(x+1\right)}{9}-\frac{a\ln\left(x^2-x+1\right)}{9}+\frac{\sqrt{3}\,b\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{9}-\frac{b\ln\left(x+1\right)}{9}+\frac{b\ln\left(x^2-x+1\right)}{18}-\frac{a}{9\,(x+1)}+\frac{b}{9x+9}-\frac{-a+b+(-a-2b)\,x}{9\left(x^2-x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^2/(x^2-x+1)^2,x)
```

```
[Out] -1/9/(x+1)*a+1/9/(x+1)*b+2/9*a*ln(x+1)-1/9*b*ln(x+1)-1/9*((-a-2*b)*x-a+b)/(
x^2-x+1)-1/9*a*ln(x^2-x+1)+1/18*b*ln(x^2-x+1)+2/9*3^(1/2)*a*arctan(1/3*(2*x
-1)*3^(1/2))+1/9*3^(1/2)*b*arctan(1/3*(2*x-1)*3^(1/2))
```

maxima [A] time = 1.36, size = 71, normalized size = 0.90

$$\frac{1}{9}\,\sqrt{3}\,(2\,a+b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{18}\,(2\,a-b)\log\left(x^2-x+1\right)+\frac{1}{9}\,(2\,a-b)\log\left(x+1\right)+\frac{bx^2+ax}{3\left(x^3+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^2/(x^2-x+1)^2,x, algorithm="maxima")
```

```
[Out] 1/9*sqrt(3)*(2*a + b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/18*(2*a - b)*log(x^
2 - x + 1) + 1/9*(2*a - b)*log(x + 1) + 1/3*(b*x^2 + a*x)/(x^3 + 1)
```

mupad [B] time = 2.29, size = 97, normalized size = 1.23

$$\frac{\frac{b\,x^2}{3}+\frac{a\,x}{3}}{x^3+1}-\ln\left(x-\frac{1}{2}-\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{a}{9}-\frac{b}{18}+\frac{\sqrt{3}\,a\,1\mathrm{i}}{9}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{18}\right)+\ln\left(x-\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{b}{18}-\frac{a}{9}+\frac{\sqrt{3}\,a\,1\mathrm{i}}{9}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{18}\right)+\ln\left(x+1\right)\left(\frac{2\,a}{9}-\frac{b}{9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^2*(x^2 - x + 1)^2),x)
```

```
[Out] ((a*x)/3 + (b*x^2)/3)/(x^3 + 1) - log(x - (3^(1/2)*1i)/2 - 1/2)*(a/9 - b/18
 + (3^(1/2)*a*1i)/9 + (3^(1/2)*b*1i)/18) + log(x + (3^(1/2)*1i)/2 - 1/2)*(b
```

```
/18 - a/9 + (3^(1/2)*a*1i)/9 + (3^(1/2)*b*1i)/18) + log(x + 1)*((2*a)/9 - b
/9)
```

sympy [C] time = 0.59, size = 238, normalized size = 3.01

$$\frac{(2a-b)\log\left(x+\frac{4a^2(2a-b)+4ab^2+b(2a-b)^2}{8a^3+b^3}\right)}{9}+\left(-\frac{a}{9}+\frac{b}{18}-\frac{\sqrt{3}\,i\,(2a+b)}{18}\right)\log\left(x+\frac{36a^2\left(-\frac{a}{9}+\frac{b}{18}-\frac{\sqrt{3}\,i(2a+b)}{18}\right)+4ab^2+81b\left(-\frac{a}{9}+\frac{b}{18}-\frac{\sqrt{3}\,i(2a+b)}{18}\right)^2}{8a^3+b^3}\right)+\left(-\frac{a}{9}+\frac{b}{18}+\frac{\sqrt{3}\,i\,(2a+b)}{18}\right)\log\left(x+\frac{36a^2\left(-\frac{a}{9}+\frac{b}{18}+\frac{\sqrt{3}\,i(2a+b)}{18}\right)+4ab^2+81b\left(-\frac{a}{9}+\frac{b}{18}+\frac{\sqrt{3}\,i(2a+b)}{18}\right)^2}{8a^3+b^3}\right)+\frac{ax+bx^2}{3x^3+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**2/(x**2-x+1)**2,x)
```

```
[Out] (2*a - b)*log(x + (4*a**2*(2*a - b) + 4*a*b**2 + b*(2*a - b)**2)/(8*a**3 +
b**3))/9 + (-a/9 + b/18 - sqrt(3)*I*(2*a + b)/18)*log(x + (36*a**2*(-a/9 +
b/18 - sqrt(3)*I*(2*a + b)/18) + 4*a*b**2 + 81*b*(-a/9 + b/18 - sqrt(3)*I*(
2*a + b)/18)**2)/(8*a**3 + b**3)) + (-a/9 + b/18 + sqrt(3)*I*(2*a + b)/18)*
log(x + (36*a**2*(-a/9 + b/18 + sqrt(3)*I*(2*a + b)/18) + 4*a*b**2 + 81*b*(
-a/9 + b/18 + sqrt(3)*I*(2*a + b)/18)**2)/(8*a**3 + b**3)) + (a*x + b*x**2)
/(3*x**3 + 3)
```

3.2064 $\int \frac{a+bx}{(1+x)^3(1-x+x^2)^3}\,dx$

Optimal. Leaf size=101

$$\frac{x(a+bx)}{6(x^3+1)^2}+\frac{x(5a+4bx)}{18(x^3+1)}-\frac{1}{54}(5a-2b)\log\left(x^2-x+1\right)+\frac{1}{27}(5a-2b)\log(x+1)-\frac{(5a+2b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{9\sqrt{3}}$$

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.381, Rules used = {809, 1855, 1860, 31, 634, 618, 204, 628}

$$\frac{x(a+bx)}{6(x^3+1)^2}+\frac{x(5a+4bx)}{18(x^3+1)}-\frac{1}{54}(5a-2b)\log\left(x^2-x+1\right)+\frac{1}{27}(5a-2b)\log(x+1)-\frac{(5a+2b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)^3*(1 - x + x^2)^3),x]
```

```
[Out] (x*(a + b*x))/(6*(1 + x^3)^2) + (x*(5*a + 4*b*x))/(18*(1 + x^3)) - ((5*a +
2*b)*ArcTan[(1 - 2*x)/Sqrt[3]])/(9*Sqrt[3]) + ((5*a - 2*b)*Log[1 + x])/27 -
 ((5*a - 2*b)*Log[1 - x + x^2])/54
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
```

```
x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1855

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> -Simp[(x*Pq*(a + b*x
^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[1/(a*n*(p + 1)), Int[ExpandToSum[n*(p
 + 1)*Pq + D[x*Pq, x], x]*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b}, x] &
& PolyQ[Pq, x] && IGtQ[n, 0] && LtQ[p, -1] && LtQ[Expon[Pq, x], n - 1]
```

Rule 1860

```
Int[((A_) + (B_.)*(x_))/((a_) + (b_.)*(x_)^3), x_Symbol] :> With[{r = Numer
ator[Rt[a/b, 3]], s = Denominator[Rt[a/b, 3]]}, -Dist[(r*(B*r - A*s))/(3*a*
s), Int[1/(r + s*x), x], x] + Dist[r/(3*a*s), Int[(r*(B*r + 2*A*s) + s*(B*r
 - A*s)*x)/(r^2 - r*s*x + s^2*x^2), x], x]] /; FreeQ[{a, b, A, B}, x] && Ne
Q[a*B^3 - b*A^3, 0] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{(1+x)^3\left(1-x+x^2\right)^3}\,dx &= \int \frac{a+bx}{\left(1+x^3\right)^3}\,dx\\
&= \frac{x(a+bx)}{6\left(1+x^3\right)^2}-\frac{1}{6}\int \frac{-5a-4bx}{\left(1+x^3\right)^2}\,dx\\
&= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{18}\int \frac{10a+4bx}{1+x^3}\,dx\\
&= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{54}\int \frac{20a+4b+(-10a+4b)x}{1-x+x^2}\,dx+\frac{1}{27}(5a-2b)\\
&= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{27}(5a-2b)\log(1+x)+\frac{1}{54}(-5a+2b)\int \frac{-1+2}{1-x+}\\
&= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{27}(5a-2b)\log(1+x)-\frac{1}{54}(5a-2b)\log\left(1-x+\right.\\
&= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}-\frac{(5a+2b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{9\sqrt{3}}+\frac{1}{27}(5a-2b)\log(1+x)-
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 94, normalized size = 0.93

$$\frac{1}{54}\left(\frac{9x(a+bx)}{\left(x^3+1\right)^2}+\frac{3x(5a+4bx)}{x^3+1}+(2b-5a)\log\left(x^2-x+1\right)+2(5a-2b)\log(x+1)+2\sqrt{3}(5a+2b)\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)^3*(1 - x + x^2)^3),x]
```

```
[Out] ((9*x*(a + b*x))/(1 + x^3)^2 + (3*x*(5*a + 4*b*x))/(1 + x^3) + 2*Sqrt[3]*(5
*a + 2*b)*ArcTan[(-1 + 2*x)/Sqrt[3]] + 2*(5*a - 2*b)*Log[1 + x] + (-5*a + 2
*b)*Log[1 - x + x^2])/54
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(1+x)^3\left(1-x+x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(a + b*x)/((1 + x)^3*(1 - x + x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(a + b*x)/((1 + x)^3*(1 - x + x^2)^3), x]
```

fricas [A] time = 0.41, size = 160, normalized size = 1.58

$$\frac{12\,bx^{5}+15\,ax^{4}+21\,bx^{2}+2\,\sqrt{3}\left((5\,a+2\,b)x^{6}+2\,(5\,a+2\,b)x^{3}+5\,a+2\,b\right)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)+24\,ax-\left((5\,a-2\,b)x^{6}+2\,(5\,a-2\,b)x^{3}+5\,a-2\,b\right)\log\left(x^{2}-x+1\right)+2\left((5\,a-2\,b)x^{6}+2\,(5\,a-2\,b)x^{3}+5\,a-2\,b\right)\log\left(x+1\right)}{54\left(x^{6}+2\,x^{3}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^3/(x^2-x+1)^3,x, algorithm="fricas")
```

```
[Out] 1/54*(12*b*x^5 + 15*a*x^4 + 21*b*x^2 + 2*sqrt(3)*((5*a + 2*b)*x^6 + 2*(5*a
+ 2*b)*x^3 + 5*a + 2*b)*arctan(1/3*sqrt(3)*(2*x - 1)) + 24*a*x - ((5*a - 2*
b)*x^6 + 2*(5*a - 2*b)*x^3 + 5*a - 2*b)*log(x^2 - x + 1) + 2*((5*a - 2*b)*x
^6 + 2*(5*a - 2*b)*x^3 + 5*a - 2*b)*log(x + 1))/(x^6 + 2*x^3 + 1)
```

giac [A] time = 0.17, size = 88, normalized size = 0.87

$$\frac{1}{27}\,\sqrt{3}\,(5\,a+2\,b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{54}\,(5\,a-2\,b)\log\left(x^{2}-x+1\right)+\frac{1}{27}\,(5\,a-2\,b)\log\left(|x+1|\right)+\frac{4\,bx^{5}+5\,ax^{4}+7\,bx^{2}+8\,ax}{18\left(x^{3}+1\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^3/(x^2-x+1)^3,x, algorithm="giac")
```

```
[Out] 1/27*sqrt(3)*(5*a + 2*b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/54*(5*a - 2*b)*l
og(x^2 - x + 1) + 1/27*(5*a - 2*b)*log(abs(x + 1)) + 1/18*(4*b*x^5 + 5*a*x^
4 + 7*b*x^2 + 8*a*x)/(x^3 + 1)^2
```

maple [A] time = 0.06, size = 154, normalized size = 1.52

$$\frac{5\sqrt{3}\,a\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{27}+\frac{5a\ln(x+1)}{27}-\frac{5a\ln\left(x^{2}-x+1\right)}{54}+\frac{2\sqrt{3}\,b\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{27}-\frac{2b\ln(x+1)}{27}+\frac{b\ln\left(x^{2}-x+1\right)}{27}-\frac{a}{54\,(x+1)^{2}}-\frac{a}{9\,(x+1)}+\frac{b}{54\,(x+1)^{2}}+\frac{2b}{27\,(x+1)}-\frac{(-3a-4b)\,x^{3}+\left(a+\frac{13b}{2}\right)x^{2}-\frac{7a}{2}+\frac{5b}{2}+(-a-8b)\,x}{27\left(x^{2}-x+1\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^3/(x^2-x+1)^3,x)
```

```
[Out] -1/54/(x+1)^2*a+1/54/(x+1)^2*b-1/9/(x+1)*a+2/27/(x+1)*b+5/27*a*ln(x+1)-2/27
*b*ln(x+1)-1/27*((-3*a-4*b)*x^3+(a+13/2*b)*x^2+(-a-8*b)*x-7/2*a+5/2*b)/(x^2
-x+1)^2-5/54*a*ln(x^2-x+1)+1/27*b*ln(x^2-x+1)+5/27*3^(1/2)*a*arctan(1/3*(2*
x-1)*3^(1/2))+2/27*3^(1/2)*b*arctan(1/3*(2*x-1)*3^(1/2))
```

maxima [A] time = 1.27, size = 92, normalized size = 0.91

$$\frac{1}{27}\,\sqrt{3}\,(5\,a+2\,b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{54}\,(5\,a-2\,b)\log\left(x^{2}-x+1\right)+\frac{1}{27}\,(5\,a-2\,b)\log\left(x+1\right)+\frac{4\,bx^{5}+5\,ax^{4}+7\,bx^{2}+8\,ax}{18\left(x^{6}+2\,x^{3}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^3/(x^2-x+1)^3,x, algorithm="maxima")
```

```
[Out] 1/27*sqrt(3)*(5*a + 2*b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/54*(5*a - 2*b)*l
og(x^2 - x + 1) + 1/27*(5*a - 2*b)*log(x + 1) + 1/18*(4*b*x^5 + 5*a*x^4 + 7
*b*x^2 + 8*a*x)/(x^6 + 2*x^3 + 1)
```

mupad [B] time = 0.14, size = 114, normalized size = 1.13

$$\ln(x+1)\left(\frac{5\,a}{27}-\frac{2\,b}{27}\right)+\ln\left(x-\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{b}{27}-\frac{5\,a}{54}+\frac{\sqrt{3}\,a\,5\mathrm{i}}{54}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{27}\right)-\ln\left(x-\frac{1}{2}-\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{5\,a}{54}-\frac{b}{27}+\frac{\sqrt{3}\,a\,5\mathrm{i}}{54}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{27}\right)+\frac{\frac{2\,b\,x^{5}}{9}+\frac{5\,a\,x^{4}}{18}+\frac{7\,b\,x^{2}}{18}+\frac{4\,a\,x}{9}}{x^{6}+2\,x^{3}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^3*(x^2 - x + 1)^3),x)
```

```
[Out] log(x + (3^(1/2)*1i)/2 - 1/2)*(b/27 - (5*a)/54 + (3^(1/2)*a*5i)/54 + (3^(1/
2)*b*1i)/27) - log(x - (3^(1/2)*1i)/2 - 1/2)*((5*a)/54 - b/27 + (3^(1/2)*a*
5i)/54 + (3^(1/2)*b*1i)/27) + log(x + 1)*((5*a)/27 - (2*b)/27) + ((4*a*x)/9
 + (5*a*x^4)/18 + (7*b*x^2)/18 + (2*b*x^5)/9)/(2*x^3 + x^6 + 1)
```

sympy [C] time = 0.71, size = 292, normalized size = 2.89

$$\frac{(5a-2b)\log\left(x+\frac{25a^2(5a-2b)+40ab^2+2b(5a-2b)^2}{125a^3+8b^3}\right)}{27}+\left(-\frac{5a}{54}+\frac{b}{27}-\frac{\sqrt{3}\,i\,(5a+2b)}{54}\right)\log\left(x+\frac{675a^2\left(-\frac{5a}{54}+\frac{b}{27}-\frac{\sqrt{3}\,i(5a+2b)}{54}\right)+40ab^2+1458b\left(-\frac{5a}{54}+\frac{b}{27}-\frac{\sqrt{3}\,i(5a+2b)}{54}\right)^2}{125a^3+8b^3}\right)+\left(-\frac{5a}{54}+\frac{b}{27}+\frac{\sqrt{3}\,i\,(5a+2b)}{54}\right)\log\left(x+\frac{675a^2\left(-\frac{5a}{54}+\frac{b}{27}+\frac{\sqrt{3}\,i(5a+2b)}{54}\right)+40ab^2+1458b\left(-\frac{5a}{54}+\frac{b}{27}+\frac{\sqrt{3}\,i(5a+2b)}{54}\right)^2}{125a^3+8b^3}\right)+\frac{5ax^4+8ax+4bx^5+7bx^2}{18x^6+36x^3+18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**3/(x**2-x+1)**3,x)
```

```
[Out] (5*a - 2*b)*log(x + (25*a**2*(5*a - 2*b) + 40*a*b**2 + 2*b*(5*a - 2*b)**2)/
(125*a**3 + 8*b**3))/27 + (-5*a/54 + b/27 - sqrt(3)*I*(5*a + 2*b)/54)*log(x
 + (675*a**2*(-5*a/54 + b/27 - sqrt(3)*I*(5*a + 2*b)/54) + 40*a*b**2 + 1458
*b*(-5*a/54 + b/27 - sqrt(3)*I*(5*a + 2*b)/54)**2)/(125*a**3 + 8*b**3)) + (
-5*a/54 + b/27 + sqrt(3)*I*(5*a + 2*b)/54)*log(x + (675*a**2*(-5*a/54 + b/2
7 + sqrt(3)*I*(5*a + 2*b)/54) + 40*a*b**2 + 1458*b*(-5*a/54 + b/27 + sqrt(3
)*I*(5*a + 2*b)/54)**2)/(125*a**3 + 8*b**3)) + (5*a*x**4 + 8*a*x + 4*b*x**5
 + 7*b*x**2)/(18*x**6 + 36*x**3 + 18)
```

3.2065 $\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=134

$$-\frac{(d+ex)^6 \left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{6e^4}-\frac{(d+ex)^5(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(-Ace-bBe}{7e^4}$$

Rubi [A] time = 0.26, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(d+ex)^6 \left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{6e^4}-\frac{(d+ex)^5(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(-Ace-bBe+3Bcd)}{7e^4}+\frac{Bc(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^5)/(5*e^4) + ((3*B*c*d^2 -
B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^6)/(6*e^4) - ((3*B*c*d - b
*B*e - A*c*e)*(d + e*x)^7)/(7*e^4) + (B*c*(d + e*x)^8)/(8*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right) dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)-\right.}{e^3}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(3Bcd^2-Be(2bd-ae)-Ae(2\right.}{6e^4}$$

Mathematica [A] time = 0.14, size = 251, normalized size = 1.87

$$\frac{1}{6}e^2x^6\left(Be(ae+4bd)+Ae(be+4cd)+6Bcd^2\right)+\frac{1}{4}dx^4\left(2Ae\left(e(2ae+3bd)+2cd^2\right)+Bd\left(6ae^2+4bde+cd^2\right)\right)+\frac{1}{3}d^2x^3\left(6aAe^2+4aBde+bd(4Ae+Bd)+Acd^2\right)+\frac{1}{5}ex^5\left(Ae\left(e(ae+4bd)+6cd^2\right)+B\left(2de(2ae+3bd)+4cd^3\right)\right)+\frac{1}{2}d^3x^2(4aAe+aBd+Abd)+aAd^4x+\frac{1}{7}e^3x^7(Ace+bBe+4Bcd)+\frac{1}{8}Bce^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d^4*x + (d^3*(A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (d^2*(A*c*d^2 + 4*a*B*d
*e + 6*a*A*e^2 + b*d*(B*d + 4*A*e))*x^3)/3 + (d*(B*d*(c*d^2 + 4*b*d*e + 6*a
*e^2) + 2*A*e*(2*c*d^2 + e*(3*b*d + 2*a*e)))*x^4)/4 + (e*(A*e*(6*c*d^2 + e*
(4*b*d + a*e)) + B*(4*c*d^3 + 2*d*e*(3*b*d + 2*a*e)))*x^5)/5 + (e^2*(6*B*c*
d^2 + B*e*(4*b*d + a*e) + A*e*(4*c*d + b*e))*x^6)/6 + (e^3*(4*B*c*d + b*B*e
 + A*c*e)*x^7)/7 + (B*c*e^4*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2), x]
```

fricas [B] time = 0.33, size = 324, normalized size = 2.42

$$\frac{1}{8}x^8e^4cB+\frac{4}{7}x^7e^3dcB+\frac{1}{7}x^7e^4bB+\frac{1}{7}x^7e^4cA+x^6e^2d^2cB+\frac{2}{3}x^6e^3dbB+\frac{1}{6}x^6e^4aB+\frac{2}{3}x^6e^3dcA+\frac{1}{6}x^6e^4bA+\frac{4}{5}x^5ed^3cB+\frac{6}{5}x^5e^2d^2bB+\frac{4}{5}x^5e^3daB+\frac{6}{5}x^5e^2d^2cA+\frac{4}{5}x^5e^3dbA+\frac{1}{5}x^5e^4aA+\frac{1}{4}x^4d^4cB+x^4ed^3bB+\frac{3}{2}x^4e^2d^2aB+x^4ed^3cA+\frac{3}{2}x^4e^2d^2bA+x^4e^3daA+\frac{1}{3}x^3d^4bB+\frac{4}{3}x^3ed^3aB+\frac{1}{3}x^3d^4cA+\frac{4}{3}x^3ed^3bA+2x^3e^2d^2aA+\frac{1}{2}x^2d^4aB+\frac{1}{2}x^2d^4bA+2x^2ed^3aA+xd^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c*B + 4/7*x^7*e^3*d*c*B + 1/7*x^7*e^4*b*B + 1/7*x^7*e^4*c*A + x
^6*e^2*d^2*c*B + 2/3*x^6*e^3*d*b*B + 1/6*x^6*e^4*a*B + 2/3*x^6*e^3*d*c*A +
1/6*x^6*e^4*b*A + 4/5*x^5*e*d^3*c*B + 6/5*x^5*e^2*d^2*b*B + 4/5*x^5*e^3*d*a
*B + 6/5*x^5*e^2*d^2*c*A + 4/5*x^5*e^3*d*b*A + 1/5*x^5*e^4*a*A + 1/4*x^4*d^
4*c*B + x^4*e*d^3*b*B + 3/2*x^4*e^2*d^2*a*B + x^4*e*d^3*c*A + 3/2*x^4*e^2*d
^2*b*A + x^4*e^3*d*a*A + 1/3*x^3*d^4*b*B + 4/3*x^3*e*d^3*a*B + 1/3*x^3*d^4*
c*A + 4/3*x^3*e*d^3*b*A + 2*x^3*e^2*d^2*a*A + 1/2*x^2*d^4*a*B + 1/2*x^2*d^4
*b*A + 2*x^2*e*d^3*a*A + x*d^4*a*A
```

giac [B] time = 0.18, size = 312, normalized size = 2.33

$$\frac{1}{8}Bcx^8e^4+\frac{4}{7}Bcdx^7e^3+Bcd^2x^6e^2+\frac{4}{5}Bcd^3x^5e+\frac{1}{4}Bcd^4x^4+\frac{1}{7}Bbx^7e^4+\frac{1}{7}Acx^7e^4+\frac{2}{3}Bbdx^6e^3+\frac{2}{3}Acdx^6e^3+\frac{6}{5}Bbd^2x^5e^2+\frac{6}{5}Acd^2x^5e^2+Bbd^3x^4e+Acd^3x^4e+\frac{1}{3}Bbd^4x^3+\frac{1}{3}Acd^4x^3+\frac{1}{6}Bax^6e^4+\frac{1}{6}Abx^6e^4+\frac{4}{5}Badx^5e^3+\frac{4}{5}Abdx^5e^3+\frac{3}{2}Bad^2x^4e^2+\frac{3}{2}Abd^2x^4e^2+\frac{4}{3}Bad^3x^3e+\frac{4}{3}Abd^3x^3e+\frac{1}{2}Bad^4x^2+\frac{1}{2}Abd^4x^2+\frac{1}{5}Aax^5e^4+Aadx^4e^3+2\,Aad^2x^3e^2+2\,Aad^3x^2e+Aad^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8*e^4 + 4/7*B*c*d*x^7*e^3 + B*c*d^2*x^6*e^2 + 4/5*B*c*d^3*x^5*e +
 1/4*B*c*d^4*x^4 + 1/7*B*b*x^7*e^4 + 1/7*A*c*x^7*e^4 + 2/3*B*b*d*x^6*e^3 +
2/3*A*c*d*x^6*e^3 + 6/5*B*b*d^2*x^5*e^2 + 6/5*A*c*d^2*x^5*e^2 + B*b*d^3*x^4
*e + A*c*d^3*x^4*e + 1/3*B*b*d^4*x^3 + 1/3*A*c*d^4*x^3 + 1/6*B*a*x^6*e^4 +
1/6*A*b*x^6*e^4 + 4/5*B*a*d*x^5*e^3 + 4/5*A*b*d*x^5*e^3 + 3/2*B*a*d^2*x^4*e
^2 + 3/2*A*b*d^2*x^4*e^2 + 4/3*B*a*d^3*x^3*e + 4/3*A*b*d^3*x^3*e + 1/2*B*a*
d^4*x^2 + 1/2*A*b*d^4*x^2 + 1/5*A*a*x^5*e^4 + A*a*d*x^4*e^3 + 2*A*a*d^2*x^3
*e^2 + 2*A*a*d^3*x^2*e + A*a*d^4*x
```

maple [B] time = 0.04, size = 283, normalized size = 2.11

$$\frac{Bc\,e^4x^8}{8}+Aa\,d^4x+\frac{\left(Bb\,e^4+\left(A\,e^4+4Bd\,e^3\right)c\right)x^7}{7}+\frac{\left(Ba\,e^4+\left(A\,e^4+4Bd\,e^3\right)b+\left(4Ad\,e^3+6B\,d^2e^2\right)c\right)x^6}{6}+\frac{\left(\left(A\,e^4+4Bd\,e^3\right)a+\left(4Ad\,e^3+6B\,d^2e^2\right)b+\left(6A\,d^2e^2+4B\,d^3e\right)c\right)x^5}{5}+\frac{\left(\left(4Ad\,e^3+6B\,d^2e^2\right)a+\left(6A\,d^2e^2+4B\,d^3e\right)b+\left(4A\,d^3e+B\,d^4\right)c\right)x^4}{4}+\frac{\left(Ac\,d^4+\left(6A\,d^2e^2+4B\,d^3e\right)a+\left(4A\,d^3e+B\,d^4\right)b\right)x^3}{3}+\frac{\left(Ab\,d^4+\left(4A\,d^3e+B\,d^4\right)a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x)
```

```
[Out] 1/8*B*e^4*c*x^8+1/7*((A*e^4+4*B*d*e^3)*c+B*e^4*b)*x^7+1/6*((4*A*d*e^3+6*B*d
^2*e^2)*c+(A*e^4+4*B*d*e^3)*b+B*e^4*a)*x^6+1/5*((6*A*d^2*e^2+4*B*d^3*e)*c+(
4*A*d*e^3+6*B*d^2*e^2)*b+(A*e^4+4*B*d*e^3)*a)*x^5+1/4*((4*A*d^3*e+B*d^4)*c+
(6*A*d^2*e^2+4*B*d^3*e)*b+(4*A*d*e^3+6*B*d^2*e^2)*a)*x^4+1/3*(A*d^4*c+(4*A*
d^3*e+B*d^4)*b+(6*A*d^2*e^2+4*B*d^3*e)*a)*x^3+1/2*(A*d^4*b+(4*A*d^3*e+B*d^4
)*a)*x^2+A*d^4*a*x
```

maxima [A] time = 0.48, size = 244, normalized size = 1.82

$$\frac{1}{8}\,Bce^4x^8+\frac{1}{7}\left(4\,Bcde^3+(Bb+Ac)e^4\right)x^7+Aad^4x+\frac{1}{6}\left(6\,Bcd^2e^2+4\,(Bb+Ac)de^3+(Ba+Ab)e^4\right)x^6+\frac{1}{5}\left(4\,Bcd^3e+Aae^4+6\,(Bb+Ac)d^2e^2+4\,(Ba+Ab)de^3\right)x^5+\frac{1}{4}\left(Bcd^4+4\,Aade^3+4\,(Bb+Ac)d^3e+6\,(Ba+Ab)d^2e^2\right)x^4+\frac{1}{3}\left(6\,Aad^2e^2+(Bb+Ac)d^4+4\,(Ba+Ab)d^3e\right)x^3+\frac{1}{2}\left(4\,Aad^3e+(Ba+Ab)d^4\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/8*B*c*e^4*x^8 + 1/7*(4*B*c*d*e^3 + (B*b + A*c)*e^4)*x^7 + A*a*d^4*x + 1/6
*(6*B*c*d^2*e^2 + 4*(B*b + A*c)*d*e^3 + (B*a + A*b)*e^4)*x^6 + 1/5*(4*B*c*d
^3*e + A*a*e^4 + 6*(B*b + A*c)*d^2*e^2 + 4*(B*a + A*b)*d*e^3)*x^5 + 1/4*(B*
```

```
c*d^4 + 4*A*a*d*e^3 + 4*(B*b + A*c)*d^3*e + 6*(B*a + A*b)*d^2*e^2)*x^4 + 1/
3*(6*A*a*d^2*e^2 + (B*b + A*c)*d^4 + 4*(B*a + A*b)*d^3*e)*x^3 + 1/2*(4*A*a*
d^3*e + (B*a + A*b)*d^4)*x^2
```

mupad [B] time = 0.13, size = 270, normalized size = 2.01

$$x^3\left(\frac{Acd^4}{3}+\frac{Bbd^4}{3}+\frac{4Abd^3e}{3}+\frac{4Bad^3e}{3}+2Aad^2e^2\right)+x^6\left(\frac{Abe^4}{6}+\frac{Bae^4}{6}+\frac{2Acde^3}{3}+\frac{2Bbde^3}{3}+Bcd^2e^2\right)+x^2\left(\frac{Abd^4}{2}+\frac{Bad^4}{2}+2Aad^3e\right)+x^7\left(\frac{Ace^4}{7}+\frac{Bbe^4}{7}+\frac{4Bcde^3}{7}\right)+x^4\left(\frac{Bcd^4}{4}+Aade^3+Acd^3e+Bbd^3e+\frac{3Abd^2e^2}{2}+\frac{3Bad^2e^2}{2}\right)+x^5\left(\frac{Aae^4}{5}+\frac{4Abde^3}{5}+\frac{4Bade^3}{5}+\frac{4Bcd^3e}{5}+\frac{6Acd^2e^2}{5}+\frac{6Bbd^2e^2}{5}\right)+Aad^4x+\frac{Bce^4x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*c*d^4)/3 + (B*b*d^4)/3 + (4*A*b*d^3*e)/3 + (4*B*a*d^3*e)/3 + 2*A*a*
d^2*e^2) + x^6*((A*b*e^4)/6 + (B*a*e^4)/6 + (2*A*c*d*e^3)/3 + (2*B*b*d*e^3)
/3 + B*c*d^2*e^2) + x^2*((A*b*d^4)/2 + (B*a*d^4)/2 + 2*A*a*d^3*e) + x^7*((A
*c*e^4)/7 + (B*b*e^4)/7 + (4*B*c*d*e^3)/7) + x^4*((B*c*d^4)/4 + A*a*d*e^3 +
 A*c*d^3*e + B*b*d^3*e + (3*A*b*d^2*e^2)/2 + (3*B*a*d^2*e^2)/2) + x^5*((A*a
*e^4)/5 + (4*A*b*d*e^3)/5 + (4*B*a*d*e^3)/5 + (4*B*c*d^3*e)/5 + (6*A*c*d^2*
e^2)/5 + (6*B*b*d^2*e^2)/5) + A*a*d^4*x + (B*c*e^4*x^8)/8
```

sympy [B] time = 0.11, size = 332, normalized size = 2.48

$$Aad^4x+\frac{Bce^4x^8}{8}+x^7\left(\frac{Ace^4}{7}+\frac{Bbe^4}{7}+\frac{4Bcde^3}{7}\right)+x^6\left(\frac{Abe^4}{6}+\frac{2Acde^3}{3}+\frac{Bae^4}{6}+\frac{2Bbde^3}{3}+Bcd^2e^2\right)+x^5\left(\frac{Aae^4}{5}+\frac{4Abde^3}{5}+\frac{6Acd^2e^2}{5}+\frac{4Bade^3}{5}+\frac{6Bbd^2e^2}{5}+\frac{4Bcd^3e}{5}\right)+x^4\left(Aade^3+\frac{3Abd^2e^2}{2}+Acd^3e+\frac{3Bad^2e^2}{2}+Bbd^3e+\frac{Bcd^4}{4}\right)+x^3\left(2Aad^2e^2+\frac{4Abd^3e}{3}+\frac{Acd^4}{3}+\frac{4Bad^3e}{3}+\frac{Bbd^4}{3}\right)+x^2\left(2Aad^3e+\frac{Abd^4}{2}+\frac{Bad^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d**4*x + B*c*e**4*x**8/8 + x**7*(A*c*e**4/7 + B*b*e**4/7 + 4*B*c*d*e**3
/7) + x**6*(A*b*e**4/6 + 2*A*c*d*e**3/3 + B*a*e**4/6 + 2*B*b*d*e**3/3 + B*c
*d**2*e**2) + x**5*(A*a*e**4/5 + 4*A*b*d*e**3/5 + 6*A*c*d**2*e**2/5 + 4*B*a
*d*e**3/5 + 6*B*b*d**2*e**2/5 + 4*B*c*d**3*e/5) + x**4*(A*a*d*e**3 + 3*A*b*
d**2*e**2/2 + A*c*d**3*e + 3*B*a*d**2*e**2/2 + B*b*d**3*e + B*c*d**4/4) + x
**3*(2*A*a*d**2*e**2 + 4*A*b*d**3*e/3 + A*c*d**4/3 + 4*B*a*d**3*e/3 + B*b*d
**4/3) + x**2*(2*A*a*d**3*e + A*b*d**4/2 + B*a*d**4/2)
```

3.2066 $\int (A+Bx)(d+ex)^3 \left(a+bx+cx^2\right) \, dx$

Optimal. Leaf size=134

$$-\frac{(d+ex)^5 \left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{5e^4}-\frac{(d+ex)^4(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(-Ace-b}{6e^4}$$

Rubi [A] time = 0.19, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(d+ex)^5 \left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{5e^4}-\frac{(d+ex)^4(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(-Ace-bBe+3Bcd)}{6e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4)/(4*e^4) + ((3*B*c*d^2 -
B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^5)/(5*e^4) - ((3*B*c*d - b
*B*e - A*c*e)*(d + e*x)^6)/(6*e^4) + (B*c*(d + e*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^3 \left(a+bx+cx^2\right) \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(3Bcd^2-Be(2bd-ae)-A\right.}{5e^4}$$

Mathematica [A] time = 0.09, size = 192, normalized size = 1.43

$$\frac{1}{3}dx^3\left(3aAe^2+3aBde+bd(3Ae+Bd)+Acd^2\right)+\frac{1}{5}ex^5\left(Be(ae+3bd)+Ae(be+3cd)+3Bcd^2\right)+\frac{1}{4}x^4\left(Ae\left(e(ae+3bd)+3cd^2\right)+B\left(3de(ae+bd)+cd^3\right)\right)+\frac{1}{2}d^2x^2(3aAe+aBd+Abd)+aAd^3x+\frac{1}{6}e^2x^6(Ace+bBe+3Bcd)+\frac{1}{7}Bce^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d^3*x + (d^2*(A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (d*(A*c*d^2 + 3*a*B*d*e
 + 3*a*A*e^2 + b*d*(B*d + 3*A*e))*x^3)/3 + ((B*(c*d^3 + 3*d*e*(b*d + a*e))
+ A*e*(3*c*d^2 + e*(3*b*d + a*e)))*x^4)/4 + (e*(3*B*c*d^2 + B*e*(3*b*d + a*
e) + A*e*(3*c*d + b*e))*x^5)/5 + (e^2*(3*B*c*d + b*B*e + A*c*e)*x^6)/6 + (B
*c*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3 \left(a+bx+cx^2\right) \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.34, size = 247, normalized size = 1.84

$$\frac{1}{7}x^7e^3cB+\frac{1}{2}x^6e^2dcB+\frac{1}{6}x^6e^3bB+\frac{1}{6}x^6e^3cA+\frac{3}{5}x^5ed^2cB+\frac{3}{5}x^5e^2dbB+\frac{1}{5}x^5e^3aB+\frac{3}{5}x^5e^2dcA+\frac{1}{5}x^5e^3bA+\frac{1}{4}x^4d^3cB+\frac{3}{4}x^4ed^2bB+\frac{3}{4}x^4e^2daB+\frac{3}{4}x^4ed^2cA+\frac{3}{4}x^4e^2dbA+\frac{1}{4}x^4e^3aA+\frac{1}{3}x^3d^3bB+x^3ed^2aB+\frac{1}{3}x^3d^3cA+x^3ed^2bA+x^3e^2daA+\frac{1}{2}x^2d^3aB+\frac{1}{2}x^2d^3bA+\frac{3}{2}x^2ed^2aA+xd^3aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c*B + 1/2*x^6*e^2*d*c*B + 1/6*x^6*e^3*b*B + 1/6*x^6*e^3*c*A + 3
/5*x^5*e*d^2*c*B + 3/5*x^5*e^2*d*b*B + 1/5*x^5*e^3*a*B + 3/5*x^5*e^2*d*c*A
+ 1/5*x^5*e^3*b*A + 1/4*x^4*d^3*c*B + 3/4*x^4*e*d^2*b*B + 3/4*x^4*e^2*d*a*B
 + 3/4*x^4*e*d^2*c*A + 3/4*x^4*e^2*d*b*A + 1/4*x^4*e^3*a*A + 1/3*x^3*d^3*b*
B + x^3*e*d^2*a*B + 1/3*x^3*d^3*c*A + x^3*e*d^2*b*A + x^3*e^2*d*a*A + 1/2*x
^2*d^3*a*B + 1/2*x^2*d^3*b*A + 3/2*x^2*e*d^2*a*A + x*d^3*a*A
```

giac [A] time = 0.16, size = 241, normalized size = 1.80

$$\frac{1}{7}Bcx^7e^3+\frac{1}{2}Bcdx^6e^2+\frac{3}{5}Bcd^2x^5e+\frac{1}{4}Bcd^3x^4+\frac{1}{6}Bbx^6e^3+\frac{1}{6}Acx^6e^3+\frac{3}{5}Bbdx^5e^2+\frac{3}{5}Acdx^5e^2+\frac{3}{4}Bbd^2x^4e+\frac{3}{4}Acd^2x^4e+\frac{1}{3}Bbd^3x^3+\frac{1}{3}Acd^3x^3+\frac{1}{5}Bax^5e^3+\frac{1}{5}Abx^5e^3+\frac{3}{4}Badx^4e^2+\frac{3}{4}Abdx^4e^2+Bad^2x^3e+Abd^2x^3e+\frac{1}{2}Bad^3x^2+\frac{1}{2}Abd^3x^2+\frac{1}{4}Aax^4e^3+Aadx^3e^2+\frac{3}{2}Aad^2x^2e+Aad^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7*e^3 + 1/2*B*c*d*x^6*e^2 + 3/5*B*c*d^2*x^5*e + 1/4*B*c*d^3*x^4 +
 1/6*B*b*x^6*e^3 + 1/6*A*c*x^6*e^3 + 3/5*B*b*d*x^5*e^2 + 3/5*A*c*d*x^5*e^2
+ 3/4*B*b*d^2*x^4*e + 3/4*A*c*d^2*x^4*e + 1/3*B*b*d^3*x^3 + 1/3*A*c*d^3*x^3
 + 1/5*B*a*x^5*e^3 + 1/5*A*b*x^5*e^3 + 3/4*B*a*d*x^4*e^2 + 3/4*A*b*d*x^4*e^
2 + B*a*d^2*x^3*e + A*b*d^2*x^3*e + 1/2*B*a*d^3*x^2 + 1/2*A*b*d^3*x^2 + 1/4
*A*a*x^4*e^3 + A*a*d*x^3*e^2 + 3/2*A*a*d^2*x^2*e + A*a*d^3*x
```

maple [A] time = 0.05, size = 214, normalized size = 1.60

$$\frac{Bce^3x^7}{7}+Aad^3x+\frac{\left(Bbe^3+\left(Ae^3+3Bde^2\right)c\right)x^6}{6}+\frac{\left(Bae^3+\left(Ae^3+3Bde^2\right)b+\left(3Ade^2+3Bd^2e\right)c\right)x^5}{5}+\frac{\left(\left(Ae^3+3Bde^2\right)a+\left(3Ade^2+3Bd^2e\right)b+\left(3Ad^2e+Bd^3\right)c\right)x^4}{4}+\frac{\left(Acd^3+\left(3Ade^2+3Bd^2e\right)a+\left(3Ad^2e+Bd^3\right)b\right)x^3}{3}+\frac{\left(Abd^3+\left(3Ad^2e+Bd^3\right)a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x)
```

```
[Out] 1/7*B*e^3*c*x^7+1/6*((A*e^3+3*B*d*e^2)*c+B*e^3*b)*x^6+1/5*((3*A*d*e^2+3*B*d
^2*e)*c+(A*e^3+3*B*d*e^2)*b+B*e^3*a)*x^5+1/4*((3*A*d^2*e+B*d^3)*c+(3*A*d*e^
2+3*B*d^2*e)*b+(A*e^3+3*B*d*e^2)*a)*x^4+1/3*(A*c*d^3+(3*A*d^2*e+B*d^3)*b+(3
*A*d*e^2+3*B*d^2*e)*a)*x^3+1/2*(A*d^3*b+(3*A*d^2*e+B*d^3)*a)*x^2+A*d^3*a*x
```

maxima [A] time = 0.50, size = 188, normalized size = 1.40

$$\frac{1}{7}Bce^3x^7+\frac{1}{6}\left(3Bcde^2+(Bb+Ac)e^3\right)x^6+Aad^3x+\frac{1}{5}\left(3Bcd^2e+3(Bb+Ac)de^2+(Ba+Ab)e^3\right)x^5+\frac{1}{4}\left(Bcd^3+Aae^3+3(Bb+Ac)d^2e+3(Ba+Ab)de^2\right)x^4+\frac{1}{3}\left(3Aade^2+(Bb+Ac)d^3+3(Ba+Ab)d^2e\right)x^3+\frac{1}{2}\left(3Aad^2e+(Ba+Ab)d^3\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*e^3*x^7 + 1/6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^6 + A*a*d^3*x + 1/5
*(3*B*c*d^2*e + 3*(B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x^5 + 1/4*(B*c*d^3 +
 A*a*e^3 + 3*(B*b + A*c)*d^2*e + 3*(B*a + A*b)*d*e^2)*x^4 + 1/3*(3*A*a*d*e^
2 + (B*b + A*c)*d^3 + 3*(B*a + A*b)*d^2*e)*x^3 + 1/2*(3*A*a*d^2*e + (B*a +
A*b)*d^3)*x^2
```

mupad [B] time = 2.36, size = 206, normalized size = 1.54

$$x^2\left(\frac{Abd^3}{2}+\frac{Bad^3}{2}+\frac{3Aad^2e}{2}\right)+x^6\left(\frac{Ace^3}{6}+\frac{Bbe^3}{6}+\frac{Bcde^2}{2}\right)+x^3\left(\frac{Acd^3}{3}+\frac{Bbd^3}{3}+Aade^2+Abd^2e+Bad^2e\right)+x^5\left(\frac{Abe^3}{5}+\frac{Bae^3}{5}+\frac{3Acde^2}{5}+\frac{3Bbde^2}{5}+\frac{3Bcd^2e}{5}\right)+x^4\left(\frac{Aae^3}{4}+\frac{Bcd^3}{4}+\frac{3Abde^2}{4}+\frac{3Bade^2}{4}+\frac{3Acd^2e}{4}+\frac{3Bbd^2e}{4}\right)+Aad^3x+\frac{Bce^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*b*d^3)/2 + (B*a*d^3)/2 + (3*A*a*d^2*e)/2) + x^6*((A*c*e^3)/6 + (B*b
*e^3)/6 + (B*c*d*e^2)/2) + x^3*((A*c*d^3)/3 + (B*b*d^3)/3 + A*a*d*e^2 + A*b
*d^2*e + B*a*d^2*e) + x^5*((A*b*e^3)/5 + (B*a*e^3)/5 + (3*A*c*d*e^2)/5 + (3
*B*b*d*e^2)/5 + (3*B*c*d^2*e)/5) + x^4*((A*a*e^3)/4 + (B*c*d^3)/4 + (3*A*b*
d*e^2)/4 + (3*B*a*d*e^2)/4 + (3*A*c*d^2*e)/4 + (3*B*b*d^2*e)/4) + A*a*d^3*x
 + (B*c*e^3*x^7)/7
```

sympy [B] time = 0.10, size = 252, normalized size = 1.88

$$Aad^3x + \frac{Bce^3x^7}{7} + x^6\left(\frac{Ace^3}{6} + \frac{Bbe^3}{6} + \frac{Bcde^2}{2}\right) + x^5\left(\frac{Abe^3}{5} + \frac{3Acde^2}{5} + \frac{Bae^3}{5} + \frac{3Bbde^2}{5} + \frac{3Bcd^2e}{5}\right) + x^4\left(\frac{Aae^3}{4} + \frac{3Abde^2}{4} + \frac{3Acd^2e}{4} + \frac{3Bade^2}{4} + \frac{3Bbd^2e}{4} + \frac{Bcd^3}{4}\right) + x^3\left(Aade^2 + Abd^2e + \frac{Acd^3}{3} + Bad^2e + \frac{Bbd^3}{3}\right) + x^2\left(\frac{3Aad^2e}{2} + \frac{Abd^3}{2} + \frac{Bad^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d**3*x + B*c*e**3*x**7/7 + x**6*(A*c*e**3/6 + B*b*e**3/6 + B*c*d*e**2/2
) + x**5*(A*b*e**3/5 + 3*A*c*d*e**2/5 + B*a*e**3/5 + 3*B*b*d*e**2/5 + 3*B*c
*d**2*e/5) + x**4*(A*a*e**3/4 + 3*A*b*d*e**2/4 + 3*A*c*d**2*e/4 + 3*B*a*d*e
**2/4 + 3*B*b*d**2*e/4 + B*c*d**3/4) + x**3*(A*a*d*e**2 + A*b*d**2*e + A*c*
d**3/3 + B*a*d**2*e + B*b*d**3/3) + x**2*(3*A*a*d**2*e/2 + A*b*d**3/2 + B*a
*d**3/2)
```

3.2067 $\int (A+Bx)(d+ex)^2 \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=134

$$-\frac{(d+ex)^4 \left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{4e^4}-\frac{(d+ex)^3(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{(d+ex)^5(-Ace-bBe}{5e^4}$$

Rubi [A] time = 0.14, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(d+ex)^4 \left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{4e^4}-\frac{(d+ex)^3(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{(d+ex)^5(-Ace-bBe+3Bcd)}{5e^4}+\frac{Bc(d+ex)^6}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3)/(3*e^4) + ((3*B*c*d^2 -
B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^4)/(4*e^4) - ((3*B*c*d - b
*B*e - A*c*e)*(d + e*x)^5)/(5*e^4) + (B*c*(d + e*x)^6)/(6*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^2}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)-\right.}{e^3}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^3}{3e^4}+\frac{\left(3Bcd^2-Be(2bd-ae)-Ae(2\right.}{4e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 137, normalized size = 1.02

$$\frac{1}{3}x^3\left(aAe^2+2aBde+bd(2Ae+Bd)+Acd^2\right)+\frac{1}{4}x^4\left(Be(ae+2bd)+Ae(be+2cd)+Bcd^2\right)+\frac{1}{2}dx^2(2aAe+aBd+Abd)+aAd^2x+\frac{1}{5}ex^5(Ace+bBe+2Bcd)+\frac{1}{6}Bce^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d^2*x + (d*(A*b*d + a*B*d + 2*a*A*e)*x^2)/2 + ((A*c*d^2 + 2*a*B*d*e + a
*A*e^2 + b*d*(B*d + 2*A*e))*x^3)/3 + ((B*c*d^2 + B*e*(2*b*d + a*e) + A*e*(2
*c*d + b*e))*x^4)/4 + (e*(2*B*c*d + b*B*e + A*c*e)*x^5)/5 + (B*c*e^2*x^6)/6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.34, size = 171, normalized size = 1.28

$$\frac{1}{6}x^6e^2cB+\frac{2}{5}x^5edcB+\frac{1}{5}x^5e^2bB+\frac{1}{5}x^5e^2cA+\frac{1}{4}x^4d^2cB+\frac{1}{2}x^4edbB+\frac{1}{4}x^4e^2aB+\frac{1}{2}x^4edcA+\frac{1}{4}x^4e^2bA+\frac{1}{3}x^3d^2bB+\frac{2}{3}x^3edaB+\frac{1}{3}x^3d^2cA+\frac{2}{3}x^3edbA+\frac{1}{3}x^3e^2aA+\frac{1}{2}x^2d^2aB+\frac{1}{2}x^2d^2bA+x^2edaA+xd^2aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c*B + 2/5*x^5*e*d*c*B + 1/5*x^5*e^2*b*B + 1/5*x^5*e^2*c*A + 1/4
*x^4*d^2*c*B + 1/2*x^4*e*d*b*B + 1/4*x^4*e^2*a*B + 1/2*x^4*e*d*c*A + 1/4*x^
4*e^2*b*A + 1/3*x^3*d^2*b*B + 2/3*x^3*e*d*a*B + 1/3*x^3*d^2*c*A + 2/3*x^3*e
*d*b*A + 1/3*x^3*e^2*a*A + 1/2*x^2*d^2*a*B + 1/2*x^2*d^2*b*A + x^2*e*d*a*A
+ x*d^2*a*A
```

giac [A] time = 0.17, size = 171, normalized size = 1.28

$$\frac{1}{6}Bcx^6e^2+\frac{2}{5}Bcdx^5e+\frac{1}{4}Bcd^2x^4+\frac{1}{5}Bbx^5e^2+\frac{1}{5}Acx^5e^2+\frac{1}{2}Bbdx^4e+\frac{1}{2}Acdx^4e+\frac{1}{3}Bbd^2x^3+\frac{1}{3}Acd^2x^3+\frac{1}{4}Bax^4e^2+\frac{1}{4}Abx^4e^2+\frac{2}{3}Badx^3e+\frac{2}{3}Abdx^3e+\frac{1}{2}Bad^2x^2+\frac{1}{2}Abd^2x^2+\frac{1}{3}Aax^3e^2+Aadx^2e+Aad^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6*e^2 + 2/5*B*c*d*x^5*e + 1/4*B*c*d^2*x^4 + 1/5*B*b*x^5*e^2 + 1/5
*A*c*x^5*e^2 + 1/2*B*b*d*x^4*e + 1/2*A*c*d*x^4*e + 1/3*B*b*d^2*x^3 + 1/3*A*
c*d^2*x^3 + 1/4*B*a*x^4*e^2 + 1/4*A*b*x^4*e^2 + 2/3*B*a*d*x^3*e + 2/3*A*b*d
*x^3*e + 1/2*B*a*d^2*x^2 + 1/2*A*b*d^2*x^2 + 1/3*A*a*x^3*e^2 + A*a*d*x^2*e
+ A*a*d^2*x
```

maple [A] time = 0.04, size = 145, normalized size = 1.08

$$\frac{Bce^2x^6}{6}+Aad^2x+\frac{\left(Bbe^2+\left(Ae^2+2Bde\right)c\right)x^5}{5}+\frac{\left(Bae^2+\left(Ae^2+2Bde\right)b+\left(2Ade+Bd^2\right)c\right)x^4}{4}+\frac{\left(Acd^2+\left(Ae^2+2Bde\right)a+\left(2Ade+Bd^2\right)b\right)x^3}{3}+\frac{\left(Abd^2+\left(2Ade+Bd^2\right)a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x)
```

```
[Out] 1/6*B*c*e^2*x^6+1/5*((A*e^2+2*B*d*e)*c+B*e^2*b)*x^5+1/4*((2*A*d*e+B*d^2)*c+
(A*e^2+2*B*d*e)*b+B*a*e^2)*x^4+1/3*(A*c*d^2+(2*A*d*e+B*d^2)*b+(A*e^2+2*B*d*
e)*a)*x^3+1/2*(A*d^2*b+(2*A*d*e+B*d^2)*a)*x^2+A*d^2*a*x
```

maxima [A] time = 0.56, size = 132, normalized size = 0.99

$$\frac{1}{6}Bce^2x^6+\frac{1}{5}\left(2Bcde+(Bb+Ac)e^2\right)x^5+Aad^2x+\frac{1}{4}\left(Bcd^2+2(Bb+Ac)de+(Ba+Ab)e^2\right)x^4+\frac{1}{3}\left(Aae^2+(Bb+Ac)d^2+2(Ba+Ab)de\right)x^3+\frac{1}{2}\left(2Aade+(Ba+Ab)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*e^2*x^6 + 1/5*(2*B*c*d*e + (B*b + A*c)*e^2)*x^5 + A*a*d^2*x + 1/4*(
B*c*d^2 + 2*(B*b + A*c)*d*e + (B*a + A*b)*e^2)*x^4 + 1/3*(A*a*e^2 + (B*b +
A*c)*d^2 + 2*(B*a + A*b)*d*e)*x^3 + 1/2*(2*A*a*d*e + (B*a + A*b)*d^2)*x^2
```

mupad [B] time = 2.32, size = 143, normalized size = 1.07

$$x^3\left(\frac{Aae^2}{3}+\frac{Acd^2}{3}+\frac{Bbd^2}{3}+\frac{2Abde}{3}+\frac{2Bade}{3}\right)+x^4\left(\frac{Abe^2}{4}+\frac{Bae^2}{4}+\frac{Bcd^2}{4}+\frac{Acde}{2}+\frac{Bbde}{2}\right)+x^2\left(\frac{Abd^2}{2}+\frac{Bad^2}{2}+Aade\right)+x^5\left(\frac{Ace^2}{5}+\frac{Bbe^2}{5}+\frac{2Bcde}{5}\right)+Aad^2x+\frac{Bce^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*a*e^2)/3 + (A*c*d^2)/3 + (B*b*d^2)/3 + (2*A*b*d*e)/3 + (2*B*a*d*e)/
3) + x^4*((A*b*e^2)/4 + (B*a*e^2)/4 + (B*c*d^2)/4 + (A*c*d*e)/2 + (B*b*d*e)
/2) + x^2*((A*b*d^2)/2 + (B*a*d^2)/2 + A*a*d*e) + x^5*((A*c*e^2)/5 + (B*b*e
^2)/5 + (2*B*c*d*e)/5) + A*a*d^2*x + (B*c*e^2*x^6)/6
```

sympy [A] time = 0.09, size = 172, normalized size = 1.28

$$Aad^2x + \frac{Bce^2x^6}{6} + x^5\left(\frac{Ace^2}{5} + \frac{Bbe^2}{5} + \frac{2Bcde}{5}\right) + x^4\left(\frac{Abe^2}{4} + \frac{Acde}{2} + \frac{Bae^2}{4} + \frac{Bbde}{2} + \frac{Bcd^2}{4}\right) + x^3\left(\frac{Aae^2}{3} + \frac{2Abde}{3} + \frac{Acd^2}{3} + \frac{2Bade}{3} + \frac{Bbd^2}{3}\right) + x^2\left(Aade + \frac{Abd^2}{2} + \frac{Bad^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d**2*x + B*c*e**2*x**6/6 + x**5*(A*c*e**2/5 + B*b*e**2/5 + 2*B*c*d*e/5)
 + x**4*(A*b*e**2/4 + A*c*d*e/2 + B*a*e**2/4 + B*b*d*e/2 + B*c*d**2/4) + x*
*3*(A*a*e**2/3 + 2*A*b*d*e/3 + A*c*d**2/3 + 2*B*a*d*e/3 + B*b*d**2/3) + x**
2*(A*a*d*e + A*b*d**2/2 + B*a*d**2/2)
```

3.2068 $\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=80

$$\frac{1}{3}x^3(aBe+Abe+Acd+bBd)+\frac{1}{2}x^2(aAe+aBd+Abd)+aAdx+\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{5}Bcex^5$$

Rubi [A] time = 0.08, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{1}{3}x^3(aBe+Abe+Acd+bBd)+\frac{1}{2}x^2(aAe+aBd+Abd)+aAdx+\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d*x + ((A*b*d + a*B*d + a*A*e)*x^2)/2 + ((b*B*d + A*c*d + A*b*e + a*B*e
)*x^3)/3 + ((B*c*d + b*B*e + A*c*e)*x^4)/4 + (B*c*e*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)\,dx=\int \left(aAd+(Abd+aBd+aAe)x+(bBd+Acd+Abe+aBe)x^2+(Bc$$
$$=aAdx+\frac{1}{2}(Abd+aBd+aAe)x^2+\frac{1}{3}(bBd+Acd+Abe+aBe)x^3+\frac{1}{4}$$

Mathematica [A] time = 0.03, size = 80, normalized size = 1.00

$$\frac{1}{3}x^3(aBe+Abe+Acd+bBd)+\frac{1}{2}x^2(aAe+aBd+Abd)+aAdx+\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d*x + ((A*b*d + a*B*d + a*A*e)*x^2)/2 + ((b*B*d + A*c*d + A*b*e + a*B*e
)*x^3)/3 + ((B*c*d + b*B*e + A*c*e)*x^4)/4 + (B*c*e*x^5)/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 94, normalized size = 1.18

$$\frac{1}{5}x^5ecB+\frac{1}{4}x^4dcB+\frac{1}{4}x^4ebB+\frac{1}{4}x^4ecA+\frac{1}{3}x^3dbB+\frac{1}{3}x^3eaB+\frac{1}{3}x^3dcA+\frac{1}{3}x^3ebA+\frac{1}{2}x^2daB+\frac{1}{2}x^2dbA+\frac{1}{2}x^2eaA+xdaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c*B + 1/4*x^4*d*c*B + 1/4*x^4*e*b*B + 1/4*x^4*e*c*A + 1/3*x^3*d*b
*B + 1/3*x^3*e*a*B + 1/3*x^3*d*c*A + 1/3*x^3*e*b*A + 1/2*x^2*d*a*B + 1/2*x^
2*d*b*A + 1/2*x^2*e*a*A + x*d*a*A
```

giac [A] time = 0.15, size = 100, normalized size = 1.25

$$\frac{1}{5}Bcx^5e + \frac{1}{4}Bcdx^4 + \frac{1}{4}Bbx^4e + \frac{1}{4}Acx^4e + \frac{1}{3}Bbdx^3 + \frac{1}{3}Acdx^3 + \frac{1}{3}Bax^3e + \frac{1}{3}Abx^3e + \frac{1}{2}Badx^2 + \frac{1}{2}Abdx^2 + \frac{1}{2}Aax^2e + Aadx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5*e + 1/4*B*c*d*x^4 + 1/4*B*b*x^4*e + 1/4*A*c*x^4*e + 1/3*B*b*d*x
^3 + 1/3*A*c*d*x^3 + 1/3*B*a*x^3*e + 1/3*A*b*x^3*e + 1/2*B*a*d*x^2 + 1/2*A*
b*d*x^2 + 1/2*A*a*x^2*e + A*a*d*x
```

maple [A] time = 0.04, size = 76, normalized size = 0.95

$$\frac{Bce\,x^5}{5} + Aadx + \frac{(Bbe + (Ae + Bd)\,c)\,x^4}{4} + \frac{(Acd + Bae + (Ae + Bd)\,b)\,x^3}{3} + \frac{(Abd + (Ae + Bd)\,a)\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x)
```

```
[Out] 1/5*B*c*e*x^5+1/4*((A*e+B*d)*c+B*b*e)*x^4+1/3*(A*c*d+(A*e+B*d)*b+a*B*e)*x^3
+1/2*(A*b*d+a*(A*e+B*d))*x^2+A*a*d*x
```

maxima [A] time = 0.46, size = 76, normalized size = 0.95

$$\frac{1}{5}Bcex^5 + \frac{1}{4}(Bcd + (Bb + Ac)e)x^4 + Aadx + \frac{1}{3}((Bb + Ac)d + (Ba + Ab)e)x^3 + \frac{1}{2}(Aae + (Ba + Ab)d)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*e*x^5 + 1/4*(B*c*d + (B*b + A*c)*e)*x^4 + A*a*d*x + 1/3*((B*b + A*c
)*d + (B*a + A*b)*e)*x^3 + 1/2*(A*a*e + (B*a + A*b)*d)*x^2
```

mupad [B] time = 0.03, size = 79, normalized size = 0.99

$$\frac{B\,c\,e\,x^5}{5} + \left(\frac{A\,c\,e}{4} + \frac{B\,b\,e}{4} + \frac{B\,c\,d}{4}\right)\,x^4 + \left(\frac{A\,b\,e}{3} + \frac{A\,c\,d}{3} + \frac{B\,a\,e}{3} + \frac{B\,b\,d}{3}\right)\,x^3 + \left(\frac{A\,a\,e}{2} + \frac{A\,b\,d}{2} + \frac{B\,a\,d}{2}\right)\,x^2 + A\,a\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*b*e)/3 + (A*c*d)/3 + (B*a*e)/3 + (B*b*d)/3) + x^2*((A*a*e)/2 + (A*b
*d)/2 + (B*a*d)/2) + x^4*((A*c*e)/4 + (B*b*e)/4 + (B*c*d)/4) + (B*c*e*x^5)/
5 + A*a*d*x
```

sympy [A] time = 0.08, size = 94, normalized size = 1.18

$$Aadx + \frac{Bcex^5}{5} + x^4\left(\frac{Ace}{4} + \frac{Bbe}{4} + \frac{Bcd}{4}\right) + x^3\left(\frac{Abe}{3} + \frac{Acd}{3} + \frac{Bae}{3} + \frac{Bbd}{3}\right) + x^2\left(\frac{Aae}{2} + \frac{Abd}{2} + \frac{Bad}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d*x + B*c*e*x**5/5 + x**4*(A*c*e/4 + B*b*e/4 + B*c*d/4) + x**3*(A*b*e/3
 + A*c*d/3 + B*a*e/3 + B*b*d/3) + x**2*(A*a*e/2 + A*b*d/2 + B*a*d/2)
```

3.2069 $\int (A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=42

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Rubi [A] time = 0.04, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {631}

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)\,dx &= \int \left(aA+(Ab+aB)x+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= aAx+\frac{1}{2}(Ab+aB)x^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.34, size = 40, normalized size = 0.95

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+\frac{1}{2}x^2bA+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*a*B + 1/2*x^2*b*A + x*a*A
```

giac [A] time = 0.15, size = 40, normalized size = 0.95

$$\frac{1}{4}Bcx^4 + \frac{1}{3}Bbx^3 + \frac{1}{3}Acx^3 + \frac{1}{2}Bax^2 + \frac{1}{2}Abx^2 + Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + 1/2*A*b*x^2 + A*a*x
```

maple [A] time = 0.05, size = 37, normalized size = 0.88

$$\frac{Bc\,x^4}{4} + Aax + \frac{(Ac + bB)\,x^3}{3} + \frac{(Ab + Ba)\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a),x)
[Out] 1/4*B*c*x^4+A*a*x+1/3*(A*c+B*b)*x^3+1/2*(A*b+B*a)*x^2
```

maxima [A] time = 0.54, size = 36, normalized size = 0.86

$$\frac{1}{4}Bcx^4 + \frac{1}{3}(Bb + Ac)x^3 + Aax + \frac{1}{2}(Ba + Ab)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
[Out] 1/4*B*c*x^4 + 1/3*(B*b + A*c)*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

mupad [B] time = 0.04, size = 38, normalized size = 0.90

$$\frac{B\,c\,x^4}{4} + \left(\frac{A\,c}{3} + \frac{B\,b}{3}\right)x^3 + \left(\frac{A\,b}{2} + \frac{B\,a}{2}\right)x^2 + A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2),x)
[Out] x^2*((A*b)/2 + (B*a)/2) + x^3*((A*c)/3 + (B*b)/3) + A*a*x + (B*c*x^4)/4
```

sympy [A] time = 0.07, size = 39, normalized size = 0.93

$$Aax + \frac{Bcx^4}{4} + x^3\left(\frac{Ac}{3} + \frac{Bb}{3}\right) + x^2\left(\frac{Ab}{2} + \frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a),x)
[Out] A*a*x + B*c*x**4/4 + x**3*(A*c/3 + B*b/3) + x**2*(A*b/2 + B*a/2)
```

3.2070 $\int \frac{(A+Bx)(a+bx+cx^2)}{d+ex} dx$

Optimal. Leaf size=111

$$-\frac{x\left(Ae(cd-be)-B\left(cd^2-e(bd-ae)\right)\right)}{e^3}-\frac{(Bd-Ae)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{Bc}{3e}$$

Rubi [A] time = 0.13, antiderivative size = 109, normalized size of antiderivative = 0.98, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{x\left(-Be(bd-ae)-Ae(cd-be)+Bcd^2\right)}{e^3}-\frac{(Bd-Ae)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{Bcx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((B*c*d^2 - B*e*(b*d - a*e) - A*e*(c*d - b*e))*x)/e^3 - ((B*c*d - b*B*e - A
*c*e)*x^2)/(2*e^2) + (B*c*x^3)/(3*e) - ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)
*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{d+ex}dx = \int\left(\frac{Bcd^2-Be(bd-ae)-Ae(cd-be)}{e^3}+\frac{(-Bcd+bBe+Ace)x}{e^2}+\frac{Bcx^2}{e}+\frac{(-B}{}\right.$$

$$= \frac{\left(Bcd^2-Be(bd-ae)-Ae(cd-be)\right)x}{e^3}-\frac{(Bcd-bBe-Ace)x^2}{2e^2}+\frac{Bcx^3}{3e}-\frac{(Bd-}{}$$

Mathematica [A] time = 0.05, size = 100, normalized size = 0.90

$$\frac{ex\left(3Be(2ae-2bd+bex)+3Ae(2be-2cd+cex)+Bc\left(6d^2-3dex+2e^2x^2\right)\right)-6(Bd-Ae)\log(d+ex)\left(e(ae-bd)+cd^2\right)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(3*B*e*(-2*b*d + 2*a*e + b*e*x) + 3*A*e*(-2*c*d + 2*b*e + c*e*x) + B*c
*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) - 6*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))*
Log[d + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{d+ex}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x), x]

fricas [A] time = 0.39, size = 123, normalized size = 1.11

$$\frac{2\,Bce^3x^3 - 3\left(Bcde^2 - (Bb + Ac)e^3\right)x^2 + 6\left(Bcd^2e - (Bb + Ac)de^2 + (Ba + Ab)e^3\right)x - 6\left(Bcd^3 - Aae^3 - (Bb + Ac)d^2e + (Ba + Ab)de^2\right)\log\left(ex + d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="fricas")

[Out] 1/6*(2*B*c*e^3*x^3 - 3*(B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e - (B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x - 6*(B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2)*log(e*x + d))/e^4

giac [A] time = 0.17, size = 136, normalized size = 1.23

$$-\left(Bcd^3 - Bbd^2e - Acd^2e + Bade^2 + Abde^2 - Aae^3\right)e^{(-4)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,Bcx^3e^2 - 3\,Bcdx^2e + 6\,Bcd^2x + 3\,Bbx^2e^2 + 3\,Acx^2e^2 - 6\,Bbdxe - 6\,Acdxe + 6\,Baxe^2 + 6\,Abxe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="giac")

[Out] -(B*c*d^3 - B*b*d^2*e - A*c*d^2*e + B*a*d*e^2 + A*b*d*e^2 - A*a*e^3)*e^(-4)*log(abs(x*e + d)) + 1/6*(2*B*c*x^3*e^2 - 3*B*c*d*x^2*e + 6*B*c*d^2*x + 3*B*b*x^2*e^2 + 3*A*c*x^2*e^2 - 6*B*b*d*x*e - 6*A*c*d*x*e + 6*B*a*x*e^2 + 6*A*b*x*e^2)*e^(-3)

maple [A] time = 0.04, size = 171, normalized size = 1.54

$$\frac{Bc\,x^3}{3e} + \frac{Ac\,x^2}{2e} + \frac{Bb\,x^2}{2e} - \frac{Bcd\,x^2}{2e^2} + \frac{Aa\ln\left(ex + d\right)}{e} - \frac{Abd\ln\left(ex + d\right)}{e^2} + \frac{Abx}{e} + \frac{Ac\,d^2\ln\left(ex + d\right)}{e^3} - \frac{Acdx}{e^2} - \frac{Bad\ln\left(ex + d\right)}{e^2} + \frac{Bax}{e} + \frac{Bb\,d^2\ln\left(ex + d\right)}{e^3} - \frac{Bbdx}{e^2} - \frac{Bc\,d^3\ln\left(ex + d\right)}{e^4} + \frac{Bc\,d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x)

[Out] 1/3*B*c/e*x^3+1/2/e*A*x^2*c+1/2/e*B*x^2*b-1/2/e^2*B*x^2*c*d+1/e*A*x*b-1/e^2*A*x*c*d+1/e*B*x*a-1/e^2*B*x*b*d+1/e^3*B*x*c*d^2+1/e*ln(e*x+d)*a*A-1/e^2*ln(e*x+d)*A*b*d+1/e^3*ln(e*x+d)*A*c*d^2-1/e^2*ln(e*x+d)*a*B*d+1/e^3*ln(e*x+d)*B*b*d^2-1/e^4*ln(e*x+d)*B*c*d^3

maxima [A] time = 0.46, size = 122, normalized size = 1.10

$$\frac{2\,Bce^2x^3 - 3\left(Bcde - (Bb + Ac)e^2\right)x^2 + 6\left(Bcd^2 - (Bb + Ac)de + (Ba + Ab)e^2\right)x}{6\,e^3} - \frac{\left(Bcd^3 - Aae^3 - (Bb + Ac)d^2e + (Ba + Ab)de^2\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="maxima")

[Out] 1/6*(2*B*c*e^2*x^3 - 3*(B*c*d*e - (B*b + A*c)*e^2)*x^2 + 6*(B*c*d^2 - (B*b + A*c)*d*e + (B*a + A*b)*e^2)*x)/e^3 - (B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2)*log(e*x + d)/e^4

mupad [B] time = 2.37, size = 130, normalized size = 1.17

$$x^2\left(\frac{A\,c + B\,b}{2\,e} - \frac{B\,c\,d}{2\,e^2}\right) + x\left(\frac{A\,b + B\,a}{e} - \frac{d\left(\frac{A\,c+B\,b}{e} - \frac{B\,c\,d}{e^2}\right)}{e}\right) + \frac{\ln\left(d + e\,x\right)\left(A\,a\,e^3 - B\,c\,d^3 - A\,b\,d\,e^2 - B\,a\,d\,e^2 + A\,c\,d^2\,e + B\,b\,d^2\,e\right)}{e^4} + \frac{B\,c\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x)

[Out] x^2*((A*c + B*b)/(2*e) - (B*c*d)/(2*e^2)) + x*((A*b + B*a)/e - (d*((A*c + B*b)/e - (B*c*d)/e^2))/e) + (log(d + e*x)*(A*a*e^3 - B*c*d^3 - A*b*d*e^2 - B*a*d*e^2 + A*c*d^2*e + B*b*d^2*e))/e^4 + (B*c*x^3)/(3*e)

sympy [A] time = 0.43, size = 107, normalized size = 0.96

$$\frac{Bcx^3}{3e}+x^2\left(\frac{Ac}{2e}+\frac{Bb}{2e}-\frac{Bcd}{2e^2}\right)+x\left(\frac{Ab}{e}-\frac{Acd}{e^2}+\frac{Ba}{e}-\frac{Bbd}{e^2}+\frac{Bcd^2}{e^3}\right)-\frac{(-Ae+Bd)\left(ae^2-bde+cd^2\right)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] B*c*x**3/(3*e) + x**2*(A*c/(2*e) + B*b/(2*e) - B*c*d/(2*e**2)) + x*(A*b/e -
 A*c*d/e**2 + B*a/e - B*b*d/e**2 + B*c*d**2/e**3) - (-A*e + B*d)*(a*e**2 -
b*d*e + c*d**2)*log(d + e*x)/e**4
```

3.2071 $\int \frac{(A+Bx)(a+bx+cx^2)}{(d+ex)^2}\,dx$

Optimal. Leaf size=116

$$-\frac{\log(d+ex)\left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{e^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{Bcx}{2e^2}$$

Rubi [A] time = 0.13, antiderivative size = 114, normalized size of antiderivative = 0.98, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}+\frac{\log(d+ex)\left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{e^4}-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{Bcx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -(((2*B*c*d - b*B*e - A*c*e)*x)/e^3) + (B*c*x^2)/(2*e^2) + ((B*d - A*e)*(c*
d^2 - b*d*e + a*e^2))/(e^4*(d + e*x)) + ((3*B*c*d^2 - B*e*(2*b*d - a*e) - A
*e*(2*c*d - b*e))*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx=\int \left(\frac{-2Bcd+bBe+Ace}{e^3}+\frac{Bcx}{e^2}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^2}+\frac{3Bcd^2-Be(2\right.$$
$$=-\frac{(2Bcd-bBe-Ace)x}{e^3}+\frac{Bcx^2}{2e^2}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{e^4(d+ex)}+\frac{\left(3Bcd^2-Be(2b\right.}{}$$

Mathematica [A] time = 0.07, size = 106, normalized size = 0.91

$$\frac{\frac{2(Bd-Ae)(e(ae-bd)+cd^2)}{d+ex}+2\log(d+ex)\left(Be(ae-2bd)+Ae(be-2cd)+3Bcd^2\right)+2ex(Ace+bBe-2Bcd)+Bce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*e*(-2*B*c*d + b*B*e + A*c*e)*x + B*c*e^2*x^2 + (2*(B*d - A*e)*(c*d^2 + e
*(-(b*d) + a*e)))/(d + e*x) + 2*(3*B*c*d^2 + B*e*(-2*b*d + a*e) + A*e*(-2*c
*d + b*e))*Log[d + e*x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2, x]
```

fricas [**A**] time = 0.38, size = 192, normalized size = 1.66

$$\frac{Bce^3x^3 + 2\,Bcd^3 - 2\,Aae^3 - 2\,(Bb + Ac)d^2e + 2\,(Ba + Ab)de^2 - \left(3\,Bcde^2 - 2\,(Bb + Ac)e^3\right)x^2 - 2\left(2\,Bcd^2e - (Bb + Ac)de^2\right)x + 2\left(3\,Bcd^3 - 2\,(Bb + Ac)d^2e + (Ba + Ab)de^2 + \left(3\,Bcd^2e - 2\,(Bb + Ac)de^2 + (Ba + Ab)e^3\right)x\right)\log(ex + d)}{2\left(e^5x + de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*e^3*x^3 + 2*B*c*d^3 - 2*A*a*e^3 - 2*(B*b + A*c)*d^2*e + 2*(B*a + A
*b)*d*e^2 - (3*B*c*d*e^2 - 2*(B*b + A*c)*e^3)*x^2 - 2*(2*B*c*d^2*e - (B*b +
 A*c)*d*e^2)*x + 2*(3*B*c*d^3 - 2*(B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2 + (
3*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x)*log(e*x + d))/(e^5*
x + d*e^4)
```

giac [**A**] time = 0.17, size = 200, normalized size = 1.72

$$\frac{1}{2}\left(Bc - \frac{2\left(3\,Bcde - Bbe^2 - Ace^2\right)e^{(-1)}}{xe + d}\right)(xe + d)^2e^{(-4)} - \left(3\,Bcd^2 - 2\,Bbde - 2\,Acde + Bae^2 + Abe^2\right)e^{(-4)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{Bcd^3e^2}{xe + d} - \frac{Bbd^2e^3}{xe + d} - \frac{Acd^2e^3}{xe + d} + \frac{Bade^4}{xe + d} + \frac{Abde^4}{xe + d} - \frac{Aae^5}{xe + d}\right)e^{(-6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*c - 2*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*
e^(-4) - (3*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e + B*a*e^2 + A*b*e^2)*e^(-4)*log
(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*c*d^3*e^2/(x*e + d) - B*b*d^2*e^3/(x
*e + d) - A*c*d^2*e^3/(x*e + d) + B*a*d*e^4/(x*e + d) + A*b*d*e^4/(x*e + d)
 - A*a*e^5/(x*e + d))*e^(-6)
```

maple [**A**] time = 0.06, size = 195, normalized size = 1.68

$$\frac{Bc\,x^2}{2e^2} - \frac{Aa}{(ex + d)\,e} + \frac{Abd}{(ex + d)\,e^2} + \frac{Ab\ln(ex + d)}{e^2} - \frac{Ac\,d^2}{(ex + d)\,e^3} - \frac{2Acd\ln(ex + d)}{e^3} + \frac{Acx}{e^2} + \frac{Bad}{(ex + d)\,e^2} + \frac{Ba\ln(ex + d)}{e^2} - \frac{Bb\,d^2}{(ex + d)\,e^3} - \frac{2Bbd\ln(ex + d)}{e^3} + \frac{Bbx}{e^2} + \frac{Bc\,d^3}{(ex + d)\,e^4} + \frac{3Bc\,d^2\ln(ex + d)}{e^4} - \frac{2Bcdx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*c/e^2*x^2+1/e^2*A*c*x+1/e^2*B*b*x-2/e^3*B*c*d*x-1/e/(e*x+d)*a*A+1/e^2
/(e*x+d)*A*d*b-1/e^3/(e*x+d)*A*c*d^2+1/e^2/(e*x+d)*a*B*d-1/e^3/(e*x+d)*B*b*
d^2+1/e^4/(e*x+d)*B*c*d^3+1/e^2*ln(e*x+d)*A*b-2/e^3*ln(e*x+d)*A*c*d+1/e^2*l
n(e*x+d)*B*a-2/e^3*ln(e*x+d)*B*b*d+3/e^4*ln(e*x+d)*B*c*d^2
```

maxima [**A**] time = 0.54, size = 126, normalized size = 1.09

$$\frac{Bcd^3 - Aae^3 - (Bb + Ac)d^2e + (Ba + Ab)de^2}{e^5x + de^4} + \frac{Bcex^2 - 2\,(2\,Bcd - (Bb + Ac)e)x}{2\,e^3} + \frac{\left(3\,Bcd^2 - 2\,(Bb + Ac)de + (Ba + Ab)e^2\right)\log(ex + d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2)/(e^5*x + d*e^4)
 + 1/2*(B*c*e*x^2 - 2*(2*B*c*d - (B*b + A*c)*e)*x)/e^3 + (3*B*c*d^2 - 2*(B*
b + A*c)*d*e + (B*a + A*b)*e^2)*log(e*x + d)/e^4
```

mupad [**B**] time = 0.09, size = 137, normalized size = 1.18

$$x\left(\frac{A\,c + B\,b}{e^2} - \frac{2\,B\,c\,d}{e^3}\right) - \frac{A\,a\,e^3 - B\,c\,d^3 - A\,b\,d\,e^2 - B\,a\,d\,e^2 + A\,c\,d^2\,e + B\,b\,d^2\,e}{e\,\left(x\,e^4 + d\,e^3\right)} + \frac{\ln(d + e\,x)\,\left(A\,b\,e^2 + B\,a\,e^2 + 3\,B\,c\,d^2 - 2\,A\,c\,d\,e - 2\,B\,b\,d\,e\right)}{e^4} + \frac{B\,c\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x)
```

```
[Out] x*((A*c + B*b)/e^2 - (2*B*c*d)/e^3) - (A*a*e^3 - B*c*d^3 - A*b*d*e^2 - B*a*
d*e^2 + A*c*d^2*e + B*b*d^2*e)/(e*(d*e^3 + e^4*x)) + (log(d + e*x)*(A*b*e^2
 + B*a*e^2 + 3*B*c*d^2 - 2*A*c*d*e - 2*B*b*d*e))/e^4 + (B*c*x^2)/(2*e^2)
```

sympy [A] time = 1.04, size = 143, normalized size = 1.23

$$\frac{Bcx^2}{2e^2} + x\left(\frac{Ac}{e^2} + \frac{Bb}{e^2} - \frac{2Bcd}{e^3}\right) + \frac{-Aae^3 + Abde^2 - Acd^2e + Bade^2 - Bbd^2e + Bcd^3}{de^4 + e^5x} + \frac{\left(Abe^2 - 2Acde + Bae^2 - 2Bbde + 3Bcd^2\right)\log\left(d + ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] B*c*x**2/(2*e**2) + x*(A*c/e**2 + B*b/e**2 - 2*B*c*d/e**3) + (-A*a*e**3 + A
*b*d*e**2 - A*c*d**2*e + B*a*d*e**2 - B*b*d**2*e + B*c*d**3)/(d*e**4 + e**5
*x) + (A*b*e**2 - 2*A*c*d*e + B*a*e**2 - 2*B*b*d*e + 3*B*c*d**2)*log(d + e*
x)/e**4
```

3.2072 $\int \frac{(A+Bx)(a+bx+cx^2)}{(d+ex)^3}\,dx$

Optimal. Leaf size=119

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{e^4(d+ex)}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Rubi [A] time = 0.13, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{e^4(d+ex)}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(2*e^4*(d + e*x)^2) - (
3*B*c*d^2 - B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(e^4*(d + e*x)) - ((3*B*
c*d - b*B*e - A*c*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx=\int \left(\frac{Bc}{e^3}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^3}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-\right.$$

$$=\frac{Bcx}{e^3}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{2e^4(d+ex)^2}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^4(d+ex)}-$$

Mathematica [A] time = 0.07, size = 135, normalized size = 1.13

$$\frac{-aBe^2-Abe^2+2Acde+2bBde-3Bcd^2}{e^4(d+ex)}+\frac{-aAe^3+aBde^2+Abde^2-Acd^2e-bBd^2e+Bcd^3}{2e^4(d+ex)^2}+\frac{\log(d+ex)(Ace+bBe-3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + (B*c*d^3 - b*B*d^2*e - A*c*d^2*e + A*b*d*e^2 + a*B*d*e^2 - a*
A*e^3)/(2*e^4*(d + e*x)^2) + (-3*B*c*d^2 + 2*b*B*d*e + 2*A*c*d*e - A*b*e^2
- a*B*e^2)/(e^4*(d + e*x)) + ((-3*B*c*d + b*B*e + A*c*e)*Log[d + e*x])/e^4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3, x]
```

fricas [A] time = 0.39, size = 203, normalized size = 1.71

$$\frac{2\,Bce^3x^3 + 4\,Bcde^2x^2 - 5\,Bcd^3 - Aae^3 + 3\,(Bb + Ac)d^2e - (Ba + Ab)de^2 - 2\left(2\,Bcd^2e - 2\,(Bb + Ac)de^2 + (Ba + Ab)e^3\right)x - 2\left(3\,Bcd^3 - (Bb + Ac)d^2e + \left(3\,Bcde^2 - (Bb + Ac)e^3\right)x^2 + 2\left(3\,Bcd^2e - (Bb + Ac)de^2\right)x\right)\log\left(ex + d\right)}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*e^3*x^3 + 4*B*c*d*e^2*x^2 - 5*B*c*d^3 - A*a*e^3 + 3*(B*b + A*c)*
d^2*e - (B*a + A*b)*d*e^2 - 2*(2*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 + (B*a + A
*b)*e^3)*x - 2*(3*B*c*d^3 - (B*b + A*c)*d^2*e + (3*B*c*d*e^2 - (B*b + A*c)*
e^3)*x^2 + 2*(3*B*c*d^2*e - (B*b + A*c)*d*e^2)*x)*log(e*x + d))/(e^6*x^2 +
2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.18, size = 129, normalized size = 1.08

$$Bcxe^{(-3)} - (3\,Bcd - Bbe - Ace)e^{(-4)}\log\left(|xe + d|\right) - \frac{\left(5\,Bcd^3 - 3\,Bbd^2e - 3\,Acd^2e + Bade^2 + Abde^2 + Aae^3 + 2\left(3\,Bcd^2e - 2\,Bbde^2 - 2\,Acde^2 + Bae^3 + Abe^3\right)x\right)e^{(-4)}}{2\,(xe + d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*c*x*e^(-3) - (3*B*c*d - B*b*e - A*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*
B*c*d^3 - 3*B*b*d^2*e - 3*A*c*d^2*e + B*a*d*e^2 + A*b*d*e^2 + A*a*e^3 + 2*(
3*B*c*d^2*e - 2*B*b*d*e^2 - 2*A*c*d*e^2 + B*a*e^3 + A*b*e^3)*x)*e^(-4)/(x*e
 + d)^2
```

maple [A] time = 0.05, size = 217, normalized size = 1.82

$$-\frac{Aa}{2\,(ex+d)^2\,e} + \frac{Abd}{2\,(ex+d)^2\,e^2} - \frac{Ac\,d^2}{2\,(ex+d)^2\,e^3} + \frac{Bad}{2\,(ex+d)^2\,e^2} - \frac{Bb\,d^2}{2\,(ex+d)^2\,e^3} + \frac{Bc\,d^3}{2\,(ex+d)^2\,e^4} - \frac{Ab}{(ex+d)\,e^2} + \frac{2Acd}{(ex+d)\,e^3} + \frac{Ac\ln(ex+d)}{e^3} - \frac{Ba}{(ex+d)\,e^2} + \frac{2Bbd}{(ex+d)\,e^3} + \frac{Bb\ln(ex+d)}{e^3} - \frac{3Bc\,d^2}{(ex+d)\,e^4} - \frac{3Bcd\ln(ex+d)}{e^4} + \frac{Bcx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] B*c/e^3*x-1/e^2/(e*x+d)*A*b+2/e^3/(e*x+d)*A*c*d-1/e^2/(e*x+d)*B*a+2/e^3/(e*
x+d)*B*b*d-3/e^4/(e*x+d)*B*c*d^2-1/2/e/(e*x+d)^2*a*A+1/2/e^2/(e*x+d)^2*A*d*
b-1/2/e^3/(e*x+d)^2*A*c*d^2+1/2/e^2/(e*x+d)^2*a*B*d-1/2/e^3/(e*x+d)^2*B*d^2
*b+1/2/e^4/(e*x+d)^2*B*c*d^3+1/e^3*ln(e*x+d)*A*c+1/e^3*ln(e*x+d)*B*b-3/e^4*
ln(e*x+d)*B*c*d
```

maxima [A] time = 0.52, size = 136, normalized size = 1.14

$$-\frac{5\,Bcd^3 + Aae^3 - 3\,(Bb + Ac)d^2e + (Ba + Ab)de^2 + 2\left(3\,Bcd^2e - 2\,(Bb + Ac)de^2 + (Ba + Ab)e^3\right)x}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)} + \frac{Bcx}{e^3} - \frac{(3\,Bcd - (Bb + Ac)e)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*B*c*d^3 + A*a*e^3 - 3*(B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2 + 2*(3*
B*c*d^2*e - 2*(B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x)/(e^6*x^2 + 2*d*e^5*x
+ d^2*e^4) + B*c*x/e^3 - (3*B*c*d - (B*b + A*c)*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.12, size = 142, normalized size = 1.19

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^4}-\frac{x\,\left(A\,b\,e^2+B\,a\,e^2+3\,B\,c\,d^2-2\,A\,c\,d\,e-2\,B\,b\,d\,e\right)+\frac{A\,a\,e^3+5\,B\,c\,d^3+A\,b\,d\,e^2+B\,a\,d\,e^2-3\,A\,c\,d^2\,e-3\,B\,b\,d^2\,e}{2\,e}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}+\frac{B\,c\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*c*e + B*b*e - 3*B*c*d))/e^4 - (x*(A*b*e^2 + B*a*e^2 + 3*B*
c*d^2 - 2*A*c*d*e - 2*B*b*d*e) + (A*a*e^3 + 5*B*c*d^3 + A*b*d*e^2 + B*a*d*e
^2 - 3*A*c*d^2*e - 3*B*b*d^2*e)/(2*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (B
*c*x)/e^3
```

sympy [A] time = 4.70, size = 162, normalized size = 1.36

$$\frac{Bcx}{e^3} + \frac{-Aae^3 - Abde^2 + 3Acd^2e - Bade^2 + 3Bbd^2e - 5Bcd^3 + x\left(-2Abe^3 + 4Acde^2 - 2Bae^3 + 4Bbde^2 - 6Bcd^2e\right)}{2d^2e^4 + 4de^5x + 2e^6x^2} + \frac{(Ace + Bbe - 3Bcd)\log(d + ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] B*c*x/e**3 + (-A*a*e**3 - A*b*d*e**2 + 3*A*c*d**2*e - B*a*d*e**2 + 3*B*b*d*
*2*e - 5*B*c*d**3 + x*(-2*A*b*e**3 + 4*A*c*d*e**2 - 2*B*a*e**3 + 4*B*b*d*e*
*2 - 6*B*c*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + (A*c*e + B*b
*e - 3*B*c*d)*log(d + e*x)/e**4
```

3.2073 $\int \frac{(A+Bx)(a+bx+cx^2)}{(d+ex)^4} dx$

Optimal. Leaf size=127

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{2e^4(d+ex)^2}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

Rubi [A] time = 0.12, antiderivative size = 126, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{2e^4(d+ex)^2}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^3) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(2*e^4*(d + e*x)^2) + (3*B*c*d - b*B*e
 - A*c*e)/(e^4*(d + e*x)) + (B*c*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^4}dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^4}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^3}+\frac{-3\ldots}{\ldots}\right.\\ &= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^3}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{3Bcd-b\ldots}{e^4(d\ldots}\end{aligned}$$

Mathematica [A] time = 0.07, size = 130, normalized size = 1.02

$$\frac{-Ae\left(e(2ae+bd+3bex)+2c\left(d^2+3dex+3e^2x^2\right)\right)+B\left(cd\left(11d^2+27dex+18e^2x^2\right)-e\left(ae(d+3ex)+2b\left(d^2+3dex+3e^2x^2\right)\right)\right)+6Bc(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (-(A*e*(e*(b*d + 2*a*e + 3*b*e*x) + 2*c*(d^2 + 3*d*e*x + 3*e^2*x^2))) + B*(
c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - e*(a*e*(d + 3*e*x) + 2*b*(d^2 + 3*d*
e*x + 3*e^2*x^2))) + 6*B*c*(d + e*x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^4}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4, x]
```

fricas [A] time = 0.39, size = 185, normalized size = 1.46

$$\frac{11\,Bcd^3 - 2\,Aae^3 - 2\,(Bb + Ac)d^2e - (Ba + Ab)de^2 + 6\left(3\,Bcde^2 - (Bb + Ac)e^3\right)x^2 + 3\left(9\,Bcd^2e - 2\,(Bb + Ac)de^2 - (Ba + Ab)e^3\right)x + 6\left(Bce^3x^3 + 3\,Bcde^2x^2 + 3\,Bcd^2ex + Bcd^3\right)\log\left(ex + d\right)}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*c*d^3 - 2*A*a*e^3 - 2*(B*b + A*c)*d^2*e - (B*a + A*b)*d*e^2 + 6*(
3*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 -
 (B*a + A*b)*e^3)*x + 6*(B*c*e^3*x^3 + 3*B*c*d*e^2*x^2 + 3*B*c*d^2*e*x + B*
c*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.20, size = 138, normalized size = 1.09

$$Bce^{(-4)}\log\left(|xe + d|\right) + \frac{\left(6\left(3\,Bcde - Bbe^2 - Ace^2\right)x^2 + 3\left(9\,Bcd^2 - 2\,Bbde - 2\,Acde - Bae^2 - Abe^2\right)x + \left(11\,Bcd^3 - 2\,Bbd^2e - 2\,Acd^2e - Bade^2 - Abde^2 - 2\,Aae^3\right)e^{(-1)}\right)e^{(-3)}}{6\left(xe + d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*x^2 +
 3*(9*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e - B*a*e^2 - A*b*e^2)*x + (11*B*c*d^3
- 2*B*b*d^2*e - 2*A*c*d^2*e - B*a*d*e^2 - A*b*d*e^2 - 2*A*a*e^3)*e^(-1))*e^
(-3)/(x*e + d)^3
```

maple [A] time = 0.05, size = 225, normalized size = 1.77

$$-\frac{Aa}{3\left(ex+d\right)^3e} + \frac{Abd}{3\left(ex+d\right)^3e^2} - \frac{Ac\,d^2}{3\left(ex+d\right)^3e^3} + \frac{Bad}{3\left(ex+d\right)^3e^2} - \frac{Bb\,d^2}{3\left(ex+d\right)^3e^3} + \frac{Bc\,d^3}{3\left(ex+d\right)^3e^4} - \frac{Ab}{2\left(ex+d\right)^2e^2} + \frac{Acd}{\left(ex+d\right)^2e^3} - \frac{Ba}{2\left(ex+d\right)^2e^2} + \frac{Bbd}{\left(ex+d\right)^2e^3} - \frac{3Bc\,d^2}{2\left(ex+d\right)^2e^4} - \frac{Ac}{\left(ex+d\right)e^3} - \frac{Bb}{\left(ex+d\right)e^3} + \frac{3Bcd}{\left(ex+d\right)e^4} + \frac{Bc\ln\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x)
```

```
[Out] -1/e^3/(e*x+d)*A*c-1/e^3/(e*x+d)*B*b+3/e^4/(e*x+d)*B*c*d-1/2/e^2/(e*x+d)^2*
A*b+1/e^3/(e*x+d)^2*A*c*d-1/2/e^2/(e*x+d)^2*B*a+1/e^3/(e*x+d)^2*B*b*d-3/2/e
^4/(e*x+d)^2*B*c*d^2+B*c/e^4*ln(e*x+d)-1/3/e/(e*x+d)^3*a*A+1/3/e^2/(e*x+d)^
3*A*b*d-1/3/e^3/(e*x+d)^3*A*c*d^2+1/3/e^2/(e*x+d)^3*a*B*d-1/3/e^3/(e*x+d)^3
*B*d^2*b+1/3/e^4/(e*x+d)^3*B*c*d^3
```

maxima [A] time = 0.46, size = 154, normalized size = 1.21

$$\frac{11\,Bcd^3 - 2\,Aae^3 - 2\,(Bb + Ac)d^2e - (Ba + Ab)de^2 + 6\left(3\,Bcde^2 - (Bb + Ac)e^3\right)x^2 + 3\left(9\,Bcd^2e - 2\,(Bb + Ac)de^2 - (Ba + Ab)e^3\right)x}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)} + \frac{Bc\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*c*d^3 - 2*A*a*e^3 - 2*(B*b + A*c)*d^2*e - (B*a + A*b)*d*e^2 + 6*(
3*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 -
 (B*a + A*b)*e^3)*x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*c*
log(e*x + d)/e^4
```

mupad [B] time = 2.37, size = 154, normalized size = 1.21

$$\frac{B\,c\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{2\,A\,a\,e^3-11\,B\,c\,d^3+A\,b\,d\,e^2+B\,a\,d\,e^2+2\,A\,c\,d^2\,e+2\,B\,b\,d^2\,e}{6\,e^4}+\frac{x^2\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^2}+\frac{x\,\left(A\,b\,e^2+B\,a\,e^2-9\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{2\,e^3}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x)
```

```
[Out] (B*c*log(d + e*x))/e^4 - ((2*A*a*e^3 - 11*B*c*d^3 + A*b*d*e^2 + B*a*d*e^2 +
 2*A*c*d^2*e + 2*B*b*d^2*e)/(6*e^4) + (x^2*(A*c*e + B*b*e - 3*B*c*d))/e^2 +
 (x*(A*b*e^2 + B*a*e^2 - 9*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(2*e^3))/(d^3
+ e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [A] time = 16.20, size = 184, normalized size = 1.45

$$\frac{Bc\log(d+ex)}{e^4}+\frac{-2Aae^3-Abde^2-2Acd^2e-Bade^2-2Bbd^2e+11Bcd^3+x^2\left(-6Ace^3-6Bbe^3+18Bcde^2\right)+x\left(-3Abe^3-6Acde^2-3Bae^3-6Bbde^2+27Bcd^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**4,x)
```

```
[Out] B*c*log(d + e*x)/e**4 + (-2*A*a*e**3 - A*b*d*e**2 - 2*A*c*d**2*e - B*a*d*e*
*2 - 2*B*b*d**2*e + 11*B*c*d**3 + x**2*(-6*A*c*e**3 - 6*B*b*e**3 + 18*B*c*d
*e**2) + x*(-3*A*b*e**3 - 6*A*c*d*e**2 - 3*B*a*e**3 - 6*B*b*d*e**2 + 27*B*c
*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.2074 $\int \frac{(A+Bx)(a+bx+cx^2)}{(d+ex)^5}\,dx$

Optimal. Leaf size=132

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{3e^4(d+ex)^3}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

Rubi [A] time = 0.12, antiderivative size = 131, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{3e^4(d+ex)^3}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(4*e^4*(d + e*x)^4) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(3*e^4*(d + e*x)^3) + (3*B*c*d - b*B*e
 - A*c*e)/(2*e^4*(d + e*x)^2) - (B*c)/(e^4*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^5}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^4}+\right.$$
$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{4e^4(d+ex)^4}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{3Bcd}{2e^4}$$

Mathematica [A] time = 0.06, size = 118, normalized size = 0.89

$$-\frac{Ae\left(e(3ae+bd+4bex)+c\left(d^2+4dex+6e^2x^2\right)\right)+B\left(e\left(ae(d+4ex)+b\left(d^2+4dex+6e^2x^2\right)\right)+3c\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(e*(b*d + 3*a*e + 4*b*e*x) + c*(d^2 + 4*d*e*x + 6*e^2*x^2)) + B*
(3*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + e*(a*e*(d + 4*e*x) + b*(
d^2 + 4*d*e*x + 6*e^2*x^2))))/(e^4*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5, x]
```

fricas [A] time = 0.37, size = 157, normalized size = 1.19

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+3\,Aae^3+(Bb+Ac)d^2e+(Ba+Ab)de^2+6\left(3\,Bcde^2+(Bb+Ac)e^3\right)x^2+4\left(3\,Bcd^2e+(Bb+Ac)de^2+(Ba+Ab)e^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*a*e^3 + (B*b + A*c)*d^2*e + (B*a +
A*b)*d*e^2 + 6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + (B*b
+ A*c)*d*e^2 + (B*a + A*b)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 +
 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.18, size = 220, normalized size = 1.67

$$-\frac{1}{12}\left(\frac{12\,Bce^{(-1)}}{xe+d}-\frac{18\,Bcde^{(-1)}}{(xe+d)^2}+\frac{12\,Bcd^2e^{(-1)}}{(xe+d)^3}-\frac{3\,Bcd^3e^{(-1)}}{(xe+d)^4}+\frac{6\,Bb}{(xe+d)^2}+\frac{6\,Ac}{(xe+d)^2}-\frac{8\,Bbd}{(xe+d)^3}-\frac{8\,Acd}{(xe+d)^3}+\frac{3\,Bbd^2}{(xe+d)^4}+\frac{3\,Acd^2}{(xe+d)^4}+\frac{4\,Bae}{(xe+d)^3}+\frac{4\,Abe}{(xe+d)^3}-\frac{3\,Bade}{(xe+d)^4}-\frac{3\,Abde}{(xe+d)^4}+\frac{3\,Aae^2}{(xe+d)^4}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*e^(-1)/(x*e + d) - 18*B*c*d*e^(-1)/(x*e + d)^2 + 12*B*c*d^2*e
^(-1)/(x*e + d)^3 - 3*B*c*d^3*e^(-1)/(x*e + d)^4 + 6*B*b/(x*e + d)^2 + 6*A*
c/(x*e + d)^2 - 8*B*b*d/(x*e + d)^3 - 8*A*c*d/(x*e + d)^3 + 3*B*b*d^2/(x*e
+ d)^4 + 3*A*c*d^2/(x*e + d)^4 + 4*B*a*e/(x*e + d)^3 + 4*A*b*e/(x*e + d)^3
- 3*B*a*d*e/(x*e + d)^4 - 3*A*b*d*e/(x*e + d)^4 + 3*A*a*e^2/(x*e + d)^4)*e^
(-3)
```

maple [A] time = 0.05, size = 142, normalized size = 1.08

$$-\frac{Bc}{(ex+d)\,e^4}-\frac{Ace+Bbe-3Bcd}{2\,(ex+d)^2\,e^4}-\frac{aA\,e^3-Abd\,e^2+Ac\,d^2e-aBd\,e^2+B\,d^2be-Bc\,d^3}{4\,(ex+d)^4\,e^4}-\frac{Ab\,e^2-2Acde+Ba\,e^2-2Bbde+3Bc\,d^2}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x)
```

```
[Out] -1/(e*x+d)*B*c/e^4-1/2*(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^2-1/4*(A*a*e^3-A*b
*d*e^2+A*c*d^2*e-B*a*d*e^2+B*b*d^2*e-B*c*d^3)/e^4/(e*x+d)^4-1/3*(A*b*e^2-2*
A*c*d*e+B*a*e^2-2*B*b*d*e+3*B*c*d^2)/e^4/(e*x+d)^3
```

maxima [A] time = 0.65, size = 157, normalized size = 1.19

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+3\,Aae^3+(Bb+Ac)d^2e+(Ba+Ab)de^2+6\left(3\,Bcde^2+(Bb+Ac)e^3\right)x^2+4\left(3\,Bcd^2e+(Bb+Ac)de^2+(Ba+Ab)e^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*a*e^3 + (B*b + A*c)*d^2*e + (B*a +
A*b)*d*e^2 + 6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + (B*b
+ A*c)*d*e^2 + (B*a + A*b)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 +
 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.08, size = 158, normalized size = 1.20

$$-\frac{\frac{3\,A\,a\,e^3+3\,B\,c\,d^3+A\,b\,d\,e^2+B\,a\,d\,e^2+A\,c\,d^2\,e+B\,b\,d^2\,e}{12\,e^4}+\frac{x^2\,\left(A\,c\,e+B\,b\,e+3\,B\,c\,d\right)}{2\,e^2}+\frac{x\,\left(A\,b\,e^2+B\,a\,e^2+3\,B\,c\,d^2+A\,c\,d\,e+B\,b\,d\,e\right)}{3\,e^3}+\frac{B\,c\,x^3}{e}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x)
```

```
[Out] -((3*A*a*e^3 + 3*B*c*d^3 + A*b*d*e^2 + B*a*d*e^2 + A*c*d^2*e + B*b*d^2*e)/(
12*e^4) + (x^2*(A*c*e + B*b*e + 3*B*c*d))/(2*e^2) + (x*(A*b*e^2 + B*a*e^2 +
 3*B*c*d^2 + A*c*d*e + B*b*d*e))/(3*e^3) + (B*c*x^3)/e)/(d^4 + e^4*x^4 + 4*
d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [**A**] time = 45.73, size = 194, normalized size = 1.47

$$\frac{-3Aae^3 - Abde^2 - Acd^2e - Bade^2 - Bbd^2e - 3Bcd^3 - 12Bce^3x^3 + x^2\left(-6Ace^3 - 6Bbe^3 - 18Bcde^2\right) + x\left(-4Abe^3 - 4Acde^2 - 4Bae^3 - 4Bbde^2 - 12Bcd^2e\right)}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a*e**3 - A*b*d*e**2 - A*c*d**2*e - B*a*d*e**2 - B*b*d**2*e - 3*B*c*d*
*3 - 12*B*c*e**3*x**3 + x**2*(-6*A*c*e**3 - 6*B*b*e**3 - 18*B*c*d*e**2) + x
*(-4*A*b*e**3 - 4*A*c*d*e**2 - 4*B*a*e**3 - 4*B*b*d*e**2 - 12*B*c*d**2*e))/
(12*d**4*e**4 + 48*d**3*e**5*x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e*
*8*x**4)
```

3.2075 $\int \frac{(A+Bx)(a+bx+cx^2)}{(d+ex)^6} dx$

Optimal. Leaf size=134

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{4e^4(d+ex)^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}$$

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{4e^4(d+ex)^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(5*e^4*(d + e*x)^5) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(4*e^4*(d + e*x)^4) + (3*B*c*d - b*B*e
 - A*c*e)/(3*e^4*(d + e*x)^3) - (B*c)/(2*e^4*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^6}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^5}+\frac{-3\ldots}{\ldots}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{5e^4(d+ex)^5}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{3Bcd-b\ldots}{3e^4(d\ldots}$$

Mathematica [A] time = 0.06, size = 122, normalized size = 0.91

$$-\frac{Ae\left(3e(4ae+bd+5bex)+2c\left(d^2+5dex+10e^2x^2\right)\right)+B\left(e\left(3ae(d+5ex)+2b\left(d^2+5dex+10e^2x^2\right)\right)+3c\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(A*e*(3*e*(b*d + 4*a*e + 5*b*e*x) + 2*c*(d^2 + 5*d*e*x + 10*e^2*x^2))
 + B*(3*c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + e*(3*a*e*(d + 5*e
*x) + 2*b*(d^2 + 5*d*e*x + 10*e^2*x^2))))/(e^4*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6, x]
```

fricas [A] time = 0.37, size = 173, normalized size = 1.29

$$-\frac{30\,Bce^{3}x^{3}+3\,Bcd^{3}+12\,Aae^{3}+2\,(Bb+Ac)d^{2}e+3\,(Ba+Ab)de^{2}+10\left(3\,Bcde^{2}+2\,(Bb+Ac)e^{3}\right)x^{2}+5\left(3\,Bcd^{2}e+2\,(Bb+Ac)de^{2}+3\,(Ba+Ab)e^{3}\right)x}{60\left(e^{9}x^{5}+5\,de^{8}x^{4}+10\,d^{2}e^{7}x^{3}+10\,d^{3}e^{6}x^{2}+5\,d^{4}e^{5}x+d^{5}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 12*A*a*e^3 + 2*(B*b + A*c)*d^2*e + 3*(B
*a + A*b)*d*e^2 + 10*(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e
 + 2*(B*b + A*c)*d*e^2 + 3*(B*a + A*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*
d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

giac [A] time = 0.17, size = 135, normalized size = 1.01

$$-\frac{\left(30\,Bcx^{3}e^{3}+30\,Bcdx^{2}e^{2}+15\,Bcd^{2}xe+3\,Bcd^{3}+20\,Bbx^{2}e^{3}+20\,Acx^{2}e^{3}+10\,Bbdxe^{2}+10\,Acdxe^{2}+2\,Bbd^{2}e+2\,Acd^{2}e+15\,Baxe^{3}+15\,Abxe^{3}+3\,Bade^{2}+3\,Abde^{2}+12\,Aae^{3}\right)e^{(-4)}}{60\,(xe+d)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3*e^3 + 30*B*c*d*x^2*e^2 + 15*B*c*d^2*x*e + 3*B*c*d^3 + 20*
B*b*x^2*e^3 + 20*A*c*x^2*e^3 + 10*B*b*d*x*e^2 + 10*A*c*d*x*e^2 + 2*B*b*d^2*
e + 2*A*c*d^2*e + 15*B*a*x*e^3 + 15*A*b*x*e^3 + 3*B*a*d*e^2 + 3*A*b*d*e^2 +
 12*A*a*e^3)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.05, size = 142, normalized size = 1.06

$$-\frac{Bc}{2\,(ex+d)^{2}\,e^{4}}-\frac{Ab\,e^{2}-2Acde+Ba\,e^{2}-2Bbde+3Bc\,d^{2}}{4\,(ex+d)^{4}\,e^{4}}-\frac{aA\,e^{3}-Abd\,e^{2}+Ac\,d^{2}e-aBd\,e^{2}+B\,d^{2}be-Bc\,d^{3}}{5\,(ex+d)^{5}\,e^{4}}-\frac{Ace+Bbe-3Bcd}{3\,(ex+d)^{3}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x)
```

```
[Out] -1/2/(e*x+d)^2*B*c/e^4-1/4*(A*b*e^2-2*A*c*d*e+B*a*e^2-2*B*b*d*e+3*B*c*d^2)/
e^4/(e*x+d)^4-1/5*(A*a*e^3-A*b*d*e^2+A*c*d^2*e-B*a*d*e^2+B*b*d^2*e-B*c*d^3)
/e^4/(e*x+d)^5-1/3*(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^3
```

maxima [A] time = 0.57, size = 173, normalized size = 1.29

$$-\frac{30\,Bce^{3}x^{3}+3\,Bcd^{3}+12\,Aae^{3}+2\,(Bb+Ac)d^{2}e+3\,(Ba+Ab)de^{2}+10\left(3\,Bcde^{2}+2\,(Bb+Ac)e^{3}\right)x^{2}+5\left(3\,Bcd^{2}e+2\,(Bb+Ac)de^{2}+3\,(Ba+Ab)e^{3}\right)x}{60\left(e^{9}x^{5}+5\,de^{8}x^{4}+10\,d^{2}e^{7}x^{3}+10\,d^{3}e^{6}x^{2}+5\,d^{4}e^{5}x+d^{5}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 12*A*a*e^3 + 2*(B*b + A*c)*d^2*e + 3*(B
*a + A*b)*d*e^2 + 10*(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e
 + 2*(B*b + A*c)*d*e^2 + 3*(B*a + A*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*
d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

mupad [B] time = 0.09, size = 180, normalized size = 1.34

$$-\frac{\frac{12\,A\,a\,e^{3}+3\,B\,c\,d^{3}+3\,A\,b\,d\,e^{2}+3\,B\,a\,d\,e^{2}+2\,A\,c\,d^{2}\,e+2\,B\,b\,d^{2}\,e}{60\,e^{4}}+\frac{x^{2}\,(2\,A\,c\,e+2\,B\,b\,e+3\,B\,c\,d)}{6\,e^{2}}+\frac{x\,\left(3\,A\,b\,e^{2}+3\,B\,a\,e^{2}+3\,B\,c\,d^{2}+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{12\,e^{3}}+\frac{B\,c\,x^{3}}{2\,e}}{d^{5}+5\,d^{4}\,e\,x+10\,d^{3}\,e^{2}\,x^{2}+10\,d^{2}\,e^{3}\,x^{3}+5\,d\,e^{4}\,x^{4}+e^{5}\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x)
```

```
[Out] -((12*A*a*e^3 + 3*B*c*d^3 + 3*A*b*d*e^2 + 3*B*a*d*e^2 + 2*A*c*d^2*e + 2*B*b
*d^2*e)/(60*e^4) + (x^2*(2*A*c*e + 2*B*b*e + 3*B*c*d))/(6*e^2) + (x*(3*A*b*
e^2 + 3*B*a*e^2 + 3*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(12*e^3) + (B*c*x^3)/
(2*e))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d
^4*e*x)
```

sympy [A] time = 114.50, size = 212, normalized size = 1.58

$$\frac{-12Aae^3 - 3Abde^2 - 2Acd^2e - 3Bade^2 - 2Bbd^2e - 3Bcd^3 - 30Bce^3x^3 + x^2\left(-20Ace^3 - 20Bbe^3 - 30Bcde^2\right) + x\left(-15Abe^3 - 10Acde^2 - 15Bae^3 - 10Bbde^2 - 15Bcd^2e\right)}{60d^5e^4 + 300d^4e^5x + 600d^3e^6x^2 + 600d^2e^7x^3 + 300de^8x^4 + 60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a*e**3 - 3*A*b*d*e**2 - 2*A*c*d**2*e - 3*B*a*d*e**2 - 2*B*b*d**2*e -
 3*B*c*d**3 - 30*B*c*e**3*x**3 + x**2*(-20*A*c*e**3 - 20*B*b*e**3 - 30*B*c*
d*e**2) + x*(-15*A*b*e**3 - 10*A*c*d*e**2 - 15*B*a*e**3 - 10*B*b*d*e**2 - 1
5*B*c*d**2*e))/(60*d**5*e**4 + 300*d**4*e**5*x + 600*d**3*e**6*x**2 + 600*d
**2*e**7*x**3 + 300*d*e**8*x**4 + 60*e**9*x**5)
```

3.2076 $\int \frac{(A+Bx)(a+bx+cx^2)}{(d+ex)^7} dx$

Optimal. Leaf size=134

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{5e^4(d+ex)^5}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{-Ace-bBe+3Bcd}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

Rubi [A] time = 0.10, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{5e^4(d+ex)^5}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{-Ace-bBe+3Bcd}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(6*e^4*(d + e*x)^6) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(5*e^4*(d + e*x)^5) + (3*B*c*d - b*B*e
 - A*c*e)/(4*e^4*(d + e*x)^4) - (B*c)/(3*e^4*(d + e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^7}dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^7}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^6}+\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{6e^4(d+ex)^6}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{5e^4(d+ex)^5}+\frac{3Bcd}{4e^4}$$

Mathematica [A] time = 0.06, size = 119, normalized size = 0.89

$$-\frac{Ae\left(2e(5ae+bd+6bex)+c\left(d^2+6dex+15e^2x^2\right)\right)+B\left(e\left(2ae(d+6ex)+b\left(d^2+6dex+15e^2x^2\right)\right)+c\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)\right)}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(2*e*(b*d + 5*a*e + 6*b*e*x) + c*(d^2 + 6*d*e*x + 15*e^2*x^2)) +
 B*(c*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + e*(2*a*e*(d + 6*e*x)
+ b*(d^2 + 6*d*e*x + 15*e^2*x^2))))/(e^4*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^7}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7, x]
```

fricas [A] time = 0.36, size = 178, normalized size = 1.33

$$-\frac{20\,Bce^{3}x^{3}+Bcd^{3}+10\,Aae^{3}+(Bb+Ac)d^{2}e+2\,(Ba+Ab)de^{2}+15\,\left(Bcde^{2}+(Bb+Ac)e^{3}\right)x^{2}+6\,\left(Bcd^{2}e+(Bb+Ac)de^{2}+2\,(Ba+Ab)e^{3}\right)x}{60\,\left(e^{10}x^{6}+6\,de^{9}x^{5}+15\,d^{2}e^{8}x^{4}+20\,d^{3}e^{7}x^{3}+15\,d^{4}e^{6}x^{2}+6\,d^{5}e^{5}x+d^{6}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + 10*A*a*e^3 + (B*b + A*c)*d^2*e + 2*(B*a +
 A*b)*d*e^2 + 15*(B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e + (B*b +
A*c)*d*e^2 + 2*(B*a + A*b)*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4
 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.16, size = 132, normalized size = 0.99

$$-\frac{\left(20\,Bcx^{3}e^{3}+15\,Bcdx^{2}e^{2}+6\,Bcd^{2}xe+Bcd^{3}+15\,Bbx^{2}e^{3}+15\,Acx^{2}e^{3}+6\,Bbdxe^{2}+6\,Acdxe^{2}+Bbd^{2}e+Acd^{2}e+12\,Baxe^{3}+12\,Abxe^{3}+2\,Bade^{2}+2\,Abde^{2}+10\,Aae^{3}\right)e^{(-4)}}{60\,(xe+d)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^3*e^3 + 15*B*c*d*x^2*e^2 + 6*B*c*d^2*x*e + B*c*d^3 + 15*B*b
*x^2*e^3 + 15*A*c*x^2*e^3 + 6*B*b*d*x*e^2 + 6*A*c*d*x*e^2 + B*b*d^2*e + A*c
*d^2*e + 12*B*a*x*e^3 + 12*A*b*x*e^3 + 2*B*a*d*e^2 + 2*A*b*d*e^2 + 10*A*a*e
^3)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 142, normalized size = 1.06

$$-\frac{Bc}{3\,(ex+d)^{3}\,e^{4}}-\frac{aA\,e^{3}-Abd\,e^{2}+Ac\,d^{2}e-aBd\,e^{2}+B\,d^{2}be-Bc\,d^{3}}{6\,(ex+d)^{6}\,e^{4}}-\frac{Ace+Bbe-3Bcd}{4\,(ex+d)^{4}\,e^{4}}-\frac{Ab\,e^{2}-2Acde+Ba\,e^{2}-2Bbde+3Bc\,d^{2}}{5\,(ex+d)^{5}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x)
```

```
[Out] -1/6*(A*a*e^3-A*b*d*e^2+A*c*d^2*e-B*a*d*e^2+B*b*d^2*e-B*c*d^3)/e^4/(e*x+d)^
6-1/4*(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^4-1/5*(A*b*e^2-2*A*c*d*e+B*a*e^2-2*
B*b*d*e+3*B*c*d^2)/e^4/(e*x+d)^5-1/3/(e*x+d)^3*B*c/e^4
```

maxima [A] time = 0.52, size = 178, normalized size = 1.33

$$-\frac{20\,Bce^{3}x^{3}+Bcd^{3}+10\,Aae^{3}+(Bb+Ac)d^{2}e+2\,(Ba+Ab)de^{2}+15\,\left(Bcde^{2}+(Bb+Ac)e^{3}\right)x^{2}+6\,\left(Bcd^{2}e+(Bb+Ac)de^{2}+2\,(Ba+Ab)e^{3}\right)x}{60\,\left(e^{10}x^{6}+6\,de^{9}x^{5}+15\,d^{2}e^{8}x^{4}+20\,d^{3}e^{7}x^{3}+15\,d^{4}e^{6}x^{2}+6\,d^{5}e^{5}x+d^{6}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + 10*A*a*e^3 + (B*b + A*c)*d^2*e + 2*(B*a +
 A*b)*d*e^2 + 15*(B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e + (B*b +
A*c)*d*e^2 + 2*(B*a + A*b)*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4
 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

mupad [B] time = 2.36, size = 182, normalized size = 1.36

$$-\frac{\frac{10\,A\,a\,e^{3}+B\,c\,d^{3}+2\,A\,b\,d\,e^{2}+2\,B\,a\,d\,e^{2}+A\,c\,d^{2}\,e+B\,b\,d^{2}\,e}{60\,e^{4}}+\frac{x^{2}\,(A\,c\,e+B\,b\,e+B\,c\,d)}{4\,e^{2}}+\frac{x\,\left(2\,A\,b\,e^{2}+2\,B\,a\,e^{2}+B\,c\,d^{2}+A\,c\,d\,e+B\,b\,d\,e\right)}{10\,e^{3}}+\frac{B\,c\,x^{3}}{3\,e}}{d^{6}+6\,d^{5}\,e\,x+15\,d^{4}\,e^{2}\,x^{2}+20\,d^{3}\,e^{3}\,x^{3}+15\,d^{2}\,e^{4}\,x^{4}+6\,d\,e^{5}\,x^{5}+e^{6}\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x)
```

```
[Out] -((10*A*a*e^3 + B*c*d^3 + 2*A*b*d*e^2 + 2*B*a*d*e^2 + A*c*d^2*e + B*b*d^2*e
)/(60*e^4) + (x^2*(A*c*e + B*b*e + B*c*d))/(4*e^2) + (x*(2*A*b*e^2 + 2*B*a*
e^2 + B*c*d^2 + A*c*d*e + B*b*d*e))/(10*e^3) + (B*c*x^3)/(3*e))/(d^6 + e^6*
x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^
5*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2077 $\int (A+Bx)(d+ex)^5 \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^9 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{9e^6}-\frac{(d+ex)^8 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.}{}$$

Rubi [A] time = 0.82, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^9 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{9e^6}-\frac{(d+ex)^8 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{8e^6}+\frac{(d+ex)^7 \left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{7e^6}-\frac{(d+ex)^6(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{6e^6}-\frac{c(d+ex)^{10}(-Ace-2bBe+5Bcd)}{10e^6}+\frac{Bc^2(d+ex)^{11}}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^6)/(6*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^7)/(7*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^8)/(8*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^9)/(9*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^10)/(10*
e^6) + (B*c^2*(d + e*x)^11)/(11*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^5 \left(a+bx+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^5}{e^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^6}{6e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-\right.}{}$$

Mathematica [B] time = 0.30, size = 665, normalized size = 2.19

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^5*x + (a*d^4*(2*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (d^3*(a*B*d*(2*b*
d + 5*a*e) + A*(b^2*d^2 + 10*a*b*d*e + 2*a*(c*d^2 + 5*a*e^2)))*x^3)/3 + (d^
2*(b^2*d^2*(B*d + 5*A*e) + 2*b*d*(A*c*d^2 + 5*a*B*d*e + 10*a*A*e^2) + 2*a*(
B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + 5*a*A*e^3))*x^4)/4 + (d*(5*b^2*d^2*e*
(B*d + 2*A*e) + 10*a*B*d*e*(c*d^2 + a*e^2) + 2*b*d*(B*c*d^3 + 5*A*c*d^2*e +
 10*a*B*d*e^2 + 10*a*A*e^3) + A*(c^2*d^4 + 20*a*c*d^2*e^2 + 5*a^2*e^4))*x^5
)/5 + ((B*(c^2*d^5 + 10*c*d^3*e*(b*d + 2*a*e) + 5*d*e^2*(2*b^2*d^2 + 4*a*b*
d*e + a^2*e^2)) + A*e*(5*c^2*d^4 + 20*c*d^2*e*(b*d + a*e) + e^2*(10*b^2*d^2
```

```
 + 10*a*b*d*e + a^2*e^2)))*x^6)/6 + (e*(A*e*(10*c^2*d^3 + 10*c*d*e*(2*b*d +
 a*e) + b*e^2*(5*b*d + 2*a*e)) + B*(5*c^2*d^4 + 20*c*d^2*e*(b*d + a*e) + e^
2*(10*b^2*d^2 + 10*a*b*d*e + a^2*e^2)))*x^7)/7 + (e^2*(A*e*(10*c^2*d^2 + b^
2*e^2 + 2*c*e*(5*b*d + a*e)) + B*(10*c^2*d^3 + 10*c*d*e*(2*b*d + a*e) + b*e
^2*(5*b*d + 2*a*e)))*x^8)/8 + (e^3*(A*c*e*(5*c*d + 2*b*e) + B*(10*c^2*d^2 +
 b^2*e^2 + 2*c*e*(5*b*d + a*e)))*x^9)/9 + (c*e^4*(5*B*c*d + 2*b*B*e + A*c*e
)*x^10)/10 + (B*c^2*e^5*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.34, size = 919, normalized size = 3.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*c^2*B + 1/2*x^10*e^4*d*c^2*B + 1/5*x^10*e^5*c*b*B + 1/10*x^10
*e^5*c^2*A + 10/9*x^9*e^3*d^2*c^2*B + 10/9*x^9*e^4*d*c*b*B + 1/9*x^9*e^5*b^
2*B + 2/9*x^9*e^5*c*a*B + 5/9*x^9*e^4*d*c^2*A + 2/9*x^9*e^5*c*b*A + 5/4*x^8
*e^2*d^3*c^2*B + 5/2*x^8*e^3*d^2*c*b*B + 5/8*x^8*e^4*d*b^2*B + 5/4*x^8*e^4*
d*c*a*B + 1/4*x^8*e^5*b*a*B + 5/4*x^8*e^3*d^2*c^2*A + 5/4*x^8*e^4*d*c*b*A +
 1/8*x^8*e^5*b^2*A + 1/4*x^8*e^5*c*a*A + 5/7*x^7*e*d^4*c^2*B + 20/7*x^7*e^2
*d^3*c*b*B + 10/7*x^7*e^3*d^2*b^2*B + 20/7*x^7*e^3*d^2*c*a*B + 10/7*x^7*e^4
*d*b*a*B + 1/7*x^7*e^5*a^2*B + 10/7*x^7*e^2*d^3*c^2*A + 20/7*x^7*e^3*d^2*c*
b*A + 5/7*x^7*e^4*d*b^2*A + 10/7*x^7*e^4*d*c*a*A + 2/7*x^7*e^5*b*a*A + 1/6*
x^6*d^5*c^2*B + 5/3*x^6*e*d^4*c*b*B + 5/3*x^6*e^2*d^3*b^2*B + 10/3*x^6*e^2*
d^3*c*a*B + 10/3*x^6*e^3*d^2*b*a*B + 5/6*x^6*e^4*d*a^2*B + 5/6*x^6*e*d^4*c^
2*A + 10/3*x^6*e^2*d^3*c*b*A + 5/3*x^6*e^3*d^2*b^2*A + 10/3*x^6*e^3*d^2*c*a
*A + 5/3*x^6*e^4*d*b*a*A + 1/6*x^6*e^5*a^2*A + 2/5*x^5*d^5*c*b*B + x^5*e*d^
4*b^2*B + 2*x^5*e*d^4*c*a*B + 4*x^5*e^2*d^3*b*a*B + 2*x^5*e^3*d^2*a^2*B + 1
/5*x^5*d^5*c^2*A + 2*x^5*e*d^4*c*b*A + 2*x^5*e^2*d^3*b^2*A + 4*x^5*e^2*d^3*
c*a*A + 4*x^5*e^3*d^2*b*a*A + x^5*e^4*d*a^2*A + 1/4*x^4*d^5*b^2*B + 1/2*x^4
*d^5*c*a*B + 5/2*x^4*e*d^4*b*a*B + 5/2*x^4*e^2*d^3*a^2*B + 1/2*x^4*d^5*c*b*
A + 5/4*x^4*e*d^4*b^2*A + 5/2*x^4*e*d^4*c*a*A + 5*x^4*e^2*d^3*b*a*A + 5/2*x
^4*e^3*d^2*a^2*A + 2/3*x^3*d^5*b*a*B + 5/3*x^3*e*d^4*a^2*B + 1/3*x^3*d^5*b^
2*A + 2/3*x^3*d^5*c*a*A + 10/3*x^3*e*d^4*b*a*A + 10/3*x^3*e^2*d^3*a^2*A + 1
/2*x^2*d^5*a^2*B + x^2*d^5*b*a*A + 5/2*x^2*e*d^4*a^2*A + x*d^5*a^2*A
```

giac [B] time = 0.17, size = 883, normalized size = 2.90

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/11*B*c^2*x^11*e^5 + 1/2*B*c^2*d*x^10*e^4 + 10/9*B*c^2*d^2*x^9*e^3 + 5/4*B
*c^2*d^3*x^8*e^2 + 5/7*B*c^2*d^4*x^7*e + 1/6*B*c^2*d^5*x^6 + 1/5*B*b*c*x^10
*e^5 + 1/10*A*c^2*x^10*e^5 + 10/9*B*b*c*d*x^9*e^4 + 5/9*A*c^2*d*x^9*e^4 + 5
/2*B*b*c*d^2*x^8*e^3 + 5/4*A*c^2*d^2*x^8*e^3 + 20/7*B*b*c*d^3*x^7*e^2 + 10/
7*A*c^2*d^3*x^7*e^2 + 5/3*B*b*c*d^4*x^6*e + 5/6*A*c^2*d^4*x^6*e + 2/5*B*b*c
```

```
*d^5*x^5 + 1/5*A*c^2*d^5*x^5 + 1/9*B*b^2*x^9*e^5 + 2/9*B*a*c*x^9*e^5 + 2/9*
A*b*c*x^9*e^5 + 5/8*B*b^2*d*x^8*e^4 + 5/4*B*a*c*d*x^8*e^4 + 5/4*A*b*c*d*x^8
*e^4 + 10/7*B*b^2*d^2*x^7*e^3 + 20/7*B*a*c*d^2*x^7*e^3 + 20/7*A*b*c*d^2*x^7
*e^3 + 5/3*B*b^2*d^3*x^6*e^2 + 10/3*B*a*c*d^3*x^6*e^2 + 10/3*A*b*c*d^3*x^6*
e^2 + B*b^2*d^4*x^5*e + 2*B*a*c*d^4*x^5*e + 2*A*b*c*d^4*x^5*e + 1/4*B*b^2*d
^5*x^4 + 1/2*B*a*c*d^5*x^4 + 1/2*A*b*c*d^5*x^4 + 1/4*B*a*b*x^8*e^5 + 1/8*A*
b^2*x^8*e^5 + 1/4*A*a*c*x^8*e^5 + 10/7*B*a*b*d*x^7*e^4 + 5/7*A*b^2*d*x^7*e^
4 + 10/7*A*a*c*d*x^7*e^4 + 10/3*B*a*b*d^2*x^6*e^3 + 5/3*A*b^2*d^2*x^6*e^3 +
 10/3*A*a*c*d^2*x^6*e^3 + 4*B*a*b*d^3*x^5*e^2 + 2*A*b^2*d^3*x^5*e^2 + 4*A*a
*c*d^3*x^5*e^2 + 5/2*B*a*b*d^4*x^4*e + 5/4*A*b^2*d^4*x^4*e + 5/2*A*a*c*d^4*
x^4*e + 2/3*B*a*b*d^5*x^3 + 1/3*A*b^2*d^5*x^3 + 2/3*A*a*c*d^5*x^3 + 1/7*B*a
^2*x^7*e^5 + 2/7*A*a*b*x^7*e^5 + 5/6*B*a^2*d*x^6*e^4 + 5/3*A*a*b*d*x^6*e^4
+ 2*B*a^2*d^2*x^5*e^3 + 4*A*a*b*d^2*x^5*e^3 + 5/2*B*a^2*d^3*x^4*e^2 + 5*A*a
*b*d^3*x^4*e^2 + 5/3*B*a^2*d^4*x^3*e + 10/3*A*a*b*d^4*x^3*e + 1/2*B*a^2*d^5
*x^2 + A*a*b*d^5*x^2 + 1/6*A*a^2*x^6*e^5 + A*a^2*d*x^5*e^4 + 5/2*A*a^2*d^2*
x^4*e^3 + 10/3*A*a^2*d^3*x^3*e^2 + 5/2*A*a^2*d^4*x^2*e + A*a^2*d^5*x
```

maple [B] time = 0.04, size = 671, normalized size = 2.21

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/11*B*e^5*c^2*x^11+1/10*((A*e^5+5*B*d*e^4)*c^2+2*B*e^5*b*c)*x^10+1/9*((5*A
*d*e^4+10*B*d^2*e^3)*c^2+2*(A*e^5+5*B*d*e^4)*b*c+B*e^5*(2*a*c+b^2))*x^9+1/8
*((10*A*d^2*e^3+10*B*d^3*e^2)*c^2+2*(5*A*d*e^4+10*B*d^2*e^3)*b*c+(A*e^5+5*B
*d*e^4)*(2*a*c+b^2)+2*B*e^5*a*b)*x^8+1/7*((10*A*d^3*e^2+5*B*d^4*e)*c^2+2*(1
0*A*d^2*e^3+10*B*d^3*e^2)*b*c+(5*A*d*e^4+10*B*d^2*e^3)*(2*a*c+b^2)+2*(A*e^5
+5*B*d*e^4)*a*b+B*e^5*a^2)*x^7+1/6*((5*A*d^4*e+B*d^5)*c^2+2*(10*A*d^3*e^2+5
*B*d^4*e)*b*c+(10*A*d^2*e^3+10*B*d^3*e^2)*(2*a*c+b^2)+2*(5*A*d*e^4+10*B*d^2
*e^3)*a*b+(A*e^5+5*B*d*e^4)*a^2)*x^6+1/5*(A*d^5*c^2+2*(5*A*d^4*e+B*d^5)*b*c
+(10*A*d^3*e^2+5*B*d^4*e)*(2*a*c+b^2)+2*(10*A*d^2*e^3+10*B*d^3*e^2)*a*b+(5*
A*d*e^4+10*B*d^2*e^3)*a^2)*x^5+1/4*(2*A*d^5*b*c+(5*A*d^4*e+B*d^5)*(2*a*c+b^
2)+2*(10*A*d^3*e^2+5*B*d^4*e)*a*b+(10*A*d^2*e^3+10*B*d^3*e^2)*a^2)*x^4+1/3*
(A*d^5*(2*a*c+b^2)+2*(5*A*d^4*e+B*d^5)*a*b+(10*A*d^3*e^2+5*B*d^4*e)*a^2)*x^
3+1/2*(2*A*d^5*a*b+(5*A*d^4*e+B*d^5)*a^2)*x^2+A*d^5*a^2*x
```

maxima [B] time = 0.49, size = 648, normalized size = 2.13

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^2*e^5*x^11 + 1/10*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)*e^5)*x^10 + 1
/9*(10*B*c^2*d^2*e^3 + 5*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c
)*e^5)*x^9 + A*a^2*d^5*x + 1/8*(10*B*c^2*d^3*e^2 + 10*(2*B*b*c + A*c^2)*d^2
*e^3 + 5*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)
*x^8 + 1/7*(5*B*c^2*d^4*e + 10*(2*B*b*c + A*c^2)*d^3*e^2 + 10*(B*b^2 + 2*(B
*a + A*b)*c)*d^2*e^3 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a
*b)*e^5)*x^7 + 1/6*(B*c^2*d^5 + A*a^2*e^5 + 5*(2*B*b*c + A*c^2)*d^4*e + 10*
(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 10*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3
+ 5*(B*a^2 + 2*A*a*b)*d*e^4)*x^6 + 1/5*(5*A*a^2*d*e^4 + (2*B*b*c + A*c^2)*d
^5 + 5*(B*b^2 + 2*(B*a + A*b)*c)*d^4*e + 10*(2*B*a*b + A*b^2 + 2*A*a*c)*d^3
*e^2 + 10*(B*a^2 + 2*A*a*b)*d^2*e^3)*x^5 + 1/4*(10*A*a^2*d^2*e^3 + (B*b^2 +
 2*(B*a + A*b)*c)*d^5 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d^4*e + 10*(B*a^2 + 2
*A*a*b)*d^3*e^2)*x^4 + 1/3*(10*A*a^2*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*
d^5 + 5*(B*a^2 + 2*A*a*b)*d^4*e)*x^3 + 1/2*(5*A*a^2*d^4*e + (B*a^2 + 2*A*a*
b)*d^5)*x^2
```

mupad [B] time = 0.27, size = 739, normalized size = 2.43

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((A*b^2*d^5)/3 + (2*A*a*c*d^5)/3 + (2*B*a*b*d^5)/3 + (5*B*a^2*d^4*e)/3
+ (10*A*a^2*d^3*e^2)/3 + (10*A*a*b*d^4*e)/3) + x^9*((B*b^2*e^5)/9 + (2*A*b*
c*e^5)/9 + (2*B*a*c*e^5)/9 + (5*A*c^2*d*e^4)/9 + (10*B*c^2*d^2*e^3)/9 + (10
*B*b*c*d*e^4)/9) + x^4*((B*b^2*d^5)/4 + (A*b*c*d^5)/2 + (B*a*c*d^5)/2 + (5*
A*b^2*d^4*e)/4 + (5*A*a^2*d^2*e^3)/2 + (5*B*a^2*d^3*e^2)/2 + (5*A*a*c*d^4*e
)/2 + (5*B*a*b*d^4*e)/2 + 5*A*a*b*d^3*e^2) + x^8*((A*b^2*e^5)/8 + (A*a*c*e^
5)/4 + (B*a*b*e^5)/4 + (5*B*b^2*d*e^4)/8 + (5*A*c^2*d^2*e^3)/4 + (5*B*c^2*d
^3*e^2)/4 + (5*A*b*c*d*e^4)/4 + (5*B*a*c*d*e^4)/4 + (5*B*b*c*d^2*e^3)/2) +
x^6*((A*a^2*e^5)/6 + (B*c^2*d^5)/6 + (5*B*a^2*d*e^4)/6 + (5*A*c^2*d^4*e)/6
+ (5*A*b^2*d^2*e^3)/3 + (5*B*b^2*d^3*e^2)/3 + (5*A*a*b*d*e^4)/3 + (5*B*b*c*
d^4*e)/3 + (10*A*a*c*d^2*e^3)/3 + (10*B*a*b*d^2*e^3)/3 + (10*A*b*c*d^3*e^2)
/3 + (10*B*a*c*d^3*e^2)/3) + x^5*((A*c^2*d^5)/5 + (2*B*b*c*d^5)/5 + A*a^2*d
*e^4 + B*b^2*d^4*e + 2*A*b^2*d^3*e^2 + 2*B*a^2*d^2*e^3 + 2*A*b*c*d^4*e + 2*
B*a*c*d^4*e + 4*A*a*b*d^2*e^3 + 4*A*a*c*d^3*e^2 + 4*B*a*b*d^3*e^2) + x^7*((
B*a^2*e^5)/7 + (2*A*a*b*e^5)/7 + (5*A*b^2*d*e^4)/7 + (5*B*c^2*d^4*e)/7 + (1
0*A*c^2*d^3*e^2)/7 + (10*B*b^2*d^2*e^3)/7 + (10*A*a*c*d*e^4)/7 + (10*B*a*b*
d*e^4)/7 + (20*A*b*c*d^2*e^3)/7 + (20*B*a*c*d^2*e^3)/7 + (20*B*b*c*d^3*e^2)
/7) + A*a^2*d^5*x + (a*d^4*x^2*(5*A*a*e + 2*A*b*d + B*a*d))/2 + (c*e^4*x^10
*(A*c*e + 2*B*b*e + 5*B*c*d))/10 + (B*c^2*e^5*x^11)/11
```

sympy [B] time = 0.24, size = 957, normalized size = 3.15

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**5*x + B*c**2*e**5*x**11/11 + x**10*(A*c**2*e**5/10 + B*b*c*e**5/5
 + B*c**2*d*e**4/2) + x**9*(2*A*b*c*e**5/9 + 5*A*c**2*d*e**4/9 + 2*B*a*c*e*
*5/9 + B*b**2*e**5/9 + 10*B*b*c*d*e**4/9 + 10*B*c**2*d**2*e**3/9) + x**8*(A
*a*c*e**5/4 + A*b**2*e**5/8 + 5*A*b*c*d*e**4/4 + 5*A*c**2*d**2*e**3/4 + B*a
*b*e**5/4 + 5*B*a*c*d*e**4/4 + 5*B*b**2*d*e**4/8 + 5*B*b*c*d**2*e**3/2 + 5*
B*c**2*d**3*e**2/4) + x**7*(2*A*a*b*e**5/7 + 10*A*a*c*d*e**4/7 + 5*A*b**2*d
*e**4/7 + 20*A*b*c*d**2*e**3/7 + 10*A*c**2*d**3*e**2/7 + B*a**2*e**5/7 + 10
*B*a*b*d*e**4/7 + 20*B*a*c*d**2*e**3/7 + 10*B*b**2*d**2*e**3/7 + 20*B*b*c*d
**3*e**2/7 + 5*B*c**2*d**4*e/7) + x**6*(A*a**2*e**5/6 + 5*A*a*b*d*e**4/3 +
10*A*a*c*d**2*e**3/3 + 5*A*b**2*d**2*e**3/3 + 10*A*b*c*d**3*e**2/3 + 5*A*c*
*2*d**4*e/6 + 5*B*a**2*d*e**4/6 + 10*B*a*b*d**2*e**3/3 + 10*B*a*c*d**3*e**2
/3 + 5*B*b**2*d**3*e**2/3 + 5*B*b*c*d**4*e/3 + B*c**2*d**5/6) + x**5*(A*a**
2*d*e**4 + 4*A*a*b*d**2*e**3 + 4*A*a*c*d**3*e**2 + 2*A*b**2*d**3*e**2 + 2*A
*b*c*d**4*e + A*c**2*d**5/5 + 2*B*a**2*d**2*e**3 + 4*B*a*b*d**3*e**2 + 2*B*
a*c*d**4*e + B*b**2*d**4*e + 2*B*b*c*d**5/5) + x**4*(5*A*a**2*d**2*e**3/2 +
 5*A*a*b*d**3*e**2 + 5*A*a*c*d**4*e/2 + 5*A*b**2*d**4*e/4 + A*b*c*d**5/2 +
5*B*a**2*d**3*e**2/2 + 5*B*a*b*d**4*e/2 + B*a*c*d**5/2 + B*b**2*d**5/4) + x
**3*(10*A*a**2*d**3*e**2/3 + 10*A*a*b*d**4*e/3 + 2*A*a*c*d**5/3 + A*b**2*d*
*5/3 + 5*B*a**2*d**4*e/3 + 2*B*a*b*d**5/3) + x**2*(5*A*a**2*d**4*e/2 + A*a*
b*d**5 + B*a**2*d**5/2)
```

3.2078 $\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^8 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{8e^6}-\frac{(d+ex)^7 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.}{}$$

Rubi [A] time = 0.63, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^8 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{8e^6}-\frac{(d+ex)^7 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{7e^6}+\frac{(d+ex)^6 \left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{6e^6}-\frac{(d+ex)^5(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{5e^6}-\frac{c(d+ex)^9(-Ace-2bBe+5Bcd)}{9e^6}+\frac{Bc^2(d+ex)^{10}}{10e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^5)/(5*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^6)/(6*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^7)/(7*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^8)/(8*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^9)/(9*e^
6) + (B*c^2*(d + e*x)^10)/(10*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^4}{e^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bc\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^5}{5e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-\right.}{}$$

Mathematica [A] time = 0.24, size = 550, normalized size = 1.81

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^4*x + (a*d^3*(2*A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (d^2*(2*a*B*d*(b*
d + 2*a*e) + A*(b^2*d^2 + 8*a*b*d*e + 2*a*(c*d^2 + 3*a*e^2)))*x^3)/3 + (d*(
b^2*d^2*(B*d + 4*A*e) + 2*b*d*(A*c*d^2 + 4*a*B*d*e + 6*a*A*e^2) + 2*a*(B*c*
d^3 + 4*A*c*d^2*e + 3*a*B*d*e^2 + 2*a*A*e^3))*x^4)/4 + ((2*b^2*d^2*e*(2*B*d
 + 3*A*e) + 4*a*B*d*e*(2*c*d^2 + a*e^2) + 2*b*d*(B*c*d^3 + 4*A*c*d^2*e + 6*
a*B*d*e^2 + 4*a*A*e^3) + A*(c^2*d^4 + 12*a*c*d^2*e^2 + a^2*e^4))*x^5)/5 + (
(2*A*e*(2*c^2*d^3 + b*e^2*(2*b*d + a*e) + 2*c*d*e*(3*b*d + 2*a*e)) + B*(c^2
*d^4 + 4*c*d^2*e*(2*b*d + 3*a*e) + e^2*(6*b^2*d^2 + 8*a*b*d*e + a^2*e^2)))*
```

```
x^6)/6 + (e*(A*e*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(4*b*d + a*e)) + 2*B*(2*c^2*d
^3 + b*e^2*(2*b*d + a*e) + 2*c*d*e*(3*b*d + 2*a*e)))*x^7)/7 + (e^2*(2*A*c*e
*(2*c*d + b*e) + B*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(4*b*d + a*e)))*x^8)/8 + (c
*e^3*(4*B*c*d + 2*b*B*e + A*c*e)*x^9)/9 + (B*c^2*e^4*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.36, size = 743, normalized size = 2.44

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*c^2*B + 4/9*x^9*e^3*d*c^2*B + 2/9*x^9*e^4*c*b*B + 1/9*x^9*e^4
*c^2*A + 3/4*x^8*e^2*d^2*c^2*B + x^8*e^3*d*c*b*B + 1/8*x^8*e^4*b^2*B + 1/4*
x^8*e^4*c*a*B + 1/2*x^8*e^3*d*c^2*A + 1/4*x^8*e^4*c*b*A + 4/7*x^7*e*d^3*c^2
*B + 12/7*x^7*e^2*d^2*c*b*B + 4/7*x^7*e^3*d*b^2*B + 8/7*x^7*e^3*d*c*a*B + 2
/7*x^7*e^4*b*a*B + 6/7*x^7*e^2*d^2*c^2*A + 8/7*x^7*e^3*d*c*b*A + 1/7*x^7*e^
4*b^2*A + 2/7*x^7*e^4*c*a*A + 1/6*x^6*d^4*c^2*B + 4/3*x^6*e*d^3*c*b*B + x^6
*e^2*d^2*b^2*B + 2*x^6*e^2*d^2*c*a*B + 4/3*x^6*e^3*d*b*a*B + 1/6*x^6*e^4*a^
2*B + 2/3*x^6*e*d^3*c^2*A + 2*x^6*e^2*d^2*c*b*A + 2/3*x^6*e^3*d*b^2*A + 4/3
*x^6*e^3*d*c*a*A + 1/3*x^6*e^4*b*a*A + 2/5*x^5*d^4*c*b*B + 4/5*x^5*e*d^3*b^
2*B + 8/5*x^5*e*d^3*c*a*B + 12/5*x^5*e^2*d^2*b*a*B + 4/5*x^5*e^3*d*a^2*B +
1/5*x^5*d^4*c^2*A + 8/5*x^5*e*d^3*c*b*A + 6/5*x^5*e^2*d^2*b^2*A + 12/5*x^5*
e^2*d^2*c*a*A + 8/5*x^5*e^3*d*b*a*A + 1/5*x^5*e^4*a^2*A + 1/4*x^4*d^4*b^2*B
 + 1/2*x^4*d^4*c*a*B + 2*x^4*e*d^3*b*a*B + 3/2*x^4*e^2*d^2*a^2*B + 1/2*x^4*
d^4*c*b*A + x^4*e*d^3*b^2*A + 2*x^4*e*d^3*c*a*A + 3*x^4*e^2*d^2*b*a*A + x^4
*e^3*d*a^2*A + 2/3*x^3*d^4*b*a*B + 4/3*x^3*e*d^3*a^2*B + 1/3*x^3*d^4*b^2*A
+ 2/3*x^3*d^4*c*a*A + 8/3*x^3*e*d^3*b*a*A + 2*x^3*e^2*d^2*a^2*A + 1/2*x^2*d
^4*a^2*B + x^2*d^4*b*a*A + 2*x^2*e*d^3*a^2*A + x*d^4*a^2*A
```

giac [B] time = 0.16, size = 719, normalized size = 2.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*c^2*x^10*e^4 + 4/9*B*c^2*d*x^9*e^3 + 3/4*B*c^2*d^2*x^8*e^2 + 4/7*B*c
^2*d^3*x^7*e + 1/6*B*c^2*d^4*x^6 + 2/9*B*b*c*x^9*e^4 + 1/9*A*c^2*x^9*e^4 +
B*b*c*d*x^8*e^3 + 1/2*A*c^2*d*x^8*e^3 + 12/7*B*b*c*d^2*x^7*e^2 + 6/7*A*c^2*
d^2*x^7*e^2 + 4/3*B*b*c*d^3*x^6*e + 2/3*A*c^2*d^3*x^6*e + 2/5*B*b*c*d^4*x^5
 + 1/5*A*c^2*d^4*x^5 + 1/8*B*b^2*x^8*e^4 + 1/4*B*a*c*x^8*e^4 + 1/4*A*b*c*x^
8*e^4 + 4/7*B*b^2*d*x^7*e^3 + 8/7*B*a*c*d*x^7*e^3 + 8/7*A*b*c*d*x^7*e^3 + B
*b^2*d^2*x^6*e^2 + 2*B*a*c*d^2*x^6*e^2 + 2*A*b*c*d^2*x^6*e^2 + 4/5*B*b^2*d^
3*x^5*e + 8/5*B*a*c*d^3*x^5*e + 8/5*A*b*c*d^3*x^5*e + 1/4*B*b^2*d^4*x^4 + 1
/2*B*a*c*d^4*x^4 + 1/2*A*b*c*d^4*x^4 + 2/7*B*a*b*x^7*e^4 + 1/7*A*b^2*x^7*e^
4 + 2/7*A*a*c*x^7*e^4 + 4/3*B*a*b*d*x^6*e^3 + 2/3*A*b^2*d*x^6*e^3 + 4/3*A*a
*c*d*x^6*e^3 + 12/5*B*a*b*d^2*x^5*e^2 + 6/5*A*b^2*d^2*x^5*e^2 + 12/5*A*a*c*
d^2*x^5*e^2 + 2*B*a*b*d^3*x^4*e + A*b^2*d^3*x^4*e + 2*A*a*c*d^3*x^4*e + 2/3
```

```
*B*a*b*d^4*x^3 + 1/3*A*b^2*d^4*x^3 + 2/3*A*a*c*d^4*x^3 + 1/6*B*a^2*x^6*e^4
+ 1/3*A*a*b*x^6*e^4 + 4/5*B*a^2*d*x^5*e^3 + 8/5*A*a*b*d*x^5*e^3 + 3/2*B*a^2
*d^2*x^4*e^2 + 3*A*a*b*d^2*x^4*e^2 + 4/3*B*a^2*d^3*x^3*e + 8/3*A*a*b*d^3*x^
3*e + 1/2*B*a^2*d^4*x^2 + A*a*b*d^4*x^2 + 1/5*A*a^2*x^5*e^4 + A*a^2*d*x^4*e
^3 + 2*A*a^2*d^2*x^3*e^2 + 2*A*a^2*d^3*x^2*e + A*a^2*d^4*x
```

maple [A] time = 0.04, size = 545, normalized size = 1.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/10*B*e^4*c^2*x^10+1/9*((A*e^4+4*B*d*e^3)*c^2+2*B*e^4*b*c)*x^9+1/8*((4*A*d
*e^3+6*B*d^2*e^2)*c^2+2*(A*e^4+4*B*d*e^3)*b*c+B*e^4*(2*a*c+b^2))*x^8+1/7*((
6*A*d^2*e^2+4*B*d^3*e)*c^2+2*(4*A*d*e^3+6*B*d^2*e^2)*b*c+(A*e^4+4*B*d*e^3)*
(2*a*c+b^2)+2*B*a*b*e^4)*x^7+1/6*((4*A*d^3*e+B*d^4)*c^2+2*(6*A*d^2*e^2+4*B*
d^3*e)*b*c+(4*A*d*e^3+6*B*d^2*e^2)*(2*a*c+b^2)+2*(A*e^4+4*B*d*e^3)*a*b+B*a^
2*e^4)*x^6+1/5*(A*d^4*c^2+2*(4*A*d^3*e+B*d^4)*b*c+(6*A*d^2*e^2+4*B*d^3*e)*(
2*a*c+b^2)+2*(4*A*d*e^3+6*B*d^2*e^2)*a*b+(A*e^4+4*B*d*e^3)*a^2)*x^5+1/4*(2*
A*d^4*b*c+(4*A*d^3*e+B*d^4)*(2*a*c+b^2)+2*(6*A*d^2*e^2+4*B*d^3*e)*a*b+(4*A*
d*e^3+6*B*d^2*e^2)*a^2)*x^4+1/3*(A*d^4*(2*a*c+b^2)+2*(4*A*d^3*e+B*d^4)*a*b+
(6*A*d^2*e^2+4*B*d^3*e)*a^2)*x^3+1/2*(2*A*d^4*a*b+(4*A*d^3*e+B*d^4)*a^2)*x^
2+A*d^4*a^2*x
```

maxima [A] time = 0.52, size = 532, normalized size = 1.75

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^2*e^4*x^10 + 1/9*(4*B*c^2*d*e^3 + (2*B*b*c + A*c^2)*e^4)*x^9 + 1/8
*(6*B*c^2*d^2*e^2 + 4*(2*B*b*c + A*c^2)*d*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*e
^4)*x^8 + A*a^2*d^4*x + 1/7*(4*B*c^2*d^3*e + 6*(2*B*b*c + A*c^2)*d^2*e^2 +
4*(B*b^2 + 2*(B*a + A*b)*c)*d*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^4)*x^7 +
1/6*(B*c^2*d^4 + 4*(2*B*b*c + A*c^2)*d^3*e + 6*(B*b^2 + 2*(B*a + A*b)*c)*d^
2*e^2 + 4*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^3 + (B*a^2 + 2*A*a*b)*e^4)*x^6 +
1/5*(A*a^2*e^4 + (2*B*b*c + A*c^2)*d^4 + 4*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e
+ 6*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^2 + 4*(B*a^2 + 2*A*a*b)*d*e^3)*x^5 +
1/4*(4*A*a^2*d*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*d^4 + 4*(2*B*a*b + A*b^2 + 2
*A*a*c)*d^3*e + 6*(B*a^2 + 2*A*a*b)*d^2*e^2)*x^4 + 1/3*(6*A*a^2*d^2*e^2 + (
2*B*a*b + A*b^2 + 2*A*a*c)*d^4 + 4*(B*a^2 + 2*A*a*b)*d^3*e)*x^3 + 1/2*(4*A*
a^2*d^3*e + (B*a^2 + 2*A*a*b)*d^4)*x^2
```

mupad [B] time = 2.48, size = 594, normalized size = 1.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((A*b^2*d^4)/3 + (2*A*a*c*d^4)/3 + (2*B*a*b*d^4)/3 + (4*B*a^2*d^3*e)/3
+ 2*A*a^2*d^2*e^2 + (8*A*a*b*d^3*e)/3) + x^4*((B*b^2*d^4)/4 + (A*b*c*d^4)/2
 + (B*a*c*d^4)/2 + A*a^2*d*e^3 + A*b^2*d^3*e + (3*B*a^2*d^2*e^2)/2 + 2*A*a*
c*d^3*e + 2*B*a*b*d^3*e + 3*A*a*b*d^2*e^2) + x^8*((B*b^2*e^4)/8 + (A*b*c*e^
4)/4 + (B*a*c*e^4)/4 + (A*c^2*d*e^3)/2 + (3*B*c^2*d^2*e^2)/4 + B*b*c*d*e^3)
 + x^7*((A*b^2*e^4)/7 + (2*A*a*c*e^4)/7 + (2*B*a*b*e^4)/7 + (4*B*b^2*d*e^3)
/7 + (4*B*c^2*d^3*e)/7 + (6*A*c^2*d^2*e^2)/7 + (8*A*b*c*d*e^3)/7 + (8*B*a*c
```

```
*d*e^3)/7 + (12*B*b*c*d^2*e^2)/7) + x^5*((A*a^2*e^4)/5 + (A*c^2*d^4)/5 + (2
*B*b*c*d^4)/5 + (4*B*a^2*d*e^3)/5 + (4*B*b^2*d^3*e)/5 + (6*A*b^2*d^2*e^2)/5
 + (8*A*a*b*d*e^3)/5 + (8*A*b*c*d^3*e)/5 + (8*B*a*c*d^3*e)/5 + (12*A*a*c*d^
2*e^2)/5 + (12*B*a*b*d^2*e^2)/5) + x^6*((B*a^2*e^4)/6 + (B*c^2*d^4)/6 + (A*
a*b*e^4)/3 + (2*A*b^2*d*e^3)/3 + (2*A*c^2*d^3*e)/3 + B*b^2*d^2*e^2 + (4*A*a
*c*d*e^3)/3 + (4*B*a*b*d*e^3)/3 + (4*B*b*c*d^3*e)/3 + 2*A*b*c*d^2*e^2 + 2*B
*a*c*d^2*e^2) + A*a^2*d^4*x + (a*d^3*x^2*(4*A*a*e + 2*A*b*d + B*a*d))/2 + (
c*e^3*x^9*(A*c*e + 2*B*b*e + 4*B*c*d))/9 + (B*c^2*e^4*x^10)/10
```

sympy [B] time = 0.18, size = 765, normalized size = 2.52

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**4*x + B*c**2*e**4*x**10/10 + x**9*(A*c**2*e**4/9 + 2*B*b*c*e**4/9
 + 4*B*c**2*d*e**3/9) + x**8*(A*b*c*e**4/4 + A*c**2*d*e**3/2 + B*a*c*e**4/4
 + B*b**2*e**4/8 + B*b*c*d*e**3 + 3*B*c**2*d**2*e**2/4) + x**7*(2*A*a*c*e**
4/7 + A*b**2*e**4/7 + 8*A*b*c*d*e**3/7 + 6*A*c**2*d**2*e**2/7 + 2*B*a*b*e**
4/7 + 8*B*a*c*d*e**3/7 + 4*B*b**2*d*e**3/7 + 12*B*b*c*d**2*e**2/7 + 4*B*c**
2*d**3*e/7) + x**6*(A*a*b*e**4/3 + 4*A*a*c*d*e**3/3 + 2*A*b**2*d*e**3/3 + 2
*A*b*c*d**2*e**2 + 2*A*c**2*d**3*e/3 + B*a**2*e**4/6 + 4*B*a*b*d*e**3/3 + 2
*B*a*c*d**2*e**2 + B*b**2*d**2*e**2 + 4*B*b*c*d**3*e/3 + B*c**2*d**4/6) + x
**5*(A*a**2*e**4/5 + 8*A*a*b*d*e**3/5 + 12*A*a*c*d**2*e**2/5 + 6*A*b**2*d**
2*e**2/5 + 8*A*b*c*d**3*e/5 + A*c**2*d**4/5 + 4*B*a**2*d*e**3/5 + 12*B*a*b*
d**2*e**2/5 + 8*B*a*c*d**3*e/5 + 4*B*b**2*d**3*e/5 + 2*B*b*c*d**4/5) + x**4
*(A*a**2*d*e**3 + 3*A*a*b*d**2*e**2 + 2*A*a*c*d**3*e + A*b**2*d**3*e + A*b*
c*d**4/2 + 3*B*a**2*d**2*e**2/2 + 2*B*a*b*d**3*e + B*a*c*d**4/2 + B*b**2*d*
*4/4) + x**3*(2*A*a**2*d**2*e**2 + 8*A*a*b*d**3*e/3 + 2*A*a*c*d**4/3 + A*b*
*2*d**4/3 + 4*B*a**2*d**3*e/3 + 2*B*a*b*d**4/3) + x**2*(2*A*a**2*d**3*e + A
*a*b*d**4 + B*a**2*d**4/2)
```

3.2079 $\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^7\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{7e^6}-\frac{(d+ex)^6\left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.}{}$$

Rubi [A] time = 0.49, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^7\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{7e^6}-\frac{(d+ex)^6\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{6e^6}+\frac{(d+ex)^5\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{5e^6}-\frac{(d+ex)^4(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{4e^6}-\frac{c(d+ex)^8(-Ace-2bBe+5Bcd)}{8e^6}+\frac{Bc^2(d+ex)^9}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^4)/(4*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^5)/(5*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^6)/(6*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^7)/(7*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^8)/(8*e^
6) + (B*c^2*(d + e*x)^9)/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{e^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd\right.}{}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{4e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-\right.}{}$$

Mathematica [A] time = 0.19, size = 421, normalized size = 1.38

$$a^2Ad^3x+\frac{1}{7}ex^7\left(B\left(2ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(2be+3cd)\right)+\frac{1}{6}x^6\left(Ae\left(2ce(ae+3bd)+b^2e^2+3c^2d^2\right)+B\left(6cde(ae+bd)+be^2(2ae+3bd)+c^2d^3\right)\right)+\frac{1}{3}dx^3\left(A\left(6abde+a\left(3ae^2+2cd^2\right)+b^2d^2\right)+aBd(3ae+2bd)\right)+\frac{1}{5}x^5\left(2b\left(aAe^3+3aBde^2+3Acd^2e+Bcd^3\right)+Acd\left(6ae^2+cd^2\right)+aBe\left(ae^2+6cd^2\right)+3b^2de(Ae+Bd)\right)+\frac{1}{4}x^4\left(2bd\left(3aAe^2+3aBde+Acd^2\right)+a\left(aAe^3+3aBde^2+6Acd^2e+2Bcd^3\right)+b^2d^2(3Ae+Bd)\right)+\frac{1}{2}ad^2x^2(3aAe+aBd+2Abd)+\frac{1}{8}ce^2x^8(Ace+2bBe+3Bcd)+\frac{1}{9}Bc^2e^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^3*x + (a*d^2*(2*A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (d*(a*B*d*(2*b*d
+ 3*a*e) + A*(b^2*d^2 + 6*a*b*d*e + a*(2*c*d^2 + 3*a*e^2)))*x^3)/3 + ((b^2*
d^2*(B*d + 3*A*e) + 2*b*d*(A*c*d^2 + 3*a*B*d*e + 3*a*A*e^2) + a*(2*B*c*d^3
+ 6*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3))*x^4)/4 + ((3*b^2*d*e*(B*d + A*e) +
a*B*e*(6*c*d^2 + a*e^2) + A*c*d*(c*d^2 + 6*a*e^2) + 2*b*(B*c*d^3 + 3*A*c*d^
2*e + 3*a*B*d*e^2 + a*A*e^3))*x^5)/5 + ((A*e*(3*c^2*d^2 + b^2*e^2 + 2*c*e*(
3*b*d + a*e)) + B*(c^2*d^3 + 6*c*d*e*(b*d + a*e) + b*e^2*(3*b*d + 2*a*e)))*
x^6)/6 + (e*(A*c*e*(3*c*d + 2*b*e) + B*(3*c^2*d^2 + b^2*e^2 + 2*c*e*(3*b*d
```

```
+ a*e)))*x^7)/7 + (c*e^2*(3*B*c*d + 2*b*B*e + A*c*e)*x^8)/8 + (B*c^2*e^3*x^
9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 568, normalized size = 1.87

$$\frac{1}{9}x^9e^3c^2B+\frac{3}{8}x^8e^2dc^2B+\frac{1}{4}x^8e^3cbB+\frac{1}{8}x^8e^3c^2A+\frac{3}{7}x^7ed^2c^2B+\frac{6}{7}x^7e^2dcbB+\frac{1}{7}x^7e^3b^2B+\frac{2}{7}x^7e^3caB+\frac{3}{7}x^7e^2dc^2A+\frac{2}{7}x^7e^3cbA+\frac{1}{6}x^6d^3c^2B+x^6ed^2cbB+\frac{1}{2}x^6e^2db^2B+x^6e^2dcaB+\frac{1}{3}x^6e^3baB+\frac{1}{2}x^6ed^2c^2A+x^6e^2dcbA+\frac{1}{6}x^6e^3b^2A+\frac{1}{3}x^6e^3caA+\frac{2}{5}x^5d^3cbB+\frac{3}{5}x^5ed^2b^2B+\frac{6}{5}x^5ed^2caB+\frac{6}{5}x^5e^2dbaB+\frac{1}{5}x^5e^3a^2B+\frac{1}{5}x^5d^3c^2A+\frac{6}{5}x^5ed^2cbA+\frac{3}{5}x^5e^2db^2A+\frac{6}{5}x^5e^2dcaA+\frac{2}{5}x^5e^3baA+\frac{1}{4}x^4d^3b^2B+\frac{1}{2}x^4d^3caB+\frac{3}{2}x^4ed^2baB+\frac{3}{4}x^4e^2da^2B+\frac{1}{2}x^4d^3cbA+\frac{3}{4}x^4ed^2b^2A+\frac{3}{2}x^4ed^2caA+\frac{3}{2}x^4e^2dbaA+\frac{1}{4}x^4e^3a^2A+\frac{2}{3}x^3d^3baB+x^3ed^2a^2B+\frac{1}{3}x^3d^3b^2A+\frac{2}{3}x^3d^3caA+2x^3ed^2baA+x^3e^2da^2A+\frac{1}{2}x^2d^3a^2B+x^2d^3baA+\frac{3}{2}x^2ed^2a^2A+xd^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*c^2*B + 3/8*x^8*e^2*d*c^2*B + 1/4*x^8*e^3*c*b*B + 1/8*x^8*e^3*c
^2*A + 3/7*x^7*e*d^2*c^2*B + 6/7*x^7*e^2*d*c*b*B + 1/7*x^7*e^3*b^2*B + 2/7*
x^7*e^3*c*a*B + 3/7*x^7*e^2*d*c^2*A + 2/7*x^7*e^3*c*b*A + 1/6*x^6*d^3*c^2*B
 + x^6*e*d^2*c*b*B + 1/2*x^6*e^2*d*b^2*B + x^6*e^2*d*c*a*B + 1/3*x^6*e^3*b*
a*B + 1/2*x^6*e*d^2*c^2*A + x^6*e^2*d*c*b*A + 1/6*x^6*e^3*b^2*A + 1/3*x^6*e
^3*c*a*A + 2/5*x^5*d^3*c*b*B + 3/5*x^5*e*d^2*b^2*B + 6/5*x^5*e*d^2*c*a*B +
6/5*x^5*e^2*d*b*a*B + 1/5*x^5*e^3*a^2*B + 1/5*x^5*d^3*c^2*A + 6/5*x^5*e*d^2
*c*b*A + 3/5*x^5*e^2*d*b^2*A + 6/5*x^5*e^2*d*c*a*A + 2/5*x^5*e^3*b*a*A + 1/
4*x^4*d^3*b^2*B + 1/2*x^4*d^3*c*a*B + 3/2*x^4*e*d^2*b*a*B + 3/4*x^4*e^2*d*a
^2*B + 1/2*x^4*d^3*c*b*A + 3/4*x^4*e*d^2*b^2*A + 3/2*x^4*e*d^2*c*a*A + 3/2*
x^4*e^2*d*b*a*A + 1/4*x^4*e^3*a^2*A + 2/3*x^3*d^3*b*a*B + x^3*e*d^2*a^2*B +
 1/3*x^3*d^3*b^2*A + 2/3*x^3*d^3*c*a*A + 2*x^3*e*d^2*b*a*A + x^3*e^2*d*a^2*
A + 1/2*x^2*d^3*a^2*B + x^2*d^3*b*a*A + 3/2*x^2*e*d^2*a^2*A + x*d^3*a^2*A
```

giac [A] time = 0.18, size = 556, normalized size = 1.83

$$\frac{1}{9}Bc^2x^9e^3+\frac{3}{8}Bc^2dx^8e^2+\frac{3}{7}Bc^2d^2x^7e+\frac{1}{6}Bc^2d^3x^6+\frac{1}{4}Bbcx^8e^3+\frac{1}{8}Ac^2x^8e^3+\frac{6}{7}Bbcdx^7e^2+\frac{3}{7}Ac^2dx^7e^2+Bbcd^2x^6e+\frac{1}{2}Ac^2d^2x^6e+\frac{2}{5}Bbcd^3x^5+\frac{1}{5}Ac^2d^3x^5+\frac{1}{7}Bb^2x^7e^3+\frac{2}{7}Bacx^7e^3+\frac{2}{7}Abcx^7e^3+\frac{1}{2}Bb^2dx^6e^2+Bacdx^6e^2+Abcdx^6e^2+\frac{3}{5}Bb^2d^2x^5e+\frac{6}{5}Bacd^2x^5e+\frac{6}{5}Abcd^2x^5e+\frac{1}{4}Bb^2d^3x^4+\frac{1}{2}Bacd^3x^4+\frac{1}{2}Abcd^3x^4+\frac{1}{3}Babx^6e^3+\frac{1}{6}Ab^2x^6e^3+\frac{1}{3}Aacx^6e^3+\frac{6}{5}Babdx^5e^2+\frac{3}{5}Ab^2dx^5e^2+\frac{6}{5}Aacdx^5e^2+\frac{3}{2}Babd^2x^4e+\frac{3}{4}Ab^2d^2x^4e+\frac{3}{2}Aacd^2x^4e+\frac{2}{3}Babd^3x^3+\frac{1}{3}Ab^2d^3x^3+\frac{2}{3}Aacd^3x^3+\frac{1}{5}Ba^2x^5e^3+\frac{2}{5}Aabx^5e^3+\frac{3}{4}Ba^2dx^4e^2+\frac{3}{2}Aabdx^4e^2+Ba^2d^2x^3e+2Aabd^2x^3e+\frac{1}{2}Ba^2d^3x^2+Aabd^3x^2+\frac{1}{4}Aa^2x^4e^3+Aa^2dx^3e^2+\frac{3}{2}Aa^2d^2x^2e+Aa^2d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9*e^3 + 3/8*B*c^2*d*x^8*e^2 + 3/7*B*c^2*d^2*x^7*e + 1/6*B*c^2*d
^3*x^6 + 1/4*B*b*c*x^8*e^3 + 1/8*A*c^2*x^8*e^3 + 6/7*B*b*c*d*x^7*e^2 + 3/7*
A*c^2*d*x^7*e^2 + B*b*c*d^2*x^6*e + 1/2*A*c^2*d^2*x^6*e + 2/5*B*b*c*d^3*x^5
 + 1/5*A*c^2*d^3*x^5 + 1/7*B*b^2*x^7*e^3 + 2/7*B*a*c*x^7*e^3 + 2/7*A*b*c*x^
7*e^3 + 1/2*B*b^2*d*x^6*e^2 + B*a*c*d*x^6*e^2 + A*b*c*d*x^6*e^2 + 3/5*B*b^2
*d^2*x^5*e + 6/5*B*a*c*d^2*x^5*e + 6/5*A*b*c*d^2*x^5*e + 1/4*B*b^2*d^3*x^4
+ 1/2*B*a*c*d^3*x^4 + 1/2*A*b*c*d^3*x^4 + 1/3*B*a*b*x^6*e^3 + 1/6*A*b^2*x^6
*e^3 + 1/3*A*a*c*x^6*e^3 + 6/5*B*a*b*d*x^5*e^2 + 3/5*A*b^2*d*x^5*e^2 + 6/5*
A*a*c*d*x^5*e^2 + 3/2*B*a*b*d^2*x^4*e + 3/4*A*b^2*d^2*x^4*e + 3/2*A*a*c*d^2
*x^4*e + 2/3*B*a*b*d^3*x^3 + 1/3*A*b^2*d^3*x^3 + 2/3*A*a*c*d^3*x^3 + 1/5*B*
a^2*x^5*e^3 + 2/5*A*a*b*x^5*e^3 + 3/4*B*a^2*d*x^4*e^2 + 3/2*A*a*b*d*x^4*e^2
 + B*a^2*d^2*x^3*e + 2*A*a*b*d^2*x^3*e + 1/2*B*a^2*d^3*x^2 + A*a*b*d^3*x^2
+ 1/4*A*a^2*x^4*e^3 + A*a^2*d*x^3*e^2 + 3/2*A*a^2*d^2*x^2*e + A*a^2*d^3*x
```

maple [A] time = 0.04, size = 419, normalized size = 1.38

$$\frac{Bc^2e^3x^9}{9}+\frac{\left(2Bbce^3+\left(Ae^3+3Bde^2\right)c^2\right)x^8}{8}+Aa^2d^3x+\frac{\left(\left(2ac+b^2\right)Be^3+2\left(Ae^3+3Bde^2\right)bc+\left(3Ade^2+3Bd^2e\right)c^2\right)x^7}{7}+\frac{\left(2Babe^3+2\left(3Ade^2+3Bd^2e\right)bc+\left(3Ad^2e+Bd^3\right)c^2+\left(Ae^3+3Bde^2\right)\left(2ac+b^2\right)\right)x^6}{6}+\frac{\left(Ac^2d^3+Ba^2e^3+2\left(Ae^3+3Bde^2\right)ab+2\left(3Ad^2e+Bd^3\right)bc+\left(3Ade^2+3Bd^2e\right)\left(2ac+b^2\right)\right)x^5}{5}+\frac{\left(2Abcd^3+\left(Ae^3+3Bde^2\right)a^2+2\left(3Ade^2+3Bd^2e\right)ab+\left(3Ad^2e+Bd^3\right)\left(2ac+b^2\right)\right)x^4}{4}+\frac{\left(\left(2ac+b^2\right)Ad^3+\left(3Ade^2+3Bd^2e\right)a^2+2\left(3Ad^2e+Bd^3\right)ab\right)x^3}{3}+\frac{\left(2Aabd^3+\left(3Ad^2e+Bd^3\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/9*B*c^2*e^3*x^9+1/8*((A*e^3+3*B*d*e^2)*c^2+2*B*e^3*b*c)*x^8+1/7*((3*A*d*e
^2+3*B*d^2*e)*c^2+2*(A*e^3+3*B*d*e^2)*b*c+B*e^3*(2*a*c+b^2))*x^7+1/6*((3*A*
d^2*e+B*d^3)*c^2+2*(3*A*d*e^2+3*B*d^2*e)*b*c+(A*e^3+3*B*d*e^2)*(2*a*c+b^2)+
2*B*e^3*a*b)*x^6+1/5*(A*c^2*d^3+2*(3*A*d^2*e+B*d^3)*b*c+(3*A*d*e^2+3*B*d^2*
e)*(2*a*c+b^2)+2*(A*e^3+3*B*d*e^2)*a*b+B*a^2*e^3)*x^5+1/4*(2*A*d^3*b*c+(3*A
*d^2*e+B*d^3)*(2*a*c+b^2)+2*(3*A*d*e^2+3*B*d^2*e)*a*b+(A*e^3+3*B*d*e^2)*a^2
)*x^4+1/3*(A*d^3*(2*a*c+b^2)+2*(3*A*d^2*e+B*d^3)*a*b+(3*A*d*e^2+3*B*d^2*e)*
a^2)*x^3+1/2*(2*A*d^3*a*b+(3*A*d^2*e+B*d^3)*a^2)*x^2+A*d^3*a^2*x
```

maxima [A] time = 0.47, size = 416, normalized size = 1.37

$$\frac{1}{9} \, B c^{2} e^{3} x^{9} + \frac{1}{8} \, {\left(3 \, B c^{2} d e^{2} + {\left(2 \, B b c + A c^{2}\right)} e^{3}\right)} x^{8} + \frac{1}{7} \, {\left(3 \, B c^{2} d^{2} e + 3 \, {\left(2 \, B b c + A c^{2}\right)} d e^{2} + {\left(B b^{2} + 2 \, {\left(B a + A b\right)} c\right)} e^{3}\right)} x^{7} + A a^{2} d^{3} x + \frac{1}{6} \, {\left(B c^{2} d^{3} + 3 \, {\left(2 \, B b c + A c^{2}\right)} d^{2} e + 3 \, {\left(B b^{2} + 2 \, {\left(B a + A b\right)} c\right)} d e^{2} + {\left(2 \, B a b + A b^{2} + 2 \, A a c\right)} e^{3}\right)} x^{6} + \frac{1}{5} \, {\left({\left(2 \, B b c + A c^{2}\right)} d^{3} + 3 \, {\left(B b^{2} + 2 \, {\left(B a + A b\right)} c\right)} d^{2} e + 3 \, {\left(2 \, B a b + A b^{2} + 2 \, A a c\right)} d e^{2} + {\left(B a^{2} + 2 \, A a b\right)} e^{3}\right)} x^{5} + \frac{1}{4} \, {\left(A a^{2} e^{3} + {\left(B b^{2} + 2 \, {\left(B a + A b\right)} c\right)} d^{3} + 3 \, {\left(2 \, B a b + A b^{2} + 2 \, A a c\right)} d^{2} e + 3 \, {\left(B a^{2} + 2 \, A a b\right)} d e^{2}\right)} x^{4} + \frac{1}{3} \, {\left(3 \, A a^{2} d e^{2} + {\left(2 \, B a b + A b^{2} + 2 \, A a c\right)} d^{3} + 3 \, {\left(B a^{2} + 2 \, A a b\right)} d^{2} e\right)} x^{3} + \frac{1}{2} \, {\left(3 \, A a^{2} d^{2} e + {\left(B a^{2} + 2 \, A a b\right)} d^{3}\right)} x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*e^3*x^9 + 1/8*(3*B*c^2*d*e^2 + (2*B*b*c + A*c^2)*e^3)*x^8 + 1/7*(
3*B*c^2*d^2*e + 3*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*e^3)*
x^7 + A*a^2*d^3*x + 1/6*(B*c^2*d^3 + 3*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 +
 2*(B*a + A*b)*c)*d*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^3)*x^6 + 1/5*((2*B*
b*c + A*c^2)*d^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e + 3*(2*B*a*b + A*b^2 +
 2*A*a*c)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x^5 + 1/4*(A*a^2*e^3 + (B*b^2 + 2*
(B*a + A*b)*c)*d^3 + 3*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e + 3*(B*a^2 + 2*A*a
*b)*d*e^2)*x^4 + 1/3*(3*A*a^2*d*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^3 + 3*(
B*a^2 + 2*A*a*b)*d^2*e)*x^3 + 1/2*(3*A*a^2*d^2*e + (B*a^2 + 2*A*a*b)*d^3)*x
^2
```

mupad [B] time = 0.14, size = 450, normalized size = 1.48

$$x^5\,\left(\frac{B\,a^2\,e^3}{5}+\frac{6\,B\,a\,b\,d\,e^2}{5}+\frac{2\,A\,a\,b\,e^3}{5}+\frac{6\,B\,a\,c\,d^2\,e}{5}+\frac{6\,A\,a\,c\,d\,e^2}{5}+\frac{3\,B\,b^2\,d^2\,e}{5}+\frac{3\,A\,b^2\,d\,e^2}{5}+\frac{2\,B\,b\,c\,d^3}{5}+\frac{6\,A\,b\,c\,d^2\,e}{5}+\frac{A\,c^2\,d^3}{5}\right)+x^3\,\left(B\,a^2\,d^2\,e+A\,a^2\,d\,e^2+\frac{2\,B\,a\,b\,d^3}{3}+2\,A\,a\,b\,d^2\,e+\frac{2\,A\,c\,a\,d^3}{3}+\frac{A\,b^2\,d^3}{3}\right)+x^7\,\left(\frac{B\,b^2\,e^3}{7}+\frac{6\,B\,b\,c\,d\,e^2}{7}+\frac{2\,A\,b\,c\,e^3}{7}+\frac{3\,B\,c^2\,d^2\,e}{7}+\frac{3\,A\,c^2\,d\,e^2}{7}+\frac{2\,B\,a\,c\,e^3}{7}\right)+x^4\,\left(\frac{3\,B\,a^2\,d\,e^2}{4}+\frac{A\,a^2\,e^3}{4}+\frac{3\,B\,a\,b\,d^2\,e}{2}+\frac{3\,A\,a\,b\,d\,e^2}{2}+\frac{B\,c\,a\,d^3}{2}+\frac{3\,A\,c\,a\,d^2\,e}{2}+\frac{B\,b^2\,d^3}{4}+\frac{3\,A\,b^2\,d^2\,e}{4}+\frac{A\,c\,b\,d^3}{2}\right)+x^6\,\left(\frac{B\,b^2\,d\,e^2}{2}+\frac{A\,b^2\,e^3}{6}+B\,b\,c\,d^2\,e+A\,b\,c\,d\,e^2+\frac{B\,a\,b\,e^3}{3}+\frac{B\,c^2\,d^3}{6}+\frac{A\,c^2\,d^2\,e}{2}+B\,a\,c\,d\,e^2+\frac{A\,a\,c\,e^3}{3}\right)+A\,a^2\,d^3\,x+\frac{a\,d^2\,x^2\,\left(3\,A\,a\,e+2\,A\,b\,d+B\,a\,d\right)}{2}+\frac{c\,e^2\,x^8\,\left(A\,c\,e+2\,B\,b\,e+3\,B\,c\,d\right)}{8}+\frac{B\,c^2\,e^3\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^5*((A*c^2*d^3)/5 + (B*a^2*e^3)/5 + (2*A*a*b*e^3)/5 + (2*B*b*c*d^3)/5 + (3
*A*b^2*d*e^2)/5 + (3*B*b^2*d^2*e)/5 + (6*A*a*c*d*e^2)/5 + (6*B*a*b*d*e^2)/5
 + (6*A*b*c*d^2*e)/5 + (6*B*a*c*d^2*e)/5) + x^3*((A*b^2*d^3)/3 + (2*A*a*c*d
^3)/3 + (2*B*a*b*d^3)/3 + A*a^2*d*e^2 + B*a^2*d^2*e + 2*A*a*b*d^2*e) + x^7*
((B*b^2*e^3)/7 + (2*A*b*c*e^3)/7 + (2*B*a*c*e^3)/7 + (3*A*c^2*d*e^2)/7 + (3
*B*c^2*d^2*e)/7 + (6*B*b*c*d*e^2)/7) + x^4*((A*a^2*e^3)/4 + (B*b^2*d^3)/4 +
 (A*b*c*d^3)/2 + (B*a*c*d^3)/2 + (3*A*b^2*d^2*e)/4 + (3*B*a^2*d*e^2)/4 + (3
*A*a*b*d*e^2)/2 + (3*A*a*c*d^2*e)/2 + (3*B*a*b*d^2*e)/2) + x^6*((A*b^2*e^3)
/6 + (B*c^2*d^3)/6 + (A*a*c*e^3)/3 + (B*a*b*e^3)/3 + (A*c^2*d^2*e)/2 + (B*b
^2*d*e^2)/2 + A*b*c*d*e^2 + B*a*c*d*e^2 + B*b*c*d^2*e) + A*a^2*d^3*x + (a*d
^2*x^2*(3*A*a*e + 2*A*b*d + B*a*d))/2 + (c*e^2*x^8*(A*c*e + 2*B*b*e + 3*B*c
*d))/8 + (B*c^2*e^3*x^9)/9
```

sympy [A] time = 0.15, size = 583, normalized size = 1.92

$$A a^{2} d^{3} x + \frac{B c^{2} e^{3} x^{9}}{9} + x^{8} \left(\frac{A c^{2} e^{3}}{8} + \frac{B b c e^{3}}{4} + \frac{3 B c^{2} d e^{2}}{8}\right) + x^{7} \left(\frac{2 A b c e^{3}}{7} + \frac{3 A c^{2} d e^{2}}{7} + \frac{2 B a c e^{3}}{7} + \frac{B b^{2} e^{3}}{7} + \frac{6 B b c d e^{2}}{7} + \frac{3 B c^{2} d^{2} e}{7}\right) + x^{6} \left(\frac{A a c e^{3}}{3} + \frac{A b^{2} e^{3}}{6} + A b c d e^{2} + \frac{A c^{2} d^{2} e}{2} + \frac{B a b e^{3}}{3} + B a c d e^{2} + \frac{B b^{2} d e^{2}}{2} + B b c d^{2} e + \frac{B c^{2} d^{3}}{6}\right) + x^{5} \left(\frac{2 A a b e^{3}}{5} + \frac{6 A a c d e^{2}}{5} + \frac{3 A b^{2} d e^{2}}{5} + \frac{6 A b c d^{2} e}{5} + \frac{A c^{2} d^{3}}{5} + \frac{B a^{2} e^{3}}{5} + \frac{6 B a b d e^{2}}{5} + \frac{6 B a c d^{2} e}{5} + \frac{3 B b^{2} d^{2} e}{5} + \frac{2 B b c d^{3}}{5}\right) + x^{4} \left(\frac{A a^{2} e^{3}}{4} + \frac{3 A a b d e^{2}}{2} + \frac{3 A a c d^{2} e}{2} + \frac{3 A b^{2} d^{2} e}{4} + \frac{A b c d^{3}}{2} + \frac{3 B a^{2} d e^{2}}{4} + \frac{3 B a b d^{2} e}{2} + \frac{B a c d^{3}}{2} + \frac{B b^{2} d^{3}}{4}\right) + x^{3} \left(A a^{2} d e^{2} + 2 A a b d^{2} e + \frac{2 A a c d^{3}}{3} + \frac{A b^{2} d^{3}}{3} + B a^{2} d^{2} e + \frac{2 B a b d^{3}}{3}\right) + x^{2} \left(\frac{3 A a^{2} d^{2} e}{2} + A a b d^{3} + \frac{B a^{2} d^{3}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**3*x + B*c**2*e**3*x**9/9 + x**8*(A*c**2*e**3/8 + B*b*c*e**3/4 + 3
*B*c**2*d*e**2/8) + x**7*(2*A*b*c*e**3/7 + 3*A*c**2*d*e**2/7 + 2*B*a*c*e**3
/7 + B*b**2*e**3/7 + 6*B*b*c*d*e**2/7 + 3*B*c**2*d**2*e/7) + x**6*(A*a*c*e*
*3/3 + A*b**2*e**3/6 + A*b*c*d*e**2 + A*c**2*d**2*e/2 + B*a*b*e**3/3 + B*a*
```

```
c*d*e**2 + B*b**2*d*e**2/2 + B*b*c*d**2*e + B*c**2*d**3/6) + x**5*(2*A*a*b*
e**3/5 + 6*A*a*c*d*e**2/5 + 3*A*b**2*d*e**2/5 + 6*A*b*c*d**2*e/5 + A*c**2*d
**3/5 + B*a**2*e**3/5 + 6*B*a*b*d*e**2/5 + 6*B*a*c*d**2*e/5 + 3*B*b**2*d**2
*e/5 + 2*B*b*c*d**3/5) + x**4*(A*a**2*e**3/4 + 3*A*a*b*d*e**2/2 + 3*A*a*c*d
**2*e/2 + 3*A*b**2*d**2*e/4 + A*b*c*d**3/2 + 3*B*a**2*d*e**2/4 + 3*B*a*b*d*
*2*e/2 + B*a*c*d**3/2 + B*b**2*d**3/4) + x**3*(A*a**2*d*e**2 + 2*A*a*b*d**2
*e + 2*A*a*c*d**3/3 + A*b**2*d**3/3 + B*a**2*d**2*e + 2*B*a*b*d**3/3) + x**
2*(3*A*a**2*d**2*e/2 + A*a*b*d**3 + B*a**2*d**3/2)
```

3.2080 $\int (A+Bx)(d+ex)^2 \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^6 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{6e^6}-\frac{(d+ex)^5 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.}{}$$

Rubi [A] time = 0.44, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{(d+ex)^6 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{6e^6}-\frac{(d+ex)^5 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{5e^6}+\frac{(d+ex)^4 \left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{4e^6}-\frac{(d+ex)^3(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{3e^6}-\frac{c(d+ex)^7(-Ace-2bBe+5Bcd)}{7e^6}+\frac{Bc^2(d+ex)^8}{8e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^3)/(3*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^4)/(4*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^5)/(5*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^6)/(6*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^7)/(7*e^
6) + (B*c^2*(d + e*x)^8)/(8*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^2 \left(a+bx+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^2}{e^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^3}{3e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-\right.}{}$$

Mathematica [A] time = 0.14, size = 301, normalized size = 0.99

$$a^2Ad^2x+\frac{1}{6}x^6\left(B\left(2ce(ae+2bd)+b^2e^2+c^2d^2\right)+2Ace(be+cd)\right)+\frac{1}{5}x^5\left(2b\left(aBe^2+2Acde+Bcd^2\right)+c\left(2aAe^2+4aBde+Acd^2\right)+b^2e(Ae+2Bd)\right)+\frac{1}{4}x^4\left(2b\left(aAe^2+2aBde+Acd^2\right)+a\left(aBe^2+4Acde+2Bcd^2\right)+b^2d(2Ae+Bd)\right)+\frac{1}{3}x^3\left(A\left(4abde+a\left(ae^2+2cd^2\right)+b^2d^2\right)+2aBd(ae+bd)\right)+\frac{1}{2}adx^2(2A(ae+bd)+aBd)+\frac{1}{7}cex^7(Ace+2B(be+cd))+\frac{1}{8}Bc^2e^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^2*x + (a*d*(a*B*d + 2*A*(b*d + a*e))*x^2)/2 + ((2*a*B*d*(b*d + a*e)
 + A*(b^2*d^2 + 4*a*b*d*e + a*(2*c*d^2 + a*e^2)))*x^3)/3 + ((b^2*d*(B*d + 2
*A*e) + 2*b*(A*c*d^2 + 2*a*B*d*e + a*A*e^2) + a*(2*B*c*d^2 + 4*A*c*d*e + a*
B*e^2))*x^4)/4 + ((b^2*e*(2*B*d + A*e) + c*(A*c*d^2 + 4*a*B*d*e + 2*a*A*e^2
) + 2*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*x^5)/5 + ((2*A*c*e*(c*d + b*e) + B
*(c^2*d^2 + b^2*e^2 + 2*c*e*(2*b*d + a*e)))*x^6)/6 + (c*e*(A*c*e + 2*B*(c*d
 + b*e))*x^7)/7 + (B*c^2*e^2*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.36, size = 396, normalized size = 1.30

$$\frac{1}{8}x^8e^2c^2B+\frac{2}{7}x^7edc^2B+\frac{2}{7}x^7e^2cbB+\frac{1}{7}x^7e^2c^2A+\frac{1}{6}x^6d^2c^2B+\frac{2}{3}x^6edcbB+\frac{1}{6}x^6e^2b^2B+\frac{1}{3}x^6e^2caB+\frac{1}{3}x^6edc^2A+\frac{1}{3}x^6e^2cbA+\frac{2}{5}x^5d^2cbB+\frac{2}{5}x^5edb^2B+\frac{4}{5}x^5edcaB+\frac{2}{5}x^5e^2baB+\frac{1}{5}x^5d^2c^2A+\frac{4}{5}x^5edcbA+\frac{1}{5}x^5e^2b^2A+\frac{2}{5}x^5e^2caA+\frac{1}{4}x^4d^2b^2B+\frac{1}{2}x^4d^2caB+x^4edbaB+\frac{1}{4}x^4e^2a^2B+\frac{1}{2}x^4d^2cbA+\frac{1}{2}x^4edb^2A+x^4edcaA+\frac{1}{2}x^4e^2baA+\frac{2}{3}x^3d^2baB+\frac{2}{3}x^3eda^2B+\frac{1}{3}x^3d^2b^2A+\frac{2}{3}x^3d^2caA+\frac{4}{3}x^3edbaA+\frac{1}{3}x^3e^2a^2A+\frac{1}{2}x^2d^2a^2B+x^2d^2baA+x^2eda^2A+xd^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*c^2*B + 2/7*x^7*e*d*c^2*B + 2/7*x^7*e^2*c*b*B + 1/7*x^7*e^2*c^2
*A + 1/6*x^6*d^2*c^2*B + 2/3*x^6*e*d*c*b*B + 1/6*x^6*e^2*b^2*B + 1/3*x^6*e^
2*c*a*B + 1/3*x^6*e*d*c^2*A + 1/3*x^6*e^2*c*b*A + 2/5*x^5*d^2*c*b*B + 2/5*x
^5*e*d*b^2*B + 4/5*x^5*e*d*c*a*B + 2/5*x^5*e^2*b*a*B + 1/5*x^5*d^2*c^2*A +
4/5*x^5*e*d*c*b*A + 1/5*x^5*e^2*b^2*A + 2/5*x^5*e^2*c*a*A + 1/4*x^4*d^2*b^2
*B + 1/2*x^4*d^2*c*a*B + x^4*e*d*b*a*B + 1/4*x^4*e^2*a^2*B + 1/2*x^4*d^2*c*
b*A + 1/2*x^4*e*d*b^2*A + x^4*e*d*c*a*A + 1/2*x^4*e^2*b*a*A + 2/3*x^3*d^2*b
*a*B + 2/3*x^3*e*d*a^2*B + 1/3*x^3*d^2*b^2*A + 2/3*x^3*d^2*c*a*A + 4/3*x^3*
e*d*b*a*A + 1/3*x^3*e^2*a^2*A + 1/2*x^2*d^2*a^2*B + x^2*d^2*b*a*A + x^2*e*d
*a^2*A + x*d^2*a^2*A
```

giac [A] time = 0.16, size = 396, normalized size = 1.30

$$\frac{1}{8}Bc^2x^8e^2+\frac{2}{7}Bc^2dx^7e+\frac{1}{6}Bc^2d^2x^6+\frac{2}{7}Bbcx^7e^2+\frac{1}{7}Ac^2x^7e^2+\frac{2}{3}Bbcdx^6e+\frac{1}{3}Ac^2dx^6e+\frac{2}{5}Bbcd^2x^5+\frac{1}{5}Ac^2d^2x^5+\frac{1}{6}Bb^2x^6e^2+\frac{1}{3}Bacx^6e^2+\frac{1}{3}Abcx^6e^2+\frac{2}{5}Bb^2dx^5e+\frac{4}{5}Bacdx^5e+\frac{4}{5}Abcdx^5e+\frac{1}{4}Bb^2d^2x^4+\frac{1}{2}Bacd^2x^4+\frac{1}{2}Abcd^2x^4+\frac{2}{5}Babx^5e^2+\frac{1}{5}Ab^2x^5e^2+\frac{2}{5}Aacx^5e^2+Babdx^4e+\frac{1}{2}Ab^2dx^4e+Aacdx^4e+\frac{2}{3}Babd^2x^3+\frac{1}{3}Ab^2d^2x^3+\frac{2}{3}Aacd^2x^3+\frac{1}{4}Ba^2x^4e^2+\frac{1}{2}Aabx^4e^2+\frac{2}{3}Ba^2dx^3e+\frac{4}{3}Aabdx^3e+\frac{1}{2}Ba^2d^2x^2+Aabd^2x^2+\frac{1}{3}Aa^2x^3e^2+Aa^2dx^2e+Aa^2d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8*e^2 + 2/7*B*c^2*d*x^7*e + 1/6*B*c^2*d^2*x^6 + 2/7*B*b*c*x^7*e
^2 + 1/7*A*c^2*x^7*e^2 + 2/3*B*b*c*d*x^6*e + 1/3*A*c^2*d*x^6*e + 2/5*B*b*c*
d^2*x^5 + 1/5*A*c^2*d^2*x^5 + 1/6*B*b^2*x^6*e^2 + 1/3*B*a*c*x^6*e^2 + 1/3*A
*b*c*x^6*e^2 + 2/5*B*b^2*d*x^5*e + 4/5*B*a*c*d*x^5*e + 4/5*A*b*c*d*x^5*e +
1/4*B*b^2*d^2*x^4 + 1/2*B*a*c*d^2*x^4 + 1/2*A*b*c*d^2*x^4 + 2/5*B*a*b*x^5*e
^2 + 1/5*A*b^2*x^5*e^2 + 2/5*A*a*c*x^5*e^2 + B*a*b*d*x^4*e + 1/2*A*b^2*d*x^
4*e + A*a*c*d*x^4*e + 2/3*B*a*b*d^2*x^3 + 1/3*A*b^2*d^2*x^3 + 2/3*A*a*c*d^2
*x^3 + 1/4*B*a^2*x^4*e^2 + 1/2*A*a*b*x^4*e^2 + 2/3*B*a^2*d*x^3*e + 4/3*A*a*
b*d*x^3*e + 1/2*B*a^2*d^2*x^2 + A*a*b*d^2*x^2 + 1/3*A*a^2*x^3*e^2 + A*a^2*d
*x^2*e + A*a^2*d^2*x
```

maple [A] time = 0.04, size = 293, normalized size = 0.96

$$\frac{Bc^2e^2x^8}{8}+\frac{\left(2Bbce^2+\left(Ae^2+2Bde\right)c^2\right)x^7}{7}+Aa^2d^2x+\frac{\left(\left(2ac+b^2\right)Be^2+2\left(Ae^2+2Bde\right)bc+\left(2Ade+Bd^2\right)c^2\right)x^6}{6}+\frac{\left(Ac^2d^2+2Babe^2+2\left(2Ade+Bd^2\right)bc+\left(Ae^2+2Bde\right)\left(2ac+b^2\right)\right)x^5}{5}+\frac{\left(2Abcd^2+Ba^2e^2+2\left(Ae^2+2Bde\right)ab+\left(2Ade+Bd^2\right)\left(2ac+b^2\right)\right)x^4}{4}+\frac{\left(\left(2ac+b^2\right)Ad^2+\left(Ae^2+2Bde\right)a^2+2\left(2Ade+Bd^2\right)ab\right)x^3}{3}+\frac{\left(2Aabd^2+\left(2Ade+Bd^2\right)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/8*B*c^2*e^2*x^8+1/7*((A*e^2+2*B*d*e)*c^2+2*B*e^2*b*c)*x^7+1/6*((2*A*d*e+B
*d^2)*c^2+2*(A*e^2+2*B*d*e)*b*c+B*e^2*(2*a*c+b^2))*x^6+1/5*(A*c^2*d^2+2*(2*
A*d*e+B*d^2)*b*c+(A*e^2+2*B*d*e)*(2*a*c+b^2)+2*B*e^2*a*b)*x^5+1/4*(2*A*d^2*
b*c+(2*A*d*e+B*d^2)*(2*a*c+b^2)+2*(A*e^2+2*B*d*e)*a*b+B*a^2*e^2)*x^4+1/3*(A
*d^2*(2*a*c+b^2)+2*(2*A*d*e+B*d^2)*a*b+(A*e^2+2*B*d*e)*a^2)*x^3+1/2*(2*A*d^
2*a*b+(2*A*d*e+B*d^2)*a^2)*x^2+A*d^2*a^2*x
```

maxima [A] time = 0.47, size = 300, normalized size = 0.99

$$\frac{1}{8}Bc^2e^2x^8+\frac{1}{7}\left(2Bc^2de+\left(2Bbc+Ac^2\right)e^2\right)x^7+\frac{1}{6}\left(Bc^2d^2+2\left(2Bbc+Ac^2\right)de+\left(Bb^2+2(Ba+Ab)c\right)e^2\right)x^6+Aa^2d^2x+\frac{1}{5}\left(\left(2Bbc+Ac^2\right)d^2+2\left(Bb^2+2(Ba+Ab)c\right)de+\left(2Bab+Ab^2+2Aac\right)e^2\right)x^5+\frac{1}{4}\left(\left(Bb^2+2(Ba+Ab)c\right)d^2+2\left(2Bab+Ab^2+2Aac\right)de+\left(Ba^2+2Aab\right)e^2\right)x^4+\frac{1}{3}\left(Aa^2e^2+\left(2Bab+Ab^2+2Aac\right)d^2+2\left(Ba^2+2Aab\right)de\right)x^3+\frac{1}{2}\left(2Aa^2de+\left(Ba^2+2Aab\right)d^2\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*e^2*x^8 + 1/7*(2*B*c^2*d*e + (2*B*b*c + A*c^2)*e^2)*x^7 + 1/6*(B*
c^2*d^2 + 2*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*(B*a + A*b)*c)*e^2)*x^6 + A*
a^2*d^2*x + 1/5*((2*B*b*c + A*c^2)*d^2 + 2*(B*b^2 + 2*(B*a + A*b)*c)*d*e +
(2*B*a*b + A*b^2 + 2*A*a*c)*e^2)*x^5 + 1/4*((B*b^2 + 2*(B*a + A*b)*c)*d^2 +
 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e + (B*a^2 + 2*A*a*b)*e^2)*x^4 + 1/3*(A*a^
2*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^2 + 2*(B*a^2 + 2*A*a*b)*d*e)*x^3 + 1/
2*(2*A*a^2*d*e + (B*a^2 + 2*A*a*b)*d^2)*x^2
```

mupad [B] time = 2.33, size = 310, normalized size = 1.02

$$x^3\left(\frac{2Ba^2de}{3}+\frac{Aa^2e^2}{3}+\frac{2Babd^2}{3}+\frac{4Aabde}{3}+\frac{2Acad^2}{3}+\frac{Ab^2d^2}{3}\right)+x^6\left(\frac{Bb^2e^2}{6}+\frac{2Bbcde}{3}+\frac{Abce^2}{3}+\frac{Bc^2d^2}{6}+\frac{Ac^2de}{3}+\frac{Bace^2}{3}\right)+x^4\left(\frac{Ba^2e^2}{4}+Babde+\frac{Aabe^2}{2}+\frac{Bcad^2}{2}+Acade+\frac{Bb^2d^2}{4}+\frac{Ab^2de}{2}+\frac{Acbd^2}{2}\right)+x^5\left(\frac{2Bb^2de}{5}+\frac{Ab^2e^2}{5}+\frac{2Bbcd^2}{5}+\frac{4Abcde}{5}+\frac{2Babe^2}{5}+\frac{Ac^2d^2}{5}+\frac{4Bacde}{5}+\frac{2Aace^2}{5}\right)+\frac{adx^2\,(2Aae+2Abd+Bad)}{2}+\frac{cex^7\,(Ace+2Bbe+2Bcd)}{7}+Aa^2d^2x+\frac{Bc^2e^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((A*a^2*e^2)/3 + (A*b^2*d^2)/3 + (2*A*a*c*d^2)/3 + (2*B*a*b*d^2)/3 + (2
*B*a^2*d*e)/3 + (4*A*a*b*d*e)/3) + x^6*((B*b^2*e^2)/6 + (B*c^2*d^2)/6 + (A*
b*c*e^2)/3 + (B*a*c*e^2)/3 + (A*c^2*d*e)/3 + (2*B*b*c*d*e)/3) + x^4*((B*a^2
*e^2)/4 + (B*b^2*d^2)/4 + (A*a*b*e^2)/2 + (A*b*c*d^2)/2 + (B*a*c*d^2)/2 + (
A*b^2*d*e)/2 + A*a*c*d*e + B*a*b*d*e) + x^5*((A*b^2*e^2)/5 + (A*c^2*d^2)/5
+ (2*A*a*c*e^2)/5 + (2*B*a*b*e^2)/5 + (2*B*b*c*d^2)/5 + (2*B*b^2*d*e)/5 + (
4*A*b*c*d*e)/5 + (4*B*a*c*d*e)/5) + (a*d*x^2*(2*A*a*e + 2*A*b*d + B*a*d))/2
 + (c*e*x^7*(A*c*e + 2*B*b*e + 2*B*c*d))/7 + A*a^2*d^2*x + (B*c^2*e^2*x^8)/
8
```

sympy [A] time = 0.13, size = 405, normalized size = 1.33

$$Aa^2d^2x+\frac{Bc^2e^2x^8}{8}+x^7\left(\frac{Ac^2e^2}{7}+\frac{2Bbce^2}{7}+\frac{2Bc^2de}{7}\right)+x^6\left(\frac{Abce^2}{3}+\frac{Ac^2de}{3}+\frac{Bace^2}{3}+\frac{Bb^2e^2}{6}+\frac{2Bbcde}{3}+\frac{Bc^2d^2}{6}\right)+x^5\left(\frac{2Aace^2}{5}+\frac{Ab^2e^2}{5}+\frac{4Abcde}{5}+\frac{Ac^2d^2}{5}+\frac{2Babe^2}{5}+\frac{4Bacde}{5}+\frac{2Bb^2de}{5}+\frac{2Bbcd^2}{5}\right)+x^4\left(\frac{Aabe^2}{2}+Aacde+\frac{Ab^2de}{2}+\frac{Abcd^2}{2}+\frac{Ba^2e^2}{4}+Babde+\frac{Bacd^2}{2}+\frac{Bb^2d^2}{4}\right)+x^3\left(\frac{Aa^2e^2}{3}+\frac{4Aabde}{3}+\frac{2Aacd^2}{3}+\frac{Ab^2d^2}{3}+\frac{2Ba^2de}{3}+\frac{2Babd^2}{3}\right)+x^2\left(Aa^2de+Aabd^2+\frac{Ba^2d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**2*x + B*c**2*e**2*x**8/8 + x**7*(A*c**2*e**2/7 + 2*B*b*c*e**2/7 +
 2*B*c**2*d*e/7) + x**6*(A*b*c*e**2/3 + A*c**2*d*e/3 + B*a*c*e**2/3 + B*b**
2*e**2/6 + 2*B*b*c*d*e/3 + B*c**2*d**2/6) + x**5*(2*A*a*c*e**2/5 + A*b**2*e
**2/5 + 4*A*b*c*d*e/5 + A*c**2*d**2/5 + 2*B*a*b*e**2/5 + 4*B*a*c*d*e/5 + 2*
B*b**2*d*e/5 + 2*B*b*c*d**2/5) + x**4*(A*a*b*e**2/2 + A*a*c*d*e + A*b**2*d*
e/2 + A*b*c*d**2/2 + B*a**2*e**2/4 + B*a*b*d*e + B*a*c*d**2/2 + B*b**2*d**2
/4) + x**3*(A*a**2*e**2/3 + 4*A*a*b*d*e/3 + 2*A*a*c*d**2/3 + A*b**2*d**2/3
+ 2*B*a**2*d*e/3 + 2*B*a*b*d**2/3) + x**2*(A*a**2*d*e + A*a*b*d**2 + B*a**2
*d**2/2)
```

3.2081 $\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=180

$$a^2Adx+\frac{1}{5}x^5\left(c(2aBe+Acd)+2bc(Ae+Bd)+b^2Be\right)+\frac{1}{4}x^4\left(2b(aBe+Acd)+2ac(Ae+Bd)+b^2(Ae+Bd)\right)+\frac{1}{3}$$

Rubi [A] time = 0.30, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$a^2Adx+\frac{1}{5}x^5\left(c(2aBe+Acd)+2bc(Ae+Bd)+b^2Be\right)+\frac{1}{4}x^4\left(2b(aBe+Acd)+2ac(Ae+Bd)+b^2(Ae+Bd)\right)+\frac{1}{3}x^3\left(A\left(2abe+2acd+b^2d\right)+aB(ae+2bd)\right)+\frac{1}{2}ax^2(aAe+aBd+2Abd)+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d*x + (a*(2*A*b*d + a*B*d + a*A*e)*x^2)/2 + ((a*B*(2*b*d + a*e) + A*(
b^2*d + 2*a*c*d + 2*a*b*e))*x^3)/3 + ((b^2*(B*d + A*e) + 2*a*c*(B*d + A*e)
+ 2*b*(A*c*d + a*B*e))*x^4)/4 + ((b^2*B*e + 2*b*c*(B*d + A*e) + c*(A*c*d +
2*a*B*e))*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B*c^2*e*x^7)/7
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^2\,dx=\int \left(a^2Ad+a(2Abd+aBd+aAe)x+\left(aB(2bd+ae)+A\left(b^2d+2acd\right.\right.\right.$$
$$=a^2Adx+\frac{1}{2}a(2Abd+aBd+aAe)x^2+\frac{1}{3}\left(aB(2bd+ae)+A\left(b^2d+2\right.\right.$$

Mathematica [A] time = 0.08, size = 180, normalized size = 1.00

$$a^2Adx+\frac{1}{5}x^5\left(c(2aBe+Acd)+2bc(Ae+Bd)+b^2Be\right)+\frac{1}{4}x^4\left(2b(aBe+Acd)+2ac(Ae+Bd)+b^2(Ae+Bd)\right)+\frac{1}{3}x^3\left(A\left(2abe+2acd+b^2d\right)+aB(ae+2bd)\right)+\frac{1}{2}ax^2(aAe+aBd+2Abd)+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d*x + (a*(2*A*b*d + a*B*d + a*A*e)*x^2)/2 + ((a*B*(2*b*d + a*e) + A*(
b^2*d + 2*a*c*d + 2*a*b*e))*x^3)/3 + ((b^2*(B*d + A*e) + 2*a*c*(B*d + A*e)
+ 2*b*(A*c*d + a*B*e))*x^4)/4 + ((b^2*B*e + 2*b*c*(B*d + A*e) + c*(A*c*d +
2*a*B*e))*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B*c^2*e*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^2\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.34, size = 225, normalized size = 1.25

$$\frac{1}{7}x^7ec^2B+\frac{1}{6}x^6dc^2B+\frac{1}{3}x^6ecbB+\frac{1}{6}x^6ec^2A+\frac{2}{5}x^5dcbB+\frac{1}{5}x^5eb^2B+\frac{2}{5}x^5ecaB+\frac{1}{5}x^5dc^2A+\frac{2}{5}x^5ecbA+\frac{1}{4}x^4db^2B+\frac{1}{2}x^4dcaB+\frac{1}{2}x^4ebaB+\frac{1}{2}x^4dcbA+\frac{1}{4}x^4eb^2A+\frac{1}{2}x^4ecaA+\frac{2}{3}x^3dbaB+\frac{1}{3}x^3ea^2B+\frac{1}{3}x^3db^2A+\frac{2}{3}x^3dcaA+\frac{2}{3}x^3ebaA+\frac{1}{2}x^2da^2B+x^2dbaA+\frac{1}{2}x^2ea^2A+xda^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*c^2*B + 1/6*x^6*d*c^2*B + 1/3*x^6*e*c*b*B + 1/6*x^6*e*c^2*A + 2/5
*x^5*d*c*b*B + 1/5*x^5*e*b^2*B + 2/5*x^5*e*c*a*B + 1/5*x^5*d*c^2*A + 2/5*x^
5*e*c*b*A + 1/4*x^4*d*b^2*B + 1/2*x^4*d*c*a*B + 1/2*x^4*e*b*a*B + 1/2*x^4*d
*c*b*A + 1/4*x^4*e*b^2*A + 1/2*x^4*e*c*a*A + 2/3*x^3*d*b*a*B + 1/3*x^3*e*a^
2*B + 1/3*x^3*d*b^2*A + 2/3*x^3*d*c*a*A + 2/3*x^3*e*b*a*A + 1/2*x^2*d*a^2*B
 + x^2*d*b*a*A + 1/2*x^2*e*a^2*A + x*d*a^2*A
```

giac [A] time = 0.16, size = 237, normalized size = 1.32

$$\frac{1}{7}Bc^2x^7e+\frac{1}{6}Bc^2dx^6+\frac{1}{3}Bbcx^6e+\frac{1}{6}Ac^2x^6e+\frac{2}{5}Bbcdx^5+\frac{1}{5}Ac^2dx^5+\frac{1}{5}Bb^2x^5e+\frac{2}{5}Bacx^5e+\frac{2}{5}Abcx^5e+\frac{1}{4}Bb^2dx^4+\frac{1}{2}Bacdx^4+\frac{1}{2}Abcdx^4+\frac{1}{2}Babx^4e+\frac{1}{4}Ab^2x^4e+\frac{1}{2}Aacx^4e+\frac{2}{3}Babdx^3+\frac{1}{3}Ab^2dx^3+\frac{2}{3}Aacdx^3+\frac{1}{3}Ba^2x^3e+\frac{2}{3}Aabx^3e+\frac{1}{2}Ba^2dx^2+Aabdx^2+\frac{1}{2}Aa^2x^2e+Aa^2dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7*e + 1/6*B*c^2*d*x^6 + 1/3*B*b*c*x^6*e + 1/6*A*c^2*x^6*e + 2/5
*B*b*c*d*x^5 + 1/5*A*c^2*d*x^5 + 1/5*B*b^2*x^5*e + 2/5*B*a*c*x^5*e + 2/5*A*
b*c*x^5*e + 1/4*B*b^2*d*x^4 + 1/2*B*a*c*d*x^4 + 1/2*A*b*c*d*x^4 + 1/2*B*a*b
*x^4*e + 1/4*A*b^2*x^4*e + 1/2*A*a*c*x^4*e + 2/3*B*a*b*d*x^3 + 1/3*A*b^2*d*
x^3 + 2/3*A*a*c*d*x^3 + 1/3*B*a^2*x^3*e + 2/3*A*a*b*x^3*e + 1/2*B*a^2*d*x^2
 + A*a*b*d*x^2 + 1/2*A*a^2*x^2*e + A*a^2*d*x
```

maple [A] time = 0.04, size = 167, normalized size = 0.93

$$\frac{Bc^2ex^7}{7}+\frac{\left(2Bbce+(Ae+Bd)c^2\right)x^6}{6}+Aa^2dx+\frac{\left(Ac^2d+\left(2ac+b^2\right)Be+2(Ae+Bd)bc\right)x^5}{5}+\frac{\left(2Abcd+2Babe+(Ae+Bd)\left(2ac+b^2\right)\right)x^4}{4}+\frac{\left(Ba^2e+\left(2ac+b^2\right)Ad+2(Ae+Bd)ab\right)x^3}{3}+\frac{\left(2Aabd+(Ae+Bd)a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/7*B*c^2*e*x^7+1/6*((A*e+B*d)*c^2+2*B*e*b*c)*x^6+1/5*(A*c^2*d+2*(A*e+B*d)*
b*c+B*e*(2*a*c+b^2))*x^5+1/4*(2*A*b*c*d+(A*e+B*d)*(2*a*c+b^2)+2*B*a*b*e)*x^
4+1/3*(A*d*(2*a*c+b^2)+2*(A*e+B*d)*a*b+B*e*a^2)*x^3+1/2*(2*A*d*a*b+(A*e+B*d
)*a^2)*x^2+A*a^2*d*x
```

maxima [A] time = 0.48, size = 184, normalized size = 1.02

$$\frac{1}{7}Bc^2ex^7+\frac{1}{6}\left(Bc^2d+\left(2Bbc+Ac^2\right)e\right)x^6+\frac{1}{5}\left(\left(2Bbc+Ac^2\right)d+\left(Bb^2+2(Ba+Ab)c\right)e\right)x^5+Aa^2dx+\frac{1}{4}\left(\left(Bb^2+2(Ba+Ab)c\right)d+\left(2Bab+Ab^2+2Aac\right)e\right)x^4+\frac{1}{3}\left(\left(2Bab+Ab^2+2Aac\right)d+\left(Ba^2+2Aab\right)e\right)x^3+\frac{1}{2}\left(Aa^2e+\left(Ba^2+2Aab\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*e*x^7 + 1/6*(B*c^2*d + (2*B*b*c + A*c^2)*e)*x^6 + 1/5*((2*B*b*c +
 A*c^2)*d + (B*b^2 + 2*(B*a + A*b)*c)*e)*x^5 + A*a^2*d*x + 1/4*((B*b^2 + 2*
(B*a + A*b)*c)*d + (2*B*a*b + A*b^2 + 2*A*a*c)*e)*x^4 + 1/3*((2*B*a*b + A*b
^2 + 2*A*a*c)*d + (B*a^2 + 2*A*a*b)*e)*x^3 + 1/2*(A*a^2*e + (B*a^2 + 2*A*a*
b)*d)*x^2
```

mupad [B] time = 2.33, size = 184, normalized size = 1.02

$$x^4\left(\frac{Ab^2e}{4}+\frac{Bb^2d}{4}+\frac{Aace}{2}+\frac{Abcd}{2}+\frac{Babe}{2}+\frac{Bacd}{2}\right)+x^3\left(\frac{Ab^2d}{3}+\frac{Ba^2e}{3}+\frac{2Aabe}{3}+\frac{2Aacd}{3}+\frac{2Babd}{3}\right)+x^5\left(\frac{Ac^2d}{5}+\frac{Bb^2e}{5}+\frac{2Abce}{5}+\frac{2Bace}{5}+\frac{2Bbcd}{5}\right)+x^2\left(\frac{Aa^2e}{2}+\frac{Ba^2d}{2}+Aabd\right)+x^6\left(\frac{Ac^2e}{6}+\frac{Bc^2d}{6}+\frac{Bbce}{3}\right)+Aa^2dx+\frac{Bc^2ex^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^4*((A*b^2*e)/4 + (B*b^2*d)/4 + (A*a*c*e)/2 + (A*b*c*d)/2 + (B*a*b*e)/2 +
(B*a*c*d)/2) + x^3*((A*b^2*d)/3 + (B*a^2*e)/3 + (2*A*a*b*e)/3 + (2*A*a*c*d)
/3 + (2*B*a*b*d)/3) + x^5*((A*c^2*d)/5 + (B*b^2*e)/5 + (2*A*b*c*e)/5 + (2*B
*a*c*e)/5 + (2*B*b*c*d)/5) + x^2*((A*a^2*e)/2 + (B*a^2*d)/2 + A*a*b*d) + x^
6*((A*c^2*e)/6 + (B*c^2*d)/6 + (B*b*c*e)/3) + A*a^2*d*x + (B*c^2*e*x^7)/7
```

sympy [A] time = 0.10, size = 231, normalized size = 1.28

$$Aa^2dx + \frac{Bc^2ex^7}{7} + x^6\left(\frac{Ac^2e}{6} + \frac{Bbce}{3} + \frac{Bc^2d}{6}\right) + x^5\left(\frac{2Abce}{5} + \frac{Ac^2d}{5} + \frac{2Bace}{5} + \frac{Bb^2e}{5} + \frac{2Bbcd}{5}\right) + x^4\left(\frac{Aace}{2} + \frac{Ab^2e}{4} + \frac{Abcd}{2} + \frac{Babe}{2} + \frac{Bacd}{2} + \frac{Bb^2d}{4}\right) + x^3\left(\frac{2Aabe}{3} + \frac{2Aacd}{3} + \frac{Ab^2d}{3} + \frac{Ba^2e}{3} + \frac{2Babd}{3}\right) + x^2\left(\frac{Aa^2e}{2} + Aabd + \frac{Ba^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d*x + B*c**2*e*x**7/7 + x**6*(A*c**2*e/6 + B*b*c*e/3 + B*c**2*d/6) +
 x**5*(2*A*b*c*e/5 + A*c**2*d/5 + 2*B*a*c*e/5 + B*b**2*e/5 + 2*B*b*c*d/5) +
 x**4*(A*a*c*e/2 + A*b**2*e/4 + A*b*c*d/2 + B*a*b*e/2 + B*a*c*d/2 + B*b**2*
d/4) + x**3*(2*A*a*b*e/3 + 2*A*a*c*d/3 + A*b**2*d/3 + B*a**2*e/3 + 2*B*a*b*
d/3) + x**2*(A*a**2*e/2 + A*a*b*d + B*a**2*d/2)
```

3.2082 $\int (A+Bx)\left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=96

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Rubi [A] time = 0.09, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^2 \, dx &= \int \left(a^2A+a(2Ab+aB)x+\left(2abB+A\left(b^2+2ac\right)\right)x^2+\left(b^2B+2Abc+2aBc\right)x^3\right.\\ &= a^2Ax+\frac{1}{2}a(2Ab+aB)x^2+\frac{1}{3}\left(2abB+A\left(b^2+2ac\right)\right)x^3+\frac{1}{4}\left(b^2B+2Abc+2aB\right.\end{aligned}$$

Mathematica [A] time = 0.02, size = 96, normalized size = 1.00

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(2aAc+2abB+Ab^2\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)^2 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^2, x]
```

fricas [A] time = 0.35, size = 99, normalized size = 1.03

$$\frac{1}{6}x^6c^2B + \frac{2}{5}x^5cbB + \frac{1}{5}x^5c^2A + \frac{1}{4}x^4b^2B + \frac{1}{2}x^4caB + \frac{1}{2}x^4cbA + \frac{2}{3}x^3baB + \frac{1}{3}x^3b^2A + \frac{2}{3}x^3caA + \frac{1}{2}x^2a^2B + x^2baA + xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*a
*B + 1/2*x^4*c*b*A + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 2/3*x^3*c*a*A + 1/2*x^
2*a^2*B + x^2*b*a*A + x*a^2*A
```

giac [A] time = 0.15, size = 99, normalized size = 1.03

$$\frac{1}{6}Bc^2x^6 + \frac{2}{5}Bbcx^5 + \frac{1}{5}Ac^2x^5 + \frac{1}{4}Bb^2x^4 + \frac{1}{2}Bacx^4 + \frac{1}{2}Abcx^4 + \frac{2}{3}Babx^3 + \frac{1}{3}Ab^2x^3 + \frac{2}{3}Aacx^3 + \frac{1}{2}Ba^2x^2 + Aabx^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*B*a*c*x
^4 + 1/2*A*b*c*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 2/3*A*a*c*x^3 + 1/2*B*
a^2*x^2 + A*a*b*x^2 + A*a^2*x
```

maple [A] time = 0.05, size = 91, normalized size = 0.95

$$\frac{B\,c^2x^6}{6} + \frac{\left(A\,c^2 + 2bBc\right)x^5}{5} + A\,a^2x + \frac{\left(2Abc + \left(2ac + b^2\right)B\right)x^4}{4} + \frac{\left(2Bab + \left(2ac + b^2\right)A\right)x^3}{3} + \frac{\left(2Aab + B\,a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+B*(2*a*c+b^2))*x^4+1/3*(
2*B*a*b+(2*a*c+b^2)*A)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.62, size = 90, normalized size = 0.94

$$\frac{1}{6}Bc^2x^6 + \frac{1}{5}\left(2\,Bbc + Ac^2\right)x^5 + \frac{1}{4}\left(Bb^2 + 2\,(Ba + Ab)c\right)x^4 + Aa^2x + \frac{1}{3}\left(2\,Bab + Ab^2 + 2\,Aac\right)x^3 + \frac{1}{2}\left(Ba^2 + 2\,Aab\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*(B*a + A*b)*c)*x
^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2 + 2*A*a*c)*x^3 + 1/2*(B*a^2 + 2*A*a*b)*
x^2
```

mupad [B] time = 2.24, size = 89, normalized size = 0.93

$$x^2\left(\frac{B\,a^2}{2} + A\,b\,a\right) + x^5\left(\frac{A\,c^2}{5} + \frac{2\,B\,b\,c}{5}\right) + x^3\left(\frac{A\,b^2}{3} + \frac{2\,B\,a\,b}{3} + \frac{2\,A\,a\,c}{3}\right) + x^4\left(\frac{B\,b^2}{4} + \frac{A\,c\,b}{2} + \frac{B\,a\,c}{2}\right) + \frac{B\,c^2\,x^6}{6} + A\,a^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^2*((B*a^2)/2 + A*a*b) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + x^3*((A*b^2)/3 +
(2*A*a*c)/3 + (2*B*a*b)/3) + x^4*((B*b^2)/4 + (A*b*c)/2 + (B*a*c)/2) + (B*c
^2*x^6)/6 + A*a^2*x
```

sympy [A] time = 0.09, size = 100, normalized size = 1.04

$$Aa^2x + \frac{Bc^2x^6}{6} + x^5\left(\frac{Ac^2}{5} + \frac{2Bbc}{5}\right) + x^4\left(\frac{Abc}{2} + \frac{Bac}{2} + \frac{Bb^2}{4}\right) + x^3\left(\frac{2Aac}{3} + \frac{Ab^2}{3} + \frac{2Bab}{3}\right) + x^2\left(Aab + \frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2 + B*
a*c/2 + B*b**2/4) + x**3*(2*A*a*c/3 + A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b +
 B*a**2/2)
```

3.2083 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{d+ex}\,dx$

Optimal. Leaf size=257

$$-\frac{x^2\left(B(cd-be)\left(cd^2-e(bd-2ae)\right)-Ae\left(-2ce(bd-ae)+b^2e^2+c^2d^2\right)\right)}{2e^4}-\frac{x^3\left(Ace(cd-2be)-B\left(-2ce(bd-ae)\right.\right.}{3e^3}$$

Rubi [A] time = 0.54, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{x^3\left(Ace(cd-2be)-B\left(-2ce(bd-ae)+b^2e^2+c^2d^2\right)\right)}{3e^3}-\frac{x^2\left(B(cd-be)\left(cd^2-e(bd-2ae)\right)-Ae\left(-2ce(bd-ae)+b^2e^2+c^2d^2\right)\right)}{2e^4}-\frac{x\left(Ae(cd-be)\left(cd^2-e(bd-2ae)\right)-B\left(cd^2-e(bd-ae)\right)^2\right)}{e^5}-\frac{(Bd-Ae)\log(d+ex)\left(ae^2-bde+cd^2\right)^2}{e^6}-\frac{cx^4(-Ace-2bBe+Bcd)}{4e^2}+\frac{Bc^2x^5}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] -(((A*e*(c*d - b*e)*(c*d^2 - e*(b*d - 2*a*e)) - B*(c*d^2 - e*(b*d - a*e))^2)*x)/e^5) - ((B*(c*d - b*e)*(c*d^2 - e*(b*d - 2*a*e)) - A*e*(c^2*d^2 + b^2*e^2 - 2*c*e*(b*d - a*e)))*x^2)/(2*e^4) - ((A*c*e*(c*d - 2*b*e) - B*(c^2*d^2 + b^2*e^2 - 2*c*e*(b*d - a*e)))*x^3)/(3*e^3) - (c*(B*c*d - 2*b*B*e - A*c*e)*x^4)/(4*e^2) + (B*c^2*x^5)/(5*e) - ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx = \int \left(\frac{-Ae(cd-be)\left(cd^2-e(bd-2ae)\right)+B\left(cd^2-e(bd-ae)\right)^2}{e^5}+\frac{\left(-B(cd-be\right.}{}\right.$$

$$= -\frac{\left(Ae(cd-be)\left(cd^2-e(bd-2ae)\right)-B\left(cd^2-e(bd-ae)\right)^2\right)x}{e^5}-\frac{\left(B(cd-be)\right.}{}$$

Mathematica [A] time = 0.18, size = 298, normalized size = 1.16

$$\frac{ex\left(B\left(10e^2\left(6a^2e^2+6abe(ex-2d)+b^2\left(6d^2-3dex+2e^2x^2\right)\right)+10ce\left(2ae\left(6d^2-3dex+2e^2x^2\right)+b\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)+c^2\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)+5Ae\left(4ce\left(3ae(ex-2d)+b\left(6d^2-3dex+2e^2x^2\right)\right)+6be^2(4ae-2bd+bex)+c^2\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)\right)-60(Bd-Ae)\log(d+ex)\left(e(ae-bd)+cd^2\right)^2}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(5*A*e*(6*b*e^2*(-2*b*d + 4*a*e + b*e*x) + c^2*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + 4*c*e*(3*a*e*(-2*d + e*x) + b*(6*d^2 - 3*d*e*x + 2*e^2*x^2))) + B*(c^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + 10*e^2*(6*a^2*e^2 + 6*a*b*e*(-2*d + e*x) + b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 10*c*e*(2*a*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)))) - 60*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^2*Log[d + e*x])/(60*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x), x]
```

fricas [A] time = 0.38, size = 379, normalized size = 1.47

$$\frac{12\,Bc^2e^5x^5-15\left(Bc^2de^4-\left(2\,Bbc+Ac^2\right)e^5\right)x^4+20\left(Bc^2d^2e^3-\left(2\,Bbc+Ac^2\right)de^4+\left(Bb^2+2\left(Ba+Ab\right)c\right)e^5\right)x^3-30\left(Bc^2d^3e^2-\left(2\,Bbc+Ac^2\right)d^2e^3+\left(Bb^2+2\left(Ba+Ab\right)c\right)de^4-\left(2\,Bab+Ab^2+2\,Aac\right)e^5\right)x^2+60\left(Bc^2d^4e-\left(2\,Bbc+Ac^2\right)d^3e^2+\left(Bb^2+2\left(Ba+Ab\right)c\right)d^2e^3-\left(2\,Bab+Ab^2+2\,Aac\right)de^4+\left(Ba^2+2\,Aab\right)e^5\right)x-60\left(Bc^2d^5-Aa^2e^5-\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\left(Ba+Ab\right)c\right)d^3e^2-\left(2\,Bab+Ab^2+2\,Aac\right)d^2e^3+\left(Ba^2+2\,Aab\right)de^4\right)\log\left(ex+d\right)}{60\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*c^2*e^5*x^5 - 15*(B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 20*
(B*c^2*d^2*e^3 - (2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c)*e^5)*x
^3 - 30*(B*c^2*d^3*e^2 - (2*B*b*c + A*c^2)*d^2*e^3 + (B*b^2 + 2*(B*a + A*b)
*c)*d*e^4 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 60*(B*c^2*d^4*e - (2*B*b
*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - (2*B*a*b + A*b^2
+ 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x - 60*(B*c^2*d^5 - A*a^2*e^5 - (
2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b + A*b
^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4)*log(e*x + d))/e^6
```

giac [A] time = 0.16, size = 463, normalized size = 1.80

$$-\left(Bc^2d^5-2\,Bbcd^4e-Ac^2d^4e+Bb^2d^3e^2+2\,Bacd^3e^2+2\,Abcd^3e^2-2\,Babd^2e^3-Ab^2d^2e^3-2\,Aacd^2e^3+Ba^2de^4+2\,Aabde^4-Aa^2e^5\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{60}\left(12\,Bc^2x^5e^4-15\,Bc^2dx^4e^3+20\,Bc^2d^2x^3e^2-30\,Bc^2d^3x^2e+60\,Bc^2d^4x+30\,Bbcx^4e^4+15\,Ac^2x^4e^4-40\,Bbcdx^3e^3-20\,Ac^2dx^3e^3+60\,Bbcd^2x^2e^2+30\,Ac^2d^2x^2e^2-120\,Bbcd^3xe-60\,Ac^2d^3xe+20\,Bb^2x^3e^4+40\,Bacx^3e^4+40\,Abcx^3e^4-30\,Bb^2dx^2e^3-60\,Bacdx^2e^3-60\,Abcdx^2e^3+60\,Bb^2d^2xe^2+120\,Bacd^2xe^2+120\,Abcd^2xe^2+60\,Babx^2e^4+30\,Ab^2x^2e^4+60\,Aacx^2e^4-120\,Babdxe^3-60\,Ab^2dxe^3-120\,Aacdxe^3+60\,Ba^2xe^4+120\,Aabxe^4\right)e^{(-5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^2*d^5 - 2*B*b*c*d^4*e - A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*B*a*c*d^3*e^2
 + 2*A*b*c*d^3*e^2 - 2*B*a*b*d^2*e^3 - A*b^2*d^2*e^3 - 2*A*a*c*d^2*e^3 + B*
a^2*d*e^4 + 2*A*a*b*d*e^4 - A*a^2*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*
B*c^2*x^5*e^4 - 15*B*c^2*d*x^4*e^3 + 20*B*c^2*d^2*x^3*e^2 - 30*B*c^2*d^3*x^
2*e + 60*B*c^2*d^4*x + 30*B*b*c*x^4*e^4 + 15*A*c^2*x^4*e^4 - 40*B*b*c*d*x^3
*e^3 - 20*A*c^2*d*x^3*e^3 + 60*B*b*c*d^2*x^2*e^2 + 30*A*c^2*d^2*x^2*e^2 - 1
20*B*b*c*d^3*x*e - 60*A*c^2*d^3*x*e + 20*B*b^2*x^3*e^4 + 40*B*a*c*x^3*e^4 +
 40*A*b*c*x^3*e^4 - 30*B*b^2*d*x^2*e^3 - 60*B*a*c*d*x^2*e^3 - 60*A*b*c*d*x^
2*e^3 + 60*B*b^2*d^2*x*e^2 + 120*B*a*c*d^2*x*e^2 + 120*A*b*c*d^2*x*e^2 + 60
*B*a*b*x^2*e^4 + 30*A*b^2*x^2*e^4 + 60*A*a*c*x^2*e^4 - 120*B*a*b*d*x*e^3 -
60*A*b^2*d*x*e^3 - 120*A*a*c*d*x*e^3 + 60*B*a^2*x*e^4 + 120*A*a*b*x*e^4)*e^
(-5)
```

maple [B] time = 0.05, size = 558, normalized size = 2.17

$$\frac{Bc^2x^5}{5e}+\frac{Ac^2x^4}{4e}+\frac{Bbcx^4}{2e}-\frac{Bc^2dx^4}{4e^2}+\frac{2Abcx^3}{3e}-\frac{Ac^2dx^3}{3e^2}+\frac{2Bacx^3}{3e}+\frac{Bb^2x^3}{3e}-\frac{2Bbcdx^3}{3e^2}+\frac{Bc^2d^2x^3}{3e^3}+\frac{Aacx^2}{e}+\frac{Ab^2x^2}{2e}-\frac{Abcdx^2}{e^2}+\frac{Ac^2d^2x^2}{2e^3}+\frac{Babx^2}{e}-\frac{Bacdx^2}{e^2}-\frac{Bb^2dx^2}{2e^2}+\frac{Bbcd^2x^2}{e^3}-\frac{Bc^2d^3x^2}{2e^4}+\frac{Aa^2\ln\left(ex+d\right)}{e}-\frac{2Aabd\ln\left(ex+d\right)}{e^2}+\frac{2Aabx}{e}+\frac{2Aacd^2\ln\left(ex+d\right)}{e^3}-\frac{2Aacdx}{e^2}+\frac{Ab^2d^2\ln\left(ex+d\right)}{e^3}-\frac{Ab^2dx}{e^2}-\frac{2Abcd^3\ln\left(ex+d\right)}{e^4}+\frac{2Abcd^2x}{e^3}+\frac{Ac^2d^4\ln\left(ex+d\right)}{e^5}-\frac{Ac^2d^3x}{e^4}-\frac{Ba^2d\ln\left(ex+d\right)}{e^2}+\frac{Ba^2x}{e}+\frac{2Babd^2\ln\left(ex+d\right)}{e^3}-\frac{2Babdx}{e^2}-\frac{2Bacd^3\ln\left(ex+d\right)}{e^4}+\frac{2Bacd^2x}{e^3}-\frac{Bb^2d^3\ln\left(ex+d\right)}{e^4}+\frac{Bb^2d^2x}{e^3}+\frac{2Bbcd^4\ln\left(ex+d\right)}{e^5}-\frac{2Bbcd^3x}{e^4}-\frac{Bc^2d^5\ln\left(ex+d\right)}{e^6}+\frac{Bc^2d^4x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x)
```

```
[Out] 2/3*B*a*c/e*x^3+1/3*B*c^2*d^2/e^3*x^3+A*a*c/e*x^2+1/2*A*c^2*d^2/e^3*x^2-1/2
*B*c^2*d^3/e^4*x^2-A*c^2*d^3/e^4*x+B*c^2*d^4/e^5*x+A*c^2*d^4/e^5*ln(e*x+d)-
B*a^2*d/e^2*ln(e*x+d)-B*c^2*d^5/e^6*ln(e*x+d)+1/e^3*B*x^2*b*c*d^2+2/e^3*A*x
*b*c*d^2-1/e^2*A*x^2*b*c*d-2/3/e^2*B*x^3*b*c*d-2/e^4*B*x*b*c*d^3-2/e^4*ln(e
*x+d)*A*b*c*d^3-2/e^2*B*x*a*b*d-2/e^2*ln(e*x+d)*A*a*b*d+2/e^5*ln(e*x+d)*B*b
```

```
*c*d^4+2/e^3*ln(e*x+d)*B*a*b*d^2-2*B*a*c*d^3/e^4*ln(e*x+d)+2*B*a*c*d^2/e^3*
x+2*A*a*c*d^2/e^3*ln(e*x+d)-B*a*c*d/e^2*x^2-2*A*a*c*d/e^2*x+1/2/e*A*x^2*b^2
+1/3/e*B*x^3*b^2+A*a^2/e*ln(e*x+d)+1/4*A*c^2/e*x^4+B*a^2/e*x+1/e*B*x^2*a*b-
1/4*B*c^2*d/e^2*x^4-1/3*A*c^2*d/e^2*x^3+1/e^3*B*x*b^2*d^2-1/2/e^2*B*x^2*b^2
*d+1/e^3*ln(e*x+d)*A*b^2*d^2+2/e*A*x*a*b-1/e^2*A*x*b^2*d-1/e^4*ln(e*x+d)*B*
b^2*d^3+1/2/e*B*x^4*b*c+2/3/e*A*x^3*b*c+1/5*B*c^2/e*x^5
```

maxima [A] time = 0.67, size = 378, normalized size = 1.47

$$\frac{12\,Bc^2e^4x^5 - 15\,\left(Bc^2de^3 - \left(2\,Bbc + Ac^2\right)e^4\right)x^4 + 20\,\left(Bc^2d^2e^2 - \left(2\,Bbc + Ac^2\right)de^3 + \left(Bb^2 + 2\,(Ba + Ab)c\right)e^4\right)x^3 - 30\,\left(Bc^2d^3e - \left(2\,Bbc + Ac^2\right)d^2e^2 + \left(Bb^2 + 2\,(Ba + Ab)c\right)de^3 - \left(2\,Bab + Ab^2 + 2\,Aac\right)e^4\right)x^2 + 60\,\left(Bc^2d^4 - \left(2\,Bbc + Ac^2\right)d^3e + \left(Bb^2 + 2\,(Ba + Ab)c\right)d^2e^2 - \left(2\,Bab + Ab^2 + 2\,Aac\right)de^3 + \left(Ba^2 + 2\,Aab\right)e^4\right)x}{60\,e^5} - \frac{\left(Bc^2d^5 - Aa^2e^5 - \left(2\,Bbc + Ac^2\right)d^4e + \left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - \left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 + \left(Ba^2 + 2\,Aab\right)de^4\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*c^2*e^4*x^5 - 15*(B*c^2*d*e^3 - (2*B*b*c + A*c^2)*e^4)*x^4 + 20*
(B*c^2*d^2*e^2 - (2*B*b*c + A*c^2)*d*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*e^4)*x
^3 - 30*(B*c^2*d^3*e - (2*B*b*c + A*c^2)*d^2*e^2 + (B*b^2 + 2*(B*a + A*b)*c
)*d*e^3 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^4)*x^2 + 60*(B*c^2*d^4 - (2*B*b*c +
 A*c^2)*d^3*e + (B*b^2 + 2*(B*a + A*b)*c)*d^2*e^2 - (2*B*a*b + A*b^2 + 2*A*
a*c)*d*e^3 + (B*a^2 + 2*A*a*b)*e^4)*x)/e^5 - (B*c^2*d^5 - A*a^2*e^5 - (2*B*
b*c + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b + A*b^2 +
 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4)*log(e*x + d)/e^6
```

mupad [B] time = 0.08, size = 423, normalized size = 1.65

$$x^3\left(\frac{Bb^2+2Acb+2Bac}{3e}-\frac{d\left(\frac{Ac^2+2Bbc}{e}-\frac{Bc^2d}{e^2}\right)}{3e}\right)+x\left(\frac{Ba^2+2Aba}{e}-\frac{d\left(\frac{Ab^2+2Bab+2Aac}{e}-\frac{d\left(\frac{Bb^2+2Acb+2Bac}{e}-\frac{d\left(\frac{Ac^2+2Bbc}{e}-\frac{Bc^2d}{e^2}\right)}{e}\right)}{e}\right)}{e}\right)+x^4\left(\frac{Ac^2+2Bbc}{4e}-\frac{Bc^2d}{4e^2}\right)+x^2\left(\frac{Ab^2+2Bab+2Aac}{2e}-\frac{d\left(\frac{Bb^2+2Acb+2Bac}{e}-\frac{d\left(\frac{Ac^2+2Bbc}{e}-\frac{Bc^2d}{e^2}\right)}{e}\right)}{2e}\right)+\frac{\ln\left(d+ex\right)\left(-Ba^2de^4+Aa^2e^5+2Babd^2e^3-2Aabde^4-2Bacd^3e^2+2Aacd^2e^3-Bb^2d^3e^2+Ab^2d^2e^3+2Bbcd^4e-2Abcd^3e^2-Bc^2d^5+Ac^2d^4e\right)}{e^6}+\frac{Bc^2x^5}{5e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x)
```

```
[Out] x^3*((B*b^2 + 2*A*b*c + 2*B*a*c)/(3*e) - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d
)/e^2))/(3*e)) + x*((B*a^2 + 2*A*a*b)/e - (d*((A*b^2 + 2*A*a*c + 2*B*a*b)/e
 - (d*((B*b^2 + 2*A*b*c + 2*B*a*c)/e - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/
e^2))/e))/e))/e) + x^4*((A*c^2 + 2*B*b*c)/(4*e) - (B*c^2*d)/(4*e^2)) + x^2*
((A*b^2 + 2*A*a*c + 2*B*a*b)/(2*e) - (d*((B*b^2 + 2*A*b*c + 2*B*a*c)/e - (d
*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/e))/(2*e)) + (log(d + e*x)*(A*a^2*e
^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + A*b^2*d^2*e^3 - B*b^2*d^3*e^2
- 2*A*a*b*d*e^4 + 2*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B*a*b*d^2*e^3 - 2*A*b
*c*d^3*e^2 - 2*B*a*c*d^3*e^2))/e^6 + (B*c^2*x^5)/(5*e)
```

sympy [A] time = 1.14, size = 372, normalized size = 1.45

$$\frac{Bc^2x^5}{5e}+x^4\left(\frac{Ac^2}{4e}+\frac{Bbc}{2e}-\frac{Bc^2d}{4e^2}\right)+x^3\left(\frac{2Abc}{3e}-\frac{Ac^2d}{3e^2}+\frac{2Bac}{3e}+\frac{Bb^2}{3e}-\frac{2Bbcd}{3e^2}+\frac{Bc^2d^2}{3e^3}\right)+x^2\left(\frac{Aac}{e}+\frac{Ab^2}{2e}-\frac{Abcd}{e^2}+\frac{Ac^2d^2}{2e^3}+\frac{Bab}{e}-\frac{Bacd}{e^2}-\frac{Bb^2d}{2e^2}+\frac{Bbcd^2}{e^3}-\frac{Bc^2d^3}{2e^4}\right)+x\left(\frac{2Aab}{e}-\frac{2Aacd}{e^2}-\frac{Ab^2d}{e^2}+\frac{2Abcd^2}{e^3}-\frac{Ac^2d^3}{e^4}+\frac{Ba^2}{e}-\frac{2Babd}{e^2}+\frac{2Bacd^2}{e^3}+\frac{Bb^2d^2}{e^3}-\frac{2Bbcd^3}{e^4}+\frac{Bc^2d^4}{e^5}\right)-\frac{(-Ae+Bd)\left(ae^2-bde+cd^2\right)^2\log\left(d+ex\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d),x)
```

```
[Out] B*c**2*x**5/(5*e) + x**4*(A*c**2/(4*e) + B*b*c/(2*e) - B*c**2*d/(4*e**2)) +
 x**3*(2*A*b*c/(3*e) - A*c**2*d/(3*e**2) + 2*B*a*c/(3*e) + B*b**2/(3*e) - 2
*B*b*c*d/(3*e**2) + B*c**2*d**2/(3*e**3)) + x**2*(A*a*c/e + A*b**2/(2*e) -
A*b*c*d/e**2 + A*c**2*d**2/(2*e**3) + B*a*b/e - B*a*c*d/e**2 - B*b**2*d/(2*
e**2) + B*b*c*d**2/e**3 - B*c**2*d**3/(2*e**4)) + x*(2*A*a*b/e - 2*A*a*c*d/
e**2 - A*b**2*d/e**2 + 2*A*b*c*d**2/e**3 - A*c**2*d**3/e**4 + B*a**2/e - 2*
B*a*b*d/e**2 + 2*B*a*c*d**2/e**3 + B*b**2*d**2/e**3 - 2*B*b*c*d**3/e**4 + B
*c**2*d**4/e**5) - (-A*e + B*d)*(a*e**2 - b*d*e + c*d**2)**2*log(d + e*x)/e
**6
```

3.2084 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=267

$$-\frac{x\left(2B(2cd-be)\left(cd^2-e(bd-ae)\right)-Ae\left(-2ce(2bd-ae)+b^2e^2+3c^2d^2\right)\right)}{e^5}-\frac{x^2\left(2Ace(cd-be)-B\left(-2ce(2bd-ae\right.\right.}{2e^4}$$

Rubi [A] time = 0.49, antiderivative size = 264, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{x^2\left(2Ace(cd-be)-B\left(-2ce(2bd-ae)+b^2e^2+3c^2d^2\right)\right)}{2e^4}-\frac{x\left(2B(2cd-be)\left(cd^2-e(bd-ae)\right)-Ae\left(-2ce(2bd-ae)+b^2e^2+3c^2d^2\right)\right)}{e^5}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{e^6(d+ex)}+\frac{\log(d+ex)\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{e^6}-\frac{cx^3(-Ace-2bBe+2Bcd)}{3e^3}+\frac{Bc^2x^4}{4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -((((2*B*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e)) - A*e*(3*c^2*d^2 + b^2*e^2 -
2*c*e*(2*b*d - a*e)))*x)/e^5) - ((2*A*c*e*(c*d - b*e) - B*(3*c^2*d^2 + b^2*
e^2 - 2*c*e*(2*b*d - a*e)))*x^2)/(2*e^4) - (c*(2*B*c*d - 2*b*B*e - A*c*e)*x
^3)/(3*e^3) + (B*c^2*x^4)/(4*e^2) + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)
/(e^6*(d + e*x)) + ((c*d^2 - b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e)
- 2*A*e*(2*c*d - b*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx=\int \left(\frac{-2B(2cd-be)\left(cd^2-e(bd-ae)\right)+Ae\left(3c^2d^2+b^2e^2-2ce(2bd-ae)\right)}{e^5}+\frac{(-}{}\right.$$

$$=-\frac{\left(2B(2cd-be)\left(cd^2-e(bd-ae)\right)-Ae\left(3c^2d^2+b^2e^2-2ce(2bd-ae)\right)\right)x}{e^5}-\frac{(2A}{}$$

Mathematica [A] time = 0.11, size = 250, normalized size = 0.94

$$\frac{6e^2x^2\left(B\left(2ce(ae-2bd)+b^2e^2+3c^2d^2\right)+2Ace(be-cd)\right)+12ex\left(Ae\left(2ce(ae-2bd)+b^2e^2+3c^2d^2\right)-2B(2cd-be)\left(e(ae-bd)+cd^2\right)\right)+\frac{12(Bd-Ae)\left(e(ae-bd)+cd^2\right)^2}{d+ex}+12\log(d+ex)\left(e(ae-bd)+cd^2\right)\left(Be(ae-3bd)+2Ae(be-2cd)+5Bcd^2\right)+4ce^3x^3(Ace+2bBe-2Bcd)+3Bc^2e^4x^4}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*e*(A*e*(3*c^2*d^2 + b^2*e^2 + 2*c*e*(-2*b*d + a*e)) - 2*B*(2*c*d - b*e)
*(c*d^2 + e*(-(b*d) + a*e)))*x + 6*e^2*(2*A*c*e*(-(c*d) + b*e) + B*(3*c^2*d
^2 + b^2*e^2 + 2*c*e*(-2*b*d + a*e)))*x^2 + 4*c*e^3*(-2*B*c*d + 2*b*B*e + A
*c*e)*x^3 + 3*B*c^2*e^4*x^4 + (12*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^2)
/(d + e*x) + 12*(c*d^2 + e*(-(b*d) + a*e))*(5*B*c*d^2 + B*e*(-3*b*d + a*e)
+ 2*A*e*(-2*c*d + b*e))*Log[d + e*x])/(12*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2, x]
```

fricas [B] time = 0.39, size = 567, normalized size = 2.12

$$\frac{3 B c^2 e^5 x^5 + 12 B c^2 d^5 - 12 A a^2 e^5 - 12 \left(2 B b c + A c^2\right) d^4 e + 12 \left(B b^2 + 2 (B a + A b) c\right) d^3 e^2 - 12 \left(2 B a b + A b^2 + 2 A a c\right) d^2 e^3 + 12 \left(B a^2 + 2 A a b\right) d e^4 - \left(5 B c^2 d e^4 - 4 \left(2 B b c + A c^2\right) e^5\right) x^4 + 2 \left(5 B c^2 d^2 e^3 - 4 \left(2 B b c + A c^2\right) d e^4 + 3 \left(B b^2 + 2 (B a + A b) c\right) e^5\right) x^3 - 6 \left(5 B c^2 d^3 e^2 - 4 \left(2 B b c + A c^2\right) d^2 e^3 + 3 \left(B b^2 + 2 (B a + A b) c\right) d e^4 - 2 \left(2 B a b + A b^2 + 2 A a c\right) e^5\right) x^2 - 12 \left(4 B c^2 d^4 e - 3 \left(2 B b c + A c^2\right) d^3 e^2 + 2 \left(B b^2 + 2 (B a + A b) c\right) d^2 e^3 - \left(2 B a b + A b^2 + 2 A a c\right) d e^4\right) x + 12 \left(5 B c^2 d^5 - 4 \left(2 B b c + A c^2\right) d^4 e + 3 \left(B b^2 + 2 (B a + A b) c\right) d^3 e^2 - 2 \left(2 B a b + A b^2 + 2 A a c\right) d^2 e^3 + \left(B a^2 + 2 A a b\right) d e^4 + \left(5 B c^2 d^4 e - 4 \left(2 B b c + A c^2\right) d^3 e^2 + 3 \left(B b^2 + 2 (B a + A b) c\right) d^2 e^3 - 2 \left(2 B a b + A b^2 + 2 A a c\right) d e^4 + \left(B a^2 + 2 A a b\right) e^5\right) x\right) \log\left(e x + d\right)}{12 \left(e^7 x + d e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="fricas")
[Out] 1/12*(3*B*c^2*e^5*x^5 + 12*B*c^2*d^5 - 12*A*a^2*e^5 - 12*(2*B*b*c + A*c^2)*
d^4*e + 12*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 12*(2*B*a*b + A*b^2 + 2*A*a*
c)*d^2*e^3 + 12*(B*a^2 + 2*A*a*b)*d*e^4 - (5*B*c^2*d*e^4 - 4*(2*B*b*c + A*c
^2)*e^5)*x^4 + 2*(5*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 +
2*(B*a + A*b)*c)*e^5)*x^3 - 6*(5*B*c^2*d^3*e^2 - 4*(2*B*b*c + A*c^2)*d^2*e^
3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*
x^2 - 12*(4*B*c^2*d^4*e - 3*(2*B*b*c + A*c^2)*d^3*e^2 + 2*(B*b^2 + 2*(B*a +
 A*b)*c)*d^2*e^3 - (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4)*x + 12*(5*B*c^2*d^5 -
 4*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a
*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4 + (5*B*c^2*d^4*e -
4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*
a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x)*log(e*x + d))/(e^7
*x + d*e^6)
```

giac [B] time = 0.17, size = 551, normalized size = 2.06

$$\frac{1}{12} \left(3 B c^2 - \frac{4 \left(5 B c^2 d e - 2 B b c e^2 - A c^2 e^2\right) e^{-1}}{x e + d} + \frac{6 \left(10 B c^2 d^2 e^2 - 8 B b c d e^3 - 4 A c^2 d e^3 + B b^2 e^4 + 2 B a c e^4 + 2 A b c e^4\right) e^{-2}}{(x e + d)^2} - \frac{12 \left(10 B c^2 d^3 e^3 - 12 B b c d^2 e^4 - 6 A c^2 d^2 e^4 + 3 B b^2 d e^5 + 6 B a c d e^5 + 6 A b c d e^5 - 2 B a b e^6 - A b^2 e^6 - 2 A a c e^6\right) e^{-3}}{(x e + d)^3}\right) (x e + d)^4 e^{-6} - \left(5 B c^2 d^4 - 8 B b c d^3 e - 4 A c^2 d^3 e + 3 B b^2 d^2 e^2 + 6 B a c d^2 e^2 + 6 A b c d^2 e^2 - 4 B a b d e^3 - 2 A b^2 d e^3 - 4 A a c d e^3 + B a^2 e^4 + 2 A a b e^4\right) e^{-6} \log\left(\frac{|x e + d| e^{-1}}{(x e + d)^2}\right) + \left(\frac{B c^2 d^5 e^4}{x e + d} - \frac{2 B b c d^4 e^5}{x e + d} - \frac{A c^2 d^4 e^5}{x e + d} + \frac{B b^2 d^3 e^6}{x e + d} + \frac{2 B a c d^3 e^6}{x e + d} + \frac{2 A b c d^3 e^6}{x e + d} - \frac{2 B a b d^2 e^7}{x e + d} - \frac{A b^2 d^2 e^7}{x e + d} - \frac{2 A a c d^2 e^7}{x e + d} + \frac{B a^2 d e^8}{x e + d} + \frac{2 A a b d e^8}{x e + d} - \frac{A a^2 e^9}{x e + d}\right) e^{-10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="giac")
[Out] 1/12*(3*B*c^2 - 4*(5*B*c^2*d*e - 2*B*b*c*e^2 - A*c^2*e^2)*e^(-1)/(x*e + d)
+ 6*(10*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 + B*b^2*e^4 + 2*B*a*c
*e^4 + 2*A*b*c*e^4)*e^(-2)/(x*e + d)^2 - 12*(10*B*c^2*d^3*e^3 - 12*B*b*c*d^
2*e^4 - 6*A*c^2*d^2*e^4 + 3*B*b^2*d*e^5 + 6*B*a*c*d*e^5 + 6*A*b*c*d*e^5 - 2
*B*a*b*e^6 - A*b^2*e^6 - 2*A*a*c*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4*e^(-6
) - (5*B*c^2*d^4 - 8*B*b*c*d^3*e - 4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 6*B*a*
c*d^2*e^2 + 6*A*b*c*d^2*e^2 - 4*B*a*b*d*e^3 - 2*A*b^2*d*e^3 - 4*A*a*c*d*e^3
 + B*a^2*e^4 + 2*A*a*b*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (
B*c^2*d^5*e^4/(x*e + d) - 2*B*b*c*d^4*e^5/(x*e + d) - A*c^2*d^4*e^5/(x*e +
d) + B*b^2*d^3*e^6/(x*e + d) + 2*B*a*c*d^3*e^6/(x*e + d) + 2*A*b*c*d^3*e^6/
(x*e + d) - 2*B*a*b*d^2*e^7/(x*e + d) - A*b^2*d^2*e^7/(x*e + d) - 2*A*a*c*d
^2*e^7/(x*e + d) + B*a^2*d*e^8/(x*e + d) + 2*A*a*b*d*e^8/(x*e + d) - A*a^2*
e^9/(x*e + d))*e^(-10)
```

maple [B] time = 0.06, size = 609, normalized size = 2.28

$$\frac{B c^2 x^4}{4 e^2} + \frac{A c^2 x^3}{3 e^2} + \frac{2 B b c x^3}{3 e^2} - \frac{2 B c^2 d x^3}{3 e^3} + \frac{A b c x^2}{e^2} - \frac{A c^2 d x^2}{e^3} + \frac{B a c x^2}{e^2} + \frac{B b^2 x^2}{2 e^2} - \frac{2 B b c d x^2}{e^3} + \frac{3 B c^2 d^2 x^2}{2 e^4} - \frac{A a^2}{(e x + d) e} + \frac{2 A a b d}{(e x + d) e^2} + \frac{2 A a b \ln(e x + d)}{e^2} - \frac{2 A a c d^2}{(e x + d) e^3} - \frac{4 A a c d \ln(e x + d)}{e^3} + \frac{2 A a c x}{e^2} - \frac{A b^2 d^2}{(e x + d) e^3} - \frac{2 A b^2 d \ln(e x + d)}{e^3} + \frac{A b^2 x}{e^2} + \frac{2 A b c d^3}{(e x + d) e^4} + \frac{6 A b c d^2 \ln(e x + d)}{e^4} - \frac{4 A b c d x}{e^3} - \frac{A c^2 d^4}{(e x + d) e^5} - \frac{4 A c^2 d^3 \ln(e x + d)}{e^5} + \frac{3 A c^2 d^2 x}{e^4} + \frac{B a^2 d}{(e x + d) e^2} + \frac{B a^2 \ln(e x + d)}{e^2} - \frac{2 B a b d^2}{(e x + d) e^3} - \frac{4 B a b d \ln(e x + d)}{e^3} + \frac{2 B a b x}{e^2} + \frac{2 B a c d^3}{(e x + d) e^4} + \frac{6 B a c d^2 \ln(e x + d)}{e^4} - \frac{4 B a c d x}{e^3} + \frac{B b^2 d^3}{(e x + d) e^4} + \frac{3 B b^2 d^2 \ln(e x + d)}{e^4} - \frac{2 B b^2 d x}{e^3} - \frac{2 B b c d^4}{(e x + d) e^5} - \frac{8 B b c d^3 \ln(e x + d)}{e^5} + \frac{6 B b c d^2 x}{e^4} + \frac{B c^2 d^5}{(e x + d) e^6} + \frac{5 B c^2 d^4 \ln(e x + d)}{e^6} - \frac{4 B c^2 d^3 x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x)
```

```
[Out] 1/e^2*A*b^2*x-1/e/(e*x+d)*A*a^2+1/e^2*ln(e*x+d)*B*a^2+1/3/e^2*A*x^3*c^2+2/3
/e^2*B*x^3*b*c-2/3/e^3*B*x^3*c^2*d-4/e^5*B*c^2*d^3*x-1/e^3/(e*x+d)*A*b^2*d^
2-1/e^5/(e*x+d)*A*c^2*d^4+1/e^2/(e*x+d)*B*a^2*d+1/e^4/(e*x+d)*B*b^2*d^3+1/e
^6/(e*x+d)*B*c^2*d^5+3/2/e^4*B*x^2*c^2*d^2+2/e^2*A*a*c*x+3/e^4*A*c^2*d^2*x+
2/e^2*B*a*b*x+1/e^2*A*x^2*b*c-2/e^3*B*b^2*d*x-4/e^5*ln(e*x+d)*A*c^2*d^3+3/e
^4*ln(e*x+d)*B*b^2*d^2-1/e^3*A*x^2*c^2*d+1/e^2*B*x^2*a*c+2/e^2*ln(e*x+d)*A*
a*b-4/e^3*ln(e*x+d)*B*a*b*d+6/e^4*ln(e*x+d)*B*a*c*d^2-8/e^5*ln(e*x+d)*B*b*c
*d^3-2/e^5/(e*x+d)*B*b*c*d^4+2/e^4/(e*x+d)*A*b*c*d^3-2/e^3/(e*x+d)*B*a*b*d^
2+2/e^4/(e*x+d)*B*d^3*a*c-2/e^3*B*x^2*b*c*d-2/e^3/(e*x+d)*A*d^2*a*c-4/e^3*l
n(e*x+d)*A*a*c*d+6/e^4*ln(e*x+d)*A*b*c*d^2-2/e^3*ln(e*x+d)*A*b^2*d+5/e^6*ln
(e*x+d)*B*c^2*d^4-4/e^3*A*b*c*d*x-4/e^3*B*a*c*d*x+6/e^4*B*b*c*d^2*x+2/e^2/(
e*x+d)*A*d*a*b+1/4*B*c^2/e^2*x^4+1/2*B*b^2/e^2*x^2
```

maxima [**A**] time = 0.61, size = 387, normalized size = 1.45

$$\frac{Bc^2d^5 - Aa^2e^5 - (2Bbc + Ac^2)d^4e + (Bb^2 + 2(Ba + Ab)c)d^3e^2 - (2Bab + Ab^2 + 2Aac)d^2e^3 + (Ba^2 + 2Aab)de^4}{e^7x + de^6} + \frac{3Bc^2e^3x^4 - 4(2Bc^2de^2 - (2Bbc + Ac^2)e^3)x^3 + 6(3Bc^2d^2e - 2(2Bbc + Ac^2)de^2 + (Bb^2 + 2(Ba + Ab)c)e^3)x^2 - 12(4Bc^2d^3 - 3(2Bbc + Ac^2)d^2e + 2(Bb^2 + 2(Ba + Ab)c)de^2 - (2Bab + Ab^2 + 2Aac)e^3)x}{12e^5} + \frac{(5Bc^2d^4 - 4(2Bbc + Ac^2)d^3e + 3(Bb^2 + 2(Ba + Ab)c)d^2e^2 - 2(2Bab + Ab^2 + 2Aac)de^3 + (Ba^2 + 2Aab)e^4)\log(ex + d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^2*d^5 - A*a^2*e^5 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c
)*d^3*e^2 - (2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4)/
(e^7*x + d*e^6) + 1/12*(3*B*c^2*e^3*x^4 - 4*(2*B*c^2*d*e^2 - (2*B*b*c + A*c
^2)*e^3)*x^3 + 6*(3*B*c^2*d^2*e - 2*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2 + 2*(B
*a + A*b)*c)*e^3)*x^2 - 12*(4*B*c^2*d^3 - 3*(2*B*b*c + A*c^2)*d^2*e + 2*(B*
b^2 + 2*(B*a + A*b)*c)*d*e^2 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^3)*x)/e^5 + (5
*B*c^2*d^4 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^
2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^3 + (B*a^2 + 2*A*a*b)*e^4)*log(e*x +
d)/e^6
```

mupad [**B**] time = 0.12, size = 499, normalized size = 1.87

$$x\left(\frac{Ab^2 + 2Bab + 2Aac}{e^2} - \frac{d^2\left(\frac{Ac^2+2Bbc}{e^2} - \frac{2Bc^2d}{e^3}\right)}{e^2} + \frac{2d\left(\frac{2d\left(\frac{Ac^2+2Bbc}{e^2} - \frac{2Bc^2d}{e^3}\right)}{e} - \frac{Bb^2+2Acb+2Bac}{e^2} + \frac{Bc^2d^2}{e^4}\right)}{e}\right) + x^3\left(\frac{Ac^2 + 2Bbc}{3e^2} - \frac{2Bc^2d}{3e^3}\right) - x^2\left(\frac{d\left(\frac{Ac^2+2Bbc}{e^2} - \frac{2Bc^2d}{e^3}\right)}{e} - \frac{Bb^2 + 2Acb + 2Bac}{2e^2} + \frac{Bc^2d^2}{2e^4}\right) - \frac{-Ba^2de^4 + Aa^2e^5 + 2Babd^2e^3 - 2Aabde^4 - 2Bacd^3e^2 + 2Aacd^2e^3 - Bb^2d^3e^2 + Ab^2d^2e^3 + 2Bbcd^4e - 2Abcd^3e^2 - Bc^2d^5 + Ac^2d^4e}{e\left(xe^6 + de^5\right)} + \frac{\ln(d + ex)\left(Ba^2e^4 - 4Babde^3 + 2Aabe^4 + 6Bacd^2e^2 - 4Aacde^3 + 3Bb^2d^2e^2 - 2Ab^2de^3 - 8Bbcd^3e + 6Abcd^2e^2 + 5Bc^2d^4 - 4Ac^2d^3e\right)}{e^6} + \frac{Bc^2x^4}{4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x)
```

```
[Out] x*((A*b^2 + 2*A*a*c + 2*B*a*b)/e^2 - (d^2*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2
*d)/e^3))/e^2 + (2*d*((2*d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e - (
B*b^2 + 2*A*b*c + 2*B*a*c)/e^2 + (B*c^2*d^2)/e^4))/e) + x^3*((A*c^2 + 2*B*b
*c)/(3*e^2) - (2*B*c^2*d)/(3*e^3)) - x^2*((d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*
c^2*d)/e^3))/e - (B*b^2 + 2*A*b*c + 2*B*a*c)/(2*e^2) + (B*c^2*d^2)/(2*e^4))
 - (A*a^2*e^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + A*b^2*d^2*e^3 - B*b
^2*d^3*e^2 - 2*A*a*b*d*e^4 + 2*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B*a*b*d^2*
e^3 - 2*A*b*c*d^3*e^2 - 2*B*a*c*d^3*e^2)/(e*(d*e^5 + e^6*x)) + (log(d + e*x
)*(B*a^2*e^4 + 5*B*c^2*d^4 + 2*A*a*b*e^4 - 2*A*b^2*d*e^3 - 4*A*c^2*d^3*e +
3*B*b^2*d^2*e^2 - 4*A*a*c*d*e^3 - 4*B*a*b*d*e^3 - 8*B*b*c*d^3*e + 6*A*b*c*d
^2*e^2 + 6*B*a*c*d^2*e^2))/e^6 + (B*c^2*x^4)/(4*e^2)
```

sympy [**A**] time = 4.41, size = 442, normalized size = 1.66

$$\frac{Bc^2x^4}{4e^2} + x^3\left(\frac{Ac^2}{3e^2} + \frac{2Bbc}{3e^2} - \frac{2Bc^2d}{3e^3}\right) + x^2\left(\frac{Abc}{e^2} - \frac{Ac^2d}{e^3} + \frac{Bac}{e^2} + \frac{Bb^2}{2e^2} - \frac{2Bbcd}{e^3} + \frac{3Bc^2d^2}{2e^4}\right) + x\left(\frac{2Aac}{e^2} + \frac{Ab^2}{e^2} - \frac{4Abcd}{e^3} + \frac{3Ac^2d^2}{e^4} + \frac{2Bab}{e^2} - \frac{4Bacd}{e^3} - \frac{2Bb^2d}{e^3} + \frac{6Bbcd^2}{e^4} - \frac{4Bc^2d^3}{e^5}\right) + \frac{-Aa^2e^5 + 2Aabde^4 - 2Aacd^2e^3 - Ab^2d^2e^3 + 2Abcd^3e^2 - Ac^2d^4e + Ba^2de^4 - 2Babd^2e^3 + 2Bacd^3e^2 + Bb^2d^3e^2 - 2Bbcd^4e + Bc^2d^5}{de^6 + e^7x} + \frac{\left(ae^2 - bde + cd^2\right)\left(2Abe^2 - 4Acde + Bae^2 - 3Bbde + 5Bcd^2\right)\log(d + ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**2,x)
```

```
[Out] B*c**2*x**4/(4*e**2) + x**3*(A*c**2/(3*e**2) + 2*B*b*c/(3*e**2) - 2*B*c**2*
d/(3*e**3)) + x**2*(A*b*c/e**2 - A*c**2*d/e**3 + B*a*c/e**2 + B*b**2/(2*e**
2) - 2*B*b*c*d/e**3 + 3*B*c**2*d**2/(2*e**4)) + x*(2*A*a*c/e**2 + A*b**2/e*
```

```
*2 - 4*A*b*c*d/e**3 + 3*A*c**2*d**2/e**4 + 2*B*a*b/e**2 - 4*B*a*c*d/e**3 -
2*B*b**2*d/e**3 + 6*B*b*c*d**2/e**4 - 4*B*c**2*d**3/e**5) + (-A*a**2*e**5 +
 2*A*a*b*d*e**4 - 2*A*a*c*d**2*e**3 - A*b**2*d**2*e**3 + 2*A*b*c*d**3*e**2
- A*c**2*d**4*e + B*a**2*d*e**4 - 2*B*a*b*d**2*e**3 + 2*B*a*c*d**3*e**2 + B
*b**2*d**3*e**2 - 2*B*b*c*d**4*e + B*c**2*d**5)/(d*e**6 + e**7*x) + (a*e**2
 - b*d*e + c*d**2)*(2*A*b*e**2 - 4*A*c*d*e + B*a*e**2 - 3*B*b*d*e + 5*B*c*d
**2)*log(d + e*x)/e**6
```

3.2085 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=281

$$-\frac{x\left(Ace(3cd-2be)-B\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^5}-\frac{\log(d+ex)\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10\right.\right.}{e^6}$$

Rubi [A] time = 0.44, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{x\left(Ace(3cd-2be)-B\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^5}-\frac{\log(d+ex)\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^6}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{e^6(d+ex)}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{2e^6(d+ex)^2}-\frac{cx^2(-Ace-2bBe+3Bcd)}{2e^4}+\frac{Bc^2x^3}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] -(((A*c*e*(3*c*d - 2*b*e) - B*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*
x)/e^5) - (c*(3*B*c*d - 2*b*B*e - A*c*e)*x^2)/(2*e^4) + (B*c^2*x^3)/(3*e^3)
 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(2*e^6*(d + e*x)^2) - ((c*d^2 -
b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(e^6*
(d + e*x)) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx=\int \left(\frac{-Ace(3cd-2be)+B\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)}{e^5}+\frac{c(-3Bcd+2bBe+\right.$$

$$=-\frac{\left(Ace(3cd-2be)-B\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)\right)x}{e^5}-\frac{c(3Bcd-2bBe-Ac}{2e^4}$$

Mathematica [A] time = 0.12, size = 262, normalized size = 0.93

$$\frac{6ex\left(B\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+Ace(2be-3cd)\right)+6\log(d+ex)\left(Ae\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+B\left(6cde(2bd-ae)+be^2(2ae-3bd)-10c^2d^3\right)\right)-\frac{6\left(e(ae-bd)+cd^2\right)\left(Be(ae-3bd)+2Ae(be-2cd)+5Bcd^2\right)}{d+ex}+\frac{3(Bd-Ae)\left(e(ae-bd)+cd^2\right)^2}{(d+ex)^2}+3ce^2x^2(Ace+2bBe-3Bcd)+2Bc^2e^3x^3}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*e*(A*c*e*(-3*c*d + 2*b*e) + B*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e
)))*x + 3*c*e^2*(-3*B*c*d + 2*b*B*e + A*c*e)*x^2 + 2*B*c^2*e^3*x^3 + (3*(B*
d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^2 - (6*(c*d^2 + e*(-(b*d)
+ a*e))*(5*B*c*d^2 + B*e*(-3*b*d + a*e) + 2*A*e*(-2*c*d + b*e)))/(d + e*x)
+ 6*(A*e*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e)) + B*(-10*c^2*d^3 + 6*
c*d*e*(2*b*d - a*e) + b*e^2*(-3*b*d + 2*a*e)))*Log[d + e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3, x]
```

fricas [B] time = 0.40, size = 620, normalized size = 2.21

$$\frac{2 B c^2 e^5 x^5 - 27 B c^2 d^5 - 3 A a^2 e^5 + 21 (2 B b c + A c^2) d^4 e - 15 (B b^2 + 2 (B a + A b) c) d^3 e^2 + 9 (2 B a b + A b^2 + 2 A a c) d^2 e^3 - 3 (B a^2 + 2 A a b) d e^4 - (5 B c^2 d e^4 - 3 (2 B b c + A c^2) e^5) x^4 + 2 (10 B c^2 d^2 e^3 - 6 (2 B b c + A c^2) d e^4 + 3 (B b^2 + 2 (B a + A b) c) e^5) x^3 + 3 (21 B c^2 d^3 e^2 - 11 (2 B b c + A c^2) d^2 e^3 + 4 (B b^2 + 2 (B a + A b) c) d e^4) x^2 + 6 (B c^2 d^4 e + (2 B b c + A c^2) d^3 e^2 - 2 (B b^2 + 2 (B a + A b) c) d^2 e^3 + 2 (2 B a b + A b^2 + 2 A a c) d e^4 - (B a^2 + 2 A a b) e^5) x - 6 \left(10 B c^2 d^5 - 6 (2 B b c + A c^2) d^4 e + 3 (B b^2 + 2 (B a + A b) c) d^3 e^2 - (2 B a b + A b^2 + 2 A a c) d^2 e^3 + (10 B c^2 d^3 e^2 - 6 (2 B b c + A c^2) d^2 e^3 + 3 (B b^2 + 2 (B a + A b) c) d e^4 - (2 B a b + A b^2 + 2 A a c) e^5) x^2 + 2 (10 B c^2 d^4 e - 6 (2 B b c + A c^2) d^3 e^2 + 3 (B b^2 + 2 (B a + A b) c) d^2 e^3 - (2 B a b + A b^2 + 2 A a c) d e^4) x\right) \log(e x + d)}{6 (e^8 x^2 + 2 d e^7 x + d^2 e^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*e^5*x^5 - 27*B*c^2*d^5 - 3*A*a^2*e^5 + 21*(2*B*b*c + A*c^2)*d^
4*e - 15*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 9*(2*B*a*b + A*b^2 + 2*A*a*c)*
d^2*e^3 - 3*(B*a^2 + 2*A*a*b)*d*e^4 - (5*B*c^2*d*e^4 - 3*(2*B*b*c + A*c^2)*
e^5)*x^4 + 2*(10*B*c^2*d^2*e^3 - 6*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 + 2*(
B*a + A*b)*c)*e^5)*x^3 + 3*(21*B*c^2*d^3*e^2 - 11*(2*B*b*c + A*c^2)*d^2*e^3
 + 4*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4)*x^2 + 6*(B*c^2*d^4*e + (2*B*b*c + A*c
^2)*d^3*e^2 - 2*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 + 2*(2*B*a*b + A*b^2 + 2*
A*a*c)*d*e^4 - (B*a^2 + 2*A*a*b)*e^5)*x - 6*(10*B*c^2*d^5 - 6*(2*B*b*c + A*
c^2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + (10*B*c^2*d^3*e^2 - 6*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 +
2*(B*a + A*b)*c)*d*e^4 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 2*(10*B*c^2
*d^4*e - 6*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3
- (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7*x
+ d^2*e^6)
```

giac [A] time = 0.18, size = 430, normalized size = 1.53

$$-\left(10 B c^2 d^3 - 12 B b c d^2 e - 6 A c^2 d^2 e + 3 B b^2 d e^2 + 6 B a c d e^2 + 6 A b c d e^2 - 2 B a b e^3 - A b^2 e^3 - 2 A a c e^3\right) e^{(-6)} \log\left(|x e + d|\right) + \frac{1}{6}\left(2 B c^2 x^3 e^6 - 9 B c^2 d x^2 e^5 + 36 B c^2 d^2 x e^4 + 6 B b c x^2 e^6 + 3 A c^2 x^2 e^6 - 36 B b c d x e^5 - 18 A c^2 d x e^5 + 6 B b^2 x e^6 + 12 B a c x e^6 + 12 A b c x e^6\right) e^{(-9)} - \frac{\left(9 B c^2 d^5 - 14 B b c d^4 e - 7 A c^2 d^4 e + 5 B b^2 d^3 e^2 + 10 B a c d^3 e^2 + 10 A b c d^3 e^2 - 6 B a b d^2 e^3 - 3 A b^2 d^2 e^3 - 6 A a c d^2 e^3 + B a^2 d e^4 + 2 A a b d e^4 + A a^2 e^5 + 2\left(5 B c^2 d^4 e - 8 B b c d^3 e^2 - 4 A c^2 d^3 e^2 + 3 B b^2 d^2 e^3 + 6 B a c d^2 e^3 + 6 A b c d^2 e^3 - 4 B a b d e^4 - 2 A b^2 d e^4 - 4 A a c d e^4 + B a^2 e^5 + 2 A a b e^5\right) x\right) e^{(-6)}}{2 (x e + d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -(10*B*c^2*d^3 - 12*B*b*c*d^2*e - 6*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*B*a*c*d
*e^2 + 6*A*b*c*d*e^2 - 2*B*a*b*e^3 - A*b^2*e^3 - 2*A*a*c*e^3)*e^(-6)*log(ab
s(x*e + d)) + 1/6*(2*B*c^2*x^3*e^6 - 9*B*c^2*d*x^2*e^5 + 36*B*c^2*d^2*x*e^4
 + 6*B*b*c*x^2*e^6 + 3*A*c^2*x^2*e^6 - 36*B*b*c*d*x*e^5 - 18*A*c^2*d*x*e^5
+ 6*B*b^2*x*e^6 + 12*B*a*c*x*e^6 + 12*A*b*c*x*e^6)*e^(-9) - 1/2*(9*B*c^2*d^
5 - 14*B*b*c*d^4*e - 7*A*c^2*d^4*e + 5*B*b^2*d^3*e^2 + 10*B*a*c*d^3*e^2 + 1
0*A*b*c*d^3*e^2 - 6*B*a*b*d^2*e^3 - 3*A*b^2*d^2*e^3 - 6*A*a*c*d^2*e^3 + B*a
^2*d*e^4 + 2*A*a*b*d*e^4 + A*a^2*e^5 + 2*(5*B*c^2*d^4*e - 8*B*b*c*d^3*e^2 -
 4*A*c^2*d^3*e^2 + 3*B*b^2*d^2*e^3 + 6*B*a*c*d^2*e^3 + 6*A*b*c*d^2*e^3 - 4*
B*a*b*d*e^4 - 2*A*b^2*d*e^4 - 4*A*a*c*d*e^4 + B*a^2*e^5 + 2*A*a*b*e^5)*x)*e
^(-6)/(x*e + d)^2
```

maple [B] time = 0.05, size = 654, normalized size = 2.33

$$\frac{B c^2 x^3}{3 e^3} - \frac{A a^2}{2 (e x + d)^2 e} + \frac{A a b d}{(e x + d)^2 e^2} - \frac{A a c d^2}{(e x + d)^2 e^3} - \frac{A b^2 d^2}{2 (e x + d)^2 e^3} + \frac{A b c d^3}{(e x + d)^2 e^4} - \frac{A c^2 d^4}{2 (e x + d)^2 e^5} + \frac{A c^2 x^2}{2 e^3} + \frac{B a^2 d}{2 (e x + d)^2 e^2} - \frac{B a b d^2}{(e x + d)^2 e^3} + \frac{B a c d^3}{(e x + d)^2 e^4} + \frac{B b^2 d^3}{2 (e x + d)^2 e^4} - \frac{B b c d^4}{(e x + d)^2 e^5} + \frac{B b c x^2}{e^3} + \frac{B c^2 d^5}{2 (e x + d)^2 e^6} - \frac{3 B c^2 d x^2}{2 e^4} - \frac{2 A a b}{(e x + d) e^2} + \frac{4 A a c d}{(e x + d) e^3} + \frac{2 A a c \ln(e x + d)}{e^3} + \frac{2 A b^2 d}{(e x + d) e^3} + \frac{A b^2 \ln(e x + d)}{e^3} - \frac{6 A b c d^2}{(e x + d) e^4} - \frac{6 A b c d \ln(e x + d)}{e^4} + \frac{2 A b c x}{e^3} + \frac{4 A c^2 d^3}{(e x + d) e^5} + \frac{6 A c^2 d^2 \ln(e x + d)}{e^5} - \frac{3 A c^2 d x}{e^4} - \frac{B a^2}{(e x + d) e^2} + \frac{4 B a b d}{(e x + d) e^3} + \frac{2 B a b \ln(e x + d)}{e^3} - \frac{6 B a c d^2}{(e x + d) e^4} - \frac{6 B a c d \ln(e x + d)}{e^4} + \frac{2 B a c x}{e^3} - \frac{3 B b^2 d^2}{(e x + d) e^4} - \frac{3 B b^2 d \ln(e x + d)}{e^4} + \frac{B b^2 x}{e^3} + \frac{8 B b c d^3}{(e x + d) e^5} + \frac{12 B b c d^2 \ln(e x + d)}{e^5} - \frac{6 B b c d x}{e^4} - \frac{5 B c^2 d^4}{(e x + d) e^6} - \frac{10 B c^2 d^3 \ln(e x + d)}{e^6} + \frac{6 B c^2 d^2 x}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x)
```

[Out] 12/e^5*ln(e*x+d)*B*b*c*d^2-6/e^4/(e*x+d)*A*b*c*d^2+4/e^3/(e*x+d)*B*a*b*d-1/2/e/(e*x+d)^2*A*a^2-1/e^2/(e*x+d)*B*a^2+A*b^2/e^3*ln(e*x+d)-6/e^4*ln(e*x+d)*A*b*c*d-6/e^4*ln(e*x+d)*B*a*c*d-1/e^3/(e*x+d)^2*A*d^2*a*c+1/2/e^3*A*x^2*c^2-6/e^4/(e*x+d)*B*a*c*d^2+1/e^4/(e*x+d)^2*B*d^3*a*c-1/e^5/(e*x+d)^2*B*b*c*d^4+1/e^4/(e*x+d)^2*A*b*c*d^3+1/e^2/(e*x+d)^2*A*d*a*b+8/e^5/(e*x+d)*B*b*c*d^3-1/e^3/(e*x+d)^2*B*d^2*a*b-6/e^4*B*b*c*d*x+2/e^3/(e*x+d)*A*b^2*d+4/e^5/(e*x+d)*A*c^2*d^3-10/e^6*ln(e*x+d)*B*c^2*d^3+4/e^3/(e*x+d)*A*a*c*d-3/e^4/(e*x+d)*B*b^2*d^2-5/e^6/(e*x+d)*B*c^2*d^4-1/2/e^3/(e*x+d)^2*A*d^2*b^2-1/2/e^5/(e*x+d)^2*A*c^2*d^4+1/2/e^2/(e*x+d)^2*B*a^2*d+1/2/e^4/(e*x+d)^2*B*b^2*d^3+1/2/e^6/(e*x+d)^2*B*c^2*d^5+2/e^3*ln(e*x+d)*A*a*c+1/e^3*B*x^2*b*c-3/2/e^4*B*x^2*c^2*d+6/e^5*ln(e*x+d)*A*c^2*d^2+2/e^3*A*b*c*x-3/e^4*A*x*c^2*d+2/e^3*B*x*a*c+6/e^5*B*c^2*d^2*x-2/e^2/(e*x+d)*A*a*b+2/e^3*ln(e*x+d)*B*a*b-3/e^4*ln(e*x+d)*B*b^2*d+B*b^2/e^3*x+1/3*B*c^2/e^3*x^3

maxima [**A**] time = 0.63, size = 397, normalized size = 1.41

$$-\frac{9 Bc^2d^5 + Aa^2e^5 - 7\left(2 Bbc + Ac^2\right)d^4e + 5\left(Bb^2 + 2(Ba + Ab)c\right)d^3e^2 - 3\left(2 Bab + Ab^2 + 2 Aac\right)d^2e^3 + \left(Ba^2 + 2 Aab\right)de^4 + 2\left(5 Bc^2d^4e - 4\left(2 Bbc + Ac^2\right)d^3e^2 + 3\left(Bb^2 + 2(Ba + Ab)c\right)d^2e^3 - 2\left(2 Bab + Ab^2 + 2 Aac\right)de^4 + \left(Ba^2 + 2 Aab\right)e^5\right)x}{2\left(e^8x^2 + 2de^7x + d^2e^6\right)} + \frac{2 Bc^2e^2x^3 - 3\left(3 Bc^2de - \left(2 Bbc + Ac^2\right)e^2\right)x^2 + 6\left(6 Bc^2d^2 - 3\left(2 Bbc + Ac^2\right)de + \left(Bb^2 + 2(Ba + Ab)c\right)e^2\right)x}{6e^5} - \frac{\left(10 Bc^2d^3 - 6\left(2 Bbc + Ac^2\right)d^2e + 3\left(Bb^2 + 2(Ba + Ab)c\right)de^2 - \left(2 Bab + Ab^2 + 2 Aac\right)e^3\right)\log(ex + d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="maxima")

[Out] -1/2*(9*B*c^2*d^5 + A*a^2*e^5 - 7*(2*B*b*c + A*c^2)*d^4*e + 5*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 3*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4 + 2*(5*B*c^2*d^4*e - 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(2*B*c^2*e^2*x^3 - 3*(3*B*c^2*d*e - (2*B*b*c + A*c^2)*e^2)*x^2 + 6*(6*B*c^2*d^2 - 3*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*(B*a + A*b)*c)*e^2)*x)/e^5 - (10*B*c^2*d^3 - 6*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^2 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^3)*log(e*x + d)/e^6

mupad [**B**] time = 2.39, size = 468, normalized size = 1.67

$$x^2\left(\frac{Ac^2+2Bbc}{2e^3}-\frac{3Bc^2d}{2e^4}\right)-\frac{x\left(Ba^2e^4-4Babde^3+2Aabe^4+6Bacd^2e^2-4Aacde^3+3Bb^2d^2e^2-2Ab^2de^3-8Bbcd^3e+6Abcd^2e^2+5Bc^2d^4-4Ac^2d^3e\right)+\frac{Ba^2de^4+Aa^2e^5-6Babd^2e^3+2Aabde^4+10Bacd^3e^2-6Aacd^2e^3+5Bb^2d^3e^2-3Ab^2d^2e^3-14Bbcd^4e+10Abcd^3e^2+9Bc^2d^5-7Ac^2d^4e}{2e}}{d^2e^5+2de^6x+e^7x^2}-x\left(\frac{3d\left(\frac{Ac^2+2Bbc}{e^3}-\frac{3Bc^2d}{e^4}\right)}{e}-\frac{Bb^2+2Acb+2Bac}{e^3}+\frac{3Bc^2d^2}{e^5}\right)+\frac{\ln(d+ex)\left(-3Bb^2de^2+Ab^2e^3+12Bbcd^2e-6Abcde^2+2Babe^3-10Bc^2d^3+6Ac^2d^2e-6Bacde^2+2Aace^3\right)}{e^6}+\frac{Bc^2x^3}{3e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x)

[Out] x^2*((A*c^2 + 2*B*b*c)/(2*e^3) - (3*B*c^2*d)/(2*e^4)) - (x*(B*a^2*e^4 + 5*B*c^2*d^4 + 2*A*a*b*e^4 - 2*A*b^2*d*e^3 - 4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 - 4*A*a*c*d*e^3 - 4*B*a*b*d*e^3 - 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^2*e^2) + (A*a^2*e^5 + 9*B*c^2*d^5 + B*a^2*d*e^4 - 7*A*c^2*d^4*e - 3*A*b^2*d^2*e^3 + 5*B*b^2*d^3*e^2 + 2*A*a*b*d*e^4 - 14*B*b*c*d^4*e - 6*A*a*c*d^2*e^3 - 6*B*a*b*d^2*e^3 + 10*A*b*c*d^3*e^2 + 10*B*a*c*d^3*e^2)/(2*e))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3*d*((A*c^2 + 2*B*b*c)/e^3 - (3*B*c^2*d)/e^4))/e - (B*b^2 + 2*A*b*c + 2*B*a*c)/e^3 + (3*B*c^2*d^2)/e^5) + (log(d + e*x)*(A*b^2*e^3 - 10*B*c^2*d^3 + 2*A*a*c*e^3 + 2*B*a*b*e^3 + 6*A*c^2*d^2*e - 3*B*b^2*d*e^2 - 6*A*b*c*d*e^2 - 6*B*a*c*d*e^2 + 12*B*b*c*d^2*e))/e^6 + (B*c^2*x^3)/(3*e^3)

sympy [**A**] time = 28.80, size = 534, normalized size = 1.90

$$\frac{Bc^2x^3}{3e^3}+x^2\left(\frac{Ac^2}{2e^3}+\frac{Bbc}{e^3}-\frac{3Bc^2d}{2e^4}\right)+x\left(\frac{2Abc}{e^3}-\frac{3Ac^2d}{e^4}+\frac{2Bac}{e^3}+\frac{Bb^2}{e^3}-\frac{6Bbcd}{e^4}+\frac{6Bc^2d^2}{e^5}\right)+\frac{-Aa^2e^5-2Aabde^4+6Aacd^2e^3+3Ab^2d^2e^3-10Abcd^3e^2+7Ac^2d^4e-Ba^2de^4+6Babd^2e^3-10Bacd^3e^2-5Bb^2d^3e^2+14Bbcd^4e-9Bc^2d^5+x\left(-4Aabe^5+8Aacde^4+4Ab^2de^4-12Abcd^2e^3+8Ac^2d^3e^2-2Ba^2e^5+8Babde^4-12Bacd^2e^3-6Bb^2d^2e^3+16Bbcd^3e^2-10Bc^2d^4e\right)}{2d^2e^6+4de^7x+2e^8x^2}+\frac{\left(2Aace^3+Ab^2e^3-6Abcde^2+6Ac^2d^2e+2Babe^3-6Bacde^2-3Bb^2de^2+12Bbcd^2e-10Bc^2d^3\right)\log(d+ex)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**3,x)

[Out] B*c**2*x**3/(3*e**3) + x**2*(A*c**2/(2*e**3) + B*b*c/e**3 - 3*B*c**2*d/(2*e**4)) + x*(2*A*b*c/e**3 - 3*A*c**2*d/e**4 + 2*B*a*c/e**3 + B*b**2/e**3 - 6*

```
B*b*c*d/e**4 + 6*B*c**2*d**2/e**5) + (-A*a**2*e**5 - 2*A*a*b*d*e**4 + 6*A*a
*c*d**2*e**3 + 3*A*b**2*d**2*e**3 - 10*A*b*c*d**3*e**2 + 7*A*c**2*d**4*e -
B*a**2*d*e**4 + 6*B*a*b*d**2*e**3 - 10*B*a*c*d**3*e**2 - 5*B*b**2*d**3*e**2
 + 14*B*b*c*d**4*e - 9*B*c**2*d**5 + x*(-4*A*a*b*e**5 + 8*A*a*c*d*e**4 + 4*
A*b**2*d*e**4 - 12*A*b*c*d**2*e**3 + 8*A*c**2*d**3*e**2 - 2*B*a**2*e**5 + 8
*B*a*b*d*e**4 - 12*B*a*c*d**2*e**3 - 6*B*b**2*d**2*e**3 + 16*B*b*c*d**3*e**
2 - 10*B*c**2*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**2) + (2*A*a*c*
e**3 + A*b**2*e**3 - 6*A*b*c*d*e**2 + 6*A*c**2*d**2*e + 2*B*a*b*e**3 - 6*B*
a*c*d*e**2 - 3*B*b**2*d*e**2 + 12*B*b*c*d**2*e - 10*B*c**2*d**3)*log(d + e*
x)/e**6
```

3.2086 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=286

$$-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{e^6}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c\ldots\right.}{e^6(d\ldots}$$

Rubi [A] time = 0.41, antiderivative size = 284, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^6(d+ex)}-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{e^6}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{2e^6(d+ex)^2}-\frac{cx(-Ace-2bBe+4Bcd)}{e^5}+\frac{Bc^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c*(4*B*c*d - 2*b*B*e - A*c*e)*x)/e^5) + (B*c^2*x^2)/(2*e^4) + ((B*d - A*
e)*(c*d^2 - b*d*e + a*e^2)^2)/(3*e^6*(d + e*x)^3) - ((c*d^2 - b*d*e + a*e^2
)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(2*e^6*(d + e*x)^2
) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e)) - A*e*(
6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(e^6*(d + e*x)) - ((2*A*c*e*(2*
c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))*Log[d + e*x])/
e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx=\int \left(\frac{c(-4Bcd+2bBe+Ace)}{e^5}+\frac{Bc^2x}{e^4}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^4}+\frac{\left(cd^2-\ldots\right.}{\ldots}\right.$$

$$=-\frac{c(4Bcd-2bBe-Ace)x}{e^5}+\frac{Bc^2x^2}{2e^4}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(cd^2-bde\ldots\right.}{\ldots}$$

Mathematica [A] time = 0.11, size = 263, normalized size = 0.92

$$\frac{6\log(d+ex)\left(B\left(2ce(ae-4bd)+b^2e^2+10c^2d^2\right)+2Ace(be-2cd)\right)-\frac{6\left(Ae\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+B\left(6cde(2bd-ae)+be^2(2ae-3bd)-10c^2d^3\right)\right)}{d+ex}+\frac{2(Bd-Ae)\left(e(ae-bd)+cd^2\right)^2}{(d+ex)^3}-\frac{3\left(e(ae-bd)+cd^2\right)\left(Be(ae-3bd)+2Ae(be-2cd)+5Bcd^2\right)}{(d+ex)^2}+6cex(Ace+2bBe-4Bcd)+3Bc^2e^2x^2}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (6*c*e*(-4*B*c*d + 2*b*B*e + A*c*e)*x + 3*B*c^2*e^2*x^2 + (2*(B*d - A*e)*(c
*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^3 - (3*(c*d^2 + e*(-(b*d) + a*e))*(5*
B*c*d^2 + B*e*(-3*b*d + a*e) + 2*A*e*(-2*c*d + b*e)))/(d + e*x)^2 - (6*(A*e
*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e)) + B*(-10*c^2*d^3 + 6*c*d*e*(2
*b*d - a*e) + b*e^2*(-3*b*d + 2*a*e))))/(d + e*x) + 6*(2*A*c*e*(-2*c*d + b*
e) + B*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-4*b*d + a*e)))*Log[d + e*x])/(6*e^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4, x]
```

fricas [B] time = 0.40, size = 618, normalized size = 2.16

$$\frac{3Bc^2e^5x^5 + 47Bc^2d^5 - 2Aa^2e^5 - 26\left(2Bbc + Ac^2\right)d^4e + 11\left(Bb^2 + 2(Ba + Ab)c\right)d^3e^2 - 2\left(2Bab + Ab^2 + 2Aac\right)d^2e^3 - \left(Ba^2 + 2Aab\right)de^4 - 3\left(5Bc^2de^4 - 2\left(2Bbc + Ac^2\right)e^5\right)x^4 - 9\left(7Bc^2d^2e^3 - 2\left(2Bbc + Ac^2\right)de^4\right)x^3 - 3\left(3Bc^2d^3e^2 + 6\left(2Bbc + Ac^2\right)d^2e^3 - 6\left(Bb^2 + 2(Ba + Ab)c\right)de^4 + 2\left(2Bab + Ab^2 + 2Aac\right)e^5\right)x^2 + 3\left(27Bc^2d^4e - 18\left(2Bbc + Ac^2\right)d^3e^2 + 9\left(Bb^2 + 2(Ba + Ab)c\right)d^2e^3 - 2\left(2Bab + Ab^2 + 2Aac\right)de^4 - \left(Ba^2 + 2Aab\right)e^5\right)x + 6\left(10Bc^2d^5 - 4\left(2Bbc + Ac^2\right)d^4e + \left(Bb^2 + 2(Ba + Ab)c\right)d^3e^2 + \left(10Bc^2d^2e^3 - 4\left(2Bbc + Ac^2\right)de^4 + \left(Bb^2 + 2(Ba + Ab)c\right)e^5\right)x^3 + 3\left(10Bc^2d^3e^2 - 4\left(2Bbc + Ac^2\right)d^2e^3 + \left(Bb^2 + 2(Ba + Ab)c\right)de^4\right)x^2 + 3\left(10Bc^2d^4e - 4\left(2Bbc + Ac^2\right)d^3e^2 + \left(Bb^2 + 2(Ba + Ab)c\right)d^2e^3\right)x\right)\log\left(ex + d\right)}{6\left(e^9x^3 + 3de^8x^2 + 3d^2e^7x + d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*e^5*x^5 + 47*B*c^2*d^5 - 2*A*a^2*e^5 - 26*(2*B*b*c + A*c^2)*d^
4*e + 11*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*
d^2*e^3 - (B*a^2 + 2*A*a*b)*d*e^4 - 3*(5*B*c^2*d*e^4 - 2*(2*B*b*c + A*c^2)*
e^5)*x^4 - 9*(7*B*c^2*d^2*e^3 - 2*(2*B*b*c + A*c^2)*d*e^4)*x^3 - 3*(3*B*c^2
*d^3*e^2 + 6*(2*B*b*c + A*c^2)*d^2*e^3 - 6*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4
+ 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 3*(27*B*c^2*d^4*e - 18*(2*B*b*c
+ A*c^2)*d^3*e^2 + 9*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*a*b + A*b^2
 + 2*A*a*c)*d*e^4 - (B*a^2 + 2*A*a*b)*e^5)*x + 6*(10*B*c^2*d^5 - 4*(2*B*b*c
 + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + (10*B*c^2*d^2*e^3 - 4
*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 3*(10*B*c^2
*d^3*e^2 - 4*(2*B*b*c + A*c^2)*d^2*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*d*e^4)*x
^2 + 3*(10*B*c^2*d^4*e - 4*(2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*
b)*c)*d^2*e^3)*x)*log(e*x + d))/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*
e^6)
```

giac [A] time = 0.16, size = 424, normalized size = 1.48

$$\left(10Bc^2d^2 - 8Bbcde - 4Ac^2de + Bb^2e^2 + 2Bace^2 + 2Abce^2\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{2}\left(Bc^2x^2e^4 - 8Bc^2dxe^3 + 4Bbcxe^4 + 2Ac^2xe^4\right)e^{(-8)} + \frac{\left(47Bc^2d^5 - 52Bbcd^4e - 26Ac^2d^4e + 11Bb^2d^3e^2 + 22Bacd^3e^2 + 22Abcd^3e^2 - 4Babd^2e^3 - 2Ab^2d^2e^3 - 4Aacd^2e^3 - Ba^2de^4 - 2Aabde^4 - 2Aa^2e^5 + 6\left(10Bc^2d^3e^2 - 12Bbcd^2e^3 - 6Ac^2d^2e^3 + 3Bb^2de^4 + 6Bacde^4 + 6Abcde^4 - 2Babe^5 - Ab^2e^5 - 2Aace^5\right)x^2 + 3\left(35Bc^2d^4e - 40Bbcd^3e^2 - 20Ac^2d^3e^2 + 9Bb^2d^2e^3 + 18Bacd^2e^3 + 18Abcd^2e^3 - 4Babde^4 - 2Ab^2de^4 - 4Aacde^4 - Ba^2e^5 - 2Aabe^5\right)x\right)e^{(-6)}}{6\left(xe + d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (10*B*c^2*d^2 - 8*B*b*c*d*e - 4*A*c^2*d*e + B*b^2*e^2 + 2*B*a*c*e^2 + 2*A*b
*c*e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(B*c^2*x^2*e^4 - 8*B*c^2*d*x*e^3 + 4
*B*b*c*x*e^4 + 2*A*c^2*x*e^4)*e^(-8) + 1/6*(47*B*c^2*d^5 - 52*B*b*c*d^4*e -
 26*A*c^2*d^4*e + 11*B*b^2*d^3*e^2 + 22*B*a*c*d^3*e^2 + 22*A*b*c*d^3*e^2 -
4*B*a*b*d^2*e^3 - 2*A*b^2*d^2*e^3 - 4*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 2*A*a*b
*d*e^4 - 2*A*a^2*e^5 + 6*(10*B*c^2*d^3*e^2 - 12*B*b*c*d^2*e^3 - 6*A*c^2*d^2
*e^3 + 3*B*b^2*d*e^4 + 6*B*a*c*d*e^4 + 6*A*b*c*d*e^4 - 2*B*a*b*e^5 - A*b^2*
e^5 - 2*A*a*c*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 40*B*b*c*d^3*e^2 - 20*A*c^2*d^
3*e^2 + 9*B*b^2*d^2*e^3 + 18*B*a*c*d^2*e^3 + 18*A*b*c*d^2*e^3 - 4*B*a*b*d*e
^4 - 2*A*b^2*d*e^4 - 4*A*a*c*d*e^4 - B*a^2*e^5 - 2*A*a*b*e^5)*x)*e^(-6)/(x*
e + d)^3
```

maple [B] time = 0.06, size = 690, normalized size = 2.41

$$-\frac{Aa^2}{3(ex+d)^3e} + \frac{2Aabd}{3(ex+d)^3e^2} - \frac{2Aacd^2}{3(ex+d)^3e^3} - \frac{Ab^2d^2}{3(ex+d)^3e^3} + \frac{2Abcd^3}{3(ex+d)^3e^4} - \frac{Ac^2d^4}{3(ex+d)^3e^5} + \frac{Ba^2d}{3(ex+d)^3e^2} - \frac{2Babd^2}{3(ex+d)^3e^3} + \frac{2Bacd^3}{3(ex+d)^3e^4} + \frac{Bb^2d^3}{3(ex+d)^3e^4} - \frac{2Bbcd^4}{3(ex+d)^3e^5} + \frac{Bc^2d^5}{3(ex+d)^3e^6} - \frac{Aab}{(ex+d)^2e^2} + \frac{2Aacd}{(ex+d)^2e^3} + \frac{Ab^2d}{(ex+d)^2e^3} - \frac{3Abcd^2}{(ex+d)^2e^4} + \frac{2Ac^2d^3}{(ex+d)^2e^5} - \frac{Ba^2}{2(ex+d)^2e^2} + \frac{2Babd}{(ex+d)^2e^3} - \frac{3Bacd^2}{(ex+d)^2e^4} - \frac{3Bb^2d^2}{2(ex+d)^2e^4} + \frac{4Bbcd^3}{(ex+d)^2e^5} - \frac{5Bc^2d^4}{2(ex+d)^2e^6} + \frac{Bc^2x^2}{2e^4} - \frac{2Aac}{(ex+d)e^3} - \frac{Ab^2}{(ex+d)e^3} + \frac{6Abcd}{(ex+d)e^4} + \frac{2Abc\ln(ex+d)}{e^4} - \frac{6Ac^2d^2}{(ex+d)e^5} - \frac{4Ac^2d\ln(ex+d)}{e^5} + \frac{Ac^2x}{e^4} - \frac{2Bab}{(ex+d)e^3} + \frac{6Bacd}{(ex+d)e^4} + \frac{2Bac\ln(ex+d)}{e^4} + \frac{3Bb^2d}{(ex+d)e^4} + \frac{Bb^2\ln(ex+d)}{e^4} - \frac{12Bbcd^2}{(ex+d)e^5} - \frac{8Bbcd\ln(ex+d)}{e^5} + \frac{2Bbcx}{e^4} + \frac{10Bc^2d^3}{(ex+d)e^6} + \frac{10Bc^2d^2\ln(ex+d)}{e^6} - \frac{4Bc^2dx}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x)
```

[Out] -2/3/e^5/(e*x+d)^3*B*b*c*d^4+2/(e*x+d)^2*A*a*c*d/e^3-3/(e*x+d)^2*B*a*c*d^2/e^4+1/3/(e*x+d)^3*B*b^2*d^3/e^4-1/(e*x+d)^2*A*a*b/e^2+1/(e*x+d)^2*A*b^2*d/e^3+A*c^2/e^4*x-1/2/(e*x+d)^2*B*a^2/e^2-1/3/(e*x+d)^3*A*a^2/e+6/(e*x+d)*B*a*c*d/e^4-1/(e*x+d)*A*b^2/e^3+2/(e*x+d)^2*B*a*b*d/e^3-2/3/(e*x+d)^3*B*a*b*d^2/e^3+2/3/(e*x+d)^3*A*a*b*d/e^2+1/3/(e*x+d)^3*B*c^2*d^5/e^6-4*A*c^2*d/e^5*ln(e*x+d)+2*B*a*c/e^4*ln(e*x+d)+10*B*c^2*d^2/e^6*ln(e*x+d)+4/e^5/(e*x+d)^2*B*b*c*d^3-1/3/(e*x+d)^3*A*b^2*d^2/e^3-2/3/(e*x+d)^3*A*a*c*d^2/e^3+2/3/(e*x+d)^3*B*a*c*d^3/e^4-2/(e*x+d)*B*a*b/e^3+3/(e*x+d)*B*b^2*d/e^4-6/(e*x+d)*A*c^2*d^2/e^5+10/(e*x+d)*B*c^2*d^3/e^6-3/2/(e*x+d)^2*B*b^2*d^2/e^4-3/e^4/(e*x+d)^2*A*b*c*d^2-12/e^5/(e*x+d)*B*b*c*d^2+6/e^4/(e*x+d)*A*b*c*d-2/(e*x+d)*A*a*c/e^3+2/3/e^4/(e*x+d)^3*A*d^3*b*c-8/e^5*ln(e*x+d)*B*b*c*d-4*B*c^2*d/e^5*x+2/(e*x+d)^2*A*c^2*d^3/e^5-5/2/(e*x+d)^2*B*c^2*d^4/e^6-1/3/(e*x+d)^3*A*c^2*d^4/e^5+1/3/(e*x+d)^3*B*a^2*d/e^2+2*c/e^4*B*b*x+2/e^4*ln(e*x+d)*A*b*c+1/2*B*c^2/e^4*x^2+B*b^2/e^4*ln(e*x+d)

maxima [A]   time = 0.66, size = 409, normalized size = 1.43

$$\frac{47\,Bc^2d^5 - 2\,Aa^2e^5 - 26\left(2\,Bbc + Ac^2\right)d^4e + 11\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - \left(Ba^2 + 2\,Aab\right)de^4 + 6\left(10\,Bc^2d^3e^2 - 6\left(2\,Bbc + Ac^2\right)d^2e^3 + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)de^4 - \left(2\,Bab + Ab^2 + 2\,Aac\right)e^5\right)x^2 + 3\left(35\,Bc^2d^4e - 20\left(2\,Bbc + Ac^2\right)d^3e^2 + 9\left(Bb^2 + 2\,(Ba + Ab)c\right)d^2e^3 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)de^4 - \left(Ba^2 + 2\,Aab\right)e^5\right)x}{6\left(e^9x^3 + 3\,de^8x^2 + 3\,d^2e^7x + d^3e^6\right)} + \frac{Bc^2ex^2 - 2\left(4\,Bc^2d - \left(2\,Bbc + Ac^2\right)e\right)x}{2\,e^5} + \frac{\left(10\,Bc^2d^2 - 4\left(2\,Bbc + Ac^2\right)de + \left(Bb^2 + 2\,(Ba + Ab)c\right)e^2\right)\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="maxima")

[Out] 1/6*(47*B*c^2*d^5 - 2*A*a^2*e^5 - 26*(2*B*b*c + A*c^2)*d^4*e + 11*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 - (B*a^2 + 2*A*a*b)*d*e^4 + 6*(10*B*c^2*d^3*e^2 - 6*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 20*(2*B*b*c + A*c^2)*d^3*e^2 + 9*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 - (B*a^2 + 2*A*a*b)*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6) + 1/2*(B*c^2*e*x^2 - 2*(4*B*c^2*d - (2*B*b*c + A*c^2)*e)*x)/e^5 + (10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*(B*a + A*b)*c)*e^2)*log(e*x + d)/e^6

mupad [B]   time = 2.37, size = 465, normalized size = 1.63

$$x\left(\frac{Ac^2+2Bbc}{e^4}-\frac{4Bc^2d}{e^5}\right)-\frac{x^2\left(Ab^2e^4+2Aace^4+2Babe^4-3Bb^2de^3-10Bc^2d^3e+6Ac^2d^2e^2-6Abcde^3-6Bacde^3+12Bbcd^2e^2\right)+x\left(\frac{Ba^2e^4}{2}-\frac{35Bc^2d^4}{2}+Aabe^4+Ab^2de^3+10Ac^2d^3e-\frac{9Bb^2d^2e^2}{2}+2Aacde^3+2Babde^3+20Bbcd^3e-9Abcd^2e^2-9Bacd^2e^2\right)+\frac{2Aa^2e^5-47Bc^2d^5+Ba^2de^4+26Ac^2d^4e+2Ab^2d^2e^3-11Bb^2d^3e^2+2Aabde^4+52Bbcd^4e+4Aacd^2e^3+4Babd^2e^3-22Abcd^3e^2-22Bacd^3e^2}{6e}}{d^3e^5+e^8x^3+3d^2e^6x+3de^7x^2}+\frac{\ln\left(d+ex\right)\left(Bb^2e^2+10Bc^2d^2+2Abce^2+2Bace^2-4Ac^2de-8Bbcde\right)}{e^6}+\frac{Bc^2x^2}{2e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x)

[Out] x*((A*c^2 + 2*B*b*c)/e^4 - (4*B*c^2*d)/e^5) - (x^2*(A*b^2*e^4 + 2*A*a*c*e^4 + 2*B*a*b*e^4 - 3*B*b^2*d*e^3 - 10*B*c^2*d^3*e + 6*A*c^2*d^2*e^2 - 6*A*b*c*d*e^3 - 6*B*a*c*d*e^3 + 12*B*b*c*d^2*e^2) + x*((B*a^2*e^4)/2 - (35*B*c^2*d^4)/2 + A*a*b*e^4 + A*b^2*d*e^3 + 10*A*c^2*d^3*e - (9*B*b^2*d^2*e^2)/2 + 2*A*a*c*d*e^3 + 2*B*a*b*d*e^3 + 20*B*b*c*d^3*e - 9*A*b*c*d^2*e^2 - 9*B*a*c*d^2*e^2) + (2*A*a^2*e^5 - 47*B*c^2*d^5 + B*a^2*d*e^4 + 26*A*c^2*d^4*e + 2*A*b^2*d^2*e^3 - 11*B*b^2*d^3*e^2 + 2*A*a*b*d*e^4 + 52*B*b*c*d^4*e + 4*A*a*c*d^2*e^3 + 4*B*a*b*d^2*e^3 - 22*A*b*c*d^3*e^2 - 22*B*a*c*d^3*e^2)/(6*e))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (log(d + e*x)*(B*b^2*e^2 + 10*B*c^2*d^2 + 2*A*b*c*e^2 + 2*B*a*c*e^2 - 4*A*c^2*d*e - 8*B*b*c*d*e))/e^6 + (B*c^2*x^2)/(2*e^4)

sympy [A]   time = 152.98, size = 547, normalized size = 1.91

$$\frac{Bc^2x^2}{2e^4} + x\left(\frac{Ac^2}{e^4} + \frac{2Bbc}{e^4} - \frac{4Bc^2d}{e^5}\right) + \frac{-2Aa^2e^5 - 2Aabde^4 - 4Aacd^2e^3 - 2Ab^2d^2e^3 + 22Abcd^3e^2 - 26Ac^2d^4e - Ba^2de^4 - 4Babd^2e^3 + 22Bacd^3e^2 + 11Bb^2d^3e^2 - 52Bbcd^4e + 47Bc^2d^5 + x^2\left(-12Aace^5 - 6Ab^2e^5 + 36Abcde^4 - 36Ac^2d^2e^3 - 12Babe^5 + 36Bacde^4 + 18Bb^2de^4 - 72Bbcd^2e^3 + 60Bc^2d^3e^2\right) + x\left(-6Aabe^5 - 12Aacde^4 - 6Ab^2de^4 + 54Abcd^2e^3 - 60Ac^2d^3e^2 - 3Ba^2e^5 - 12Babde^4 + 54Bacd^2e^3 + 27Bb^2d^2e^3 - 120Bbcd^3e^2 + 105Bc^2d^4e\right)}{6d^3e^6 + 18d^2e^7x + 18de^8x^2 + 6e^9x^3} + \frac{\left(2Abce^2 - 4Ac^2de + 2Bace^2 + Bb^2e^2 - 8Bbcde + 10Bc^2d^2\right)\log\left(d + ex\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**4,x)

[Out] B*c**2*x**2/(2*e**4) + x*(A*c**2/e**4 + 2*B*b*c/e**4 - 4*B*c**2*d/e**5) + (-2*A*a**2*e**5 - 2*A*a*b*d*e**4 - 4*A*a*c*d**2*e**3 - 2*A*b**2*d**2*e**3 +

```
22*A*b*c*d**3*e**2 - 26*A*c**2*d**4*e - B*a**2*d*e**4 - 4*B*a*b*d**2*e**3 +
 22*B*a*c*d**3*e**2 + 11*B*b**2*d**3*e**2 - 52*B*b*c*d**4*e + 47*B*c**2*d**
5 + x**2*(-12*A*a*c*e**5 - 6*A*b**2*e**5 + 36*A*b*c*d*e**4 - 36*A*c**2*d**2
*e**3 - 12*B*a*b*e**5 + 36*B*a*c*d*e**4 + 18*B*b**2*d*e**4 - 72*B*b*c*d**2*
e**3 + 60*B*c**2*d**3*e**2) + x*(-6*A*a*b*e**5 - 12*A*a*c*d*e**4 - 6*A*b**2
*d*e**4 + 54*A*b*c*d**2*e**3 - 60*A*c**2*d**3*e**2 - 3*B*a**2*e**5 - 12*B*a
*b*d*e**4 + 54*B*a*c*d**2*e**3 + 27*B*b**2*d**2*e**3 - 120*B*b*c*d**3*e**2
+ 105*B*c**2*d**4*e))/(6*d**3*e**6 + 18*d**2*e**7*x + 18*d*e**8*x**2 + 6*e*
*9*x**3) + (2*A*b*c*e**2 - 4*A*c**2*d*e + 2*B*a*c*e**2 + B*b**2*e**2 - 8*B*
b*c*d*e + 10*B*c**2*d**2)*log(d + e*x)/e**6
```

3.2087 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=289

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2c\right.}{2e^6(d+ex)^2}$$

Rubi [A] time = 0.36, antiderivative size = 287, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{2e^6(d+ex)^2}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{3e^6(d+ex)^3}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{4e^6(d+ex)^4}-\frac{c\log(d+ex)(-Ace-2bBe+5Bcd)}{e^6}+\frac{Bc^2x}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (B*c^2*x)/e^5 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(4*e^6*(d + e*x)^4)
 - ((c*d^2 - b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d -
 b*e)))/(3*e^6*(d + e*x)^3) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*
d*e*(2*b*d - a*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(2*e^
6*(d + e*x)^2) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(
4*b*d - a*e)))/(e^6*(d + e*x)) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*Log[d + e*x
])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx = \int \left(\frac{Bc^2}{e^5}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd\right.}{e^5(d+ex)^4}\right.$$

$$= \frac{Bc^2x}{e^5}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{4e^6(d+ex)^4}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae\right.}{3e^6(d+ex)^3}$$

Mathematica [A] time = 0.26, size = 391, normalized size = 1.35

$$-\frac{Ae\left(e^2\left(3a^2e^2+2abe(d+4ex)+b^2\left(d^2+4dex+6e^2x^2\right)\right)+2ce\left(ae\left(d^2+4dex+6e^2x^2\right)+3b\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+c^2(-d)\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)+B\left(e^2\left(a^2e^2(d+4ex)+2abe\left(d^2+4dex+6e^2x^2\right)+3b^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+2ce\left(3ae\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)-bd\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)+c^2\left(77d^5+248d^4ex+252d^3e^2x^2+48d^2e^3x^3-48de^4x^4-12e^5x^5\right)\right)+12c(d+ex)^4\log(d+ex)(-Ace-2bBe+5Bcd)}{12e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(-(c^2*d*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) + e
^2*(3*a^2*e^2 + 2*a*b*e*(d + 4*e*x) + b^2*(d^2 + 4*d*e*x + 6*e^2*x^2)) + 2*
c*e*(a*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + 3*b*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 +
 4*e^3*x^3))) + B*(c^2*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3
*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5) + e^2*(a^2*e^2*(d + 4*e*x) + 2*a*b*e*(d^2
 + 4*d*e*x + 6*e^2*x^2) + 3*b^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)
) + 2*c*e*(3*a*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - b*d*(25*d^3
```

```
+ 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3))) + 12*c*(5*B*c*d - 2*b*B*e - A*
c*e)*(d + e*x)^4*Log[d + e*x])/(e^6*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5, x]
```

fricas [B] time = 0.38, size = 572, normalized size = 1.98

$$\frac{12\,Bc^2e^5x^5 + 48\,Bc^2de^4x^4 - 77\,Bc^2d^5 - 3\,Aa^2e^5 + 25\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - \left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - \left(Ba^2 + 2\,Aab\right)de^4 - 12\left(4\,Bc^2d^2e^3 - 4\left(2\,Bbc + Ac^2\right)de^4 + \left(Bb^2 + 2\,(Ba + Ab)c\right)e^5\right)x^3 - 6\left(42\,Bc^2d^3e^2 - 18\left(2\,Bbc + Ac^2\right)d^2e^3 + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)de^4 + \left(2\,Bab + Ab^2 + 2\,Aac\right)e^5\right)x^2 - 4\left(62\,Bc^2d^4e - 22\left(2\,Bbc + Ac^2\right)d^3e^2 + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^2e^3 + \left(2\,Bab + Ab^2 + 2\,Aac\right)de^4 + \left(Ba^2 + 2\,Aab\right)e^5\right)x - 12\left(5\,Bc^2d^5 - \left(2\,Bbc + Ac^2\right)d^4e + \left(5\,Bc^2de^4 - \left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 4\left(5\,Bc^2d^2e^3 - \left(2\,Bbc + Ac^2\right)de^4\right)x^3 + 6\left(5\,Bc^2d^3e^2 - \left(2\,Bbc + Ac^2\right)d^2e^3\right)x^2 + 4\left(5\,Bc^2d^4e - \left(2\,Bbc + Ac^2\right)d^3e^2\right)x\right)\log\left(ex + d\right)}{12\left(e^{10}x^4 + 4\,de^9x^3 + 6\,d^2e^8x^2 + 4\,d^3e^7x + d^4e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*e^5*x^5 + 48*B*c^2*d*e^4*x^4 - 77*B*c^2*d^5 - 3*A*a^2*e^5 +
25*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b
 + A*b^2 + 2*A*a*c)*d^2*e^3 - (B*a^2 + 2*A*a*b)*d*e^4 - 12*(4*B*c^2*d^2*e^3
 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 - 6*(42*B
*c^2*d^3*e^2 - 18*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d
*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 - 4*(62*B*c^2*d^4*e - 22*(2*B*b
*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 + (2*B*a*b + A*b^
2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x - 12*(5*B*c^2*d^5 - (2*B*b*c
+ A*c^2)*d^4*e + (5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 4*(5*B*c^2*d
^2*e^3 - (2*B*b*c + A*c^2)*d*e^4)*x^3 + 6*(5*B*c^2*d^3*e^2 - (2*B*b*c + A*c
^2)*d^2*e^3)*x^2 + 4*(5*B*c^2*d^4*e - (2*B*b*c + A*c^2)*d^3*e^2)*x)*log(e*x
 + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.21, size = 719, normalized size = 2.49

$$(xe + d)Bc^2e^{(-6)} + \left(5\,Bc^2d - 2\,Bbce - Ac^2e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) - \frac{1}{12}\left(\frac{120\,Bc^2d^2e^{22}}{xe + d} - \frac{60\,Bc^2d^3e^{22}}{(xe + d)^2} + \frac{20\,Bc^2d^4e^{22}}{(xe + d)^3} - \frac{3\,Bc^2d^5e^{22}}{(xe + d)^4} - \frac{96\,Bbcde^{23}}{xe + d} - \frac{48\,Ac^2de^{23}}{xe + d} + \frac{72\,Bbcd^2e^{23}}{(xe + d)^2} + \frac{36\,Ac^2d^2e^{23}}{(xe + d)^2} - \frac{32\,Bbcd^3e^{23}}{(xe + d)^3} - \frac{16\,Ac^2d^3e^{23}}{(xe + d)^3} + \frac{6\,Bbcd^4e^{23}}{(xe + d)^4} + \frac{3\,Ac^2d^4e^{23}}{(xe + d)^4} + \frac{12\,Bb^2e^{24}}{xe + d} + \frac{24\,Bace^{24}}{xe + d} + \frac{24\,Abce^{24}}{xe + d} - \frac{18\,Bb^2de^{24}}{(xe + d)^2} - \frac{36\,Bacde^{24}}{(xe + d)^2} - \frac{36\,Abcde^{24}}{(xe + d)^2} + \frac{12\,Bb^2d^2e^{24}}{(xe + d)^3} + \frac{24\,Bacd^2e^{24}}{(xe + d)^3} + \frac{24\,Abcd^2e^{24}}{(xe + d)^3} - \frac{3\,Bb^2d^3e^{24}}{(xe + d)^4} - \frac{6\,Bacd^3e^{24}}{(xe + d)^4} - \frac{6\,Abcd^3e^{24}}{(xe + d)^4} + \frac{12\,Babe^{25}}{(xe + d)^2} + \frac{6\,Ab^2e^{25}}{(xe + d)^2} + \frac{12\,Aace^{25}}{(xe + d)^2} - \frac{16\,Babde^{25}}{(xe + d)^3} - \frac{8\,Ab^2de^{25}}{(xe + d)^3} - \frac{16\,Aacde^{25}}{(xe + d)^3} + \frac{6\,Babd^2e^{25}}{(xe + d)^4} + \frac{3\,Ab^2d^2e^{25}}{(xe + d)^4} + \frac{6\,Aacd^2e^{25}}{(xe + d)^4} + \frac{4\,Ba^2e^{26}}{(xe + d)^3} + \frac{8\,Aabe^{26}}{(xe + d)^3} - \frac{3\,Ba^2de^{26}}{(xe + d)^4} - \frac{6\,Aabde^{26}}{(xe + d)^4} + \frac{3\,Aa^2e^{27}}{(xe + d)^4}\right)e^{(-28)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*c^2*e^(-6) + (5*B*c^2*d - 2*B*b*c*e - A*c^2*e)*e^(-6)*log(abs(x
*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(120*B*c^2*d^2*e^22/(x*e + d) - 60*B*c^2
*d^3*e^22/(x*e + d)^2 + 20*B*c^2*d^4*e^22/(x*e + d)^3 - 3*B*c^2*d^5*e^22/(x
*e + d)^4 - 96*B*b*c*d*e^23/(x*e + d) - 48*A*c^2*d*e^23/(x*e + d) + 72*B*b*
c*d^2*e^23/(x*e + d)^2 + 36*A*c^2*d^2*e^23/(x*e + d)^2 - 32*B*b*c*d^3*e^23/
(x*e + d)^3 - 16*A*c^2*d^3*e^23/(x*e + d)^3 + 6*B*b*c*d^4*e^23/(x*e + d)^4
+ 3*A*c^2*d^4*e^23/(x*e + d)^4 + 12*B*b^2*e^24/(x*e + d) + 24*B*a*c*e^24/(x
*e + d) + 24*A*b*c*e^24/(x*e + d) - 18*B*b^2*d*e^24/(x*e + d)^2 - 36*B*a*c*
d*e^24/(x*e + d)^2 - 36*A*b*c*d*e^24/(x*e + d)^2 + 12*B*b^2*d^2*e^24/(x*e +
 d)^3 + 24*B*a*c*d^2*e^24/(x*e + d)^3 + 24*A*b*c*d^2*e^24/(x*e + d)^3 - 3*B
*b^2*d^3*e^24/(x*e + d)^4 - 6*B*a*c*d^3*e^24/(x*e + d)^4 - 6*A*b*c*d^3*e^24
/(x*e + d)^4 + 12*B*a*b*e^25/(x*e + d)^2 + 6*A*b^2*e^25/(x*e + d)^2 + 12*A*
a*c*e^25/(x*e + d)^2 - 16*B*a*b*d*e^25/(x*e + d)^3 - 8*A*b^2*d*e^25/(x*e +
d)^3 - 16*A*a*c*d*e^25/(x*e + d)^3 + 6*B*a*b*d^2*e^25/(x*e + d)^4 + 3*A*b^2
*d^2*e^25/(x*e + d)^4 + 6*A*a*c*d^2*e^25/(x*e + d)^4 + 4*B*a^2*e^26/(x*e +
d)^3 + 8*A*a*b*e^26/(x*e + d)^3 - 3*B*a^2*d*e^26/(x*e + d)^4 - 6*A*a*b*d*e^
26/(x*e + d)^4 + 3*A*a^2*e^27/(x*e + d)^4)*e^(-28)
```

maple [B] time = 0.05, size = 710, normalized size = 2.46

$$-\frac{A a^{2}}{4 (e x+d)^{4} e}+\frac{A a b d}{2 (e x+d)^{4} e^{2}}-\frac{A a c d^{2}}{2 (e x+d)^{4} e^{3}}-\frac{A b^{2} d^{2}}{4 (e x+d)^{4} e^{3}}+\frac{A b c d^{3}}{2 (e x+d)^{4} e^{4}}-\frac{A c^{2} d^{4}}{4 (e x+d)^{4} e^{5}}+\frac{B a^{2} d}{4 (e x+d)^{4} e^{2}}-\frac{B a b d^{2}}{2 (e x+d)^{4} e^{3}}+\frac{B a c d^{3}}{2 (e x+d)^{4} e^{4}}+\frac{B b^{2} d^{3}}{4 (e x+d)^{4} e^{4}}-\frac{B b c d^{4}}{2 (e x+d)^{4} e^{5}}+\frac{B c^{2} d^{5}}{4 (e x+d)^{4} e^{6}}-\frac{2 A a b}{3 (e x+d)^{3} e^{2}}+\frac{4 A a c d}{3 (e x+d)^{3} e^{3}}+\frac{2 A b^{2} d}{3 (e x+d)^{3} e^{3}}-\frac{2 A b c d^{2}}{(e x+d)^{3} e^{4}}+\frac{4 A c^{2} d^{3}}{3 (e x+d)^{3} e^{5}}-\frac{B a^{2}}{3 (e x+d)^{3} e^{2}}+\frac{4 B a b d}{3 (e x+d)^{3} e^{3}}-\frac{2 B a c d^{2}}{(e x+d)^{3} e^{4}}-\frac{B b^{2} d^{2}}{(e x+d)^{3} e^{4}}+\frac{8 B b c d^{3}}{3 (e x+d)^{3} e^{5}}-\frac{5 B c^{2} d^{4}}{3 (e x+d)^{3} e^{6}}-\frac{A a c}{(e x+d)^{2} e^{3}}-\frac{A b^{2}}{2 (e x+d)^{2} e^{3}}+\frac{3 A b c d}{(e x+d)^{2} e^{4}}-\frac{3 A c^{2} d^{2}}{(e x+d)^{2} e^{5}}-\frac{B a b}{(e x+d)^{2} e^{3}}+\frac{3 B a c d}{(e x+d)^{2} e^{4}}+\frac{3 B b^{2} d}{2 (e x+d)^{2} e^{4}}-\frac{6 B b c d^{2}}{(e x+d)^{2} e^{5}}+\frac{5 B c^{2} d^{3}}{(e x+d)^{2} e^{6}}-\frac{2 A b c}{(e x+d) e^{4}}+\frac{4 A c^{2} d}{(e x+d) e^{5}}+\frac{A c^{2} \ln (e x+d)}{e^{5}}-\frac{2 B a c}{(e x+d) e^{4}}-\frac{B b^{2}}{(e x+d) e^{4}}+\frac{8 B b c d}{(e x+d) e^{5}}+\frac{2 B b c \ln (e x+d)}{e^{5}}-\frac{10 B c^{2} d^{2}}{(e x+d) e^{6}}-\frac{5 B c^{2} d \ln (e x+d)}{e^{6}}+\frac{B c^{2} x}{e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x)
```

```
[Out] 1/2/e^4/(e*x+d)^4*A*d^3*b*c-1/2/e^3/(e*x+d)^4*B*d^2*a*b+1/2/e^2/(e*x+d)^4*A
*d*a*b-1/2/e^3/(e*x+d)^4*A*d^2*a*c+4/3/e^3/(e*x+d)^3*A*a*c*d-1/2/e^5/(e*x+d
)^4*B*d^4*b*c+4/3/e^3/(e*x+d)^3*B*a*b*d-2/e^4/(e*x+d)^3*A*b*c*d^2+8/3/e^5/(
e*x+d)^3*B*b*c*d^3-2/e^4/(e*x+d)^3*B*a*c*d^2+1/4/e^6/(e*x+d)^4*B*c^2*d^5+2*
c/e^5*ln(e*x+d)*B*b-1/e^4/(e*x+d)*B*b^2-1/3/e^2/(e*x+d)^3*B*a^2+c^2/e^5*ln(
e*x+d)*A-1/4/e/(e*x+d)^4*A*a^2-1/2/e^3/(e*x+d)^2*A*b^2+1/4/e^2/(e*x+d)^4*B*
a^2*d+1/4/e^4/(e*x+d)^4*B*d^3*b^2-2/e^4/(e*x+d)*A*b*c+1/2/e^4/(e*x+d)^4*B*d
^3*a*c-6/e^5/(e*x+d)^2*B*b*c*d^2+8/e^5/(e*x+d)*B*b*c*d+3/e^4/(e*x+d)^2*A*b*
c*d-5*c^2/e^6*ln(e*x+d)*B*d-3/e^5/(e*x+d)^2*A*c^2*d^2-1/e^3/(e*x+d)^2*B*a*b
+3/2/e^4/(e*x+d)^2*B*b^2*d+5/e^6/(e*x+d)^2*B*c^2*d^3-1/4/e^3/(e*x+d)^4*A*d^
2*b^2-1/4/e^5/(e*x+d)^4*A*c^2*d^4+3/e^4/(e*x+d)^2*B*a*c*d-5/3/e^6/(e*x+d)^3
*B*c^2*d^4-2/3/e^2/(e*x+d)^3*A*a*b+2/3/e^3/(e*x+d)^3*A*b^2*d+4/3/e^5/(e*x+d
)^3*A*c^2*d^3+4/e^5/(e*x+d)*A*c^2*d-2/e^4/(e*x+d)*B*a*c-10/e^6/(e*x+d)*B*c^
2*d^2-1/e^3/(e*x+d)^2*A*a*c-1/e^4/(e*x+d)^3*B*b^2*d^2+B*c^2/e^5*x
```

maxima [A] time = 0.78, size = 417, normalized size = 1.44

$$-\frac{77 B c^{2} d^{5}+3 A a^{2} e^{5}-25 \left(2 B b c+A c^{2}\right) d^{4} e+3 \left(B b^{2}+2 (B a+A b) c\right) d^{3} e^{2}+\left(2 B a b+A b^{2}+2 A a c\right) d^{2} e^{3}+\left(B a^{2}+2 A a b\right) d e^{4}+12 \left(10 B c^{2} d^{2} e^{3}-4 \left(2 B b c+A c^{2}\right) d e^{4}+\left(B b^{2}+2 (B a+A b) c\right) e^{5}\right) x^{3}+6 \left(50 B c^{2} d^{3} e^{2}-18 \left(2 B b c+A c^{2}\right) d^{2} e^{3}+3 \left(B b^{2}+2 (B a+A b) c\right) d e^{4}+\left(2 B a b+A b^{2}+2 A a c\right) e^{5}\right) x^{2}+4 \left(65 B c^{2} d^{4} e-22 \left(2 B b c+A c^{2}\right) d^{3} e^{2}+3 \left(B b^{2}+2 (B a+A b) c\right) d^{2} e^{3}+\left(2 B a b+A b^{2}+2 A a c\right) d e^{4}+\left(B a^{2}+2 A a b\right) e^{5}\right) x}{12 \left(e^{10} x^{4}+4 d e^{9} x^{3}+6 d^{2} e^{8} x^{2}+4 d^{3} e^{7} x+d^{4} e^{6}\right)}+\frac{B c^{2} x}{e^{5}}-\frac{\left(5 B c^{2} d-\left(2 B b c+A c^{2}\right) e\right) \log (e x+d)}{e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(77*B*c^2*d^5 + 3*A*a^2*e^5 - 25*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 +
 2*(B*a + A*b)*c)*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 +
2*A*a*b)*d*e^4 + 12*(10*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2
+ 2*(B*a + A*b)*c)*e^5)*x^3 + 6*(50*B*c^2*d^3*e^2 - 18*(2*B*b*c + A*c^2)*d^
2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5
)*x^2 + 4*(65*B*c^2*d^4*e - 22*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*
a + A*b)*c)*d^2*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)
*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6) +
 B*c^2*x/e^5 - (5*B*c^2*d - (2*B*b*c + A*c^2)*e)*log(e*x + d)/e^6
```

mupad [B] time = 2.42, size = 475, normalized size = 1.64

$$\frac{\ln (d+e x) \left(A c^{2} e-5 B c^{2} d+2 B b c e\right)}{e^{6}}-\frac{x^{3} \left(B b^{2} e^{4}-8 B b c d e^{3}+2 A b c e^{4}+10 B c^{2} d^{2} e^{2}-4 A c^{2} d e^{3}+2 B a c e^{4}\right)+x^{2} \left(\frac{3 B b^{2} d e^{3}}{2}+\frac{A b^{2} e^{4}}{2}-18 B b c d^{2} e^{2}+3 A b c d e^{3}+B a b e^{4}+25 B c^{2} d^{3} e-9 A c^{2} d^{2} e^{2}+3 B a c d e^{3}+A a c e^{4}\right)+x \left(\frac{B a^{2} e^{4}}{3}+\frac{2 B a b d e^{3}}{3}+\frac{2 A a b e^{4}}{3}+2 B a c d^{2} e^{2}+\frac{2 A a c d e^{3}}{3}+B b^{2} d^{2} e^{2}+\frac{A b^{2} d e^{3}}{3}-\frac{44 B b c d^{3} e}{3}+2 A b c d^{2} e^{2}+\frac{65 B c^{2} d^{4}}{3}-\frac{22 A c^{2} d^{3} e}{3}\right)+\frac{B a^{2} d e^{4}+3 A a^{2} e^{5}+2 B a b d^{2} e^{3}+2 A a b d e^{4}+6 B a c d^{3} e^{2}+2 A a c d^{2} e^{3}+3 B b^{2} d^{3} e^{2}+A b^{2} d^{2} e^{3}-50 B b c d^{4} e+6 A b c d^{3} e^{2}+77 B c^{2} d^{5}-25 A c^{2} d^{4} e}{12 e}}{d^{4} e^{5}+4 d^{3} e^{6} x+6 d^{2} e^{7} x^{2}+4 d e^{8} x^{3}+e^{9} x^{4}}+\frac{B c^{2} x}{e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*c^2*e - 5*B*c^2*d + 2*B*b*c*e))/e^6 - (x^3*(B*b^2*e^4 + 2*
A*b*c*e^4 + 2*B*a*c*e^4 - 4*A*c^2*d*e^3 + 10*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3)
 + x^2*((A*b^2*e^4)/2 + A*a*c*e^4 + B*a*b*e^4 + (3*B*b^2*d*e^3)/2 + 25*B*c^
2*d^3*e - 9*A*c^2*d^2*e^2 + 3*A*b*c*d*e^3 + 3*B*a*c*d*e^3 - 18*B*b*c*d^2*e^
2) + x*((B*a^2*e^4)/3 + (65*B*c^2*d^4)/3 + (2*A*a*b*e^4)/3 + (A*b^2*d*e^3)/
3 - (22*A*c^2*d^3*e)/3 + B*b^2*d^2*e^2 + (2*A*a*c*d*e^3)/3 + (2*B*a*b*d*e^3
)/3 - (44*B*b*c*d^3*e)/3 + 2*A*b*c*d^2*e^2 + 2*B*a*c*d^2*e^2) + (3*A*a^2*e^
5 + 77*B*c^2*d^5 + B*a^2*d*e^4 - 25*A*c^2*d^4*e + A*b^2*d^2*e^3 + 3*B*b^2*d
^3*e^2 + 2*A*a*b*d*e^4 - 50*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B*a*b*d^2*e^3
 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d^3*e^2)/(12*e))/(d^4*e^5 + e^9*x^4 + 4*d^3*e^
6*x + 4*d*e^8*x^3 + 6*d^2*e^7*x^2) + (B*c^2*x)/e^5
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**5,x)
```

```
[Out] Timed out
```

3.2088 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{(d+ex)^6}\,dx$

Optimal. Leaf size=297

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2c\right.}{3e^6(d+ex)^3}$$

Rubi [A] time = 0.34, antiderivative size = 295, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{3e^6(d+ex)^3}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{4e^6(d+ex)^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{5e^6(d+ex)^5}+\frac{c(-Ace-2bBe+5Bcd)}{e^6(d+ex)}+\frac{Bc^2\log(d+ex)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(5*e^6*(d + e*x)^5) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(4*e^6*(
d + e*x)^4) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(3*e^6*(d + e*x)^3) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
2*e^6*(d + e*x)^2) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(e^6*(d + e*x)) + (B*c
^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^6}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)\right.}{e^5(d+ex)^5}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{5e^6(d+ex)^5}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2Ae\right.}{4e^6(d+ex)^4}$$

Mathematica [A] time = 0.21, size = 386, normalized size = 1.30

$$\frac{-2Ae\left(e^2\left(6a^2e^2+3abe(d+5ex)+b^2\left(d^2+5dex+10e^2x^2\right)\right)+ce\left(2ae\left(d^2+5dex+10e^2x^2\right)+3b\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)+6c^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+B\left(-e^2\left(3a^2e^2(d+5ex)+4abe\left(d^2+5dex+10e^2x^2\right)+3b^2\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)\right)-6ce\left(ae\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+4b\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+c^2d\left(137d^4+625d^3ex+1100d^2e^2x^2+900de^3x^3+300e^4x^4\right)\right)+60Bc^2(d+ex)^5\log(d+ex)}{60e^6(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-2*A*e*(6*c^2*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4
) + e^2*(6*a^2*e^2 + 3*a*b*e*(d + 5*e*x) + b^2*(d^2 + 5*d*e*x + 10*e^2*x^2)
) + c*e*(2*a*e*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*b*(d^3 + 5*d^2*e*x + 10*d*e
^2*x^2 + 10*e^3*x^3))) + B*(c^2*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2
 + 900*d*e^3*x^3 + 300*e^4*x^4) - e^2*(3*a^2*e^2*(d + 5*e*x) + 4*a*b*e*(d^2
 + 5*d*e*x + 10*e^2*x^2) + 3*b^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x
^3)) - 6*c*e*(a*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 4*b*(d^4
```

```
+ 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4))) + 60*B*c^2*(d +
e*x)^5*Log[d + e*x])/(60*e^6*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6, x]
```

fricas [A] time = 0.39, size = 505, normalized size = 1.70

$$\frac{137\,Bc^2d^5 - 12\,Aa^2e^5 - 12\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - 3\left(Ba^2 + 2\,Aab\right)de^4 + 60\left(5\,Bc^2de^4 - \left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 30\left(30\,Bc^2d^2e^3 - 4\left(2\,Bbc + Ac^2\right)de^4 - \left(Bb^2 + 2\,(Ba + Ab)c\right)e^5\right)x^3 + 10\left(110\,Bc^2d^3e^2 - 12\left(2\,Bbc + Ac^2\right)d^2e^3 - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)de^4 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)e^5\right)x^2 + 5\left(125\,Bc^2d^4e - 12\left(2\,Bbc + Ac^2\right)d^3e^2 - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^2e^3 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)de^4 - 3\left(Ba^2 + 2\,Aab\right)e^5\right)x + 60\left(Bc^2e^5x^5 + 5\,Bc^2de^4x^4 + 10\,Bc^2d^2e^3x^3 + 10\,Bc^2d^3e^2x^2 + 5\,Bc^2d^4ex + Bc^2d^5\right)\log\left(ex + d\right)}{60\left(e^{11}x^5 + 5\,de^{10}x^4 + 10\,d^2e^9x^3 + 10\,d^3e^8x^2 + 5\,d^4e^7x + d^5e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 12*A*a^2*e^5 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2
+ 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 - 3*(B*a
^2 + 2*A*a*b)*d*e^4 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30*(
30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*(B*a + A*b)*c)*e^
5)*x^3 + 10*(110*B*c^2*d^3*e^2 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(B*b^2 +
2*(B*a + A*b)*c)*d*e^4 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 5*(125*B*
c^2*d^4*e - 12*(2*B*b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*
e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 - 3*(B*a^2 + 2*A*a*b)*e^5)*x + 60
*(B*c^2*e^5*x^5 + 5*B*c^2*d*e^4*x^4 + 10*B*c^2*d^2*e^3*x^3 + 10*B*c^2*d^3*e
^2*x^2 + 5*B*c^2*d^4*e*x + B*c^2*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e^10*x^
4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [A] time = 0.19, size = 426, normalized size = 1.43

$$Bc^2e^{(-6)}\log\left(|xe + d|\right) + \frac{\left(60\left(5\,Bc^2de^3 - 2\,Bbce^4 - Ac^2e^4\right)x^4 + 30\left(30\,Bc^2d^2e^2 - 8\,Bbcde^3 - 4\,Ac^2de^3 - Bb^2e^4 - 2\,Bace^4 - 2\,Abce^4\right)x^3 + 10\left(110\,Bc^2d^3e - 24\,Bbcd^2e^2 - 12\,Ac^2d^2e^2 - 3\,Bb^2de^3 - 6\,Bacde^3 - 6\,Abcde^3 - 4\,Babe^4 - 2\,Ab^2e^4 - 4\,Aace^4\right)x^2 + 5\left(125\,Bc^2d^4 - 24\,Bbcd^3e - 12\,Ac^2d^3e - 3\,Bb^2d^2e^2 - 6\,Bacd^2e^2 - 6\,Abcd^2e^2 - 4\,Babde^3 - 2\,Ab^2de^3 - 4\,Aacde^3 - 3\,Ba^2e^4 - 6\,Aabe^4\right)x + \left(137\,Bc^2d^5 - 24\,Bbcd^4e - 12\,Ac^2d^4e - 3\,Bb^2d^3e^2 - 6\,Bacd^3e^2 - 6\,Abcd^3e^2 - 4\,Babd^2e^3 - 2\,Ab^2d^2e^3 - 4\,Aacd^2e^3 - 3\,Ba^2de^4 - 6\,Aabde^4 - 12\,Aa^2e^5\right)e^{(-1)}\right)e^{(-5)}}{60\,(xe + d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*c^2*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*c^2*d*e^3 - 2*B*b*c*e^4 - A*
c^2*e^4)*x^4 + 30*(30*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 - B*b^2
*e^4 - 2*B*a*c*e^4 - 2*A*b*c*e^4)*x^3 + 10*(110*B*c^2*d^3*e - 24*B*b*c*d^2*
e^2 - 12*A*c^2*d^2*e^2 - 3*B*b^2*d*e^3 - 6*B*a*c*d*e^3 - 6*A*b*c*d*e^3 - 4*
B*a*b*e^4 - 2*A*b^2*e^4 - 4*A*a*c*e^4)*x^2 + 5*(125*B*c^2*d^4 - 24*B*b*c*d^
3*e - 12*A*c^2*d^3*e - 3*B*b^2*d^2*e^2 - 6*B*a*c*d^2*e^2 - 6*A*b*c*d^2*e^2
- 4*B*a*b*d*e^3 - 2*A*b^2*d*e^3 - 4*A*a*c*d*e^3 - 3*B*a^2*e^4 - 6*A*a*b*e^4
)*x + (137*B*c^2*d^5 - 24*B*b*c*d^4*e - 12*A*c^2*d^4*e - 3*B*b^2*d^3*e^2 -
6*B*a*c*d^3*e^2 - 6*A*b*c*d^3*e^2 - 4*B*a*b*d^2*e^3 - 2*A*b^2*d^2*e^3 - 4*A
*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 6*A*a*b*d*e^4 - 12*A*a^2*e^5)*e^(-1))*e^(-5)
/(x*e + d)^5
```

maple [B] time = 0.06, size = 715, normalized size = 2.41

$$-\frac{Aa^2}{5(ex+d)^5e}+\frac{2Aabd}{5(ex+d)^5e^2}-\frac{2Aacd^2}{5(ex+d)^5e^3}-\frac{Ab^2d^2}{5(ex+d)^5e^3}+\frac{2Abcd^3}{5(ex+d)^5e^4}-\frac{Ac^2d^4}{5(ex+d)^5e^5}+\frac{Ba^2d}{5(ex+d)^5e^2}-\frac{2Babd^2}{5(ex+d)^5e^3}+\frac{2Bacd^3}{5(ex+d)^5e^4}+\frac{Bb^2d^3}{5(ex+d)^5e^4}-\frac{2Bbcd^4}{5(ex+d)^5e^5}+\frac{Bc^2d^5}{5(ex+d)^5e^6}-\frac{Aab}{2(ex+d)^4e^2}+\frac{Aacd}{(ex+d)^4e^3}+\frac{Ab^2d}{2(ex+d)^4e^3}-\frac{3Abcd^2}{2(ex+d)^4e^4}+\frac{Ac^2d^3}{(ex+d)^4e^5}-\frac{Ba^2}{4(ex+d)^4e^2}+\frac{Babd}{(ex+d)^4e^3}-\frac{3Bacd^2}{2(ex+d)^4e^4}-\frac{3Bb^2d^2}{4(ex+d)^4e^4}+\frac{2Bbcd^3}{(ex+d)^4e^5}-\frac{5Bc^2d^4}{4(ex+d)^4e^6}-\frac{2Aac}{3(ex+d)^3e^3}-\frac{Ab^2}{3(ex+d)^3e^3}+\frac{2Abcd}{(ex+d)^3e^4}-\frac{2Ac^2d^2}{(ex+d)^3e^5}-\frac{2Bab}{3(ex+d)^3e^3}+\frac{2Bacd}{(ex+d)^3e^4}+\frac{Bb^2d}{(ex+d)^3e^4}-\frac{4Bbcd^2}{(ex+d)^3e^5}+\frac{10Bc^2d^3}{3(ex+d)^3e^6}-\frac{Abc}{(ex+d)^2e^4}+\frac{2Ac^2d}{(ex+d)^2e^5}-\frac{Bac}{(ex+d)^2e^4}-\frac{Bb^2}{2(ex+d)^2e^4}+\frac{4Bbcd}{(ex+d)^2e^5}-\frac{5Bc^2d^2}{(ex+d)^2e^6}-\frac{Ac^2}{(ex+d)e^5}-\frac{2Bbc}{(ex+d)e^5}+\frac{5Bc^2d}{(ex+d)e^6}+\frac{Bc^2\ln(ex+d)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x)
```

```
[Out] -1/3/e^3/(e*x+d)^3*A*b^2-1/5/e/(e*x+d)^5*A*a^2-1/4/e^2/(e*x+d)^4*B*a^2-c^2/
e^5/(e*x+d)*A+1/e^3/(e*x+d)^4*A*a*c*d+1/e^3/(e*x+d)^4*B*d*a*b+4/e^5/(e*x+d)
^2*B*b*c*d-3/2/e^4/(e*x+d)^4*A*b*c*d^2-2/5/e^3/(e*x+d)^5*B*d^2*a*b+2/5/e^2/
(e*x+d)^5*A*a*b*d-3/2/e^4/(e*x+d)^4*B*a*c*d^2+2/e^5/(e*x+d)^4*B*d^3*b*c-2/5
/e^3/(e*x+d)^5*A*d^2*a*c+2/5/e^4/(e*x+d)^5*A*b*c*d^3+2/e^4/(e*x+d)^3*B*a*c*
d-4/e^5/(e*x+d)^3*B*b*c*d^2+2/5/e^4/(e*x+d)^5*B*d^3*a*c-2/5/e^5/(e*x+d)^5*B
*d^4*b*c+2/e^4/(e*x+d)^3*A*b*c*d+5*c^2/e^6/(e*x+d)*B*d-1/e^4/(e*x+d)^2*A*b*
c+2/e^5/(e*x+d)^2*A*c^2*d-1/e^4/(e*x+d)^2*a*B*c-2*c/e^5/(e*x+d)*B*b+10/3/e^
6/(e*x+d)^3*B*c^2*d^3+1/e^4/(e*x+d)^3*B*b^2*d+1/5/e^2/(e*x+d)^5*B*a^2*d+1/e
^5/(e*x+d)^4*A*c^2*d^3-5/e^6/(e*x+d)^2*B*d^2*c^2+1/5/e^6/(e*x+d)^5*B*c^2*d^
5-2/3/e^3/(e*x+d)^3*A*a*c+1/2/e^3/(e*x+d)^4*A*d*b^2+1/5/e^4/(e*x+d)^5*B*d^3
*b^2-2/e^5/(e*x+d)^3*A*c^2*d^2-1/5/e^3/(e*x+d)^5*A*d^2*b^2-1/5/e^5/(e*x+d)^
5*A*c^2*d^4-1/2/e^2/(e*x+d)^4*A*a*b-3/4/e^4/(e*x+d)^4*B*b^2*d^2-5/4/e^6/(e*
x+d)^4*B*d^4*c^2-2/3/e^3/(e*x+d)^3*B*a*b+B*c^2/e^6*ln(e*x+d)-1/2/(e*x+d)^2*
B*b^2/e^4
```

maxima [**A**] time = 0.69, size = 438, normalized size = 1.47

$$\frac{137\,Bc^2d^5 - 12\,Aa^2e^5 - 12\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - 3\left(Ba^2 + 2\,Aab\right)de^4 + 60\left(5\,Bc^2de^4 - \left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 30\left(30\,Bc^2d^2e^3 - 4\left(2\,Bbc + Ac^2\right)de^4 - \left(Bb^2 + 2\,(Ba + Ab)c\right)e^5\right)x^3 + 10\left(110\,Bc^2d^3e^2 - 12\left(2\,Bbc + Ac^2\right)d^2e^3 - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)de^4 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)e^5\right)x^2 + 5\left(125\,Bc^2d^4e - 12\left(2\,Bbc + Ac^2\right)d^3e^2 - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^2e^3 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)de^4 - 3\left(Ba^2 + 2\,Aab\right)e^5\right)x}{60\left(e^{11}x^5 + 5\,de^{10}x^4 + 10\,d^2e^9x^3 + 10\,d^3e^8x^2 + 5\,d^4e^7x + d^5e^6\right)} + \frac{Bc^2\log\left(ex + d\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 12*A*a^2*e^5 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2
+ 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 - 3*(B*a
^2 + 2*A*a*b)*d*e^4 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30*(
30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*(B*a + A*b)*c)*e^
5)*x^3 + 10*(110*B*c^2*d^3*e^2 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(B*b^2 +
2*(B*a + A*b)*c)*d*e^4 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 5*(125*B*
c^2*d^4*e - 12*(2*B*b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*
e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 - 3*(B*a^2 + 2*A*a*b)*e^5)*x)/(e^
11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5
*e^6) + B*c^2*log(e*x + d)/e^6
```

mupad [**B**] time = 2.50, size = 483, normalized size = 1.63

$$\frac{B\,c^2\,\ln\left(d+e\,x\right)}{e^6}-\frac{\frac{3\,B\,a^2\,d\,e^4+12\,A\,a^2\,e^5+4\,B\,a\,b\,d^2\,e^3+6\,A\,a\,b\,d\,e^4+6\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3+3\,B\,b^2\,d^3\,e^2+2\,A\,b^2\,d^2\,e^3+24\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2-137\,B\,c^2\,d^5+12\,A\,c^2\,d^4\,e}{60\,e^6}+\frac{x^3\,\left(B\,b^2\,e^2+8\,B\,b\,c\,d\,e+2\,A\,b\,c\,e^2-30\,B\,c^2\,d^2+4\,A\,c^2\,d\,e+2\,B\,a\,c\,e^2\right)}{2\,e^3}+\frac{x^2\,\left(3\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e+6\,A\,b\,c\,d\,e^2+4\,B\,a\,b\,e^3-110\,B\,c^2\,d^3+12\,A\,c^2\,d^2\,e+6\,B\,a\,c\,d\,e^2+4\,A\,a\,c\,e^3\right)}{6\,e^4}+\frac{x\,\left(3\,B\,a^2\,e^4+4\,B\,a\,b\,d\,e^3+6\,A\,a\,b\,e^4+6\,B\,a\,c\,d^2\,e^2+4\,A\,a\,c\,d\,e^3+3\,B\,b^2\,d^2\,e^2+2\,A\,b^2\,d\,e^3+24\,B\,b\,c\,d^3\,e+6\,A\,b\,c\,d^2\,e^2-125\,B\,c^2\,d^4+12\,A\,c^2\,d^3\,e\right)}{12\,e^5}+\frac{c\,x^4\,\left(A\,c\,e+2\,B\,b\,e-5\,B\,c\,d\right)}{e^2}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x)
```

```
[Out] (B*c^2*log(d + e*x))/e^6 - ((12*A*a^2*e^5 - 137*B*c^2*d^5 + 3*B*a^2*d*e^4 +
 12*A*c^2*d^4*e + 2*A*b^2*d^2*e^3 + 3*B*b^2*d^3*e^2 + 6*A*a*b*d*e^4 + 24*B*
b*c*d^4*e + 4*A*a*c*d^2*e^3 + 4*B*a*b*d^2*e^3 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d
^3*e^2)/(60*e^6) + (x^3*(B*b^2*e^2 - 30*B*c^2*d^2 + 2*A*b*c*e^2 + 2*B*a*c*e
^2 + 4*A*c^2*d*e + 8*B*b*c*d*e))/(2*e^3) + (x^2*(2*A*b^2*e^3 - 110*B*c^2*d^
3 + 4*A*a*c*e^3 + 4*B*a*b*e^3 + 12*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*
e^2 + 6*B*a*c*d*e^2 + 24*B*b*c*d^2*e))/(6*e^4) + (x*(3*B*a^2*e^4 - 125*B*c^
2*d^4 + 6*A*a*b*e^4 + 2*A*b^2*d*e^3 + 12*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 4*
A*a*c*d*e^3 + 4*B*a*b*d*e^3 + 24*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^
2*e^2))/(12*e^5) + (c*x^4*(A*c*e + 2*B*b*e - 5*B*c*d))/e^2)/(d^5 + e^5*x^5
+ 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.2089 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^7}\,dx$

Optimal. Leaf size=302

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-\right.}{4e^6(d+ex)^4}$$

Rubi [A] time = 0.32, antiderivative size = 300, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{4e^6(d+ex)^4}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{5e^6(d+ex)^5}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{6e^6(d+ex)^6}+\frac{c(-Ace-2bBe+5Bcd)}{2e^6(d+ex)^2}-\frac{Bc^2}{e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(6*e^6*(d + e*x)^6) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(5*e^6*(
d + e*x)^5) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(4*e^6*(d + e*x)^4) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
3*e^6*(d + e*x)^3) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(2*e^6*(d + e*x)^2) -
(B*c^2)/(e^6*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^7}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^7}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-a\right.}{e^5(d+ex)^6}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{6e^6(d+ex)^6}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2\right.}{5e^6(d+ex)^5}$$

Mathematica [A] time = 0.18, size = 372, normalized size = 1.23

$$-\frac{Ae\left(e^2\left(10a^2e^2+4abe(d+6ex)+b^2\left(d^2+6dex+15e^2x^2\right)\right)+2ce\left(ae\left(d^2+6dex+15e^2x^2\right)+b\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)\right)+2c^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)+B\left(e^2\left(2a^2e^2(d+6ex)+2abe\left(d^2+6dex+15e^2x^2\right)+b^2\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)\right)+2ce\left(ae\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+2b\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)+10c^2\left(d^5+6d^4ex+15d^3e^2x^2+20d^2e^3x^3+15de^4x^4+6e^5x^5\right)\right)}{60e^6(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(2*c^2*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4
*x^4) + e^2*(10*a^2*e^2 + 4*a*b*e*(d + 6*e*x) + b^2*(d^2 + 6*d*e*x + 15*e^2
*x^2)) + 2*c*e*(a*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + b*(d^3 + 6*d^2*e*x + 15*
d*e^2*x^2 + 20*e^3*x^3))) + B*(10*c^2*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 2
0*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5) + e^2*(2*a^2*e^2*(d + 6*e*x) + 2*
a*b*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + b^2*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 +
20*e^3*x^3)) + 2*c*e*(a*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2
```

```
*b*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4))))/(e^6*(
d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7, x]
```

fricas [A] time = 0.39, size = 438, normalized size = 1.45

$$-\frac{60\,Bc^2e^5x^5+10\,Bc^2d^5+10\,Aa^2e^5+2\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,(Ba+Ab)c\right)d^3e^2+\left(2\,Bab+Ab^2+2\,Aac\right)d^2e^3+2\left(Ba^2+2\,Aab\right)de^4+30\left(5\,Bc^2de^4+\left(2\,Bbc+Ac^2\right)e^5\right)x^4+20\left(10\,Bc^2d^2e^3+2\left(2\,Bbc+Ac^2\right)de^4+\left(Bb^2+2\,(Ba+Ab)c\right)e^5\right)x^3+15\left(10\,Bc^2d^3e^2+2\left(2\,Bbc+Ac^2\right)d^2e^3+\left(Bb^2+2\,(Ba+Ab)c\right)de^4+\left(2\,Bab+Ab^2+2\,Aac\right)e^5\right)x^2+6\left(10\,Bc^2d^4e+2\left(2\,Bbc+Ac^2\right)d^3e^2+\left(Bb^2+2\,(Ba+Ab)c\right)d^2e^3+\left(2\,Bab+Ab^2+2\,Aac\right)de^4+2\left(Ba^2+2\,Aab\right)e^5\right)x}{60\left(e^{12}x^6+6\,de^{11}x^5+15\,d^2e^{10}x^4+20\,d^3e^9x^3+15\,d^4e^8x^2+6\,d^5e^7x+d^6e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 10*A*a^2*e^5 + 2*(2*B*b*c + A*c^2)
*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^
2*e^3 + 2*(B*a^2 + 2*A*a*b)*d*e^4 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)*e
^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*
a + A*b)*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + 2*(2*B*b*c + A*c^2)*d^2*e^3 +
 (B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 6
*(10*B*c^2*d^4*e + 2*(2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*
d^2*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 2*(B*a^2 + 2*A*a*b)*e^5)*x)/(
e^12*x^6 + 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2
 + 6*d^5*e^7*x + d^6*e^6)
```

giac [A] time = 0.22, size = 460, normalized size = 1.52

$$-\frac{\left(60\,Bc^2x^5e^5+150\,Bc^2dx^4e^4+200\,Bc^2d^2x^3e^3+150\,Bc^2d^3x^2e^2+60\,Bc^2d^4xe+10\,Bc^2d^5+60\,Bbcx^4e^5+30\,Ac^2x^4e^5+80\,Bbcdx^3e^4+40\,Ac^2dx^3e^4+60\,Bbcd^2x^2e^3+30\,Ac^2d^2x^2e^3+24\,Bbcd^3xe^2+12\,Ac^2d^3xe^2+4\,Bbcd^4e+2\,Ac^2d^4e+20\,Bb^2x^3e^5+40\,Bacx^3e^5+40\,Abcx^3e^5+15\,Bb^2dx^2e^4+30\,Bacdx^2e^4+30\,Abcdx^2e^4+6\,Bb^2d^2xe^3+12\,Bacd^2xe^3+12\,Abcd^2xe^3+Bb^2d^3e^2+2\,Bacd^3e^2+2\,Abcd^3e^2+30\,Babx^2e^5+15\,Ab^2x^2e^5+30\,Aacx^2e^5+12\,Babdxe^4+6\,Ab^2dxe^4+12\,Aacdxe^4+2\,Babd^2e^3+Ab^2d^2e^3+2\,Aacd^2e^3+12\,Ba^2xe^5+24\,Aabxe^5+2\,Ba^2de^4+4\,Aabde^4+10\,Aa^2e^5\right)e^{(-6)}}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(60*B*c^2*x^5*e^5 + 150*B*c^2*d*x^4*e^4 + 200*B*c^2*d^2*x^3*e^3 + 150
*B*c^2*d^3*x^2*e^2 + 60*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 60*B*b*c*x^4*e^5 + 3
0*A*c^2*x^4*e^5 + 80*B*b*c*d*x^3*e^4 + 40*A*c^2*d*x^3*e^4 + 60*B*b*c*d^2*x^
2*e^3 + 30*A*c^2*d^2*x^2*e^3 + 24*B*b*c*d^3*x*e^2 + 12*A*c^2*d^3*x*e^2 + 4*
B*b*c*d^4*e + 2*A*c^2*d^4*e + 20*B*b^2*x^3*e^5 + 40*B*a*c*x^3*e^5 + 40*A*b*
c*x^3*e^5 + 15*B*b^2*d*x^2*e^4 + 30*B*a*c*d*x^2*e^4 + 30*A*b*c*d*x^2*e^4 +
6*B*b^2*d^2*x*e^3 + 12*B*a*c*d^2*x*e^3 + 12*A*b*c*d^2*x*e^3 + B*b^2*d^3*e^2
 + 2*B*a*c*d^3*e^2 + 2*A*b*c*d^3*e^2 + 30*B*a*b*x^2*e^5 + 15*A*b^2*x^2*e^5
+ 30*A*a*c*x^2*e^5 + 12*B*a*b*d*x*e^4 + 6*A*b^2*d*x*e^4 + 12*A*a*c*d*x*e^4
+ 2*B*a*b*d^2*e^3 + A*b^2*d^2*e^3 + 2*A*a*c*d^2*e^3 + 12*B*a^2*x*e^5 + 24*A
*a*b*x*e^5 + 2*B*a^2*d*e^4 + 4*A*a*b*d*e^4 + 10*A*a^2*e^5)*e^(-6)/(x*e + d)
^6
```

maple [A] time = 0.05, size = 453, normalized size = 1.50

$$-\frac{B c^2}{(ex+d)\,e^6}-\frac{(Ace+2Bbe-5Bcd)\,c}{2\,(ex+d)^2\,e^6}-\frac{A a^2e^5-2Aabd\,e^4+2A\,d^2ac\,e^3+A\,d^2b^2e^3-2Abc\,d^3e^2+A\,c^2d^4e-B\,a^2d\,e^4+2B\,d^2ab\,e^3-2B\,d^3ac\,e^2-B\,d^3b^2e^2+2B\,d^4bce-B\,c^2d^5}{6\,(ex+d)^6\,e^6}-\frac{2Aac\,e^3+A\,b^2e^3-6Abcd\,e^2+6A\,c^2d^2e+2Bab\,e^3-6Bacd\,e^2-3B\,b^2d\,e^2+12Bbc\,d^2e-10B\,c^2d^3}{4\,(ex+d)^4\,e^6}-\frac{2Aab\,e^4-4Aacd\,e^3-2Ad\,b^2e^3+6Abc\,d^2e^2-4A\,c^2d^3e+B\,a^2e^4-4Bdab\,e^3+6Bac\,d^2e^2+3B\,b^2d^2e^2-8B\,d^3bce+5B\,c^2d^4}{5\,(ex+d)^5\,e^6}-\frac{2Abc\,e^2-4A\,c^2de+2aBc\,e^2+b^2B\,e^2-8Bbcde+10B\,c^2d^2}{3\,(ex+d)^3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x)
```

```
[Out] -1/(e*x+d)*B*c^2/e^6-1/2*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^2-1/6*(A*a^2
*e^5-2*A*a*b*d*e^4+2*A*a*c*d^2*e^3+A*b^2*d^2*e^3-2*A*b*c*d^3*e^2+A*c^2*d^4*
e-B*a^2*d*e^4+2*B*a*b*d^2*e^3-2*B*a*c*d^3*e^2-B*b^2*d^3*e^2+2*B*b*c*d^4*e-B
*c^2*d^5)/e^6/(e*x+d)^6-1/4*(2*A*a*c*e^3+A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^
2*e+2*B*a*b*e^3-6*B*a*c*d*e^2-3*B*b^2*d*e^2+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^
6/(e*x+d)^4-1/5*(2*A*a*b*e^4-4*A*a*c*d*e^3-2*A*b^2*d*e^3+6*A*b*c*d^2*e^2-4*
A*c^2*d^3*e+B*a^2*e^4-4*B*a*b*d*e^3+6*B*a*c*d^2*e^2+3*B*b^2*d^2*e^2-8*B*b*c
*d^3*e+5*B*c^2*d^4)/e^6/(e*x+d)^5-1/3*(2*A*b*c*e^2-4*A*c^2*d*e+2*B*a*c*e^2+
B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^3
```

maxima [A] time = 0.63, size = 438, normalized size = 1.45

$$-\frac{60 Bc^2e^5x^5 + 10Bc^2d^5 + 10Aa^2e^5 + 2(2Bbc+Ac^2)d^4e + (Bb^2+2(Ba+Ab)c)d^3e^2 + (2Bab+Ab^2+2Aac)d^2e^3 + 2(Ba^2+2Aab)de^4 + 30(5Bc^2de^4+(2Bbc+Ac^2)e^5)x^4 + 20(10Bc^2d^2e^3+2(2Bbc+Ac^2)de^4+(Bb^2+2(Ba+Ab)c)e^5)x^3 + 15(10Bc^2d^3e^2+2(2Bbc+Ac^2)d^2e^3+(Bb^2+2(Ba+Ab)c)de^4+(2Bab+Ab^2+2Aac)e^5)x^2 + 6(10Bc^2d^4e+2(2Bbc+Ac^2)d^3e^2+(Bb^2+2(Ba+Ab)c)d^2e^3+(2Bab+Ab^2+2Aac)de^4+2(Ba^2+2Aab)e^5)x}{60(e^{12}x^6+6de^{11}x^5+15d^2e^{10}x^4+20d^3e^9x^3+15d^4e^8x^2+6d^5e^7x+d^6e^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 10*A*a^2*e^5 + 2*(2*B*b*c + A*c^2)
*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^
2*e^3 + 2*(B*a^2 + 2*A*a*b)*d*e^4 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)*e
^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*
a + A*b)*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + 2*(2*B*b*c + A*c^2)*d^2*e^3 +
 (B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 6
*(10*B*c^2*d^4*e + 2*(2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*
d^2*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 2*(B*a^2 + 2*A*a*b)*e^5)*x)/(
e^12*x^6 + 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2
 + 6*d^5*e^7*x + d^6*e^6)
```

mupad [B] time = 0.16, size = 485, normalized size = 1.61

$$-\frac{\frac{2Ba^2de^4+10Aa^2e^5+2Babd^2e^3+4Aabde^4+2Bacd^3e^2+2Aacd^2e^3+Bb^2d^3e^2+Ab^2d^2e^3+4Bbcd^4e+2Abcd^3e^2+10Bc^2d^5+2Ac^2d^4e}{60e^6}+\frac{x^3\left(Bb^2e^2+4Bbcde+2Abce^2+10Bc^2d^2+2Ac^2de+2Bace^2\right)}{3e^3}+\frac{x^2\left(Bb^2de^2+Ab^2e^3+4Bbcd^2e+2Abcde^2+2Babe^3+10Bc^2d^3+2Ac^2d^2e+2Bacde^2+2Aace^3\right)}{4e^4}+\frac{x\left(2Ba^2e^4+2Babde^3+4Aabe^4+2Bacd^2e^2+2Aacde^3+Bb^2d^2e^2+Ab^2de^3+4Bbcd^3e+2Abcd^2e^2+10Bc^2d^4+2Ac^2d^3e\right)}{10e^5}+\frac{cx^4\left(Ace+2Bbe+5Bcd\right)}{2e^2}+\frac{Bc^2x^5}{e}}{d^6+6d^5ex+15d^4e^2x^2+20d^3e^3x^3+15d^2e^4x^4+6de^5x^5+e^6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x)
```

```
[Out] -((10*A*a^2*e^5 + 10*B*c^2*d^5 + 2*B*a^2*d*e^4 + 2*A*c^2*d^4*e + A*b^2*d^2*
e^3 + B*b^2*d^3*e^2 + 4*A*a*b*d*e^4 + 4*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B
*a*b*d^2*e^3 + 2*A*b*c*d^3*e^2 + 2*B*a*c*d^3*e^2)/(60*e^6) + (x^3*(B*b^2*e^
2 + 10*B*c^2*d^2 + 2*A*b*c*e^2 + 2*B*a*c*e^2 + 2*A*c^2*d*e + 4*B*b*c*d*e))/
(3*e^3) + (x^2*(A*b^2*e^3 + 10*B*c^2*d^3 + 2*A*a*c*e^3 + 2*B*a*b*e^3 + 2*A*
c^2*d^2*e + B*b^2*d*e^2 + 2*A*b*c*d*e^2 + 2*B*a*c*d*e^2 + 4*B*b*c*d^2*e))/(
4*e^4) + (x*(2*B*a^2*e^4 + 10*B*c^2*d^4 + 4*A*a*b*e^4 + A*b^2*d*e^3 + 2*A*c
^2*d^3*e + B*b^2*d^2*e^2 + 2*A*a*c*d*e^3 + 2*B*a*b*d*e^3 + 4*B*b*c*d^3*e +
2*A*b*c*d^2*e^2 + 2*B*a*c*d^2*e^2))/(10*e^5) + (c*x^4*(A*c*e + 2*B*b*e + 5*
B*c*d))/(2*e^2) + (B*c^2*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*
x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2090 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^8}\,dx$

Optimal. Leaf size=304

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{4e^6(d+ex)^4}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\big(-2c}{5e^6(d+ex)^5}$$

Rubi [A] time = 0.32, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{4e^6(d+ex)^4}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^6(d+ex)^5}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{6e^6(d+ex)^6}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{7e^6(d+ex)^7}+\frac{c(-Ace-2bBe+5Bcd)}{3e^6(d+ex)^3}-\frac{Bc^2}{2e^6(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(7*e^6*(d + e*x)^7) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(6*e^6*(
d + e*x)^6) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(5*e^6*(d + e*x)^5) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
4*e^6*(d + e*x)^4) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(3*e^6*(d + e*x)^3) -
(B*c^2)/(2*e^6*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^8}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^8}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)\right.}{e^5(d+ex)^7}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{7e^6(d+ex)^7}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2Ae\right.}{6e^6(d+ex)^6}$$

Mathematica [A] time = 0.20, size = 377, normalized size = 1.24

$$-\frac{2Ae\left(2e^2\left(15a^2e^2+5abe(d+7ex)+b^2\left(d^2+7dex+21e^2x^2\right)\right)+ce\left(4ae\left(d^2+7dex+21e^2x^2\right)+3b\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)\right)+2c^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+B\left(e^2\left(10a^2e^2(d+7ex)+8abe\left(d^2+7dex+21e^2x^2\right)+3b^2\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)\right)+2ce\left(3ae\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+4b\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+10c^2\left(d^5+7d^4ex+21d^3e^2x^2+35d^2e^3x^3+35de^4x^4+21e^5x^5\right)\right)}{420e^6(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/420*(2*A*e*(2*c^2*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*
e^4*x^4) + 2*e^2*(15*a^2*e^2 + 5*a*b*e*(d + 7*e*x) + b^2*(d^2 + 7*d*e*x + 2
1*e^2*x^2)) + c*e*(4*a*e*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*b*(d^3 + 7*d^2*e*
x + 21*d*e^2*x^2 + 35*e^3*x^3))) + B*(10*c^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*
x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5) + e^2*(10*a^2*e^2*(d + 7*
e*x) + 8*a*b*e*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*b^2*(d^3 + 7*d^2*e*x + 21*d
*e^2*x^2 + 35*e^3*x^3)) + 2*c*e*(3*a*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35
```

```
*e^3*x^3) + 4*b*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x
^4))))/(e^6*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8, x]
```

fricas [A] time = 0.39, size = 457, normalized size = 1.50

$$-\frac{210\,Bc^2e^5x^5 + 10\,Bc^2d^5 + 60\,Aa^2e^5 + 4\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 + 4\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 + 10\left(Ba^2 + 2\,Aab\right)de^4 + 70\left(5\,Bc^2de^4 + 2\left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 35\left(10\,Bc^2d^2e^3 + 4\left(2\,Bbc + Ac^2\right)de^4 + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)e^5\right)x^3 + 21\left(10\,Bc^2d^3e^2 + 4\left(2\,Bbc + Ac^2\right)d^2e^3 + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)de^4 + 4\left(2\,Bab + Ab^2 + 2\,Aac\right)e^5\right)x^2 + 7\left(10\,Bc^2d^4e + 4\left(2\,Bbc + Ac^2\right)d^3e^2 + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^2e^3 + 4\left(2\,Bab + Ab^2 + 2\,Aac\right)de^4 + 10\left(Ba^2 + 2\,Aab\right)e^5\right)x}{420\left(e^{13}x^7 + 7\,de^{12}x^6 + 21\,d^2e^{11}x^5 + 35\,d^3e^{10}x^4 + 35\,d^4e^9x^3 + 21\,d^5e^8x^2 + 7\,d^6e^7x + d^7e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x, algorithm="fricas")

[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 60*A*a^2*e^5 + 4*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 4*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 10*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*
b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*(2*B*b*c + A*c^2
)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 4*(2*B*a*b + A*b^2 + 2*A*a*
c)*e^5)*x^2 + 7*(10*B*c^2*d^4*e + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 +
2*(B*a + A*b)*c)*d^2*e^3 + 4*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 10*(B*a^2
+ 2*A*a*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10
*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [A] time = 0.17, size = 462, normalized size = 1.52

$$-\frac{\left(210\,Bc^2x^5e^5 + 350\,Bc^2dx^4e^4 + 350\,Bc^2d^2x^3e^3 + 210\,Bc^2d^3x^2e^2 + 70\,Bc^2d^4xe + 10\,Bc^2d^5 + 280\,Bbcx^4e^5 + 140\,Ac^2x^4e^5 + 280\,Bbcdx^3e^4 + 140\,Ac^2dx^3e^4 + 168\,Bbcd^2x^2e^3 + 84\,Ac^2d^2x^2e^3 + 56\,Bbcd^3xe^2 + 28\,Ac^2d^3xe^2 + 8\,Bbcd^4e + 4\,Ac^2d^4e + 105\,Bb^2x^3e^5 + 210\,Bacx^3e^5 + 210\,Abcx^3e^5 + 63\,Bb^2dx^2e^4 + 126\,Bacdx^2e^4 + 126\,Abcdx^2e^4 + 21\,Bb^2d^2xe^3 + 42\,Bacd^2xe^3 + 42\,Abcd^2xe^3 + 3\,Bb^2d^3e^2 + 6\,Bacd^3e^2 + 6\,Abcd^3e^2 + 168\,Babx^2e^5 + 84\,Ab^2x^2e^5 + 168\,Aacx^2e^5 + 56\,Babdxe^4 + 28\,Ab^2dxe^4 + 56\,Aacdxe^4 + 8\,Babd^2e^3 + 4\,Ab^2d^2e^3 + 8\,Aacd^2e^3 + 70\,Ba^2xe^5 + 140\,Aabxe^5 + 10\,Ba^2de^4 + 20\,Aabde^4 + 60\,Aa^2e^5\right)e^{(-6)}}{420\,(xe + d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x, algorithm="giac")

[Out] -1/420*(210*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 350*B*c^2*d^2*x^3*e^3 + 2
10*B*c^2*d^3*x^2*e^2 + 70*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 280*B*b*c*x^4*e^5
+ 140*A*c^2*x^4*e^5 + 280*B*b*c*d*x^3*e^4 + 140*A*c^2*d*x^3*e^4 + 168*B*b*c
*d^2*x^2*e^3 + 84*A*c^2*d^2*x^2*e^3 + 56*B*b*c*d^3*x*e^2 + 28*A*c^2*d^3*x*e
^2 + 8*B*b*c*d^4*e + 4*A*c^2*d^4*e + 105*B*b^2*x^3*e^5 + 210*B*a*c*x^3*e^5
+ 210*A*b*c*x^3*e^5 + 63*B*b^2*d*x^2*e^4 + 126*B*a*c*d*x^2*e^4 + 126*A*b*c*
d*x^2*e^4 + 21*B*b^2*d^2*x*e^3 + 42*B*a*c*d^2*x*e^3 + 42*A*b*c*d^2*x*e^3 +
3*B*b^2*d^3*e^2 + 6*B*a*c*d^3*e^2 + 6*A*b*c*d^3*e^2 + 168*B*a*b*x^2*e^5 + 8
4*A*b^2*x^2*e^5 + 168*A*a*c*x^2*e^5 + 56*B*a*b*d*x*e^4 + 28*A*b^2*d*x*e^4 +
 56*A*a*c*d*x*e^4 + 8*B*a*b*d^2*e^3 + 4*A*b^2*d^2*e^3 + 8*A*a*c*d^2*e^3 + 7
0*B*a^2*x*e^5 + 140*A*a*b*x*e^5 + 10*B*a^2*d*e^4 + 20*A*a*b*d*e^4 + 60*A*a^
2*e^5)*e^(-6)/(x*e + d)^7
```

maple [A] time = 0.05, size = 453, normalized size = 1.49

$$-\frac{Bc^2}{2\,(ex+d)^2e^6} - \frac{(Ace + 2Bbe - 5Bcd)\,c}{3\,(ex+d)^3e^6} - \frac{2Aab\,e^4 - 4Aacd\,e^3 - 2Ad\,b^2e^3 + 6Abc\,d^2e^2 - 4A\,c^2d^3e + B\,a^2e^4 - 4Bdab\,e^3 + 6Bac\,d^2e^2 + 3B\,b^2d^2e^2 - 8B\,d^3bce + 5B\,c^2d^4}{6\,(ex+d)^6e^6} - \frac{2Abc\,e^2 - 4A\,c^2de + 2aBc\,e^2 + b^2B\,e^2 - 8Bbcde + 10B\,c^2d^2}{4\,(ex+d)^4e^6} - \frac{2Aac\,e^3 + A\,b^2e^3 - 6Abcd\,e^2 + 6A\,c^2d^2e + 2Bab\,e^3 - 6Bacd\,e^2 - 3B\,b^2d\,e^2 + 12Bbc\,d^2e - 10B\,c^2d^3}{5\,(ex+d)^5e^6} - \frac{A\,a^2e^5 - 2Aabd\,e^4 + 2A\,d^2ac\,e^3 + A\,d^2b^2e^3 - 2Abc\,d^3e^2 + A\,c^2d^4e - B\,a^2d\,e^4 + 2B\,d^2ab\,e^3 - 2B\,d^3ac\,e^2 - B\,d^3b^2e^2 + 2B\,d^4bce - B\,c^2d^5}{7\,(ex+d)^7e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x)
```

```
[Out] -1/2/(e*x+d)^2*B*c^2/e^6-1/6*(2*A*a*b*e^4-4*A*a*c*d*e^3-2*A*b^2*d*e^3+6*A*b
*c*d^2*e^2-4*A*c^2*d^3*e+B*a^2*e^4-4*B*a*b*d*e^3+6*B*a*c*d^2*e^2+3*B*b^2*d^
2*e^2-8*B*b*c*d^3*e+5*B*c^2*d^4)/e^6/(e*x+d)^6-1/4*(2*A*b*c*e^2-4*A*c^2*d*e
+2*B*a*c*e^2+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^4-1/5*(2*A*a*c
*e^3+A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e+2*B*a*b*e^3-6*B*a*c*d*e^2-3*B*b^
2*d*e^2+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^6/(e*x+d)^5-1/3*c*(A*c*e+2*B*b*e-5*B
*c*d)/e^6/(e*x+d)^3-1/7*(A*a^2*e^5-2*A*a*b*d*e^4+2*A*a*c*d^2*e^3+A*b^2*d^2*
e^3-2*A*b*c*d^3*e^2+A*c^2*d^4*e-B*a^2*d*e^4+2*B*a*b*d^2*e^3-2*B*a*c*d^3*e^2
-B*b^2*d^3*e^2+2*B*b*c*d^4*e-B*c^2*d^5)/e^6/(e*x+d)^7
```

maxima [A] time = 0.68, size = 457, normalized size = 1.50

$$-\frac{210\,Bc^{2}e^{5}x^{5}+10\,Bc^{2}d^{5}+60\,Aa^{2}e^{5}+4\left(2\,Bbc+Ac^{2}\right)d^{4}e+3\left(Bb^{2}+2\,(Ba+Ab)c\right)d^{3}e^{2}+4\left(2\,Bab+Ab^{2}+2\,Aac\right)d^{2}e^{3}+10\left(Ba^{2}+2\,Aab\right)de^{4}+70\left(5\,Bc^{2}de^{4}+2\left(2\,Bbc+Ac^{2}\right)e^{5}\right)x^{4}+35\left(10\,Bc^{2}d^{2}e^{3}+4\left(2\,Bbc+Ac^{2}\right)de^{4}+3\left(Bb^{2}+2\,(Ba+Ab)c\right)e^{5}\right)x^{3}+21\left(10\,Bc^{2}d^{3}e^{2}+4\left(2\,Bbc+Ac^{2}\right)d^{2}e^{3}+3\left(Bb^{2}+2\,(Ba+Ab)c\right)de^{4}+4\left(2\,Bab+Ab^{2}+2\,Aac\right)e^{5}\right)x^{2}+7\left(10\,Bc^{2}d^{4}e+4\left(2\,Bbc+Ac^{2}\right)d^{3}e^{2}+3\left(Bb^{2}+2\,(Ba+Ab)c\right)d^{2}e^{3}+4\left(2\,Bab+Ab^{2}+2\,Aac\right)de^{4}+10\left(Ba^{2}+2\,Aab\right)e^{5}\right)x}{420\left(e^{13}x^{7}+7\,de^{12}x^{6}+21\,d^{2}e^{11}x^{5}+35\,d^{3}e^{10}x^{4}+35\,d^{4}e^{9}x^{3}+21\,d^{5}e^{8}x^{2}+7\,d^{6}e^{7}x+d^{7}e^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 60*A*a^2*e^5 + 4*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 4*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 10*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*
b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*(2*B*b*c + A*c^2
)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 4*(2*B*a*b + A*b^2 + 2*A*a*
c)*e^5)*x^2 + 7*(10*B*c^2*d^4*e + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 +
2*(B*a + A*b)*c)*d^2*e^3 + 4*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 10*(B*a^2
+ 2*A*a*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10
*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [B] time = 0.17, size = 505, normalized size = 1.66

$$-\frac{\frac{10\,B\,a^{2}\,d\,e^{4}+60\,A\,a^{2}\,e^{5}+8\,B\,a\,b\,d^{2}\,e^{3}+20\,A\,a\,b\,d\,e^{4}+6\,B\,a\,c\,d^{3}\,e^{2}+8\,A\,a\,c\,d^{2}\,e^{3}+3\,B\,b^{2}\,d^{3}\,e^{2}+4\,A\,b^{2}\,d^{2}\,e^{3}+8\,B\,b\,c\,d^{4}\,e+6\,A\,b\,c\,d^{3}\,e^{2}+10\,B\,c^{2}\,d^{5}+4\,A\,c^{2}\,d^{4}\,e}{420\,e^{6}}+\frac{x^{3}\left(3\,B\,b^{2}\,e^{2}+8\,B\,b\,c\,d\,e+6\,A\,b\,c\,e^{2}+10\,B\,c^{2}\,d^{2}+4\,A\,c^{2}\,d\,e+6\,B\,a\,c\,e^{2}\right)}{12\,e^{3}}+\frac{x^{2}\left(3\,B\,b^{2}\,d\,e^{2}+4\,A\,b^{2}\,e^{3}+8\,B\,b\,c\,d^{2}\,e+6\,A\,b\,c\,d\,e^{2}+8\,B\,a\,b\,e^{3}+10\,B\,c^{2}\,d^{3}+4\,A\,c^{2}\,d^{2}\,e+6\,B\,a\,c\,d\,e^{2}+8\,A\,a\,c\,e^{3}\right)}{20\,e^{4}}+\frac{x\left(10\,B\,a^{2}\,e^{4}+8\,B\,a\,b\,d\,e^{3}+20\,A\,a\,b\,e^{4}+6\,B\,a\,c\,d^{2}\,e^{2}+8\,A\,a\,c\,d\,e^{3}+3\,B\,b^{2}\,d^{2}\,e^{2}+4\,A\,b^{2}\,d\,e^{3}+8\,B\,b\,c\,d^{3}\,e+6\,A\,b\,c\,d^{2}\,e^{2}+10\,B\,c^{2}\,d^{4}+4\,A\,c^{2}\,d^{3}\,e\right)}{60\,e^{5}}+\frac{c\,x^{4}\,\left(2\,A\,c\,e+4\,B\,b\,e+5\,B\,c\,d\right)}{6\,e^{2}}+\frac{B\,c^{2}\,x^{5}}{2\,e}}{d^{7}+7\,d^{6}\,e\,x+21\,d^{5}\,e^{2}\,x^{2}+35\,d^{4}\,e^{3}\,x^{3}+35\,d^{3}\,e^{4}\,x^{4}+21\,d^{2}\,e^{5}\,x^{5}+7\,d\,e^{6}\,x^{6}+e^{7}\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x)
```

```
[Out] -((60*A*a^2*e^5 + 10*B*c^2*d^5 + 10*B*a^2*d*e^4 + 4*A*c^2*d^4*e + 4*A*b^2*d
^2*e^3 + 3*B*b^2*d^3*e^2 + 20*A*a*b*d*e^4 + 8*B*b*c*d^4*e + 8*A*a*c*d^2*e^3
 + 8*B*a*b*d^2*e^3 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d^3*e^2)/(420*e^6) + (x^3*(3
*B*b^2*e^2 + 10*B*c^2*d^2 + 6*A*b*c*e^2 + 6*B*a*c*e^2 + 4*A*c^2*d*e + 8*B*b
*c*d*e))/(12*e^3) + (x^2*(4*A*b^2*e^3 + 10*B*c^2*d^3 + 8*A*a*c*e^3 + 8*B*a*
b*e^3 + 4*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 6*B*a*c*d*e^2 + 8*B
*b*c*d^2*e))/(20*e^4) + (x*(10*B*a^2*e^4 + 10*B*c^2*d^4 + 20*A*a*b*e^4 + 4*
A*b^2*d*e^3 + 4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 8*A*a*c*d*e^3 + 8*B*a*b*d*e
^3 + 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^2*e^2))/(60*e^5) + (c*x^4*
(2*A*c*e + 4*B*b*e + 5*B*c*d))/(6*e^2) + (B*c^2*x^5)/(2*e))/(d^7 + e^7*x^7
+ 7*d*e^6*x^6 + 21*d^5*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*d^2*e
^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.2091 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^9}\,dx$

Optimal. Leaf size=304

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-\right.}{6e^6(d+ex)^6}$$

Rubi [A] time = 0.32, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{6e^6(d+ex)^6}-\frac{\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{7e^6(d+ex)^7}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^2}{8e^6(d+ex)^8}+\frac{c(-Ace-2bBe+5Bcd)}{4e^6(d+ex)^4}-\frac{Bc^2}{3e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(8*e^6*(d + e*x)^8) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(7*e^6*(
d + e*x)^7) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(6*e^6*(d + e*x)^6) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
5*e^6*(d + e*x)^5) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(4*e^6*(d + e*x)^4) -
(B*c^2)/(3*e^6*(d + e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^9}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^9}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-a\right.}{e^5(d+ex)^8}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{8e^6(d+ex)^8}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2\right.}{7e^6(d+ex)^7}$$

Mathematica [A] time = 0.19, size = 375, normalized size = 1.23

$$-\frac{Ae\left(5e^2\left(21a^2e^2+6abe(d+8ex)+b^2\left(d^2+8dex+28e^2x^2\right)\right)+2ce\left(5ae\left(d^2+8dex+28e^2x^2\right)+3b\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)\right)+3c^2\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)+B\left(e^2\left(15a^2e^2(d+8ex)+10abe\left(d^2+8dex+28e^2x^2\right)+3b^2\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)\right)+6ce\left(ae\left(d^3+8d^2ex+28de^2x^2+56e^3x^3\right)+b\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)+5c^2\left(d^5+8d^4ex+28d^3e^2x^2+56d^2e^3x^3+70de^4x^4+56e^5x^5\right)\right)}{840e^6(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -1/840*(A*e*(3*c^2*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^
4*x^4) + 5*e^2*(21*a^2*e^2 + 6*a*b*e*(d + 8*e*x) + b^2*(d^2 + 8*d*e*x + 28*
e^2*x^2)) + 2*c*e*(5*a*e*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*b*(d^3 + 8*d^2*e*
x + 28*d*e^2*x^2 + 56*e^3*x^3))) + B*(5*c^2*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x
^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + e^2*(15*a^2*e^2*(d + 8*e
*x) + 10*a*b*e*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*b^2*(d^3 + 8*d^2*e*x + 28*d
*e^2*x^2 + 56*e^3*x^3)) + 6*c*e*(a*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e
```

```
^3*x^3) + b*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4))
))/(e^6*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9, x]
```

fricas [A] time = 0.39, size = 468, normalized size = 1.54

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x, algorithm="fricas")
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 105*A*a^2*e^5 + 3*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 5*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 15*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 3*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b
^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 28*(5*B*c^2*d^3*e^2 + 3*(2*B*b*c + A*c^2)*
d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)
*e^5)*x^2 + 8*(5*B*c^2*d^4*e + 3*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(
B*a + A*b)*c)*d^2*e^3 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 15*(B*a^2 + 2
*A*a*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^
5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e
^6)
```

giac [A] time = 0.16, size = 462, normalized size = 1.52

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x, algorithm="giac")
[Out] -1/840*(280*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 280*B*c^2*d^2*x^3*e^3 + 1
40*B*c^2*d^3*x^2*e^2 + 40*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 420*B*b*c*x^4*e^5 +
 210*A*c^2*x^4*e^5 + 336*B*b*c*d*x^3*e^4 + 168*A*c^2*d*x^3*e^4 + 168*B*b*c*
d^2*x^2*e^3 + 84*A*c^2*d^2*x^2*e^3 + 48*B*b*c*d^3*x*e^2 + 24*A*c^2*d^3*x*e^
2 + 6*B*b*c*d^4*e + 3*A*c^2*d^4*e + 168*B*b^2*x^3*e^5 + 336*B*a*c*x^3*e^5 +
 336*A*b*c*x^3*e^5 + 84*B*b^2*d*x^2*e^4 + 168*B*a*c*d*x^2*e^4 + 168*A*b*c*d
*x^2*e^4 + 24*B*b^2*d^2*x*e^3 + 48*B*a*c*d^2*x*e^3 + 48*A*b*c*d^2*x*e^3 + 3
*B*b^2*d^3*e^2 + 6*B*a*c*d^3*e^2 + 6*A*b*c*d^3*e^2 + 280*B*a*b*x^2*e^5 + 14
0*A*b^2*x^2*e^5 + 280*A*a*c*x^2*e^5 + 80*B*a*b*d*x*e^4 + 40*A*b^2*d*x*e^4 +
 80*A*a*c*d*x*e^4 + 10*B*a*b*d^2*e^3 + 5*A*b^2*d^2*e^3 + 10*A*a*c*d^2*e^3 +
 120*B*a^2*x*e^5 + 240*A*a*b*x*e^5 + 15*B*a^2*d*e^4 + 30*A*a*b*d*e^4 + 105*
A*a^2*e^5)*e^(-6)/(x*e + d)^8
```

maple [A] time = 0.05, size = 453, normalized size = 1.49

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x)
```

[Out] -1/8*(A*a^2*e^5-2*A*a*b*d*e^4+2*A*a*c*d^2*e^3+A*b^2*d^2*e^3-2*A*b*c*d^3*e^2+A*c^2*d^4*e-B*a^2*d*e^4+2*B*a*b*d^2*e^3-2*B*a*c*d^3*e^2-B*b^2*d^3*e^2+2*B*b*c*d^4*e-B*c^2*d^5)/e^6/(e*x+d)^8-1/6*(2*A*a*c*e^3+A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e+2*B*a*b*e^3-6*B*a*c*d*e^2-3*B*b^2*d*e^2+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^6/(e*x+d)^6-1/4*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^4-1/5*(2*A*b*c*e^2-4*A*c^2*d*e+2*B*a*c*e^2+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^5-1/3/(e*x+d)^3*B*c^2/e^6-1/7*(2*A*a*b*e^4-4*A*a*c*d*e^3-2*A*b^2*d*e^3+6*A*b*c*d^2*e^2-4*A*c^2*d^3*e+B*a^2*e^4-4*B*a*b*d*e^3+6*B*a*c*d^2*e^2+3*B*b^2*d^2*e^2-8*B*b*c*d^3*e+5*B*c^2*d^4)/e^6/(e*x+d)^7

maxima [A]   time = 0.95, size = 468, normalized size = 1.54

$$-\frac{280 Bc^2e^5x^5 + 5 Bc^2d^5 + 105 Aa^2e^5 + 3\left(2 Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2 (Ba + Ab)c\right)d^3e^2 + 5\left(2 Bab + Ab^2 + 2 Aac\right)d^2e^3 + 15\left(Ba^2 + 2 Aab\right)de^4 + 70\left(5 Bc^2de^4 + 3\left(2 Bbc + Ac^2\right)e^5\right)x^4 + 56\left(5 Bc^2d^2e^3 + 3\left(2 Bbc + Ac^2\right)de^4 + 3\left(Bb^2 + 2 (Ba + Ab)c\right)e^5\right)x^3 + 28\left(5 Bc^2d^3e^2 + 3\left(2 Bbc + Ac^2\right)d^2e^3 + 3\left(Bb^2 + 2 (Ba + Ab)c\right)de^4 + 5\left(2 Bab + Ab^2 + 2 Aac\right)e^5\right)x^2 + 8\left(5 Bc^2d^4e + 3\left(2 Bbc + Ac^2\right)d^3e^2 + 3\left(Bb^2 + 2 (Ba + Ab)c\right)d^2e^3 + 5\left(2 Bab + Ab^2 + 2 Aac\right)de^4 + 15\left(Ba^2 + 2 Aab\right)e^5\right)x}{840\left(e^{14}x^8 + 8 de^{13}x^7 + 28 d^2e^{12}x^6 + 56 d^3e^{11}x^5 + 70 d^4e^{10}x^4 + 56 d^5e^9x^3 + 28 d^6e^8x^2 + 8 d^7e^7x + d^8e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x, algorithm="maxima")

[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 105*A*a^2*e^5 + 3*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + 15*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 3*(2*B*b*c + A*c^2)*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 28*(5*B*c^2*d^3*e^2 + 3*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 8*(5*B*c^2*d^4*e + 3*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 15*(B*a^2 + 2*A*a*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e^6)

mupad [B]   time = 2.43, size = 516, normalized size = 1.70

$$-\frac{\frac{15 B a^2 d e^4+105 A a^2 e^5+10 B a b d^2 e^3+30 A a b d e^4+6 B a c d^3 e^2+10 A a c d^2 e^3+3 B b^2 d^3 e^2+5 A b^2 d^2 e^3+6 B b c d^4 e+6 A b c d^3 e^2+5 B c^2 d^5+3 A c^2 d^4 e}{840 e^6}+\frac{x^3\left(3 B b^2 e^2+6 B b c d e+6 A b c e^2+5 B c^2 d^2+3 A c^2 d e+6 B a c e^2\right)}{15 e^3}+\frac{x^2\left(3 B b^2 d e^2+5 A b^2 e^3+6 B b c d^2 e+6 A b c d e^2+10 B a b e^3+5 B c^2 d^3+3 A c^2 d^2 e+6 B a c d e^2+10 A a c e^3\right)}{30 e^4}+\frac{x\left(15 B a^2 e^4+10 B a b d e^3+30 A a b e^4+6 B a c d^2 e^2+10 A a c d e^3+3 B b^2 d^2 e^2+5 A b^2 d e^3+6 B b c d^3 e+6 A b c d^2 e^2+5 B c^2 d^4+3 A c^2 d^3 e\right)}{105 e^5}+\frac{c x^4 (3 A c e+6 B b e+5 B c d)}{12 e^2}+\frac{B c^2 x^5}{3 e}}{d^8+8 d^7 e x+28 d^6 e^2 x^2+56 d^5 e^3 x^3+70 d^4 e^4 x^4+56 d^3 e^5 x^5+28 d^2 e^6 x^6+8 d e^7 x^7+e^8 x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x)

[Out] -((105*A*a^2*e^5 + 5*B*c^2*d^5 + 15*B*a^2*d*e^4 + 3*A*c^2*d^4*e + 5*A*b^2*d^2*e^3 + 3*B*b^2*d^3*e^2 + 30*A*a*b*d*e^4 + 6*B*b*c*d^4*e + 10*A*a*c*d^2*e^3 + 10*B*a*b*d^2*e^3 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d^3*e^2)/(840*e^6) + (x^3*(3*B*b^2*e^2 + 5*B*c^2*d^2 + 6*A*b*c*e^2 + 6*B*a*c*e^2 + 3*A*c^2*d*e + 6*B*b*c*d*e))/(15*e^3) + (x^2*(5*A*b^2*e^3 + 5*B*c^2*d^3 + 10*A*a*c*e^3 + 10*B*a*b*e^3 + 3*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 6*B*a*c*d*e^2 + 6*B*b*c*d^2*e))/(30*e^4) + (x*(15*B*a^2*e^4 + 5*B*c^2*d^4 + 30*A*a*b*e^4 + 5*A*b^2*d*e^3 + 3*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 10*A*a*c*d*e^3 + 10*B*a*b*d*e^3 + 6*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^2*e^2))/(105*e^5) + (c*x^4*(3*A*c*e + 6*B*b*e + 5*B*c*d))/(12*e^2) + (B*c^2*x^5)/(3*e))/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^3*x^3 + 70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**9,x)

[Out] Timed out

3.2092 $\int (A+Bx)(d+ex)^5 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^9 \left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)\right.}{9e^8}$$

Rubi [A] time = 1.75, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^6)/(6*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^7)/(7*e^8) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e
)))*(d + e*x)^8)/(8*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^9)/
(9*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d +
e*x)^10)/(10*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*
e*(6*b*d - a*e)))*(d + e*x)^11)/(11*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)
*(d + e*x)^12)/(12*e^8) + (B*c^3*(d + e*x)^13)/(13*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a+bx+cx^2\right)^3 dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^5}{e^7} + \frac{\left(cd^2-bde+ae^2\right)^2(7Bc\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^6}{6e^8} + \frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-\right.}{}$$

Mathematica [B] time = 0.60, size = 1178, normalized size = 2.12

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^5*x + (a^2*d^4*(3*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (a*d^3*(a*B*d*(
3*b*d + 5*a*e) + A*(3*b^2*d^2 + 15*a*b*d*e + a*(3*c*d^2 + 10*a*e^2)))*x^3)/
3 + (d^2*(A*(b^3*d^3 + 15*a*b^2*d^2*e + 5*a^2*e*(3*c*d^2 + 2*a*e^2) + 6*a*b
```

```
*d*(c*d^2 + 5*a*e^2)) + a*B*d*(3*b^2*d^2 + 15*a*b*d*e + a*(3*c*d^2 + 10*a*e
^2)))*x^4)/4 + (d*(b^3*d^3*(B*d + 5*A*e) + 3*b^2*d^2*(A*c*d^2 + 5*a*B*d*e +
 10*a*A*e^2) + 6*a*b*d*(B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + 5*a*A*e^3) +
a*(5*a*B*d*e*(3*c*d^2 + 2*a*e^2) + A*(3*c^2*d^4 + 30*a*c*d^2*e^2 + 5*a^2*e^
4)))*x^5)/5 + ((5*b^3*d^3*e*(B*d + 2*A*e) + 3*b^2*d^2*(B*c*d^3 + 5*A*c*d^2*
e + 10*a*B*d*e^2 + 10*a*A*e^3) + 3*b*d*(10*a*B*d*e*(c*d^2 + a*e^2) + A*(c^2
*d^4 + 20*a*c*d^2*e^2 + 5*a^2*e^4)) + a*(A*e*(15*c^2*d^4 + 30*a*c*d^2*e^2 +
 a^2*e^4) + B*(3*c^2*d^5 + 30*a*c*d^3*e^2 + 5*a^2*d*e^4)))*x^6)/6 + ((10*b^
3*d^2*e^2*(B*d + A*e) + 15*b^2*d*e*(B*c*d^3 + 2*A*c*d^2*e + 2*a*B*d*e^2 + a
*A*e^3) + a*B*e*(15*c^2*d^4 + 30*a*c*d^2*e^2 + a^2*e^4) + A*c*d*(c^2*d^4 +
30*a*c*d^2*e^2 + 15*a^2*e^4) + 3*b*(A*e*(5*c^2*d^4 + 20*a*c*d^2*e^2 + a^2*e
^4) + B*(c^2*d^5 + 20*a*c*d^3*e^2 + 5*a^2*d*e^4)))*x^7)/7 + ((A*e*(5*c^3*d^
4 + 30*c^2*d^2*e*(b*d + a*e) + b^2*e^3*(5*b*d + 3*a*e) + 3*c*e^2*(10*b^2*d^
2 + 10*a*b*d*e + a^2*e^2)) + B*(c^3*d^5 + 15*c^2*d^3*e*(b*d + 2*a*e) + 15*c
*d*e^2*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2) + b*e^3*(10*b^2*d^2 + 15*a*b*d*e +
 3*a^2*e^2)))*x^8)/8 + (e*(A*e*(10*c^3*d^3 + b^3*e^3 + 15*c^2*d*e*(2*b*d +
a*e) + 3*b*c*e^2*(5*b*d + 2*a*e)) + B*(5*c^3*d^4 + 30*c^2*d^2*e*(b*d + a*e)
 + b^2*e^3*(5*b*d + 3*a*e) + 3*c*e^2*(10*b^2*d^2 + 10*a*b*d*e + a^2*e^2)))*
x^9)/9 + (e^2*(A*c*e*(10*c^2*d^2 + 3*b^2*e^2 + 3*c*e*(5*b*d + a*e)) + B*(10
*c^3*d^3 + b^3*e^3 + 15*c^2*d*e*(2*b*d + a*e) + 3*b*c*e^2*(5*b*d + 2*a*e)))
*x^10)/10 + (c*e^3*(A*c*e*(5*c*d + 3*b*e) + B*(10*c^2*d^2 + 3*b^2*e^2 + 3*c
*e*(5*b*d + a*e)))*x^11)/11 + (c^2*e^4*(5*B*c*d + 3*b*B*e + A*c*e)*x^12)/12
 + (B*c^3*e^5*x^13)/13
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^5\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.35, size = 1663, normalized size = 3.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^5*c^3*B + 5/12*x^12*e^4*d*c^3*B + 1/4*x^12*e^5*c^2*b*B + 1/12*x
^12*e^5*c^3*A + 10/11*x^11*e^3*d^2*c^3*B + 15/11*x^11*e^4*d*c^2*b*B + 3/11*
x^11*e^5*c*b^2*B + 3/11*x^11*e^5*c^2*a*B + 5/11*x^11*e^4*d*c^3*A + 3/11*x^1
1*e^5*c^2*b*A + x^10*e^2*d^3*c^3*B + 3*x^10*e^3*d^2*c^2*b*B + 3/2*x^10*e^4*
d*c*b^2*B + 1/10*x^10*e^5*b^3*B + 3/2*x^10*e^4*d*c^2*a*B + 3/5*x^10*e^5*c*b
*a*B + x^10*e^3*d^2*c^3*A + 3/2*x^10*e^4*d*c^2*b*A + 3/10*x^10*e^5*c*b^2*A
+ 3/10*x^10*e^5*c^2*a*A + 5/9*x^9*e*d^4*c^3*B + 10/3*x^9*e^2*d^3*c^2*b*B +
10/3*x^9*e^3*d^2*c*b^2*B + 5/9*x^9*e^4*d*b^3*B + 10/3*x^9*e^3*d^2*c^2*a*B +
 10/3*x^9*e^4*d*c*b*a*B + 1/3*x^9*e^5*b^2*a*B + 1/3*x^9*e^5*c*a^2*B + 10/9*
x^9*e^2*d^3*c^3*A + 10/3*x^9*e^3*d^2*c^2*b*A + 5/3*x^9*e^4*d*c*b^2*A + 1/9*
x^9*e^5*b^3*A + 5/3*x^9*e^4*d*c^2*a*A + 2/3*x^9*e^5*c*b*a*A + 1/8*x^8*d^5*c
^3*B + 15/8*x^8*e*d^4*c^2*b*B + 15/4*x^8*e^2*d^3*c*b^2*B + 5/4*x^8*e^3*d^2*
b^3*B + 15/4*x^8*e^2*d^3*c^2*a*B + 15/2*x^8*e^3*d^2*c*b*a*B + 15/8*x^8*e^4*
d*b^2*a*B + 15/8*x^8*e^4*d*c*a^2*B + 3/8*x^8*e^5*b*a^2*B + 5/8*x^8*e*d^4*c^
3*A + 15/4*x^8*e^2*d^3*c^2*b*A + 15/4*x^8*e^3*d^2*c*b^2*A + 5/8*x^8*e^4*d*b
^3*A + 15/4*x^8*e^3*d^2*c^2*a*A + 15/4*x^8*e^4*d*c*b*a*A + 3/8*x^8*e^5*b^2*
a*A + 3/8*x^8*e^5*c*a^2*A + 3/7*x^7*d^5*c^2*b*B + 15/7*x^7*e*d^4*c*b^2*B +
10/7*x^7*e^2*d^3*b^3*B + 15/7*x^7*e*d^4*c^2*a*B + 60/7*x^7*e^2*d^3*c*b*a*B
+ 30/7*x^7*e^3*d^2*b^2*a*B + 30/7*x^7*e^3*d^2*c*a^2*B + 15/7*x^7*e^4*d*b*a^
2*B + 1/7*x^7*e^5*a^3*B + 1/7*x^7*d^5*c^3*A + 15/7*x^7*e*d^4*c^2*b*A + 30/7
```

```
*x^7*e^2*d^3*c*b^2*A + 10/7*x^7*e^3*d^2*b^3*A + 30/7*x^7*e^2*d^3*c^2*a*A +
60/7*x^7*e^3*d^2*c*b*a*A + 15/7*x^7*e^4*d*b^2*a*A + 15/7*x^7*e^4*d*c*a^2*A
+ 3/7*x^7*e^5*b*a^2*A + 1/2*x^6*d^5*c*b^2*B + 5/6*x^6*e*d^4*b^3*B + 1/2*x^6
*d^5*c^2*a*B + 5*x^6*e*d^4*c*b*a*B + 5*x^6*e^2*d^3*b^2*a*B + 5*x^6*e^2*d^3*
c*a^2*B + 5*x^6*e^3*d^2*b*a^2*B + 5/6*x^6*e^4*d*a^3*B + 1/2*x^6*d^5*c^2*b*A
 + 5/2*x^6*e*d^4*c*b^2*A + 5/3*x^6*e^2*d^3*b^3*A + 5/2*x^6*e*d^4*c^2*a*A +
10*x^6*e^2*d^3*c*b*a*A + 5*x^6*e^3*d^2*b^2*a*A + 5*x^6*e^3*d^2*c*a^2*A + 5/
2*x^6*e^4*d*b*a^2*A + 1/6*x^6*e^5*a^3*A + 1/5*x^5*d^5*b^3*B + 6/5*x^5*d^5*c
*b*a*B + 3*x^5*e*d^4*b^2*a*B + 3*x^5*e*d^4*c*a^2*B + 6*x^5*e^2*d^3*b*a^2*B
+ 2*x^5*e^3*d^2*a^3*B + 3/5*x^5*d^5*c*b^2*A + x^5*e*d^4*b^3*A + 3/5*x^5*d^5
*c^2*a*A + 6*x^5*e*d^4*c*b*a*A + 6*x^5*e^2*d^3*b^2*a*A + 6*x^5*e^2*d^3*c*a^
2*A + 6*x^5*e^3*d^2*b*a^2*A + x^5*e^4*d*a^3*A + 3/4*x^4*d^5*b^2*a*B + 3/4*x
^4*d^5*c*a^2*B + 15/4*x^4*e*d^4*b*a^2*B + 5/2*x^4*e^2*d^3*a^3*B + 1/4*x^4*d
^5*b^3*A + 3/2*x^4*d^5*c*b*a*A + 15/4*x^4*e*d^4*b^2*a*A + 15/4*x^4*e*d^4*c*
a^2*A + 15/2*x^4*e^2*d^3*b*a^2*A + 5/2*x^4*e^3*d^2*a^3*A + x^3*d^5*b*a^2*B
+ 5/3*x^3*e*d^4*a^3*B + x^3*d^5*b^2*a*A + x^3*d^5*c*a^2*A + 5*x^3*e*d^4*b*a
^2*A + 10/3*x^3*e^2*d^3*a^3*A + 1/2*x^2*d^5*a^3*B + 3/2*x^2*d^5*b*a^2*A + 5
/2*x^2*e*d^4*a^3*A + x*d^5*a^3*A
```

giac [B] time = 0.18, size = 1603, normalized size = 2.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/13*B*c^3*x^13*e^5 + 5/12*B*c^3*d*x^12*e^4 + 10/11*B*c^3*d^2*x^11*e^3 + B*
c^3*d^3*x^10*e^2 + 5/9*B*c^3*d^4*x^9*e + 1/8*B*c^3*d^5*x^8 + 1/4*B*b*c^2*x^
12*e^5 + 1/12*A*c^3*x^12*e^5 + 15/11*B*b*c^2*d*x^11*e^4 + 5/11*A*c^3*d*x^11
*e^4 + 3*B*b*c^2*d^2*x^10*e^3 + A*c^3*d^2*x^10*e^3 + 10/3*B*b*c^2*d^3*x^9*e
^2 + 10/9*A*c^3*d^3*x^9*e^2 + 15/8*B*b*c^2*d^4*x^8*e + 5/8*A*c^3*d^4*x^8*e
+ 3/7*B*b*c^2*d^5*x^7 + 1/7*A*c^3*d^5*x^7 + 3/11*B*b^2*c*x^11*e^5 + 3/11*B*
a*c^2*x^11*e^5 + 3/11*A*b*c^2*x^11*e^5 + 3/2*B*b^2*c*d*x^10*e^4 + 3/2*B*a*c
^2*d*x^10*e^4 + 3/2*A*b*c^2*d*x^10*e^4 + 10/3*B*b^2*c*d^2*x^9*e^3 + 10/3*B*
a*c^2*d^2*x^9*e^3 + 10/3*A*b*c^2*d^2*x^9*e^3 + 15/4*B*b^2*c*d^3*x^8*e^2 + 1
5/4*B*a*c^2*d^3*x^8*e^2 + 15/4*A*b*c^2*d^3*x^8*e^2 + 15/7*B*b^2*c*d^4*x^7*e
 + 15/7*B*a*c^2*d^4*x^7*e + 15/7*A*b*c^2*d^4*x^7*e + 1/2*B*b^2*c*d^5*x^6 +
1/2*B*a*c^2*d^5*x^6 + 1/2*A*b*c^2*d^5*x^6 + 1/10*B*b^3*x^10*e^5 + 3/5*B*a*b
*c*x^10*e^5 + 3/10*A*b^2*c*x^10*e^5 + 3/10*A*a*c^2*x^10*e^5 + 5/9*B*b^3*d*x
^9*e^4 + 10/3*B*a*b*c*d*x^9*e^4 + 5/3*A*b^2*c*d*x^9*e^4 + 5/3*A*a*c^2*d*x^9
*e^4 + 5/4*B*b^3*d^2*x^8*e^3 + 15/2*B*a*b*c*d^2*x^8*e^3 + 15/4*A*b^2*c*d^2*
x^8*e^3 + 15/4*A*a*c^2*d^2*x^8*e^3 + 10/7*B*b^3*d^3*x^7*e^2 + 60/7*B*a*b*c*
d^3*x^7*e^2 + 30/7*A*b^2*c*d^3*x^7*e^2 + 30/7*A*a*c^2*d^3*x^7*e^2 + 5/6*B*b
^3*d^4*x^6*e + 5*B*a*b*c*d^4*x^6*e + 5/2*A*b^2*c*d^4*x^6*e + 5/2*A*a*c^2*d^
4*x^6*e + 1/5*B*b^3*d^5*x^5 + 6/5*B*a*b*c*d^5*x^5 + 3/5*A*b^2*c*d^5*x^5 + 3
/5*A*a*c^2*d^5*x^5 + 1/3*B*a*b^2*x^9*e^5 + 1/9*A*b^3*x^9*e^5 + 1/3*B*a^2*c*
x^9*e^5 + 2/3*A*a*b*c*x^9*e^5 + 15/8*B*a*b^2*d*x^8*e^4 + 5/8*A*b^3*d*x^8*e^
4 + 15/8*B*a^2*c*d*x^8*e^4 + 15/4*A*a*b*c*d*x^8*e^4 + 30/7*B*a*b^2*d^2*x^7*
e^3 + 10/7*A*b^3*d^2*x^7*e^3 + 30/7*B*a^2*c*d^2*x^7*e^3 + 60/7*A*a*b*c*d^2*
x^7*e^3 + 5*B*a*b^2*d^3*x^6*e^2 + 5/3*A*b^3*d^3*x^6*e^2 + 5*B*a^2*c*d^3*x^6
*e^2 + 10*A*a*b*c*d^3*x^6*e^2 + 3*B*a*b^2*d^4*x^5*e + A*b^3*d^4*x^5*e + 3*B
*a^2*c*d^4*x^5*e + 6*A*a*b*c*d^4*x^5*e + 3/4*B*a*b^2*d^5*x^4 + 1/4*A*b^3*d^
5*x^4 + 3/4*B*a^2*c*d^5*x^4 + 3/2*A*a*b*c*d^5*x^4 + 3/8*B*a^2*b*x^8*e^5 + 3
/8*A*a*b^2*x^8*e^5 + 3/8*A*a^2*c*x^8*e^5 + 15/7*B*a^2*b*d*x^7*e^4 + 15/7*A*
a*b^2*d*x^7*e^4 + 15/7*A*a^2*c*d*x^7*e^4 + 5*B*a^2*b*d^2*x^6*e^3 + 5*A*a*b^
2*d^2*x^6*e^3 + 5*A*a^2*c*d^2*x^6*e^3 + 6*B*a^2*b*d^3*x^5*e^2 + 6*A*a*b^2*d
^3*x^5*e^2 + 6*A*a^2*c*d^3*x^5*e^2 + 15/4*B*a^2*b*d^4*x^4*e + 15/4*A*a*b^2*
d^4*x^4*e + 15/4*A*a^2*c*d^4*x^4*e + B*a^2*b*d^5*x^3 + A*a*b^2*d^5*x^3 + A*
a^2*c*d^5*x^3 + 1/7*B*a^3*x^7*e^5 + 3/7*A*a^2*b*x^7*e^5 + 5/6*B*a^3*d*x^6*e
^4 + 5/2*A*a^2*b*d*x^6*e^4 + 2*B*a^3*d^2*x^5*e^3 + 6*A*a^2*b*d^2*x^5*e^3 +
```

```
5/2*B*a^3*d^3*x^4*e^2 + 15/2*A*a^2*b*d^3*x^4*e^2 + 5/3*B*a^3*d^4*x^3*e + 5*
A*a^2*b*d^4*x^3*e + 1/2*B*a^3*d^5*x^2 + 3/2*A*a^2*b*d^5*x^2 + 1/6*A*a^3*x^6
*e^5 + A*a^3*d*x^5*e^4 + 5/2*A*a^3*d^2*x^4*e^3 + 10/3*A*a^3*d^3*x^3*e^2 + 5
/2*A*a^3*d^4*x^2*e + A*a^3*d^5*x
```

maple [B] time = 0.04, size = 1263, normalized size = 2.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/13*B*e^5*c^3*x^13+1/12*((A*e^5+5*B*d*e^4)*c^3+3*B*e^5*b*c^2)*x^12+1/11*((
5*A*d*e^4+10*B*d^2*e^3)*c^3+3*(A*e^5+5*B*d*e^4)*b*c^2+B*e^5*(a*c^2+2*b^2*c+
c*(2*a*c+b^2)))*x^11+1/10*((10*A*d^2*e^3+10*B*d^3*e^2)*c^3+3*(5*A*d*e^4+10*
B*d^2*e^3)*b*c^2+(A*e^5+5*B*d*e^4)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+B*e^5*(4*a
*b*c+b*(2*a*c+b^2)))*x^10+1/9*((10*A*d^3*e^2+5*B*d^4*e)*c^3+3*(10*A*d^2*e^3
+10*B*d^3*e^2)*b*c^2+(5*A*d*e^4+10*B*d^2*e^3)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))
+(A*e^5+5*B*d*e^4)*(4*a*b*c+b*(2*a*c+b^2))+B*e^5*(a*(2*a*c+b^2)+2*a*b^2+c*a
^2))*x^9+1/8*((5*A*d^4*e+B*d^5)*c^3+3*(10*A*d^3*e^2+5*B*d^4*e)*b*c^2+(10*A*
d^2*e^3+10*B*d^3*e^2)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+(5*A*d*e^4+10*B*d^2*e^3
)*(4*a*b*c+b*(2*a*c+b^2))+(A*e^5+5*B*d*e^4)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3
*B*e^5*a^2*b)*x^8+1/7*(A*d^5*c^3+3*(5*A*d^4*e+B*d^5)*b*c^2+(10*A*d^3*e^2+5*
B*d^4*e)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+(10*A*d^2*e^3+10*B*d^3*e^2)*(4*a*b*c
+b*(2*a*c+b^2))+(5*A*d*e^4+10*B*d^2*e^3)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(A
*e^5+5*B*d*e^4)*a^2*b+B*e^5*a^3)*x^7+1/6*(3*A*d^5*b*c^2+(5*A*d^4*e+B*d^5)*(
a*c^2+2*b^2*c+c*(2*a*c+b^2))+(10*A*d^3*e^2+5*B*d^4*e)*(4*a*b*c+b*(2*a*c+b^2
))+(10*A*d^2*e^3+10*B*d^3*e^2)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(5*A*d*e^4+1
0*B*d^2*e^3)*a^2*b+(A*e^5+5*B*d*e^4)*a^3)*x^6+1/5*(A*d^5*(a*c^2+2*b^2*c+c*(
2*a*c+b^2))+(5*A*d^4*e+B*d^5)*(4*a*b*c+b*(2*a*c+b^2))+(10*A*d^3*e^2+5*B*d^4
*e)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(10*A*d^2*e^3+10*B*d^3*e^2)*a^2*b+(5*A*
d*e^4+10*B*d^2*e^3)*a^3)*x^5+1/4*(A*d^5*(4*a*b*c+b*(2*a*c+b^2))+(5*A*d^4*e+
B*d^5)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(10*A*d^3*e^2+5*B*d^4*e)*a^2*b+(10*A
*d^2*e^3+10*B*d^3*e^2)*a^3)*x^4+1/3*(A*d^5*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*
(5*A*d^4*e+B*d^5)*a^2*b+(10*A*d^3*e^2+5*B*d^4*e)*a^3)*x^3+1/2*(3*A*d^5*a^2*
b+(5*A*d^4*e+B*d^5)*a^3)*x^2+A*d^5*a^3*x
```

maxima [B] time = 0.74, size = 1114, normalized size = 2.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^3*e^5*x^13 + 1/12*(5*B*c^3*d*e^4 + (3*B*b*c^2 + A*c^3)*e^5)*x^12 +
 1/11*(10*B*c^3*d^2*e^3 + 5*(3*B*b*c^2 + A*c^3)*d*e^4 + 3*(B*b^2*c + (B*a +
 A*b)*c^2)*e^5)*x^11 + 1/10*(10*B*c^3*d^3*e^2 + 10*(3*B*b*c^2 + A*c^3)*d^2*
e^3 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^4 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*
b + A*b^2)*c)*e^5)*x^10 + A*a^3*d^5*x + 1/9*(5*B*c^3*d^4*e + 10*(3*B*b*c^2
+ A*c^3)*d^3*e^2 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^3 + 5*(B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*e^5)*x^9 + 1/8*(B*c^3*d^5 + 5*(3*B*b*c^2 + A*c^3)*d^4*e + 30*(B*b^2
*c + (B*a + A*b)*c^2)*d^3*e^2 + 10*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d^2*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^4 + 3*(B*a^
2*b + A*a*b^2 + A*a^2*c)*e^5)*x^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^5 + 15*(B*b^
2*c + (B*a + A*b)*c^2)*d^4*e + 10*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*d^3*e^2 + 10*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^3 + 15*(B
*a^2*b + A*a*b^2 + A*a^2*c)*d*e^4 + (B*a^3 + 3*A*a^2*b)*e^5)*x^7 + 1/6*(A*a
^3*e^5 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^5 + 5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*
a*b + A*b^2)*c)*d^4*e + 10*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*
e^2 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^3 + 5*(B*a^3 + 3*A*a^2*b)*d*e^
```

```
4)*x^6 + 1/5*(5*A*a^3*d*e^4 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d
^5 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e + 30*(B*a^2*b + A*
a*b^2 + A*a^2*c)*d^3*e^2 + 10*(B*a^3 + 3*A*a^2*b)*d^2*e^3)*x^5 + 1/4*(10*A*
a^3*d^2*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^5 + 15*(B*a^2*b
 + A*a*b^2 + A*a^2*c)*d^4*e + 10*(B*a^3 + 3*A*a^2*b)*d^3*e^2)*x^4 + 1/3*(10
*A*a^3*d^3*e^2 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^5 + 5*(B*a^3 + 3*A*a^2*b
)*d^4*e)*x^3 + 1/2*(5*A*a^3*d^4*e + (B*a^3 + 3*A*a^2*b)*d^5)*x^2
```

mupad [B] time = 2.66, size = 1348, normalized size = 2.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^7*((A*c^3*d^5)/7 + (B*a^3*e^5)/7 + (3*A*a^2*b*e^5)/7 + (3*B*b*c^2*d^5)/7
+ (10*A*b^3*d^2*e^3)/7 + (10*B*b^3*d^3*e^2)/7 + (30*A*a*c^2*d^3*e^2)/7 + (3
0*B*a*b^2*d^2*e^3)/7 + (30*A*b^2*c*d^3*e^2)/7 + (30*B*a^2*c*d^2*e^3)/7 + (1
5*A*a*b^2*d*e^4)/7 + (15*A*a^2*c*d*e^4)/7 + (15*B*a^2*b*d*e^4)/7 + (15*A*b*
c^2*d^4*e)/7 + (15*B*a*c^2*d^4*e)/7 + (15*B*b^2*c*d^4*e)/7 + (60*A*a*b*c*d^
2*e^3)/7 + (60*B*a*b*c*d^3*e^2)/7) + x^4*((A*b^3*d^5)/4 + (3*B*a*b^2*d^5)/4
 + (3*B*a^2*c*d^5)/4 + (5*A*a^3*d^2*e^3)/2 + (5*B*a^3*d^3*e^2)/2 + (15*A*a^
2*b*d^3*e^2)/2 + (3*A*a*b*c*d^5)/2 + (15*A*a*b^2*d^4*e)/4 + (15*A*a^2*c*d^4
*e)/4 + (15*B*a^2*b*d^4*e)/4) + x^10*((B*b^3*e^5)/10 + (3*A*a*c^2*e^5)/10 +
 (3*A*b^2*c*e^5)/10 + A*c^3*d^2*e^3 + B*c^3*d^3*e^2 + 3*B*b*c^2*d^2*e^3 + (
3*B*a*b*c*e^5)/5 + (3*A*b*c^2*d*e^4)/2 + (3*B*a*c^2*d*e^4)/2 + (3*B*b^2*c*d
*e^4)/2) + x^5*((B*b^3*d^5)/5 + (3*A*a*c^2*d^5)/5 + (3*A*b^2*c*d^5)/5 + A*a
^3*d*e^4 + A*b^3*d^4*e + 2*B*a^3*d^2*e^3 + 6*A*a*b^2*d^3*e^2 + 6*A*a^2*b*d^
2*e^3 + 6*A*a^2*c*d^3*e^2 + 6*B*a^2*b*d^3*e^2 + (6*B*a*b*c*d^5)/5 + 3*B*a*b
^2*d^4*e + 3*B*a^2*c*d^4*e + 6*A*a*b*c*d^4*e) + x^9*((A*b^3*e^5)/9 + (B*a*b
^2*e^5)/3 + (B*a^2*c*e^5)/3 + (5*B*b^3*d*e^4)/9 + (5*B*c^3*d^4*e)/9 + (10*A
*c^3*d^3*e^2)/9 + (10*A*b*c^2*d^2*e^3)/3 + (10*B*a*c^2*d^2*e^3)/3 + (10*B*b
*c^2*d^3*e^2)/3 + (10*B*b^2*c*d^2*e^3)/3 + (2*A*a*b*c*e^5)/3 + (5*A*a*c^2*d
*e^4)/3 + (5*A*b^2*c*d*e^4)/3 + (10*B*a*b*c*d*e^4)/3) + x^3*(A*a*b^2*d^5 +
A*a^2*c*d^5 + B*a^2*b*d^5 + (5*B*a^3*d^4*e)/3 + (10*A*a^3*d^3*e^2)/3 + 5*A*
a^2*b*d^4*e) + x^11*((3*A*b*c^2*e^5)/11 + (3*B*a*c^2*e^5)/11 + (3*B*b^2*c*e
^5)/11 + (5*A*c^3*d*e^4)/11 + (10*B*c^3*d^2*e^3)/11 + (15*B*b*c^2*d*e^4)/11
) + x^6*((A*a^3*e^5)/6 + (A*b*c^2*d^5)/2 + (B*a*c^2*d^5)/2 + (B*b^2*c*d^5)/
2 + (5*B*a^3*d*e^4)/6 + (5*B*b^3*d^4*e)/6 + (5*A*b^3*d^3*e^2)/3 + 5*A*a*b^2
*d^2*e^3 + 5*A*a^2*c*d^2*e^3 + 5*B*a*b^2*d^3*e^2 + 5*B*a^2*b*d^2*e^3 + 5*B*
a^2*c*d^3*e^2 + (5*A*a^2*b*d*e^4)/2 + (5*A*a*c^2*d^4*e)/2 + (5*A*b^2*c*d^4*
e)/2 + 10*A*a*b*c*d^3*e^2 + 5*B*a*b*c*d^4*e) + x^8*((B*c^3*d^5)/8 + (3*A*a*
b^2*e^5)/8 + (3*A*a^2*c*e^5)/8 + (3*B*a^2*b*e^5)/8 + (5*A*b^3*d*e^4)/8 + (5
*A*c^3*d^4*e)/8 + (5*B*b^3*d^2*e^3)/4 + (15*A*a*c^2*d^2*e^3)/4 + (15*A*b*c^
2*d^3*e^2)/4 + (15*A*b^2*c*d^2*e^3)/4 + (15*B*a*c^2*d^3*e^2)/4 + (15*B*b^2*
c*d^3*e^2)/4 + (15*B*a*b^2*d*e^4)/8 + (15*B*a^2*c*d*e^4)/8 + (15*B*b*c^2*d^
4*e)/8 + (15*B*a*b*c*d^2*e^3)/2 + (15*A*a*b*c*d*e^4)/4) + (a^2*d^4*x^2*(5*A
*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e^4*x^12*(A*c*e + 3*B*b*e + 5*B*c*d))/12
+ A*a^3*d^5*x + (B*c^3*e^5*x^13)/13
```

sympy [B] time = 0.28, size = 1731, normalized size = 3.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**5*x + B*c**3*e**5*x**13/13 + x**12*(A*c**3*e**5/12 + B*b*c**2*e**
5/4 + 5*B*c**3*d*e**4/12) + x**11*(3*A*b*c**2*e**5/11 + 5*A*c**3*d*e**4/11
+ 3*B*a*c**2*e**5/11 + 3*B*b**2*c*e**5/11 + 15*B*b*c**2*d*e**4/11 + 10*B*c*
*3*d**2*e**3/11) + x**10*(3*A*a*c**2*e**5/10 + 3*A*b**2*c*e**5/10 + 3*A*b*c
```

```
**2*d*e**4/2 + A*c**3*d**2*e**3 + 3*B*a*b*c*e**5/5 + 3*B*a*c**2*d*e**4/2 +
B*b**3*e**5/10 + 3*B*b**2*c*d*e**4/2 + 3*B*b*c**2*d**2*e**3 + B*c**3*d**3*e
**2) + x**9*(2*A*a*b*c*e**5/3 + 5*A*a*c**2*d*e**4/3 + A*b**3*e**5/9 + 5*A*b
**2*c*d*e**4/3 + 10*A*b*c**2*d**2*e**3/3 + 10*A*c**3*d**3*e**2/9 + B*a**2*c
*e**5/3 + B*a*b**2*e**5/3 + 10*B*a*b*c*d*e**4/3 + 10*B*a*c**2*d**2*e**3/3 +
 5*B*b**3*d*e**4/9 + 10*B*b**2*c*d**2*e**3/3 + 10*B*b*c**2*d**3*e**2/3 + 5*
B*c**3*d**4*e/9) + x**8*(3*A*a**2*c*e**5/8 + 3*A*a*b**2*e**5/8 + 15*A*a*b*c
*d*e**4/4 + 15*A*a*c**2*d**2*e**3/4 + 5*A*b**3*d*e**4/8 + 15*A*b**2*c*d**2*
e**3/4 + 15*A*b*c**2*d**3*e**2/4 + 5*A*c**3*d**4*e/8 + 3*B*a**2*b*e**5/8 +
15*B*a**2*c*d*e**4/8 + 15*B*a*b**2*d*e**4/8 + 15*B*a*b*c*d**2*e**3/2 + 15*B
*a*c**2*d**3*e**2/4 + 5*B*b**3*d**2*e**3/4 + 15*B*b**2*c*d**3*e**2/4 + 15*B
*b*c**2*d**4*e/8 + B*c**3*d**5/8) + x**7*(3*A*a**2*b*e**5/7 + 15*A*a**2*c*d
*e**4/7 + 15*A*a*b**2*d*e**4/7 + 60*A*a*b*c*d**2*e**3/7 + 30*A*a*c**2*d**3*
e**2/7 + 10*A*b**3*d**2*e**3/7 + 30*A*b**2*c*d**3*e**2/7 + 15*A*b*c**2*d**4
*e/7 + A*c**3*d**5/7 + B*a**3*e**5/7 + 15*B*a**2*b*d*e**4/7 + 30*B*a**2*c*d
**2*e**3/7 + 30*B*a*b**2*d**2*e**3/7 + 60*B*a*b*c*d**3*e**2/7 + 15*B*a*c**2
*d**4*e/7 + 10*B*b**3*d**3*e**2/7 + 15*B*b**2*c*d**4*e/7 + 3*B*b*c**2*d**5/
7) + x**6*(A*a**3*e**5/6 + 5*A*a**2*b*d*e**4/2 + 5*A*a**2*c*d**2*e**3 + 5*A
*a*b**2*d**2*e**3 + 10*A*a*b*c*d**3*e**2 + 5*A*a*c**2*d**4*e/2 + 5*A*b**3*d
**3*e**2/3 + 5*A*b**2*c*d**4*e/2 + A*b*c**2*d**5/2 + 5*B*a**3*d*e**4/6 + 5*
B*a**2*b*d**2*e**3 + 5*B*a**2*c*d**3*e**2 + 5*B*a*b**2*d**3*e**2 + 5*B*a*b*
c*d**4*e + B*a*c**2*d**5/2 + 5*B*b**3*d**4*e/6 + B*b**2*c*d**5/2) + x**5*(A
*a**3*d*e**4 + 6*A*a**2*b*d**2*e**3 + 6*A*a**2*c*d**3*e**2 + 6*A*a*b**2*d**
3*e**2 + 6*A*a*b*c*d**4*e + 3*A*a*c**2*d**5/5 + A*b**3*d**4*e + 3*A*b**2*c*
d**5/5 + 2*B*a**3*d**2*e**3 + 6*B*a**2*b*d**3*e**2 + 3*B*a**2*c*d**4*e + 3*
B*a*b**2*d**4*e + 6*B*a*b*c*d**5/5 + B*b**3*d**5/5) + x**4*(5*A*a**3*d**2*e
**3/2 + 15*A*a**2*b*d**3*e**2/2 + 15*A*a**2*c*d**4*e/4 + 15*A*a*b**2*d**4*e
/4 + 3*A*a*b*c*d**5/2 + A*b**3*d**5/4 + 5*B*a**3*d**3*e**2/2 + 15*B*a**2*b*
d**4*e/4 + 3*B*a**2*c*d**5/4 + 3*B*a*b**2*d**5/4) + x**3*(10*A*a**3*d**3*e*
*2/3 + 5*A*a**2*b*d**4*e + A*a**2*c*d**5 + A*a*b**2*d**5 + 5*B*a**3*d**4*e/
3 + B*a**2*b*d**5) + x**2*(5*A*a**3*d**4*e/2 + 3*A*a**2*b*d**5/2 + B*a**3*d
**5/2)
```

3.2093 $\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^8 \left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)\right.\right.}{8e^8}$$

Rubi [A] time = 1.38, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^5)/(5*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^6)/(6*e^8) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e
)))*(d + e*x)^7)/(7*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^8)/
(8*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d +
e*x)^9)/(9*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*
(6*b*d - a*e)))*(d + e*x)^10)/(10*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(
d + e*x)^11)/(11*e^8) + (B*c^3*(d + e*x)^12)/(12*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4\left(a+bx+cx^2\right)^3 dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^4}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bc\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^5}{5e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-\right.}{}$$

Mathematica [A] time = 0.47, size = 957, normalized size = 1.72

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^4*x + (a^2*d^3*(3*A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (a*d^2*(a*B*d*(
3*b*d + 4*a*e) + 3*A*(b^2*d^2 + 4*a*b*d*e + a*(c*d^2 + 2*a*e^2)))*x^3)/3 +
(d*(3*a*B*d*(b^2*d^2 + 4*a*b*d*e + a*(c*d^2 + 2*a*e^2)) + A*(b^3*d^3 + 12*a
```

```
*b^2*d^2*e + 4*a^2*e*(3*c*d^2 + a*e^2) + 6*a*b*d*(c*d^2 + 3*a*e^2)))*x^4)/4
 + ((b^3*d^3*(B*d + 4*A*e) + 3*b^2*d^2*(A*c*d^2 + 4*a*B*d*e + 6*a*A*e^2) +
6*a*b*d*(B*c*d^3 + 4*A*c*d^2*e + 3*a*B*d*e^2 + 2*a*A*e^3) + a*(4*a*B*d*e*(3
*c*d^2 + a*e^2) + A*(3*c^2*d^4 + 18*a*c*d^2*e^2 + a^2*e^4)))*x^5)/5 + ((2*b
^3*d^2*e*(2*B*d + 3*A*e) + 12*a*A*c*d*e*(c*d^2 + a*e^2) + 12*a*b*B*d*e*(2*c
*d^2 + a*e^2) + 3*b^2*d*(B*c*d^3 + 4*A*c*d^2*e + 6*a*B*d*e^2 + 4*a*A*e^3) +
 3*A*b*(c^2*d^4 + 12*a*c*d^2*e^2 + a^2*e^4) + a*B*(3*c^2*d^4 + 18*a*c*d^2*e
^2 + a^2*e^4))*x^6)/6 + ((2*b^3*d*e^2*(3*B*d + 2*A*e) + 12*a*B*c*d*e*(c*d^2
 + a*e^2) + 12*A*b*c*d*e*(c*d^2 + 2*a*e^2) + 3*b^2*e*(4*B*c*d^3 + 6*A*c*d^2
*e + 4*a*B*d*e^2 + a*A*e^3) + 3*b*B*(c^2*d^4 + 12*a*c*d^2*e^2 + a^2*e^4) +
A*c*(c^2*d^4 + 18*a*c*d^2*e^2 + 3*a^2*e^4))*x^7)/7 + ((A*e*(4*c^3*d^3 + b^3
*e^3 + 6*b*c*e^2*(2*b*d + a*e) + 6*c^2*d*e*(3*b*d + 2*a*e)) + B*(c^3*d^4 +
6*c^2*d^2*e*(2*b*d + 3*a*e) + b^2*e^3*(4*b*d + 3*a*e) + 3*c*e^2*(6*b^2*d^2
+ 8*a*b*d*e + a^2*e^2)))*x^8)/8 + (e*(3*A*c*e*(2*c^2*d^2 + b^2*e^2 + c*e*(4
*b*d + a*e)) + B*(4*c^3*d^3 + b^3*e^3 + 6*b*c*e^2*(2*b*d + a*e) + 6*c^2*d*e
*(3*b*d + 2*a*e)))*x^9)/9 + (c*e^2*(A*c*e*(4*c*d + 3*b*e) + 3*B*(2*c^2*d^2
+ b^2*e^2 + c*e*(4*b*d + a*e)))*x^10)/10 + (c^2*e^3*(4*B*c*d + 3*b*B*e + A*
c*e)*x^11)/11 + (B*c^3*e^4*x^12)/12
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.33, size = 1353, normalized size = 2.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*c^3*B + 4/11*x^11*e^3*d*c^3*B + 3/11*x^11*e^4*c^2*b*B + 1/11*
x^11*e^4*c^3*A + 3/5*x^10*e^2*d^2*c^3*B + 6/5*x^10*e^3*d*c^2*b*B + 3/10*x^1
0*e^4*c*b^2*B + 3/10*x^10*e^4*c^2*a*B + 2/5*x^10*e^3*d*c^3*A + 3/10*x^10*e^
4*c^2*b*A + 4/9*x^9*e*d^3*c^3*B + 2*x^9*e^2*d^2*c^2*b*B + 4/3*x^9*e^3*d*c*b
^2*B + 1/9*x^9*e^4*b^3*B + 4/3*x^9*e^3*d*c^2*a*B + 2/3*x^9*e^4*c*b*a*B + 2/
3*x^9*e^2*d^2*c^3*A + 4/3*x^9*e^3*d*c^2*b*A + 1/3*x^9*e^4*c*b^2*A + 1/3*x^9
*e^4*c^2*a*A + 1/8*x^8*d^4*c^3*B + 3/2*x^8*e*d^3*c^2*b*B + 9/4*x^8*e^2*d^2*
c*b^2*B + 1/2*x^8*e^3*d*b^3*B + 9/4*x^8*e^2*d^2*c^2*a*B + 3*x^8*e^3*d*c*b*a
*B + 3/8*x^8*e^4*b^2*a*B + 3/8*x^8*e^4*c*a^2*B + 1/2*x^8*e*d^3*c^3*A + 9/4*
x^8*e^2*d^2*c^2*b*A + 3/2*x^8*e^3*d*c*b^2*A + 1/8*x^8*e^4*b^3*A + 3/2*x^8*e
^3*d*c^2*a*A + 3/4*x^8*e^4*c*b*a*A + 3/7*x^7*d^4*c^2*b*B + 12/7*x^7*e*d^3*c
*b^2*B + 6/7*x^7*e^2*d^2*b^3*B + 12/7*x^7*e*d^3*c^2*a*B + 36/7*x^7*e^2*d^2*
c*b*a*B + 12/7*x^7*e^3*d*b^2*a*B + 12/7*x^7*e^3*d*c*a^2*B + 3/7*x^7*e^4*b*a
^2*B + 1/7*x^7*d^4*c^3*A + 12/7*x^7*e*d^3*c^2*b*A + 18/7*x^7*e^2*d^2*c*b^2*
A + 4/7*x^7*e^3*d*b^3*A + 18/7*x^7*e^2*d^2*c^2*a*A + 24/7*x^7*e^3*d*c*b*a*A
 + 3/7*x^7*e^4*b^2*a*A + 3/7*x^7*e^4*c*a^2*A + 1/2*x^6*d^4*c*b^2*B + 2/3*x^
6*e*d^3*b^3*B + 1/2*x^6*d^4*c^2*a*B + 4*x^6*e*d^3*c*b*a*B + 3*x^6*e^2*d^2*b
^2*a*B + 3*x^6*e^2*d^2*c*a^2*B + 2*x^6*e^3*d*b*a^2*B + 1/6*x^6*e^4*a^3*B +
1/2*x^6*d^4*c^2*b*A + 2*x^6*e*d^3*c*b^2*A + x^6*e^2*d^2*b^3*A + 2*x^6*e*d^3
*c^2*a*A + 6*x^6*e^2*d^2*c*b*a*A + 2*x^6*e^3*d*b^2*a*A + 2*x^6*e^3*d*c*a^2*
A + 1/2*x^6*e^4*b*a^2*A + 1/5*x^5*d^4*b^3*B + 6/5*x^5*d^4*c*b*a*B + 12/5*x^
5*e*d^3*b^2*a*B + 12/5*x^5*e*d^3*c*a^2*B + 18/5*x^5*e^2*d^2*b*a^2*B + 4/5*x
^5*e^3*d*a^3*B + 3/5*x^5*d^4*c*b^2*A + 4/5*x^5*e*d^3*b^3*A + 3/5*x^5*d^4*c^
2*a*A + 24/5*x^5*e*d^3*c*b*a*A + 18/5*x^5*e^2*d^2*b^2*a*A + 18/5*x^5*e^2*d^
2*c*a^2*A + 12/5*x^5*e^3*d*b*a^2*A + 1/5*x^5*e^4*a^3*A + 3/4*x^4*d^4*b^2*a*
```

```
B + 3/4*x^4*d^4*c*a^2*B + 3*x^4*e*d^3*b*a^2*B + 3/2*x^4*e^2*d^2*a^3*B + 1/4
*x^4*d^4*b^3*A + 3/2*x^4*d^4*c*b*a*A + 3*x^4*e*d^3*b^2*a*A + 3*x^4*e*d^3*c*
a^2*A + 9/2*x^4*e^2*d^2*b*a^2*A + x^4*e^3*d*a^3*A + x^3*d^4*b*a^2*B + 4/3*x
^3*e*d^3*a^3*B + x^3*d^4*b^2*a*A + x^3*d^4*c*a^2*A + 4*x^3*e*d^3*b*a^2*A +
2*x^3*e^2*d^2*a^3*A + 1/2*x^2*d^4*a^3*B + 3/2*x^2*d^4*b*a^2*A + 2*x^2*e*d^3
*a^3*A + x*d^4*a^3*A
```

giac [B] time = 0.20, size = 1313, normalized size = 2.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12*e^4 + 4/11*B*c^3*d*x^11*e^3 + 3/5*B*c^3*d^2*x^10*e^2 + 4/9*
B*c^3*d^3*x^9*e + 1/8*B*c^3*d^4*x^8 + 3/11*B*b*c^2*x^11*e^4 + 1/11*A*c^3*x^
11*e^4 + 6/5*B*b*c^2*d*x^10*e^3 + 2/5*A*c^3*d*x^10*e^3 + 2*B*b*c^2*d^2*x^9*
e^2 + 2/3*A*c^3*d^2*x^9*e^2 + 3/2*B*b*c^2*d^3*x^8*e + 1/2*A*c^3*d^3*x^8*e +
 3/7*B*b*c^2*d^4*x^7 + 1/7*A*c^3*d^4*x^7 + 3/10*B*b^2*c*x^10*e^4 + 3/10*B*a
*c^2*x^10*e^4 + 3/10*A*b*c^2*x^10*e^4 + 4/3*B*b^2*c*d*x^9*e^3 + 4/3*B*a*c^2
*d*x^9*e^3 + 4/3*A*b*c^2*d*x^9*e^3 + 9/4*B*b^2*c*d^2*x^8*e^2 + 9/4*B*a*c^2*
d^2*x^8*e^2 + 9/4*A*b*c^2*d^2*x^8*e^2 + 12/7*B*b^2*c*d^3*x^7*e + 12/7*B*a*c
^2*d^3*x^7*e + 12/7*A*b*c^2*d^3*x^7*e + 1/2*B*b^2*c*d^4*x^6 + 1/2*B*a*c^2*d
^4*x^6 + 1/2*A*b*c^2*d^4*x^6 + 1/9*B*b^3*x^9*e^4 + 2/3*B*a*b*c*x^9*e^4 + 1/
3*A*b^2*c*x^9*e^4 + 1/3*A*a*c^2*x^9*e^4 + 1/2*B*b^3*d*x^8*e^3 + 3*B*a*b*c*d
*x^8*e^3 + 3/2*A*b^2*c*d*x^8*e^3 + 3/2*A*a*c^2*d*x^8*e^3 + 6/7*B*b^3*d^2*x^
7*e^2 + 36/7*B*a*b*c*d^2*x^7*e^2 + 18/7*A*b^2*c*d^2*x^7*e^2 + 18/7*A*a*c^2*
d^2*x^7*e^2 + 2/3*B*b^3*d^3*x^6*e + 4*B*a*b*c*d^3*x^6*e + 2*A*b^2*c*d^3*x^6
*e + 2*A*a*c^2*d^3*x^6*e + 1/5*B*b^3*d^4*x^5 + 6/5*B*a*b*c*d^4*x^5 + 3/5*A*
b^2*c*d^4*x^5 + 3/5*A*a*c^2*d^4*x^5 + 3/8*B*a*b^2*x^8*e^4 + 1/8*A*b^3*x^8*e
^4 + 3/8*B*a^2*c*x^8*e^4 + 3/4*A*a*b*c*x^8*e^4 + 12/7*B*a*b^2*d*x^7*e^3 + 4
/7*A*b^3*d*x^7*e^3 + 12/7*B*a^2*c*d*x^7*e^3 + 24/7*A*a*b*c*d*x^7*e^3 + 3*B*
a*b^2*d^2*x^6*e^2 + A*b^3*d^2*x^6*e^2 + 3*B*a^2*c*d^2*x^6*e^2 + 6*A*a*b*c*d
^2*x^6*e^2 + 12/5*B*a*b^2*d^3*x^5*e + 4/5*A*b^3*d^3*x^5*e + 12/5*B*a^2*c*d^
3*x^5*e + 24/5*A*a*b*c*d^3*x^5*e + 3/4*B*a*b^2*d^4*x^4 + 1/4*A*b^3*d^4*x^4
+ 3/4*B*a^2*c*d^4*x^4 + 3/2*A*a*b*c*d^4*x^4 + 3/7*B*a^2*b*x^7*e^4 + 3/7*A*a
*b^2*x^7*e^4 + 3/7*A*a^2*c*x^7*e^4 + 2*B*a^2*b*d*x^6*e^3 + 2*A*a*b^2*d*x^6*
e^3 + 2*A*a^2*c*d*x^6*e^3 + 18/5*B*a^2*b*d^2*x^5*e^2 + 18/5*A*a*b^2*d^2*x^5
*e^2 + 18/5*A*a^2*c*d^2*x^5*e^2 + 3*B*a^2*b*d^3*x^4*e + 3*A*a*b^2*d^3*x^4*e
 + 3*A*a^2*c*d^3*x^4*e + B*a^2*b*d^4*x^3 + A*a*b^2*d^4*x^3 + A*a^2*c*d^4*x^
3 + 1/6*B*a^3*x^6*e^4 + 1/2*A*a^2*b*x^6*e^4 + 4/5*B*a^3*d*x^5*e^3 + 12/5*A*
a^2*b*d*x^5*e^3 + 3/2*B*a^3*d^2*x^4*e^2 + 9/2*A*a^2*b*d^2*x^4*e^2 + 4/3*B*a
^3*d^3*x^3*e + 4*A*a^2*b*d^3*x^3*e + 1/2*B*a^3*d^4*x^2 + 3/2*A*a^2*b*d^4*x^
2 + 1/5*A*a^3*x^5*e^4 + A*a^3*d*x^4*e^3 + 2*A*a^3*d^2*x^3*e^2 + 2*A*a^3*d^3
*x^2*e + A*a^3*d^4*x
```

maple [A] time = 0.05, size = 1041, normalized size = 1.88

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/12*B*c^3*e^4*x^12+1/11*((A*e^4+4*B*d*e^3)*c^3+3*B*e^4*b*c^2)*x^11+1/10*((
4*A*d*e^3+6*B*d^2*e^2)*c^3+3*(A*e^4+4*B*d*e^3)*b*c^2+B*e^4*(a*c^2+2*b^2*c+(
2*a*c+b^2)*c))*x^10+1/9*((6*A*d^2*e^2+4*B*d^3*e)*c^3+3*(4*A*d*e^3+6*B*d^2*e
^2)*b*c^2+(A*e^4+4*B*d*e^3)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*e^4*(4*a*b*c+(2
*a*c+b^2)*b))*x^9+1/8*((4*A*d^3*e+B*d^4)*c^3+3*(6*A*d^2*e^2+4*B*d^3*e)*b*c^
2+(4*A*d*e^3+6*B*d^2*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(A*e^4+4*B*d*e^3)*(
4*a*b*c+(2*a*c+b^2)*b)+B*e^4*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^8+1/7*(A*c^3*
```

```
d^4+3*(4*A*d^3*e+B*d^4)*b*c^2+(6*A*d^2*e^2+4*B*d^3*e)*(a*c^2+2*b^2*c+(2*a*c
+b^2)*c)+(4*A*d*e^3+6*B*d^2*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+(A*e^4+4*B*d*e^3)*
(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*B*e^4*a^2*b)*x^7+1/6*(3*A*d^4*b*c^2+(4*A*d^
3*e+B*d^4)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(6*A*d^2*e^2+4*B*d^3*e)*(4*a*b*c+(
2*a*c+b^2)*b)+(4*A*d*e^3+6*B*d^2*e^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(A*e^
4+4*B*d*e^3)*a^2*b+B*e^4*a^3)*x^6+1/5*(A*d^4*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+
(4*A*d^3*e+B*d^4)*(4*a*b*c+(2*a*c+b^2)*b)+(6*A*d^2*e^2+4*B*d^3*e)*(a^2*c+2*
a*b^2+(2*a*c+b^2)*a)+3*(4*A*d*e^3+6*B*d^2*e^2)*a^2*b+(A*e^4+4*B*d*e^3)*a^3)
*x^5+1/4*(A*d^4*(4*a*b*c+(2*a*c+b^2)*b)+(4*A*d^3*e+B*d^4)*(a^2*c+2*a*b^2+(2
*a*c+b^2)*a)+3*(6*A*d^2*e^2+4*B*d^3*e)*a^2*b+(4*A*d*e^3+6*B*d^2*e^2)*a^3)*x
^4+1/3*(A*d^4*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(4*A*d^3*e+B*d^4)*a^2*b+(6*A*
d^2*e^2+4*B*d^3*e)*a^3)*x^3+1/2*(3*A*d^4*a^2*b+(4*A*d^3*e+B*d^4)*a^3)*x^2+A
*d^4*a^3*x
```

maxima [A] time = 0.57, size = 919, normalized size = 1.66

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*e^4*x^12 + 1/11*(4*B*c^3*d*e^3 + (3*B*b*c^2 + A*c^3)*e^4)*x^11 +
 1/10*(6*B*c^3*d^2*e^2 + 4*(3*B*b*c^2 + A*c^3)*d*e^3 + 3*(B*b^2*c + (B*a +
A*b)*c^2)*e^4)*x^10 + 1/9*(4*B*c^3*d^3*e + 6*(3*B*b*c^2 + A*c^3)*d^2*e^2 +
12*(B*b^2*c + (B*a + A*b)*c^2)*d*e^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*e^4)*x^9 + A*a^3*d^4*x + 1/8*(B*c^3*d^4 + 4*(3*B*b*c^2 + A*c^3)*d^3
*e + 18*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^2 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B
*a*b + A*b^2)*c)*d*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^4)*x
^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^4 + 12*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e +
6*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^2 + 4*(3*B*a*b^2 + A*b^
3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^3 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^4)*x^7
 + 1/6*(3*(B*b^2*c + (B*a + A*b)*c^2)*d^4 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a
*b + A*b^2)*c)*d^3*e + 6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^
2 + 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^3 + (B*a^3 + 3*A*a^2*b)*e^4)*x^6 +
 1/5*(A*a^3*e^4 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4 + 4*(3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e + 18*(B*a^2*b + A*a*b^2 + A*a^
2*c)*d^2*e^2 + 4*(B*a^3 + 3*A*a^2*b)*d*e^3)*x^5 + 1/4*(4*A*a^3*d*e^3 + (3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4 + 12*(B*a^2*b + A*a*b^2 + A*a^2
*c)*d^3*e + 6*(B*a^3 + 3*A*a^2*b)*d^2*e^2)*x^4 + 1/3*(6*A*a^3*d^2*e^2 + 3*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d^4 + 4*(B*a^3 + 3*A*a^2*b)*d^3*e)*x^3 + 1/2*(
4*A*a^3*d^3*e + (B*a^3 + 3*A*a^2*b)*d^4)*x^2
```

mupad [B] time = 0.29, size = 1093, normalized size = 1.97

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^5*((A*a^3*e^4)/5 + (B*b^3*d^4)/5 + (3*A*a*c^2*d^4)/5 + (3*A*b^2*c*d^4)/5
+ (4*A*b^3*d^3*e)/5 + (4*B*a^3*d*e^3)/5 + (18*A*a*b^2*d^2*e^2)/5 + (18*A*a^
2*c*d^2*e^2)/5 + (18*B*a^2*b*d^2*e^2)/5 + (6*B*a*b*c*d^4)/5 + (12*A*a^2*b*d
*e^3)/5 + (12*B*a*b^2*d^3*e)/5 + (12*B*a^2*c*d^3*e)/5 + (24*A*a*b*c*d^3*e)/
5) + x^8*((A*b^3*e^4)/8 + (B*c^3*d^4)/8 + (3*B*a*b^2*e^4)/8 + (3*B*a^2*c*e^
4)/8 + (A*c^3*d^3*e)/2 + (B*b^3*d*e^3)/2 + (9*A*b*c^2*d^2*e^2)/4 + (9*B*a*c
^2*d^2*e^2)/4 + (9*B*b^2*c*d^2*e^2)/4 + (3*A*a*b*c*e^4)/4 + (3*A*a*c^2*d*e^
3)/2 + (3*A*b^2*c*d*e^3)/2 + (3*B*b*c^2*d^3*e)/2 + 3*B*a*b*c*d*e^3) + x^3*(
A*a*b^2*d^4 + A*a^2*c*d^4 + B*a^2*b*d^4 + (4*B*a^3*d^3*e)/3 + 2*A*a^3*d^2*e
^2 + 4*A*a^2*b*d^3*e) + x^10*((3*A*b*c^2*e^4)/10 + (3*B*a*c^2*e^4)/10 + (3*
```

```
B*b^2*c*e^4)/10 + (2*A*c^3*d*e^3)/5 + (3*B*c^3*d^2*e^2)/5 + (6*B*b*c^2*d*e^
3)/5) + x^6*((B*a^3*e^4)/6 + (A*a^2*b*e^4)/2 + (A*b*c^2*d^4)/2 + (B*a*c^2*d
^4)/2 + (B*b^2*c*d^4)/2 + (2*B*b^3*d^3*e)/3 + A*b^3*d^2*e^2 + 3*B*a*b^2*d^2
*e^2 + 3*B*a^2*c*d^2*e^2 + 2*A*a*b^2*d*e^3 + 2*A*a*c^2*d^3*e + 2*A*a^2*c*d*
e^3 + 2*B*a^2*b*d*e^3 + 2*A*b^2*c*d^3*e + 6*A*a*b*c*d^2*e^2 + 4*B*a*b*c*d^3
*e) + x^7*((A*c^3*d^4)/7 + (3*A*a*b^2*e^4)/7 + (3*A*a^2*c*e^4)/7 + (3*B*a^2
*b*e^4)/7 + (3*B*b*c^2*d^4)/7 + (4*A*b^3*d*e^3)/7 + (6*B*b^3*d^2*e^2)/7 + (
18*A*a*c^2*d^2*e^2)/7 + (18*A*b^2*c*d^2*e^2)/7 + (12*B*a*b^2*d*e^3)/7 + (12
*A*b*c^2*d^3*e)/7 + (12*B*a*c^2*d^3*e)/7 + (12*B*a^2*c*d*e^3)/7 + (12*B*b^2
*c*d^3*e)/7 + (36*B*a*b*c*d^2*e^2)/7 + (24*A*a*b*c*d*e^3)/7) + x^4*((A*b^3*
d^4)/4 + (3*B*a*b^2*d^4)/4 + (3*B*a^2*c*d^4)/4 + A*a^3*d*e^3 + (3*B*a^3*d^2
*e^2)/2 + (9*A*a^2*b*d^2*e^2)/2 + (3*A*a*b*c*d^4)/2 + 3*A*a*b^2*d^3*e + 3*A
*a^2*c*d^3*e + 3*B*a^2*b*d^3*e) + x^9*((B*b^3*e^4)/9 + (A*a*c^2*e^4)/3 + (A
*b^2*c*e^4)/3 + (4*B*c^3*d^3*e)/9 + (2*A*c^3*d^2*e^2)/3 + 2*B*b*c^2*d^2*e^2
 + (2*B*a*b*c*e^4)/3 + (4*A*b*c^2*d*e^3)/3 + (4*B*a*c^2*d*e^3)/3 + (4*B*b^2
*c*d*e^3)/3) + (a^2*d^3*x^2*(4*A*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e^3*x^11*
(A*c*e + 3*B*b*e + 4*B*c*d))/11 + A*a^3*d^4*x + (B*c^3*e^4*x^12)/12
```

sympy [B] time = 0.24, size = 1401, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**4*x + B*c**3*e**4*x**12/12 + x**11*(A*c**3*e**4/11 + 3*B*b*c**2*e
**4/11 + 4*B*c**3*d*e**3/11) + x**10*(3*A*b*c**2*e**4/10 + 2*A*c**3*d*e**3/
5 + 3*B*a*c**2*e**4/10 + 3*B*b**2*c*e**4/10 + 6*B*b*c**2*d*e**3/5 + 3*B*c**
3*d**2*e**2/5) + x**9*(A*a*c**2*e**4/3 + A*b**2*c*e**4/3 + 4*A*b*c**2*d*e**
3/3 + 2*A*c**3*d**2*e**2/3 + 2*B*a*b*c*e**4/3 + 4*B*a*c**2*d*e**3/3 + B*b**
3*e**4/9 + 4*B*b**2*c*d*e**3/3 + 2*B*b*c**2*d**2*e**2 + 4*B*c**3*d**3*e/9)
+ x**8*(3*A*a*b*c*e**4/4 + 3*A*a*c**2*d*e**3/2 + A*b**3*e**4/8 + 3*A*b**2*c
*d*e**3/2 + 9*A*b*c**2*d**2*e**2/4 + A*c**3*d**3*e/2 + 3*B*a**2*c*e**4/8 +
3*B*a*b**2*e**4/8 + 3*B*a*b*c*d*e**3 + 9*B*a*c**2*d**2*e**2/4 + B*b**3*d*e*
*3/2 + 9*B*b**2*c*d**2*e**2/4 + 3*B*b*c**2*d**3*e/2 + B*c**3*d**4/8) + x**7
*(3*A*a**2*c*e**4/7 + 3*A*a*b**2*e**4/7 + 24*A*a*b*c*d*e**3/7 + 18*A*a*c**2
*d**2*e**2/7 + 4*A*b**3*d*e**3/7 + 18*A*b**2*c*d**2*e**2/7 + 12*A*b*c**2*d*
*3*e/7 + A*c**3*d**4/7 + 3*B*a**2*b*e**4/7 + 12*B*a**2*c*d*e**3/7 + 12*B*a*
b**2*d*e**3/7 + 36*B*a*b*c*d**2*e**2/7 + 12*B*a*c**2*d**3*e/7 + 6*B*b**3*d*
*2*e**2/7 + 12*B*b**2*c*d**3*e/7 + 3*B*b*c**2*d**4/7) + x**6*(A*a**2*b*e**4
/2 + 2*A*a**2*c*d*e**3 + 2*A*a*b**2*d*e**3 + 6*A*a*b*c*d**2*e**2 + 2*A*a*c*
*2*d**3*e + A*b**3*d**2*e**2 + 2*A*b**2*c*d**3*e + A*b*c**2*d**4/2 + B*a**3
*e**4/6 + 2*B*a**2*b*d*e**3 + 3*B*a**2*c*d**2*e**2 + 3*B*a*b**2*d**2*e**2 +
 4*B*a*b*c*d**3*e + B*a*c**2*d**4/2 + 2*B*b**3*d**3*e/3 + B*b**2*c*d**4/2)
+ x**5*(A*a**3*e**4/5 + 12*A*a**2*b*d*e**3/5 + 18*A*a**2*c*d**2*e**2/5 + 18
*A*a*b**2*d**2*e**2/5 + 24*A*a*b*c*d**3*e/5 + 3*A*a*c**2*d**4/5 + 4*A*b**3*
d**3*e/5 + 3*A*b**2*c*d**4/5 + 4*B*a**3*d*e**3/5 + 18*B*a**2*b*d**2*e**2/5
+ 12*B*a**2*c*d**3*e/5 + 12*B*a*b**2*d**3*e/5 + 6*B*a*b*c*d**4/5 + B*b**3*d
**4/5) + x**4*(A*a**3*d*e**3 + 9*A*a**2*b*d**2*e**2/2 + 3*A*a**2*c*d**3*e +
 3*A*a*b**2*d**3*e + 3*A*a*b*c*d**4/2 + A*b**3*d**4/4 + 3*B*a**3*d**2*e**2/
2 + 3*B*a**2*b*d**3*e + 3*B*a**2*c*d**4/4 + 3*B*a*b**2*d**4/4) + x**3*(2*A*
a**3*d**2*e**2 + 4*A*a**2*b*d**3*e + A*a**2*c*d**4 + A*a*b**2*d**4 + 4*B*a*
*3*d**3*e/3 + B*a**2*b*d**4) + x**2*(2*A*a**3*d**3*e + 3*A*a**2*b*d**4/2 +
B*a**3*d**4/2)
```

3.2094 $\int (A+Bx)(d+ex)^3 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^7 \left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{7e^8}$$

Rubi [A] time = 1.11, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^4)/(4*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^5)/(5*e^8) - ((c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*
a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))
)*(d + e*x)^6)/(2*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^7)/(7
*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*
(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*
x)^8)/(8*e^8) - (c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b
*d - a*e)))*(d + e*x)^9)/(3*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d + e*
x)^10)/(10*e^8) + (B*c^3*(d + e*x)^11)/(11*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^3 \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^3}{e^7} + \frac{\left(cd^2-bde+ae^2\right)^2 (\ldots}{\ldots}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^4}{4e^8} + \frac{\left(cd^2-bde+ae^2\right)^2 (7Bc\ldots}{\ldots}$$

Mathematica [A] time = 0.35, size = 715, normalized size = 1.29

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^3*x + (a^2*d^2*(a*B*d + 3*A*(b*d + a*e))*x^2)/2 + a*d*(a*B*d*(b*d +
 a*e) + A*(b^2*d^2 + 3*a*b*d*e + a*(c*d^2 + a*e^2)))*x^3 + ((3*a*B*d*(b^2*d
^2 + 3*a*b*d*e + a*(c*d^2 + a*e^2)) + A*(b^3*d^3 + 9*a*b^2*d^2*e + a^2*e*(9
```

```
*c*d^2 + a*e^2) + 3*a*b*d*(2*c*d^2 + 3*a*e^2)))*x^4)/4 + ((b^3*d^2*(B*d + 3
*A*e) + 3*b^2*d*(A*c*d^2 + 3*a*B*d*e + 3*a*A*e^2) + 3*a*b*(2*B*c*d^3 + 6*A*
c*d^2*e + 3*a*B*d*e^2 + a*A*e^3) + a*(a*B*e*(9*c*d^2 + a*e^2) + 3*A*c*d*(c*
d^2 + 3*a*e^2)))*x^5)/5 + ((b^3*d*e*(B*d + A*e) + a*b*B*e*(6*c*d^2 + a*e^2)
 + A*b*c*d*(c*d^2 + 6*a*e^2) + b^2*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a
*A*e^3) + a*c*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3))*x^6)/2 + ((b
^3*e^2*(3*B*d + A*e) + 3*b^2*e*(3*B*c*d^2 + 3*A*c*d*e + a*B*e^2) + 3*b*c*(B
*c*d^3 + 3*A*c*d^2*e + 6*a*B*d*e^2 + 2*a*A*e^3) + c*(3*a*B*e*(3*c*d^2 + a*e
^2) + A*c*d*(c*d^2 + 9*a*e^2)))*x^7)/7 + ((3*A*c*e*(c^2*d^2 + b^2*e^2 + c*e
*(3*b*d + a*e)) + B*(c^3*d^3 + b^3*e^3 + 9*c^2*d*e*(b*d + a*e) + 3*b*c*e^2*
(3*b*d + 2*a*e)))*x^8)/8 + (c*e*(A*c*e*(c*d + b*e) + B*(c^2*d^2 + b^2*e^2 +
 c*e*(3*b*d + a*e)))*x^9)/3 + (c^2*e^2*(A*c*e + 3*B*(c*d + b*e))*x^10)/10 +
 (B*c^3*e^3*x^11)/11
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.34, size = 1040, normalized size = 1.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*c^3*B + 3/10*x^10*e^2*d*c^3*B + 3/10*x^10*e^3*c^2*b*B + 1/10*
x^10*e^3*c^3*A + 1/3*x^9*e*d^2*c^3*B + x^9*e^2*d*c^2*b*B + 1/3*x^9*e^3*c*b^
2*B + 1/3*x^9*e^3*c^2*a*B + 1/3*x^9*e^2*d*c^3*A + 1/3*x^9*e^3*c^2*b*A + 1/8
*x^8*d^3*c^3*B + 9/8*x^8*e*d^2*c^2*b*B + 9/8*x^8*e^2*d*c*b^2*B + 1/8*x^8*e^
3*b^3*B + 9/8*x^8*e^2*d*c^2*a*B + 3/4*x^8*e^3*c*b*a*B + 3/8*x^8*e*d^2*c^3*A
 + 9/8*x^8*e^2*d*c^2*b*A + 3/8*x^8*e^3*c*b^2*A + 3/8*x^8*e^3*c^2*a*A + 3/7*
x^7*d^3*c^2*b*B + 9/7*x^7*e*d^2*c*b^2*B + 3/7*x^7*e^2*d*b^3*B + 9/7*x^7*e*d
^2*c^2*a*B + 18/7*x^7*e^2*d*c*b*a*B + 3/7*x^7*e^3*b^2*a*B + 3/7*x^7*e^3*c*a
^2*B + 1/7*x^7*d^3*c^3*A + 9/7*x^7*e*d^2*c^2*b*A + 9/7*x^7*e^2*d*c*b^2*A +
1/7*x^7*e^3*b^3*A + 9/7*x^7*e^2*d*c^2*a*A + 6/7*x^7*e^3*c*b*a*A + 1/2*x^6*d
^3*c*b^2*B + 1/2*x^6*e*d^2*b^3*B + 1/2*x^6*d^3*c^2*a*B + 3*x^6*e*d^2*c*b*a*
B + 3/2*x^6*e^2*d*b^2*a*B + 3/2*x^6*e^2*d*c*a^2*B + 1/2*x^6*e^3*b*a^2*B + 1
/2*x^6*d^3*c^2*b*A + 3/2*x^6*e*d^2*c*b^2*A + 1/2*x^6*e^2*d*b^3*A + 3/2*x^6*
e*d^2*c^2*a*A + 3*x^6*e^2*d*c*b*a*A + 1/2*x^6*e^3*b^2*a*A + 1/2*x^6*e^3*c*a
^2*A + 1/5*x^5*d^3*b^3*B + 6/5*x^5*d^3*c*b*a*B + 9/5*x^5*e*d^2*b^2*a*B + 9/
5*x^5*e*d^2*c*a^2*B + 9/5*x^5*e^2*d*b*a^2*B + 1/5*x^5*e^3*a^3*B + 3/5*x^5*d
^3*c*b^2*A + 3/5*x^5*e*d^2*b^3*A + 3/5*x^5*d^3*c^2*a*A + 18/5*x^5*e*d^2*c*b
*a*A + 9/5*x^5*e^2*d*b^2*a*A + 9/5*x^5*e^2*d*c*a^2*A + 3/5*x^5*e^3*b*a^2*A
+ 3/4*x^4*d^3*b^2*a*B + 3/4*x^4*d^3*c*a^2*B + 9/4*x^4*e*d^2*b*a^2*B + 3/4*x
^4*e^2*d*a^3*B + 1/4*x^4*d^3*b^3*A + 3/2*x^4*d^3*c*b*a*A + 9/4*x^4*e*d^2*b^
2*a*A + 9/4*x^4*e*d^2*c*a^2*A + 9/4*x^4*e^2*d*b*a^2*A + 1/4*x^4*e^3*a^3*A +
 x^3*d^3*b*a^2*B + x^3*e*d^2*a^3*B + x^3*d^3*b^2*a*A + x^3*d^3*c*a^2*A + 3*
x^3*e*d^2*b*a^2*A + x^3*e^2*d*a^3*A + 1/2*x^2*d^3*a^3*B + 3/2*x^2*d^3*b*a^2
*A + 3/2*x^2*e*d^2*a^3*A + x*d^3*a^3*A
```

giac [A] time = 0.17, size = 1020, normalized size = 1.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11*e^3 + 3/10*B*c^3*d*x^10*e^2 + 1/3*B*c^3*d^2*x^9*e + 1/8*B*c
^3*d^3*x^8 + 3/10*B*b*c^2*x^10*e^3 + 1/10*A*c^3*x^10*e^3 + B*b*c^2*d*x^9*e^
2 + 1/3*A*c^3*d*x^9*e^2 + 9/8*B*b*c^2*d^2*x^8*e + 3/8*A*c^3*d^2*x^8*e + 3/7
*B*b*c^2*d^3*x^7 + 1/7*A*c^3*d^3*x^7 + 1/3*B*b^2*c*x^9*e^3 + 1/3*B*a*c^2*x^
9*e^3 + 1/3*A*b*c^2*x^9*e^3 + 9/8*B*b^2*c*d*x^8*e^2 + 9/8*B*a*c^2*d*x^8*e^2
 + 9/8*A*b*c^2*d*x^8*e^2 + 9/7*B*b^2*c*d^2*x^7*e + 9/7*B*a*c^2*d^2*x^7*e +
9/7*A*b*c^2*d^2*x^7*e + 1/2*B*b^2*c*d^3*x^6 + 1/2*B*a*c^2*d^3*x^6 + 1/2*A*b
*c^2*d^3*x^6 + 1/8*B*b^3*x^8*e^3 + 3/4*B*a*b*c*x^8*e^3 + 3/8*A*b^2*c*x^8*e^
3 + 3/8*A*a*c^2*x^8*e^3 + 3/7*B*b^3*d*x^7*e^2 + 18/7*B*a*b*c*d*x^7*e^2 + 9/
7*A*b^2*c*d*x^7*e^2 + 9/7*A*a*c^2*d*x^7*e^2 + 1/2*B*b^3*d^2*x^6*e + 3*B*a*b
*c*d^2*x^6*e + 3/2*A*b^2*c*d^2*x^6*e + 3/2*A*a*c^2*d^2*x^6*e + 1/5*B*b^3*d^
3*x^5 + 6/5*B*a*b*c*d^3*x^5 + 3/5*A*b^2*c*d^3*x^5 + 3/5*A*a*c^2*d^3*x^5 + 3
/7*B*a*b^2*x^7*e^3 + 1/7*A*b^3*x^7*e^3 + 3/7*B*a^2*c*x^7*e^3 + 6/7*A*a*b*c*
x^7*e^3 + 3/2*B*a*b^2*d*x^6*e^2 + 1/2*A*b^3*d*x^6*e^2 + 3/2*B*a^2*c*d*x^6*e
^2 + 3*A*a*b*c*d*x^6*e^2 + 9/5*B*a*b^2*d^2*x^5*e + 3/5*A*b^3*d^2*x^5*e + 9/
5*B*a^2*c*d^2*x^5*e + 18/5*A*a*b*c*d^2*x^5*e + 3/4*B*a*b^2*d^3*x^4 + 1/4*A*
b^3*d^3*x^4 + 3/4*B*a^2*c*d^3*x^4 + 3/2*A*a*b*c*d^3*x^4 + 1/2*B*a^2*b*x^6*e
^3 + 1/2*A*a*b^2*x^6*e^3 + 1/2*A*a^2*c*x^6*e^3 + 9/5*B*a^2*b*d*x^5*e^2 + 9/
5*A*a*b^2*d*x^5*e^2 + 9/5*A*a^2*c*d*x^5*e^2 + 9/4*B*a^2*b*d^2*x^4*e + 9/4*A
*a*b^2*d^2*x^4*e + 9/4*A*a^2*c*d^2*x^4*e + B*a^2*b*d^3*x^3 + A*a*b^2*d^3*x^
3 + A*a^2*c*d^3*x^3 + 1/5*B*a^3*x^5*e^3 + 3/5*A*a^2*b*x^5*e^3 + 3/4*B*a^3*d
*x^4*e^2 + 9/4*A*a^2*b*d*x^4*e^2 + B*a^3*d^2*x^3*e + 3*A*a^2*b*d^2*x^3*e +
1/2*B*a^3*d^3*x^2 + 3/2*A*a^2*b*d^3*x^2 + 1/4*A*a^3*x^4*e^3 + A*a^3*d*x^3*e
^2 + 3/2*A*a^3*d^2*x^2*e + A*a^3*d^3*x
```

maple [A] time = 0.04, size = 819, normalized size = 1.48

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/11*B*c^3*e^3*x^11+1/10*((A*e^3+3*B*d*e^2)*c^3+3*B*e^3*b*c^2)*x^10+1/9*((3
*A*d*e^2+3*B*d^2*e)*c^3+3*(A*e^3+3*B*d*e^2)*b*c^2+B*e^3*(a*c^2+2*b^2*c+(2*a
*c+b^2)*c))*x^9+1/8*((3*A*d^2*e+B*d^3)*c^3+3*(3*A*d*e^2+3*B*d^2*e)*b*c^2+(A
*e^3+3*B*d*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*e^3*(4*a*b*c+(2*a*c+b^2)*b)
)*x^8+1/7*(A*c^3*d^3+3*(3*A*d^2*e+B*d^3)*b*c^2+(3*A*d*e^2+3*B*d^2*e)*(a*c^2
+2*b^2*c+(2*a*c+b^2)*c)+(A*e^3+3*B*d*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+B*e^3*(a^
2*c+2*a*b^2+(2*a*c+b^2)*a))*x^7+1/6*(3*A*d^3*b*c^2+(3*A*d^2*e+B*d^3)*(a*c^2
+2*b^2*c+(2*a*c+b^2)*c)+(3*A*d*e^2+3*B*d^2*e)*(4*a*b*c+(2*a*c+b^2)*b)+(A*e^
3+3*B*d*e^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*B*e^3*a^2*b)*x^6+1/5*(A*d^3*(a
*c^2+2*b^2*c+(2*a*c+b^2)*c)+(3*A*d^2*e+B*d^3)*(4*a*b*c+(2*a*c+b^2)*b)+(3*A*
d*e^2+3*B*d^2*e)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(A*e^3+3*B*d*e^2)*a^2*b+B*
a^3*e^3)*x^5+1/4*(A*d^3*(4*a*b*c+(2*a*c+b^2)*b)+(3*A*d^2*e+B*d^3)*(a^2*c+2*
a*b^2+(2*a*c+b^2)*a)+3*(3*A*d*e^2+3*B*d^2*e)*a^2*b+(A*e^3+3*B*d*e^2)*a^3)*x
^4+1/3*(A*d^3*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(3*A*d^2*e+B*d^3)*a^2*b+(3*A*
d*e^2+3*B*d^2*e)*a^3)*x^3+1/2*(3*A*d^3*a^2*b+(3*A*d^2*e+B*d^3)*a^3)*x^2+A*d
^3*a^3*x
```

maxima [A] time = 0.73, size = 713, normalized size = 1.28

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*e^3*x^11 + 1/10*(3*B*c^3*d*e^2 + (3*B*b*c^2 + A*c^3)*e^3)*x^10 +
 1/3*(B*c^3*d^2*e + (3*B*b*c^2 + A*c^3)*d*e^2 + (B*b^2*c + (B*a + A*b)*c^2)
```

```
*e^3)*x^9 + 1/8*(B*c^3*d^3 + 3*(3*B*b*c^2 + A*c^3)*d^2*e + 9*(B*b^2*c + (B*
a + A*b)*c^2)*d*e^2 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^3)*x^8
+ A*a^3*d^3*x + 1/7*((3*B*b*c^2 + A*c^3)*d^3 + 9*(B*b^2*c + (B*a + A*b)*c^2
)*d^2*e + 3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^2 + (3*B*a*b^2
+ A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^3)*x^7 + 1/2*((B*b^2*c + (B*a + A*b)*c^2
)*d^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e + (3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^2 + (B*a^2*b + A*a*b^2 + A*a^2*c)*e^3)*x^6
 + 1/5*((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3 + 3*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e + 9*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^2
+ (B*a^3 + 3*A*a^2*b)*e^3)*x^5 + 1/4*(A*a^3*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*d^3 + 9*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e + 3*(B*a^3 +
 3*A*a^2*b)*d*e^2)*x^4 + (A*a^3*d*e^2 + (B*a^2*b + A*a*b^2 + A*a^2*c)*d^3 +
 (B*a^3 + 3*A*a^2*b)*d^2*e)*x^3 + 1/2*(3*A*a^3*d^2*e + (B*a^3 + 3*A*a^2*b)*
d^3)*x^2
```

mupad [B] time = 0.22, size = 835, normalized size = 1.50

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^5*((B*a^3*e^3)/5 + (B*b^3*d^3)/5 + (3*A*a*c^2*d^3)/5 + (3*A*a^2*b*e^3)/5
+ (3*A*b^2*c*d^3)/5 + (3*A*b^3*d^2*e)/5 + (6*B*a*b*c*d^3)/5 + (9*A*a*b^2*d*
e^2)/5 + (9*A*a^2*c*d*e^2)/5 + (9*B*a*b^2*d^2*e)/5 + (9*B*a^2*b*d*e^2)/5 +
(9*B*a^2*c*d^2*e)/5 + (18*A*a*b*c*d^2*e)/5) + x^7*((A*b^3*e^3)/7 + (A*c^3*d
^3)/7 + (3*B*a*b^2*e^3)/7 + (3*B*b*c^2*d^3)/7 + (3*B*a^2*c*e^3)/7 + (3*B*b^
3*d*e^2)/7 + (6*A*a*b*c*e^3)/7 + (9*A*a*c^2*d*e^2)/7 + (9*A*b*c^2*d^2*e)/7
+ (9*A*b^2*c*d*e^2)/7 + (9*B*a*c^2*d^2*e)/7 + (9*B*b^2*c*d^2*e)/7 + (18*B*a
*b*c*d*e^2)/7) + x^3*(A*a*b^2*d^3 + A*a^2*c*d^3 + B*a^2*b*d^3 + A*a^3*d*e^2
 + B*a^3*d^2*e + 3*A*a^2*b*d^2*e) + x^9*((A*b*c^2*e^3)/3 + (B*a*c^2*e^3)/3
+ (B*b^2*c*e^3)/3 + (A*c^3*d*e^2)/3 + (B*c^3*d^2*e)/3 + B*b*c^2*d*e^2) + x^
6*((A*a*b^2*e^3)/2 + (A*b*c^2*d^3)/2 + (A*a^2*c*e^3)/2 + (B*a*c^2*d^3)/2 +
(B*a^2*b*e^3)/2 + (B*b^2*c*d^3)/2 + (A*b^3*d*e^2)/2 + (B*b^3*d^2*e)/2 + (3*
A*a*c^2*d^2*e)/2 + (3*B*a*b^2*d*e^2)/2 + (3*A*b^2*c*d^2*e)/2 + (3*B*a^2*c*d
*e^2)/2 + 3*A*a*b*c*d*e^2 + 3*B*a*b*c*d^2*e) + x^4*((A*a^3*e^3)/4 + (A*b^3*
d^3)/4 + (3*B*a*b^2*d^3)/4 + (3*B*a^2*c*d^3)/4 + (3*B*a^3*d*e^2)/4 + (3*A*a
*b*c*d^3)/2 + (9*A*a*b^2*d^2*e)/4 + (9*A*a^2*b*d*e^2)/4 + (9*A*a^2*c*d^2*e)
/4 + (9*B*a^2*b*d^2*e)/4) + x^8*((B*b^3*e^3)/8 + (B*c^3*d^3)/8 + (3*A*a*c^2
*e^3)/8 + (3*A*b^2*c*e^3)/8 + (3*A*c^3*d^2*e)/8 + (3*B*a*b*c*e^3)/4 + (9*A*
b*c^2*d*e^2)/8 + (9*B*a*c^2*d*e^2)/8 + (9*B*b*c^2*d^2*e)/8 + (9*B*b^2*c*d*e
^2)/8) + (a^2*d^2*x^2*(3*A*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e^2*x^10*(A*c*e
 + 3*B*b*e + 3*B*c*d))/10 + A*a^3*d^3*x + (B*c^3*e^3*x^11)/11
```

sympy [B] time = 0.20, size = 1080, normalized size = 1.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**3*x + B*c**3*e**3*x**11/11 + x**10*(A*c**3*e**3/10 + 3*B*b*c**2*e
**3/10 + 3*B*c**3*d*e**2/10) + x**9*(A*b*c**2*e**3/3 + A*c**3*d*e**2/3 + B*
a*c**2*e**3/3 + B*b**2*c*e**3/3 + B*b*c**2*d*e**2 + B*c**3*d**2*e/3) + x**8
*(3*A*a*c**2*e**3/8 + 3*A*b**2*c*e**3/8 + 9*A*b*c**2*d*e**2/8 + 3*A*c**3*d*
*2*e/8 + 3*B*a*b*c*e**3/4 + 9*B*a*c**2*d*e**2/8 + B*b**3*e**3/8 + 9*B*b**2*
c*d*e**2/8 + 9*B*b*c**2*d**2*e/8 + B*c**3*d**3/8) + x**7*(6*A*a*b*c*e**3/7
+ 9*A*a*c**2*d*e**2/7 + A*b**3*e**3/7 + 9*A*b**2*c*d*e**2/7 + 9*A*b*c**2*d*
*2*e/7 + A*c**3*d**3/7 + 3*B*a**2*c*e**3/7 + 3*B*a*b**2*e**3/7 + 18*B*a*b*c
```

```
*d*e**2/7 + 9*B*a*c**2*d**2*e/7 + 3*B*b**3*d*e**2/7 + 9*B*b**2*c*d**2*e/7 +
 3*B*b*c**2*d**3/7) + x**6*(A*a**2*c*e**3/2 + A*a*b**2*e**3/2 + 3*A*a*b*c*d
*e**2 + 3*A*a*c**2*d**2*e/2 + A*b**3*d*e**2/2 + 3*A*b**2*c*d**2*e/2 + A*b*c
**2*d**3/2 + B*a**2*b*e**3/2 + 3*B*a**2*c*d*e**2/2 + 3*B*a*b**2*d*e**2/2 +
3*B*a*b*c*d**2*e + B*a*c**2*d**3/2 + B*b**3*d**2*e/2 + B*b**2*c*d**3/2) + x
**5*(3*A*a**2*b*e**3/5 + 9*A*a**2*c*d*e**2/5 + 9*A*a*b**2*d*e**2/5 + 18*A*a
*b*c*d**2*e/5 + 3*A*a*c**2*d**3/5 + 3*A*b**3*d**2*e/5 + 3*A*b**2*c*d**3/5 +
 B*a**3*e**3/5 + 9*B*a**2*b*d*e**2/5 + 9*B*a**2*c*d**2*e/5 + 9*B*a*b**2*d**
2*e/5 + 6*B*a*b*c*d**3/5 + B*b**3*d**3/5) + x**4*(A*a**3*e**3/4 + 9*A*a**2*
b*d*e**2/4 + 9*A*a**2*c*d**2*e/4 + 9*A*a*b**2*d**2*e/4 + 3*A*a*b*c*d**3/2 +
 A*b**3*d**3/4 + 3*B*a**3*d*e**2/4 + 9*B*a**2*b*d**2*e/4 + 3*B*a**2*c*d**3/
4 + 3*B*a*b**2*d**3/4) + x**3*(A*a**3*d*e**2 + 3*A*a**2*b*d**2*e + A*a**2*c
*d**3 + A*a*b**2*d**3 + B*a**3*d**2*e + B*a**2*b*d**3) + x**2*(3*A*a**3*d**
2*e/2 + 3*A*a**2*b*d**3/2 + B*a**3*d**3/2)
```

3.2095 $\int (A+Bx)(d+ex)^2 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^6 \left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)\right.}{6e^8}$$

Rubi [A] time = 0.86, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^3)/(3*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^4)/(4*e^8) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e
)))*(d + e*x)^5)/(5*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^6)/
(6*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d +
e*x)^7)/(7*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*
(6*b*d - a*e)))*(d + e*x)^8)/(8*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d
+ e*x)^9)/(9*e^8) + (B*c^3*(d + e*x)^10)/(10*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^2 \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^2}{e^7} + \frac{\left(cd^2-bde+ae^2\right)^2 \left(7Bc\right.}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^3}{3e^8} + \frac{\left(cd^2-bde+ae^2\right)^2 \left(7Bcd^2-\right.}{}$$

Mathematica [A] time = 0.27, size = 526, normalized size = 0.95

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^2*x + (a^2*d*(3*A*b*d + a*B*d + 2*a*A*e)*x^2)/2 + (a*(a*B*d*(3*b*d
+ 2*a*e) + A*(3*b^2*d^2 + 6*a*b*d*e + a*(3*c*d^2 + a*e^2)))*x^3)/3 + ((A*(b
^3*d^2 + 6*a*b^2*d*e + 6*a^2*c*d*e + 3*a*b*(2*c*d^2 + a*e^2)) + a*B*(3*b^2*
```

```
d^2 + 6*a*b*d*e + a*(3*c*d^2 + a*e^2)))*x^4)/4 + ((b^3*d*(B*d + 2*A*e) + 3*
b^2*(A*c*d^2 + 2*a*B*d*e + a*A*e^2) + 3*a*c*(A*c*d^2 + 2*a*B*d*e + a*A*e^2)
 + 3*a*b*(2*B*c*d^2 + 4*A*c*d*e + a*B*e^2))*x^5)/5 + ((b^3*e*(2*B*d + A*e)
+ 3*b*c*(A*c*d^2 + 4*a*B*d*e + 2*a*A*e^2) + 3*b^2*(B*c*d^2 + 2*A*c*d*e + a*
B*e^2) + 3*a*c*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*x^6)/6 + ((b^3*B*e^2 + 3*b^
2*c*e*(2*B*d + A*e) + c^2*(A*c*d^2 + 6*a*B*d*e + 3*a*A*e^2) + 3*b*c*(B*c*d^
2 + 2*A*c*d*e + 2*a*B*e^2))*x^7)/7 + (c*(A*c*e*(2*c*d + 3*b*e) + B*(c^2*d^2
 + 3*b^2*e^2 + 3*c*e*(2*b*d + a*e)))*x^8)/8 + (c^2*e*(2*B*c*d + 3*b*B*e + A
*c*e)*x^9)/9 + (B*c^3*e^2*x^10)/10
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.33, size = 727, normalized size = 1.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*c^3*B + 2/9*x^9*e*d*c^3*B + 1/3*x^9*e^2*c^2*b*B + 1/9*x^9*e^2
*c^3*A + 1/8*x^8*d^2*c^3*B + 3/4*x^8*e*d*c^2*b*B + 3/8*x^8*e^2*c*b^2*B + 3/
8*x^8*e^2*c^2*a*B + 1/4*x^8*e*d*c^3*A + 3/8*x^8*e^2*c^2*b*A + 3/7*x^7*d^2*c
^2*b*B + 6/7*x^7*e*d*c*b^2*B + 1/7*x^7*e^2*b^3*B + 6/7*x^7*e*d*c^2*a*B + 6/
7*x^7*e^2*c*b*a*B + 1/7*x^7*d^2*c^3*A + 6/7*x^7*e*d*c^2*b*A + 3/7*x^7*e^2*c
*b^2*A + 3/7*x^7*e^2*c^2*a*A + 1/2*x^6*d^2*c*b^2*B + 1/3*x^6*e*d*b^3*B + 1/
2*x^6*d^2*c^2*a*B + 2*x^6*e*d*c*b*a*B + 1/2*x^6*e^2*b^2*a*B + 1/2*x^6*e^2*c
*a^2*B + 1/2*x^6*d^2*c^2*b*A + x^6*e*d*c*b^2*A + 1/6*x^6*e^2*b^3*A + x^6*e*
d*c^2*a*A + x^6*e^2*c*b*a*A + 1/5*x^5*d^2*b^3*B + 6/5*x^5*d^2*c*b*a*B + 6/5
*x^5*e*d*b^2*a*B + 6/5*x^5*e*d*c*a^2*B + 3/5*x^5*e^2*b*a^2*B + 3/5*x^5*d^2*
c*b^2*A + 2/5*x^5*e*d*b^3*A + 3/5*x^5*d^2*c^2*a*A + 12/5*x^5*e*d*c*b*a*A +
3/5*x^5*e^2*b^2*a*A + 3/5*x^5*e^2*c*a^2*A + 3/4*x^4*d^2*b^2*a*B + 3/4*x^4*d
^2*c*a^2*B + 3/2*x^4*e*d*b*a^2*B + 1/4*x^4*e^2*a^3*B + 1/4*x^4*d^2*b^3*A +
3/2*x^4*d^2*c*b*a*A + 3/2*x^4*e*d*b^2*a*A + 3/2*x^4*e*d*c*a^2*A + 3/4*x^4*e
^2*b*a^2*A + x^3*d^2*b*a^2*B + 2/3*x^3*e*d*a^3*B + x^3*d^2*b^2*a*A + x^3*d^
2*c*a^2*A + 2*x^3*e*d*b*a^2*A + 1/3*x^3*e^2*a^3*A + 1/2*x^2*d^2*a^3*B + 3/2
*x^2*d^2*b*a^2*A + x^2*e*d*a^3*A + x*d^2*a^3*A
```

giac [A] time = 0.16, size = 727, normalized size = 1.31

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10*e^2 + 2/9*B*c^3*d*x^9*e + 1/8*B*c^3*d^2*x^8 + 1/3*B*b*c^2*x
^9*e^2 + 1/9*A*c^3*x^9*e^2 + 3/4*B*b*c^2*d*x^8*e + 1/4*A*c^3*d*x^8*e + 3/7*
B*b*c^2*d^2*x^7 + 1/7*A*c^3*d^2*x^7 + 3/8*B*b^2*c*x^8*e^2 + 3/8*B*a*c^2*x^8
*e^2 + 3/8*A*b*c^2*x^8*e^2 + 6/7*B*b^2*c*d*x^7*e + 6/7*B*a*c^2*d*x^7*e + 6/
7*A*b*c^2*d*x^7*e + 1/2*B*b^2*c*d^2*x^6 + 1/2*B*a*c^2*d^2*x^6 + 1/2*A*b*c^2
*d^2*x^6 + 1/7*B*b^3*x^7*e^2 + 6/7*B*a*b*c*x^7*e^2 + 3/7*A*b^2*c*x^7*e^2 +
3/7*A*a*c^2*x^7*e^2 + 1/3*B*b^3*d*x^6*e + 2*B*a*b*c*d*x^6*e + A*b^2*c*d*x^6
```

```
*e + A*a*c^2*d*x^6*e + 1/5*B*b^3*d^2*x^5 + 6/5*B*a*b*c*d^2*x^5 + 3/5*A*b^2*
c*d^2*x^5 + 3/5*A*a*c^2*d^2*x^5 + 1/2*B*a*b^2*x^6*e^2 + 1/6*A*b^3*x^6*e^2 +
 1/2*B*a^2*c*x^6*e^2 + A*a*b*c*x^6*e^2 + 6/5*B*a*b^2*d*x^5*e + 2/5*A*b^3*d*
x^5*e + 6/5*B*a^2*c*d*x^5*e + 12/5*A*a*b*c*d*x^5*e + 3/4*B*a*b^2*d^2*x^4 +
1/4*A*b^3*d^2*x^4 + 3/4*B*a^2*c*d^2*x^4 + 3/2*A*a*b*c*d^2*x^4 + 3/5*B*a^2*b
*x^5*e^2 + 3/5*A*a*b^2*x^5*e^2 + 3/5*A*a^2*c*x^5*e^2 + 3/2*B*a^2*b*d*x^4*e
+ 3/2*A*a*b^2*d*x^4*e + 3/2*A*a^2*c*d*x^4*e + B*a^2*b*d^2*x^3 + A*a*b^2*d^2
*x^3 + A*a^2*c*d^2*x^3 + 1/4*B*a^3*x^4*e^2 + 3/4*A*a^2*b*x^4*e^2 + 2/3*B*a^
3*d*x^3*e + 2*A*a^2*b*d*x^3*e + 1/2*B*a^3*d^2*x^2 + 3/2*A*a^2*b*d^2*x^2 + 1
/3*A*a^3*x^3*e^2 + A*a^3*d*x^2*e + A*a^3*d^2*x
```

maple [A] time = 0.05, size = 597, normalized size = 1.08

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/10*B*c^3*e^2*x^10+1/9*(3*B*b*c^2*e^2+(A*e^2+2*B*d*e)*c^3)*x^9+1/8*((2*A*d
*e+B*d^2)*c^3+3*(A*e^2+2*B*d*e)*b*c^2+B*e^2*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*
x^8+1/7*(A*c^3*d^2+3*(2*A*d*e+B*d^2)*b*c^2+(A*e^2+2*B*d*e)*(a*c^2+2*b^2*c+(
2*a*c+b^2)*c)+B*e^2*(4*a*b*c+(2*a*c+b^2)*b))*x^7+1/6*(3*A*b*c^2*d^2+(2*A*d*
e+B*d^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(A*e^2+2*B*d*e)*(4*a*b*c+(2*a*c+b^2)
*b)+B*e^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^6+1/5*(A*d^2*(a*c^2+2*b^2*c+(2*a
*c+b^2)*c)+(2*A*d*e+B*d^2)*(4*a*b*c+(2*a*c+b^2)*b)+(A*e^2+2*B*d*e)*(a^2*c+2
*a*b^2+(2*a*c+b^2)*a)+3*B*e^2*a^2*b)*x^5+1/4*(A*d^2*(4*a*b*c+(2*a*c+b^2)*b)
+(2*A*d*e+B*d^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(A*e^2+2*B*d*e)*a^2*b+B*e^
2*a^3)*x^4+1/3*(A*d^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(2*A*d*e+B*d^2)*a^2*b
+(A*e^2+2*B*d*e)*a^3)*x^3+1/2*(3*A*d^2*a^2*b+(2*A*d*e+B*d^2)*a^3)*x^2+A*d^2
*a^3*x
```

maxima [A] time = 0.65, size = 529, normalized size = 0.95

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*e^2*x^10 + 1/9*(2*B*c^3*d*e + (3*B*b*c^2 + A*c^3)*e^2)*x^9 + 1/8
*(B*c^3*d^2 + 2*(3*B*b*c^2 + A*c^3)*d*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^2
)*x^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^2 + 6*(B*b^2*c + (B*a + A*b)*c^2)*d*e +
(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^2)*x^7 + A*a^3*d^2*x + 1/6*(3
*(B*b^2*c + (B*a + A*b)*c^2)*d^2 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d*e + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^2)*x^6 + 1/5*((B*
b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2 + 2*(3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^2)*x^5 + 1/4*((3*
B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2 + 6*(B*a^2*b + A*a*b^2 + A*a^2
*c)*d*e + (B*a^3 + 3*A*a^2*b)*e^2)*x^4 + 1/3*(A*a^3*e^2 + 3*(B*a^2*b + A*a*
b^2 + A*a^2*c)*d^2 + 2*(B*a^3 + 3*A*a^2*b)*d*e)*x^3 + 1/2*(2*A*a^3*d*e + (B
*a^3 + 3*A*a^2*b)*d^2)*x^2
```

mupad [B] time = 2.49, size = 578, normalized size = 1.04

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^3*((A*a^3*e^2)/3 + (2*B*a^3*d*e)/3 + A*a*b^2*d^2 + A*a^2*c*d^2 + B*a^2*b*
d^2 + 2*A*a^2*b*d*e) + x^8*((B*c^3*d^2)/8 + (A*c^3*d*e)/4 + (3*A*b*c^2*e^2)
```

```
/8 + (3*B*a*c^2*e^2)/8 + (3*B*b^2*c*e^2)/8 + (3*B*b*c^2*d*e)/4) + x^4*((A*b
^3*d^2)/4 + (B*a^3*e^2)/4 + (3*A*a^2*b*e^2)/4 + (3*B*a*b^2*d^2)/4 + (3*B*a^
2*c*d^2)/4 + (3*A*a*b*c*d^2)/2 + (3*A*a*b^2*d*e)/2 + (3*A*a^2*c*d*e)/2 + (3
*B*a^2*b*d*e)/2) + x^7*((A*c^3*d^2)/7 + (B*b^3*e^2)/7 + (3*A*a*c^2*e^2)/7 +
 (3*A*b^2*c*e^2)/7 + (3*B*b*c^2*d^2)/7 + (6*B*a*b*c*e^2)/7 + (6*A*b*c^2*d*e
)/7 + (6*B*a*c^2*d*e)/7 + (6*B*b^2*c*d*e)/7) + x^5*((B*b^3*d^2)/5 + (2*A*b^
3*d*e)/5 + (3*A*a*b^2*e^2)/5 + (3*A*a*c^2*d^2)/5 + (3*A*a^2*c*e^2)/5 + (3*A
*b^2*c*d^2)/5 + (3*B*a^2*b*e^2)/5 + (6*B*a*b*c*d^2)/5 + (6*B*a*b^2*d*e)/5 +
 (6*B*a^2*c*d*e)/5 + (12*A*a*b*c*d*e)/5) + x^6*((A*b^3*e^2)/6 + (B*b^3*d*e)
/3 + (A*b*c^2*d^2)/2 + (B*a*b^2*e^2)/2 + (B*a*c^2*d^2)/2 + (B*a^2*c*e^2)/2
+ (B*b^2*c*d^2)/2 + A*a*b*c*e^2 + A*a*c^2*d*e + A*b^2*c*d*e + 2*B*a*b*c*d*e
) + A*a^3*d^2*x + (a^2*d*x^2*(2*A*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e*x^9*(A
*c*e + 3*B*b*e + 2*B*c*d))/9 + (B*c^3*e^2*x^10)/10
```

sympy [A] time = 0.17, size = 753, normalized size = 1.36

$$Aa^3d^2x + \frac{Bc^3e^2x^{10}}{10} + x^9\left(\frac{Ac^3e^2}{9} + \frac{Bbc^2e^2}{3} + \frac{2Bc^3de}{9}\right) + x^8\left(\frac{3Abc^2e^2}{8} + \frac{Ac^3de}{4} + \frac{3Bac^2e^2}{8} + \frac{3Bb^2ce^2}{8} + \frac{3Bbc^2de}{4} + \frac{Bc^3d^2}{8}\right) + x^7\left(\frac{3Aac^2e^2}{7} + \frac{3Ab^2ce^2}{7} + \frac{6Abc^2de}{7} + \frac{Ac^3d^2}{7} + \frac{6Babce^2}{7} + \frac{6Bac^2de}{7} + \frac{Bb^3e^2}{7} + \frac{6Bb^2cde}{7} + \frac{3Bbc^2d^2}{7}\right) + x^6\left(Aabce^2 + Aac^2de + \frac{Ab^3e^2}{6} + Ab^2cde + \frac{Abc^2d^2}{2} + \frac{Ba^2ce^2}{2} + \frac{Bab^2e^2}{2} + 2Babcde + \frac{Bac^2d^2}{2} + \frac{Bb^3de}{3} + \frac{Bb^2cd^2}{2}\right) + x^5\left(\frac{3Aa^2ce^2}{5} + \frac{3Aab^2e^2}{5} + \frac{12Aabcde}{5} + \frac{3Aac^2d^2}{5} + \frac{2Ab^3de}{5} + \frac{3Ab^2cd^2}{5} + \frac{3Ba^2be^2}{5} + \frac{6Ba^2cde}{5} + \frac{6Bab^2de}{5} + \frac{6Babcd^2}{5} + \frac{Bb^3d^2}{5}\right) + x^4\left(\frac{3Aa^2be^2}{4} + \frac{3Aa^2cde}{2} + \frac{3Aab^2de}{2} + \frac{3Aabcd^2}{2} + \frac{Ab^3d^2}{4} + \frac{Ba^3e^2}{4} + \frac{3Ba^2bde}{2} + \frac{3Ba^2cd^2}{4} + \frac{3Bab^2d^2}{4}\right) + x^3\left(\frac{Aa^3e^2}{3} + 2Aa^2bde + Aa^2cd^2 + Aab^2d^2 + \frac{2Ba^3de}{3} + Ba^2bd^2\right) + x^2\left(Aa^3de + \frac{3Aa^2bd^2}{2} + \frac{Ba^3d^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**2*x + B*c**3*e**2*x**10/10 + x**9*(A*c**3*e**2/9 + B*b*c**2*e**2/
3 + 2*B*c**3*d*e/9) + x**8*(3*A*b*c**2*e**2/8 + A*c**3*d*e/4 + 3*B*a*c**2*e
**2/8 + 3*B*b**2*c*e**2/8 + 3*B*b*c**2*d*e/4 + B*c**3*d**2/8) + x**7*(3*A*a
*c**2*e**2/7 + 3*A*b**2*c*e**2/7 + 6*A*b*c**2*d*e/7 + A*c**3*d**2/7 + 6*B*a
*b*c*e**2/7 + 6*B*a*c**2*d*e/7 + B*b**3*e**2/7 + 6*B*b**2*c*d*e/7 + 3*B*b*c
**2*d**2/7) + x**6*(A*a*b*c*e**2 + A*a*c**2*d*e + A*b**3*e**2/6 + A*b**2*c*
d*e + A*b*c**2*d**2/2 + B*a**2*c*e**2/2 + B*a*b**2*e**2/2 + 2*B*a*b*c*d*e +
 B*a*c**2*d**2/2 + B*b**3*d*e/3 + B*b**2*c*d**2/2) + x**5*(3*A*a**2*c*e**2/
5 + 3*A*a*b**2*e**2/5 + 12*A*a*b*c*d*e/5 + 3*A*a*c**2*d**2/5 + 2*A*b**3*d*e
/5 + 3*A*b**2*c*d**2/5 + 3*B*a**2*b*e**2/5 + 6*B*a**2*c*d*e/5 + 6*B*a*b**2*
d*e/5 + 6*B*a*b*c*d**2/5 + B*b**3*d**2/5) + x**4*(3*A*a**2*b*e**2/4 + 3*A*a
**2*c*d*e/2 + 3*A*a*b**2*d*e/2 + 3*A*a*b*c*d**2/2 + A*b**3*d**2/4 + B*a**3*
e**2/4 + 3*B*a**2*b*d*e/2 + 3*B*a**2*c*d**2/4 + 3*B*a*b**2*d**2/4) + x**3*(
A*a**3*e**2/3 + 2*A*a**2*b*d*e + A*a**2*c*d**2 + A*a*b**2*d**2 + 2*B*a**3*d
*e/3 + B*a**2*b*d**2) + x**2*(A*a**3*d*e + 3*A*a**2*b*d**2/2 + B*a**3*d**2/
2)
```

3.2096 $\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=310

$$a^3Adx+\frac{1}{4}x^4\left(A\left(3a^2ce+3ab^2e+6abcd+b^3d\right)+3aB\left(abe+acd+b^2d\right)\right)+\frac{1}{2}a^2x^2(aAe+aBd+3Abd)+\frac{1}{7}cx^7\left(c(3aB\right.$$

Rubi [A] time = 0.64, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {771}

$$\frac{1}{4}x^4\left(A\left(3a^2ce+3ab^2e+6abcd+b^3d\right)+3aB\left(abe+acd+b^2d\right)\right)+\frac{1}{2}a^2x^2(aAe+aBd+3Abd)+a^3Adx+\frac{1}{6}x^6\left(3bc(2aBe+Acd)+3ac^2(Ae+Bd)+3b^2c(Ae+Bd)+b^3Be\right)+\frac{1}{7}cx^7\left(c(3aBe+Acd)+3bc(Ae+Bd)+3b^2Be\right)+\frac{1}{5}x^5\left(3b^2(aBe+Acd)+6abc(Ae+Bd)+3ac(aBe+Acd)+b^3(Ae+Bd)\right)+\frac{1}{3}ax^3\left(3A\left(abe+acd+b^2d\right)+aB(ae+3bd)\right)+\frac{1}{8}c^2x^8(Ace+3bBe+Bcd)+\frac{1}{9}Bc^3ex^9$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d*x + (a^2*(3*A*b*d + a*B*d + a*A*e)*x^2)/2 + (a*(a*B*(3*b*d + a*e) +
 3*A*(b^2*d + a*c*d + a*b*e))*x^3)/3 + ((3*a*B*(b^2*d + a*c*d + a*b*e) + A*
(b^3*d + 6*a*b*c*d + 3*a*b^2*e + 3*a^2*c*e))*x^4)/4 + ((b^3*(B*d + A*e) + 6
*a*b*c*(B*d + A*e) + 3*b^2*(A*c*d + a*B*e) + 3*a*c*(A*c*d + a*B*e))*x^5)/5
+ ((b^3*B*e + 3*b^2*c*(B*d + A*e) + 3*a*c^2*(B*d + A*e) + 3*b*c*(A*c*d + 2*
a*B*e))*x^6)/6 + (c*(3*b^2*B*e + 3*b*c*(B*d + A*e) + c*(A*c*d + 3*a*B*e))*x
^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^3\,dx = \int \left(a^3Ad+a^2(3Abd+aBd+aAe)x+a\left(aB(3bd+ae)+3A\left(b^2d+acd\right.\right.\right.$$

$$= a^3Adx+\frac{1}{2}a^2(3Abd+aBd+aAe)x^2+\frac{1}{3}a\left(aB(3bd+ae)+3A\left(b^2d+a\right.\right.$$

Mathematica [A] time = 0.16, size = 310, normalized size = 1.00

$$a^3Adx+\frac{1}{4}x^4\left(A\left(3a^2ce+3ab^2e+6abcd+b^3d\right)+3aB\left(abe+acd+b^2d\right)\right)+\frac{1}{2}a^2x^2(aAe+aBd+3Abd)+\frac{1}{7}cx^7\left(c(3aBe+Acd)+3bc(Ae+Bd)+3b^2Be\right)+\frac{1}{3}ax^3\left(3A\left(abe+acd+b^2d\right)+aB(ae+3bd)\right)+\frac{1}{6}x^6\left(3bc(2aBe+Acd)+3ac^2(Ae+Bd)+3b^2c(Ae+Bd)+b^3Be\right)+\frac{1}{5}x^5\left(3b^2(aBe+Acd)+6abc(Ae+Bd)+3ac(aBe+Acd)+b^3(Ae+Bd)\right)+\frac{1}{8}c^2x^8(Ace+3bBe+Bcd)+\frac{1}{9}Bc^3ex^9$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d*x + (a^2*(3*A*b*d + a*B*d + a*A*e)*x^2)/2 + (a*(a*B*(3*b*d + a*e) +
 3*A*(b^2*d + a*c*d + a*b*e))*x^3)/3 + ((3*a*B*(b^2*d + a*c*d + a*b*e) + A*
(b^3*d + 6*a*b*c*d + 3*a*b^2*e + 3*a^2*c*e))*x^4)/4 + ((b^3*(B*d + A*e) + 6
*a*b*c*(B*d + A*e) + 3*b^2*(A*c*d + a*B*e) + 3*a*c*(A*c*d + a*B*e))*x^5)/5
+ ((b^3*B*e + 3*b^2*c*(B*d + A*e) + 3*a*c^2*(B*d + A*e) + 3*b*c*(A*c*d + 2*
a*B*e))*x^6)/6 + (c*(3*b^2*B*e + 3*b*c*(B*d + A*e) + c*(A*c*d + 3*a*B*e))*x
^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 417, normalized size = 1.35

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*c^3*B + 1/8*x^8*d*c^3*B + 3/8*x^8*e*c^2*b*B + 1/8*x^8*e*c^3*A + 3
/7*x^7*d*c^2*b*B + 3/7*x^7*e*c*b^2*B + 3/7*x^7*e*c^2*a*B + 1/7*x^7*d*c^3*A
+ 3/7*x^7*e*c^2*b*A + 1/2*x^6*d*c*b^2*B + 1/6*x^6*e*b^3*B + 1/2*x^6*d*c^2*a
*B + x^6*e*c*b*a*B + 1/2*x^6*d*c^2*b*A + 1/2*x^6*e*c*b^2*A + 1/2*x^6*e*c^2*
a*A + 1/5*x^5*d*b^3*B + 6/5*x^5*d*c*b*a*B + 3/5*x^5*e*b^2*a*B + 3/5*x^5*e*c
*a^2*B + 3/5*x^5*d*c*b^2*A + 1/5*x^5*e*b^3*A + 3/5*x^5*d*c^2*a*A + 6/5*x^5*
e*c*b*a*A + 3/4*x^4*d*b^2*a*B + 3/4*x^4*d*c*a^2*B + 3/4*x^4*e*b*a^2*B + 1/4
*x^4*d*b^3*A + 3/2*x^4*d*c*b*a*A + 3/4*x^4*e*b^2*a*A + 3/4*x^4*e*c*a^2*A +
x^3*d*b*a^2*B + 1/3*x^3*e*a^3*B + x^3*d*b^2*a*A + x^3*d*c*a^2*A + x^3*e*b*a
^2*A + 1/2*x^2*d*a^3*B + 3/2*x^2*d*b*a^2*A + 1/2*x^2*e*a^3*A + x*d*a^3*A
```

giac [A] time = 0.16, size = 437, normalized size = 1.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9*e + 1/8*B*c^3*d*x^8 + 3/8*B*b*c^2*x^8*e + 1/8*A*c^3*x^8*e + 3
/7*B*b*c^2*d*x^7 + 1/7*A*c^3*d*x^7 + 3/7*B*b^2*c*x^7*e + 3/7*B*a*c^2*x^7*e
+ 3/7*A*b*c^2*x^7*e + 1/2*B*b^2*c*d*x^6 + 1/2*B*a*c^2*d*x^6 + 1/2*A*b*c^2*d
*x^6 + 1/6*B*b^3*x^6*e + B*a*b*c*x^6*e + 1/2*A*b^2*c*x^6*e + 1/2*A*a*c^2*x^
6*e + 1/5*B*b^3*d*x^5 + 6/5*B*a*b*c*d*x^5 + 3/5*A*b^2*c*d*x^5 + 3/5*A*a*c^2
*d*x^5 + 3/5*B*a*b^2*x^5*e + 1/5*A*b^3*x^5*e + 3/5*B*a^2*c*x^5*e + 6/5*A*a*
b*c*x^5*e + 3/4*B*a*b^2*d*x^4 + 1/4*A*b^3*d*x^4 + 3/4*B*a^2*c*d*x^4 + 3/2*A
*a*b*c*d*x^4 + 3/4*B*a^2*b*x^4*e + 3/4*A*a*b^2*x^4*e + 3/4*A*a^2*c*x^4*e +
B*a^2*b*d*x^3 + A*a*b^2*d*x^3 + A*a^2*c*d*x^3 + 1/3*B*a^3*x^3*e + A*a^2*b*x
^3*e + 1/2*B*a^3*d*x^2 + 3/2*A*a^2*b*d*x^2 + 1/2*A*a^3*x^2*e + A*a^3*d*x
```

maple [A] time = 0.04, size = 375, normalized size = 1.21

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/9*B*c^3*e*x^9+1/8*((A*e+B*d)*c^3+3*B*e*b*c^2)*x^8+1/7*(A*d*c^3+3*(A*e+B*d
)*b*c^2+B*e*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x^7+1/6*(3*A*d*b*c^2+(A*e+B*d)*(
a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*e*(4*a*b*c+(2*a*c+b^2)*b))*x^6+1/5*(A*d*(a*c
^2+2*b^2*c+(2*a*c+b^2)*c)+(A*e+B*d)*(4*a*b*c+(2*a*c+b^2)*b)+B*e*(a^2*c+2*a*
b^2+(2*a*c+b^2)*a))*x^5+1/4*(A*d*(4*a*b*c+(2*a*c+b^2)*b)+(A*e+B*d)*(a^2*c+2
*a*b^2+(2*a*c+b^2)*a)+3*B*e*a^2*b)*x^4+1/3*(A*d*(a^2*c+2*a*b^2+(2*a*c+b^2)*
a)+3*(A*e+B*d)*a^2*b+B*e*a^3)*x^3+1/2*(3*A*d*a^2*b+(A*e+B*d)*a^3)*x^2+A*a^3
*d*x
```

maxima [A] time = 0.60, size = 334, normalized size = 1.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*e*x^9 + 1/8*(B*c^3*d + (3*B*b*c^2 + A*c^3)*e)*x^8 + 1/7*((3*B*b*c
^2 + A*c^3)*d + 3*(B*b^2*c + (B*a + A*b)*c^2)*e)*x^7 + 1/6*(3*(B*b^2*c + (B
*a + A*b)*c^2)*d + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e)*x^6 + A*a
^3*d*x + 1/5*((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d + (3*B*a*b^2 +
A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e)*x^5 + 1/4*((3*B*a*b^2 + A*b^3 + 3*(B*a^2
+ 2*A*a*b)*c)*d + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e)*x^4 + 1/3*(3*(B*a^2*b
+ A*a*b^2 + A*a^2*c)*d + (B*a^3 + 3*A*a^2*b)*e)*x^3 + 1/2*(A*a^3*e + (B*a^3
 + 3*A*a^2*b)*d)*x^2
```

mupad [B] time = 0.13, size = 338, normalized size = 1.09

$$x^7\left(\frac{Ac^3d}{7}+\frac{3Abc^2e}{7}+\frac{3Bac^2e}{7}+\frac{3Bbc^2d}{7}+\frac{3Bb^2ce}{7}\right)+x^5\left(\frac{Ab^3e}{5}+\frac{Bb^3d}{5}+\frac{3Aac^2d}{5}+\frac{3Ab^2cd}{5}+\frac{3Bab^2e}{5}+\frac{3Ba^2ce}{5}+\frac{6Aabce}{5}+\frac{6Babcd}{5}\right)+x^2\left(\frac{Aa^3e}{2}+\frac{Ba^3d}{2}+\frac{3Aa^2bd}{2}\right)+x^8\left(\frac{Ac^3e}{8}+\frac{Bc^3d}{8}+\frac{3Bbc^2e}{8}\right)+x^4\left(\frac{Ab^3d}{4}+\frac{3Aab^2e}{4}+\frac{3Bab^2d}{4}+\frac{3Aa^2ce}{4}+\frac{3Ba^2be}{4}+\frac{3Ba^2cd}{4}+\frac{3Aabcd}{2}\right)+x^6\left(\frac{Bb^3e}{6}+\frac{Aac^2e}{2}+\frac{Abc^2d}{2}+\frac{Bac^2d}{2}+\frac{Ab^2ce}{2}+\frac{Bb^2cd}{2}+Babce\right)+x^3\left(\frac{Ba^3e}{3}+Aab^2d+Aa^2be+Aa^2cd+Ba^2bd\right)+Aa^3dx+\frac{Bc^3ex^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^7*((A*c^3*d)/7 + (3*A*b*c^2*e)/7 + (3*B*a*c^2*e)/7 + (3*B*b*c^2*d)/7 + (3
*B*b^2*c*e)/7) + x^5*((A*b^3*e)/5 + (B*b^3*d)/5 + (3*A*a*c^2*d)/5 + (3*A*b^
2*c*d)/5 + (3*B*a*b^2*e)/5 + (3*B*a^2*c*e)/5 + (6*A*a*b*c*e)/5 + (6*B*a*b*c
*d)/5) + x^2*((A*a^3*e)/2 + (B*a^3*d)/2 + (3*A*a^2*b*d)/2) + x^8*((A*c^3*e)
/8 + (B*c^3*d)/8 + (3*B*b*c^2*e)/8) + x^4*((A*b^3*d)/4 + (3*A*a*b^2*e)/4 +
(3*B*a*b^2*d)/4 + (3*A*a^2*c*e)/4 + (3*B*a^2*b*e)/4 + (3*B*a^2*c*d)/4 + (3*
A*a*b*c*d)/2) + x^6*((B*b^3*e)/6 + (A*a*c^2*e)/2 + (A*b*c^2*d)/2 + (B*a*c^2
*d)/2 + (A*b^2*c*e)/2 + (B*b^2*c*d)/2 + B*a*b*c*e) + x^3*((B*a^3*e)/3 + A*a
*b^2*d + A*a^2*b*e + A*a^2*c*d + B*a^2*b*d) + A*a^3*d*x + (B*c^3*e*x^9)/9
```

sympy [A] time = 0.13, size = 435, normalized size = 1.40

$$Aa^3dx+\frac{Bc^3ex^9}{9}+x^8\left(\frac{Ac^3e}{8}+\frac{3Bbc^2e}{8}+\frac{Bc^3d}{8}\right)+x^7\left(\frac{3Abc^2e}{7}+\frac{Ac^3d}{7}+\frac{3Bac^2e}{7}+\frac{3Bb^2ce}{7}+\frac{3Bbc^2d}{7}\right)+x^6\left(\frac{Aac^2e}{2}+\frac{Ab^2ce}{2}+\frac{Abc^2d}{2}+Babce+\frac{Bac^2d}{2}+\frac{Bb^3e}{6}+\frac{Bb^2cd}{2}\right)+x^5\left(\frac{6Aabce}{5}+\frac{3Aac^2d}{5}+\frac{Ab^3e}{5}+\frac{3Ab^2cd}{5}+\frac{3Ba^2ce}{5}+\frac{3Bab^2e}{5}+\frac{6Babcd}{5}+\frac{Bb^3d}{5}\right)+x^4\left(\frac{3Aa^2ce}{4}+\frac{3Aab^2e}{4}+\frac{3Aabcd}{2}+\frac{Ab^3d}{4}+\frac{3Ba^2be}{4}+\frac{3Ba^2cd}{4}+\frac{3Bab^2d}{4}\right)+x^3\left(Aa^2be+Aa^2cd+Aab^2d+\frac{Ba^3e}{3}+Ba^2bd\right)+x^2\left(\frac{Aa^3e}{2}+\frac{3Aa^2bd}{2}+\frac{Ba^3d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d*x + B*c**3*e*x**9/9 + x**8*(A*c**3*e/8 + 3*B*b*c**2*e/8 + B*c**3*d
/8) + x**7*(3*A*b*c**2*e/7 + A*c**3*d/7 + 3*B*a*c**2*e/7 + 3*B*b**2*c*e/7 +
 3*B*b*c**2*d/7) + x**6*(A*a*c**2*e/2 + A*b**2*c*e/2 + A*b*c**2*d/2 + B*a*b
*c*e + B*a*c**2*d/2 + B*b**3*e/6 + B*b**2*c*d/2) + x**5*(6*A*a*b*c*e/5 + 3*
A*a*c**2*d/5 + A*b**3*e/5 + 3*A*b**2*c*d/5 + 3*B*a**2*c*e/5 + 3*B*a*b**2*e/
5 + 6*B*a*b*c*d/5 + B*b**3*d/5) + x**4*(3*A*a**2*c*e/4 + 3*A*a*b**2*e/4 + 3
*A*a*b*c*d/2 + A*b**3*d/4 + 3*B*a**2*b*e/4 + 3*B*a**2*c*d/4 + 3*B*a*b**2*d/
4) + x**3*(A*a**2*b*e + A*a**2*c*d + A*a*b**2*d + B*a**3*e/3 + B*a**2*b*d)
+ x**2*(A*a**3*e/2 + 3*A*a**2*b*d/2 + B*a**3*d/2)
```

3.2097 $\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=158

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b\right.$$

Rubi [A] time = 0.21, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$\frac{1}{2}a^2x^2(aB+3Ab)+a^3Ax+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3A+a^2(3Ab+aB)x+3a\left(abB+A\left(b^2+ac\right)\right)x^2+\left(3aB\left(b^2+ac\right)+A\right.\right.\\ &= a^3Ax+\frac{1}{2}a^2(3Ab+aB)x^2+a\left(abB+A\left(b^2+ac\right)\right)x^3+\frac{1}{4}\left(3aB\left(b^2+ac\right)+\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 158, normalized size = 1.00

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{4}x^4\left(A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)\right)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)*(a + b*x + c*x^2)^3, x]
```

fricas [A] time = 0.35, size = 187, normalized size = 1.18

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2aB+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{6}{5}x^5cbaB+\frac{3}{5}x^5cb^2A+\frac{3}{5}x^5c^2aA+\frac{3}{4}x^4b^2aB+\frac{3}{4}x^4ca^2B+\frac{1}{4}x^4b^3A+\frac{3}{2}x^4cbaA+x^3ba^2B+x^3b^2aA+x^3ca^2A+\frac{1}{2}x^2a^3B+\frac{3}{2}x^2ba^2A+xa^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*a*B + 1/2*x^6*c^2*b*A + 1/5*x^5*b^3*B + 6/5*x^5*c*b*a*B + 3/5*x^5*c*b^
2*A + 3/5*x^5*c^2*a*A + 3/4*x^4*b^2*a*B + 3/4*x^4*c*a^2*B + 1/4*x^4*b^3*A +
 3/2*x^4*c*b*a*A + x^3*b*a^2*B + x^3*b^2*a*A + x^3*c*a^2*A + 1/2*x^2*a^3*B
+ 3/2*x^2*b*a^2*A + x*a^3*A
```

giac [A] time = 0.15, size = 187, normalized size = 1.18

$$\frac{1}{8}Bc^3x^8+\frac{3}{7}Bbc^2x^7+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bb^2cx^6+\frac{1}{2}Bac^2x^6+\frac{1}{2}Abc^2x^6+\frac{1}{5}Bb^3x^5+\frac{6}{5}Babcx^5+\frac{3}{5}Ab^2cx^5+\frac{3}{5}Aac^2x^5+\frac{3}{4}Bab^2x^4+\frac{1}{4}Ab^3x^4+\frac{3}{4}Ba^2cx^4+\frac{3}{2}Aabcx^4+Ba^2bx^3+Aab^2x^3+Aa^2cx^3+\frac{1}{2}Ba^3x^2+\frac{3}{2}Aa^2bx^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*B*a
*c^2*x^6 + 1/2*A*b*c^2*x^6 + 1/5*B*b^3*x^5 + 6/5*B*a*b*c*x^5 + 3/5*A*b^2*c*
x^5 + 3/5*A*a*c^2*x^5 + 3/4*B*a*b^2*x^4 + 1/4*A*b^3*x^4 + 3/4*B*a^2*c*x^4 +
 3/2*A*a*b*c*x^4 + B*a^2*b*x^3 + A*a*b^2*x^3 + A*a^2*c*x^3 + 1/2*B*a^3*x^2
+ 3/2*A*a^2*b*x^2 + A*a^3*x
```

maple [A] time = 0.04, size = 223, normalized size = 1.41

$$\frac{Bc^3x^8}{8}+\frac{\left(Ac^3+3Bbc^2\right)x^7}{7}+\frac{\left(3Abc^2+\left(ac^2+2b^2c+\left(2ac+b^2\right)c\right)B\right)x^6}{6}+Aa^3x+\frac{\left(\left(ac^2+2b^2c+\left(2ac+b^2\right)c\right)A+\left(4abc+\left(2ac+b^2\right)b\right)B\right)x^5}{5}+\frac{\left(\left(4abc+\left(2ac+b^2\right)b\right)A+\left(a^2c+2ab^2+\left(2ac+b^2\right)a\right)B\right)x^4}{4}+\frac{\left(3Ba^2b+\left(a^2c+2ab^2+\left(2ac+b^2\right)a\right)A\right)x^3}{3}+\frac{\left(3Aa^2b+Ba^3\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+B*(a*c^2+2*b^2*c+(2*
a*c+b^2)*c))*x^6+1/5*(A*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*(4*a*b*c+(2*a*c+b^2
)*b))*x^5+1/4*(A*(4*a*b*c+(2*a*c+b^2)*b)+B*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x
^4+1/3*(A*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*B*a^2*b)*x^3+1/2*(3*A*a^2*b+B*a^3
)*x^2+A*a^3*x
```

maxima [A] time = 0.53, size = 162, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}\left(3Bbc^2+Ac^3\right)x^7+\frac{1}{2}\left(Bb^2c+(Ba+Ab)c^2\right)x^6+\frac{1}{5}\left(Bb^3+3Aac^2+3\left(2Bab+Ab^2\right)c\right)x^5+Aa^3x+\frac{1}{4}\left(3Bab^2+Ab^3+3\left(Ba^2+2Aab\right)c\right)x^4+\left(Ba^2b+Aab^2+Aa^2c\right)x^3+\frac{1}{2}\left(Ba^3+3Aa^2b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c + (B*a + A*b)*c^
2)*x^6 + 1/5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^5 + A*a^3*x + 1/
4*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^4 + (B*a^2*b + A*a*b^2 + A*
a^2*c)*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

mupad [B] time = 0.07, size = 163, normalized size = 1.03

$$x^4\left(\frac{3Bca^2}{4}+\frac{3Bab^2}{4}+\frac{3Acab}{2}+\frac{Ab^3}{4}\right)+x^5\left(\frac{Bb^3}{5}+\frac{3Ab^2c}{5}+\frac{6Babc}{5}+\frac{3Aac^2}{5}\right)+x^2\left(\frac{Ba^3}{2}+\frac{3Aba^2}{2}\right)+x^7\left(\frac{Ac^3}{7}+\frac{3Bbc^2}{7}\right)+x^3\left(Ba^2b+Aca^2+Aab^2\right)+x^6\left(\frac{Bb^2c}{2}+\frac{Abc^2}{2}+\frac{Bac^2}{2}\right)+\frac{Bc^3x^8}{8}+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((A*b^3)/4 + (3*B*a*b^2)/4 + (3*B*a^2*c)/4 + (3*A*a*b*c)/2) + x^5*((B*b
^3)/5 + (3*A*a*c^2)/5 + (3*A*b^2*c)/5 + (6*B*a*b*c)/5) + x^2*((B*a^3)/2 + (
3*A*a^2*b)/2) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + x^3*(A*a*b^2 + A*a^2*c +
B*a^2*b) + x^6*((A*b*c^2)/2 + (B*a*c^2)/2 + (B*b^2*c)/2) + (B*c^3*x^8)/8 +
A*a^3*x
```

sympy [A] time = 0.10, size = 190, normalized size = 1.20

$$Aa^3x + \frac{Bc^3x^8}{8} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^6\left(\frac{Abc^2}{2} + \frac{Bac^2}{2} + \frac{Bb^2c}{2}\right) + x^5\left(\frac{3Aac^2}{5} + \frac{3Ab^2c}{5} + \frac{6Babc}{5} + \frac{Bb^3}{5}\right) + x^4\left(\frac{3Aabc}{2} + \frac{Ab^3}{4} + \frac{3Ba^2c}{4} + \frac{3Bab^2}{4}\right) + x^3\left(Aa^2c + Aab^2 + Ba^2b\right) + x^2\left(\frac{3Aa^2b}{2} + \frac{Ba^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*c**2/
2 + B*a*c**2/2 + B*b**2*c/2) + x**5*(3*A*a*c**2/5 + 3*A*b**2*c/5 + 6*B*a*b*
c/5 + B*b**3/5) + x**4*(3*A*a*b*c/2 + A*b**3/4 + 3*B*a**2*c/4 + 3*B*a*b**2/
4) + x**3*(A*a**2*c + A*a*b**2 + B*a**2*b) + x**2*(3*A*a**2*b/2 + B*a**3/2)
```

3.2098 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=544

$$-\frac{(d+ex)^3\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)\right.}{3e^8}$$

Rubi [A] time = 1.19, antiderivative size = 541, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d -
b*e))*x)/e^7 - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*
a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))
)*(d + e*x)^2)/(2*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^3)/(3
*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*
(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*
x)^4)/(4*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6
*b*d - a*e)))*(d + e*x)^5)/(5*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d +
e*x)^6)/(6*e^8) + (B*c^3*(d + e*x)^7)/(7*e^8) - ((B*d - A*e)*(c*d^2 - b*d*e
 + a*e^2)^3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx = \int \left(\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3Ae(2cd-be)\right)}{e^7}+\frac{(-Bd+Ae)\left(\right.}{e^7\left(\right.}\right.$$

$$=\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3Ae(2cd-be)\right)x}{e^7}-\frac{3\left(cd^2-bde+\right.}{}$$

Mathematica [A] time = 0.46, size = 700, normalized size = 1.29

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (e*x*(7*A*e*(c^3*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*d^2*e^3*x^3 -
12*d*e^4*x^4 + 10*e^5*x^5) + 10*b*e^3*(18*a^2*e^2 + 9*a*b*e*(-2*d + e*x) +
b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 15*c*e^2*(6*a^2*e^2*(-2*d + e*x) + 4*a
```

```
*b*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b^2*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
 + 3*e^3*x^3)) + 3*c^2*e*(5*a*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*
x^3) + b*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4)
)) + B*(c^3*(420*d^6 - 210*d^5*e*x + 140*d^4*e^2*x^2 - 105*d^3*e^3*x^3 + 84
*d^2*e^4*x^4 - 70*d*e^5*x^5 + 60*e^6*x^6) + 35*e^3*(12*a^3*e^3 + 18*a^2*b*e
^2*(-2*d + e*x) + 6*a*b^2*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b^3*(-12*d^3 +
6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)) + 21*c*e^2*(10*a^2*e^2*(6*d^2 - 3*d*e
*x + 2*e^2*x^2) + 10*a*b*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)
+ b^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4)) +
 21*c^2*e*(a*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^
4*x^4) + b*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*d^2*e^3*x^3 - 12*d*e
^4*x^4 + 10*e^5*x^5)))) - 420*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^3*Log[
d + e*x])/(420*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x), x]
```

fricas [A] time = 0.39, size = 843, normalized size = 1.55

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*B*c^3*e^7*x^7 - 70*(B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 +
84*(B*c^3*d^2*e^5 - (3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)*c^
2)*e^7)*x^5 - 105*(B*c^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^2*e^5 + 3*(B*b^2*c
 + (B*a + A*b)*c^2)*d*e^6 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7
)*x^4 + 140*(B*c^3*d^4*e^3 - (3*B*b*c^2 + A*c^3)*d^3*e^4 + 3*(B*b^2*c + (B*
a + A*b)*c^2)*d^2*e^5 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 +
 (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 - 210*(B*c^3*d^5*e^2
- (3*B*b*c^2 + A*c^3)*d^4*e^3 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - (B*
b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(
B*a^2 + 2*A*a*b)*c)*d*e^6 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 420*
(B*c^3*d^6*e - (3*B*b*c^2 + A*c^3)*d^5*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*
d^4*e^3 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2
+ A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*
d*e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x - 420*(B*c^3*d^7 - A*a^3*e^7 - (3*B*b*c^
2 + A*c^3)*d^6*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c
^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2
*b)*d*e^6)*log(e*x + d))/e^8
```

giac [B] time = 0.20, size = 1130, normalized size = 2.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^3*d^7 - 3*B*b*c^2*d^6*e - A*c^3*d^6*e + 3*B*b^2*c*d^5*e^2 + 3*B*a*c^2
*d^5*e^2 + 3*A*b*c^2*d^5*e^2 - B*b^3*d^4*e^3 - 6*B*a*b*c*d^4*e^3 - 3*A*b^2*
```

```
c*d^4*e^3 - 3*A*a*c^2*d^4*e^3 + 3*B*a*b^2*d^3*e^4 + A*b^3*d^3*e^4 + 3*B*a^2
*c*d^3*e^4 + 6*A*a*b*c*d^3*e^4 - 3*B*a^2*b*d^2*e^5 - 3*A*a*b^2*d^2*e^5 - 3*
A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + 3*A*a^2*b*d*e^6 - A*a^3*e^7)*e^(-8)*log(abs
(x*e + d)) + 1/420*(60*B*c^3*x^7*e^6 - 70*B*c^3*d*x^6*e^5 + 84*B*c^3*d^2*x^
5*e^4 - 105*B*c^3*d^3*x^4*e^3 + 140*B*c^3*d^4*x^3*e^2 - 210*B*c^3*d^5*x^2*e
 + 420*B*c^3*d^6*x + 210*B*b*c^2*x^6*e^6 + 70*A*c^3*x^6*e^6 - 252*B*b*c^2*d
*x^5*e^5 - 84*A*c^3*d*x^5*e^5 + 315*B*b*c^2*d^2*x^4*e^4 + 105*A*c^3*d^2*x^4
*e^4 - 420*B*b*c^2*d^3*x^3*e^3 - 140*A*c^3*d^3*x^3*e^3 + 630*B*b*c^2*d^4*x^
2*e^2 + 210*A*c^3*d^4*x^2*e^2 - 1260*B*b*c^2*d^5*x*e - 420*A*c^3*d^5*x*e +
252*B*b^2*c*x^5*e^6 + 252*B*a*c^2*x^5*e^6 + 252*A*b*c^2*x^5*e^6 - 315*B*b^2
*c*d*x^4*e^5 - 315*B*a*c^2*d*x^4*e^5 - 315*A*b*c^2*d*x^4*e^5 + 420*B*b^2*c*
d^2*x^3*e^4 + 420*B*a*c^2*d^2*x^3*e^4 + 420*A*b*c^2*d^2*x^3*e^4 - 630*B*b^2
*c*d^3*x^2*e^3 - 630*B*a*c^2*d^3*x^2*e^3 - 630*A*b*c^2*d^3*x^2*e^3 + 1260*B
*b^2*c*d^4*x*e^2 + 1260*B*a*c^2*d^4*x*e^2 + 1260*A*b*c^2*d^4*x*e^2 + 105*B*
b^3*x^4*e^6 + 630*B*a*b*c*x^4*e^6 + 315*A*b^2*c*x^4*e^6 + 315*A*a*c^2*x^4*e
^6 - 140*B*b^3*d*x^3*e^5 - 840*B*a*b*c*d*x^3*e^5 - 420*A*b^2*c*d*x^3*e^5 -
420*A*a*c^2*d*x^3*e^5 + 210*B*b^3*d^2*x^2*e^4 + 1260*B*a*b*c*d^2*x^2*e^4 +
630*A*b^2*c*d^2*x^2*e^4 + 630*A*a*c^2*d^2*x^2*e^4 - 420*B*b^3*d^3*x*e^3 - 2
520*B*a*b*c*d^3*x*e^3 - 1260*A*b^2*c*d^3*x*e^3 - 1260*A*a*c^2*d^3*x*e^3 + 4
20*B*a*b^2*x^3*e^6 + 140*A*b^3*x^3*e^6 + 420*B*a^2*c*x^3*e^6 + 840*A*a*b*c*
x^3*e^6 - 630*B*a*b^2*d*x^2*e^5 - 210*A*b^3*d*x^2*e^5 - 630*B*a^2*c*d*x^2*e
^5 - 1260*A*a*b*c*d*x^2*e^5 + 1260*B*a*b^2*d^2*x*e^4 + 420*A*b^3*d^2*x*e^4
+ 1260*B*a^2*c*d^2*x*e^4 + 2520*A*a*b*c*d^2*x*e^4 + 630*B*a^2*b*x^2*e^6 + 6
30*A*a*b^2*x^2*e^6 + 630*A*a^2*c*x^2*e^6 - 1260*B*a^2*b*d*x*e^5 - 1260*A*a*
b^2*d*x*e^5 - 1260*A*a^2*c*d*x*e^5 + 420*B*a^3*x*e^6 + 1260*A*a^2*b*x*e^6)*
e^(-7)
```

maple [B] time = 0.05, size = 1319, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x)
```

```
[Out] 1/6/e*A*x^6*c^3+1/e*B*x*a^3+1/3/e*A*x^3*b^3+1/e*ln(e*x+d)*A*a^3+1/4/e*B*x^4
*b^3-1/e^8*ln(e*x+d)*B*c^3*d^7+1/e^7*B*x*c^3*d^6-1/e^4*B*x*b^3*d^3-2/e^2*B*
x^3*a*b*c*d+6/e^3*A*x*a*b*c*d^2-6/e^4*B*x*a*b*c*d^3+6/e^5*ln(e*x+d)*B*a*b*c
*d^4-1/2/e^6*B*x^2*c^3*d^5-1/6/e^2*B*x^6*c^3*d+3/2/e*A*x^2*a*b^2+1/2/e^3*B*
x^2*b^3*d^2-1/5/e^2*A*x^5*c^3*d+3/5/e*B*x^5*a*c^2+3/5/e*B*x^5*b^2*c+1/2/e^5
*A*x^2*c^3*d^4+1/e^3*A*x*b^3*d^2-1/e^6*A*x*c^3*d^5+3/e*A*x*a^2*b-1/3/e^4*A*
x^3*c^3*d^3-1/3/e^2*B*x^3*b^3*d+1/3/e^5*B*x^3*c^3*d^4+1/e*B*x^3*a^2*c+1/e*B
*x^3*a*b^2+1/e^7*ln(e*x+d)*A*c^3*d^6-1/e^2*ln(e*x+d)*B*a^3*d+1/e^5*ln(e*x+d
)*B*b^3*d^4+1/5/e^3*B*x^5*c^3*d^2+3/4/e*A*x^4*a*c^2+1/2/e*B*x^6*b*c^2-1/4/e
^4*B*x^4*c^3*d^3+3/5/e*A*x^5*b*c^2-1/e^4*ln(e*x+d)*A*b^3*d^3+3/2/e*A*x^2*a^
2*c+3/e^3*B*x^2*a*b*c*d^2-3/e^2*A*x^2*a*b*c*d+3/4/e*A*x^4*b^2*c+1/4/e^3*A*x
^4*c^3*d^2-1/2/e^2*A*x^2*b^3*d+3/2/e*B*x^2*a^2*b-6/e^4*ln(e*x+d)*A*a*b*c*d^
3+1/7*B*c^3/e*x^7-1/e^2*A*x^3*b^2*c*d-3/5/e^2*B*x^5*b*c^2*d-3/e^6*B*x*b*c^2
*d^5+3/e^5*B*x*b^2*c*d^4+3/e^5*B*x*a*c^2*d^4+3/e^3*B*x*a*b^2*d^2-3/4/e^2*B*
x^4*b^2*c*d-3/e^4*A*x*a*c^2*d^3-3/e^2*A*x*a^2*c*d-3/4/e^2*B*x^4*a*c^2*d+1/e
^3*A*x^3*b*c^2*d^2+1/e^3*B*x^3*a*c^2*d^2+1/e^3*B*x^3*b^2*c*d^2-3/e^2*B*x*a^
2*b*d+3/e^3*B*x*a^2*c*d^2-3/e^2*A*x*a*b^2*d+3/e^3*ln(e*x+d)*B*a^2*b*d^2-3/e
^4*ln(e*x+d)*B*d^3*a^2*c-3/e^4*ln(e*x+d)*B*a*b^2*d^3-3/e^6*ln(e*x+d)*B*a*c^
2*d^5-3/e^6*ln(e*x+d)*B*b^2*c*d^5+3/e^7*ln(e*x+d)*B*b*c^2*d^6-3/e^2*ln(e*x+
d)*A*a^2*b*d+3/e^3*ln(e*x+d)*A*d^2*a^2*c+3/e^3*ln(e*x+d)*A*a*b^2*d^2-3/2/e^
2*B*x^2*a^2*c*d+3/e^5*ln(e*x+d)*A*a*c^2*d^4-3/2/e^4*B*x^2*b^2*c*d^3+3/2/e^5
*B*x^2*b*c^2*d^4+2/e*A*x^3*a*b*c-1/e^2*A*x^3*a*c^2*d-3/2/e^4*A*x^2*b*c^2*d^
3-1/e^4*B*x^3*b*c^2*d^3+3/2/e^3*A*x^2*a*c^2*d^2+3/2/e^3*A*x^2*b^2*c*d^2+3/4
/e^3*B*x^4*b*c^2*d^2-3/4/e^2*A*x^4*b*c^2*d+3/2/e*B*x^4*a*b*c-3/e^4*A*x*b^2*
c*d^3+3/e^5*A*x*b*c^2*d^4-3/2/e^2*B*x^2*a*b^2*d-3/2/e^4*B*x^2*a*c^2*d^3+3/e
^5*ln(e*x+d)*A*b^2*c*d^4-3/e^6*ln(e*x+d)*A*b*c^2*d^5
```

maxima [A] time = 0.55, size = 842, normalized size = 1.55

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*B*c^3*e^6*x^7 - 70*(B*c^3*d*e^5 - (3*B*b*c^2 + A*c^3)*e^6)*x^6 +
84*(B*c^3*d^2*e^4 - (3*B*b*c^2 + A*c^3)*d*e^5 + 3*(B*b^2*c + (B*a + A*b)*c^
2)*e^6)*x^5 - 105*(B*c^3*d^3*e^3 - (3*B*b*c^2 + A*c^3)*d^2*e^4 + 3*(B*b^2*c
 + (B*a + A*b)*c^2)*d*e^5 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^6
)*x^4 + 140*(B*c^3*d^4*e^2 - (3*B*b*c^2 + A*c^3)*d^3*e^3 + 3*(B*b^2*c + (B*
a + A*b)*c^2)*d^2*e^4 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^5 +
 (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^6)*x^3 - 210*(B*c^3*d^5*e -
(3*B*b*c^2 + A*c^3)*d^4*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^3 - (B*b^
3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e^5 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^6)*x^2 + 420*(B
*c^3*d^6 - (3*B*b*c^2 + A*c^3)*d^5*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^
2 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^3 + (3*B*a*b^2 + A*b^
3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^5
+ (B*a^3 + 3*A*a^2*b)*e^6)*x)/e^7 - (B*c^3*d^7 - A*a^3*e^7 - (3*B*b*c^2 + A
*c^3)*d^6*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c
)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d
*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 2.37, size = 968, normalized size = 1.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x)
```

```
[Out] x^2*((3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b)/(2*e) - (d*((A*b^3 + 3*B*a*b^2 + 3
*B*a^2*c + 6*A*a*b*c)/e - (d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e
 - (d*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e - (d*((A*c^3 + 3*B*b*c^2)/e -
(B*c^3*d)/e^2))/e))/e))/e))/(2*e)) + x^5*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*
c)/(5*e) - (d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/(5*e)) + x^4*((B*b^3
 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/(4*e) - (d*((3*A*b*c^2 + 3*B*a*c^2 +
3*B*b^2*c)/e - (d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e))/(4*e)) + x*(
(B*a^3 + 3*A*a^2*b)/e - (d*((3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b)/e - (d*((A*
b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/e - (d*((B*b^3 + 3*A*a*c^2 + 3*A*b
^2*c + 6*B*a*b*c)/e - (d*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e - (d*((A*c^
3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e))/e))/e))/e))/e) + x^3*((A*b^3 + 3*B*a
*b^2 + 3*B*a^2*c + 6*A*a*b*c)/(3*e) - (d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c +
6*B*a*b*c)/e - (d*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e - (d*((A*c^3 + 3*B
*b*c^2)/e - (B*c^3*d)/e^2))/e))/e))/(3*e)) + x^6*((A*c^3 + 3*B*b*c^2)/(6*e)
 - (B*c^3*d)/(6*e^2)) + (log(d + e*x)*(A*a^3*e^7 - B*c^3*d^7 - B*a^3*d*e^6
+ A*c^3*d^6*e - A*b^3*d^3*e^4 + B*b^3*d^4*e^3 + 3*A*a*b^2*d^2*e^5 + 3*A*a*c
^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 - 3*B*a*b^2*d^3*e^4 + 3*B*a^2*b*d^2*e^5 - 3*
A*b*c^2*d^5*e^2 + 3*A*b^2*c*d^4*e^3 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4
 - 3*B*b^2*c*d^5*e^2 - 3*A*a^2*b*d*e^6 + 3*B*b*c^2*d^6*e - 6*A*a*b*c*d^3*e^
4 + 6*B*a*b*c*d^4*e^3))/e^8 + (B*c^3*x^7)/(7*e)
```

sympy [A] time = 2.13, size = 979, normalized size = 1.80

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d),x)
```

```
[Out] B*c**3*x**7/(7*e) + x**6*(A*c**3/(6*e) + B*b*c**2/(2*e) - B*c**3*d/(6*e**2)
) + x**5*(3*A*b*c**2/(5*e) - A*c**3*d/(5*e**2) + 3*B*a*c**2/(5*e) + 3*B*b**
2*c/(5*e) - 3*B*b*c**2*d/(5*e**2) + B*c**3*d**2/(5*e**3)) + x**4*(3*A*a*c**
2/(4*e) + 3*A*b**2*c/(4*e) - 3*A*b*c**2*d/(4*e**2) + A*c**3*d**2/(4*e**3) +
 3*B*a*b*c/(2*e) - 3*B*a*c**2*d/(4*e**2) + B*b**3/(4*e) - 3*B*b**2*c*d/(4*e
**2) + 3*B*b*c**2*d**2/(4*e**3) - B*c**3*d**3/(4*e**4)) + x**3*(2*A*a*b*c/e
 - A*a*c**2*d/e**2 + A*b**3/(3*e) - A*b**2*c*d/e**2 + A*b*c**2*d**2/e**3 -
A*c**3*d**3/(3*e**4) + B*a**2*c/e + B*a*b**2/e - 2*B*a*b*c*d/e**2 + B*a*c**
2*d**2/e**3 - B*b**3*d/(3*e**2) + B*b**2*c*d**2/e**3 - B*b*c**2*d**3/e**4 +
 B*c**3*d**4/(3*e**5)) + x**2*(3*A*a**2*c/(2*e) + 3*A*a*b**2/(2*e) - 3*A*a*
b*c*d/e**2 + 3*A*a*c**2*d**2/(2*e**3) - A*b**3*d/(2*e**2) + 3*A*b**2*c*d**2
/(2*e**3) - 3*A*b*c**2*d**3/(2*e**4) + A*c**3*d**4/(2*e**5) + 3*B*a**2*b/(2
*e) - 3*B*a**2*c*d/(2*e**2) - 3*B*a*b**2*d/(2*e**2) + 3*B*a*b*c*d**2/e**3 -
 3*B*a*c**2*d**3/(2*e**4) + B*b**3*d**2/(2*e**3) - 3*B*b**2*c*d**3/(2*e**4)
 + 3*B*b*c**2*d**4/(2*e**5) - B*c**3*d**5/(2*e**6)) + x*(3*A*a**2*b/e - 3*A
*a**2*c*d/e**2 - 3*A*a*b**2*d/e**2 + 6*A*a*b*c*d**2/e**3 - 3*A*a*c**2*d**3/
e**4 + A*b**3*d**2/e**3 - 3*A*b**2*c*d**3/e**4 + 3*A*b*c**2*d**4/e**5 - A*c
**3*d**5/e**6 + B*a**3/e - 3*B*a**2*b*d/e**2 + 3*B*a**2*c*d**2/e**3 + 3*B*a
*b**2*d**2/e**3 - 6*B*a*b*c*d**3/e**4 + 3*B*a*c**2*d**4/e**5 - B*b**3*d**3/
e**4 + 3*B*b**2*c*d**4/e**5 - 3*B*b*c**2*d**5/e**6 + B*c**3*d**6/e**7) - (-
A*e + B*d)*(a*e**2 - b*d*e + c*d**2)**3*log(d + e*x)/e**8
```

3.2099 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=525

$$-\frac{x\left(3B(2cd-be)\left(cd^2-e(bd-ae)\right)^2-Ae\left(3ce^2\left(a^2e^2-4abde+3b^2d^2\right)-b^2e^3(2bd-3ae)-3c^2d^2e(4bd-3ae)\right.\right.}{e^7}$$

Rubi [A] time = 1.09, antiderivative size = 522, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] -(((3*B*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2 - A*e*(5*c^3*d^4 - b^2*e^3*
(2*b*d - 3*a*e) - 3*c^2*d^2*e*(4*b*d - 3*a*e) + 3*c*e^2*(3*b^2*d^2 - 4*a*b*
d*e + a^2*e^2)))*x)/e^7) - ((A*e*(c*d - b*e)*(4*c^2*d^2 + b^2*e^2 - c*e*(5*
b*d - 6*a*e)) - B*(5*c^3*d^4 - b^2*e^3*(2*b*d - 3*a*e) - 3*c^2*d^2*e*(4*b*d
 - 3*a*e) + 3*c*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2)))*x^2)/(2*e^6) - ((B*
(c*d - b*e)*(4*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - 6*a*e)) - 3*A*c*e*(c^2*d^2
+ b^2*e^2 - c*e*(2*b*d - a*e)))*x^3)/(3*e^5) - (c*(A*c*e*(2*c*d - 3*b*e) -
3*B*(c^2*d^2 + b^2*e^2 - c*e*(2*b*d - a*e)))*x^4)/(4*e^4) - (c^2*(2*B*c*d -
 3*b*B*e - A*c*e)*x^5)/(5*e^3) + (B*c^3*x^6)/(6*e^2) + ((B*d - A*e)*(c*d^2
- b*d*e + a*e^2)^3)/(e^8*(d + e*x)) + ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2
 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx = \int \left(\frac{-3B(2cd-be)\left(cd^2-e(bd-ae)\right)^2+Ae\left(5c^3d^4-b^2e^3(2bd-3ae)-3c^2d\right.}{e^7}\right.$$

$$= -\frac{\left(3B(2cd-be)\left(cd^2-e(bd-ae)\right)^2-Ae\left(5c^3d^4-b^2e^3(2bd-3ae)-3c^2d^2e(\right.\right.}{e^7}$$

Mathematica [A] time = 0.57, size = 922, normalized size = 1.76

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (3*A*e*(c^3*(-20*d^6 + 100*d^5*e*x + 60*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 10*d
^2*e^4*x^4 - 6*d*e^5*x^5 + 4*e^6*x^6) + 10*e^3*(6*a^2*b*d*e^2 - 2*a^3*e^3 +
 6*a*b^2*e*(-d^2 + d*e*x + e^2*x^2) + b^3*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2
```

```
+ e^3*x^3)) + 20*c*e^2*(3*a^2*e^2*(-d^2 + d*e*x + e^2*x^2) + 3*a*b*e*(2*d^3
 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + b^2*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2
*x^2 - 2*d*e^3*x^3 + e^4*x^4)) + 5*c^2*e*(4*a*e*(-3*d^4 + 9*d^3*e*x + 6*d^2
*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + b*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2
 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5))) + B*(c^3*(60*d^7 - 360*d^6*e
*x - 210*d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 - 1
4*d*e^6*x^6 + 10*e^7*x^7) + 10*e^3*(6*a^3*d*e^3 + 18*a^2*b*e^2*(-d^2 + d*e*
x + e^2*x^2) + 9*a*b^2*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 2*b^
3*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4)) + 15*c*e^2*
(6*a^2*e^2*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 8*a*b*e*(-3*d^4 +
9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + b^2*(12*d^5 - 48*d^4*e
*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5)) + 3*c^2*e*
(5*a*e*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4
 + 3*e^5*x^5) - 6*b*(10*d^6 - 50*d^5*e*x - 30*d^4*e^2*x^2 + 10*d^3*e^3*x^3
- 5*d^2*e^4*x^4 + 3*d*e^5*x^5 - 2*e^6*x^6))) + 60*(c*d^2 + e*(-(b*d) + a*e)
)^2*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e))*(d + e*x)*Log[d
 + e*x])/(60*e^8*(d + e*x))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2, x]
```

fricas [B] time = 0.40, size = 1189, normalized size = 2.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*e^7*x^7 + 60*B*c^3*d^7 - 60*A*a^3*e^7 - 60*(3*B*b*c^2 + A*c^
3)*d^6*e + 180*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 60*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 60*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^4 - 180*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 60*(B*a^3 + 3*
A*a^2*b)*d*e^6 - 2*(7*B*c^3*d*e^6 - 6*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B
*c^3*d^2*e^5 - 6*(3*B*b*c^2 + A*c^3)*d*e^6 + 15*(B*b^2*c + (B*a + A*b)*c^2)
*e^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*
c + (B*a + A*b)*c^2)*d*e^6 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
e^7)*x^4 + 10*(7*B*c^3*d^4*e^3 - 6*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 15*(B*b^2*
c + (B*a + A*b)*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*d*e^6 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 - 30*(7*B*
c^3*d^5*e^2 - 6*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B*b^2*c + (B*a + A*b)*c^2
)*d^3*e^4 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 3*(3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 6*(B*a^2*b + A*a*b^2 + A*a^2
*c)*e^7)*x^2 - 60*(6*B*c^3*d^6*e - 5*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 12*(B*b^
2*c + (B*a + A*b)*c^2)*d^4*e^3 - 3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d^3*e^4 + 2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 3*(B*
a^2*b + A*a*b^2 + A*a^2*c)*d*e^6)*x + 60*(7*B*c^3*d^7 - 6*(3*B*b*c^2 + A*c^
3)*d^6*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)
*c)*d^3*e^4 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)
*d*e^6 + (7*B*c^3*d^6*e - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + (B*
a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e
^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 6*(B*a^2*b + A
```

```
*a*b^2 + A*a^2*c)*d*e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x)*log(e*x + d))/(e^9*x
+ d*e^8)
```

giac [B] time = 0.25, size = 1200, normalized size = 2.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*B*c^3 - 12*(7*B*c^3*d*e - 3*B*b*c^2*e^2 - A*c^3*e^2)*e^(-1)/(x*e +
 d) + 45*(7*B*c^3*d^2*e^2 - 6*B*b*c^2*d*e^3 - 2*A*c^3*d*e^3 + B*b^2*c*e^4 +
 B*a*c^2*e^4 + A*b*c^2*e^4)*e^(-2)/(x*e + d)^2 - 20*(35*B*c^3*d^3*e^3 - 45*
B*b*c^2*d^2*e^4 - 15*A*c^3*d^2*e^4 + 15*B*b^2*c*d*e^5 + 15*B*a*c^2*d*e^5 +
15*A*b*c^2*d*e^5 - B*b^3*e^6 - 6*B*a*b*c*e^6 - 3*A*b^2*c*e^6 - 3*A*a*c^2*e^
6)*e^(-3)/(x*e + d)^3 + 30*(35*B*c^3*d^4*e^4 - 60*B*b*c^2*d^3*e^5 - 20*A*c^
3*d^3*e^5 + 30*B*b^2*c*d^2*e^6 + 30*B*a*c^2*d^2*e^6 + 30*A*b*c^2*d^2*e^6 -
4*B*b^3*d*e^7 - 24*B*a*b*c*d*e^7 - 12*A*b^2*c*d*e^7 - 12*A*a*c^2*d*e^7 + 3*
B*a*b^2*e^8 + A*b^3*e^8 + 3*B*a^2*c*e^8 + 6*A*a*b*c*e^8)*e^(-4)/(x*e + d)^4
 - 180*(7*B*c^3*d^5*e^5 - 15*B*b*c^2*d^4*e^6 - 5*A*c^3*d^4*e^6 + 10*B*b^2*c
*d^3*e^7 + 10*B*a*c^2*d^3*e^7 + 10*A*b*c^2*d^3*e^7 - 2*B*b^3*d^2*e^8 - 12*B
*a*b*c*d^2*e^8 - 6*A*b^2*c*d^2*e^8 - 6*A*a*c^2*d^2*e^8 + 3*B*a*b^2*d*e^9 +
A*b^3*d*e^9 + 3*B*a^2*c*d*e^9 + 6*A*a*b*c*d*e^9 - B*a^2*b*e^10 - A*a*b^2*e^
10 - A*a^2*c*e^10)*e^(-5)/(x*e + d)^5)*(x*e + d)^6*e^(-8) - (7*B*c^3*d^6 -
18*B*b*c^2*d^5*e - 6*A*c^3*d^5*e + 15*B*b^2*c*d^4*e^2 + 15*B*a*c^2*d^4*e^2
+ 15*A*b*c^2*d^4*e^2 - 4*B*b^3*d^3*e^3 - 24*B*a*b*c*d^3*e^3 - 12*A*b^2*c*d^
3*e^3 - 12*A*a*c^2*d^3*e^3 + 9*B*a*b^2*d^2*e^4 + 3*A*b^3*d^2*e^4 + 9*B*a^2*
c*d^2*e^4 + 18*A*a*b*c*d^2*e^4 - 6*B*a^2*b*d*e^5 - 6*A*a*b^2*d*e^5 - 6*A*a^
2*c*d*e^5 + B*a^3*e^6 + 3*A*a^2*b*e^6)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e
+ d)^2) + (B*c^3*d^7*e^6/(x*e + d) - 3*B*b*c^2*d^6*e^7/(x*e + d) - A*c^3*d^
6*e^7/(x*e + d) + 3*B*b^2*c*d^5*e^8/(x*e + d) + 3*B*a*c^2*d^5*e^8/(x*e + d)
 + 3*A*b*c^2*d^5*e^8/(x*e + d) - B*b^3*d^4*e^9/(x*e + d) - 6*B*a*b*c*d^4*e^
9/(x*e + d) - 3*A*b^2*c*d^4*e^9/(x*e + d) - 3*A*a*c^2*d^4*e^9/(x*e + d) + 3
*B*a*b^2*d^3*e^10/(x*e + d) + A*b^3*d^3*e^10/(x*e + d) + 3*B*a^2*c*d^3*e^10
/(x*e + d) + 6*A*a*b*c*d^3*e^10/(x*e + d) - 3*B*a^2*b*d^2*e^11/(x*e + d) -
3*A*a*b^2*d^2*e^11/(x*e + d) - 3*A*a^2*c*d^2*e^11/(x*e + d) + B*a^3*d*e^12/
(x*e + d) + 3*A*a^2*b*d*e^12/(x*e + d) - A*a^3*e^13/(x*e + d))*e^(-14)
```

maple [B] time = 0.06, size = 1404, normalized size = 2.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x)
```

```
[Out] -1/e/(e*x+d)*A*a^3+1/e^2*ln(e*x+d)*B*a^3+1/2/e^2*A*x^2*b^3+1/3/e^2*B*x^3*b^
3+1/5/e^2*A*x^5*c^3-4/e^5*ln(e*x+d)*B*b^3*d^3+7/e^8*ln(e*x+d)*B*c^3*d^6-2/e
^3*A*b^3*d*x+5/e^6*A*c^3*d^4*x-2/5/e^3*B*x^5*c^3*d+3/4/e^2*A*x^4*b*c^2-1/2/
e^3*A*x^4*c^3*d+3/4/e^2*B*x^4*a*c^2+3/4/e^2*B*x^4*b^2*c+1/e^4/(e*x+d)*A*b^3
*d^3-1/e^7/(e*x+d)*A*c^3*d^6+1/e^2/(e*x+d)*B*a^3*d-1/e^5/(e*x+d)*B*b^3*d^4+
1/e^8/(e*x+d)*B*c^3*d^7+3/e^2*ln(e*x+d)*A*a^2*b+1/e^4*A*x^3*c^3*d^2-6/e^7*B
*c^3*d^5*x+3/e^2*B*a^2*b*x+3/e^4*B*b^3*d^2*x+3/5/e^2*B*x^5*b*c^2+3/4/e^4*B*
x^4*c^3*d^2-4/3/e^5*B*x^3*c^3*d^3-2/e^5*A*x^2*c^3*d^3+3/e^4*ln(e*x+d)*A*b^3
*d^2-6/e^7*ln(e*x+d)*A*c^3*d^5+3/2/e^2*B*x^2*a^2*c+3/2/e^2*B*x^2*a*b^2-1/e^
3*B*x^2*b^3*d+5/2/e^6*B*x^2*c^3*d^4+3/e^2*A*a^2*c*x+3/e^2*A*a*b^2*x+1/e^2*A
*x^3*a*c^2+1/e^2*A*x^3*b^2*c+1/6*B*c^3/e^2*x^6+6/e^4/(e*x+d)*A*a*b*c*d^3-6/
e^5/(e*x+d)*B*a*b*c*d^4+18/e^4*ln(e*x+d)*A*a*b*c*d^2-24/e^5*ln(e*x+d)*B*a*b
*c*d^3-6/e^3*B*x^2*a*b*c*d-12/e^3*A*a*b*c*d*x+18/e^4*B*a*b*c*d^2*x-2/e^3*A*
x^3*b*c^2*d+2/e^2*B*x^3*a*b*c-2/e^3*B*x^3*a*c^2*d-2/e^3*B*x^3*b^2*c*d-6/e^3
*B*a^2*c*d*x+3/e^2*A*x^2*a*b*c-3/e^3*A*x^2*a*c^2*d-3/e^3*A*x^2*b^2*c*d+9/2/
e^4*A*x^2*b*c^2*d^2+3/e^4*B*x^3*b*c^2*d^2+9/e^4*A*b^2*c*d^2*x-12/e^5*A*b*c^
```

```
2*d^3*x+9/2/e^4*B*x^2*a*c^2*d^2+9/2/e^4*B*x^2*b^2*c*d^2-6/e^5*B*x^2*b*c^2*d
^3+15/e^6*B*b*c^2*d^4*x-12/e^5*B*a*c^2*d^3*x-6/e^3*B*a*b^2*d*x+3/e^2/(e*x+d
)*A*d*a^2*b-3/e^3/(e*x+d)*A*d^2*a^2*c-3/e^3/(e*x+d)*A*a*b^2*d^2-3/e^5/(e*x+
d)*A*a*c^2*d^4-3/e^5/(e*x+d)*A*b^2*c*d^4+3/e^6/(e*x+d)*A*b*c^2*d^5-3/e^3/(e
*x+d)*B*a^2*b*d^2+3/e^4/(e*x+d)*B*d^3*a^2*c+3/e^4/(e*x+d)*B*a*b^2*d^3+3/e^6
/(e*x+d)*B*a*c^2*d^5+3/e^6/(e*x+d)*B*b^2*c*d^5-3/e^7/(e*x+d)*B*b*c^2*d^6-3/
2/e^3*B*x^4*b*c^2*d-12/e^5*B*b^2*c*d^3*x+15/e^6*ln(e*x+d)*A*b*c^2*d^4-6/e^3
*ln(e*x+d)*B*a^2*b*d+9/e^4*ln(e*x+d)*B*a^2*c*d^2+9/e^4*ln(e*x+d)*B*a*b^2*d^
2+15/e^6*ln(e*x+d)*B*d^4*a*c^2+15/e^6*ln(e*x+d)*B*b^2*c*d^4-18/e^7*ln(e*x+d
)*B*b*c^2*d^5+9/e^4*A*a*c^2*d^2*x-6/e^3*ln(e*x+d)*A*a^2*c*d-6/e^3*ln(e*x+d)
*A*a*b^2*d-12/e^5*ln(e*x+d)*A*d^3*a*c^2-12/e^5*ln(e*x+d)*A*b^2*c*d^3
```

maxima [A] time = 0.58, size = 853, normalized size = 1.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^3*d^7 - A*a^3*e^7 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + (B*a + A*
b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*
B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A
*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^6)/(e^9*x + d*e^8) + 1/60*(10*B*c
^3*e^5*x^6 - 12*(2*B*c^3*d*e^4 - (3*B*b*c^2 + A*c^3)*e^5)*x^5 + 15*(3*B*c^3
*d^2*e^3 - 2*(3*B*b*c^2 + A*c^3)*d*e^4 + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^5)
*x^4 - 20*(4*B*c^3*d^3*e^2 - 3*(3*B*b*c^2 + A*c^3)*d^2*e^3 + 6*(B*b^2*c + (
B*a + A*b)*c^2)*d*e^4 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^5)*x^
3 + 30*(5*B*c^3*d^4*e - 4*(3*B*b*c^2 + A*c^3)*d^3*e^2 + 9*(B*b^2*c + (B*a +
 A*b)*c^2)*d^2*e^3 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^4 +
(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^5)*x^2 - 60*(6*B*c^3*d^5 - 5*
(3*B*b*c^2 + A*c^3)*d^4*e + 12*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^2 - 3*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^3 + 2*(3*B*a*b^2 + A*b^3 + 3*
(B*a^2 + 2*A*a*b)*c)*d*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^5)*x)/e^7 +
(7*B*c^3*d^6 - 6*(3*B*b*c^2 + A*c^3)*d^5*e + 15*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^3 + 3*(3*B*a
*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^4 - 6*(B*a^2*b + A*a*b^2 + A*a^
2*c)*d*e^5 + (B*a^3 + 3*A*a^2*b)*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 2.44, size = 1483, normalized size = 2.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x)
```

```
[Out] x^3*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/(3*e^2) - (d^2*((A*c^3 + 3
*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/(3*e^2) + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)
/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^2 + (B*c
^3*d^2)/e^4))/(3*e)) + x^2*((A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/(2*
e^2) + (d^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c
^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^2 + (B*c^3*d^2)/e^4))/(2*e^2) - (d*((B*b^3 +
3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e^2 - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2
*B*c^3*d)/e^3))/e^2 + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3
))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^2 + (B*c^3*d^2)/e^4))/e))/e) -
 x*((2*d*((A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/e^2 + (d^2*((2*d*((A*
c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b
^2*c)/e^2 + (B*c^3*d^2)/e^4))/e^2 - (2*d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c +
6*B*a*b*c)/e^2 - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2 + (2
*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*
a*c^2 + 3*B*b^2*c)/e^2 + (B*c^3*d^2)/e^4))/e))/e))/e - (3*A*a*b^2 + 3*A*a^2
*c + 3*B*a^2*b)/e^2 + (d^2*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e^2
```

```
 - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2 + (2*d*((2*d*((A*c
^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^
2*c)/e^2 + (B*c^3*d^2)/e^4))/e))/e^2) - x^4*((d*((A*c^3 + 3*B*b*c^2)/e^2 -
(2*B*c^3*d)/e^3))/(2*e) - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/(4*e^2) + (B*
c^3*d^2)/(4*e^4)) + x^5*((A*c^3 + 3*B*b*c^2)/(5*e^2) - (2*B*c^3*d)/(5*e^3))
 - (A*a^3*e^7 - B*c^3*d^7 - B*a^3*d*e^6 + A*c^3*d^6*e - A*b^3*d^3*e^4 + B*b
^3*d^4*e^3 + 3*A*a*b^2*d^2*e^5 + 3*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 - 3*
B*a*b^2*d^3*e^4 + 3*B*a^2*b*d^2*e^5 - 3*A*b*c^2*d^5*e^2 + 3*A*b^2*c*d^4*e^3
 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4 - 3*B*b^2*c*d^5*e^2 - 3*A*a^2*b*d*
e^6 + 3*B*b*c^2*d^6*e - 6*A*a*b*c*d^3*e^4 + 6*B*a*b*c*d^4*e^3)/(e*(d*e^7 +
e^8*x)) + (log(d + e*x)*(B*a^3*e^6 + 7*B*c^3*d^6 + 3*A*a^2*b*e^6 - 6*A*c^3*
d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b^3*d^3*e^3 - 12*A*a*c^2*d^3*e^3 + 9*B*a*b^2*
d^2*e^4 + 15*A*b*c^2*d^4*e^2 - 12*A*b^2*c*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 9*
B*a^2*c*d^2*e^4 + 15*B*b^2*c*d^4*e^2 - 6*A*a*b^2*d*e^5 - 6*A*a^2*c*d*e^5 -
6*B*a^2*b*d*e^5 - 18*B*b*c^2*d^5*e + 18*A*a*b*c*d^2*e^4 - 24*B*a*b*c*d^3*e^
3))/e^8 + (B*c^3*x^6)/(6*e^2)
```

sympy [B] time = 10.14, size = 1056, normalized size = 2.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**2,x)
```

```
[Out] B*c**3*x**6/(6*e**2) + x**5*(A*c**3/(5*e**2) + 3*B*b*c**2/(5*e**2) - 2*B*c*
*3*d/(5*e**3)) + x**4*(3*A*b*c**2/(4*e**2) - A*c**3*d/(2*e**3) + 3*B*a*c**2
/(4*e**2) + 3*B*b**2*c/(4*e**2) - 3*B*b*c**2*d/(2*e**3) + 3*B*c**3*d**2/(4*
e**4)) + x**3*(A*a*c**2/e**2 + A*b**2*c/e**2 - 2*A*b*c**2*d/e**3 + A*c**3*d
**2/e**4 + 2*B*a*b*c/e**2 - 2*B*a*c**2*d/e**3 + B*b**3/(3*e**2) - 2*B*b**2*
c*d/e**3 + 3*B*b*c**2*d**2/e**4 - 4*B*c**3*d**3/(3*e**5)) + x**2*(3*A*a*b*c
/e**2 - 3*A*a*c**2*d/e**3 + A*b**3/(2*e**2) - 3*A*b**2*c*d/e**3 + 9*A*b*c**
2*d**2/(2*e**4) - 2*A*c**3*d**3/e**5 + 3*B*a**2*c/(2*e**2) + 3*B*a*b**2/(2*
e**2) - 6*B*a*b*c*d/e**3 + 9*B*a*c**2*d**2/(2*e**4) - B*b**3*d/e**3 + 9*B*b
**2*c*d**2/(2*e**4) - 6*B*b*c**2*d**3/e**5 + 5*B*c**3*d**4/(2*e**6)) + x*(3
*A*a**2*c/e**2 + 3*A*a*b**2/e**2 - 12*A*a*b*c*d/e**3 + 9*A*a*c**2*d**2/e**4
 - 2*A*b**3*d/e**3 + 9*A*b**2*c*d**2/e**4 - 12*A*b*c**2*d**3/e**5 + 5*A*c**
3*d**4/e**6 + 3*B*a**2*b/e**2 - 6*B*a**2*c*d/e**3 - 6*B*a*b**2*d/e**3 + 18*
B*a*b*c*d**2/e**4 - 12*B*a*c**2*d**3/e**5 + 3*B*b**3*d**2/e**4 - 12*B*b**2*
c*d**3/e**5 + 15*B*b*c**2*d**4/e**6 - 6*B*c**3*d**5/e**7) + (-A*a**3*e**7 +
 3*A*a**2*b*d*e**6 - 3*A*a**2*c*d**2*e**5 - 3*A*a*b**2*d**2*e**5 + 6*A*a*b*
c*d**3*e**4 - 3*A*a*c**2*d**4*e**3 + A*b**3*d**3*e**4 - 3*A*b**2*c*d**4*e**
3 + 3*A*b*c**2*d**5*e**2 - A*c**3*d**6*e + B*a**3*d*e**6 - 3*B*a**2*b*d**2*
e**5 + 3*B*a**2*c*d**3*e**4 + 3*B*a*b**2*d**3*e**4 - 6*B*a*b*c*d**4*e**3 +
3*B*a*c**2*d**5*e**2 - B*b**3*d**4*e**3 + 3*B*b**2*c*d**5*e**2 - 3*B*b*c**2
*d**6*e + B*c**3*d**7)/(d*e**8 + e**9*x) + (a*e**2 - b*d*e + c*d**2)**2*(3*
A*b*e**2 - 6*A*c*d*e + B*a*e**2 - 4*B*b*d*e + 7*B*c*d**2)*log(d + e*x)/e**8
```

3.2100 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=531

$$-\frac{x\left(Ae\left(-9c^2de(2bd-ae)+3bce^2(3bd-2ae)-b^3e^3+10c^3d^3\right)-3B\left(ce^2\left(a^2e^2-6abde+6b^2d^2\right)-b^2e^3(bd-ae)-\right.}{e^7}$$

Rubi [A] time = 1.08, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] -(((A*e*(10*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(3*b*d - 2*a*e) - 9*c^2*d*e*(2*b*
d - a*e)) - 3*B*(5*c^3*d^4 - 2*c^2*d^2*e*(5*b*d - 3*a*e) - b^2*e^3*(b*d - a
*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2)))*x)/e^7) - ((B*(10*c^3*d^3 -
 b^3*e^3 + 3*b*c*e^2*(3*b*d - 2*a*e) - 9*c^2*d*e*(2*b*d - a*e)) - 3*A*c*e*(
2*c^2*d^2 + b^2*e^2 - c*e*(3*b*d - a*e)))*x^2)/(2*e^6) - (c*(A*c*e*(c*d - b
*e) - B*(2*c^2*d^2 + b^2*e^2 - c*e*(3*b*d - a*e)))*x^3)/e^5 - (c^2*(3*B*c*d
 - 3*b*B*e - A*c*e)*x^4)/(4*e^4) + (B*c^3*x^5)/(5*e^3) + ((B*d - A*e)*(c*d^
2 - b*d*e + a*e^2)^3)/(2*e^8*(d + e*x)^2) - ((c*d^2 - b*d*e + a*e^2)^2*(7*B
*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(e^8*(d + e*x)) - (3*(c*
d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a*e) + b*e^2*(2*b*d -
 a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx = \int \left(\frac{-Ae\left(10c^3d^3-b^3e^3+3bce^2(3bd-2ae)-9c^2de(2bd-ae)\right)+3B\left(5c^3d^4-2\right.}{e^7}\right.$$

$$= -\frac{\left(Ae\left(10c^3d^3-b^3e^3+3bce^2(3bd-2ae)-9c^2de(2bd-ae)\right)-3B\left(5c^3d^4-2c^2d\right.}{e^7}$$

Mathematica [A] time = 0.28, size = 503, normalized size = 0.95

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (20*e*(A*e*(-10*c^3*d^3 + b^3*e^3 + 9*c^2*d*e*(2*b*d - a*e) + 3*b*c*e^2*(-3
*b*d + 2*a*e)) + 3*B*(5*c^3*d^4 + b^2*e^3*(-(b*d) + a*e) + 2*c^2*d^2*e*(-5*
b*d + 3*a*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2)))*x + 10*e^2*(3*A*c*
```

```
e*(2*c^2*d^2 + b^2*e^2 + c*e*(-3*b*d + a*e)) + B*(-10*c^3*d^3 + b^3*e^3 + 9
*c^2*d*e*(2*b*d - a*e) + 3*b*c*e^2*(-3*b*d + 2*a*e)))*x^2 + 20*c*e^3*(A*c*e
*(-(c*d) + b*e) + B*(2*c^2*d^2 + b^2*e^2 + c*e*(-3*b*d + a*e)))*x^3 + 5*c^2
*e^4*(-3*B*c*d + 3*b*B*e + A*c*e)*x^4 + 4*B*c^3*e^5*x^5 + (10*(B*d - A*e)*(
c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^2 - (20*(c*d^2 + e*(-(b*d) + a*e))^2
*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e)))/(d + e*x) - 60*(c
*d^2 + e*(-(b*d) + a*e))*(-(A*e*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*e)))
 + B*(7*c^2*d^3 + b*e^2*(2*b*d - a*e) + c*d*e*(-8*b*d + 3*a*e)))*Log[d + e*
x])/(20*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3, x]
```

fricas [B] time = 0.40, size = 1311, normalized size = 2.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*e^7*x^7 - 130*B*c^3*d^7 - 10*A*a^3*e^7 + 110*(3*B*b*c^2 + A*c
^3)*d^6*e - 270*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 70*(B*b^3 + 3*A*a*c^2
 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - 50*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*d^3*e^4 + 90*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 10*(B*a^3 + 3*
A*a^2*b)*d*e^6 - (7*B*c^3*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 2*(7*B*c
^3*d^2*e^5 - 5*(3*B*b*c^2 + A*c^3)*d*e^6 + 10*(B*b^2*c + (B*a + A*b)*c^2)*e
^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 10*(B*b^2*c
+ (B*a + A*b)*c^2)*d*e^6 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^
7)*x^4 + 20*(7*B*c^3*d^4*e^3 - 5*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 10*(B*b^2*c
+ (B*a + A*b)*c^2)*d^2*e^5 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
d*e^6 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 10*(50*B*c^3
*d^5*e^2 - 34*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 63*(B*b^2*c + (B*a + A*b)*c^2)*
d^3*e^4 - 11*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 4*(3*B*a
*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6)*x^2 + 20*(8*B*c^3*d^6*e - 4*(3
*B*b*c^2 + A*c^3)*d^5*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + (B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 - 2*(3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d^2*e^5 + 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*a^3
+ 3*A*a^2*b)*e^7)*x - 60*(7*B*c^3*d^7 - 5*(3*B*b*c^2 + A*c^3)*d^6*e + 10*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - (B*a
^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (7*B*c^3*d^5*e^2 - 5*(3*B*b*c^2 + A*c^3
)*d^4*e^3 + 10*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 2*(B*b^3 + 3*A*a*c^2 +
 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*
c)*d*e^6 - (B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 2*(7*B*c^3*d^6*e - 5*(3
*B*b*c^2 + A*c^3)*d^5*e^2 + 10*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 2*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*d^2*e^5 - (B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6)*x)*log(e*
x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.20, size = 1048, normalized size = 1.97

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(7*B*c^3*d^5 - 15*B*b*c^2*d^4*e - 5*A*c^3*d^4*e + 10*B*b^2*c*d^3*e^2 + 1
0*B*a*c^2*d^3*e^2 + 10*A*b*c^2*d^3*e^2 - 2*B*b^3*d^2*e^3 - 12*B*a*b*c*d^2*e
^3 - 6*A*b^2*c*d^2*e^3 - 6*A*a*c^2*d^2*e^3 + 3*B*a*b^2*d*e^4 + A*b^3*d*e^4
+ 3*B*a^2*c*d*e^4 + 6*A*a*b*c*d*e^4 - B*a^2*b*e^5 - A*a*b^2*e^5 - A*a^2*c*e
^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(4*B*c^3*x^5*e^12 - 15*B*c^3*d*x^4*e^11
 + 40*B*c^3*d^2*x^3*e^10 - 100*B*c^3*d^3*x^2*e^9 + 300*B*c^3*d^4*x*e^8 + 15
*B*b*c^2*x^4*e^12 + 5*A*c^3*x^4*e^12 - 60*B*b*c^2*d*x^3*e^11 - 20*A*c^3*d*x
^3*e^11 + 180*B*b*c^2*d^2*x^2*e^10 + 60*A*c^3*d^2*x^2*e^10 - 600*B*b*c^2*d^
3*x*e^9 - 200*A*c^3*d^3*x*e^9 + 20*B*b^2*c*x^3*e^12 + 20*B*a*c^2*x^3*e^12 +
 20*A*b*c^2*x^3*e^12 - 90*B*b^2*c*d*x^2*e^11 - 90*B*a*c^2*d*x^2*e^11 - 90*A
*b*c^2*d*x^2*e^11 + 360*B*b^2*c*d^2*x*e^10 + 360*B*a*c^2*d^2*x*e^10 + 360*A
*b*c^2*d^2*x*e^10 + 10*B*b^3*x^2*e^12 + 60*B*a*b*c*x^2*e^12 + 30*A*b^2*c*x^
2*e^12 + 30*A*a*c^2*x^2*e^12 - 60*B*b^3*d*x*e^11 - 360*B*a*b*c*d*x*e^11 - 1
80*A*b^2*c*d*x*e^11 - 180*A*a*c^2*d*x*e^11 + 60*B*a*b^2*x*e^12 + 20*A*b^3*x
*e^12 + 60*B*a^2*c*x*e^12 + 120*A*a*b*c*x*e^12)*e^(-15) - 1/2*(13*B*c^3*d^7
 - 33*B*b*c^2*d^6*e - 11*A*c^3*d^6*e + 27*B*b^2*c*d^5*e^2 + 27*B*a*c^2*d^5*
e^2 + 27*A*b*c^2*d^5*e^2 - 7*B*b^3*d^4*e^3 - 42*B*a*b*c*d^4*e^3 - 21*A*b^2*
c*d^4*e^3 - 21*A*a*c^2*d^4*e^3 + 15*B*a*b^2*d^3*e^4 + 5*A*b^3*d^3*e^4 + 15*
B*a^2*c*d^3*e^4 + 30*A*a*b*c*d^3*e^4 - 9*B*a^2*b*d^2*e^5 - 9*A*a*b^2*d^2*e^
5 - 9*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + 3*A*a^2*b*d*e^6 + A*a^3*e^7 + 2*(7*B*
c^3*d^6*e - 18*B*b*c^2*d^5*e^2 - 6*A*c^3*d^5*e^2 + 15*B*b^2*c*d^4*e^3 + 15*
B*a*c^2*d^4*e^3 + 15*A*b*c^2*d^4*e^3 - 4*B*b^3*d^3*e^4 - 24*B*a*b*c*d^3*e^4
 - 12*A*b^2*c*d^3*e^4 - 12*A*a*c^2*d^3*e^4 + 9*B*a*b^2*d^2*e^5 + 3*A*b^3*d^
2*e^5 + 9*B*a^2*c*d^2*e^5 + 18*A*a*b*c*d^2*e^5 - 6*B*a^2*b*d*e^6 - 6*A*a*b^
2*d*e^6 - 6*A*a^2*c*d*e^6 + B*a^3*e^7 + 3*A*a^2*b*e^7)*x)*e^(-8)/(x*e + d)^
2
```

maple [B] time = 0.06, size = 1483, normalized size = 2.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x)
```

```
[Out] -A*c^3*d/e^4*x^3-7/(e*x+d)*B*c^3*d^6/e^8-1/2/(e*x+d)^2*A*c^3*d^6/e^7+1/2/(e
*x+d)^2*B*a^3*d/e^2+6/(e*x+d)*A*c^3*d^5/e^7+1/4*A*c^3/e^3*x^4-1/(e*x+d)*B*a
^3/e^2-1/2/(e*x+d)^2*A*a^3/e+1/2/e^4/(e*x+d)^2*A*b^3*d^3-1/2/e^5/(e*x+d)^2*
B*b^3*d^4+3/e^3*ln(e*x+d)*A*a*b^2-3/e^4*ln(e*x+d)*A*b^3*d+3/e^3*ln(e*x+d)*B
*a^2*b+6/e^5*ln(e*x+d)*B*b^3*d^2+1/e^3*B*x^3*b^2*c+1/e^3*A*x^3*b*c^2+3/4/e^
3*B*x^4*b*c^2+3/e^3*B*a*b^2*x-3/e^4*B*b^3*d*x+3/2/e^3*A*x^2*b^2*c-15/(e*x+d
)*B*a*c^2*d^4/e^6-3/2/(e*x+d)^2*A*a^2*c*d^2/e^3-3/2/(e*x+d)^2*A*a*c^2*d^4/e
^5+3/2/(e*x+d)^2*B*a^2*c*d^3/e^4+3/2/(e*x+d)^2*B*a*c^2*d^5/e^6+3*A*c^3*d^2/
e^5*x^2+1/2/(e*x+d)^2*B*c^3*d^7/e^8+3*A*a^2*c/e^3*ln(e*x+d)+15*A*c^3*d^4/e^
7*ln(e*x+d)-21*B*c^3*d^5/e^8*ln(e*x+d)+15*B*c^3*d^4/e^7*x-3/4*B*c^3*d/e^4*x
^4+18*A*a*c^2*d^2/e^5*ln(e*x+d)-9*B*a^2*c*d/e^4*ln(e*x+d)-30*B*a*c^2*d^3/e^
6*ln(e*x+d)-9/2*B*a*c^2*d/e^4*x^2-9*A*a*c^2*d/e^4*x+18*B*a*c^2*d^2/e^5*x+6/
(e*x+d)*A*a^2*c*d/e^3+12/(e*x+d)*A*a*c^2*d^3/e^5-9/(e*x+d)*B*a^2*c*d^2/e^4+
1/e^3*A*b^3*x+1/2/e^3*B*x^2*b^3+3/2*A*a*c^2/e^3*x^2-5*B*c^3*d^3/e^6*x^2-10*
A*c^3*d^3/e^6*x+3*B*a^2*c/e^3*x-3/e^2/(e*x+d)*A*a^2*b-3/e^4/(e*x+d)*A*b^3*d
^2+4/e^5/(e*x+d)*B*b^3*d^3+B*a*c^2/e^3*x^3+2*B*c^3*d^2/e^5*x^3+1/5*B*c^3/e^
3*x^5+24/e^5/(e*x+d)*B*a*b*c*d^3+3/e^4/(e*x+d)^2*A*a*b*c*d^3-3/e^5/(e*x+d)^
2*B*a*b*c*d^4-18/e^4*ln(e*x+d)*A*a*b*c*d+36/e^5*ln(e*x+d)*B*a*b*c*d^2-18/e^
4*B*a*b*c*d*x-18/e^4/(e*x+d)*A*a*b*c*d^2+3/2/e^6/(e*x+d)^2*A*b*c^2*d^5-3/2/
e^3/(e*x+d)^2*B*d^2*a^2*b-3/2/e^5/(e*x+d)^2*A*b^2*c*d^4-9/e^4/(e*x+d)*B*a*b
^2*d^2-15/e^6/(e*x+d)*B*b^2*c*d^4+18/e^7/(e*x+d)*B*b*c^2*d^5+3/2/e^2/(e*x+d
)^2*A*d*a^2*b-3/2/e^3/(e*x+d)^2*A*d^2*a*b^2+3/e^3*B*x^2*a*b*c-9/2/e^4*B*x^2
*b^2*c*d+9/e^5*B*x^2*b*c^2*d^2-3/2/e^7/(e*x+d)^2*B*b*c^2*d^6-30/e^6*ln(e*x+
d)*A*b*c^2*d^3-9/e^4*ln(e*x+d)*B*a*b^2*d-30/e^6*ln(e*x+d)*B*b^2*c*d^3+45/e^
7*ln(e*x+d)*B*b*c^2*d^4+3/2/e^4/(e*x+d)^2*B*a*b^2*d^3+3/2/e^6/(e*x+d)^2*B*b
```

```
^2*c*d^5+18/e^5*ln(e*x+d)*A*b^2*c*d^2+6/e^3/(e*x+d)*A*a*b^2*d+12/e^5/(e*x+d
)*A*b^2*c*d^3-15/e^6/(e*x+d)*A*b*c^2*d^4+6/e^3/(e*x+d)*B*a^2*b*d-9/2/e^4*A*
x^2*b*c^2*d+18/e^5*B*b^2*c*d^2*x-30/e^6*B*b*c^2*d^3*x+6/e^3*A*a*b*c*x-9/e^4
*A*b^2*c*d*x+18/e^5*A*b*c^2*d^2*x-3/e^4*B*x^3*b*c^2*d
```

maxima [A] time = 0.79, size = 861, normalized size = 1.62

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*B*c^3*d^7 + A*a^3*e^7 - 11*(3*B*b*c^2 + A*c^3)*d^6*e + 27*(B*b^2*c
 + (B*a + A*b)*c^2)*d^5*e^2 - 7*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*d^4*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 9*(B*a^2
*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^6 + 2*(7*B*c^3*d^
6*e - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^
3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + 3*(3*B*a*b^2 +
A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*
e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^10*x^2 + 2*d*e^9*x + d^2*e^8) + 1/20*(
4*B*c^3*e^4*x^5 - 5*(3*B*c^3*d*e^3 - (3*B*b*c^2 + A*c^3)*e^4)*x^4 + 20*(2*B
*c^3*d^2*e^2 - (3*B*b*c^2 + A*c^3)*d*e^3 + (B*b^2*c + (B*a + A*b)*c^2)*e^4)
*x^3 - 10*(10*B*c^3*d^3*e - 6*(3*B*b*c^2 + A*c^3)*d^2*e^2 + 9*(B*b^2*c + (B
*a + A*b)*c^2)*d*e^3 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^4)*x^2
 + 20*(15*B*c^3*d^4 - 10*(3*B*b*c^2 + A*c^3)*d^3*e + 18*(B*b^2*c + (B*a + A
*b)*c^2)*d^2*e^2 - 3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^3 + (3
*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^4)*x)/e^7 - 3*(7*B*c^3*d^5 - 5*
(3*B*b*c^2 + A*c^3)*d^4*e + 10*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^2 - 2*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*d*e^4 - (B*a^2*b + A*a*b^2 + A*a^2*c)*e^5)*log(e*x + d)/
e^8
```

mupad [B] time = 2.51, size = 1297, normalized size = 2.44

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x)
```

```
[Out] x*((A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/e^3 + (3*d^2*((3*d*((A*c^3 +
 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)
/e^3 + (3*B*c^3*d^2)/e^5))/e^2 - (3*d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B
*a*b*c)/e^3 - (3*d^2*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^2 + (3*
d*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*c^2 + 3*B*a
*c^2 + 3*B*b^2*c)/e^3 + (3*B*c^3*d^2)/e^5))/e - (B*c^3*d^3)/e^6))/e - (d^3*
((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^3) - ((A*a^3*e^7 + 13*B*c^3*
d^7 + B*a^3*d*e^6 - 11*A*c^3*d^6*e + 5*A*b^3*d^3*e^4 - 7*B*b^3*d^4*e^3 - 9*
A*a*b^2*d^2*e^5 - 21*A*a*c^2*d^4*e^3 - 9*A*a^2*c*d^2*e^5 + 15*B*a*b^2*d^3*e
^4 - 9*B*a^2*b*d^2*e^5 + 27*A*b*c^2*d^5*e^2 - 21*A*b^2*c*d^4*e^3 + 27*B*a*c
^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4 + 27*B*b^2*c*d^5*e^2 + 3*A*a^2*b*d*e^6 - 33
*B*b*c^2*d^6*e + 30*A*a*b*c*d^3*e^4 - 42*B*a*b*c*d^4*e^3)/(2*e) + x*(B*a^3*
e^6 + 7*B*c^3*d^6 + 3*A*a^2*b*e^6 - 6*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b
^3*d^3*e^3 - 12*A*a*c^2*d^3*e^3 + 9*B*a*b^2*d^2*e^4 + 15*A*b*c^2*d^4*e^2 -
12*A*b^2*c*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 + 15*B*b^2*c*d^
4*e^2 - 6*A*a*b^2*d*e^5 - 6*A*a^2*c*d*e^5 - 6*B*a^2*b*d*e^5 - 18*B*b*c^2*d^
5*e + 18*A*a*b*c*d^2*e^4 - 24*B*a*b*c*d^3*e^3))/(d^2*e^7 + e^9*x^2 + 2*d*e^
8*x) - x^3*((d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*c^2
+ 3*B*a*c^2 + 3*B*b^2*c)/(3*e^3) + (B*c^3*d^2)/e^5) + x^4*((A*c^3 + 3*B*b*c
^2)/(4*e^3) - (3*B*c^3*d)/(4*e^4)) + x^2*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c +
```

```
6*B*a*b*c)/(2*e^3) - (3*d^2*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/(2
*e^2) + (3*d*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*
c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^3 + (3*B*c^3*d^2)/e^5))/(2*e) - (B*c^3*d^3)/
(2*e^6)) + (log(d + e*x)*(3*A*a*b^2*e^5 - 21*B*c^3*d^5 + 3*A*a^2*c*e^5 + 3*
B*a^2*b*e^5 - 3*A*b^3*d*e^4 + 15*A*c^3*d^4*e + 6*B*b^3*d^2*e^3 + 18*A*a*c^2
*d^2*e^3 - 30*A*b*c^2*d^3*e^2 + 18*A*b^2*c*d^2*e^3 - 30*B*a*c^2*d^3*e^2 - 3
0*B*b^2*c*d^3*e^2 - 9*B*a*b^2*d*e^4 - 9*B*a^2*c*d*e^4 + 45*B*b*c^2*d^4*e +
36*B*a*b*c*d^2*e^3 - 18*A*a*b*c*d*e^4))/e^8 + (B*c^3*x^5)/(5*e^3)
```

sympy [B] time = 86.43, size = 1149, normalized size = 2.16

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**3,x)
```

```
[Out] B*c**3*x**5/(5*e**3) + x**4*(A*c**3/(4*e**3) + 3*B*b*c**2/(4*e**3) - 3*B*c*
*3*d/(4*e**4)) + x**3*(A*b*c**2/e**3 - A*c**3*d/e**4 + B*a*c**2/e**3 + B*b*
*2*c/e**3 - 3*B*b*c**2*d/e**4 + 2*B*c**3*d**2/e**5) + x**2*(3*A*a*c**2/(2*e
**3) + 3*A*b**2*c/(2*e**3) - 9*A*b*c**2*d/(2*e**4) + 3*A*c**3*d**2/e**5 + 3
*B*a*b*c/e**3 - 9*B*a*c**2*d/(2*e**4) + B*b**3/(2*e**3) - 9*B*b**2*c*d/(2*e
**4) + 9*B*b*c**2*d**2/e**5 - 5*B*c**3*d**3/e**6) + x*(6*A*a*b*c/e**3 - 9*A
*a*c**2*d/e**4 + A*b**3/e**3 - 9*A*b**2*c*d/e**4 + 18*A*b*c**2*d**2/e**5 -
10*A*c**3*d**3/e**6 + 3*B*a**2*c/e**3 + 3*B*a*b**2/e**3 - 18*B*a*b*c*d/e**4
 + 18*B*a*c**2*d**2/e**5 - 3*B*b**3*d/e**4 + 18*B*b**2*c*d**2/e**5 - 30*B*b
*c**2*d**3/e**6 + 15*B*c**3*d**4/e**7) + (-A*a**3*e**7 - 3*A*a**2*b*d*e**6
+ 9*A*a**2*c*d**2*e**5 + 9*A*a*b**2*d**2*e**5 - 30*A*a*b*c*d**3*e**4 + 21*A
*a*c**2*d**4*e**3 - 5*A*b**3*d**3*e**4 + 21*A*b**2*c*d**4*e**3 - 27*A*b*c**
2*d**5*e**2 + 11*A*c**3*d**6*e - B*a**3*d*e**6 + 9*B*a**2*b*d**2*e**5 - 15*
B*a**2*c*d**3*e**4 - 15*B*a*b**2*d**3*e**4 + 42*B*a*b*c*d**4*e**3 - 27*B*a*
c**2*d**5*e**2 + 7*B*b**3*d**4*e**3 - 27*B*b**2*c*d**5*e**2 + 33*B*b*c**2*d
**6*e - 13*B*c**3*d**7 + x*(-6*A*a**2*b*e**7 + 12*A*a**2*c*d*e**6 + 12*A*a*
b**2*d*e**6 - 36*A*a*b*c*d**2*e**5 + 24*A*a*c**2*d**3*e**4 - 6*A*b**3*d**2*
e**5 + 24*A*b**2*c*d**3*e**4 - 30*A*b*c**2*d**4*e**3 + 12*A*c**3*d**5*e**2
- 2*B*a**3*e**7 + 12*B*a**2*b*d*e**6 - 18*B*a**2*c*d**2*e**5 - 18*B*a*b**2*
d**2*e**5 + 48*B*a*b*c*d**3*e**4 - 30*B*a*c**2*d**4*e**3 + 8*B*b**3*d**3*e*
*4 - 30*B*b**2*c*d**4*e**3 + 36*B*b*c**2*d**5*e**2 - 14*B*c**3*d**6*e))/(2*
d**2*e**8 + 4*d*e**9*x + 2*e**10*x**2) + 3*(a*e**2 - b*d*e + c*d**2)*(A*a*c
*e**3 + A*b**2*e**3 - 5*A*b*c*d*e**2 + 5*A*c**2*d**2*e + B*a*b*e**3 - 3*B*a
*c*d*e**2 - 2*B*b**2*d*e**2 + 8*B*b*c*d**2*e - 7*B*c**2*d**3)*log(d + e*x)/
e**8
```

3.2101 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=521

$$-\frac{\log(d+ex)\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-\right.\right.}{e^8}$$

Rubi [A] time = 0.99, antiderivative size = 519, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]

[Out] -(((B*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)) - A*c*e*
(10*c^2*d^2 + 3*b^2*e^2 - 3*c*e*(4*b*d - a*e)))*x)/e^7) - (c*(A*c*e*(4*c*d
- 3*b*e) - B*(10*c^2*d^2 + 3*b^2*e^2 - 3*c*e*(4*b*d - a*e)))*x^2)/(2*e^6) -
 (c^2*(4*B*c*d - 3*b*B*e - A*c*e)*x^3)/(3*e^5) + (B*c^3*x^4)/(4*e^4) + ((B*
d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(3*e^8*(d + e*x)^3) - ((c*d^2 - b*d*e +
 a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(2*e^8*(d
+ e*x)^2) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a*e
) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))))/
(e^8*(d + e*x)) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d
- 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*b*d -
 a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx = \int \left(\frac{-B(2cd-be)\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)+Ace\left(10c^2d^2+3b^2e^2-\right.}{e^7}\right.$$

$$= -\frac{\left(B(2cd-be)\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)-Ace\left(10c^2d^2+3b^2e^2-3ce\right.\right.}{e^7}$$

Mathematica [A] time = 0.26, size = 488, normalized size = 0.94

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]

[Out] (12*e*(A*c*e*(10*c^2*d^2 + 3*b^2*e^2 + 3*c*e*(-4*b*d + a*e)) - B*(2*c*d - b
*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-5*b*d + 3*a*e)))*x + 6*c*e^2*(A*c*e*(-4
*c*d + 3*b*e) + B*(10*c^2*d^2 + 3*b^2*e^2 + 3*c*e*(-4*b*d + a*e)))*x^2 + 4*
```

```
c^2*e^3*(-4*B*c*d + 3*b*B*e + A*c*e)*x^3 + 3*B*c^3*e^4*x^4 + (4*(B*d - A*e)
*(c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^3 - (6*(c*d^2 + e*(-(b*d) + a*e))^
2*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e)))/(d + e*x)^2 + (3
6*(c*d^2 + e*(-(b*d) + a*e))*(-(A*e*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*
e))) + B*(7*c^2*d^3 + b*e^2*(2*b*d - a*e) + c*d*e*(-8*b*d + 3*a*e))))/(d +
e*x) + 12*(A*e*(-2*c*d + b*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-5*b*d + 3*a*e
)) + B*(35*c^3*d^4 + 30*c^2*d^2*e*(-2*b*d + a*e) + b^2*e^3*(-4*b*d + 3*a*e)
 + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*Log[d + e*x])/(12*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4, x]
```

fricas [B] time = 0.42, size = 1369, normalized size = 2.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*e^7*x^7 + 214*B*c^3*d^7 - 4*A*a^3*e^7 - 148*(3*B*b*c^2 + A*c^
3)*d^6*e + 282*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 52*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 22*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^4 - 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 2*(B*a^3 + 3*A*
a^2*b)*d*e^6 - (7*B*c^3*d*e^6 - 4*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B*c^3
*d^2*e^5 - 4*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + (B*a + A*b)*c^2)*e^7)
*x^5 - 3*(35*B*c^3*d^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 30*(B*b^2*c +
 (B*a + A*b)*c^2)*d*e^6 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7
)*x^4 - 2*(278*B*c^3*d^4*e^3 - 146*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 189*(B*b^2
*c + (B*a + A*b)*c^2)*d^2*e^5 - 18*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d*e^6)*x^3 - 6*(68*B*c^3*d^5*e^2 - 26*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 9*(
B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + 6*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d^2*e^5 - 6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 6*(
B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 6*(37*B*c^3*d^6*e - 34*(3*B*b*c^2 +
 A*c^3)*d^5*e^2 + 81*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 18*(B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + 9*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
2*A*a*b)*c)*d^2*e^5 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*a^3 + 3*A*
a^2*b)*e^7)*x + 12*(35*B*c^3*d^7 - 20*(3*B*b*c^2 + A*c^3)*d^6*e + 30*(B*b^2
*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 + (35*B*c^
3*d^4*e^3 - 20*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + (B*a + A*b)*c^2)
*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*a*b^2
 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 3*(35*B*c^3*d^5*e^2 - 20*(3*B*
b*c^2 + A*c^3)*d^4*e^3 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 4*(B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*a^
2 + 2*A*a*b)*c)*d*e^6)*x^2 + 3*(35*B*c^3*d^6*e - 20*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2
*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^
2*e^5)*x)*log(e*x + d))/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.18, size = 1021, normalized size = 1.96

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (35*B*c^3*d^4 - 60*B*b*c^2*d^3*e - 20*A*c^3*d^3*e + 30*B*b^2*c*d^2*e^2 + 30
*B*a*c^2*d^2*e^2 + 30*A*b*c^2*d^2*e^2 - 4*B*b^3*d*e^3 - 24*B*a*b*c*d*e^3 -
12*A*b^2*c*d*e^3 - 12*A*a*c^2*d*e^3 + 3*B*a*b^2*e^4 + A*b^3*e^4 + 3*B*a^2*c
*e^4 + 6*A*a*b*c*e^4)*e^(-8)*log(abs(x*e + d)) + 1/12*(3*B*c^3*x^4*e^12 - 1
6*B*c^3*d*x^3*e^11 + 60*B*c^3*d^2*x^2*e^10 - 240*B*c^3*d^3*x*e^9 + 12*B*b*c
^2*x^3*e^12 + 4*A*c^3*x^3*e^12 - 72*B*b*c^2*d*x^2*e^11 - 24*A*c^3*d*x^2*e^1
1 + 360*B*b*c^2*d^2*x*e^10 + 120*A*c^3*d^2*x*e^10 + 18*B*b^2*c*x^2*e^12 + 1
8*B*a*c^2*x^2*e^12 + 18*A*b*c^2*x^2*e^12 - 144*B*b^2*c*d*x*e^11 - 144*B*a*c
^2*d*x*e^11 - 144*A*b*c^2*d*x*e^11 + 12*B*b^3*x*e^12 + 72*B*a*b*c*x*e^12 +
36*A*b^2*c*x*e^12 + 36*A*a*c^2*x*e^12)*e^(-16) + 1/6*(107*B*c^3*d^7 - 222*B
*b*c^2*d^6*e - 74*A*c^3*d^6*e + 141*B*b^2*c*d^5*e^2 + 141*B*a*c^2*d^5*e^2 +
 141*A*b*c^2*d^5*e^2 - 26*B*b^3*d^4*e^3 - 156*B*a*b*c*d^4*e^3 - 78*A*b^2*c*
d^4*e^3 - 78*A*a*c^2*d^4*e^3 + 33*B*a*b^2*d^3*e^4 + 11*A*b^3*d^3*e^4 + 33*B
*a^2*c*d^3*e^4 + 66*A*a*b*c*d^3*e^4 - 6*B*a^2*b*d^2*e^5 - 6*A*a*b^2*d^2*e^5
 - 6*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 3*A*a^2*b*d*e^6 - 2*A*a^3*e^7 + 18*(7*
B*c^3*d^5*e^2 - 15*B*b*c^2*d^4*e^3 - 5*A*c^3*d^4*e^3 + 10*B*b^2*c*d^3*e^4 +
 10*B*a*c^2*d^3*e^4 + 10*A*b*c^2*d^3*e^4 - 2*B*b^3*d^2*e^5 - 12*B*a*b*c*d^2
*e^5 - 6*A*b^2*c*d^2*e^5 - 6*A*a*c^2*d^2*e^5 + 3*B*a*b^2*d*e^6 + A*b^3*d*e^
6 + 3*B*a^2*c*d*e^6 + 6*A*a*b*c*d*e^6 - B*a^2*b*e^7 - A*a*b^2*e^7 - A*a^2*c
*e^7)*x^2 + 3*(77*B*c^3*d^6*e - 162*B*b*c^2*d^5*e^2 - 54*A*c^3*d^5*e^2 + 10
5*B*b^2*c*d^4*e^3 + 105*B*a*c^2*d^4*e^3 + 105*A*b*c^2*d^4*e^3 - 20*B*b^3*d^
3*e^4 - 120*B*a*b*c*d^3*e^4 - 60*A*b^2*c*d^3*e^4 - 60*A*a*c^2*d^3*e^4 + 27*
B*a*b^2*d^2*e^5 + 9*A*b^3*d^2*e^5 + 27*B*a^2*c*d^2*e^5 + 54*A*a*b*c*d^2*e^5
 - 6*B*a^2*b*d*e^6 - 6*A*a*b^2*d*e^6 - 6*A*a^2*c*d*e^6 - B*a^3*e^7 - 3*A*a^
2*b*e^7)*x)*e^(-8)/(x*e + d)^3
```

maple [B] time = 0.07, size = 1545, normalized size = 2.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x)
```

```
[Out] -1/2/e^2/(e*x+d)^2*B*a^3+1/e^4*ln(e*x+d)*A*b^3-1/3/e/(e*x+d)^3*A*a^3+1/3/e^
4*A*x^3*c^3+1/e^4*B*b^3*x+1/3/e^8/(e*x+d)^3*B*c^3*d^7-3/e^3/(e*x+d)*A*a^2*c
-3/e^3/(e*x+d)*A*a*b^2+3/e^4/(e*x+d)*A*b^3*d-15/e^7/(e*x+d)*A*c^3*d^4-3/e^3
/(e*x+d)*B*a^2*b-6/e^5/(e*x+d)*B*b^3*d^2+21/e^8/(e*x+d)*B*c^3*d^5-3/2/e^2/(
e*x+d)^2*A*a^2*b-3/2/e^4/(e*x+d)^2*A*b^3*d^2+3/e^7/(e*x+d)^2*A*c^3*d^5+2/e^
5/(e*x+d)^2*B*b^3*d^3-7/2/e^8/(e*x+d)^2*B*c^3*d^6+3/2/e^4*A*x^2*b*c^2-2/e^5
*A*x^2*c^3*d+3/2/e^4*B*x^2*a*c^2+3/2/e^4*B*x^2*b^2*c+5/e^6*B*x^2*c^3*d^2+3/
e^4*A*a*c^2*x+3/e^4*A*b^2*c*x+10/e^6*A*c^3*d^2*x-20/e^7*B*c^3*d^3*x-20/e^7*
ln(e*x+d)*A*c^3*d^3+3/e^4*ln(e*x+d)*B*a^2*c+3/e^4*ln(e*x+d)*B*a*b^2+1/e^4*B
*x^3*b*c^2-4/3/e^5*B*x^3*c^3*d+1/3/e^4/(e*x+d)^3*A*d^3*b^3-1/3/e^7/(e*x+d)^
3*A*c^3*d^6+1/3/e^2/(e*x+d)^3*B*a^3*d-1/3/e^5/(e*x+d)^3*B*b^3*d^4-4/e^5*ln(
e*x+d)*B*b^3*d+35/e^8*ln(e*x+d)*B*c^3*d^4+1/4*B*c^3/e^4*x^4+1/e^6/(e*x+d)^3
*B*b^2*c*d^5-1/e^7/(e*x+d)^3*B*b*c^2*d^6+6/e^4*ln(e*x+d)*A*a*b*c-12/e^5*ln(
e*x+d)*A*a*c^2*d-12/e^5*ln(e*x+d)*A*b^2*c*d+30/e^6*ln(e*x+d)*A*b*c^2*d^2+30
/e^6*ln(e*x+d)*B*a*c^2*d^2+30/e^6*ln(e*x+d)*B*b^2*c*d^2-60/e^7*ln(e*x+d)*B*
b*c^2*d^3+1/e^2/(e*x+d)^3*A*d*a^2*b-1/e^3/(e*x+d)^3*A*d^2*a^2*c-1/e^3/(e*x+
d)^3*A*d^2*a*b^2+9/e^4/(e*x+d)*B*a^2*c*d+9/e^4/(e*x+d)*B*a*b^2*d+30/e^6*B*b
*c^2*d^2*x+2/e^4/(e*x+d)^3*A*d^3*a*b*c-2/e^5/(e*x+d)^3*B*a*b*c*d^4+18/e^4/(
e*x+d)*A*a*b*c*d-36/e^5/(e*x+d)*B*a*b*c*d^2-9/e^4/(e*x+d)^2*A*a*b*c*d^2-24/
e^5*ln(e*x+d)*B*a*b*c*d+12/e^5/(e*x+d)^2*B*a*b*c*d^3+3/e^3/(e*x+d)^2*B*a^2*
b*d-9/2/e^4/(e*x+d)^2*B*a^2*c*d^2-9/2/e^4/(e*x+d)^2*B*a*b^2*d^2-15/2/e^6/(e
*x+d)^2*B*d^4*a*c^2-15/2/e^6/(e*x+d)^2*B*b^2*c*d^4+9/e^7/(e*x+d)^2*B*b*c^2*
d^5+6/e^5/(e*x+d)^2*A*d^3*a*c^2+6/e^5/(e*x+d)^2*A*b^2*c*d^3-15/2/e^6/(e*x+d
)^2*A*b*c^2*d^4+30/e^6/(e*x+d)*B*a*c^2*d^3+30/e^6/(e*x+d)*B*b^2*c*d^3-45/e^
7/(e*x+d)*B*b*c^2*d^4+3/e^3/(e*x+d)^2*A*a^2*c*d+3/e^3/(e*x+d)^2*A*a*b^2*d+3
0/e^6/(e*x+d)*A*b*c^2*d^3-18/e^5/(e*x+d)*A*a*c^2*d^2-18/e^5/(e*x+d)*A*b^2*c
```

```
*d^2+6/e^4*B*a*b*c*x-12/e^5*B*a*c^2*d*x-12/e^5*B*b^2*c*d*x-6/e^5*B*x^2*b*c^
2*d-12/e^5*A*b*c^2*d*x-1/e^5/(e*x+d)^3*A*a*c^2*d^4-1/e^5/(e*x+d)^3*A*b^2*c*
d^4+1/e^6/(e*x+d)^3*A*b*c^2*d^5-1/e^3/(e*x+d)^3*B*d^2*a^2*b+1/e^4/(e*x+d)^3
*B*d^3*a^2*c+1/e^4/(e*x+d)^3*B*d^3*a*b^2+1/e^6/(e*x+d)^3*B*a*c^2*d^5
```

maxima [A] time = 0.79, size = 875, normalized size = 1.68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*B*c^3*d^7 - 2*A*a^3*e^7 - 74*(3*B*b*c^2 + A*c^3)*d^6*e + 141*(B*b^
2*c + (B*a + A*b)*c^2)*d^5*e^2 - 26*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^4*e^3 + 11*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 6*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*b)*d*e^6 + 18*(7*B*
c^3*d^5*e^2 - 5*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 10*(B*b^2*c + (B*a + A*b)*c^2
)*d^3*e^4 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*
b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - (B*a^2*b + A*a*b^2 + A*a^2*c)*
e^7)*x^2 + 3*(77*B*c^3*d^6*e - 54*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 105*(B*b^2*
c + (B*a + A*b)*c^2)*d^4*e^3 - 20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*d^3*e^4 + 9*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 6*(B*a
^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^11*x^3 + 3
*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8) + 1/12*(3*B*c^3*e^3*x^4 - 4*(4*B*c^3*d
*e^2 - (3*B*b*c^2 + A*c^3)*e^3)*x^3 + 6*(10*B*c^3*d^2*e - 4*(3*B*b*c^2 + A*
c^3)*d*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^3)*x^2 - 12*(20*B*c^3*d^3 - 10
*(3*B*b*c^2 + A*c^3)*d^2*e + 12*(B*b^2*c + (B*a + A*b)*c^2)*d*e^2 - (B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^3)*x)/e^7 + (35*B*c^3*d^4 - 20*(3*B*
b*c^2 + A*c^3)*d^3*e + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^2 - 4*(B*b^3 +
3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
2*A*a*b)*c)*e^4)*log(e*x + d)/e^8
```

mupad [B] time = 2.53, size = 1151, normalized size = 2.21

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x)
```

```
[Out] x*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e^4 - (6*d^2*((A*c^3 + 3*B*b
*c^2)/e^4 - (4*B*c^3*d)/e^5))/e^2 + (4*d*((4*d*((A*c^3 + 3*B*b*c^2)/e^4 - (
4*B*c^3*d)/e^5))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^4 + (6*B*c^3*d^2
)/e^6))/e - (4*B*c^3*d^3)/e^7) - x^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^4 - (4*B*
c^3*d)/e^5))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/(2*e^4) + (3*B*c^3*d^2
)/e^6) - ((2*A*a^3*e^7 - 107*B*c^3*d^7 + B*a^3*d*e^6 + 74*A*c^3*d^6*e - 11*
A*b^3*d^3*e^4 + 26*B*b^3*d^4*e^3 + 6*A*a*b^2*d^2*e^5 + 78*A*a*c^2*d^4*e^3 +
 6*A*a^2*c*d^2*e^5 - 33*B*a*b^2*d^3*e^4 + 6*B*a^2*b*d^2*e^5 - 141*A*b*c^2*d
^5*e^2 + 78*A*b^2*c*d^4*e^3 - 141*B*a*c^2*d^5*e^2 - 33*B*a^2*c*d^3*e^4 - 14
1*B*b^2*c*d^5*e^2 + 3*A*a^2*b*d*e^6 + 222*B*b*c^2*d^6*e - 66*A*a*b*c*d^3*e^
4 + 156*B*a*b*c*d^4*e^3)/(6*e) + x*((B*a^3*e^6)/2 - (77*B*c^3*d^6)/2 + (3*A
*a^2*b*e^6)/2 + 27*A*c^3*d^5*e - (9*A*b^3*d^2*e^4)/2 + 10*B*b^3*d^3*e^3 + 3
0*A*a*c^2*d^3*e^3 - (27*B*a*b^2*d^2*e^4)/2 - (105*A*b*c^2*d^4*e^2)/2 + 30*A
*b^2*c*d^3*e^3 - (105*B*a*c^2*d^4*e^2)/2 - (27*B*a^2*c*d^2*e^4)/2 - (105*B*
b^2*c*d^4*e^2)/2 + 3*A*a*b^2*d*e^5 + 3*A*a^2*c*d*e^5 + 3*B*a^2*b*d*e^5 + 81
*B*b*c^2*d^5*e - 27*A*a*b*c*d^2*e^4 + 60*B*a*b*c*d^3*e^3) + x^2*(3*A*a*b^2*
e^6 + 3*A*a^2*c*e^6 + 3*B*a^2*b*e^6 - 3*A*b^3*d*e^5 - 21*B*c^3*d^5*e + 15*A
*c^3*d^4*e^2 + 6*B*b^3*d^2*e^4 + 18*A*a*c^2*d^2*e^4 - 30*A*b*c^2*d^3*e^3 +
18*A*b^2*c*d^2*e^4 - 30*B*a*c^2*d^3*e^3 + 45*B*b*c^2*d^4*e^2 - 30*B*b^2*c*d
^3*e^3 - 9*B*a*b^2*d*e^5 - 9*B*a^2*c*d*e^5 + 36*B*a*b*c*d^2*e^4 - 18*A*a*b*
```

```
c*d*e^5))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) + x^3*((A*c^3 +
3*B*b*c^2)/(3*e^4) - (4*B*c^3*d)/(3*e^5)) + (log(d + e*x)*(A*b^3*e^4 + 35*B
*c^3*d^4 + 3*B*a*b^2*e^4 + 3*B*a^2*c*e^4 - 20*A*c^3*d^3*e - 4*B*b^3*d*e^3 +
 30*A*b*c^2*d^2*e^2 + 30*B*a*c^2*d^2*e^2 + 30*B*b^2*c*d^2*e^2 + 6*A*a*b*c*e
^4 - 12*A*a*c^2*d*e^3 - 12*A*b^2*c*d*e^3 - 60*B*b*c^2*d^3*e - 24*B*a*b*c*d*
e^3))/e^8 + (B*c^3*x^4)/(4*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**4,x)
```

```
[Out] Timed out
```

3.2102 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{(d+ex)^5}\,dx$

Optimal. Leaf size=533

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2\right.}{e^8(d+ex)}$$

Rubi [A] time = 0.94, antiderivative size = 531, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] -((c*(A*c*e*(5*c*d - 3*b*e) - 3*B*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))
)*x)/e^7) - (c^2*(5*B*c*d - 3*b*B*e - A*c*e)*x^2)/(2*e^6) + (B*c^3*x^3)/(3*
e^5) + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(4*e^8*(d + e*x)^4) - ((c*d^
2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))
/(3*e^8*(d + e*x)^3) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*
b*d - 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d
 - a*e))))/(2*e^8*(d + e*x)^2) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 -
 2*c*e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*
d^2*e*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(e^8*(d
+ e*x)) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*Log[d
 + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx = \int \left(\frac{c\left(-Ace(5cd-3be)+3B\left(5c^2d^2+b^2e^2-ce(5bd-ae)\right)\right)}{e^7}+\frac{c^2(-5Bcd+3bB}{e^6}\right.$$

$$= -\frac{c\left(Ace(5cd-3be)-3B\left(5c^2d^2+b^2e^2-ce(5bd-ae)\right)\right)x}{e^7}-\frac{c^2(5Bcd-3bBe-}{2e^6}$$

Mathematica [A] time = 0.25, size = 496, normalized size = 0.93

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] (12*c*e*(A*c*e*(-5*c*d + 3*b*e) + 3*B*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d +
a*e)))*x + 6*c^2*e^2*(-5*B*c*d + 3*b*B*e + A*c*e)*x^2 + 4*B*c^3*e^3*x^3 + (
```

```
3*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^4 - (4*(c*d^2 + e*(-(
b*d) + a*e))^2*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e)))/(d
+ e*x)^3 + (18*(c*d^2 + e*(-(b*d) + a*e))*(-(A*e*(5*c^2*d^2 + b^2*e^2 + c*e
*(-5*b*d + a*e))) + B*(7*c^2*d^3 + b*e^2*(2*b*d - a*e) + c*d*e*(-8*b*d + 3*
a*e))))/(d + e*x)^2 - (12*(A*e*(-2*c*d + b*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e
*(-5*b*d + 3*a*e)) + B*(35*c^3*d^4 + 30*c^2*d^2*e*(-2*b*d + a*e) + b^2*e^3*
(-4*b*d + 3*a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2))))/(d + e*x)
+ 12*(3*A*c*e*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*e)) + B*(-35*c^3*d^3 +
 b^3*e^3 + 15*c^2*d*e*(3*b*d - a*e) + 3*b*c*e^2*(-5*b*d + 2*a*e)))*Log[d +
e*x])/(12*e^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5, x]
```

fricas [B] time = 0.40, size = 1343, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*c^3*e^7*x^7 - 319*B*c^3*d^7 - 3*A*a^3*e^7 + 171*(3*B*b*c^2 + A*c^
3)*d^6*e - 231*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 25*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*
b)*d*e^6 - 2*(7*B*c^3*d*e^6 - 3*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 12*(7*B*c^3*
d^2*e^5 - 3*(3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^7)*
x^5 + 4*(139*B*c^3*d^3*e^4 - 51*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 36*(B*b^2*c +
 (B*a + A*b)*c^2)*d*e^6)*x^4 + 4*(136*B*c^3*d^4*e^3 - 24*(3*B*b*c^2 + A*c^3
)*d^3*e^4 - 36*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 12*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d*e^6 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)
*c)*e^7)*x^3 - 6*(74*B*c^3*d^5*e^2 - 66*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 126*(
B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 18*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*d^2*e^5 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 3*
(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 - 4*(214*B*c^3*d^6*e - 126*(3*B*b*c^
2 + A*c^3)*d^5*e^2 + 186*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 22*(B*b^3 +
3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^
2 + 2*A*a*b)*c)*d^2*e^5 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + (B*a^3 +
3*A*a^2*b)*e^7)*x - 12*(35*B*c^3*d^7 - 15*(3*B*b*c^2 + A*c^3)*d^6*e + 15*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^4*e^3 + (35*B*c^3*d^3*e^4 - 15*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b
^2*c + (B*a + A*b)*c^2)*d*e^6 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*e^7)*x^4 + 4*(35*B*c^3*d^4*e^3 - 15*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 15*(B*b^
2*c + (B*a + A*b)*c^2)*d^2*e^5 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*d*e^6)*x^3 + 6*(35*B*c^3*d^5*e^2 - 15*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B
*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^2*e^5)*x^2 + 4*(35*B*c^3*d^6*e - 15*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15
*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d^3*e^4)*x)*log(e*x + d))/(e^12*x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2
 + 4*d^3*e^9*x + d^4*e^8)
```

giac [B] time = 0.42, size = 1567, normalized size = 2.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="giac")

[Out] 1/6*(2*B*c^3 - 3*(7*B*c^3*d*e - 3*B*b*c^2*e^2 - A*c^3*e^2)*e^(-1)/(x*e + d) + 18*(7*B*c^3*d^2*e^2 - 6*B*b*c^2*d*e^3 - 2*A*c^3*d*e^3 + B*b^2*c*e^4 + B*a*c^2*e^4 + A*b*c^2*e^4)*e^(-2)/(x*e + d)^2)*(x*e + d)^3*e^(-8) + (35*B*c^3*d^3 - 45*B*b*c^2*d^2*e - 15*A*c^3*d^2*e + 15*B*b^2*c*d*e^2 + 15*B*a*c^2*d*e^2 + 15*A*b*c^2*d*e^2 - B*b^3*e^3 - 6*B*a*b*c*e^3 - 3*A*b^2*c*e^3 - 3*A*a*c^2*e^3)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(420*B*c^3*d^4*e^36/(x*e + d) - 126*B*c^3*d^5*e^36/(x*e + d)^2 + 28*B*c^3*d^6*e^36/(x*e + d)^3 - 3*B*c^3*d^7*e^36/(x*e + d)^4 - 720*B*b*c^2*d^3*e^37/(x*e + d) - 240*A*c^3*d^3*e^37/(x*e + d) + 270*B*b*c^2*d^4*e^37/(x*e + d)^2 + 90*A*c^3*d^4*e^37/(x*e + d)^2 - 72*B*b*c^2*d^5*e^37/(x*e + d)^3 - 24*A*c^3*d^5*e^37/(x*e + d)^3 + 9*B*b*c^2*d^6*e^37/(x*e + d)^4 + 3*A*c^3*d^6*e^37/(x*e + d)^4 + 360*B*b^2*c*d^2*e^38/(x*e + d) + 360*B*a*c^2*d^2*e^38/(x*e + d) + 360*A*b*c^2*d^2*e^38/(x*e + d) - 180*B*b^2*c*d^3*e^38/(x*e + d)^2 - 180*B*a*c^2*d^3*e^38/(x*e + d)^2 - 180*A*b*c^2*d^3*e^38/(x*e + d)^2 + 60*B*b^2*c*d^4*e^38/(x*e + d)^3 + 60*B*a*c^2*d^4*e^38/(x*e + d)^3 + 60*A*b*c^2*d^4*e^38/(x*e + d)^3 - 9*B*b^2*c*d^5*e^38/(x*e + d)^4 - 9*B*a*c^2*d^5*e^38/(x*e + d)^4 - 9*A*b*c^2*d^5*e^38/(x*e + d)^4 - 48*B*b^3*d*e^39/(x*e + d) - 288*B*a*b*c*d*e^39/(x*e + d) - 144*A*b^2*c*d*e^39/(x*e + d) - 144*A*a*c^2*d*e^39/(x*e + d) + 36*B*b^3*d^2*e^39/(x*e + d)^2 + 216*B*a*b*c*d^2*e^39/(x*e + d)^2 + 108*A*b^2*c*d^2*e^39/(x*e + d)^2 + 108*A*a*c^2*d^2*e^39/(x*e + d)^2 - 16*B*b^3*d^3*e^39/(x*e + d)^3 - 96*B*a*b*c*d^3*e^39/(x*e + d)^3 - 48*A*b^2*c*d^3*e^39/(x*e + d)^3 - 48*A*a*c^2*d^3*e^39/(x*e + d)^3 + 3*B*b^3*d^4*e^39/(x*e + d)^4 + 18*B*a*b*c*d^4*e^39/(x*e + d)^4 + 9*A*b^2*c*d^4*e^39/(x*e + d)^4 + 9*A*a*c^2*d^4*e^39/(x*e + d)^4 + 36*B*a*b^2*e^40/(x*e + d) + 12*A*b^3*e^40/(x*e + d) + 36*B*a^2*c*e^40/(x*e + d) + 72*A*a*b*c*e^40/(x*e + d) - 54*B*a*b^2*d*e^40/(x*e + d)^2 - 18*A*b^3*d*e^40/(x*e + d)^2 - 54*B*a^2*c*d*e^40/(x*e + d)^2 - 108*A*a*b*c*d*e^40/(x*e + d)^2 + 36*B*a*b^2*d^2*e^40/(x*e + d)^3 + 12*A*b^3*d^2*e^40/(x*e + d)^3 + 36*B*a^2*c*d^2*e^40/(x*e + d)^3 + 72*A*a*b*c*d^2*e^40/(x*e + d)^3 - 9*B*a*b^2*d^3*e^40/(x*e + d)^4 - 3*A*b^3*d^3*e^40/(x*e + d)^4 - 9*B*a^2*c*d^3*e^40/(x*e + d)^4 - 18*A*a*b*c*d^3*e^40/(x*e + d)^4 + 18*B*a^2*b*e^41/(x*e + d)^2 + 18*A*a*b^2*e^41/(x*e + d)^2 + 18*A*a^2*c*e^41/(x*e + d)^2 - 24*B*a^2*b*d*e^41/(x*e + d)^3 - 24*A*a*b^2*d*e^41/(x*e + d)^3 - 24*A*a^2*c*d*e^41/(x*e + d)^3 + 9*B*a^2*b*d^2*e^41/(x*e + d)^4 + 9*A*a*b^2*d^2*e^41/(x*e + d)^4 + 9*A*a^2*c*d^2*e^41/(x*e + d)^4 + 4*B*a^3*e^42/(x*e + d)^3 + 12*A*a^2*b*e^42/(x*e + d)^3 - 3*B*a^3*d*e^42/(x*e + d)^4 - 9*A*a^2*b*d*e^42/(x*e + d)^4 + 3*A*a^3*e^43/(x*e + d)^4)*e^(-44)

maple [B] time = 0.07, size = 1605, normalized size = 3.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x)

[Out] 1/e^5*ln(e*x+d)*B*b^3-1/3/e^2/(e*x+d)^3*B*a^3-1/4/e/(e*x+d)^4*A*a^3+1/2*c^3/e^5*A*x^2+3*c/e^5*B*b^2*x+15*c^3/e^7*B*d^2*x+20/e^7/(e*x+d)*A*c^3*d^3-3/e^4/(e*x+d)*B*a^2*c-3/e^4/(e*x+d)*B*a*b^2+4/e^5/(e*x+d)*B*b^3*d-35/e^8/(e*x+d)*B*c^3*d^4-3/2/e^3/(e*x+d)^2*A*a^2*c-3/2/e^3/(e*x+d)^2*A*a*b^2+3/2/e^4/(e*x+d)^2*A*b^3*d-15/2/e^7/(e*x+d)^2*A*c^3*d^4-3/2/e^3/(e*x+d)^2*B*a^2*b-3/e^5/(e*x+d)^2*B*b^3*d^2+21/2/e^8/(e*x+d)^2*B*c^3*d^5+1/4/e^4/(e*x+d)^4*A*d^3*b^3-1/4/e^7/(e*x+d)^4*A*c^3*d^6+1/4/e^2/(e*x+d)^4*B*a^3*d-1/4/e^5/(e*x+d)^4*B*d^4*b^3+1/4/e^8/(e*x+d)^4*B*c^3*d^7+3/e^5*ln(e*x+d)*A*a*c^2+3/e^5*ln(e*x+d)*A*b^2*c+15/e^7*ln(e*x+d)*A*c^3*d^2-35/e^8*ln(e*x+d)*B*c^3*d^3-1/e^2/(e*x+d)^3*A*a^2*b-1/e^4/(e*x+d)^3*A*b^3*d^2+2/e^7/(e*x+d)^3*A*c^3*d^5+4/3/e^5/(e*x+d)^3*B*b^3*d^3-7/3/e^8/(e*x+d)^3*B*c^3*d^6+3/2*c^2/e^5*B*x^2*b-5/2*c^3/e^6*B*x^2*d-1/e^4/(e*x+d)*A*b^3+3*c^2/e^5*B*x*a+1/3*B*c^3/e^5*x^3+3*c^2/e^5*A*b*x-5*c^3/e^6*A*x*d-45/2/e^7/(e*x+d)^2*B*b*c^2*d^4+3/4/e^2/(e*x+d)^4*A*d

```
*a^2*b-3/4/e^3/(e*x+d)^4*A*d^2*a^2*c+12/e^5/(e*x+d)*A*b^2*c*d-30/e^6/(e*x+d
)*A*b*c^2*d^2-30/e^6/(e*x+d)*B*a*c^2*d^2-30/e^6/(e*x+d)*B*b^2*c*d^2+60/e^7/
(e*x+d)*B*b*c^2*d^3-9/e^5/(e*x+d)^2*A*a*c^2*d^2-9/e^5/(e*x+d)^2*A*b^2*c*d^2
+15/e^6/(e*x+d)^2*A*b*c^2*d^3+9/2/e^4/(e*x+d)^2*B*a^2*c*d+9/2/e^4/(e*x+d)^2
*B*a*b^2*d+15/e^6/(e*x+d)^2*B*a*c^2*d^3+15/e^6/(e*x+d)^2*B*b^2*c*d^3+2/e^3/
(e*x+d)^3*A*a*b^2*d+4/e^5/(e*x+d)^3*A*d^3*a*c^2+4/e^5/(e*x+d)^3*A*b^2*c*d^3
-15*c^2/e^6*B*b*d*x-6/e^4/(e*x+d)*A*a*b*c+12/e^5/(e*x+d)*A*a*c^2*d+3/4/e^4/
(e*x+d)^4*B*d^3*a^2*c+9/e^4/(e*x+d)^2*A*a*b*c*d-6/e^4/(e*x+d)^3*A*a*b*c*d^2
+8/e^5/(e*x+d)^3*B*a*b*c*d^3+24/e^5/(e*x+d)*B*a*b*c*d-18/e^5/(e*x+d)^2*B*a*
b*c*d^2+3/2/e^4/(e*x+d)^4*A*d^3*a*b*c-3/2/e^5/(e*x+d)^4*B*d^4*a*b*c-5/e^6/(
e*x+d)^3*B*b^2*c*d^4-5/e^6/(e*x+d)^3*B*d^4*a*c^2-3/e^4/(e*x+d)^3*B*a*b^2*d^
2-5/e^6/(e*x+d)^3*A*b*c^2*d^4+2/e^3/(e*x+d)^3*B*a^2*b*d-3/e^4/(e*x+d)^3*B*a
^2*c*d^2+3/4/e^4/(e*x+d)^4*B*d^3*a*b^2+3/4/e^6/(e*x+d)^4*B*a*c^2*d^5+3/4/e^
6/(e*x+d)^4*B*b^2*c*d^5-3/4/e^7/(e*x+d)^4*B*b*c^2*d^6-15/e^6*ln(e*x+d)*A*b*
c^2*d+6/e^5*ln(e*x+d)*B*a*b*c-15/e^6*ln(e*x+d)*B*a*c^2*d-15/e^6*ln(e*x+d)*B
*b^2*c*d+45/e^7*ln(e*x+d)*B*b*c^2*d^2+2/e^3/(e*x+d)^3*A*a^2*c*d+3/4/e^6/(e*
x+d)^4*A*b*c^2*d^5-3/4/e^3/(e*x+d)^4*B*d^2*a^2*b+6/e^7/(e*x+d)^3*B*b*c^2*d^
5-3/4/e^3/(e*x+d)^4*A*d^2*a*b^2-3/4/e^5/(e*x+d)^4*A*a*c^2*d^4-3/4/e^5/(e*x+
d)^4*A*d^4*b^2*c
```

maxima [A] time = 0.72, size = 884, normalized size = 1.66

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(319*B*c^3*d^7 + 3*A*a^3*e^7 - 171*(3*B*b*c^2 + A*c^3)*d^6*e + 231*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 25*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 + 3
*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^6 + 12*(35
*B*c^3*d^4*e^3 - 20*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + (B*a + A*b)
*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 18*(63*B*c^3*d^5*e^2 - 35
*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 50*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 6*(
B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*d*e^6 + (B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 4*(2
59*B*c^3*d^6*e - 141*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 195*(B*b^2*c + (B*a + A*
b)*c^2)*d^4*e^3 - 22*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 +
3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 3*(B*a^2*b + A*a*b^
2 + A*a^2*c)*d*e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^12*x^4 + 4*d*e^11*x^3 +
 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8) + 1/6*(2*B*c^3*e^2*x^3 - 3*(5*B*c^
3*d*e - (3*B*b*c^2 + A*c^3)*e^2)*x^2 + 6*(15*B*c^3*d^2 - 5*(3*B*b*c^2 + A*c
^3)*d*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^2)*x)/e^7 - (35*B*c^3*d^3 - 15*(3
*B*b*c^2 + A*c^3)*d^2*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^2 - (B*b^3 + 3
*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 2.54, size = 1106, normalized size = 2.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x)
```

```
[Out] x^2*((A*c^3 + 3*B*b*c^2)/(2*e^5) - (5*B*c^3*d)/(2*e^6)) - ((3*A*a^3*e^7 + 3
19*B*c^3*d^7 + B*a^3*d*e^6 - 171*A*c^3*d^6*e + 3*A*b^3*d^3*e^4 - 25*B*b^3*d
^4*e^3 + 3*A*a*b^2*d^2*e^5 - 75*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 + 9*B*a
*b^2*d^3*e^4 + 3*B*a^2*b*d^2*e^5 + 231*A*b*c^2*d^5*e^2 - 75*A*b^2*c*d^4*e^3
 + 231*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4 + 231*B*b^2*c*d^5*e^2 + 3*A*a^2*
```

```
b*d*e^6 - 513*B*b*c^2*d^6*e + 18*A*a*b*c*d^3*e^4 - 150*B*a*b*c*d^4*e^3)/(12
*e) + x^3*(A*b^3*e^6 + 3*B*a*b^2*e^6 + 3*B*a^2*c*e^6 - 4*B*b^3*d*e^5 - 20*A
*c^3*d^3*e^3 + 35*B*c^3*d^4*e^2 + 30*A*b*c^2*d^2*e^4 + 30*B*a*c^2*d^2*e^4 -
 60*B*b*c^2*d^3*e^3 + 30*B*b^2*c*d^2*e^4 + 6*A*a*b*c*e^6 - 12*A*a*c^2*d*e^5
 - 12*A*b^2*c*d*e^5 - 24*B*a*b*c*d*e^5) + x*((B*a^3*e^6)/3 + (259*B*c^3*d^6
)/3 + A*a^2*b*e^6 - 47*A*c^3*d^5*e + A*b^3*d^2*e^4 - (22*B*b^3*d^3*e^3)/3 -
 22*A*a*c^2*d^3*e^3 + 3*B*a*b^2*d^2*e^4 + 65*A*b*c^2*d^4*e^2 - 22*A*b^2*c*d
^3*e^3 + 65*B*a*c^2*d^4*e^2 + 3*B*a^2*c*d^2*e^4 + 65*B*b^2*c*d^4*e^2 + A*a*
b^2*d*e^5 + A*a^2*c*d*e^5 + B*a^2*b*d*e^5 - 141*B*b*c^2*d^5*e + 6*A*a*b*c*d
^2*e^4 - 44*B*a*b*c*d^3*e^3) + x^2*((3*A*a*b^2*e^6)/2 + (3*A*a^2*c*e^6)/2 +
 (3*B*a^2*b*e^6)/2 + (3*A*b^3*d*e^5)/2 + (189*B*c^3*d^5*e)/2 - (105*A*c^3*d
^4*e^2)/2 - 9*B*b^3*d^2*e^4 - 27*A*a*c^2*d^2*e^4 + 75*A*b*c^2*d^3*e^3 - 27*
A*b^2*c*d^2*e^4 + 75*B*a*c^2*d^3*e^3 - (315*B*b*c^2*d^4*e^2)/2 + 75*B*b^2*c
*d^3*e^3 + (9*B*a*b^2*d*e^5)/2 + (9*B*a^2*c*d*e^5)/2 - 54*B*a*b*c*d^2*e^4 +
 9*A*a*b*c*d*e^5))/(d^4*e^7 + e^11*x^4 + 4*d^3*e^8*x + 4*d*e^10*x^3 + 6*d^2
*e^9*x^2) - x*((5*d*((A*c^3 + 3*B*b*c^2)/e^5 - (5*B*c^3*d)/e^6))/e - (3*A*b
*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^5 + (10*B*c^3*d^2)/e^7) + (log(d + e*x)*(B*
b^3*e^3 - 35*B*c^3*d^3 + 3*A*a*c^2*e^3 + 3*A*b^2*c*e^3 + 15*A*c^3*d^2*e + 6
*B*a*b*c*e^3 - 15*A*b*c^2*d*e^2 - 15*B*a*c^2*d*e^2 + 45*B*b*c^2*d^2*e - 15*
B*b^2*c*d*e^2))/e^8 + (B*c^3*x^3)/(3*e^5)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**5,x)
```

```
[Out] Timed out
```

3.2103 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{(d+ex)^6} dx$

Optimal. Leaf size=534

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2 \cdots\right.}{2e^8(d+ex)^2}$$

Rubi [A] time = 0.90, antiderivative size = 532, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] -((c^2*(6*B*c*d - 3*b*B*e - A*c*e)*x)/e^7) + (B*c^3*x^2)/(2*e^6) + ((B*d -
A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(5*e^8*(d + e*x)^5) - ((c*d^2 - b*d*e + a*e
^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(4*e^8*(d + e*
x)^4) + ((c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a*e) + b*
e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))))/(e^8*(
d + e*x)^3) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a
*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*b*d - a*e)
 + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(2*e^8*(d + e*x)^2) + (B*(3
5*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3*b*d - a*e))
 - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(e^8*(d + e*x)) - (3*
c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*d - a*e)))*Log[d
 + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^6}\,dx = \int \left(\frac{c^2(-6Bcd+3bBe+Ace)}{e^7}+\frac{Bc^3x}{e^6}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^6}+ \cdots\right)$$

$$= -\frac{c^2(6Bcd-3bBe-Ace)x}{e^7}+\frac{Bc^3x^2}{2e^6}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{5e^8(d+ex)^5}- \cdots$$

Mathematica [A] time = 0.56, size = 885, normalized size = 1.66

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] (A*e*(-2*c^3*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2*x^2 + 400*d^3*e^3*x^3 + 50
*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6) - e^3*(4*a^3*e^3 + 3*a^2*b*e^2*(d
```

```
 + 5*e*x) + 2*a*b^2*e*(d^2 + 5*d*e*x + 10*e^2*x^2) + b^3*(d^3 + 5*d^2*e*x +
 10*d*e^2*x^2 + 10*e^3*x^3)) - 2*c*e^2*(a^2*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2
) + 3*a*b*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 6*b^2*(d^4 + 5*
d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + c^2*e*(-12*a*e*(d^4
 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4) + b*d*(137*d^4 +
625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4))) + B*(c^3*(4
59*d^7 + 1875*d^6*e*x + 2700*d^5*e^2*x^2 + 1300*d^4*e^3*x^3 - 400*d^3*e^4*x
^4 - 500*d^2*e^5*x^5 - 70*d*e^6*x^6 + 10*e^7*x^7) - e^3*(a^3*e^3*(d + 5*e*x
) + 2*a^2*b*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*a*b^2*e*(d^3 + 5*d^2*e*x +
 10*d*e^2*x^2 + 10*e^3*x^3) + 4*b^3*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*
d*e^3*x^3 + 5*e^4*x^4)) + c*e^2*(-3*a^2*e^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2
 + 10*e^3*x^3) - 24*a*b*e*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3
+ 5*e^4*x^4) + b^2*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*
x^3 + 300*e^4*x^4)) + c^2*e*(a*d*e*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^
2 + 900*d*e^3*x^3 + 300*e^4*x^4) - 6*b*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2*
x^2 + 400*d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6))) + 60*
c*(A*c*e*(-2*c*d + b*e) + B*(7*c^2*d^2 + b^2*e^2 + c*e*(-6*b*d + a*e)))*(d
+ e*x)^5*Log[d + e*x])/(20*e^8*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6, x]
```

fricas [B] time = 0.40, size = 1247, normalized size = 2.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*c^3*e^7*x^7 + 459*B*c^3*d^7 - 4*A*a^3*e^7 - 174*(3*B*b*c^2 + A*c
^3)*d^6*e + 137*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)
*c)*d^3*e^4 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*b)
*d*e^6 - 10*(7*B*c^3*d*e^6 - 2*(3*B*b*c^2 + A*c^3)*e^7)*x^6 - 100*(5*B*c^3*
d^2*e^5 - (3*B*b*c^2 + A*c^3)*d*e^6)*x^5 - 20*(20*B*c^3*d^3*e^4 + 5*(3*B*b*
c^2 + A*c^3)*d^2*e^5 - 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 10*(130*B*c^3*d^4*e^3 - 80*(3*B*b
*c^2 + A*c^3)*d^3*e^4 + 90*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 - 4*(B*b^3 +
 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
 2*A*a*b)*c)*e^7)*x^3 + 10*(270*B*c^3*d^5*e^2 - 120*(3*B*b*c^2 + A*c^3)*d^4
*e^3 + 110*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 4*(B*b^3 + 3*A*a*c^2 + 3*(
2*B*a*b + A*b^2)*c)*d^2*e^5 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d
*e^6 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 5*(375*B*c^3*d^6*e - 150*
(3*B*b*c^2 + A*c^3)*d^5*e^2 + 125*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 4*(
B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 - (3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*
a^3 + 3*A*a^2*b)*e^7)*x + 60*(7*B*c^3*d^7 - 2*(3*B*b*c^2 + A*c^3)*d^6*e + (
B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + (7*B*c^3*d^2*e^5 - 2*(3*B*b*c^2 + A*c^
3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 + 5*(7*B*c^3*d^3*e^4 - 2*(3
*B*b*c^2 + A*c^3)*d^2*e^5 + (B*b^2*c + (B*a + A*b)*c^2)*d*e^6)*x^4 + 10*(7*
B*c^3*d^4*e^3 - 2*(3*B*b*c^2 + A*c^3)*d^3*e^4 + (B*b^2*c + (B*a + A*b)*c^2)
*d^2*e^5)*x^3 + 10*(7*B*c^3*d^5*e^2 - 2*(3*B*b*c^2 + A*c^3)*d^4*e^3 + (B*b^
2*c + (B*a + A*b)*c^2)*d^3*e^4)*x^2 + 5*(7*B*c^3*d^6*e - 2*(3*B*b*c^2 + A*c
```

```
^3)*d^5*e^2 + (B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3)*x)*log(e*x + d))/(e^13*x
^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*d^4*e^9*x + d^5*e
^8)
```

giac [A] time = 0.18, size = 998, normalized size = 1.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 3*(7*B*c^3*d^2 - 6*B*b*c^2*d*e - 2*A*c^3*d*e + B*b^2*c*e^2 + B*a*c^2*e^2 +
A*b*c^2*e^2)*e^(-8)*log(abs(x*e + d)) + 1/2*(B*c^3*x^2*e^6 - 12*B*c^3*d*x*e
^5 + 6*B*b*c^2*x*e^6 + 2*A*c^3*x*e^6)*e^(-12) + 1/20*(459*B*c^3*d^7 - 522*B
*b*c^2*d^6*e - 174*A*c^3*d^6*e + 137*B*b^2*c*d^5*e^2 + 137*B*a*c^2*d^5*e^2
+ 137*A*b*c^2*d^5*e^2 - 4*B*b^3*d^4*e^3 - 24*B*a*b*c*d^4*e^3 - 12*A*b^2*c*d
^4*e^3 - 12*A*a*c^2*d^4*e^3 - 3*B*a*b^2*d^3*e^4 - A*b^3*d^3*e^4 - 3*B*a^2*c
*d^3*e^4 - 6*A*a*b*c*d^3*e^4 - 2*B*a^2*b*d^2*e^5 - 2*A*a*b^2*d^2*e^5 - 2*A*
a^2*c*d^2*e^5 - B*a^3*d*e^6 - 3*A*a^2*b*d*e^6 + 20*(35*B*c^3*d^3*e^4 - 45*B
*b*c^2*d^2*e^5 - 15*A*c^3*d^2*e^5 + 15*B*b^2*c*d*e^6 + 15*B*a*c^2*d*e^6 + 1
5*A*b*c^2*d*e^6 - B*b^3*e^7 - 6*B*a*b*c*e^7 - 3*A*b^2*c*e^7 - 3*A*a*c^2*e^7
)*x^4 - 4*A*a^3*e^7 + 10*(245*B*c^3*d^4*e^3 - 300*B*b*c^2*d^3*e^4 - 100*A*c
^3*d^3*e^4 + 90*B*b^2*c*d^2*e^5 + 90*B*a*c^2*d^2*e^5 + 90*A*b*c^2*d^2*e^5 -
 4*B*b^3*d*e^6 - 24*B*a*b*c*d*e^6 - 12*A*b^2*c*d*e^6 - 12*A*a*c^2*d*e^6 - 3
*B*a*b^2*e^7 - A*b^3*e^7 - 3*B*a^2*c*e^7 - 6*A*a*b*c*e^7)*x^3 + 10*(329*B*c
^3*d^5*e^2 - 390*B*b*c^2*d^4*e^3 - 130*A*c^3*d^4*e^3 + 110*B*b^2*c*d^3*e^4
+ 110*B*a*c^2*d^3*e^4 + 110*A*b*c^2*d^3*e^4 - 4*B*b^3*d^2*e^5 - 24*B*a*b*c*
d^2*e^5 - 12*A*b^2*c*d^2*e^5 - 12*A*a*c^2*d^2*e^5 - 3*B*a*b^2*d*e^6 - A*b^3
*d*e^6 - 3*B*a^2*c*d*e^6 - 6*A*a*b*c*d*e^6 - 2*B*a^2*b*e^7 - 2*A*a*b^2*e^7
- 2*A*a^2*c*e^7)*x^2 + 5*(399*B*c^3*d^6*e - 462*B*b*c^2*d^5*e^2 - 154*A*c^3
*d^5*e^2 + 125*B*b^2*c*d^4*e^3 + 125*B*a*c^2*d^4*e^3 + 125*A*b*c^2*d^4*e^3
- 4*B*b^3*d^3*e^4 - 24*B*a*b*c*d^3*e^4 - 12*A*b^2*c*d^3*e^4 - 12*A*a*c^2*d^
3*e^4 - 3*B*a*b^2*d^2*e^5 - A*b^3*d^2*e^5 - 3*B*a^2*c*d^2*e^5 - 6*A*a*b*c*d
^2*e^5 - 2*B*a^2*b*d*e^6 - 2*A*a*b^2*d*e^6 - 2*A*a^2*c*d*e^6 - B*a^3*e^7 -
3*A*a^2*b*e^7)*x)*e^(-8)/(x*e + d)^5
```

maple [B] time = 0.06, size = 1637, normalized size = 3.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x)
```

```
[Out] -1/5/e/(e*x+d)^5*A*a^3-1/2/e^4/(e*x+d)^2*A*b^3-1/4/e^2/(e*x+d)^4*B*a^3+3*c^
2/e^6*B*b*x-6*c^3/e^7*B*d*x+1/e^5/(e*x+d)^4*B*b^3*d^3-7/4/e^8/(e*x+d)^4*B*c
^3*d^6+1/5/e^4/(e*x+d)^5*A*d^3*b^3-1/5/e^7/(e*x+d)^5*A*c^3*d^6+1/5/e^2/(e*x
+d)^5*B*a^3*d-1/5/e^5/(e*x+d)^5*B*d^4*b^3+1/5/e^8/(e*x+d)^5*B*c^3*d^7+6/5/e
^4/(e*x+d)^5*A*d^3*a*b*c-6/5/e^5/(e*x+d)^5*B*d^4*a*b*c-3/2/e^4/(e*x+d)^2*B*
a^2*c-3/2/e^4/(e*x+d)^2*B*a*b^2+2/e^5/(e*x+d)^2*B*b^3*d-35/2/e^8/(e*x+d)^2*
B*c^3*d^4-2/e^5/(e*x+d)^3*B*b^3*d^2+7/e^8/(e*x+d)^3*B*c^3*d^5+3*c^2/e^6*ln(
e*x+d)*A*b-6*c^3/e^7*ln(e*x+d)*A*d+3*c^2/e^6*ln(e*x+d)*a*B+c^3/e^6*A*x-1/e^
5/(e*x+d)*B*b^3+6/e^4/(e*x+d)^3*A*a*b*c*d-9/2/e^4/(e*x+d)^4*A*a*b*c*d^2+6/e
^5/(e*x+d)^4*B*a*b*c*d^3+3*c/e^6*ln(e*x+d)*b^2*B+21*c^3/e^8*ln(e*x+d)*B*d^2
-1/e^3/(e*x+d)^3*A*a^2*c-1/e^3/(e*x+d)^3*A*a*b^2+1/e^4/(e*x+d)^3*A*b^3*d-5/
e^7/(e*x+d)^3*A*c^3*d^4-1/e^3/(e*x+d)^3*B*a^2*b-3/4/e^2/(e*x+d)^4*A*a^2*b-3
/4/e^4/(e*x+d)^4*A*b^3*d^2+3/2/e^7/(e*x+d)^4*A*c^3*d^5+12/e^5/(e*x+d)^2*B*a
*b*c*d-12/e^5/(e*x+d)^3*B*a*b*c*d^2+1/2*B*c^3/e^6*x^2-3/e^5/(e*x+d)*A*a*c^2
-3/e^5/(e*x+d)*A*b^2*c-15/e^7/(e*x+d)*A*c^3*d^2+35/e^8/(e*x+d)*B*c^3*d^3+10
/e^7/(e*x+d)^2*A*c^3*d^3-15/e^6/(e*x+d)^2*A*b*c^2*d^2-15/e^6/(e*x+d)^2*B*a*
c^2*d^2-15/e^6/(e*x+d)^2*B*b^2*c*d^2+30/e^7/(e*x+d)^2*B*b*c^2*d^3-45/e^7/(e
```

```
*x+d)*B*b*c^2*d^2+15/e^6/(e*x+d)*B*b^2*c*d+15/e^6/(e*x+d)*B*a*c^2*d+6/e^5/(
e*x+d)^2*A*b^2*c*d+3/5/e^6/(e*x+d)^5*B*d^5*b^2*c-3/5/e^7/(e*x+d)^5*B*b*c^2*
d^6-3/e^4/(e*x+d)^2*A*a*b*c+6/e^5/(e*x+d)^2*A*a*c^2*d-3/5/e^5/(e*x+d)^5*A*a
*c^2*d^4-3/5/e^5/(e*x+d)^5*A*d^4*b^2*c+3/5/e^6/(e*x+d)^5*A*d^5*b*c^2-3/5/e^
3/(e*x+d)^5*B*d^2*a^2*b+3/5/e^4/(e*x+d)^5*B*d^3*a^2*c+3/5/e^4/(e*x+d)^5*B*d
^3*a*b^2+3/5/e^6/(e*x+d)^5*B*a*c^2*d^5+10/e^6/(e*x+d)^3*B*b^2*c*d^3+3/2/e^3
/(e*x+d)^4*A*a^2*c*d+3/2/e^3/(e*x+d)^4*A*a*b^2*d+3/e^5/(e*x+d)^4*A*d^3*a*c^
2+3/e^5/(e*x+d)^4*A*b^2*c*d^3-15/4/e^6/(e*x+d)^4*A*b*c^2*d^4+3/2/e^3/(e*x+d
)^4*B*a^2*b*d-9/4/e^4/(e*x+d)^4*B*a^2*c*d^2-9/4/e^4/(e*x+d)^4*B*a*b^2*d^2-1
5/4/e^6/(e*x+d)^4*B*d^4*a*c^2-15/4/e^6/(e*x+d)^4*B*b^2*c*d^4+9/2/e^7/(e*x+d
)^4*B*b*c^2*d^5+3/5/e^2/(e*x+d)^5*A*d*a^2*b-3/5/e^3/(e*x+d)^5*A*d^2*a^2*c-3
/5/e^3/(e*x+d)^5*A*d^2*a*b^2+15/e^6/(e*x+d)*A*b*c^2*d-6/e^5/(e*x+d)*B*a*b*c
-15/e^7/(e*x+d)^3*B*b*c^2*d^4-18*c^2/e^7*ln(e*x+d)*B*b*d-6/e^5/(e*x+d)^3*A*
a*c^2*d^2-6/e^5/(e*x+d)^3*A*b^2*c*d^2+10/e^6/(e*x+d)^3*A*b*c^2*d^3+3/e^4/(e
*x+d)^3*B*a^2*c*d+3/e^4/(e*x+d)^3*B*a*b^2*d+10/e^6/(e*x+d)^3*B*a*c^2*d^3
```

maxima [A] time = 0.66, size = 898, normalized size = 1.68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/20*(459*B*c^3*d^7 - 4*A*a^3*e^7 - 174*(3*B*b*c^2 + A*c^3)*d^6*e + 137*(B*
b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d^4*e^3 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 2*(B*
a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*b)*d*e^6 + 20*(35*B*c
^3*d^3*e^4 - 15*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*c + (B*a + A*b)*c^2
)*d*e^6 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 10*(245*B*
c^3*d^4*e^3 - 100*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 90*(B*b^2*c + (B*a + A*b)*c
^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - (3*B*a*
b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 10*(329*B*c^3*d^5*e^2 - 130
*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 110*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 4*
(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 - (3*B*a*b^2 + A*b^3 +
3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 5
*(399*B*c^3*d^6*e - 154*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 125*(B*b^2*c + (B*a +
 A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4
- (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 2*(B*a^2*b + A*a*b^
2 + A*a^2*c)*d*e^6 - (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^13*x^5 + 5*d*e^12*x^4 +
 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*d^4*e^9*x + d^5*e^8) + 1/2*(B*c^3*e*
x^2 - 2*(6*B*c^3*d - (3*B*b*c^2 + A*c^3)*e)*x)/e^7 + 3*(7*B*c^3*d^2 - 2*(3*
B*b*c^2 + A*c^3)*d*e + (B*b^2*c + (B*a + A*b)*c^2)*e^2)*log(e*x + d)/e^8
```

mupad [B] time = 0.26, size = 1106, normalized size = 2.07

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x)
```

```
[Out] x*((A*c^3 + 3*B*b*c^2)/e^6 - (6*B*c^3*d)/e^7) - ((4*A*a^3*e^7 - 459*B*c^3*d
^7 + B*a^3*d*e^6 + 174*A*c^3*d^6*e + A*b^3*d^3*e^4 + 4*B*b^3*d^4*e^3 + 2*A*
a*b^2*d^2*e^5 + 12*A*a*c^2*d^4*e^3 + 2*A*a^2*c*d^2*e^5 + 3*B*a*b^2*d^3*e^4
+ 2*B*a^2*b*d^2*e^5 - 137*A*b*c^2*d^5*e^2 + 12*A*b^2*c*d^4*e^3 - 137*B*a*c^
2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 - 137*B*b^2*c*d^5*e^2 + 3*A*a^2*b*d*e^6 + 522
*B*b*c^2*d^6*e + 6*A*a*b*c*d^3*e^4 + 24*B*a*b*c*d^4*e^3)/(20*e) + x^4*(B*b^
3*e^6 + 3*A*a*c^2*e^6 + 3*A*b^2*c*e^6 + 15*A*c^3*d^2*e^4 - 35*B*c^3*d^3*e^3
 + 45*B*b*c^2*d^2*e^4 + 6*B*a*b*c*e^6 - 15*A*b*c^2*d*e^5 - 15*B*a*c^2*d*e^5
 - 15*B*b^2*c*d*e^5) + x^3*((A*b^3*e^6)/2 + (3*B*a*b^2*e^6)/2 + (3*B*a^2*c*
```

```
e^6)/2 + 2*B*b^3*d*e^5 + 50*A*c^3*d^3*e^3 - (245*B*c^3*d^4*e^2)/2 - 45*A*b*
c^2*d^2*e^4 - 45*B*a*c^2*d^2*e^4 + 150*B*b*c^2*d^3*e^3 - 45*B*b^2*c*d^2*e^4
 + 3*A*a*b*c*e^6 + 6*A*a*c^2*d*e^5 + 6*A*b^2*c*d*e^5 + 12*B*a*b*c*d*e^5) +
x*((B*a^3*e^6)/4 - (399*B*c^3*d^6)/4 + (3*A*a^2*b*e^6)/4 + (77*A*c^3*d^5*e)
/2 + (A*b^3*d^2*e^4)/4 + B*b^3*d^3*e^3 + 3*A*a*c^2*d^3*e^3 + (3*B*a*b^2*d^2
*e^4)/4 - (125*A*b*c^2*d^4*e^2)/4 + 3*A*b^2*c*d^3*e^3 - (125*B*a*c^2*d^4*e^
2)/4 + (3*B*a^2*c*d^2*e^4)/4 - (125*B*b^2*c*d^4*e^2)/4 + (A*a*b^2*d*e^5)/2
+ (A*a^2*c*d*e^5)/2 + (B*a^2*b*d*e^5)/2 + (231*B*b*c^2*d^5*e)/2 + (3*A*a*b*
c*d^2*e^4)/2 + 6*B*a*b*c*d^3*e^3) + x^2*(A*a*b^2*e^6 + A*a^2*c*e^6 + B*a^2*
b*e^6 + (A*b^3*d*e^5)/2 - (329*B*c^3*d^5*e)/2 + 65*A*c^3*d^4*e^2 + 2*B*b^3*
d^2*e^4 + 6*A*a*c^2*d^2*e^4 - 55*A*b*c^2*d^3*e^3 + 6*A*b^2*c*d^2*e^4 - 55*B
*a*c^2*d^3*e^3 + 195*B*b*c^2*d^4*e^2 - 55*B*b^2*c*d^3*e^3 + (3*B*a*b^2*d*e^
5)/2 + (3*B*a^2*c*d*e^5)/2 + 12*B*a*b*c*d^2*e^4 + 3*A*a*b*c*d*e^5))/(d^5*e^
7 + e^12*x^5 + 5*d^4*e^8*x + 5*d*e^11*x^4 + 10*d^3*e^9*x^2 + 10*d^2*e^10*x^
3) + (log(d + e*x)*(21*B*c^3*d^2 - 6*A*c^3*d*e + 3*A*b*c^2*e^2 + 3*B*a*c^2*
e^2 + 3*B*b^2*c*e^2 - 18*B*b*c^2*d*e))/e^8 + (B*c^3*x^2)/(2*e^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.2104 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{(d+ex)^7}\,dx$

Optimal. Leaf size=541

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2\right.}{3e^8(d+ex)^3}$$

Rubi [A] time = 0.81, antiderivative size = 539, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] (B*c^3*x)/e^7 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(6*e^8*(d + e*x)^6)
 - ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d
 - b*e)))/(5*e^8*(d + e*x)^5) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 -
c*d*e*(8*b*d - 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c
*e*(5*b*d - a*e))))/(4*e^8*(d + e*x)^4) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 +
b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e)
- 30*c^2*d^2*e*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))
/(3*e^8*(d + e*x)^3) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e)
 - 15*c^2*d*e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d -
a*e)))/(2*e^8*(d + e*x)^2) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2
*e^2 - c*e*(6*b*d - a*e))))/(e^8*(d + e*x)) - (c^2*(7*B*c*d - 3*b*B*e - A*c
*e)*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^7}\,dx = \int \left(\frac{Bc^3}{e^7}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^7}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4b\right.}{e^7(d+ex)^6}\right.$$

$$= \frac{Bc^3x}{e^7}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{6e^8(d+ex)^6}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-\right.}{5e^8(d+ex)^5}$$

Mathematica [A] time = 0.65, size = 868, normalized size = 1.60

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(-(c^3*d*(147*d^5 + 822*d^4*e*x + 1875*d^3*e^2*x^2 + 2200*d^2*e^
3*x^3 + 1350*d*e^4*x^4 + 360*e^5*x^5)) + e^3*(10*a^3*e^3 + 6*a^2*b*e^2*(d +
```

```
 6*e*x) + 3*a*b^2*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + b^3*(d^3 + 6*d^2*e*x + 1
5*d*e^2*x^2 + 20*e^3*x^3)) + 3*c*e^2*(a^2*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2)
+ 2*a*b*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*b^2*(d^4 + 6*d^
3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + 6*c^2*e*(a*e*(d^4 +
6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) + 5*b*(d^5 + 6*d^4*
e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5))) + B*(c^
3*(669*d^7 + 3594*d^6*e*x + 7725*d^5*e^2*x^2 + 8200*d^4*e^3*x^3 + 4050*d^3*
e^4*x^4 + 360*d^2*e^5*x^5 - 360*d*e^6*x^6 - 60*e^7*x^7) + e^3*(2*a^3*e^3*(d
 + 6*e*x) + 3*a^2*b*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + 3*a*b^2*e*(d^3 + 6*d
^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*b^3*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x
^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + 3*c*e^2*(a^2*e^2*(d^3 + 6*d^2*e*x + 15*d
*e^2*x^2 + 20*e^3*x^3) + 4*a*b*e*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e
^3*x^3 + 15*e^4*x^4) + 10*b^2*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^
3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5)) + 3*c^2*e*(10*a*e*(d^5 + 6*d^4*e*x + 15*
d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5) - b*d*(147*d^5 + 8
22*d^4*e*x + 1875*d^3*e^2*x^2 + 2200*d^2*e^3*x^3 + 1350*d*e^4*x^4 + 360*e^5
*x^5))) + 60*c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d + e*x)^6*Log[d + e*x])/(e^8
*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7, x]
```

fricas [B] time = 0.39, size = 1145, normalized size = 2.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^3*e^7*x^7 + 360*B*c^3*d*e^6*x^6 - 669*B*c^3*d^7 - 10*A*a^3*e^7
 + 147*(3*B*b*c^2 + A*c^3)*d^6*e - 30*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 -
 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - (3*B*a*b^2 + A*b^3
 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5
 - 2*(B*a^3 + 3*A*a^2*b)*d*e^6 - 180*(2*B*c^3*d^2*e^5 - 2*(3*B*b*c^2 + A*c^
3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 - 30*(135*B*c^3*d^3*e^4 - 4
5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + (B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 - 20*(410*B*c^3*d^4*e^3 -
110*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 +
2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*a*b^2 + A*b^3 +
3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 - 15*(515*B*c^3*d^5*e^2 - 125*(3*B*b*c^2 +
A*c^3)*d^4*e^3 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*d*e^6 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 - 6*(599*B*c^3*d^6
*e - 137*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e
^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A
*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e
^6 + 2*(B*a^3 + 3*A*a^2*b)*e^7)*x - 60*(7*B*c^3*d^7 - (3*B*b*c^2 + A*c^3)*d
^6*e + (7*B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 6*(7*B*c^3*d^2*e^5 -
 (3*B*b*c^2 + A*c^3)*d*e^6)*x^5 + 15*(7*B*c^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)
*d^2*e^5)*x^4 + 20*(7*B*c^3*d^4*e^3 - (3*B*b*c^2 + A*c^3)*d^3*e^4)*x^3 + 15
*(7*B*c^3*d^5*e^2 - (3*B*b*c^2 + A*c^3)*d^4*e^3)*x^2 + 6*(7*B*c^3*d^6*e - (
3*B*b*c^2 + A*c^3)*d^5*e^2)*x)*log(e*x + d))/(e^14*x^6 + 6*d*e^13*x^5 + 15*
d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4*e^10*x^2 + 6*d^5*e^9*x + d^6*e^8)
```

giac [A] time = 0.23, size = 989, normalized size = 1.83

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] B*c^3*x*e^(-7) - (7*B*c^3*d - 3*B*b*c^2*e - A*c^3*e)*e^(-8)*log(abs(x*e + d
)) - 1/60*(669*B*c^3*d^7 - 441*B*b*c^2*d^6*e - 147*A*c^3*d^6*e + 30*B*b^2*c
*d^5*e^2 + 30*B*a*c^2*d^5*e^2 + 30*A*b*c^2*d^5*e^2 + 2*B*b^3*d^4*e^3 + 12*B
*a*b*c*d^4*e^3 + 6*A*b^2*c*d^4*e^3 + 6*A*a*c^2*d^4*e^3 + 3*B*a*b^2*d^3*e^4
+ A*b^3*d^3*e^4 + 3*B*a^2*c*d^3*e^4 + 6*A*a*b*c*d^3*e^4 + 3*B*a^2*b*d^2*e^5
 + 3*A*a*b^2*d^2*e^5 + 3*A*a^2*c*d^2*e^5 + 180*(7*B*c^3*d^2*e^5 - 6*B*b*c^2
*d*e^6 - 2*A*c^3*d*e^6 + B*b^2*c*e^7 + B*a*c^2*e^7 + A*b*c^2*e^7)*x^5 + 2*B
*a^3*d*e^6 + 6*A*a^2*b*d*e^6 + 30*(175*B*c^3*d^3*e^4 - 135*B*b*c^2*d^2*e^5
- 45*A*c^3*d^2*e^5 + 15*B*b^2*c*d*e^6 + 15*B*a*c^2*d*e^6 + 15*A*b*c^2*d*e^6
 + B*b^3*e^7 + 6*B*a*b*c*e^7 + 3*A*b^2*c*e^7 + 3*A*a*c^2*e^7)*x^4 + 10*A*a^
3*e^7 + 20*(455*B*c^3*d^4*e^3 - 330*B*b*c^2*d^3*e^4 - 110*A*c^3*d^3*e^4 + 3
0*B*b^2*c*d^2*e^5 + 30*B*a*c^2*d^2*e^5 + 30*A*b*c^2*d^2*e^5 + 2*B*b^3*d*e^6
 + 12*B*a*b*c*d*e^6 + 6*A*b^2*c*d*e^6 + 6*A*a*c^2*d*e^6 + 3*B*a*b^2*e^7 + A
*b^3*e^7 + 3*B*a^2*c*e^7 + 6*A*a*b*c*e^7)*x^3 + 15*(539*B*c^3*d^5*e^2 - 375
*B*b*c^2*d^4*e^3 - 125*A*c^3*d^4*e^3 + 30*B*b^2*c*d^3*e^4 + 30*B*a*c^2*d^3*
e^4 + 30*A*b*c^2*d^3*e^4 + 2*B*b^3*d^2*e^5 + 12*B*a*b*c*d^2*e^5 + 6*A*b^2*c
*d^2*e^5 + 6*A*a*c^2*d^2*e^5 + 3*B*a*b^2*d*e^6 + A*b^3*d*e^6 + 3*B*a^2*c*d*
e^6 + 6*A*a*b*c*d*e^6 + 3*B*a^2*b*e^7 + 3*A*a*b^2*e^7 + 3*A*a^2*c*e^7)*x^2
+ 6*(609*B*c^3*d^6*e - 411*B*b*c^2*d^5*e^2 - 137*A*c^3*d^5*e^2 + 30*B*b^2*c
*d^4*e^3 + 30*B*a*c^2*d^4*e^3 + 30*A*b*c^2*d^4*e^3 + 2*B*b^3*d^3*e^4 + 12*B
*a*b*c*d^3*e^4 + 6*A*b^2*c*d^3*e^4 + 6*A*a*c^2*d^3*e^4 + 3*B*a*b^2*d^2*e^5
+ A*b^3*d^2*e^5 + 3*B*a^2*c*d^2*e^5 + 6*A*a*b*c*d^2*e^5 + 3*B*a^2*b*d*e^6 +
 3*A*a*b^2*d*e^6 + 3*A*a^2*c*d*e^6 + 2*B*a^3*e^7 + 6*A*a^2*b*e^7)*x)*e^(-8)
/(x*e + d)^6
```

maple [B] time = 0.06, size = 1656, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x)
```

```
[Out] -21*c^3/e^8/(e*x+d)*B*d^2-3/2/e^5/(e*x+d)^4*B*b^3*d^2+21/4/e^8/(e*x+d)^4*B*
c^3*d^5+1/6/e^4/(e*x+d)^6*A*d^3*b^3-3*c^2/e^6/(e*x+d)*A*b+6*c^3/e^7/(e*x+d)
*A*d-1/2/e^5/(e*x+d)^2*B*b^3-1/6/e/(e*x+d)^6*A*a^3-1/5/e^2/(e*x+d)^5*B*a^3+
c^3/e^7*ln(e*x+d)*A-1/3/e^4/(e*x+d)^3*A*b^3-3/4/e^3/(e*x+d)^4*B*a^2*b+3*c^2
/e^7*ln(e*x+d)*B*b-7*c^3/e^8*ln(e*x+d)*B*d-3/2/e^5/(e*x+d)^2*A*a*c^2-3/2/e^
5/(e*x+d)^2*A*b^2*c-15/2/e^7/(e*x+d)^2*A*c^3*d^2+35/2/e^8/(e*x+d)^2*B*c^3*d
^3+1/6/e^2/(e*x+d)^6*B*a^3*d-1/6/e^5/(e*x+d)^6*B*d^4*b^3+1/6/e^8/(e*x+d)^6*
B*c^3*d^7-18/5/e^4/(e*x+d)^5*A*a*b*c*d^2+8/e^5/(e*x+d)^3*B*a*b*c*d+24/5/e^5
/(e*x+d)^5*B*a*b*c*d^3+9/2/e^4/(e*x+d)^4*A*a*b*c*d-9/e^5/(e*x+d)^4*B*a*b*c*
d^2+1/e^4/(e*x+d)^6*A*d^3*a*b*c-1/e^5/(e*x+d)^6*B*d^4*a*b*c-3*c^2/e^6/(e*x+
d)*a*B-3*c/e^6/(e*x+d)*b^2*B+20/3/e^7/(e*x+d)^3*A*c^3*d^3-1/e^4/(e*x+d)^3*B
*a^2*c-1/e^4/(e*x+d)^3*B*a*b^2+4/3/e^5/(e*x+d)^3*B*b^3*d-35/3/e^8/(e*x+d)^3
*B*c^3*d^4-3/5/e^2/(e*x+d)^5*A*a^2*b-1/6/e^7/(e*x+d)^6*A*d^6*c^3+12/5/e^5/(
e*x+d)^5*A*d^3*a*c^2+12/5/e^5/(e*x+d)^5*A*b^2*c*d^3-3/e^6/(e*x+d)^5*A*b*c^2
*d^4+6/5/e^3/(e*x+d)^5*B*a^2*b*d+6/5/e^3/(e*x+d)^5*A*a^2*c*d+6/5/e^3/(e*x+d
)^5*A*a*b^2*d-10/e^6/(e*x+d)^3*A*b*c^2*d^2-10/e^6/(e*x+d)^3*B*a*c^2*d^2-9/5
/e^4/(e*x+d)^5*B*a^2*c*d^2-9/5/e^4/(e*x+d)^5*B*a*b^2*d^2-3/e^6/(e*x+d)^5*B*
d^4*a*c^2-3/e^6/(e*x+d)^5*B*b^2*c*d^4+18/5/e^7/(e*x+d)^5*B*b*c^2*d^5-2/e^4/
(e*x+d)^3*A*a*b*c+4/e^5/(e*x+d)^3*A*a*c^2*d+4/e^5/(e*x+d)^3*A*b^2*c*d-3/5/e
^4/(e*x+d)^5*A*b^3*d^2+6/5/e^7/(e*x+d)^5*A*c^3*d^5+4/5/e^5/(e*x+d)^5*B*b^3*
d^3-7/5/e^8/(e*x+d)^5*B*c^3*d^6-3/4/e^3/(e*x+d)^4*A*a^2*c-3/4/e^3/(e*x+d)^4
```

```
*A*a*b^2+3/4/e^4/(e*x+d)^4*A*b^3*d-15/4/e^7/(e*x+d)^4*A*c^3*d^4+B*c^3/e^7*x
+18*c^2/e^7/(e*x+d)*B*b*d-3/e^5/(e*x+d)^2*B*a*b*c+15/2/e^6/(e*x+d)^2*B*a*c^
2*d+15/2/e^6/(e*x+d)^2*B*b^2*c*d-45/2/e^7/(e*x+d)^2*B*b*c^2*d^2-9/2/e^5/(e*
x+d)^4*A*a*c^2*d^2-1/2/e^7/(e*x+d)^6*B*d^6*b*c^2+15/2/e^6/(e*x+d)^2*A*b*c^2
*d+1/2/e^6/(e*x+d)^6*B*d^5*b^2*c+1/2/e^4/(e*x+d)^6*B*d^3*a*b^2+1/2/e^6/(e*x
+d)^6*B*a*c^2*d^5-1/2/e^3/(e*x+d)^6*B*d^2*a^2*b+1/2/e^4/(e*x+d)^6*B*d^3*a^2
*c-1/2/e^5/(e*x+d)^6*A*d^4*b^2*c+1/2/e^6/(e*x+d)^6*A*d^5*b*c^2+1/2/e^2/(e*x
+d)^6*A*d*a^2*b-1/2/e^3/(e*x+d)^6*A*d^2*a^2*c-1/2/e^3/(e*x+d)^6*A*d^2*a*b^2
-1/2/e^5/(e*x+d)^6*A*a*c^2*d^4+15/2/e^6/(e*x+d)^4*B*b^2*c*d^3-45/4/e^7/(e*x
+d)^4*B*b*c^2*d^4+9/4/e^4/(e*x+d)^4*B*a*b^2*d+15/2/e^6/(e*x+d)^4*B*a*c^2*d^
3-10/e^6/(e*x+d)^3*B*b^2*c*d^2+20/e^7/(e*x+d)^3*B*b*c^2*d^3-9/2/e^5/(e*x+d)
^4*A*b^2*c*d^2+15/2/e^6/(e*x+d)^4*A*b*c^2*d^3+9/4/e^4/(e*x+d)^4*B*a^2*c*d
```

maxima [A] time = 0.71, size = 905, normalized size = 1.67

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(669*B*c^3*d^7 + 10*A*a^3*e^7 - 147*(3*B*b*c^2 + A*c^3)*d^6*e + 30*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 + 3*(B
*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 2*(B*a^3 + 3*A*a^2*b)*d*e^6 + 180*(7*
B*c^3*d^2*e^5 - 2*(3*B*b*c^2 + A*c^3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e
^7)*x^5 + 30*(175*B*c^3*d^3*e^4 - 45*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
e^7)*x^4 + 20*(455*B*c^3*d^4*e^3 - 110*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*
b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d*e^6 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 15*(53
9*B*c^3*d^5*e^2 - 125*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 30*(B*b^2*c + (B*a + A*
b)*c^2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 3*(B*a^2*b + A*a*b^2 + A
*a^2*c)*e^7)*x^2 + 6*(609*B*c^3*d^6*e - 137*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 3
0*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b +
 A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 +
3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 2*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^14
*x^6 + 6*d*e^13*x^5 + 15*d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4*e^10*x^2 +
 6*d^5*e^9*x + d^6*e^8) + B*c^3*x/e^7 - (7*B*c^3*d - (3*B*b*c^2 + A*c^3)*e)
*log(e*x + d)/e^8
```

mupad [B] time = 2.54, size = 1598, normalized size = 2.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x)
```

```
[Out] -(10*A*a^3*e^7 + 669*B*c^3*d^7 + 2*B*a^3*d*e^6 - 147*A*c^3*d^6*e + 420*B*c^
3*d^7*log(d + e*x) + 12*B*a^3*e^7*x + A*b^3*d^3*e^4 + 2*B*b^3*d^4*e^3 + 20*
A*b^3*e^7*x^3 + 30*B*b^3*e^7*x^4 - 60*B*c^3*e^7*x^7 + 3594*B*c^3*d^6*e*x +
3*A*a*b^2*d^2*e^5 + 6*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 + 3*B*a*b^2*d^3*e
^4 + 3*B*a^2*b*d^2*e^5 + 30*A*b*c^2*d^5*e^2 + 6*A*b^2*c*d^4*e^3 + 30*B*a*c^
2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 + 30*B*b^2*c*d^5*e^2 + 45*A*a*b^2*e^7*x^2 + 4
5*A*a^2*c*e^7*x^2 + 45*B*a^2*b*e^7*x^2 + 60*B*a*b^2*e^7*x^3 + 90*A*a*c^2*e^
7*x^4 + 60*B*a^2*c*e^7*x^3 + 90*A*b^2*c*e^7*x^4 + 180*A*b*c^2*e^7*x^5 + 180
*B*a*c^2*e^7*x^5 + 6*A*b^3*d^2*e^5*x + 15*A*b^3*d*e^6*x^2 + 180*B*b^2*c*e^7
*x^5 - 822*A*c^3*d^5*e^2*x + 12*B*b^3*d^3*e^4*x + 40*B*b^3*d*e^6*x^3 - 360*
A*c^3*d*e^6*x^5 - 360*B*c^3*d*e^6*x^6 - 60*A*c^3*e^7*x^6*log(d + e*x) - 187
5*A*c^3*d^4*e^3*x^2 + 30*B*b^3*d^2*e^5*x^2 - 2200*A*c^3*d^3*e^4*x^3 - 1350*
A*c^3*d^2*e^5*x^4 + 7725*B*c^3*d^5*e^2*x^2 + 8200*B*c^3*d^4*e^3*x^3 + 4050*
```

```
B*c^3*d^3*e^4*x^4 + 360*B*c^3*d^2*e^5*x^5 + 6*A*a^2*b*d*e^6 - 441*B*b*c^2*d
^6*e - 60*A*c^3*d^6*e*log(d + e*x) + 36*A*a^2*b*e^7*x + 90*A*a*c^2*d^2*e^5*
x^2 + 450*A*b*c^2*d^3*e^4*x^2 + 90*A*b^2*c*d^2*e^5*x^2 + 450*B*a*c^2*d^3*e^
4*x^2 + 600*A*b*c^2*d^2*e^5*x^3 + 600*B*a*c^2*d^2*e^5*x^3 - 5625*B*b*c^2*d^
4*e^3*x^2 + 450*B*b^2*c*d^3*e^4*x^2 - 6600*B*b*c^2*d^3*e^4*x^3 + 600*B*b^2*
c*d^2*e^5*x^3 - 4050*B*b*c^2*d^2*e^5*x^4 - 900*A*c^3*d^4*e^3*x^2*log(d + e*
x) - 1200*A*c^3*d^3*e^4*x^3*log(d + e*x) - 900*A*c^3*d^2*e^5*x^4*log(d + e*
x) + 6300*B*c^3*d^5*e^2*x^2*log(d + e*x) + 8400*B*c^3*d^4*e^3*x^3*log(d + e
*x) + 6300*B*c^3*d^3*e^4*x^4*log(d + e*x) + 2520*B*c^3*d^2*e^5*x^5*log(d +
e*x) + 6*A*a*b*c*d^3*e^4 + 12*B*a*b*c*d^4*e^3 - 180*B*b*c^2*d^6*e*log(d + e
*x) + 120*A*a*b*c*e^7*x^3 + 18*A*a*b^2*d*e^6*x + 180*B*a*b*c*e^7*x^4 + 18*A
*a^2*c*d*e^6*x + 18*B*a^2*b*d*e^6*x + 2520*B*c^3*d^6*e*x*log(d + e*x) + 36*
A*a*c^2*d^3*e^4*x + 18*B*a*b^2*d^2*e^5*x + 45*B*a*b^2*d*e^6*x^2 + 120*A*a*c
^2*d*e^6*x^3 + 180*A*b*c^2*d^4*e^3*x + 36*A*b^2*c*d^3*e^4*x + 180*B*a*c^2*d
^4*e^3*x + 18*B*a^2*c*d^2*e^5*x + 45*B*a^2*c*d*e^6*x^2 + 120*A*b^2*c*d*e^6*
x^3 + 450*A*b*c^2*d*e^6*x^4 + 450*B*a*c^2*d*e^6*x^4 - 2466*B*b*c^2*d^5*e^2*
x + 180*B*b^2*c*d^4*e^3*x + 450*B*b^2*c*d*e^6*x^4 - 1080*B*b*c^2*d*e^6*x^5
- 180*B*b*c^2*e^7*x^6*log(d + e*x) - 360*A*c^3*d^5*e^2*x*log(d + e*x) - 360
*A*c^3*d*e^6*x^5*log(d + e*x) + 420*B*c^3*d*e^6*x^6*log(d + e*x) + 180*B*a*
b*c*d^2*e^5*x^2 - 1080*B*b*c^2*d^5*e^2*x*log(d + e*x) - 1080*B*b*c^2*d*e^6*
x^5*log(d + e*x) - 2700*B*b*c^2*d^4*e^3*x^2*log(d + e*x) - 3600*B*b*c^2*d^3
*e^4*x^3*log(d + e*x) - 2700*B*b*c^2*d^2*e^5*x^4*log(d + e*x) + 36*A*a*b*c*
d^2*e^5*x + 90*A*a*b*c*d*e^6*x^2 + 72*B*a*b*c*d^3*e^4*x + 240*B*a*b*c*d*e^6
*x^3)/(60*e^8*(d + e*x)^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2105 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^8}\,dx$

Optimal. Leaf size=548

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2 \ldots}{4e^8(d+ex)^4}$$

Rubi [A] time = 0.77, antiderivative size = 546, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(7*e^8*(d + e*x)^7) - ((c*d^2 - b*d
*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(6*e^8
*(d + e*x)^6) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3
*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)
)))/(5*e^8*(d + e*x)^5) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(4*e^8*(d + e*x
)^4) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3
*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(3*e^8*(d
 + e*x)^3) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*
d - a*e))))/(2*e^8*(d + e*x)^2) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(e^8*(d
 + e*x)) + (B*c^3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^8}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd- \ldots\right.}{e^7(d+ex)^7} \ldots\right.$$

$$= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{7e^8(d+ex)^7}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)- \ldots\right.}{6e^8(d+ex)^6} \ldots$$

Mathematica [A] time = 0.49, size = 863, normalized size = 1.57

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] (-3*A*e*(20*c^3*(d^6 + 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 35*d^2
*e^4*x^4 + 21*d*e^5*x^5 + 7*e^6*x^6) + e^3*(20*a^3*e^3 + 10*a^2*b*e^2*(d +
```

```
7*e*x) + 4*a*b^2*e*(d^2 + 7*d*e*x + 21*e^2*x^2) + b^3*(d^3 + 7*d^2*e*x + 21
*d*e^2*x^2 + 35*e^3*x^3)) + 2*c*e^2*(2*a^2*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2)
 + 3*a*b*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 2*b^2*(d^4 + 7*d
^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + 2*c^2*e*(2*a*e*(d^4
 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*b*(d^5 + 7*d
^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5))) + B
*(c^3*d*(1089*d^6 + 7203*d^5*e*x + 20139*d^4*e^2*x^2 + 30625*d^3*e^3*x^3 +
26950*d^2*e^4*x^4 + 13230*d*e^5*x^5 + 2940*e^6*x^6) - e^3*(10*a^3*e^3*(d +
7*e*x) + 12*a^2*b*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + 9*a*b^2*e*(d^3 + 7*d^2
*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*b^3*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2
 + 35*d*e^3*x^3 + 35*e^4*x^4)) - 3*c*e^2*(3*a^2*e^2*(d^3 + 7*d^2*e*x + 21*d
*e^2*x^2 + 35*e^3*x^3) + 8*a*b*e*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e
^3*x^3 + 35*e^4*x^4) + 10*b^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^
3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5)) - 30*c^2*e*(a*e*(d^5 + 7*d^4*e*x + 21*d
^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5) + 6*b*(d^6 + 7*d^5
*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^5 + 7*
e^6*x^6))) + 420*B*c^3*(d + e*x)^7*Log[d + e*x])/(420*e^8*(d + e*x)^7)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^8}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x]

[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8, x]
```

fricas [A] time = 0.39, size = 1023, normalized size = 1.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x, algorithm="fricas")

[Out] 1/420*(1089*B*c^3*d^7 - 60*A*a^3*e^7 - 60*(3*B*b*c^2 + A*c^3)*d^6*e - 30*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 12
*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 10*(B*a^3 + 3*A*a^2*b)*d*e^6 + 420
*(7*B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*
(3*B*b*c^2 + A*c^3)*d*e^6 - (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 + 70*(385*
B*c^3*d^3*e^4 - 30*(3*B*b*c^2 + A*c^3)*d^2*e^5 - 15*(B*b^2*c + (B*a + A*b)*
c^2)*d*e^6 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 35*(8
75*B*c^3*d^4*e^3 - 60*(3*B*b*c^2 + A*c^3)*d^3*e^4 - 30*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - 3*(
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 21*(959*B*c^3*d^5*e^2
 - 60*(3*B*b*c^2 + A*c^3)*d^4*e^3 - 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4
- 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 - 3*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*
x^2 + 7*(1029*B*c^3*d^6*e - 60*(3*B*b*c^2 + A*c^3)*d^5*e^2 - 30*(B*b^2*c +
(B*a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^
3*e^4 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 12*(B*a^2*b
 + A*a*b^2 + A*a^2*c)*d*e^6 - 10*(B*a^3 + 3*A*a^2*b)*e^7)*x + 420*(B*c^3*e^
7*x^7 + 7*B*c^3*d*e^6*x^6 + 21*B*c^3*d^2*e^5*x^5 + 35*B*c^3*d^3*e^4*x^4 + 3
5*B*c^3*d^4*e^3*x^3 + 21*B*c^3*d^5*e^2*x^2 + 7*B*c^3*d^6*e*x + B*c^3*d^7)*l
og(e*x + d))/(e^15*x^7 + 7*d*e^14*x^6 + 21*d^2*e^13*x^5 + 35*d^3*e^12*x^4 +
 35*d^4*e^11*x^3 + 21*d^5*e^10*x^2 + 7*d^6*e^9*x + d^7*e^8)
```

giac [A] time = 0.18, size = 1001, normalized size = 1.83

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] B*c^3*e^(-8)*log(abs(x*e + d)) + 1/420*(420*(7*B*c^3*d*e^5 - 3*B*b*c^2*e^6
- A*c^3*e^6)*x^6 + 630*(21*B*c^3*d^2*e^4 - 6*B*b*c^2*d*e^5 - 2*A*c^3*d*e^5
- B*b^2*c*e^6 - B*a*c^2*e^6 - A*b*c^2*e^6)*x^5 + 70*(385*B*c^3*d^3*e^3 - 90
*B*b*c^2*d^2*e^4 - 30*A*c^3*d^2*e^4 - 15*B*b^2*c*d*e^5 - 15*B*a*c^2*d*e^5 -
 15*A*b*c^2*d*e^5 - 2*B*b^3*e^6 - 12*B*a*b*c*e^6 - 6*A*b^2*c*e^6 - 6*A*a*c^
2*e^6)*x^4 + 35*(875*B*c^3*d^4*e^2 - 180*B*b*c^2*d^3*e^3 - 60*A*c^3*d^3*e^3
 - 30*B*b^2*c*d^2*e^4 - 30*B*a*c^2*d^2*e^4 - 30*A*b*c^2*d^2*e^4 - 4*B*b^3*d
*e^5 - 24*B*a*b*c*d*e^5 - 12*A*b^2*c*d*e^5 - 12*A*a*c^2*d*e^5 - 9*B*a*b^2*e
^6 - 3*A*b^3*e^6 - 9*B*a^2*c*e^6 - 18*A*a*b*c*e^6)*x^3 + 21*(959*B*c^3*d^5*
e - 180*B*b*c^2*d^4*e^2 - 60*A*c^3*d^4*e^2 - 30*B*b^2*c*d^3*e^3 - 30*B*a*c^
2*d^3*e^3 - 30*A*b*c^2*d^3*e^3 - 4*B*b^3*d^2*e^4 - 24*B*a*b*c*d^2*e^4 - 12*
A*b^2*c*d^2*e^4 - 12*A*a*c^2*d^2*e^4 - 9*B*a*b^2*d*e^5 - 3*A*b^3*d*e^5 - 9*
B*a^2*c*d*e^5 - 18*A*a*b*c*d*e^5 - 12*B*a^2*b*e^6 - 12*A*a*b^2*e^6 - 12*A*a
^2*c*e^6)*x^2 + 7*(1029*B*c^3*d^6 - 180*B*b*c^2*d^5*e - 60*A*c^3*d^5*e - 30
*B*b^2*c*d^4*e^2 - 30*B*a*c^2*d^4*e^2 - 30*A*b*c^2*d^4*e^2 - 4*B*b^3*d^3*e^
3 - 24*B*a*b*c*d^3*e^3 - 12*A*b^2*c*d^3*e^3 - 12*A*a*c^2*d^3*e^3 - 9*B*a*b^
2*d^2*e^4 - 3*A*b^3*d^2*e^4 - 9*B*a^2*c*d^2*e^4 - 18*A*a*b*c*d^2*e^4 - 12*B
*a^2*b*d*e^5 - 12*A*a*b^2*d*e^5 - 12*A*a^2*c*d*e^5 - 10*B*a^3*e^6 - 30*A*a^
2*b*e^6)*x + (1089*B*c^3*d^7 - 180*B*b*c^2*d^6*e - 60*A*c^3*d^6*e - 30*B*b^
2*c*d^5*e^2 - 30*B*a*c^2*d^5*e^2 - 30*A*b*c^2*d^5*e^2 - 4*B*b^3*d^4*e^3 - 2
4*B*a*b*c*d^4*e^3 - 12*A*b^2*c*d^4*e^3 - 12*A*a*c^2*d^4*e^3 - 9*B*a*b^2*d^3
*e^4 - 3*A*b^3*d^3*e^4 - 9*B*a^2*c*d^3*e^4 - 18*A*a*b*c*d^3*e^4 - 12*B*a^2*
b*d^2*e^5 - 12*A*a*b^2*d^2*e^5 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 30*A
*a^2*b*d*e^6 - 60*A*a^3*e^7)*e^(-1))*e^(-7)/(x*e + d)^7
```

maple [B] time = 0.06, size = 1661, normalized size = 3.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x)
```

```
[Out] -36/5/e^5/(e*x+d)^5*B*d^2*a*b*c+4/e^5/(e*x+d)^6*B*d^3*a*b*c+6/7/e^4/(e*x+d)
^7*A*d^3*a*b*c-6/7/e^5/(e*x+d)^7*B*d^4*a*b*c+18/5/e^4/(e*x+d)^5*A*d*a*b*c+6
/e^5/(e*x+d)^4*B*d*a*b*c-3/e^4/(e*x+d)^6*A*d^2*a*b*c-1/3/e^5/(e*x+d)^3*b^3*
B-c^3/e^7/(e*x+d)*A-1/4/e^4/(e*x+d)^4*A*b^3-1/6/e^2/(e*x+d)^6*B*a^3-1/7/e/(
e*x+d)^7*A*a^3-7/6/e^8/(e*x+d)^6*B*d^6*c^3+1/7/e^4/(e*x+d)^7*A*b^3*d^3-1/7/
e^7/(e*x+d)^7*A*d^6*c^3-3/4/e^4/(e*x+d)^4*B*a*b^2+1/e^5/(e*x+d)^4*B*b^3*d-3
5/4/e^8/(e*x+d)^4*B*c^3*d^4-1/2/e^2/(e*x+d)^6*A*a^2*b-1/2/e^4/(e*x+d)^6*A*d
^2*b^3+1/e^7/(e*x+d)^6*A*c^3*d^5-1/e^5/(e*x+d)^3*A*b^2*c-5/e^7/(e*x+d)^3*A*
c^3*d^2+35/3/e^8/(e*x+d)^3*B*d^3*c^3+3*c^3/e^7/(e*x+d)^2*A*d-3/2*c^2/e^6/(e
*x+d)^2*a*B+B*c^3/e^8*ln(e*x+d)-3/2*c/e^6/(e*x+d)^2*b^2*B-21/2*c^3/e^8/(e*x
+d)^2*B*d^2+5/e^7/(e*x+d)^4*A*c^3*d^3-3/4/e^4/(e*x+d)^4*B*a^2*c-1/e^5/(e*x+
d)^3*A*a*c^2-3*c^2/e^7/(e*x+d)*B*b+7*c^3/e^8/(e*x+d)*B*d+1/7/e^2/(e*x+d)^7*
B*a^3*d-1/7/e^5/(e*x+d)^7*B*d^4*b^3+1/7/e^8/(e*x+d)^7*B*c^3*d^7-3/5/e^3/(e*
x+d)^5*A*a^2*c-3/5/e^3/(e*x+d)^5*A*a*b^2+3/5/e^4/(e*x+d)^5*A*d*b^3-3/e^7/(e
*x+d)^5*A*c^3*d^4-3/5/e^3/(e*x+d)^5*B*a^2*b-6/5/e^5/(e*x+d)^5*B*d^2*b^3+21/
5/e^8/(e*x+d)^5*B*d^5*c^3-3/2*c^2/e^6/(e*x+d)^2*A*b+2/3/e^5/(e*x+d)^6*B*b^3
*d^3+5/e^6/(e*x+d)^3*B*d*b^2*c+5/e^6/(e*x+d)^3*B*d*a*c^2-2/e^5/(e*x+d)^3*a*
b*B*c+5/e^6/(e*x+d)^3*A*b*c^2*d+3/e^7/(e*x+d)^6*B*d^5*b*c^2-9/e^7/(e*x+d)^5
*B*d^4*b*c^2-3/7/e^5/(e*x+d)^7*A*a*c^2*d^4-3/7/e^5/(e*x+d)^7*A*d^4*b^2*c+3/
7/e^6/(e*x+d)^7*A*b*c^2*d^5-3/7/e^3/(e*x+d)^7*B*d^2*a^2*b+3/7/e^4/(e*x+d)^7
*B*d^3*a^2*c-3/2/e^4/(e*x+d)^6*B*d^2*a*b^2-5/2/e^6/(e*x+d)^6*B*d^4*a*c^2-5/
2/e^6/(e*x+d)^6*B*d^4*b^2*c+3/7/e^6/(e*x+d)^7*B*a*c^2*d^5+3/7/e^6/(e*x+d)^7
*B*d^5*b^2*c-3/7/e^7/(e*x+d)^7*B*d^6*b*c^2+3/7/e^2/(e*x+d)^7*A*d*a^2*b-3/7/
e^3/(e*x+d)^7*A*d^2*a^2*c-3/7/e^3/(e*x+d)^7*A*d^2*a*b^2-15/2/e^6/(e*x+d)^4*
B*d^2*a*c^2-15/2/e^6/(e*x+d)^4*B*d^2*b^2*c+15/e^7/(e*x+d)^4*B*d^3*b*c^2+1/e
```

```
^3/(e*x+d)^6*A*a^2*c*d+3/7/e^4/(e*x+d)^7*B*a*b^2*d^3-18/5/e^5/(e*x+d)^5*A*a
*c^2*d^2-18/5/e^5/(e*x+d)^5*A*b^2*c*d^2-3/2/e^4/(e*x+d)^6*B*a^2*c*d^2+6/e^6
/(e*x+d)^5*A*b*c^2*d^3+9*c^2/e^7/(e*x+d)^2*B*b*d-3/2/e^4/(e*x+d)^4*A*a*b*c+
3/e^5/(e*x+d)^4*A*d*a*c^2+3/e^5/(e*x+d)^4*A*d*b^2*c-15/2/e^6/(e*x+d)^4*A*b*
c^2*d^2+1/e^3/(e*x+d)^6*A*d*a*b^2+2/e^5/(e*x+d)^6*A*d^3*a*c^2+2/e^5/(e*x+d)
^6*A*d^3*b^2*c-5/2/e^6/(e*x+d)^6*A*b*c^2*d^4+1/e^3/(e*x+d)^6*B*d*a^2*b+6/e^
6/(e*x+d)^5*B*a*c^2*d^3+6/e^6/(e*x+d)^5*B*d^3*b^2*c-15/e^7/(e*x+d)^3*B*b*c^
2*d^2+9/5/e^4/(e*x+d)^5*B*a^2*c*d+9/5/e^4/(e*x+d)^5*B*d*a*b^2
```

maxima [A] time = 1.01, size = 926, normalized size = 1.69

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*a^3*e^7 - 60*(3*B*b*c^2 + A*c^3)*d^6*e - 30*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 12
*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 10*(B*a^3 + 3*A*a^2*b)*d*e^6 + 420
*(7*B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*
(3*B*b*c^2 + A*c^3)*d*e^6 - (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 + 70*(385*
B*c^3*d^3*e^4 - 30*(3*B*b*c^2 + A*c^3)*d^2*e^5 - 15*(B*b^2*c + (B*a + A*b)*
c^2)*d*e^6 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 35*(8
75*B*c^3*d^4*e^3 - 60*(3*B*b*c^2 + A*c^3)*d^3*e^4 - 30*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - 3*(
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 21*(959*B*c^3*d^5*e^2
 - 60*(3*B*b*c^2 + A*c^3)*d^4*e^3 - 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4
- 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 - 3*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*
x^2 + 7*(1029*B*c^3*d^6*e - 60*(3*B*b*c^2 + A*c^3)*d^5*e^2 - 30*(B*b^2*c +
(B*a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^
3*e^4 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 12*(B*a^2*b
 + A*a*b^2 + A*a^2*c)*d*e^6 - 10*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^15*x^7 + 7*
d*e^14*x^6 + 21*d^2*e^13*x^5 + 35*d^3*e^12*x^4 + 35*d^4*e^11*x^3 + 21*d^5*e
^10*x^2 + 7*d^6*e^9*x + d^7*e^8) + B*c^3*log(e*x + d)/e^8
```

mupad [B] time = 2.58, size = 1353, normalized size = 2.47

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x)
```

```
[Out] -(60*A*a^3*e^7 - 1089*B*c^3*d^7 + 10*B*a^3*d*e^6 + 60*A*c^3*d^6*e - 420*B*c
^3*d^7*log(d + e*x) + 70*B*a^3*e^7*x + 3*A*b^3*d^3*e^4 + 4*B*b^3*d^4*e^3 +
105*A*b^3*e^7*x^3 + 140*B*b^3*e^7*x^4 + 420*A*c^3*e^7*x^6 - 7203*B*c^3*d^6*
e*x + 12*A*a*b^2*d^2*e^5 + 12*A*a*c^2*d^4*e^3 + 12*A*a^2*c*d^2*e^5 + 9*B*a*
b^2*d^3*e^4 + 12*B*a^2*b*d^2*e^5 + 30*A*b*c^2*d^5*e^2 + 12*A*b^2*c*d^4*e^3
+ 30*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4 + 30*B*b^2*c*d^5*e^2 + 252*A*a*b^2
*e^7*x^2 + 252*A*a^2*c*e^7*x^2 + 252*B*a^2*b*e^7*x^2 + 315*B*a*b^2*e^7*x^3
+ 420*A*a*c^2*e^7*x^4 + 315*B*a^2*c*e^7*x^3 + 420*A*b^2*c*e^7*x^4 + 630*A*b
*c^2*e^7*x^5 + 630*B*a*c^2*e^7*x^5 + 21*A*b^3*d^2*e^5*x + 63*A*b^3*d*e^6*x^
2 + 630*B*b^2*c*e^7*x^5 + 1260*B*b*c^2*e^7*x^6 + 420*A*c^3*d^5*e^2*x + 28*B
*b^3*d^3*e^4*x + 140*B*b^3*d*e^6*x^3 + 1260*A*c^3*d*e^6*x^5 - 2940*B*c^3*d*
e^6*x^6 - 420*B*c^3*e^7*x^7*log(d + e*x) + 1260*A*c^3*d^4*e^3*x^2 + 84*B*b^
3*d^2*e^5*x^2 + 2100*A*c^3*d^3*e^4*x^3 + 2100*A*c^3*d^2*e^5*x^4 - 20139*B*c
^3*d^5*e^2*x^2 - 30625*B*c^3*d^4*e^3*x^3 - 26950*B*c^3*d^3*e^4*x^4 - 13230*
B*c^3*d^2*e^5*x^5 + 30*A*a^2*b*d*e^6 + 180*B*b*c^2*d^6*e + 210*A*a^2*b*e^7*
```

```
x + 252*A*a*c^2*d^2*e^5*x^2 + 630*A*b*c^2*d^3*e^4*x^2 + 252*A*b^2*c*d^2*e^5
*x^2 + 630*B*a*c^2*d^3*e^4*x^2 + 1050*A*b*c^2*d^2*e^5*x^3 + 1050*B*a*c^2*d^
2*e^5*x^3 + 3780*B*b*c^2*d^4*e^3*x^2 + 630*B*b^2*c*d^3*e^4*x^2 + 6300*B*b*c
^2*d^3*e^4*x^3 + 1050*B*b^2*c*d^2*e^5*x^3 + 6300*B*b*c^2*d^2*e^5*x^4 - 8820
*B*c^3*d^5*e^2*x^2*log(d + e*x) - 14700*B*c^3*d^4*e^3*x^3*log(d + e*x) - 14
700*B*c^3*d^3*e^4*x^4*log(d + e*x) - 8820*B*c^3*d^2*e^5*x^5*log(d + e*x) +
18*A*a*b*c*d^3*e^4 + 24*B*a*b*c*d^4*e^3 + 630*A*a*b*c*e^7*x^3 + 84*A*a*b^2*
d*e^6*x + 840*B*a*b*c*e^7*x^4 + 84*A*a^2*c*d*e^6*x + 84*B*a^2*b*d*e^6*x - 2
940*B*c^3*d^6*e*x*log(d + e*x) + 84*A*a*c^2*d^3*e^4*x + 63*B*a*b^2*d^2*e^5*
x + 189*B*a*b^2*d*e^6*x^2 + 420*A*a*c^2*d*e^6*x^3 + 210*A*b*c^2*d^4*e^3*x +
 84*A*b^2*c*d^3*e^4*x + 210*B*a*c^2*d^4*e^3*x + 63*B*a^2*c*d^2*e^5*x + 189*
B*a^2*c*d*e^6*x^2 + 420*A*b^2*c*d*e^6*x^3 + 1050*A*b*c^2*d*e^6*x^4 + 1050*B
*a*c^2*d*e^6*x^4 + 1260*B*b*c^2*d^5*e^2*x + 210*B*b^2*c*d^4*e^3*x + 1050*B*
b^2*c*d*e^6*x^4 + 3780*B*b*c^2*d*e^6*x^5 - 2940*B*c^3*d*e^6*x^6*log(d + e*x
) + 504*B*a*b*c*d^2*e^5*x^2 + 126*A*a*b*c*d^2*e^5*x + 378*A*a*b*c*d*e^6*x^2
 + 168*B*a*b*c*d^3*e^4*x + 840*B*a*b*c*d*e^6*x^3)/(420*e^8*(d + e*x)^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**8,x)
[Out] Timed out
```

3.2106 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^9}\,dx$

Optimal. Leaf size=550

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2\cdots}{5e^8(d+ex)^5}$$

Rubi [A] time = 0.71, antiderivative size = 548, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2bd-ae)+35c^3d^4\right)}{5e^8(d+ex)^5}+\frac{c\left(Ace(2cd-be)-B\left(-ce(6bd-ae)+b^2e^2+7c^2d^2\right)\right)}{e^8(d+ex)^3}+\frac{B\left(-15c^2de(3bd-ae)+3bce^2(5bd-2ae)-b^3e^3+35c^3d^3\right)-3Ace\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{4e^8(d+ex)^4}+\frac{\left(ae^2-bde+cd^2\right)\left(B\left(-cde(8bd-3ae)+be^2(2bd-ae)+7c^2d^3\right)-Ae\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)\right)}{2e^8(d+ex)^6}-\frac{\left(ae^2-bde+cd^2\right)^2\left(-Be(4bd-ae)-3Ae(2cd-be)+7Bcd^2\right)}{7e^8(d+ex)^7}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)^3}{8e^8(d+ex)^8}+\frac{c^2(-Ace-3bBe+7Bcd)}{2e^8(d+ex)^2}-\frac{Bc^3}{e^8(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(8*e^8*(d + e*x)^8) - ((c*d^2 - b*d
*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(7*e^8
*(d + e*x)^7) + ((c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a
*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))
)/(2*e^8*(d + e*x)^6) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5
*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*
b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(5*e^8*(d + e*x)^
5) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3*b
*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(4*e^8*(d +
 e*x)^4) + (c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*d -
a*e))))/(e^8*(d + e*x)^3) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(2*e^8*(d + e
*x)^2) - (B*c^3)/(e^8*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^9}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^9}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)\cdots\right.}{e^7(d+ex)^8}\cdots\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{8e^8(d+ex)^8}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3A\cdots\right.}{7e^8(d+ex)^7}\cdots$$

Mathematica [A] time = 0.47, size = 847, normalized size = 1.54

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] -1/280*(A*e*(5*c^3*(d^6 + 8*d^5*e*x + 28*d^4*e^2*x^2 + 56*d^3*e^3*x^3 + 70*
d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6) + e^3*(35*a^3*e^3 + 15*a^2*b*e^2*(
```

```
d + 8*e*x) + 5*a*b^2*e*(d^2 + 8*d*e*x + 28*e^2*x^2) + b^3*(d^3 + 8*d^2*e*x
+ 28*d*e^2*x^2 + 56*e^3*x^3)) + c*e^2*(5*a^2*e^2*(d^2 + 8*d*e*x + 28*e^2*x^
2) + 6*a*b*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + 3*b^2*(d^4 + 8
*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + c^2*e*(3*a*e*(d^4
 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) + 5*b*(d^5 + 8*d
^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5))) + B
*(35*c^3*(d^7 + 8*d^6*e*x + 28*d^5*e^2*x^2 + 56*d^4*e^3*x^3 + 70*d^3*e^4*x^
4 + 56*d^2*e^5*x^5 + 28*d*e^6*x^6 + 8*e^7*x^7) + e^3*(5*a^3*e^3*(d + 8*e*x)
 + 5*a^2*b*e^2*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*a*b^2*e*(d^3 + 8*d^2*e*x +
28*d*e^2*x^2 + 56*e^3*x^3) + b^3*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e
^3*x^3 + 70*e^4*x^4)) + c*e^2*(3*a^2*e^2*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 +
56*e^3*x^3) + 6*a*b*e*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70
*e^4*x^4) + 5*b^2*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d
*e^4*x^4 + 56*e^5*x^5)) + 5*c^2*e*(a*e*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 +
56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + 3*b*(d^6 + 8*d^5*e*x + 28*d^4
*e^2*x^2 + 56*d^3*e^3*x^3 + 70*d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6))))/
(e^8*(d + e*x)^8)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^9}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9, x]
```

fricas [A] time = 0.38, size = 922, normalized size = 1.68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 35*A*a^3*e^7 + 5*(3*B*b*c^2 + A*
c^3)*d^6*e + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + (B*b^3 + 3*A*a*c^2 + 3
*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)
*d^3*e^4 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 5*(B*a^3 + 3*A*a^2*b)*
d*e^6 + 140*(7*B*c^3*d*e^6 + (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 280*(7*B*c^3*d^
2*e^5 + (3*B*b*c^2 + A*c^3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 +
70*(35*B*c^3*d^3*e^4 + 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 5*(B*b^2*c + (B*a +
A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 56
*(35*B*c^3*d^4*e^3 + 5*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 5*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 28*(35*B*c^3*d^5*e^2 + 5*
(3*B*b*c^2 + A*c^3)*d^4*e^3 + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + (B*b^
3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e^6 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 8*(35*
B*c^3*d^6*e + 5*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 5*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2
 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)
*d*e^6 + 5*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^
14*x^6 + 56*d^3*e^13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*
x^2 + 8*d^7*e^9*x + d^8*e^8)
```

giac [B] time = 0.18, size = 1127, normalized size = 2.05

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/280*(280*B*c^3*x^7*e^7 + 980*B*c^3*d*x^6*e^6 + 1960*B*c^3*d^2*x^5*e^5 +
2450*B*c^3*d^3*x^4*e^4 + 1960*B*c^3*d^4*x^3*e^3 + 980*B*c^3*d^5*x^2*e^2 + 2
80*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 420*B*b*c^2*x^6*e^7 + 140*A*c^3*x^6*e^7 +
 840*B*b*c^2*d*x^5*e^6 + 280*A*c^3*d*x^5*e^6 + 1050*B*b*c^2*d^2*x^4*e^5 + 3
50*A*c^3*d^2*x^4*e^5 + 840*B*b*c^2*d^3*x^3*e^4 + 280*A*c^3*d^3*x^3*e^4 + 42
0*B*b*c^2*d^4*x^2*e^3 + 140*A*c^3*d^4*x^2*e^3 + 120*B*b*c^2*d^5*x*e^2 + 40*
A*c^3*d^5*x*e^2 + 15*B*b*c^2*d^6*e + 5*A*c^3*d^6*e + 280*B*b^2*c*x^5*e^7 +
280*B*a*c^2*x^5*e^7 + 280*A*b*c^2*x^5*e^7 + 350*B*b^2*c*d*x^4*e^6 + 350*B*a
*c^2*d*x^4*e^6 + 350*A*b*c^2*d*x^4*e^6 + 280*B*b^2*c*d^2*x^3*e^5 + 280*B*a*
c^2*d^2*x^3*e^5 + 280*A*b*c^2*d^2*x^3*e^5 + 140*B*b^2*c*d^3*x^2*e^4 + 140*B
*a*c^2*d^3*x^2*e^4 + 140*A*b*c^2*d^3*x^2*e^4 + 40*B*b^2*c*d^4*x*e^3 + 40*B*
a*c^2*d^4*x*e^3 + 40*A*b*c^2*d^4*x*e^3 + 5*B*b^2*c*d^5*e^2 + 5*B*a*c^2*d^5*
e^2 + 5*A*b*c^2*d^5*e^2 + 70*B*b^3*x^4*e^7 + 420*B*a*b*c*x^4*e^7 + 210*A*b^
2*c*x^4*e^7 + 210*A*a*c^2*x^4*e^7 + 56*B*b^3*d*x^3*e^6 + 336*B*a*b*c*d*x^3*
e^6 + 168*A*b^2*c*d*x^3*e^6 + 168*A*a*c^2*d*x^3*e^6 + 28*B*b^3*d^2*x^2*e^5
+ 168*B*a*b*c*d^2*x^2*e^5 + 84*A*b^2*c*d^2*x^2*e^5 + 84*A*a*c^2*d^2*x^2*e^5
 + 8*B*b^3*d^3*x*e^4 + 48*B*a*b*c*d^3*x*e^4 + 24*A*b^2*c*d^3*x*e^4 + 24*A*a
*c^2*d^3*x*e^4 + B*b^3*d^4*e^3 + 6*B*a*b*c*d^4*e^3 + 3*A*b^2*c*d^4*e^3 + 3*
A*a*c^2*d^4*e^3 + 168*B*a*b^2*x^3*e^7 + 56*A*b^3*x^3*e^7 + 168*B*a^2*c*x^3*
e^7 + 336*A*a*b*c*x^3*e^7 + 84*B*a*b^2*d*x^2*e^6 + 28*A*b^3*d*x^2*e^6 + 84*
B*a^2*c*d*x^2*e^6 + 168*A*a*b*c*d*x^2*e^6 + 24*B*a*b^2*d^2*x*e^5 + 8*A*b^3*
d^2*x*e^5 + 24*B*a^2*c*d^2*x*e^5 + 48*A*a*b*c*d^2*x*e^5 + 3*B*a*b^2*d^3*e^4
 + A*b^3*d^3*e^4 + 3*B*a^2*c*d^3*e^4 + 6*A*a*b*c*d^3*e^4 + 140*B*a^2*b*x^2*
e^7 + 140*A*a*b^2*x^2*e^7 + 140*A*a^2*c*x^2*e^7 + 40*B*a^2*b*d*x*e^6 + 40*A
*a*b^2*d*x*e^6 + 40*A*a^2*c*d*x*e^6 + 5*B*a^2*b*d^2*e^5 + 5*A*a*b^2*d^2*e^5
 + 5*A*a^2*c*d^2*e^5 + 40*B*a^3*x*e^7 + 120*A*a^2*b*x*e^7 + 5*B*a^3*d*e^6 +
 15*A*a^2*b*d*e^6 + 35*A*a^3*e^7)*e^(-8)/(x*e + d)^8
```

maple [A] time = 0.05, size = 1067, normalized size = 1.94

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x)
```

```
[Out] -1/(e*x+d)*B*c^3/e^8-1/8*(A*a^3*e^7-3*A*a^2*b*d*e^6+3*A*a^2*c*d^2*e^5+3*A*a
*b^2*d^2*e^5-6*A*a*b*c*d^3*e^4+3*A*a*c^2*d^4*e^3-A*b^3*d^3*e^4+3*A*b^2*c*d^
4*e^3-3*A*b*c^2*d^5*e^2+A*c^3*d^6*e-B*a^3*d*e^6+3*B*a^2*b*d^2*e^5-3*B*a^2*c
*d^3*e^4-3*B*a*b^2*d^3*e^4+6*B*a*b*c*d^4*e^3-3*B*a*c^2*d^5*e^2+B*b^3*d^4*e^
3-3*B*b^2*c*d^5*e^2+3*B*b*c^2*d^6*e-B*c^3*d^7)/e^8/(e*x+d)^8-1/2*c^2*(A*c*e
+3*B*b*e-7*B*c*d)/e^8/(e*x+d)^2-1/4*(3*A*a*c^2*e^3+3*A*b^2*c*e^3-15*A*b*c^2
*d*e^2+15*A*c^3*d^2*e+6*B*a*b*c*e^3-15*B*a*c^2*d*e^2+B*b^3*e^3-15*B*b^2*c*d
*e^2+45*B*b*c^2*d^2*e-35*B*c^3*d^3)/e^8/(e*x+d)^4-1/6*(3*A*a^2*c*e^5+3*A*a*
b^2*e^5-18*A*a*b*c*d*e^4+18*A*a*c^2*d^2*e^3-3*A*b^3*d*e^4+18*A*b^2*c*d^2*e^
3-30*A*b*c^2*d^3*e^2+15*A*c^3*d^4*e+3*B*a^2*b*e^5-9*B*a^2*c*d*e^4-9*B*a*b^2
*d*e^4+36*B*a*b*c*d^2*e^3-30*B*a*c^2*d^3*e^2+6*B*b^3*d^2*e^3-30*B*b^2*c*d^3
*e^2+45*B*b*c^2*d^4*e-21*B*c^3*d^5)/e^8/(e*x+d)^6-1/7*(3*A*a^2*b*e^6-6*A*a^
2*c*d*e^5-6*A*a*b^2*d*e^5+18*A*a*b*c*d^2*e^4-12*A*a*c^2*d^3*e^3+3*A*b^3*d^2
*e^4-12*A*b^2*c*d^3*e^3+15*A*b*c^2*d^4*e^2-6*A*c^3*d^5*e+B*a^3*e^6-6*B*a^2*
b*d*e^5+9*B*a^2*c*d^2*e^4+9*B*a*b^2*d^2*e^4-24*B*a*b*c*d^3*e^3+15*B*a*c^2*d
^4*e^2-4*B*b^3*d^3*e^3+15*B*b^2*c*d^4*e^2-18*B*b*c^2*d^5*e+7*B*c^3*d^6)/e^8
/(e*x+d)^7-1/5*(6*A*a*b*c*e^4-12*A*a*c^2*d*e^3+A*b^3*e^4-12*A*b^2*c*d*e^3+3
0*A*b*c^2*d^2*e^2-20*A*c^3*d^3*e+3*B*a^2*c*e^4+3*B*a*b^2*e^4-24*B*a*b*c*d*e
^3+30*B*a*c^2*d^2*e^2-4*B*b^3*d*e^3+30*B*b^2*c*d^2*e^2-60*B*b*c^2*d^3*e+35*
B*c^3*d^4)/e^8/(e*x+d)^5-c*(A*b*c*e^2-2*A*c^2*d*e+B*a*c*e^2+B*b^2*e^2-6*B*b
*c*d*e+7*B*c^2*d^2)/e^8/(e*x+d)^3
```

maxima [A] time = 1.06, size = 922, normalized size = 1.68

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 35*A*a^3*e^7 + 5*(3*B*b*c^2 + A*
c^3)*d^6*e + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + (B*b^3 + 3*A*a*c^2 + 3
*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)
*d^3*e^4 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 5*(B*a^3 + 3*A*a^2*b)*
d*e^6 + 140*(7*B*c^3*d*e^6 + (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 280*(7*B*c^3*d^
2*e^5 + (3*B*b*c^2 + A*c^3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 +
70*(35*B*c^3*d^3*e^4 + 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 5*(B*b^2*c + (B*a +
A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 56
*(35*B*c^3*d^4*e^3 + 5*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 5*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 28*(35*B*c^3*d^5*e^2 + 5*
(3*B*b*c^2 + A*c^3)*d^4*e^3 + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + (B*b^
3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e^6 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 8*(35*
B*c^3*d^6*e + 5*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 5*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2
 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)
*d*e^6 + 5*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^
14*x^6 + 56*d^3*e^13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*
x^2 + 8*d^7*e^9*x + d^8*e^8)
```

mupad [B] time = 0.28, size = 1115, normalized size = 2.03

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x)
```

```
[Out] -((35*A*a^3*e^7 + 35*B*c^3*d^7 + 5*B*a^3*d*e^6 + 5*A*c^3*d^6*e + A*b^3*d^3*
e^4 + B*b^3*d^4*e^3 + 5*A*a*b^2*d^2*e^5 + 3*A*a*c^2*d^4*e^3 + 5*A*a^2*c*d^2
*e^5 + 3*B*a*b^2*d^3*e^4 + 5*B*a^2*b*d^2*e^5 + 5*A*b*c^2*d^5*e^2 + 3*A*b^2*
c*d^4*e^3 + 5*B*a*c^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 + 5*B*b^2*c*d^5*e^2 + 15*
A*a^2*b*d*e^6 + 15*B*b*c^2*d^6*e + 6*A*a*b*c*d^3*e^4 + 6*B*a*b*c*d^4*e^3)/(
280*e^8) + (x^4*(B*b^3*e^3 + 35*B*c^3*d^3 + 3*A*a*c^2*e^3 + 3*A*b^2*c*e^3 +
 5*A*c^3*d^2*e + 6*B*a*b*c*e^3 + 5*A*b*c^2*d*e^2 + 5*B*a*c^2*d*e^2 + 15*B*b
*c^2*d^2*e + 5*B*b^2*c*d*e^2))/(4*e^4) + (x*(5*B*a^3*e^6 + 35*B*c^3*d^6 + 1
5*A*a^2*b*e^6 + 5*A*c^3*d^5*e + A*b^3*d^2*e^4 + B*b^3*d^3*e^3 + 3*A*a*c^2*d
^3*e^3 + 3*B*a*b^2*d^2*e^4 + 5*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 + 5*B*a*
c^2*d^4*e^2 + 3*B*a^2*c*d^2*e^4 + 5*B*b^2*c*d^4*e^2 + 5*A*a*b^2*d*e^5 + 5*A
*a^2*c*d*e^5 + 5*B*a^2*b*d*e^5 + 15*B*b*c^2*d^5*e + 6*A*a*b*c*d^2*e^4 + 6*B
*a*b*c*d^3*e^3))/(35*e^7) + (x^2*(35*B*c^3*d^5 + 5*A*a*b^2*e^5 + 5*A*a^2*c*
e^5 + 5*B*a^2*b*e^5 + A*b^3*d*e^4 + 5*A*c^3*d^4*e + B*b^3*d^2*e^3 + 3*A*a*c
^2*d^2*e^3 + 5*A*b*c^2*d^3*e^2 + 3*A*b^2*c*d^2*e^3 + 5*B*a*c^2*d^3*e^2 + 5*
B*b^2*c*d^3*e^2 + 3*B*a*b^2*d*e^4 + 3*B*a^2*c*d*e^4 + 15*B*b*c^2*d^4*e + 6*
B*a*b*c*d^2*e^3 + 6*A*a*b*c*d*e^4))/(10*e^6) + (x^5*(7*B*c^3*d^2 + A*c^3*d*
e + A*b*c^2*e^2 + B*a*c^2*e^2 + B*b^2*c*e^2 + 3*B*b*c^2*d*e))/e^3 + (x^3*(A
*b^3*e^4 + 35*B*c^3*d^4 + 3*B*a*b^2*e^4 + 3*B*a^2*c*e^4 + 5*A*c^3*d^3*e + B
*b^3*d*e^3 + 5*A*b*c^2*d^2*e^2 + 5*B*a*c^2*d^2*e^2 + 5*B*b^2*c*d^2*e^2 + 6*
A*a*b*c*e^4 + 3*A*a*c^2*d*e^3 + 3*A*b^2*c*d*e^3 + 15*B*b*c^2*d^3*e + 6*B*a*
b*c*d*e^3))/(5*e^5) + (c^2*x^6*(A*c*e + 3*B*b*e + 7*B*c*d))/(2*e^2) + (B*c^
3*x^7)/e)/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^3*x^3 +
70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.2107 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=555

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2\right.}{6e^8(d+ex)^6}$$

Rubi [A] time = 0.74, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(9*e^8*(d + e*x)^9) - ((c*d^2 - b*d
*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(8*e^8
*(d + e*x)^8) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3
*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)
)))/(7*e^8*(d + e*x)^7) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(6*e^8*(d + e*x
)^6) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3
*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(5*e^8*(d
 + e*x)^5) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*
d - a*e))))/(4*e^8*(d + e*x)^4) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(3*e^8*
(d + e*x)^3) - (B*c^3)/(2*e^8*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{10}}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{10}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-\right.}{e^7(d+ex)^9}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{9e^8(d+ex)^9}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-\right.}{8e^8(d+ex)^8}$$

Mathematica [A] time = 0.49, size = 852, normalized size = 1.54

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(A*e*(10*c^3*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 1
26*d^2*e^4*x^4 + 126*d*e^5*x^5 + 84*e^6*x^6) + 5*e^3*(56*a^3*e^3 + 21*a^2*b
```

```
*e^2*(d + 9*e*x) + 6*a*b^2*e*(d^2 + 9*d*e*x + 36*e^2*x^2) + b^3*(d^3 + 9*d^
2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3)) + 6*c*e^2*(5*a^2*e^2*(d^2 + 9*d*e*x + 3
6*e^2*x^2) + 5*a*b*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 2*b^2*
(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + 3*c^2*e*
(4*a*e*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4) + 5*
b*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*
e^5*x^5))) + B*(35*c^3*(d^7 + 9*d^6*e*x + 36*d^5*e^2*x^2 + 84*d^4*e^3*x^3 +
 126*d^3*e^4*x^4 + 126*d^2*e^5*x^5 + 84*d*e^6*x^6 + 36*e^7*x^7) + e^3*(35*a
^3*e^3*(d + 9*e*x) + 30*a^2*b*e^2*(d^2 + 9*d*e*x + 36*e^2*x^2) + 15*a*b^2*e
*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 4*b^3*(d^4 + 9*d^3*e*x + 3
6*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + 3*c*e^2*(5*a^2*e^2*(d^3 + 9*
d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 8*a*b*e*(d^4 + 9*d^3*e*x + 36*d^2*e^
2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4) + 5*b^2*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x
^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5)) + 15*c^2*e*(a*e*(d^5 +
9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5)
+ 2*b*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^4
+ 126*d*e^5*x^5 + 84*e^6*x^6))))/(e^8*(d + e*x)^9)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{10}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x]
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10, x]
```

fricas [A] time = 0.39, size = 945, normalized size = 1.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x, algorithm="fricas")
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 280*A*a^3*e^7 + 10*(3*B*b*c^2
+ A*c^3)*d^6*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 4*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*
A*a*b)*c)*d^3*e^4 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 35*(B*a^3 +
3*A*a^2*b)*d*e^6 + 420*(7*B*c^3*d*e^6 + 2*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 63
0*(7*B*c^3*d^2*e^5 + 2*(3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)
*c^2)*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4 + 10*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 1
5*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*e^7)*x^4 + 84*(35*B*c^3*d^4*e^3 + 10*(3*B*b*c^2 + A*c^3)*d^3*e^4 +
 15*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*d*e^6 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3
 + 36*(35*B*c^3*d^5*e^2 + 10*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B*b^2*c + (B
*a + A*b)*c^2)*d^3*e^4 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*
e^5 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 30*(B*a^2*b + A
*a*b^2 + A*a^2*c)*e^7)*x^2 + 9*(35*B*c^3*d^6*e + 10*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2
*B*a*b + A*b^2)*c)*d^3*e^4 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*
d^2*e^5 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 35*(B*a^3 + 3*A*a^2*b)*e
^7)*x)/(e^17*x^9 + 9*d*e^16*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d
^4*e^13*x^5 + 126*d^5*e^12*x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*
e^9*x + d^9*e^8)
```

giac [B] time = 0.21, size = 1129, normalized size = 2.03

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(1260*B*c^3*x^7*e^7 + 2940*B*c^3*d*x^6*e^6 + 4410*B*c^3*d^2*x^5*e^5
 + 4410*B*c^3*d^3*x^4*e^4 + 2940*B*c^3*d^4*x^3*e^3 + 1260*B*c^3*d^5*x^2*e^2
 + 315*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 2520*B*b*c^2*x^6*e^7 + 840*A*c^3*x^6*
e^7 + 3780*B*b*c^2*d*x^5*e^6 + 1260*A*c^3*d*x^5*e^6 + 3780*B*b*c^2*d^2*x^4*
e^5 + 1260*A*c^3*d^2*x^4*e^5 + 2520*B*b*c^2*d^3*x^3*e^4 + 840*A*c^3*d^3*x^3
*e^4 + 1080*B*b*c^2*d^4*x^2*e^3 + 360*A*c^3*d^4*x^2*e^3 + 270*B*b*c^2*d^5*x
*e^2 + 90*A*c^3*d^5*x*e^2 + 30*B*b*c^2*d^6*e + 10*A*c^3*d^6*e + 1890*B*b^2*
c*x^5*e^7 + 1890*B*a*c^2*x^5*e^7 + 1890*A*b*c^2*x^5*e^7 + 1890*B*b^2*c*d*x^
4*e^6 + 1890*B*a*c^2*d*x^4*e^6 + 1890*A*b*c^2*d*x^4*e^6 + 1260*B*b^2*c*d^2*
x^3*e^5 + 1260*B*a*c^2*d^2*x^3*e^5 + 1260*A*b*c^2*d^2*x^3*e^5 + 540*B*b^2*c
*d^3*x^2*e^4 + 540*B*a*c^2*d^3*x^2*e^4 + 540*A*b*c^2*d^3*x^2*e^4 + 135*B*b^
2*c*d^4*x*e^3 + 135*B*a*c^2*d^4*x*e^3 + 135*A*b*c^2*d^4*x*e^3 + 15*B*b^2*c*
d^5*e^2 + 15*B*a*c^2*d^5*e^2 + 15*A*b*c^2*d^5*e^2 + 504*B*b^3*x^4*e^7 + 302
4*B*a*b*c*x^4*e^7 + 1512*A*b^2*c*x^4*e^7 + 1512*A*a*c^2*x^4*e^7 + 336*B*b^3
*d*x^3*e^6 + 2016*B*a*b*c*d*x^3*e^6 + 1008*A*b^2*c*d*x^3*e^6 + 1008*A*a*c^2
*d*x^3*e^6 + 144*B*b^3*d^2*x^2*e^5 + 864*B*a*b*c*d^2*x^2*e^5 + 432*A*b^2*c*
d^2*x^2*e^5 + 432*A*a*c^2*d^2*x^2*e^5 + 36*B*b^3*d^3*x*e^4 + 216*B*a*b*c*d^
3*x*e^4 + 108*A*b^2*c*d^3*x*e^4 + 108*A*a*c^2*d^3*x*e^4 + 4*B*b^3*d^4*e^3 +
 24*B*a*b*c*d^4*e^3 + 12*A*b^2*c*d^4*e^3 + 12*A*a*c^2*d^4*e^3 + 1260*B*a*b^
2*x^3*e^7 + 420*A*b^3*x^3*e^7 + 1260*B*a^2*c*x^3*e^7 + 2520*A*a*b*c*x^3*e^7
 + 540*B*a*b^2*d*x^2*e^6 + 180*A*b^3*d*x^2*e^6 + 540*B*a^2*c*d*x^2*e^6 + 10
80*A*a*b*c*d*x^2*e^6 + 135*B*a*b^2*d^2*x*e^5 + 45*A*b^3*d^2*x*e^5 + 135*B*a
^2*c*d^2*x*e^5 + 270*A*a*b*c*d^2*x*e^5 + 15*B*a*b^2*d^3*e^4 + 5*A*b^3*d^3*e
^4 + 15*B*a^2*c*d^3*e^4 + 30*A*a*b*c*d^3*e^4 + 1080*B*a^2*b*x^2*e^7 + 1080*
A*a*b^2*x^2*e^7 + 1080*A*a^2*c*x^2*e^7 + 270*B*a^2*b*d*x*e^6 + 270*A*a*b^2*
d*x*e^6 + 270*A*a^2*c*d*x*e^6 + 30*B*a^2*b*d^2*e^5 + 30*A*a*b^2*d^2*e^5 + 3
0*A*a^2*c*d^2*e^5 + 315*B*a^3*x*e^7 + 945*A*a^2*b*x*e^7 + 35*B*a^3*d*e^6 +
105*A*a^2*b*d*e^6 + 280*A*a^3*e^7)*e^(-8)/(x*e + d)^9
```

maple [A] time = 0.05, size = 1067, normalized size = 1.92

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x)
```

```
[Out] -1/8*(3*A*a^2*b*e^6-6*A*a^2*c*d*e^5-6*A*a*b^2*d*e^5+18*A*a*b*c*d^2*e^4-12*A
*a*c^2*d^3*e^3+3*A*b^3*d^2*e^4-12*A*b^2*c*d^3*e^3+15*A*b*c^2*d^4*e^2-6*A*c^
3*d^5*e+B*a^3*e^6-6*B*a^2*b*d*e^5+9*B*a^2*c*d^2*e^4+9*B*a*b^2*d^2*e^4-24*B*
a*b*c*d^3*e^3+15*B*a*c^2*d^4*e^2-4*B*b^3*d^3*e^3+15*B*b^2*c*d^4*e^2-18*B*b*
c^2*d^5*e+7*B*c^3*d^6)/e^8/(e*x+d)^8-1/2/(e*x+d)^2*B*c^3/e^8-3/4*c*(A*b*c*e
^2-2*A*c^2*d*e+B*a*c*e^2+B*b^2*e^2-6*B*b*c*d*e+7*B*c^2*d^2)/e^8/(e*x+d)^4-1
/6*(6*A*a*b*c*e^4-12*A*a*c^2*d*e^3+A*b^3*e^4-12*A*b^2*c*d*e^3+30*A*b*c^2*d^
2*e^2-20*A*c^3*d^3*e+3*B*a^2*c*e^4+3*B*a*b^2*e^4-24*B*a*b*c*d*e^3+30*B*a*c^
2*d^2*e^2-4*B*b^3*d*e^3+30*B*b^2*c*d^2*e^2-60*B*b*c^2*d^3*e+35*B*c^3*d^4)/e
^8/(e*x+d)^6-1/7*(3*A*a^2*c*e^5+3*A*a*b^2*e^5-18*A*a*b*c*d*e^4+18*A*a*c^2*d
^2*e^3-3*A*b^3*d*e^4+18*A*b^2*c*d^2*e^3-30*A*b*c^2*d^3*e^2+15*A*c^3*d^4*e+3
*B*a^2*b*e^5-9*B*a^2*c*d*e^4-9*B*a*b^2*d*e^4+36*B*a*b*c*d^2*e^3-30*B*a*c^2*
d^3*e^2+6*B*b^3*d^2*e^3-30*B*b^2*c*d^3*e^2+45*B*b*c^2*d^4*e-21*B*c^3*d^5)/e
^8/(e*x+d)^7-1/9*(A*a^3*e^7-3*A*a^2*b*d*e^6+3*A*a^2*c*d^2*e^5+3*A*a*b^2*d^2
*e^5-6*A*a*b*c*d^3*e^4+3*A*a*c^2*d^4*e^3-A*b^3*d^3*e^4+3*A*b^2*c*d^4*e^3-3*
A*b*c^2*d^5*e^2+A*c^3*d^6*e-B*a^3*d*e^6+3*B*a^2*b*d^2*e^5-3*B*a^2*c*d^3*e^4
-3*B*a*b^2*d^3*e^4+6*B*a*b*c*d^4*e^3-3*B*a*c^2*d^5*e^2+B*b^3*d^4*e^3-3*B*b^
2*c*d^5*e^2+3*B*b*c^2*d^6*e-B*c^3*d^7)/e^8/(e*x+d)^9-1/5*(3*A*a*c^2*e^3+3*A
*b^2*c*e^3-15*A*b*c^2*d*e^2+15*A*c^3*d^2*e+6*B*a*b*c*e^3-15*B*a*c^2*d*e^2+B
```

```
*b^3*e^3-15*B*b^2*c*d*e^2+45*B*b*c^2*d^2*e-35*B*c^3*d^3)/e^8/(e*x+d)^5-1/3*
c^2*(A*c*e+3*B*b*e-7*B*c*d)/e^8/(e*x+d)^3
```

maxima [A] time = 1.05, size = 945, normalized size = 1.70

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 280*A*a^3*e^7 + 10*(3*B*b*c^2
+ A*c^3)*d^6*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 4*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*
A*a*b)*c)*d^3*e^4 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 35*(B*a^3 +
3*A*a^2*b)*d*e^6 + 420*(7*B*c^3*d*e^6 + 2*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 63
0*(7*B*c^3*d^2*e^5 + 2*(3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)
*c^2)*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4 + 10*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 1
5*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*e^7)*x^4 + 84*(35*B*c^3*d^4*e^3 + 10*(3*B*b*c^2 + A*c^3)*d^3*e^4 +
 15*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*d*e^6 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3
 + 36*(35*B*c^3*d^5*e^2 + 10*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B*b^2*c + (B
*a + A*b)*c^2)*d^3*e^4 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*
e^5 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 30*(B*a^2*b + A
*a*b^2 + A*a^2*c)*e^7)*x^2 + 9*(35*B*c^3*d^6*e + 10*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2
*B*a*b + A*b^2)*c)*d^3*e^4 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*
d^2*e^5 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 35*(B*a^3 + 3*A*a^2*b)*e
^7)*x)/(e^17*x^9 + 9*d*e^16*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d
^4*e^13*x^5 + 126*d^5*e^12*x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*
e^9*x + d^9*e^8)
```

mupad [B] time = 2.57, size = 1142, normalized size = 2.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^3*e^7 + 35*B*c^3*d^7 + 35*B*a^3*d*e^6 + 10*A*c^3*d^6*e + 5*A*b^3
*d^3*e^4 + 4*B*b^3*d^4*e^3 + 30*A*a*b^2*d^2*e^5 + 12*A*a*c^2*d^4*e^3 + 30*A
*a^2*c*d^2*e^5 + 15*B*a*b^2*d^3*e^4 + 30*B*a^2*b*d^2*e^5 + 15*A*b*c^2*d^5*e
^2 + 12*A*b^2*c*d^4*e^3 + 15*B*a*c^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4 + 15*B*b^
2*c*d^5*e^2 + 105*A*a^2*b*d*e^6 + 30*B*b*c^2*d^6*e + 30*A*a*b*c*d^3*e^4 + 2
4*B*a*b*c*d^4*e^3)/(2520*e^8) + (x^4*(4*B*b^3*e^3 + 35*B*c^3*d^3 + 12*A*a*c
^2*e^3 + 12*A*b^2*c*e^3 + 10*A*c^3*d^2*e + 24*B*a*b*c*e^3 + 15*A*b*c^2*d*e^
2 + 15*B*a*c^2*d*e^2 + 30*B*b*c^2*d^2*e + 15*B*b^2*c*d*e^2))/(20*e^4) + (x*
(35*B*a^3*e^6 + 35*B*c^3*d^6 + 105*A*a^2*b*e^6 + 10*A*c^3*d^5*e + 5*A*b^3*d
^2*e^4 + 4*B*b^3*d^3*e^3 + 12*A*a*c^2*d^3*e^3 + 15*B*a*b^2*d^2*e^4 + 15*A*b
*c^2*d^4*e^2 + 12*A*b^2*c*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 15*B*a^2*c*d^2*e^4
 + 15*B*b^2*c*d^4*e^2 + 30*A*a*b^2*d*e^5 + 30*A*a^2*c*d*e^5 + 30*B*a^2*b*d*
e^5 + 30*B*b*c^2*d^5*e + 30*A*a*b*c*d^2*e^4 + 24*B*a*b*c*d^3*e^3))/(280*e^7
) + (x^2*(35*B*c^3*d^5 + 30*A*a*b^2*e^5 + 30*A*a^2*c*e^5 + 30*B*a^2*b*e^5 +
 5*A*b^3*d*e^4 + 10*A*c^3*d^4*e + 4*B*b^3*d^2*e^3 + 12*A*a*c^2*d^2*e^3 + 15
*A*b*c^2*d^3*e^2 + 12*A*b^2*c*d^2*e^3 + 15*B*a*c^2*d^3*e^2 + 15*B*b^2*c*d^3
*e^2 + 15*B*a*b^2*d*e^4 + 15*B*a^2*c*d*e^4 + 30*B*b*c^2*d^4*e + 24*B*a*b*c*
d^2*e^3 + 30*A*a*b*c*d*e^4))/(70*e^6) + (x^5*(7*B*c^3*d^2 + 2*A*c^3*d*e + 3
*A*b*c^2*e^2 + 3*B*a*c^2*e^2 + 3*B*b^2*c*e^2 + 6*B*b*c^2*d*e))/(4*e^3) + (x
^3*(5*A*b^3*e^4 + 35*B*c^3*d^4 + 15*B*a*b^2*e^4 + 15*B*a^2*c*e^4 + 10*A*c^3
```

```
*d^3*e + 4*B*b^3*d*e^3 + 15*A*b*c^2*d^2*e^2 + 15*B*a*c^2*d^2*e^2 + 15*B*b^2
*c*d^2*e^2 + 30*A*a*b*c*e^4 + 12*A*a*c^2*d*e^3 + 12*A*b^2*c*d*e^3 + 30*B*b*
c^2*d^3*e + 24*B*a*b*c*d*e^3))/(30*e^5) + (c^2*x^6*(2*A*c*e + 6*B*b*e + 7*B
*c*d))/(6*e^2) + (B*c^3*x^7)/(2*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 + 36*d^7*e
^2*x^2 + 84*d^6*e^3*x^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d^3*e^6*x^
6 + 36*d^2*e^7*x^7 + 9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.2108 $\int \frac{(A+Bx)(a+bx+cx^2)^3}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=555

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2\right.}{7e^8(d+ex)^7}$$

Rubi [A] time = 0.67, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(10*e^8*(d + e*x)^10) - ((c*d^2 - b
*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(9*e
^8*(d + e*x)^9) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*
e))))/(8*e^8*(d + e*x)^8) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(7*e^8*(d + e
*x)^7) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*
(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(6*e^8*
(d + e*x)^6) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*
b*d - a*e))))/(5*e^8*(d + e*x)^5) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(4*e^
8*(d + e*x)^4) - (B*c^3)/(3*e^8*(d + e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{11}}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{11}} + \frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)\right.}{e^7(d+ex)^{10}}\right.$$
$$= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{10e^8(d+ex)^{10}} - \frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3A\right.}{9e^8(d+ex)^9}$$

Mathematica [A] time = 0.50, size = 849, normalized size = 1.53

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] -1/2520*(3*A*e*(c^3*(d^6 + 10*d^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 +
210*d^2*e^4*x^4 + 252*d*e^5*x^5 + 210*e^6*x^6) + e^3*(84*a^3*e^3 + 28*a^2*b
```

```
*e^2*(d + 10*e*x) + 7*a*b^2*e*(d^2 + 10*d*e*x + 45*e^2*x^2) + b^3*(d^3 + 10
*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3)) + c*e^2*(7*a^2*e^2*(d^2 + 10*d*e*x
+ 45*e^2*x^2) + 6*a*b*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 2
*b^2*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)) + 2
*c^2*e*(a*e*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^
4) + b*(d^5 + 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4
 + 252*e^5*x^5))) + B*(7*c^3*(d^7 + 10*d^6*e*x + 45*d^5*e^2*x^2 + 120*d^4*e
^3*x^3 + 210*d^3*e^4*x^4 + 252*d^2*e^5*x^5 + 210*d*e^6*x^6 + 120*e^7*x^7) +
 e^3*(28*a^3*e^3*(d + 10*e*x) + 21*a^2*b*e^2*(d^2 + 10*d*e*x + 45*e^2*x^2)
+ 9*a*b^2*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 2*b^3*(d^4 +
10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)) + 3*c*e^2*(3*a^
2*e^2*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 4*a*b*e*(d^4 + 10*d
^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4) + 2*b^2*(d^5 + 10*d^
4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5)) +
3*c^2*e*(2*a*e*(d^5 + 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d
*e^4*x^4 + 252*e^5*x^5) + 3*b*(d^6 + 10*d^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*
e^3*x^3 + 210*d^2*e^4*x^4 + 252*d*e^5*x^5 + 210*e^6*x^6))))/(e^8*(d + e*x)^
10)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{11}}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11, x]
```

fricas [A] time = 0.39, size = 956, normalized size = 1.72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 252*A*a^3*e^7 + 3*(3*B*b*c^2 + A
*c^3)*d^6*e + 6*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 2*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*d^3*e^4 + 21*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 28*(B*a^3 + 3*A*
a^2*b)*d*e^6 + 210*(7*B*c^3*d*e^6 + 3*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 252*(7
*B*c^3*d^2*e^5 + 3*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + (B*a + A*b)*c^2
)*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^6 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 + 3*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d^2*e^5 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d*e^6 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 45*(7*
B*c^3*d^5*e^2 + 3*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 6*(B*b^2*c + (B*a + A*b)*c^
2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 3*(3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 21*(B*a^2*b + A*a*b^2 + A*a
^2*c)*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 6*(B*b
^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^3*e^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 21*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 28*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^18*x
^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6
 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2
 + 10*d^9*e^9*x + d^10*e^8)
```

giac [B] time = 0.18, size = 1129, normalized size = 2.03

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*c^3*x^7*e^7 + 1470*B*c^3*d*x^6*e^6 + 1764*B*c^3*d^2*x^5*e^5
+ 1470*B*c^3*d^3*x^4*e^4 + 840*B*c^3*d^4*x^3*e^3 + 315*B*c^3*d^5*x^2*e^2 +
70*B*c^3*d^6*x*e + 7*B*c^3*d^7 + 1890*B*b*c^2*x^6*e^7 + 630*A*c^3*x^6*e^7 +
 2268*B*b*c^2*d*x^5*e^6 + 756*A*c^3*d*x^5*e^6 + 1890*B*b*c^2*d^2*x^4*e^5 +
630*A*c^3*d^2*x^4*e^5 + 1080*B*b*c^2*d^3*x^3*e^4 + 360*A*c^3*d^3*x^3*e^4 +
405*B*b*c^2*d^4*x^2*e^3 + 135*A*c^3*d^4*x^2*e^3 + 90*B*b*c^2*d^5*x*e^2 + 30
*A*c^3*d^5*x*e^2 + 9*B*b*c^2*d^6*e + 3*A*c^3*d^6*e + 1512*B*b^2*c*x^5*e^7 +
 1512*B*a*c^2*x^5*e^7 + 1512*A*b*c^2*x^5*e^7 + 1260*B*b^2*c*d*x^4*e^6 + 126
0*B*a*c^2*d*x^4*e^6 + 1260*A*b*c^2*d*x^4*e^6 + 720*B*b^2*c*d^2*x^3*e^5 + 72
0*B*a*c^2*d^2*x^3*e^5 + 720*A*b*c^2*d^2*x^3*e^5 + 270*B*b^2*c*d^3*x^2*e^4 +
 270*B*a*c^2*d^3*x^2*e^4 + 270*A*b*c^2*d^3*x^2*e^4 + 60*B*b^2*c*d^4*x*e^3 +
 60*B*a*c^2*d^4*x*e^3 + 60*A*b*c^2*d^4*x*e^3 + 6*B*b^2*c*d^5*e^2 + 6*B*a*c^
2*d^5*e^2 + 6*A*b*c^2*d^5*e^2 + 420*B*b^3*x^4*e^7 + 2520*B*a*b*c*x^4*e^7 +
1260*A*b^2*c*x^4*e^7 + 1260*A*a*c^2*x^4*e^7 + 240*B*b^3*d*x^3*e^6 + 1440*B*
a*b*c*d*x^3*e^6 + 720*A*b^2*c*d*x^3*e^6 + 720*A*a*c^2*d*x^3*e^6 + 90*B*b^3*
d^2*x^2*e^5 + 540*B*a*b*c*d^2*x^2*e^5 + 270*A*b^2*c*d^2*x^2*e^5 + 270*A*a*c
^2*d^2*x^2*e^5 + 20*B*b^3*d^3*x*e^4 + 120*B*a*b*c*d^3*x*e^4 + 60*A*b^2*c*d^
3*x*e^4 + 60*A*a*c^2*d^3*x*e^4 + 2*B*b^3*d^4*e^3 + 12*B*a*b*c*d^4*e^3 + 6*A
*b^2*c*d^4*e^3 + 6*A*a*c^2*d^4*e^3 + 1080*B*a*b^2*x^3*e^7 + 360*A*b^3*x^3*e
^7 + 1080*B*a^2*c*x^3*e^7 + 2160*A*a*b*c*x^3*e^7 + 405*B*a*b^2*d*x^2*e^6 +
135*A*b^3*d*x^2*e^6 + 405*B*a^2*c*d*x^2*e^6 + 810*A*a*b*c*d*x^2*e^6 + 90*B*
a*b^2*d^2*x*e^5 + 30*A*b^3*d^2*x*e^5 + 90*B*a^2*c*d^2*x*e^5 + 180*A*a*b*c*d
^2*x*e^5 + 9*B*a*b^2*d^3*e^4 + 3*A*b^3*d^3*e^4 + 9*B*a^2*c*d^3*e^4 + 18*A*a
*b*c*d^3*e^4 + 945*B*a^2*b*x^2*e^7 + 945*A*a*b^2*x^2*e^7 + 945*A*a^2*c*x^2*
e^7 + 210*B*a^2*b*d*x*e^6 + 210*A*a*b^2*d*x*e^6 + 210*A*a^2*c*d*x*e^6 + 21*
B*a^2*b*d^2*e^5 + 21*A*a*b^2*d^2*e^5 + 21*A*a^2*c*d^2*e^5 + 280*B*a^3*x*e^7
 + 840*A*a^2*b*x*e^7 + 28*B*a^3*d*e^6 + 84*A*a^2*b*d*e^6 + 252*A*a^3*e^7)*e
^(-8)/(x*e + d)^10
```

maple [A] time = 0.05, size = 1067, normalized size = 1.92

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x)
```

```
[Out] -1/8*(3*A*a^2*c*e^5+3*A*a*b^2*e^5-18*A*a*b*c*d*e^4+18*A*a*c^2*d^2*e^3-3*A*b
^3*d*e^4+18*A*b^2*c*d^2*e^3-30*A*b*c^2*d^3*e^2+15*A*c^3*d^4*e+3*B*a^2*b*e^5
-9*B*a^2*c*d*e^4-9*B*a*b^2*d*e^4+36*B*a*b*c*d^2*e^3-30*B*a*c^2*d^3*e^2+6*B*
b^3*d^2*e^3-30*B*b^2*c*d^3*e^2+45*B*b*c^2*d^4*e-21*B*c^3*d^5)/e^8/(e*x+d)^8
-1/10*(A*a^3*e^7-3*A*a^2*b*d*e^6+3*A*a^2*c*d^2*e^5+3*A*a*b^2*d^2*e^5-6*A*a*
b*c*d^3*e^4+3*A*a*c^2*d^4*e^3-A*b^3*d^3*e^4+3*A*b^2*c*d^4*e^3-3*A*b*c^2*d^5
*e^2+A*c^3*d^6*e-B*a^3*d*e^6+3*B*a^2*b*d^2*e^5-3*B*a^2*c*d^3*e^4-3*B*a*b^2*
d^3*e^4+6*B*a*b*c*d^4*e^3-3*B*a*c^2*d^5*e^2+B*b^3*d^4*e^3-3*B*b^2*c*d^5*e^2
+3*B*b*c^2*d^6*e-B*c^3*d^7)/e^8/(e*x+d)^10-1/4*c^2*(A*c*e+3*B*b*e-7*B*c*d)/
e^8/(e*x+d)^4-1/6*(3*A*a*c^2*e^3+3*A*b^2*c*e^3-15*A*b*c^2*d*e^2+15*A*c^3*d^
2*e+6*B*a*b*c*e^3-15*B*a*c^2*d*e^2+B*b^3*e^3-15*B*b^2*c*d*e^2+45*B*b*c^2*d^
2*e-35*B*c^3*d^3)/e^8/(e*x+d)^6-1/7*(6*A*a*b*c*e^4-12*A*a*c^2*d*e^3+A*b^3*e
^4-12*A*b^2*c*d*e^3+30*A*b*c^2*d^2*e^2-20*A*c^3*d^3*e+3*B*a^2*c*e^4+3*B*a*b
^2*e^4-24*B*a*b*c*d*e^3+30*B*a*c^2*d^2*e^2-4*B*b^3*d*e^3+30*B*b^2*c*d^2*e^2
-60*B*b*c^2*d^3*e+35*B*c^3*d^4)/e^8/(e*x+d)^7-1/9*(3*A*a^2*b*e^6-6*A*a^2*c*
d*e^5-6*A*a*b^2*d*e^5+18*A*a*b*c*d^2*e^4-12*A*a*c^2*d^3*e^3+3*A*b^3*d^2*e^4
-12*A*b^2*c*d^3*e^3+15*A*b*c^2*d^4*e^2-6*A*c^3*d^5*e+B*a^3*e^6-6*B*a^2*b*d*
e^5+9*B*a^2*c*d^2*e^4+9*B*a*b^2*d^2*e^4-24*B*a*b*c*d^3*e^3+15*B*a*c^2*d^4*e
^2-4*B*b^3*d^3*e^3+15*B*b^2*c*d^4*e^2-18*B*b*c^2*d^5*e+7*B*c^3*d^6)/e^8/(e*
```

```
x+d)^9-3/5*c*(A*b*c*e^2-2*A*c^2*d*e+B*a*c*e^2+B*b^2*e^2-6*B*b*c*d*e+7*B*c^2
*d^2)/e^8/(e*x+d)^5-1/3/(e*x+d)^3*B*c^3/e^8
```

maxima [A] time = 1.02, size = 956, normalized size = 1.72

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 252*A*a^3*e^7 + 3*(3*B*b*c^2 + A
*c^3)*d^6*e + 6*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 2*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*d^3*e^4 + 21*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 28*(B*a^3 + 3*A*
a^2*b)*d*e^6 + 210*(7*B*c^3*d*e^6 + 3*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 252*(7
*B*c^3*d^2*e^5 + 3*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + (B*a + A*b)*c^2
)*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^6 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 + 3*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d^2*e^5 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d*e^6 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 45*(7*
B*c^3*d^5*e^2 + 3*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 6*(B*b^2*c + (B*a + A*b)*c^
2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 3*(3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 21*(B*a^2*b + A*a*b^2 + A*a
^2*c)*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 6*(B*b
^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^3*e^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 21*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 28*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^18*x
^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6
 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2
 + 10*d^9*e^9*x + d^10*e^8)
```

mupad [B] time = 2.68, size = 1153, normalized size = 2.08

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x)
```

```
[Out] -((252*A*a^3*e^7 + 7*B*c^3*d^7 + 28*B*a^3*d*e^6 + 3*A*c^3*d^6*e + 3*A*b^3*d
^3*e^4 + 2*B*b^3*d^4*e^3 + 21*A*a*b^2*d^2*e^5 + 6*A*a*c^2*d^4*e^3 + 21*A*a^
2*c*d^2*e^5 + 9*B*a*b^2*d^3*e^4 + 21*B*a^2*b*d^2*e^5 + 6*A*b*c^2*d^5*e^2 +
6*A*b^2*c*d^4*e^3 + 6*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4 + 6*B*b^2*c*d^5*e
^2 + 84*A*a^2*b*d*e^6 + 9*B*b*c^2*d^6*e + 18*A*a*b*c*d^3*e^4 + 12*B*a*b*c*d
^4*e^3)/(2520*e^8) + (x^4*(2*B*b^3*e^3 + 7*B*c^3*d^3 + 6*A*a*c^2*e^3 + 6*A*
b^2*c*e^3 + 3*A*c^3*d^2*e + 12*B*a*b*c*e^3 + 6*A*b*c^2*d*e^2 + 6*B*a*c^2*d*
e^2 + 9*B*b*c^2*d^2*e + 6*B*b^2*c*d*e^2))/(12*e^4) + (x*(28*B*a^3*e^6 + 7*B
*c^3*d^6 + 84*A*a^2*b*e^6 + 3*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 + 2*B*b^3*d^3*e
^3 + 6*A*a*c^2*d^3*e^3 + 9*B*a*b^2*d^2*e^4 + 6*A*b*c^2*d^4*e^2 + 6*A*b^2*c*
d^3*e^3 + 6*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 + 6*B*b^2*c*d^4*e^2 + 21*A*
a*b^2*d*e^5 + 21*A*a^2*c*d*e^5 + 21*B*a^2*b*d*e^5 + 9*B*b*c^2*d^5*e + 18*A*
a*b*c*d^2*e^4 + 12*B*a*b*c*d^3*e^3))/(252*e^7) + (x^2*(7*B*c^3*d^5 + 21*A*a
*b^2*e^5 + 21*A*a^2*c*e^5 + 21*B*a^2*b*e^5 + 3*A*b^3*d*e^4 + 3*A*c^3*d^4*e
+ 2*B*b^3*d^2*e^3 + 6*A*a*c^2*d^2*e^3 + 6*A*b*c^2*d^3*e^2 + 6*A*b^2*c*d^2*e
^3 + 6*B*a*c^2*d^3*e^2 + 6*B*b^2*c*d^3*e^2 + 9*B*a*b^2*d*e^4 + 9*B*a^2*c*d*
e^4 + 9*B*b*c^2*d^4*e + 12*B*a*b*c*d^2*e^3 + 18*A*a*b*c*d*e^4))/(56*e^6) +
(x^5*(7*B*c^3*d^2 + 3*A*c^3*d*e + 6*A*b*c^2*e^2 + 6*B*a*c^2*e^2 + 6*B*b^2*c
*e^2 + 9*B*b*c^2*d*e))/(10*e^3) + (x^3*(3*A*b^3*e^4 + 7*B*c^3*d^4 + 9*B*a*b
^2*e^4 + 9*B*a^2*c*e^4 + 3*A*c^3*d^3*e + 2*B*b^3*d*e^3 + 6*A*b*c^2*d^2*e^2
```

```
+ 6*B*a*c^2*d^2*e^2 + 6*B*b^2*c*d^2*e^2 + 18*A*a*b*c*e^4 + 6*A*a*c^2*d*e^3
+ 6*A*b^2*c*d*e^3 + 9*B*b*c^2*d^3*e + 12*B*a*b*c*d*e^3))/(21*e^5) + (c^2*x^
6*(3*A*c*e + 9*B*b*e + 7*B*c*d))/(12*e^2) + (B*c^3*x^7)/(3*e))/(d^10 + e^10
*x^10 + 10*d*e^9*x^9 + 45*d^8*e^2*x^2 + 120*d^7*e^3*x^3 + 210*d^6*e^4*x^4 +
 252*d^5*e^5*x^5 + 210*d^4*e^6*x^6 + 120*d^3*e^7*x^7 + 45*d^2*e^8*x^8 + 10*
d^9*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.2109 $\int x(d+ex)^m \left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=121

$$\frac{(d+ex)^{m+2}\left(3cd^2-e(2bd-ae)\right)}{e^4(m+2)}-\frac{d(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{(3cd-be)(d+ex)^{m+3}}{e^4(m+3)}+\frac{c(d+ex)^{m+4}}{e^4(m+4)}$$

Rubi [A] time = 0.08, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{d(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(3cd^2-e(2bd-ae)\right)}{e^4(m+2)}-\frac{(3cd-be)(d+ex)^{m+3}}{e^4(m+3)}+\frac{c(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] -((d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((3*c*d^2
- e*(2*b*d - a*e))*(d + e*x)^(2 + m))/(e^4*(2 + m)) - ((3*c*d - b*e)*(d + e
*x)^(3 + m))/(e^4*(3 + m)) + (c*(d + e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x(d+ex)^m\left(a+bx+cx^2\right)dx=\int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^{1+m}}{e^3}+\frac{(-$$
$$=-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^{2+m}}{e^4(2+m)}-\frac{(3cd$$

Mathematica [A] time = 0.24, size = 142, normalized size = 1.17

$$\frac{(d+ex)^{m+1}\left(e(m+4)\left(ae(m+3)(e(m+1)x-d)+b\left(2d^2-2de(m+1)x+e^2\left(m^2+3m+2\right)x^2\right)\right)+c\left(-6d^3+6d^2e(m+1)x-3de^2\left(m^2+3m+2\right)x^2+e^3\left(m^3+6m^2+11m+6\right)x^3\right)\right)}{e^4(m+1)(m+2)(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(c*(-6*d^3 + 6*d^2*e*(1 + m)*x - 3*d*e^2*(2 + 3*m + m^2)
*x^2 + e^3*(6 + 11*m + 6*m^2 + m^3)*x^3) + e*(4 + m)*(a*e*(3 + m)*(-d + e*(
1 + m)*x) + b*(2*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2)*x^2))))/(e^4*(
1 + m)*(2 + m)*(3 + m)*(4 + m))
```

IntegrateAlgebraic [F] time = 0.07, size = 0, normalized size = 0.00

$$\int x(d+ex)^m\left(a+bx+cx^2\right)dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][x*(d + e*x)^m*(a + b*x + c*x^2), x]
```

fricas [B] time = 0.40, size = 342, normalized size = 2.83

$$-\frac{\left(ad^2e^2m^2+6cd^4-8bd^3e+12ad^2e^2-\left(ce^4m^3+6ce^4m^2+11ce^4m+6ce^4\right)x^4-\left(8be^4+\left(cde^3+be^4\right)m^3+\left(3cde^3+7be^4\right)m^2+2\left(cde^3+7be^4\right)m\right)x^3-\left(12ae^4+\left(bde^3+ae^4\right)m^3-\left(3cd^2e^2-5bde^3-8ae^4\right)m^2-\left(3cd^2e^2-4bde^3-19ae^4\right)m\right)x^2-\left(2bd^3e-7ad^2e^2\right)m-\left(ade^3m^3-\left(2bd^2e^2-7ade^3\right)m^2+2\left(3cd^3e-4bd^2e^2+6ade^3\right)m\right)x\right)(ex+d)^m}{e^4m^4+10e^4m^3+35e^4m^2+50e^4m+24e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] -(a*d^2*e^2*m^2 + 6*c*d^4 - 8*b*d^3*e + 12*a*d^2*e^2 - (c*e^4*m^3 + 6*c*e^4
*m^2 + 11*c*e^4*m + 6*c*e^4)*x^4 - (8*b*e^4 + (c*d*e^3 + b*e^4)*m^3 + (3*c*
d*e^3 + 7*b*e^4)*m^2 + 2*(c*d*e^3 + 7*b*e^4)*m)*x^3 - (12*a*e^4 + (b*d*e^3
+ a*e^4)*m^3 - (3*c*d^2*e^2 - 5*b*d*e^3 - 8*a*e^4)*m^2 - (3*c*d^2*e^2 - 4*b
*d*e^3 - 19*a*e^4)*m)*x^2 - (2*b*d^3*e - 7*a*d^2*e^2)*m - (a*d*e^3*m^3 - (2
*b*d^2*e^2 - 7*a*d*e^3)*m^2 + 2*(3*c*d^3*e - 4*b*d^2*e^2 + 6*a*d*e^3)*m)*x)
*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.20, size = 606, normalized size = 5.01

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*c*m^3*x^4*e^4 + (x*e + d)^m*c*d*m^3*x^3*e^3 + (x*e + d)^m*b*m^
3*x^3*e^4 + 6*(x*e + d)^m*c*m^2*x^4*e^4 + (x*e + d)^m*b*d*m^3*x^2*e^3 + 3*(
x*e + d)^m*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*c*d^2*m^2*x^2*e^2 + (x*e + d)^m*
a*m^3*x^2*e^4 + 7*(x*e + d)^m*b*m^2*x^3*e^4 + 11*(x*e + d)^m*c*m*x^4*e^4 +
(x*e + d)^m*a*d*m^3*x*e^3 + 5*(x*e + d)^m*b*d*m^2*x^2*e^3 + 2*(x*e + d)^m*c
*d*m*x^3*e^3 - 2*(x*e + d)^m*b*d^2*m^2*x*e^2 - 3*(x*e + d)^m*c*d^2*m*x^2*e^
2 + 6*(x*e + d)^m*c*d^3*m*x*e + 8*(x*e + d)^m*a*m^2*x^2*e^4 + 14*(x*e + d)^
m*b*m*x^3*e^4 + 6*(x*e + d)^m*c*x^4*e^4 + 7*(x*e + d)^m*a*d*m^2*x*e^3 + 4*(
x*e + d)^m*b*d*m*x^2*e^3 - (x*e + d)^m*a*d^2*m^2*e^2 - 8*(x*e + d)^m*b*d^2*
m*x*e^2 + 2*(x*e + d)^m*b*d^3*m*e - 6*(x*e + d)^m*c*d^4 + 19*(x*e + d)^m*a*
m*x^2*e^4 + 8*(x*e + d)^m*b*x^3*e^4 + 12*(x*e + d)^m*a*d*m*x*e^3 - 7*(x*e +
 d)^m*a*d^2*m*e^2 + 8*(x*e + d)^m*b*d^3*e + 12*(x*e + d)^m*a*x^2*e^4 - 12*(
x*e + d)^m*a*d^2*e^2)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^
4)
```

maple [B] time = 0.05, size = 281, normalized size = 2.32

$$-\frac{\left(-c\,e^3m^3x^3-b\,e^3m^3x^2-6c\,e^3m^2x^3-a\,e^3m^3x-7b\,e^3m^2x^2+3cd\,e^2m^2x^2-11c\,e^3m\,x^3-8a\,e^3m^2x+2bd\,e^2m^2x-14b\,e^3m\,x^2+9cd\,e^2m\,x^2-6c\,x^3e^3+ad\,e^2m^2-19a\,e^3mx+10bd\,e^2mx-8b\,e^3x^2-6c\,d^2emx+6cd\,e^2x^2+7ad\,e^2m-12a\,e^3x-2b\,d^2em+8bd\,e^2x-6c\,d^2ex+12ad\,e^2-8b\,d^2e+6c\,d^3\right)(ex+d)^{m+1}}{\left(m^4+10m^3+35m^2+50m+24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^m*(c*x^2+b*x+a),x)
```

```
[Out] -(e*x+d)^(m+1)*(-c*e^3*m^3*x^3-b*e^3*m^3*x^2-6*c*e^3*m^2*x^3-a*e^3*m^3*x-7*
b*e^3*m^2*x^2+3*c*d*e^2*m^2*x^2-11*c*e^3*m*x^3-8*a*e^3*m^2*x+2*b*d*e^2*m^2*
x-14*b*e^3*m*x^2+9*c*d*e^2*m*x^2-6*c*e^3*x^3+a*d*e^2*m^2-19*a*e^3*m*x+10*b*
d*e^2*m*x-8*b*e^3*x^2-6*c*d^2*e*m*x+6*c*d*e^2*x^2+7*a*d*e^2*m-12*a*e^3*x-2*
b*d^2*e*m+8*b*d*e^2*x-6*c*d^2*e*x+12*a*d*e^2-8*b*d^2*e+6*c*d^3)/e^4/(m^4+10
*m^3+35*m^2+50*m+24)
```

maxima [A] time = 0.65, size = 215, normalized size = 1.78

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m a}{\left(m^2+3m+2\right)e^2}+\frac{\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx+2d^3\right)(ex+d)^m b}{\left(m^3+6m^2+11m+6\right)e^3}+\frac{\left(\left(m^3+6m^2+11m+6\right)e^4x^4+\left(m^3+3m^2+2m\right)de^3x^3-3\left(m^2+m\right)d^2e^2x^2+6d^3emx-6d^4\right)(ex+d)^m c}{\left(m^4+10m^3+35m^2+50m+24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a/((m^2 + 3*m + 2)*e^2) + ((m
^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d
)^m*b/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 +
(m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d
^4)*(e*x + d)^m*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.55, size = 300, normalized size = 2.48

$$(d+ex)^m\left(\frac{c\,x^4\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}-\frac{d^2\,\left(6\,c\,d^2-2\,b\,d\,e\,m-8\,b\,d\,e+a\,e^2\,m^2+7\,a\,e^2\,m+12\,a\,e^2\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{x^3\,\left(4\,b\,e+b\,e\,m+c\,d\,m\right)\,\left(m^2+3\,m+2\right)}{e\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{x^2\,\left(m+1\right)\,\left(-3\,c\,d^2\,m+b\,d\,e\,m^2+4\,b\,d\,e\,m+a\,e^2\,m^2+7\,a\,e^2\,m+12\,a\,e^2\right)}{e^2\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\frac{d\,m\,x\,\left(6\,c\,d^2-2\,b\,d\,e\,m-8\,b\,d\,e+a\,e^2\,m^2+7\,a\,e^2\,m+12\,a\,e^2\right)}{e^3\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^m*(a + b*x + c*x^2),x)
```

```
[Out] (d + e*x)^m*((c*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4
 + 24) - (d^2*(12*a*e^2 + 6*c*d^2 + a*e^2*m^2 - 8*b*d*e + 7*a*e^2*m - 2*b*d
*e*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^3*(4*b*e + b*e*m + c*
d*m)*(3*m + m^2 + 2))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^2*(m + 1
)*(12*a*e^2 + a*e^2*m^2 + 7*a*e^2*m - 3*c*d^2*m + b*d*e*m^2 + 4*b*d*e*m))/(
e^2*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (d*m*x*(12*a*e^2 + 6*c*d^2 + a*e
^2*m^2 - 8*b*d*e + 7*a*e^2*m - 2*b*d*e*m))/(e^3*(50*m + 35*m^2 + 10*m^3 + m
^4 + 24)))
```

sympy [A] time = 3.38, size = 3267, normalized size = 27.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**m*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((d**m*(a*x**2/2 + b*x**3/3 + c*x**4/4), Eq(e, 0)), (-a*d*e**2/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 3*a*e**3*x/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*b*d**2*e/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*b*d*e**2*x/(
6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*b*e**3*x**
2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*c*d**3*
log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
+ 11*c*d**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) +
 18*c*d**2*e*x*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2
+ 6*e**7*x**3) + 27*c*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x*
*2 + 6*e**7*x**3) + 18*c*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e*
*5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*c*d*e**2*x**2/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*c*e**3*x**3*log(d/e + x)/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-a
*d*e**2/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*a*e**3*x/(2*d**2*e**4
+ 4*d*e**5*x + 2*e**6*x**2) + 2*b*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e*
*5*x + 2*e**6*x**2) + 3*b*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) +
 4*b*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*b*d
*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*b*e**3*x**2*log(d/e +
x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*c*d**3*log(d/e + x)/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*c*d**3/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) - 12*c*d**2*e*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*
x**2) - 12*c*d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*c*d*e**2
*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*c*e**3*x**3
/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2), Eq(m, -3)), (2*a*d*e**2*log(d/e
+ x)/(2*d*e**4 + 2*e**5*x) + 2*a*d*e**2/(2*d*e**4 + 2*e**5*x) + 2*a*e**3*x*
log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*
e**5*x) - 4*b*d**2*e/(2*d*e**4 + 2*e**5*x) - 4*b*d*e**2*x*log(d/e + x)/(2*d
*e**4 + 2*e**5*x) + 2*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*c*d**3*log(d/e
+ x)/(2*d*e**4 + 2*e**5*x) + 6*c*d**3/(2*d*e**4 + 2*e**5*x) + 6*c*d**2*e*x*
log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*c*d*e**2*x**2/(2*d*e**4 + 2*e**5*x)
```

```
+ c*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (-a*d*log(d/e + x)/e**2 +
a*x/e + b*d**2*log(d/e + x)/e**3 - b*d*x/e**2 + b*x**2/(2*e) - c*d**3*log(d
/e + x)/e**4 + c*d**2*x/e**3 - c*d*x**2/(2*e**2) + c*x**3/(3*e), Eq(m, -1))
, (-a*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) - 7*a*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*a*d**2*e**2*(d + e*x)**m/(e
**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a*d*e**3*m*
*3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) + 7*a*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4
*m**2 + 50*e**4*m + 24*e**4) + 12*a*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10
*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a*e**4*m**3*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*a
*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 19*a*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*a*e**4*x**2*(d + e*x)**m/(e**4*
m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*b*d**3*e*m*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 8*b*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) - 2*b*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*b*d**2*e**2*m*x*(d + e*x)**m/(e
**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b*d*e**3*m*
*3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
 24*e**4) + 5*b*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*b*d*e**3*m*x**2*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b*e**4*m**3*x**3
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4) + 7*b*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m*
*2 + 50*e**4*m + 24*e**4) + 14*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*b*e**4*x**3*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*c*d**4
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4) + 6*c*d**3*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) - 3*c*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*c*d**2*e**2*m*x**2*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ c*d*e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 3*c*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*c*d*e**3*m*x**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + c*e
**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 6*c*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*c*e**4*m*x**4*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*c*e**4*x**4
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4), True))
```

3.2110 $\int x(d+ex)^5 \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=103

$$\frac{(d+ex)^7 \left(3cd^2-e(2bd-ae)\right)}{7e^4}-\frac{d(d+ex)^6 \left(ae^2-bde+cd^2\right)}{6e^4}-\frac{(d+ex)^8(3cd-be)}{8e^4}+\frac{c(d+ex)^9}{9e^4}$$

Rubi [A] time = 0.16, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{(d+ex)^7 \left(3cd^2-e(2bd-ae)\right)}{7e^4}-\frac{d(d+ex)^6 \left(ae^2-bde+cd^2\right)}{6e^4}-\frac{(d+ex)^8(3cd-be)}{8e^4}+\frac{c(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^5*(a + b*x + c*x^2),x]
```

```
[Out] -(d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^6)/(6*e^4) + ((3*c*d^2 - e*(2*b*d - a
*e))*(d + e*x)^7)/(7*e^4) - ((3*c*d - b*e)*(d + e*x)^8)/(8*e^4) + (c*(d + e
*x)^9)/(9*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x(d+ex)^5 \left(a+bx+cx^2\right) dx = \int \left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^5}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^6}{e^3}+\frac{(-3cd\right.$$

$$= -\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^6}{6e^4}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^7}{7e^4}-\frac{(3cd-be)}{8e}$$

Mathematica [A] time = 0.04, size = 166, normalized size = 1.61

$$\frac{5}{6}de^2x^6\left(ae^2+2bde+2cd^2\right)+d^2ex^5\left(2ae^2+2bde+cd^2\right)+\frac{1}{7}e^3x^7\left(ae^2+5bde+10cd^2\right)+\frac{1}{4}d^3x^4\left(10ae^2+5bde+cd^2\right)+\frac{1}{3}d^4x^3(5ae+bd)+\frac{1}{2}ad^5x^2+\frac{1}{8}e^4x^8(be+5cd)+\frac{1}{9}ce^5x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^5*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^5*x^2)/2 + (d^4*(b*d + 5*a*e)*x^3)/3 + (d^3*(c*d^2 + 5*b*d*e + 10*a*e^
2)*x^4)/4 + d^2*e*(c*d^2 + 2*b*d*e + 2*a*e^2)*x^5 + (5*d*e^2*(2*c*d^2 + 2*b
*d*e + a*e^2)*x^6)/6 + (e^3*(10*c*d^2 + 5*b*d*e + a*e^2)*x^7)/7 + (e^4*(5*c
*d + b*e)*x^8)/8 + (c*e^5*x^9)/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(d+ex)^5 \left(a+bx+cx^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)^5*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(d + e*x)^5*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 186, normalized size = 1.81

$$\frac{1}{9}x^9e^5c+\frac{5}{8}x^8e^4dc+\frac{1}{8}x^8e^5b+\frac{10}{7}x^7e^3d^2c+\frac{5}{7}x^7e^4db+\frac{1}{7}x^7e^5a+\frac{5}{3}x^6e^2d^3c+\frac{5}{3}x^6e^3d^2b+\frac{5}{6}x^6e^4da+x^5ed^4c+2x^5e^2d^3b+2x^5e^3d^2a+\frac{1}{4}x^4d^5c+\frac{5}{4}x^4ed^4b+\frac{5}{2}x^4e^2d^3a+\frac{1}{3}x^3d^5b+\frac{5}{3}x^3ed^4a+\frac{1}{2}x^2d^5a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^5*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*c + 5/8*x^8*e^4*d*c + 1/8*x^8*e^5*b + 10/7*x^7*e^3*d^2*c + 5/7*
x^7*e^4*d*b + 1/7*x^7*e^5*a + 5/3*x^6*e^2*d^3*c + 5/3*x^6*e^3*d^2*b + 5/6*x
^6*e^4*d*a + x^5*e*d^4*c + 2*x^5*e^2*d^3*b + 2*x^5*e^3*d^2*a + 1/4*x^4*d^5*
c + 5/4*x^4*e*d^4*b + 5/2*x^4*e^2*d^3*a + 1/3*x^3*d^5*b + 5/3*x^3*e*d^4*a +
 1/2*x^2*d^5*a
```

giac [A] time = 0.15, size = 177, normalized size = 1.72

$$\frac{1}{9}cx^9e^5+\frac{5}{8}cdx^8e^4+\frac{10}{7}cd^2x^7e^3+\frac{5}{3}cd^3x^6e^2+cd^4x^5e+\frac{1}{4}cd^5x^4+\frac{1}{8}bx^8e^5+\frac{5}{7}bdx^7e^4+\frac{5}{3}bd^2x^6e^3+2bd^3x^5e^2+\frac{5}{4}bd^4x^4e+\frac{1}{3}bd^5x^3+\frac{1}{7}ax^7e^5+\frac{5}{6}adx^6e^4+2ad^2x^5e^3+\frac{5}{2}ad^3x^4e^2+\frac{5}{3}ad^4x^3e+\frac{1}{2}ad^5x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^5*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/9*c*x^9*e^5 + 5/8*c*d*x^8*e^4 + 10/7*c*d^2*x^7*e^3 + 5/3*c*d^3*x^6*e^2 +
c*d^4*x^5*e + 1/4*c*d^5*x^4 + 1/8*b*x^8*e^5 + 5/7*b*d*x^7*e^4 + 5/3*b*d^2*x
^6*e^3 + 2*b*d^3*x^5*e^2 + 5/4*b*d^4*x^4*e + 1/3*b*d^5*x^3 + 1/7*a*x^7*e^5
+ 5/6*a*d*x^6*e^4 + 2*a*d^2*x^5*e^3 + 5/2*a*d^3*x^4*e^2 + 5/3*a*d^4*x^3*e +
 1/2*a*d^5*x^2
```

maple [A] time = 0.04, size = 172, normalized size = 1.67

$$\frac{ce^5x^9}{9}+\frac{ad^5x^2}{2}+\frac{\left(e^5b+5de^4c\right)x^8}{8}+\frac{\left(e^5a+5de^4b+10d^2e^3c\right)x^7}{7}+\frac{\left(5de^4a+10bd^2e^3+10d^3e^2c\right)x^6}{6}+\frac{\left(10d^2e^3a+10d^3e^2b+5d^4ec\right)x^5}{5}+\frac{\left(10d^3e^2a+5d^4eb+d^5c\right)x^4}{4}+\frac{\left(5d^4ea+d^5b\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^5*(c*x^2+b*x+a),x)
```

```
[Out] 1/9*e^5*c*x^9+1/8*(b*e^5+5*c*d*e^4)*x^8+1/7*(a*e^5+5*b*d*e^4+10*c*d^2*e^3)*
x^7+1/6*(5*a*d*e^4+10*b*d^2*e^3+10*c*d^3*e^2)*x^6+1/5*(10*a*d^2*e^3+10*b*d^
3*e^2+5*c*d^4*e)*x^5+1/4*(10*a*d^3*e^2+5*b*d^4*e+c*d^5)*x^4+1/3*(5*a*d^4*e+
b*d^5)*x^3+1/2*d^5*a*x^2
```

maxima [A] time = 0.57, size = 168, normalized size = 1.63

$$\frac{1}{9}ce^5x^9+\frac{1}{8}\left(5cde^4+be^5\right)x^8+\frac{1}{2}ad^5x^2+\frac{1}{7}\left(10cd^2e^3+5bde^4+ae^5\right)x^7+\frac{5}{6}\left(2cd^3e^2+2bd^2e^3+ade^4\right)x^6+\left(cd^4e+2bd^3e^2+2ad^2e^3\right)x^5+\frac{1}{4}\left(cd^5+5bd^4e+10ad^3e^2\right)x^4+\frac{1}{3}\left(bd^5+5ad^4e\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^5*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/9*c*e^5*x^9 + 1/8*(5*c*d*e^4 + b*e^5)*x^8 + 1/2*a*d^5*x^2 + 1/7*(10*c*d^2
*e^3 + 5*b*d*e^4 + a*e^5)*x^7 + 5/6*(2*c*d^3*e^2 + 2*b*d^2*e^3 + a*d*e^4)*x
^6 + (c*d^4*e + 2*b*d^3*e^2 + 2*a*d^2*e^3)*x^5 + 1/4*(c*d^5 + 5*b*d^4*e + 1
0*a*d^3*e^2)*x^4 + 1/3*(b*d^5 + 5*a*d^4*e)*x^3
```

mupad [B] time = 2.36, size = 160, normalized size = 1.55

$$x^3\left(\frac{b\,d^5}{3}+\frac{5\,a\,e\,d^4}{3}\right)+x^8\left(\frac{b\,e^5}{8}+\frac{5\,c\,d\,e^4}{8}\right)+x^4\left(\frac{c\,d^5}{4}+\frac{5\,b\,d^4\,e}{4}+\frac{5\,a\,d^3\,e^2}{2}\right)+x^7\left(\frac{10\,c\,d^2\,e^3}{7}+\frac{5\,b\,d\,e^4}{7}+\frac{a\,e^5}{7}\right)+\frac{a\,d^5\,x^2}{2}+\frac{c\,e^5\,x^9}{9}+d^2\,e\,x^5\,\left(c\,d^2+2\,b\,d\,e+2\,a\,e^2\right)+\frac{5\,d\,e^2\,x^6\,\left(2\,c\,d^2+2\,b\,d\,e+a\,e^2\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^5*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((b*d^5)/3 + (5*a*d^4*e)/3) + x^8*((b*e^5)/8 + (5*c*d*e^4)/8) + x^4*((c
*d^5)/4 + (5*a*d^3*e^2)/2 + (5*b*d^4*e)/4) + x^7*((a*e^5)/7 + (10*c*d^2*e^3
)/7 + (5*b*d*e^4)/7) + (a*d^5*x^2)/2 + (c*e^5*x^9)/9 + d^2*e*x^5*(2*a*e^2 +
 c*d^2 + 2*b*d*e) + (5*d*e^2*x^6*(a*e^2 + 2*c*d^2 + 2*b*d*e))/6
```

sympy [B] time = 0.10, size = 192, normalized size = 1.86

$$\frac{ad^5x^2}{2} + \frac{ce^5x^9}{9} + x^8\left(\frac{be^5}{8} + \frac{5cde^4}{8}\right) + x^7\left(\frac{ae^5}{7} + \frac{5bde^4}{7} + \frac{10cd^2e^3}{7}\right) + x^6\left(\frac{5ade^4}{6} + \frac{5bd^2e^3}{3} + \frac{5cd^3e^2}{3}\right) + x^5\left(2ad^2e^3 + 2bd^3e^2 + cd^4e\right) + x^4\left(\frac{5ad^3e^2}{2} + \frac{5bd^4e}{4} + \frac{cd^5}{4}\right) + x^3\left(\frac{5ad^4e}{3} + \frac{bd^5}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**5*(c*x**2+b*x+a),x)
```

```
[Out] a*d**5*x**2/2 + c*e**5*x**9/9 + x**8*(b*e**5/8 + 5*c*d*e**4/8) + x**7*(a*e*
*5/7 + 5*b*d*e**4/7 + 10*c*d**2*e**3/7) + x**6*(5*a*d*e**4/6 + 5*b*d**2*e**
3/3 + 5*c*d**3*e**2/3) + x**5*(2*a*d**2*e**3 + 2*b*d**3*e**2 + c*d**4*e) +
x**4*(5*a*d**3*e**2/2 + 5*b*d**4*e/4 + c*d**5/4) + x**3*(5*a*d**4*e/3 + b*d
**5/3)
```

3.2111 $\int x(d+ex)^4\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=103

$$\frac{(d+ex)^6\left(3cd^2-e(2bd-ae)\right)}{6e^4}-\frac{d(d+ex)^5\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(3cd-be)}{7e^4}+\frac{c(d+ex)^8}{8e^4}$$

Rubi [A] time = 0.13, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{(d+ex)^6\left(3cd^2-e(2bd-ae)\right)}{6e^4}-\frac{d(d+ex)^5\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(3cd-be)}{7e^4}+\frac{c(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] -(d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^5)/(5*e^4) + ((3*c*d^2 - e*(2*b*d - a
*e))*(d + e*x)^6)/(6*e^4) - ((3*c*d - b*e)*(d + e*x)^7)/(7*e^4) + (c*(d + e
*x)^8)/(8*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x(d+ex)^4\left(a+bx+cx^2\right)\,dx=\int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^5}{e^3}+\frac{(-3cd+$$
$$=-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^6}{6e^4}-\frac{(3cd-be)(d}{7e^4}$$

Mathematica [A] time = 0.03, size = 140, normalized size = 1.36

$$\frac{1}{6}e^2x^6\left(ae^2+4bde+6cd^2\right)+\frac{2}{5}dex^5\left(2ae^2+3bde+2cd^2\right)+\frac{1}{4}d^2x^4\left(6ae^2+4bde+cd^2\right)+\frac{1}{3}d^3x^3(4ae+bd)+\frac{1}{2}ad^4x^2+\frac{1}{7}e^3x^7(be+4cd)+\frac{1}{8}ce^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^4*x^2)/2 + (d^3*(b*d + 4*a*e)*x^3)/3 + (d^2*(c*d^2 + 4*b*d*e + 6*a*e^2
)*x^4)/4 + (2*d*e*(2*c*d^2 + 3*b*d*e + 2*a*e^2)*x^5)/5 + (e^2*(6*c*d^2 + 4*
b*d*e + a*e^2)*x^6)/6 + (e^3*(4*c*d + b*e)*x^7)/7 + (c*e^4*x^8)/8
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(d+ex)^4\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(d + e*x)^4*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 149, normalized size = 1.45

$$\frac{1}{8}x^8e^4c + \frac{4}{7}x^7e^3dc + \frac{1}{7}x^7e^4b + x^6e^2d^2c + \frac{2}{3}x^6e^3db + \frac{1}{6}x^6e^4a + \frac{4}{5}x^5ed^3c + \frac{6}{5}x^5e^2d^2b + \frac{4}{5}x^5e^3da + \frac{1}{4}x^4d^4c + x^4ed^3b + \frac{3}{2}x^4e^2d^2a + \frac{1}{3}x^3d^4b + \frac{4}{3}x^3ed^3a + \frac{1}{2}x^2d^4a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c + 4/7*x^7*e^3*d*c + 1/7*x^7*e^4*b + x^6*e^2*d^2*c + 2/3*x^6*e
^3*d*b + 1/6*x^6*e^4*a + 4/5*x^5*e*d^3*c + 6/5*x^5*e^2*d^2*b + 4/5*x^5*e^3*
d*a + 1/4*x^4*d^4*c + x^4*e*d^3*b + 3/2*x^4*e^2*d^2*a + 1/3*x^3*d^4*b + 4/3
*x^3*e*d^3*a + 1/2*x^2*d^4*a
```

giac [A] time = 0.16, size = 143, normalized size = 1.39

$$\frac{1}{8}cx^8e^4 + \frac{4}{7}cdx^7e^3 + cd^2x^6e^2 + \frac{4}{5}cd^3x^5e + \frac{1}{4}cd^4x^4 + \frac{1}{7}bx^7e^4 + \frac{2}{3}bdx^6e^3 + \frac{6}{5}bd^2x^5e^2 + bd^3x^4e + \frac{1}{3}bd^4x^3 + \frac{1}{6}ax^6e^4 + \frac{4}{5}adx^5e^3 + \frac{3}{2}ad^2x^4e^2 + \frac{4}{3}ad^3x^3e + \frac{1}{2}ad^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*c*x^8*e^4 + 4/7*c*d*x^7*e^3 + c*d^2*x^6*e^2 + 4/5*c*d^3*x^5*e + 1/4*c*d
^4*x^4 + 1/7*b*x^7*e^4 + 2/3*b*d*x^6*e^3 + 6/5*b*d^2*x^5*e^2 + b*d^3*x^4*e
+ 1/3*b*d^4*x^3 + 1/6*a*x^6*e^4 + 4/5*a*d*x^5*e^3 + 3/2*a*d^2*x^4*e^2 + 4/3
*a*d^3*x^3*e + 1/2*a*d^4*x^2
```

maple [A] time = 0.04, size = 139, normalized size = 1.35

$$\frac{c\,e^4x^8}{8} + \frac{a\,d^4x^2}{2} + \frac{\left(e^4b + 4cd\,e^3\right)x^7}{7} + \frac{\left(e^4a + 4d\,e^3b + 6d^2e^2c\right)x^6}{6} + \frac{\left(4ad\,e^3 + 6d^2e^2b + 4c\,d^3e\right)x^5}{5} + \frac{\left(6a\,d^2e^2 + 4d^3eb + c\,d^4\right)x^4}{4} + \frac{\left(4d^3ea + b\,d^4\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^4*(c*x^2+b*x+a),x)
```

```
[Out] 1/8*e^4*c*x^8+1/7*(b*e^4+4*c*d*e^3)*x^7+1/6*(a*e^4+4*b*d*e^3+6*c*d^2*e^2)*x
^6+1/5*(4*a*d*e^3+6*b*d^2*e^2+4*c*d^3*e)*x^5+1/4*(6*a*d^2*e^2+4*b*d^3*e+c*d
^4)*x^4+1/3*(4*a*d^3*e+b*d^4)*x^3+1/2*d^4*a*x^2
```

maxima [A] time = 0.73, size = 138, normalized size = 1.34

$$\frac{1}{8}ce^4x^8 + \frac{1}{7}\left(4\,cde^3 + be^4\right)x^7 + \frac{1}{2}ad^4x^2 + \frac{1}{6}\left(6\,cd^2e^2 + 4\,bde^3 + ae^4\right)x^6 + \frac{2}{5}\left(2\,cd^3e + 3\,bd^2e^2 + 2\,ade^3\right)x^5 + \frac{1}{4}\left(cd^4 + 4\,bd^3e + 6\,ad^2e^2\right)x^4 + \frac{1}{3}\left(bd^4 + 4\,ad^3e\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/8*c*e^4*x^8 + 1/7*(4*c*d*e^3 + b*e^4)*x^7 + 1/2*a*d^4*x^2 + 1/6*(6*c*d^2*
e^2 + 4*b*d*e^3 + a*e^4)*x^6 + 2/5*(2*c*d^3*e + 3*b*d^2*e^2 + 2*a*d*e^3)*x^
5 + 1/4*(c*d^4 + 4*b*d^3*e + 6*a*d^2*e^2)*x^4 + 1/3*(b*d^4 + 4*a*d^3*e)*x^3
```

mupad [B] time = 0.06, size = 132, normalized size = 1.28

$$x^3\left(\frac{b\,d^4}{3} + \frac{4\,a\,e\,d^3}{3}\right) + x^7\left(\frac{b\,e^4}{7} + \frac{4\,c\,d\,e^3}{7}\right) + x^4\left(\frac{c\,d^4}{4} + b\,d^3\,e + \frac{3\,a\,d^2\,e^2}{2}\right) + x^6\left(c\,d^2\,e^2 + \frac{2\,b\,d\,e^3}{3} + \frac{a\,e^4}{6}\right) + \frac{a\,d^4\,x^2}{2} + \frac{c\,e^4\,x^8}{8} + \frac{2\,d\,e\,x^5\,\left(2\,c\,d^2 + 3\,b\,d\,e + 2\,a\,e^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^4*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((b*d^4)/3 + (4*a*d^3*e)/3) + x^7*((b*e^4)/7 + (4*c*d*e^3)/7) + x^4*((c
*d^4)/4 + (3*a*d^2*e^2)/2 + b*d^3*e) + x^6*((a*e^4)/6 + c*d^2*e^2 + (2*b*d*
```

```
e^3)/3) + (a*d^4*x^2)/2 + (c*e^4*x^8)/8 + (2*d*e*x^5*(2*a*e^2 + 2*c*d^2 + 3
*b*d*e))/5
```

sympy [A] time = 0.09, size = 153, normalized size = 1.49

$$\frac{ad^4x^2}{2} + \frac{ce^4x^8}{8} + x^7\left(\frac{be^4}{7} + \frac{4cde^3}{7}\right) + x^6\left(\frac{ae^4}{6} + \frac{2bde^3}{3} + cd^2e^2\right) + x^5\left(\frac{4ade^3}{5} + \frac{6bd^2e^2}{5} + \frac{4cd^3e}{5}\right) + x^4\left(\frac{3ad^2e^2}{2} + bd^3e + \frac{cd^4}{4}\right) + x^3\left(\frac{4ad^3e}{3} + \frac{bd^4}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**4*(c*x**2+b*x+a),x)
```

```
[Out] a*d**4*x**2/2 + c*e**4*x**8/8 + x**7*(b*e**4/7 + 4*c*d*e**3/7) + x**6*(a*e*
*4/6 + 2*b*d*e**3/3 + c*d**2*e**2) + x**5*(4*a*d*e**3/5 + 6*b*d**2*e**2/5 +
 4*c*d**3*e/5) + x**4*(3*a*d**2*e**2/2 + b*d**3*e + c*d**4/4) + x**3*(4*a*d
**3*e/3 + b*d**4/3)
```

3.2112 $\int x(d+ex)^3\left(a+bx+cx^2\right)dx$

Optimal. Leaf size=103

$$\frac{(d+ex)^5\left(3cd^2-e(2bd-ae)\right)}{5e^4}-\frac{d(d+ex)^4\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(3cd-be)}{6e^4}+\frac{c(d+ex)^7}{7e^4}$$

Rubi [A] time = 0.10, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{(d+ex)^5\left(3cd^2-e(2bd-ae)\right)}{5e^4}-\frac{d(d+ex)^4\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(3cd-be)}{6e^4}+\frac{c(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] -(d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4)/(4*e^4) + ((3*c*d^2 - e*(2*b*d - a
*e))*(d + e*x)^5)/(5*e^4) - ((3*c*d - b*e)*(d + e*x)^6)/(6*e^4) + (c*(d + e
*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int x(d+ex)^3\left(a+bx+cx^2\right)dx=\int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^4}{e^3}+\frac{(-3cd$$

$$=-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^5}{5e^4}-\frac{(3cd-be)}{6e}$$

Mathematica [A] time = 0.03, size = 109, normalized size = 1.06

$$\frac{1}{5}ex^5\left(ae^2+3bde+3cd^2\right)+\frac{1}{4}dx^4\left(3ae^2+3bde+cd^2\right)+\frac{1}{3}d^2x^3(3ae+bd)+\frac{1}{2}ad^3x^2+\frac{1}{6}e^2x^6(be+3cd)+\frac{1}{7}ce^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^3*x^2)/2 + (d^2*(b*d + 3*a*e)*x^3)/3 + (d*(c*d^2 + 3*b*d*e + 3*a*e^2)*
x^4)/4 + (e*(3*c*d^2 + 3*b*d*e + a*e^2)*x^5)/5 + (e^2*(3*c*d + b*e)*x^6)/6
+ (c*e^3*x^7)/7
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(d+ex)^3\left(a+bx+cx^2\right)dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(d + e*x)^3*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.35, size = 114, normalized size = 1.11

$$\frac{1}{7}x^7e^3c + \frac{1}{2}x^6e^2dc + \frac{1}{6}x^6e^3b + \frac{3}{5}x^5ed^2c + \frac{3}{5}x^5e^2db + \frac{1}{5}x^5e^3a + \frac{1}{4}x^4d^3c + \frac{3}{4}x^4ed^2b + \frac{3}{4}x^4e^2da + \frac{1}{3}x^3d^3b + x^3ed^2a + \frac{1}{2}x^2d^3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c + 1/2*x^6*e^2*d*c + 1/6*x^6*e^3*b + 3/5*x^5*e*d^2*c + 3/5*x^5
*e^2*d*b + 1/5*x^5*e^3*a + 1/4*x^4*d^3*c + 3/4*x^4*e*d^2*b + 3/4*x^4*e^2*d*
a + 1/3*x^3*d^3*b + x^3*e*d^2*a + 1/2*x^2*d^3*a
```

giac [A] time = 0.17, size = 111, normalized size = 1.08

$$\frac{1}{7}cx^7e^3 + \frac{1}{2}cdx^6e^2 + \frac{3}{5}cd^2x^5e + \frac{1}{4}cd^3x^4 + \frac{1}{6}bx^6e^3 + \frac{3}{5}bdx^5e^2 + \frac{3}{4}bd^2x^4e + \frac{1}{3}bd^3x^3 + \frac{1}{5}ax^5e^3 + \frac{3}{4}adx^4e^2 + ad^2x^3e + \frac{1}{2}ad^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/7*c*x^7*e^3 + 1/2*c*d*x^6*e^2 + 3/5*c*d^2*x^5*e + 1/4*c*d^3*x^4 + 1/6*b*x
^6*e^3 + 3/5*b*d*x^5*e^2 + 3/4*b*d^2*x^4*e + 1/3*b*d^3*x^3 + 1/5*a*x^5*e^3
+ 3/4*a*d*x^4*e^2 + a*d^2*x^3*e + 1/2*a*d^3*x^2
```

maple [A] time = 0.04, size = 106, normalized size = 1.03

$$\frac{c\,e^3x^7}{7} + \frac{a\,d^3x^2}{2} + \frac{\left(b\,e^3 + 3d\,e^2c\right)x^6}{6} + \frac{\left(a\,e^3 + 3bd\,e^2 + 3c\,d^2e\right)x^5}{5} + \frac{\left(3ad\,e^2 + 3b\,d^2e + c\,d^3\right)x^4}{4} + \frac{\left(3d^2ea + b\,d^3\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^3*(c*x^2+b*x+a),x)
```

```
[Out] 1/7*e^3*c*x^7+1/6*(b*e^3+3*c*d*e^2)*x^6+1/5*(a*e^3+3*b*d*e^2+3*c*d^2*e)*x^5
+1/4*(3*a*d*e^2+3*b*d^2*e+c*d^3)*x^4+1/3*(3*a*d^2*e+b*d^3)*x^3+1/2*d^3*a*x^
2
```

maxima [A] time = 0.50, size = 105, normalized size = 1.02

$$\frac{1}{7}ce^3x^7 + \frac{1}{6}\left(3\,cde^2 + be^3\right)x^6 + \frac{1}{2}ad^3x^2 + \frac{1}{5}\left(3\,cd^2e + 3\,bde^2 + ae^3\right)x^5 + \frac{1}{4}\left(cd^3 + 3\,bd^2e + 3\,ade^2\right)x^4 + \frac{1}{3}\left(bd^3 + 3\,ad^2e\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/7*c*e^3*x^7 + 1/6*(3*c*d*e^2 + b*e^3)*x^6 + 1/2*a*d^3*x^2 + 1/5*(3*c*d^2*
e + 3*b*d*e^2 + a*e^3)*x^5 + 1/4*(c*d^3 + 3*b*d^2*e + 3*a*d*e^2)*x^4 + 1/3*
(b*d^3 + 3*a*d^2*e)*x^3
```

mupad [B] time = 2.24, size = 104, normalized size = 1.01

$$x^3\left(\frac{b\,d^3}{3} + a\,e\,d^2\right) + x^6\left(\frac{b\,e^3}{6} + \frac{c\,d\,e^2}{2}\right) + x^4\left(\frac{c\,d^3}{4} + \frac{3\,b\,d^2\,e}{4} + \frac{3\,a\,d\,e^2}{4}\right) + x^5\left(\frac{3\,c\,d^2\,e}{5} + \frac{3\,b\,d\,e^2}{5} + \frac{a\,e^3}{5}\right) + \frac{a\,d^3\,x^2}{2} + \frac{c\,e^3\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^3*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((b*d^3)/3 + a*d^2*e) + x^6*((b*e^3)/6 + (c*d*e^2)/2) + x^4*((c*d^3)/4
+ (3*a*d*e^2)/4 + (3*b*d^2*e)/4) + x^5*((a*e^3)/5 + (3*b*d*e^2)/5 + (3*c*d^
2*e)/5) + (a*d^3*x^2)/2 + (c*e^3*x^7)/7
```

sympy [A] time = 0.08, size = 116, normalized size = 1.13

$$\frac{ad^3x^2}{2}+\frac{ce^3x^7}{7}+x^6\left(\frac{be^3}{6}+\frac{cde^2}{2}\right)+x^5\left(\frac{ae^3}{5}+\frac{3bde^2}{5}+\frac{3cd^2e}{5}\right)+x^4\left(\frac{3ade^2}{4}+\frac{3bd^2e}{4}+\frac{cd^3}{4}\right)+x^3\left(ad^2e+\frac{bd^3}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**3*(c*x**2+b*x+a),x)
```

```
[Out] a*d**3*x**2/2 + c*e**3*x**7/7 + x**6*(b*e**3/6 + c*d*e**2/2) + x**5*(a*e**3
/5 + 3*b*d*e**2/5 + 3*c*d**2*e/5) + x**4*(3*a*d*e**2/4 + 3*b*d**2*e/4 + c*d
**3/4) + x**3*(a*d**2*e + b*d**3/3)
```

3.2113 $\int x(d+ex)^2\left(a+bx+cx^2\right)dx$

Optimal. Leaf size=78

$$\frac{1}{4}x^4\left(e(ae+2bd)+cd^2\right)+\frac{1}{3}dx^3(2ae+bd)+\frac{1}{2}ad^2x^2+\frac{1}{5}ex^5(be+2cd)+\frac{1}{6}ce^2x^6$$

Rubi [A] time = 0.07, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{1}{4}x^4\left(e(ae+2bd)+cd^2\right)+\frac{1}{3}dx^3(2ae+bd)+\frac{1}{2}ad^2x^2+\frac{1}{5}ex^5(be+2cd)+\frac{1}{6}ce^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^2*x^2)/2 + (d*(b*d + 2*a*e)*x^3)/3 + ((c*d^2 + e*(2*b*d + a*e))*x^4)/4
 + (e*(2*c*d + b*e)*x^5)/5 + (c*e^2*x^6)/6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)^2\left(a+bx+cx^2\right)dx&=\int\left(ad^2x+d(bd+2ae)x^2+\left(cd^2+e(2bd+ae)\right)x^3+e(2cd+be)x^4+ce^2x^5\right)dx\\&=\frac{1}{2}ad^2x^2+\frac{1}{3}d(bd+2ae)x^3+\frac{1}{4}\left(cd^2+e(2bd+ae)\right)x^4+\frac{1}{5}e(2cd+be)x^5+\frac{1}{6}ce^2x^6\end{aligned}$$

Mathematica [A] time = 0.02, size = 70, normalized size = 0.90

$$\frac{1}{60}x^2\left(15x^2\left(e(ae+2bd)+cd^2\right)+20dx(2ae+bd)+30ad^2+12ex^3(be+2cd)+10ce^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] (x^2*(30*a*d^2 + 20*d*(b*d + 2*a*e)*x + 15*(c*d^2 + e*(2*b*d + a*e))*x^2 +
12*e*(2*c*d + b*e)*x^3 + 10*c*e^2*x^4))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(d+ex)^2\left(a+bx+cx^2\right)dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(d + e*x)^2*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.34, size = 79, normalized size = 1.01

$$\frac{1}{6}x^6e^2c+\frac{2}{5}x^5edc+\frac{1}{5}x^5e^2b+\frac{1}{4}x^4d^2c+\frac{1}{2}x^4edb+\frac{1}{4}x^4e^2a+\frac{1}{3}x^3d^2b+\frac{2}{3}x^3eda+\frac{1}{2}x^2d^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c + 2/5*x^5*e*d*c + 1/5*x^5*e^2*b + 1/4*x^4*d^2*c + 1/2*x^4*e*d
*b + 1/4*x^4*e^2*a + 1/3*x^3*d^2*b + 2/3*x^3*e*d*a + 1/2*x^2*d^2*a
```

giac [A] time = 0.15, size = 79, normalized size = 1.01

$$\frac{1}{6}\,cx^6e^2 + \frac{2}{5}\,cdx^5e + \frac{1}{4}\,cd^2x^4 + \frac{1}{5}\,bx^5e^2 + \frac{1}{2}\,bdx^4e + \frac{1}{3}\,bd^2x^3 + \frac{1}{4}\,ax^4e^2 + \frac{2}{3}\,adx^3e + \frac{1}{2}\,ad^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*c*x^6*e^2 + 2/5*c*d*x^5*e + 1/4*c*d^2*x^4 + 1/5*b*x^5*e^2 + 1/2*b*d*x^4
*e + 1/3*b*d^2*x^3 + 1/4*a*x^4*e^2 + 2/3*a*d*x^3*e + 1/2*a*d^2*x^2
```

maple [A] time = 0.04, size = 73, normalized size = 0.94

$$\frac{c\,e^2x^6}{6} + \frac{a\,d^2x^2}{2} + \frac{\left(b\,e^2 + 2cde\right)x^5}{5} + \frac{\left(a\,e^2 + 2bde + c\,d^2\right)x^4}{4} + \frac{\left(2ade + b\,d^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^2*(c*x^2+b*x+a),x)
```

```
[Out] 1/6*c*e^2*x^6+1/5*(b*e^2+2*c*d*e)*x^5+1/4*(a*e^2+2*b*d*e+c*d^2)*x^4+1/3*(2*
a*d*e+b*d^2)*x^3+1/2*a*d^2*x^2
```

maxima [A] time = 0.57, size = 72, normalized size = 0.92

$$\frac{1}{6}\,ce^2x^6 + \frac{1}{5}\left(2\,cde + be^2\right)x^5 + \frac{1}{2}\,ad^2x^2 + \frac{1}{4}\left(cd^2 + 2\,bde + ae^2\right)x^4 + \frac{1}{3}\left(bd^2 + 2\,ade\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/6*c*e^2*x^6 + 1/5*(2*c*d*e + b*e^2)*x^5 + 1/2*a*d^2*x^2 + 1/4*(c*d^2 + 2*
b*d*e + a*e^2)*x^4 + 1/3*(b*d^2 + 2*a*d*e)*x^3
```

mupad [B] time = 0.03, size = 73, normalized size = 0.94

$$x^4\left(\frac{c\,d^2}{4} + \frac{b\,d\,e}{2} + \frac{a\,e^2}{4}\right) + x^3\left(\frac{b\,d^2}{3} + \frac{2\,a\,e\,d}{3}\right) + x^5\left(\frac{b\,e^2}{5} + \frac{2\,c\,d\,e}{5}\right) + \frac{a\,d^2\,x^2}{2} + \frac{c\,e^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^2*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((a*e^2)/4 + (c*d^2)/4 + (b*d*e)/2) + x^3*((b*d^2)/3 + (2*a*d*e)/3) + x
^5*((b*e^2)/5 + (2*c*d*e)/5) + (a*d^2*x^2)/2 + (c*e^2*x^6)/6
```

sympy [A] time = 0.08, size = 80, normalized size = 1.03

$$\frac{ad^2x^2}{2} + \frac{ce^2x^6}{6} + x^5\left(\frac{be^2}{5} + \frac{2cde}{5}\right) + x^4\left(\frac{ae^2}{4} + \frac{bde}{2} + \frac{cd^2}{4}\right) + x^3\left(\frac{2ade}{3} + \frac{bd^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**2*(c*x**2+b*x+a),x)
```

```
[Out] a*d**2*x**2/2 + c*e**2*x**6/6 + x**5*(b*e**2/5 + 2*c*d*e/5) + x**4*(a*e**2/
4 + b*d*e/2 + c*d**2/4) + x**3*(2*a*d*e/3 + b*d**2/3)
```

3.2114 $\int x(d+ex)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{3}x^3(ae+bd)+\frac{1}{2}adx^2+\frac{1}{4}x^4(be+cd)+\frac{1}{5}cex^5$$

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {765}

$$\frac{1}{3}x^3(ae+bd)+\frac{1}{2}adx^2+\frac{1}{4}x^4(be+cd)+\frac{1}{5}cex^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)*(a + b*x + c*x^2),x]
[Out] (a*d*x^2)/2 + ((b*d + a*e)*x^3)/3 + ((c*d + b*e)*x^4)/4 + (c*e*x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)\left(a+bx+cx^2\right)\,dx&=\int\left(adx+(bd+ae)x^2+(cd+be)x^3+cex^4\right)\,dx\\&=\frac{1}{2}adx^2+\frac{1}{3}(bd+ae)x^3+\frac{1}{4}(cd+be)x^4+\frac{1}{5}cex^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 41, normalized size = 0.87

$$\frac{1}{60}x^2\left(20x(ae+bd)+30ad+15x^2(be+cd)+12cex^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)*(a + b*x + c*x^2),x]
[Out] (x^2*(30*a*d + 20*(b*d + a*e)*x + 15*(c*d + b*e)*x^2 + 12*c*e*x^3))/60
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(d+ex)\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(d + e*x)*(a + b*x + c*x^2),x]
[Out] IntegrateAlgebraic[x*(d + e*x)*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.32, size = 43, normalized size = 0.91

$$\frac{1}{5}x^5ec+\frac{1}{4}x^4dc+\frac{1}{4}x^4eb+\frac{1}{3}x^3db+\frac{1}{3}x^3ea+\frac{1}{2}x^2da$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c + 1/4*x^4*d*c + 1/4*x^4*e*b + 1/3*x^3*d*b + 1/3*x^3*e*a + 1/2*x
^2*d*a
```

giac [A] time = 0.17, size = 46, normalized size = 0.98

$$\frac{1}{5}cx^5e + \frac{1}{4}cdx^4 + \frac{1}{4}bx^4e + \frac{1}{3}bdx^3 + \frac{1}{3}ax^3e + \frac{1}{2}adx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/5*c*x^5*e + 1/4*c*d*x^4 + 1/4*b*x^4*e + 1/3*b*d*x^3 + 1/3*a*x^3*e + 1/2*a
*d*x^2
```

maple [A] time = 0.04, size = 40, normalized size = 0.85

$$\frac{ce\,x^5}{5} + \frac{ad\,x^2}{2} + \frac{(be+cd)\,x^4}{4} + \frac{(ae+bd)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*a*d*x^2+1/3*(a*e+b*d)*x^3+1/4*(b*e+c*d)*x^4+1/5*c*e*x^5
```

maxima [A] time = 0.60, size = 39, normalized size = 0.83

$$\frac{1}{5}cex^5 + \frac{1}{4}(cd+be)x^4 + \frac{1}{2}adx^2 + \frac{1}{3}(bd+ae)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/5*c*e*x^5 + 1/4*(c*d + b*e)*x^4 + 1/2*a*d*x^2 + 1/3*(b*d + a*e)*x^3
```

mupad [B] time = 0.04, size = 41, normalized size = 0.87

$$\frac{c\,e\,x^5}{5} + \left(\frac{b\,e}{4} + \frac{c\,d}{4}\right)x^4 + \left(\frac{a\,e}{3} + \frac{b\,d}{3}\right)x^3 + \frac{a\,d\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((a*e)/3 + (b*d)/3) + x^4*((b*e)/4 + (c*d)/4) + (a*d*x^2)/2 + (c*e*x^5)
/5
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{adx^2}{2} + \frac{cex^5}{5} + x^4\left(\frac{be}{4} + \frac{cd}{4}\right) + x^3\left(\frac{ae}{3} + \frac{bd}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x**2+b*x+a),x)
```

```
[Out] a*d*x**2/2 + c*e*x**5/5 + x**4*(b*e/4 + c*d/4) + x**3*(a*e/3 + b*d/3)
```

3.2115 $\int x\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=25

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {14}

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*x + c*x^2),x]
```

```
[Out] (a*x^2)/2 + (b*x^3)/3 + (c*x^4)/4
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rubi steps

$$\begin{aligned}\int x\left(a+bx+cx^2\right)\,dx&=\int\left(ax+bx^2+cx^3\right)\,dx\\&=\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}\end{aligned}$$

Mathematica [A] time = 0.00, size = 25, normalized size = 1.00

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*x + c*x^2),x]
```

```
[Out] (a*x^2)/2 + (b*x^3)/3 + (c*x^4)/4
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(a+bx+cx^2\right)\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[x*(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[x*(a + b*x + c*x^2), x]
```

fricas [A] time = 0.34, size = 19, normalized size = 0.76

$$\frac{1}{4}x^4c+\frac{1}{3}x^3b+\frac{1}{2}x^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c + 1/3*x^3*b + 1/2*x^2*a
```

giac [A] time = 0.15, size = 19, normalized size = 0.76

$$\frac{1}{4}cx^4 + \frac{1}{3}bx^3 + \frac{1}{2}ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*c*x^4 + 1/3*b*x^3 + 1/2*a*x^2
```

maple [A] time = 0.04, size = 20, normalized size = 0.80

$$\frac{1}{4}c\,x^4 + \frac{1}{3}b\,x^3 + \frac{1}{2}a\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*a*x^2+1/3*b*x^3+1/4*c*x^4
```

maxima [A] time = 0.65, size = 19, normalized size = 0.76

$$\frac{1}{4}cx^4 + \frac{1}{3}bx^3 + \frac{1}{2}ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*c*x^4 + 1/3*b*x^3 + 1/2*a*x^2
```

mupad [B] time = 0.03, size = 19, normalized size = 0.76

$$\frac{x^2\left(3\,c\,x^2+4\,b\,x+6\,a\right)}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*x + c*x^2),x)
```

```
[Out] (x^2*(6*a + 4*b*x + 3*c*x^2))/12
```

sympy [A] time = 0.06, size = 19, normalized size = 0.76

$$\frac{ax^2}{2} + \frac{bx^3}{3} + \frac{cx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a),x)
```

```
[Out] a*x**2/2 + b*x**3/3 + c*x**4/4
```

3.2116 $\int \frac{x(a+bx+cx^2)}{d+ex}\,dx$

Optimal. Leaf size=79

$$-\frac{d\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}+\frac{x\left(ae^2-bde+cd^2\right)}{e^3}-\frac{x^2(cd-be)}{2e^2}+\frac{cx^3}{3e}$$

Rubi [A] time = 0.07, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{x\left(ae^2-bde+cd^2\right)}{e^3}-\frac{d\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{x^2(cd-be)}{2e^2}+\frac{cx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((c*d^2 - b*d*e + a*e^2)*x)/e^3 - ((c*d - b*e)*x^2)/(2*e^2) + (c*x^3)/(3*e)
 - (d*(c*d^2 - b*d*e + a*e^2)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{cd^2-bde+ae^2}{e^3}+\frac{(-cd+be)x}{e^2}+\frac{cx^2}{e}-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)}\right)dx\\ &= \frac{\left(cd^2-bde+ae^2\right)x}{e^3}-\frac{(cd-be)x^2}{2e^2}+\frac{cx^3}{3e}-\frac{d\left(cd^2-bde+ae^2\right)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 0.94

$$\frac{ex\left(3e(2ae-2bd+bex)+c\left(6d^2-3dex+2e^2x^2\right)\right)-6\log(d+ex)\left(de(ae-bd)+cd^3\right)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(3*e*(-2*b*d + 2*a*e + b*e*x) + c*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) - 6*(
c*d^3 + d*e*(-(b*d) + a*e))*Log[d + e*x])/(6*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{d+ex}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x), x]
```

fricas [A] time = 0.39, size = 82, normalized size = 1.04

$$\frac{2\,ce^3x^3 - 3\left(cde^2 - be^3\right)x^2 + 6\left(cd^2e - bde^2 + ae^3\right)x - 6\left(cd^3 - bd^2e + ade^2\right)\log\left(ex + d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*c*e^3*x^3 - 3*(c*d*e^2 - b*e^3)*x^2 + 6*(c*d^2*e - b*d*e^2 + a*e^3)*
x - 6*(c*d^3 - b*d^2*e + a*d*e^2)*log(e*x + d))/e^4
```

giac [A] time = 0.18, size = 82, normalized size = 1.04

$$-\left(cd^3 - bd^2e + ade^2\right)e^{(-4)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,cx^3e^2 - 3\,cdx^2e + 6\,cd^2x + 3\,bx^2e^2 - 6\,bdxe + 6\,axe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(c*d^3 - b*d^2*e + a*d*e^2)*e^(-4)*log(abs(x*e + d)) + 1/6*(2*c*x^3*e^2 -
3*c*d*x^2*e + 6*c*d^2*x + 3*b*x^2*e^2 - 6*b*d*x*e + 6*a*x*e^2)*e^(-3)
```

maple [A] time = 0.04, size = 95, normalized size = 1.20

$$\frac{c\,x^3}{3e} + \frac{b\,x^2}{2e} - \frac{cd\,x^2}{2e^2} - \frac{ad\ln\left(ex + d\right)}{e^2} + \frac{ax}{e} + \frac{b\,d^2\ln\left(ex + d\right)}{e^3} - \frac{bdx}{e^2} - \frac{c\,d^3\ln\left(ex + d\right)}{e^4} + \frac{c\,d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d),x)
```

```
[Out] 1/3*c*x^3/e+1/2/e*x^2*b-1/2/e^2*c*d*x^2+1/e*a*x-1/e^2*x*b*d+1/e^3*c*d^2*x-d
/e^2*ln(e*x+d)*a+d^2/e^3*ln(e*x+d)*b-d^3/e^4*ln(e*x+d)*c
```

maxima [A] time = 0.50, size = 81, normalized size = 1.03

$$\frac{2\,ce^2x^3 - 3\left(cde - be^2\right)x^2 + 6\left(cd^2 - bde + ae^2\right)x}{6\,e^3} - \frac{\left(cd^3 - bd^2e + ade^2\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*c*e^2*x^3 - 3*(c*d*e - b*e^2)*x^2 + 6*(c*d^2 - b*d*e + a*e^2)*x)/e^3
 - (c*d^3 - b*d^2*e + a*d*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 2.34, size = 85, normalized size = 1.08

$$x^2\left(\frac{b}{2\,e} - \frac{c\,d}{2\,e^2}\right) + x\left(\frac{a}{e} - \frac{d\left(\frac{b}{e} - \frac{c\,d}{e^2}\right)}{e}\right) - \frac{\ln\left(d + e\,x\right)\left(c\,d^3 - b\,d^2\,e + a\,d\,e^2\right)}{e^4} + \frac{c\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x),x)
```

```
[Out] x^2*(b/(2*e) - (c*d)/(2*e^2)) + x*(a/e - (d*(b/e - (c*d)/e^2))/e) - (log(d
+ e*x)*(c*d^3 + a*d*e^2 - b*d^2*e))/e^4 + (c*x^3)/(3*e)
```

sympy [A] time = 0.24, size = 71, normalized size = 0.90

$$\frac{cx^3}{3e} - \frac{d\left(ae^2 - bde + cd^2\right)\log\left(d + ex\right)}{e^4} + x^2\left(\frac{b}{2e} - \frac{cd}{2e^2}\right) + x\left(\frac{a}{e} - \frac{bd}{e^2} + \frac{cd^2}{e^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] c*x**3/(3*e) - d*(a*e**2 - b*d*e + c*d**2)*log(d + e*x)/e**4 + x**2*(b/(2*e
) - c*d/(2*e**2)) + x*(a/e - b*d/e**2 + c*d**2/e**3)
```

3.2117 $\int \frac{x(a+bx+cx^2)}{(d+ex)^2}\,dx$

Optimal. Leaf size=84

$$\frac{\log(d+ex)\left(3cd^2-e(2bd-ae)\right)}{e^4}+\frac{d\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{x(2cd-be)}{e^3}+\frac{cx^2}{2e^2}$$

Rubi [A] time = 0.09, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{d\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}+\frac{\log(d+ex)\left(3cd^2-e(2bd-ae)\right)}{e^4}-\frac{x(2cd-be)}{e^3}+\frac{cx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -(((2*c*d - b*e)*x)/e^3) + (c*x^2)/(2*e^2) + (d*(c*d^2 - b*d*e + a*e^2))/(e
^4*(d + e*x)) + ((3*c*d^2 - e*(2*b*d - a*e))*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx &= \int \left(\frac{-2cd+be}{e^3}+\frac{cx}{e^2}-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^2}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)}\right)dx\\ &= -\frac{(2cd-be)x}{e^3}+\frac{cx^2}{2e^2}+\frac{d\left(cd^2-bde+ae^2\right)}{e^4(d+ex)}+\frac{\left(3cd^2-e(2bd-ae)\right)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.94

$$\frac{\frac{2\left(de(ae-bd)+cd^3\right)}{d+ex}+2\log(d+ex)\left(e(ae-2bd)+3cd^2\right)+2ex(be-2cd)+ce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*e*(-2*c*d + b*e)*x + c*e^2*x^2 + (2*(c*d^3 + d*e*(-(b*d) + a*e)))/(d + e
*x) + 2*(3*c*d^2 + e*(-2*b*d + a*e))*Log[d + e*x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^2, x]
```

fricas [A] time = 0.39, size = 131, normalized size = 1.56

$$\frac{ce^3x^3 + 2\,cd^3 - 2\,bd^2e + 2\,ade^2 - \left(3\,cde^2 - 2\,be^3\right)x^2 - 2\left(2\,cd^2e - bde^2\right)x + 2\left(3\,cd^3 - 2\,bd^2e + ade^2 + \left(3\,cd^2e - 2\,bde^2 + ae^3\right)x\right)\log\left(ex + d\right)}{2\left(e^5x + de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(c*e^3*x^3 + 2*c*d^3 - 2*b*d^2*e + 2*a*d*e^2 - (3*c*d*e^2 - 2*b*e^3)*x^
2 - 2*(2*c*d^2*e - b*d*e^2)*x + 2*(3*c*d^3 - 2*b*d^2*e + a*d*e^2 + (3*c*d^2
*e - 2*b*d*e^2 + a*e^3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [A] time = 0.20, size = 131, normalized size = 1.56

$$\frac{1}{2}\left((xe+d)^2\left(c - \frac{2\left(3\,cde - be^2\right)e^{(-1)}}{xe+d}\right)e^{(-3)} - 2\left(3\,cd^2 - 2\,bde + ae^2\right)e^{(-3)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right) + 2\left(\frac{cd^3e^2}{xe+d} - \frac{bd^2e^3}{xe+d} + \frac{ade^4}{xe+d}\right)e^{(-5)}\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*((x*e + d)^2*(c - 2*(3*c*d*e - b*e^2)*e^(-1)/(x*e + d))*e^(-3) - 2*(3*c
*d^2 - 2*b*d*e + a*e^2)*e^(-3)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + 2*(c*
d^3*e^2/(x*e + d) - b*d^2*e^3/(x*e + d) + a*d*e^4/(x*e + d))*e^(-5))*e^(-1)
```

maple [A] time = 0.05, size = 108, normalized size = 1.29

$$\frac{c\,x^2}{2e^2} + \frac{ad}{(ex+d)\,e^2} + \frac{a\ln(ex+d)}{e^2} - \frac{b\,d^2}{(ex+d)\,e^3} - \frac{2bd\ln(ex+d)}{e^3} + \frac{bx}{e^2} + \frac{c\,d^3}{(ex+d)\,e^4} + \frac{3c\,d^2\ln(ex+d)}{e^4} - \frac{2cdx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] 1/2*c*x^2/e^2+1/e^2*b*x-2/e^3*x*c*d+d/e^2/(e*x+d)*a-d^2/e^3/(e*x+d)*b+d^3/e
^4/(e*x+d)*c+1/e^2*ln(e*x+d)*a-2/e^3*ln(e*x+d)*b*d+3/e^4*ln(e*x+d)*c*d^2
```

maxima [A] time = 0.51, size = 85, normalized size = 1.01

$$\frac{cd^3 - bd^2e + ade^2}{e^5x + de^4} + \frac{cex^2 - 2\,(2\,cd - be)x}{2\,e^3} + \frac{\left(3\,cd^2 - 2\,bde + ae^2\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (c*d^3 - b*d^2*e + a*d*e^2)/(e^5*x + d*e^4) + 1/2*(c*e*x^2 - 2*(2*c*d - b*e
)*x)/e^3 + (3*c*d^2 - 2*b*d*e + a*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 2.34, size = 88, normalized size = 1.05

$$x\left(\frac{b}{e^2} - \frac{2\,c\,d}{e^3}\right) + \frac{c\,x^2}{2\,e^2} + \frac{\ln\left(d + e\,x\right)\,\left(3\,c\,d^2 - 2\,b\,d\,e + a\,e^2\right)}{e^4} + \frac{c\,d^3 - b\,d^2\,e + a\,d\,e^2}{e\,\left(x\,e^4 + d\,e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^2,x)
```

```
[Out] x*(b/e^2 - (2*c*d)/e^3) + (c*x^2)/(2*e^2) + (log(d + e*x)*(a*e^2 + 3*c*d^2
- 2*b*d*e))/e^4 + (c*d^3 + a*d*e^2 - b*d^2*e)/(e*(d*e^3 + e^4*x))
```

sympy [A] time = 0.42, size = 82, normalized size = 0.98

$$\frac{cx^2}{2e^2} + x\left(\frac{b}{e^2} - \frac{2cd}{e^3}\right) + \frac{ade^2 - bd^2e + cd^3}{de^4 + e^5x} + \frac{\left(ae^2 - 2bde + 3cd^2\right)\log\left(d + ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] c*x**2/(2*e**2) + x*(b/e**2 - 2*c*d/e**3) + (a*d*e**2 - b*d**2*e + c*d**3)/
(d*e**4 + e**5*x) + (a*e**2 - 2*b*d*e + 3*c*d**2)*log(d + e*x)/e**4
```

3.2118 $\int \frac{x(a+bx+cx^2)}{(d+ex)^3} dx$

Optimal. Leaf size=89

$$-\frac{3cd^2-e(2bd-ae)}{e^4(d+ex)}+\frac{d\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{(3cd-be)\log(d+ex)}{e^4}+\frac{cx}{e^3}$$

Rubi [A] time = 0.08, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{d\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{3cd^2-e(2bd-ae)}{e^4(d+ex)}-\frac{(3cd-be)\log(d+ex)}{e^4}+\frac{cx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (c*x)/e^3 + (d*(c*d^2 - b*d*e + a*e^2))/(2*e^4*(d + e*x)^2) - (3*c*d^2 - e*
(2*b*d - a*e))/(e^4*(d + e*x)) - ((3*c*d - b*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{c}{e^3}-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^3}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^2}+\frac{-3cd+be}{e^3(d+ex)}\right)dx\\ &= \frac{cx}{e^3}+\frac{d\left(cd^2-bde+ae^2\right)}{2e^4(d+ex)^2}-\frac{3cd^2-e(2bd-ae)}{e^4(d+ex)}-\frac{(3cd-be)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 80, normalized size = 0.90

$$\frac{\frac{de(ae-bd)+cd^3}{(d+ex)^2}-\frac{2\left(e(ae-2bd)+3cd^2\right)}{d+ex}+2(be-3cd)\log(d+ex)+2cex}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*c*e*x + (c*d^3 + d*e*(-(b*d) + a*e))/(d + e*x)^2 - (2*(3*c*d^2 + e*(-2*b
*d + a*e)))/(d + e*x) + 2*(-3*c*d + b*e)*Log[d + e*x])/(2*e^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^3, x]
```

fricas [A] time = 0.38, size = 147, normalized size = 1.65

$$\frac{2\,ce^3x^3+4\,cde^2x^2-5\,cd^3+3\,bd^2e-ade^2-2\left(2\,cd^2e-2\,bde^2+ae^3\right)x-2\left(3\,cd^3-bd^2e+\left(3\,cde^2-be^3\right)x^2+2\left(3\,cd^2e-bde^2\right)x\right)\log\left(ex+d\right)}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*c*e^3*x^3 + 4*c*d*e^2*x^2 - 5*c*d^3 + 3*b*d^2*e - a*d*e^2 - 2*(2*c*d
^2*e - 2*b*d*e^2 + a*e^3)*x - 2*(3*c*d^3 - b*d^2*e + (3*c*d*e^2 - b*e^3)*x^
2 + 2*(3*c*d^2*e - b*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4
)
```

giac [A] time = 0.15, size = 82, normalized size = 0.92

$$cxe^{(-3)}-(3\,cd-be)e^{(-4)}\log\left(|xe+d|\right)-\frac{\left(5\,cd^3-3\,bd^2e+ade^2+2\left(3\,cd^2e-2\,bde^2+ae^3\right)x\right)e^{(-4)}}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] c*x*e^(-3) - (3*c*d - b*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*c*d^3 - 3*b*d^
2*e + a*d*e^2 + 2*(3*c*d^2*e - 2*b*d*e^2 + a*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [A] time = 0.05, size = 121, normalized size = 1.36

$$\frac{ad}{2\,(ex+d)^2\,e^2}-\frac{b\,d^2}{2\,(ex+d)^2\,e^3}+\frac{c\,d^3}{2\,(ex+d)^2\,e^4}-\frac{a}{(ex+d)\,e^2}+\frac{2bd}{(ex+d)\,e^3}+\frac{b\ln(ex+d)}{e^3}-\frac{3c\,d^2}{(ex+d)\,e^4}-\frac{3cd\ln(ex+d)}{e^4}+\frac{cx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] c*x/e^3-1/e^2/(e*x+d)*a+2/e^3/(e*x+d)*b*d-3/e^4/(e*x+d)*c*d^2+1/2*d/e^2/(e*
x+d)^2*a-1/2*d^2/e^3/(e*x+d)^2*b+1/2*d^3/e^4/(e*x+d)^2*c+1/e^3*ln(e*x+d)*b-
3/e^4*ln(e*x+d)*c*d
```

maxima [A] time = 0.63, size = 96, normalized size = 1.08

$$-\frac{5\,cd^3-3\,bd^2e+ade^2+2\left(3\,cd^2e-2\,bde^2+ae^3\right)x}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}+\frac{cx}{e^3}-\frac{(3\,cd-be)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*c*d^3 - 3*b*d^2*e + a*d*e^2 + 2*(3*c*d^2*e - 2*b*d*e^2 + a*e^3)*x)/
(e^6*x^2 + 2*d*e^5*x + d^2*e^4) + c*x/e^3 - (3*c*d - b*e)*log(e*x + d)/e^4
```

mupad [B] time = 2.35, size = 96, normalized size = 1.08

$$\frac{\ln\left(d+e\,x\right)\,\left(b\,e-3\,c\,d\right)}{e^4}-\frac{x\,\left(3\,c\,d^2-2\,b\,d\,e+a\,e^2\right)+\frac{5\,c\,d^3-3\,b\,d^2\,e+a\,d\,e^2}{2\,e}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}+\frac{c\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(b*e - 3*c*d))/e^4 - (x*(a*e^2 + 3*c*d^2 - 2*b*d*e) + (5*c*d^
3 + a*d*e^2 - 3*b*d^2*e)/(2*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (c*x)/e^3
```

sympy [A] time = 0.76, size = 97, normalized size = 1.09

$$\frac{cx}{e^3}+\frac{-ade^2+3bd^2e-5cd^3+x\left(-2ae^3+4bde^2-6cd^2e\right)}{2d^2e^4+4de^5x+2e^6x^2}+\frac{(be-3cd)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] c*x/e**3 + (-a*d*e**2 + 3*b*d**2*e - 5*c*d**3 + x*(-2*a*e**3 + 4*b*d*e**2 -
 6*c*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + (b*e - 3*c*d)*log(
d + e*x)/e**4
```

3.2119 $\int \frac{x(a+bx+cx^2)}{(d+ex)^4} dx$

Optimal. Leaf size=96

$$-\frac{3cd^2-e(2bd-ae)}{2e^4(d+ex)^2}+\frac{d\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3cd-be}{e^4(d+ex)}+\frac{c\log(d+ex)}{e^4}$$

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{2e^4(d+ex)^2}+\frac{d\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3cd-be}{e^4(d+ex)}+\frac{c\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^3) - (3*c*d^2 - e*(2*b*d - a*e
))/(2*e^4*(d + e*x)^2) + (3*c*d - b*e)/(e^4*(d + e*x)) + (c*Log[d + e*x])/e
^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx&=\int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^4}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^3}+\frac{-3cd+be}{e^3(d+ex)^2}+\frac{c}{e^3(d+ex)}\right)dx\\&=\frac{d\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^3}-\frac{3cd^2-e(2bd-ae)}{2e^4(d+ex)^2}+\frac{3cd-be}{e^4(d+ex)}+\frac{c\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.90

$$\frac{-e\left(ae(d+3ex)+2b\left(d^2+3dex+3e^2x^2\right)\right)+cd\left(11d^2+27dex+18e^2x^2\right)+6c(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - e*(a*e*(d + 3*e*x) + 2*b*(d^2 + 3*d
*e*x + 3*e^2*x^2)) + 6*c*(d + e*x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^4, x]
```

fricas [A] time = 0.39, size = 141, normalized size = 1.47

$$\frac{11\,cd^3-2\,bd^2e-ade^2+6\left(3\,cde^2-be^3\right)x^2+3\left(9\,cd^2e-2\,bde^2-ae^3\right)x+6\left(ce^3x^3+3\,cde^2x^2+3\,cd^2ex+cd^3\right)\log\left(ex+d\right)}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*c*d^3 - 2*b*d^2*e - a*d*e^2 + 6*(3*c*d*e^2 - b*e^3)*x^2 + 3*(9*c*d^
2*e - 2*b*d*e^2 - a*e^3)*x + 6*(c*e^3*x^3 + 3*c*d*e^2*x^2 + 3*c*d^2*e*x + c
*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.16, size = 88, normalized size = 0.92

$$ce^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,cde-be^2\right)x^2+3\left(9\,cd^2-2\,bde-ae^2\right)x+\left(11\,cd^3-2\,bd^2e-ade^2\right)e^{(-1)}\right)e^{(-3)}}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*c*d*e - b*e^2)*x^2 + 3*(9*c*d^2 - 2*
b*d*e - a*e^2)*x + (11*c*d^3 - 2*b*d^2*e - a*d*e^2)*e^(-1))*e^(-3)/(x*e + d
)^3
```

maple [A] time = 0.05, size = 128, normalized size = 1.33

$$\frac{ad}{3\left(ex+d\right)^3e^2}-\frac{b\,d^2}{3\left(ex+d\right)^3e^3}+\frac{c\,d^3}{3\left(ex+d\right)^3e^4}-\frac{a}{2\left(ex+d\right)^2e^2}+\frac{bd}{\left(ex+d\right)^2e^3}-\frac{3c\,d^2}{2\left(ex+d\right)^2e^4}-\frac{b}{\left(ex+d\right)e^3}+\frac{3cd}{\left(ex+d\right)e^4}+\frac{c\ln\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^4,x)
```

```
[Out] -1/e^3/(e*x+d)*b+3/e^4/(e*x+d)*c*d-1/2/e^2/(e*x+d)^2*a+1/e^3/(e*x+d)^2*b*d-
3/2/e^4/(e*x+d)^2*c*d^2+c*ln(e*x+d)/e^4+1/3*d/e^2/(e*x+d)^3*a-1/3*d^2/e^3/(
e*x+d)^3*b+1/3*d^3/e^4/(e*x+d)^3*c
```

maxima [A] time = 0.61, size = 113, normalized size = 1.18

$$\frac{11\,cd^3-2\,bd^2e-ade^2+6\left(3\,cde^2-be^3\right)x^2+3\left(9\,cd^2e-2\,bde^2-ae^3\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{c\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*c*d^3 - 2*b*d^2*e - a*d*e^2 + 6*(3*c*d*e^2 - b*e^3)*x^2 + 3*(9*c*d^
2*e - 2*b*d*e^2 - a*e^3)*x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
 + c*log(e*x + d)/e^4
```

mupad [B] time = 0.08, size = 107, normalized size = 1.11

$$\frac{c\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{-11\,c\,d^3+2\,b\,d^2\,e+a\,d\,e^2}{6\,e^4}+\frac{x\,\left(-9\,c\,d^2+2\,b\,d\,e+a\,e^2\right)}{2\,e^3}+\frac{x^2\,\left(b\,e-3\,c\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^4,x)
```

```
[Out] (c*log(d + e*x))/e^4 - ((a*d*e^2 - 11*c*d^3 + 2*b*d^2*e)/(6*e^4) + (x*(a*e^
2 - 9*c*d^2 + 2*b*d*e))/(2*e^3) + (x^2*(b*e - 3*c*d))/e^2)/(d^3 + e^3*x^3 +
 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [A] time = 1.33, size = 114, normalized size = 1.19

$$\frac{c\log\left(d+ex\right)}{e^4}+\frac{-ade^2-2bd^2e+11cd^3+x^2\left(-6be^3+18cde^2\right)+x\left(-3ae^3-6bde^2+27cd^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**4,x)
```

```
[Out] c*log(d + e*x)/e**4 + (-a*d*e**2 - 2*b*d**2*e + 11*c*d**3 + x**2*(-6*b*e**3
 + 18*c*d*e**2) + x*(-3*a*e**3 - 6*b*d*e**2 + 27*c*d**2*e))/(6*d**3*e**4 +
18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.2120 $\int \frac{x(a+bx+cx^2)}{(d+ex)^5} dx$

Optimal. Leaf size=101

$$-\frac{3cd^2-e(2bd-ae)}{3e^4(d+ex)^3}+\frac{d\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3cd-be}{2e^4(d+ex)^2}-\frac{c}{e^4(d+ex)}$$

Rubi [A] time = 0.07, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{3e^4(d+ex)^3}+\frac{d\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3cd-be}{2e^4(d+ex)^2}-\frac{c}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(4*e^4*(d + e*x)^4) - (3*c*d^2 - e*(2*b*d - a*e
))/(3*e^4*(d + e*x)^3) + (3*c*d - b*e)/(2*e^4*(d + e*x)^2) - c/(e^4*(d + e*
x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^5}dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^5}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^4}+\frac{-3cd+be}{e^3(d+ex)^3}+\frac{c}{e^3(d+ex)^2}\right)dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{4e^4(d+ex)^4}-\frac{3cd^2-e(2bd-ae)}{3e^4(d+ex)^3}+\frac{3cd-be}{2e^4(d+ex)^2}-\frac{c}{e^4(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 77, normalized size = 0.76

$$-\frac{e\left(ae(d+4ex)+b\left(d^2+4dex+6e^2x^2\right)\right)+3c\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(3*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + e*(a*e*(d + 4*e*x)
 + b*(d^2 + 4*d*e*x + 6*e^2*x^2)))/(e^4*(d + e*x)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^5}dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^5,x]
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^5, x]
```

fricas [A] time = 0.36, size = 116, normalized size = 1.15

$$-\frac{12\,ce^{3}x^{3}+3\,cd^{3}+bd^{2}e+ade^{2}+6\left(3\,cde^{2}+be^{3}\right)x^{2}+4\left(3\,cd^{2}e+bde^{2}+ae^{3}\right)x}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="fricas")
[Out] -1/12*(12*c*e^3*x^3 + 3*c*d^3 + b*d^2*e + a*d*e^2 + 6*(3*c*d*e^2 + b*e^3)*x
^2 + 4*(3*c*d^2*e + b*d*e^2 + a*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*
x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.16, size = 128, normalized size = 1.27

$$-\frac{1}{12}\left(\frac{12\,ce^{(-1)}}{xe+d}-\frac{18\,cde^{(-1)}}{(xe+d)^{2}}+\frac{12\,cd^{2}e^{(-1)}}{(xe+d)^{3}}-\frac{3\,cd^{3}e^{(-1)}}{(xe+d)^{4}}+\frac{6\,b}{(xe+d)^{2}}-\frac{8\,bd}{(xe+d)^{3}}+\frac{3\,bd^{2}}{(xe+d)^{4}}+\frac{4\,ae}{(xe+d)^{3}}-\frac{3\,ade}{(xe+d)^{4}}\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="giac")
[Out] -1/12*(12*c*e^(-1)/(x*e + d) - 18*c*d*e^(-1)/(x*e + d)^2 + 12*c*d^2*e^(-1)/
(x*e + d)^3 - 3*c*d^3*e^(-1)/(x*e + d)^4 + 6*b/(x*e + d)^2 - 8*b*d/(x*e + d
)^3 + 3*b*d^2/(x*e + d)^4 + 4*a*e/(x*e + d)^3 - 3*a*d*e/(x*e + d)^4)*e^(-3)
```

maple [A] time = 0.05, size = 93, normalized size = 0.92

$$-\frac{c}{(ex+d)\,e^{4}}+\frac{\left(a\,e^{2}-bde+c\,d^{2}\right)d}{4\,(ex+d)^{4}\,e^{4}}-\frac{be-3cd}{2\,(ex+d)^{2}\,e^{4}}-\frac{a\,e^{2}-2bde+3c\,d^{2}}{3\,(ex+d)^{3}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^5,x)
[Out] -c/e^4/(e*x+d)-1/2*(b*e-3*c*d)/e^4/(e*x+d)^2+1/4*d*(a*e^2-b*d*e+c*d^2)/e^4/
(e*x+d)^4-1/3*(a*e^2-2*b*d*e+3*c*d^2)/e^4/(e*x+d)^3
```

maxima [A] time = 0.47, size = 116, normalized size = 1.15

$$-\frac{12\,ce^{3}x^{3}+3\,cd^{3}+bd^{2}e+ade^{2}+6\left(3\,cde^{2}+be^{3}\right)x^{2}+4\left(3\,cd^{2}e+bde^{2}+ae^{3}\right)x}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="maxima")
[Out] -1/12*(12*c*e^3*x^3 + 3*c*d^3 + b*d^2*e + a*d*e^2 + 6*(3*c*d*e^2 + b*e^3)*x
^2 + 4*(3*c*d^2*e + b*d*e^2 + a*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*
x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.06, size = 111, normalized size = 1.10

$$-\frac{\frac{c\,x^{3}}{e}+\frac{d\,\left(3\,c\,d^{2}+b\,d\,e+a\,e^{2}\right)}{12\,e^{4}}+\frac{x\,\left(3\,c\,d^{2}+b\,d\,e+a\,e^{2}\right)}{3\,e^{3}}+\frac{x^{2}\,\left(b\,e+3\,c\,d\right)}{2\,e^{2}}}{d^{4}+4\,d^{3}\,e\,x+6\,d^{2}\,e^{2}\,x^{2}+4\,d\,e^{3}\,x^{3}+e^{4}\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^5,x)
```

```
[Out] -((c*x^3)/e + (d*(a*e^2 + 3*c*d^2 + b*d*e))/(12*e^4) + (x*(a*e^2 + 3*c*d^2
+ b*d*e))/(3*e^3) + (x^2*(b*e + 3*c*d))/(2*e^2))/(d^4 + e^4*x^4 + 4*d*e^3*x
^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [**A**] time = 2.21, size = 126, normalized size = 1.25

$$\frac{-ade^2 - bd^2e - 3cd^3 - 12ce^3x^3 + x^2\left(-6be^3 - 18cde^2\right) + x\left(-4ae^3 - 4bde^2 - 12cd^2e\right)}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**5,x)
```

```
[Out] (-a*d*e**2 - b*d**2*e - 3*c*d**3 - 12*c*e**3*x**3 + x**2*(-6*b*e**3 - 18*c*
d*e**2) + x*(-4*a*e**3 - 4*b*d*e**2 - 12*c*d**2*e))/(12*d**4*e**4 + 48*d**3
*e**5*x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.2121 $\int \frac{x(a+bx+cx^2)}{(d+ex)^6} dx$

Optimal. Leaf size=103

$$-\frac{3cd^2-e(2bd-ae)}{4e^4(d+ex)^4}+\frac{d\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{3cd-be}{3e^4(d+ex)^3}-\frac{c}{2e^4(d+ex)^2}$$

Rubi [A] time = 0.07, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{4e^4(d+ex)^4}+\frac{d\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{3cd-be}{3e^4(d+ex)^3}-\frac{c}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(5*e^4*(d + e*x)^5) - (3*c*d^2 - e*(2*b*d - a*e
))/(4*e^4*(d + e*x)^4) + (3*c*d - b*e)/(3*e^4*(d + e*x)^3) - c/(2*e^4*(d +
e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^6}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^5}+\frac{-3cd+be}{e^3(d+ex)^4}+\frac{c}{e^3(d+ex)^3}\right)dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{5e^4(d+ex)^5}-\frac{3cd^2-e(2bd-ae)}{4e^4(d+ex)^4}+\frac{3cd-be}{3e^4(d+ex)^3}-\frac{c}{2e^4(d+ex)^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.77

$$-\frac{e\left(3ae(d+5ex)+2b\left(d^2+5dex+10e^2x^2\right)\right)+3c\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(3*c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + e*(3*a*e*(d + 5*
e*x) + 2*b*(d^2 + 5*d*e*x + 10*e^2*x^2)))/(e^4*(d + e*x)^5)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^6, x]
```

fricas [A] time = 0.39, size = 132, normalized size = 1.28

$$-\frac{30\,ce^{3}x^{3} + 3\,cd^{3} + 2\,bd^{2}e + 3\,ade^{2} + 10\,\left(3\,cde^{2} + 2\,be^{3}\right)x^{2} + 5\,\left(3\,cd^{2}e + 2\,bde^{2} + 3\,ae^{3}\right)x}{60\,\left(e^{9}x^{5} + 5\,de^{8}x^{4} + 10\,d^{2}e^{7}x^{3} + 10\,d^{3}e^{6}x^{2} + 5\,d^{4}e^{5}x + d^{5}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*c*e^3*x^3 + 3*c*d^3 + 2*b*d^2*e + 3*a*d*e^2 + 10*(3*c*d*e^2 + 2*b
*e^3)*x^2 + 5*(3*c*d^2*e + 2*b*d*e^2 + 3*a*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 +
 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

giac [A] time = 0.17, size = 80, normalized size = 0.78

$$-\frac{\left(30\,cx^{3}e^{3} + 30\,cdx^{2}e^{2} + 15\,cd^{2}xe + 3\,cd^{3} + 20\,bx^{2}e^{3} + 10\,bdxe^{2} + 2\,bd^{2}e + 15\,axe^{3} + 3\,ade^{2}\right)e^{(-4)}}{60\,(xe + d)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*c*x^3*e^3 + 30*c*d*x^2*e^2 + 15*c*d^2*x*e + 3*c*d^3 + 20*b*x^2*e^
3 + 10*b*d*x*e^2 + 2*b*d^2*e + 15*a*x*e^3 + 3*a*d*e^2)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.05, size = 93, normalized size = 0.90

$$-\frac{c}{2\,(ex+d)^{2}\,e^{4}} + \frac{\left(a\,e^{2} - bde + c\,d^{2}\right)d}{5\,(ex+d)^{5}\,e^{4}} - \frac{a\,e^{2} - 2bde + 3c\,d^{2}}{4\,(ex+d)^{4}\,e^{4}} - \frac{be - 3cd}{3\,(ex+d)^{3}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^6,x)
```

```
[Out] -1/2*c/e^4/(e*x+d)^2-1/4*(a*e^2-2*b*d*e+3*c*d^2)/e^4/(e*x+d)^4+1/5*d*(a*e^2
-b*d*e+c*d^2)/e^4/(e*x+d)^5-1/3*(b*e-3*c*d)/e^4/(e*x+d)^3
```

maxima [A] time = 0.53, size = 132, normalized size = 1.28

$$-\frac{30\,ce^{3}x^{3} + 3\,cd^{3} + 2\,bd^{2}e + 3\,ade^{2} + 10\,\left(3\,cde^{2} + 2\,be^{3}\right)x^{2} + 5\,\left(3\,cd^{2}e + 2\,bde^{2} + 3\,ae^{3}\right)x}{60\,\left(e^{9}x^{5} + 5\,de^{8}x^{4} + 10\,d^{2}e^{7}x^{3} + 10\,d^{3}e^{6}x^{2} + 5\,d^{4}e^{5}x + d^{5}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*c*e^3*x^3 + 3*c*d^3 + 2*b*d^2*e + 3*a*d*e^2 + 10*(3*c*d*e^2 + 2*b
*e^3)*x^2 + 5*(3*c*d^2*e + 2*b*d*e^2 + 3*a*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 +
 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

mupad [B] time = 0.06, size = 128, normalized size = 1.24

$$-\frac{\frac{c\,x^3}{2\,e}+\frac{d\,\left(3\,c\,d^2+2\,b\,d\,e+3\,a\,e^2\right)}{60\,e^4}+\frac{x\,\left(3\,c\,d^2+2\,b\,d\,e+3\,a\,e^2\right)}{12\,e^3}+\frac{x^2\,\left(2\,b\,e+3\,c\,d\right)}{6\,e^2}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^6,x)
```

```
[Out] -((c*x^3)/(2*e) + (d*(3*a*e^2 + 3*c*d^2 + 2*b*d*e))/(60*e^4) + (x*(3*a*e^2
+ 3*c*d^2 + 2*b*d*e))/(12*e^3) + (x^2*(2*b*e + 3*c*d))/(6*e^2))/(d^5 + e^5*
x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [A] time = 3.66, size = 141, normalized size = 1.37

$$\frac{-3ade^2 - 2bd^2e - 3cd^3 - 30ce^3x^3 + x^2\left(-20be^3 - 30cde^2\right) + x\left(-15ae^3 - 10bde^2 - 15cd^2e\right)}{60d^5e^4 + 300d^4e^5x + 600d^3e^6x^2 + 600d^2e^7x^3 + 300de^8x^4 + 60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**6,x)
```

```
[Out] (-3*a*d*e**2 - 2*b*d**2*e - 3*c*d**3 - 30*c*e**3*x**3 + x**2*(-20*b*e**3 -
30*c*d*e**2) + x*(-15*a*e**3 - 10*b*d*e**2 - 15*c*d**2*e))/(60*d**5*e**4 +
300*d**4*e**5*x + 600*d**3*e**6*x**2 + 600*d**2*e**7*x**3 + 300*d*e**8*x**4
 + 60*e**9*x**5)
```

3.2122 $\int \frac{x(a+bx+cx^2)}{(d+ex)^7} dx$

Optimal. Leaf size=103

$$-\frac{3cd^2-e(2bd-ae)}{5e^4(d+ex)^5}+\frac{d\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{3cd-be}{4e^4(d+ex)^4}-\frac{c}{3e^4(d+ex)^3}$$

Rubi [A] time = 0.07, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{5e^4(d+ex)^5}+\frac{d\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{3cd-be}{4e^4(d+ex)^4}-\frac{c}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(6*e^4*(d + e*x)^6) - (3*c*d^2 - e*(2*b*d - a*e
))/(5*e^4*(d + e*x)^5) + (3*c*d - b*e)/(4*e^4*(d + e*x)^4) - c/(3*e^4*(d +
e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^7}\,dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^7}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^6}+\frac{-3cd+be}{e^3(d+ex)^5}+\frac{c}{e^3(d+ex)^4}\right)dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{6e^4(d+ex)^6}-\frac{3cd^2-e(2bd-ae)}{5e^4(d+ex)^5}+\frac{3cd-be}{4e^4(d+ex)^4}-\frac{c}{3e^4(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 77, normalized size = 0.75

$$-\frac{e\left(2ae(d+6ex)+b\left(d^2+6dex+15e^2x^2\right)\right)+c\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(c*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + e*(2*a*e*(d + 6*e*
x) + b*(d^2 + 6*d*e*x + 15*e^2*x^2)))/(e^4*(d + e*x)^6)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^7}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] IntegrateAlgebraic[(x*(a + b*x + c*x^2))/(d + e*x)^7, x]
```

fricas [A] time = 0.37, size = 137, normalized size = 1.33

$$-\frac{20\,ce^{3}x^{3}+cd^{3}+bd^{2}e+2\,ade^{2}+15\left(cde^{2}+be^{3}\right)x^{2}+6\left(cd^{2}e+bde^{2}+2\,ae^{3}\right)x}{60\left(e^{10}x^{6}+6\,de^{9}x^{5}+15\,d^{2}e^{8}x^{4}+20\,d^{3}e^{7}x^{3}+15\,d^{4}e^{6}x^{2}+6\,d^{5}e^{5}x+d^{6}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*c*e^3*x^3 + c*d^3 + b*d^2*e + 2*a*d*e^2 + 15*(c*d*e^2 + b*e^3)*x^
2 + 6*(c*d^2*e + b*d*e^2 + 2*a*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8
*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.15, size = 78, normalized size = 0.76

$$-\frac{\left(20\,cx^{3}e^{3}+15\,cdx^{2}e^{2}+6\,cd^{2}xe+cd^{3}+15\,bx^{2}e^{3}+6\,bdxe^{2}+bd^{2}e+12\,axe^{3}+2\,ade^{2}\right)e^{(-4)}}{60\,(xe+d)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*c*x^3*e^3 + 15*c*d*x^2*e^2 + 6*c*d^2*x*e + c*d^3 + 15*b*x^2*e^3 +
 6*b*d*x*e^2 + b*d^2*e + 12*a*x*e^3 + 2*a*d*e^2)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 93, normalized size = 0.90

$$-\frac{c}{3\,(ex+d)^{3}\,e^{4}}+\frac{\left(a\,e^{2}-bde+c\,d^{2}\right)d}{6\,(ex+d)^{6}\,e^{4}}-\frac{be-3cd}{4\,(ex+d)^{4}\,e^{4}}-\frac{a\,e^{2}-2bde+3c\,d^{2}}{5\,(ex+d)^{5}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^7,x)
```

```
[Out] -1/4*(b*e-3*c*d)/e^4/(e*x+d)^4+1/6*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^6-1/5*
(a*e^2-2*b*d*e+3*c*d^2)/e^4/(e*x+d)^5-1/3*c/e^4/(e*x+d)^3
```

maxima [A] time = 0.62, size = 137, normalized size = 1.33

$$-\frac{20\,ce^{3}x^{3}+cd^{3}+bd^{2}e+2\,ade^{2}+15\left(cde^{2}+be^{3}\right)x^{2}+6\left(cd^{2}e+bde^{2}+2\,ae^{3}\right)x}{60\left(e^{10}x^{6}+6\,de^{9}x^{5}+15\,d^{2}e^{8}x^{4}+20\,d^{3}e^{7}x^{3}+15\,d^{4}e^{6}x^{2}+6\,d^{5}e^{5}x+d^{6}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*c*e^3*x^3 + c*d^3 + b*d^2*e + 2*a*d*e^2 + 15*(c*d*e^2 + b*e^3)*x^
2 + 6*(c*d^2*e + b*d*e^2 + 2*a*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8
*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

mupad [B] time = 2.35, size = 133, normalized size = 1.29

$$-\frac{\frac{c\,x^{3}}{3\,e}+\frac{d\left(c\,d^{2}+b\,d\,e+2\,a\,e^{2}\right)}{60\,e^{4}}+\frac{x\left(c\,d^{2}+b\,d\,e+2\,a\,e^{2}\right)}{10\,e^{3}}+\frac{x^{2}\,(b\,e+c\,d)}{4\,e^{2}}}{d^{6}+6\,d^{5}\,e\,x+15\,d^{4}\,e^{2}\,x^{2}+20\,d^{3}\,e^{3}\,x^{3}+15\,d^{2}\,e^{4}\,x^{4}+6\,d\,e^{5}\,x^{5}+e^{6}\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^7,x)
```

```
[Out] -((c*x^3)/(3*e) + (d*(2*a*e^2 + c*d^2 + b*d*e))/(60*e^4) + (x*(2*a*e^2 + c*
d^2 + b*d*e))/(10*e^3) + (x^2*(b*e + c*d))/(4*e^2))/(d^6 + e^6*x^6 + 6*d*e^
5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [A] time = 5.83, size = 150, normalized size = 1.46

$$\frac{-2ade^2 - bd^2e - cd^3 - 20ce^3x^3 + x^2\left(-15be^3 - 15cde^2\right) + x\left(-12ae^3 - 6bde^2 - 6cd^2e\right)}{60d^6e^4 + 360d^5e^5x + 900d^4e^6x^2 + 1200d^3e^7x^3 + 900d^2e^8x^4 + 360de^9x^5 + 60e^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**7,x)
```

```
[Out] (-2*a*d*e**2 - b*d**2*e - c*d**3 - 20*c*e**3*x**3 + x**2*(-15*b*e**3 - 15*c
*d*e**2) + x*(-12*a*e**3 - 6*b*d*e**2 - 6*c*d**2*e))/(60*d**6*e**4 + 360*d*
*5*e**5*x + 900*d**4*e**6*x**2 + 1200*d**3*e**7*x**3 + 900*d**2*e**8*x**4 +
 360*d*e**9*x**5 + 60*e**10*x**6)
```

3.2123 $\int \frac{(A+Bx)(d+ex)^3}{a+bx+cx^2}\,dx$

Optimal. Leaf size=357

$$\frac{ex\left(B\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(3cd-be)\right)}{c^3}+\frac{\log\left(a+bx+cx^2\right)\left(Ace\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right.\right.}{}$$

Rubi [A] time = 0.65, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$\frac{\log\left(a+bx+cx^2\right)\left(Ace\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+B\left(-3c^2de(ae+bd)+bce^2(2ae+3bd)-b^3e^3+c^3d^3\right)\right)}{2c^4}+\frac{ex\left(B\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(3cd-be)\right)}{c^3}-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(b^2ce\left(-4aBe^2+3Acde+3Bcd^2\right)-bc^2\left(-3aAe^3-9aBde^2+3Acd^2e+Bcd^3\right)+2c^2\left(Acd\left(cd^2-3ae^2\right)-aBe\left(3cd^2-ae^2\right)\right)-b^3ce^2(Ae+3Bd)+b^4Be^3\right)}{c^4\sqrt{b^2-4ac}}+\frac{e^2x^2(Ace-bBe+3Bcd)}{2c^2}+\frac{Be^3x^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(A*c*e*(3*c*d - b*e) + B*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e)))*x)/c
^3 + (e^2*(3*B*c*d - b*B*e + A*c*e)*x^2)/(2*c^2) + (B*e^3*x^3)/(3*c) - ((b^
4*B*e^3 - b^3*c*e^2*(3*B*d + A*e) + b^2*c*e*(3*B*c*d^2 + 3*A*c*d*e - 4*a*B*
e^2) - b*c^2*(B*c*d^3 + 3*A*c*d^2*e - 9*a*B*d*e^2 - 3*a*A*e^3) + 2*c^2*(A*c
*d*(c*d^2 - 3*a*e^2) - a*B*e*(3*c*d^2 - a*e^2)))*ArcTanh[(b + 2*c*x)/Sqrt[b
^2 - 4*a*c]])/(c^4*Sqrt[b^2 - 4*a*c]) + ((A*c*e*(3*c^2*d^2 + b^2*e^2 - c*e*
(3*b*d + a*e)) + B*(c^3*d^3 - b^3*e^3 - 3*c^2*d*e*(b*d + a*e) + b*c*e^2*(3*
b*d + 2*a*e)))*Log[a + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{a+bx+cx^2}\,dx = \int \left(\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)}{c^3} + \frac{e^2(3Bcd-bBe+Ace)x}{c^2} + \right.$$

$$= \frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3} + \frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2} + $$

$$= \frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3} + \frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2} + $$

$$= \frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3} + \frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2} + $$

$$= \frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3} + \frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2} + $$

Mathematica [A] time = 0.29, size = 352, normalized size = 0.99

$$\frac{6cex\left(B\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(3cd-be)\right)+3\log(a+x(b+cx))\left(Ace\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+B\left(-3c^2de(ae+bd)+bce^2(2ae+3bd)-b^3e^3+c^3d^3\right)\right)+\frac{6\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(b^2ce\left(-4aBe^2+3Acde+3Bcd^2\right)+bc^2\left(3aAe^3+9aBde^2-3Acd^2e-Bcd^3\right)+2c^2\left(Acd\left(cd^2-3ae^2\right)+aBe\left(ae^2-3cd^2\right)\right)-b^3ce^2(Ae+3Bd)+b^4Be^3\right)}{\sqrt{4ac-b^2}}+3c^2e^2x^2(Ace-bBe+3Bcd)+2Bc^3e^3x^3}{6c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (6*c*e*(A*c*e*(3*c*d - b*e) + B*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e)))*
x + 3*c^2*e^2*(3*B*c*d - b*B*e + A*c*e)*x^2 + 2*B*c^3*e^3*x^3 + (6*(b^4*B*e
^3 - b^3*c*e^2*(3*B*d + A*e) + b^2*c*e*(3*B*c*d^2 + 3*A*c*d*e - 4*a*B*e^2)
+ b*c^2*(-(B*c*d^3) - 3*A*c*d^2*e + 9*a*B*d*e^2 + 3*a*A*e^3) + 2*c^2*(A*c*d
*(c*d^2 - 3*a*e^2) + a*B*e*(-3*c*d^2 + a*e^2)))*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 3*(A*c*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*
d + a*e)) + B*(c^3*d^3 - b^3*e^3 - 3*c^2*d*e*(b*d + a*e) + b*c*e^2*(3*b*d +
 2*a*e)))*Log[a + x*(b + c*x)])/(6*c^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.54, size = 1139, normalized size = 3.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*(B*b^2*c^3 - 4*B*a*c^4)*e^3*x^3 + 3*(3*(B*b^2*c^3 - 4*B*a*c^4)*d*e^
2 - (B*b^3*c^2 + 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)*e^3)*x^2 - 3*((B*b*c^3
- 2*A*c^4)*d^3 - 3*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d^2*e + 3*(B*b^3*c + 2*A
*a*c^3 - (3*B*a*b + A*b^2)*c^2)*d*e^2 - (B*b^4 + (2*B*a^2 + 3*A*a*b)*c^2 -
(4*B*a*b^2 + A*b^3)*c)*e^3)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^
2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 6*(3*(B*b^2
*c^3 - 4*B*a*c^4)*d^2*e - 3*(B*b^3*c^2 + 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)
*d*e^2 + (B*b^4*c + 4*(B*a^2 + A*a*b)*c^3 - (5*B*a*b^2 + A*b^3)*c^2)*e^3)*x
```

```
 + 3*((B*b^2*c^3 - 4*B*a*c^4)*d^3 - 3*(B*b^3*c^2 + 4*A*a*c^4 - (4*B*a*b + A
*b^2)*c^3)*d^2*e + 3*(B*b^4*c + 4*(B*a^2 + A*a*b)*c^3 - (5*B*a*b^2 + A*b^3)
*c^2)*d*e^2 - (B*b^5 - 4*A*a^2*c^3 + (8*B*a^2*b + 5*A*a*b^2)*c^2 - (6*B*a*b
^3 + A*b^4)*c)*e^3)*log(c*x^2 + b*x + a))/(b^2*c^4 - 4*a*c^5), 1/6*(2*(B*b^
2*c^3 - 4*B*a*c^4)*e^3*x^3 + 3*(3*(B*b^2*c^3 - 4*B*a*c^4)*d*e^2 - (B*b^3*c^
2 + 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)*e^3)*x^2 + 6*((B*b*c^3 - 2*A*c^4)*d^
3 - 3*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d^2*e + 3*(B*b^3*c + 2*A*a*c^3 - (3*B
*a*b + A*b^2)*c^2)*d*e^2 - (B*b^4 + (2*B*a^2 + 3*A*a*b)*c^2 - (4*B*a*b^2 +
A*b^3)*c)*e^3)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b
^2 - 4*a*c)) + 6*(3*(B*b^2*c^3 - 4*B*a*c^4)*d^2*e - 3*(B*b^3*c^2 + 4*A*a*c^
4 - (4*B*a*b + A*b^2)*c^3)*d*e^2 + (B*b^4*c + 4*(B*a^2 + A*a*b)*c^3 - (5*B*
a*b^2 + A*b^3)*c^2)*e^3)*x + 3*((B*b^2*c^3 - 4*B*a*c^4)*d^3 - 3*(B*b^3*c^2
+ 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)*d^2*e + 3*(B*b^4*c + 4*(B*a^2 + A*a*b)
*c^3 - (5*B*a*b^2 + A*b^3)*c^2)*d*e^2 - (B*b^5 - 4*A*a^2*c^3 + (8*B*a^2*b +
 5*A*a*b^2)*c^2 - (6*B*a*b^3 + A*b^4)*c)*e^3)*log(c*x^2 + b*x + a))/(b^2*c^
4 - 4*a*c^5)]
```

giac [**A**]   time = 0.18, size = 402, normalized size = 1.13

$$\frac{2Bc^2x^3e^3 + 9Bc^2dx^2e^2 + 18Bc^2d^2xe - 3Bbcx^2e^3 + 3Ac^2x^2e^3 - 18Bbcdxe^2 + 18Ac^2dxe^2 + 6Bb^2xe^3 - 6Bacxe^3 - 6Abcxe^3}{6c^3} + \frac{\left(Bc^3d^3 - 3Bbc^2d^2e + 3Ac^3d^2e + 3Bb^2cde^2 - 3Bac^2de^2 - 3Abc^2de^2 - Bb^3e^3 + 2Babce^3 + Ab^2ce^3 - Aac^2e^3\right)\log\left(cx^2 + bx + a\right)}{2c^4} - \frac{\left(Bbc^3d^3 - 2Ac^4d^3 - 3Bb^2c^2d^2e + 6Bac^3d^2e + 3Abc^3d^2e + 3Bb^3cde^2 - 9Babc^2de^2 - 3Ab^2c^2de^2 + 6Aac^3de^2 - Bb^4e^3 + 4Bab^2ce^3 + Ab^3ce^3 - 2Ba^2c^2e^3 - 3Aabc^2e^3\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\sqrt{-b^2+4ac}\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*(2*B*c^2*x^3*e^3 + 9*B*c^2*d*x^2*e^2 + 18*B*c^2*d^2*x*e - 3*B*b*c*x^2*e
^3 + 3*A*c^2*x^2*e^3 - 18*B*b*c*d*x*e^2 + 18*A*c^2*d*x*e^2 + 6*B*b^2*x*e^3
- 6*B*a*c*x*e^3 - 6*A*b*c*x*e^3)/c^3 + 1/2*(B*c^3*d^3 - 3*B*b*c^2*d^2*e + 3
*A*c^3*d^2*e + 3*B*b^2*c*d*e^2 - 3*B*a*c^2*d*e^2 - 3*A*b*c^2*d*e^2 - B*b^3*
e^3 + 2*B*a*b*c*e^3 + A*b^2*c*e^3 - A*a*c^2*e^3)*log(c*x^2 + b*x + a)/c^4 -
 (B*b*c^3*d^3 - 2*A*c^4*d^3 - 3*B*b^2*c^2*d^2*e + 6*B*a*c^3*d^2*e + 3*A*b*c
^3*d^2*e + 3*B*b^3*c*d*e^2 - 9*B*a*b*c^2*d*e^2 - 3*A*b^2*c^2*d*e^2 + 6*A*a*
c^3*d*e^2 - B*b^4*e^3 + 4*B*a*b^2*c*e^3 + A*b^3*c*e^3 - 2*B*a^2*c^2*e^3 - 3
*A*a*b*c^2*e^3)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*
c^4)
```

maple [**B**]   time = 0.05, size = 946, normalized size = 2.65

$$\frac{Be^3x^3}{3c} + \frac{3Aabe^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{6Aade^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} - \frac{Ab^3e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3} + \frac{3Ab^2de^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{3Abd^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} + \frac{Ae^3x^2}{2c} + \frac{2Ad^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{2Ba^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{4Bab^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3} + \frac{9Babde^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{6Bad^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} + \frac{Bb^4e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^4} - \frac{3Bb^3de^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3} + \frac{3Bb^2d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{Bbd^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} - \frac{Bbe^3x^2}{2c^2} + \frac{3Bde^2x^2}{2c} - \frac{Aae^3\ln\left(cx^2+bx+a\right)}{2c^2} + \frac{Ab^2e^3\ln\left(cx^2+bx+a\right)}{2c^3} - \frac{3Abde^2\ln\left(cx^2+bx+a\right)}{2c^2} - \frac{Abe^3x}{c^2} + \frac{3Ad^2e\ln\left(cx^2+bx+a\right)}{2c} + \frac{3Ade^2x}{c} + \frac{Babe^3\ln\left(cx^2+bx+a\right)}{c^3} - \frac{3Bade^2\ln\left(cx^2+bx+a\right)}{2c^2} - \frac{Bae^3x}{c^2} - \frac{Bb^3e^3\ln\left(cx^2+bx+a\right)}{2c^4} + \frac{3Bb^2de^2\ln\left(cx^2+bx+a\right)}{2c^3} + \frac{Bb^2e^3x}{c^3} - \frac{3Bbd^2e\ln\left(cx^2+bx+a\right)}{2c^2} - \frac{3Bbde^2x}{c^2} + \frac{Bd^3\ln\left(cx^2+bx+a\right)}{2c} + \frac{3Bd^2ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/c*ln(c*x^2+b*x+a)*B*d^3+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*A*d^3+1/2*e^3/c*A*x^2+1/2/c^3*ln(c*x^2+b*x+a)*A*b^2*e^3-1/c^3/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b^3*e^3+1/c^4/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*B*e^3-1/c/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*B*d^3-3/2/c^2*ln(c*x^2+b*x+a)*A*b*d
*e^2+1/c^3*ln(c*x^2+b*x+a)*a*b*B*e^3-3/2/c^2*ln(c*x^2+b*x+a)*B*d*a*e^2+3/2/
c^3*ln(c*x^2+b*x+a)*B*d*b^2*e^2+9/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*B*a*b*d*e^2+3*e^2/c*A*x*d+e^3/c^3*B*b^2*x+3*e/c*B*d^2*x-1/
2/c^2*ln(c*x^2+b*x+a)*A*a*e^3-1/2/c^4*ln(c*x^2+b*x+a)*b^3*B*e^3+3/2/c*ln(c*
x^2+b*x+a)*A*d^2*e-1/2*e^3/c^2*B*x^2*b+3/2*e^2/c*B*x^2*d-e^3/c^2*B*x*a-e^3/
c^2*A*b*x-3/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*B
*d*e^2+3/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*B*d^
2*e-3*e^2/c^2*B*b*d*x-3/2/c^2*ln(c*x^2+b*x+a)*B*b*d^2*e+2/c^2/(4*a*c-b^2)^(
1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a^2*e^3+3/c^2/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*A*d*e^2+3/c^2/(4*a*c-b^2)^(1/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*b*e^3-3/c/(4*a*c-b^2)^(1/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*b*A*d^2*e-6/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/
```

```
(4*a*c-b^2)^(1/2))*A*a*d*e^2-4/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*B*a*b^2*e^3-6/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*B*a*d^2*e+1/3*B/c*e^3*x^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.11, size = 539, normalized size = 1.51

$$x^2\left(\frac{Ae^3+3Bde^2}{2c}-\frac{Bbe^3}{2c^2}\right)-x\left(\frac{b\left(\frac{Ae^3+3Bde^2}{c}-\frac{Bbe^3}{c^2}\right)}{c}-\frac{3de\,(Ae+Bd)}{c}+\frac{Bae^3}{c^2}\right)-\frac{\ln\left(cx^2+bx+a\right)\left(-8Ba^2bc^2e^3+12Ba^2c^3de^2+4Aa^2c^3e^3+6Bab^3ce^3-15Bab^2c^2de^2-5Aab^2c^2e^3+12Babc^3d^2e+12Aabc^3de^2-4Bac^4d^3-12Aac^4d^2e-Bb^5e^3+3Bb^4cde^2+Ab^4ce^3-3Bb^3c^2d^2e-3Ab^3c^2de^2+Bb^2c^3d^3+3Ab^2c^3d^2e\right)}{2\left(4ac^5-b^2c^4\right)}+\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4ac-b^2}}+\frac{2cx}{\sqrt{4ac-b^2}}\right)\left(2Ba^2c^2e^3-4Bab^2ce^3+9Babc^2de^2+3Aabc^2e^3-6Bac^3d^2e-6Aac^3de^2+Bb^4e^3-3Bb^3cde^2-Ab^3ce^3+3Bb^2c^2d^2e+3Ab^2c^2de^2-Bbc^3d^3-3Abc^3d^2e+2Ac^4d^3\right)}{c^4\sqrt{4ac-b^2}}+\frac{Be^3x^3}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*e^3 + 3*B*d*e^2)/(2*c) - (B*b*e^3)/(2*c^2)) - x*((b*((A*e^3 + 3*B*d
*e^2)/c - (B*b*e^3)/c^2))/c - (3*d*e*(A*e + B*d))/c + (B*a*e^3)/c^2) - (log
(a + b*x + c*x^2)*(A*b^4*c*e^3 - 4*B*a*c^4*d^3 - B*b^5*e^3 + 4*A*a^2*c^3*e^
3 + B*b^2*c^3*d^3 - 5*A*a*b^2*c^2*e^3 - 8*B*a^2*b*c^2*e^3 + 3*A*b^2*c^3*d^2
*e - 3*A*b^3*c^2*d*e^2 + 12*B*a^2*c^3*d*e^2 - 3*B*b^3*c^2*d^2*e + 6*B*a*b^3
*c*e^3 - 12*A*a*c^4*d^2*e + 3*B*b^4*c*d*e^2 + 12*A*a*b*c^3*d*e^2 + 12*B*a*b
*c^3*d^2*e - 15*B*a*b^2*c^2*d*e^2))/(2*(4*a*c^5 - b^2*c^4)) + (atan(b/(4*a*
c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(2*A*c^4*d^3 + B*b^4*e^3 - A*
b^3*c*e^3 - B*b*c^3*d^3 + 2*B*a^2*c^2*e^3 + 3*A*b^2*c^2*d*e^2 + 3*B*b^2*c^2
*d^2*e + 3*A*a*b*c^2*e^3 - 4*B*a*b^2*c*e^3 - 6*A*a*c^3*d*e^2 - 3*A*b*c^3*d^
2*e - 6*B*a*c^3*d^2*e - 3*B*b^3*c*d*e^2 + 9*B*a*b*c^2*d*e^2))/(c^4*(4*a*c -
 b^2)^(1/2)) + (B*e^3*x^3)/(3*c)
```

sympy [B] time = 25.81, size = 2759, normalized size = 7.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] B*e**3*x**3/(3*c) + x**2*(A*e**3/(2*c) - B*b*e**3/(2*c**2) + 3*B*d*e**2/(2*
c)) + x*(-A*b*e**3/c**2 + 3*A*d*e**2/c - B*a*e**3/c**2 + B*b**2*e**3/c**3 -
 3*B*b*d*e**2/c**2 + 3*B*d**2*e/c) + (-sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e*
*3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*
d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c
**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2
*c**2*d**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A
*b**2*c*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a
*c**2*d*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3
*d**3)/(2*c**4))*log(x + (2*A*a**2*c**2*e**3 - A*a*b**2*c*e**3 + 3*A*a*b*c*
*2*d*e**2 - 6*A*a*c**3*d**2*e + A*b*c**3*d**3 - 3*B*a**2*b*c*e**3 + 6*B*a**
2*c**2*d*e**2 + B*a*b**3*e**3 - 3*B*a*b**2*c*d*e**2 + 3*B*a*b*c**2*d**2*e -
 2*B*a*c**3*d**3 + 4*a*c**4*(-sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e**3 - 6*A*
a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*d**2*e +
2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e**
2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d**
2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A*b**2*c*e
```

```
**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a*c**2*d*e
**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3*d**3)/(2
*c**4)) - b**2*c**3*(-sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e**3 - 6*A*a*c**3*d
*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*d**2*e + 2*A*c**4
*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e**2 - 6*B*
a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d**2*e - B*
b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A*b**2*c*e**3 - 3*
A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a*c**2*d*e**2 - B*
b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3*d**3)/(2*c**4)))
/(3*A*a*b*c**2*e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e
**2 - 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c
*e**3 + 9*B*a*b*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*
d*e**2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3)) + (sqrt(-4*a*c + b**2)*(3*A
*a*b*c**2*e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 -
 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3
 + 9*B*a*b*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**
2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c
**2*e**3 + A*b**2*c*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*
e**3 - 3*B*a*c**2*d*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**
2*e + B*c**3*d**3)/(2*c**4))*log(x + (2*A*a**2*c**2*e**3 - A*a*b**2*c*e**3
+ 3*A*a*b*c**2*d*e**2 - 6*A*a*c**3*d**2*e + A*b*c**3*d**3 - 3*B*a**2*b*c*e*
*3 + 6*B*a**2*c**2*d*e**2 + B*a*b**3*e**3 - 3*B*a*b**2*c*d*e**2 + 3*B*a*b*c
**2*d**2*e - 2*B*a*c**3*d**3 + 4*a*c**4*(sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*
e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**
3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b
*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b*
*2*c**2*d**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 +
 A*b**2*c*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B
*a*c**2*d*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c*
*3*d**3)/(2*c**4)) - b**2*c**3*(sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e**3 - 6*
A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*d**2*e
+ 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e
**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d
**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A*b**2*c
*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a*c**2*d
*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3*d**3)/
(2*c**4)))/(3*A*a*b*c**2*e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**
2*c**2*d*e**2 - 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*
B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3
*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3))
```

3.2124 $\int \frac{(A+Bx)(d+ex)^2}{a+bx+cx^2} dx$

Optimal. Leaf size=205

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(-ce(ae+2bd)+b^2e^2+c^2d^2\right)+Ace(2cd-be)\right)}{2c^3}+\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(bc\left(-3aBe^2+2Acde+\right.\right.}{}$$

Rubi [A] time = 0.37, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(-ce(ae+2bd)+b^2e^2+c^2d^2\right)+Ace(2cd-be)\right)}{2c^3}+\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(bc\left(-3aBe^2+2Acde+Bcd^2\right)-2c^2\left(-aAe^2-2aBde+Acd^2\right)-b^2ce(Ae+2Bd)+b^3Be^2\right)}{c^3\sqrt{b^2-4ac}}+\frac{ex(Ace-bBe+2Bcd)}{c^2}+\frac{Be^2x^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(2*B*c*d - b*B*e + A*c*e)*x)/c^2 + (B*e^2*x^2)/(2*c) + ((b^3*B*e^2 - b^2
*c*e*(2*B*d + A*e) - 2*c^2*(A*c*d^2 - 2*a*B*d*e - a*A*e^2) + b*c*(B*c*d^2 +
 2*A*c*d*e - 3*a*B*e^2))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*Sqrt[
b^2 - 4*a*c]) + ((A*c*e*(2*c*d - b*e) + B*(c^2*d^2 + b^2*e^2 - c*e*(2*b*d +
 a*e)))*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{a+bx+cx^2}\,dx = \int \left(\frac{e(2Bcd-bBe+Ace)}{c^2}+\frac{Be^2x}{c}+\frac{-aBe(2cd-be)+Ac\left(cd^2-ae^2\right)+\left(Ace(2cd-\right.}{c^2\left(a+bx+\right.}\right.$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2}+\frac{Be^2x^2}{2c}+\frac{\int \frac{-aBe(2cd-be)+Ac\left(cd^2-ae^2\right)+\left(Ace(2cd-be)+B\left(c^2d^2+b^2e^2-ce\right.\right.}{a+bx+cx^2}}{c^2}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2}+\frac{Be^2x^2}{2c}-\frac{\left(b^3Be^2-b^2ce(2Bd+Ae)-2c^2\left(Acd^2-2aBde-\right.\right.}{2}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2}+\frac{Be^2x^2}{2c}+\frac{\left(Ace(2cd-be)+B\left(c^2d^2+b^2e^2-ce(2bd+ae)\right)\right)}{2c^3}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2}+\frac{Be^2x^2}{2c}+\frac{\left(b^3Be^2-b^2ce(2Bd+Ae)-2c^2\left(Acd^2-2aBde-\right.\right.}{c^3}$$

Mathematica [A] time = 0.17, size = 203, normalized size = 0.99

$$\frac{\log(a+x(b+cx))\left(B\left(-ce(ae+2bd)+b^2e^2+c^2d^2\right)+Ace(2cd-be)\right)-\frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(bc\left(-3aBe^2+2Acde+Bcd^2\right)+2c^2\left(aAe^2+2aBde-Acd^2\right)-b^2ce(Ae+2Bd)+b^3Be^2\right)}{\sqrt{4ac-b^2}}+2cex(Ace-bBe+2Bcd)+Bc^2e^2x^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*e*(2*B*c*d - b*B*e + A*c*e)*x + B*c^2*e^2*x^2 - (2*(b^3*B*e^2 - b^2*c*
e*(2*B*d + A*e) + 2*c^2*(-(A*c*d^2) + 2*a*B*d*e + a*A*e^2) + b*c*(B*c*d^2 +
 2*A*c*d*e - 3*a*B*e^2))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2
+ 4*a*c] + (A*c*e*(2*c*d - b*e) + B*(c^2*d^2 + b^2*e^2 - c*e*(2*b*d + a*e))
)*Log[a + x*(b + c*x)])/(2*c^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.45, size = 673, normalized size = 3.28

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 + ((B*b*c^2 - 2*A*c^3)*d^2 - 2*(B*b^2
*c - (2*B*a + A*b)*c^2)*d*e + (B*b^3 + 2*A*a*c^2 - (3*B*a*b + A*b^2)*c)*e^2
)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a
*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(2*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (B
*b^3*c + 4*A*a*c^3 - (4*B*a*b + A*b^2)*c^2)*e^2)*x + ((B*b^2*c^2 - 4*B*a*c^
3)*d^2 - 2*(B*b^3*c + 4*A*a*c^3 - (4*B*a*b + A*b^2)*c^2)*d*e + (B*b^4 + 4*(
B*a^2 + A*a*b)*c^2 - (5*B*a*b^2 + A*b^3)*c)*e^2)*log(c*x^2 + b*x + a))/(b^2
*c^3 - 4*a*c^4), 1/2*((B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 + 2*((B*b*c^2 - 2*A*c
^3)*d^2 - 2*(B*b^2*c - (2*B*a + A*b)*c^2)*d*e + (B*b^3 + 2*A*a*c^2 - (3*B*a
*b + A*b^2)*c)*e^2)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x +
```

```
b)/(b^2 - 4*a*c)) + 2*(2*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (B*b^3*c + 4*A*a*c^3
 - (4*B*a*b + A*b^2)*c^2)*e^2)*x + ((B*b^2*c^2 - 4*B*a*c^3)*d^2 - 2*(B*b^3*
c + 4*A*a*c^3 - (4*B*a*b + A*b^2)*c^2)*d*e + (B*b^4 + 4*(B*a^2 + A*a*b)*c^2
 - (5*B*a*b^2 + A*b^3)*c)*e^2)*log(c*x^2 + b*x + a))/(b^2*c^3 - 4*a*c^4)]
```

giac [A] time = 0.16, size = 219, normalized size = 1.07

$$\frac{Bcx^2e^2 + 4\,Bcdxe - 2\,Bbxe^2 + 2\,Acxe^2}{2\,c^2} + \frac{\left(Bc^2d^2 - 2\,Bbcde + 2\,Ac^2de + Bb^2e^2 - Bace^2 - Abce^2\right)\log\left(cx^2 + bx + a\right)}{2\,c^3} - \frac{\left(Bbc^2d^2 - 2\,Ac^3d^2 - 2\,Bb^2cde + 4\,Bac^2de + 2\,Abc^2de + Bb^3e^2 - 3\,Babce^2 - Ab^2ce^2 + 2\,Aac^2e^2\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2 + 4\,ac}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c*x^2*e^2 + 4*B*c*d*x*e - 2*B*b*x*e^2 + 2*A*c*x*e^2)/c^2 + 1/2*(B*c^
2*d^2 - 2*B*b*c*d*e + 2*A*c^2*d*e + B*b^2*e^2 - B*a*c*e^2 - A*b*c*e^2)*log(
c*x^2 + b*x + a)/c^3 - (B*b*c^2*d^2 - 2*A*c^3*d^2 - 2*B*b^2*c*d*e + 4*B*a*c
^2*d*e + 2*A*b*c^2*d*e + B*b^3*e^2 - 3*B*a*b*c*e^2 - A*b^2*c*e^2 + 2*A*a*c^
2*e^2)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^3)
```

maple [B] time = 0.05, size = 543, normalized size = 2.65

$$-\frac{2Aa\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} + \frac{A\,b^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{2Abde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} + \frac{2A\,d^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{3Bab\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{4Bade\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} - \frac{B\,b^3e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3} + \frac{2B\,b^2de\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2} - \frac{Bb\,d^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c} + \frac{B\,e^2x^2}{2c} - \frac{Ab\,e^2\ln\left(c\,x^2+bx+a\right)}{2c^2} + \frac{Ade\ln\left(c\,x^2+bx+a\right)}{c} + \frac{A\,e^2x}{c} - \frac{Ba\,e^2\ln\left(c\,x^2+bx+a\right)}{2c^2} + \frac{B\,b^2e^2\ln\left(c\,x^2+bx+a\right)}{2c^3} - \frac{Bbde\ln\left(c\,x^2+bx+a\right)}{c^2} - \frac{Bb\,e^2x}{c^2} + \frac{B\,d^2\ln\left(c\,x^2+bx+a\right)}{2c} + \frac{2Bdex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*B/c*e^2*x^2+1/c*e^2*A*x-1/c^2*e^2*B*b*x+2/c*e*B*d*x-1/2/c^2*ln(c*x^2+b*
x+a)*A*b*e^2+1/c*ln(c*x^2+b*x+a)*A*d*e-1/2/c^2*ln(c*x^2+b*x+a)*a*B*e^2+1/2/
c^3*ln(c*x^2+b*x+a)*b^2*B*e^2-1/c^2*ln(c*x^2+b*x+a)*B*b*d*e+1/2/c*ln(c*x^2+
b*x+a)*B*d^2-2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*
e^2+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*d^2+3/c^2/(4*
a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*b*e^2-4/c/(4*a*c-b^2
)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*d*e+1/c^2/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b^2*e^2-2/c/(4*a*c-b^2)^(1/2)*arctan
((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b*d*e-1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*b^3*B*e^2+2/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*B*b^2*d*e-1/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*B*b*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.78, size = 316, normalized size = 1.54

$$x\left(\frac{A\,e^2+2\,B\,d\,e}{c}-\frac{B\,b\,e^2}{c^2}\right)-\frac{\ln\left(c\,x^2+b\,x+a\right)\left(4\,B\,a^2\,c^2\,e^2-5\,B\,a\,b^2\,c\,e^2+8\,B\,a\,b\,c^2\,d\,e+4\,A\,a\,b\,c^2\,e^2-4\,B\,a\,c^3\,d^2-8\,A\,a\,c^3\,d\,e+B\,b^4\,e^2-2\,B\,b^3\,c\,d\,e-A\,b^3\,c\,e^2+B\,b^2\,c^2\,d^2+2\,A\,b^2\,c^2\,d\,e\right)}{2\,\left(4\,a\,c^4-b^2\,c^3\right)}-\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\left(B\,b^3\,e^2-2\,B\,b^2\,c\,d\,e-A\,b^2\,c\,e^2+B\,b\,c^2\,d^2+2\,A\,b\,c^2\,d\,e-3\,B\,a\,b\,c\,e^2-2\,A\,c^3\,d^2+4\,B\,a\,c^2\,d\,e+2\,A\,a\,c^2\,e^2\right)}{c^3\,\sqrt{4\,a\,c-b^2}}+\frac{B\,e^2\,x^2}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x)
```

```
[Out] x*((A*e^2 + 2*B*d*e)/c - (B*b*e^2)/c^2) - (log(a + b*x + c*x^2)*(B*b^4*e^2
- 4*B*a*c^3*d^2 - A*b^3*c*e^2 + 4*B*a^2*c^2*e^2 + B*b^2*c^2*d^2 - 8*A*a*c^3
```

```
*d*e - 2*B*b^3*c*d*e + 4*A*a*b*c^2*e^2 - 5*B*a*b^2*c*e^2 + 2*A*b^2*c^2*d*e
+ 8*B*a*b*c^2*d*e))/(2*(4*a*c^4 - b^2*c^3)) - (atan(b/(4*a*c - b^2)^(1/2) +
 (2*c*x)/(4*a*c - b^2)^(1/2))*(B*b^3*e^2 - 2*A*c^3*d^2 + 2*A*a*c^2*e^2 - A*
b^2*c*e^2 + B*b*c^2*d^2 - 3*B*a*b*c*e^2 + 2*A*b*c^2*d*e + 4*B*a*c^2*d*e - 2
*B*b^2*c*d*e))/(c^3*(4*a*c - b^2)^(1/2)) + (B*e^2*x^2)/(2*c)
```

sympy [B] time = 11.09, size = 1532, normalized size = 7.47

$$\frac{Be^2x^2}{2c} + x\left(\frac{Ae^2}{c} - \frac{Bbe^2}{c^2} + \frac{2Bde}{c}\right) + \left(-\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2\right)}{2c^3(4ac-b^2)} - \frac{Abce^2 - 2Ac^2de + Bace^2 - Bb^2e^2 + 2Bbcde - Bc^2d^2}{2c^3}\right)\log\left(x + \frac{Aabce^2 - 4Aac^2de + Abc^2d^2 + 2Ba^2ce^2 - Bab^2e^2 + 2Babcde - 2Bac^2d^2 + 4ac^3\left(-\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2\right)}{2c^3(4ac-b^2)} - \frac{Abce^2 - 2Ac^2de + Bace^2 - Bb^2e^2 + 2Bbcde - Bc^2d^2}{2c^3}\right) - b^2c^2\left(-\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2\right)}{2c^3(4ac-b^2)} - \frac{Abce^2 - 2Ac^2de + Bace^2 - Bb^2e^2 + 2Bbcde - Bc^2d^2}{2c^3}\right)}{-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2}\right) + \left(\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2\right)}{2c^3(4ac-b^2)} - \frac{Abce^2 - 2Ac^2de + Bace^2 - Bb^2e^2 + 2Bbcde - Bc^2d^2}{2c^3}\right)\log\left(x + \frac{Aabce^2 - 4Aac^2de + Abc^2d^2 + 2Ba^2ce^2 - Bab^2e^2 + 2Babcde - 2Bac^2d^2 + 4ac^3\left(\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2\right)}{2c^3(4ac-b^2)} - \frac{Abce^2 - 2Ac^2de + Bace^2 - Bb^2e^2 + 2Bbcde - Bc^2d^2}{2c^3}\right) - b^2c^2\left(\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2\right)}{2c^3(4ac-b^2)} - \frac{Abce^2 - 2Ac^2de + Bace^2 - Bb^2e^2 + 2Bbcde - Bc^2d^2}{2c^3}\right)}{-2Aac^2e^2 + Ab^2ce^2 - 2Abc^2de + 2Ac^3d^2 + 3Babce^2 - 4Bac^2de - Bb^3e^2 + 2Bb^2cde - Bbc^2d^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] B*e**2*x**2/(2*c) + x*(A*e**2/c - B*b*e**2/c**2 + 2*B*d*e/c) + (-sqrt(-4*a*
c + b**2)*(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**
2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c*
*2*d**2)/(2*c**3*(4*a*c - b**2)) - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2
- B*b**2*e**2 + 2*B*b*c*d*e - B*c**2*d**2)/(2*c**3))*log(x + (A*a*b*c*e**2
- 4*A*a*c**2*d*e + A*b*c**2*d**2 + 2*B*a**2*c*e**2 - B*a*b**2*e**2 + 2*B*a*
b*c*d*e - 2*B*a*c**2*d**2 + 4*a*c**3*(-sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**
2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a
*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c -
b**2)) - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*
e - B*c**2*d**2)/(2*c**3)) - b**2*c**2*(-sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e
**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B
*a*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c
- b**2)) - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*
d*e - B*c**2*d**2)/(2*c**3)))/(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**
2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B
*b**2*c*d*e - B*b*c**2*d**2)) + (sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**2 + A*
b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*
d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c - b**2))
 - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*e - B*
c**2*d**2)/(2*c**3))*log(x + (A*a*b*c*e**2 - 4*A*a*c**2*d*e + A*b*c**2*d**2
 + 2*B*a**2*c*e**2 - B*a*b**2*e**2 + 2*B*a*b*c*d*e - 2*B*a*c**2*d**2 + 4*a*
c**3*(sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*
e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b**
2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c - b**2)) - (A*b*c*e**2 - 2*A*c**2*d
*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*e - B*c**2*d**2)/(2*c**3)) - b**2
*c**2*(sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d
*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b*
*2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c - b**2)) - (A*b*c*e**2 - 2*A*c**2*
d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*e - B*c**2*d**2)/(2*c**3)))/(-2*
A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*
e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2))
```

3.2125 $\int \frac{(A+Bx)(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=108

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)}{c^2\sqrt{b^2-4ac}}+\frac{\log\left(a+bx+cx^2\right)(Ace-bBe+Bcd)}{2c^2}+\frac{Bex}{c}$$

Rubi [A] time = 0.13, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {773, 634, 618, 206, 628}

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)}{c^2\sqrt{b^2-4ac}}+\frac{\log\left(a+bx+cx^2\right)(Ace-bBe+Bcd)}{2c^2}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (B*e*x)/c - ((b^2*B*e - b*c*(B*d + A*e) + 2*c*(A*c*d - a*B*e))*ArcTanh[(b +
 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^2*Sqrt[b^2 - 4*a*c]) + ((B*c*d - b*B*e + A*c
*e)*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{a+bx+cx^2}\,dx = \frac{Bex}{c} + \frac{\int \frac{Acd-aBe+(Bcd-bBe+Ace)x}{a+bx+cx^2}\,dx}{c}$$
$$= \frac{Bex}{c} + \frac{(Bcd-bBe+Ace)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2} + \frac{\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\int}{2c^2}$$
$$= \frac{Bex}{c} + \frac{(Bcd-bBe+Ace)\log\left(a+bx+cx^2\right)}{2c^2} - \frac{\left(b^2Be-bc(Bd+Ae)+2c(Acd-aB\right.}{c}$$
$$= \frac{Bex}{c} - \frac{\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}} + \frac{(Bcd-bBe+Ac}{}$$

Mathematica [A] time = 0.09, size = 108, normalized size = 1.00

$$\frac{\frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)}{\sqrt{4ac-b^2}}+\log(a+x(b+cx))(Ace-bBe+Bcd)+2Bcex}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*c*e*x + (2*(b^2*B*e - b*c*(B*d + A*e) + 2*c*(A*c*d - a*B*e))*ArcTan[(b
 + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + (B*c*d - b*B*e + A*c*e)
*Log[a + x*(b + c*x)])/(2*c^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.42, size = 369, normalized size = 3.42

$$\left[\frac{2\left(Bb^2c-4\,Bac^2\right)ex+\sqrt{b^2-4\,ac}\left(\left(Bbc-2\,Ac^2\right)d-\left(Bb^2-(2\,Ba+Ab)c\right)e\right)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+\left(\left(Bb^2c-4\,Bac^2\right)d-\left(Bb^3+4\,Aac^2-\left(4\,Bab+Ab^2\right)c\right)e\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c^2-4\,ac^3\right)}, \frac{2\left(Bb^2c-4\,Bac^2\right)ex+2\sqrt{-b^2+4\,ac}\left(\left(Bbc-2\,Ac^2\right)d-\left(Bb^2-(2\,Ba+Ab)c\right)e\right)\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right)+\left(\left(Bb^2c-4\,Bac^2\right)d-\left(Bb^3+4\,Aac^2-\left(4\,Bab+Ab^2\right)c\right)e\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c^2-4\,ac^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(B*b^2*c - 4*B*a*c^2)*e*x + sqrt(b^2 - 4*a*c)*((B*b*c - 2*A*c^2)*d
 - (B*b^2 - (2*B*a + A*b)*c)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqr
t(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + ((B*b^2*c - 4*B*a*c^2)*d -
 (B*b^3 + 4*A*a*c^2 - (4*B*a*b + A*b^2)*c)*e)*log(c*x^2 + b*x + a))/(b^2*c^
2 - 4*a*c^3), 1/2*(2*(B*b^2*c - 4*B*a*c^2)*e*x + 2*sqrt(-b^2 + 4*a*c)*((B*b
*c - 2*A*c^2)*d - (B*b^2 - (2*B*a + A*b)*c)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(
2*c*x + b)/(b^2 - 4*a*c)) + ((B*b^2*c - 4*B*a*c^2)*d - (B*b^3 + 4*A*a*c^2 -
 (4*B*a*b + A*b^2)*c)*e)*log(c*x^2 + b*x + a))/(b^2*c^2 - 4*a*c^3)]
```

giac [A] time = 0.16, size = 112, normalized size = 1.04

$$\frac{Bxe}{c} + \frac{(Bcd-Bbe+Ace)\log\left(cx^2+bx+a\right)}{2\,c^2} - \frac{\left(Bbcd-2\,Ac^2d-Bb^2e+2\,Bace+Abce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] B*x*e/c + 1/2*(B*c*d - B*b*e + A*c*e)*log(c*x^2 + b*x + a)/c^2 - (B*b*c*d -
 2*A*c^2*d - B*b^2*e + 2*B*a*c*e + A*b*c*e)*arctan((2*c*x + b)/sqrt(-b^2 +
4*a*c))/(sqrt(-b^2 + 4*a*c)*c^2)
```

maple [B] time = 0.05, size = 261, normalized size = 2.42

$$-\frac{Abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{2Ad\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{2Bae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{Bb^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}-\frac{Bbd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{Ae\ln\left(cx^2+bx+a\right)}{2c}-\frac{Bbe\ln\left(cx^2+bx+a\right)}{2c^2}+\frac{Bd\ln\left(cx^2+bx+a\right)}{2c}+\frac{Bex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] B/c*e*x+1/2/c*ln(c*x^2+b*x+a)*A*e-1/2/c^2*ln(c*x^2+b*x+a)*B*b*e+1/2/c*ln(c*
x^2+b*x+a)*B*d+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*d-
2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*e-1/c/(4*a*c-
b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b*e+1/c^2/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*B*e-1/c/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.70, size = 163, normalized size = 1.51

$$\frac{\ln\left(cx^2+bx+a\right)\left(Bb^3e+4Aac^2e+4Bac^2d-Ab^2ce-Bb^2cd-4Babce\right)}{2\left(4ac^3-b^2c^2\right)}-\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4ac-b^2}}+\frac{2cx}{\sqrt{4ac-b^2}}\right)\left(Abce-Bb^2e-2Ac^2d+2Bace+Bbcd\right)}{c^2\sqrt{4ac-b^2}}+\frac{Bex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] (log(a + b*x + c*x^2)*(B*b^3*e + 4*A*a*c^2*e + 4*B*a*c^2*d - A*b^2*c*e - B*
b^2*c*d - 4*B*a*b*c*e))/(2*(4*a*c^3 - b^2*c^2)) - (atan(b/(4*a*c - b^2)^(1/
2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(A*b*c*e - B*b^2*e - 2*A*c^2*d + 2*B*a*c*
e + B*b*c*d))/(c^2*(4*a*c - b^2)^(1/2)) + (B*e*x)/c
```

sympy [B] time = 3.44, size = 677, normalized size = 6.27

$$\frac{Bex}{c}+\left(-\frac{\sqrt{-4ac+b^2}\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)\log\left(x+\frac{2Aace-Abcd-Babe+2Bacd-4ac^2\left(-\frac{\sqrt{-4ac+b^2}\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)+b^2c\left(-\frac{\sqrt{-4ac+b^2}\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)}{Abce-2Ac^2d+2Bace-Bb^2e+Bbcd}\right)+\left(\frac{\sqrt{-4ac+b^2}\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)\log\left(x+\frac{2Aace-Abcd-Babe+2Bacd-4ac^2\left(\frac{\sqrt{-4ac+b^2}\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)+b^2c\left(\frac{\sqrt{-4ac+b^2}\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)}{Abce-2Ac^2d+2Bace-Bb^2e+Bbcd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] B*e*x/c + (-sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*
e + B*b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2))*l
og(x + (2*A*a*c*e - A*b*c*d - B*a*b*e + 2*B*a*c*d - 4*a*c**2*(-sqrt(-4*a*c
+ b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*b*c*d)/(2*c**2*(4*
a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)) + b**2*c*(-sqrt(-4*a*c +
```

```
b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*b*c*d)/(2*c**2*(4*a*
c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)))/(A*b*c*e - 2*A*c**2*d + 2*
B*a*c*e - B*b**2*e + B*b*c*d)) + (sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d
 + 2*B*a*c*e - B*b**2*e + B*b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*
e - B*c*d)/(2*c**2))*log(x + (2*A*a*c*e - A*b*c*d - B*a*b*e + 2*B*a*c*d - 4
*a*c**2*(sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e +
 B*b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)) + b*
*2*c*(sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*
b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)))/(A*b*c
*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*b*c*d))
```

3.2126 $\int \frac{A+Bx}{a+bx+cx^2}\,dx$

Optimal. Leaf size=64

$$\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{B\log\left(a+bx+cx^2\right)}{2c}$$

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {634, 618, 206, 628}

$$\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{B\log\left(a+bx+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*Sqrt[b^2 - 4*a*c]
) + (B*Log[a + b*x + c*x^2])/(2*c)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a+bx+cx^2}\,dx &= \frac{B\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c}+\frac{(-bB+2Ac)\int \frac{1}{a+bx+cx^2}\,dx}{2c}\\ &= \frac{B\log\left(a+bx+cx^2\right)}{2c}-\frac{(-bB+2Ac)\operatorname{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{c}\\ &= \frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{B\log\left(a+bx+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.05, size = 66, normalized size = 1.03

$$\frac{B\log(a+x(b+cx))-\frac{2(bB-2Ac)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((-2*(b*B - 2*A*c)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*
c] + B*Log[a + x*(b + c*x)])/(2*c)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{a+bx+cx^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2), x]
```

fricas [A] time = 0.39, size = 207, normalized size = 3.23

$$\left[-\frac{(Bb-2\,Ac)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)-\left(Bb^2-4\,Bac\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c-4\,ac^2\right)},\ \frac{2\,(Bb-2\,Ac)\sqrt{-b^2+4\,ac}\,\arctan\left(-\frac{\sqrt{-b^2+4\,ac}\,(2\,cx+b)}{b^2-4\,ac}\right)+\left(Bb^2-4\,Bac\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c-4\,ac^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [-1/2*((B*b - 2*A*c)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a
*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - (B*b^2 - 4*B*a*c)*
log(c*x^2 + b*x + a))/(b^2*c - 4*a*c^2), 1/2*(2*(B*b - 2*A*c)*sqrt(-b^2 + 4
*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (B*b^2 - 4*B*
a*c)*log(c*x^2 + b*x + a))/(b^2*c - 4*a*c^2)]
```

giac [A] time = 0.18, size = 63, normalized size = 0.98

$$\frac{B\log\left(cx^2+bx+a\right)}{2\,c}-\frac{(Bb-2\,Ac)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*B*log(c*x^2 + b*x + a)/c - (B*b - 2*A*c)*arctan((2*c*x + b)/sqrt(-b^2 +
 4*a*c))/(sqrt(-b^2 + 4*a*c)*c)
```

maple [A] time = 0.04, size = 93, normalized size = 1.45

$$\frac{2A\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{Bb\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}+\frac{B\ln\left(c\,x^2+bx+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*B*ln(c*x^2+b*x+a)/c+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*A-1/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.12, size = 162, normalized size = 2.53

$$\frac{2\,A\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{\sqrt{4\,a\,c-b^2}}-\frac{B\,b^2\,\ln\left(c\,x^2+b\,x+a\right)}{2\,\left(4\,a\,c^2-b^2\,c\right)}+\frac{2\,B\,a\,c\,\ln\left(c\,x^2+b\,x+a\right)}{4\,a\,c^2-b^2\,c}-\frac{B\,b\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{c\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2),x)
```

```
[Out] (2*A*atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2)))/(4*a*c - b^
2)^(1/2) - (B*b^2*log(a + b*x + c*x^2))/(2*(4*a*c^2 - b^2*c)) + (2*B*a*c*lo
g(a + b*x + c*x^2))/(4*a*c^2 - b^2*c) - (B*b*atan(b/(4*a*c - b^2)^(1/2) + (
2*c*x)/(4*a*c - b^2)^(1/2)))/(c*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 0.69, size = 280, normalized size = 4.38

$$\left(\frac{B}{2c}-\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c\left(4ac-b^2\right)}\right)\log\left(x+\frac{-Ab+2Ba-4ac\left(\frac{B}{2c}-\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c(4ac-b^2)}\right)+b^2\left(\frac{B}{2c}-\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c(4ac-b^2)}\right)}{-2Ac+Bb}\right)+\left(\frac{B}{2c}+\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c\left(4ac-b^2\right)}\right)\log\left(x+\frac{-Ab+2Ba-4ac\left(\frac{B}{2c}+\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c(4ac-b^2)}\right)+b^2\left(\frac{B}{2c}+\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c(4ac-b^2)}\right)}{-2Ac+Bb}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] (B/(2*c) - (-2*A*c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(4*a*c - b**2)))*log(x +
 (-A*b + 2*B*a - 4*a*c*(B/(2*c) - (-2*A*c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(
4*a*c - b**2))) + b**2*(B/(2*c) - (-2*A*c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(
4*a*c - b**2))))/(-2*A*c + B*b)) + (B/(2*c) + (-2*A*c + B*b)*sqrt(-4*a*c +
b**2)/(2*c*(4*a*c - b**2)))*log(x + (-A*b + 2*B*a - 4*a*c*(B/(2*c) + (-2*A*
c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(4*a*c - b**2))) + b**2*(B/(2*c) + (-2*A*
c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(4*a*c - b**2))))/(-2*A*c + B*b))
```

3.2127 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)} \, dx$

Optimal. Leaf size=146

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(-2aBe+Abe-2Acd+bBd)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)}+\frac{(Bd-Ae)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2-bde+cd^2}$$

Rubi [A] time = 0.22, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(-2aBe+Abe-2Acd+bBd)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)}+\frac{(Bd-Ae)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2-bde+cd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] ((b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]]
)/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)) - ((B*d - A*e)*Log[d + e*x])/
(c*d^2 - b*d*e + a*e^2) + ((B*d - A*e)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*
d*e + a*e^2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{Acd-Abe+aBe+c(Bd-Ae)x}{\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}\right)dx$$

$$= -\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2} + \frac{\int \frac{Acd-Abe+aBe+c(Bd-Ae)x}{a+bx+cx^2}\,dx}{cd^2-bde+ae^2}$$

$$= -\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2} + \frac{(Bd-Ae)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2\left(cd^2-bde+ae^2\right)} - \frac{(bBd-2Acd+Abe-2aBe)}{2\left(cd^2-bde+a\right.}$$

$$= -\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2} + \frac{(Bd-Ae)\log\left(a+bx+cx^2\right)}{2\left(cd^2-bde+ae^2\right)} + \frac{(bBd-2Acd+Abe-}{}$$

$$= \frac{(bBd-2Acd+Abe-2aBe)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\left(cd^2-bde+ae^2\right)} - \frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2} + \frac{(Bd-}{2(}$$

Mathematica [A] time = 0.12, size = 125, normalized size = 0.86

$$\frac{\sqrt{4ac-b^2}(Bd-Ae)(2\log(d+ex)-\log(a+x(b+cx)))+2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)(-2aBe+Abe-2Acd+bBd)}{2\sqrt{4ac-b^2}\left(e(bd-ae)-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c
]] + Sqrt[-b^2 + 4*a*c]*(B*d - A*e)*(2*Log[d + e*x] - Log[a + x*(b + c*x)])
)/(2*Sqrt[-b^2 + 4*a*c]*(-(c*d^2) + e*(b*d - a*e)))
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)), x]
```

fricas [A] time = 4.81, size = 409, normalized size = 2.80

$$\left[\frac{\sqrt{b^2-4ac}((Bb-2Ac)d-(2Ba-Ab)e)\log\left(\frac{2c^2x^2+2bcx+b^2-2ac+\sqrt{b^2-4ac}(2cx+b)}{cx^2+bx+a}\right)+\left((Bb^2-4Bac)d-(Ab^2-4Aac)e\right)\log\left(cx^2+bx+a\right)-2\left((Bb^2-4Bac)d-(Ab^2-4Aac)e\right)\log(ex+d)}{2\left((b^2c-4ac^2)d^2-(b^3-4abc)de+(ab^2-4a^2c)e^2\right)}, \frac{2\sqrt{-b^2+4ac}((Bb-2Ac)d-(2Ba-Ab)e)\arctan\left(-\frac{\sqrt{-b^2+4ac}(2cx+b)}{b^2-4ac}\right)+\left((Bb^2-4Bac)d-(Ab^2-4Aac)e\right)\log\left(cx^2+bx+a\right)-2\left((Bb^2-4Bac)d-(Ab^2-4Aac)e\right)\log(ex+d)}{2\left((b^2c-4ac^2)d^2-(b^3-4abc)de+(ab^2-4a^2c)e^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b^2 - 4*a*c)*((B*b - 2*A*c)*d - (2*B*a - A*b)*e)*log((2*c^2*x^2
+ 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a))
 + ((B*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(c*x^2 + b*x + a) - 2*((B
*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(e*x + d))/((b^2*c - 4*a*c^2)*d
^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2), 1/2*(2*sqrt(-b^2 + 4*a*c
)*((B*b - 2*A*c)*d - (2*B*a - A*b)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b
)/(b^2 - 4*a*c)) + ((B*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(c*x^2 +
b*x + a) - 2*((B*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(e*x + d))/((b^
2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2)]
```

giac [A] time = 0.16, size = 155, normalized size = 1.06

$$\frac{(Bd-Ae)\log\left(cx^2+bx+a\right)}{2\left(cd^2-bde+ae^2\right)}-\frac{\left(Bde-Ae^2\right)\log\left(|xe+d|\right)}{cd^2e-bde^2+ae^3}-\frac{(Bbd-2\,Acd-2\,Bae+Abe)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(cd^2-bde+ae^2\right)\sqrt{-b^2+4\,ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*d - A*e)*log(c*x^2 + b*x + a)/(c*d^2 - b*d*e + a*e^2) - (B*d*e - A*e
^2)*log(abs(x*e + d))/(c*d^2*e - b*d*e^2 + a*e^3) - (B*b*d - 2*A*c*d - 2*B*
a*e + A*b*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((c*d^2 - b*d*e + a*e^2
)*sqrt(-b^2 + 4*a*c))
```

maple [B] time = 0.05, size = 343, normalized size = 2.35

$$-\frac{Abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)\sqrt{4ac-b^2}}+\frac{2Acd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)\sqrt{4ac-b^2}}+\frac{2Bae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)\sqrt{4ac-b^2}}-\frac{Bbd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)\sqrt{4ac-b^2}}+\frac{Ae\ln\left(ex+d\right)}{a\,e^2-bde+c\,d^2}-\frac{Ae\ln\left(c\,x^2+bx+a\right)}{2\left(a\,e^2-bde+c\,d^2\right)}-\frac{Bd\ln\left(ex+d\right)}{a\,e^2-bde+c\,d^2}+\frac{Bd\ln\left(c\,x^2+bx+a\right)}{2a\,e^2-2bde+2c\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*A*e-1/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*B*d-1/2
/(a*e^2-b*d*e+c*d^2)*ln(c*x^2+b*x+a)*A*e+1/2/(a*e^2-b*d*e+c*d^2)*ln(c*x^2+b
*x+a)*B*d-1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*A*b*e+2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*A*c*d+2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*B*a*e-1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 8.70, size = 1027, normalized size = 7.03

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x)
```

```
[Out] (log(d + e*x)*(A*e - B*d))/(a*e^2 + c*d^2 - b*d*e) - (log(B^2*c*e*x - ((B*a
*c*e^2 - A*b*c*e^2 - A*c^2*d*e + c*e*x*(B*b*e - 3*A*c*e + B*c*d) + B*b*c*d*
e + (c*e*(2*b^2*e^2*x + 2*c^2*d^2*x + a*b*e^2 + b*c*d^2 + b^2*d*e - 6*a*c*e
^2*x - 8*a*c*d*e - 2*b*c*d*e*x)*((A*b^2*e)/2 - (B*b^2*d)/2 + (A*b*e*(b^2 -
4*a*c)^(1/2))/2 - A*c*d*(b^2 - 4*a*c)^(1/2) - B*a*e*(b^2 - 4*a*c)^(1/2) + (
B*b*d*(b^2 - 4*a*c)^(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^
2 + c*d^2 - b*d*e)))*((A*b^2*e)/2 - (B*b^2*d)/2 + (A*b*e*(b^2 - 4*a*c)^(1/2
))/2 - A*c*d*(b^2 - 4*a*c)^(1/2) - B*a*e*(b^2 - 4*a*c)^(1/2) + (B*b*d*(b^2
- 4*a*c)^(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^2 + c*d^2 -
 b*d*e)) + A*B*c*e)*(b*((A*e*(b^2 - 4*a*c)^(1/2))/2 + (B*d*(b^2 - 4*a*c)^(1
```

```
/2))/2) + b^2*((A*e)/2 - (B*d)/2) - A*c*d*(b^2 - 4*a*c)^(1/2) - B*a*e*(b^2
 - 4*a*c)^(1/2) - 2*A*a*c*e + 2*B*a*c*d))/(a*b^2*e^2 - 4*a*c^2*d^2 - 4*a^2*c
*e^2 + b^2*c*d^2 - b^3*d*e + 4*a*b*c*d*e) - (log(B^2*c*e*x - ((B*a*c*e^2 -
A*b*c*e^2 - A*c^2*d*e + c*e*x*(B*b*e - 3*A*c*e + B*c*d) + B*b*c*d*e + (c*e*
(2*b^2*e^2*x + 2*c^2*d^2*x + a*b*e^2 + b*c*d^2 + b^2*d*e - 6*a*c*e^2*x - 8*
a*c*d*e - 2*b*c*d*e*x)*((A*b^2*e)/2 - (B*b^2*d)/2 - (A*b*e*(b^2 - 4*a*c)^(1
/2))/2 + A*c*d*(b^2 - 4*a*c)^(1/2) + B*a*e*(b^2 - 4*a*c)^(1/2) - (B*b*d*(b^
2 - 4*a*c)^(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^2 + c*d^2
 - b*d*e)))*((A*b^2*e)/2 - (B*b^2*d)/2 - (A*b*e*(b^2 - 4*a*c)^(1/2))/2 + A*
c*d*(b^2 - 4*a*c)^(1/2) + B*a*e*(b^2 - 4*a*c)^(1/2) - (B*b*d*(b^2 - 4*a*c)^
(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e))
+ A*B*c*e)*(b^2*((A*e)/2 - (B*d)/2) - b*((A*e*(b^2 - 4*a*c)^(1/2))/2 + (B*d
*(b^2 - 4*a*c)^(1/2))/2) + A*c*d*(b^2 - 4*a*c)^(1/2) + B*a*e*(b^2 - 4*a*c)^
(1/2) - 2*A*a*c*e + 2*B*a*c*d))/(a*b^2*e^2 - 4*a*c^2*d^2 - 4*a^2*c*e^2 + b^
2*c*d^2 - b^3*d*e + 4*a*b*c*d*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2128 $\int \frac{A+Bx}{(d+ex)^2(a+bx+cx^2)}\,dx$

Optimal. Leaf size=255

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-b\left(aBe^2+2Acde+Bcd^2\right)+2c\left(-aAe^2+2aBde+Acd^2\right)+Ab^2e^2\right)}{\sqrt{b^2-4ac}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\log\left(a+bx+cx^2\right)\left(\right.}{2\left(ae^2\right.}$$

Rubi [A] time = 0.44, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-b\left(aBe^2+2Acde+Bcd^2\right)+2c\left(-aAe^2+2aBde+Acd^2\right)+Ab^2e^2\right)}{\sqrt{b^2-4ac}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\log\left(a+bx+cx^2\right)\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)}{2\left(ae^2-bde+cd^2\right)^2}+\frac{Bd-Ae}{(d+ex)\left(ae^2-bde+cd^2\right)}+\frac{\log(d+ex)\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)}{\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) - ((A*b^2*e^2 + 2*c*(A*c*d^
2 + 2*a*B*d*e - a*A*e^2) - b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*ArcTanh[(b +
2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)^2) +
((A*e*(2*c*d - b*e) - B*(c*d^2 - a*e^2))*Log[d + e*x])/(c*d^2 - b*d*e + a*e
^2)^2 - ((A*e*(2*c*d - b*e) - B*(c*d^2 - a*e^2))*Log[a + b*x + c*x^2])/(2*(
c*d^2 - b*d*e + a*e^2)^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{e\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} + \frac{aBe(2cd-\cdots}{\cdots}\right.$$

$$= \frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} + \int \frac{aBe\cdots}{\cdots}$$

$$= \frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} - \frac{(Ae(2\cdots}{\cdots}$$

$$= \frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2} - \frac{(Ae(2\cdots}{\cdots}$$

$$= \frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(Ab^2e^2+2c\left(Acd^2+2aBde-aAe^2\right)-b\left(Bcd^2+2A\cdots\right.\right.}{\sqrt{b^2-4ac}\left(cd^2-bde+\cdots\right.}$$

Mathematica [A] time = 0.34, size = 219, normalized size = 0.86

$$\frac{\frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(-b\left(aBe^2+2Acde+Bcd^2\right)+2c\left(-aAe^2+2aBde+Acd^2\right)+Ab^2e^2\right)}{\sqrt{4ac-b^2}}-2\log(d+ex)\left(B\left(cd^2-ae^2\right)+Ae(be-2cd)\right)+\log(a+x(b+cx))\left(B\left(cd^2-ae^2\right)+Ae(be-2cd)\right)+\frac{2(Bd-Ae)\left(e(ae-bd)+cd^2\right)}{d+ex}}{2\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((2*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e)))/(d + e*x) + (2*(A*b^2*e^2 + 2*c
*(A*c*d^2 + 2*a*B*d*e - a*A*e^2) - b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*ArcTa
n[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 2*(A*e*(-2*c*d + b*
e) + B*(c*d^2 - a*e^2))*Log[d + e*x] + (A*e*(-2*c*d + b*e) + B*(c*d^2 - a*e
^2))*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)), x]
```

fricas [B] time = 62.07, size = 1594, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(B*b^2*c - 4*B*a*c^2)*d^3 - 2*(B*b^3 - 4*A*a*c^2 - (4*B*a*b - A*b^2
)*c)*d^2*e + 2*(B*a*b^2 + A*b^3 - 4*(B*a^2 + A*a*b)*c)*d*e^2 - 2*(A*a*b^2 -
 4*A*a^2*c)*e^3 - (2*(2*B*a - A*b)*c*d^2*e - (B*b*c - 2*A*c^2)*d^3 - (B*a*b
 - A*b^2 + 2*A*a*c)*d*e^2 + (2*(2*B*a - A*b)*c*d*e^2 - (B*b*c - 2*A*c^2)*d^
2*e - (B*a*b - A*b^2 + 2*A*a*c)*e^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 +
2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) +
 ((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c - 4*A*a*c^2)*d^2*e - (B*a*b^2 - A*
```

```
b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*c - 4*B*a*c^2)*d^2*e - 2*(A*b^2*
c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*e^3)*x)*log(
c*x^2 + b*x + a) - 2*((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c - 4*A*a*c^2)*d
^2*e - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*c - 4*B*a*c^
2)*d^2*e - 2*(A*b^2*c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*
a*b)*c)*e^3)*x)*log(e*x + d))/((b^2*c^2 - 4*a*c^3)*d^5 - 2*(b^3*c - 4*a*b*c
^2)*d^4*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^3*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d
^2*e^3 + (a^2*b^2 - 4*a^3*c)*d*e^4 + ((b^2*c^2 - 4*a*c^3)*d^4*e - 2*(b^3*c
- 4*a*b*c^2)*d^3*e^2 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^3 - 2*(a*b^3 - 4
*a^2*b*c)*d*e^4 + (a^2*b^2 - 4*a^3*c)*e^5)*x), 1/2*(2*(B*b^2*c - 4*B*a*c^2)
*d^3 - 2*(B*b^3 - 4*A*a*c^2 - (4*B*a*b - A*b^2)*c)*d^2*e + 2*(B*a*b^2 + A*b
^3 - 4*(B*a^2 + A*a*b)*c)*d*e^2 - 2*(A*a*b^2 - 4*A*a^2*c)*e^3 - 2*(2*(2*B*a
 - A*b)*c*d^2*e - (B*b*c - 2*A*c^2)*d^3 - (B*a*b - A*b^2 + 2*A*a*c)*d*e^2 +
 (2*(2*B*a - A*b)*c*d*e^2 - (B*b*c - 2*A*c^2)*d^2*e - (B*a*b - A*b^2 + 2*A*
a*c)*e^3)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2
 - 4*a*c)) + ((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c - 4*A*a*c^2)*d^2*e - (
B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*c - 4*B*a*c^2)*d^2*e
 - 2*(A*b^2*c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*
e^3)*x)*log(c*x^2 + b*x + a) - 2*((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c -
4*A*a*c^2)*d^2*e - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*
c - 4*B*a*c^2)*d^2*e - 2*(A*b^2*c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4
*(B*a^2 - A*a*b)*c)*e^3)*x)*log(e*x + d))/((b^2*c^2 - 4*a*c^3)*d^5 - 2*(b^3
*c - 4*a*b*c^2)*d^4*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^3*e^2 - 2*(a*b^3 -
4*a^2*b*c)*d^2*e^3 + (a^2*b^2 - 4*a^3*c)*d*e^4 + ((b^2*c^2 - 4*a*c^3)*d^4*e
 - 2*(b^3*c - 4*a*b*c^2)*d^3*e^2 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^3 -
2*(a*b^3 - 4*a^2*b*c)*d*e^4 + (a^2*b^2 - 4*a^3*c)*e^5)*x)]
```

giac [A] time = 0.17, size = 383, normalized size = 1.50

$$-\frac{\left(Bbcd^2e^2 - 2\,Ac^2d^2e^2 - 4\,Bacde^3 + 2\,Abcde^3 + Babe^4 - Ab^2e^4 + 2\,Aace^4\right)\arctan\left(\frac{\left(2\,cd - \frac{2\,cd^2}{xe+d} - be + \frac{2\,bde}{xe+d} - \frac{2\,ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{-b^2+4\,ac}}\right)e^{(-2)}}{\left(c^2d^4 - 2\,bcd^3e + b^2d^2e^2 + 2\,acd^2e^2 - 2\,abde^3 + a^2e^4\right)\sqrt{-b^2+4\,ac}} + \frac{\left(Bcd^2 - 2\,Acde - Bae^2 + Abe^2\right)\log\left(c - \frac{2\,cd}{xe+d} + \frac{cd^2}{(xe+d)^2} + \frac{be}{xe+d} - \frac{bde}{(xe+d)^2} + \frac{ae^2}{(xe+d)^2}\right)}{2\left(c^2d^4 - 2\,bcd^3e + b^2d^2e^2 + 2\,acd^2e^2 - 2\,abde^3 + a^2e^4\right)} + \frac{\frac{Bde^2}{xe+d} - \frac{Ae^3}{xe+d}}{cd^2e^2 - bde^3 + ae^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -(B*b*c*d^2*e^2 - 2*A*c^2*d^2*e^2 - 4*B*a*c*d*e^3 + 2*A*b*c*d*e^3 + B*a*b*e
^4 - A*b^2*e^4 + 2*A*a*c*e^4)*arctan((2*c*d - 2*c*d^2/(x*e + d) - b*e + 2*b
*d*e/(x*e + d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(-b^2 + 4*a*c))*e^(-2)/((c^2
*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*s
qrt(-b^2 + 4*a*c)) + 1/2*(B*c*d^2 - 2*A*c*d*e - B*a*e^2 + A*b*e^2)*log(c -
2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a
*e^2/(x*e + d)^2)/(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*
a*b*d*e^3 + a^2*e^4) + (B*d*e^2/(x*e + d) - A*e^3/(x*e + d))/(c*d^2*e^2 - b
*d*e^3 + a*e^4)
```

maple [B] time = 0.06, size = 729, normalized size = 2.86

$$-\frac{2Aac\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} + \frac{A\,b^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} - \frac{2Abcde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} + \frac{2A\,c^2d^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} - \frac{Bab\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} + \frac{4Bacde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} - \frac{Bbc\,d^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}} - \frac{Ab\,e^2\ln(ex+d)}{\left(a\,e^2-bde+c\,d^2\right)^2} + \frac{Ab\,e^2\ln\left(c\,x^2+bx+a\right)}{2\left(a\,e^2-bde+c\,d^2\right)^2} + \frac{2Acde\ln(ex+d)}{\left(a\,e^2-bde+c\,d^2\right)^2} - \frac{Acde\ln\left(c\,x^2+bx+a\right)}{\left(a\,e^2-bde+c\,d^2\right)^2} + \frac{Ba\,e^2\ln(ex+d)}{\left(a\,e^2-bde+c\,d^2\right)^2} - \frac{Ba\,e^2\ln\left(c\,x^2+bx+a\right)}{2\left(a\,e^2-bde+c\,d^2\right)^2} - \frac{Bc\,d^2\ln(ex+d)}{\left(a\,e^2-bde+c\,d^2\right)^2} + \frac{Bc\,d^2\ln\left(c\,x^2+bx+a\right)}{2\left(a\,e^2-bde+c\,d^2\right)^2} - \frac{Ae}{\left(a\,e^2-bde+c\,d^2\right)(ex+d)} + \frac{Bd}{\left(a\,e^2-bde+c\,d^2\right)(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] -1/(a*e^2-b*d*e+c*d^2)/(e*x+d)*A*e+1/(a*e^2-b*d*e+c*d^2)/(e*x+d)*B*d-1/(a*e
^2-b*d*e+c*d^2)^2*ln(e*x+d)*A*b*e^2+2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*A*c*d
*e+1/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*B*a*e^2-1/(a*e^2-b*d*e+c*d^2)^2*ln(e*x
+d)*B*c*d^2+1/2/(a*e^2-b*d*e+c*d^2)^2*ln(c*x^2+b*x+a)*A*b*e^2-1/(a*e^2-b*d*
e+c*d^2)^2*c*ln(c*x^2+b*x+a)*A*d*e-1/2/(a*e^2-b*d*e+c*d^2)^2*ln(c*x^2+b*x+a
)*a*B*e^2+1/2/(a*e^2-b*d*e+c*d^2)^2*c*ln(c*x^2+b*x+a)*B*d^2-2/(a*e^2-b*d*e+
c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*e^2*c+1/
```

```
(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))
*A*b^2*e^2-2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*A*b*c*d*e+2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2
*c*x+b)/(4*a*c-b^2)^(1/2))*A*c^2*d^2-1/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*b*e^2+4/(a*e^2-b*d*e+c*d^2)^2/(
4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*c*d*e-1/(a*e^2-b*d
*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*c*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 7.22, size = 2650, normalized size = 10.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*A*a*b^3*e^4 + A*b*c^3*d^4 + 6*B*a*c^3*d^4 + 6*B*a^3*c*e^4 + 2*A*b^4*
e^4*x + 2*A*c^4*d^4*x - A*c^3*d^4*(b^2 - 4*a*c)^(1/2) - 2*B*a^2*b^2*e^4 - 2
*B*b^2*c^2*d^4 - 2*B*a*b^3*e^4*x - B*b*c^3*d^4*x + 2*A*a*b^2*e^4*(b^2 - 4*a
*c)^(1/2) - A*a^2*c*e^4*(b^2 - 4*a*c)^(1/2) - 2*B*a^2*b*e^4*(b^2 - 4*a*c)^(
1/2) + 2*B*b*c^2*d^4*(b^2 - 4*a*c)^(1/2) + 2*A*b^3*e^4*x*(b^2 - 4*a*c)^(1/2
) + 3*B*c^3*d^4*x*(b^2 - 4*a*c)^(1/2) + 16*A*a^2*c^2*d*e^3 + 2*A*b^2*c^2*d^
3*e - A*b^3*c*d^2*e^2 + 2*A*a^2*c^2*e^4*x - 20*B*a^2*c^2*d^2*e^2 - 7*A*a^2*
b*c*e^4 - 16*A*a*c^3*d^3*e + 10*A*b^2*c^2*d^2*e^2*x - 6*A*a*b^2*c*d*e^3 + 4
*B*a*b*c^2*d^3*e + 4*B*a^2*b*c*d*e^3 - 8*A*a*b^2*c*e^4*x + 7*B*a^2*b*c*e^4*
x - 4*A*b*c^3*d^3*e*x - 8*A*b^3*c*d*e^3*x + 16*B*a*c^3*d^3*e*x - 2*A*b*c^2*
d^3*e*(b^2 - 4*a*c)^(1/2) - 8*B*a*c^2*d^3*e*(b^2 - 4*a*c)^(1/2) + 8*B*a^2*c
*d*e^3*(b^2 - 4*a*c)^(1/2) - 2*B*a*b^2*e^4*x*(b^2 - 4*a*c)^(1/2) + 3*B*a^2*
c*e^4*x*(b^2 - 4*a*c)^(1/2) - 8*A*c^3*d^3*e*x*(b^2 - 4*a*c)^(1/2) + 10*A*a*
b*c^2*d^2*e^2 + 2*B*a*b^2*c*d^2*e^2 - 28*A*a*c^3*d^2*e^2*x - 16*B*a^2*c^2*d
*e^3*x - 2*B*b^2*c^2*d^3*e*x + B*b^3*c*d^2*e^2*x + 14*A*a*c^2*d^2*e^2*(b^2
- 4*a*c)^(1/2) + A*b^2*c*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 8*A*a*c^2*d*e^3*x*(b
^2 - 4*a*c)^(1/2) - 8*A*b^2*c*d*e^3*x*(b^2 - 4*a*c)^(1/2) - 2*B*b*c^2*d^3*e
*x*(b^2 - 4*a*c)^(1/2) - 10*B*a*b*c^2*d^2*e^2*x + 12*A*b*c^2*d^2*e^2*x*(b^2
 - 4*a*c)^(1/2) - 10*B*a*c^2*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + B*b^2*c*d^2*e^
2*x*(b^2 - 4*a*c)^(1/2) - 10*A*a*b*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 4*A*a*b*c*
e^4*x*(b^2 - 4*a*c)^(1/2) + 28*A*a*b*c^2*d*e^3*x + 6*B*a*b^2*c*d*e^3*x + 6*
B*a*b*c*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(B*a*b^2*e^2 - A*b^3*e^2 + 4*B*a*c^2*d
^2 - 4*B*a^2*c*e^2 - B*b^2*c*d^2 - A*b^2*e^2*(b^2 - 4*a*c)^(1/2) - 2*A*c^2*
d^2*(b^2 - 4*a*c)^(1/2) + 4*A*a*b*c*e^2 - 8*A*a*c^2*d*e + 2*A*b^2*c*d*e + 2
*A*a*c*e^2*(b^2 - 4*a*c)^(1/2) + B*a*b*e^2*(b^2 - 4*a*c)^(1/2) + B*b*c*d^2*
(b^2 - 4*a*c)^(1/2) + 2*A*b*c*d*e*(b^2 - 4*a*c)^(1/2) - 4*B*a*c*d*e*(b^2 -
4*a*c)^(1/2)))/(2*(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 -
b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2
*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2)) - (log(d + e*x)*(e^2*(A*b -
B*a) + B*c*d^2 - 2*A*c*d*e))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3
 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (log(2*A*a*b^3*e^4 + A*b*c^3*d^4 + 6*B*a*
c^3*d^4 + 6*B*a^3*c*e^4 + 2*A*b^4*e^4*x + 2*A*c^4*d^4*x + A*c^3*d^4*(b^2 -
4*a*c)^(1/2) - 2*B*a^2*b^2*e^4 - 2*B*b^2*c^2*d^4 - 2*B*a*b^3*e^4*x - B*b*c^
3*d^4*x - 2*A*a*b^2*e^4*(b^2 - 4*a*c)^(1/2) + A*a^2*c*e^4*(b^2 - 4*a*c)^(1/
```

```
2) + 2*B*a^2*b*e^4*(b^2 - 4*a*c)^(1/2) - 2*B*b*c^2*d^4*(b^2 - 4*a*c)^(1/2)
- 2*A*b^3*e^4*x*(b^2 - 4*a*c)^(1/2) - 3*B*c^3*d^4*x*(b^2 - 4*a*c)^(1/2) + 1
6*A*a^2*c^2*d*e^3 + 2*A*b^2*c^2*d^3*e - A*b^3*c*d^2*e^2 + 2*A*a^2*c^2*e^4*x
 - 20*B*a^2*c^2*d^2*e^2 - 7*A*a^2*b*c*e^4 - 16*A*a*c^3*d^3*e + 10*A*b^2*c^2
*d^2*e^2*x - 6*A*a*b^2*c*d*e^3 + 4*B*a*b*c^2*d^3*e + 4*B*a^2*b*c*d*e^3 - 8*
A*a*b^2*c*e^4*x + 7*B*a^2*b*c*e^4*x - 4*A*b*c^3*d^3*e*x - 8*A*b^3*c*d*e^3*x
 + 16*B*a*c^3*d^3*e*x + 2*A*b*c^2*d^3*e*(b^2 - 4*a*c)^(1/2) + 8*B*a*c^2*d^3
*e*(b^2 - 4*a*c)^(1/2) - 8*B*a^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) + 2*B*a*b^2*e^
4*x*(b^2 - 4*a*c)^(1/2) - 3*B*a^2*c*e^4*x*(b^2 - 4*a*c)^(1/2) + 8*A*c^3*d^3
*e*x*(b^2 - 4*a*c)^(1/2) + 10*A*a*b*c^2*d^2*e^2 + 2*B*a*b^2*c*d^2*e^2 - 28*
A*a*c^3*d^2*e^2*x - 16*B*a^2*c^2*d*e^3*x - 2*B*b^2*c^2*d^3*e*x + B*b^3*c*d^
2*e^2*x - 14*A*a*c^2*d^2*e^2*(b^2 - 4*a*c)^(1/2) - A*b^2*c*d^2*e^2*(b^2 - 4
*a*c)^(1/2) - 8*A*a*c^2*d*e^3*x*(b^2 - 4*a*c)^(1/2) + 8*A*b^2*c*d*e^3*x*(b^
2 - 4*a*c)^(1/2) + 2*B*b*c^2*d^3*e*x*(b^2 - 4*a*c)^(1/2) - 10*B*a*b*c^2*d^2
*e^2*x - 12*A*b*c^2*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 10*B*a*c^2*d^2*e^2*x*(b
^2 - 4*a*c)^(1/2) - B*b^2*c*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 10*A*a*b*c*d*e^
3*(b^2 - 4*a*c)^(1/2) + 4*A*a*b*c*e^4*x*(b^2 - 4*a*c)^(1/2) + 28*A*a*b*c^2*
d*e^3*x + 6*B*a*b^2*c*d*e^3*x - 6*B*a*b*c*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(A*b
^3*e^2 - B*a*b^2*e^2 - 4*B*a*c^2*d^2 + 4*B*a^2*c*e^2 + B*b^2*c*d^2 - A*b^2*
e^2*(b^2 - 4*a*c)^(1/2) - 2*A*c^2*d^2*(b^2 - 4*a*c)^(1/2) - 4*A*a*b*c*e^2 +
 8*A*a*c^2*d*e - 2*A*b^2*c*d*e + 2*A*a*c*e^2*(b^2 - 4*a*c)^(1/2) + B*a*b*e^
2*(b^2 - 4*a*c)^(1/2) + B*b*c*d^2*(b^2 - 4*a*c)^(1/2) + 2*A*b*c*d*e*(b^2 -
4*a*c)^(1/2) - 4*B*a*c*d*e*(b^2 - 4*a*c)^(1/2)))/(2*(4*a*c^3*d^4 + 4*a^3*c*
e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3
*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*
e^2)) - (A*e - B*d)/((d + e*x)*(a*e^2 + c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2129 $\int \frac{A+Bx}{(d+ex)^3(a+bx+cx^2)}\,dx$

Optimal. Leaf size=414

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(abe^3-3acde^2+c^2d^3\right)-Ae\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\right)}{2\left(ae^2-bde+cd^2\right)^3}-\frac{\log(d+ex)\left(B\left(abe^3-3acde\right.\right.}{}$$

Rubi [A] time = 0.80, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {800, 634, 618, 206, 628}

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(abe^3-3acde^2+c^2d^3\right)-Ae\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\right)}{2\left(ae^2-bde+cd^2\right)^3}-\frac{\log(d+ex)\left(B\left(abe^3-3acde^2+c^2d^3\right)-Ae\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-b^2e^2(aBe+3Acd)+bc\left(-3aAe^3+3aBde^2+3Acd^2e+Bcd^3\right)-2c\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3cd^2-ae^2\right)\right)+Ab^3e^3\right)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)^3}+\frac{Bd-Ae}{2(d+ex)^2\left(ae^2-bde+cd^2\right)}-\frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{(d+ex)\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2) - (A*e*(2*c*d - b*e) -
B*(c*d^2 - a*e^2))/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) + ((A*b^3*e^3 - b^
2*e^2*(3*A*c*d + a*B*e) + b*c*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 - 3*a*A*
e^3) - 2*c*(A*c*d*(c*d^2 - 3*a*e^2) + a*B*e*(3*c*d^2 - a*e^2)))*ArcTanh[(b
+ 2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)^3)
- ((B*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3) - A*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3
*b*d + a*e)))*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^3 + ((B*(c^2*d^3 - 3*a*
c*d*e^2 + a*b*e^3) - A*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e)))*Log[a +
 b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{e\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)^2} + \frac{e\left(-B\left(c\right.\right.}{}\right.$$

$$= \frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(B\left(c^2d^3-3ac\right.\right.}{}$$

$$= \frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(B\left(c^2d^3-3ac\right.\right.}{}$$

$$= \frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{\left(B\left(c^2d^3-3ac\right.\right.}{}$$

$$= \frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} + \frac{\left(Ab^3e^3-b^2e^2\right.}{}$$

Mathematica [A] time = 0.47, size = 413, normalized size = 1.00

$$-\frac{\log(d+ex)\left(Ae\left(ce(ae+3bd)-b^2e^2-3c^2d^2\right)+B\left(abe^3-3acde^2+c^2d^3\right)\right)}{\left(e(ae-bd)+cd^2\right)^3}+\frac{\log(a+x(b+cx))\left(Ae\left(ce(ae+3bd)-b^2e^2-3c^2d^2\right)+B\left(abe^3-3acde^2+c^2d^3\right)\right)}{2\left(e(ae-bd)+cd^2\right)^3}+\frac{\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(-b^2e^2(aBe+3Acd)+bc\left(-3aAe^3+3aBde^2+3Acd^2e+Bcd^3\right)+2c\left(Acd\left(3ae^2-cd^2\right)+aBe\left(ae^2-3cd^2\right)\right)+Ab^3e^3\right)}{\sqrt{4ac-b^2}\left(e(bd-ae)-cd^2\right)^3}+\frac{B\left(cd^2-ae^2\right)+Ae(be-2cd)}{(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{Bd-Ae}{2(d+ex)^2\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x)^2) + (A*e*(-2*c*d + b*e
) + B*(c*d^2 - a*e^2))/((c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) + ((A*b^3*e
^3 - b^2*e^2*(3*A*c*d + a*B*e) + b*c*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 -
 3*a*A*e^3) + 2*c*(a*B*e*(-3*c*d^2 + a*e^2) + A*c*d*(-(c*d^2) + 3*a*e^2)))*
ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(Sqrt[-b^2 + 4*a*c]*(-(c*d^2) + e*(
b*d - a*e))^3) - ((B*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3) + A*e*(-3*c^2*d^2 -
b^2*e^2 + c*e*(3*b*d + a*e)))*Log[d + e*x])/(c*d^2 + e*(-(b*d) + a*e))^3 +
((B*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3) + A*e*(-3*c^2*d^2 - b^2*e^2 + c*e*(3*
b*d + a*e)))*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^3)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [A] time = 0.19, size = 797, normalized size = 1.93

$$\frac{\left(Bc^{2}d^{3} - 3\,Ac^{2}d^{2}e - 3\,Bacde^{2} + 3\,Abcde^{2} + Babe^{3} - Ab^{2}e^{3} + Aace^{3}\right)\log\left(cx^{2} + bx + a\right)}{2\,\left(c^{3}d^{6} - 3\,bc^{2}d^{5}e + 3\,b^{2}cd^{4}e^{2} + 3\,ac^{2}d^{4}e^{2} - b^{3}d^{3}e^{3} - 6\,abcd^{3}e^{3} + 3\,ab^{2}d^{2}e^{4} + 3\,a^{2}cd^{2}e^{4} - 3\,a^{2}bde^{5} + a^{3}e^{6}\right)} - \frac{\left(Bc^{2}d^{3}e - 3\,Ac^{2}d^{2}e^{2} - 3\,Bacde^{3} + 3\,Abcde^{3} + Babe^{4} - Ab^{2}e^{4} + Aace^{4}\right)\log\left(|xe + d|\right)}{c^{3}d^{6}e - 3\,bc^{2}d^{5}e^{2} + 3\,b^{2}cd^{4}e^{3} + 3\,ac^{2}d^{4}e^{3} - b^{3}d^{3}e^{4} - 6\,abcd^{3}e^{4} + 3\,ab^{2}d^{2}e^{5} + 3\,a^{2}cd^{2}e^{5} - 3\,a^{2}bde^{6} + a^{3}e^{7}} - \frac{\left(Bbc^{2}d^{3} - 2\,Ac^{3}d^{3} - 6\,Bac^{2}d^{2}e + 3\,Abc^{2}d^{2}e + 3\,Babcde^{2} - 3\,Ab^{2}cde^{2} + 6\,Aac^{2}de^{2} - Bab^{2}e^{3} + Ab^{3}e^{3} + 2\,Ba^{2}ce^{3} - 3\,Aabce^{3}\right)\arctan\left(\frac{2\,cx + b}{\sqrt{-b^{2} + 4\,ac}}\right)}{\left(c^{3}d^{6} - 3\,bc^{2}d^{5}e + 3\,b^{2}cd^{4}e^{2} + 3\,ac^{2}d^{4}e^{2} - b^{3}d^{3}e^{3} - 6\,abcd^{3}e^{3} + 3\,ab^{2}d^{2}e^{4} + 3\,a^{2}cd^{2}e^{4} - 3\,a^{2}bde^{5} + a^{3}e^{6}\right)\sqrt{-b^{2} + 4\,ac}} + \frac{3\,Bc^{2}d^{5} - 4\,Bbcd^{4}e - 5\,Ac^{2}d^{4}e + Bb^{2}d^{3}e^{2} + 2\,Bacd^{3}e^{2} + 8\,Abcd^{3}e^{2} - 3\,Ab^{2}d^{2}e^{3} - 6\,Aacd^{2}e^{3} - Ba^{2}de^{4} + 4\,Aabde^{4} - Aa^{2}e^{5} + 2\,\left(Bc^{2}d^{4}e - Bbcd^{3}e^{2} - 2\,Ac^{2}d^{3}e^{2} + 3\,Abcd^{2}e^{3} + Babde^{4} - Ab^{2}de^{4} - 2\,Aacde^{4} - Ba^{2}e^{5} + Aabe^{5}\right)x}{2\,\left(cd^{2} - bde + ae^{2}\right)^{3}\left(xe + d\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c^2*d^3 - 3*A*c^2*d^2*e - 3*B*a*c*d*e^2 + 3*A*b*c*d*e^2 + B*a*b*e^3
- A*b^2*e^3 + A*a*c*e^3)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*
b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d
^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (B*c^2*d^3*e - 3*A*c^
2*d^2*e^2 - 3*B*a*c*d*e^3 + 3*A*b*c*d*e^3 + B*a*b*e^4 - A*b^2*e^4 + A*a*c*e
^4)*log(abs(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*
c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2
*e^5 - 3*a^2*b*d*e^6 + a^3*e^7) - (B*b*c^2*d^3 - 2*A*c^3*d^3 - 6*B*a*c^2*d^
2*e + 3*A*b*c^2*d^2*e + 3*B*a*b*c*d*e^2 - 3*A*b^2*c*d*e^2 + 6*A*a*c^2*d*e^2
 - B*a*b^2*e^3 + A*b^3*e^3 + 2*B*a^2*c*e^3 - 3*A*a*b*c*e^3)*arctan((2*c*x +
 b)/sqrt(-b^2 + 4*a*c))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c
^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*
e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(-b^2 + 4*a*c)) + 1/2*(3*B*c^2*d^5 - 4*B
*b*c*d^4*e - 5*A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*B*a*c*d^3*e^2 + 8*A*b*c*d^3*
e^2 - 3*A*b^2*d^2*e^3 - 6*A*a*c*d^2*e^3 - B*a^2*d*e^4 + 4*A*a*b*d*e^4 - A*a
^2*e^5 + 2*(B*c^2*d^4*e - B*b*c*d^3*e^2 - 2*A*c^2*d^3*e^2 + 3*A*b*c*d^2*e^3
 + B*a*b*d*e^4 - A*b^2*d*e^4 - 2*A*a*c*d*e^4 - B*a^2*e^5 + A*a*b*e^5)*x)/((
c*d^2 - b*d*e + a*e^2)^3*(x*e + d)^2)
```

maple [B] time = 0.06, size = 1339, normalized size = 3.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] -3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/
2))*B*a*b*c*d*e^2-3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*A*b*c^2*d^2*e+6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*c^2*d^2*e-6/(a*e^2-b*d*e+c*d^2)^3
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*c^2*d*e^2+3/(a*e
^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b
^2*c*d*e^2+3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*A*a*b*c*e^3+1/2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*A*a*e
^3-3/2/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*x+a)*A*d^2*e+1/2/(a*e^2-b*d*e+c
*d^2)^3*ln(c*x^2+b*x+a)*a*b*B*e^3-1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b^3*e^3+1/(a*e^2-b*d*e+c*d^2)^3*ln(e
*x+d)*A*b^2*e^3-1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*B*c^2*d^3+1/(a*e^2-b*d*e+
c*d^2)^2/(e*x+d)*B*c*d^2-1/2/(a*e^2-b*d*e+c*d^2)^3*ln(c*x^2+b*x+a)*A*b^2*e^
3+1/2/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*x+a)*B*d^3+1/(a*e^2-b*d*e+c*d^2)
^2/(e*x+d)*A*b*e^2-1/2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2*A*e+1/2/(a*e^2-b*d*e+c
*d^2)/(e*x+d)^2*B*d-1/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*B*a*e^2-2/(a*e^2-b*d*e+
c*d^2)^2/(e*x+d)*A*c*d*e-1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*A*a*c*e^3+3/(a*e
^2-b*d*e+c*d^2)^3*ln(e*x+d)*A*c^2*d^2*e-1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*B
*a*b*e^3+2/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-
b^2)^(1/2))*A*c^3*d^3+1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*B*a*b^2*e^3-1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*c^2*d^3+3/(a*e^2-b*d*e+c*d^2)^3
*ln(e*x+d)*B*a*c*d*e^2-3/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*A*b*c*d*e^2-2/(a*e
^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a
^2*c*e^3+3/2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*A*b*d*e^2-3/2/(a*e^2-b
*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*B*d*a*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 26.75, size = 7042, normalized size = 17.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x)
```

```
[Out] (log(((A*b^4*e^3 - (3*A*b*e^3*(b^2 - 4*a*c)^(3/2))/4 + (B*a*e^3*(b^2 - 4*a*
c)^(3/2))/2 - B*a*b^3*e^3 + 4*B*a*c^3*d^3 - (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))
/4 + 2*A*c^3*d^3*(b^2 - 4*a*c)^(1/2) + 4*A*a^2*c^2*e^3 - B*b^2*c^2*d^3 + (B
*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 - B*b*c^2*d^3*(b^2 - 4*a*c)^(1/2) - (3*B*
b^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 + 3*A*b^2*c^2*d^2*e - 12*B*a^2*c^2*d*e^2 +
 (3*A*c*d*e^2*(b^2 - 4*a*c)^(3/2))/2 + (3*B*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4
- (3*B*c*d^2*e*(b^2 - 4*a*c)^(3/2))/2 - 5*A*a*b^2*c*e^3 + 4*B*a^2*b*c*e^3 -
 12*A*a*c^3*d^2*e - 3*A*b^3*c*d*e^2 + 12*A*a*b*c^2*d*e^2 + 3*B*a*b^2*c*d*e^
2 - 3*A*b*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + (3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1
/2))/2 + (3*B*b^2*c*d^2*e*(b^2 - 4*a*c)^(1/2))/2)*(4*B*d*e^5*(b^2 - 4*a*c)^
(7/2) + 3*B*e^6*x*(b^2 - 4*a*c)^(7/2) - 3*A*b^2*e^6*(b^2 - 4*a*c)^(5/2) + 2
*A*b^4*e^6*(b^2 - 4*a*c)^(3/2) + A*b^6*e^6*(b^2 - 4*a*c)^(1/2) + 128*B*a^4*
c^3*e^6 - 32*A*b^6*c*e^6*x - 2*B*a*b^5*e^6*(b^2 - 4*a*c)^(1/2) + B*b^2*d*e^
5*(b^2 - 4*a*c)^(5/2) - 10*B*b^4*d*e^5*(b^2 - 4*a*c)^(3/2) + 5*B*b^6*d*e^5*
(b^2 - 4*a*c)^(1/2) + B*b^2*e^6*x*(b^2 - 4*a*c)^(5/2) - 3*B*b^4*e^6*x*(b^2
- 4*a*c)^(3/2) - B*b^6*e^6*x*(b^2 - 4*a*c)^(1/2) - 320*A*a^3*b*c^3*e^6 + 48
*B*a^2*b^4*c*e^6 + 640*A*a^3*c^4*d*e^5 - 32*A*b^2*c^5*d^5*e + 48*B*b^3*c^4*
d^5*e - 48*A*c^2*d^2*e^4*(b^2 - 4*a*c)^(5/2) - 64*A*c^4*d^4*e^2*(b^2 - 4*a*
c)^(3/2) + 48*B*c^2*d^3*e^3*(b^2 - 4*a*c)^(5/2) + 272*A*a^2*b^3*c^2*e^6 - 2
24*B*a^3*b^2*c^2*e^6 - 1280*A*a^2*c^5*d^3*e^3 - 48*A*b^3*c^4*d^4*e^2 + 96*A
*b^4*c^3*d^3*e^3 - 64*A*b^5*c^2*d^2*e^4 + 640*B*a^2*c^5*d^4*e^2 - 1280*B*a^
3*c^4*d^2*e^4 - 16*B*b^4*c^3*d^4*e^2 + 2*B*a*b*e^6*(b^2 - 4*a*c)^(5/2) - 48
*A*a*b^5*c*e^6 + 128*A*a*c^6*d^5*e + 16*A*b^6*c*d*e^5 - 96*A*c^4*d^3*e^3*x*
(b^2 - 4*a*c)^(3/2) + 40*B*c^2*d^2*e^4*x*(b^2 - 4*a*c)^(5/2) + 48*B*c^4*d^4
*e^2*x*(b^2 - 4*a*c)^(3/2) - 64*A*a*b^2*c^4*d^3*e^3 - 96*A*a*b^3*c^3*d^2*e^
4 + 1408*A*a^2*b*c^4*d^2*e^4 - 928*A*a^2*b^2*c^3*d*e^5 - 96*B*a*b^2*c^4*d^4
*e^2 - 32*B*a*b^3*c^3*d^3*e^3 + 64*B*a*b^4*c^2*d^2*e^4 + 128*B*a^2*b*c^4*d^
3*e^3 - 144*B*a^2*b^3*c^2*d*e^5 - 256*A*a^2*b^2*c^3*e^6*x - 160*B*a^2*b^3*c
^2*e^6*x - 1024*A*a^2*c^5*d^2*e^4*x - 256*A*b^2*c^5*d^4*e^2*x + 512*A*b^3*c
^4*d^3*e^3*x - 448*A*b^4*c^3*d^2*e^4*x + 1536*B*a^2*c^5*d^3*e^3*x - 32*B*b^
3*c^4*d^4*e^2*x + 30*A*b*c*d*e^5*(b^2 - 4*a*c)^(5/2) + 18*A*b*c*e^6*x*(b^2
- 4*a*c)^(5/2) - 192*B*a*b*c^5*d^5*e - 16*B*a*b^5*c*d*e^5 - 24*A*b^2*c^2*d^
2*e^4*(b^2 - 4*a*c)^(3/2) + 80*A*b^2*c^4*d^4*e^2*(b^2 - 4*a*c)^(1/2) - 80*A
*b^3*c^3*d^3*e^3*(b^2 - 4*a*c)^(1/2) + 40*A*b^4*c^2*d^2*e^4*(b^2 - 4*a*c)^(
1/2) - 88*B*b^2*c^2*d^3*e^3*(b^2 - 4*a*c)^(3/2) - 40*B*b^3*c^3*d^4*e^2*(b^2
 - 4*a*c)^(1/2) + 40*B*b^4*c^2*d^3*e^3*(b^2 - 4*a*c)^(1/2) + 32*B*a*b^5*c*e
^6*x - 256*B*a*c^6*d^5*e*x + 64*B*a^2*b^2*c^3*d^2*e^4 - 32*A*b*c^5*d^5*e*(b
^2 - 4*a*c)^(1/2) - 4*A*b^3*c*d*e^5*(b^2 - 4*a*c)^(3/2) - 10*A*b^5*c*d*e^5*
(b^2 - 4*a*c)^(1/2) - 28*B*b*c*d^2*e^4*(b^2 - 4*a*c)^(5/2) + 12*A*b^3*c*e^6
*x*(b^2 - 4*a*c)^(3/2) + 2*A*b^5*c*e^6*x*(b^2 - 4*a*c)^(1/2) - 36*A*c^2*d*e
^5*x*(b^2 - 4*a*c)^(5/2) - 64*A*c^6*d^5*e*x*(b^2 - 4*a*c)^(1/2) + 192*A*a*b
```

```
*c^5*d^4*e^2 + 128*A*a*b^4*c^2*d*e^5 + 832*B*a^3*b*c^3*d*e^5 + 192*A*a*b^4*
c^2*e^6*x + 128*B*a^3*b*c^3*e^6*x + 1024*A*a*c^6*d^4*e^2*x + 192*A*b^5*c^2*
d*e^5*x - 256*B*a^3*c^4*d*e^5*x + 64*B*b^2*c^5*d^5*e*x + 80*A*b*c^3*d^3*e^3
*(b^2 - 4*a*c)^(3/2) + 56*B*b*c^3*d^4*e^2*(b^2 - 4*a*c)^(3/2) + 16*B*b^2*c^
4*d^5*e*(b^2 - 4*a*c)^(1/2) + 48*B*b^3*c*d^2*e^4*(b^2 - 4*a*c)^(3/2) - 20*B
*b^5*c*d^2*e^4*(b^2 - 4*a*c)^(1/2) + 32*B*b*c^5*d^5*e*x*(b^2 - 4*a*c)^(1/2)
 + 12*B*b^3*c*d*e^5*x*(b^2 - 4*a*c)^(3/2) + 10*B*b^5*c*d*e^5*x*(b^2 - 4*a*c
)^(1/2) - 2048*A*a*b*c^5*d^3*e^3*x - 1024*A*a*b^3*c^3*d*e^5*x + 1024*A*a^2*
b*c^4*d*e^5*x + 128*B*a*b*c^5*d^4*e^2*x - 192*B*a*b^4*c^2*d*e^5*x + 144*A*b
*c^3*d^2*e^4*x*(b^2 - 4*a*c)^(3/2) + 160*A*b*c^5*d^4*e^2*x*(b^2 - 4*a*c)^(1
/2) - 72*A*b^2*c^2*d*e^5*x*(b^2 - 4*a*c)^(3/2) - 20*A*b^4*c^2*d*e^5*x*(b^2
- 4*a*c)^(1/2) - 48*B*b*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(3/2) + 2048*A*a*b^2*c^
4*d^2*e^4*x - 384*B*a*b^2*c^4*d^3*e^3*x + 448*B*a*b^3*c^3*d^2*e^4*x - 1792*
B*a^2*b*c^4*d^2*e^4*x + 832*B*a^2*b^2*c^3*d*e^5*x - 22*B*b*c*d*e^5*x*(b^2 -
 4*a*c)^(5/2) - 160*A*b^2*c^4*d^3*e^3*x*(b^2 - 4*a*c)^(1/2) + 80*A*b^3*c^3*
d^2*e^4*x*(b^2 - 4*a*c)^(1/2) - 80*B*b^2*c^4*d^4*e^2*x*(b^2 - 4*a*c)^(1/2)
+ 80*B*b^3*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(1/2) - 40*B*b^4*c^2*d^2*e^4*x*(b^2
- 4*a*c)^(1/2)))/(64*(4*a*c - b^2)^2*(a*e^2 + c*d^2 - b*d*e)^6) + (c^2*e*(A
^2*b^3*e^4 + A*B*c^3*d^4 + B^2*a^2*b*e^4 - 2*A^2*c^3*d^3*e + 2*A^2*a*c^2*d*
e^3 - 4*A^2*b^2*c*d*e^3 + 2*B^2*a*c^2*d^3*e - 2*B^2*a^2*c*d*e^3 + 5*A^2*b*c
^2*d^2*e^2 - 2*A*B*a*b^2*e^4 + A*B*a^2*c*e^4 - A^2*a*b*c*e^4 - 2*A*B*b*c^2*
d^3*e - 6*A*B*a*c^2*d^2*e^2 + A*B*b^2*c*d^2*e^2 - B^2*a*b*c*d^2*e^2 + 6*A*B
*a*b*c*d*e^3))/(a*e^2 + c*d^2 - b*d*e)^4 + (c^3*e*x*(A*b*e^2 - B*a*e^2 + B*
c*d^2 - 2*A*c*d*e)^2)/(a*e^2 + c*d^2 - b*d*e)^4)*((A*e^3*(4*a*c - b^2)^2)/4
 - (3*A*b*e^3*(b^2 - 4*a*c)^(3/2))/4 + (B*a*e^3*(b^2 - 4*a*c)^(3/2))/2 - (3
*A*b^2*e^3*(4*a*c - b^2))/4 - (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))/4 + 2*A*c^3*d
^3*(b^2 - 4*a*c)^(1/2) + B*c^2*d^3*(4*a*c - b^2) - (3*B*d*e^2*(4*a*c - b^2)
^2)/4 + (B*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 - B*b*c^2*d^3*(b^2 - 4*a*c)^(1/
2) - 3*A*c^2*d^2*e*(4*a*c - b^2) - (3*B*b^2*d*e^2*(4*a*c - b^2))/4 - (3*B*b
^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 + B*a*b*e^3*(4*a*c - b^2) + (3*A*c*d*e^2*(b
^2 - 4*a*c)^(3/2))/2 + (3*B*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4 - (3*B*c*d^2*e*(
b^2 - 4*a*c)^(3/2))/2 + 3*A*b*c*d*e^2*(4*a*c - b^2) - 3*A*b*c^2*d^2*e*(b^2
- 4*a*c)^(1/2) + (3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1/2))/2 + (3*B*b^2*c*d^2*e
*(b^2 - 4*a*c)^(1/2))/2))/((4*a*c - b^2)*((4*a*c - b^2)*((3*a*d^2*e^4)/2 -
3*b*d^3*e^3 + (3*c*d^4*e^2)/2) + 2*a^3*e^6 + 2*c^3*d^6 - 5*b^3*d^3*e^3 + (1
5*a*b^2*d^2*e^4)/2 + (15*b^2*c*d^4*e^2)/2 - 6*a^2*b*d*e^5 - 6*b*c^2*d^5*e))
 - (log(d + e*x)*(e^2*(3*A*b*c*d - 3*B*a*c*d) + e^3*(A*a*c - A*b^2 + B*a*b)
 + B*c^2*d^3 - 3*A*c^2*d^2*e))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d
^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^
5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3) - ((A*a*e^3 - 3*B*c*d^3 - 3*A*b*d*e^2
+ B*a*d*e^2 + 5*A*c*d^2*e + B*b*d^2*e)/(2*(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2
- 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)) - (x*(A*b*e^3 - B*a*e^3 - 2*A
*c*d*e^2 + B*c*d^2*e))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b
*c*d^3*e + 2*a*c*d^2*e^2))/(d^2 + e^2*x^2 + 2*d*e*x) - (log((c^2*e*(A^2*b^3
*e^4 + A*B*c^3*d^4 + B^2*a^2*b*e^4 - 2*A^2*c^3*d^3*e + 2*A^2*a*c^2*d*e^3 -
4*A^2*b^2*c*d*e^3 + 2*B^2*a*c^2*d^3*e - 2*B^2*a^2*c*d*e^3 + 5*A^2*b*c^2*d^2
*e^2 - 2*A*B*a*b^2*e^4 + A*B*a^2*c*e^4 - A^2*a*b*c*e^4 - 2*A*B*b*c^2*d^3*e
- 6*A*B*a*c^2*d^2*e^2 + A*B*b^2*c*d^2*e^2 - B^2*a*b*c*d^2*e^2 + 6*A*B*a*b*c
*d*e^3))/(a*e^2 + c*d^2 - b*d*e)^4 - ((A*b^4*e^3 + (3*A*b*e^3*(b^2 - 4*a*c)
^(3/2))/4 - (B*a*e^3*(b^2 - 4*a*c)^(3/2))/2 - B*a*b^3*e^3 + 4*B*a*c^3*d^3 +
 (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))/4 - 2*A*c^3*d^3*(b^2 - 4*a*c)^(1/2) + 4*A*
a^2*c^2*e^3 - B*b^2*c^2*d^3 - (B*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 + B*b*c^2
*d^3*(b^2 - 4*a*c)^(1/2) + (3*B*b^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 + 3*A*b^2*
c^2*d^2*e - 12*B*a^2*c^2*d*e^2 - (3*A*c*d*e^2*(b^2 - 4*a*c)^(3/2))/2 - (3*B
*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4 + (3*B*c*d^2*e*(b^2 - 4*a*c)^(3/2))/2 - 5*A
*a*b^2*c*e^3 + 4*B*a^2*b*c*e^3 - 12*A*a*c^3*d^2*e - 3*A*b^3*c*d*e^2 + 12*A*
a*b*c^2*d*e^2 + 3*B*a*b^2*c*d*e^2 + 3*A*b*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - (
3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1/2))/2 - (3*B*b^2*c*d^2*e*(b^2 - 4*a*c)^(1/
2))/2)*(4*B*d*e^5*(b^2 - 4*a*c)^(7/2) + 3*B*e^6*x*(b^2 - 4*a*c)^(7/2) - 3*A
```

*b^2*e^6*(b^2 - 4*a*c)^(5/2) + 2*A*b^4*e^6*(b^2 - 4*a*c)^(3/2) + A*b^6*e^6*(b^2 - 4*a*c)^(1/2) - 128*B*a^4*c^3*e^6 + 32*A*b^6*c*e^6*x - 2*B*a*b^5*e^6*(b^2 - 4*a*c)^(1/2) + B*b^2*d*e^5*(b^2 - 4*a*c)^(5/2) - 10*B*b^4*d*e^5*(b^2 - 4*a*c)^(3/2) + 5*B*b^6*d*e^5*(b^2 - 4*a*c)^(1/2) + B*b^2*e^6*x*(b^2 - 4*a*c)^(5/2) - 3*B*b^4*e^6*x*(b^2 - 4*a*c)^(3/2) - B*b^6*e^6*x*(b^2 - 4*a*c)^(1/2) + 320*A*a^3*b*c^3*e^6 - 48*B*a^2*b^4*c*e^6 - 640*A*a^3*c^4*d*e^5 + 32*A*b^2*c^5*d^5*e - 48*B*b^3*c^4*d^5*e - 48*A*c^2*d^2*e^4*(b^2 - 4*a*c)^(5/2) - 64*A*c^4*d^4*e^2*(b^2 - 4*a*c)^(3/2) + 48*B*c^2*d^3*e^3*(b^2 - 4*a*c)^(5/2) - 272*A*a^2*b^3*c^2*e^6 + 224*B*a^3*b^2*c^2*e^6 + 1280*A*a^2*c^5*d^3*e^3 + 48*A*b^3*c^4*d^4*e^2 - 96*A*b^4*c^3*d^3*e^3 + 64*A*b^5*c^2*d^2*e^4 - 640*B*a^2*c^5*d^4*e^2 + 1280*B*a^3*c^4*d^2*e^4 + 16*B*b^4*c^3*d^4*e^2 + 2*B*a*b*e^6*(b^2 - 4*a*c)^(5/2) + 48*A*a*b^5*c*e^6 - 128*A*a*c^6*d^5*e - 16*A*b^6*c*d*e^5 - 96*A*c^4*d^3*e^3*x*(b^2 - 4*a*c)^(3/2) + 40*B*c^2*d^2*e^4*x*(b^2 - 4*a*c)^(5/2) + 48*B*c^4*d^4*e^2*x*(b^2 - 4*a*c)^(3/2) + 64*A*a*b^2*c^4*d^3*e^3 + 96*A*a*b^3*c^3*d^2*e^4 - 1408*A*a^2*b*c^4*d^2*e^4 + 928*A*a^2*b^2*c^3*d*e^5 + 96*B*a*b^2*c^4*d^4*e^2 + 32*B*a*b^3*c^3*d^3*e^3 - 64*B*a*b^4*c^2*d^2*e^4 - 128*B*a^2*b*c^4*d^3*e^3 + 144*B*a^2*b^3*c^2*d*e^5 + 256*A*a^2*b^2*c^3*e^6*x + 160*B*a^2*b^3*c^2*e^6*x + 1024*A*a^2*c^5*d^2*e^4*x + 256*A*b^2*c^5*d^4*e^2*x - 512*A*b^3*c^4*d^3*e^3*x + 448*A*b^4*c^3*d^2*e^4*x - 1536*B*a^2*c^5*d^3*e^3*x + 32*B*b^3*c^4*d^4*e^2*x + 30*A*b*c*d*e^5*(b^2 - 4*a*c)^(5/2) + 18*A*b*c*e^6*x*(b^2 - 4*a*c)^(5/2) + 192*B*a*b*c^5*d^5*e + 16*B*a*b^5*c*d*e^5 - 24*A*b^2*c^2*d^2*e^4*(b^2 - 4*a*c)^(3/2) + 80*A*b^2*c^4*d^4*e^2*(b^2 - 4*a*c)^(1/2) - 80*A*b^3*c^3*d^3*e^3*(b^2 - 4*a*c)^(1/2) + 40*A*b^4*c^2*d^2*e^4*(b^2 - 4*a*c)^(1/2) - 88*B*b^2*c^2*d^3*e^3*(b^2 - 4*a*c)^(3/2) - 40*B*b^3*c^3*d^4*e^2*(b^2 - 4*a*c)^(1/2) + 40*B*b^4*c^2*d^3*e^3*(b^2 - 4*a*c)^(1/2) - 32*B*a*b^5*c*e^6*x + 256*B*a*c^6*d^5*e*x - 64*B*a^2*b^2*c^3*d^2*e^4 - 32*A*b*c^5*d^5*e*(b^2 - 4*a*c)^(1/2) - 4*A*b^3*c*d*e^5*(b^2 - 4*a*c)^(3/2) - 10*A*b^5*c*d*e^5*(b^2 - 4*a*c)^(1/2) - 28*B*b*c*d^2*e^4*(b^2 - 4*a*c)^(5/2) + 12*A*b^3*c*e^6*x*(b^2 - 4*a*c)^(3/2) + 2*A*b^5*c*e^6*x*(b^2 - 4*a*c)^(1/2) - 36*A*c^2*d*e^5*x*(b^2 - 4*a*c)^(5/2) - 64*A*c^6*d^5*e*x*(b^2 - 4*a*c)^(1/2) - 192*A*a*b*c^5*d^4*e^2 - 128*A*a*b^4*c^2*d*e^5 - 832*B*a^3*b*c^3*d*e^5 - 192*A*a*b^4*c^2*e^6*x - 128*B*a^3*b*c^3*e^6*x - 1024*A*a*c^6*d^4*e^2*x - 192*A*b^5*c^2*d*e^5*x + 256*B*a^3*c^4*d*e^5*x - 64*B*b^2*c^5*d^5*e*x + 80*A*b*c^3*d^3*e^3*(b^2 - 4*a*c)^(3/2) + 56*B*b*c^3*d^4*e^2*(b^2 - 4*a*c)^(3/2) + 16*B*b^2*c^4*d^5*e*(b^2 - 4*a*c)^(1/2) + 48*B*b^3*c*d^2*e^4*(b^2 - 4*a*c)^(3/2) - 20*B*b^5*c*d^2*e^4*(b^2 - 4*a*c)^(1/2) + 32*B*b*c^5*d^5*e*x*(b^2 - 4*a*c)^(1/2) + 12*B*b^3*c*d*e^5*x*(b^2 - 4*a*c)^(3/2) + 10*B*b^5*c*d*e^5*x*(b^2 - 4*a*c)^(1/2) + 2048*A*a*b*c^5*d^3*e^3*x + 1024*A*a*b^3*c^3*d*e^5*x - 1024*A*a^2*b*c^4*d*e^5*x - 128*B*a*b*c^5*d^4*e^2*x + 192*B*a*b^4*c^2*d*e^5*x + 144*A*b*c^3*d^2*e^4*x*(b^2 - 4*a*c)^(3/2) + 160*A*b*c^5*d^4*e^2*x*(b^2 - 4*a*c)^(1/2) - 72*A*b^2*c^2*d*e^5*x*(b^2 - 4*a*c)^(3/2) - 20*A*b^4*c^2*d*e^5*x*(b^2 - 4*a*c)^(1/2) - 48*B*b*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(3/2) - 2048*A*a*b^2*c^4*d^2*e^4*x + 384*B*a*b^2*c^4*d^3*e^3*x - 448*B*a*b^3*c^3*d^2*e^4*x + 1792*B*a^2*b*c^4*d^2*e^4*x - 832*B*a^2*b^2*c^3*d*e^5*x - 22*B*b*c*d*e^5*x*(b^2 - 4*a*c)^(5/2) - 160*A*b^2*c^4*d^3*e^3*x*(b^2 - 4*a*c)^(1/2) + 80*A*b^3*c^3*d^2*e^4*x*(b^2 - 4*a*c)^(1/2) - 80*B*b^2*c^4*d^4*e^2*x*(b^2 - 4*a*c)^(1/2) + 80*B*b^3*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(1/2) - 40*B*b^4*c^2*d^2*e^4*x*(b^2 - 4*a*c)^(1/2)))/(64*(4*a*c - b^2)^2*(a*e^2 + c*d^2 - b*d*e)^6) + (c^3*e*x*(A*b*e^2 - B*a*e^2 + B*c*d^2 - 2*A*c*d*e)^2)/(a*e^2 + c*d^2 - b*d*e)^4)*((B*a*e^3*(b^2 - 4*a*c)^(3/2))/2 - (3*A*b*e^3*(b^2 - 4*a*c)^(3/2))/4 - (A*e^3*(4*a*c - b^2)^2)/4 + (3*A*b^2*e^3*(4*a*c - b^2))/4 - (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))/4 + 2*A*c^3*d^3*(b^2 - 4*a*c)^(1/2) - B*c^2*d^3*(4*a*c - b^2) + (3*B*d*e^2*(4*a*c - b^2)^2)/4 + (B*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 - B*b*c^2*d^3*(b^2 - 4*a*c)^(1/2) + 3*A*c^2*d^2*e*(4*a*c - b^2) + (3*B*b^2*d*e^2*(4*a*c - b^2))/4 - (3*B*b^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 - B*a*b*e^3*(4*a*c - b^2) + (3*A*c*d*e^2*(b^2 - 4*a*c)^(3/2))/2 + (3*B*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4 - (3*B*c*d^2*e*(b^2 - 4*a*c)^(3/2))/2 - 3*A*b*c*d*e^2*(4*a*c - b^2) - 3*A*b*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + (3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1/2))/2 + (3*B*b^2*c*d^2*e*(b^2 - 4*a*c)^(1/2)

```
)/2))/((4*a*c - b^2)*((4*a*c - b^2)*((3*a*d^2*e^4)/2 - 3*b*d^3*e^3 + (3*c*d
^4*e^2)/2) + 2*a^3*e^6 + 2*c^3*d^6 - 5*b^3*d^3*e^3 + (15*a*b^2*d^2*e^4)/2 +
 (15*b^2*c*d^4*e^2)/2 - 6*a^2*b*d*e^5 - 6*b*c^2*d^5*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2130 $\int \frac{(d+ex)^4(f+gx)}{(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=543

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(4c^3e\left(3a^2e^2(4dg+ef)-3abde(3dg+2ef)+b^2d^2(2dg+3ef)\right)-30a^2bc^2e^4g+10ab^3ce^4g\right.}{c^3\left(b^2-4ac\right)^{5/2}}$$

Rubi [A] time = 1.21, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {818, 634, 618, 206, 628}

$$\frac{(d+ex)\left(x\left(-c^2e\left(16a^2e^2g+2abe(11dg+3ef)+b^2(-d)(5dg+6ef)\right)+b^2ce^2g(15ae+bd)-2c^3d(3bd(dg+3ef)-2ae(4dg+3ef))-2b^4e^3g+12c^4d^3f\right)+2bc\left(7a^2e^3g+acde(7dg+9ef)+3c^2d^3f\right)+b^3eg\left(cd^2-2ae^2\right)-b^2cd\left(ae^2g+3cd(dg+2ef)\right)-4ac^2e\left(ae(8dg+3ef)+3cd^2f\right)\right)}{2c^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(4c^3e\left(3a^2e^2(4dg+ef)-3abde(3dg+2ef)+b^2d^2(2dg+3ef)\right)-30a^2bc^2e^4g+10ab^3ce^4g-2c^4d^2(3bd(dg+4ef)-4ae(2dg+3ef))+b^5\left(-e^4\right)g+12c^5d^4f\right)}{c^3\left(b^2-4ac\right)^{5/2}}+\frac{(d+ex)^3\left(-x\left(-c(2aeg+bdg+bef)+b^2eg+2c^2df\right)-b(aeg+cdf)+2ac(dg+ef)\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{e^4g\log\left(a+bx+cx^2\right)}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^4*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^3*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g
- c*(b*e*f + b*d*g + 2*a*e*g))*x))/(2*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^2)
+ ((d + e*x)*(b^3*e*(c*d^2 - 2*a*e^2)*g - b^2*c*d*(a*e^2*g + 3*c*d*(2*e*f +
 d*g)) + 2*b*c*(3*c^2*d^3*f + 7*a^2*e^3*g + a*c*d*e*(9*e*f + 7*d*g)) - 4*a*
c^2*e*(3*c*d^2*f + a*e*(3*e*f + 8*d*g)) + (12*c^4*d^3*f - 2*b^4*e^3*g + b^2
*c*e^2*(b*d + 15*a*e)*g - 2*c^3*d*(3*b*d*(3*e*f + d*g) - 2*a*e*(3*e*f + 4*d
*g)) - c^2*e*(16*a^2*e^2*g - b^2*d*(6*e*f + 5*d*g) + 2*a*b*e*(3*e*f + 11*d*
g)))*x))/(2*c^2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - ((12*c^5*d^4*f - b^5*e
^4*g + 10*a*b^3*c*e^4*g - 30*a^2*b*c^2*e^4*g - 2*c^4*d^2*(3*b*d*(4*e*f + d*
g) - 4*a*e*(3*e*f + 2*d*g)) + 4*c^3*e*(b^2*d^2*(3*e*f + 2*d*g) - 3*a*b*d*e*
(2*e*f + 3*d*g) + 3*a^2*e^2*(e*f + 4*d*g)))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 -
4*a*c]])/(c^3*(b^2 - 4*a*c)^(5/2)) + (e^4*g*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(d+ex)^4(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

Mathematica [A] time = 1.86, size = 897, normalized size = 1.65

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^4*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((b^5*e^4*g*x + b^4*e^3*(a*e*g - c*(e*f + 4*d*g)*x) - b^3*c*e^2*(-2*c*d*(2*
e*f + 3*d*g)*x + a*e*(e*f + 4*d*g + 5*e*g*x)) + 2*c^2*(a^3*e^4*g - c^3*d^4*
f*x - a^2*c*e^2*(6*d^2*g + e^2*f*x + 4*d*e*(f + g*x)) + a*c^2*d^2*(d^2*g +
6*e^2*f*x + 4*d*e*(f + g*x))) + b*c^2*(c^2*d^3*(-(d*f) + 4*e*f*x + d*g*x) +
 a^2*e^3*(3*e*f + 12*d*g + 5*e*g*x) - 2*a*c*d*e*(2*d^2*g + 6*e^2*f*x + 3*d*
e*(f + 3*g*x))) + 2*b^2*c*e*(-2*a^2*e^3*g - c^2*d^2*(3*e*f + 2*d*g)*x + a*c
*e*(3*d^2*g + 2*e^2*f*x + 2*d*e*(f + 4*g*x))))/((b^2 - 4*a*c)*(a + x*(b + c
*x))^2) + (-(b^6*e^4*g) + b^5*c*e^3*(4*d*g + e*(f + 4*g*x)) + 2*b^3*c^2*e*(
c*d^2*(3*e*f + 2*d*g) - a*e^2*(4*e*f + 16*d*g + 15*e*g*x)) + b^2*c^2*(-39*a
^2*e^4*g + c^2*d^2*(-12*d*e*f - 3*d^2*g + 12*e^2*f*x + 8*d*e*g*x) + 2*a*c*e
^2*(10*d*e*f + 15*d^2*g + 8*e^2*f*x + 32*d*e*g*x)) + 2*b*c^3*(a^2*e^3*(11*e
*f + 44*d*g + 25*e*g*x) + 2*a*c*d*e*(2*d^2*g - 6*e^2*f*x + 3*d*e*(f - 3*g*x
)) + 3*c^2*d^3*(-4*e*f*x + d*(f - g*x))) - b^4*c*e^2*(-11*a*e^2*g + 2*c*(3*
d^2*g + e^2*f*x + 2*d*e*(f + 2*g*x))) + 4*c^3*(8*a^3*e^4*g + 3*c^3*d^4*f*x
+ 2*a*c^2*d^2*e*(3*e*f + 2*d*g)*x - a^2*c*e^2*(24*d^2*g + 5*e^2*f*x + 4*d*e
```

```
*(4*f + 5*g*x))))/((b^2 - 4*a*c)^2*(a + x*(b + c*x))) + (2*c*(12*c^5*d^4*f
- b^5*e^4*g + 10*a*b^3*c*e^4*g - 30*a^2*b*c^2*e^4*g + 2*c^4*d^2*(-3*b*d*(4*
e*f + d*g) + 4*a*e*(3*e*f + 2*d*g)) + 4*c^3*e*(b^2*d^2*(3*e*f + 2*d*g) - 3*
a*b*d*e*(2*e*f + 3*d*g) + 3*a^2*e^2*(e*f + 4*d*g)))*ArcTan[(b + 2*c*x)/Sqrt
[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(5/2) + c*e^4*g*Log[a + x*(b + c*x)])/(2*c^
4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^4(f+gx)}{(a+bx+cx^2)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^4*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)^4*(f + g*x))/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 1.21, size = 5676, normalized size = 10.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*((6*(b^2*c^6 - 4*a*c^7)*d^4 - 12*(b^3*c^5 - 4*a*b*c^6)*d^3*e + 6*(b
^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^2*e^2 - 12*(a*b^3*c^4 - 4*a^2*b*c^5)*d*
e^3 - (b^6*c^2 - 12*a*b^4*c^3 + 42*a^2*b^2*c^4 - 40*a^3*c^5)*e^4)*f - (3*(b
^3*c^5 - 4*a*b*c^6)*d^4 - 4*(b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^3*e + 18*
(a*b^3*c^4 - 4*a^2*b*c^5)*d^2*e^2 + 4*(b^6*c^2 - 12*a*b^4*c^3 + 42*a^2*b^2*
c^4 - 40*a^3*c^5)*d*e^3 - (2*b^7*c - 23*a*b^5*c^2 + 85*a^2*b^3*c^3 - 100*a^
3*b*c^4)*e^4)*g)*x^3 + ((18*(b^3*c^5 - 4*a*b*c^6)*d^4 - 36*(b^4*c^4 - 4*a*b
^2*c^5)*d^3*e + 18*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2*b*c^5)*d^2*e^2 - 4*(b^6*c
^2 - 3*a*b^4*c^3 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d*e^3 - (b^7*c - 12*a*b^5*c
^2 + 30*a^2*b^3*c^3 + 8*a^3*b*c^4)*e^4)*f - (9*(b^4*c^4 - 4*a*b^2*c^5)*d^4
- 12*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2*b*c^5)*d^3*e + 6*(b^6*c^2 - 3*a*b^4*c^3
 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d^2*e^2 + 4*(b^7*c - 12*a*b^5*c^2 + 30*a^2*
b^3*c^3 + 8*a^3*b*c^4)*d*e^3 - (3*b^8 - 31*a*b^6*c + 87*a^2*b^4*c^2 - 12*a^
3*b^2*c^3 - 128*a^4*c^4)*e^4)*g)*x^2 - ((12*(c^7*d^4 - 2*b*c^6*d^3*e - 2*a*
b*c^5*d*e^3 + a^2*c^5*e^4 + (b^2*c^5 + 2*a*c^6)*d^2*e^2)*f - (6*b*c^6*d^4 +
 36*a*b*c^5*d^2*e^2 - 48*a^2*c^5*d*e^3 - 8*(b^2*c^5 + 2*a*c^6)*d^3*e + (b^5
*c^2 - 10*a*b^3*c^3 + 30*a^2*b*c^4)*e^4)*g)*x^4 + 2*(12*(b*c^6*d^4 - 2*b^2*
c^5*d^3*e - 2*a*b^2*c^4*d*e^3 + a^2*b*c^4*e^4 + (b^3*c^4 + 2*a*b*c^5)*d^2*e
^2)*f - (6*b^2*c^5*d^4 + 36*a*b^2*c^4*d^2*e^2 - 48*a^2*b*c^4*d*e^3 - 8*(b^3
*c^4 + 2*a*b*c^5)*d^3*e + (b^6*c - 10*a*b^4*c^2 + 30*a^2*b^2*c^3)*e^4)*g)*x
^3 + (12*((b^2*c^5 + 2*a*c^6)*d^4 - 2*(b^3*c^4 + 2*a*b*c^5)*d^3*e + (b^4*c^
3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^2 - 2*(a*b^3*c^3 + 2*a^2*b*c^4)*d*e^3 +
(a^2*b^2*c^3 + 2*a^3*c^4)*e^4)*f - (6*(b^3*c^4 + 2*a*b*c^5)*d^4 - 8*(b^4*c^
3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^3*e + 36*(a*b^3*c^3 + 2*a^2*b*c^4)*d^2*e^2 -
 48*(a^2*b^2*c^3 + 2*a^3*c^4)*d*e^3 + (b^7 - 8*a*b^5*c + 10*a^2*b^3*c^2 + 6
0*a^3*b*c^3)*e^4)*g)*x^2 + 12*(a^2*c^5*d^4 - 2*a^2*b*c^4*d^3*e - 2*a^3*b*c^
3*d*e^3 + a^4*c^3*e^4 + (a^2*b^2*c^3 + 2*a^3*c^4)*d^2*e^2)*f - (6*a^2*b*c^4
*d^4 + 36*a^3*b*c^3*d^2*e^2 - 48*a^4*c^3*d*e^3 - 8*(a^2*b^2*c^3 + 2*a^3*c^4
)*d^3*e + (a^2*b^5 - 10*a^3*b^3*c + 30*a^4*b*c^2)*e^4)*g + 2*(12*(a*b*c^5*d
^4 - 2*a*b^2*c^4*d^3*e - 2*a^2*b^2*c^3*d*e^3 + a^3*b*c^3*e^4 + (a*b^3*c^3 +
 2*a^2*b*c^4)*d^2*e^2)*f - (6*a*b^2*c^4*d^4 + 36*a^2*b^2*c^3*d^2*e^2 - 48*a
^3*b*c^3*d*e^3 - 8*(a*b^3*c^3 + 2*a^2*b*c^4)*d^3*e + (a*b^6 - 10*a^2*b^4*c
+ 30*a^3*b^2*c^2)*e^4)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b
^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - ((b^5*c^3
- 14*a*b^3*c^4 + 40*a^2*b*c^5)*d^4 + 4*(a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*
c^5)*d^3*e - 36*(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^2*e^2 + 4*(a^2*b^4*c^2 + 4*a^
```

3*b^2*c^3 - 32*a^4*c^4)*d*e^3 + (a^2*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)
*e^4)*f - ((a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*c^5)*d^4 - 24*(a^2*b^3*c^3 -
 4*a^3*b*c^4)*d^3*e + 6*(a^2*b^4*c^2 + 4*a^3*b^2*c^3 - 32*a^4*c^4)*d^2*e^2
+ 4*(a^2*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)*d*e^3 - 3*(a^2*b^6 - 11*a^3
*b^4*c + 36*a^4*b^2*c^2 - 32*a^5*c^3)*e^4)*g + 2*((2*(b^4*c^4 + a*b^2*c^5 -
 20*a^2*c^6)*d^4 - 4*(b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^3*e + 6*(5*a*b^
4*c^3 - 22*a^2*b^2*c^4 + 8*a^3*c^5)*d^2*e^2 - 4*(a*b^5*c^2 + a^2*b^3*c^3 -
20*a^3*b*c^4)*d*e^3 - (a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c
^4)*e^4)*f - ((b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^4 - 4*(5*a*b^4*c^3 - 2
2*a^2*b^2*c^4 + 8*a^3*c^5)*d^3*e + 6*(a*b^5*c^2 + a^2*b^3*c^3 - 20*a^3*b*c^
4)*d^2*e^2 + 4*(a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c^4)*d*e
^3 - (3*a*b^7 - 34*a^2*b^5*c + 119*a^3*b^3*c^2 - 124*a^4*b*c^3)*e^4)*g)*x +
 ((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*e^4*g*x^4 + 2*(b^7
*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e^4*g*x^3 + (b^8 - 10*a*
b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*e^4*g*x^2 + 2*(a*b^7
 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*e^4*g*x + (a^2*b^6 - 12*a^
3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4*g)*log(c*x^2 + b*x + a))/(a^2*b^
6*c^3 - 12*a^3*b^4*c^4 + 48*a^4*b^2*c^5 - 64*a^5*c^6 + (b^6*c^5 - 12*a*b^4*
c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*x^4 + 2*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2
*b^3*c^6 - 64*a^3*b*c^7)*x^3 + (b^8*c^3 - 10*a*b^6*c^4 + 24*a^2*b^4*c^5 + 3
2*a^3*b^2*c^6 - 128*a^4*c^7)*x^2 + 2*(a*b^7*c^3 - 12*a^2*b^5*c^4 + 48*a^3*b
^3*c^5 - 64*a^4*b*c^6)*x), 1/2*(2*((6*(b^2*c^6 - 4*a*c^7)*d^4 - 12*(b^3*c^5
 - 4*a*b*c^6)*d^3*e + 6*(b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^2*e^2 - 12*(a
*b^3*c^4 - 4*a^2*b*c^5)*d*e^3 - (b^6*c^2 - 12*a*b^4*c^3 + 42*a^2*b^2*c^4 -
40*a^3*c^5)*e^4)*f - (3*(b^3*c^5 - 4*a*b*c^6)*d^4 - 4*(b^4*c^4 - 2*a*b^2*c^
5 - 8*a^2*c^6)*d^3*e + 18*(a*b^3*c^4 - 4*a^2*b*c^5)*d^2*e^2 + 4*(b^6*c^2 -
12*a*b^4*c^3 + 42*a^2*b^2*c^4 - 40*a^3*c^5)*d*e^3 - (2*b^7*c - 23*a*b^5*c^2
 + 85*a^2*b^3*c^3 - 100*a^3*b*c^4)*e^4)*g)*x^3 + ((18*(b^3*c^5 - 4*a*b*c^6)
d^4 - 36(b^4*c^4 - 4*a*b^2*c^5)*d^3*e + 18*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2
*b*c^5)*d^2*e^2 - 4*(b^6*c^2 - 3*a*b^4*c^3 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d
*e^3 - (b^7*c - 12*a*b^5*c^2 + 30*a^2*b^3*c^3 + 8*a^3*b*c^4)*e^4)*f - (9*(b
^4*c^4 - 4*a*b^2*c^5)*d^4 - 12*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2*b*c^5)*d^3*e
+ 6*(b^6*c^2 - 3*a*b^4*c^3 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d^2*e^2 + 4*(b^7*
c - 12*a*b^5*c^2 + 30*a^2*b^3*c^3 + 8*a^3*b*c^4)*d*e^3 - (3*b^8 - 31*a*b^6*
c + 87*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 128*a^4*c^4)*e^4)*g)*x^2 - 2*((12*(c^
7*d^4 - 2*b*c^6*d^3*e - 2*a*b*c^5*d*e^3 + a^2*c^5*e^4 + (b^2*c^5 + 2*a*c^6)
*d^2*e^2)*f - (6*b*c^6*d^4 + 36*a*b*c^5*d^2*e^2 - 48*a^2*c^5*d*e^3 - 8*(b^2
*c^5 + 2*a*c^6)*d^3*e + (b^5*c^2 - 10*a*b^3*c^3 + 30*a^2*b*c^4)*e^4)*g)*x^4
 + 2*(12*(b*c^6*d^4 - 2*b^2*c^5*d^3*e - 2*a*b^2*c^4*d*e^3 + a^2*b*c^4*e^4 +
 (b^3*c^4 + 2*a*b*c^5)*d^2*e^2)*f - (6*b^2*c^5*d^4 + 36*a*b^2*c^4*d^2*e^2 -
 48*a^2*b*c^4*d*e^3 - 8*(b^3*c^4 + 2*a*b*c^5)*d^3*e + (b^6*c - 10*a*b^4*c^2
 + 30*a^2*b^2*c^3)*e^4)*g)*x^3 + (12*((b^2*c^5 + 2*a*c^6)*d^4 - 2*(b^3*c^4
+ 2*a*b*c^5)*d^3*e + (b^4*c^3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^2 - 2*(a*b^3
*c^3 + 2*a^2*b*c^4)*d*e^3 + (a^2*b^2*c^3 + 2*a^3*c^4)*e^4)*f - (6*(b^3*c^4
+ 2*a*b*c^5)*d^4 - 8*(b^4*c^3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^3*e + 36*(a*b^3*
c^3 + 2*a^2*b*c^4)*d^2*e^2 - 48*(a^2*b^2*c^3 + 2*a^3*c^4)*d*e^3 + (b^7 - 8*
a*b^5*c + 10*a^2*b^3*c^2 + 60*a^3*b*c^3)*e^4)*g)*x^2 + 12*(a^2*c^5*d^4 - 2*
a^2*b*c^4*d^3*e - 2*a^3*b*c^3*d*e^3 + a^4*c^3*e^4 + (a^2*b^2*c^3 + 2*a^3*c^
4)*d^2*e^2)*f - (6*a^2*b*c^4*d^4 + 36*a^3*b*c^3*d^2*e^2 - 48*a^4*c^3*d*e^3
- 8*(a^2*b^2*c^3 + 2*a^3*c^4)*d^3*e + (a^2*b^5 - 10*a^3*b^3*c + 30*a^4*b*c^
2)*e^4)*g + 2*(12*(a*b*c^5*d^4 - 2*a*b^2*c^4*d^3*e - 2*a^2*b^2*c^3*d*e^3 +
a^3*b*c^3*e^4 + (a*b^3*c^3 + 2*a^2*b*c^4)*d^2*e^2)*f - (6*a*b^2*c^4*d^4 + 3
6*a^2*b^2*c^3*d^2*e^2 - 48*a^3*b*c^3*d*e^3 - 8*(a*b^3*c^3 + 2*a^2*b*c^4)*d^
3*e + (a*b^6 - 10*a^2*b^4*c + 30*a^3*b^2*c^2)*e^4)*g)*x)*sqrt(-b^2 + 4*a*c)
*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - ((b^5*c^3 - 14*a*b
^3*c^4 + 40*a^2*b*c^5)*d^4 + 4*(a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*c^5)*d^3
e - 36(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^2*e^2 + 4*(a^2*b^4*c^2 + 4*a^3*b^2*c^
3 - 32*a^4*c^4)*d*e^3 + (a^2*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)*e^4)*f
- ((a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*c^5)*d^4 - 24*(a^2*b^3*c^3 - 4*a^3*b

```
*c^4)*d^3*e + 6*(a^2*b^4*c^2 + 4*a^3*b^2*c^3 - 32*a^4*c^4)*d^2*e^2 + 4*(a^2
*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)*d*e^3 - 3*(a^2*b^6 - 11*a^3*b^4*c +
 36*a^4*b^2*c^2 - 32*a^5*c^3)*e^4)*g + 2*((2*(b^4*c^4 + a*b^2*c^5 - 20*a^2*
c^6)*d^4 - 4*(b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^3*e + 6*(5*a*b^4*c^3 -
22*a^2*b^2*c^4 + 8*a^3*c^5)*d^2*e^2 - 4*(a*b^5*c^2 + a^2*b^3*c^3 - 20*a^3*b
*c^4)*d*e^3 - (a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c^4)*e^4)
*f - ((b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^4 - 4*(5*a*b^4*c^3 - 22*a^2*b^
2*c^4 + 8*a^3*c^5)*d^3*e + 6*(a*b^5*c^2 + a^2*b^3*c^3 - 20*a^3*b*c^4)*d^2*e
^2 + 4*(a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c^4)*d*e^3 - (3*
a*b^7 - 34*a^2*b^5*c + 119*a^3*b^3*c^2 - 124*a^4*b*c^3)*e^4)*g)*x + ((b^6*c
^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*e^4*g*x^4 + 2*(b^7*c - 12*
a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e^4*g*x^3 + (b^8 - 10*a*b^6*c +
24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*e^4*g*x^2 + 2*(a*b^7 - 12*a^
2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*e^4*g*x + (a^2*b^6 - 12*a^3*b^4*c
+ 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4*g)*log(c*x^2 + b*x + a))/(a^2*b^6*c^3 -
12*a^3*b^4*c^4 + 48*a^4*b^2*c^5 - 64*a^5*c^6 + (b^6*c^5 - 12*a*b^4*c^6 + 48
*a^2*b^2*c^7 - 64*a^3*c^8)*x^4 + 2*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^3*c^6
 - 64*a^3*b*c^7)*x^3 + (b^8*c^3 - 10*a*b^6*c^4 + 24*a^2*b^4*c^5 + 32*a^3*b^
2*c^6 - 128*a^4*c^7)*x^2 + 2*(a*b^7*c^3 - 12*a^2*b^5*c^4 + 48*a^3*b^3*c^5 -
 64*a^4*b*c^6)*x)]
```

giac [B] time = 0.25, size = 1316, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (12*c^5*d^4*f - 6*b*c^4*d^4*g - 24*b*c^4*d^3*f*e + 8*b^2*c^3*d^3*g*e + 16*a
*c^4*d^3*g*e + 12*b^2*c^3*d^2*f*e^2 + 24*a*c^4*d^2*f*e^2 - 36*a*b*c^3*d^2*g
*e^2 - 24*a*b*c^3*d*f*e^3 + 48*a^2*c^3*d*g*e^3 + 12*a^2*c^3*f*e^4 - b^5*g*e
^4 + 10*a*b^3*c*g*e^4 - 30*a^2*b*c^2*g*e^4)*arctan((2*c*x + b)/sqrt(-b^2 +
4*a*c))/((b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*sqrt(-b^2 + 4*a*c)) + 1/2*g*e
^4*log(c*x^2 + b*x + a)/c^3 - 1/2*(b^3*c^3*d^4*f - 10*a*b*c^4*d^4*f + a*b^2
*c^3*d^4*g + 8*a^2*c^4*d^4*g + 4*a*b^2*c^3*d^3*f*e + 32*a^2*c^4*d^3*f*e - 2
4*a^2*b*c^3*d^3*g*e - 36*a^2*b*c^3*d^2*f*e^2 + 6*a^2*b^2*c^2*d^2*g*e^2 + 48
*a^3*c^3*d^2*g*e^2 + 4*a^2*b^2*c^2*d*f*e^3 + 32*a^3*c^3*d*f*e^3 + 4*a^2*b^3
*c*d*g*e^3 - 40*a^3*b*c^2*d*g*e^3 + a^2*b^3*c*f*e^4 - 10*a^3*b*c^2*f*e^4 -
3*a^2*b^4*g*e^4 + 21*a^3*b^2*c*g*e^4 - 24*a^4*c^2*g*e^4 - 2*(6*c^6*d^4*f -
3*b*c^5*d^4*g - 12*b*c^5*d^3*f*e + 4*b^2*c^4*d^3*g*e + 8*a*c^5*d^3*g*e + 6*
b^2*c^4*d^2*f*e^2 + 12*a*c^5*d^2*f*e^2 - 18*a*b*c^4*d^2*g*e^2 - 12*a*b*c^4*
d*f*e^3 - 4*b^4*c^2*d*g*e^3 + 32*a*b^2*c^3*d*g*e^3 - 40*a^2*c^4*d*g*e^3 - b
^4*c^2*f*e^4 + 8*a*b^2*c^3*f*e^4 - 10*a^2*c^4*f*e^4 + 2*b^5*c*g*e^4 - 15*a*
b^3*c^2*g*e^4 + 25*a^2*b*c^3*g*e^4)*x^3 - (18*b*c^5*d^4*f - 9*b^2*c^4*d^4*g
 - 36*b^2*c^4*d^3*f*e + 12*b^3*c^3*d^3*g*e + 24*a*b*c^4*d^3*g*e + 18*b^3*c^
3*d^2*f*e^2 + 36*a*b*c^4*d^2*f*e^2 - 6*b^4*c^2*d^2*g*e^2 - 6*a*b^2*c^3*d^2*
g*e^2 - 96*a^2*c^4*d^2*g*e^2 - 4*b^4*c^2*d*f*e^3 - 4*a*b^2*c^3*d*f*e^3 - 64
*a^2*c^4*d*f*e^3 - 4*b^5*c*d*g*e^3 + 32*a*b^3*c^2*d*g*e^3 + 8*a^2*b*c^3*d*g
*e^3 - b^5*c*f*e^4 + 8*a*b^3*c^2*f*e^4 + 2*a^2*b*c^3*f*e^4 + 3*b^6*g*e^4 -
19*a*b^4*c*g*e^4 + 11*a^2*b^2*c^2*g*e^4 + 32*a^3*c^3*g*e^4)*x^2 - 2*(2*b^2*
c^4*d^4*f + 10*a*c^5*d^4*f - b^3*c^3*d^4*g - 5*a*b*c^4*d^4*g - 4*b^3*c^3*d^
3*f*e - 20*a*b*c^4*d^3*f*e + 20*a*b^2*c^3*d^3*g*e - 8*a^2*c^4*d^3*g*e + 30*
a*b^2*c^3*d^2*f*e^2 - 12*a^2*c^4*d^2*f*e^2 - 6*a*b^3*c^2*d^2*g*e^2 - 30*a^2
*b*c^3*d^2*g*e^2 - 4*a*b^3*c^2*d*f*e^3 - 20*a^2*b*c^3*d*f*e^3 - 4*a*b^4*c*d
*g*e^3 + 40*a^2*b^2*c^2*d*g*e^3 - 24*a^3*c^3*d*g*e^3 - a*b^4*c*f*e^4 + 10*a
^2*b^2*c^2*f*e^4 - 6*a^3*c^3*f*e^4 + 3*a*b^5*g*e^4 - 22*a^2*b^3*c*g*e^4 + 3
1*a^3*b*c^2*g*e^4)*x)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c)^2*c^3)
```

maple [B] time = 0.07, size = 2221, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] ((25*a^2*b*c^2*e^4*g-40*a^2*c^3*d*e^3*g-10*a^2*c^3*e^4*f-15*a*b^3*c*e^4*g+3
2*a*b^2*c^2*d*e^3*g+8*a*b^2*c^2*e^4*f-18*a*b*c^3*d^2*e^2*g-12*a*b*c^3*d*e^3
*f+8*a*c^4*d^3*e*g+12*a*c^4*d^2*e^2*f+2*b^5*e^4*g-4*b^4*c*d*e^3*g-b^4*c*e^4
*f+4*b^2*c^3*d^3*e*g+6*b^2*c^3*d^2*e^2*f-3*b*c^4*d^4*g-12*b*c^4*d^3*e*f+6*c
^5*d^4*f)/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^3+1/2*(32*a^3*c^3*e^4*g+11*a^2*b
^2*c^2*e^4*g+8*a^2*b*c^3*d*e^3*g+2*a^2*b*c^3*e^4*f-96*a^2*c^4*d^2*e^2*g-64*
a^2*c^4*d*e^3*f-19*a*b^4*c*e^4*g+32*a*b^3*c^2*d*e^3*g+8*a*b^3*c^2*e^4*f-6*a
*b^2*c^3*d^2*e^2*g-4*a*b^2*c^3*d*e^3*f+24*a*b*c^4*d^3*e*g+36*a*b*c^4*d^2*e^
2*f+3*b^6*e^4*g-4*b^5*c*d*e^3*g-b^5*c*e^4*f-6*b^4*c^2*d^2*e^2*g-4*b^4*c^2*d
*e^3*f+12*b^3*c^3*d^3*e*g+18*b^3*c^3*d^2*e^2*f-9*b^2*c^4*d^4*g-36*b^2*c^4*d
^3*e*f+18*b*c^5*d^4*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/c^3*x^2+(31*a^3*b*c^2*e^4
*g-24*a^3*c^3*d*e^3*g-6*a^3*c^3*e^4*f-22*a^2*b^3*c*e^4*g+40*a^2*b^2*c^2*d*e
^3*g+10*a^2*b^2*c^2*e^4*f-30*a^2*b*c^3*d^2*e^2*g-20*a^2*b*c^3*d*e^3*f-8*a^2
*c^4*d^3*e*g-12*a^2*c^4*d^2*e^2*f+3*a*b^5*e^4*g-4*a*b^4*c*d*e^3*g-a*b^4*c*e
^4*f-6*a*b^3*c^2*d^2*e^2*g-4*a*b^3*c^2*d*e^3*f+20*a*b^2*c^3*d^3*e*g+30*a*b^
2*c^3*d^2*e^2*f-5*a*b*c^4*d^4*g-20*a*b*c^4*d^3*e*f+10*a*c^5*d^4*f-b^3*c^3*d
^4*g-4*b^3*c^3*d^3*e*f+2*b^2*c^4*d^4*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/c^3*x+1/
2/c^3*(24*a^4*c^2*e^4*g-21*a^3*b^2*c*e^4*g+40*a^3*b*c^2*d*e^3*g+10*a^3*b*c^
2*e^4*f-48*a^3*c^3*d^2*e^2*g-32*a^3*c^3*d*e^3*f+3*a^2*b^4*e^4*g-4*a^2*b^3*c
*d*e^3*g-a^2*b^3*c*e^4*f-6*a^2*b^2*c^2*d^2*e^2*g-4*a^2*b^2*c^2*d*e^3*f+24*a
^2*b*c^3*d^3*e*g+36*a^2*b*c^3*d^2*e^2*f-8*a^2*c^4*d^4*g-32*a^2*c^4*d^3*e*f-
a*b^2*c^3*d^4*g-4*a*b^2*c^3*d^3*e*f+10*a*b*c^4*d^4*f-b^3*c^3*d^4*f)/(16*a^2
*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2+8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*ln(c*x^
2+b*x+a)*a^2*e^4*g-4/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*ln(c*x^2+b*x+a)*a*b^2*e
^4*g+1/2/c^3/(16*a^2*c^2-8*a*b^2*c+b^4)*ln(c*x^2+b*x+a)*b^4*e^4*g-30/c/(16*
a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2)
)*a^2*b*e^4*g+48/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*a^2*d*e^3*g+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2
)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e^4*f+10/c^2/(16*a^2*c^2-8*
a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e^
4*g-36/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c
-b^2)^(1/2))*a*b*d^2*e^2*g-24/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d*e^3*f+16*c/(16*a^2*c^2-8*a*b^2*c+
b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d^3*e*g+24*c/(
16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*a*d^2*e^2*f+8/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*b^2*d^3*e*g+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b
^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d^2*e^2*f-6*c/(16*a^2*c^2
-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^4
*g-24*c/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*b*d^3*e*f+12*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d^4*f-1/c^3/(16*a^2*c^2-8*a*b^2*c+b^4)
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*e^4*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 5.59, size = 1763, normalized size = 3.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (atan((x*(32*a^2*c^5*(4*a*c - b^2)^(5/2) + 2*b^4*c^3*(4*a*c - b^2)^(5/2) -
16*a*b^2*c^4*(4*a*c - b^2)^(5/2)))/(c^2*(4*a*c - b^2)^5) + ((32*a^2*c^5*(4*
a*c - b^2)^(5/2) + 2*b^4*c^3*(4*a*c - b^2)^(5/2) - 16*a*b^2*c^4*(4*a*c - b^
2)^(5/2))*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4))/(2*c^5*(4*a*c - b^2)^5*(b
^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(12*c^5*d^4*f - b^5*e^4*g + 12*a^2*c^3*e^4*f
 - 6*b*c^4*d^4*g + 10*a*b^3*c*e^4*g + 16*a*c^4*d^3*e*g - 24*b*c^4*d^3*e*f -
 30*a^2*b*c^2*e^4*g + 24*a*c^4*d^2*e^2*f + 48*a^2*c^3*d*e^3*g + 8*b^2*c^3*d
^3*e*g + 12*b^2*c^3*d^2*e^2*f - 24*a*b*c^3*d*e^3*f - 36*a*b*c^3*d^2*e^2*g))
/(c^3*(4*a*c - b^2)^(5/2)) - (log(a + b*x + c*x^2)*(b^10*e^4*g - 1024*a^5*c
^5*e^4*g - 20*a*b^8*c*e^4*g + 160*a^2*b^6*c^2*e^4*g - 640*a^3*b^4*c^3*e^4*g
 + 1280*a^4*b^2*c^4*e^4*g))/(2*(1024*a^5*c^8 - b^10*c^3 + 20*a*b^8*c^4 - 16
0*a^2*b^6*c^5 + 640*a^3*b^4*c^6 - 1280*a^4*b^2*c^7)) - ((8*a^2*c^4*d^4*g -
3*a^2*b^4*e^4*g + b^3*c^3*d^4*f - 24*a^4*c^2*e^4*g - 10*a*b*c^4*d^4*f + a*b
^2*c^3*d^4*g + a^2*b^3*c*e^4*f - 10*a^3*b*c^2*e^4*f + 21*a^3*b^2*c*e^4*g +
32*a^2*c^4*d^3*e*f + 32*a^3*c^3*d*e^3*f + 48*a^3*c^3*d^2*e^2*g - 36*a^2*b*c
^3*d^2*e^2*f + 4*a^2*b^2*c^2*d*e^3*f + 6*a^2*b^2*c^2*d^2*e^2*g + 4*a*b^2*c^
3*d^3*e*f - 24*a^2*b*c^3*d^3*e*g + 4*a^2*b^3*c*d*e^3*g - 40*a^3*b*c^2*d*e^3
*g)/(2*c^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^3*(6*c^5*d^4*f + 2*b^5*e^4*
g - 10*a^2*c^3*e^4*f - 3*b*c^4*d^4*g - b^4*c*e^4*f - 15*a*b^3*c*e^4*g + 8*a
*c^4*d^3*e*g - 12*b*c^4*d^3*e*f - 4*b^4*c*d*e^3*g + 8*a*b^2*c^2*e^4*f + 25*
a^2*b*c^2*e^4*g + 12*a*c^4*d^2*e^2*f - 40*a^2*c^3*d*e^3*g + 4*b^2*c^3*d^3*e
*g + 6*b^2*c^3*d^2*e^2*f - 12*a*b*c^3*d*e^3*f - 18*a*b*c^3*d^2*e^2*g + 32*a
*b^2*c^2*d*e^3*g))/(c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^2*(3*b^6*e^4*g
 + 32*a^3*c^3*e^4*g - 9*b^2*c^4*d^4*g + 18*b*c^5*d^4*f - b^5*c*e^4*f - 19*a
*b^4*c*e^4*g - 4*b^5*c*d*e^3*g + 8*a*b^3*c^2*e^4*f + 2*a^2*b*c^3*e^4*f - 64
*a^2*c^4*d*e^3*f - 36*b^2*c^4*d^3*e*f - 4*b^4*c^2*d*e^3*f + 12*b^3*c^3*d^3*
e*g + 11*a^2*b^2*c^2*e^4*g - 96*a^2*c^4*d^2*e^2*g + 18*b^3*c^3*d^2*e^2*f -
6*b^4*c^2*d^2*e^2*g - 6*a*b^2*c^3*d^2*e^2*g + 24*a*b*c^4*d^3*e*g + 36*a*b*c
^4*d^2*e^2*f - 4*a*b^2*c^3*d*e^3*f + 32*a*b^3*c^2*d*e^3*g + 8*a^2*b*c^3*d*e
^3*g))/(2*c^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x*(6*a^3*c^3*e^4*f - 2*b^2
*c^4*d^4*f + b^3*c^3*d^4*g - 10*a*c^5*d^4*f - 3*a*b^5*e^4*g + 5*a*b*c^4*d^4
*g + a*b^4*c*e^4*f + 22*a^2*b^3*c*e^4*g - 31*a^3*b*c^2*e^4*g + 8*a^2*c^4*d^
3*e*g + 24*a^3*c^3*d*e^3*g + 4*b^3*c^3*d^3*e*f - 10*a^2*b^2*c^2*e^4*f + 12*
a^2*c^4*d^2*e^2*f - 30*a*b^2*c^3*d^2*e^2*f + 6*a*b^3*c^2*d^2*e^2*g + 30*a^2
*b*c^3*d^2*e^2*g - 40*a^2*b^2*c^2*d*e^3*g + 20*a*b*c^4*d^3*e*f + 4*a*b^4*c*
d*e^3*g + 4*a*b^3*c^2*d*e^3*f + 20*a^2*b*c^3*d*e^3*f - 20*a*b^2*c^3*d^3*e*g
))/(c^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4
 + 2*a*b*x + 2*b*c*x^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**4*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2131 $\int \frac{(d+ex)^3(f+gx)}{\left(a+bx+cx^2\right)^3} dx$

Optimal. Leaf size=195

$$-\frac{6\left(ae^2-bde+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(2aeg-bdg-bef+2cdf)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^3(-2ag+x(2cf-bg)+bf)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{3(d+ex\cdots}{}$$

Rubi [A] time = 0.16, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {804, 722, 618, 206}

$$-\frac{6\left(ae^2-bde+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(2aeg-bdg-bef+2cdf)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^3(-2ag+x(2cf-bg)+bf)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{3(d+ex)(-2ae+x(2cd-be)+bd)(2aeg-bdg-bef+2cdf)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^3*(b*f - 2*a*g + (2*c*f - b*g)*x))/(2*(b^2 - 4*a*c)*(a + b*x +
c*x^2)^2) + (3*(2*c*d*f - b*e*f - b*d*g + 2*a*e*g)*(d + e*x)*(b*d - 2*a*e +
 (2*c*d - b*e)*x))/(2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - (6*(c*d^2 - b*d*
e + a*e^2)*(2*c*d*f - b*e*f - b*d*g + 2*a*e*g)*ArcTanh[(b + 2*c*x)/Sqrt[b^2
 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{(3(2cdf-bef-bdg+2aeg))\int \frac{(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cdf-bef-bdg+2aeg)(d+ex)(bd-2a\ldots}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cdf-bef-bdg+2aeg)(d+ex)(bd-2a\ldots}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cdf-bef-bdg+2aeg)(d+ex)(bd-2a\ldots}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Mathematica [B] time = 0.98, size = 550, normalized size = 2.82

$$\frac{1}{2}\left(\frac{bc\left(-3a^2e^3g+3ace\left(d^2g+de(f+3gx)+e^2fx\right)+c^2d^2(d(f-gx)-3efx)\right)+2c^2\left(a^2e^2(3dg+e(f+gx))-acd\left(d^2g+3de(f+gx)+3e^2fx\right)+c^2d^3fx\right)+b^3e^2(aeg-cx(3dg+ef))-b^2ce(ae(3dg+ef+4egx)-3cdx(dg+ef))+b^4e^3gx}{c^3\left(4ac-b^2\right)(a+x(b+cx))^2}+\frac{2bc^2\left(11a^2e^3g+3ace\left(d^2g+de(f-3gx)-e^2fx\right)+3c^2d^2(d(f-gx)-3efx)\right)-4c^3\left(a^2e^2(12dg+4ef+5egx)-3acdex(dg+ef)-3c^2d^3fx\right)+b^3ce\left(3cd(dg+ef)-8ae^2g\right)+b^2c^2\left(ae^2(15dg+5ef+16egx)-3cd\left(d^2g+3def-2degx-2e^2fx\right)\right)+b^5e^3g-b^4ce^2(3dg+e(f+2gx))}{c^3\left(b^2-4ac\right)^2(a+x(b+cx))}+\frac{12\left(e(ae-bd)+cd^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)(2aeg-b(dg+ef)+2cdf)}{\left(4ac-b^2\right)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((b^5*e^3*g + b^3*c*e*(-8*a*e^2*g + 3*c*d*(e*f + d*g)) - b^4*c*e^2*(3*d*g +
 e*(f + 2*g*x)) - 4*c^3*(-3*c^2*d^3*f*x - 3*a*c*d*e*(e*f + d*g)*x + a^2*e^2
*(4*e*f + 12*d*g + 5*e*g*x)) + b^2*c^2*(a*e^2*(5*e*f + 15*d*g + 16*e*g*x) -
 3*c*d*(3*d*e*f + d^2*g - 2*e^2*f*x - 2*d*e*g*x)) + 2*b*c^2*(11*a^2*e^3*g +
 3*a*c*e*(d^2*g - e^2*f*x + d*e*(f - 3*g*x)) + 3*c^2*d^2*(-3*e*f*x + d*(f -
 g*x))))/(c^3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))) + (b^4*e^3*g*x + b^3*e^2*(
a*e*g - c*(e*f + 3*d*g)*x) - b^2*c*e*(-3*c*d*(e*f + d*g)*x + a*e*(e*f + 3*d
*g + 4*e*g*x)) + 2*c^2*(c^2*d^3*f*x + a^2*e^2*(3*d*g + e*(f + g*x)) - a*c*d
*(d^2*g + 3*e^2*f*x + 3*d*e*(f + g*x))) + b*c*(-3*a^2*e^3*g + c^2*d^2*(-3*e
*f*x + d*(f - g*x)) + 3*a*c*e*(d^2*g + e^2*f*x + d*e*(f + 3*g*x))))/(c^3*(-
b^2 + 4*a*c)*(a + x*(b + c*x))^2) + (12*(c*d^2 + e*(-(b*d) + a*e))*(2*c*d*f
 + 2*a*e*g - b*(e*f + d*g))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 +
 4*a*c)^(5/2))/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^3(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^3*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)^3*(f + g*x))/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.51, size = 3941, normalized size = 20.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(3*(2*(b^2*c^5 - 4*a*c^6)*d^3 - 3*(b^3*c^4 - 4*a*b*c^5)*d^2*e + (b^
4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d*e^2 - (a*b^3*c^3 - 4*a^2*b*c^4)*e^3)*f -
 (3*(b^3*c^4 - 4*a*b*c^5)*d^3 - 3*(b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d^2*e
```

+ 9*(a*b^3*c^3 - 4*a^2*b*c^4)*d*e^2 + (b^6*c - 12*a*b^4*c^2 + 42*a^2*b^2*c^3 - 40*a^3*c^4)*e^3)*g)*x^3 + ((18*(b^3*c^4 - 4*a*b*c^5)*d^3 - 27*(b^4*c^3 - 4*a*b^2*c^4)*d^2*e + 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d*e^2 - (b^6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*e^3)*f - (9*(b^4*c^3 - 4*a*b^2*c^4)*d^3 - 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d^2*e + 3*(b^6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*d*e^2 + (b^7 - 12*a*b^5*c + 30*a^2*b^3*c^2 + 8*a^3*b*c^3)*e^3)*g)*x^2 + 6*(((2*c^6*d^3 - 3*b*c^5*d^2*e - a*b*c^4*e^3 + (b^2*c^4 + 2*a*c^5)*d*e^2)*f - (b*c^5*d^3 + 3*a*b*c^4*d*e^2 - 2*a^2*c^4*e^3 - (b^2*c^4 + 2*a*c^5)*d^2*e)*g)*x^4 + 2*((2*b*c^5*d^3 - 3*b^2*c^4*d^2*e - a*b^2*c^3*e^3 + (b^3*c^3 + 2*a*b*c^4)*d*e^2)*f - (b^2*c^4*d^3 + 3*a*b^2*c^3*d*e^2 - 2*a^2*b*c^3*e^3 - (b^3*c^3 + 2*a*b*c^4)*d^2*e)*g)*x^3 + ((2*(b^2*c^4 + 2*a*c^5)*d^3 - 3*(b^3*c^3 + 2*a*b*c^4)*d^2*e + (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d*e^2 - (a*b^3*c^2 + 2*a^2*b*c^3)*e^3)*f - ((b^3*c^3 + 2*a*b*c^4)*d^3 - (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d^2*e + 3*(a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2 - 2*(a^2*b^2*c^2 + 2*a^3*c^3)*e^3)*g)*x^2 + (2*a^2*c^4*d^3 - 3*a^2*b*c^3*d^2*e - a^3*b*c^2*e^3 + (a^2*b^2*c^2 + 2*a^3*c^3)*d*e^2)*f - (a^2*b*c^3*d^3 + 3*a^3*b*c^2*d*e^2 - 2*a^4*c^2*e^3 - (a^2*b^2*c^2 + 2*a^3*c^3)*d^2*e)*g + 2*((2*a*b*c^4*d^3 - 3*a*b^2*c^3*d^2*e - a^2*b^2*c^2*e^3 + (a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2)*f - (a*b^2*c^3*d^3 + 3*a^2*b^2*c^2*d*e^2 - 2*a^3*b*c^2*e^3 - (a*b^3*c^2 + 2*a^2*b*c^3)*d^2*e)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - ((b^5*c^2 - 14*a*b^3*c^3 + 40*a^2*b*c^4)*d^3 + 3*(a*b^4*c^2 + 4*a^2*b^2*c^3 - 32*a^3*c^4)*d^2*e - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d*e^2 + (a^2*b^4*c + 4*a^3*b^2*c^2 - 32*a^4*c^3)*e^3)*f - ((a*b^4*c^2 + 4*a^2*b^2*c^3 - 32*a^3*c^4)*d^3 - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e + 3*(a^2*b^4*c + 4*a^3*b^2*c^2 - 32*a^4*c^3)*d*e^2 + (a^2*b^5 - 14*a^3*b^3*c + 40*a^4*b*c^2)*e^3)*g + 2*((2*(b^4*c^3 + a*b^2*c^4 - 20*a^2*c^5)*d^3 - 3*(b^5*c^2 + a*b^3*c^3 - 20*a^2*b*c^4)*d^2*e + 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*a^3*c^4)*d*e^2 - (a*b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*e^3)*f - ((b^5*c^2 + a*b^3*c^3 - 20*a^2*b*c^4)*d^3 - 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*a^3*c^4)*d^2*e + 3*(a*b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*d*e^2 + (a*b^6 - 14*a^2*b^4*c + 46*a^3*b^2*c^2 - 24*a^4*c^3)*e^3)*g)*x)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5 + (b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7)*x^4 + 2*(b^7*c^3 - 12*a*b^5*c^4 + 48*a^2*b^3*c^5 - 64*a^3*b*c^6)*x^3 + (b^8*c^2 - 10*a*b^6*c^3 + 24*a^2*b^4*c^4 + 32*a^3*b^2*c^5 - 128*a^4*c^6)*x^2 + 2*(a*b^7*c^2 - 12*a^2*b^5*c^3 + 48*a^3*b^3*c^4 - 64*a^4*b*c^5)*x), 1/2*(2*(3*(2*(b^2*c^5 - 4*a*c^6)*d^3 - 3*(b^3*c^4 - 4*a*b*c^5)*d^2*e + (b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d*e^2 - (a*b^3*c^3 - 4*a^2*b*c^4)*e^3)*f - (3*(b^3*c^4 - 4*a*b*c^5)*d^3 - 3*(b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d^2*e + 9*(a*b^3*c^3 - 4*a^2*b*c^4)*d*e^2 + (b^6*c - 12*a*b^4*c^2 + 42*a^2*b^2*c^3 - 40*a^3*c^4)*e^3)*g)*x^3 + ((18*(b^3*c^4 - 4*a*b*c^5)*d^3 - 27*(b^4*c^3 - 4*a*b^2*c^4)*d^2*e + 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d*e^2 - (b^6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*e^3)*f - (9*(b^4*c^3 - 4*a*b^2*c^4)*d^3 - 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d^2*e + 3*(b^6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*d*e^2 + (b^7 - 12*a*b^5*c + 30*a^2*b^3*c^2 + 8*a^3*b*c^3)*e^3)*g)*x^2 - 12*(((2*c^6*d^3 - 3*b*c^5*d^2*e - a*b*c^4*e^3 + (b^2*c^4 + 2*a*c^5)*d*e^2)*f - (b*c^5*d^3 + 3*a*b*c^4*d*e^2 - 2*a^2*c^4*e^3 - (b^2*c^4 + 2*a*c^5)*d^2*e)*g)*x^4 + 2*((2*b*c^5*d^3 - 3*b^2*c^4*d^2*e - a*b^2*c^3*e^3 + (b^3*c^3 + 2*a*b*c^4)*d*e^2)*f - (b^2*c^4*d^3 + 3*a*b^2*c^3*d*e^2 - 2*a^2*b*c^3*e^3 - (b^3*c^3 + 2*a*b*c^4)*d^2*e)*g)*x^3 + ((2*(b^2*c^4 + 2*a*c^5)*d^3 - 3*(b^3*c^3 + 2*a*b*c^4)*d^2*e + (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d*e^2 - (a*b^3*c^2 + 2*a^2*b*c^3)*e^3)*f - ((b^3*c^3 + 2*a*b*c^4)*d^3 - (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d^2*e + 3*(a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2 - 2*(a^2*b^2*c^2 + 2*a^3*c^3)*e^3)*g)*x^2 + (2*a^2*c^4*d^3 - 3*a^2*b*c^3*d^2*e - a^3*b*c^2*e^3 + (a^2*b^2*c^2 + 2*a^3*c^3)*d*e^2)*f - (a^2*b*c^3*d^3 + 3*a^3*b*c^2*d*e^2 - 2*a^4*c^2*e^3 - (a^2*b^2*c^2 + 2*a^3*c^3)*d^2*e)*g + 2*((2*a*b*c^4*d^3 - 3*a*b^2*c^3*d^2*e - a^2*b^2*c^2*e^3 + (a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2)*f - (a*b^2*c^3*d^3 + 3*a^2*b^2*c^2*d*e^2 - 2*a^3*b*c^2*e^3 - (a*b^3*c^2 + 2*a^2*b*c^3)*d^2*e)*g)

```
*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)
) - ((b^5*c^2 - 14*a*b^3*c^3 + 40*a^2*b*c^4)*d^3 + 3*(a*b^4*c^2 + 4*a^2*b^2
*c^3 - 32*a^3*c^4)*d^2*e - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d*e^2 + (a^2*b^4*
c + 4*a^3*b^2*c^2 - 32*a^4*c^3)*e^3)*f - ((a*b^4*c^2 + 4*a^2*b^2*c^3 - 32*a
^3*c^4)*d^3 - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e + 3*(a^2*b^4*c + 4*a^3*b
^2*c^2 - 32*a^4*c^3)*d*e^2 + (a^2*b^5 - 14*a^3*b^3*c + 40*a^4*b*c^2)*e^3)*g
 + 2*((2*(b^4*c^3 + a*b^2*c^4 - 20*a^2*c^5)*d^3 - 3*(b^5*c^2 + a*b^3*c^3 -
20*a^2*b*c^4)*d^2*e + 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*a^3*c^4)*d*e^2 -
(a*b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*e^3)*f - ((b^5*c^2 + a*b^3*c^3 - 20*
a^2*b*c^4)*d^3 - 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*a^3*c^4)*d^2*e + 3*(a*
b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*d*e^2 + (a*b^6 - 14*a^2*b^4*c + 46*a^3*
b^2*c^2 - 24*a^4*c^3)*e^3)*g)*x)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2
*c^4 - 64*a^5*c^5 + (b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7)*
x^4 + 2*(b^7*c^3 - 12*a*b^5*c^4 + 48*a^2*b^3*c^5 - 64*a^3*b*c^6)*x^3 + (b^8
*c^2 - 10*a*b^6*c^3 + 24*a^2*b^4*c^4 + 32*a^3*b^2*c^5 - 128*a^4*c^6)*x^2 +
2*(a*b^7*c^2 - 12*a^2*b^5*c^3 + 48*a^3*b^3*c^4 - 64*a^4*b*c^5)*x)]
```

giac [B] time = 0.21, size = 979, normalized size = 5.02

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 6*(2*c^2*d^3*f - b*c*d^3*g - 3*b*c*d^2*f*e + b^2*d^2*g*e + 2*a*c*d^2*g*e +
b^2*d*f*e^2 + 2*a*c*d*f*e^2 - 3*a*b*d*g*e^2 - a*b*f*e^3 + 2*a^2*g*e^3)*arct
an((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-b^
2 + 4*a*c)) + 1/2*(12*c^5*d^3*f*x^3 - 6*b*c^4*d^3*g*x^3 - 18*b*c^4*d^2*f*x^
3*e + 6*b^2*c^3*d^2*g*x^3*e + 12*a*c^4*d^2*g*x^3*e + 18*b*c^4*d^3*f*x^2 - 9
*b^2*c^3*d^3*g*x^2 + 6*b^2*c^3*d*f*x^3*e^2 + 12*a*c^4*d*f*x^3*e^2 - 18*a*b*
c^3*d*g*x^3*e^2 - 27*b^2*c^3*d^2*f*x^2*e + 9*b^3*c^2*d^2*g*x^2*e + 18*a*b*c
^3*d^2*g*x^2*e + 4*b^2*c^3*d^3*f*x + 20*a*c^4*d^3*f*x - 2*b^3*c^2*d^3*g*x -
 10*a*b*c^3*d^3*g*x - 6*a*b*c^3*f*x^3*e^3 - 2*b^4*c*g*x^3*e^3 + 16*a*b^2*c^
2*g*x^3*e^3 - 20*a^2*c^3*g*x^3*e^3 + 9*b^3*c^2*d*f*x^2*e^2 + 18*a*b*c^3*d*f
*x^2*e^2 - 3*b^4*c*d*g*x^2*e^2 - 3*a*b^2*c^2*d*g*x^2*e^2 - 48*a^2*c^3*d*g*x
^2*e^2 - 6*b^3*c^2*d^2*f*x*e - 30*a*b*c^3*d^2*f*x*e + 30*a*b^2*c^2*d^2*g*x*
e - 12*a^2*c^3*d^2*g*x*e - b^3*c^2*d^3*f + 10*a*b*c^3*d^3*f - a*b^2*c^2*d^3
*g - 8*a^2*c^3*d^3*g - b^4*c*f*x^2*e^3 - a*b^2*c^2*f*x^2*e^3 - 16*a^2*c^3*f
*x^2*e^3 - b^5*g*x^2*e^3 + 8*a*b^3*c*g*x^2*e^3 + 2*a^2*b*c^2*g*x^2*e^3 + 30
*a*b^2*c^2*d*f*x*e^2 - 12*a^2*c^3*d*f*x*e^2 - 6*a*b^3*c*d*g*x*e^2 - 30*a^2*
b*c^2*d*g*x*e^2 - 3*a*b^2*c^2*d^2*f*e - 24*a^2*c^3*d^2*f*e + 18*a^2*b*c^2*d
^2*g*e - 2*a*b^3*c*f*x*e^3 - 10*a^2*b*c^2*f*x*e^3 - 2*a*b^4*g*x*e^3 + 20*a^
2*b^2*c*g*x*e^3 - 12*a^3*c^2*g*x*e^3 + 18*a^2*b*c^2*d*f*e^2 - 3*a^2*b^2*c*d
*g*e^2 - 24*a^3*c^2*d*g*e^2 - a^2*b^2*c*f*e^3 - 8*a^3*c^2*f*e^3 - a^2*b^3*g
*e^3 + 10*a^3*b*c*g*e^3)/((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*(c*x^2 + b*x
 + a)^2)
```

maple [B] time = 0.06, size = 1458, normalized size = 7.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-(10*a^2*c^2*e^3*g-8*a*b^2*c*e^3*g+9*a*b*c^2*d*e^2*g+3*a*b*c^2*e^3*f-6*a*c
^3*d^2*e*g-6*a*c^3*d*e^2*f+b^4*e^3*g-3*b^2*c^2*d^2*e*g-3*b^2*c^2*d*e^2*f+3*
b*c^3*d^3*g+9*b*c^3*d^2*e*f-6*c^4*d^3*f)/c/(16*a^2*c^2-8*a*b^2*c+b^4)*x^3+1
/2*(2*a^2*b*c^2*e^3*g-48*a^2*c^3*d*e^2*g-16*a^2*c^3*e^3*f+8*a*b^3*c*e^3*g-3
*a*b^2*c^2*d*e^2*g-a*b^2*c^2*e^3*f+18*a*b*c^3*d^2*e*g+18*a*b*c^3*d*e^2*f-b^
5*e^3*g-3*b^4*c*d*e^2*g-b^4*c*e^3*f+9*b^3*c^2*d^2*e*g+9*b^3*c^2*d*e^2*f-9*b
```

```
^2*c^3*d^3*g-27*b^2*c^3*d^2*e*f+18*b*c^4*d^3*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/
c^2*x^2-(6*a^3*c^2*e^3*g-10*a^2*b^2*c*e^3*g+15*a^2*b*c^2*d*e^2*g+5*a^2*b*c^
2*e^3*f+6*a^2*c^3*d^2*e*g+6*a^2*c^3*d*e^2*f+a*b^4*e^3*g+3*a*b^3*c*d*e^2*g+a
*b^3*c*e^3*f-15*a*b^2*c^2*d^2*e*g-15*a*b^2*c^2*d*e^2*f+5*a*b*c^3*d^3*g+15*a
*b*c^3*d^2*e*f-10*a*c^4*d^3*f+b^3*c^2*d^3*g+3*b^3*c^2*d^2*e*f-2*b^2*c^3*d^3
*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/c^2*x+1/2/c^2*(10*a^3*b*c*e^3*g-24*a^3*c^2*d
*e^2*g-8*a^3*c^2*e^3*f-a^2*b^3*e^3*g-3*a^2*b^2*c*d*e^2*g-a^2*b^2*c*e^3*f+18
*a^2*b*c^2*d^2*e*g+18*a^2*b*c^2*d*e^2*f-8*a^2*c^3*d^3*g-24*a^2*c^3*d^2*e*f-
a*b^2*c^2*d^3*g-3*a*b^2*c^2*d^2*e*f+10*a*b*c^3*d^3*f-b^3*c^2*d^3*f)/(16*a^2
*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b
^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e^3*g-18/(16*a^2*c^2-8*a*
b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d*e^2*
g-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*a*b*e^3*f+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*d^2*e*g+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*d*e^2*f+6/(16*a^2*c^2
-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d
^2*e*g+6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a
*c-b^2)^(1/2))*b^2*d*e^2*f-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*a
rctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d^3*g-18/(16*a^2*c^2-8*a*b^2*c+b^4)/
(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d^2*e*f+12/(16*a^
2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*
c^2*d^3*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.36, size = 1167, normalized size = 5.98

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (6*atan((((3*(b^5 + 16*a^2*b*c^2 - 8*a*b^3*c)*(a*e^2 + c*d^2 - b*d*e)*(2*a*
e*g - b*d*g - b*e*f + 2*c*d*f))/((4*a*c - b^2)^(5/2)*(b^4 + 16*a^2*c^2 - 8*
a*b^2*c)) + (6*c*x*(a*e^2 + c*d^2 - b*d*e)*(2*a*e*g - b*d*g - b*e*f + 2*c*d
*f))/(4*a*c - b^2)^(5/2))*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(6*a^2*e^3*g + 6*
c^2*d^3*f - 3*a*b*e^3*f - 3*b*c*d^3*g + 3*b^2*d*e^2*f + 3*b^2*d^2*e*g - 9*a
*b*d*e^2*g + 6*a*c*d*e^2*f + 6*a*c*d^2*e*g - 9*b*c*d^2*e*f))*(a*e^2 + c*d^2
 - b*d*e)*(2*a*e*g - b*d*g - b*e*f + 2*c*d*f))/(4*a*c - b^2)^(5/2) - ((a^2*
b^3*e^3*g + 8*a^2*c^3*d^3*g + 8*a^3*c^2*e^3*f + b^3*c^2*d^3*f - 10*a*b*c^3*
d^3*f - 10*a^3*b*c*e^3*g + a*b^2*c^2*d^3*g + a^2*b^2*c*e^3*f + 24*a^2*c^3*d
^2*e*f + 24*a^3*c^2*d*e^2*g + 3*a*b^2*c^2*d^2*e*f - 18*a^2*b*c^2*d*e^2*f -
18*a^2*b*c^2*d^2*e*g + 3*a^2*b^2*c*d*e^2*g)/(2*c^2*(b^4 + 16*a^2*c^2 - 8*a*
b^2*c)) + (x*(6*a^3*c^2*e^3*g - 2*b^2*c^3*d^3*f + b^3*c^2*d^3*g - 10*a*c^4*
d^3*f + a*b^4*e^3*g + 5*a*b*c^3*d^3*g + a*b^3*c*e^3*f + 5*a^2*b*c^2*e^3*f -
 10*a^2*b^2*c*e^3*g + 6*a^2*c^3*d*e^2*f + 6*a^2*c^3*d^2*e*g + 3*b^3*c^2*d^2
*e*f + 15*a*b*c^3*d^2*e*f + 3*a*b^3*c*d*e^2*g - 15*a*b^2*c^2*d*e^2*f - 15*a
*b^2*c^2*d^2*e*g + 15*a^2*b*c^2*d*e^2*g))/(c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*
```

```
c)) - (x^3*(6*c^4*d^3*f - b^4*e^3*g - 10*a^2*c^2*e^3*g - 3*b*c^3*d^3*g - 3*
a*b*c^2*e^3*f + 8*a*b^2*c*e^3*g + 6*a*c^3*d*e^2*f + 6*a*c^3*d^2*e*g - 9*b*c
^3*d^2*e*f + 3*b^2*c^2*d*e^2*f + 3*b^2*c^2*d^2*e*g - 9*a*b*c^2*d*e^2*g))/(c
*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^2*(b^5*e^3*g + 16*a^2*c^3*e^3*f + 9*b
^2*c^3*d^3*g - 18*b*c^4*d^3*f + b^4*c*e^3*f - 8*a*b^3*c*e^3*g + 3*b^4*c*d*e
^2*g + a*b^2*c^2*e^3*f - 2*a^2*b*c^2*e^3*g + 48*a^2*c^3*d*e^2*g + 27*b^2*c^
3*d^2*e*f - 9*b^3*c^2*d*e^2*f - 9*b^3*c^2*d^2*e*g - 18*a*b*c^3*d*e^2*f - 18
*a*b*c^3*d^2*e*g + 3*a*b^2*c^2*d*e^2*g))/(2*c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2
*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2132 $\int \frac{(d+ex)^2(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=305

$$-\frac{2\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-c(3bd(dg+2ef)-2ae(2dg+ef))+be(-3aeg+2bdg+bef)+6c^2d^2f\right)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^2(-2ag+}{2\left(b^2-4ac\right)}$$

Rubi [A] time = 0.38, antiderivative size = 303, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {820, 777, 618, 206}

$$-\frac{-x\left(-2c^2(2ae(ef-2dg)+3bd(dg+2ef))-2bce(aeg-2b(dg+ef))+b^3\left(-e^2\right)g+12c^3d^2f\right)+b^2\left(ae^2g+cd(3dg+2ef)\right)-6bc\left(ae(2dg+ef)+cd^2f\right)+8ace(aeg+2cdf)}{2c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}-\frac{2\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(be(-3aeg+2bdg+bef)+2ace(2dg+ef)-3bcd(dg+2ef)+6c^2d^2f\right)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^2(-2ag+x(2cf-bg)+bf)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^2*(b*f - 2*a*g + (2*c*f - b*g)*x))/(2*(b^2 - 4*a*c)*(a + b*x +
c*x^2)^2) - (8*a*c*e*(2*c*d*f + a*e*g) - 6*b*c*(c*d^2*f + a*e*(e*f + 2*d*g)
) + b^2*(a*e^2*g + c*d*(2*e*f + 3*d*g)) - (12*c^3*d^2*f - b^3*e^2*g - 2*b*c
*e*(a*e*g - 2*b*(e*f + d*g)) - 2*c^2*(2*a*e*(e*f - 2*d*g) + 3*b*d*(2*e*f +
d*g)))*x)/(2*c*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - (2*(6*c^2*d^2*f - 3*b*c
*d*(2*e*f + d*g) + 2*a*c*e*(e*f + 2*d*g) + b*e*(b*e*f + 2*b*d*g - 3*a*e*g))
*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(d+ex)^2(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{(d+ex)(6cdf-2bef-3bdg+4aeg+e(2cf-bg)x)}{\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{8ace(2cdf+aeg)-6bc\left(cd^2f+ae(ef+2dg\right.}{}$$

$$= -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{8ace(2cdf+aeg)-6bc\left(cd^2f+ae(ef+2dg\right.}{}$$

$$= -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{8ace(2cdf+aeg)-6bc\left(cd^2f+ae(ef+2dg\right.}{}$$

Mathematica [A] time = 0.67, size = 408, normalized size = 1.34

$$\frac{1}{2}\left(\frac{2c\left(a^2e^2g-ac\left(d^2g+2de(f+gx)+e^2fx\right)+c^2d^2fx\right)+b^2e(cx(2dg+ef)-aeg)+bc(ae(2dg+ef+3egx)+cd(df-dgx-2efx))+b^3\left(-e^2\right)gx}{c^2\left(4ac-b^2\right)(a+x(b+cx))^2}+\frac{4c^2\left(-4a^2e^2g+acex(2dg+ef)+3c^2d^2fx\right)+b^2c\left(5ae^2g+c\left(-3d^2g-6def+4degx+2e^2fx\right)\right)+2bc^2(ae(2dg+ef-3egx)+3cd(df-dgx-2efx))+b^4\left(-e^2\right)g+b^3ce(2dg+ef)}{c^2\left(b^2-4ac\right)^2(a+x(b+cx))}+\frac{4\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(be(-3aeg+2bdg+bef)+2ace(2dg+ef)-3bcd(dg+2ef)+6c^2d^2f\right)}{\left(4ac-b^2\right)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((-(b^4*e^2*g) + b^3*c*e*(e*f + 2*d*g) + 4*c^2*(-4*a^2*e^2*g + 3*c^2*d^2*f*
x + a*c*e*(e*f + 2*d*g)*x) + 2*b*c^2*(3*c*d*(d*f - 2*e*f*x - d*g*x) + a*e*(
e*f + 2*d*g - 3*e*g*x)) + b^2*c*(5*a*e^2*g + c*(-6*d*e*f - 3*d^2*g + 2*e^2*
f*x + 4*d*e*g*x)))/(c^2*(b^2 - 4*a*c)^2*(a + x*(b + c*x))) + (-(b^3*e^2*g*x
) + b^2*e*(-(a*e*g) + c*(e*f + 2*d*g)*x) + b*c*(c*d*(d*f - 2*e*f*x - d*g*x)
 + a*e*(e*f + 2*d*g + 3*e*g*x)) + 2*c*(a^2*e^2*g + c^2*d^2*f*x - a*c*(d^2*g
 + e^2*f*x + 2*d*e*(f + g*x))))/(c^2*(-b^2 + 4*a*c)*(a + x*(b + c*x))^2) +
(4*(6*c^2*d^2*f - 3*b*c*d*(2*e*f + d*g) + 2*a*c*e*(e*f + 2*d*g) + b*e*(b*e*
f + 2*b*d*g - 3*a*e*g))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a
*c)^(5/2))/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^2(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)^2*(f + g*x))/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.46, size = 2906, normalized size = 9.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*((6*(b^2*c^4 - 4*a*c^5)*d^2 - 6*(b^3*c^3 - 4*a*b*c^4)*d*e + (b^4*c^
2 - 2*a*b^2*c^3 - 8*a^2*c^4)*e^2)*f - (3*(b^3*c^3 - 4*a*b*c^4)*d^2 - 2*(b^4
*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d*e + 3*(a*b^3*c^2 - 4*a^2*b*c^3)*e^2)*g)*x
^3 + (3*(6*(b^3*c^3 - 4*a*b*c^4)*d^2 - 6*(b^4*c^2 - 4*a*b^2*c^3)*d*e + (b^5
```

```
*c - 2*a*b^3*c^2 - 8*a^2*b*c^3)*e^2)*f - (9*(b^4*c^2 - 4*a*b^2*c^3)*d^2 - 6
*(b^5*c - 2*a*b^3*c^2 - 8*a^2*b*c^3)*d*e + (b^6 - 3*a*b^4*c + 12*a^2*b^2*c^
2 - 64*a^3*c^3)*e^2)*g)*x^2 - 2*(((6*c^5*d^2 - 6*b*c^4*d*e + (b^2*c^3 + 2*a
*c^4)*e^2)*f - (3*b*c^4*d^2 + 3*a*b*c^3*e^2 - 2*(b^2*c^3 + 2*a*c^4)*d*e)*g)
*x^4 + 2*((6*b*c^4*d^2 - 6*b^2*c^3*d*e + (b^3*c^2 + 2*a*b*c^3)*e^2)*f - (3*
b^2*c^3*d^2 + 3*a*b^2*c^2*e^2 - 2*(b^3*c^2 + 2*a*b*c^3)*d*e)*g)*x^3 + ((6*(
b^2*c^3 + 2*a*c^4)*d^2 - 6*(b^3*c^2 + 2*a*b*c^3)*d*e + (b^4*c + 4*a*b^2*c^2
 + 4*a^2*c^3)*e^2)*f - (3*(b^3*c^2 + 2*a*b*c^3)*d^2 - 2*(b^4*c + 4*a*b^2*c^
2 + 4*a^2*c^3)*d*e + 3*(a*b^3*c + 2*a^2*b*c^2)*e^2)*g)*x^2 + (6*a^2*c^3*d^2
 - 6*a^2*b*c^2*d*e + (a^2*b^2*c + 2*a^3*c^2)*e^2)*f - (3*a^2*b*c^2*d^2 + 3*
a^3*b*c*e^2 - 2*(a^2*b^2*c + 2*a^3*c^2)*d*e)*g + 2*((6*a*b*c^3*d^2 - 6*a*b^
2*c^2*d*e + (a*b^3*c + 2*a^2*b*c^2)*e^2)*f - (3*a*b^2*c^2*d^2 + 3*a^2*b^2*c
*e^2 - 2*(a*b^3*c + 2*a^2*b*c^2)*d*e)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^
2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a
)) - ((b^5*c - 14*a*b^3*c^2 + 40*a^2*b*c^3)*d^2 + 2*(a*b^4*c + 4*a^2*b^2*c^
2 - 32*a^3*c^3)*d*e - 6*(a^2*b^3*c - 4*a^3*b*c^2)*e^2)*f - ((a*b^4*c + 4*a^
2*b^2*c^2 - 32*a^3*c^3)*d^2 - 12*(a^2*b^3*c - 4*a^3*b*c^2)*d*e + (a^2*b^4 +
 4*a^3*b^2*c - 32*a^4*c^2)*e^2)*g + 2*((2*(b^4*c^2 + a*b^2*c^3 - 20*a^2*c^4
)*d^2 - 2*(b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d*e + (5*a*b^4*c - 22*a^2*b^2*
c^2 + 8*a^3*c^3)*e^2)*f - ((b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d^2 - 2*(5*a*
b^4*c - 22*a^2*b^2*c^2 + 8*a^3*c^3)*d*e + (a*b^5 + a^2*b^3*c - 20*a^3*b*c^2
)*e^2)*g)*x)/(a^2*b^6*c - 12*a^3*b^4*c^2 + 48*a^4*b^2*c^3 - 64*a^5*c^4 + (b
^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^4 + 2*(b^7*c^2 - 12*
a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^3 + (b^8*c - 10*a*b^6*c^2 + 24
*a^2*b^4*c^3 + 32*a^3*b^2*c^4 - 128*a^4*c^5)*x^2 + 2*(a*b^7*c - 12*a^2*b^5*
c^2 + 48*a^3*b^3*c^3 - 64*a^4*b*c^4)*x), 1/2*(2*((6*(b^2*c^4 - 4*a*c^5)*d^2
 - 6*(b^3*c^3 - 4*a*b*c^4)*d*e + (b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*e^2)*f
 - (3*(b^3*c^3 - 4*a*b*c^4)*d^2 - 2*(b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d*e
 + 3*(a*b^3*c^2 - 4*a^2*b*c^3)*e^2)*g)*x^3 + (3*(6*(b^3*c^3 - 4*a*b*c^4)*d^
2 - 6*(b^4*c^2 - 4*a*b^2*c^3)*d*e + (b^5*c - 2*a*b^3*c^2 - 8*a^2*b*c^3)*e^2
)*f - (9*(b^4*c^2 - 4*a*b^2*c^3)*d^2 - 6*(b^5*c - 2*a*b^3*c^2 - 8*a^2*b*c^3
)*d*e + (b^6 - 3*a*b^4*c + 12*a^2*b^2*c^2 - 64*a^3*c^3)*e^2)*g)*x^2 - 4*(((
6*c^5*d^2 - 6*b*c^4*d*e + (b^2*c^3 + 2*a*c^4)*e^2)*f - (3*b*c^4*d^2 + 3*a*b
*c^3*e^2 - 2*(b^2*c^3 + 2*a*c^4)*d*e)*g)*x^4 + 2*((6*b*c^4*d^2 - 6*b^2*c^3*
d*e + (b^3*c^2 + 2*a*b*c^3)*e^2)*f - (3*b^2*c^3*d^2 + 3*a*b^2*c^2*e^2 - 2*(
b^3*c^2 + 2*a*b*c^3)*d*e)*g)*x^3 + ((6*(b^2*c^3 + 2*a*c^4)*d^2 - 6*(b^3*c^2
 + 2*a*b*c^3)*d*e + (b^4*c + 4*a*b^2*c^2 + 4*a^2*c^3)*e^2)*f - (3*(b^3*c^2
+ 2*a*b*c^3)*d^2 - 2*(b^4*c + 4*a*b^2*c^2 + 4*a^2*c^3)*d*e + 3*(a*b^3*c + 2
*a^2*b*c^2)*e^2)*g)*x^2 + (6*a^2*c^3*d^2 - 6*a^2*b*c^2*d*e + (a^2*b^2*c + 2
*a^3*c^2)*e^2)*f - (3*a^2*b*c^2*d^2 + 3*a^3*b*c*e^2 - 2*(a^2*b^2*c + 2*a^3*
c^2)*d*e)*g + 2*((6*a*b*c^3*d^2 - 6*a*b^2*c^2*d*e + (a*b^3*c + 2*a^2*b*c^2)
*e^2)*f - (3*a*b^2*c^2*d^2 + 3*a^2*b^2*c*e^2 - 2*(a*b^3*c + 2*a^2*b*c^2)*d*
e)*g)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4
*a*c)) - ((b^5*c - 14*a*b^3*c^2 + 40*a^2*b*c^3)*d^2 + 2*(a*b^4*c + 4*a^2*b^
2*c^2 - 32*a^3*c^3)*d*e - 6*(a^2*b^3*c - 4*a^3*b*c^2)*e^2)*f - ((a*b^4*c +
4*a^2*b^2*c^2 - 32*a^3*c^3)*d^2 - 12*(a^2*b^3*c - 4*a^3*b*c^2)*d*e + (a^2*b
^4 + 4*a^3*b^2*c - 32*a^4*c^2)*e^2)*g + 2*((2*(b^4*c^2 + a*b^2*c^3 - 20*a^2
*c^4)*d^2 - 2*(b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d*e + (5*a*b^4*c - 22*a^2*
b^2*c^2 + 8*a^3*c^3)*e^2)*f - ((b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d^2 - 2*(
5*a*b^4*c - 22*a^2*b^2*c^2 + 8*a^3*c^3)*d*e + (a*b^5 + a^2*b^3*c - 20*a^3*b
*c^2)*e^2)*g)*x)/(a^2*b^6*c - 12*a^3*b^4*c^2 + 48*a^4*b^2*c^3 - 64*a^5*c^4
+ (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^4 + 2*(b^7*c^2 -
 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^3 + (b^8*c - 10*a*b^6*c^2
+ 24*a^2*b^4*c^3 + 32*a^3*b^2*c^4 - 128*a^4*c^5)*x^2 + 2*(a*b^7*c - 12*a^2*
b^5*c^2 + 48*a^3*b^3*c^3 - 64*a^4*b*c^4)*x)]
```

giac [B] time = 0.18, size = 645, normalized size = 2.11

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2*(6*c^2*d^2*f - 3*b*c*d^2*g - 6*b*c*d*f*e + 2*b^2*d*g*e + 4*a*c*d*g*e + b^
2*f*e^2 + 2*a*c*f*e^2 - 3*a*b*g*e^2)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))
/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-b^2 + 4*a*c)) + 1/2*(12*c^4*d^2*f*x^
3 - 6*b*c^3*d^2*g*x^3 - 12*b*c^3*d*f*x^3*e + 4*b^2*c^2*d*g*x^3*e + 8*a*c^3*
d*g*x^3*e + 18*b*c^3*d^2*f*x^2 - 9*b^2*c^2*d^2*g*x^2 + 2*b^2*c^2*f*x^3*e^2
+ 4*a*c^3*f*x^3*e^2 - 6*a*b*c^2*g*x^3*e^2 - 18*b^2*c^2*d*f*x^2*e + 6*b^3*c*
d*g*x^2*e + 12*a*b*c^2*d*g*x^2*e + 4*b^2*c^2*d^2*f*x + 20*a*c^3*d^2*f*x - 2
*b^3*c*d^2*g*x - 10*a*b*c^2*d^2*g*x + 3*b^3*c*f*x^2*e^2 + 6*a*b*c^2*f*x^2*e
^2 - b^4*g*x^2*e^2 - a*b^2*c*g*x^2*e^2 - 16*a^2*c^2*g*x^2*e^2 - 4*b^3*c*d*f
*x*e - 20*a*b*c^2*d*f*x*e + 20*a*b^2*c*d*g*x*e - 8*a^2*c^2*d*g*x*e - b^3*c*
d^2*f + 10*a*b*c^2*d^2*f - a*b^2*c*d^2*g - 8*a^2*c^2*d^2*g + 10*a*b^2*c*f*x
*e^2 - 4*a^2*c^2*f*x*e^2 - 2*a*b^3*g*x*e^2 - 10*a^2*b*c*g*x*e^2 - 2*a*b^2*c
*d*f*e - 16*a^2*c^2*d*f*e + 12*a^2*b*c*d*g*e + 6*a^2*b*c*f*e^2 - a^2*b^2*g*
e^2 - 8*a^3*c*g*e^2)/((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*(c*x^2 + b*x + a)^
2)
```

maple [B] time = 0.06, size = 1014, normalized size = 3.32

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-c*(3*a*b*e^2*g-4*a*c*d*e*g-2*a*c*e^2*f-2*b^2*d*e*g-b^2*e^2*f+3*b*c*d^2*g+
6*b*c*d*e*f-6*c^2*d^2*f)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^3-1/2*(16*a^2*c^2*e^2
*g+a*b^2*c*e^2*g-12*a*b*c^2*d*e*g-6*a*b*c^2*e^2*f+b^4*e^2*g-6*b^3*c*d*e*g-3
*b^3*c*e^2*f+9*b^2*c^2*d^2*g+18*b^2*c^2*d*e*f-18*b*c^3*d^2*f)/c/(16*a^2*c^2
-8*a*b^2*c+b^4)*x^2-1/c*(5*a^2*b*c*e^2*g+4*a^2*c^2*d*e*g+2*a^2*c^2*e^2*f+a*
b^3*e^2*g-10*a*b^2*c*d*e*g-5*a*b^2*c*e^2*f+5*a*b*c^2*d^2*g+10*a*b*c^2*d*e*f
-10*a*c^3*d^2*f+b^3*c*d^2*g+2*b^3*c*d*e*f-2*b^2*c^2*d^2*f)/(16*a^2*c^2-8*a*
b^2*c+b^4)*x-1/2*(8*a^3*c*e^2*g+a^2*b^2*e^2*g-12*a^2*b*c*d*e*g-6*a^2*b*c*e^
2*f+8*a^2*c^2*d^2*g+16*a^2*c^2*d*e*f+a*b^2*c*d^2*g+2*a*b^2*c*d*e*f-10*a*b*c
^2*d^2*f+b^3*c*d^2*f)/c/(16*a^2*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2-6/(16*a
^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))
*a*b*e^2*g+8/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/
(4*a*c-b^2)^(1/2))*a*c*d*e*g+4/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*e^2*f+4/(16*a^2*c^2-8*a*b^2*c+b^4)
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d*e*g+2/(16*a^2*
c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^
2*e^2*f-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*b*c*d^2*g-12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*a
rctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d*e*f+12/(16*a^2*c^2-8*a*b^2*c+b^4)/
(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^2*d^2*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.23, size = 913, normalized size = 2.99

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*atan((((2*c*x*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g + 2*a*c*e^2*f - 3*b
*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))/(4*a*c - b^2)^(5/2) +
((b^5 + 16*a^2*b*c^2 - 8*a*b^3*c)*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g +
2*a*c*e^2*f - 3*b*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))/((4*a
*c - b^2)^(5/2)*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(b^4 + 16*a^2*c^2 - 8*a*b^
2*c))/(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g + 2*a*c*e^2*f - 3*b*c*d^2*g +
2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*
e^2*g + 2*a*c*e^2*f - 3*b*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f
))/(4*a*c - b^2)^(5/2) - ((a^2*b^2*e^2*g + 8*a^2*c^2*d^2*g + b^3*c*d^2*f +
8*a^3*c*e^2*g - 10*a*b*c^2*d^2*f + a*b^2*c*d^2*g - 6*a^2*b*c*e^2*f + 16*a^2
*c^2*d*e*f + 2*a*b^2*c*d*e*f - 12*a^2*b*c*d*e*g)/(2*c*(b^4 + 16*a^2*c^2 - 8
*a*b^2*c)) + (x^2*(b^4*e^2*g + 16*a^2*c^2*e^2*g + 9*b^2*c^2*d^2*g - 18*b*c^
3*d^2*f - 3*b^3*c*e^2*f - 6*a*b*c^2*e^2*f + a*b^2*c*e^2*g + 18*b^2*c^2*d*e*
f - 6*b^3*c*d*e*g - 12*a*b*c^2*d*e*g))/(2*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))
 + (x*(2*a^2*c^2*e^2*f - 2*b^2*c^2*d^2*f - 10*a*c^3*d^2*f + a*b^3*e^2*g + b
^3*c*d^2*g + 5*a*b*c^2*d^2*g - 5*a*b^2*c*e^2*f + 5*a^2*b*c*e^2*g + 4*a^2*c^
2*d*e*g + 2*b^3*c*d*e*f + 10*a*b*c^2*d*e*f - 10*a*b^2*c*d*e*g))/(c*(b^4 + 1
6*a^2*c^2 - 8*a*b^2*c)) - (c*x^3*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g + 2
*a*c*e^2*f - 3*b*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))/(b^4 +
 16*a^2*c^2 - 8*a*b^2*c))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*
b*c*x^3)
```

sympy [B] time = 128.60, size = 2076, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b
**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f)*log(x
 + (-64*a**3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g -
2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*
c**2*d**2*f) + 48*a**2*b**2*c**2*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g -
 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6
*b*c*d*e*f - 6*c**2*d**2*f) - 12*a*b**4*c*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b
*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d
**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f) + 3*a*b**2*e**2*g - 4*a*b*c*d*e*g - 2*
a*b*c*e**2*f + b**6*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g
- 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f -
6*c**2*d**2*f) - 2*b**3*d*e*g - b**3*e**2*f + 3*b**2*c*d**2*g + 6*b**2*c*d*
e*f - 6*b*c**2*d**2*f)/(6*a*b*c*e**2*g - 8*a*c**2*d*e*g - 4*a*c**2*e**2*f -
 4*b**2*c*d*e*g - 2*b**2*c*e**2*f + 6*b*c**2*d**2*g + 12*b*c**2*d*e*f - 12*
c**3*d**2*f)) - sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g - 2*
a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*c*
*2*d**2*f)*log(x + (64*a**3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g -
 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6
*b*c*d*e*f - 6*c**2*d**2*f) - 48*a**2*b**2*c**2*sqrt(-1/(4*a*c - b**2)**5)*
(3*a*b*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3
*b*c*d**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f) + 12*a*b**4*c*sqrt(-1/(4*a*c - b
**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e
**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f) + 3*a*b**2*e**2*g - 4*a
*b*c*d*e*g - 2*a*b*c*e**2*f - b**6*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g
 - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g +
 6*b*c*d*e*f - 6*c**2*d**2*f) - 2*b**3*d*e*g - b**3*e**2*f + 3*b**2*c*d**2*
g + 6*b**2*c*d*e*f - 6*b*c**2*d**2*f)/(6*a*b*c*e**2*g - 8*a*c**2*d*e*g - 4*
a*c**2*e**2*f - 4*b**2*c*d*e*g - 2*b**2*c*e**2*f + 6*b*c**2*d**2*g + 12*b*c
```

```
**2*d*e*f - 12*c**3*d**2*f)) + (-8*a**3*c*e**2*g - a**2*b**2*e**2*g + 12*a*
*2*b*c*d*e*g + 6*a**2*b*c*e**2*f - 8*a**2*c**2*d**2*g - 16*a**2*c**2*d*e*f
- a*b**2*c*d**2*g - 2*a*b**2*c*d*e*f + 10*a*b*c**2*d**2*f - b**3*c*d**2*f +
 x**3*(-6*a*b*c**2*e**2*g + 8*a*c**3*d*e*g + 4*a*c**3*e**2*f + 4*b**2*c**2*
d*e*g + 2*b**2*c**2*e**2*f - 6*b*c**3*d**2*g - 12*b*c**3*d*e*f + 12*c**4*d*
*2*f) + x**2*(-16*a**2*c**2*e**2*g - a*b**2*c*e**2*g + 12*a*b*c**2*d*e*g +
6*a*b*c**2*e**2*f - b**4*e**2*g + 6*b**3*c*d*e*g + 3*b**3*c*e**2*f - 9*b**2
*c**2*d**2*g - 18*b**2*c**2*d*e*f + 18*b*c**3*d**2*f) + x*(-10*a**2*b*c*e**
2*g - 8*a**2*c**2*d*e*g - 4*a**2*c**2*e**2*f - 2*a*b**3*e**2*g + 20*a*b**2*
c*d*e*g + 10*a*b**2*c*e**2*f - 10*a*b*c**2*d**2*g - 20*a*b*c**2*d*e*f + 20*
a*c**3*d**2*f - 2*b**3*c*d**2*g - 4*b**3*c*d*e*f + 4*b**2*c**2*d**2*f))/(32
*a**4*c**3 - 16*a**3*b**2*c**2 + 2*a**2*b**4*c + x**4*(32*a**2*c**5 - 16*a*
b**2*c**4 + 2*b**4*c**3) + x**3*(64*a**2*b*c**4 - 32*a*b**3*c**3 + 4*b**5*c
**2) + x**2*(64*a**3*c**4 - 12*a*b**4*c**2 + 2*b**6*c) + x*(64*a**3*b*c**3
- 32*a**2*b**3*c**2 + 4*a*b**5*c))
```

3.2133 $\int \frac{(d+ex)(f+gx)}{(a+bx+cx^2)^3} dx$

Optimal. Leaf size=221

$$\frac{(b+2cx)\left(c(2aeg-3b(dg+ef))+b^2eg+6c^2df\right)}{2c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{-x\left(-c(2aeg+bdg+bef)+b^2eg+2c^2df\right)-b(aeg+cdf)+2}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Rubi [A] time = 0.21, antiderivative size = 219, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {777, 614, 618, 206}

$$\frac{(b+2cx)\left(2aceg+b^2eg-3bc(dg+ef)+6c^2df\right)}{2c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{-x\left(-c(2aeg+bdg+bef)+b^2eg+2c^2df\right)-b(aeg+cdf)+2ac(dg+ef)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{2\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(2aceg+b^2eg-3bc(dg+ef)+6c^2df\right)}{\left(b^2-4ac\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(b*e*f +
b*d*g + 2*a*e*g))*x)/(2*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^2) + ((6*c^2*d*f
+ b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d*g))*(b + 2*c*x))/(2*c*(b^2 - 4*a*c)^
2*(a + b*x + c*x^2)) - (2*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d
*g))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\left(6c^2df+b\right.}{}$$

$$= \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\left(6c^2df+b\right.}{2}$$

$$= \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\left(6c^2df+b\right.}{2}$$

$$= \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\left(6c^2df+b\right.}{2}$$

Mathematica [A] time = 0.40, size = 216, normalized size = 0.98

$$\frac{1}{2}\left(\frac{(b+2cx)\left(2aceg+b^2eg-3bc(dg+ef)+6c^2df\right)}{c\left(b^2-4ac\right)^2(a+x(b+cx))}+\frac{abeg-2ac(dg+e(f+gx))+b^2egx+bc(d(f-gx)-efx)+2c^2dfx}{c\left(4ac-b^2\right)(a+x(b+cx))^2}+\frac{4\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(2aceg+b^2eg-3bc(dg+ef)+6c^2df\right)}{\left(4ac-b^2\right)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (((6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d*g))*(b + 2*c*x))/(c*(b^
2 - 4*a*c)^2*(a + x*(b + c*x))) + (a*b*e*g + 2*c^2*d*f*x + b^2*e*g*x + b*c*
(-(e*f*x) + d*(f - g*x)) - 2*a*c*(d*g + e*(f + g*x)))/(c*(-b^2 + 4*a*c)*(a
+ x*(b + c*x))^2) + (4*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d*g)
)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(5/2))/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((d + e*x)*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((d + e*x)*(f + g*x))/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.47, size = 1879, normalized size = 8.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(3*(2*(b^2*c^3 - 4*a*c^4)*d - (b^3*c^2 - 4*a*b*c^3)*e)*f - (3*(b^3*
c^2 - 4*a*b*c^3)*d - (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*e)*g)*x^3 + 3*(3*(2*
(b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 4*a*b^2*c^2)*e)*f - (3*(b^4*c - 4*a*b^2*
c^2)*d - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e)*g)*x^2 + 2*((3*(2*c^4*d - b*c^3
*e)*f - (3*b*c^3*d - (b^2*c^2 + 2*a*c^3)*e)*g)*x^4 + 2*(3*(2*b*c^3*d - b^2*
c^2*e)*f - (3*b^2*c^2*d - (b^3*c + 2*a*b*c^2)*e)*g)*x^3 + (3*(2*(b^2*c^2 +
2*a*c^3)*d - (b^3*c + 2*a*b*c^2)*e)*f - (3*(b^3*c + 2*a*b*c^2)*d - (b^4 + 4
*a*b^2*c + 4*a^2*c^2)*e)*g)*x^2 + 3*(2*a^2*c^2*d - a^2*b*c*e)*f - (3*a^2*b*
c*d - (a^2*b^2 + 2*a^3*c)*e)*g + 2*(3*(2*a*b*c^2*d - a*b^2*c*e)*f - (3*a*b^
2*c*d - (a*b^3 + 2*a^2*b*c)*e)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b
```

```
*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - ((
b^5 - 14*a*b^3*c + 40*a^2*b*c^2)*d + (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*e)*
f - ((a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*d - 6*(a^2*b^3 - 4*a^3*b*c)*e)*g +
2*((2*(b^4*c + a*b^2*c^2 - 20*a^2*c^3)*d - (b^5 + a*b^3*c - 20*a^2*b*c^2)*e
)*f - ((b^5 + a*b^3*c - 20*a^2*b*c^2)*d - (5*a*b^4 - 22*a^2*b^2*c + 8*a^3*c
^2)*e)*g)*x)/(a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3 + (b^6*c
^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*x^4 + 2*(b^7*c - 12*a*b^5*
c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*x^3 + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c
^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*x^2 + 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b
^3*c^2 - 64*a^4*b*c^3)*x), 1/2*(2*(3*(2*(b^2*c^3 - 4*a*c^4)*d - (b^3*c^2 -
4*a*b*c^3)*e)*f - (3*(b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 2*a*b^2*c^2 - 8*a^2
*c^3)*e)*g)*x^3 + 3*(3*(2*(b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 4*a*b^2*c^2)*e
)*f - (3*(b^4*c - 4*a*b^2*c^2)*d - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e)*g)*x^
2 - 4*((3*(2*c^4*d - b*c^3*e)*f - (3*b*c^3*d - (b^2*c^2 + 2*a*c^3)*e)*g)*x^
4 + 2*(3*(2*b*c^3*d - b^2*c^2*e)*f - (3*b^2*c^2*d - (b^3*c + 2*a*b*c^2)*e)*
g)*x^3 + (3*(2*(b^2*c^2 + 2*a*c^3)*d - (b^3*c + 2*a*b*c^2)*e)*f - (3*(b^3*c
 + 2*a*b*c^2)*d - (b^4 + 4*a*b^2*c + 4*a^2*c^2)*e)*g)*x^2 + 3*(2*a^2*c^2*d
- a^2*b*c*e)*f - (3*a^2*b*c*d - (a^2*b^2 + 2*a^3*c)*e)*g + 2*(3*(2*a*b*c^2*
d - a*b^2*c*e)*f - (3*a*b^2*c*d - (a*b^3 + 2*a^2*b*c)*e)*g)*x)*sqrt(-b^2 +
4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - ((b^5 - 14*a
*b^3*c + 40*a^2*b*c^2)*d + (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*e)*f - ((a*b^
4 + 4*a^2*b^2*c - 32*a^3*c^2)*d - 6*(a^2*b^3 - 4*a^3*b*c)*e)*g + 2*((2*(b^4
*c + a*b^2*c^2 - 20*a^2*c^3)*d - (b^5 + a*b^3*c - 20*a^2*b*c^2)*e)*f - ((b^
5 + a*b^3*c - 20*a^2*b*c^2)*d - (5*a*b^4 - 22*a^2*b^2*c + 8*a^3*c^2)*e)*g)*
x)/(a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3 + (b^6*c^2 - 12*a*
b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*x^4 + 2*(b^7*c - 12*a*b^5*c^2 + 48*a
^2*b^3*c^3 - 64*a^3*b*c^4)*x^3 + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^
3*b^2*c^3 - 128*a^4*c^4)*x^2 + 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 6
4*a^4*b*c^3)*x)]
```

giac [A] time = 0.21, size = 369, normalized size = 1.67

$$\frac{2\left(6c^2df-3bcdg-3bcfe+b^2ge+2acge\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\left(b^4-8ab^2c+16a^2c^2\right)\sqrt{-b^2+4ac}}+\frac{12c^3dfx^3-6bc^2dgx^3-6bc^2fx^3e+2b^2cgx^3e+4ac^2gx^3e+18bc^2dfx^2-9b^2cdgx^2-9b^2cfx^2e+3b^3gx^2e+6abcgx^2e+4b^2cdfx+20ac^2dfx-2b^3dgx-10abcdgx-2b^3fxe-10abcfxe+10ab^2gxe-4a^2cgxe-b^3df+10abcdf-ab^2dg-8a^2cdg-ab^2fe-8a^2cfe+6a^2bge}{2\left(b^4-8ab^2c+16a^2c^2\right)\left(cx^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2*(6*c^2*d*f - 3*b*c*d*g - 3*b*c*f*e + b^2*g*e + 2*a*c*g*e)*arctan((2*c*x +
 b)/sqrt(-b^2 + 4*a*c))/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-b^2 + 4*a*c))
 + 1/2*(12*c^3*d*f*x^3 - 6*b*c^2*d*g*x^3 - 6*b*c^2*f*x^3*e + 2*b^2*c*g*x^3*
e + 4*a*c^2*g*x^3*e + 18*b*c^2*d*f*x^2 - 9*b^2*c*d*g*x^2 - 9*b^2*c*f*x^2*e
+ 3*b^3*g*x^2*e + 6*a*b*c*g*x^2*e + 4*b^2*c*d*f*x + 20*a*c^2*d*f*x - 2*b^3*
d*g*x - 10*a*b*c*d*g*x - 2*b^3*f*x*e - 10*a*b*c*f*x*e + 10*a*b^2*g*x*e - 4*
a^2*c*g*x*e - b^3*d*f + 10*a*b*c*d*f - a*b^2*d*g - 8*a^2*c*d*g - a*b^2*f*e
- 8*a^2*c*f*e + 6*a^2*b*g*e)/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*(c*x^2 + b*x +
 a)^2)
```

maple [B] time = 0.06, size = 591, normalized size = 2.67

$$\frac{4aceg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8ab^2c+b^4\right)\sqrt{4ac-b^2}}+\frac{2b^2eg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8ab^2c+b^4\right)\sqrt{4ac-b^2}}-\frac{6bcdg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8ab^2c+b^4\right)\sqrt{4ac-b^2}}-\frac{6bcef\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8ab^2c+b^4\right)\sqrt{4ac-b^2}}+\frac{12c^2df\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8ab^2c+b^4\right)\sqrt{4ac-b^2}}+\frac{\frac{\left(2aceg+b^2eg-3bcdg-3bcef+6c^2df\right)cx^3}{16a^2c^2-8ab^2c+b^4}+\frac{3\left(2aceg+b^2eg-3bcdg-3bcef+6c^2df\right)bx^2}{2\left(16a^2c^2-8ab^2c+b^4\right)}-\frac{\left(2a^2ceg-5ab^2eg+5abcdg+5abcef-10ac^2df+b^3dg+b^3ef-2b^2cdf\right)x}{16a^2c^2-8ab^2c+b^4}+\frac{6a^2beg-8a^2cdg-8a^2cef-ab^2dg-ab^2ef+10abcdf-b^3df}{32a^2c^2-16ab^2c+2b^4}}{\left(cx^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (c*(2*a*c*e*g+b^2*e*g-3*b*c*d*g-3*b*c*e*f+6*c^2*d*f)/(16*a^2*c^2-8*a*b^2*c+
b^4)*x^3+3/2*b*(2*a*c*e*g+b^2*e*g-3*b*c*d*g-3*b*c*e*f+6*c^2*d*f)/(16*a^2*c^
2-8*a*b^2*c+b^4)*x^2-(2*a^2*c*e*g-5*a*b^2*e*g+5*a*b*c*d*g+5*a*b*c*e*f-10*a*
c^2*d*f+b^3*d*g+b^3*e*f-2*b^2*c*d*f)/(16*a^2*c^2-8*a*b^2*c+b^4)*x+1/2*(6*a^
2*b*e*g-8*a^2*c*d*g-8*a^2*c*e*f-a*b^2*d*g-a*b^2*e*f+10*a*b*c*d*f-b^3*d*f)/(
```

```
16*a^2*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2+4/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*
a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*e*g+2/(16*a^2*c^2-8*
a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e*g-
6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b*c*d*g-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*
x+b)/(4*a*c-b^2)^(1/2))*b*c*e*f+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(
1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^2*d*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.59, size = 555, normalized size = 2.51

$$\frac{2\,\mathrm{atan}\left(\frac{\left(\frac{2\,c\,x\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}+\frac{\left(16\,a^2\,b\,c^2-8\,a\,b^3\,c+b^5\right)\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}\right)\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}{6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f}\right)\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}-\frac{\frac{b^3\,d\,f+a\,b^2\,d\,g+a\,b^2\,e\,f-6\,a^2\,b\,e\,g+8\,a^2\,c\,d\,g+8\,a^2\,c\,e\,f-10\,a\,b\,c\,d\,f}{2\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}+\frac{x\,\left(b^3\,d\,g+b^3\,e\,f-10\,a\,c^2\,d\,f-5\,a\,b^2\,e\,g-2\,b^2\,c\,d\,f+2\,a^2\,c\,e\,g+5\,a\,b\,c\,d\,g+5\,a\,b\,c\,e\,f\right)}{16\,a^2\,c^2-8\,a\,b^2\,c+b^4}-\frac{3\,b\,x^2\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{2\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}-\frac{c\,x^3\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{16\,a^2\,c^2-8\,a\,b^2\,c+b^4}}{x^2\,\left(b^2+2\,a\,c\right)+a^2+c^2\,x^4+2\,a\,b\,x+2\,b\,c\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*atan((((2*c*x*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))
/(4*a*c - b^2)^(5/2) + ((b^5 + 16*a^2*b*c^2 - 8*a*b^3*c)*(6*c^2*d*f + b^2*e
*g + 2*a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))/((4*a*c - b^2)^(5/2)*(b^4 + 16*a^2
*c^2 - 8*a*b^2*c)))*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(6*c^2*d*f + b^2*e*g +
2*a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*
c*d*g - 3*b*c*e*f))/(4*a*c - b^2)^(5/2) - ((b^3*d*f + a*b^2*d*g + a*b^2*e*f
 - 6*a^2*b*e*g + 8*a^2*c*d*g + 8*a^2*c*e*f - 10*a*b*c*d*f)/(2*(b^4 + 16*a^2
*c^2 - 8*a*b^2*c)) + (x*(b^3*d*g + b^3*e*f - 10*a*c^2*d*f - 5*a*b^2*e*g - 2
*b^2*c*d*f + 2*a^2*c*e*g + 5*a*b*c*d*g + 5*a*b*c*e*f))/(b^4 + 16*a^2*c^2 -
8*a*b^2*c) - (3*b*x^2*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*d*g - 3*b*c*
e*f))/(2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (c*x^3*(6*c^2*d*f + b^2*e*g + 2*
a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(x^2*(2*a
*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [B] time = 15.17, size = 1234, normalized size = 5.58

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] -sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f +
 6*c**2*d*f)*log(x + (-64*a**3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g +
 b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + 48*a**2*b**2*c**2*sqrt(-1
/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*
d*f) - 12*a*b**4*c*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c
*d*g - 3*b*c*e*f + 6*c**2*d*f) + 2*a*b*c*e*g + b**6*sqrt(-1/(4*a*c - b**2)*
*5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + b**3*e*g
- 3*b**2*c*d*g - 3*b**2*c*e*f + 6*b*c**2*d*f)/(4*a*c**2*e*g + 2*b**2*c*e*g
- 6*b*c**2*d*g - 6*b*c**2*e*f + 12*c**3*d*f)) + sqrt(-1/(4*a*c - b**2)**5)*
(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f)*log(x + (64*a**
```

```
3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c
*e*f + 6*c**2*d*f) - 48*a**2*b**2*c**2*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*
g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + 12*a*b**4*c*sqrt(-1/(4
*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f
) + 2*a*b*c*e*g - b**6*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3
*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + b**3*e*g - 3*b**2*c*d*g - 3*b**2*c*e*f
 + 6*b*c**2*d*f)/(4*a*c**2*e*g + 2*b**2*c*e*g - 6*b*c**2*d*g - 6*b*c**2*e*f
 + 12*c**3*d*f)) + (6*a**2*b*e*g - 8*a**2*c*d*g - 8*a**2*c*e*f - a*b**2*d*g
 - a*b**2*e*f + 10*a*b*c*d*f - b**3*d*f + x**3*(4*a*c**2*e*g + 2*b**2*c*e*g
 - 6*b*c**2*d*g - 6*b*c**2*e*f + 12*c**3*d*f) + x**2*(6*a*b*c*e*g + 3*b**3*
e*g - 9*b**2*c*d*g - 9*b**2*c*e*f + 18*b*c**2*d*f) + x*(-4*a**2*c*e*g + 10*
a*b**2*e*g - 10*a*b*c*d*g - 10*a*b*c*e*f + 20*a*c**2*d*f - 2*b**3*d*g - 2*b
**3*e*f + 4*b**2*c*d*f))/(32*a**4*c**2 - 16*a**3*b**2*c + 2*a**2*b**4 + x**
4*(32*a**2*c**4 - 16*a*b**2*c**3 + 2*b**4*c**2) + x**3*(64*a**2*b*c**3 - 32
*a*b**3*c**2 + 4*b**5*c) + x**2*(64*a**3*c**3 - 12*a*b**4*c + 2*b**6) + x*(
64*a**3*b*c**2 - 32*a**2*b**3*c + 4*a*b**5))
```

3.2134 $\int \frac{f+gx}{(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=131

$$\frac{3(b+2cx)(2cf-bg)}{2(b^2-4ac)^2(a+bx+cx^2)}-\frac{-2ag+x(2cf-bg)+bf}{2(b^2-4ac)(a+bx+cx^2)^2}-\frac{6c(2cf-bg)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)^{5/2}}$$

Rubi [A] time = 0.06, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {638, 614, 618, 206}

$$\frac{3(b+2cx)(2cf-bg)}{2(b^2-4ac)^2(a+bx+cx^2)}-\frac{-2ag+x(2cf-bg)+bf}{2(b^2-4ac)(a+bx+cx^2)^2}-\frac{6c(2cf-bg)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(b*f - 2*a*g + (2*c*f - b*g)*x)/(2*(b^2 - 4*a*c)*(a + b*x + c*x^2)^2) + (3
*(2*c*f - b*g)*(b + 2*c*x))/(2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - (6*c*(2
*c*f - b*g)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{f+gx}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{(3(2cf-bg))\int \frac{1}{\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cf-bg)(b+2cx)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)} + \frac{(3c(2cf-bg))\int \frac{1}{a+bx+cx^2}}{\left(b^2-4ac\right)^2}$$

$$= -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cf-bg)(b+2cx)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)} - \frac{(6c(2cf-bg))\,\text{Subst}\left(\int\right.}{\left(b^2-\right.}$$

$$= -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cf-bg)(b+2cx)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)} - \frac{6c(2cf-bg)\tanh^{-1}\left(\frac{b}{\sqrt{b}}\right.}{\left(b^2-4ac\right)^{5/2}}$$

Mathematica [A] time = 0.13, size = 128, normalized size = 0.98

$$\frac{\frac{\left(b^2-4ac\right)(2ag-bf+bgx-2cfx)}{(a+x(b+cx))^2} - \frac{12c(bg-2cf)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{3(b+2cx)(2cf-bg)}{a+x(b+cx)}}{2\left(b^2-4ac\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (((b^2 - 4*a*c)*(-(b*f) + 2*a*g - 2*c*f*x + b*g*x))/(a + x*(b + c*x))^2 + (
3*(2*c*f - b*g)*(b + 2*c*x))/(a + x*(b + c*x)) - (12*c*(-2*c*f + b*g)*ArcTa
n[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c])/(2*(b^2 - 4*a*c)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(f + g*x)/(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.45, size = 1116, normalized size = 8.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(6*(2*(b^2*c^3 - 4*a*c^4)*f - (b^3*c^2 - 4*a*b*c^3)*g)*x^3 + 9*(2*(b^3
*c^2 - 4*a*b*c^3)*f - (b^4*c - 4*a*b^2*c^2)*g)*x^2 - 6*(2*a^2*c^2*f - a^2*b
*c*g + (2*c^4*f - b*c^3*g)*x^4 + 2*(2*b*c^3*f - b^2*c^2*g)*x^3 + (2*(b^2*c^
2 + 2*a*c^3)*f - (b^3*c + 2*a*b*c^2)*g)*x^2 + 2*(2*a*b*c^2*f - a*b^2*c*g)*x
)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a
*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - (b^5 - 14*a*b^3*c + 40*a^2*b*c^2)*f -
 (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*g + 2*(2*(b^4*c + a*b^2*c^2 - 20*a^2*c^
3)*f - (b^5 + a*b^3*c - 20*a^2*b*c^2)*g)*x)/(a^2*b^6 - 12*a^3*b^4*c + 48*a^
4*b^2*c^2 - 64*a^5*c^3 + (b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*
c^5)*x^4 + 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*x^3 + (
```

```
b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*x^2 + 2*(
a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*x), 1/2*(6*(2*(b^2*c^
3 - 4*a*c^4)*f - (b^3*c^2 - 4*a*b*c^3)*g)*x^3 + 9*(2*(b^3*c^2 - 4*a*b*c^3)*
f - (b^4*c - 4*a*b^2*c^2)*g)*x^2 - 12*(2*a^2*c^2*f - a^2*b*c*g + (2*c^4*f -
 b*c^3*g)*x^4 + 2*(2*b*c^3*f - b^2*c^2*g)*x^3 + (2*(b^2*c^2 + 2*a*c^3)*f -
(b^3*c + 2*a*b*c^2)*g)*x^2 + 2*(2*a*b*c^2*f - a*b^2*c*g)*x)*sqrt(-b^2 + 4*a
*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - (b^5 - 14*a*b^3
*c + 40*a^2*b*c^2)*f - (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*g + 2*(2*(b^4*c +
 a*b^2*c^2 - 20*a^2*c^3)*f - (b^5 + a*b^3*c - 20*a^2*b*c^2)*g)*x)/(a^2*b^6
- 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3 + (b^6*c^2 - 12*a*b^4*c^3 + 48
*a^2*b^2*c^4 - 64*a^3*c^5)*x^4 + 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 -
 64*a^3*b*c^4)*x^3 + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 -
128*a^4*c^4)*x^2 + 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)
*x)]
```

giac [A] time = 0.17, size = 199, normalized size = 1.52

$$\frac{6\left(2\,c^{2}f-bcg\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}\right)\sqrt{-b^{2}+4\,ac}}+\frac{12\,c^{3}fx^{3}-6\,bc^{2}gx^{3}+18\,bc^{2}fx^{2}-9\,b^{2}cgx^{2}+4\,b^{2}cfx+20\,ac^{2}fx-2\,b^{3}gx-10\,abcgx-b^{3}f+10\,abcf-ab^{2}g-8\,a^{2}cg}{2\left(b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}\right)\left(cx^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 6*(2*c^2*f - b*c*g)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^4 - 8*a*b^2*
c + 16*a^2*c^2)*sqrt(-b^2 + 4*a*c)) + 1/2*(12*c^3*f*x^3 - 6*b*c^2*g*x^3 + 1
8*b*c^2*f*x^2 - 9*b^2*c*g*x^2 + 4*b^2*c*f*x + 20*a*c^2*f*x - 2*b^3*g*x - 10
*a*b*c*g*x - b^3*f + 10*a*b*c*f - a*b^2*g - 8*a^2*c*g)/((b^4 - 8*a*b^2*c +
16*a^2*c^2)*(c*x^2 + b*x + a)^2)
```

maple [A] time = 0.05, size = 242, normalized size = 1.85

$$-\frac{3bcgx}{\left(4ac-b^{2}\right)^{2}\left(cx^{2}+bx+a\right)}-\frac{6bcg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{5}{2}}}+\frac{6c^{2}fx}{\left(4ac-b^{2}\right)^{2}\left(cx^{2}+bx+a\right)}+\frac{12c^{2}f\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{5}{2}}}-\frac{3b^{2}g}{2\left(4ac-b^{2}\right)^{2}\left(cx^{2}+bx+a\right)}+\frac{3bcf}{\left(4ac-b^{2}\right)^{2}\left(cx^{2}+bx+a\right)}+\frac{-2ag+bf+\left(-bg+2cf\right)x}{2\left(4ac-b^{2}\right)\left(cx^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/2*(b*f-2*a*g+(-b*g+2*c*f)*x)/(4*a*c-b^2)/(c*x^2+b*x+a)^2-3/(4*a*c-b^2)^2/
(c*x^2+b*x+a)*c*x*b*g+6/(4*a*c-b^2)^2/(c*x^2+b*x+a)*c^2*x*f-3/2/(4*a*c-b^2)
^2/(c*x^2+b*x+a)*b^2*g+3/(4*a*c-b^2)^2/(c*x^2+b*x+a)*b*c*f-6/(4*a*c-b^2)^(5
/2)*c*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*g+12/(4*a*c-b^2)^(5/2)*c^2*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.57, size = 353, normalized size = 2.69

$$\frac{6\,c\,\mathrm{atan}\left(\frac{\left(\frac{6\,c^{2}\,x\,\left(b\,g-2\,c\,f\right)}{{\left(4\,a\,c-b^{2}\right)}^{5/2}}+\frac{3\,c\,\left(b\,g-2\,c\,f\right)\,\left(16\,a^{2}\,b\,c^{2}-8\,a\,b^{3}\,c+b^{5}\right)}{{\left(4\,a\,c-b^{2}\right)}^{5/2}\,\left(16\,a^{2}\,c^{2}-8\,a\,b^{2}\,c+b^{4}\right)}\right)\,\left(16\,a^{2}\,c^{2}-8\,a\,b^{2}\,c+b^{4}\right)}{6\,c^{2}\,f-3\,b\,c\,g}\right)\,\left(b\,g-2\,c\,f\right)}{{\left(4\,a\,c-b^{2}\right)}^{5/2}}-\frac{\frac{8\,c\,g\,a^{2}+g\,a\,b^{2}-10\,c\,f\,a\,b+f\,b^{3}}{2\,\left(16\,a^{2}\,c^{2}-8\,a\,b^{2}\,c+b^{4}\right)}+\frac{x\,\left(b^{2}+5\,a\,c\right)\,\left(b\,g-2\,c\,f\right)}{16\,a^{2}\,c^{2}-8\,a\,b^{2}\,c+b^{4}}+\frac{3\,c^{2}\,x^{3}\,\left(b\,g-2\,c\,f\right)}{16\,a^{2}\,c^{2}-8\,a\,b^{2}\,c+b^{4}}+\frac{9\,b\,c\,x^{2}\,\left(b\,g-2\,c\,f\right)}{2\,\left(16\,a^{2}\,c^{2}-8\,a\,b^{2}\,c+b^{4}\right)}}{x^{2}\,\left(b^{2}+2\,a\,c\right)+a^{2}+c^{2}\,x^{4}+2\,a\,b\,x+2\,b\,c\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (6*c*atan((((6*c^2*x*(b*g - 2*c*f))/(4*a*c - b^2)^(5/2) + (3*c*(b*g - 2*c*f
)*(b^5 + 16*a^2*b*c^2 - 8*a*b^3*c))/((4*a*c - b^2)^(5/2)*(b^4 + 16*a^2*c^2
- 8*a*b^2*c)))*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(6*c^2*f - 3*b*c*g))*(b*g -
2*c*f))/(4*a*c - b^2)^(5/2) - ((b^3*f + a*b^2*g + 8*a^2*c*g - 10*a*b*c*f)/(
2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x*(5*a*c + b^2)*(b*g - 2*c*f))/(b^4 +
16*a^2*c^2 - 8*a*b^2*c) + (3*c^2*x^3*(b*g - 2*c*f))/(b^4 + 16*a^2*c^2 - 8*a
*b^2*c) + (9*b*c*x^2*(b*g - 2*c*f))/(2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^
2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [B] time = 1.68, size = 651, normalized size = 4.97

$$3c\sqrt{-\frac{1}{\left(4ac-b^2\right)^5}}\left(bg-2cf\right)\log\left(x+\frac{-192a^3c^4\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)+144a^2b^2c^3\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)-36ab^4c^2\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)+3b^6c\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)+3b^2cg-6bc^2f}{6bc^2g-12c^3f}\right)-3c\sqrt{-\frac{1}{\left(4ac-b^2\right)^5}}\left(bg-2cf\right)\log\left(x+\frac{192a^3c^4\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)-144a^2b^2c^3\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)+36ab^4c^2\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)-3b^6c\sqrt{-\frac{1}{(4ac-b^2)^5}}\left(bg-2cf\right)+3b^2cg-6bc^2f}{6bc^2g-12c^3f}\right)+\frac{-8a^2cg-ab^2g+10abcf-b^3f+x^3\left(-6bc^2g+12c^3f\right)+x^2\left(-9b^2cg+18bc^2f\right)+x\left(-10abcg+20ac^2f-2b^3g+4b^2cf\right)}{32a^4c^2-16a^3b^2c+2a^2b^4+x^4\left(32a^2c^4-16ab^2c^3+2b^4c^2\right)+x^3\left(64a^2bc^3-32ab^3c^2+4b^5c\right)+x^2\left(64a^3c^3-12ab^4c+2b^6\right)+x\left(64a^3bc^2-32a^2b^3c+4ab^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] 3*c*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f)*log(x + (-192*a**3*c**4*sqrt(-
1/(4*a*c - b**2)**5)*(b*g - 2*c*f) + 144*a**2*b**2*c**3*sqrt(-1/(4*a*c - b*
*2)**5)*(b*g - 2*c*f) - 36*a*b**4*c**2*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*
c*f) + 3*b**6*c*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) + 3*b**2*c*g - 6*b
*c**2*f)/(6*b*c**2*g - 12*c**3*f)) - 3*c*sqrt(-1/(4*a*c - b**2)**5)*(b*g -
2*c*f)*log(x + (192*a**3*c**4*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) - 14
4*a**2*b**2*c**3*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) + 36*a*b**4*c**2*
sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) - 3*b**6*c*sqrt(-1/(4*a*c - b**2)*
*5)*(b*g - 2*c*f) + 3*b**2*c*g - 6*b*c**2*f)/(6*b*c**2*g - 12*c**3*f)) + (-
8*a**2*c*g - a*b**2*g + 10*a*b*c*f - b**3*f + x**3*(-6*b*c**2*g + 12*c**3*f
) + x**2*(-9*b**2*c*g + 18*b*c**2*f) + x*(-10*a*b*c*g + 20*a*c**2*f - 2*b**
3*g + 4*b**2*c*f))/(32*a**4*c**2 - 16*a**3*b**2*c + 2*a**2*b**4 + x**4*(32*
a**2*c**4 - 16*a*b**2*c**3 + 2*b**4*c**2) + x**3*(64*a**2*b*c**3 - 32*a*b**
3*c**2 + 4*b**5*c) + x**2*(64*a**3*c**3 - 12*a*b**4*c + 2*b**6) + x*(64*a**
3*b*c**2 - 32*a**2*b**3*c + 4*a*b**5))
```

3.2135 $\int \frac{f+gx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=666

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(4c^3de\left(3a^2e^2(5ef-2dg)-3abde(dg+5ef)+b^2d^2(4dg+5ef)\right)-6c^2e^2\left(-2a^3e^3g+a^2be^2(\ldots\right.\right.}{\left(b^2-\ldots\right.}$$

Rubi [A] time = 2.55, antiderivative size = 664, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {822, 800, 634, 618, 206, 628}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] -(b*c*d*f - b^2*e*f + 2*a*c*e*f - 2*a*c*d*g + a*b*e*g + c*(2*c*d*f + 2*a*e*
g - b*(e*f + d*g))*x)/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c
*x^2)^2) - (3*a*c*e*(2*c*d - b*e)*(2*c*d*f + 2*a*e*g - b*(e*f + d*g)) - (b*
c*d - b^2*e + 2*a*c*e)*(6*c^2*d^2*f - 2*b^2*e*(e*f - d*g) + 2*a*c*e*(4*e*f
- d*g) - 3*b*c*d*(e*f + d*g)) + c*(3*c*e*(b*d - 2*a*e)*(2*c*d*f + 2*a*e*g -
 b*(e*f + d*g)) - (2*c*d - b*e)*(6*c^2*d^2*f - 2*b^2*e*(e*f - d*g) + 2*a*c*
e*(4*e*f - d*g) - 3*b*c*d*(e*f + d*g)))*x)/(2*(b^2 - 4*a*c)^2*(c*d^2 - b*d*
e + a*e^2)^2*(a + b*x + c*x^2)) - ((12*c^5*d^5*f - b^5*e^4*(e*f - d*g) + 10
*a*b^3*c*e^4*(e*f - d*g) + 2*c^4*d^3*(2*a*e*(10*e*f - d*g) - 3*b*d*(5*e*f +
 d*g)) - 6*c^2*e^2*(2*b^3*d^3*g - 6*a*b^2*d^2*e*g - 2*a^3*e^3*g + a^2*b*e^2
*(5*e*f + d*g)) + 4*c^3*d*e*(3*a^2*e^2*(5*e*f - 2*d*g) - 3*a*b*d*e*(5*e*f +
 d*g) + b^2*d^2*(5*e*f + 4*d*g)))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(
(b^2 - 4*a*c)^(5/2)*(c*d^2 - b*d*e + a*e^2)^3) + (e^4*(e*f - d*g)*Log[d + e
*x])/(c*d^2 - b*d*e + a*e^2)^3 - (e^4*(e*f - d*g)*Log[a + b*x + c*x^2])/(2*
(c*d^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx = -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{6c^2d^2 \ldots}{\ldots}}{\ldots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{3ace(2\ldots}{\ldots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{3ace(2\ldots}{\ldots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{3ace(2\ldots}{\ldots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{3ace(2\ldots}{\ldots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{3ace(2\ldots}{\ldots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{3ace(2\ldots}{\ldots}$$

Mathematica [A] time = 2.82, size = 668, normalized size = 1.00

$$\frac{1}{2}\left(\frac{2bc\left(3a^2e^3g-ace\left(d^2g-7def+5degx+7e^2fx\right)+3c^2d^2(df-dgx-3efx)\right)-4c^2\left(a^2e^2(4dg-4ef-3egx)+acdex(dg-7ef)-3c^2d^3fx\right)+b^2c\left(3ae^2(dg-5ef)+cd\left(-3d^2g-9def+10degx+2e^2fx\right)\right)+2b^4e^2(ef-dg)+b^3ce\left(5d^2g+de(f-2gx)+2e^2fx\right)}{\left(b^2-4ac\right)^2(a+x(b+cx))\left(e(ae-bd)+cd^2\right)^2}-\frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(4c^3de\left(3a^2e^2(5ef-2dg)-3abde(dg+5ef)+b^2d^2(4dg+5ef)\right)+6c^2e^2\left(2a^3e^3g-a^2be^2(dg+5ef)+6ab^2d^2eg-2b^3d^3g\right)+10ab^3ce^4(ef-dg)-2c^4d^3(2ae(dg-10ef)+3bd(dg+5ef))+b^5e^4(dg-ef)+12c^5d^5f\right)}{\left(4ac-b^2\right)^{5/2}\left(e(bd-ae)-cd^2\right)^3}+\frac{b(aeg+cd(f-gx)-cefx)+2c(-adg+ae(f+gx)+cdfx)+b^2(-e)f}{\left(b^2-4ac\right)(a+x(b+cx))^2\left(e(bd-ae)-cd^2\right)}+\frac{2e^4(ef-dg)\log(d+ex)}{\left(e(ae-bd)+cd^2\right)^3}+\frac{e^4(dg-ef)\log(a+x(b+cx))}{\left(e(ae-bd)+cd^2\right)^3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((-(b^2*e*f) + b*(a*e*g - c*e*f*x + c*d*(f - g*x)) + 2*c*(-(a*d*g) + c*d*f*
x + a*e*(f + g*x)))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*(a + x*(b + c
*x))^2) + (2*b^4*e^2*(e*f - d*g) + b^3*c*e*(5*d^2*g + 2*e^2*f*x + d*e*(f -
2*g*x)) - 4*c^2*(-3*c^2*d^3*f*x + a*c*d*e*(-7*e*f + d*g)*x + a^2*e^2*(-4*e*
f + 4*d*g - 3*e*g*x)) + 2*b*c*(3*a^2*e^3*g + 3*c^2*d^2*(d*f - 3*e*f*x - d*g
*x) - a*c*e*(-7*d*e*f + d^2*g + 7*e^2*f*x + 5*d*e*g*x)) + b^2*c*(3*a*e^2*(-
5*e*f + d*g) + c*d*(-9*d*e*f - 3*d^2*g + 2*e^2*f*x + 10*d*e*g*x)))/((b^2 -
4*a*c)^2*(c*d^2 + e*(-(b*d) + a*e))^2*(a + x*(b + c*x))) - (2*(12*c^5*d^5*f
 + 10*a*b^3*c*e^4*(e*f - d*g) + b^5*e^4*(-(e*f) + d*g) - 2*c^4*d^3*(2*a*e*(
-10*e*f + d*g) + 3*b*d*(5*e*f + d*g)) + 6*c^2*e^2*(-2*b^3*d^3*g + 6*a*b^2*d
^2*e*g + 2*a^3*e^3*g - a^2*b*e^2*(5*e*f + d*g)) + 4*c^3*d*e*(3*a^2*e^2*(5*e
*f - 2*d*g) - 3*a*b*d*e*(5*e*f + d*g) + b^2*d^2*(5*e*f + 4*d*g)))*ArcTan[(b
 + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/((-b^2 + 4*a*c)^(5/2)*(-(c*d^2) + e*(b*d - a
*e))^3) + (2*e^4*(e*f - d*g)*Log[d + e*x])/(c*d^2 + e*(-(b*d) + a*e))^3 + (
e^4*(-(e*f) + d*g)*Log[a + x*(b + c*x)])/(c*d^2 + e*(-(b*d) + a*e))^3)/2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.27, size = 2288, normalized size = 3.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*(d*g*e^4 - f*e^5)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2
*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*
e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (d*g*e^5 - f*e^6)*log(ab
s(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^
3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a
^2*b*d*e^6 + a^3*e^7) + (12*c^5*d^5*f - 6*b*c^4*d^5*g - 30*b*c^4*d^4*f*e +
16*b^2*c^3*d^4*g*e - 4*a*c^4*d^4*g*e + 20*b^2*c^3*d^3*f*e^2 + 40*a*c^4*d^3*
f*e^2 - 12*b^3*c^2*d^3*g*e^2 - 12*a*b*c^3*d^3*g*e^2 - 60*a*b*c^3*d^2*f*e^3
+ 36*a*b^2*c^2*d^2*g*e^3 - 24*a^2*c^3*d^2*g*e^3 + 60*a^2*c^3*d*f*e^4 + b^5*
d*g*e^4 - 10*a*b^3*c*d*g*e^4 - 6*a^2*b*c^2*d*g*e^4 - b^5*f*e^5 + 10*a*b^3*c
*f*e^5 - 30*a^2*b*c^2*f*e^5 + 12*a^3*c^2*g*e^5)*arctan((2*c*x + b)/sqrt(-b^
2 + 4*a*c))/((b^4*c^3*d^6 - 8*a*b^2*c^4*d^6 + 16*a^2*c^5*d^6 - 3*b^5*c^2*d^
5*e + 24*a*b^3*c^3*d^5*e - 48*a^2*b*c^4*d^5*e + 3*b^6*c*d^4*e^2 - 21*a*b^4*
c^2*d^4*e^2 + 24*a^2*b^2*c^3*d^4*e^2 + 48*a^3*c^4*d^4*e^2 - b^7*d^3*e^3 + 2
*a*b^5*c*d^3*e^3 + 32*a^2*b^3*c^2*d^3*e^3 - 96*a^3*b*c^3*d^3*e^3 + 3*a*b^6*
d^2*e^4 - 21*a^2*b^4*c*d^2*e^4 + 24*a^3*b^2*c^2*d^2*e^4 + 48*a^4*c^3*d^2*e^
4 - 3*a^2*b^5*d*e^5 + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 + a^3*b^4*e^6
 - 8*a^4*b^2*c*e^6 + 16*a^5*c^2*e^6)*sqrt(-b^2 + 4*a*c)) - 1/2*(b^3*c^3*d^5
```

```
*f - 10*a*b*c^4*d^5*f + a*b^2*c^3*d^5*g + 8*a^2*c^4*d^5*g - 3*b^4*c^2*d^4*f
*e + 29*a*b^2*c^3*d^4*f*e - 8*a^2*c^4*d^4*f*e - 3*a*b^3*c^2*d^4*g*e - 18*a^
2*b*c^3*d^4*g*e + 3*b^5*c*d^3*f*e^2 - 24*a*b^3*c^2*d^3*f*e^2 - 12*a^2*b*c^3
*d^3*f*e^2 + 3*a*b^4*c*d^3*g*e^2 + 10*a^2*b^2*c^2*d^3*g*e^2 + 32*a^3*c^3*d^
3*g*e^2 - b^6*d^2*f*e^3 + a*b^4*c*d^2*f*e^3 + 50*a^2*b^2*c^2*d^2*f*e^3 - 32
*a^3*c^3*d^2*f*e^3 - a*b^5*d^2*g*e^3 - 44*a^3*b*c^2*d^2*g*e^3 + 4*a*b^5*d*f
*e^4 - 27*a^2*b^3*c*d*f*e^4 + 14*a^3*b*c^2*d*f*e^4 + 9*a^3*b^2*c*d*g*e^4 +
24*a^4*c^2*d*g*e^4 - 3*a^2*b^4*f*e^5 + 21*a^3*b^2*c*f*e^5 - 24*a^4*c^2*f*e^
5 + a^3*b^3*g*e^5 - 10*a^4*b*c*g*e^5 - 2*(6*c^6*d^5*f - 3*b*c^5*d^5*g - 15*
b*c^5*d^4*f*e + 8*b^2*c^4*d^4*g*e - 2*a*c^5*d^4*g*e + 10*b^2*c^4*d^3*f*e^2
+ 20*a*c^5*d^3*f*e^2 - 6*b^3*c^3*d^3*g*e^2 - 6*a*b*c^4*d^3*g*e^2 - 30*a*b*c
^4*d^2*f*e^3 + b^4*c^2*d^2*g*e^3 + 10*a*b^2*c^3*d^2*g*e^3 + 4*a^2*c^4*d^2*g
*e^3 - b^4*c^2*d*f*e^4 + 8*a*b^2*c^3*d*f*e^4 + 14*a^2*c^4*d*f*e^4 - a*b^3*c
^2*d*g*e^4 - 11*a^2*b*c^3*d*g*e^4 + a*b^3*c^2*f*e^5 - 7*a^2*b*c^3*f*e^5 + 6
*a^3*c^3*g*e^5)*x^3 - (18*b*c^5*d^5*f - 9*b^2*c^4*d^5*g - 45*b^2*c^4*d^4*f*
e + 24*b^3*c^3*d^4*g*e - 6*a*b*c^4*d^4*g*e + 30*b^3*c^3*d^3*f*e^2 + 60*a*b*
c^4*d^3*f*e^2 - 19*b^4*c^2*d^3*g*e^2 - 10*a*b^2*c^3*d^3*g*e^2 - 16*a^2*c^4*
d^3*g*e^2 + b^4*c^2*d^2*f*e^3 - 98*a*b^2*c^3*d^2*f*e^3 + 16*a^2*c^4*d^2*f*e
^3 + 4*b^5*c*d^2*g*e^3 + 22*a*b^3*c^2*d^2*g*e^3 + 28*a^2*b*c^3*d^2*g*e^3 -
4*b^5*c*d*f*e^4 + 32*a*b^3*c^2*d*f*e^4 + 26*a^2*b*c^3*d*f*e^4 - 4*a*b^4*c*d
*g*e^4 - 25*a^2*b^2*c^2*d*g*e^4 - 16*a^3*c^3*d*g*e^4 + 4*a*b^4*c*f*e^5 - 29
*a^2*b^2*c^2*f*e^5 + 16*a^3*c^3*f*e^5 + 18*a^3*b*c^2*g*e^5)*x^2 - 2*(2*b^2*
c^4*d^5*f + 10*a*c^5*d^5*f - b^3*c^3*d^5*g - 5*a*b*c^4*d^5*g - 5*b^3*c^3*d^
4*f*e - 25*a*b*c^4*d^4*f*e + 3*b^4*c^2*d^4*g*e + 10*a*b^2*c^3*d^4*g*e + 2*a
^2*c^4*d^4*g*e + 3*b^4*c^2*d^3*f*e^2 + 26*a*b^2*c^3*d^3*f*e^2 + 28*a^2*c^4*
d^3*f*e^2 - 3*b^5*c*d^3*g*e^2 - 4*a*b^3*c^2*d^3*g*e^2 - 26*a^2*b*c^3*d^3*g*
e^2 + b^5*c*d^2*f*e^3 - 18*a*b^3*c^2*d^2*f*e^3 - 34*a^2*b*c^3*d^2*f*e^3 + b
^6*d^2*g*e^3 + 26*a^2*b^2*c^2*d^2*g*e^3 + 12*a^3*c^3*d^2*g*e^3 - b^6*d*f*e^
4 + 6*a*b^4*c*d*f*e^4 + 10*a^2*b^2*c^2*d*f*e^4 + 18*a^3*c^3*d*f*e^4 - a*b^5
*d*g*e^4 - 29*a^3*b*c^2*d*g*e^4 + a*b^5*f*e^5 - 6*a^2*b^3*c*f*e^5 - a^3*b*c
^2*f*e^5 + 2*a^3*b^2*c*g*e^5 + 10*a^4*c^2*g*e^5)*x)/((c*d^2 - b*d*e + a*e^2
)^3*(c*x^2 + b*x + a)^2*(b^2 - 4*a*c)^2)
```

maple [B] time = 0.08, size = 9360, normalized size = 14.05

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 8.10, size = 25467, normalized size = 38.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x)
```

[Out] ((24*a^3*c^2*e^3*f - 8*a^2*c^3*d^3*g - a^2*b^3*e^3*g - b^3*c^2*d^3*f + 3*a*b^4*e^3*f - b^5*d*e^2*f + 10*a*b*c^3*d^3*f + 10*a^3*b*c*e^3*g - a*b^4*d*e^2*g + 2*b^4*c*d^2*e*f - a*b^2*c^2*d^3*g - 21*a^2*b^2*c*e^3*f + 8*a^2*c^3*d^2*e*f - 24*a^3*c^2*d*e^2*g + 6*a*b^3*c*d*e^2*f + 2*a*b^3*c*d^2*e*g - 19*a*b^2*c^2*d^2*e*f + 10*a^2*b*c^2*d*e^2*f + 10*a^2*b*c^2*d^2*e*g + a^2*b^2*c*d*e^2*g)/(2*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)) + (x^2*(16*a^2*c^3*e^3*f - 9*b^2*c^3*d^3*g + 18*b*c^4*d^3*f + 4*b^4*c*e^3*f - 4*b^4*c*d*e^2*g - 29*a*b^2*c^2*e^3*f + 18*a^2*b*c^2*e^3*g - 16*a^2*c^3*d*e^2*g - 27*b^2*c^3*d^2*e*f + 3*b^3*c^2*d*e^2*f + 15*b^3*c^2*d^2*e*g + 42*a*b*c^3*d*e^2*f - 6*a*b*c^3*d^2*e*g - 7*a*b^2*c^2*d*e^2*g))/(2*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)) + (x^3*(6*c^5*d^3*f + 6*a^2*c^3*e^3*g + b^3*c^2*e^3*f - 3*b*c^4*d^3*g - 7*a*b*c^3*e^3*f + 14*a*c^4*d*e^2*f - 2*a*c^4*d^2*e*g - 9*b*c^4*d^2*e*f + b^2*c^3*d*e^2*f + 5*b^2*c^3*d^2*e*g - b^3*c^2*d*e^2*g - 5*a*b*c^3*d*e^2*g))/(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3) + (x*(b^5*e^3*f + 2*b^2*c^3*d^3*f + 10*a^3*c^2*e^3*g - b^3*c^2*d^3*g + 10*a*c^4*d^3*f - b^5*d*e^2*g - 5*a*b*c^3*d^3*g - 6*a*b^3*c*e^3*f + 2*b^4*c*d^2*e*g - a^2*b*c^2*e^3*f + 2*a^2*b^2*c*e^3*g + 18*a^2*c^3*d*e^2*f + 2*a^2*c^3*d^2*e*g - 3*b^3*c^2*d^2*e*f - 15*a*b*c^3*d^2*e*f + 2*a*b^3*c*d*e^2*g + 9*a*b^2*c^2*d*e^2*f + 5*a*b^2*c^2*d^2*e*g - 19*a^2*b*c^2*d*e^2*g))/(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) + symsum(log(root(61440*a^8*b*c^7*d^5*e^7*z^3 + 61440*a^7*b*c^8*d^7*e^5*z^3 + 30720*a^9*b*c^6*d^3*e^9*z^3 + 30720*a^6*b*c^9*d^9*e^3*z^3 - 7680*a^9*b^3*c^4*d*e^11*z^3 - 7680*a^4*b^3*c^9*d^11*e*z^3 + 3840*a^8*b^5*c^3*d*e^11*z^3 + 3840*a^3*b^5*c^8*d^11*e*z^3 - 960*a^7*b^7*c^2*d*e^11*z^3 - 960*a^2*b^7*c^7*d^11*e*z^3 + 370*a^4*b^11*c*d^3*e^9*z^3 + 370*a*b^11*c^4*d^9*e^3*z^3 - 294*a^5*b^10*c*d^2*e^10*z^3 - 294*a*b^10*c^5*d^10*e^2*z^3 - 240*a^3*b^12*c*d^4*e^8*z^3 - 240*a*b^12*c^3*d^8*e^4*z^3 + 60*a^2*b^13*c*d^5*e^7*z^3 + 60*a*b^13*c^2*d^7*e^5*z^3 + 6144*a^10*b*c^5*d*e^11*z^3 + 6144*a^5*b*c^10*d^11*e*z^3 + 120*a^6*b^9*c*d*e^11*z^3 + 120*a*b^9*c^6*d^11*e*z^3 + 10*a*b^14*c*d^6*e^6*z^3 + 71680*a^6*b^4*c^6*d^6*e^6*z^3 - 66560*a^7*b^2*c^7*d^6*e^6*z^3 + 51840*a^7*b^4*c^5*d^4*e^8*z^3 + 51840*a^5*b^4*c^7*d^8*e^4*z^3 - 42240*a^8*b^2*c^6*d^4*e^8*z^3 - 42240*a^6*b^2*c^8*d^8*e^4*z^3 - 32256*a^6*b^5*c^5*d^5*e^7*z^3 - 32256*a^5*b^5*c^6*d^7*e^5*z^3 + 21120*a^5*b^7*c^4*d^5*e^7*z^3 + 21120*a^4*b^7*c^5*d^7*e^5*z^3 - 17920*a^8*b^3*c^5*d^3*e^9*z^3 - 17920*a^5*b^3*c^8*d^9*e^3*z^3 - 17024*a^5*b^6*c^5*d^6*e^6*z^3 - 16800*a^6*b^6*c^4*d^4*e^8*z^3 - 16800*a^4*b^6*c^6*d^8*e^4*z^3 + 15360*a^8*b^4*c^4*d^2*e^10*z^3 - 15360*a^7*b^3*c^6*d^5*e^7*z^3 - 15360*a^6*b^3*c^7*d^7*e^5*z^3 + 15360*a^4*b^4*c^8*d^10*e^2*z^3 - 8640*a^7*b^6*c^3*d^2*e^10*z^3 - 8640*a^3*b^6*c^7*d^10*e^2*z^3 + 8000*a^6*b^7*c^3*d^3*e^9*z^3 + 8000*a^3*b^7*c^6*d^9*e^3*z^3 - 7680*a^9*b^2*c^5*d^2*e^10*z^3 - 7680*a^5*b^2*c^9*d^10*e^2*z^3 - 6400*a^7*b^5*c^4*d^3*e^9*z^3 - 6400*a^4*b^5*c^7*d^9*e^3*z^3 - 4560*a^4*b^9*c^3*d^5*e^7*z^3 - 4560*a^3*b^9*c^4*d^7*e^5*z^3 - 3920*a^4*b^8*c^4*d^6*e^6*z^3 - 2600*a^5*b^9*c^2*d^3*e^9*z^3 - 2600*a^2*b^9*c^5*d^9*e^3*z^3 + 2380*a^3*b^10*c^3*d^6*e^6*z^3 + 2280*a^6*b^8*c^2*d^2*e^10*z^3 + 2280*a^2*b^8*c^6*d^10*e^2*z^3 + 1215*a^4*b^10*c^2*d^4*e^8*z^3 + 1215*a^2*b^10*c^4*d^8*e^4*z^3 - 350*a^2*b^12*c^2*d^6*e^6*z^3 - 300*a^5*b^8*c^3*d^4*e^8*z^3 - 300*a^3*b^8*c^5*d^8*e^4*z^3 + 180*a^3*b^11*c^2*d^5*e^7*z^3 + 180*a^2*b^11*c^3*d^7*e^5*z^3 - 6*b^15*c*d^7*e^5*

z^3 - 6*b^11*c^5*d^11*e*z^3 - 6*a^5*b^11*d*e^11*z^3 - 6*a*b^15*d^5*e^7*z^3
- 20*a^7*b^8*c*e^12*z^3 - 20*a*b^8*c^7*d^12*z^3 - 20*b^13*c^3*d^9*e^3*z^3 +
15*b^14*c^2*d^8*e^4*z^3 + 15*b^12*c^4*d^10*e^2*z^3 - 20480*a^8*c^8*d^6*e^6
*z^3 - 15360*a^9*c^7*d^4*e^8*z^3 - 15360*a^7*c^9*d^8*e^4*z^3 - 6144*a^10*c^
6*d^2*e^10*z^3 - 6144*a^6*c^10*d^10*e^2*z^3 - 20*a^3*b^13*d^3*e^9*z^3 + 15*
a^4*b^12*d^2*e^10*z^3 + 15*a^2*b^14*d^4*e^8*z^3 + 1280*a^10*b^2*c^4*e^12*z^
3 - 640*a^9*b^4*c^3*e^12*z^3 + 160*a^8*b^6*c^2*e^12*z^3 + 1280*a^4*b^2*c^10
*d^12*z^3 - 640*a^3*b^4*c^9*d^12*z^3 + 160*a^2*b^6*c^8*d^12*z^3 - 1024*a^11
*c^5*e^12*z^3 - 1024*a^5*c^11*d^12*z^3 + b^16*d^6*e^6*z^3 + b^10*c^6*d^12*z
^3 + a^6*b^10*e^12*z^3 + 132*a*b*c^8*d^8*e^2*f*g*z + 1960*a^2*b^3*c^5*d^4*e
^6*f*g*z - 1560*a^3*b^2*c^5*d^3*e^7*f*g*z - 1500*a^2*b^2*c^6*d^5*e^5*f*g*z
+ 960*a^3*b^3*c^4*d^2*e^8*f*g*z - 420*a^2*b^4*c^4*d^3*e^7*f*g*z - 222*a^2*b
^5*c^3*d^2*e^8*f*g*z - 40*a*b^8*c*d*e^9*f*g*z + 1830*a^4*b^2*c^4*d*e^9*f*g*
z + 1440*a*b^3*c^6*d^6*e^4*f*g*z - 1080*a^3*b^4*c^3*d*e^9*f*g*z - 856*a*b^2
*c^7*d^7*e^3*f*g*z - 840*a*b^4*c^5*d^5*e^5*f*g*z + 302*a^2*b^6*c^2*d*e^9*f*
g*z + 180*a^4*b*c^5*d^2*e^8*f*g*z - 120*a^3*b*c^6*d^4*e^6*f*g*z + 84*a*b^6*
c^3*d^3*e^7*f*g*z - 24*a^2*b*c^7*d^6*e^4*f*g*z + 18*a*b^7*c^2*d^2*e^8*f*g*z
- 2*a*b^5*c^4*d^4*e^6*f*g*z + 24*a*c^9*d^9*e*f*g*z + 372*b^3*c^7*d^8*e^2*f
*g*z - 340*b^4*c^6*d^7*e^3*f*g*z + 114*b^5*c^5*d^6*e^4*f*g*z + 12*b^6*c^4*d
^5*e^5*f*g*z - 6*b^8*c^2*d^3*e^7*f*g*z - 2*b^7*c^3*d^4*e^6*f*g*z + 528*a^3*
c^7*d^5*e^5*f*g*z + 480*a^4*c^6*d^3*e^7*f*g*z + 224*a^2*c^8*d^7*e^3*f*g*z -
60*a^4*b^3*c^3*e^10*f*g*z + 6*a^3*b^5*c^2*e^10*f*g*z + 36*a^5*b*c^4*d*e^9*
g^2*z + 20*a*b^8*c*d^2*e^8*g^2*z + 960*a*b*c^8*d^7*e^3*f^2*z + 900*a^4*b*c^
5*d*e^9*f^2*z - 1185*a^4*b^2*c^4*d^2*e^8*g^2*z + 450*a^3*b^4*c^3*d^2*e^8*g^
2*z - 420*a^2*b^4*c^4*d^4*e^6*g^2*z + 300*a^3*b^2*c^5*d^4*e^6*g^2*z + 210*a
^2*b^2*c^6*d^6*e^4*g^2*z + 192*a^2*b^5*c^3*d^3*e^7*g^2*z - 142*a^2*b^6*c^2*
d^2*e^8*g^2*z + 100*a^2*b^3*c^5*d^5*e^5*g^2*z + 60*a^3*b^3*c^4*d^3*e^7*g^2*
z - 1950*a^2*b^2*c^6*d^4*e^6*f^2*z - 900*a^3*b^2*c^5*d^2*e^8*f^2*z + 300*a^
2*b^4*c^4*d^2*e^8*f^2*z + 100*a^2*b^3*c^5*d^3*e^7*f^2*z - 186*b^2*c^8*d^9*e
*f*g*z - 1896*a^5*c^5*d*e^9*f*g*z + 180*a^5*b*c^4*e^10*f*g*z - 12*a*b*c^8*d
^9*e*g^2*z - 390*a*b^4*c^5*d^6*e^4*g^2*z + 298*a*b^5*c^4*d^5*e^5*g^2*z + 18
0*a*b^3*c^6*d^7*e^3*g^2*z - 120*a^3*b*c^6*d^5*e^5*g^2*z - 96*a^2*b*c^7*d^7*
e^3*g^2*z + 60*a^4*b^3*c^3*d*e^9*g^2*z - 54*a*b^6*c^3*d^4*e^6*g^2*z - 18*a*
b^7*c^2*d^3*e^7*g^2*z - 6*a^3*b^5*c^2*d*e^9*g^2*z - 4*a*b^2*c^7*d^8*e^2*g^2
*z + 2400*a^3*b*c^6*d^3*e^7*f^2*z + 2280*a^2*b*c^7*d^5*e^5*f^2*z - 1300*a*b
^2*c^7*d^6*e^4*f^2*z + 540*a*b^3*c^6*d^5*e^5*f^2*z - 300*a^3*b^3*c^4*d*e^9*
f^2*z + 150*a*b^4*c^5*d^4*e^6*f^2*z - 80*a*b^5*c^4*d^3*e^7*f^2*z + 30*a^2*b
^5*c^3*d*e^9*f^2*z - 30*a*b^6*c^3*d^2*e^8*f^2*z + 180*b*c^9*d^9*e*f^2*z + 2
0*a*b^8*c*e^10*f^2*z - 100*b^4*c^6*d^8*e^2*g^2*z + 96*b^5*c^5*d^7*e^3*g^2*z
- 33*b^6*c^4*d^6*e^4*g^2*z - 8*b^7*c^3*d^5*e^5*g^2*z + 6*b^8*c^2*d^4*e^6*g
^2*z + 912*a^5*c^5*d^2*e^8*g^2*z - 345*b^2*c^8*d^8*e^2*f^2*z + 300*b^3*c^7*
d^7*e^3*f^2*z - 120*a^4*c^6*d^4*e^6*g^2*z - 100*b^4*c^6*d^6*e^4*f^2*z - 48*
a^3*c^7*d^6*e^4*g^2*z - 15*b^6*c^4*d^4*e^6*f^2*z + 10*b^7*c^3*d^3*e^7*f^2*z
+ 6*b^5*c^5*d^5*e^5*f^2*z - 4*a^2*c^8*d^8*e^2*g^2*z - 1200*a^3*c^7*d^4*e^6
*f^2*z - 900*a^4*c^6*d^2*e^8*f^2*z - 760*a^2*c^8*d^6*e^4*f^2*z - 1185*a^4*b
^2*c^4*e^10*f^2*z + 630*a^3*b^4*c^3*e^10*f^2*z - 160*a^2*b^6*c^2*e^10*f^2*z
+ 2*b^10*d*e^9*f*g*z + 36*b*c^9*d^10*f*g*z + 48*b^3*c^7*d^9*e*g^2*z - 240*
a*c^9*d^8*e^2*f^2*z - b^10*d^2*e^8*g^2*z - 36*a^6*c^4*e^10*g^2*z - 9*b^2*c^
8*d^10*g^2*z + 768*a^5*c^5*e^10*f^2*z - 36*c^10*d^10*f^2*z - b^10*e^10*f^2*
z - 177*a*b^2*c^4*d^2*e^7*f*g^2 + 285*a*b^2*c^4*d*e^8*f^2*g + 252*a^2*b*c^4
*d*e^8*f*g^2 - 120*a*b^3*c^3*d*e^8*f*g^2 + 108*a*b*c^5*d^3*e^6*f*g^2 + 36*a
*b*c^5*d^2*e^7*f^2*g - 132*a*b*c^5*d*e^8*f^3 - 69*b^2*c^5*d^4*e^5*f*g^2 + 5
7*b^2*c^5*d^3*e^6*f^2*g - 45*b^3*c^4*d^2*e^7*f^2*g + 30*b^4*c^3*d^2*e^7*f*g
^2 + 9*b^3*c^4*d^3*e^6*f*g^2 + 156*a^2*c^5*d^2*e^7*f*g^2 - 72*a^2*b*c^4*d^2
*e^7*g^3 + 60*a*b^3*c^3*d^2*e^7*g^3 - 13*a*b^2*c^4*d^3*e^6*g^3 + 36*b*c^6*d
^5*e^4*f*g^2 + 36*b*c^6*d^4*e^5*f^2*g - 30*b^4*c^3*d*e^8*f^2*g + 12*b^5*c^2
*d*e^8*f*g^2 - 408*a^2*c^5*d*e^8*f^2*g - 156*a*c^6*d^3*e^6*f^2*g + 24*a*c^6
*d^4*e^5*f*g^2 - 180*a^2*b*c^4*e^9*f^2*g + 60*a*b^3*c^3*e^9*f^2*g - 12*a*b*
c^5*d^4*e^5*g^3 - 36*c^7*d^5*e^4*f^2*g - 6*b^5*c^2*e^9*f^2*g + 36*a^3*c^4*e

^9*f*g^2 - 72*b*c^6*d^3*e^6*f^3 - 36*a^3*c^4*d*e^8*g^3 + 15*b^3*c^4*d*e^8*f
^3 + 132*a*c^6*d^2*e^7*f^3 - 95*a*b^2*c^4*e^9*f^3 + 21*b^3*c^4*d^4*e^5*g^3
- 10*b^4*c^3*d^3*e^6*g^3 - 9*b^2*c^5*d^5*e^4*g^3 - 6*b^5*c^2*d^2*e^7*g^3 +
21*b^2*c^5*d^2*e^7*f^3 - 4*a^2*c^5*d^3*e^6*g^3 + 36*c^7*d^4*e^5*f^3 + 10*b^
4*c^3*e^9*f^3 + 256*a^2*c^5*e^9*f^3, z, k)*((a^2*b^9*c*e^10*f - 96*a^7*c^5*
e^10*g + 368*a^6*b*c^5*e^10*f + 96*a^2*c^10*d^9*e*f + 32*a^6*c^6*d*e^9*f +
6*b^4*c^8*d^9*e*f + b^11*c*d^2*e^8*f - 3*b^5*c^7*d^9*e*g - b^11*c*d^3*e^7*g
 - 17*a^3*b^7*c^2*e^10*f + 111*a^4*b^5*c^3*e^10*f - 328*a^5*b^3*c^4*e^10*f
- 6*a^5*b^4*c^3*e^10*g + 48*a^6*b^2*c^4*e^10*g + 320*a^3*c^9*d^7*e^3*f + 38
4*a^4*c^8*d^5*e^5*f + 192*a^5*c^7*d^3*e^7*f - 32*a^3*c^9*d^8*e^2*g - 192*a^
4*c^8*d^6*e^4*g - 384*a^5*c^7*d^4*e^6*g - 320*a^6*c^6*d^2*e^8*g - 21*b^5*c^
7*d^8*e^2*f + 25*b^6*c^6*d^7*e^3*f - 10*b^7*c^5*d^6*e^4*f - b^10*c^2*d^3*e^
7*f + 11*b^6*c^6*d^8*e^2*g - 14*b^7*c^5*d^7*e^3*g + 6*b^8*c^4*d^6*e^4*g + b
^10*c^2*d^4*e^6*g + 168*a*b^3*c^8*d^8*e^2*f - 180*a*b^4*c^7*d^7*e^3*f + 36*
a*b^5*c^6*d^6*e^4*f + 15*a*b^6*c^5*d^5*e^5*f + 11*a*b^7*c^4*d^4*e^6*f + 17*
a*b^8*c^3*d^3*e^7*f - 17*a*b^9*c^2*d^2*e^8*f - 336*a^2*b*c^9*d^8*e^2*f + 35
*a^2*b^8*c^2*d*e^9*f - 704*a^3*b*c^8*d^6*e^4*f - 239*a^3*b^6*c^3*d*e^9*f -
32*a^4*b*c^7*d^4*e^6*f + 746*a^4*b^4*c^4*d*e^9*f + 704*a^5*b*c^6*d^2*e^8*f
- 896*a^5*b^2*c^5*d*e^9*f - 90*a*b^4*c^7*d^8*e^2*g + 108*a*b^5*c^6*d^7*e^3*
g - 27*a*b^6*c^5*d^6*e^4*g - 11*a*b^7*c^4*d^5*e^5*g - 23*a*b^8*c^3*d^4*e^6*
g + 17*a*b^9*c^2*d^3*e^7*g - 64*a^3*b*c^8*d^7*e^3*g + 17*a^3*b^7*c^2*d*e^9*
g + 32*a^4*b*c^7*d^5*e^5*g - 87*a^4*b^5*c^3*d*e^9*g + 64*a^5*b*c^6*d^3*e^7*
g + 136*a^5*b^3*c^4*d*e^9*g - 2*a*b^10*c*d*e^9*f + 240*a^2*b^2*c^8*d^7*e^3*
f + 192*a^2*b^3*c^7*d^6*e^4*f - 96*a^2*b^4*c^6*d^5*e^5*f - 90*a^2*b^5*c^5*d
^4*e^6*f - 153*a^2*b^6*c^4*d^3*e^7*f + 112*a^2*b^7*c^3*d^2*e^8*f + 48*a^3*b
^2*c^7*d^5*e^5*f + 192*a^3*b^3*c^6*d^4*e^6*f + 676*a^3*b^4*c^5*d^3*e^7*f -
292*a^3*b^5*c^4*d^2*e^8*f - 1136*a^4*b^2*c^6*d^3*e^7*f + 32*a^4*b^3*c^5*d^2
*e^8*f + 192*a^2*b^2*c^8*d^8*e^2*g - 192*a^2*b^3*c^7*d^7*e^3*g - 84*a^2*b^4
*c^6*d^6*e^4*g + 90*a^2*b^5*c^5*d^5*e^5*g + 165*a^2*b^6*c^4*d^4*e^6*g - 88*
a^2*b^7*c^3*d^3*e^7*g - 35*a^2*b^8*c^2*d^2*e^8*g + 432*a^3*b^2*c^7*d^6*e^4*
g - 192*a^3*b^3*c^6*d^5*e^5*g - 496*a^3*b^4*c^5*d^4*e^6*g + 148*a^3*b^5*c^4
*d^3*e^7*g + 203*a^3*b^6*c^3*d^2*e^8*g + 656*a^4*b^2*c^6*d^4*e^6*g - 32*a^4
*b^3*c^5*d^3*e^7*g - 476*a^4*b^4*c^4*d^2*e^8*g + 464*a^5*b^2*c^5*d^2*e^8*g
- 48*a*b^2*c^9*d^9*e*f + 24*a*b^3*c^8*d^9*e*g + 2*a*b^10*c*d^2*e^8*g - 48*a
^2*b*c^9*d^9*e*g - a^2*b^9*c*d*e^9*g + 16*a^6*b*c^5*d*e^9*g)/(a^4*b^8*e^8 +
 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*
c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3
*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a
^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^
6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 +
512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4
- 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*
e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*
d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*
c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^
5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10
*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e
^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e +
52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072
*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*
a^6*b^3*c^3*d*e^7) - root(61440*a^8*b*c^7*d^5*e^7*z^3 + 61440*a^7*b*c^8*d^7
*e^5*z^3 + 30720*a^9*b*c^6*d^3*e^9*z^3 + 30720*a^6*b*c^9*d^9*e^3*z^3 - 7680
*a^9*b^3*c^4*d*e^11*z^3 - 7680*a^4*b^3*c^9*d^11*e*z^3 + 3840*a^8*b^5*c^3*d*
e^11*z^3 + 3840*a^3*b^5*c^8*d^11*e*z^3 - 960*a^7*b^7*c^2*d*e^11*z^3 - 960*a
^2*b^7*c^7*d^11*e*z^3 + 370*a^4*b^11*c*d^3*e^9*z^3 + 370*a*b^11*c^4*d^9*e^3
*z^3 - 294*a^5*b^10*c*d^2*e^10*z^3 - 294*a*b^10*c^5*d^10*e^2*z^3 - 240*a^3*
b^12*c*d^4*e^8*z^3 - 240*a*b^12*c^3*d^8*e^4*z^3 + 60*a^2*b^13*c*d^5*e^7*z^3
 + 60*a*b^13*c^2*d^7*e^5*z^3 + 6144*a^10*b*c^5*d*e^11*z^3 + 6144*a^5*b*c^10
*d^11*e*z^3 + 120*a^6*b^9*c*d*e^11*z^3 + 120*a*b^9*c^6*d^11*e*z^3 + 10*a*b^

14*c*d^6*e^6*z^3 + 71680*a^6*b^4*c^6*d^6*e^6*z^3 - 66560*a^7*b^2*c^7*d^6*e^6*z^3 + 51840*a^7*b^4*c^5*d^4*e^8*z^3 + 51840*a^5*b^4*c^7*d^8*e^4*z^3 - 42240*a^8*b^2*c^6*d^4*e^8*z^3 - 42240*a^6*b^2*c^8*d^8*e^4*z^3 - 32256*a^6*b^5*c^5*d^5*e^7*z^3 - 32256*a^5*b^5*c^6*d^7*e^5*z^3 + 21120*a^5*b^7*c^4*d^5*e^7*z^3 + 21120*a^4*b^7*c^5*d^7*e^5*z^3 - 17920*a^8*b^3*c^5*d^3*e^9*z^3 - 17920*a^5*b^3*c^8*d^9*e^3*z^3 - 17024*a^5*b^6*c^5*d^6*e^6*z^3 - 16800*a^6*b^6*c^4*d^4*e^8*z^3 - 16800*a^4*b^6*c^6*d^8*e^4*z^3 + 15360*a^8*b^4*c^4*d^2*e^10*z^3 - 15360*a^7*b^3*c^6*d^5*e^7*z^3 - 15360*a^6*b^3*c^7*d^7*e^5*z^3 + 15360*a^4*b^4*c^8*d^10*e^2*z^3 - 8640*a^7*b^6*c^3*d^2*e^10*z^3 - 8640*a^3*b^6*c^7*d^10*e^2*z^3 + 8000*a^6*b^7*c^3*d^3*e^9*z^3 + 8000*a^3*b^7*c^6*d^9*e^3*z^3 - 7680*a^9*b^2*c^5*d^2*e^10*z^3 - 7680*a^5*b^2*c^9*d^10*e^2*z^3 - 6400*a^7*b^5*c^4*d^3*e^9*z^3 - 6400*a^4*b^5*c^7*d^9*e^3*z^3 - 4560*a^4*b^9*c^3*d^5*e^7*z^3 - 4560*a^3*b^9*c^4*d^7*e^5*z^3 - 3920*a^4*b^8*c^4*d^6*e^6*z^3 - 2600*a^5*b^9*c^2*d^3*e^9*z^3 - 2600*a^2*b^9*c^5*d^9*e^3*z^3 + 2380*a^3*b^10*c^3*d^6*e^6*z^3 + 2280*a^6*b^8*c^2*d^2*e^10*z^3 + 2280*a^2*b^8*c^6*d^10*e^2*z^3 + 1215*a^4*b^10*c^2*d^4*e^8*z^3 + 1215*a^2*b^10*c^4*d^8*e^4*z^3 - 350*a^2*b^12*c^2*d^6*e^6*z^3 - 300*a^5*b^8*c^3*d^4*e^8*z^3 - 300*a^3*b^8*c^5*d^8*e^4*z^3 + 180*a^3*b^11*c^2*d^5*e^7*z^3 + 180*a^2*b^11*c^3*d^7*e^5*z^3 - 6*b^15*c*d^7*e^5*z^3 - 6*b^11*c^5*d^11*e*z^3 - 6*a^5*b^11*d*e^11*z^3 - 6*a*b^15*d^5*e^7*z^3 - 20*a^7*b^8*c*e^12*z^3 - 20*a*b^8*c^7*d^12*z^3 - 20*b^13*c^3*d^9*e^3*z^3 + 15*b^14*c^2*d^8*e^4*z^3 + 15*b^12*c^4*d^10*e^2*z^3 - 20480*a^8*c^8*d^6*e^6*z^3 - 15360*a^9*c^7*d^4*e^8*z^3 - 15360*a^7*c^9*d^8*e^4*z^3 - 6144*a^10*c^6*d^2*e^10*z^3 - 6144*a^6*c^10*d^10*e^2*z^3 - 20*a^3*b^13*d^3*e^9*z^3 + 15*a^4*b^12*d^2*e^10*z^3 + 15*a^2*b^14*d^4*e^8*z^3 + 1280*a^10*b^2*c^4*e^12*z^3 - 640*a^9*b^4*c^3*e^12*z^3 + 160*a^8*b^6*c^2*e^12*z^3 + 1280*a^4*b^2*c^10*d^12*z^3 - 640*a^3*b^4*c^9*d^12*z^3 + 160*a^2*b^6*c^8*d^12*z^3 - 1024*a^11*c^5*e^12*z^3 - 1024*a^5*c^11*d^12*z^3 + b^16*d^6*e^6*z^3 + b^10*c^6*d^12*z^3 + a^6*b^10*e^12*z^3 + 132*a*b*c^8*d^8*e^2*f*g*z + 1960*a^2*b^3*c^5*d^4*e^6*f*g*z - 1560*a^3*b^2*c^5*d^3*e^7*f*g*z - 1500*a^2*b^2*c^6*d^5*e^5*f*g*z + 960*a^3*b^3*c^4*d^2*e^8*f*g*z - 420*a^2*b^4*c^4*d^3*e^7*f*g*z - 222*a^2*b^5*c^3*d^2*e^8*f*g*z - 40*a*b^8*c*d*e^9*f*g*z + 1830*a^4*b^2*c^4*d*e^9*f*g*z + 1440*a*b^3*c^6*d^6*e^4*f*g*z - 1080*a^3*b^4*c^3*d*e^9*f*g*z - 856*a*b^2*c^7*d^7*e^3*f*g*z - 840*a*b^4*c^5*d^5*e^5*f*g*z + 302*a^2*b^6*c^2*d*e^9*f*g*z + 180*a^4*b*c^5*d^2*e^8*f*g*z - 120*a^3*b*c^6*d^4*e^6*f*g*z + 84*a*b^6*c^3*d^3*e^7*f*g*z - 24*a^2*b*c^7*d^6*e^4*f*g*z + 18*a*b^7*c^2*d^2*e^8*f*g*z - 2*a*b^5*c^4*d^4*e^6*f*g*z + 24*a*c^9*d^9*e*f*g*z + 372*b^3*c^7*d^8*e^2*f*g*z - 340*b^4*c^6*d^7*e^3*f*g*z + 114*b^5*c^5*d^6*e^4*f*g*z + 12*b^6*c^4*d^5*e^5*f*g*z - 6*b^8*c^2*d^3*e^7*f*g*z - 2*b^7*c^3*d^4*e^6*f*g*z + 528*a^3*c^7*d^5*e^5*f*g*z + 480*a^4*c^6*d^3*e^7*f*g*z + 224*a^2*c^8*d^7*e^3*f*g*z - 60*a^4*b^3*c^3*e^10*f*g*z + 6*a^3*b^5*c^2*e^10*f*g*z + 36*a^5*b*c^4*d*e^9*g^2*z + 20*a*b^8*c*d^2*e^8*g^2*z + 960*a*b*c^8*d^7*e^3*f^2*z + 900*a^4*b*c^5*d*e^9*f^2*z - 1185*a^4*b^2*c^4*d^2*e^8*g^2*z + 450*a^3*b^4*c^3*d^2*e^8*g^2*z - 420*a^2*b^4*c^4*d^4*e^6*g^2*z + 300*a^3*b^2*c^5*d^4*e^6*g^2*z + 210*a^2*b^2*c^6*d^6*e^4*g^2*z + 192*a^2*b^5*c^3*d^3*e^7*g^2*z - 142*a^2*b^6*c^2*d^2*e^8*g^2*z + 100*a^2*b^3*c^5*d^5*e^5*g^2*z + 60*a^3*b^3*c^4*d^3*e^7*g^2*z - 1950*a^2*b^2*c^6*d^4*e^6*f^2*z - 900*a^3*b^2*c^5*d^2*e^8*f^2*z + 300*a^2*b^4*c^4*d^2*e^8*f^2*z + 100*a^2*b^3*c^5*d^3*e^7*f^2*z - 186*b^2*c^8*d^9*e*f*g*z - 1896*a^5*c^5*d*e^9*f*g*z + 180*a^5*b*c^4*e^10*f*g*z - 12*a*b*c^8*d^9*e*g^2*z - 390*a*b^4*c^5*d^6*e^4*g^2*z + 298*a*b^5*c^4*d^5*e^5*g^2*z + 180*a*b^3*c^6*d^7*e^3*g^2*z - 120*a^3*b*c^6*d^5*e^5*g^2*z - 96*a^2*b*c^7*d^7*e^3*g^2*z + 60*a^4*b^3*c^3*d*e^9*g^2*z - 54*a*b^6*c^3*d^4*e^6*g^2*z - 18*a*b^7*c^2*d^3*e^7*g^2*z - 6*a^3*b^5*c^2*d*e^9*g^2*z - 4*a*b^2*c^7*d^8*e^2*g^2*z + 2400*a^3*b*c^6*d^3*e^7*f^2*z + 2280*a^2*b*c^7*d^5*e^5*f^2*z - 1300*a*b^2*c^7*d^6*e^4*f^2*z + 540*a*b^3*c^6*d^5*e^5*f^2*z - 300*a^3*b^3*c^4*d*e^9*f^2*z + 150*a*b^4*c^5*d^4*e^6*f^2*z - 80*a*b^5*c^4*d^3*e^7*f^2*z + 30*a^2*b^5*c^3*d*e^9*f^2*z - 30*a*b^6*c^3*d^2*e^8*f^2*z + 180*b*c^9*d^9*e*f^2*z + 20*a*b^8*c*e^10*f^2*z - 100*b^4*c^6*d^8*e^2*g^2*z + 96*b^5*c^5*d^7*e^3*g^2*z - 33*b^6*c^4*d^6*e^4*g^2*z - 8*b^7*c^3*d^5*e^5*g^2*z + 6*b^8*c^2*d^4*e^6*g^2*z + 912*a^5*c^5*d^2*e^8*g^2*z - 345*b^2*c^8*d^8*e^2*f^2*

z + 300*b^3*c^7*d^7*e^3*f^2*z - 120*a^4*c^6*d^4*e^6*g^2*z - 100*b^4*c^6*d^6
*e^4*f^2*z - 48*a^3*c^7*d^6*e^4*g^2*z - 15*b^6*c^4*d^4*e^6*f^2*z + 10*b^7*c
^3*d^3*e^7*f^2*z + 6*b^5*c^5*d^5*e^5*f^2*z - 4*a^2*c^8*d^8*e^2*g^2*z - 1200
*a^3*c^7*d^4*e^6*f^2*z - 900*a^4*c^6*d^2*e^8*f^2*z - 760*a^2*c^8*d^6*e^4*f^
2*z - 1185*a^4*b^2*c^4*e^10*f^2*z + 630*a^3*b^4*c^3*e^10*f^2*z - 160*a^2*b^
6*c^2*e^10*f^2*z + 2*b^10*d*e^9*f*g*z + 36*b*c^9*d^10*f*g*z + 48*b^3*c^7*d^
9*e*g^2*z - 240*a*c^9*d^8*e^2*f^2*z - b^10*d^2*e^8*g^2*z - 36*a^6*c^4*e^10*
g^2*z - 9*b^2*c^8*d^10*g^2*z + 768*a^5*c^5*e^10*f^2*z - 36*c^10*d^10*f^2*z
- b^10*e^10*f^2*z - 177*a*b^2*c^4*d^2*e^7*f*g^2 + 285*a*b^2*c^4*d*e^8*f^2*g
+ 252*a^2*b*c^4*d*e^8*f*g^2 - 120*a*b^3*c^3*d*e^8*f*g^2 + 108*a*b*c^5*d^3*
e^6*f*g^2 + 36*a*b*c^5*d^2*e^7*f^2*g - 132*a*b*c^5*d*e^8*f^3 - 69*b^2*c^5*d
^4*e^5*f*g^2 + 57*b^2*c^5*d^3*e^6*f^2*g - 45*b^3*c^4*d^2*e^7*f^2*g + 30*b^4
*c^3*d^2*e^7*f*g^2 + 9*b^3*c^4*d^3*e^6*f*g^2 + 156*a^2*c^5*d^2*e^7*f*g^2 -
72*a^2*b*c^4*d^2*e^7*g^3 + 60*a*b^3*c^3*d^2*e^7*g^3 - 13*a*b^2*c^4*d^3*e^6*
g^3 + 36*b*c^6*d^5*e^4*f*g^2 + 36*b*c^6*d^4*e^5*f^2*g - 30*b^4*c^3*d*e^8*f^
2*g + 12*b^5*c^2*d*e^8*f*g^2 - 408*a^2*c^5*d*e^8*f^2*g - 156*a*c^6*d^3*e^6*
f^2*g + 24*a*c^6*d^4*e^5*f*g^2 - 180*a^2*b*c^4*e^9*f^2*g + 60*a*b^3*c^3*e^9
*f^2*g - 12*a*b*c^5*d^4*e^5*g^3 - 36*c^7*d^5*e^4*f^2*g - 6*b^5*c^2*e^9*f^2*
g + 36*a^3*c^4*e^9*f*g^2 - 72*b*c^6*d^3*e^6*f^3 - 36*a^3*c^4*d*e^8*g^3 + 15
*b^3*c^4*d*e^8*f^3 + 132*a*c^6*d^2*e^7*f^3 - 95*a*b^2*c^4*e^9*f^3 + 21*b^3*
c^4*d^4*e^5*g^3 - 10*b^4*c^3*d^3*e^6*g^3 - 9*b^2*c^5*d^5*e^4*g^3 - 6*b^5*c^
2*d^2*e^7*g^3 + 21*b^2*c^5*d^2*e^7*f^3 - 4*a^2*c^5*d^3*e^6*g^3 + 36*c^7*d^4
*e^5*f^3 + 10*b^4*c^3*e^9*f^3 + 256*a^2*c^5*e^9*f^3, z, k)*((a^5*b^9*c*e^11
+ 256*a^9*b*c^5*e^11 - 2048*a^9*c^6*d*e^10 + b^9*c^6*d^10*e + b^14*c*d^5*e
^6 - 16*a^6*b^7*c^2*e^11 + 96*a^7*b^5*c^3*e^11 - 256*a^8*b^3*c^4*e^11 - 204
8*a^5*c^10*d^9*e^2 - 8192*a^6*c^9*d^7*e^4 - 12288*a^7*c^8*d^5*e^6 - 8192*a^
8*c^7*d^3*e^8 - 3*b^10*c^5*d^9*e^2 + 2*b^11*c^4*d^8*e^3 + 2*b^12*c^3*d^7*e^
4 - 3*b^13*c^2*d^6*e^5 - 160*a^2*b^6*c^7*d^9*e^2 - 400*a^2*b^7*c^6*d^8*e^3
+ 1120*a^2*b^8*c^5*d^7*e^4 - 790*a^2*b^9*c^4*d^6*e^5 + 46*a^2*b^10*c^3*d^5*
e^6 + 86*a^2*b^11*c^2*d^4*e^7 + 3040*a^3*b^5*c^7*d^8*e^3 - 5760*a^3*b^6*c^6
*d^7*e^4 + 2720*a^3*b^7*c^5*d^6*e^5 + 1136*a^3*b^8*c^4*d^5*e^6 - 790*a^3*b^
9*c^3*d^4*e^7 - 92*a^3*b^10*c^2*d^3*e^8 + 1280*a^4*b^2*c^9*d^9*e^2 - 8960*a
^4*b^3*c^8*d^8*e^3 + 12800*a^4*b^4*c^7*d^7*e^4 - 320*a^4*b^5*c^6*d^6*e^5 -
8896*a^4*b^6*c^5*d^5*e^6 + 2720*a^4*b^7*c^4*d^4*e^7 + 1120*a^4*b^8*c^3*d^3*
e^8 + 5*a^4*b^9*c^2*d^2*e^9 - 7168*a^5*b^2*c^8*d^7*e^4 - 17408*a^5*b^3*c^7*
d^6*e^5 + 23552*a^5*b^4*c^6*d^5*e^6 - 320*a^5*b^5*c^5*d^4*e^7 - 5760*a^5*b^
6*c^4*d^3*e^8 - 400*a^5*b^7*c^3*d^2*e^9 - 16896*a^6*b^2*c^7*d^5*e^6 - 17408
*a^6*b^3*c^6*d^4*e^7 + 12800*a^6*b^4*c^5*d^3*e^8 + 3040*a^6*b^5*c^4*d^2*e^9
- 7168*a^7*b^2*c^6*d^3*e^8 - 8960*a^7*b^3*c^5*d^2*e^9 - 16*a*b^7*c^7*d^10*
e - 3*a*b^13*c*d^4*e^7 + 256*a^4*b*c^10*d^10*e - 3*a^4*b^10*c*d*e^10 + 40*a
*b^8*c^6*d^9*e^2 + 5*a*b^9*c^5*d^8*e^3 - 92*a*b^10*c^4*d^7*e^4 + 86*a*b^11*
c^3*d^6*e^5 - 20*a*b^12*c^2*d^5*e^6 + 96*a^2*b^5*c^8*d^10*e + 2*a^2*b^12*c*
d^3*e^8 - 256*a^3*b^3*c^9*d^10*e + 2*a^3*b^11*c*d^2*e^9 + 9472*a^5*b*c^9*d^
8*e^3 + 40*a^5*b^8*c^2*d*e^10 + 27136*a^6*b*c^8*d^6*e^5 - 160*a^6*b^6*c^3*d
*e^10 + 27136*a^7*b*c^7*d^4*e^7 + 9472*a^8*b*c^6*d^2*e^9 + 1280*a^8*b^2*c^5
*d*e^10)/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b
^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^
3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256
*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^
2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6
+ 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 -
90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3
+ 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*
e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3
*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^
3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b
^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e
^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 3
84*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a

^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7) - (x*(1536*a^9*c^6*e^11 - 2*a^4*b^10*c*e^11 - 512*a^4*c^11*d^10*e - 2*b^8*c^7*d^10*e - 2*b^14*c*d^4*e^7 + 38*a^5*b^8*c^2*e^11 - 288*a^6*b^6*c^3*e^11 + 1088*a^7*b^4*c^4*e^11 - 2048*a^8*b^2*c^5*e^11 - 512*a^5*c^10*d^8*e^3 + 3072*a^6*c^9*d^6*e^5 + 7168*a^7*c^8*d^4*e^7 + 5632*a^8*c^7*d^2*e^9 + 10*b^9*c^6*d^9*e^2 - 22*b^10*c^5*d^8*e^3 + 28*b^11*c^4*d^7*e^4 - 22*b^12*c^3*d^6*e^5 + 10*b^13*c^2*d^5*e^6 + 960*a^2*b^5*c^8*d^9*e^2 - 2080*a^2*b^6*c^7*d^8*e^3 + 2560*a^2*b^7*c^6*d^7*e^4 - 1780*a^2*b^8*c^5*d^6*e^5 + 412*a^2*b^9*c^4*d^5*e^6 + 248*a^2*b^10*c^3*d^4*e^7 - 116*a^2*b^11*c^2*d^3*e^8 - 2560*a^3*b^3*c^9*d^9*e^2 + 5440*a^3*b^4*c^8*d^8*e^3 - 6400*a^3*b^5*c^7*d^7*e^4 + 3520*a^3*b^6*c^6*d^6*e^5 + 1088*a^3*b^7*c^5*d^5*e^6 - 2340*a^3*b^8*c^4*d^4*e^7 + 520*a^3*b^9*c^3*d^3*e^8 + 212*a^3*b^10*c^2*d^2*e^9 - 5120*a^4*b^2*c^9*d^8*e^3 + 5120*a^4*b^3*c^8*d^7*e^4 + 640*a^4*b^4*c^7*d^6*e^5 - 9088*a^4*b^5*c^6*d^5*e^6 + 8000*a^4*b^6*c^5*d^4*e^7 - 1450*a^4*b^8*c^3*d^2*e^9 - 8192*a^5*b^2*c^8*d^6*e^5 + 17408*a^5*b^3*c^7*d^5*e^6 - 10112*a^5*b^4*c^6*d^4*e^7 - 6400*a^5*b^5*c^5*d^3*e^8 + 4640*a^5*b^6*c^4*d^2*e^9 - 1024*a^6*b^2*c^7*d^4*e^7 + 17408*a^6*b^3*c^6*d^3*e^8 - 6080*a^6*b^4*c^5*d^2*e^9 - 512*a^7*b^2*c^6*d^2*e^9 + 32*a*b^6*c^8*d^10*e + 8*a*b^13*c*d^3*e^8 + 8*a^3*b^11*c*d*e^10 - 5632*a^8*b*c^6*d*e^10 - 160*a*b^7*c^7*d^9*e^2 + 350*a*b^8*c^6*d^8*e^3 - 440*a*b^9*c^5*d^7*e^4 + 332*a*b^10*c^4*d^6*e^5 - 128*a*b^11*c^3*d^5*e^6 + 6*a*b^12*c^2*d^4*e^7 - 192*a^2*b^4*c^9*d^10*e - 12*a^2*b^12*c*d^2*e^9 + 512*a^3*b^2*c^10*d^10*e + 2560*a^4*b*c^10*d^9*e^2 - 150*a^4*b^9*c^2*d*e^10 + 2048*a^5*b*c^9*d^7*e^4 + 1120*a^5*b^7*c^3*d*e^10 - 9216*a^6*b*c^8*d^5*e^6 - 4160*a^6*b^5*c^4*d*e^10 - 14336*a^7*b*c^7*d^3*e^8 + 7680*a^7*b^3*c^5*d*e^10))/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7)) + (x*(768*a^6*c^6*e^10*f - 96*a^6*b*c^5*e^10*g - 576*a^6*c^6*d*e^9*g + 2*a^2*b^8*c^2*e^10*f - 33*a^3*b^6*c^3*e^10*f + 216*a^4*b^4*c^4*e^10*f - 656*a^5*b^2*c^5*e^10*f - 6*a^4*b^5*c^3*e^10*g + 48*a^5*b^3*c^4*e^10*g + 192*a^2*c^10*d^8*e^2*f + 832*a^3*c^9*d^6*e^4*f + 1856*a^4*c^8*d^4*e^6*f + 1984*a^5*c^7*d^2*e^8*f - 64*a^3*c^9*d^7*e^3*g - 704*a^4*c^8*d^5*e^5*g - 1216*a^5*c^7*d^3*e^7*g + 12*b^4*c^8*d^8*e^2*f - 48*b^5*c^7*d^7*e^3*f + 71*b^6*c^6*d^6*e^4*f - 45*b^7*c^5*d^5*e^5*f + 11*b^8*c^4*d^4*e^6*f - 3*b^9*c^3*d^3*e^7*f + 2*b^10*c^2*d^2*e^8*f - 6*b^5*c^7*d^8*e^2*g + 25*b^6*c^6*d^7*e^3*g - 39*b^7*c^5*d^6*e^4*g + 25*b^8*c^4*d^5*e^5*g - 3*b^9*c^3*d^4*e^6*g - 2*b^10*c^2*d^3*e^7*g - 96*a*b^2*c^9*d^8*e^2*f + 384*a*b^3*c^8*d^7*e^3*f - 516*a*b^4*c^7*d^6*e^4*f + 204*a*b^5*c^6*d^5*e^5*f + 49*a*b^6*c^5*d^4*e^6*f + 10*a*b^7*c^4*d^3*e^7*f - 31*a*b^8*c^3*d^2*e^8*f - 768*a^2*b*c^9*d^7*e^3*f + 67*a^2*b^7*c^3*d*e^9*f - 2496*a^3*b*c^8*d^5*e^5*f - 468*a^3*b^5*c^4*d*e^9*f - 3712*a^4*b*c^7*d^3*e^7*f + 1552*a^4*b^3*c^5*d*e^9*f + 48*a*b^3*c^8*d^8*e^2*g - 204*a*b^4*c^7*d^7*e^3*g + 300*a*b^5*c^6*d^6*e^4*g - 121*a*b^6*c^5*d^5*e^5*g - 82*a*b^7*c^4*d^4*e^6*g + 55*a*b^8*c^3*d^3*e^7*g + 4*a*b^9*c^2*d^2*e^8*g - 96*a^2*b*c^9*d^8*e^2*g - 2*a^2*b^8*c^2*d*e^9*g - 192*a^3*b*c^8*d^6*e^4*g + 57*a^3*b^6*c^3*d*e^9*g + 832*a^4*b*c^7*d^4*e^6*g - 396*a^4*b^4*c^4*d*e^9*g + 832*a^5*b*c^6*d^2*e^8*g + 944*a^5*b^2*c^5*d*e^9*g + 720*a^2*b^2*c^8*d^6*e^4*f +

528*a^2*b^3*c^7*d^5*e^5*f - 804*a^2*b^4*c^6*d^4*e^6*f - 168*a^2*b^5*c^5*d^3
*e^7*f + 233*a^2*b^6*c^4*d^2*e^8*f + 1264*a^3*b^2*c^7*d^4*e^6*f + 1632*a^3*
b^3*c^6*d^3*e^7*f - 764*a^3*b^4*c^5*d^2*e^8*f + 304*a^4*b^2*c^6*d^2*e^8*f +
 432*a^2*b^2*c^8*d^7*e^3*g - 528*a^2*b^3*c^7*d^6*e^4*g - 276*a^2*b^4*c^6*d^
5*e^5*g + 852*a^2*b^5*c^5*d^4*e^6*g - 281*a^2*b^6*c^4*d^3*e^7*g - 103*a^2*b
^7*c^3*d^2*e^8*g + 1616*a^3*b^2*c^7*d^5*e^5*g - 2112*a^3*b^3*c^6*d^4*e^6*g
+ 44*a^3*b^4*c^5*d^3*e^7*g + 684*a^3*b^5*c^4*d^2*e^8*g + 1616*a^4*b^2*c^6*d
^3*e^7*g - 1552*a^4*b^3*c^5*d^2*e^8*g - 4*a*b^9*c^2*d*e^9*f - 1984*a^5*b*c^
6*d*e^9*f))/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8
+ b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4
*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 -
256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10
*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e
^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3
 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*
e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d
^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*
c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5
*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*
a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*
d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3
- 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 9
2*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072
*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7)) - (6*b^3*c^6*d^4*e^5*f^2 - 36
*c^9*d^7*e^2*f^2 - 72*a^2*b^3*c^4*e^9*f^2 - 292*a^2*c^7*d^3*e^6*f^2 - 4*a^2
*c^7*d^5*e^4*g^2 - 8*a^3*c^6*d^3*e^6*g^2 - 93*b^2*c^7*d^5*e^4*f^2 - b^7*c^2
*e^9*f^2 + 11*b^4*c^5*d^3*e^6*f^2 + 7*b^5*c^4*d^2*e^7*f^2 - 9*b^2*c^7*d^7*e
^2*g^2 + 30*b^3*c^6*d^6*e^3*g^2 - 31*b^4*c^5*d^5*e^4*g^2 + 7*b^5*c^4*d^4*e^
5*g^2 + 4*b^6*c^3*d^3*e^6*g^2 - b^7*c^2*d^2*e^7*g^2 - 96*a^4*c^5*e^9*f*g +
15*a*b^5*c^3*e^9*f^2 + 112*a^3*b*c^5*e^9*f^2 - 168*a*c^8*d^5*e^4*f^2 - 224*
a^3*c^6*d*e^8*f^2 + 108*b*c^8*d^6*e^3*f^2 + 60*a^4*c^5*d*e^8*g^2 - 2*b^6*c^
3*d*e^8*f^2 + 336*a*b*c^7*d^4*e^5*f^2 + 8*a*b^4*c^4*d*e^8*f^2 - 12*a*b*c^7*
d^6*e^3*g^2 - 6*a^2*b^4*c^3*e^9*f*g + 48*a^3*b^2*c^4*e^9*f*g + 80*a^2*c^7*d
^4*e^5*f*g + 88*a^3*c^6*d^2*e^7*f*g - 114*b^2*c^7*d^6*e^3*f*g + 108*b^3*c^6
*d^5*e^4*f*g - 16*b^4*c^5*d^4*e^5*f*g - 14*b^5*c^4*d^3*e^6*f*g - 2*b^6*c^3*
d^2*e^7*f*g - 106*a*b^2*c^6*d^3*e^6*f^2 - 86*a*b^3*c^5*d^2*e^7*f^2 + 340*a^
2*b*c^6*d^2*e^7*f^2 + 47*a^2*b^2*c^5*d*e^8*f^2 - 10*a*b^2*c^6*d^5*e^4*g^2 +
 70*a*b^3*c^5*d^4*e^5*g^2 - 52*a*b^4*c^4*d^3*e^6*g^2 + 3*a*b^5*c^3*d^2*e^7*
g^2 - 32*a^2*b*c^6*d^4*e^5*g^2 + 6*a^2*b^4*c^3*d*e^8*g^2 - 20*a^3*b*c^5*d^2
*e^7*g^2 - 48*a^3*b^2*c^4*d*e^8*g^2 + 24*a*c^8*d^6*e^3*f*g + 36*b*c^8*d^7*e
^2*f*g + 2*b^7*c^2*d*e^8*f*g + 11*a^2*b^2*c^5*d^3*e^6*g^2 + 36*a^2*b^3*c^4*
d^2*e^7*g^2 + 108*a*b*c^7*d^5*e^4*f*g - 18*a*b^5*c^3*d*e^8*f*g + 52*a^3*b*c
^5*d*e^8*f*g - 316*a*b^2*c^6*d^4*e^5*f*g + 160*a*b^3*c^5*d^3*e^6*f*g + 44*a
*b^4*c^4*d^2*e^7*f*g + 124*a^2*b*c^6*d^3*e^6*f*g + 36*a^2*b^3*c^4*d*e^8*f*g
 - 274*a^2*b^2*c^5*d^2*e^7*f*g)/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^
4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 -
4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 9
6*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*
c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4
+ 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192
*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 -
128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5
 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^
4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^
5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b
^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d
^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 5
2*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a
^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*

b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7) + (x*(36*a^4*c^5*e^9*g^2 + b^6*c^3*e^9*f^2 + 36*c^9*d^6*e^3*f^2 + 49*a^2*b^2*c^5*e^9*f^2 + 196*a^2*c^7*d^2*e^7*f^2 + 4*a^2*c^7*d^4*e^5*g^2 - 24*a^3*c^6*d^2*e^7*g^2 + 93*b^2*c^7*d^4*e^5*f^2 - 6*b^3*c^6*d^3*e^6*f^2 - 17*b^4*c^5*d^2*e^7*f^2 + 9*b^2*c^7*d^6*e^3*g^2 - 30*b^3*c^6*d^5*e^4*g^2 + 31*b^4*c^5*d^4*e^5*g^2 - 10*b^5*c^4*d^3*e^6*g^2 + b^6*c^3*d^2*e^7*g^2 - 14*a*b^4*c^4*e^9*f^2 + 168*a*c^8*d^4*e^5*f^2 - 108*b*c^8*d^5*e^4*f^2 + 2*b^5*c^4*d*e^8*f^2 - 336*a*b*c^7*d^3*e^6*f^2 + 14*a*b^3*c^5*d*e^8*f^2 - 196*a^2*b*c^6*d*e^8*f^2 + 12*a*b*c^7*d^5*e^4*g^2 - 60*a^3*b*c^5*d*e^8*g^2 + 12*a^2*b^3*c^4*e^9*f*g + 16*a^2*c^7*d^3*e^6*f*g + 114*b^2*c^7*d^5*e^4*f*g - 108*b^3*c^6*d^4*e^5*f*g + 22*b^4*c^5*d^3*e^6*f*g + 8*b^5*c^4*d^2*e^7*f*g + 154*a*b^2*c^6*d^2*e^7*f^2 + 10*a*b^2*c^6*d^4*e^5*g^2 - 46*a*b^3*c^5*d^3*e^6*g^2 + 10*a*b^4*c^4*d^2*e^7*g^2 - 16*a^2*b*c^6*d^3*e^6*g^2 - 12*a^2*b^3*c^4*d*e^8*g^2 - 84*a^3*b*c^5*e^9*f*g - 24*a*c^8*d^5*e^4*f*g + 168*a^3*c^6*d*e^8*f*g - 36*b*c^8*d^6*e^3*f*g - 2*b^6*c^3*d*e^8*f*g + 85*a^2*b^2*c^5*d^2*e^7*g^2 - 108*a*b*c^7*d^4*e^5*f*g + 4*a*b^4*c^4*d*e^8*f*g + 268*a*b^2*c^6*d^3*e^6*f*g - 112*a*b^3*c^5*d^2*e^7*f*g - 220*a^2*b*c^6*d^2*e^7*f*g + 82*a^2*b^2*c^5*d*e^8*f*g))/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7))*root(61440*a^8*b*c^7*d^5*e^7*z^3 + 61440*a^7*b*c^8*d^7*e^5*z^3 + 30720*a^9*b*c^6*d^3*e^9*z^3 + 30720*a^6*b*c^9*d^9*e^3*z^3 - 7680*a^9*b^3*c^4*d*e^11*z^3 - 7680*a^4*b^3*c^9*d^11*e*z^3 + 3840*a^8*b^5*c^3*d*e^11*z^3 + 3840*a^3*b^5*c^8*d^11*e*z^3 - 960*a^7*b^7*c^2*d*e^11*z^3 - 960*a^2*b^7*c^7*d^11*e*z^3 + 370*a^4*b^11*c*d^3*e^9*z^3 + 370*a*b^11*c^4*d^9*e^3*z^3 - 294*a^5*b^10*c*d^2*e^10*z^3 - 294*a*b^10*c^5*d^10*e^2*z^3 - 240*a^3*b^12*c*d^4*e^8*z^3 - 240*a*b^12*c^3*d^8*e^4*z^3 + 60*a^2*b^13*c*d^5*e^7*z^3 + 60*a*b^13*c^2*d^7*e^5*z^3 + 6144*a^10*b*c^5*d*e^11*z^3 + 6144*a^5*b*c^10*d^11*e*z^3 + 120*a^6*b^9*c*d*e^11*z^3 + 120*a*b^9*c^6*d^11*e*z^3 + 10*a*b^14*c*d^6*e^6*z^3 + 71680*a^6*b^4*c^6*d^6*e^6*z^3 - 66560*a^7*b^2*c^7*d^6*e^6*z^3 + 51840*a^7*b^4*c^5*d^4*e^8*z^3 + 51840*a^5*b^4*c^7*d^8*e^4*z^3 - 42240*a^8*b^2*c^6*d^4*e^8*z^3 - 42240*a^6*b^2*c^8*d^8*e^4*z^3 - 32256*a^6*b^5*c^5*d^5*e^7*z^3 - 32256*a^5*b^5*c^6*d^7*e^5*z^3 + 21120*a^5*b^7*c^4*d^5*e^7*z^3 + 21120*a^4*b^7*c^5*d^7*e^5*z^3 - 17920*a^8*b^3*c^5*d^3*e^9*z^3 - 17920*a^5*b^3*c^8*d^9*e^3*z^3 - 17024*a^5*b^6*c^5*d^6*e^6*z^3 - 16800*a^6*b^6*c^4*d^4*e^8*z^3 - 16800*a^4*b^6*c^6*d^8*e^4*z^3 + 15360*a^8*b^4*c^4*d^2*e^10*z^3 - 15360*a^7*b^3*c^6*d^5*e^7*z^3 - 15360*a^6*b^3*c^7*d^7*e^5*z^3 + 15360*a^4*b^4*c^8*d^10*e^2*z^3 - 8640*a^7*b^6*c^3*d^2*e^10*z^3 - 8640*a^3*b^6*c^7*d^10*e^2*z^3 + 8000*a^6*b^7*c^3*d^3*e^9*z^3 + 8000*a^3*b^7*c^6*d^9*e^3*z^3 - 7680*a^9*b^2*c^5*d^2*e^10*z^3 - 7680*a^5*b^2*c^9*d^10*e^2*z^3 - 6400*a^7*b^5*c^4*d^3*e^9*z^3 - 6400*a^4*b^5*c^7*d^9*e^3*z^3 - 4560*a^4*b^9*c^3*d^5*e^7*z^3 - 4560*a^3*b^9*c^4*d^7*e^5*z^3 - 3920*a^4*b^8*c^4*d^6*e^6*z^3 - 2600*a^5*b^9*c^2*d^3*e^9*z^3 - 2600*a^2*b^9*c^5*d^9*e^3*z^3 + 2380*a^3*b^10*c^3*d^6*e^6*z^3 + 2280*a^6*b^8*c^2*d^2*e^10*z^3 + 2280*a^2*b^8*c^6*d^10*e^2*z^3 + 1215*a^4*b^10*c^2*d^4*e^8*z^3 + 1215*a^2*b^10*c^4*d^8*e^4*z^3 - 350*a^2*b^12*c^2*d^6*e^6*z^3 - 300*a^5*b^8*c^3*d^4*e^8*z^3 - 300*a^3*b^8*c^5*d^8*e^4*z^3 + 180*a^3*b^11*c^2*d^5*e^7*z^3 + 180*a^2*b^11*c^3*d^7*e^5*z^3

- 6*b^15*c*d^7*e^5*z^3 - 6*b^11*c^5*d^11*e*z^3 - 6*a^5*b^11*d*e^11*z^3 - 6*a*b^15*d^5*e^7*z^3 - 20*a^7*b^8*c*e^12*z^3 - 20*a*b^8*c^7*d^12*z^3 - 20*b^13*c^3*d^9*e^3*z^3 + 15*b^14*c^2*d^8*e^4*z^3 + 15*b^12*c^4*d^10*e^2*z^3 - 20480*a^8*c^8*d^6*e^6*z^3 - 15360*a^9*c^7*d^4*e^8*z^3 - 15360*a^7*c^9*d^8*e^4*z^3 - 6144*a^10*c^6*d^2*e^10*z^3 - 6144*a^6*c^10*d^10*e^2*z^3 - 20*a^3*b^13*d^3*e^9*z^3 + 15*a^4*b^12*d^2*e^10*z^3 + 15*a^2*b^14*d^4*e^8*z^3 + 1280*a^10*b^2*c^4*e^12*z^3 - 640*a^9*b^4*c^3*e^12*z^3 + 160*a^8*b^6*c^2*e^12*z^3 + 1280*a^4*b^2*c^10*d^12*z^3 - 640*a^3*b^4*c^9*d^12*z^3 + 160*a^2*b^6*c^8*d^12*z^3 - 1024*a^11*c^5*e^12*z^3 - 1024*a^5*c^11*d^12*z^3 + b^16*d^6*e^6*z^3 + b^10*c^6*d^12*z^3 + a^6*b^10*e^12*z^3 + 132*a*b*c^8*d^8*e^2*f*g*z + 1960*a^2*b^3*c^5*d^4*e^6*f*g*z - 1560*a^3*b^2*c^5*d^3*e^7*f*g*z - 1500*a^2*b^2*c^6*d^5*e^5*f*g*z + 960*a^3*b^3*c^4*d^2*e^8*f*g*z - 420*a^2*b^4*c^4*d^3*e^7*f*g*z - 222*a^2*b^5*c^3*d^2*e^8*f*g*z - 40*a*b^8*c*d*e^9*f*g*z + 1830*a^4*b^2*c^4*d*e^9*f*g*z + 1440*a*b^3*c^6*d^6*e^4*f*g*z - 1080*a^3*b^4*c^3*d*e^9*f*g*z - 856*a*b^2*c^7*d^7*e^3*f*g*z - 840*a*b^4*c^5*d^5*e^5*f*g*z + 302*a^2*b^6*c^2*d*e^9*f*g*z + 180*a^4*b*c^5*d^2*e^8*f*g*z - 120*a^3*b*c^6*d^4*e^6*f*g*z + 84*a*b^6*c^3*d^3*e^7*f*g*z - 24*a^2*b*c^7*d^6*e^4*f*g*z + 18*a*b^7*c^2*d^2*e^8*f*g*z - 2*a*b^5*c^4*d^4*e^6*f*g*z + 24*a*c^9*d^9*e*f*g*z + 372*b^3*c^7*d^8*e^2*f*g*z - 340*b^4*c^6*d^7*e^3*f*g*z + 114*b^5*c^5*d^6*e^4*f*g*z + 12*b^6*c^4*d^5*e^5*f*g*z - 6*b^8*c^2*d^3*e^7*f*g*z - 2*b^7*c^3*d^4*e^6*f*g*z + 528*a^3*c^7*d^5*e^5*f*g*z + 480*a^4*c^6*d^3*e^7*f*g*z + 224*a^2*c^8*d^7*e^3*f*g*z - 60*a^4*b^3*c^3*e^10*f*g*z + 6*a^3*b^5*c^2*e^10*f*g*z + 36*a^5*b*c^4*d*e^9*g^2*z + 20*a*b^8*c*d^2*e^8*g^2*z + 960*a*b*c^8*d^7*e^3*f^2*z + 900*a^4*b*c^5*d*e^9*f^2*z - 1185*a^4*b^2*c^4*d^2*e^8*g^2*z + 450*a^3*b^4*c^3*d^2*e^8*g^2*z - 420*a^2*b^4*c^4*d^4*e^6*g^2*z + 300*a^3*b^2*c^5*d^4*e^6*g^2*z + 210*a^2*b^2*c^6*d^6*e^4*g^2*z + 192*a^2*b^5*c^3*d^3*e^7*g^2*z - 142*a^2*b^6*c^2*d^2*e^8*g^2*z + 100*a^2*b^3*c^5*d^5*e^5*g^2*z + 60*a^3*b^3*c^4*d^3*e^7*g^2*z - 1950*a^2*b^2*c^6*d^4*e^6*f^2*z - 900*a^3*b^2*c^5*d^2*e^8*f^2*z + 300*a^2*b^4*c^4*d^2*e^8*f^2*z + 100*a^2*b^3*c^5*d^3*e^7*f^2*z - 186*b^2*c^8*d^9*e*f*g*z - 1896*a^5*c^5*d*e^9*f*g*z + 180*a^5*b*c^4*e^10*f*g*z - 12*a*b*c^8*d^9*e*g^2*z - 390*a*b^4*c^5*d^6*e^4*g^2*z + 298*a*b^5*c^4*d^5*e^5*g^2*z + 180*a*b^3*c^6*d^7*e^3*g^2*z - 120*a^3*b*c^6*d^5*e^5*g^2*z - 96*a^2*b*c^7*d^7*e^3*g^2*z + 60*a^4*b^3*c^3*d*e^9*g^2*z - 54*a*b^6*c^3*d^4*e^6*g^2*z - 18*a*b^7*c^2*d^3*e^7*g^2*z - 6*a^3*b^5*c^2*d*e^9*g^2*z - 4*a*b^2*c^7*d^8*e^2*g^2*z + 2400*a^3*b*c^6*d^3*e^7*f^2*z + 2280*a^2*b*c^7*d^5*e^5*f^2*z - 1300*a*b^2*c^7*d^6*e^4*f^2*z + 540*a*b^3*c^6*d^5*e^5*f^2*z - 300*a^3*b^3*c^4*d*e^9*f^2*z + 150*a*b^4*c^5*d^4*e^6*f^2*z - 80*a*b^5*c^4*d^3*e^7*f^2*z + 30*a^2*b^5*c^3*d*e^9*f^2*z - 30*a*b^6*c^3*d^2*e^8*f^2*z + 180*b*c^9*d^9*e*f^2*z + 20*a*b^8*c*e^10*f^2*z - 100*b^4*c^6*d^8*e^2*g^2*z + 96*b^5*c^5*d^7*e^3*g^2*z - 33*b^6*c^4*d^6*e^4*g^2*z - 8*b^7*c^3*d^5*e^5*g^2*z + 6*b^8*c^2*d^4*e^6*g^2*z + 912*a^5*c^5*d^2*e^8*g^2*z - 345*b^2*c^8*d^8*e^2*f^2*z + 300*b^3*c^7*d^7*e^3*f^2*z - 120*a^4*c^6*d^4*e^6*g^2*z - 100*b^4*c^6*d^6*e^4*f^2*z - 48*a^3*c^7*d^6*e^4*g^2*z - 15*b^6*c^4*d^4*e^6*f^2*z + 10*b^7*c^3*d^3*e^7*f^2*z + 6*b^5*c^5*d^5*e^5*f^2*z - 4*a^2*c^8*d^8*e^2*g^2*z - 1200*a^3*c^7*d^4*e^6*f^2*z - 900*a^4*c^6*d^2*e^8*f^2*z - 760*a^2*c^8*d^6*e^4*f^2*z - 1185*a^4*b^2*c^4*e^10*f^2*z + 630*a^3*b^4*c^3*e^10*f^2*z - 160*a^2*b^6*c^2*e^10*f^2*z + 2*b^10*d*e^9*f*g*z + 36*b*c^9*d^10*f*g*z + 48*b^3*c^7*d^9*e*g^2*z - 240*a*c^9*d^8*e^2*f^2*z - b^10*d^2*e^8*g^2*z - 36*a^6*c^4*e^10*g^2*z - 9*b^2*c^8*d^10*g^2*z + 768*a^5*c^5*e^10*f^2*z - 36*c^10*d^10*f^2*z - b^10*e^10*f^2*z - 177*a*b^2*c^4*d^2*e^7*f*g^2 + 285*a*b^2*c^4*d*e^8*f^2*g + 252*a^2*b*c^4*d*e^8*f*g^2 - 120*a*b^3*c^3*d*e^8*f*g^2 + 108*a*b*c^5*d^3*e^6*f*g^2 + 36*a*b*c^5*d^2*e^7*f^2*g - 132*a*b*c^5*d*e^8*f^3 - 69*b^2*c^5*d^4*e^5*f*g^2 + 57*b^2*c^5*d^3*e^6*f^2*g - 45*b^3*c^4*d^2*e^7*f^2*g + 30*b^4*c^3*d^2*e^7*f*g^2 + 9*b^3*c^4*d^3*e^6*f*g^2 + 156*a^2*c^5*d^2*e^7*f*g^2 - 72*a^2*b*c^4*d^2*e^7*g^3 + 60*a*b^3*c^3*d^2*e^7*g^3 - 13*a*b^2*c^4*d^3*e^6*g^3 + 36*b*c^6*d^5*e^4*f*g^2 + 36*b*c^6*d^4*e^5*f^2*g - 30*b^4*c^3*d*e^8*f^2*g + 12*b^5*c^2*d*e^8*f*g^2 - 408*a^2*c^5*d*e^8*f^2*g - 156*a*c^6*d^3*e^6*f^2*g + 24*a*c^6*d^4*e^5*f*g^2 - 180*a^2*b*c^4*e^9*f^2*g + 60*a*b^3*c^3*e^9*f^2*g - 12*a*b*c^5*d^4*e^5*g^3 - 36*c^7*d^5*e^4*f^2*g - 6*b^5*c^2*e^9*f

```
^2*g + 36*a^3*c^4*e^9*f*g^2 - 72*b*c^6*d^3*e^6*f^3 - 36*a^3*c^4*d*e^8*g^3 +
 15*b^3*c^4*d*e^8*f^3 + 132*a*c^6*d^2*e^7*f^3 - 95*a*b^2*c^4*e^9*f^3 + 21*b
^3*c^4*d^4*e^5*g^3 - 10*b^4*c^3*d^3*e^6*g^3 - 9*b^2*c^5*d^5*e^4*g^3 - 6*b^5
*c^2*d^2*e^7*g^3 + 21*b^2*c^5*d^2*e^7*f^3 - 4*a^2*c^5*d^3*e^6*g^3 + 36*c^7*
d^4*e^5*f^3 + 10*b^4*c^3*e^9*f^3 + 256*a^2*c^5*e^9*f^3, z, k), k, 1, 3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2136 $\int \frac{f+gx}{(d+ex)^2\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=1043

$$\frac{(cd(6ef-5dg)-e(3bef-2bdg-aeg))\log(d+ex)e^4}{\left(cd^2-bed+ae^2\right)^4}-\frac{(cd(6ef-5dg)-e(3bef-2bdg-aeg))\log\left(cx^2+bx+\right.}{2\left(cd^2-bed+ae^2\right)^4}$$

Rubi [A] time = 6.29, antiderivative size = 1043, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {822, 800, 634, 618, 206, 628}

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x]
```

```
[Out] (e*(6*c^4*d^4*f - b^3*e^3*(3*b*e*f - 2*b*d*g - a*e*g) - b*c*e^2*(7*a^2*e^2*
g - a*b*e*(21*e*f - 13*d*g) - 3*b^2*d*(e*f - d*g)) + c^3*d^2*(4*a*e*(6*e*f
- d*g) - 3*b*d*(4*e*f + d*g)) - c^2*e*(2*a^2*e^2*(15*e*f - 22*d*g) + 6*a*b*
d*e*(4*e*f + d*g) - b^2*d^2*(3*e*f + 7*d*g))))/((b^2 - 4*a*c)^2*(c*d^2 - b*
d*e + a*e^2)^3*(d + e*x)) - (b*c*d*f - b^2*e*f + 2*a*c*e*f - 2*a*c*d*g + a*
b*e*g + c*(2*c*d*f + 2*a*e*g - b*(e*f + d*g))*x)/(2*(b^2 - 4*a*c)*(c*d^2 -
b*d*e + a*e^2)*(d + e*x)*(a + b*x + c*x^2)^2) - (4*a*c*e*(2*c*d - b*e)*(2*c
*d*f + 2*a*e*g - b*(e*f + d*g)) - (b*c*d - b^2*e + 2*a*c*e)*(6*c^2*d^2*f -
b*e*(3*b*e*f - 2*b*d*g - a*e*g) + c*(2*a*e*(5*e*f - 2*d*g) - b*d*(2*e*f + 3
*d*g))) - c*(12*c^3*d^3*f + b^2*e^2*(3*b*e*f - 2*b*d*g - a*e*g) + 2*c^2*d*(
2*a*e*(9*e*f - 2*d*g) - 3*b*d*(3*e*f + d*g)) + c*e*(11*b^2*d^2*g + 16*a^2*e
^2*g - 2*a*b*e*(9*e*f + 5*d*g)))*x)/(2*(b^2 - 4*a*c)^2*(c*d^2 - b*d*e + a*e
^2)^2*(d + e*x)*(a + b*x + c*x^2)) - ((12*c^6*d^6*f + b^5*e^5*(3*b*e*f - 2*
b*d*g - a*e*g) + b^3*c*e^4*(10*a^2*e^2*g - b^2*d*(6*e*f - 5*d*g) - 10*a*b*e
*(3*e*f - 2*d*g)) - 10*a*b*c^2*e^4*(3*a^2*e^2*g - b^2*d*(6*e*f - 5*d*g) - 3
*a*b*e*(3*e*f - 2*d*g)) - 10*c^3*e^2*(2*b^3*d^4*g - 8*a*b^2*d^3*e*g + 6*a^3
*e^3*(e*f - 2*d*g) + 3*a^2*b*d*e^2*(6*e*f - d*g)) + 2*c^5*d^4*(2*a*e*(15*e*
f - 2*d*g) - 3*b*d*(6*e*f + d*g)) + 10*c^4*d^2*e*(2*a^2*e^2*(9*e*f - 4*d*g)
 - a*b*d*e*(12*e*f + d*g) + b^2*d^2*(3*e*f + 2*d*g)))*ArcTanh[(b + 2*c*x)/S
qrt[b^2 - 4*a*c]])/((b^2 - 4*a*c)^(5/2)*(c*d^2 - b*d*e + a*e^2)^4) + (e^4*(
c*d*(6*e*f - 5*d*g) - e*(3*b*e*f - 2*b*d*g - a*e*g))*Log[d + e*x])/(c*d^2 -
 b*d*e + a*e^2)^4 - (e^4*(c*d*(6*e*f - 5*d*g) - e*(3*b*e*f - 2*b*d*g - a*e*
g))*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\left(a+bx+cx^2\right)^3}\,dx = -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{6c^2 \cdots}{\cdots}}{\cdots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^2} - \frac{4ace(\cdots}{\cdots}$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^2} - \frac{4ace(\cdots}{\cdots}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b^2d(\cdots\right.\right.}{(\cdots}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b^2d(\cdots\right.\right.}{(\cdots}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b^2d(\cdots\right.\right.}{(\cdots}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b^2d(\cdots\right.\right.}{(\cdots}$$

Mathematica [A] time = 6.75, size = 1409, normalized size = 1.35

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x]
```

```
[Out] -((e^4*(e*f - d*g))/((c*d^2 - b*d*e + a*e^2)^3*(d + e*x))) + (b*c^2*d^2*f -
 2*b^2*c*d*e*f + 4*a*c^2*d*e*f + b^3*e^2*f - 3*a*b*c*e^2*f - 2*a*c^2*d^2*g
+ 2*a*b*c*d*e*g - a*b^2*e^2*g + 2*a^2*c*e^2*g + 2*c^3*d^2*f*x - 2*b*c^2*d*e
*f*x + b^2*c*e^2*f*x - 2*a*c^2*e^2*f*x - b*c^2*d^2*g*x + 4*a*c^2*d*e*g*x -
a*b*c*e^2*g*x)/(2*(-b^2 + 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2
)^2) + (6*b*c^4*d^4*f - 12*b^2*c^3*d^3*e*f + 3*b^3*c^2*d^2*e^2*f + 24*a*b*c
^3*d^2*e^2*f + 7*b^4*c*d*e^3*f - 56*a*b^2*c^2*d*e^3*f + 64*a^2*c^3*d*e^3*f
- 4*b^5*e^4*f + 29*a*b^3*c*e^4*f - 46*a^2*b*c^2*e^4*f - 3*b^2*c^3*d^4*g + 7
*b^3*c^2*d^3*e*g - 4*a*b*c^3*d^3*e*g - 6*b^4*c*d^2*e^2*g + 18*a*b^2*c^2*d^2
*e^2*g - 48*a^2*c^3*d^2*e^2*g + 2*b^5*d*e^3*g - 13*a*b^3*c*d*e^3*g + 44*a^2
*b*c^2*d*e^3*g + 2*a*b^4*e^4*g - 15*a^2*b^2*c*e^4*g + 16*a^3*c^2*e^4*g + 12
*c^5*d^4*f*x - 24*b*c^4*d^3*e*f*x + 6*b^2*c^3*d^2*e^2*f*x + 48*a*c^4*d^2*e^
2*f*x + 6*b^3*c^2*d*e^3*f*x - 48*a*b*c^3*d*e^3*f*x - 4*b^4*c*e^4*f*x + 26*a
*b^2*c^2*e^4*f*x - 28*a^2*c^3*e^4*f*x - 6*b*c^4*d^4*g*x + 14*b^2*c^3*d^3*e*
g*x - 8*a*c^4*d^3*e*g*x - 6*b^3*c^2*d^2*e^2*g*x - 12*a*b*c^3*d^2*e^2*g*x +
2*b^4*c*d*e^3*g*x - 10*a*b^2*c^2*d*e^3*g*x + 56*a^2*c^3*d*e^3*g*x + 2*a*b^3
*c*e^4*g*x - 14*a^2*b*c^2*e^4*g*x)/(2*(-b^2 + 4*a*c)^2*(c*d^2 - b*d*e + a*e
^2)^3*(a + b*x + c*x^2)) + ((12*c^6*d^6*f - 36*b*c^5*d^5*e*f + 30*b^2*c^4*d
^4*e^2*f + 60*a*c^5*d^4*e^2*f - 120*a*b*c^4*d^3*e^3*f + 180*a^2*c^4*d^2*e^4
*f - 6*b^5*c*d*e^5*f + 60*a*b^3*c^2*d*e^5*f - 180*a^2*b*c^3*d*e^5*f + 3*b^6
*e^6*f - 30*a*b^4*c*e^6*f + 90*a^2*b^2*c^2*e^6*f - 60*a^3*c^3*e^6*f - 6*b*c
^5*d^6*g + 20*b^2*c^4*d^5*e*g - 8*a*c^5*d^5*e*g - 20*b^3*c^3*d^4*e^2*g - 10
*a*b*c^4*d^4*e^2*g + 80*a*b^2*c^3*d^3*e^3*g - 80*a^2*c^4*d^3*e^3*g + 5*b^5*
c*d^2*e^4*g - 50*a*b^3*c^2*d^2*e^4*g + 30*a^2*b*c^3*d^2*e^4*g - 2*b^6*d*e^5
*g + 20*a*b^4*c*d*e^5*g - 60*a^2*b^2*c^2*d*e^5*g + 120*a^3*c^3*d*e^5*g - a*
b^5*e^6*g + 10*a^2*b^3*c*e^6*g - 30*a^3*b*c^2*e^6*g)*ArcTan[(b + 2*c*x)/Sqr
t[-b^2 + 4*a*c]])/((b^2 - 4*a*c)^2*Sqrt[-b^2 + 4*a*c]*(-(c*d^2) + b*d*e - a
*e^2)^4) + ((6*c*d*e^5*f - 3*b*e^6*f - 5*c*d^2*e^4*g + 2*b*d*e^5*g + a*e^6*
g)*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^4 + ((-6*c*d*e^5*f + 3*b*e^6*f + 5
*c*d^2*e^4*g - 2*b*d*e^5*g - a*e^6*g)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d
*e + a*e^2)^4)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{(d+ex)^2\left(a+bx+cx^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3), x]
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 2.14, size = 3417, normalized size = 3.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (12*c^6*d^6*f*e^2 - 6*b*c^5*d^6*g*e^2 - 36*b*c^5*d^5*f*e^3 + 20*b^2*c^4*d^5
*g*e^3 - 8*a*c^5*d^5*g*e^3 + 30*b^2*c^4*d^4*f*e^4 + 60*a*c^5*d^4*f*e^4 - 20
*b^3*c^3*d^4*g*e^4 - 10*a*b*c^4*d^4*g*e^4 - 120*a*b*c^4*d^3*f*e^5 + 80*a*b^
2*c^3*d^3*g*e^5 - 80*a^2*c^4*d^3*g*e^5 + 180*a^2*c^4*d^2*f*e^6 + 5*b^5*c*d^
2*g*e^6 - 50*a*b^3*c^2*d^2*g*e^6 + 30*a^2*b*c^3*d^2*g*e^6 - 6*b^5*c*d*f*e^7
 + 60*a*b^3*c^2*d*f*e^7 - 180*a^2*b*c^3*d*f*e^7 - 2*b^6*d*g*e^7 + 20*a*b^4*
c*d*g*e^7 - 60*a^2*b^2*c^2*d*g*e^7 + 120*a^3*c^3*d*g*e^7 + 3*b^6*f*e^8 - 30
*a*b^4*c*f*e^8 + 90*a^2*b^2*c^2*f*e^8 - 60*a^3*c^3*f*e^8 - a*b^5*g*e^8 + 10
*a^2*b^3*c*g*e^8 - 30*a^3*b*c^2*g*e^8)*arctan((2*c*d - 2*c*d^2/(x*e + d) -
b*e + 2*b*d*e/(x*e + d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(-b^2 + 4*a*c))*e^(
-2)/((b^4*c^4*d^8 - 8*a*b^2*c^5*d^8 + 16*a^2*c^6*d^8 - 4*b^5*c^3*d^7*e + 32
*a*b^3*c^4*d^7*e - 64*a^2*b*c^5*d^7*e + 6*b^6*c^2*d^6*e^2 - 44*a*b^4*c^3*d^
6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 64*a^3*c^5*d^6*e^2 - 4*b^7*c*d^5*e^3 + 20*
a*b^5*c^2*d^5*e^3 + 32*a^2*b^3*c^3*d^5*e^3 - 192*a^3*b*c^4*d^5*e^3 + b^8*d^
4*e^4 + 4*a*b^6*c*d^4*e^4 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^
4 + 96*a^4*c^4*d^4*e^4 - 4*a*b^7*d^3*e^5 + 20*a^2*b^5*c*d^3*e^5 + 32*a^3*b^
3*c^2*d^3*e^5 - 192*a^4*b*c^3*d^3*e^5 + 6*a^2*b^6*d^2*e^6 - 44*a^3*b^4*c*d^
2*e^6 + 64*a^4*b^2*c^2*d^2*e^6 + 64*a^5*c^3*d^2*e^6 - 4*a^3*b^5*d*e^7 + 32*
a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 + a^4*b^4*e^8 - 8*a^5*b^2*c*e^8 + 16*a
^6*c^2*e^8)*sqrt(-b^2 + 4*a*c)) + 1/2*(5*c*d^2*g*e^4 - 6*c*d*f*e^5 - 2*b*d*
g*e^5 + 3*b*f*e^6 - a*g*e^6)*log(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 +
b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^4*d^8 - 4*b*c^3*d
^7*e + 6*b^2*c^2*d^6*e^2 + 4*a*c^3*d^6*e^2 - 4*b^3*c*d^5*e^3 - 12*a*b*c^2*d
^5*e^3 + b^4*d^4*e^4 + 12*a*b^2*c*d^4*e^4 + 6*a^2*c^2*d^4*e^4 - 4*a*b^3*d^3
*e^5 - 12*a^2*b*c*d^3*e^5 + 6*a^2*b^2*d^2*e^6 + 4*a^3*c*d^2*e^6 - 4*a^3*b*d
*e^7 + a^4*e^8) + (d*g*e^10/(x*e + d) - f*e^11/(x*e + d))/(c^3*d^6*e^6 - 3*
b*c^2*d^5*e^7 + 3*b^2*c*d^4*e^8 + 3*a*c^2*d^4*e^8 - b^3*d^3*e^9 - 6*a*b*c*d
^3*e^9 + 3*a*b^2*d^2*e^10 + 3*a^2*c*d^2*e^10 - 3*a^2*b*d*e^11 + a^3*e^12) +
 1/2*(12*c^7*d^5*f*e - 6*b*c^6*d^5*g*e - 30*b*c^6*d^4*f*e^2 + 17*b^2*c^5*d^
4*g*e^2 - 8*a*c^6*d^4*g*e^2 + 16*b^2*c^5*d^3*f*e^3 + 56*a*c^6*d^3*f*e^3 - 1
2*b^3*c^4*d^3*g*e^3 - 12*a*b*c^5*d^3*g*e^3 + 6*b^3*c^4*d^2*f*e^4 - 84*a*b*c
^5*d^2*f*e^4 + 8*b^4*c^3*d^2*g*e^4 - 34*a*b^2*c^4*d^2*g*e^4 + 128*a^2*c^5*d
^2*g*e^4 - 14*b^4*c^3*d*f*e^5 + 100*a*b^2*c^4*d*f*e^5 - 116*a^2*c^5*d*f*e^5
 - 2*b^5*c^2*d*g*e^5 + 18*a*b^3*c^3*d*g*e^5 - 70*a^2*b*c^4*d*g*e^5 + 5*b^5*
c^2*f*e^6 - 36*a*b^3*c^3*f*e^6 + 58*a^2*b*c^4*f*e^6 - 3*a*b^4*c^2*g*e^6 + 2
1*a^2*b^2*c^3*g*e^6 - 24*a^3*c^4*g*e^6 - 2*(18*c^7*d^6*f*e^2 - 9*b*c^6*d^6*
g*e^2 - 54*b*c^6*d^5*f*e^3 + 30*b^2*c^5*d^5*g*e^3 - 12*a*c^6*d^5*g*e^3 + 47
*b^2*c^5*d^4*f*e^4 + 82*a*c^6*d^4*f*e^4 - 31*b^3*c^4*d^4*g*e^4 - 11*a*b*c^5
*d^4*g*e^4 - 4*b^3*c^4*d^3*f*e^5 - 164*a*b*c^5*d^3*f*e^5 + 24*b^4*c^3*d^3*g
*e^5 - 64*a*b^2*c^4*d^3*g*e^5 + 232*a^2*c^5*d^3*g*e^5 - 29*b^4*c^3*d^2*f*e^
6 + 244*a*b^2*c^4*d^2*f*e^6 - 242*a^2*c^5*d^2*f*e^6 - 11*b^5*c^2*d^2*g*e^6
+ 67*a*b^3*c^3*d^2*g*e^6 - 227*a^2*b*c^4*d^2*g*e^6 + 22*b^5*c^2*d*f*e^7 - 1
62*a*b^3*c^3*d*f*e^7 + 242*a^2*b*c^4*d*f*e^7 + 2*b^6*c*d*g*e^7 - 24*a*b^4*c
^2*d*g*e^7 + 110*a^2*b^2*c^3*d*g*e^7 - 76*a^3*c^4*d*g*e^7 - 5*b^6*c*f*e^8 +
 38*a*b^4*c^2*f*e^8 - 71*a^2*b^2*c^3*f*e^8 + 14*a^3*c^4*f*e^8 + 3*a*b^5*c*g
*e^8 - 22*a^2*b^3*c^2*g*e^8 + 31*a^3*b*c^3*g*e^8)*e^(-1)/(x*e + d) + (36*c^
7*d^7*f*e^3 - 18*b*c^6*d^7*g*e^3 - 126*b*c^6*d^6*f*e^4 + 69*b^2*c^5*d^6*g*e
^4 - 24*a*c^6*d^6*g*e^4 + 144*b^2*c^5*d^5*f*e^5 + 180*a*c^6*d^5*f*e^5 - 90*
b^3*c^4*d^5*g*e^5 - 18*a*b*c^5*d^5*g*e^5 - 45*b^3*c^4*d^4*f*e^6 - 450*a*b*c
^5*d^4*f*e^6 + 80*b^4*c^3*d^4*g*e^6 - 145*a*b^2*c^4*d^4*g*e^6 + 560*a^2*c^5
*d^4*g*e^6 - 70*b^4*c^3*d^3*f*e^7 + 740*a*b^2*c^4*d^3*f*e^7 - 580*a^2*c^5*d
^3*f*e^7 - 50*b^5*c^2*d^3*g*e^7 + 250*a*b^3*c^3*d^3*g*e^7 - 830*a^2*b*c^4*d
^3*g*e^7 + 87*b^5*c^2*d^2*f*e^8 - 660*a*b^3*c^3*d^2*f*e^8 + 870*a^2*b*c^4*d
^2*f*e^8 + 16*b^6*c*d^2*g*e^8 - 129*a*b^4*c^2*d^2*g*e^8 + 471*a^2*b^2*c^3*d
```

```
^2*g*e^8 - 88*a^3*c^4*d^2*g*e^8 - 36*b^6*c*d*f*e^9 + 258*a*b^4*c^2*d*f*e^9
- 372*a^2*b^2*c^3*d*f*e^9 - 84*a^3*c^4*d*f*e^9 - 2*b^7*d*g*e^9 + 32*a*b^5*c
*d*g*e^9 - 160*a^2*b^3*c^2*d*g*e^9 + 130*a^3*b*c^3*d*g*e^9 + 5*b^7*f*e^10 -
 34*a*b^5*c*f*e^10 + 41*a^2*b^3*c^2*f*e^10 + 42*a^3*b*c^3*f*e^10 - 3*a*b^6*
g*e^10 + 19*a^2*b^4*c*g*e^10 - 11*a^3*b^2*c^2*g*e^10 - 32*a^4*c^3*g*e^10)*e
^(-2)/(x*e + d)^2 - 2*(6*c^7*d^8*f*e^4 - 3*b*c^6*d^8*g*e^4 - 24*b*c^6*d^7*f
*e^5 + 13*b^2*c^5*d^7*g*e^5 - 4*a*c^6*d^7*g*e^5 + 33*b^2*c^5*d^6*f*e^6 + 36
*a*c^6*d^6*f*e^6 - 20*b^3*c^4*d^6*g*e^6 - 4*a*b*c^5*d^6*g*e^6 - 15*b^3*c^4*
d^5*f*e^7 - 108*a*b*c^5*d^5*f*e^7 + 20*b^4*c^3*d^5*g*e^7 - 25*a*b^2*c^4*d^5
*g*e^7 + 116*a^2*c^5*d^5*g*e^7 - 15*b^4*c^3*d^4*f*e^8 + 195*a*b^2*c^4*d^4*f
*e^8 - 120*a^2*c^5*d^4*f*e^8 - 15*b^5*c^2*d^4*g*e^8 + 65*a*b^3*c^3*d^4*g*e^
8 - 230*a^2*b*c^4*d^4*g*e^8 + 27*b^5*c^2*d^3*f*e^9 - 210*a*b^3*c^3*d^3*f*e^
9 + 240*a^2*b*c^4*d^3*f*e^9 + 6*b^6*c*d^3*g*e^9 - 39*a*b^4*c^2*d^3*g*e^9 +
131*a^2*b^2*c^3*d^3*g*e^9 + 52*a^3*c^4*d^3*g*e^9 - 15*b^6*c*d^2*f*e^10 + 99
*a*b^4*c^2*d^2*f*e^10 - 81*a^2*b^2*c^3*d^2*f*e^10 - 132*a^3*c^4*d^2*f*e^10
- b^7*d^2*g*e^10 + 11*a*b^5*c*d^2*g*e^10 - 46*a^2*b^3*c^2*d^2*g*e^10 - 12*a
^3*b*c^3*d^2*g*e^10 + 3*b^7*d*f*e^11 - 12*a*b^5*c*d*f*e^11 - 39*a^2*b^3*c^2
*d*f*e^11 + 132*a^3*b*c^3*d*f*e^11 - a*b^6*d*g*e^11 + a^2*b^4*c*d*g*e^11 +
41*a^3*b^2*c^2*d*g*e^11 - 68*a^4*c^3*d*g*e^11 - 3*a*b^6*f*e^12 + 24*a^2*b^4
*c*f*e^12 - 51*a^3*b^2*c^2*f*e^12 + 18*a^4*c^3*f*e^12 + 2*a^2*b^5*g*e^12 -
15*a^3*b^3*c*g*e^12 + 25*a^4*b*c^2*g*e^12)*e^(-3)/(x*e + d)^3)/((c*d^2 - b*
d*e + a*e^2)^4*(b^2 - 4*a*c)^2*(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b
*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)^2)
```

maple [**B**] time = 0.11, size = 13679, normalized size = 13.12

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 13.00, size = 40079, normalized size = 38.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x)
```

```
[Out] symsum(log(root(286720*a^9*b*c^8*d^7*e^9*z^3 + 286720*a^8*b*c^9*d^9*e^7*z^3
 + 172032*a^10*b*c^7*d^5*e^11*z^3 + 172032*a^7*b*c^10*d^11*e^5*z^3 + 57344*
a^11*b*c^6*d^3*e^13*z^3 + 57344*a^6*b*c^11*d^13*e^3*z^3 - 10240*a^11*b^3*c^
4*d*e^15*z^3 - 10240*a^4*b^3*c^11*d^15*e*z^3 + 5120*a^10*b^5*c^3*d*e^15*z^3
 + 5120*a^3*b^5*c^10*d^15*e*z^3 - 1280*a^9*b^7*c^2*d*e^15*z^3 - 1280*a^2*b^
7*c^9*d^15*e*z^3 - 1232*a^5*b^12*c*d^4*e^12*z^3 - 1232*a*b^12*c^5*d^12*e^4*
z^3 + 1064*a^6*b^11*c*d^3*e^13*z^3 + 1064*a*b^11*c^6*d^13*e^3*z^3 + 840*a^4
*b^13*c*d^5*e^11*z^3 + 840*a*b^13*c^4*d^11*e^5*z^3 - 552*a^7*b^10*c*d^2*e^1
```

4*z^3 - 552*a*b^10*c^7*d^14*e^2*z^3 - 280*a^3*b^14*c*d^6*e^10*z^3 - 280*a*b^14*c^3*d^10*e^6*z^3 - 8*a^2*b^15*c*d^7*e^9*z^3 - 8*a*b^15*c^2*d^9*e^7*z^3 + 8192*a^12*b*c^5*d*e^15*z^3 + 8192*a^5*b*c^12*d^15*e*z^3 + 160*a^8*b^9*c*d*e^15*z^3 + 160*a*b^9*c^8*d^15*e*z^3 + 36*a*b^16*c*d^8*e^8*z^3 - 483840*a^8*b^2*c^8*d^8*e^8*z^3 - 365568*a^7*b^5*c^6*d^7*e^9*z^3 - 365568*a^6*b^5*c^7*d^9*e^7*z^3 - 358400*a^9*b^2*c^7*d^6*e^10*z^3 - 358400*a^7*b^2*c^9*d^10*e^6*z^3 + 241920*a^7*b^4*c^7*d^8*e^8*z^3 + 215040*a^8*b^4*c^6*d^6*e^10*z^3 + 215040*a^8*b^3*c^7*d^7*e^9*z^3 + 215040*a^7*b^3*c^8*d^9*e^7*z^3 + 215040*a^6*b^4*c^8*d^10*e^6*z^3 - 193536*a^8*b^5*c^5*d^5*e^11*z^3 - 193536*a^5*b^5*c^8*d^11*e^5*z^3 - 136192*a^10*b^2*c^6*d^4*e^12*z^3 - 136192*a^6*b^2*c^10*d^12*e^4*z^3 + 133056*a^6*b^6*c^6*d^8*e^8*z^3 + 125440*a^9*b^4*c^5*d^4*e^12*z^3 + 125440*a^5*b^4*c^9*d^12*e^4*z^3 - 109944*a^5*b^8*c^5*d^8*e^8*z^3 + 106752*a^6*b^7*c^5*d^7*e^9*z^3 + 106752*a^5*b^7*c^6*d^9*e^7*z^3 + 80640*a^7*b^7*c^4*d^5*e^11*z^3 + 80640*a^4*b^7*c^7*d^11*e^5*z^3 - 77280*a^6*b^8*c^4*d^6*e^10*z^3 - 77280*a^4*b^8*c^6*d^10*e^6*z^3 + 71680*a^9*b^3*c^6*d^5*e^11*z^3 + 71680*a^6*b^3*c^9*d^11*e^5*z^3 + 69888*a^7*b^6*c^5*d^6*e^10*z^3 + 69888*a^5*b^6*c^7*d^10*e^6*z^3 - 35840*a^9*b^5*c^4*d^3*e^13*z^3 - 35840*a^4*b^5*c^9*d^13*e^3*z^3 + 30720*a^10*b^4*c^4*d^2*e^14*z^3 + 30720*a^4*b^4*c^10*d^14*e^2*z^3 + 26880*a^8*b^7*c^3*d^3*e^13*z^3 + 26880*a^3*b^7*c^8*d^13*e^3*z^3 + 21510*a^4*b^10*c^4*d^8*e^8*z^3 + 18536*a^5*b^10*c^3*d^6*e^10*z^3 + 18536*a^3*b^10*c^5*d^10*e^6*z^3 - 18480*a^7*b^8*c^3*d^4*e^12*z^3 - 18480*a^3*b^8*c^7*d^12*e^4*z^3 - 18432*a^11*b^2*c^5*d^2*e^14*z^3 - 18432*a^5*b^2*c^11*d^14*e^2*z^3 - 16640*a^9*b^6*c^3*d^2*e^14*z^3 - 16640*a^3*b^6*c^9*d^14*e^2*z^3 - 14336*a^10*b^3*c^5*d^3*e^13*z^3 - 14336*a^5*b^3*c^10*d^13*e^3*z^3 - 13440*a^8*b^6*c^4*d^4*e^12*z^3 - 13440*a^4*b^6*c^8*d^12*e^4*z^3 + 13280*a^5*b^9*c^4*d^7*e^9*z^3 + 13280*a^4*b^9*c^5*d^9*e^7*z^3 - 10840*a^4*b^11*c^3*d^7*e^9*z^3 - 10840*a^3*b^11*c^4*d^9*e^7*z^3 + 7868*a^6*b^10*c^2*d^4*e^12*z^3 + 7868*a^2*b^10*c^6*d^12*e^4*z^3 - 7840*a^7*b^9*c^2*d^3*e^13*z^3 - 7840*a^2*b^9*c^7*d^13*e^3*z^3 - 5600*a^6*b^9*c^3*d^5*e^11*z^3 - 5600*a^3*b^9*c^6*d^11*e^5*z^3 + 4320*a^8*b^8*c^2*d^2*e^14*z^3 + 4320*a^2*b^8*c^8*d^14*e^2*z^3 - 3528*a^5*b^11*c^2*d^5*e^11*z^3 - 3528*a^2*b^11*c^5*d^11*e^5*z^3 + 1520*a^3*b^13*c^2*d^7*e^9*z^3 + 1520*a^2*b^13*c^3*d^9*e^7*z^3 - 700*a^4*b^12*c^2*d^6*e^10*z^3 - 700*a^2*b^12*c^4*d^10*e^6*z^3 - 540*a^2*b^14*c^2*d^8*e^8*z^3 + 480*a^3*b^12*c^3*d^8*e^8*z^3 - 8*b^17*c*d^9*e^7*z^3 - 8*b^11*c^7*d^15*e*z^3 - 8*a^7*b^11*d*e^15*z^3 - 8*a*b^17*d^7*e^9*z^3 - 20*a^9*b^8*c*e^16*z^3 - 20*a*b^8*c^9*d^16*z^3 + 70*b^14*c^4*d^12*e^4*z^3 - 56*b^15*c^3*d^11*e^5*z^3 - 56*b^13*c^5*d^13*e^3*z^3 + 28*b^16*c^2*d^10*e^6*z^3 + 28*b^12*c^6*d^14*e^2*z^3 - 71680*a^9*c^9*d^8*e^8*z^3 - 57344*a^10*c^8*d^6*e^10*z^3 - 57344*a^8*c^10*d^10*e^6*z^3 - 28672*a^11*c^7*d^4*e^12*z^3 - 28672*a^7*c^11*d^12*e^4*z^3 - 8192*a^12*c^6*d^2*e^14*z^3 - 8192*a^6*c^12*d^14*e^2*z^3 + 70*a^4*b^14*d^4*e^12*z^3 - 56*a^5*b^13*d^3*e^13*z^3 - 56*a^3*b^15*d^5*e^11*z^3 + 28*a^6*b^12*d^2*e^14*z^3 + 28*a^2*b^16*d^6*e^10*z^3 + 1280*a^12*b^2*c^4*e^16*z^3 - 640*a^11*b^4*c^3*e^16*z^3 + 160*a^10*b^6*c^2*e^16*z^3 + 1280*a^4*b^2*c^12*d^16*z^3 - 640*a^3*b^4*c^11*d^16*z^3 + 160*a^2*b^6*c^10*d^16*z^3 - 1024*a^13*c^5*e^16*z^3 - 1024*a^5*c^13*d^16*z^3 + b^18*d^8*e^8*z^3 + b^10*c^8*d^16*z^3 + a^8*b^10*e^16*z^3 + 96*a*b*c^10*d^10*e^2*f*g*z + 69900*a^4*b^2*c^6*d^3*e^9*f*g*z - 64590*a^4*b^3*c^5*d^2*e^10*f*g*z - 40200*a^3*b^4*c^5*d^3*e^9*f*g*z + 32820*a^3*b^5*c^4*d^2*e^10*f*g*z + 10680*a^2*b^6*c^4*d^3*e^9*f*g*z + 10500*a^3*b^3*c^6*d^4*e^8*f*g*z + 8820*a^2*b^3*c^7*d^6*e^6*f*g*z - 8460*a^2*b^7*c^3*d^2*e^10*f*g*z - 5880*a^3*b^2*c^7*d^5*e^7*f*g*z - 5040*a^2*b^4*c^6*d^5*e^7*f*g*z - 3240*a^2*b^2*c^8*d^7*e^5*f*g*z - 1260*a^2*b^5*c^5*d^4*e^8*f*g*z - 252*a*b^10*c*d*e^11*f*g*z + 55872*a^5*b*c^6*d^2*e^10*f*g*z - 30636*a^5*b^2*c^5*d*e^11*f*g*z + 24180*a^4*b^4*c^4*d*e^11*f*g*z - 9720*a^3*b^6*c^3*d*e^11*f*g*z + 3690*a*b^3*c^8*d^8*e^4*f*g*z - 3360*a^3*b*c^8*d^6*e^6*f*g*z - 3240*a*b^4*c^7*d^7*e^5*f*g*z + 2160*a^2*b^8*c^2*d*e^11*f*g*z - 2100*a^4*b*c^7*d^4*e^8*f*g*z - 1500*a*b^2*c^9*d^9*e^3*f*g*z - 1320*a*b^8*c^3*d^3*e^9*f*g*z - 1260*a^2*b*c^9*d^8*e^4*f*g*z + 1080*a*b^9*c^2*d^2*e^10*f*g*z + 924*a*b^6*c^5*d^5*e^7*f*g*z + 252*a*b^5*c^6*d^6*e^6*f*g*z - 150*a*b^7*c^4*d^4*e^8*f*g*z + 48*a*c^11*d^11*e*f*g*z - 660*b^4*c^8*d^9*e^3*f*g*z + 570*b^

3*c^9*d^10*e^2*f*g*z + 270*b^5*c^7*d^8*e^4*f*g*z + 84*b^6*c^6*d^7*e^5*f*g*z + 60*b^10*c^2*d^3*e^9*f*g*z - 60*b^8*c^4*d^5*e^7*f*g*z - 42*b^7*c^5*d^6*e^6*f*g*z + 30*b^9*c^3*d^4*e^8*f*g*z - 59280*a^5*c^7*d^3*e^9*f*g*z + 3360*a^4*c^8*d^5*e^7*f*g*z + 2400*a^3*c^9*d^7*e^5*f*g*z + 720*a^2*c^10*d^9*e^3*f*g*z + 7410*a^5*b^3*c^4*e^12*f*g*z - 3810*a^4*b^5*c^3*e^12*f*g*z + 960*a^3*b^7*c^2*e^12*f*g*z + 4872*a^6*b*c^5*d*e^11*g^2*z + 90*a*b^10*c*d^2*e^10*g^2*z + 80*a^2*b^9*c*d*e^11*g^2*z - 33048*a^5*b*c^6*d*e^11*f^2*z + 1800*a*b*c^10*d^9*e^3*f^2*z - 720*a*b^9*c^2*d*e^11*f^2*z - 31575*a^4*b^2*c^6*d^4*e^8*g^2*z + 24700*a^4*b^3*c^5*d^3*e^9*g^2*z + 16722*a^5*b^2*c^5*d^2*e^10*g^2*z + 15700*a^3*b^4*c^5*d^4*e^8*g^2*z - 12140*a^3*b^5*c^4*d^3*e^9*g^2*z - 11640*a^4*b^4*c^4*d^2*e^10*g^2*z - 4485*a^2*b^6*c^4*d^4*e^8*g^2*z + 4180*a^3*b^6*c^3*d^2*e^10*g^2*z + 3120*a^2*b^7*c^3*d^3*e^9*g^2*z - 1960*a^3*b^3*c^6*d^5*e^7*g^2*z + 1820*a^3*b^2*c^7*d^6*e^6*g^2*z + 1596*a^2*b^5*c^5*d^5*e^7*g^2*z + 1185*a^2*b^2*c^8*d^8*e^4*g^2*z - 1080*a^2*b^3*c^7*d^7*e^5*g^2*z - 840*a^2*b^8*c^2*d^2*e^10*g^2*z - 840*a^2*b^4*c^6*d^6*e^6*g^2*z - 50760*a^4*b^2*c^6*d^2*e^10*f^2*z + 25380*a^3*b^4*c^5*d^2*e^10*f^2*z - 12600*a^3*b^2*c^7*d^4*e^8*f^2*z - 10080*a^2*b^2*c^8*d^6*e^6*f^2*z - 6030*a^2*b^6*c^4*d^2*e^10*f^2*z + 3150*a^2*b^4*c^6*d^4*e^8*f^2*z + 2520*a^2*b^3*c^7*d^5*e^7*f^2*z - 1260*a^2*b^5*c^5*d^3*e^9*f^2*z - 228*b^2*c^10*d^11*e*f*g*z - 54*b^11*c*d^2*e^10*f*g*z + 12816*a^6*c^6*d*e^11*f*g*z - 5508*a^6*b*c^5*e^12*f*g*z - 120*a^2*b^9*c*e^12*f*g*z - 24*a*b*c^10*d^11*e*g^2*z - 18360*a^5*b*c^6*d^3*e^9*g^2*z - 5340*a^5*b^3*c^4*d*e^11*g^2*z + 2580*a^4*b^5*c^3*d*e^11*g^2*z + 1680*a^4*b*c^7*d^5*e^7*g^2*z + 1380*a*b^5*c^6*d^7*e^5*g^2*z - 1050*a*b^4*c^7*d^8*e^4*g^2*z - 686*a*b^6*c^5*d^6*e^6*g^2*z - 640*a^3*b^7*c^2*d*e^11*g^2*z + 570*a*b^8*c^3*d^4*e^8*g^2*z - 400*a*b^9*c^2*d^3*e^9*g^2*z - 280*a^2*b*c^9*d^9*e^3*g^2*z + 260*a*b^3*c^8*d^9*e^3*g^2*z + 80*a^3*b*c^8*d^7*e^5*g^2*z + 50*a*b^2*c^9*d^10*e^2*g^2*z + 44460*a^4*b^3*c^5*d*e^11*f^2*z - 22860*a^3*b^5*c^4*d*e^11*f^2*z + 15120*a^3*b*c^8*d^5*e^7*f^2*z + 12600*a^4*b*c^7*d^3*e^9*f^2*z + 7920*a^2*b*c^9*d^7*e^5*f^2*z + 5760*a^2*b^7*c^3*d*e^11*f^2*z - 3060*a*b^2*c^9*d^8*e^4*f^2*z + 1440*a*b^3*c^8*d^7*e^5*f^2*z - 1260*a*b^5*c^6*d^5*e^7*f^2*z + 1260*a*b^4*c^7*d^6*e^6*f^2*z + 720*a*b^8*c^3*d^2*e^10*f^2*z + 180*a*b^7*c^4*d^3*e^9*f^2*z + 216*b*c^11*d^11*e*f^2*z + 36*b^11*c*d*e^11*f^2*z - 4*a*b^11*d*e^11*g^2*z + 180*a*b^10*c*e^12*f^2*z + 200*b^5*c^7*d^9*e^3*g^2*z - 160*b^4*c^8*d^10*e^2*g^2*z - 85*b^6*c^6*d^8*e^4*g^2*z + 70*b^8*c^4*d^6*e^6*g^2*z - 56*b^7*c^5*d^7*e^5*g^2*z - 25*b^10*c^2*d^4*e^8*g^2*z - 20*b^9*c^3*d^5*e^7*g^2*z + 24000*a^5*c^7*d^4*e^8*g^2*z - 11280*a^6*c^6*d^2*e^10*g^2*z - 1120*a^4*c^8*d^6*e^6*g^2*z + 540*b^3*c^9*d^9*e^3*f^2*z - 504*b^2*c^10*d^10*e^2*f^2*z - 320*a^3*c^9*d^8*e^4*g^2*z - 225*b^4*c^8*d^8*e^4*f^2*z + 144*b^7*c^5*d^5*e^7*f^2*z - 126*b^6*c^6*d^6*e^6*f^2*z - 45*b^8*c^4*d^4*e^8*f^2*z - 36*b^10*c^2*d^2*e^10*f^2*z + 36*b^5*c^7*d^7*e^5*f^2*z - 16*a^2*c^10*d^10*e^2*g^2*z + 33048*a^5*c^7*d^2*e^10*f^2*z - 6300*a^4*c^8*d^4*e^8*f^2*z - 5040*a^3*c^9*d^6*e^6*f^2*z - 1980*a^2*c^10*d^8*e^4*f^2*z - 1185*a^6*b^2*c^4*e^12*g^2*z + 630*a^5*b^4*c^3*e^12*g^2*z - 160*a^4*b^6*c^2*e^12*g^2*z - 11565*a^4*b^4*c^4*e^12*f^2*z + 9612*a^5*b^2*c^5*e^12*f^2*z + 5760*a^3*b^6*c^3*e^12*f^2*z - 1440*a^2*b^8*c^2*e^12*f^2*z + 12*b^12*d*e^11*f*g*z + 36*b*c^11*d^12*f*g*z + 6*a*b^11*e^12*f*g*z + 60*b^3*c^9*d^11*e*g^2*z + 20*b^11*c*d^3*e^9*g^2*z - 360*a*c^11*d^10*e^2*f^2*z + 20*a^3*b^8*c*e^12*g^2*z - 4*b^12*d^2*e^10*g^2*z + 768*a^7*c^5*e^12*g^2*z - 9*b^2*c^10*d^12*g^2*z - 900*a^6*c^6*e^12*f^2*z - a^2*b^10*e^12*g^2*z - 36*c^12*d^12*f^2*z - 9*b^12*e^12*f^2*z + 4644*a*b^2*c^6*d^2*e^8*f^2*g + 3420*a^2*b*c^6*d^2*e^8*f*g^2 - 2436*a*b^2*c^6*d^3*e^7*f*g^2 - 2142*a^2*b^2*c^5*d*e^9*f*g^2 - 1470*a*b^3*c^5*d^2*e^8*f*g^2 + 1020*a*b^4*c^4*d*e^9*f*g^2 + 732*a*b*c^7*d^4*e^6*f*g^2 + 720*a*b*c^7*d^3*e^7*f^2*g - 648*a^2*b*c^6*d*e^9*f^2*g - 468*a*b^3*c^5*d*e^9*f^2*g + 981*a^2*b^2*c^5*d^2*e^8*g^3 - 540*b^3*c^6*d^3*e^7*f^2*g + 468*b^2*c^7*d^4*e^6*f^2*g - 459*b^4*c^5*d^2*e^8*f^2*g - 438*b^2*c^7*d^5*e^5*f*g^2 + 396*b^4*c^5*d^3*e^7*f*g^2 + 120*b^5*c^4*d^2*e^8*f*g^2 + 87*b^3*c^6*d^4*e^6*f*g^2 - 7452*a^2*c^7*d^2*e^8*f^2*g + 2688*a^2*c^7*d^3*e^7*f*g^2 + 1512*a^2*b^2*c^5*e^10*f^2*g + 555*a^2*b^3*c^4*e^10*f*g^2 - 1184*a^2*b*c^6*d^3*e^7*g^3 + 796*a*b^3*c^5*d^3*e^7*g^3 - 360*a*b^4*c^4*d^2*e^8*g^3 - 350*a^2*b^3*c^4*d*e^9*g

^3 + 7*a*b^2*c^6*d^4*e^6*g^3 + 216*b*c^8*d^5*e^5*f^2*g + 180*b*c^8*d^6*e^4*
f*g^2 - 120*b^6*c^3*d*e^9*f*g^2 + 90*b^5*c^4*d*e^9*f^2*g - 1332*a*c^8*d^4*e
^6*f^2*g + 1008*a^3*c^6*d*e^9*f*g^2 + 240*a*c^8*d^5*e^5*f*g^2 - 1404*a^3*b*
c^5*e^10*f*g^2 - 765*a*b^4*c^4*e^10*f^2*g - 60*a*b^5*c^3*e^10*f*g^2 + 760*a
^3*b*c^5*d*e^9*g^3 - 120*a*b*c^7*d^5*e^5*g^3 + 40*a*b^5*c^3*d*e^9*g^3 - 194
4*a*b*c^7*d^2*e^8*f^3 - 1728*a*b^2*c^6*d*e^9*f^3 - 180*c^9*d^6*e^4*f^2*g +
90*b^6*c^3*e^10*f^2*g + 900*a^3*c^6*e^10*f^2*g - 540*b*c^8*d^4*e^6*f^3 + 16
2*b^4*c^5*d*e^9*f^3 + 5400*a^2*c^7*d*e^9*f^3 + 1296*a*c^8*d^3*e^7*f^3 - 270
0*a^2*b*c^6*e^10*f^3 + 1188*a*b^3*c^5*e^10*f^3 + 138*b^3*c^6*d^5*e^5*g^3 -
98*b^4*c^5*d^4*e^6*g^3 - 80*b^5*c^4*d^3*e^7*g^3 - 45*b^2*c^7*d^6*e^4*g^3 +
40*b^6*c^3*d^2*e^8*g^3 - 1264*a^3*c^6*d^2*e^8*g^3 + 216*b^3*c^6*d^2*e^8*f^3
 + 216*b^2*c^7*d^3*e^7*f^3 - 80*a^2*c^7*d^4*e^6*g^3 - 95*a^3*b^2*c^4*e^10*g
^3 + 10*a^2*b^4*c^3*e^10*g^3 + 216*c^9*d^5*e^5*f^3 + 256*a^4*c^5*e^10*g^3 -
 135*b^5*c^4*e^10*f^3, z, k)*(root(286720*a^9*b*c^8*d^7*e^9*z^3 + 286720*a^
8*b*c^9*d^9*e^7*z^3 + 172032*a^10*b*c^7*d^5*e^11*z^3 + 172032*a^7*b*c^10*d^
11*e^5*z^3 + 57344*a^11*b*c^6*d^3*e^13*z^3 + 57344*a^6*b*c^11*d^13*e^3*z^3
 - 10240*a^11*b^3*c^4*d*e^15*z^3 - 10240*a^4*b^3*c^11*d^15*e*z^3 + 5120*a^10
*b^5*c^3*d*e^15*z^3 + 5120*a^3*b^5*c^10*d^15*e*z^3 - 1280*a^9*b^7*c^2*d*e^1
5*z^3 - 1280*a^2*b^7*c^9*d^15*e*z^3 - 1232*a^5*b^12*c*d^4*e^12*z^3 - 1232*a
*b^12*c^5*d^12*e^4*z^3 + 1064*a^6*b^11*c*d^3*e^13*z^3 + 1064*a*b^11*c^6*d^1
3*e^3*z^3 + 840*a^4*b^13*c*d^5*e^11*z^3 + 840*a*b^13*c^4*d^11*e^5*z^3 - 552
*a^7*b^10*c*d^2*e^14*z^3 - 552*a*b^10*c^7*d^14*e^2*z^3 - 280*a^3*b^14*c*d^6
*e^10*z^3 - 280*a*b^14*c^3*d^10*e^6*z^3 - 8*a^2*b^15*c*d^7*e^9*z^3 - 8*a*b^
15*c^2*d^9*e^7*z^3 + 8192*a^12*b*c^5*d*e^15*z^3 + 8192*a^5*b*c^12*d^15*e*z^
3 + 160*a^8*b^9*c*d*e^15*z^3 + 160*a*b^9*c^8*d^15*e*z^3 + 36*a*b^16*c*d^8*e
^8*z^3 - 483840*a^8*b^2*c^8*d^8*e^8*z^3 - 365568*a^7*b^5*c^6*d^7*e^9*z^3 -
365568*a^6*b^5*c^7*d^9*e^7*z^3 - 358400*a^9*b^2*c^7*d^6*e^10*z^3 - 358400*a
^7*b^2*c^9*d^10*e^6*z^3 + 241920*a^7*b^4*c^7*d^8*e^8*z^3 + 215040*a^8*b^4*c
^6*d^6*e^10*z^3 + 215040*a^8*b^3*c^7*d^7*e^9*z^3 + 215040*a^7*b^3*c^8*d^9*e
^7*z^3 + 215040*a^6*b^4*c^8*d^10*e^6*z^3 - 193536*a^8*b^5*c^5*d^5*e^11*z^3
 - 193536*a^5*b^5*c^8*d^11*e^5*z^3 - 136192*a^10*b^2*c^6*d^4*e^12*z^3 - 1361
92*a^6*b^2*c^10*d^12*e^4*z^3 + 133056*a^6*b^6*c^6*d^8*e^8*z^3 + 125440*a^9*
b^4*c^5*d^4*e^12*z^3 + 125440*a^5*b^4*c^9*d^12*e^4*z^3 - 109944*a^5*b^8*c^5
*d^8*e^8*z^3 + 106752*a^6*b^7*c^5*d^7*e^9*z^3 + 106752*a^5*b^7*c^6*d^9*e^7*
z^3 + 80640*a^7*b^7*c^4*d^5*e^11*z^3 + 80640*a^4*b^7*c^7*d^11*e^5*z^3 - 772
80*a^6*b^8*c^4*d^6*e^10*z^3 - 77280*a^4*b^8*c^6*d^10*e^6*z^3 + 71680*a^9*b^
3*c^6*d^5*e^11*z^3 + 71680*a^6*b^3*c^9*d^11*e^5*z^3 + 69888*a^7*b^6*c^5*d^6
*e^10*z^3 + 69888*a^5*b^6*c^7*d^10*e^6*z^3 - 35840*a^9*b^5*c^4*d^3*e^13*z^3
 - 35840*a^4*b^5*c^9*d^13*e^3*z^3 + 30720*a^10*b^4*c^4*d^2*e^14*z^3 + 30720
*a^4*b^4*c^10*d^14*e^2*z^3 + 26880*a^8*b^7*c^3*d^3*e^13*z^3 + 26880*a^3*b^7
*c^8*d^13*e^3*z^3 + 21510*a^4*b^10*c^4*d^8*e^8*z^3 + 18536*a^5*b^10*c^3*d^6
*e^10*z^3 + 18536*a^3*b^10*c^5*d^10*e^6*z^3 - 18480*a^7*b^8*c^3*d^4*e^12*z^
3 - 18480*a^3*b^8*c^7*d^12*e^4*z^3 - 18432*a^11*b^2*c^5*d^2*e^14*z^3 - 1843
2*a^5*b^2*c^11*d^14*e^2*z^3 - 16640*a^9*b^6*c^3*d^2*e^14*z^3 - 16640*a^3*b^
6*c^9*d^14*e^2*z^3 - 14336*a^10*b^3*c^5*d^3*e^13*z^3 - 14336*a^5*b^3*c^10*d
^13*e^3*z^3 - 13440*a^8*b^6*c^4*d^4*e^12*z^3 - 13440*a^4*b^6*c^8*d^12*e^4*z
^3 + 13280*a^5*b^9*c^4*d^7*e^9*z^3 + 13280*a^4*b^9*c^5*d^9*e^7*z^3 - 10840*
a^4*b^11*c^3*d^7*e^9*z^3 - 10840*a^3*b^11*c^4*d^9*e^7*z^3 + 7868*a^6*b^10*c
^2*d^4*e^12*z^3 + 7868*a^2*b^10*c^6*d^12*e^4*z^3 - 7840*a^7*b^9*c^2*d^3*e^1
3*z^3 - 7840*a^2*b^9*c^7*d^13*e^3*z^3 - 5600*a^6*b^9*c^3*d^5*e^11*z^3 - 560
0*a^3*b^9*c^6*d^11*e^5*z^3 + 4320*a^8*b^8*c^2*d^2*e^14*z^3 + 4320*a^2*b^8*c
^8*d^14*e^2*z^3 - 3528*a^5*b^11*c^2*d^5*e^11*z^3 - 3528*a^2*b^11*c^5*d^11*e
^5*z^3 + 1520*a^3*b^13*c^2*d^7*e^9*z^3 + 1520*a^2*b^13*c^3*d^9*e^7*z^3 - 70
0*a^4*b^12*c^2*d^6*e^10*z^3 - 700*a^2*b^12*c^4*d^10*e^6*z^3 - 540*a^2*b^14*
c^2*d^8*e^8*z^3 + 480*a^3*b^12*c^3*d^8*e^8*z^3 - 8*b^17*c*d^9*e^7*z^3 - 8*b
^11*c^7*d^15*e*z^3 - 8*a^7*b^11*d*e^15*z^3 - 8*a*b^17*d^7*e^9*z^3 - 20*a^9*
b^8*c*e^16*z^3 - 20*a*b^8*c^9*d^16*z^3 + 70*b^14*c^4*d^12*e^4*z^3 - 56*b^15
*c^3*d^11*e^5*z^3 - 56*b^13*c^5*d^13*e^3*z^3 + 28*b^16*c^2*d^10*e^6*z^3 + 2
8*b^12*c^6*d^14*e^2*z^3 - 71680*a^9*c^9*d^8*e^8*z^3 - 57344*a^10*c^8*d^6*e^

10*z^3 - 57344*a^8*c^10*d^10*e^6*z^3 - 28672*a^11*c^7*d^4*e^12*z^3 - 28672*
a^7*c^11*d^12*e^4*z^3 - 8192*a^12*c^6*d^2*e^14*z^3 - 8192*a^6*c^12*d^14*e^2
*z^3 + 70*a^4*b^14*d^4*e^12*z^3 - 56*a^5*b^13*d^3*e^13*z^3 - 56*a^3*b^15*d^
5*e^11*z^3 + 28*a^6*b^12*d^2*e^14*z^3 + 28*a^2*b^16*d^6*e^10*z^3 + 1280*a^1
2*b^2*c^4*e^16*z^3 - 640*a^11*b^4*c^3*e^16*z^3 + 160*a^10*b^6*c^2*e^16*z^3
+ 1280*a^4*b^2*c^12*d^16*z^3 - 640*a^3*b^4*c^11*d^16*z^3 + 160*a^2*b^6*c^10
*d^16*z^3 - 1024*a^13*c^5*e^16*z^3 - 1024*a^5*c^13*d^16*z^3 + b^18*d^8*e^8*
z^3 + b^10*c^8*d^16*z^3 + a^8*b^10*e^16*z^3 + 96*a*b*c^10*d^10*e^2*f*g*z +
69900*a^4*b^2*c^6*d^3*e^9*f*g*z - 64590*a^4*b^3*c^5*d^2*e^10*f*g*z - 40200*
a^3*b^4*c^5*d^3*e^9*f*g*z + 32820*a^3*b^5*c^4*d^2*e^10*f*g*z + 10680*a^2*b^
6*c^4*d^3*e^9*f*g*z + 10500*a^3*b^3*c^6*d^4*e^8*f*g*z + 8820*a^2*b^3*c^7*d^
6*e^6*f*g*z - 8460*a^2*b^7*c^3*d^2*e^10*f*g*z - 5880*a^3*b^2*c^7*d^5*e^7*f*
g*z - 5040*a^2*b^4*c^6*d^5*e^7*f*g*z - 3240*a^2*b^2*c^8*d^7*e^5*f*g*z - 126
0*a^2*b^5*c^5*d^4*e^8*f*g*z - 252*a*b^10*c*d*e^11*f*g*z + 55872*a^5*b*c^6*d
^2*e^10*f*g*z - 30636*a^5*b^2*c^5*d*e^11*f*g*z + 24180*a^4*b^4*c^4*d*e^11*f
*g*z - 9720*a^3*b^6*c^3*d*e^11*f*g*z + 3690*a*b^3*c^8*d^8*e^4*f*g*z - 3360*
a^3*b*c^8*d^6*e^6*f*g*z - 3240*a*b^4*c^7*d^7*e^5*f*g*z + 2160*a^2*b^8*c^2*d
*e^11*f*g*z - 2100*a^4*b*c^7*d^4*e^8*f*g*z - 1500*a*b^2*c^9*d^9*e^3*f*g*z -
1320*a*b^8*c^3*d^3*e^9*f*g*z - 1260*a^2*b*c^9*d^8*e^4*f*g*z + 1080*a*b^9*c
^2*d^2*e^10*f*g*z + 924*a*b^6*c^5*d^5*e^7*f*g*z + 252*a*b^5*c^6*d^6*e^6*f*g
*z - 150*a*b^7*c^4*d^4*e^8*f*g*z + 48*a*c^11*d^11*e*f*g*z - 660*b^4*c^8*d^9
*e^3*f*g*z + 570*b^3*c^9*d^10*e^2*f*g*z + 270*b^5*c^7*d^8*e^4*f*g*z + 84*b^
6*c^6*d^7*e^5*f*g*z + 60*b^10*c^2*d^3*e^9*f*g*z - 60*b^8*c^4*d^5*e^7*f*g*z
- 42*b^7*c^5*d^6*e^6*f*g*z + 30*b^9*c^3*d^4*e^8*f*g*z - 59280*a^5*c^7*d^3*e
^9*f*g*z + 3360*a^4*c^8*d^5*e^7*f*g*z + 2400*a^3*c^9*d^7*e^5*f*g*z + 720*a^
2*c^10*d^9*e^3*f*g*z + 7410*a^5*b^3*c^4*e^12*f*g*z - 3810*a^4*b^5*c^3*e^12*
f*g*z + 960*a^3*b^7*c^2*e^12*f*g*z + 4872*a^6*b*c^5*d*e^11*g^2*z + 90*a*b^1
0*c*d^2*e^10*g^2*z + 80*a^2*b^9*c*d*e^11*g^2*z - 33048*a^5*b*c^6*d*e^11*f^2
*z + 1800*a*b*c^10*d^9*e^3*f^2*z - 720*a*b^9*c^2*d*e^11*f^2*z - 31575*a^4*b
^2*c^6*d^4*e^8*g^2*z + 24700*a^4*b^3*c^5*d^3*e^9*g^2*z + 16722*a^5*b^2*c^5*
d^2*e^10*g^2*z + 15700*a^3*b^4*c^5*d^4*e^8*g^2*z - 12140*a^3*b^5*c^4*d^3*e^
9*g^2*z - 11640*a^4*b^4*c^4*d^2*e^10*g^2*z - 4485*a^2*b^6*c^4*d^4*e^8*g^2*z
+ 4180*a^3*b^6*c^3*d^2*e^10*g^2*z + 3120*a^2*b^7*c^3*d^3*e^9*g^2*z - 1960*
a^3*b^3*c^6*d^5*e^7*g^2*z + 1820*a^3*b^2*c^7*d^6*e^6*g^2*z + 1596*a^2*b^5*c
^5*d^5*e^7*g^2*z + 1185*a^2*b^2*c^8*d^8*e^4*g^2*z - 1080*a^2*b^3*c^7*d^7*e^
5*g^2*z - 840*a^2*b^8*c^2*d^2*e^10*g^2*z - 840*a^2*b^4*c^6*d^6*e^6*g^2*z -
50760*a^4*b^2*c^6*d^2*e^10*f^2*z + 25380*a^3*b^4*c^5*d^2*e^10*f^2*z - 12600
*a^3*b^2*c^7*d^4*e^8*f^2*z - 10080*a^2*b^2*c^8*d^6*e^6*f^2*z - 6030*a^2*b^6
*c^4*d^2*e^10*f^2*z + 3150*a^2*b^4*c^6*d^4*e^8*f^2*z + 2520*a^2*b^3*c^7*d^5
*e^7*f^2*z - 1260*a^2*b^5*c^5*d^3*e^9*f^2*z - 228*b^2*c^10*d^11*e*f*g*z - 5
4*b^11*c*d^2*e^10*f*g*z + 12816*a^6*c^6*d*e^11*f*g*z - 5508*a^6*b*c^5*e^12*
f*g*z - 120*a^2*b^9*c*e^12*f*g*z - 24*a*b*c^10*d^11*e*g^2*z - 18360*a^5*b*c
^6*d^3*e^9*g^2*z - 5340*a^5*b^3*c^4*d*e^11*g^2*z + 2580*a^4*b^5*c^3*d*e^11*
g^2*z + 1680*a^4*b*c^7*d^5*e^7*g^2*z + 1380*a*b^5*c^6*d^7*e^5*g^2*z - 1050*
a*b^4*c^7*d^8*e^4*g^2*z - 686*a*b^6*c^5*d^6*e^6*g^2*z - 640*a^3*b^7*c^2*d*e
^11*g^2*z + 570*a*b^8*c^3*d^4*e^8*g^2*z - 400*a*b^9*c^2*d^3*e^9*g^2*z - 280
*a^2*b*c^9*d^9*e^3*g^2*z + 260*a*b^3*c^8*d^9*e^3*g^2*z + 80*a^3*b*c^8*d^7*e
^5*g^2*z + 50*a*b^2*c^9*d^10*e^2*g^2*z + 44460*a^4*b^3*c^5*d*e^11*f^2*z - 2
2860*a^3*b^5*c^4*d*e^11*f^2*z + 15120*a^3*b*c^8*d^5*e^7*f^2*z + 12600*a^4*b
*c^7*d^3*e^9*f^2*z + 7920*a^2*b*c^9*d^7*e^5*f^2*z + 5760*a^2*b^7*c^3*d*e^11
*f^2*z - 3060*a*b^2*c^9*d^8*e^4*f^2*z + 1440*a*b^3*c^8*d^7*e^5*f^2*z - 1260
*a*b^5*c^6*d^5*e^7*f^2*z + 1260*a*b^4*c^7*d^6*e^6*f^2*z + 720*a*b^8*c^3*d^2
*e^10*f^2*z + 180*a*b^7*c^4*d^3*e^9*f^2*z + 216*b*c^11*d^11*e*f^2*z + 36*b^
11*c*d*e^11*f^2*z - 4*a*b^11*d*e^11*g^2*z + 180*a*b^10*c*e^12*f^2*z + 200*b
^5*c^7*d^9*e^3*g^2*z - 160*b^4*c^8*d^10*e^2*g^2*z - 85*b^6*c^6*d^8*e^4*g^2*
z + 70*b^8*c^4*d^6*e^6*g^2*z - 56*b^7*c^5*d^7*e^5*g^2*z - 25*b^10*c^2*d^4*e
^8*g^2*z - 20*b^9*c^3*d^5*e^7*g^2*z + 24000*a^5*c^7*d^4*e^8*g^2*z - 11280*a
^6*c^6*d^2*e^10*g^2*z - 1120*a^4*c^8*d^6*e^6*g^2*z + 540*b^3*c^9*d^9*e^3*f^
2*z - 504*b^2*c^10*d^10*e^2*f^2*z - 320*a^3*c^9*d^8*e^4*g^2*z - 225*b^4*c^8

*d^8*e^4*f^2*z + 144*b^7*c^5*d^5*e^7*f^2*z - 126*b^6*c^6*d^6*e^6*f^2*z - 45*b^8*c^4*d^4*e^8*f^2*z - 36*b^10*c^2*d^2*e^10*f^2*z + 36*b^5*c^7*d^7*e^5*f^2*z - 16*a^2*c^10*d^10*e^2*g^2*z + 33048*a^5*c^7*d^2*e^10*f^2*z - 6300*a^4*c^8*d^4*e^8*f^2*z - 5040*a^3*c^9*d^6*e^6*f^2*z - 1980*a^2*c^10*d^8*e^4*f^2*z - 1185*a^6*b^2*c^4*e^12*g^2*z + 630*a^5*b^4*c^3*e^12*g^2*z - 160*a^4*b^6*c^2*e^12*g^2*z - 11565*a^4*b^4*c^4*e^12*f^2*z + 9612*a^5*b^2*c^5*e^12*f^2*z + 5760*a^3*b^6*c^3*e^12*f^2*z - 1440*a^2*b^8*c^2*e^12*f^2*z + 12*b^12*d*e^11*f*g*z + 36*b*c^11*d^12*f*g*z + 6*a*b^11*e^12*f*g*z + 60*b^3*c^9*d^11*e*g^2*z + 20*b^11*c*d^3*e^9*g^2*z - 360*a*c^11*d^10*e^2*f^2*z + 20*a^3*b^8*c*e^12*g^2*z - 4*b^12*d^2*e^10*g^2*z + 768*a^7*c^5*e^12*g^2*z - 9*b^2*c^10*d^12*g^2*z - 900*a^6*c^6*e^12*f^2*z - a^2*b^10*e^12*g^2*z - 36*c^12*d^12*f^2*z - 9*b^12*e^12*f^2*z + 4644*a*b^2*c^6*d^2*e^8*f^2*g + 3420*a^2*b*c^6*d^2*e^8*f*g^2 - 2436*a*b^2*c^6*d^3*e^7*f*g^2 - 2142*a^2*b^2*c^5*d*e^9*f*g^2 - 1470*a*b^3*c^5*d^2*e^8*f*g^2 + 1020*a*b^4*c^4*d*e^9*f*g^2 + 732*a*b*c^7*d^4*e^6*f*g^2 + 720*a*b*c^7*d^3*e^7*f^2*g - 648*a^2*b*c^6*d*e^9*f^2*g - 468*a*b^3*c^5*d*e^9*f^2*g + 981*a^2*b^2*c^5*d^2*e^8*g^3 - 540*b^3*c^6*d^3*e^7*f^2*g + 468*b^2*c^7*d^4*e^6*f^2*g - 459*b^4*c^5*d^2*e^8*f^2*g - 438*b^2*c^7*d^5*e^5*f*g^2 + 396*b^4*c^5*d^3*e^7*f*g^2 + 120*b^5*c^4*d^2*e^8*f*g^2 + 87*b^3*c^6*d^4*e^6*f*g^2 - 7452*a^2*c^7*d^2*e^8*f^2*g + 2688*a^2*c^7*d^3*e^7*f*g^2 + 1512*a^2*b^2*c^5*e^10*f^2*g + 555*a^2*b^3*c^4*e^10*f*g^2 - 1184*a^2*b*c^6*d^3*e^7*g^3 + 796*a*b^3*c^5*d^3*e^7*g^3 - 360*a*b^4*c^4*d^2*e^8*g^3 - 350*a^2*b^3*c^4*d*e^9*g^3 + 7*a*b^2*c^6*d^4*e^6*g^3 + 216*b*c^8*d^5*e^5*f^2*g + 180*b*c^8*d^6*e^4*f*g^2 - 120*b^6*c^3*d*e^9*f*g^2 + 90*b^5*c^4*d*e^9*f^2*g - 1332*a*c^8*d^4*e^6*f^2*g + 1008*a^3*c^6*d*e^9*f*g^2 + 240*a*c^8*d^5*e^5*f*g^2 - 1404*a^3*b*c^5*e^10*f*g^2 - 765*a*b^4*c^4*e^10*f^2*g - 60*a*b^5*c^3*e^10*f*g^2 + 760*a^3*b*c^5*d*e^9*g^3 - 120*a*b*c^7*d^5*e^5*g^3 + 40*a*b^5*c^3*d*e^9*g^3 - 1944*a*b*c^7*d^2*e^8*f^3 - 1728*a*b^2*c^6*d*e^9*f^3 - 180*c^9*d^6*e^4*f^2*g + 90*b^6*c^3*e^10*f^2*g + 900*a^3*c^6*e^10*f^2*g - 540*b*c^8*d^4*e^6*f^3 + 162*b^4*c^5*d*e^9*f^3 + 5400*a^2*c^7*d*e^9*f^3 + 1296*a*c^8*d^3*e^7*f^3 - 2700*a^2*b*c^6*e^10*f^3 + 1188*a*b^3*c^5*e^10*f^3 + 138*b^3*c^6*d^5*e^5*g^3 - 98*b^4*c^5*d^4*e^6*g^3 - 80*b^5*c^4*d^3*e^7*g^3 - 45*b^2*c^7*d^6*e^4*g^3 + 40*b^6*c^3*d^2*e^8*g^3 - 1264*a^3*c^6*d^2*e^8*g^3 + 216*b^3*c^6*d^2*e^8*f^3 + 216*b^2*c^7*d^3*e^7*f^3 - 80*a^2*c^7*d^4*e^6*g^3 - 95*a^3*b^2*c^4*e^10*g^3 + 10*a^2*b^4*c^3*e^10*g^3 + 216*c^9*d^5*e^5*f^3 + 256*a^4*c^5*e^10*g^3 - 135*b^5*c^4*e^10*f^3, z, k)*((2048*a^11*c^6*d*e^14 - 256*a^11*b*c^5*e^15 - a^7*b^9*c*e^15 - b^9*c^8*d^14*e - b^16*c*d^7*e^8 + 16*a^8*b^7*c^2*e^15 - 96*a^9*b^5*c^3*e^15 + 256*a^10*b^3*c^4*e^15 + 2048*a^5*c^12*d^13*e^2 + 12288*a^6*c^11*d^11*e^4 + 30720*a^7*c^10*d^9*e^6 + 40960*a^8*c^9*d^7*e^8 + 30720*a^9*c^8*d^5*e^10 + 12288*a^10*c^7*d^3*e^12 + 5*b^10*c^7*d^13*e^2 - 9*b^11*c^6*d^12*e^3 + 5*b^12*c^5*d^11*e^4 + 5*b^13*c^4*d^10*e^5 - 9*b^14*c^3*d^9*e^6 + 5*b^15*c^2*d^8*e^7 + 352*a^2*b^6*c^9*d^13*e^2 + 16*a^2*b^7*c^8*d^12*e^3 - 1872*a^2*b^8*c^7*d^11*e^4 + 3499*a^2*b^9*c^6*d^10*e^5 - 2549*a^2*b^10*c^5*d^9*e^6 + 438*a^2*b^11*c^4*d^8*e^7 + 334*a^2*b^12*c^3*d^7*e^8 - 113*a^2*b^13*c^2*d^6*e^9 - 512*a^3*b^4*c^10*d^13*e^2 - 2976*a^3*b^5*c^9*d^12*e^3 + 12352*a^3*b^6*c^8*d^11*e^4 - 16784*a^3*b^7*c^7*d^10*e^5 + 6984*a^3*b^8*c^6*d^9*e^6 + 4157*a^3*b^9*c^5*d^8*e^7 - 4204*a^3*b^10*c^4*d^7*e^8 + 438*a^3*b^11*c^3*d^6*e^9 + 284*a^3*b^12*c^2*d^5*e^10 - 768*a^4*b^2*c^11*d^13*e^2 + 11776*a^4*b^3*c^10*d^12*e^3 - 32512*a^4*b^4*c^9*d^11*e^4 + 28704*a^4*b^5*c^8*d^10*e^5 + 13216*a^4*b^6*c^7*d^9*e^6 - 36752*a^4*b^7*c^6*d^8*e^7 + 15264*a^4*b^8*c^5*d^7*e^8 + 4157*a^4*b^9*c^4*d^6*e^9 - 2549*a^4*b^10*c^3*d^5*e^10 - 285*a^4*b^11*c^2*d^4*e^11 + 26112*a^5*b^2*c^10*d^11*e^4 + 14336*a^5*b^3*c^9*d^10*e^5 - 94720*a^5*b^4*c^8*d^9*e^6 + 88032*a^5*b^5*c^7*d^8*e^7 + 4480*a^5*b^6*c^6*d^7*e^8 - 36752*a^5*b^7*c^5*d^6*e^9 + 6984*a^5*b^8*c^4*d^5*e^10 + 3499*a^5*b^9*c^3*d^4*e^11 + 70*a^5*b^10*c^2*d^3*e^12 + 111360*a^6*b^2*c^9*d^9*e^6 - 14080*a^6*b^3*c^8*d^8*e^7 - 125440*a^6*b^4*c^7*d^7*e^8 + 88032*a^6*b^5*c^6*d^6*e^9 + 13216*a^6*b^6*c^5*d^5*e^10 - 16784*a^6*b^7*c^4*d^4*e^11 - 1872*a^6*b^8*c^3*d^3*e^12 + 89*a^6*b^9*c^2*d^2*e^13 + 168960*a^7*b^2*c^8*d^7*e^8 - 14080*a^7*b^3*c^7*d^6*e^9 - 94720*a^7*b^4*c^6*d^5*e^10 + 28704*a^7*b^5*c^5*d^4*e^11 + 12352*a^7*b^6*c^4*d^3*e^12 + 16*a

^7*b^7*c^3*d^2*e^13 + 111360*a^8*b^2*c^7*d^5*e^10 + 14336*a^8*b^3*c^6*d^4*e^11 - 32512*a^8*b^4*c^5*d^3*e^12 - 2976*a^8*b^5*c^4*d^2*e^13 + 26112*a^9*b^2*c^6*d^3*e^12 + 11776*a^9*b^3*c^5*d^2*e^13 + 16*a*b^7*c^9*d^14*e + 5*a*b^15*c*d^6*e^9 - 256*a^4*b*c^12*d^14*e + 5*a^6*b^10*c*d*e^14 - 72*a*b^8*c^8*d^13*e^2 + 89*a*b^9*c^7*d^12*e^3 + 70*a*b^10*c^6*d^11*e^4 - 285*a*b^11*c^5*d^10*e^5 + 284*a*b^12*c^4*d^9*e^6 - 113*a*b^13*c^3*d^8*e^7 + 6*a*b^14*c^2*d^7*e^8 - 96*a^2*b^5*c^10*d^14*e - 9*a^2*b^14*c*d^5*e^10 + 256*a^3*b^3*c^11*d^14*e + 5*a^3*b^13*c*d^4*e^11 + 5*a^4*b^12*c*d^3*e^12 - 14080*a^5*b*c^11*d^12*e^3 - 9*a^5*b^11*c*d^2*e^13 - 66816*a^6*b*c^10*d^10*e^5 - 131840*a^7*b*c^9*d^8*e^7 - 72*a^7*b^8*c^2*d*e^14 - 131840*a^8*b*c^8*d^6*e^9 + 352*a^8*b^6*c^3*d*e^14 - 66816*a^9*b*c^7*d^4*e^11 - 512*a^9*b^4*c^4*d*e^14 - 14080*a^10*b*c^6*d^2*e^13 - 768*a^10*b^2*c^5*d*e^14)/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11) - (x*(2*a^6*b^10*c*e^15 - 1536*a^11*c^6*e^15 + 512*a^4*c^13*d^14*e + 2*b^8*c^9*d^14*e + 2*b^16*c*d^6*e^9 - 38*a^7*b^8*c^2*e^15 + 288*a^8*b^6*c^3*e^15 - 1088*a^9*b^4*c^4*e^15 + 2048*a^10*b^2*c^5*e^15 + 1536*a^5*c^12*d^12*e^3 - 1536*a^6*c^11*d^10*e^5 - 12800*a^7*c^10*d^8*e^7 - 23040*a^8*c^9*d^6*e^9 - 19968*a^9*c^8*d^4*e^11 - 8704*a^10*c^7*d^2*e^13 - 14*b^9*c^8*d^13*e^2 + 44*b^10*c^7*d^12*e^3 - 82*b^11*c^6*d^11*e^4 + 100*b^12*c^5*d^10*e^5 - 82*b^13*c^4*d^9*e^6 + 44*b^14*c^3*d^8*e^7 - 14*b^15*c^2*d^7*e^8 - 1344*a^2*b^5*c^10*d^13*e^2 + 4128*a^2*b^6*c^9*d^12*e^3 - 7296*a^2*b^7*c^8*d^11*e^4 + 7962*a^2*b^8*c^7*d^10*e^5 - 4962*a^2*b^9*c^6*d^9*e^6 + 834*a^2*b^10*c^5*d^8*e^7 + 1092*a^2*b^11*c^4*d^7*e^8 - 714*a^2*b^12*c^3*d^6*e^9 + 78*a^2*b^13*c^2*d^5*e^10 + 3584*a^3*b^3*c^11*d^13*e^2 - 10688*a^3*b^4*c^10*d^12*e^3 + 17536*a^3*b^5*c^9*d^11*e^4 - 15712*a^3*b^6*c^8*d^10*e^5 + 3232*a^3*b^7*c^7*d^9*e^6 + 9326*a^3*b^8*c^6*d^8*e^7 - 10232*a^3*b^9*c^5*d^7*e^8 + 3164*a^3*b^10*c^4*d^6*e^9 + 752*a^3*b^11*c^3*d^5*e^10 - 410*a^3*b^12*c^2*d^4*e^11 + 9728*a^4*b^2*c^11*d^12*e^3 - 11776*a^4*b^3*c^10*d^11*e^4 - 1088*a^4*b^4*c^9*d^10*e^5 + 27968*a^4*b^5*c^8*d^9*e^6 - 44576*a^4*b^6*c^7*d^8*e^7 + 27392*a^4*b^7*c^6*d^7*e^8 + 2086*a^4*b^8*c^5*d^6*e^9 - 8882*a^4*b^9*c^4*d^5*e^10 + 1520*a^4*b^10*c^3*d^4*e^11 + 670*a^4*b^11*c^2*d^3*e^12 + 27648*a^5*b^2*c^10*d^10*e^5 - 53760*a^5*b^3*c^9*d^9*e^6 + 56640*a^5*b^4*c^8*d^8*e^7 - 5376*a^5*b^5*c^7*d^7*e^8 - 45024*a^5*b^6*c^6*d^6*e^9 + 29472*a^5*b^7*c^5*d^5*e^10 + 2802*a^5*b^8*c^4*d^4*e^11 - 4164*a^5*b^9*c^3*d^3*e^12 - 546*a^5*b^10*c^2*d^2*e^13 + 5120*a^6*b^2*c^9*d^8*e^7 - 66560*a^6*b^3*c^8*d^7*e^8 + 96320*a^6*b^4*c^7*d^6*e^9

- 23744*a^6*b^5*c^6*d^5*e^10 - 32032*a^6*b^6*c^5*d^4*e^11 + 10624*a^6*b^7*c^4*d^3*e^12 + 3902*a^6*b^8*c^3*d^2*e^13 - 43520*a^7*b^2*c^8*d^6*e^9 - 48640*a^7*b^3*c^7*d^5*e^10 + 71872*a^7*b^4*c^6*d^4*e^11 - 2944*a^7*b^5*c^5*d^3*e^12 - 13472*a^7*b^6*c^4*d^2*e^13 - 41472*a^8*b^2*c^7*d^4*e^11 - 32256*a^8*b^3*c^6*d^3*e^12 + 21312*a^8*b^4*c^5*d^2*e^13 - 8192*a^9*b^2*c^6*d^2*e^13 - 32*a*b^6*c^10*d^14*e - 12*a*b^15*c*d^5*e^10 - 12*a^5*b^11*c*d*e^14 + 8704*a^10*b*c^6*d*e^14 + 224*a*b^7*c^9*d^13*e^2 - 698*a*b^8*c^8*d^12*e^3 + 1276*a*b^9*c^7*d^11*e^4 - 1498*a*b^10*c^6*d^10*e^5 + 1132*a*b^11*c^5*d^9*e^6 - 494*a*b^12*c^4*d^8*e^7 + 68*a*b^13*c^3*d^7*e^8 + 34*a*b^14*c^2*d^6*e^9 + 192*a^2*b^4*c^11*d^14*e + 30*a^2*b^14*c*d^4*e^11 - 512*a^3*b^2*c^12*d^14*e - 40*a^3*b^13*c*d^3*e^12 - 3584*a^4*b*c^12*d^13*e^2 + 30*a^4*b^12*c*d^2*e^13 - 9216*a^5*b*c^11*d^11*e^4 + 7680*a^6*b*c^10*d^9*e^6 + 226*a^6*b^9*c^2*d*e^14 + 51200*a^7*b*c^9*d^7*e^8 - 1696*a^7*b^7*c^3*d*e^14 + 69120*a^8*b*c^8*d^5*e^10 + 6336*a^8*b^5*c^4*d*e^14 + 39936*a^9*b*c^7*d^3*e^12 - 11776*a^9*b^3*c^5*d*e^14))/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11)) + (480*a^8*c^6*e^13*f - 3*a^3*b^10*c*e^13*f + a^4*b^9*c*e^13*g + 368*a^8*b*c^5*e^13*g + 96*a^2*c^12*d^12*e*f - 448*a^8*c^6*d*e^12*g + 6*b^4*c^10*d^12*e*f + 3*b^13*c*d^3*e^10*f - 3*b^5*c^9*d^12*e*g - 2*b^13*c*d^4*e^9*g + 51*a^4*b^8*c^2*e^13*f - 333*a^5*b^6*c^3*e^13*f + 1014*a^6*b^4*c^4*e^13*f - 1344*a^7*b^2*c^5*e^13*f - 17*a^5*b^7*c^2*e^13*g + 111*a^6*b^5*c^3*e^13*g - 328*a^7*b^3*c^4*e^13*g + 576*a^3*c^11*d^10*e^3*f + 1824*a^4*c^10*d^8*e^5*f + 3456*a^5*c^9*d^6*e^7*f + 3744*a^6*c^8*d^4*e^9*f + 2112*a^7*c^7*d^2*e^11*f - 64*a^3*c^11*d^11*e^2*g - 704*a^4*c^10*d^9*e^4*g - 2176*a^5*c^9*d^7*e^6*g - 2944*a^6*c^8*d^5*e^8*g - 1856*a^7*c^7*d^3*e^10*g - 30*b^5*c^9*d^11*e^2*f + 57*b^6*c^8*d^10*e^3*f - 48*b^7*c^7*d^9*e^4*f + 15*b^8*c^6*d^8*e^5*f - 6*b^10*c^4*d^6*e^7*f + 15*b^11*c^3*d^5*e^8*f - 12*b^12*c^2*d^4*e^9*f + 16*b^6*c^8*d^11*e^2*g - 33*b^7*c^7*d^10*e^3*g + 30*b^8*c^6*d^9*e^4*g - 10*b^9*c^5*d^8*e^5*g + 5*b^10*c^4*d^7*e^6*g - 12*b^11*c^3*d^6*e^7*g + 9*b^12*c^2*d^5*e^8*g + 240*a*b^3*c^10*d^11*e^2*f - 420*a*b^4*c^9*d^10*e^3*f + 246*a*b^5*c^8*d^9*e^4*f + 39*a*b^6*c^7*d^8*e^5*f - 36*a*b^7*c^6*d^7*e^6*f + 78*a*b^8*c^5*d^6*e^7*f - 252*a*b^9*c^4*d^5*e^8*f + 186*a*b^10*c^3*d^4*e^9*f - 24*a*b^11*c^2*d^3*e^10*f - 480*a^2*b*c^11*d^11*e^2*f - 2208*a^3*b*c^10*d^9*e^4*f - 150*a^3*b^9*c^2*d*e^12*f - 4032*a^4*b*c^9*d^7*e^6*f + 948*a^4*b^7*c^3*d*e^12*f - 3648*a^5*b*c^8*d^5*e^8*f - 2706*a^5*b^5*c^4*d*e^12*f - 1632*a^6*b*c^7*d^3*e^10*f + 3024*a^6*b^3*c^5*d*e^12*f -

132*a*b^4*c^9*d^11*e^2*g + 264*a*b^5*c^8*d^10*e^3*g - 184*a*b^6*c^7*d^9*e^4*g - 17*a*b^7*c^6*d^8*e^5*g - 48*a*b^8*c^5*d^7*e^6*g + 212*a*b^9*c^4*d^6*e^7*g - 139*a*b^10*c^3*d^5*e^8*g + 15*a*b^11*c^2*d^4*e^9*g - 3*a^2*b^11*c*d^2*e^11*g + 848*a^4*b*c^9*d^8*e^5*g + 18*a^4*b^8*c^2*d*e^12*g + 2432*a^5*b*c^8*d^6*e^7*g - 128*a^5*b^6*c^3*d*e^12*g + 2928*a^6*b*c^7*d^4*e^9*g + 388*a^6*b^4*c^4*d*e^12*g + 1664*a^7*b*c^6*d^2*e^11*g - 288*a^7*b^2*c^5*d*e^12*g + 624*a^2*b^2*c^10*d^10*e^3*f + 336*a^2*b^3*c^9*d^9*e^4*f - 918*a^2*b^4*c^8*d^8*e^5*f + 36*a^2*b^5*c^7*d^7*e^6*f - 414*a^2*b^6*c^6*d^6*e^7*f + 1740*a^2*b^7*c^5*d^5*e^8*f - 1038*a^2*b^8*c^4*d^4*e^9*f - 126*a^2*b^9*c^3*d^3*e^10*f + 135*a^2*b^10*c^2*d^2*e^11*f + 1632*a^3*b^2*c^9*d^8*e^5*f + 1440*a^3*b^3*c^8*d^7*e^6*f + 1320*a^3*b^4*c^7*d^6*e^7*f - 5892*a^3*b^5*c^6*d^5*e^8*f + 1974*a^3*b^6*c^5*d^4*e^9*f + 2004*a^3*b^7*c^4*d^3*e^10*f - 690*a^3*b^8*c^3*d^2*e^11*f - 2976*a^4*b^2*c^8*d^6*e^7*f + 8928*a^4*b^3*c^7*d^5*e^8*f + 2010*a^4*b^4*c^6*d^4*e^9*f - 7782*a^4*b^5*c^5*d^3*e^10*f + 981*a^4*b^6*c^4*d^2*e^11*f - 9456*a^5*b^2*c^7*d^4*e^9*f + 10608*a^5*b^3*c^6*d^3*e^10*f + 2364*a^5*b^4*c^5*d^2*e^11*f - 6864*a^6*b^2*c^6*d^2*e^11*f + 288*a^2*b^2*c^10*d^11*e^2*g - 528*a^2*b^3*c^9*d^10*e^3*g - 12*a^2*b^4*c^8*d^9*e^4*g + 669*a^2*b^5*c^7*d^8*e^5*g + 328*a^2*b^6*c^6*d^7*e^6*g - 1430*a^2*b^7*c^5*d^6*e^7*g + 708*a^2*b^8*c^4*d^5*e^8*g + 101*a^2*b^9*c^3*d^4*e^9*g - 73*a^2*b^10*c^2*d^3*e^10*g + 1248*a^3*b^2*c^9*d^9*e^4*g - 1976*a^3*b^3*c^8*d^8*e^5*g - 1736*a^3*b^4*c^7*d^7*e^6*g + 4488*a^3*b^5*c^6*d^6*e^7*g - 1064*a^3*b^6*c^5*d^5*e^8*g - 1294*a^3*b^7*c^4*d^4*e^9*g + 348*a^3*b^8*c^3*d^3*e^10*g + 48*a^3*b^9*c^2*d^2*e^11*g + 4032*a^4*b^2*c^8*d^7*e^6*g - 6176*a^4*b^3*c^7*d^6*e^7*g - 1592*a^4*b^4*c^6*d^5*e^8*g + 4407*a^4*b^5*c^5*d^4*e^9*g - 504*a^4*b^6*c^4*d^3*e^10*g - 281*a^4*b^7*c^3*d^2*e^11*g + 5184*a^5*b^2*c^7*d^5*e^8*g - 5912*a^5*b^3*c^6*d^4*e^9*g - 500*a^5*b^4*c^5*d^3*e^10*g + 816*a^5*b^5*c^4*d^2*e^11*g + 1824*a^6*b^2*c^6*d^3*e^10*g - 1488*a^6*b^3*c^5*d^2*e^11*g - 48*a*b^2*c^11*d^12*e*f - 9*a*b^12*c*d^2*e^11*f + 9*a^2*b^11*c*d*e^12*f - 288*a^7*b*c^6*d*e^12*f + 24*a*b^3*c^10*d^12*e*g + 5*a*b^12*c*d^3*e^10*g - 48*a^2*b*c^11*d^12*e*g - a^3*b^10*c*d*e^12*g)/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11) + (x*(768*a^8*c^6*e^13*g - 1824*a^7*b*c^6*e^13*f + 3648*a^7*c^7*d*e^12*f - 6*a^3*b^9*c^2*e^13*f + 99*a^4*b^7*c^3*e^13*f - 618*a^5*b^5*c^4*e^13*f + 1728*a^6*b^3*c^5*e^13*f + 2*a^4*b^8*c^2*e^13*g - 33*a^5*b^6*c^3*e^13*g + 216*a^6*b^4*c^4*e^13*g - 656*a^7*b^2*c^5*e^13*g + 192*a^2*c^12*d^11*e^2*f + 1344*a^3*c^11*d^9*e^

4*f + 6528*a^4*c^10*d^7*e^6*f + 13440*a^5*c^9*d^5*e^8*f + 11712*a^6*c^8*d^3*e^10*f - 128*a^3*c^11*d^10*e^3*g - 2816*a^4*c^10*d^8*e^5*g - 6912*a^5*c^9*d^6*e^7*g - 5120*a^6*c^8*d^4*e^9*g - 128*a^7*c^7*d^2*e^11*g + 12*b^4*c^10*d^11*e^2*f - 66*b^5*c^9*d^10*e^3*f + 144*b^6*c^8*d^9*e^4*f - 153*b^7*c^7*d^8*e^5*f + 84*b^8*c^6*d^7*e^6*f - 42*b^9*c^5*d^6*e^7*f + 42*b^10*c^4*d^5*e^8*f - 27*b^11*c^3*d^4*e^9*f + 6*b^12*c^2*d^3*e^10*f - 6*b^5*c^9*d^11*e^2*g + 35*b^6*c^8*d^10*e^3*g - 82*b^7*c^7*d^9*e^4*g + 88*b^8*c^6*d^8*e^5*g - 28*b^9*c^5*d^7*e^6*g - 23*b^10*c^4*d^6*e^7*g + 20*b^11*c^3*d^5*e^8*g - 4*b^12*c^2*d^4*e^9*g - 96*a*b^2*c^11*d^11*e^2*f + 528*a*b^3*c^10*d^10*e^3*f - 1068*a*b^4*c^9*d^9*e^4*f + 846*a*b^5*c^8*d^8*e^5*f - 120*a*b^6*c^7*d^7*e^6*f + 168*a*b^7*c^6*d^6*e^7*f - 588*a*b^8*c^5*d^5*e^8*f + 384*a*b^9*c^4*d^4*e^9*f - 36*a*b^10*c^3*d^3*e^10*f - 18*a*b^11*c^2*d^2*e^11*f - 1056*a^2*b*c^11*d^10*e^3*f + 18*a^2*b^10*c^2*d*e^12*f - 6048*a^3*b*c^10*d^8*e^5*f - 288*a^3*b^8*c^3*d*e^12*f - 22848*a^4*b*c^9*d^6*e^7*f + 1704*a^4*b^6*c^4*d*e^12*f - 33600*a^5*b*c^8*d^4*e^9*f - 4188*a^5*b^4*c^5*d*e^12*f - 17568*a^6*b*c^7*d^2*e^11*f + 2400*a^6*b^2*c^6*d*e^12*f + 48*a*b^3*c^10*d^11*e^2*g - 288*a*b^4*c^9*d^10*e^3*g + 654*a*b^5*c^8*d^9*e^4*g - 517*a*b^6*c^7*d^8*e^5*g - 284*a*b^7*c^6*d^7*e^6*g + 698*a*b^8*c^5*d^6*e^7*g - 344*a*b^9*c^4*d^5*e^8*g + 23*a*b^10*c^3*d^4*e^9*g + 10*a*b^11*c^2*d^3*e^10*g - 96*a^2*b*c^11*d^11*e^2*g - 32*a^3*b*c^10*d^9*e^4*g - 2*a^3*b^9*c^2*d*e^12*g + 8000*a^4*b*c^9*d^7*e^6*g + 34*a^4*b^7*c^3*d*e^12*g + 14016*a^5*b*c^8*d^5*e^8*g - 282*a^5*b^5*c^4*d*e^12*g + 4384*a^6*b*c^7*d^3*e^10*g + 1136*a^6*b^3*c^5*d*e^12*g + 1632*a^2*b^2*c^10*d^9*e^4*f + 576*a^2*b^3*c^9*d^8*e^5*f - 2664*a^2*b^4*c^8*d^7*e^6*f - 756*a^2*b^5*c^7*d^6*e^7*f + 4200*a^2*b^6*c^6*d^5*e^8*f - 1986*a^2*b^7*c^5*d^4*e^9*f - 408*a^2*b^8*c^4*d^3*e^10*f + 252*a^2*b^9*c^3*d^2*e^11*f + 5568*a^3*b^2*c^9*d^7*e^6*f + 8736*a^3*b^3*c^8*d^6*e^7*f - 15288*a^3*b^4*c^7*d^5*e^8*f + 2268*a^3*b^5*c^6*d^4*e^9*f + 4824*a^3*b^6*c^5*d^3*e^10*f - 1104*a^3*b^7*c^4*d^2*e^11*f + 17472*a^4*b^2*c^8*d^5*e^8*f + 13440*a^4*b^3*c^7*d^4*e^9*f - 16740*a^4*b^4*c^6*d^3*e^10*f + 246*a^4*b^5*c^5*d^2*e^11*f + 16032*a^5*b^2*c^7*d^3*e^10*f + 9552*a^5*b^3*c^6*d^2*e^11*f + 624*a^2*b^2*c^10*d^10*e^3*g - 1296*a^2*b^3*c^9*d^9*e^4*g - 264*a^2*b^4*c^8*d^8*e^5*g + 4116*a^2*b^5*c^7*d^7*e^6*g - 4674*a^2*b^6*c^6*d^6*e^7*g + 1296*a^2*b^7*c^5*d^5*e^8*g + 438*a^2*b^8*c^4*d^4*e^9*g - 138*a^2*b^9*c^3*d^3*e^10*g - 6*a^2*b^10*c^2*d^2*e^11*g + 4400*a^3*b^2*c^9*d^8*e^5*g - 12128*a^3*b^3*c^8*d^7*e^6*g + 9344*a^3*b^4*c^7*d^6*e^7*g + 1900*a^3*b^5*c^6*d^5*e^8*g - 3834*a^3*b^6*c^5*d^4*e^9*g + 380*a^3*b^7*c^4*d^3*e^10*g + 94*a^3*b^8*c^3*d^2*e^11*g + 352*a^4*b^2*c^8*d^6*e^7*g - 14944*a^4*b^3*c^7*d^5*e^8*g + 8560*a^4*b^4*c^6*d^4*e^9*g + 1298*a^4*b^5*c^5*d^3*e^10*g - 385*a^4*b^6*c^4*d^2*e^11*g - 1440*a^5*b^2*c^7*d^4*e^9*g - 6096*a^5*b^3*c^6*d^3*e^10*g + 96*a^5*b^4*c^5*d^2*e^11*g + 1328*a^6*b^2*c^6*d^2*e^11*g - 1696*a^7*b*c^6*d*e^12*g))/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*

d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e
^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5
 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e
 - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3
- 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^
7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^
11)) - (1728*a^3*b^3*c^5*e^11*f^2 - 36*c^11*d^9*e^2*f^2 - 738*a^2*b^5*c^4*e
^11*f^2 - 9*b^9*c^2*e^11*f^2 - a^2*b^7*c^2*e^11*g^2 + 15*a^3*b^5*c^3*e^11*g
^2 - 72*a^4*b^3*c^4*e^11*g^2 - 792*a^2*c^9*d^5*e^6*f^2 - 864*a^3*c^8*d^3*e^
8*f^2 - 16*a^2*c^9*d^7*e^4*g^2 + 32*a^3*c^8*d^5*e^6*g^2 + 1648*a^4*c^7*d^3*
e^8*g^2 - 180*b^2*c^9*d^7*e^4*f^2 + 36*b^3*c^8*d^6*e^5*f^2 + 63*b^4*c^7*d^5
*e^6*f^2 - 45*b^6*c^5*d^3*e^8*f^2 + 9*b^7*c^4*d^2*e^9*f^2 - 9*b^2*c^9*d^9*e
^2*g^2 + 42*b^3*c^8*d^8*e^3*g^2 - 67*b^4*c^7*d^7*e^4*g^2 + 39*b^5*c^6*d^6*e
^5*g^2 + 4*b^6*c^5*d^5*e^6*g^2 - 17*b^7*c^4*d^4*e^7*g^2 + 12*b^8*c^3*d^3*e^
8*g^2 - 4*b^9*c^2*d^2*e^9*g^2 + 480*a^5*c^6*e^11*f*g + 135*a*b^7*c^3*e^11*f
^2 - 1440*a^4*b*c^6*e^11*f^2 + 112*a^5*b*c^5*e^11*g^2 - 288*a*c^10*d^7*e^4*
f^2 + 1980*a^4*c^7*d*e^10*f^2 + 144*b*c^10*d^8*e^3*f^2 - 704*a^5*c^6*d*e^10
*g^2 + 18*b^8*c^3*d*e^10*f^2 + 864*a*b*c^9*d^6*e^5*f^2 - 288*a*b^6*c^4*d*e^
10*f^2 - 24*a*b*c^9*d^8*e^3*g^2 - 4*a*b^8*c^2*d*e^10*g^2 - 90*a^2*b^6*c^3*e
^11*f*g + 462*a^3*b^4*c^4*e^11*f*g - 912*a^4*b^2*c^5*e^11*f*g + 144*a^2*c^9
*d^6*e^5*f*g - 144*a^3*c^8*d^4*e^7*f*g - 4368*a^4*c^7*d^2*e^9*f*g - 156*b^2
*c^9*d^8*e^3*f*g + 222*b^3*c^8*d^7*e^4*f*g - 90*b^4*c^7*d^6*e^5*f*g - 48*b^
5*c^6*d^5*e^6*f*g + 36*b^6*c^5*d^4*e^7*f*g + 18*b^7*c^4*d^3*e^8*f*g - 30*b^
8*c^3*d^2*e^9*f*g - 684*a*b^2*c^8*d^5*e^6*f^2 - 216*a*b^3*c^7*d^4*e^7*f^2 +
 450*a*b^4*c^6*d^3*e^8*f^2 + 18*a*b^5*c^5*d^2*e^9*f^2 + 1872*a^2*b*c^8*d^4*
e^7*f^2 + 1575*a^2*b^4*c^5*d*e^10*f^2 + 2016*a^3*b*c^7*d^2*e^9*f^2 - 3348*a
^3*b^2*c^6*d*e^10*f^2 + 20*a*b^2*c^8*d^7*e^4*g^2 + 102*a*b^3*c^7*d^6*e^5*g^
2 - 180*a*b^4*c^6*d^5*e^6*g^2 + 145*a*b^5*c^5*d^4*e^7*g^2 - 130*a*b^6*c^4*d
^3*e^8*g^2 + 62*a*b^7*c^3*d^2*e^9*g^2 - 24*a^2*b*c^8*d^6*e^5*g^2 + 58*a^2*b
^6*c^3*d*e^10*g^2 + 168*a^3*b*c^7*d^4*e^7*g^2 - 310*a^3*b^4*c^4*d*e^10*g^2
- 1256*a^4*b*c^6*d^2*e^9*g^2 + 735*a^4*b^2*c^5*d*e^10*g^2 + 6*a*b^8*c^2*e^1
1*f*g + 48*a*c^10*d^8*e^3*f*g + 36*b*c^10*d^9*e^2*f*g + 12*b^9*c^2*d*e^10*f
*g - 1116*a^2*b^2*c^7*d^3*e^8*f^2 - 684*a^2*b^3*c^6*d^2*e^9*f^2 + 18*a^2*b^
2*c^7*d^5*e^6*g^2 - 98*a^2*b^3*c^6*d^4*e^7*g^2 + 585*a^2*b^4*c^5*d^3*e^8*g^
2 - 399*a^2*b^5*c^4*d^2*e^9*g^2 - 1692*a^3*b^2*c^6*d^3*e^8*g^2 + 1210*a^3*b
^3*c^5*d^2*e^9*g^2 + 120*a*b*c^9*d^7*e^4*f*g - 180*a*b^7*c^3*d*e^10*f*g + 3
708*a^4*b*c^6*d*e^10*f*g - 684*a*b^2*c^8*d^6*e^5*f*g + 774*a*b^3*c^7*d^5*e^
6*f*g - 186*a*b^4*c^6*d^4*e^7*f*g - 258*a*b^5*c^5*d^3*e^8*f*g + 378*a*b^6*c
^4*d^2*e^9*f*g + 192*a^2*b*c^8*d^5*e^6*f*g + 1086*a^2*b^5*c^4*d*e^10*f*g -
24*a^3*b*c^7*d^3*e^8*f*g - 3150*a^3*b^3*c^5*d*e^10*f*g - 804*a^2*b^2*c^7*d^
4*e^7*f*g + 1002*a^2*b^3*c^6*d^3*e^8*f*g - 1770*a^2*b^4*c^5*d^2*e^9*f*g + 3
900*a^3*b^2*c^6*d^2*e^9*f*g)/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c
^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^
12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*
e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 25
6*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^1
0*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^
6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2
 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 -
1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^
5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6
*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b
^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560
*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5
 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4
*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5
*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*
a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9
+ 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*

d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11) - (x*(1260*a^3*b^2*c^6*e^11*f^2 - 9*b^8*c^3*e^11*f^2 - 36*c^11*d^8*e^3*f^2 - 621*a^2*b^4*c^5*e^11*f^2 - 900*a^4*c^7*e^11*f^2 - a^2*b^6*c^3*e^11*g^2 + 14*a^3*b^4*c^4*e^11*g^2 - 49*a^4*b^2*c^5*e^11*g^2 - 216*a^2*c^9*d^4*e^7*f^2 + 1440*a^3*c^8*d^2*e^9*f^2 - 16*a^2*c^9*d^6*e^5*g^2 + 352*a^3*c^8*d^4*e^7*g^2 - 1936*a^4*c^7*d^2*e^9*g^2 - 180*b^2*c^9*d^6*e^5*f^2 + 36*b^3*c^8*d^5*e^6*f^2 + 99*b^4*c^7*d^4*e^7*f^2 - 90*b^5*c^6*d^3*e^8*f^2 + 9*b^6*c^5*d^2*e^9*f^2 - 9*b^2*c^9*d^8*e^3*g^2 + 42*b^3*c^8*d^7*e^4*g^2 - 67*b^4*c^7*d^6*e^5*g^2 + 54*b^5*c^6*d^5*e^6*g^2 - 37*b^6*c^5*d^4*e^7*g^2 + 12*b^7*c^4*d^3*e^8*g^2 - 4*b^8*c^3*d^2*e^9*g^2 + 126*a*b^6*c^4*e^11*f^2 - 288*a*c^10*d^6*e^5*f^2 + 144*b*c^10*d^7*e^4*f^2 + 18*b^7*c^4*d*e^10*f^2 + 864*a*b*c^9*d^5*e^6*f^2 - 270*a*b^5*c^5*d*e^10*f^2 - 1440*a^3*b*c^7*d*e^10*f^2 - 24*a*b*c^9*d^7*e^4*g^2 - 4*a*b^7*c^3*d*e^10*g^2 + 616*a^4*b*c^6*d*e^10*g^2 - 84*a^2*b^5*c^4*e^11*f*g + 354*a^3*b^3*c^5*e^11*f*g - 336*a^2*c^9*d^5*e^6*f*g - 2352*a^3*c^8*d^3*e^8*f*g - 156*b^2*c^9*d^7*e^4*f*g + 222*b^3*c^8*d^6*e^5*f*g - 120*b^4*c^7*d^5*e^6*f*g + 6*b^5*c^6*d^4*e^7*f*g + 48*b^6*c^5*d^3*e^8*f*g - 30*b^7*c^4*d^2*e^9*f*g - 972*a*b^2*c^8*d^4*e^7*f^2 + 504*a*b^3*c^7*d^3*e^8*f^2 + 162*a*b^4*c^6*d^2*e^9*f^2 + 432*a^2*b*c^8*d^3*e^8*f^2 + 1188*a^2*b^3*c^6*d*e^10*f^2 + 20*a*b^2*c^8*d^6*e^5*g^2 - 18*a*b^3*c^7*d^5*e^6*g^2 + 168*a*b^4*c^6*d^4*e^7*g^2 - 68*a*b^5*c^5*d^3*e^8*g^2 + 58*a*b^6*c^4*d^2*e^9*g^2 + 216*a^2*b*c^8*d^5*e^6*g^2 + 54*a^2*b^5*c^4*d*e^10*g^2 + 472*a^3*b*c^7*d^3*e^8*g^2 - 270*a^3*b^3*c^5*d*e^10*g^2 + 6*a*b^7*c^3*e^11*f*g - 420*a^4*b*c^6*e^11*f*g + 48*a*c^10*d^7*e^4*f*g + 2640*a^4*c^7*d*e^10*f*g + 36*b*c^10*d^8*e^3*f*g + 12*b^8*c^3*d*e^10*f*g - 1404*a^2*b^2*c^7*d^2*e^9*f^2 - 798*a^2*b^2*c^7*d^4*e^7*g^2 + 214*a^2*b^3*c^6*d^3*e^8*g^2 - 375*a^2*b^4*c^5*d^2*e^9*g^2 + 1060*a^3*b^2*c^6*d^2*e^9*g^2 + 120*a*b*c^9*d^6*e^5*f*g - 168*a*b^6*c^4*d*e^10*f*g - 444*a*b^2*c^8*d^5*e^6*f*g + 342*a*b^3*c^7*d^4*e^7*f*g - 420*a*b^4*c^6*d^3*e^8*f*g + 258*a*b^5*c^5*d^2*e^9*f*g + 1056*a^2*b*c^8*d^4*e^7*f*g + 1020*a^2*b^4*c^5*d*e^10*f*g + 2088*a^3*b*c^7*d^2*e^9*f*g - 2964*a^3*b^2*c^6*d*e^10*f*g + 492*a^2*b^2*c^7*d^3*e^8*f*g - 822*a^2*b^3*c^6*d^2*e^9*f*g))/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^1

1*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e
^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5
*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d
*e^11))*root(286720*a^9*b*c^8*d^7*e^9*z^3 + 286720*a^8*b*c^9*d^9*e^7*z^3 +
172032*a^10*b*c^7*d^5*e^11*z^3 + 172032*a^7*b*c^10*d^11*e^5*z^3 + 57344*a^1
1*b*c^6*d^3*e^13*z^3 + 57344*a^6*b*c^11*d^13*e^3*z^3 - 10240*a^11*b^3*c^4*d
*e^15*z^3 - 10240*a^4*b^3*c^11*d^15*e*z^3 + 5120*a^10*b^5*c^3*d*e^15*z^3 +
5120*a^3*b^5*c^10*d^15*e*z^3 - 1280*a^9*b^7*c^2*d*e^15*z^3 - 1280*a^2*b^7*c
^9*d^15*e*z^3 - 1232*a^5*b^12*c*d^4*e^12*z^3 - 1232*a*b^12*c^5*d^12*e^4*z^3
 + 1064*a^6*b^11*c*d^3*e^13*z^3 + 1064*a*b^11*c^6*d^13*e^3*z^3 + 840*a^4*b^
13*c*d^5*e^11*z^3 + 840*a*b^13*c^4*d^11*e^5*z^3 - 552*a^7*b^10*c*d^2*e^14*z
^3 - 552*a*b^10*c^7*d^14*e^2*z^3 - 280*a^3*b^14*c*d^6*e^10*z^3 - 280*a*b^14
*c^3*d^10*e^6*z^3 - 8*a^2*b^15*c*d^7*e^9*z^3 - 8*a*b^15*c^2*d^9*e^7*z^3 + 8
192*a^12*b*c^5*d*e^15*z^3 + 8192*a^5*b*c^12*d^15*e*z^3 + 160*a^8*b^9*c*d*e^
15*z^3 + 160*a*b^9*c^8*d^15*e*z^3 + 36*a*b^16*c*d^8*e^8*z^3 - 483840*a^8*b^
2*c^8*d^8*e^8*z^3 - 365568*a^7*b^5*c^6*d^7*e^9*z^3 - 365568*a^6*b^5*c^7*d^9
*e^7*z^3 - 358400*a^9*b^2*c^7*d^6*e^10*z^3 - 358400*a^7*b^2*c^9*d^10*e^6*z^
3 + 241920*a^7*b^4*c^7*d^8*e^8*z^3 + 215040*a^8*b^4*c^6*d^6*e^10*z^3 + 2150
40*a^8*b^3*c^7*d^7*e^9*z^3 + 215040*a^7*b^3*c^8*d^9*e^7*z^3 + 215040*a^6*b^
4*c^8*d^10*e^6*z^3 - 193536*a^8*b^5*c^5*d^5*e^11*z^3 - 193536*a^5*b^5*c^8*d
^11*e^5*z^3 - 136192*a^10*b^2*c^6*d^4*e^12*z^3 - 136192*a^6*b^2*c^10*d^12*e
^4*z^3 + 133056*a^6*b^6*c^6*d^8*e^8*z^3 + 125440*a^9*b^4*c^5*d^4*e^12*z^3 +
 125440*a^5*b^4*c^9*d^12*e^4*z^3 - 109944*a^5*b^8*c^5*d^8*e^8*z^3 + 106752*
a^6*b^7*c^5*d^7*e^9*z^3 + 106752*a^5*b^7*c^6*d^9*e^7*z^3 + 80640*a^7*b^7*c^
4*d^5*e^11*z^3 + 80640*a^4*b^7*c^7*d^11*e^5*z^3 - 77280*a^6*b^8*c^4*d^6*e^1
0*z^3 - 77280*a^4*b^8*c^6*d^10*e^6*z^3 + 71680*a^9*b^3*c^6*d^5*e^11*z^3 + 7
1680*a^6*b^3*c^9*d^11*e^5*z^3 + 69888*a^7*b^6*c^5*d^6*e^10*z^3 + 69888*a^5*
b^6*c^7*d^10*e^6*z^3 - 35840*a^9*b^5*c^4*d^3*e^13*z^3 - 35840*a^4*b^5*c^9*d
^13*e^3*z^3 + 30720*a^10*b^4*c^4*d^2*e^14*z^3 + 30720*a^4*b^4*c^10*d^14*e^2
*z^3 + 26880*a^8*b^7*c^3*d^3*e^13*z^3 + 26880*a^3*b^7*c^8*d^13*e^3*z^3 + 21
510*a^4*b^10*c^4*d^8*e^8*z^3 + 18536*a^5*b^10*c^3*d^6*e^10*z^3 + 18536*a^3*
b^10*c^5*d^10*e^6*z^3 - 18480*a^7*b^8*c^3*d^4*e^12*z^3 - 18480*a^3*b^8*c^7*
d^12*e^4*z^3 - 18432*a^11*b^2*c^5*d^2*e^14*z^3 - 18432*a^5*b^2*c^11*d^14*e^
2*z^3 - 16640*a^9*b^6*c^3*d^2*e^14*z^3 - 16640*a^3*b^6*c^9*d^14*e^2*z^3 - 1
4336*a^10*b^3*c^5*d^3*e^13*z^3 - 14336*a^5*b^3*c^10*d^13*e^3*z^3 - 13440*a^
8*b^6*c^4*d^4*e^12*z^3 - 13440*a^4*b^6*c^8*d^12*e^4*z^3 + 13280*a^5*b^9*c^4
*d^7*e^9*z^3 + 13280*a^4*b^9*c^5*d^9*e^7*z^3 - 10840*a^4*b^11*c^3*d^7*e^9*z
^3 - 10840*a^3*b^11*c^4*d^9*e^7*z^3 + 7868*a^6*b^10*c^2*d^4*e^12*z^3 + 7868
*a^2*b^10*c^6*d^12*e^4*z^3 - 7840*a^7*b^9*c^2*d^3*e^13*z^3 - 7840*a^2*b^9*c
^7*d^13*e^3*z^3 - 5600*a^6*b^9*c^3*d^5*e^11*z^3 - 5600*a^3*b^9*c^6*d^11*e^5
*z^3 + 4320*a^8*b^8*c^2*d^2*e^14*z^3 + 4320*a^2*b^8*c^8*d^14*e^2*z^3 - 3528
*a^5*b^11*c^2*d^5*e^11*z^3 - 3528*a^2*b^11*c^5*d^11*e^5*z^3 + 1520*a^3*b^13
*c^2*d^7*e^9*z^3 + 1520*a^2*b^13*c^3*d^9*e^7*z^3 - 700*a^4*b^12*c^2*d^6*e^1
0*z^3 - 700*a^2*b^12*c^4*d^10*e^6*z^3 - 540*a^2*b^14*c^2*d^8*e^8*z^3 + 480*
a^3*b^12*c^3*d^8*e^8*z^3 - 8*b^17*c*d^9*e^7*z^3 - 8*b^11*c^7*d^15*e*z^3 - 8
*a^7*b^11*d*e^15*z^3 - 8*a*b^17*d^7*e^9*z^3 - 20*a^9*b^8*c*e^16*z^3 - 20*a*
b^8*c^9*d^16*z^3 + 70*b^14*c^4*d^12*e^4*z^3 - 56*b^15*c^3*d^11*e^5*z^3 - 56
*b^13*c^5*d^13*e^3*z^3 + 28*b^16*c^2*d^10*e^6*z^3 + 28*b^12*c^6*d^14*e^2*z^
3 - 71680*a^9*c^9*d^8*e^8*z^3 - 57344*a^10*c^8*d^6*e^10*z^3 - 57344*a^8*c^1
0*d^10*e^6*z^3 - 28672*a^11*c^7*d^4*e^12*z^3 - 28672*a^7*c^11*d^12*e^4*z^3
- 8192*a^12*c^6*d^2*e^14*z^3 - 8192*a^6*c^12*d^14*e^2*z^3 + 70*a^4*b^14*d^4
*e^12*z^3 - 56*a^5*b^13*d^3*e^13*z^3 - 56*a^3*b^15*d^5*e^11*z^3 + 28*a^6*b^
12*d^2*e^14*z^3 + 28*a^2*b^16*d^6*e^10*z^3 + 1280*a^12*b^2*c^4*e^16*z^3 - 6
40*a^11*b^4*c^3*e^16*z^3 + 160*a^10*b^6*c^2*e^16*z^3 + 1280*a^4*b^2*c^12*d^
16*z^3 - 640*a^3*b^4*c^11*d^16*z^3 + 160*a^2*b^6*c^10*d^16*z^3 - 1024*a^13*
c^5*e^16*z^3 - 1024*a^5*c^13*d^16*z^3 + b^18*d^8*e^8*z^3 + b^10*c^8*d^16*z^
3 + a^8*b^10*e^16*z^3 + 96*a*b*c^10*d^10*e^2*f*g*z + 69900*a^4*b^2*c^6*d^3*
e^9*f*g*z - 64590*a^4*b^3*c^5*d^2*e^10*f*g*z - 40200*a^3*b^4*c^5*d^3*e^9*f*
g*z + 32820*a^3*b^5*c^4*d^2*e^10*f*g*z + 10680*a^2*b^6*c^4*d^3*e^9*f*g*z +

10500*a^3*b^3*c^6*d^4*e^8*f*g*z + 8820*a^2*b^3*c^7*d^6*e^6*f*g*z - 8460*a^2
*b^7*c^3*d^2*e^10*f*g*z - 5880*a^3*b^2*c^7*d^5*e^7*f*g*z - 5040*a^2*b^4*c^6
*d^5*e^7*f*g*z - 3240*a^2*b^2*c^8*d^7*e^5*f*g*z - 1260*a^2*b^5*c^5*d^4*e^8*
f*g*z - 252*a*b^10*c*d*e^11*f*g*z + 55872*a^5*b*c^6*d^2*e^10*f*g*z - 30636*
a^5*b^2*c^5*d*e^11*f*g*z + 24180*a^4*b^4*c^4*d*e^11*f*g*z - 9720*a^3*b^6*c^
3*d*e^11*f*g*z + 3690*a*b^3*c^8*d^8*e^4*f*g*z - 3360*a^3*b*c^8*d^6*e^6*f*g*
z - 3240*a*b^4*c^7*d^7*e^5*f*g*z + 2160*a^2*b^8*c^2*d*e^11*f*g*z - 2100*a^4
*b*c^7*d^4*e^8*f*g*z - 1500*a*b^2*c^9*d^9*e^3*f*g*z - 1320*a*b^8*c^3*d^3*e^
9*f*g*z - 1260*a^2*b*c^9*d^8*e^4*f*g*z + 1080*a*b^9*c^2*d^2*e^10*f*g*z + 92
4*a*b^6*c^5*d^5*e^7*f*g*z + 252*a*b^5*c^6*d^6*e^6*f*g*z - 150*a*b^7*c^4*d^4
*e^8*f*g*z + 48*a*c^11*d^11*e*f*g*z - 660*b^4*c^8*d^9*e^3*f*g*z + 570*b^3*c
^9*d^10*e^2*f*g*z + 270*b^5*c^7*d^8*e^4*f*g*z + 84*b^6*c^6*d^7*e^5*f*g*z +
60*b^10*c^2*d^3*e^9*f*g*z - 60*b^8*c^4*d^5*e^7*f*g*z - 42*b^7*c^5*d^6*e^6*f
*g*z + 30*b^9*c^3*d^4*e^8*f*g*z - 59280*a^5*c^7*d^3*e^9*f*g*z + 3360*a^4*c^
8*d^5*e^7*f*g*z + 2400*a^3*c^9*d^7*e^5*f*g*z + 720*a^2*c^10*d^9*e^3*f*g*z +
 7410*a^5*b^3*c^4*e^12*f*g*z - 3810*a^4*b^5*c^3*e^12*f*g*z + 960*a^3*b^7*c^
2*e^12*f*g*z + 4872*a^6*b*c^5*d*e^11*g^2*z + 90*a*b^10*c*d^2*e^10*g^2*z + 8
0*a^2*b^9*c*d*e^11*g^2*z - 33048*a^5*b*c^6*d*e^11*f^2*z + 1800*a*b*c^10*d^9
*e^3*f^2*z - 720*a*b^9*c^2*d*e^11*f^2*z - 31575*a^4*b^2*c^6*d^4*e^8*g^2*z +
 24700*a^4*b^3*c^5*d^3*e^9*g^2*z + 16722*a^5*b^2*c^5*d^2*e^10*g^2*z + 15700
*a^3*b^4*c^5*d^4*e^8*g^2*z - 12140*a^3*b^5*c^4*d^3*e^9*g^2*z - 11640*a^4*b^
4*c^4*d^2*e^10*g^2*z - 4485*a^2*b^6*c^4*d^4*e^8*g^2*z + 4180*a^3*b^6*c^3*d^
2*e^10*g^2*z + 3120*a^2*b^7*c^3*d^3*e^9*g^2*z - 1960*a^3*b^3*c^6*d^5*e^7*g^
2*z + 1820*a^3*b^2*c^7*d^6*e^6*g^2*z + 1596*a^2*b^5*c^5*d^5*e^7*g^2*z + 118
5*a^2*b^2*c^8*d^8*e^4*g^2*z - 1080*a^2*b^3*c^7*d^7*e^5*g^2*z - 840*a^2*b^8*
c^2*d^2*e^10*g^2*z - 840*a^2*b^4*c^6*d^6*e^6*g^2*z - 50760*a^4*b^2*c^6*d^2*
e^10*f^2*z + 25380*a^3*b^4*c^5*d^2*e^10*f^2*z - 12600*a^3*b^2*c^7*d^4*e^8*f
^2*z - 10080*a^2*b^2*c^8*d^6*e^6*f^2*z - 6030*a^2*b^6*c^4*d^2*e^10*f^2*z +
3150*a^2*b^4*c^6*d^4*e^8*f^2*z + 2520*a^2*b^3*c^7*d^5*e^7*f^2*z - 1260*a^2*
b^5*c^5*d^3*e^9*f^2*z - 228*b^2*c^10*d^11*e*f*g*z - 54*b^11*c*d^2*e^10*f*g*
z + 12816*a^6*c^6*d*e^11*f*g*z - 5508*a^6*b*c^5*e^12*f*g*z - 120*a^2*b^9*c*
e^12*f*g*z - 24*a*b*c^10*d^11*e*g^2*z - 18360*a^5*b*c^6*d^3*e^9*g^2*z - 534
0*a^5*b^3*c^4*d*e^11*g^2*z + 2580*a^4*b^5*c^3*d*e^11*g^2*z + 1680*a^4*b*c^7
*d^5*e^7*g^2*z + 1380*a*b^5*c^6*d^7*e^5*g^2*z - 1050*a*b^4*c^7*d^8*e^4*g^2*
z - 686*a*b^6*c^5*d^6*e^6*g^2*z - 640*a^3*b^7*c^2*d*e^11*g^2*z + 570*a*b^8*
c^3*d^4*e^8*g^2*z - 400*a*b^9*c^2*d^3*e^9*g^2*z - 280*a^2*b*c^9*d^9*e^3*g^2
*z + 260*a*b^3*c^8*d^9*e^3*g^2*z + 80*a^3*b*c^8*d^7*e^5*g^2*z + 50*a*b^2*c^
9*d^10*e^2*g^2*z + 44460*a^4*b^3*c^5*d*e^11*f^2*z - 22860*a^3*b^5*c^4*d*e^1
1*f^2*z + 15120*a^3*b*c^8*d^5*e^7*f^2*z + 12600*a^4*b*c^7*d^3*e^9*f^2*z + 7
920*a^2*b*c^9*d^7*e^5*f^2*z + 5760*a^2*b^7*c^3*d*e^11*f^2*z - 3060*a*b^2*c^
9*d^8*e^4*f^2*z + 1440*a*b^3*c^8*d^7*e^5*f^2*z - 1260*a*b^5*c^6*d^5*e^7*f^2
*z + 1260*a*b^4*c^7*d^6*e^6*f^2*z + 720*a*b^8*c^3*d^2*e^10*f^2*z + 180*a*b^
7*c^4*d^3*e^9*f^2*z + 216*b*c^11*d^11*e*f^2*z + 36*b^11*c*d*e^11*f^2*z - 4*
a*b^11*d*e^11*g^2*z + 180*a*b^10*c*e^12*f^2*z + 200*b^5*c^7*d^9*e^3*g^2*z -
 160*b^4*c^8*d^10*e^2*g^2*z - 85*b^6*c^6*d^8*e^4*g^2*z + 70*b^8*c^4*d^6*e^6
*g^2*z - 56*b^7*c^5*d^7*e^5*g^2*z - 25*b^10*c^2*d^4*e^8*g^2*z - 20*b^9*c^3*
d^5*e^7*g^2*z + 24000*a^5*c^7*d^4*e^8*g^2*z - 11280*a^6*c^6*d^2*e^10*g^2*z
- 1120*a^4*c^8*d^6*e^6*g^2*z + 540*b^3*c^9*d^9*e^3*f^2*z - 504*b^2*c^10*d^1
0*e^2*f^2*z - 320*a^3*c^9*d^8*e^4*g^2*z - 225*b^4*c^8*d^8*e^4*f^2*z + 144*b
^7*c^5*d^5*e^7*f^2*z - 126*b^6*c^6*d^6*e^6*f^2*z - 45*b^8*c^4*d^4*e^8*f^2*z
 - 36*b^10*c^2*d^2*e^10*f^2*z + 36*b^5*c^7*d^7*e^5*f^2*z - 16*a^2*c^10*d^10
*e^2*g^2*z + 33048*a^5*c^7*d^2*e^10*f^2*z - 6300*a^4*c^8*d^4*e^8*f^2*z - 50
40*a^3*c^9*d^6*e^6*f^2*z - 1980*a^2*c^10*d^8*e^4*f^2*z - 1185*a^6*b^2*c^4*e
^12*g^2*z + 630*a^5*b^4*c^3*e^12*g^2*z - 160*a^4*b^6*c^2*e^12*g^2*z - 11565
*a^4*b^4*c^4*e^12*f^2*z + 9612*a^5*b^2*c^5*e^12*f^2*z + 5760*a^3*b^6*c^3*e^
12*f^2*z - 1440*a^2*b^8*c^2*e^12*f^2*z + 12*b^12*d*e^11*f*g*z + 36*b*c^11*d
^12*f*g*z + 6*a*b^11*e^12*f*g*z + 60*b^3*c^9*d^11*e*g^2*z + 20*b^11*c*d^3*e
^9*g^2*z - 360*a*c^11*d^10*e^2*f^2*z + 20*a^3*b^8*c*e^12*g^2*z - 4*b^12*d^2
*e^10*g^2*z + 768*a^7*c^5*e^12*g^2*z - 9*b^2*c^10*d^12*g^2*z - 900*a^6*c^6*

e^12*f^2*z - a^2*b^10*e^12*g^2*z - 36*c^12*d^12*f^2*z - 9*b^12*e^12*f^2*z + 4644*a*b^2*c^6*d^2*e^8*f^2*g + 3420*a^2*b*c^6*d^2*e^8*f*g^2 - 2436*a*b^2*c^6*d^3*e^7*f*g^2 - 2142*a^2*b^2*c^5*d*e^9*f*g^2 - 1470*a*b^3*c^5*d^2*e^8*f*g^2 + 1020*a*b^4*c^4*d*e^9*f*g^2 + 732*a*b*c^7*d^4*e^6*f*g^2 + 720*a*b*c^7*d^3*e^7*f^2*g - 648*a^2*b*c^6*d*e^9*f^2*g - 468*a*b^3*c^5*d*e^9*f^2*g + 981*a^2*b^2*c^5*d^2*e^8*g^3 - 540*b^3*c^6*d^3*e^7*f^2*g + 468*b^2*c^7*d^4*e^6*f^2*g - 459*b^4*c^5*d^2*e^8*f^2*g - 438*b^2*c^7*d^5*e^5*f*g^2 + 396*b^4*c^5*d^3*e^7*f*g^2 + 120*b^5*c^4*d^2*e^8*f*g^2 + 87*b^3*c^6*d^4*e^6*f*g^2 - 7452*a^2*c^7*d^2*e^8*f^2*g + 2688*a^2*c^7*d^3*e^7*f*g^2 + 1512*a^2*b^2*c^5*e^10*f^2*g + 555*a^2*b^3*c^4*e^10*f*g^2 - 1184*a^2*b*c^6*d^3*e^7*g^3 + 796*a*b^3*c^5*d^3*e^7*g^3 - 360*a*b^4*c^4*d^2*e^8*g^3 - 350*a^2*b^3*c^4*d*e^9*g^3 + 7*a*b^2*c^6*d^4*e^6*g^3 + 216*b*c^8*d^5*e^5*f^2*g + 180*b*c^8*d^6*e^4*f*g^2 - 120*b^6*c^3*d*e^9*f*g^2 + 90*b^5*c^4*d*e^9*f^2*g - 1332*a*c^8*d^4*e^6*f^2*g + 1008*a^3*c^6*d*e^9*f*g^2 + 240*a*c^8*d^5*e^5*f*g^2 - 1404*a^3*b*c^5*e^10*f*g^2 - 765*a*b^4*c^4*e^10*f^2*g - 60*a*b^5*c^3*e^10*f*g^2 + 760*a^3*b*c^5*d*e^9*g^3 - 120*a*b*c^7*d^5*e^5*g^3 + 40*a*b^5*c^3*d*e^9*g^3 - 1944*a*b*c^7*d^2*e^8*f^3 - 1728*a*b^2*c^6*d*e^9*f^3 - 180*c^9*d^6*e^4*f^2*g + 90*b^6*c^3*e^10*f^2*g + 900*a^3*c^6*e^10*f^2*g - 540*b*c^8*d^4*e^6*f^3 + 162*b^4*c^5*d*e^9*f^3 + 5400*a^2*c^7*d*e^9*f^3 + 1296*a*c^8*d^3*e^7*f^3 - 2700*a^2*b*c^6*e^10*f^3 + 1188*a*b^3*c^5*e^10*f^3 + 138*b^3*c^6*d^5*e^5*g^3 - 98*b^4*c^5*d^4*e^6*g^3 - 80*b^5*c^4*d^3*e^7*g^3 - 45*b^2*c^7*d^6*e^4*g^3 + 40*b^6*c^3*d^2*e^8*g^3 - 1264*a^3*c^6*d^2*e^8*g^3 + 216*b^3*c^6*d^2*e^8*f^3 + 216*b^2*c^7*d^3*e^7*f^3 - 80*a^2*c^7*d^4*e^6*g^3 - 95*a^3*b^2*c^4*e^10*g^3 + 10*a^2*b^4*c^3*e^10*g^3 + 216*c^9*d^5*e^5*f^3 + 256*a^4*c^5*e^10*g^3 - 135*b^5*c^4*e^10*f^3, z, k), k, 1, 3) + ((b^6*d^2*e^3*f - 8*a^2*c^4*d^5*g - 32*a^4*c^2*e^5*f - b^3*c^3*d^5*f - 2*a^2*b^4*e^5*f + 10*a*b*c^4*d^5*f - 5*a*b^5*d*e^4*f - a*b^2*c^3*d^5*g + 16*a^3*b^2*c*e^5*f + a*b^5*d^2*e^3*g + 5*a^2*b^4*d*e^4*g + 16*a^2*c^4*d^4*e*f + 56*a^4*c^2*d*e^4*g + 3*b^4*c^2*d^4*e*f - 3*b^5*c*d^3*e^2*f + 80*a^3*c^3*d^2*e^3*f - 48*a^3*c^3*d^3*e^2*g + 21*a*b^3*c^2*d^3*e^2*f - 9*a^2*b^3*c*d^2*e^3*g + 44*a^3*b*c^2*d^2*e^3*g - 56*a^2*b^2*c^2*d^2*e^3*f + 6*a^2*b^2*c^2*d^3*e^2*g - 28*a*b^2*c^3*d^4*e*f + 2*a*b^4*c*d^2*e^3*f + 36*a^2*b^3*c*d*e^4*f - 58*a^3*b*c^2*d*e^4*f + 3*a*b^3*c^2*d^4*e*g - 3*a*b^4*c*d^3*e^2*g + 12*a^2*b*c^3*d^4*e*g - 37*a^3*b^2*c*d*e^4*g)/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)) - (x^4*(30*a^2*c^4*e^5*f + 3*b^4*c^2*e^5*f - 6*c^6*d^4*e*f + 3*b*c^5*d^4*e*g - 21*a*b^2*c^3*e^5*f - a*b^3*c^2*e^5*g + 7*a^2*b*c^3*e^5*g - 24*a*c^5*d^2*e^3*f + 4*a*c^5*d^3*e^2*g + 12*b*c^5*d^3*e^2*f - 44*a^2*c^4*d*e^4*g - 3*b^3*c^3*d*e^4*f - 2*b^4*c^2*d*e^4*g - 3*b^2*c^4*d^2*e^3*f - 7*b^2*c^4*d^3*e^2*g + 3*b^3*c^3*d^2*e^3*g + 24*a*b*c^4*d*e^4*f + 6*a*b*c^4*d^2*e^3*g + 13*a*b^2*c^3*d*e^4*g))/(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3) - (x^2*(6*b^6*e^5*f + 100*a^3*c^3*e^5*f + 9*b^2*c^4*d^5*g - 2*a*b^5*e^5*g - 18*b*c^5*d^5*f - 4*b^6*d*e^4*g - 36*a*b^4*c*e^5*f - 20*a*c^5*d^4*e*f + 12*a^2*b^3*c*e^5*g + 2*a^3*b*c^2*e^5*g - 152*a^3*c^3*d*e^4*g + 32*b^2*c^4*d^4*e*f - 19*b^3*c^3*d^4*e*g + 2*b^5*c*d^2*e^3*g + 14*a^2*b^2*c^2*e^5*f - 112*a^2*c^4*d^2*e^3*f + 40*a^2*c^4*d^3*e^2*g - b^3*c^3*d^3*e^2*f - 13*b^4*c^2*d^2*e^3*f + 6*b^4*c^2*d^3*e^2*g + 62*a*b^2*c^3*d^2*e^3*f - 16*a*b^2*c^3*d^3*e^2*g + 5*a*b^3*c^2*d^2*e^3*g - 16*a^2*b*c^3*d^2*e^3*g - 5*a^2*b^2*c^2*d*e^4*g + 22*a*b*c^4*d^4*e*g + 20*a*b^4*c*d*e^4*g - 32*a*b*c^4*d^3*e^2*f - a*b^3*c^2

```
*d*e^4*f + 58*a^2*b*c^3*d*e^4*f))/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5
*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 +
3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*
a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*
c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e
^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^
4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)) + (x^3*(12*c^
6*d^5*f + 16*a^3*c^3*e^5*g - 6*b*c^5*d^5*g - 12*b^5*c*e^5*f + 4*a*b^4*c*e^5
*g - 8*a*c^5*d^4*e*g - 6*b*c^5*d^4*e*f + 8*b^5*c*d*e^4*g + 87*a*b^3*c^2*e^5
*f - 138*a^2*b*c^3*e^5*f + 48*a*c^5*d^3*e^2*f + 36*a^2*c^4*d*e^4*f + 9*b^4*
c^2*d*e^4*f + 5*b^2*c^4*d^4*e*g - 29*a^2*b^2*c^2*e^5*g + 8*a^2*c^4*d^2*e^3*
g - 30*b^2*c^4*d^3*e^2*f + 15*b^3*c^3*d^2*e^3*f + 15*b^3*c^3*d^3*e^2*g - 10
*b^4*c^2*d^2*e^3*g - 4*a*b^2*c^3*d^2*e^3*g + 24*a*b*c^4*d^2*e^3*f - 78*a*b^
2*c^3*d*e^4*f - 24*a*b*c^4*d^3*e^2*g - 53*a*b^3*c^2*d*e^4*g + 150*a^2*b*c^3
*d*e^4*g))/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6
- b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2
*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^
4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^
2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e
 + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*
b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)) + (x*(3*a^2*b^4*e^5*g + 4*b^2*c^4*d^
5*f + 24*a^4*c^2*e^5*g - 2*b^3*c^3*d^5*g + 2*b^6*d^2*e^3*g - 9*a*b^5*e^5*f
+ 20*a*c^5*d^5*f - 3*b^6*d*e^4*f - 10*a*b*c^4*d^5*g + 7*a*b^5*d*e^4*g + 68*
a^2*b^3*c*e^5*f - 122*a^3*b*c^2*e^5*f - 21*a^3*b^2*c*e^5*g + 44*a^3*c^3*d*e
^4*f - 9*b^3*c^3*d^4*e*f + 5*b^5*c*d^2*e^3*f + 6*b^4*c^2*d^4*e*g - 6*b^5*c*
d^3*e^2*g + 64*a^2*c^4*d^3*e^2*f + 24*a^3*c^3*d^2*e^3*g + 3*b^4*c^2*d^3*e^2
*f + 14*a*b^2*c^3*d^3*e^2*f - 33*a*b^3*c^2*d^2*e^3*f + 16*a^2*b*c^3*d^2*e^3
*f - 70*a^2*b^2*c^2*d*e^4*f + 21*a*b^3*c^2*d^3*e^2*g - 72*a^2*b*c^3*d^3*e^2
*g - 30*a*b*c^4*d^4*e*f + 26*a*b^4*c*d*e^4*f + 40*a^2*b^2*c^2*d^2*e^3*g + 9
*a*b^2*c^3*d^4*e*g - 15*a*b^4*c*d^2*e^3*g - 53*a^2*b^3*c*d*e^4*g + 106*a^3*
b*c^2*d*e^4*g))/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3
*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 -
3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 +
48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a
^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*
d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21
*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))/(x^2*(b^2*d + 2*a*b*e + 2*a*c*
d) + x^3*(b^2*e + 2*a*c*e + 2*b*c*d) + x*(a^2*e + 2*a*b*d) + a^2*d + x^4*(c
^2*d + 2*b*c*e) + c^2*e*x^5)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2137 $\int \frac{(5-x)(3+2x)^4}{2+5x+3x^2} \, dx$

Optimal. Leaf size=43

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}-6\log(x+1)+\frac{10625}{243}\log(3x+2)$$

Rubi [A] time = 0.02, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {800, 632, 31}

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}-6\log(x+1)+\frac{10625}{243}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (11576*x)/81 + (1156*x^2)/27 + (32*x^3)/27 - (4*x^4)/3 - 6*Log[1 + x] + (10
625*Log[2 + 3*x])/243
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^4}{2+5x+3x^2} \, dx &= \int \left(\frac{11576}{81}+\frac{2312x}{27}+\frac{32x^2}{9}-\frac{16x^3}{3}+\frac{9653+9167x}{81\left(2+5x+3x^2\right)}\right) dx \\
&= \frac{11576x}{81}+\frac{1156x^2}{27}+\frac{32x^3}{27}-\frac{4x^4}{3}+\frac{1}{81}\int \frac{9653+9167x}{2+5x+3x^2} \, dx \\
&= \frac{11576x}{81}+\frac{1156x^2}{27}+\frac{32x^3}{27}-\frac{4x^4}{3}-18\int \frac{1}{3+3x} \, dx+\frac{10625}{81}\int \frac{1}{2+3x} \, dx \\
&= \frac{11576x}{81}+\frac{1156x^2}{27}+\frac{32x^3}{27}-\frac{4x^4}{3}-6\log(1+x)+\frac{10625}{243}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 1.00

$$\frac{1}{972}\left(42500\log(-6x-4)-3\left(432x^4-384x^3-13872x^2-46304x+1944\log(-2(x+1))-41727\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (42500*Log[-4 - 6*x] - 3*(-41727 - 46304*x - 13872*x^2 - 384*x^3 + 432*x^4
+ 1944*Log[-2*(1 + x)]))/972
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^4}{2+5x+3x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2),x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2), x]
```

fricas [A] time = 0.60, size = 33, normalized size = 0.77

$$-\frac{4}{3}\,x^4+\frac{32}{27}\,x^3+\frac{1156}{27}\,x^2+\frac{11576}{81}\,x+\frac{10625}{243}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -4/3*x^4 + 32/27*x^3 + 1156/27*x^2 + 11576/81*x + 10625/243*log(3*x + 2) -
6*log(x + 1)
```

giac [A] time = 0.16, size = 35, normalized size = 0.81

$$-\frac{4}{3}\,x^4+\frac{32}{27}\,x^3+\frac{1156}{27}\,x^2+\frac{11576}{81}\,x+\frac{10625}{243}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -4/3*x^4 + 32/27*x^3 + 1156/27*x^2 + 11576/81*x + 10625/243*log(abs(3*x + 2
)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 34, normalized size = 0.79

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}+\frac{10625\ln\left(3x+2\right)}{243}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+5*x+2),x)
```

```
[Out] 11576/81*x+1156/27*x^2+32/27*x^3-4/3*x^4-6*ln(x+1)+10625/243*ln(3*x+2)
```

maxima [A] time = 0.49, size = 33, normalized size = 0.77

$$-\frac{4}{3}\,x^4+\frac{32}{27}\,x^3+\frac{1156}{27}\,x^2+\frac{11576}{81}\,x+\frac{10625}{243}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -4/3*x^4 + 32/27*x^3 + 1156/27*x^2 + 11576/81*x + 10625/243*log(3*x + 2) -
6*log(x + 1)
```

mupad [B] time = 0.05, size = 31, normalized size = 0.72

$$\frac{11576\,x}{81}-6\,\ln\left(x+1\right)+\frac{10625\,\ln\left(x+\frac{2}{3}\right)}{243}+\frac{1156\,x^2}{27}+\frac{32\,x^3}{27}-\frac{4\,x^4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (11576*x)/81 - 6*log(x + 1) + (10625*log(x + 2/3))/243 + (1156*x^2)/27 + (3
2*x^3)/27 - (4*x^4)/3
```

sympy [A] time = 0.13, size = 41, normalized size = 0.95

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}+\frac{10625\log\left(x+\frac{2}{3}\right)}{243}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2),x)
```

```
[Out] -4*x**4/3 + 32*x**3/27 + 1156*x**2/27 + 11576*x/81 + 10625*log(x + 2/3)/243
 - 6*log(x + 1)
```

3.2138 $\int \frac{(5-x)(3+2x)^3}{2+5x+3x^2} dx$

Optimal. Leaf size=36

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}-6\log(x+1)+\frac{2125}{81}\log(3x+2)$$

Rubi [A] time = 0.02, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {800, 632, 31}

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}-6\log(x+1)+\frac{2125}{81}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (922*x)/27 + (26*x^2)/9 - (8*x^3)/9 - 6*Log[1 + x] + (2125*Log[2 + 3*x])/81
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^3}{2+5x+3x^2} dx &= \int \left(\frac{922}{27}+\frac{52x}{9}-\frac{8x^2}{3}+\frac{1801+1639x}{27(2+5x+3x^2)}\right) dx \\
&= \frac{922x}{27}+\frac{26x^2}{9}-\frac{8x^3}{9}+\frac{1}{27}\int \frac{1801+1639x}{2+5x+3x^2} dx \\
&= \frac{922x}{27}+\frac{26x^2}{9}-\frac{8x^3}{9}-18\int \frac{1}{3+3x} dx+\frac{2125}{27}\int \frac{1}{2+3x} dx \\
&= \frac{922x}{27}+\frac{26x^2}{9}-\frac{8x^3}{9}-6\log(1+x)+\frac{2125}{81}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.97

$$\frac{1}{162}\left(-144x^3+468x^2+5532x+4250\log(-6x-4)-972\log(-2(x+1))+6759\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (6759 + 5532*x + 468*x^2 - 144*x^3 + 4250*Log[-4 - 6*x] - 972*Log[-2*(1 + x
)])/162
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^3}{2+5x+3x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2),x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2), x]
```

fricas [A] time = 0.50, size = 28, normalized size = 0.78

$$-\frac{8}{9}\,x^3+\frac{26}{9}\,x^2+\frac{922}{27}\,x+\frac{2125}{81}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -8/9*x^3 + 26/9*x^2 + 922/27*x + 2125/81*log(3*x + 2) - 6*log(x + 1)
```

giac [A] time = 0.15, size = 30, normalized size = 0.83

$$-\frac{8}{9}\,x^3+\frac{26}{9}\,x^2+\frac{922}{27}\,x+\frac{2125}{81}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -8/9*x^3 + 26/9*x^2 + 922/27*x + 2125/81*log(abs(3*x + 2)) - 6*log(abs(x +
1))
```

maple [A] time = 0.05, size = 29, normalized size = 0.81

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}+\frac{2125\ln\left(3x+2\right)}{81}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+5*x+2),x)
```

```
[Out] 922/27*x+26/9*x^2-8/9*x^3-6*ln(x+1)+2125/81*ln(3*x+2)
```

maxima [A] time = 0.50, size = 28, normalized size = 0.78

$$-\frac{8}{9}\,x^3+\frac{26}{9}\,x^2+\frac{922}{27}\,x+\frac{2125}{81}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -8/9*x^3 + 26/9*x^2 + 922/27*x + 2125/81*log(3*x + 2) - 6*log(x + 1)
```

mupad [B] time = 2.31, size = 26, normalized size = 0.72

$$\frac{922\,x}{27}-6\,\ln\left(x+1\right)+\frac{2125\,\ln\left(x+\frac{2}{3}\right)}{81}+\frac{26\,x^2}{9}-\frac{8\,x^3}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (922*x)/27 - 6*log(x + 1) + (2125*log(x + 2/3))/81 + (26*x^2)/9 - (8*x^3)/9
```

sympy [A] time = 0.13, size = 34, normalized size = 0.94

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}+\frac{2125\log\left(x+\frac{2}{3}\right)}{81}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2),x)
```

```
[Out] -8*x**3/9 + 26*x**2/9 + 922*x/27 + 2125*log(x + 2/3)/81 - 6*log(x + 1)
```

3.2139 $\int \frac{(5-x)(3+2x)^2}{2+5x+3x^2}\,dx$

Optimal. Leaf size=29

$$-\frac{2x^2}{3}+\frac{44x}{9}-6\log(x+1)+\frac{425}{27}\log(3x+2)$$

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {800, 632, 31}

$$-\frac{2x^2}{3}+\frac{44x}{9}-6\log(x+1)+\frac{425}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (44*x)/9 - (2*x^2)/3 - 6*Log[1 + x] + (425*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{2+5x+3x^2}\,dx &= \int \left(\frac{44}{9}-\frac{4x}{3}+\frac{317+263x}{9\left(2+5x+3x^2\right)}\right)dx\\
&= \frac{44x}{9}-\frac{2x^2}{3}+\frac{1}{9}\int \frac{317+263x}{2+5x+3x^2}\,dx\\
&= \frac{44x}{9}-\frac{2x^2}{3}-18\int \frac{1}{3+3x}\,dx+\frac{425}{9}\int \frac{1}{2+3x}\,dx\\
&= \frac{44x}{9}-\frac{2x^2}{3}-6\log(1+x)+\frac{425}{27}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 34, normalized size = 1.17

$$-\frac{2x^2}{3}+\frac{44x}{9}+\frac{425}{27}\log(-6x-4)-6\log(-2(x+1))+\frac{53}{6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2),x]
[Out] 53/6 + (44*x)/9 - (2*x^2)/3 + (425*Log[-4 - 6*x])/27 - 6*Log[-2*(1 + x)]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^2}{2+5x+3x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2),x]
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2), x]
```

fricas [A] time = 0.47, size = 23, normalized size = 0.79

$$-\frac{2}{3}\,x^2+\frac{44}{9}\,x+\frac{425}{27}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="fricas")
[Out] -2/3*x^2 + 44/9*x + 425/27*log(3*x + 2) - 6*log(x + 1)
```

giac [A] time = 0.17, size = 25, normalized size = 0.86

$$-\frac{2}{3}\,x^2+\frac{44}{9}\,x+\frac{425}{27}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="giac")
[Out] -2/3*x^2 + 44/9*x + 425/27*log(abs(3*x + 2)) - 6*log(abs(x + 1))
```

maple [A] time = 0.06, size = 24, normalized size = 0.83

$$-\frac{2x^2}{3}+\frac{44x}{9}+\frac{425\ln\left(3x+2\right)}{27}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+5*x+2),x)
[Out] 44/9*x-2/3*x^2-6*ln(x+1)+425/27*ln(3*x+2)
```

maxima [A] time = 0.56, size = 23, normalized size = 0.79

$$-\frac{2}{3}\,x^2+\frac{44}{9}\,x+\frac{425}{27}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="maxima")
[Out] -2/3*x^2 + 44/9*x + 425/27*log(3*x + 2) - 6*log(x + 1)
```

mupad [B] time = 0.03, size = 21, normalized size = 0.72

$$\frac{44\,x}{9}-6\,\ln\left(x+1\right)+\frac{425\,\ln\left(x+\frac{2}{3}\right)}{27}-\frac{2\,x^2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2),x)
[Out] (44*x)/9 - 6*log(x + 1) + (425*log(x + 2/3))/27 - (2*x^2)/3
```

sympy [A] time = 0.12, size = 27, normalized size = 0.93

$$-\frac{2x^2}{3}+\frac{44x}{9}+\frac{425\log\left(x+\frac{2}{3}\right)}{27}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2),x)
[Out] -2*x**2/3 + 44*x/9 + 425*log(x + 2/3)/27 - 6*log(x + 1)
```

3.2140 $\int \frac{(5-x)(3+2x)}{2+5x+3x^2} dx$

Optimal. Leaf size=22

$$-\frac{2x}{3}-6\log(x+1)+\frac{85}{9}\log(3x+2)$$

Rubi [A] time = 0.01, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {773, 632, 31}

$$-\frac{2x}{3}-6\log(x+1)+\frac{85}{9}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2),x]
[Out] (-2*x)/3 - 6*Log[1 + x] + (85*Log[2 + 3*x])/9
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{2+5x+3x^2} dx &= -\frac{2x}{3}+\frac{1}{3}\int \frac{49+31x}{2+5x+3x^2} dx\\ &= -\frac{2x}{3}-18\int \frac{1}{3+3x} dx+\frac{85}{3}\int \frac{1}{2+3x} dx\\ &= -\frac{2x}{3}-6\log(1+x)+\frac{85}{9}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 1.00

$$-\frac{2x}{3}-6\log(x+1)+\frac{85}{9}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2),x]
[Out] (-2*x)/3 - 6*Log[1 + x] + (85*Log[2 + 3*x])/9
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)}{2+5x+3x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2),x]
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2), x]
```

fricas [A] time = 0.38, size = 18, normalized size = 0.82

$$-\frac{2}{3}\,x + \frac{85}{9}\,\log\left(3\,x + 2\right) - 6\,\log\left(x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2),x, algorithm="fricas")
[Out] -2/3*x + 85/9*log(3*x + 2) - 6*log(x + 1)
```

giac [A] time = 0.21, size = 20, normalized size = 0.91

$$-\frac{2}{3}\,x + \frac{85}{9}\,\log\left(|3\,x + 2|\right) - 6\,\log\left(|x + 1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2),x, algorithm="giac")
[Out] -2/3*x + 85/9*log(abs(3*x + 2)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 19, normalized size = 0.86

$$-\frac{2x}{3} + \frac{85\ln\left(3x+2\right)}{9} - 6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+5*x+2),x)
[Out] -2/3*x-6*ln(x+1)+85/9*ln(3*x+2)
```

maxima [A] time = 0.48, size = 18, normalized size = 0.82

$$-\frac{2}{3}\,x + \frac{85}{9}\,\log\left(3\,x + 2\right) - 6\,\log\left(x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2),x, algorithm="maxima")
[Out] -2/3*x + 85/9*log(3*x + 2) - 6*log(x + 1)
```

mupad [B] time = 0.04, size = 16, normalized size = 0.73

$$\frac{85\,\ln\left(x+\frac{2}{3}\right)}{9} - 6\,\ln\left(x+1\right) - \frac{2\,x}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2),x)
[Out] (85*log(x + 2/3))/9 - 6*log(x + 1) - (2*x)/3
```

sympy [A] time = 0.12, size = 20, normalized size = 0.91

$$-\frac{2x}{3}+\frac{85\log\left(x+\frac{2}{3}\right)}{9}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2),x)
```

```
[Out] -2*x/3 + 85*log(x + 2/3)/9 - 6*log(x + 1)
```

3.2141 $\int \frac{5-x}{2+5x+3x^2}\,dx$

Optimal. Leaf size=17

$$\frac{17}{3}\log(3x+2)-6\log(x+1)$$

Rubi [A] time = 0.01, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {632, 31}

$$\frac{17}{3}\log(3x+2)-6\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2),x]
[Out] -6*Log[1 + x] + (17*Log[2 + 3*x])/3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{2+5x+3x^2}\,dx &= 17\int \frac{1}{2+3x}\,dx-18\int \frac{1}{3+3x}\,dx\\ &= -6\log(1+x)+\frac{17}{3}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 17, normalized size = 1.00

$$\frac{17}{3}\log(3x+2)-6\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2),x]
[Out] -6*Log[1 + x] + (17*Log[2 + 3*x])/3
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{2+5x+3x^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2),x]
[Out] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2), x]
```

fricas [A] time = 0.38, size = 15, normalized size = 0.88

$$\frac{17}{3}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2),x, algorithm="fricas")
[Out] 17/3*log(3*x + 2) - 6*log(x + 1)
```

giac [A] time = 0.15, size = 17, normalized size = 1.00

$$\frac{17}{3}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2),x, algorithm="giac")
[Out] 17/3*log(abs(3*x + 2)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 16, normalized size = 0.94

$$\frac{17\ln\left(3x+2\right)}{3}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2),x)
[Out] -6*ln(x+1)+17/3*ln(3*x+2)
```

maxima [A] time = 0.73, size = 15, normalized size = 0.88

$$\frac{17}{3}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2),x, algorithm="maxima")
[Out] 17/3*log(3*x + 2) - 6*log(x + 1)
```

mupad [B] time = 2.32, size = 13, normalized size = 0.76

$$\frac{17\,\ln\left(x+\frac{2}{3}\right)}{3}-6\,\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2),x)
[Out] (17*log(x + 2/3))/3 - 6*log(x + 1)
```

sympy [A] time = 0.10, size = 15, normalized size = 0.88

$$\frac{17\log\left(x+\frac{2}{3}\right)}{3}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2),x)
[Out] 17*log(x + 2/3)/3 - 6*log(x + 1)
```

3.2142 $\int \frac{5-x}{(3+2x)(2+5x+3x^2)}\,dx$

Optimal. Leaf size=27

$$-6\log(x+1)+\frac{13}{5}\log(2x+3)+\frac{17}{5}\log(3x+2)$$

Rubi [A] time = 0.03, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-6\log(x+1)+\frac{13}{5}\log(2x+3)+\frac{17}{5}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)),x]
[Out] -6*Log[1 + x] + (13*Log[3 + 2*x])/5 + (17*Log[2 + 3*x])/5
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)}+\frac{51}{5(2+3x)}\right)dx\\ &= -6\log(1+x)+\frac{13}{5}\log(3+2x)+\frac{17}{5}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 1.00

$$-6\log(x+1)+\frac{13}{5}\log(2x+3)+\frac{17}{5}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)),x]
[Out] -6*Log[1 + x] + (13*Log[3 + 2*x])/5 + (17*Log[2 + 3*x])/5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)),x]
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)), x]
```

fricas [A] time = 0.38, size = 23, normalized size = 0.85

$$\frac{17}{5}\log\left(3\,x+2\right)+\frac{13}{5}\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2),x, algorithm="fricas")
[Out] 17/5*log(3*x + 2) + 13/5*log(2*x + 3) - 6*log(x + 1)
```

giac [A] time = 0.15, size = 26, normalized size = 0.96

$$\frac{17}{5}\,\log\left(|3\,x+2|\right)+\frac{13}{5}\,\log\left(|2\,x+3|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2),x, algorithm="giac")
[Out] 17/5*log(abs(3*x + 2)) + 13/5*log(abs(2*x + 3)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 24, normalized size = 0.89

$$\frac{17\ln\left(3x+2\right)}{5}+\frac{13\ln\left(2x+3\right)}{5}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+5*x+2),x)
[Out] -6*ln(x+1)+13/5*ln(2*x+3)+17/5*ln(3*x+2)
```

maxima [A] time = 0.55, size = 23, normalized size = 0.85

$$\frac{17}{5}\,\log\left(3\,x+2\right)+\frac{13}{5}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2),x, algorithm="maxima")
[Out] 17/5*log(3*x + 2) + 13/5*log(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 0.05, size = 19, normalized size = 0.70

$$\frac{17\,\ln\left(x+\frac{2}{3}\right)}{5}-6\,\ln\left(x+1\right)+\frac{13\,\ln\left(x+\frac{3}{2}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)),x)
[Out] (17*log(x + 2/3))/5 - 6*log(x + 1) + (13*log(x + 3/2))/5
```

sympy [A] time = 0.14, size = 26, normalized size = 0.96

$$\frac{17\log\left(x+\frac{2}{3}\right)}{5}-6\log\left(x+1\right)+\frac{13\log\left(x+\frac{3}{2}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2),x)
[Out] 17*log(x + 2/3)/5 - 6*log(x + 1) + 13*log(x + 3/2)/5
```

3.2143 $\int \frac{5-x}{(3+2x)^2(2+5x+3x^2)}\,dx$

Optimal. Leaf size=38

$$-\frac{13}{5(2x+3)}-6\log(x+1)+\frac{99}{25}\log(2x+3)+\frac{51}{25}\log(3x+2)$$

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-\frac{13}{5(2x+3)}-6\log(x+1)+\frac{99}{25}\log(2x+3)+\frac{51}{25}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(5*(3 + 2*x)) - 6*Log[1 + x] + (99*Log[3 + 2*x])/25 + (51*Log[2 + 3*x])
/25
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)^2}+\frac{198}{25(3+2x)}+\frac{153}{25(2+3x)}\right)dx\\ &= -\frac{13}{5(3+2x)}-6\log(1+x)+\frac{99}{25}\log(3+2x)+\frac{51}{25}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 38, normalized size = 1.00

$$\frac{1}{25}\left(-\frac{65}{2x+3}+51\log(-6x-4)-150\log(-2(x+1))+99\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (-65/(3 + 2*x) + 51*Log[-4 - 6*x] - 150*Log[-2*(1 + x)] + 99*Log[3 + 2*x])/
25
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)), x]
```

fricas [A] time = 0.39, size = 48, normalized size = 1.26

$$\frac{51\,(2\,x+3)\log\left(3\,x+2\right)+99\,(2\,x+3)\log\left(2\,x+3\right)-150\,(2\,x+3)\log\left(x+1\right)-65}{25\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/25*(51*(2*x + 3)*log(3*x + 2) + 99*(2*x + 3)*log(2*x + 3) - 150*(2*x + 3)
*log(x + 1) - 65)/(2*x + 3)
```

giac [A] time = 0.19, size = 40, normalized size = 1.05

$$-\frac{13}{5\,(2\,x+3)}-6\,\log\left(\left|-\frac{1}{2\,x+3}+1\right|\right)+\frac{51}{25}\,\log\left(\left|-\frac{5}{2\,x+3}+3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -13/5/(2*x + 3) - 6*log(abs(-1/(2*x + 3) + 1)) + 51/25*log(abs(-5/(2*x + 3)
 + 3))
```

maple [A] time = 0.06, size = 33, normalized size = 0.87

$$\frac{51\ln\left(3x+2\right)}{25}+\frac{99\ln\left(2x+3\right)}{25}-6\ln\left(x+1\right)-\frac{13}{5\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+5*x+2),x)
```

```
[Out] -13/5/(2*x+3)-6*ln(x+1)+99/25*ln(2*x+3)+51/25*ln(3*x+2)
```

maxima [A] time = 0.73, size = 32, normalized size = 0.84

$$-\frac{13}{5\,(2\,x+3)}+\frac{51}{25}\,\log\left(3\,x+2\right)+\frac{99}{25}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -13/5/(2*x + 3) + 51/25*log(3*x + 2) + 99/25*log(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 2.29, size = 28, normalized size = 0.74

$$\frac{51\,\ln\left(x+\frac{2}{3}\right)}{25}-6\,\ln\left(x+1\right)+\frac{99\,\ln\left(x+\frac{3}{2}\right)}{25}-\frac{13}{10\,\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (51*log(x + 2/3))/25 - 6*log(x + 1) + (99*log(x + 3/2))/25 - 13/(10*(x + 3/
2))
```

sympy [A] time = 0.16, size = 32, normalized size = 0.84

$$\frac{51\log\left(x+\frac{2}{3}\right)}{25}-6\log\left(x+1\right)+\frac{99\log\left(x+\frac{3}{2}\right)}{25}-\frac{13}{10x+15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2),x)
[Out] 51*log(x + 2/3)/25 - 6*log(x + 1) + 99*log(x + 3/2)/25 - 13/(10*x + 15)
```

3.2144 $\int \frac{5-x}{(3+2x)^3(2+5x+3x^2)}\,dx$

Optimal. Leaf size=49

$$-\frac{99}{25(2x+3)}-\frac{13}{10(2x+3)^2}-6\log(x+1)+\frac{597}{125}\log(2x+3)+\frac{153}{125}\log(3x+2)$$

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-\frac{99}{25(2x+3)}-\frac{13}{10(2x+3)^2}-6\log(x+1)+\frac{597}{125}\log(2x+3)+\frac{153}{125}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(10*(3 + 2*x)^2) - 99/(25*(3 + 2*x)) - 6*Log[1 + x] + (597*Log[3 + 2*x]
)/125 + (153*Log[2 + 3*x])/125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)^3}+\frac{198}{25(3+2x)^2}+\frac{1194}{125(3+2x)}+\frac{459}{125(2+3x)}\right)dx\\ &= -\frac{13}{10(3+2x)^2}-\frac{99}{25(3+2x)}-6\log(1+x)+\frac{597}{125}\log(3+2x)+\frac{153}{125}\log(2+3x\end{aligned}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 0.96

$$\frac{1}{250}\left(-\frac{990}{2x+3}-\frac{325}{(2x+3)^2}+306\log(-6x-4)-1500\log(-2(x+1))+1194\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (-325/(3 + 2*x)^2 - 990/(3 + 2*x) + 306*Log[-4 - 6*x] - 1500*Log[-2*(1 + x)
] + 1194*Log[3 + 2*x])/250
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)), x]
```

fricas [A] time = 0.39, size = 71, normalized size = 1.45

$$\frac{306\left(4x^2+12x+9\right)\log(3x+2)+1194\left(4x^2+12x+9\right)\log(2x+3)-1500\left(4x^2+12x+9\right)\log(x+1)-1980x-3295}{250\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/250*(306*(4*x^2 + 12*x + 9)*log(3*x + 2) + 1194*(4*x^2 + 12*x + 9)*log(2*
x + 3) - 1500*(4*x^2 + 12*x + 9)*log(x + 1) - 1980*x - 3295)/(4*x^2 + 12*x
+ 9)
```

giac [A] time = 0.16, size = 40, normalized size = 0.82

$$-\frac{396x+659}{50(2x+3)^2}+\frac{153}{125}\log(|3x+2|)+\frac{597}{125}\log(|2x+3|)-6\log(|x+1|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -1/50*(396*x + 659)/(2*x + 3)^2 + 153/125*log(abs(3*x + 2)) + 597/125*log(a
bs(2*x + 3)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 42, normalized size = 0.86

$$\frac{153\ln(3x+2)}{125}+\frac{597\ln(2x+3)}{125}-6\ln(x+1)-\frac{13}{10(2x+3)^2}-\frac{99}{25(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+5*x+2),x)
```

```
[Out] -13/10/(2*x+3)^2-99/25/(2*x+3)-6*ln(x+1)+597/125*ln(2*x+3)+153/125*ln(3*x+2
)
```

maxima [A] time = 0.58, size = 42, normalized size = 0.86

$$-\frac{396x+659}{50\left(4x^2+12x+9\right)}+\frac{153}{125}\log(3x+2)+\frac{597}{125}\log(2x+3)-6\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -1/50*(396*x + 659)/(4*x^2 + 12*x + 9) + 153/125*log(3*x + 2) + 597/125*log
(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 0.04, size = 36, normalized size = 0.73

$$\frac{153\ln\left(x+\frac{2}{3}\right)}{125}-6\ln(x+1)+\frac{597\ln\left(x+\frac{3}{2}\right)}{125}-\frac{\frac{99x}{50}+\frac{659}{200}}{x^2+3x+\frac{9}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (153*log(x + 2/3))/125 - 6*log(x + 1) + (597*log(x + 3/2))/125 - ((99*x)/50
 + 659/200)/(3*x + x^2 + 9/4)
```

sympy [A] time = 0.18, size = 41, normalized size = 0.84

$$-\frac{396x+659}{200x^2+600x+450}+\frac{153\log\left(x+\frac{2}{3}\right)}{125}-6\log\left(x+1\right)+\frac{597\log\left(x+\frac{3}{2}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2),x)
```

```
[Out] -(396*x + 659)/(200*x**2 + 600*x + 450) + 153*log(x + 2/3)/125 - 6*log(x +
1) + 597*log(x + 3/2)/125
```

3.2145 $\int \frac{5-x}{(3+2x)^4(2+5x+3x^2)}\,dx$

Optimal. Leaf size=60

$$-\frac{597}{125(2x+3)}-\frac{99}{50(2x+3)^2}-\frac{13}{15(2x+3)^3}-6\log(x+1)+\frac{3291}{625}\log(2x+3)+\frac{459}{625}\log(3x+2)$$

Rubi [A] time = 0.04, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-\frac{597}{125(2x+3)}-\frac{99}{50(2x+3)^2}-\frac{13}{15(2x+3)^3}-6\log(x+1)+\frac{3291}{625}\log(2x+3)+\frac{459}{625}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(15*(3 + 2*x)^3) - 99/(50*(3 + 2*x)^2) - 597/(125*(3 + 2*x)) - 6*Log[1
+ x] + (3291*Log[3 + 2*x])/625 + (459*Log[2 + 3*x])/625
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)}\,dx=\int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)^4}+\frac{198}{25(3+2x)^3}+\frac{1194}{125(3+2x)^2}+\frac{6582}{625(3+2x)}+\frac{62}{}\right.$$
$$=-\frac{13}{15(3+2x)^3}-\frac{99}{50(3+2x)^2}-\frac{597}{125(3+2x)}-6\log(1+x)+\frac{3291}{625}\log(3+2.$$

Mathematica [A] time = 0.03, size = 62, normalized size = 1.03

$$-\frac{597}{125(2x+3)}-\frac{99}{50(2x+3)^2}-\frac{13}{15(2x+3)^3}+\frac{459}{625}\log(-6x-4)-6\log(-2(x+1))+\frac{3291}{625}\log(2x+3)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(15*(3 + 2*x)^3) - 99/(50*(3 + 2*x)^2) - 597/(125*(3 + 2*x)) + (459*Log
[-4 - 6*x])/625 - 6*Log[-2*(1 + x)] + (3291*Log[3 + 2*x])/625
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)), x]
```

fricas [A] time = 0.39, size = 96, normalized size = 1.60

$$-\frac{71640\,x^2-2754\,\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(3\,x+2\right)-19746\,\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(2\,x+3\right)+22500\,\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(x+1\right)+229770\,x+186715}{3750\,\left(8\,x^3+36\,x^2+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/3750*(71640*x^2 - 2754*(8*x^3 + 36*x^2 + 54*x + 27)*log(3*x + 2) - 19746
*(8*x^3 + 36*x^2 + 54*x + 27)*log(2*x + 3) + 22500*(8*x^3 + 36*x^2 + 54*x +
 27)*log(x + 1) + 229770*x + 186715)/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [A] time = 0.17, size = 45, normalized size = 0.75

$$-\frac{14328\,x^2+45954\,x+37343}{750\,\left(2\,x+3\right)^3}+\frac{459}{625}\,\log\left(\left|3\,x+2\right|\right)+\frac{3291}{625}\,\log\left(\left|2\,x+3\right|\right)-6\,\log\left(\left|x+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -1/750*(14328*x^2 + 45954*x + 37343)/(2*x + 3)^3 + 459/625*log(abs(3*x + 2)
) + 3291/625*log(abs(2*x + 3)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 51, normalized size = 0.85

$$\frac{459\ln\left(3x+2\right)}{625}+\frac{3291\ln\left(2x+3\right)}{625}-6\ln\left(x+1\right)-\frac{13}{15\left(2x+3\right)^3}-\frac{99}{50\left(2x+3\right)^2}-\frac{597}{125\left(2x+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+5*x+2),x)
```

```
[Out] -13/15/(2*x+3)^3-99/50/(2*x+3)^2-597/125/(2*x+3)-6*ln(x+1)+3291/625*ln(2*x+
3)+459/625*ln(3*x+2)
```

maxima [A] time = 0.55, size = 52, normalized size = 0.87

$$-\frac{14328\,x^2+45954\,x+37343}{750\,\left(8\,x^3+36\,x^2+54\,x+27\right)}+\frac{459}{625}\,\log\left(3\,x+2\right)+\frac{3291}{625}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -1/750*(14328*x^2 + 45954*x + 37343)/(8*x^3 + 36*x^2 + 54*x + 27) + 459/625
*log(3*x + 2) + 3291/625*log(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 0.04, size = 46, normalized size = 0.77

$$\frac{459\,\ln\left(x+\frac{2}{3}\right)}{625}-6\,\ln\left(x+1\right)+\frac{3291\,\ln\left(x+\frac{3}{2}\right)}{625}-\frac{\frac{597\,x^2}{250}+\frac{7659\,x}{1000}+\frac{37343}{6000}}{x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (459*log(x + 2/3))/625 - 6*log(x + 1) + (3291*log(x + 3/2))/625 - ((7659*x)
/1000 + (597*x^2)/250 + 37343/6000)/((27*x)/4 + (9*x^2)/2 + x^3 + 27/8)
```

sympy [A] time = 0.20, size = 51, normalized size = 0.85

$$-\frac{14328x^2 + 45954x + 37343}{6000x^3 + 27000x^2 + 40500x + 20250} + \frac{459\log\left(x + \frac{2}{3}\right)}{625} - 6\log\left(x + 1\right) + \frac{3291\log\left(x + \frac{3}{2}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2),x)
```

```
[Out] -(14328*x**2 + 45954*x + 37343)/(6000*x**3 + 27000*x**2 + 40500*x + 20250)
+ 459*log(x + 2/3)/625 - 6*log(x + 1) + 3291*log(x + 3/2)/625
```

3.2146 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=50

$$-\frac{8x^2}{9}-\frac{12083x+11597}{81\left(3x^2+5x+2\right)}+\frac{112x}{27}+83\log(x+1)-\frac{1625}{27}\log(3x+2)$$

Rubi [A] time = 0.06, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 1657, 632, 31}

$$-\frac{8x^2}{9}-\frac{12083x+11597}{81\left(3x^2+5x+2\right)}+\frac{112x}{27}+83\log(x+1)-\frac{1625}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (112*x)/27 - (8*x^2)/9 - (11597 + 12083*x)/(81*(2 + 5*x + 3*x^2)) + 83*Log[
1 + x] - (1625*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1657

```
Int[(Pq_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx = \int \frac{\frac{13}{2}(3+2x)^4-\frac{1}{2}(3+2x)^5}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{11597+12083x}{81\left(2+5x+3x^2\right)} - \int \frac{\frac{169}{27}-\frac{2312x}{27}-\frac{32x^2}{9}+\frac{16x^3}{3}}{2+5x+3x^2}\,dx$$
$$= -\frac{11597+12083x}{81\left(2+5x+3x^2\right)} - \int \left(-\frac{112}{27}+\frac{16x}{9}+\frac{131-616x}{9\left(2+5x+3x^2\right)}\right)dx$$
$$= \frac{112x}{27}-\frac{8x^2}{9}-\frac{11597+12083x}{81\left(2+5x+3x^2\right)}-\frac{1}{9}\int \frac{131-616x}{2+5x+3x^2}\,dx$$
$$= \frac{112x}{27}-\frac{8x^2}{9}-\frac{11597+12083x}{81\left(2+5x+3x^2\right)}-\frac{1625}{9}\int \frac{1}{2+3x}\,dx+249\int \frac{1}{3+3x}\,dx$$
$$= \frac{112x}{27}-\frac{8x^2}{9}-\frac{11597+12083x}{81\left(2+5x+3x^2\right)}+83\log(1+x)-\frac{1625}{27}\log(2+3x)$$

Mathematica [A] time = 0.04, size = 56, normalized size = 1.12

$$\frac{1}{81}\left(-\frac{12083x+11597}{3x^2+5x+2}-18(2x+3)^2+276(2x+3)-4875\log(-6x-4)+6723\log(-2(x+1))\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (276*(3 + 2*x) - 18*(3 + 2*x)^2 - (11597 + 12083*x)/(2 + 5*x + 3*x^2) - 487
5*Log[-4 - 6*x] + 6723*Log[-2*(1 + x)])/81
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^2, x]
```

fricas [A] time = 0.39, size = 68, normalized size = 1.36

$$-\frac{216\,x^4-648\,x^3-1536\,x^2+4875\left(3\,x^2+5\,x+2\right)\log\left(3\,x+2\right)-6723\left(3\,x^2+5\,x+2\right)\log\left(x+1\right)+11411\,x+11597}{81\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/81*(216*x^4 - 648*x^3 - 1536*x^2 + 4875*(3*x^2 + 5*x + 2)*log(3*x + 2) -
 6723*(3*x^2 + 5*x + 2)*log(x + 1) + 11411*x + 11597)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.16, size = 44, normalized size = 0.88

$$-\frac{8}{9}\,x^2+\frac{112}{27}\,x-\frac{12083\,x+11597}{81\,(3\,x+2)(x+1)}-\frac{1625}{27}\,\log\left(|3\,x+2|\right)+83\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -8/9*x^2 + 112/27*x - 1/81*(12083*x + 11597)/((3*x + 2)*(x + 1)) - 1625/27*
log(abs(3*x + 2)) + 83*log(abs(x + 1))
```

maple [A] time = 0.05, size = 40, normalized size = 0.80

$$-\frac{8x^2}{9}+\frac{112x}{27}-\frac{1625\ln(3x+2)}{27}+83\ln(x+1)-\frac{10625}{81(3x+2)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/9*x^2+112/27*x-10625/81/(3*x+2)-1625/27*ln(3*x+2)-6/(x+1)+83*ln(x+1)
```

maxima [A] time = 0.82, size = 42, normalized size = 0.84

$$-\frac{8}{9}x^2+\frac{112}{27}x-\frac{12083x+11597}{81\left(3x^2+5x+2\right)}-\frac{1625}{27}\log(3x+2)+83\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -8/9*x^2 + 112/27*x - 1/81*(12083*x + 11597)/(3*x^2 + 5*x + 2) - 1625/27*lo
g(3*x + 2) + 83*log(x + 1)
```

mupad [B] time = 0.04, size = 38, normalized size = 0.76

$$\frac{112x}{27}+83\ln(x+1)-\frac{1625\ln\left(x+\frac{2}{3}\right)}{27}-\frac{\frac{12083x}{243}+\frac{11597}{243}}{x^2+\frac{5x}{3}+\frac{2}{3}}-\frac{8x^2}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (112*x)/27 + 83*log(x + 1) - (1625*log(x + 2/3))/27 - ((12083*x)/243 + 1159
7/243)/((5*x)/3 + x^2 + 2/3) - (8*x^2)/9
```

sympy [A] time = 0.16, size = 42, normalized size = 0.84

$$-\frac{8x^2}{9}+\frac{112x}{27}-\frac{12083x+11597}{243x^2+405x+162}-\frac{1625\log\left(x+\frac{2}{3}\right)}{27}+83\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**2,x)
```

```
[Out] -8*x**2/9 + 112*x/27 - (12083*x + 11597)/(243*x**2 + 405*x + 162) - 1625*lo
g(x + 2/3)/27 + 83*log(x + 1)
```

3.2147 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=43

$$-\frac{2611x+2449}{27\left(3x^2+5x+2\right)}-\frac{8x}{9}+71\log(x+1)-\frac{1825}{27}\log(3x+2)$$

Rubi [A] time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 1657, 632, 31}

$$-\frac{2611x+2449}{27\left(3x^2+5x+2\right)}-\frac{8x}{9}+71\log(x+1)-\frac{1825}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-8*x)/9 - (2449 + 2611*x)/(27*(2 + 5*x + 3*x^2)) + 71*Log[1 + x] - (1825*L
og[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1657

```
Int[(Pq_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^2}\,dx = \int \frac{\frac{13}{2}(3+2x)^3-\frac{1}{2}(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\int \frac{\frac{563}{9}-\frac{52x}{9}+\frac{8x^2}{3}}{2+5x+3x^2}\,dx$$
$$= -\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\int \left(\frac{8}{9}+\frac{547-92x}{9\left(2+5x+3x^2\right)}\right)dx$$
$$= -\frac{8x}{9}-\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\frac{1}{9}\int \frac{547-92x}{2+5x+3x^2}\,dx$$
$$= -\frac{8x}{9}-\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\frac{1825}{9}\int \frac{1}{2+3x}\,dx+213\int \frac{1}{3+3x}\,dx$$
$$= -\frac{8x}{9}-\frac{2449+2611x}{27\left(2+5x+3x^2\right)}+71\log(1+x)-\frac{1825}{27}\log(2+3x)$$

Mathematica [A] time = 0.03, size = 47, normalized size = 1.09

$$-\frac{2611x+2449}{81x^2+135x+54}-\frac{4}{9}(2x+3)-\frac{1825}{27}\log(-6x-4)+71\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-4*(3 + 2*x))/9 - (2449 + 2611*x)/(54 + 135*x + 81*x^2) - (1825*Log[-4 - 6
*x])/27 + 71*Log[-2*(1 + x)]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^2, x]
```

fricas [A] time = 0.38, size = 63, normalized size = 1.47

$$-\frac{72\,x^3+120\,x^2+1825\left(3\,x^2+5\,x+2\right)\log\left(3\,x+2\right)-1917\left(3\,x^2+5\,x+2\right)\log\left(x+1\right)+2659\,x+2449}{27\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/27*(72*x^3 + 120*x^2 + 1825*(3*x^2 + 5*x + 2)*log(3*x + 2) - 1917*(3*x^2
 + 5*x + 2)*log(x + 1) + 2659*x + 2449)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.19, size = 39, normalized size = 0.91

$$-\frac{8}{9}\,x-\frac{2611\,x+2449}{27\,(3\,x+2)(x+1)}-\frac{1825}{27}\,\log\left(|3\,x+2|\right)+71\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -8/9*x - 1/27*(2611*x + 2449)/((3*x + 2)*(x + 1)) - 1825/27*log(abs(3*x + 2
)) + 71*log(abs(x + 1))
```

maple [A] time = 0.05, size = 35, normalized size = 0.81

$$-\frac{8x}{9}-\frac{1825\ln\left(3x+2\right)}{27}+71\ln\left(x+1\right)-\frac{2125}{27\left(3x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/9*x-2125/27/(3*x+2)-1825/27*ln(3*x+2)-6/(x+1)+71*ln(x+1)
```

maxima [A] time = 0.56, size = 37, normalized size = 0.86

$$-\frac{8}{9}\,x-\frac{2611\,x+2449}{27\left(3\,x^{2}+5\,x+2\right)}-\frac{1825}{27}\,\log\left(3\,x+2\right)+71\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -8/9*x - 1/27*(2611*x + 2449)/(3*x^2 + 5*x + 2) - 1825/27*log(3*x + 2) + 71
*log(x + 1)
```

mupad [B] time = 2.26, size = 33, normalized size = 0.77

$$71\,\ln\left(x+1\right)-\frac{8\,x}{9}-\frac{1825\,\ln\left(x+\frac{2}{3}\right)}{27}-\frac{\frac{2611\,x}{81}+\frac{2449}{81}}{x^2+\frac{5\,x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 71*log(x + 1) - (8*x)/9 - (1825*log(x + 2/3))/27 - ((2611*x)/81 + 2449/81)/
((5*x)/3 + x^2 + 2/3)
```

sympy [A] time = 0.16, size = 36, normalized size = 0.84

$$-\frac{8x}{9}-\frac{2611x+2449}{81x^{2}+135x+54}-\frac{1825\log\left(x+\frac{2}{3}\right)}{27}+71\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**2,x)
```

```
[Out] -8*x/9 - (2611*x + 2449)/(81*x**2 + 135*x + 54) - 1825*log(x + 2/3)/27 + 71
*log(x + 1)
```

3.2148 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^2} dx$

Optimal. Leaf size=38

$$-\frac{587x+533}{9\left(3x^2+5x+2\right)}+59\log(x+1)-\frac{535}{9}\log(3x+2)$$

Rubi [A] time = 0.04, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {816, 1660, 632, 31}

$$-\frac{587x+533}{9\left(3x^2+5x+2\right)}+59\log(x+1)-\frac{535}{9}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -(533 + 587*x)/(9*(2 + 5*x + 3*x^2)) + 59*Log[1 + x] - (535*Log[2 + 3*x])/9
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx = \int \frac{45+51x+8x^2-4x^3}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{533+587x}{9\left(2+5x+3x^2\right)} - \int \frac{\frac{181}{3}+\frac{4x}{3}}{2+5x+3x^2}\,dx$$
$$= -\frac{533+587x}{9\left(2+5x+3x^2\right)} + 177\int \frac{1}{3+3x}\,dx - \frac{535}{3}\int \frac{1}{2+3x}\,dx$$
$$= -\frac{533+587x}{9\left(2+5x+3x^2\right)} + 59\log(1+x) - \frac{535}{9}\log(2+3x)$$

Mathematica [A] time = 0.03, size = 38, normalized size = 1.00

$$-\frac{587x+533}{27x^2+45x+18} - \frac{535}{9}\log(-6x-4) + 59\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((533 + 587*x)/(18 + 45*x + 27*x^2)) - (535*Log[-4 - 6*x])/9 + 59*Log[-2*(
1 + x)]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^2, x]
```

fricas [A] time = 0.39, size = 53, normalized size = 1.39

$$-\frac{535\left(3x^2+5x+2\right)\log(3x+2) - 531\left(3x^2+5x+2\right)\log(x+1) + 587x + 533}{9\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/9*(535*(3*x^2 + 5*x + 2)*log(3*x + 2) - 531*(3*x^2 + 5*x + 2)*log(x + 1)
 + 587*x + 533)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.19, size = 36, normalized size = 0.95

$$-\frac{587x+533}{9(3x+2)(x+1)} - \frac{535}{9}\log(|3x+2|) + 59\log(|x+1|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/9*(587*x + 533)/((3*x + 2)*(x + 1)) - 535/9*log(abs(3*x + 2)) + 59*log(a
bs(x + 1))
```

maple [A] time = 0.05, size = 32, normalized size = 0.84

$$-\frac{535 \ln \left(3 x+2\right)}{9}+59 \ln \left(x+1\right)-\frac{425}{9 \left(3 x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+5*x+2)^2,x)
```

```
[Out] -425/9/(3*x+2)-535/9*ln(3*x+2)-6/(x+1)+59*ln(x+1)
```

maxima [A] time = 0.47, size = 34, normalized size = 0.89

$$-\frac{587 \, x + 533}{9 \, {\left(3 \, x^{2} + 5 \, x + 2\right)}} - \frac{535}{9} \, \log\left(3 \, x + 2\right) + 59 \, \log\left(x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/9*(587*x + 533)/(3*x^2 + 5*x + 2) - 535/9*log(3*x + 2) + 59*log(x + 1)
```

mupad [B] time = 0.05, size = 30, normalized size = 0.79

$$59\,\ln\left(x+1\right)-\frac{535\,\ln\left(x+\frac{2}{3}\right)}{9}-\frac{\frac{587\,x}{27}+\frac{533}{27}}{x^2+\frac{5\,x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 59*log(x + 1) - (535*log(x + 2/3))/9 - ((587*x)/27 + 533/27)/((5*x)/3 + x^2
 + 2/3)
```

sympy [A] time = 0.15, size = 31, normalized size = 0.82

$$- \frac{587 x + 533}{27 x^{2} + 45 x + 18} - \frac{535 \log{\left (x + \frac{2}{3} \right)}}{9} + 59 \log{\left (x + 1 \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(587*x + 533)/(27*x**2 + 45*x + 18) - 535*log(x + 2/3)/9 + 59*log(x + 1)
```

3.2149 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=36

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}+47\log(x+1)-47\log(3x+2)$$

Rubi [A] time = 0.01, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {777, 616, 31}

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}+47\log(x+1)-47\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -(121 + 139*x)/(3*(2 + 5*x + 3*x^2)) + 47*Log[1 + x] - 47*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{121+139x}{3\left(2+5x+3x^2\right)}-47\int \frac{1}{2+5x+3x^2}\,dx\\
&= -\frac{121+139x}{3\left(2+5x+3x^2\right)}-141\int \frac{1}{2+3x}\,dx+141\int \frac{1}{3+3x}\,dx\\
&= -\frac{121+139x}{3\left(2+5x+3x^2\right)}+47\log(1+x)-47\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 34, normalized size = 0.94

$$-\frac{139x+121}{9x^2+15x+6}+47\log(x+1)-47\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((121 + 139*x)/(6 + 15*x + 9*x^2)) + 47*Log[1 + x] - 47*Log[2 + 3*x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)}{(2+5x+3x^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^2, x]
```

fricas [A] time = 0.38, size = 53, normalized size = 1.47

$$-\frac{141\left(3x^2+5x+2\right)\log\left(3x+2\right)-141\left(3x^2+5x+2\right)\log\left(x+1\right)+139x+121}{3\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/3*(141*(3*x^2 + 5*x + 2)*log(3*x + 2) - 141*(3*x^2 + 5*x + 2)*log(x + 1)
 + 139*x + 121)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.16, size = 36, normalized size = 1.00

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}-47\log\left(|3x+2|\right)+47\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/3*(139*x + 121)/(3*x^2 + 5*x + 2) - 47*log(abs(3*x + 2)) + 47*log(abs(x
+ 1))
```

maple [A] time = 0.05, size = 32, normalized size = 0.89

$$-47\ln\left(3x+2\right)+47\ln\left(x+1\right)-\frac{85}{3\left(3x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -85/3/(3*x+2)-47*ln(3*x+2)-6/(x+1)+47*ln(x+1)
```

maxima [A] time = 0.61, size = 34, normalized size = 0.94

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}-47\log\left(3x+2\right)+47\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/3*(139*x + 121)/(3*x^2 + 5*x + 2) - 47*log(3*x + 2) + 47*log(x + 1)
```

mupad [B]   time = 2.27, size = 26, normalized size = 0.72

$$94\,\mathrm{atanh}\left(6\,x+5\right)-\frac{\frac{139\,x}{9}+\frac{121}{9}}{x^2+\frac{5\,x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 94*atanh(6*x + 5) - ((139*x)/9 + 121/9)/((5*x)/3 + x^2 + 2/3)
```

sympy [A]   time = 0.13, size = 29, normalized size = 0.81

$$-\frac{139x+121}{9x^2+15x+6}-47\log\left(x+\frac{2}{3}\right)+47\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(139*x + 121)/(9*x**2 + 15*x + 6) - 47*log(x + 2/3) + 47*log(x + 1)
```

3.2150 $\int \frac{5-x}{\left(2+5x+3x^2\right)^2} dx$

Optimal. Leaf size=34

$$-\frac{35x+29}{3x^2+5x+2}+35\log(x+1)-35\log(3x+2)$$

Rubi [A] time = 0.01, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {638, 616, 31}

$$-\frac{35x+29}{3x^2+5x+2}+35\log(x+1)-35\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((29 + 35*x)/(2 + 5*x + 3*x^2)) + 35*Log[1 + x] - 35*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{\left(2+5x+3x^2\right)^2} dx &= -\frac{29+35x}{2+5x+3x^2}-35\int \frac{1}{2+5x+3x^2} dx\\
&= -\frac{29+35x}{2+5x+3x^2}-105\int \frac{1}{2+3x} dx+105\int \frac{1}{3+3x} dx\\
&= -\frac{29+35x}{2+5x+3x^2}+35\log(1+x)-35\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.97

$$\frac{-35x-29}{3x^2+5x+2}+35\log(x+1)-35\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-29 - 35*x)/(2 + 5*x + 3*x^2) + 35*Log[1 + x] - 35*Log[2 + 3*x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2)^2,x]
[Out] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2)^2, x]
```

fricas [A] time = 0.38, size = 53, normalized size = 1.56

$$-\frac{35\left(3x^2+5x+2\right)\log\left(3x+2\right)-35\left(3x^2+5x+2\right)\log\left(x+1\right)+35x+29}{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
[Out] -(35*(3*x^2 + 5*x + 2)*log(3*x + 2) - 35*(3*x^2 + 5*x + 2)*log(x + 1) + 35*
x + 29)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.15, size = 36, normalized size = 1.06

$$-\frac{35x+29}{3x^2+5x+2}-35\log\left(|3x+2|\right)+35\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2,x, algorithm="giac")
[Out] -(35*x + 29)/(3*x^2 + 5*x + 2) - 35*log(abs(3*x + 2)) + 35*log(abs(x + 1))
```

maple [A] time = 0.05, size = 32, normalized size = 0.94

$$-35\ln\left(3x+2\right)+35\ln\left(x+1\right)-\frac{17}{3x+2}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^2,x)
[Out] -17/(3*x+2)-35*ln(3*x+2)-6/(x+1)+35*ln(x+1)
```

maxima [A] time = 0.53, size = 34, normalized size = 1.00

$$-\frac{35x+29}{3x^2+5x+2}-35\log\left(3x+2\right)+35\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
[Out] -(35*x + 29)/(3*x^2 + 5*x + 2) - 35*log(3*x + 2) + 35*log(x + 1)
```

mupad [B] time = 2.26, size = 26, normalized size = 0.76

$$70\,\mathrm{atanh}\left(6x+5\right)-\frac{\frac{35x}{3}+\frac{29}{3}}{x^2+\frac{5x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 70*atanh(6*x + 5) - ((35*x)/3 + 29/3)/((5*x)/3 + x^2 + 2/3)
```

sympy [A] time = 0.13, size = 29, normalized size = 0.85

$$-\frac{35x+29}{3x^2+5x+2}-35\log\left(x+\frac{2}{3}\right)+35\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(35*x + 29)/(3*x**2 + 5*x + 2) - 35*log(x + 2/3) + 35*log(x + 1)
```

3.2151 $\int \frac{5-x}{(3+2x)(2+5x+3x^2)^2}\,dx$

Optimal. Leaf size=48

$$-\frac{3(47x+37)}{5\left(3x^2+5x+2\right)}+23\log(x+1)+\frac{52}{25}\log(2x+3)-\frac{627}{25}\log(3x+2)$$

Rubi [A] time = 0.04, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5\left(3x^2+5x+2\right)}+23\log(x+1)+\frac{52}{25}\log(2x+3)-\frac{627}{25}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-3*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)) + 23*Log[1 + x] + (52*Log[3 + 2*x])/
25 - (627*Log[2 + 3*x])/25
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{397+282x}{(3+2x)\left(2+5x+3x^2\right)}\,dx\\
&= -\frac{3(37+47x)}{5\left(2+5x+3x^2\right)}-\frac{1}{5}\int \left(-\frac{115}{1+x}-\frac{104}{5(3+2x)}+\frac{1881}{5(2+3x)}\right)dx\\
&= -\frac{3(37+47x)}{5\left(2+5x+3x^2\right)}+23\log(1+x)+\frac{52}{25}\log(3+2x)-\frac{627}{25}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.03, size = 48, normalized size = 1.00

$$\frac{1}{25}\left(-\frac{15(47x+37)}{3x^2+5x+2}-627\log(-6x-4)+575\log(-2(x+1))+52\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] ((-15*(37 + 47*x))/(2 + 5*x + 3*x^2) - 627*Log[-4 - 6*x] + 575*Log[-2*(1 +
x)] + 52*Log[3 + 2*x])/25
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^2), x]
```

fricas [A] time = 0.38, size = 71, normalized size = 1.48

$$-\frac{627\left(3x^2+5x+2\right)\log\left(3x+2\right)-52\left(3x^2+5x+2\right)\log\left(2x+3\right)-575\left(3x^2+5x+2\right)\log\left(x+1\right)+705x+555}{25\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/25*(627*(3*x^2 + 5*x + 2)*log(3*x + 2) - 52*(3*x^2 + 5*x + 2)*log(2*x +
3) - 575*(3*x^2 + 5*x + 2)*log(x + 1) + 705*x + 555)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.15, size = 45, normalized size = 0.94

$$-\frac{3\left(47x+37\right)}{5\left(3x+2\right)\left(x+1\right)}-\frac{627}{25}\log\left(|3x+2|\right)+\frac{52}{25}\log\left(|2x+3|\right)+23\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -3/5*(47*x + 37)/((3*x + 2)*(x + 1)) - 627/25*log(abs(3*x + 2)) + 52/25*log
(abs(2*x + 3)) + 23*log(abs(x + 1))
```

maple [A] time = 0.05, size = 40, normalized size = 0.83

$$-\frac{627\ln\left(3x+2\right)}{25}+\frac{52\ln\left(2x+3\right)}{25}+23\ln\left(x+1\right)-\frac{51}{5\left(3x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -51/5/(3*x+2)-627/25*ln(3*x+2)+52/25*ln(2*x+3)-6/(x+1)+23*ln(x+1)
```

maxima [A] time = 0.46, size = 42, normalized size = 0.88

$$-\frac{3\left(47x+37\right)}{5\left(3x^2+5x+2\right)}-\frac{627}{25}\log\left(3x+2\right)+\frac{52}{25}\log\left(2x+3\right)+23\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -3/5*(47*x + 37)/(3*x^2 + 5*x + 2) - 627/25*log(3*x + 2) + 52/25*log(2*x +
3) + 23*log(x + 1)
```

mupad [B] time = 0.04, size = 36, normalized size = 0.75

$$23\ \ln\left(x+1\right)-\frac{627\ \ln\left(x+\frac{2}{3}\right)}{25}+\frac{52\ \ln\left(x+\frac{3}{2}\right)}{25}-\frac{\frac{47\,x}{5}+\frac{37}{5}}{x^2+\frac{5\,x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] 23*log(x + 1) - (627*log(x + 2/3))/25 + (52*log(x + 3/2))/25 - ((47*x)/5 +
37/5)/((5*x)/3 + x^2 + 2/3)
```

sympy [A] time = 0.18, size = 41, normalized size = 0.85

$$-\frac{141x+111}{15x^2+25x+10}-\frac{627\log\left(x+\frac{2}{3}\right)}{25}+23\log\left(x+1\right)+\frac{52\log\left(x+\frac{3}{2}\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(141*x + 111)/(15*x**2 + 25*x + 10) - 627*log(x + 2/3)/25 + 23*log(x + 1)
+ 52*log(x + 3/2)/25
```

3.2152 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=66

$$-\frac{3(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)}-\frac{454}{25(2x+3)}+11\log(x+1)+\frac{812}{125}\log(2x+3)-\frac{2187}{125}\log(3x+2)$$

Rubi [A] time = 0.05, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)}-\frac{454}{25(2x+3)}+11\log(x+1)+\frac{812}{125}\log(2x+3)-\frac{2187}{125}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -454/(25*(3 + 2*x)) - (3*(37 + 47*x))/(5*(3 + 2*x)*(2 + 5*x + 3*x^2)) + 11*
Log[1 + x] + (812*Log[3 + 2*x])/125 - (2187*Log[2 + 3*x])/125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{619+564x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{3(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)}-\frac{1}{5}\int \left(-\frac{55}{1+x}-\frac{908}{5(3+2x)^2}-\frac{1624}{25(3+2x)}+\frac{65}{25(2}\right.\\ &= -\frac{454}{25(3+2x)}-\frac{3(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)}+11\log(1+x)+\frac{812}{125}\log(3+2x)-\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 0.86

$$\frac{1}{125}\left(-\frac{15(201x+151)}{3x^2+5x+2}-\frac{260}{2x+3}-2187\log(-6x-4)+1375\log(-2(x+1))+812\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-260/(3 + 2*x) - (15*(151 + 201*x))/(2 + 5*x + 3*x^2) - 2187*Log[-4 - 6*x]
 + 1375*Log[-2*(1 + x)] + 812*Log[3 + 2*x])/125
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^2(2+5x+3x^2)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^2), x]
```

fricas [A] time = 0.38, size = 96, normalized size = 1.45

$$-\frac{6810\,x^2+2187\left(6\,x^3+19\,x^2+19\,x+6\right)\log\left(3\,x+2\right)-812\left(6\,x^3+19\,x^2+19\,x+6\right)\log\left(2\,x+3\right)-1375\left(6\,x^3+19\,x^2+19\,x+6\right)\log\left(x+1\right)+14875\,x+7315}{125\left(6\,x^3+19\,x^2+19\,x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/125*(6810*x^2 + 2187*(6*x^3 + 19*x^2 + 19*x + 6)*log(3*x + 2) - 812*(6*x
^3 + 19*x^2 + 19*x + 6)*log(2*x + 3) - 1375*(6*x^3 + 19*x^2 + 19*x + 6)*log
(x + 1) + 14875*x + 7315)/(6*x^3 + 19*x^2 + 19*x + 6)
```

giac [A] time = 0.17, size = 77, normalized size = 1.17

$$-\frac{52}{25\,(2\,x+3)}+\frac{6\left(\frac{1403}{2\,x+3}-903\right)}{125\left(\frac{5}{2\,x+3}-3\right)\left(\frac{1}{2\,x+3}-1\right)}+11\,\log\left(\left|-\frac{1}{2\,x+3}+1\right|\right)-\frac{2187}{125}\,\log\left(\left|-\frac{5}{2\,x+3}+3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -52/25/(2*x + 3) + 6/125*(1403/(2*x + 3) - 903)/((5/(2*x + 3) - 3)*(1/(2*x
+ 3) - 1)) + 11*log(abs(-1/(2*x + 3) + 1)) - 2187/125*log(abs(-5/(2*x + 3)
+ 3))
```

maple [A] time = 0.06, size = 49, normalized size = 0.74

$$-\frac{2187\ln(3x+2)}{125}+\frac{812\ln(2x+3)}{125}+11\ln(x+1)-\frac{153}{25\,(3x+2)}-\frac{52}{25\,(2x+3)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+5*x+2)^2,x)
```

```
[Out] -153/25/(3*x+2)-2187/125*ln(3*x+2)-52/25/(2*x+3)+812/125*ln(2*x+3)-6/(x+1)+
11*ln(x+1)
```

maxima [A] time = 0.56, size = 52, normalized size = 0.79

$$-\frac{1362\,x^2+2975\,x+1463}{25\left(6\,x^3+19\,x^2+19\,x+6\right)}-\frac{2187}{125}\,\log\left(3\,x+2\right)+\frac{812}{125}\,\log\left(2\,x+3\right)+11\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/25*(1362*x^2 + 2975*x + 1463)/(6*x^3 + 19*x^2 + 19*x + 6) - 2187/125*log
(3*x + 2) + 812/125*log(2*x + 3) + 11*log(x + 1)
```

mupad [B] time = 2.32, size = 46, normalized size = 0.70

$$11\ln(x+1)-\frac{2187\ln\left(x+\frac{2}{3}\right)}{125}+\frac{812\ln\left(x+\frac{3}{2}\right)}{125}-\frac{\frac{227x^2}{25}+\frac{119x}{6}+\frac{1463}{150}}{x^3+\frac{19x^2}{6}+\frac{19x}{6}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] 11*log(x + 1) - (2187*log(x + 2/3))/125 + (812*log(x + 3/2))/125 - ((119*x)
/6 + (227*x^2)/25 + 1463/150)/((19*x)/6 + (19*x^2)/6 + x^3 + 1)
```

sympy [A] time = 0.19, size = 51, normalized size = 0.77

$$-\frac{1362x^2+2975x+1463}{150x^3+475x^2+475x+150}-\frac{2187\log\left(x+\frac{2}{3}\right)}{125}+11\log(x+1)+\frac{812\log\left(x+\frac{3}{2}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(1362*x**2 + 2975*x + 1463)/(150*x**3 + 475*x**2 + 475*x + 150) - 2187*log
(x + 2/3)/125 + 11*log(x + 1) + 812*log(x + 3/2)/125
```

3.2153 $\int \frac{5-x}{(3+2x)^3(2+5x+3x^2)^2} dx$

Optimal. Leaf size=77

$$-\frac{3(47x+37)}{5(2x+3)^2(3x^2+5x+2)}-\frac{2618}{125(2x+3)}-\frac{428}{25(2x+3)^2}-\log(x+1)+\frac{8104}{625}\log(2x+3)-\frac{7479}{625}\log(3x+2)$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5(2x+3)^2(3x^2+5x+2)}-\frac{2618}{125(2x+3)}-\frac{428}{25(2x+3)^2}-\log(x+1)+\frac{8104}{625}\log(2x+3)-\frac{7479}{625}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -428/(25*(3 + 2*x)^2) - 2618/(125*(3 + 2*x)) - (3*(37 + 47*x))/(5*(3 + 2*x)
^2*(2 + 5*x + 3*x^2)) - Log[1 + x] + (8104*Log[3 + 2*x])/625 - (7479*Log[2
+ 3*x])/625
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3(2+5x+3x^2)^2} dx &= -\frac{3(37+47x)}{5(3+2x)^2(2+5x+3x^2)}-\frac{1}{5}\int \frac{841+846x}{(3+2x)^3(2+5x+3x^2)} dx\\ &= -\frac{3(37+47x)}{5(3+2x)^2(2+5x+3x^2)}-\frac{1}{5}\int \left(\frac{5}{1+x}-\frac{1712}{5(3+2x)^3}-\frac{5236}{25(3+2x)^2}-\right.\\ &= -\frac{428}{25(3+2x)^2}-\frac{2618}{125(3+2x)}-\frac{3(37+47x)}{5(3+2x)^2(2+5x+3x^2)}-\log(1+x)+\end{aligned}$$

Mathematica [A] time = 0.03, size = 66, normalized size = 0.86

$$\frac{1}{625}\left(-\frac{15(903x+653)}{3x^2+5x+2}-\frac{4060}{2x+3}-\frac{650}{(2x+3)^2}-7479\log(-6x-4)-625\log(-2(x+1))+8104\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-650/(3 + 2*x)^2 - 4060/(3 + 2*x) - (15*(653 + 903*x))/(2 + 5*x + 3*x^2) -
 7479*Log[-4 - 6*x] - 625*Log[-2*(1 + x)] + 8104*Log[3 + 2*x])/625
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^2), x]
```

fricas [A] time = 0.39, size = 121, normalized size = 1.57

$$-\frac{78540\,x^3+280810\,x^2+7479\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)\log\left(3\,x+2\right)-8104\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)\log\left(2\,x+3\right)+625\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)\log\left(x+1\right)+319835\,x+113815}{625\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/625*(78540*x^3 + 280810*x^2 + 7479*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18
)*log(3*x + 2) - 8104*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log(2*x + 3) +
 625*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log(x + 1) + 319835*x + 113815)
/(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)
```

giac [A] time = 0.15, size = 62, normalized size = 0.81

$$-\frac{15708\,x^3+56162\,x^2+63967\,x+22763}{125\,(3\,x+2)(2\,x+3)^2(x+1)}-\frac{7479}{625}\log\left(|3\,x+2|\right)+\frac{8104}{625}\log\left(|2\,x+3|\right)-\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/125*(15708*x^3 + 56162*x^2 + 63967*x + 22763)/((3*x + 2)*(2*x + 3)^2*(x
+ 1)) - 7479/625*log(abs(3*x + 2)) + 8104/625*log(abs(2*x + 3)) - log(abs(x
 + 1))
```

maple [A] time = 0.06, size = 58, normalized size = 0.75

$$-\frac{7479\ln\left(3x+2\right)}{625}+\frac{8104\ln\left(2x+3\right)}{625}-\ln\left(x+1\right)-\frac{459}{125\left(3x+2\right)}-\frac{26}{25\left(2x+3\right)^2}-\frac{812}{125\left(2x+3\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+5*x+2)^2,x)
```

```
[Out] -459/125/(3*x+2)-7479/625*ln(3*x+2)-26/25/(2*x+3)^2-812/125/(2*x+3)+8104/62
5*ln(2*x+3)-6/(x+1)-ln(x+1)
```

maxima [A] time = 0.62, size = 62, normalized size = 0.81

$$-\frac{15708\,x^3+56162\,x^2+63967\,x+22763}{125\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)}-\frac{7479}{625}\log\left(3\,x+2\right)+\frac{8104}{625}\log\left(2\,x+3\right)-\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/125*(15708*x^3 + 56162*x^2 + 63967*x + 22763)/(12*x^4 + 56*x^3 + 95*x^2
+ 69*x + 18) - 7479/625*log(3*x + 2) + 8104/625*log(2*x + 3) - log(x + 1)
```

mupad [B] time = 2.31, size = 56, normalized size = 0.73

$$\frac{8104\ \ln\left(x+\frac{3}{2}\right)}{625}-\frac{7479\ \ln\left(x+\frac{2}{3}\right)}{625}-\ln\left(x+1\right)-\frac{\frac{1309\,x^3}{125}+\frac{28081\,x^2}{750}+\frac{63967\,x}{1500}+\frac{22763}{1500}}{x^4+\frac{14\,x^3}{3}+\frac{95\,x^2}{12}+\frac{23\,x}{4}+\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (8104*log(x + 3/2))/625 - (7479*log(x + 2/3))/625 - log(x + 1) - ((63967*x)
/1500 + (28081*x^2)/750 + (1309*x^3)/125 + 22763/1500)/((23*x)/4 + (95*x^2)
/12 + (14*x^3)/3 + x^4 + 3/2)
```

sympy [A] time = 0.21, size = 60, normalized size = 0.78

$$-\frac{15708x^3+56162x^2+63967x+22763}{1500x^4+7000x^3+11875x^2+8625x+2250}-\frac{7479\log\left(x+\frac{2}{3}\right)}{625}-\log\left(x+1\right)+\frac{8104\log\left(x+\frac{3}{2}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(15708*x**3 + 56162*x**2 + 63967*x + 22763)/(1500*x**4 + 7000*x**3 + 11875
*x**2 + 8625*x + 2250) - 7479*log(x + 2/3)/625 - log(x + 1) + 8104*log(x +
3/2)/625
```

3.2154 $\int \frac{5-x}{(3+2x)^4(2+5x+3x^2)^2} dx$

Optimal. Leaf size=88

$$-\frac{3(47x+37)}{5(2x+3)^3(3x^2+5x+2)}-\frac{16522}{625(2x+3)}-\frac{2212}{125(2x+3)^2}-\frac{1258}{75(2x+3)^3}-13\log(x+1)+\frac{65816\log(2x+3)}{3125}-\frac{25191\,l}{3}$$

Rubi [A] time = 0.06, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5(2x+3)^3(3x^2+5x+2)}-\frac{16522}{625(2x+3)}-\frac{2212}{125(2x+3)^2}-\frac{1258}{75(2x+3)^3}-13\log(x+1)+\frac{65816\log(2x+3)}{3125}-\frac{25191\log(3x+2)}{3125}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -1258/(75*(3 + 2*x)^3) - 2212/(125*(3 + 2*x)^2) - 16522/(625*(3 + 2*x)) - (
3*(37 + 47*x))/(5*(3 + 2*x)^3*(2 + 5*x + 3*x^2)) - 13*Log[1 + x] + (65816*L
og[3 + 2*x])/3125 - (25191*Log[2 + 3*x])/3125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^4(2+5x+3x^2)^2} dx &= -\frac{3(37+47x)}{5(3+2x)^3(2+5x+3x^2)}-\frac{1}{5}\int \frac{1063+1128x}{(3+2x)^4(2+5x+3x^2)} dx \\
&= -\frac{3(37+47x)}{5(3+2x)^3(2+5x+3x^2)}-\frac{1}{5}\int \left(\frac{65}{1+x}-\frac{2516}{5(3+2x)^4}-\frac{8848}{25(3+2x)^3}-\frac{3}{125(}\right. \\
&= -\frac{1258}{75(3+2x)^3}-\frac{2212}{125(3+2x)^2}-\frac{16522}{625(3+2x)}-\frac{3(37+47x)}{5(3+2x)^3(2+5x+3x^2)}-13
\end{aligned}$$

Mathematica [A] time = 0.04, size = 75, normalized size = 0.85

$$\frac{-\frac{45(4209x+2959)}{3x^2+5x+2}-\frac{121560}{2x+3}-\frac{30450}{(2x+3)^2}-\frac{6500}{(2x+3)^3}-75573\log(-6x-4)-121875\log(-2(x+1))+197448\log(2x+3)}{9375}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-6500/(3 + 2*x)^3 - 30450/(3 + 2*x)^2 - 121560/(3 + 2*x) - (45*(2959 + 420
9*x))/(2 + 5*x + 3*x^2) - 75573*Log[-4 - 6*x] - 121875*Log[-2*(1 + x)] + 19
7448*Log[3 + 2*x])/9375
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^2}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^2), x]
```

fricas [A] time = 0.39, size = 146, normalized size = 1.66

$$-\frac{2973960\,x^4+14873880\,x^3+27167700\,x^2+75573\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)\log\left(3\,x+2\right)-197448\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)\log\left(2\,x+3\right)+121875\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)\log\left(x+1\right)+21302995\,x+5978965}{9375\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/9375*(2973960*x^4 + 14873880*x^3 + 27167700*x^2 + 75573*(24*x^5 + 148*x^
4 + 358*x^3 + 423*x^2 + 243*x + 54)*log(3*x + 2) - 197448*(24*x^5 + 148*x^4
 + 358*x^3 + 423*x^2 + 243*x + 54)*log(2*x + 3) + 121875*(24*x^5 + 148*x^4
+ 358*x^3 + 423*x^2 + 243*x + 54)*log(x + 1) + 21302995*x + 5978965)/(24*x^
5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)
```

giac [A] time = 0.17, size = 67, normalized size = 0.76

$$-\frac{594792\,x^4+2974776\,x^3+5433540\,x^2+4260599\,x+1195793}{1875\,(3\,x+2)(2\,x+3)^3(x+1)}-\frac{25191}{3125}\,\log\left(|3\,x+2|\right)+\frac{65816}{3125}\,\log\left(|2\,x+3|\right)-13\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/1875*(594792*x^4 + 2974776*x^3 + 5433540*x^2 + 4260599*x + 1195793)/((3*
x + 2)*(2*x + 3)^3*(x + 1)) - 25191/3125*log(abs(3*x + 2)) + 65816/3125*log
(abs(2*x + 3)) - 13*log(abs(x + 1))
```

maple [A] time = 0.06, size = 67, normalized size = 0.76

$$-\frac{25191\ln(3x+2)}{3125}+\frac{65816\ln(2x+3)}{3125}-13\ln(x+1)-\frac{1377}{625\,(3x+2)}-\frac{52}{75\,(2x+3)^3}-\frac{406}{125\,(2x+3)^2}-\frac{8104}{625\,(2x+3)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+5*x+2)^2,x)
```

```
[Out] -1377/625/(3*x+2)-25191/3125*ln(3*x+2)-52/75/(2*x+3)^3-406/125/(2*x+3)^2-81
04/625/(2*x+3)+65816/3125*ln(2*x+3)-6/(x+1)-13*ln(x+1)
```

maxima [A] time = 0.51, size = 72, normalized size = 0.82

$$-\frac{594792\,x^4+2974776\,x^3+5433540\,x^2+4260599\,x+1195793}{1875\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)}-\frac{25191}{3125}\,\log\left(3\,x+2\right)+\frac{65816}{3125}\,\log\left(2\,x+3\right)-13\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/1875*(594792*x^4 + 2974776*x^3 + 5433540*x^2 + 4260599*x + 1195793)/(24*
x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54) - 25191/3125*log(3*x + 2) +
 65816/3125*log(2*x + 3) - 13*log(x + 1)
```

mupad [B] time = 2.37, size = 66, normalized size = 0.75

$$\frac{65816\,\ln\left(x+\frac{3}{2}\right)}{3125}-\frac{25191\,\ln\left(x+\frac{2}{3}\right)}{3125}-13\,\ln\left(x+1\right)-\frac{\frac{8261\,x^4}{625}+\frac{123949\,x^3}{1875}+\frac{90559\,x^2}{750}+\frac{4260599\,x}{45000}+\frac{1195793}{45000}}{x^5+\frac{37\,x^4}{6}+\frac{179\,x^3}{12}+\frac{141\,x^2}{8}+\frac{81\,x}{8}+\frac{9}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (65816*log(x + 3/2))/3125 - (25191*log(x + 2/3))/3125 - 13*log(x + 1) - ((4
260599*x)/45000 + (90559*x^2)/750 + (123949*x^3)/1875 + (8261*x^4)/625 + 11
95793/45000)/((81*x)/8 + (141*x^2)/8 + (179*x^3)/12 + (37*x^4)/6 + x^5 + 9/
4)
```

sympy [A] time = 0.23, size = 71, normalized size = 0.81

$$-\frac{594792x^4+2974776x^3+5433540x^2+4260599x+1195793}{45000x^5+277500x^4+671250x^3+793125x^2+455625x+101250}-\frac{25191\log\left(x+\frac{2}{3}\right)}{3125}-13\log\left(x+1\right)+\frac{65816\log\left(x+\frac{3}{2}\right)}{3125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(594792*x**4 + 2974776*x**3 + 5433540*x**2 + 4260599*x + 1195793)/(45000*x
**5 + 277500*x**4 + 671250*x**3 + 793125*x**2 + 455625*x + 101250) - 25191*
log(x + 2/3)/3125 - 13*log(x + 1) + 65816*log(x + 3/2)/3125
```

3.2155 $\int \frac{(5-x)(3+2x)^5}{(2+5x+3x^2)^3}\,dx$

Optimal. Leaf size=64

$$\frac{502254x+398585}{486\left(3x^2+5x+2\right)}-\frac{57499x+56041}{486\left(3x^2+5x+2\right)^2}-\frac{32x}{27}-1085\log(x+1)+\frac{29375}{27}\log(3x+2)$$

Rubi [A] time = 0.08, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 1657, 632, 31}

$$\frac{502254x+398585}{486\left(3x^2+5x+2\right)}-\frac{57499x+56041}{486\left(3x^2+5x+2\right)^2}-\frac{32x}{27}-1085\log(x+1)+\frac{29375}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^5)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-32*x)/27 - (56041 + 57499*x)/(486*(2 + 5*x + 3*x^2)^2) + (398585 + 502254
*x)/(486*(2 + 5*x + 3*x^2)) - 1085*Log[1 + x] + (29375*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1657

```
Int[(Pq_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^5}{\left(2+5x+3x^2\right)^3}\,dx = \int \frac{\frac{13}{2}(3+2x)^5-\frac{1}{2}(3+2x)^6}{\left(2+5x+3x^2\right)^3}\,dx$$
$$= -\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{-\frac{72539}{243}-\frac{87920x}{81}-\frac{9824x^2}{27}+\frac{160x^3}{9}+\frac{64x^4}{3}}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}+\frac{1}{2}\int \frac{\frac{58942}{27}+\frac{160x}{27}-\frac{64x^2}{9}}{2+5x+3x^2}\,dx$$
$$= -\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}+\frac{1}{2}\int \left(-\frac{64}{27}+\frac{10(1969+16x)}{9\left(2+5x+3x^2\right)}\right)dx$$
$$= -\frac{32x}{27}-\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}+\frac{5}{9}\int \frac{1969+16x}{2+5x+3x^2}\,dx$$
$$= -\frac{32x}{27}-\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}-3255\int \frac{1}{3+3x}\,dx+\frac{29375}{9}\int \frac{}{2-}$$
$$= -\frac{32x}{27}-\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}-1085\log(1+x)+\frac{29375}{27}\log(2+$$

Mathematica [A] time = 0.03, size = 81, normalized size = 1.27

$$\frac{-1728x^5-8352x^4+486510x^3+1221179x^2+176250\left(3x^2+5x+2\right)^2\log(-6x-4)-175770\left(3x^2+5x+2\right)^2\log(-2(x+1))+973450x+245891}{162\left(3x^2+5x+2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^5)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (245891 + 973450*x + 1221179*x^2 + 486510*x^3 - 8352*x^4 - 1728*x^5 + 17625
0*(2 + 5*x + 3*x^2)^2*Log[-4 - 6*x] - 175770*(2 + 5*x + 3*x^2)^2*Log[-2*(1
+ x)])/(162*(2 + 5*x + 3*x^2)^2)
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^5}{\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^5)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^5)/(2 + 5*x + 3*x^2)^3, x]
```

fricas [A] time = 0.39, size = 103, normalized size = 1.61

$$-\frac{1728\,x^5+5760\,x^4-495150\,x^3-1231835\,x^2-176250\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log(3\,x+2)+175770\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log(x+1)-979210\,x-247043}{162\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/162*(1728*x^5 + 5760*x^4 - 495150*x^3 - 1231835*x^2 - 176250*(9*x^4 + 30
*x^3 + 37*x^2 + 20*x + 4)*log(3*x + 2) + 175770*(9*x^4 + 30*x^3 + 37*x^2 +
```

```
20*x + 4)*log(x + 1) - 979210*x - 247043)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
 4)
```

giac [A] time = 0.15, size = 49, normalized size = 0.77

$$-\frac{32}{27}x+\frac{502254\,x^3+1235675\,x^2+979978\,x+247043}{162\,(3\,x+2)^2(x+1)^2}+\frac{29375}{27}\log\left(|3\,x+2|\right)-1085\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -32/27*x + 1/162*(502254*x^3 + 1235675*x^2 + 979978*x + 247043)/((3*x + 2)^
2*(x + 1)^2) + 29375/27*log(abs(3*x + 2)) - 1085*log(abs(x + 1))
```

maple [A] time = 0.06, size = 51, normalized size = 0.80

$$-\frac{32x}{27}+\frac{29375\ln(3x+2)}{27}-1085\ln(x+1)-\frac{53125}{162\,(3x+2)^2}+\frac{6250}{9\,(3x+2)}+\frac{3}{(x+1)^2}+\frac{113}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^5/(3*x^2+5*x+2)^3,x)
```

```
[Out] -32/27*x-53125/162/(3*x+2)^2+6250/9/(3*x+2)+29375/27*ln(3*x+2)+3/(x+1)^2+11
3/(x+1)-1085*ln(x+1)
```

maxima [A] time = 0.55, size = 57, normalized size = 0.89

$$-\frac{32}{27}x+\frac{502254\,x^3+1235675\,x^2+979978\,x+247043}{162\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+\frac{29375}{27}\log\left(3\,x+2\right)-1085\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -32/27*x + 1/162*(502254*x^3 + 1235675*x^2 + 979978*x + 247043)/(9*x^4 + 30
*x^3 + 37*x^2 + 20*x + 4) + 29375/27*log(3*x + 2) - 1085*log(x + 1)
```

mupad [B] time = 2.44, size = 52, normalized size = 0.81

$$\frac{29375\,\ln\left(x+\frac{2}{3}\right)}{27}-1085\,\ln\left(x+1\right)-\frac{32\,x}{27}+\frac{\frac{9301\,x^3}{27}+\frac{1235675\,x^2}{1458}+\frac{489989\,x}{729}+\frac{247043}{1458}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^5*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (29375*log(x + 2/3))/27 - 1085*log(x + 1) - (32*x)/27 + ((489989*x)/729 + (
1235675*x^2)/1458 + (9301*x^3)/27 + 247043/1458)/((20*x)/9 + (37*x^2)/9 + (
10*x^3)/3 + x^4 + 4/9)
```

sympy [A] time = 0.19, size = 58, normalized size = 0.91

$$-\frac{32x}{27}-\frac{-502254x^3-1235675x^2-979978x-247043}{1458x^4+4860x^3+5994x^2+3240x+648}+\frac{29375\log\left(x+\frac{2}{3}\right)}{27}-1085\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**5/(3*x**2+5*x+2)**3,x)
```

```
[Out] -32*x/27 - (-502254*x**3 - 1235675*x**2 - 979978*x - 247043)/(1458*x**4 + 4
860*x**3 + 5994*x**2 + 3240*x + 648) + 29375*log(x + 2/3)/27 - 1085*log(x +
 1)
```

3.2156 $\int \frac{(5-x)(3+2x)^4}{(2+5x+3x^2)^3} dx$

Optimal. Leaf size=59

$$-\frac{12083x+11597}{162(3x^2+5x+2)^2}+\frac{7(20298x+16651)}{162(3x^2+5x+2)}-883\log(x+1)+\frac{23825}{27}\log(3x+2)$$

Rubi [A] time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {816, 1660, 632, 31}

$$-\frac{12083x+11597}{162(3x^2+5x+2)^2}+\frac{7(20298x+16651)}{162(3x^2+5x+2)}-883\log(x+1)+\frac{23825}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(11597 + 12083*x)/(162*(2 + 5*x + 3*x^2)^2) + (7*(16651 + 20298*x))/(162*(
2 + 5*x + 3*x^2)) - 883*Log[1 + x] + (23825*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^3}\,dx = \int \frac{\frac{13}{2}(3+2x)^4-\frac{1}{2}(3+2x)^5}{\left(2+5x+3x^2\right)^3}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{\frac{13097}{81}-\frac{4624x}{27}-\frac{64x^2}{9}+\frac{32x^3}{3}}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2}+\frac{7(16651+20298x)}{162\left(2+5x+3x^2\right)}+\frac{1}{2}\int \frac{\frac{15862}{9}-\frac{32x}{9}}{2+5x+3x^2}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2}+\frac{7(16651+20298x)}{162\left(2+5x+3x^2\right)}+\frac{23825}{9}\int \frac{1}{2+3x}\,dx-2649\int \frac{1}{3+3x}$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2}+\frac{7(16651+20298x)}{162\left(2+5x+3x^2\right)}-883\log(1+x)+\frac{23825}{27}\log(2+3x)$$

Mathematica [A] time = 0.04, size = 62, normalized size = 1.05

$$\frac{1}{54}\left(47650\log(-6x-4)-\frac{3\left(-47362x^3-117789x^2+15894\left(3x^2+5x+2\right)^2\log(-2(x+1))-94986x-24613\right)}{\left(3x^2+5x+2\right)^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (47650*Log[-4 - 6*x] - (3*(-24613 - 94986*x - 117789*x^2 - 47362*x^3 + 1589
4*(2 + 5*x + 3*x^2)^2*Log[-2*(1 + x)]))/(2 + 5*x + 3*x^2)^2)/54
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^3, x]
```

fricas [A] time = 0.38, size = 93, normalized size = 1.58

$$\frac{142086\,x^3+353367\,x^2+47650\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-47682\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(x+1\right)+284958\,x+73839}{54\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/54*(142086*x^3 + 353367*x^2 + 47650*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*
log(3*x + 2) - 47682*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 2849
58*x + 73839)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.17, size = 46, normalized size = 0.78

$$\frac{47362\,x^3+117789\,x^2+94986\,x+24613}{18\,(3\,x+2)^2(x+1)^2}+\frac{23825}{27}\log\left(|3\,x+2|\right)-883\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/18*(47362*x^3 + 117789*x^2 + 94986*x + 24613)/((3*x + 2)^2*(x + 1)^2) + 2
3825/27*log(abs(3*x + 2)) - 883*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.81

$$\frac{23825\ln\left(3x+2\right)}{27}-883\ln\left(x+1\right)-\frac{10625}{54\left(3x+2\right)^{2}}+\frac{15500}{27\left(3x+2\right)}+\frac{3}{\left(x+1\right)^{2}}+\frac{101}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+5*x+2)^3,x)
```

```
[Out] -10625/54/(3*x+2)^2+15500/27/(3*x+2)+23825/27*ln(3*x+2)+3/(x+1)^2+101/(x+1)
-883*ln(x+1)
```

maxima [A] time = 0.49, size = 54, normalized size = 0.92

$$\frac{47362\,x^{3}+117789\,x^{2}+94986\,x+24613}{18\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)}+\frac{23825}{27}\,\log\left(3\,x+2\right)-883\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/18*(47362*x^3 + 117789*x^2 + 94986*x + 24613)/(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4) + 23825/27*log(3*x + 2) - 883*log(x + 1)
```

mupad [B] time = 2.45, size = 49, normalized size = 0.83

$$\frac{23825\,\ln\left(x+\frac{2}{3}\right)}{27}-883\,\ln\left(x+1\right)+\frac{\frac{23681\,x^{3}}{81}+\frac{39263\,x^{2}}{54}+\frac{1759\,x}{3}+\frac{24613}{162}}{x^{4}+\frac{10\,x^{3}}{3}+\frac{37\,x^{2}}{9}+\frac{20\,x}{9}+\frac{4}{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (23825*log(x + 2/3))/27 - 883*log(x + 1) + ((1759*x)/3 + (39263*x^2)/54 + (
23681*x^3)/81 + 24613/162)/((20*x)/9 + (37*x^2)/9 + (10*x^3)/3 + x^4 + 4/9)
```

sympy [A] time = 0.19, size = 53, normalized size = 0.90

$$-\frac{-47362x^{3}-117789x^{2}-94986x-24613}{162x^{4}+540x^{3}+666x^{2}+360x+72}+\frac{23825\log\left(x+\frac{2}{3}\right)}{27}-883\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-47362*x**3 - 117789*x**2 - 94986*x - 24613)/(162*x**4 + 540*x**3 + 666*x
**2 + 360*x + 72) + 23825*log(x + 2/3)/27 - 883*log(x + 1)
```

3.2157 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=69

$$-\frac{(35x+29)(2x+3)^3}{2\left(3x^2+5x+2\right)^2}+\frac{141(8x+7)(2x+3)}{2\left(3x^2+5x+2\right)}-705\log(x+1)+705\log(3x+2)$$

Rubi [A] time = 0.03, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {804, 722, 616, 31}

$$-\frac{(35x+29)(2x+3)^3}{2\left(3x^2+5x+2\right)^2}+\frac{141(8x+7)(2x+3)}{2\left(3x^2+5x+2\right)}-705\log(x+1)+705\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -((3 + 2*x)^3*(29 + 35*x))/(2*(2 + 5*x + 3*x^2)^2) + (141*(3 + 2*x)*(7 + 8*
x))/(2*(2 + 5*x + 3*x^2)) - 705*Log[1 + x] + 705*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^3}\,dx = -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2} - \frac{141}{2}\int \frac{(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2} + \frac{141(3+2x)(7+8x)}{2\left(2+5x+3x^2\right)} + 705\int \frac{1}{2+5x+3x^2}\,dx$$
$$= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2} + \frac{141(3+2x)(7+8x)}{2\left(2+5x+3x^2\right)} + 2115\int \frac{1}{2+3x}\,dx - 2115\int \frac{1}{3+3x}\,dx$$
$$= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2} + \frac{141(3+2x)(7+8x)}{2\left(2+5x+3x^2\right)} - 705\log(1+x) + 705\log(2+3x)$$

Mathematica [A] time = 0.03, size = 59, normalized size = 0.86

$$-\frac{2611x+2449}{54\left(3x^2+5x+2\right)^2} + \frac{38118x+31673}{54\left(3x^2+5x+2\right)} + 705\log(-6x-4) - 705\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/54*(2449 + 2611*x)/(2 + 5*x + 3*x^2)^2 + (31673 + 38118*x)/(54*(2 + 5*x
+ 3*x^2)) + 705*Log[-4 - 6*x] - 705*Log[-2*(1 + x)]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^3, x]
```

fricas [A] time = 0.38, size = 93, normalized size = 1.35

$$\frac{38118\,x^3 + 95203\,x^2 + 12690\left(9\,x^4 + 30\,x^3 + 37\,x^2 + 20\,x + 4\right)\log(3\,x+2) - 12690\left(9\,x^4 + 30\,x^3 + 37\,x^2 + 20\,x + 4\right)\log(x+1) + 77330\,x + 20299}{18\left(9\,x^4 + 30\,x^3 + 37\,x^2 + 20\,x + 4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/18*(38118*x^3 + 95203*x^2 + 12690*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*lo
g(3*x + 2) - 12690*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 77330*
x + 20299)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.18, size = 46, normalized size = 0.67

$$\frac{38118\,x^3 + 95203\,x^2 + 77330\,x + 20299}{18\left(3\,x^2 + 5\,x + 2\right)^2} + 705\,\log\left(|3\,x+2|\right) - 705\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/18*(38118*x^3 + 95203*x^2 + 77330*x + 20299)/(3*x^2 + 5*x + 2)^2 + 705*lo
g(abs(3*x + 2)) - 705*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.70

$$705\ln(3x+2)-705\ln(x+1)-\frac{2125}{18(3x+2)^2}+\frac{3950}{9(3x+2)}+\frac{3}{(x+1)^2}+\frac{89}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+5*x+2)^3,x)
```

```
[Out] -2125/18/(3*x+2)^2+3950/9/(3*x+2)+705*ln(3*x+2)+3/(x+1)^2+89/(x+1)-705*ln(x
+1)
```

maxima [A] time = 0.55, size = 54, normalized size = 0.78

$$\frac{38118\,x^3+95203\,x^2+77330\,x+20299}{18\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+705\,\log(3\,x+2)-705\,\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/18*(38118*x^3 + 95203*x^2 + 77330*x + 20299)/(9*x^4 + 30*x^3 + 37*x^2 + 2
0*x + 4) + 705*log(3*x + 2) - 705*log(x + 1)
```

mupad [B] time = 0.05, size = 45, normalized size = 0.65

$$\frac{\frac{6353\,x^3}{27}+\frac{95203\,x^2}{162}+\frac{38665\,x}{81}+\frac{20299}{162}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}-1410\,\mathrm{atanh}(6\,x+5)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((38665*x)/81 + (95203*x^2)/162 + (6353*x^3)/27 + 20299/162)/((20*x)/9 + (3
7*x^2)/9 + (10*x^3)/3 + x^4 + 4/9) - 1410*atanh(6*x + 5)
```

sympy [A] time = 0.17, size = 51, normalized size = 0.74

$$-\frac{-38118x^3-95203x^2-77330x-20299}{162x^4+540x^3+666x^2+360x+72}+705\log\left(x+\frac{2}{3}\right)-705\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-38118*x**3 - 95203*x**2 - 77330*x - 20299)/(162*x**4 + 540*x**3 + 666*x*
*2 + 360*x + 72) + 705*log(x + 2/3) - 705*log(x + 1)
```

3.2158 $\int \frac{(5-x)(3+2x)^2}{(2+5x+3x^2)^3} \, dx$

Optimal. Leaf size=57

$$-\frac{587x+533}{18\left(3x^2+5x+2\right)^2}+\frac{9918x+8269}{18\left(3x^2+5x+2\right)}-551\log(x+1)+551\log(3x+2)$$

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 638, 616, 31}

$$-\frac{587x+533}{18\left(3x^2+5x+2\right)^2}+\frac{9918x+8269}{18\left(3x^2+5x+2\right)}-551\log(x+1)+551\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(533 + 587*x)/(18*(2 + 5*x + 3*x^2)^2) + (8269 + 9918*x)/(18*(2 + 5*x + 3*
x^2)) - 551*Log[1 + x] + 551*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
```

```
- 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^3}\,dx &= \int \frac{45+51x+8x^2-4x^3}{\left(2+5x+3x^2\right)^3}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{\frac{1673}{9}+\frac{8x}{3}}{\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}+\frac{8269+9918x}{18\left(2+5x+3x^2\right)}+551\int \frac{1}{2+5x+3x^2}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}+\frac{8269+9918x}{18\left(2+5x+3x^2\right)}+1653\int \frac{1}{2+3x}\,dx-1653\int \frac{1}{3+3x}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}+\frac{8269+9918x}{18\left(2+5x+3x^2\right)}-551\log(1+x)+551\log(2+3x)
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 56, normalized size = 0.98

$$
-\frac{587x+533}{18\left(3x^2+5x+2\right)^2}+\frac{9918x+8269}{54x^2+90x+36}+551\log(-6x-4)-551\log(-2(x+1))
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/18*(533 + 587*x)/(2 + 5*x + 3*x^2)^2 + (8269 + 9918*x)/(36 + 90*x + 54*x
^2) + 551*Log[-4 - 6*x] - 551*Log[-2*(1 + x)]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^3}\,dx
$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^3, x]
```

fricas [A] time = 0.38, size = 93, normalized size = 1.63

$$
\frac{9918\,x^3+24799\,x^2+3306\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-3306\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(x+1\right)+20198\,x+5335}{6\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(9918*x^3 + 24799*x^2 + 3306*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(3
*x + 2) - 3306*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 20198*x +
5335)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.16, size = 46, normalized size = 0.81

$$
\frac{9918\,x^3+24799\,x^2+20198\,x+5335}{6\left(3\,x^2+5\,x+2\right)^2}+551\,\log\left(|3\,x+2|\right)-551\,\log\left(|x+1|\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/6*(9918*x^3 + 24799*x^2 + 20198*x + 5335)/(3*x^2 + 5*x + 2)^2 + 551*log(a
bs(3*x + 2)) - 551*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.84

$$551 \ln (3x+2) - 551 \ln (x+1) - \frac{425}{6(3x+2)^2} + \frac{320}{3x+2} + \frac{3}{(x+1)^2} + \frac{77}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+5*x+2)^3,x)
```

```
[Out] -425/6/(3*x+2)^2+320/(3*x+2)+551*ln(3*x+2)+3/(x+1)^2+77/(x+1)-551*ln(x+1)
```

maxima [A] time = 0.54, size = 54, normalized size = 0.95

$$\frac{9918\,x^3+24799\,x^2+20198\,x+5335}{6\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)} + 551\,\log(3\,x+2) - 551\,\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/6*(9918*x^3 + 24799*x^2 + 20198*x + 5335)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x
 + 4) + 551*log(3*x + 2) - 551*log(x + 1)
```

mupad [B] time = 2.84, size = 45, normalized size = 0.79

$$\frac{\frac{551\,x^3}{3}+\frac{24799\,x^2}{54}+\frac{10099\,x}{27}+\frac{5335}{54}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}} - 1102\,\mathrm{atanh}(6\,x+5)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((10099*x)/27 + (24799*x^2)/54 + (551*x^3)/3 + 5335/54)/((20*x)/9 + (37*x^2
)/9 + (10*x^3)/3 + x^4 + 4/9) - 1102*atanh(6*x + 5)
```

sympy [A] time = 0.17, size = 51, normalized size = 0.89

$$-\frac{-9918x^3-24799x^2-20198x-5335}{54x^4+180x^3+222x^2+120x+24} + 551\log\left(x+\frac{2}{3}\right) - 551\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-9918*x**3 - 24799*x**2 - 20198*x - 5335)/(54*x**4 + 180*x**3 + 222*x**2
+ 120*x + 24) + 551*log(x + 2/3) - 551*log(x + 1)
```

3.2159 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^3} \, dx$

Optimal. Leaf size=57

$$\frac{421(6x+5)}{6\left(3x^2+5x+2\right)}-\frac{139x+121}{6\left(3x^2+5x+2\right)^2}-421\log(x+1)+421\log(3x+2)$$

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {777, 614, 616, 31}

$$\frac{421(6x+5)}{6\left(3x^2+5x+2\right)}-\frac{139x+121}{6\left(3x^2+5x+2\right)^2}-421\log(x+1)+421\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(121 + 139*x)/(6*(2 + 5*x + 3*x^2)^2) + (421*(5 + 6*x))/(6*(2 + 5*x + 3*x^
2)) - 421*Log[1 + x] + 421*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^3} dx = -\frac{121+139x}{6\left(2+5x+3x^2\right)^2} - \frac{421}{6}\int \frac{1}{\left(2+5x+3x^2\right)^2} dx$$
$$= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2} + \frac{421(5+6x)}{6\left(2+5x+3x^2\right)} + 421\int \frac{1}{2+5x+3x^2} dx$$
$$= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2} + \frac{421(5+6x)}{6\left(2+5x+3x^2\right)} + 1263\int \frac{1}{2+3x} dx - 1263\int \frac{1}{3+3x} dx$$
$$= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2} + \frac{421(5+6x)}{6\left(2+5x+3x^2\right)} - 421\log(1+x) + 421\log(2+3x)$$

Mathematica [A] time = 0.02, size = 57, normalized size = 1.00

$$\frac{421(6x+5)}{6\left(3x^2+5x+2\right)} - \frac{139x+121}{6\left(3x^2+5x+2\right)^2} - 421\log(x+1) + 421\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/6*(121 + 139*x)/(2 + 5*x + 3*x^2)^2 + (421*(5 + 6*x))/(6*(2 + 5*x + 3*x^
2)) - 421*Log[1 + x] + 421*Log[2 + 3*x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^3} dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^3, x]
```

fricas [A] time = 0.37, size = 93, normalized size = 1.63

$$\frac{2526\,x^3+6315\,x^2+842\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-842\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(x+1\right)+5146\,x+1363}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2526*x^3 + 6315*x^2 + 842*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(3*x
 + 2) - 842*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 5146*x + 1363
)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.20, size = 46, normalized size = 0.81

$$\frac{2526\,x^3+6315\,x^2+5146\,x+1363}{2\left(3\,x^2+5\,x+2\right)^2} + 421\,\log\left(|3\,x+2|\right) - 421\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/2*(2526*x^3 + 6315*x^2 + 5146*x + 1363)/(3*x^2 + 5*x + 2)^2 + 421*log(abs
(3*x + 2)) - 421*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.84

$$421\ln(3x+2)-421\ln(x+1)-\frac{85}{2(3x+2)^{2}}+\frac{226}{3x+2}+\frac{3}{(x+1)^{2}}+\frac{65}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -85/2/(3*x+2)^2+226/(3*x+2)+421*ln(3*x+2)+3/(x+1)^2+65/(x+1)-421*ln(x+1)
```

maxima [A] time = 0.48, size = 54, normalized size = 0.95

$$\frac{2526\,x^{3}+6315\,x^{2}+5146\,x+1363}{2\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)}+421\,\log(3\,x+2)-421\,\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2526*x^3 + 6315*x^2 + 5146*x + 1363)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
 4) + 421*log(3*x + 2) - 421*log(x + 1)
```

mupad [B] time = 2.30, size = 45, normalized size = 0.79

$$\frac{\frac{421\,x^{3}}{3}+\frac{2105\,x^{2}}{6}+\frac{2573\,x}{9}+\frac{1363}{18}}{x^{4}+\frac{10\,x^{3}}{3}+\frac{37\,x^{2}}{9}+\frac{20\,x}{9}+\frac{4}{9}}-842\,\mathrm{atanh}(6\,x+5)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((2573*x)/9 + (2105*x^2)/6 + (421*x^3)/3 + 1363/18)/((20*x)/9 + (37*x^2)/9
+ (10*x^3)/3 + x^4 + 4/9) - 842*atanh(6*x + 5)
```

sympy [A] time = 0.16, size = 51, normalized size = 0.89

$$-\frac{-2526x^{3}-6315x^{2}-5146x-1363}{18x^{4}+60x^{3}+74x^{2}+40x+8}+421\log\left(x+\frac{2}{3}\right)-421\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-2526*x**3 - 6315*x**2 - 5146*x - 1363)/(18*x**4 + 60*x**3 + 74*x**2 + 40
*x + 8) + 421*log(x + 2/3) - 421*log(x + 1)
```

3.2160 $\int \frac{5-x}{(2+5x+3x^2)^3} \, dx$

Optimal. Leaf size=57

$$\frac{105(6x+5)}{2(3x^2+5x+2)} - \frac{35x+29}{2(3x^2+5x+2)^2} - 315\log(x+1) + 315\log(3x+2)$$

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {638, 614, 616, 31}

$$\frac{105(6x+5)}{2(3x^2+5x+2)} - \frac{35x+29}{2(3x^2+5x+2)^2} - 315\log(x+1) + 315\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(29 + 35*x)/(2*(2 + 5*x + 3*x^2)^2) + (105*(5 + 6*x))/(2*(2 + 5*x + 3*x^2)
) - 315*Log[1 + x] + 315*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{5-x}{\left(2+5x+3x^2\right)^3}\,dx=-\frac{29+35x}{2\left(2+5x+3x^2\right)^2}-\frac{105}{2}\int \frac{1}{\left(2+5x+3x^2\right)^2}\,dx$$
$$=-\frac{29+35x}{2\left(2+5x+3x^2\right)^2}+\frac{105(5+6x)}{2\left(2+5x+3x^2\right)}+315\int \frac{1}{2+5x+3x^2}\,dx$$
$$=-\frac{29+35x}{2\left(2+5x+3x^2\right)^2}+\frac{105(5+6x)}{2\left(2+5x+3x^2\right)}+945\int \frac{1}{2+3x}\,dx-945\int \frac{1}{3+3x}\,dx$$
$$=-\frac{29+35x}{2\left(2+5x+3x^2\right)^2}+\frac{105(5+6x)}{2\left(2+5x+3x^2\right)}-315\log(1+x)+315\log(2+3x)$$

Mathematica [A] time = 0.01, size = 57, normalized size = 1.00

$$\frac{-35x-29}{2\left(3x^2+5x+2\right)^2}+\frac{105(6x+5)}{2\left(3x^2+5x+2\right)}-315\log(x+1)+315\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-29 - 35*x)/(2*(2 + 5*x + 3*x^2)^2) + (105*(5 + 6*x))/(2*(2 + 5*x + 3*x^2)
) - 315*Log[1 + x] + 315*Log[2 + 3*x]
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2)^3, x]
```

fricas [A] time = 0.39, size = 93, normalized size = 1.63

$$\frac{1890\,x^3+4725\,x^2+630\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-630\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(x+1\right)+3850\,x+1021}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(1890*x^3 + 4725*x^2 + 630*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(3*x
 + 2) - 630*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 3850*x + 1021
)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.16, size = 46, normalized size = 0.81

$$\frac{1890\,x^3+4725\,x^2+3850\,x+1021}{2\left(3\,x^2+5\,x+2\right)^2}+315\,\log\left(|3\,x+2|\right)-315\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/2*(1890*x^3 + 4725*x^2 + 3850*x + 1021)/(3*x^2 + 5*x + 2)^2 + 315*log(abs
(3*x + 2)) - 315*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.84

$$315\ln(3x+2)-315\ln(x+1)-\frac{51}{2(3x+2)^2}+\frac{156}{3x+2}+\frac{3}{(x+1)^2}+\frac{53}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -51/2/(3*x+2)^2+156/(3*x+2)+315*ln(3*x+2)+3/(x+1)^2+53/(x+1)-315*ln(x+1)
```

maxima [A] time = 0.50, size = 54, normalized size = 0.95

$$\frac{1890\,x^3+4725\,x^2+3850\,x+1021}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+315\,\log(3\,x+2)-315\,\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(1890*x^3 + 4725*x^2 + 3850*x + 1021)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
 4) + 315*log(3*x + 2) - 315*log(x + 1)
```

mupad [B] time = 0.05, size = 45, normalized size = 0.79

$$\frac{105\,x^3+\frac{525\,x^2}{2}+\frac{1925\,x}{9}+\frac{1021}{18}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}-630\,\mathrm{atanh}(6\,x+5)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((1925*x)/9 + (525*x^2)/2 + 105*x^3 + 1021/18)/((20*x)/9 + (37*x^2)/9 + (10
*x^3)/3 + x^4 + 4/9) - 630*atanh(6*x + 5)
```

sympy [A] time = 0.15, size = 51, normalized size = 0.89

$$-\frac{-1890x^3-4725x^2-3850x-1021}{18x^4+60x^3+74x^2+40x+8}+315\log\left(x+\frac{2}{3}\right)-315\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-1890*x**3 - 4725*x**2 - 3850*x - 1021)/(18*x**4 + 60*x**3 + 74*x**2 + 40
*x + 8) + 315*log(x + 2/3) - 315*log(x + 1)
```

3.2161 $\int \frac{5-x}{(3+2x)(2+5x+3x^2)^3} dx$

Optimal. Leaf size=69

$$-\frac{3(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{11442x+9587}{50\left(3x^2+5x+2\right)}-233\log(x+1)+\frac{208}{125}\log(2x+3)+\frac{28917}{125}\log(3x+2)$$

Rubi [A] time = 0.05, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{11442x+9587}{50\left(3x^2+5x+2\right)}-233\log(x+1)+\frac{208}{125}\log(2x+3)+\frac{28917}{125}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-3*(37 + 47*x))/(10*(2 + 5*x + 3*x^2)^2) + (9587 + 11442*x)/(50*(2 + 5*x +
 3*x^2)) - 233*Log[1 + x] + (208*Log[3 + 2*x])/125 + (28917*Log[2 + 3*x])/1
25
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^3}dx = -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1217+846x}{(3+2x)\left(2+5x+3x^2\right)^2}dx$$

$$= -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{9587+11442x}{50\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{34534+22884x}{(3+2x)\left(2+5x+3x^2\right)} d$$

$$= -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{9587+11442x}{50\left(2+5x+3x^2\right)}+\frac{1}{50}\int \left(-\frac{11650}{1+x}+\frac{832}{5(3+2x)}+\right.$$

$$= -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{9587+11442x}{50\left(2+5x+3x^2\right)}-233\log(1+x)+\frac{208}{125}\log(3+2$$

Mathematica [A] time = 0.05, size = 68, normalized size = 0.99

$$\frac{1}{125}\left(-\frac{75(47x+37)}{2\left(3x^2+5x+2\right)^2}+\frac{57210x+47935}{6x^2+10x+4}+28917\log(-6x-4)-29125\log(-2(x+1))+208\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] ((-75*(37 + 47*x))/(2*(2 + 5*x + 3*x^2)^2) + (47935 + 57210*x)/(4 + 10*x +
6*x^2) + 28917*Log[-4 - 6*x] - 29125*Log[-2*(1 + x)] + 208*Log[3 + 2*x])/12
5
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^3), x]
```

fricas [A] time = 0.40, size = 121, normalized size = 1.75

$$\frac{171630\,x^3+429855\,x^2+57834\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)+416\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(2\,x+3\right)-58250\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(x+1\right)+350570\,x+93095}{250\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/250*(171630*x^3 + 429855*x^2 + 57834*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
*log(3*x + 2) + 416*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(2*x + 3) - 582
50*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 350570*x + 93095)/(9*x
^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.15, size = 55, normalized size = 0.80

$$\frac{34326\,x^3+85971\,x^2+70114\,x+18619}{50\,(3\,x+2)^2(x+1)^2}+\frac{28917}{125}\,\log\left(|3\,x+2|\right)+\frac{208}{125}\,\log\left(|2\,x+3|\right)-233\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/50*(34326*x^3 + 85971*x^2 + 70114*x + 18619)/((3*x + 2)^2*(x + 1)^2) + 28
917/125*log(abs(3*x + 2)) + 208/125*log(abs(2*x + 3)) - 233*log(abs(x + 1))
```

maple [A] time = 0.05, size = 56, normalized size = 0.81

$$\frac{28917\ln(3x+2)}{125}+\frac{208\ln(2x+3)}{125}-233\ln(x+1)-\frac{153}{10\,(3x+2)^2}+\frac{2646}{25\,(3x+2)}+\frac{3}{(x+1)^2}+\frac{41}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -153/10/(3*x+2)^2+2646/25/(3*x+2)+28917/125*ln(3*x+2)+208/125*ln(2*x+3)+3/(
x+1)^2+41/(x+1)-233*ln(x+1)
```

maxima [A] time = 0.59, size = 62, normalized size = 0.90

$$\frac{34326\,x^3+85971\,x^2+70114\,x+18619}{50\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+\frac{28917}{125}\,\log\left(3\,x+2\right)+\frac{208}{125}\,\log\left(2\,x+3\right)-233\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/50*(34326*x^3 + 85971*x^2 + 70114*x + 18619)/(9*x^4 + 30*x^3 + 37*x^2 + 2
0*x + 4) + 28917/125*log(3*x + 2) + 208/125*log(2*x + 3) - 233*log(x + 1)
```

mupad [B] time = 2.32, size = 55, normalized size = 0.80

$$\frac{28917\,\ln\left(x+\frac{2}{3}\right)}{125}-233\,\ln\left(x+1\right)+\frac{208\,\ln\left(x+\frac{3}{2}\right)}{125}+\frac{\frac{1907\,x^3}{25}+\frac{28657\,x^2}{150}+\frac{35057\,x}{225}+\frac{18619}{450}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] (28917*log(x + 2/3))/125 - 233*log(x + 1) + (208*log(x + 3/2))/125 + ((3505
7*x)/225 + (28657*x^2)/150 + (1907*x^3)/25 + 18619/450)/((20*x)/9 + (37*x^2
)/9 + (10*x^3)/3 + x^4 + 4/9)
```

sympy [A] time = 0.21, size = 63, normalized size = 0.91

$$-\frac{-34326x^3-85971x^2-70114x-18619}{450x^4+1500x^3+1850x^2+1000x+200}+\frac{28917\log\left(x+\frac{2}{3}\right)}{125}-233\log\left(x+1\right)+\frac{208\log\left(x+\frac{3}{2}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-34326*x**3 - 85971*x**2 - 70114*x - 18619)/(450*x**4 + 1500*x**3 + 1850*
x**2 + 1000*x + 200) + 28917*log(x + 2/3)/125 - 233*log(x + 1) + 208*log(x
+ 3/2)/125
```

3.2162 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=94

$$-\frac{3(47x+37)}{10(2x+3)\left(3x^2+5x+2\right)^2}+\frac{10848x+9293}{50(2x+3)\left(3x^2+5x+2\right)}+\frac{12946}{125(2x+3)}-175\log(x+1)+\frac{4912}{625}\log(2x+3)+\frac{104463}{625}$$

Rubi [A] time = 0.06, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{10(2x+3)\left(3x^2+5x+2\right)^2}+\frac{10848x+9293}{50(2x+3)\left(3x^2+5x+2\right)}+\frac{12946}{125(2x+3)}-175\log(x+1)+\frac{4912}{625}\log(2x+3)+\frac{104463}{625}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 12946/(125*(3 + 2*x)) - (3*(37 + 47*x))/(10*(3 + 2*x)*(2 + 5*x + 3*x^2)^2)
+ (9293 + 10848*x)/(50*(3 + 2*x)*(2 + 5*x + 3*x^2)) - 175*Log[1 + x] + (491
2*Log[3 + 2*x])/625 + (104463*Log[2 + 3*x])/625
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^3}\,dx &= -\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1439+1128x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}+\frac{9293+10848x}{50(3+2x)\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{52142}{(3+2x)^2(}\\
&= -\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}+\frac{9293+10848x}{50(3+2x)\left(2+5x+3x^2\right)}+\frac{1}{50}\int \left(-\frac{8750}{1+x}-\right.\\
&= \frac{12946}{125(3+2x)}-\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}+\frac{9293+10848x}{50(3+2x)\left(2+5x+3x^2\right)}-175
\end{aligned}$$

Mathematica [A] time = 0.04, size = 78, normalized size = 0.83

$$\frac{1}{625}\left(-\frac{75(201x+151)}{2\left(3x^2+5x+2\right)^2}+\frac{5(39462x+33697)}{6x^2+10x+4}-\frac{1040}{2x+3}+104463\log(-6x-4)-109375\log(-2(x+1))+4912\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-1040/(3 + 2*x) - (75*(151 + 201*x))/(2*(2 + 5*x + 3*x^2)^2) + (5*(33697 +
 39462*x))/(4 + 10*x + 6*x^2) + 104463*Log[-4 - 6*x] - 109375*Log[-2*(1 + x
)] + 4912*Log[3 + 2*x])/625
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^3), x]
```

fricas [A] time = 0.40, size = 146, normalized size = 1.55

$$\frac{1165140\,x^4+4697400\,x^3+6842995\,x^2+208926\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)\log\left(3\,x+2\right)+9824\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)\log\left(2\,x+3\right)-218750\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)\log\left(x+1\right)+4275600\,x+968615}{1250\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/1250*(1165140*x^4 + 4697400*x^3 + 6842995*x^2 + 208926*(18*x^5 + 87*x^4 +
 164*x^3 + 151*x^2 + 68*x + 12)*log(3*x + 2) + 9824*(18*x^5 + 87*x^4 + 164*
x^3 + 151*x^2 + 68*x + 12)*log(2*x + 3) - 218750*(18*x^5 + 87*x^4 + 164*x^3
 + 151*x^2 + 68*x + 12)*log(x + 1) + 4275600*x + 968615)/(18*x^5 + 87*x^4 +
 164*x^3 + 151*x^2 + 68*x + 12)
```

giac [A] time = 0.16, size = 95, normalized size = 1.01

$$-\frac{208}{125\,(2\,x+3)}-\frac{2\left(\frac{168231}{2\,x+3}-\frac{211036}{(2\,x+3)^2}+\frac{82447}{(2\,x+3)^3}-42642\right)}{125\left(\frac{5}{2\,x+3}-3\right)^2\left(\frac{1}{2\,x+3}-1\right)^2}-175\,\log\left(\left|-\frac{1}{2\,x+3}+1\right|\right)+\frac{104463}{625}\,\log\left(\left|-\frac{5}{2\,x+3}+3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -208/125/(2*x + 3) - 2/125*(168231/(2*x + 3) - 211036/(2*x + 3)^2 + 82447/(
2*x + 3)^3 - 42642)/((5/(2*x + 3) - 3)^2*(1/(2*x + 3) - 1)^2) - 175*log(abs
(-1/(2*x + 3) + 1)) + 104463/625*log(abs(-5/(2*x + 3) + 3))
```

maple [A] time = 0.05, size = 65, normalized size = 0.69

$$\frac{104463\ln(3x+2)}{625}+\frac{4912\ln(2x+3)}{625}-175\ln(x+1)-\frac{459}{50\,(3x+2)^2}+\frac{8856}{125\,(3x+2)}-\frac{208}{125\,(2x+3)}+\frac{3}{(x+1)^2}+\frac{29}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+5*x+2)^3,x)
```

```
[Out] -459/50/(3*x+2)^2+8856/125/(3*x+2)+104463/625*ln(3*x+2)-208/125/(2*x+3)+491
2/625*ln(2*x+3)+3/(x+1)^2+29/(x+1)-175*ln(x+1)
```

maxima [A] time = 0.69, size = 72, normalized size = 0.77

$$\frac{233028\,x^4+939480\,x^3+1368599\,x^2+855120\,x+193723}{250\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)}+\frac{104463}{625}\,\log\left(3\,x+2\right)+\frac{4912}{625}\,\log\left(2\,x+3\right)-175\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/250*(233028*x^4 + 939480*x^3 + 1368599*x^2 + 855120*x + 193723)/(18*x^5 +
 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12) + 104463/625*log(3*x + 2) + 4912/6
25*log(2*x + 3) - 175*log(x + 1)
```

mupad [B] time = 0.04, size = 65, normalized size = 0.69

$$\frac{104463\,\ln\left(x+\frac{2}{3}\right)}{625}-175\,\ln\left(x+1\right)+\frac{4912\,\ln\left(x+\frac{3}{2}\right)}{625}+\frac{\frac{6473\,x^4}{125}+\frac{15658\,x^3}{75}+\frac{1368599\,x^2}{4500}+\frac{14252\,x}{75}+\frac{193723}{4500}}{x^5+\frac{29\,x^4}{6}+\frac{82\,x^3}{9}+\frac{151\,x^2}{18}+\frac{34\,x}{9}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] (104463*log(x + 2/3))/625 - 175*log(x + 1) + (4912*log(x + 3/2))/625 + ((14
252*x)/75 + (1368599*x^2)/4500 + (15658*x^3)/75 + (6473*x^4)/125 + 193723/4
500)/((34*x)/9 + (151*x^2)/18 + (82*x^3)/9 + (29*x^4)/6 + x^5 + 2/3)
```

sympy [A] time = 0.23, size = 73, normalized size = 0.78

$$-\frac{-233028x^4-939480x^3-1368599x^2-855120x-193723}{4500x^5+21750x^4+41000x^3+37750x^2+17000x+3000}+\frac{104463\log\left(x+\frac{2}{3}\right)}{625}-175\log\left(x+1\right)+\frac{4912\log\left(x+\frac{3}{2}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-233028*x**4 - 939480*x**3 - 1368599*x**2 - 855120*x - 193723)/(4500*x**5
 + 21750*x**4 + 41000*x**3 + 37750*x**2 + 17000*x + 3000) + 104463*log(x +
2/3)/625 - 175*log(x + 1) + 4912*log(x + 3/2)/625
```

3.2163 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=105

$$-\frac{3(47x+37)}{10(2x+3)^2\left(3x^2+5x+2\right)^2}+\frac{10254x+8999}{50(2x+3)^2\left(3x^2+5x+2\right)}+\frac{35886}{625(2x+3)}+\frac{11856}{125(2x+3)^2}-141\log(x+1)+\frac{6859}{}$$

Rubi [A] time = 0.07, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{10(2x+3)^2\left(3x^2+5x+2\right)^2}+\frac{10254x+8999}{50(2x+3)^2\left(3x^2+5x+2\right)}+\frac{35886}{625(2x+3)}+\frac{11856}{125(2x+3)^2}-141\log(x+1)+\frac{68592\log(2x+3)}{3125}+\frac{372033\log(3x+2)}{3125}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 11856/(125*(3 + 2*x)^2) + 35886/(625*(3 + 2*x)) - (3*(37 + 47*x))/(10*(3 +
2*x)^2*(2 + 5*x + 3*x^2)^2) + (8999 + 10254*x)/(50*(3 + 2*x)^2*(2 + 5*x + 3
*x^2)) - 141*Log[1 + x] + (68592*Log[3 + 2*x])/3125 + (372033*Log[2 + 3*x])
/3125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^3}\,dx &= -\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1661+1410x}{(3+2x)^3\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2}+\frac{8999+10254x}{50(3+2x)^2\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{68}{(3+2}\\ &= -\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2}+\frac{8999+10254x}{50(3+2x)^2\left(2+5x+3x^2\right)}+\frac{1}{50}\int \left(-\frac{705}{1+}\right.\\ &= \frac{11856}{125(3+2x)^2}+\frac{35886}{625(3+2x)}-\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2}+\frac{8999+}{50(3+2x)^2(}\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.82

$$\frac{-\frac{75(903x+653)}{2\left(3x^2+5x+2\right)^2}+\frac{611970x+550495}{6x^2+10x+4}-\frac{24560}{2x+3}-\frac{2600}{(2x+3)^2}+372033\log(-6x-4)-440625\log(-2(x+1))+68592\log(2x+3)}{3125}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-2600/(3 + 2*x)^2 - 24560/(3 + 2*x) - (75*(653 + 903*x))/(2*(2 + 5*x + 3*x
^2)^2) + (550495 + 611970*x)/(4 + 10*x + 6*x^2) + 372033*Log[-4 - 6*x] - 44
0625*Log[-2*(1 + x)] + 68592*Log[3 + 2*x])/3125
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^3), x]
```

fricas [A] time = 0.39, size = 171, normalized size = 1.63

$$\frac{6459480\,x^5+36556020\,x^4+80482290\,x^3+85904835\,x^2+744066\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+589\,x^2+228\,x+36\right)\log\left(3\,x+2\right)+137184\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+589\,x^2+228\,x+36\right)\log\left(2\,x+3\right)-881250\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+589\,x^2+228\,x+36\right)\log\left(x+1\right)+44358230\,x+8857895}{6250\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+589\,x^2+228\,x+36\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/6250*(6459480*x^5 + 36556020*x^4 + 80482290*x^3 + 85904835*x^2 + 744066*(
36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)*log(3*x + 2) +
 137184*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)*log(2
*x + 3) - 881250*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x +
36)*log(x + 1) + 44358230*x + 8857895)/(36*x^6 + 228*x^5 + 589*x^4 + 794*x^
3 + 589*x^2 + 228*x + 36)
```

giac [A] time = 0.16, size = 70, normalized size = 0.67

$$\frac{1291896\,x^5+7311204\,x^4+16096458\,x^3+17180967\,x^2+8871646\,x+1771579}{1250\left(6\,x^3+19\,x^2+19\,x+6\right)^2}+\frac{372033}{3125}\,\log\left(|3\,x+2|\right)+\frac{68592}{3125}\,\log\left(|2\,x+3|\right)-141\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/1250*(1291896*x^5 + 7311204*x^4 + 16096458*x^3 + 17180967*x^2 + 8871646*x
 + 1771579)/(6*x^3 + 19*x^2 + 19*x + 6)^2 + 372033/3125*log(abs(3*x + 2)) +
 68592/3125*log(abs(2*x + 3)) - 141*log(abs(x + 1))
```

maple [A] time = 0.06, size = 74, normalized size = 0.70

$$\frac{372033\ln\left(3x+2\right)}{3125}+\frac{68592\ln\left(2x+3\right)}{3125}-141\ln\left(x+1\right)-\frac{1377}{250\left(3x+2\right)^2}+\frac{29322}{625\left(3x+2\right)}-\frac{104}{125\left(2x+3\right)^2}-\frac{4912}{625\left(2x+3\right)}+\frac{3}{\left(x+1\right)^2}+\frac{17}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+5*x+2)^3,x)
```

```
[Out] -1377/250/(3*x+2)^2+29322/625/(3*x+2)+372033/3125*ln(3*x+2)-104/125/(2*x+3)
^2-4912/625/(2*x+3)+68592/3125*ln(2*x+3)+3/(x+1)^2+17/(x+1)-141*ln(x+1)
```

maxima [A] time = 0.59, size = 82, normalized size = 0.78

$$\frac{1291896\,x^{5}+7311204\,x^{4}+16096458\,x^{3}+17180967\,x^{2}+8871646\,x+1771579}{1250\left(36\,x^{6}+228\,x^{5}+589\,x^{4}+794\,x^{3}+589\,x^{2}+228\,x+36\right)}+\frac{372033}{3125}\,\log\left(3\,x+2\right)+\frac{68592}{3125}\,\log\left(2\,x+3\right)-141\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/1250*(1291896*x^5 + 7311204*x^4 + 16096458*x^3 + 17180967*x^2 + 8871646*x
 + 1771579)/(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36) +
 372033/3125*log(3*x + 2) + 68592/3125*log(2*x + 3) - 141*log(x + 1)
```

mupad [B] time = 2.29, size = 75, normalized size = 0.71

$$\frac{372033\,\ln\left(x+\frac{2}{3}\right)}{3125}-141\,\ln\left(x+1\right)+\frac{68592\,\ln\left(x+\frac{3}{2}\right)}{3125}+\frac{\frac{17943\,x^5}{625}+\frac{203089\,x^4}{1250}+\frac{2682743\,x^3}{7500}+\frac{5726989\,x^2}{15000}+\frac{4435823\,x}{22500}+\frac{1771579}{45000}}{x^6+\frac{19\,x^5}{3}+\frac{589\,x^4}{36}+\frac{397\,x^3}{18}+\frac{589\,x^2}{36}+\frac{19\,x}{3}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] (372033*log(x + 2/3))/3125 - 141*log(x + 1) + (68592*log(x + 3/2))/3125 + (
(4435823*x)/22500 + (5726989*x^2)/15000 + (2682743*x^3)/7500 + (203089*x^4)
/1250 + (17943*x^5)/625 + 1771579/45000)/((19*x)/3 + (589*x^2)/36 + (397*x^
3)/18 + (589*x^4)/36 + (19*x^5)/3 + x^6 + 1)
```

sympy [A] time = 0.24, size = 83, normalized size = 0.79

$$-\frac{-1291896x^{5}-7311204x^{4}-16096458x^{3}-17180967x^{2}-8871646x-1771579}{45000x^{6}+285000x^{5}+736250x^{4}+992500x^{3}+736250x^{2}+285000x+45000}+\frac{372033\log\left(x+\frac{2}{3}\right)}{3125}-141\log\left(x+1\right)+\frac{68592\log\left(x+\frac{3}{2}\right)}{3125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-1291896*x**5 - 7311204*x**4 - 16096458*x**3 - 17180967*x**2 - 8871646*x
- 1771579)/(45000*x**6 + 285000*x**5 + 736250*x**4 + 992500*x**3 + 736250*x
**2 + 285000*x + 45000) + 372033*log(x + 2/3)/3125 - 141*log(x + 1) + 68592
*log(x + 3/2)/3125
```

3.2164 $\int \frac{x(1+x)^2}{\left(1+x+x^2\right)^3} dx$

Optimal. Leaf size=33

$$-\frac{(x+1)(2x+1)}{6\left(x^2+x+1\right)^2}-\frac{1}{6\left(x^2+x+1\right)}$$

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {818, 629}

$$-\frac{(x+1)(2x+1)}{6\left(x^2+x+1\right)^2}-\frac{1}{6\left(x^2+x+1\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 + x)^2)/(1 + x + x^2)^3,x]
```

```
[Out] -((1 + x)*(1 + 2*x))/(6*(1 + x + x^2)^2) - 1/(6*(1 + x + x^2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{x(1+x)^2}{\left(1+x+x^2\right)^3} dx &= -\frac{(1+x)(1+2x)}{6\left(1+x+x^2\right)^2}-\frac{1}{6}\int \frac{-1-2x}{\left(1+x+x^2\right)^2} dx\\ &= -\frac{(1+x)(1+2x)}{6\left(1+x+x^2\right)^2}-\frac{1}{6\left(1+x+x^2\right)}\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 0.67

$$-\frac{3x^2+4x+2}{6\left(x^2+x+1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 + x)^2)/(1 + x + x^2)^3,x]
[Out] -1/6*(2 + 4*x + 3*x^2)/(1 + x + x^2)^2
```

IntegrateAlgebraic [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(1+x)^2}{\left(1+x+x^2\right)^3}\,dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(x*(1 + x)^2)/(1 + x + x^2)^3,x]
[Out] IntegrateAlgebraic[(x*(1 + x)^2)/(1 + x + x^2)^3, x]
```

fricas [A] time = 0.37, size = 32, normalized size = 0.97

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^4+2\,x^3+3\,x^2+2\,x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+x+1)^3,x, algorithm="fricas")
[Out] -1/6*(3*x^2 + 4*x + 2)/(x^4 + 2*x^3 + 3*x^2 + 2*x + 1)
```

giac [A] time = 0.15, size = 20, normalized size = 0.61

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^2+x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+x+1)^3,x, algorithm="giac")
[Out] -1/6*(3*x^2 + 4*x + 2)/(x^2 + x + 1)^2
```

maple [A] time = 0.04, size = 20, normalized size = 0.61

$$\frac{-\frac{1}{2}x^2-\frac{2}{3}x-\frac{1}{3}}{\left(x^2+x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x+1)^2/(x^2+x+1)^3,x)
[Out] (-1/2*x^2-2/3*x-1/3)/(x^2+x+1)^2
```

maxima [A] time = 0.52, size = 32, normalized size = 0.97

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^4+2\,x^3+3\,x^2+2\,x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+x+1)^3,x, algorithm="maxima")
[Out] -1/6*(3*x^2 + 4*x + 2)/(x^4 + 2*x^3 + 3*x^2 + 2*x + 1)
```

mupad [B] time = 0.04, size = 20, normalized size = 0.61

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^2+x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(x + 1)^2)/(x + x^2 + 1)^3,x)
```

```
[Out] -(4*x + 3*x^2 + 2)/(6*(x + x^2 + 1)^2)
```

sympy [A] time = 0.12, size = 31, normalized size = 0.94

$$\frac{-3x^2-4x-2}{6x^4+12x^3+18x^2+12x+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)**2/(x**2+x+1)**3,x)
```

```
[Out] (-3*x**2 - 4*x - 2)/(6*x**4 + 12*x**3 + 18*x**2 + 12*x + 6)
```

3.2165 $\int (5-x)(3+2x)^4\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=160

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{3/2}(2x+3)^4+\frac{229}{378}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{478}{315}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(378774x+8$$

Rubi [A] time = 0.09, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{3/2}(2x+3)^4+\frac{229}{378}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{478}{315}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(378774x+874301)\left(3x^2+5x+2\right)^{3/2}}{68040}+\frac{25969(6x+5)\sqrt{3x^2+5x+2}}{15552}-\frac{25969\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{31104\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (25969*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/15552 + (478*(3 + 2*x)^2*(2 + 5*x +
 3*x^2)^(3/2))/315 + (229*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2))/378 - ((3 +
2*x)^4*(2 + 5*x + 3*x^2)^(3/2))/21 + ((874301 + 378774*x)*(2 + 5*x + 3*x^2)
^(3/2))/68040 - (25969*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]
)/(31104*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^4\sqrt{2+5x+3x^2}\,dx &= -\frac{1}{21}(3+2x)^4\left(2+5x+3x^2\right)^{3/2}+\frac{1}{21}\int (3+2x)^3\left(\frac{707}{2}+229x\right)\sqrt{2+5x\\
&= \frac{229}{378}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^4\left(2+5x+3x^2\right)^{3/2}+\frac{1}{378}\int\\
&= \frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}-\frac{1}{21}(3\\
&= \frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}-\frac{1}{21}(3\\
&= \frac{25969(5+6x)\sqrt{2+5x+3x^2}}{15552}+\frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3\\
&= \frac{25969(5+6x)\sqrt{2+5x+3x^2}}{15552}+\frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3\\
&= \frac{25969(5+6x)\sqrt{2+5x+3x^2}}{15552}+\frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3\end{aligned}$$

Mathematica [A] time = 0.06, size = 82, normalized size = 0.51

$$\frac{-908915\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(1244160x^6+1624320x^5-28649088x^4-123633360x^3-208601544x^2-161915450x-47009103\right)}{3265920}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-47009103 - 161915450*x - 208601544*x^2 - 123633
360*x^3 - 28649088*x^4 + 1624320*x^5 + 1244160*x^6) - 908915*Sqrt[3]*ArcTan
h[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/3265920
```

IntegrateAlgebraic [A] time = 0.91, size = 84, normalized size = 0.52

$$\frac{\sqrt{3x^2+5x+2}\left(-1244160x^6-1624320x^5+28649088x^4+123633360x^3+208601544x^2+161915450x+47009103\right)}{544320}-\frac{25969\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{15552\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(47009103 + 161915450*x + 208601544*x^2 + 123633360*
x^3 + 28649088*x^4 - 1624320*x^5 - 1244160*x^6))/544320 - (25969*ArcTanh[Sq
rt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(15552*Sqrt[3])
```

fricas [A] time = 0.42, size = 83, normalized size = 0.52

$$-\frac{1}{544320}\left(1244160\,x^6+1624320\,x^5-28649088\,x^4-123633360\,x^3-208601544\,x^2-161915450\,x-47009103\right)\sqrt{3\,x^2+5\,x+2}+\frac{25969}{186624}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/544320*(1244160*x^6 + 1624320*x^5 - 28649088*x^4 - 123633360*x^3 - 20860
1544*x^2 - 161915450*x - 47009103)*sqrt(3*x^2 + 5*x + 2) + 25969/186624*sqr
t(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.20, size = 79, normalized size = 0.49

$$-\frac{1}{544320}\left(2\left(12\left(6\left(8\left(30\left(36x+47\right)x-24869\right)x-858565\right)x-8691731\right)x-80957725\right)x-47009103\right)\sqrt{3x^2+5x+2}+\frac{25969}{93312}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/544320*(2*(12*(6*(8*(30*(36*x + 47)*x - 24869)*x - 858565)*x - 8691731)*
x - 80957725)*x - 47009103)*sqrt(3*x^2 + 5*x + 2) + 25969/93312*sqrt(3)*log
(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 130, normalized size = 0.81

$$-\frac{16\left(3x^2+5x+2\right)^{\frac{3}{2}}x^4}{21}+\frac{52\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3}{189}+\frac{5542\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2}{315}+\frac{34931\left(3x^2+5x+2\right)^{\frac{3}{2}}x}{756}-\frac{25969\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{93312}+\frac{25969\left(6x+5\right)\sqrt{3x^2+5x+2}}{15552}+\frac{2654033\left(3x^2+5x+2\right)^{\frac{3}{2}}}{68040}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -16/21*x^4*(3*x^2+5*x+2)^(3/2)+52/189*x^3*(3*x^2+5*x+2)^(3/2)+5542/315*x^2*
(3*x^2+5*x+2)^(3/2)+34931/756*x*(3*x^2+5*x+2)^(3/2)-25969/93312*ln(1/3*(5/2
+3*x)*3^(1/2)+(3*x^2+5*x+2)^(1/2))*3^(1/2)+25969/15552*(6*x+5)*(3*x^2+5*x+2
)^(1/2)+2654033/68040*(3*x^2+5*x+2)^(3/2)
```

maxima [A] time = 1.24, size = 138, normalized size = 0.86

$$-\frac{16}{21}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^4+\frac{52}{189}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3+\frac{5542}{315}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+\frac{34931}{756}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{2654033}{68040}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{25969}{2592}\sqrt{3x^2+5x+2}\,x-\frac{25969}{93312}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{129845}{15552}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/21*(3*x^2 + 5*x + 2)^(3/2)*x^4 + 52/189*(3*x^2 + 5*x + 2)^(3/2)*x^3 + 5
542/315*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 34931/756*(3*x^2 + 5*x + 2)^(3/2)*x +
 2654033/68040*(3*x^2 + 5*x + 2)^(3/2) + 25969/2592*sqrt(3*x^2 + 5*x + 2)*x
 - 25969/93312*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 129
845/15552*sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 3.65, size = 170, normalized size = 1.06

$$\frac{5542x^2\left(3x^2+5x+2\right)^{3/2}}{315}+\frac{52x^3\left(3x^2+5x+2\right)^{3/2}}{189}-\frac{16x^4\left(3x^2+5x+2\right)^{3/2}}{21}-\frac{118159\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{27216}+\frac{118159\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}}{378}+\frac{2654033\sqrt{3x^2+5x+2}\,\left(72x^2+30x-27\right)}{1632960}+\frac{34931x\left(3x^2+5x+2\right)^{3/2}}{756}+\frac{2654033\sqrt{3}\,\ln\left(2\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(6x+5\right)}{3}\right)}{653184}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (5542*x^2*(5*x + 3*x^2 + 2)^(3/2))/315 + (52*x^3*(5*x + 3*x^2 + 2)^(3/2))/1
89 - (16*x^4*(5*x + 3*x^2 + 2)^(3/2))/21 - (118159*3^(1/2)*log((5*x + 3*x^2
 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/27216 + (118159*(x/2 + 5/12)*(5*x +
 3*x^2 + 2)^(1/2))/378 + (2654033*(5*x + 3*x^2 + 2)^(1/2)*(30*x + 72*x^2 -
27))/1632960 + (34931*x*(5*x + 3*x^2 + 2)^(3/2))/756 + (2654033*3^(1/2)*log
(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x + 5))/3))/653184
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-999x\sqrt{3x^2+5x+2}\right)dx-\int\left(-864x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-264x^3\sqrt{3x^2+5x+2}\right)dx-\int 16x^4\sqrt{3x^2+5x+2}\,dx-\int 16x^5\sqrt{3x^2+5x+2}\,dx-\int\left(-405\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-999*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-864*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-264*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral
(16*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(16*x**5*sqrt(3*x**2 + 5*x +
2), x) - Integral(-405*sqrt(3*x**2 + 5*x + 2), x)
```

3.2166 $\int (5-x)(3+2x)^3\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=135

$$-\frac{1}{18}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{11}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(11538x+27487)\left(3x^2+5x+2\right)^{3/2}}{3240}+\frac{6221(6x\cdots$$

Rubi [A] time = 0.07, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{18}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{11}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(11538x+27487)\left(3x^2+5x+2\right)^{3/2}}{3240}+\frac{6221(6x+5)\sqrt{3x^2+5x+2}}{5184}-\frac{6221\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{10368\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (6221*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/5184 + (11*(3 + 2*x)^2*(2 + 5*x + 3*
x^2)^(3/2))/15 - ((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2))/18 + ((27487 + 11538
*x)*(2 + 5*x + 3*x^2)^(3/2))/3240 - (6221*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2])])/(10368*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
```

```
|| IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\sqrt{2+5x+3x^2}\,dx = -\frac{1}{18}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}+\frac{1}{18}\int (3+2x)^2\left(\frac{609}{2}+198x\right)\sqrt{2+5x}$$
$$= \frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}+\frac{1}{270}\int ($$
$$= \frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}+\frac{(27487}{}$$
$$= \frac{6221(5+6x)\sqrt{2+5x+3x^2}}{5184}+\frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2$$
$$= \frac{6221(5+6x)\sqrt{2+5x+3x^2}}{5184}+\frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2$$
$$= \frac{6221(5+6x)\sqrt{2+5x+3x^2}}{5184}+\frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2$$

Mathematica [A] time = 0.04, size = 77, normalized size = 0.57

$$\frac{-31105\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(34560x^5-14976x^4-825840x^3-2317848x^2-2432350x-859701\right)}{155520}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-859701 - 2432350*x - 2317848*x^2 - 825840*x^3 -
 14976*x^4 + 34560*x^5) - 31105*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x
+ 9*x^2])])/155520
```

IntegrateAlgebraic [A] time = 0.65, size = 79, normalized size = 0.59

$$\frac{\sqrt{3x^2+5x+2}\left(-34560x^5+14976x^4+825840x^3+2317848x^2+2432350x+859701\right)}{25920}-\frac{6221\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{5184\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(859701 + 2432350*x + 2317848*x^2 + 825840*x^3 + 149
76*x^4 - 34560*x^5))/25920 - (6221*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(
1 + x))])/(5184*Sqrt[3])
```

fricas [A] time = 0.41, size = 78, normalized size = 0.58

$$-\frac{1}{25920}\left(34560x^5-14976x^4-825840x^3-2317848x^2-2432350x-859701\right)\sqrt{3x^2+5x+2}+\frac{6221}{62208}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/25920*(34560*x^5 - 14976*x^4 - 825840*x^3 - 2317848*x^2 - 2432350*x - 85
9701)*sqrt(3*x^2 + 5*x + 2) + 6221/62208*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2
+ 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.20, size = 74, normalized size = 0.55

$$-\frac{1}{25920}\left(2\left(12\left(6\left(8\left(30x-13\right)x-5735\right)x-96577\right)x-1216175\right)x-859701\right)\sqrt{3x^2+5x+2}+\frac{6221}{31104}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/25920*(2*(12*(6*(8*(30*x - 13)*x - 5735)*x - 96577)*x - 1216175)*x - 859
701)*sqrt(3*x^2 + 5*x + 2) + 6221/31104*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 113, normalized size = 0.84

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3}{9}+\frac{14\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2}{15}+\frac{337\left(3x^2+5x+2\right)^{\frac{3}{2}}x}{36}-\frac{6221\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{31104}+\frac{44011\left(3x^2+5x+2\right)^{\frac{3}{2}}}{3240}+\frac{6221\left(6x+5\right)\sqrt{3x^2+5x+2}}{5184}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+5*x+2)^(3/2)*x^3+14/15*(3*x^2+5*x+2)^(3/2)*x^2+337/36*(3*x^2+5*
x+2)^(3/2)*x+44011/3240*(3*x^2+5*x+2)^(3/2)+6221/5184*(6*x+5)*(3*x^2+5*x+2)
^(1/2)-6221/31104*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.35, size = 121, normalized size = 0.90

$$-\frac{4}{9}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3+\frac{14}{15}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+\frac{337}{36}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{44011}{3240}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{6221}{864}\sqrt{3x^2+5x+2}\,x-\frac{6221}{31104}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{31105}{5184}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*(3*x^2 + 5*x + 2)^(3/2)*x^3 + 14/15*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 337/
36*(3*x^2 + 5*x + 2)^(3/2)*x + 44011/3240*(3*x^2 + 5*x + 2)^(3/2) + 6221/86
4*sqrt(3*x^2 + 5*x + 2)*x - 6221/31104*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5
*x + 2) + 6*x + 5) + 31105/5184*sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 3.47, size = 153, normalized size = 1.13

$$\frac{14x^2\left(3x^2+5x+2\right)^{3/2}}{15}-\frac{4x^3\left(3x^2+5x+2\right)^{3/2}}{9}-\frac{2093\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{1296}+\frac{2093\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}}{18}+\frac{44011\sqrt{3x^2+5x+2}\,\left(72x^2+30x-27\right)}{77760}+\frac{337x\left(3x^2+5x+2\right)^{3/2}}{36}+\frac{44011\sqrt{3}\,\ln\left(2\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\,(6x+5)}{3}\right)}{31104}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (14*x^2*(5*x + 3*x^2 + 2)^(3/2))/15 - (4*x^3*(5*x + 3*x^2 + 2)^(3/2))/9 - (
2093*3^(1/2)*log((5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/1296 +
 (2093*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/18 + (44011*(5*x + 3*x^2 + 2)^
(1/2)*(30*x + 72*x^2 - 27))/77760 + (337*x*(5*x + 3*x^2 + 2)^(3/2))/36 + (4
4011*3^(1/2)*log(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x + 5))/3))/31104
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-243x\sqrt{3x^2+5x+2}\right)dx-\int\left(-126x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-4x^3\sqrt{3x^2+5x+2}\right)dx-\int 8x^4\sqrt{3x^2+5x+2}\,dx-\int\left(-135\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-243*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-126*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-4*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(8
*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-135*sqrt(3*x**2 + 5*x + 2), x)
```

3.2167 $\int (5-x)(3+2x)^2\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=110

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(3006x+7969)\left(3x^2+5x+2\right)^{3/2}}{1620}+\frac{2267(6x+5)\sqrt{3x^2+5x+2}}{2592}-\frac{2267\tanh^{-1}\left(\right.}{5184}$$

Rubi [A] time = 0.05, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(3006x+7969)\left(3x^2+5x+2\right)^{3/2}}{1620}+\frac{2267(6x+5)\sqrt{3x^2+5x+2}}{2592}-\frac{2267\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{5184\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (2267*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/2592 - ((3 + 2*x)^2*(2 + 5*x + 3*x^2
)^(3/2))/15 + ((7969 + 3006*x)*(2 + 5*x + 3*x^2)^(3/2))/1620 - (2267*ArcTan
h[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(5184*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
```

```
|| IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\sqrt{2+5x+3x^2}\,dx = -\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{1}{15}\int (3+2x)\left(\frac{511}{2}+167x\right)\sqrt{2+5x}$$

$$= -\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969+3006x)\left(2+5x+3x^2\right)^{3/2}}{1620}+$$

$$= \frac{2267(5+6x)\sqrt{2+5x+3x^2}}{2592}-\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969}{}$$

$$= \frac{2267(5+6x)\sqrt{2+5x+3x^2}}{2592}-\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969}{}$$

$$= \frac{2267(5+6x)\sqrt{2+5x+3x^2}}{2592}-\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969}{}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.65

$$\frac{-11335\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(10368x^4-23760x^3-229416x^2-375250x-168627\right)}{77760}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-168627 - 375250*x - 229416*x^2 - 23760*x^3 + 10
368*x^4) - 11335*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/777
60
```

IntegrateAlgebraic [A] time = 0.53, size = 74, normalized size = 0.67

$$\frac{\sqrt{3x^2+5x+2}\left(-10368x^4+23760x^3+229416x^2+375250x+168627\right)}{12960}-\frac{2267\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{2592\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(168627 + 375250*x + 229416*x^2 + 23760*x^3 - 10368*
x^4))/12960 - (2267*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(2592
*Sqrt[3])
```

fricas [A] time = 0.40, size = 73, normalized size = 0.66

$$-\frac{1}{12960}\left(10368x^4-23760x^3-229416x^2-375250x-168627\right)\sqrt{3x^2+5x+2}+\frac{2267}{31104}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/12960*(10368*x^4 - 23760*x^3 - 229416*x^2 - 375250*x - 168627)*sqrt(3*x^
2 + 5*x + 2) + 2267/31104*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x
 + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.19, size = 69, normalized size = 0.63

$$-\frac{1}{12960}\left(2\left(12\left(18\left(24x-55\right)x-9559\right)x-187625\right)x-168627\right)\sqrt{3x^2+5x+2}+\frac{2267}{15552}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/12960*(2*(12*(18*(24*x - 55)*x - 9559)*x - 187625)*x - 168627)*sqrt(3*x^
2 + 5*x + 2) + 2267/15552*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 96, normalized size = 0.87

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2}{15}+\frac{19\left(3x^2+5x+2\right)^{\frac{3}{2}}x}{18}-\frac{2267\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{15552}+\frac{6997\left(3x^2+5x+2\right)^{\frac{3}{2}}}{1620}+\frac{2267\left(6x+5\right)\sqrt{3x^2+5x+2}}{2592}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -4/15*(3*x^2+5*x+2)^(3/2)*x^2+19/18*(3*x^2+5*x+2)^(3/2)*x+6997/1620*(3*x^2+
5*x+2)^(3/2)+2267/2592*(6*x+5)*(3*x^2+5*x+2)^(1/2)-2267/15552*3^(1/2)*ln(1/
3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.32, size = 104, normalized size = 0.95

$$-\frac{4}{15}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+\frac{19}{18}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{6997}{1620}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{2267}{432}\sqrt{3x^2+5x+2}\,x-\frac{2267}{15552}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{11335}{2592}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 19/18*(3*x^2 + 5*x + 2)^(3/2)*x + 6997/
1620*(3*x^2 + 5*x + 2)^(3/2) + 2267/432*sqrt(3*x^2 + 5*x + 2)*x - 2267/1555
2*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 11335/2592*sqrt(
3*x^2 + 5*x + 2)
```

mupad [B] time = 3.51, size = 136, normalized size = 1.24

$$\frac{386\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}}{9}-\frac{193\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{324}-\frac{4x^2\left(3x^2+5x+2\right)^{3/2}}{15}+\frac{6997\sqrt{3x^2+5x+2}\,\left(72x^2+30x-27\right)}{38880}+\frac{19x\left(3x^2+5x+2\right)^{3/2}}{18}+\frac{6997\sqrt{3}\,\ln\left(2\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\,(6x+5)}{3}\right)}{15552}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (386*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/9 - (193*3^(1/2)*log((5*x + 3*x^
2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/324 - (4*x^2*(5*x + 3*x^2 + 2)^(3/
2))/15 + (6997*(5*x + 3*x^2 + 2)^(1/2)*(30*x + 72*x^2 - 27))/38880 + (19*x*
(5*x + 3*x^2 + 2)^(3/2))/18 + (6997*3^(1/2)*log(2*(5*x + 3*x^2 + 2)^(1/2) +
 (3^(1/2)*(6*x + 5))/3))/15552
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-51x\sqrt{3x^2+5x+2}\right)dx-\int\left(-8x^2\sqrt{3x^2+5x+2}\right)dx-\int 4x^3\sqrt{3x^2+5x+2}\,dx-\int\left(-45\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-51*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-8*x**2*sqrt(3*x**2 +
 5*x + 2), x) - Integral(4*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(-45*s
qrt(3*x**2 + 5*x + 2), x)
```

3.2168 $\int (5-x)(3+2x)\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=85

$$\frac{1}{108}(109-18x)\left(3x^2+5x+2\right)^{3/2}+\frac{559}{864}(6x+5)\sqrt{3x^2+5x+2}-\frac{559\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1728\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {779, 612, 621, 206}

$$\frac{1}{108}(109-18x)\left(3x^2+5x+2\right)^{3/2}+\frac{559}{864}(6x+5)\sqrt{3x^2+5x+2}-\frac{559\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1728\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (559*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/864 + ((109 - 18*x)*(2 + 5*x + 3*x^2)
^(3/2))/108 - (559*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(1
728*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\sqrt{2+5x+3x^2}\,dx = \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} + \frac{559}{72}\int \sqrt{2+5x+3x^2}\,dx$$

$$= \frac{559}{864}(5+6x)\sqrt{2+5x+3x^2} + \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} - \frac{559\int \frac{}{\sqrt{}}}{1}$$

$$= \frac{559}{864}(5+6x)\sqrt{2+5x+3x^2} + \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} - \frac{559}{864}\text{Sub}$$

$$= \frac{559}{864}(5+6x)\sqrt{2+5x+3x^2} + \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} - \frac{559\tanh}{}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.79

$$\frac{-559\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(432x^3-1896x^2-7426x-4539\right)}{5184}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-4539 - 7426*x - 1896*x^2 + 432*x^3) - 559*Sqrt[
3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/5184
```

IntegrateAlgebraic [A] time = 0.41, size = 69, normalized size = 0.81

$$\frac{1}{864}\sqrt{3x^2+5x+2}\left(-432x^3+1896x^2+7426x+4539\right)-\frac{559\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{864\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(4539 + 7426*x + 1896*x^2 - 432*x^3))/864 - (559*Arc
Tanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(864*Sqrt[3])
```

fricas [A] time = 0.40, size = 68, normalized size = 0.80

$$-\frac{1}{864}\left(432x^3-1896x^2-7426x-4539\right)\sqrt{3x^2+5x+2}+\frac{559}{10368}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/864*(432*x^3 - 1896*x^2 - 7426*x - 4539)*sqrt(3*x^2 + 5*x + 2) + 559/103
68*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x
+ 49)
```

giac [A] time = 0.25, size = 64, normalized size = 0.75

$$-\frac{1}{864}\left(2\left(12(18x-79)x-3713\right)x-4539\right)\sqrt{3x^2+5x+2}+\frac{559}{5184}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/864*(2*(12*(18*x - 79)*x - 3713)*x - 4539)*sqrt(3*x^2 + 5*x + 2) + 559/5
184*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 79, normalized size = 0.93

$$-\frac{\left(3x^2+5x+2\right)^{\frac{3}{2}} x}{6}-\frac{559\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{5184}+\frac{109\left(3x^2+5x+2\right)^{\frac{3}{2}}}{108}+\frac{559\,(6x+5)\sqrt{3x^2+5x+2}}{864}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/6*(3*x^2+5*x+2)^(3/2)*x+109/108*(3*x^2+5*x+2)^(3/2)+559/864*(6*x+5)*(3*x
^2+5*x+2)^(1/2)-559/5184*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/
2))
```

maxima [A] time = 1.33, size = 87, normalized size = 1.02

$$-\frac{1}{6}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{109}{108}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{559}{144}\sqrt{3x^2+5x+2}\,x-\frac{559}{5184}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{2795}{864}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*(3*x^2 + 5*x + 2)^(3/2)*x + 109/108*(3*x^2 + 5*x + 2)^(3/2) + 559/144*
sqrt(3*x^2 + 5*x + 2)*x - 559/5184*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 6*x + 5) + 2795/864*sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 0.70, size = 119, normalized size = 1.40

$$\frac{46\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}}{3}-\frac{23\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{108}+\frac{109\sqrt{3x^2+5x+2}\,\left(72x^2+30x-27\right)}{2592}-\frac{x\left(3x^2+5x+2\right)^{3/2}}{6}+\frac{545\sqrt{3}\,\ln\left(2\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\,(6x+5)}{3}\right)}{5184}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (46*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/3 - (23*3^(1/2)*log((5*x + 3*x^2
+ 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/108 + (109*(5*x + 3*x^2 + 2)^(1/2)*(
30*x + 72*x^2 - 27))/2592 - (x*(5*x + 3*x^2 + 2)^(3/2))/6 + (545*3^(1/2)*lo
g(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x + 5))/3))/5184
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-7x\sqrt{3x^2+5x+2}\right)dx-\int 2x^2\sqrt{3x^2+5x+2}\,dx-\int\left(-15\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-7*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(2*x**2*sqrt(3*x**2 + 5
*x + 2), x) - Integral(-15*sqrt(3*x**2 + 5*x + 2), x)
```

3.2169 $\int (5-x)\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=80

$$-\frac{1}{9}\left(3x^2+5x+2\right)^{3/2}+\frac{35}{72}(6x+5)\sqrt{3x^2+5x+2}-\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{144\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {640, 612, 621, 206}

$$-\frac{1}{9}\left(3x^2+5x+2\right)^{3/2}+\frac{35}{72}(6x+5)\sqrt{3x^2+5x+2}-\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{144\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (35*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/72 - (2 + 5*x + 3*x^2)^(3/2)/9 - (35*A
rcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(144*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{2+5x+3x^2}\,dx &= -\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}+\frac{35}{6}\int \sqrt{2+5x+3x^2}\,dx\\ &= \frac{35}{72}(5+6x)\sqrt{2+5x+3x^2}-\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}-\frac{35}{144}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{35}{72}(5+6x)\sqrt{2+5x+3x^2}-\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}-\frac{35}{72}\,\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\right.\\ &= \frac{35}{72}(5+6x)\sqrt{2+5x+3x^2}-\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}-\frac{35\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{144\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 62, normalized size = 0.78

$$\frac{1}{432}\left(-6\sqrt{3x^2+5x+2}\left(24x^2-170x-159\right)-35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-159 - 170*x + 24*x^2) - 35*Sqrt[3]*ArcTanh[(5 +
 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/432
```

IntegrateAlgebraic [A] time = 0.30, size = 64, normalized size = 0.80

$$\frac{1}{72}\left(-24x^2+170x+159\right)\sqrt{3x^2+5x+2}-\frac{35\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{72\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] ((159 + 170*x - 24*x^2)*Sqrt[2 + 5*x + 3*x^2])/72 - (35*ArcTanh[Sqrt[2 + 5*
x + 3*x^2]/(Sqrt[3]*(1 + x))])/(72*Sqrt[3])
```

fricas [A] time = 0.38, size = 63, normalized size = 0.79

$$-\frac{1}{72}\left(24x^2-170x-159\right)\sqrt{3x^2+5x+2}+\frac{35}{864}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/72*(24*x^2 - 170*x - 159)*sqrt(3*x^2 + 5*x + 2) + 35/864*sqrt(3)*log(-4*
sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.18, size = 59, normalized size = 0.74

$$-\frac{1}{72}(2(12x-85)x-159)\sqrt{3x^2+5x+2}+\frac{35}{432}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/72*(2*(12*x - 85)*x - 159)*sqrt(3*x^2 + 5*x + 2) + 35/432*sqrt(3)*log(ab
s(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 64, normalized size = 0.80

$$-\frac{35\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{432}+\frac{35\,(6x+5)\,\sqrt{3x^2+5x+2}}{72}-\frac{\left(3x^2+5x+2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 35/72*(6*x+5)*(3*x^2+5*x+2)^(1/2)-35/432*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(
3*x^2+5*x+2)^(1/2))-1/9*(3*x^2+5*x+2)^(3/2)
```

maxima [A] time = 1.35, size = 72, normalized size = 0.90

$$-\frac{1}{9}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}+\frac{35}{12}\,\sqrt{3\,x^2+5\,x+2}\,x-\frac{35}{432}\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)+\frac{175}{72}\,\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 5*x + 2)^(3/2) + 35/12*sqrt(3*x^2 + 5*x + 2)*x - 35/432*sqrt(
3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 175/72*sqrt(3*x^2 + 5*x
 + 2)
```

mupad [B] time = 2.66, size = 104, normalized size = 1.30

$$5\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3\,x^2+5\,x+2}-\frac{5\,\sqrt{3}\,\ln\left(\sqrt{3\,x^2+5\,x+2}+\frac{\sqrt{3}\,\left(3\,x+\frac{5}{2}\right)}{3}\right)}{72}-\frac{\sqrt{3\,x^2+5\,x+2}\,\left(72\,x^2+30\,x-27\right)}{216}-\frac{5\,\sqrt{3}\,\ln\left(2\,\sqrt{3\,x^2+5\,x+2}+\frac{\sqrt{3}\,(6\,x+5)}{3}\right)}{432}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] 5*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2) - (5*3^(1/2)*log((5*x + 3*x^2 + 2)^(
1/2) + (3^(1/2)*(3*x + 5/2))/3))/72 - ((5*x + 3*x^2 + 2)^(1/2)*(30*x + 72*x
^2 - 27))/216 - (5*3^(1/2)*log(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x +
5))/3))/432
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int x\sqrt{3x^2+5x+2}\,dx-\int\left(-5\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-5*sqrt(3*x**2 + 5*x + 2)
, x)
```

3.2170 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{3+2x}\,dx$

Optimal. Leaf size=100

$$\frac{1}{24}\sqrt{3x^2+5x+2}\,(73-6x)-\frac{311\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{48\sqrt{3}}+\frac{13}{8}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Rubi [A] time = 0.06, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{24}\sqrt{3x^2+5x+2}\,(73-6x)-\frac{311\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{48\sqrt{3}}+\frac{13}{8}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x),x]
```

```
[Out] ((73 - 6*x)*Sqrt[2 + 5*x + 3*x^2])/24 - (311*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*S
qrt[2 + 5*x + 3*x^2])])/(48*Sqrt[3]) + (13*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqr
t[5]*Sqrt[2 + 5*x + 3*x^2])])/8
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+5x+3x^2}}{3+2x}\,dx &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{1}{48}\int \frac{543+622x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{311}{48}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx+\frac{65}{8}\int \frac{1}{(3+2x)\sqrt{2+5x}}\\ &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{311}{24}\operatorname{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)-\frac{65}{4}\\ &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{311\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{48\sqrt{3}}+\frac{13}{8}\sqrt{5}\tanh^{-1}\left(\frac{}{2\sqrt{5}}\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 93, normalized size = 0.93

$$\frac{1}{144}\left(-6\sqrt{3x^2+5x+2}\,(6x-73)-234\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-311\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x),x]
```

```
[Out] (-6*(-73 + 6*x)*Sqrt[2 + 5*x + 3*x^2] - 234*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*S
qrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 311*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/144
```

IntegrateAlgebraic [A] time = 0.48, size = 94, normalized size = 0.94

$$\frac{1}{24}\sqrt{3x^2+5x+2}\,(73-6x)-\frac{311\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)}{24\sqrt{3}}+\frac{13}{4}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x),x]
```

```
[Out] ((73 - 6*x)*Sqrt[2 + 5*x + 3*x^2])/24 - (311*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/
(Sqrt[3]*(1 + x))])/(24*Sqrt[3]) + (13*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2
]/(Sqrt[5]*(1 + x))])/4
```

fricas [A] time = 0.41, size = 109, normalized size = 1.09

$$-\frac{1}{24}\sqrt{3x^2+5x+2}\,(6x-73)+\frac{311}{288}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+\frac{13}{16}\sqrt{5}\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/24*sqrt(3*x^2 + 5*x + 2)*(6*x - 73) + 311/288*sqrt(3)*log(-4*sqrt(3)*sqr
t(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 13/16*sqrt(5)*log((4*
sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12
*x + 9))
```

giac [A] time = 0.29, size = 126, normalized size = 1.26

$$-\frac{1}{24}\sqrt{3x^2+5x+2}(6x-73)+\frac{13}{8}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{311}{144}\sqrt{3}\log\left(\left|-6\sqrt{3}x-5\sqrt{3}+6\sqrt{3x^2+5x+2}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(3*x^2 + 5*x + 2)*(6*x - 73) + 13/8*sqrt(5)*log(abs(-4*sqrt(3)*x
- 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqr
t(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 311/144*sqrt(3)*log(abs(-6*s
qrt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x + 2)))
```

maple [A] time = 0.05, size = 127, normalized size = 1.27

$$-\frac{13\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{8}-\frac{13\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{6}+\frac{\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{144}-\frac{(6x+5)\sqrt{3x^2+5x+2}}{24}+\frac{13\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3),x)
```

```
[Out] -1/24*(6*x+5)*(3*x^2+5*x+2)^(1/2)+1/144*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))+13/8*(12*(x+3/2)^2-16*x-19)^(1/2)-13/6*ln(1/3*(3*x+5/2)*
3^(1/2)+(3*(x+3/2)^2-4*x-19/4)^(1/2))*3^(1/2)-13/8*5^(1/2)*arctanh(2/5*(-7/
2-4*x)*5^(1/2)/(12*(x+3/2)^2-16*x-19)^(1/2))
```

maxima [A] time = 1.11, size = 99, normalized size = 0.99

$$-\frac{1}{4}\sqrt{3x^2+5x+2}\,x-\frac{311}{144}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{13}{8}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{73}{24}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(3*x^2 + 5*x + 2)*x - 311/144*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x
 + 2) + 3*x + 5/2) - 13/8*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x
 + 3) + 5/2/abs(2*x + 3) - 2) + 73/24*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\sqrt{3x^2+5x+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(x*sqrt(3*x**2
+ 5*x + 2)/(2*x + 3), x)
```

3.2171 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=105

$$-\frac{\sqrt{3x^2+5x+2}\,(x+8)}{2(2x+3)}+\frac{43\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{3}}-\frac{57\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{5}}$$

Rubi [A] time = 0.06, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {812, 843, 621, 206, 724}

$$-\frac{\sqrt{3x^2+5x+2}\,(x+8)}{2(2x+3)}+\frac{43\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{3}}-\frac{57\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -((8 + x)*Sqrt[2 + 5*x + 3*x^2])/(2*(3 + 2*x)) + (43*ArcTanh[(5 + 6*x)/(2*S
qrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(8*Sqrt[3]) - (57*ArcTanh[(7 + 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])])/(8*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
```

```
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx &= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)} - \frac{1}{8}\int \frac{-72-86x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)} + \frac{43}{8}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx - \frac{57}{8}\int \frac{1}{(3+2x)\sqrt{2+5x \cdots}} \\
&= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)} + \frac{43}{4}\operatorname{Subst}\left(\int \frac{1}{12-x^2}\,dx, x, \frac{5+6x}{\sqrt{2+5x+3x^2}}\right) + \frac{57}{4} \mathrm{S}\cdots \\
&= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)} + \frac{43\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{8\sqrt{3}} - \frac{57\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+\cdots}}\right)}{8\sqrt{5}}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 98, normalized size = 0.93

$$
-\frac{\sqrt{3x^2+5x+2}\,(x+8)}{4x+6} + \frac{57\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{5}} + \frac{43\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{8\sqrt{3}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -(((8 + x)*Sqrt[2 + 5*x + 3*x^2])/(6 + 4*x)) + (57*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(8*Sqrt[5]) + (43*ArcTanh[(5 + 6*x)/(2*Sqrt[
6 + 15*x + 9*x^2])])/(8*Sqrt[3])
```

IntegrateAlgebraic [A] time = 0.49, size = 101, normalized size = 0.96

$$
\frac{\sqrt{3x^2+5x+2}\,(-x-8)}{2(2x+3)} + \frac{43\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)}{4\sqrt{3}} - \frac{57\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{4\sqrt{5}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] ((-8 - x)*Sqrt[2 + 5*x + 3*x^2])/(2*(3 + 2*x)) + (43*ArcTanh[Sqrt[2 + 5*x +
 3*x^2]/(Sqrt[3]*(1 + x))])/(4*Sqrt[3]) - (57*ArcTanh[Sqrt[2 + 5*x + 3*x^2]
/(Sqrt[5]*(1 + x))])/(4*Sqrt[5])
```

fricas [A] time = 0.42, size = 127, normalized size = 1.21

$$
\frac{215\sqrt{3}\,(2x+3)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+171\sqrt{5}\,(2x+3)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-120\sqrt{3x^2+5x+2}\,(x+8)}{240\,(2x+3)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/240*(215*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5)
+ 72*x^2 + 120*x + 49) + 171*sqrt(5)*(2*x + 3)*log(-(4*sqrt(5)*sqrt(3*x^2 +
 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 120*sqrt(
3*x^2 + 5*x + 2)*(x + 8))/(2*x + 3)
```

giac [B] time = 0.75, size = 291, normalized size = 2.77

$$-\frac{43}{24}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)+\frac{57}{40}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{13}{8}\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}\operatorname{sgn}\left(\frac{1}{2x+3}\right)+\frac{4\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-3\sqrt{5}\operatorname{sgn}\left(\frac{1}{2x+3}\right)}{4\left(\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^2-3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -43/24*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^
2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 57/40*sqrt(5)*log(abs(sqr
t(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))*sgn
(1/(2*x + 3)) - 13/8*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)*sgn(1/(2*x + 3)
) + 1/4*(4*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))*sgn
(1/(2*x + 3)) - 3*sqrt(5)*sgn(1/(2*x + 3)))/((sqrt(-8/(2*x + 3) + 5/(2*x +
3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)
```

maple [A] time = 0.06, size = 121, normalized size = 1.15

$$\frac{57\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{40}+\frac{43\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{24}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{10\left(x+\frac{3}{2}\right)}-\frac{57\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{40}+\frac{13(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-57/40*(-16*x+12*(x+3/2)^2-19)^
(1/2)+43/24*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))
+57/40*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2)
)+13/20*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.22, size = 105, normalized size = 1.00

$$\frac{43}{24}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{57}{40}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{1}{4}\sqrt{3x^2+5x+2}-\frac{13\sqrt{3x^2+5x+2}}{4(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] 43/24*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 57/40*sqrt(5
)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) -
1/4*sqrt(3*x^2 + 5*x + 2) - 13/4*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{{(2\,x+3)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{4x^2+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(x*sq
rt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x)
```

3.2172 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=107

$$\frac{\sqrt{3x^2+5x+2}\,(124x+121)}{40(2x+3)^2}-\frac{1}{8}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{27\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{80\sqrt{5}}$$

Rubi [A] time = 0.06, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {810, 843, 621, 206, 724}

$$\frac{\sqrt{3x^2+5x+2}\,(124x+121)}{40(2x+3)^2}-\frac{1}{8}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{27\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{80\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((121 + 124*x)*Sqrt[2 + 5*x + 3*x^2])/(40*(3 + 2*x)^2) - (Sqrt[3]*ArcTanh[(
5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/8 + (27*ArcTanh[(7 + 8*x)/(2*S
qrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(80*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx &= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}-\frac{1}{80}\int \frac{63+60x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}+\frac{27}{80}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx-\frac{3}{8}\int \frac{}{\sqrt{2+5}} \\
&= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}-\frac{27}{40}\operatorname{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)- \\
&= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}-\frac{1}{8}\sqrt{3}\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)+\frac{27\tanh^{-}}{}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 100, normalized size = 0.93

$$
\frac{1}{400}\left(\frac{10\sqrt{3x^2+5x+2}\,(124x+121)}{(2x+3)^2}-27\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-50\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((10*(121 + 124*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 - 27*Sqrt[5]*ArcTanh[
(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 50*Sqrt[3]*ArcTanh[(5 + 6*x
)/(2*Sqrt[6 + 15*x + 9*x^2])])/400
```

IntegrateAlgebraic [A] time = 0.51, size = 101, normalized size = 0.94

$$
\frac{\sqrt{3x^2+5x+2}\,(124x+121)}{40(2x+3)^2}-\frac{1}{4}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)+\frac{27\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{40\sqrt{5}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((121 + 124*x)*Sqrt[2 + 5*x + 3*x^2])/(40*(3 + 2*x)^2) - (Sqrt[3]*ArcTanh[S
qrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/4 + (27*ArcTanh[Sqrt[2 + 5*x + 3*x
^2]/(Sqrt[5]*(1 + x))])/(40*Sqrt[5])
```

fricas [A] time = 0.40, size = 143, normalized size = 1.34

$$
\frac{50\sqrt{3}\left(4x^2+12x+9\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+27\sqrt{5}\left(4x^2+12x+9\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+20\sqrt{3x^2+5x+2}\,(124x+121)}{800\left(4x^2+12x+9\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/800*(50*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(
6*x + 5) + 72*x^2 + 120*x + 49) + 27*sqrt(5)*(4*x^2 + 12*x + 9)*log((4*sqrt
```

```
(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x +
 9)) + 20*sqrt(3*x^2 + 5*x + 2)*(124*x + 121))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.31, size = 240, normalized size = 2.24

$$\frac{27}{400}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{1}{8}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{886\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+2897\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+9039\sqrt{3}x+3037\sqrt{3}-9039\sqrt{3x^2+5x+2}}{40\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] 27/400*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
 2))) + 1/8*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
- 5)) + 1/40*(886*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 2897*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 9039*sqrt(3)*x + 3037*sqrt(3) - 9039*sq
rt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.06, size = 142, normalized size = 1.33

$$-\frac{27\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{400}-\frac{\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{8}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{40\left(x+\frac{3}{2}\right)^2}-\frac{21\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{50\left(x+\frac{3}{2}\right)}+\frac{27\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{400}+\frac{21\left(6x+5\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{100}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^3,x)
```

```
[Out] -13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-21/50/(x+3/2)*(-4*x+3*(x+3/2
)^2-19/4)^(3/2)+27/400*(-16*x+12*(x+3/2)^2-19)^(1/2)-27/400*5^(1/2)*arctanh
(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+21/100*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(1/2)-1/8*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/
2)^2-19/4)^(1/2))
```

maxima [A] time = 1.19, size = 131, normalized size = 1.22

$$-\frac{1}{8}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{27}{400}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{39}{40}\sqrt{3x^2+5x+2}-\frac{13\left(3x^2+5x+2\right)^{\frac{3}{2}}}{10\left(4x^2+12x+9\right)}-\frac{21\sqrt{3x^2+5x+2}}{20\left(2x+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] -1/8*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 27/400*sqrt(5
)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) +
39/40*sqrt(3*x^2 + 5*x + 2) - 13/10*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x +
 9) - 21/20*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3x^2+5x+2}}{(2x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - In
tegral(x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
```

3.2173 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=94

$$-\frac{13\left(3x^2+5x+2\right)^{3/2}}{15(2x+3)^3}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{200(2x+3)^2}-\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400\sqrt{5}}$$

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{3/2}}{15(2x+3)^3}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{200(2x+3)^2}-\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (47*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(200*(3 + 2*x)^2) - (13*(2 + 5*x + 3*x
^2)^(3/2))/(15*(3 + 2*x)^3) - (47*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
 + 3*x^2])])/(400*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^4}\,dx = -\frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3} + \frac{47}{10}\int \frac{\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{200(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3} - \frac{47}{400}\int \frac{1}{(3+2x)\sqrt{2+5x+}}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{200(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3} + \frac{47}{200}\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx,\right.$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{200(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3} - \frac{47\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{400\sqrt{5}}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 0.79

$$\frac{\sqrt{3x^2+5x+2}\left(696x^2+2758x+1921\right)}{600(2x+3)^3} + \frac{47\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(1921 + 2758*x + 696*x^2))/(600*(3 + 2*x)^3) + (47*A
rcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(400*Sqrt[5])
```

IntegrateAlgebraic [A] time = 0.47, size = 71, normalized size = 0.76

$$\frac{\sqrt{3x^2+5x+2}\left(696x^2+2758x+1921\right)}{600(2x+3)^3} - \frac{47\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{200\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(1921 + 2758*x + 696*x^2))/(600*(3 + 2*x)^3) - (47*A
rcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(200*Sqrt[5])
```

fricas [A] time = 0.41, size = 111, normalized size = 1.18

$$\frac{141\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(696x^2+2758x+1921\right)\sqrt{3x^2+5x+2}}{12000\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/12000*(141*sqrt(5)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^
2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(69
6*x^2 + 2758*x + 1921)*sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.32, size = 257, normalized size = 2.73

$$-\frac{47}{2000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right) - \frac{1236\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5 - 4830\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4 - 90290\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3 - 144945\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2 - 287985\sqrt{3}x - 69339\sqrt{3} + 287985\sqrt{3x^2+5x+2}}{600\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -47/2000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
 + 2))) - 1/600*(1236*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 4830*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 90290*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^3 - 144945*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 287985*sq
rt(3)*x - 69339*sqrt(3) + 287985*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)
^3
```

maple [A] time = 0.06, size = 132, normalized size = 1.40

$$\frac{47\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{2000}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{200\left(x+\frac{3}{2}\right)^{2}}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{125\left(x+\frac{3}{2}\right)}-\frac{47\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{2000}+\frac{47\left(6x+5\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{250}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{120\left(x+\frac{3}{2}\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^4,x)
```

```
[Out] -47/200/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-47/125/(x+3/2)*(-4*x+3*(x+3
/2)^2-19/4)^(3/2)-47/2000*(-16*x+12*(x+3/2)^2-19)^(1/2)+47/2000*5^(1/2)*arc
tanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+47/250*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(1/2)-13/120/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.30, size = 135, normalized size = 1.44

$$\frac{47}{2000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{141}{200}\sqrt{3x^{2}+5x+2}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{15\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{47\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{50\left(4x^{2}+12x+9\right)}-\frac{47\sqrt{3x^{2}+5x+2}}{50\left(2x+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 47/2000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*
x + 3) - 2) + 141/200*sqrt(3*x^2 + 5*x + 2) - 13/15*(3*x^2 + 5*x + 2)^(3/2)
/(8*x^3 + 36*x^2 + 54*x + 27) - 47/50*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x
 + 9) - 47/50*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\left(x-5\right)\sqrt{3x^{2}+5x+2}}{\left(2x+3\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+5x+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\right)dx-\int\frac{x\sqrt{3x^{2}+5x+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x +
 81), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2
+ 216*x + 81), x)
```

3.2174 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=119

$$-\frac{4\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}+\frac{153(8x+7)\sqrt{3x^2+5x+2}}{800(2x+3)^2}-\frac{153\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1600\sqrt{5}}$$

Rubi [A] time = 0.06, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{4\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}+\frac{153(8x+7)\sqrt{3x^2+5x+2}}{800(2x+3)^2}-\frac{153\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1600\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] (153*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(800*(3 + 2*x)^2) - (13*(2 + 5*x + 3*
x^2)^(3/2))/(20*(3 + 2*x)^4) - (4*(2 + 5*x + 3*x^2)^(3/2))/(5*(3 + 2*x)^3)
- (153*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(1600*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
```

```
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^5}\,dx = -\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4} - \frac{1}{20}\int \frac{\left(-\frac{123}{2}+39x\right)\sqrt{2+5x+3x^2}}{(3+2x)^4}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4} - \frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3} + \frac{153}{40}\int \frac{\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx$$

$$= \frac{153(7+8x)\sqrt{2+5x+3x^2}}{800(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4} - \frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3} - \frac{153\int}{}$$

$$= \frac{153(7+8x)\sqrt{2+5x+3x^2}}{800(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4} - \frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3} + \frac{153}{800}\mathrm{S}$$

$$= \frac{153(7+8x)\sqrt{2+5x+3x^2}}{800(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4} - \frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3} - \frac{153\,\mathrm{ta}}{}$$

Mathematica [A] time = 0.05, size = 119, normalized size = 1.00

$$\frac{1}{20}\left(-\frac{16\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^3} - \frac{13\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4} + \frac{153(8x+7)\sqrt{3x^2+5x+2}}{40(2x+3)^2} + \frac{153\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{80\sqrt{5}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] ((153*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(40*(3 + 2*x)^2) - (13*(2 + 5*x + 3*
x^2)^(3/2))/(3 + 2*x)^4 - (16*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3 + (153*A
rcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(80*Sqrt[5]))/20
```

IntegrateAlgebraic [A] time = 0.58, size = 76, normalized size = 0.64

$$\frac{\sqrt{3x^2+5x+2}\left(1056x^3+5252x^2+9108x+4759\right)}{800(2x+3)^4} - \frac{153\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{800\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(4759 + 9108*x + 5252*x^2 + 1056*x^3))/(800*(3 + 2*x
)^4) - (153*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(800*Sqrt[5])
```

fricas [A] time = 0.41, size = 126, normalized size = 1.06

$$\frac{153\sqrt{5}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right) + 20\left(1056x^3+5252x^2+9108x+4759\right)\sqrt{3x^2+5x+2}}{16000\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/16000*(153*sqrt(5)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-(4*sqrt(
5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x +
9)) + 20*(1056*x^3 + 5252*x^2 + 9108*x + 4759)*sqrt(3*x^2 + 5*x + 2))/(16*x
^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [A] time = 0.27, size = 183, normalized size = 1.54

$$-\frac{3}{8000}\sqrt{5}\left(44\sqrt{5}\sqrt{3}+51\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+\frac{153}{8000}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{1600}\left(\frac{5\left(\frac{2\left(\frac{65\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-24\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}-25\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}-132\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -3/8000*sqrt(5)*(44*sqrt(5)*sqrt(3) + 51*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(
2*x + 3)) + 153/8000*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x +
3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))*sgn(1/(2*x + 3)) - 1/1600*(5*(2*(65*sg
n(1/(2*x + 3))/(2*x + 3) - 24*sgn(1/(2*x + 3)))/(2*x + 3) - 25*sgn(1/(2*x +
 3)))/(2*x + 3) - 132*sgn(1/(2*x + 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3)
```

maple [A] time = 0.06, size = 153, normalized size = 1.29

$$\frac{153\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{8000}-\frac{\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{10\left(x+\frac{3}{2}\right)^3}-\frac{153\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{800\left(x+\frac{3}{2}\right)^2}-\frac{153\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{500\left(x+\frac{3}{2}\right)}-\frac{153\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{8000}+\frac{153\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{1000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{320\left(x+\frac{3}{2}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^5,x)
```

```
[Out] -1/10/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-153/800/(x+3/2)^2*(-4*x+3*(x+
3/2)^2-19/4)^(3/2)-153/500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-153/8000*(
-16*x+12*(x+3/2)^2-19)^(1/2)+153/8000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2
)/(-16*x+12*(x+3/2)^2-19)^(1/2))+153/1000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(
1/2)-13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.25, size = 171, normalized size = 1.44

$$\frac{153}{8000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{459}{800}\sqrt{3x^2+5x+2}-\frac{13\left(3x^2+5x+2\right)^{\frac{3}{2}}}{20\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{4\left(3x^2+5x+2\right)^{\frac{3}{2}}}{5\left(8x^3+36x^2+54x+27\right)}-\frac{153\left(3x^2+5x+2\right)^{\frac{3}{2}}}{200\left(4x^2+12x+9\right)}-\frac{153\sqrt{3x^2+5x+2}}{200\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 153/8000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) + 459/800*sqrt(3*x^2 + 5*x + 2) - 13/20*(3*x^2 + 5*x + 2)^(3/2
)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 4/5*(3*x^2 + 5*x + 2)^(3/2)/(8
*x^3 + 36*x^2 + 54*x + 27) - 153/200*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x
+ 9) - 153/200*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{(2\,x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x
**2 + 810*x + 243), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x
**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x)
```

3.2175 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=144

$$-\frac{87\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^3}-\frac{339\left(3x^2+5x+2\right)^{3/2}}{500(2x+3)^4}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{25(2x+3)^5}+\frac{3159(8x+7)\sqrt{3x^2+5x+2}}{20000(2x+3)^2}-\frac{3159\tanh}{4}$$

Rubi [A] time = 0.09, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{87\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^3}-\frac{339\left(3x^2+5x+2\right)^{3/2}}{500(2x+3)^4}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{25(2x+3)^5}+\frac{3159(8x+7)\sqrt{3x^2+5x+2}}{20000(2x+3)^2}-\frac{3159\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] (3159*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20000*(3 + 2*x)^2) - (13*(2 + 5*x +
 3*x^2)^(3/2))/(25*(3 + 2*x)^5) - (339*(2 + 5*x + 3*x^2)^(3/2))/(500*(3 + 2
*x)^4) - (87*(2 + 5*x + 3*x^2)^(3/2))/(125*(3 + 2*x)^3) - (3159*ArcTanh[(7
+ 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^6}\,dx = -\frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{1}{25}\int \frac{\left(-\frac{105}{2}+78x\right)\sqrt{2+5x+3x^2}}{(3+2x)^5}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} + \frac{1}{500}\int \frac{\left(\frac{2169}{2}-1017x\right)\sqrt{2+5x}}{(3+2x)^4}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - \frac{87\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^3} + \frac{3159\int}{1}$$

$$= \frac{3159(7+8x)\sqrt{2+5x+3x^2}}{20000(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - 87$$

$$= \frac{3159(7+8x)\sqrt{2+5x+3x^2}}{20000(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - 87$$

$$= \frac{3159(7+8x)\sqrt{2+5x+3x^2}}{20000(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - 87$$

Mathematica [A] time = 0.11, size = 146, normalized size = 1.01

$$\frac{1}{25}\left(-\frac{87\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{339\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^5}+\frac{3159\left(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2}+\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{8000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5 - (339*(2 + 5*x + 3*x^2)^(3/2))/
(20*(3 + 2*x)^4) - (87*(2 + 5*x + 3*x^2)^(3/2))/(5*(3 + 2*x)^3) + (3159*((1
0*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x)
/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/8000)/25
```

IntegrateAlgebraic [A] time = 0.58, size = 81, normalized size = 0.56

$$\frac{\sqrt{3x^2+5x+2}\left(35136x^4+225816x^3+549516x^2+606326x+244331\right)}{20000(2x+3)^5}-\frac{3159\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{20000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(244331 + 606326*x + 549516*x^2 + 225816*x^3 + 35136
*x^4))/(20000*(3 + 2*x)^5) - (3159*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(
1 + x))])/(20000*Sqrt[5])
```

fricas [A] time = 0.42, size = 141, normalized size = 0.98

$$\frac{3159\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(35136x^4+225816x^3+549516x^2+606326x+244331\right)\sqrt{3x^2+5x+2}}{400000\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/400000*(3159*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243
)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(
4*x^2 + 12*x + 9)) + 20*(35136*x^4 + 225816*x^3 + 549516*x^2 + 606326*x + 2
44331)*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*
x + 243)
```

giac [B] time = 0.41, size = 363, normalized size = 2.52

$$-\frac{3159}{200000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{\sqrt{3}\left(50544\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9+2047032\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^8+11747352\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^7+121295556\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^6+269183136\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+1164571962\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+1077361162\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+1845838971\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+592102521\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+244862928\right)}{60000\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -3159/200000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) + 1/60000*sqrt(3)*(50544*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^9 + 2047032*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 11747352*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 121295556*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^6 + 269183136*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 11
64571962*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 1077361162*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^3 + 1845838971*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^2 + 592102521*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 244862928)
/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2)) + 11)^5
```

maple [A] time = 0.06, size = 174, normalized size = 1.21

$$\frac{3159\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{200000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{800\left(x+\frac{3}{2}\right)^5}-\frac{339\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{8000\left(x+\frac{3}{2}\right)^4}-\frac{87\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{1000\left(x+\frac{3}{2}\right)^3}-\frac{3159\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{20000\left(x+\frac{3}{2}\right)^2}-\frac{3159\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{12500\left(x+\frac{3}{2}\right)}-\frac{3159\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{200000}+\frac{3159\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{25000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^6,x)
```

```
[Out] -13/800/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-339/8000/(x+3/2)^4*(-4*x+3*
(x+3/2)^2-19/4)^(3/2)-87/1000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3159/
20000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3159/12500/(x+3/2)*(-4*x+3*(x
+3/2)^2-19/4)^(3/2)-3159/200000*(-16*x+12*(x+3/2)^2-19)^(1/2)+3159/200000*5
^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+3159/2
5000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.42, size = 212, normalized size = 1.47

$$\frac{3159}{200000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{9477}{20000}\sqrt{3x^2+5x+2}-\frac{13\left(3x^2+5x+2\right)^{\frac{3}{2}}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{339\left(3x^2+5x+2\right)^{\frac{3}{2}}}{500\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{87\left(3x^2+5x+2\right)^{\frac{3}{2}}}{125\left(8x^3+36x^2+54x+27\right)}-\frac{3159\left(3x^2+5x+2\right)^{\frac{3}{2}}}{5000\left(4x^2+12x+9\right)}-\frac{3159\sqrt{3x^2+5x+2}}{5000\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 3159/200000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) + 9477/20000*sqrt(3*x^2 + 5*x + 2) - 13/25*(3*x^2 + 5*x + 2
)^(3/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 339/500*(3*
x^2 + 5*x + 2)^(3/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 87/125*(3*x
```

```
^2 + 5*x + 2)^(3/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 3159/5000*(3*x^2 + 5*x +
 2)^(3/2)/(4*x^2 + 12*x + 9) - 3159/5000*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{(2\,x+3)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*
x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(6
4*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x)
```

3.2176 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^7} \, dx$

Optimal. Leaf size=169

$$-\frac{2237\left(3x^2+5x+2\right)^{3/2}}{3750(2x+3)^3}-\frac{3113\left(3x^2+5x+2\right)^{3/2}}{5000(2x+3)^4}-\frac{73\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{30(2x+3)^6}+\frac{26453(8x+7)}{200000(}$$

Rubi [A] time = 0.11, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{2237\left(3x^2+5x+2\right)^{3/2}}{3750(2x+3)^3}-\frac{3113\left(3x^2+5x+2\right)^{3/2}}{5000(2x+3)^4}-\frac{73\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{30(2x+3)^6}+\frac{26453(8x+7)\sqrt{3x^2+5x+2}}{200000(2x+3)^2}-\frac{26453\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] (26453*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(200000*(3 + 2*x)^2) - (13*(2 + 5*x
 + 3*x^2)^(3/2))/(30*(3 + 2*x)^6) - (73*(2 + 5*x + 3*x^2)^(3/2))/(125*(3 +
2*x)^5) - (3113*(2 + 5*x + 3*x^2)^(3/2))/(5000*(3 + 2*x)^4) - (2237*(2 + 5*
x + 3*x^2)^(3/2))/(3750*(3 + 2*x)^3) - (26453*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*
Sqrt[2 + 5*x + 3*x^2])])/(400000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^7}\,dx = -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{1}{30}\int \frac{\left(-\frac{87}{2}+117x\right)\sqrt{2+5x+3x^2}}{(3+2x)^6}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}+\frac{1}{750}\int \frac{\left(\frac{1455}{2}-2628x\right)\sqrt{2+5x+}}{(3+2x)^5}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{3113\left(2+5x+3x^2\right)^{3/2}}{5000(3+2x)^4}-\int\frac{\left(-\frac{50169}{2}\right.}{}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{3113\left(2+5x+3x^2\right)^{3/2}}{5000(3+2x)^4}-\frac{2237\,(2}{375}$$

$$= \frac{26453(7+8x)\sqrt{2+5x+3x^2}}{200000(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{31}{}$$

$$= \frac{26453(7+8x)\sqrt{2+5x+3x^2}}{200000(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{31}{}$$

$$= \frac{26453(7+8x)\sqrt{2+5x+3x^2}}{200000(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{31}{}$$

Mathematica [A] time = 0.09, size = 169, normalized size = 1.00

$$\frac{1}{750}\left(-\frac{2237\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{9339\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}-\frac{438\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^5}-\frac{325\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^6}+\frac{79359\left(\frac{10\sqrt{3x^2+5x+2}(8x+7)}{(2x+3)^2}+\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{8000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] ((-325*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6 - (438*(2 + 5*x + 3*x^2)^(3/2))
/(3 + 2*x)^5 - (9339*(2 + 5*x + 3*x^2)^(3/2))/(20*(3 + 2*x)^4) - (2237*(2 +
 5*x + 3*x^2)^(3/2))/(5*(3 + 2*x)^3) + (79359*((10*(7 + 8*x)*Sqrt[2 + 5*x +
 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
 3*x^2])]))/8000)/750
```

IntegrateAlgebraic [A] time = 0.65, size = 86, normalized size = 0.51

$$\frac{\sqrt{3x^2+5x+2}\left(1567872x^5+12381040x^4+39304480x^3+62797200x^2+50707640x+16322393\right)}{600000(2x+3)^6}-\frac{26453\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{200000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(16322393 + 50707640*x + 62797200*x^2 + 39304480*x^3
 + 12381040*x^4 + 1567872*x^5))/(600000*(3 + 2*x)^6) - (26453*ArcTanh[Sqrt[
2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(200000*Sqrt[5])
```

fricas [A] time = 0.41, size = 156, normalized size = 0.92

$$\frac{79359\sqrt{5}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(1567872x^5+12381040x^4+39304480x^3+62797200x^2+50707640x+16322393\right)\sqrt{3x^2+5x+2}}{12000000\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/12000000*(79359*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^
2 + 2916*x + 729)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2
 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(1567872*x^5 + 12381040*x^4 + 39304
480*x^3 + 62797200*x^2 + 50707640*x + 16322393)*sqrt(3*x^2 + 5*x + 2))/(64*
x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.34, size = 410, normalized size = 2.43

$$-\frac{26453}{2000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{2539488\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{11}+41901552\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{10}+924796880\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{9}+3988893600\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{8}+33933192480\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{7}+66530947296\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{6}+275158218192\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{5}+265623867480\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{4}+526452161650\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{3}+226453420305\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{2}+171288605499\sqrt{3}x+19197814536\sqrt{3}-171288605499\sqrt{3x^2+5x+2}}{600000\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] -26453/2000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqr
t(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))) + 1/600000*(2539488*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 +
41901552*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 924796880*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^9 + 3988893600*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2))^8 + 33933192480*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 665309
47296*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 275158218192*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2))^5 + 265623867480*sqrt(3)*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^4 + 526452161650*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 2264
53420305*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 171288605499*sqrt(
3)*x + 19197814536*sqrt(3) - 171288605499*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2)) + 11)^6
```

maple [A] time = 0.06, size = 195, normalized size = 1.15

$$\frac{26453\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{2000000}-\frac{73\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{4000\left(x+\frac{3}{2}\right)^5}-\frac{3113\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{80000\left(x+\frac{3}{2}\right)^4}-\frac{2237\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{30000\left(x+\frac{3}{2}\right)^3}-\frac{26453\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{200000\left(x+\frac{3}{2}\right)^2}-\frac{26453\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{125000\left(x+\frac{3}{2}\right)}-\frac{26453\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{2000000}+\frac{26453\left(6x+5\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{250000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{1920\left(x+\frac{3}{2}\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^7,x)
```

```
[Out] -73/4000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3113/80000/(x+3/2)^4*(-4*x
+3*(x+3/2)^2-19/4)^(3/2)-2237/30000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
-26453/200000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-26453/125000/(x+3/2)*
(-4*x+3*(x+3/2)^2-19/4)^(3/2)-26453/2000000*(-16*x+12*(x+3/2)^2-19)^(1/2)+2
6453/2000000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)
^(1/2))+26453/250000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-13/1920/(x+3/2)^
6*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.29, size = 258, normalized size = 1.53

$$\frac{26453}{2000000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{79359}{200000}\sqrt{3x^2+5x+2}-\frac{13\left(3x^2+5x+2\right)^{\frac{3}{2}}}{30\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{73\left(3x^2+5x+2\right)^{\frac{3}{2}}}{125\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{3113\left(3x^2+5x+2\right)^{\frac{3}{2}}}{5000\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{2237\left(3x^2+5x+2\right)^{\frac{3}{2}}}{3750\left(8x^3+36x^2+54x+27\right)}-\frac{26453\left(3x^2+5x+2\right)^{\frac{3}{2}}}{50000\left(4x^2+12x+9\right)}-\frac{26453\sqrt{3x^2+5x+2}}{50000\left(2x+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 26453/2000000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/
abs(2*x + 3) - 2) + 79359/200000*sqrt(3*x^2 + 5*x + 2) - 13/30*(3*x^2 + 5*x
 + 2)^(3/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 7
29) - 73/125*(3*x^2 + 5*x + 2)^(3/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2
 + 810*x + 243) - 3113/5000*(3*x^2 + 5*x + 2)^(3/2)/(16*x^4 + 96*x^3 + 216*
x^2 + 216*x + 81) - 2237/3750*(3*x^2 + 5*x + 2)^(3/2)/(8*x^3 + 36*x^2 + 54*
x + 27) - 26453/50000*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x + 9) - 26453/50
000*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{(2\,x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{5\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right) dx - \int \frac{x\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 151
20*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(x*sqrt(3
*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**
3 + 20412*x**2 + 10206*x + 2187), x)
```

3.2177 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=183

$$-\frac{1}{27} \left(3x^2+5x+2\right)^{5/2} (2x+3)^4+\frac{299}{648} \left(3x^2+5x+2\right)^{5/2} (2x+3)^3+\frac{487}{486} \left(3x^2+5x+2\right)^{5/2} (2x+3)^2+\frac{(188910x+4$$

Rubi [A] time = 0.11, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{27} \left(3x^2+5x+2\right)^{5/2} (2x+3)^4+\frac{299}{648} \left(3x^2+5x+2\right)^{5/2} (2x+3)^3+\frac{487}{486} \left(3x^2+5x+2\right)^{5/2} (2x+3)^2+\frac{(188910x+420721) \left(3x^2+5x+2\right)^{5/2}}{58320}+\frac{454969(6x+5) \left(3x^2+5x+2\right)^{3/2}}{559872}-\frac{454969(6x+5)\sqrt{3x^2+5x+2}}{4478976}+\frac{454969 \tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{8957952\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-454969*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/4478976 + (454969*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/559872 + (487*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2))/486
+ (299*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2))/648 - ((3 + 2*x)^4*(2 + 5*x + 3
*x^2)^(5/2))/27 + ((420721 + 188910*x)*(2 + 5*x + 3*x^2)^(5/2))/58320 + (45
4969*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(8957952*Sqrt[3]
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^4\left(2+5x+3x^2\right)^{3/2}\,dx &= -\frac{1}{27}(3+2x)^4\left(2+5x+3x^2\right)^{5/2}+\frac{1}{27}\int (3+2x)^3\left(\frac{917}{2}+299x\right)\left(2+5\right.\\ &= \frac{299}{648}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^4\left(2+5x+3x^2\right)^{5/2}+\frac{1}{648}\\ &= \frac{487}{486}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{299}{648}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}-\frac{1}{27}\\ &= \frac{487}{486}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{299}{648}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}-\frac{1}{27}\\ &= \frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}+\frac{487}{486}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\\ &= -\frac{454969(5+6x)\sqrt{2+5x+3x^2}}{4478976}+\frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}\\ &= -\frac{454969(5+6x)\sqrt{2+5x+3x^2}}{4478976}+\frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}\\ &= -\frac{454969(5+6x)\sqrt{2+5x+3x^2}}{4478976}+\frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}\end{aligned}$$

Mathematica [A] time = 0.06, size = 92, normalized size = 0.50

$$\frac{2274845\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(119439360x^8+370759680x^7-2143687680x^6-14811482880x^5-37262745216x^4-49917376080x^3-37650690888x^2-15049298650x-2471988351\right)}{134369280}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-2471988351 - 15049298650*x - 37650690888*x^2 -
49917376080*x^3 - 37262745216*x^4 - 14811482880*x^5 - 2143687680*x^6 + 3707
59680*x^7 + 119439360*x^8) + 2274845*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/134369280
```

IntegrateAlgebraic [A] time = 0.87, size = 94, normalized size = 0.51

$$\frac{454969\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{4478976\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-119439360x^8-370759680x^7+2143687680x^6+14811482880x^5+37262745216x^4+49917376080x^3+37650690888x^2+15049298650x+2471988351\right)}{22394880}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(2471988351 + 15049298650*x + 37650690888*x^2 + 4991
7376080*x^3 + 37262745216*x^4 + 14811482880*x^5 + 2143687680*x^6 - 37075968
0*x^7 - 119439360*x^8))/22394880 + (454969*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(S
qrt[3]*(1 + x))])/(4478976*Sqrt[3])
```

fricas [A] time = 0.41, size = 93, normalized size = 0.51

$$-\frac{1}{22394880}\left(119439360x^8+370759680x^7-2143687680x^6-14811482880x^5-37262745216x^4-49917376080x^3-37650690888x^2-15049298650x-2471988351\right)\sqrt{3x^2+5x+2}+\frac{454969}{53747712}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/22394880*(119439360*x^8 + 370759680*x^7 - 2143687680*x^6 - 14811482880*x
^5 - 37262745216*x^4 - 49917376080*x^3 - 37650690888*x^2 - 15049298650*x -
2471988351)*sqrt(3*x^2 + 5*x + 2) + 454969/53747712*sqrt(3)*log(4*sqrt(3)*s
qrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.21, size = 89, normalized size = 0.49

$$-\frac{1}{22394880}\,(2\,(12\,(6\,(8\,(30\,(36\,(2\,(48\,x+149)x-1723)x-428573)x-32346133)x-346648445)x-1568778787)x-7524649325)x-2471988351)\sqrt{3\,x^2+5\,x+2}-\frac{454969}{26873856}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/22394880*(2*(12*(6*(8*(30*(36*(2*(48*x + 149)*x - 1723)*x - 428573)*x -
32346133)*x - 346648445)*x - 1568778787)*x - 7524649325)*x - 2471988351)*sq
rt(3*x^2 + 5*x + 2) - 454969/26873856*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 149, normalized size = 0.81

$$-\frac{16\left(3x^2+5x+2\right)^{\frac{5}{2}}x^4}{27}+\frac{11\left(3x^2+5x+2\right)^{\frac{5}{2}}x^3}{81}+\frac{6133\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2}{486}+\frac{2317\left(3x^2+5x+2\right)^{\frac{5}{2}}x}{72}+\frac{454969\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{26873856}-\frac{454969\,(6x+5)\,\sqrt{3x^2+5x+2}}{4478976}+\frac{454969\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{559872}+\frac{1498291\left(3x^2+5x+2\right)^{\frac{5}{2}}}{58320}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -16/27*x^4*(3*x^2+5*x+2)^(5/2)+11/81*x^3*(3*x^2+5*x+2)^(5/2)+6133/486*x^2*(
3*x^2+5*x+2)^(5/2)+2317/72*x*(3*x^2+5*x+2)^(5/2)+454969/26873856*3^(1/2)*ln
(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-454969/4478976*(6*x+5)*(3*x^2+5
*x+2)^(1/2)+454969/559872*(6*x+5)*(3*x^2+5*x+2)^(3/2)+1498291/58320*(3*x^2+
5*x+2)^(5/2)
```

maxima [A] time = 1.17, size = 167, normalized size = 0.91

$$-\frac{16}{27}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^4+\frac{11}{81}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^3+\frac{6133}{486}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^2+\frac{2317}{72}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{1498291}{58320}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{454969}{93312}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{2274845}{559872}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{454969}{746496}\,\sqrt{3\,x^2+5\,x+2}\,x+\frac{454969}{26873856}\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)-\frac{2274845}{4478976}\,\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/27*(3*x^2 + 5*x + 2)^(5/2)*x^4 + 11/81*(3*x^2 + 5*x + 2)^(5/2)*x^3 + 61
33/486*(3*x^2 + 5*x + 2)^(5/2)*x^2 + 2317/72*(3*x^2 + 5*x + 2)^(5/2)*x + 14
98291/58320*(3*x^2 + 5*x + 2)^(5/2) + 454969/93312*(3*x^2 + 5*x + 2)^(3/2)*
x + 2274845/559872*(3*x^2 + 5*x + 2)^(3/2) - 454969/746496*sqrt(3*x^2 + 5*x
 + 2)*x + 454969/26873856*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x
 + 5) - 2274845/4478976*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^4\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-4023x\sqrt{3x^2+5x+2}\right)dx-\int\left(-7938x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-7845x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-3880x^4\sqrt{3x^2+5x+2}\right)dx-\int\left(-680x^5\sqrt{3x^2+5x+2}\right)dx-\int 128x^6\sqrt{3x^2+5x+2}\,dx-\int 48x^7\sqrt{3x^2+5x+2}\,dx-\int\left(-810\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-4023*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-7938*x**2*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-7845*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integ
ral(-3880*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-680*x**5*sqrt(3*x**2
+ 5*x + 2), x) - Integral(128*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(48
*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-810*sqrt(3*x**2 + 5*x + 2), x)
```

3.2178 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{3/2} dx$

Optimal. Leaf size=158

$$-\frac{1}{24}\left(3x^2+5x+2\right)^{5/2}(2x+3)^3+\frac{67}{126}\left(3x^2+5x+2\right)^{5/2}(2x+3)^2+\frac{(33210x+75451)\left(3x^2+5x+2\right)^{5/2}}{15120}+\frac{12277(6}{}$$

Rubi [A] time = 0.08, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{24}\left(3x^2+5x+2\right)^{5/2}(2x+3)^3+\frac{67}{126}\left(3x^2+5x+2\right)^{5/2}(2x+3)^2+\frac{(33210x+75451)\left(3x^2+5x+2\right)^{5/2}}{15120}+\frac{12277(6x+5)\left(3x^2+5x+2\right)^{3/2}}{20736}-\frac{12277(6x+5)\sqrt{3x^2+5x+2}}{165888}+\frac{12277\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{331776\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-12277*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/165888 + (12277*(5 + 6*x)*(2 + 5*x
 + 3*x^2)^(3/2))/20736 + (67*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2))/126 - ((3
 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2))/24 + ((75451 + 33210*x)*(2 + 5*x + 3*x^2
)^(5/2))/15120 + (12277*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
])/(331776*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{1}{24}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}+\frac{1}{24}\int (3+2x)^2\left(\frac{819}{2}+268x\right)\left(2+5\right.$$

$$= \frac{67}{126}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}+\frac{1}{504}$$

$$= \frac{67}{126}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}+\frac{(754}{}$$

$$= \frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+\frac{67}{126}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}-\frac{1}{2}$$

$$= -\frac{12277(5+6x)\sqrt{2+5x+3x^2}}{165888}+\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+\frac{6}{1}$$

$$= -\frac{12277(5+6x)\sqrt{2+5x+3x^2}}{165888}+\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+\frac{6}{1}$$

$$= -\frac{12277(5+6x)\sqrt{2+5x+3x^2}}{165888}+\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+\frac{6}{1}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 0.55

$$\frac{429695\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(17418240x^7+25297920x^6-368236800x^5-1650151296x^4-2993047920x^3-2762417688x^2-1276112350x-233137461\right)}{34836480}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-233137461 - 1276112350*x - 2762417688*x^2 - 299
3047920*x^3 - 1650151296*x^4 - 368236800*x^5 + 25297920*x^6 + 17418240*x^7)
 + 429695*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/34836480
```

IntegrateAlgebraic [A] time = 0.79, size = 89, normalized size = 0.56

$$\frac{12277\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{165888\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-17418240x^7-25297920x^6+368236800x^5+1650151296x^4+2993047920x^3+2762417688x^2+1276112350x+233137461\right)}{5806080}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(233137461 + 1276112350*x + 2762417688*x^2 + 2993047
920*x^3 + 1650151296*x^4 + 368236800*x^5 - 25297920*x^6 - 17418240*x^7))/58
06080 + (12277*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(165888*Sq
rt[3])
```

fricas [A] time = 0.40, size = 88, normalized size = 0.56

$$-\frac{1}{5806080}\left(17418240\,x^7+25297920\,x^6-368236800\,x^5-1650151296\,x^4-2993047920\,x^3-2762417688\,x^2-1276112350\,x-233137461\right)\sqrt{3\,x^2+5\,x+2}+\frac{12277}{1990656}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/5806080*(17418240*x^7 + 25297920*x^6 - 368236800*x^5 - 1650151296*x^4 -
2993047920*x^3 - 2762417688*x^2 - 1276112350*x - 233137461)*sqrt(3*x^2 + 5*
x + 2) + 12277/1990656*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5
) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.21, size = 84, normalized size = 0.53

$$-\frac{1}{5806080}\,(2\,(12\,(6\,(8\,(30\,(12\,(42\,x+61)x-10655)x-1432423)x-20785055)x-115100737)x-638056175)x-233137461)\sqrt{3\,x^2+5\,x+2}-\frac{12277}{995328}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/5806080*(2*(12*(6*(8*(30*(12*(42*x + 61)*x - 10655)*x - 1432423)*x - 207
85055)*x - 115100737)*x - 638056175)*x - 233137461)*sqrt(3*x^2 + 5*x + 2) -
 12277/995328*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
) - 5))
```

maple [A] time = 0.05, size = 132, normalized size = 0.84

$$-\frac{\left(3x^2+5x+2\right)^{\frac{5}{2}} x^3}{3}+\frac{79\left(3x^2+5x+2\right)^{\frac{5}{2}} x^2}{126}+\frac{1063\left(3x^2+5x+2\right)^{\frac{5}{2}} x}{168}+\frac{12277\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{995328}-\frac{12277\,(6x+5)\,\sqrt{3x^2+5x+2}}{165888}+\frac{12277\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{20736}+\frac{130801\left(3x^2+5x+2\right)^{\frac{5}{2}}}{15120}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/3*(3*x^2+5*x+2)^(5/2)*x^3+79/126*(3*x^2+5*x+2)^(5/2)*x^2+1063/168*(3*x^2
+5*x+2)^(5/2)*x+12277/995328*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)
^(1/2))-12277/165888*(6*x+5)*(3*x^2+5*x+2)^(1/2)+12277/20736*(6*x+5)*(3*x^2
+5*x+2)^(3/2)+130801/15120*(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 1.34, size = 150, normalized size = 0.95

$$-\frac{1}{3}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^3+\frac{79}{126}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^2+\frac{1063}{168}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{130801}{15120}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{12277}{3456}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{61385}{20736}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{12277}{27648}\sqrt{3\,x^2+5\,x+2}\,x+\frac{12277}{995328}\sqrt{3}\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)-\frac{61385}{165888}\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/3*(3*x^2 + 5*x + 2)^(5/2)*x^3 + 79/126*(3*x^2 + 5*x + 2)^(5/2)*x^2 + 106
3/168*(3*x^2 + 5*x + 2)^(5/2)*x + 130801/15120*(3*x^2 + 5*x + 2)^(5/2) + 12
277/3456*(3*x^2 + 5*x + 2)^(3/2)*x + 61385/20736*(3*x^2 + 5*x + 2)^(3/2) -
12277/27648*sqrt(3*x^2 + 5*x + 2)*x + 12277/995328*sqrt(3)*log(2*sqrt(3)*sq
rt(3*x^2 + 5*x + 2) + 6*x + 5) - 61385/165888*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^3\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-1161x\sqrt{3x^2+5x+2}\right)dx-\int\left(-1872x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-1367x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-382x^4\sqrt{3x^2+5x+2}\right)dx-\int 28x^5\sqrt{3x^2+5x+2}\,dx-\int 24x^6\sqrt{3x^2+5x+2}\,dx-\int\left(-270\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-1161*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1872*x**2*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-1367*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integ
ral(-382*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(28*x**5*sqrt(3*x**2 + 5
*x + 2), x) - Integral(24*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(-270*s
qrt(3*x**2 + 5*x + 2), x)
```

3.2179 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=133

$$-\frac{1}{21}(2x+3)^2\left(3x^2+5x+2\right)^{5/2}+\frac{(2370x+5827)\left(3x^2+5x+2\right)^{5/2}}{1890}+\frac{1129(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-\frac{1129(6x+$$

Rubi [A] time = 0.06, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{21}(2x+3)^2\left(3x^2+5x+2\right)^{5/2}+\frac{(2370x+5827)\left(3x^2+5x+2\right)^{5/2}}{1890}+\frac{1129(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-\frac{1129(6x+5)\sqrt{3x^2+5x+2}}{20736}+\frac{1129\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{41472\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-1129*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/20736 + (1129*(5 + 6*x)*(2 + 5*x +
3*x^2)^(3/2))/2592 - ((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2))/21 + ((5827 + 23
70*x)*(2 + 5*x + 3*x^2)^(5/2))/1890 + (1129*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])])/(41472*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{1}{21}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{1}{21}\int (3+2x)\left(\frac{721}{2}+237x\right)\left(2+5x\right.$$
$$= -\frac{1}{21}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{(5827+2370x)\left(2+5x+3x^2\right)^{5/2}}{1890}+$$
$$= \frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{(582}{}$$
$$= -\frac{1129(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}($$
$$= -\frac{1129(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}($$
$$= -\frac{1129(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}($$

Mathematica [A] time = 0.05, size = 82, normalized size = 0.62

$$\frac{39515\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(1244160x^6-311040x^5-27084672x^4-79049520x^3-94861176x^2-51971350x-10669737\right)}{4354560}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-10669737 - 51971350*x - 94861176*x^2 - 79049520
*x^3 - 27084672*x^4 - 311040*x^5 + 1244160*x^6) + 39515*Sqrt[3]*ArcTanh[(5
+ 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/4354560
```

IntegrateAlgebraic [A] time = 0.71, size = 84, normalized size = 0.63

$$\frac{1129\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{20736\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-1244160x^6+311040x^5+27084672x^4+79049520x^3+94861176x^2+51971350x+10669737\right)}{725760}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(10669737 + 51971350*x + 94861176*x^2 + 79049520*x^3
 + 27084672*x^4 + 311040*x^5 - 1244160*x^6))/725760 + (1129*ArcTanh[Sqrt[2
+ 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(20736*Sqrt[3])
```

fricas [A] time = 0.41, size = 83, normalized size = 0.62

$$-\frac{1}{725760}\left(1244160\,x^6-311040\,x^5-27084672\,x^4-79049520\,x^3-94861176\,x^2-51971350\,x-10669737\right)\sqrt{3\,x^2+5\,x+2}+\frac{1129}{248832}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/725760*(1244160*x^6 - 311040*x^5 - 27084672*x^4 - 79049520*x^3 - 9486117
6*x^2 - 51971350*x - 10669737)*sqrt(3*x^2 + 5*x + 2) + 1129/248832*sqrt(3)*
log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.21, size = 79, normalized size = 0.59

$$-\frac{1}{725760}\left(2\left(12\left(18\left(8\left(90\left(4x-1\right)x-7837\right)x-182985\right)x-3952549\right)x-25985675\right)x-10669737\right)\sqrt{3x^2+5x+2}-\frac{1129}{124416}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/725760*(2*(12*(18*(8*(90*(4*x - 1)*x - 7837)*x - 182985)*x - 3952549)*x
- 25985675)*x - 10669737)*sqrt(3*x^2 + 5*x + 2) - 1129/124416*sqrt(3)*log(a
bs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 115, normalized size = 0.86

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2}{21}+\frac{43\left(3x^2+5x+2\right)^{\frac{5}{2}}x}{63}+\frac{1129\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{124416}+\frac{5017\left(3x^2+5x+2\right)^{\frac{5}{2}}}{1890}+\frac{1129\left(6x+5\right)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{2592}-\frac{1129\left(6x+5\right)\sqrt{3x^2+5x+2}}{20736}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -4/21*(3*x^2+5*x+2)^(5/2)*x^2+43/63*(3*x^2+5*x+2)^(5/2)*x+5017/1890*(3*x^2+
5*x+2)^(5/2)+1129/2592*(6*x+5)*(3*x^2+5*x+2)^(3/2)-1129/20736*(6*x+5)*(3*x^
2+5*x+2)^(1/2)+1129/124416*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(
1/2))
```

maxima [A] time = 1.31, size = 133, normalized size = 1.00

$$-\frac{4}{21}\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2+\frac{43}{63}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{5017}{1890}\left(3x^2+5x+2\right)^{\frac{5}{2}}+\frac{1129}{432}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{5645}{2592}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{1129}{3456}\sqrt{3x^2+5x+2}\,x+\frac{1129}{124416}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{5645}{20736}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/21*(3*x^2 + 5*x + 2)^(5/2)*x^2 + 43/63*(3*x^2 + 5*x + 2)^(5/2)*x + 5017/
1890*(3*x^2 + 5*x + 2)^(5/2) + 1129/432*(3*x^2 + 5*x + 2)^(3/2)*x + 5645/25
92*(3*x^2 + 5*x + 2)^(3/2) - 1129/3456*sqrt(3*x^2 + 5*x + 2)*x + 1129/12441
6*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 5645/20736*sqrt(
3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2x+3)^2\,(x-5)\,\left(3x^2+5x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-327x\sqrt{3x^2+5x+2}\right)dx-\int\left(-406x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-185x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-4x^4\sqrt{3x^2+5x+2}\right)dx-\int 12x^5\sqrt{3x^2+5x+2}\,dx-\int\left(-90\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-327*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-406*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-185*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral
(-4*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(12*x**5*sqrt(3*x**2 + 5*x +
2), x) - Integral(-90*sqrt(3*x**2 + 5*x + 2), x)
```

3.2180 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=108

$$\frac{1}{270}(161-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{839(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-\frac{839(6x+5)\sqrt{3x^2+5x+2}}{20736}+\frac{839\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{41472\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {779, 612, 621, 206}

$$\frac{1}{270}(161-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{839(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-\frac{839(6x+5)\sqrt{3x^2+5x+2}}{20736}+\frac{839\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{41472\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-839*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/20736 + (839*(5 + 6*x)*(2 + 5*x + 3*
x^2)^(3/2))/2592 + ((161 - 30*x)*(2 + 5*x + 3*x^2)^(5/2))/270 + (839*ArcTan
h[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(41472*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{3/2}\,dx = \frac{1}{270}(161-30x)\left(2+5x+3x^2\right)^{5/2}+\frac{839}{108}\int \left(2+5x+3x^2\right)^{3/2}\,dx$$
$$= \frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}(161-30x)\left(2+5x+3x^2\right)^{5/2}-$$
$$= -\frac{839(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}$$
$$= -\frac{839(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}$$
$$= -\frac{839(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}$$

Mathematica [A] time = 0.04, size = 77, normalized size = 0.71

$$\frac{4195\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(103680x^5-210816x^4-2032560x^3-3567288x^2-2406950x-561921\right)}{622080}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-561921 - 2406950*x - 3567288*x^2 - 2032560*x^3
- 210816*x^4 + 103680*x^5) + 4195*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*
x + 9*x^2])])/622080
```

IntegrateAlgebraic [A] time = 0.61, size = 79, normalized size = 0.73

$$\frac{839\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{20736\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-103680x^5+210816x^4+2032560x^3+3567288x^2+2406950x+561921\right)}{103680}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(561921 + 2406950*x + 3567288*x^2 + 2032560*x^3 + 21
0816*x^4 - 103680*x^5))/103680 + (839*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3
]*(1 + x))])/(20736*Sqrt[3])
```

fricas [A] time = 0.40, size = 78, normalized size = 0.72

$$-\frac{1}{103680}\left(103680\,x^5-210816\,x^4-2032560\,x^3-3567288\,x^2-2406950\,x-561921\right)\sqrt{3\,x^2+5\,x+2}+\frac{839}{248832}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/103680*(103680*x^5 - 210816*x^4 - 2032560*x^3 - 3567288*x^2 - 2406950*x
- 561921)*sqrt(3*x^2 + 5*x + 2) + 839/248832*sqrt(3)*log(4*sqrt(3)*sqrt(3*x
^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.24, size = 74, normalized size = 0.69

$$-\frac{1}{103680}(2(12(18(8(30\,x-61)x-4705)x-148637)x-1203475)x-561921)\sqrt{3\,x^2+5\,x+2}-\frac{839}{124416}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/103680*(2*(12*(18*(8*(30*x - 61)*x - 4705)*x - 148637)*x - 1203475)*x -
561921)*sqrt(3*x^2 + 5*x + 2) - 839/124416*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A]   time = 0.05, size = 98, normalized size = 0.91

$$-\frac{\left(3x^2+5x+2\right)^{\frac{5}{2}} x}{9}+\frac{839\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{124416}+\frac{161\left(3x^2+5x+2\right)^{\frac{5}{2}}}{270}+\frac{839\left(6x+5\right)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{2592}-\frac{839\left(6x+5\right)\sqrt{3x^2+5x+2}}{20736}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/9*(3*x^2+5*x+2)^(5/2)*x+161/270*(3*x^2+5*x+2)^(5/2)+839/2592*(6*x+5)*(3*
x^2+5*x+2)^(3/2)-839/20736*(6*x+5)*(3*x^2+5*x+2)^(1/2)+839/124416*3^(1/2)*l
n(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A]   time = 1.35, size = 116, normalized size = 1.07

$$-\frac{1}{9}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{161}{270}\left(3x^2+5x+2\right)^{\frac{5}{2}}+\frac{839}{432}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{4195}{2592}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{839}{3456}\sqrt{3x^2+5x+2}\,x+\frac{839}{124416}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{4195}{20736}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 5*x + 2)^(5/2)*x + 161/270*(3*x^2 + 5*x + 2)^(5/2) + 839/432*
(3*x^2 + 5*x + 2)^(3/2)*x + 4195/2592*(3*x^2 + 5*x + 2)^(3/2) - 839/3456*sq
rt(3*x^2 + 5*x + 2)*x + 839/124416*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 6*x + 5) - 4195/20736*sqrt(3*x^2 + 5*x + 2)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-89x\sqrt{3x^2+5x+2}\right)dx-\int\left(-76x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-11x^3\sqrt{3x^2+5x+2}\right)dx-\int 6x^4\sqrt{3x^2+5x+2}\,dx-\int\left(-30\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-89*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-76*x**2*sqrt(3*x**2
+ 5*x + 2), x) - Integral(-11*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(6*
x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-30*sqrt(3*x**2 + 5*x + 2), x)
```

3.2181 $\int (5-x)\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=103

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{5/2}+\frac{35}{144}(6x+5)\left(3x^2+5x+2\right)^{3/2}-\frac{35(6x+5)\sqrt{3x^2+5x+2}}{1152}+\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2304\sqrt{3}}$$

Rubi [A] time = 0.03, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{5/2}+\frac{35}{144}(6x+5)\left(3x^2+5x+2\right)^{3/2}-\frac{35(6x+5)\sqrt{3x^2+5x+2}}{1152}+\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2304\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-35*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/1152 + (35*(5 + 6*x)*(2 + 5*x + 3*x^2
)^(3/2))/144 - (2 + 5*x + 3*x^2)^(5/2)/15 + (35*ArcTanh[(5 + 6*x)/(2*Sqrt[3
]*Sqrt[2 + 5*x + 3*x^2])])/(2304*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (5-x)\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{1}{15}\left(2+5x+3x^2\right)^{5/2}+\frac{35}{6}\int \left(2+5x+3x^2\right)^{3/2}\,dx$$
$$= \frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x^2\right)^{5/2}-\frac{35}{96}\int \sqrt{2+5x+3x^2}\,dx$$
$$= -\frac{35(5+6x)\sqrt{2+5x+3x^2}}{1152}+\frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x^2\right.$$
$$= -\frac{35(5+6x)\sqrt{2+5x+3x^2}}{1152}+\frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x^2\right.$$
$$= -\frac{35(5+6x)\sqrt{2+5x+3x^2}}{1152}+\frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x^2\right.$$

Mathematica [A] time = 0.06, size = 72, normalized size = 0.70

$$\frac{175\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(3456x^4-13680x^3-48792x^2-43070x-11589\right)}{34560}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-11589 - 43070*x - 48792*x^2 - 13680*x^3 + 3456*
x^4) + 175*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/34560
```

IntegrateAlgebraic [A] time = 0.46, size = 74, normalized size = 0.72

$$\frac{35\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{1152\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-3456x^4+13680x^3+48792x^2+43070x+11589\right)}{5760}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(11589 + 43070*x + 48792*x^2 + 13680*x^3 - 3456*x^4)
)/5760 + (35*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(1152*Sqrt[3
])
```

fricas [A] time = 0.40, size = 73, normalized size = 0.71

$$-\frac{1}{5760}\left(3456\,x^4-13680\,x^3-48792\,x^2-43070\,x-11589\right)\sqrt{3\,x^2+5\,x+2}+\frac{35}{13824}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/5760*(3456*x^4 - 13680*x^3 - 48792*x^2 - 43070*x - 11589)*sqrt(3*x^2 + 5
*x + 2) + 35/13824*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) +
72*x^2 + 120*x + 49)
```

giac [A] time = 0.19, size = 69, normalized size = 0.67

$$-\frac{1}{5760}\left(2\left(12\left(6\left(24\,x-95\right)x-2033\right)x-21535\right)x-11589\right)\sqrt{3\,x^2+5\,x+2}-\frac{35}{6912}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/5760*(2*(12*(6*(24*x - 95)*x - 2033)*x - 21535)*x - 11589)*sqrt(3*x^2 +
5*x + 2) - 35/6912*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2)) - 5))
```

maple [A] time = 0.08, size = 83, normalized size = 0.81

$$\frac{35\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{6912}+\frac{35\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{144}-\frac{35\left(6x+5\right)\sqrt{3x^{2}+5x+2}}{1152}-\frac{\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 35/144*(6*x+5)*(3*x^2+5*x+2)^(3/2)-35/1152*(6*x+5)*(3*x^2+5*x+2)^(1/2)+35/6
912*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-1/15*(3*x^2+5*x+2
)^(5/2)
```

maxima [A] time = 1.33, size = 101, normalized size = 0.98

$$-\frac{1}{15}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}+\frac{35}{24}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x+\frac{175}{144}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{35}{192}\sqrt{3x^{2}+5x+2}\,x+\frac{35}{6912}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^{2}+5x+2}+6x+5\right)-\frac{175}{1152}\sqrt{3x^{2}+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*x^2 + 5*x + 2)^(5/2) + 35/24*(3*x^2 + 5*x + 2)^(3/2)*x + 175/144*(
3*x^2 + 5*x + 2)^(3/2) - 35/192*sqrt(3*x^2 + 5*x + 2)*x + 35/6912*sqrt(3)*l
og(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 175/1152*sqrt(3*x^2 + 5*x +
 2)
```

mupad [B] time = 2.87, size = 130, normalized size = 1.26

$$\frac{35\sqrt{3}\ \ln\left(\sqrt{3x^{2}+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{6912}-\frac{5\left(6x+5\right)\sqrt{3x^{2}+5x+2}}{1152}+\frac{5\left(3x+\frac{5}{2}\right)\left(3x^{2}+5x+2\right)^{3/2}}{12}-\frac{5\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^{2}+5x+2}}{16}+\frac{5x\left(3x^{2}+5x+2\right)^{3/2}}{24}+\frac{25\left(3x^{2}+5x+2\right)^{3/2}}{144}-\frac{\left(3x^{2}+5x+2\right)^{5/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] (35*3^(1/2)*log((5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/6912 -
(5*(6*x + 5)*(5*x + 3*x^2 + 2)^(1/2))/1152 + (5*(3*x + 5/2)*(5*x + 3*x^2 +
2)^(3/2))/12 - (5*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/16 + (5*x*(5*x + 3*
x^2 + 2)^(3/2))/24 + (25*(5*x + 3*x^2 + 2)^(3/2))/144 - (5*x + 3*x^2 + 2)^(
5/2)/15
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-23x\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-10x^{2}\sqrt{3x^{2}+5x+2}\right)dx-\int 3x^{3}\sqrt{3x^{2}+5x+2}\,dx-\int\left(-10\sqrt{3x^{2}+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-23*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10*x**2*sqrt(3*x**2
+ 5*x + 2), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10*
sqrt(3*x**2 + 5*x + 2), x)
```

3.2182 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{3+2x}\,dx$

Optimal. Leaf size=123

$$\frac{1}{48}(47-6x)\left(3x^2+5x+2\right)^{3/2}+\frac{1}{128}(175-414x)\sqrt{3x^2+5x+2}-\frac{2011\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{256\sqrt{3}}+\frac{65}{32}\sqrt{5}\tanh^{-1}\left(\frac{}{2\sqrt{}}\right.$$

Rubi [A] time = 0.08, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{48}(47-6x)\left(3x^2+5x+2\right)^{3/2}+\frac{1}{128}(175-414x)\sqrt{3x^2+5x+2}-\frac{2011\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{256\sqrt{3}}+\frac{65}{32}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] ((175 - 414*x)*Sqrt[2 + 5*x + 3*x^2])/128 + ((47 - 6*x)*(2 + 5*x + 3*x^2)^(
3/2))/48 - (2011*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(256
*Sqrt[3]) + (65*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])
])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{3+2x}\,dx &= \frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{96}\int \frac{(1083+1242x)\sqrt{2+5x+3x^2}}{3+2x}\,dx\\ &= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}+\frac{\int \frac{-6179}{(3+2x)\sqrt{}}}{4}\\ &= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{2011}{256}\int\\ &= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{2011}{128}\,\mathrm{Sub}\\ &= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{2011\tan}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 103, normalized size = 0.84

$$\frac{1}{768}\left(-1560\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-2011\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-2\sqrt{3x^2+5x+2}\left(144x^3-888x^2-542x-1277\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(-1277 - 542*x - 888*x^2 + 144*x^3) - 1560*Sqrt[5
]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 2011*Sqrt[3]*ArcT
anh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/768
```

IntegrateAlgebraic [A] time = 0.61, size = 104, normalized size = 0.85

$$-\frac{2011\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{128\sqrt{3}}+\frac{65}{16}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{1}{384}\sqrt{3x^2+5x+2}\left(-144x^3+888x^2+542x+1277\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(1277 + 542*x + 888*x^2 - 144*x^3))/384 - (2011*ArcT
anh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(128*Sqrt[3]) + (65*Sqrt[5]*A
rcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/16
```

fricas [A] time = 0.42, size = 119, normalized size = 0.97

$$-\frac{1}{384}\left(144x^3-888x^2-542x-1277\right)\sqrt{3x^2+5x+2}+\frac{2011}{1536}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+\frac{65}{64}\sqrt{5}\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/384*(144*x^3 - 888*x^2 - 542*x - 1277)*sqrt(3*x^2 + 5*x + 2) + 2011/1536
*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x +
```

```
49) + 65/64*sqrt(5)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^
2 + 212*x + 89)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.30, size = 136, normalized size = 1.11

$$-\frac{1}{384}\,(2\,(12\,(6\,x-37)x-271)x-1277)\sqrt{3\,x^2+5\,x+2}+\frac{65}{32}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)+\frac{2011}{768}\,\sqrt{3}\,\log\left(\left|-6\,\sqrt{3}x-5\,\sqrt{3}+6\,\sqrt{3\,x^2+5\,x+2}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/384*(2*(12*(6*x - 37)*x - 271)*x - 1277)*sqrt(3*x^2 + 5*x + 2) + 65/32*s
qrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) +
2011/768*sqrt(3)*log(abs(-6*sqrt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x + 2)
))
```

maple [A] time = 0.05, size = 183, normalized size = 1.49

$$-\frac{65\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{32}-\frac{377\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{144}-\frac{\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{2304}-\frac{(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{48}+\frac{(6x+5)\sqrt{3x^2+5x+2}}{384}+\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{12}-\frac{13\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{24}+\frac{65\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3),x)
```

```
[Out] -1/48*(6*x+5)*(3*x^2+5*x+2)^(3/2)+1/384*(6*x+5)*(3*x^2+5*x+2)^(1/2)-1/2304*
3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))+13/12*(-4*x+3*(x+3/2)
^2-19/4)^(3/2)-13/24*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-377/144*3^(1/2)*
ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+65/32*(-16*x+12*(x+
3/2)^2-19)^(1/2)-65/32*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+
3/2)^2-19)^(1/2))
```

maxima [A] time = 1.51, size = 128, normalized size = 1.04

$$-\frac{1}{8}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{47}{48}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{207}{64}\,\sqrt{3\,x^2+5\,x+2}\,x-\frac{2011}{768}\,\sqrt{3}\,\log\left(\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+3\,x+\frac{5}{2}\right)-\frac{65}{32}\,\sqrt{5}\,\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)+\frac{175}{128}\,\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/8*(3*x^2 + 5*x + 2)^(3/2)*x + 47/48*(3*x^2 + 5*x + 2)^(3/2) - 207/64*sqr
t(3*x^2 + 5*x + 2)*x - 2011/768*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) +
 3*x + 5/2) - 65/32*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3)
+ 5/2/abs(2*x + 3) - 2) + 175/128*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{2\,x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-23*x*sqrt(3*
x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(2
*x + 3), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x)
```

3.2183 $\int \frac{(5-x)(2+5x+3x^2)^{3/2}}{(3+2x)^2} \, dx$

Optimal. Leaf size=128

$$-\frac{(x+21)(3x^2+5x+2)^{3/2}}{6(2x+3)}-\frac{1}{96}(361-726x)\sqrt{3x^2+5x+2}+\frac{3743\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{192\sqrt{3}}-\frac{161}{32}\sqrt{5}\tanh^{-1}\left(\frac{}{2\sqrt{5}}\right.$$

Rubi [A] time = 0.08, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+21)(3x^2+5x+2)^{3/2}}{6(2x+3)}-\frac{1}{96}(361-726x)\sqrt{3x^2+5x+2}+\frac{3743\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{192\sqrt{3}}-\frac{161}{32}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] -((361 - 726*x)*Sqrt[2 + 5*x + 3*x^2])/96 - ((21 + x)*(2 + 5*x + 3*x^2)^(3/
2))/(6*(3 + 2*x)) + (3743*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
]])/(192*Sqrt[3]) - (161*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
 + 3*x^2])])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
```

```
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^2}\,dx = -\frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)} - \frac{1}{8}\int \frac{(-202-242x)\sqrt{2+5x+3x^2}}{3+2x}\,dx$$

$$= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2} - \frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)} + \frac{1}{384}\int \frac{1}{(3+$$

$$= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2} - \frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)} + \frac{3743}{192}\int \frac{}{\sqrt{2}}$$

$$= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2} - \frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)} + \frac{3743}{96}\,\mathrm{Subst}$$

$$= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2} - \frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)} + \frac{3743\tanh^{-}}{1}$$

Mathematica [A] time = 0.07, size = 110, normalized size = 0.86

$$\frac{1}{576}\left(2898\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+3743\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(48x^3-364x^2+256x+1755\right)}{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(1755 + 256*x - 364*x^2 + 48*x^3))/(3 + 2*x) + 2
898*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] + 3743*Sq
rt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/576
```

IntegrateAlgebraic [A] time = 0.64, size = 111, normalized size = 0.87

$$\frac{3743\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{96\sqrt{3}}-\frac{161}{16}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-48x^3+364x^2-256x-1755\right)}{96(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-1755 - 256*x + 364*x^2 - 48*x^3))/(96*(3 + 2*x)) +
 (3743*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(96*Sqrt[3]) - (16
1*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/16
```

fricas [A] time = 0.42, size = 139, normalized size = 1.09

$$\frac{3743\,\sqrt{3}(2\,x+3)\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)+2898\,\sqrt{5}(2\,x+3)\log\left(-\frac{4\,\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}(8\,x+7)-124\,x^2-212\,x-89}{4\,x^2+12\,x+9}\right)-12\left(48\,x^3-364\,x^2+256\,x+1755\right)\sqrt{3\,x^2+5\,x+2}}{1152\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/1152*(3743*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5
) + 72*x^2 + 120*x + 49) + 2898*sqrt(5)*(2*x + 3)*log(-(4*sqrt(5)*sqrt(3*x^
2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 12*(48
*x^3 - 364*x^2 + 256*x + 1755)*sqrt(3*x^2 + 5*x + 2))/(2*x + 3)
```

giac [B] time = 1.13, size = 481, normalized size = 3.76

$$-\frac{3743}{576}\,\sqrt{3}\log\left(\frac{\left|-2\,\sqrt{3}+2\,\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{2\,\sqrt{5}}{2\,x+3}\right|}{\left|2\,\sqrt{3}+2\,\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{2\,\sqrt{5}}{2\,x+3}\right|}\right)\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)+\frac{161}{32}\,\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)-4\right|\right)\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)-\frac{65}{32}\,\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}\,\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)+\frac{4069\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)^5\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)-4308\,\sqrt{5}\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)^4\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)-14464\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)^3\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)+17388\,\sqrt{5}\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)^2\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)+12627\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)-17928\,\sqrt{5}\,\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)}{96\left(\left(\sqrt{-\frac{8}{2\,x+3}+\frac{5}{(2\,x+3)^2}+3}+\frac{\sqrt{5}}{2\,x+3}\right)^2-3\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -3743/576*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2
+ 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x +
3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 161/32*sqrt(5)*log(abs
(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))
*sgn(1/(2*x + 3)) - 65/32*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)*sgn(1/(2*x
 + 3)) + 1/96*(4069*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x
+ 3))^5*sgn(1/(2*x + 3)) - 4308*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2
+ 3) + sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 14464*(sqrt(-8/(2*x + 3) + 5
/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x + 3)) + 17388*sqrt(5)*(
sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2*sgn(1/(2*x +
3)) + 12627*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))*sg
n(1/(2*x + 3)) - 17928*sqrt(5)*sgn(1/(2*x + 3)))/((sqrt(-8/(2*x + 3) + 5/(2
*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^3
```

maple [A] time = 0.06, size = 158, normalized size = 1.23

$$\frac{161\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{32}+\frac{3743\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{576}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{10\left(x+\frac{3}{2}\right)}-\frac{161\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{60}+\frac{121\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{96}-\frac{161\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{32}+\frac{13\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-161/60*(-4*x+3*(x+3/2)^2-19/4)
^(3/2)+121/96*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+3743/576*3^(1/2)*ln(1/3
*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-161/32*(-16*x+12*(x+3/2)^
2-19)^(1/2)+161/32*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)
^2-19)^(1/2))+13/20*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.24, size = 134, normalized size = 1.05

$$-\frac{1}{12}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}+\frac{121}{16}\,\sqrt{3\,x^2+5\,x+2}\,x+\frac{3743}{576}\,\sqrt{3}\log\left(\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+3\,x+\frac{5}{2}\right)+\frac{161}{32}\,\sqrt{5}\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)-\frac{361}{96}\,\sqrt{3\,x^2+5\,x+2}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}{4\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 5*x + 2)^(3/2) + 121/16*sqrt(3*x^2 + 5*x + 2)*x + 3743/576*s
qrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 161/32*sqrt(5)*log(
sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 361/96
*sqrt(3*x^2 + 5*x + 2) - 13/4*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+2}}{4x^2+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-23
*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-10*x**2*sqrt(
3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(3*x**3*sqrt(3*x**2 + 5
*x + 2)/(4*x**2 + 12*x + 9), x)
```

3.2184 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=135

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(43x+93)\sqrt{3x^2+5x+2}}{16(2x+3)}-\frac{343}{64}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{1329\tanh^{-1}\left(\frac{-}{2}\right.}{64\sqrt{}}$$

Rubi [A] time = 0.08, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(43x+93)\sqrt{3x^2+5x+2}}{16(2x+3)}-\frac{343}{64}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{1329\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{64\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] (3*(93 + 43*x)*Sqrt[2 + 5*x + 3*x^2])/(16*(3 + 2*x)) - ((8 + x)*(2 + 5*x +
3*x^2)^(3/2))/(4*(3 + 2*x)^2) - (343*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*S
qrt[2 + 5*x + 3*x^2])])/64 + (1329*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*
x + 3*x^2])])/(64*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
```

```
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3}\,dx &= -\frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{3}{32}\int \frac{(-144-172x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx\\ &= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)}-\frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2}+\frac{3}{256}\int \frac{-2344}{(3+2x)\sqrt{}}\\ &= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)}-\frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{1029}{64}\int \frac{1}{\sqrt{2+5x}}\\ &= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)}-\frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{1029}{32}\text{Subst}\left(\int \frac{}{12}\right.\\ &= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)}-\frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{343}{64}\sqrt{3}\tanh^{-1}\left(\frac{}{2}\right.\end{aligned}$$

Mathematica [A] time = 0.09, size = 110, normalized size = 0.81

$$\frac{1}{320}\left(-1329\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-1715\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{20\sqrt{3x^2+5x+2}\left(12x^3-142x^2-777x-773\right)}{(2x+3)^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-20*Sqrt[2 + 5*x + 3*x^2]*(-773 - 777*x - 142*x^2 + 12*x^3))/(3 + 2*x)^2
- 1329*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 1715
*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/320
```

IntegrateAlgebraic [A] time = 0.59, size = 111, normalized size = 0.82

$$-\frac{343}{32}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)+\frac{1329\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{32\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-12x^3+142x^2+777x+773\right)}{16(2x+3)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(773 + 777*x + 142*x^2 - 12*x^3))/(16*(3 + 2*x)^2) -
 (343*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/32 + (1329*
ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(32*Sqrt[5])
```

fricas [A] time = 0.42, size = 153, normalized size = 1.13

$$\frac{1715\sqrt{3}\left(4x^2+12x+9\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+1329\sqrt{5}\left(4x^2+12x+9\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-40\left(12x^3-142x^2-777x-773\right)\sqrt{3x^2+5x+2}}{640\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/640*(1715*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)
*(6*x + 5) + 72*x^2 + 120*x + 49) + 1329*sqrt(5)*(4*x^2 + 12*x + 9)*log((4*
```

```
sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12
*x + 9)) - 40*(12*x^3 - 142*x^2 - 777*x - 773)*sqrt(3*x^2 + 5*x + 2))/(4*x^
2 + 12*x + 9)
```

giac [B] time = 0.34, size = 259, normalized size = 1.92

$$-\frac{1}{32}\sqrt{3x^2+5x+2}(6x-89)+\frac{1329}{320}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{343}{64}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{5\left(510\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+1869\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6259\sqrt{3}x+2209\sqrt{3}-6259\sqrt{3x^2+5x+2}\right)}{32\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/32*sqrt(3*x^2 + 5*x + 2)*(6*x - 89) + 1329/320*sqrt(5)*log(abs(-4*sqrt(3
)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2
*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 343/64*sqrt(3)*log(abs(-
2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) + 5/32*(510*(sqrt(3)*x
- sqrt(3*x^2 + 5*x + 2))^3 + 1869*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^2 + 6259*sqrt(3)*x + 2209*sqrt(3) - 6259*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2)) + 11)^2
```

maple [A] time = 0.06, size = 179, normalized size = 1.33

$$-\frac{1329\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{320}-\frac{343\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{64}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{40\left(x+\frac{3}{2}\right)^2}+\frac{31\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{50\left(x+\frac{3}{2}\right)}+\frac{443\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{200}-\frac{171(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{160}+\frac{1329\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{320}-\frac{31(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{100}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^3,x)
```

```
[Out] -13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+31/50/(x+3/2)*(-4*x+3*(x+3/2
)^2-19/4)^(5/2)+443/200*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-171/160*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(1/2)-343/64*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x
+3/2)^2-19/4)^(1/2))+1329/320*(-16*x+12*(x+3/2)^2-19)^(1/2)-1329/320*5^(1/2
)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-31/100*(6*x
+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.19, size = 160, normalized size = 1.19

$$\frac{39}{40}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{10\left(4x^2+12x+9\right)}-\frac{513}{80}\sqrt{3x^2+5x+2}\,x-\frac{343}{64}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{1329}{320}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{237}{80}\sqrt{3x^2+5x+2}+\frac{31\left(3x^2+5x+2\right)^{\frac{3}{2}}}{20(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/40*(3*x^2 + 5*x + 2)^(3/2) - 13/10*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x
 + 9) - 513/80*sqrt(3*x^2 + 5*x + 2)*x - 343/64*sqrt(3)*log(sqrt(3)*sqrt(3*
x^2 + 5*x + 2) + 3*x + 5/2) - 1329/320*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x
 + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 237/80*sqrt(3*x^2 + 5*x + 2) +
 31/20*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-23*x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
- Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
```

3.2185 $\int \frac{(5-x)(2+5x+3x^2)^{3/2}}{(3+2x)^4} dx$

Optimal. Leaf size=137

$$\frac{(342x+383)\left(3x^2+5x+2\right)^{3/2}}{120(2x+3)^3}-\frac{(402x+845)\sqrt{3x^2+5x+2}}{160(2x+3)}+\frac{51}{32}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)-\frac{1973\tanh^{-1}}{}$$

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{(342x+383)\left(3x^2+5x+2\right)^{3/2}}{120(2x+3)^3}-\frac{(402x+845)\sqrt{3x^2+5x+2}}{160(2x+3)}+\frac{51}{32}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)-\frac{1973\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{320\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] -((845 + 402*x)*Sqrt[2 + 5*x + 3*x^2])/(160*(3 + 2*x)) + ((383 + 342*x)*(2
+ 5*x + 3*x^2)^(3/2))/(120*(3 + 2*x)^3) + (51*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*
Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/32 - (1973*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sq
rt[2 + 5*x + 3*x^2])])/(320*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx = \frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3}-\frac{1}{80}\int \frac{(361+402x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)}+\frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3}+\frac{1}{640}\int -$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)}+\frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3}+\frac{153}{32}\int -$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)}+\frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3}+\frac{153}{16}\text{Sub}$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)}+\frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3}+\frac{51}{32}\sqrt{3}\ \text{ta}$$

Mathematica [A] time = 0.10, size = 110, normalized size = 0.80

$$\frac{5919\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+7650\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(720x^3+13176x^2+30878x+19751\right)}{(2x+3)^3}}{4800}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(19751 + 30878*x + 13176*x^2 + 720*x^3))/(3 + 2
*x)^3 + 5919*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]
+ 7650*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/4800
```

IntegrateAlgebraic [A] time = 0.63, size = 111, normalized size = 0.81

$$\frac{51}{16}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)-\frac{1973\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{160\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-720x^3-13176x^2-30878x-19751\right)}{480(2x+3)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-19751 - 30878*x - 13176*x^2 - 720*x^3))/(480*(3 +
2*x)^3) + (51*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/16
- (1973*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(160*Sqrt[5])
```

fricas [A] time = 0.42, size = 169, normalized size = 1.23

$$\frac{7650\,\sqrt{3}\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)+5919\,\sqrt{5}\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(-\frac{4\,\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}\,(8\,x+7)-124\,x^2-212\,x-89}{4\,x^2+12\,x+9}\right)-20\left(720\,x^3+13176\,x^2+30878\,x+19751\right)\sqrt{3\,x^2+5\,x+2}}{9600\left(8\,x^3+36\,x^2+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/9600*(7650*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(4*sqrt(3)*sqrt(3*x^2
+ 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 5919*sqrt(5)*(8*x^3 + 36*x^2
+ 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 21
2*x - 89)/(4*x^2 + 12*x + 9)) - 20*(720*x^3 + 13176*x^2 + 30878*x + 19751)*
sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.34, size = 305, normalized size = 2.23

$$-\frac{1973}{1600}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)-\frac{51}{32}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)-\frac{3}{16}\,\sqrt{3\,x^2+5\,x+2}-\frac{62484\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^5+390510\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^4+2835190\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^3+3307455\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^2+5598195\,\sqrt{3}\,x+1227924\,\sqrt{3}-5598195\,\sqrt{3\,x^2+5\,x+2}}{480\left(2\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^2+6\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1973/1600*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5
*x + 2))) - 51/32*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2)) - 5)) - 3/16*sqrt(3*x^2 + 5*x + 2) - 1/480*(62484*(sqrt(3)*x - sqrt(3
*x^2 + 5*x + 2))^5 + 390510*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 +
 2835190*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 3307455*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^2 + 5598195*sqrt(3)*x + 1227924*sqrt(3) - 5598195
*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.06, size = 200, normalized size = 1.46

$$\frac{1973\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1600}+\frac{51\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{32}-\frac{37\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{600\left(x+\frac{3}{2}\right)^2}-\frac{158\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{375\left(x+\frac{3}{2}\right)}-\frac{1973\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{3000}+\frac{121\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{400}-\frac{1973\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{1600}+\frac{79\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{375}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{120\left(x+\frac{3}{2}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^4,x)
```

```
[Out] -37/600/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-158/375/(x+3/2)*(-4*x+3*(x+
3/2)^2-19/4)^(5/2)-1973/3000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+121/400*(6*x+5)*
(-4*x+3*(x+3/2)^2-19/4)^(1/2)+51/32*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+
3*(x+3/2)^2-19/4)^(1/2))-1973/1600*(-16*x+12*(x+3/2)^2-19)^(1/2)+1973/1600*
5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+79/37
5*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-13/120/(x+3/2)^3*(-4*x+3*(x+3/2)^2-
19/4)^(5/2)
```

maxima [A] time = 1.36, size = 191, normalized size = 1.39

$$\frac{37}{200}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}{15\left(8\,x^3+36\,x^2+54\,x+27\right)}-\frac{37\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}{150\left(4\,x^2+12\,x+9\right)}+\frac{363}{200}\,\sqrt{3\,x^2+5\,x+2}\,x+\frac{51}{32}\,\sqrt{3}\,\log\left(\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+3\,x+\frac{5}{2}\right)+\frac{1973}{1600}\,\sqrt{5}\,\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)-\frac{763}{800}\,\sqrt{3\,x^2+5\,x+2}-\frac{79\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}{75\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 37/200*(3*x^2 + 5*x + 2)^(3/2) - 13/15*(3*x^2 + 5*x + 2)^(5/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 37/150*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x + 9) + 363/
200*sqrt(3*x^2 + 5*x + 2)*x + 51/32*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x +
2) + 3*x + 5/2) + 1973/1600*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2
*x + 3) + 5/2/abs(2*x + 3) - 2) - 763/800*sqrt(3*x^2 + 5*x + 2) - 79/75*(3*
x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{10\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int \left(-\frac{23x\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int \left(-\frac{10x^2\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int \frac{3x^3\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x
+ 81), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*
x**2 + 216*x + 81), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**4
+ 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x
+ 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x)
```

3.2186 $\int \frac{(5-x)(2+5x+3x^2)^{3/2}}{(3+2x)^5} dx$

Optimal. Leaf size=137

$$\frac{(352x+333)(3x^2+5x+2)^{3/2}}{240(2x+3)^4}+\frac{(1528x+2087)\sqrt{3x^2+5x+2}}{3200(2x+3)^2}-\frac{3}{32}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{2359\tan$$

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {810, 843, 621, 206, 724}

$$\frac{(352x+333)(3x^2+5x+2)^{3/2}}{240(2x+3)^4}+\frac{(1528x+2087)\sqrt{3x^2+5x+2}}{3200(2x+3)^2}-\frac{3}{32}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{2359\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{6400\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] ((2087 + 1528*x)*Sqrt[2 + 5*x + 3*x^2])/(3200*(3 + 2*x)^2) + ((333 + 352*x)
*(2 + 5*x + 3*x^2)^(3/2))/(240*(3 + 2*x)^4) - (3*Sqrt[3]*ArcTanh[(5 + 6*x)/
(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/32 + (2359*ArcTanh[(7 + 8*x)/(2*Sqrt[5]
*Sqrt[2 + 5*x + 3*x^2])])/(6400*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx &= \frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{1}{160}\int \frac{(139+120x)\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx \\
&= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}+\frac{\int \frac{-608\ldots}{(3+2x)\ldots}}{1\ldots} \\
&= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{9}{32}\int \frac{\ldots}{\sqrt{\ldots}} \\
&= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{9}{16}\text{Subs}\ldots \\
&= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{3}{32}\sqrt{3}\,\text{t}\ldots
\end{aligned}
$$

Mathematica [A] time = 0.11, size = 110, normalized size = 0.80

$$
\frac{-7077\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-9000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+\frac{10\sqrt{3x^2+5x+2}\left(60576x^3+190412x^2+211148x+82989\right)}{(2x+3)^4}}{96000}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] ((10*Sqrt[2 + 5*x + 3*x^2]*(82989 + 211148*x + 190412*x^2 + 60576*x^3))/(3
+ 2*x)^4 - 7077*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2]
)] - 9000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/96000
```

IntegrateAlgebraic [A] time = 0.61, size = 111, normalized size = 0.81

$$
-\frac{3}{16}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)+\frac{2359\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{3200\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(60576x^3+190412x^2+211148x+82989\right)}{9600(2x+3)^4}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(82989 + 211148*x + 190412*x^2 + 60576*x^3))/(9600*(
3 + 2*x)^4) - (3*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/
16 + (2359*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(3200*Sqrt[5])
```

fricas [A] time = 0.43, size = 183, normalized size = 1.34

$$
\frac{9000\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+7077\sqrt{5}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+20\left(60576x^3+190412x^2+211148x+82989\right)\sqrt{3x^2+5x+2}}{192000\left(16x^4+96x^3+216x^2+216x+81\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/192000*(9000*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-4*sqrt
(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 7077*sqrt(5)*(
16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2
)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(60576*x^3 + 1
90412*x^2 + 211148*x + 82989)*sqrt(3*x^2 + 5*x + 2))/(16*x^4 + 96*x^3 + 216
*x^2 + 216*x + 81)
```

giac [A] time = 0.29, size = 106, normalized size = 0.77

$$-\frac{1}{19200}\left(\frac{5\left(\frac{10\left(\frac{195\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-488\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+4109\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}-7572\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}-\frac{631}{1600}\sqrt{3}\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -1/19200*(5*(10*(195*sgn(1/(2*x + 3))/(2*x + 3) - 488*sgn(1/(2*x + 3)))/(2*
x + 3) + 4109*sgn(1/(2*x + 3)))/(2*x + 3) - 7572*sgn(1/(2*x + 3)))*sqrt(-8/
(2*x + 3) + 5/(2*x + 3)^2 + 3) - 631/1600*sqrt(3)*sgn(1/(2*x + 3))
```

maple [B] time = 0.06, size = 221, normalized size = 1.61

$$-\frac{2359\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{32000}-\frac{3\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{32}-\frac{17\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{300\left(x+\frac{3}{2}\right)^3}-\frac{1129\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{12000\left(x+\frac{3}{2}\right)^2}-\frac{911\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{7500\left(x+\frac{3}{2}\right)}+\frac{2359\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{60000}-\frac{109\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{4000}+\frac{2359\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{32000}+\frac{911\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{15000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{320\left(x+\frac{3}{2}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^5,x)
```

```
[Out] -17/300/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1129/12000/(x+3/2)^2*(-4*x+
3*(x+3/2)^2-19/4)^(5/2)-911/7500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+2359
/60000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-109/4000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/
4)^(1/2)-3/32*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2
))+2359/32000*(-16*x+12*(x+3/2)^2-19)^(1/2)-2359/32000*5^(1/2)*arctanh(2/5*
(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+911/15000*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(3/2)-13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.34, size = 227, normalized size = 1.66

$$\frac{1129}{4000}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{20\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{34\left(3x^2+5x+2\right)^{\frac{5}{2}}}{75\left(8x^3+36x^2+54x+27\right)}-\frac{1129\left(3x^2+5x+2\right)^{\frac{5}{2}}}{3000\left(4x^2+12x+9\right)}-\frac{327}{2000}\sqrt{3x^2+5x+2}\,x-\frac{3}{32}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{2359}{32000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{179}{16000}\sqrt{3x^2+5x+2}-\frac{911\left(3x^2+5x+2\right)^{\frac{3}{2}}}{3000\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 1129/4000*(3*x^2 + 5*x + 2)^(3/2) - 13/20*(3*x^2 + 5*x + 2)^(5/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) - 34/75*(3*x^2 + 5*x + 2)^(5/2)/(8*x^3 + 36
*x^2 + 54*x + 27) - 1129/3000*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x + 9) -
327/2000*sqrt(3*x^2 + 5*x + 2)*x - 3/32*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 3*x + 5/2) - 2359/32000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/
abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 179/16000*sqrt(3*x^2 + 5*x + 2) - 91
1/3000*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*
x**2 + 810*x + 243), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 +
240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-10*x**2*sqrt
(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243
), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x*
*3 + 1080*x**2 + 810*x + 243), x)
```

3.2187 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=124

$$-\frac{13\left(3x^2+5x+2\right)^{5/2}}{25(2x+3)^5}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{400(2x+3)^4}-\frac{141(8x+7)\sqrt{3x^2+5x+2}}{16000(2x+3)^2}+\frac{141\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{32000\sqrt{5}}$$

Rubi [A] time = 0.06, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{5/2}}{25(2x+3)^5}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{400(2x+3)^4}-\frac{141(8x+7)\sqrt{3x^2+5x+2}}{16000(2x+3)^2}+\frac{141\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{32000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] (-141*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(16000*(3 + 2*x)^2) + (47*(7 + 8*x)*
(2 + 5*x + 3*x^2)^(3/2))/(400*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x^2)^(5/2))/(
25*(3 + 2*x)^5) + (141*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]
)/(32000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx = -\frac{13\left(2+5x+3x^2\right)^{5/2}}{25(3+2x)^5} + \frac{47}{10}\int \frac{\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$$
$$= \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4} - \frac{13\left(2+5x+3x^2\right)^{5/2}}{25(3+2x)^5} - \frac{141}{800}\int \frac{\sqrt{2+5x+3x}}{(3+2x)^3}$$
$$= -\frac{141(7+8x)\sqrt{2+5x+3x^2}}{16000(3+2x)^2} + \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4} - \frac{13\left(2+5x+\right.}{25(3+2}$$
$$= -\frac{141(7+8x)\sqrt{2+5x+3x^2}}{16000(3+2x)^2} + \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4} - \frac{13\left(2+5x+\right.}{25(3+2}$$
$$= -\frac{141(7+8x)\sqrt{2+5x+3x^2}}{16000(3+2x)^2} + \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4} - \frac{13\left(2+5x+\right.}{25(3+2}$$

Mathematica [A] time = 0.08, size = 128, normalized size = 1.03

$$-\frac{83200\left(3x^2+5x+2\right)^{5/2}-47(2x+3)\left(-30(8x+7)\sqrt{3x^2+5x+2}\,(2x+3)^2+400(8x+7)\left(3x^2+5x+2\right)^{3/2}-3\sqrt{5}\,(2x+3)^4\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{160000(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] -1/160000*(83200*(2 + 5*x + 3*x^2)^(5/2) - 47*(3 + 2*x)*(-30*(3 + 2*x)^2*(7
 + 8*x)*Sqrt[2 + 5*x + 3*x^2] + 400*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2) - 3*S
qrt[5]*(3 + 2*x)^4*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/
(3 + 2*x)^5
```

IntegrateAlgebraic [A] time = 0.56, size = 81, normalized size = 0.65

$$\frac{141\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{16000\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\,\left(6336x^4+66616x^3+131516x^2+90126x+19031\right)}{16000(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(19031 + 90126*x + 131516*x^2 + 66616*x^3 + 6336*x^4
))/(16000*(3 + 2*x)^5) + (141*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x
))])/(16000*Sqrt[5])
```

fricas [A] time = 0.42, size = 140, normalized size = 1.13

$$\frac{141\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+20\left(6336x^4+66616x^3+131516x^2+90126x+19031\right)\sqrt{3x^2+5x+2}}{320000\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/320000*(141*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*
x^2 + 12*x + 9)) + 20*(6336*x^4 + 66616*x^3 + 131516*x^2 + 90126*x + 19031)
*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 24
3)
```

giac [B] time = 0.31, size = 359, normalized size = 2.90

$$\frac{141}{160000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{146256\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9+654456\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^8+415048\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^7-15455452\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^6-140042336\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5-207568854\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4-544555762\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3-286352757\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2-252454821\sqrt{3}x-31985676\sqrt{3}+252454821\sqrt{3x^2+5x+2}}{16000\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] 141/160000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5
*x + 2))) - 1/16000*(146256*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 654456*
sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 415048*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^7 - 15455452*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6
- 140042336*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 207568854*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 544555762*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^3 - 286352757*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 2524548
21*sqrt(3)*x - 31985676*sqrt(3) + 252454821*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2)) + 11)^5
```

maple [B] time = 0.06, size = 211, normalized size = 1.70

$$-\frac{141\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{160000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{800\left(x+\frac{3}{2}\right)^5}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{1600\left(x+\frac{3}{2}\right)^4}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{1000\left(x+\frac{3}{2}\right)^3}-\frac{1457\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{20000\left(x+\frac{3}{2}\right)^2}-\frac{1363\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{12500\left(x+\frac{3}{2}\right)}+\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{100000}-\frac{141(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{20000}+\frac{141\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{160000}+\frac{1363(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{25000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^6,x)
```

```
[Out] -13/800/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-47/1600/(x+3/2)^4*(-4*x+3*(
x+3/2)^2-19/4)^(5/2)-47/1000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1457/2
0000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1363/12500/(x+3/2)*(-4*x+3*(x+
3/2)^2-19/4)^(5/2)+47/100000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-141/20000*(6*x+5
)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+141/160000*(-16*x+12*(x+3/2)^2-19)^(1/2)-14
1/160000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/
2))+1363/25000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [B] time = 1.29, size = 241, normalized size = 1.94

$$\frac{4371}{20000}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{47\left(3x^2+5x+2\right)^{\frac{5}{2}}}{100\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{47\left(3x^2+5x+2\right)^{\frac{5}{2}}}{125\left(8x^3+36x^2+54x+27\right)}-\frac{1457\left(3x^2+5x+2\right)^{\frac{5}{2}}}{5000\left(4x^2+12x+9\right)}-\frac{423}{10000}\sqrt{3x^2+5x+2}\,x-\frac{141}{160000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{2679}{80000}\sqrt{3x^2+5x+2}-\frac{1363\left(3x^2+5x+2\right)^{\frac{3}{2}}}{5000(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 4371/20000*(3*x^2 + 5*x + 2)^(3/2) - 13/25*(3*x^2 + 5*x + 2)^(5/2)/(32*x^5
+ 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 47/100*(3*x^2 + 5*x + 2)^(5
/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 47/125*(3*x^2 + 5*x + 2)^(5/
2)/(8*x^3 + 36*x^2 + 54*x + 27) - 1457/5000*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2
+ 12*x + 9) - 423/10000*sqrt(3*x^2 + 5*x + 2)*x - 141/160000*sqrt(5)*log(sq
rt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 2679/800
00*sqrt(3*x^2 + 5*x + 2) - 1363/5000*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320
*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-23*x*sqrt(3*x**2 + 5*x +
2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729),
 x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x
**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(3*x**3*sqrt(3*x*
*2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 291
6*x + 729), x)
```

3.2188 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=149

$$-\frac{167\left(3x^2+5x+2\right)^{5/2}}{375(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{30(2x+3)^6}+\frac{1141(8x+7)\left(3x^2+5x+2\right)^{3/2}}{12000(2x+3)^4}-\frac{1141(8x+7)\sqrt{3x^2+5x+2}}{160000(2x+3)^2}+\frac{114}{}$$

Rubi [A] time = 0.08, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{167\left(3x^2+5x+2\right)^{5/2}}{375(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{30(2x+3)^6}+\frac{1141(8x+7)\left(3x^2+5x+2\right)^{3/2}}{12000(2x+3)^4}-\frac{1141(8x+7)\sqrt{3x^2+5x+2}}{160000(2x+3)^2}+\frac{1141\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{320000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] (-1141*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(160000*(3 + 2*x)^2) + (1141*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(12000*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x^2)^(5
/2))/(30*(3 + 2*x)^6) - (167*(2 + 5*x + 3*x^2)^(5/2))/(375*(3 + 2*x)^5) + (
1141*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(320000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{30(3+2x)^6}-\frac{1}{30}\int \frac{\left(-\frac{217}{2}+39x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{30(3+2x)^6}-\frac{167\left(2+5x+3x^2\right)^{5/2}}{375(3+2x)^5}+\frac{1141}{300}\int \frac{\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\\
&= \frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13\left(2+5x+3x^2\right)^{5/2}}{30(3+2x)^6}-\frac{167\left(2+5x+3x^2\right)}{375(3+2x)^5}\\
&= -\frac{1141(7+8x)\sqrt{2+5x+3x^2}}{160000(3+2x)^2}+\frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13\left(2+5\right.}{30(3}\\
&= -\frac{1141(7+8x)\sqrt{2+5x+3x^2}}{160000(3+2x)^2}+\frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13\left(2+5\right.}{30(3}\\
&= -\frac{1141(7+8x)\sqrt{2+5x+3x^2}}{160000(3+2x)^2}+\frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13\left(2+5\right.}{30(3}\end{aligned}$$

Mathematica [A] time = 0.09, size = 151, normalized size = 1.01

$$\frac{1}{30}\left(-\frac{334\left(3x^2+5x+2\right)^{5/2}}{25(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6}+\frac{1141(8x+7)\left(3x^2+5x+2\right)^{3/2}}{400(2x+3)^4}-\frac{3423\left(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2}+\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{160000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] ((1141*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(400*(3 + 2*x)^4) - (13*(2 + 5*x
+ 3*x^2)^(5/2))/(3 + 2*x)^6 - (334*(2 + 5*x + 3*x^2)^(5/2))/(25*(3 + 2*x)^5
) - (3423*((10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTa
nh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/160000)/30
```

IntegrateAlgebraic [A] time = 0.62, size = 86, normalized size = 0.58

$$\frac{1141\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{160000\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(95616x^5+799120x^4+3065440x^3+4479600x^2+2526920x+412679\right)}{480000(2x+3)^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(412679 + 2526920*x + 4479600*x^2 + 3065440*x^3 + 79
9120*x^4 + 95616*x^5))/(480000*(3 + 2*x)^6) + (1141*ArcTanh[Sqrt[2 + 5*x +
3*x^2]/(Sqrt[5]*(1 + x))])/(160000*Sqrt[5])
```

fricas [A] time = 0.42, size = 155, normalized size = 1.04

$$\frac{3423\,\sqrt{5}\left(64\,x^{6}+576\,x^{5}+2160\,x^{4}+4320\,x^{3}+4860\,x^{2}+2916\,x+729\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}\,(8\,x+7)+124\,x^{2}+212\,x+89}{4\,x^{2}+12\,x+9}\right)+20\left(95616\,x^{5}+799120\,x^{4}+3065440\,x^{3}+4479600\,x^{2}+2526920\,x+412679\right)\sqrt{3\,x^{2}+5\,x+2}}{9600000\left(64\,x^{6}+576\,x^{5}+2160\,x^{4}+4320\,x^{3}+4860\,x^{2}+2916\,x+729\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/9600000*(3423*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
+ 2916*x + 729)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 +
212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(95616*x^5 + 799120*x^4 + 3065440*x^3
+ 4479600*x^2 + 2526920*x + 412679)*sqrt(3*x^2 + 5*x + 2))/(64*x^6 + 576*x^
5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.36, size = 410, normalized size = 2.75

$$\frac{1141}{1600000}\,\sqrt{5}\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}\right)-\frac{109536\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{11}+6127344\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{10}+70129360\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{9}-83080800\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{8}-3334681440\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{7}-9802137888\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{6}-47432214576\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{5}-48106882440\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{4}-94851959950\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{3}-39436262415\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{2}-28403540997\,\sqrt{3}x-3009604608\,\sqrt{3}+28403540997\,\sqrt{3\,x^{2}+5\,x+2}}{480000\left(2\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{2}+6\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)+11\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 1141/1600000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) - 1/480000*(109536*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 612
7344*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 70129360*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^9 - 83080800*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^8 - 3334681440*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 9802137888*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 - 47432214576*(sqrt(3)*x - sqrt(
3*x^2 + 5*x + 2))^5 - 48106882440*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^4 - 94851959950*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 39436262415*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 28403540997*sqrt(3)*x - 3009604
608*sqrt(3) + 28403540997*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^6
```

maple [A] time = 0.06, size = 232, normalized size = 1.56

$$-\frac{1141\,\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1600000}-\frac{167\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{12000\left(x+\frac{3}{2}\right)^{5}}-\frac{1141\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{48000\left(x+\frac{3}{2}\right)^{4}}-\frac{1141\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{30000\left(x+\frac{3}{2}\right)^{3}}-\frac{35371\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{600000\left(x+\frac{3}{2}\right)^{2}}-\frac{33089\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{375000\left(x+\frac{3}{2}\right)}+\frac{1141\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{3000000}-\frac{1141\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{200000}+\frac{1141\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{1600000}+\frac{33089\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{750000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{1920\left(x+\frac{3}{2}\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^7,x)
```

```
[Out] -167/12000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1141/48000/(x+3/2)^4*(-4
*x+3*(x+3/2)^2-19/4)^(5/2)-1141/30000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/
2)-35371/600000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-33089/375000/(x+3/2
)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+1141/3000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-
1141/200000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+1141/1600000*(-16*x+12*(x
+3/2)^2-19)^(1/2)-1141/1600000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*
x+12*(x+3/2)^2-19)^(1/2))+33089/750000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2
)-13/1920/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.20, size = 287, normalized size = 1.93

$$\frac{35371}{200000}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}-\frac{13\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}{30\left(64\,x^{6}+576\,x^{5}+2160\,x^{4}+4320\,x^{3}+4860\,x^{2}+2916\,x+729\right)}-\frac{167\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}{375\left(32\,x^{5}+240\,x^{4}+720\,x^{3}+1080\,x^{2}+810\,x+243\right)}-\frac{1141\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}{3000\left(16\,x^{4}+96\,x^{3}+216\,x^{2}+216\,x+81\right)}-\frac{1141\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}{3750\left(8\,x^{3}+36\,x^{2}+54\,x+27\right)}-\frac{35371\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}{150000\left(4\,x^{2}+12\,x+9\right)}-\frac{3423}{100000}\sqrt{3\,x^{2}+5\,x+2}\,x-\frac{1141}{1600000}\,\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3\,x^{2}+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)-\frac{21679}{800000}\sqrt{3\,x^{2}+5\,x+2}-\frac{33089\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}{150000\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 35371/200000*(3*x^2 + 5*x + 2)^(3/2) - 13/30*(3*x^2 + 5*x + 2)^(5/2)/(64*x^
6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 167/375*(3*x
```

```
^2 + 5*x + 2)^(5/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) -
 1141/3000*(3*x^2 + 5*x + 2)^(5/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
 - 1141/3750*(3*x^2 + 5*x + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 35371/1
50000*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x + 9) - 3423/100000*sqrt(3*x^2 +
 5*x + 2)*x - 1141/1600000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*
x + 3) + 5/2/abs(2*x + 3) - 2) - 21679/800000*sqrt(3*x^2 + 5*x + 2) - 33089
/150000*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{10\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \left(-\frac{23x\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \left(-\frac{10x^2\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \frac{3x^3\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15
120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-23*x*s
qrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 2268
0*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-10*x**2*sqrt(3*x**2 +
 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 204
12*x**2 + 10206*x + 2187), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(128
*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 1020
6*x + 2187), x)
```

3.2189 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=174

$$-\frac{4892\left(3x^2+5x+2\right)^{5/2}}{13125(2x+3)^5}-\frac{433\left(3x^2+5x+2\right)^{5/2}}{1050(2x+3)^6}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^7}+\frac{4663(8x+7)\left(3x^2+5x+2\right)^{3/2}}{60000(2x+3)^4}-\frac{4663(8x}{80}$$

Rubi [A] time = 0.11, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{4892\left(3x^2+5x+2\right)^{5/2}}{13125(2x+3)^5}-\frac{433\left(3x^2+5x+2\right)^{5/2}}{1050(2x+3)^6}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^7}+\frac{4663(8x+7)\left(3x^2+5x+2\right)^{3/2}}{60000(2x+3)^4}-\frac{4663(8x+7)\sqrt{3x^2+5x+2}}{800000(2x+3)^2}+\frac{4663\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1600000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] (-4663*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(800000*(3 + 2*x)^2) + (4663*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(60000*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x^2)^(5
/2))/(35*(3 + 2*x)^7) - (433*(2 + 5*x + 3*x^2)^(5/2))/(1050*(3 + 2*x)^6) -
(4892*(2 + 5*x + 3*x^2)^(5/2))/(13125*(3 + 2*x)^5) + (4663*ArcTanh[(7 + 8*x
)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(1600000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7}-\frac{1}{35}\int \frac{\left(-\frac{199}{2}+78x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7}-\frac{433\left(2+5x+3x^2\right)^{5/2}}{1050(3+2x)^6}+\frac{\int \frac{\left(\frac{5887}{2}-1299x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,d}{1050}\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7}-\frac{433\left(2+5x+3x^2\right)^{5/2}}{1050(3+2x)^6}-\frac{4892\left(2+5x+3x^2\right)^{5/2}}{13125(3+2x)^5}+\\
&= \frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4}-\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7}-\frac{433\left(2+5x+3x^2\right)}{1050(3+2x)^6}\\
&= -\frac{4663(7+8x)\sqrt{2+5x+3x^2}}{800000(3+2x)^2}+\frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4}-\frac{13\left(2+5\right.}{35(3}\\
&= -\frac{4663(7+8x)\sqrt{2+5x+3x^2}}{800000(3+2x)^2}+\frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4}-\frac{13\left(2+5\right.}{35(3}\\
&= -\frac{4663(7+8x)\sqrt{2+5x+3x^2}}{800000(3+2x)^2}+\frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4}-\frac{13\left(2+5\right.}{35(3}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 157, normalized size = 0.90

$$\frac{1}{35}\left(-\frac{4892\left(3x^2+5x+2\right)^{5/2}}{375(2x+3)^5}-\frac{433\left(3x^2+5x+2\right)^{5/2}}{30(2x+3)^6}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^7}+\frac{32641\left(\frac{10\sqrt{3x^2+5x+2}\left(864x^3+2068x^2+1572x+371\right)}{(2x+3)^4}-3\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{4800000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7 - (433*(2 + 5*x + 3*x^2)^(5/2))/
(30*(3 + 2*x)^6) - (4892*(2 + 5*x + 3*x^2)^(5/2))/(375*(3 + 2*x)^5) + (3264
1*((10*Sqrt[2 + 5*x + 3*x^2]*(371 + 1572*x + 2068*x^2 + 864*x^3))/(3 + 2*x)
^4 - 3*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/4800
000)/35
```

IntegrateAlgebraic [A] time = 0.72, size = 91, normalized size = 0.52

$$\frac{4663\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{800000\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(191232x^6+2893088x^5+16376240x^4+55403520x^3+64140640x^2+15759118x-6554463\right)}{16800000(2x+3)^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-6554463 + 15759118*x + 64140640*x^2 + 55403520*x^3
 + 16376240*x^4 + 2893088*x^5 + 191232*x^6))/(16800000*(3 + 2*x)^7) + (4663
*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(800000*Sqrt[5])
```

fricas [A] time = 0.42, size = 170, normalized size = 0.98

$$\frac{97923\sqrt{5}\left(128x^{7}+1344x^{6}+6048x^{5}+15120x^{4}+22680x^{3}+20412x^{2}+10206x+2187\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^{2}+5x+2}(8x+7)+124x^{2}+212x+89}{4x^{2}+12x+9}\right)+20\left(191232x^{6}+2893088x^{5}+16376240x^{4}+55403520x^{3}+64140640x^{2}+15759118x-6554463\right)\sqrt{3x^{2}+5x+2}}{336000000\left(128x^{7}+1344x^{6}+6048x^{5}+15120x^{4}+22680x^{3}+20412x^{2}+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/336000000*(97923*sqrt(5)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 226
80*x^3 + 20412*x^2 + 10206*x + 2187)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(
8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(191232*x^6 + 289
3088*x^5 + 16376240*x^4 + 55403520*x^3 + 64140640*x^2 + 15759118*x - 655446
3)*sqrt(3*x^2 + 5*x + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 2268
0*x^3 + 20412*x^2 + 10206*x + 2187)
```

giac [B] time = 0.33, size = 461, normalized size = 2.65

$$\frac{4663}{8000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}\right)-\frac{6267072\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{13}+122207904\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{12}+3852187808\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{11}+18344551344\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{10}+131374293680\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{9}+134399090784\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{8}-264419126976\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{7}-1446858601104\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{6}-6675760646156\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{5}-5954681858370\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{4}-10149146991914\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{3}-3640765552263\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{2}-2268672558411\sqrt{3}x-208833935688\sqrt{3}+2268672558411\sqrt{3x^{2}+5x+2}}{16800000\left(2\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{2}+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)+11\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] 4663/8000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) - 1/16800000*(6267072*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 +
122207904*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 + 3852187808*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 18344551344*sqrt(3)*(sqrt(3)*x - sqrt(3
*x^2 + 5*x + 2))^10 + 131374293680*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 +
134399090784*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 - 264419126976*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 1446858601104*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^6 - 6675760646156*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^5 - 5954681858370*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 10149146
991914*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 3640765552263*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 2268672558411*sqrt(3)*x - 208833935688*sq
rt(3) + 2268672558411*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^7
```

maple [A] time = 0.07, size = 253, normalized size = 1.45

$$-\frac{4663\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{8000000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{4480\left(x+\frac{3}{2}\right)^{7}}-\frac{433\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{67200\left(x+\frac{3}{2}\right)^{6}}-\frac{1223\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{105000\left(x+\frac{3}{2}\right)^{5}}-\frac{4663\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{240000\left(x+\frac{3}{2}\right)^{4}}-\frac{4663\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{150000\left(x+\frac{3}{2}\right)^{3}}-\frac{144553\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{3000000\left(x+\frac{3}{2}\right)^{2}}-\frac{135227\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{1875000\left(x+\frac{3}{2}\right)}+\frac{4663\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{15000000}-\frac{4663(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{1000000}+\frac{4663\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{8000000}+\frac{135227(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{3750000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^8,x)
```

```
[Out] -13/4480/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-433/67200/(x+3/2)^6*(-4*x+
3*(x+3/2)^2-19/4)^(5/2)-1223/105000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
-4663/240000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-4663/150000/(x+3/2)^3*
(-4*x+3*(x+3/2)^2-19/4)^(5/2)-144553/3000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19
/4)^(5/2)-135227/1875000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+4663/1500000
0*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-4663/1000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4
)^(1/2)+4663/8000000*(-16*x+12*(x+3/2)^2-19)^(1/2)-4663/8000000*5^(1/2)*arc
tanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+135227/3750000*(
6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [B] time = 1.30, size = 338, normalized size = 1.94

$$\frac{144553}{1000000}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{35\left(128x^{7}+1344x^{6}+6048x^{5}+15120x^{4}+22680x^{3}+20412x^{2}+10206x+2187\right)}-\frac{433\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{1050\left(64x^{6}+576x^{5}+2160x^{4}+4320x^{3}+4860x^{2}+2916x+729\right)}-\frac{4892\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{13125\left(32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243\right)}-\frac{4663\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{15000\left(16x^{4}+96x^{3}+216x^{2}+216x+81\right)}-\frac{4663\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{18750\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{144553\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{750000\left(4x^{2}+12x+9\right)}-\frac{13989}{500000}\sqrt{3x^{2}+5x+2}\,x-\frac{4663}{8000000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{88597}{4000000}\sqrt{3x^{2}+5x+2}-\frac{135227\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{750000(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 144553/1000000*(3*x^2 + 5*x + 2)^(3/2) - 13/35*(3*x^2 + 5*x + 2)^(5/2)/(128
*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x +
2187) - 433/1050*(3*x^2 + 5*x + 2)^(5/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 432
0*x^3 + 4860*x^2 + 2916*x + 729) - 4892/13125*(3*x^2 + 5*x + 2)^(5/2)/(32*x
^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 4663/15000*(3*x^2 + 5*x
+ 2)^(5/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 4663/18750*(3*x^2 + 5
*x + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 144553/750000*(3*x^2 + 5*x + 2
)^(5/2)/(4*x^2 + 12*x + 9) - 13989/500000*sqrt(3*x^2 + 5*x + 2)*x - 4663/80
00000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
+ 3) - 2) - 88597/4000000*sqrt(3*x^2 + 5*x + 2) - 135227/750000*(3*x^2 + 5*
x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^8,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{10\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int \left(-\frac{23x\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int \left(-\frac{10x^2\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int \frac{3x^3\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**8,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-23*x*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6
+ 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x)
- Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6
 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x)
```

3.2190 $\int \frac{(5-x)(2+5x+3x^2)^{3/2}}{(3+2x)^9} dx$

Optimal. Leaf size=199

$$-\frac{3879(3x^2+5x+2)^{5/2}}{12500(2x+3)^5}-\frac{717(3x^2+5x+2)^{5/2}}{2000(2x+3)^6}-\frac{19(3x^2+5x+2)^{5/2}}{50(2x+3)^7}-\frac{13(3x^2+5x+2)^{5/2}}{40(2x+3)^8}+\frac{51309(8x+7)(3x^2}{800000(2x}$$

Rubi [A] time = 0.13, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{3879(3x^2+5x+2)^{5/2}}{12500(2x+3)^5}-\frac{717(3x^2+5x+2)^{5/2}}{2000(2x+3)^6}-\frac{19(3x^2+5x+2)^{5/2}}{50(2x+3)^7}-\frac{13(3x^2+5x+2)^{5/2}}{40(2x+3)^8}+\frac{51309(8x+7)(3x^2+5x+2)^{3/2}}{800000(2x+3)^4}-\frac{153927(8x+7)\sqrt{3x^2+5x+2}}{32000000(2x+3)^2}+\frac{153927\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{64000000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^9,x]
```

```
[Out] (-153927*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(32000000*(3 + 2*x)^2) + (51309*(
7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(800000*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x
^2)^(5/2))/(40*(3 + 2*x)^8) - (19*(2 + 5*x + 3*x^2)^(5/2))/(50*(3 + 2*x)^7)
 - (717*(2 + 5*x + 3*x^2)^(5/2))/(2000*(3 + 2*x)^6) - (3879*(2 + 5*x + 3*x^
2)^(5/2))/(12500*(3 + 2*x)^5) + (153927*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2
 + 5*x + 3*x^2])])/(64000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^9}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{1}{40}\int \frac{\left(-\frac{181}{2}+117x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}+\frac{\int \frac{\left(\frac{5481}{2}-3192x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx}{1400}\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}-\frac{717\left(2+5x+3x^2\right)^{5/2}}{2000(3+2x)^6}-\int\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}-\frac{717\left(2+5x+3x^2\right)^{5/2}}{2000(3+2x)^6}-387\\
&= \frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)}{50(3+2x)^7}\\
&= -\frac{153927(7+8x)\sqrt{2+5x+3x^2}}{32000000(3+2x)^2}+\frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13(2}{4}\\
&= -\frac{153927(7+8x)\sqrt{2+5x+3x^2}}{32000000(3+2x)^2}+\frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13(2}{4}\\
&= -\frac{153927(7+8x)\sqrt{2+5x+3x^2}}{32000000(3+2x)^2}+\frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13(2}{4}
\end{aligned}
$$

Mathematica [A] time = 0.13, size = 182, normalized size = 0.91

$$
\frac{1}{40}\left(-\frac{7758\left(3x^2+5x+2\right)^{5/2}}{625(2x+3)^5}-\frac{717\left(3x^2+5x+2\right)^{5/2}}{50(2x+3)^6}-\frac{76\left(3x^2+5x+2\right)^{5/2}}{5(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^8}+\frac{51309\left(\frac{10\sqrt{3x^2+5x+2}\left(864x^3+2068x^2+1572x+371\right)}{(2x+3)^4}-3\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{8000000}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^9,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8 - (76*(2 + 5*x + 3*x^2)^(5/2))/(
5*(3 + 2*x)^7) - (717*(2 + 5*x + 3*x^2)^(5/2))/(50*(3 + 2*x)^6) - (7758*(2
+ 5*x + 3*x^2)^(5/2))/(625*(3 + 2*x)^5) + (51309*((10*Sqrt[2 + 5*x + 3*x^2]
*(371 + 1572*x + 2068*x^2 + 864*x^3))/(3 + 2*x)^4 - 3*Sqrt[5]*ArcTanh[(-7 -
 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/8000000)/40
```

IntegrateAlgebraic [A] time = 0.78, size = 96, normalized size = 0.48

$$
\frac{153927\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{32000000\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-5681664x^7-60161472x^6-272314944x^5-682163760x^4-1007243840x^3-924451956x^2-512781828x-131091161\right)}{32000000(2x+3)^8}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^9,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-131091161 - 512781828*x - 924451956*x^2 - 10072438
40*x^3 - 682163760*x^4 - 272314944*x^5 - 60161472*x^6 - 5681664*x^7))/(3200
0000*(3 + 2*x)^8) + (153927*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))
])/(32000000*Sqrt[5])
```

fricas [A] time = 0.42, size = 185, normalized size = 0.93

$$\frac{153927\sqrt{5}\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\left(5681664x^7+60161472x^6+272314944x^5+682163760x^4+1007243840x^3+924451956x^2+512781828x+131091161\right)\sqrt{3x^2+5x+2}}{640000000\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/640000000*(153927*sqrt(5)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 9
0720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log((4*sqrt(5)*sqrt(3*x
^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(5
681664*x^7 + 60161472*x^6 + 272314944*x^5 + 682163760*x^4 + 1007243840*x^3
+ 924451956*x^2 + 512781828*x + 131091161)*sqrt(3*x^2 + 5*x + 2))/(256*x^8
+ 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 3
4992*x + 6561)
```

giac [B] time = 0.35, size = 512, normalized size = 2.57

$$\frac{153927}{320000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{19702656\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{15}+443309760\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{14}+13775440320\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{13}+88813739520\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{12}+1135723030560\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{11}+3326100961968\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{10}+20795205897360\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{9}+31719485197440\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{8}+108381222834920\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{7}+93303707056820\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{6}+182905948708404\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{5}+90199904722080\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{4}+98616726439110\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{3}+25302796273485\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{2}+12323187970155\sqrt{3}x+954490882968\sqrt{3}-12323187970155\sqrt{3x^2+5x+2}}{32000000\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{2}+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] 153927/320000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*s
qrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x
^2 + 5*x + 2))) - 1/32000000*(19702656*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^
15 + 443309760*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 + 13775440320
*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 88813739520*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 5*x + 2))^12 + 1135723030560*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^11 + 3326100961968*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 2079
5205897360*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 31719485197440*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 108381222834920*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^7 + 93303707056820*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^6 + 182905948708404*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 90199904722
080*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 98616726439110*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2))^3 + 25302796273485*sqrt(3)*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^2 + 12323187970155*sqrt(3)*x + 954490882968*sqrt(3) - 12323
187970155*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 +
 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^8
```

maple [A] time = 0.14, size = 274, normalized size = 1.38

$$-\frac{153927\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{320000000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{10240\left(x+\frac{3}{2}\right)^8}-\frac{51309\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{3200000\left(x+\frac{3}{2}\right)^4}-\frac{3879\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{400000\left(x+\frac{3}{2}\right)^5}-\frac{51309\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{2000000\left(x+\frac{3}{2}\right)^3}-\frac{1590579\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{40000000\left(x+\frac{3}{2}\right)^2}+\frac{1487961(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{50000000}-\frac{1487961\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{25000000\left(x+\frac{3}{2}\right)}-\frac{153927(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{40000000}-\frac{19\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{6400\left(x+\frac{3}{2}\right)^7}+\frac{153927\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{320000000}+\frac{51309\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{200000000}-\frac{717\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{128000\left(x+\frac{3}{2}\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^9,x)
```

```
[Out] -13/10240/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-51309/3200000/(x+3/2)^4*(
-4*x+3*(x+3/2)^2-19/4)^(5/2)-3879/400000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^
(5/2)-51309/2000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1590579/4000000
0/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+1487961/50000000*(6*x+5)*(-4*x+3*
```

```
(x+3/2)^2-19/4)^(3/2)-1487961/25000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2
)-153927/40000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-153927/320000000*5^
(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-19/6400
/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+153927/320000000*(-16*x+12*(x+3/2)
^2-19)^(1/2)+51309/200000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-717/128000/(x+3/
2)^6*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.31, size = 394, normalized size = 1.98

$$\frac{4771737}{40000000}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{40\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)}-\frac{19\left(3x^2+5x+2\right)^{\frac{5}{2}}}{50\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}-\frac{717\left(3x^2+5x+2\right)^{\frac{5}{2}}}{2000\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{3879\left(3x^2+5x+2\right)^{\frac{5}{2}}}{12500\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{51309\left(3x^2+5x+2\right)^{\frac{5}{2}}}{200000\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{51309\left(3x^2+5x+2\right)^{\frac{5}{2}}}{250000\left(8x^3+36x^2+54x+27\right)}-\frac{1590579\left(3x^2+5x+2\right)^{\frac{5}{2}}}{10000000\left(4x^2+12x+9\right)}-\frac{461781}{20000000}\sqrt{3x^2+5x+2}\,x-\frac{153927}{320000000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{2924613}{160000000}\sqrt{3x^2+5x+2}-\frac{1487961\left(3x^2+5x+2\right)^{\frac{3}{2}}}{10000000(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 4771737/40000000*(3*x^2 + 5*x + 2)^(3/2) - 13/40*(3*x^2 + 5*x + 2)^(5/2)/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561) - 19/50*(3*x^2 + 5*x + 2)^(5/2)/(128*x^7 + 1344*x^6 +
 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 717/2000*
(3*x^2 + 5*x + 2)^(5/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
+ 2916*x + 729) - 3879/12500*(3*x^2 + 5*x + 2)^(5/2)/(32*x^5 + 240*x^4 + 72
0*x^3 + 1080*x^2 + 810*x + 243) - 51309/200000*(3*x^2 + 5*x + 2)^(5/2)/(16*
x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 51309/250000*(3*x^2 + 5*x + 2)^(5/2)
/(8*x^3 + 36*x^2 + 54*x + 27) - 1590579/10000000*(3*x^2 + 5*x + 2)^(5/2)/(4
*x^2 + 12*x + 9) - 461781/20000000*sqrt(3*x^2 + 5*x + 2)*x - 153927/3200000
00*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3
) - 2) - 2924613/160000000*sqrt(3*x^2 + 5*x + 2) - 1487961/10000000*(3*x^2
+ 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^9,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**9,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 1
45152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098
*x + 19683), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x*
*8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 3
14928*x**2 + 118098*x + 19683), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x +
2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*
x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(3*x**3*
sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 3
26592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x
)
```

3.2191 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{5/2} \, dx$

Optimal. Leaf size=206

$$-\frac{1}{33} \left(3x^2+5x+2\right)^{7/2} (2x+3)^4+\frac{41}{110} \left(3x^2+5x+2\right)^{7/2} (2x+3)^3+\frac{3298 \left(3x^2+5x+2\right)^{7/2} (2x+3)^2}{4455}+\frac{(3365726x+7$$

Rubi [A] time = 0.12, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{33} \left(3x^2+5x+2\right)^{7/2} (2x+3)^4+\frac{41}{110} \left(3x^2+5x+2\right)^{7/2} (2x+3)^3+\frac{3298 \left(3x^2+5x+2\right)^{7/2} (2x+3)^2}{4455}+\frac{(3365726x+7405817) \left(3x^2+5x+2\right)^{7/2}}{1496880}+\frac{249299(6x+5) \left(3x^2+5x+2\right)^{5/2}}{466560}-\frac{249299(6x+5) \left(3x^2+5x+2\right)^{3/2}}{4478976}+\frac{249299(6x+5)\sqrt{3x^2+5x+2}}{35831808}-\frac{249299 \tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{71663616\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (249299*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/35831808 - (249299*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/4478976 + (249299*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/46
6560 + (3298*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2))/4455 + (41*(3 + 2*x)^3*(2
 + 5*x + 3*x^2)^(7/2))/110 - ((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2))/33 + ((7
405817 + 3365726*x)*(2 + 5*x + 3*x^2)^(7/2))/1496880 - (249299*ArcTanh[(5 +
 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(71663616*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)^4\left(2+5x+3x^2\right)^{5/2}\,dx &= -\frac{1}{33}(3+2x)^4\left(2+5x+3x^2\right)^{7/2}+\frac{1}{33}\int (3+2x)^3\left(\frac{1127}{2}+369x\right)\left(2\right.\\
&= \frac{41}{110}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4\left(2+5x+3x^2\right)^{7/2}+\frac{}{9}\\
&= \frac{3298(3+2x)^2\left(2+5x+3x^2\right)^{7/2}}{4455}+\frac{41}{110}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}-\\
&= \frac{3298(3+2x)^2\left(2+5x+3x^2\right)^{7/2}}{4455}+\frac{41}{110}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}-\\
&= \frac{249299(5+6x)\left(2+5x+3x^2\right)^{5/2}}{466560}+\frac{3298(3+2x)^2\left(2+5x+3x^2\right)^{7/}}{4455}\\
&= -\frac{249299(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}+\frac{249299(5+6x)\left(2+5x+3x\right.}{466560}\\
&= \frac{249299(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{249299(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}\\
&= \frac{249299(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{249299(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}\\
&= \frac{249299(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{249299(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 102, normalized size = 0.50

$$\frac{-95980115\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(180592312320x^{10}+875872714752x^9-1932170526720x^8-25759323039744x^7-90095929758720x^6-172473366866688x^5-204855126595200x^4-155155370878800x^3-73069860056520x^2-19521700361210x-2261297826735\right)}{82771476480}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-2261297826735 - 19521700361210*x - 730698600565
20*x^2 - 155155370878800*x^3 - 204855126595200*x^4 - 172473366866688*x^5 -
90095929758720*x^6 - 25759323039744*x^7 - 1932170526720*x^8 + 875872714752*
x^9 + 180592312320*x^10) - 95980115*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 1
5*x + 9*x^2])])/82771476480
```

IntegrateAlgebraic [A] time = 1.31, size = 104, normalized size = 0.50

$$\frac{\sqrt{3x^2+5x+2}\left(-180592312320x^{10}-875872714752x^9+1932170526720x^8+25759323039744x^7+90095929758720x^6+172473366866688x^5+204855126595200x^4+155155370878800x^3+73069860056520x^2+19521700361210x+2261297826735\right)}{13795246080}-\frac{249299\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{35831808\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(2261297826735 + 19521700361210*x + 73069860056520*x
^2 + 155155370878800*x^3 + 204855126595200*x^4 + 172473366866688*x^5 + 9009
5929758720*x^6 + 25759323039744*x^7 + 1932170526720*x^8 - 875872714752*x^9
- 180592312320*x^10))/13795246080 - (249299*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(
Sqrt[3]*(1 + x))])/(35831808*Sqrt[3])
```

fricas [A] time = 0.41, size = 103, normalized size = 0.50

$$-\frac{1}{13795246080}\left(180592312320\,x^{10}+875872714752\,x^{9}-1932170526720\,x^{8}-25759323039744\,x^{7}-90095929758720\,x^{6}-172473366866688\,x^{5}-204855126595200\,x^{4}-155155370878800\,x^{3}-73069860056520\,x^{2}-19521700361210\,x-2261297826735\right)\sqrt{3\,x^{2}+5\,x+2}+\frac{249299}{429981696}\,\sqrt{3}\,\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}\,(6\,x+5)+72\,x^{2}+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/13795246080*(180592312320*x^10 + 875872714752*x^9 - 1932170526720*x^8 -
25759323039744*x^7 - 90095929758720*x^6 - 172473366866688*x^5 - 20485512659
5200*x^4 - 155155370878800*x^3 - 73069860056520*x^2 - 19521700361210*x - 22
61297826735)*sqrt(3*x^2 + 5*x + 2) + 249299/429981696*sqrt(3)*log(-4*sqrt(3
)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 99, normalized size = 0.48

$$-\frac{1}{13795246080}\,(2\,(12\,(6\,(8\,(6\,(36\,(14\,(48\,(54\,(20\,x+97)x-11555)x-7394353)x-362075335)x-24952744049)x-177825630725)x-1077467853325)x-3044577502355)x-9760850180605)x-2261297826735)\sqrt{3\,x^{2}+5\,x+2}+\frac{249299}{214990848}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/13795246080*(2*(12*(6*(8*(6*(36*(14*(48*(54*(20*x + 97)*x - 11555)*x - 7
394353)*x - 362075335)*x - 24952744049)*x - 177825630725)*x - 1077467853325
)*x - 3044577502355)*x - 9760850180605)*x - 2261297826735)*sqrt(3*x^2 + 5*x
 + 2) + 249299/214990848*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 168, normalized size = 0.82

$$-\frac{16\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{4}}{33}+\frac{4\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{3}}{55}+\frac{8762\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{2}}{891}+\frac{2642401\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x}{106920}-\frac{249299\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{214990848}+\frac{249299\,(6x+5)\,\sqrt{3x^{2}+5x+2}}{35831808}-\frac{249299\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{4478976}+\frac{249299\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{466560}+\frac{5753773\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{299376}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -16/33*x^4*(3*x^2+5*x+2)^(7/2)+4/55*x^3*(3*x^2+5*x+2)^(7/2)+8762/891*x^2*(3
*x^2+5*x+2)^(7/2)+2642401/106920*x*(3*x^2+5*x+2)^(7/2)-249299/214990848*3^(
1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))+249299/35831808*(6*x+5)*
(3*x^2+5*x+2)^(1/2)-249299/4478976*(6*x+5)*(3*x^2+5*x+2)^(3/2)+249299/46656
0*(6*x+5)*(3*x^2+5*x+2)^(5/2)+5753773/299376*(3*x^2+5*x+2)^(7/2)
```

maxima [A] time = 1.32, size = 196, normalized size = 0.95

$$-\frac{16}{33}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{4}+\frac{4}{55}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{3}+\frac{8762}{891}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{2}+\frac{2642401}{106920}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x+\frac{5753773}{299376}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}+\frac{249299}{77760}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}x+\frac{249299}{93312}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}-\frac{249299}{746496}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x-\frac{1246495}{4478976}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}+\frac{249299}{5971968}\sqrt{3\,x^{2}+5\,x+2}\,x-\frac{249299}{214990848}\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}+6\,x+5\right)+\frac{1246495}{35831808}\sqrt{3\,x^{2}+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/33*(3*x^2 + 5*x + 2)^(7/2)*x^4 + 4/55*(3*x^2 + 5*x + 2)^(7/2)*x^3 + 876
2/891*(3*x^2 + 5*x + 2)^(7/2)*x^2 + 2642401/106920*(3*x^2 + 5*x + 2)^(7/2)*
x + 5753773/299376*(3*x^2 + 5*x + 2)^(7/2) + 249299/77760*(3*x^2 + 5*x + 2)
^(5/2)*x + 249299/93312*(3*x^2 + 5*x + 2)^(5/2) - 249299/746496*(3*x^2 + 5*
x + 2)^(3/2)*x - 1246495/4478976*(3*x^2 + 5*x + 2)^(3/2) + 249299/5971968*s
qrt(3*x^2 + 5*x + 2)*x - 249299/214990848*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2
+ 5*x + 2) + 6*x + 5) + 1246495/35831808*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^4\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-12096x\sqrt{3x^2+5x+2}\right)dx-\int\left(-38421x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-67449x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-70799x^4\sqrt{3x^2+5x+2}\right)dx-\int\left(-44295x^5\sqrt{3x^2+5x+2}\right)dx-\int\left(-14784x^6\sqrt{3x^2+5x+2}\right)dx-\int\left(-1304x^7\sqrt{3x^2+5x+2}\right)dx-\int 624x^8\sqrt{3x^2+5x+2}\,dx-\int 144x^9\sqrt{3x^2+5x+2}\,dx-\int\left(-1620\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-12096*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-38421*x**2*sqrt(3
*x**2 + 5*x + 2), x) - Integral(-67449*x**3*sqrt(3*x**2 + 5*x + 2), x) - In
tegral(-70799*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-44295*x**5*sqrt(3
*x**2 + 5*x + 2), x) - Integral(-14784*x**6*sqrt(3*x**2 + 5*x + 2), x) - In
tegral(-1304*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(624*x**8*sqrt(3*x**
2 + 5*x + 2), x) - Integral(144*x**9*sqrt(3*x**2 + 5*x + 2), x) - Integral(
-1620*sqrt(3*x**2 + 5*x + 2), x)
```

3.2192 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=181

$$-\frac{1}{30}(2x+3)^3\left(3x^2+5x+2\right)^{7/2}+\frac{169}{405}(2x+3)^2\left(3x^2+5x+2\right)^{7/2}+\frac{(213878x+477101)\left(3x^2+5x+2\right)^{7/2}}{136080}+\frac{182917(6$$

Rubi [A] time = 0.10, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{30}(2x+3)^3\left(3x^2+5x+2\right)^{7/2}+\frac{169}{405}(2x+3)^2\left(3x^2+5x+2\right)^{7/2}+\frac{(213878x+477101)\left(3x^2+5x+2\right)^{7/2}}{136080}+\frac{182917(6x+5)\left(3x^2+5x+2\right)^{5/2}}{466560}-\frac{182917(6x+5)\left(3x^2+5x+2\right)^{3/2}}{4478976}+\frac{182917(6x+5)\sqrt{3x^2+5x+2}}{35831808}-\frac{182917\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{71663616\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (182917*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/35831808 - (182917*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/4478976 + (182917*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/46
6560 + (169*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2))/405 - ((3 + 2*x)^3*(2 + 5*
x + 3*x^2)^(7/2))/30 + ((477101 + 213878*x)*(2 + 5*x + 3*x^2)^(7/2))/136080
 - (182917*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(71663616*
Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{5/2}\,dx &= -\frac{1}{30}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}+\frac{1}{30}\int (3+2x)^2\left(\frac{1029}{2}+338x\right)\Big(2 \\
&= \frac{169}{405}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}+ \\
&= \frac{169}{405}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}+ \\
&= \frac{182917(5+6x)\left(2+5x+3x^2\right)^{5/2}}{466560}+\frac{169}{405}(3+2x)^2\left(2+5x+3x^2\right)^{7/2} \\
&= -\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}+\frac{182917(5+6x)\left(2+5x+3x^2\right.}{466560} \\
&= \frac{182917(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976} \\
&= \frac{182917(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976} \\
&= \frac{182917(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 97, normalized size = 0.54

$$\frac{-6402095\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(9029615616x^9+29262643200x^8-147947046912x^7-1086687912960x^6-2893044950784x^5-4253933381760x^4-3762746217360x^3-1995914277480x^2-585749416130x-73178684475\right)}{7524679680}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-73178684475 - 585749416130*x - 1995914277480*x^
2 - 3762746217360*x^3 - 4253933381760*x^4 - 2893044950784*x^5 - 10866879129
60*x^6 - 147947046912*x^7 + 29262643200*x^8 + 9029615616*x^9) - 6402095*Sqr
t[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/7524679680
```

IntegrateAlgebraic [A] time = 0.93, size = 99, normalized size = 0.55

$$\frac{\sqrt{3x^2+5x+2}\left(-9029615616x^9-29262643200x^8+147947046912x^7+1086687912960x^6+2893044950784x^5+4253933381760x^4+3762746217360x^3+1995914277480x^2+585749416130x+73178684475\right)}{1254113280}-\frac{182917\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{35831808\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(73178684475 + 585749416130*x + 1995914277480*x^2 +
3762746217360*x^3 + 4253933381760*x^4 + 2893044950784*x^5 + 1086687912960*x
^6 + 147947046912*x^7 - 29262643200*x^8 - 9029615616*x^9))/1254113280 - (18
2917*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(35831808*Sqrt[3])
```

fricas [A] time = 0.41, size = 98, normalized size = 0.54

$$-\frac{1}{1254113280}\left(9029615616\,x^9+29262643200\,x^8-147947046912\,x^7-1086687912960\,x^6-2893044950784\,x^5-4253933381760\,x^4-3762746217360\,x^3-1995914277480\,x^2-585749416130\,x-73178684475\right)\sqrt{3\,x^2+5\,x+2}+\frac{182917}{429981696}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/1254113280*(9029615616*x^9 + 29262643200*x^8 - 147947046912*x^7 - 108668
7912960*x^6 - 2893044950784*x^5 - 4253933381760*x^4 - 3762746217360*x^3 - 1
995914277480*x^2 - 585749416130*x - 73178684475)*sqrt(3*x^2 + 5*x + 2) + 18
2917/429981696*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*
x^2 + 120*x + 49)
```

giac [A] time = 0.24, size = 94, normalized size = 0.52

$$-\frac{1}{1254113280}\,(2\,(12\,(6\,(8\,(6\,(36\,(14\,(48\,(54\,x+175)x-42469)x-4367155)x-418553957)x-3692650505)x-26130182065)x-83163094895)x-292874708065)x-73178684475)\sqrt{3\,x^2+5\,x+2}+\frac{182917}{214990848}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/1254113280*(2*(12*(6*(8*(6*(36*(14*(48*(54*x + 175)*x - 42469)*x - 43671
55)*x - 418553957)*x - 3692650505)*x - 26130182065)*x - 83163094895)*x - 29
2874708065)*x - 73178684475)*sqrt(3*x^2 + 5*x + 2) + 182917/214990848*sqrt(
3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 151, normalized size = 0.83

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{7}{2}}x^3}{15}+\frac{38\left(3x^2+5x+2\right)^{\frac{7}{2}}x^2}{81}+\frac{46453\left(3x^2+5x+2\right)^{\frac{7}{2}}x}{9720}-\frac{182917\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{214990848}+\frac{182917\,(6x+5)\sqrt{3x^2+5x+2}}{35831808}-\frac{182917\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{4478976}+\frac{182917\,(6x+5)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{466560}+\frac{173137\left(3x^2+5x+2\right)^{\frac{7}{2}}}{27216}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -4/15*(3*x^2+5*x+2)^(7/2)*x^3+38/81*(3*x^2+5*x+2)^(7/2)*x^2+46453/9720*(3*x
^2+5*x+2)^(7/2)*x-182917/214990848*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+
5*x+2)^(1/2))+182917/35831808*(6*x+5)*(3*x^2+5*x+2)^(1/2)-182917/4478976*(6
*x+5)*(3*x^2+5*x+2)^(3/2)+182917/466560*(6*x+5)*(3*x^2+5*x+2)^(5/2)+173137/
27216*(3*x^2+5*x+2)^(7/2)
```

maxima [A] time = 1.20, size = 179, normalized size = 0.99

$$-\frac{4}{15}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x^3+\frac{38}{81}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x^2+\frac{46453}{9720}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{173137}{27216}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}+\frac{182917}{77760}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{182917}{93312}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{182917}{746496}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x-\frac{914585}{4478976}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}+\frac{182917}{5971968}\sqrt{3\,x^2+5\,x+2}\,x-\frac{182917}{214990848}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)+\frac{914585}{35831808}\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 5*x + 2)^(7/2)*x^3 + 38/81*(3*x^2 + 5*x + 2)^(7/2)*x^2 + 464
53/9720*(3*x^2 + 5*x + 2)^(7/2)*x + 173137/27216*(3*x^2 + 5*x + 2)^(7/2) +
182917/77760*(3*x^2 + 5*x + 2)^(5/2)*x + 182917/93312*(3*x^2 + 5*x + 2)^(5/
2) - 182917/746496*(3*x^2 + 5*x + 2)^(3/2)*x - 914585/4478976*(3*x^2 + 5*x
+ 2)^(3/2) + 182917/5971968*sqrt(3*x^2 + 5*x + 2)*x - 182917/214990848*sqrt
(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 914585/35831808*sqrt(3
*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^3\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-3672x\sqrt{3x^2+5x+2}\right)dx-\int \left(-10359x^2\sqrt{3x^2+5x+2}\right)dx-\int \left(-15577x^3\sqrt{3x^2+5x+2}\right)dx-\int \left(-13215x^4\sqrt{3x^2+5x+2}\right)dx-\int \left(-5955x^5\sqrt{3x^2+5x+2}\right)dx-\int \left(-958x^6\sqrt{3x^2+5x+2}\right)dx-\int 204x^7\sqrt{3x^2+5x+2}\,dx-\int 72x^8\sqrt{3x^2+5x+2}\,dx-\int \left(-540\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-3672*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10359*x**2*sqrt(3*
x**2 + 5*x + 2), x) - Integral(-15577*x**3*sqrt(3*x**2 + 5*x + 2), x) - Int
egral(-13215*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-5955*x**5*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-958*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integr
al(204*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(72*x**8*sqrt(3*x**2 + 5*x
 + 2), x) - Integral(-540*sqrt(3*x**2 + 5*x + 2), x)
```

3.2193 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{5/2} \, dx$

Optimal. Leaf size=156

$$-\frac{1}{27}(2x+3)^2\left(3x^2+5x+2\right)^{7/2}+\frac{(4298x+10211)\left(3x^2+5x+2\right)^{7/2}}{4536}+\frac{4507(6x+5)\left(3x^2+5x+2\right)^{5/2}}{15552}-\frac{22535(6x+$$

Rubi [A] time = 0.07, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{27}(2x+3)^2\left(3x^2+5x+2\right)^{7/2}+\frac{(4298x+10211)\left(3x^2+5x+2\right)^{7/2}}{4536}+\frac{4507(6x+5)\left(3x^2+5x+2\right)^{5/2}}{15552}-\frac{22535(6x+5)\left(3x^2+5x+2\right)^{3/2}}{746496}+\frac{22535(6x+5)\sqrt{3x^2+5x+2}}{5971968}-\frac{22535\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{11943936\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (22535*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/5971968 - (22535*(5 + 6*x)*(2 + 5*x
 + 3*x^2)^(3/2))/746496 + (4507*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/15552 -
((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2))/27 + ((10211 + 4298*x)*(2 + 5*x + 3*x
^2)^(7/2))/4536 - (22535*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]
)])/(11943936*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
```

```
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{5/2}\,dx = -\frac{1}{27}(3+2x)^2\left(2+5x+3x^2\right)^{7/2} + \frac{1}{27}\int (3+2x)\left(\frac{931}{2}+307x\right)\left(2+\right.$$
$$= -\frac{1}{27}(3+2x)^2\left(2+5x+3x^2\right)^{7/2} + \frac{(10211+4298x)\left(2+5x+3x^2\right)^{7/}}{4536}$$
$$= \frac{4507(5+6x)\left(2+5x+3x^2\right)^{5/2}}{15552} - \frac{1}{27}(3+2x)^2\left(2+5x+3x^2\right)^{7/2} + $$
$$= -\frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496} + \frac{4507(5+6x)\left(2+5x+3x^2\right)^{5/2}}{15552}$$
$$= \frac{22535(5+6x)\sqrt{2+5x+3x^2}}{5971968} - \frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496} +$$
$$= \frac{22535(5+6x)\sqrt{2+5x+3x^2}}{5971968} - \frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496} +$$
$$= \frac{22535(5+6x)\sqrt{2+5x+3x^2}}{5971968} - \frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496} +$$

Mathematica [A] time = 0.05, size = 92, normalized size = 0.59

$$\frac{-157745\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(167215104x^8+268240896x^7-3275873280x^6-15455860992x^5-30355761024x^4-32476001904x^3-19762157208x^2-6434937470x-871825317\right)}{250822656}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-871825317 - 6434937470*x - 19762157208*x^2 - 32
476001904*x^3 - 30355761024*x^4 - 15455860992*x^5 - 3275873280*x^6 + 268240
896*x^7 + 167215104*x^8) - 157745*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*
x + 9*x^2])])/250822656
```

IntegrateAlgebraic [A] time = 0.83, size = 94, normalized size = 0.60

$$\frac{\sqrt{3x^2+5x+2}\left(-167215104x^8-268240896x^7+3275873280x^6+15455860992x^5+30355761024x^4+32476001904x^3+19762157208x^2+6434937470x+871825317\right)}{41803776}-\frac{22535\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{5971968\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(871825317 + 6434937470*x + 19762157208*x^2 + 324760
01904*x^3 + 30355761024*x^4 + 15455860992*x^5 + 3275873280*x^6 - 268240896*
x^7 - 167215104*x^8))/41803776 - (22535*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt
[3]*(1 + x))])/(5971968*Sqrt[3])
```

fricas [A] time = 0.40, size = 93, normalized size = 0.60

$$-\frac{1}{41803776}\left(167215104x^8+268240896x^7-3275873280x^6-15455860992x^5-30355761024x^4-32476001904x^3-19762157208x^2-6434937470x-871825317\right)\sqrt{3x^2+5x+2}+\frac{22535}{71663616}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/41803776*(167215104*x^8 + 268240896*x^7 - 3275873280*x^6 - 15455860992*x
^5 - 30355761024*x^4 - 32476001904*x^3 - 19762157208*x^2 - 6434937470*x - 8
71825317)*sqrt(3*x^2 + 5*x + 2) + 22535/71663616*sqrt(3)*log(-4*sqrt(3)*sqr
t(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.44, size = 89, normalized size = 0.57

$$-\frac{1}{41803776}\,(2\,(12\,(6\,(8\,(6\,(36\,(14\,(48\,x+77)x-13165)x-2236091)x-26350487)x-225527791)x-823423217)x-3217468735)x-871825317)\sqrt{3\,x^2+5\,x+2}+\frac{22535}{35831808}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/41803776*(2*(12*(6*(8*(6*(36*(14*(48*x + 77)*x - 13165)*x - 2236091)*x -
 26350487)*x - 225527791)*x - 823423217)*x - 3217468735)*x - 871825317)*sqr
t(3*x^2 + 5*x + 2) + 22535/35831808*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 134, normalized size = 0.86

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{7}{2}}x^2}{27}+\frac{163\left(3x^2+5x+2\right)^{\frac{7}{2}}x}{324}-\frac{22535\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{35831808}+\frac{8699\left(3x^2+5x+2\right)^{\frac{7}{2}}}{4536}+\frac{4507\,(6x+5)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{15552}-\frac{22535\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{746496}+\frac{22535\,(6x+5)\sqrt{3x^2+5x+2}}{5971968}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -4/27*(3*x^2+5*x+2)^(7/2)*x^2+163/324*(3*x^2+5*x+2)^(7/2)*x+8699/4536*(3*x^
2+5*x+2)^(7/2)+4507/15552*(6*x+5)*(3*x^2+5*x+2)^(5/2)-22535/746496*(6*x+5)*
(3*x^2+5*x+2)^(3/2)+22535/5971968*(6*x+5)*(3*x^2+5*x+2)^(1/2)-22535/3583180
8*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.30, size = 162, normalized size = 1.04

$$-\frac{4}{27}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x^2+\frac{163}{324}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{8699}{4536}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}+\frac{4507}{2592}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{22535}{15552}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{22535}{124416}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x-\frac{112675}{746496}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}+\frac{22535}{995328}\,\sqrt{3\,x^2+5\,x+2}\,x-\frac{22535}{35831808}\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)+\frac{112675}{5971968}\,\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/27*(3*x^2 + 5*x + 2)^(7/2)*x^2 + 163/324*(3*x^2 + 5*x + 2)^(7/2)*x + 869
9/4536*(3*x^2 + 5*x + 2)^(7/2) + 4507/2592*(3*x^2 + 5*x + 2)^(5/2)*x + 2253
5/15552*(3*x^2 + 5*x + 2)^(5/2) - 22535/124416*(3*x^2 + 5*x + 2)^(3/2)*x -
112675/746496*(3*x^2 + 5*x + 2)^(3/2) + 22535/995328*sqrt(3*x^2 + 5*x + 2)*
x - 22535/35831808*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) +
 112675/5971968*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^2\,\left(x-5\right)\,{\left(3\,x^2+5\,x+2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-1104x\sqrt{3x^2+5x+2}\right)dx-\int \left(-2717x^2\sqrt{3x^2+5x+2}\right)dx-\int \left(-3381x^3\sqrt{3x^2+5x+2}\right)dx-\int \left(-2151x^4\sqrt{3x^2+5x+2}\right)dx-\int \left(-551x^5\sqrt{3x^2+5x+2}\right)dx-\int 48x^6\sqrt{3x^2+5x+2}\,dx-\int 36x^7\sqrt{3x^2+5x+2}\,dx-\int \left(-180\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-1104*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-2717*x**2*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-3381*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integ
ral(-2151*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-551*x**5*sqrt(3*x**2
+ 5*x + 2), x) - Integral(48*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(36*
x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-180*sqrt(3*x**2 + 5*x + 2), x)
```

3.2194 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=131

$$\frac{1}{168}(71-14x)\left(3x^2+5x+2\right)^{7/2}+\frac{373(6x+5)\left(3x^2+5x+2\right)^{5/2}}{1728}-\frac{1865(6x+5)\left(3x^2+5x+2\right)^{3/2}}{82944}+\frac{1865(6x+5)\sqrt{3}}{6635}$$

Rubi [A] time = 0.05, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {779, 612, 621, 206}

$$\frac{1}{168}(71-14x)\left(3x^2+5x+2\right)^{7/2}+\frac{373(6x+5)\left(3x^2+5x+2\right)^{5/2}}{1728}-\frac{1865(6x+5)\left(3x^2+5x+2\right)^{3/2}}{82944}+\frac{1865(6x+5)\sqrt{3x^2+5x+2}}{663552}-\frac{1865\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1327104\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (1865*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/663552 - (1865*(5 + 6*x)*(2 + 5*x +
3*x^2)^(3/2))/82944 + (373*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/1728 + ((71 -
 14*x)*(2 + 5*x + 3*x^2)^(7/2))/168 - (1865*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])])/(1327104*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{5/2}\,dx = \frac{1}{168}(71-14x)\left(2+5x+3x^2\right)^{7/2} + \frac{373}{48}\int \left(2+5x+3x^2\right)^{5/2}\,dx$$

$$= \frac{373(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1728} + \frac{1}{168}(71-14x)\left(2+5x+3x^2\right)^{7/2} - \cdots$$

$$= -\frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + \frac{373(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1728} + \cdots$$

$$= \frac{1865(5+6x)\sqrt{2+5x+3x^2}}{663552} - \frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + \cdots$$

$$= \frac{1865(5+6x)\sqrt{2+5x+3x^2}}{663552} - \frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + \cdots$$

$$= \frac{1865(5+6x)\sqrt{2+5x+3x^2}}{663552} - \frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + \cdots$$

Mathematica [A] time = 0.08, size = 101, normalized size = 0.77

$$\frac{373\left(6\sqrt{3x^2+5x+2}\left(20736x^5+86400x^4+142128x^3+115320x^2+46166x+7305\right)-5\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)}{3981312} - \frac{1}{168}(14x-71)\left(3x^2+5x+2\right)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/168*((-71 + 14*x)*(2 + 5*x + 3*x^2)^(7/2)) + (373*(6*Sqrt[2 + 5*x + 3*x^
2]*(7305 + 46166*x + 115320*x^2 + 142128*x^3 + 86400*x^4 + 20736*x^5) - 5*S
qrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/3981312
```

IntegrateAlgebraic [A] time = 0.74, size = 89, normalized size = 0.68

$$\frac{\sqrt{3x^2+5x+2}\left(-10450944x^7+746496x^6+211154688x^5+655212672x^4+897818256x^3+642995688x^2+235223330x+34777419\right)}{4644864} - \frac{1865\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{663552\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(34777419 + 235223330*x + 642995688*x^2 + 897818256*
x^3 + 655212672*x^4 + 211154688*x^5 + 746496*x^6 - 10450944*x^7))/4644864 -
 (1865*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(663552*Sqrt[3])
```

fricas [A] time = 0.41, size = 88, normalized size = 0.67

$$-\frac{1}{4644864}\left(10450944x^7-746496x^6-211154688x^5-655212672x^4-897818256x^3-642995688x^2-235223330x-34777419\right)\sqrt{3x^2+5x+2} + \frac{1865}{7962624}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/4644864*(10450944*x^7 - 746496*x^6 - 211154688*x^5 - 655212672*x^4 - 897
818256*x^3 - 642995688*x^2 - 235223330*x - 34777419)*sqrt(3*x^2 + 5*x + 2)
+ 1865/7962624*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*
x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 84, normalized size = 0.64

$$-\frac{1}{4644864}\left(2\left(12\left(18\left(8\left(6\left(36\left(14x-1\right)x-10183\right)x-189587\right)x-2078283\right)x-26791487\right)x-117611665\right)x-34777419\right)\sqrt{3x^2+5x+2} + \frac{1865}{3981312}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/4644864*(2*(12*(18*(8*(6*(36*(14*x - 1)*x - 10183)*x - 189587)*x - 20782
83)*x - 26791487)*x - 117611665)*x - 34777419)*sqrt(3*x^2 + 5*x + 2) + 1865
/3981312*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5
))
```

maple [A] time = 0.05, size = 117, normalized size = 0.89

$$-\frac{\left(3x^2+5x+2\right)^{\frac{7}{2}} x}{12}-\frac{1865\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{3981312}+\frac{71\left(3x^2+5x+2\right)^{\frac{7}{2}}}{168}+\frac{373\left(6x+5\right)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{1728}-\frac{1865\left(6x+5\right)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{82944}+\frac{1865\left(6x+5\right)\sqrt{3x^2+5x+2}}{663552}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -1/12*(3*x^2+5*x+2)^(7/2)*x+71/168*(3*x^2+5*x+2)^(7/2)+373/1728*(6*x+5)*(3*
x^2+5*x+2)^(5/2)-1865/82944*(6*x+5)*(3*x^2+5*x+2)^(3/2)+1865/663552*(6*x+5)
*(3*x^2+5*x+2)^(1/2)-1865/3981312*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5
*x+2)^(1/2))
```

maxima [A] time = 1.26, size = 145, normalized size = 1.11

$$-\frac{1}{12}\left(3x^2+5x+2\right)^{\frac{7}{2}}x+\frac{71}{168}\left(3x^2+5x+2\right)^{\frac{7}{2}}+\frac{373}{288}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{1865}{1728}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{1865}{13824}\left(3x^2+5x+2\right)^{\frac{3}{2}}x-\frac{9325}{82944}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{1865}{110592}\sqrt{3x^2+5x+2}\,x-\frac{1865}{3981312}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{9325}{663552}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 5*x + 2)^(7/2)*x + 71/168*(3*x^2 + 5*x + 2)^(7/2) + 373/288*
(3*x^2 + 5*x + 2)^(5/2)*x + 1865/1728*(3*x^2 + 5*x + 2)^(5/2) - 1865/13824*
(3*x^2 + 5*x + 2)^(3/2)*x - 9325/82944*(3*x^2 + 5*x + 2)^(3/2) + 1865/11059
2*sqrt(3*x^2 + 5*x + 2)*x - 1865/3981312*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 +
 5*x + 2) + 6*x + 5) + 9325/663552*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-328x\sqrt{3x^2+5x+2}\right)dx-\int\left(-687x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-669x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-271x^4\sqrt{3x^2+5x+2}\right)dx-\int\left(-3x^5\sqrt{3x^2+5x+2}\right)dx-\int 18x^6\sqrt{3x^2+5x+2}\,dx-\int\left(-60\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-328*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-687*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-669*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral
(-271*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3*x**5*sqrt(3*x**2 + 5*x
+ 2), x) - Integral(18*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(-60*sqrt(
3*x**2 + 5*x + 2), x)
```

3.2195 $\int (5-x)\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=126

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{7/2}+\frac{35}{216}(6x+5)\left(3x^2+5x+2\right)^{5/2}-\frac{175(6x+5)\left(3x^2+5x+2\right)^{3/2}}{10368}+\frac{175(6x+5)\sqrt{3x^2+5x+2}}{82944}$$

Rubi [A] time = 0.04, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{7/2}+\frac{35}{216}(6x+5)\left(3x^2+5x+2\right)^{5/2}-\frac{175(6x+5)\left(3x^2+5x+2\right)^{3/2}}{10368}+\frac{175(6x+5)\sqrt{3x^2+5x+2}}{82944}-\frac{175\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{165888\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (175*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/82944 - (175*(5 + 6*x)*(2 + 5*x + 3*x
^2)^(3/2))/10368 + (35*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/216 - (2 + 5*x +
3*x^2)^(7/2)/21 - (175*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]
)/(165888*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (5-x)\left(2+5x+3x^2\right)^{5/2} dx = -\frac{1}{21}\left(2+5x+3x^2\right)^{7/2} + \frac{35}{6}\int \left(2+5x+3x^2\right)^{5/2} dx$$
$$= \frac{35}{216}(5+6x)\left(2+5x+3x^2\right)^{5/2} - \frac{1}{21}\left(2+5x+3x^2\right)^{7/2} - \frac{175}{432}\int \left(2+5x+3x^2\right)^{3/}$$
$$= -\frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368} + \frac{35}{216}(5+6x)\left(2+5x+3x^2\right)^{5/2} - \frac{1}{21}\left(2+5x+\right.$$
$$= \frac{175(5+6x)\sqrt{2+5x+3x^2}}{82944} - \frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368} + \frac{35}{216}(5+6x)\left(2+\right.$$
$$= \frac{175(5+6x)\sqrt{2+5x+3x^2}}{82944} - \frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368} + \frac{35}{216}(5+6x)\left(2+\right.$$
$$= \frac{175(5+6x)\sqrt{2+5x+3x^2}}{82944} - \frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368} + \frac{35}{216}(5+6x)\left(2+\right.$$

Mathematica [A] time = 0.06, size = 108, normalized size = 0.86

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{7/2} + \frac{35}{216}(6x+5)\left(3x^2+5x+2\right)^{5/2} - \frac{175\left(\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) + 6\sqrt{3x^2+5x+2}\left(144x^3+360x^2+290x+75\right)\right)}{497664}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (35*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/216 - (2 + 5*x + 3*x^2)^(7/2)/21 - (
175*(6*Sqrt[2 + 5*x + 3*x^2]*(75 + 290*x + 360*x^2 + 144*x^3) + Sqrt[3]*Arc
Tanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/497664
```

IntegrateAlgebraic [A] time = 0.65, size = 84, normalized size = 0.67

$$\frac{\sqrt{3x^2+5x+2}\left(-746496x^6+1347840x^5+13454208x^4+26388720x^3+23110872x^2+9651790x+1568541\right)}{580608} - \frac{175\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{82944\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(1568541 + 9651790*x + 23110872*x^2 + 26388720*x^3 +
 13454208*x^4 + 1347840*x^5 - 746496*x^6))/580608 - (175*ArcTanh[Sqrt[2 + 5
*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(82944*Sqrt[3])
```

fricas [A] time = 0.40, size = 83, normalized size = 0.66

$$-\frac{1}{580608}\left(746496x^6-1347840x^5-13454208x^4-26388720x^3-23110872x^2-9651790x-1568541\right)\sqrt{3x^2+5x+2} + \frac{175}{995328}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/580608*(746496*x^6 - 1347840*x^5 - 13454208*x^4 - 26388720*x^3 - 2311087
2*x^2 - 9651790*x - 1568541)*sqrt(3*x^2 + 5*x + 2) + 175/995328*sqrt(3)*log
(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.23, size = 79, normalized size = 0.63

$$-\frac{1}{580608}(2(12(18(8(6(36x-65)x-3893)x-61085)x-962953)x-4825895)x-1568541)\sqrt{3x^2+5x+2} + \frac{175}{497664}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/580608*(2*(12*(18*(8*(6*(36*x - 65)*x - 3893)*x - 61085)*x - 962953)*x -
 4825895)*x - 1568541)*sqrt(3*x^2 + 5*x + 2) + 175/497664*sqrt(3)*log(abs(-
2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.04, size = 102, normalized size = 0.81

$$-\frac{175\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{497664}+\frac{35\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{216}-\frac{175\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{10368}+\frac{175\left(6x+5\right)\sqrt{3x^{2}+5x+2}}{82944}-\frac{\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 35/216*(6*x+5)*(3*x^2+5*x+2)^(5/2)-175/10368*(6*x+5)*(3*x^2+5*x+2)^(3/2)+17
5/82944*(6*x+5)*(3*x^2+5*x+2)^(1/2)-175/497664*3^(1/2)*ln(1/3*(3*x+5/2)*3^(
1/2)+(3*x^2+5*x+2)^(1/2))-1/21*(3*x^2+5*x+2)^(7/2)
```

maxima [A] time = 1.21, size = 130, normalized size = 1.03

$$-\frac{1}{21}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}+\frac{35}{36}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}x+\frac{175}{216}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}-\frac{175}{1728}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x-\frac{875}{10368}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}+\frac{175}{13824}\sqrt{3x^{2}+5x+2}\,x-\frac{175}{497664}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^{2}+5x+2}+6x+5\right)+\frac{875}{82944}\sqrt{3x^{2}+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/21*(3*x^2 + 5*x + 2)^(7/2) + 35/36*(3*x^2 + 5*x + 2)^(5/2)*x + 175/216*(
3*x^2 + 5*x + 2)^(5/2) - 175/1728*(3*x^2 + 5*x + 2)^(3/2)*x - 875/10368*(3*
x^2 + 5*x + 2)^(3/2) + 175/13824*sqrt(3*x^2 + 5*x + 2)*x - 175/497664*sqrt(
3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 875/82944*sqrt(3*x^2 +
5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\left(x-5\right)\,{\left(3\,x^2+5\,x+2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] int(-(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-96x\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-165x^{2}\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-113x^{3}\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-15x^{4}\sqrt{3x^{2}+5x+2}\right)dx-\int 9x^{5}\sqrt{3x^{2}+5x+2}\,dx-\int\left(-20\sqrt{3x^{2}+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-96*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-165*x**2*sqrt(3*x**2
 + 5*x + 2), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(
-15*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2
), x) - Integral(-20*sqrt(3*x**2 + 5*x + 2), x)
```

3.2196 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,dx$

Optimal. Leaf size=146

$$\frac{1}{360}(209-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{(25-5586x)\left(3x^2+5x+2\right)^{3/2}}{3456}+\frac{(51455-106734x)\sqrt{3x^2+5x+2}}{27648}-\frac{543811\ \text{ta}}{}$$

Rubi [A] time = 0.10, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{360}(209-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{(25-5586x)\left(3x^2+5x+2\right)^{3/2}}{3456}+\frac{(51455-106734x)\sqrt{3x^2+5x+2}}{27648}-\frac{543811\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{55296\sqrt{3}}+\frac{325}{128}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] ((51455 - 106734*x)*Sqrt[2 + 5*x + 3*x^2])/27648 + ((25 - 5586*x)*(2 + 5*x
+ 3*x^2)^(3/2))/3456 + ((209 - 30*x)*(2 + 5*x + 3*x^2)^(5/2))/360 - (543811
*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(55296*Sqrt[3]) + (3
25*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,dx = \frac{1}{360}(209-30x)\left(2+5x+3x^2\right)^{5/2} - \frac{1}{144}\int \frac{(1623+1862x)\left(2+5x+3x^2\right)^{3/}}{3+2x}$$

$$= \frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456} + \frac{1}{360}(209-30x)\left(2+5x+3x^2\right)^{5/2} + \frac{\int (-1}{}$$

$$= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648} + \frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456} + \frac{1}{360}($$

$$= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648} + \frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456} + \frac{1}{360}($$

$$= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648} + \frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456} + \frac{1}{360}($$

$$= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648} + \frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456} + \frac{1}{360}($$

Mathematica [A] time = 0.06, size = 113, normalized size = 0.77

$$\frac{-2106000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 2719055\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\left(103680x^5-376704x^4-1311120x^3-1624872x^2-583490x-580299\right)}{829440}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-580299 - 583490*x - 1624872*x^2 - 1311120*x^3 -
 376704*x^4 + 103680*x^5) - 2106000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*S
qrt[2 + 5*x + 3*x^2])] - 2719055*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x
 + 9*x^2])])/829440
```

IntegrateAlgebraic [A] time = 0.76, size = 114, normalized size = 0.78

$$-\frac{543811\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{27648\sqrt{3}} + \frac{325}{64}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right) + \frac{\sqrt{3x^2+5x+2}\left(-103680x^5+376704x^4+1311120x^3+1624872x^2+583490x+580299\right)}{138240}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(580299 + 583490*x + 1624872*x^2 + 1311120*x^3 + 376
704*x^4 - 103680*x^5))/138240 - (543811*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt
[3]*(1 + x))])/(27648*Sqrt[3]) + (325*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]
/(Sqrt[5]*(1 + x))])/64
```

fricas [A] time = 0.41, size = 129, normalized size = 0.88

$$-\frac{1}{138240}\left(103680\,x^5-376704\,x^4-1311120\,x^3-1624872\,x^2-583490\,x-580299\right)\sqrt{3\,x^2+5\,x+2} + \frac{543811}{331776}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right) + \frac{325}{256}\sqrt{5}\log\left(\frac{4\sqrt{5}\sqrt{3\,x^2+5\,x+2}\,(8\,x+7)+124\,x^2+212\,x+89}{4\,x^2+12\,x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/138240*(103680*x^5 - 376704*x^4 - 1311120*x^3 - 1624872*x^2 - 583490*x -
 580299)*sqrt(3*x^2 + 5*x + 2) + 543811/331776*sqrt(3)*log(-4*sqrt(3)*sqrt(
3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 325/256*sqrt(5)*log((4*
sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12
*x + 9))
```

giac [A] time = 0.33, size = 146, normalized size = 1.00

$$-\frac{1}{138240}\,(2\,(12\,(18\,(8\,(30\,x-109)x-3035)x-67703)x-291745)x-580299)\sqrt{3\,x^2+5\,x+2}+\frac{325}{128}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)+\frac{543811}{165888}\,\sqrt{3}\,\log\left(\left|-6\,\sqrt{3}\,x-5\,\sqrt{3}+6\,\sqrt{3\,x^2+5\,x+2}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/138240*(2*(12*(18*(8*(30*x - 109)*x - 3035)*x - 67703)*x - 291745)*x - 5
80299)*sqrt(3*x^2 + 5*x + 2) + 325/128*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqr
t(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) -
6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 543811/165888*sqrt(3)*log(abs(-6*sq
rt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x + 2)))
```

maple [B] time = 0.04, size = 239, normalized size = 1.64

$$-\frac{325\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{128}-\frac{7553\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{2304}+\frac{5\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{165888}-\frac{(6x+5)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{72}+\frac{5\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{3456}-\frac{5\,(6x+5)\sqrt{3x^{2}+5x+2}}{27648}+\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{20}-\frac{13\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{48}-\frac{247\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{384}+\frac{65\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{48}+\frac{325\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3),x)
```

```
[Out] -1/72*(6*x+5)*(3*x^2+5*x+2)^(5/2)+5/3456*(6*x+5)*(3*x^2+5*x+2)^(3/2)-5/2764
8*(6*x+5)*(3*x^2+5*x+2)^(1/2)+5/165888*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*
x^2+5*x+2)^(1/2))+13/20*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-13/48*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(3/2)-247/384*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-7553/2
304*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+65/48*(
-4*x+3*(x+3/2)^2-19/4)^(3/2)+325/128*(-16*x+12*(x+3/2)^2-19)^(1/2)-325/128*
5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.23, size = 157, normalized size = 1.08

$$-\frac{1}{12}\,\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{209}{360}\,\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{931}{576}\,\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{25}{3456}\,\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{17789}{4608}\,\sqrt{3\,x^2+5\,x+2}\,x-\frac{543811}{165888}\,\sqrt{3}\,\log\left(\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+3\,x+\frac{5}{2}\right)-\frac{325}{128}\,\sqrt{5}\,\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)+\frac{51455}{27648}\,\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 5*x + 2)^(5/2)*x + 209/360*(3*x^2 + 5*x + 2)^(5/2) - 931/576
*(3*x^2 + 5*x + 2)^(3/2)*x + 25/3456*(3*x^2 + 5*x + 2)^(3/2) - 17789/4608*s
qrt(3*x^2 + 5*x + 2)*x - 543811/165888*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x
 + 2) + 3*x + 5/2) - 325/128*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(
2*x + 3) + 5/2/abs(2*x + 3) - 2) + 51455/27648*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{2\,x+3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x),x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-96*x*sqrt(3*
x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(
2*x + 3), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - In
tegral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(9*x**5*sqrt
(3*x**2 + 5*x + 2)/(2*x + 3), x)
```

3.2197 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=151

$$-\frac{(x+34)\left(3x^2+5x+2\right)^{5/2}}{10(2x+3)}-\frac{1}{192}(65-1194x)\left(3x^2+5x+2\right)^{3/2}-\frac{1}{512}(3865-8082x)\sqrt{3x^2+5x+2}+\frac{41053\tanh^{-1}}{10}$$

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+34)\left(3x^2+5x+2\right)^{5/2}}{10(2x+3)}-\frac{1}{192}(65-1194x)\left(3x^2+5x+2\right)^{3/2}-\frac{1}{512}(3865-8082x)\sqrt{3x^2+5x+2}+\frac{41053\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1024\sqrt{3}}-\frac{1325}{128}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] -((3865 - 8082*x)*Sqrt[2 + 5*x + 3*x^2])/512 - ((65 - 1194*x)*(2 + 5*x + 3*
x^2)^(3/2))/192 - ((34 + x)*(2 + 5*x + 3*x^2)^(5/2))/(10*(3 + 2*x)) + (4105
3*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(1024*Sqrt[3]) - (1
325*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
```

```
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2}\,dx = -\frac{(34+x)\left(2+5x+3x^2\right)^{5/2}}{10(3+2x)} - \frac{1}{8}\int \frac{(-332-398x)\left(2+5x+3x^2\right)^{3/2}}{3+2x}\,dx$$

$$= -\frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2} - \frac{(34+x)\left(2+5x+3x^2\right)^{5/2}}{10(3+2x)} + \frac{1}{768}\int$$

$$= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2} - \frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2} -$$

$$= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2} - \frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2} -$$

$$= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2} - \frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2} -$$

$$= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2} - \frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2} -$$

Mathematica [A] time = 0.09, size = 120, normalized size = 0.79

$$\frac{159000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+205265\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{2\sqrt{3x^2+5x+2}\left(6912x^5-28512x^4-80064x^3-118996x^2+40412x+293973\right)}{2x+3}}{15360}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-2*Sqrt[2 + 5*x + 3*x^2]*(293973 + 40412*x - 118996*x^2 - 80064*x^3 - 285
12*x^4 + 6912*x^5))/(3 + 2*x) + 159000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5
]*Sqrt[2 + 5*x + 3*x^2])] + 205265*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15
*x + 9*x^2])])/15360
```

IntegrateAlgebraic [A] time = 0.85, size = 121, normalized size = 0.80

$$\frac{41053\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{512\sqrt{3}}-\frac{1325}{64}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-6912x^5+28512x^4+80064x^3+118996x^2-40412x-293973\right)}{7680(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-293973 - 40412*x + 118996*x^2 + 80064*x^3 + 28512*
x^4 - 6912*x^5))/(7680*(3 + 2*x)) + (41053*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(S
qrt[3]*(1 + x))])/(512*Sqrt[3]) - (1325*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^
2]/(Sqrt[5]*(1 + x))])/64
```

fricas [A] time = 0.43, size = 149, normalized size = 0.99

$$\frac{205265 \sqrt{3} (2x+3) \log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+159000\sqrt{5}(2x+3)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-4\left(6912x^5-28512x^4-80064x^3-118996x^2+40412x+293973\right)\sqrt{3x^2+5x+2}}{30720(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/30720*(205265*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x
+ 5) + 72*x^2 + 120*x + 49) + 159000*sqrt(5)*(2*x + 3)*log(-(4*sqrt(5)*sqrt
(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 4
*(6912*x^5 - 28512*x^4 - 80064*x^3 - 118996*x^2 + 40412*x + 293973)*sqrt(3*
x^2 + 5*x + 2))/(2*x + 3)
```

giac [B] time = 1.17, size = 671, normalized size = 4.44

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -41053/3072*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^
2 + 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x
+ 3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 1325/128*sqrt(5)*log
(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) -
 4))*sgn(1/(2*x + 3)) - 325/128*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)*sgn(
1/(2*x + 3)) + 1/7680*(1304805*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sq
rt(5)/(2*x + 3))^9*sgn(1/(2*x + 3)) - 2064120*sqrt(5)*(sqrt(-8/(2*x + 3) +
5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^8*sgn(1/(2*x + 3)) - 4382950*(sqrt(
-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^7*sgn(1/(2*x + 3)) +
 10490640*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x +
3))^6*sgn(1/(2*x + 3)) + 19083456*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) +
 sqrt(5)/(2*x + 3))^5*sgn(1/(2*x + 3)) - 33372000*sqrt(5)*(sqrt(-8/(2*x + 3
) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 42760170*(
sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x +
3)) + 60102000*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2
*x + 3))^2*sgn(1/(2*x + 3)) + 21448395*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3) + sqrt(5)/(2*x + 3))*sgn(1/(2*x + 3)) - 36498600*sqrt(5)*sgn(1/(2*x + 3
)))/((sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^5
```

maple [A] time = 0.06, size = 195, normalized size = 1.29

$$\frac{1325\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{128}+\frac{41053\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{3072}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{10\left(x+\frac{3}{2}\right)}-\frac{53\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{20}+\frac{199(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{192}+\frac{1347(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{512}-\frac{265\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{48}-\frac{1325\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{128}+\frac{13(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-53/20*(-4*x+3*(x+3/2)^2-19/4)^
(5/2)+199/192*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1347/512*(6*x+5)*(-4*x+
3*(x+3/2)^2-19/4)^(1/2)+41053/3072*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3
*(x+3/2)^2-19/4)^(1/2))-265/48*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-1325/128*(-16*
```

```
x+12*(x+3/2)^2-19)^(1/2)+1325/128*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-
16*x+12*(x+3/2)^2-19)^(1/2))+13/20*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [A] time = 1.46, size = 163, normalized size = 1.08

$$-\frac{1}{20}\left(3x^2+5x+2\right)^{\frac{5}{2}}+\frac{199}{32}\left(3x^2+5x+2\right)^{\frac{3}{2}}x-\frac{65}{192}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{4(2x+3)}+\frac{4041}{256}\sqrt{3x^2+5x+2}\,x+\frac{41053}{3072}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{1325}{128}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{3865}{512}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/20*(3*x^2 + 5*x + 2)^(5/2) + 199/32*(3*x^2 + 5*x + 2)^(3/2)*x - 65/192*(
3*x^2 + 5*x + 2)^(3/2) - 13/4*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 4041/256*
sqrt(3*x^2 + 5*x + 2)*x + 41053/3072*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 3*x + 5/2) + 1325/128*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2
*x + 3) + 5/2/abs(2*x + 3) - 2) - 3865/512*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{4x^2+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-96
*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-165*x**2*sqrt
(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-113*x**3*sqrt(3*x**2
 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x +
 2)/(4*x**2 + 12*x + 9), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(4*x**
2 + 12*x + 9), x)
```

3.2198 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=160

$$-\frac{(2x+29)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(164x+573)\left(3x^2+5x+2\right)^{3/2}}{192(2x+3)}+\frac{5(3763-7854x)\sqrt{3x^2+5x+2}}{1536}-\frac{199615\tanh^{-}}{30}$$

Rubi [A] time = 0.10, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(2x+29)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(164x+573)\left(3x^2+5x+2\right)^{3/2}}{192(2x+3)}+\frac{5(3763-7854x)\sqrt{3x^2+5x+2}}{1536}-\frac{199615\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{3072\sqrt{3}}+\frac{4295}{256}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] (5*(3763 - 7854*x)*Sqrt[2 + 5*x + 3*x^2])/1536 + (5*(573 + 164*x)*(2 + 5*x
+ 3*x^2)^(3/2))/(192*(3 + 2*x)) - ((29 + 2*x)*(2 + 5*x + 3*x^2)^(5/2))/(16*
(3 + 2*x)^2) - (199615*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]
)/(3072*Sqrt[3]) + (4295*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
+ 3*x^2])])/256
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3}\,dx = -\frac{(29+2x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^2} - \frac{5}{64}\int \frac{(-274-328x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^2}\,dx$$

$$= \frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)} - \frac{(29+2x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^2} + \frac{5}{512}\int \frac{(-8}{}$$

$$= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536} + \frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)} - \frac{(29+}{}$$

$$= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536} + \frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)} - \frac{(29+}{}$$

$$= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536} + \frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)} - \frac{(29+}{}$$

$$= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536} + \frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)} - \frac{(29+}{}$$

Mathematica [A] time = 0.09, size = 120, normalized size = 0.75

$$\frac{-154620\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 199615\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{6\sqrt{3x^2+5x+2}\left(1728x^5-8544x^4-14456x^3-57292x^2-290742x-295719\right)}{(2x+3)^2}}{9216}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(-295719 - 290742*x - 57292*x^2 - 14456*x^3 - 85
44*x^4 + 1728*x^5))/(3 + 2*x)^2 - 154620*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])] - 199615*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/9216
```

IntegrateAlgebraic [A] time = 0.75, size = 121, normalized size = 0.76

$$-\frac{199615\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{1536\sqrt{3}}+\frac{4295}{128}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-1728x^5+8544x^4+14456x^3+57292x^2+290742x+295719\right)}{1536(2x+3)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(295719 + 290742*x + 57292*x^2 + 14456*x^3 + 8544*x^
4 - 1728*x^5))/(1536*(3 + 2*x)^2) - (199615*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(
Sqrt[3]*(1 + x))])/(1536*Sqrt[3]) + (4295*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*
x^2]/(Sqrt[5]*(1 + x))])/128
```

fricas [A] time = 0.42, size = 163, normalized size = 1.02

$$\frac{199615\sqrt{3}\left(4x^2+12x+9\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+154620\sqrt{5}\left(4x^2+12x+9\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-12\left(1728x^5-8544x^4-14456x^3-57292x^2-290742x-295719\right)\sqrt{3x^2+5x+2}}{18432\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/18432*(199615*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x
+ 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 154620*sqrt(5)*(4*x^2 + 12*x + 9)*l
og((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^
2 + 12*x + 9)) - 12*(1728*x^5 - 8544*x^4 - 14456*x^3 - 57292*x^2 - 290742*x
 - 295719)*sqrt(3*x^2 + 5*x + 2))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.34, size = 269, normalized size = 1.68

$$-\frac{1}{1536}\left(2\left(12(18x-143)x+2855\right)x-23731\right)\sqrt{3x^2+5x+2}+\frac{4295}{256}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{199615}{9216}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{5\left(4214\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+15793\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+53551\sqrt{3}x+19053\sqrt{3}-53551\sqrt{3x^2+5x+2}\right)}{128\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/1536*(2*(12*(18*x - 143)*x + 2855)*x - 23731)*sqrt(3*x^2 + 5*x + 2) + 42
95/256*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
 2))) + 199615/9216*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2)) - 5)) + 5/128*(4214*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 15793*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 53551*sqrt(3)*x + 19053*sqrt
(3) - 53551*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2
 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.06, size = 216, normalized size = 1.35

$$-\frac{4295\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{256}-\frac{199615\sqrt{3}\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{9216}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{40\left(x+\frac{3}{2}\right)^2}+\frac{83\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{50\left(x+\frac{3}{2}\right)}+\frac{859\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{200}-\frac{109(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{64}-\frac{6545(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{1536}+\frac{859\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{96}+\frac{4295\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{256}-\frac{83(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{100}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^3,x)
```

```
[Out] -13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+83/50/(x+3/2)*(-4*x+3*(x+3/2
)^2-19/4)^(7/2)+859/200*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-109/64*(6*x+5)*(-4*x+
3*(x+3/2)^2-19/4)^(3/2)-6545/1536*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-199
615/9216*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+85
9/96*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+4295/256*(-16*x+12*(x+3/2)^2-19)^(1/2)-4
295/256*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2
))-83/100*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [A] time = 1.33, size = 189, normalized size = 1.18

$$\frac{39}{40}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{10\left(4x^2+12x+9\right)}-\frac{327}{32}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{83}{192}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{83\left(3x^2+5x+2\right)^{\frac{5}{2}}}{20\left(2x+3\right)}-\frac{6545}{256}\sqrt{3x^2+5x+2}\,x-\frac{199615}{9216}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{4295}{256}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{18815}{1536}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/40*(3*x^2 + 5*x + 2)^(5/2) - 13/10*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x
 + 9) - 327/32*(3*x^2 + 5*x + 2)^(3/2)*x + 83/192*(3*x^2 + 5*x + 2)^(3/2) +
 83/20*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) - 6545/256*sqrt(3*x^2 + 5*x + 2)*x
 - 199615/9216*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 429
5/256*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
+ 3) - 2) + 18815/1536*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-96*x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
 - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27)
, x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x +
27), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x +
 27), x)
```

3.2199 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=165

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(43x+93)\left(3x^2+5x+2\right)^{3/2}}{48(2x+3)^2}-\frac{5(343x+736)\sqrt{3x^2+5x+2}}{64(2x+3)}+\frac{13505\tanh^{-1}\left(\frac{6\ldots}{2\sqrt{3}\sqrt{3\ldots}}\right.}{256\sqrt{3}}$$

Rubi [A] time = 0.11, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(43x+93)\left(3x^2+5x+2\right)^{3/2}}{48(2x+3)^2}-\frac{5(343x+736)\sqrt{3x^2+5x+2}}{64(2x+3)}+\frac{13505\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{256\sqrt{3}}-\frac{3487}{256}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] (-5*(736 + 343*x)*Sqrt[2 + 5*x + 3*x^2])/(64*(3 + 2*x)) + (5*(93 + 43*x)*(2
 + 5*x + 3*x^2)^(3/2))/(48*(3 + 2*x)^2) - ((8 + x)*(2 + 5*x + 3*x^2)^(5/2))
/(6*(3 + 2*x)^3) + (13505*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
])])/(256*Sqrt[3]) - (3487*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*
x + 3*x^2])])/256
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4}\,dx = -\frac{(8+x)\left(2+5x+3x^2\right)^{5/2}}{6(3+2x)^3} - \frac{5}{72}\int \frac{(-216-258x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3}\,dx$$

$$= \frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2} - \frac{(8+x)\left(2+5x+3x^2\right)^{5/2}}{6(3+2x)^3} + \frac{5}{768}\int \frac{(-7032$$

$$= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)} + \frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2} - \frac{(8+x)\left(\right.}{6\left(\right.}$$

$$= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)} + \frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2} - \frac{(8+x)\left(\right.}{6\left(\right.}$$

$$= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)} + \frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2} - \frac{(8+x)\left(\right.}{6\left(\right.}$$

$$= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)} + \frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2} - \frac{(8+x)\left(\right.}{6\left(\right.}$$

Mathematica [A] time = 0.10, size = 120, normalized size = 0.73

$$\frac{1}{768}\left(10461\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+13505\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{4\sqrt{3x^2+5x+2}\left(288x^5-1896x^4+1944x^3+64332x^2+143533x+89224\right)}{(2x+3)^3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-4*Sqrt[2 + 5*x + 3*x^2]*(89224 + 143533*x + 64332*x^2 + 1944*x^3 - 1896*
x^4 + 288*x^5))/(3 + 2*x)^3 + 10461*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*S
qrt[2 + 5*x + 3*x^2])] + 13505*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x +
 9*x^2])])/768
```

IntegrateAlgebraic [A] time = 0.75, size = 121, normalized size = 0.73

$$\frac{13505\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{128\sqrt{3}}-\frac{3487}{128}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-288x^5+1896x^4-1944x^3-64332x^2-143533x-89224\right)}{192(2x+3)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-89224 - 143533*x - 64332*x^2 - 1944*x^3 + 1896*x^4
 - 288*x^5))/(192*(3 + 2*x)^3) + (13505*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt
[3]*(1 + x))])/(128*Sqrt[3]) - (3487*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/
(Sqrt[5]*(1 + x))])/128
```

fricas [A] time = 0.42, size = 179, normalized size = 1.08

$$\frac{13505\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+10461\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-8\left(288x^5-1896x^4+1944x^3+64332x^2+143533x+89224\right)\sqrt{3x^2+5x+2}}{1536\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/1536*(13505*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(4*sqrt(3)*sqrt(3*x^2
 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 10461*sqrt(5)*(8*x^3 + 36*x^
2 + 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 -
212*x - 89)/(4*x^2 + 12*x + 9)) - 8*(288*x^5 - 1896*x^4 + 1944*x^3 + 64332*
x^2 + 143533*x + 89224)*sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.34, size = 315, normalized size = 1.91

$$-\frac{1}{128}\,(2\,(12\,x-133)x+1197)\sqrt{3\,x^2+5\,x+2}-\frac{3487}{256}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)-\frac{13505}{768}\,\sqrt{3}\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)-\frac{203604\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)^5+1334970\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)^4+10053790\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)^3+12051375\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)^2+20819415\,\sqrt{3}x+4639299\,\sqrt{3}-20819415\,\sqrt{3\,x^2+5\,x+2}}{384\left(2\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)^2+6\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1/128*(2*(12*x - 133)*x + 1197)*sqrt(3*x^2 + 5*x + 2) - 3487/256*sqrt(5)*l
og(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(
-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) - 13505/76
8*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) - 1/
384*(203604*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 1334970*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^4 + 10053790*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^3 + 12051375*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 20819415*sq
rt(3)*x + 4639299*sqrt(3) - 20819415*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) +
 11)^3
```

maple [A] time = 0.06, size = 237, normalized size = 1.44

$$\frac{3487\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{256}+\frac{13505\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{768}+\frac{67\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{600\left(x+\frac{3}{2}\right)^2}-\frac{197\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{125\left(x+\frac{3}{2}\right)}-\frac{3487\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{1000}+\frac{329\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{240}+\frac{443\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{128}-\frac{3487\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{480}-\frac{3487\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{256}+\frac{197\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{250}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{120\left(x+\frac{3}{2}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^4,x)
```

```
[Out] 67/600/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-197/125/(x+3/2)*(-4*x+3*(x+3
/2)^2-19/4)^(7/2)-3487/1000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+329/240*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(3/2)+443/128*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+
13505/768*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-3
487/480*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3487/256*(-16*x+12*(x+3/2)^2-19)^(1/2
)+3487/256*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(
1/2))+197/250*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-13/120/(x+3/2)^3*(-4*x+
3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.36, size = 220, normalized size = 1.33

$$-\frac{67}{200}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}}{15\left(8\,x^3+36\,x^2+54\,x+27\right)}+\frac{67\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}}{150\left(4\,x^2+12\,x+9\right)}+\frac{329}{40}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x-\frac{197}{480}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{197\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}{50\,(2\,x+3)}+\frac{1329}{64}\sqrt{3\,x^2+5\,x+2}\,x+\frac{13505}{768}\sqrt{3}\log\left(\sqrt{3}\sqrt{3\,x^2+5\,x+2}+3\,x+\frac{5}{2}\right)+\frac{3487}{256}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)-\frac{159}{16}\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] -67/200*(3*x^2 + 5*x + 2)^(5/2) - 13/15*(3*x^2 + 5*x + 2)^(7/2)/(8*x^3 + 36
*x^2 + 54*x + 27) + 67/150*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x + 9) + 329
/40*(3*x^2 + 5*x + 2)^(3/2)*x - 197/480*(3*x^2 + 5*x + 2)^(3/2) - 197/50*(3
*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 1329/64*sqrt(3*x^2 + 5*x + 2)*x + 13505/7
68*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 3487/256*sqrt(5
)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) -
159/16*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x
+ 81), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*
x**2 + 216*x + 81), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**4
 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-113*x**3*sqrt(3*x**2 +
5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-15*x**
4*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x) -
Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*
x + 81), x)
```

3.2200 $\int \frac{(5-x)(2+5x+3x^2)^{5/2}}{(3+2x)^5} dx$

Optimal. Leaf size=167

$$-\frac{(4x+19)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^4}-\frac{(2898x+3727)\left(3x^2+5x+2\right)^{3/2}}{384(2x+3)^3}+\frac{(5718x+12265)\sqrt{3x^2+5x+2}}{512(2x+3)}-\frac{1875}{256}\sqrt{3}\tanh$$

Rubi [A] time = 0.10, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{(4x+19)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^4}-\frac{(2898x+3727)\left(3x^2+5x+2\right)^{3/2}}{384(2x+3)^3}+\frac{(5718x+12265)\sqrt{3x^2+5x+2}}{512(2x+3)}-\frac{1875}{256}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{29047\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1024\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] ((12265 + 5718*x)*Sqrt[2 + 5*x + 3*x^2])/(512*(3 + 2*x)) - ((3727 + 2898*x)
*(2 + 5*x + 3*x^2)^(3/2))/(384*(3 + 2*x)^3) - ((19 + 4*x)*(2 + 5*x + 3*x^2)
^(5/2))/(16*(3 + 2*x)^4) - (1875*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[
2 + 5*x + 3*x^2])])/256 + (29047*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
+ 3*x^2])])/(1024*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^5}\,dx = -\frac{(19+4x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^4} - \frac{5}{64}\int \frac{(-158-188x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx$$

$$= -\frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3} - \frac{(19+4x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^4} + \int \frac{(19556}{}$$

$$= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)} - \frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3} - \frac{(19}{}$$

$$= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)} - \frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3} - \frac{(19}{}$$

$$= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)} - \frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3} - \frac{(19}{}$$

$$= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)} - \frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3} - \frac{(19}{}$$

Mathematica [A] time = 0.13, size = 120, normalized size = 0.72

$$\frac{-87141\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 112500\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{10\sqrt{3x^2+5x+2}\left(3456x^5-39744x^4-533280x^3-1672268x^2-2059268x-896721\right)}{(2x+3)^4}}{15360}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(-896721 - 2059268*x - 1672268*x^2 - 533280*x^3
 - 39744*x^4 + 3456*x^5))/(3 + 2*x)^4 - 87141*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2
*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 112500*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt
[6 + 15*x + 9*x^2])])/15360
```

IntegrateAlgebraic [A] time = 0.77, size = 121, normalized size = 0.72

$$-\frac{1875}{128}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)+\frac{29047\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{512\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\,(-3456x^5+39744x^4+533280x^3+1672268x^2+2059268x+896721)}{1536(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(896721 + 2059268*x + 1672268*x^2 + 533280*x^3 + 397
44*x^4 - 3456*x^5))/(1536*(3 + 2*x)^4) - (1875*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x
 + 3*x^2]/(Sqrt[3]*(1 + x))])/128 + (29047*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(S
qrt[5]*(1 + x))])/(512*Sqrt[5])
```

fricas [A] time = 0.43, size = 193, normalized size = 1.16

$$\frac{112500\sqrt{3}(16x^4+96x^3+216x^2+216x+81)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+87141\sqrt{5}(16x^4+96x^3+216x^2+216x+81)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20(3456x^5-39744x^4-533280x^3-1672268x^2-2059268x-896721)\sqrt{3x^2+5x+2}}{30720(16x^4+96x^3+216x^2+216x+81)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/30720*(112500*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-4*sqr
t(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 87141*sqrt(5)
*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x +
 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(3456*x^5 -
39744*x^4 - 533280*x^3 - 1672268*x^2 - 2059268*x - 896721)*sqrt(3*x^2 + 5*x
 + 2))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [B] time = 1.06, size = 445, normalized size = 2.66

$$\frac{1875}{256}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{29047}{5120}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{3072}\left(\left(\frac{\frac{10\left(\frac{195\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-904\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+18577\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-27132\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}-\frac{9\left(157\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^3\mathrm{sgn}\left(\frac{1}{2x+3}\right)-126\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^2\mathrm{sgn}\left(\frac{1}{2x+3}\right)-409\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+330\sqrt{5}\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{128\left(\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^2-3\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] 1875/256*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3
)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) - 29047/5120*sqrt(5)*log(
abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) -
4))*sgn(1/(2*x + 3)) - 1/3072*((10*(195*sgn(1/(2*x + 3))/(2*x + 3) - 904*sg
n(1/(2*x + 3)))/(2*x + 3) + 18577*sgn(1/(2*x + 3)))/(2*x + 3) - 27132*sgn(1
/(2*x + 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 9/128*(157*(sqrt(-8/(
2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x + 3)) - 126
*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2*sgn
(1/(2*x + 3)) - 409*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x
+ 3))*sgn(1/(2*x + 3)) + 330*sqrt(5)*sgn(1/(2*x + 3)))/((sqrt(-8/(2*x + 3)
+ 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^2
```

maple [A] time = 0.06, size = 258, normalized size = 1.54

$$-\frac{29047\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{5120}-\frac{1875\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{256}-\frac{\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{75\left(x+\frac{3}{2}\right)^3}-\frac{1627\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{12000\left(x+\frac{3}{2}\right)^2}+\frac{1307\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{2500\left(x+\frac{3}{2}\right)}+\frac{29047\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{20000}-\frac{1387(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{2400}-\frac{461(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{320}+\frac{29047\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{9600}+\frac{29047\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{5120}-\frac{1307(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{5000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{320\left(x+\frac{3}{2}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^5,x)
```

```
[Out] -1/75/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1627/12000/(x+3/2)^2*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)+1307/2500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+29047
/20000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1387/2400*(6*x+5)*(-4*x+3*(x+3/2)^2-19
/4)^(3/2)-461/320*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-1875/256*3^(1/2)*ln
```

```
(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+29047/9600*(-4*x+3*(x
+3/2)^2-19/4)^(3/2)+29047/5120*(-16*x+12*(x+3/2)^2-19)^(1/2)-29047/5120*5^(
1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-1307/500
0*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-
19/4)^(7/2)
```

maxima [A] time = 1.26, size = 256, normalized size = 1.53

$$\frac{1627}{4000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{20\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{8\left(3x^2+5x+2\right)^{\frac{7}{2}}}{75\left(8x^3+36x^2+54x+27\right)}-\frac{1627\left(3x^2+5x+2\right)^{\frac{7}{2}}}{3000\left(4x^2+12x+9\right)}-\frac{1387}{400}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{1307}{9600}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{1307\left(3x^2+5x+2\right)^{\frac{5}{2}}}{1000\,(2x+3)}-\frac{1383}{160}\sqrt{3x^2+5x+2}\,x-\frac{1875}{256}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{29047}{5120}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{10607}{2560}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 1627/4000*(3*x^2 + 5*x + 2)^(5/2) - 13/20*(3*x^2 + 5*x + 2)^(7/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) - 8/75*(3*x^2 + 5*x + 2)^(7/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 1627/3000*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x + 9) - 1
387/400*(3*x^2 + 5*x + 2)^(3/2)*x + 1307/9600*(3*x^2 + 5*x + 2)^(3/2) + 130
7/1000*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) - 1383/160*sqrt(3*x^2 + 5*x + 2)*x
 - 1875/256*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 29047/
5120*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x +
 3) - 2) + 10607/2560*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*
x**2 + 810*x + 243), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 +
240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-165*x**2*sqr
t(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 24
3), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 72
0*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x
 + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integ
ral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**
2 + 810*x + 243), x)
```

3.2201 $\int \frac{(5-x)(2+5x+3x^2)^{5/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=167

$$\frac{(114x+119)\left(3x^2+5x+2\right)^{5/2}}{80(2x+3)^5}+\frac{(13074x+17051)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^3}-\frac{(26934x+57845)\sqrt{3x^2+5x+2}}{12800(2x+3)}+\frac{177}{128}\sqrt{3}$$

Rubi [A] time = 0.11, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{(114x+119)\left(3x^2+5x+2\right)^{5/2}}{80(2x+3)^5}+\frac{(13074x+17051)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^3}-\frac{(26934x+57845)\sqrt{3x^2+5x+2}}{12800(2x+3)}+\frac{177}{128}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)-\frac{137111\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25600\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] -((57845 + 26934*x)*Sqrt[2 + 5*x + 3*x^2])/(12800*(3 + 2*x)) + ((17051 + 13
074*x)*(2 + 5*x + 3*x^2)^(3/2))/(9600*(3 + 2*x)^3) + ((119 + 114*x)*(2 + 5*
x + 3*x^2)^(5/2))/(80*(3 + 2*x)^5) + (177*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt
[3]*Sqrt[2 + 5*x + 3*x^2])])/128 - (137111*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqr
t[2 + 5*x + 3*x^2])])/(25600*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx = \frac{(119+114x)\left(2+5x+3x^2\right)^{5/2}}{80(3+2x)^5} - \frac{1}{160}\int \frac{(437+462x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx$$

$$= \frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3} + \frac{(119+114x)\left(2+5x+3x^2\right)^{5/2}}{80(3+2x)^5} + \int \frac{(\cdots}{\cdots}$$

$$= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)} + \frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3} + \cdots$$

$$= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)} + \frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3} + \cdots$$

$$= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)} + \frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3} + \cdots$$

$$= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)} + \frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3} + \cdots$$

Mathematica [A] time = 0.14, size = 120, normalized size = 0.72

$$\frac{411333\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+531000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(172800x^5+4630848x^4+21586808x^3+41641148x^2+37019838x+12600183\right)}{(2x+3)^5}}{384000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(12600183 + 37019838*x + 41641148*x^2 + 2158680
8*x^3 + 4630848*x^4 + 172800*x^5))/(3 + 2*x)^5 + 411333*Sqrt[5]*ArcTanh[(-7
 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] + 531000*Sqrt[3]*ArcTanh[(5 + 6*
x)/(2*Sqrt[6 + 15*x + 9*x^2])])/384000
```

IntegrateAlgebraic [A] time = 0.79, size = 121, normalized size = 0.72

$$\frac{177}{64}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)-\frac{137111\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{12800\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\,\left(-172800x^5-4630848x^4-21586808x^3-41641148x^2-37019838x-12600183\right)}{38400(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-12600183 - 37019838*x - 41641148*x^2 - 21586808*x^
3 - 4630848*x^4 - 172800*x^5))/(38400*(3 + 2*x)^5) + (177*Sqrt[3]*ArcTanh[S
qrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/64 - (137111*ArcTanh[Sqrt[2 + 5*x
+ 3*x^2]/(Sqrt[5]*(1 + x))])/(12800*Sqrt[5])
```

fricas [A] time = 0.43, size = 209, normalized size = 1.25

$$\frac{531000\sqrt{3}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+411333\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-20\left(172800x^5+4630848x^4+21586808x^3+41641148x^2+37019838x+12600183\right)\sqrt{3x^2+5x+2}}{768000\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/768000*(531000*sqrt(3)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 2
43)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) +
411333*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)*log(-(
4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 +
12*x + 9)) - 20*(172800*x^5 + 4630848*x^4 + 21586808*x^3 + 41641148*x^2 + 3
7019838*x + 12600183)*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 +
1080*x^2 + 810*x + 243)
```

giac [B] time = 0.40, size = 407, normalized size = 2.44

$$-\frac{137111}{128000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{177}{128}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{9}{64}\sqrt{3x^2+5x+2}-\frac{27201072\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9+316934472\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^8+4873277176\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^7+14374341276\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^6+80473660448\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+98380998102\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+236231795506\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+119385279741\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+103767800973\sqrt{3}x+13144069068\sqrt{3}-103767800973\sqrt{3x^2+5x+2}}{38400\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -137111/128000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqr
t(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))) - 177/128*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2)) - 5)) - 9/64*sqrt(3*x^2 + 5*x + 2) - 1/38400*(27201072*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2))^9 + 316934472*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^8 + 4873277176*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 143743412
76*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 80473660448*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^5 + 98380998102*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^4 + 236231795506*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 119385279
741*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 103767800973*sqrt(3)*x
+ 13144069068*sqrt(3) - 103767800973*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) +
 11)^5
```

maple [B] time = 0.06, size = 279, normalized size = 1.67

$$\frac{137111\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{128000}+\frac{177\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{128}-\frac{521\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{15000\left(x+\frac{3}{2}\right)^3}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{800\left(x+\frac{3}{2}\right)^5}-\frac{9349\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{300000\left(x+\frac{3}{2}\right)^2}+\frac{11491(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{125000}+\frac{6281(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{60000}-\frac{11491\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{62500\left(x+\frac{3}{2}\right)}+\frac{4361(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{16000}-\frac{137111\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{128000}-\frac{131\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{8000\left(x+\frac{3}{2}\right)^4}-\frac{137111\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{240000}-\frac{137111\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{500000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^6,x)
```

```
[Out] -521/15000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/800/(x+3/2)^5*(-4*x+3
*(x+3/2)^2-19/4)^(7/2)-9349/300000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+
```

```
11491/125000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+6281/60000*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(3/2)-11491/62500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+
4361/16000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+137111/128000*5^(1/2)*arct
anh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+177/128*3^(1/2)*l
n(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-137111/128000*(-16*x
+12*(x+3/2)^2-19)^(1/2)-131/8000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13
7111/240000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-137111/500000*(-4*x+3*(x+3/2)^2-1
9/4)^(5/2)
```

maxima [B] time = 1.53, size = 297, normalized size = 1.78

$$\frac{9349}{100000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{131\left(3x^2+5x+2\right)^{\frac{7}{2}}}{500\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{521\left(3x^2+5x+2\right)^{\frac{7}{2}}}{1875\left(8x^3+36x^2+54x+27\right)}-\frac{9349\left(3x^2+5x+2\right)^{\frac{7}{2}}}{75000\left(4x^2+12x+9\right)}+\frac{6281}{10000}\left(3x^2+5x+2\right)^{\frac{3}{2}}x-\frac{11491}{240000}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{11491\left(3x^2+5x+2\right)^{\frac{5}{2}}}{25000\,(2x+3)}+\frac{13083}{8000}\sqrt{3x^2+5x+2}\,x+\frac{177}{128}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{137111}{128000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{49891}{64000}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 9349/100000*(3*x^2 + 5*x + 2)^(5/2) - 13/25*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5
 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 131/500*(3*x^2 + 5*x + 2)^
(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 521/1875*(3*x^2 + 5*x + 2)
^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 9349/75000*(3*x^2 + 5*x + 2)^(7/2)/(4
*x^2 + 12*x + 9) + 6281/10000*(3*x^2 + 5*x + 2)^(3/2)*x - 11491/240000*(3*x
^2 + 5*x + 2)^(3/2) - 11491/25000*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 13083
/8000*sqrt(3*x^2 + 5*x + 2)*x + 177/128*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 3*x + 5/2) + 137111/128000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x +
2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 49891/64000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320
*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-96*x*sqrt(3*x**2 + 5*x +
2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729),
 x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*
x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-113*x**3*sqrt(
3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 +
 2916*x + 729), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 57
6*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(9
*x**5*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 +
4860*x**2 + 2916*x + 729), x)
```

3.2202 $\int \frac{(5-x)(2+5x+3x^2)^{5/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=167

$$\frac{(116x+109)\left(3x^2+5x+2\right)^{5/2}}{120(2x+3)^6}+\frac{(328x+437)\left(3x^2+5x+2\right)^{3/2}}{1920(2x+3)^4}+\frac{(10952x+14083)\sqrt{3x^2+5x+2}}{25600(2x+3)^2}-\frac{9}{128}\sqrt{3}\tanh$$

Rubi [A] time = 0.10, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {810, 843, 621, 206, 724}

$$\frac{(116x+109)\left(3x^2+5x+2\right)^{5/2}}{120(2x+3)^6}+\frac{(328x+437)\left(3x^2+5x+2\right)^{3/2}}{1920(2x+3)^4}+\frac{(10952x+14083)\sqrt{3x^2+5x+2}}{25600(2x+3)^2}-\frac{9}{128}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{13931\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{51200\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] ((14083 + 10952*x)*Sqrt[2 + 5*x + 3*x^2])/(25600*(3 + 2*x)^2) + ((437 + 328
*x)*(2 + 5*x + 3*x^2)^(3/2))/(1920*(3 + 2*x)^4) + ((109 + 116*x)*(2 + 5*x +
 3*x^2)^(5/2))/(120*(3 + 2*x)^6) - (9*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*
Sqrt[2 + 5*x + 3*x^2])])/128 + (13931*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 +
 5*x + 3*x^2])])/(51200*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx = \frac{(109+116x)\left(2+5x+3x^2\right)^{5/2}}{120(3+2x)^6} - \frac{1}{240}\int \frac{(215+180x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$$

$$= \frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4} + \frac{(109+116x)\left(2+5x+3x^2\right)^{5/2}}{120(3+2x)^6} + \int \frac{(-1833\ldots}{}$$

$$= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2} + \frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4} + \frac{(109\ldots}{}$$

$$= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2} + \frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4} + \frac{(109\ldots}{}$$

$$= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2} + \frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4} + \frac{(109\ldots}{}$$

$$= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2} + \frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4} + \frac{(109\ldots}{}$$

Mathematica [A] time = 0.15, size = 120, normalized size = 0.72

$$\frac{-41793\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 54000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) + \frac{10\sqrt{3x^2+5x+2}\left(1351296x^5+7629680x^4+18217760x^3+22854480x^2+14921560x+4015849\right)}{(2x+3)^6}}{768000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] ((10*Sqrt[2 + 5*x + 3*x^2]*(4015849 + 14921560*x + 22854480*x^2 + 18217760*
x^3 + 7629680*x^4 + 1351296*x^5))/(3 + 2*x)^6 - 41793*Sqrt[5]*ArcTanh[(-7 -
 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 54000*Sqrt[3]*ArcTanh[(5 + 6*x)/
(2*Sqrt[6 + 15*x + 9*x^2])])/768000
```

IntegrateAlgebraic [A] time = 0.75, size = 121, normalized size = 0.72

$$-\frac{9}{64}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right) + \frac{13931\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25600\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\left(1351296x^5+7629680x^4+18217760x^3+22854480x^2+14921560x+4015849\right)}{76800(2x+3)^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(4015849 + 14921560*x + 22854480*x^2 + 18217760*x^3
+ 7629680*x^4 + 1351296*x^5))/(76800*(3 + 2*x)^6) - (9*Sqrt[3]*ArcTanh[Sqrt
[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/64 + (13931*ArcTanh[Sqrt[2 + 5*x + 3*
x^2]/(Sqrt[5]*(1 + x))])/(25600*Sqrt[5])
```

fricas [A] time = 0.44, size = 223, normalized size = 1.34

$$\frac{54000\sqrt{3}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right) + 41793\sqrt{5}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) + 20\left(1351296x^5+7629680x^4+18217760x^3+22854480x^2+14921560x+4015849\right)\sqrt{3x^2+5x+2}}{1536000\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/1536000*(54000*sqrt(3)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
 + 2916*x + 729)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 +
120*x + 49) + 41793*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*
x^2 + 2916*x + 729)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^
2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(1351296*x^5 + 7629680*x^4 + 18217
760*x^3 + 22854480*x^2 + 14921560*x + 4015849)*sqrt(3*x^2 + 5*x + 2))/(64*x
^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.37, size = 444, normalized size = 2.66

$$\frac{13931}{256000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{9}{128}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{20435424\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{11}+269619696\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{10}+4893810640\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{9}+17834042400\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{8}+129909086880\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{7}+219870810528\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{6}+791797675536\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{5}+672745449240\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{4}+1187868124850\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{3}+460902113505\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{2}+318216938187\sqrt{3}x+32907940848\sqrt{3}-318216938187\sqrt{3x^2+5x+2}}{76800\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{2}+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 13931/256000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) + 9/128*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2)) - 5)) + 1/76800*(20435424*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 +
269619696*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 4893810640*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 17834042400*sqrt(3)*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^8 + 129909086880*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 21
9870810528*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 791797675536*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 672745449240*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^4 + 1187868124850*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3
+ 460902113505*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 318216938187
*sqrt(3)*x + 32907940848*sqrt(3) - 318216938187*sqrt(3*x^2 + 5*x + 2))/(2*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2)) + 11)^6
```

maple [B] time = 0.07, size = 300, normalized size = 1.80

$$-\frac{13931\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{256000}-\frac{9\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{128}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{1920\left(x+\frac{3}{2}\right)^{6}}-\frac{709\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{30000\left(x+\frac{3}{2}\right)^{3}}-\frac{23\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{2400\left(x+\frac{3}{2}\right)^{5}}-\frac{22271\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{600000\left(x+\frac{3}{2}\right)^{2}}+\frac{6089\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{250000}-\frac{1001\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{120000}-\frac{6089\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{125000\left(x+\frac{3}{2}\right)}-\frac{431\left(6x+5\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{32000}+\frac{13931\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{256000}-\frac{249\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{16000\left(x+\frac{3}{2}\right)^{4}}+\frac{13931\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{480000}+\frac{13931\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{1000000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^7,x)
```

```
[Out] -13/1920/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-709/30000/(x+3/2)^3*(-4*x+
3*(x+3/2)^2-19/4)^(7/2)-23/2400/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-222
71/600000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+6089/250000*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(5/2)-1001/120000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-
6089/125000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-431/32000*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(1/2)-13931/256000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/
(-16*x+12*(x+3/2)^2-19)^(1/2))-9/128*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x
+3*(x+3/2)^2-19/4)^(1/2))+13931/256000*(-16*x+12*(x+3/2)^2-19)^(1/2)-249/16
000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+13931/480000*(-4*x+3*(x+3/2)^2-
19/4)^(3/2)+13931/1000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.32, size = 343, normalized size = 2.05

$$\frac{22271}{200000}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{30\left(64x^{6}+576x^{5}+2160x^{4}+4320x^{3}+4860x^{2}+2916x+729\right)}-\frac{23\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{75\left(32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243\right)}-\frac{249\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{1000\left(16x^{4}+96x^{3}+216x^{2}+216x+81\right)}-\frac{709\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{3750\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{22271\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{150000\left(4x^{2}+12x+9\right)}-\frac{1001}{20000}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x-\frac{6089}{480000}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{6089\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{50000\left(2x+3\right)}-\frac{1293}{16000}\sqrt{3x^{2}+5x+2}\,x-\frac{9}{128}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right)-\frac{13931}{256000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{5311}{128000}\sqrt{3x^{2}+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 22271/200000*(3*x^2 + 5*x + 2)^(5/2) - 13/30*(3*x^2 + 5*x + 2)^(7/2)/(64*x^
6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 23/75*(3*x^2
 + 5*x + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 2
49/1000*(3*x^2 + 5*x + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) -
709/3750*(3*x^2 + 5*x + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 22271/15000
0*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x + 9) - 1001/20000*(3*x^2 + 5*x + 2)
^(3/2)*x - 6089/480000*(3*x^2 + 5*x + 2)^(3/2) - 6089/50000*(3*x^2 + 5*x +
2)^(5/2)/(2*x + 3) - 1293/16000*sqrt(3*x^2 + 5*x + 2)*x - 9/128*sqrt(3)*log
(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 13931/256000*sqrt(5)*log(sqrt
(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 5311/12800
0*sqrt(3*x^2 + 5*x + 2)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^7, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{20\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \left(-\frac{96x\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \left(-\frac{165x^2\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \left(-\frac{113x^3\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \left(-\frac{15x^4\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int \frac{9x^5\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15
120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-96*x*s
qrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 2268
0*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-165*x**2*sqrt(3*x**2
+ 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20
412*x**2 + 10206*x + 2187), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/
(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 +
10206*x + 2187), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(128*x**7 +
1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 21
87), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 60
48*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x)
```

3.2203 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=154

$$-\frac{13\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{5/2}}{600(2x+3)^6}-\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^4}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{128000(2x+3)^2}-$$

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{5/2}}{600(2x+3)^6}-\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^4}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{128000(2x+3)^2}-\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{256000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (47*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(128000*(3 + 2*x)^2) - (47*(7 + 8*x)*(
2 + 5*x + 3*x^2)^(3/2))/(9600*(3 + 2*x)^4) + (47*(7 + 8*x)*(2 + 5*x + 3*x^2
)^(5/2))/(600*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(35*(3 + 2*x)^7)
- (47*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(256000*Sqrt[5]
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx = -\frac{13\left(2+5x+3x^2\right)^{7/2}}{35(3+2x)^7} + \frac{47}{10}\int \frac{\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$$

$$= \frac{47(7+8x)\left(2+5x+3x^2\right)^{5/2}}{600(3+2x)^6} - \frac{13\left(2+5x+3x^2\right)^{7/2}}{35(3+2x)^7} - \frac{47}{240}\int \frac{\left(2+5x+3x^2\right.}{(3+2x)^5}$$

$$= -\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4} + \frac{47(7+8x)\left(2+5x+3x^2\right)^{5/2}}{600(3+2x)^6} - \frac{13\left(2+5x\right.}{35(3+}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{128000(3+2x)^2} - \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4} + \frac{47(7+8x)\left(2+\right.}{600(3+}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{128000(3+2x)^2} - \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4} + \frac{47(7+8x)\left(2+\right.}{600(3+}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{128000(3+2x)^2} - \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4} + \frac{47(7+8x)\left(2+\right.}{600(3+}$$

Mathematica [A] time = 0.08, size = 154, normalized size = 1.00

$$-\frac{13\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7} + \frac{47(8x+7)\left(3x^2+5x+2\right)^{5/2}}{600(2x+3)^6} - \frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^4} + \frac{47\left(\frac{10\sqrt{3x^2+5x+2}(8x+7)}{(2x+3)^2} + \sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{1280000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (-47*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(9600*(3 + 2*x)^4) + (47*(7 + 8*x)*
(2 + 5*x + 3*x^2)^(5/2))/(600*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(
35*(3 + 2*x)^7) + (47*((10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + S
qrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/1280000
```

IntegrateAlgebraic [A] time = 0.67, size = 91, normalized size = 0.59

$$\frac{\sqrt{3x^2+5x+2}\left(1089792x^6+22620128x^5+81951440x^4+127557120x^3+100711840x^2+39981058x+6404247\right)}{2688000(2x+3)^7} - \frac{47\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{128000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(6404247 + 39981058*x + 100711840*x^2 + 127557120*x^
3 + 81951440*x^4 + 22620128*x^5 + 1089792*x^6))/(2688000*(3 + 2*x)^7) - (47
*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(128000*Sqrt[5])
```

fricas [A] time = 0.42, size = 171, normalized size = 1.11

$$\frac{987\sqrt{5}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right) + 20\left(1089792x^6+22620128x^5+81951440x^4+127557120x^3+100711840x^2+39981058x+6404247\right)\sqrt{3x^2+5x+2}}{53760000\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/53760000*(987*sqrt(5)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*
x^3 + 20412*x^2 + 10206*x + 2187)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*
x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(1089792*x^6 + 2262
0128*x^5 + 81951440*x^4 + 127557120*x^3 + 100711840*x^2 + 39981058*x + 6404
```

```
247)*sqrt(3*x^2 + 5*x + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22
680*x^3 + 20412*x^2 + 10206*x + 2187)
```

giac [B] time = 0.33, size = 461, normalized size = 2.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] -47/1280000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3
*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
5*x + 2))) - 1/2688000*(72512832*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 6
51952224*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 + 6898276448*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 8494566864*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2))^10 - 58878767920*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 - 326
450774496*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 - 2207907445056*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 3147944405424*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^6 - 9314774279636*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5
 - 6492162811470*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 9472821206
534*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 3070624865553*sqrt(3)*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^2 - 1792565462541*sqrt(3)*x - 158637115728*sqrt(
3) + 1792565462541*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^7
```

maple [B] time = 0.07, size = 290, normalized size = 1.88

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^8,x)
```

```
[Out] -47/9600/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/4480/(x+3/2)^7*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)-2867/150000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-4
7/6000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-87373/3000000/(x+3/2)^2*(-4*
x+3*(x+3/2)^2-19/4)^(7/2)+27307/1250000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/
2)-1363/600000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-27307/625000/(x+3/2)*(
-4*x+3*(x+3/2)^2-19/4)^(7/2)+47/160000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2
)+47/1280000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)
^(1/2))-47/1280000*(-16*x+12*(x+3/2)^2-19)^(1/2)-987/80000/(x+3/2)^4*(-4*x+
3*(x+3/2)^2-19/4)^(7/2)-47/2400000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-47/5000000
*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.48, size = 367, normalized size = 2.38

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 87373/1000000*(3*x^2 + 5*x + 2)^(5/2) - 13/35*(3*x^2 + 5*x + 2)^(7/2)/(128*
x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2
187) - 47/150*(3*x^2 + 5*x + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x
^3 + 4860*x^2 + 2916*x + 729) - 94/375*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5 + 24
0*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 987/5000*(3*x^2 + 5*x + 2)^(7/2
)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 2867/18750*(3*x^2 + 5*x + 2)^(
7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 87373/750000*(3*x^2 + 5*x + 2)^(7/2)/(4
*x^2 + 12*x + 9) - 1363/100000*(3*x^2 + 5*x + 2)^(3/2)*x - 27307/2400000*(3
*x^2 + 5*x + 2)^(3/2) - 27307/250000*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 14
```

```
1/80000*sqrt(3*x^2 + 5*x + 2)*x + 47/1280000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2
 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 893/640000*sqrt(3*x^2 +
5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^8,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{113x^3\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{15x^4\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\frac{9x^5\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**8,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-96*x*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6
 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x)
 - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*
x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561)
, x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 161
28*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 65
61), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16
128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6
561), x)
```

3.2204 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$

Optimal. Leaf size=179

$$-\frac{107\left(3x^2+5x+2\right)^{7/2}}{350(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{40(2x+3)^8}+\frac{1517(8x+7)\left(3x^2+5x+2\right)^{5/2}}{24000(2x+3)^6}-\frac{1517(8x+7)\left(3x^2+5x+2\right)^{3/2}}{384000(2x+3)^4}+$$

Rubi [A] time = 0.10, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{107\left(3x^2+5x+2\right)^{7/2}}{350(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{40(2x+3)^8}+\frac{1517(8x+7)\left(3x^2+5x+2\right)^{5/2}}{24000(2x+3)^6}-\frac{1517(8x+7)\left(3x^2+5x+2\right)^{3/2}}{384000(2x+3)^4}+\frac{1517(8x+7)\sqrt{3x^2+5x+2}}{5120000(2x+3)^2}-\frac{1517\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10240000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] (1517*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(5120000*(3 + 2*x)^2) - (1517*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(384000*(3 + 2*x)^4) + (1517*(7 + 8*x)*(2 + 5*
x + 3*x^2)^(5/2))/(24000*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(40*(3
 + 2*x)^8) - (107*(2 + 5*x + 3*x^2)^(7/2))/(350*(3 + 2*x)^7) - (1517*ArcTan
h[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(10240000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9}\,dx = -\frac{13\left(2+5x+3x^2\right)^{7/2}}{40(3+2x)^8} - \frac{1}{40}\int \frac{\left(-\frac{311}{2}+39x\right)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx$$
$$= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{40(3+2x)^8} - \frac{107\left(2+5x+3x^2\right)^{7/2}}{350(3+2x)^7} + \frac{1517}{400}\int \frac{\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}$$
$$= \frac{1517(7+8x)\left(2+5x+3x^2\right)^{5/2}}{24000(3+2x)^6} - \frac{13\left(2+5x+3x^2\right)^{7/2}}{40(3+2x)^8} - \frac{107\left(2+5x+3x^2\right)}{350(3+2x)^7}$$
$$= -\frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4} + \frac{1517(7+8x)\left(2+5x+3x^2\right)^{5/2}}{24000(3+2x)^6} - \frac{13(2+}{40}$$
$$= \frac{1517(7+8x)\sqrt{2+5x+3x^2}}{5120000(3+2x)^2} - \frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4} + \frac{1517(7+8}{240}$$
$$= \frac{1517(7+8x)\sqrt{2+5x+3x^2}}{5120000(3+2x)^2} - \frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4} + \frac{1517(7+8}{240}$$
$$= \frac{1517(7+8x)\sqrt{2+5x+3x^2}}{5120000(3+2x)^2} - \frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4} + \frac{1517(7+8}{240}$$

Mathematica [A] time = 0.18, size = 182, normalized size = 1.02

$$\frac{1}{40}\left(-\frac{428\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7} - \frac{13\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8} + \frac{1517\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6} - \frac{2(8x+7)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4} + \frac{3(8x+7)\sqrt{3x^2+5x+2}}{20(2x+3)^2} + \frac{3\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40\sqrt{5}}\right)}{19200}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8 - (428*(2 + 5*x + 3*x^2)^(7/2))/
(35*(3 + 2*x)^7) + (1517*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)
^2) - (2*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(7 + 8*x)*(2
+ 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2
 + 5*x + 3*x^2])])/(40*Sqrt[5])))/19200)/40
```

IntegrateAlgebraic [A] time = 0.77, size = 96, normalized size = 0.54

$$\frac{\sqrt{3x^2+5x+2}\left(35495424x^7+395685952x^6+2141523904x^5+5486222160x^4+7363989440x^3+5395613996x^2+2061624348x+325079151\right)}{107520000(2x+3)^8} - \frac{1517\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{5120000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(325079151 + 2061624348*x + 5395613996*x^2 + 7363989
440*x^3 + 5486222160*x^4 + 2141523904*x^5 + 395685952*x^6 + 35495424*x^7))/
(107520000*(3 + 2*x)^8) - (1517*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 +
 x))])/(5120000*Sqrt[5])
```

fricas [A] time = 0.43, size = 186, normalized size = 1.04

$$\frac{31857\sqrt{5}\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(35495424x^7+395685952x^6+2141523904x^5+5486222160x^4+7363989440x^3+5395613996x^2+2061624348x+325079151\right)\sqrt{3x^2+5x+2}}{2150400000\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/2150400000*(31857*sqrt(5)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 9
0720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log(-(4*sqrt(5)*sqrt(3*
x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(
35495424*x^7 + 395685952*x^6 + 2141523904*x^5 + 5486222160*x^4 + 7363989440
*x^3 + 5395613996*x^2 + 2061624348*x + 325079151)*sqrt(3*x^2 + 5*x + 2))/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561)
```

giac [B] time = 0.35, size = 512, normalized size = 2.86

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] -1517/51200000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqr
t(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))) + 1/107520000*(4077696*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15
 - 2811291840*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 - 54242130880*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 23829496320*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^12 + 4407279220960*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
)^11 + 22617729467088*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 1950
51199819760*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 377875254407040*sqrt(3)
*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 1580087388997720*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^7 + 1627784736400620*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^6 + 3742975645158764*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 21150
26806109280*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 257338275980401
0*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 709918795444635*sqrt(3)*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^2 + 358308332266605*sqrt(3)*x + 27766562618088*s
qrt(3) - 358308332266605*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^8
```

maple [B] time = 0.08, size = 311, normalized size = 1.74

$$\frac{1517\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{51200000}-\frac{1517\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{384000\left(x+\frac{3}{2}\right)^6}-\frac{107\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{44800\left(x+\frac{3}{2}\right)^7}-\frac{92537\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{6000000\left(x+\frac{3}{2}\right)^3}-\frac{1517\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{240000\left(x+\frac{3}{2}\right)^5}-\frac{2820103\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{120000000\left(x+\frac{3}{2}\right)^2}+\frac{881377(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{50000000}-\frac{43993(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{24000000}-\frac{881377\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{25000000\left(x+\frac{3}{2}\right)}+\frac{1517(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{6400000}-\frac{1517\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{51200000}-\frac{31857\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{3200000\left(x+\frac{3}{2}\right)^4}-\frac{1517\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{96000000}-\frac{1517\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{200000000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{10240\left(x+\frac{3}{2}\right)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^9,x)
```

```
[Out] -1517/384000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-107/44800/(x+3/2)^7*(-
4*x+3*(x+3/2)^2-19/4)^(7/2)-92537/6000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)
^(7/2)-1517/240000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-2820103/12000000
0/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+881377/50000000*(6*x+5)*(-4*x+3*(
x+3/2)^2-19/4)^(5/2)-43993/24000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-8
81377/25000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+1517/6400000*(6*x+5)*(
```

```
-4*x+3*(x+3/2)^2-19/4)^(1/2)+1517/51200000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5
^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-1517/51200000*(-16*x+12*(x+3/2)^2-19)
^(1/2)-31857/3200000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1517/96000000*
(-4*x+3*(x+3/2)^2-19/4)^(3/2)-1517/200000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-
13/10240/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.63, size = 423, normalized size = 2.36

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 2820103/40000000*(3*x^2 + 5*x + 2)^(5/2) - 13/40*(3*x^2 + 5*x + 2)^(7/2)/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561) - 107/350*(3*x^2 + 5*x + 2)^(7/2)/(128*x^7 + 1344*x^6
 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 1517/60
00*(3*x^2 + 5*x + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x
^2 + 2916*x + 729) - 1517/7500*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5 + 240*x^4 +
720*x^3 + 1080*x^2 + 810*x + 243) - 31857/200000*(3*x^2 + 5*x + 2)^(7/2)/(1
6*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 92537/750000*(3*x^2 + 5*x + 2)^(7/
2)/(8*x^3 + 36*x^2 + 54*x + 27) - 2820103/30000000*(3*x^2 + 5*x + 2)^(7/2)/
(4*x^2 + 12*x + 9) - 43993/4000000*(3*x^2 + 5*x + 2)^(3/2)*x - 881377/96000
000*(3*x^2 + 5*x + 2)^(3/2) - 881377/10000000*(3*x^2 + 5*x + 2)^(5/2)/(2*x
+ 3) + 4551/3200000*sqrt(3*x^2 + 5*x + 2)*x + 1517/51200000*sqrt(5)*log(sqr
t(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 28823/256
00000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^9,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**9,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 1
45152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098
*x + 19683), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x*
*8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 3
14928*x**2 + 118098*x + 19683), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x +
 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888
*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(-113*x
**3*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6
 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683
), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41
472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x
**2 + 118098*x + 19683), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(512*x
**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 48
9888*x**3 + 314928*x**2 + 118098*x + 19683), x)
```

3.2205 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx$

Optimal. Leaf size=204

$$-\frac{1321\left(3x^2+5x+2\right)^{7/2}}{5250(2x+3)^7}-\frac{527\left(3x^2+5x+2\right)^{7/2}}{1800(2x+3)^8}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{45(2x+3)^9}+\frac{6167(8x+7)\left(3x^2+5x+2\right)^{5/2}}{120000(2x+3)^6}-\frac{6167(8x}{19}$$

Rubi [A] time = 0.13, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{1321\left(3x^2+5x+2\right)^{7/2}}{5250(2x+3)^7}-\frac{527\left(3x^2+5x+2\right)^{7/2}}{1800(2x+3)^8}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{45(2x+3)^9}+\frac{6167(8x+7)\left(3x^2+5x+2\right)^{5/2}}{120000(2x+3)^6}-\frac{6167(8x+7)\left(3x^2+5x+2\right)^{3/2}}{1920000(2x+3)^4}+\frac{6167(8x+7)\sqrt{3x^2+5x+2}}{25600000(2x+3)^2}-\frac{6167\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{51200000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] (6167*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(25600000*(3 + 2*x)^2) - (6167*(7 +
8*x)*(2 + 5*x + 3*x^2)^(3/2))/(1920000*(3 + 2*x)^4) + (6167*(7 + 8*x)*(2 +
5*x + 3*x^2)^(5/2))/(120000*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(45
*(3 + 2*x)^9) - (527*(2 + 5*x + 3*x^2)^(7/2))/(1800*(3 + 2*x)^8) - (1321*(2
 + 5*x + 3*x^2)^(7/2))/(5250*(3 + 2*x)^7) - (6167*ArcTanh[(7 + 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])])/(51200000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9} - \frac{1}{45}\int \frac{\left(-\frac{293}{2}+78x\right)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9} - \frac{527\left(2+5x+3x^2\right)^{7/2}}{1800(3+2x)^8} + \frac{\int \frac{\left(\frac{11109}{2}-1581x\right)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,d}{1800}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9} - \frac{527\left(2+5x+3x^2\right)^{7/2}}{1800(3+2x)^8} - \frac{1321\left(2+5x+3x^2\right)^{7/2}}{5250(3+2x)^7} + \cdots$$

$$= \frac{6167(7+8x)\left(2+5x+3x^2\right)^{5/2}}{120000(3+2x)^6} - \frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9} - \frac{527\left(2+5x+3x^2\right)}{1800(3+2x)^8}$$

$$= -\frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4} + \frac{6167(7+8x)\left(2+5x+3x^2\right)^{5/2}}{120000(3+2x)^6} - \frac{13\left(2+\right.}{45}$$

$$= \frac{6167(7+8x)\sqrt{2+5x+3x^2}}{25600000(3+2x)^2} - \frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4} + \frac{6167(7+8}{120}$$

$$= \frac{6167(7+8x)\sqrt{2+5x+3x^2}}{25600000(3+2x)^2} - \frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4} + \frac{6167(7+8}{120}$$

$$= \frac{6167(7+8x)\sqrt{2+5x+3x^2}}{25600000(3+2x)^2} - \frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4} + \frac{6167(7+8}{120}$$

Mathematica [A] time = 0.15, size = 207, normalized size = 1.01

$$\frac{1}{45}\left(-\frac{3963\left(3x^2+5x+2\right)^{7/2}}{350(2x+3)^7} - \frac{527\left(3x^2+5x+2\right)^{7/2}}{40(2x+3)^8} - \frac{13\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^9} + \frac{18501\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6} - \frac{2(8x+7)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4} + \frac{3(8x+7)\sqrt{3x^2+5x+2}}{20(2x+3)^2} + \frac{3\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40\sqrt{5}}\right)}{256000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9 - (527*(2 + 5*x + 3*x^2)^(7/2))/
(40*(3 + 2*x)^8) - (3963*(2 + 5*x + 3*x^2)^(7/2))/(350*(3 + 2*x)^7) + (1850
1*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)^2) - (2*(7 + 8*x)*(2 +
 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(7 + 8*x)*(2 + 5*x + 3*x^2)^(5/2))/(
3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40*
Sqrt[5])))/256000)/45
```

IntegrateAlgebraic [A] time = 0.86, size = 101, normalized size = 0.50

$$\frac{\sqrt{3x^2+5x+2}\left(333241344x^8+4204480128x^7+23288995392x^6+76435267296x^5+149661252080x^4+173974546136x^3+117870367452x^2+43246799138x+6706847909\right)}{1612800000(2x+3)^9} - \frac{6167\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25600000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(6706847909 + 43246799138*x + 117870367452*x^2 + 173
974546136*x^3 + 149661252080*x^4 + 76435267296*x^5 + 23288995392*x^6 + 4204
480128*x^7 + 333241344*x^8))/(1612800000*(3 + 2*x)^9) - (6167*ArcTanh[Sqrt[
2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(25600000*Sqrt[5])
```

fricas [A] time = 0.43, size = 201, normalized size = 0.99

$$\frac{388521\sqrt{5}\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(333241344x^8+4204480128x^7+23288995392x^6+76435267296x^5+149661252080x^4+173974546136x^3+117870367452x^2+43246799138x+6706847909\right)\sqrt{3x^2+5x+2}}{32256000000\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^10,x, algorithm="fricas")
```

```
[Out] 1/32256000000*(388521*sqrt(5)*(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6
+ 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)*log
(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2
 + 12*x + 9)) + 20*(333241344*x^8 + 4204480128*x^7 + 23288995392*x^6 + 7643
5267296*x^5 + 149661252080*x^4 + 173974546136*x^3 + 117870367452*x^2 + 4324
6799138*x + 6706847909)*sqrt(3*x^2 + 5*x + 2))/(512*x^9 + 6912*x^8 + 41472*
x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 1180
98*x + 19683)
```

giac [B] time = 0.35, size = 563, normalized size = 2.76

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^10,x, algorithm="giac")
```

```
[Out] -6167/256000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sq
rt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))) + 1/1612800000*(99461376*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^17 + 2536265088*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16 - 839543550
72*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 - 341000936640*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^14 + 17778066768000*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^13 + 177356386111968*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12
+ 2399974462831392*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 684460112355662
4*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 41172892580130560*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 60936872688585000*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^8 + 204498063708405624*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^7 + 174436297943297292*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 +
 339439601929212792*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 164994557892929
730*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 174936772514694750*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 42504221165006223*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 5*x + 2))^2 + 19065836258759367*sqrt(3)*x + 1323473153587704*s
qrt(3) - 19065836258759367*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^9
```

maple [A] time = 0.10, size = 332, normalized size = 1.63

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^10,x)
```

```
[Out] -6167/1920000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1321/672000/(x+3/2)^7
*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-376187/30000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-
```

```
19/4)^(7/2)-6167/1200000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-11464453/6
00000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+3583027/250000000*(6*x+5)*
(-4*x+3*(x+3/2)^2-19/4)^(5/2)-178843/120000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19
/4)^(3/2)-3583027/125000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+6167/3200
0000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+6167/256000000*5^(1/2)*arctanh(2
/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-6167/256000000*(-16*x+
12*(x+3/2)^2-19)^(1/2)-129507/16000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7
/2)-6167/480000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-6167/1000000000*(-4*x+3*(x
+3/2)^2-19/4)^(5/2)-527/460800/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/2
3040/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.40, size = 484, normalized size = 2.37

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^10,x, algorithm="maxima")
```

```
[Out] 11464453/200000000*(3*x^2 + 5*x + 2)^(5/2) - 13/45*(3*x^2 + 5*x + 2)^(7/2)/
(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 48
9888*x^3 + 314928*x^2 + 118098*x + 19683) - 527/1800*(3*x^2 + 5*x + 2)^(7/2
)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81
648*x^2 + 34992*x + 6561) - 1321/5250*(3*x^2 + 5*x + 2)^(7/2)/(128*x^7 + 13
44*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 6
167/30000*(3*x^2 + 5*x + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 +
 4860*x^2 + 2916*x + 729) - 6167/37500*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5 + 24
0*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 129507/1000000*(3*x^2 + 5*x + 2
)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 376187/3750000*(3*x^2 +
5*x + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 11464453/150000000*(3*x^2 + 5
*x + 2)^(7/2)/(4*x^2 + 12*x + 9) - 178843/20000000*(3*x^2 + 5*x + 2)^(3/2)*
x - 3583027/480000000*(3*x^2 + 5*x + 2)^(3/2) - 3583027/50000000*(3*x^2 + 5
*x + 2)^(5/2)/(2*x + 3) + 18501/16000000*sqrt(3*x^2 + 5*x + 2)*x + 6167/256
000000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
 + 3) - 2) + 117173/128000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,{\left(3\,x^2+5\,x+2\right)}^{5/2}}{{(2\,x+3)}^{10}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^10,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^10, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**10,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8
 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3
+ 1180980*x**2 + 393660*x + 59049), x) - Integral(-96*x*sqrt(3*x**2 + 5*x +
 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1
959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 59049
), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9
```

```
+ 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 +
2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - Integral(-113*x**3*sq
rt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 +
 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 +
 393660*x + 59049), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(1024*x**
10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 +
 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - Integ
ral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 +
414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1
180980*x**2 + 393660*x + 59049), x)
```

3.2206 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{7/2} \, dx$

Optimal. Leaf size=229

$$-\frac{1}{39}(2x+3)^4 \left(3x^2+5x+2\right)^{9/2}+\frac{439(2x+3)^3 \left(3x^2+5x+2\right)^{9/2}}{1404}+\frac{205}{351}(2x+3)^2 \left(3x^2+5x+2\right)^{9/2}+\frac{(389394x+8$$

Rubi [A] time = 0.14, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{39}(2x+3)^4 \left(3x^2+5x+2\right)^{9/2}+\frac{439(2x+3)^3 \left(3x^2+5x+2\right)^{9/2}}{1404}+\frac{205}{351}(2x+3)^2 \left(3x^2+5x+2\right)^{9/2}+\frac{(389394x+852175) \left(3x^2+5x+2\right)^{9/2}}{227448}+\frac{74167(6x+5) \left(3x^2+5x+2\right)^{7/2}}{186624}-\frac{519169(6x+5) \left(3x^2+5x+2\right)^{5/2}}{13436928}+\frac{2595845(6x+5) \left(3x^2+5x+2\right)^{3/2}}{644972544}-\frac{2595845(6x+5)\sqrt{3x^2+5x+2}}{5159780352}+\frac{2595845 \tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{10319560704\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-2595845*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/5159780352 + (2595845*(5 + 6*x)*
(2 + 5*x + 3*x^2)^(3/2))/644972544 - (519169*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5
/2))/13436928 + (74167*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/186624 + (205*(3
+ 2*x)^2*(2 + 5*x + 3*x^2)^(9/2))/351 + (439*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^
(9/2))/1404 - ((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(9/2))/39 + ((852175 + 389394*
x)*(2 + 5*x + 3*x^2)^(9/2))/227448 + (2595845*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*
Sqrt[2 + 5*x + 3*x^2])])/(10319560704*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
```

```
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{7/2} dx = -\frac{1}{39}(3+2x)^4 \left(2+5x+3x^2\right)^{9/2} + \frac{1}{39} \int (3+2x)^3 \left(\frac{1337}{2}+439x\right) \left(2+\right.$$

$$= \frac{439(3+2x)^3 \left(2+5x+3x^2\right)^{9/2}}{1404} - \frac{1}{39}(3+2x)^4 \left(2+5x+3x^2\right)^{9/2} + \frac{\int (3}{}$$

$$= \frac{205}{351}(3+2x)^2 \left(2+5x+3x^2\right)^{9/2} + \frac{439(3+2x)^3 \left(2+5x+3x^2\right)^{9/2}}{1404} - \frac{1}{39}$$

$$= \frac{205}{351}(3+2x)^2 \left(2+5x+3x^2\right)^{9/2} + \frac{439(3+2x)^3 \left(2+5x+3x^2\right)^{9/2}}{1404} - \frac{1}{39}$$

$$= \frac{74167(5+6x) \left(2+5x+3x^2\right)^{7/2}}{186624} + \frac{205}{351}(3+2x)^2 \left(2+5x+3x^2\right)^{9/2} + \frac{4}{}$$

$$= -\frac{519169(5+6x) \left(2+5x+3x^2\right)^{5/2}}{13436928} + \frac{74167(5+6x) \left(2+5x+3x^2\right)^{7/2}}{186624}$$

$$= \frac{2595845(5+6x) \left(2+5x+3x^2\right)^{3/2}}{644972544} - \frac{519169(5+6x) \left(2+5x+3x^2\right)^{5/2}}{13436928}$$

$$= -\frac{2595845(5+6x)\sqrt{2+5x+3x^2}}{5159780352} + \frac{2595845(5+6x) \left(2+5x+3x^2\right)^{3/2}}{644972544}$$

$$= -\frac{2595845(5+6x)\sqrt{2+5x+3x^2}}{5159780352} + \frac{2595845(5+6x) \left(2+5x+3x^2\right)^{3/2}}{644972544}$$

$$= -\frac{2595845(5+6x)\sqrt{2+5x+3x^2}}{5159780352} + \frac{2595845(5+6x) \left(2+5x+3x^2\right)^{3/2}}{644972544}$$

Mathematica [A] time = 0.22, size = 184, normalized size = 0.80

$$\frac{-36(2x+3)^4 \left(3x^2+5x+2\right)^{9/2} + 439(2x+3)^3 \left(3x^2+5x+2\right)^{9/2} + 820(2x+3)^2 \left(3x^2+5x+2\right)^{9/2} + \frac{1}{162}(389394x+852175) \left(3x^2+5x+2\right)^{9/2} + \frac{964171\left(35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+6\sqrt{3x^2+5x+2}\left(4478976x^7+26127360x^6+64800000x^5+88560000x^4+72023472x^3+34858680x^2+9298342x+1054785\right)\right)}{286654464}}{1404}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (820*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(9/2) + 439*(3 + 2*x)^3*(2 + 5*x + 3*x^2
)^(9/2) - 36*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(9/2) + ((852175 + 389394*x)*(2
+ 5*x + 3*x^2)^(9/2))/162 + (964171*(6*Sqrt[2 + 5*x + 3*x^2]*(1054785 + 929
8342*x + 34858680*x^2 + 72023472*x^3 + 88560000*x^4 + 64800000*x^5 + 261273
60*x^6 + 4478976*x^7) + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x
^2])]))/286654464)/1404
```

IntegrateAlgebraic [A] time = 1.30, size = 114, normalized size = 0.50

$$\frac{2595845\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{5159780352\sqrt{3}} + \frac{\sqrt{3x^2+5x+2}\left(-2229025112064x^{12} - 14643456638976x^{11} + 2110350163968x^{10} + 333952593887232x^9 + 1590604366381056x^8 + 4022427759003648x^7 + 6524509131334656x^6 + 7203650864723712x^5 + 5499074981552256x^4 + 2865856228323984x^3 + 975104480077800x^2 + 195441229635490x + 17510968283403\right)}{67077144576}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(17510968283403 + 195441229635490*x + 97510448007780
0*x^2 + 2865856228323984*x^3 + 5499074981552256*x^4 + 7203650864723712*x^5
+ 6524509131334656*x^6 + 4022427759003648*x^7 + 1590604366381056*x^8 + 3339
52593887232*x^9 + 2110350163968*x^10 - 14643456638976*x^11 - 2229025112064*
x^12))/67077144576 + (2595845*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x
))])/(5159780352*Sqrt[3])
```

fricas [A] time = 0.42, size = 113, normalized size = 0.49

$$-\frac{1}{67077144576}\left(2229025112064\,x^{12} + 14643456638976\,x^{11} - 2110350163968\,x^{10} - 333952593887232\,x^{9} - 1590604366381056\,x^{8} - 4022427759003648\,x^{7} - 6524509131334656\,x^{6} - 7203650864723712\,x^{5} - 5499074981552256\,x^{4} - 2865856228323984\,x^{3} - 975104480077800\,x^{2} - 195441229635490\,x - 17510968283403\right)\sqrt{3\,x^{2} + 5\,x + 2} + \frac{2595845}{61917364224}\,\sqrt{3}\log\left(4\,\sqrt{3}\sqrt{3\,x^{2} + 5\,x + 2}\,(6\,x + 5) + 72\,x^{2} + 120\,x + 49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/67077144576*(2229025112064*x^12 + 14643456638976*x^11 - 2110350163968*x^
10 - 333952593887232*x^9 - 1590604366381056*x^8 - 4022427759003648*x^7 - 65
24509131334656*x^6 - 7203650864723712*x^5 - 5499074981552256*x^4 - 28658562
28323984*x^3 - 975104480077800*x^2 - 195441229635490*x - 17510968283403)*sq
rt(3*x^2 + 5*x + 2) + 2595845/61917364224*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2
+ 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.23, size = 109, normalized size = 0.48

$$-\frac{1}{67077144576}\left(2\left(12\left(6\left(8\left(6\left(36\left(2\left(48\left(54\left(4\left(6\left(72\,x + 473\right)x - 409\right)x - 258889\right)x - 66586273\right)x - 8082617507\right)x - 26220538883\right)x - 1042194858901\right)x - 4773502588153\right)x - 19901779363361\right)x - 40629353336575\right)x - 97720614817745\right)x - 17510968283403\right)\sqrt{3\,x^{2} + 5\,x + 2} - \frac{2595845}{30958682112}\,\sqrt{3}\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x - \sqrt{3\,x^{2} + 5\,x + 2}\right) - 5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/67077144576*(2*(12*(6*(8*(6*(36*(2*(48*(54*(4*(6*(72*x + 473)*x - 409)*x
 - 258889)*x - 66586273)*x - 8082617507)*x - 26220538883)*x - 1042194858901
)*x - 4773502588153)*x - 19901779363361)*x - 40629353336575)*x - 9772061481
7745)*x - 17510968283403)*sqrt(3*x^2 + 5*x + 2) - 2595845/30958682112*sqrt(
3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 187, normalized size = 0.82

$$-\frac{16\left(3x^{2}+5x+2\right)^{\frac{9}{2}} x^{4}}{39}+\frac{14\left(3x^{2}+5x+2\right)^{\frac{9}{2}} x^{3}}{351}+\frac{2827\left(3x^{2}+5x+2\right)^{\frac{9}{2}} x^{2}}{351}+\frac{84521\left(3x^{2}+5x+2\right)^{\frac{9}{2}} x}{4212}+\frac{2595845\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{30958682112}+\frac{74167\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{186624}-\frac{2595845\left(6x+5\right)\sqrt{3x^{2}+5x+2}}{5159780352}+\frac{2595845\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{644972544}-\frac{519169\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{13436928}+\frac{3495529\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{227448}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -16/39*x^4*(3*x^2+5*x+2)^(9/2)+14/351*x^3*(3*x^2+5*x+2)^(9/2)+2827/351*x^2*
(3*x^2+5*x+2)^(9/2)+84521/4212*x*(3*x^2+5*x+2)^(9/2)+74167/186624*(6*x+5)*(
3*x^2+5*x+2)^(7/2)+2595845/30958682112*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*
x^2+5*x+2)^(1/2))-2595845/5159780352*(6*x+5)*(3*x^2+5*x+2)^(1/2)+2595845/64
4972544*(6*x+5)*(3*x^2+5*x+2)^(3/2)-519169/13436928*(6*x+5)*(3*x^2+5*x+2)^(
5/2)+3495529/227448*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.34, size = 225, normalized size = 0.98

$$-\frac{16}{39}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{9}{2}} x^{4} + \frac{14}{351}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{9}{2}} x^{3} + \frac{2827}{351}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{9}{2}} x^{2} + \frac{84521}{4212}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{9}{2}} x + \frac{3495529}{227448}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{9}{2}} + \frac{74167}{31104}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{7}{2}} x + \frac{370835}{186624}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{7}{2}} - \frac{519169}{2239488}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{5}{2}} x - \frac{2595845}{13436928}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{5}{2}} + \frac{2595845}{107495424}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{3}{2}} x + \frac{12979225}{644972544}\left(3\,x^{2} + 5\,x + 2\right)^{\frac{3}{2}} - \frac{2595845}{859963392}\sqrt{3\,x^{2} + 5\,x + 2}\,x + \frac{2595845}{30958682112}\sqrt{3}\log\left(2\,\sqrt{3}\sqrt{3\,x^{2} + 5\,x + 2} + 6\,x + 5\right) - \frac{12979225}{5159780352}\sqrt{3\,x^{2} + 5\,x + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -16/39*(3*x^2 + 5*x + 2)^(9/2)*x^4 + 14/351*(3*x^2 + 5*x + 2)^(9/2)*x^3 + 2
827/351*(3*x^2 + 5*x + 2)^(9/2)*x^2 + 84521/4212*(3*x^2 + 5*x + 2)^(9/2)*x
+ 3495529/227448*(3*x^2 + 5*x + 2)^(9/2) + 74167/31104*(3*x^2 + 5*x + 2)^(7
/2)*x + 370835/186624*(3*x^2 + 5*x + 2)^(7/2) - 519169/2239488*(3*x^2 + 5*x
```

```
 + 2)^(5/2)*x - 2595845/13436928*(3*x^2 + 5*x + 2)^(5/2) + 2595845/10749542
4*(3*x^2 + 5*x + 2)^(3/2)*x + 12979225/644972544*(3*x^2 + 5*x + 2)^(3/2) -
2595845/859963392*sqrt(3*x^2 + 5*x + 2)*x + 2595845/30958682112*sqrt(3)*log
(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 12979225/5159780352*sqrt(3*x^
2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2x+3)^4 (x-5) \left(3x^2+5x+2\right)^{7/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-32292x\sqrt{3x^2+5x+2}\right) dx - \int \left(-142182x^2\sqrt{3x^2+5x+2}\right) dx - \int \left(-363291x^3\sqrt{3x^2+5x+2}\right) dx - \int \left(-594106x^4\sqrt{3x^2+5x+2}\right) dx - \int \left(-644932x^5\sqrt{3x^2+5x+2}\right) dx - \int \left(-463440x^6\sqrt{3x^2+5x+2}\right) dx - \int \left(-209413x^7\sqrt{3x^2+5x+2}\right) dx - \int \left(-49624x^8\sqrt{3x^2+5x+2}\right) dx - \int \left(-504x^9\sqrt{3x^2+5x+2}\right) dx - \int 2592x^{10}\sqrt{3x^2+5x+2}\, dx - \int 432x^{11}\sqrt{3x^2+5x+2}\, dx - \int \left(-3240\sqrt{3x^2+5x+2}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-32292*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-142182*x**2*sqrt(
3*x**2 + 5*x + 2), x) - Integral(-363291*x**3*sqrt(3*x**2 + 5*x + 2), x) -
Integral(-594106*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-644932*x**5*sq
rt(3*x**2 + 5*x + 2), x) - Integral(-463440*x**6*sqrt(3*x**2 + 5*x + 2), x)
 - Integral(-209413*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-49624*x**8*
sqrt(3*x**2 + 5*x + 2), x) - Integral(-504*x**9*sqrt(3*x**2 + 5*x + 2), x)
- Integral(2592*x**10*sqrt(3*x**2 + 5*x + 2), x) - Integral(432*x**11*sqrt(
3*x**2 + 5*x + 2), x) - Integral(-3240*sqrt(3*x**2 + 5*x + 2), x)
```

3.2207 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{7/2} \, dx$

Optimal. Leaf size=204

$$-\frac{1}{36}(2x+3)^3 \left(3x^2+5x+2\right)^{9/2}+\frac{34}{99}(2x+3)^2 \left(3x^2+5x+2\right)^{9/2}+\frac{(390798x+863825) \left(3x^2+5x+2\right)^{9/2}}{320760}+\frac{91087(\ldots}{}$$

Rubi [A] time = 0.11, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{36}(2x+3)^3 \left(3x^2+5x+2\right)^{9/2}+\frac{34}{99}(2x+3)^2 \left(3x^2+5x+2\right)^{9/2}+\frac{(390798x+863825) \left(3x^2+5x+2\right)^{9/2}}{320760}+\frac{91087(6x+5) \left(3x^2+5x+2\right)^{7/2}}{311040}-\frac{637609(6x+5) \left(3x^2+5x+2\right)^{5/2}}{22394880}+\frac{637609(6x+5) \left(3x^2+5x+2\right)^{3/2}}{214990848}-\frac{637609(6x+5)\sqrt{3x^2+5x+2}}{1719926784}+\frac{637609 \tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{3439853568\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-637609*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/1719926784 + (637609*(5 + 6*x)*(2
 + 5*x + 3*x^2)^(3/2))/214990848 - (637609*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2
))/22394880 + (91087*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/311040 + (34*(3 + 2
*x)^2*(2 + 5*x + 3*x^2)^(9/2))/99 - ((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(9/2))/3
6 + ((863825 + 390798*x)*(2 + 5*x + 3*x^2)^(9/2))/320760 + (637609*ArcTanh[
(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(3439853568*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{7/2}\,dx = -\frac{1}{36}(3+2x)^3\left(2+5x+3x^2\right)^{9/2}+\frac{1}{36}\int (3+2x)^2\left(\frac{1239}{2}+408x\right)\left(2+\right.$$

$$=\frac{34}{99}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}-\frac{1}{36}(3+2x)^3\left(2+5x+3x^2\right)^{9/2}+\frac{\int (3}{}$$

$$=\frac{34}{99}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}-\frac{1}{36}(3+2x)^3\left(2+5x+3x^2\right)^{9/2}+\frac{(8638}{}$$

$$=\frac{91087(5+6x)\left(2+5x+3x^2\right)^{7/2}}{311040}+\frac{34}{99}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}-\frac{1}{36}$$

$$=-\frac{637609(5+6x)\left(2+5x+3x^2\right)^{5/2}}{22394880}+\frac{91087(5+6x)\left(2+5x+3x^2\right)^{7/2}}{311040}$$

$$=\frac{637609(5+6x)\left(2+5x+3x^2\right)^{3/2}}{214990848}-\frac{637609(5+6x)\left(2+5x+3x^2\right)^{5/2}}{22394880}$$

$$=-\frac{637609(5+6x)\sqrt{2+5x+3x^2}}{1719926784}+\frac{637609(5+6x)\left(2+5x+3x^2\right)^{3/2}}{214990848}$$

$$=-\frac{637609(5+6x)\sqrt{2+5x+3x^2}}{1719926784}+\frac{637609(5+6x)\left(2+5x+3x^2\right)^{3/2}}{214990848}$$

$$=-\frac{637609(5+6x)\sqrt{2+5x+3x^2}}{1719926784}+\frac{637609(5+6x)\left(2+5x+3x^2\right)^{3/2}}{214990848}$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.80

$$\frac{1}{36}\left(-(2x+3)^3\left(3x^2+5x+2\right)^{9/2}+\frac{136}{11}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(390798x+863825)\left(3x^2+5x+2\right)^{9/2}}{8910}+\frac{91087\left(35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+6\sqrt{3x^2+5x+2}\left(4478976x^7+26127360x^6+64800000x^5+88560000x^4+72023472x^3+34858680x^2+9298342x+1054785\right)\right)}{1433272320}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] ((136*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(9/2))/11 - (3 + 2*x)^3*(2 + 5*x + 3*x^
2)^(9/2) + ((863825 + 390798*x)*(2 + 5*x + 3*x^2)^(9/2))/8910 + (91087*(6*S
qrt[2 + 5*x + 3*x^2]*(1054785 + 9298342*x + 34858680*x^2 + 72023472*x^3 + 8
8560000*x^4 + 64800000*x^5 + 26127360*x^6 + 4478976*x^7) + 35*Sqrt[3]*ArcTa
nh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/1433272320)/36
```

IntegrateAlgebraic [A] time = 1.17, size = 109, normalized size = 0.53

$$\frac{637609\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{1719926784\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-1702727516160x^{11}-8487838679040x^{10}+15591566278656x^9+235832896880640x^8+866110416795648x^7+1766184385305600x^6+2298912734198016x^5+1992318117275520x^4+1149328734822000x^3+425035984788120x^2+91318722047870x+8675936123685\right)}{94595973120}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(8675936123685 + 91318722047870*x + 425035984788120*
x^2 + 1149328734822000*x^3 + 1992318117275520*x^4 + 2298912734198016*x^5 +
1766184385305600*x^6 + 866110416795648*x^7 + 235832896880640*x^8 + 15591566
```

```
278656*x^9 - 8487838679040*x^10 - 1702727516160*x^11))/94595973120 + (63760
9*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(1719926784*Sqrt[3])
```

fricas [A] time = 0.41, size = 108, normalized size = 0.53

$$-\frac{1}{94595973120}\left(1702727516160\,x^{11}+8487838679040\,x^{10}-15591566278656\,x^{9}-235832896880640\,x^{8}-866110416795648\,x^{7}-1766184385305600\,x^{6}-2298912734198016\,x^{5}-1992318117275520\,x^{4}-1149328734822000\,x^{3}-425035984788120\,x^{2}-91318722047870\,x-8675936123685\right)\sqrt{3\,x^{2}+5\,x+2}+\frac{637609}{20639121408}\,\sqrt{3}\log\left(4\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}\,(6\,x+5)+72\,x^{2}+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/94595973120*(1702727516160*x^11 + 8487838679040*x^10 - 15591566278656*x^
9 - 235832896880640*x^8 - 866110416795648*x^7 - 1766184385305600*x^6 - 2298
912734198016*x^5 - 1992318117275520*x^4 - 1149328734822000*x^3 - 4250359847
88120*x^2 - 91318722047870*x - 8675936123685)*sqrt(3*x^2 + 5*x + 2) + 63760
9/20639121408*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^
2 + 120*x + 49)
```

giac [A] time = 0.33, size = 104, normalized size = 0.51

$$-\frac{1}{94595973120}\,(2\,(12\,(6\,(8\,(6\,(36\,(2\,(48\,(54\,(20\,(66\,x+329)x-12087)x-9872495)x-1740351757)x-7097898925)x-332597328443)x-1729442810135)x-7981449547375)x-17709832699505)x-45659361023935)x-8675936123685)\sqrt{3\,x^{2}+5\,x+2}-\frac{637609}{10319560704}\,\sqrt{3}\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/94595973120*(2*(12*(6*(8*(6*(36*(2*(48*(54*(20*(66*x + 329)*x - 12087)*x
 - 9872495)*x - 1740351757)*x - 7097898925)*x - 332597328443)*x - 172944281
0135)*x - 7981449547375)*x - 17709832699505)*x - 45659361023935)*x - 867593
6123685)*sqrt(3*x^2 + 5*x + 2) - 637609/10319560704*sqrt(3)*log(abs(-2*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 170, normalized size = 0.83

$$-\frac{2\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x^{3}}{9}+\frac{37\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x^{2}}{99}+\frac{22807\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x}{5940}+\frac{637609\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{10319560704}+\frac{91087\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{311040}-\frac{637609\,(6x+5)\sqrt{3x^{2}+5x+2}}{1719926784}+\frac{637609\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{214990848}-\frac{637609\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{22394880}+\frac{322939\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{64152}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -2/9*(3*x^2+5*x+2)^(9/2)*x^3+37/99*(3*x^2+5*x+2)^(9/2)*x^2+22807/5940*(3*x^
2+5*x+2)^(9/2)*x+91087/311040*(6*x+5)*(3*x^2+5*x+2)^(7/2)+637609/1031956070
4*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-637609/1719926784*(
6*x+5)*(3*x^2+5*x+2)^(1/2)+637609/214990848*(6*x+5)*(3*x^2+5*x+2)^(3/2)-637
609/22394880*(6*x+5)*(3*x^2+5*x+2)^(5/2)+322939/64152*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.26, size = 208, normalized size = 1.02

$$-\frac{2}{9}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x^{3}+\frac{37}{99}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x^{2}+\frac{22807}{5940}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x+\frac{322939}{64152}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}+\frac{91087}{51840}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x+\frac{91087}{62208}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}-\frac{637609}{3732480}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}x-\frac{637609}{4478976}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}+\frac{637609}{35831808}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x+\frac{3188045}{214990848}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}-\frac{637609}{286654464}\sqrt{3\,x^{2}+5\,x+2}\,x+\frac{637609}{10319560704}\sqrt{3}\log\left(2\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}+6\,x+5\right)-\frac{3188045}{1719926784}\sqrt{3\,x^{2}+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/9*(3*x^2 + 5*x + 2)^(9/2)*x^3 + 37/99*(3*x^2 + 5*x + 2)^(9/2)*x^2 + 2280
7/5940*(3*x^2 + 5*x + 2)^(9/2)*x + 322939/64152*(3*x^2 + 5*x + 2)^(9/2) + 9
1087/51840*(3*x^2 + 5*x + 2)^(7/2)*x + 91087/62208*(3*x^2 + 5*x + 2)^(7/2)
- 637609/3732480*(3*x^2 + 5*x + 2)^(5/2)*x - 637609/4478976*(3*x^2 + 5*x +
2)^(5/2) + 637609/35831808*(3*x^2 + 5*x + 2)^(3/2)*x + 3188045/214990848*(3
*x^2 + 5*x + 2)^(3/2) - 637609/286654464*sqrt(3*x^2 + 5*x + 2)*x + 637609/1
0319560704*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 3188045
/1719926784*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^3\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-10044x\sqrt{3x^2+5x+2}\right)dx-\int\left(-40698x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-93965x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-135392x^4\sqrt{3x^2+5x+2}\right)dx-\int\left(-124716x^5\sqrt{3x^2+5x+2}\right)dx-\int\left(-71336x^6\sqrt{3x^2+5x+2}\right)dx-\int\left(-22247x^7\sqrt{3x^2+5x+2}\right)dx-\int\left(-1710x^8\sqrt{3x^2+5x+2}\right)dx-\int 972x^9\sqrt{3x^2+5x+2}\,dx-\int 216x^{10}\sqrt{3x^2+5x+2}\,dx-\int\left(-1080\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-10044*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-40698*x**2*sqrt(3
*x**2 + 5*x + 2), x) - Integral(-93965*x**3*sqrt(3*x**2 + 5*x + 2), x) - In
tegral(-135392*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-124716*x**5*sqrt
(3*x**2 + 5*x + 2), x) - Integral(-71336*x**6*sqrt(3*x**2 + 5*x + 2), x) -
Integral(-22247*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1710*x**8*sqrt(
3*x**2 + 5*x + 2), x) - Integral(972*x**9*sqrt(3*x**2 + 5*x + 2), x) - Inte
gral(216*x**10*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1080*sqrt(3*x**2 + 5*
x + 2), x)
```

3.2208 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{7/2} dx$

Optimal. Leaf size=179

$$-\frac{1}{33}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(20358x+47425)\left(3x^2+5x+2\right)^{9/2}}{26730}+\frac{5627(6x+5)\left(3x^2+5x+2\right)^{7/2}}{25920}-\frac{39389(}{}$$

Rubi [A] time = 0.08, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{33}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(20358x+47425)\left(3x^2+5x+2\right)^{9/2}}{26730}+\frac{5627(6x+5)\left(3x^2+5x+2\right)^{7/2}}{25920}-\frac{39389(6x+5)\left(3x^2+5x+2\right)^{5/2}}{1866240}+\frac{39389(6x+5)\left(3x^2+5x+2\right)^{3/2}}{17915904}-\frac{39389(6x+5)\sqrt{3x^2+5x+2}}{143327232}+\frac{39389\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{286654464\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-39389*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/143327232 + (39389*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/17915904 - (39389*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/18
66240 + (5627*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/25920 - ((3 + 2*x)^2*(2 +
5*x + 3*x^2)^(9/2))/33 + ((47425 + 20358*x)*(2 + 5*x + 3*x^2)^(9/2))/26730
+ (39389*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(286654464*S
qrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{7/2}\,dx = -\frac{1}{33}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}+\frac{1}{33}\int (3+2x)\left(\frac{1141}{2}+377x\right)\left(2+5\right.$$

$$= -\frac{1}{33}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}+\frac{(47425+20358x)\left(2+5x+3x^2\right)^{9/2}}{26730}$$

$$= \frac{5627(5+6x)\left(2+5x+3x^2\right)^{7/2}}{25920}-\frac{1}{33}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}+\frac{(47}{}$$

$$= -\frac{39389(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1866240}+\frac{5627(5+6x)\left(2+5x+3x^2\right)^{7/2}}{25920}-$$

$$= \frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}-\frac{39389(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1866240}+$$

$$= -\frac{39389(5+6x)\sqrt{2+5x+3x^2}}{143327232}+\frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}-$$

$$= -\frac{39389(5+6x)\sqrt{2+5x+3x^2}}{143327232}+\frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}-$$

$$= -\frac{39389(5+6x)\sqrt{2+5x+3x^2}}{143327232}+\frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}-$$

Mathematica [A] time = 0.14, size = 138, normalized size = 0.77

$$\frac{1}{33}\left(-(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{1}{810}(20358x+47425)\left(3x^2+5x+2\right)^{9/2}+\frac{61897\left(35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+6\sqrt{3x^2+5x+2}\left(4478976x^7+26127360x^6+64800000x^5+88560000x^4+72023472x^3+34858680x^2+9298342x+1054785\right)\right)}{1433272320}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(9/2)) + ((47425 + 20358*x)*(2 + 5*x + 3*x
^2)^(9/2))/810 + (61897*(6*Sqrt[2 + 5*x + 3*x^2]*(1054785 + 9298342*x + 348
58680*x^2 + 72023472*x^3 + 88560000*x^4 + 64800000*x^5 + 26127360*x^6 + 447
8976*x^7) + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/1433
272320)/33
```

IntegrateAlgebraic [A] time = 1.00, size = 104, normalized size = 0.58

$$\frac{39389\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{143327232\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-77396705280x^{10}-261858852864x^9+1156531322880x^8+9116575930368x^7+25723491978240x^6+41190616509696x^5+41472321125760x^4+26847121235760x^3+10882383306360x^2+2519542755670x+254668717065\right)}{7882997760}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(254668717065 + 2519542755670*x + 10882383306360*x^2
 + 26847121235760*x^3 + 41472321125760*x^4 + 41190616509696*x^5 + 257234919
78240*x^6 + 9116575930368*x^7 + 1156531322880*x^8 - 261858852864*x^9 - 7739
6705280*x^10))/7882997760 + (39389*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(
1 + x))])/(143327232*Sqrt[3])
```

fricas [A] time = 0.42, size = 103, normalized size = 0.58

$$-\frac{1}{7882997760}\,\left(77396705280\,x^{10}+261858852864\,x^{9}-1156531322880\,x^{8}-9116575930368\,x^{7}-25723491978240\,x^{6}-41190616509696\,x^{5}-41472321125760\,x^{4}-26847121235760\,x^{3}-10882383306360\,x^{2}-2519542755670\,x-254668717065\right)\sqrt{3\,x^{2}+5\,x+2}+\frac{39389}{1719926784}\,\sqrt{3}\log\left(4\,\sqrt{3}\sqrt{3\,x^{2}+5\,x+2}\,(6\,x+5)+72\,x^{2}+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/7882997760*(77396705280*x^10 + 261858852864*x^9 - 1156531322880*x^8 - 91
16575930368*x^7 - 25723491978240*x^6 - 41190616509696*x^5 - 41472321125760*
x^4 - 26847121235760*x^3 - 10882383306360*x^2 - 2519542755670*x - 254668717
065)*sqrt(3*x^2 + 5*x + 2) + 39389/1719926784*sqrt(3)*log(4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 99, normalized size = 0.55

$$-\frac{1}{7882997760}\,\left(2\,\left(12\,\left(6\,\left(8\,\left(6\,\left(36\,\left(2\,\left(48\,\left(54\,\left(60\,x+203\right)x-48415\right)x-18318737\right)x-103376945\right)x-5959290583\right)x-36000278755\right)x-186438341915\right)x-453432637765\right)x-1259771377835\right)x-254668717065\right)\sqrt{3\,x^{2}+5\,x+2}-\frac{39389}{859963392}\,\sqrt{3}\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/7882997760*(2*(12*(6*(8*(6*(36*(2*(48*(54*(60*x + 203)*x - 48415)*x - 18
318737)*x - 103376945)*x - 5959290583)*x - 36000278755)*x - 186438341915)*x
 - 453432637765)*x - 1259771377835)*x - 254668717065)*sqrt(3*x^2 + 5*x + 2)
 - 39389/859963392*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2)) - 5))
```

maple [A] time = 0.06, size = 153, normalized size = 0.85

$$-\frac{4\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x^{2}}{33}+\frac{197\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x}{495}+\frac{39389\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{859963392}+\frac{5627\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{25920}-\frac{39389\left(6x+5\right)\sqrt{3x^{2}+5x+2}}{143327232}+\frac{39389\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{17915904}-\frac{39389\left(6x+5\right)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{1866240}+\frac{8027\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{5346}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -4/33*(3*x^2+5*x+2)^(9/2)*x^2+197/495*(3*x^2+5*x+2)^(9/2)*x+5627/25920*(6*x
+5)*(3*x^2+5*x+2)^(7/2)+39389/859963392*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))-39389/143327232*(6*x+5)*(3*x^2+5*x+2)^(1/2)+39389/179159
04*(6*x+5)*(3*x^2+5*x+2)^(3/2)-39389/1866240*(6*x+5)*(3*x^2+5*x+2)^(5/2)+80
27/5346*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.31, size = 191, normalized size = 1.07

$$-\frac{4}{33}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x^{2}+\frac{197}{495}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x+\frac{8027}{5346}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}+\frac{5627}{4320}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x+\frac{5627}{5184}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}-\frac{39389}{311040}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}x-\frac{39389}{373248}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}+\frac{39389}{2985984}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x+\frac{196945}{17915904}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}-\frac{39389}{23887872}\sqrt{3\,x^{2}+5\,x+2}\,x+\frac{39389}{859963392}\sqrt{3}\log\left(2\,\sqrt{3}\sqrt{3\,x^{2}+5\,x+2}+6\,x+5\right)-\frac{196945}{143327232}\sqrt{3\,x^{2}+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -4/33*(3*x^2 + 5*x + 2)^(9/2)*x^2 + 197/495*(3*x^2 + 5*x + 2)^(9/2)*x + 802
7/5346*(3*x^2 + 5*x + 2)^(9/2) + 5627/4320*(3*x^2 + 5*x + 2)^(7/2)*x + 5627
/5184*(3*x^2 + 5*x + 2)^(7/2) - 39389/311040*(3*x^2 + 5*x + 2)^(5/2)*x - 39
389/373248*(3*x^2 + 5*x + 2)^(5/2) + 39389/2985984*(3*x^2 + 5*x + 2)^(3/2)*
x + 196945/17915904*(3*x^2 + 5*x + 2)^(3/2) - 39389/23887872*sqrt(3*x^2 + 5
*x + 2)*x + 39389/859963392*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6
*x + 5) - 196945/143327232*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^2\,\left(x-5\right)\,\left(3\,x^2+5\,x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-3108x\sqrt{3x^2+5x+2}\right) dx - \int \left(-11494x^2\sqrt{3x^2+5x+2}\right) dx - \int \left(-23659x^3\sqrt{3x^2+5x+2}\right) dx - \int \left(-29358x^4\sqrt{3x^2+5x+2}\right) dx - \int \left(-22000x^5\sqrt{3x^2+5x+2}\right) dx - \int \left(-9112x^6\sqrt{3x^2+5x+2}\right) dx - \int \left(-1341x^7\sqrt{3x^2+5x+2}\right) dx - \int 324x^8\sqrt{3x^2+5x+2}\, dx - \int 108x^9\sqrt{3x^2+5x+2}\, dx - \int \left(-360\sqrt{3x^2+5x+2}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-3108*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-11494*x**2*sqrt(3*
x**2 + 5*x + 2), x) - Integral(-23659*x**3*sqrt(3*x**2 + 5*x + 2), x) - Int
egral(-29358*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-22000*x**5*sqrt(3*
x**2 + 5*x + 2), x) - Integral(-9112*x**6*sqrt(3*x**2 + 5*x + 2), x) - Inte
gral(-1341*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(324*x**8*sqrt(3*x**2
+ 5*x + 2), x) - Integral(108*x**9*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3
60*sqrt(3*x**2 + 5*x + 2), x)
```

3.2209 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{7/2}\,dx$

Optimal. Leaf size=154

$$\frac{1}{810}(265–54x)\left(3x^2+5x+2\right)^{9/2}+\frac{1399(6x+5)\left(3x^2+5x+2\right)^{7/2}}{8640}-\frac{9793(6x+5)\left(3x^2+5x+2\right)^{5/2}}{622080}+\frac{9793(6x+ \cdots}{}$$

Rubi [A] time = 0.06, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {779, 612, 621, 206}

$$\frac{1}{810}(265-54x)\left(3x^2+5x+2\right)^{9/2}+\frac{1399(6x+5)\left(3x^2+5x+2\right)^{7/2}}{8640}-\frac{9793(6x+5)\left(3x^2+5x+2\right)^{5/2}}{622080}+\frac{9793(6x+5)\left(3x^2+5x+2\right)^{3/2}}{5971968}-\frac{9793(6x+5)\sqrt{3x^2+5x+2}}{47775744}+\frac{9793\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{95551488\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-9793*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/47775744 + (9793*(5 + 6*x)*(2 + 5*x
 + 3*x^2)^(3/2))/5971968 - (9793*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/622080
+ (1399*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/8640 + ((265 - 54*x)*(2 + 5*x +
3*x^2)^(9/2))/810 + (9793*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
])])/(95551488*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{7/2}\,dx &= \frac{1}{810}(265-54x)\left(2+5x+3x^2\right)^{9/2}+\frac{1399}{180}\int \left(2+5x+3x^2\right)^{7/2}\,dx \\ &= \frac{1399(5+6x)\left(2+5x+3x^2\right)^{7/2}}{8640}+\frac{1}{810}(265-54x)\left(2+5x+3x^2\right)^{9/2}-\frac{9}{} \\ &= -\frac{9793(5+6x)\left(2+5x+3x^2\right)^{5/2}}{622080}+\frac{1399(5+6x)\left(2+5x+3x^2\right)^{7/2}}{8640}+\frac{1}{81} \\ &= \frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-\frac{9793(5+6x)\left(2+5x+3x^2\right)^{5/2}}{622080}+\frac{139}{} \\ &= -\frac{9793(5+6x)\sqrt{2+5x+3x^2}}{47775744}+\frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-\frac{9793}{} \\ &= -\frac{9793(5+6x)\sqrt{2+5x+3x^2}}{47775744}+\frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-\frac{9793}{} \\ &= -\frac{9793(5+6x)\sqrt{2+5x+3x^2}}{47775744}+\frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-\frac{9793}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 111, normalized size = 0.72

$$\frac{1399\left(35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+6\sqrt{3x^2+5x+2}\left(4478976x^7+26127360x^6+64800000x^5+88560000x^4+72023472x^3+34858680x^2+9298342x+1054785\right)\right)}{1433272320}-\frac{1}{810}(54x-265)\left(3x^2+5x+2\right)^{9/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] -1/810*((-265 + 54*x)*(2 + 5*x + 3*x^2)^(9/2)) + (1399*(6*Sqrt[2 + 5*x + 3*
x^2]*(1054785 + 9298342*x + 34858680*x^2 + 72023472*x^3 + 88560000*x^4 + 64
800000*x^5 + 26127360*x^6 + 4478976*x^7) + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*
Sqrt[6 + 15*x + 9*x^2])]))/1433272320
```

IntegrateAlgebraic [A] time = 0.92, size = 99, normalized size = 0.64

$$\frac{9793\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{47775744\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-1289945088x^9-2269347840x^8+23529056256x^7+117850567680x^6+250227954432x^5+302902600320x^4+224097754320x^3+100612822920x^2+25257845290x+2726071095\right)}{238878720}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(2726071095 + 25257845290*x + 100612822920*x^2 + 224
097754320*x^3 + 302902600320*x^4 + 250227954432*x^5 + 117850567680*x^6 + 23
529056256*x^7 - 2269347840*x^8 - 1289945088*x^9))/238878720 + (9793*ArcTanh
[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(47775744*Sqrt[3])
```

fricas [A] time = 0.41, size = 98, normalized size = 0.64

$$-\frac{1}{238878720}\left(1289945088\,x^9+2269347840\,x^8-23529056256\,x^7-117850567680\,x^6-250227954432\,x^5-302902600320\,x^4-224097754320\,x^3-100612822920\,x^2-25257845290\,x-2726071095\right)\sqrt{3\,x^2+5\,x+2}+\frac{9793}{573308928}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/238878720*(1289945088*x^9 + 2269347840*x^8 - 23529056256*x^7 - 117850567
680*x^6 - 250227954432*x^5 - 302902600320*x^4 - 224097754320*x^3 - 10061282
2920*x^2 - 25257845290*x - 2726071095)*sqrt(3*x^2 + 5*x + 2) + 9793/5733089
28*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x +
 49)
```

giac [A] time = 0.23, size = 94, normalized size = 0.61

$$-\frac{1}{238878720}\,(2\,(12\,(6\,(8\,(6\,(36\,(2\,(48\,(54\,x+95)x-47279)x-473615)x-36201961)x-262936285)x-1556234405)x-4192200955)x-12628922645)x-2726071095)\sqrt{3\,x^2+5\,x+2}-\frac{9793}{286654464}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/238878720*(2*(12*(6*(8*(6*(36*(2*(48*(54*x + 95)*x - 47279)*x - 473615)*
x - 36201961)*x - 262936285)*x - 1556234405)*x - 4192200955)*x - 1262892264
5)*x - 2726071095)*sqrt(3*x^2 + 5*x + 2) - 9793/286654464*sqrt(3)*log(abs(-
2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 136, normalized size = 0.88

$$-\frac{\left(3x^2+5x+2\right)^{\frac{9}{2}}x}{15}+\frac{9793\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{286654464}+\frac{53\left(3x^2+5x+2\right)^{\frac{9}{2}}}{162}+\frac{1399\,(6x+5)\left(3x^2+5x+2\right)^{\frac{7}{2}}}{8640}-\frac{9793\,(6x+5)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{622080}+\frac{9793\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{5971968}-\frac{9793\,(6x+5)\sqrt{3x^2+5x+2}}{47775744}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -1/15*(3*x^2+5*x+2)^(9/2)*x+53/162*(3*x^2+5*x+2)^(9/2)+1399/8640*(6*x+5)*(3
*x^2+5*x+2)^(7/2)-9793/622080*(6*x+5)*(3*x^2+5*x+2)^(5/2)+9793/5971968*(6*x
+5)*(3*x^2+5*x+2)^(3/2)-9793/47775744*(6*x+5)*(3*x^2+5*x+2)^(1/2)+9793/2866
54464*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.23, size = 174, normalized size = 1.13

$$-\frac{1}{15}\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}x+\frac{53}{162}\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}+\frac{1399}{1440}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{1399}{1728}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{9793}{103680}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x-\frac{9793}{124416}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{9793}{995328}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{48965}{5971968}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{9793}{7962624}\sqrt{3\,x^2+5\,x+2}\,x+\frac{9793}{286654464}\sqrt{3}\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)-\frac{48965}{47775744}\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*x^2 + 5*x + 2)^(9/2)*x + 53/162*(3*x^2 + 5*x + 2)^(9/2) + 1399/144
0*(3*x^2 + 5*x + 2)^(7/2)*x + 1399/1728*(3*x^2 + 5*x + 2)^(7/2) - 9793/1036
80*(3*x^2 + 5*x + 2)^(5/2)*x - 9793/124416*(3*x^2 + 5*x + 2)^(5/2) + 9793/9
95328*(3*x^2 + 5*x + 2)^(3/2)*x + 48965/5971968*(3*x^2 + 5*x + 2)^(3/2) - 9
793/7962624*sqrt(3*x^2 + 5*x + 2)*x + 9793/286654464*sqrt(3)*log(2*sqrt(3)*
sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 48965/47775744*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-956x\sqrt{3x^2+5x+2}\right)dx-\int\left(-3194x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-5757x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-5948x^4\sqrt{3x^2+5x+2}\right)dx-\int\left(-3368x^5\sqrt{3x^2+5x+2}\right)dx-\int\left(-792x^6\sqrt{3x^2+5x+2}\right)dx-\int 81x^7\sqrt{3x^2+5x+2}\,dx-\int 54x^8\sqrt{3x^2+5x+2}\,dx-\int\left(-120\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-956*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3194*x**2*sqrt(3*x*
*2 + 5*x + 2), x) - Integral(-5757*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integr
al(-5948*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3368*x**5*sqrt(3*x**2
+ 5*x + 2), x) - Integral(-792*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(8
1*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(54*x**8*sqrt(3*x**2 + 5*x + 2)
, x) - Integral(-120*sqrt(3*x**2 + 5*x + 2), x)
```

3.2210 $\int (5-x) \left(2+5x+3x^2\right)^{7/2} \, dx$

Optimal. Leaf size=149

$$-\frac{1}{27}\left(3x^2+5x+2\right)^{9/2}+\frac{35}{288}(6x+5)\left(3x^2+5x+2\right)^{7/2}-\frac{245(6x+5)\left(3x^2+5x+2\right)^{5/2}}{20736}+\frac{1225(6x+5)\left(3x^2+5x+2\right.}{995328}$$

Rubi [A] time = 0.05, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$-\frac{1}{27}\left(3x^2+5x+2\right)^{9/2}+\frac{35}{288}(6x+5)\left(3x^2+5x+2\right)^{7/2}-\frac{245(6x+5)\left(3x^2+5x+2\right)^{5/2}}{20736}+\frac{1225(6x+5)\left(3x^2+5x+2\right)^{3/2}}{995328}-\frac{1225(6x+5)\sqrt{3x^2+5x+2}}{7962624}+\frac{1225\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{15925248\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-1225*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/7962624 + (1225*(5 + 6*x)*(2 + 5*x
+ 3*x^2)^(3/2))/995328 - (245*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/20736 + (3
5*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/288 - (2 + 5*x + 3*x^2)^(9/2)/27 + (12
25*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(15925248*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (5-x)\left(2+5x+3x^2\right)^{7/2}\,dx = -\frac{1}{27}\left(2+5x+3x^2\right)^{9/2} + \frac{35}{6}\int \left(2+5x+3x^2\right)^{7/2}\,dx$$
$$= \frac{35}{288}(5+6x)\left(2+5x+3x^2\right)^{7/2} - \frac{1}{27}\left(2+5x+3x^2\right)^{9/2} - \frac{245}{576}\int \left(2+5x+3x\right.$$
$$= -\frac{245(5+6x)\left(2+5x+3x^2\right)^{5/2}}{20736} + \frac{35}{288}(5+6x)\left(2+5x+3x^2\right)^{7/2} - \frac{1}{27}\left(2+5\right.$$
$$= \frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328} - \frac{245(5+6x)\left(2+5x+3x^2\right)^{5/2}}{20736} + \frac{35}{288}(5+6$$
$$= -\frac{1225(5+6x)\sqrt{2+5x+3x^2}}{7962624} + \frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328} - \frac{245(5+6}{}$$
$$= -\frac{1225(5+6x)\sqrt{2+5x+3x^2}}{7962624} + \frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328} - \frac{245(5+6}{}$$
$$= -\frac{1225(5+6x)\sqrt{2+5x+3x^2}}{7962624} + \frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328} - \frac{245(5+6}{}$$

Mathematica [A] time = 0.12, size = 119, normalized size = 0.80

$$\frac{-64\left(3x^2+5x+2\right)^{9/2}+210(6x+5)\left(3x^2+5x+2\right)^{7/2}-\frac{245\left(6\sqrt{3x^2+5x+2}\left(20736x^5+86400x^4+142128x^3+115320x^2+46166x+7305\right)-5\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)}{27648}}{1728}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (210*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2) - 64*(2 + 5*x + 3*x^2)^(9/2) - (245*
(6*Sqrt[2 + 5*x + 3*x^2]*(7305 + 46166*x + 115320*x^2 + 142128*x^3 + 86400*
x^4 + 20736*x^5) - 5*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])
)/27648)/1728
```

IntegrateAlgebraic [A] time = 0.78, size = 94, normalized size = 0.63

$$\frac{1225\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{7962624\sqrt{3}}+\frac{\sqrt{3x^2+5x+2}\left(-23887872x^8-2488320x^7+452625408x^6+1507127040x^5+2320737408x^4+2013572880x^3+1014795048x^2+278256050x+32198883\right)}{7962624}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(32198883 + 278256050*x + 1014795048*x^2 + 201357288
0*x^3 + 2320737408*x^4 + 1507127040*x^5 + 452625408*x^6 - 2488320*x^7 - 238
87872*x^8))/7962624 + (1225*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))
])/(7962624*Sqrt[3])
```

fricas [A] time = 0.39, size = 93, normalized size = 0.62

$$-\frac{1}{7962624}\left(23887872x^8+2488320x^7-452625408x^6-1507127040x^5-2320737408x^4-2013572880x^3-1014795048x^2-278256050x-32198883\right)\sqrt{3x^2+5x+2}+\frac{1225}{95551488}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/7962624*(23887872*x^8 + 2488320*x^7 - 452625408*x^6 - 1507127040*x^5 - 2
320737408*x^4 - 2013572880*x^3 - 1014795048*x^2 - 278256050*x - 32198883)*s
qrt(3*x^2 + 5*x + 2) + 1225/95551488*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x
 + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 89, normalized size = 0.60

$$-\frac{1}{7962624}\,(2\,(12\,(6\,(8\,(6\,(36\,(2\,(48\,x+5)x-1819)x-218045)x-2014529)x-13983145)x-42283127)x-139128025)x-32198883)\sqrt{3\,x^2+5\,x+2}-\frac{1225}{47775744}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/7962624*(2*(12*(6*(8*(6*(36*(2*(48*x + 5)*x - 1819)*x - 218045)*x - 2014
529)*x - 13983145)*x - 42283127)*x - 139128025)*x - 32198883)*sqrt(3*x^2 +
5*x + 2) - 1225/47775744*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 121, normalized size = 0.81

$$\frac{1225\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{47775744}+\frac{35\,(6x+5)\left(3x^2+5x+2\right)^{\frac{7}{2}}}{288}-\frac{245\,(6x+5)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{20736}+\frac{1225\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{995328}-\frac{1225\,(6x+5)\sqrt{3x^2+5x+2}}{7962624}-\frac{\left(3x^2+5x+2\right)^{\frac{9}{2}}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] 35/288*(6*x+5)*(3*x^2+5*x+2)^(7/2)-245/20736*(6*x+5)*(3*x^2+5*x+2)^(5/2)+12
25/995328*(6*x+5)*(3*x^2+5*x+2)^(3/2)-1225/7962624*(6*x+5)*(3*x^2+5*x+2)^(1
/2)+1225/47775744*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-1/2
7*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.39, size = 159, normalized size = 1.07

$$-\frac{1}{27}\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}+\frac{35}{48}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{175}{288}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{245}{3456}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x-\frac{1225}{20736}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{1225}{165888}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{6125}{995328}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{1225}{1327104}\sqrt{3\,x^2+5\,x+2}\,x+\frac{1225}{47775744}\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)-\frac{6125}{7962624}\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/27*(3*x^2 + 5*x + 2)^(9/2) + 35/48*(3*x^2 + 5*x + 2)^(7/2)*x + 175/288*(
3*x^2 + 5*x + 2)^(7/2) - 245/3456*(3*x^2 + 5*x + 2)^(5/2)*x - 1225/20736*(3
*x^2 + 5*x + 2)^(5/2) + 1225/165888*(3*x^2 + 5*x + 2)^(3/2)*x + 6125/995328
*(3*x^2 + 5*x + 2)^(3/2) - 1225/1327104*sqrt(3*x^2 + 5*x + 2)*x + 1225/4777
5744*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 6125/7962624*
sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] int(-(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-292x\sqrt{3x^2+5x+2}\right)dx-\int\left(-870x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-1339x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-1090x^4\sqrt{3x^2+5x+2}\right)dx-\int\left(-396x^5\sqrt{3x^2+5x+2}\right)dx-\int 27x^7\sqrt{3x^2+5x+2}\,dx-\int\left(-40\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-292*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-870*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integra
l(-1090*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-396*x**5*sqrt(3*x**2 +
5*x + 2), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-40*s
qrt(3*x**2 + 5*x + 2), x)
```

3.2211 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{3+2x}\,dx$

Optimal. Leaf size=169

$$\frac{1}{672}(277-42x)\left(3x^2+5x+2\right)^{7/2}-\frac{(7446x+589)\left(3x^2+5x+2\right)^{5/2}}{6912}+\frac{5(6205-127338x)\left(3x^2+5x+2\right)^{3/2}}{331776}+\frac{5(\cdots$$

Rubi [A] time = 0.13, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{672}(277-42x)\left(3x^2+5x+2\right)^{7/2}-\frac{(7446x+589)\left(3x^2+5x+2\right)^{5/2}}{6912}+\frac{5(6205-127338x)\left(3x^2+5x+2\right)^{3/2}}{331776}+\frac{5(1229315-2568342x)\sqrt{3x^2+5x+2}}{2654208}-\frac{65251715\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{5308416\sqrt{3}}+\frac{1625}{512}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x),x]
```

```
[Out] (5*(1229315 - 2568342*x)*Sqrt[2 + 5*x + 3*x^2])/2654208 + (5*(6205 - 127338
*x)*(2 + 5*x + 3*x^2)^(3/2))/331776 - ((589 + 7446*x)*(2 + 5*x + 3*x^2)^(5/
2))/6912 + ((277 - 42*x)*(2 + 5*x + 3*x^2)^(7/2))/672 - (65251715*ArcTanh[(
5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(5308416*Sqrt[3]) + (1625*Sqrt
[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/512
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{3+2x}\,dx = \frac{1}{672}(277-42x)\left(2+5x+3x^2\right)^{7/2} - \frac{1}{192}\int \frac{(2163+2482x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,d$$

$$= -\frac{(589+7446x)\left(2+5x+3x^2\right)^{5/2}}{6912} + \frac{1}{672}(277-42x)\left(2+5x+3x^2\right)^{7/2} + \int \frac{(-35}{}$$

$$= \frac{5(6205-127338x)\left(2+5x+3x^2\right)^{3/2}}{331776} - \frac{(589+7446x)\left(2+5x+3x^2\right)^{5/2}}{6912} + \frac{1}{672}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\left(2+5x+3x^2\right)^{3/2}}{331776}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\left(2+5x+3x^2\right)^{3/2}}{331776}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\left(2+5x+3x^2\right)^{3/2}}{331776}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\left(2+5x+3x^2\right)^{3/2}}{331776}$$

Mathematica [A] time = 0.08, size = 123, normalized size = 0.73

$$\frac{-353808000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-456762005\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(31352832x^7-50015232x^6-529784064x^5-1167854976x^4-1224844848x^3-722869752x^2-185981750x-101435865\right)}{111476736}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-101435865 - 185981750*x - 722869752*x^2 - 12248
44848*x^3 - 1167854976*x^4 - 529784064*x^5 - 50015232*x^6 + 31352832*x^7) -
 353808000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] -
456762005*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/111476736
```

IntegrateAlgebraic [A] time = 0.98, size = 124, normalized size = 0.73

$$-\frac{65251715\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{2654208\sqrt{3}}+\frac{1625}{256}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-31352832x^7+50015232x^6+529784064x^5+1167854976x^4+1224844848x^3+722869752x^2+185981750x+101435865\right)}{18579456}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(101435865 + 185981750*x + 722869752*x^2 + 122484484
8*x^3 + 1167854976*x^4 + 529784064*x^5 + 50015232*x^6 - 31352832*x^7))/1857
9456 - (65251715*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(2654208
*Sqrt[3]) + (1625*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])
/256
```

fricas [A] time = 0.42, size = 139, normalized size = 0.82

$$-\frac{1}{18579456}\left(31352832\,x^{7}-50015232\,x^{6}-529784064\,x^{5}-1167854976\,x^{4}-1224844848\,x^{3}-722869752\,x^{2}-185981750\,x-101435865\right)\sqrt{3\,x^{2}+5\,x+2}+\frac{65251715}{31850496}\,\sqrt{3}\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}\,(6\,x+5)+72\,x^{2}+120\,x+49\right)+\frac{1625}{1024}\,\sqrt{5}\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}\,(8\,x+7)+124\,x^{2}+212\,x+89}{4\,x^{2}+12\,x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/18579456*(31352832*x^7 - 50015232*x^6 - 529784064*x^5 - 1167854976*x^4 -
 1224844848*x^3 - 722869752*x^2 - 185981750*x - 101435865)*sqrt(3*x^2 + 5*x
 + 2) + 65251715/31850496*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x
 + 5) + 72*x^2 + 120*x + 49) + 1625/1024*sqrt(5)*log((4*sqrt(5)*sqrt(3*x^2
+ 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.36, size = 156, normalized size = 0.92

$$-\frac{1}{18579456}\,(2\,(12\,(18\,(8\,(6\,(36\,(42\,x-67)x-25549)x-337921)x-2835289)x-30119573)x-92990875)x-101435865)\sqrt{3\,x^{2}+5\,x+2}+\frac{1625}{512}\,\sqrt{5}\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}\right)+\frac{65251715}{15925248}\,\sqrt{3}\log\left(\left|-6\,\sqrt{3}x-5\,\sqrt{3}+6\,\sqrt{3\,x^{2}+5\,x+2}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/18579456*(2*(12*(18*(8*(6*(36*(42*x - 67)*x - 25549)*x - 337921)*x - 283
5289)*x - 30119573)*x - 92990875)*x - 101435865)*sqrt(3*x^2 + 5*x + 2) + 16
25/512*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
 2))) + 65251715/15925248*sqrt(3)*log(abs(-6*sqrt(3)*x - 5*sqrt(3) + 6*sqrt
(3*x^2 + 5*x + 2)))
```

maple [B] time = 0.05, size = 295, normalized size = 1.75

$$-\frac{1625\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{512}-\frac{679705\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{165888}-\frac{35\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{15925248}-\frac{(6x+5)\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{96}+\frac{7\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{6912}-\frac{35\,(6x+5)\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{331776}+\frac{35\,(6x+5)\sqrt{3x^{2}+5x+2}}{2654208}+\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{28}-\frac{13\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{72}-\frac{1105\,(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{3456}-\frac{22295\,(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{27648}+\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{16}+\frac{325\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{192}+\frac{1625\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{512}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3),x)
```

```
[Out] -1/96*(6*x+5)*(3*x^2+5*x+2)^(7/2)+7/6912*(6*x+5)*(3*x^2+5*x+2)^(5/2)-35/331
776*(6*x+5)*(3*x^2+5*x+2)^(3/2)+35/2654208*(6*x+5)*(3*x^2+5*x+2)^(1/2)-35/1
5925248*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))+13/28*(-4*x+3
*(x+3/2)^2-19/4)^(7/2)-13/72*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1105/345
6*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-22295/27648*(6*x+5)*(-4*x+3*(x+3/2)
^2-19/4)^(1/2)-679705/165888*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/
2)^2-19/4)^(1/2))+13/16*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+325/192*(-4*x+3*(x+3/
2)^2-19/4)^(3/2)+1625/512*(-16*x+12*(x+3/2)^2-19)^(1/2)-1625/512*5^(1/2)*ar
ctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.31, size = 186, normalized size = 1.10

$$-\frac{1}{16}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x+\frac{277}{672}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}-\frac{1241}{1152}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}x-\frac{589}{6912}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}-\frac{106115}{55296}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x+\frac{31025}{331776}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}-\frac{2140285}{442368}\,\sqrt{3\,x^{2}+5\,x+2}\,x-\frac{65251715}{15925248}\,\sqrt{3}\log\left(\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}+3\,x+\frac{5}{2}\right)-\frac{1625}{512}\,\sqrt{5}\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)+\frac{6146575}{2654208}\,\sqrt{3\,x^{2}+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/16*(3*x^2 + 5*x + 2)^(7/2)*x + 277/672*(3*x^2 + 5*x + 2)^(7/2) - 1241/11
52*(3*x^2 + 5*x + 2)^(5/2)*x - 589/6912*(3*x^2 + 5*x + 2)^(5/2) - 106115/55
296*(3*x^2 + 5*x + 2)^(3/2)*x + 31025/331776*(3*x^2 + 5*x + 2)^(3/2) - 2140
285/442368*sqrt(3*x^2 + 5*x + 2)*x - 65251715/15925248*sqrt(3)*log(sqrt(3)*
sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 1625/512*sqrt(5)*log(sqrt(5)*sqrt(3*x^
2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 6146575/2654208*sqrt(3*
x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{40\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int \left(-\frac{292x\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int \left(-\frac{870x^2\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int \left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int \left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int \left(-\frac{396x^5\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int \frac{27x^7\sqrt{3x^2+5x+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x),x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-292*x*sqrt(3
*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/
(2*x + 3), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) -
Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-396*x*
*5*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(27*x**7*sqrt(3*x**2 + 5*
x + 2)/(2*x + 3), x)
```

3.2212 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^2} \, dx$

Optimal. Leaf size=174

$$-\frac{(x+47)\left(3x^2+5x+2\right)^{7/2}}{14(2x+3)}+\frac{(8310x+283)\left(3x^2+5x+2\right)^{5/2}}{1440}-\frac{(6925-151098x)\left(3x^2+5x+2\right)^{3/2}}{13824}-(1454315$$

Rubi [A] time = 0.12, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+47)\left(3x^2+5x+2\right)^{7/2}}{14(2x+3)}+\frac{(8310x+283)\left(3x^2+5x+2\right)^{5/2}}{1440}-\frac{(6925-151098x)\left(3x^2+5x+2\right)^{3/2}}{13824}-\frac{(1454315-3037062x)\sqrt{3x^2+5x+2}}{110592}+\frac{15434623\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{221184\sqrt{3}}-\frac{9225}{512}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^2,x]
```

```
[Out] -((1454315 - 3037062*x)*Sqrt[2 + 5*x + 3*x^2])/110592 - ((6925 - 151098*x)*
(2 + 5*x + 3*x^2)^(3/2))/13824 + ((283 + 8310*x)*(2 + 5*x + 3*x^2)^(5/2))/1
440 - ((47 + x)*(2 + 5*x + 3*x^2)^(7/2))/(14*(3 + 2*x)) + (15434623*ArcTanh
[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(221184*Sqrt[3]) - (9225*Sqr
t[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/512
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
```

```
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^2}\,dx = -\frac{(47+x)\left(2+5x+3x^2\right)^{7/2}}{14(3+2x)} - \frac{1}{8}\int \frac{(-462-554x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,dx$$

$$= \frac{(283+8310x)\left(2+5x+3x^2\right)^{5/2}}{1440} - \frac{(47+x)\left(2+5x+3x^2\right)^{7/2}}{14(3+2x)} + \frac{\int \frac{(84678+100732\ldots}{3+\ldots}}{11\ldots}$$

$$= -\frac{(6925-151098x)\left(2+5x+3x^2\right)^{3/2}}{13824} + \frac{(283+8310x)\left(2+5x+3x^2\right)^{5/2}}{1440} - \frac{(47\ldots}{\ldots}$$

$$= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592} - \frac{(6925-151098x)\left(2+5x+3x^2\right)^{3/2}}{13824}$$

$$= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592} - \frac{(6925-151098x)\left(2+5x+3x^2\right)^{3/2}}{13824}$$

$$= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592} - \frac{(6925-151098x)\left(2+5x+3x^2\right)^{3/2}}{13824}$$

$$= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592} - \frac{(6925-151098x)\left(2+5x+3x^2\right)^{3/2}}{13824}$$

Mathematica [A] time = 0.11, size = 130, normalized size = 0.75

$$\frac{418446000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+540211805\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(7464960x^7-13893120x^6-125632512x^5-273531168x^4-275126016x^3-179819084x^2+28017108x+259165107\right)}{2x+3}}{23224320}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(259165107 + 28017108*x - 179819084*x^2 - 275126
016*x^3 - 273531168*x^4 - 125632512*x^5 - 13893120*x^6 + 7464960*x^7))/(3 +
 2*x) + 418446000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^
2])] + 540211805*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/232
24320
```

IntegrateAlgebraic [A] time = 1.04, size = 131, normalized size = 0.75

$$\frac{15434623\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{110592\sqrt{3}}-\frac{9225}{256}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-7464960x^7+13893120x^6+125632512x^5+273531168x^4+275126016x^3+179819084x^2-28017108x-259165107\right)}{3870720(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^2,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-259165107 - 28017108*x + 179819084*x^2 + 275126016
*x^3 + 273531168*x^4 + 125632512*x^5 + 13893120*x^6 - 7464960*x^7))/(387072
0*(3 + 2*x)) + (15434623*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/
(110592*Sqrt[3]) - (9225*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1
+ x))])/256
```

fricas [A] time = 0.43, size = 159, normalized size = 0.91

$$\frac{540211805\sqrt{3}(2x+3)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+418446000\sqrt{5}(2x+3)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-12\left(7464960x^7-13893120x^6-125632512x^5-273531168x^4-275126016x^3-179819084x^2+28017108x+259165107\right)\sqrt{3x^2+5x+2}}{46448640(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/46448640*(540211805*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)
*(6*x + 5) + 72*x^2 + 120*x + 49) + 418446000*sqrt(5)*(2*x + 3)*log(-(4*sqr
t(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x
+ 9)) - 12*(7464960*x^7 - 13893120*x^6 - 125632512*x^5 - 273531168*x^4 - 27
5126016*x^3 - 179819084*x^2 + 28017108*x + 259165107)*sqrt(3*x^2 + 5*x + 2)
)/(2*x + 3)
```

giac [B] time = 1.45, size = 861, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -15434623/663552*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x
+ 3)^2 + 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/
(2*x + 3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 9225/512*sqrt(5
)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x +
3)) - 4))*sgn(1/(2*x + 3)) - 1625/512*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
)*sgn(1/(2*x + 3)) + 1/3870720*(1702084195*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)
^2 + 3) + sqrt(5)/(2*x + 3))^13*sgn(1/(2*x + 3)) - 3595838400*sqrt(5)*(sqrt
(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^12*sgn(1/(2*x + 3))
 - 462583100*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^1
1*sgn(1/(2*x + 3)) + 12803555520*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2
 + 3) + sqrt(5)/(2*x + 3))^10*sgn(1/(2*x + 3)) + 91554292599*(sqrt(-8/(2*x
+ 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^9*sgn(1/(2*x + 3)) - 1329506
43840*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^
8*sgn(1/(2*x + 3)) - 221215739904*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) +
 sqrt(5)/(2*x + 3))^7*sgn(1/(2*x + 3)) + 432202780800*sqrt(5)*(sqrt(-8/(2*x
 + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^6*sgn(1/(2*x + 3)) + 252015
304401*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^5*sgn(1
/(2*x + 3)) - 680038027200*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)
+ sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 506502404100*(sqrt(-8/(2*x + 3) +
 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x + 3)) + 786343723200*
sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2*sgn(
1/(2*x + 3)) + 178876045845*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(
5)/(2*x + 3))*sgn(1/(2*x + 3)) - 339366412800*sqrt(5)*sgn(1/(2*x + 3)))/((s
qrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^7
```

maple [A] time = 0.06, size = 232, normalized size = 1.33

$$\frac{9225\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{512}+\frac{15434623\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{663552}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{10\left(x+\frac{3}{2}\right)}-\frac{369\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{140}+\frac{277\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{288}+\frac{25183\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{13824}+\frac{506177\left(6x+5\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{110592}-\frac{369\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{80}-\frac{615\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{64}-\frac{9225\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}{512}+\frac{13\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-369/140*(-4*x+3*(x+3/2)^2-19/4
)^(7/2)+277/288*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+25183/13824*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(3/2)+506177/110592*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^
(1/2)+15434623/663552*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19
/4)^(1/2))-369/80*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-615/64*(-4*x+3*(x+3/2)^2-19
/4)^(3/2)-9225/512*(-16*x+12*(x+3/2)^2-19)^(1/2)+9225/512*5^(1/2)*arctanh(2
/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+13/20*(6*x+5)*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.31, size = 192, normalized size = 1.10

$$-\frac{1}{28}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}+\frac{277}{48}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}x+\frac{283}{1440}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{4\left(2x+3\right)}+\frac{25183}{2304}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x-\frac{6925}{13824}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}+\frac{506177}{18432}\sqrt{3x^{2}+5x+2}\,x+\frac{15434623}{663552}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right)+\frac{9225}{512}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{1454315}{110592}\sqrt{3x^{2}+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/28*(3*x^2 + 5*x + 2)^(7/2) + 277/48*(3*x^2 + 5*x + 2)^(5/2)*x + 283/1440
*(3*x^2 + 5*x + 2)^(5/2) - 13/4*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 25183/2
304*(3*x^2 + 5*x + 2)^(3/2)*x - 6925/13824*(3*x^2 + 5*x + 2)^(3/2) + 506177
/18432*sqrt(3*x^2 + 5*x + 2)*x + 15434623/663552*sqrt(3)*log(sqrt(3)*sqrt(3
*x^2 + 5*x + 2) + 3*x + 5/2) + 9225/512*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*
x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 1454315/110592*sqrt(3*x^2 + 5
*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{292x\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{870x^{2}\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{1339x^{3}\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{1090x^{4}\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{396x^{5}\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\frac{27x^{7}\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-29
2*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-870*x**2*sqr
t(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-1339*x**3*sqrt(3*x*
*2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5
*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)
/(4*x**2 + 12*x + 9), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(4*x**2
+ 12*x + 9), x)
```

3.2213 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=181

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^2}+\frac{7(121x+584)\left(3x^2+5x+2\right)^{5/2}}{240(2x+3)}+\frac{7(805-17394x)\left(3x^2+5x+2\right)^{3/2}}{4608}+\frac{7(167495$$

Rubi [A] time = 0.13, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^2}+\frac{7(121x+584)\left(3x^2+5x+2\right)^{5/2}}{240(2x+3)}+\frac{7(805-17394x)\left(3x^2+5x+2\right)^{3/2}}{4608}+\frac{7(167495-349806x)\sqrt{3x^2+5x+2}}{36864}-\frac{12443893\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{73728\sqrt{3}}+\frac{44625\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1024}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^3,x]
```

```
[Out] (7*(167495 - 349806*x)*Sqrt[2 + 5*x + 3*x^2])/36864 + (7*(805 - 17394*x)*(2
 + 5*x + 3*x^2)^(3/2))/4608 + (7*(584 + 121*x)*(2 + 5*x + 3*x^2)^(5/2))/(24
0*(3 + 2*x)) - ((21 + x)*(2 + 5*x + 3*x^2)^(7/2))/(12*(3 + 2*x)^2) - (12443
893*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(73728*Sqrt[3]) +
 (44625*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/1024
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
```

```
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^3}\,dx = -\frac{(21+x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^2} - \frac{7}{96}\int \frac{(-404-484x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2}\,dx$$

$$= \frac{7(584+121x)\left(2+5x+3x^2\right)^{5/2}}{240(3+2x)} - \frac{(21+x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^2} + \frac{7}{768}\int (-1948$$

$$= \frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608} + \frac{7(584+121x)\left(2+5x+3x^2\right)^{5/2}}{240(3+2x)} - (21+$$

$$= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864} + \frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608} + 7$$

$$= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864} + \frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608} + 7$$

$$= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864} + \frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608} + 7$$

$$= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864} + \frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608} + 7$$

Mathematica [A] time = 0.11, size = 130, normalized size = 0.72

$$\frac{-48195000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-62219465\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(414720x^7-926208x^6-6830784x^5-15112992x^4-12848072x^3-19284852x^2-89867034x-91912653\right)}{(2x+3)^2}}{1105920}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(-91912653 - 89867034*x - 19284852*x^2 - 1284807
2*x^3 - 15112992*x^4 - 6830784*x^5 - 926208*x^6 + 414720*x^7))/(3 + 2*x)^2
- 48195000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] -
62219465*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/1105920
```

IntegrateAlgebraic [A] time = 0.95, size = 131, normalized size = 0.72

$$-\frac{12443893\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{36864\sqrt{3}}+\frac{44625}{512}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\,(-414720x^7+926208x^6+6830784x^5+15112992x^4+12848072x^3+19284852x^2+89867034x+91912653)}{184320(2x+3)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^3,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(91912653 + 89867034*x + 19284852*x^2 + 12848072*x^3
 + 15112992*x^4 + 6830784*x^5 + 926208*x^6 - 414720*x^7))/(184320*(3 + 2*x)
^2) - (12443893*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(36864*Sq
rt[3]) + (44625*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/5
12
```

fricas [A] time = 0.44, size = 173, normalized size = 0.96

$$\frac{62219465\sqrt{3}\left(4x^2+12x+9\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+48195000\sqrt{5}\left(4x^2+12x+9\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-12\left(414720x^7-926208x^6-6830784x^5-15112992x^4-12848072x^3-19284852x^2-89867034x-91912653\right)\sqrt{3x^2+5x+2}}{2211840\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2211840*(62219465*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 +
5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 48195000*sqrt(5)*(4*x^2 + 12*x
+ 9)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)
/(4*x^2 + 12*x + 9)) - 12*(414720*x^7 - 926208*x^6 - 6830784*x^5 - 15112992
*x^4 - 12848072*x^3 - 19284852*x^2 - 89867034*x - 91912653)*sqrt(3*x^2 + 5*
x + 2))/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.38, size = 279, normalized size = 1.54

$$-\frac{1}{184320}\left(2\left(12\left(18\left(8\left(30x-157\right)x-725\right)x-67409\right)x+1173065\right)x-8219517\right)\sqrt{3x^2+5x+2}+\frac{44625}{1024}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{12443893}{221184}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{25\left(5878\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+22241\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+75807\sqrt{3}x+27061\sqrt{3}-75807\sqrt{3x^2+5x+2}\right)}{512\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/184320*(2*(12*(18*(8*(30*x - 157)*x - 725)*x - 67409)*x + 1173065)*x - 8
219517)*sqrt(3*x^2 + 5*x + 2) + 44625/1024*sqrt(5)*log(abs(-4*sqrt(3)*x - 2
*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5
) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 12443893/221184*sqrt(3)*log(abs
(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) + 25/512*(5878*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 22241*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^2 + 75807*sqrt(3)*x + 27061*sqrt(3) - 75807*sqrt(3*x^2 + 5*x + 2))
/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.06, size = 253, normalized size = 1.40

$$-\frac{44625\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1024}-\frac{12443893\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{221184}+\frac{27\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{10\left(x+\frac{3}{2}\right)}+\frac{51\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{8}-\frac{1127\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{480}-\frac{20293\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{4608}-\frac{408107\left(6x+5\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{36864}+\frac{357\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{32}+\frac{2975\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{128}+\frac{44625\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{1024}-\frac{27\left(6x+5\right)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{20}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{40\left(x+\frac{3}{2}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^3,x)
```

```
[Out] 27/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+51/8*(-4*x+3*(x+3/2)^2-19/4)^(7
/2)-1127/480*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-20293/4608*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(3/2)-408107/36864*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
-12443893/221184*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(
1/2))+357/32*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+2975/128*(-4*x+3*(x+3/2)^2-19/4)
^(3/2)+44625/1024*(-16*x+12*(x+3/2)^2-19)^(1/2)-44625/1024*5^(1/2)*arctanh(
```

```
2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-27/20*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(7/2)-13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [A] time = 1.14, size = 218, normalized size = 1.20

$$\frac{39}{40}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{10\left(4x^2+12x+9\right)}-\frac{1127}{80}\left(3x^2+5x+2\right)^{\frac{5}{2}}x-\frac{7}{12}\left(3x^2+5x+2\right)^{\frac{5}{2}}+\frac{27\left(3x^2+5x+2\right)^{\frac{7}{2}}}{4\left(2x+3\right)}-\frac{20293}{768}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{5635}{4608}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{408107}{6144}\sqrt{3x^2+5x+2}\,x-\frac{12443893}{221184}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{44625}{1024}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{1172465}{36864}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/40*(3*x^2 + 5*x + 2)^(7/2) - 13/10*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x
 + 9) - 1127/80*(3*x^2 + 5*x + 2)^(5/2)*x - 7/12*(3*x^2 + 5*x + 2)^(5/2) +
27/4*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) - 20293/768*(3*x^2 + 5*x + 2)^(3/2)*
x + 5635/4608*(3*x^2 + 5*x + 2)^(3/2) - 408107/6144*sqrt(3*x^2 + 5*x + 2)*x
 - 12443893/221184*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) -
 44625/1024*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) + 1172465/36864*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{396x^5\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\frac{27x^7\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-292*x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) -
Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x
) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 2
7), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*
x + 27), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 +
 54*x + 27), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2
 + 54*x + 27), x)
```

3.2214 $\int \frac{(5-x)(2+5x+3x^2)^{7/2}}{(3+2x)^4} \, dx$

Optimal. Leaf size=190

$$-\frac{(3x+37)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^3}+\frac{7(414x+1171)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^2}-\frac{7(1652x+5713)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)}-\frac{7(37375$$

Rubi [A] time = 0.13, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(3x+37)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^3}+\frac{7(414x+1171)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^2}-\frac{7(1652x+5713)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)}-\frac{7(37375-78054x)\sqrt{3x^2+5x+2}}{6144}+\frac{2776697\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{12288\sqrt{3}}-\frac{59745\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1024}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^4,x]
```

```
[Out] (-7*(37375 - 78054*x)*Sqrt[2 + 5*x + 3*x^2])/6144 - (7*(5713 + 1652*x)*(2 +
 5*x + 3*x^2)^(3/2))/(768*(3 + 2*x)) + (7*(1171 + 414*x)*(2 + 5*x + 3*x^2)^
(5/2))/(960*(3 + 2*x)^2) - ((37 + 3*x)*(2 + 5*x + 3*x^2)^(7/2))/(30*(3 + 2*
x)^3) + (2776697*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(122
88*Sqrt[3]) - (59745*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*
x^2])])/1024
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^4}\,dx = -\frac{(37+3x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^3} - \frac{7}{120}\int \frac{(-346-414x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3}\,dx$$

$$= \frac{7(1171+414x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^2} - \frac{(37+3x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^3} + \frac{7\int \frac{(-16796-1\cdots}{\cdots}}{\cdots}$$

$$= -\frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + \frac{7(1171+414x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^2} - \frac{(37\cdots}{\cdots}$$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + \frac{7(\cdots}{\cdots}$$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + \frac{7(\cdots}{\cdots}$$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + \frac{7(\cdots}{\cdots}$$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + \frac{7(\cdots}{\cdots}$$

Mathematica [A]   time = 0.11, size = 130, normalized size = 0.68

$$\frac{10754100\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+13883485\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(82944x^7-231552x^6-1266816x^5-3277520x^4+746240x^3+44770416x^2+98927312x+61268351\right)}{(2x+3)^3}}{184320}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(61268351 + 98927312*x + 44770416*x^2 + 746240*x
^3 - 3277520*x^4 - 1266816*x^5 - 231552*x^6 + 82944*x^7))/(3 + 2*x)^3 + 107
```

```
54100*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] + 13883
485*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/184320
```

IntegrateAlgebraic [A] time = 0.95, size = 131, normalized size = 0.69

$$\frac{2776697\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{6144\sqrt{3}}-\frac{59745}{512}\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)+\frac{\sqrt{3x^2+5x+2}\left(-82944x^7+231552x^6+1266816x^5+3277520x^4-746240x^3-44770416x^2-98927312x-61268351\right)}{30720(2x+3)^3}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-61268351 - 98927312*x - 44770416*x^2 - 746240*x^3
+ 3277520*x^4 + 1266816*x^5 + 231552*x^6 - 82944*x^7))/(30720*(3 + 2*x)^3)
+ (2776697*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(6144*Sqrt[3])
 - (59745*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/512
```

fricas [A] time = 0.42, size = 189, normalized size = 0.99

$$\frac{13883485\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+10754100\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-12\left(82944x^7-231552x^6-1266816x^5-3277520x^4+746240x^3+44770416x^2+98927312x+61268351\right)\sqrt{3x^2+5x+2}}{368640\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/368640*(13883485*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(4*sqrt(3)*sqrt(
3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 10754100*sqrt(5)*(8*x^3
 + 36*x^2 + 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 12
4*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 12*(82944*x^7 - 231552*x^6 - 1266
816*x^5 - 3277520*x^4 + 746240*x^3 + 44770416*x^2 + 98927312*x + 61268351)*
sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.48, size = 325, normalized size = 1.71

$$-\frac{1}{30720}\left(2\left(12\left(18(24x-175)x+4661\right)x-218885\right)x+1563313\right)\sqrt{3x^2+5x+2}-\frac{59745}{1024}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{2776697}{36864}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{5\left(424596\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+2828550\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+21565510\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+26086815\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+45375675\sqrt{3}x+10164786\sqrt{3}-45375675\sqrt{3x^2+5x+2}\right)}{1536\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1/30720*(2*(12*(18*(24*x - 175)*x + 4661)*x - 218885)*x + 1563313)*sqrt(3*
x^2 + 5*x + 2) - 59745/1024*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sq
rt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) +
 4*sqrt(3*x^2 + 5*x + 2))) - 2776697/36864*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) - 5/1536*(424596*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2))^5 + 2828550*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 +
21565510*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 26086815*sqrt(3)*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^2 + 45375675*sqrt(3)*x + 10164786*sqrt(3) - 4537
5675*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sq
rt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.06, size = 274, normalized size = 1.44

$$\frac{59745\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1024}+\frac{2776697\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{36864}+\frac{57\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{200\left(x+\frac{3}{2}\right)^2}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{120\left(x+\frac{3}{2}\right)^3}+\frac{48(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{25}+\frac{1253(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{400}-\frac{96\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{25\left(x+\frac{3}{2}\right)}+\frac{4529(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{768}+\frac{91063(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{6144}-\frac{59745\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{1024}-\frac{3983\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{128}-\frac{11949\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{800}-\frac{1707\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{200}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^4,x)
```

```
[Out] 57/200/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/120/(x+3/2)^3*(-4*x+3*(x+
3/2)^2-19/4)^(9/2)+48/25*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+1253/400*(6*
x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-96/25/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9
/2)+4529/768*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+91063/6144*(6*x+5)*(-4*x
```

```
+3*(x+3/2)^2-19/4)^(1/2)+59745/1024*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/
(-16*x+12*(x+3/2)^2-19)^(1/2))+2776697/36864*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/
2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-59745/1024*(-16*x+12*(x+3/2)^2-19)^(1/2)-
3983/128*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-11949/800*(-4*x+3*(x+3/2)^2-19/4)^(5
/2)-1707/200*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.25, size = 249, normalized size = 1.31

$$-\frac{171}{200}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{15\left(8x^3+36x^2+54x+27\right)}+\frac{57\left(3x^2+5x+2\right)^{\frac{9}{2}}}{50\left(4x^2+12x+9\right)}+\frac{3759}{200}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{581}{800}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{48\left(3x^2+5x+2\right)^{\frac{7}{2}}}{5\left(2x+3\right)}+\frac{4529}{128}\left(3x^2+5x+2\right)^{\frac{3}{2}}x-\frac{1253}{768}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{91063}{1024}\sqrt{3x^2+5x+2}\,x+\frac{2776697}{36864}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{59745}{1024}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{261625}{6144}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] -171/200*(3*x^2 + 5*x + 2)^(7/2) - 13/15*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 3
6*x^2 + 54*x + 27) + 57/50*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) + 375
9/200*(3*x^2 + 5*x + 2)^(5/2)*x + 581/800*(3*x^2 + 5*x + 2)^(5/2) - 48/5*(3
*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 4529/128*(3*x^2 + 5*x + 2)^(3/2)*x - 1253
/768*(3*x^2 + 5*x + 2)^(3/2) + 91063/1024*sqrt(3*x^2 + 5*x + 2)*x + 2776697
/36864*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 59745/1024*
sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) -
 2) - 261625/6144*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{396x^5\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\frac{27x^7\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x
+ 81), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216
*x**2 + 216*x + 81), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**
4 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-1339*x**3*sqrt(3*x**2
+ 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-1090
*x**4*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x
) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2
 + 216*x + 81), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*
x**3 + 216*x**2 + 216*x + 81), x)
```

3.2215 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=195

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{7/2}}{8(2x+3)^4}+\frac{7(43x+93)\left(3x^2+5x+2\right)^{5/2}}{96(2x+3)^3}-\frac{35(343x+736)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)^2}+\frac{35(2701x+57\ldots}{1024\ldots}$$

Rubi [A] time = 0.13, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{7/2}}{8(2x+3)^4}+\frac{7(43x+93)\left(3x^2+5x+2\right)^{5/2}}{96(2x+3)^3}-\frac{35(343x+736)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)^2}+\frac{35(2701x+5795)\sqrt{3x^2+5x+2}}{1024(2x+3)}-\frac{744275\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{4096\sqrt{3}}+\frac{192171\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{4096}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^5,x]
```

```
[Out] (35*(5795 + 2701*x)*Sqrt[2 + 5*x + 3*x^2])/(1024*(3 + 2*x)) - (35*(736 + 34
3*x)*(2 + 5*x + 3*x^2)^(3/2))/(768*(3 + 2*x)^2) + (7*(93 + 43*x)*(2 + 5*x +
 3*x^2)^(5/2))/(96*(3 + 2*x)^3) - ((8 + x)*(2 + 5*x + 3*x^2)^(7/2))/(8*(3 +
 2*x)^4) - (744275*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(4
096*Sqrt[3]) + (192171*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
3*x^2])])/4096
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^5}\,dx = -\frac{(8+x)\left(2+5x+3x^2\right)^{7/2}}{8(3+2x)^4} - \frac{7}{128}\int \frac{(-288-344x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4}\,dx$$

$$= \frac{7(93+43x)\left(2+5x+3x^2\right)^{5/2}}{96(3+2x)^3} - \frac{(8+x)\left(2+5x+3x^2\right)^{7/2}}{8(3+2x)^4} + \frac{35\int \frac{(-14064-16464x}{(3+2}}{921\ldots}$$

$$= -\frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+43x)\left(2+5x+3x^2\right)^{5/2}}{96(3+2x)^3} - \frac{(8+x)(}{8}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

Mathematica [A] time = 0.12, size = 130, normalized size = 0.67

$$\frac{-576513\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 744275\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{12\sqrt{3x^2+5x+2}\left(3456x^7-12864x^6-38288x^5-253688x^4-2869312x^3-9107922x^2-11295211x-4933171\right)}{(2x+3)^4}}{12288}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^5,x]
```

```
[Out] ((-12*Sqrt[2 + 5*x + 3*x^2]*(-4933171 - 11295211*x - 9107922*x^2 - 2869312*
x^3 - 253688*x^4 - 38288*x^5 - 12864*x^6 + 3456*x^7))/(3 + 2*x)^4 - 576513*
Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 744275*Sqrt
[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/12288
```

IntegrateAlgebraic [A] time = 0.93, size = 131, normalized size = 0.67

$$-\frac{744275\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{2048\sqrt{3}} + \frac{192171\sqrt{5}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{2048} + \frac{\sqrt{3x^2+5x+2}\left(-3456x^7+12864x^6+38288x^5+253688x^4+2869312x^3+9107922x^2+11295211x+4933171\right)}{1024(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^5,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(4933171 + 11295211*x + 9107922*x^2 + 2869312*x^3 +
253688*x^4 + 38288*x^5 + 12864*x^6 - 3456*x^7))/(1024*(3 + 2*x)^4) - (74427
5*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(2048*Sqrt[3]) + (19217
1*Sqrt[5]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/2048
```

fricas [A] time = 0.44, size = 203, normalized size = 1.04

$$\frac{744275\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+576513\sqrt{5}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-24\left(3456x^7-12864x^6-38288x^5-253688x^4-2869312x^3-9107922x^2-11295211x-4933171\right)\sqrt{3x^2+5x+2}}{24576\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/24576*(744275*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-4*sqr
t(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 576513*sqrt(5
)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x
+ 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 24*(3456*x^7 -
 12864*x^6 - 38288*x^5 - 253688*x^4 - 2869312*x^3 - 9107922*x^2 - 11295211*
x - 4933171)*sqrt(3*x^2 + 5*x + 2))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81
)
```

giac [B] time = 1.31, size = 636, normalized size = 3.26

$$\frac{744275}{12288}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{192171}{4096}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{4096}\left(\frac{5\left(\frac{50\left(\frac{13\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-88\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+14343\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}-181996\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}-\frac{479709\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^7\mathrm{sgn}\left(\frac{1}{2x+3}\right)-499296\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^6\mathrm{sgn}\left(\frac{1}{2x+3}\right)-3133183\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^5\mathrm{sgn}\left(\frac{1}{2x+3}\right)+3365712\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^4\mathrm{sgn}\left(\frac{1}{2x+3}\right)+7550211\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^3\mathrm{sgn}\left(\frac{1}{2x+3}\right)-8139744\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^2\mathrm{sgn}\left(\frac{1}{2x+3}\right)-6574257\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+6966000\sqrt{5}\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2048\left(\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)^2-3\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] 744275/12288*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)
^2 + 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x
 + 3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) - 192171/4096*sqrt(5)
*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3
)) - 4))*sgn(1/(2*x + 3)) - 1/4096*(5*(50*(13*sgn(1/(2*x + 3))/(2*x + 3) -
88*sgn(1/(2*x + 3)))/(2*x + 3) + 14343*sgn(1/(2*x + 3)))/(2*x + 3) - 181996
*sgn(1/(2*x + 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 1/2048*(479709*
(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^7*sgn(1/(2*x +
 3)) - 499296*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*
x + 3))^6*sgn(1/(2*x + 3)) - 3133183*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
) + sqrt(5)/(2*x + 3))^5*sgn(1/(2*x + 3)) + 3365712*sqrt(5)*(sqrt(-8/(2*x +
 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) + 7550211*
(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x +
 3)) - 8139744*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2
*x + 3))^2*sgn(1/(2*x + 3)) - 6574257*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
3) + sqrt(5)/(2*x + 3))*sgn(1/(2*x + 3)) + 6966000*sqrt(5)*sgn(1/(2*x + 3))
)/((sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^4
```

maple [A] time = 0.06, size = 295, normalized size = 1.51

$$-\frac{192171\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{4096}-\frac{744275\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{12288}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{320\left(x+\frac{3}{2}\right)^4}-\frac{1263\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{4000\left(x+\frac{3}{2}\right)^2}+\frac{3\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{100\left(x+\frac{3}{2}\right)^3}-\frac{1479(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{1000}-\frac{10101(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{4000}+\frac{1479\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{500\left(x+\frac{3}{2}\right)}-\frac{6069(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{1280}-\frac{24409(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{2048}+\frac{192171\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{4096}+\frac{64057\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{2560}+\frac{192171\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{16000}+\frac{27453\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{4000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^5,x)
```

```
[Out] -13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-1263/4000/(x+3/2)^2*(-4*x+3
*(x+3/2)^2-19/4)^(9/2)+3/100/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-1479/1
000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-10101/4000*(6*x+5)*(-4*x+3*(x+3/2
)^2-19/4)^(5/2)+1479/500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-6069/1280*(6
*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-24409/2048*(6*x+5)*(-4*x+3*(x+3/2)^2-19
/4)^(1/2)-192171/4096*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3
/2)^2-19)^(1/2))-744275/12288*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3
/2)^2-19/4)^(1/2))+192171/4096*(-16*x+12*(x+3/2)^2-19)^(1/2)+64057/2560*(-4
*x+3*(x+3/2)^2-19/4)^(3/2)+192171/16000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+27453
/4000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.18, size = 285, normalized size = 1.46

$$\frac{3789}{4000}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{20\left(16x^{4}+96x^{3}+216x^{2}+216x+81\right)}+\frac{6\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{25\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{1263\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{1000\left(4x^{2}+12x+9\right)}-\frac{30303}{2000}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}x-\frac{9849}{16000}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}+\frac{1479\left(3x^{2}+5x+2\right)^{\frac{7}{2}}}{200\left(2x+3\right)}-\frac{18207}{640}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x+\frac{3367}{2560}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{73227}{1024}\sqrt{3x^{2}+5x+2}\,x-\frac{744275}{12288}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right)-\frac{192171}{4096}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{35063}{1024}\sqrt{3x^{2}+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 3789/4000*(3*x^2 + 5*x + 2)^(7/2) - 13/20*(3*x^2 + 5*x + 2)^(9/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) + 6/25*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 1263/1000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 3
0303/2000*(3*x^2 + 5*x + 2)^(5/2)*x - 9849/16000*(3*x^2 + 5*x + 2)^(5/2) +
1479/200*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) - 18207/640*(3*x^2 + 5*x + 2)^(3
/2)*x + 3367/2560*(3*x^2 + 5*x + 2)^(3/2) - 73227/1024*sqrt(3*x^2 + 5*x + 2
)*x - 744275/12288*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) -
 192171/4096*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/a
bs(2*x + 3) - 2) + 35063/1024*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^{2}+5x+2\right)^{7/2}}{(2x+3)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\right)dx-\int\left(-\frac{292x\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\right)dx-\int\left(-\frac{870x^{2}\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\right)dx-\int\left(-\frac{1339x^{3}\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\right)dx-\int\left(-\frac{1090x^{4}\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\right)dx-\int\left(-\frac{396x^{5}\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\right)dx-\int\frac{27x^{7}\sqrt{3x^{2}+5x+2}}{32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*
x**2 + 810*x + 243), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 +
 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-870*x**2*sq
rt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 2
43), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 +
720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-1090*x**4*sqrt(3*x**2 +
 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - I
ntegral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1
080*x**2 + 810*x + 243), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(32*x
**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x)
```

3.2216 $\int \frac{(5-x)(2+5x+3x^2)^{7/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=197

$$-\frac{(5x+27)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^5}+\frac{7(548x+1003)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^4}+\frac{7(33142x+42733)\left(3x^2+5x+2\right)^{3/2}}{7680(2x+3)^3}-\frac{21(2$$

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{(5x+27)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^5}+\frac{7(548x+1003)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^4}+\frac{7(33142x+42733)\left(3x^2+5x+2\right)^{3/2}}{7680(2x+3)^3}-\frac{21(21974x+47145)\sqrt{3x^2+5x+2}}{10240(2x+3)}+\frac{30275\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1024}-\frac{2345091\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{20480\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^6,x]
```

```
[Out] (-21*(47145 + 21974*x)*Sqrt[2 + 5*x + 3*x^2])/(10240*(3 + 2*x)) + (7*(42733
 + 33142*x)*(2 + 5*x + 3*x^2)^(3/2))/(7680*(3 + 2*x)^3) + (7*(1003 + 548*x)
*(2 + 5*x + 3*x^2)^(5/2))/(960*(3 + 2*x)^4) - ((27 + 5*x)*(2 + 5*x + 3*x^2)
^(7/2))/(30*(3 + 2*x)^5) + (30275*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2])])/1024 - (2345091*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 +
5*x + 3*x^2])])/(20480*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^6}\,dx = -\frac{(27+5x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^5}-\frac{7}{120}\int \frac{(-230-274x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^5}\,dx$$

$$= \frac{7(1003+548x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^4}-\frac{(27+5x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^5}+7\int \frac{(-11292-1}{}$$

$$= \frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3}+\frac{7(1003+548x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^4}-(2$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)}+\frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3}+$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)}+\frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3}+$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)}+\frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3}+$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)}+\frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3}+$$

Mathematica [A] time = 0.15, size = 130, normalized size = 0.66

$$\frac{2345091\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+3027500\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(46080x^7-257280x^6+483840x^5+27897856x^4+127665096x^3+242016116x^2+213122626x+72189541\right)}{(2x+3)^5}}{102400}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^6,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(72189541 + 213122626*x + 242016116*x^2 + 12766
5096*x^3 + 27897856*x^4 + 483840*x^5 - 257280*x^6 + 46080*x^7))/(3 + 2*x)^5
 + 2345091*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] +
3027500*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/102400
```

IntegrateAlgebraic [A] time = 1.03, size = 131, normalized size = 0.66

$$\frac{30275}{512}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)-\frac{2345091\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{10240\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-46080x^7+257280x^6-483840x^5-27897856x^4-127665096x^3-242016116x^2-213122626x-72189541\right)}{10240(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^6,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-72189541 - 213122626*x - 242016116*x^2 - 127665096
*x^3 - 27897856*x^4 - 483840*x^5 + 257280*x^6 - 46080*x^7))/(10240*(3 + 2*x
)^5) + (30275*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/512
 - (2345091*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(10240*Sqrt[5
])
```

fricas [A] time = 0.42, size = 219, normalized size = 1.11

$$\frac{3027500\sqrt{3}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+2345091\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-20\left(46080x^7-257280x^6+483840x^5+27897856x^4+127665096x^3+242016116x^2+213122626x+72189541\right)\sqrt{3x^2+5x+2}}{204800\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/204800*(3027500*sqrt(3)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
243)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) +
 2345091*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)*log(
-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2
+ 12*x + 9)) - 20*(46080*x^7 - 257280*x^6 + 483840*x^5 + 27897856*x^4 + 127
665096*x^3 + 242016116*x^2 + 213122626*x + 72189541)*sqrt(3*x^2 + 5*x + 2))
/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.37, size = 417, normalized size = 2.12

$$-\frac{3}{512}\left(2(12x-157)x+2067\right)\sqrt{3x^2+5x+2}-\frac{2345091}{102400}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{30275}{1024}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{60397264\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9+739203704\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^8+11836231432\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^7+36096211012\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^6+207702455456\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+259725515674\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+635418284542\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+326158305587\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+287216072451\sqrt{3}x+36785380096\sqrt{3}-287216072451\sqrt{3x^2+5x+2}}{10240\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -3/512*(2*(12*x - 157)*x + 2067)*sqrt(3*x^2 + 5*x + 2) - 2345091/102400*sqr
t(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2)
)/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) - 30
275/1024*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5
)) - 1/10240*(60397264*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 739203704*sq
rt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 11836231432*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^7 + 36096211012*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^6 + 207702455456*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 259725515674*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 635418284542*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^3 + 326158305587*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^2 + 287216072451*sqrt(3)*x + 36785380096*sqrt(3) - 287216072451*sqrt
(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^5
```

maple [A] time = 0.06, size = 316, normalized size = 1.60

$$\frac{2345091\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{102400}+\frac{30275\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{1024}-\frac{27\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{8000\left(x+\frac{3}{2}\right)^4}+\frac{10023\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{100000\left(x+\frac{3}{2}\right)^2}-\frac{251\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{5000\left(x+\frac{3}{2}\right)^3}+\frac{19059(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{25000}+\frac{122871(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{100000}-\frac{19059\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{12500\left(x+\frac{3}{2}\right)}+\frac{37037(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{16000}+\frac{37233(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{6400}-\frac{2345091\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{102400}-\frac{781697\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{64000}-\frac{2345091\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{400000}-\frac{335013\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{100000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{800\left(x+\frac{3}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^6,x)
```

```
[Out] -27/8000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+10023/100000/(x+3/2)^2*(-4
*x+3*(x+3/2)^2-19/4)^(9/2)-251/5000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

```
+19059/25000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+122871/100000*(6*x+5)*(-
4*x+3*(x+3/2)^2-19/4)^(5/2)-19059/12500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/
2)+37037/16000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+37233/6400*(6*x+5)*(-4
*x+3*(x+3/2)^2-19/4)^(1/2)+2345091/102400*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^
(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+30275/1024*3^(1/2)*ln(1/3*(3*x+5/2)*3^
(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-2345091/102400*(-16*x+12*(x+3/2)^2-19)
^(1/2)-781697/64000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-2345091/400000*(-4*x+3*(x
+3/2)^2-19/4)^(5/2)-335013/100000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/800/(x+3
/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.29, size = 326, normalized size = 1.65

$$-\frac{30069}{100000}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{27\left(3x^2+5x+2\right)^{\frac{9}{2}}}{500\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{251\left(3x^2+5x+2\right)^{\frac{9}{2}}}{625\left(8x^3+36x^2+54x+27\right)}+\frac{10023\left(3x^2+5x+2\right)^{\frac{9}{2}}}{25000\left(4x^2+12x+9\right)}+\frac{368613}{50000}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{112329}{400000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{19059\left(3x^2+5x+2\right)^{\frac{7}{2}}}{5000\,(2x+3)}+\frac{111111}{8000}\left(3x^2+5x+2\right)^{\frac{3}{2}}x-\frac{40957}{64000}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{111699}{3200}\sqrt{3x^2+5x+2}\,x+\frac{30275}{1024}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{2345091}{102400}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2\,|2x+3|}-2\right)-\frac{855771}{51200}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] -30069/100000*(3*x^2 + 5*x + 2)^(7/2) - 13/25*(3*x^2 + 5*x + 2)^(9/2)/(32*x
^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 27/500*(3*x^2 + 5*x + 2)
^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 251/625*(3*x^2 + 5*x + 2)
^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) + 10023/25000*(3*x^2 + 5*x + 2)^(9/2)/(
4*x^2 + 12*x + 9) + 368613/50000*(3*x^2 + 5*x + 2)^(5/2)*x + 112329/400000*
(3*x^2 + 5*x + 2)^(5/2) - 19059/5000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 11
1111/8000*(3*x^2 + 5*x + 2)^(3/2)*x - 40957/64000*(3*x^2 + 5*x + 2)^(3/2) +
 111699/3200*sqrt(3*x^2 + 5*x + 2)*x + 30275/1024*sqrt(3)*log(sqrt(3)*sqrt(
3*x^2 + 5*x + 2) + 3*x + 5/2) + 2345091/102400*sqrt(5)*log(sqrt(5)*sqrt(3*x
^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 855771/51200*sqrt(3*x^
2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{396x^5\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\frac{27x^7\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320
*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-292*x*sqrt(3*x**2 + 5*x +
 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729)
, x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160
*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-1339*x**3*sqr
t(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2
 + 2916*x + 729), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(64*x**6
+ 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integr
al(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*
x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x +
 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729)
, x)
```

3.2217 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=197

$$-\frac{(3x+11)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^6}-\frac{7(1046x+1301)\left(3x^2+5x+2\right)^{5/2}}{1920(2x+3)^5}-\frac{7(31174x+40201)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}+\frac{63(2$$

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{(3x+11)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^6}-\frac{7(1046x+1301)\left(3x^2+5x+2\right)^{5/2}}{1920(2x+3)^5}-\frac{7(31174x+40201)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}+\frac{63(20678x+44365)\sqrt{3x^2+5x+2}}{102400(2x+3)}-\frac{8547\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1024}+\frac{6620481\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{204800\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^7,x]
```

```
[Out] (63*(44365 + 20678*x)*Sqrt[2 + 5*x + 3*x^2])/(102400*(3 + 2*x)) - (7*(40201
 + 31174*x)*(2 + 5*x + 3*x^2)^(3/2))/(25600*(3 + 2*x)^3) - (7*(1301 + 1046*
x)*(2 + 5*x + 3*x^2)^(5/2))/(1920*(3 + 2*x)^5) - ((11 + 3*x)*(2 + 5*x + 3*x
^2)^(7/2))/(12*(3 + 2*x)^6) - (8547*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])])/1024 + (6620481*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2
+ 5*x + 3*x^2])])/(204800*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] && !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^7}\,dx = -\frac{(11+3x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^6} - \frac{7}{96}\int \frac{(-172-204x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx$$

$$= -\frac{7(1301+1046x)\left(2+5x+3x^2\right)^{5/2}}{1920(3+2x)^5} - \frac{(11+3x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^6} + \frac{7\int \frac{(31932+}{}}{}$$

$$= -\frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} - \frac{7(1301+1046x)\left(2+5x+3x^2\right)^{5/2}}{1920(3+2x)^5} - $$

$$= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)} - \frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} - $$

$$= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)} - \frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} - $$

$$= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)} - \frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} - $$

$$= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)} - \frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} - $$

Mathematica [A] time = 0.17, size = 130, normalized size = 0.66

$$\frac{-19861443\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 25641000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{10\sqrt{3x^2+5x+2}\left(2073600x^7-23155200x^6-550079616x^5-2968126160x^4-7425343520x^3-9799959120x^2-6648875480x-1835461379\right)}{(2x+3)^6}}{3072000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^7,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(-1835461379 - 6648875480*x - 9799959120*x^2 -
7425343520*x^3 - 2968126160*x^4 - 550079616*x^5 - 23155200*x^6 + 2073600*x^
7))/(3 + 2*x)^6 - 19861443*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5
```

```
*x + 3*x^2])] - 25641000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2
])])/3072000
```

IntegrateAlgebraic [A] time = 1.01, size = 131, normalized size = 0.66

$$-\frac{8547}{512}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)+\frac{6620481\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{102400\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-2073600x^7+23155200x^6+550079616x^5+2968126160x^4+7425343520x^3+9799959120x^2+6648875480x+1835461379\right)}{307200(2x+3)^6}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^7,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(1835461379 + 6648875480*x + 9799959120*x^2 + 742534
3520*x^3 + 2968126160*x^4 + 550079616*x^5 + 23155200*x^6 - 2073600*x^7))/(3
07200*(3 + 2*x)^6) - (8547*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(
1 + x))])/512 + (6620481*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/
(102400*Sqrt[5])
```

fricas [A] time = 0.45, size = 233, normalized size = 1.18

$$\frac{25641000\sqrt{3}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+19861443\sqrt{5}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\left(2073600x^7-23155200x^6-550079616x^5-2968126160x^4-7425343520x^3-9799959120x^2-6648875480x-1835461379\right)\sqrt{3x^2+5x+2}}{6144000\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/6144000*(25641000*sqrt(3)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*
x^2 + 2916*x + 729)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2
 + 120*x + 49) + 19861443*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 +
 4860*x^2 + 2916*x + 729)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) +
124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(2073600*x^7 - 23155200*x^6
- 550079616*x^5 - 2968126160*x^4 - 7425343520*x^3 - 9799959120*x^2 - 664887
5480*x - 1835461379)*sqrt(3*x^2 + 5*x + 2))/(64*x^6 + 576*x^5 + 2160*x^4 +
4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.39, size = 467, normalized size = 2.37

$$-\frac{9}{512}\sqrt{3x^2+5x+2}(6x-121)+\frac{6620481}{1024000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{8547}{1024}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{\sqrt{3}\left(1761054624\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{11}+78359519088\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{10}+522182992240\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{9}+6180007168800\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{8}+16013156565600\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{7}+85756996584864\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{6}+107556795368496\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{5}+284279833881720\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{4}+172447244925750\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{3}+205883289380025\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{2}+48408731804817\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+15295619190024\right)}{921600\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] -9/512*sqrt(3*x^2 + 5*x + 2)*(6*x - 121) + 6620481/1024000*sqrt(5)*log(abs(
-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt
(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 8547/1024*sqrt(
3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) + 1/921600*
sqrt(3)*(1761054624*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 783595
19088*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 522182992240*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^9 + 6180007168800*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^8 + 16013156565600*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 +
85756996584864*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 107556795368496*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 284279833881720*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^4 + 172447244925750*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^3 + 205883289380025*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 48408
731804817*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 15295619190024)/(2*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2)) + 11)^6
```

maple [B] time = 0.07, size = 337, normalized size = 1.71

$$-\frac{6620481\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1024000}-\frac{8547\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{1024}-\frac{1143\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{80000\left(x+\frac{3}{2}\right)^4}-\frac{63693\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{1000000\left(x+\frac{3}{2}\right)^2}-\frac{459\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{50000\left(x+\frac{3}{2}\right)^3}-\frac{47169(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{250000}-\frac{349461(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{1000000}+\frac{47169\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{125000\left(x+\frac{3}{2}\right)}-\frac{104517(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{160000}-\frac{210231(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{128000}+\frac{6620481\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{1024000}+\frac{2206827\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{640000}+\frac{6620481\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{4000000}+\frac{945783\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{1000000}-\frac{21\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{4000\left(x+\frac{3}{2}\right)^5}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{1920\left(x+\frac{3}{2}\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^7,x)
```

```
[Out] -1143/80000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-63693/1000000/(x+3/2)^2
*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-459/50000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^
(9/2)-47169/250000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-349461/1000000*(6*
x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+47169/125000/(x+3/2)*(-4*x+3*(x+3/2)^2-1
9/4)^(9/2)-104517/160000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-210231/12800
0*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-6620481/1024000*5^(1/2)*arctanh(2/5
*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-8547/1024*3^(1/2)*ln(1/3
*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+6620481/1024000*(-16*x+12
*(x+3/2)^2-19)^(1/2)+2206827/640000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+6620481/4
000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+945783/1000000*(-4*x+3*(x+3/2)^2-19/4)
^(7/2)-21/4000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/1920/(x+3/2)^6*(-
4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.35, size = 372, normalized size = 1.89

$$\frac{191079}{1000000}\left(3x^2+5x+2\right)^{\frac{7}{2}} - \frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{30\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)} - \frac{21\left(3x^2+5x+2\right)^{\frac{9}{2}}}{125\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)} - \frac{1143\left(3x^2+5x+2\right)^{\frac{9}{2}}}{5000\left(16x^4+96x^3+216x^2+216x+81\right)} - \frac{459\left(3x^2+5x+2\right)^{\frac{9}{2}}}{6250\left(8x^3+36x^2+54x+27\right)} - \frac{63693\left(3x^2+5x+2\right)^{\frac{9}{2}}}{250000\left(4x^2+12x+9\right)} - \frac{1048383}{500000}\left(3x^2+5x+2\right)^{\frac{5}{2}}x - \frac{368739}{4000000}\left(3x^2+5x+2\right)^{\frac{5}{2}} + \frac{47169\left(3x^2+5x+2\right)^{\frac{7}{2}}}{50000\left(2x+3\right)} - \frac{313551}{80000}\left(3x^2+5x+2\right)^{\frac{3}{2}}x + \frac{116487}{640000}\left(3x^2+5x+2\right)^{\frac{3}{2}} - \frac{630693}{64000}\sqrt{3x^2+5x+2}\,x - \frac{8547}{1024}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right) - \frac{6620481}{1024000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right) + \frac{2415861}{512000}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 191079/1000000*(3*x^2 + 5*x + 2)^(7/2) - 13/30*(3*x^2 + 5*x + 2)^(9/2)/(64*
x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 21/125*(3*
x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
- 1143/5000*(3*x^2 + 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81
) - 459/6250*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 63693/2
50000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 1048383/500000*(3*x^2 +
5*x + 2)^(5/2)*x - 368739/4000000*(3*x^2 + 5*x + 2)^(5/2) + 47169/50000*(3*
x^2 + 5*x + 2)^(7/2)/(2*x + 3) - 313551/80000*(3*x^2 + 5*x + 2)^(3/2)*x + 1
16487/640000*(3*x^2 + 5*x + 2)^(3/2) - 630693/64000*sqrt(3*x^2 + 5*x + 2)*x
 - 8547/1024*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 66204
81/1024000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs
(2*x + 3) - 2) + 2415861/512000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx - \int\left(-\frac{292x\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx - \int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx - \int\left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx - \int\left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx - \int\left(-\frac{396x^5\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx - \int\frac{27x^7\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15
120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-292*x*
sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 226
80*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-870*x**2*sqrt(3*x**2
 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 2
```

```
0412*x**2 + 10206*x + 2187), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2
)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2
+ 10206*x + 2187), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(128*x**
7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x
+ 2187), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x*
*6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x)
 - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**
5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x)
```

3.2218 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=197

$$\frac{(266x+269)\left(3x^2+5x+2\right)^{7/2}}{280(2x+3)^7}+\frac{3(106x+135)\left(3x^2+5x+2\right)^{5/2}}{640(2x+3)^5}+\frac{(30858x+39767)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}-3(61278$$

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{(266x+269)\left(3x^2+5x+2\right)^{7/2}}{280(2x+3)^7}+\frac{3(106x+135)\left(3x^2+5x+2\right)^{5/2}}{640(2x+3)^5}+\frac{(30858x+39767)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}-\frac{3(61278x+131465)\sqrt{3x^2+5x+2}}{102400(2x+3)}+\frac{603}{512}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)-\frac{934161\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{204800\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8,x]
```

```
[Out] (-3*(131465 + 61278*x)*Sqrt[2 + 5*x + 3*x^2])/(102400*(3 + 2*x)) + ((39767
+ 30858*x)*(2 + 5*x + 3*x^2)^(3/2))/(25600*(3 + 2*x)^3) + (3*(135 + 106*x)*
(2 + 5*x + 3*x^2)^(5/2))/(640*(3 + 2*x)^5) + ((269 + 266*x)*(2 + 5*x + 3*x^
2)^(7/2))/(280*(3 + 2*x)^7) + (603*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqr
t[2 + 5*x + 3*x^2])])/512 - (934161*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5
*x + 3*x^2])])/(204800*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^8}\,dx = \frac{(269+266x)\left(2+5x+3x^2\right)^{7/2}}{280(3+2x)^7} - \frac{1}{240}\int \frac{(513+522x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx$$

$$= \frac{3(135+106x)\left(2+5x+3x^2\right)^{5/2}}{640(3+2x)^5} + \frac{(269+266x)\left(2+5x+3x^2\right)^{7/2}}{280(3+2x)^7} + \int \frac{(-782}{}$$

$$= \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} + \frac{3(135+106x)\left(2+5x+3x^2\right)^{5/2}}{640(3+2x)^5} + \frac{(2}{}$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}$$

Mathematica [A] time = 0.18, size = 130, normalized size = 0.66

$$\frac{6539127\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+8442000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(9676800x^7+338443008x^6+2361590432x^5+7622049520x^4+13619671040x^3+13975079520x^2+7753535702x+1810375853\right)}{(2x+3)^7}}{7168000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(1810375853 + 7753535702*x + 13975079520*x^2 +
13619671040*x^3 + 7622049520*x^4 + 2361590432*x^5 + 338443008*x^6 + 9676800
*x^7))/(3 + 2*x)^7 + 6539127*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 +
```

5*x + 3*x^2])] + 8442000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^
2])])/7168000

IntegrateAlgebraic [A] time = 0.97, size = 131, normalized size = 0.66

$$\frac{603}{256}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)-\frac{934161\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{102400\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-9676800x^7-338443008x^6-2361590432x^5-7622049520x^4-13619671040x^3-13975079520x^2-7753535702x-1810375853\right)}{716800(2x+3)^7}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-1810375853 - 7753535702*x - 13975079520*x^2 - 1361
9671040*x^3 - 7622049520*x^4 - 2361590432*x^5 - 338443008*x^6 - 9676800*x^7
))/(716800*(3 + 2*x)^7) + (603*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[
3]*(1 + x))])/256 - (934161*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))
])/(102400*Sqrt[5])
```

fricas [A] time = 0.44, size = 249, normalized size = 1.26

$$\frac{8442000\sqrt{3}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+6539127\sqrt{5}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)-20\left(9676800x^7+338443008x^6+2361590432x^5+7622049520x^4+13619671040x^3+13975079520x^2+7753535702x+1810375853\right)\sqrt{3x^2+5x+2}}{14336000\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/14336000*(8442000*sqrt(3)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22
680*x^3 + 20412*x^2 + 10206*x + 2187)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(
6*x + 5) + 72*x^2 + 120*x + 49) + 6539127*sqrt(5)*(128*x^7 + 1344*x^6 + 604
8*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187)*log(-(4*sqrt(5)
*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)
) - 20*(9676800*x^7 + 338443008*x^6 + 2361590432*x^5 + 7622049520*x^4 + 136
19671040*x^3 + 13975079520*x^2 + 7753535702*x + 1810375853)*sqrt(3*x^2 + 5*
x + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2
+ 10206*x + 2187)
```

giac [B] time = 0.41, size = 509, normalized size = 2.58

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] -934161/1024000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sq
rt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))) - 603/512*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5)) - 27/256*sqrt(3*x^2 + 5*x + 2) - 1/716800*(2310353472*(s
qrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 39459777504*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^12 + 930047331808*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^1
1 + 4439192854544*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 42996771
835920*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 98991221694624*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 500967391220544*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^7 + 626374342937616*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^6 + 1740466332835804*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 1179088946690
970*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 1703610278292706*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 552456024942507*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^2 + 324453464706399*sqrt(3)*x + 28970271150072*sqrt(3) -
 324453464706399*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^7
```

maple [B] time = 0.08, size = 358, normalized size = 1.82

$$\frac{934161\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1024000}+\frac{603\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{512}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{4480\left(x+\frac{3}{2}\right)^7}-\frac{4719\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{560000\left(x+\frac{3}{2}\right)^4}-\frac{15267\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{1000000\left(x+\frac{3}{2}\right)^2}-\frac{5147\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{350000\left(x+\frac{3}{2}\right)^3}+\frac{78423(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{1750000}+\frac{47541(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{1000000}-\frac{78423\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{875000\left(x+\frac{3}{2}\right)}+\frac{14777(6x+5)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{160000}+\frac{29661(6x+5)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{128000}-\frac{934161\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}{1024000}-\frac{311387\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{640000}-\frac{934161\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{4000000}-\frac{934161\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{7000000}-\frac{3\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{500\left(x+\frac{3}{2}\right)^5}-\frac{3\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{9}{2}}}{896\left(x+\frac{3}{2}\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^8,x)
```

```
[Out] -13/4480/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-4719/560000/(x+3/2)^4*(-4*
x+3*(x+3/2)^2-19/4)^(9/2)-15267/1000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(
9/2)-5147/350000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+78423/1750000*(6*x
+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+47541/1000000*(6*x+5)*(-4*x+3*(x+3/2)^2-1
9/4)^(5/2)-78423/875000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+14777/160000*
(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+29661/128000*(6*x+5)*(-4*x+3*(x+3/2)^
2-19/4)^(1/2)+934161/1024000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+
12*(x+3/2)^2-19)^(1/2))+603/512*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x
+3/2)^2-19/4)^(1/2))-934161/1024000*(-16*x+12*(x+3/2)^2-19)^(1/2)-311387/64
0000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-934161/4000000*(-4*x+3*(x+3/2)^2-19/4)^(
5/2)-934161/7000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-3/500/(x+3/2)^5*(-4*x+3*(
x+3/2)^2-19/4)^(9/2)-3/896/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.63, size = 423, normalized size = 2.15

$$\frac{45801}{1000000}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{35\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}-\frac{3\left(3x^2+5x+2\right)^{\frac{9}{2}}}{14\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{24\left(3x^2+5x+2\right)^{\frac{9}{2}}}{125\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{4719\left(3x^2+5x+2\right)^{\frac{9}{2}}}{35000\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{5147\left(3x^2+5x+2\right)^{\frac{9}{2}}}{43750\left(8x^3+36x^2+54x+27\right)}-\frac{15267\left(3x^2+5x+2\right)^{\frac{9}{2}}}{250000\left(4x^2+12x+9\right)}+\frac{142623}{500000}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{16659}{4000000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{78423\left(3x^2+5x+2\right)^{\frac{7}{2}}}{350000\,(2x+3)}+\frac{44331}{80000}\left(3x^2+5x+2\right)^{\frac{3}{2}}x-\frac{15847}{640000}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{88983}{64000}\sqrt{3x^2+5x+2}\,x+\frac{603}{512}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{934161}{1024000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{340941}{512000}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 45801/1000000*(3*x^2 + 5*x + 2)^(7/2) - 13/35*(3*x^2 + 5*x + 2)^(9/2)/(128*
x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2
187) - 3/14*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3
 + 4860*x^2 + 2916*x + 729) - 24/125*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*
x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 4719/35000*(3*x^2 + 5*x + 2)^(9/2
)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 5147/43750*(3*x^2 + 5*x + 2)^(
9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 15267/250000*(3*x^2 + 5*x + 2)^(9/2)/(4
*x^2 + 12*x + 9) + 142623/500000*(3*x^2 + 5*x + 2)^(5/2)*x + 16659/4000000*
(3*x^2 + 5*x + 2)^(5/2) - 78423/350000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) +
44331/80000*(3*x^2 + 5*x + 2)^(3/2)*x - 15847/640000*(3*x^2 + 5*x + 2)^(3/2
) + 88983/64000*sqrt(3*x^2 + 5*x + 2)*x + 603/512*sqrt(3)*log(sqrt(3)*sqrt(
3*x^2 + 5*x + 2) + 3*x + 5/2) + 934161/1024000*sqrt(5)*log(sqrt(5)*sqrt(3*x
^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 340941/512000*sqrt(3*x
^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^8,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\frac{396x^5\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\frac{27x^7\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**8,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-292*x*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 +
```

```
48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) -
Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**
6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x
) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 1612
8*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 656
1), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 +
 16128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x
+ 6561), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x*
*7 + 16128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 3499
2*x + 6561), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*
x**7 + 16128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34
992*x + 6561), x)
```

3.2219 $\int \frac{(5-x)(2+5x+3x^2)^{7/2}}{(3+2x)^9} \, dx$

Optimal. Leaf size=197

$$\frac{(808x+757)\left(3x^2+5x+2\right)^{7/2}}{1120(2x+3)^8}+\frac{(664x+881)\left(3x^2+5x+2\right)^{5/2}}{6400(2x+3)^6}+\frac{(17096x+20959)\left(3x^2+5x+2\right)^{3/2}}{102400(2x+3)^4}+\frac{3(434$$

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {810, 843, 621, 206, 724}

$$\frac{(808x+757)\left(3x^2+5x+2\right)^{7/2}}{1120(2x+3)^8}+\frac{(664x+881)\left(3x^2+5x+2\right)^{5/2}}{6400(2x+3)^6}+\frac{(17096x+20959)\left(3x^2+5x+2\right)^{3/2}}{102400(2x+3)^4}+\frac{3(434104x+559841)\sqrt{3x^2+5x+2}}{4096000(2x+3)^2}-\frac{27}{512}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{1673211\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8192000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9,x]
```

```
[Out] (3*(559841 + 434104*x)*Sqrt[2 + 5*x + 3*x^2])/(4096000*(3 + 2*x)^2) + ((209
59 + 17096*x)*(2 + 5*x + 3*x^2)^(3/2))/(102400*(3 + 2*x)^4) + ((881 + 664*x
)*(2 + 5*x + 3*x^2)^(5/2))/(6400*(3 + 2*x)^6) + ((757 + 808*x)*(2 + 5*x + 3
*x^2)^(7/2))/(1120*(3 + 2*x)^8) - (27*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*
Sqrt[2 + 5*x + 3*x^2])])/512 + (1673211*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2
 + 5*x + 3*x^2])])/(8192000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] && !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9}\,dx = \frac{(757+808x)\left(2+5x+3x^2\right)^{7/2}}{1120(3+2x)^8} - \frac{1}{320}\int \frac{(291+240x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$$

$$= \frac{(881+664x)\left(2+5x+3x^2\right)^{5/2}}{6400(3+2x)^6} + \frac{(757+808x)\left(2+5x+3x^2\right)^{7/2}}{1120(3+2x)^8} + \int \frac{(-36690-4}{}$$

$$= \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} + \frac{(881+664x)\left(2+5x+3x^2\right)^{5/2}}{6400(3+2x)^6} + \frac{(757}{}$$

$$= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} +$$

$$= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} +$$

$$= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} +$$

$$= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} +$$

Mathematica [A] time = 0.19, size = 130, normalized size = 0.66

$$\frac{-11712477\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 15120000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) + \frac{10\sqrt{3x^2+5x+2}\left(1478785536x^7+12182619328x^6+45214440256x^5+97176896240x^4+129405924160x^3+105874603844x^2+48950756372x+9818427389\right)}{(2x+3)^8}}{286720000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9,x]
```

```
[Out] ((10*Sqrt[2 + 5*x + 3*x^2]*(9818427389 + 48950756372*x + 105874603844*x^2 +
 129405924160*x^3 + 97176896240*x^4 + 45214440256*x^5 + 12182619328*x^6 + 1
478785536*x^7))/(3 + 2*x)^8 - 11712477*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5
]*Sqrt[2 + 5*x + 3*x^2])] - 15120000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/286720000
```

IntegrateAlgebraic [A] time = 0.99, size = 131, normalized size = 0.66

$$-\frac{27}{256}\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right) + \frac{1673211\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{4096000\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\left(1478785536x^7+12182619328x^6+45214440256x^5+97176896240x^4+129405924160x^3+105874603844x^2+48950756372x+9818427389\right)}{28672000(2x+3)^8}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(9818427389 + 48950756372*x + 105874603844*x^2 + 129
405924160*x^3 + 97176896240*x^4 + 45214440256*x^5 + 12182619328*x^6 + 14787
85536*x^7))/(28672000*(3 + 2*x)^8) - (27*Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x
```

```
^2]/(Sqrt[3]*(1 + x))])/256 + (1673211*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[
5]*(1 + x))])/(4096000*Sqrt[5])
```

fricas [A] time = 0.45, size = 263, normalized size = 1.34

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/573440000*(15120000*sqrt(3)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 +
 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log(-4*sqrt(3)*sqrt(3
*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 11712477*sqrt(5)*(256*x^
8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 +
 34992*x + 6561)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 +
 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(1478785536*x^7 + 12182619328*x^6 + 4
5214440256*x^5 + 97176896240*x^4 + 129405924160*x^3 + 105874603844*x^2 + 48
950756372*x + 9818427389)*sqrt(3*x^2 + 5*x + 2))/(256*x^8 + 3072*x^7 + 1612
8*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)
```

giac [B] time = 0.51, size = 546, normalized size = 2.77

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] 1673211/40960000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*s
qrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x
^2 + 5*x + 2))) + 27/512*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5)) + 1/28672000*(25982914944*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^15 + 475461282240*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 + 12
329944383680*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 66497191380480*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 + 747738478510240*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^11 + 2056338758898032*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^10 + 12823219634258640*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 2
0470141041874560*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 7577479745
7107080*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 72179382871515780*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 157788604924552196*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^5 + 86325470670757920*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^4 + 102935771527447390*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 28
057073003987265*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 14067886443
441495*sqrt(3)*x + 1086949713645432*sqrt(3) - 14067886443441495*sqrt(3*x^2
+ 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2)) + 11)^8
```

maple [B] time = 0.08, size = 379, normalized size = 1.92

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^9,x)
```

```
[Out] -13/10240/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-81/44800/(x+3/2)^7*(-4*x+
3*(x+3/2)^2-19/4)^(9/2)-158331/22400000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(
9/2)-664383/40000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-150503/1400000
0/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+767427/70000000*(6*x+5)*(-4*x+3*(
x+3/2)^2-19/4)^(7/2)-135591/40000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-
767427/35000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-25627/6400000*(6*x+5)
```

```
*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-53211/5120000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4
)^(1/2)-1673211/40960000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(
x+3/2)^2-19)^(1/2))-27/512*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)
^2-19/4)^(1/2))+1673211/40960000*(-16*x+12*(x+3/2)^2-19)^(1/2)+557737/25600
000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1673211/160000000*(-4*x+3*(x+3/2)^2-19/4)
^(5/2)+1673211/280000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-363/80000/(x+3/2)^5*
(-4*x+3*(x+3/2)^2-19/4)^(9/2)-523/179200/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^
(9/2)
```

maxima [B] time = 1.64, size = 479, normalized size = 2.43

$$\frac{1993149}{40000000}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{40\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)}-\frac{81\left(3x^2+5x+2\right)^{\frac{9}{2}}}{350\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}-\frac{523\left(3x^2+5x+2\right)^{\frac{9}{2}}}{2800\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{363\left(3x^2+5x+2\right)^{\frac{9}{2}}}{2500\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{158331\left(3x^2+5x+2\right)^{\frac{9}{2}}}{1400000\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{150503\left(3x^2+5x+2\right)^{\frac{9}{2}}}{1750000\left(8x^3+36x^2+54x+27\right)}-\frac{664383\left(3x^2+5x+2\right)^{\frac{9}{2}}}{10000000\left(4x^2+12x+9\right)}-\frac{406773}{20000000}\left(3x^2+5x+2\right)^{\frac{5}{2}}x-\frac{1038609}{160000000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{767427\left(3x^2+5x+2\right)^{\frac{7}{2}}}{14000000\left(2x+3\right)}-\frac{76881}{3200000}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{45197}{25600000}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{159633}{2560000}\sqrt{3x^2+5x+2}\,x-\frac{27}{512}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{1673211}{40960000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{608991}{20480000}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 1993149/40000000*(3*x^2 + 5*x + 2)^(7/2) - 13/40*(3*x^2 + 5*x + 2)^(9/2)/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561) - 81/350*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 + 1344*x^6
+ 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 523/2800
*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
 + 2916*x + 729) - 363/2500*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 + 720
*x^3 + 1080*x^2 + 810*x + 243) - 158331/1400000*(3*x^2 + 5*x + 2)^(9/2)/(16
*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 150503/1750000*(3*x^2 + 5*x + 2)^(9
/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 664383/10000000*(3*x^2 + 5*x + 2)^(9/2)/
(4*x^2 + 12*x + 9) - 406773/20000000*(3*x^2 + 5*x + 2)^(5/2)*x - 1038609/16
0000000*(3*x^2 + 5*x + 2)^(5/2) - 767427/14000000*(3*x^2 + 5*x + 2)^(7/2)/(
2*x + 3) - 76881/3200000*(3*x^2 + 5*x + 2)^(3/2)*x + 45197/25600000*(3*x^2
+ 5*x + 2)^(3/2) - 159633/2560000*sqrt(3*x^2 + 5*x + 2)*x - 27/512*sqrt(3)*
log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 1673211/40960000*sqrt(5)*l
og(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 608
991/20480000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^9,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{1339x^3\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{1090x^4\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\left(-\frac{396x^5\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\right)dx-\int\frac{27x^7\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**9,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 1
45152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098
*x + 19683), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x
**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 +
314928*x**2 + 118098*x + 19683), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x
+ 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 48988
8*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(-1339
*x**3*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x*
```

```
*6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 196
83), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8
+ 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 3149
28*x**2 + 118098*x + 19683), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)
/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x*
*4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(27*x**7*s
qrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 32
6592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x)
```

3.2220 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx$

Optimal. Leaf size=184

$$-\frac{13\left(3x^2+5x+2\right)^{9/2}}{45(2x+3)^9}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8}-\frac{329(8x+7)\left(3x^2+5x+2\right)^{5/2}}{96000(2x+3)^6}+\frac{329(8x+7)\left(3x^2+5x+2\right)}{1536000(2x+3)^4}$$

Rubi [A] time = 0.10, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{9/2}}{45(2x+3)^9}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8}-\frac{329(8x+7)\left(3x^2+5x+2\right)^{5/2}}{96000(2x+3)^6}+\frac{329(8x+7)\left(3x^2+5x+2\right)^{3/2}}{1536000(2x+3)^4}-\frac{329(8x+7)\sqrt{3x^2+5x+2}}{20480000(2x+3)^2}+\frac{329\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40960000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^10,x]
```

```
[Out] (-329*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20480000*(3 + 2*x)^2) + (329*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(1536000*(3 + 2*x)^4) - (329*(7 + 8*x)*(2 + 5*
x + 3*x^2)^(5/2))/(96000*(3 + 2*x)^6) + (47*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/
2))/(800*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(45*(3 + 2*x)^9) + (32
9*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40960000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{9/2}}{45(3+2x)^9} + \frac{47}{10}\int \frac{\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9}\,dx$$

$$= \frac{47(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800(3+2x)^8} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{45(3+2x)^9} - \frac{329\int \frac{\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}dx}{1600}$$

$$= -\frac{329(7+8x)\left(2+5x+3x^2\right)^{5/2}}{96000(3+2x)^6} + \frac{47(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800(3+2x)^8} - \frac{13\left(2+5x \cdots\right.}{45(3 \cdots}$$

$$= \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x)\left(2+5x+3x^2\right)^{5/2}}{96000(3+2x)^6} + \frac{47(7+8x \cdots}{80 \cdots}$$

$$= -\frac{329(7+8x)\sqrt{2+5x+3x^2}}{20480000(3+2x)^2} + \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x \cdots}{960 \cdots}$$

$$= -\frac{329(7+8x)\sqrt{2+5x+3x^2}}{20480000(3+2x)^2} + \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x \cdots}{960 \cdots}$$

$$= -\frac{329(7+8x)\sqrt{2+5x+3x^2}}{20480000(3+2x)^2} + \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x \cdots}{960 \cdots}$$

Mathematica [A] time = 0.14, size = 185, normalized size = 1.01

$$-\frac{13\left(3x^2+5x+2\right)^{9/2}}{45(2x+3)^9} + \frac{47(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8} - \frac{329\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6} - \frac{2(8x+7)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4} + \frac{3(8x+7)\sqrt{3x^2+5x+2}}{20(2x+3)^2} + \frac{3\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40\sqrt{5}}\right)}{3072000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^10,x]
```

```
[Out] (47*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/2))/(800*(3 + 2*x)^8) - (13*(2 + 5*x + 3
*x^2)^(9/2))/(45*(3 + 2*x)^9) - (329*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(
20*(3 + 2*x)^2) - (2*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(
7 + 8*x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40*Sqrt[5])))/3072000
```

IntegrateAlgebraic [A] time = 0.86, size = 101, normalized size = 0.55

$$\frac{329\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{20480000\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\left(28394496x^8+2848109952x^7+15895201728x^6+38558367264x^5+51825176720x^4+41530110824x^3+19810691268x^2+5201574542x+578701331\right)}{184320000(2x+3)^9}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^10,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(578701331 + 5201574542*x + 19810691268*x^2 + 415301
10824*x^3 + 51825176720*x^4 + 38558367264*x^5 + 15895201728*x^6 + 284810995
2*x^7 + 28394496*x^8))/(184320000*(3 + 2*x)^9) + (329*ArcTanh[Sqrt[2 + 5*x
+ 3*x^2]/(Sqrt[5]*(1 + x))])/(20480000*Sqrt[5])
```

fricas [A] time = 0.43, size = 200, normalized size = 1.09

$$\frac{2961\sqrt{5}\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+20\left(28394496x^8+2848109952x^7+15895201728x^6+38558367264x^5+51825176720x^4+41530110824x^3+19810691268x^2+5201574542x+578701331\right)\sqrt{3x^2+5x+2}}{3686400000\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+19683\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^10,x, algorithm="fricas")
```

```
[Out] 1/3686400000*(2961*sqrt(5)*(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 3
26592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)*log((4
*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 1
2*x + 9)) + 20*(28394496*x^8 + 2848109952*x^7 + 15895201728*x^6 + 385583672
64*x^5 + 51825176720*x^4 + 41530110824*x^3 + 19810691268*x^2 + 5201574542*x
 + 578701331)*sqrt(3*x^2 + 5*x + 2))/(512*x^9 + 6912*x^8 + 41472*x^7 + 1451
52*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 196
83)
```

giac [B] time = 0.38, size = 563, normalized size = 3.06

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^10,x, algorithm="giac")
```

```
[Out] 329/204800000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt
(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))) - 1/184320000*(14930678016*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^17 + 204061569408*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16 + 3866707
486848*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 + 14840812733760*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^14 + 114102022608000*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^13 + 198779998219488*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^12 + 649357338634272*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 207317438
979984*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 2217334591351040*(s
qrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 - 5247913396815000*sqrt(3)*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^8 - 20151247122371016*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^7 - 17924557725783828*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6
- 35125577732048328*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 169531618535930
70*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 17752204726475250*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 4253745315948057*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^2 - 1882391465118753*sqrt(3)*x - 129047626217736*sqrt(3
) + 1882391465118753*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^9
```

maple [B] time = 0.11, size = 369, normalized size = 2.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^10,x)
```

```
[Out] -47/51200/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-47/32000/(x+3/2)^7*(-4*x+
3*(x+3/2)^2-19/4)^(9/2)-90287/16000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9
/2)-2621237/200000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-259393/300000
00/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+491479/50000000*(6*x+5)*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)-191149/200000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2
)-491479/25000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+9541/96000000*(6*x+
5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-329/25600000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/
4)^(1/2)-329/204800000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+
3/2)^2-19)^(1/2))+329/204800000*(-16*x+12*(x+3/2)^2-19)^(1/2)+329/384000000
*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+329/800000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+
47/200000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1457/400000/(x+3/2)^5*(-4*x+3*(x
+3/2)^2-19/4)^(9/2)-893/384000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/2
3040/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.40, size = 513, normalized size = 2.79

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^10,x, algorithm="maxima")
```

```
[Out] 7863711/200000000*(3*x^2 + 5*x + 2)^(7/2) - 13/45*(3*x^2 + 5*x + 2)^(9/2)/(
512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489
888*x^3 + 314928*x^2 + 118098*x + 19683) - 47/200*(3*x^2 + 5*x + 2)^(9/2)/(
256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648
*x^2 + 34992*x + 6561) - 47/250*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 + 1344*x^6
 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 893/600
0*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^
2 + 2916*x + 729) - 1457/12500*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 +
720*x^3 + 1080*x^2 + 810*x + 243) - 90287/1000000*(3*x^2 + 5*x + 2)^(9/2)/(
16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 259393/3750000*(3*x^2 + 5*x + 2)^
(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 2621237/50000000*(3*x^2 + 5*x + 2)^(9/
2)/(4*x^2 + 12*x + 9) - 573447/100000000*(3*x^2 + 5*x + 2)^(5/2)*x - 382265
1/800000000*(3*x^2 + 5*x + 2)^(5/2) - 491479/10000000*(3*x^2 + 5*x + 2)^(7/
2)/(2*x + 3) + 9541/16000000*(3*x^2 + 5*x + 2)^(3/2)*x + 191149/384000000*(
3*x^2 + 5*x + 2)^(3/2) - 987/12800000*sqrt(3*x^2 + 5*x + 2)*x - 329/2048000
00*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3
) - 2) - 6251/102400000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^10,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^10, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**10,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8
 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3
+ 1180980*x**2 + 393660*x + 59049), x) - Integral(-292*x*sqrt(3*x**2 + 5*x
+ 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 +
1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 5904
9), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9
 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 +
 2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - Integral(-1339*x**3*
sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7
 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2
 + 393660*x + 59049), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(1024
*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x*
*5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - I
ntegral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*
x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x
**3 + 1180980*x**2 + 393660*x + 59049), x) - Integral(27*x**7*sqrt(3*x**2 +
 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x*
*6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x +
 59049), x)
```

3.2221 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx$

Optimal. Leaf size=209

$$-\frac{29\left(3x^2+5x+2\right)^{9/2}}{125(2x+3)^9}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{50(2x+3)^{10}}+\frac{1893(8x+7)\left(3x^2+5x+2\right)^{7/2}}{40000(2x+3)^8}-\frac{4417(8x+7)\left(3x^2+5x+2\right)^{5/2}}{1600000(2x+3)^6}+4$$

Rubi [A] time = 0.12, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{29\left(3x^2+5x+2\right)^{9/2}}{125(2x+3)^9}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{50(2x+3)^{10}}+\frac{1893(8x+7)\left(3x^2+5x+2\right)^{7/2}}{40000(2x+3)^8}-\frac{4417(8x+7)\left(3x^2+5x+2\right)^{5/2}}{1600000(2x+3)^6}+\frac{4417(8x+7)\left(3x^2+5x+2\right)^{3/2}}{25600000(2x+3)^4}-\frac{13251(8x+7)\sqrt{3x^2+5x+2}}{1024000000(2x+3)^2}+\frac{13251\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2048000000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^11,x]
```

```
[Out] (-13251*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(1024000000*(3 + 2*x)^2) + (4417*(
7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(25600000*(3 + 2*x)^4) - (4417*(7 + 8*x)*
(2 + 5*x + 3*x^2)^(5/2))/(1600000*(3 + 2*x)^6) + (1893*(7 + 8*x)*(2 + 5*x +
 3*x^2)^(7/2))/(40000*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(50*(3 +
2*x)^10) - (29*(2 + 5*x + 3*x^2)^(9/2))/(125*(3 + 2*x)^9) + (13251*ArcTanh[
(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(2048000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{9/2}}{50(3+2x)^{10}} - \frac{1}{50}\int \frac{\left(-\frac{405}{2}+39x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{50(3+2x)^{10}} - \frac{29\left(2+5x+3x^2\right)^{9/2}}{125(3+2x)^9} + \frac{1893}{500}\int \frac{\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9}\,d$$

$$= \frac{1893(7+8x)\left(2+5x+3x^2\right)^{7/2}}{40000(3+2x)^8} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{50(3+2x)^{10}} - \frac{29\left(2+5x+3x^2\right)^{9/}}{125(3+2x)^9}$$

$$= -\frac{4417(7+8x)\left(2+5x+3x^2\right)^{5/2}}{1600000(3+2x)^6} + \frac{1893(7+8x)\left(2+5x+3x^2\right)^{7/2}}{40000(3+2x)^8} - \frac{13\left(2+\right.}{50}$$

$$= \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^4} - \frac{4417(7+8x)\left(2+5x+3x^2\right)^{5/2}}{1600000(3+2x)^6} + \frac{1893(7}{4}$$

$$= -\frac{13251(7+8x)\sqrt{2+5x+3x^2}}{1024000000(3+2x)^2} + \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^4} - \frac{4417(7}{16}$$

$$= -\frac{13251(7+8x)\sqrt{2+5x+3x^2}}{1024000000(3+2x)^2} + \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^4} - \frac{4417(7}{16}$$

$$= -\frac{13251(7+8x)\sqrt{2+5x+3x^2}}{1024000000(3+2x)^2} + \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^4} - \frac{4417(7}{16}$$

Mathematica [A] time = 0.16, size = 212, normalized size = 1.01

$$\frac{1}{50}\left(-\frac{58\left(3x^2+5x+2\right)^{9/2}}{5(2x+3)^9} - \frac{13\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{10}} + \frac{1893(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8} - \frac{4417\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6} - \frac{2(8x+7)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4} + \frac{3(8x+7)\sqrt{3x^2+5x+2}}{20(2x+3)^2} + \frac{3\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40\sqrt{5}}\right)}{1024000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^11,x]
```

```
[Out] ((1893*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/2))/(800*(3 + 2*x)^8) - (13*(2 + 5*x
+ 3*x^2)^(9/2))/(3 + 2*x)^10 - (58*(2 + 5*x + 3*x^2)^(9/2))/(5*(3 + 2*x)^9)
 - (4417*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)^2) - (2*(7 + 8*
x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(7 + 8*x)*(2 + 5*x + 3*x^2)^(
5/2))/(3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])
])/(40*Sqrt[5])))/1024000)/50
```

IntegrateAlgebraic [A] time = 0.94, size = 106, normalized size = 0.51

$$\frac{13251\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{1024000000\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\left(371791872x^9+5268182272x^8+40186580992x^7+148740043392x^6+304078211712x^5+372602220928x^4+281702072128x^3+128970753208x^2+32786922608x+3544392763\right)}{1024000000(2x+3)^{10}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^11,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(3544392763 + 32786922608*x + 128970753208*x^2 + 281
702072128*x^3 + 372602220928*x^4 + 304078211712*x^5 + 148740043392*x^6 + 40
186580992*x^7 + 5268182272*x^8 + 371791872*x^9))/(1024000000*(3 + 2*x)^10)
+ (13251*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(1024000000*Sqrt
[5])
```

fricas [A] time = 0.44, size = 215, normalized size = 1.03

$$\frac{13251\,\sqrt{5}\left(1024\,x^{10}+15360\,x^{9}+103680\,x^{8}+414720\,x^{7}+1088640\,x^{6}+1959552\,x^{5}+2449440\,x^{4}+2099520\,x^{3}+1180980\,x^{2}+393660\,x+59049\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}\,(8\,x+7)+124\,x^{2}+212\,x+89}{4\,x^{2}+12\,x+9}\right)+20\left(371791872\,x^{9}+5268182272\,x^{8}+40186580992\,x^{7}+148740043392\,x^{6}+304078211712\,x^{5}+372602220928\,x^{4}+281702072128\,x^{3}+128970753208\,x^{2}+32786922608\,x+3544392763\right)\sqrt{3\,x^{2}+5\,x+2}}{20480000000\left(1024\,x^{10}+15360\,x^{9}+103680\,x^{8}+414720\,x^{7}+1088640\,x^{6}+1959552\,x^{5}+2449440\,x^{4}+2099520\,x^{3}+1180980\,x^{2}+393660\,x+59049\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^11,x, algorithm="fricas")
```

```
[Out] 1/20480000000*(13251*sqrt(5)*(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x
^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 +
393660*x + 59049)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2
+ 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(371791872*x^9 + 5268182272*x^8 + 40
186580992*x^7 + 148740043392*x^6 + 304078211712*x^5 + 372602220928*x^4 + 28
1702072128*x^3 + 128970753208*x^2 + 32786922608*x + 3544392763)*sqrt(3*x^2
+ 5*x + 2))/(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 1088640*x^6
+ 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*x + 59049)
```

giac [B] time = 0.41, size = 614, normalized size = 2.94

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^11,x, algorithm="giac")
```

```
[Out] 13251/10240000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*
sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))) - 1/1024000000*(6784512*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
)^19 + 83137358592*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^18 + 2689605
043456*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^17 + 9174489217536*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^16 - 53080570863872*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^15 - 898783135722624*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
)^14 - 13174687008250752*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 - 405071727
95248512*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 - 27016959672711001
6*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 - 458790099197766656*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 1833183533173743552*(sqrt(3)*x - sqrt(3
*x^2 + 5*x + 2))^9 - 1939024456450048032*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^8 - 4903074367120921776*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 3
280073192617110456*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 - 51648562
11259534888*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 2082844158764403144*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 1869656136275991262*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^3 - 391066159205340747*sqrt(3)*(sqrt(3)*x - sqrt(
3*x^2 + 5*x + 2))^2 - 153124376229353121*sqrt(3)*x - 9387541838830536*sqrt(
3) + 153124376229353121*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^10
```

maple [B] time = 0.15, size = 390, normalized size = 1.87

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^11,x)
```

```
[Out] -13/51200/(x+3/2)^10*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-1893/2560000/(x+3/2)^8*(
-4*x+3*(x+3/2)^2-19/4)^(9/2)-1893/1600000/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)
^(9/2)-3636453/800000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-105574503/
10000000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-3482489/500000000/(x+3/
2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+19795101/2500000000*(6*x+5)*(-4*x+3*(x+3
/2)^2-19/4)^(7/2)-7698831/10000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
-19795101/1250000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+128093/160000000
0*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-13251/1280000000*(6*x+5)*(-4*x+3*(x
+3/2)^2-19/4)^(1/2)-13251/10240000000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2
)/(-16*x+12*(x+3/2)^2-19)^(1/2))+13251/10240000000*(-16*x+12*(x+3/2)^2-19)^
(1/2)+4417/6400000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+13251/40000000000*(-4*x
+3*(x+3/2)^2-19/4)^(5/2)+1893/10000000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-586
83/20000000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-11989/6400000/(x+3/2)^6
*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-29/64000/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(
9/2)
```

maxima [B] time = 1.50, size = 579, normalized size = 2.77

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^11,x, algorithm="maxima")
```

```
[Out] 316723509/10000000000*(3*x^2 + 5*x + 2)^(7/2) - 13/50*(3*x^2 + 5*x + 2)^(9/
2)/(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 1088640*x^6 + 1959552
*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*x + 59049) - 29/125
*(3*x^2 + 5*x + 2)^(9/2)/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326
592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683) - 1893/1
0000*(3*x^2 + 5*x + 2)^(9/2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 +
90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561) - 1893/12500*(3*x^2 +
5*x + 2)^(9/2)/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 204
12*x^2 + 10206*x + 2187) - 11989/100000*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 5
76*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 58683/625000*(3*x
^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) -
 3636453/50000000*(3*x^2 + 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*
x + 81) - 3482489/62500000*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x +
 27) - 105574503/2500000000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 23
096493/5000000000*(3*x^2 + 5*x + 2)^(5/2)*x - 153963369/40000000000*(3*x^2
+ 5*x + 2)^(5/2) - 19795101/500000000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 3
84279/800000000*(3*x^2 + 5*x + 2)^(3/2)*x + 2566277/6400000000*(3*x^2 + 5*x
 + 2)^(3/2) - 39753/640000000*sqrt(3*x^2 + 5*x + 2)*x - 13251/10240000000*s
qrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) -
2) - 251769/5120000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^11,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^11, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**11,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**
9 + 1140480*x**8 + 3421440*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x
**4 + 8660520*x**3 + 4330260*x**2 + 1299078*x + 177147), x) - Integral(-292
*x*sqrt(3*x**2 + 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480
*x**8 + 3421440*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 86605
20*x**3 + 4330260*x**2 + 1299078*x + 177147), x) - Integral(-870*x**2*sqrt(
3*x**2 + 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 +
3421440*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3
+ 4330260*x**2 + 1299078*x + 177147), x) - Integral(-1339*x**3*sqrt(3*x**2
+ 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440
*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3 + 43302
60*x**2 + 1299078*x + 177147), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x +
 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440*x**7 +
 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3 + 4330260*x**2
 + 1299078*x + 177147), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(204
8*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440*x**7 + 7185024
*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3 + 4330260*x**2 + 12990
78*x + 177147), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(2048*x**11 +
33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440*x**7 + 7185024*x**6 + 10
777536*x**5 + 11547360*x**4 + 8660520*x**3 + 4330260*x**2 + 1299078*x + 177
147), x)
```

3.2222 $\int \frac{(5-x)(2+5x+3x^2)^{7/2}}{(3+2x)^{12}}\,dx$

Optimal. Leaf size=234

$$-\frac{3904\left(3x^2+5x+2\right)^{9/2}}{20625(2x+3)^9}-\frac{621\left(3x^2+5x+2\right)^{9/2}}{2750(2x+3)^{10}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}+\frac{7671(8x+7)\left(3x^2+5x+2\right)^{7/2}}{200000(2x+3)^8}-1789$$

Rubi [A] time = 0.15, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{3904\left(3x^2+5x+2\right)^{9/2}}{20625(2x+3)^9}-\frac{621\left(3x^2+5x+2\right)^{9/2}}{2750(2x+3)^{10}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}+\frac{7671(8x+7)\left(3x^2+5x+2\right)^{7/2}}{200000(2x+3)^8}-\frac{17899(8x+7)\left(3x^2+5x+2\right)^{5/2}}{8000000(2x+3)^6}+\frac{17899(8x+7)\left(3x^2+5x+2\right)^{3/2}}{128000000(2x+3)^4}-\frac{53697(8x+7)\sqrt{3x^2+5x+2}}{5120000000(2x+3)^2}+\frac{53697\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10240000000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^12,x]
```

```
[Out] (-53697*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(5120000000*(3 + 2*x)^2) + (17899*
(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(128000000*(3 + 2*x)^4) - (17899*(7 + 8*
x)*(2 + 5*x + 3*x^2)^(5/2))/(8000000*(3 + 2*x)^6) + (7671*(7 + 8*x)*(2 + 5*
x + 3*x^2)^(7/2))/(200000*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(55*(
3 + 2*x)^11) - (621*(2 + 5*x + 3*x^2)^(9/2))/(2750*(3 + 2*x)^10) - (3904*(2
 + 5*x + 3*x^2)^(9/2))/(20625*(3 + 2*x)^9) + (53697*ArcTanh[(7 + 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(10240000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{12}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{1}{55}\int \frac{\left(-\frac{387}{2}+78x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{621\left(2+5x+3x^2\right)^{9/2}}{2750(3+2x)^{10}} + \frac{\int \frac{\left(\frac{17835}{2}-1863x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx}{2750}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{621\left(2+5x+3x^2\right)^{9/2}}{2750(3+2x)^{10}} - \frac{3904\left(2+5x+3x^2\right)^{9/2}}{20625(3+2x)^9} + 767$$

$$= \frac{7671(7+8x)\left(2+5x+3x^2\right)^{7/2}}{200000(3+2x)^8} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{621\left(2+5x+3x^2\right)^{9/2}}{2750(3+2x)^{10}}$$

$$= -\frac{17899(7+8x)\left(2+5x+3x^2\right)^{5/2}}{8000000(3+2x)^6} + \frac{7671(7+8x)\left(2+5x+3x^2\right)^{7/2}}{200000(3+2x)^8} - \frac{13(2+5}{55(3}$$

$$= \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^4} - \frac{17899(7+8x)\left(2+5x+3x^2\right)^{5/2}}{8000000(3+2x)^6} + \frac{7671(7+}{2}$$

$$= -\frac{53697(7+8x)\sqrt{2+5x+3x^2}}{5120000000(3+2x)^2} + \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^4} - \frac{17899(7}{80}$$

$$= -\frac{53697(7+8x)\sqrt{2+5x+3x^2}}{5120000000(3+2x)^2} + \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^4} - \frac{17899(7}{80}$$

$$= -\frac{53697(7+8x)\sqrt{2+5x+3x^2}}{5120000000(3+2x)^2} + \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^4} - \frac{17899(7}{80}$$

Mathematica [A] time = 0.31, size = 239, normalized size = 1.02

$$\frac{1}{55}\left(-\frac{3904\left(3x^2+5x+2\right)^{9/2}}{375(2x+3)^9} - \frac{621\left(3x^2+5x+2\right)^{9/2}}{50(2x+3)^{10}} - \frac{13\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{11}} + \frac{84381\left(\frac{2(8x+7)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8} - \frac{7(8x+7)\left(3x^2+5x+2\right)^{5/2}}{60(2x+3)^6} + \frac{7(8x+7)\left(3x^2+5x+2\right)^{3/2}}{960(2x+3)^4} - \frac{7\left(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2} + \sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{128000}\right)}{80000}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^12,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(9/2))/(3 + 2*x)^11 - (621*(2 + 5*x + 3*x^2)^(9/2))
/(50*(3 + 2*x)^10) - (3904*(2 + 5*x + 3*x^2)^(9/2))/(375*(3 + 2*x)^9) + (84
381*((7*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(960*(3 + 2*x)^4) - (7*(7 + 8*x)
*(2 + 5*x + 3*x^2)^(5/2))/(60*(3 + 2*x)^6) + (2*(7 + 8*x)*(2 + 5*x + 3*x^2)
```

^(7/2))/(3 + 2*x)^8 - (7*((10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/128000))/80000)/55

IntegrateAlgebraic [A] time = 1.09, size = 111, normalized size = 0.47

$$\frac{53697\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{5120000000\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\,(30557343744x^{10}+479034140160x^9+3387337708800x^8+14992486229760x^7+41485308553600x^6+72251114756992x^5+80329740407040x^4+56898923222800x^3+24817198954840x^2+6058472990850x+629890144539)}{168960000000(2x+3)^{11}}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^12,x]

[Out] (Sqrt[2 + 5*x + 3*x^2]*(629890144539 + 6058472990850*x + 24817198954840*x^2 + 56898923222800*x^3 + 80329740407040*x^4 + 72251114756992*x^5 + 41485308553600*x^6 + 14992486229760*x^7 + 3387337708800*x^8 + 479034140160*x^9 + 30557343744*x^10))/(168960000000*(3 + 2*x)^11) + (53697*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(5120000000*Sqrt[5])

fricas [A] time = 0.45, size = 230, normalized size = 0.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^12,x, algorithm="fricas")

[Out] 1/3379200000000*(1772001*sqrt(5)*(2048*x^11 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 7185024*x^6 + 10777536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078*x + 177147)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(30557343744*x^10 + 479034140160*x^9 + 3387337708800*x^8 + 14992486229760*x^7 + 41485308553600*x^6 + 72251114756992*x^5 + 80329740407040*x^4 + 56898923222800*x^3 + 24817198954840*x^2 + 6058472990850*x + 629890144539)*sqrt(3*x^2 + 5*x + 2))/(2048*x^11 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 7185024*x^6 + 10777536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078*x + 177147)

giac [B] time = 0.38, size = 665, normalized size = 2.84

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^12,x, algorithm="giac")

[Out] 53697/51200000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) - 1/168960000000*(1814529024*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^21 + 57157664256*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^20 + 57290941171200*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^19 + 557490020440320*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^18 + 3116590396465920*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^17 - 40571342658595584*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16 - 1098653419392131328*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 - 4929229513296950400*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 - 44860439685628251520*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 - 101067124429527527040*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 - 530008429621517017088*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 - 735944911884403670592*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 2465807894359584887200*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 - 2226326899649908579920*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 - 4870616002552398497520*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 2849658548882889760632*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 - 3959763769847021107884*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 142

```
0163541040959876150*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 1141537
424727199856070*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 2151306177862497217
65*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 76323347715579462729*sqr
t(3)*x - 4261520459402725896*sqrt(3) + 76323347715579462729*sqrt(3*x^2 + 5*
x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2)) + 11)^11
```

maple [B] time = 0.19, size = 411, normalized size = 1.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^12,x)
```

```
[Out] -621/2816000/(x+3/2)^10*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-7671/12800000/(x+3/2)
^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-7671/8000000/(x+3/2)^7*(-4*x+3*(x+3/2)^2-1
9/4)^(9/2)-14735991/4000000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-4278
19341/50000000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-14112083/25000000
00/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+80215647/12500000000*(6*x+5)*(-4
*x+3*(x+3/2)^2-19/4)^(7/2)-31197957/50000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-1
9/4)^(5/2)-80215647/6250000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+519071
/8000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-53697/6400000000*(6*x+5)*
(-4*x+3*(x+3/2)^2-19/4)^(1/2)-53697/51200000000*5^(1/2)*arctanh(2/5*(-4*x-7
/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+53697/51200000000*(-16*x+12*(x+3
/2)^2-19)^(1/2)+17899/32000000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+53697/20000
0000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+7671/50000000000*(-4*x+3*(x+3/2)^2-19
/4)^(7/2)-237801/100000000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-48583/32
000000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/112640/(x+3/2)^11*(-4*x+3
*(x+3/2)^2-19/4)^(9/2)-61/165000/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.42, size = 650, normalized size = 2.78

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^12,x, algorithm="maxima")
```

```
[Out] 1283458023/50000000000*(3*x^2 + 5*x + 2)^(7/2) - 13/55*(3*x^2 + 5*x + 2)^(9
/2)/(2048*x^11 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 7185
024*x^6 + 10777536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078
*x + 177147) - 621/2750*(3*x^2 + 5*x + 2)^(9/2)/(1024*x^10 + 15360*x^9 + 10
3680*x^8 + 414720*x^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x
^3 + 1180980*x^2 + 393660*x + 59049) - 3904/20625*(3*x^2 + 5*x + 2)^(9/2)/(
512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489
888*x^3 + 314928*x^2 + 118098*x + 19683) - 7671/50000*(3*x^2 + 5*x + 2)^(9/
2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 8
1648*x^2 + 34992*x + 6561) - 7671/62500*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 +
1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) -
 48583/500000*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x
^3 + 4860*x^2 + 2916*x + 729) - 237801/3125000*(3*x^2 + 5*x + 2)^(9/2)/(32*
x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 14735991/250000000*(3*x
^2 + 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 14112083/312
500000*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 427819341/125
00000000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 93593871/25000000000*
(3*x^2 + 5*x + 2)^(5/2)*x - 623905443/200000000000*(3*x^2 + 5*x + 2)^(5/2)
- 80215647/2500000000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 1557213/400000000
0*(3*x^2 + 5*x + 2)^(3/2)*x + 10399319/32000000000*(3*x^2 + 5*x + 2)^(3/2)
- 161091/3200000000*sqrt(3*x^2 + 5*x + 2)*x - 53697/51200000000*sqrt(5)*log
(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 10202
43/25600000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^12,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^12, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**12,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**
10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6 + 5542732
8*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441
), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 +
608256*x**10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6
 + 55427328*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*
x + 531441), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 7
3728*x**11 + 608256*x**10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 +
43110144*x**6 + 55427328*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x*
*2 + 4251528*x + 531441), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(
4096*x**12 + 73728*x**11 + 608256*x**10 + 3041280*x**9 + 10264320*x**8 + 24
634368*x**7 + 43110144*x**6 + 55427328*x**5 + 51963120*x**4 + 34642080*x**3
 + 15588936*x**2 + 4251528*x + 531441), x) - Integral(-1090*x**4*sqrt(3*x**
2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**10 + 3041280*x**9 + 1026
4320*x**8 + 24634368*x**7 + 43110144*x**6 + 55427328*x**5 + 51963120*x**4 +
 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441), x) - Integral(-396*x*
*5*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**10 + 304128
0*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6 + 55427328*x**5 + 51
963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441), x) - Int
egral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**
10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6 + 5542732
8*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441
), x)
```

3.2223 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{13}} \, dx$

Optimal. Leaf size=259

$$-\frac{6379\left(3x^2+5x+2\right)^{9/2}}{41250(2x+3)^9}-\frac{2067\left(3x^2+5x+2\right)^{9/2}}{11000(2x+3)^{10}}-\frac{12\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{60(2x+3)^{12}}+\frac{25017(8x+7)\left(3x\right.}{800000(2x\right.}$$

Rubi [A] time = 0.18, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{6379\left(3x^2+5x+2\right)^{9/2}}{41250(2x+3)^9}-\frac{2067\left(3x^2+5x+2\right)^{9/2}}{11000(2x+3)^{10}}-\frac{12\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{60(2x+3)^{12}}+\frac{25017(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800000(2x+3)^8}-\frac{58373(8x+7)\left(3x^2+5x+2\right)^{5/2}}{32000000(2x+3)^6}+\frac{58373(8x+7)\left(3x^2+5x+2\right)^{3/2}}{512000000(2x+3)^4}-\frac{175119(8x+7)\sqrt{3x^2+5x+2}}{20480000000(2x+3)^2}+\frac{175119\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{40960000000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^13,x]
```

```
[Out] (-175119*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20480000000*(3 + 2*x)^2) + (5837
3*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(512000000*(3 + 2*x)^4) - (58373*(7 +
8*x)*(2 + 5*x + 3*x^2)^(5/2))/(32000000*(3 + 2*x)^6) + (25017*(7 + 8*x)*(2
+ 5*x + 3*x^2)^(7/2))/(800000*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(
60*(3 + 2*x)^12) - (12*(2 + 5*x + 3*x^2)^(9/2))/(55*(3 + 2*x)^11) - (2067*(
2 + 5*x + 3*x^2)^(9/2))/(11000*(3 + 2*x)^10) - (6379*(2 + 5*x + 3*x^2)^(9/2
))/(41250*(3 + 2*x)^9) + (175119*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
+ 3*x^2])])/(40960000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{13}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}} - \frac{1}{60}\int \frac{\left(-\frac{369}{2}+117x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{12}}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}} - \frac{12\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} + \frac{\int \frac{\left(\frac{18045}{2}-4320x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx}{3300}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}} - \frac{12\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{2067\left(2+5x+3x^2\right)^{9/2}}{11000(3+2x)^{10}} - \int$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}} - \frac{12\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{2067\left(2+5x+3x^2\right)^{9/2}}{11000(3+2x)^{10}} - 63$$

$$= \frac{25017(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800000(3+2x)^{8}} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}} - \frac{12\left(2+5x+3x^2\right)}{55(3+2x)^{11}}$$

$$= -\frac{58373(7+8x)\left(2+5x+3x^2\right)^{5/2}}{32000000(3+2x)^{6}} + \frac{25017(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800000(3+2x)^{8}} - 13$$

$$= \frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}} - \frac{58373(7+8x)\left(2+5x+3x^2\right)^{5/2}}{32000000(3+2x)^{6}} + 2501$$

$$= -\frac{175119(7+8x)\sqrt{2+5x+3x^2}}{20480000000(3+2x)^{2}} + \frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}} - 5837$$

$$= -\frac{175119(7+8x)\sqrt{2+5x+3x^2}}{20480000000(3+2x)^{2}} + \frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}} - 5837$$

$$= -\frac{175119(7+8x)\sqrt{2+5x+3x^2}}{20480000000(3+2x)^{2}} + \frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}} - 5837$$

Mathematica [A] time = 0.24, size = 262, normalized size = 1.01

$$\frac{-\frac{12758\left(3x^2+5x+2\right)^{9/2}}{25(2x+3)^9} - \frac{6201\left(3x^2+5x+2\right)^{9/2}}{10(2x+3)^{10}} - \frac{720\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{11}} - \frac{715\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{12}} + \frac{825561\left(\frac{2(8x+7)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8} - \frac{7(8x+7)\left(3x^2+5x+2\right)^{5/2}}{60(2x+3)^6} + \frac{7(8x+7)\left(3x^2+5x+2\right)^{3/2}}{960(2x+3)^4} - \frac{7\left(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2} + \sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)}{128000}\right)}{16000}}{3300}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^13,x]
```

```
[Out] ((-715*(2 + 5*x + 3*x^2)^(9/2))/(3 + 2*x)^12 - (720*(2 + 5*x + 3*x^2)^(9/2)
)/(3 + 2*x)^11 - (6201*(2 + 5*x + 3*x^2)^(9/2))/(10*(3 + 2*x)^10) - (12758*
```

```
(2 + 5*x + 3*x^2)^(9/2))/(25*(3 + 2*x)^9) + (825561*((7*(7 + 8*x)*(2 + 5*x
+ 3*x^2)^(3/2))/(960*(3 + 2*x)^4) - (7*(7 + 8*x)*(2 + 5*x + 3*x^2)^(5/2))/(
60*(3 + 2*x)^6) + (2*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8 - (7*((
10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x
)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/128000))/16000)/3300
```

IntegrateAlgebraic [A] time = 1.29, size = 116, normalized size = 0.45

$$\frac{175119\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{20480000000\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\,(60734693376x^{11}+1044584776704x^{10}+8182662620160x^9+38544695427840x^8+123629135656960x^7+273282692080768x^6+410468875350912x^5+412855931529440x^4+271870111600160x^3+111795175925940x^2+25843081681156x+2531527640959)}{675840000000(2x+3)^{12}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^13,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(2531527640959 + 25843081681156*x + 111795175925940*
x^2 + 271870111600160*x^3 + 412855931529440*x^4 + 410468875350912*x^5 + 273
282692080768*x^6 + 123629135656960*x^7 + 38544695427840*x^8 + 8182662620160
*x^9 + 1044584776704*x^10 + 60734693376*x^11))/(675840000000*(3 + 2*x)^12)
+ (175119*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(20480000000*Sq
rt[5])
```

fricas [A] time = 0.46, size = 245, normalized size = 0.95

$$\frac{5778927\sqrt{5}\,(4096x^{12}+73728x^{11}+608256x^{10}+3041280x^9+10264320x^8+24634368x^7+43110144x^6+55427328x^5+51963120x^4+34642080x^3+15588936x^2+4251528x+531441)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+20\,(60734693376x^{11}+1044584776704x^{10}+8182662620160x^9+38544695427840x^8+123629135656960x^7+273282692080768x^6+410468875350912x^5+412855931529440x^4+271870111600160x^3+111795175925940x^2+25843081681156x+2531527640959)\sqrt{3x^2+5x+2}}{135168000000000\,(4096x^{12}+73728x^{11}+608256x^{10}+3041280x^9+10264320x^8+24634368x^7+43110144x^6+55427328x^5+51963120x^4+34642080x^3+15588936x^2+4251528x+531441)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^13,x, algorithm="fricas")
```

```
[Out] 1/135168000000000*(5778927*sqrt(5)*(4096*x^12 + 73728*x^11 + 608256*x^10 + 3
041280*x^9 + 10264320*x^8 + 24634368*x^7 + 43110144*x^6 + 55427328*x^5 + 51
963120*x^4 + 34642080*x^3 + 15588936*x^2 + 4251528*x + 531441)*log((4*sqrt(
5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x +
9)) + 20*(60734693376*x^11 + 1044584776704*x^10 + 8182662620160*x^9 + 38544
695427840*x^8 + 123629135656960*x^7 + 273282692080768*x^6 + 410468875350912
*x^5 + 412855931529440*x^4 + 271870111600160*x^3 + 111795175925940*x^2 + 25
843081681156*x + 2531527640959)*sqrt(3*x^2 + 5*x + 2))/(4096*x^12 + 73728*x
^11 + 608256*x^10 + 3041280*x^9 + 10264320*x^8 + 24634368*x^7 + 43110144*x^
6 + 55427328*x^5 + 51963120*x^4 + 34642080*x^3 + 15588936*x^2 + 4251528*x +
 531441)
```

giac [B] time = 0.54, size = 716, normalized size = 2.76

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^13,x, algorithm="giac")
```

```
[Out] 175119/204800000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) +
4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))) - 1/675840000000*(11835242496*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^23 + 408315866112*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^22
+ 20039038086144*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^21 + 535243596890112*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^20 + 13859706456921600*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^19 + 31535346744025344*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^18 - 789031961976842496*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^17 - 7977976824329385984*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16
 - 113078650509677476096*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 - 358779889
050339715200*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 - 2538162771649
151164032*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 - 4660243350382625915904*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 - 20499122524155108829248*(sq
```

```
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 - 24347916060701730772704*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 7078841544357275692560*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^9 - 5607608391143111439820 8*sqrt(3)*(sqrt(3)*x - sqrt(
3*x^2 + 5*x + 2))^8 - 10859804356422352490992 8*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^7 - 5666355002172542410141 2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^6 - 7066828763983199726182 8*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 22
876037084903247115200*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 16680
770211437743348146*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 2864949797863813
201587*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 930278306769206446 26
9*sqrt(3)*x - 477292620328586655 12*sqrt(3) + 930278306769206446269*sqrt(3*x
^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^12
```

maple [A] time = 9.36, size = 432, normalized size = 1.67

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^13,x)
```

```
[Out] -2067/11264000/(x+3/2)^10*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-25017/51200000/(x+3
/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-25017/32000000/(x+3/2)^7*(-4*x+3*(x+3/2
)^2-19/4)^(9/2)-48057657/16000000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2
)-1395223107/200000000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-46022941/
10000000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+261602769/50000000000*(
6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-101744139/200000000000*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(5/2)-261602769/25000000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4
)^(9/2)+1692817/32000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-175119/25
600000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-175119/204800000000*5^(1/2)
*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+175119/20480
0000000*(-16*x+12*(x+3/2)^2-19)^(1/2)+58373/128000000000*(-4*x+3*(x+3/2)^2-
19/4)^(3/2)+175119/800000000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+25017/2000000
00000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-775527/400000000/(x+3/2)^5*(-4*x+3*(x+3
/2)^2-19/4)^(9/2)-158441/128000000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-
3/28160/(x+3/2)^11*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-6379/21120000/(x+3/2)^9*(-
4*x+3*(x+3/2)^2-19/4)^(9/2)-13/245760/(x+3/2)^12*(-4*x+3*(x+3/2)^2-19/4)^(9
/2)
```

maxima [B] time = 1.40, size = 726, normalized size = 2.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^13,x, algorithm="maxima")
```

```
[Out] 4185669321/200000000000*(3*x^2 + 5*x + 2)^(7/2) - 13/60*(3*x^2 + 5*x + 2)^(
9/2)/(4096*x^12 + 73728*x^11 + 608256*x^10 + 3041280*x^9 + 10264320*x^8 + 2
4634368*x^7 + 43110144*x^6 + 55427328*x^5 + 51963120*x^4 + 34642080*x^3 + 1
5588936*x^2 + 4251528*x + 531441) - 12/55*(3*x^2 + 5*x + 2)^(9/2)/(2048*x^1
1 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 7185024*x^6 + 107
77536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078*x + 177147)
- 2067/11000*(3*x^2 + 5*x + 2)^(9/2)/(1024*x^10 + 15360*x^9 + 103680*x^8 +
414720*x^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 118098
0*x^2 + 393660*x + 59049) - 6379/41250*(3*x^2 + 5*x + 2)^(9/2)/(512*x^9 + 6
912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 3
14928*x^2 + 118098*x + 19683) - 25017/200000*(3*x^2 + 5*x + 2)^(9/2)/(256*x
^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2
+ 34992*x + 6561) - 25017/250000*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 + 1344*x^
6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 158441
/2000000*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 +
```

```
4860*x^2 + 2916*x + 729) - 775527/12500000*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5
+ 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 48057657/1000000000*(3*x^2
+ 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 46022941/125000
0000*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 1395223107/5000
0000000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 305232417/100000000000
*(3*x^2 + 5*x + 2)^(5/2)*x - 2034707661/800000000000*(3*x^2 + 5*x + 2)^(5/2
) - 261602769/10000000000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 5078451/16000
000000*(3*x^2 + 5*x + 2)^(3/2)*x + 33914713/128000000000*(3*x^2 + 5*x + 2)^
(3/2) - 525357/12800000000*sqrt(3*x^2 + 5*x + 2)*x - 175119/204800000000*sq
rt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2
) - 3327261/102400000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^13,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^13, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**13,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 1437696*x
**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7 + 240
185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 55269864*x
**2 + 13817466*x + 1594323), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(8
192*x**13 + 159744*x**12 + 1437696*x**11 + 7907328*x**10 + 29652480*x**9 +
80061696*x**8 + 160123392*x**7 + 240185088*x**6 + 270208224*x**5 + 22517352
0*x**4 + 135104112*x**3 + 55269864*x**2 + 13817466*x + 1594323), x) - Integ
ral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 1437696*x
**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7 + 240
185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 55269864*x
**2 + 13817466*x + 1594323), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2
)/(8192*x**13 + 159744*x**12 + 1437696*x**11 + 7907328*x**10 + 29652480*x**
9 + 80061696*x**8 + 160123392*x**7 + 240185088*x**6 + 270208224*x**5 + 2251
73520*x**4 + 135104112*x**3 + 55269864*x**2 + 13817466*x + 1594323), x) - I
ntegral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 1437
696*x**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7
+ 240185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 55269
864*x**2 + 13817466*x + 1594323), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x
 + 2)/(8192*x**13 + 159744*x**12 + 1437696*x**11 + 7907328*x**10 + 29652480
*x**9 + 80061696*x**8 + 160123392*x**7 + 240185088*x**6 + 270208224*x**5 +
225173520*x**4 + 135104112*x**3 + 55269864*x**2 + 13817466*x + 1594323), x)
 - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 143
7696*x**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7
 + 240185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 5526
9864*x**2 + 13817466*x + 1594323), x)
```

3.2224 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a+bx+cx^2}} \, dx$

Optimal. Leaf size=407

$$\frac{\sqrt{a+bx+cx^2}\left(2cex\left(B\left(-4ce(9ae+16bd)+35b^2e^2+24c^2d^2\right)+40Ace(2cd-be)\right)+8Ace\left(-2ce(8ae+27bd)\right)\right.}{192c^4}$$

Rubi [A] time = 0.68, antiderivative size = 407, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(2cex\left(B\left(-4ce(9ae+16bd)+35b^2e^2+24c^2d^2\right)+40Ace(2cd-be)\right)+8Ace\left(-2ce(8ae+27bd)+15b^2e^2+64c^2d^2\right)+B\left(-8c^2de(48ae+47bd)+20bce^2(11ae+18bd)-105b^3e^3+96c^3d^3\right)\right)}{192c^4}+\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(24b^2ce\left(-5aBe^2+6Acde+6Bcd^2\right)-32bc^2\left(-3aAe^3-9aBde^2+6Acd^2e+2Bcd^3\right)+16c^2\left(4Acd\left(2cd^2-3ae^2\right)-3aBe\left(4cd^2-ae^2\right)\right)-40b^3ce^2(Ae+3Bd)+35b^4Be^3\right)}{128c^{9/2}}+\frac{(d+ex)^2\sqrt{a+bx+cx^2}(8Ace-7bBe+6Bcd)}{24c^2}+\frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((6*B*c*d - 7*b*B*e + 8*A*c*e)*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/(24*c^2)
+ (B*(d + e*x)^3*Sqrt[a + b*x + c*x^2])/(4*c) + ((8*A*c*e*(64*c^2*d^2 + 15*
b^2*e^2 - 2*c*e*(27*b*d + 8*a*e)) + B*(96*c^3*d^3 - 105*b^3*e^3 + 20*b*c*e^
2*(18*b*d + 11*a*e) - 8*c^2*d*e*(47*b*d + 48*a*e)) + 2*c*e*(40*A*c*e*(2*c*d
 - b*e) + B*(24*c^2*d^2 + 35*b^2*e^2 - 4*c*e*(16*b*d + 9*a*e)))*x)*Sqrt[a +
 b*x + c*x^2])/(192*c^4) + ((35*b^4*B*e^3 - 40*b^3*c*e^2*(3*B*d + A*e) + 24
*b^2*c*e*(6*B*c*d^2 + 6*A*c*d*e - 5*a*B*e^2) - 32*b*c^2*(2*B*c*d^3 + 6*A*c*
d^2*e - 9*a*B*d*e^2 - 3*a*A*e^3) + 16*c^2*(4*A*c*d*(2*c*d^2 - 3*a*e^2) - 3*
a*B*e*(4*c*d^2 - a*e^2)))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x
^2])])/(128*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
```

```
|| IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx = \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{(d+ex)^2\left(\frac{1}{2}(-bBd+8Acd-6aBe)+\frac{1}{2}(6Bcd-7bBe+8Ace)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{(d+ex)(}{}}{}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{\left(8Ace\left(\right.\right.}{}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{\left(8Ace\left(\right.\right.}{}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{\left(8Ace\left(\right.\right.}{}$$

Mathematica [A] time = 0.53, size = 357, normalized size = 0.88

$$\frac{2\sqrt{c}\sqrt{a+x(b+cx)}\left(8Ace\left(-2ce(8ae+27bd+5bex)+15b^2e^2+4c^2\left(18d^2+9dex+2e^2x^2\right)\right)+B\left(-8c^2e\left(3ae(16d+3ex)+b\left(54d^2+30dex+7e^2x^2\right)\right)+10bce^2(22ae+36bd+7bex)-105b^3e^3+48c^3\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)\right)\right)+3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\left(24b^2ce\left(-5aBe^2+6Acde+6Bcd^2\right)-32bc^2\left(-3aAe^3-9aBde^2+6Acd^2e+2Bcd^3\right)+16c^2\left(4Acd\left(2cd^2-3ae^2\right)+3aBe\left(ae^2-4cd^2\right)\right)-40b^3ce^2(Ae+3Bd)+35b^4Be^3\right)}{384c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(8*A*c*e*(15*b^2*e^2 - 2*c*e*(27*b*d + 8*a
*e + 5*b*e*x) + 4*c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) + B*(-105*b^3*e^3 + 1
0*b*c*e^2*(36*b*d + 22*a*e + 7*b*e*x) + 48*c^3*(4*d^3 + 6*d^2*e*x + 4*d*e^2
*x^2 + e^3*x^3) - 8*c^2*e*(3*a*e*(16*d + 3*e*x) + b*(54*d^2 + 30*d*e*x + 7*
e^2*x^2)))) + 3*(35*b^4*B*e^3 - 40*b^3*c*e^2*(3*B*d + A*e) + 24*b^2*c*e*(6*
B*c*d^2 + 6*A*c*d*e - 5*a*B*e^2) - 32*b*c^2*(2*B*c*d^3 + 6*A*c*d^2*e - 9*a*
B*d*e^2 - 3*a*A*e^3) + 16*c^2*(4*A*c*d*(2*c*d^2 - 3*a*e^2) + 3*a*B*e*(-4*c*
d^2 + a*e^2)))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(384
*c^(9/2))
```

IntegrateAlgebraic [A] time = 1.77, size = 433, normalized size = 1.06

$$\frac{\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)\left(-48a^2Bc^2e^3-96aAbc^2e^3+192aAc^3de^2+120ab^2Bce^3-288abBc^2de^2+192aBc^3d^2e+40Ab^3ce^3-144Ab^2c^2de^2+192Abc^3d^2e-128Ac^4d^3-35b^4Be^3+120b^3Bcde^2-144b^2Bc^2d^2e+64bBc^3d^3\right)}{128c^{9/2}}+\frac{\sqrt{a+bx+cx^2}\left(-128aAc^2e^3+220abBce^3-384aBc^2de^2-72aBc^2e^3x+120Ab^2ce^3-432Abc^2de^2-80Abc^2e^3x+576Ac^3d^2e+288Ac^3de^2x+64Ac^3e^3x^2-105b^3Be^3+360b^2Bcde^2+70b^2Bce^3x-432bBc^2d^2e-240bBc^2de^2x-56bBc^2e^3x^2+192Bc^3d^3+288Bc^3d^2ex+192Bc^3de^2x^2+48Bc^3e^3x^3\right)}{192c^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(192*B*c^3*d^3 - 432*b*B*c^2*d^2*e + 576*A*c^3*d^2*e
 + 360*b^2*B*c*d*e^2 - 432*A*b*c^2*d*e^2 - 384*a*B*c^2*d*e^2 - 105*b^3*B*e^
3 + 120*A*b^2*c*e^3 + 220*a*b*B*c*e^3 - 128*a*A*c^2*e^3 + 288*B*c^3*d^2*e*x
 - 240*b*B*c^2*d*e^2*x + 288*A*c^3*d*e^2*x + 70*b^2*B*c*e^3*x - 80*A*b*c^2*
e^3*x - 72*a*B*c^2*e^3*x + 192*B*c^3*d*e^2*x^2 - 56*b*B*c^2*e^3*x^2 + 64*A*
c^3*e^3*x^2 + 48*B*c^3*e^3*x^3))/(192*c^4) + ((64*b*B*c^3*d^3 - 128*A*c^4*d
^3 - 144*b^2*B*c^2*d^2*e + 192*A*b*c^3*d^2*e + 192*a*B*c^3*d^2*e + 120*b^3*
B*c*d*e^2 - 144*A*b^2*c^2*d*e^2 - 288*a*b*B*c^2*d*e^2 + 192*a*A*c^3*d*e^2 -
 35*b^4*B*e^3 + 40*A*b^3*c*e^3 + 120*a*b^2*B*c*e^3 - 96*a*A*b*c^2*e^3 - 48*
a^2*B*c^2*e^3)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a + b*x + c*x^2]])/(128*c^(9/
2))
```

fricas [A] time = 0.66, size = 811, normalized size = 1.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(64*(B*b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*(B*a + A*b)*c^
3)*d^2*e + 24*(5*B*b^3*c + 8*A*a*c^3 - 6*(2*B*a*b + A*b^2)*c^2)*d*e^2 - (35
*B*b^4 + 48*(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*e^3)*sqrt(c)*
log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c
) - 4*a*c) - 4*(48*B*c^4*e^3*x^3 + 192*B*c^4*d^3 - 144*(3*B*b*c^3 - 4*A*c^4
)*d^2*e + 24*(15*B*b^2*c^2 - 2*(8*B*a + 9*A*b)*c^3)*d*e^2 - (105*B*b^3*c +
128*A*a*c^3 - 20*(11*B*a*b + 6*A*b^2)*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b
*c^3 - 8*A*c^4)*e^3)*x^2 + 2*(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*
e^2 + (35*B*b^2*c^2 - 4*(9*B*a + 10*A*b)*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a)
)/c^5, 1/384*(3*(64*(B*b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*(B*a + A*
b)*c^3)*d^2*e + 24*(5*B*b^3*c + 8*A*a*c^3 - 6*(2*B*a*b + A*b^2)*c^2)*d*e^2
- (35*B*b^4 + 48*(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*e^3)*sqr
t(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*
x + a*c)) + 2*(48*B*c^4*e^3*x^3 + 192*B*c^4*d^3 - 144*(3*B*b*c^3 - 4*A*c^4)
*d^2*e + 24*(15*B*b^2*c^2 - 2*(8*B*a + 9*A*b)*c^3)*d*e^2 - (105*B*b^3*c + 1
28*A*a*c^3 - 20*(11*B*a*b + 6*A*b^2)*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b*
c^3 - 8*A*c^4)*e^3)*x^2 + 2*(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*e
^2 + (35*B*b^2*c^2 - 4*(9*B*a + 10*A*b)*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))
/c^5]
```

giac [A] time = 0.30, size = 412, normalized size = 1.01

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*x*e^3/c + (24*B*c^3*d*e^2 - 7*B*b*c^
2*e^3 + 8*A*c^3*e^3)/c^4)*x + (144*B*c^3*d^2*e - 120*B*b*c^2*d*e^2 + 144*A*
c^3*d*e^2 + 35*B*b^2*c*e^3 - 36*B*a*c^2*e^3 - 40*A*b*c^2*e^3)/c^4)*x + (192
*B*c^3*d^3 - 432*B*b*c^2*d^2*e + 576*A*c^3*d^2*e + 360*B*b^2*c*d*e^2 - 384*
B*a*c^2*d*e^2 - 432*A*b*c^2*d*e^2 - 105*B*b^3*e^3 + 220*B*a*b*c*e^3 + 120*A
*b^2*c*e^3 - 128*A*a*c^2*e^3)/c^4) + 1/128*(64*B*b*c^3*d^3 - 128*A*c^4*d^3
- 144*B*b^2*c^2*d^2*e + 192*B*a*c^3*d^2*e + 192*A*b*c^3*d^2*e + 120*B*b^3*c
*d*e^2 - 288*B*a*b*c^2*d*e^2 - 144*A*b^2*c^2*d*e^2 + 192*A*a*c^3*d*e^2 - 35
*B*b^4*e^3 + 120*B*a*b^2*c*e^3 + 40*A*b^3*c*e^3 - 48*B*a^2*c^2*e^3 - 96*A*a
*b*c^2*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^
(9/2)
```

maple [B] time = 0.06, size = 981, normalized size = 2.41

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -5/4*b/c^2*x*(c*x^2+b*x+a)^(1/2)*B*d*e^2+9/4*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e^2+x^2/c*(c*x^2+b*x+a)^(1/2)*B*d*e^2-3/8*B*e
^3*a/c^2*x*(c*x^2+b*x+a)^(1/2)-7/24*B*e^3*b/c^2*x^2*(c*x^2+b*x+a)^(1/2)+35/
96*B*e^3*b^2/c^3*x*(c*x^2+b*x+a)^(1/2)-15/16*B*e^3*b^2/c^(7/2)*a*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+55/48*B*e^3*b/c^3*a*(c*x^2+b*x+a)^(1/2)+3
/4*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*e^3-2*a/c^2*(c
```

```
*x^2+b*x+a)^(1/2)*B*d*e^2+3/2*x/c*(c*x^2+b*x+a)^(1/2)*A*d*e^2+3/2*x/c*(c*x^
2+b*x+a)^(1/2)*B*d^2*e-5/12*b/c^2*x*(c*x^2+b*x+a)^(1/2)*A*e^3+15/8*b^2/c^3*
(c*x^2+b*x+a)^(1/2)*B*d*e^2-15/16*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*B*d*e^2-3/2*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(
1/2))*A*d*e^2+9/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B
*d^2*e-3/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d^2*e-3/
2*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d^2*e-9/4*b/c^2*(
c*x^2+b*x+a)^(1/2)*A*d*e^2-9/4*b/c^2*(c*x^2+b*x+a)^(1/2)*B*d^2*e+9/8*b^2/c^
(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d*e^2+A*d^3*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)+1/c*(c*x^2+b*x+a)^(1/2)*B*d^3+1/3*
x^2/c*(c*x^2+b*x+a)^(1/2)*A*e^3+5/8*b^2/c^3*(c*x^2+b*x+a)^(1/2)*A*e^3-35/64
*B*e^3*b^3/c^4*(c*x^2+b*x+a)^(1/2)+35/128*B*e^3*b^4/c^(9/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/8*B*e^3*a^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*B*d^3+1/4*B*e^3*x^3/c*(c*x^2+b*x+a)^(1/2)-5/16*b^3/c^(7/2)*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*e^3-2/3*a/c^2*(c*x^2+b*x+a)^(1/2)*A*e^3+3/
c*(c*x^2+b*x+a)^(1/2)*A*d^2*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^3}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/sqrt(a + b*x + c*x**2), x)
```

3.2225 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=234

$$\frac{\sqrt{a+bx+cx^2}\left(B\left(-4ce(4ae+9bd)+15b^2e^2+16c^2d^2\right)+2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)\right)}{24c^3}-\text{tan}$$

Rubi [A] time = 0.25, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(B\left(-4ce(4ae+9bd)+15b^2e^2+16c^2d^2\right)+2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)\right)}{24c^3}-\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(4bc\left(-3aBe^2+4Acde+2Bcd^2\right)-8c^2\left(-aAe^2-2aBde+2Acd^2\right)-6b^2ce(Ae+2Bd)+5b^3Be^2\right)}{16c^{7/2}}+\frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/(3*c) + ((6*A*c*e*(8*c*d - 3*b*e) + B
*(16*c^2*d^2 + 15*b^2*e^2 - 4*c*e*(9*b*d + 4*a*e)) + 2*c*e*(4*B*c*d - 5*b*B
*e + 6*A*c*e)*x)*Sqrt[a + b*x + c*x^2])/(24*c^3) - ((5*b^3*B*e^2 - 6*b^2*c*
e*(2*B*d + A*e) - 8*c^2*(2*A*c*d^2 - 2*a*B*d*e - a*A*e^2) + 4*b*c*(2*B*c*d^
2 + 4*A*c*d*e - 3*a*B*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c
*x^2])])/(16*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx = \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\int \frac{(d+ex)\left(\frac{1}{2}(-bBd+6Acd-4aBe)+\frac{1}{2}(4Bcd-5bBe+6Ace)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2+15b^2e^2-4ce(9bd+4ae)\right)\right.}{24c^3}$$

$$= \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2+15b^2e^2-4ce(9bd+4ae)\right)\right.}{24c^3}$$

$$= \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2+15b^2e^2-4ce(9bd+4ae)\right)\right.}{24c^3}$$

Mathematica [A] time = 0.20, size = 225, normalized size = 0.96

$$\frac{\frac{\sqrt{a+x(b+cx)}\left(B\left(-2ce(8ae+18bd+5bex)+15b^2e^2+8c^2d(2d+ex)\right)+6Ace(-3be+8cd+2cex)\right)}{8c^2}-\frac{3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\left(4bc\left(-3aBe^2+4Acde+2Bcd^2\right)+8c^2\left(aAe^2+2aBde-2Acd^2\right)-6b^2ce(Ae+2Bd)+5b^3Be^2\right)}{16c^{5/2}}+B(d+ex)^2\sqrt{a+x(b+cx)}}{3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*(d + e*x)^2*Sqrt[a + x*(b + c*x)] + (Sqrt[a + x*(b + c*x)]*(6*A*c*e*(8*c
*d - 3*b*e + 2*c*e*x) + B*(15*b^2*e^2 + 8*c^2*d*(2*d + e*x) - 2*c*e*(18*b*d
 + 8*a*e + 5*b*e*x))))/(8*c^2) - (3*(5*b^3*B*e^2 - 6*b^2*c*e*(2*B*d + A*e)
+ 8*c^2*(-2*A*c*d^2 + 2*a*B*d*e + a*A*e^2) + 4*b*c*(2*B*c*d^2 + 4*A*c*d*e -
 3*a*B*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(16*c^
(5/2)))/(3*c)
```

IntegrateAlgebraic [A] time = 0.87, size = 234, normalized size = 1.00

$$\frac{\sqrt{a+bx+cx^2}\left(-16aBce^2-18Abce^2+48Ac^2de+12Ac^2e^2x+15b^2Be^2-36bBcde-10bBce^2x+24Bc^2d^2+24Bc^2dex+8Bc^2e^2x^2\right)}{24c^3}+\frac{\log\left(-2\sqrt{c}\sqrt{a+bx+cx^2}+b+2cx\right)\left(8aAc^2e^2-12abBce^2+16aBc^2de-6Ab^2ce^2+16Abc^2de-16Ac^3d^2+5b^3Be^2-12b^2Bcde+8bBc^2d^2\right)}{16c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + b*x + c*x^2]*(24*B*c^2*d^2 - 36*b*B*c*d*e + 48*A*c^2*d*e + 15*b^2
*B*e^2 - 18*A*b*c*e^2 - 16*a*B*c*e^2 + 24*B*c^2*d*e*x - 10*b*B*c*e^2*x + 12
*A*c^2*e^2*x + 8*B*c^2*e^2*x^2))/(24*c^3) + ((8*b*B*c^2*d^2 - 16*A*c^3*d^2
- 12*b^2*B*c*d*e + 16*A*b*c^2*d*e + 16*a*B*c^2*d*e + 5*b^3*B*e^2 - 6*A*b^2*
c*e^2 - 12*a*b*B*c*e^2 + 8*a*A*c^2*e^2)*Log[b + 2*c*x - 2*Sqrt[c]*Sqrt[a +
b*x + c*x^2]])/(16*c^(7/2))
```

fricas [A] time = 0.51, size = 487, normalized size = 2.08

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(3*B*b^2*c - 4*(B*a + A*b)*c^2)*d*e
 + (5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*e^2)*sqrt(c)*log(-8*c^2*x^
2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) +
4*(8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*c^2 - 4*A*c^3)*d*e + (15*B*b^
2*c - 2*(8*B*a + 9*A*b)*c^2)*e^2 + 2*(12*B*c^3*d*e - (5*B*b*c^2 - 6*A*c^3)*
e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/48*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*
(3*B*b^2*c - 4*(B*a + A*b)*c^2)*d*e + (5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*b + A
```

```
*b^2)*c)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c
)/(c^2*x^2 + b*c*x + a*c)) + 2*(8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*
c^2 - 4*A*c^3)*d*e + (15*B*b^2*c - 2*(8*B*a + 9*A*b)*c^2)*e^2 + 2*(12*B*c^3
*d*e - (5*B*b*c^2 - 6*A*c^3)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.26, size = 231, normalized size = 0.99

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(\frac{4Bxe^2}{c}+\frac{12Bc^2de-5Bbce^2+6Ac^2e^2}{c^3}\right)x+\frac{24Bc^2d^2-36Bbcde+48Ac^2de+15Bb^2e^2-16Bace^2-18Abce^2}{c^3}\right)+\frac{\left(8Bbc^2d^2-16Ac^3d^2-12Bb^2cde+16Bac^2de+16Abc^2de+5Bb^3e^2-12Babce^2-6Ab^2ce^2+8Aac^2e^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{16c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*x*e^2/c + (12*B*c^2*d*e - 5*B*b*c*e^2 +
6*A*c^2*e^2)/c^3)*x + (24*B*c^2*d^2 - 36*B*b*c*d*e + 48*A*c^2*d*e + 15*B*b^
2*e^2 - 16*B*a*c*e^2 - 18*A*b*c*e^2)/c^3) + 1/16*(8*B*b*c^2*d^2 - 16*A*c^3*
d^2 - 12*B*b^2*c*d*e + 16*B*a*c^2*d*e + 16*A*b*c^2*d*e + 5*B*b^3*e^2 - 12*B
*a*b*c*e^2 - 6*A*b^2*c*e^2 + 8*A*a*c^2*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 537, normalized size = 2.29

$$\frac{\sqrt{cx^2+bx+a}\,Be^2x^2}{3c}-\frac{Aae^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3Ab^2e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{5}{2}}}-\frac{Abde\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}+\frac{Ad^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{\sqrt{c}}+\frac{3Babe^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{5}{2}}}-\frac{Bade\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{5Bb^3e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{16c^{\frac{7}{2}}}+\frac{3Bb^2de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{5}{2}}}-\frac{Bbd^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+bx+a}\,Ae^2x}{2c}-\frac{5\sqrt{cx^2+bx+a}\,Bbe^2x}{12c^2}+\frac{\sqrt{cx^2+bx+a}\,Bdex}{c}-\frac{3\sqrt{cx^2+bx+a}\,Abe^2}{4c^2}+\frac{2\sqrt{cx^2+bx+a}\,Ade}{c}-\frac{2\sqrt{cx^2+bx+a}\,Bae^2}{3c^2}+\frac{5\sqrt{cx^2+bx+a}\,Bb^2e^2}{8c^3}-\frac{3\sqrt{cx^2+bx+a}\,Bbde}{2c^2}+\frac{\sqrt{cx^2+bx+a}\,Bd^2}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*B*e^2*x^2/c*(c*x^2+b*x+a)^(1/2)-5/12*B*e^2*b/c^2*x*(c*x^2+b*x+a)^(1/2)+
5/8*B*e^2*b^2/c^3*(c*x^2+b*x+a)^(1/2)-5/16*B*e^2*b^3/c^(7/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/4*B*e^2*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x+a)^(1/2))-2/3*B*e^2*a/c^2*(c*x^2+b*x+a)^(1/2)+1/2*x/c*(c*x^2+b*x
+a)^(1/2)*A*e^2+x/c*(c*x^2+b*x+a)^(1/2)*B*d*e-3/4*b/c^2*(c*x^2+b*x+a)^(1/2)
*A*e^2-3/2*b/c^2*(c*x^2+b*x+a)^(1/2)*B*d*e+3/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x+a)^(1/2))*A*e^2+3/4*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))*B*d*e-1/2*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))*A*e^2-a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e+2
/c*(c*x^2+b*x+a)^(1/2)*A*d*e+1/c*(c*x^2+b*x+a)^(1/2)*B*d^2-b/c^(3/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))*B*d^2+A*d^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^2}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)(d + ex)^2}{\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/sqrt(a + b*x + c*x**2), x)
```

3.2226 $\int \frac{(A+Bx)(d+ex)}{\sqrt{a+bx+cx^2}} dx$

Optimal. Leaf size=116

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(4c(2Acd-aBe)-4bc(Ae+Bd)+3b^2Be\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2E}{4c^2}$$

Rubi [A] time = 0.09, antiderivative size = 115, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {779, 621, 206}

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(-4aBce-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bcex)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((3*b*B*e - 4*c*(B*d + A*e) - 2*B*c*e*x)*Sqrt[a + b*x + c*x^2])/(4*c^2) +
((8*A*c^2*d + 3*b^2*B*e - 4*a*B*c*e - 4*b*c*(B*d + A*e))*ArcTanh[(b + 2*c*x
)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(8*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(8Ac^2d+3b^2Be-4aBce-4bc(Bc\right.}{8c^2}\\ &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(8Ac^2d+3b^2Be-4aBce-4bc(Bc\right.}{}\\ &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(8Ac^2d+3b^2Be-4aBce-4bc(Bc\right.}{8c^{5/}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 115, normalized size = 0.99

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\left(-2aBce-2bc(Ae+Bd)+4Ac^2d+\frac{3}{2}b^2Be\right)+\sqrt{c}\sqrt{a+x(b+cx)}\,(4Ace+B(-3be+4cd+2cex))}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*Sqrt[a + x*(b + c*x)]*(4*A*c*e + B*(4*c*d - 3*b*e + 2*c*e*x)) + (4
*A*c^2*d + (3*b^2*B*e)/2 - 2*a*B*c*e - 2*b*c*(B*d + A*e))*ArcTanh[(b + 2*c*
x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^(5/2))
```

IntegrateAlgebraic [A] time = 0.59, size = 120, normalized size = 1.03

$$\frac{\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)\left(4aBce+4Abce-8Ac^2d-3b^2Be+4bBcd\right)}{8c^{5/2}}+\frac{\sqrt{a+bx+cx^2}\,(4Ace-3bBe+4Bcd+2Bcex)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*B*c*d - 3*b*B*e + 4*A*c*e + 2*B*c*e*x)*Sqrt[a + b*x + c*x^2])/(4*c^2) +
 ((4*b*B*c*d - 8*A*c^2*d - 3*b^2*B*e + 4*A*b*c*e + 4*a*B*c*e)*Log[b*c^2 + 2
*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]])/(8*c^(5/2))
```

fricas [A] time = 0.46, size = 273, normalized size = 2.35

$$\left[\frac{\left(4\left(Bbc-2Ac^2\right)d-\left(3Bb^2-4(Ba+Ab)c\right)e\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{c}-4ac\right)+4\left(2Bc^2ex+4Bc^2d-\left(3Bbc-4Ac^2\right)e\right)\sqrt{cx^2+bx+a}}{16c^3},\ \frac{\left(4\left(Bbc-2Ac^2\right)d-\left(3Bb^2-4(Ba+Ab)c\right)e\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)+2\left(2Bc^2ex+4Bc^2d-\left(3Bbc-4Ac^2\right)e\right)\sqrt{cx^2+bx+a}}{8c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 - 4*(B*a + A*b)*c)*e)*sqrt(c)*log(
-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) -
4*a*c) + 4*(2*B*c^2*e*x + 4*B*c^2*d - (3*B*b*c - 4*A*c^2)*e)*sqrt(c*x^2 + b
*x + a))/c^3, 1/8*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 - 4*(B*a + A*b)*c)*e)*
sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b
*c*x + a*c)) + 2*(2*B*c^2*e*x + 4*B*c^2*d - (3*B*b*c - 4*A*c^2)*e)*sqrt(c*x
^2 + b*x + a))/c^3]
```

giac [A] time = 0.25, size = 119, normalized size = 1.03

$$\frac{1}{4}\sqrt{cx^2+bx+a}\left(\frac{2Bxe}{c}+\frac{4Bcd-3Bbe+4Ace}{c^2}\right)+\frac{\left(4Bbcd-8Ac^2d-3Bb^2e+4Bace+4Abce\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{8c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x + a)*(2*B*x*e/c + (4*B*c*d - 3*B*b*e + 4*A*c*e)/c^2) +
 1/8*(4*B*b*c*d - 8*A*c^2*d - 3*B*b^2*e + 4*B*a*c*e + 4*A*b*c*e)*log(abs(-2
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 243, normalized size = 2.09

$$-\frac{Abe\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{Ad\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{\sqrt{c}}-\frac{Bae\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3Bb^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{8c^{\frac{5}{2}}}-\frac{Bbd\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+bx+a}\,Bex}{2c}+\frac{\sqrt{cx^2+bx+a}\,Ae}{c}-\frac{3\sqrt{cx^2+bx+a}\,Bbe}{4c^2}+\frac{\sqrt{cx^2+bx+a}\,Bd}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/2*B*e*x/c*(c*x^2+b*x+a)^(1/2)-3/4*B*e*b/c^2*(c*x^2+b*x+a)^(1/2)+3/8*B*e*b
^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/2*B*e*a/c^(3/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/c*(c*x^2+b*x+a)^(1/2)*A*e+1/c*(
c*x^2+b*x+a)^(1/2)*B*d-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(
1/2))*A*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d+A*d
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A + B\,x)\,(d + e\,x)}{\sqrt{c\,x^2 + b\,x + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)(d + ex)}{\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/sqrt(a + b*x + c*x**2), x)
```

3.2227 $\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=67

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {640, 621, 206}

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{2c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 66, normalized size = 0.99

$$\frac{(2Ac-bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{3/2}}+\frac{B\sqrt{a+x(b+cx)}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + x*(b + c*x)])/c + ((-(b*B) + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt
[c]*Sqrt[a + x*(b + c*x)])])/(2*c^(3/2))
```

IntegrateAlgebraic [A] time = 0.01, size = 69, normalized size = 1.03

$$\frac{(bB-2Ac)\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{2c^{3/2}}+\frac{B\sqrt{a+bx+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + b*x + c*x^2])/c + ((b*B - 2*A*c)*Log[b*c + 2*c^2*x - 2*c^(3/2)*
Sqrt[a + b*x + c*x^2]])/(2*c^(3/2))
```

fricas [A] time = 0.42, size = 162, normalized size = 2.42

$$\left[\frac{4\sqrt{cx^2+bx+a}\,Bc-(Bb-2\,Ac)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)}{4\,c^2},\ \frac{2\,\sqrt{cx^2+bx+a}\,Bc+(Bb-2\,Ac)\sqrt{-c}\,\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{-c}}{2\,(c^2x^2+bcx+ac)}\right)}{2\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(4*sqrt(c*x^2 + b*x + a)*B*c - (B*b - 2*A*c)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/c^2,
1/2*(2*sqrt(c*x^2 + b*x + a)*B*c + (B*b - 2*A*c)*sqrt(-c)*arctan(1/2*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)))/c^2]
```

giac [A] time = 0.24, size = 62, normalized size = 0.93

$$\frac{\sqrt{cx^2+bx+a}\,B}{c}+\frac{(Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.05, size = 81, normalized size = 1.21

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\;B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] (c*x^2+b*x+a)^(1/2)*B/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.66, size = 80, normalized size = 1.19

$$\frac{B\sqrt{c\,x^2+b\,x+a}}{c}+\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (B*(a + b*x + c*x^2)^(1/2))/c + (A*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x
^2)^(1/2)))/c^(1/2) - (B*b*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2
)))/(2*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.2228 $\int \frac{A+Bx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=132

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

Rubi [A] time = 0.12, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {843, 621, 206, 724}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(Sqrt[c]*e) - ((
B*d - A*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e +
a*e^2]*Sqrt[a + b*x + c*x^2])])/(e*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx = \frac{B\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{e} + \frac{(-Bd+Ae)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{e}$$

$$= \frac{(2B)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{e} - \frac{(2(-Bd+Ae))\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4bde+4ae^2-x^2}\right.}{e}$$

$$= \frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}\,e} - \frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bde+ae^2}\sqrt{a+bx+cx^2}}\right)}{e\sqrt{cd^2-bde+ae^2}}$$

Mathematica [A] time = 0.15, size = 126, normalized size = 0.95

$$\frac{\frac{(Bd-Ae)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\sqrt{e(ae-bd)+cd^2}} + \frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c] + ((B*d
 - A*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d
) + a*e)]*Sqrt[a + x*(b + c*x)])])/Sqrt[c*d^2 + e*(-(b*d) + a*e)])/e
```

IntegrateAlgebraic [A] time = 0.63, size = 152, normalized size = 1.15

$$-\frac{2(Bd-Ae)\sqrt{-ae^2+bde-cd^2}\,\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}\,d+\sqrt{c}\,ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{e\left(ae^2-bde+cd^2\right)} - \frac{B\log\left(-2\sqrt{c}\,e\sqrt{a+bx+cx^2}+be+2cex\right)}{\sqrt{c}\,e}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*Sqrt[-(c*d^2) + b*d*e - a*e^2]*ArcTan[(Sqrt[c]*d + Sqrt[c]*
e*x - e*Sqrt[a + b*x + c*x^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/(e*(c*d^2 -
 b*d*e + a*e^2)) - (B*Log[b*e + 2*c*e*x - 2*Sqrt[c]*e*Sqrt[a + b*x + c*x^2]
])/(Sqrt[c]*e)
```

fricas [B] time = 42.74, size = 1079, normalized size = 8.17

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*c*d^2 - B*b*d*e + B*a*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
- 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - (B*c*d - A*c*e)*sq
rt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 -
(8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*
e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 +
 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)))/(c^2*d^2*e
 - b*c*d*e^2 + a*c*e^3), -1/2*(2*(B*c*d^2 - B*b*d*e + B*a*e^2)*sqrt(-c)*arc
tan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c))
 + (B*c*d - A*c*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 -
 (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sq
```

```
rt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e
)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*
x + d^2)))/(c^2*d^2*e - b*c*d*e^2 + a*c*e^3), -1/2*(2*(B*c*d - A*c*e)*sqrt(
-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2
 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 +
(c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - (B*
c*d^2 - B*b*d*e + B*a*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(
c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/(c^2*d^2*e - b*c*d*e^2 + a*c
*e^3), -((B*c*d - A*c*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d
^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(
a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2
- b^2*d*e + a*b*e^2)*x)) + (B*c*d^2 - B*b*d*e + B*a*e^2)*sqrt(-c)*arctan(1/
2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)))/(c^2
*d^2*e - b*c*d*e^2 + a*c*e^3)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [**B**] time = 0.06, size = 349, normalized size = 2.64

$$-\frac{A\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^{2}-2bde+2c\,d^{2}}{e^{2}}+2\sqrt{\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}\,\sqrt{\left(x+\frac{d}{e}\right)^{2}c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}\;e}+\frac{Bd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^{2}-2bde+2c\,d^{2}}{e^{2}}+2\sqrt{\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}\,\sqrt{\left(x+\frac{d}{e}\right)^{2}c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}\;e^{2}}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{\sqrt{c}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] B/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-1/e/((a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e
+c*d^2)/e^2)^(1/2))/(x+d/e))*A+1/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b
*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+
d/e))*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\left(d+e\,x\right)\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.2229 $\int \frac{A+Bx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=150

$$\frac{\sqrt{a+bx+cx^2}\,(Bd-Ae)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{(-2aBe+Abe-2Acd+bBd)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

Rubi [A] time = 0.14, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,(Bd-Ae)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{(-2aBe+Abe-2Acd+bBd)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) - (
(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)
/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e
+ a*e^2)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{(bBd-2Acd+Abe-2aBe)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{(bBd-2Acd+Abe-2aBe)\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4bde+4ae^2}\right.}{cd^2-bde+ae^2}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{(bBd-2Acd+Abe-2aBe)\tanh^{-1}\left(\frac{bd-2ae+(2cd}{2\sqrt{cd^2-bde+ae^2}\sqrt{}}\right.}{2\left(cd^2-bde+ae^2\right)^{3/2}}$$

Mathematica [A] time = 0.09, size = 147, normalized size = 0.98

$$\frac{\sqrt{a+x(b+cx)}\,(Bd-Ae)}{(d+ex)\left(e(ae-bd)+cd^2\right)} + \frac{(-2aBe+Abe-2Acd+bBd)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x))
+ ((b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x +
b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d^2
 + e*(-(b*d) + a*e))^(3/2))
```

IntegrateAlgebraic [A] time = 1.05, size = 229, normalized size = 1.53

$$\frac{\sqrt{a+bx+cx^2}\,(Bd-Ae)}{(d+ex)\left(ae^2-bde+cd^2\right)} + \frac{\left(2Acd\sqrt{-ae^2+bde-cd^2}-Abe\sqrt{-ae^2+bde-cd^2}-bBd\sqrt{-ae^2+bde-cd^2}+2aBe\sqrt{-ae^2+bde-cd^2}\right)\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) + (
(-(b*B*d*Sqrt[-(c*d^2) + b*d*e - a*e^2]) + 2*A*c*d*Sqrt[-(c*d^2) + b*d*e -
a*e^2] - A*b*e*Sqrt[-(c*d^2) + b*d*e - a*e^2] + 2*a*B*e*Sqrt[-(c*d^2) + b*d
*e - a*e^2])*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sqrt[a + b*x + c*x^2])/Sqr
t[-(c*d^2) + b*d*e - a*e^2]])/(c*d^2 - b*d*e + a*e^2)^2
```

fricas [B] time = 2.19, size = 748, normalized size = 4.99

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(((B*b - 2*A*c)*d^2 - (2*B*a - A*b)*d*e + ((B*b - 2*A*c)*d*e - (2*B*a
- A*b)*e^2)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^
2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c
*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)
 - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x +
d^2)) + 4*(B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2)*sqrt(
c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2
 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b
^2 + 2*a*c)*d^2*e^3)*x), -1/2*(((B*b - 2*A*c)*d^2 - (2*B*a - A*b)*d*e + ((B
```

```
*b - 2*A*c)*d*e - (2*B*a - A*b)*e^2)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan
(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*
c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*
x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(B*c*d^3 - A*a*e^3 - (B*b + A*c
)*d^2*e + (B*a + A*b)*d*e^2)*sqrt(c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e
- 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^
3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^3)*x)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.06, size = 1033, normalized size = 6.89

$$\frac{Ab\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{2\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}}-\frac{Acd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\,e}-\frac{Bbd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{2\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\,e}+\frac{Bcd^2\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{\left(ae^2-bde+cd^2\right)\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\,e^2}-\frac{\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}\,A}{\left(ae^2-bde+cd^2\right)\left(x+\frac{d}{e}\right)}+\frac{\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}\,Bd}{\left(ae^2-bde+cd^2\right)\left(x+\frac{d}{e}\right)e}-\frac{B\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2ae^2-2bde+2cd^2}{e^2}+2\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{ae^2-bde+cd^2}{e^2}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{ae^2-bde+cd^2}{e^2}}\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*A+1/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2
*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*B*d+1/2/(a*e^2-b*d*e+c*d^2)/
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*
d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*A-1/2/e/(a*e^2-b*d*e+c*d^2)/(
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d
^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*B*d-1/e/(a*e^2-b*d*e+c*d^2)/((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^
2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d*A+1/e^2/(a*e^2-b*d*e+c*d^2)/(
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d
^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d^2*B-B/e^2/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                           +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**2*sqrt(a + b*x + c*x**2)), x)
```

3.2230 $\int \frac{A+Bx}{(d+ex)^3 \sqrt{a+bx+cx^2}} \, dx$

Optimal. Leaf size=271

$$\frac{\left(-4b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2+3aBde+2Acd^2\right)+b^2e(3Ae+Bd)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}$$

Rubi [A] time = 0.38, antiderivative size = 269, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {834, 806, 724, 206}

$$\frac{\left(-4b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2+3aBde+2Acd^2\right)+b^2e(3Ae+Bd)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{\sqrt{a+bx+cx^2}(Bd-Ae)}{2(d+ex)^2\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{a+bx+cx^2}\left(Be(bd-4ae)-3Ae(2cd-be)+2Bcd^2\right)}{4(d+ex)\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2)
 + ((2*B*c*d^2 + B*e*(b*d - 4*a*e) - 3*A*e*(2*c*d - b*e))*Sqrt[a + b*x + c*
x^2])/(4*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) + ((b^2*e*(B*d + 3*A*e) + 4*c
*(2*A*c*d^2 + 3*a*B*d*e - a*A*e^2) - 4*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*A
rcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[
a + b*x + c*x^2])])/(8*(c*d^2 - b*d*e + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{\int \frac{\frac{1}{2}(bBd-4Acd+3Abe-4aBe)-c(Bd-Ae)x}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(2Bcd^2+Be(bd-4ae)-3Ae(2cd-be)\right)\sqrt{a+bx}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(2Bcd^2+Be(bd-4ae)-3Ae(2cd-be)\right)\sqrt{a+bx}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(2Bcd^2+Be(bd-4ae)-3Ae(2cd-be)\right)\sqrt{a+bx}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

Mathematica [A] time = 0.46, size = 264, normalized size = 0.97

$$-\frac{\left(-4b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2+3aBde+2Acd^2\right)+b^2e(3Ae+Bd)\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{5/2}} + \frac{\sqrt{a+x(b+cx)}(Bd-Ae)}{2(d+ex)^2\left(e(ae-bd)+cd^2\right)} + \frac{\sqrt{a+x(b+cx)}\left(Be(bd-4ae)+3Ae(be-2cd)+2Bcd^2\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x)
^2) + ((2*B*c*d^2 + B*e*(b*d - 4*a*e) + 3*A*e*(-2*c*d + b*e))*Sqrt[a + x*(b
 + c*x)])/(4*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) - ((b^2*e*(B*d + 3*A*e
) + 4*c*(2*A*c*d^2 + 3*a*B*d*e - a*A*e^2) - 4*b*(B*c*d^2 + 2*A*c*d*e + a*B*
e^2))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d)
+ a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a*e))^(5/2))
```

IntegrateAlgebraic [F] time = 182.09, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] $Aborted
```

fricas [B] time = 15.99, size = 1750, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*((4*(B*b*c - 2*A*c^2)*d^4 - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^3*e + (4*
B*a*b - 3*A*b^2 + 4*A*a*c)*d^2*e^2 + (4*(B*b*c - 2*A*c^2)*d^2*e^2 - (B*b^2
+ 4*(3*B*a - 2*A*b)*c)*d*e^3 + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*e^4)*x^2 + 2*(
4*(B*b*c - 2*A*c^2)*d^3*e - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^2*e^2 + (4*B*a*
b - 3*A*b^2 + 4*A*a*c)*d*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e
 - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e
^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e
+ (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^
2*x^2 + 2*d*e*x + d^2)) + 4*(4*B*c^2*d^5 - 2*A*a^2*e^5 - (5*B*b*c + 8*A*c^2
```

```
)*d^4*e + (B*b^2 + (2*B*a + 13*A*b)*c)*d^3*e^2 + (B*a*b - 5*A*b^2 - 10*A*a*
c)*d^2*e^3 - (2*B*a^2 - 7*A*a*b)*d*e^4 + (2*B*c^2*d^4*e - (B*b*c + 6*A*c^2)
*d^3*e^2 - (B*b^2 + (2*B*a - 9*A*b)*c)*d^2*e^3 + (5*B*a*b - 3*A*b^2 - 6*A*a
*c)*d*e^4 - (4*B*a^2 - 3*A*a*b)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^8 - 3
*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 -
(b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^
2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*
a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^
6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*
a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x), -1/8*((4*(B*b*c - 2*A*c^2)*
d^4 - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^3*e + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*d
^2*e^2 + (4*(B*b*c - 2*A*c^2)*d^2*e^2 - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d*e^3
 + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*e^4)*x^2 + 2*(4*(B*b*c - 2*A*c^2)*d^3*e -
(B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^2*e^2 + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*d*e^3
)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*
sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e +
a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)
*x)) - 2*(4*B*c^2*d^5 - 2*A*a^2*e^5 - (5*B*b*c + 8*A*c^2)*d^4*e + (B*b^2 +
(2*B*a + 13*A*b)*c)*d^3*e^2 + (B*a*b - 5*A*b^2 - 10*A*a*c)*d^2*e^3 - (2*B*a
^2 - 7*A*a*b)*d*e^4 + (2*B*c^2*d^4*e - (B*b*c + 6*A*c^2)*d^3*e^2 - (B*b^2 +
 (2*B*a - 9*A*b)*c)*d^2*e^3 + (5*B*a*b - 3*A*b^2 - 6*A*a*c)*d*e^4 - (4*B*a^
2 - 3*A*a*b)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^8 - 3*b*c^2*d^7*e - 3*a^
2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 - (b^3 + 6*a*b*c)*d^5
*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^2*d^5*e^3 - 3*a^2*b
*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*a*b*c)*d^3*e^5 + 3*
(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2 - 3*a^2*b*d^2
*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*a*b*c)*d^4*e^4 + 3*
(a*b^2 + a^2*c)*d^3*e^5)*x)]
```

giac [B] time = 0.39, size = 1476, normalized size = 5.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*(4*B*b*c*d^2 - 8*A*c^2*d^2 - B*b^2*d*e - 12*B*a*c*d*e + 8*A*b*c*d*e +
4*B*a*b*e^2 - 3*A*b^2*e^2 + 4*A*a*c*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d
^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b
*d*e - a*e^2)) + 1/4*(8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*c^(5/2)*d^4
 - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b*c^(3/2)*d^3*e - 24*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^2*A*c^(5/2)*d^3*e + 8*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))*B*b*c^2*d^4 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b*c*d^2*e
^2 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*c^2*d^2*e^2 - 16*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*B*a*c^2*d^3*e - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*A*b*c^2*d^3*e + 2*B*b^2*c^(3/2)*d^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*B*b^2*sqrt(c)*d^2*e^2 - 20*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*
a*c^(3/2)*d^2*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b*c^(3/2)*d^
2*e^2 + B*b^3*sqrt(c)*d^3*e - 8*B*a*b*c^(3/2)*d^3*e - 6*A*b^2*c^(3/2)*d^3*e
 - (sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b^2*d*e^3 - 12*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*B*a*c*d*e^3 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
A*b*c*d*e^3 + (sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*b^3*d^2*e^2 - 16*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*B*a*b*c*d^2*e^2 + 20*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*A*b^2*c*d^2*e^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*c^
2*d^2*e^2 - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*b*sqrt(c)*d*e^3 - 9
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b^2*sqrt(c)*d*e^3 + 12*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^2*A*a*c^(3/2)*d*e^3 - 5*B*a*b^2*sqrt(c)*d^2*e^2 +
3*A*b^3*sqrt(c)*d^2*e^2 + 4*B*a^2*c^(3/2)*d^2*e^2 + 20*A*a*b*c^(3/2)*d^2*e^
2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b*e^4 - 3*(sqrt(c)*x - sqrt
```

```
(c*x^2 + b*x + a))^3*A*b^2*e^4 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*
a*c*e^4 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a*b^2*d*e^3 - 5*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*A*b^3*d*e^3 + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*B*a^2*c*d*e^3 - 28*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b*c*d*e^3 +
 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(c)*e^4 + 12*B*a^2*b*sqr
t(c)*d*e^3 - 11*A*a*b^2*sqrt(c)*d*e^3 - 12*A*a^2*c^(3/2)*d*e^3 - 4*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*B*a^2*b*e^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*A*a*b^2*e^4 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*c*e^4 - 8*B*
a^3*sqrt(c)*e^4 + 8*A*a^2*b*sqrt(c)*e^4)/((c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*
d^2*e^3 + 2*a*c*d^2*e^3 - 2*a*b*d*e^4 + a^2*e^5)*((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*
e)^2)
```

maple [B] time = 0.12, size = 2204, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -B/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)+1/2*B/e/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/
e^2)^(1/2))/(x+d/e))*b-3/2*B/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2))/(x+d/e))*c*d-1/2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A+1/2/e^2/(a*e^2-b*d*e
+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*B*d+3/4*e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A-3/4/(a*e^2-b*d*e+c*d^2)^2/(x+d/
e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*B*d-
3/2/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*c*d*A+3/2/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d^2*B-3/8*e/(a*
e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/
e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*A+3/8/(a
*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)
/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*B*d+3/2
/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d
/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^
2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c*d*A-
3/2/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c
*d^2*B-3/2/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e
-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/
2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/
e))*c^2*d^2*A+3/2/e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/
2))/(x+d/e))*c^2*d^3*B+1/2/e*c/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2
)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2))/(x+d/e))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(d + ex\right)^{3} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**3*sqrt(a + b*x + c*x**2)), x)
```

3.2231 $\int \frac{A+Bx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=444

$$\frac{\sqrt{a+bx+cx^2}\left(B\left(2cde(5bd-26ae)-3be^2(bd-6ae)+8c^2d^3\right)-Ae\left(-4ce(4ae+11bd)+15b^2e^2+44c^2d^2\right)\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}-\frac{(-2\cdots}{\cdots}$$

Rubi [A] time = 0.84, antiderivative size = 442, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(B\left(2cde(5bd-26ae)-3be^2(bd-6ae)+8c^2d^3\right)-Ae\left(-4ce(4ae+11bd)+15b^2e^2+44c^2d^2\right)\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}-\frac{\left(-2b^2e\left(3aBe^2+9Acde+2Bcd^2\right)+4bc\left(-3aAe^3+5aBde^2+6Acd^2e+2Bcd^3\right)-8c\left(Acd\left(2cd^2-3ae^2\right)+aBe\left(4cd^2-ae^2\right)\right)+b^3e^2(5Ae+Bd)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16\left(ae^2-bde+cd^2\right)^{7/2}}+\frac{\sqrt{a+bx+cx^2}(Bd-Ae)}{3(d+ex)^3\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{a+bx+cx^2}\left(Be(bd-6ae)-5Ae(2cd-be)+4Bcd^2\right)}{12(d+ex)^2\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3)
 + ((4*B*c*d^2 + B*e*(b*d - 6*a*e) - 5*A*e*(2*c*d - b*e))*Sqrt[a + b*x + c*
x^2])/(12*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) + ((B*(8*c^2*d^3 + 2*c*d*e
*(5*b*d - 26*a*e) - 3*b*e^2*(b*d - 6*a*e)) - A*e*(44*c^2*d^2 + 15*b^2*e^2 -
 4*c*e*(11*b*d + 4*a*e)))*Sqrt[a + b*x + c*x^2])/(24*(c*d^2 - b*d*e + a*e^2
)^3*(d + e*x)) - ((b^3*e^2*(B*d + 5*A*e) - 2*b^2*e*(2*B*c*d^2 + 9*A*c*d*e +
 3*a*B*e^2) + 4*b*c*(2*B*c*d^3 + 6*A*c*d^2*e + 5*a*B*d*e^2 - 3*a*A*e^3) - 8
*c*(A*c*d*(2*c*d^2 - 3*a*e^2) + a*B*e*(4*c*d^2 - a*e^2)))*ArcTanh[(b*d - 2*
a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2]
)])/(16*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
```

```
2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} - \frac{\int \frac{\frac{1}{2}(bBd-6Acd+5Abe-6aBe)-2c(Bd-Ae)x}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx}{3\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

Mathematica [A] time = 0.93, size = 434, normalized size = 0.98

$$\frac{\frac{\sqrt{a+x(b+cx)}\left(Ae\left(4ce(4ae+11bd)-15b^2e^2-44c^2d^2\right)+B\left(2cde(5bd-26ae)-3be^2(bd-6ae)+8c^2d^3\right)\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)}+\frac{3\left(-2b^2e\left(3aBe^2+9Acde+2Bcd^2\right)+4bc\left(-3aAe^3+5aBde^2+6Acd^2e+2Bcd^3\right)+8c\left(Acd\left(3ae^2-2cd^2\right)+aBe\left(ae^2-4cd^2\right)\right)+b^3e^2(5Ae+Bd)\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{3/2}}+\frac{2\sqrt{a+x(b+cx)}(Bd-Ae)\left(e(ae-bd)+cd^2\right)}{(d+ex)^3}+\frac{\sqrt{a+x(b+cx)}\left(Be(bd-6ae)+5Ae(be-2cd)+4Bcd^2\right)}{2(d+ex)^2}}{6\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)])/(d + e*x)
^3 + ((4*B*c*d^2 + B*e*(b*d - 6*a*e) + 5*A*e*(-2*c*d + b*e))*Sqrt[a + x*(b
+ c*x)])/(2*(d + e*x)^2) + ((B*(8*c^2*d^3 + 2*c*d*e*(5*b*d - 26*a*e) - 3*b*
e^2*(b*d - 6*a*e)) + A*e*(-44*c^2*d^2 - 15*b^2*e^2 + 4*c*e*(11*b*d + 4*a*e)
))*Sqrt[a + x*(b + c*x)])/(4*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x)) + (3*(b^
3*e^2*(B*d + 5*A*e) - 2*b^2*e*(2*B*c*d^2 + 9*A*c*d*e + 3*a*B*e^2) + 4*b*c*(
2*B*c*d^3 + 6*A*c*d^2*e + 5*a*B*d*e^2 - 3*a*A*e^3) + 8*c*(a*B*e*(-4*c*d^2 +
 a*e^2) + A*c*d*(-2*c*d^2 + 3*a*e^2)))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x +
b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2
 + e*(-(b*d) + a*e))^(3/2)))/(6*(c*d^2 + e*(-(b*d) + a*e))^2)
```

IntegrateAlgebraic [F] time = 180.30, size = 0, normalized size = 0.00

$$\$Aborted$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] $Aborted
```

fricas [B] time = 85.51, size = 3684, normalized size = 8.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/96*(3*(8*(B*b*c^2 - 2*A*c^3)*d^6 - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*
d^5*e + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^4*e^2 - (6*B*a*b^
2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^3*e^3 + (8*(B*b*c^2 - 2*A*c^3)*d^3
*e^3 - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^2*e^4 + (B*b^3 + 24*A*a*c^2 +
2*(10*B*a*b - 9*A*b^2)*c)*d*e^5 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a
*b)*c)*e^6)*x^3 + 3*(8*(B*b*c^2 - 2*A*c^3)*d^4*e^2 - 4*(B*b^2*c + 2*(4*B*a
- 3*A*b)*c^2)*d^3*e^3 + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^2
*e^4 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d*e^5)*x^2 + 3*(8*(B
*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^4*e^2 + (B*
b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^3*e^3 - (6*B*a*b^2 - 5*A*b^3
 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^2*e^4)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*
a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4
*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d -
 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)
*x)/(e^2*x^2 + 2*d*e*x + d^2)) - 4*(24*B*c^3*d^7 - 8*A*a^3*e^7 - 36*(B*b*c^
2 + 2*A*c^3)*d^6*e + (15*B*b^2*c - 2*(8*B*a - 81*A*b)*c^2)*d^5*e^2 - (3*B*b
^3 + 92*A*a*c^2 - (44*B*a*b - 123*A*b^2)*c)*d^4*e^3 - (13*B*a*b^2 - 33*A*b^
3 + 4*(11*B*a^2 - 34*A*a*b)*c)*d^3*e^4 + (20*B*a^2*b - 59*A*a*b^2 - 28*A*a^
2*c)*d^2*e^5 - 2*(2*B*a^3 - 17*A*a^2*b)*d*e^6 + (8*B*c^3*d^5*e^2 + 2*(B*b*c
^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c + 44*(B*a - 2*A*b)*c^2)*d^3*e^4 + (3*B
*b^3 - 28*A*a*c^2 + (80*B*a*b - 59*A*b^2)*c)*d^2*e^5 - (21*B*a*b^2 - 15*A*b
^3 + 4*(13*B*a^2 - 7*A*a*b)*c)*d*e^6 + (18*B*a^2*b - 15*A*a*b^2 + 16*A*a^2*
c)*e^7)*x^2 + 2*(12*B*c^3*d^6*e - (5*B*b*c^2 + 54*A*c^3)*d^5*e^2 - (11*B*b^
2*c + (42*B*a - 113*A*b)*c^2)*d^4*e^3 + (4*B*b^3 - 48*A*a*c^2 + (86*B*a*b -
 79*A*b^2)*c)*d^3*e^4 - (29*B*a*b^2 - 20*A*b^3 + 2*(30*B*a^2 - 29*A*a*b)*c)
*d^2*e^5 + (31*B*a^2*b - 25*A*a*b^2 + 6*A*a^2*c)*d*e^6 - (6*B*a^3 - 5*A*a^2
*b)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^4*d^11 - 4*b*c^3*d^10*e - 4*a^3*b*d^4
*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2 + 2*a*c^3)*d^9*e^2 - 4*(b^3*c + 3*a*b*c^2
)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^7*e^4 - 4*(a*b^3 + 3*a^2*b*c)*
d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^6 + (c^4*d^8*e^3 - 4*b*c^3*d^7*e^4
- 4*a^3*b*d*e^10 + a^4*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^6*e^5 - 4*(b^3*c +
3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^7 - 4*(a*b^3 + 3*
a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^2*e^9)*x^3 + 3*(c^4*d^9*e^2 -
4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9 + a^4*d*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d^
7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*
e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^8)*x^2
+ 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 - 4*a^3*b*d^3*e^8 + a^4*d^2*e^9 + 2*(3*b^
2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^7*e^4 + (b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^5*e^6 + 2*(3*a^2*b^2 + 2*a
^3*c)*d^4*e^7)*x), -1/48*(3*(8*(B*b*c^2 - 2*A*c^3)*d^6 - 4*(B*b^2*c + 2*(4*
B*a - 3*A*b)*c^2)*d^5*e + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d
^4*e^2 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^3*e^3 + (8*(B*b*
c^2 - 2*A*c^3)*d^3*e^3 - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^2*e^4 + (B*b
^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d*e^5 - (6*B*a*b^2 - 5*A*b^3 -
4*(2*B*a^2 - 3*A*a*b)*c)*e^6)*x^3 + 3*(8*(B*b*c^2 - 2*A*c^3)*d^4*e^2 - 4*(B
*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^3*e^3 + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b
 - 9*A*b^2)*c)*d^2*e^4 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d*
e^5)*x^2 + 3*(8*(B*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*
c^2)*d^4*e^2 + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^3*e^3 - (6
*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^2*e^4)*x)*sqrt(-c*d^2 + b*d
*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*
(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b
*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(24*B*c^3*d^7
 - 8*A*a^3*e^7 - 36*(B*b*c^2 + 2*A*c^3)*d^6*e + (15*B*b^2*c - 2*(8*B*a - 81
*A*b)*c^2)*d^5*e^2 - (3*B*b^3 + 92*A*a*c^2 - (44*B*a*b - 123*A*b^2)*c)*d^4*
e^3 - (13*B*a*b^2 - 33*A*b^3 + 4*(11*B*a^2 - 34*A*a*b)*c)*d^3*e^4 + (20*B*a
```

```
^2*b - 59*A*a*b^2 - 28*A*a^2*c)*d^2*e^5 - 2*(2*B*a^3 - 17*A*a^2*b)*d*e^6 +
(8*B*c^3*d^5*e^2 + 2*(B*b*c^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c + 44*(B*a -
 2*A*b)*c^2)*d^3*e^4 + (3*B*b^3 - 28*A*a*c^2 + (80*B*a*b - 59*A*b^2)*c)*d^2
*e^5 - (21*B*a*b^2 - 15*A*b^3 + 4*(13*B*a^2 - 7*A*a*b)*c)*d*e^6 + (18*B*a^2
*b - 15*A*a*b^2 + 16*A*a^2*c)*e^7)*x^2 + 2*(12*B*c^3*d^6*e - (5*B*b*c^2 + 5
4*A*c^3)*d^5*e^2 - (11*B*b^2*c + (42*B*a - 113*A*b)*c^2)*d^4*e^3 + (4*B*b^3
 - 48*A*a*c^2 + (86*B*a*b - 79*A*b^2)*c)*d^3*e^4 - (29*B*a*b^2 - 20*A*b^3 +
 2*(30*B*a^2 - 29*A*a*b)*c)*d^2*e^5 + (31*B*a^2*b - 25*A*a*b^2 + 6*A*a^2*c)
*d*e^6 - (6*B*a^3 - 5*A*a^2*b)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^4*d^11 - 4
*b*c^3*d^10*e - 4*a^3*b*d^4*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2 + 2*a*c^3)*d^9
*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^7*e
^4 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^6 + (c^4
*d^8*e^3 - 4*b*c^3*d^7*e^4 - 4*a^3*b*d*e^10 + a^4*e^11 + 2*(3*b^2*c^2 + 2*a
*c^3)*d^6*e^5 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c
^2)*d^4*e^7 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^2*e
^9)*x^3 + 3*(c^4*d^9*e^2 - 4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9 + a^4*d*e^10 +
 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6*e^5 + (b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*d^5*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^7 + 2*(3*a^2*b
^2 + 2*a^3*c)*d^3*e^8)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 - 4*a^3*b*d^3*
e^8 + a^4*d^2*e^9 + 2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3*c + 3*a*b*c^2)
*d^7*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d
^5*e^6 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^7)*x)]
```

giac [B] time = 0.74, size = 4249, normalized size = 9.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(8*B*b*c^2*d^3 - 16*A*c^3*d^3 - 4*B*b^2*c*d^2*e - 32*B*a*c^2*d^2*e + 2
4*A*b*c^2*d^2*e + B*b^3*d*e^2 + 20*B*a*b*c*d*e^2 - 18*A*b^2*c*d*e^2 + 24*A*
a*c^2*d*e^2 - 6*B*a*b^2*e^3 + 5*A*b^3*e^3 + 8*B*a^2*c*e^3 - 12*A*a*b*c*e^3)
*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 +
b*d*e - a*e^2))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e
^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*
a^2*b*d*e^5 + a^3*e^6)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/24*(64*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*B*c^4*d^6 - 16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^3*B*b*c^3*d^5*e - 352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*c^4*d^5*e
+ 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b*c^(7/2)*d^6 + 120*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^4*B*b*c^(5/2)*d^4*e^2 - 240*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^4*A*c^(7/2)*d^4*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*B*b^2*c^(5/2)*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*c^(7
/2)*d^5*e - 528*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b*c^(7/2)*d^5*e + 4
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*b^2*c^3*d^6 + 24*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*B*b*c^2*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*A*c^3*d^3*e^3 + 168*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b^2*c^2*d^4
*e^2 - 512*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*c^3*d^4*e^2 + 400*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b*c^3*d^4*e^2 + 36*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*B*b^3*c^2*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B
*a*b*c^3*d^5*e - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^2*c^3*d^5*e +
8*B*b^3*c^(5/2)*d^6 - 60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*b^2*c^(3/2
)*d^3*e^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a*c^(5/2)*d^3*e^3 +
 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*b*c^(5/2)*d^3*e^3 + 54*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*B*b^3*c^(3/2)*d^4*e^2 - 696*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*B*a*b*c^(5/2)*d^4*e^2 + 756*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2*A*b^2*c^(5/2)*d^4*e^2 + 816*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*A*a*c^(7/2)*d^4*e^2 + 10*B*b^4*c^(3/2)*d^5*e - 48*B*a*b^2*c^(5/2)*d^5*e
 - 44*A*b^3*c^(5/2)*d^5*e - 12*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*b^2*
c*d^2*e^4 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a*c^2*d^2*e^4 + 72*(
```

sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b*c^2*d^2*e^4 - 74*(sqrt(c)*x - sqrt (c*x^2 + b*x + a))^3*B*b^3*c*d^3*e^3 - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b*c^2*d^3*e^3 - 204*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2*c ^2*d^3*e^3 + 656*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c^3*d^3*e^3 - 6* (sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*b^4*c*d^4*e^2 - 360*(sqrt(c)*x - sqrt (c*x^2 + b*x + a))*B*a*b^2*c^2*d^4*e^2 + 336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^3*c^2*d^4*e^2 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*c^3* d^4*e^2 + 816*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b*c^3*d^4*e^2 + 15*(s qrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*b^3*sqrt(c)*d^2*e^4 + 300*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a*b*c^(3/2)*d^2*e^4 - 270*(sqrt(c)*x - sqrt(c* x^2 + b*x + a))^4*A*b^2*c^(3/2)*d^2*e^4 + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a*c^(5/2)*d^2*e^4 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b ^4*sqrt(c)*d^3*e^3 + 252*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*b^2*c^(3 /2)*d^3*e^3 - 498*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b^3*c^(3/2)*d^3*e ^3 + 816*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*c^(5/2)*d^3*e^3 - 648* (sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b*c^(5/2)*d^3*e^3 - 3*B*b^5*sqrt(c)*d^4*e^2 - 70*B*a*b^3*c^(3/2)*d^4*e^2 + 44*A*b^4*c^(3/2)*d^4*e^2 + 48*B*a ^2*b*c^(5/2)*d^4*e^2 + 204*A*a*b^2*c^(5/2)*d^4*e^2 + 3*(sqrt(c)*x - sqrt(c* x^2 + b*x + a))^5*B*b^3*d*e^5 + 60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B* a*b*c*d*e^5 - 54*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^2*c*d*e^5 + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*c^2*d*e^5 + 8*(sqrt(c)*x - sqrt(c* x^2 + b*x + a))^3*B*b^4*d^2*e^4 + 252*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3 *B*a*b^2*c*d^2*e^4 - 34*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^3*c*d^2*e ^4 + 624*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*c^2*d^2*e^4 - 264*(sqr t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b*c^2*d^2*e^4 - 3*(sqrt(c)*x - sqrt(c *x^2 + b*x + a))*B*b^5*d^3*e^3 + 186*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B* a*b^3*c*d^3*e^3 - 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^4*c*d^3*e^3 + 864*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b*c^2*d^3*e^3 - 900*(sqrt(c) *x - sqrt(c*x^2 + b*x + a))*A*a*b^2*c^2*d^3*e^3 - 480*(sqrt(c)*x - sqrt(c*x ^2 + b*x + a))*A*a^2*c^3*d^3*e^3 - 90*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4 *B*a*b^2*sqrt(c)*d*e^5 + 75*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*b^3*sqr t(c)*d*e^5 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*c^(3/2)*d*e^5 - 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a*b*c^(3/2)*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*b^3*sqrt(c)*d^2*e^4 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b^4*sqrt(c)*d^2*e^4 - 144*(sqrt(c)*x - sqrt(c*x^ 2 + b*x + a))^2*B*a^2*b*c^(3/2)*d^2*e^4 + 432*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b^2*c^(3/2)*d^2*e^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^ 2*A*a^2*c^(5/2)*d^2*e^4 + 24*B*a*b^4*sqrt(c)*d^3*e^3 - 15*A*b^5*sqrt(c)*d^3 *e^3 + 240*B*a^2*b^2*c^(3/2)*d^3*e^3 - 206*A*a*b^3*c^(3/2)*d^3*e^3 - 16*B*a ^3*c^(5/2)*d^3*e^3 - 240*A*a^2*b*c^(5/2)*d^3*e^3 - 18*(sqrt(c)*x - sqrt(c*x ^2 + b*x + a))^5*B*a*b^2*e^6 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b ^3*e^6 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c*e^6 - 36*(sqrt(c) *x - sqrt(c*x^2 + b*x + a))^5*A*a*b*c*e^6 - 56*(sqrt(c)*x - sqrt(c*x^2 + b* x + a))^3*B*a*b^3*d*e^5 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^4*d* e^5 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b*c*d*e^5 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^2*c*d*e^5 - 192*(sqrt(c)*x - sqrt(c*x ^2 + b*x + a))^3*A*a^2*c^2*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B *a*b^4*d^2*e^4 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^5*d^2*e^4 - 432 *(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b^2*c*d^2*e^4 + 450*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^3*c*d^2*e^4 - 528*(sqrt(c)*x - sqrt(c*x^2 + b *x + a))*B*a^3*c^2*d^2*e^4 + 432*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2* b*c^2*d^2*e^4 - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b^3*sqrt(c)*d *e^5 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*c^(3/2)*d*e^5 - 87*B *a^2*b^3*sqrt(c)*d^2*e^4 + 78*A*a*b^4*sqrt(c)*d^2*e^4 - 284*B*a^3*b*c^(3/2) *d^2*e^4 + 222*A*a^2*b^2*c^(3/2)*d^2*e^4 + 88*A*a^3*c^(5/2)*d^2*e^4 + 48*(s qrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b^2*e^6 - 40*(sqrt(c)*x - sqrt(c* x^2 + b*x + a))^3*A*a*b^3*e^6 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A* a^2*b*c*e^6 + 57*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b^3*d*e^5 - 66*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^4*d*e^5 + 276*(sqrt(c)*x - sqrt(c*

```
x^2 + b*x + a))*B*a^3*b*c*d*e^5 - 306*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A
*a^2*b^2*c*d*e^5 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*c^2*d*e^5
+ 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c)*e^6 + 96*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*A*a^3*c^(3/2)*e^6 + 114*B*a^3*b^2*sqrt(c)*d*
e^5 - 111*A*a^2*b^3*sqrt(c)*d*e^5 + 104*B*a^4*c^(3/2)*d*e^5 - 28*A*a^3*b*c^
(3/2)*d*e^5 - 30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2*e^6 + 33*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^3*e^6 - 24*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^4*c*e^6 + 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c
*e^6 - 48*B*a^4*b*sqrt(c)*e^6 + 48*A*a^3*b^2*sqrt(c)*e^6 - 32*A*a^4*c^(3/2)
*e^6)/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b
^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*
d*e^6 + a^3*e^7)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^3)
```

maple [B] time = 0.07, size = 3898, normalized size = 8.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/3/e^2/(a*e^2-b*d*e+c*d^2)/(x+d/e)^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-1/2*B/e^2/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x
+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)-3/4/(a*e^2-b
*d*e+c*d^2)^2*c/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2
*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*A-5/8*e^2/(a*
e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*b^2*A+5/16*e^2/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))*b^3*A+1/2*B/e^2*c/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))+1/3/e^3/(a*e^2-b*d*e+c*d^2)/(x+d/e)^3*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*B*d-5/2/(a*e^2-
b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*c^2*d^2*A+9/4*B/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2))/(x+d/e))*b*c*d-15/4/e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2))/(x+d/e))*b*c^2*d^3*B+5/2*e/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*
((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d*A-1
5/8*e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2
*c*d*A-5/6/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d*A-3*B/e^2/(a*e^2-b*d*e+c*d^2)^2/((a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2
)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d^2+3/4*B/(a*e^2-b*d*e+c*d^2)^
2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*b+5/12/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A-13/6*B/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d+5/6/e^
2/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*c*d^2*B+5/8*e/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*B*d+5/2/e/(
```

```
a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*c^2*d^3*B-5/16*e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2))/(x+d/e))*b^3*B*d+2/3/(a*e^2-b*d*e+c*d^2)^2*c/(x+d/e)*((x
+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-3/8*B/(a*e
^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e
+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(
b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2+5/2/e^2/(
a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e
)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^3*d^4*B+
3/2/e/(a*e^2-b*d*e+c*d^2)^2*c^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*
c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))
*d*A-5/12/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*B*d+15/4/(a*e^2-b*d*e+c*d^2)^3/((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^
2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c^2*d^2*A-5/2/(a*e^2-b*d*e+c*d^2)^3/
(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b
*c*d^2*B+15/8/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*
e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d
/e))*b^2*c*d^2*B-5/2/e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2))/(x+d/e))*c^3*d^3*A
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                  +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^4\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(d+ex\right)^{4}\sqrt{a+bx+cx^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**4*sqrt(a + b*x + c*x**2)), x)
```

3.2232 $\int \frac{(A+Bx)(d+ex)^3}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=325

$$\frac{3e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(B\left(-4ce(ae+3bd)+5b^2e^2+8c^2d^2\right)+4Ace(2cd-be)\right)}{8c^{7/2}}+\frac{2(d+ex)^2\left(-x\left(2c(Acd-\right.\right.}{}$$

Rubi [A] time = 0.34, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 779, 621, 206}

$$-\frac{e\sqrt{a+bx+cx^2}\left(-2cex\left(-4c(3aBe+Abe+bBd)+8Ac^2d+5b^2Be\right)+4bc\left(-13aBe^2+6Acde+4Bcd^2\right)-32c^2\left(-aAe^2-3aBde+Acd^2\right)-12b^2ce(Ae+3Bd)+15b^3Be^2\right)}{4c^3\left(b^2-4ac\right)}+\frac{3e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(B\left(-4ce(ae+3bd)+5b^2e^2+8c^2d^2\right)+4Ace(2cd-be)\right)}{8c^{7/2}}+\frac{2(d+ex)^2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)^2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
- (e*(15*b^3*B*e^2 - 12*b^2*c*e*(3*B*d + A*e) - 32*c^2*(A*c*d^2 - 3*a*B*d*e
 - a*A*e^2) + 4*b*c*(4*B*c*d^2 + 6*A*c*d*e - 13*a*B*e^2) - 2*c*e*(8*A*c^2*d
 + 5*b^2*B*e - 4*c*(b*B*d + A*b*e + 3*a*B*e))*x)*Sqrt[a + b*x + c*x^2])/(4*
c^3*(b^2 - 4*a*c)) + (3*e*(4*A*c*e*(2*c*d - b*e) + B*(8*c^2*d^2 + 5*b^2*e^2
 - 4*c*e*(3*b*d + a*e)))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^
2])])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
```

```
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\ &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\ &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\ &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.64, size = 426, normalized size = 1.31

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[c]*(4*A*c*(3*b^3*e^3*x + b^2*e^2*(3*a*e + c*x*(-6*d + e*x)) - 2*b*
c*(c*d^2*(d - 3*e*x) + a*e^2*(3*d + 5*e*x)) - 4*c*(2*a^2*e^3 + c^2*d^3*x +
a*c*e*(-3*d^2 - 3*d*e*x + e^2*x^2))) + B*(-4*a^2*c*e^2*(-13*b*e + 6*c*(4*d
+ e*x)) + b*x*(8*c^3*d^3 - 15*b^3*e^3 + b^2*c*e^2*(36*d - 5*e*x) + 2*b*c^2*
e*(-12*d^2 + 6*d*e*x + e^2*x^2)) + a*(-15*b^3*e^3 + 2*b^2*c*e^2*(18*d + 31*
e*x) + 4*b*c^2*e*(-6*d^2 - 30*d*e*x + 5*e^2*x^2) + 8*c^3*(2*d^3 + 6*d^2*e*x
 - 6*d*e^2*x^2 - e^3*x^3)))) - 3*(b^2 - 4*a*c)*e*(4*A*c*e*(2*c*d - b*e) + B
*(8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(3*b*d + a*e)))*Sqrt[a + x*(b + c*x)]*ArcTa
nh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(8*c^(7/2)*(-b^2 + 4*a*c
)*Sqrt[a + x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 3.78, size = 538, normalized size = 1.66

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -1/4*(-8*A*b*c^3*d^3 + 16*a*B*c^3*d^3 - 24*a*b*B*c^2*d^2*e + 48*a*A*c^3*d^2
*e + 36*a*b^2*B*c*d*e^2 - 24*a*A*b*c^2*d*e^2 - 96*a^2*B*c^2*d*e^2 - 15*a*b^
3*B*e^3 + 12*a*A*b^2*c*e^3 + 52*a^2*b*B*c*e^3 - 32*a^2*A*c^2*e^3 + 8*b*B*c^
3*d^3*x - 16*A*c^4*d^3*x - 24*b^2*B*c^2*d^2*e*x + 24*A*b*c^3*d^2*e*x + 48*a
*B*c^3*d^2*e*x + 36*b^3*B*c*d*e^2*x - 24*A*b^2*c^2*d*e^2*x - 120*a*b*B*c^2*
d*e^2*x + 48*a*A*c^3*d*e^2*x - 15*b^4*B*e^3*x + 12*A*b^3*c*e^3*x + 62*a*b^2
*B*c*e^3*x - 40*a*A*b*c^2*e^3*x - 24*a^2*B*c^2*e^3*x + 12*b^2*B*c^2*d*e^2*x
^2 - 48*a*B*c^3*d*e^2*x^2 - 5*b^3*B*c*e^3*x^2 + 4*A*b^2*c^2*e^3*x^2 + 20*a*
b*B*c^2*e^3*x^2 - 16*a*A*c^3*e^3*x^2 + 2*b^2*B*c^2*e^3*x^3 - 8*a*B*c^3*e^3*
```

```
x^3)/(c^3*(-b^2 + 4*a*c)*Sqrt[a + b*x + c*x^2]) - (3*(8*B*c^2*d^2*e - 12*b*
B*c*d*e^2 + 8*A*c^2*d*e^2 + 5*b^2*B*e^3 - 4*A*b*c*e^3 - 4*a*B*c*e^3)*Log[b*
c^3 + 2*c^4*x - 2*c^(7/2)*Sqrt[a + b*x + c*x^2]])/(8*c^(7/2))
```

fricas [B] time = 3.12, size = 1605, normalized size = 4.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^2*e - 4*(3*B*a*b^3*c + 8*A*a^2*c
^3 - 2*(6*B*a^2*b + A*a*b^2)*c^2)*d*e^2 + (5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)
*c^2 - 4*(6*B*a^2*b^2 + A*a*b^3)*c)*e^3 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^2*e
- 4*(3*B*b^3*c^2 + 8*A*a*c^4 - 2*(6*B*a*b + A*b^2)*c^3)*d*e^2 + (5*B*b^4*c
+ 16*(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*e^3)*x^2 + (8*(B*b^3*
c^2 - 4*B*a*b*c^3)*d^2*e - 4*(3*B*b^4*c + 8*A*a*b*c^3 - 2*(6*B*a*b^2 + A*b^
3)*c^2)*d*e^2 + (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^
4)*c)*e^3)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x +
 a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(8*(2*B*a - A*b)*c^4*d^3 + 2*(B*b^2*c^
3 - 4*B*a*c^4)*e^3*x^3 - 24*(B*a*b*c^3 - 2*A*a*c^4)*d^2*e + 12*(3*B*a*b^2*c
^2 - 2*(4*B*a^2 + A*a*b)*c^3)*d*e^2 - (15*B*a*b^3*c + 32*A*a^2*c^3 - 4*(13*
B*a^2*b + 3*A*a*b^2)*c^2)*e^3 + (12*(B*b^2*c^3 - 4*B*a*c^4)*d*e^2 - (5*B*b^
3*c^2 + 16*A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*
c^5)*d^3 - 24*(B*b^2*c^3 - (2*B*a + A*b)*c^4)*d^2*e + 12*(3*B*b^3*c^2 + 4*A
*a*c^4 - 2*(5*B*a*b + A*b^2)*c^3)*d*e^2 - (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*
b)*c^3 - 2*(31*B*a*b^2 + 6*A*b^3)*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*b^
2*c^4 - 4*a^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x), -1/
8*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^2*e - 4*(3*B*a*b^3*c + 8*A*a^2*c^3 -
2*(6*B*a^2*b + A*a*b^2)*c^2)*d*e^2 + (5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)*c^2
- 4*(6*B*a^2*b^2 + A*a*b^3)*c)*e^3 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^2*e - 4*(
3*B*b^3*c^2 + 8*A*a*c^4 - 2*(6*B*a*b + A*b^2)*c^3)*d*e^2 + (5*B*b^4*c + 16*
(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*e^3)*x^2 + (8*(B*b^3*c^2 -
 4*B*a*b*c^3)*d^2*e - 4*(3*B*b^4*c + 8*A*a*b*c^3 - 2*(6*B*a*b^2 + A*b^3)*c^
2)*d*e^2 + (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^4)*c)
*e^3)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^
2*x^2 + b*c*x + a*c)) - 2*(8*(2*B*a - A*b)*c^4*d^3 + 2*(B*b^2*c^3 - 4*B*a*c
^4)*e^3*x^3 - 24*(B*a*b*c^3 - 2*A*a*c^4)*d^2*e + 12*(3*B*a*b^2*c^2 - 2*(4*B
*a^2 + A*a*b)*c^3)*d*e^2 - (15*B*a*b^3*c + 32*A*a^2*c^3 - 4*(13*B*a^2*b + 3
*A*a*b^2)*c^2)*e^3 + (12*(B*b^2*c^3 - 4*B*a*c^4)*d*e^2 - (5*B*b^3*c^2 + 16*
A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d^3 -
24*(B*b^2*c^3 - (2*B*a + A*b)*c^4)*d^2*e + 12*(3*B*b^3*c^2 + 4*A*a*c^4 - 2*
(5*B*a*b + A*b^2)*c^3)*d*e^2 - (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*b)*c^3 - 2*
(31*B*a*b^2 + 6*A*b^3)*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^4 - 4*a
^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x)]
```

giac [A] time = 0.33, size = 530, normalized size = 1.63

$$\frac{\left(\left(\frac{2\left(Bb^2c^2e^3-4\,Bac^3e^3\right)x}{b^2c^3-4\,ac^4}+\frac{12\,Bb^2c^2de^2-48\,Bac^3de^2-5\,Bb^3ce^3+20\,Babc^2e^3+4\,Ab^2c^2e^3-16\,Aac^3e^3}{b^2c^3-4\,ac^4}\right)x+\frac{8\,Bbc^3d^3-16\,Ac^4d^3-24\,Bb^2c^2d^2e+48\,Bac^3d^2e+24\,Abc^3d^2e+36\,Bb^3cde^2-120\,Babc^2de^2-24\,Ab^2c^2de^2+48\,Aac^3de^2-15\,Bb^4e^3+62\,Bab^2ce^3+12\,Ab^3ce^3-24\,Ba^2c^2e^3-40\,Aabc^2e^3}{b^2c^3-4\,ac^4}\right)x+\frac{16\,Bac^3d^3-8\,Abc^3d^3-24\,Babc^2d^2e+48\,Aac^3d^2e+36\,Bab^2cde^2-96\,Ba^2c^2de^2-24\,Aabc^2de^2-15\,Bab^3e^3+52\,Ba^2bce^3+12\,Aab^2ce^3-32\,Aa^2c^2e^3}{b^2c^3-4\,ac^4}}{4\,\sqrt{cx^2+bx+a}}-\frac{3\left(8\,Bc^2d^2e-12\,Bbcde^2+8\,Ac^2de^2+5\,Bb^2e^3-4\,Bace^3-4\,Abce^3\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*(((2*(B*b^2*c^2*e^3 - 4*B*a*c^3*e^3)*x/(b^2*c^3 - 4*a*c^4) + (12*B*b^2*
c^2*d*e^2 - 48*B*a*c^3*d*e^2 - 5*B*b^3*c*e^3 + 20*B*a*b*c^2*e^3 + 4*A*b^2*c
^2*e^3 - 16*A*a*c^3*e^3)/(b^2*c^3 - 4*a*c^4))*x + (8*B*b*c^3*d^3 - 16*A*c^4
*d^3 - 24*B*b^2*c^2*d^2*e + 48*B*a*c^3*d^2*e + 24*A*b*c^3*d^2*e + 36*B*b^3*
c*d*e^2 - 120*B*a*b*c^2*d*e^2 - 24*A*b^2*c^2*d*e^2 + 48*A*a*c^3*d*e^2 - 15*
B*b^4*e^3 + 62*B*a*b^2*c*e^3 + 12*A*b^3*c*e^3 - 24*B*a^2*c^2*e^3 - 40*A*a*b
*c^2*e^3)/(b^2*c^3 - 4*a*c^4))*x + (16*B*a*c^3*d^3 - 8*A*b*c^3*d^3 - 24*B*a
```

```
*b*c^2*d^2*e + 48*A*a*c^3*d^2*e + 36*B*a*b^2*c*d*e^2 - 96*B*a^2*c^2*d*e^2 -
 24*A*a*b*c^2*d*e^2 - 15*B*a*b^3*e^3 + 52*B*a^2*b*c*e^3 + 12*A*a*b^2*c*e^3
- 32*A*a^2*c^2*e^3)/(b^2*c^3 - 4*a*c^4))/sqrt(c*x^2 + b*x + a) - 3/8*(8*B*c
^2*d^2*e - 12*B*b*c*d*e^2 + 8*A*c^2*d*e^2 + 5*B*b^2*e^3 - 4*B*a*c*e^3 - 4*A
*b*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7
/2)
```

maple [B] time = 0.07, size = 1451, normalized size = 4.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d^3-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a
)^(1/2)*B*d^3-9/2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d
*e^2+6*a/c^2/(c*x^2+b*x+a)^(1/2)*B*d*e^2+3*x^2/c/(c*x^2+b*x+a)^(1/2)*B*d*e^
2-9/4*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e^2+2*a/c^2*b^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*A*e^3-3/2*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*
A*e^3-3*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*A*d^2*e+3/2*b^3/c^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*A*d*e^2+3/2*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*
B*d^2*e-6*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*A*d^2*e-9/2*b^3/c^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*x*B*d*e^2+4*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*
A*e^3+3*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*A*d*e^2+3*b^2/c/(4*a*c-b^2)
/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e+12*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B
*d*e^2+15/8*B*e^3*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+15/16*B*e^3*b^5
/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-5/4*B*e^3*b/c^2*x^2/(c*x^2+b*x+a)^(1/2
)-3*x/c/(c*x^2+b*x+a)^(1/2)*A*d*e^2+3/2*b/c^2/(c*x^2+b*x+a)^(1/2)*B*d^2*e-1
/c/(c*x^2+b*x+a)^(1/2)*B*d^3+1/2*B*e^3*x^3/c/(c*x^2+b*x+a)^(1/2)+15/16*B*e^
3*b^3/c^4/(c*x^2+b*x+a)^(1/2)+15/8*B*e^3*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))-3/2*B*e^3*a/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))+3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d*e^2+2*
a/c^2/(c*x^2+b*x+a)^(1/2)*A*e^3-3/2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*A*e^3-3*x/c/(c*x^2+b*x+a)^(1/2)*B*d^2*e+3/2*b/c^2/(c*x^2+b*x
+a)^(1/2)*A*d*e^2+3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d
^2*e-3/c/(c*x^2+b*x+a)^(1/2)*A*d^2*e-13/2*B*e^3*b^2/c^2*a/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*x+6*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e^2-13/4*B
*e^3*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+9/2*b/c^2*x/(c*x^2+b*x+a)^(1
/2)*B*d*e^2+2*A*d^3*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+x^2/c/(c*x^2+
b*x+a)^(1/2)*A*e^3-3/4*b^2/c^3/(c*x^2+b*x+a)^(1/2)*A*e^3-3/4*b^4/c^3/(4*a*c
-b^2)/(c*x^2+b*x+a)^(1/2)*A*e^3-13/4*B*e^3*b/c^3*a/(c*x^2+b*x+a)^(1/2)+3/2*
B*e^3*a/c^2*x/(c*x^2+b*x+a)^(1/2)-15/8*B*e^3*b^2/c^3*x/(c*x^2+b*x+a)^(1/2)+
3/2*b/c^2*x/(c*x^2+b*x+a)^(1/2)*A*e^3-9/4*b^2/c^3/(c*x^2+b*x+a)^(1/2)*B*d*e
^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/(a + b*x + c*x**2)**(3/2), x)
```

3.2233 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=210

$$\frac{e\sqrt{a+bx+cx^2}\left(-2c(4aBe+Abe+bBd)+4Ac^2d+3b^2Be\right)}{c^2\left(b^2-4ac\right)}+\frac{2(d+ex)\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2B\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx}}$$

Rubi [A] time = 0.19, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 640, 621, 206}

$$\frac{e\sqrt{a+bx+cx^2}\left(-2c(4aBe+Abe+bBd)+4Ac^2d+3b^2Be\right)}{c^2\left(b^2-4ac\right)}+\frac{2(d+ex)\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)(2Ace-3bBe+4Bcd)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d +
 A*e) + 2*c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) +
(e*(4*A*c^2*d + 3*b^2*B*e - 2*c*(b*B*d + A*b*e + 4*a*B*e))*Sqrt[a + b*x + c
*x^2])/(c^2*(b^2 - 4*a*c)) + (e*(4*B*c*d - 3*b*B*e + 2*A*c*e)*ArcTanh[(b +
2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) || !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2(d+ex)\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\ldots}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\ldots}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\ldots}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\ldots}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.45, size = 238, normalized size = 1.13

$$\frac{\frac{2\sqrt{c}\left(B\left(8a^2ce^2+a\left(-3b^2e^2+2bce(2d+5ex)-4c^2\left(d^2+2dex-e^2x^2\right)\right)-bx\left(3b^2e^2+bce(ex-4d)+2c^2d^2\right)\right)+2Ac\left(abe^2-2ace(2d+ex)+b^2e^2x+bcd(d-2ex)+2c^2d^2x\right)\right)}{\sqrt{a+x(b+cx)}}+e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)(-2Ace+3bBe-4Bcd)}{2c^{5/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(2*A*c*(a*b*e^2 + 2*c^2*d^2*x + b^2*e^2*x + b*c*d*(d - 2*e*x) -
 2*a*c*e*(2*d + e*x)) + B*(8*a^2*c*e^2 - b*x*(2*c^2*d^2 + 3*b^2*e^2 + b*c*e
*(-4*d + e*x)) + a*(-3*b^2*e^2 + 2*b*c*e*(2*d + 5*e*x) - 4*c^2*(d^2 + 2*d*e
*x - e^2*x^2)))))/Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*e*(-4*B*c*d + 3*b*B
*e - 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(2*c^
(5/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 1.35, size = 281, normalized size = 1.34

$$\frac{\log\left(-2c^{5/2}\sqrt{a+bx+cx^2}+bc^2+2c^3x\right)\left(-2Ace^2+3bBe^2-4Bcde\right)}{2c^{5/2}}-\frac{-8a^2Bce^2-2aAbce^2+8aAc^2de+4aAc^2e^2x+3ab^2Be^2-4abBcde-10abBce^2x+4aBc^2d^2+8aBc^2dex-4aBc^2e^2x^2-2Ab^2ce^2x-2Abc^2d^2+4Abc^2dex-4Ac^3d^2x+3b^3Be^2x-4b^2Bcdex+b^2Bce^2x^2+2bBc^2d^2x}{c^2\left(4ac-b^2\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((-2*A*b*c^2*d^2 + 4*a*B*c^2*d^2 - 4*a*b*B*c*d*e + 8*a*A*c^2*d*e + 3*a*b^2
*B*e^2 - 2*a*A*b*c*e^2 - 8*a^2*B*c*e^2 + 2*b*B*c^2*d^2*x - 4*A*c^3*d^2*x -
4*b^2*B*c*d*e*x + 4*A*b*c^2*d*e*x + 8*a*B*c^2*d*e*x + 3*b^3*B*e^2*x - 2*A*b
^2*c*e^2*x - 10*a*b*B*c*e^2*x + 4*a*A*c^2*e^2*x + b^2*B*c*e^2*x^2 - 4*a*B*c
^2*e^2*x^2)/(c^2*(-b^2 + 4*a*c)*Sqrt[a + b*x + c*x^2])) + ((-4*B*c*d*e + 3*
b*B*e^2 - 2*A*c*e^2)*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]]
)/(2*c^(5/2))
```

fricas [B] time = 2.51, size = 945, normalized size = 4.50

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d*e - (3*B*a*b^3 + 8*A*a^2*c^2 - 2*(6*B*
a^2*b + A*a*b^2)*c)*e^2 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (3*B*b^3*c + 8*A
```

```
*a*c^3 - 2*(6*B*a*b + A*b^2)*c^2)*e^2)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d*e
 - (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*a*b^2 + A*b^3)*c)*e^2)*x)*sqrt(c)*log(-8
*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*
a*c) + 4*(2*(2*B*a - A*b)*c^3*d^2 + (B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 - 4*(B*
a*b*c^2 - 2*A*a*c^3)*d*e + (3*B*a*b^2*c - 2*(4*B*a^2 + A*a*b)*c^2)*e^2 + (2
*(B*b*c^3 - 2*A*c^4)*d^2 - 4*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d*e + (3*B*b^3
*c + 4*A*a*c^3 - 2*(5*B*a*b + A*b^2)*c^2)*e^2)*x)*sqrt(c*x^2 + b*x + a))/(a
*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x),
-1/2*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d*e - (3*B*a*b^3 + 8*A*a^2*c^2 - 2*(6*B*
a^2*b + A*a*b^2)*c)*e^2 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (3*B*b^3*c + 8*A
*a*c^3 - 2*(6*B*a*b + A*b^2)*c^2)*e^2)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d*e
 - (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*a*b^2 + A*b^3)*c)*e^2)*x)*sqrt(-c)*arcta
n(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) -
 2*(2*(2*B*a - A*b)*c^3*d^2 + (B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 - 4*(B*a*b*c^
2 - 2*A*a*c^3)*d*e + (3*B*a*b^2*c - 2*(4*B*a^2 + A*a*b)*c^2)*e^2 + (2*(B*b*
c^3 - 2*A*c^4)*d^2 - 4*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d*e + (3*B*b^3*c + 4
*A*a*c^3 - 2*(5*B*a*b + A*b^2)*c^2)*e^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c
^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x)]
```

giac [A] time = 0.31, size = 294, normalized size = 1.40

$$\frac{\left(\frac{(Bb^2ce^2-4\,Bac^2e^2)x}{b^2c^2-4\,ac^3}+\frac{2\,Bbc^2d^2-4\,Ac^3d^2-4\,Bb^2cde+8\,Bac^2de+4\,Abc^2de+3\,Bb^3e^2-10\,Babce^2-2\,Ab^2ce^2+4\,Aac^2e^2}{b^2c^2-4\,ac^3}\right)x+\frac{4\,Bac^2d^2-2\,Abc^2d^2-4\,Babcde+8\,Aac^2de+3\,Bab^2e^2-8\,Ba^2ce^2-2\,Aabce^2}{b^2c^2-4\,ac^3}}{\sqrt{cx^2+bx+a}}-\frac{\left(4\,Bcde-3\,Bbe^2+2\,Ace^2\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] (((B*b^2*c*e^2 - 4*B*a*c^2*e^2)*x/(b^2*c^2 - 4*a*c^3) + (2*B*b*c^2*d^2 - 4*
A*c^3*d^2 - 4*B*b^2*c*d*e + 8*B*a*c^2*d*e + 4*A*b*c^2*d*e + 3*B*b^3*e^2 - 1
0*B*a*b*c*e^2 - 2*A*b^2*c*e^2 + 4*A*a*c^2*e^2)/(b^2*c^2 - 4*a*c^3))*x + (4*
B*a*c^2*d^2 - 2*A*b*c^2*d^2 - 4*B*a*b*c*d*e + 8*A*a*c^2*d*e + 3*B*a*b^2*e^2
 - 8*B*a^2*c*e^2 - 2*A*a*b*c*e^2)/(b^2*c^2 - 4*a*c^3))/sqrt(c*x^2 + b*x + a
) - 1/2*(4*B*c*d*e - 3*B*b*e^2 + 2*A*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.05, size = 779, normalized size = 3.71

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*A*d^2*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/4*B*e^2*b^2/c^3/(c*x^2+
b*x+a)^(1/2)-2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d^2-2*x/c/(c*x^2+b*x+a
)^(1/2)*B*d*e+b/c^2/(c*x^2+b*x+a)^(1/2)*B*d*e+1/2*b^3/c^2/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*A*e^2+3/2*B*e^2*b/c^2*x/(c*x^2+b*x+a)^(1/2)-3/4*B*e^2*b^4/c^
3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d
^2-1/c/(c*x^2+b*x+a)^(1/2)*B*d^2+1/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*A*e^2+2*B*e^2*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-2*b^2/c
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*A*d*e-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*
x*A*d*e+b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e+b^2/c/(4*a*c-b^2)/(c*
x^2+b*x+a)^(1/2)*x*A*e^2-3/2*B*e^2*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*
x+4*B*e^2*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+2*b^2/c/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*x*B*d*e+1/2*b/c^2/(c*x^2+b*x+a)^(1/2)*A*e^2+B*e^2*x^2/c/(c*x
^2+b*x+a)^(1/2)+2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e
-2/c/(c*x^2+b*x+a)^(1/2)*A*d*e-3/2*B*e^2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))+2*B*e^2*a/c^2/(c*x^2+b*x+a)^(1/2)-x/c/(c*x^2+b*x+a)^(1/
2)*A*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^2}{\left(c\,x^2+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^2}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/(a + b*x + c*x**2)**(3/2), x)
```

3.2234 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=126

$$\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{Be\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

Rubi [A] time = 0.06, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {777, 621, 206}

$$\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{Be\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d + A*e) + 2*
c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (B*e*ArcTa
nh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(Be)\cdots}{\cdots}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(2B\cdots}{\cdots}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{Be\,\mathrm{t}\cdots}{\cdots}$$

Mathematica [A] time = 0.37, size = 127, normalized size = 1.01

$$\frac{\frac{2\sqrt{c}\,(Ac(-2ae+b(d-ex)+2cdx)+B(abe-2ac(d+ex)+bx(be-cd)))}{\sqrt{a+x(b+cx)}} - Be\left(b^2-4ac\right)\log\left(2\sqrt{c}\sqrt{a+x(b+cx)}+b+2cx\right)}{c^{3/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(A*c*(-2*a*e + 2*c*d*x + b*(d - e*x)) + B*(a*b*e + b*(-(c*d) +
b*e)*x - 2*a*c*(d + e*x))))/Sqrt[a + x*(b + c*x)] - B*(b^2 - 4*a*c)*e*Log[b
 + 2*c*x + 2*Sqrt[c]*Sqrt[a + x*(b + c*x)]])/(c^(3/2)*(-b^2 + 4*a*c))
```

IntegrateAlgebraic [A] time = 0.77, size = 132, normalized size = 1.05

$$\frac{2\left(-2aAce+abBe-2aBcd-2aBcex+Abcd-Abcex+2Ac^2dx+b^2Bex-bBcdx\right)}{c\left(4ac-b^2\right)\sqrt{a+bx+cx^2}} - \frac{Be\log\left(-2c^{3/2}\sqrt{a+bx+cx^2}+bc+2c^2x\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(A*b*c*d - 2*a*B*c*d + a*b*B*e - 2*a*A*c*e - b*B*c*d*x + 2*A*c^2*d*x + b
^2*B*e*x - A*b*c*e*x - 2*a*B*c*e*x))/(c*(-b^2 + 4*a*c)*Sqrt[a + b*x + c*x^2
]) - (B*e*Log[b*c + 2*c^2*x - 2*c^(3/2)*Sqrt[a + b*x + c*x^2]])/c^(3/2)
```

fricas [B] time = 1.65, size = 489, normalized size = 3.88

$$\left[\frac{\left(\left(Bb^2c-4\,Bac^2\right)ex^2+\left(Bb^3-4\,Babc\right)ex+\left(Bab^2-4\,Ba^2c\right)e\right)\sqrt{c}\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)+4\left((2\,Ba-Ab)c^2d-\left(Babc-2\,Aac^2\right)e+\left(\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c-(2\,Ba+Ab)c^2\right)e\right)x\right)\sqrt{cx^2+bx+a}}{2\left(ab^2c^2-4\,a^2c^3+\left(b^2c^3-4\,ac^4\right)x^2+\left(b^3c^2-4\,abc^3\right)x\right)},\ -\frac{\left(\left(Bb^2c-4\,Bac^2\right)ex^2+\left(Bb^3-4\,Babc\right)ex+\left(Bab^2-4\,Ba^2c\right)e\right)\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{-c}}{2\left(c^2x^2+bcx+ac\right)}\right)-2\left((2\,Ba-Ab)c^2d-\left(Babc-2\,Aac^2\right)e+\left(\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c-(2\,Ba+Ab)c^2\right)e\right)x\right)\sqrt{cx^2+bx+a}}{ab^2c^2-4\,a^2c^3+\left(b^2c^3-4\,ac^4\right)x^2+\left(b^3c^2-4\,abc^3\right)x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(((B*b^2*c - 4*B*a*c^2)*e*x^2 + (B*b^3 - 4*B*a*b*c)*e*x + (B*a*b^2 - 4
*B*a^2*c)*e)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x +
a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*((2*B*a - A*b)*c^2*d - (B*a*b*c - 2*A*a
*c^2)*e + ((B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - (2*B*a + A*b)*c^2)*e)*x)*sqrt
(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*
c^2 - 4*a*b*c^3)*x), -(((B*b^2*c - 4*B*a*c^2)*e*x^2 + (B*b^3 - 4*B*a*b*c)*e
*x + (B*a*b^2 - 4*B*a^2*c)*e)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*
c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*((2*B*a - A*b)*c^2*d - (B*a*
b*c - 2*A*a*c^2)*e + ((B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - (2*B*a + A*b)*c^2)
*e)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*
x^2 + (b^3*c^2 - 4*a*b*c^3)*x)]
```

giac [A] time = 0.32, size = 147, normalized size = 1.17

$$-\frac{Be\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}+\frac{2\left(\frac{(Bbcd-2\,Ac^2d-Bb^2e+2\,Bace+Abce)x}{b^2c-4\,ac^2}+\frac{2\,Bacd-Abcd-Babe+2\,Aace}{b^2c-4\,ac^2}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -B*e*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2) +
 2*((B*b*c*d - 2*A*c^2*d - B*b^2*e + 2*B*a*c*e + A*b*c*e)*x/(b^2*c - 4*a*c^
2) + (2*B*a*c*d - A*b*c*d - B*a*b*e + 2*A*a*c*e)/(b^2*c - 4*a*c^2))/sqrt(c*
x^2 + b*x + a)
```

maple [B] time = 0.05, size = 341, normalized size = 2.71

$$-\frac{2Abex}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}+\frac{Bb^2ex}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}-\frac{2Bbdx}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}-\frac{Ab^2e}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}+\frac{Bb^3e}{2\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c^2}-\frac{Bb^2d}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}\,c}+\frac{2\left(2cx+b\right)Ad}{\left(4ac-b^2\right)\sqrt{cx^2+bx+a}}-\frac{Bex}{\sqrt{cx^2+bx+a}\,c}+\frac{Be\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{Ae}{\sqrt{cx^2+bx+a}\,c}+\frac{Bbe}{2\sqrt{cx^2+bx+a}\,c^2}-\frac{Bd}{\sqrt{cx^2+bx+a}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -B*e*x/c/(c*x^2+b*x+a)^(1/2)+1/2*B*e*b/c^2/(c*x^2+b*x+a)^(1/2)+B*e*b^2/c/(4
*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+1/2*B*e*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)+B*e/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/c/(c*x^2+b*x
+a)^(1/2)*A*e-1/c/(c*x^2+b*x+a)^(1/2)*B*d-2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/
2)*x*A*e-2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d-b^2/c/(4*a*c-b^2)/(c*x^2
+b*x+a)^(1/2)*A*e-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d+2*A*d*(2*c*x+b)
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.28, size = 163, normalized size = 1.29

$$\frac{B\,e\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{c^{3/2}}-\frac{4\,A\,a\,e-2\,A\,b\,d+2\,A\,b\,e\,x-4\,A\,c\,d\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}-\frac{B\,d\,\left(4\,a+2\,b\,x\right)}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}+\frac{B\,e\,\left(\frac{a\,b}{2}-x\,\left(a\,c-\frac{b^2}{2}\right)\right)}{c\,\left(a\,c-\frac{b^2}{4}\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*e*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(3/2) - (4*A*a*e
 - 2*A*b*d + 2*A*b*e*x - 4*A*c*d*x)/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
 - (B*d*(4*a + 2*b*x))/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2)) + (B*e*((a*b
)/2 - x*(a*c - b^2/2)))/(c*(a*c - b^2/4)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.2235 $\int \frac{A+Bx}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=45

$$-\frac{2(-2aB-x(bB-2Ac)+Ab)}{(b^2-4ac)\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {636}

$$-\frac{2(-2aB-x(bB-2Ac)+Ab)}{(b^2-4ac)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(a+bx+cx^2)^{3/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)}{(b^2-4ac)\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.16, size = 44, normalized size = 0.98

$$\frac{2B(2a+bx)-2A(b+2cx)}{(b^2-4ac)\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*B*(2*a + b*x) - 2*A*(b + 2*c*x))/((b^2 - 4*a*c)*Sqrt[a + x*(b + c*x)])
```

IntegrateAlgebraic [A] time = 0.01, size = 44, normalized size = 0.98

$$-\frac{2(-2aB+Ab+2Acx-bBx)}{(b^2-4ac)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - b*B*x + 2*A*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

fricas [A] time = 0.47, size = 74, normalized size = 1.64

$$\frac{2\sqrt{cx^2+bx+a}\,(2\,Ba-Ab+(Bb-2\,Ac)x)}{ab^2-4\,a^2c+(b^2c-4\,ac^2)x^2+(b^3-4\,abc)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)*(2*B*a - A*b + (B*b - 2*A*c)*x)/(a*b^2 - 4*a^2*c +
(b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)
```

giac [A] time = 0.29, size = 55, normalized size = 1.22

$$\frac{2\left(\frac{(Bb-2\,Ac)x}{b^2-4\,ac}+\frac{2\,Ba-Ab}{b^2-4\,ac}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b - 2*A*c)*x/(b^2 - 4*a*c) + (2*B*a - A*b)/(b^2 - 4*a*c))/sqrt(c*x^2
+ b*x + a)
```

maple [A] time = 0.05, size = 45, normalized size = 1.00

$$\frac{4Acx-2Bbx+2Ab-4Ba}{\sqrt{c\,x^2+bx+a}\,\left(4ac-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/(c*x^2+b*x+a)^(1/2)*(2*A*c*x-B*b*x+A*b-2*B*a)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.51, size = 44, normalized size = 0.98

$$\frac{2\,A\,b-4\,B\,a+4\,A\,c\,x-2\,B\,b\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*A*b - 4*B*a + 4*A*c*x - 2*B*b*x)/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.2236 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=188

$$\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2c}{2\sqrt{a+bx+cx^2}}\right.}{\left(ae^2-bde+cd^2\right)^{3/2}}$$

Rubi [A] time = 0.16, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 12, 724, 206}

$$\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*Sqrt[a + b*x +
c*x^2]) - (e*(B*d - A*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*
d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(c*d^2 - b*d*e + a*e^2)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} -$$

Mathematica [A] time = 0.16, size = 184, normalized size = 0.98

$$\frac{2\left(2Ac(ae+cdx)+aB(be-2cd+2cex)-Ab^2e+Abc(d-ex)-bBcdx\right)}{\left(b^2-4ac\right)\sqrt{a+x(b+cx)}\left(e(bd-ae)-cd^2\right)}+\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(A*b^2*e) - b*B*c*d*x + 2*A*c*(a*e + c*d*x) + A*b*c*(d - e*x) + a*B*(-
2*c*d + b*e + 2*c*e*x)))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*Sqrt[a +
 x*(b + c*x)]) + (e*(B*d - A*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/
(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*
d) + a*e))^(3/2)
```

IntegrateAlgebraic [A] time = 1.05, size = 233, normalized size = 1.24

$$-\frac{2\left(-2aAce-abBe+2aBcd-2aBcex+Ab^2e-Abcd+Abcex-2Ac^2dx+bBcdx\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(-ae^2+bde-cd^2\right)}-\frac{2\left(Bde\sqrt{-ae^2+bde-cd^2}-Ae^2\sqrt{-ae^2+bde-cd^2}\right)\tan^{-1}\left(\frac{-e\sqrt{a+bx+cx^2}+\sqrt{c}d+\sqrt{c}ex}{\sqrt{-ae^2+bde-cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(-(A*b*c*d) + 2*a*B*c*d + A*b^2*e - a*b*B*e - 2*a*A*c*e + b*B*c*d*x - 2
*A*c^2*d*x + A*b*c*e*x - 2*a*B*c*e*x))/((b^2 - 4*a*c)*(-(c*d^2) + b*d*e - a
*e^2)*Sqrt[a + b*x + c*x^2]) - (2*(B*d*e*Sqrt[-(c*d^2) + b*d*e - a*e^2] - A
*e^2*Sqrt[-(c*d^2) + b*d*e - a*e^2])*ArcTan[(Sqrt[c]*d + Sqrt[c]*e*x - e*Sq
rt[a + b*x + c*x^2])/Sqrt[-(c*d^2) + b*d*e - a*e^2]])/(c*d^2 - b*d*e + a*e^
2)^2
```

fricas [B] time = 4.95, size = 1656, normalized size = 8.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(c*d^2 - b*d*e + a*e^2)*((B*a*b^2 - 4*B*a^2*c)*d*e - (A*a*b^2 -
4*A*a^2*c)*e^2 + ((B*b^2*c - 4*B*a*c^2)*d*e - (A*b^2*c - 4*A*a*c^2)*e^2)*x^
2 + ((B*b^3 - 4*B*a*b*c)*d*e - (A*b^3 - 4*A*a*b*c)*e^2)*x)*log((8*a*b*d*e -
 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2
)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e +
```

```
(2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*
x^2 + 2*d*e*x + d^2)) - 4*((2*B*a - A*b)*c^2*d^3 - (2*A*a*c^2 + (3*B*a*b -
2*A*b^2)*c)*d^2*e + (B*a*b^2 - A*b^3 + (2*B*a^2 + A*a*b)*c)*d*e^2 - (B*a^2*
b - A*a*b^2 + 2*A*a^2*c)*e^3 - ((2*B*a^2 - A*a*b)*c*e^3 - (B*b*c^2 - 2*A*c^
3)*d^3 + (B*b^2*c + (2*B*a - 3*A*b)*c^2)*d^2*e + (2*A*a*c^2 - (3*B*a*b - A*
b^2)*c)*d*e^2)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c^2 - 4*a^2*c^3)*d^4 - 2*(
a*b^3*c - 4*a^2*b*c^2)*d^3*e + (a*b^4 - 2*a^2*b^2*c - 8*a^3*c^2)*d^2*e^2 -
2*(a^2*b^3 - 4*a^3*b*c)*d*e^3 + (a^3*b^2 - 4*a^4*c)*e^4 + ((b^2*c^3 - 4*a*c
^4)*d^4 - 2*(b^3*c^2 - 4*a*b*c^3)*d^3*e + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)
*d^2*e^2 - 2*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a^2*b^2*c - 4*a^3*c^2)*e^4)*x
^2 + ((b^3*c^2 - 4*a*b*c^3)*d^4 - 2*(b^4*c - 4*a*b^2*c^2)*d^3*e + (b^5 - 2*
a*b^3*c - 8*a^2*b*c^2)*d^2*e^2 - 2*(a*b^4 - 4*a^2*b^2*c)*d*e^3 + (a^2*b^3 -
 4*a^3*b*c)*e^4)*x), -(sqrt(-c*d^2 + b*d*e - a*e^2)*((B*a*b^2 - 4*B*a^2*c)*
d*e - (A*a*b^2 - 4*A*a^2*c)*e^2 + ((B*b^2*c - 4*B*a*c^2)*d*e - (A*b^2*c - 4
*A*a*c^2)*e^2)*x^2 + ((B*b^3 - 4*B*a*b*c)*d*e - (A*b^3 - 4*A*a*b*c)*e^2)*x)
*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*
e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*
c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*((2*B*a - A*b)*c^2*d^3 -
 (2*A*a*c^2 + (3*B*a*b - 2*A*b^2)*c)*d^2*e + (B*a*b^2 - A*b^3 + (2*B*a^2 +
A*a*b)*c)*d*e^2 - (B*a^2*b - A*a*b^2 + 2*A*a^2*c)*e^3 - ((2*B*a^2 - A*a*b)*
c*e^3 - (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^2*c + (2*B*a - 3*A*b)*c^2)*d^2*e + (
2*A*a*c^2 - (3*B*a*b - A*b^2)*c)*d*e^2)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c
^2 - 4*a^2*c^3)*d^4 - 2*(a*b^3*c - 4*a^2*b*c^2)*d^3*e + (a*b^4 - 2*a^2*b^2*
c - 8*a^3*c^2)*d^2*e^2 - 2*(a^2*b^3 - 4*a^3*b*c)*d*e^3 + (a^3*b^2 - 4*a^4*c
)*e^4 + ((b^2*c^3 - 4*a*c^4)*d^4 - 2*(b^3*c^2 - 4*a*b*c^3)*d^3*e + (b^4*c -
 2*a*b^2*c^2 - 8*a^2*c^3)*d^2*e^2 - 2*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a^2*
b^2*c - 4*a^3*c^2)*e^4)*x^2 + ((b^3*c^2 - 4*a*b*c^3)*d^4 - 2*(b^4*c - 4*a*b
^2*c^2)*d^3*e + (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*d^2*e^2 - 2*(a*b^4 - 4*a^2*
b^2*c)*d*e^3 + (a^2*b^3 - 4*a^3*b*c)*e^4)*x)]
```

giac [B] time = 0.31, size = 568, normalized size = 3.02

$$\frac{2\left(\frac{\left(Bbc^2d^3-2\,Ac^3d^3-Bb^2cd^2e-2\,Bac^2d^2e+3\,Abc^2d^2e+3\,Babcde^2-Ab^2cde^2-2\,Aac^2de^2-2\,Ba^2ce^3+Aabce^3\right)x}{b^2c^2d^4-4\,ac^3d^4-2\,b^3cd^3e+8\,abc^2d^3e+b^4d^2e^2-2\,ab^2cd^2e^2-8\,a^2c^2d^2e^2-2\,ab^3de^3+8\,a^2bcde^3+a^2b^2e^4-4\,a^3ce^4}+\frac{2\,Bac^2d^3-Abc^2d^3-3\,Babcd^2e+2\,Ab^2cd^2e-2\,Aac^2d^2e+Bab^2de^2-Ab^3de^2+2\,Ba^2cde^2+Aabcde^2-Ba^2be^3+Aab^2e^3-2\,Aa^2ce^3}{b^2c^2d^4-4\,ac^3d^4-2\,b^3cd^3e+8\,abc^2d^3e+b^4d^2e^2-2\,ab^2cd^2e^2-8\,a^2c^2d^2e^2-2\,ab^3de^3+8\,a^2bcde^3+a^2b^2e^4-4\,a^3ce^4}\right)}{\sqrt{cx^2+bx+a}}-\frac{2\left(Bde-Ae^2\right)\arctan\left(-\frac{\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)e+\sqrt{c}d}{\sqrt{-cd^2+bde-ae^2}}\right)}{\left(cd^2-bde+ae^2\right)\sqrt{-cd^2+bde-ae^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c^2*d^3 - 2*A*c^3*d^3 - B*b^2*c*d^2*e - 2*B*a*c^2*d^2*e + 3*A*b*c^2
*d^2*e + 3*B*a*b*c*d*e^2 - A*b^2*c*d*e^2 - 2*A*a*c^2*d*e^2 - 2*B*a^2*c*e^3
+ A*a*b*c*e^3)*x/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3
*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 +
8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4) + (2*B*a*c^2*d^3 - A*b*c^2*d^3
 - 3*B*a*b*c*d^2*e + 2*A*b^2*c*d^2*e - 2*A*a*c^2*d^2*e + B*a*b^2*d*e^2 - A*
b^3*d*e^2 + 2*B*a^2*c*d*e^2 + A*a*b*c*d*e^2 - B*a^2*b*e^3 + A*a*b^2*e^3 - 2
*A*a^2*c*e^3)/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3*e
+ b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 + 8*a
^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4))/sqrt(c*x^2 + b*x + a) - 2*(B*d*e
 - A*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(
-c*d^2 + b*d*e - a*e^2))/((c*d^2 - b*d*e + a*e^2)*sqrt(-c*d^2 + b*d*e - a*e
^2))
```

maple [B] time = 0.06, size = 1261, normalized size = 6.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*B/e*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+e/(a*e^2-b*d*e+c*d^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-1/(a*e^2-b*d
```

```
*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*B*d-2*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*A+2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*B*d+
4/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d*A-4/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d^2*B-e
/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*b^2*A+1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*B*d+2/(a*e^2-b*d
*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*b*c*d*A-2/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-
2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d^2*B-e/(a*e^2-b*d*e+c*
d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d
*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x
+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*A+1/(a*e^2-b*d*e+c*d^2)/((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^
2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\left(d+e\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(d + ex\right) \left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*(a + b*x + c*x**2)**(3/2)), x)
```

3.2237 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=334

$$\frac{e\sqrt{a+bx+cx^2}\left(2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-2aAe^2+3aBde+Acd^2\right)+b^2e(Bd-3Ae)\right)}{\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^2}+\frac{2\left(-A\left(2ace+b^2\right.\right.}{\left(b^2\right.}$$

Rubi [A] time = 0.42, antiderivative size = 332, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$\frac{e\sqrt{a+bx+cx^2}\left(2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-2aAe^2+3aBde+Acd^2\right)+b^2e(Bd-3Ae)\right)}{\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^2}+\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)(d+ex)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e\left(-Be(2ae+bd)-3Ae(2cd-be)+4Bcd^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)*Sqrt[
a + b*x + c*x^2]) + (e*(b^2*e*(B*d - 3*A*e) - 4*c*(A*c*d^2 + 3*a*B*d*e - 2*
a*A*e^2) + 2*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + b*x + c*x^2])/((b^
2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - (e*(4*B*c*d^2 - B*e*(b*d
+ 2*a*e) - 3*A*e*(2*c*d - b*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*
Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a*
e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
```

```
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} \\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} \\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}} \\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.85, size = 326, normalized size = 0.98

$$\frac{e\sqrt{a+x(b+cx)}\left(2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-2aAe^2+3aBde+Acd^2\right)+b^2e(Bd-3Ae)\right)}{\left(b^2-4ac\right)(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{2\left(-2Ac(ae+cdx)+aB(2c(d-ex)-be)+Ab^2e+Abc(ex-d)+bBcdx\right)}{\left(b^2-4ac\right)(d+ex)\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)}+\frac{e\left(-Be(2ae+bd)+3Ae(be-2cd)+4Bcd^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (e*(b^2*e*(B*d - 3*A*e) - 4*c*(A*c*d^2 + 3*a*B*d*e - 2*a*A*e^2) + 2*b*(B*c*
d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + x*(b + c*x)])/((b^2 - 4*a*c)*(c*d^2 +
e*(-(b*d) + a*e))^2*(d + e*x)) + (2*(A*b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d
*x) + A*b*c*(-d + e*x) + a*B*(-(b*e) + 2*c*(d - e*x))))/((b^2 - 4*a*c)*(c*d
^2 + e*(-(b*d) + a*e))*(d + e*x)*Sqrt[a + x*(b + c*x)]) + (e*(4*B*c*d^2 - B
*e*(b*d + 2*a*e) + 3*A*e*(-2*c*d + b*e))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x
+ b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d
^2 + e*(-(b*d) + a*e))^(5/2))
```

IntegrateAlgebraic [B] time = 38.28, size = 6674, normalized size = 19.98

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] Result too large to show
```

fricas [B] time = 19.05, size = 4122, normalized size = 12.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d^3*e - (B*a*b^3 - 24*A*a^2*c^2 - 2*(2*B
*a^2*b - 3*A*a*b^2)*c)*d^2*e^2 - (2*B*a^2*b^2 - 3*A*a*b^3 - 4*(2*B*a^3 - 3*
```

```
A*a^2*b)*c)*d*e^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^2*e^2 - (B*b^3*c - 24*A*a*
c^3 - 2*(2*B*a*b - 3*A*b^2)*c^2)*d*e^3 + (4*(2*B*a^2 - 3*A*a*b)*c^2 - (2*B*
a*b^2 - 3*A*b^3)*c)*e^4)*x^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^3*e + 3*(B*b^3*
c + 8*A*a*c^3 - 2*(2*B*a*b + A*b^2)*c^2)*d^2*e^2 - (B*b^4 - 4*(2*B*a^2 + 3*
A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*d*e^3 - (2*B*a*b^3 - 3*A*b^4 - 4*(2*B
*a^2*b - 3*A*a*b^2)*c)*e^4)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d^3*e - (B*b^4
 + 8*(2*B*a^2 - 3*A*a*b)*c^2 - 2*(4*B*a*b^2 - 3*A*b^3)*c)*d^2*e^2 - 3*(B*a*
b^3 - A*b^4 - 8*A*a^2*c^2 - 2*(2*B*a^2*b - 3*A*a*b^2)*c)*d*e^3 - (2*B*a^2*b
^2 - 3*A*a*b^3 - 4*(2*B*a^3 - 3*A*a^2*b)*c)*e^4)*x)*sqrt(c*d^2 - b*d*e + a*
e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*
e + (b^2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x
 + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 +
 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*(2*(2*B*a - A*b)*c^3*d^5 - 2
*(4*A*a*c^3 + (4*B*a*b - 3*A*b^2)*c^2)*d^4*e - (4*(B*a^2 - 3*A*a*b)*c^2 - (
7*B*a*b^2 - 6*A*b^3)*c)*d^3*e^2 - (3*B*a*b^3 - 2*A*b^4 + 4*A*a^2*c^2 - (4*B
*a^2*b - 3*A*a*b^2)*c)*d^2*e^3 + (3*B*a^2*b^2 - A*a*b^3 - 2*(4*B*a^3 - A*a^
2*b)*c)*d*e^4 - (A*a^2*b^2 - 4*A*a^3*c)*e^5 + (2*(B*b*c^3 - 2*A*c^4)*d^4*e
 - (B*b^2*c^2 + 4*(3*B*a - 2*A*b)*c^3)*d^3*e^2 - (B*b^3*c - 4*A*a*c^3 - (16*
B*a*b - 7*A*b^2)*c^2)*d^2*e^3 - (4*(3*B*a^2 + A*a*b)*c^2 + (B*a*b^2 - 3*A*b
^3)*c)*d*e^4 + (8*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*e^5)*x^2 + (2*(B*b
*c^3 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 + (2*B*a - 3*A*b)*c^3)*d^4*e + (B*b^3*c
 - 8*A*a*c^3)*d^3*e^2 - (B*b^4 + 8*(B*a^2 - 2*A*a*b)*c^2 - (8*B*a*b^2 - 5*A*
b^3)*c)*d^2*e^3 - (B*a*b^3 - 3*A*b^4 + 4*A*a^2*c^2 + 2*(B*a^2*b + 4*A*a*b^2
)*c)*d*e^4 + (2*B*a^2*b^2 - 3*A*a*b^3 - 2*(2*B*a^3 - 5*A*a^2*b)*c)*e^5)*x)*
sqrt(c*x^2 + b*x + a))/((a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3*c^2 - 4*a^2*
b*c^3)*d^6*e + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2 - (a*b^5 + 2
*a^2*b^3*c - 24*a^3*b*c^2)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c - 4*a^4*c^2)*
d^3*e^4 - 3*(a^3*b^3 - 4*a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c)*d*e^6 + ((b
^2*c^4 - 4*a*c^5)*d^6*e - 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*(b^4*c^2 - 3*
a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2*b*c^3)*d^3*e
^4 + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*b^3*c - 4*a^3
*b*c^2)*d*e^6 + (a^3*b^2*c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 - 4*a*c^5)*d^7
 - 2*(b^3*c^3 - 4*a*b*c^4)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d^5*e^2 + (2*b
^5*c - 11*a*b^3*c^2 + 12*a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c - 15*a^2*b^2*c
^2 + 12*a^3*c^3)*d^3*e^4 + 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (3*a^2*b^4 - 1
3*a^3*b^2*c + 4*a^4*c^2)*d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^2 + ((b^3*c^3
 - 4*a*b*c^4)*d^7 - (3*b^4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6*e + 3*(b^5*c
 - 4*a*b^3*c^2)*d^5*e^2 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^4
*e^3 + (2*a*b^5 - 11*a^2*b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^3*b^2*c - 4*a
^4*c^2)*d^2*e^5 - 2*(a^3*b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4*a^5*c)*e^7)*
x), -1/2*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d^3*e - (B*a*b^3 - 24*A*a^2*c^2 - 2*
(2*B*a^2*b - 3*A*a*b^2)*c)*d^2*e^2 - (2*B*a^2*b^2 - 3*A*a*b^3 - 4*(2*B*a^3
 - 3*A*a^2*b)*c)*d*e^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^2*e^2 - (B*b^3*c - 24*
A*a*c^3 - 2*(2*B*a*b - 3*A*b^2)*c^2)*d*e^3 + (4*(2*B*a^2 - 3*A*a*b)*c^2 - (
2*B*a*b^2 - 3*A*b^3)*c)*e^4)*x^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^3*e + 3*(B*
b^3*c + 8*A*a*c^3 - 2*(2*B*a*b + A*b^2)*c^2)*d^2*e^2 - (B*b^4 - 4*(2*B*a^2
 + 3*A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*d*e^3 - (2*B*a*b^3 - 3*A*b^4 - 4*
(2*B*a^2*b - 3*A*a*b^2)*c)*e^4)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d^3*e - (B
*b^4 + 8*(2*B*a^2 - 3*A*a*b)*c^2 - 2*(4*B*a*b^2 - 3*A*b^3)*c)*d^2*e^2 - 3*(
B*a*b^3 - A*b^4 - 8*A*a^2*c^2 - 2*(2*B*a^2*b - 3*A*a*b^2)*c)*d*e^3 - (2*B*a
^2*b^2 - 3*A*a*b^3 - 4*(2*B*a^3 - 3*A*a^2*b)*c)*e^4)*x)*sqrt(-c*d^2 + b*d*e
 - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b
*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c
*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(2*(2*B*a - A*b
)*c^3*d^5 - 2*(4*A*a*c^3 + (4*B*a*b - 3*A*b^2)*c^2)*d^4*e - (4*(B*a^2 - 3*A
*a*b)*c^2 - (7*B*a*b^2 - 6*A*b^3)*c)*d^3*e^2 - (3*B*a*b^3 - 2*A*b^4 + 4*A*a
^2*c^2 - (4*B*a^2*b - 3*A*a*b^2)*c)*d^2*e^3 + (3*B*a^2*b^2 - A*a*b^3 - 2*(4
*B*a^3 - A*a^2*b)*c)*d*e^4 - (A*a^2*b^2 - 4*A*a^3*c)*e^5 + (2*(B*b*c^3 - 2*
A*c^4)*d^4*e - (B*b^2*c^2 + 4*(3*B*a - 2*A*b)*c^3)*d^3*e^2 - (B*b^3*c - 4*A
```

```
*a*c^3 - (16*B*a*b - 7*A*b^2)*c^2)*d^2*e^3 - (4*(3*B*a^2 + A*a*b)*c^2 + (B*
a*b^2 - 3*A*b^3)*c)*d*e^4 + (8*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*e^5)*
x^2 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 + (2*B*a - 3*A*b)*c^3)*d^4*
e + (B*b^3*c - 8*A*a*c^3)*d^3*e^2 - (B*b^4 + 8*(B*a^2 - 2*A*a*b)*c^2 - (8*B
*a*b^2 - 5*A*b^3)*c)*d^2*e^3 - (B*a*b^3 - 3*A*b^4 + 4*A*a^2*c^2 + 2*(B*a^2*
b + 4*A*a*b^2)*c)*d*e^4 + (2*B*a^2*b^2 - 3*A*a*b^3 - 2*(2*B*a^3 - 5*A*a^2*b
)*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3
*c^2 - 4*a^2*b*c^3)*d^6*e + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2
 - (a*b^5 + 2*a^2*b^3*c - 24*a^3*b*c^2)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c
- 4*a^4*c^2)*d^3*e^4 - 3*(a^3*b^3 - 4*a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c
)*d*e^6 + ((b^2*c^4 - 4*a*c^5)*d^6*e - 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*
(b^4*c^2 - 3*a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2
*b*c^3)*d^3*e^4 + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*
b^3*c - 4*a^3*b*c^2)*d*e^6 + (a^3*b^2*c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 -
 4*a*c^5)*d^7 - 2*(b^3*c^3 - 4*a*b*c^4)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d
^5*e^2 + (2*b^5*c - 11*a*b^3*c^2 + 12*a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c -
 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^3*e^4 + 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (
3*a^2*b^4 - 13*a^3*b^2*c + 4*a^4*c^2)*d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^
2 + ((b^3*c^3 - 4*a*b*c^4)*d^7 - (3*b^4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6
*e + 3*(b^5*c - 4*a*b^3*c^2)*d^5*e^2 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12
*a^3*c^3)*d^4*e^3 + (2*a*b^5 - 11*a^2*b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^
3*b^2*c - 4*a^4*c^2)*d^2*e^5 - 2*(a^3*b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4
*a^5*c)*e^7)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 3090, normalized size = 9.25

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -12*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^2*d*A-3*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c
-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b
^2*c*B*d+3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((
(b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)
^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(
x+d/e))*b*A-1/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-B/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))+12/e*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*B*d+6/e*c/(a*e^
2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*b*B*d-6/e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^3*B+3*e^2/(a*e
^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*x*b^2*c*A+B/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)-3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A+3/2*e^
```

```
2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*A+3*e/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d*A+3/(a*e^2-b*d*e+c*d^
2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d
*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x
+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d^2*B+3/2*e/(a*e^2-b*d*e
+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*b*B*d+12/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^2*d^2*B-12/e/(a*e^2-b*d*e+c*d^2)^2
/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*x*c^3*d^3*B-6*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c
*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c*d*A-3/(a*e^2-b*d*e+c*d^2
)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d^2
*B-B/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2+12/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^3*d^2*A+6/(
a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*b^2*c*d^2*B-3/2*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)
/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*B*d-
3/2*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*B
*d+6/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^2*A-2*B/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^
2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c-
8*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*A-4*c/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A+1/e/(a*e^2-
b*d*e+c*d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*B*d-3*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*l
n(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
)/(x+d/e))*c*d*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                  +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2238 $\int \frac{A+Bx}{(d+ex)^3(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=545

$$\frac{3e\left(Ae\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)-B\left(-4cde(3ae+bd)+be^2(4ae+bd)+8c^2d^3\right)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-b}{2\sqrt{a+bx+cx^2}\sqrt{ae^2}}\right.}{8\left(ae^2-bde+cd^2\right)^{7/2}}$$

Rubi [A] time = 0.93, antiderivative size = 545, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$\frac{3e\left(Ae\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)-B\left(-4cde(3ae+bd)+be^2(4ae+bd)+8c^2d^3\right)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{7/2}}+\frac{e\sqrt{a+bx+cx^2}\left(4b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-3aAe^2+5aBde+2Acd^2\right)+b^2e(Bd-5Ae)\right)}{2\left(b^2-4ac\right)(d+ex)^2\left(ae^2-bde+cd^2\right)^2}-\frac{e\sqrt{a+bx+cx^2}\left(-2b^2e\left(-6aBe^2-19Acde+5Bcd^2\right)-4bc\left(-13aAe^3+9aBde^2+6Acd^2e+2Bcd^3\right)+8c\left(Acd\left(2cd^2-13ae^2\right)+aBe\left(11cd^2-4ae^2\right)\right)+3b^3e^2(Bd-5Ae)\right)}{4\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^3}+\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)(d+ex)^2\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2*Sqr
t[a + b*x + c*x^2]) + (e*(b^2*e*(B*d - 5*A*e) - 4*c*(2*A*c*d^2 + 5*a*B*d*e
- 3*a*A*e^2) + 4*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + b*x + c*x^2])/
(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) - (e*(3*b^3*e^2*(B*
d - 5*A*e) - 2*b^2*e*(5*B*c*d^2 - 19*A*c*d*e - 6*a*B*e^2) - 4*b*c*(2*B*c*d^
3 + 6*A*c*d^2*e + 9*a*B*d*e^2 - 13*a*A*e^3) + 8*c*(A*c*d*(2*c*d^2 - 13*a*e^
2) + a*B*e*(11*c*d^2 - 4*a*e^2)))*Sqrt[a + b*x + c*x^2])/(4*(b^2 - 4*a*c)*(
c*d^2 - b*d*e + a*e^2)^3*(d + e*x)) + (3*e*(A*e*(16*c^2*d^2 + 5*b^2*e^2 - 4
*c*e*(4*b*d + a*e)) - B*(8*c^2*d^3 - 4*c*d*e*(b*d + 3*a*e) + b*e^2*(b*d + 4
*a*e)))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e
^2]*Sqrt[a + b*x + c*x^2])])/(8*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
```

```
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 3.35, size = 527, normalized size = 0.97

$$\frac{2\left(\frac{3e\left(b^2-4ac\right)\left(Ae\left(4ce(ae+4bd)-5b^2e^2-16c^2d^2\right)+B\left(-4cde(3ae+bd)+be^2(4ae+bd)+8c^2d^3\right)\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{16\left(e(ae-bd)+cd^2\right)^{5/2}}+\frac{e\sqrt{a+x(b+cx)}\left(4b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-3aAe^2+5aBde+2Acd^2\right)+b^2e(Bd-5Ae)\right)}{4(d+ex)^2\left(e(ae-bd)+cd^2\right)}+\frac{-2Ac(ae+cdx)+aB(2c(d-ex)-be)+Ab^2e+Abc(ex-d)+bBcdx}{(d+ex)^2\sqrt{a+x(b+cx)}}-\frac{e\sqrt{a+x(b+cx)}\left(2b^2e\left(6aBe^2+19Acde-5Bcd^2\right)-4bc\left(-13aAe^3+9aBde^2+6Acd^2e+2Bcd^3\right)+8c\left(Acd\left(2cd^2-13ae^2\right)+aBe\left(11cd^2-4ae^2\right)\right)+3b^3e^2(Bd-5Ae)\right)}{8(d+ex)\left(e(ae-bd)+cd^2\right)^2}\right)}{\left(b^2-4ac\right)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*((e*(b^2*e*(B*d - 5*A*e) - 4*c*(2*A*c*d^2 + 5*a*B*d*e - 3*a*A*e^2) + 4*b
*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + x*(b + c*x)])/(4*(c*d^2 + e*(-(b
*d) + a*e))*(d + e*x)^2) - (e*(3*b^3*e^2*(B*d - 5*A*e) + 2*b^2*e*(-5*B*c*d^
2 + 19*A*c*d*e + 6*a*B*e^2) - 4*b*c*(2*B*c*d^3 + 6*A*c*d^2*e + 9*a*B*d*e^2
- 13*a*A*e^3) + 8*c*(A*c*d*(2*c*d^2 - 13*a*e^2) + a*B*e*(11*c*d^2 - 4*a*e^2
)))*Sqrt[a + x*(b + c*x)])/(8*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) + (A*
b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d*x) + A*b*c*(-d + e*x) + a*B*(-(b*e) +
```

```
2*c*(d - e*x)))/((d + e*x)^2*Sqrt[a + x*(b + c*x)]) + (3*(b^2 - 4*a*c)*e*(A
*e*(-16*c^2*d^2 - 5*b^2*e^2 + 4*c*e*(4*b*d + a*e)) + B*(8*c^2*d^3 - 4*c*d*e
*(b*d + 3*a*e) + b*e^2*(b*d + 4*a*e)))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x +
b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(16*(c*d^
2 + e*(-(b*d) + a*e))^(5/2))))/((b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

IntegrateAlgebraic [F] time = 180.14, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 88.93, size = 8054, normalized size = 14.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/16*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^5*e - 4*(B*a*b^3*c - 16*A*a^2*c^3
 - 4*(B*a^2*b - A*a*b^2)*c^2)*d^4*e^2 + (B*a*b^4 + 16*(3*B*a^3 - 4*A*a^2*b)
*c^2 - 16*(B*a^2*b^2 - A*a*b^3)*c)*d^3*e^3 + (4*B*a^2*b^3 - 5*A*a*b^4 - 16*
A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d^2*e^4 + (8*(B*b^2*c^3 - 4*B*a*
c^4)*d^3*e^3 - 4*(B*b^3*c^2 - 16*A*a*c^4 - 4*(B*a*b - A*b^2)*c^3)*d^2*e^4 +
 (B*b^4*c + 16*(3*B*a^2 - 4*A*a*b)*c^3 - 16*(B*a*b^2 - A*b^3)*c^2)*d*e^5 -
(16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2 - (4*B*a*b^3 - 5*A*b^4)*c)*e^
6)*x^4 + (16*(B*b^2*c^3 - 4*B*a*c^4)*d^4*e^2 - 32*(A*b^2*c^3 - 4*A*a*c^4)*d
^3*e^3 - 2*(B*b^4*c - 16*(3*B*a^2 - 2*A*a*b)*c^3 + 8*(B*a*b^2 - A*b^3)*c^2)
*d^2*e^4 + (B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b - A*a*b^2)*c^2 - 2*(4*B*a*b^
3 - 3*A*b^4)*c)*d*e^5 + (4*B*a*b^4 - 5*A*b^5 - 16*A*a^2*b*c^2 - 8*(2*B*a^2*
b^2 - 3*A*a*b^3)*c)*e^6)*x^3 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^5*e + 4*(3*B*b^
3*c^2 + 16*A*a*c^4 - 4*(3*B*a*b + A*b^2)*c^3)*d^4*e^2 - (7*B*b^4*c - 16*(B*
a^2 + 4*A*a*b)*c^3 - 8*(3*B*a*b^2 - 2*A*b^3)*c^2)*d^3*e^3 + (2*B*b^5 + 48*A
*a^2*c^3 + 24*(4*B*a^2*b - 5*A*a*b^2)*c^2 - (32*B*a*b^3 - 27*A*b^4)*c)*d^2*
e^4 + (9*B*a*b^4 - 10*A*b^5 + 48*(B*a^3 - 2*A*a^2*b)*c^2 - 16*(3*B*a^2*b^2
- 4*A*a*b^3)*c)*d*e^5 + (4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^
3*b - 3*A*a^2*b^2)*c)*e^6)*x^2 + (8*(B*b^3*c^2 - 4*B*a*b*c^3)*d^5*e - 4*(B*
b^4*c + 16*(B*a^2 - A*a*b)*c^3 - 4*(2*B*a*b^2 - A*b^3)*c^2)*d^4*e^2 + (B*b^
5 + 128*A*a^2*c^3 + 16*(5*B*a^2*b - 6*A*a*b^2)*c^2 - 8*(3*B*a*b^3 - 2*A*b^4
)*c)*d^3*e^3 + (6*B*a*b^4 - 5*A*b^5 + 48*(2*B*a^3 - 3*A*a^2*b)*c^2 - 8*(6*B
*a^2*b^2 - 7*A*a*b^3)*c)*d^2*e^4 + 2*(4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^
2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d*e^5)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*lo
g((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^
2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(
b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)
*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*(8*(2*B*a - A*b)*c^4*d^7 - 8*(6*A*a
*c^4 + (5*B*a*b - 4*A*b^2)*c^3)*d^6*e - 4*(4*(5*B*a^2 - 7*A*a*b)*c^3 - 3*(5
*B*a*b^2 - 4*A*b^3)*c^2)*d^5*e^2 + (32*A*a^2*c^3 + 4*(29*B*a^2*b - 24*A*a*b
^2)*c^2 - (49*B*a*b^3 - 32*A*b^4)*c)*d^4*e^3 + (13*B*a*b^4 - 8*A*b^5 - 44*(
2*B*a^3 + A*a^2*b)*c^2 - (10*B*a^2*b^2 - 33*A*a*b^3)*c)*d^3*e^4 - (11*B*a^2
*b^3 + A*a*b^4 - 88*A*a^3*c^2 - 2*(18*B*a^3*b - 7*A*a^2*b^2)*c)*d^2*e^5 - (
2*B*a^3*b^2 - 11*A*a^2*b^3 - 4*(2*B*a^4 - 11*A*a^3*b)*c)*d*e^6 - 2*(A*a^3*b
^2 - 4*A*a^4*c)*e^7 + (8*(B*b*c^4 - 2*A*c^5)*d^5*e^2 + 2*(B*b^2*c^3 - 4*(11
*B*a - 5*A*b)*c^4)*d^4*e^3 - (13*B*b^3*c^2 - 88*A*a*c^4 - 2*(66*B*a*b - 31*
A*b^2)*c^3)*d^3*e^4 + (3*B*b^4*c - 4*(14*B*a^2 + 33*A*a*b)*c^3 - (38*B*a*b^
2 - 53*A*b^3)*c^2)*d^2*e^5 + (104*A*a^2*c^3 + 2*(2*B*a^2*b + 7*A*a*b^2)*c^2
 + 3*(3*B*a*b^3 - 5*A*b^4)*c)*d*e^6 + (4*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*
```

B*a^2*b^2 - 5*A*a*b^3)*c)*e^7)*x^3 + (16*(B*b*c^4 - 2*A*c^5)*d^6*e - 4*(B*b
^2*c^3 + 2*(16*B*a - 9*A*b)*c^4)*d^5*e^2 - (7*B*b^3*c^2 - 80*A*a*c^4 - 4*(3
7*B*a*b - 20*A*b^2)*c^3)*d^4*e^3 - (8*B*b^4*c + 4*(34*B*a^2 + 7*A*a*b)*c^3
- (26*B*a*b^2 + 27*A*b^3)*c^2)*d^3*e^4 + (3*B*b^5 + 136*A*a^2*c^3 + 2*(26*B
*a^2*b - 73*A*a*b^2)*c^2 - (25*B*a*b^3 - 28*A*b^4)*c)*d^2*e^5 + (9*B*a*b^4
- 15*A*b^5 - 4*(2*B*a^3 - 5*A*a^2*b)*c^2 - (22*B*a^2*b^2 - 49*A*a*b^3)*c)*d
*e^6 - (12*B*a^2*b^3 - 15*A*a*b^4 - 24*A*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2
*b^2)*c)*e^7)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d^7 - 8*(B*b^2*c^3 + (2*B*a - 3*
A*b)*c^4)*d^6*e + 4*(3*B*b^3*c^2 - 16*A*a*c^4 - 4*(3*B*a*b - A*b^2)*c^3)*d^
5*e^2 - (17*B*b^4*c + 8*(17*B*a^2 - 30*A*a*b)*c^3 - 2*(71*B*a*b^2 - 40*A*b^
3)*c^2)*d^4*e^3 + (5*B*b^5 + 40*A*a^2*c^3 + 2*(58*B*a^2*b - 137*A*a*b^2)*c^
2 - (79*B*a*b^3 - 81*A*b^4)*c)*d^3*e^4 + (16*B*a*b^4 - 25*A*b^5 - 4*(26*B*a
^3 - 19*A*a^2*b)*c^2 - (2*B*a^2*b^2 - 63*A*a*b^3)*c)*d^2*e^5 - (17*B*a^2*b^
3 - 20*A*a*b^4 - 88*A*a^3*c^2 - 2*(26*B*a^3*b - 47*A*a^2*b^2)*c)*d*e^6 - (4
*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 - 5*A*a^3*b)*c)*e^7)*x)*sqrt(c*x^2 +
b*x + a))/((a*b^2*c^4 - 4*a^2*c^5)*d^10 - 4*(a*b^3*c^3 - 4*a^2*b*c^4)*d^9*e
 + 2*(3*a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*a^3*c^4)*d^8*e^2 - 4*(a*b^5*c - a^2*
b^3*c^2 - 12*a^3*b*c^3)*d^7*e^3 + (a*b^6 + 8*a^2*b^4*c - 42*a^3*b^2*c^2 - 2
4*a^4*c^3)*d^6*e^4 - 4*(a^2*b^5 - a^3*b^3*c - 12*a^4*b*c^2)*d^5*e^5 + 2*(3*
a^3*b^4 - 10*a^4*b^2*c - 8*a^5*c^2)*d^4*e^6 - 4*(a^4*b^3 - 4*a^5*b*c)*d^3*e
^7 + (a^5*b^2 - 4*a^6*c)*d^2*e^8 + ((b^2*c^5 - 4*a*c^6)*d^8*e^2 - 4*(b^3*c^
4 - 4*a*b*c^5)*d^7*e^3 + 2*(3*b^4*c^3 - 10*a*b^2*c^4 - 8*a^2*c^5)*d^6*e^4 -
 4*(b^5*c^2 - a*b^3*c^3 - 12*a^2*b*c^4)*d^5*e^5 + (b^6*c + 8*a*b^4*c^2 - 42
*a^2*b^2*c^3 - 24*a^3*c^4)*d^4*e^6 - 4*(a*b^5*c - a^2*b^3*c^2 - 12*a^3*b*c^
3)*d^3*e^7 + 2*(3*a^2*b^4*c - 10*a^3*b^2*c^2 - 8*a^4*c^3)*d^2*e^8 - 4*(a^3*
b^3*c - 4*a^4*b*c^2)*d*e^9 + (a^4*b^2*c - 4*a^5*c^2)*e^10)*x^4 + (2*(b^2*c^
5 - 4*a*c^6)*d^9*e - 7*(b^3*c^4 - 4*a*b*c^5)*d^8*e^2 + 8*(b^4*c^3 - 3*a*b^2
*c^4 - 4*a^2*c^5)*d^7*e^3 - 2*(b^5*c^2 + 6*a*b^3*c^3 - 40*a^2*b*c^4)*d^6*e^
4 - 2*(b^6*c - 10*a*b^4*c^2 + 18*a^2*b^2*c^3 + 24*a^3*c^4)*d^5*e^5 + (b^7 -
 34*a^2*b^3*c^2 + 72*a^3*b*c^3)*d^4*e^6 - 4*(a*b^6 - 4*a^2*b^4*c - 2*a^3*b^
2*c^2 + 8*a^4*c^3)*d^3*e^7 + 2*(3*a^2*b^5 - 14*a^3*b^3*c + 8*a^4*b*c^2)*d^2
e^8 - 2(2*a^3*b^4 - 9*a^4*b^2*c + 4*a^5*c^2)*d*e^9 + (a^4*b^3 - 4*a^5*b*c
)*e^10)*x^3 + ((b^2*c^5 - 4*a*c^6)*d^10 - 2*(b^3*c^4 - 4*a*b*c^5)*d^9*e - (
2*b^4*c^3 - 13*a*b^2*c^4 + 20*a^2*c^5)*d^8*e^2 + 8*(b^5*c^2 - 5*a*b^3*c^3 +
 4*a^2*b*c^4)*d^7*e^3 - (7*b^6*c - 22*a*b^4*c^2 - 34*a^2*b^2*c^3 + 40*a^3*c
^4)*d^6*e^4 + 2*(b^7 + 4*a*b^5*c - 38*a^2*b^3*c^2 + 24*a^3*b*c^3)*d^5*e^5 -
 (7*a*b^6 - 22*a^2*b^4*c - 34*a^3*b^2*c^2 + 40*a^4*c^3)*d^4*e^6 + 8*(a^2*b^
5 - 5*a^3*b^3*c + 4*a^4*b*c^2)*d^3*e^7 - (2*a^3*b^4 - 13*a^4*b^2*c + 20*a^5
*c^2)*d^2*e^8 - 2*(a^4*b^3 - 4*a^5*b*c)*d*e^9 + (a^5*b^2 - 4*a^6*c)*e^10)*x
^2 + ((b^3*c^4 - 4*a*b*c^5)*d^10 - 2*(2*b^4*c^3 - 9*a*b^2*c^4 + 4*a^2*c^5)*
d^9*e + 2*(3*b^5*c^2 - 14*a*b^3*c^3 + 8*a^2*b*c^4)*d^8*e^2 - 4*(b^6*c - 4*a
*b^4*c^2 - 2*a^2*b^2*c^3 + 8*a^3*c^4)*d^7*e^3 + (b^7 - 34*a^2*b^3*c^2 + 72*
a^3*b*c^3)*d^6*e^4 - 2*(a*b^6 - 10*a^2*b^4*c + 18*a^3*b^2*c^2 + 24*a^4*c^3)
*d^5*e^5 - 2*(a^2*b^5 + 6*a^3*b^3*c - 40*a^4*b*c^2)*d^4*e^6 + 8*(a^3*b^4 -
3*a^4*b^2*c - 4*a^5*c^2)*d^3*e^7 - 7*(a^4*b^3 - 4*a^5*b*c)*d^2*e^8 + 2*(a^5
*b^2 - 4*a^6*c)*d*e^9)*x), -1/8*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^5*e - 4
*(B*a*b^3*c - 16*A*a^2*c^3 - 4*(B*a^2*b - A*a*b^2)*c^2)*d^4*e^2 + (B*a*b^4
+ 16*(3*B*a^3 - 4*A*a^2*b)*c^2 - 16*(B*a^2*b^2 - A*a*b^3)*c)*d^3*e^3 + (4*B
*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d^2*e^
4 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^3*e^3 - 4*(B*b^3*c^2 - 16*A*a*c^4 - 4*(B*a
*b - A*b^2)*c^3)*d^2*e^4 + (B*b^4*c + 16*(3*B*a^2 - 4*A*a*b)*c^3 - 16*(B*a*
b^2 - A*b^3)*c^2)*d*e^5 - (16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2 - (
4*B*a*b^3 - 5*A*b^4)*c)*e^6)*x^4 + (16*(B*b^2*c^3 - 4*B*a*c^4)*d^4*e^2 - 32
*(A*b^2*c^3 - 4*A*a*c^4)*d^3*e^3 - 2*(B*b^4*c - 16*(3*B*a^2 - 2*A*a*b)*c^3
+ 8*(B*a*b^2 - A*b^3)*c^2)*d^2*e^4 + (B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b -
A*a*b^2)*c^2 - 2*(4*B*a*b^3 - 3*A*b^4)*c)*d*e^5 + (4*B*a*b^4 - 5*A*b^5 - 16
*A*a^2*b*c^2 - 8*(2*B*a^2*b^2 - 3*A*a*b^3)*c)*e^6)*x^3 + (8*(B*b^2*c^3 - 4*
B*a*c^4)*d^5*e + 4*(3*B*b^3*c^2 + 16*A*a*c^4 - 4*(3*B*a*b + A*b^2)*c^3)*d^4
*e^2 - (7*B*b^4*c - 16*(B*a^2 + 4*A*a*b)*c^3 - 8*(3*B*a*b^2 - 2*A*b^3)*c^2)

```
*d^3*e^3 + (2*B*b^5 + 48*A*a^2*c^3 + 24*(4*B*a^2*b - 5*A*a*b^2)*c^2 - (32*B
*a*b^3 - 27*A*b^4)*c)*d^2*e^4 + (9*B*a*b^4 - 10*A*b^5 + 48*(B*a^3 - 2*A*a^2
*b)*c^2 - 16*(3*B*a^2*b^2 - 4*A*a*b^3)*c)*d*e^5 + (4*B*a^2*b^3 - 5*A*a*b^4
 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*e^6)*x^2 + (8*(B*b^3*c^2 -
4*B*a*b*c^3)*d^5*e - 4*(B*b^4*c + 16*(B*a^2 - A*a*b)*c^3 - 4*(2*B*a*b^2 - A
*b^3)*c^2)*d^4*e^2 + (B*b^5 + 128*A*a^2*c^3 + 16*(5*B*a^2*b - 6*A*a*b^2)*c^
2 - 8*(3*B*a*b^3 - 2*A*b^4)*c)*d^3*e^3 + (6*B*a*b^4 - 5*A*b^5 + 48*(2*B*a^3
 - 3*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 - 7*A*a*b^3)*c)*d^2*e^4 + 2*(4*B*a^2*b^3
 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d*e^5)*x)*sqrt
(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^
2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 +
 (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*
(8*(2*B*a - A*b)*c^4*d^7 - 8*(6*A*a*c^4 + (5*B*a*b - 4*A*b^2)*c^3)*d^6*e -
4*(4*(5*B*a^2 - 7*A*a*b)*c^3 - 3*(5*B*a*b^2 - 4*A*b^3)*c^2)*d^5*e^2 + (32*A
*a^2*c^3 + 4*(29*B*a^2*b - 24*A*a*b^2)*c^2 - (49*B*a*b^3 - 32*A*b^4)*c)*d^4
*e^3 + (13*B*a*b^4 - 8*A*b^5 - 44*(2*B*a^3 + A*a^2*b)*c^2 - (10*B*a^2*b^2 -
 33*A*a*b^3)*c)*d^3*e^4 - (11*B*a^2*b^3 + A*a*b^4 - 88*A*a^3*c^2 - 2*(18*B*
a^3*b - 7*A*a^2*b^2)*c)*d^2*e^5 - (2*B*a^3*b^2 - 11*A*a^2*b^3 - 4*(2*B*a^4
 - 11*A*a^3*b)*c)*d*e^6 - 2*(A*a^3*b^2 - 4*A*a^4*c)*e^7 + (8*(B*b*c^4 - 2*A*
c^5)*d^5*e^2 + 2*(B*b^2*c^3 - 4*(11*B*a - 5*A*b)*c^4)*d^4*e^3 - (13*B*b^3*c
^2 - 88*A*a*c^4 - 2*(66*B*a*b - 31*A*b^2)*c^3)*d^3*e^4 + (3*B*b^4*c - 4*(14
*B*a^2 + 33*A*a*b)*c^3 - (38*B*a*b^2 - 53*A*b^3)*c^2)*d^2*e^5 + (104*A*a^2*
c^3 + 2*(2*B*a^2*b + 7*A*a*b^2)*c^2 + 3*(3*B*a*b^3 - 5*A*b^4)*c)*d*e^6 + (4
*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*B*a^2*b^2 - 5*A*a*b^3)*c)*e^7)*x^3 + (16
*(B*b*c^4 - 2*A*c^5)*d^6*e - 4*(B*b^2*c^3 + 2*(16*B*a - 9*A*b)*c^4)*d^5*e^2
 - (7*B*b^3*c^2 - 80*A*a*c^4 - 4*(37*B*a*b - 20*A*b^2)*c^3)*d^4*e^3 - (8*B*
b^4*c + 4*(34*B*a^2 + 7*A*a*b)*c^3 - (26*B*a*b^2 + 27*A*b^3)*c^2)*d^3*e^4 +
 (3*B*b^5 + 136*A*a^2*c^3 + 2*(26*B*a^2*b - 73*A*a*b^2)*c^2 - (25*B*a*b^3 -
 28*A*b^4)*c)*d^2*e^5 + (9*B*a*b^4 - 15*A*b^5 - 4*(2*B*a^3 - 5*A*a^2*b)*c^2
 - (22*B*a^2*b^2 - 49*A*a*b^3)*c)*d*e^6 - (12*B*a^2*b^3 - 15*A*a*b^4 - 24*A
*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2*b^2)*c)*e^7)*x^2 + (8*(B*b*c^4 - 2*A*c^
5)*d^7 - 8*(B*b^2*c^3 + (2*B*a - 3*A*b)*c^4)*d^6*e + 4*(3*B*b^3*c^2 - 16*A*
a*c^4 - 4*(3*B*a*b - A*b^2)*c^3)*d^5*e^2 - (17*B*b^4*c + 8*(17*B*a^2 - 30*A
*a*b)*c^3 - 2*(71*B*a*b^2 - 40*A*b^3)*c^2)*d^4*e^3 + (5*B*b^5 + 40*A*a^2*c^
3 + 2*(58*B*a^2*b - 137*A*a*b^2)*c^2 - (79*B*a*b^3 - 81*A*b^4)*c)*d^3*e^4 +
 (16*B*a*b^4 - 25*A*b^5 - 4*(26*B*a^3 - 19*A*a^2*b)*c^2 - (2*B*a^2*b^2 - 63
*A*a*b^3)*c)*d^2*e^5 - (17*B*a^2*b^3 - 20*A*a*b^4 - 88*A*a^3*c^2 - 2*(26*B*
a^3*b - 47*A*a^2*b^2)*c)*d*e^6 - (4*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 -
5*A*a^3*b)*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c^4 - 4*a^2*c^5)*d^10
 - 4*(a*b^3*c^3 - 4*a^2*b*c^4)*d^9*e + 2*(3*a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*a
^3*c^4)*d^8*e^2 - 4*(a*b^5*c - a^2*b^3*c^2 - 12*a^3*b*c^3)*d^7*e^3 + (a*b^6
 + 8*a^2*b^4*c - 42*a^3*b^2*c^2 - 24*a^4*c^3)*d^6*e^4 - 4*(a^2*b^5 - a^3*b^
3*c - 12*a^4*b*c^2)*d^5*e^5 + 2*(3*a^3*b^4 - 10*a^4*b^2*c - 8*a^5*c^2)*d^4*
e^6 - 4*(a^4*b^3 - 4*a^5*b*c)*d^3*e^7 + (a^5*b^2 - 4*a^6*c)*d^2*e^8 + ((b^2
*c^5 - 4*a*c^6)*d^8*e^2 - 4*(b^3*c^4 - 4*a*b*c^5)*d^7*e^3 + 2*(3*b^4*c^3 -
10*a*b^2*c^4 - 8*a^2*c^5)*d^6*e^4 - 4*(b^5*c^2 - a*b^3*c^3 - 12*a^2*b*c^4)*
d^5*e^5 + (b^6*c + 8*a*b^4*c^2 - 42*a^2*b^2*c^3 - 24*a^3*c^4)*d^4*e^6 - 4*(
a*b^5*c - a^2*b^3*c^2 - 12*a^3*b*c^3)*d^3*e^7 + 2*(3*a^2*b^4*c - 10*a^3*b^2
*c^2 - 8*a^4*c^3)*d^2*e^8 - 4*(a^3*b^3*c - 4*a^4*b*c^2)*d*e^9 + (a^4*b^2*c
 - 4*a^5*c^2)*e^10)*x^4 + (2*(b^2*c^5 - 4*a*c^6)*d^9*e - 7*(b^3*c^4 - 4*a*b*
c^5)*d^8*e^2 + 8*(b^4*c^3 - 3*a*b^2*c^4 - 4*a^2*c^5)*d^7*e^3 - 2*(b^5*c^2 +
 6*a*b^3*c^3 - 40*a^2*b*c^4)*d^6*e^4 - 2*(b^6*c - 10*a*b^4*c^2 + 18*a^2*b^2
*c^3 + 24*a^3*c^4)*d^5*e^5 + (b^7 - 34*a^2*b^3*c^2 + 72*a^3*b*c^3)*d^4*e^6
 - 4*(a*b^6 - 4*a^2*b^4*c - 2*a^3*b^2*c^2 + 8*a^4*c^3)*d^3*e^7 + 2*(3*a^2*b^
5 - 14*a^3*b^3*c + 8*a^4*b*c^2)*d^2*e^8 - 2*(2*a^3*b^4 - 9*a^4*b^2*c + 4*a^
5*c^2)*d*e^9 + (a^4*b^3 - 4*a^5*b*c)*e^10)*x^3 + ((b^2*c^5 - 4*a*c^6)*d^10
 - 2*(b^3*c^4 - 4*a*b*c^5)*d^9*e - (2*b^4*c^3 - 13*a*b^2*c^4 + 20*a^2*c^5)*d
^8*e^2 + 8*(b^5*c^2 - 5*a*b^3*c^3 + 4*a^2*b*c^4)*d^7*e^3 - (7*b^6*c - 22*a*
b^4*c^2 - 34*a^2*b^2*c^3 + 40*a^3*c^4)*d^6*e^4 + 2*(b^7 + 4*a*b^5*c - 38*a^
```

```
2*b^3*c^2 + 24*a^3*b*c^3)*d^5*e^5 - (7*a*b^6 - 22*a^2*b^4*c - 34*a^3*b^2*c^
2 + 40*a^4*c^3)*d^4*e^6 + 8*(a^2*b^5 - 5*a^3*b^3*c + 4*a^4*b*c^2)*d^3*e^7 -
 (2*a^3*b^4 - 13*a^4*b^2*c + 20*a^5*c^2)*d^2*e^8 - 2*(a^4*b^3 - 4*a^5*b*c)*
d*e^9 + (a^5*b^2 - 4*a^6*c)*e^10)*x^2 + ((b^3*c^4 - 4*a*b*c^5)*d^10 - 2*(2*
b^4*c^3 - 9*a*b^2*c^4 + 4*a^2*c^5)*d^9*e + 2*(3*b^5*c^2 - 14*a*b^3*c^3 + 8*
a^2*b*c^4)*d^8*e^2 - 4*(b^6*c - 4*a*b^4*c^2 - 2*a^2*b^2*c^3 + 8*a^3*c^4)*d^
7*e^3 + (b^7 - 34*a^2*b^3*c^2 + 72*a^3*b*c^3)*d^6*e^4 - 2*(a*b^6 - 10*a^2*b
^4*c + 18*a^3*b^2*c^2 + 24*a^4*c^3)*d^5*e^5 - 2*(a^2*b^5 + 6*a^3*b^3*c - 40
*a^4*b*c^2)*d^4*e^6 + 8*(a^3*b^4 - 3*a^4*b^2*c - 4*a^5*c^2)*d^3*e^7 - 7*(a^
4*b^3 - 4*a^5*b*c)*d^2*e^8 + 2*(a^5*b^2 - 4*a^6*c)*d*e^9)*x)]
```

giac [B] time = 0.86, size = 4002, normalized size = 7.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")

[Out] 2*((B*b*c^6*d^9 - 2*A*c^7*d^9 - 3*B*b^2*c^5*d^8*e - 6*B*a*c^6*d^8*e + 9*A*b
*c^6*d^8*e + 3*B*b^3*c^4*d^7*e^2 + 24*B*a*b*c^5*d^7*e^2 - 18*A*b^2*c^5*d^7*
e^2 - B*b^4*c^3*d^6*e^3 - 34*B*a*b^2*c^4*d^6*e^3 + 21*A*b^3*c^4*d^6*e^3 - 1
6*B*a^2*c^5*d^6*e^3 + 21*B*a*b^3*c^3*d^5*e^4 - 15*A*b^4*c^3*d^5*e^4 + 42*B*
a^2*b*c^4*d^5*e^4 - 6*A*a*b^2*c^4*d^5*e^4 + 12*A*a^2*c^5*d^5*e^4 - 6*B*a*b^
4*c^2*d^4*e^5 + 6*A*b^5*c^2*d^4*e^5 - 36*B*a^2*b^2*c^3*d^4*e^5 + 15*A*a*b^3
*c^3*d^4*e^5 - 12*B*a^3*c^4*d^4*e^5 - 30*A*a^2*b*c^4*d^4*e^5 + B*a*b^5*c*d^
3*e^6 - A*b^6*c*d^3*e^6 + 13*B*a^2*b^3*c^2*d^3*e^6 - 12*A*a*b^4*c^2*d^3*e^6
 + 16*B*a^3*b*c^3*d^3*e^6 + 18*A*a^2*b^2*c^3*d^3*e^6 + 16*A*a^3*c^4*d^3*e^6
 - 3*B*a^2*b^4*c*d^2*e^7 + 3*A*a*b^5*c*d^2*e^7 - 6*B*a^3*b^2*c^2*d^2*e^7 +
3*A*a^2*b^3*c^2*d^2*e^7 - 24*A*a^3*b*c^3*d^2*e^7 + 3*B*a^3*b^3*c*d*e^8 - 3*
A*a^2*b^4*c*d*e^8 - 3*B*a^4*b*c^2*d*e^8 + 6*A*a^3*b^2*c^2*d*e^8 + 6*A*a^4*c
^3*d*e^8 - B*a^4*b^2*c*e^9 + A*a^3*b^3*c*e^9 + 2*B*a^5*c^2*e^9 - 3*A*a^4*b*
c^2*e^9)*x/(b^2*c^6*d^12 - 4*a*c^7*d^12 - 6*b^3*c^5*d^11*e + 24*a*b*c^6*d^1
1*e + 15*b^4*c^4*d^10*e^2 - 54*a*b^2*c^5*d^10*e^2 - 24*a^2*c^6*d^10*e^2 - 2
0*b^5*c^3*d^9*e^3 + 50*a*b^3*c^4*d^9*e^3 + 120*a^2*b*c^5*d^9*e^3 + 15*b^6*c
^2*d^8*e^4 - 225*a^2*b^2*c^4*d^8*e^4 - 60*a^3*c^5*d^8*e^4 - 6*b^7*c*d^7*e^5
 - 36*a*b^5*c^2*d^7*e^5 + 180*a^2*b^3*c^3*d^7*e^5 + 240*a^3*b*c^4*d^7*e^5 +
 b^8*d^6*e^6 + 26*a*b^6*c*d^6*e^6 - 30*a^2*b^4*c^2*d^6*e^6 - 340*a^3*b^2*c^
3*d^6*e^6 - 80*a^4*c^4*d^6*e^6 - 6*a*b^7*d^5*e^7 - 36*a^2*b^5*c*d^5*e^7 + 1
80*a^3*b^3*c^2*d^5*e^7 + 240*a^4*b*c^3*d^5*e^7 + 15*a^2*b^6*d^4*e^8 - 225*a
^4*b^2*c^2*d^4*e^8 - 60*a^5*c^3*d^4*e^8 - 20*a^3*b^5*d^3*e^9 + 50*a^4*b^3*c
*d^3*e^9 + 120*a^5*b*c^2*d^3*e^9 + 15*a^4*b^4*d^2*e^10 - 54*a^5*b^2*c*d^2*e
^10 - 24*a^6*c^2*d^2*e^10 - 6*a^5*b^3*d*e^11 + 24*a^6*b*c*d*e^11 + a^6*b^2*
e^12 - 4*a^7*c*e^12) + (2*B*a*c^6*d^9 - A*b*c^6*d^9 - 9*B*a*b*c^5*d^8*e + 6
*A*b^2*c^5*d^8*e - 6*A*a*c^6*d^8*e + 18*B*a*b^2*c^4*d^7*e^2 - 15*A*b^3*c^4*
d^7*e^2 + 24*A*a*b*c^5*d^7*e^2 - 21*B*a*b^3*c^3*d^6*e^3 + 20*A*b^4*c^3*d^6*
e^3 - 34*A*a*b^2*c^4*d^6*e^3 - 16*A*a^2*c^5*d^6*e^3 + 15*B*a*b^4*c^2*d^5*e^
4 - 15*A*b^5*c^2*d^5*e^4 + 6*B*a^2*b^2*c^3*d^5*e^4 + 15*A*a*b^3*c^3*d^5*e^4
 - 12*B*a^3*c^4*d^5*e^4 + 54*A*a^2*b*c^4*d^5*e^4 - 6*B*a*b^5*c*d^4*e^5 + 6*
A*b^6*c*d^4*e^5 - 15*B*a^2*b^3*c^2*d^4*e^5 + 9*A*a*b^4*c^2*d^4*e^5 + 30*B*a
^3*b*c^3*d^4*e^5 - 66*A*a^2*b^2*c^3*d^4*e^5 - 12*A*a^3*c^4*d^4*e^5 + B*a*b^
6*d^3*e^6 - A*b^7*d^3*e^6 + 12*B*a^2*b^4*c*d^3*e^6 - 11*A*a*b^5*c*d^3*e^6 -
 18*B*a^3*b^2*c^2*d^3*e^6 + 31*A*a^2*b^3*c^2*d^3*e^6 - 16*B*a^4*c^3*d^3*e^6
 + 32*A*a^3*b*c^3*d^3*e^6 - 3*B*a^2*b^5*d^2*e^7 + 3*A*a*b^6*d^2*e^7 - 3*B*a
^3*b^3*c*d^2*e^7 + 24*B*a^4*b*c^2*d^2*e^7 - 30*A*a^3*b^2*c^2*d^2*e^7 + 3*B*
a^3*b^4*d*e^8 - 3*A*a^2*b^5*d*e^8 - 6*B*a^4*b^2*c*d*e^8 + 9*A*a^3*b^3*c*d*e
^8 - 6*B*a^5*c^2*d*e^8 + 3*A*a^4*b*c^2*d*e^8 - B*a^4*b^3*e^9 + A*a^3*b^4*e^
9 + 3*B*a^5*b*c*e^9 - 4*A*a^4*b^2*c*e^9 + 2*A*a^5*c^2*e^9)/(b^2*c^6*d^12 -
4*a*c^7*d^12 - 6*b^3*c^5*d^11*e + 24*a*b*c^6*d^11*e + 15*b^4*c^4*d^10*e^2 -
 54*a*b^2*c^5*d^10*e^2 - 24*a^2*c^6*d^10*e^2 - 20*b^5*c^3*d^9*e^3 + 50*a*b^
3*c^4*d^9*e^3 + 120*a^2*b*c^5*d^9*e^3 + 15*b^6*c^2*d^8*e^4 - 225*a^2*b^2*c^
```

```
4*d^8*e^4 - 60*a^3*c^5*d^8*e^4 - 6*b^7*c*d^7*e^5 - 36*a*b^5*c^2*d^7*e^5 + 1
80*a^2*b^3*c^3*d^7*e^5 + 240*a^3*b*c^4*d^7*e^5 + b^8*d^6*e^6 + 26*a*b^6*c*d
^6*e^6 - 30*a^2*b^4*c^2*d^6*e^6 - 340*a^3*b^2*c^3*d^6*e^6 - 80*a^4*c^4*d^6*
e^6 - 6*a*b^7*d^5*e^7 - 36*a^2*b^5*c*d^5*e^7 + 180*a^3*b^3*c^2*d^5*e^7 + 24
0*a^4*b*c^3*d^5*e^7 + 15*a^2*b^6*d^4*e^8 - 225*a^4*b^2*c^2*d^4*e^8 - 60*a^5
*c^3*d^4*e^8 - 20*a^3*b^5*d^3*e^9 + 50*a^4*b^3*c*d^3*e^9 + 120*a^5*b*c^2*d^
3*e^9 + 15*a^4*b^4*d^2*e^10 - 54*a^5*b^2*c*d^2*e^10 - 24*a^6*c^2*d^2*e^10 -
 6*a^5*b^3*d*e^11 + 24*a^6*b*c*d*e^11 + a^6*b^2*e^12 - 4*a^7*c*e^12))/sqrt(
c*x^2 + b*x + a) - 3/4*(8*B*c^2*d^3*e - 4*B*b*c*d^2*e^2 - 16*A*c^2*d^2*e^2
+ B*b^2*d*e^3 - 12*B*a*c*d*e^3 + 16*A*b*c*d*e^3 + 4*B*a*b*e^4 - 5*A*b^2*e^4
 + 4*A*a*c*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)
/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2
+ 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2
*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/4*(
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*c^(5/2)*d^4*e + 16*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*B*c^2*d^3*e^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*B*b*c^2*d^4*e - 28*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b*c^(3/2)*d
^3*e^2 - 56*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*c^(5/2)*d^3*e^2 + 10*B*
b^2*c^(3/2)*d^4*e - 12*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b*c*d^2*e^3
- 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*c^2*d^2*e^3 - 24*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*B*b^2*c*d^3*e^2 - 64*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*B*a*c^2*d^3*e^2 - 56*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b*c^2*d^3*e
^2 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b^2*sqrt(c)*d^2*e^3 - 36*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*c^(3/2)*d^2*e^3 + 48*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^2*A*b*c^(3/2)*d^2*e^3 - 3*B*b^3*sqrt(c)*d^3*e^2 - 32*B
*a*b*c^(3/2)*d^3*e^2 - 14*A*b^2*c^(3/2)*d^3*e^2 + 3*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*B*b^2*d*e^4 - 12*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*c
*d*e^4 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b*c*d*e^4 + 5*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*B*b^3*d^2*e^3 + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))*B*a*b*c*d^2*e^3 + 44*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^2*c*d^2
*e^3 + 88*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*c^2*d^2*e^3 + 4*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^2*B*a*b*sqrt(c)*d*e^4 - 13*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^2*A*b^2*sqrt(c)*d*e^4 + 28*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*A*a*c^(3/2)*d*e^4 + 7*B*a*b^2*sqrt(c)*d^2*e^3 + 7*A*b^3*sqrt(c)*d^2*e^
3 + 20*B*a^2*c^(3/2)*d^2*e^3 + 44*A*a*b*c^(3/2)*d^2*e^3 + 4*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^3*B*a*b*e^5 - 7*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
A*b^2*e^5 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c*e^5 - (sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*B*a*b^2*d*e^4 - 9*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))*A*b^3*d*e^4 + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*c*d*e^4 - 60
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b*c*d*e^4 + 8*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^2*B*a^2*sqrt(c)*e^5 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*A*a*b*sqrt(c)*e^5 + 4*B*a^2*b*sqrt(c)*d*e^4 - 23*A*a*b^2*sqrt(c)*d*e^4 -
 28*A*a^2*c^(3/2)*d*e^4 - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b*e^5
 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^2*e^5 + 4*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*A*a^2*c*e^5 - 8*B*a^3*sqrt(c)*e^5 + 16*A*a^2*b*sqrt(c)*e^
5)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*
e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 +
 a^3*e^6)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^2)
```

maple [B] time = 0.07, size = 5528, normalized size = 10.14

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2239 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=608

$$\frac{2(d+ex)^3\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2(d+ex)\left(-2b^2c\left(-aAe\right.\right.}{}$$

Rubi [A] time = 0.84, antiderivative size = 608, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 640, 621, 206}

[illegible]

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^3*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(3*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) + (2*(d + e*x)*(b^3*B*e*(c*d^2 - 5*a*e^2) - 8*a*c^2*e*(A*c*d^2 + 8*a*B*
d*e + 3*a*A*e^2) - 2*b^2*c*(2*B*c*d^3 + 5*A*c*d^2*e - 2*a*B*d*e^2 - a*A*e^3
) + 4*b*c*(2*A*c*d*(c*d^2 + 3*a*e^2) + a*B*e*(5*c*d^2 + 7*a*e^2)) - (5*b^4*
B*e^3 - 2*b^3*c*e^2*(3*B*d + A*e) - 4*b^2*c*e*(B*c*d^2 + A*c*d*e + 8*a*B*e^
2) + 8*b*c^2*(B*c*d^3 + 3*A*c*d^2*e + 6*a*B*d*e^2 + 2*a*A*e^3) - 16*c^2*(2*
a*B*e*(c*d^2 - a*e^2) + A*c*d*(c*d^2 + 2*a*e^2)))*x))/(3*c^2*(b^2 - 4*a*c)^
2*Sqrt[a + b*x + c*x^2]) + (e*(15*b^4*B*e^3 - 2*b^3*c*e^2*(7*B*d + 3*A*e) -
 4*b^2*c*e*(2*B*c*d^2 + A*c*d*e + 25*a*B*e^2) + 8*b*c^2*(2*B*c*d^3 + 6*A*c*
d^2*e + 13*a*B*d*e^2 + 5*a*A*e^3) - 16*c^2*(4*a*B*e*(c*d^2 - 2*a*e^2) + A*c
*d*(2*c*d^2 + 5*a*e^2)))*Sqrt[a + b*x + c*x^2])/(3*c^3*(b^2 - 4*a*c)^2) + (
e^3*(8*B*c*d - 5*b*B*e + 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b
*x + c*x^2])])/(2*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
```

```
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Mathematica [A] time = 2.40, size = 849, normalized size = 1.40

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*A*c*(3*b^5*e^4*x^2 + 2*b^4*e^4*x*(3*a + 2*c*x^2) + b^3*(3*a^2*e^4 - 18*
a*c*e^4*x^2 + c^2*d*(d^3 + 12*d^2*e*x - 18*d*e^2*x^2 - 4*e^3*x^3)) - 4*b*c*
(5*a^3*e^4 + 2*c^3*d^3*x^2*(3*d - 4*e*x) + 12*a^2*c*d*e^2*(d - 2*e*x) + 3*a
*c^2*d*(d^3 - 4*d^2*e*x + 6*d*e^2*x^2 - 4*e^3*x^3)) + 8*c^2*(-2*c^3*d^4*x^3
 + a^3*e^3*(8*d + 3*e*x) - 3*a*c^2*d^2*x*(d^2 + 2*e^2*x^2) + 4*a^2*c*e*(d^3
 + 3*d*e^2*x^2 + e^3*x^3)) - 2*b^2*c*(21*a^2*e^4*x + 3*c^2*d^2*x*(d^2 - 8*d
*e*x + 2*e^2*x^2) + 2*a*c*e*(-2*d^3 + 18*d^2*e*x - 6*d*e^2*x^2 + 7*e^3*x^3)
)) + B*(128*a^4*c^2*e^4 + b*x*(15*b^5*e^4*x - 16*c^5*d^4*x^2 + 8*b*c^4*d^3*
x*(-3*d + 2*e*x) + b^3*c^2*e^3*x^2*(-32*d + 3*e*x) + 4*b^4*c*e^3*x*(-6*d +
5*e*x) - 6*b^2*c^3*d^2*(d^2 - 4*d*e*x - 2*e^2*x^2)) + 4*a^3*c*e^2*(-25*b^2*
e^2 + 2*b*c*e*(20*d + 39*e*x) - 48*c^2*(d^2 + d*e*x - e^2*x^2)) + a^2*(15*b
^4*e^4 + 48*b^2*c^2*e^3*x*(7*d + e*x) - 6*b^3*c*e^3*(4*d + 35*e*x) + 32*b*c
^3*e*(2*d^3 - 9*d^2*e*x + 8*e^3*x^3) - 16*c^4*(d^4 + 18*d^2*e^2*x^2 + 16*d*
e^3*x^3 - 3*e^4*x^4)) + 2*a*(15*b^5*e^4*x + 32*c^5*d^3*e*x^3 + 2*b^3*c^2*e^
3*x^2*(36*d - 37*e*x) - 3*b^4*c*e^3*x*(8*d + 15*e*x) - 12*b*c^4*d^2*x*(d^2
- 4*d*e*x + 6*e^2*x^2) - 2*b^2*c^3*(d^4 - 24*d^3*e*x + 18*d^2*e^2*x^2 - 56*
d*e^3*x^3 + 6*e^4*x^4))))/(3*c^3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2)) +
```

```
(e^3*(8*B*c*d - 5*b*B*e + 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
x*(b + c*x)])])/(2*c^(7/2))
```

IntegrateAlgebraic [B] time = 14.80, size = 1243, normalized size = 2.04

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*A*b^3*c^3*d^4 - 4*a*b^2*B*c^3*d^4 + 24*a*A*b*c^4*d^4 - 16*a^2*B*c^4*d^4
 - 16*a*A*b^2*c^3*d^3*e + 64*a^2*b*B*c^3*d^3*e - 64*a^2*A*c^4*d^3*e + 96*a^
2*A*b*c^3*d^2*e^2 - 192*a^3*B*c^3*d^2*e^2 - 24*a^2*b^3*B*c*d*e^3 + 160*a^3*
b*B*c^2*d*e^3 - 128*a^3*A*c^3*d*e^3 + 15*a^2*b^4*B*e^4 - 6*a^2*A*b^3*c*e^4
- 100*a^3*b^2*B*c*e^4 + 40*a^3*A*b*c^2*e^4 + 128*a^4*B*c^2*e^4 - 6*b^3*B*c^
3*d^4*x + 12*A*b^2*c^4*d^4*x - 24*a*b*B*c^4*d^4*x + 48*a*A*c^5*d^4*x - 24*A
*b^3*c^3*d^3*e*x + 96*a*b^2*B*c^3*d^3*e*x - 96*a*A*b*c^4*d^3*e*x + 144*a*A*
b^2*c^3*d^2*e^2*x - 288*a^2*b*B*c^3*d^2*e^2*x - 48*a*b^4*B*c*d*e^3*x + 336*
a^2*b^2*B*c^2*d*e^3*x - 192*a^2*A*b*c^3*d*e^3*x - 192*a^3*B*c^3*d*e^3*x + 3
0*a*b^5*B*e^4*x - 12*a*A*b^4*c*e^4*x - 210*a^2*b^3*B*c*e^4*x + 84*a^2*A*b^2
*c^2*e^4*x + 312*a^3*b*B*c^2*e^4*x - 48*a^3*A*c^3*e^4*x - 24*b^2*B*c^4*d^4*
x^2 + 48*A*b*c^5*d^4*x^2 + 24*b^3*B*c^3*d^3*e*x^2 - 96*A*b^2*c^4*d^3*e*x^2
+ 96*a*b*B*c^4*d^3*e*x^2 + 36*A*b^3*c^3*d^2*e^2*x^2 - 72*a*b^2*B*c^3*d^2*e^
2*x^2 + 144*a*A*b*c^4*d^2*e^2*x^2 - 288*a^2*B*c^4*d^2*e^2*x^2 - 24*b^5*B*c*
d*e^3*x^2 + 144*a*b^3*B*c^2*d*e^3*x^2 - 48*a*A*b^2*c^3*d*e^3*x^2 - 192*a^2*
A*c^4*d*e^3*x^2 + 15*b^6*B*e^4*x^2 - 6*A*b^5*c*e^4*x^2 - 90*a*b^4*B*c*e^4*x
^2 + 36*a*A*b^3*c^2*e^4*x^2 + 48*a^2*b^2*B*c^2*e^4*x^2 + 192*a^3*B*c^3*e^4*
x^2 - 16*b*B*c^5*d^4*x^3 + 32*A*c^6*d^4*x^3 + 16*b^2*B*c^4*d^3*e*x^3 - 64*A
*b*c^5*d^3*e*x^3 + 64*a*B*c^5*d^3*e*x^3 + 12*b^3*B*c^3*d^2*e^2*x^3 + 24*A*b
^2*c^4*d^2*e^2*x^3 - 144*a*b*B*c^4*d^2*e^2*x^3 + 96*a*A*c^5*d^2*e^2*x^3 - 3
2*b^4*B*c^2*d*e^3*x^3 + 8*A*b^3*c^3*d*e^3*x^3 + 224*a*b^2*B*c^3*d*e^3*x^3 -
 96*a*A*b*c^4*d*e^3*x^3 - 256*a^2*B*c^4*d*e^3*x^3 + 20*b^5*B*c*e^4*x^3 - 8*
A*b^4*c^2*e^4*x^3 - 148*a*b^3*B*c^2*e^4*x^3 + 56*a*A*b^2*c^3*e^4*x^3 + 256*
a^2*b*B*c^3*e^4*x^3 - 64*a^2*A*c^4*e^4*x^3 + 3*b^4*B*c^2*e^4*x^4 - 24*a*b^2
*B*c^3*e^4*x^4 + 48*a^2*B*c^4*e^4*x^4)/(3*c^3*(-b^2 + 4*a*c)^2*(a + b*x + c
*x^2)^(3/2)) + ((-8*B*c*d*e^3 + 5*b*B*e^4 - 2*A*c*e^4)*Log[b*c^3 + 2*c^4*x
- 2*c^(7/2)*Sqrt[a + b*x + c*x^2]])/(2*c^(7/2))
```

fricas [B] time = 14.41, size = 3181, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(8*(B*a^2*b^4*c - 8*B*a^3*b^2*c^2 + 16*B*a^4*c^3)*d*e^3 - (5*B*a^2
*b^5 - 32*A*a^4*c^3 + 16*(5*B*a^4*b + A*a^3*b^2)*c^2 - 2*(20*B*a^3*b^3 + A*
a^2*b^4)*c)*e^4 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d*e^3 - (5*
B*b^5*c^2 - 32*A*a^2*c^5 + 16*(5*B*a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A
*b^4)*c^3)*e^4)*x^4 + 2*(8*(B*b^5*c^2 - 8*B*a*b^3*c^3 + 16*B*a^2*b*c^4)*d*e
^3 - (5*B*b^6*c - 32*A*a^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B
*a*b^4 + A*b^5)*c^2)*e^4)*x^3 + (8*(B*b^6*c - 6*B*a*b^4*c^2 + 32*B*a^3*c^4)
*d*e^3 - (5*B*b^7 + 12*A*a*b^4*c^2 + 160*B*a^3*b*c^3 - 64*A*a^3*c^4 - 2*(15
*B*a*b^5 + A*b^6)*c)*e^4)*x^2 + 2*(8*(B*a*b^5*c - 8*B*a^2*b^3*c^2 + 16*B*a^
3*b*c^3)*d*e^3 - (5*B*a*b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b^3)
*c^2 - 2*(20*B*a^2*b^4 + A*a*b^5)*c)*e^4)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c
*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(96*(2*
B*a^3 - A*a^2*b)*c^4*d^2*e^2 - 3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)
*e^4*x^4 + 2*(4*(2*B*a^2 - 3*A*a*b)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^4 + 16
*(4*A*a^2*c^5 - (4*B*a^2*b - A*a*b^2)*c^4)*d^3*e + 8*(3*B*a^2*b^3*c^2 - 20*
```

```
B*a^3*b*c^3 + 16*A*a^3*c^4)*d*e^3 - (15*B*a^2*b^4*c + 8*(16*B*a^4 + 5*A*a^3
*b)*c^3 - 2*(50*B*a^3*b^2 + 3*A*a^2*b^3)*c^2)*e^4 + 4*(4*(B*b*c^6 - 2*A*c^7
)*d^4 - 4*(B*b^2*c^5 + 4*(B*a - A*b)*c^6)*d^3*e - 3*(B*b^3*c^4 + 8*A*a*c^6
- 2*(6*B*a*b - A*b^2)*c^5)*d^2*e^2 + 2*(4*B*b^4*c^3 + 4*(8*B*a^2 + 3*A*a*b)
*c^5 - (28*B*a*b^2 + A*b^3)*c^4)*d*e^3 - (5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(3
2*B*a^2*b + 7*A*a*b^2)*c^4 - (37*B*a*b^3 + 2*A*b^4)*c^3)*e^4)*x^3 + 3*(8*(B
*b^2*c^5 - 2*A*b*c^6)*d^4 - 8*(B*b^3*c^4 + 4*(B*a*b - A*b^2)*c^5)*d^3*e + 1
2*(4*(2*B*a^2 - A*a*b)*c^5 + (2*B*a*b^2 - A*b^3)*c^4)*d^2*e^2 + 8*(B*b^5*c^
2 - 6*B*a*b^3*c^3 + 2*A*a*b^2*c^4 + 8*A*a^2*c^5)*d*e^3 - (5*B*b^6*c + 64*B*
a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A*a*b^3)*c^3 - 2*(15*B*a*b^4 + A*b^5)*c^2)*e^4
)*x^2 + 6*(24*(2*B*a^2*b - A*a*b^2)*c^4*d^2*e^2 + (B*b^3*c^4 - 8*A*a*c^6 +
2*(2*B*a*b - A*b^2)*c^5)*d^4 + 4*(4*A*a*b*c^5 - (4*B*a*b^2 - A*b^3)*c^4)*d^
3*e + 8*(B*a*b^4*c^2 - 7*B*a^2*b^2*c^3 + 4*(B*a^3 + A*a^2*b)*c^4)*d*e^3 - (
5*B*a*b^5*c - 8*A*a^3*c^4 + 2*(26*B*a^3*b + 7*A*a^2*b^2)*c^3 - (35*B*a^2*b^
3 + 2*A*a*b^4)*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c^4 - 8*a^3*b^2
*c^5 + 16*a^4*c^6 + (b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*x^4 + 2*(b^5*c^5 -
 8*a*b^3*c^6 + 16*a^2*b*c^7)*x^3 + (b^6*c^4 - 6*a*b^4*c^5 + 32*a^3*c^7)*x^2
 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*x), -1/6*(3*(8*(B*a^2*b^4*c
 - 8*B*a^3*b^2*c^2 + 16*B*a^4*c^3)*d*e^3 - (5*B*a^2*b^5 - 32*A*a^4*c^3 + 16
*(5*B*a^4*b + A*a^3*b^2)*c^2 - 2*(20*B*a^3*b^3 + A*a^2*b^4)*c)*e^4 + (8*(B*
b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d*e^3 - (5*B*b^5*c^2 - 32*A*a^2*c^5
 + 16*(5*B*a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A*b^4)*c^3)*e^4)*x^4 + 2*
(8*(B*b^5*c^2 - 8*B*a*b^3*c^3 + 16*B*a^2*b*c^4)*d*e^3 - (5*B*b^6*c - 32*A*a
^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B*a*b^4 + A*b^5)*c^2)*e^4
)*x^3 + (8*(B*b^6*c - 6*B*a*b^4*c^2 + 32*B*a^3*c^4)*d*e^3 - (5*B*b^7 + 12*A
*a*b^4*c^2 + 160*B*a^3*b*c^3 - 64*A*a^3*c^4 - 2*(15*B*a*b^5 + A*b^6)*c)*e^4
)*x^2 + 2*(8*(B*a*b^5*c - 8*B*a^2*b^3*c^2 + 16*B*a^3*b*c^3)*d*e^3 - (5*B*a*
b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b^3)*c^2 - 2*(20*B*a^2*b^4 +
 A*a*b^5)*c)*e^4)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(96*(2*B*a^3 - A*a^2*b)*c^4*d^2*e^2 -
 3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*e^4*x^4 + 2*(4*(2*B*a^2 - 3*A
*a*b)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^4 + 16*(4*A*a^2*c^5 - (4*B*a^2*b - A
*a*b^2)*c^4)*d^3*e + 8*(3*B*a^2*b^3*c^2 - 20*B*a^3*b*c^3 + 16*A*a^3*c^4)*d*
e^3 - (15*B*a^2*b^4*c + 8*(16*B*a^4 + 5*A*a^3*b)*c^3 - 2*(50*B*a^3*b^2 + 3*
A*a^2*b^3)*c^2)*e^4 + 4*(4*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(B*b^2*c^5 + 4*(B*a
- A*b)*c^6)*d^3*e - 3*(B*b^3*c^4 + 8*A*a*c^6 - 2*(6*B*a*b - A*b^2)*c^5)*d^2
*e^2 + 2*(4*B*b^4*c^3 + 4*(8*B*a^2 + 3*A*a*b)*c^5 - (28*B*a*b^2 + A*b^3)*c^
4)*d*e^3 - (5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(32*B*a^2*b + 7*A*a*b^2)*c^4 - (
37*B*a*b^3 + 2*A*b^4)*c^3)*e^4)*x^3 + 3*(8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 - 8*
(B*b^3*c^4 + 4*(B*a*b - A*b^2)*c^5)*d^3*e + 12*(4*(2*B*a^2 - A*a*b)*c^5 + (
2*B*a*b^2 - A*b^3)*c^4)*d^2*e^2 + 8*(B*b^5*c^2 - 6*B*a*b^3*c^3 + 2*A*a*b^2*
c^4 + 8*A*a^2*c^5)*d*e^3 - (5*B*b^6*c + 64*B*a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A
*a*b^3)*c^3 - 2*(15*B*a*b^4 + A*b^5)*c^2)*e^4)*x^2 + 6*(24*(2*B*a^2*b - A*a
*b^2)*c^4*d^2*e^2 + (B*b^3*c^4 - 8*A*a*c^6 + 2*(2*B*a*b - A*b^2)*c^5)*d^4 +
 4*(4*A*a*b*c^5 - (4*B*a*b^2 - A*b^3)*c^4)*d^3*e + 8*(B*a*b^4*c^2 - 7*B*a^2
*b^2*c^3 + 4*(B*a^3 + A*a^2*b)*c^4)*d*e^3 - (5*B*a*b^5*c - 8*A*a^3*c^4 + 2*
(26*B*a^3*b + 7*A*a^2*b^2)*c^3 - (35*B*a^2*b^3 + 2*A*a*b^4)*c^2)*e^4)*x)*sq
rt(c*x^2 + b*x + a))/(a^2*b^4*c^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6 + (b^4*c^6 -
 8*a*b^2*c^7 + 16*a^2*c^8)*x^4 + 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*x
^3 + (b^6*c^4 - 6*a*b^4*c^5 + 32*a^3*c^7)*x^2 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^
5 + 16*a^3*b*c^6)*x)]
```

giac [B] time = 0.40, size = 1185, normalized size = 1.95

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((((3*(B*b^4*c^2*e^4 - 8*B*a*b^2*c^3*e^4 + 16*B*a^2*c^4*e^4)*x/(b^4*c^3
```

```
 - 8*a*b^2*c^4 + 16*a^2*c^5) - 4*(4*B*b*c^5*d^4 - 8*A*c^6*d^4 - 4*B*b^2*c^4
*d^3*e - 16*B*a*c^5*d^3*e + 16*A*b*c^5*d^3*e - 3*B*b^3*c^3*d^2*e^2 + 36*B*a
*b*c^4*d^2*e^2 - 6*A*b^2*c^4*d^2*e^2 - 24*A*a*c^5*d^2*e^2 + 8*B*b^4*c^2*d*e
^3 - 56*B*a*b^2*c^3*d*e^3 - 2*A*b^3*c^3*d*e^3 + 64*B*a^2*c^4*d*e^3 + 24*A*a
*b*c^4*d*e^3 - 5*B*b^5*c*e^4 + 37*B*a*b^3*c^2*e^4 + 2*A*b^4*c^2*e^4 - 64*B*
a^2*b*c^3*e^4 - 14*A*a*b^2*c^3*e^4 + 16*A*a^2*c^4*e^4)/(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5))*x - 3*(8*B*b^2*c^4*d^4 - 16*A*b*c^5*d^4 - 8*B*b^3*c^3*d^3
*e - 32*B*a*b*c^4*d^3*e + 32*A*b^2*c^4*d^3*e + 24*B*a*b^2*c^3*d^2*e^2 - 12*
A*b^3*c^3*d^2*e^2 + 96*B*a^2*c^4*d^2*e^2 - 48*A*a*b*c^4*d^2*e^2 + 8*B*b^5*c
*d*e^3 - 48*B*a*b^3*c^2*d*e^3 + 16*A*a*b^2*c^3*d*e^3 + 64*A*a^2*c^4*d*e^3 -
 5*B*b^6*e^4 + 30*B*a*b^4*c*e^4 + 2*A*b^5*c*e^4 - 16*B*a^2*b^2*c^2*e^4 - 12
*A*a*b^3*c^2*e^4 - 64*B*a^3*c^3*e^4)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*
x - 6*(B*b^3*c^3*d^4 + 4*B*a*b*c^4*d^4 - 2*A*b^2*c^4*d^4 - 8*A*a*c^5*d^4 -
16*B*a*b^2*c^3*d^3*e + 4*A*b^3*c^3*d^3*e + 16*A*a*b*c^4*d^3*e + 48*B*a^2*b*
c^3*d^2*e^2 - 24*A*a*b^2*c^3*d^2*e^2 + 8*B*a*b^4*c*d*e^3 - 56*B*a^2*b^2*c^2
*d*e^3 + 32*B*a^3*c^3*d*e^3 + 32*A*a^2*b*c^3*d*e^3 - 5*B*a*b^5*e^4 + 35*B*a
^2*b^3*c*e^4 + 2*A*a*b^4*c*e^4 - 52*B*a^3*b*c^2*e^4 - 14*A*a^2*b^2*c^2*e^4
+ 8*A*a^3*c^3*e^4)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*x - (4*B*a*b^2*c^3
*d^4 + 2*A*b^3*c^3*d^4 + 16*B*a^2*c^4*d^4 - 24*A*a*b*c^4*d^4 - 64*B*a^2*b*c
^3*d^3*e + 16*A*a*b^2*c^3*d^3*e + 64*A*a^2*c^4*d^3*e + 192*B*a^3*c^3*d^2*e^
2 - 96*A*a^2*b*c^3*d^2*e^2 + 24*B*a^2*b^3*c*d*e^3 - 160*B*a^3*b*c^2*d*e^3 +
 128*A*a^3*c^3*d*e^3 - 15*B*a^2*b^4*e^4 + 100*B*a^3*b^2*c*e^4 + 6*A*a^2*b^3
*c*e^4 - 128*B*a^4*c^2*e^4 - 40*A*a^3*b*c^2*e^4)/(b^4*c^3 - 8*a*b^2*c^4 + 1
6*a^2*c^5))/(c*x^2 + b*x + a)^(3/2) - 1/2*(8*B*c*d*e^3 - 5*B*b*e^4 + 2*A*c*
e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.09, size = 3912, normalized size = 6.43

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -1/6*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d*e^3+2*b^2/c^2*a/(4*a*c-b
^2)/(c*x^2+b*x+a)^(3/2)*x*B*d*e^3+16*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1
/2)*x*B*d*e^3-4*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d*e^3-4/3*b^4/c^2
/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d*e^3-2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2
+b*x+a)^(3/2)*A*d*e^3-6*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^2*e^2-1
/3/c/(c*x^2+b*x+a)^(3/2)*B*d^4+1/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*A*e^4+8/3*B*e^4*a^2/c^3/(c*x^2+b*x+a)^(3/2)+5/96*B*e^4*b^4/c^5/(c
*x^2+b*x+a)^(3/2)-5/4*B*e^4*b^2/c^4/(c*x^2+b*x+a)^(1/2)+B*e^4*x^4/c/(c*x^2+
b*x+a)^(3/2)-5/2*B*e^4*b/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)-1/c^2*x/(c*x^2+b*x+a)^(1/2)*A*e^4-8/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)*B*d^4+4*B*e^4*a^2/c^2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+8*b^3/c^2*a/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d*e^3-48*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^
(1/2)*x*B*d^2*e^2+b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^2*e^2+2/3*b^2
/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^3*e+2*a/c/(4*a*c-b^2)/(c*x^2+b*x+a
)^(3/2)*b*A*d^2*e^2+4/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d*e^3-16*
b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d*e^3-24*b^2/c*a/(4*a*c-b^2)^2/
(c*x^2+b*x+a)^(1/2)*B*d^2*e^2+1/2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)
*x*A*e^4+b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d*e^3-38/3*B*e^4*b^3/c
^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+32*B*e^4*a^2/c*b/(4*a*c-b^2)^2/(c*
x^2+b*x+a)^(1/2)*x-3*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2-32
*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d*e^3+1/2*b^3/c^2/(4*a*c-b^2)/(c
*x^2+b*x+a)^(3/2)*x*B*d^2*e^2+8/3*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x
*A*d*e^3+4*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^4+4*b^3/c/(4*a*c
-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e^2+1/3*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+
a)^(3/2)*x*A*d*e^3-19/12*B*e^4*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+
64/3*a*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^3*e-64/3*b*c/(4*a*c-b^2)^2
/(c*x^2+b*x+a)^(1/2)*x*A*d^3*e+1/4*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2
```

```
)*A*e^4+4/3*b/c^3*a/(c*x^2+b*x+a)^(3/2)*B*d*e^3+1/2*b^2/c^3*x/(c*x^2+b*x+a)
^(3/2)*B*d*e^3-4/3/c/(c*x^2+b*x+a)^(3/2)*A*d^3*e+4/3*a/c/(4*a*c-b^2)/(c*x^2
+b*x+a)^(3/2)*b*B*d^3*e+32*a*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d^2*e^
2+4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e^3-5/2*B*e^4*b
^3/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+5/48*B*e^4*b^5/c^4/(4*a*c-b^2)/(c*
x^2+b*x+a)^(3/2)*x+5/6*B*e^4*b^5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-19
/24*B*e^4*b^4/c^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+B*e^4*a/c^3*b*x/(c*x^2+
b*x+a)^(3/2)+2*B*e^4*a^2/c^3*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-19/3*B*e^4
*b^4/c^3*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/4*b^4/c^3/(4*a*c-b^2)/(c*x^2
+b*x+a)^(3/2)*B*d^2*e^2+2/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e^3-2
/3*b^5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d*e^3+1/2/c^3*b/(c*x^2+b*x+a
)^(1/2)*A*e^4+16*B*e^4*a^2/c^2*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-3*x/c/
(c*x^2+b*x+a)^(3/2)*A*d^2*e^2+2/3*A*d^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b-1
/3*x^3/c/(c*x^2+b*x+a)^(3/2)*A*e^4-1/48*b^3/c^4/(c*x^2+b*x+a)^(3/2)*A*e^4+5
/6*B*e^4*b/c^2*x^3/(c*x^2+b*x+a)^(3/2)+4*B*e^4*a/c^2*x^2/(c*x^2+b*x+a)^(3/2
)+1/2*b/c^2/(c*x^2+b*x+a)^(3/2)*A*d^2*e^2+1/3*b/c^2/(c*x^2+b*x+a)^(3/2)*B*d
^3*e-B*e^4*b^2/c^4*a/(c*x^2+b*x+a)^(3/2)+5/2*B*e^4*b/c^3*x/(c*x^2+b*x+a)^(1
/2)-5/4*B*e^4*b^4/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-5/4*B*e^4*b^2/c^3*x^2
/(c*x^2+b*x+a)^(3/2)+5/12*B*e^4*b^6/c^4/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-5
/16*B*e^4*b^3/c^4*x/(c*x^2+b*x+a)^(3/2)+5/96*B*e^4*b^6/c^5/(4*a*c-b^2)/(c*x
^2+b*x+a)^(3/2)-1/24*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*e^4+16/3*b
^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^3*e+4*b^3/c/(4*a*c-b^2)^2/(c*x^2
+b*x+a)^(1/2)*A*d^2*e^2+8/3*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d^3*e
+4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^2*e^2+8/3*a/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*x*B*d^3*e+16*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*A*d^2*e^2+32
/3*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*B*d^3*e-16/3*b*c/(4*a*c-b^2)^2/(c*
x^2+b*x+a)^(1/2)*x*B*d^4+1/3*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d^3*
e+8*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d^2*e^2+2*b^4/c^2/(4*a*c-b^2)
^2/(c*x^2+b*x+a)^(1/2)*B*d^2*e^2-3/2*b/c^2*x/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2+
1/6*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*d*e^3+2*b^3/c^2*a/(4*a*c-b^2)
^2/(c*x^2+b*x+a)^(1/2)*A*e^4-b/c^2*x/(c*x^2+b*x+a)^(3/2)*A*d*e^3-8/3*b/(4*a
*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^3*e-4/3*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)*A*d^3*e+2*b/c^2*x^2/(c*x^2+b*x+a)^(3/2)*B*d*e^3+1/2*b^3/c^2/(4*a*c-b^2
)/(c*x^2+b*x+a)^(3/2)*A*d^2*e^2+4/3*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)*A*d*e^3+1/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*A*e^4-1/3*b^4/c^2/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^4-1/12*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x
+a)^(3/2)*B*d*e^3-1/48*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*e^4-1/6*b^
5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*e^4+1/3*b/c^3*a/(c*x^2+b*x+a)^(3/
2)*A*e^4-4/c^2*x/(c*x^2+b*x+a)^(1/2)*B*d*e^3+2/c^3*b/(c*x^2+b*x+a)^(1/2)*B*
d*e^3-4*x^2/c/(c*x^2+b*x+a)^(3/2)*A*d*e^3-6*x^2/c/(c*x^2+b*x+a)^(3/2)*B*d^2
*e^2+1/6*b^2/c^3/(c*x^2+b*x+a)^(3/2)*A*d*e^3-4/3*x^3/c/(c*x^2+b*x+a)^(3/2)*
B*d*e^3+1/4*b^2/c^3/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2-8/3*a/c^2/(c*x^2+b*x+a)^(
3/2)*A*d*e^3+4/3*A*d^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+32/3*A*d^4*c^2/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+16/3*A*d^4*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)
^(1/2)*b-2/3*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^4-1/3*b^2/c/(4*a*c-b^2
)/(c*x^2+b*x+a)^(3/2)*B*d^4-32/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d^
3*e-4*a/c^2/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2+1/2*b/c^2*x^2/(c*x^2+b*x+a)^(3/2)
*A*e^4+1/8*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)*A*e^4-1/12*b^3/c^4/(c*x^2+b*x+a)^(
3/2)*B*d*e^3+1/2/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*A*e^4-2*x/c/(c*x^2
+b*x+a)^(3/2)*B*d^3*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+ex)^4}{\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2240 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=397

$$\frac{2(d+ex)^2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(-x\left(2b^2ce\left(11aBe^2\right.\right.\right.}{}$$

Rubi [A] time = 0.34, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 777, 621, 206}

$$-\frac{2\left(-x\left(2b^2ce\left(11aBe^2+4Acde+3Bcd^2\right)-8bc^2\left(aAe^3+4aBde^2+3Acd^2e+Bcd^3\right)+8c^2\left(2Acd\left(ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)+2b^3Bcde^2-3b^4Be^3\right)-4bc\left(2Acd\left(3ae^2+cd^2\right)+5aBe\left(ae^2+cd^2\right)\right)+16ac^2e\left(aAe^2+3aBde+Acd^2\right)+b^3(-B)\left(cd^2e-3ae^3\right)+4b^2c^2d^2(2Ae+Bd)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2(d+ex)^2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{Be^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(3*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) - (2*(4*b^2*c^2*d^2*(B*d + 2*A*e) + 16*a*c^2*e*(A*c*d^2 + 3*a*B*d*e + a
*A*e^2) - b^3*B*(c*d^2*e - 3*a*e^3) - 4*b*c*(5*a*B*e*(c*d^2 + a*e^2) + 2*A*
c*d*(c*d^2 + 3*a*e^2)) - (2*b^3*B*c*d*e^2 - 3*b^4*B*e^3 + 2*b^2*c*e*(3*B*c*
d^2 + 4*A*c*d*e + 11*a*B*e^2) - 8*b*c^2*(B*c*d^3 + 3*A*c*d^2*e + 4*a*B*d*e^
2 + a*A*e^3) + 8*c^2*(3*a*B*e*(c*d^2 - a*e^2) + 2*A*c*d*(c*d^2 + a*e^2)))*x
))/(3*c^2*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2]) + (B*e^3*ArcTanh[(b + 2*c*
x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
```

```
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Mathematica [A] time = 1.34, size = 505, normalized size = 1.27

$$\frac{Be^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{c^{5/2}}-\frac{2\left(Ac^2\left(-12b(d-ex)\left(2a^2e^2+ac(d-ex)^2+2c^2d^2x^2\right)+8\left(2a^3e^3+3a^2ce\left(d^2+e^2x^2\right)-3ac^2dx\left(d^2+e^2x^2\right)-2c^3d^3x^3\right)+6b^2\left(d^2-6dex+e^2x^2\right)(ae-cdx)+b^3\left(d^3+9d^2ex-9de^2x^2-e^3x^3\right)\right)+B\left(4a^3ce^2(6c(2d+ex)-5be)+a^2\left(3b^3e^3-42b^2ce^3x-24bc^2de(d-3ex)+8c^3\left(d^3+9de^2x^2+4e^3x^3\right)\right)+2a\left(3b^4e^3x-9b^3ce^3x^2+b^2c^2\left(d^3-18d^2ex+9de^2x^2-14e^3x^3\right)+6bc^3dx\left(d^2-3dex+3e^2x^2\right)-12c^4d^2ex^3\right)+bx\left(3b^4e^3x+4b^3ce^3x^2+3b^2c^2d\left(d^2-3dex-e^2x^2\right)+6bc^3d^2x(2d-ex)+8c^4d^3x^2\right)\right)\right)}{3c^2\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*c^2*(6*b^2*(a*e - c*d*x)*(d^2 - 6*d*e*x + e^2*x^2) + b^3*(d^3 + 9*d^
2*e*x - 9*d*e^2*x^2 - e^3*x^3) - 12*b*(d - e*x)*(2*a^2*e^2 + 2*c^2*d^2*x^2
+ a*c*(d - e*x)^2) + 8*(2*a^3*e^3 - 2*c^3*d^3*x^3 + 3*a^2*c*e*(d^2 + e^2*x^
2) - 3*a*c^2*d*x*(d^2 + e^2*x^2))) + B*(4*a^3*c*e^2*(-5*b*e + 6*c*(2*d + e*
x)) + b*x*(3*b^4*e^3*x + 8*c^4*d^3*x^2 + 4*b^3*c*e^3*x^2 + 6*b*c^3*d^2*x*(2
*d - e*x) + 3*b^2*c^2*d*(d^2 - 3*d*e*x - e^2*x^2)) + 2*a*(3*b^4*e^3*x - 9*b
^3*c*e^3*x^2 - 12*c^4*d^2*e*x^3 + 6*b*c^3*d*x*(d^2 - 3*d*e*x + 3*e^2*x^2) +
 b^2*c^2*(d^3 - 18*d^2*e*x + 9*d*e^2*x^2 - 14*e^3*x^3)) + a^2*(3*b^3*e^3 -
42*b^2*c*e^3*x - 24*b*c^2*d*e*(d - 3*e*x) + 8*c^3*(d^3 + 9*d*e^2*x^2 + 4*e^
3*x^3)))))/(3*c^2*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2)) + (B*e^3*ArcTanh
[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/c^(5/2)
```

IntegrateAlgebraic [B] time = 5.92, size = 802, normalized size = 2.02

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b^3*c^2*d^3 + 2*a*b^2*B*c^2*d^3 - 12*a*A*b*c^3*d^3 + 8*a^2*B*c^3*d^3
 + 6*a*A*b^2*c^2*d^2*e - 24*a^2*b*B*c^2*d^2*e + 24*a^2*A*c^3*d^2*e - 24*a^2
*A*b*c^2*d*e^2 + 48*a^3*B*c^2*d*e^2 + 3*a^2*b^3*B*e^3 - 20*a^3*b*B*c*e^3 +
16*a^3*A*c^2*e^3 + 3*b^3*B*c^2*d^3*x - 6*A*b^2*c^3*d^3*x + 12*a*b*B*c^3*d^3
```

```
*x - 24*a*A*c^4*d^3*x + 9*A*b^3*c^2*d^2*e*x - 36*a*b^2*B*c^2*d^2*e*x + 36*a
*A*b*c^3*d^2*e*x - 36*a*A*b^2*c^2*d*e^2*x + 72*a^2*b*B*c^2*d*e^2*x + 6*a*b^
4*B*e^3*x - 42*a^2*b^2*B*c*e^3*x + 24*a^2*A*b*c^2*e^3*x + 24*a^3*B*c^2*e^3*
x + 12*b^2*B*c^3*d^3*x^2 - 24*A*b*c^4*d^3*x^2 - 9*b^3*B*c^2*d^2*e*x^2 + 36*
A*b^2*c^3*d^2*e*x^2 - 36*a*b*B*c^3*d^2*e*x^2 - 9*A*b^3*c^2*d*e^2*x^2 + 18*a
*b^2*B*c^2*d*e^2*x^2 - 36*a*A*b*c^3*d*e^2*x^2 + 72*a^2*B*c^3*d*e^2*x^2 + 3*
b^5*B*e^3*x^2 - 18*a*b^3*B*c*e^3*x^2 + 6*a*A*b^2*c^2*e^3*x^2 + 24*a^2*A*c^3
*e^3*x^2 + 8*b*B*c^4*d^3*x^3 - 16*A*c^5*d^3*x^3 - 6*b^2*B*c^3*d^2*e*x^3 + 2
4*A*b*c^4*d^2*e*x^3 - 24*a*B*c^4*d^2*e*x^3 - 3*b^3*B*c^2*d*e^2*x^3 - 6*A*b^
2*c^3*d*e^2*x^3 + 36*a*b*B*c^3*d*e^2*x^3 - 24*a*A*c^4*d*e^2*x^3 + 4*b^4*B*c
*e^3*x^3 - A*b^3*c^2*e^3*x^3 - 28*a*b^2*B*c^2*e^3*x^3 + 12*a*A*b*c^3*e^3*x^
3 + 32*a^2*B*c^3*e^3*x^3))/(3*c^2*(-b^2 + 4*a*c)^2*(a + b*x + c*x^2)^(3/2))
 - (B*e^3*Log[b*c^2 + 2*c^3*x - 2*c^(5/2)*Sqrt[a + b*x + c*x^2]])/c^(5/2)
```

fricas [B] time = 11.26, size = 1881, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*e^3*x^4 + 2*(B*b^5*c -
8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*e^3*x^3 + (B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c
^3)*e^3*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b*c^2)*e^3*x + (B*a^2*b
^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x -
b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(24*(2*B*a^3
 - A*a^2*b)*c^3*d*e^2 + (4*(2*B*a^2 - 3*A*a*b)*c^4 + (2*B*a*b^2 + A*b^3)*c^
3)*d^3 + 6*(4*A*a^2*c^4 - (4*B*a^2*b - A*a*b^2)*c^3)*d^2*e + (3*B*a^2*b^3*c
 - 20*B*a^3*b*c^2 + 16*A*a^3*c^3)*e^3 + (8*(B*b*c^5 - 2*A*c^6)*d^3 - 6*(B*b
^2*c^4 + 4*(B*a - A*b)*c^5)*d^2*e - 3*(B*b^3*c^3 + 8*A*a*c^5 - 2*(6*B*a*b -
 A*b^2)*c^4)*d*e^2 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c^4 - (28*B*a*b^2
 + A*b^3)*c^3)*e^3)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 3*(B*b^3*c^3 +
 4*(B*a*b - A*b^2)*c^4)*d^2*e + 3*(4*(2*B*a^2 - A*a*b)*c^4 + (2*B*a*b^2 - A
*b^3)*c^3)*d*e^2 + (B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3 + 8*A*a^2*c^4)*
e^3)*x^2 + 3*(12*(2*B*a^2*b - A*a*b^2)*c^3*d*e^2 + (B*b^3*c^3 - 8*A*a*c^5 +
 2*(2*B*a*b - A*b^2)*c^4)*d^3 + 3*(4*A*a*b*c^4 - (4*B*a*b^2 - A*b^3)*c^3)*d
^2*e + 2*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)*c^3)*e^3)*x)*sq
rt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 -
 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x
^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^
4 + 16*a^3*b*c^5)*x), -1/3*(3*((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*e
^3*x^4 + 2*(B*b^5*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*e^3*x^3 + (B*b^6 - 6*
B*a*b^4*c + 32*B*a^3*c^3)*e^3*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b
*c^2)*e^3*x + (B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*e^3)*sqrt(-c)*arct
an(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c))
+ 2*(24*(2*B*a^3 - A*a^2*b)*c^3*d*e^2 + (4*(2*B*a^2 - 3*A*a*b)*c^4 + (2*B*a
*b^2 + A*b^3)*c^3)*d^3 + 6*(4*A*a^2*c^4 - (4*B*a^2*b - A*a*b^2)*c^3)*d^2*e
+ (3*B*a^2*b^3*c - 20*B*a^3*b*c^2 + 16*A*a^3*c^3)*e^3 + (8*(B*b*c^5 - 2*A*c
^6)*d^3 - 6*(B*b^2*c^4 + 4*(B*a - A*b)*c^5)*d^2*e - 3*(B*b^3*c^3 + 8*A*a*c^
5 - 2*(6*B*a*b - A*b^2)*c^4)*d*e^2 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c
^4 - (28*B*a*b^2 + A*b^3)*c^3)*e^3)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3
- 3*(B*b^3*c^3 + 4*(B*a*b - A*b^2)*c^4)*d^2*e + 3*(4*(2*B*a^2 - A*a*b)*c^4
+ (2*B*a*b^2 - A*b^3)*c^3)*d*e^2 + (B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3
 + 8*A*a^2*c^4)*e^3)*x^2 + 3*(12*(2*B*a^2*b - A*a*b^2)*c^3*d*e^2 + (B*b^3*c
^3 - 8*A*a*c^5 + 2*(2*B*a*b - A*b^2)*c^4)*d^3 + 3*(4*A*a*b*c^4 - (4*B*a*b^2
 - A*b^3)*c^3)*d^2*e + 2*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)
*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*
c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 +
 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^
3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x)]
```

giac [B] time = 0.39, size = 790, normalized size = 1.99

$$-\frac{Be^3\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{5}{2}}}-\frac{2\left(\left(\left(\frac{\left(8Bbc^4d^3-16Ac^5d^3-6Bb^2c^3d^2e-24Bac^4d^2e+24Abc^4d^2e-3Bb^3c^2de^2+36Babc^3de^2-6Ab^2c^3de^2-24Aac^4de^2+4Bb^4ce^3-28Bab^2c^2e^3-Ab^3c^2e^3+32Ba^2c^3e^3+12Aabc^3e^3\right)x}{b^4c^2-8ab^2c^3+16a^2c^4}+\frac{3\left(4Bb^2c^3d^3-8Abc^4d^3-3Bb^3c^2d^2e-12Babc^3d^2e+12Ab^2c^3d^2e+6Bab^2c^2de^2-3Ab^3c^2de^2+24Ba^2c^3de^2-12Aabc^3de^2+Bb^5e^3-6Bab^3ce^3+2Aab^2c^2e^3+8Aa^2c^3e^3\right)}{b^4c^2-8ab^2c^3+16a^2c^4}\right)x+\frac{3\left(Bb^3c^2d^3+4Babc^3d^3-2Ab^2c^3d^3-8Aac^4d^3-12Bab^2c^2d^2e+3Ab^3c^2d^2e+12Aabc^3d^2e+24Ba^2bc^2de^2-12Aab^2c^2de^2+2Bab^4e^3-14Ba^2b^2ce^3+8Ba^3c^2e^3+8Aa^2bc^2e^3\right)}{b^4c^2-8ab^2c^3+16a^2c^4}\right)x+\frac{2Bab^2c^2d^3+Ab^3c^2d^3+8Ba^2c^3d^3-12Aabc^3d^3-24Ba^2bc^2d^2e+6Aab^2c^2d^2e+24Aa^2c^3d^2e+48Ba^3c^2de^2-24Aa^2bc^2de^2+3Ba^2b^3e^3-20Ba^3bce^3+16Aa^3c^2e^3}{b^4c^2-8ab^2c^3+16a^2c^4}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -B*e^3*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
 - 2/3*((((8*B*b*c^4*d^3 - 16*A*c^5*d^3 - 6*B*b^2*c^3*d^2*e - 24*B*a*c^4*d^
2*e + 24*A*b*c^4*d^2*e - 3*B*b^3*c^2*d*e^2 + 36*B*a*b*c^3*d*e^2 - 6*A*b^2*c
^3*d*e^2 - 24*A*a*c^4*d*e^2 + 4*B*b^4*c*e^3 - 28*B*a*b^2*c^2*e^3 - A*b^3*c^
2*e^3 + 32*B*a^2*c^3*e^3 + 12*A*a*b*c^3*e^3)*x/(b^4*c^2 - 8*a*b^2*c^3 + 16*
a^2*c^4) + 3*(4*B*b^2*c^3*d^3 - 8*A*b*c^4*d^3 - 3*B*b^3*c^2*d^2*e - 12*B*a*
b*c^3*d^2*e + 12*A*b^2*c^3*d^2*e + 6*B*a*b^2*c^2*d*e^2 - 3*A*b^3*c^2*d*e^2
+ 24*B*a^2*c^3*d*e^2 - 12*A*a*b*c^3*d*e^2 + B*b^5*e^3 - 6*B*a*b^3*c*e^3 + 2
*A*a*b^2*c^2*e^3 + 8*A*a^2*c^3*e^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x
 + 3*(B*b^3*c^2*d^3 + 4*B*a*b*c^3*d^3 - 2*A*b^2*c^3*d^3 - 8*A*a*c^4*d^3 - 1
2*B*a*b^2*c^2*d^2*e + 3*A*b^3*c^2*d^2*e + 12*A*a*b*c^3*d^2*e + 24*B*a^2*b*c
^2*d*e^2 - 12*A*a*b^2*c^2*d*e^2 + 2*B*a*b^4*e^3 - 14*B*a^2*b^2*c*e^3 + 8*B*
a^3*c^2*e^3 + 8*A*a^2*b*c^2*e^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x +
(2*B*a*b^2*c^2*d^3 + A*b^3*c^2*d^3 + 8*B*a^2*c^3*d^3 - 12*A*a*b*c^3*d^3 - 2
4*B*a^2*b*c^2*d^2*e + 6*A*a*b^2*c^2*d^2*e + 24*A*a^2*c^3*d^2*e + 48*B*a^3*c
^2*d*e^2 - 24*A*a^2*b*c^2*d*e^2 + 3*B*a^2*b^3*e^3 - 20*B*a^3*b*c*e^3 + 16*A
*a^3*c^2*e^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.10, size = 2443, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 1/2*B*e^3*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+4*B*e^3*b^2/c*a/(4*a*
c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+1/4*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*
x*B*d*e^2+2*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d*e^2-b/c*a/(4*a*c-
b^2)/(c*x^2+b*x+a)^(3/2)*x*A*e^3-3/2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3
/2)*B*d*e^2-24*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d*e^2-12*b^2/c*a/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d*e^2+1/2*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a
)^(3/2)*x*A*d*e^2+1/2*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^2*e+a/c/(
4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b*A*d*e^2+a/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2
)*b*B*d^2*e+16*a*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d*e^2+16*a*c/(4*a*
c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e-16*b*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(
1/2)*x*A*d^2*e-1/4*b/c^2*x/(c*x^2+b*x+a)^(3/2)*A*e^3+1/8*b^2/c^3/(c*x^2+b*x
+a)^(3/2)*B*d*e^2+1/24*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*e^3+1/3*b^
4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*e^3-2*a/c^2/(c*x^2+b*x+a)^(3/2)*B
*d*e^2-3/2*x/c/(c*x^2+b*x+a)^(3/2)*A*d*e^2-3/2*x/c/(c*x^2+b*x+a)^(3/2)*B*d^
2*e+1/4*b/c^2/(c*x^2+b*x+a)^(3/2)*A*d*e^2+1/4*b/c^2/(c*x^2+b*x+a)^(3/2)*B*d
^2*e-2/3*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^3-1/3*b^2/c/(4*a*c-b^2)/(c
*x^2+b*x+a)^(3/2)*B*d^3-8*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d^2*e+4/3
*A*d^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+32/3*A*d^3*c^2/(4*a*c-b^2)^2/(c*
x^2+b*x+a)^(1/2)*x+16/3*A*d^3*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b+1/2*B*e
^3*b/c^2*x^2/(c*x^2+b*x+a)^(3/2)+1/8*B*e^3*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)-1/
48*B*e^3*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-1/6*B*e^3*b^5/c^3/(4*a*c-b
^2)^2/(c*x^2+b*x+a)^(1/2)+1/3*B*e^3*b/c^3*a/(c*x^2+b*x+a)^(3/2)+1/2*B*e^3/c
^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3*x^2/c/(c*x^2+b*x+a)^(3/2)*B*d*e^2+
2*B*e^3*b^3/c^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+B*e^3/c^2*b^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*x-3/4*b/c^2*x/(c*x^2+b*x+a)^(3/2)*B*d*e^2+1/12*b^3/c
^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*e^3+1/8*b^4/c^3/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*B*d*e^2-1/24*B*e^3*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-1/
3*B*e^3*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+2*b^3/c/(4*a*c-b^2)^2/(
```

```
c*x^2+b*x+a)^(1/2)*B*d^2*e+2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d*e^2+2*
a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^2*e+8*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)
^(1/2)*b*A*d*e^2+8*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*B*d^2*e-2*b/(4*a*c
-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^2*e-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A
*d^2*e-16/3*b*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^3+2/3*b^3/c/(4*a*c-
b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^3+b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2
)*B*d*e^2-1/2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*e^3-8*b*a/(4*a*c-
b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^3-4*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1
/2)*A*e^3+1/4*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*d*e^2+1/4*b^3/c^2/(
4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d^2*e+4*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1
/2)*x*A*d*e^2+4*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e+2*b^3/c/(4*
a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d*e^2+1/4*B*e^3*b^3/c^3*a/(4*a*c-b^2)/(c*x
^2+b*x+a)^(3/2)-1/3/c/(c*x^2+b*x+a)^(3/2)*B*d^3+B*e^3/c^(5/2)*ln((1/2*b+c*x
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-3*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*
d*e^2+2/3*A*d^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b-x^2/c/(c*x^2+b*x+a)^(3/2)
*A*e^3+1/24*b^2/c^3/(c*x^2+b*x+a)^(3/2)*A*e^3-2/3*a/c^2/(c*x^2+b*x+a)^(3/2)
*A*e^3-1/3*B*e^3*x^3/c/(c*x^2+b*x+a)^(3/2)-1/48*B*e^3*b^3/c^4/(c*x^2+b*x+a)
^(3/2)-B*e^3/c^2*x/(c*x^2+b*x+a)^(1/2)+1/2*B*e^3/c^3*b/(c*x^2+b*x+a)^(1/2)-
1/c/(c*x^2+b*x+a)^(3/2)*A*d^2*e-8/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B
*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{{\left(c\,x^2+b\,x+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2241 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=121

$$-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {804, 636}

$$-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^2)/(3*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(3/2)) - (8*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(b*d - 2*a*e + (2*
c*d - b*e)*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}} \, dx &= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(bBd-2Acd+Abe-2aBe)) \int \frac{d+ex}{\left(a+bx+cx^2\right)^{3/}}}{3\left(b^2-4ac\right)}\\ &= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(bBd-2Acd+Abe-2aBe)(bd-2ae+(2c}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [B] time = 0.95, size = 314, normalized size = 2.60

$$\frac{2A\left(4b\left(2a^2e^2+3ac(d-ex)^2+2c^2dx^2(3d-2ex)\right)+8c\left(-2a^2de+acx\left(3d^2+e^2x^2\right)+2c^2d^2x^3\right)+b^2\left(2cx\left(3d^2-12dex+e^2x^2\right)-4ae(d-3ex)\right)-\left(b^3\left(d^2+6dex-3e^2x^2\right)\right)\right)-2B\left(16a^3e^2+8a^2\left(be(3ex-2d)+c\left(d^2+3e^2x^2\right)\right)+2a\left(b^2\left(d^2-12dex+3e^2x^2\right)+6bcx(d-ex)^2-8c^2dex^3\right)+bx\left(b^2\left(3d^2-6dex-e^2x^2\right)+4bcdx(3d-ex)+8c^2d^2x^2\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*A*(-(b^3*(d^2 + 6*d*e*x - 3*e^2*x^2)) + 4*b*(2*a^2*e^2 + 2*c^2*d*x^2*(3*
d - 2*e*x) + 3*a*c*(d - e*x)^2) + 8*c*(-2*a^2*d*e + 2*c^2*d^2*x^3 + a*c*x*(
3*d^2 + e^2*x^2)) + b^2*(-4*a*e*(d - 3*e*x) + 2*c*x*(3*d^2 - 12*d*e*x + e^2
*x^2))) - 2*B*(16*a^3*e^2 + b*x*(8*c^2*d^2*x^2 + 4*b*c*d*x*(3*d - e*x) + b^
2*(3*d^2 - 6*d*e*x - e^2*x^2)) + 8*a^2*(b*e*(-2*d + 3*e*x) + c*(d^2 + 3*e^2
*x^2)) + 2*a*(-8*c^2*d*e*x^3 + 6*b*c*x*(d - e*x)^2 + b^2*(d^2 - 12*d*e*x +
3*e^2*x^2))))/(3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [B] time = 3.06, size = 425, normalized size = 3.51

$$-\frac{2\left(16a^3Be^2-8a^2Abe^2+16a^2Acde-16a^2bBde+24a^2bBe^2x+8a^2Bcd^2+24a^2Bce^2x^2+4aAb^2de-12aAb^2e^2x-12aAbcd^2+24aAbcdex-12aAbce^2x^2-24aAc^2d^2x-8aAc^2e^2x^3+2ab^2Bd^2-24ab^2Bdex+6ab^2Be^2x^2+12abBcd^2x-24abBcdex^2+12abBce^2x^3-16aBc^2dex^3+Ab^3d^2+6Ab^3dex-3Ab^3e^2x^2-6Ab^2cd^2x+24Ab^2cdex^2-2Ab^2ce^2x^3-24Abc^2d^2x^2+16Abc^2dex^3-16Ac^3d^2x^3+3b^3Bd^2x-6b^3Bdex^2-b^3Be^2x^3+12b^2Bcd^2x^2-4b^2Bcdex^3+8bBc^2d^2x^3\right)}{3\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b^3*d^2 + 2*a*b^2*B*d^2 - 12*a*A*b*c*d^2 + 8*a^2*B*c*d^2 + 4*a*A*b^2
*d*e - 16*a^2*b*B*d*e + 16*a^2*A*c*d*e - 8*a^2*A*b*e^2 + 16*a^3*B*e^2 + 3*b
^3*B*d^2*x - 6*A*b^2*c*d^2*x + 12*a*b*B*c*d^2*x - 24*a*A*c^2*d^2*x + 6*A*b^
3*d*e*x - 24*a*b^2*B*d*e*x + 24*a*A*b*c*d*e*x - 12*a*A*b^2*e^2*x + 24*a^2*b
*B*e^2*x + 12*b^2*B*c*d^2*x^2 - 24*A*b*c^2*d^2*x^2 - 6*b^3*B*d*e*x^2 + 24*A
*b^2*c*d*e*x^2 - 24*a*b*B*c*d*e*x^2 - 3*A*b^3*e^2*x^2 + 6*a*b^2*B*e^2*x^2 -
 12*a*A*b*c*e^2*x^2 + 24*a^2*B*c*e^2*x^2 + 8*b*B*c^2*d^2*x^3 - 16*A*c^3*d^2
*x^3 - 4*b^2*B*c*d*e*x^3 + 16*A*b*c^2*d*e*x^3 - 16*a*B*c^2*d*e*x^3 - b^3*B*
e^2*x^3 - 2*A*b^2*c*e^2*x^3 + 12*a*b*B*c*e^2*x^3 - 8*a*A*c^2*e^2*x^3))/(3*(
b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 9.12, size = 469, normalized size = 3.88

$$-\frac{2\left(\left(8\left(Bbc^2-2Ac^3\right)d^2-4\left(Bb^2c+4\left(Ba-Ab\right)c^2\right)de-\left(Bb^3+8Aac^2-2\left(6Bab-Ab^2\right)c\right)e^2\right)x^3+\left(2Bab^2+Ab^3+4\left(2Ba^2-3Aab\right)c\right)d^2-4\left(4Ba^2b-Aab^2-4Aa^2c\right)de+8\left(2Ba^3-Aa^2b\right)e^2+3\left(4\left(Bb^2c-2Abc^2\right)d^2-2\left(Bb^3+4\left(Bab-Ab^2\right)c\right)de+\left(2Bab^2-Ab^3+4\left(2Ba^2-Aab\right)c\right)e^2\right)x^2+3\left(\left(Bb^3-8Aac^2+2\left(2Bab-Ab^2\right)c\right)d^2-2\left(4Bab^2-Ab^3-4Aabc\right)de+4\left(2Ba^2b-Aab^2\right)e^2\right)x\right)\sqrt{cx^2+bx+a}}{3\left(a^2b^4-8a^3b^2c+16a^4c^2+\left(b^4c^2-8ab^2c^3+16a^2c^4\right)x^4+2\left(b^5c-8ab^3c^2+16a^2bc^3\right)x^3+\left(b^6-6ab^4c+32a^3c^3\right)x^2+2\left(ab^5-8a^2b^3c+16a^3bc^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*((8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(B*b^2*c + 4*(B*a - A*b)*c^2)*d*e - (B
*b^3 + 8*A*a*c^2 - 2*(6*B*a*b - A*b^2)*c)*e^2)*x^3 + (2*B*a*b^2 + A*b^3 + 4
*(2*B*a^2 - 3*A*a*b)*c)*d^2 - 4*(4*B*a^2*b - A*a*b^2 - 4*A*a^2*c)*d*e + 8*(
2*B*a^3 - A*a^2*b)*e^2 + 3*(4*(B*b^2*c - 2*A*b*c^2)*d^2 - 2*(B*b^3 + 4*(B*a
*b - A*b^2)*c)*d*e + (2*B*a*b^2 - A*b^3 + 4*(2*B*a^2 - A*a*b)*c)*e^2)*x^2 +
 3*((B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b^2)*c)*d^2 - 2*(4*B*a*b^2 - A*b^3
- 4*A*a*b*c)*d*e + 4*(2*B*a^2*b - A*a*b^2)*e^2)*x)*sqrt(c*x^2 + b*x + a)/(a
^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^
4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*
c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)
```

giac [B] time = 0.33, size = 448, normalized size = 3.70

$$-\frac{2\left(\left(\left(\frac{\left(8Bbc^2d^2-16Ac^3d^2-4Bb^2cde-16Bac^2de+16Abc^2de-Bb^3e^2+12Babce^2-2Ab^2ce^2-8Aac^2e^2\right)x}{b^4-8ab^2c+16a^2c^2}+\frac{3\left(4Bb^2cd^2-8Abc^2d^2-2Bb^3de-8Babcde+8Ab^2cde+2Bab^2e^2-Ab^3e^2+8Ba^2ce^2-4Aabce^2\right)}{b^4-8ab^2c+16a^2c^2}\right)x+\frac{3\left(Bb^3d^2+4Babcd^2-2Ab^2cd^2-8Aac^2d^2-8Bab^2de+2Ab^3de+8Aabcde+8Ba^2be^2-4Aab^2e^2\right)}{b^4-8ab^2c+16a^2c^2}\right)x+\frac{2Bab^2d^2+Ab^3d^2+8Ba^2cd^2-12Aabcd^2-16Ba^2bde+4Aab^2de+16Aa^2cde+16Ba^3e^2-8Aa^2be^2}{b^4-8ab^2c+16a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((((8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 4*B*b^2*c*d*e - 16*B*a*c^2*d*e + 16
*A*b*c^2*d*e - B*b^3*e^2 + 12*B*a*b*c*e^2 - 2*A*b^2*c*e^2 - 8*A*a*c^2*e^2)*
x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(4*B*b^2*c*d^2 - 8*A*b*c^2*d^2 - 2*B*b
^3*d*e - 8*B*a*b*c*d*e + 8*A*b^2*c*d*e + 2*B*a*b^2*e^2 - A*b^3*e^2 + 8*B*a^
2*c*e^2 - 4*A*a*b*c*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3*d^2 +
 4*B*a*b*c*d^2 - 2*A*b^2*c*d^2 - 8*A*a*c^2*d^2 - 8*B*a*b^2*d*e + 2*A*b^3*d*
e + 8*A*a*b*c*d*e + 8*B*a^2*b*e^2 - 4*A*a*b^2*e^2)/(b^4 - 8*a*b^2*c + 16*a^
2*c^2))*x + (2*B*a*b^2*d^2 + A*b^3*d^2 + 8*B*a^2*c*d^2 - 12*A*a*b*c*d^2 - 1
```

```
6*B*a^2*b*d*e + 4*A*a*b^2*d*e + 16*A*a^2*c*d*e + 16*B*a^3*e^2 - 8*A*a^2*b*e
^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.02, size = 433, normalized size = 3.58

$$\frac{-8Babcd^2x-\frac{32}{3}Abc^2dex^3-8Babce^2x^3+\frac{32}{3}Bac^2dex^3+\frac{8}{3}Bb^2cdex^3+8Aabce^2x^2-16Ab^2cdex^2+16Bab^2dex+16Babcdex^2-16Aabcdex+\frac{16}{3}Aa^2be^2-\frac{16}{3}Ba^2cd^2-\frac{4}{3}Bab^2d^2+\frac{32}{3}Ac^3d^2x^3+\frac{2}{3}Bb^3e^2x^3+2Ab^3e^2x^2-2Bb^3d^2x+8Aab^2e^2x+16Aac^2d^2x-4Ab^3dex+4Ab^2cd^2x-16Ba^2be^2x+\frac{16}{3}Aac^2e^2x^3+\frac{4}{3}Ab^2ce^2x^3-\frac{16}{3}Bbc^2d^2x^3+16Abc^2d^2x^2-16Ba^2ce^2x^2-4Bab^2e^2x^2+4Bb^3dex^2-8Bb^2cd^2x^2-\frac{32}{3}Aa^2cde-\frac{8}{3}Aab^2de+8Aabcd^2+\frac{32}{3}Ba^2bde-\frac{2}{3}Ab^3d^2-\frac{32}{3}Ba^3e^2}{\left(cx^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8ab^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(8*A*a*c^2*e^2*x^3+2*A*b^2*c*e^2*x^3-16*A*b*c^2*d*e
*x^3+16*A*c^3*d^2*x^3-12*B*a*b*c*e^2*x^3+16*B*a*c^2*d*e*x^3+B*b^3*e^2*x^3+4
*B*b^2*c*d*e*x^3-8*B*b*c^2*d^2*x^3+12*A*a*b*c*e^2*x^2+3*A*b^3*e^2*x^2-24*A*
b^2*c*d*e*x^2+24*A*b*c^2*d^2*x^2-24*B*a^2*c*e^2*x^2-6*B*a*b^2*e^2*x^2+24*B*
a*b*c*d*e*x^2+6*B*b^3*d*e*x^2-12*B*b^2*c*d^2*x^2+12*A*a*b^2*e^2*x-24*A*a*b*
c*d*e*x+24*A*a*c^2*d^2*x-6*A*b^3*d*e*x+6*A*b^2*c*d^2*x-24*B*a^2*b*e^2*x+24*
B*a*b^2*d*e*x-12*B*a*b*c*d^2*x-3*B*b^3*d^2*x+8*A*a^2*b*e^2-16*A*a^2*c*d*e-4
*A*a*b^2*d*e+12*A*a*b*c*d^2-A*b^3*d^2-16*B*a^3*e^2+16*B*a^2*b*d*e-8*B*a^2*c
*d^2-2*B*a*b^2*d^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.09, size = 423, normalized size = 3.50

$$-\frac{2\left(16Ba^3e^2-16Ba^2bde+24Ba^2be^2x-8Aa^2be^2+8Ba^2cd^2+16Aa^2cde+24Ba^2ce^2x^2+2Bab^2d^2-24Bab^2dex+4Aab^2de+6Bab^2e^2x^2-12Aab^2e^2x+12Babcd^2x-12Aabcd^2-24Babcdex^2+24Aabcdex+12Babce^2x^3-12Aabce^2x^2-24Aac^2d^2x-16Bac^2dex^3-8Aac^2e^2x^3+3Bb^3d^2x+Ab^3d^2-6Bb^3dex^2+6Ab^3dex-Bb^3e^2x^3-3Ab^3e^2x^2+12Bb^2cd^2x^2-6Ab^2cd^2x-4Bb^2cdex^3+24Ab^2cdex^2-2Ab^2ce^2x^3+8Bbc^2d^2x^3-24Abc^2d^2x^2+16Abc^2dex^3-16Ac^3d^2x^3\right)}{3\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3*d^2 + 16*B*a^3*e^2 - 8*A*a^2*b*e^2 + 2*B*a*b^2*d^2 + 8*B*a^2*c*d
^2 + 3*B*b^3*d^2*x - 3*A*b^3*e^2*x^2 - 16*A*c^3*d^2*x^3 - B*b^3*e^2*x^3 - 6
*A*b^2*c*d^2*x + 24*B*a^2*b*e^2*x - 6*B*b^3*d*e*x^2 - 24*A*b*c^2*d^2*x^2 +
6*B*a*b^2*e^2*x^2 - 8*A*a*c^2*e^2*x^3 + 24*B*a^2*c*e^2*x^2 + 12*B*b^2*c*d^2
*x^2 - 2*A*b^2*c*e^2*x^3 + 8*B*b*c^2*d^2*x^3 - 12*A*a*b*c*d^2 + 4*A*a*b^2*d
*e + 16*A*a^2*c*d*e - 16*B*a^2*b*d*e + 6*A*b^3*d*e*x - 12*A*a*b^2*e^2*x - 2
4*A*a*c^2*d^2*x + 12*B*a*b*c*d^2*x - 24*B*a*b^2*d*e*x - 12*A*a*b*c*e^2*x^2
+ 12*B*a*b*c*e^2*x^3 + 24*A*b^2*c*d*e*x^2 + 16*A*b*c^2*d*e*x^3 - 16*B*a*c^2
*d*e*x^3 - 4*B*b^2*c*d*e*x^3 + 24*A*a*b*c*d*e*x - 24*B*a*b*c*d*e*x^2))/(3*(
4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2242 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=158

$$\frac{2(b+2cx)\left(4c(aBe+2Acd)-4bc(Ae+Bd)+b^2Be\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {777, 613}

$$\frac{2(b+2cx)\left(4c(aBe+2Acd)-4bc(Ae+Bd)+b^2Be\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d + A*e) + 2*
c*(A*c*d - a*B*e))*x))/(3*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/2)) + (2*(b^
2*B*e - 4*b*c*(B*d + A*e) + 4*c*(2*A*c*d + a*B*e))*(b + 2*c*x))/(3*c*(b^2 -
 4*a*c)^2*Sqrt[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{\left(b^2B\right.}{}\\ &= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\left(b\right.}{}\end{aligned}$$

Mathematica [A] time = 0.31, size = 200, normalized size = 1.27

$$-\frac{2\left(A\left(8c\left(a^2e-3acdx-2c^2dx^3\right)+2b^2\left(ae-3cdx+6cex^2\right)+4bc\left(-3ad+3aex-6cdx^2+2cex^3\right)+b^3(d+3ex)\right)+B\left(8a^2(cd-be)+2a\left(b^2(d-6ex)+6bcx(d-ex)-4c^2ex^3\right)+bx\left(3b^2(d-ex)-2bcx(ex-6d)+8c^2dx^2\right)\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*(b^3*(d + 3*e*x) + 2*b^2*(a*e - 3*c*d*x + 6*c*e*x^2) + 8*c*(a^2*e -
3*a*c*d*x - 2*c^2*d*x^3) + 4*b*c*(-3*a*d + 3*a*e*x - 6*c*d*x^2 + 2*c*e*x^3)
) + B*(8*a^2*(c*d - b*e) + 2*a*(-4*c^2*e*x^3 + b^2*(d - 6*e*x) + 6*b*c*x*(d
 - e*x)) + b*x*(8*c^2*d*x^2 + 3*b^2*(d - e*x) - 2*b*c*x*(-6*d + e*x)))))/(3
*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 1.77, size = 248, normalized size = 1.57

$$-\frac{2\left(8a^2Ace-8a^2bBe+8a^2Bcd+2aAb^2e-12aAbcd+12aAbcex-24aAc^2dx+2ab^2Bd-12ab^2Bex+12abBcdx-12abBcex^2-8aBc^2ex^3+Ab^3d+3Ab^3ex-6Ab^2cdx+12Ab^2cex^2-24Abc^2dx^2+8Abc^2ex^3-16Ac^3dx^3+3b^3Bdx-3b^3Bex^2+12b^2Bcdx^2-2b^2Bcex^3+8bBc^2dx^3\right)}{3\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b^3*d + 2*a*b^2*B*d - 12*a*A*b*c*d + 8*a^2*B*c*d + 2*a*A*b^2*e - 8*a
^2*b*B*e + 8*a^2*A*c*e + 3*b^3*B*d*x - 6*A*b^2*c*d*x + 12*a*b*B*c*d*x - 24*
a*A*c^2*d*x + 3*A*b^3*e*x - 12*a*b^2*B*e*x + 12*a*A*b*c*e*x + 12*b^2*B*c*d*
x^2 - 24*A*b*c^2*d*x^2 - 3*b^3*B*e*x^2 + 12*A*b^2*c*e*x^2 - 12*a*b*B*c*e*x^
2 + 8*b*B*c^2*d*x^3 - 16*A*c^3*d*x^3 - 2*b^2*B*c*e*x^3 + 8*A*b*c^2*e*x^3 -
8*a*B*c^2*e*x^3))/(3*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 8.91, size = 353, normalized size = 2.23

$$-\frac{2\left(2\left(4\left(Bbc^2-2Ac^3\right)d-\left(Bb^2c+4\left(Ba-Ab\right)c^2\right)e\right)x^3+3\left(4\left(Bb^2c-2Abc^2\right)d-\left(Bb^3+4\left(Bab-Ab^2\right)c\right)e\right)x^2+\left(2Bab^2+Ab^3+4\left(2Ba^2-3Aab\right)c\right)d-2\left(4Ba^2b-Aab^2-4Aa^2c\right)e+3\left(\left(Bb^3-8Aac^2+2\left(2Bab-Ab^2\right)c\right)d-\left(4Bab^2-Ab^3-4Aabc\right)e\right)x\right)\sqrt{cx^2+bx+a}}{3\left(a^2b^4-8a^3b^2c+16a^4c^2+\left(b^4c^2-8ab^2c^3+16a^2c^4\right)x^4+2\left(b^5c-8ab^3c^2+16a^2bc^3\right)x^3+\left(b^6-6ab^4c+32a^3c^3\right)x^2+2\left(ab^5-8a^2b^3c+16a^3bc^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*(4*(B*b*c^2 - 2*A*c^3)*d - (B*b^2*c + 4*(B*a - A*b)*c^2)*e)*x^3 + 3
*(4*(B*b^2*c - 2*A*b*c^2)*d - (B*b^3 + 4*(B*a*b - A*b^2)*c)*e)*x^2 + (2*B*a
*b^2 + A*b^3 + 4*(2*B*a^2 - 3*A*a*b)*c)*d - 2*(4*B*a^2*b - A*a*b^2 - 4*A*a^
2*c)*e + 3*((B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b^2)*c)*d - (4*B*a*b^2 - A*
b^3 - 4*A*a*b*c)*e)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^
4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 +
 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*
b^3*c + 16*a^3*b*c^2)*x)
```

giac [B] time = 0.33, size = 309, normalized size = 1.96

$$-\frac{2\left(\left(\left(\frac{2\left(4Bbc^2d-8Ac^3d-Bb^2ce-4Bac^2e+4Abc^2e\right)x}{b^4-8ab^2c+16a^2c^2}+\frac{3\left(4Bb^2cd-8Abc^2d-Bb^3e-4Babce+4Ab^2ce\right)}{b^4-8ab^2c+16a^2c^2}\right)x+\frac{3\left(Bb^3d+4Babcd-2Ab^2cd-8Aac^2d-4Bab^2e+Ab^3e+4Aabce\right)}{b^4-8ab^2c+16a^2c^2}\right)x+\frac{2Bab^2d+Ab^3d+8Ba^2cd-12Aabcd-8Ba^2be+2Aab^2e+8Aa^2ce}{b^4-8ab^2c+16a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(((2*(4*B*b*c^2*d - 8*A*c^3*d - B*b^2*c*e - 4*B*a*c^2*e + 4*A*b*c^2*e)
*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(4*B*b^2*c*d - 8*A*b*c^2*d - B*b^3*e
- 4*B*a*b*c*e + 4*A*b^2*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3*d
 + 4*B*a*b*c*d - 2*A*b^2*c*d - 8*A*a*c^2*d - 4*B*a*b^2*e + A*b^3*e + 4*A*a*
b*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (2*B*a*b^2*d + A*b^3*d + 8*B*a^2
*c*d - 12*A*a*b*c*d - 8*B*a^2*b*e + 2*A*a*b^2*e + 8*A*a^2*c*e)/(b^4 - 8*a*b
^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a)^(3/2)
```

maple [A] time = 0.01, size = 256, normalized size = 1.62

$$-\frac{2\left(8Abc^2ex^3-16Ac^3dx^3-8Bac^2ex^3-2Bb^2cex^3+8Bbc^2dx^3+12Ab^2cex^2-24Abc^2dx^2-12Babcex^2-3Bb^3ex^2+12Bb^2cdx^2+12Aabcex-24Aac^2dx+3Ab^3ex-6Ab^2cdx-12Bab^2ex+12Babcdx+3Bb^3dx+8Aa^2ce+2Aab^2e-12Aabcd+Ab^3d-8Ba^2be+8Ba^2cd+2Bab^2d\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8ab^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)*(8*A*b*c^2*e*x^3-16*A*c^3*d*x^3-8*B*a*c^2*e*x^3-2*
B*b^2*c*e*x^3+8*B*b*c^2*d*x^3+12*A*b^2*c*e*x^2-24*A*b*c^2*d*x^2-12*B*a*b*c*
e*x^2-3*B*b^3*e*x^2+12*B*b^2*c*d*x^2+12*A*a*b*c*e*x-24*A*a*c^2*d*x+3*A*b^3*
e*x-6*A*b^2*c*d*x-12*B*a*b^2*e*x+12*B*a*b*c*d*x+3*B*b^3*d*x+8*A*a^2*c*e+2*A
*a*b^2*e-12*A*a*b*c*d+A*b^3*d-8*B*a^2*b*e+8*B*a^2*c*d+2*B*a*b^2*d)/(16*a^2*
c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.82, size = 246, normalized size = 1.56

$$-\frac{2\left(A b^3 d+2 A a b^2 e+2 B a b^2 d+8 A a^2 c e-8 B a^2 b e+8 B a^2 c d+3 A b^3 e x+3 B b^3 d x-16 A c^3 d x^3-3 B b^3 e x^2-24 A b c^2 d x^2+12 A b^2 c e x^2+12 B b^2 c d x^2+8 A b c^2 e x^3-8 B a c^2 e x^3+8 B b c^2 d x^3-2 B b^2 c e x^3-12 A a b c d-24 A a c^2 d x-6 A b^2 c d x-12 B a b^2 e x-12 B a b c e x^2+12 A a b c e x+12 B a b c d x\right)}{3\left(4 a c-b^2\right)^2\left(c x^2+b x+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3*d + 2*A*a*b^2*e + 2*B*a*b^2*d + 8*A*a^2*c*e - 8*B*a^2*b*e + 8*B*
a^2*c*d + 3*A*b^3*e*x + 3*B*b^3*d*x - 16*A*c^3*d*x^3 - 3*B*b^3*e*x^2 - 24*A
*b*c^2*d*x^2 + 12*A*b^2*c*e*x^2 + 12*B*b^2*c*d*x^2 + 8*A*b*c^2*e*x^3 - 8*B*
a*c^2*e*x^3 + 8*B*b*c^2*d*x^3 - 2*B*b^2*c*e*x^3 - 12*A*a*b*c*d - 24*A*a*c^2
*d*x - 6*A*b^2*c*d*x - 12*B*a*b^2*e*x - 12*B*a*b*c*e*x^2 + 12*A*a*b*c*e*x +
 12*B*a*b*c*d*x))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2243 $\int \frac{A+Bx}{(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=90

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) - (8*(b*B - 2*A*c)*(b + 2*c*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2
])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3\left(b^2-4ac\right)}\\ &= -\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.10, size = 99, normalized size = 1.10

$$-\frac{2\left(B\left(8a^2c+2ab(b+6cx)+bx\left(3b^2+12bcx+8c^2x^2\right)\right)+A(b+2cx)\left(-4c\left(3a+2cx^2\right)+b^2-8bcx\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*(b + 2*c*x)*(b^2 - 8*b*c*x - 4*c*(3*a + 2*c*x^2)) + B*(8*a^2*c + 2*a
*b*(b + 6*c*x) + b*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2))))/(3*(b^2 - 4*a*c)^2*(
a + x*(b + c*x))^(3/2))
```

IntegrateAlgebraic [A] time = 0.01, size = 123, normalized size = 1.37

$$-\frac{2\left(8a^2Bc-12aAbc-24aAc^2x+2ab^2B+12abBcx+Ab^3-6Ab^2cx-24Abc^2x^2-16Ac^3x^3+3b^3Bx+12b^2Bcx^2+8bBc^2x^3\right)}{3\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b^3 + 2*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c + 3*b^3*B*x - 6*A*b^2*c*x +
 12*a*b*B*c*x - 24*a*A*c^2*x + 12*b^2*B*c*x^2 - 24*A*b*c^2*x^2 + 8*b*B*c^2*
x^3 - 16*A*c^3*x^3))/(3*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2))
```

fricas [B] time = 1.10, size = 245, normalized size = 2.72

$$-\frac{2\left(2\,Bab^2+Ab^3+8\left(Bbc^2-2\,Ac^3\right)x^3+12\left(Bb^2c-2\,Abc^2\right)x^2+4\left(2\,Ba^2-3\,Aab\right)c+3\left(Bb^3-8\,Aac^2+2\left(2\,Bab-Ab^2\right)c\right)x\right)\sqrt{cx^2+bx+a}}{3\left(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)x^4+2\left(b^5c-8\,ab^3c^2+16\,a^2bc^3\right)x^3+\left(b^6-6\,ab^4c+32\,a^3c^3\right)x^2+2\left(ab^5-8\,a^2b^3c+16\,a^3bc^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*B*a*b^2 + A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c
^2)*x^2 + 4*(2*B*a^2 - 3*A*a*b)*c + 3*(B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b
^2)*c)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*
c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3
)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^
3*b*c^2)*x)
```

giac [B] time = 0.30, size = 193, normalized size = 2.14

$$-\frac{2\left(\left(4\left(\frac{2\left(Bbc^2-2\,Ac^3\right)x}{b^4-8\,ab^2c+16\,a^2c^2}+\frac{3\left(Bb^2c-2\,Abc^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{3\left(Bb^3+4\,Babc-2\,Ab^2c-8\,Aac^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x+\frac{2\,Bab^2+Ab^3+8\,Ba^2c-12\,Aabc}{b^4-8\,ab^2c+16\,a^2c^2}\right)}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*(2*(B*b*c^2 - 2*A*c^3)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(B*b^2
*c - 2*A*b*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3 + 4*B*a*b*c -
2*A*b^2*c - 8*A*a*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (2*B*a*b^2 + A*b
^3 + 8*B*a^2*c - 12*A*a*b*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x +
 a)^(3/2)
```

maple [A] time = 0.01, size = 132, normalized size = 1.47

$$\frac{\frac{32}{3}A\,c^3x^3-\frac{16}{3}Bb\,c^2x^3+16Ab\,c^2x^2-8B\,b^2c\,x^2+16Aa\,c^2x+4A\,b^2cx-8Babcx-2B\,b^3x+8Aabc-\frac{2}{3}A\,b^3-\frac{16}{3}B\,a^2c-\frac{4}{3}Ba\,b^2}{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8a\,b^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(16*A*c^3*x^3-8*B*b*c^2*x^3+24*A*b*c^2*x^2-12*B*b^2
*c*x^2+24*A*a*c^2*x+6*A*b^2*c*x-12*B*a*b*c*x-3*B*b^3*x+12*A*a*b*c-A*b^3-8*B
*a^2*c-2*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.66, size = 121, normalized size = 1.34

$$-\frac{2\left(8Ba^2c+2Bab^2+12Babcx-12Aabc-24Aac^2x+3Bb^3x+Ab^3+12Bb^2cx^2-6Ab^2cx+8Bbc^2x^3-24Abc^2x^2-16Ac^3x^3\right)}{3\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 2*B*a*b^2 + 8*B*a^2*c + 3*B*b^3*x - 24*A*a*c^2*
x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B*b^2*c*x^2 + 8*B*b*c^2*x^3 - 12*A*a*
b*c + 12*B*a*b*c*x))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2244 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=436

$$\frac{2\left(cx\left((2cd-be)\left(4c\left(3aAe^2-aBde+2Acd^2\right)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\right)+4ce(bd-2ae)(-2aBe+Ab\cdots\right.\right.}{3\cdots}$$

Rubi [A] time = 0.55, antiderivative size = 436, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {822, 12, 724, 206}

$$\frac{2\left(cx\left((2cd-be)\left(4c\left(3aAe^2-aBde+2Acd^2\right)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\right)+4ce(bd-2ae)(-2aBe+Abe-2Acd+bBd)\right)+\left(2ace+b^2(-e)+bcd\right)\left(4c\left(3aAe^2-aBde+2Acd^2\right)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\right)+4ace(2cd-be)(-2aBe+Abe-2Acd+bBd)\right)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)^2}+\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}\left(ae^2-bde+cd^2\right)}-\frac{e^3(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*
x^2)^(3/2)) + (2*(4*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)
 + (b*c*d - b^2*e + 2*a*c*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d + A*e) + 4
*c*(2*A*c*d^2 - a*B*d*e + 3*a*A*e^2)) + c*(4*c*e*(b*d - 2*a*e)*(b*B*d - 2*A
*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d
 + A*e) + 4*c*(2*A*c*d^2 - a*B*d*e + 3*a*A*e^2)))*x))/(3*(b^2 - 4*a*c)^2*(c
*d^2 - b*d*e + a*e^2)^2*Sqrt[a + b*x + c*x^2]) - (e^3*(B*d - A*e)*ArcTanh[(
b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x
+ c*x^2])])/(c*d^2 - b*d*e + a*e^2)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2 \ldots}{}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(\ldots\right.}{}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(\ldots\right.}{}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(\ldots\right.}{}$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(\ldots\right.}{}$$

Mathematica [A] time = 1.04, size = 437, normalized size = 1.00

$$\frac{4\left(cx\left(\frac{1}{2}(2cd-be)\left(4c\left(3aAe^2-aBde+2Acd^2\right)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\right)+2ce(bd-2ae)(-2aBe+Abe-2Acd+bBd)\right)+\frac{1}{2}\left(2ace+b^2(-e)+bcd\right)\left(4c\left(3aAe^2-aBde+2Acd^2\right)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\right)+2ace(2cd-be)(-2aBe+Abe-2Acd+bBd)\right)}{3\left(b^2-4ac\right)^2\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)^2}+\frac{2\left(2Ac(ae+cdx)+aB(be-2cd+2cex)-Ab^2e+Abc(d-ex)-bBcdx\right)}{3\left(b^2-4ac\right)(a+x(b+cx))^{3/2}\left(e(bd-ae)-cd^2\right)}+\frac{e^3(Bd-Ae)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (4*(2*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + ((b*c*d - b
^2*e + 2*a*c*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d + A*e) + 4*c*(2*A*c*d^2
 - a*B*d*e + 3*a*A*e^2)))/2 + c*(2*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b
*e - 2*a*B*e) + ((2*c*d - b*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d + A*e) +
 4*c*(2*A*c*d^2 - a*B*d*e + 3*a*A*e^2)))/2)*x))/(3*(b^2 - 4*a*c)^2*(c*d^2 +
 e*(-(b*d) + a*e))^2*Sqrt[a + x*(b + c*x)]) + (2*(-(A*b^2*e) - b*B*c*d*x +
2*A*c*(a*e + c*d*x) + A*b*c*(d - e*x) + a*B*(-2*c*d + b*e + 2*c*e*x)))/(3*(
b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*(a + x*(b + c*x))^(3/2)) + (e^3*(B*
d - A*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*
d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(5/2)
```

IntegrateAlgebraic [F] time = 180.97, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 24.72, size = 6068, normalized size = 13.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*d*e^3 - (A*a^2*b^4 - 8
*A*a^3*b^2*c + 16*A*a^4*c^2)*e^4 + ((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c
^4)*d*e^3 - (A*b^4*c^2 - 8*A*a*b^2*c^3 + 16*A*a^2*c^4)*e^4)*x^4 + 2*((B*b^5
*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*d*e^3 - (A*b^5*c - 8*A*a*b^3*c^2 + 16*
A*a^2*b*c^3)*e^4)*x^3 + ((B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*d*e^3 - (A*b^
6 - 6*A*a*b^4*c + 32*A*a^3*c^3)*e^4)*x^2 + 2*((B*a*b^5 - 8*B*a^2*b^3*c + 16
*B*a^3*b*c^2)*d*e^3 - (A*a*b^5 - 8*A*a^2*b^3*c + 16*A*a^3*b*c^2)*e^4)*x)*sq
rt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 -
(8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*
e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 +
 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*((4*(2*
B*a^2 - 3*A*a*b)*c^4 + (2*B*a*b^2 + A*b^3)*c^3)*d^5 - (8*A*a^2*c^4 + 2*(8*B
*a^2*b - 17*A*a*b^2)*c^3 + 3*(2*B*a*b^3 + A*b^4)*c^2)*d^4*e + (20*(2*B*a^3
- A*a^2*b)*c^3 + 3*(2*B*a^2*b^2 - 9*A*a*b^3)*c^2 + 3*(2*B*a*b^4 + A*b^5)*c)
*d^3*e^2 - (2*B*a*b^5 + A*b^6 - B*a^2*b^3*c + 40*A*a^3*c^3 + 2*(26*B*a^3*b
- 33*A*a^2*b^2)*c^2)*d^2*e^3 + (B*a^2*b^4 + 5*A*a*b^5 + 16*(2*B*a^4 + A*a^3
*b)*c^2 + 2*(4*B*a^3*b^2 - 17*A*a^2*b^3)*c)*d*e^4 + (B*a^3*b^3 - 4*A*a^2*b^
4 - 32*A*a^4*c^2 - 4*(3*B*a^4*b - 7*A*a^3*b^2)*c)*e^5 + (8*(B*b*c^5 - 2*A*c
^6)*d^5 - 2*(11*B*b^2*c^4 - 4*(B*a + 5*A*b)*c^5)*d^4*e + (17*B*b^3*c^3 - 56
*A*a*c^5 + 2*(6*B*a*b - 13*A*b^2)*c^4)*d^3*e^2 - (3*B*b^4*c^2 + 4*(2*B*a^2
- 21*A*a*b)*c^4 + (26*B*a*b^2 + A*b^3)*c^3)*d^2*e^3 - (40*A*a^2*c^4 - 2*(14
*B*a^2*b - 11*A*a*b^2)*c^3 - 3*(B*a*b^3 + A*b^4)*c^2)*d*e^4 - (3*A*a*b^3*c^
2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*e^5)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^
5 - (11*B*b^3*c^3 - 4*(B*a*b + 5*A*b^2)*c^4)*d^4*e + (9*B*b^4*c^2 + 4*(2*B*
a^2 - 7*A*a*b)*c^4 + (2*B*a*b^2 - 13*A*b^3)*c^3)*d^3*e^2 - (2*B*b^5*c + 8*A
*a^2*c^4 + 2*(6*B*a^2*b - 23*A*a*b^2)*c^3 + (9*B*a*b^3 + A*b^4)*c^2)*d^2*e^
3 + (4*(2*B*a^3 - 3*A*a^2*b)*c^3 + 5*(2*B*a^2*b^2 - 3*A*a*b^3)*c^2 + 2*(B*a
*b^4 + A*b^5)*c)*d*e^4 - 2*(A*a*b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*
b^2)*c^2)*e^5)*x^2 + 3*((B*b^3*c^3 - 8*A*a*c^5 + 2*(2*B*a*b - A*b^2)*c^4)*d
^5 - (3*B*b^4*c^2 - 20*A*a*b*c^4 + (8*B*a*b^2 - 5*A*b^3)*c^3)*d^4*e + (3*B*
b^5*c - 24*A*a^2*c^4 + 2*(10*B*a^2*b - 11*A*a*b^2)*c^3 + 3*(B*a*b^3 - A*b^4
)*c^2)*d^3*e^2 - (B*b^6 + A*b^5*c + 4*(2*B*a^3 - 7*A*a^2*b)*c^3 + (22*B*a^2
*b^2 - 17*A*a*b^3)*c^2)*d^2*e^3 + (B*a*b^5 + A*b^6 - 6*A*a*b^4*c - 16*A*a^3
*c^3 + 8*(3*B*a^3*b - A*a^2*b^2)*c^2)*d*e^4 - (A*a*b^5 + 8*B*a^4*c^2 + 2*(B
*a^3*b^2 - 3*A*a^2*b^3)*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^4*c^3 - 8
*a^3*b^2*c^4 + 16*a^4*c^5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*
c^4)*d^5*e + 3*(a^2*b^6*c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4
*e^2 - (a^2*b^7 - 2*a^3*b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*
(a^3*b^6 - 7*a^4*b^4*c + 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 -
 8*a^5*b^3*c + 16*a^6*b*c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e
^6 + ((b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 +
 16*a^2*b*c^6)*d^5*e + 3*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^
6)*d^4*e^2 - (b^7*c^2 - 2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^
3 + 3*(a*b^6*c^2 - 7*a^2*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*
(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b
^2*c^3 + 16*a^5*c^4)*e^6)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d
^6 - 3*(b^6*c^3 - 8*a*b^4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^
5*c^3 + 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a
^2*b^4*c^3 + 96*a^3*b^2*c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b
^3*c^3 + 16*a^4*b*c^4)*d^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*
c^3)*d*e^5 + (a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^
3 - 6*a*b^4*c^4 + 32*a^3*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5
)*d^5*e + 3*(b^8*c - 5*a*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*
c^5)*d^4*e^2 - (b^9 - 36*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*
e^3 + 3*(a*b^8 - 5*a^2*b^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)
*d^2*e^4 - 3*(a^2*b^7 - 6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^
4*b^4*c + 32*a^6*c^3)*e^6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c
^5)*d^6 - 3*(a*b^6*c^2 - 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c
 - 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b
```

^6*c - 32*a^3*b^4*c^2 + 96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c + 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5 *b^2*c^2)*d*e^5 + (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x), -1/3*(3*((B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*d*e^3 - (A*a^2*b^4 - 8*A*a^3*b^2 *c + 16*A*a^4*c^2)*e^4 + ((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*d*e^3 - (A*b^4*c^2 - 8*A*a*b^2*c^3 + 16*A*a^2*c^4)*e^4)*x^4 + 2*((B*b^5*c - 8*B*a *b^3*c^2 + 16*B*a^2*b*c^3)*d*e^3 - (A*b^5*c - 8*A*a*b^3*c^2 + 16*A*a^2*b*c^ 3)*e^4)*x^3 + ((B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*d*e^3 - (A*b^6 - 6*A*a* b^4*c + 32*A*a^3*c^3)*e^4)*x^2 + 2*((B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b*c ^2)*d*e^3 - (A*a*b^5 - 8*A*a^2*b^3*c + 16*A*a^3*b*c^2)*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^ 2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*((4*(2*B *a^2 - 3*A*a*b)*c^4 + (2*B*a*b^2 + A*b^3)*c^3)*d^5 - (8*A*a^2*c^4 + 2*(8*B* a^2*b - 17*A*a*b^2)*c^3 + 3*(2*B*a*b^3 + A*b^4)*c^2)*d^4*e + (20*(2*B*a^3 - A*a^2*b)*c^3 + 3*(2*B*a^2*b^2 - 9*A*a*b^3)*c^2 + 3*(2*B*a*b^4 + A*b^5)*c)* d^3*e^2 - (2*B*a*b^5 + A*b^6 - B*a^2*b^3*c + 40*A*a^3*c^3 + 2*(26*B*a^3*b - 33*A*a^2*b^2)*c^2)*d^2*e^3 + (B*a^2*b^4 + 5*A*a*b^5 + 16*(2*B*a^4 + A*a^3* b)*c^2 + 2*(4*B*a^3*b^2 - 17*A*a^2*b^3)*c)*d*e^4 + (B*a^3*b^3 - 4*A*a^2*b^4 - 32*A*a^4*c^2 - 4*(3*B*a^4*b - 7*A*a^3*b^2)*c)*e^5 + (8*(B*b*c^5 - 2*A*c^ 6)*d^5 - 2*(11*B*b^2*c^4 - 4*(B*a + 5*A*b)*c^5)*d^4*e + (17*B*b^3*c^3 - 56* A*a*c^5 + 2*(6*B*a*b - 13*A*b^2)*c^4)*d^3*e^2 - (3*B*b^4*c^2 + 4*(2*B*a^2 - 21*A*a*b)*c^4 + (26*B*a*b^2 + A*b^3)*c^3)*d^2*e^3 - (40*A*a^2*c^4 - 2*(14* B*a^2*b - 11*A*a*b^2)*c^3 - 3*(B*a*b^3 + A*b^4)*c^2)*d*e^4 - (3*A*a*b^3*c^2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*e^5)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^5 - (11*B*b^3*c^3 - 4*(B*a*b + 5*A*b^2)*c^4)*d^4*e + (9*B*b^4*c^2 + 4*(2*B*a ^2 - 7*A*a*b)*c^4 + (2*B*a*b^2 - 13*A*b^3)*c^3)*d^3*e^2 - (2*B*b^5*c + 8*A* a^2*c^4 + 2*(6*B*a^2*b - 23*A*a*b^2)*c^3 + (9*B*a*b^3 + A*b^4)*c^2)*d^2*e^3 + (4*(2*B*a^3 - 3*A*a^2*b)*c^3 + 5*(2*B*a^2*b^2 - 3*A*a*b^3)*c^2 + 2*(B*a* b^4 + A*b^5)*c)*d*e^4 - 2*(A*a*b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*b ^2)*c^2)*e^5)*x^2 + 3*((B*b^3*c^3 - 8*A*a*c^5 + 2*(2*B*a*b - A*b^2)*c^4)*d^ 5 - (3*B*b^4*c^2 - 20*A*a*b*c^4 + (8*B*a*b^2 - 5*A*b^3)*c^3)*d^4*e + (3*B*b ^5*c - 24*A*a^2*c^4 + 2*(10*B*a^2*b - 11*A*a*b^2)*c^3 + 3*(B*a*b^3 - A*b^4) *c^2)*d^3*e^2 - (B*b^6 + A*b^5*c + 4*(2*B*a^3 - 7*A*a^2*b)*c^3 + (22*B*a^2* b^2 - 17*A*a*b^3)*c^2)*d^2*e^3 + (B*a*b^5 + A*b^6 - 6*A*a*b^4*c - 16*A*a^3* c^3 + 8*(3*B*a^3*b - A*a^2*b^2)*c^2)*d*e^4 - (A*a*b^5 + 8*B*a^4*c^2 + 2*(B* a^3*b^2 - 3*A*a^2*b^3)*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^4*c^3 - 8* a^3*b^2*c^4 + 16*a^4*c^5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c ^4)*d^5*e + 3*(a^2*b^6*c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4* e^2 - (a^2*b^7 - 2*a^3*b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*(a^3*b^6 - 7*a^4*b^4*c + 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e^ 6 + ((b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^5*e + 3*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^6)*d^4*e^2 - (b^7*c^2 - 2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^3 + 3*(a*b^6*c^2 - 7*a^2*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b^ 2*c^3 + 16*a^5*c^4)*e^6)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^ 6 - 3*(b^6*c^3 - 8*a*b^4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^5 *c^3 + 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a^ 2*b^4*c^3 + 96*a^3*b^2*c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b^ 3*c^3 + 16*a^4*b*c^4)*d^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*c ^3)*d*e^5 + (a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5) *d^5*e + 3*(b^8*c - 5*a*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*c ^5)*d^4*e^2 - (b^9 - 36*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*e ^3 + 3*(a*b^8 - 5*a^2*b^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)* d^2*e^4 - 3*(a^2*b^7 - 6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^4 *b^4*c + 32*a^6*c^3)*e^6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^

```
5)*d^6 - 3*(a*b^6*c^2 - 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c
- 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b^
6*c - 32*a^3*b^4*c^2 + 96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c +
 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5*
b^2*c^2)*d*e^5 + (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x)]
```

giac [B] time = 0.90, size = 11729, normalized size = 26.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2*(B*d*e^3 - A*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(
c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 +
 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b*d*e - a*e^2)) - 2/3
*((((8*B*b*c^10*d^15 - 16*A*c^11*d^15 - 62*B*b^2*c^9*d^14*e + 8*B*a*c^10*d^
14*e + 120*A*b*c^10*d^14*e + 207*B*b^3*c^8*d^13*e^2 + 12*B*a*b*c^9*d^13*e^2
 - 386*A*b^2*c^9*d^13*e^2 - 136*A*a*c^10*d^13*e^2 - 388*B*b^4*c^7*d^12*e^3
- 276*B*a*b^2*c^8*d^12*e^3 + 689*A*b^3*c^8*d^12*e^3 + 32*B*a^2*c^9*d^12*e^3
 + 884*A*a*b*c^9*d^12*e^3 + 445*B*b^5*c^6*d^11*e^4 + 938*B*a*b^3*c^7*d^11*e
^4 - 732*A*b^4*c^7*d^11*e^4 + 48*B*a^2*b*c^8*d^11*e^4 - 2412*A*a*b^2*c^8*d^
11*e^4 - 480*A*a^2*c^9*d^11*e^4 - 318*B*b^6*c^5*d^10*e^5 - 1530*B*a*b^4*c^6
*d^10*e^5 + 451*A*b^5*c^6*d^10*e^5 - 810*B*a^2*b^2*c^7*d^10*e^5 + 3542*A*a*
b^3*c^7*d^10*e^5 + 24*B*a^3*c^8*d^10*e^5 + 2640*A*a^2*b*c^8*d^10*e^5 + 137*
B*b^7*c^4*d^9*e^6 + 1392*B*a*b^5*c^5*d^9*e^6 - 130*A*b^6*c^5*d^9*e^6 + 2165
*B*a^2*b^3*c^6*d^9*e^6 - 2950*A*a*b^4*c^6*d^9*e^6 + 340*B*a^3*b*c^7*d^9*e^6
 - 5910*A*a^2*b^2*c^7*d^9*e^6 - 920*A*a^3*c^8*d^9*e^6 - 32*B*b^8*c^3*d^8*e^
7 - 712*B*a*b^6*c^4*d^8*e^7 - 9*A*b^7*c^4*d^8*e^7 - 2640*B*a^2*b^4*c^5*d^8*
e^7 + 1296*A*a*b^5*c^5*d^8*e^7 - 1720*B*a^3*b^2*c^6*d^8*e^7 + 6795*A*a^2*b^
3*c^6*d^8*e^7 - 80*B*a^4*c^7*d^8*e^7 + 4140*A*a^3*b*c^7*d^8*e^7 + 3*B*b^9*c
^2*d^7*e^8 + 186*B*a*b^7*c^3*d^7*e^8 + 16*A*b^8*c^3*d^7*e^8 + 1638*B*a^2*b^
5*c^4*d^7*e^8 - 184*A*a*b^6*c^4*d^7*e^8 + 2940*B*a^3*b^3*c^5*d^7*e^8 - 4080
*A*a^2*b^4*c^5*d^7*e^8 + 840*B*a^4*b*c^6*d^7*e^8 - 7240*A*a^3*b^2*c^6*d^7*e
^8 - 1040*A*a^4*c^7*d^7*e^8 - 18*B*a*b^8*c^2*d^6*e^9 - 3*A*b^9*c^2*d^6*e^9
- 478*B*a^2*b^6*c^3*d^6*e^9 - 58*A*a*b^7*c^3*d^6*e^9 - 2260*B*a^3*b^4*c^4*d
^6*e^9 + 1050*A*a^2*b^5*c^4*d^6*e^9 - 2130*B*a^4*b^2*c^5*d^6*e^9 + 6020*A*a
^3*b^3*c^5*d^6*e^9 - 200*B*a^5*c^6*d^6*e^9 + 3640*A*a^4*b*c^6*d^6*e^9 + 45*
B*a^2*b^7*c^2*d^5*e^10 + 18*A*a*b^8*c^2*d^5*e^10 + 736*B*a^3*b^5*c^3*d^5*e^
10 + 30*A*a^2*b^6*c^3*d^5*e^10 + 2105*B*a^4*b^3*c^4*d^5*e^10 - 2220*A*a^3*b
^4*c^4*d^5*e^10 + 948*B*a^5*b*c^5*d^5*e^10 - 4590*A*a^4*b^2*c^5*d^5*e^10 -
696*A*a^5*c^6*d^5*e^10 - 60*B*a^3*b^6*c^2*d^4*e^11 - 45*A*a^2*b^7*c^2*d^4*e
^11 - 780*B*a^4*b^4*c^3*d^4*e^11 + 160*A*a^3*b^5*c^3*d^4*e^11 - 1332*B*a^5*
b^2*c^4*d^4*e^11 + 2375*A*a^4*b^3*c^4*d^4*e^11 - 192*B*a^6*c^5*d^4*e^11 + 1
740*A*a^5*b*c^5*d^4*e^11 + 45*B*a^4*b^5*c^2*d^3*e^12 + 60*A*a^3*b^6*c^2*d^3
*e^12 + 602*B*a^5*b^3*c^3*d^3*e^12 - 340*A*a^4*b^4*c^3*d^3*e^12 + 512*B*a^6
*b*c^4*d^3*e^12 - 1356*A*a^5*b^2*c^4*d^3*e^12 - 256*A*a^6*c^5*d^3*e^12 - 18
*B*a^5*b^4*c^2*d^2*e^13 - 45*A*a^4*b^5*c^2*d^2*e^13 - 326*B*a^6*b^2*c^3*d^2
*e^13 + 294*A*a^5*b^3*c^3*d^2*e^13 - 88*B*a^7*c^4*d^2*e^13 + 384*A*a^6*b*c^
4*d^2*e^13 + 3*B*a^6*b^3*c^2*d*e^14 + 18*A*a^5*b^4*c^2*d*e^14 + 108*B*a^7*b
*c^3*d*e^14 - 122*A*a^6*b^2*c^3*d*e^14 - 40*A*a^7*c^4*d*e^14 - 3*A*a^6*b^3*
c^2*e^15 - 16*B*a^8*c^3*e^15 + 20*A*a^7*b*c^3*e^15)*x/(b^4*c^8*d^16 - 8*a*b
^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 1
28*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^
2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5
*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*
c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3
*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*
c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688
*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a
```

^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16) + 3*(4*B*b^2*c^9*d^15 - 8*A*b*c^10*d^15 - 31*B*b^3*c^8*d^14*e + 4*B*a*b*c^9*d^14*e + 60*A*b^2*c^9*d^14*e + 104*B*b^4*c^7*d^13*e^2 + 2*B*a*b^2*c^8*d^13*e^2 - 193*A*b^3*c^8*d^13*e^2 + 8*B*a^2*c^9*d^13*e^2 - 68*A*a*b*c^9*d^13*e^2 - 197*B*b^5*c^6*d^12*e^3 - 114*B*a*b^3*c^7*d^12*e^3 + 344*A*b^4*c^7*d^12*e^3 - 32*B*a^2*b*c^8*d^12*e^3 + 446*A*a*b^2*c^8*d^12*e^3 - 8*A*a^2*c^9*d^12*e^3 + 230*B*b^6*c^5*d^11*e^4 + 412*B*a*b^4*c^6*d^11*e^4 - 363*A*b^5*c^6*d^11*e^4 + 120*B*a^2*b^2*c^7*d^11*e^4 - 1230*A*a*b^3*c^7*d^11*e^4 + 48*B*a^3*c^8*d^11*e^4 - 192*A*a^2*b*c^8*d^11*e^4 - 169*B*b^7*c^4*d^10*e^5 - 700*B*a*b^5*c^5*d^10*e^5 + 218*A*b^6*c^5*d^10*e^5 - 445*B*a^2*b^3*c^6*d^10*e^5 + 1828*A*a*b^4*c^6*d^10*e^5 - 228*B*a^3*b*c^7*d^10*e^5 + 1224*A*a^2*b^2*c^7*d^10*e^5 - 48*A*a^3*c^8*d^10*e^5 + 76*B*b^8*c^3*d^9*e^6 + 666*B*a*b^6*c^4*d^9*e^6 - 55*A*b^7*c^4*d^9*e^6 + 970*B*a^2*b^4*c^5*d^9*e^6 - 1540*A*a*b^5*c^5*d^9*e^6 + 590*B*a^3*b^2*c^6*d^9*e^6 - 2915*A*a^2*b^3*c^6*d^9*e^6 + 120*B*a^4*c^7*d^9*e^6 - 220*A*a^3*b*c^7*d^9*e^6 - 19*B*b^9*c^2*d^8*e^7 - 362*B*a*b^7*c^3*d^8*e^7 - 12*A*b^8*c^3*d^8*e^7 - 1158*B*a^2*b^5*c^4*d^8*e^7 + 678*A*a*b^6*c^4*d^8*e^7 - 1100*B*a^3*b^3*c^5*d^8*e^7 + 3510*A*a^2*b^4*c^5*d^8*e^7 - 520*B*a^4*b*c^6*d^8*e^7 + 1650*A*a^3*b^2*c^6*d^8*e^7 - 120*A*a^4*c^7*d^8*e^7 + 2*B*b^10*c*d^7*e^8 + 104*B*a*b^8*c^2*d^7*e^8 + 11*A*b^9*c^2*d^7*e^8 + 752*B*a^2*b^6*c^3*d^7*e^8 - 86*A*a*b^7*c^3*d^7*e^8 + 1360*B*a^3*b^4*c^4*d^7*e^8 - 2202*A*a^2*b^5*c^4*d^7*e^8 + 1060*B*a^4*b^2*c^5*d^7*e^8 - 3380*A*a^3*b^3*c^5*d^7*e^8 + 160*B*a^5*c^6*d^7*e^8 - 40*A*a^4*b*c^6*d^7*e^8 - 12*B*a*b^9*c*d^6*e^9 - 2*A*b^10*c*d^6*e^9 - 245*B*a^2*b^7*c^2*d^6*e^9 - 40*A*a*b^8*c^2*d^6*e^9 - 968*B*a^3*b^5*c^3*d^6*e^9 + 592*A*a^2*b^6*c^3*d^6*e^9 - 1305*B*a^4*b^3*c^4*d^6*e^9 + 3120*A*a^3*b^4*c^4*d^6*e^9 - 580*B*a^5*b*c^5*d^6*e^9 + 1180*A*a^4*b^2*c^5*d^6*e^9 - 160*A*a^5*c^6*d^6*e^9 + 30*B*a^2*b^8*c*d^5*e^10 + 12*A*a*b^9*c*d^5*e^10 + 338*B*a^3*b^6*c^2*d^5*e^10 + 21*A*a^2*b^7*c^2*d^5*e^10 + 940*B*a^4*b^4*c^3*d^5*e^10 - 1272*A*a^3*b^5*c^3*d^5*e^10 + 894*B*a^5*b^2*c^4*d^5*e^10 - 2055*A*a^4*b^3*c^4*d^5*e^10 + 120*B*a^6*c^5*d^5*e^10 + 132*A*a^5*b*c^5*d^5*e^10 - 40*B*a^3*b^7*c*d^4*e^11 - 30*A*a^2*b^8*c*d^4*e^11 - 325*B*a^4*b^5*c^2*d^4*e^11 + 110*A*a^3*b^6*c^2*d^4*e^11 - 706*B*a^5*b^3*c^3*d^4*e^11 + 1300*A*a^4*b^4*c^3*d^4*e^11 - 336*B*a^6*b*c^4*d^4*e^11 + 450*A*a^5*b^2*c^4*d^4*e^11 - 120*A*a^6*c^5*d^4*e^11 + 30*B*a^4*b^6*c*d^3*e^12 + 40*A*a^3*b^7*c*d^3*e^12 + 244*B*a^5*b^4*c^2*d^3*e^12 - 235*A*a^4*b^5*c^2*d^3*e^12 + 352*B*a^6*b^2*c^3*d^3*e^12 - 638*A*a^5*b^3*c^3*d^3*e^12 + 48*B*a^7*c^4*d^3*e^12 + 112*A*a^6*b*c^4*d^3*e^12 - 12*B*a^5*b^5*c*d^2*e^13 - 30*A*a^4*b^6*c*d^2*e^13 - 139*B*a^6*b^3*c^2*d^2*e^13 + 204*A*a^5*b^4*c^2*d^2*e^13 - 92*B*a^7*b*c^3*d^2*e^13 + 96*A*a^6*b^2*c^3*d^2*e^13 - 48*A*a^7*c^4*d^2*e^13 + 2*B*a^6*b^4*c*d*e^14 + 12*A*a^5*b^5*c*d*e^14 + 50*B*a^7*b^2*c^2*d*e^14 - 85*A*a^6*b^3*c^2*d*e^14 + 8*B*a^8*c^3*d*e^14 + 28*A*a^7*b*c^3*d*e^14 - 2*A*a^6*b^4*c*e^15 - 8*B*a^8*b*c^2*e^15 + 14*A*a^7*b^2*c^2*e^15 - 8*A*a^8*c^3*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b

^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a
^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^
3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c
^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^
4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^
5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b
^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176
*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 -
8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a
^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^
12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^
3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*
c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^
7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^
5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2
*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7
*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5
*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^
4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a
^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*
b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6
*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9
*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^
15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x + 3*(B*b^3*c^8*
d^15 + 4*B*a*b*c^9*d^15 - 2*A*b^2*c^9*d^15 - 8*A*a*c^10*d^15 - 8*B*b^4*c^7*
d^14*e - 28*B*a*b^2*c^8*d^14*e + 15*A*b^3*c^8*d^14*e + 60*A*a*b*c^9*d^14*e
+ 28*B*b^5*c^6*d^13*e^2 + 88*B*a*b^3*c^7*d^13*e^2 - 48*A*b^4*c^7*d^13*e^2 +
40*B*a^2*b*c^8*d^13*e^2 - 212*A*a*b^2*c^8*d^13*e^2 - 64*A*a^2*c^9*d^13*e^2
- 56*B*b^6*c^5*d^12*e^3 - 170*B*a*b^4*c^6*d^12*e^3 + 84*A*b^5*c^6*d^12*e^3
- 242*B*a^2*b^2*c^7*d^12*e^3 + 472*A*a*b^3*c^7*d^12*e^3 - 8*B*a^3*c^8*d^12
*e^3 + 408*A*a^2*b*c^8*d^12*e^3 + 70*B*b^7*c^4*d^11*e^4 + 236*B*a*b^5*c^5*d
^11*e^4 - 84*A*b^6*c^5*d^11*e^4 + 615*B*a^2*b^3*c^6*d^11*e^4 - 726*A*a*b^4*
c^6*d^11*e^4 + 204*B*a^3*b*c^7*d^11*e^4 - 1158*A*a^2*b^2*c^7*d^11*e^4 - 216
*A*a^3*c^8*d^11*e^4 - 56*B*b^8*c^3*d^10*e^5 - 254*B*a*b^6*c^4*d^10*e^5 + 42
*A*b^7*c^4*d^10*e^5 - 860*B*a^2*b^4*c^5*d^10*e^5 + 772*A*a*b^5*c^5*d^10*e^5
- 912*B*a^3*b^2*c^6*d^10*e^5 + 1961*A*a^2*b^3*c^6*d^10*e^5 - 48*B*a^4*c^7*
d^10*e^5 + 1140*A*a^3*b*c^7*d^10*e^5 + 28*B*b^9*c^2*d^9*e^6 + 208*B*a*b^7*c
^3*d^9*e^6 + 745*B*a^2*b^5*c^4*d^9*e^6 - 530*A*a*b^6*c^4*d^9*e^6 + 1770*B*a
^3*b^3*c^5*d^9*e^6 - 2220*A*a^2*b^4*c^5*d^9*e^6 + 560*B*a^4*b*c^6*d^9*e^6 -
2560*A*a^3*b^2*c^6*d^9*e^6 - 400*A*a^4*c^7*d^9*e^6 - 8*B*b^10*c*d^8*e^7 -
118*B*a*b^8*c^2*d^8*e^7 - 12*A*b^9*c^2*d^8*e^7 - 450*B*a^2*b^6*c^3*d^8*e^7
+ 192*A*a*b^7*c^3*d^8*e^7 - 1780*B*a^3*b^4*c^4*d^8*e^7 + 1719*A*a^2*b^5*c^4
*d^8*e^7 - 1790*B*a^4*b^2*c^5*d^8*e^7 + 3270*A*a^3*b^3*c^5*d^8*e^7 - 120*B*
a^5*c^6*d^8*e^7 + 1680*A*a^4*b*c^6*d^8*e^7 + B*b^11*d^7*e^8 + 40*B*a*b^9*c*
d^7*e^8 + 6*A*b^10*c*d^7*e^8 + 217*B*a^2*b^7*c^2*d^7*e^8 - 2*A*a*b^8*c^2*d^
7*e^8 + 968*B*a^3*b^5*c^3*d^7*e^8 - 838*A*a^2*b^6*c^3*d^7*e^8 + 2495*B*a^4*
b^3*c^4*d^7*e^8 - 2700*A*a^3*b^4*c^4*d^7*e^8 + 860*B*a^5*b*c^5*d^7*e^8 - 28
30*A*a^4*b^2*c^5*d^7*e^8 - 440*A*a^5*c^6*d^7*e^8 - 6*B*a*b^10*d^6*e^9 - A*b
^11*d^6*e^9 - 80*B*a^2*b^8*c*d^6*e^9 - 24*A*a*b^9*c*d^6*e^9 - 304*B*a^3*b^6
*c^2*d^6*e^9 + 183*A*a^2*b^7*c^2*d^6*e^9 - 1640*B*a^4*b^4*c^3*d^6*e^9 + 149
6*A*a^3*b^5*c^3*d^6*e^9 - 1900*B*a^5*b^2*c^4*d^6*e^9 + 2545*A*a^4*b^3*c^4*d
^6*e^9 - 160*B*a^6*c^5*d^6*e^9 + 1380*A*a^5*b*c^5*d^6*e^9 + 15*B*a^2*b^9*d^
5*e^10 + 6*A*a*b^10*d^5*e^10 + 82*B*a^3*b^7*c*d^5*e^10 + 24*A*a^2*b^8*c*d^5
*e^10 + 458*B*a^4*b^5*c^2*d^5*e^10 - 480*A*a^3*b^6*c^2*d^5*e^10 + 1716*B*a^
5*b^3*c^3*d^5*e^10 - 1440*A*a^4*b^4*c^3*d^5*e^10 + 744*B*a^6*b*c^4*d^5*e^10
- 1572*A*a^5*b^2*c^4*d^5*e^10 - 288*A*a^6*c^5*d^5*e^10 - 20*B*a^3*b^8*d^4*
e^11 - 15*A*a^2*b^9*d^4*e^11 - 50*B*a^4*b^6*c*d^4*e^11 + 30*A*a^3*b^7*c*d^4
*e^11 - 578*B*a^5*b^4*c^2*d^4*e^11 + 550*A*a^4*b^5*c^2*d^4*e^11 - 1038*B*a^
6*b^2*c^3*d^4*e^11 + 860*A*a^5*b^3*c^3*d^4*e^11 - 120*B*a^7*c^4*d^4*e^11 +

600*A*a^6*b*c^4*d^4*e^11 + 15*B*a^4*b^7*d^3*e^12 + 20*A*a^3*b^8*d^3*e^12 +
28*B*a^5*b^5*c*d^3*e^12 - 90*A*a^4*b^6*c*d^3*e^12 + 473*B*a^6*b^3*c^2*d^3*e
^12 - 318*A*a^5*b^4*c^2*d^3*e^12 + 340*B*a^7*b*c^3*d^3*e^12 - 362*A*a^6*b^2
*c^3*d^3*e^12 - 104*A*a^7*c^4*d^3*e^12 - 6*B*a^5*b^6*d^2*e^13 - 15*A*a^4*b^
7*d^2*e^13 - 20*B*a^6*b^4*c*d^2*e^13 + 84*A*a^5*b^5*c*d^2*e^13 - 232*B*a^7*
b^2*c^2*d^2*e^13 + 87*A*a^6*b^3*c^2*d^2*e^13 - 48*B*a^8*c^3*d^2*e^13 + 108*
A*a^7*b*c^3*d^2*e^13 + B*a^6*b^5*d*e^14 + 6*A*a^5*b^6*d*e^14 + 10*B*a^7*b^3
*c*d*e^14 - 36*A*a^6*b^4*c*d*e^14 + 64*B*a^8*b*c^2*d*e^14 - 8*A*a^7*b^2*c^2
*d*e^14 - 16*A*a^8*c^3*d*e^14 - A*a^6*b^5*e^15 - 2*B*a^8*b^2*c*e^15 + 6*A*a
^7*b^3*c*e^15 - 8*B*a^9*c^2*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2
*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e
+ 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 +
128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*
a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a
*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 +
448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*
a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5
+ 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6
+ 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*
e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 +
1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^
7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*
b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 112
0*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*
c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^
6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b
^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 8
96*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a
^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 +
70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 +
2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 39
2*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 +
28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 1
28*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^
2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x + (2*B*a*
b^2*c^8*d^15 + A*b^3*c^8*d^15 + 8*B*a^2*c^9*d^15 - 12*A*a*b*c^9*d^15 - 16*B
*a*b^3*c^7*d^14*e - 8*A*b^4*c^7*d^14*e - 56*B*a^2*b*c^8*d^14*e + 94*A*a*b^2
*c^8*d^14*e - 8*A*a^2*c^9*d^14*e + 56*B*a*b^4*c^6*d^13*e^2 + 28*A*b^5*c^6*d
^13*e^2 + 176*B*a^2*b^2*c^7*d^13*e^2 - 312*A*a*b^3*c^7*d^13*e^2 + 80*B*a^3*
c^8*d^13*e^2 - 40*A*a^2*b*c^8*d^13*e^2 - 112*B*a*b^5*c^5*d^12*e^3 - 56*A*b^
6*c^5*d^12*e^3 - 339*B*a^2*b^3*c^6*d^12*e^3 + 560*A*a*b^4*c^6*d^12*e^3 - 49
2*B*a^3*b*c^7*d^12*e^3 + 496*A*a^2*b^2*c^7*d^12*e^3 - 80*A*a^3*c^8*d^12*e^3
+ 140*B*a*b^6*c^4*d^11*e^4 + 70*A*b^7*c^4*d^11*e^4 + 466*B*a^2*b^4*c^5*d^1
1*e^4 - 560*A*a*b^5*c^5*d^11*e^4 + 1278*B*a^3*b^2*c^6*d^11*e^4 - 1649*A*a^2
*b^3*c^6*d^11*e^4 + 312*B*a^4*c^7*d^11*e^4 + 156*A*a^3*b*c^7*d^11*e^4 - 112
*B*a*b^7*c^3*d^10*e^5 - 56*A*b^8*c^3*d^10*e^5 - 493*B*a^2*b^5*c^4*d^10*e^5
+ 252*A*a*b^6*c^4*d^10*e^5 - 1834*B*a^3*b^3*c^5*d^10*e^5 + 2726*A*a^2*b^4*c
^5*d^10*e^5 - 1632*B*a^4*b*c^6*d^10*e^5 + 738*A*a^3*b^2*c^6*d^10*e^5 - 312*
A*a^4*c^7*d^10*e^5 + 56*B*a*b^8*c^2*d^9*e^6 + 28*A*b^9*c^2*d^9*e^6 + 396*B*
a^2*b^6*c^3*d^9*e^6 + 56*A*a*b^7*c^3*d^9*e^6 + 1620*B*a^3*b^4*c^4*d^9*e^6 -
2447*A*a^2*b^5*c^4*d^9*e^6 + 3460*B*a^4*b^2*c^5*d^9*e^6 - 3150*A*a^3*b^3*c
^5*d^9*e^6 + 640*B*a^5*c^6*d^9*e^6 + 960*A*a^4*b*c^6*d^9*e^6 - 16*B*a*b^9*c
*d^8*e^7 - 8*A*b^10*c*d^8*e^7 - 221*B*a^2*b^7*c^2*d^8*e^7 - 128*A*a*b^8*c^2
*d^8*e^7 - 960*B*a^3*b^5*c^3*d^8*e^7 + 1060*A*a^2*b^6*c^3*d^8*e^7 - 3785*B*
a^4*b^3*c^4*d^8*e^7 + 4820*A*a^3*b^4*c^4*d^8*e^7 - 2740*B*a^5*b*c^5*d^8*e^7
- 100*A*a^4*b^2*c^5*d^8*e^7 - 640*A*a^5*c^6*d^8*e^7 + 2*B*a*b^10*d^7*e^8 +
A*b^11*d^7*e^8 + 74*B*a^2*b^8*c*d^7*e^8 + 60*A*a*b^9*c*d^7*e^8 + 422*B*a^3
*b^6*c^2*d^7*e^8 - 31*A*a^2*b^7*c^2*d^7*e^8 + 2260*B*a^4*b^4*c^3*d^7*e^8 -
3520*A*a^3*b^5*c^3*d^7*e^8 + 4510*B*a^5*b^2*c^4*d^7*e^8 - 2865*A*a^4*b^3*c^

```
4*d^7*e^8 + 760*B*a^6*c^5*d^7*e^8 + 1900*A*a^5*b*c^5*d^7*e^8 - 11*B*a^2*b^9
*d^6*e^9 - 10*A*a*b^10*d^6*e^9 - 138*B*a^3*b^7*c*d^6*e^9 - 146*A*a^2*b^8*c*
d^6*e^9 - 742*B*a^4*b^5*c^2*d^6*e^9 + 1034*A*a^3*b^6*c^2*d^6*e^9 - 3500*B*a
^5*b^3*c^3*d^6*e^9 + 4180*A*a^4*b^4*c^3*d^6*e^9 - 2520*B*a^6*b*c^4*d^6*e^9
- 1150*A*a^5*b^2*c^4*d^6*e^9 - 760*A*a^6*c^5*d^6*e^9 + 24*B*a^3*b^8*d^5*e^1
0 + 39*A*a^2*b^9*d^5*e^10 + 152*B*a^4*b^6*c*d^5*e^10 + 82*A*a^3*b^7*c*d^5*e
^10 + 1240*B*a^5*b^4*c^2*d^5*e^10 - 2198*A*a^4*b^5*c^2*d^5*e^10 + 2952*B*a^
6*b^2*c^3*d^5*e^10 - 1484*A*a^5*b^3*c^3*d^5*e^10 + 528*B*a^7*c^4*d^5*e^10 +
 1848*A*a^6*b*c^4*d^5*e^10 - 25*B*a^4*b^7*d^4*e^11 - 80*A*a^3*b^8*d^4*e^11
- 160*B*a^5*b^5*c*d^4*e^11 + 240*A*a^4*b^6*c*d^4*e^11 - 1381*B*a^6*b^3*c^2*
d^4*e^11 + 1952*A*a^5*b^4*c^2*d^4*e^11 - 1236*B*a^7*b*c^3*d^4*e^11 - 936*A*
a^6*b^2*c^3*d^4*e^11 - 528*A*a^7*c^4*d^4*e^11 + 10*B*a^5*b^6*d^3*e^12 + 95*
A*a^4*b^7*d^3*e^12 + 186*B*a^6*b^4*c*d^3*e^12 - 512*A*a^5*b^5*c*d^3*e^12 +
866*B*a^7*b^2*c^2*d^3*e^12 - 607*A*a^6*b^3*c^2*d^3*e^12 + 200*B*a^8*c^3*d^3
*e^12 + 900*A*a^7*b*c^3*d^3*e^12 + 3*B*a^6*b^5*d^2*e^13 - 66*A*a^5*b^6*d^2*
e^13 - 154*B*a^7*b^3*c*d^2*e^13 + 430*A*a^6*b^4*c*d^2*e^13 - 272*B*a^8*b*c^
2*d^2*e^13 - 194*A*a^7*b^2*c^2*d^2*e^13 - 200*A*a^8*c^3*d^2*e^13 - 4*B*a^7*
b^4*d*e^14 + 25*A*a^6*b^5*d*e^14 + 68*B*a^8*b^2*c*d*e^14 - 174*A*a^7*b^3*c*
d*e^14 + 32*B*a^9*c^2*d*e^14 + 176*A*a^8*b*c^2*d*e^14 + B*a^8*b^3*e^15 - 4*
A*a^7*b^4*e^15 - 12*B*a^9*b*c*e^15 + 28*A*a^8*b^2*c*e^15 - 32*A*a^9*c^2*e^1
5)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e +
 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b
^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*
c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*
b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4
*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c
^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3
*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b
^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6
272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*
b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720
*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*
d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*
c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^
7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*
d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d
^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*
c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^
9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*
b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*
b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448
*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*
b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b
^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5
*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9
*b^2*c*e^16 + 16*a^10*c^2*e^16))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.04, size = 2996, normalized size = 6.87

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(
a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b*A-4/3/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)
/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*x*d^
2*B-2/3/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e
)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c*d^2*B-16/3*e/(a*e^2-b*d*e+c*d^2)*c^2/(
4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1
```

```
/2)*x*b*A-32/3/e/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*
c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*d^2*B-16/3/e/(a*e^2-b*d*e+c
*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*b*d^2*B-2*e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c
+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*A+4*e^2/(a*e^2-
b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*x*c^2*d*A-4*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^
2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d^2*B+2*e^2/
(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d*A-2*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d^2*B+16/
3/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*B*d+2/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/
((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b*B*d
-1/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(
a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2*A-e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*A+e^2/
(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*
d^2)/e^2+(b*e-2*c*d)/e*(x+d/e)+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2
*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*B*d+1/3/(
a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*
d*e+c*d^2)/e^2)^(3/2)*b^2*B*d+4/3*B/e/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+3
2/3*B/e*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+16/3*B/e*c/(4*a*c-b^2)^2/(c
*x^2+b*x+a)^(1/2)*b+1/3*e/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x
+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*A+e^3/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2
*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-1/3/(a*e^2-b*d*e+
c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*B*
d+2*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e
)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*B*d+4/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b
^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*x
*d*A+2/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)
+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c*d*A+32/3/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c
-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x
*d*A+8/3/(a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+
d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*B*d+16/3/(a*e^2-b*d*e+c*d^2)*c^2/(4
*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/
2)*b*d*A-8/3*e/(a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)
/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*A+e^2/(a*e^2-b*d*e+c*d^2)^2/(
4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*b^2*B*d-e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*B*d-e^3/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*c*d)/e*(x+d/e)+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))*A+2/3*B/e/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)\,\left(c\,x^2 + b\,x + a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x)
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
[Out] Timed out
```

3.2245 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=746

$$\frac{e\sqrt{a+bx+cx^2}\left(-8bc\left(B\left(5a^2e^4+3acd^2e^2+2c^2d^4\right)+2Acde\left(9ae^2+4cd^2\right)\right)-16c^2\left(aBde\left(2cd^2-13ae^2\right)-A\left(-8\ldots\right.\right.\right.}{3\left(b^2-4a\ldots\right.}$$

Rubi [A] time = 1.56, antiderivative size = 744, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$\frac{e\sqrt{a+bx+cx^2}\left(-8bc\left(B\left(5a^2e^4+3acd^2e^2+2c^2d^4\right)+2Acde\left(9ae^2+4cd^2\right)\right)-16c^2\left(aBde\left(2cd^2-13ae^2\right)-A\left(-8a^2e^4+9acd^2e^2+2c^2d^4\right)\right)-2b^3e^2\left(-3aBe^2-10Acde+9Bcd^2\right)+4b^2ce\left(25aAe^3-14aBde^2+3Acd^2e+10Bcd^3\right)+3b^4e^3(3Bd-5Ae)\right)}{3\left(b^2-4ac\right)^2(d+ex)\left(ae^2-bde+cd^2\right)^3}+\ldots$$

[illegible]

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)*(a
+ b*x + c*x^2)^(3/2)) + (2*(6*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e
- 2*a*B*e) + (b*c*d - b^2*e + 2*a*c*e)*(b^2*e*(3*B*d - 5*A*e) + 8*c*(A*c*d^
2 - a*B*d*e + 2*a*A*e^2) - 2*b*(2*B*c*d^2 + A*c*d*e - a*B*e^2)) + c*(6*c*e*
(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(b^2*e*(3
*B*d - 5*A*e) + 8*c*(A*c*d^2 - a*B*d*e + 2*a*A*e^2) - 2*b*(2*B*c*d^2 + A*c*
d*e - a*B*e^2)))*x))/(3*(b^2 - 4*a*c)^2*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)
*Sqrt[a + b*x + c*x^2]) + (e*(3*b^4*e^3*(3*B*d - 5*A*e) - 2*b^3*e^2*(9*B*c*
d^2 - 10*A*c*d*e - 3*a*B*e^2) + 4*b^2*c*e*(10*B*c*d^3 + 3*A*c*d^2*e - 14*a*
B*d*e^2 + 25*a*A*e^3) - 16*c^2*(a*B*d*e*(2*c*d^2 - 13*a*e^2) - A*(2*c^2*d^4
 + 9*a*c*d^2*e^2 - 8*a^2*e^4)) - 8*b*c*(2*A*c*d*e*(4*c*d^2 + 9*a*e^2) + B*(
2*c^2*d^4 + 3*a*c*d^2*e^2 + 5*a^2*e^4)))*Sqrt[a + b*x + c*x^2])/(3*(b^2 - 4
*a*c)^2*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)) - (e^3*(8*B*c*d^2 - B*e*(3*b*d
 + 2*a*e) - 5*A*e*(2*c*d - b*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2
*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a
*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} -$$

Mathematica [A] time = 4.71, size = 754, normalized size = 1.01

$$\frac{2\left(\frac{-4bc\left(Ac\left(ae^2(9d-7ex)+2cd^2(d-3ex)\right)-B\left(-4a^2e^3+acde(d+3ex)+2c^2d^3x\right)\right)-8c^2\left(a^2e^2(4Ae-5Bd+3Bex)-acde(Ad-7Aex+2Bdx)+2Ac^2d^3x\right)+b^3e\left(2aBe^2+Ace(3d-5ex)+Bcd(3ex-7d)\right)+2b^2c\left(16aAe^3+aBe^2(ex-5d)+Acde(5d+ex)+2Bcd^2(d-4ex)\right)+b^4e^2(3Bd-5Ae)}{\left(b^2-4ac\right)(d+ex)\sqrt{a+x(b+cx)}\left(e(bd-ae)-cd^2\right)}+\frac{e\sqrt{a+x(b+cx)}\left(-8bc\left(B\left(5a^2e^4+3acd^2e^2+2c^2d^4\right)+2Acde\left(9ae^2+4cd^2\right)\right)+16c^2\left(A\left(-8a^2e^4+9acd^2e^2+2c^2d^4\right)+aBde\left(13ae^2-2cd^2\right)\right)+2b^3e^2\left(3aBe^2+10Acde-9Bcd^2\right)+4b^2ce\left(25aAe^3-14aBde^2+3Acd^2e+10Bcd^3\right)+3b^4e^3(3Bd-5Ae)\right)}{2\left(b^2-4ac\right)(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{3e^3\left(b^2-4ac\right)\left(-Be(2ae+3bd)+5Ae(be-2cd)+8Bcd^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{4\left(e(ae-bd)+cd^2\right)^{5/2}}+\frac{-2Ac(ae+cdx)+aB(2c(d-ex)-be)+Ab^2e+Abc(ex-d)+bBcdx}{(d+ex)(a+x(b+cx))^{3/2}}\right)}{3\left(b^2-4ac\right)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*((e*(3*b^4*e^3*(3*B*d - 5*A*e) + 2*b^3*e^2*(-9*B*c*d^2 + 10*A*c*d*e + 3*
a*B*e^2) + 4*b^2*c*e*(10*B*c*d^3 + 3*A*c*d^2*e - 14*a*B*d*e^2 + 25*a*A*e^3)
 + 16*c^2*(a*B*d*e*(-2*c*d^2 + 13*a*e^2) + A*(2*c^2*d^4 + 9*a*c*d^2*e^2 - 8
*a^2*e^4)) - 8*b*c*(2*A*c*d*e*(4*c*d^2 + 9*a*e^2) + B*(2*c^2*d^4 + 3*a*c*d^
2*e^2 + 5*a^2*e^4)))*Sqrt[a + x*(b + c*x)])/(2*(b^2 - 4*a*c)*(c*d^2 + e*(-(
b*d) + a*e))^2*(d + e*x)) + (A*b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d*x) + A*
b*c*(-d + e*x) + a*B*(-(b*e) + 2*c*(d - e*x)))/((d + e*x)*(a + x*(b + c*x))
^(3/2)) + (b^4*e^2*(3*B*d - 5*A*e) + 2*b^2*c*(16*a*A*e^3 + 2*B*c*d^2*(d - 4
*e*x) + a*B*e^2*(-5*d + e*x) + A*c*d*e*(5*d + e*x)) + b^3*e*(2*a*B*e^2 + A*
c*e*(3*d - 5*e*x) + B*c*d*(-7*d + 3*e*x)) - 8*c^2*(2*A*c^2*d^3*x - a*c*d*e*
(A*d + 2*B*d*x - 7*A*e*x) + a^2*e^2*(-5*B*d + 4*A*e + 3*B*e*x)) - 4*b*c*(A*
c*(a*e^2*(9*d - 7*e*x) + 2*c*d^2*(d - 3*e*x)) - B*(-4*a^2*e^3 + 2*c^2*d^3*x
 + a*c*d*e*(d + 3*e*x))))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*(d + e*
```

```
x)*Sqrt[a + x*(b + c*x)]) + (3*(b^2 - 4*a*c)*e^3*(8*B*c*d^2 - B*e*(3*b*d +
2*a*e) + 5*A*e*(-2*c*d + b*e))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(
2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(4*(c*d^2 + e*(-(
b*d) + a*e))^(5/2))))/(3*(b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

IntegrateAlgebraic [F] time = 180.70, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] $Aborted
```

fricas [B] time = 103.12, size = 12690, normalized size = 17.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(8*(B*a^2*b^4*c - 8*B*a^3*b^2*c^2 + 16*B*a^4*c^3)*d^3*e^3 - (3*B*a
^2*b^5 + 160*A*a^4*c^3 + 16*(3*B*a^4*b - 5*A*a^3*b^2)*c^2 - 2*(12*B*a^3*b^3
 - 5*A*a^2*b^4)*c)*d^2*e^4 - (2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 - 5*A
*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*d*e^5 + (8*(B*b^4*c^3 - 8*B*
a*b^2*c^4 + 16*B*a^2*c^5)*d^2*e^4 - (3*B*b^5*c^2 + 160*A*a^2*c^5 + 16*(3*B*
a^2*b - 5*A*a*b^2)*c^4 - 2*(12*B*a*b^3 - 5*A*b^4)*c^3)*d*e^5 - (16*(2*B*a^3
 - 5*A*a^2*b)*c^4 - 8*(2*B*a^2*b^2 - 5*A*a*b^3)*c^3 + (2*B*a*b^4 - 5*A*b^5)
*c^2)*e^6)*x^5 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d^3*e^3 + (1
3*B*b^5*c^2 - 160*A*a^2*c^5 + 16*(13*B*a^2*b + 5*A*a*b^2)*c^4 - 2*(52*B*a*b
^3 + 5*A*b^4)*c^3)*d^2*e^4 - (6*B*b^6*c + 16*(2*B*a^3 + 15*A*a^2*b)*c^4 + 4
0*(2*B*a^2*b^2 - 3*A*a*b^3)*c^3 - (46*B*a*b^4 - 15*A*b^5)*c^2)*d*e^5 - 2*(1
6*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 8*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*
b^5 - 5*A*b^6)*c)*e^6)*x^4 + (16*(B*b^5*c^2 - 8*B*a*b^3*c^3 + 16*B*a^2*b*c^
4)*d^3*e^3 + 2*(B*b^6*c - 10*A*b^5*c^2 + 32*(4*B*a^3 - 5*A*a^2*b)*c^4 - 16*
(3*B*a^2*b^2 - 5*A*a*b^3)*c^3)*d^2*e^4 - (3*B*b^7 - 14*B*a*b^5*c + 320*A*a^
3*c^4 + 160*(B*a^3*b - A*a^2*b^2)*c^3 - 4*(8*B*a^2*b^3 - 5*A*a*b^4)*c^2)*d*
e^5 - (2*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 - 5*A*a^3*b)*c^3 - 6*(2*B*a^2*b^4
 - 5*A*a*b^5)*c)*e^6)*x^3 + (8*(B*b^6*c - 6*B*a*b^4*c^2 + 32*B*a^3*c^4)*d^3*
e^3 - (3*B*b^7 - 160*B*a^3*b*c^3 + 320*A*a^3*c^4 + 4*(32*B*a^2*b^3 - 15*A*a
*b^4)*c^2 - 2*(17*B*a*b^5 - 5*A*b^6)*c)*d^2*e^4 - (8*B*a*b^6 - 5*A*b^7 + 32
*(2*B*a^4 + 5*A*a^3*b)*c^3 + 32*(3*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 - 10*(6*B*a
^2*b^4 - 5*A*a*b^5)*c)*d*e^5 - 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b -
 5*A*a^3*b^2)*c^2 - 8*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^6)*x^2 + (16*(B*a*b^
5*c - 8*B*a^2*b^3*c^2 + 16*B*a^3*b*c^3)*d^3*e^3 - 2*(3*B*a*b^6 - 32*(2*B*a^
4 - 5*A*a^3*b)*c^3 + 80*(B*a^3*b^2 - A*a^2*b^3)*c^2 - 2*(14*B*a^2*b^4 - 5*A
*a*b^5)*c)*d^2*e^4 - (7*B*a^2*b^5 - 10*A*a*b^6 + 160*A*a^4*c^3 + 16*(7*B*a^
4*b - 15*A*a^3*b^2)*c^2 - 2*(28*B*a^3*b^3 - 45*A*a^2*b^4)*c)*d*e^5 - (2*B*a
^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*
a^3*b^3)*c)*e^6)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2
 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 + 4*s
qrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*
e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e
*x + d^2)) - 4*(2*(4*(2*B*a^2 - 3*A*a*b)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^7
 - 8*(4*A*a^2*c^5 + (4*B*a^2*b - 11*A*a*b^2)*c^4 + (2*B*a*b^3 + A*b^4)*c^3)
*d^6*e + 4*(4*(10*B*a^3 - A*a^2*b)*c^4 - 2*(2*B*a^2*b^2 + 13*A*a*b^3)*c^3 +
 3*(2*B*a*b^4 + A*b^5)*c^2)*d^5*e^2 - 8*(32*A*a^3*c^4 + 4*(9*B*a^3*b - 8*A*
a^2*b^2)*c^3 - (7*B*a^2*b^3 + 3*A*a*b^4)*c^2 + (2*B*a*b^5 + A*b^6)*c)*d^4*e
^3 + (4*B*a*b^6 + 2*A*b^7 + 8*(4*B*a^4 + 45*A*a^3*b)*c^3 + 2*(86*B*a^3*b^2
 - 155*A*a^2*b^3)*c^2 - (31*B*a^2*b^4 - 32*A*a*b^5)*c)*d^3*e^4 + (7*B*a^2*b^
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5 - 16*A*a*b^6 - 176*A*a^4*c^3 - 16*(B*a^4*b + A*a^3*b^2)*c^2 - (48*B*a^3*b ^3 - 91*A*a^2*b^4)*c)*d^2*e^5 - (11*B*a^3*b^4 - 11*A*a^2*b^5 + 112*(B*a^5 - A*a^4*b)*c^2 - 4*(20*B*a^4*b^2 - 19*A*a^3*b^3)*c)*d*e^6 + 3*(A*a^3*b^4 - 8 *A*a^4*b^2*c + 16*A*a^5*c^2)*e^7 + (16*(B*b*c^6 - 2*A*c^7)*d^6*e - 8*(7*B*b ^2*c^5 - 4*(B*a + 3*A*b)*c^6)*d^5*e^2 + 2*(29*B*b^3*c^4 - 88*A*a*c^6 + 2*(2 *B*a*b - 19*A*b^2)*c^5)*d^4*e^3 - (27*B*b^4*c^3 + 176*(B*a^2 - 2*A*a*b)*c^5 + 8*(B*a*b^2 + A*b^3)*c^4)*d^3*e^4 + (9*B*b^5*c^2 - 16*A*a^2*c^5 + 16*(17* B*a^2*b - 16*A*a*b^2)*c^4 - (44*B*a*b^3 - 35*A*b^4)*c^3)*d^2*e^5 - (16*(13* B*a^3 - A*a^2*b)*c^4 - 16*(B*a^2*b^2 + 5*A*a*b^3)*c^3 + 3*(B*a*b^4 + 5*A*b^ 5)*c^2)*d*e^6 + (128*A*a^3*c^4 + 20*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B* a^2*b^3 - 5*A*a*b^4)*c^2)*e^7)*x^4 + 2*(8*(B*b*c^6 - 2*A*c^7)*d^7 - 8*(2*B* b^2*c^5 - (2*B*a + 3*A*b)*c^6)*d^6*e - (13*B*b^3*c^4 + 88*A*a*c^6 - 2*(14*B *a*b + 17*A*b^2)*c^5)*d^5*e^2 + (36*B*b^4*c^3 + 4*(2*B*a^2 + 11*A*a*b)*c^5 - (46*B*a*b^2 + 61*A*b^3)*c^4)*d^4*e^3 - 2*(12*B*b^5*c^2 + 64*A*a^2*c^5 + 2 *(32*B*a^2*b - 49*A*a*b^2)*c^4 - (19*B*a*b^3 + 2*A*b^4)*c^3)*d^3*e^4 + (9*B *b^6*c - 16*(2*B*a^3 - 11*A*a^2*b)*c^4 + 2*(106*B*a^2*b^2 - 121*A*a*b^3)*c^ 3 - 6*(8*B*a*b^4 - 5*A*b^5)*c^2)*d^2*e^5 - (56*A*a^3*c^4 + 2*(74*B*a^3*b + 19*A*a^2*b^2)*c^3 - 15*(B*a^2*b^3 + 6*A*a*b^4)*c^2 + 3*(B*a*b^5 + 5*A*b^6)* c)*d*e^6 - 3*(4*(2*B*a^4 - 13*A*a^3*b)*c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)* c^2 + (2*B*a^2*b^4 - 5*A*a*b^5)*c)*e^7)*x^3 + 3*(8*(B*b^2*c^5 - 2*A*b*c^6)* d^7 - 2*(13*B*b^3*c^4 + 8*A*a*c^6 - 2*(6*B*a*b + 11*A*b^2)*c^5)*d^6*e + 2*(12*B*b^4*c^3 + 4*(6*B*a^2 - 5*A*a*b)*c^5 - (18*B*a*b^2 + 13*A*b^3)*c^4)*d^5 *e^2 - 4*(B*b^5*c^2 + 32*A*a^2*c^5 + 2*(6*B*a^2*b - 17*A*a*b^2)*c^4 - 2*(B* a*b^3 - 2*A*b^4)*c^3)*d^4*e^3 - (5*B*b^6*c + 68*A*a*b^3*c^3 + 64*(B*a^3 - 2 *A*a^2*b)*c^4 - 14*(B*a*b^4 + A*b^5)*c^2)*d^3*e^4 + (3*B*b^7 - 48*A*a^3*c^4 + 4*(22*B*a^3*b + 7*A*a^2*b^2)*c^3 + 2*(11*B*a^2*b^3 - 21*A*a*b^4)*c^2 - (14*B*a*b^5 - 5*A*b^6)*c)*d^2*e^5 - (B*a*b^6 + 5*A*b^7 + 8*(14*B*a^4 + A*a^3 *b)*c^3 + 2*(2*B*a^3*b^2 + 9*A*a^2*b^3)*c^2 - 2*(B*a^2*b^4 + 15*A*a*b^5)*c) *d*e^6 - (2*B*a^2*b^5 - 5*A*a*b^6 - 16*A*a^3*b^2*c^2 - 64*A*a^4*c^3 - 6*(2* B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^7)*x^2 + 2*(3*(B*b^3*c^4 - 8*A*a*c^6 + 2*(2*B *a*b - A*b^2)*c^5)*d^7 - (12*B*b^4*c^3 - 4*(2*B*a^2 + 15*A*a*b)*c^5 + (22*B *a*b^2 - 19*A*b^3)*c^4)*d^6*e + 2*(9*B*b^5*c^2 - 56*A*a^2*c^5 + 4*(13*B*a^2 *b - 8*A*a*b^2)*c^4 - 2*(5*B*a*b^3 + 4*A*b^4)*c^3)*d^5*e^2 - 2*(6*B*b^6*c + 4*(2*B*a^3 - 11*A*a^2*b)*c^4 + 2*(44*B*a^2*b^2 - 23*A*a*b^3)*c^3 - 3*(8*B* a*b^4 - A*b^5)*c^2)*d^4*e^3 + (3*B*b^7 - 152*A*a^3*c^4 + 2*(6*B*a^3*b + 61* A*a^2*b^2)*c^3 + (91*B*a^2*b^3 - 102*A*a*b^4)*c^2 - (23*B*a*b^5 - 14*A*b^6) *c)*d^3*e^4 + (5*B*a*b^6 - 5*A*b^7 - 4*(14*B*a^4 - 39*A*a^3*b)*c^3 + (74*B* a^3*b^2 - 125*A*a^2*b^3)*c^2 - (38*B*a^2*b^4 - 43*A*a*b^5)*c)*d^2*e^5 - (4* B*a^2*b^5 + 5*A*a*b^6 + 64*A*a^4*c^3 + 20*(4*B*a^4*b + A*a^3*b^2)*c^2 - 2*(15*B*a^3*b^3 + 16*A*a^2*b^4)*c)*d*e^6 - 2*(2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2 - 37*A*a^3*b^3)*c)*e^7)*x)*sqrt(c*x^ 2 + b*x + a))/((a^2*b^4*c^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6)*d^9 - 4*(a^2*b^5* c^3 - 8*a^3*b^3*c^4 + 16*a^4*b*c^5)*d^8*e + 2*(3*a^2*b^6*c^2 - 22*a^3*b^4*c ^3 + 32*a^4*b^2*c^4 + 32*a^5*c^5)*d^7*e^2 - 4*(a^2*b^7*c - 5*a^3*b^5*c^2 - 8*a^4*b^3*c^3 + 48*a^5*b*c^4)*d^6*e^3 + (a^2*b^8 + 4*a^3*b^6*c - 74*a^4*b^4 *c^2 + 144*a^5*b^2*c^3 + 96*a^6*c^4)*d^5*e^4 - 4*(a^3*b^7 - 5*a^4*b^5*c - 8 *a^5*b^3*c^2 + 48*a^6*b*c^3)*d^4*e^5 + 2*(3*a^4*b^6 - 22*a^5*b^4*c + 32*a^6 *b^2*c^2 + 32*a^7*c^3)*d^3*e^6 - 4*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*d ^2*e^7 + (a^6*b^4 - 8*a^7*b^2*c + 16*a^8*c^2)*d*e^8 + ((b^4*c^6 - 8*a*b^2*c ^7 + 16*a^2*c^8)*d^8*e - 4*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^7*e^2 + 2*(3*b^6*c^4 - 22*a*b^4*c^5 + 32*a^2*b^2*c^6 + 32*a^3*c^7)*d^6*e^3 - 4*(b^ 7*c^3 - 5*a*b^5*c^4 - 8*a^2*b^3*c^5 + 48*a^3*b*c^6)*d^5*e^4 + (b^8*c^2 + 4* a*b^6*c^3 - 74*a^2*b^4*c^4 + 144*a^3*b^2*c^5 + 96*a^4*c^6)*d^4*e^5 - 4*(a*b ^7*c^2 - 5*a^2*b^5*c^3 - 8*a^3*b^3*c^4 + 48*a^4*b*c^5)*d^3*e^6 + 2*(3*a^2*b ^6*c^2 - 22*a^3*b^4*c^3 + 32*a^4*b^2*c^4 + 32*a^5*c^5)*d^2*e^7 - 4*(a^3*b^5 *c^2 - 8*a^4*b^3*c^3 + 16*a^5*b*c^4)*d*e^8 + (a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*c^4)*e^9)*x^5 + ((b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*d^9 - 2*(b^5* c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^8*e - 2*(b^6*c^4 - 10*a*b^4*c^5 + 32*a^ 2*b^2*c^6 - 32*a^3*c^7)*d^7*e^2 + 4*(2*b^7*c^3 - 17*a*b^5*c^4 + 40*a^2*b^3*

c^5 - 16*a^3*b*c^6)*d^6*e^3 - (7*b^8*c^2 - 44*a*b^6*c^3 + 10*a^2*b^4*c^4 + 240*a^3*b^2*c^5 - 96*a^4*c^6)*d^5*e^4 + 2*(b^9*c + 2*a*b^7*c^2 - 64*a^2*b^5 *c^3 + 160*a^3*b^3*c^4)*d^4*e^5 - 2*(4*a*b^8*c - 23*a^2*b^6*c^2 - 10*a^3*b^ 4*c^3 + 160*a^4*b^2*c^4 - 32*a^5*c^5)*d^3*e^6 + 4*(3*a^2*b^7*c - 23*a^3*b^5 *c^2 + 40*a^4*b^3*c^3 + 16*a^5*b*c^4)*d^2*e^7 - (8*a^3*b^6*c - 65*a^4*b^4*c ^2 + 136*a^5*b^2*c^3 - 16*a^6*c^4)*d*e^8 + 2*(a^4*b^5*c - 8*a^5*b^3*c^2 + 1 6*a^6*b*c^3)*e^9)*x^4 + (2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^9 - (7* b^6*c^4 - 58*a*b^4*c^5 + 128*a^2*b^2*c^6 - 32*a^3*c^7)*d^8*e + 8*(b^7*c^3 - 8*a*b^5*c^4 + 16*a^2*b^3*c^5)*d^7*e^2 - 2*(b^8*c^2 - 4*a*b^6*c^3 - 20*a^2* b^4*c^4 + 96*a^3*b^2*c^5 - 64*a^4*c^6)*d^6*e^3 - 2*(b^9*c - 10*a*b^7*c^2 + 38*a^2*b^5*c^3 - 80*a^3*b^3*c^4 + 96*a^4*b*c^5)*d^5*e^4 + (b^10 - 2*a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c^3 + 192*a^5*c^5)*d^4*e^5 - 4*(a*b^9 - 6*a^ 2*b^7*c + 4*a^3*b^5*c^2 + 64*a^5*b*c^4)*d^3*e^6 + 2*(3*a^2*b^8 - 20*a^3*b^6 *c + 20*a^4*b^4*c^2 + 32*a^5*b^2*c^3 + 64*a^6*c^4)*d^2*e^7 - 2*(2*a^3*b^7 - 13*a^4*b^5*c + 8*a^5*b^3*c^2 + 48*a^6*b*c^3)*d*e^8 + (a^4*b^6 - 6*a^5*b^4* c + 32*a^7*c^3)*e^9)*x^3 + ((b^6*c^4 - 6*a*b^4*c^5 + 32*a^3*c^7)*d^9 - 2*(2 *b^7*c^3 - 13*a*b^5*c^4 + 8*a^2*b^3*c^5 + 48*a^3*b*c^6)*d^8*e + 2*(3*b^8*c^ 2 - 20*a*b^6*c^3 + 20*a^2*b^4*c^4 + 32*a^3*b^2*c^5 + 64*a^4*c^6)*d^7*e^2 - 4*(b^9*c - 6*a*b^7*c^2 + 4*a^2*b^5*c^3 + 64*a^4*b*c^5)*d^6*e^3 + (b^10 - 2* a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c^3 + 192*a^5*c^5)*d^5*e^4 - 2*(a*b^9 - 10*a^2*b^7*c + 38*a^3*b^5*c^2 - 80*a^4*b^3*c^3 + 96*a^5*b*c^4)*d^4*e^5 - 2*(a^2*b^8 - 4*a^3*b^6*c - 20*a^4*b^4*c^2 + 96*a^5*b^2*c^3 - 64*a^6*c^4)*d ^3*e^6 + 8*(a^3*b^7 - 8*a^4*b^5*c + 16*a^5*b^3*c^2)*d^2*e^7 - (7*a^4*b^6 - 58*a^5*b^4*c + 128*a^6*b^2*c^2 - 32*a^7*c^3)*d*e^8 + 2*(a^5*b^5 - 8*a^6*b^3 *c + 16*a^7*b*c^2)*e^9)*x^2 + (2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6) *d^9 - (8*a*b^6*c^3 - 65*a^2*b^4*c^4 + 136*a^3*b^2*c^5 - 16*a^4*c^6)*d^8*e + 4*(3*a*b^7*c^2 - 23*a^2*b^5*c^3 + 40*a^3*b^3*c^4 + 16*a^4*b*c^5)*d^7*e^2 - 2*(4*a*b^8*c - 23*a^2*b^6*c^2 - 10*a^3*b^4*c^3 + 160*a^4*b^2*c^4 - 32*a^5 *c^5)*d^6*e^3 + 2*(a*b^9 + 2*a^2*b^7*c - 64*a^3*b^5*c^2 + 160*a^4*b^3*c^3)* d^5*e^4 - (7*a^2*b^8 - 44*a^3*b^6*c + 10*a^4*b^4*c^2 + 240*a^5*b^2*c^3 - 96 *a^6*c^4)*d^4*e^5 + 4*(2*a^3*b^7 - 17*a^4*b^5*c + 40*a^5*b^3*c^2 - 16*a^6*b *c^3)*d^3*e^6 - 2*(a^4*b^6 - 10*a^5*b^4*c + 32*a^6*b^2*c^2 - 32*a^7*c^3)*d^ 2*e^7 - 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*d*e^8 + (a^6*b^4 - 8*a^7*b ^2*c + 16*a^8*c^2)*e^9)*x), -1/6*(3*(8*(B*a^2*b^4*c - 8*B*a^3*b^2*c^2 + 16* B*a^4*c^3)*d^3*e^3 - (3*B*a^2*b^5 + 160*A*a^4*c^3 + 16*(3*B*a^4*b - 5*A*a^3 *b^2)*c^2 - 2*(12*B*a^3*b^3 - 5*A*a^2*b^4)*c)*d^2*e^4 - (2*B*a^3*b^4 - 5*A* a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*d *e^5 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d^2*e^4 - (3*B*b^5*c^2 + 160*A*a^2*c^5 + 16*(3*B*a^2*b - 5*A*a*b^2)*c^4 - 2*(12*B*a*b^3 - 5*A*b^4)*c^3)*d*e^5 - (16*(2*B*a^3 - 5*A*a^2*b)*c^4 - 8*(2*B*a^2*b^2 - 5*A*a*b^3)* c^3 + (2*B*a*b^4 - 5*A*b^5)*c^2)*e^6)*x^5 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d^3*e^3 + (13*B*b^5*c^2 - 160*A*a^2*c^5 + 16*(13*B*a^2*b + 5 *A*a*b^2)*c^4 - 2*(52*B*a*b^3 + 5*A*b^4)*c^3)*d^2*e^4 - (6*B*b^6*c + 16*(2* B*a^3 + 15*A*a^2*b)*c^4 + 40*(2*B*a^2*b^2 - 3*A*a*b^3)*c^3 - (46*B*a*b^4 - 15*A*b^5)*c^2)*d*e^5 - 2*(16*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 8*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*b^5 - 5*A*b^6)*c)*e^6)*x^4 + (16*(B*b^5*c^2 - 8* B*a*b^3*c^3 + 16*B*a^2*b*c^4)*d^3*e^3 + 2*(B*b^6*c - 10*A*b^5*c^2 + 32*(4*B *a^3 - 5*A*a^2*b)*c^4 - 16*(3*B*a^2*b^2 - 5*A*a*b^3)*c^3)*d^2*e^4 - (3*B*b^ 7 - 14*B*a*b^5*c + 320*A*a^3*c^4 + 160*(B*a^3*b - A*a^2*b^2)*c^3 - 4*(8*B*a ^2*b^3 - 5*A*a*b^4)*c^2)*d*e^5 - (2*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 - 5*A*a ^3*b)*c^3 - 6*(2*B*a^2*b^4 - 5*A*a*b^5)*c)*e^6)*x^3 + (8*(B*b^6*c - 6*B*a*b ^4*c^2 + 32*B*a^3*c^4)*d^3*e^3 - (3*B*b^7 - 160*B*a^3*b*c^3 + 320*A*a^3*c^4 + 4*(32*B*a^2*b^3 - 15*A*a*b^4)*c^2 - 2*(17*B*a*b^5 - 5*A*b^6)*c)*d^2*e^4 - (8*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 + 5*A*a^3*b)*c^3 + 32*(3*B*a^3*b^2 - 5 *A*a^2*b^3)*c^2 - 10*(6*B*a^2*b^4 - 5*A*a*b^5)*c)*d*e^5 - 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b - 5*A*a^3*b^2)*c^2 - 8*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^6)*x^2 + (16*(B*a*b^5*c - 8*B*a^2*b^3*c^2 + 16*B*a^3*b*c^3)*d^3*e^3 - 2*(3*B*a*b^6 - 32*(2*B*a^4 - 5*A*a^3*b)*c^3 + 80*(B*a^3*b^2 - A*a^2*b^3)* c^2 - 2*(14*B*a^2*b^4 - 5*A*a*b^5)*c)*d^2*e^4 - (7*B*a^2*b^5 - 10*A*a*b^6 +

160*A*a^4*c^3 + 16*(7*B*a^4*b - 15*A*a^3*b^2)*c^2 - 2*(28*B*a^3*b^3 - 45*A
*a^2*b^4)*c)*d*e^5 - (2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*
c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*e^6)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)
*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*
e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*
c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(2*(4*(2*B*a^2 - 3*A*a*b
)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^7 - 8*(4*A*a^2*c^5 + (4*B*a^2*b - 11*A*a
*b^2)*c^4 + (2*B*a*b^3 + A*b^4)*c^3)*d^6*e + 4*(4*(10*B*a^3 - A*a^2*b)*c^4
- 2*(2*B*a^2*b^2 + 13*A*a*b^3)*c^3 + 3*(2*B*a*b^4 + A*b^5)*c^2)*d^5*e^2 - 8
*(32*A*a^3*c^4 + 4*(9*B*a^3*b - 8*A*a^2*b^2)*c^3 - (7*B*a^2*b^3 + 3*A*a*b^4
)*c^2 + (2*B*a*b^5 + A*b^6)*c)*d^4*e^3 + (4*B*a*b^6 + 2*A*b^7 + 8*(4*B*a^4
+ 45*A*a^3*b)*c^3 + 2*(86*B*a^3*b^2 - 155*A*a^2*b^3)*c^2 - (31*B*a^2*b^4 -
32*A*a*b^5)*c)*d^3*e^4 + (7*B*a^2*b^5 - 16*A*a*b^6 - 176*A*a^4*c^3 - 16*(B*
a^4*b + A*a^3*b^2)*c^2 - (48*B*a^3*b^3 - 91*A*a^2*b^4)*c)*d^2*e^5 - (11*B*a
^3*b^4 - 11*A*a^2*b^5 + 112*(B*a^5 - A*a^4*b)*c^2 - 4*(20*B*a^4*b^2 - 19*A*
a^3*b^3)*c)*d*e^6 + 3*(A*a^3*b^4 - 8*A*a^4*b^2*c + 16*A*a^5*c^2)*e^7 + (16*
(B*b*c^6 - 2*A*c^7)*d^6*e - 8*(7*B*b^2*c^5 - 4*(B*a + 3*A*b)*c^6)*d^5*e^2 +
2*(29*B*b^3*c^4 - 88*A*a*c^6 + 2*(2*B*a*b - 19*A*b^2)*c^5)*d^4*e^3 - (27*B
*b^4*c^3 + 176*(B*a^2 - 2*A*a*b)*c^5 + 8*(B*a*b^2 + A*b^3)*c^4)*d^3*e^4 + (
9*B*b^5*c^2 - 16*A*a^2*c^5 + 16*(17*B*a^2*b - 16*A*a*b^2)*c^4 - (44*B*a*b^3
- 35*A*b^4)*c^3)*d^2*e^5 - (16*(13*B*a^3 - A*a^2*b)*c^4 - 16*(B*a^2*b^2 +
5*A*a*b^3)*c^3 + 3*(B*a*b^4 + 5*A*b^5)*c^2)*d*e^6 + (128*A*a^3*c^4 + 20*(2*
B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2)*e^7)*x^4 + 2*
(8*(B*b*c^6 - 2*A*c^7)*d^7 - 8*(2*B*b^2*c^5 - (2*B*a + 3*A*b)*c^6)*d^6*e -
(13*B*b^3*c^4 + 88*A*a*c^6 - 2*(14*B*a*b + 17*A*b^2)*c^5)*d^5*e^2 + (36*B*b
^4*c^3 + 4*(2*B*a^2 + 11*A*a*b)*c^5 - (46*B*a*b^2 + 61*A*b^3)*c^4)*d^4*e^3
- 2*(12*B*b^5*c^2 + 64*A*a^2*c^5 + 2*(32*B*a^2*b - 49*A*a*b^2)*c^4 - (19*B*
a*b^3 + 2*A*b^4)*c^3)*d^3*e^4 + (9*B*b^6*c - 16*(2*B*a^3 - 11*A*a^2*b)*c^4
+ 2*(106*B*a^2*b^2 - 121*A*a*b^3)*c^3 - 6*(8*B*a*b^4 - 5*A*b^5)*c^2)*d^2*e^
5 - (56*A*a^3*c^4 + 2*(74*B*a^3*b + 19*A*a^2*b^2)*c^3 - 15*(B*a^2*b^3 + 6*A
*a*b^4)*c^2 + 3*(B*a*b^5 + 5*A*b^6)*c)*d*e^6 - 3*(4*(2*B*a^4 - 13*A*a^3*b)*
c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 + (2*B*a^2*b^4 - 5*A*a*b^5)*c)*e^7)
x^3 + 3(8*(B*b^2*c^5 - 2*A*b*c^6)*d^7 - 2*(13*B*b^3*c^4 + 8*A*a*c^6 - 2*(
6*B*a*b + 11*A*b^2)*c^5)*d^6*e + 2*(12*B*b^4*c^3 + 4*(6*B*a^2 - 5*A*a*b)*c^
5 - (18*B*a*b^2 + 13*A*b^3)*c^4)*d^5*e^2 - 4*(B*b^5*c^2 + 32*A*a^2*c^5 + 2*
(6*B*a^2*b - 17*A*a*b^2)*c^4 - 2*(B*a*b^3 - 2*A*b^4)*c^3)*d^4*e^3 - (5*B*b^
6*c + 68*A*a*b^3*c^3 + 64*(B*a^3 - 2*A*a^2*b)*c^4 - 14*(B*a*b^4 + A*b^5)*c^
2)*d^3*e^4 + (3*B*b^7 - 48*A*a^3*c^4 + 4*(22*B*a^3*b + 7*A*a^2*b^2)*c^3 + 2
*(11*B*a^2*b^3 - 21*A*a*b^4)*c^2 - (14*B*a*b^5 - 5*A*b^6)*c)*d^2*e^5 - (B*a
*b^6 + 5*A*b^7 + 8*(14*B*a^4 + A*a^3*b)*c^3 + 2*(2*B*a^3*b^2 + 9*A*a^2*b^3)
c^2 - 2(B*a^2*b^4 + 15*A*a*b^5)*c)*d*e^6 - (2*B*a^2*b^5 - 5*A*a*b^6 - 16*
A*a^3*b^2*c^2 - 64*A*a^4*c^3 - 6*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^7)*x^2 +
2*(3*(B*b^3*c^4 - 8*A*a*c^6 + 2*(2*B*a*b - A*b^2)*c^5)*d^7 - (12*B*b^4*c^3
- 4*(2*B*a^2 + 15*A*a*b)*c^5 + (22*B*a*b^2 - 19*A*b^3)*c^4)*d^6*e + 2*(9*B*
b^5*c^2 - 56*A*a^2*c^5 + 4*(13*B*a^2*b - 8*A*a*b^2)*c^4 - 2*(5*B*a*b^3 + 4*
A*b^4)*c^3)*d^5*e^2 - 2*(6*B*b^6*c + 4*(2*B*a^3 - 11*A*a^2*b)*c^4 + 2*(44*B
*a^2*b^2 - 23*A*a*b^3)*c^3 - 3*(8*B*a*b^4 - A*b^5)*c^2)*d^4*e^3 + (3*B*b^7
- 152*A*a^3*c^4 + 2*(6*B*a^3*b + 61*A*a^2*b^2)*c^3 + (91*B*a^2*b^3 - 102*A*
a*b^4)*c^2 - (23*B*a*b^5 - 14*A*b^6)*c)*d^3*e^4 + (5*B*a*b^6 - 5*A*b^7 - 4*
(14*B*a^4 - 39*A*a^3*b)*c^3 + (74*B*a^3*b^2 - 125*A*a^2*b^3)*c^2 - (38*B*a^
2*b^4 - 43*A*a*b^5)*c)*d^2*e^5 - (4*B*a^2*b^5 + 5*A*a*b^6 + 64*A*a^4*c^3 +
20*(4*B*a^4*b + A*a^3*b^2)*c^2 - 2*(15*B*a^3*b^3 + 16*A*a^2*b^4)*c)*d*e^6 -
2*(2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2
- 37*A*a^3*b^3)*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^4*c^4 - 8*a^3*b^2
*c^5 + 16*a^4*c^6)*d^9 - 4*(a^2*b^5*c^3 - 8*a^3*b^3*c^4 + 16*a^4*b*c^5)*d^8
e + 2(3*a^2*b^6*c^2 - 22*a^3*b^4*c^3 + 32*a^4*b^2*c^4 + 32*a^5*c^5)*d^7*e
^2 - 4*(a^2*b^7*c - 5*a^3*b^5*c^2 - 8*a^4*b^3*c^3 + 48*a^5*b*c^4)*d^6*e^3 +
(a^2*b^8 + 4*a^3*b^6*c - 74*a^4*b^4*c^2 + 144*a^5*b^2*c^3 + 96*a^6*c^4)*d^
5*e^4 - 4*(a^3*b^7 - 5*a^4*b^5*c - 8*a^5*b^3*c^2 + 48*a^6*b*c^3)*d^4*e^5 +

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2*(3*a^4*b^6 - 22*a^5*b^4*c + 32*a^6*b^2*c^2 + 32*a^7*c^3)*d^3*e^6 - 4*(a^5
*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*d^2*e^7 + (a^6*b^4 - 8*a^7*b^2*c + 16*a^
8*c^2)*d*e^8 + ((b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*d^8*e - 4*(b^5*c^5 - 8
*a*b^3*c^6 + 16*a^2*b*c^7)*d^7*e^2 + 2*(3*b^6*c^4 - 22*a*b^4*c^5 + 32*a^2*b
^2*c^6 + 32*a^3*c^7)*d^6*e^3 - 4*(b^7*c^3 - 5*a*b^5*c^4 - 8*a^2*b^3*c^5 + 4
8*a^3*b*c^6)*d^5*e^4 + (b^8*c^2 + 4*a*b^6*c^3 - 74*a^2*b^4*c^4 + 144*a^3*b^
2*c^5 + 96*a^4*c^6)*d^4*e^5 - 4*(a*b^7*c^2 - 5*a^2*b^5*c^3 - 8*a^3*b^3*c^4
+ 48*a^4*b*c^5)*d^3*e^6 + 2*(3*a^2*b^6*c^2 - 22*a^3*b^4*c^3 + 32*a^4*b^2*c^
4 + 32*a^5*c^5)*d^2*e^7 - 4*(a^3*b^5*c^2 - 8*a^4*b^3*c^3 + 16*a^5*b*c^4)*d*
e^8 + (a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*c^4)*e^9)*x^5 + ((b^4*c^6 - 8*a
*b^2*c^7 + 16*a^2*c^8)*d^9 - 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^8*e
 - 2*(b^6*c^4 - 10*a*b^4*c^5 + 32*a^2*b^2*c^6 - 32*a^3*c^7)*d^7*e^2 + 4*(2*
b^7*c^3 - 17*a*b^5*c^4 + 40*a^2*b^3*c^5 - 16*a^3*b*c^6)*d^6*e^3 - (7*b^8*c^
2 - 44*a*b^6*c^3 + 10*a^2*b^4*c^4 + 240*a^3*b^2*c^5 - 96*a^4*c^6)*d^5*e^4 +
 2*(b^9*c + 2*a*b^7*c^2 - 64*a^2*b^5*c^3 + 160*a^3*b^3*c^4)*d^4*e^5 - 2*(4*
a*b^8*c - 23*a^2*b^6*c^2 - 10*a^3*b^4*c^3 + 160*a^4*b^2*c^4 - 32*a^5*c^5)*d
^3*e^6 + 4*(3*a^2*b^7*c - 23*a^3*b^5*c^2 + 40*a^4*b^3*c^3 + 16*a^5*b*c^4)*d
^2*e^7 - (8*a^3*b^6*c - 65*a^4*b^4*c^2 + 136*a^5*b^2*c^3 - 16*a^6*c^4)*d*e^
8 + 2*(a^4*b^5*c - 8*a^5*b^3*c^2 + 16*a^6*b*c^3)*e^9)*x^4 + (2*(b^5*c^5 - 8
*a*b^3*c^6 + 16*a^2*b*c^7)*d^9 - (7*b^6*c^4 - 58*a*b^4*c^5 + 128*a^2*b^2*c^
6 - 32*a^3*c^7)*d^8*e + 8*(b^7*c^3 - 8*a*b^5*c^4 + 16*a^2*b^3*c^5)*d^7*e^2
- 2*(b^8*c^2 - 4*a*b^6*c^3 - 20*a^2*b^4*c^4 + 96*a^3*b^2*c^5 - 64*a^4*c^6)*
d^6*e^3 - 2*(b^9*c - 10*a*b^7*c^2 + 38*a^2*b^5*c^3 - 80*a^3*b^3*c^4 + 96*a^
4*b*c^5)*d^5*e^4 + (b^10 - 2*a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c^3 + 19
2*a^5*c^5)*d^4*e^5 - 4*(a*b^9 - 6*a^2*b^7*c + 4*a^3*b^5*c^2 + 64*a^5*b*c^4)
*d^3*e^6 + 2*(3*a^2*b^8 - 20*a^3*b^6*c + 20*a^4*b^4*c^2 + 32*a^5*b^2*c^3 +
64*a^6*c^4)*d^2*e^7 - 2*(2*a^3*b^7 - 13*a^4*b^5*c + 8*a^5*b^3*c^2 + 48*a^6*
b*c^3)*d*e^8 + (a^4*b^6 - 6*a^5*b^4*c + 32*a^7*c^3)*e^9)*x^3 + ((b^6*c^4 -
6*a*b^4*c^5 + 32*a^3*c^7)*d^9 - 2*(2*b^7*c^3 - 13*a*b^5*c^4 + 8*a^2*b^3*c^5
 + 48*a^3*b*c^6)*d^8*e + 2*(3*b^8*c^2 - 20*a*b^6*c^3 + 20*a^2*b^4*c^4 + 32*
a^3*b^2*c^5 + 64*a^4*c^6)*d^7*e^2 - 4*(b^9*c - 6*a*b^7*c^2 + 4*a^2*b^5*c^3
+ 64*a^4*b*c^5)*d^6*e^3 + (b^10 - 2*a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c
^3 + 192*a^5*c^5)*d^5*e^4 - 2*(a*b^9 - 10*a^2*b^7*c + 38*a^3*b^5*c^2 - 80*a
^4*b^3*c^3 + 96*a^5*b*c^4)*d^4*e^5 - 2*(a^2*b^8 - 4*a^3*b^6*c - 20*a^4*b^4*
c^2 + 96*a^5*b^2*c^3 - 64*a^6*c^4)*d^3*e^6 + 8*(a^3*b^7 - 8*a^4*b^5*c + 16*
a^5*b^3*c^2)*d^2*e^7 - (7*a^4*b^6 - 58*a^5*b^4*c + 128*a^6*b^2*c^2 - 32*a^7
*c^3)*d*e^8 + 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*e^9)*x^2 + (2*(a*b^5
*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*d^9 - (8*a*b^6*c^3 - 65*a^2*b^4*c^4 +
136*a^3*b^2*c^5 - 16*a^4*c^6)*d^8*e + 4*(3*a*b^7*c^2 - 23*a^2*b^5*c^3 + 40*
a^3*b^3*c^4 + 16*a^4*b*c^5)*d^7*e^2 - 2*(4*a*b^8*c - 23*a^2*b^6*c^2 - 10*a^
3*b^4*c^3 + 160*a^4*b^2*c^4 - 32*a^5*c^5)*d^6*e^3 + 2*(a*b^9 + 2*a^2*b^7*c
- 64*a^3*b^5*c^2 + 160*a^4*b^3*c^3)*d^5*e^4 - (7*a^2*b^8 - 44*a^3*b^6*c + 1
0*a^4*b^4*c^2 + 240*a^5*b^2*c^3 - 96*a^6*c^4)*d^4*e^5 + 4*(2*a^3*b^7 - 17*a
^4*b^5*c + 40*a^5*b^3*c^2 - 16*a^6*b*c^3)*d^3*e^6 - 2*(a^4*b^6 - 10*a^5*b^4
*c + 32*a^6*b^2*c^2 - 32*a^7*c^3)*d^2*e^7 - 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a
^7*b*c^2)*d*e^8 + (a^6*b^4 - 8*a^7*b^2*c + 16*a^8*c^2)*e^9)*x)]
```

giac [B] time = 3.79, size = 8475, normalized size = 11.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*((32*sqrt(c*d^2 - b*d*e + a*e^2)*B*b*c^4*d^4*e^2 - 64*sqrt(c*d^2 - b*d*
e + a*e^2)*A*c^5*d^4*e^2 - 80*sqrt(c*d^2 - b*d*e + a*e^2)*B*b^2*c^3*d^3*e^3
 + 64*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*c^4*d^3*e^3 + 128*sqrt(c*d^2 - b*d*e
+ a*e^2)*A*b*c^4*d^3*e^3 - 24*B*b^4*c^(3/2)*d^2*e^5*log(abs(-2*c*d + b*e +
2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 192*B*a*b^2*c^(5/2)*d^2*e^5*log(a
bs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 384*B*a^2*c^(7/
```

2)*d^2*e^5*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 36*sqrt(c*d^2 - b*d*e + a*e^2)*B*b^3*c^2*d^2*e^4 + 48*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*b*c^3*d^2*e^4 - 24*sqrt(c*d^2 - b*d*e + a*e^2)*A*b^2*c^3*d^2*e^4 - 288*sqrt(c*d^2 - b*d*e + a*e^2)*A*a*c^4*d^2*e^4 + 9*B*b^5*sqrt(c)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 72*B*a*b^3*c^(3/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 30*A*b^4*c^(3/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 144*B*a^2*b*c^(5/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 240*A*a*b^2*c^(5/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 480*A*a^2*c^(7/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 18*sqrt(c*d^2 - b*d*e + a*e^2)*B*b^4*c*d*e^5 + 112*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*b^2*c^2*d*e^5 - 40*sqrt(c*d^2 - b*d*e + a*e^2)*A*b^3*c^2*d*e^5 - 416*sqrt(c*d^2 - b*d*e + a*e^2)*B*a^2*c^3*d*e^5 + 288*sqrt(c*d^2 - b*d*e + a*e^2)*A*a*b*c^3*d*e^5 + 6*B*a*b^4*sqrt(c)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 15*A*b^5*sqrt(c)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 48*B*a^2*b^2*c^(3/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 120*A*a*b^3*c^(3/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 96*B*a^3*c^(5/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 240*A*a^2*b*c^(5/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 12*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*b^3*c*e^6 + 30*sqrt(c*d^2 - b*d*e + a*e^2)*A*b^4*c*e^6 + 80*sqrt(c*d^2 - b*d*e + a*e^2)*B*a^2*b*c^2*e^6 - 200*sqrt(c*d^2 - b*d*e + a*e^2)*A*a*b^2*c^2*e^6 + 256*sqrt(c*d^2 - b*d*e + a*e^2)*A*a^2*c^3*e^6)*sgn(1/(x*e + d))/(sqrt(c*d^2 - b*d*e + a*e^2)*b^4*c^(7/2)*d^6 - 8*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^2*c^(9/2)*d^6 + 16*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*c^(11/2)*d^6 - 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^5*c^(5/2)*d^5*e + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^3*c^(7/2)*d^5*e - 48*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b*c^(9/2)*d^5*e + 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^6*c^(3/2)*d^4*e^2 - 21*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^4*c^(5/2)*d^4*e^2 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^2*c^(7/2)*d^4*e^2 + 48*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*c^(9/2)*d^4*e^2 - sqrt(c*d^2 - b*d*e + a*e^2)*b^7*sqrt(c)*d^3*e^3 + 2*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^5*c^(3/2)*d^3*e^3 + 32*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^3*c^(5/2)*d^3*e^3 - 96*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b*c^(7/2)*d^3*e^3 + 3*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^6*sqrt(c)*d^2*e^4 - 21*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^4*c^(3/2)*d^2*e^4 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^2*c^(5/2)*d^2*e^4 + 48*sqrt(c*d^2 - b*d*e + a*e^2)*a^4*c^(7/2)*d^2*e^4 - 3*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^5*sqrt(c)*d*e^5 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^3*c^(3/2)*d*e^5 - 48*sqrt(c*d^2 - b*d*e + a*e^2)*a^4*b*c^(5/2)*d*e^5 + sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^4*sqrt(c)*e^6 - 8*sqrt(c*d^2 - b*d*e + a*e^2)*a^4*b^2*c^(3/2)*e^6 + 16*sqrt(c*d^2 - b*d*e + a*e^2)*a^5*c^(5/2)*e^6) + 2*((((4*(4*B*b*c^5*d^7*e^16*sgn(1/(x*e + d)) - 8*A*c^6*d^7*e^16*sgn(1/(x*e + d)) - 16*B*b^2*c^4*d^6*e^17*sgn(1/(x*e + d)) + 8*B*a*c^5*d^6*e^17*sgn(1/(x*e + d)) + 28*A*b*c^5*d^6*e^17*sgn(1/(x*e + d)) + 21*B*b^3*c^3*d^5*e^18*sgn(1/(x*e + d)) - 30*A*b^2*c^4*d^5*e^18*sgn(1/(x*e + d)) - 48*A*a*c^5*d^5*e^18*sgn(1/(x*e + d)) - 18*B*b^4*c^2*d^4*e^19*sgn(1/(x*e + d)) + 34*B*a*b^2*c^3*d^4*e^19*sgn(1/(x*e + d)) + 5*A*b^3*c^3*d^4*e^19*sgn(1/(x*e + d)) - 128*B*a^2*c^4*d^4*e^19*sgn(1/(x*e + d)) + 120*A*a*b*c^4*d^4*e^19*sgn(1/(x*e + d)) + 12*B*b^5*c*d^3*e^20*sgn(1/(x*e + d)) - 66*B*a*b^3*c^2*d^3*e^20*sgn(1/(x*e + d)) + 18*A*b^4*c^2*d^3*e^20*sgn(1/(x*e + d)) + 212*B*a^2*b*c^3*d^3*e^20*sgn(1/(x*e + d)) - 164*A*a*b^2*c^3*d^3*e^20*sgn(1/(x*e + d)) + 88*A*a^2*c^4*d^3*e^20*sgn(1/(x*e + d)) - 3*B*b^6*d^2*e^21*sgn(1/(x*e + d)) + 18*B*a*b^4*c*d^2*e^21*sgn(1/(x*e + d)) - 18*A*b^5*c*d^2*e^21*sgn(1/(x*e + d)) - 36*B*a^2*b^2*c^2*d^2*e^21*sgn(1/(x*e + d)) + 126*A*a*b^3*c^2*d^2*e^21*sgn(1/(x*e + d)) - 120*B*a^3*c^3*d^2*e^21*sgn(1/(x*e + d)) - 132*A*a^2*b*c^3*d^2*e^21*sgn(1/(x*e + d)) + B*a*b^5*d*e^22*sgn(1/(x*e + d)) + 5*A*b^6*d*e^22*sgn(1/(x*e + d)) - 11*B*a^2*b^3*c*d*e^22*sgn(1/(x*e + d)) - 24*A*a*b^4*c*d*e^22*sgn(1/(x*e + d)) + 56*B*a^3*b*c^2*d*e^22*sgn(1/(x*e + d)) - 30*A*a^2*b^2*c^2*d*e^22*sgn(1/(x*e + d)) + 128*

A*a^3*c^3*d*e^22*sgn(1/(x*e + d)) + 2*B*a^2*b^4*e^23*sgn(1/(x*e + d)) - 5*A
*a*b^5*e^23*sgn(1/(x*e + d)) - 14*B*a^3*b^2*c*e^23*sgn(1/(x*e + d)) + 37*A*
a^2*b^3*c*e^23*sgn(1/(x*e + d)) + 16*B*a^4*c^2*e^23*sgn(1/(x*e + d)) - 64*A
*a^3*b*c^2*e^23*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*
a*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d)
)^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(
x*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*s
gn(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c
^3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b
^7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32
*a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e
 + d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(
1/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^
2*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^
3*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^
3*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^
5*c^2*e^17*sgn(1/(x*e + d))^2) + 3*(B*b^4*c^2*d^5*e^20*sgn(1/(x*e + d)) - 8
*B*a*b^2*c^3*d^5*e^20*sgn(1/(x*e + d)) + 16*B*a^2*c^4*d^5*e^20*sgn(1/(x*e +
 d)) - 2*B*b^5*c*d^4*e^21*sgn(1/(x*e + d)) + 16*B*a*b^3*c^2*d^4*e^21*sgn(1/
(x*e + d)) - A*b^4*c^2*d^4*e^21*sgn(1/(x*e + d)) - 32*B*a^2*b*c^3*d^4*e^21*
sgn(1/(x*e + d)) + 8*A*a*b^2*c^3*d^4*e^21*sgn(1/(x*e + d)) - 16*A*a^2*c^4*d
^4*e^21*sgn(1/(x*e + d)) + B*b^6*d^3*e^22*sgn(1/(x*e + d)) - 6*B*a*b^4*c*d^
3*e^22*sgn(1/(x*e + d)) + 2*A*b^5*c*d^3*e^22*sgn(1/(x*e + d)) - 16*A*a*b^3*
c^2*d^3*e^22*sgn(1/(x*e + d)) + 32*B*a^3*c^3*d^3*e^22*sgn(1/(x*e + d)) + 32
*A*a^2*b*c^3*d^3*e^22*sgn(1/(x*e + d)) - 2*B*a*b^5*d^2*e^23*sgn(1/(x*e + d)
) - A*b^6*d^2*e^23*sgn(1/(x*e + d)) + 16*B*a^2*b^3*c*d^2*e^23*sgn(1/(x*e +
d)) + 6*A*a*b^4*c*d^2*e^23*sgn(1/(x*e + d)) - 32*B*a^3*b*c^2*d^2*e^23*sgn(1
/(x*e + d)) - 32*A*a^3*c^3*d^2*e^23*sgn(1/(x*e + d)) + B*a^2*b^4*d*e^24*sgn
(1/(x*e + d)) + 2*A*a*b^5*d*e^24*sgn(1/(x*e + d)) - 8*B*a^3*b^2*c*d*e^24*sg
n(1/(x*e + d)) - 16*A*a^2*b^3*c*d*e^24*sgn(1/(x*e + d)) + 16*B*a^4*c^2*d*e^
24*sgn(1/(x*e + d)) + 32*A*a^3*b*c^2*d*e^24*sgn(1/(x*e + d)) - A*a^2*b^4*e^
25*sgn(1/(x*e + d)) + 8*A*a^3*b^2*c*e^25*sgn(1/(x*e + d)) - 16*A*a^4*c^2*e^
25*sgn(1/(x*e + d)))*e^(-1)/((b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2
*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 -
 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e +
 d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/
(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^
4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^
3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*
b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d)
)^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*
e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^1
5*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d
*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4
*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2
*e^17*sgn(1/(x*e + d))^2)*(x*e + d)))*e^(-1)/(x*e + d) - 3*(16*B*b*c^5*d^6*
e^15*sgn(1/(x*e + d)) - 32*A*c^6*d^6*e^15*sgn(1/(x*e + d)) - 56*B*b^2*c^4*d
^5*e^16*sgn(1/(x*e + d)) + 32*B*a*c^5*d^5*e^16*sgn(1/(x*e + d)) + 96*A*b*c^
5*d^5*e^16*sgn(1/(x*e + d)) + 60*B*b^3*c^3*d^4*e^17*sgn(1/(x*e + d)) - 80*A
*b^2*c^4*d^4*e^17*sgn(1/(x*e + d)) - 160*A*a*c^5*d^4*e^17*sgn(1/(x*e + d))
 - 42*B*b^4*c^2*d^3*e^18*sgn(1/(x*e + d)) + 96*B*a*b^2*c^3*d^3*e^18*sgn(1/(x
*e + d)) - 352*B*a^2*c^4*d^3*e^18*sgn(1/(x*e + d)) + 320*A*a*b*c^4*d^3*e^18
*sgn(1/(x*e + d)) + 20*B*b^5*c*d^2*e^19*sgn(1/(x*e + d)) - 120*B*a*b^3*c^2*
d^2*e^19*sgn(1/(x*e + d)) + 46*A*b^4*c^2*d^2*e^19*sgn(1/(x*e + d)) + 400*B*
a^2*b*c^3*d^2*e^19*sgn(1/(x*e + d)) - 368*A*a*b^2*c^3*d^2*e^19*sgn(1/(x*e +
 d)) + 256*A*a^2*c^4*d^2*e^19*sgn(1/(x*e + d)) - 3*B*b^6*d*e^20*sgn(1/(x*e
+ d)) + 26*B*a*b^4*c*d*e^20*sgn(1/(x*e + d)) - 30*A*b^5*c*d*e^20*sgn(1/(x*e
 + d)) - 88*B*a^2*b^2*c^2*d*e^20*sgn(1/(x*e + d)) + 208*A*a*b^3*c^2*d*e^20*
sgn(1/(x*e + d)) - 64*B*a^3*c^3*d*e^20*sgn(1/(x*e + d)) - 256*A*a^2*b*c^3*d

```
*e^20*sgn(1/(x*e + d)) - 2*B*a*b^5*e^21*sgn(1/(x*e + d)) + 5*A*b^6*e^21*sgn
(1/(x*e + d)) + 12*B*a^2*b^3*c*e^21*sgn(1/(x*e + d)) - 30*A*a*b^4*c*e^21*sg
n(1/(x*e + d)) + 16*A*a^2*b^2*c^2*e^21*sgn(1/(x*e + d)) + 64*A*a^3*c^3*e^21
*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e
^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2
*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 4
8*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))
^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn
(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn
(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^
3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*
b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2
+ 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x
*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(
1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(
1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(
1/(x*e + d))^2))*e^(-1)/(x*e + d) + 6*(8*B*b*c^5*d^5*e^14*sgn(1/(x*e + d))
- 16*A*c^6*d^5*e^14*sgn(1/(x*e + d)) - 24*B*b^2*c^4*d^4*e^15*sgn(1/(x*e + d
)) + 16*B*a*c^5*d^4*e^15*sgn(1/(x*e + d)) + 40*A*b*c^5*d^4*e^15*sgn(1/(x*e
+ d)) + 19*B*b^3*c^3*d^3*e^16*sgn(1/(x*e + d)) + 4*B*a*b*c^4*d^3*e^16*sgn(1
/(x*e + d)) - 22*A*b^2*c^4*d^3*e^16*sgn(1/(x*e + d)) - 72*A*a*c^5*d^3*e^16*
sgn(1/(x*e + d)) - 11*B*b^4*c^2*d^2*e^17*sgn(1/(x*e + d)) + 38*B*a*b^2*c^3*
d^2*e^17*sgn(1/(x*e + d)) - 7*A*b^3*c^3*d^2*e^17*sgn(1/(x*e + d)) - 136*B*a
^2*c^4*d^2*e^17*sgn(1/(x*e + d)) + 108*A*a*b*c^4*d^2*e^17*sgn(1/(x*e + d))
+ 3*B*b^5*c*d*e^18*sgn(1/(x*e + d)) - 23*B*a*b^3*c^2*d*e^18*sgn(1/(x*e + d)
) + 15*A*b^4*c^2*d*e^18*sgn(1/(x*e + d)) + 84*B*a^2*b*c^3*d*e^18*sgn(1/(x*e
 + d)) - 106*A*a*b^2*c^3*d*e^18*sgn(1/(x*e + d)) + 104*A*a^2*c^4*d*e^18*sgn
(1/(x*e + d)) + 2*B*a*b^4*c*e^19*sgn(1/(x*e + d)) - 5*A*b^5*c*e^19*sgn(1/(x
*e + d)) - 14*B*a^2*b^2*c^2*e^19*sgn(1/(x*e + d)) + 35*A*a*b^3*c^2*e^19*sgn
(1/(x*e + d)) + 8*B*a^3*c^3*e^19*sgn(1/(x*e + d)) - 52*A*a^2*b*c^3*e^19*sgn
(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*
sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5
*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^
2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 -
 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(
x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(
x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^
14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*
d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24
*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e +
 d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x
*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x
*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x
*e + d))^2))*e^(-1)/(x*e + d) - (16*B*b*c^5*d^4*e^13*sgn(1/(x*e + d)) - 32*
A*c^6*d^4*e^13*sgn(1/(x*e + d)) - 40*B*b^2*c^4*d^3*e^14*sgn(1/(x*e + d)) +
32*B*a*c^5*d^3*e^14*sgn(1/(x*e + d)) + 64*A*b*c^5*d^3*e^14*sgn(1/(x*e + d))
 + 18*B*b^3*c^3*d^2*e^15*sgn(1/(x*e + d)) + 24*B*a*b*c^4*d^2*e^15*sgn(1/(x*
e + d)) - 12*A*b^2*c^4*d^2*e^15*sgn(1/(x*e + d)) - 144*A*a*c^5*d^2*e^15*sgn
(1/(x*e + d)) - 9*B*b^4*c^2*d*e^16*sgn(1/(x*e + d)) + 56*B*a*b^2*c^3*d*e^16
*sgn(1/(x*e + d)) - 20*A*b^3*c^3*d*e^16*sgn(1/(x*e + d)) - 208*B*a^2*c^4*d*
e^16*sgn(1/(x*e + d)) + 144*A*a*b*c^4*d*e^16*sgn(1/(x*e + d)) - 6*B*a*b^3*c
^2*e^17*sgn(1/(x*e + d)) + 15*A*b^4*c^2*e^17*sgn(1/(x*e + d)) + 40*B*a^2*b*
c^3*e^17*sgn(1/(x*e + d)) - 100*A*a*b^2*c^3*e^17*sgn(1/(x*e + d)) + 128*A*a
^2*c^4*e^17*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^
2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2
- 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e
+ d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1
/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d
^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d
```

```
^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2
*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d
))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x
*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^
15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*
d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^
4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^
2*e^17*sgn(1/(x*e + d))^2))/(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/
(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)^(3/2) + 3*(8*B*c*d^2*e^6
 - 3*B*b*d*e^7 - 10*A*c*d*e^7 - 2*B*a*e^8 + 5*A*b*e^8)*log(abs(-2*c*d + b*e
 + 2*sqrt(c*d^2 - b*d*e + a*e^2)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d
)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2) + sqrt(c*d^2*e
^2 - b*d*e^3 + a*e^4)*e^(-1)/(x*e + d))))/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3
*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*
d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a^3*e^7)*sqrt(c*d^2 - b*d*e + a
*e^2)*sgn(1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.08, size = 6675, normalized size = 8.95

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2246 $\int \frac{(A+Bx)(d+ex)^6}{(a+bx+cx^2)^{7/2}}\,dx$

Optimal. Leaf size=1401

$$\frac{(12Bcd-7bBe+2Ace)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{cx^2+bx+a}}\right)e^5}{2c^{9/2}}+\frac{\left(105Be^5b^6-10ce^4(11Bd+3Ae)b^5-4ce^3\left(5Acde+8B\left(2cd\right.\right.\right.}{}$$

Rubi [A] time = 2.20, antiderivative size = 1401, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 640, 621, 206}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(d + e*x)^5*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(5*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) + (2*(d + e*x)^3*(b^3*B*e*(3*c*d^2 - 7*a*e^2) - 8*a*c^2*e*(3*A*c*d^2 +
12*a*B*d*e + 5*a*A*e^2) - 2*b^2*c*(4*B*c*d^3 + 9*A*c*d^2*e - a*A*e^3) + 4*b
*c*(4*A*c*d*(c*d^2 + 3*a*e^2) + a*B*e*(9*c*d^2 + 11*a*e^2)) - (7*b^4*B*e^3
- 2*b^3*c*e^2*(3*B*d + A*e) - 12*b^2*c*e*(B*c*d^2 + A*c*d*e + 4*a*B*e^2) +
8*b*c^2*(2*B*c*d^3 + 6*A*c*d^2*e + 9*a*B*d*e^2 + 3*a*A*e^3) - 16*c^2*(3*a*B
*e*(c*d^2 - a*e^2) + A*c*d*(2*c*d^2 + 3*a*e^2)))*x))/(15*c^2*(b^2 - 4*a*c)^
2*(a + b*x + c*x^2)^(3/2)) + (2*(d + e*x)*(7*b^5*B*e^3*(c*d^2 - 5*a*e^2) -
2*b^4*c*e^3*(A*c*d^2 - 16*a*B*d*e - 5*a*A*e^2) - 8*b^3*c*e*(A*c*d*e*(21*c*d
^2 - a*e^2) + 6*B*(2*c^2*d^4 + a*c*d^2*e^2 - 7*a^2*e^4)) + 32*a*c^3*e*(6*a*
B*d*e*(c*d^2 + 11*a*e^2) + A*(4*c^2*d^4 + 9*a*c*d^2*e^2 + 15*a^2*e^4)) - 16
*b*c^2*(2*A*c*d*(4*c^2*d^4 + 19*a*c*d^2*e^2 + 21*a^2*e^4) + a*B*e*(16*c^2*d
^4 + 75*a*c*d^2*e^2 + 57*a^2*e^4)) + 16*b^2*c^2*(6*A*e*(3*c^2*d^4 + 6*a*c*d
^2*e^2 - a^2*e^4) + B*(4*c^2*d^5 + 37*a*c*d^3*e^2 - 21*a^2*d*e^4)) - (35*b^
6*B*e^5 - 2*b^5*c*e^4*(23*B*d + 5*A*e) - 4*b^4*c*e^3*(5*B*c*d^2 + A*c*d*e +
 91*a*B*e^2) - 8*b^3*c^2*e^2*(5*B*c*d^3 + 7*A*c*d^2*e - 63*a*B*d*e^2 - 13*a
*A*e^3) + 64*c^3*(6*a*B*e*(c^2*d^4 + 4*a*c*d^2*e^2 - 2*a^2*e^4) + A*c*d*(4*
c^2*d^4 + 11*a*c*d^2*e^2 + 12*a^2*e^4)) + 16*b^2*c^2*e*(A*c*d*e*(29*c*d^2 +
 9*a*e^2) + B*(14*c^2*d^4 + 21*a*c*d^2*e^2 + 72*a^2*e^4)) - 32*b*c^3*(A*e*(
20*c^2*d^4 + 33*a*c*d^2*e^2 + 12*a^2*e^4) + B*(4*c^2*d^5 + 35*a*c*d^3*e^2 +
 60*a^2*d*e^4)))*x))/(15*c^3*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*x^2]) + (e*(1
05*b^6*B*e^5 - 10*b^5*c*e^4*(11*B*d + 3*A*e) - 16*b^3*c^2*e^2*(3*B*c*d^3 +
A*c*d^2*e - 78*a*B*d*e^2 - 20*a*A*e^3) - 4*b^4*c*e^3*(5*A*c*d*e + 8*B*(2*c*
d^2 + 35*a*e^2)) + 16*b^2*c^2*e*(6*A*c*d*e*(9*c*d^2 + 2*a*e^2) + 7*B*(4*c^2
*d^4 + 6*a*c*d^2*e^2 + 33*a^2*e^4)) + 64*c^3*(6*a*B*e*(2*c^2*d^4 + 9*a*c*d^
2*e^2 - 8*a^2*e^4) + A*c*d*(8*c^2*d^4 + 26*a*c*d^2*e^2 + 33*a^2*e^4)) - 32*
b*c^3*(A*e*(40*c^2*d^4 + 78*a*c*d^2*e^2 + 33*a^2*e^4) + B*(8*c^2*d^5 + 74*a
*c*d^3*e^2 + 141*a^2*d*e^4)))*Sqrt[a + b*x + c*x^2])/(15*c^4*(b^2 - 4*a*c)^
3) + (e^5*(12*B*c*d - 7*b*B*e + 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqr
t[a + b*x + c*x^2])])/(2*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^6}{\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2(d+ex)^5\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Mathematica [A] time = 11.25, size = 2369, normalized size = 1.69

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*A*c*(15*b^8*e^6*x^3 + 5*b^7*e^6*x^2*(9*a + 7*c*x^2) + b^6*e^6*x*(45*a^2
- 100*a*c*x^2 + 23*c^2*x^4) - 2*b^4*c*(245*a^3*e^6*x + 75*a^2*c*e^6*x^3 + 5
*c^3*d^2*x*(d^4 + 24*d^3*e*x - 135*d^2*e^2*x^2 + 40*d*e^3*x^3 + 3*e^4*x^4)
- 3*a*c^2*e*(2*d^5 + 50*d^4*e*x - 300*d^3*e^2*x^2 + 100*d^2*e^3*x^3 + 10*d*
e^4*x^4 - 43*e^5*x^5)) + 40*b^3*c*(-4*a^4*e^6 + 35*a^3*c*e^6*x^2 + c^4*d^3*
x^2*(2*d^3 - 36*d^2*e*x + 45*d*e^2*x^2 - 4*e^3*x^3) + 3*a^2*c^2*e^2*(d^4 -
20*d^3*e*x + 30*d^2*e^2*x^2 - 4*d*e^3*x^3 + 10*e^4*x^4) - a*c^3*d*(d^5 + 18
*d^4*e*x - 75*d^3*e^2*x^2 + 100*d^2*e^3*x^3 - 45*d*e^4*x^4 - 6*e^5*x^5)) +
3*b^5*(5*a^3*e^6 - 155*a^2*c*e^6*x^2 - 125*a*c^2*e^6*x^4 + c^3*d*(d^5 + 10*
d^4*e*x + 75*d^3*e^2*x^2 - 100*d^2*e^3*x^3 - 25*d*e^4*x^4 - 6*e^5*x^5)) + 1
6*b*c^2*(33*a^5*e^6 + 8*c^5*d^5*x^4*(5*d - 6*e*x) + 15*a^4*c*e^4*(8*d^2 - 1
6*d*e*x + e^2*x^2) + 30*a*c^4*d^3*x^2*(2*d^3 - 4*d^2*e*x + 5*d*e^2*x^2 - 4*
e^3*x^3) - 5*a^3*c^2*e^2*(-18*d^4 + 40*d^3*e*x - 60*d^2*e^2*x^2 + 72*d*e^3*
x^3 + 5*e^4*x^4) + 15*a^2*c^3*d*(d^5 - 6*d^4*e*x + 15*d^3*e^2*x^2 - 20*d^2*
e^3*x^3 + 15*d*e^4*x^4 - 6*e^5*x^5)) + 48*b^2*c^2*(35*a^4*e^6*x + 5*c^4*d^4
*x^3*(2*d^2 - 8*d*e*x + 3*e^2*x^2) + 5*a^3*c*e^3*(-4*d^3 + 20*d^2*e*x - 12*
d*e^2*x^2 + 9*e^3*x^3) + 5*a*c^3*d^2*x*(d^4 - 12*d^3*e*x + 15*d^2*e^2*x^2 -
 20*d*e^3*x^3 + 3*e^4*x^4) + a^2*c^2*e*(-6*d^5 + 75*d^4*e*x - 100*d^3*e^2*x
^2 + 150*d^2*e^3*x^3 - 30*d*e^4*x^4 + 19*e^5*x^5)) - 32*c^3*(-8*c^5*d^6*x^5
 + 3*a^5*e^5*(16*d + 5*e*x) - 10*a*c^4*d^4*x^3*(2*d^2 + 3*e^2*x^2) + 5*a^4*
c*e^3*(8*d^3 + 24*d*e^2*x^2 + 7*e^3*x^3) - 15*a^2*c^3*d^2*x*(d^4 + 5*d^2*e^
2*x^2 + 3*e^4*x^4) + a^3*c^2*e*(18*d^5 + 100*d^3*e^2*x^2 + 90*d*e^4*x^4 + 2
3*e^5*x^5))) + B*(3072*a^6*c^3*e^6 + 48*a^5*c^2*e^4*(-77*b^2*e^2 + 2*b*c*e*
(66*d + 115*e*x) - 40*c^2*(4*d^2 + 3*d*e*x - 4*e^2*x^2)) - b*x*(105*b^8*e^6
*x^2 + 256*c^8*d^6*x^4 + 64*b*c^7*d^5*x^3*(10*d - 9*e*x) + 3*b^5*c^3*e^5*x^
4*(-92*d + 5*e*x) + 7*b^6*c^2*e^5*x^3*(-60*d + 23*e*x) + 5*b^7*c*e^5*x^2*(-
36*d + 49*e*x) + 240*b^2*c^6*d^4*x^2*(2*d^2 - 6*d*e*x + e^2*x^2) + 40*b^3*c
^5*d^3*x*(2*d^3 - 27*d^2*e*x + 15*d*e^2*x^2 + 2*e^3*x^3) - 10*b^4*c^4*d^2*(
d^4 + 18*d^3*e*x - 45*d^2*e^2*x^2 - 20*d*e^3*x^3 - 9*e^4*x^4)) + 80*a^4*c*e
^2*(14*b^4*e^4 + 3*b^2*c^2*e^3*x*(84*d + 17*e*x) - 3*b^3*c*e^3*(8*d + 49*e*
x) + 2*b*c^3*e*(32*d^3 - 120*d^2*e*x + 18*d*e^2*x^2 + 121*e^3*x^3) - 24*c^4
*(d^4 + 10*d^2*e^2*x^2 + 7*d*e^3*x^3 - 3*e^4*x^4)) - a^3*(105*b^6*e^6 + 196
0*b^4*c^2*e^5*x*(3*d + 5*e*x) + 240*b^3*c^3*e^5*x^2*(-70*d + 59*e*x) - 10*b
^5*c*e^5*(18*d + 343*e*x) - 80*b^2*c^4*e^2*(-18*d^4 + 160*d^3*e*x - 180*d^2
*e^2*x^2 + 324*d*e^3*x^3 + 71*e^4*x^4) - 32*b*c^5*e*(36*d^5 - 150*d^4*e*x +
 400*d^3*e^2*x^2 - 900*d^2*e^3*x^3 - 150*d*e^4*x^4 + 251*e^5*x^5) + 192*c^6
*(d^6 + 25*d^4*e^2*x^2 + 75*d^2*e^4*x^4 + 46*d*e^5*x^5 - 5*e^6*x^6)) - 3*a^
2*(105*b^7*e^6*x + 10*b^5*c^2*e^5*x^2*(186*d - 35*e*x) + 40*b^4*c^3*e^5*x^3
*(15*d + 71*e*x) - 5*b^6*c*e^5*x*(36*d + 217*e*x) - 640*c^7*d^3*e*x^3*(d^2
+ 2*e^2*x^2) + 160*b*c^6*d^2*x*(d^4 - 6*d^3*e*x + 15*d^2*e^2*x^2 - 20*d*e^3
*x^3 + 15*e^4*x^4) + 16*b^3*c^4*e*(-2*d^5 + 75*d^4*e*x - 200*d^3*e^2*x^2 +
50*d^2*e^3*x^3 - 300*d*e^4*x^4 + 143*e^5*x^5) + 16*b^2*c^5*(2*d^6 - 60*d^5*
e*x + 150*d^4*e^2*x^2 - 400*d^3*e^3*x^3 + 150*d^2*e^4*x^4 - 228*d*e^5*x^5 +
 15*e^6*x^6)) + a*(-315*b^8*e^6*x^2 + 768*c^8*d^5*e*x^5 + 75*b^6*c^2*e^5*x^
3*(-16*d + 35*e*x) + 20*b^7*c*e^5*x^2*(27*d + 35*e*x) + 6*b^5*c^3*e^5*x^4*(
-750*d + 307*e*x) - 320*b*c^7*d^4*x^3*(2*d^2 - 6*d*e*x + 9*e^2*x^2) + 480*b
^2*c^6*d^3*x^2*(-2*d^3 + 6*d^2*e*x - 15*d*e^2*x^2 + 4*e^3*x^3) - 240*b^3*c^
5*d^2*x*(d^4 - 10*d^3*e*x + 25*d^2*e^2*x^2 - 20*d*e^3*x^3 - 5*e^4*x^4) + 4*
b^4*c^4*(d^6 + 60*d^5*e*x - 675*d^4*e^2*x^2 + 400*d^3*e^3*x^3 + 75*d^2*e^4*
x^4 - 774*d*e^5*x^5 + 45*e^6*x^6))))/(15*c^4*(-b^2 + 4*a*c)^3*(a + x*(b + c
*x))^(5/2)) + (e^5*(12*B*c*d - 7*b*B*e + 2*A*c*e)*Log[b + 2*c*x + 2*Sqrt[c]
*Sqrt[a + x*(b + c*x)]])/(2*c^(9/2))
```

IntegrateAlgebraic [B] time = 53.10, size = 3721, normalized size = 2.66

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] -1/15*(-6*A*b^5*c^4*d^6 - 4*a*b^4*B*c^4*d^6 + 80*a*A*b^3*c^5*d^6 + 96*a^2*b
^2*B*c^5*d^6 - 480*a^2*A*b*c^6*d^6 + 192*a^3*B*c^6*d^6 - 24*a*A*b^4*c^4*d^5
*e - 96*a^2*b^3*B*c^4*d^5*e + 576*a^2*A*b^2*c^5*d^5*e - 1152*a^3*b*B*c^5*d^
5*e + 1152*a^3*A*c^6*d^5*e - 240*a^2*A*b^3*c^4*d^4*e^2 + 1440*a^3*b^2*B*c^4
*d^4*e^2 - 2880*a^3*A*b*c^5*d^4*e^2 + 1920*a^4*B*c^5*d^4*e^2 + 1920*a^3*A*b
^2*c^4*d^3*e^3 - 5120*a^4*b*B*c^4*d^3*e^3 + 2560*a^4*A*c^5*d^3*e^3 - 3840*a
^4*A*b*c^4*d^2*e^4 + 7680*a^5*B*c^4*d^2*e^4 - 180*a^3*b^5*B*c*d*e^5 + 1920*
a^4*b^3*B*c^2*d*e^5 - 6336*a^5*b*B*c^3*d*e^5 + 3072*a^5*A*c^4*d*e^5 + 105*a
^3*b^6*B*e^6 - 30*a^3*A*b^5*c*e^6 - 1120*a^4*b^4*B*c*e^6 + 320*a^4*A*b^3*c^
2*e^6 + 3696*a^5*b^2*B*c^2*e^6 - 1056*a^5*A*b*c^3*e^6 - 3072*a^6*B*c^3*e^6
- 10*b^5*B*c^4*d^6*x + 20*A*b^4*c^5*d^6*x + 240*a*b^3*B*c^5*d^6*x - 480*a*A
*b^2*c^6*d^6*x + 480*a^2*b*B*c^6*d^6*x - 960*a^2*A*c^7*d^6*x - 60*A*b^5*c^4
*d^5*e*x - 240*a*b^4*B*c^4*d^5*e*x + 1440*a*A*b^3*c^5*d^5*e*x - 2880*a^2*b^
2*B*c^5*d^5*e*x + 2880*a^2*A*b*c^6*d^5*e*x - 600*a*A*b^4*c^4*d^4*e^2*x + 36
00*a^2*b^3*B*c^4*d^4*e^2*x - 7200*a^2*A*b^2*c^5*d^4*e^2*x + 4800*a^3*b*B*c^
5*d^4*e^2*x + 4800*a^2*A*b^3*c^4*d^3*e^3*x - 12800*a^3*b^2*B*c^4*d^3*e^3*x
+ 6400*a^3*A*b*c^5*d^3*e^3*x - 9600*a^3*A*b^2*c^4*d^2*e^4*x + 19200*a^4*b*B
*c^4*d^2*e^4*x - 540*a^2*b^6*B*c*d*e^5*x + 5880*a^3*b^4*B*c^2*d*e^5*x - 201
60*a^4*b^2*B*c^3*d*e^5*x + 7680*a^4*A*b*c^4*d*e^5*x + 5760*a^5*B*c^4*d*e^5*
x + 315*a^2*b^7*B*e^6*x - 90*a^2*A*b^6*c*e^6*x - 3430*a^3*b^5*B*c*e^6*x + 9
80*a^3*A*b^4*c^2*e^6*x + 11760*a^4*b^3*B*c^2*e^6*x - 3360*a^4*A*b^2*c^3*e^6
*x - 11040*a^5*b*B*c^3*e^6*x + 960*a^5*A*c^4*e^6*x + 80*b^4*B*c^5*d^6*x^2 -
 160*A*b^3*c^6*d^6*x^2 + 960*a*b^2*B*c^6*d^6*x^2 - 1920*a*A*b*c^7*d^6*x^2 -
 180*b^5*B*c^4*d^5*e*x^2 + 480*A*b^4*c^5*d^5*e*x^2 - 2400*a*b^3*B*c^5*d^5*e
*x^2 + 5760*a*A*b^2*c^6*d^5*e*x^2 - 2880*a^2*b*B*c^6*d^5*e*x^2 - 450*A*b^5*
c^4*d^4*e^2*x^2 + 2700*a*b^4*B*c^4*d^4*e^2*x^2 - 6000*a*A*b^3*c^5*d^4*e^2*x
^2 + 7200*a^2*b^2*B*c^5*d^4*e^2*x^2 - 7200*a^2*A*b*c^6*d^4*e^2*x^2 + 4800*a
^3*B*c^6*d^4*e^2*x^2 + 3600*a*A*b^4*c^4*d^3*e^3*x^2 - 9600*a^2*b^3*B*c^4*d^
3*e^3*x^2 + 9600*a^2*A*b^2*c^5*d^3*e^3*x^2 - 12800*a^3*b*B*c^5*d^3*e^3*x^2
+ 6400*a^3*A*c^6*d^3*e^3*x^2 - 7200*a^2*A*b^3*c^4*d^2*e^4*x^2 + 14400*a^3*b
^2*B*c^4*d^2*e^4*x^2 - 9600*a^3*A*b*c^5*d^2*e^4*x^2 + 19200*a^4*B*c^5*d^2*e
^4*x^2 - 540*a*b^7*B*c*d*e^5*x^2 + 5580*a^2*b^5*B*c^2*d*e^5*x^2 - 16800*a^3
*b^3*B*c^3*d*e^5*x^2 + 5760*a^3*A*b^2*c^4*d*e^5*x^2 - 2880*a^4*b*B*c^4*d*e^
5*x^2 + 7680*a^4*A*c^5*d*e^5*x^2 + 315*a*b^8*B*e^6*x^2 - 90*a*A*b^7*c*e^6*x
^2 - 3255*a^2*b^6*B*c*e^6*x^2 + 930*a^2*A*b^5*c^2*e^6*x^2 + 9800*a^3*b^4*B*
c^2*e^6*x^2 - 2800*a^3*A*b^3*c^3*e^6*x^2 - 4080*a^4*b^2*B*c^3*e^6*x^2 - 480
*a^4*A*b*c^4*e^6*x^2 - 7680*a^5*B*c^4*e^6*x^2 + 480*b^3*B*c^6*d^6*x^3 - 960
*A*b^2*c^7*d^6*x^3 + 640*a*b*B*c^7*d^6*x^3 - 1280*a*A*c^8*d^6*x^3 - 1080*b^
4*B*c^5*d^5*e*x^3 + 2880*A*b^3*c^6*d^5*e*x^3 - 2880*a*b^2*B*c^6*d^5*e*x^3 +
 3840*a*A*b*c^7*d^5*e*x^3 - 1920*a^2*B*c^7*d^5*e*x^3 + 450*b^5*B*c^4*d^4*e^
2*x^3 - 2700*A*b^4*c^5*d^4*e^2*x^3 + 6000*a*b^3*B*c^5*d^4*e^2*x^3 - 7200*a*
A*b^2*c^6*d^4*e^2*x^3 + 7200*a^2*b*B*c^6*d^4*e^2*x^3 - 4800*a^2*A*c^7*d^4*e
^2*x^3 + 600*A*b^5*c^4*d^3*e^3*x^3 - 1600*a*b^4*B*c^4*d^3*e^3*x^3 + 8000*a*
A*b^3*c^5*d^3*e^3*x^3 - 19200*a^2*b^2*B*c^5*d^3*e^3*x^3 + 9600*a^2*A*b*c^6*
d^3*e^3*x^3 - 1200*a*A*b^4*c^4*d^2*e^4*x^3 + 2400*a^2*b^3*B*c^4*d^2*e^4*x^3
 - 14400*a^2*A*b^2*c^5*d^2*e^4*x^3 + 28800*a^3*b*B*c^5*d^2*e^4*x^3 - 180*b^
8*B*c*d*e^5*x^3 + 1200*a*b^6*B*c^2*d*e^5*x^3 + 1800*a^2*b^4*B*c^3*d*e^5*x^3
 + 960*a^2*A*b^3*c^4*d*e^5*x^3 - 25920*a^3*b^2*B*c^4*d*e^5*x^3 + 11520*a^3*
A*b*c^5*d*e^5*x^3 + 13440*a^4*B*c^5*d*e^5*x^3 + 105*b^9*B*e^6*x^3 - 30*A*b^
8*c*e^6*x^3 - 700*a*b^7*B*c*e^6*x^3 + 200*a*A*b^6*c^2*e^6*x^3 - 1050*a^2*b^
5*B*c^2*e^6*x^3 + 300*a^2*A*b^4*c^3*e^6*x^3 + 14160*a^3*b^3*B*c^3*e^6*x^3 -
 4320*a^3*A*b^2*c^4*e^6*x^3 - 19360*a^4*b*B*c^4*e^6*x^3 + 2240*a^4*A*c^5*e^
6*x^3 + 640*b^2*B*c^7*d^6*x^4 - 1280*A*b*c^8*d^6*x^4 - 1440*b^3*B*c^6*d^5*e
*x^4 + 3840*A*b^2*c^7*d^5*e*x^4 - 1920*a*b*B*c^7*d^5*e*x^4 + 600*b^4*B*c^5*
d^4*e^2*x^4 - 3600*A*b^3*c^6*d^4*e^2*x^4 + 7200*a*b^2*B*c^6*d^4*e^2*x^4 - 4
800*a*A*b*c^7*d^4*e^2*x^4 + 200*b^5*B*c^4*d^3*e^3*x^4 + 800*A*b^4*c^5*d^3*e
```

```
^3*x^4 - 4800*a*b^3*B*c^5*d^3*e^3*x^4 + 9600*a*A*b^2*c^6*d^3*e^3*x^4 - 9600
*a^2*b*B*c^6*d^3*e^3*x^4 + 150*A*b^5*c^4*d^2*e^4*x^4 - 300*a*b^4*B*c^4*d^2*
e^4*x^4 - 3600*a*A*b^3*c^5*d^2*e^4*x^4 + 7200*a^2*b^2*B*c^5*d^2*e^4*x^4 - 7
200*a^2*A*b*c^6*d^2*e^4*x^4 + 14400*a^3*B*c^6*d^2*e^4*x^4 - 420*b^7*B*c^2*d
*e^5*x^4 + 4500*a*b^5*B*c^3*d*e^5*x^4 - 120*a*A*b^4*c^4*d*e^5*x^4 - 14400*a
^2*b^3*B*c^4*d*e^5*x^4 + 2880*a^2*A*b^2*c^5*d*e^5*x^4 + 4800*a^3*b*B*c^5*d*
e^5*x^4 + 5760*a^3*A*c^6*d*e^5*x^4 + 245*b^8*B*c*e^6*x^4 - 70*A*b^7*c^2*e^6
*x^4 - 2625*a*b^6*B*c^2*e^6*x^4 + 750*a*A*b^5*c^3*e^6*x^4 + 8520*a^2*b^4*B*
c^3*e^6*x^4 - 2400*a^2*A*b^3*c^4*e^6*x^4 - 5680*a^3*b^2*B*c^4*e^6*x^4 + 800
*a^3*A*b*c^5*e^6*x^4 - 5760*a^4*B*c^5*e^6*x^4 + 256*b*B*c^8*d^6*x^5 - 512*A
*c^9*d^6*x^5 - 576*b^2*B*c^7*d^5*e*x^5 + 1536*A*b*c^8*d^5*e*x^5 - 768*a*B*c
^8*d^5*e*x^5 + 240*b^3*B*c^6*d^4*e^2*x^5 - 1440*A*b^2*c^7*d^4*e^2*x^5 + 288
0*a*b*B*c^7*d^4*e^2*x^5 - 1920*a*A*c^8*d^4*e^2*x^5 + 80*b^4*B*c^5*d^3*e^3*x
^5 + 320*A*b^3*c^6*d^3*e^3*x^5 - 1920*a*b^2*B*c^6*d^3*e^3*x^5 + 3840*a*A*b*
c^7*d^3*e^3*x^5 - 3840*a^2*B*c^7*d^3*e^3*x^5 + 90*b^5*B*c^4*d^2*e^4*x^5 + 6
0*A*b^4*c^5*d^2*e^4*x^5 - 1200*a*b^3*B*c^5*d^2*e^4*x^5 - 1440*a*A*b^2*c^6*d
^2*e^4*x^5 + 7200*a^2*b*B*c^6*d^2*e^4*x^5 - 2880*a^2*A*c^7*d^2*e^4*x^5 - 27
6*b^6*B*c^3*d*e^5*x^5 + 36*A*b^5*c^4*d*e^5*x^5 + 3096*a*b^4*B*c^4*d*e^5*x^5
 - 480*a*A*b^3*c^5*d*e^5*x^5 - 10944*a^2*b^2*B*c^5*d*e^5*x^5 + 2880*a^2*A*b
*c^6*d*e^5*x^5 + 8832*a^3*B*c^6*d*e^5*x^5 + 161*b^7*B*c^2*e^6*x^5 - 46*A*b^
6*c^3*e^6*x^5 - 1842*a*b^5*B*c^3*e^6*x^5 + 516*a*A*b^4*c^4*e^6*x^5 + 6864*a
^2*b^3*B*c^4*e^6*x^5 - 1824*a^2*A*b^2*c^5*e^6*x^5 - 8032*a^3*b*B*c^5*e^6*x^
5 + 1472*a^3*A*c^6*e^6*x^5 + 15*b^6*B*c^3*e^6*x^6 - 180*a*b^4*B*c^4*e^6*x^6
 + 720*a^2*b^2*B*c^5*e^6*x^6 - 960*a^3*B*c^6*e^6*x^6)/(c^4*(-b^2 + 4*a*c)^3
*(a + b*x + c*x^2)^(5/2)) + ((-12*B*c*d*e^5 + 7*b*B*e^6 - 2*A*c*e^6)*Log[b*
c^4 + 2*c^5*x - 2*c^(9/2)*Sqrt[a + b*x + c*x^2]])/(2*c^(9/2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.49, size = 3352, normalized size = 2.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*((((((15*(B*b^6*c^3*e^6 - 12*B*a*b^4*c^4*e^6 + 48*B*a^2*b^2*c^5*e^6 -
64*B*a^3*c^6*e^6)*x/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7)
+ (256*B*b*c^8*d^6 - 512*A*c^9*d^6 - 576*B*b^2*c^7*d^5*e - 768*B*a*c^8*d^5*
e + 1536*A*b*c^8*d^5*e + 240*B*b^3*c^6*d^4*e^2 + 2880*B*a*b*c^7*d^4*e^2 - 1
440*A*b^2*c^7*d^4*e^2 - 1920*A*a*c^8*d^4*e^2 + 80*B*b^4*c^5*d^3*e^3 - 1920*
B*a*b^2*c^6*d^3*e^3 + 320*A*b^3*c^6*d^3*e^3 - 3840*B*a^2*c^7*d^3*e^3 + 3840
*A*a*b*c^7*d^3*e^3 + 90*B*b^5*c^4*d^2*e^4 - 1200*B*a*b^3*c^5*d^2*e^4 + 60*A
*b^4*c^5*d^2*e^4 + 7200*B*a^2*b*c^6*d^2*e^4 - 1440*A*a*b^2*c^6*d^2*e^4 - 28
80*A*a^2*c^7*d^2*e^4 - 276*B*b^6*c^3*d*e^5 + 3096*B*a*b^4*c^4*d*e^5 + 36*A*
b^5*c^4*d*e^5 - 10944*B*a^2*b^2*c^5*d*e^5 - 480*A*a*b^3*c^5*d*e^5 + 8832*B*
a^3*c^6*d*e^5 + 2880*A*a^2*b*c^6*d*e^5 + 161*B*b^7*c^2*e^6 - 1842*B*a*b^5*c
^3*e^6 - 46*A*b^6*c^3*e^6 + 6864*B*a^2*b^3*c^4*e^6 + 516*A*a*b^4*c^4*e^6 -
8032*B*a^3*b*c^5*e^6 - 1824*A*a^2*b^2*c^5*e^6 + 1472*A*a^3*c^6*e^6)/(b^6*c^
4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x + 5*(128*B*b^2*c^7*d^6 -
 256*A*b*c^8*d^6 - 288*B*b^3*c^6*d^5*e - 384*B*a*b*c^7*d^5*e + 768*A*b^2*c^
7*d^5*e + 120*B*b^4*c^5*d^4*e^2 + 1440*B*a*b^2*c^6*d^4*e^2 - 720*A*b^3*c^6*
d^4*e^2 - 960*A*a*b*c^7*d^4*e^2 + 40*B*b^5*c^4*d^3*e^3 - 960*B*a*b^3*c^5*d^
3*e^3 + 160*A*b^4*c^5*d^3*e^3 - 1920*B*a^2*b*c^6*d^3*e^3 + 1920*A*a*b^2*c^6
```

*d^3*e^3 - 60*B*a*b^4*c^4*d^2*e^4 + 30*A*b^5*c^4*d^2*e^4 + 1440*B*a^2*b^2*c^5*d^2*e^4 - 720*A*a*b^3*c^5*d^2*e^4 + 2880*B*a^3*c^6*d^2*e^4 - 1440*A*a^2*b*c^6*d^2*e^4 - 84*B*b^7*c^2*d*e^5 + 900*B*a*b^5*c^3*d*e^5 - 2880*B*a^2*b^3*c^4*d*e^5 - 24*A*a*b^4*c^4*d*e^5 + 960*B*a^3*b*c^5*d*e^5 + 576*A*a^2*b^2*c^5*d*e^5 + 1152*A*a^3*c^6*d*e^5 + 49*B*b^8*c*e^6 - 525*B*a*b^6*c^2*e^6 - 14*A*b^7*c^2*e^6 + 1704*B*a^2*b^4*c^3*e^6 + 150*A*a*b^5*c^3*e^6 - 1136*B*a^3*b^2*c^4*e^6 - 480*A*a^2*b^3*c^4*e^6 - 1152*B*a^4*c^5*e^6 + 160*A*a^3*b*c^5*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x + 5*(96*B*b^3*c^6*d^6 + 128*B*a*b*c^7*d^6 - 192*A*b^2*c^7*d^6 - 256*A*a*c^8*d^6 - 216*B*b^4*c^5*d^5*e - 576*B*a*b^2*c^6*d^5*e + 576*A*b^3*c^6*d^5*e - 384*B*a^2*c^7*d^5*e + 768*A*a*b*c^7*d^5*e + 90*B*b^5*c^4*d^4*e^2 + 1200*B*a*b^3*c^5*d^4*e^2 - 540*A*b^4*c^5*d^4*e^2 + 1440*B*a^2*b*c^6*d^4*e^2 - 1440*A*a*b^2*c^6*d^4*e^2 - 960*A*a^2*c^7*d^4*e^2 - 320*B*a*b^4*c^4*d^3*e^3 + 120*A*b^5*c^4*d^3*e^3 - 3840*B*a^2*b^2*c^5*d^3*e^3 + 1600*A*a*b^3*c^5*d^3*e^3 + 1920*A*a^2*b*c^6*d^3*e^3 + 480*B*a^2*b^3*c^4*d^2*e^4 - 240*A*a*b^4*c^4*d^2*e^4 + 5760*B*a^3*b*c^5*d^2*e^4 - 2880*A*a^2*b^2*c^5*d^2*e^4 - 36*B*b^8*c*d*e^5 + 240*B*a*b^6*c^2*d*e^5 + 360*B*a^2*b^4*c^3*d*e^5 - 5184*B*a^3*b^2*c^4*d*e^5 + 192*A*a^2*b^3*c^4*d*e^5 + 2688*B*a^4*c^5*d*e^5 + 2304*A*a^3*b*c^5*d*e^5 + 21*B*b^9*e^6 - 140*B*a*b^7*c*e^6 - 6*A*b^8*c*e^6 - 210*B*a^2*b^5*c^2*e^6 + 40*A*a*b^6*c^2*e^6 + 2832*B*a^3*b^3*c^3*e^6 + 60*A*a^2*b^4*c^3*e^6 - 3872*B*a^4*b*c^4*e^6 - 864*A*a^3*b^2*c^4*e^6 + 448*A*a^4*c^5*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x + 5*(16*B*b^4*c^5*d^6 + 192*B*a*b^2*c^6*d^6 - 32*A*b^3*c^6*d^6 - 384*A*a*b*c^7*d^6 - 36*B*b^5*c^4*d^5*e - 480*B*a*b^3*c^5*d^5*e + 96*A*b^4*c^5*d^5*e - 576*B*a^2*b*c^6*d^5*e + 1152*A*a*b^2*c^6*d^5*e + 540*B*a*b^4*c^4*d^4*e^2 - 90*A*b^5*c^4*d^4*e^2 + 1440*B*a^2*b^2*c^5*d^4*e^2 - 1200*A*a*b^3*c^5*d^4*e^2 + 960*B*a^3*c^6*d^4*e^2 - 1440*A*a^2*b*c^6*d^4*e^2 - 1920*B*a^2*b^3*c^4*d^3*e^3 + 720*A*a*b^4*c^4*d^3*e^3 - 2560*B*a^3*b*c^5*d^3*e^3 + 1920*A*a^2*b^2*c^5*d^3*e^3 + 1280*A*a^3*c^6*d^3*e^3 + 2880*B*a^3*b^2*c^4*d^2*e^4 - 1440*A*a^2*b^3*c^4*d^2*e^4 + 3840*B*a^4*c^5*d^2*e^4 - 1920*A*a^3*b*c^5*d^2*e^4 - 108*B*a*b^7*c*d*e^5 + 1116*B*a^2*b^5*c^2*d*e^5 - 3360*B*a^3*b^3*c^3*d*e^5 - 576*B*a^4*b*c^4*d*e^5 + 1152*A*a^3*b^2*c^4*d*e^5 + 1536*A*a^4*c^5*d*e^5 + 63*B*a*b^8*e^6 - 651*B*a^2*b^6*c*e^6 - 18*A*a*b^7*c*e^6 + 1960*B*a^3*b^4*c^2*e^6 + 186*A*a^2*b^5*c^2*e^6 - 816*B*a^4*b^2*c^3*e^6 - 560*A*a^3*b^3*c^3*e^6 - 1536*B*a^5*c^4*e^6 - 96*A*a^4*b*c^4*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x - 5*(2*B*b^5*c^4*d^6 - 48*B*a*b^3*c^5*d^6 - 4*A*b^4*c^5*d^6 - 96*B*a^2*b*c^6*d^6 + 96*A*a*b^2*c^6*d^6 + 192*A*a^2*c^7*d^6 + 48*B*a*b^4*c^4*d^5*e + 12*A*b^5*c^4*d^5*e + 576*B*a^2*b^2*c^5*d^5*e - 288*A*a*b^3*c^5*d^5*e - 576*A*a^2*b*c^6*d^5*e - 720*B*a^2*b^3*c^4*d^4*e^2 + 120*A*a*b^4*c^4*d^4*e^2 - 960*B*a^3*b*c^5*d^4*e^2 + 1440*A*a^2*b^2*c^5*d^4*e^2 + 2560*B*a^3*b^2*c^4*d^3*e^3 - 960*A*a^2*b^3*c^4*d^3*e^3 - 1280*A*a^3*b*c^5*d^3*e^3 - 3840*B*a^4*b*c^4*d^2*e^4 + 1920*A*a^3*b^2*c^4*d^2*e^4 + 108*B*a^2*b^6*c*d*e^5 - 1176*B*a^3*b^4*c^2*d*e^5 + 4032*B*a^4*b^2*c^3*d*e^5 - 1152*B*a^5*c^4*d*e^5 - 1536*A*a^4*b*c^4*d*e^5 - 63*B*a^2*b^7*e^6 + 686*B*a^3*b^5*c*e^6 + 18*A*a^2*b^6*c*e^6 - 2352*B*a^4*b^3*c^2*e^6 - 196*A*a^3*b^4*c^2*e^6 + 2208*B*a^5*b*c^3*e^6 + 672*A*a^4*b^2*c^3*e^6 - 192*A*a^5*c^4*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x - (4*B*a*b^4*c^4*d^6 + 6*A*b^5*c^4*d^6 - 96*B*a^2*b^2*c^5*d^6 - 80*A*a*b^3*c^5*d^6 - 192*B*a^3*c^6*d^6 + 480*A*a^2*b*c^6*d^6 + 96*B*a^2*b^3*c^4*d^5*e + 24*A*a*b^4*c^4*d^5*e + 1152*B*a^3*b*c^5*d^5*e - 576*A*a^2*b^2*c^5*d^5*e - 1152*A*a^3*c^6*d^5*e - 1440*B*a^3*b^2*c^4*d^4*e^2 + 240*A*a^2*b^3*c^4*d^4*e^2 - 1920*B*a^4*c^5*d^4*e^2 + 2880*A*a^3*b*c^5*d^4*e^2 + 5120*B*a^4*b*c^4*d^3*e^3 - 1920*A*a^3*b^2*c^4*d^3*e^3 - 2560*A*a^4*c^5*d^3*e^3 - 7680*B*a^5*c^4*d^2*e^4 + 3840*A*a^4*b*c^4*d^2*e^4 + 180*B*a^3*b^5*c*d*e^5 - 1920*B*a^4*b^3*c^2*d*e^5 + 6336*B*a^5*b*c^3*d*e^5 - 3072*A*a^5*c^4*d*e^5 - 105*B*a^3*b^6*e^6 + 1120*B*a^4*b^4*c*e^6 + 30*A*a^3*b^5*c*e^6 - 3696*B*a^5*b^2*c^2*e^6 - 320*A*a^4*b^3*c^2*e^6 + 3072*B*a^6*c^3*e^6 + 1056*A*a^5*b*c^3*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))/(c*x^2 + b*x + a)^(5/2) - 1/2*(12*B*c*d*e^5 - 7*B*b*e^6 + 2*A*c*e^6)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)

maple [B] time = 0.05, size = 11346, normalized size = 8.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^6}{\left(c\,x^2+b\,x+a\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**6/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2247 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=942

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{cx^2+bx+a}}\right)e^5}{c^{7/2}}+\frac{2\left(5Be^3\left(cd^2-3ae^2\right)b^5+4Bc^2d^3e^2b^4-8ce\left(16Ac^2ed^3+B\left(11c^2d^4+7ace^2d^2-20a^2\right.\right.\right.}{}$$

Rubi [A] time = 0.96, antiderivative size = 942, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 777, 621, 206}

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(d + e*x)^4*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(5*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) + (2*(d + e*x)^2*(b^3*B*e*(3*c*d^2 - 5*a*e^2) - 4*b^2*c*d*(2*B*c*d^2 +
4*A*c*d*e + a*B*e^2) - 16*a*c^2*e*(5*a*B*d*e + 2*A*(c*d^2 + a*e^2)) + 4*b*c
*(9*a*B*e*(c*d^2 + a*e^2) + 4*A*c*d*(c*d^2 + 3*a*e^2)) + (2*b^3*B*c*d*e^2 -
 5*b^4*B*e^3 + 2*b^2*c*e*(7*B*c*d^2 + 8*A*c*d*e + 19*a*B*e^2) - 8*b*c^2*(2*
B*c*d^3 + 6*A*c*d^2*e + 7*a*B*d*e^2 + 2*a*A*e^3) + 8*c^2*(5*a*B*e*(c*d^2 -
a*e^2) + 4*A*c*d*(c*d^2 + a*e^2)))*x))/(15*c^2*(b^2 - 4*a*c)^2*(a + b*x + c
*x^2)^(3/2)) + (2*(4*b^4*B*c^2*d^3*e^2 + 5*b^5*B*e^3*(c*d^2 - 3*a*e^2) + 32
*b^2*c^3*d^2*(2*B*c*d^3 + 8*A*c*d^2*e + 17*a*B*d*e^2 + 16*a*A*e^3) + 64*a*c
^3*e*(4*A*(c*d^2 + a*e^2)^2 + 5*a*B*d*e*(c*d^2 + 4*a*e^2)) - 8*b^3*c*e*(16*
A*c^2*d^3*e + B*(11*c^2*d^4 + 7*a*c*d^2*e^2 - 20*a^2*e^4)) - 16*b*c^2*(8*A*
c*d*(c^2*d^4 + 6*a*c*d^2*e^2 + 5*a^2*e^4) + a*B*e*(18*c^2*d^4 + 71*a*c*d^2*
e^2 + 33*a^2*e^4)) + (10*b^5*B*c*d*e^4 - 15*b^6*B*e^5 + 2*b^4*B*c*e^3*(3*c*
d^2 + 85*a*e^2) + 16*b^3*c^2*d*e^2*(6*B*c*d^2 + 8*A*c*d*e - 7*a*B*e^2) - 32
*c^3*(8*A*c*d*(c*d^2 + a*e^2)^2 + 5*a*B*e*(2*c^2*d^4 + 5*a*c*d^2*e^2 - 3*a^
2*e^4)) - 16*b^2*c^2*e*(16*A*c*d*e*(2*c*d^2 + a*e^2) + B*(15*c^2*d^4 + 29*a
*c*d^2*e^2 + 39*a^2*e^4)) + 32*b*c^3*(4*A*e*(5*c^2*d^4 + 6*a*c*d^2*e^2 + a^
2*e^4) + B*(4*c^2*d^5 + 28*a*c*d^3*e^2 + 29*a^2*d*e^4)))*x))/(15*c^3*(b^2 -
 4*a*c)^3*Sqrt[a + b*x + c*x^2]) + (B*e^5*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + b*x + c*x^2])])/c^(7/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
```

```
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Mathematica [A] time = 9.19, size = 1608, normalized size = 1.71

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] ((2*Sqrt[c]*(A*c^3*(10*b^4*(a*e - c*d*x)*(d^4 + 20*d^3*e*x - 90*d^2*e^2*x^2
 + 20*d*e^3*x^3 + e^4*x^4) + b^5*(3*d^5 + 25*d^4*e*x + 150*d^3*e^2*x^2 - 15
0*d^2*e^3*x^3 - 25*d*e^4*x^4 - 3*e^5*x^5) + 40*b^3*(d - e*x)*(2*a^2*e^2*(d^
2 - 14*d*e*x + e^2*x^2) + 2*c^2*d^2*x^2*(d^2 - 14*d*e*x + e^2*x^2) - a*c*(d
 - e*x)^2*(d^2 + 18*d*e*x + e^2*x^2)) + 80*b*(d - e*x)*(8*a^4*e^4 + 8*c^4*d
^4*x^4 + 3*a^2*c^2*(d - e*x)^4 + 4*a^3*c*e^2*(3*d^2 - 2*d*e*x + 3*e^2*x^2)
+ 4*a*c^3*d^2*x^2*(3*d^2 - 2*d*e*x + 3*e^2*x^2)) + 80*b^2*(-2*a^3*e^3*(3*d^
```

```
2 - 10*d*e*x + 3*e^2*x^2) + 2*c^3*d^3*x^3*(3*d^2 - 10*d*e*x + 3*e^2*x^2) -
3*a^2*c*e*(d^4 - 10*d^3*e*x + 10*d^2*e^2*x^2 - 10*d*e^3*x^3 + e^4*x^4) + 3*
a*c^2*d*x*(d^4 - 10*d^3*e*x + 10*d^2*e^2*x^2 - 10*d*e^3*x^3 + e^4*x^4)) + 3
2*(-8*a^5*e^5 + 8*c^5*d^5*x^5 - 20*a^4*c*e^3*(d^2 + e^2*x^2) + 20*a*c^4*d^3
*x^3*(d^2 + e^2*x^2) - 5*a^3*c^2*e*(3*d^4 + 10*d^2*e^2*x^2 + 3*e^4*x^4) + 5
*a^2*c^3*d*x*(3*d^4 + 10*d^2*e^2*x^2 + 3*e^4*x^4))) + B*(-16*a^5*c^2*e^4*(8
0*c*d - 33*b*e + 30*c*e*x) - 80*a^4*c*e^2*(2*b^3*e^3 - 21*b^2*c*e^3*x + b*c
^2*e*(-16*d^2 + 40*d*e*x - 3*e^2*x^2) + 2*c^3*(4*d^3 + 20*d*e^2*x^2 + 7*e^3
*x^3)) + b*x*(15*b^7*e^5*x^2 + 35*b^6*c*e^5*x^3 - 128*c^7*d^5*x^4 + 23*b^5*
c^2*e^5*x^4 + 80*b*c^6*d^4*x^3*(-4*d + 3*e*x) - 40*b^2*c^5*d^3*x^2*(6*d^2 -
 15*d*e*x + 2*e^2*x^2) - 10*b^3*c^4*d^2*x*(4*d^3 - 45*d^2*e*x + 20*d*e^2*x^
2 + 2*e^3*x^3) + 5*b^4*c^3*d*(d^4 + 15*d^3*e*x - 30*d^2*e^2*x^2 - 10*d*e^3*
x^3 - 3*e^4*x^4)) + a*(45*b^7*e^5*x^2 - 100*b^6*c*e^5*x^3 - 375*b^5*c^2*e^5
*x^4 + 320*c^7*d^4*e*x^5 - 160*b*c^6*d^3*x^3*(2*d^2 - 5*d*e*x + 6*e^2*x^2)
+ 240*b^2*c^5*d^2*x^2*(-2*d^3 + 5*d^2*e*x - 10*d*e^2*x^2 + 2*e^3*x^3) + 40*
b^3*c^4*d*x*(-3*d^4 + 25*d^3*e*x - 50*d^2*e^2*x^2 + 30*d*e^3*x^3 + 5*e^4*x^
4) + 2*b^4*c^3*(d^5 + 50*d^4*e*x - 450*d^3*e^2*x^2 + 200*d^2*e^3*x^3 + 25*d
*e^4*x^4 - 129*e^5*x^5)) + a^2*(45*b^6*e^5*x - 465*b^5*c*e^5*x^2 - 150*b^4*
c^2*e^5*x^3 + 160*c^6*d^2*e*x^3*(5*d^2 + 6*e^2*x^2) - 240*b*c^5*d*x*(d^4 -
5*d^3*e*x + 10*d^2*e^2*x^2 - 10*d*e^3*x^3 + 5*e^4*x^4) + 40*b^3*c^3*e*(d^4
- 30*d^3*e*x + 60*d^2*e^2*x^2 - 10*d*e^3*x^3 + 30*e^4*x^4) - 48*b^2*c^4*(d^
5 - 25*d^4*e*x + 50*d^3*e^2*x^2 - 100*d^2*e^3*x^3 + 25*d*e^4*x^4 - 19*e^5*x
^5)) - a^3*(-15*b^5*e^5 + 490*b^4*c*e^5*x - 1400*b^3*c^2*e^5*x^2 + 80*b^2*c
^3*e^2*(6*d^3 - 40*d^2*e*x + 30*d*e^2*x^2 - 27*e^3*x^3) + 80*b*c^4*e*(-6*d^
4 + 20*d^3*e*x - 40*d^2*e^2*x^2 + 60*d*e^3*x^3 + 5*e^4*x^4) + 32*c^5*(3*d^5
 + 50*d^3*e^2*x^2 + 75*d*e^4*x^4 + 23*e^5*x^5)))))/(a + x*(b + c*x))^(5/2)
- 15*B*(b^2 - 4*a*c)^3*e^5*Log[b + 2*c*x + 2*Sqrt[c]*Sqrt[a + x*(b + c*x)]]
)/(15*c^(7/2)*(-b^2 + 4*a*c)^3)
```

IntegrateAlgebraic [B] time = 30.31, size = 2751, normalized size = 2.92

Result too large to show

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(3*A*b^5*c^3*d^5 + 2*a*b^4*B*c^3*d^5 - 40*a*A*b^3*c^4*d^5 - 48*a^2*b^2*B
*c^4*d^5 + 240*a^2*A*b*c^5*d^5 - 96*a^3*B*c^5*d^5 + 10*a*A*b^4*c^3*d^4*e +
40*a^2*b^3*B*c^3*d^4*e - 240*a^2*A*b^2*c^4*d^4*e + 480*a^3*b*B*c^4*d^4*e -
480*a^3*A*c^5*d^4*e + 80*a^2*A*b^3*c^3*d^3*e^2 - 480*a^3*b^2*B*c^3*d^3*e^2
+ 960*a^3*A*b*c^4*d^3*e^2 - 640*a^4*B*c^4*d^3*e^2 - 480*a^3*A*b^2*c^3*d^2*e
^3 + 1280*a^4*b*B*c^3*d^2*e^3 - 640*a^4*A*c^4*d^2*e^3 + 640*a^4*A*b*c^3*d*e
^4 - 1280*a^5*B*c^3*d*e^4 + 15*a^3*b^5*B*e^5 - 160*a^4*b^3*B*c*e^5 + 528*a^
5*b*B*c^2*e^5 - 256*a^5*A*c^3*e^5 + 5*b^5*B*c^3*d^5*x - 10*A*b^4*c^4*d^5*x
- 120*a*b^3*B*c^4*d^5*x + 240*a*A*b^2*c^5*d^5*x - 240*a^2*b*B*c^5*d^5*x + 4
80*a^2*A*c^6*d^5*x + 25*A*b^5*c^3*d^4*e*x + 100*a*b^4*B*c^3*d^4*e*x - 600*a
*A*b^3*c^4*d^4*e*x + 1200*a^2*b^2*B*c^4*d^4*e*x - 1200*a^2*A*b*c^5*d^4*e*x
+ 200*a*A*b^4*c^3*d^3*e^2*x - 1200*a^2*b^3*B*c^3*d^3*e^2*x + 2400*a^2*A*b^2
*c^4*d^3*e^2*x - 1600*a^3*b*B*c^4*d^3*e^2*x - 1200*a^2*A*b^3*c^3*d^2*e^3*x
+ 3200*a^3*b^2*B*c^3*d^2*e^3*x - 1600*a^3*A*b*c^4*d^2*e^3*x + 1600*a^3*A*b^
2*c^3*d*e^4*x - 3200*a^4*b*B*c^3*d*e^4*x + 45*a^2*b^6*B*e^5*x - 490*a^3*b^4
*B*c*e^5*x + 1680*a^4*b^2*B*c^2*e^5*x - 640*a^4*A*b*c^3*e^5*x - 480*a^5*B*c
^3*e^5*x - 40*b^4*B*c^4*d^5*x^2 + 80*A*b^3*c^5*d^5*x^2 - 480*a*b^2*B*c^5*d^
5*x^2 + 960*a*A*b*c^6*d^5*x^2 + 75*b^5*B*c^3*d^4*e*x^2 - 200*A*b^4*c^4*d^4*
e*x^2 + 1000*a*b^3*B*c^4*d^4*e*x^2 - 2400*a*A*b^2*c^5*d^4*e*x^2 + 1200*a^2*
b*B*c^5*d^4*e*x^2 + 150*A*b^5*c^3*d^3*e^2*x^2 - 900*a*b^4*B*c^3*d^3*e^2*x^2
 + 2000*a*A*b^3*c^4*d^3*e^2*x^2 - 2400*a^2*b^2*B*c^4*d^3*e^2*x^2 + 2400*a^2
*A*b*c^5*d^3*e^2*x^2 - 1600*a^3*B*c^5*d^3*e^2*x^2 - 900*a*A*b^4*c^3*d^2*e^3
*x^2 + 2400*a^2*b^3*B*c^3*d^2*e^3*x^2 - 2400*a^2*A*b^2*c^4*d^2*e^3*x^2 + 32
00*a^3*b*B*c^4*d^2*e^3*x^2 - 1600*a^3*A*c^5*d^2*e^3*x^2 + 1200*a^2*A*b^3*c^
```

```
3*d*e^4*x^2 - 2400*a^3*b^2*B*c^3*d*e^4*x^2 + 1600*a^3*A*b*c^4*d*e^4*x^2 - 3
200*a^4*B*c^4*d*e^4*x^2 + 45*a*b^7*B*e^5*x^2 - 465*a^2*b^5*B*c*e^5*x^2 + 14
00*a^3*b^3*B*c^2*e^5*x^2 - 480*a^3*A*b^2*c^3*e^5*x^2 + 240*a^4*b*B*c^3*e^5*
x^2 - 640*a^4*A*c^4*e^5*x^2 - 240*b^3*B*c^5*d^5*x^3 + 480*A*b^2*c^6*d^5*x^3
 - 320*a*b*B*c^6*d^5*x^3 + 640*a*A*c^7*d^5*x^3 + 450*b^4*B*c^4*d^4*e*x^3 -
1200*A*b^3*c^5*d^4*e*x^3 + 1200*a*b^2*B*c^5*d^4*e*x^3 - 1600*a*A*b*c^6*d^4*
e*x^3 + 800*a^2*B*c^6*d^4*e*x^3 - 150*b^5*B*c^3*d^3*e^2*x^3 + 900*A*b^4*c^4
*d^3*e^2*x^3 - 2000*a*b^3*B*c^4*d^3*e^2*x^3 + 2400*a*A*b^2*c^5*d^3*e^2*x^3
- 2400*a^2*b*B*c^5*d^3*e^2*x^3 + 1600*a^2*A*c^6*d^3*e^2*x^3 - 150*A*b^5*c^3
*d^2*e^3*x^3 + 400*a*b^4*B*c^3*d^2*e^3*x^3 - 2000*a*A*b^3*c^4*d^2*e^3*x^3 +
 4800*a^2*b^2*B*c^4*d^2*e^3*x^3 - 2400*a^2*A*b*c^5*d^2*e^3*x^3 + 200*a*A*b^
4*c^3*d*e^4*x^3 - 400*a^2*b^3*B*c^3*d*e^4*x^3 + 2400*a^2*A*b^2*c^4*d*e^4*x^
3 - 4800*a^3*b*B*c^4*d*e^4*x^3 + 15*b^8*B*e^5*x^3 - 100*a*b^6*B*c*e^5*x^3 -
 150*a^2*b^4*B*c^2*e^5*x^3 - 80*a^2*A*b^3*c^3*e^5*x^3 + 2160*a^3*b^2*B*c^3*
e^5*x^3 - 960*a^3*A*b*c^4*e^5*x^3 - 1120*a^4*B*c^4*e^5*x^3 - 320*b^2*B*c^6*
d^5*x^4 + 640*A*b*c^7*d^5*x^4 + 600*b^3*B*c^5*d^4*e*x^4 - 1600*A*b^2*c^6*d^
4*e*x^4 + 800*a*b*B*c^6*d^4*e*x^4 - 200*b^4*B*c^4*d^3*e^2*x^4 + 1200*A*b^3*
c^5*d^3*e^2*x^4 - 2400*a*b^2*B*c^5*d^3*e^2*x^4 + 1600*a*A*b*c^6*d^3*e^2*x^4
 - 50*b^5*B*c^3*d^2*e^3*x^4 - 200*A*b^4*c^4*d^2*e^3*x^4 + 1200*a*b^3*B*c^4*
d^2*e^3*x^4 - 2400*a*A*b^2*c^5*d^2*e^3*x^4 + 2400*a^2*b*B*c^5*d^2*e^3*x^4 -
 25*A*b^5*c^3*d*e^4*x^4 + 50*a*b^4*B*c^3*d*e^4*x^4 + 600*a*A*b^3*c^4*d*e^4*
x^4 - 1200*a^2*b^2*B*c^4*d*e^4*x^4 + 1200*a^2*A*b*c^5*d*e^4*x^4 - 2400*a^3*
B*c^5*d*e^4*x^4 + 35*b^7*B*c*e^5*x^4 - 375*a*b^5*B*c^2*e^5*x^4 + 10*a*A*b^4
*c^3*e^5*x^4 + 1200*a^2*b^3*B*c^3*e^5*x^4 - 240*a^2*A*b^2*c^4*e^5*x^4 - 400
*a^3*b*B*c^4*e^5*x^4 - 480*a^3*A*c^5*e^5*x^4 - 128*b*B*c^7*d^5*x^5 + 256*A*
c^8*d^5*x^5 + 240*b^2*B*c^6*d^4*e*x^5 - 640*A*b*c^7*d^4*e*x^5 + 320*a*B*c^7
*d^4*e*x^5 - 80*b^3*B*c^5*d^3*e^2*x^5 + 480*A*b^2*c^6*d^3*e^2*x^5 - 960*a*b
*B*c^6*d^3*e^2*x^5 + 640*a*A*c^7*d^3*e^2*x^5 - 20*b^4*B*c^4*d^2*e^3*x^5 - 8
0*A*b^3*c^5*d^2*e^3*x^5 + 480*a*b^2*B*c^5*d^2*e^3*x^5 - 960*a*A*b*c^6*d^2*e
^3*x^5 + 960*a^2*B*c^6*d^2*e^3*x^5 - 15*b^5*B*c^3*d*e^4*x^5 - 10*A*b^4*c^4*
d*e^4*x^5 + 200*a*b^3*B*c^4*d*e^4*x^5 + 240*a*A*b^2*c^5*d*e^4*x^5 - 1200*a^
2*b*B*c^5*d*e^4*x^5 + 480*a^2*A*c^6*d*e^4*x^5 + 23*b^6*B*c^2*e^5*x^5 - 3*A*
b^5*c^3*e^5*x^5 - 258*a*b^4*B*c^3*e^5*x^5 + 40*a*A*b^3*c^4*e^5*x^5 + 912*a^
2*b^2*B*c^4*e^5*x^5 - 240*a^2*A*b*c^5*e^5*x^5 - 736*a^3*B*c^5*e^5*x^5))/(15
*c^3*(-b^2 + 4*a*c)^3*(a + b*x + c*x^2)^(5/2)) - (B*e^5*Log[b*c^3 + 2*c^4*x
 - 2*c^(7/2)*Sqrt[a + b*x + c*x^2]])/c^(7/2)
```

fricas [B] time = 80.94, size = 5253, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] [1/30*(15*((B*b^6*c^3 - 12*B*a*b^4*c^4 + 48*B*a^2*b^2*c^5 - 64*B*a^3*c^6)*e
^5*x^6 + 3*(B*b^7*c^2 - 12*B*a*b^5*c^3 + 48*B*a^2*b^3*c^4 - 64*B*a^3*b*c^5)
*e^5*x^5 + 3*(B*b^8*c - 11*B*a*b^6*c^2 + 36*B*a^2*b^4*c^3 - 16*B*a^3*b^2*c^
4 - 64*B*a^4*c^5)*e^5*x^4 + (B*b^9 - 6*B*a*b^7*c - 24*B*a^2*b^5*c^2 + 224*B
*a^3*b^3*c^3 - 384*B*a^4*b*c^4)*e^5*x^3 + 3*(B*a*b^8 - 11*B*a^2*b^6*c + 36*
B*a^3*b^4*c^2 - 16*B*a^4*b^2*c^3 - 64*B*a^5*c^4)*e^5*x^2 + 3*(B*a^2*b^7 - 1
2*B*a^3*b^5*c + 48*B*a^4*b^3*c^2 - 64*B*a^5*b*c^3)*e^5*x + (B*a^3*b^6 - 12*
B*a^4*b^4*c + 48*B*a^5*b^2*c^2 - 64*B*a^6*c^3)*e^5)*sqrt(c)*log(-8*c^2*x^2
- 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*
(640*(2*B*a^5 - A*a^4*b)*c^4*d*e^4 + (48*(2*B*a^3 - 5*A*a^2*b)*c^6 + 8*(6*B
*a^2*b^2 + 5*A*a*b^3)*c^5 - (2*B*a*b^4 + 3*A*b^5)*c^4)*d^5 + 10*(48*A*a^3*c
^6 - 24*(2*B*a^3*b - A*a^2*b^2)*c^5 - (4*B*a^2*b^3 + A*a*b^4)*c^4)*d^4*e +
80*(4*(2*B*a^4 - 3*A*a^3*b)*c^5 + (6*B*a^3*b^2 - A*a^2*b^3)*c^4)*d^3*e^2 +
160*(4*A*a^4*c^5 - (8*B*a^4*b - 3*A*a^3*b^2)*c^4)*d^2*e^3 - (15*B*a^3*b^5*c
 - 160*B*a^4*b^3*c^2 + 528*B*a^5*b*c^3 - 256*A*a^5*c^4)*e^5 + (128*(B*b*c^8
 - 2*A*c^9)*d^5 - 80*(3*B*b^2*c^7 + 4*(B*a - 2*A*b)*c^8)*d^4*e + 80*(B*b^3*
```

c^6 - 8*A*a*c^8 + 6*(2*B*a*b - A*b^2)*c^7)*d^3*e^2 + 20*(B*b^4*c^5 - 48*(B*
a^2 - A*a*b)*c^7 - 4*(6*B*a*b^2 - A*b^3)*c^6)*d^2*e^3 + 5*(3*B*b^5*c^4 - 96
*A*a^2*c^7 + 48*(5*B*a^2*b - A*a*b^2)*c^6 - 2*(20*B*a*b^3 - A*b^4)*c^5)*d*e
^4 - (23*B*b^6*c^3 - 16*(46*B*a^3 + 15*A*a^2*b)*c^6 + 8*(114*B*a^2*b^2 + 5*
A*a*b^3)*c^5 - 3*(86*B*a*b^4 + A*b^5)*c^4)*e^5)*x^5 + 5*(64*(B*b^2*c^7 - 2*
A*b*c^8)*d^5 - 40*(3*B*b^3*c^6 + 4*(B*a*b - 2*A*b^2)*c^7)*d^4*e + 40*(B*b^4
*c^5 - 8*A*a*b*c^7 + 6*(2*B*a*b^2 - A*b^3)*c^6)*d^3*e^2 + 10*(B*b^5*c^4 - 4
8*(B*a^2*b - A*a*b^2)*c^6 - 4*(6*B*a*b^3 - A*b^4)*c^5)*d^2*e^3 + 5*(48*(2*B
*a^3 - A*a^2*b)*c^6 + 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (2*B*a*b^4 - A*b^5)*
c^4)*d*e^4 - (7*B*b^7*c^2 - 75*B*a*b^5*c^3 - 96*A*a^3*c^6 - 16*(5*B*a^3*b +
 3*A*a^2*b^2)*c^5 + 2*(120*B*a^2*b^3 + A*a*b^4)*c^4)*e^5)*x^4 + 5*(16*(3*B*
b^3*c^6 - 8*A*a*c^8 + 2*(2*B*a*b - 3*A*b^2)*c^7)*d^5 - 10*(9*B*b^4*c^5 + 16
*(B*a^2 - 2*A*a*b)*c^7 + 24*(B*a*b^2 - A*b^3)*c^6)*d^4*e + 10*(3*B*b^5*c^4
 - 32*A*a^2*c^7 + 48*(B*a^2*b - A*a*b^2)*c^6 + 2*(20*B*a*b^3 - 9*A*b^4)*c^5)
*d^3*e^2 + 10*(48*A*a^2*b*c^6 - 8*(12*B*a^2*b^2 - 5*A*a*b^3)*c^5 - (8*B*a*b
^4 - 3*A*b^5)*c^4)*d^2*e^3 + 40*(12*(2*B*a^3*b - A*a^2*b^2)*c^5 + (2*B*a^2*
b^3 - A*a*b^4)*c^4)*d*e^4 - (3*B*b^8*c - 20*B*a*b^6*c^2 - 30*B*a^2*b^4*c^3
 - 32*(7*B*a^4 + 6*A*a^3*b)*c^5 + 16*(27*B*a^3*b^2 - A*a^2*b^3)*c^4)*e^5)*x^
3 + 5*(8*(B*b^4*c^5 - 24*A*a*b*c^7 + 2*(6*B*a*b^2 - A*b^3)*c^6)*d^5 - 5*(3*
B*b^5*c^4 + 48*(B*a^2*b - 2*A*a*b^2)*c^6 + 8*(5*B*a*b^3 - A*b^4)*c^5)*d^4*e
 + 10*(16*(2*B*a^3 - 3*A*a^2*b)*c^6 + 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c^5 + 3*(
6*B*a*b^4 - A*b^5)*c^4)*d^3*e^2 + 20*(16*A*a^3*c^6 - 8*(4*B*a^3*b - 3*A*a^2
*b^2)*c^5 - 3*(8*B*a^2*b^3 - 3*A*a*b^4)*c^4)*d^2*e^3 + 80*(4*(2*B*a^4 - A*a
^3*b)*c^5 + 3*(2*B*a^3*b^2 - A*a^2*b^3)*c^4)*d*e^4 - (9*B*a*b^7*c - 93*B*a^
2*b^5*c^2 + 280*B*a^3*b^3*c^3 - 128*A*a^4*c^5 + 48*(B*a^4*b - 2*A*a^3*b^2)*
c^4)*e^5)*x^2 + 5*(320*(2*B*a^4*b - A*a^3*b^2)*c^4*d*e^4 - (B*b^5*c^4 + 96*
A*a^2*c^7 - 48*(B*a^2*b - A*a*b^2)*c^6 - 2*(12*B*a*b^3 + A*b^4)*c^5)*d^5 +
5*(48*A*a^2*b*c^6 - 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (4*B*a*b^4 + A*b^5)*c^
4)*d^4*e + 40*(4*(2*B*a^3*b - 3*A*a^2*b^2)*c^5 + (6*B*a^2*b^3 - A*a*b^4)*c^
4)*d^3*e^2 + 80*(4*A*a^3*b*c^5 - (8*B*a^3*b^2 - 3*A*a^2*b^3)*c^4)*d^2*e^3 -
 (9*B*a^2*b^6*c - 98*B*a^3*b^4*c^2 + 336*B*a^4*b^2*c^3 - 32*(3*B*a^5 + 4*A*
a^4*b)*c^4)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^6*c^4 - 12*a^4*b^4*c^5 +
48*a^5*b^2*c^6 - 64*a^6*c^7 + (b^6*c^7 - 12*a*b^4*c^8 + 48*a^2*b^2*c^9 - 64
*a^3*c^10)*x^6 + 3*(b^7*c^6 - 12*a*b^5*c^7 + 48*a^2*b^3*c^8 - 64*a^3*b*c^9)
x^5 + 3(b^8*c^5 - 11*a*b^6*c^6 + 36*a^2*b^4*c^7 - 16*a^3*b^2*c^8 - 64*a^4
*c^9)*x^4 + (b^9*c^4 - 6*a*b^7*c^5 - 24*a^2*b^5*c^6 + 224*a^3*b^3*c^7 - 384
*a^4*b*c^8)*x^3 + 3*(a*b^8*c^4 - 11*a^2*b^6*c^5 + 36*a^3*b^4*c^6 - 16*a^4*b
^2*c^7 - 64*a^5*c^8)*x^2 + 3*(a^2*b^7*c^4 - 12*a^3*b^5*c^5 + 48*a^4*b^3*c^6
 - 64*a^5*b*c^7)*x), -1/15*(15*((B*b^6*c^3 - 12*B*a*b^4*c^4 + 48*B*a^2*b^2*
c^5 - 64*B*a^3*c^6)*e^5*x^6 + 3*(B*b^7*c^2 - 12*B*a*b^5*c^3 + 48*B*a^2*b^3*
c^4 - 64*B*a^3*b*c^5)*e^5*x^5 + 3*(B*b^8*c - 11*B*a*b^6*c^2 + 36*B*a^2*b^4*
c^3 - 16*B*a^3*b^2*c^4 - 64*B*a^4*c^5)*e^5*x^4 + (B*b^9 - 6*B*a*b^7*c - 24*
B*a^2*b^5*c^2 + 224*B*a^3*b^3*c^3 - 384*B*a^4*b*c^4)*e^5*x^3 + 3*(B*a*b^8 -
 11*B*a^2*b^6*c + 36*B*a^3*b^4*c^2 - 16*B*a^4*b^2*c^3 - 64*B*a^5*c^4)*e^5*x
^2 + 3*(B*a^2*b^7 - 12*B*a^3*b^5*c + 48*B*a^4*b^3*c^2 - 64*B*a^5*b*c^3)*e^5
*x + (B*a^3*b^6 - 12*B*a^4*b^4*c + 48*B*a^5*b^2*c^2 - 64*B*a^6*c^3)*e^5)*sq
rt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c
*x + a*c)) - 2*(640*(2*B*a^5 - A*a^4*b)*c^4*d*e^4 + (48*(2*B*a^3 - 5*A*a^2*
b)*c^6 + 8*(6*B*a^2*b^2 + 5*A*a*b^3)*c^5 - (2*B*a*b^4 + 3*A*b^5)*c^4)*d^5 +
 10*(48*A*a^3*c^6 - 24*(2*B*a^3*b - A*a^2*b^2)*c^5 - (4*B*a^2*b^3 + A*a*b^4
)*c^4)*d^4*e + 80*(4*(2*B*a^4 - 3*A*a^3*b)*c^5 + (6*B*a^3*b^2 - A*a^2*b^3)*
c^4)*d^3*e^2 + 160*(4*A*a^4*c^5 - (8*B*a^4*b - 3*A*a^3*b^2)*c^4)*d^2*e^3 -
(15*B*a^3*b^5*c - 160*B*a^4*b^3*c^2 + 528*B*a^5*b*c^3 - 256*A*a^5*c^4)*e^5
+ (128*(B*b*c^8 - 2*A*c^9)*d^5 - 80*(3*B*b^2*c^7 + 4*(B*a - 2*A*b)*c^8)*d^4
e + 80(B*b^3*c^6 - 8*A*a*c^8 + 6*(2*B*a*b - A*b^2)*c^7)*d^3*e^2 + 20*(B*b
^4*c^5 - 48*(B*a^2 - A*a*b)*c^7 - 4*(6*B*a*b^2 - A*b^3)*c^6)*d^2*e^3 + 5*(3
*B*b^5*c^4 - 96*A*a^2*c^7 + 48*(5*B*a^2*b - A*a*b^2)*c^6 - 2*(20*B*a*b^3 -
A*b^4)*c^5)*d*e^4 - (23*B*b^6*c^3 - 16*(46*B*a^3 + 15*A*a^2*b)*c^6 + 8*(114
*B*a^2*b^2 + 5*A*a*b^3)*c^5 - 3*(86*B*a*b^4 + A*b^5)*c^4)*e^5)*x^5 + 5*(64*

```
(B*b^2*c^7 - 2*A*b*c^8)*d^5 - 40*(3*B*b^3*c^6 + 4*(B*a*b - 2*A*b^2)*c^7)*d^
4*e + 40*(B*b^4*c^5 - 8*A*a*b*c^7 + 6*(2*B*a*b^2 - A*b^3)*c^6)*d^3*e^2 + 10
*(B*b^5*c^4 - 48*(B*a^2*b - A*a*b^2)*c^6 - 4*(6*B*a*b^3 - A*b^4)*c^5)*d^2*e
^3 + 5*(48*(2*B*a^3 - A*a^2*b)*c^6 + 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (2*B*
a*b^4 - A*b^5)*c^4)*d*e^4 - (7*B*b^7*c^2 - 75*B*a*b^5*c^3 - 96*A*a^3*c^6 -
16*(5*B*a^3*b + 3*A*a^2*b^2)*c^5 + 2*(120*B*a^2*b^3 + A*a*b^4)*c^4)*e^5)*x^
4 + 5*(16*(3*B*b^3*c^6 - 8*A*a*c^8 + 2*(2*B*a*b - 3*A*b^2)*c^7)*d^5 - 10*(9
*B*b^4*c^5 + 16*(B*a^2 - 2*A*a*b)*c^7 + 24*(B*a*b^2 - A*b^3)*c^6)*d^4*e + 1
0*(3*B*b^5*c^4 - 32*A*a^2*c^7 + 48*(B*a^2*b - A*a*b^2)*c^6 + 2*(20*B*a*b^3
- 9*A*b^4)*c^5)*d^3*e^2 + 10*(48*A*a^2*b*c^6 - 8*(12*B*a^2*b^2 - 5*A*a*b^3)
*c^5 - (8*B*a*b^4 - 3*A*b^5)*c^4)*d^2*e^3 + 40*(12*(2*B*a^3*b - A*a^2*b^2)*
c^5 + (2*B*a^2*b^3 - A*a*b^4)*c^4)*d*e^4 - (3*B*b^8*c - 20*B*a*b^6*c^2 - 30
*B*a^2*b^4*c^3 - 32*(7*B*a^4 + 6*A*a^3*b)*c^5 + 16*(27*B*a^3*b^2 - A*a^2*b^
3)*c^4)*e^5)*x^3 + 5*(8*(B*b^4*c^5 - 24*A*a*b*c^7 + 2*(6*B*a*b^2 - A*b^3)*c
^6)*d^5 - 5*(3*B*b^5*c^4 + 48*(B*a^2*b - 2*A*a*b^2)*c^6 + 8*(5*B*a*b^3 - A*
b^4)*c^5)*d^4*e + 10*(16*(2*B*a^3 - 3*A*a^2*b)*c^6 + 8*(6*B*a^2*b^2 - 5*A*a
*b^3)*c^5 + 3*(6*B*a*b^4 - A*b^5)*c^4)*d^3*e^2 + 20*(16*A*a^3*c^6 - 8*(4*B*
a^3*b - 3*A*a^2*b^2)*c^5 - 3*(8*B*a^2*b^3 - 3*A*a*b^4)*c^4)*d^2*e^3 + 80*(4
*(2*B*a^4 - A*a^3*b)*c^5 + 3*(2*B*a^3*b^2 - A*a^2*b^3)*c^4)*d*e^4 - (9*B*a*
b^7*c - 93*B*a^2*b^5*c^2 + 280*B*a^3*b^3*c^3 - 128*A*a^4*c^5 + 48*(B*a^4*b
- 2*A*a^3*b^2)*c^4)*e^5)*x^2 + 5*(320*(2*B*a^4*b - A*a^3*b^2)*c^4*d*e^4 - (
B*b^5*c^4 + 96*A*a^2*c^7 - 48*(B*a^2*b - A*a*b^2)*c^6 - 2*(12*B*a*b^3 + A*b
^4)*c^5)*d^5 + 5*(48*A*a^2*b*c^6 - 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (4*B*a*
b^4 + A*b^5)*c^4)*d^4*e + 40*(4*(2*B*a^3*b - 3*A*a^2*b^2)*c^5 + (6*B*a^2*b^
3 - A*a*b^4)*c^4)*d^3*e^2 + 80*(4*A*a^3*b*c^5 - (8*B*a^3*b^2 - 3*A*a^2*b^3)
*c^4)*d^2*e^3 - (9*B*a^2*b^6*c - 98*B*a^3*b^4*c^2 + 336*B*a^4*b^2*c^3 - 32*
(3*B*a^5 + 4*A*a^4*b)*c^4)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^6*c^4 - 12
*a^4*b^4*c^5 + 48*a^5*b^2*c^6 - 64*a^6*c^7 + (b^6*c^7 - 12*a*b^4*c^8 + 48*a
^2*b^2*c^9 - 64*a^3*c^10)*x^6 + 3*(b^7*c^6 - 12*a*b^5*c^7 + 48*a^2*b^3*c^8
- 64*a^3*b*c^9)*x^5 + 3*(b^8*c^5 - 11*a*b^6*c^6 + 36*a^2*b^4*c^7 - 16*a^3*b
^2*c^8 - 64*a^4*c^9)*x^4 + (b^9*c^4 - 6*a*b^7*c^5 - 24*a^2*b^5*c^6 + 224*a^
3*b^3*c^7 - 384*a^4*b*c^8)*x^3 + 3*(a*b^8*c^4 - 11*a^2*b^6*c^5 + 36*a^3*b^4
*c^6 - 16*a^4*b^2*c^7 - 64*a^5*c^8)*x^2 + 3*(a^2*b^7*c^4 - 12*a^3*b^5*c^5 +
 48*a^4*b^3*c^6 - 64*a^5*b*c^7)*x)]
```

giac [B] time = 0.84, size = 2525, normalized size = 2.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] -B*e^5*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
 + 2/15*((((((128*B*b*c^7*d^5 - 256*A*c^8*d^5 - 240*B*b^2*c^6*d^4*e - 320*B
*a*c^7*d^4*e + 640*A*b*c^7*d^4*e + 80*B*b^3*c^5*d^3*e^2 + 960*B*a*b*c^6*d^3
*e^2 - 480*A*b^2*c^6*d^3*e^2 - 640*A*a*c^7*d^3*e^2 + 20*B*b^4*c^4*d^2*e^3 -
 480*B*a*b^2*c^5*d^2*e^3 + 80*A*b^3*c^5*d^2*e^3 - 960*B*a^2*c^6*d^2*e^3 + 9
60*A*a*b*c^6*d^2*e^3 + 15*B*b^5*c^3*d*e^4 - 200*B*a*b^3*c^4*d*e^4 + 10*A*b^
4*c^4*d*e^4 + 1200*B*a^2*b*c^5*d*e^4 - 240*A*a*b^2*c^5*d*e^4 - 480*A*a^2*c^
6*d*e^4 - 23*B*b^6*c^2*e^5 + 258*B*a*b^4*c^3*e^5 + 3*A*b^5*c^3*e^5 - 912*B*
a^2*b^2*c^4*e^5 - 40*A*a*b^3*c^4*e^5 + 736*B*a^3*c^5*e^5 + 240*A*a^2*b*c^5*
e^5)*x/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6) + 5*(64*B*b^2
*c^6*d^5 - 128*A*b*c^7*d^5 - 120*B*b^3*c^5*d^4*e - 160*B*a*b*c^6*d^4*e + 32
0*A*b^2*c^6*d^4*e + 40*B*b^4*c^4*d^3*e^2 + 480*B*a*b^2*c^5*d^3*e^2 - 240*A*
b^3*c^5*d^3*e^2 - 320*A*a*b*c^6*d^3*e^2 + 10*B*b^5*c^3*d^2*e^3 - 240*B*a*b^
3*c^4*d^2*e^3 + 40*A*b^4*c^4*d^2*e^3 - 480*B*a^2*b*c^5*d^2*e^3 + 480*A*a*b^
2*c^5*d^2*e^3 - 10*B*a*b^4*c^3*d*e^4 + 5*A*b^5*c^3*d*e^4 + 240*B*a^2*b^2*c^
4*d*e^4 - 120*A*a*b^3*c^4*d*e^4 + 480*B*a^3*c^5*d*e^4 - 240*A*a^2*b*c^5*d*e
^4 - 7*B*b^7*c*e^5 + 75*B*a*b^5*c^2*e^5 - 240*B*a^2*b^3*c^3*e^5 - 2*A*a*b^4
*c^3*e^5 + 80*B*a^3*b*c^4*e^5 + 48*A*a^2*b^2*c^4*e^5 + 96*A*a^3*c^5*e^5)/(b
```

```
^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*x + 5*(48*B*b^3*c^5*d
^5 + 64*B*a*b*c^6*d^5 - 96*A*b^2*c^6*d^5 - 128*A*a*c^7*d^5 - 90*B*b^4*c^4*d
^4*e - 240*B*a*b^2*c^5*d^4*e + 240*A*b^3*c^5*d^4*e - 160*B*a^2*c^6*d^4*e +
320*A*a*b*c^6*d^4*e + 30*B*b^5*c^3*d^3*e^2 + 400*B*a*b^3*c^4*d^3*e^2 - 180*
A*b^4*c^4*d^3*e^2 + 480*B*a^2*b*c^5*d^3*e^2 - 480*A*a*b^2*c^5*d^3*e^2 - 320
*A*a^2*c^6*d^3*e^2 - 80*B*a*b^4*c^3*d^2*e^3 + 30*A*b^5*c^3*d^2*e^3 - 960*B*
a^2*b^2*c^4*d^2*e^3 + 400*A*a*b^3*c^4*d^2*e^3 + 480*A*a^2*b*c^5*d^2*e^3 + 8
0*B*a^2*b^3*c^3*d*e^4 - 40*A*a*b^4*c^3*d*e^4 + 960*B*a^3*b*c^4*d*e^4 - 480*
A*a^2*b^2*c^4*d*e^4 - 3*B*b^8*e^5 + 20*B*a*b^6*c*e^5 + 30*B*a^2*b^4*c^2*e^5
 - 432*B*a^3*b^2*c^3*e^5 + 16*A*a^2*b^3*c^3*e^5 + 224*B*a^4*c^4*e^5 + 192*A
*a^3*b*c^4*e^5)/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*x +
 5*(8*B*b^4*c^4*d^5 + 96*B*a*b^2*c^5*d^5 - 16*A*b^3*c^5*d^5 - 192*A*a*b*c^6
*d^5 - 15*B*b^5*c^3*d^4*e - 200*B*a*b^3*c^4*d^4*e + 40*A*b^4*c^4*d^4*e - 24
0*B*a^2*b*c^5*d^4*e + 480*A*a*b^2*c^5*d^4*e + 180*B*a*b^4*c^3*d^3*e^2 - 30*
A*b^5*c^3*d^3*e^2 + 480*B*a^2*b^2*c^4*d^3*e^2 - 400*A*a*b^3*c^4*d^3*e^2 + 3
20*B*a^3*c^5*d^3*e^2 - 480*A*a^2*b*c^5*d^3*e^2 - 480*B*a^2*b^3*c^3*d^2*e^3
+ 180*A*a*b^4*c^3*d^2*e^3 - 640*B*a^3*b*c^4*d^2*e^3 + 480*A*a^2*b^2*c^4*d^2
*e^3 + 320*A*a^3*c^5*d^2*e^3 + 480*B*a^3*b^2*c^3*d*e^4 - 240*A*a^2*b^3*c^3*
d*e^4 + 640*B*a^4*c^4*d*e^4 - 320*A*a^3*b*c^4*d*e^4 - 9*B*a*b^7*e^5 + 93*B*
a^2*b^5*c*e^5 - 280*B*a^3*b^3*c^2*e^5 - 48*B*a^4*b*c^3*e^5 + 96*A*a^3*b^2*c
^3*e^5 + 128*A*a^4*c^4*e^5)/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a
^3*c^6))*x - 5*(B*b^5*c^3*d^5 - 24*B*a*b^3*c^4*d^5 - 2*A*b^4*c^4*d^5 - 48*B
*a^2*b*c^5*d^5 + 48*A*a*b^2*c^5*d^5 + 96*A*a^2*c^6*d^5 + 20*B*a*b^4*c^3*d^4
*e + 5*A*b^5*c^3*d^4*e + 240*B*a^2*b^2*c^4*d^4*e - 120*A*a*b^3*c^4*d^4*e -
240*A*a^2*b*c^5*d^4*e - 240*B*a^2*b^3*c^3*d^3*e^2 + 40*A*a*b^4*c^3*d^3*e^2
- 320*B*a^3*b*c^4*d^3*e^2 + 480*A*a^2*b^2*c^4*d^3*e^2 + 640*B*a^3*b^2*c^3*d
^2*e^3 - 240*A*a^2*b^3*c^3*d^2*e^3 - 320*A*a^3*b*c^4*d^2*e^3 - 640*B*a^4*b*
c^3*d*e^4 + 320*A*a^3*b^2*c^3*d*e^4 + 9*B*a^2*b^6*e^5 - 98*B*a^3*b^4*c*e^5
+ 336*B*a^4*b^2*c^2*e^5 - 96*B*a^5*c^3*e^5 - 128*A*a^4*b*c^3*e^5)/(b^6*c^3
- 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*x - (2*B*a*b^4*c^3*d^5 + 3*A
*b^5*c^3*d^5 - 48*B*a^2*b^2*c^4*d^5 - 40*A*a*b^3*c^4*d^5 - 96*B*a^3*c^5*d^5
 + 240*A*a^2*b*c^5*d^5 + 40*B*a^2*b^3*c^3*d^4*e + 10*A*a*b^4*c^3*d^4*e + 48
0*B*a^3*b*c^4*d^4*e - 240*A*a^2*b^2*c^4*d^4*e - 480*A*a^3*c^5*d^4*e - 480*B
*a^3*b^2*c^3*d^3*e^2 + 80*A*a^2*b^3*c^3*d^3*e^2 - 640*B*a^4*c^4*d^3*e^2 + 9
60*A*a^3*b*c^4*d^3*e^2 + 1280*B*a^4*b*c^3*d^2*e^3 - 480*A*a^3*b^2*c^3*d^2*e
^3 - 640*A*a^4*c^4*d^2*e^3 - 1280*B*a^5*c^3*d*e^4 + 640*A*a^4*b*c^3*d*e^4 +
 15*B*a^3*b^5*e^5 - 160*B*a^4*b^3*c*e^5 + 528*B*a^5*b*c^2*e^5 - 256*A*a^5*c
^3*e^5)/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))/(c*x^2 + b*
x + a)^(5/2)
```

maple [B] time = 0.02, size = 7765, normalized size = 8.24

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+ex)^5}{\left(c\,x^2+b\,x+a\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x)
[Out] int(((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+b*x+a)**(7/2),x)
[Out] Timed out
```

3.2248 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=210

$$\frac{128\left(ae^2-bde+cd^2\right)(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^4(-2aB-x(bB-2Ac)+}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Rubi [A] time = 0.14, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {804, 722, 636}

$$\frac{128\left(ae^2-bde+cd^2\right)(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^4(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}-\frac{16(d+ex)^2(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^4)/(5*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(5/2)) - (16*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(d + e*x)^2*(b*d
- 2*a*e + (2*c*d - b*e)*x))/(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) +
(128*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(c*d^2 - b*d*e + a*e^2)*(b*d - 2*a
*e + (2*c*d - b*e)*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^4}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{(8(bBd-2Acd+Abe-2aBe))\int \frac{(d+ex)}{(a+bx+cx}}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^4}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{16(bBd-2Acd+Abe-2aBe)(d+ex)^2(b}{15\left(b^2-4ac\right)^2\left(a+bx+c\right.}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^4}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{16(bBd-2Acd+Abe-2aBe)(d+ex)^2(b}{15\left(b^2-4ac\right)^2\left(a+bx+c\right.}$$

Mathematica [B] time = 6.30, size = 1196, normalized size = 5.70

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*A*(b^5*(3*d^4 + 20*d^3*e*x + 90*d^2*e^2*x^2 - 60*d*e^3*x^3 - 5*e^4*x^4)
 + 16*b*(8*a^4*e^4 + 8*c^4*d^3*x^4*(5*d - 4*e*x) + 15*a^2*c^2*(d - e*x)^4 +
 4*a^3*c*e^2*(9*d^2 - 10*d*e*x + 5*e^2*x^2) + 4*a*c^3*d*x^2*(15*d^3 - 20*d^
2*e*x + 15*d*e^2*x^2 - 6*e^3*x^3)) + 8*b^3*(-5*a*c*(d - e*x)^2*(d^2 + 14*d*
e*x - 3*e^2*x^2) + 6*a^2*e^2*(d^2 - 10*d*e*x + 5*e^2*x^2) + 2*c^2*d*x^2*(5*
d^3 - 60*d^2*e*x + 45*d*e^2*x^2 - 2*e^3*x^3)) + 32*c*(-8*a^4*d*e^3 + 8*c^4*
d^4*x^5 + 4*a*c^3*d^2*x^3*(5*d^2 + 3*e^2*x^2) - 4*a^3*c*d*e*(3*d^2 + 5*e^2*
x^2) + 3*a^2*c^2*x*(5*d^4 + 10*d^2*e^2*x^2 + e^4*x^4)) + 16*b^2*(4*a^3*e^3*
(-3*d + 5*e*x) + 2*c^3*d^2*x^3*(15*d^2 - 40*d*e*x + 9*e^2*x^2) + 6*a^2*c*e*
(-2*d^3 + 15*d^2*e*x - 10*d*e^2*x^2 + 5*e^3*x^3) + 3*a*c^2*x*(5*d^4 - 40*d^
3*e*x + 30*d^2*e^2*x^2 - 20*d*e^3*x^3 + e^4*x^4)) + 2*b^4*(4*a*e*(d^3 + 15*
d^2*e*x - 45*d*e^2*x^2 + 5*e^3*x^3) - c*x*(5*d^4 + 80*d^3*e*x - 270*d^2*e^2
*x^2 + 40*d*e^3*x^3 + e^4*x^4))) + 2*B*(256*a^5*e^4 + 128*a^4*e^2*(b*e*(-4*
d + 5*e*x) + c*(3*d^2 + 5*e^2*x^2)) + b*x*(128*c^4*d^4*x^4 + 64*b*c^3*d^3*x
^3*(5*d - 3*e*x) + 48*b^2*c^2*d^2*x^2*(5*d^2 - 10*d*e*x + e^2*x^2) + 8*b^3*
c*d*x*(5*d^3 - 45*d^2*e*x + 15*d*e^2*x^2 + e^3*x^3) + b^4*(-5*d^4 - 60*d^3*
e*x + 90*d^2*e^2*x^2 + 20*d*e^3*x^3 + 3*e^4*x^4)) + 32*a^3*(b^2*e^2*(9*d^2
- 40*d*e*x + 15*e^2*x^2) + 2*b*c*e*(-6*d^3 + 15*d^2*e*x - 20*d*e^2*x^2 + 15
*e^3*x^3) + 3*c^2*(d^4 + 10*d^2*e^2*x^2 + 5*e^4*x^4)) - 16*a^2*(-15*b*c^2*x
*(d - e*x)^4 + 8*c^3*d*e*x^3*(5*d^2 + 3*e^2*x^2) + b^3*e*(2*d^3 - 45*d^2*e*
x + 60*d*e^2*x^2 - 5*e^3*x^3) - 3*b^2*c*(d^4 - 20*d^3*e*x + 30*d^2*e^2*x^2
- 40*d*e^3*x^3 + 5*e^4*x^4)) - 2*a*(128*c^4*d^3*e*x^5 + 20*b^3*c*x*(d - e*x
)^2*(-3*d^2 + 14*d*e*x + e^2*x^2) - 32*b*c^3*d^2*x^3*(5*d^2 - 10*d*e*x + 9*
e^2*x^2) + 48*b^2*c^2*d*x^2*(-5*d^3 + 10*d^2*e*x - 15*d*e^2*x^2 + 2*e^3*x^3
) + b^4*(d^4 + 40*d^3*e*x - 270*d^2*e^2*x^2 + 80*d*e^3*x^3 + 5*e^4*x^4))))/
(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [B] time = 21.88, size = 1893, normalized size = 9.01

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(3*A*b^5*d^4 + 2*a*b^4*B*d^4 - 40*a*A*b^3*c*d^4 - 48*a^2*b^2*B*c*d^4 +
240*a^2*A*b*c^2*d^4 - 96*a^3*B*c^2*d^4 + 8*a*A*b^4*d^3*e + 32*a^2*b^3*B*d^3
*e - 192*a^2*A*b^2*c*d^3*e + 384*a^3*b*B*c*d^3*e - 384*a^3*A*c^2*d^3*e + 48
```

```
*a^2*A*b^3*d^2*e^2 - 288*a^3*b^2*B*d^2*e^2 + 576*a^3*A*b*c*d^2*e^2 - 384*a^
4*B*c*d^2*e^2 - 192*a^3*A*b^2*d*e^3 + 512*a^4*b*B*d*e^3 - 256*a^4*A*c*d*e^3
 + 128*a^4*A*b*e^4 - 256*a^5*B*e^4 + 5*b^5*B*d^4*x - 10*A*b^4*c*d^4*x - 120
*a*b^3*B*c*d^4*x + 240*a*A*b^2*c^2*d^4*x - 240*a^2*b*B*c^2*d^4*x + 480*a^2*
A*c^3*d^4*x + 20*A*b^5*d^3*e*x + 80*a*b^4*B*d^3*e*x - 480*a*A*b^3*c*d^3*e*x
 + 960*a^2*b^2*B*c*d^3*e*x - 960*a^2*A*b*c^2*d^3*e*x + 120*a*A*b^4*d^2*e^2*
x - 720*a^2*b^3*B*d^2*e^2*x + 1440*a^2*A*b^2*c*d^2*e^2*x - 960*a^3*b*B*c*d^
2*e^2*x - 480*a^2*A*b^3*d*e^3*x + 1280*a^3*b^2*B*d*e^3*x - 640*a^3*A*b*c*d*
e^3*x + 320*a^3*A*b^2*e^4*x - 640*a^4*b*B*e^4*x - 40*b^4*B*c*d^4*x^2 + 80*A
*b^3*c^2*d^4*x^2 - 480*a*b^2*B*c^2*d^4*x^2 + 960*a*A*b*c^3*d^4*x^2 + 60*b^5
*B*d^3*e*x^2 - 160*A*b^4*c*d^3*e*x^2 + 800*a*b^3*B*c*d^3*e*x^2 - 1920*a*A*b
^2*c^2*d^3*e*x^2 + 960*a^2*b*B*c^2*d^3*e*x^2 + 90*A*b^5*d^2*e^2*x^2 - 540*a
*b^4*B*d^2*e^2*x^2 + 1200*a*A*b^3*c*d^2*e^2*x^2 - 1440*a^2*b^2*B*c*d^2*e^2*
x^2 + 1440*a^2*A*b*c^2*d^2*e^2*x^2 - 960*a^3*B*c^2*d^2*e^2*x^2 - 360*a*A*b^
4*d*e^3*x^2 + 960*a^2*b^3*B*d*e^3*x^2 - 960*a^2*A*b^2*c*d*e^3*x^2 + 1280*a^
3*b*B*c*d*e^3*x^2 - 640*a^3*A*c^2*d*e^3*x^2 + 240*a^2*A*b^3*e^4*x^2 - 480*a
^3*b^2*B*e^4*x^2 + 320*a^3*A*b*c*e^4*x^2 - 640*a^4*B*c*e^4*x^2 - 240*b^3*B*
c^2*d^4*x^3 + 480*A*b^2*c^3*d^4*x^3 - 320*a*b*B*c^3*d^4*x^3 + 640*a*A*c^4*d
^4*x^3 + 360*b^4*B*c*d^3*e*x^3 - 960*A*b^3*c^2*d^3*e*x^3 + 960*a*b^2*B*c^2*
d^3*e*x^3 - 1280*a*A*b*c^3*d^3*e*x^3 + 640*a^2*B*c^3*d^3*e*x^3 - 90*b^5*B*d
^2*e^2*x^3 + 540*A*b^4*c*d^2*e^2*x^3 - 1200*a*b^3*B*c*d^2*e^2*x^3 + 1440*a*
A*b^2*c^2*d^2*e^2*x^3 - 1440*a^2*b*B*c^2*d^2*e^2*x^3 + 960*a^2*A*c^3*d^2*e^
2*x^3 - 60*A*b^5*d*e^3*x^3 + 160*a*b^4*B*d*e^3*x^3 - 800*a*A*b^3*c*d*e^3*x^
3 + 1920*a^2*b^2*B*c*d*e^3*x^3 - 960*a^2*A*b*c^2*d*e^3*x^3 + 40*a*A*b^4*e^4
*x^3 - 80*a^2*b^3*B*e^4*x^3 + 480*a^2*A*b^2*c*e^4*x^3 - 960*a^3*b*B*c*e^4*x
^3 - 320*b^2*B*c^3*d^4*x^4 + 640*A*b*c^4*d^4*x^4 + 480*b^3*B*c^2*d^3*e*x^4
- 1280*A*b^2*c^3*d^3*e*x^4 + 640*a*b*B*c^3*d^3*e*x^4 - 120*b^4*B*c*d^2*e^2*
x^4 + 720*A*b^3*c^2*d^2*e^2*x^4 - 1440*a*b^2*B*c^2*d^2*e^2*x^4 + 960*a*A*b*
c^3*d^2*e^2*x^4 - 20*b^5*B*d*e^3*x^4 - 80*A*b^4*c*d*e^3*x^4 + 480*a*b^3*B*c
*d*e^3*x^4 - 960*a*A*b^2*c^2*d*e^3*x^4 + 960*a^2*b*B*c^2*d*e^3*x^4 - 5*A*b^
5*e^4*x^4 + 10*a*b^4*B*e^4*x^4 + 120*a*A*b^3*c*e^4*x^4 - 240*a^2*b^2*B*c*e^
4*x^4 + 240*a^2*A*b*c^2*e^4*x^4 - 480*a^3*B*c^2*e^4*x^4 - 128*b*B*c^4*d^4*x
^5 + 256*A*c^5*d^4*x^5 + 192*b^2*B*c^3*d^3*e*x^5 - 512*A*b*c^4*d^3*e*x^5 +
256*a*B*c^4*d^3*e*x^5 - 48*b^3*B*c^2*d^2*e^2*x^5 + 288*A*b^2*c^3*d^2*e^2*x^
5 - 576*a*b*B*c^3*d^2*e^2*x^5 + 384*a*A*c^4*d^2*e^2*x^5 - 8*b^4*B*c*d*e^3*x
^5 - 32*A*b^3*c^2*d*e^3*x^5 + 192*a*b^2*B*c^2*d*e^3*x^5 - 384*a*A*b*c^3*d*e
^3*x^5 + 384*a^2*B*c^3*d*e^3*x^5 - 3*b^5*B*e^4*x^5 - 2*A*b^4*c*e^4*x^5 + 40
*a*b^3*B*c*e^4*x^5 + 48*a*A*b^2*c^2*e^4*x^5 - 240*a^2*b*B*c^2*e^4*x^5 + 96*
a^2*A*c^3*e^4*x^5))/(15*(b^2 - 4*a*c)^3*(a + b*x + c*x^2)^(5/2))
```

fricas [B] time = 66.93, size = 1628, normalized size = 7.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*((128*(B*b*c^4 - 2*A*c^5)*d^4 - 64*(3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4)
*d^3*e + 48*(B*b^3*c^2 - 8*A*a*c^4 + 6*(2*B*a*b - A*b^2)*c^3)*d^2*e^2 + 8*(
B*b^4*c - 48*(B*a^2 - A*a*b)*c^3 - 4*(6*B*a*b^2 - A*b^3)*c^2)*d*e^3 + (3*B*
b^5 - 96*A*a^2*c^3 + 48*(5*B*a^2*b - A*a*b^2)*c^2 - 2*(20*B*a*b^3 - A*b^4)*
c)*e^4)*x^5 - (2*B*a*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*
a^2*b^2 + 5*A*a*b^3)*c)*d^4 - 8*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*
(2*B*a^3*b - A*a^2*b^2)*c)*d^3*e + 48*(6*B*a^3*b^2 - A*a^2*b^3 + 4*(2*B*a^4
 - 3*A*a^3*b)*c)*d^2*e^2 - 64*(8*B*a^4*b - 3*A*a^3*b^2 - 4*A*a^4*c)*d*e^3 +
 128*(2*B*a^5 - A*a^4*b)*e^4 + 5*(64*(B*b^2*c^3 - 2*A*b*c^4)*d^4 - 32*(3*B*
b^3*c^2 + 4*(B*a*b - 2*A*b^2)*c^3)*d^3*e + 24*(B*b^4*c - 8*A*a*b*c^3 + 6*(2
*B*a*b^2 - A*b^3)*c^2)*d^2*e^2 + 4*(B*b^5 - 48*(B*a^2*b - A*a*b^2)*c^2 - 4*
(6*B*a*b^3 - A*b^4)*c)*d*e^3 - (2*B*a*b^4 - A*b^5 - 48*(2*B*a^3 - A*a^2*b)*
c^2 - 24*(2*B*a^2*b^2 - A*a*b^3)*c)*e^4)*x^4 + 10*(8*(3*B*b^3*c^2 - 8*A*a*c
```

```
^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d^4 - 4*(9*B*b^4*c + 16*(B*a^2 - 2*A*a*b)*c
^3 + 24*(B*a*b^2 - A*b^3)*c^2)*d^3*e + 3*(3*B*b^5 - 32*A*a^2*c^3 + 48*(B*a^
2*b - A*a*b^2)*c^2 + 2*(20*B*a*b^3 - 9*A*b^4)*c)*d^2*e^2 - 2*(8*B*a*b^4 - 3
*A*b^5 - 48*A*a^2*b*c^2 + 8*(12*B*a^2*b^2 - 5*A*a*b^3)*c)*d*e^3 + 4*(2*B*a^
2*b^3 - A*a*b^4 + 12*(2*B*a^3*b - A*a^2*b^2)*c)*e^4)*x^3 + 10*(4*(B*b^4*c -
 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d^4 - 2*(3*B*b^5 + 48*(B*a^2*b -
 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*d^3*e + 3*(18*B*a*b^4 - 3*A*b^5
+ 16*(2*B*a^3 - 3*A*a^2*b)*c^2 + 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c)*d^2*e^2 - 4
*(24*B*a^2*b^3 - 9*A*a*b^4 - 16*A*a^3*c^2 + 8*(4*B*a^3*b - 3*A*a^2*b^2)*c)*
d*e^3 + 8*(6*B*a^3*b^2 - 3*A*a^2*b^3 + 4*(2*B*a^4 - A*a^3*b)*c)*e^4)*x^2 -
5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*(12*B*a*b^3 + A*b
^4)*c)*d^4 + 4*(4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*(2*B*a^2*b^2 - A*a*
b^3)*c)*d^3*e - 24*(6*B*a^2*b^3 - A*a*b^4 + 4*(2*B*a^3*b - 3*A*a^2*b^2)*c)*
d^2*e^2 + 32*(8*B*a^3*b^2 - 3*A*a^2*b^3 - 4*A*a^3*b*c)*d*e^3 - 64*(2*B*a^4*
b - A*a^3*b^2)*e^4)*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a
^5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3
*c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5
+ 3*(b^8*c - 11*a*b^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x
^4 + (b^9 - 6*a*b^7*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x
^3 + 3*(a*b^8 - 11*a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4
)*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [B] time = 0.37, size = 1763, normalized size = 8.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((((((128*B*b*c^4*d^4 - 256*A*c^5*d^4 - 192*B*b^2*c^3*d^3*e - 256*B*a*
c^4*d^3*e + 512*A*b*c^4*d^3*e + 48*B*b^3*c^2*d^2*e^2 + 576*B*a*b*c^3*d^2*e^
2 - 288*A*b^2*c^3*d^2*e^2 - 384*A*a*c^4*d^2*e^2 + 8*B*b^4*c*d*e^3 - 192*B*a
*b^2*c^2*d*e^3 + 32*A*b^3*c^2*d*e^3 - 384*B*a^2*c^3*d*e^3 + 384*A*a*b*c^3*d
*e^3 + 3*B*b^5*e^4 - 40*B*a*b^3*c*e^4 + 2*A*b^4*c*e^4 + 240*B*a^2*b*c^2*e^4
 - 48*A*a*b^2*c^2*e^4 - 96*A*a^2*c^3*e^4)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*
c^2 - 64*a^3*c^3) + 5*(64*B*b^2*c^3*d^4 - 128*A*b*c^4*d^4 - 96*B*b^3*c^2*d^
3*e - 128*B*a*b*c^3*d^3*e + 256*A*b^2*c^3*d^3*e + 24*B*b^4*c*d^2*e^2 + 288*
B*a*b^2*c^2*d^2*e^2 - 144*A*b^3*c^2*d^2*e^2 - 192*A*a*b*c^3*d^2*e^2 + 4*B*b
^5*d*e^3 - 96*B*a*b^3*c*d*e^3 + 16*A*b^4*c*d*e^3 - 192*B*a^2*b*c^2*d*e^3 +
192*A*a*b^2*c^2*d*e^3 - 2*B*a*b^4*e^4 + A*b^5*e^4 + 48*B*a^2*b^2*c*e^4 - 24
*A*a*b^3*c*e^4 + 96*B*a^3*c^2*e^4 - 48*A*a^2*b*c^2*e^4)/(b^6 - 12*a*b^4*c +
 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 10*(24*B*b^3*c^2*d^4 + 32*B*a*b*c^3*d^4
- 48*A*b^2*c^3*d^4 - 64*A*a*c^4*d^4 - 36*B*b^4*c*d^3*e - 96*B*a*b^2*c^2*d^3
*e + 96*A*b^3*c^2*d^3*e - 64*B*a^2*c^3*d^3*e + 128*A*a*b*c^3*d^3*e + 9*B*b^
5*d^2*e^2 + 120*B*a*b^3*c*d^2*e^2 - 54*A*b^4*c*d^2*e^2 + 144*B*a^2*b*c^2*d^
2*e^2 - 144*A*a*b^2*c^2*d^2*e^2 - 96*A*a^2*c^3*d^2*e^2 - 16*B*a*b^4*d*e^3 +
 6*A*b^5*d*e^3 - 192*B*a^2*b^2*c*d*e^3 + 80*A*a*b^3*c*d*e^3 + 96*A*a^2*b*c^
2*d*e^3 + 8*B*a^2*b^3*e^4 - 4*A*a*b^4*e^4 + 96*B*a^3*b*c*e^4 - 48*A*a^2*b^2
*c*e^4)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 10*(4*B*b^4*c
*d^4 + 48*B*a*b^2*c^2*d^4 - 8*A*b^3*c^2*d^4 - 96*A*a*b*c^3*d^4 - 6*B*b^5*d^
3*e - 80*B*a*b^3*c*d^3*e + 16*A*b^4*c*d^3*e - 96*B*a^2*b*c^2*d^3*e + 192*A*
a*b^2*c^2*d^3*e + 54*B*a*b^4*d^2*e^2 - 9*A*b^5*d^2*e^2 + 144*B*a^2*b^2*c*d^
2*e^2 - 120*A*a*b^3*c*d^2*e^2 + 96*B*a^3*c^2*d^2*e^2 - 144*A*a^2*b*c^2*d^2*
e^2 - 96*B*a^2*b^3*d*e^3 + 36*A*a*b^4*d*e^3 - 128*B*a^3*b*c*d*e^3 + 96*A*a^
2*b^2*c*d*e^3 + 64*A*a^3*c^2*d*e^3 + 48*B*a^3*b^2*e^4 - 24*A*a^2*b^3*e^4 +
64*B*a^4*c*e^4 - 32*A*a^3*b*c*e^4)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*
a^3*c^3))*x - 5*(B*b^5*d^4 - 24*B*a*b^3*c*d^4 - 2*A*b^4*c*d^4 - 48*B*a^2*b*
c^2*d^4 + 48*A*a*b^2*c^2*d^4 + 96*A*a^2*c^3*d^4 + 16*B*a*b^4*d^3*e + 4*A*b^
5*d^3*e + 192*B*a^2*b^2*c*d^3*e - 96*A*a*b^3*c*d^3*e - 192*A*a^2*b*c^2*d^3*
e - 144*B*a^2*b^3*d^2*e^2 + 24*A*a*b^4*d^2*e^2 - 192*B*a^3*b*c*d^2*e^2 + 28
```

```
8*A*a^2*b^2*c*d^2*e^2 + 256*B*a^3*b^2*d*e^3 - 96*A*a^2*b^3*d*e^3 - 128*A*a^
3*b*c*d*e^3 - 128*B*a^4*b*e^4 + 64*A*a^3*b^2*e^4)/(b^6 - 12*a*b^4*c + 48*a^
2*b^2*c^2 - 64*a^3*c^3))*x - (2*B*a*b^4*d^4 + 3*A*b^5*d^4 - 48*B*a^2*b^2*c*
d^4 - 40*A*a*b^3*c*d^4 - 96*B*a^3*c^2*d^4 + 240*A*a^2*b*c^2*d^4 + 32*B*a^2*
b^3*d^3*e + 8*A*a*b^4*d^3*e + 384*B*a^3*b*c*d^3*e - 192*A*a^2*b^2*c*d^3*e -
 384*A*a^3*c^2*d^3*e - 288*B*a^3*b^2*d^2*e^2 + 48*A*a^2*b^3*d^2*e^2 - 384*B
*a^4*c*d^2*e^2 + 576*A*a^3*b*c*d^2*e^2 + 512*B*a^4*b*d*e^3 - 192*A*a^3*b^2*
d*e^3 - 256*A*a^4*c*d*e^3 - 256*B*a^5*e^4 + 128*A*a^4*b*e^4)/(b^6 - 12*a*b^
4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2 + b*x + a)^(5/2)
```

maple [B] time = 0.02, size = 1914, normalized size = 9.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 2/15/(c*x^2+b*x+a)^(5/2)*(96*A*a^2*c^3*e^4*x^5+48*A*a*b^2*c^2*e^4*x^5-384*A
*a*b*c^3*d*e^3*x^5+384*A*a*c^4*d^2*e^2*x^5-2*A*b^4*c*e^4*x^5-32*A*b^3*c^2*d
*e^3*x^5+288*A*b^2*c^3*d^2*e^2*x^5-512*A*b*c^4*d^3*e*x^5+256*A*c^5*d^4*x^5-
240*B*a^2*b*c^2*e^4*x^5+384*B*a^2*c^3*d*e^3*x^5+40*B*a*b^3*c*e^4*x^5+192*B*
a*b^2*c^2*d*e^3*x^5-576*B*a*b*c^3*d^2*e^2*x^5+256*B*a*c^4*d^3*e*x^5-3*B*b^5
*e^4*x^5-8*B*b^4*c*d*e^3*x^5-48*B*b^3*c^2*d^2*e^2*x^5+192*B*b^2*c^3*d^3*e*x
^5-128*B*b*c^4*d^4*x^5+240*A*a^2*b*c^2*e^4*x^4+120*A*a*b^3*c*e^4*x^4-960*A*
a*b^2*c^2*d*e^3*x^4+960*A*a*b*c^3*d^2*e^2*x^4-5*A*b^5*e^4*x^4-80*A*b^4*c*d*
e^3*x^4+720*A*b^3*c^2*d^2*e^2*x^4-1280*A*b^2*c^3*d^3*e*x^4+640*A*b*c^4*d^4*
x^4-480*B*a^3*c^2*e^4*x^4-240*B*a^2*b^2*c*e^4*x^4+960*B*a^2*b*c^2*d*e^3*x^4
+10*B*a*b^4*e^4*x^4+480*B*a*b^3*c*d*e^3*x^4-1440*B*a*b^2*c^2*d^2*e^2*x^4+64
0*B*a*b*c^3*d^3*e*x^4-20*B*b^5*d*e^3*x^4-120*B*b^4*c*d^2*e^2*x^4+480*B*b^3*
c^2*d^3*e*x^4-320*B*b^2*c^3*d^4*x^4+480*A*a^2*b^2*c*e^4*x^3-960*A*a^2*b*c^2
*d*e^3*x^3+960*A*a^2*c^3*d^2*e^2*x^3+40*A*a*b^4*e^4*x^3-800*A*a*b^3*c*d*e^3
*x^3+1440*A*a*b^2*c^2*d^2*e^2*x^3-1280*A*a*b*c^3*d^3*e*x^3+640*A*a*c^4*d^4*
x^3-60*A*b^5*d*e^3*x^3+540*A*b^4*c*d^2*e^2*x^3-960*A*b^3*c^2*d^3*e*x^3+480*
A*b^2*c^3*d^4*x^3-960*B*a^3*b*c*e^4*x^3-80*B*a^2*b^3*e^4*x^3+1920*B*a^2*b^2
*c*d*e^3*x^3-1440*B*a^2*b*c^2*d^2*e^2*x^3+640*B*a^2*c^3*d^3*e*x^3+160*B*a*b
^4*d*e^3*x^3-1200*B*a*b^3*c*d^2*e^2*x^3+960*B*a*b^2*c^2*d^3*e*x^3-320*B*a*b
*c^3*d^4*x^3-90*B*b^5*d^2*e^2*x^3+360*B*b^4*c*d^3*e*x^3-240*B*b^3*c^2*d^4*x
^3+320*A*a^3*b*c*e^4*x^2-640*A*a^3*c^2*d*e^3*x^2+240*A*a^2*b^3*e^4*x^2-960*
A*a^2*b^2*c*d*e^3*x^2+1440*A*a^2*b*c^2*d^2*e^2*x^2-360*A*a*b^4*d*e^3*x^2+12
00*A*a*b^3*c*d^2*e^2*x^2-1920*A*a*b^2*c^2*d^3*e*x^2+960*A*a*b*c^3*d^4*x^2+9
0*A*b^5*d^2*e^2*x^2-160*A*b^4*c*d^3*e*x^2+80*A*b^3*c^2*d^4*x^2-640*B*a^4*c*
e^4*x^2-480*B*a^3*b^2*e^4*x^2+1280*B*a^3*b*c*d*e^3*x^2-960*B*a^3*c^2*d^2*e^
2*x^2+960*B*a^2*b^3*d*e^3*x^2-1440*B*a^2*b^2*c*d^2*e^2*x^2+960*B*a^2*b*c^2*
d^3*e*x^2-540*B*a*b^4*d^2*e^2*x^2+800*B*a*b^3*c*d^3*e*x^2-480*B*a*b^2*c^2*d
^4*x^2+60*B*b^5*d^3*e*x^2-40*B*b^4*c*d^4*x^2+320*A*a^3*b^2*e^4*x-640*A*a^3*
b*c*d*e^3*x-480*A*a^2*b^3*d*e^3*x+1440*A*a^2*b^2*c*d^2*e^2*x-960*A*a^2*b*c^
2*d^3*e*x+480*A*a^2*c^3*d^4*x+120*A*a*b^4*d^2*e^2*x-480*A*a*b^3*c*d^3*e*x+2
40*A*a*b^2*c^2*d^4*x+20*A*b^5*d^3*e*x-10*A*b^4*c*d^4*x-640*B*a^4*b*e^4*x+12
80*B*a^3*b^2*d*e^3*x-960*B*a^3*b*c*d^2*e^2*x-720*B*a^2*b^3*d^2*e^2*x+960*B*
a^2*b^2*c*d^3*e*x-240*B*a^2*b*c^2*d^4*x+80*B*a*b^4*d^3*e*x-120*B*a*b^3*c*d^
4*x+5*B*b^5*d^4*x+128*A*a^4*b*e^4-256*A*a^4*c*d*e^3-192*A*a^3*b^2*d*e^3+576
*A*a^3*b*c*d^2*e^2-384*A*a^3*c^2*d^3*e+48*A*a^2*b^3*d^2*e^2-192*A*a^2*b^2*c
*d^3*e+240*A*a^2*b*c^2*d^4+8*A*a*b^4*d^3*e-40*A*a*b^3*c*d^4+3*A*b^5*d^4-256
*B*a^5*e^4+512*B*a^4*b*d*e^3-384*B*a^4*c*d^2*e^2-288*B*a^3*b^2*d^2*e^2+384*
B*a^3*b*c*d^3*e-96*B*a^3*c^2*d^4+32*B*a^2*b^3*d^3*e-48*B*a^2*b^2*c*d^4+2*B*
a*b^4*d^4)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 5.48, size = 7972, normalized size = 37.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] ((a*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(24*A*b
*c^2*e^4 + 48*B*a*c^2*e^4 - 30*B*b^2*c*e^4 - 96*A*c^3*d*e^3 - 144*B*c^3*d^2
*e^2 + 96*B*b*c^2*d*e^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3
*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c
*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - x*((a*((16*c*e^3*(A*c*e - B
*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*
a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*
c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2
*c)*(4*a*c - b^2))))/c + (2*(24*A*b*c^2*e^4 + 48*B*a*c^2*e^4 - 30*B*b^2*c*e
^4 - 96*A*c^3*d*e^3 - 144*B*c^3*d^2*e^2 + 96*B*b*c^2*d*e^3))/(15*c*(4*a*c^2
 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2
- b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
)))/c - (2*(4*B*b^3*e^4 - 16*A*a*c^2*e^4 - 2*A*b^2*c*e^4 + 32*B*c^3*d^3*e +
 48*A*c^3*d^2*e^2 + 16*B*a*b*c*e^4 - 64*B*a*c^2*d*e^3 - 8*B*b^2*c*d*e^3))/(
15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(24*A*b*c^2*e^4 + 48*B*a*c^2*e^4
 - 30*B*b^2*c*e^4 - 96*A*c^3*d*e^3 - 144*B*c^3*d^2*e^2 + 96*B*b*c^2*d*e^3))
/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*(4*B*b^3*e^4 - 16*A*a*c^2*e
^4 - 2*A*b^2*c*e^4 + 32*B*c^3*d^3*e + 48*A*c^3*d^2*e^2 + 16*B*a*b*c*e^4 - 6
4*B*a*c^2*d*e^3 - 8*B*b^2*c*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
))/(a + b*x + c*x^2)^(1/2) - ((a*((2*A*b*c^3*e^4 + 4*B*a*c^3*e^4 - 16*A*c^4
*d*e^3 - 2*B*b^2*c^2*e^4 - 24*B*c^4*d^2*e^2 + 8*B*b*c^3*d*e^3)/(15*c^4*(4*a
*c - b^2)) + (b*((2*e^3*(2*A*c*e - B*b*e + 8*B*c*d))/(15*c*(4*a*c - b^2)) -
 (4*B*b*e^4)/(15*c*(4*a*c - b^2))))/c + (4*B*a*e^4)/(15*c*(4*a*c - b^2))))/
c - x*((4*A*a*c^3*e^4 + 2*B*b^3*c*e^4 - 16*B*c^4*d^3*e - 2*A*b^2*c^2*e^4 -
24*A*c^4*d^2*e^2 + 12*B*b*c^3*d^2*e^2 - 8*B*b^2*c^2*d*e^3 - 6*B*a*b*c^2*e^4
 + 8*A*b*c^3*d*e^3 + 16*B*a*c^3*d*e^3)/(15*c^4*(4*a*c - b^2)) - (b*((2*A*b*
c^3*e^4 + 4*B*a*c^3*e^4 - 16*A*c^4*d*e^3 - 2*B*b^2*c^2*e^4 - 24*B*c^4*d^2*e
^2 + 8*B*b*c^3*d*e^3)/(15*c^4*(4*a*c - b^2)) + (b*((2*e^3*(2*A*c*e - B*b*e
+ 8*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B*b*e^4)/(15*c*(4*a*c - b^2))))/c + (
4*B*a*e^4)/(15*c*(4*a*c - b^2))))/c + (a*((2*e^3*(2*A*c*e - B*b*e + 8*B*c*d
))/(15*c*(4*a*c - b^2)) - (4*B*b*e^4)/(15*c*(4*a*c - b^2))))/c) + (2*B*b^4*
e^4 + 4*B*c^4*d^4 - 2*A*b^3*c*e^4 + 16*A*c^4*d^3*e + 4*B*a^2*c^2*e^4 - 12*A
*b*c^3*d^2*e^2 + 8*A*b^2*c^2*d*e^3 - 24*B*a*c^3*d^2*e^2 + 12*B*b^2*c^2*d^2*
e^2 + 6*A*a*b*c^2*e^4 - 8*B*a*b^2*c*e^4 - 16*A*a*c^3*d*e^3 - 8*B*b*c^3*d^3*
e - 8*B*b^3*c*d*e^3 + 24*B*a*b*c^2*d*e^3)/(15*c^4*(4*a*c - b^2)))/(a + b*x
+ c*x^2)^(3/2) + (x*((a*((b*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 -
b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
)))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d
^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 -
b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
)))/c + (2*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c
^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a
*c^4*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*A*c^5*d*e^3
- 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^3*(4*a*c^2 -
```

b^2*c)*(4*a*c - b^2))))/c + (b*((a*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*((b*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(8*B*c^5*d^4 + 12*B*b^4*c*e^4 + 32*A*c^5*d^3*e - 12*A*b^3*c^2*e^4 + 48*B*a^2*c^3*e^4 - 60*B*a*b^2*c^2*e^4 + 48*A*b^2*c^3*d*e^3 - 288*B*a*c^4*d^2*e^2 - 48*B*b^3*c^2*d*e^3 + 72*B*b^2*c^3*d^2*e^2 + 48*A*a*b*c^3*e^4 - 192*A*a*c^4*d*e^3 + 192*B*a*b*c^3*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(32*A*c^5*d^4 - 8*B*b^5*e^4 + 8*A*b^4*c*e^4 - 20*B*b*c^4*d^4 - 8*A*a^2*c^3*e^4 - 20*A*a*b^2*c^2*e^4 - 4*B*a^2*b*c^2*e^4 + 48*A*a*c^4*d^2*e^2 - 32*A*b^3*c^2*d*e^3 - 32*B*a^2*c^3*d*e^3 + 32*B*b^2*c^3*d^3*e + 48*A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*d^2*e^2 + 28*B*a*b^3*c*e^4 - 80*A*b*c^4*d^3*e + 32*B*a*c^4*d^3*e + 32*B*b^4*c*d*e^3 + 48*A*a*b*c^3*d*e^3 + 72*B*a*b*c^3*d^2*e^2 - 80*B*a*b^2*c^2*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (b*(8*B*c^5*d^4 + 12*B*b^4*c*e^4 + 32*A*c^5*d^3*e - 12*A*b^3*c^2*e^4 + 48*B*a^2*c^3*e^4 - 60*B*a*b^2*c^2*e^4 + 48*A*b^2*c^3*d*e^3 - 288*B*a*c^4*d^2*e^2 - 48*B*b^3*c^2*d*e^3 + 72*B*b^2*c^3*d^2*e^2 + 48*A*a*b*c^3*e^4 - 192*A*a*c^4*d*e^3 + 192*B*a*b*c^3*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((a*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*((b*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(8*B*c^5*d^4 + 12*B*b^4*c*e^4 + 32*A*c^5*d^3*e - 12*A*b^3*c^2*e^4 + 48*B*a^2*c^3*e^4 - 60*B*a*b^2*c^2*e^4 + 48*A*b^2*c^3*d*e^3 - 288*B*a*c^4*d^2*e^2 - 48*B*b^3*c^2*d*e^3 + 72*B*b^2*c^3*d^2*e^2 + 48*A*a*b*c^3*e^4 - 192*A*a*c^4*d*e^3 + 192*B*a*b*c^3*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(32*A*c^5*d^4 - 8*B*b^5*e^4 + 8*A*b^4*c*e^4 - 20*B*b*c^4*d^4 - 8*A*a^2*c^3*e^4 - 20*A*a*b^2*c^2*e^4 - 4*B*a^2*b*c^2*e^4 + 48*A*a*c^4*d^2*e^2 - 32*A*b^3*c^2*d*e^3 - 32*B*a^2*c^3*d*e^3 + 32*B*b^2*c^3*d^3*e + 48*

A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*d^2*e^2 + 28*B*a*b^3*c*e^4 - 80*A*b*c^4*d^3*e + 32*B*a*c^4*d^3*e + 32*B*b^4*c*d*e^3 + 48*A*a*b*c^3*d*e^3 + 72*B*a*b*c^3*d^2*e^2 - 80*B*a*b^2*c^2*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + (x*((a*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (8*e^2*(5*B*b^2*e^2 + 12*B*c^2*d^2 - 2*A*b*c*e^2 - 14*B*a*c*e^2 + 8*A*c^2*d*e - 8*B*b*c*d*e))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(256*A*c^5*d^4 + 16*B*b^5*e^4 - 4*A*b^4*c*e^4 - 128*B*b*c^4*d^4 + 160*A*a^2*c^3*e^4 + 40*A*a*b^2*c^2*e^4 - 64*B*a^2*b*c^2*e^4 + 192*A*a*c^4*d^2*e^2 - 32*A*b^3*c^2*d*e^3 + 640*B*a^2*c^3*d*e^3 + 224*B*b^2*c^3*d^3*e + 336*A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*d^2*e^2 - 80*B*a*b^3*c*e^4 - 512*A*b*c^4*d^3*e + 128*B*a*c^4*d^3*e - 16*B*b^4*c*d*e^3 - 384*A*a*b*c^3*d*e^3 - 576*B*a*b*c^3*d^2*e^2 + 160*B*a*b^2*c^2*d*e^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) - (4*b*e^2*(5*B*b^2*e^2 + 12*B*c^2*d^2 - 2*A*b*c*e^2 - 14*B*a*c*e^2 + 8*A*c^2*d*e - 8*B*b*c*d*e))/(5*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) - (a*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (8*e^2*(5*B*b^2*e^2 + 12*B*c^2*d^2 - 2*A*b*c*e^2 - 14*B*a*c*e^2 + 8*A*c^2*d*e - 8*B*b*c*d*e))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(256*A*c^5*d^4 + 16*B*b^5*e^4 - 4*A*b^4*c*e^4 - 128*B*b*c^4*d^4 + 160*A*a^2*c^3*e^4 + 40*A*a*b^2*c^2*e^4 - 64*B*a^2*b*c^2*e^4 + 192*A*a*c^4*d^2*e^2 - 32*A*b^3*c^2*d*e^3 + 640*B*a^2*c^3*d*e^3 + 224*B*b^2*c^3*d^3*e + 336*A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*d^2*e^2 - 80*B*a*b^3*c*e^4 - 512*A*b*c^4*d^3*e + 128*B*a*c^4*d^3*e - 16*B*b^4*c*d*e^3 - 384*A*a*b*c^3*d*e^3 - 576*B*a*b*c^3*d^2*e^2 + 160*B*a*b^2*c^2*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a + b*x + c*x^2)^(1/2) - (x*((b*((a*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*((b*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (a*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c + (8*c^2*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*b*c*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c))))/c + (2*c^2*((2*B*d^4)/5 + (8*A*d^3*e)/5))/(4*a*c^2 - b^2*c) + (4*b*c*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c))))/c + (a*((b*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (a*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c + (8*c^2*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*b*c*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*B*d^4)/5 + (8*A*d^3*e)/5))/(4*a*c^2 - b^2*c) - (4*A*c^2*d^4)/(5*(4*a*c^2 - b^2*c))) + (a*((a*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*((b*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (a*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c + (8*c^2*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*b*c*d*e^2*(2*A*e + 3*B*d

```
))/(5*(4*a*c^2 - b^2*c))))/c + (2*c^2*((2*B*d^4)/5 + (8*A*d^3*e)/5))/(4*a*c
^2 - b^2*c) + (4*b*c*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c))))/c - (2*
A*b*c*d^4)/(5*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(5/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2249 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=264

$$-\frac{16(-2ae+x(2cd-be)+bd)\left(-8b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(aAe^2+3aBde+4Acd^2\right)+b^2e(3Ae+5Bd)\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-$$

Rubi [A] time = 0.36, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {820, 804, 636}

$$-\frac{16(-2ae+x(2cd-be)+bd)\left(-8b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(aAe^2+3aBde+4Acd^2\right)+b^2e(3Ae+5Bd)\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^3(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}-\frac{4(d+ex)^2\left(-x\left(4c(3aBe+4Acd)-8bc(Ae+Bd)+b^2Be\right)-8b(aBe+Acd)+4aAce+b^2(3Ae+4Bd)\right)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^3)/(5*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(5/2)) - (4*(d + e*x)^2*(4*a*A*c*e + b^2*(4*B*d + 3*A*e) - 8*b*(A*
c*d + a*B*e) - (b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*A*c*d + 3*a*B*e))*x))/
(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) - (16*(b^2*e*(5*B*d + 3*A*e) +
 4*c*(4*A*c*d^2 + 3*a*B*d*e + a*A*e^2) - 8*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2
))*(b*d - 2*a*e + (2*c*d - b*e)*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*x^
2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^3}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{2\int \frac{(d+ex)^2(-4bBd+8Acd-3Abe+6aBe-(bB-2Ac)ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^3}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{4(d+ex)^2\left(4aAce+b^2(4Bd+3Ae)-8b(Ac\right.}{15\left(b^2-4\right.}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^3}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{4(d+ex)^2\left(4aAce+b^2(4Bd+3Ae)-8b(Ac\right.}{15\left(b^2-4\right.}$$

Mathematica [B] time = 1.62, size = 963, normalized size = 3.65

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(A*(-3*b^5*(d^3 + 5*d^2*e*x + 15*d*e^2*x^2 - 5*e^3*x^3) - 32*c*(-2*a^4*e
^3 + 8*c^4*d^3*x^5 + 15*a^2*c^2*d*x*(d^2 + e^2*x^2) + 2*a*c^3*d*x^3*(10*d^2
 + 3*e^2*x^2) - a^3*c*e*(9*d^2 + 5*e^2*x^2)) + 16*b*c*(-15*a^2*c*(d - e*x)^
3 + 8*c^3*d^2*x^4*(-5*d + 3*e*x) + 2*a^3*e^2*(-9*d + 5*e*x) + 6*a*c^2*x^2*(
-10*d^3 + 10*d^2*e*x - 5*d*e^2*x^2 + e^3*x^3)) + 48*b^2*(a^3*e^3 + c^3*d*x^
3*(-10*d^2 + 20*d*e*x - 3*e^2*x^2) + a^2*c*e*(3*d^2 - 15*d*e*x + 5*e^2*x^2)
 + 5*a*c^2*x*(-d^3 + 6*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3)) + b^4*(-6*a*e*(d^2
 + 10*d*e*x - 15*e^2*x^2) + 10*c*x*(d^3 + 12*d^2*e*x - 27*d*e^2*x^2 + 2*e^3
*x^3)) - 8*b^3*(3*a^2*e^2*(d - 5*e*x) + c^2*x^2*(10*d^3 - 90*d^2*e*x + 45*d
*e^2*x^2 - e^3*x^3) - 5*a*c*(d^3 + 9*d^2*e*x - 15*d*e^2*x^2 + 5*e^3*x^3)))
+ B*(64*a^4*e^2*(3*c*d - 2*b*e) + 16*a^3*(b^2*e^2*(9*d - 20*e*x) - 2*b*c*e*
(9*d^2 - 15*d*e*x + 10*e^2*x^2) + 6*c^2*(d^3 + 5*d*e^2*x^2)) - 24*a^2*(10*b
*c^2*x*(-d + e*x)^3 + 4*c^3*e*x^3*(5*d^2 + e^2*x^2) + b^3*e*(d^2 - 15*d*e*x
 + 10*e^2*x^2) - 2*b^2*c*(d^3 - 15*d^2*e*x + 15*d*e^2*x^2 - 10*e^3*x^3)) +
b*x*(128*c^4*d^3*x^4 + 16*b*c^3*d^2*x^3*(20*d - 9*e*x) + 24*b^2*c^2*d*x^2*(
10*d^2 - 15*d*e*x + e^2*x^2) - 5*b^4*(d^3 + 9*d^2*e*x - 9*d*e^2*x^2 - e^3*x
^3) + 2*b^3*c*x*(20*d^3 - 135*d^2*e*x + 30*d*e^2*x^2 + e^3*x^3)) - 2*a*(96*
c^4*d^2*e*x^5 - 16*b*c^3*d*x^3*(10*d^2 - 15*d*e*x + 9*e^2*x^2) + 24*b^2*c^2
*x^2*(-10*d^3 + 15*d^2*e*x - 15*d*e^2*x^2 + e^3*x^3) + 60*b^3*c*x*(-d^3 + 5
*d^2*e*x - 5*d*e^2*x^2 + e^3*x^3) + b^4*(d^3 + 30*d^2*e*x - 135*d*e^2*x^2 +
 20*e^3*x^3)))))/(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [B] time = 14.92, size = 1481, normalized size = 5.61

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(3*A*b^5*d^3 + 2*a*b^4*B*d^3 - 40*a*A*b^3*c*d^3 - 48*a^2*b^2*B*c*d^3 +
240*a^2*A*b*c^2*d^3 - 96*a^3*B*c^2*d^3 + 6*a*A*b^4*d^2*e + 24*a^2*b^3*B*d^2
*e - 144*a^2*A*b^2*c*d^2*e + 288*a^3*b*B*c*d^2*e - 288*a^3*A*c^2*d^2*e + 24
*a^2*A*b^3*d*e^2 - 144*a^3*b^2*B*d*e^2 + 288*a^3*A*b*c*d*e^2 - 192*a^4*B*c*
d*e^2 - 48*a^3*A*b^2*e^3 + 128*a^4*b*B*e^3 - 64*a^4*A*c*e^3 + 5*b^5*B*d^3*x
 - 10*A*b^4*c*d^3*x - 120*a*b^3*B*c*d^3*x + 240*a*A*b^2*c^2*d^3*x - 240*a^2
*b*B*c^2*d^3*x + 480*a^2*A*c^3*d^3*x + 15*A*b^5*d^2*e*x + 60*a*b^4*B*d^2*e*
x - 360*a*A*b^3*c*d^2*e*x + 720*a^2*b^2*B*c*d^2*e*x - 720*a^2*A*b*c^2*d^2*e
```

```
*x + 60*a*A*b^4*d*e^2*x - 360*a^2*b^3*B*d*e^2*x + 720*a^2*A*b^2*c*d*e^2*x -
 480*a^3*b*B*c*d*e^2*x - 120*a^2*A*b^3*e^3*x + 320*a^3*b^2*B*e^3*x - 160*a^
3*A*b*c*e^3*x - 40*b^4*B*c*d^3*x^2 + 80*A*b^3*c^2*d^3*x^2 - 480*a*b^2*B*c^2
*d^3*x^2 + 960*a*A*b*c^3*d^3*x^2 + 45*b^5*B*d^2*e*x^2 - 120*A*b^4*c*d^2*e*x
^2 + 600*a*b^3*B*c*d^2*e*x^2 - 1440*a*A*b^2*c^2*d^2*e*x^2 + 720*a^2*b*B*c^2
*d^2*e*x^2 + 45*A*b^5*d*e^2*x^2 - 270*a*b^4*B*d*e^2*x^2 + 600*a*A*b^3*c*d*e
^2*x^2 - 720*a^2*b^2*B*c*d*e^2*x^2 + 720*a^2*A*b*c^2*d*e^2*x^2 - 480*a^3*B*
c^2*d*e^2*x^2 - 90*a*A*b^4*e^3*x^2 + 240*a^2*b^3*B*e^3*x^2 - 240*a^2*A*b^2*
c*e^3*x^2 + 320*a^3*b*B*c*e^3*x^2 - 160*a^3*A*c^2*e^3*x^2 - 240*b^3*B*c^2*d
^3*x^3 + 480*A*b^2*c^3*d^3*x^3 - 320*a*b*B*c^3*d^3*x^3 + 640*a*A*c^4*d^3*x^
3 + 270*b^4*B*c*d^2*e*x^3 - 720*A*b^3*c^2*d^2*e*x^3 + 720*a*b^2*B*c^2*d^2*e
*x^3 - 960*a*A*b*c^3*d^2*e*x^3 + 480*a^2*B*c^3*d^2*e*x^3 - 45*b^5*B*d*e^2*x
^3 + 270*A*b^4*c*d*e^2*x^3 - 600*a*b^3*B*c*d*e^2*x^3 + 720*a*A*b^2*c^2*d*e^
2*x^3 - 720*a^2*b*B*c^2*d*e^2*x^3 + 480*a^2*A*c^3*d*e^2*x^3 - 15*A*b^5*e^3*
x^3 + 40*a*b^4*B*e^3*x^3 - 200*a*A*b^3*c*e^3*x^3 + 480*a^2*b^2*B*c*e^3*x^3
- 240*a^2*A*b*c^2*e^3*x^3 - 320*b^2*B*c^3*d^3*x^4 + 640*A*b*c^4*d^3*x^4 + 3
60*b^3*B*c^2*d^2*e*x^4 - 960*A*b^2*c^3*d^2*e*x^4 + 480*a*b*B*c^3*d^2*e*x^4
- 60*b^4*B*c*d*e^2*x^4 + 360*A*b^3*c^2*d*e^2*x^4 - 720*a*b^2*B*c^2*d*e^2*x^
4 + 480*a*A*b*c^3*d*e^2*x^4 - 5*b^5*B*e^3*x^4 - 20*A*b^4*c*e^3*x^4 + 120*a*
b^3*B*c*e^3*x^4 - 240*a*A*b^2*c^2*e^3*x^4 + 240*a^2*b*B*c^2*e^3*x^4 - 128*b
*B*c^4*d^3*x^5 + 256*A*c^5*d^3*x^5 + 144*b^2*B*c^3*d^2*e*x^5 - 384*A*b*c^4*
d^2*e*x^5 + 192*a*B*c^4*d^2*e*x^5 - 24*b^3*B*c^2*d*e^2*x^5 + 144*A*b^2*c^3*
d*e^2*x^5 - 288*a*b*B*c^3*d*e^2*x^5 + 192*a*A*c^4*d*e^2*x^5 - 2*b^4*B*c*e^3
*x^5 - 8*A*b^3*c^2*e^3*x^5 + 48*a*b^2*B*c^2*e^3*x^5 - 96*a*A*b*c^3*e^3*x^5
+ 96*a^2*B*c^3*e^3*x^5))/(15*(b^2 - 4*a*c)^3*(a + b*x + c*x^2)^(5/2))
```

fricas [B] time = 128.73, size = 1370, normalized size = 5.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(2*(64*(B*b*c^4 - 2*A*c^5)*d^3 - 24*(3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4
)*d^2*e + 12*(B*b^3*c^2 - 8*A*a*c^4 + 6*(2*B*a*b - A*b^2)*c^3)*d*e^2 + (B*b
^4*c - 48*(B*a^2 - A*a*b)*c^3 - 4*(6*B*a*b^2 - A*b^3)*c^2)*e^3)*x^5 + 5*(64
*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 24*(3*B*b^3*c^2 + 4*(B*a*b - 2*A*b^2)*c^3)*d
^2*e + 12*(B*b^4*c - 8*A*a*b*c^3 + 6*(2*B*a*b^2 - A*b^3)*c^2)*d*e^2 + (B*b^
5 - 48*(B*a^2*b - A*a*b^2)*c^2 - 4*(6*B*a*b^3 - A*b^4)*c)*e^3)*x^4 - (2*B*a
*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 + 5*A*a*b^3)
*c)*d^3 - 6*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*(2*B*a^3*b - A*a^2*b
^2)*c)*d^2*e + 24*(6*B*a^3*b^2 - A*a^2*b^3 + 4*(2*B*a^4 - 3*A*a^3*b)*c)*d*e
^2 - 16*(8*B*a^4*b - 3*A*a^3*b^2 - 4*A*a^4*c)*e^3 + 5*(16*(3*B*b^3*c^2 - 8*
A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d^3 - 6*(9*B*b^4*c + 16*(B*a^2 - 2*A*a
*b)*c^3 + 24*(B*a*b^2 - A*b^3)*c^2)*d^2*e + 3*(3*B*b^5 - 32*A*a^2*c^3 + 48*
(B*a^2*b - A*a*b^2)*c^2 + 2*(20*B*a*b^3 - 9*A*b^4)*c)*d*e^2 - (8*B*a*b^4 -
3*A*b^5 - 48*A*a^2*b*c^2 + 8*(12*B*a^2*b^2 - 5*A*a*b^3)*c)*e^3)*x^3 + 5*(8*
(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d^3 - 3*(3*B*b^5 + 48*
(B*a^2*b - 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*d^2*e + 3*(18*B*a*b^4
- 3*A*b^5 + 16*(2*B*a^3 - 3*A*a^2*b)*c^2 + 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c)*d
*e^2 - 2*(24*B*a^2*b^3 - 9*A*a*b^4 - 16*A*a^3*c^2 + 8*(4*B*a^3*b - 3*A*a^2*
b^2)*c)*e^3)*x^2 - 5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 -
2*(12*B*a*b^3 + A*b^4)*c)*d^3 + 3*(4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*
(2*B*a^2*b^2 - A*a*b^3)*c)*d^2*e - 12*(6*B*a^2*b^3 - A*a*b^4 + 4*(2*B*a^3*b
 - 3*A*a^2*b^2)*c)*d*e^2 + 8*(8*B*a^3*b^2 - 3*A*a^2*b^3 - 4*A*a^3*b*c)*e^3)
*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6
*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*
c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b
^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7
*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*
```

```
a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7
- 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [B] time = 0.36, size = 1437, normalized size = 5.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(((((2*(64*B*b*c^4*d^3 - 128*A*c^5*d^3 - 72*B*b^2*c^3*d^2*e - 96*B*a*c
^4*d^2*e + 192*A*b*c^4*d^2*e + 12*B*b^3*c^2*d*e^2 + 144*B*a*b*c^3*d*e^2 - 7
2*A*b^2*c^3*d*e^2 - 96*A*a*c^4*d*e^2 + B*b^4*c*e^3 - 24*B*a*b^2*c^2*e^3 + 4
*A*b^3*c^2*e^3 - 48*B*a^2*c^3*e^3 + 48*A*a*b*c^3*e^3)*x/(b^6 - 12*a*b^4*c +
 48*a^2*b^2*c^2 - 64*a^3*c^3) + 5*(64*B*b^2*c^3*d^3 - 128*A*b*c^4*d^3 - 72*
B*b^3*c^2*d^2*e - 96*B*a*b*c^3*d^2*e + 192*A*b^2*c^3*d^2*e + 12*B*b^4*c*d*e
^2 + 144*B*a*b^2*c^2*d*e^2 - 72*A*b^3*c^2*d*e^2 - 96*A*a*b*c^3*d*e^2 + B*b^
5*e^3 - 24*B*a*b^3*c*e^3 + 4*A*b^4*c*e^3 - 48*B*a^2*b*c^2*e^3 + 48*A*a*b^2*
c^2*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(48*B*b^3*
c^2*d^3 + 64*B*a*b*c^3*d^3 - 96*A*b^2*c^3*d^3 - 128*A*a*c^4*d^3 - 54*B*b^4*
c*d^2*e - 144*B*a*b^2*c^2*d^2*e + 144*A*b^3*c^2*d^2*e - 96*B*a^2*c^3*d^2*e
+ 192*A*a*b*c^3*d^2*e + 9*B*b^5*d*e^2 + 120*B*a*b^3*c*d*e^2 - 54*A*b^4*c*d*
e^2 + 144*B*a^2*b*c^2*d*e^2 - 144*A*a*b^2*c^2*d*e^2 - 96*A*a^2*c^3*d*e^2 -
8*B*a*b^4*e^3 + 3*A*b^5*e^3 - 96*B*a^2*b^2*c*e^3 + 40*A*a*b^3*c*e^3 + 48*A*
a^2*b*c^2*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(8*B
*b^4*c*d^3 + 96*B*a*b^2*c^2*d^3 - 16*A*b^3*c^2*d^3 - 192*A*a*b*c^3*d^3 - 9*
B*b^5*d^2*e - 120*B*a*b^3*c*d^2*e + 24*A*b^4*c*d^2*e - 144*B*a^2*b*c^2*d^2*
e + 288*A*a*b^2*c^2*d^2*e + 54*B*a*b^4*d*e^2 - 9*A*b^5*d*e^2 + 144*B*a^2*b^
2*c*d*e^2 - 120*A*a*b^3*c*d*e^2 + 96*B*a^3*c^2*d*e^2 - 144*A*a^2*b*c^2*d*e^
2 - 48*B*a^2*b^3*e^3 + 18*A*a*b^4*e^3 - 64*B*a^3*b*c*e^3 + 48*A*a^2*b^2*c*e
^3 + 32*A*a^3*c^2*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x
- 5*(B*b^5*d^3 - 24*B*a*b^3*c*d^3 - 2*A*b^4*c*d^3 - 48*B*a^2*b*c^2*d^3 + 48
*A*a*b^2*c^2*d^3 + 96*A*a^2*c^3*d^3 + 12*B*a*b^4*d^2*e + 3*A*b^5*d^2*e + 14
4*B*a^2*b^2*c*d^2*e - 72*A*a*b^3*c*d^2*e - 144*A*a^2*b*c^2*d^2*e - 72*B*a^2
*b^3*d*e^2 + 12*A*a*b^4*d*e^2 - 96*B*a^3*b*c*d*e^2 + 144*A*a^2*b^2*c*d*e^2
+ 64*B*a^3*b^2*e^3 - 24*A*a^2*b^3*e^3 - 32*A*a^3*b*c*e^3)/(b^6 - 12*a*b^4*c
 + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x - (2*B*a*b^4*d^3 + 3*A*b^5*d^3 - 48*B*a^
2*b^2*c*d^3 - 40*A*a*b^3*c*d^3 - 96*B*a^3*c^2*d^3 + 240*A*a^2*b*c^2*d^3 + 2
4*B*a^2*b^3*d^2*e + 6*A*a*b^4*d^2*e + 288*B*a^3*b*c*d^2*e - 144*A*a^2*b^2*c
*d^2*e - 288*A*a^3*c^2*d^2*e - 144*B*a^3*b^2*d*e^2 + 24*A*a^2*b^3*d*e^2 - 1
92*B*a^4*c*d*e^2 + 288*A*a^3*b*c*d*e^2 + 128*B*a^4*b*e^3 - 48*A*a^3*b^2*e^3
 - 64*A*a^4*c*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2
 + b*x + a)^(5/2)
```

maple [B] time = 0.02, size = 1502, normalized size = 5.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] -2/15/(c*x^2+b*x+a)^(5/2)*(96*A*a*b*c^3*e^3*x^5-192*A*a*c^4*d*e^2*x^5+8*A*b
^3*c^2*e^3*x^5-144*A*b^2*c^3*d*e^2*x^5+384*A*b*c^4*d^2*e*x^5-256*A*c^5*d^3*
x^5-96*B*a^2*c^3*e^3*x^5-48*B*a*b^2*c^2*e^3*x^5+288*B*a*b*c^3*d*e^2*x^5-192
*B*a*c^4*d^2*e*x^5+2*B*b^4*c*e^3*x^5+24*B*b^3*c^2*d*e^2*x^5-144*B*b^2*c^3*d
^2*e*x^5+128*B*b*c^4*d^3*x^5+240*A*a*b^2*c^2*e^3*x^4-480*A*a*b*c^3*d*e^2*x^
4+20*A*b^4*c*e^3*x^4-360*A*b^3*c^2*d*e^2*x^4+960*A*b^2*c^3*d^2*e*x^4-640*A*
b*c^4*d^3*x^4-240*B*a^2*b*c^2*e^3*x^4-120*B*a*b^3*c*e^3*x^4+720*B*a*b^2*c^2
*d*e^2*x^4-480*B*a*b*c^3*d^2*e*x^4+5*B*b^5*e^3*x^4+60*B*b^4*c*d*e^2*x^4-360
*B*b^3*c^2*d^2*e*x^4+320*B*b^2*c^3*d^3*x^4+240*A*a^2*b*c^2*e^3*x^3-480*A*a^
2*c^3*d*e^2*x^3+200*A*a*b^3*c*e^3*x^3-720*A*a*b^2*c^2*d*e^2*x^3+960*A*a*b*c
```

```
^3*d^2*e*x^3-640*A*a*c^4*d^3*x^3+15*A*b^5*e^3*x^3-270*A*b^4*c*d*e^2*x^3+720
*A*b^3*c^2*d^2*e*x^3-480*A*b^2*c^3*d^3*x^3-480*B*a^2*b^2*c*e^3*x^3+720*B*a^
2*b*c^2*d*e^2*x^3-480*B*a^2*c^3*d^2*e*x^3-40*B*a*b^4*e^3*x^3+600*B*a*b^3*c*
d*e^2*x^3-720*B*a*b^2*c^2*d^2*e*x^3+320*B*a*b*c^3*d^3*x^3+45*B*b^5*d*e^2*x^
3-270*B*b^4*c*d^2*e*x^3+240*B*b^3*c^2*d^3*x^3+160*A*a^3*c^2*e^3*x^2+240*A*a
^2*b^2*c*e^3*x^2-720*A*a^2*b*c^2*d*e^2*x^2+90*A*a*b^4*e^3*x^2-600*A*a*b^3*c
*d*e^2*x^2+1440*A*a*b^2*c^2*d^2*e*x^2-960*A*a*b*c^3*d^3*x^2-45*A*b^5*d*e^2*
x^2+120*A*b^4*c*d^2*e*x^2-80*A*b^3*c^2*d^3*x^2-320*B*a^3*b*c*e^3*x^2+480*B*
a^3*c^2*d*e^2*x^2-240*B*a^2*b^3*e^3*x^2+720*B*a^2*b^2*c*d*e^2*x^2-720*B*a^2
*b*c^2*d^2*e*x^2+270*B*a*b^4*d*e^2*x^2-600*B*a*b^3*c*d^2*e*x^2+480*B*a*b^2*
c^2*d^3*x^2-45*B*b^5*d^2*e*x^2+40*B*b^4*c*d^3*x^2+160*A*a^3*b*c*e^3*x+120*A
*a^2*b^3*e^3*x-720*A*a^2*b^2*c*d*e^2*x+720*A*a^2*b*c^2*d^2*e*x-480*A*a^2*c^
3*d^3*x-60*A*a*b^4*d*e^2*x+360*A*a*b^3*c*d^2*e*x-240*A*a*b^2*c^2*d^3*x-15*A
*b^5*d^2*e*x+10*A*b^4*c*d^3*x-320*B*a^3*b^2*e^3*x+480*B*a^3*b*c*d*e^2*x+360
*B*a^2*b^3*d*e^2*x-720*B*a^2*b^2*c*d^2*e*x+240*B*a^2*b*c^2*d^3*x-60*B*a*b^4
*d^2*e*x+120*B*a*b^3*c*d^3*x-5*B*b^5*d^3*x+64*A*a^4*c*e^3+48*A*a^3*b^2*e^3-
288*A*a^3*b*c*d*e^2+288*A*a^3*c^2*d^2*e-24*A*a^2*b^3*d*e^2+144*A*a^2*b^2*c*
d^2*e-240*A*a^2*b*c^2*d^3-6*A*a*b^4*d^2*e+40*A*a*b^3*c*d^3-3*A*b^5*d^3-128*
B*a^4*b*e^3+192*B*a^4*c*d*e^2+144*B*a^3*b^2*d*e^2-288*B*a^3*b*c*d^2*e+96*B*
a^3*c^2*d^3-24*B*a^2*b^3*d^2*e+48*B*a^2*b^2*c*d^3-2*B*a*b^4*d^3)/(64*a^3*c^
3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 4.43, size = 4090, normalized size = 15.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] (x*((2*A*b*c^2*e^3 + 4*B*a*c^2*e^3 - 2*B*b^2*c*e^3 - 12*A*c^3*d*e^2 - 12*B*
c^3*d^2*e + 6*B*b*c^2*d*e^2)/(15*c^3*(4*a*c - b^2)) + (b*((2*e^2*(2*A*c*e -
 B*b*e + 6*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B*b*e^3)/(15*c*(4*a*c - b^2)))
)/c + (4*B*a*e^3)/(15*c*(4*a*c - b^2))) + (2*B*b^3*e^3 - 4*B*c^3*d^3 + 4*A*
a*c^2*e^3 - 2*A*b^2*c*e^3 - 12*A*c^3*d^2*e - 6*B*a*b*c*e^3 + 6*A*b*c^2*d*e^
2 + 12*B*a*c^2*d*e^2 + 6*B*b*c^2*d^2*e - 6*B*b^2*c*d*e^2)/(15*c^3*(4*a*c -
b^2)) + (a*((2*e^2*(2*A*c*e - B*b*e + 6*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B
*b*e^3)/(15*c*(4*a*c - b^2))))/c)/(a + b*x + c*x^2)^(3/2) - (x*((b*((16*c*e
^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*
c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(2*B*b^2*e^3 + 16*B*a*c
*e^3 - 24*A*c^2*d*e^2 - 24*B*c^2*d^2*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2
)) - (8*b*e^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
) + (16*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((16*c*e^2*(A*
c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^3)
/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(2*B*b^2*e^3 + 16*B*a*c*e^3 -
 24*A*c^2*d*e^2 - 24*B*c^2*d^2*e))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/
(a + b*x + c*x^2)^(1/2) + (x*((b*((b*((b*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a
*c - b^2))))/c - (2*(24*A*c^4*d*e^2 - 48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*
B*b^2*c^2*e^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^3)/(
```

```
15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^2*(A*e + 3*B*d))/(15*(4*a*
c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c
^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2))))/c + (2*(8*B*c^4*d^3 - 48*A*a*c^3*e^3 - 12*B*b^3*c*e^3 + 24*A*c^4*d
^2*e + 12*A*b^2*c^2*e^3 + 36*B*b^2*c^2*d*e^2 + 48*B*a*b*c^2*e^3 - 144*B*a*c
^3*d*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(24*A*c^4*d*e^2 - 48
*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b^2*c^2*e^3))/(15*c^2*(4*a*c^2 - b^2*c
)*(4*a*c - b^2))))/c - (a*((b*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^
2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))
)/c - (2*(24*A*c^4*d*e^2 - 48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b^2*c^2*e
^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^3)/(15*(4*a*c^2
 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c
)*(4*a*c - b^2))))/c + (2*(32*A*c^4*d^3 + 8*B*b^4*e^3 - 8*A*b^3*c*e^3 - 20*
B*b*c^3*d^3 - 8*B*a^2*c^2*e^3 + 24*A*b^2*c^2*d*e^2 + 24*B*b^2*c^2*d^2*e + 1
2*A*a*b*c^2*e^3 - 20*B*a*b^2*c*e^3 + 24*A*a*c^3*d*e^2 - 60*A*b*c^3*d^2*e +
24*B*a*c^3*d^2*e - 24*B*b^3*c*d*e^2 + 36*B*a*b*c^2*d*e^2))/(15*c*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2)) - (b*(8*B*c^4*d^3 - 48*A*a*c^3*e^3 - 12*B*b^3*c*e^3
+ 24*A*c^4*d^2*e + 12*A*b^2*c^2*e^3 + 36*B*b^2*c^2*d*e^2 + 48*B*a*b*c^2*e^3
 - 144*B*a*c^3*d*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((b*(
(b*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*
b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (2*(24*A*c^4*d*e^2 -
48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b^2*c^2*e^3))/(15*c*(4*a*c^2 - b^2*c
)*(4*a*c - b^2)) + (16*B*a*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) -
(8*b*c^2*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*(
(16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^
2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(8*B*c^4*d^3 - 48*A*a*
c^3*e^3 - 12*B*b^3*c*e^3 + 24*A*c^4*d^2*e + 12*A*b^2*c^2*e^3 + 36*B*b^2*c^2
*d*e^2 + 48*B*a*b*c^2*e^3 - 144*B*a*c^3*d*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*
a*c - b^2)) + (b*(24*A*c^4*d*e^2 - 48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b
^2*c^2*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(32*A*c^4*d^
3 + 8*B*b^4*e^3 - 8*A*b^3*c*e^3 - 20*B*b*c^3*d^3 - 8*B*a^2*c^2*e^3 + 24*A*b
^2*c^2*d*e^2 + 24*B*b^2*c^2*d^2*e + 12*A*a*b*c^2*e^3 - 20*B*a*b^2*c*e^3 + 2
4*A*a*c^3*d*e^2 - 60*A*b*c^3*d^2*e + 24*B*a*c^3*d^2*e - 24*B*b^3*c*d*e^2 +
36*B*a*b*c^2*d*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c
*x^2)^(3/2) + (x*((a*((b*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 -
b^2*c) - (2*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^3)/5 + (6*B
*d*e^2)/5))/(4*a*c^2 - b^2*c) - (12*c^2*d*e*(A*e + B*d))/(5*(4*a*c^2 - b^2*
c)) + (4*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c - (b*((2*c^2*((2*B*d^3)/5 + (
6*A*d^2*e)/5))/(4*a*c^2 - b^2*c) - (a*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5)
)/(4*a*c^2 - b^2*c) - (2*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c + (b*((b*((2*
c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^3)/(5*(4*
a*c^2 - b^2*c))))/c - (b*c*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c)
 - (12*c^2*d*e*(A*e + B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^3)/(5*(4*a*c
^2 - b^2*c))))/c + (6*b*c*d*e*(A*e + B*d))/(5*(4*a*c^2 - b^2*c))))/c + (b*c
*((2*B*d^3)/5 + (6*A*d^2*e)/5))/(4*a*c^2 - b^2*c) + (4*A*c^2*d^3)/(5*(4*a*c
^2 - b^2*c))) - (a*((2*c^2*((2*B*d^3)/5 + (6*A*d^2*e)/5))/(4*a*c^2 - b^2*c)
 - (a*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e
^3)/(5*(4*a*c^2 - b^2*c))))/c + (b*((b*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5
))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A
*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c) - (12*c^2*d*e*(A*e + B*d))/(5*(
4*a*c^2 - b^2*c)) + (4*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c + (6*b*c*d*e*(A
*e + B*d))/(5*(4*a*c^2 - b^2*c))))/c + (2*A*b*c*d^3)/(5*(4*a*c^2 - b^2*c)))
/(a + b*x + c*x^2)^(5/2) + (x*((2*(256*A*c^4*d^3 - 4*B*b^4*e^3 - 8*A*b^3*c*
e^3 - 128*B*b*c^3*d^3 + 160*B*a^2*c^2*e^3 + 168*A*b^2*c^2*d*e^2 + 168*B*b^2
*c^2*d^2*e - 96*A*a*b*c^2*e^3 + 40*B*a*b^2*c*e^3 + 96*A*a*c^3*d*e^2 - 384*A
*b*c^3*d^2*e + 96*B*a*c^3*d^2*e - 24*B*b^3*c*d*e^2 - 288*B*a*b*c^2*d*e^2))/
(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (b*((16*c*e^2*(A*c*e - B*b*e + 3*B
*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^3)/(5*(4*a*c^2 - b^
2*c)*(4*a*c - b^2))))/c - (8*b*e^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 -
```

```
 b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
) + (a*((16*c*e^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c -
b^2)) - (8*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(256*A*c
^4*d^3 - 4*B*b^4*e^3 - 8*A*b^3*c*e^3 - 128*B*b*c^3*d^3 + 160*B*a^2*c^2*e^3
+ 168*A*b^2*c^2*d*e^2 + 168*B*b^2*c^2*d^2*e - 96*A*a*b*c^2*e^3 + 40*B*a*b^2
*c*e^3 + 96*A*a*c^3*d*e^2 - 384*A*b*c^3*d^2*e + 96*B*a*c^3*d^2*e - 24*B*b^3
*c*d*e^2 - 288*B*a*b*c^2*d*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/
(a + b*x + c*x^2)^(1/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2250 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=324

$$-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}+\frac{8(b+2cx)\left(4bc\left(3aBe^2+8Acde+4Bcd^2\right)-8c^2\left(aAe^2+2aBde+4Acd\right.\right.}{15c\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}$$

Rubi [A] time = 0.39, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {820, 777, 613}

$$\frac{8(b+2cx)\left(4bc\left(3aBe^2+8Acde+4Bcd^2\right)-8c^2\left(aAe^2+2aBde+4Acd^2\right)-6b^2ce(Ae+2Bd)+b^3Be^2\right)}{15c\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{8\left(x\left(-4c^2\left(-aAe^2+aBde+2Acd^2\right)-3b^2ce(Ae+Bd)+4bc^2d(2Ae+Bd)+b^3Be^2\right)+b^2\left(aBe^2+Acde+2Bcd^2\right)-4bc\left(aAe^2+2aBde+Acd^2\right)+4ace(aBe+3Acd)\right)}{15c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^2)/(5*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(5/2)) - (8*(4*a*c*e*(3*A*c*d + a*B*e) - 4*b*c*(A*c*d^2 + 2*a*B*d*
e + a*A*e^2) + b^2*(2*B*c*d^2 + A*c*d*e + a*B*e^2) + (b^3*B*e^2 - 3*b^2*c*e
*(B*d + A*e) + 4*b*c^2*d*(B*d + 2*A*e) - 4*c^2*(2*A*c*d^2 + a*B*d*e - a*A*e
^2))*x))/(15*c*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) + (8*(b^3*B*e^2 - 6
*b^2*c*e*(2*B*d + A*e) - 8*c^2*(4*A*c*d^2 + 2*a*B*d*e + a*A*e^2) + 4*b*c*(4
*B*c*d^2 + 8*A*c*d*e + 3*a*B*e^2))*(b + 2*c*x))/(15*c*(b^2 - 4*a*c)^3*Sqrt[
a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{2\int \frac{(d+ex)(2(4Acd+2aBe-b(2Bd+Ae))-2(bB-2Ac)ex)}{\left(a+bx+cx^2\right)^{5/2}}}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{8\left(4ace(3Acd+aBe)-4bc\left(Acd^2+2aBd\right.\right.}{}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{8\left(4ace(3Acd+aBe)-4bc\left(Acd^2+2aBd\right.\right.}{}$$

Mathematica [B] time = 1.41, size = 711, normalized size = 2.19

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*A*(b^5*(3*d^2 + 10*d*e*x + 15*e^2*x^2) + 2*b^4*(2*a*e*(d + 5*e*x) - 5*c
*x*(d^2 + 8*d*e*x - 9*e^2*x^2)) + 32*c^2*(-6*a^3*d*e + 8*c^3*d^2*x^5 + 5*a^
2*c*x*(3*d^2 + e^2*x^2) + 2*a*c^2*x^3*(10*d^2 + e^2*x^2)) + 16*b*c*(6*a^3*e
^2 + 8*c^3*d*x^4*(5*d - 2*e*x) + 15*a^2*c*(d - e*x)^2 + 10*a*c^2*x^2*(6*d^2
 - 4*d*e*x + e^2*x^2)) + 16*b^2*c*(3*a^2*e*(-2*d + 5*e*x) + 15*a*c*x*(d^2 -
 4*d*e*x + e^2*x^2) + c^2*x^3*(30*d^2 - 40*d*e*x + 3*e^2*x^2)) + 8*b^3*(a^2
*e^2 - 5*a*c*(d^2 + 6*d*e*x - 5*e^2*x^2) + 5*c^2*x^2*(2*d^2 - 12*d*e*x + 3*
e^2*x^2))) + 2*B*(64*a^4*c*e^2 + b*x*(128*c^4*d^2*x^4 + 32*b*c^3*d*x^3*(10*
d - 3*e*x) - 5*b^4*(d^2 + 6*d*e*x - 3*e^2*x^2) + 8*b^2*c^2*x^2*(30*d^2 - 30
*d*e*x + e^2*x^2) + 20*b^3*c*x*(2*d^2 - 9*d*e*x + e^2*x^2)) + 16*a^3*(3*b^2
*e^2 + 2*b*c*e*(-6*d + 5*e*x) + 2*c^2*(3*d^2 + 5*e^2*x^2)) - 8*a^2*(40*c^3*
d*e*x^3 + b^3*e*(2*d - 15*e*x) - 30*b*c^2*x*(d - e*x)^2 - 6*b^2*c*(d^2 - 10
*d*e*x + 5*e^2*x^2)) - 2*a*(64*c^4*d*e*x^5 + b^4*(d^2 + 20*d*e*x - 45*e^2*x
^2) - 120*b^2*c^2*x^2*(2*d^2 - 2*d*e*x + e^2*x^2) - 16*b*c^3*x^3*(10*d^2 -
10*d*e*x + 3*e^2*x^2) - 20*b^3*c*x*(3*d^2 - 10*d*e*x + 5*e^2*x^2))))/(15*(b
^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [B] time = 10.23, size = 1043, normalized size = 3.22

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(3*A*b^5*d^2 + 2*a*b^4*B*d^2 - 40*a*A*b^3*c*d^2 - 48*a^2*b^2*B*c*d^2 +
240*a^2*A*b*c^2*d^2 - 96*a^3*B*c^2*d^2 + 4*a*A*b^4*d*e + 16*a^2*b^3*B*d*e -
 96*a^2*A*b^2*c*d*e + 192*a^3*b*B*c*d*e - 192*a^3*A*c^2*d*e + 8*a^2*A*b^3*e
^2 - 48*a^3*b^2*B*e^2 + 96*a^3*A*b*c*e^2 - 64*a^4*B*c*e^2 + 5*b^5*B*d^2*x -
 10*A*b^4*c*d^2*x - 120*a*b^3*B*c*d^2*x + 240*a*A*b^2*c^2*d^2*x - 240*a^2*b
*B*c^2*d^2*x + 480*a^2*A*c^3*d^2*x + 10*A*b^5*d*e*x + 40*a*b^4*B*d*e*x - 24
0*a*A*b^3*c*d*e*x + 480*a^2*b^2*B*c*d*e*x - 480*a^2*A*b*c^2*d*e*x + 20*a*A*
b^4*e^2*x - 120*a^2*b^3*B*e^2*x + 240*a^2*A*b^2*c*e^2*x - 160*a^3*b*B*c*e^2
*x - 40*b^4*B*c*d^2*x^2 + 80*A*b^3*c^2*d^2*x^2 - 480*a*b^2*B*c^2*d^2*x^2 +
960*a*A*b*c^3*d^2*x^2 + 30*b^5*B*d*e*x^2 - 80*A*b^4*c*d*e*x^2 + 400*a*b^3*B
*c*d*e*x^2 - 960*a*A*b^2*c^2*d*e*x^2 + 480*a^2*b*B*c^2*d*e*x^2 + 15*A*b^5*e
^2*x^2 - 90*a*b^4*B*e^2*x^2 + 200*a*A*b^3*c*e^2*x^2 - 240*a^2*b^2*B*c*e^2*x
^2 + 240*a^2*A*b*c^2*e^2*x^2 - 160*a^3*B*c^2*e^2*x^2 - 240*b^3*B*c^2*d^2*x^
```

```
3 + 480*A*b^2*c^3*d^2*x^3 - 320*a*b*B*c^3*d^2*x^3 + 640*a*A*c^4*d^2*x^3 + 1
80*b^4*B*c*d*e*x^3 - 480*A*b^3*c^2*d*e*x^3 + 480*a*b^2*B*c^2*d*e*x^3 - 640*
a*A*b*c^3*d*e*x^3 + 320*a^2*B*c^3*d*e*x^3 - 15*b^5*B*e^2*x^3 + 90*A*b^4*c*e
^2*x^3 - 200*a*b^3*B*c*e^2*x^3 + 240*a*A*b^2*c^2*e^2*x^3 - 240*a^2*b*B*c^2*
e^2*x^3 + 160*a^2*A*c^3*e^2*x^3 - 320*b^2*B*c^3*d^2*x^4 + 640*A*b*c^4*d^2*x
^4 + 240*b^3*B*c^2*d*e*x^4 - 640*A*b^2*c^3*d*e*x^4 + 320*a*b*B*c^3*d*e*x^4
- 20*b^4*B*c*e^2*x^4 + 120*A*b^3*c^2*e^2*x^4 - 240*a*b^2*B*c^2*e^2*x^4 + 16
0*a*A*b*c^3*e^2*x^4 - 128*b*B*c^4*d^2*x^5 + 256*A*c^5*d^2*x^5 + 96*b^2*B*c^
3*d*e*x^5 - 256*A*b*c^4*d*e*x^5 + 128*a*B*c^4*d*e*x^5 - 8*b^3*B*c^2*e^2*x^5
 + 48*A*b^2*c^3*e^2*x^5 - 96*a*b*B*c^3*e^2*x^5 + 64*a*A*c^4*e^2*x^5))/(15*(
b^2 - 4*a*c)^3*(a + b*x + c*x^2)^(5/2))
```

fricas [B] time = 130.73, size = 1095, normalized size = 3.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(8*(16*(B*b*c^4 - 2*A*c^5)*d^2 - 4*(3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4)
*d*e + (B*b^3*c^2 - 8*A*a*c^4 + 6*(2*B*a*b - A*b^2)*c^3)*e^2)*x^5 + 20*(16*
(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(3*B*b^3*c^2 + 4*(B*a*b - 2*A*b^2)*c^3)*d*e
 + (B*b^4*c - 8*A*a*b*c^3 + 6*(2*B*a*b^2 - A*b^3)*c^2)*e^2)*x^4 + 5*(16*(3*
B*b^3*c^2 - 8*A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d^2 - 4*(9*B*b^4*c + 16*
(B*a^2 - 2*A*a*b)*c^3 + 24*(B*a*b^2 - A*b^3)*c^2)*d*e + (3*B*b^5 - 32*A*a^2
*c^3 + 48*(B*a^2*b - A*a*b^2)*c^2 + 2*(20*B*a*b^3 - 9*A*b^4)*c)*e^2)*x^3 -
(2*B*a*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 + 5*A*
a*b^3)*c)*d^2 - 4*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*(2*B*a^3*b - A
*a^2*b^2)*c)*d*e + 8*(6*B*a^3*b^2 - A*a^2*b^3 + 4*(2*B*a^4 - 3*A*a^3*b)*c)*
e^2 + 5*(8*(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d^2 - 2*(3*
B*b^5 + 48*(B*a^2*b - 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*d*e + (18*B
*a*b^4 - 3*A*b^5 + 16*(2*B*a^3 - 3*A*a^2*b)*c^2 + 8*(6*B*a^2*b^2 - 5*A*a*b^
3)*c)*e^2)*x^2 - 5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*
(12*B*a*b^3 + A*b^4)*c)*d^2 + 2*(4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*(2
*B*a^2*b^2 - A*a*b^3)*c)*d*e - 4*(6*B*a^2*b^3 - A*a*b^4 + 4*(2*B*a^3*b - 3*
A*a^2*b^2)*c)*e^2)*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^
5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*
c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 +
 3*(b^8*c - 11*a*b^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^
4 + (b^9 - 6*a*b^7*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^
3 + 3*(a*b^8 - 11*a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)
*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [B] time = 0.34, size = 1089, normalized size = 3.36

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((((4*(2*(16*B*b*c^4*d^2 - 32*A*c^5*d^2 - 12*B*b^2*c^3*d*e - 16*B*a*c^
4*d*e + 32*A*b*c^4*d*e + B*b^3*c^2*e^2 + 12*B*a*b*c^3*e^2 - 6*A*b^2*c^3*e^2
 - 8*A*a*c^4*e^2)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3) + 5*(1
6*B*b^2*c^3*d^2 - 32*A*b*c^4*d^2 - 12*B*b^3*c^2*d*e - 16*B*a*b*c^3*d*e + 32
*A*b^2*c^3*d*e + B*b^4*c*e^2 + 12*B*a*b^2*c^2*e^2 - 6*A*b^3*c^2*e^2 - 8*A*a
*b*c^3*e^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(48*B*b
^3*c^2*d^2 + 64*B*a*b*c^3*d^2 - 96*A*b^2*c^3*d^2 - 128*A*a*c^4*d^2 - 36*B*b
^4*c*d*e - 96*B*a*b^2*c^2*d*e + 96*A*b^3*c^2*d*e - 64*B*a^2*c^3*d*e + 128*A
*a*b*c^3*d*e + 3*B*b^5*e^2 + 40*B*a*b^3*c*e^2 - 18*A*b^4*c*e^2 + 48*B*a^2*b
*c^2*e^2 - 48*A*a*b^2*c^2*e^2 - 32*A*a^2*c^3*e^2)/(b^6 - 12*a*b^4*c + 48*a^
```

```
2*b^2*c^2 - 64*a^3*c^3))*x + 5*(8*B*b^4*c*d^2 + 96*B*a*b^2*c^2*d^2 - 16*A*b
^3*c^2*d^2 - 192*A*a*b*c^3*d^2 - 6*B*b^5*d*e - 80*B*a*b^3*c*d*e + 16*A*b^4*
c*d*e - 96*B*a^2*b*c^2*d*e + 192*A*a*b^2*c^2*d*e + 18*B*a*b^4*e^2 - 3*A*b^5
*e^2 + 48*B*a^2*b^2*c*e^2 - 40*A*a*b^3*c*e^2 + 32*B*a^3*c^2*e^2 - 48*A*a^2*
b*c^2*e^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x - 5*(B*b^5*d
^2 - 24*B*a*b^3*c*d^2 - 2*A*b^4*c*d^2 - 48*B*a^2*b*c^2*d^2 + 48*A*a*b^2*c^2
*d^2 + 96*A*a^2*c^3*d^2 + 8*B*a*b^4*d*e + 2*A*b^5*d*e + 96*B*a^2*b^2*c*d*e
- 48*A*a*b^3*c*d*e - 96*A*a^2*b*c^2*d*e - 24*B*a^2*b^3*e^2 + 4*A*a*b^4*e^2
- 32*B*a^3*b*c*e^2 + 48*A*a^2*b^2*c*e^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
 - 64*a^3*c^3))*x - (2*B*a*b^4*d^2 + 3*A*b^5*d^2 - 48*B*a^2*b^2*c*d^2 - 40*
A*a*b^3*c*d^2 - 96*B*a^3*c^2*d^2 + 240*A*a^2*b*c^2*d^2 + 16*B*a^2*b^3*d*e +
 4*A*a*b^4*d*e + 192*B*a^3*b*c*d*e - 96*A*a^2*b^2*c*d*e - 192*A*a^3*c^2*d*e
 - 48*B*a^3*b^2*e^2 + 8*A*a^2*b^3*e^2 - 64*B*a^4*c*e^2 + 96*A*a^3*b*c*e^2)/
(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2 + b*x + a)^(5/2)
```

maple [B] time = 0.02, size = 1064, normalized size = 3.28

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 2/15/(c*x^2+b*x+a)^(5/2)*(64*A*a*c^4*e^2*x^5+48*A*b^2*c^3*e^2*x^5-256*A*b*c
^4*d*e*x^5+256*A*c^5*d^2*x^5-96*B*a*b*c^3*e^2*x^5+128*B*a*c^4*d*e*x^5-8*B*b
^3*c^2*e^2*x^5+96*B*b^2*c^3*d*e*x^5-128*B*b*c^4*d^2*x^5+160*A*a*b*c^3*e^2*x
^4+120*A*b^3*c^2*e^2*x^4-640*A*b^2*c^3*d*e*x^4+640*A*b*c^4*d^2*x^4-240*B*a*
b^2*c^2*e^2*x^4+320*B*a*b*c^3*d*e*x^4-20*B*b^4*c*e^2*x^4+240*B*b^3*c^2*d*e*
x^4-320*B*b^2*c^3*d^2*x^4+160*A*a^2*c^3*e^2*x^3+240*A*a*b^2*c^2*e^2*x^3-640
*A*a*b*c^3*d*e*x^3+640*A*a*c^4*d^2*x^3+90*A*b^4*c*e^2*x^3-480*A*b^3*c^2*d*e
*x^3+480*A*b^2*c^3*d^2*x^3-240*B*a^2*b*c^2*e^2*x^3+320*B*a^2*c^3*d*e*x^3-20
0*B*a*b^3*c*e^2*x^3+480*B*a*b^2*c^2*d*e*x^3-320*B*a*b*c^3*d^2*x^3-15*B*b^5*
e^2*x^3+180*B*b^4*c*d*e*x^3-240*B*b^3*c^2*d^2*x^3+240*A*a^2*b*c^2*e^2*x^2+2
00*A*a*b^3*c*e^2*x^2-960*A*a*b^2*c^2*d*e*x^2+960*A*a*b*c^3*d^2*x^2+15*A*b^5
*e^2*x^2-80*A*b^4*c*d*e*x^2+80*A*b^3*c^2*d^2*x^2-160*B*a^3*c^2*e^2*x^2-240*
B*a^2*b^2*c*e^2*x^2+480*B*a^2*b*c^2*d*e*x^2-90*B*a*b^4*e^2*x^2+400*B*a*b^3*
c*d*e*x^2-480*B*a*b^2*c^2*d^2*x^2+30*B*b^5*d*e*x^2-40*B*b^4*c*d^2*x^2+240*A
*a^2*b^2*c*e^2*x-480*A*a^2*b*c^2*d*e*x+480*A*a^2*c^3*d^2*x+20*A*a*b^4*e^2*x
-240*A*a*b^3*c*d*e*x+240*A*a*b^2*c^2*d^2*x+10*A*b^5*d*e*x-10*A*b^4*c*d^2*x-
160*B*a^3*b*c*e^2*x-120*B*a^2*b^3*e^2*x+480*B*a^2*b^2*c*d*e*x-240*B*a^2*b*c
^2*d^2*x+40*B*a*b^4*d*e*x-120*B*a*b^3*c*d^2*x+5*B*b^5*d^2*x+96*A*a^3*b*c*e^
2-192*A*a^3*c^2*d*e+8*A*a^2*b^3*e^2-96*A*a^2*b^2*c*d*e+240*A*a^2*b*c^2*d^2+
4*A*a*b^4*d*e-40*A*a*b^3*c*d^2+3*A*b^5*d^2-64*B*a^4*c*e^2-48*B*a^3*b^2*e^2+
192*B*a^3*b*c*d*e-96*B*a^3*c^2*d^2+16*B*a^2*b^3*d*e-48*B*a^2*b^2*c*d^2+2*B*
a*b^4*d^2)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.77, size = 1996, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] (x*((2*c^2*(8*A*e^2 + 16*B*d*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*
B*b*c*e^2)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*c*(8*A*e^2 + 16*B*d*e)
)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*B*a*c*e^2)/(5*(4*a*c^2 - b^2*c
)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(1/2) - (x*((a*((2*c^2*((2*A*e^2)/5 + (
4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^2)/(5*(4*a*c^2 - b^2*c))))/c +
(b*((2*c^2*((2*B*d^2)/5 + (4*A*d*e)/5))/(4*a*c^2 - b^2*c) - (b*((2*c^2*((2*
A*e^2)/5 + (4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^2)/(5*(4*a*c^2 - b^
2*c))))/c + (b*c*((2*A*e^2)/5 + (4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (4*B*a*c*
e^2)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*B*d^2)/5 + (4*A*d*e)/5))/(4*a*c^2
 - b^2*c) - (4*A*c^2*d^2)/(5*(4*a*c^2 - b^2*c))) + (a*((2*c^2*((2*B*d^2)/5
+ (4*A*d*e)/5))/(4*a*c^2 - b^2*c) - (b*((2*c^2*((2*A*e^2)/5 + (4*B*d*e)/5))
/(4*a*c^2 - b^2*c) - (2*B*b*c*e^2)/(5*(4*a*c^2 - b^2*c))))/c + (b*c*((2*A*e
^2)/5 + (4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (4*B*a*c*e^2)/(5*(4*a*c^2 - b^2*c
))))/c - (2*A*b*c*d^2)/(5*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(5/2) - (x*
((2*e*(2*A*c*e - B*b*e + 4*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B*b*e^2)/(15*c
*(4*a*c - b^2))) + (2*B*b^2*e^2 + 4*B*c^2*d^2 - 2*A*b*c*e^2 - 4*B*a*c*e^2 +
 8*A*c^2*d*e - 4*B*b*c*d*e)/(15*c^2*(4*a*c - b^2)) - (4*B*a*e^2)/(15*c*(4*a
*c - b^2)))/(a + b*x + c*x^2)^(3/2) + (x*((b*((2*(8*B*c^3*d^2 + 16*A*c^3*d*
e - 48*B*a*c^2*e^2 + 12*B*b^2*c*e^2))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
- (b*((16*c^3*e*(A*e + 2*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*
b*c^2*e^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (8*b*c^2*e*(A*e + 2*B
*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*B*a*c^2*e^2)/(15*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2))))/c + (2*(32*A*c^3*d^2 - 8*B*b^3*e^2 + 8*A*a*c^2*e^2
 + 8*A*b^2*c*e^2 - 20*B*b*c^2*d^2 + 12*B*a*b*c*e^2 - 40*A*b*c^2*d*e + 16*B*
a*c^2*d*e + 16*B*b^2*c*d*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (a*((16
*c^3*e*(A*e + 2*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^2
)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*(8*B*c^3*d^2 + 16*A*c^3*d*e
 - 48*B*a*c^2*e^2 + 12*B*b^2*c*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
) + (a*((2*(8*B*c^3*d^2 + 16*A*c^3*d*e - 48*B*a*c^2*e^2 + 12*B*b^2*c*e^2))/
(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (b*((16*c^3*e*(A*e + 2*B*d))/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^2)/(15*(4*a*c^2 - b^2*c)*(4*a*
c - b^2))))/c + (8*b*c^2*e*(A*e + 2*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^
2)) - (16*B*a*c^2*e^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(32*A*
c^3*d^2 - 8*B*b^3*e^2 + 8*A*a*c^2*e^2 + 8*A*b^2*c*e^2 - 20*B*b*c^2*d^2 + 12
*B*a*b*c*e^2 - 40*A*b*c^2*d*e + 16*B*a*c^2*d*e + 16*B*b^2*c*d*e))/(15*c*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + (x*((2*c*(256*A*c^
3*d^2 - 8*B*b^3*e^2 + 32*A*a*c^2*e^2 + 56*A*b^2*c*e^2 - 128*B*b*c^2*d^2 - 9
6*B*a*b*c*e^2 - 256*A*b*c^2*d*e + 64*B*a*c^2*d*e + 112*B*b^2*c*d*e))/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (8*B*b*c*e^2)/(5*(4*a*c^2 - b^2*c)*(4*a*
c - b^2))) + (b*(256*A*c^3*d^2 - 8*B*b^3*e^2 + 32*A*a*c^2*e^2 + 56*A*b^2*c*
e^2 - 128*B*b*c^2*d^2 - 96*B*a*b*c*e^2 - 256*A*b*c^2*d*e + 64*B*a*c^2*d*e +
 112*B*b^2*c*d*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (16*B*a*c*e^2)/
(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2251 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=225

$$-\frac{16(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}+\frac{2(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2B\right.}{15c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Rubi [A] time = 0.18, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {777, 614, 613}

$$-\frac{16(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}+\frac{2(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)}{15c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}+\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d + A*e) + 2*
c*(A*c*d - a*B*e))*x))/(5*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/2)) + (2*(3*
b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*A*c*d + a*B*e))*(b + 2*c*x))/(15*c*(b^
2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) - (16*(3*b^2*B*e - 8*b*c*(B*d + A*e)
+ 4*c*(4*A*c*d + a*B*e))*(b + 2*c*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*
x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{\left(3b^2Be \cdots\right.}{\cdots}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{2\left(3b^2 \cdots\right.}{\cdots}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{2\left(3b^2 \cdots\right.}{\cdots}$$

Mathematica [A] time = 0.59, size = 200, normalized size = 0.89

$$\frac{2\left(-3\left(b^2-4ac\right)^2(Ac(-2ae+b(d-ex)+2cdx)+B(abe-2ac(d+ex)+bx(be-cd)))+\left(b^2-4ac\right)(b+2cx)(a+x(b+cx))\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)-8c(b+2cx)(a+x(b+cx))^2\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)\right)}{15c\left(b^2-4ac\right)^3(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*((b^2 - 4*a*c)*(3*b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*A*c*d + a*B*e))*(
b + 2*c*x)*(a + x*(b + c*x)) - 8*c*(3*b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*
A*c*d + a*B*e))*(b + 2*c*x)*(a + x*(b + c*x))^2 - 3*(b^2 - 4*a*c)^2*(A*c*(-
2*a*e + 2*c*d*x + b*(d - e*x)) + B*(a*b*e + b*(-(c*d) + b*e)*x - 2*a*c*(d +
 e*x)))))/(15*c*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [B] time = 6.96, size = 587, normalized size = 2.61

[illegible]

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(3*A*b^5*d + 2*a*b^4*B*d - 40*a*A*b^3*c*d - 48*a^2*b^2*B*c*d + 240*a^2*
A*b*c^2*d - 96*a^3*B*c^2*d + 2*a*A*b^4*e + 8*a^2*b^3*B*e - 48*a^2*A*b^2*c*e
 + 96*a^3*b*B*c*e - 96*a^3*A*c^2*e + 5*b^5*B*d*x - 10*A*b^4*c*d*x - 120*a*b
^3*B*c*d*x + 240*a*A*b^2*c^2*d*x - 240*a^2*b*B*c^2*d*x + 480*a^2*A*c^3*d*x
+ 5*A*b^5*e*x + 20*a*b^4*B*e*x - 120*a*A*b^3*c*e*x + 240*a^2*b^2*B*c*e*x -
240*a^2*A*b*c^2*e*x - 40*b^4*B*c*d*x^2 + 80*A*b^3*c^2*d*x^2 - 480*a*b^2*B*c
^2*d*x^2 + 960*a*A*b*c^3*d*x^2 + 15*b^5*B*e*x^2 - 40*A*b^4*c*e*x^2 + 200*a*
b^3*B*c*e*x^2 - 480*a*A*b^2*c^2*e*x^2 + 240*a^2*b*B*c^2*e*x^2 - 240*b^3*B*c
^2*d*x^3 + 480*A*b^2*c^3*d*x^3 - 320*a*b*B*c^3*d*x^3 + 640*a*A*c^4*d*x^3 +
90*b^4*B*c*e*x^3 - 240*A*b^3*c^2*e*x^3 + 240*a*b^2*B*c^2*e*x^3 - 320*a*A*b*
c^3*e*x^3 + 160*a^2*B*c^3*e*x^3 - 320*b^2*B*c^3*d*x^4 + 640*A*b*c^4*d*x^4 +
 120*b^3*B*c^2*e*x^4 - 320*A*b^2*c^3*e*x^4 + 160*a*b*B*c^3*e*x^4 - 128*b*B*
c^4*d*x^5 + 256*A*c^5*d*x^5 + 48*b^2*B*c^3*e*x^5 - 128*A*b*c^4*e*x^5 + 64*a
*B*c^4*e*x^5))/(15*(b^2 - 4*a*c)^3*(a + b*x + c*x^2)^(5/2))
```

fricas [B] time = 127.21, size = 805, normalized size = 3.58

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(16*(8*(B*b*c^4 - 2*A*c^5)*d - (3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4)*e)*
x^5 + 40*(8*(B*b^2*c^3 - 2*A*b*c^4)*d - (3*B*b^3*c^2 + 4*(B*a*b - 2*A*b^2)*
```

c^3)*e)*x^4 + 10*(8*(3*B*b^3*c^2 - 8*A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d - (9*B*b^4*c + 16*(B*a^2 - 2*A*a*b)*c^3 + 24*(B*a*b^2 - A*b^3)*c^2)*e)*x^3 + 5*(8*(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d - (3*B*b^5 + 48*(B*a^2*b - 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*e)*x^2 - (2*B*a*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 + 5*A*a*b^3)*c)*d - 2*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*(2*B*a^3*b - A*a^2*b^2)*c)*e - 5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*(12*B*a*b^3 + A*b^4)*c)*d + (4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*(2*B*a^2*b^2 - A*a*b^3)*c)*e)*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)

giac [B] time = 0.31, size = 727, normalized size = 3.23

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")

[Out] 2/15*(((2*(4*(2*(8*B*b*c^4*d - 16*A*c^5*d - 3*B*b^2*c^3*e - 4*B*a*c^4*e + 8*A*b*c^4*e)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3) + 5*(8*B*b^2*c^3*d - 16*A*b*c^4*d - 3*B*b^3*c^2*e - 4*B*a*b*c^3*e + 8*A*b^2*c^3*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(24*B*b^3*c^2*d + 32*B*a*b*c^3*d - 48*A*b^2*c^3*d - 64*A*a*c^4*d - 9*B*b^4*c*e - 24*B*a*b^2*c^2*e + 24*A*b^3*c^2*e - 16*B*a^2*c^3*e + 32*A*a*b*c^3*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(8*B*b^4*c*d + 96*B*a*b^2*c^2*d - 16*A*b^3*c^2*d - 192*A*a*b*c^3*d - 3*B*b^5*e - 40*B*a*b^3*c*e + 8*A*b^4*c*e - 48*B*a^2*b*c^2*e + 96*A*a*b^2*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x - 5*(B*b^5*d - 24*B*a*b^3*c*d - 2*A*b^4*c*d - 48*B*a^2*b*c^2*d + 48*A*a*b^2*c^2*d + 96*A*a^2*c^3*d + 4*B*a*b^4*e + A*b^5*e + 48*B*a^2*b^2*c*e - 24*A*a*b^3*c*e - 48*A*a^2*b*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x - (2*B*a*b^4*d + 3*A*b^5*d - 48*B*a^2*b^2*c*d - 40*A*a*b^3*c*d - 96*B*a^3*c^2*d + 240*A*a^2*b*c^2*d + 8*B*a^2*b^3*e + 2*A*a*b^4*e + 96*B*a^3*b*c*e - 48*A*a^2*b^2*c*e - 96*A*a^3*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2 + b*x + a)^(5/2)

maple [B] time = 0.01, size = 608, normalized size = 2.70

Verification of antiderivative is not currently implemented for this CAS.

[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x)

[Out] -2/15/(c*x^2+b*x+a)^(5/2)*(128*A*b*c^4*e*x^5-256*A*c^5*d*x^5-64*B*a*c^4*e*x^5-48*B*b^2*c^3*e*x^5+128*B*b*c^4*d*x^5+320*A*b^2*c^3*e*x^4-640*A*b*c^4*d*x^4-160*B*a*b*c^3*e*x^4-120*B*b^3*c^2*e*x^4+320*B*b^2*c^3*d*x^4+320*A*a*b*c^3*e*x^3-640*A*a*c^4*d*x^3+240*A*b^3*c^2*e*x^3-480*A*b^2*c^3*d*x^3-160*B*a^2*c^3*e*x^3-240*B*a*b^2*c^2*e*x^3+320*B*a*b*c^3*d*x^3-90*B*b^4*c*e*x^3+240*B*b^3*c^2*d*x^3+480*A*a*b^2*c^2*e*x^2-960*A*a*b*c^3*d*x^2+40*A*b^4*c*e*x^2-80*A*b^3*c^2*d*x^2-240*B*a^2*b*c^2*e*x^2-200*B*a*b^3*c*e*x^2+480*B*a*b^2*c^2*d*x^2-15*B*b^5*e*x^2+40*B*b^4*c*d*x^2+240*A*a^2*b*c^2*e*x-480*A*a^2*c^3*d*x+120*A*a*b^3*c*e*x-240*A*a*b^2*c^2*d*x-5*A*b^5*e*x+10*A*b^4*c*d*x-240*B*a^2*b^2*c*e*x+240*B*a^2*b*c^2*d*x-20*B*a*b^4*e*x+120*B*a*b^3*c*d*x-5*B*b^5*d*x+96*A*a^3*c^2*e+48*A*a^2*b^2*c*e-240*A*a^2*b*c^2*d-2*A*a*b^4*e+40*A*a*b^3*c*d-3*A*b^5*d-96*B*a^3*b*c*e+96*B*a^3*c^2*d-8*B*a^2*b^3*e+48*B*a^2*b^2*c*d-2*B*a*b^4*d)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.26, size = 892, normalized size = 3.96

$$\frac{\frac{16Bc^2ex}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}+\frac{8Bbce}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}}{\sqrt{cx^2+bx+a}}-\frac{x\left(\frac{b\left(\frac{2c^2\left(\frac{2Ae}{5}+\frac{2Bd}{5}\right)}{4ac^2-b^2c}-\frac{2Bbce}{5\left(4ac^2-b^2c\right)}\right)}{c}-\frac{bc\left(\frac{2Ae}{5}+\frac{2Bd}{5}\right)}{4ac^2-b^2c}-\frac{4Ac^2d}{5\left(4ac^2-b^2c\right)}+\frac{4Bace}{5\left(4ac^2-b^2c\right)}\right)+\frac{a\left(\frac{2c^2\left(\frac{2Ae}{5}+\frac{2Bd}{5}\right)}{4ac^2-b^2c}-\frac{2Bbce}{5\left(4ac^2-b^2c\right)}\right)}{c}-\frac{2Abcd}{5\left(4ac^2-b^2c\right)}}{\left(cx^2+bx+a\right)^{5/2}}+\frac{x\left(\frac{b\left(\frac{16c^3(Ae+Bd)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}-\frac{8Bbc^2e}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}\right)}{c}+\frac{2c\left(32Ac^2d+8Bb^2e-20Abce+8Bace-20Bbcd\right)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}-\frac{8bc^2(Ae+Bd)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}+\frac{16Bac^2e}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}\right)+\frac{a\left(\frac{16c^3(Ae+Bd)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}-\frac{8Bbc^2e}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}\right)}{c}+\frac{b\left(32Ac^2d+8Bb^2e-20Abce+8Bace-20Bbcd\right)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}}{\left(cx^2+bx+a\right)^{3/2}}+\frac{\frac{bc\left(256Ac^2d+56Bb^2e-128Abce+32Bace-128Bbcd\right)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}+\frac{2c^2x\left(256Ac^2d+56Bb^2e-128Abce+32Bace-128Bbcd\right)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}}{\sqrt{cx^2+bx+a}}-\frac{\frac{4Ace-2Bbe+4Bcd}{15c\left(4ac-b^2\right)}+\frac{4Bex}{15\left(4ac-b^2\right)}}{\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] ((16*B*c^2*e*x)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (8*B*b*c*e)/(15*(4*a
*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(1/2) - (x*((b*((2*c^2*((2*
A*e)/5 + (2*B*d)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e)/(5*(4*a*c^2 - b^2*c)))
)/c - (b*c*((2*A*e)/5 + (2*B*d)/5))/(4*a*c^2 - b^2*c) - (4*A*c^2*d)/(5*(4*a
*c^2 - b^2*c)) + (4*B*a*c*e)/(5*(4*a*c^2 - b^2*c))) + (a*((2*c^2*((2*A*e)/5
 + (2*B*d)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e)/(5*(4*a*c^2 - b^2*c))))/c -
(2*A*b*c*d)/(5*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(5/2) + (x*((b*((16*c^
3*(A*e + B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e)/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*c*(32*A*c^2*d + 8*B*b^2*e - 20*A*b*c
*e + 8*B*a*c*e - 20*B*b*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c
^2*(A*e + B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e)/(15*(
4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((16*c^3*(A*e + B*d))/(15*(4*a*c^2 -
b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))
)/c + (b*(32*A*c^2*d + 8*B*b^2*e - 20*A*b*c*e + 8*B*a*c*e - 20*B*b*c*d))/(1
5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + ((b*c*(256*A*
c^2*d + 56*B*b^2*e - 128*A*b*c*e + 32*B*a*c*e - 128*B*b*c*d))/(15*(4*a*c^2
- b^2*c)*(4*a*c - b^2)^2) + (2*c^2*x*(256*A*c^2*d + 56*B*b^2*e - 128*A*b*c*
e + 32*B*a*c*e - 128*B*b*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a +
 b*x + c*x^2)^(1/2) - ((4*A*c*e - 2*B*b*e + 4*B*c*d)/(15*c*(4*a*c - b^2)) +
 (4*B*e*x)/(15*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2252 $\int \frac{A+Bx}{(a+bx+cx^2)^{7/2}}\,dx$

Optimal. Leaf size=133

$$\frac{128c(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{16(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Rubi [A] time = 0.04, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {638, 614, 613}

$$\frac{128c(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{16(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(5*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) - (16*(b*B - 2*A*c)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^
(3/2)) + (128*c*(b*B - 2*A*c)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x
 + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{7/2}}\,dx=-\frac{2(Ab-2aB-(bB-2Ac)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}+\frac{(8(bB-2Ac))\int\frac{1}{\left(a+bx+cx^2\right)^{5/2}}\,dx}{5\left(b^2-4ac\right)}$$

$$=-\frac{2(Ab-2aB-(bB-2Ac)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}-\frac{16(bB-2Ac)(b+2cx)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{(64c(bB-2Ac)}{15\left(b^2\right.}$$

$$=-\frac{2(Ab-2aB-(bB-2Ac)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}-\frac{16(bB-2Ac)(b+2cx)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}+\frac{128c(bB-2A}{15\left(b^2-4ac\right)^3}$$

Mathematica [A] time = 0.20, size = 120, normalized size = 0.90

$$\frac{2\left(3\left(b^2-4ac\right)^2(B(2a+bx)-A(b+2cx))-8\left(b^2-4ac\right)(b+2cx)(a+x(b+cx))(bB-2Ac)+64c(b+2cx)(a+x(b+cx))^2(bB-2Ac)\right)}{15\left(b^2-4ac\right)^3(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(-8*(b^2 - 4*a*c)*(b*B - 2*A*c)*(b + 2*c*x)*(a + x*(b + c*x)) + 64*c*(b*
B - 2*A*c)*(b + 2*c*x)*(a + x*(b + c*x))^2 + 3*(b^2 - 4*a*c)^2*(B*(2*a + b*
x) - A*(b + 2*c*x))))/(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

IntegrateAlgebraic [B] time = 2.76, size = 267, normalized size = 2.01

$$\frac{2\left(-96a^3Bc^2+240a^2Abc^2+480a^2Ac^3x-48a^2b^2Bc-240a^2bBc^2x-40aAb^3c+240aAb^2c^2x+960aAbc^3x^2+640aAc^4x^3+2ab^4B-120ab^3Bcx-480ab^2Bc^2x^2-320abBc^3x^3+3Ab^5-10Ab^4cx+80Ab^3c^2x^2+480Ab^2c^3x^3+640Abc^4x^4+256Ac^5x^5+5b^5Bx-40b^4Bcx^2-240b^3Bc^2x^3-320b^2Bc^3x^4-128bBc^4x^5\right)}{15\left(b^2-4ac\right)^3\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(A + B*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(3*A*b^5 + 2*a*b^4*B - 40*a*A*b^3*c - 48*a^2*b^2*B*c + 240*a^2*A*b*c^2
- 96*a^3*B*c^2 + 5*b^5*B*x - 10*A*b^4*c*x - 120*a*b^3*B*c*x + 240*a*A*b^2*c
^2*x - 240*a^2*b*B*c^2*x + 480*a^2*A*c^3*x - 40*b^4*B*c*x^2 + 80*A*b^3*c^2*
x^2 - 480*a*b^2*B*c^2*x^2 + 960*a*A*b*c^3*x^2 - 240*b^3*B*c^2*x^3 + 480*A*b
^2*c^3*x^3 - 320*a*b*B*c^3*x^3 + 640*a*A*c^4*x^3 - 320*b^2*B*c^3*x^4 + 640*
A*b*c^4*x^4 - 128*b*B*c^4*x^5 + 256*A*c^5*x^5))/(15*(b^2 - 4*a*c)^3*(a + b*
x + c*x^2)^(5/2))
```

fricas [B] time = 5.06, size = 543, normalized size = 4.08

$$-\frac{2\left(2Bab^4+3Ab^5-128\left(Bbc^4-2Ac^5\right)x^5-320\left(Bb^2c^3-2Abc^4\right)x^4-80\left(3Bb^3c^2-8Aac^4+2\left(2Bab-3Ab^2\right)c^3\right)x^3-48\left(2Ba^3-5Aa^2b\right)c^2-40\left(Bb^4c-24Aabc^3+2\left(6Bab^2-Ab^3\right)c^2\right)x^2-8\left(6Ba^2b^2+5Aab^3\right)c+5\left(Bb^5+96Aa^2c^3-48\left(Ba^2b-Aab^2\right)c^2-2\left(12Bab^3+Ab^4\right)c\right)x\right)\sqrt{cx^2+bx+a}}{15\left(a^3b^6-12a^4b^4c+48a^5b^2c^2-64a^6c^3+\left(b^6c^3-12ab^4c^4+48a^2b^2c^5-64a^3c^6\right)x^6+3\left(b^7c^2-12ab^5c^3+48a^2b^3c^4-64a^3bc^5\right)x^5+3\left(b^8c-11ab^6c^2+36a^2b^4c^3-16a^3b^2c^4-64a^4c^5\right)x^4+\left(b^9-6ab^7c-24a^2b^5c^2+224a^3b^3c^3-384a^4bc^4\right)x^3+3\left(ab^8-11a^2b^6c+36a^3b^4c^2-16a^4b^2c^3-64a^5c^4\right)x^2+3\left(a^2b^7-12a^3b^5c+48a^4b^3c^2-64a^5bc^3\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(2*B*a*b^4 + 3*A*b^5 - 128*(B*b*c^4 - 2*A*c^5)*x^5 - 320*(B*b^2*c^3 -
 2*A*b*c^4)*x^4 - 80*(3*B*b^3*c^2 - 8*A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*
x^3 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 40*(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*
b^2 - A*b^3)*c^2)*x^2 - 8*(6*B*a^2*b^2 + 5*A*a*b^3)*c + 5*(B*b^5 + 96*A*a^2
*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*(12*B*a*b^3 + A*b^4)*c)*x)*sqrt(c*x^2
 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^
3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5
*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b^6*c^2 + 36*a^
2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7*c - 24*a^2*b^
5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*a^2*b^6*c + 36
*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c
 + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [B] time = 0.28, size = 433, normalized size = 3.26

$$\frac{2\left(\left(8\left(2\left(4\left(\frac{2\left(Bbc^4-2Ac^5\right)x}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}+\frac{5\left(Bb^2c^3-2Abc^4\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{5\left(3Bb^3c^2+4Babc^3-6Ab^2c^3-8Aac^4\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{5\left(Bb^4c+12Bab^2c^2-2Ab^3c^2-24Aabc^3\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x-\frac{5\left(Bb^5-24Bab^3c-2Ab^4c-48Ba^2bc^2+48Aab^2c^2+96Aa^2c^3\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x-\frac{2Bab^4+3Ab^5-48Ba^2b^2c-40Aab^3c-96Ba^3c^2+240Aa^2bc^2}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)}{15\left(cx^2+bx+a\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((8*(2*(4*(2*(B*b*c^4 - 2*A*c^5)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
- 64*a^3*c^3) + 5*(B*b^2*c^3 - 2*A*b*c^4)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^
2 - 64*a^3*c^3))*x + 5*(3*B*b^3*c^2 + 4*B*a*b*c^3 - 6*A*b^2*c^3 - 8*A*a*c^4
```

```
)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(B*b^4*c + 12*B*a
*b^2*c^2 - 2*A*b^3*c^2 - 24*A*a*b*c^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 -
 64*a^3*c^3))*x - 5*(B*b^5 - 24*B*a*b^3*c - 2*A*b^4*c - 48*B*a^2*b*c^2 + 48
*A*a*b^2*c^2 + 96*A*a^2*c^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^
3))*x - (2*B*a*b^4 + 3*A*b^5 - 48*B*a^2*b^2*c - 40*A*a*b^3*c - 96*B*a^3*c^2
 + 240*A*a^2*b*c^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^
2 + b*x + a)^(5/2)
```

maple [B] time = 0.01, size = 288, normalized size = 2.17

$$\frac{\frac{512}{15}Ac^5x^5-\frac{256}{15}Bbc^4x^5+\frac{256}{3}Abc^4x^4-\frac{128}{3}Bb^2c^3x^4+\frac{256}{3}Aac^4x^3+64Ab^2c^3x^3-\frac{128}{3}Babc^3x^3-32Bb^3c^2x^3+128Aabc^3x^2+\frac{32}{3}Ab^3c^2x^2-64Bab^2c^2x^2-\frac{16}{3}Bb^4cx^2+64Aa^2c^3x+32Aab^2c^2x-\frac{4}{3}Ab^4cx-32Ba^2bc^2x-16Bab^3cx+\frac{2}{3}Bb^5x+32Aa^2bc^2-\frac{16}{3}Aab^3c+\frac{2}{5}Ab^5-\frac{64}{5}Ba^3c^2-\frac{32}{5}Ba^2b^2c+\frac{4}{15}Bab^4}{\left(cx^2+bx+a\right)^{\frac{5}{2}}\left(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 2/15/(c*x^2+b*x+a)^(5/2)*(256*A*c^5*x^5-128*B*b*c^4*x^5+640*A*b*c^4*x^4-320
*B*b^2*c^3*x^4+640*A*a*c^4*x^3+480*A*b^2*c^3*x^3-320*B*a*b*c^3*x^3-240*B*b^
3*c^2*x^3+960*A*a*b*c^3*x^2+80*A*b^3*c^2*x^2-480*B*a*b^2*c^2*x^2-40*B*b^4*c
*x^2+480*A*a^2*c^3*x+240*A*a*b^2*c^2*x-10*A*b^4*c*x-240*B*a^2*b*c^2*x-120*B
*a*b^3*c*x+5*B*b^5*x+240*A*a^2*b*c^2-40*A*a*b^3*c+3*A*b^5-96*B*a^3*c^2-48*B
*a^2*b^2*c+2*B*a*b^4)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.12, size = 394, normalized size = 2.96

$$\frac{\frac{b\,c\,\left(256\,A\,c^2-128\,B\,b\,c\right)}{15\,\left(4\,a\,c^2-b^2\,c\right)\,{\left(4\,a\,c-b^2\right)}^2}+\frac{2\,c^2\,x\,\left(256\,A\,c^2-128\,B\,b\,c\right)}{15\,\left(4\,a\,c^2-b^2\,c\right)\,{\left(4\,a\,c-b^2\right)}^2}}{\sqrt{c\,x^2+b\,x+a}}+\frac{x\,\left(\frac{4\,A\,c^2}{5\,\left(4\,a\,c^2-b^2\,c\right)}-\frac{2\,B\,b\,c}{5\,\left(4\,a\,c^2-b^2\,c\right)}\right)+\frac{2\,A\,b\,c}{5\,\left(4\,a\,c^2-b^2\,c\right)}-\frac{4\,B\,a\,c}{5\,\left(4\,a\,c^2-b^2\,c\right)}}{{\left(c\,x^2+b\,x+a\right)}^{5/2}}+\frac{x\,\left(\frac{2\,c^2\,\left(32\,A\,c-20\,B\,b\right)}{15\,\left(4\,a\,c^2-b^2\,c\right)\,\left(4\,a\,c-b^2\right)}+\frac{8\,B\,b\,c^2}{15\,\left(4\,a\,c^2-b^2\,c\right)\,\left(4\,a\,c-b^2\right)}\right)+\frac{b\,c\,\left(32\,A\,c-20\,B\,b\right)}{15\,\left(4\,a\,c^2-b^2\,c\right)\,\left(4\,a\,c-b^2\right)}+\frac{16\,B\,a\,c^2}{15\,\left(4\,a\,c^2-b^2\,c\right)\,\left(4\,a\,c-b^2\right)}}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}-\frac{4\,B}{\left(60\,a\,c-15\,b^2\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] ((b*c*(256*A*c^2 - 128*B*b*c))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (2*
c^2*x*(256*A*c^2 - 128*B*b*c))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a +
 b*x + c*x^2)^(1/2) + (x*((4*A*c^2)/(5*(4*a*c^2 - b^2*c)) - (2*B*b*c)/(5*(4
*a*c^2 - b^2*c))) + (2*A*b*c)/(5*(4*a*c^2 - b^2*c)) - (4*B*a*c)/(5*(4*a*c^2
 - b^2*c)))/(a + b*x + c*x^2)^(5/2) + (x*((2*c^2*(32*A*c - 20*B*b))/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)) + (8*B*b*c^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c -
b^2))) + (b*c*(32*A*c - 20*B*b))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16
*B*a*c^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) - (
4*B)/((60*a*c - 15*b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2253 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=974

$$-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bed+ae^2}\sqrt{cx^2+bx+a}}\right)e^5}{\left(cd^2-bed+ae^2\right)^{7/2}}+\frac{2\left(4ace(2cd-be)\left(8ce(bd-2ae)(bBd-2Acd+Abe-2aBe)+(2\right.\right.}{}$$

Rubi [A] time = 1.71, antiderivative size = 974, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 12, 724, 206}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/(5*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*
x^2)^(5/2)) + (2*(8*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)
 + (b*c*d - b^2*e + 2*a*c*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4
*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)) + c*(8*c*e*(b*d - 2*a*e)*(b*B*d - 2*A
*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d
 + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))*x))/(15*(b^2 - 4*a*c)^2*(
c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2)^(3/2)) + (2*(4*a*c*e*(2*c*d - b*
e)*(8*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)
*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*
a*A*e^2))) - (b*c*d - b^2*e + 2*a*c*e)*(8*c*d*e*(b*B*d - 2*A*c*d + A*b*e -
2*a*B*e)*(4*b*c*d - 3*b^2*e + 4*a*c*e) + (8*c^2*d^2 - 3*b^2*e^2 - 4*c*e*(b*
d - 3*a*e))*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a
*B*d*e + 5*a*A*e^2))) + c*(4*c*e*(b*d - 2*a*e)*(8*c*e*(b*d - 2*a*e)*(b*B*d
- 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d
*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2))) - (2*c*d - b*e)*(8*c
*d*e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(4*b*c*d - 3*b^2*e + 4*a*c*e) + (8
*c^2*d^2 - 3*b^2*e^2 - 4*c*e*(b*d - 3*a*e))*(5*b^2*e*(B*d - A*e) - 8*b*c*d*
(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2))))*x))/(15*(b^2 - 4*a*c
)^3*(c*d^2 - b*d*e + a*e^2)^3*Sqrt[a + b*x + c*x^2]) - (e^5*(B*d - A*e)*Arc
Tanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a
+ b*x + c*x^2])])/(c*d^2 - b*d*e + a*e^2)^(7/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}} +$$

Mathematica [A] time = 6.24, size = 1120, normalized size = 1.15

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x]
```

```
[Out] (-2*(-(a*B*(2*c*d - b*e)) + A*(b*c*d - b^2*e + 2*a*c*e) + c*(-(B*(b*d - 2*a
*e)) + A*(2*c*d - b*e))*x)*(a + b*x + c*x^2))/(5*(b^2 - 4*a*c)*(c*d^2 - b*d
*e + a*e^2)*(a + x*(b + c*x))^(7/2)) - (2*(a + b*x + c*x^2)^(7/2)*((-2*(4*a
*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + ((b*c*d - b^2*e +
2*a*c*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*
d*e + 5*a*A*e^2)))/2 + c*(4*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*
a*B*e) + ((2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4
*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))/2)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e +
a*e^2)*(a + b*x + c*x^2)^(3/2)) - (2*((-2*(-(a*c*e*(2*c*d - b*e)*(8*c*e*(b*
```

```
d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*
d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))) +
 ((b*c*d - b^2*e + 2*a*c*e)*(8*c*d*e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(4
*b*c*d - 3*b^2*e + 4*a*c*e) + (8*c^2*d^2 - 3*b^2*e^2 - 4*c*e*(b*d - 3*a*e))
*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*
a*A*e^2))))/4 + c*(-(c*e*(b*d - 2*a*e)*(8*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*
d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d +
A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))) + ((2*c*d - b*e)*(8*c*d*e*(
b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(4*b*c*d - 3*b^2*e + 4*a*c*e) + (8*c^2*d
^2 - 3*b^2*e^2 - 4*c*e*(b*d - 3*a*e))*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d +
 A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2))))/4)*x))/((b^2 - 4*a*c)*(c*d
^2 - b*d*e + a*e^2)*Sqrt[a + b*x + c*x^2]) + (15*(b^2 - 4*a*c)^2*e^5*(B*d -
 A*e)*ArcTanh[(-(b*d) + 2*a*e - (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*
e^2]*Sqrt[a + b*x + c*x^2])])/(Sqrt[c*d^2 - b*d*e + a*e^2]*(4*c*d^2 - 4*b*d
*e + 4*a*e^2))))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2))))/(5*(b^2 - 4*a*
c)*(c*d^2 - b*d*e + a*e^2)*(a + x*(b + c*x))^(7/2))
```

IntegrateAlgebraic [F] time = 180.12, size = 0, normalized size = 0.00

$Aborted

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x]
[Out] $Aborted
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.02, size = 5461, normalized size = 5.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x)
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+Bx}{(d+ex)\left(cx^2+bx+a\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2254 $\int \frac{(5-x)(3+2x)^4}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=137

$$-\frac{1}{15}\sqrt{3x^2+5x+2}\,(2x+3)^4+\frac{53}{60}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{391}{135}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{648}(9650x+27519)\sqrt{3x^2+}$$

Rubi [A] time = 0.09, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {832, 779, 621, 206}

$$-\frac{1}{15}\sqrt{3x^2+5x+2}\,(2x+3)^4+\frac{53}{60}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{391}{135}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{648}(9650x+27519)\sqrt{3x^2+5x+2}+\frac{28051\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1296\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (391*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2])/135 + (53*(3 + 2*x)^3*Sqrt[2 + 5*x
+ 3*x^2])/60 - ((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2])/15 + ((27519 + 9650*x)*S
qrt[2 + 5*x + 3*x^2])/648 + (28051*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*
x + 3*x^2])])/(1296*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\sqrt{2+5x+3x^2}}\,dx = -\frac{1}{15}(3+2x)^4\sqrt{2+5x+3x^2} + \frac{1}{15}\int \frac{(3+2x)^3\left(\frac{497}{2}+159x\right)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+3x^2} + \frac{1}{180}\int \frac{(3+2x)^2\left(\frac{11691}{2}\right.}{\sqrt{2+5x+3}}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.53

$$\frac{140255\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\left(3456x^4-2160x^3-93912x^2-268750x-281829\right)}{19440}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-281829 - 268750*x - 93912*x^2 - 2160*x^3 + 3456
*x^4) + 140255*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/19440
```

IntegrateAlgebraic [A] time = 1.55, size = 74, normalized size = 0.54

$$\frac{28051\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{648\sqrt{3}} + \frac{\sqrt{3x^2+5x+2}\left(-3456x^4+2160x^3+93912x^2+268750x+281829\right)}{3240}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(281829 + 268750*x + 93912*x^2 + 2160*x^3 - 3456*x^4
))/3240 + (28051*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(648*Sqr
t[3])
```

fricas [A] time = 0.41, size = 73, normalized size = 0.53

$$-\frac{1}{3240}\left(3456x^4-2160x^3-93912x^2-268750x-281829\right)\sqrt{3x^2+5x+2} + \frac{28051}{7776}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/3240*(3456*x^4 - 2160*x^3 - 93912*x^2 - 268750*x - 281829)*sqrt(3*x^2 +
5*x + 2) + 28051/7776*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5)
 + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.23, size = 69, normalized size = 0.50

$$-\frac{1}{3240}\,(2\,(12\,(18\,(8\,x-5)x-3913)x-134375)x-281829)\sqrt{3\,x^2+5\,x+2}-\frac{28051}{3888}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/3240*(2*(12*(18*(8*x - 5)*x - 3913)*x - 134375)*x - 281829)*sqrt(3*x^2 +
 5*x + 2) - 28051/3888*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2)) - 5))
```

maple [A] time = 0.02, size = 111, normalized size = 0.81

$$-\frac{16\sqrt{3x^2+5x+2}\,x^4}{15}+\frac{2\sqrt{3x^2+5x+2}\,x^3}{3}+\frac{3913\sqrt{3x^2+5x+2}\,x^2}{135}+\frac{26875\sqrt{3x^2+5x+2}\,x}{324}+\frac{28051\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{3888}+\frac{93943\sqrt{3x^2+5x+2}}{1080}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -16/15*x^4*(3*x^2+5*x+2)^(1/2)+2/3*x^3*(3*x^2+5*x+2)^(1/2)+3913/135*x^2*(3*
x^2+5*x+2)^(1/2)+26875/324*x*(3*x^2+5*x+2)^(1/2)+93943/1080*(3*x^2+5*x+2)^(
1/2)+28051/3888*ln(1/3*(5/2+3*x)*3^(1/2)+(3*x^2+5*x+2)^(1/2))*3^(1/2)
```

maxima [A] time = 1.29, size = 109, normalized size = 0.80

$$-\frac{16}{15}\,\sqrt{3\,x^2+5\,x+2}\,x^4+\frac{2}{3}\,\sqrt{3\,x^2+5\,x+2}\,x^3+\frac{3913}{135}\,\sqrt{3\,x^2+5\,x+2}\,x^2+\frac{26875}{324}\,\sqrt{3\,x^2+5\,x+2}\,x+\frac{28051}{3888}\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)+\frac{93943}{1080}\,\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/15*sqrt(3*x^2 + 5*x + 2)*x^4 + 2/3*sqrt(3*x^2 + 5*x + 2)*x^3 + 3913/135
*sqrt(3*x^2 + 5*x + 2)*x^2 + 26875/324*sqrt(3*x^2 + 5*x + 2)*x + 28051/3888
*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 93943/1080*sqrt(3
*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(2\,x+3)^4\,(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{864x^2}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{264x^3}{\sqrt{3x^2+5x+2}}\right)dx-\int\frac{16x^4}{\sqrt{3x^2+5x+2}}\,dx-\int\frac{16x^5}{\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{405}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-999*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-864*x**2/sqrt(3*x**
2 + 5*x + 2), x) - Integral(-264*x**3/sqrt(3*x**2 + 5*x + 2), x) - Integral
(16*x**4/sqrt(3*x**2 + 5*x + 2), x) - Integral(16*x**5/sqrt(3*x**2 + 5*x +
2), x) - Integral(-405/sqrt(3*x**2 + 5*x + 2), x)
```

3.2255 $\int \frac{(5-x)(3+2x)^3}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=112

$$-\frac{1}{12}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{32}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{5}{648}(1078x+3261)\sqrt{3x^2+5x+2}+\frac{19405\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1296\sqrt{3}}$$

Rubi [A] time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {832, 779, 621, 206}

$$-\frac{1}{12}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{32}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{5}{648}(1078x+3261)\sqrt{3x^2+5x+2}+\frac{19405\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1296\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (32*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2])/27 - ((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x
^2])/12 + (5*(3261 + 1078*x)*Sqrt[2 + 5*x + 3*x^2])/648 + (19405*ArcTanh[(5
 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(1296*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^3}{\sqrt{2+5x+3x^2}}\,dx = -\frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{1}{12}\int \frac{(3+2x)^2\left(\frac{399}{2}+128x\right)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{1}{108}\int \frac{(3+2x)\left(\frac{6805}{2}+269\right.}{\sqrt{2+5x+3x^2}}$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{5}{648}(3261+1078x)\sqrt{2+5x}$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{5}{648}(3261+1078x)\sqrt{2+5x}$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{5}{648}(3261+1078x)\sqrt{2+5x}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.60

$$\frac{19405\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\left(432x^3-1128x^2-11690x-21759\right)}{3888}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-21759 - 11690*x - 1128*x^2 + 432*x^3) + 19405*S
qrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/3888
```

IntegrateAlgebraic [A] time = 0.87, size = 69, normalized size = 0.62

$$\frac{19405\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{648\sqrt{3}} + \frac{1}{648}\sqrt{3x^2+5x+2}\left(-432x^3+1128x^2+11690x+21759\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(21759 + 11690*x + 1128*x^2 - 432*x^3))/648 + (19405
*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(648*Sqrt[3])
```

fricas [A] time = 0.40, size = 68, normalized size = 0.61

$$-\frac{1}{648}\left(432x^3-1128x^2-11690x-21759\right)\sqrt{3x^2+5x+2} + \frac{19405}{7776}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/648*(432*x^3 - 1128*x^2 - 11690*x - 21759)*sqrt(3*x^2 + 5*x + 2) + 19405
/7776*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*
x + 49)
```

giac [A] time = 0.23, size = 64, normalized size = 0.57

$$-\frac{1}{648}(2(12(18x-47)x-5845)x-21759)\sqrt{3x^2+5x+2} - \frac{19405}{3888}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/648*(2*(12*(18*x - 47)*x - 5845)*x - 21759)*sqrt(3*x^2 + 5*x + 2) - 1940
5/3888*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.01, size = 94, normalized size = 0.84

$$-\frac{2\sqrt{3x^2+5x+2}\,x^3}{3}+\frac{47\sqrt{3x^2+5x+2}\,x^2}{27}+\frac{5845\sqrt{3x^2+5x+2}\,x}{324}+\frac{19405\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{3888}+\frac{7253\sqrt{3x^2+5x+2}}{216}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -2/3*(3*x^2+5*x+2)^(1/2)*x^3+47/27*(3*x^2+5*x+2)^(1/2)*x^2+5845/324*(3*x^2+
5*x+2)^(1/2)*x+7253/216*(3*x^2+5*x+2)^(1/2)+19405/3888*3^(1/2)*ln(1/3*(3*x+
5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.36, size = 92, normalized size = 0.82

$$-\frac{2}{3}\sqrt{3x^2+5x+2}\,x^3+\frac{47}{27}\sqrt{3x^2+5x+2}\,x^2+\frac{5845}{324}\sqrt{3x^2+5x+2}\,x+\frac{19405}{3888}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{7253}{216}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(3*x^2 + 5*x + 2)*x^3 + 47/27*sqrt(3*x^2 + 5*x + 2)*x^2 + 5845/324
*sqrt(3*x^2 + 5*x + 2)*x + 19405/3888*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 6*x + 5) + 7253/216*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2x+3)^3\,(x-5)}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{126x^2}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{4x^3}{\sqrt{3x^2+5x+2}}\right)dx-\int\frac{8x^4}{\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{135}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-243*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-126*x**2/sqrt(3*x**
2 + 5*x + 2), x) - Integral(-4*x**3/sqrt(3*x**2 + 5*x + 2), x) - Integral(8
*x**4/sqrt(3*x**2 + 5*x + 2), x) - Integral(-135/sqrt(3*x**2 + 5*x + 2), x)
```

3.2256 $\int \frac{(5-x)(3+2x)^2}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=87

$$-\frac{1}{9}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{54}(194x+699)\sqrt{3x^2+5x+2}+\frac{1147\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{108\sqrt{3}}$$

Rubi [A] time = 0.05, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {832, 779, 621, 206}

$$-\frac{1}{9}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{54}(194x+699)\sqrt{3x^2+5x+2}+\frac{1147\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{108\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2])/9 + ((699 + 194*x)*Sqrt[2 + 5*x + 3*x^
2])/54 + (1147*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(108*S
qrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{9}\int \frac{(3+2x)\left(\frac{301}{2}+97x\right)}{\sqrt{2+5x+3x^2}}\,dx \\ &= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{54}(699+194x)\sqrt{2+5x+3x^2} + \frac{1147}{108}\int \frac{1}{\sqrt{2+5x+\cdots}} \\ &= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{54}(699+194x)\sqrt{2+5x+3x^2} + \frac{1147}{54}\,\text{Subst}\left(\int \frac{1}{12-\cdots}\right. \\ &= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{54}(699+194x)\sqrt{2+5x+3x^2} + \frac{1147\tanh^{-1}\left(\frac{5\cdots}{2\sqrt{3}\sqrt{2\cdots}}\right.}{108\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 62, normalized size = 0.71

$$\frac{1}{324}\left(1147\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(24x^2-122x-645\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-645 - 122*x + 24*x^2) + 1147*Sqrt[3]*ArcTanh[(5
 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/324
```

IntegrateAlgebraic [A] time = 0.62, size = 64, normalized size = 0.74

$$\frac{1}{54}\sqrt{3x^2+5x+2}\left(-24x^2+122x+645\right)+\frac{1147\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{54\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] ((645 + 122*x - 24*x^2)*Sqrt[2 + 5*x + 3*x^2])/54 + (1147*ArcTanh[Sqrt[2 +
5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(54*Sqrt[3])
```

fricas [A] time = 0.40, size = 63, normalized size = 0.72

$$-\frac{1}{54}\left(24x^2-122x-645\right)\sqrt{3x^2+5x+2}+\frac{1147}{648}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/54*(24*x^2 - 122*x - 645)*sqrt(3*x^2 + 5*x + 2) + 1147/648*sqrt(3)*log(4
*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.23, size = 59, normalized size = 0.68

$$-\frac{1}{54}(2(12x-61)x-645)\sqrt{3x^2+5x+2}-\frac{1147}{324}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/54*(2*(12*x - 61)*x - 645)*sqrt(3*x^2 + 5*x + 2) - 1147/324*sqrt(3)*log(
abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.01, size = 77, normalized size = 0.89

$$-\frac{4\sqrt{3x^2+5x+2}\,x^2}{9}+\frac{61\sqrt{3x^2+5x+2}\,x}{27}+\frac{1147\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{324}+\frac{215\sqrt{3x^2+5x+2}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+5*x+2)^(1/2)*x^2+61/27*(3*x^2+5*x+2)^(1/2)*x+215/18*(3*x^2+5*x+
2)^(1/2)+1147/324*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.24, size = 75, normalized size = 0.86

$$-\frac{4}{9}\sqrt{3x^2+5x+2}x^2+\frac{61}{27}\sqrt{3x^2+5x+2}x+\frac{1147}{324}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{215}{18}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*sqrt(3*x^2 + 5*x + 2)*x^2 + 61/27*sqrt(3*x^2 + 5*x + 2)*x + 1147/324*s
qrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 215/18*sqrt(3*x^2 +
 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(2x+3)^2\,(x-5)}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{8x^2}{\sqrt{3x^2+5x+2}}\right)dx-\int\frac{4x^3}{\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{45}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-51*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-8*x**2/sqrt(3*x**2 +
 5*x + 2), x) - Integral(4*x**3/sqrt(3*x**2 + 5*x + 2), x) - Integral(-45/s
qrt(3*x**2 + 5*x + 2), x)
```

3.2257 $\int \frac{(5-x)(3+2x)}{\sqrt{2+5x+3x^2}} \, dx$

Optimal. Leaf size=62

$$\frac{1}{6}\sqrt{3x^2+5x+2}\,(19-2x)+\frac{31\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{4\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {779, 621, 206}

$$\frac{1}{6}\sqrt{3x^2+5x+2}\,(19-2x)+\frac{31\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{4\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] ((19 - 2*x)*Sqrt[2 + 5*x + 3*x^2])/6 + (31*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqr
t[2 + 5*x + 3*x^2])])/(4*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\sqrt{2+5x+3x^2}}\,dx&=\frac{1}{6}(19-2x)\sqrt{2+5x+3x^2}+\frac{31}{4}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\&=\frac{1}{6}(19-2x)\sqrt{2+5x+3x^2}+\frac{31}{2}\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\&=\frac{1}{6}(19-2x)\sqrt{2+5x+3x^2}+\frac{31\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{4\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 57, normalized size = 0.92

$$\frac{1}{12}\left(31\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-2(2x-19)\sqrt{3x^2+5x+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2*(-19 + 2*x)*Sqrt[2 + 5*x + 3*x^2] + 31*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqr
t[6 + 15*x + 9*x^2])])/12
```

IntegrateAlgebraic [A] time = 0.52, size = 59, normalized size = 0.95

$$\frac{1}{6}\sqrt{3x^2+5x+2}\,(19-2x)+\frac{31\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] ((19 - 2*x)*Sqrt[2 + 5*x + 3*x^2])/6 + (31*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(S
qrt[3]*(1 + x))])/(2*Sqrt[3])
```

fricas [A] time = 0.40, size = 58, normalized size = 0.94

$$-\frac{1}{6}\sqrt{3\,x^2+5\,x+2}\,(2\,x-19)+\frac{31}{24}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/6*sqrt(3*x^2 + 5*x + 2)*(2*x - 19) + 31/24*sqrt(3)*log(4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 54, normalized size = 0.87

$$-\frac{1}{6}\sqrt{3\,x^2+5\,x+2}\,(2\,x-19)-\frac{31}{12}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/6*sqrt(3*x^2 + 5*x + 2)*(2*x - 19) - 31/12*sqrt(3)*log(abs(-2*sqrt(3)*(s
qrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.01, size = 60, normalized size = 0.97

$$-\frac{\sqrt{3x^2+5x+2}\;x}{3}+\frac{31\sqrt{3}\;\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{12}+\frac{19\sqrt{3x^2+5x+2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/3*(3*x^2+5*x+2)^(1/2)*x+19/6*(3*x^2+5*x+2)^(1/2)+31/12*3^(1/2)*ln(1/3*(3
*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.31, size = 58, normalized size = 0.94

$$-\frac{1}{3}\sqrt{3\,x^2+5\,x+2}\,x+\frac{31}{12}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)+\frac{19}{6}\sqrt{3\,x^2+5\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(3*x^2 + 5*x + 2)*x + 31/12*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x
 + 2) + 6*x + 5) + 19/6*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{(2x+3)(x-5)}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{7x}{\sqrt{3x^2+5x+2}}\right) dx - \int \frac{2x^2}{\sqrt{3x^2+5x+2}}\,dx - \int \left(-\frac{15}{\sqrt{3x^2+5x+2}}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-7*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(2*x**2/sqrt(3*x**2 + 5
*x + 2), x) - Integral(-15/sqrt(3*x**2 + 5*x + 2), x)
```

3.2258 $\int \frac{5-x}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=57

$$\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{6\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {640, 621, 206}

$$\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{6\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -Sqrt[2 + 5*x + 3*x^2]/3 + (35*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x +
3*x^2])])/(6*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{1}{3}\sqrt{2+5x+3x^2}+\frac{35}{6}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{1}{3}\sqrt{2+5x+3x^2}+\frac{35}{3}\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\
&= -\frac{1}{3}\sqrt{2+5x+3x^2}+\frac{35\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{6\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 52, normalized size = 0.91

$$\frac{1}{18}\left(35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2] + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x +
 9*x^2])])/18
```

IntegrateAlgebraic [A] time = 0.41, size = 54, normalized size = 0.95

$$\frac{35\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{3\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/3*Sqrt[2 + 5*x + 3*x^2] + (35*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1
+ x))])/(3*Sqrt[3])
```

fricas [A] time = 0.39, size = 53, normalized size = 0.93

$$\frac{35}{36}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 35/36*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*
x + 49) - 1/3*sqrt(3*x^2 + 5*x + 2)
```

giac [A] time = 0.25, size = 49, normalized size = 0.86

$$-\frac{35}{18}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -35/18*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
 - 1/3*sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.79

$$\frac{35\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{18}-\frac{\sqrt{3x^2+5x+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 35/18*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-1/3*(3*x^2+5*x+
2)^(1/2)
```

maxima [A] time = 1.33, size = 43, normalized size = 0.75

$$\frac{35}{18}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 35/18*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 1/3*sqrt(3*x
^2 + 5*x + 2)
```

mupad [B] time = 2.68, size = 44, normalized size = 0.77

$$\frac{35\sqrt{3}\ln\left(\sqrt{3}\,x+\frac{5\sqrt{3}}{6}+\sqrt{3\,x^2+5\,x+2}\right)}{18}-\frac{\sqrt{3\,x^2+5\,x+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (35*3^(1/2)*log(3^(1/2)*x + (5*3^(1/2))/6 + (5*x + 3*x^2 + 2)^(1/2)))/18 -
(5*x + 3*x^2 + 2)^(1/2)/3
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-5/sqrt(3*x**2 + 5*x + 2)
, x)
```

3.2259 $\int \frac{5-x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=77

$$\frac{13\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{5}}-\frac{\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{3}}$$

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {843, 621, 206, 724}

$$\frac{13\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{5}}-\frac{\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] -ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]/(2*Sqrt[3]) + (13*Arc
Tanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(2*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx = -\left(\frac{1}{2}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\right) + \frac{13}{2}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx$$
$$= -\left(13\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx, x, \frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)\right) - \text{Subst}\left(\int \frac{1}{12-x^2}\,dx, x, \frac{5}{\sqrt{2+}}\right.$$
$$= -\frac{\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{2\sqrt{3}} + \frac{13\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{2\sqrt{5}}$$

Mathematica [A] time = 0.02, size = 72, normalized size = 0.94

$$\frac{1}{30}\left(-39\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 5\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-39*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 5*Sqrt
[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/30
```

IntegrateAlgebraic [A] time = 0.56, size = 67, normalized size = 0.87

$$\frac{13\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{\sqrt{5}} - \frac{\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] -(ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))]/Sqrt[3]) + (13*ArcTanh[S
qrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/Sqrt[5]
```

fricas [A] time = 0.40, size = 90, normalized size = 1.17

$$\frac{1}{12}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right) + \frac{13}{20}\sqrt{5}\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*
x + 49) + 13/20*sqrt(5)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 12
4*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.29, size = 107, normalized size = 1.39

$$\frac{13}{10}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right) + \frac{1}{6}\sqrt{3}\log\left(\left|-6\sqrt{3}x-5\sqrt{3}+6\sqrt{3x^2+5x+2}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 13/10*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
```

```
2))) + 1/6*sqrt(3)*log(abs(-6*sqrt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x +
2)))
```

maple [A] time = 0.01, size = 61, normalized size = 0.79

$$-\frac{13\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{10}-\frac{\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/6*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-13/10*5^(1/2)*ar
ctanh(2/5*(-7/2-4*x)*5^(1/2)/(12*(x+3/2)^2-16*x-19)^(1/2))
```

maxima [A] time = 1.17, size = 70, normalized size = 0.91

$$-\frac{1}{6}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right)-\frac{13}{10}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 13/10*sqrt(5)
*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)\sqrt{3x^{2}+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{2x\sqrt{3x^{2}+5x+2}+3\sqrt{3x^{2}+5x+2}}\,dx-\int \left(-\frac{5}{2x\sqrt{3x^{2}+5x+2}+3\sqrt{3x^{2}+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(2*x*sqrt(3*x**2 + 5*x + 2) + 3*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-5/(2*x*sqrt(3*x**2 + 5*x + 2) + 3*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2260 $\int \frac{5-x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=64

$$\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10\sqrt{5}}-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}$$

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {806, 724, 206}

$$\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10\sqrt{5}}-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(5*(3 + 2*x)) + (47*ArcTanh[(7 + 8*x)/(2*Sqrt[5
]*Sqrt[2 + 5*x + 3*x^2])])/(10*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx &= -\frac{13\sqrt{2+5x+3x^2}}{5(3+2x)}+\frac{47}{10}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{13\sqrt{2+5x+3x^2}}{5(3+2x)}-\frac{47}{5}\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)\\
&= -\frac{13\sqrt{2+5x+3x^2}}{5(3+2x)}+\frac{47\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{10\sqrt{5}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 64, normalized size = 1.00

$$-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}-\frac{47\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(5*(3 + 2*x)) - (47*ArcTanh[(-7 - 8*x)/(2*Sqrt[
5]*Sqrt[2 + 5*x + 3*x^2])])/(10*Sqrt[5])
```

IntegrateAlgebraic [A] time = 0.46, size = 61, normalized size = 0.95

$$\frac{47\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{5\sqrt{5}}-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(5*(3 + 2*x)) + (47*ArcTanh[Sqrt[2 + 5*x + 3*x^
2]/(Sqrt[5]*(1 + x))])/(5*Sqrt[5])
```

fricas [A] time = 0.40, size = 80, normalized size = 1.25

$$\frac{47\sqrt{5}(2x+3)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-260\sqrt{3x^2+5x+2}}{100(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/100*(47*sqrt(5)*(2*x + 3)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7)
+ 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 260*sqrt(3*x^2 + 5*x + 2))/(2
*x + 3)
```

giac [B] time = 0.34, size = 127, normalized size = 1.98

$$\frac{1}{50}\sqrt{5}\left(13\sqrt{5}\sqrt{3}+47\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{47\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)}{50\operatorname{sgn}\left(\frac{1}{2x+3}\right)}-\frac{13\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}}{10\operatorname{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/50*sqrt(5)*(13*sqrt(5)*sqrt(3) + 47*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(2*x
 + 3)) - 47/50*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3) + sqrt(5)/(2*x + 3)) - 4))/sgn(1/(2*x + 3)) - 13/10*sqrt(-8/(2*x + 3) +
 5/(2*x + 3)^2 + 3)/sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 53, normalized size = 0.83

$$-\frac{47\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{50}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{10\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -13/10/(x+3/2)*(3*(x+3/2)^2-4*x-19/4)^(1/2)-47/50*5^(1/2)*arctanh(2/5*(-4*x
-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.29, size = 64, normalized size = 1.00

$$-\frac{47}{50}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -47/50*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
 + 3) - 2) - 13/5*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int\frac{x-5}{(2x+3)^2\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{4x^2\sqrt{3x^2+5x+2}+12x\sqrt{3x^2+5x+2}+9\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{4x^2\sqrt{3x^2+5x+2}+12x\sqrt{3x^2+5x+2}+9\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(4*x**2*sqrt(3*x**2 + 5*x + 2) + 12*x*sqrt(3*x**2 + 5*x + 2) +
9*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(4*x**2*sqrt(3*x**2 + 5*x + 2)
+ 12*x*sqrt(3*x**2 + 5*x + 2) + 9*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2261 $\int \frac{5-x}{(3+2x)^3 \sqrt{2+5x+3x^2}} \, dx$

Optimal. Leaf size=89

$$-\frac{73\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{13\sqrt{3x^2+5x+2}}{10(2x+3)^2}+\frac{389\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

Rubi [A] time = 0.06, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$-\frac{73\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{13\sqrt{3x^2+5x+2}}{10(2x+3)^2}+\frac{389\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(10*(3 + 2*x)^2) - (73*Sqrt[2 + 5*x + 3*x^2])/(
25*(3 + 2*x)) + (389*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/
(100*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx &= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{1}{10}\int \frac{-\frac{29}{2}+39x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{73\sqrt{2+5x+3x^2}}{25(3+2x)}+\frac{389}{100}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{73\sqrt{2+5x+3x^2}}{25(3+2x)}-\frac{389}{50}\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7}{\sqrt{2+5}}\right. \\
&= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{73\sqrt{2+5x+3x^2}}{25(3+2x)}+\frac{389\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{100\sqrt{5}}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 69, normalized size = 0.78

$$
\frac{1}{500}\left(-\frac{10\sqrt{3x^2+5x+2}\,(292x+503)}{(2x+3)^2}-389\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*(503 + 292*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 - 389*Sqrt[5]*ArcTan
h[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/500
```

IntegrateAlgebraic [A] time = 0.55, size = 66, normalized size = 0.74

$$
\frac{\sqrt{3x^2+5x+2}\,(-292x-503)}{50(2x+3)^2}+\frac{389\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}\,(x+1)}\right)}{50\sqrt{5}}
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-503 - 292*x)*Sqrt[2 + 5*x + 3*x^2])/(50*(3 + 2*x)^2) + (389*ArcTanh[Sqrt
[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(50*Sqrt[5])
```

fricas [A] time = 0.40, size = 95, normalized size = 1.07

$$
\frac{389\sqrt{5}\left(4x^2+12x+9\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\sqrt{3x^2+5x+2}\,(292x+503)}{1000\left(4x^2+12x+9\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/1000*(389*sqrt(5)*(4*x^2 + 12*x + 9)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)
*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*sqrt(3*x^2 + 5*
x + 2)*(292*x + 503))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.32, size = 206, normalized size = 2.31

$$
\frac{389}{500}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{778\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+3551\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+13217\sqrt{3}x+4971\sqrt{3}-13217\sqrt{3x^2+5x+2}}{50\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 389/500*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) - 1/50*(778*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 3551*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 13217*sqrt(3)*x + 4971*sqrt(3) - 13217
*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.01, size = 74, normalized size = 0.83

$$-\frac{389\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{500}-\frac{73\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{50\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{40\left(x+\frac{3}{2}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -73/50/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-389/500*5^(1/2)*arctanh(2/5*(-
4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/40/(x+3/2)^2*(-4*x+3*(x+
3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.27, size = 90, normalized size = 1.01

$$-\frac{389}{500}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^{2}+5x+2}}{10\left(4x^{2}+12x+9\right)}-\frac{73\sqrt{3x^{2}+5x+2}}{25(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -389/500*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 13/10*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 73/25*sqrt(
3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{x-5}{(2x+3)^{3}\sqrt{3x^{2}+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{8x^{3}\sqrt{3x^{2}+5x+2}+36x^{2}\sqrt{3x^{2}+5x+2}+54x\sqrt{3x^{2}+5x+2}+27\sqrt{3x^{2}+5x+2}}\,dx-\int\left(-\frac{5}{8x^{3}\sqrt{3x^{2}+5x+2}+36x^{2}\sqrt{3x^{2}+5x+2}+54x\sqrt{3x^{2}+5x+2}+27\sqrt{3x^{2}+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(8*x**3*sqrt(3*x**2 + 5*x + 2) + 36*x**2*sqrt(3*x**2 + 5*x + 2)
 + 54*x*sqrt(3*x**2 + 5*x + 2) + 27*sqrt(3*x**2 + 5*x + 2)), x) - Integral(
-5/(8*x**3*sqrt(3*x**2 + 5*x + 2) + 36*x**2*sqrt(3*x**2 + 5*x + 2) + 54*x*s
qrt(3*x**2 + 5*x + 2) + 27*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2262 $\int \frac{5-x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=114

$$-\frac{72\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{49\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{13\sqrt{3x^2+5x+2}}{15(2x+3)^3}+\frac{331\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

Rubi [A] time = 0.07, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$-\frac{72\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{49\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{13\sqrt{3x^2+5x+2}}{15(2x+3)^3}+\frac{331\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^3) - (49*Sqrt[2 + 5*x + 3*x^2])/(
30*(3 + 2*x)^2) - (72*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)) + (331*ArcTanh[
(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(100*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx = -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{1}{15}\int \frac{-\frac{11}{2}+78x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} + \frac{1}{150}\int \frac{-\frac{45}{2}-735x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,d$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} - \frac{72\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{331}{100}\int \frac{}{(3+}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} - \frac{72\sqrt{2+5x+3x^2}}{25(3+2x)} - \frac{331}{50}\operatorname{Subst}\Big($$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} - \frac{72\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{331\tanh^{-1}\big(}{10}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.65

$$\frac{-\frac{10\sqrt{3x^2+5x+2}\left(1728x^2+5674x+4753\right)}{(2x+3)^3} - 993\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1500}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(4753 + 5674*x + 1728*x^2))/(3 + 2*x)^3 - 993*S
qrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/1500
```

IntegrateAlgebraic [A] time = 0.63, size = 71, normalized size = 0.62

$$\frac{\sqrt{3x^2+5x+2}\left(-1728x^2-5674x-4753\right)}{150(2x+3)^3} + \frac{331\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{50\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-4753 - 5674*x - 1728*x^2)*Sqrt[2 + 5*x + 3*x^2])/(150*(3 + 2*x)^3) + (33
1*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(50*Sqrt[5])
```

fricas [A] time = 0.40, size = 110, normalized size = 0.96

$$\frac{993\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) - 20\left(1728x^2+5674x+4753\right)\sqrt{3x^2+5x+2}}{3000\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3000*(993*sqrt(5)*(8*x^3 + 36*x^2 + 54*x + 27)*log((4*sqrt(5)*sqrt(3*x^2
+ 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(1728
*x^2 + 5674*x + 4753)*sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.31, size = 257, normalized size = 2.25

$$\frac{331}{500}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right) - \frac{3972\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+29790\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+255470\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+338835\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+632175\sqrt{3}x+149502\sqrt{3}-632175\sqrt{3x^2+5x+2}}{150\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 331/500*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) - 1/150*(3972*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 29790*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 255470*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^3 + 338835*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 632175*s
qrt(3)*x + 149502*sqrt(3) - 632175*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 1
1)^3
```

maple [A] time = 0.01, size = 95, normalized size = 0.83

$$-\frac{331\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{500}-\frac{49\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{120\left(x+\frac{3}{2}\right)^{2}}-\frac{36\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{25\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{120\left(x+\frac{3}{2}\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -49/120/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-36/25/(x+3/2)*(-4*x+3*(x+3/
2)^2-19/4)^(1/2)-331/500*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(
x+3/2)^2-19)^(1/2))-13/120/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.21, size = 121, normalized size = 1.06

$$-\frac{331}{500}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^{2}+5x+2}}{15\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{49\sqrt{3x^{2}+5x+2}}{30\left(4x^{2}+12x+9\right)}-\frac{72\sqrt{3x^{2}+5x+2}}{25(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -331/500*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 13/15*sqrt(3*x^2 + 5*x + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 4
9/30*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 72/25*sqrt(3*x^2 + 5*x + 2)
/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{x-5}{(2x+3)^{4}\sqrt{3x^{2}+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{16x^{4}\sqrt{3x^{2}+5x+2}+96x^{3}\sqrt{3x^{2}+5x+2}+216x^{2}\sqrt{3x^{2}+5x+2}+216x\sqrt{3x^{2}+5x+2}+81\sqrt{3x^{2}+5x+2}}\,dx-\int\left(-\frac{5}{16x^{4}\sqrt{3x^{2}+5x+2}+96x^{3}\sqrt{3x^{2}+5x+2}+216x^{2}\sqrt{3x^{2}+5x+2}+216x\sqrt{3x^{2}+5x+2}+81\sqrt{3x^{2}+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(16*x**4*sqrt(3*x**2 + 5*x + 2) + 96*x**3*sqrt(3*x**2 + 5*x + 2
) + 216*x**2*sqrt(3*x**2 + 5*x + 2) + 216*x*sqrt(3*x**2 + 5*x + 2) + 81*sqr
t(3*x**2 + 5*x + 2)), x) - Integral(-5/(16*x**4*sqrt(3*x**2 + 5*x + 2) + 96
*x**3*sqrt(3*x**2 + 5*x + 2) + 216*x**2*sqrt(3*x**2 + 5*x + 2) + 216*x*sqrt
(3*x**2 + 5*x + 2) + 81*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2263 $\int \frac{5-x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=139

$$-\frac{681\sqrt{3x^2+5x+2}}{250(2x+3)}-\frac{41\sqrt{3x^2+5x+2}}{24(2x+3)^2}-\frac{86\sqrt{3x^2+5x+2}}{75(2x+3)^3}-\frac{13\sqrt{3x^2+5x+2}}{20(2x+3)^4}+\frac{5771\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2000\sqrt{5}}$$

Rubi [A] time = 0.10, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$-\frac{681\sqrt{3x^2+5x+2}}{250(2x+3)}-\frac{41\sqrt{3x^2+5x+2}}{24(2x+3)^2}-\frac{86\sqrt{3x^2+5x+2}}{75(2x+3)^3}-\frac{13\sqrt{3x^2+5x+2}}{20(2x+3)^4}+\frac{5771\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)^4) - (86*Sqrt[2 + 5*x + 3*x^2])/(
75*(3 + 2*x)^3) - (41*Sqrt[2 + 5*x + 3*x^2])/(24*(3 + 2*x)^2) - (681*Sqrt[2
 + 5*x + 3*x^2])/(250*(3 + 2*x)) + (5771*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[
2 + 5*x + 3*x^2])])/(2000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx = -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4} - \frac{1}{20}\int \frac{\frac{7}{2}+117x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4} - \frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3} + \frac{1}{300}\int \frac{-\frac{1067}{2}-2064x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4} - \frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2} - \frac{\int \frac{\frac{5265}{2}+15375x}{(3+2x)^2\sqrt{2+5x+3}}}{3000}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4} - \frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2} - \frac{681\sqrt{2+5x+3}}{250(3+2x)}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4} - \frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2} - \frac{681\sqrt{2+5x+3}}{250(3+2x)}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4} - \frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2} - \frac{681\sqrt{2+5x+3}}{250(3+2x)}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.57

$$\frac{-17313\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - \frac{10\sqrt{3x^2+5x+2}\left(65376x^3+314692x^2+509668x+279039\right)}{(2x+3)^4}}{30000}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(279039 + 509668*x + 314692*x^2 + 65376*x^3))/(
3 + 2*x)^4 - 17313*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x
^2])])/30000
```

IntegrateAlgebraic [A] time = 0.64, size = 76, normalized size = 0.55

$$\frac{5771\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{1000\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\left(-65376x^3-314692x^2-509668x-279039\right)}{3000(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-279039 - 509668*x - 314692*x^2 - 65376*x^3))/(3000
*(3 + 2*x)^4) + (5771*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(10
00*Sqrt[5])
```

fricas [A] time = 0.40, size = 125, normalized size = 0.90

$$\frac{17313\sqrt{5}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) - 20\left(65376x^3+314692x^2+509668x+279039\right)\sqrt{3x^2+5x+2}}{60000\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/60000*(17313*sqrt(5)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt
(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x +
```

```
9)) - 20*(65376*x^3 + 314692*x^2 + 509668*x + 279039)*sqrt(3*x^2 + 5*x + 2
))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [A] time = 0.37, size = 193, normalized size = 1.39

$$\frac{1}{10000}\sqrt{5}\left(2724\sqrt{5}\sqrt{3}+5771\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{6000}\left(\frac{5\left(\frac{2\left(\frac{344}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{195}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{1025}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{8172}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}-\frac{5771\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)}{10000\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/10000*sqrt(5)*(2724*sqrt(5)*sqrt(3) + 5771*log(-sqrt(5)*sqrt(3) + 4))*sgn
(1/(2*x + 3)) - 1/6000*(5*(2*(344/sgn(1/(2*x + 3)) + 195/((2*x + 3)*sgn(1/(
2*x + 3))))/(2*x + 3) + 1025/sgn(1/(2*x + 3)))/(2*x + 3) + 8172/sgn(1/(2*x
+ 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 5771/10000*sqrt(5)*log(abs(
sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))/
sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 116, normalized size = 0.83

$$-\frac{5771\sqrt{5}\ \mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{10000}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{320\left(x+\frac{3}{2}\right)^4}-\frac{43\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{300\left(x+\frac{3}{2}\right)^3}-\frac{41\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{96\left(x+\frac{3}{2}\right)^2}-\frac{681\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{500\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-43/300/(x+3/2)^3*(-4*x+3*(x
+3/2)^2-19/4)^(1/2)-41/96/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-681/500/(
x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-5771/10000*5^(1/2)*arctanh(2/5*(-4*x-7
/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.27, size = 157, normalized size = 1.13

$$-\frac{5771}{10000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^2+5x+2}}{20\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{86\sqrt{3x^2+5x+2}}{75\left(8x^3+36x^2+54x+27\right)}-\frac{41\sqrt{3x^2+5x+2}}{24\left(4x^2+12x+9\right)}-\frac{681\sqrt{3x^2+5x+2}}{250(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5771/10000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) - 13/20*sqrt(3*x^2 + 5*x + 2)/(16*x^4 + 96*x^3 + 216*x^2 +
216*x + 81) - 86/75*sqrt(3*x^2 + 5*x + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 41
/24*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 681/250*sqrt(3*x^2 + 5*x + 2
)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^5\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{32x^5\sqrt{3x^2+5x+2}+240x^4\sqrt{3x^2+5x+2}+720x^3\sqrt{3x^2+5x+2}+1080x^2\sqrt{3x^2+5x+2}+810x\sqrt{3x^2+5x+2}+243\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{32x^5\sqrt{3x^2+5x+2}+240x^4\sqrt{3x^2+5x+2}+720x^3\sqrt{3x^2+5x+2}+1080x^2\sqrt{3x^2+5x+2}+810x\sqrt{3x^2+5x+2}+243\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(32*x**5*sqrt(3*x**2 + 5*x + 2) + 240*x**4*sqrt(3*x**2 + 5*x +
2) + 720*x**3*sqrt(3*x**2 + 5*x + 2) + 1080*x**2*sqrt(3*x**2 + 5*x + 2) + 8
10*x*sqrt(3*x**2 + 5*x + 2) + 243*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5
/(32*x**5*sqrt(3*x**2 + 5*x + 2) + 240*x**4*sqrt(3*x**2 + 5*x + 2) + 720*x*
*3*sqrt(3*x**2 + 5*x + 2) + 1080*x**2*sqrt(3*x**2 + 5*x + 2) + 810*x*sqrt(3
*x**2 + 5*x + 2) + 243*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2264 $\int \frac{5-x}{(3+2x)^6\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=164

$$-\frac{15891\sqrt{3x^2+5x+2}}{6250(2x+3)}-\frac{1007\sqrt{3x^2+5x+2}}{600(2x+3)^2}-\frac{2321\sqrt{3x^2+5x+2}}{1875(2x+3)^3}-\frac{443\sqrt{3x^2+5x+2}}{500(2x+3)^4}-\frac{13\sqrt{3x^2+5x+2}}{25(2x+3)^5}+$$

Rubi [A] time = 0.14, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$-\frac{15891\sqrt{3x^2+5x+2}}{6250(2x+3)}-\frac{1007\sqrt{3x^2+5x+2}}{600(2x+3)^2}-\frac{2321\sqrt{3x^2+5x+2}}{1875(2x+3)^3}-\frac{443\sqrt{3x^2+5x+2}}{500(2x+3)^4}-\frac{13\sqrt{3x^2+5x+2}}{25(2x+3)^5}+\frac{128381\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{50000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)^5) - (443*Sqrt[2 + 5*x + 3*x^2])/
(500*(3 + 2*x)^4) - (2321*Sqrt[2 + 5*x + 3*x^2])/(1875*(3 + 2*x)^3) - (1007
*Sqrt[2 + 5*x + 3*x^2])/(600*(3 + 2*x)^2) - (15891*Sqrt[2 + 5*x + 3*x^2])/(
6250*(3 + 2*x)) + (128381*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2
])])/(50000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^6\sqrt{2+5x+3x^2}}\,dx = -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{1}{25}\int \frac{\frac{25}{2}+156x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} + \frac{1}{500}\int \frac{-\frac{2677}{2}-3987x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} - \frac{\int \frac{\frac{41237}{2}+55}{(3+2x)^3\sqrt{2+}}}{750}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} - \frac{1007\sqrt{2+5}}{600(3+}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} - \frac{1007\sqrt{2+5}}{600(3+}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} - \frac{1007\sqrt{2+5}}{600(3+}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} - \frac{1007\sqrt{2+5}}{600(3+}$$

Mathematica [A] time = 0.06, size = 84, normalized size = 0.51

$$\frac{-385143\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - \frac{10\sqrt{3x^2+5x+2}\left(3051072x^4+19313432x^3+46092332x^2+49233702x+19918587\right)}{(2x+3)^5}}{750000}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(19918587 + 49233702*x + 46092332*x^2 + 1931343
2*x^3 + 3051072*x^4))/(3 + 2*x)^5 - 385143*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/750000
```

IntegrateAlgebraic [A] time = 0.96, size = 81, normalized size = 0.49

$$\frac{128381\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25000\sqrt{5}} + \frac{\sqrt{3x^2+5x+2}\left(-3051072x^4-19313432x^3-46092332x^2-49233702x-19918587\right)}{75000(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(-19918587 - 49233702*x - 46092332*x^2 - 19313432*x^
3 - 3051072*x^4))/(75000*(3 + 2*x)^5) + (128381*ArcTanh[Sqrt[2 + 5*x + 3*x^
2]/(Sqrt[5]*(1 + x))])/(25000*Sqrt[5])
```

fricas [A] time = 0.41, size = 140, normalized size = 0.85

$$\frac{385143\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) - 20\left(3051072x^4+19313432x^3+46092332x^2+49233702x+19918587\right)\sqrt{3x^2+5x+2}}{1500000\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/1500000*(385143*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
243)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)
/(4*x^2 + 12*x + 9)) - 20*(3051072*x^4 + 19313432*x^3 + 46092332*x^2 + 4923
3702*x + 19918587)*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 108
0*x^2 + 810*x + 243)
```

giac [B] time = 0.56, size = 359, normalized size = 2.19

$$\frac{128381}{250000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6162288\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9+83190888\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^8+1461489304\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^7+4863585804\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^6+30365807072\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+40931011758\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+107175203674\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+58461317289\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+54344360217\sqrt{3}x+7303159752\sqrt{3}-54344360217\sqrt{3x^2+5x+2}}{75000\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 128381/250000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt
(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))) - 1/75000*(6162288*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 831
90888*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 1461489304*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^7 + 4863585804*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^6 + 30365807072*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 409310117
58*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 107175203674*(sqrt(3)*x
- sqrt(3*x^2 + 5*x + 2))^3 + 58461317289*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^2 + 54344360217*sqrt(3)*x + 7303159752*sqrt(3) - 54344360217*sqrt
(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^5
```

maple [A] time = 0.01, size = 137, normalized size = 0.84

$$-\frac{128381\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{250000}-\frac{443\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{8000\left(x+\frac{3}{2}\right)^4}-\frac{2321\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{15000\left(x+\frac{3}{2}\right)^3}-\frac{1007\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{2400\left(x+\frac{3}{2}\right)^2}-\frac{15891\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{12500\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{800\left(x+\frac{3}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -443/8000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-2321/15000/(x+3/2)^3*(-4*
x+3*(x+3/2)^2-19/4)^(1/2)-1007/2400/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
-15891/12500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-128381/250000*5^(1/2)*ar
ctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/800/(x+3/2)^
5*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.17, size = 198, normalized size = 1.21

$$-\frac{128381}{250000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^2+5x+2}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{443\sqrt{3x^2+5x+2}}{500\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{2321\sqrt{3x^2+5x+2}}{1875\left(8x^3+36x^2+54x+27\right)}-\frac{1007\sqrt{3x^2+5x+2}}{600\left(4x^2+12x+9\right)}-\frac{15891\sqrt{3x^2+5x+2}}{6250\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -128381/250000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2
/abs(2*x + 3) - 2) - 13/25*sqrt(3*x^2 + 5*x + 2)/(32*x^5 + 240*x^4 + 720*x^
3 + 1080*x^2 + 810*x + 243) - 443/500*sqrt(3*x^2 + 5*x + 2)/(16*x^4 + 96*x^
3 + 216*x^2 + 216*x + 81) - 2321/1875*sqrt(3*x^2 + 5*x + 2)/(8*x^3 + 36*x^2
 + 54*x + 27) - 1007/600*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 15891/6
250*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^6\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^6*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^6*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{64x^6\sqrt{3x^2+5x+2}+576x^5\sqrt{3x^2+5x+2}+2160x^4\sqrt{3x^2+5x+2}+4320x^3\sqrt{3x^2+5x+2}+4860x^2\sqrt{3x^2+5x+2}+2916x\sqrt{3x^2+5x+2}+729\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{64x^6\sqrt{3x^2+5x+2}+576x^5\sqrt{3x^2+5x+2}+2160x^4\sqrt{3x^2+5x+2}+4320x^3\sqrt{3x^2+5x+2}+4860x^2\sqrt{3x^2+5x+2}+2916x\sqrt{3x^2+5x+2}+729\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**6/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(64*x**6*sqrt(3*x**2 + 5*x + 2) + 576*x**5*sqrt(3*x**2 + 5*x +
2) + 2160*x**4*sqrt(3*x**2 + 5*x + 2) + 4320*x**3*sqrt(3*x**2 + 5*x + 2) +
4860*x**2*sqrt(3*x**2 + 5*x + 2) + 2916*x*sqrt(3*x**2 + 5*x + 2) + 729*sqrt
(3*x**2 + 5*x + 2)), x) - Integral(-5/(64*x**6*sqrt(3*x**2 + 5*x + 2) + 576
*x**5*sqrt(3*x**2 + 5*x + 2) + 2160*x**4*sqrt(3*x**2 + 5*x + 2) + 4320*x**3
*sqrt(3*x**2 + 5*x + 2) + 4860*x**2*sqrt(3*x**2 + 5*x + 2) + 2916*x*sqrt(3*
x**2 + 5*x + 2) + 729*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2265 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=117

$$-\frac{2(139x+121)(2x+3)^3}{3\sqrt{3x^2+5x+2}}+\frac{1664}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{10}{81}(1438x+3369)\sqrt{3x^2+5x+2}+\frac{6265\tanh^{-1}\left(\frac{\cdots}{2\sqrt{3}\cdots}\right.}{81\sqrt{3}}$$

Rubi [A] time = 0.07, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 832, 779, 621, 206}

$$-\frac{2(139x+121)(2x+3)^3}{3\sqrt{3x^2+5x+2}}+\frac{1664}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{10}{81}(1438x+3369)\sqrt{3x^2+5x+2}+\frac{6265\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{81\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)^3*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (1664*(3 + 2*x)^
2*Sqrt[2 + 5*x + 3*x^2])/27 + (10*(3369 + 1438*x)*Sqrt[2 + 5*x + 3*x^2])/81
 + (6265*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(81*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{3}\int \frac{(3+2x)^2(723+832x)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{2}{27}\int \frac{(3+2x)(6625+71}{\sqrt{2+5x+3x^2}}$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{10}{81}(3369+1438x)\sqrt{2+5}$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{10}{81}(3369+1438x)\sqrt{2+5}$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{10}{81}(3369+1438x)\sqrt{2+5}$$

Mathematica [A] time = 0.04, size = 81, normalized size = 0.69

$$-\frac{6\left(72x^4-102x^3-3331x^2+6920x+9591\right)-6265\sqrt{9x^2+15x+6}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{243\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/243*(6*(9591 + 6920*x - 3331*x^2 - 102*x^3 + 72*x^4) - 6265*Sqrt[6 + 15*
x + 9*x^2]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/Sqrt[2 + 5*x + 3*
x^2]
```

IntegrateAlgebraic [A] time = 0.60, size = 86, normalized size = 0.74

$$\frac{12530\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}\,(x+1)}\right)}{81\sqrt{3}} - \frac{2\sqrt{3x^2+5x+2}\,\left(72x^4-102x^3-3331x^2+6920x+9591\right)}{81(x+1)(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(9591 + 6920*x - 3331*x^2 - 102*x^3 + 72*x^4))/(8
1*(1 + x)*(2 + 3*x)) + (12530*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x
))])/(81*Sqrt[3])
```

fricas [A] time = 0.42, size = 97, normalized size = 0.83

$$\frac{6265\sqrt{3}\left(3x^2+5x+2\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)-12\left(72x^4-102x^3-3331x^2+6920x+9591\right)\sqrt{3x^2+5x+2}}{486\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/486*(6265*sqrt(3)*(3*x^2 + 5*x + 2)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(
6*x + 5) + 72*x^2 + 120*x + 49) - 12*(72*x^4 - 102*x^3 - 3331*x^2 + 6920*x
+ 9591)*sqrt(3*x^2 + 5*x + 2))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.23, size = 67, normalized size = 0.57

$$-\frac{6265}{243}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\left(\left(\left(6\left(12x-17\right)x-3331\right)x+6920\right)x+9591\right)}{81\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -6265/243*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) -
5)) - 2/81*(((6*(12*x - 17)*x - 3331)*x + 6920)*x + 9591)/sqrt(3*x^2 + 5*x
+ 2)
```

maple [A] time = 0.02, size = 130, normalized size = 1.11

$$-\frac{16x^4}{9\sqrt{3x^2+5x+2}}+\frac{68x^3}{27\sqrt{3x^2+5x+2}}+\frac{6662x^2}{81\sqrt{3x^2+5x+2}}-\frac{6265x}{81\sqrt{3x^2+5x+2}}+\frac{6265\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{243}-\frac{25739}{162\sqrt{3x^2+5x+2}}-\frac{2525\left(6x+5\right)}{162\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -25739/162/(3*x^2+5*x+2)^(1/2)+6265/243*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))-2525/162*(5+6*x)/(3*x^2+5*x+2)^(1/2)-16/9*x^4/(3*x^2+5*x
+2)^(1/2)+68/27*x^3/(3*x^2+5*x+2)^(1/2)+6662/81*x^2/(3*x^2+5*x+2)^(1/2)-626
5/81*x/(3*x^2+5*x+2)^(1/2)
```

maxima [A] time = 1.11, size = 109, normalized size = 0.93

$$-\frac{16x^4}{9\sqrt{3x^2+5x+2}}+\frac{68x^3}{27\sqrt{3x^2+5x+2}}+\frac{6662x^2}{81\sqrt{3x^2+5x+2}}+\frac{6265}{243}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{13840x}{81\sqrt{3x^2+5x+2}}-\frac{6394}{27\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/9*x^4/sqrt(3*x^2 + 5*x + 2) + 68/27*x^3/sqrt(3*x^2 + 5*x + 2) + 6662/81
*x^2/sqrt(3*x^2 + 5*x + 2) + 6265/243*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 6*x + 5) - 13840/81*x/sqrt(3*x^2 + 5*x + 2) - 6394/27/sqrt(3*x^2 +
 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2x+3\right)}^4\,\left(x-5\right)}{{\left(3x^2+5x+2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{864x^2}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{264x^3}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{16x^4}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\,dx-\int\frac{16x^5}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{405}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-999*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2
) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-864*x**2/(3*x**2*sqrt(3*x**2
+ 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-264*x**3/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x +
2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(16*x**4/(3*x**2*sqrt(3*x**2 +
 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - In
tegral(16*x**5/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
+ 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-405/(3*x**2*sqrt(3*x**2 + 5*x +
 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2266 $\int \frac{(5-x)(3+2x)^3}{(2+5x+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=92

$$-\frac{2(139x+121)(2x+3)^2}{3\sqrt{3x^2+5x+2}}+\frac{2}{9}(554x+1239)\sqrt{3x^2+5x+2}+\frac{247\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 779, 621, 206}

$$-\frac{2(139x+121)(2x+3)^2}{3\sqrt{3x^2+5x+2}}+\frac{2}{9}(554x+1239)\sqrt{3x^2+5x+2}+\frac{247\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)^2*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (2*(1239 + 554*x
)*Sqrt[2 + 5*x + 3*x^2])/9 + (247*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x
 + 3*x^2])])/(9*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{3}\int \frac{(3+2x)(481+554x)}{\sqrt{2+5x+3x^2}}\,dx$$
$$= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{9}(1239+554x)\sqrt{2+5x+3x^2} + \frac{247}{9}\int \frac{1}{\sqrt{2+5x+3x^2}}\,d$$
$$= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{9}(1239+554x)\sqrt{2+5x+3x^2} + \frac{494}{9}\,\text{Subst}\left(\int \frac{1}{12-x^2}\,d\right.$$
$$= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{9}(1239+554x)\sqrt{2+5x+3x^2} + \frac{247\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3}}\right.}{9\sqrt{3}}$$

Mathematica [A] time = 0.03, size = 76, normalized size = 0.83

$$-\frac{6\left(6x^3-31x^2+806x+789\right)-247\sqrt{9x^2+15x+6}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{27\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/27*(6*(789 + 806*x - 31*x^2 + 6*x^3) - 247*Sqrt[6 + 15*x + 9*x^2]*ArcTan
h[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/Sqrt[2 + 5*x + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.50, size = 81, normalized size = 0.88

$$\frac{494\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{9\sqrt{3}} - \frac{2\sqrt{3x^2+5x+2}\,\left(6x^3-31x^2+806x+789\right)}{9(x+1)(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(789 + 806*x - 31*x^2 + 6*x^3))/(9*(1 + x)*(2 + 3
*x)) + (494*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(9*Sqrt[3])
```

fricas [A] time = 0.40, size = 92, normalized size = 1.00

$$\frac{247\sqrt{3}\left(3x^2+5x+2\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)-12\left(6x^3-31x^2+806x+789\right)\sqrt{3x^2+5x+2}}{54\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/54*(247*sqrt(3)*(3*x^2 + 5*x + 2)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*
x + 5) + 72*x^2 + 120*x + 49) - 12*(6*x^3 - 31*x^2 + 806*x + 789)*sqrt(3*x^
2 + 5*x + 2))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.23, size = 62, normalized size = 0.67

$$-\frac{247}{27}\sqrt{3}\,\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\left(((6x-31)x+806)x+789\right)}{9\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -247/27*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)
) - 2/9*(((6*x - 31)*x + 806)*x + 789)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.01, size = 113, normalized size = 1.23

$$-\frac{4x^{3}}{3\sqrt{3x^{2}+5x+2}}+\frac{62x^{2}}{9\sqrt{3x^{2}+5x+2}}-\frac{247x}{9\sqrt{3x^{2}+5x+2}}+\frac{247\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{27}-\frac{881}{18\sqrt{3x^{2}+5x+2}}-\frac{455\,(6x+5)}{18\sqrt{3x^{2}+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+5*x+2)^(1/2)*x^3+62/9/(3*x^2+5*x+2)^(1/2)*x^2-247/9/(3*x^2+5*x+
2)^(1/2)*x-881/18/(3*x^2+5*x+2)^(1/2)-455/18*(6*x+5)/(3*x^2+5*x+2)^(1/2)+24
7/27*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.40, size = 92, normalized size = 1.00

$$-\frac{4\,x^{3}}{3\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{62\,x^{2}}{9\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{247}{27}\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}+6\,x+5\right)-\frac{1612\,x}{9\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{526}{3\,\sqrt{3\,x^{2}+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^3/sqrt(3*x^2 + 5*x + 2) + 62/9*x^2/sqrt(3*x^2 + 5*x + 2) + 247/27*sq
rt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 1612/9*x/sqrt(3*x^2
+ 5*x + 2) - 526/3/sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2\,x+3)^{3}\,(x-5)}{\left(3\,x^{2}+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\right)dx-\int\left(-\frac{126x^{2}}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\right)dx-\int\left(-\frac{4x^{3}}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\right)dx-\int\frac{8x^{4}}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\,dx-\int\left(-\frac{135}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-243*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2
) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-126*x**2/(3*x**2*sqrt(3*x**2
+ 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-4*x**3/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
 + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(8*x**4/(3*x**2*sqrt(3*x**2 + 5*
x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integ
ral(-135/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sq
rt(3*x**2 + 5*x + 2)), x)
```

3.2267 $\int \frac{(5-x)(3+2x)^2}{(2+5x+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=83

$$-\frac{2(2x+3)(139x+121)}{3\sqrt{3x^2+5x+2}}+\frac{184}{3}\sqrt{3x^2+5x+2}+2\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)$$

Rubi [A] time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 640, 621, 206}

$$-\frac{2(2x+3)(139x+121)}{3\sqrt{3x^2+5x+2}}+\frac{184}{3}\sqrt{3x^2+5x+2}+2\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (184*Sqrt[2 + 5*x
+ 3*x^2])/3 + 2*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{3/2}}dx = -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{3}\int \frac{239+276x}{\sqrt{2+5x+3x^2}}dx$$
$$= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{184}{3}\sqrt{2+5x+3x^2} + 6\int \frac{1}{\sqrt{2+5x+3x^2}}dx$$
$$= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{184}{3}\sqrt{2+5x+3x^2} + 12\,\text{Subst}\left(\int \frac{1}{12-x^2}dx, x, \frac{5 \cdots}{\sqrt{2+5 \cdots}}\right.$$
$$= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{184}{3}\sqrt{2+5x+3x^2} + 2\sqrt{3}\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right.$$

Mathematica [A] time = 0.03, size = 68, normalized size = 0.82

$$-\frac{4x^2-6\sqrt{9x^2+15x+6}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+398x+358}{3\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/3*(358 + 398*x + 4*x^2 - 6*Sqrt[6 + 15*x + 9*x^2]*ArcTanh[(5 + 6*x)/(2*S
qrt[6 + 15*x + 9*x^2])])/Sqrt[2 + 5*x + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.44, size = 74, normalized size = 0.89

$$4\sqrt{3}\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)-\frac{2\left(2x^2+199x+179\right)\sqrt{3x^2+5x+2}}{3(x+1)(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(179 + 199*x + 2*x^2)*Sqrt[2 + 5*x + 3*x^2])/(3*(1 + x)*(2 + 3*x)) + 4*
Sqrt[3]*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))]
```

fricas [A] time = 0.41, size = 87, normalized size = 1.05

$$\frac{3\sqrt{3}\left(3x^2+5x+2\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)-2\sqrt{3x^2+5x+2}\left(2x^2+199x+179\right)}{3\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/3*(3*sqrt(3)*(3*x^2 + 5*x + 2)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x +
 5) + 72*x^2 + 120*x + 49) - 2*sqrt(3*x^2 + 5*x + 2)*(2*x^2 + 199*x + 179))
/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.22, size = 58, normalized size = 0.70

$$-2\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\left((2x+199)x+179\right)}{3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -2*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) - 2
/3*((2*x + 199)*x + 179)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.01, size = 96, normalized size = 1.16

$$-\frac{4x^2}{3\sqrt{3x^2+5x+2}}-\frac{6x}{\sqrt{3x^2+5x+2}}+2\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)-\frac{124}{9\sqrt{3x^2+5x+2}}-\frac{190\,(6x+5)}{9\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+5*x+2)^(1/2)*x^2-6/(3*x^2+5*x+2)^(1/2)*x-124/9/(3*x^2+5*x+2)^(1
/2)-190/9*(6*x+5)/(3*x^2+5*x+2)^(1/2)+2*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.60, size = 75, normalized size = 0.90

$$-\frac{4\,x^2}{3\,\sqrt{3\,x^2+5\,x+2}}+2\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)-\frac{398\,x}{3\,\sqrt{3\,x^2+5\,x+2}}-\frac{358}{3\,\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^2/sqrt(3*x^2 + 5*x + 2) + 2*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 6*x + 5) - 398/3*x/sqrt(3*x^2 + 5*x + 2) - 358/3/sqrt(3*x^2 + 5*x + 2
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2\,x+3)^2\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{8x^2}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{4x^3}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{45}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-51*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
 + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-8*x**2/(3*x**2*sqrt(3*x**2 + 5
*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Inte
gral(4*x**3/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2
*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-45/(3*x**2*sqrt(3*x**2 + 5*x + 2)
+ 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2268 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=62

$$-\frac{2(139x+121)}{3\sqrt{3x^2+5x+2}}-\frac{2\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{3\sqrt{3}}$$

Rubi [A] time = 0.02, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {777, 621, 206}

$$-\frac{2(139x+121)}{3\sqrt{3x^2+5x+2}}-\frac{2\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) - (2*ArcTanh[(5 + 6*x)/(2*Sqrt
[3]*Sqrt[2 + 5*x + 3*x^2])])/(3*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2(121+139x)}{3\sqrt{2+5x+3x^2}}-\frac{2}{3}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{2(121+139x)}{3\sqrt{2+5x+3x^2}}-\frac{4}{3}\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\
&= -\frac{2(121+139x)}{3\sqrt{2+5x+3x^2}}-\frac{2\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{3\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 53, normalized size = 0.85

$$-\frac{2}{9}\left(\frac{417x+363}{\sqrt{3x^2+5x+2}}+\sqrt{3}\log\left(2\sqrt{9x^2+15x+6}+6x+5\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*((363 + 417*x)/Sqrt[2 + 5*x + 3*x^2] + Sqrt[3]*Log[5 + 6*x + 2*Sqrt[6 +
 15*x + 9*x^2]]))/9
```

IntegrateAlgebraic [A] time = 0.37, size = 71, normalized size = 1.15

$$-\frac{2\sqrt{3x^2+5x+2}\,(139x+121)}{3(x+1)(3x+2)}-\frac{4\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(121 + 139*x)*Sqrt[2 + 5*x + 3*x^2])/(3*(1 + x)*(2 + 3*x)) - (4*ArcTanh
[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(3*Sqrt[3])
```

fricas [A] time = 0.40, size = 81, normalized size = 1.31

$$\frac{\sqrt{3}\left(3x^2+5x+2\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)-6\sqrt{3x^2+5x+2}\,(139x+121)}{9\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/9*(sqrt(3)*(3*x^2 + 5*x + 2)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x +
5) + 72*x^2 + 120*x + 49) - 6*sqrt(3*x^2 + 5*x + 2)*(139*x + 121))/(3*x^2 +
 5*x + 2)
```

giac [A] time = 0.21, size = 54, normalized size = 0.87

$$\frac{2}{9}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\,(139x+121)}{3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) -
2/3*(139*x + 121)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.00, size = 79, normalized size = 1.27

$$\frac{2x}{3\sqrt{3x^2+5x+2}}-\frac{2\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{9}-\frac{26}{9\sqrt{3x^2+5x+2}}-\frac{140\,(6x+5)}{9\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 2/3/(3*x^2+5*x+2)^(1/2)*x-26/9/(3*x^2+5*x+2)^(1/2)-140/9*(6*x+5)/(3*x^2+5*x
+2)^(1/2)-2/9*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.23, size = 58, normalized size = 0.94

$$-\frac{2}{9}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{278x}{3\sqrt{3x^2+5x+2}}-\frac{242}{3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -2/9*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 278/3*x/sqrt(
3*x^2 + 5*x + 2) - 242/3/sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 0.38, size = 78, normalized size = 1.26

$$\frac{352x}{3\sqrt{3x^2+5x+2}}-\frac{6(35x+29)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{3}\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{9}+\frac{280}{3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] (352*x)/(3*(5*x + 3*x^2 + 2)^(1/2)) - (6*(35*x + 29))/(5*x + 3*x^2 + 2)^(1/
2) - (2*3^(1/2)*log((5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/9 +
 280/(3*(5*x + 3*x^2 + 2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{7x}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{2x^2}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{15}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-7*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
+ 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(2*x**2/(3*x**2*sqrt(3*x**2 + 5*x
 + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integr
al(-15/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt
(3*x**2 + 5*x + 2)), x)
```

3.2269 $\int \frac{5-x}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=21

$$-\frac{2(35x+29)}{\sqrt{3x^2+5x+2}}$$

Rubi [A] time = 0.00, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {636}

$$-\frac{2(35x+29)}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(29 + 35*x))/Sqrt[2 + 5*x + 3*x^2]
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{5-x}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(29+35x)}{\sqrt{2+5x+3x^2}}$$

Mathematica [A] time = 0.04, size = 21, normalized size = 1.00

$$-\frac{2(35x+29)}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(29 + 35*x))/Sqrt[2 + 5*x + 3*x^2]
```

IntegrateAlgebraic [A] time = 0.30, size = 33, normalized size = 1.57

$$-\frac{2(35x+29)\sqrt{3x^2+5x+2}}{(x+1)(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(29 + 35*x)*Sqrt[2 + 5*x + 3*x^2])/((1 + x)*(2 + 3*x))
```

fricas [A] time = 0.40, size = 19, normalized size = 0.90

$$-\frac{2\,(35\,x+29)}{\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*(35*x + 29)/sqrt(3*x^2 + 5*x + 2)
```

giac [A] time = 0.23, size = 19, normalized size = 0.90

$$-\frac{2\,(35\,x+29)}{\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(35*x + 29)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.00, size = 28, normalized size = 1.33

$$-\frac{2\,(35x+29)\,(x+1)\,(3x+2)}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -2*(29+35*x)*(1+x)*(2+3*x)/(3*x^2+5*x+2)^(3/2)
```

maxima [A] time = 0.51, size = 30, normalized size = 1.43

$$-\frac{70\,x}{\sqrt{3\,x^2+5\,x+2}}-\frac{58}{\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -70*x/sqrt(3*x^2 + 5*x + 2) - 58/sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 0.07, size = 19, normalized size = 0.90

$$-\frac{2\,\left(35\,x+29\right)}{\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -(2*(35*x + 29))/(5*x + 3*x^2 + 2)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2
*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(3*x**2*sqrt(3*x**2 + 5*x + 2) +
 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2270 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=62

$$\frac{26\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{5\sqrt{5}}-\frac{6(47x+37)}{5\sqrt{3x^2+5x+2}}$$

Rubi [A] time = 0.04, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 12, 724, 206}

$$\frac{26\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{5\sqrt{5}}-\frac{6(47x+37)}{5\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*Sqrt[2 + 5*x + 3*x^2]) + (26*ArcTanh[(7 + 8*x)/(2*Sqrt[
5]*Sqrt[2 + 5*x + 3*x^2])])/(5*Sqrt[5])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}} - \frac{2}{5}\int -\frac{13}{(3+2x)\sqrt{2+5x+3x^2}}\,dx$$
$$= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}} + \frac{26}{5}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx$$
$$= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}} - \frac{52}{5}\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx, x, \frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)$$
$$= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}} + \frac{26\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{5\sqrt{5}}$$

Mathematica [A] time = 0.03, size = 62, normalized size = 1.00

$$-\frac{2(141x+111)}{5\sqrt{3x^2+5x+2}} - \frac{26\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{5\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(111 + 141*x))/(5*Sqrt[2 + 5*x + 3*x^2]) - (26*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(5*Sqrt[5])
```

IntegrateAlgebraic [A] time = 0.39, size = 71, normalized size = 1.15

$$\frac{52\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{5\sqrt{5}} - \frac{6(47x+37)\sqrt{3x^2+5x+2}}{5(x+1)(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x)*Sqrt[2 + 5*x + 3*x^2])/(5*(1 + x)*(2 + 3*x)) + (52*ArcTanh[
Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(5*Sqrt[5])
```

fricas [A] time = 0.41, size = 95, normalized size = 1.53

$$\frac{13\sqrt{5}\left(3x^2+5x+2\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) - 30\sqrt{3x^2+5x+2}(47x+37)}{25\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/25*(13*sqrt(5)*(3*x^2 + 5*x + 2)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*
x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 30*sqrt(3*x^2 + 5*x +
2)*(47*x + 37))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.28, size = 93, normalized size = 1.50

$$\frac{26}{25}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right) - \frac{6(47x+37)}{5\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 26/25*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
2))) - 6/5*(47*x + 37)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.01, size = 87, normalized size = 1.40

$$-\frac{26\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{25}+\frac{6x+5}{\sqrt{3x^{2}+5x+2}}+\frac{13}{5\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{52\left(6x+5\right)}{5\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] (6*x+5)/(3*x^2+5*x+2)^(1/2)+13/5/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-52/5*(6*x+5)
/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-26/25*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)
/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.36, size = 72, normalized size = 1.16

$$-\frac{26}{25}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{282x}{5\sqrt{3x^{2}+5x+2}}-\frac{222}{5\sqrt{3x^{2}+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -26/25*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
 + 3) - 2) - 282/5*x/sqrt(3*x^2 + 5*x + 2) - 222/5/sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int\frac{x-5}{(2x+3)\left(3x^{2}+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{6x^{3}\sqrt{3x^{2}+5x+2}+19x^{2}\sqrt{3x^{2}+5x+2}+19x\sqrt{3x^{2}+5x+2}+6\sqrt{3x^{2}+5x+2}}\,dx-\int\left(-\frac{5}{6x^{3}\sqrt{3x^{2}+5x+2}+19x^{2}\sqrt{3x^{2}+5x+2}+19x\sqrt{3x^{2}+5x+2}+6\sqrt{3x^{2}+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(6*x**3*sqrt(3*x**2 + 5*x + 2) + 19*x**2*sqrt(3*x**2 + 5*x + 2)
 + 19*x*sqrt(3*x**2 + 5*x + 2) + 6*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-
5/(6*x**3*sqrt(3*x**2 + 5*x + 2) + 19*x**2*sqrt(3*x**2 + 5*x + 2) + 19*x*sq
rt(3*x**2 + 5*x + 2) + 6*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2271 $\int \frac{5-x}{(3+2x)^2(2+5x+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{6(47x+37)}{5(2x+3)\sqrt{3x^2+5x+2}}-\frac{856\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{302\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Rubi [A] time = 0.05, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)\sqrt{3x^2+5x+2}}-\frac{856\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{302\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]) - (856*Sqrt[2 + 5*x + 
3*x^2])/(25*(3 + 2*x)) + (302*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3
*x^2])])/(25*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}} - \frac{2}{5}\int \frac{209+282x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx$$
$$= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}} - \frac{856\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{302}{25}\int \frac{1}{(3+2x)\sqrt{2+5x+}}$$
$$= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}} - \frac{856\sqrt{2+5x+3x^2}}{25(3+2x)} - \frac{604}{25}\mathrm{Subst}\left(\int \frac{1}{20-x^2}\,dx\right.$$
$$= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}} - \frac{856\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{302\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x}}\right.}{25\sqrt{5}}$$

Mathematica [A] time = 0.03, size = 90, normalized size = 0.96

$$-\frac{2\left(6420x^2+151\sqrt{5}(2x+3)\sqrt{3x^2+5x+2}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+14225x+7055\right)}{125(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(7055 + 14225*x + 6420*x^2 + 151*Sqrt[5]*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2
]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/(125*(3 + 2*x)*Sq
rt[2 + 5*x + 3*x^2])
```

IntegrateAlgebraic [A] time = 0.49, size = 83, normalized size = 0.88

$$\frac{604\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25\sqrt{5}} - \frac{2\sqrt{3x^2+5x+2}\left(1284x^2+2845x+1411\right)}{25(x+1)(2x+3)(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(1411 + 2845*x + 1284*x^2))/(25*(1 + x)*(3 + 2*x)
*(2 + 3*x)) + (604*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(25*Sq
rt[5])
```

fricas [A] time = 0.41, size = 110, normalized size = 1.17

$$\frac{151\sqrt{5}\left(6x^3+19x^2+19x+6\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-10\left(1284x^2+2845x+1411\right)\sqrt{3x^2+5x+2}}{125\left(6x^3+19x^2+19x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/125*(151*sqrt(5)*(6*x^3 + 19*x^2 + 19*x + 6)*log((4*sqrt(5)*sqrt(3*x^2 +
5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 10*(1284*x
^2 + 2845*x + 1411)*sqrt(3*x^2 + 5*x + 2))/(6*x^3 + 19*x^2 + 19*x + 6)
```

giac [B] time = 0.32, size = 170, normalized size = 1.81

$$\frac{2}{125}\sqrt{5}\left(214\sqrt{5}\sqrt{3}+151\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+\frac{2\left(\frac{\frac{1007}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}-\frac{65}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}-\frac{642}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{25\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}}-\frac{302\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)}{125\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/125*sqrt(5)*(214*sqrt(5)*sqrt(3) + 151*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(
2*x + 3)) + 2/25*((1007/sgn(1/(2*x + 3)) - 65/((2*x + 3)*sgn(1/(2*x + 3))))
/(2*x + 3) - 642/sgn(1/(2*x + 3)))/sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) -
 302/125*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) +
sqrt(5)/(2*x + 3)) - 4))/sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 90, normalized size = 0.96

$$-\frac{302\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{125}-\frac{13}{10\left(x+\frac{3}{2}\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{151}{25\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{214\,(6x+5)}{25\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -13/10/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+151/25/(-4*x+3*(x+3/2)^2-19/4)
^(1/2)-214/25*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-302/125*5^(1/2)*arctanh
(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.36, size = 106, normalized size = 1.13

$$-\frac{302}{125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{1284x}{25\sqrt{3x^2+5x+2}}-\frac{919}{25\sqrt{3x^2+5x+2}}-\frac{13}{5\left(2\sqrt{3x^2+5x+2}\,x+3\sqrt{3x^2+5x+2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -302/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 1284/25*x/sqrt(3*x^2 + 5*x + 2) - 919/25/sqrt(3*x^2 + 5*x +
2) - 13/5/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 + 5*x + 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{12x^4\sqrt{3x^2+5x+2}+56x^3\sqrt{3x^2+5x+2}+95x^2\sqrt{3x^2+5x+2}+69x\sqrt{3x^2+5x+2}+18\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{12x^4\sqrt{3x^2+5x+2}+56x^3\sqrt{3x^2+5x+2}+95x^2\sqrt{3x^2+5x+2}+69x\sqrt{3x^2+5x+2}+18\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(12*x**4*sqrt(3*x**2 + 5*x + 2) + 56*x**3*sqrt(3*x**2 + 5*x + 2
) + 95*x**2*sqrt(3*x**2 + 5*x + 2) + 69*x*sqrt(3*x**2 + 5*x + 2) + 18*sqrt(
3*x**2 + 5*x + 2)), x) - Integral(-5/(12*x**4*sqrt(3*x**2 + 5*x + 2) + 56*x
**3*sqrt(3*x**2 + 5*x + 2) + 95*x**2*sqrt(3*x**2 + 5*x + 2) + 69*x*sqrt(3*x
**2 + 5*x + 2) + 18*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2272 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=119

$$-\frac{6(47x+37)}{5(2x+3)^2\sqrt{3x^2+5x+2}}-\frac{864\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{166\sqrt{3x^2+5x+2}}{5(2x+3)^2}+\frac{483\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Rubi [A] time = 0.07, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)^2\sqrt{3x^2+5x+2}}-\frac{864\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{166\sqrt{3x^2+5x+2}}{5(2x+3)^2}+\frac{483\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]) - (166*Sqrt[2 + 5*x
+ 3*x^2])/(5*(3 + 2*x)^2) - (864*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)) + (4
83*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(25*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}} - \frac{2}{5}\int \frac{431+564x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}} - \frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2} + \frac{1}{25}\int \frac{-1575-249(}{(3+2x)^2\sqrt{2+5x}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}} - \frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2} - \frac{864\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{48}{25}$$

$$= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}} - \frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2} - \frac{864\sqrt{2+5x+3x^2}}{25(3+2x)} - \frac{96}{25}$$

$$= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}} - \frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2} - \frac{864\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{48}{}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.66

$$-\frac{483\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}} - \frac{2\left(2592x^3+9453x^2+10988x+3977\right)}{25(2x+3)^2\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(3977 + 10988*x + 9453*x^2 + 2592*x^3))/(25*(3 + 2*x)^2*Sqrt[2 + 5*x +
3*x^2]) - (483*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(25*S
qrt[5])
```

IntegrateAlgebraic [A] time = 0.53, size = 88, normalized size = 0.74

$$\frac{966\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25\sqrt{5}} - \frac{2\sqrt{3x^2+5x+2}\left(2592x^3+9453x^2+10988x+3977\right)}{25(x+1)(2x+3)^2(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(3977 + 10988*x + 9453*x^2 + 2592*x^3))/(25*(1 +
x)*(3 + 2*x)^2*(2 + 3*x)) + (966*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1
+ x))])/(25*Sqrt[5])
```

fricas [A] time = 0.41, size = 125, normalized size = 1.05

$$\frac{483\sqrt{5}\left(12x^4+56x^3+95x^2+69x+18\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\left(2592x^3+9453x^2+10988x+3977\right)\sqrt{3x^2+5x+2}}{250\left(12x^4+56x^3+95x^2+69x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/250*(483*sqrt(5)*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log((4*sqrt(5)*sq
rt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) -
 20*(2592*x^3 + 9453*x^2 + 10988*x + 3977)*sqrt(3*x^2 + 5*x + 2))/(12*x^4 +
 56*x^3 + 95*x^2 + 69*x + 18)
```

giac [B] time = 0.36, size = 225, normalized size = 1.89

$$\frac{483}{125}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6(903x+653)}{125\sqrt{3x^2+5x+2}}-\frac{2\left(2442\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+9999\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+35473\sqrt{3}x+12979\sqrt{3}-35473\sqrt{3x^2+5x+2}\right)}{125\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 483/125*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) - 6/125*(903*x + 653)/sqrt(3*x^2 + 5*x + 2) - 2/125*(2442*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^3 + 9999*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^2 + 35473*sqrt(3)*x + 12979*sqrt(3) - 35473*sqrt(3*x^2 + 5*x + 2))/(2*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2)) + 11)^2
```

maple [A] time = 0.01, size = 111, normalized size = 0.93

$$-\frac{483\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{125}-\frac{5}{2\left(x+\frac{3}{2}\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{483}{50\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{216(6x+5)}{25\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{13}{40\left(x+\frac{3}{2}\right)^2\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -5/2/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+483/50/(-4*x+3*(x+3/2)^2-19/4)^(
1/2)-216/25*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-483/125*5^(1/2)*arctanh(2
/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/40/(x+3/2)^2/(-4*x+
3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.27, size = 157, normalized size = 1.32

$$-\frac{483}{125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{1296x}{25\sqrt{3x^2+5x+2}}-\frac{1677}{50\sqrt{3x^2+5x+2}}-\frac{13}{10\left(4\sqrt{3x^2+5x+2}x^2+12\sqrt{3x^2+5x+2}x+9\sqrt{3x^2+5x+2}\right)}-\frac{5}{2\sqrt{3x^2+5x+2}x+3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -483/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 1296/25*x/sqrt(3*x^2 + 5*x + 2) - 1677/50/sqrt(3*x^2 + 5*x +
 2) - 13/10/(4*sqrt(3*x^2 + 5*x + 2)*x^2 + 12*sqrt(3*x^2 + 5*x + 2)*x + 9*s
qrt(3*x^2 + 5*x + 2)) - 5/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 + 5*x +
 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{x-5}{(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{24x^5\sqrt{3x^2+5x+2}+148x^4\sqrt{3x^2+5x+2}+358x^3\sqrt{3x^2+5x+2}+423x^2\sqrt{3x^2+5x+2}+243x\sqrt{3x^2+5x+2}+54\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{24x^5\sqrt{3x^2+5x+2}+148x^4\sqrt{3x^2+5x+2}+358x^3\sqrt{3x^2+5x+2}+423x^2\sqrt{3x^2+5x+2}+243x\sqrt{3x^2+5x+2}+54\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(24*x**5*sqrt(3*x**2 + 5*x + 2) + 148*x**4*sqrt(3*x**2 + 5*x +
2) + 358*x**3*sqrt(3*x**2 + 5*x + 2) + 423*x**2*sqrt(3*x**2 + 5*x + 2) + 24
3*x*sqrt(3*x**2 + 5*x + 2) + 54*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(
24*x**5*sqrt(3*x**2 + 5*x + 2) + 148*x**4*sqrt(3*x**2 + 5*x + 2) + 358*x**3
*sqrt(3*x**2 + 5*x + 2) + 423*x**2*sqrt(3*x**2 + 5*x + 2) + 243*x*sqrt(3*x*
*2 + 5*x + 2) + 54*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2273 $\int \frac{5-x}{(3+2x)^4(2+5x+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=144

$$-\frac{6(47x+37)}{5(2x+3)^3\sqrt{3x^2+5x+2}}-\frac{4632\sqrt{3x^2+5x+2}}{125(2x+3)}-\frac{478\sqrt{3x^2+5x+2}}{15(2x+3)^2}-\frac{2464\sqrt{3x^2+5x+2}}{75(2x+3)^3}+\frac{3289\tanh^{-1}\left(\frac{-}{2}\right.}{125}$$

Rubi [A] time = 0.10, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)^3\sqrt{3x^2+5x+2}}-\frac{4632\sqrt{3x^2+5x+2}}{125(2x+3)}-\frac{478\sqrt{3x^2+5x+2}}{15(2x+3)^2}-\frac{2464\sqrt{3x^2+5x+2}}{75(2x+3)^3}+\frac{3289\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{125\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]) - (2464*Sqrt[2 + 5*x
 + 3*x^2])/(75*(3 + 2*x)^3) - (478*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^2)
- (4632*Sqrt[2 + 5*x + 3*x^2])/(125*(3 + 2*x)) + (3289*ArcTanh[(7 + 8*x)/(2
*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(125*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}} - \frac{2}{5}\int \frac{653+846x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}} - \frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3} + \frac{2}{75}\int \frac{-5113-739}{(3+2x)^3\sqrt{2+5}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}} - \frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2} - $$

$$= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}} - \frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2} - $$

$$= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}} - \frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2} - $$

$$= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}} - \frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3} - \frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2} - $$

Mathematica [A] time = 0.06, size = 84, normalized size = 0.58

$$\frac{-9867\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-\frac{10\left(83376x^4+424938x^3+792065x^2+634312x+181559\right)}{(2x+3)^3\sqrt{3x^2+5x+2}}}{1875}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] ((-10*(181559 + 634312*x + 792065*x^2 + 424938*x^3 + 83376*x^4))/((3 + 2*x)
^3*Sqrt[2 + 5*x + 3*x^2]) - 9867*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt
[2 + 5*x + 3*x^2])])/1875
```

IntegrateAlgebraic [A] time = 0.55, size = 93, normalized size = 0.65

$$\frac{6578\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{125\sqrt{5}}-\frac{2\sqrt{3x^2+5x+2}\left(83376x^4+424938x^3+792065x^2+634312x+181559\right)}{375(x+1)(2x+3)^3(3x+2)}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(181559 + 634312*x + 792065*x^2 + 424938*x^3 + 83
376*x^4))/(375*(1 + x)*(3 + 2*x)^3*(2 + 3*x)) + (6578*ArcTanh[Sqrt[2 + 5*x
+ 3*x^2]/(Sqrt[5]*(1 + x))])/(125*Sqrt[5])
```

fricas [A] time = 0.40, size = 140, normalized size = 0.97

$$\frac{9867\sqrt{5}\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\left(83376x^4+424938x^3+792065x^2+634312x+181559\right)\sqrt{3x^2+5x+2}}{3750\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/3750*(9867*sqrt(5)*(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)*lo
g((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2
 + 12*x + 9)) - 20*(83376*x^4 + 424938*x^3 + 792065*x^2 + 634312*x + 181559
)*sqrt(3*x^2 + 5*x + 2))/(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54
)
```

giac [B] time = 0.32, size = 276, normalized size = 1.92

$$\frac{3289}{625}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6(4209x+2959)}{625\sqrt{3x^2+5x+2}}-\frac{2\left(118356\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+851850\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+6938110\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+8824815\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+15944775\sqrt{3}x+3678471\sqrt{3}-15944775\sqrt{3x^2+5x+2}\right)}{1875\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 3289/625*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
 + 2))) - 6/625*(4209*x + 2959)/sqrt(3*x^2 + 5*x + 2) - 2/1875*(118356*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 851850*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^4 + 6938110*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 8824815*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 15944775*sqrt(3)*x + 3678471*s
qrt(3) - 15944775*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.01, size = 132, normalized size = 0.92

$$-\frac{3289\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{625}-\frac{349}{600\left(x+\frac{3}{2}\right)^2\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{271}{75\left(x+\frac{3}{2}\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{3289}{250\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{1158(6x+5)}{125\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{13}{120\left(x+\frac{3}{2}\right)^3\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -349/600/(x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-271/75/(x+3/2)/(-4*x+3*(x+
3/2)^2-19/4)^(1/2)+3289/250/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-1158/125*(6*x+5)/
(-4*x+3*(x+3/2)^2-19/4)^(1/2)-3289/625*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/
2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/120/(x+3/2)^3/(-4*x+3*(x+3/2)^2-19/4)^
(1/2)
```

maxima [A] time = 1.30, size = 225, normalized size = 1.56

$$-\frac{3289}{625}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{6948x}{125\sqrt{3x^2+5x+2}}-\frac{8291}{250\sqrt{3x^2+5x+2}}-\frac{13}{15\left(8\sqrt{3x^2+5x+2}x^3+36\sqrt{3x^2+5x+2}x^2+54\sqrt{3x^2+5x+2}x+27\sqrt{3x^2+5x+2}\right)}-\frac{349}{150\left(4\sqrt{3x^2+5x+2}x^2+12\sqrt{3x^2+5x+2}x+9\sqrt{3x^2+5x+2}\right)}-\frac{542}{75\left(2\sqrt{3x^2+5x+2}x+3\sqrt{3x^2+5x+2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -3289/625*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(
2*x + 3) - 2) - 6948/125*x/sqrt(3*x^2 + 5*x + 2) - 8291/250/sqrt(3*x^2 + 5*
x + 2) - 13/15/(8*sqrt(3*x^2 + 5*x + 2)*x^3 + 36*sqrt(3*x^2 + 5*x + 2)*x^2
+ 54*sqrt(3*x^2 + 5*x + 2)*x + 27*sqrt(3*x^2 + 5*x + 2)) - 349/150/(4*sqrt(
```

```
3*x^2 + 5*x + 2)*x^2 + 12*sqrt(3*x^2 + 5*x + 2)*x + 9*sqrt(3*x^2 + 5*x + 2)
) - 542/75/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 + 5*x + 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^4 \left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{48x^6\sqrt{3x^2+5x+2}+368x^5\sqrt{3x^2+5x+2}+1160x^4\sqrt{3x^2+5x+2}+1920x^3\sqrt{3x^2+5x+2}+1755x^2\sqrt{3x^2+5x+2}+837x\sqrt{3x^2+5x+2}+162\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{48x^6\sqrt{3x^2+5x+2}+368x^5\sqrt{3x^2+5x+2}+1160x^4\sqrt{3x^2+5x+2}+1920x^3\sqrt{3x^2+5x+2}+1755x^2\sqrt{3x^2+5x+2}+837x\sqrt{3x^2+5x+2}+162\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(48*x**6*sqrt(3*x**2 + 5*x + 2) + 368*x**5*sqrt(3*x**2 + 5*x +
2) + 1160*x**4*sqrt(3*x**2 + 5*x + 2) + 1920*x**3*sqrt(3*x**2 + 5*x + 2) +
1755*x**2*sqrt(3*x**2 + 5*x + 2) + 837*x*sqrt(3*x**2 + 5*x + 2) + 162*sqrt(
3*x**2 + 5*x + 2)), x) - Integral(-5/(48*x**6*sqrt(3*x**2 + 5*x + 2) + 368*
x**5*sqrt(3*x**2 + 5*x + 2) + 1160*x**4*sqrt(3*x**2 + 5*x + 2) + 1920*x**3*
sqrt(3*x**2 + 5*x + 2) + 1755*x**2*sqrt(3*x**2 + 5*x + 2) + 837*x*sqrt(3*x*
*2 + 5*x + 2) + 162*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2274 $\int \frac{5-x}{(3+2x)^5(2+5x+3x^2)^{3/2}}\,dx$

Optimal. Leaf size=169

$$-\frac{6(47x+37)}{5(2x+3)^4\sqrt{3x^2+5x+2}}-\frac{25458\sqrt{3x^2+5x+2}}{625(2x+3)}-\frac{973\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{11596\sqrt{3x^2+5x+2}}{375(2x+3)^3}-\frac{817\sqrt{3x^2+5x+2}}{25(2x+3)^4}$$

Rubi [A] time = 0.12, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)^4\sqrt{3x^2+5x+2}}-\frac{25458\sqrt{3x^2+5x+2}}{625(2x+3)}-\frac{973\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{11596\sqrt{3x^2+5x+2}}{375(2x+3)^3}-\frac{817\sqrt{3x^2+5x+2}}{25(2x+3)^4}+\frac{82039\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2500\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]) - (817*Sqrt[2 + 5*x
+ 3*x^2])/(25*(3 + 2*x)^4) - (11596*Sqrt[2 + 5*x + 3*x^2])/(375*(3 + 2*x)^3
) - (973*Sqrt[2 + 5*x + 3*x^2])/(30*(3 + 2*x)^2) - (25458*Sqrt[2 + 5*x + 3*
x^2])/(625*(3 + 2*x)) + (82039*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
3*x^2])])/(2500*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^5\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}} - \frac{2}{5}\int \frac{875+1128x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}} - \frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4} + \frac{1}{50}\int \frac{-10463-1470}{(3+2x)^4\sqrt{2+5x}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}} - \frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4} - \frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3} -$$

$$= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}} - \frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4} - \frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3} -$$

$$= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}} - \frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4} - \frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3} -$$

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Mathematica [A] time = 0.06, size = 89, normalized size = 0.53

$$\frac{-246117\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-\frac{10\left(3665952x^5+24066204x^4+62190544x^3+78737669x^2+48537379x+11545002\right)}{(2x+3)^4\sqrt{3x^2+5x+2}}}{37500}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] ((-10*(11545002 + 48537379*x + 78737669*x^2 + 62190544*x^3 + 24066204*x^4 +
 3665952*x^5))/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]) - 246117*Sqrt[5]*ArcTanh
[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/37500
```

IntegrateAlgebraic [A] time = 0.67, size = 98, normalized size = 0.58

$$\frac{82039\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{1250\sqrt{5}}+\frac{\sqrt{3x^2+5x+2}\left(-3665952x^5-24066204x^4-62190544x^3-78737669x^2-48537379x-11545002\right)}{3750(x+1)(2x+3)^4(3x+2)}$$

Antiderivative was successfully verified.

[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^5*(2 + 5*x + 3*x^2)^(3/2)),x]

[Out] (Sqrt[2 + 5*x + 3*x^2]*(-11545002 - 48537379*x - 78737669*x^2 - 62190544*x^
3 - 24066204*x^4 - 3665952*x^5))/(3750*(1 + x)*(3 + 2*x)^4*(2 + 3*x)) + (82
039*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(1250*Sqrt[5])

fricas [A] time = 0.42, size = 155, normalized size = 0.92

$$\frac{246117 \sqrt{5} \left(48 x^{6} + 368 x^{5} + 1160 x^{4} + 1920 x^{3} + 1755 x^{2} + 837 x + 162\right) \log\left(\frac{4 \sqrt{5} \sqrt{3 x^{2} + 5 x + 2} (8 x + 7) + 124 x^{2} + 212 x + 89}{4 x^{2} + 12 x + 9}\right) - 20 \left(3665952 x^{5} + 24066204 x^{4} + 62190544 x^{3} + 78737669 x^{2} + 48537379 x + 11545002\right) \sqrt{3 x^{2} + 5 x + 2}}{75000 \left(48 x^{6} + 368 x^{5} + 1160 x^{4} + 1920 x^{3} + 1755 x^{2} + 837 x + 162\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")

[Out] 1/75000*(246117*sqrt(5)*(48*x^6 + 368*x^5 + 1160*x^4 + 1920*x^3 + 1755*x^2
+ 837*x + 162)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 2
12*x + 89)/(4*x^2 + 12*x + 9)) - 20*(3665952*x^5 + 24066204*x^4 + 62190544*
x^3 + 78737669*x^2 + 48537379*x + 11545002)*sqrt(3*x^2 + 5*x + 2))/(48*x^6
+ 368*x^5 + 1160*x^4 + 1920*x^3 + 1755*x^2 + 837*x + 162)

giac [A] time = 0.35, size = 235, normalized size = 1.39

$$\frac{1}{12500} \sqrt{5} \left(50916 \sqrt{5} \sqrt{3} + 82039 \log\left(-\sqrt{5} \sqrt{3} + 4\right)\right) \mathrm{sgn}\left(\frac{1}{2 x + 3}\right) - \frac{\frac{\frac{5 \left(\frac{\frac{10 \left(\frac{448}{\mathrm{sgn}\left(\frac{1}{2 x+3}\right)} + \frac{195}{(2 x+3) \mathrm{sgn}\left(\frac{1}{2 x+3}\right)}\right)}{2 x+3} + \frac{9619}{\mathrm{sgn}\left(\frac{1}{2 x+3}\right)}}{2 x+3} + \frac{27724}{\mathrm{sgn}\left(\frac{1}{2 x+3}\right)}\right)}{2 x+3} - \frac{857109}{\mathrm{sgn}\left(\frac{1}{2 x+3}\right)}}{2 x+3} + \frac{458244}{\mathrm{sgn}\left(\frac{1}{2 x+3}\right)}}{7500 \sqrt{-\frac{8}{2 x+3} + \frac{5}{(2 x+3)^{2}} + 3}} - \frac{82039 \sqrt{5} \log\left(\left|\sqrt{5} \left(\sqrt{-\frac{8}{2 x+3} + \frac{5}{(2 x+3)^{2}} + 3} + \frac{\sqrt{5}}{2 x+3}\right) - 4\right|\right)}{12500 \, \mathrm{sgn}\left(\frac{1}{2 x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")

[Out] 1/12500*sqrt(5)*(50916*sqrt(5)*sqrt(3) + 82039*log(-sqrt(5)*sqrt(3) + 4))*s
gn(1/(2*x + 3)) - 1/7500*((5*((10*(448/sgn(1/(2*x + 3)) + 195/((2*x + 3)*sg
n(1/(2*x + 3))))/(2*x + 3) + 9619/sgn(1/(2*x + 3)))/(2*x + 3) + 27724/sgn(1
/(2*x + 3)))/(2*x + 3) - 857109/sgn(1/(2*x + 3)))/(2*x + 3) + 458244/sgn(1/
(2*x + 3)))/sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 82039/12500*sqrt(5)*lo
g(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))
- 4))/sgn(1/(2*x + 3))

maple [A] time = 0.01, size = 153, normalized size = 0.91

$$-\frac{82039 \sqrt{5}\, \mathrm{arctanh}\left(\frac{2 \left(-4 x-\frac{7}{2}\right) \sqrt{5}}{5 \sqrt{-16 x+12 \left(x+\frac{3}{2}\right)^{2}-19}}\right)}{12500} - \frac{13}{320 \left(x+\frac{3}{2}\right)^{4} \sqrt{-4 x+3 \left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}} - \frac{14}{75 \left(x+\frac{3}{2}\right)^{3} \sqrt{-4 x+3 \left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}} - \frac{9619}{12000 \left(x+\frac{3}{2}\right)^{2} \sqrt{-4 x+3 \left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}} - \frac{6931}{1500 \left(x+\frac{3}{2}\right) \sqrt{-4 x+3 \left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}} + \frac{82039}{5000 \sqrt{-4 x+3 \left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}} - \frac{12729 (6 x+5)}{1250 \sqrt{-4 x+3 \left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x)

[Out] -13/320/(x+3/2)^4/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-14/75/(x+3/2)^3/(-4*x+3*(x+
3/2)^2-19/4)^(1/2)-9619/12000/(x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-6931/
1500/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+82039/5000/(-4*x+3*(x+3/2)^2-19/
4)^(1/2)-12729/1250*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-82039/12500*5^(1/
2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))

maxima [B] time = 1.25, size = 310, normalized size = 1.83

$$-\frac{82039}{12500} \sqrt{5} \log\left(\frac{\sqrt{5} \sqrt{3 x^{2} + 5 x + 2}}{|2 x + 3|} + \frac{5}{2 |2 x + 3|} - 2\right) - \frac{38187 x}{625 \sqrt{3 x^{2} + 5 x + 2}} - \frac{172541}{5000 \sqrt{3 x^{2} + 5 x + 2}} - \frac{13}{20 \left(16 \sqrt{3 x^{2} + 5 x + 2} x^{4} + 96 \sqrt{3 x^{2} + 5 x + 2} x^{3} + 216 \sqrt{3 x^{2} + 5 x + 2} x^{2} + 216 \sqrt{3 x^{2} + 5 x + 2} x + 81 \sqrt{3 x^{2} + 5 x + 2}\right)} - \frac{112}{75 \left(8 \sqrt{3 x^{2} + 5 x + 2} x^{3} + 36 \sqrt{3 x^{2} + 5 x + 2} x^{2} + 54 \sqrt{3 x^{2} + 5 x + 2} x + 27 \sqrt{3 x^{2} + 5 x + 2}\right)} - \frac{9619}{3000 \left(4 \sqrt{3 x^{2} + 5 x + 2} x^{2} + 12 \sqrt{3 x^{2} + 5 x + 2} x + 9 \sqrt{3 x^{2} + 5 x + 2}\right)} - \frac{6931}{750 \left(2 \sqrt{3 x^{2} + 5 x + 2} x + 3 \sqrt{3 x^{2} + 5 x + 2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")

```
[Out] -82039/12500*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/a
bs(2*x + 3) - 2) - 38187/625*x/sqrt(3*x^2 + 5*x + 2) - 172541/5000/sqrt(3*x
^2 + 5*x + 2) - 13/20/(16*sqrt(3*x^2 + 5*x + 2)*x^4 + 96*sqrt(3*x^2 + 5*x +
 2)*x^3 + 216*sqrt(3*x^2 + 5*x + 2)*x^2 + 216*sqrt(3*x^2 + 5*x + 2)*x + 81*
sqrt(3*x^2 + 5*x + 2)) - 112/75/(8*sqrt(3*x^2 + 5*x + 2)*x^3 + 36*sqrt(3*x^
2 + 5*x + 2)*x^2 + 54*sqrt(3*x^2 + 5*x + 2)*x + 27*sqrt(3*x^2 + 5*x + 2)) -
 9619/3000/(4*sqrt(3*x^2 + 5*x + 2)*x^2 + 12*sqrt(3*x^2 + 5*x + 2)*x + 9*sq
rt(3*x^2 + 5*x + 2)) - 6931/750/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 +
 5*x + 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^5\,\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{96x^7\sqrt{3x^2+5x+2}+880x^6\sqrt{3x^2+5x+2}+3424x^5\sqrt{3x^2+5x+2}+7320x^4\sqrt{3x^2+5x+2}+9270x^3\sqrt{3x^2+5x+2}+6939x^2\sqrt{3x^2+5x+2}+2835x\sqrt{3x^2+5x+2}+486\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{96x^7\sqrt{3x^2+5x+2}+880x^6\sqrt{3x^2+5x+2}+3424x^5\sqrt{3x^2+5x+2}+7320x^4\sqrt{3x^2+5x+2}+9270x^3\sqrt{3x^2+5x+2}+6939x^2\sqrt{3x^2+5x+2}+2835x\sqrt{3x^2+5x+2}+486\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(96*x**7*sqrt(3*x**2 + 5*x + 2) + 880*x**6*sqrt(3*x**2 + 5*x +
2) + 3424*x**5*sqrt(3*x**2 + 5*x + 2) + 7320*x**4*sqrt(3*x**2 + 5*x + 2) +
9270*x**3*sqrt(3*x**2 + 5*x + 2) + 6939*x**2*sqrt(3*x**2 + 5*x + 2) + 2835*
x*sqrt(3*x**2 + 5*x + 2) + 486*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(9
6*x**7*sqrt(3*x**2 + 5*x + 2) + 880*x**6*sqrt(3*x**2 + 5*x + 2) + 3424*x**5
*sqrt(3*x**2 + 5*x + 2) + 7320*x**4*sqrt(3*x**2 + 5*x + 2) + 9270*x**3*sqrt
(3*x**2 + 5*x + 2) + 6939*x**2*sqrt(3*x**2 + 5*x + 2) + 2835*x*sqrt(3*x**2
+ 5*x + 2) + 486*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2275 $\int \frac{(5-x)(3+2x)^4}{(2+5x+3x^2)^{5/2}} dx$

Optimal. Leaf size=115

$$-\frac{2(139x+121)(2x+3)^3}{9(3x^2+5x+2)^{3/2}}+\frac{4(7976x+6809)(2x+3)}{27\sqrt{3x^2+5x+2}}-\frac{6848}{9}\sqrt{3x^2+5x+2}+\frac{152\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{27\sqrt{3}}$$

Rubi [A] time = 0.06, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 640, 621, 206}

$$-\frac{2(139x+121)(2x+3)^3}{9(3x^2+5x+2)^{3/2}}+\frac{4(7976x+6809)(2x+3)}{27\sqrt{3x^2+5x+2}}-\frac{6848}{9}\sqrt{3x^2+5x+2}+\frac{152\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{27\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^3*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (4*(3 + 2*x)*(
6809 + 7976*x))/(27*Sqrt[2 + 5*x + 3*x^2]) - (6848*Sqrt[2 + 5*x + 3*x^2])/9
 + (152*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(27*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{2}{9}\int \frac{(3+2x)^2(-117+272x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}} + \frac{4}{27}\int \frac{-12802-15408x}{\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}} - \frac{6848}{9}\sqrt{2+5x+3x^2} + \frac{152}{27}\int$$

$$= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}} - \frac{6848}{9}\sqrt{2+5x+3x^2} + \frac{304}{27}\text{Su}$$

$$= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}} - \frac{6848}{9}\sqrt{2+5x+3x^2} + \frac{152\,\text{ta}}{}$$

Mathematica [A] time = 0.07, size = 83, normalized size = 0.72

$$\frac{2\left(-216x^4+176160x^3+438540x^2+76\sqrt{3}\left(3x^2+5x+2\right)^{3/2}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+354459x+92457\right)}{81\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(92457 + 354459*x + 438540*x^2 + 176160*x^3 - 216*x^4 + 76*Sqrt[3]*(2 +
5*x + 3*x^2)^(3/2)*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/(81*(2 +
 5*x + 3*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.54, size = 86, normalized size = 0.75

$$\frac{304\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{27\sqrt{3}} - \frac{2\sqrt{3x^2+5x+2}\left(72x^4-58720x^3-146180x^2-118153x-30819\right)}{27(x+1)^2(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(-30819 - 118153*x - 146180*x^2 - 58720*x^3 + 72*
x^4))/(27*(1 + x)^2*(2 + 3*x)^2) + (304*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt
[3]*(1 + x))])/(27*Sqrt[3])
```

fricas [A] time = 0.41, size = 117, normalized size = 1.02

$$\frac{2\left(38\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)-3\left(72x^4-58720x^3-146180x^2-118153x-30819\right)\sqrt{3x^2+5x+2}\right)}{81\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/81*(38*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) - 3*(72*x^4 - 58720*x^3 - 1
46180*x^2 - 118153*x - 30819)*sqrt(3*x^2 + 5*x + 2))/(9*x^4 + 30*x^3 + 37*x
^2 + 20*x + 4)
```

giac [A] time = 0.23, size = 68, normalized size = 0.59

$$-\frac{152}{81}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\left(\left(4\left(2\left(9x-7340\right)x-36545\right)x-118153\right)x-30819\right)}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -152/81*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)
) - 2/27*((4*(2*(9*x - 7340)*x - 36545)*x - 118153)*x - 30819)/(3*x^2 + 5*x
 + 2)^(3/2)
```

maple [A] time = 0.01, size = 178, normalized size = 1.55

$$-\frac{16x^4}{3\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{152x^3}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{2380x^2}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{152x}{27\sqrt{3x^2+5x+2}}-\frac{14639x}{81\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{152\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{81}-\frac{145763}{1458\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{380}{81\sqrt{3x^2+5x+2}}-\frac{16181\left(6x+5\right)}{1458\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{\frac{118048x}{81}+\frac{295120}{243}}{\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -145763/1458/(3*x^2+5*x+2)^(3/2)+380/81/(3*x^2+5*x+2)^(1/2)+152/81*3^(1/2)*
ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-16181/1458*(6*x+5)/(3*x^2+5*x
+2)^(3/2)+59024/243*(6*x+5)/(3*x^2+5*x+2)^(1/2)-152/27/(3*x^2+5*x+2)^(1/2)*
x-16/3*x^4/(3*x^2+5*x+2)^(3/2)-152/27*x^3/(3*x^2+5*x+2)^(3/2)-2380/27*x^2/(
3*x^2+5*x+2)^(3/2)-14639/81*x/(3*x^2+5*x+2)^(3/2)
```

maxima [B] time = 1.16, size = 214, normalized size = 1.86

$$-\frac{16x^4}{3\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{152}{81}x\left(\frac{1410x}{\sqrt{3x^2+5x+2}}+\frac{9x^2}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{1175}{\sqrt{3x^2+5x+2}}-\frac{55x}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{46}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}\right)+\frac{152}{81}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{71440}{81}\sqrt{3x^2+5x+2}-\frac{60704x}{81\sqrt{3x^2+5x+2}}-\frac{920x^2}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{15680}{27\sqrt{3x^2+5x+2}}-\frac{13066x}{81\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{6766}{81\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/3*x^4/(3*x^2 + 5*x + 2)^(3/2) - 152/81*x*(1410*x/sqrt(3*x^2 + 5*x + 2)
+ 9*x^2/(3*x^2 + 5*x + 2)^(3/2) + 1175/sqrt(3*x^2 + 5*x + 2) - 55*x/(3*x^2
+ 5*x + 2)^(3/2) - 46/(3*x^2 + 5*x + 2)^(3/2)) + 152/81*sqrt(3)*log(2*sqrt(
3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 71440/81*sqrt(3*x^2 + 5*x + 2) - 6070
4/81*x/sqrt(3*x^2 + 5*x + 2) - 920/9*x^2/(3*x^2 + 5*x + 2)^(3/2) - 15680/27
/sqrt(3*x^2 + 5*x + 2) - 13066/81*x/(3*x^2 + 5*x + 2)^(3/2) - 6766/81/(3*x^
2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\left(2x+3\right)^4\,\left(x-5\right)}{\left(3x^2+5x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int(((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{864x^2}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{264x^3}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx-\int\frac{16x^4}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\,dx-\int\frac{16x^5}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{405}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-999*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x
 + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sq
rt(3*x**2 + 5*x + 2)), x) - Integral(-864*x**2/(9*x**4*sqrt(3*x**2 + 5*x +
2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x
*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-264*x**
3/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2
*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x
 + 2)), x) - Integral(16*x**4/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt
(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*
x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(16*x**5/(9*x**4*sqrt(3*x*
*2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x
+ 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integr
al(-405/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 3
7*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2
 + 5*x + 2)), x)
```

3.2276 $\int \frac{(5-x)(3+2x)^3}{(2+5x+3x^2)^{5/2}}\,dx$

Optimal. Leaf size=92

$$-\frac{2(139x+121)(2x+3)^2}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(2834x+2481)}{9\sqrt{3x^2+5x+2}}-\frac{8\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

Rubi [A] time = 0.04, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 777, 621, 206}

$$-\frac{2(139x+121)(2x+3)^2}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(2834x+2481)}{9\sqrt{3x^2+5x+2}}-\frac{8\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^2*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (4*(2481 + 283
4*x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (8*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 +
5*x + 3*x^2])])/(9*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
```

```
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(-359-6x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2481+2834x)}{9\sqrt{2+5x+3x^2}}-\frac{8}{9}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2481+2834x)}{9\sqrt{2+5x+3x^2}}-\frac{16}{9}\mathrm{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\
&= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2481+2834x)}{9\sqrt{2+5x+3x^2}}-\frac{8\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{9\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 67, normalized size = 0.73

$$\frac{2\left(16448x^3+41074x^2+33443x+8835\right)}{9\left(3x^2+5x+2\right)^{3/2}}-\frac{8\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(8835 + 33443*x + 41074*x^2 + 16448*x^3))/(9*(2 + 5*x + 3*x^2)^(3/2)) -
(8*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/(9*Sqrt[3])
```

IntegrateAlgebraic [A] time = 0.43, size = 81, normalized size = 0.88

$$\frac{2\sqrt{3x^2+5x+2}\left(16448x^3+41074x^2+33443x+8835\right)}{9(x+1)^2(3x+2)^2}-\frac{16\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{3}(x+1)}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(8835 + 33443*x + 41074*x^2 + 16448*x^3))/(9*(1 +
x)^2*(2 + 3*x)^2) - (16*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[3]*(1 + x))])/(
9*Sqrt[3])
```

fricas [A] time = 0.40, size = 112, normalized size = 1.22

$$\frac{2\left(2\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+3\left(16448x^3+41074x^2+33443x+8835\right)\sqrt{3x^2+5x+2}\right)}{27\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/27*(2*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 3*(16448*x^3 + 41074*x^2
+ 33443*x + 8835)*sqrt(3*x^2 + 5*x + 2))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
4)
```

giac [A] time = 0.46, size = 63, normalized size = 0.68

$$\frac{8}{27}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{2\left((2(8224x+20537)x+33443)x+8835\right)}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 8/27*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) +
 2/9*((2*(8224*x + 20537)*x + 33443)*x + 8835)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [B] time = 0.01, size = 161, normalized size = 1.75

$$\frac{8x^3}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{32x^2}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{607x}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{8x}{9\sqrt{3x^2+5x+2}}-\frac{8\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{27}-\frac{10855}{486\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{4033(6x+5)}{486\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{\frac{32864x}{27}+\frac{82160}{81}}{\sqrt{3x^2+5x+2}}-\frac{20}{27\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 8/9/(3*x^2+5*x+2)^(3/2)*x^3-32/9/(3*x^2+5*x+2)^(3/2)*x^2-607/27/(3*x^2+5*x+
2)^(3/2)*x-10855/486/(3*x^2+5*x+2)^(3/2)-4033/486*(6*x+5)/(3*x^2+5*x+2)^(3/
2)+16432/81*(6*x+5)/(3*x^2+5*x+2)^(1/2)+8/9/(3*x^2+5*x+2)^(1/2)*x-20/27/(3*
x^2+5*x+2)^(1/2)-8/27*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [B] time = 1.23, size = 197, normalized size = 2.14

$$\frac{8}{27}x\left(\frac{1410x}{\sqrt{3x^2+5x+2}}+\frac{9x^2}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{1175}{\sqrt{3x^2+5x+2}}-\frac{55x}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{46}{\left(3x^2+5x+2\right)^{\frac{3}{2}}}\right)-\frac{8}{27}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{3760}{27}\sqrt{3x^2+5x+2}+\frac{42272x}{27\sqrt{3x^2+5x+2}}-\frac{4x^2}{3\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{11680}{9\sqrt{3x^2+5x+2}}-\frac{2318x}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{2030}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 8/27*x*(1410*x/sqrt(3*x^2 + 5*x + 2) + 9*x^2/(3*x^2 + 5*x + 2)^(3/2) + 1175
/sqrt(3*x^2 + 5*x + 2) - 55*x/(3*x^2 + 5*x + 2)^(3/2) - 46/(3*x^2 + 5*x + 2
)^(3/2)) - 8/27*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 37
60/27*sqrt(3*x^2 + 5*x + 2) + 42272/27*x/sqrt(3*x^2 + 5*x + 2) - 4/3*x^2/(3
*x^2 + 5*x + 2)^(3/2) + 11680/9/sqrt(3*x^2 + 5*x + 2) - 2318/27*x/(3*x^2 +
5*x + 2)^(3/2) - 2030/27/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2x+3)^3\,(x-5)}{\left(3x^2+5x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int(((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{9x^4S+30x^3S+37x^2S+20xS+4S}\right)dx-\int\left(-\frac{126x^2}{9x^4S+30x^3S+37x^2S+20xS+4S}\right)dx-\int\left(-\frac{4x^3}{9x^4S+30x^3S+37x^2S+20xS+4S}\right)dx-\int\frac{8x^4}{9x^4S+30x^3S+37x^2S+20xS+4S}\,dx-\int\left(-\frac{135}{9x^4S+30x^3S+37x^2S+20xS+4S}\right)dx,\quad S=\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-243*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x
 + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sq
```

```
rt(3*x**2 + 5*x + 2)), x) - Integral(-126*x**2/(9*x**4*sqrt(3*x**2 + 5*x +
2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x
*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-4*x**3/
(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*s
qrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x +
 2)), x) - Integral(8*x**4/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*
x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x +
 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-135/(9*x**4*sqrt(3*x**2 + 5
*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) +
 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2277 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=54

$$\frac{376(8x+7)}{3\sqrt{3x^2+5x+2}}-\frac{2(2x+3)^2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 54, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {804, 636}

$$\frac{376(8x+7)}{3\sqrt{3x^2+5x+2}}-\frac{2(2x+3)^2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^2*(29 + 35*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) + (376*(7 + 8*x))/
(3*Sqrt[2 + 5*x + 3*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{5/2}}\,dx&=-\frac{2(3+2x)^2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{188}{3}\int \frac{3+2x}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\&=-\frac{2(3+2x)^2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{376(7+8x)}{3\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 33, normalized size = 0.61

$$\frac{2\left(4372x^3+10932x^2+8925x+2371\right)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(2371 + 8925*x + 10932*x^2 + 4372*x^3))/(3*(2 + 5*x + 3*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.32, size = 45, normalized size = 0.83

$$\frac{2\sqrt{3x^2+5x+2}\left(4372x^3+10932x^2+8925x+2371\right)}{3(x+1)^2(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(2371 + 8925*x + 10932*x^2 + 4372*x^3))/(3*(1 + x)
^2*(2 + 3*x)^2)
```

fricas [A] time = 0.40, size = 51, normalized size = 0.94

$$\frac{2\left(4372\,x^3+10932\,x^2+8925\,x+2371\right)\sqrt{3\,x^2+5\,x+2}}{3\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(4372*x^3 + 10932*x^2 + 8925*x + 2371)*sqrt(3*x^2 + 5*x + 2)/(9*x^4 + 3
0*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.22, size = 28, normalized size = 0.52

$$\frac{2\left(\left(4\left(1093\,x+2733\right)x+8925\right)x+2371\right)}{3\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((4*(1093*x + 2733)*x + 8925)*x + 2371)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [A] time = 0.00, size = 38, normalized size = 0.70

$$\frac{2\left(4372x^3+10932x^2+8925x+2371\right)(x+1)(3x+2)}{3\left(3x^2+5x+2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/3*(4372*x^3+10932*x^2+8925*x+2371)*(x+1)*(3*x+2)/(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 0.51, size = 76, normalized size = 1.41

$$\frac{8744\,x}{9\sqrt{3\,x^2+5\,x+2}}+\frac{4\,x^2}{3\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}+\frac{21860}{27\sqrt{3\,x^2+5\,x+2}}-\frac{1114\,x}{27\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{1042}{27\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 8744/9*x/sqrt(3*x^2 + 5*x + 2) + 4/3*x^2/(3*x^2 + 5*x + 2)^(3/2) + 21860/27
/sqrt(3*x^2 + 5*x + 2) - 1114/27*x/(3*x^2 + 5*x + 2)^(3/2) - 1042/27/(3*x^2
 + 5*x + 2)^(3/2)
```

mupad [B] time = 0.12, size = 48, normalized size = 0.89

$$\frac{36062\,x+8744\,x\,\left(3\,x^2+5\,x+2\right)+21872\,x^2+14226}{\sqrt{3\,x^2+5\,x+2}\,\left(27\,x^2+45\,x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] (36062*x + 8744*x*(5*x + 3*x^2 + 2) + 21872*x^2 + 14226)/((5*x + 3*x^2 + 2)
^(1/2)*(45*x + 27*x^2 + 18))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{8x^2}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx-\int\frac{4x^3}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{45}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-51*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x
+ 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqr
t(3*x**2 + 5*x + 2)), x) - Integral(-8*x**2/(9*x**4*sqrt(3*x**2 + 5*x + 2)
+ 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sq
rt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(4*x**3/(9*x
**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(
3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2))
, x) - Integral(-45/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 +
5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4
*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2278 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=47

$$\frac{1124(6x+5)}{9\sqrt{3x^2+5x+2}}-\frac{2(139x+121)}{9\left(3x^2+5x+2\right)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {777, 613}

$$\frac{1124(6x+5)}{9\sqrt{3x^2+5x+2}}-\frac{2(139x+121)}{9\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (1124*(5 + 6*x))/(9*Sqrt[2
 + 5*x + 3*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{562}{9}\int \frac{1}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{1124(5+6x)}{9\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 31, normalized size = 0.66

$$\frac{2\left(1124x^3+2810x^2+2295x+611\right)}{\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(611 + 2295*x + 2810*x^2 + 1124*x^3))/(2 + 5*x + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.31, size = 43, normalized size = 0.91

$$\frac{2\sqrt{3x^2+5x+2}\left(1124x^3+2810x^2+2295x+611\right)}{(x+1)^2(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(611 + 2295*x + 2810*x^2 + 1124*x^3))/((1 + x)^2*(
2 + 3*x)^2)
```

fricas [A] time = 0.39, size = 51, normalized size = 1.09

$$\frac{2\left(1124\,x^3+2810\,x^2+2295\,x+611\right)\sqrt{3\,x^2+5\,x+2}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2*(1124*x^3 + 2810*x^2 + 2295*x + 611)*sqrt(3*x^2 + 5*x + 2)/(9*x^4 + 30*x^
3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.24, size = 28, normalized size = 0.60

$$\frac{2\left((562\,(2\,x+5)x+2295)x+611\right)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 2*((562*(2*x + 5)*x + 2295)*x + 611)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [A] time = 0.00, size = 38, normalized size = 0.81

$$\frac{2\left(1124x^3+2810x^2+2295x+611\right)(x+1)\,(3x+2)}{\left(3x^2+5x+2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2*(1124*x^3+2810*x^2+2295*x+611)*(x+1)*(3*x+2)/(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 0.53, size = 59, normalized size = 1.26

$$\frac{2248\,x}{3\,\sqrt{3\,x^2+5\,x+2}}+\frac{5620}{9\,\sqrt{3\,x^2+5\,x+2}}-\frac{278\,x}{9\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{242}{9\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 2248/3*x/sqrt(3*x^2 + 5*x + 2) + 5620/9/sqrt(3*x^2 + 5*x + 2) - 278/9*x/(3*
x^2 + 5*x + 2)^(3/2) - 242/9/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [B] time = 2.44, size = 48, normalized size = 1.02

$$\frac{9274\,x+2248\,x\,\left(3\,x^2+5\,x+2\right)+5620\,x^2+3666}{\sqrt{3\,x^2+5\,x+2}\,\left(9\,x^2+15\,x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] (9274*x + 2248*x*(5*x + 3*x^2 + 2) + 5620*x^2 + 3666)/((5*x + 3*x^2 + 2)^(1
/2)*(15*x + 9*x^2 + 6))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{7x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx-\int\frac{2x^2}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{15}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-7*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x +
 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt
(3*x**2 + 5*x + 2)), x) - Integral(2*x**2/(9*x**4*sqrt(3*x**2 + 5*x + 2) +
30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt
(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-15/(9*x**4*s
qrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**
2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2279 $\int \frac{5-x}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=47

$$\frac{280(6x+5)}{3\sqrt{3x^2+5x+2}}-\frac{2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Rubi [A] time = 0.01, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {638, 613}

$$\frac{280(6x+5)}{3\sqrt{3x^2+5x+2}}-\frac{2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(29 + 35*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) + (280*(5 + 6*x))/(3*Sqrt[2 +
5*x + 3*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{140}{3}\int \frac{1}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{280(5+6x)}{3\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 31, normalized size = 0.66

$$\frac{2\left(840x^3+2100x^2+1715x+457\right)}{\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(457 + 1715*x + 2100*x^2 + 840*x^3))/(2 + 5*x + 3*x^2)^(3/2)
```

IntegrateAlgebraic [A] time = 0.30, size = 43, normalized size = 0.91

$$\frac{2\sqrt{3x^2+5x+2}\left(840x^3+2100x^2+1715x+457\right)}{(x+1)^2(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(457 + 1715*x + 2100*x^2 + 840*x^3))/((1 + x)^2*(2
 + 3*x)^2)
```

fricas [A] time = 0.40, size = 51, normalized size = 1.09

$$\frac{2\left(840\,x^3+2100\,x^2+1715\,x+457\right)\sqrt{3\,x^2+5\,x+2}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2*(840*x^3 + 2100*x^2 + 1715*x + 457)*sqrt(3*x^2 + 5*x + 2)/(9*x^4 + 30*x^3
 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.21, size = 29, normalized size = 0.62

$$\frac{2\,(35\,(12\,(2\,x+5)x+49)x+457)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 2*(35*(12*(2*x + 5)*x + 49)*x + 457)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [A] time = 0.00, size = 38, normalized size = 0.81

$$\frac{2\left(840x^3+2100x^2+1715x+457\right)(x+1)\,(3x+2)}{\left(3x^2+5x+2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2*(840*x^3+2100*x^2+1715*x+457)*(x+1)*(3*x+2)/(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 0.44, size = 59, normalized size = 1.26

$$\frac{560\,x}{\sqrt{3\,x^2+5\,x+2}}+\frac{1400}{3\,\sqrt{3\,x^2+5\,x+2}}-\frac{70\,x}{3\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{58}{3\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 560*x/sqrt(3*x^2 + 5*x + 2) + 1400/3/sqrt(3*x^2 + 5*x + 2) - 70/3*x/(3*x^2
+ 5*x + 2)^(3/2) - 58/3/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [B] time = 2.42, size = 36, normalized size = 0.77

$$\frac{2310\,x+560\,x\,\left(3\,x^2+5\,x+2\right)+1400\,x^2+914}{{\left(3\,x^2+5\,x+2\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] (2310*x + 560*x*(5*x + 3*x^2 + 2) + 1400*x^2 + 914)/(5*x + 3*x^2 + 2)^(3/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2)
 + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*
x**2 + 5*x + 2)), x) - Integral(-5/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3
*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2
 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2280 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=85

$$-\frac{2(47x+37)}{5\left(3x^2+5x+2\right)^{3/2}}+\frac{12(836x+701)}{25\sqrt{3x^2+5x+2}}+\frac{104\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Rubi [A] time = 0.05, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 12, 724, 206}

$$-\frac{2(47x+37)}{5\left(3x^2+5x+2\right)^{3/2}}+\frac{12(836x+701)}{25\sqrt{3x^2+5x+2}}+\frac{104\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)^(3/2)) + (12*(701 + 836*x))/(25*Sqrt[
2 + 5*x + 3*x^2]) + (104*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2]
)])/(25*Sqrt[5])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}} - \frac{2}{15}\int \frac{807+564x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}} + \frac{12(701+836x)}{25\sqrt{2+5x+3x^2}} + \frac{4}{75}\int \frac{78}{(3+2x)\sqrt{2+5x+3x^2}}$$

$$= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}} + \frac{12(701+836x)}{25\sqrt{2+5x+3x^2}} + \frac{104}{25}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}$$

$$= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}} + \frac{12(701+836x)}{25\sqrt{2+5x+3x^2}} - \frac{208}{25}\,\mathrm{Subst}\left(\int \frac{1}{20-x^2}\,dx, x, -$$

$$= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}} + \frac{12(701+836x)}{25\sqrt{2+5x+3x^2}} + \frac{104\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{25\sqrt{5}}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.85

$$\frac{2}{125}\left(\frac{5\left(15048x^3+37698x^2+30827x+8227\right)}{\left(3x^2+5x+2\right)^{3/2}} - 52\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*((5*(8227 + 30827*x + 37698*x^2 + 15048*x^3))/(2 + 5*x + 3*x^2)^(3/2) -
52*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/125
```

IntegrateAlgebraic [A] time = 0.39, size = 81, normalized size = 0.95

$$\frac{208\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25\sqrt{5}} + \frac{2\sqrt{3x^2+5x+2}\left(15048x^3+37698x^2+30827x+8227\right)}{25(x+1)^2(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(8227 + 30827*x + 37698*x^2 + 15048*x^3))/(25*(1 +
 x)^2*(2 + 3*x)^2) + (208*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])
/(25*Sqrt[5])
```

fricas [A] time = 0.41, size = 125, normalized size = 1.47

$$\frac{2\left(26\sqrt{5}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+5\left(15048x^3+37698x^2+30827x+8227\right)\sqrt{3x^2+5x+2}\right)}{125\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/125*(26*sqrt(5)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log((4*sqrt(5)*sqrt(
3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 5*
(15048*x^3 + 37698*x^2 + 30827*x + 8227)*sqrt(3*x^2 + 5*x + 2))/(9*x^4 + 30
*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.28, size = 102, normalized size = 1.20

$$\frac{104}{125}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)+\frac{2\,((6\,(2508\,x+6283)x+30827)x+8227)}{25\,\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 104/125*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) + 2/25*((6*(2508*x + 6283)*x + 30827)*x + 8227)/(3*x^2 + 5*x + 2)^(3
/2)
```

maple [B] time = 0.01, size = 144, normalized size = 1.69

$$-\frac{104\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{125}+\frac{6x+5}{3\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{8\,(6x+5)}{\sqrt{3x^2+5x+2}}+\frac{13}{15\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{52\,(6x+5)}{15\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{\frac{11232x}{25}+\frac{1872}{5}}{\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{52}{25\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/3*(6*x+5)/(3*x^2+5*x+2)^(3/2)-8*(6*x+5)/(3*x^2+5*x+2)^(1/2)+13/15/(-4*x+3
*(x+3/2)^2-19/4)^(3/2)-52/15*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1872/25*
(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+52/25/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-1
04/125*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2)
)
```

maxima [A] time = 1.45, size = 101, normalized size = 1.19

$$-\frac{104}{125}\,\sqrt{5}\,\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)+\frac{10032\,x}{25\,\sqrt{3\,x^2+5\,x+2}}+\frac{8412}{25\,\sqrt{3\,x^2+5\,x+2}}-\frac{94\,x}{5\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{74}{5\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -104/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) + 10032/25*x/sqrt(3*x^2 + 5*x + 2) + 8412/25/sqrt(3*x^2 + 5*x
+ 2) - 94/5*x/(3*x^2 + 5*x + 2)^(3/2) - 74/5/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{18x^5\sqrt{3x^2+5x+2}+87x^4\sqrt{3x^2+5x+2}+164x^3\sqrt{3x^2+5x+2}+151x^2\sqrt{3x^2+5x+2}+68x\sqrt{3x^2+5x+2}+12\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{18x^5\sqrt{3x^2+5x+2}+87x^4\sqrt{3x^2+5x+2}+164x^3\sqrt{3x^2+5x+2}+151x^2\sqrt{3x^2+5x+2}+68x\sqrt{3x^2+5x+2}+12\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(18*x**5*sqrt(3*x**2 + 5*x + 2) + 87*x**4*sqrt(3*x**2 + 5*x + 2
) + 164*x**3*sqrt(3*x**2 + 5*x + 2) + 151*x**2*sqrt(3*x**2 + 5*x + 2) + 68*
x*sqrt(3*x**2 + 5*x + 2) + 12*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(18
*x**5*sqrt(3*x**2 + 5*x + 2) + 87*x**4*sqrt(3*x**2 + 5*x + 2) + 164*x**3*sq
rt(3*x**2 + 5*x + 2) + 151*x**2*sqrt(3*x**2 + 5*x + 2) + 68*x*sqrt(3*x**2 +
 5*x + 2) + 12*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2281 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=124

$$-\frac{2(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)^{3/2}}+\frac{4416\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{4(462x+401)}{5(2x+3)\sqrt{3x^2+5x+2}}+\frac{408\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Rubi [A] time = 0.07, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$-\frac{2(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)^{3/2}}+\frac{4416\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{4(462x+401)}{5(2x+3)\sqrt{3x^2+5x+2}}+\frac{408\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)) + (4*(401 + 462*x))/
(5*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]) + (4416*Sqrt[2 + 5*x + 3*x^2])/(25*(3 +
 2*x)) + (408*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(25*Sqr
t[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
```

```
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{1029+846x}{(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}}+\frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{125}{(3+2x}\\ &= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}}+\frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}}+\frac{4416\sqrt{2+5x}}{25(3+2}\\ &= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}}+\frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}}+\frac{4416\sqrt{2+5x}}{25(3+2}\\ &= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}}+\frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}}+\frac{4416\sqrt{2+5x}}{25(3+2}\end{aligned}$$

Mathematica [A] time = 0.06, size = 113, normalized size = 0.91

$$\frac{10\left(19872x^4+80100x^3+116826x^2+73215x+16667\right)-408\sqrt{5}\sqrt{3x^2+5x+2}\left(6x^3+19x^2+19x+6\right)\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{125(2x+3)\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (10*(16667 + 73215*x + 116826*x^2 + 80100*x^3 + 19872*x^4) - 408*Sqrt[5]*Sq
rt[2 + 5*x + 3*x^2]*(6 + 19*x + 19*x^2 + 6*x^3)*ArcTanh[(-7 - 8*x)/(2*Sqrt[
5]*Sqrt[2 + 5*x + 3*x^2])])/(125*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.47, size = 93, normalized size = 0.75

$$\frac{816\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{25\sqrt{5}}+\frac{2\sqrt{3x^2+5x+2}\left(19872x^4+80100x^3+116826x^2+73215x+16667\right)}{25(x+1)^2(2x+3)(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(16667 + 73215*x + 116826*x^2 + 80100*x^3 + 19872*
x^4))/(25*(1 + x)^2*(3 + 2*x)*(2 + 3*x)^2) + (816*ArcTanh[Sqrt[2 + 5*x + 3*
x^2]/(Sqrt[5]*(1 + x))])/(25*Sqrt[5])
```

fricas [A] time = 0.41, size = 140, normalized size = 1.13

$$\frac{2\left(102\sqrt{5}\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+5\left(19872x^4+80100x^3+116826x^2+73215x+16667\right)\sqrt{3x^2+5x+2}\right)}{125\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/125*(102*sqrt(5)*(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)*log((4
*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 1
2*x + 9)) + 5*(19872*x^4 + 80100*x^3 + 116826*x^2 + 73215*x + 16667)*sqrt(3
*x^2 + 5*x + 2))/(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)
```

giac [B] time = 0.39, size = 235, normalized size = 1.90

$$-\frac{24}{125}\sqrt{5}\left(92\sqrt{5}\sqrt{3}-17\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{408\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-4\right|\right)}{125\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{8\left(\frac{\frac{\frac{5\left(\frac{972}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{13}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}-\frac{12324}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}+\frac{9783}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}-\frac{2484}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{25\left(\frac{8}{2x+3}-\frac{5}{(2x+3)^2}-3\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -24/125*sqrt(5)*(92*sqrt(5)*sqrt(3) - 17*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(
2*x + 3)) - 408/125*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3
)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))/sgn(1/(2*x + 3)) + 8/25*(((5*(972/sgn(1
/(2*x + 3)) + 13/((2*x + 3)*sgn(1/(2*x + 3))))/(2*x + 3) - 12324/sgn(1/(2*x
 + 3)))/(2*x + 3) + 9783/sgn(1/(2*x + 3)))/(2*x + 3) - 2484/sgn(1/(2*x + 3)
))/((8/(2*x + 3) - 5/(2*x + 3)^2 - 3)*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
))
```

maple [A] time = 0.01, size = 127, normalized size = 1.02

$$-\frac{408\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{125}-\frac{13}{10\left(x+\frac{3}{2}\right)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{17}{5\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{16(6x+5)}{5\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{\frac{6624x}{25}+\frac{1104}{5}}{\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{204}{25\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -13/10/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+17/5/(-4*x+3*(x+3/2)^2-19/4)^(
3/2)-16/5*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1104/25*(6*x+5)/(-4*x+3*(x+
3/2)^2-19/4)^(1/2)+204/25/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-408/125*5^(1/2)*arc
tanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.31, size = 135, normalized size = 1.09

$$-\frac{408}{125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{6624x}{25\sqrt{3x^2+5x+2}}+\frac{5724}{25\sqrt{3x^2+5x+2}}-\frac{96x}{5\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{13}{5\left(2\left(3x^2+5x+2\right)^{\frac{3}{2}}x+3\left(3x^2+5x+2\right)^{\frac{3}{2}}\right)}-\frac{63}{5\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -408/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) + 6624/25*x/sqrt(3*x^2 + 5*x + 2) + 5724/25/sqrt(3*x^2 + 5*x +
 2) - 96/5*x/(3*x^2 + 5*x + 2)^(3/2) - 13/5/(2*(3*x^2 + 5*x + 2)^(3/2)*x +
3*(3*x^2 + 5*x + 2)^(3/2)) - 63/5/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^2\left(3x^2+5x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{36x^6\sqrt{3x^2+5x+2}+228x^5\sqrt{3x^2+5x+2}+589x^4\sqrt{3x^2+5x+2}+794x^3\sqrt{3x^2+5x+2}+589x^2\sqrt{3x^2+5x+2}+228x\sqrt{3x^2+5x+2}+36\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{36x^6\sqrt{3x^2+5x+2}+228x^5\sqrt{3x^2+5x+2}+589x^4\sqrt{3x^2+5x+2}+794x^3\sqrt{3x^2+5x+2}+589x^2\sqrt{3x^2+5x+2}+228x\sqrt{3x^2+5x+2}+36\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(36*x**6*sqrt(3*x**2 + 5*x + 2) + 228*x**5*sqrt(3*x**2 + 5*x +
2) + 589*x**4*sqrt(3*x**2 + 5*x + 2) + 794*x**3*sqrt(3*x**2 + 5*x + 2) + 58
9*x**2*sqrt(3*x**2 + 5*x + 2) + 228*x*sqrt(3*x**2 + 5*x + 2) + 36*sqrt(3*x*
*2 + 5*x + 2)), x) - Integral(-5/(36*x**6*sqrt(3*x**2 + 5*x + 2) + 228*x**5
*sqrt(3*x**2 + 5*x + 2) + 589*x**4*sqrt(3*x**2 + 5*x + 2) + 794*x**3*sqrt(3
*x**2 + 5*x + 2) + 589*x**2*sqrt(3*x**2 + 5*x + 2) + 228*x*sqrt(3*x**2 + 5*
x + 2) + 36*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2282 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=147

$$-\frac{2(47x+37)}{5(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}+\frac{11808\sqrt{3x^2+5x+2}}{125(2x+3)}+\frac{152\sqrt{3x^2+5x+2}}{(2x+3)^2}+\frac{4(2112x+1907)}{25(2x+3)^2\sqrt{3x^2+5x+2}}+\frac{4884\tan$$

Rubi [A] time = 0.09, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{2(47x+37)}{5(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}+\frac{11808\sqrt{3x^2+5x+2}}{125(2x+3)}+\frac{152\sqrt{3x^2+5x+2}}{(2x+3)^2}+\frac{4(2112x+1907)}{25(2x+3)^2\sqrt{3x^2+5x+2}}+\frac{4884\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{125\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)) + (4*(1907 + 2112*
x))/(25*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]) + (152*Sqrt[2 + 5*x + 3*x^2])/(3
 + 2*x)^2 + (11808*Sqrt[2 + 5*x + 3*x^2])/(125*(3 + 2*x)) + (4884*ArcTanh[(
7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(125*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
```

```
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{1251+1128x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}+\frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{\ldots}{(3+\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}+\frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}}+\frac{152\sqrt{2+5\ldots}}{(3+2\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}+\frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}}+\frac{152\sqrt{2+5\ldots}}{(3+2\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}+\frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}}+\frac{152\sqrt{2+5\ldots}}{(3+2\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}+\frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}}+\frac{152\sqrt{2+5\ldots}}{(3+2\ldots}$$

Mathematica [A] time = 0.08, size = 143, normalized size = 0.97

$$\frac{2\left(142500\left(3x^2+5x+2\right)^2+50(6336x+5721)\left(3x^2+5x+2\right)+18(2x+3)\left(3x^2+5x+2\right)^{3/2}\left(4920\sqrt{3x^2+5x+2}-407\sqrt{5}(2x+3)\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)-375(47x+37)\right)}{1875(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(-375*(37 + 47*x) + 50*(5721 + 6336*x)*(2 + 5*x + 3*x^2) + 142500*(2 + 5
*x + 3*x^2)^2 + 18*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)*(4920*Sqrt[2 + 5*x + 3
*x^2] - 407*Sqrt[5]*(3 + 2*x)*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
3*x^2])])))/(1875*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.53, size = 98, normalized size = 0.67

$$\frac{9768\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{125\sqrt{5}}+\frac{2\sqrt{3x^2+5x+2}\left(106272x^5+599148x^4+1316616x^3+1405814x^2+727887x+146063\right)}{125(x+1)^2(2x+3)^2(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(146063 + 727887*x + 1405814*x^2 + 1316616*x^3 + 5
99148*x^4 + 106272*x^5))/(125*(1 + x)^2*(3 + 2*x)^2*(2 + 3*x)^2) + (9768*Ar
cTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(125*Sqrt[5])
```

fricas [A] time = 0.42, size = 155, normalized size = 1.05

$$\frac{2\left(1221\,\sqrt{5}\left(36\,x^{6}+228\,x^{5}+589\,x^{4}+794\,x^{3}+589\,x^{2}+228\,x+36\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}\,(8\,x+7)+124\,x^{2}+212\,x+89}{4\,x^{2}+12\,x+9}\right)+5\left(106272\,x^{5}+599148\,x^{4}+1316616\,x^{3}+1405814\,x^{2}+727887\,x+146063\right)\sqrt{3\,x^{2}+5\,x+2}\right)}{625\left(36\,x^{6}+228\,x^{5}+589\,x^{4}+794\,x^{3}+589\,x^{2}+228\,x+36\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/625*(1221*sqrt(5)*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x
 + 36)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 8
9)/(4*x^2 + 12*x + 9)) + 5*(106272*x^5 + 599148*x^4 + 1316616*x^3 + 1405814
*x^2 + 727887*x + 146063)*sqrt(3*x^2 + 5*x + 2))/(36*x^6 + 228*x^5 + 589*x^
4 + 794*x^3 + 589*x^2 + 228*x + 36)
```

giac [A] time = 0.32, size = 234, normalized size = 1.59

$$\frac{4884}{625}\,\sqrt{5}\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}\right)+\frac{2\,((6\,(23826\,x+61591)x+309599)x+84259)}{625\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}-\frac{8\left(4106\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{3}+16447\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{2}+57729\,\sqrt{3}x+20987\,\sqrt{3}-57729\,\sqrt{3\,x^{2}+5\,x+2}\right)}{625\left(2\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)^{2}+6\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^{2}+5\,x+2}\right)+11\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 4884/625*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
 + 2))) + 2/625*((6*(23826*x + 61591)*x + 309599)*x + 84259)/(3*x^2 + 5*x +
 2)^(3/2) - 8/625*(4106*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 16447*sqrt(
3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 57729*sqrt(3)*x + 20987*sqrt(3)
- 57729*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6
*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.01, size = 148, normalized size = 1.01

$$-\frac{4884\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{625}-\frac{177}{50\left(x+\frac{3}{2}\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{407}{50\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{106\,(6x+5)}{25\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{\frac{17712x}{125}+\frac{2952}{25}}{\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}+\frac{2442}{125\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{13}{40\left(x+\frac{3}{2}\right)^{2}\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -177/50/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+407/50/(-4*x+3*(x+3/2)^2-19/4
)^(3/2)-106/25*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+2952/125*(6*x+5)/(-4*x
+3*(x+3/2)^2-19/4)^(1/2)+2442/125/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-4884/625*5^
(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/40/(
x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.24, size = 186, normalized size = 1.27

$$-\frac{4884}{625}\,\sqrt{5}\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)+\frac{17712\,x}{125\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{17202}{125\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{636\,x}{25\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}-\frac{13}{10\left(4\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{2}+12\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x+9\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\right)}-\frac{177}{25\left(2\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x+3\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\right)}-\frac{653}{50\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4884/625*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(
2*x + 3) - 2) + 17712/125*x/sqrt(3*x^2 + 5*x + 2) + 17202/125/sqrt(3*x^2 +
5*x + 2) - 636/25*x/(3*x^2 + 5*x + 2)^(3/2) - 13/10/(4*(3*x^2 + 5*x + 2)^(3
/2)*x^2 + 12*(3*x^2 + 5*x + 2)^(3/2)*x + 9*(3*x^2 + 5*x + 2)^(3/2)) - 177/2
```

```
5/(2*(3*x^2 + 5*x + 2)^(3/2)*x + 3*(3*x^2 + 5*x + 2)^(3/2)) - 653/50/(3*x^2
 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^3\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{72x^7\sqrt{3x^2+5x+2}+564x^6\sqrt{3x^2+5x+2}+1862x^5\sqrt{3x^2+5x+2}+3355x^4\sqrt{3x^2+5x+2}+3560x^3\sqrt{3x^2+5x+2}+2223x^2\sqrt{3x^2+5x+2}+756x\sqrt{3x^2+5x+2}+108\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{72x^7\sqrt{3x^2+5x+2}+564x^6\sqrt{3x^2+5x+2}+1862x^5\sqrt{3x^2+5x+2}+3355x^4\sqrt{3x^2+5x+2}+3560x^3\sqrt{3x^2+5x+2}+2223x^2\sqrt{3x^2+5x+2}+756x\sqrt{3x^2+5x+2}+108\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(72*x**7*sqrt(3*x**2 + 5*x + 2) + 564*x**6*sqrt(3*x**2 + 5*x +
2) + 1862*x**5*sqrt(3*x**2 + 5*x + 2) + 3355*x**4*sqrt(3*x**2 + 5*x + 2) +
3560*x**3*sqrt(3*x**2 + 5*x + 2) + 2223*x**2*sqrt(3*x**2 + 5*x + 2) + 756*x
*sqrt(3*x**2 + 5*x + 2) + 108*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(72
*x**7*sqrt(3*x**2 + 5*x + 2) + 564*x**6*sqrt(3*x**2 + 5*x + 2) + 1862*x**5*
sqrt(3*x**2 + 5*x + 2) + 3355*x**4*sqrt(3*x**2 + 5*x + 2) + 3560*x**3*sqrt(
3*x**2 + 5*x + 2) + 2223*x**2*sqrt(3*x**2 + 5*x + 2) + 756*x*sqrt(3*x**2 +
5*x + 2) + 108*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2283 $\int \frac{5-x}{(3+2x)^4(2+5x+3x^2)^{5/2}}\,dx$

Optimal. Leaf size=174

$$-\frac{2(47x+37)}{5(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}+\frac{9696\sqrt{3x^2+5x+2}}{625(2x+3)}+\frac{1048\sqrt{3x^2+5x+2}}{15(2x+3)^2}+\frac{47552\sqrt{3x^2+5x+2}}{375(2x+3)^3}+\frac{12(638x+603)}{25(2x+3)^3\sqrt{3x^2+5x+2}}$$

Rubi [A] time = 0.12, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{2(47x+37)}{5(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}+\frac{9696\sqrt{3x^2+5x+2}}{625(2x+3)}+\frac{1048\sqrt{3x^2+5x+2}}{15(2x+3)^2}+\frac{47552\sqrt{3x^2+5x+2}}{375(2x+3)^3}+\frac{12(638x+603)}{25(2x+3)^3\sqrt{3x^2+5x+2}}+\frac{46108\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{625\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)) + (12*(603 + 638*x
))/(25*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]) + (47552*Sqrt[2 + 5*x + 3*x^2])/(
375*(3 + 2*x)^3) + (1048*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^2) + (9696*Sq
rt[2 + 5*x + 3*x^2])/(625*(3 + 2*x)) + (46108*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*
Sqrt[2 + 5*x + 3*x^2])])/(625*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
```

```
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{1473+1410x}{(3+2x)^4\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{\ldots}{(3+\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2\ldots}}{375(3\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2\ldots}}{375(3\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2\ldots}}{375(3\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2\ldots}}{375(3\ldots}$$

$$= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2\ldots}}{375(3\ldots}$$

Mathematica [A] time = 0.11, size = 150, normalized size = 0.86

$$\frac{2\left(594400\left(3x^2+5x+2\right)^2+2250(638x+603)\left(3x^2+5x+2\right)+2(2x+3)\left(3x^2+5x+2\right)^{3/2}\left(10(7272x+27283)\sqrt{3x^2+5x+2}-34581\sqrt{5}(2x+3)^2\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)-1875(47x+37)\right)}{9375(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(-1875*(37 + 47*x) + 2250*(603 + 638*x)*(2 + 5*x + 3*x^2) + 594400*(2 +
5*x + 3*x^2)^2 + 2*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)*(10*(27283 + 7272*x)*S
qrt[2 + 5*x + 3*x^2] - 34581*Sqrt[5]*(3 + 2*x)^2*ArcTanh[(-7 - 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])])))/(9375*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2))
```

IntegrateAlgebraic [A] time = 0.60, size = 103, normalized size = 0.59

$$\frac{92216\tanh^{-1}\left(\frac{\sqrt{3x^2+5x+2}}{\sqrt{5}(x+1)}\right)}{625\sqrt{5}}+\frac{2\sqrt{3x^2+5x+2}\left(523584x^6+4495032x^5+15334836x^4+26717636x^3+25105026x^2+12060957x+2313929\right)}{1875(x+1)^2(2x+3)^3(3x+2)^2}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[2 + 5*x + 3*x^2]*(2313929 + 12060957*x + 25105026*x^2 + 26717636*x^
3 + 15334836*x^4 + 4495032*x^5 + 523584*x^6))/(1875*(1 + x)^2*(3 + 2*x)^3*(
2 + 3*x)^2) + (92216*ArcTanh[Sqrt[2 + 5*x + 3*x^2]/(Sqrt[5]*(1 + x))])/(625
*Sqrt[5])
```

fricas [A] time = 0.43, size = 170, normalized size = 0.98

$$\frac{2\left(34581\sqrt{5}\left(72x^7+564x^6+1862x^5+3355x^4+3560x^3+2223x^2+756x+108\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+5\left(523584x^6+4495032x^5+15334836x^4+26717636x^3+25105026x^2+12060957x+2313929\right)\sqrt{3x^2+5x+2}\right)}{9375\left(72x^7+564x^6+1862x^5+3355x^4+3560x^3+2223x^2+756x+108\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/9375*(34581*sqrt(5)*(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 + 3560*x^3 +
2223*x^2 + 756*x + 108)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 12
4*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 5*(523584*x^6 + 4495032*x^5 + 153
34836*x^4 + 26717636*x^3 + 25105026*x^2 + 12060957*x + 2313929)*sqrt(3*x^2
+ 5*x + 2))/(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 +
 756*x + 108)
```

giac [A] time = 0.34, size = 285, normalized size = 1.64

$$\frac{46108}{3125}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{2\left((12(19992x+58207)x+636631)x+184301\right)}{3125\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{8\left(296724\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5+2103870\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^4+16891990\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^3+21246975\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+38063715\sqrt{3}x+8723544\sqrt{3}-38063715\sqrt{3x^2+5x+2}\right)}{9375\left(2\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^2+6\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)+11\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 46108/3125*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5
*x + 2))) + 2/3125*((12*(19992*x + 58207)*x + 636631)*x + 184301)/(3*x^2 +
5*x + 2)^(3/2) - 8/9375*(296724*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 210
3870*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 16891990*(sqrt(3)*x -
sqrt(3*x^2 + 5*x + 2))^3 + 21246975*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^2 + 38063715*sqrt(3)*x + 8723544*sqrt(3) - 38063715*sqrt(3*x^2 + 5*x +
 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.01, size = 169, normalized size = 0.97

$$-\frac{46108\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{3125}-\frac{151}{200\left(x+\frac{3}{2}\right)^2\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{862}{125\left(x+\frac{3}{2}\right)\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{11527}{750\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{2366(6x+5)}{375\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{\frac{14544x}{625}+\frac{2424}{125}}{\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{23054}{625\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{13}{120\left(x+\frac{3}{2}\right)^3\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -151/200/(x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(3/2)-862/125/(x+3/2)/(-4*x+3*(x
+3/2)^2-19/4)^(3/2)+11527/750/(-4*x+3*(x+3/2)^2-19/4)^(3/2)-2366/375*(6*x+5
)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+2424/625*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1
/2)+23054/625/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-46108/3125*5^(1/2)*arctanh(2/5*
(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/120/(x+3/2)^3/(-4*x+3*
(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.27, size = 254, normalized size = 1.46

$$-\frac{46108}{3125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{14544x}{625\sqrt{3x^2+5x+2}}+\frac{35174}{625\sqrt{3x^2+5x+2}}-\frac{4732x}{125\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{13}{15\left(8\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3+36\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+54\left(3x^2+5x+2\right)^{\frac{3}{2}}x+27\left(3x^2+5x+2\right)^{\frac{3}{2}}\right)}-\frac{151}{50\left(4\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+12\left(3x^2+5x+2\right)^{\frac{3}{2}}x+9\left(3x^2+5x+2\right)^{\frac{3}{2}}\right)}-\frac{1724}{125\left(2\left(3x^2+5x+2\right)^{\frac{3}{2}}x+3\left(3x^2+5x+2\right)^{\frac{3}{2}}\right)}-\frac{12133}{750\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -46108/3125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) + 14544/625*x/sqrt(3*x^2 + 5*x + 2) + 35174/625/sqrt(3*x^2
+ 5*x + 2) - 4732/125*x/(3*x^2 + 5*x + 2)^(3/2) - 13/15/(8*(3*x^2 + 5*x + 2
)^(3/2)*x^3 + 36*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 54*(3*x^2 + 5*x + 2)^(3/2)*x
 + 27*(3*x^2 + 5*x + 2)^(3/2)) - 151/50/(4*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 12
*(3*x^2 + 5*x + 2)^(3/2)*x + 9*(3*x^2 + 5*x + 2)^(3/2)) - 1724/125/(2*(3*x^
2 + 5*x + 2)^(3/2)*x + 3*(3*x^2 + 5*x + 2)^(3/2)) - 12133/750/(3*x^2 + 5*x
+ 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{{\left(2\,x+3\right)}^4\,{\left(3\,x^2+5\,x+2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{144x^8\sqrt{3x^2+5x+2}+1344x^7\sqrt{3x^2+5x+2}+5416x^6\sqrt{3x^2+5x+2}+12296x^5\sqrt{3x^2+5x+2}+17185x^4\sqrt{3x^2+5x+2}+15126x^3\sqrt{3x^2+5x+2}+8181x^2\sqrt{3x^2+5x+2}+2484x\sqrt{3x^2+5x+2}+324\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{144x^8\sqrt{3x^2+5x+2}+1344x^7\sqrt{3x^2+5x+2}+5416x^6\sqrt{3x^2+5x+2}+12296x^5\sqrt{3x^2+5x+2}+17185x^4\sqrt{3x^2+5x+2}+15126x^3\sqrt{3x^2+5x+2}+8181x^2\sqrt{3x^2+5x+2}+2484x\sqrt{3x^2+5x+2}+324\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(144*x**8*sqrt(3*x**2 + 5*x + 2) + 1344*x**7*sqrt(3*x**2 + 5*x
+ 2) + 5416*x**6*sqrt(3*x**2 + 5*x + 2) + 12296*x**5*sqrt(3*x**2 + 5*x + 2)
 + 17185*x**4*sqrt(3*x**2 + 5*x + 2) + 15126*x**3*sqrt(3*x**2 + 5*x + 2) +
8181*x**2*sqrt(3*x**2 + 5*x + 2) + 2484*x*sqrt(3*x**2 + 5*x + 2) + 324*sqrt
(3*x**2 + 5*x + 2)), x) - Integral(-5/(144*x**8*sqrt(3*x**2 + 5*x + 2) + 13
44*x**7*sqrt(3*x**2 + 5*x + 2) + 5416*x**6*sqrt(3*x**2 + 5*x + 2) + 12296*x
**5*sqrt(3*x**2 + 5*x + 2) + 17185*x**4*sqrt(3*x**2 + 5*x + 2) + 15126*x**3
*sqrt(3*x**2 + 5*x + 2) + 8181*x**2*sqrt(3*x**2 + 5*x + 2) + 2484*x*sqrt(3*
x**2 + 5*x + 2) + 324*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2284 $\int \frac{-1+x}{(1+x)\sqrt{1+x+x^2}}\,dx$

Optimal. Leaf size=35

$$2\tanh^{-1}\left(\frac{1-x}{2\sqrt{x^2+x+1}}\right)+\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)$$

Rubi [A] time = 0.03, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {843, 619, 215, 724, 206}

$$2\tanh^{-1}\left(\frac{1-x}{2\sqrt{x^2+x+1}}\right)+\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(-1 + x)/((1 + x)*Sqrt[1 + x + x^2]),x]
```

```
[Out] ArcSinh[(1 + 2*x)/Sqrt[3]] + 2*ArcTanh[(1 - x)/(2*Sqrt[1 + x + x^2])]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{-1+x}{(1+x)\sqrt{1+x+x^2}}\,dx = -\left(2\int \frac{1}{(1+x)\sqrt{1+x+x^2}}\,dx\right) + \int \frac{1}{\sqrt{1+x+x^2}}\,dx$$

$$= 4\,\text{Subst}\left(\int \frac{1}{4-x^2}\,dx, x, \frac{1-x}{\sqrt{1+x+x^2}}\right) + \frac{\text{Subst}\left(\int \frac{1}{\sqrt{1+\frac{x^2}{3}}}\,dx, x, 1+2x\right)}{\sqrt{3}}$$

$$= \sinh^{-1}\left(\frac{1+2x}{\sqrt{3}}\right) + 2\tanh^{-1}\left(\frac{1-x}{2\sqrt{1+x+x^2}}\right)$$

Mathematica [A] time = 0.01, size = 35, normalized size = 1.00

$$2\tanh^{-1}\left(\frac{1-x}{2\sqrt{x^2+x+1}}\right) + \sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-1 + x)/((1 + x)*Sqrt[1 + x + x^2]),x]
[Out] ArcSinh[(1 + 2*x)/Sqrt[3]] + 2*ArcTanh[(1 - x)/(2*Sqrt[1 + x + x^2])]
```

IntegrateAlgebraic [A] time = 0.24, size = 39, normalized size = 1.11

$$-\log\left(2\sqrt{x^2+x+1}-2x-1\right) - 4\tanh^{-1}\left(-\sqrt{x^2+x+1}+x+1\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(-1 + x)/((1 + x)*Sqrt[1 + x + x^2]),x]
[Out] -4*ArcTanh[1 + x - Sqrt[1 + x + x^2]] - Log[-1 - 2*x + 2*Sqrt[1 + x + x^2]]
```

fricas [A] time = 0.42, size = 50, normalized size = 1.43

$$2\log\left(-x+\sqrt{x^2+x+1}\right) - 2\log\left(-x+\sqrt{x^2+x+1}-2\right) - \log\left(-2x+2\sqrt{x^2+x+1}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x^2+x+1)^(1/2),x, algorithm="fricas")
[Out] 2*log(-x + sqrt(x^2 + x + 1)) - 2*log(-x + sqrt(x^2 + x + 1) - 2) - log(-2*
x + 2*sqrt(x^2 + x + 1) - 1)
```

giac [A] time = 0.18, size = 52, normalized size = 1.49

$$-\log\left(-2x+2\sqrt{x^2+x+1}-1\right) + 2\log\left(\left|-x+\sqrt{x^2+x+1}\right|\right) - 2\log\left(\left|-x+\sqrt{x^2+x+1}-2\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x^2+x+1)^(1/2),x, algorithm="giac")
[Out] -log(-2*x + 2*sqrt(x^2 + x + 1) - 1) + 2*log(abs(-x + sqrt(x^2 + x + 1))) -
 2*log(abs(-x + sqrt(x^2 + x + 1) - 2))
```

maple [A] time = 0.01, size = 32, normalized size = 0.91

$$\operatorname{arcsinh}\left(\frac{2\sqrt{3}\left(x+\frac{1}{2}\right)}{3}\right) + 2\operatorname{arctanh}\left(\frac{-x+1}{2\sqrt{-x+(x+1)^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-1+x)/(x+1)/(x^2+x+1)^(1/2),x)
```

```
[Out] arcsinh(2/3*3^(1/2)*(x+1/2))+2*arctanh(1/2*(1-x)/((x+1)^2-x)^(1/2))
```

maxima [A] time = 1.18, size = 41, normalized size = 1.17

$$\operatorname{arsinh}\left(\frac{2}{3}\sqrt{3}x+\frac{1}{3}\sqrt{3}\right)-2\operatorname{arsinh}\left(\frac{\sqrt{3}x}{3|x+1|}-\frac{\sqrt{3}}{3|x+1|}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x^2+x+1)^(1/2),x, algorithm="maxima")
```

```
[Out] arcsinh(2/3*sqrt(3)*x + 1/3*sqrt(3)) - 2*arcsinh(1/3*sqrt(3)*x/abs(x + 1) -
 1/3*sqrt(3)/abs(x + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x-1}{(x+1)\sqrt{x^2+x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x - 1)/((x + 1)*(x + x^2 + 1)^(1/2)),x)
```

```
[Out] int((x - 1)/((x + 1)*(x + x^2 + 1)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x-1}{(x+1)\sqrt{x^2+x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x**2+x+1)**(1/2),x)
```

```
[Out] Integral((x - 1)/((x + 1)*sqrt(x**2 + x + 1)), x)
```

3.2285 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{1}{40}(2x+3)^{15/2}+\frac{47}{104}(2x+3)^{13/2}-\frac{109}{88}(2x+3)^{11/2}+\frac{65}{72}(2x+3)^{9/2}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{1}{40}(2x+3)^{15/2}+\frac{47}{104}(2x+3)^{13/2}-\frac{109}{88}(2x+3)^{11/2}+\frac{65}{72}(2x+3)^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (65*(3 + 2*x)^(9/2))/72 - (109*(3 + 2*x)^(11/2))/88 + (47*(3 + 2*x)^(13/2))
/104 - (3 + 2*x)^(15/2)/40
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)\,dx &= \int \left(\frac{65}{8}(3+2x)^{7/2}-\frac{109}{8}(3+2x)^{9/2}+\frac{47}{8}(3+2x)^{11/2}-\frac{3}{8}(3+2x)^{13/2}\right.\\ &= \frac{65}{72}(3+2x)^{9/2}-\frac{109}{88}(3+2x)^{11/2}+\frac{47}{104}(3+2x)^{13/2}-\frac{1}{40}(3+2x)^{15/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{(2x+3)^{9/2}\left(1287x^3-5841x^2-10269x-3727\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/6435*((3 + 2*x)^(9/2)*(-3727 - 10269*x - 5841*x^2 + 1287*x^3))
```

IntegrateAlgebraic [A] time = 0.08, size = 49, normalized size = 0.92

$$\frac{-1287(2x+3)^{15/2}+23265(2x+3)^{13/2}-63765(2x+3)^{11/2}+46475(2x+3)^{9/2}}{51480}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (46475*(3 + 2*x)^(9/2) - 63765*(3 + 2*x)^(11/2) + 23265*(3 + 2*x)^(13/2) -
1287*(3 + 2*x)^(15/2))/51480
```

fricas [A] time = 0.39, size = 44, normalized size = 0.83

$$-\frac{1}{6435} \left(20592 x^{7} + 30096 x^{6} - 447048 x^{5} - 2029120 x^{4} - 3733305 x^{3} - 3496257 x^{2} - 1636821 x - 301887\right) \sqrt{2 x + 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/6435*(20592*x^7 + 30096*x^6 - 447048*x^5 - 2029120*x^4 - 3733305*x^3 - 3
496257*x^2 - 1636821*x - 301887)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 37, normalized size = 0.70

$$-\frac{1}{40} \left(2 x + 3\right)^{\frac{15}{2}} + \frac{47}{104} \left(2 x + 3\right)^{\frac{13}{2}} - \frac{109}{88} \left(2 x + 3\right)^{\frac{11}{2}} + \frac{65}{72} \left(2 x + 3\right)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -1/40*(2*x + 3)^(15/2) + 47/104*(2*x + 3)^(13/2) - 109/88*(2*x + 3)^(11/2)
+ 65/72*(2*x + 3)^(9/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(1287 x^{3}-5841 x^{2}-10269 x -3727\right) \left(2 x +3\right)^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x)
```

```
[Out] -1/6435*(1287*x^3-5841*x^2-10269*x-3727)*(3+2*x)^(9/2)
```

maxima [A] time = 0.54, size = 37, normalized size = 0.70

$$-\frac{1}{40} \left(2 x + 3\right)^{\frac{15}{2}} + \frac{47}{104} \left(2 x + 3\right)^{\frac{13}{2}} - \frac{109}{88} \left(2 x + 3\right)^{\frac{11}{2}} + \frac{65}{72} \left(2 x + 3\right)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -1/40*(2*x + 3)^(15/2) + 47/104*(2*x + 3)^(13/2) - 109/88*(2*x + 3)^(11/2)
+ 65/72*(2*x + 3)^(9/2)
```

mupad [B] time = 3.03, size = 37, normalized size = 0.70

$$\frac{65\,{\left(2\,x+3\right)}^{9/2}}{72}-\frac{109\,{\left(2\,x+3\right)}^{11/2}}{88}+\frac{47\,{\left(2\,x+3\right)}^{13/2}}{104}-\frac{{\left(2\,x+3\right)}^{15/2}}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(7/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (65*(2*x + 3)^(9/2))/72 - (109*(2*x + 3)^(11/2))/88 + (47*(2*x + 3)^(13/2))
/104 - (2*x + 3)^(15/2)/40
```

sympy [B] time = 3.78, size = 116, normalized size = 2.19

$$- \frac{16 x^{7} \sqrt{2 x + 3}}{5} - \frac{304 x^{6} \sqrt{2 x + 3}}{65} + \frac{49672 x^{5} \sqrt{2 x + 3}}{715} + \frac{405824 x^{4} \sqrt{2 x + 3}}{1287} + \frac{248887 x^{3} \sqrt{2 x + 3}}{429} + \frac{388473 x^{2} \sqrt{2 x + 3}}{715} + \frac{181869 x \sqrt{2 x + 3}}{715} + \frac{33543 \sqrt{2 x + 3}}{715}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)*(3*x**2+5*x+2),x)
```

```
[Out] -16*x**7*sqrt(2*x + 3)/5 - 304*x**6*sqrt(2*x + 3)/65 + 49672*x**5*sqrt(2*x
+ 3)/715 + 405824*x**4*sqrt(2*x + 3)/1287 + 248887*x**3*sqrt(2*x + 3)/429 +
 388473*x**2*sqrt(2*x + 3)/715 + 181869*x*sqrt(2*x + 3)/715 + 33543*sqrt(2*
x + 3)/715
```

3.2286 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{3}{104}(2x+3)^{13/2}+\frac{47}{88}(2x+3)^{11/2}-\frac{109}{72}(2x+3)^{9/2}+\frac{65}{56}(2x+3)^{7/2}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{104}(2x+3)^{13/2}+\frac{47}{88}(2x+3)^{11/2}-\frac{109}{72}(2x+3)^{9/2}+\frac{65}{56}(2x+3)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (65*(3 + 2*x)^(7/2))/56 - (109*(3 + 2*x)^(9/2))/72 + (47*(3 + 2*x)^(11/2))/
88 - (3*(3 + 2*x)^(13/2))/104
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)\,dx &= \int \left(\frac{65}{8}(3+2x)^{5/2}-\frac{109}{8}(3+2x)^{7/2}+\frac{47}{8}(3+2x)^{9/2}-\frac{3}{8}(3+2x)^{11/2}\right)dx\\ &= \frac{65}{56}(3+2x)^{7/2}-\frac{109}{72}(3+2x)^{9/2}+\frac{47}{88}(3+2x)^{11/2}-\frac{3}{104}(3+2x)^{13/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{(2x+3)^{7/2}\left(2079x^3-9891x^2-16429x-5829\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/9009*((3 + 2*x)^(7/2)*(-5829 - 16429*x - 9891*x^2 + 2079*x^3))
```

IntegrateAlgebraic [A] time = 0.05, size = 49, normalized size = 0.92

$$\frac{-2079(2x+3)^{13/2}+38493(2x+3)^{11/2}-109109(2x+3)^{9/2}+83655(2x+3)^{7/2}}{72072}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (83655*(3 + 2*x)^(7/2) - 109109*(3 + 2*x)^(9/2) + 38493*(3 + 2*x)^(11/2) -
2079*(3 + 2*x)^(13/2))/72072
```

fricas [A] time = 0.40, size = 39, normalized size = 0.74

$$-\frac{1}{9009}\left(16632\,x^{6}-4284\,x^{5}-375242\,x^{4}-1116057\,x^{3}-1364067\,x^{2}-758349\,x-157383\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/9009*(16632*x^6 - 4284*x^5 - 375242*x^4 - 1116057*x^3 - 1364067*x^2 - 75
8349*x - 157383)*sqrt(2*x + 3)
```

giac [A] time = 0.19, size = 37, normalized size = 0.70

$$-\frac{3}{104}\,(2\,x+3)^{\frac{13}{2}}+\frac{47}{88}\,(2\,x+3)^{\frac{11}{2}}-\frac{109}{72}\,(2\,x+3)^{\frac{9}{2}}+\frac{65}{56}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -3/104*(2*x + 3)^(13/2) + 47/88*(2*x + 3)^(11/2) - 109/72*(2*x + 3)^(9/2) +
 65/56*(2*x + 3)^(7/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(2079x^{3}-9891x^{2}-16429x-5829\right)(2x+3)^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2),x)
```

```
[Out] -1/9009*(2079*x^3-9891*x^2-16429*x-5829)*(2*x+3)^(7/2)
```

maxima [A] time = 0.50, size = 37, normalized size = 0.70

$$-\frac{3}{104}\,(2\,x+3)^{\frac{13}{2}}+\frac{47}{88}\,(2\,x+3)^{\frac{11}{2}}-\frac{109}{72}\,(2\,x+3)^{\frac{9}{2}}+\frac{65}{56}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -3/104*(2*x + 3)^(13/2) + 47/88*(2*x + 3)^(11/2) - 109/72*(2*x + 3)^(9/2) +
 65/56*(2*x + 3)^(7/2)
```

mupad [B] time = 0.04, size = 37, normalized size = 0.70

$$\frac{65\,{(2\,x+3)}^{7/2}}{56}-\frac{109\,{(2\,x+3)}^{9/2}}{72}+\frac{47\,{(2\,x+3)}^{11/2}}{88}-\frac{3\,{(2\,x+3)}^{13/2}}{104}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (65*(2*x + 3)^(7/2))/56 - (109*(2*x + 3)^(9/2))/72 + (47*(2*x + 3)^(11/2))/
88 - (3*(2*x + 3)^(13/2))/104
```

sympy [B] time = 1.85, size = 100, normalized size = 1.89

$$-\frac{24x^{6}\sqrt{2x+3}}{13}+\frac{68x^{5}\sqrt{2x+3}}{143}+\frac{53606x^{4}\sqrt{2x+3}}{1287}+\frac{372019x^{3}\sqrt{2x+3}}{3003}+\frac{151563x^{2}\sqrt{2x+3}}{1001}+\frac{84261x\sqrt{2x+3}}{1001}+\frac{17487\sqrt{2x+3}}{1001}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2),x)
```

```
[Out] -24*x**6*sqrt(2*x + 3)/13 + 68*x**5*sqrt(2*x + 3)/143 + 53606*x**4*sqrt(2*x
 + 3)/1287 + 372019*x**3*sqrt(2*x + 3)/3003 + 151563*x**2*sqrt(2*x + 3)/100
1 + 84261*x*sqrt(2*x + 3)/1001 + 17487*sqrt(2*x + 3)/1001
```

3.2287 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{3}{88}(2x+3)^{11/2}+\frac{47}{72}(2x+3)^{9/2}-\frac{109}{56}(2x+3)^{7/2}+\frac{13}{8}(2x+3)^{5/2}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{88}(2x+3)^{11/2}+\frac{47}{72}(2x+3)^{9/2}-\frac{109}{56}(2x+3)^{7/2}+\frac{13}{8}(2x+3)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (13*(3 + 2*x)^(5/2))/8 - (109*(3 + 2*x)^(7/2))/56 + (47*(3 + 2*x)^(9/2))/72
 - (3*(3 + 2*x)^(11/2))/88
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)\,dx &= \int \left(\frac{65}{8}(3+2x)^{3/2}-\frac{109}{8}(3+2x)^{5/2}+\frac{47}{8}(3+2x)^{7/2}-\frac{3}{8}(3+2x)^{9/2}\right)\\ &= \frac{13}{8}(3+2x)^{5/2}-\frac{109}{56}(3+2x)^{7/2}+\frac{47}{72}(3+2x)^{9/2}-\frac{3}{88}(3+2x)^{11/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{1}{693}(2x+3)^{5/2}\left(189x^3-959x^2-1455x-513\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/693*((3 + 2*x)^(5/2)*(-513 - 1455*x - 959*x^2 + 189*x^3))
```

IntegrateAlgebraic [A] time = 0.04, size = 49, normalized size = 0.92

$$\frac{-189(2x+3)^{11/2}+3619(2x+3)^{9/2}-10791(2x+3)^{7/2}+9009(2x+3)^{5/2}}{5544}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (9009*(3 + 2*x)^(5/2) - 10791*(3 + 2*x)^(7/2) + 3619*(3 + 2*x)^(9/2) - 189*
(3 + 2*x)^(11/2))/5544
```

fricas [A] time = 0.38, size = 34, normalized size = 0.64

$$-\frac{1}{693}\left(756\,x^{5}-1568\,x^{4}-15627\,x^{3}-28143\,x^{2}-19251\,x-4617\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/693*(756*x^5 - 1568*x^4 - 15627*x^3 - 28143*x^2 - 19251*x - 4617)*sqrt(2
*x + 3)
```

giac [A] time = 0.21, size = 37, normalized size = 0.70

$$-\frac{3}{88}\,(2\,x+3)^{\frac{11}{2}}+\frac{47}{72}\,(2\,x+3)^{\frac{9}{2}}-\frac{109}{56}\,(2\,x+3)^{\frac{7}{2}}+\frac{13}{8}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -3/88*(2*x + 3)^(11/2) + 47/72*(2*x + 3)^(9/2) - 109/56*(2*x + 3)^(7/2) + 1
3/8*(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(189x^{3}-959x^{2}-1455x-513\right)(2x+3)^{\frac{5}{2}}}{693}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2),x)
```

```
[Out] -1/693*(189*x^3-959*x^2-1455*x-513)*(2*x+3)^(5/2)
```

maxima [A] time = 0.55, size = 37, normalized size = 0.70

$$-\frac{3}{88}\,(2\,x+3)^{\frac{11}{2}}+\frac{47}{72}\,(2\,x+3)^{\frac{9}{2}}-\frac{109}{56}\,(2\,x+3)^{\frac{7}{2}}+\frac{13}{8}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -3/88*(2*x + 3)^(11/2) + 47/72*(2*x + 3)^(9/2) - 109/56*(2*x + 3)^(7/2) + 1
3/8*(2*x + 3)^(5/2)
```

mupad [B] time = 0.04, size = 37, normalized size = 0.70

$$\frac{13\,(2\,x+3)^{5/2}}{8}-\frac{109\,(2\,x+3)^{7/2}}{56}+\frac{47\,(2\,x+3)^{9/2}}{72}-\frac{3\,(2\,x+3)^{11/2}}{88}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (13*(2*x + 3)^(5/2))/8 - (109*(2*x + 3)^(7/2))/56 + (47*(2*x + 3)^(9/2))/72
 - (3*(2*x + 3)^(11/2))/88
```

sympy [A] time = 13.96, size = 46, normalized size = 0.87

$$-\frac{3(2x+3)^{\frac{11}{2}}}{88}+\frac{47(2x+3)^{\frac{9}{2}}}{72}-\frac{109(2x+3)^{\frac{7}{2}}}{56}+\frac{13(2x+3)^{\frac{5}{2}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2),x)
```

```
[Out] -3*(2*x + 3)**(11/2)/88 + 47*(2*x + 3)**(9/2)/72 - 109*(2*x + 3)**(7/2)/56
+ 13*(2*x + 3)**(5/2)/8
```

3.2288 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{1}{24}(2x+3)^{9/2}+\frac{47}{56}(2x+3)^{7/2}-\frac{109}{40}(2x+3)^{5/2}+\frac{65}{24}(2x+3)^{3/2}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{1}{24}(2x+3)^{9/2}+\frac{47}{56}(2x+3)^{7/2}-\frac{109}{40}(2x+3)^{5/2}+\frac{65}{24}(2x+3)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2),x]
```

```
[Out] (65*(3 + 2*x)^(3/2))/24 - (109*(3 + 2*x)^(5/2))/40 + (47*(3 + 2*x)^(7/2))/5
6 - (3 + 2*x)^(9/2)/24
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)dx &= \int \left(\frac{65}{8}\sqrt{3+2x}-\frac{109}{8}(3+2x)^{3/2}+\frac{47}{8}(3+2x)^{5/2}-\frac{3}{8}(3+2x)^{7/2}\right)dx\\ &= \frac{65}{24}(3+2x)^{3/2}-\frac{109}{40}(3+2x)^{5/2}+\frac{47}{56}(3+2x)^{7/2}-\frac{1}{24}(3+2x)^{9/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{1}{105}(2x+3)^{3/2}\left(35x^3-195x^2-249x-101\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/105*((3 + 2*x)^(3/2)*(-101 - 249*x - 195*x^2 + 35*x^3))
```

IntegrateAlgebraic [A] time = 0.04, size = 49, normalized size = 0.92

$$\frac{1}{840}\left(-35(2x+3)^{9/2}+705(2x+3)^{7/2}-2289(2x+3)^{5/2}+2275(2x+3)^{3/2}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2),x]
```

```
[Out] (2275*(3 + 2*x)^(3/2) - 2289*(3 + 2*x)^(5/2) + 705*(3 + 2*x)^(7/2) - 35*(3
+ 2*x)^(9/2))/840
```

fricas [A] time = 0.38, size = 29, normalized size = 0.55

$$-\frac{1}{105}\left(70\,x^4-285\,x^3-1083\,x^2-949\,x-303\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)*(3+2*x)^(1/2),x, algorithm="fricas")
[Out] -1/105*(70*x^4 - 285*x^3 - 1083*x^2 - 949*x - 303)*sqrt(2*x + 3)
```

giac [A] time = 0.15, size = 37, normalized size = 0.70

$$-\frac{1}{24}\,(2\,x+3)^{\frac{9}{2}}+\frac{47}{56}\,(2\,x+3)^{\frac{7}{2}}-\frac{109}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{65}{24}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)*(3+2*x)^(1/2),x, algorithm="giac")
[Out] -1/24*(2*x + 3)^(9/2) + 47/56*(2*x + 3)^(7/2) - 109/40*(2*x + 3)^(5/2) + 65
/24*(2*x + 3)^(3/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(35x^3-195x^2-249x-101\right)(2x+3)^{\frac{3}{2}}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)*(2*x+3)^(1/2),x)
[Out] -1/105*(35*x^3-195*x^2-249*x-101)*(2*x+3)^(3/2)
```

maxima [A] time = 0.61, size = 37, normalized size = 0.70

$$-\frac{1}{24}\,(2\,x+3)^{\frac{9}{2}}+\frac{47}{56}\,(2\,x+3)^{\frac{7}{2}}-\frac{109}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{65}{24}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)*(3+2*x)^(1/2),x, algorithm="maxima")
[Out] -1/24*(2*x + 3)^(9/2) + 47/56*(2*x + 3)^(7/2) - 109/40*(2*x + 3)^(5/2) + 65
/24*(2*x + 3)^(3/2)
```

mupad [B] time = 0.04, size = 37, normalized size = 0.70

$$\frac{65\,(2\,x+3)^{3/2}}{24}-\frac{109\,(2\,x+3)^{5/2}}{40}+\frac{47\,(2\,x+3)^{7/2}}{56}-\frac{(2\,x+3)^{9/2}}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
[Out] (65*(2*x + 3)^(3/2))/24 - (109*(2*x + 3)^(5/2))/40 + (47*(2*x + 3)^(7/2))/5
6 - (2*x + 3)^(9/2)/24
```

sympy [A] time = 2.70, size = 44, normalized size = 0.83

$$-\frac{(2x+3)^{\frac{9}{2}}}{24}+\frac{47\,(2x+3)^{\frac{7}{2}}}{56}-\frac{109\,(2x+3)^{\frac{5}{2}}}{40}+\frac{65\,(2x+3)^{\frac{3}{2}}}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)*(3+2*x)**(1/2),x)
[Out] -(2*x + 3)**(9/2)/24 + 47*(2*x + 3)**(7/2)/56 - 109*(2*x + 3)**(5/2)/40 + 6
5*(2*x + 3)**(3/2)/24
```

3.2289 $\int \frac{(5-x)(2+5x+3x^2)}{\sqrt{3+2x}} dx$

Optimal. Leaf size=53

$$-\frac{3}{56}(2x+3)^{7/2}+\frac{47}{40}(2x+3)^{5/2}-\frac{109}{24}(2x+3)^{3/2}+\frac{65}{8}\sqrt{2x+3}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{56}(2x+3)^{7/2}+\frac{47}{40}(2x+3)^{5/2}-\frac{109}{24}(2x+3)^{3/2}+\frac{65}{8}\sqrt{2x+3}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x],x]
```

```
[Out] (65*Sqrt[3 + 2*x])/8 - (109*(3 + 2*x)^(3/2))/24 + (47*(3 + 2*x)^(5/2))/40 -
 (3*(3 + 2*x)^(7/2))/56
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{\sqrt{3+2x}}\,dx &= \int \left(\frac{65}{8\sqrt{3+2x}}-\frac{109}{8}\sqrt{3+2x}+\frac{47}{8}(3+2x)^{3/2}-\frac{3}{8}(3+2x)^{5/2}\right)dx\\ &= \frac{65}{8}\sqrt{3+2x}-\frac{109}{24}(3+2x)^{3/2}+\frac{47}{40}(3+2x)^{5/2}-\frac{3}{56}(3+2x)^{7/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{1}{105}\sqrt{2x+3}\left(45x^3-291x^2-223x-381\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x],x]
```

```
[Out] -1/105*(Sqrt[3 + 2*x]*(-381 - 223*x - 291*x^2 + 45*x^3))
```

IntegrateAlgebraic [A] time = 0.05, size = 40, normalized size = 0.75

$$-\frac{1}{840}\sqrt{2x+3}\left(45(2x+3)^3-987(2x+3)^2+3815(2x+3)-6825\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x],x]
```

```
[Out] -1/840*(Sqrt[3 + 2*x]*(-6825 + 3815*(3 + 2*x) - 987*(3 + 2*x)^2 + 45*(3 + 2
*x)^3))
```

fricas [A] time = 0.41, size = 24, normalized size = 0.45

$$-\frac{1}{105}\left(45\,x^3 - 291\,x^2 - 223\,x - 381\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="fricas")
[Out] -1/105*(45*x^3 - 291*x^2 - 223*x - 381)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 37, normalized size = 0.70

$$-\frac{3}{56}\,(2\,x+3)^{\frac{7}{2}} + \frac{47}{40}\,(2\,x+3)^{\frac{5}{2}} - \frac{109}{24}\,(2\,x+3)^{\frac{3}{2}} + \frac{65}{8}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="giac")
[Out] -3/56*(2*x + 3)^(7/2) + 47/40*(2*x + 3)^(5/2) - 109/24*(2*x + 3)^(3/2) + 65
/8*sqrt(2*x + 3)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(45x^3 - 291x^2 - 223x - 381\right)\sqrt{2x+3}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(1/2),x)
[Out] -1/105*(45*x^3-291*x^2-223*x-381)*(2*x+3)^(1/2)
```

maxima [A] time = 0.49, size = 37, normalized size = 0.70

$$-\frac{3}{56}\,(2\,x+3)^{\frac{7}{2}} + \frac{47}{40}\,(2\,x+3)^{\frac{5}{2}} - \frac{109}{24}\,(2\,x+3)^{\frac{3}{2}} + \frac{65}{8}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="maxima")
[Out] -3/56*(2*x + 3)^(7/2) + 47/40*(2*x + 3)^(5/2) - 109/24*(2*x + 3)^(3/2) + 65
/8*sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 37, normalized size = 0.70

$$\frac{65\,\sqrt{2\,x+3}}{8} - \frac{109\,(2\,x+3)^{3/2}}{24} + \frac{47\,(2\,x+3)^{5/2}}{40} - \frac{3\,(2\,x+3)^{7/2}}{56}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(1/2),x)
[Out] (65*(2*x + 3)^(1/2))/8 - (109*(2*x + 3)^(3/2))/24 + (47*(2*x + 3)^(5/2))/40
 - (3*(2*x + 3)^(7/2))/56
```

sympy [A] time = 41.28, size = 46, normalized size = 0.87

$$-\frac{3\,(2x+3)^{\frac{7}{2}}}{56} + \frac{47\,(2x+3)^{\frac{5}{2}}}{40} - \frac{109\,(2x+3)^{\frac{3}{2}}}{24} + \frac{65\sqrt{2x+3}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(1/2),x)
[Out] -3*(2*x + 3)**(7/2)/56 + 47*(2*x + 3)**(5/2)/40 - 109*(2*x + 3)**(3/2)/24 +
 65*sqrt(2*x + 3)/8
```

3.2290 $\int \frac{(5-x)(2+5x+3x^2)}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{3}{40}(2x+3)^{5/2}+\frac{47}{24}(2x+3)^{3/2}-\frac{109}{8}\sqrt{2x+3}-\frac{65}{8\sqrt{2x+3}}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{40}(2x+3)^{5/2}+\frac{47}{24}(2x+3)^{3/2}-\frac{109}{8}\sqrt{2x+3}-\frac{65}{8\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(3/2),x]
```

```
[Out] -65/(8*Sqrt[3 + 2*x]) - (109*Sqrt[3 + 2*x])/8 + (47*(3 + 2*x)^(3/2))/24 - (
3*(3 + 2*x)^(5/2))/40
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{3/2}}\,dx &= \int \left(\frac{65}{8(3+2x)^{3/2}}-\frac{109}{8\sqrt{3+2x}}+\frac{47}{8}\sqrt{3+2x}-\frac{3}{8}(3+2x)^{3/2}\right)dx\\ &= -\frac{65}{8\sqrt{3+2x}}-\frac{109}{8}\sqrt{3+2x}+\frac{47}{24}(3+2x)^{3/2}-\frac{3}{40}(3+2x)^{5/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{9x^3-77x^2+117x+501}{15\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(3/2),x]
```

```
[Out] -1/15*(501 + 117*x - 77*x^2 + 9*x^3)/Sqrt[3 + 2*x]
```

IntegrateAlgebraic [A] time = 0.04, size = 40, normalized size = 0.75

$$\frac{-9(2x+3)^3+235(2x+3)^2-1635(2x+3)-975}{120\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(3/2),x]
```

```
[Out] (-975 - 1635*(3 + 2*x) + 235*(3 + 2*x)^2 - 9*(3 + 2*x)^3)/(120*Sqrt[3 + 2*x
])
```

fricas [A] time = 0.38, size = 24, normalized size = 0.45

$$-\frac{9\,x^{3}-77\,x^{2}+117\,x+501}{15\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/15*(9*x^3 - 77*x^2 + 117*x + 501)/sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 37, normalized size = 0.70

$$-\frac{3}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{47}{24}\,(2\,x+3)^{\frac{3}{2}}-\frac{109}{8}\,\sqrt{2\,x+3}-\frac{65}{8\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] -3/40*(2*x + 3)^(5/2) + 47/24*(2*x + 3)^(3/2) - 109/8*sqrt(2*x + 3) - 65/8/
sqrt(2*x + 3)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{9x^{3}-77x^{2}+117x+501}{15\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(3/2),x)
```

```
[Out] -1/15*(9*x^3-77*x^2+117*x+501)/(2*x+3)^(1/2)
```

maxima [A] time = 0.51, size = 37, normalized size = 0.70

$$-\frac{3}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{47}{24}\,(2\,x+3)^{\frac{3}{2}}-\frac{109}{8}\,\sqrt{2\,x+3}-\frac{65}{8\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -3/40*(2*x + 3)^(5/2) + 47/24*(2*x + 3)^(3/2) - 109/8*sqrt(2*x + 3) - 65/8/
sqrt(2*x + 3)
```

mupad [B] time = 0.04, size = 37, normalized size = 0.70

$$\frac{47\,(2\,x+3)^{3/2}}{24}-\frac{109\,\sqrt{2\,x+3}}{8}-\frac{65}{8\,\sqrt{2\,x+3}}-\frac{3\,(2\,x+3)^{5/2}}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(3/2),x)
```

```
[Out] (47*(2*x + 3)^(3/2))/24 - (109*(2*x + 3)^(1/2))/8 - 65/(8*(2*x + 3)^(1/2))
- (3*(2*x + 3)^(5/2))/40
```

sympy [A] time = 19.15, size = 46, normalized size = 0.87

$$-\frac{3\,(2x+3)^{\frac{5}{2}}}{40}+\frac{47\,(2x+3)^{\frac{3}{2}}}{24}-\frac{109\sqrt{2x+3}}{8}-\frac{65}{8\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(3/2),x)
```

```
[Out] -3*(2*x + 3)**(5/2)/40 + 47*(2*x + 3)**(3/2)/24 - 109*sqrt(2*x + 3)/8 - 65/
(8*sqrt(2*x + 3))
```

3.2291 $\int \frac{(5-x)(2+5x+3x^2)}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{1}{8}(2x+3)^{3/2}+\frac{47}{8}\sqrt{2x+3}+\frac{109}{8\sqrt{2x+3}}-\frac{65}{24(2x+3)^{3/2}}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{1}{8}(2x+3)^{3/2}+\frac{47}{8}\sqrt{2x+3}+\frac{109}{8\sqrt{2x+3}}-\frac{65}{24(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(5/2),x]
```

```
[Out] -65/(24*(3 + 2*x)^(3/2)) + 109/(8*Sqrt[3 + 2*x]) + (47*Sqrt[3 + 2*x])/8 - (
3 + 2*x)^(3/2)/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{5/2}}\,dx &= \int \left(\frac{65}{8(3+2x)^{5/2}}-\frac{109}{8(3+2x)^{3/2}}+\frac{47}{8\sqrt{3+2x}}-\frac{3}{8}\sqrt{3+2x}\right)dx\\ &= -\frac{65}{24(3+2x)^{3/2}}+\frac{109}{8\sqrt{3+2x}}+\frac{47}{8}\sqrt{3+2x}-\frac{1}{8}(3+2x)^{3/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{3x^3-57x^2-273x-263}{3(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/3*(-263 - 273*x - 57*x^2 + 3*x^3)/(3 + 2*x)^(3/2)
```

IntegrateAlgebraic [A] time = 0.05, size = 40, normalized size = 0.75

$$\frac{-3(2x+3)^3+141(2x+3)^2+327(2x+3)-65}{24(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(5/2),x]
```

```
[Out] (-65 + 327*(3 + 2*x) + 141*(3 + 2*x)^2 - 3*(3 + 2*x)^3)/(24*(3 + 2*x)^(3/2)
)
```

fricas [A] time = 0.38, size = 36, normalized size = 0.68

$$-\frac{\left(3\,x^3-57\,x^2-273\,x-263\right)\sqrt{2\,x+3}}{3\left(4\,x^2+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(5/2),x, algorithm="fricas")
[Out] -1/3*(3*x^3 - 57*x^2 - 273*x - 263)*sqrt(2*x + 3)/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.20, size = 33, normalized size = 0.62

$$-\frac{1}{8}\,(2\,x+3)^{\frac{3}{2}}+\frac{47}{8}\,\sqrt{2\,x+3}+\frac{327\,x+458}{12\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(5/2),x, algorithm="giac")
[Out] -1/8*(2*x + 3)^(3/2) + 47/8*sqrt(2*x + 3) + 1/12*(327*x + 458)/(2*x + 3)^(3
/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{3x^3-57x^2-273x-263}{3\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(5/2),x)
[Out] -1/3*(3*x^3-57*x^2-273*x-263)/(2*x+3)^(3/2)
```

maxima [A] time = 0.58, size = 33, normalized size = 0.62

$$-\frac{1}{8}\,(2\,x+3)^{\frac{3}{2}}+\frac{47}{8}\,\sqrt{2\,x+3}+\frac{327\,x+458}{12\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(5/2),x, algorithm="maxima")
[Out] -1/8*(2*x + 3)^(3/2) + 47/8*sqrt(2*x + 3) + 1/12*(327*x + 458)/(2*x + 3)^(3
/2)
```

mupad [B] time = 0.05, size = 38, normalized size = 0.72

$$\frac{654\,x+141\,{(2\,x+3)}^2-3\,{(2\,x+3)}^3+916}{\sqrt{2\,x+3}\,\left(48\,x+72\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(5/2),x)
[Out] (654*x + 141*(2*x + 3)^2 - 3*(2*x + 3)^3 + 916)/((2*x + 3)^(1/2)*(48*x + 72
))
```

sympy [B] time = 0.66, size = 102, normalized size = 1.92

$$-\frac{3x^3}{6x\sqrt{2x+3}+9\sqrt{2x+3}}+\frac{57x^2}{6x\sqrt{2x+3}+9\sqrt{2x+3}}+\frac{273x}{6x\sqrt{2x+3}+9\sqrt{2x+3}}+\frac{263}{6x\sqrt{2x+3}+9\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(5/2),x)
```

```
[Out] -3*x**3/(6*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)) + 57*x**2/(6*x*sqrt(2*x + 3)
+ 9*sqrt(2*x + 3)) + 273*x/(6*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)) + 263/(6*x
*sqrt(2*x + 3) + 9*sqrt(2*x + 3))
```

3.2292 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{3}{8}\sqrt{2x+3}-\frac{47}{8\sqrt{2x+3}}+\frac{109}{24(2x+3)^{3/2}}-\frac{13}{8(2x+3)^{5/2}}$$

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{8}\sqrt{2x+3}-\frac{47}{8\sqrt{2x+3}}+\frac{109}{24(2x+3)^{3/2}}-\frac{13}{8(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(7/2),x]
```

```
[Out] -13/(8*(3 + 2*x)^(5/2)) + 109/(24*(3 + 2*x)^(3/2)) - 47/(8*Sqrt[3 + 2*x]) -
 (3*Sqrt[3 + 2*x])/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{7/2}}\,dx &= \int \left(\frac{65}{8(3+2x)^{7/2}}-\frac{109}{8(3+2x)^{5/2}}+\frac{47}{8(3+2x)^{3/2}}-\frac{3}{8\sqrt{3+2x}}\right)dx\\ &= -\frac{13}{8(3+2x)^{5/2}}+\frac{109}{24(3+2x)^{3/2}}-\frac{47}{8\sqrt{3+2x}}-\frac{3}{8}\sqrt{3+2x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{9x^3+111x^2+245x+153}{3(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(7/2),x]
```

```
[Out] -1/3*(153 + 245*x + 111*x^2 + 9*x^3)/(3 + 2*x)^(5/2)
```

IntegrateAlgebraic [A] time = 0.05, size = 40, normalized size = 0.75

$$\frac{-9(2x+3)^3-141(2x+3)^2+109(2x+3)-39}{24(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(7/2),x]
```

```
[Out] (-39 + 109*(3 + 2*x) - 141*(3 + 2*x)^2 - 9*(3 + 2*x)^3)/(24*(3 + 2*x)^(5/2)
)
```

fricas [A] time = 0.39, size = 41, normalized size = 0.77

$$-\frac{\left(9\,x^{3}+111\,x^{2}+245\,x+153\right)\sqrt{2\,x+3}}{3\,\left(8\,x^{3}+36\,x^{2}+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/3*(9*x^3 + 111*x^2 + 245*x + 153)*sqrt(2*x + 3)/(8*x^3 + 36*x^2 + 54*x +
 27)
```

giac [A] time = 0.21, size = 33, normalized size = 0.62

$$-\frac{3}{8}\,\sqrt{2\,x+3}-\frac{141\,(2\,x+3)^{2}-218\,x-288}{24\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] -3/8*sqrt(2*x + 3) - 1/24*(141*(2*x + 3)^2 - 218*x - 288)/(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{9x^{3}+111x^{2}+245x+153}{3\,(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(7/2),x)
```

```
[Out] -1/3*(9*x^3+111*x^2+245*x+153)/(2*x+3)^(5/2)
```

maxima [A] time = 0.46, size = 33, normalized size = 0.62

$$-\frac{3}{8}\,\sqrt{2\,x+3}-\frac{141\,(2\,x+3)^{2}-218\,x-288}{24\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -3/8*sqrt(2*x + 3) - 1/24*(141*(2*x + 3)^2 - 218*x - 288)/(2*x + 3)^(5/2)
```

mupad [B] time = 2.37, size = 24, normalized size = 0.45

$$-\frac{9\,x^{3}+111\,x^{2}+245\,x+153}{3\,(2\,x+3)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(7/2),x)
```

```
[Out] -(245*x + 111*x^2 + 9*x^3 + 153)/(3*(2*x + 3)^(5/2))
```

sympy [B] time = 1.37, size = 158, normalized size = 2.98

$$-\frac{9x^{3}}{12x^{2}\sqrt{2x+3}+36x\sqrt{2x+3}+27\sqrt{2x+3}}-\frac{111x^{2}}{12x^{2}\sqrt{2x+3}+36x\sqrt{2x+3}+27\sqrt{2x+3}}-\frac{245x}{12x^{2}\sqrt{2x+3}+36x\sqrt{2x+3}+27\sqrt{2x+3}}-\frac{153}{12x^{2}\sqrt{2x+3}+36x\sqrt{2x+3}+27\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(7/2),x)
```

```
[Out] -9*x**3/(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)) - 1
11*x**2/(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)) - 2
45*x/(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)) - 153/
(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3))
```

3.2293 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^2\,dx$

Optimal. Leaf size=79

$$-\frac{9}{608}(2x+3)^{19/2}+\frac{165}{544}(2x+3)^{17/2}-\frac{359}{240}(2x+3)^{15/2}+\frac{651}{208}(2x+3)^{13/2}-\frac{1065}{352}(2x+3)^{11/2}+\frac{325}{288}(2x+3)^{9/2}$$

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.037$, Rules used = {771}

$$-\frac{9}{608}(2x+3)^{19/2}+\frac{165}{544}(2x+3)^{17/2}-\frac{359}{240}(2x+3)^{15/2}+\frac{651}{208}(2x+3)^{13/2}-\frac{1065}{352}(2x+3)^{11/2}+\frac{325}{288}(2x+3)^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (325*(3 + 2*x)^(9/2))/288 - (1065*(3 + 2*x)^(11/2))/352 + (651*(3 + 2*x)^(1
3/2))/208 - (359*(3 + 2*x)^(15/2))/240 + (165*(3 + 2*x)^(17/2))/544 - (9*(3
 + 2*x)^(19/2))/608
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}(3+2x)^{7/2}-\frac{1065}{32}(3+2x)^{9/2}+\frac{651}{16}(3+2x)^{11/2}-\frac{359}{16}(3+\right.\\ &= \frac{325}{288}(3+2x)^{9/2}-\frac{1065}{352}(3+2x)^{11/2}+\frac{651}{208}(3+2x)^{13/2}-\frac{359}{240}(3+2x\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{(2x+3)^{9/2}\left(984555x^5-2702700x^4-13495911x^3-17037702x^2-8846388x-1670104\right)}{2078505}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/2078505*((3 + 2*x)^(9/2)*(-1670104 - 8846388*x - 17037702*x^2 - 13495911
*x^3 - 2702700*x^4 + 984555*x^5))
```

IntegrateAlgebraic [A] time = 0.04, size = 71, normalized size = 0.90

$$\frac{-984555(2x+3)^{19/2}+20173725(2x+3)^{17/2}-99491106(2x+3)^{15/2}+208170270(2x+3)^{13/2}-201237075(2x+3)^{11/2}+75057125(2x+3)^{9/2}}{66512160}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (75057125*(3 + 2*x)^(9/2) - 201237075*(3 + 2*x)^(11/2) + 208170270*(3 + 2*x
)^(13/2) - 99491106*(3 + 2*x)^(15/2) + 20173725*(3 + 2*x)^(17/2) - 984555*(
3 + 2*x)^(19/2))/66512160
```

fricas [A] time = 0.40, size = 54, normalized size = 0.68

$$-\frac{1}{2078505}\left(15752880\,x^{9}+51274080\,x^{8}-262729896\,x^{7}-1939330008\,x^{6}-5196312621\,x^{5}-7690154020\,x^{4}-6844462215\,x^{3}-3651616134\,x^{2}-1077299892\,x-135278424\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/2078505*(15752880*x^9 + 51274080*x^8 - 262729896*x^7 - 1939330008*x^6 -
5196312621*x^5 - 7690154020*x^4 - 6844462215*x^3 - 3651616134*x^2 - 1077299
892*x - 135278424)*sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 55, normalized size = 0.70

$$-\frac{9}{608}\,(2\,x+3)^{\frac{19}{2}}+\frac{165}{544}\,(2\,x+3)^{\frac{17}{2}}-\frac{359}{240}\,(2\,x+3)^{\frac{15}{2}}+\frac{651}{208}\,(2\,x+3)^{\frac{13}{2}}-\frac{1065}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{325}{288}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -9/608*(2*x + 3)^(19/2) + 165/544*(2*x + 3)^(17/2) - 359/240*(2*x + 3)^(15/
2) + 651/208*(2*x + 3)^(13/2) - 1065/352*(2*x + 3)^(11/2) + 325/288*(2*x +
3)^(9/2)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{\left(984555x^{5}-2702700x^{4}-13495911x^{3}-17037702x^{2}-8846388x-1670104\right)(2x+3)^{\frac{9}{2}}}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)*(3*x^2+5*x+2)^2,x)
```

```
[Out] -1/2078505*(984555*x^5-2702700*x^4-13495911*x^3-17037702*x^2-8846388*x-1670
104)*(2*x+3)^(9/2)
```

maxima [A] time = 0.53, size = 55, normalized size = 0.70

$$-\frac{9}{608}\,(2\,x+3)^{\frac{19}{2}}+\frac{165}{544}\,(2\,x+3)^{\frac{17}{2}}-\frac{359}{240}\,(2\,x+3)^{\frac{15}{2}}+\frac{651}{208}\,(2\,x+3)^{\frac{13}{2}}-\frac{1065}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{325}{288}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -9/608*(2*x + 3)^(19/2) + 165/544*(2*x + 3)^(17/2) - 359/240*(2*x + 3)^(15/
2) + 651/208*(2*x + 3)^(13/2) - 1065/352*(2*x + 3)^(11/2) + 325/288*(2*x +
3)^(9/2)
```

mupad [B] time = 2.39, size = 55, normalized size = 0.70

$$\frac{325\,(2\,x+3)^{9/2}}{288}-\frac{1065\,(2\,x+3)^{11/2}}{352}+\frac{651\,(2\,x+3)^{13/2}}{208}-\frac{359\,(2\,x+3)^{15/2}}{240}+\frac{165\,(2\,x+3)^{17/2}}{544}-\frac{9\,(2\,x+3)^{19/2}}{608}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(7/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (325*(2*x + 3)^(9/2))/288 - (1065*(2*x + 3)^(11/2))/352 + (651*(2*x + 3)^(1
3/2))/208 - (359*(2*x + 3)^(15/2))/240 + (165*(2*x + 3)^(17/2))/544 - (9*(2
*x + 3)^(19/2))/608
```

sympy [B] time = 5.88, size = 146, normalized size = 1.85

$$-\frac{144x^9\sqrt{2x+3}}{19}-\frac{7968x^8\sqrt{2x+3}}{323}+\frac{612424x^7\sqrt{2x+3}}{4845}+\frac{19589192x^6\sqrt{2x+3}}{20995}+\frac{577368069x^5\sqrt{2x+3}}{230945}+\frac{1538030804x^4\sqrt{2x+3}}{415701}+\frac{456297481x^3\sqrt{2x+3}}{138567}+\frac{405735126x^2\sqrt{2x+3}}{230945}+\frac{119699988x\sqrt{2x+3}}{230945}+\frac{15030936\sqrt{2x+3}}{230945}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)*(3*x**2+5*x+2)**2,x)
```

```
[Out] -144*x**9*sqrt(2*x + 3)/19 - 7968*x**8*sqrt(2*x + 3)/323 + 612424*x**7*sqrt
(2*x + 3)/4845 + 19589192*x**6*sqrt(2*x + 3)/20995 + 577368069*x**5*sqrt(2*
x + 3)/230945 + 1538030804*x**4*sqrt(2*x + 3)/415701 + 456297481*x**3*sqrt(
2*x + 3)/138567 + 405735126*x**2*sqrt(2*x + 3)/230945 + 119699988*x*sqrt(2*
x + 3)/230945 + 15030936*sqrt(2*x + 3)/230945
```

3.2294 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^2\,dx$

Optimal. Leaf size=79

$$-\frac{9}{544}(2x+3)^{17/2}+\frac{11}{32}(2x+3)^{15/2}-\frac{359}{208}(2x+3)^{13/2}+\frac{651}{176}(2x+3)^{11/2}-\frac{355}{96}(2x+3)^{9/2}+\frac{325}{224}(2x+3)^{7/2}$$

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.037$, Rules used = {771}

$$-\frac{9}{544}(2x+3)^{17/2}+\frac{11}{32}(2x+3)^{15/2}-\frac{359}{208}(2x+3)^{13/2}+\frac{651}{176}(2x+3)^{11/2}-\frac{355}{96}(2x+3)^{9/2}+\frac{325}{224}(2x+3)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (325*(3 + 2*x)^(7/2))/224 - (355*(3 + 2*x)^(9/2))/96 + (651*(3 + 2*x)^(11/2
))/176 - (359*(3 + 2*x)^(13/2))/208 + (11*(3 + 2*x)^(15/2))/32 - (9*(3 + 2*
x)^(17/2))/544
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}(3+2x)^{5/2}-\frac{1065}{32}(3+2x)^{7/2}+\frac{651}{16}(3+2x)^{9/2}-\frac{359}{16}(3+2x)\right.\\ &= \frac{325}{224}(3+2x)^{7/2}-\frac{355}{96}(3+2x)^{9/2}+\frac{651}{176}(3+2x)^{11/2}-\frac{359}{208}(3+2x)^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{(2x+3)^{7/2}\left(27027x^5-78078x^4-371679x^3-461664x^2-236768x-44388\right)}{51051}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/51051*((3 + 2*x)^(7/2)*(-44388 - 236768*x - 461664*x^2 - 371679*x^3 - 78
078*x^4 + 27027*x^5))
```

IntegrateAlgebraic [A] time = 0.05, size = 71, normalized size = 0.90

$$\frac{-27027(2x+3)^{17/2}+561561(2x+3)^{15/2}-2819586(2x+3)^{13/2}+6042582(2x+3)^{11/2}-6041035(2x+3)^{9/2}+2370225(2x+3)^{7/2}}{1633632}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (2370225*(3 + 2*x)^(7/2) - 6041035*(3 + 2*x)^(9/2) + 6042582*(3 + 2*x)^(11/
2) - 2819586*(3 + 2*x)^(13/2) + 561561*(3 + 2*x)^(15/2) - 27027*(3 + 2*x)^(
17/2))/1633632
```

fricas [A] time = 0.38, size = 49, normalized size = 0.62

$$-\frac{1}{51051}\left(216216\,x^{8}+348348\,x^{7}-4324782\,x^{6}-20560239\,x^{5}-40692820\,x^{4}-43843941\,x^{3}-26848368\,x^{2}-8789688\,x-1198476\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/51051*(216216*x^8 + 348348*x^7 - 4324782*x^6 - 20560239*x^5 - 40692820*x
^4 - 43843941*x^3 - 26848368*x^2 - 8789688*x - 1198476)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 55, normalized size = 0.70

$$-\frac{9}{544}\,(2\,x+3)^{\frac{17}{2}}+\frac{11}{32}\,(2\,x+3)^{\frac{15}{2}}-\frac{359}{208}\,(2\,x+3)^{\frac{13}{2}}+\frac{651}{176}\,(2\,x+3)^{\frac{11}{2}}-\frac{355}{96}\,(2\,x+3)^{\frac{9}{2}}+\frac{325}{224}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -9/544*(2*x + 3)^(17/2) + 11/32*(2*x + 3)^(15/2) - 359/208*(2*x + 3)^(13/2)
 + 651/176*(2*x + 3)^(11/2) - 355/96*(2*x + 3)^(9/2) + 325/224*(2*x + 3)^(7
/2)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{\left(27027x^{5}-78078x^{4}-371679x^{3}-461664x^{2}-236768x-44388\right)(2x+3)^{\frac{7}{2}}}{51051}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^2,x)
```

```
[Out] -1/51051*(27027*x^5-78078*x^4-371679*x^3-461664*x^2-236768*x-44388)*(2*x+3)
^(7/2)
```

maxima [A] time = 0.48, size = 55, normalized size = 0.70

$$-\frac{9}{544}\,(2\,x+3)^{\frac{17}{2}}+\frac{11}{32}\,(2\,x+3)^{\frac{15}{2}}-\frac{359}{208}\,(2\,x+3)^{\frac{13}{2}}+\frac{651}{176}\,(2\,x+3)^{\frac{11}{2}}-\frac{355}{96}\,(2\,x+3)^{\frac{9}{2}}+\frac{325}{224}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -9/544*(2*x + 3)^(17/2) + 11/32*(2*x + 3)^(15/2) - 359/208*(2*x + 3)^(13/2)
 + 651/176*(2*x + 3)^(11/2) - 355/96*(2*x + 3)^(9/2) + 325/224*(2*x + 3)^(7
/2)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{325\,(2\,x+3)^{7/2}}{224}-\frac{355\,(2\,x+3)^{9/2}}{96}+\frac{651\,(2\,x+3)^{11/2}}{176}-\frac{359\,(2\,x+3)^{13/2}}{208}+\frac{11\,(2\,x+3)^{15/2}}{32}-\frac{9\,(2\,x+3)^{17/2}}{544}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (325*(2*x + 3)^(7/2))/224 - (355*(2*x + 3)^(9/2))/96 + (651*(2*x + 3)^(11/2
))/176 - (359*(2*x + 3)^(13/2))/208 + (11*(2*x + 3)^(15/2))/32 - (9*(2*x +
3)^(17/2))/544
```

sympy [A] time = 29.68, size = 70, normalized size = 0.89

$$-\frac{9(2x+3)^{\frac{17}{2}}}{544}+\frac{11(2x+3)^{\frac{15}{2}}}{32}-\frac{359(2x+3)^{\frac{13}{2}}}{208}+\frac{651(2x+3)^{\frac{11}{2}}}{176}-\frac{355(2x+3)^{\frac{9}{2}}}{96}+\frac{325(2x+3)^{\frac{7}{2}}}{224}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**2,x)
```

```
[Out] -9*(2*x + 3)**(17/2)/544 + 11*(2*x + 3)**(15/2)/32 - 359*(2*x + 3)**(13/2)/
208 + 651*(2*x + 3)**(11/2)/176 - 355*(2*x + 3)**(9/2)/96 + 325*(2*x + 3)**
(7/2)/224
```

3.2295 $\int (5-x)(3+2x)^{3/2} \left(2+5x+3x^2\right)^2 \, dx$

Optimal. Leaf size=79

$$-\frac{3}{160}(2x+3)^{15/2}+\frac{165}{416}(2x+3)^{13/2}-\frac{359}{176}(2x+3)^{11/2}+\frac{217}{48}(2x+3)^{9/2}-\frac{1065}{224}(2x+3)^{7/2}+\frac{65}{32}(2x+3)^{5/2}$$

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{3}{160}(2x+3)^{15/2}+\frac{165}{416}(2x+3)^{13/2}-\frac{359}{176}(2x+3)^{11/2}+\frac{217}{48}(2x+3)^{9/2}-\frac{1065}{224}(2x+3)^{7/2}+\frac{65}{32}(2x+3)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (65*(3 + 2*x)^(5/2))/32 - (1065*(3 + 2*x)^(7/2))/224 + (217*(3 + 2*x)^(9/2)
)/48 - (359*(3 + 2*x)^(11/2))/176 + (165*(3 + 2*x)^(13/2))/416 - (3*(3 + 2*
x)^(15/2))/160
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}(3+2x)^{3/2}-\frac{1065}{32}(3+2x)^{5/2}+\frac{651}{16}(3+2x)^{7/2}-\frac{359}{16}(3+2\right.\\ &= \frac{65}{32}(3+2x)^{5/2}-\frac{1065}{224}(3+2x)^{7/2}+\frac{217}{48}(3+2x)^{9/2}-\frac{359}{176}(3+2x)^{11/}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{(2x+3)^{5/2}\left(9009x^5-27720x^4-124005x^3-151270x^2-76260x-14304\right)}{15015}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/15015*((3 + 2*x)^(5/2)*(-14304 - 76260*x - 151270*x^2 - 124005*x^3 - 277
20*x^4 + 9009*x^5))
```

IntegrateAlgebraic [A] time = 0.04, size = 71, normalized size = 0.90

$$\frac{-9009(2x+3)^{15/2}+190575(2x+3)^{13/2}-980070(2x+3)^{11/2}+2172170(2x+3)^{9/2}-2284425(2x+3)^{7/2}+975975(2x+3)^{5/2}}{480480}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (975975*(3 + 2*x)^(5/2) - 2284425*(3 + 2*x)^(7/2) + 2172170*(3 + 2*x)^(9/2)
 - 980070*(3 + 2*x)^(11/2) + 190575*(3 + 2*x)^(13/2) - 9009*(3 + 2*x)^(15/2
))/480480
```

fricas [A] time = 0.39, size = 44, normalized size = 0.56

$$-\frac{1}{15015}\left(36036\,x^{7}-2772\,x^{6}-747579\,x^{5}-2342620\,x^{4}-3236325\,x^{3}-2333766\,x^{2}-857988\,x-128736\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/15015*(36036*x^7 - 2772*x^6 - 747579*x^5 - 2342620*x^4 - 3236325*x^3 - 2
333766*x^2 - 857988*x - 128736)*sqrt(2*x + 3)
```

giac [A] time = 0.18, size = 55, normalized size = 0.70

$$-\frac{3}{160}\,(2\,x+3)^{\frac{15}{2}}+\frac{165}{416}\,(2\,x+3)^{\frac{13}{2}}-\frac{359}{176}\,(2\,x+3)^{\frac{11}{2}}+\frac{217}{48}\,(2\,x+3)^{\frac{9}{2}}-\frac{1065}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{65}{32}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -3/160*(2*x + 3)^(15/2) + 165/416*(2*x + 3)^(13/2) - 359/176*(2*x + 3)^(11/
2) + 217/48*(2*x + 3)^(9/2) - 1065/224*(2*x + 3)^(7/2) + 65/32*(2*x + 3)^(5
/2)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{\left(9009x^{5}-27720x^{4}-124005x^{3}-151270x^{2}-76260x-14304\right)(2x+3)^{\frac{5}{2}}}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^2,x)
```

```
[Out] -1/15015*(9009*x^5-27720*x^4-124005*x^3-151270*x^2-76260*x-14304)*(2*x+3)^(
5/2)
```

maxima [A] time = 0.47, size = 55, normalized size = 0.70

$$-\frac{3}{160}\,(2\,x+3)^{\frac{15}{2}}+\frac{165}{416}\,(2\,x+3)^{\frac{13}{2}}-\frac{359}{176}\,(2\,x+3)^{\frac{11}{2}}+\frac{217}{48}\,(2\,x+3)^{\frac{9}{2}}-\frac{1065}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{65}{32}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -3/160*(2*x + 3)^(15/2) + 165/416*(2*x + 3)^(13/2) - 359/176*(2*x + 3)^(11/
2) + 217/48*(2*x + 3)^(9/2) - 1065/224*(2*x + 3)^(7/2) + 65/32*(2*x + 3)^(5
/2)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{65\,(2\,x+3)^{5/2}}{32}-\frac{1065\,(2\,x+3)^{7/2}}{224}+\frac{217\,(2\,x+3)^{9/2}}{48}-\frac{359\,(2\,x+3)^{11/2}}{176}+\frac{165\,(2\,x+3)^{13/2}}{416}-\frac{3\,(2\,x+3)^{15/2}}{160}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (65*(2*x + 3)^(5/2))/32 - (1065*(2*x + 3)^(7/2))/224 + (217*(2*x + 3)^(9/2)
)/48 - (359*(2*x + 3)^(11/2))/176 + (165*(2*x + 3)^(13/2))/416 - (3*(2*x +
3)^(15/2))/160
```

sympy [A] time = 23.80, size = 70, normalized size = 0.89

$$-\frac{3(2x+3)^{\frac{15}{2}}}{160}+\frac{165(2x+3)^{\frac{13}{2}}}{416}-\frac{359(2x+3)^{\frac{11}{2}}}{176}+\frac{217(2x+3)^{\frac{9}{2}}}{48}-\frac{1065(2x+3)^{\frac{7}{2}}}{224}+\frac{65(2x+3)^{\frac{5}{2}}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**2,x)
```

```
[Out] -3*(2*x + 3)**(15/2)/160 + 165*(2*x + 3)**(13/2)/416 - 359*(2*x + 3)**(11/2
)/176 + 217*(2*x + 3)**(9/2)/48 - 1065*(2*x + 3)**(7/2)/224 + 65*(2*x + 3)*
*(5/2)/32
```

3.2296 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^2\,dx$

Optimal. Leaf size=79

$$-\frac{9}{416}(2x+3)^{13/2}+\frac{15}{32}(2x+3)^{11/2}-\frac{359}{144}(2x+3)^{9/2}+\frac{93}{16}(2x+3)^{7/2}-\frac{213}{32}(2x+3)^{5/2}+\frac{325}{96}(2x+3)^{3/2}$$

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{416}(2x+3)^{13/2}+\frac{15}{32}(2x+3)^{11/2}-\frac{359}{144}(2x+3)^{9/2}+\frac{93}{16}(2x+3)^{7/2}-\frac{213}{32}(2x+3)^{5/2}+\frac{325}{96}(2x+3)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (325*(3 + 2*x)^(3/2))/96 - (213*(3 + 2*x)^(5/2))/32 + (93*(3 + 2*x)^(7/2))/
16 - (359*(3 + 2*x)^(9/2))/144 + (15*(3 + 2*x)^(11/2))/32 - (9*(3 + 2*x)^(1
3/2))/416
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^2\,dx = \int \left(\frac{325}{32}\sqrt{3+2x}-\frac{1065}{32}(3+2x)^{3/2}+\frac{651}{16}(3+2x)^{5/2}-\frac{359}{16}(3+2x)^{7/2}+\right.$$
$$=\frac{325}{96}(3+2x)^{3/2}-\frac{213}{32}(3+2x)^{5/2}+\frac{93}{16}(3+2x)^{7/2}-\frac{359}{144}(3+2x)^{9/2}+\frac{15}{32}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 0.48

$$-\frac{1}{117}(2x+3)^{3/2}\left(81x^5-270x^4-1109x^3-1332x^2-648x-132\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/117*((3 + 2*x)^(3/2)*(-132 - 648*x - 1332*x^2 - 1109*x^3 - 270*x^4 + 81*
x^5))
```

IntegrateAlgebraic [A] time = 0.06, size = 58, normalized size = 0.73

$$-\frac{(2x+3)^{3/2}\left(81(2x+3)^5-1755(2x+3)^4+9334(2x+3)^3-21762(2x+3)^2+24921(2x+3)-12675\right)}{3744}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/3744*((3 + 2*x)^(3/2)*(-12675 + 24921*(3 + 2*x) - 21762*(3 + 2*x)^2 + 93
34*(3 + 2*x)^3 - 1755*(3 + 2*x)^4 + 81*(3 + 2*x)^5))
```

fricas [A] time = 0.39, size = 39, normalized size = 0.49

$$-\frac{1}{117}\left(162\,x^{6}-297\,x^{5}-3028\,x^{4}-5991\,x^{3}-5292\,x^{2}-2208\,x-396\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/117*(162*x^6 - 297*x^5 - 3028*x^4 - 5991*x^3 - 5292*x^2 - 2208*x - 396)*
sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 55, normalized size = 0.70

$$-\frac{9}{416}\,(2\,x+3)^{\frac{13}{2}}+\frac{15}{32}\,(2\,x+3)^{\frac{11}{2}}-\frac{359}{144}\,(2\,x+3)^{\frac{9}{2}}+\frac{93}{16}\,(2\,x+3)^{\frac{7}{2}}-\frac{213}{32}\,(2\,x+3)^{\frac{5}{2}}+\frac{325}{96}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -9/416*(2*x + 3)^(13/2) + 15/32*(2*x + 3)^(11/2) - 359/144*(2*x + 3)^(9/2)
+ 93/16*(2*x + 3)^(7/2) - 213/32*(2*x + 3)^(5/2) + 325/96*(2*x + 3)^(3/2)
```

maple [A] time = 0.00, size = 35, normalized size = 0.44

$$-\frac{\left(81x^{5}-270x^{4}-1109x^{3}-1332x^{2}-648x-132\right)(2x+3)^{\frac{3}{2}}}{117}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2*(2*x+3)^(1/2),x)
```

```
[Out] -1/117*(81*x^5-270*x^4-1109*x^3-1332*x^2-648*x-132)*(2*x+3)^(3/2)
```

maxima [A] time = 0.64, size = 55, normalized size = 0.70

$$-\frac{9}{416}\,(2\,x+3)^{\frac{13}{2}}+\frac{15}{32}\,(2\,x+3)^{\frac{11}{2}}-\frac{359}{144}\,(2\,x+3)^{\frac{9}{2}}+\frac{93}{16}\,(2\,x+3)^{\frac{7}{2}}-\frac{213}{32}\,(2\,x+3)^{\frac{5}{2}}+\frac{325}{96}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -9/416*(2*x + 3)^(13/2) + 15/32*(2*x + 3)^(11/2) - 359/144*(2*x + 3)^(9/2)
+ 93/16*(2*x + 3)^(7/2) - 213/32*(2*x + 3)^(5/2) + 325/96*(2*x + 3)^(3/2)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{325\,(2\,x+3)^{3/2}}{96}-\frac{213\,(2\,x+3)^{5/2}}{32}+\frac{93\,(2\,x+3)^{7/2}}{16}-\frac{359\,(2\,x+3)^{9/2}}{144}+\frac{15\,(2\,x+3)^{11/2}}{32}-\frac{9\,(2\,x+3)^{13/2}}{416}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (325*(2*x + 3)^(3/2))/96 - (213*(2*x + 3)^(5/2))/32 + (93*(2*x + 3)^(7/2))/
16 - (359*(2*x + 3)^(9/2))/144 + (15*(2*x + 3)^(11/2))/32 - (9*(2*x + 3)^(1
3/2))/416
```

sympy [A] time = 3.56, size = 70, normalized size = 0.89

$$-\frac{9(2x+3)^{\frac{13}{2}}}{416}+\frac{15(2x+3)^{\frac{11}{2}}}{32}-\frac{359(2x+3)^{\frac{9}{2}}}{144}+\frac{93(2x+3)^{\frac{7}{2}}}{16}-\frac{213(2x+3)^{\frac{5}{2}}}{32}+\frac{325(2x+3)^{\frac{3}{2}}}{96}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2*(3+2*x)**(1/2),x)
```

```
[Out] -9*(2*x + 3)**(13/2)/416 + 15*(2*x + 3)**(11/2)/32 - 359*(2*x + 3)**(9/2)/1
44 + 93*(2*x + 3)**(7/2)/16 - 213*(2*x + 3)**(5/2)/32 + 325*(2*x + 3)**(3/2
)/96
```

3.2297 $\int \frac{(5-x)(2+5x+3x^2)^2}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=79

$$-\frac{9}{352}(2x+3)^{11/2}+\frac{55}{96}(2x+3)^{9/2}-\frac{359}{112}(2x+3)^{7/2}+\frac{651}{80}(2x+3)^{5/2}-\frac{355}{32}(2x+3)^{3/2}+\frac{325}{32}\sqrt{2x+3}$$

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{352}(2x+3)^{11/2}+\frac{55}{96}(2x+3)^{9/2}-\frac{359}{112}(2x+3)^{7/2}+\frac{651}{80}(2x+3)^{5/2}-\frac{355}{32}(2x+3)^{3/2}+\frac{325}{32}\sqrt{2x+3}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/Sqrt[3 + 2*x],x]
```

```
[Out] (325*Sqrt[3 + 2*x])/32 - (355*(3 + 2*x)^(3/2))/32 + (651*(3 + 2*x)^(5/2))/8
0 - (359*(3 + 2*x)^(7/2))/112 + (55*(3 + 2*x)^(9/2))/96 - (9*(3 + 2*x)^(11/
2))/352
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{\sqrt{3+2x}}\,dx &= \int \left(\frac{325}{32\sqrt{3+2x}}-\frac{1065}{32}\sqrt{3+2x}+\frac{651}{16}(3+2x)^{3/2}-\frac{359}{16}(3+2x)^{5/2}+\frac{165}{32}(3\right.\\ &= \frac{325}{32}\sqrt{3+2x}-\frac{355}{32}(3+2x)^{3/2}+\frac{651}{80}(3+2x)^{5/2}-\frac{359}{112}(3+2x)^{7/2}+\frac{55}{96}(3+2\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{\sqrt{2x+3}\left(945x^5-3500x^4-12645x^3-15354x^2-6252x-4344\right)}{1155}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/Sqrt[3 + 2*x],x]
```

```
[Out] -1/1155*(Sqrt[3 + 2*x]*(-4344 - 6252*x - 15354*x^2 - 12645*x^3 - 3500*x^4 +
 945*x^5))
```

IntegrateAlgebraic [A] time = 0.04, size = 71, normalized size = 0.90

$$\frac{-945(2x+3)^{11/2}+21175(2x+3)^{9/2}-118470(2x+3)^{7/2}+300762(2x+3)^{5/2}-410025(2x+3)^{3/2}+375375\sqrt{2x+3}}{36960}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^2)/Sqrt[3 + 2*x],x]
```

```
[Out] (375375*Sqrt[3 + 2*x] - 410025*(3 + 2*x)^(3/2) + 300762*(3 + 2*x)^(5/2) - 1
18470*(3 + 2*x)^(7/2) + 21175*(3 + 2*x)^(9/2) - 945*(3 + 2*x)^(11/2))/36960
```

fricas [A] time = 0.39, size = 34, normalized size = 0.43

$$-\frac{1}{1155}\left(945\,x^{5}-3500\,x^{4}-12645\,x^{3}-15354\,x^{2}-6252\,x-4344\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/1155*(945*x^5 - 3500*x^4 - 12645*x^3 - 15354*x^2 - 6252*x - 4344)*sqrt(2
*x + 3)
```

giac [A] time = 0.17, size = 55, normalized size = 0.70

$$-\frac{9}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{55}{96}\,(2\,x+3)^{\frac{9}{2}}-\frac{359}{112}\,(2\,x+3)^{\frac{7}{2}}+\frac{651}{80}\,(2\,x+3)^{\frac{5}{2}}-\frac{355}{32}\,(2\,x+3)^{\frac{3}{2}}+\frac{325}{32}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -9/352*(2*x + 3)^(11/2) + 55/96*(2*x + 3)^(9/2) - 359/112*(2*x + 3)^(7/2) +
 651/80*(2*x + 3)^(5/2) - 355/32*(2*x + 3)^(3/2) + 325/32*sqrt(2*x + 3)
```

maple [A] time = 0.00, size = 35, normalized size = 0.44

$$-\frac{\left(945x^{5}-3500x^{4}-12645x^{3}-15354x^{2}-6252x-4344\right)\sqrt{2x+3}}{1155}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(1/2),x)
```

```
[Out] -1/1155*(945*x^5-3500*x^4-12645*x^3-15354*x^2-6252*x-4344)*(2*x+3)^(1/2)
```

maxima [A] time = 0.52, size = 55, normalized size = 0.70

$$-\frac{9}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{55}{96}\,(2\,x+3)^{\frac{9}{2}}-\frac{359}{112}\,(2\,x+3)^{\frac{7}{2}}+\frac{651}{80}\,(2\,x+3)^{\frac{5}{2}}-\frac{355}{32}\,(2\,x+3)^{\frac{3}{2}}+\frac{325}{32}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -9/352*(2*x + 3)^(11/2) + 55/96*(2*x + 3)^(9/2) - 359/112*(2*x + 3)^(7/2) +
 651/80*(2*x + 3)^(5/2) - 355/32*(2*x + 3)^(3/2) + 325/32*sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{325\,\sqrt{2\,x+3}}{32}-\frac{355\,{(2\,x+3)}^{3/2}}{32}+\frac{651\,{(2\,x+3)}^{5/2}}{80}-\frac{359\,{(2\,x+3)}^{7/2}}{112}+\frac{55\,{(2\,x+3)}^{9/2}}{96}-\frac{9\,{(2\,x+3)}^{11/2}}{352}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(1/2),x)
```

```
[Out] (325*(2*x + 3)^(1/2))/32 - (355*(2*x + 3)^(3/2))/32 + (651*(2*x + 3)^(5/2))
/80 - (359*(2*x + 3)^(7/2))/112 + (55*(2*x + 3)^(9/2))/96 - (9*(2*x + 3)^(1
1/2))/352
```

<u>**sympy**</u> **[A]** time = 85.81, size = 70, normalized size = 0.89

$$-\frac{9(2x+3)^{\frac{11}{2}}}{352}+\frac{55(2x+3)^{\frac{9}{2}}}{96}-\frac{359(2x+3)^{\frac{7}{2}}}{112}+\frac{651(2x+3)^{\frac{5}{2}}}{80}-\frac{355(2x+3)^{\frac{3}{2}}}{32}+\frac{325\sqrt{2x+3}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(1/2),x)
```

```
[Out] -9*(2*x + 3)**(11/2)/352 + 55*(2*x + 3)**(9/2)/96 - 359*(2*x + 3)**(7/2)/11
2 + 651*(2*x + 3)**(5/2)/80 - 355*(2*x + 3)**(3/2)/32 + 325*sqrt(2*x + 3)/3
2
```

3.2298 $\int \frac{(5-x)(2+5x+3x^2)^2}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{1}{32}(2x+3)^{9/2}+\frac{165}{224}(2x+3)^{7/2}-\frac{359}{80}(2x+3)^{5/2}+\frac{217}{16}(2x+3)^{3/2}-\frac{1065}{32}\sqrt{2x+3}-\frac{325}{32\sqrt{2x+3}}$$

Rubi [A] time = 0.03, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{1}{32}(2x+3)^{9/2}+\frac{165}{224}(2x+3)^{7/2}-\frac{359}{80}(2x+3)^{5/2}+\frac{217}{16}(2x+3)^{3/2}-\frac{1065}{32}\sqrt{2x+3}-\frac{325}{32\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(3/2),x]
```

```
[Out] -325/(32*Sqrt[3 + 2*x]) - (1065*Sqrt[3 + 2*x])/32 + (217*(3 + 2*x)^(3/2))/1
6 - (359*(3 + 2*x)^(5/2))/80 + (165*(3 + 2*x)^(7/2))/224 - (3 + 2*x)^(9/2)/
32
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{3/2}}\,dx=\int \left(\frac{325}{32(3+2x)^{3/2}}-\frac{1065}{32\sqrt{3+2x}}+\frac{651}{16}\sqrt{3+2x}-\frac{359}{16}(3+2x)^{3/2}+\frac{165}{32}(3+2x)\right.$$
$$=-\frac{325}{32\sqrt{3+2x}}-\frac{1065}{32}\sqrt{3+2x}+\frac{217}{16}(3+2x)^{3/2}-\frac{359}{80}(3+2x)^{5/2}+\frac{165}{224}(3+2x)$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{35x^5-150x^4-431x^3-632x^2+432x+1996}{35\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(3/2),x]
```

```
[Out] -1/35*(1996 + 432*x - 632*x^2 - 431*x^3 - 150*x^4 + 35*x^5)/Sqrt[3 + 2*x]
```

IntegrateAlgebraic [A] time = 0.04, size = 58, normalized size = 0.73

$$\frac{-35(2x+3)^5+825(2x+3)^4-5026(2x+3)^3+15190(2x+3)^2-37275(2x+3)-11375}{1120\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(3/2),x]
```

```
[Out] (-11375 - 37275*(3 + 2*x) + 15190*(3 + 2*x)^2 - 5026*(3 + 2*x)^3 + 825*(3 +
 2*x)^4 - 35*(3 + 2*x)^5)/(1120*Sqrt[3 + 2*x])
```

fricas [A] time = 0.39, size = 34, normalized size = 0.43

$$-\frac{35\,x^{5}-150\,x^{4}-431\,x^{3}-632\,x^{2}+432\,x+1996}{35\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/35*(35*x^5 - 150*x^4 - 431*x^3 - 632*x^2 + 432*x + 1996)/sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 55, normalized size = 0.70

$$-\frac{1}{32}\,(2\,x+3)^{\frac{9}{2}}+\frac{165}{224}\,(2\,x+3)^{\frac{7}{2}}-\frac{359}{80}\,(2\,x+3)^{\frac{5}{2}}+\frac{217}{16}\,(2\,x+3)^{\frac{3}{2}}-\frac{1065}{32}\,\sqrt{2\,x+3}-\frac{325}{32\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] -1/32*(2*x + 3)^(9/2) + 165/224*(2*x + 3)^(7/2) - 359/80*(2*x + 3)^(5/2) +
217/16*(2*x + 3)^(3/2) - 1065/32*sqrt(2*x + 3) - 325/32/sqrt(2*x + 3)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{35x^{5}-150x^{4}-431x^{3}-632x^{2}+432x+1996}{35\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(3/2),x)
```

```
[Out] -1/35*(35*x^5-150*x^4-431*x^3-632*x^2+432*x+1996)/(2*x+3)^(1/2)
```

maxima [A] time = 0.52, size = 55, normalized size = 0.70

$$-\frac{1}{32}\,(2\,x+3)^{\frac{9}{2}}+\frac{165}{224}\,(2\,x+3)^{\frac{7}{2}}-\frac{359}{80}\,(2\,x+3)^{\frac{5}{2}}+\frac{217}{16}\,(2\,x+3)^{\frac{3}{2}}-\frac{1065}{32}\,\sqrt{2\,x+3}-\frac{325}{32\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/32*(2*x + 3)^(9/2) + 165/224*(2*x + 3)^(7/2) - 359/80*(2*x + 3)^(5/2) +
217/16*(2*x + 3)^(3/2) - 1065/32*sqrt(2*x + 3) - 325/32/sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{217\,(2\,x+3)^{3/2}}{16}-\frac{1065\,\sqrt{2\,x+3}}{32}-\frac{325}{32\,\sqrt{2\,x+3}}-\frac{359\,(2\,x+3)^{5/2}}{80}+\frac{165\,(2\,x+3)^{7/2}}{224}-\frac{(2\,x+3)^{9/2}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(3/2),x)
```

```
[Out] (217*(2*x + 3)^(3/2))/16 - (1065*(2*x + 3)^(1/2))/32 - 325/(32*(2*x + 3)^(1
/2)) - (359*(2*x + 3)^(5/2))/80 + (165*(2*x + 3)^(7/2))/224 - (2*x + 3)^(9/
2)/32
```

sympy [A] time = 35.24, size = 68, normalized size = 0.86

$$-\frac{(2x+3)^{\frac{9}{2}}}{32}+\frac{165\,(2x+3)^{\frac{7}{2}}}{224}-\frac{359\,(2x+3)^{\frac{5}{2}}}{80}+\frac{217\,(2x+3)^{\frac{3}{2}}}{16}-\frac{1065\sqrt{2x+3}}{32}-\frac{325}{32\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(3/2),x)
```

```
[Out] -(2*x + 3)**(9/2)/32 + 165*(2*x + 3)**(7/2)/224 - 359*(2*x + 3)**(5/2)/80 +
 217*(2*x + 3)**(3/2)/16 - 1065*sqrt(2*x + 3)/32 - 325/(32*sqrt(2*x + 3))
```

3.2299 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{9}{224}(2x+3)^{7/2}+\frac{33}{32}(2x+3)^{5/2}-\frac{359}{48}(2x+3)^{3/2}+\frac{651}{16}\sqrt{2x+3}+\frac{1065}{32\sqrt{2x+3}}-\frac{325}{96(2x+3)^{3/2}}$$

Rubi [A] time = 0.03, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{224}(2x+3)^{7/2}+\frac{33}{32}(2x+3)^{5/2}-\frac{359}{48}(2x+3)^{3/2}+\frac{651}{16}\sqrt{2x+3}+\frac{1065}{32\sqrt{2x+3}}-\frac{325}{96(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(5/2),x]
```

```
[Out] -325/(96*(3 + 2*x)^(3/2)) + 1065/(32*Sqrt[3 + 2*x]) + (651*Sqrt[3 + 2*x])/1
6 - (359*(3 + 2*x)^(3/2))/48 + (33*(3 + 2*x)^(5/2))/32 - (9*(3 + 2*x)^(7/2)
)/224
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{5/2}}\,dx=\int \left(\frac{325}{32(3+2x)^{5/2}}-\frac{1065}{32(3+2x)^{3/2}}+\frac{651}{16\sqrt{3+2x}}-\frac{359}{16}\sqrt{3+2x}+\frac{165}{32}(3+2$$
$$=-\frac{325}{96(3+2x)^{3/2}}+\frac{1065}{32\sqrt{3+2x}}+\frac{651}{16}\sqrt{3+2x}-\frac{359}{48}(3+2x)^{3/2}+\frac{33}{32}(3+2x)^5$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{27x^5-144x^4-215x^3-1530x^2-7164x-7024}{21(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/21*(-7024 - 7164*x - 1530*x^2 - 215*x^3 - 144*x^4 + 27*x^5)/(3 + 2*x)^(3
/2)
```

IntegrateAlgebraic [A] time = 0.05, size = 58, normalized size = 0.73

$$\frac{-27(2x+3)^5+693(2x+3)^4-5026(2x+3)^3+27342(2x+3)^2+22365(2x+3)-2275}{672(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(5/2),x]
```

[Out] (-2275 + 22365*(3 + 2*x) + 27342*(3 + 2*x)^2 - 5026*(3 + 2*x)^3 + 693*(3 + 2*x)^4 - 27*(3 + 2*x)^5)/(672*(3 + 2*x)^(3/2))

fricas [A] time = 0.38, size = 46, normalized size = 0.58

$$-\frac{\left(27\,x^5-144\,x^4-215\,x^3-1530\,x^2-7164\,x-7024\right)\sqrt{2\,x+3}}{21\,\left(4\,x^2+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(5/2),x, algorithm="fricas")

[Out] -1/21*(27*x^5 - 144*x^4 - 215*x^3 - 1530*x^2 - 7164*x - 7024)*sqrt(2*x + 3)/(4*x^2 + 12*x + 9)

giac [A] time = 0.18, size = 51, normalized size = 0.65

$$-\frac{9}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{33}{32}\,(2\,x+3)^{\frac{5}{2}}-\frac{359}{48}\,(2\,x+3)^{\frac{3}{2}}+\frac{651}{16}\,\sqrt{2\,x+3}+\frac{5\,(639\,x+926)}{48\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(5/2),x, algorithm="giac")

[Out] -9/224*(2*x + 3)^(7/2) + 33/32*(2*x + 3)^(5/2) - 359/48*(2*x + 3)^(3/2) + 651/16*sqrt(2*x + 3) + 5/48*(639*x + 926)/(2*x + 3)^(3/2)

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{27x^5-144x^4-215x^3-1530x^2-7164x-7024}{21\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(5/2),x)

[Out] -1/21*(27*x^5-144*x^4-215*x^3-1530*x^2-7164*x-7024)/(2*x+3)^(3/2)

maxima [A] time = 0.63, size = 51, normalized size = 0.65

$$-\frac{9}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{33}{32}\,(2\,x+3)^{\frac{5}{2}}-\frac{359}{48}\,(2\,x+3)^{\frac{3}{2}}+\frac{651}{16}\,\sqrt{2\,x+3}+\frac{5\,(639\,x+926)}{48\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(5/2),x, algorithm="maxima")

[Out] -9/224*(2*x + 3)^(7/2) + 33/32*(2*x + 3)^(5/2) - 359/48*(2*x + 3)^(3/2) + 651/16*sqrt(2*x + 3) + 5/48*(639*x + 926)/(2*x + 3)^(3/2)

mupad [B] time = 0.03, size = 50, normalized size = 0.63

$$\frac{\frac{1065\,x}{16}+\frac{2315}{24}}{{(2\,x+3)}^{3/2}}+\frac{651\,\sqrt{2\,x+3}}{16}-\frac{359\,{(2\,x+3)}^{3/2}}{48}+\frac{33\,{(2\,x+3)}^{5/2}}{32}-\frac{9\,{(2\,x+3)}^{7/2}}{224}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(5/2),x)

[Out] ((1065*x)/16 + 2315/24)/(2*x + 3)^(3/2) + (651*(2*x + 3)^(1/2))/16 - (359*(2*x + 3)^(3/2))/48 + (33*(2*x + 3)^(5/2))/32 - (9*(2*x + 3)^(7/2))/224

sympy [A] time = 43.54, size = 70, normalized size = 0.89

$$-\frac{9(2x+3)^{\frac{7}{2}}}{224}+\frac{33(2x+3)^{\frac{5}{2}}}{32}-\frac{359(2x+3)^{\frac{3}{2}}}{48}+\frac{651\sqrt{2x+3}}{16}+\frac{1065}{32\sqrt{2x+3}}-\frac{325}{96(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(5/2),x)
```

```
[Out] -9*(2*x + 3)**(7/2)/224 + 33*(2*x + 3)**(5/2)/32 - 359*(2*x + 3)**(3/2)/48
+ 651*sqrt(2*x + 3)/16 + 1065/(32*sqrt(2*x + 3)) - 325/(96*(2*x + 3)**(3/2)
)
```

3.2300 $\int \frac{(5-x)(2+5x+3x^2)^2}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{9}{160}(2x+3)^{5/2}+\frac{55}{32}(2x+3)^{3/2}-\frac{359}{16}\sqrt{2x+3}-\frac{651}{16\sqrt{2x+3}}+\frac{355}{32(2x+3)^{3/2}}-\frac{65}{32(2x+3)^{5/2}}$$

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{160}(2x+3)^{5/2}+\frac{55}{32}(2x+3)^{3/2}-\frac{359}{16}\sqrt{2x+3}-\frac{651}{16\sqrt{2x+3}}+\frac{355}{32(2x+3)^{3/2}}-\frac{65}{32(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(7/2),x]
```

```
[Out] -65/(32*(3 + 2*x)^(5/2)) + 355/(32*(3 + 2*x)^(3/2)) - 651/(16*Sqrt[3 + 2*x]
) - (359*Sqrt[3 + 2*x])/16 + (55*(3 + 2*x)^(3/2))/32 - (9*(3 + 2*x)^(5/2))/
160
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{7/2}}\,dx = \int \left(\frac{325}{32(3+2x)^{7/2}}-\frac{1065}{32(3+2x)^{5/2}}+\frac{651}{16(3+2x)^{3/2}}-\frac{359}{16\sqrt{3+2x}}+\frac{165}{32}\sqrt{3+2x}\right.$$
$$= -\frac{65}{32(3+2x)^{5/2}}+\frac{355}{32(3+2x)^{3/2}}-\frac{651}{16\sqrt{3+2x}}-\frac{359}{16}\sqrt{3+2x}+\frac{55}{32}(3+2x)^{3/2}-$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{9x^5-70x^4+275x^3+3300x^2+6760x+4076}{5(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(7/2),x]
```

```
[Out] -1/5*(4076 + 6760*x + 3300*x^2 + 275*x^3 - 70*x^4 + 9*x^5)/(3 + 2*x)^(5/2)
```

IntegrateAlgebraic [A] time = 0.05, size = 58, normalized size = 0.73

$$\frac{-9(2x+3)^5+275(2x+3)^4-3590(2x+3)^3-6510(2x+3)^2+1775(2x+3)-325}{160(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(7/2),x]
```

```
[Out] (-325 + 1775*(3 + 2*x) - 6510*(3 + 2*x)^2 - 3590*(3 + 2*x)^3 + 275*(3 + 2*x
)^4 - 9*(3 + 2*x)^5)/(160*(3 + 2*x)^(5/2))
```

fricas [A] time = 0.39, size = 51, normalized size = 0.65

$$-\frac{\left(9\,x^{5}-70\,x^{4}+275\,x^{3}+3300\,x^{2}+6760\,x+4076\right)\sqrt{2\,x+3}}{5\,\left(8\,x^{3}+36\,x^{2}+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/5*(9*x^5 - 70*x^4 + 275*x^3 + 3300*x^2 + 6760*x + 4076)*sqrt(2*x + 3)/(8
*x^3 + 36*x^2 + 54*x + 27)
```

giac [A] time = 0.17, size = 51, normalized size = 0.65

$$-\frac{9}{160}\,(2\,x+3)^{\frac{5}{2}}+\frac{55}{32}\,(2\,x+3)^{\frac{3}{2}}-\frac{359}{16}\,\sqrt{2\,x+3}-\frac{651\,(2\,x+3)^{2}-355\,x-500}{16\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] -9/160*(2*x + 3)^(5/2) + 55/32*(2*x + 3)^(3/2) - 359/16*sqrt(2*x + 3) - 1/1
6*(651*(2*x + 3)^2 - 355*x - 500)/(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 35, normalized size = 0.44

$$-\frac{9x^{5}-70x^{4}+275x^{3}+3300x^{2}+6760x+4076}{5\,(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(7/2),x)
```

```
[Out] -1/5*(9*x^5-70*x^4+275*x^3+3300*x^2+6760*x+4076)/(2*x+3)^(5/2)
```

maxima [A] time = 0.66, size = 51, normalized size = 0.65

$$-\frac{9}{160}\,(2\,x+3)^{\frac{5}{2}}+\frac{55}{32}\,(2\,x+3)^{\frac{3}{2}}-\frac{359}{16}\,\sqrt{2\,x+3}-\frac{651\,(2\,x+3)^{2}-355\,x-500}{16\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -9/160*(2*x + 3)^(5/2) + 55/32*(2*x + 3)^(3/2) - 359/16*sqrt(2*x + 3) - 1/1
6*(651*(2*x + 3)^2 - 355*x - 500)/(2*x + 3)^(5/2)
```

mupad [B] time = 0.04, size = 50, normalized size = 0.63

$$\frac{\frac{355\,x}{16}-\frac{651\,(2\,x+3)^2}{16}+\frac{125}{4}}{(2\,x+3)^{5/2}}-\frac{359\,\sqrt{2\,x+3}}{16}+\frac{55\,(2\,x+3)^{3/2}}{32}-\frac{9\,(2\,x+3)^{5/2}}{160}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(7/2),x)
```

```
[Out] ((355*x)/16 - (651*(2*x + 3)^2)/16 + 125/4)/(2*x + 3)^(5/2) - (359*(2*x + 3
)^(1/2))/16 + (55*(2*x + 3)^(3/2))/32 - (9*(2*x + 3)^(5/2))/160
```

sympy [B] time = 1.56, size = 238, normalized size = 3.01

$$-\frac{9x^5}{20x^2\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}+\frac{70x^4}{20x^2\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}-\frac{275x^3}{20x^2\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}-\frac{3300x^2}{20x^2\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}-\frac{6760x}{20x^2\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}-\frac{4076}{20x^2\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(7/2),x)
```

```
[Out] -9*x**5/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) + 7
0*x**4/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 27
5*x**3/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 33
00*x**2/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 6
760*x/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 407
6/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3))
```

3.2301 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{23/2}}{2944}+\frac{27}{128}(2x+3)^{21/2}-\frac{3519(2x+3)^{19/2}}{2432}+\frac{10475(2x+3)^{17/2}}{2176}-\frac{17201(2x+3)^{15/2}}{1920}+\frac{16005(2x+3)^{13/2}}{1664}$$

Rubi [A] time = 0.04, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{23/2}}{2944}+\frac{27}{128}(2x+3)^{21/2}-\frac{3519(2x+3)^{19/2}}{2432}+\frac{10475(2x+3)^{17/2}}{2176}-\frac{17201(2x+3)^{15/2}}{1920}+\frac{16005(2x+3)^{13/2}}{1664}-\frac{7925(2x+3)^{11/2}}{1408}+\frac{1625(2x+3)^{9/2}}{1152}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1625*(3 + 2*x)^(9/2))/1152 - (7925*(3 + 2*x)^(11/2))/1408 + (16005*(3 + 2*
x)^(13/2))/1664 - (17201*(3 + 2*x)^(15/2))/1920 + (10475*(3 + 2*x)^(17/2))/
2176 - (3519*(3 + 2*x)^(19/2))/2432 + (27*(3 + 2*x)^(21/2))/128 - (27*(3 +
2*x)^(23/2))/2944
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^3\,dx=\int \left(\frac{1625}{128}(3+2x)^{7/2}-\frac{7925}{128}(3+2x)^{9/2}+\frac{16005}{128}(3+2x)^{11/2}-\frac{1720}{128}\right.$$
$$=\frac{1625(3+2x)^{9/2}}{1152}-\frac{7925(3+2x)^{11/2}}{1408}+\frac{16005(3+2x)^{13/2}}{1664}-\frac{17201(3}{19}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{9/2}\left(56119635x^7-56119635x^6-943203690x^5-2232945000x^4-2481091899x^3-1481619843x^2-460865502x-58847566\right)}{47805615}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/47805615*((3 + 2*x)^(9/2)*(-58847566 - 460865502*x - 1481619843*x^2 - 24
81091899*x^3 - 2232945000*x^4 - 943203690*x^5 - 56119635*x^6 + 56119635*x^7
))
```

IntegrateAlgebraic [A] time = 0.05, size = 93, normalized size = 0.89

$$\frac{-56119635(2x+3)^{23/2}+1290751605(2x+3)^{21/2}-8854103115(2x+3)^{19/2}+29456695125(2x+3)^{17/2}-54820292241(2x+3)^{15/2}+58856066775(2x+3)^{13/2}-34441772625(2x+3)^{11/2}+8631569375(2x+3)^{9/2}}{6119118720}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (8631569375*(3 + 2*x)^(9/2) - 34441772625*(3 + 2*x)^(11/2) + 58856066775*(3
 + 2*x)^(13/2) - 54820292241*(3 + 2*x)^(15/2) + 29456695125*(3 + 2*x)^(17/2
```

```
) - 8854103115*(3 + 2*x)^(19/2) + 1290751605*(3 + 2*x)^(21/2) - 56119635*(3
 + 2*x)^(23/2))/6119118720
```

fricas [A] time = 0.40, size = 64, normalized size = 0.61

$$-\frac{1}{47805615}\left(897914160\,x^{11}+4489570800\,x^{10}-8356902840\,x^{9}-126274674240\,x^{8}-465368338149\,x^{7}-952484547267\,x^{6}-1244240822034\,x^{5}-1081998930520\,x^{4}-626194644675\,x^{3}-232269229971\,x^{2}-50041179918\,x-4766652846\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/47805615*(897914160*x^11 + 4489570800*x^10 - 8356902840*x^9 - 1262746742
40*x^8 - 465368338149*x^7 - 952484547267*x^6 - 1244240822034*x^5 - 10819989
30520*x^4 - 626194644675*x^3 - 232269229971*x^2 - 50041179918*x - 476665284
6)*sqrt(2*x + 3)
```

giac [A] time = 0.18, size = 73, normalized size = 0.70

$$-\frac{27}{2944}\,(2\,x+3)^{\frac{23}{2}}+\frac{27}{128}\,(2\,x+3)^{\frac{21}{2}}-\frac{3519}{2432}\,(2\,x+3)^{\frac{19}{2}}+\frac{10475}{2176}\,(2\,x+3)^{\frac{17}{2}}-\frac{17201}{1920}\,(2\,x+3)^{\frac{15}{2}}+\frac{16005}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{7925}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{1625}{1152}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -27/2944*(2*x + 3)^(23/2) + 27/128*(2*x + 3)^(21/2) - 3519/2432*(2*x + 3)^(
19/2) + 10475/2176*(2*x + 3)^(17/2) - 17201/1920*(2*x + 3)^(15/2) + 16005/1
664*(2*x + 3)^(13/2) - 7925/1408*(2*x + 3)^(11/2) + 1625/1152*(2*x + 3)^(9/
2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{\left(56119635x^{7}-56119635x^{6}-943203690x^{5}-2232945000x^{4}-2481091899x^{3}-1481619843x^{2}-460865502x-58847566\right)(2x+3)^{\frac{9}{2}}}{47805615}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)*(3*x^2+5*x+2)^3,x)
```

```
[Out] -1/47805615*(56119635*x^7-56119635*x^6-943203690*x^5-2232945000*x^4-2481091
899*x^3-1481619843*x^2-460865502*x-58847566)*(2*x+3)^(9/2)
```

maxima [A] time = 0.71, size = 73, normalized size = 0.70

$$-\frac{27}{2944}\,(2\,x+3)^{\frac{23}{2}}+\frac{27}{128}\,(2\,x+3)^{\frac{21}{2}}-\frac{3519}{2432}\,(2\,x+3)^{\frac{19}{2}}+\frac{10475}{2176}\,(2\,x+3)^{\frac{17}{2}}-\frac{17201}{1920}\,(2\,x+3)^{\frac{15}{2}}+\frac{16005}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{7925}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{1625}{1152}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -27/2944*(2*x + 3)^(23/2) + 27/128*(2*x + 3)^(21/2) - 3519/2432*(2*x + 3)^(
19/2) + 10475/2176*(2*x + 3)^(17/2) - 17201/1920*(2*x + 3)^(15/2) + 16005/1
664*(2*x + 3)^(13/2) - 7925/1408*(2*x + 3)^(11/2) + 1625/1152*(2*x + 3)^(9/
2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,(2\,x+3)^{9/2}}{1152}-\frac{7925\,(2\,x+3)^{11/2}}{1408}+\frac{16005\,(2\,x+3)^{13/2}}{1664}-\frac{17201\,(2\,x+3)^{15/2}}{1920}+\frac{10475\,(2\,x+3)^{17/2}}{2176}-\frac{3519\,(2\,x+3)^{19/2}}{2432}+\frac{27\,(2\,x+3)^{21/2}}{128}-\frac{27\,(2\,x+3)^{23/2}}{2944}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(7/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (1625*(2*x + 3)^(9/2))/1152 - (7925*(2*x + 3)^(11/2))/1408 + (16005*(2*x +
3)^(13/2))/1664 - (17201*(2*x + 3)^(15/2))/1920 + (10475*(2*x + 3)^(17/2))/
```

```
2176 - (3519*(2*x + 3)^(19/2))/2432 + (27*(2*x + 3)^(21/2))/128 - (27*(2*x
+ 3)^(23/2))/2944
```

sympy [A] time = 49.99, size = 94, normalized size = 0.90

$$-\frac{27(2x+3)^{\frac{23}{2}}}{2944}+\frac{27(2x+3)^{\frac{21}{2}}}{128}-\frac{3519(2x+3)^{\frac{19}{2}}}{2432}+\frac{10475(2x+3)^{\frac{17}{2}}}{2176}-\frac{17201(2x+3)^{\frac{15}{2}}}{1920}+\frac{16005(2x+3)^{\frac{13}{2}}}{1664}-\frac{7925(2x+3)^{\frac{11}{2}}}{1408}+\frac{1625(2x+3)^{\frac{9}{2}}}{1152}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)*(3*x**2+5*x+2)**3,x)
```

```
[Out] -27*(2*x + 3)**(23/2)/2944 + 27*(2*x + 3)**(21/2)/128 - 3519*(2*x + 3)**(19
/2)/2432 + 10475*(2*x + 3)**(17/2)/2176 - 17201*(2*x + 3)**(15/2)/1920 + 16
005*(2*x + 3)**(13/2)/1664 - 7925*(2*x + 3)**(11/2)/1408 + 1625*(2*x + 3)**
(9/2)/1152
```

3.2302 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{9}{896}(2x+3)^{21/2}+\frac{567(2x+3)^{19/2}}{2432}-\frac{207}{128}(2x+3)^{17/2}+\frac{2095}{384}(2x+3)^{15/2}-\frac{17201(2x+3)^{13/2}}{1664}+\frac{1455}{128}(2x+3)^{11/2}-\frac{7925(2\ldots}{1\ldots}$$

Rubi [A] time = 0.04, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{896}(2x+3)^{21/2}+\frac{567(2x+3)^{19/2}}{2432}-\frac{207}{128}(2x+3)^{17/2}+\frac{2095}{384}(2x+3)^{15/2}-\frac{17201(2x+3)^{13/2}}{1664}+\frac{1455}{128}(2x+3)^{11/2}-\frac{7925(2x+3)^{9/2}}{1152}+\frac{1625}{896}(2x+3)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1625*(3 + 2*x)^(7/2))/896 - (7925*(3 + 2*x)^(9/2))/1152 + (1455*(3 + 2*x)^
(11/2))/128 - (17201*(3 + 2*x)^(13/2))/1664 + (2095*(3 + 2*x)^(15/2))/384 -
 (207*(3 + 2*x)^(17/2))/128 + (567*(3 + 2*x)^(19/2))/2432 - (9*(3 + 2*x)^(2
1/2))/896
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^3\,dx &= \int \left(\frac{1625}{128}(3+2x)^{5/2}-\frac{7925}{128}(3+2x)^{7/2}+\frac{16005}{128}(3+2x)^{9/2}-\frac{17201}{128}(3\ldots\right.\\ &= \frac{1625}{896}(3+2x)^{7/2}-\frac{7925(3+2x)^{9/2}}{1152}+\frac{1455}{128}(3+2x)^{11/2}-\frac{17201(3+2x\ldots}{1664}\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{7/2}\left(20007x^7-22113x^6-339066x^5-791700x^4-871983x^3-517293x^2-160006x-20346\right)}{15561}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/15561*((3 + 2*x)^(7/2)*(-20346 - 160006*x - 517293*x^2 - 871983*x^3 - 79
1700*x^4 - 339066*x^5 - 22113*x^6 + 20007*x^7))
```

IntegrateAlgebraic [A] time = 0.06, size = 93, normalized size = 0.89

$$\frac{-20007(2x+3)^{21/2}+464373(2x+3)^{19/2}-3221127(2x+3)^{17/2}+10866765(2x+3)^{15/2}-20589597(2x+3)^{13/2}+22641255(2x+3)^{11/2}-13702325(2x+3)^{9/2}+3612375(2x+3)^{7/2}}{1991808}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (3612375*(3 + 2*x)^(7/2) - 13702325*(3 + 2*x)^(9/2) + 22641255*(3 + 2*x)^(1
1/2) - 20589597*(3 + 2*x)^(13/2) + 10866765*(3 + 2*x)^(15/2) - 3221127*(3 +
 2*x)^(17/2) + 464373*(3 + 2*x)^(19/2) - 20007*(3 + 2*x)^(21/2))/1991808
```

fricas [A] time = 0.38, size = 59, normalized size = 0.56

$$-\frac{1}{15561}\left(160056\,x^{10}+543348\,x^{9}-2428218\,x^{8}-19193889\,x^{7}-54383679\,x^{6}-87436314\,x^{5}-88365578\,x^{4}-57400347\,x^{3}-23339691\,x^{2}-5418846\,x-549342\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/15561*(160056*x^10 + 543348*x^9 - 2428218*x^8 - 19193889*x^7 - 54383679*
x^6 - 87436314*x^5 - 88365578*x^4 - 57400347*x^3 - 23339691*x^2 - 5418846*x
 - 549342)*sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 73, normalized size = 0.70

$$-\frac{9}{896}\,(2\,x+3)^{\frac{21}{2}}+\frac{567}{2432}\,(2\,x+3)^{\frac{19}{2}}-\frac{207}{128}\,(2\,x+3)^{\frac{17}{2}}+\frac{2095}{384}\,(2\,x+3)^{\frac{15}{2}}-\frac{17201}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{1455}{128}\,(2\,x+3)^{\frac{11}{2}}-\frac{7925}{1152}\,(2\,x+3)^{\frac{9}{2}}+\frac{1625}{896}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -9/896*(2*x + 3)^(21/2) + 567/2432*(2*x + 3)^(19/2) - 207/128*(2*x + 3)^(17
/2) + 2095/384*(2*x + 3)^(15/2) - 17201/1664*(2*x + 3)^(13/2) + 1455/128*(2
*x + 3)^(11/2) - 7925/1152*(2*x + 3)^(9/2) + 1625/896*(2*x + 3)^(7/2)
```

maple [A] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{\left(20007x^{7}-22113x^{6}-339066x^{5}-791700x^{4}-871983x^{3}-517293x^{2}-160006x-20346\right)(2x+3)^{\frac{7}{2}}}{15561}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^3,x)
```

```
[Out] -1/15561*(20007*x^7-22113*x^6-339066*x^5-791700*x^4-871983*x^3-517293*x^2-1
60006*x-20346)*(2*x+3)^(7/2)
```

maxima [A] time = 0.79, size = 73, normalized size = 0.70

$$-\frac{9}{896}\,(2\,x+3)^{\frac{21}{2}}+\frac{567}{2432}\,(2\,x+3)^{\frac{19}{2}}-\frac{207}{128}\,(2\,x+3)^{\frac{17}{2}}+\frac{2095}{384}\,(2\,x+3)^{\frac{15}{2}}-\frac{17201}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{1455}{128}\,(2\,x+3)^{\frac{11}{2}}-\frac{7925}{1152}\,(2\,x+3)^{\frac{9}{2}}+\frac{1625}{896}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -9/896*(2*x + 3)^(21/2) + 567/2432*(2*x + 3)^(19/2) - 207/128*(2*x + 3)^(17
/2) + 2095/384*(2*x + 3)^(15/2) - 17201/1664*(2*x + 3)^(13/2) + 1455/128*(2
*x + 3)^(11/2) - 7925/1152*(2*x + 3)^(9/2) + 1625/896*(2*x + 3)^(7/2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,{\left(2\,x+3\right)}^{7/2}}{896}-\frac{7925\,{\left(2\,x+3\right)}^{9/2}}{1152}+\frac{1455\,{\left(2\,x+3\right)}^{11/2}}{128}-\frac{17201\,{\left(2\,x+3\right)}^{13/2}}{1664}+\frac{2095\,{\left(2\,x+3\right)}^{15/2}}{384}-\frac{207\,{\left(2\,x+3\right)}^{17/2}}{128}+\frac{567\,{\left(2\,x+3\right)}^{19/2}}{2432}-\frac{9\,{\left(2\,x+3\right)}^{21/2}}{896}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (1625*(2*x + 3)^(7/2))/896 - (7925*(2*x + 3)^(9/2))/1152 + (1455*(2*x + 3)^
(11/2))/128 - (17201*(2*x + 3)^(13/2))/1664 + (2095*(2*x + 3)^(15/2))/384 -
 (207*(2*x + 3)^(17/2))/128 + (567*(2*x + 3)^(19/2))/2432 - (9*(2*x + 3)^(2
1/2))/896
```

sympy [A] time = 42.10, size = 94, normalized size = 0.90

$$-\frac{9\,(2x+3)^{\frac{21}{2}}}{896}+\frac{567\,(2x+3)^{\frac{19}{2}}}{2432}-\frac{207\,(2x+3)^{\frac{17}{2}}}{128}+\frac{2095\,(2x+3)^{\frac{15}{2}}}{384}-\frac{17201\,(2x+3)^{\frac{13}{2}}}{1664}+\frac{1455\,(2x+3)^{\frac{11}{2}}}{128}-\frac{7925\,(2x+3)^{\frac{9}{2}}}{1152}+\frac{1625\,(2x+3)^{\frac{7}{2}}}{896}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**3,x)
```

```
[Out] -9*(2*x + 3)**(21/2)/896 + 567*(2*x + 3)**(19/2)/2432 - 207*(2*x + 3)**(17/
2)/128 + 2095*(2*x + 3)**(15/2)/384 - 17201*(2*x + 3)**(13/2)/1664 + 1455*(
2*x + 3)**(11/2)/128 - 7925*(2*x + 3)**(9/2)/1152 + 1625*(2*x + 3)**(7/2)/8
96
```

3.2303 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{19/2}}{2432}+\frac{567(2x+3)^{17/2}}{2176}-\frac{1173}{640}(2x+3)^{15/2}+\frac{10475(2x+3)^{13/2}}{1664}-\frac{17201(2x+3)^{11/2}}{1408}+\frac{5335}{384}(2x+3)^{9/2}-\frac{79}{8}$$

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{19/2}}{2432}+\frac{567(2x+3)^{17/2}}{2176}-\frac{1173}{640}(2x+3)^{15/2}+\frac{10475(2x+3)^{13/2}}{1664}-\frac{17201(2x+3)^{11/2}}{1408}+\frac{5335}{384}(2x+3)^{9/2}-\frac{7925}{896}(2x+3)^{7/2}+\frac{325}{128}(2x+3)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (325*(3 + 2*x)^(5/2))/128 - (7925*(3 + 2*x)^(7/2))/896 + (5335*(3 + 2*x)^(9
/2))/384 - (17201*(3 + 2*x)^(11/2))/1408 + (10475*(3 + 2*x)^(13/2))/1664 -
(1173*(3 + 2*x)^(15/2))/640 + (567*(3 + 2*x)^(17/2))/2176 - (27*(3 + 2*x)^(
19/2))/2432
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^3\,dx=\int\left(\frac{1625}{128}(3+2x)^{3/2}-\frac{7925}{128}(3+2x)^{5/2}+\frac{16005}{128}(3+2x)^{7/2}-\frac{17201}{128}\right.$$

$$=\frac{325}{128}(3+2x)^{5/2}-\frac{7925}{896}(3+2x)^{7/2}+\frac{5335}{384}(3+2x)^{9/2}-\frac{17201(3+2}{1408}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{5/2}\left(6891885x^7-8513505x^6-117819702x^5-270695040x^4-295054725x^3-173763625x^2-53367570x-6778218\right)}{4849845}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/4849845*((3 + 2*x)^(5/2)*(-6778218 - 53367570*x - 173763625*x^2 - 295054
725*x^3 - 270695040*x^4 - 117819702*x^5 - 8513505*x^6 + 6891885*x^7))
```

IntegrateAlgebraic [A] time = 0.05, size = 93, normalized size = 0.89

$$\frac{-6891885(2x+3)^{19/2}+161756595(2x+3)^{17/2}-1137773637(2x+3)^{15/2}+3907855875(2x+3)^{13/2}-7583834895(2x+3)^{11/2}+8624641025(2x+3)^{9/2}-5490717375(2x+3)^{7/2}+1576199625(2x+3)^{5/2}}{620780160}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1576199625*(3 + 2*x)^(5/2) - 5490717375*(3 + 2*x)^(7/2) + 8624641025*(3 +
2*x)^(9/2) - 7583834895*(3 + 2*x)^(11/2) + 3907855875*(3 + 2*x)^(13/2) - 11
```

```
37773637*(3 + 2*x)^(15/2) + 161756595*(3 + 2*x)^(17/2) - 6891885*(3 + 2*x)^
(19/2))/620780160
```

fricas [A] time = 0.38, size = 54, normalized size = 0.51

$$-\frac{1}{4849845}\left(27567540\,x^{9}+48648600\,x^{8}-511413903\,x^{7}-2573238129\,x^{6}-5488936698\,x^{5}-6671966560\,x^{4}-4954126305\,x^{3}-2231396337\,x^{2}-561646746\,x-61003962\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/4849845*(27567540*x^9 + 48648600*x^8 - 511413903*x^7 - 2573238129*x^6 -
5488936698*x^5 - 6671966560*x^4 - 4954126305*x^3 - 2231396337*x^2 - 5616467
46*x - 61003962)*sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 73, normalized size = 0.70

$$-\frac{27}{2432}\,(2\,x+3)^{\frac{19}{2}}+\frac{567}{2176}\,(2\,x+3)^{\frac{17}{2}}-\frac{1173}{640}\,(2\,x+3)^{\frac{15}{2}}+\frac{10475}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{17201}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{5335}{384}\,(2\,x+3)^{\frac{9}{2}}-\frac{7925}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{325}{128}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -27/2432*(2*x + 3)^(19/2) + 567/2176*(2*x + 3)^(17/2) - 1173/640*(2*x + 3)^
(15/2) + 10475/1664*(2*x + 3)^(13/2) - 17201/1408*(2*x + 3)^(11/2) + 5335/3
84*(2*x + 3)^(9/2) - 7925/896*(2*x + 3)^(7/2) + 325/128*(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{\left(6891885x^{7}-8513505x^{6}-117819702x^{5}-270695040x^{4}-295054725x^{3}-173763625x^{2}-53367570x-6778218\right)(2x+3)^{\frac{5}{2}}}{4849845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^3,x)
```

```
[Out] -1/4849845*(6891885*x^7-8513505*x^6-117819702*x^5-270695040*x^4-295054725*x
^3-173763625*x^2-53367570*x-6778218)*(2*x+3)^(5/2)
```

maxima [A] time = 0.53, size = 73, normalized size = 0.70

$$-\frac{27}{2432}\,(2\,x+3)^{\frac{19}{2}}+\frac{567}{2176}\,(2\,x+3)^{\frac{17}{2}}-\frac{1173}{640}\,(2\,x+3)^{\frac{15}{2}}+\frac{10475}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{17201}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{5335}{384}\,(2\,x+3)^{\frac{9}{2}}-\frac{7925}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{325}{128}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -27/2432*(2*x + 3)^(19/2) + 567/2176*(2*x + 3)^(17/2) - 1173/640*(2*x + 3)^
(15/2) + 10475/1664*(2*x + 3)^(13/2) - 17201/1408*(2*x + 3)^(11/2) + 5335/3
84*(2*x + 3)^(9/2) - 7925/896*(2*x + 3)^(7/2) + 325/128*(2*x + 3)^(5/2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{325\,(2\,x+3)^{5/2}}{128}-\frac{7925\,(2\,x+3)^{7/2}}{896}+\frac{5335\,(2\,x+3)^{9/2}}{384}-\frac{17201\,(2\,x+3)^{11/2}}{1408}+\frac{10475\,(2\,x+3)^{13/2}}{1664}-\frac{1173\,(2\,x+3)^{15/2}}{640}+\frac{567\,(2\,x+3)^{17/2}}{2176}-\frac{27\,(2\,x+3)^{19/2}}{2432}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (325*(2*x + 3)^(5/2))/128 - (7925*(2*x + 3)^(7/2))/896 + (5335*(2*x + 3)^(9
/2))/384 - (17201*(2*x + 3)^(11/2))/1408 + (10475*(2*x + 3)^(13/2))/1664 -
(1173*(2*x + 3)^(15/2))/640 + (567*(2*x + 3)^(17/2))/2176 - (27*(2*x + 3)^(
19/2))/2432
```

sympy [A] time = 35.46, size = 94, normalized size = 0.90

$$-\frac{27\,(2x+3)^{\frac{19}{2}}}{2432}+\frac{567\,(2x+3)^{\frac{17}{2}}}{2176}-\frac{1173\,(2x+3)^{\frac{15}{2}}}{640}+\frac{10475\,(2x+3)^{\frac{13}{2}}}{1664}-\frac{17201\,(2x+3)^{\frac{11}{2}}}{1408}+\frac{5335\,(2x+3)^{\frac{9}{2}}}{384}-\frac{7925\,(2x+3)^{\frac{7}{2}}}{896}+\frac{325\,(2x+3)^{\frac{5}{2}}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**3,x)
```

```
[Out] -27*(2*x + 3)**(19/2)/2432 + 567*(2*x + 3)**(17/2)/2176 - 1173*(2*x + 3)**(
15/2)/640 + 10475*(2*x + 3)**(13/2)/1664 - 17201*(2*x + 3)**(11/2)/1408 + 5
335*(2*x + 3)**(9/2)/384 - 7925*(2*x + 3)**(7/2)/896 + 325*(2*x + 3)**(5/2)
/128
```

3.2304 $\int (5-x)\sqrt{3+2x}\,\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{17/2}}{2176}+\frac{189}{640}(2x+3)^{15/2}-\frac{3519(2x+3)^{13/2}}{1664}+\frac{10475(2x+3)^{11/2}}{1408}-\frac{17201(2x+3)^{9/2}}{1152}+\frac{16005}{896}(2x+3)^{7/2}-\frac{1585}{128}$$

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{17/2}}{2176}+\frac{189}{640}(2x+3)^{15/2}-\frac{3519(2x+3)^{13/2}}{1664}+\frac{10475(2x+3)^{11/2}}{1408}-\frac{17201(2x+3)^{9/2}}{1152}+\frac{16005}{896}(2x+3)^{7/2}-\frac{1585}{128}(2x+3)^{5/2}+\frac{1625}{384}(2x+3)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1625*(3 + 2*x)^(3/2))/384 - (1585*(3 + 2*x)^(5/2))/128 + (16005*(3 + 2*x)^
(7/2))/896 - (17201*(3 + 2*x)^(9/2))/1152 + (10475*(3 + 2*x)^(11/2))/1408 -
 (3519*(3 + 2*x)^(13/2))/1664 + (189*(3 + 2*x)^(15/2))/640 - (27*(3 + 2*x)^
(17/2))/2176
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (5-x)\sqrt{3+2x}\,\left(2+5x+3x^2\right)^3\,dx=\int \left(\frac{1625}{128}\sqrt{3+2x}-\frac{7925}{128}(3+2x)^{3/2}+\frac{16005}{128}(3+2x)^{5/2}-\frac{17201}{128}(3+2\right.$$
$$=\frac{1625}{384}(3+2x)^{3/2}-\frac{1585}{128}(3+2x)^{5/2}+\frac{16005}{896}(3+2x)^{7/2}-\frac{17201(3+2x)^{9}}{1152}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{3/2}\left(1216215x^7-1702701x^6-20968794x^5-47286540x^4-50880095x^3-29756385x^2-9013014x-1197186\right)}{765765}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/765765*((3 + 2*x)^(3/2)*(-1197186 - 9013014*x - 29756385*x^2 - 50880095*
x^3 - 47286540*x^4 - 20968794*x^5 - 1702701*x^6 + 1216215*x^7))
```

IntegrateAlgebraic [A] time = 0.06, size = 93, normalized size = 0.89

$$\frac{-1216215(2x+3)^{17/2}+28945917(2x+3)^{15/2}-207286695(2x+3)^{13/2}+729217125(2x+3)^{11/2}-1463547085(2x+3)^{9/2}+1750866975(2x+3)^{7/2}-1213737525(2x+3)^{5/2}+414789375(2x+3)^{3/2}}{98017920}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (414789375*(3 + 2*x)^(3/2) - 1213737525*(3 + 2*x)^(5/2) + 1750866975*(3 + 2
*x)^(7/2) - 1463547085*(3 + 2*x)^(9/2) + 729217125*(3 + 2*x)^(11/2) - 20728
```

```
6695*(3 + 2*x)^(13/2) + 28945917*(3 + 2*x)^(15/2) - 1216215*(3 + 2*x)^(17/2
))/98017920
```

fricas [A] time = 0.38, size = 49, normalized size = 0.47

$$-\frac{1}{765765}\left(2432430\,x^8 + 243243\,x^7 - 47045691\,x^6 - 157479462\,x^5 - 243619810\,x^4 - 212153055\,x^3 - 107295183\,x^2 - 29433414\,x - 3591558\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/765765*(2432430*x^8 + 243243*x^7 - 47045691*x^6 - 157479462*x^5 - 243619
810*x^4 - 212153055*x^3 - 107295183*x^2 - 29433414*x - 3591558)*sqrt(2*x +
3)
```

giac [A] time = 0.21, size = 73, normalized size = 0.70

$$-\frac{27}{2176}\,(2\,x+3)^{\frac{17}{2}} + \frac{189}{640}\,(2\,x+3)^{\frac{15}{2}} - \frac{3519}{1664}\,(2\,x+3)^{\frac{13}{2}} + \frac{10475}{1408}\,(2\,x+3)^{\frac{11}{2}} - \frac{17201}{1152}\,(2\,x+3)^{\frac{9}{2}} + \frac{16005}{896}\,(2\,x+3)^{\frac{7}{2}} - \frac{1585}{128}\,(2\,x+3)^{\frac{5}{2}} + \frac{1625}{384}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -27/2176*(2*x + 3)^(17/2) + 189/640*(2*x + 3)^(15/2) - 3519/1664*(2*x + 3)^
(13/2) + 10475/1408*(2*x + 3)^(11/2) - 17201/1152*(2*x + 3)^(9/2) + 16005/8
96*(2*x + 3)^(7/2) - 1585/128*(2*x + 3)^(5/2) + 1625/384*(2*x + 3)^(3/2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{\left(1216215x^7 - 1702701x^6 - 20968794x^5 - 47286540x^4 - 50880095x^3 - 29756385x^2 - 9013014x - 1197186\right)(2x+3)^{\frac{3}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3*(2*x+3)^(1/2),x)
```

```
[Out] -1/765765*(1216215*x^7-1702701*x^6-20968794*x^5-47286540*x^4-50880095*x^3-2
9756385*x^2-9013014*x-1197186)*(2*x+3)^(3/2)
```

maxima [A] time = 0.67, size = 73, normalized size = 0.70

$$-\frac{27}{2176}\,(2\,x+3)^{\frac{17}{2}} + \frac{189}{640}\,(2\,x+3)^{\frac{15}{2}} - \frac{3519}{1664}\,(2\,x+3)^{\frac{13}{2}} + \frac{10475}{1408}\,(2\,x+3)^{\frac{11}{2}} - \frac{17201}{1152}\,(2\,x+3)^{\frac{9}{2}} + \frac{16005}{896}\,(2\,x+3)^{\frac{7}{2}} - \frac{1585}{128}\,(2\,x+3)^{\frac{5}{2}} + \frac{1625}{384}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -27/2176*(2*x + 3)^(17/2) + 189/640*(2*x + 3)^(15/2) - 3519/1664*(2*x + 3)^
(13/2) + 10475/1408*(2*x + 3)^(11/2) - 17201/1152*(2*x + 3)^(9/2) + 16005/8
96*(2*x + 3)^(7/2) - 1585/128*(2*x + 3)^(5/2) + 1625/384*(2*x + 3)^(3/2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,(2\,x+3)^{3/2}}{384} - \frac{1585\,(2\,x+3)^{5/2}}{128} + \frac{16005\,(2\,x+3)^{7/2}}{896} - \frac{17201\,(2\,x+3)^{9/2}}{1152} + \frac{10475\,(2\,x+3)^{11/2}}{1408} - \frac{3519\,(2\,x+3)^{13/2}}{1664} + \frac{189\,(2\,x+3)^{15/2}}{640} - \frac{27\,(2\,x+3)^{17/2}}{2176}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (1625*(2*x + 3)^(3/2))/384 - (1585*(2*x + 3)^(5/2))/128 + (16005*(2*x + 3)^
(7/2))/896 - (17201*(2*x + 3)^(9/2))/1152 + (10475*(2*x + 3)^(11/2))/1408 -
 (3519*(2*x + 3)^(13/2))/1664 + (189*(2*x + 3)^(15/2))/640 - (27*(2*x + 3)^
(17/2))/2176
```

sympy [A] time = 4.02, size = 94, normalized size = 0.90

$$-\frac{27(2x+3)^{\frac{17}{2}}}{2176}+\frac{189(2x+3)^{\frac{15}{2}}}{640}-\frac{3519(2x+3)^{\frac{13}{2}}}{1664}+\frac{10475(2x+3)^{\frac{11}{2}}}{1408}-\frac{17201(2x+3)^{\frac{9}{2}}}{1152}+\frac{16005(2x+3)^{\frac{7}{2}}}{896}-\frac{1585(2x+3)^{\frac{5}{2}}}{128}+\frac{1625(2x+3)^{\frac{3}{2}}}{384}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3*(3+2*x)**(1/2),x)
```

```
[Out] -27*(2*x + 3)**(17/2)/2176 + 189*(2*x + 3)**(15/2)/640 - 3519*(2*x + 3)**(1
3/2)/1664 + 10475*(2*x + 3)**(11/2)/1408 - 17201*(2*x + 3)**(9/2)/1152 + 16
005*(2*x + 3)**(7/2)/896 - 1585*(2*x + 3)**(5/2)/128 + 1625*(2*x + 3)**(3/2
)/384
```

3.2305 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=105

$$-\frac{9}{640}(2x+3)^{15/2}+\frac{567(2x+3)^{13/2}}{1664}-\frac{3519(2x+3)^{11/2}}{1408}+\frac{10475(2x+3)^{9/2}}{1152}-\frac{17201}{896}(2x+3)^{7/2}+\frac{3201}{128}(2x+3)^{5/2}-\frac{792}{38}$$

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{640}(2x+3)^{15/2}+\frac{567(2x+3)^{13/2}}{1664}-\frac{3519(2x+3)^{11/2}}{1408}+\frac{10475(2x+3)^{9/2}}{1152}-\frac{17201}{896}(2x+3)^{7/2}+\frac{3201}{128}(2x+3)^{5/2}-\frac{7925}{384}(2x+3)^{3/2}+\frac{1625}{128}\sqrt{2x+3}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/Sqrt[3 + 2*x],x]
```

```
[Out] (1625*Sqrt[3 + 2*x])/128 - (7925*(3 + 2*x)^(3/2))/384 + (3201*(3 + 2*x)^(5/
2))/128 - (17201*(3 + 2*x)^(7/2))/896 + (10475*(3 + 2*x)^(9/2))/1152 - (351
9*(3 + 2*x)^(11/2))/1408 + (567*(3 + 2*x)^(13/2))/1664 - (9*(3 + 2*x)^(15/2
))/640
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{\sqrt{3+2x}}\,dx = \int \left(\frac{1625}{128\sqrt{3+2x}}-\frac{7925}{128}\sqrt{3+2x}+\frac{16005}{128}(3+2x)^{3/2}-\frac{17201}{128}(3+2x)^{5/2}+\frac{1}{}\right.$$
$$=\frac{1625}{128}\sqrt{3+2x}-\frac{7925}{384}(3+2x)^{3/2}+\frac{3201}{128}(3+2x)^{5/2}-\frac{17201}{896}(3+2x)^{7/2}+\frac{104}{}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{\sqrt{2x+3}\left(81081x^7-130977x^6-1407294x^5-3109960x^4-3285105x^3-1924641x^2-535098x-196506\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/Sqrt[3 + 2*x],x]
```

```
[Out] -1/45045*(Sqrt[3 + 2*x]*(-196506 - 535098*x - 1924641*x^2 - 3285105*x^3 - 3
109960*x^4 - 1407294*x^5 - 130977*x^6 + 81081*x^7))
```

IntegrateAlgebraic [A] time = 0.06, size = 93, normalized size = 0.89

$$\frac{-81081(2x+3)^{15/2}+1964655(2x+3)^{13/2}-14410305(2x+3)^{11/2}+52427375(2x+3)^{9/2}-110688435(2x+3)^{7/2}+144189045(2x+3)^{5/2}-118993875(2x+3)^{3/2}+73198125\sqrt{2x+3}}{5765760}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^3)/Sqrt[3 + 2*x],x]
```

```
[Out] (73198125*Sqrt[3 + 2*x] - 118993875*(3 + 2*x)^(3/2) + 144189045*(3 + 2*x)^(
5/2) - 110688435*(3 + 2*x)^(7/2) + 52427375*(3 + 2*x)^(9/2) - 14410305*(3 +
 2*x)^(11/2) + 1964655*(3 + 2*x)^(13/2) - 81081*(3 + 2*x)^(15/2))/5765760
```

fricas [A] time = 0.38, size = 44, normalized size = 0.42

$$-\frac{1}{45045}\left(81081\,x^{7}-130977\,x^{6}-1407294\,x^{5}-3109960\,x^{4}-3285105\,x^{3}-1924641\,x^{2}-535098\,x-196506\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/45045*(81081*x^7 - 130977*x^6 - 1407294*x^5 - 3109960*x^4 - 3285105*x^3
- 1924641*x^2 - 535098*x - 196506)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 73, normalized size = 0.70

$$-\frac{9}{640}\,(2\,x+3)^{\frac{15}{2}}+\frac{567}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{3519}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{10475}{1152}\,(2\,x+3)^{\frac{9}{2}}-\frac{17201}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{3201}{128}\,(2\,x+3)^{\frac{5}{2}}-\frac{7925}{384}\,(2\,x+3)^{\frac{3}{2}}+\frac{1625}{128}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -9/640*(2*x + 3)^(15/2) + 567/1664*(2*x + 3)^(13/2) - 3519/1408*(2*x + 3)^(
11/2) + 10475/1152*(2*x + 3)^(9/2) - 17201/896*(2*x + 3)^(7/2) + 3201/128*(
2*x + 3)^(5/2) - 7925/384*(2*x + 3)^(3/2) + 1625/128*sqrt(2*x + 3)
```

maple [A] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{\left(81081x^{7}-130977x^{6}-1407294x^{5}-3109960x^{4}-3285105x^{3}-1924641x^{2}-535098x-196506\right)\sqrt{2x+3}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(1/2),x)
```

```
[Out] -1/45045*(81081*x^7-130977*x^6-1407294*x^5-3109960*x^4-3285105*x^3-1924641*
x^2-535098*x-196506)*(2*x+3)^(1/2)
```

maxima [A] time = 0.51, size = 73, normalized size = 0.70

$$-\frac{9}{640}\,(2\,x+3)^{\frac{15}{2}}+\frac{567}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{3519}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{10475}{1152}\,(2\,x+3)^{\frac{9}{2}}-\frac{17201}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{3201}{128}\,(2\,x+3)^{\frac{5}{2}}-\frac{7925}{384}\,(2\,x+3)^{\frac{3}{2}}+\frac{1625}{128}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -9/640*(2*x + 3)^(15/2) + 567/1664*(2*x + 3)^(13/2) - 3519/1408*(2*x + 3)^(
11/2) + 10475/1152*(2*x + 3)^(9/2) - 17201/896*(2*x + 3)^(7/2) + 3201/128*(
2*x + 3)^(5/2) - 7925/384*(2*x + 3)^(3/2) + 1625/128*sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,\sqrt{2\,x+3}}{128}-\frac{7925\,{(2\,x+3)}^{3/2}}{384}+\frac{3201\,{(2\,x+3)}^{5/2}}{128}-\frac{17201\,{(2\,x+3)}^{7/2}}{896}+\frac{10475\,{(2\,x+3)}^{9/2}}{1152}-\frac{3519\,{(2\,x+3)}^{11/2}}{1408}+\frac{567\,{(2\,x+3)}^{13/2}}{1664}-\frac{9\,{(2\,x+3)}^{15/2}}{640}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(1/2),x)
```

```
[Out] (1625*(2*x + 3)^(1/2))/128 - (7925*(2*x + 3)^(3/2))/384 + (3201*(2*x + 3)^(
5/2))/128 - (17201*(2*x + 3)^(7/2))/896 + (10475*(2*x + 3)^(9/2))/1152 - (3
519*(2*x + 3)^(11/2))/1408 + (567*(2*x + 3)^(13/2))/1664 - (9*(2*x + 3)^(15
/2))/640
```

sympy [A] time = 124.64, size = 94, normalized size = 0.90

$$-\frac{9(2x+3)^{\frac{15}{2}}}{640}+\frac{567(2x+3)^{\frac{13}{2}}}{1664}-\frac{3519(2x+3)^{\frac{11}{2}}}{1408}+\frac{10475(2x+3)^{\frac{9}{2}}}{1152}-\frac{17201(2x+3)^{\frac{7}{2}}}{896}+\frac{3201(2x+3)^{\frac{5}{2}}}{128}-\frac{7925(2x+3)^{\frac{3}{2}}}{384}+\frac{1625\sqrt{2x+3}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(1/2),x)
```

```
[Out] -9*(2*x + 3)**(15/2)/640 + 567*(2*x + 3)**(13/2)/1664 - 3519*(2*x + 3)**(11
/2)/1408 + 10475*(2*x + 3)**(9/2)/1152 - 17201*(2*x + 3)**(7/2)/896 + 3201*
(2*x + 3)**(5/2)/128 - 7925*(2*x + 3)**(3/2)/384 + 1625*sqrt(2*x + 3)/128
```

3.2306 $\int \frac{(5-x)(2+5x+3x^2)^3}{(3+2x)^{3/2}} \, dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{13/2}}{1664}+\frac{567(2x+3)^{11/2}}{1408}-\frac{391}{128}(2x+3)^{9/2}+\frac{10475}{896}(2x+3)^{7/2}-\frac{17201}{640}(2x+3)^{5/2}+\frac{5335}{128}(2x+3)^{3/2}-\frac{7925}{128}\sqrt{2x+\cdots}$$

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{13/2}}{1664}+\frac{567(2x+3)^{11/2}}{1408}-\frac{391}{128}(2x+3)^{9/2}+\frac{10475}{896}(2x+3)^{7/2}-\frac{17201}{640}(2x+3)^{5/2}+\frac{5335}{128}(2x+3)^{3/2}-\frac{7925}{128}\sqrt{2x+3}-\frac{1625}{128\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(3/2),x]
```

```
[Out] -1625/(128*Sqrt[3 + 2*x]) - (7925*Sqrt[3 + 2*x])/128 + (5335*(3 + 2*x)^(3/2
))/128 - (17201*(3 + 2*x)^(5/2))/640 + (10475*(3 + 2*x)^(7/2))/896 - (391*(
3 + 2*x)^(9/2))/128 + (567*(3 + 2*x)^(11/2))/1408 - (27*(3 + 2*x)^(13/2))/1
664
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{3/2}}\,dx &= \int \left(\frac{1625}{128(3+2x)^{3/2}}-\frac{7925}{128\sqrt{3+2x}}+\frac{16005}{128}\sqrt{3+2x}-\frac{17201}{128}(3+2x)^{3/2}+\frac{10475}{128}\cdots\right)\\ &= -\frac{1625}{128\sqrt{3+2x}}-\frac{7925}{128}\sqrt{3+2x}+\frac{5335}{128}(3+2x)^{3/2}-\frac{17201}{640}(3+2x)^{5/2}+\frac{10475}{896}(\cdots\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{10395x^7-19845x^6-180530x^5-392500x^4-398339x^3-256433x^2+77138x+431614}{5005\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(3/2),x]
```

```
[Out] -1/5005*(431614 + 77138*x - 256433*x^2 - 398339*x^3 - 392500*x^4 - 180530*x
^5 - 19845*x^6 + 10395*x^7)/Sqrt[3 + 2*x]
```

IntegrateAlgebraic [A] time = 0.06, size = 76, normalized size = 0.72

$$\frac{-10395(2x+3)^7+257985(2x+3)^6-1956955(2x+3)^5+7489625(2x+3)^4-17218201(2x+3)^3+26701675(2x+3)^2-39664625(2x+3)-8133125}{640640\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(3/2),x]
```

```
[Out] (-8133125 - 39664625*(3 + 2*x) + 26701675*(3 + 2*x)^2 - 17218201*(3 + 2*x)^
3 + 7489625*(3 + 2*x)^4 - 1956955*(3 + 2*x)^5 + 257985*(3 + 2*x)^6 - 10395*
(3 + 2*x)^7)/(640640*Sqrt[3 + 2*x])
```

fricas [A] time = 0.38, size = 44, normalized size = 0.42

$$-\frac{10395\,x^{7}-19845\,x^{6}-180530\,x^{5}-392500\,x^{4}-398339\,x^{3}-256433\,x^{2}+77138\,x+431614}{5005\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/5005*(10395*x^7 - 19845*x^6 - 180530*x^5 - 392500*x^4 - 398339*x^3 - 256
433*x^2 + 77138*x + 431614)/sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 73, normalized size = 0.70

$$-\frac{27}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{567}{1408}\,(2\,x+3)^{\frac{11}{2}}-\frac{391}{128}\,(2\,x+3)^{\frac{9}{2}}+\frac{10475}{896}\,(2\,x+3)^{\frac{7}{2}}-\frac{17201}{640}\,(2\,x+3)^{\frac{5}{2}}+\frac{5335}{128}\,(2\,x+3)^{\frac{3}{2}}-\frac{7925}{128}\,\sqrt{2\,x+3}-\frac{1625}{128\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] -27/1664*(2*x + 3)^(13/2) + 567/1408*(2*x + 3)^(11/2) - 391/128*(2*x + 3)^(
9/2) + 10475/896*(2*x + 3)^(7/2) - 17201/640*(2*x + 3)^(5/2) + 5335/128*(2*
x + 3)^(3/2) - 7925/128*sqrt(2*x + 3) - 1625/128/sqrt(2*x + 3)
```

maple [A] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{10395x^{7}-19845x^{6}-180530x^{5}-392500x^{4}-398339x^{3}-256433x^{2}+77138x+431614}{5005\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(3/2),x)
```

```
[Out] -1/5005*(10395*x^7-19845*x^6-180530*x^5-392500*x^4-398339*x^3-256433*x^2+77
138*x+431614)/(2*x+3)^(1/2)
```

maxima [A] time = 0.51, size = 73, normalized size = 0.70

$$-\frac{27}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{567}{1408}\,(2\,x+3)^{\frac{11}{2}}-\frac{391}{128}\,(2\,x+3)^{\frac{9}{2}}+\frac{10475}{896}\,(2\,x+3)^{\frac{7}{2}}-\frac{17201}{640}\,(2\,x+3)^{\frac{5}{2}}+\frac{5335}{128}\,(2\,x+3)^{\frac{3}{2}}-\frac{7925}{128}\,\sqrt{2\,x+3}-\frac{1625}{128\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -27/1664*(2*x + 3)^(13/2) + 567/1408*(2*x + 3)^(11/2) - 391/128*(2*x + 3)^(
9/2) + 10475/896*(2*x + 3)^(7/2) - 17201/640*(2*x + 3)^(5/2) + 5335/128*(2*
x + 3)^(3/2) - 7925/128*sqrt(2*x + 3) - 1625/128/sqrt(2*x + 3)
```

mupad [B] time = 0.04, size = 73, normalized size = 0.70

$$\frac{5335\,(2\,x+3)^{3/2}}{128}-\frac{7925\,\sqrt{2\,x+3}}{128}-\frac{1625}{128\,\sqrt{2\,x+3}}-\frac{17201\,(2\,x+3)^{5/2}}{640}+\frac{10475\,(2\,x+3)^{7/2}}{896}-\frac{391\,(2\,x+3)^{9/2}}{128}+\frac{567\,(2\,x+3)^{11/2}}{1408}-\frac{27\,(2\,x+3)^{13/2}}{1664}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(3/2),x)
```

```
[Out] (5335*(2*x + 3)^(3/2))/128 - (7925*(2*x + 3)^(1/2))/128 - 1625/(128*(2*x +
3)^(1/2)) - (17201*(2*x + 3)^(5/2))/640 + (10475*(2*x + 3)^(7/2))/896 - (39
```

```
1*(2*x + 3)^(9/2))/128 + (567*(2*x + 3)^(11/2))/1408 - (27*(2*x + 3)^(13/2)
)/1664
```

sympy [A] time = 46.04, size = 94, normalized size = 0.90

$$-\frac{27(2x+3)^{\frac{13}{2}}}{1664}+\frac{567(2x+3)^{\frac{11}{2}}}{1408}-\frac{391(2x+3)^{\frac{9}{2}}}{128}+\frac{10475(2x+3)^{\frac{7}{2}}}{896}-\frac{17201(2x+3)^{\frac{5}{2}}}{640}+\frac{5335(2x+3)^{\frac{3}{2}}}{128}-\frac{7925\sqrt{2x+3}}{128}-\frac{1625}{128\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(3/2),x)
```

```
[Out] -27*(2*x + 3)**(13/2)/1664 + 567*(2*x + 3)**(11/2)/1408 - 391*(2*x + 3)**(9
/2)/128 + 10475*(2*x + 3)**(7/2)/896 - 17201*(2*x + 3)**(5/2)/640 + 5335*(2
*x + 3)**(3/2)/128 - 7925*sqrt(2*x + 3)/128 - 1625/(128*sqrt(2*x + 3))
```

3.2307 $\int \frac{(5-x)(2+5x+3x^2)^3}{(3+2x)^{5/2}} dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{11/2}}{1408}+\frac{63}{128}(2x+3)^{9/2}-\frac{3519}{896}(2x+3)^{7/2}+\frac{2095}{128}(2x+3)^{5/2}-\frac{17201}{384}(2x+3)^{3/2}+\frac{16005}{128}\sqrt{2x+3}+\frac{7925}{128\sqrt{2x}}$$

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{11/2}}{1408}+\frac{63}{128}(2x+3)^{9/2}-\frac{3519}{896}(2x+3)^{7/2}+\frac{2095}{128}(2x+3)^{5/2}-\frac{17201}{384}(2x+3)^{3/2}+\frac{16005}{128}\sqrt{2x+3}+\frac{7925}{128\sqrt{2x+3}}-\frac{1625}{384(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(5/2),x]
```

```
[Out] -1625/(384*(3 + 2*x)^(3/2)) + 7925/(128*Sqrt[3 + 2*x]) + (16005*Sqrt[3 + 2*
x])/128 - (17201*(3 + 2*x)^(3/2))/384 + (2095*(3 + 2*x)^(5/2))/128 - (3519*
(3 + 2*x)^(7/2))/896 + (63*(3 + 2*x)^(9/2))/128 - (27*(3 + 2*x)^(11/2))/140
8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{5/2}}\,dx = \int \left(\frac{1625}{128(3+2x)^{5/2}}-\frac{7925}{128(3+2x)^{3/2}}+\frac{16005}{128\sqrt{3+2x}}-\frac{17201}{128}\sqrt{3+2x}+\frac{1047}{128}\right.$$

$$= -\frac{1625}{384(3+2x)^{3/2}}+\frac{7925}{128\sqrt{3+2x}}+\frac{16005}{128}\sqrt{3+2x}-\frac{17201}{384}(3+2x)^{3/2}+\frac{2095}{128}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{567x^7-1323x^6-9666x^5-21360x^4-17663x^3-42003x^2-184566x-181486}{231(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/231*(-181486 - 184566*x - 42003*x^2 - 17663*x^3 - 21360*x^4 - 9666*x^5 -
 1323*x^6 + 567*x^7)/(3 + 2*x)^(3/2)
```

IntegrateAlgebraic [A] time = 0.05, size = 76, normalized size = 0.72

$$\frac{-567(2x+3)^7+14553(2x+3)^6-116127(2x+3)^5+483945(2x+3)^4-1324477(2x+3)^3+3697155(2x+3)^2+1830675(2x+3)-125125}{29568(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(5/2),x]
```

```
[Out] (-125125 + 1830675*(3 + 2*x) + 3697155*(3 + 2*x)^2 - 1324477*(3 + 2*x)^3 +
483945*(3 + 2*x)^4 - 116127*(3 + 2*x)^5 + 14553*(3 + 2*x)^6 - 567*(3 + 2*x)
^7)/(29568*(3 + 2*x)^(3/2))
```

fricas [A] time = 0.39, size = 56, normalized size = 0.53

$$-\frac{\left(567\,x^{7}-1323\,x^{6}-9666\,x^{5}-21360\,x^{4}-17663\,x^{3}-42003\,x^{2}-184566\,x-181486\right)\sqrt{2\,x+3}}{231\,\left(4\,x^{2}+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/231*(567*x^7 - 1323*x^6 - 9666*x^5 - 21360*x^4 - 17663*x^3 - 42003*x^2 -
 184566*x - 181486)*sqrt(2*x + 3)/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.18, size = 69, normalized size = 0.66

$$-\frac{27}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{63}{128}\,(2\,x+3)^{\frac{9}{2}}-\frac{3519}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{2095}{128}\,(2\,x+3)^{\frac{5}{2}}-\frac{17201}{384}\,(2\,x+3)^{\frac{3}{2}}+\frac{16005}{128}\,\sqrt{2\,x+3}+\frac{25\,(951\,x+1394)}{192\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] -27/1408*(2*x + 3)^(11/2) + 63/128*(2*x + 3)^(9/2) - 3519/896*(2*x + 3)^(7/
2) + 2095/128*(2*x + 3)^(5/2) - 17201/384*(2*x + 3)^(3/2) + 16005/128*sqrt(
2*x + 3) + 25/192*(951*x + 1394)/(2*x + 3)^(3/2)
```

maple [A] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{567x^{7}-1323x^{6}-9666x^{5}-21360x^{4}-17663x^{3}-42003x^{2}-184566x-181486}{231\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(5/2),x)
```

```
[Out] -1/231*(567*x^7-1323*x^6-9666*x^5-21360*x^4-17663*x^3-42003*x^2-184566*x-18
1486)/(2*x+3)^(3/2)
```

maxima [A] time = 0.56, size = 69, normalized size = 0.66

$$-\frac{27}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{63}{128}\,(2\,x+3)^{\frac{9}{2}}-\frac{3519}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{2095}{128}\,(2\,x+3)^{\frac{5}{2}}-\frac{17201}{384}\,(2\,x+3)^{\frac{3}{2}}+\frac{16005}{128}\,\sqrt{2\,x+3}+\frac{25\,(951\,x+1394)}{192\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -27/1408*(2*x + 3)^(11/2) + 63/128*(2*x + 3)^(9/2) - 3519/896*(2*x + 3)^(7/
2) + 2095/128*(2*x + 3)^(5/2) - 17201/384*(2*x + 3)^(3/2) + 16005/128*sqrt(
2*x + 3) + 25/192*(951*x + 1394)/(2*x + 3)^(3/2)
```

mupad [B] time = 0.03, size = 68, normalized size = 0.65

$$\frac{\frac{7925\,x}{64}+\frac{17425}{96}}{(2\,x+3)^{3/2}}+\frac{16005\,\sqrt{2\,x+3}}{128}-\frac{17201\,(2\,x+3)^{3/2}}{384}+\frac{2095\,(2\,x+3)^{5/2}}{128}-\frac{3519\,(2\,x+3)^{7/2}}{896}+\frac{63\,(2\,x+3)^{9/2}}{128}-\frac{27\,(2\,x+3)^{11/2}}{1408}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(5/2),x)
```

[Out] ((7925*x)/64 + 17425/96)/(2*x + 3)^(3/2) + (16005*(2*x + 3)^(1/2))/128 - (17201*(2*x + 3)^(3/2))/384 + (2095*(2*x + 3)^(5/2))/128 - (3519*(2*x + 3)^(7/2))/896 + (63*(2*x + 3)^(9/2))/128 - (27*(2*x + 3)^(11/2))/1408

sympy [A] time = 56.09, size = 94, normalized size = 0.90

$$-\frac{27(2x+3)^{\frac{11}{2}}}{1408}+\frac{63(2x+3)^{\frac{9}{2}}}{128}-\frac{3519(2x+3)^{\frac{7}{2}}}{896}+\frac{2095(2x+3)^{\frac{5}{2}}}{128}-\frac{17201(2x+3)^{\frac{3}{2}}}{384}+\frac{16005\sqrt{2x+3}}{128}+\frac{7925}{128\sqrt{2x+3}}-\frac{1625}{384(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(5/2),x)

[Out] -27*(2*x + 3)**(11/2)/1408 + 63*(2*x + 3)**(9/2)/128 - 3519*(2*x + 3)**(7/2)/896 + 2095*(2*x + 3)**(5/2)/128 - 17201*(2*x + 3)**(3/2)/384 + 16005*sqrt(2*x + 3)/128 + 7925/(128*sqrt(2*x + 3)) - 1625/(384*(2*x + 3)**(3/2))

3.2308 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{3}{128}(2x+3)^{9/2}+\frac{81}{128}(2x+3)^{7/2}-\frac{3519}{640}(2x+3)^{5/2}+\frac{10475}{384}(2x+3)^{3/2}-\frac{17201}{128}\sqrt{2x+3}-\frac{16005}{128\sqrt{2x+3}}+\frac{7925}{384(2x+3)^{3/2}}-$$

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{3}{128}(2x+3)^{9/2}+\frac{81}{128}(2x+3)^{7/2}-\frac{3519}{640}(2x+3)^{5/2}+\frac{10475}{384}(2x+3)^{3/2}-\frac{17201}{128}\sqrt{2x+3}-\frac{16005}{128\sqrt{2x+3}}+\frac{7925}{384(2x+3)^{3/2}}-\frac{325}{128(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(7/2),x]
```

```
[Out] -325/(128*(3 + 2*x)^(5/2)) + 7925/(384*(3 + 2*x)^(3/2)) - 16005/(128*Sqrt[3
 + 2*x]) - (17201*Sqrt[3 + 2*x])/128 + (10475*(3 + 2*x)^(3/2))/384 - (3519*
(3 + 2*x)^(5/2))/640 + (81*(3 + 2*x)^(7/2))/128 - (3*(3 + 2*x)^(9/2))/128
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{7/2}}\,dx &= \int \left(\frac{1625}{128(3+2x)^{7/2}}-\frac{7925}{128(3+2x)^{5/2}}+\frac{16005}{128(3+2x)^{3/2}}-\frac{17201}{128\sqrt{3+2x}}+\frac{10475}{128}\sqrt{\right.\\ &= -\frac{325}{128(3+2x)^{5/2}}+\frac{7925}{384(3+2x)^{3/2}}-\frac{16005}{128\sqrt{3+2x}}-\frac{17201}{128}\sqrt{3+2x}+\frac{10475}{384}(3+\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{45x^7-135x^6-702x^5-1940x^4+3195x^3+41805x^2+85070x+51162}{15(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(7/2),x]
```

```
[Out] -1/15*(51162 + 85070*x + 41805*x^2 + 3195*x^3 - 1940*x^4 - 702*x^5 - 135*x^
6 + 45*x^7)/(3 + 2*x)^(5/2)
```

IntegrateAlgebraic [A] time = 0.05, size = 76, normalized size = 0.72

$$\frac{-45(2x+3)^7+1215(2x+3)^6-10557(2x+3)^5+52375(2x+3)^4-258015(2x+3)^3-240075(2x+3)^2+39625(2x+3)-4875}{1920(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(7/2),x]
```

```
[Out] (-4875 + 39625*(3 + 2*x) - 240075*(3 + 2*x)^2 - 258015*(3 + 2*x)^3 + 52375*
(3 + 2*x)^4 - 10557*(3 + 2*x)^5 + 1215*(3 + 2*x)^6 - 45*(3 + 2*x)^7)/(1920*
(3 + 2*x)^(5/2))
```

fricas [A] time = 0.38, size = 61, normalized size = 0.58

$$-\frac{\left(45 x^{7}-135 x^{6}-702 x^{5}-1940 x^{4}+3195 x^{3}+41805 x^{2}+85070 x+51162\right) \sqrt{2 x+3}}{15 \left(8 x^{3}+36 x^{2}+54 x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/15*(45*x^7 - 135*x^6 - 702*x^5 - 1940*x^4 + 3195*x^3 + 41805*x^2 + 85070
*x + 51162)*sqrt(2*x + 3)/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [A] time = 0.18, size = 69, normalized size = 0.66

$$-\frac{3}{128} (2 x+3)^{\frac{9}{2}}+\frac{81}{128} (2 x+3)^{\frac{7}{2}}-\frac{3519}{640} (2 x+3)^{\frac{5}{2}}+\frac{10475}{384} (2 x+3)^{\frac{3}{2}}-\frac{17201}{128} \sqrt{2 x+3}-\frac{5 \left(9603 (2 x+3)^{2}-3170 x-4560\right)}{384 (2 x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] -3/128*(2*x + 3)^(9/2) + 81/128*(2*x + 3)^(7/2) - 3519/640*(2*x + 3)^(5/2)
+ 10475/384*(2*x + 3)^(3/2) - 17201/128*sqrt(2*x + 3) - 5/384*(9603*(2*x +
3)^2 - 3170*x - 4560)/(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{45 x^{7}-135 x^{6}-702 x^{5}-1940 x^{4}+3195 x^{3}+41805 x^{2}+85070 x+51162}{15 (2 x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(7/2),x)
```

```
[Out] -1/15*(45*x^7-135*x^6-702*x^5-1940*x^4+3195*x^3+41805*x^2+85070*x+51162)/(2
*x+3)^(5/2)
```

maxima [A] time = 0.49, size = 69, normalized size = 0.66

$$-\frac{3}{128} (2 x+3)^{\frac{9}{2}}+\frac{81}{128} (2 x+3)^{\frac{7}{2}}-\frac{3519}{640} (2 x+3)^{\frac{5}{2}}+\frac{10475}{384} (2 x+3)^{\frac{3}{2}}-\frac{17201}{128} \sqrt{2 x+3}-\frac{5 \left(9603 (2 x+3)^{2}-3170 x-4560\right)}{384 (2 x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -3/128*(2*x + 3)^(9/2) + 81/128*(2*x + 3)^(7/2) - 3519/640*(2*x + 3)^(5/2)
+ 10475/384*(2*x + 3)^(3/2) - 17201/128*sqrt(2*x + 3) - 5/384*(9603*(2*x +
3)^2 - 3170*x - 4560)/(2*x + 3)^(5/2)
```

mupad [B] time = 0.03, size = 68, normalized size = 0.65

$$\frac{\frac{7925 x}{192}-\frac{16005 (2 x+3)^{2}}{128}+\frac{475}{8}}{(2 x+3)^{5/2}}-\frac{17201 \sqrt{2 x+3}}{128}+\frac{10475 (2 x+3)^{3/2}}{384}-\frac{3519 (2 x+3)^{5/2}}{640}+\frac{81 (2 x+3)^{7/2}}{128}-\frac{3 (2 x+3)^{9/2}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(7/2),x)
```

```
[Out] ((7925*x)/192 - (16005*(2*x + 3)^2)/128 + 475/8)/(2*x + 3)^(5/2) - (17201*(
2*x + 3)^(1/2))/128 + (10475*(2*x + 3)^(3/2))/384 - (3519*(2*x + 3)^(5/2))/
640 + (81*(2*x + 3)^(7/2))/128 - (3*(2*x + 3)^(9/2))/128
```

sympy [A] time = 62.14, size = 94, normalized size = 0.90

$$-\frac{3(2x+3)^{\frac{9}{2}}}{128}+\frac{81(2x+3)^{\frac{7}{2}}}{128}-\frac{3519(2x+3)^{\frac{5}{2}}}{640}+\frac{10475(2x+3)^{\frac{3}{2}}}{384}-\frac{17201\sqrt{2x+3}}{128}-\frac{16005}{128\sqrt{2x+3}}+\frac{7925}{384(2x+3)^{\frac{3}{2}}}-\frac{325}{128(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(7/2),x)
```

```
[Out] -3*(2*x + 3)**(9/2)/128 + 81*(2*x + 3)**(7/2)/128 - 3519*(2*x + 3)**(5/2)/6
40 + 10475*(2*x + 3)**(3/2)/384 - 17201*sqrt(2*x + 3)/128 - 16005/(128*sqrt
(2*x + 3)) + 7925/(384*(2*x + 3)**(3/2)) - 325/(128*(2*x + 3)**(5/2))
```

3.2309 $\int \frac{(5-x)(3+2x)^{7/2}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=94

$$-\frac{2}{21}(2x+3)^{7/2}+\frac{62}{45}(2x+3)^{5/2}+\frac{526}{81}(2x+3)^{3/2}+\frac{3278}{81}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.10, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{21}(2x+3)^{7/2}+\frac{62}{45}(2x+3)^{5/2}+\frac{526}{81}(2x+3)^{3/2}+\frac{3278}{81}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (3278*Sqrt[3 + 2*x])/81 + (526*(3 + 2*x)^(3/2))/81 + (62*(3 + 2*x)^(5/2))/4
5 - (2*(3 + 2*x)^(7/2))/21 + 12*ArcTanh[Sqrt[3 + 2*x]] - (4250*Sqrt[5/3]*Ar
cTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/81
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{7/2}}{2+5x+3x^2}\,dx = -\frac{2}{21}(3+2x)^{7/2} + \frac{1}{3}\int \frac{(3+2x)^{5/2}(49+31x)}{2+5x+3x^2}\,dx$$
$$= \frac{62}{45}(3+2x)^{5/2} - \frac{2}{21}(3+2x)^{7/2} + \frac{1}{9}\int \frac{(3+2x)^{3/2}(317+263x)}{2+5x+3x^2}\,dx$$
$$= \frac{526}{81}(3+2x)^{3/2} + \frac{62}{45}(3+2x)^{5/2} - \frac{2}{21}(3+2x)^{7/2} + \frac{1}{27}\int \frac{\sqrt{3+2x}\,(1801+1639x)}{2+5x+3x^2}\,dx$$
$$= \frac{3278}{81}\sqrt{3+2x} + \frac{526}{81}(3+2x)^{3/2} + \frac{62}{45}(3+2x)^{5/2} - \frac{2}{21}(3+2x)^{7/2} + \frac{1}{81}\int \frac{9653+}{\sqrt{3+2x}\,(2}$$
$$= \frac{3278}{81}\sqrt{3+2x} + \frac{526}{81}(3+2x)^{3/2} + \frac{62}{45}(3+2x)^{5/2} - \frac{2}{21}(3+2x)^{7/2} + \frac{2}{81}\,\text{Subst}\left(\int \frac{-819}{5-}\right.$$
$$= \frac{3278}{81}\sqrt{3+2x} + \frac{526}{81}(3+2x)^{3/2} + \frac{62}{45}(3+2x)^{5/2} - \frac{2}{21}(3+2x)^{7/2} - 36\,\text{Subst}\left(\int \frac{1}{-3+}\right.$$
$$= \frac{3278}{81}\sqrt{3+2x} + \frac{526}{81}(3+2x)^{3/2} + \frac{62}{45}(3+2x)^{5/2} - \frac{2}{21}(3+2x)^{7/2} + 12\tanh^{-1}\left(\sqrt{3+2}\right.$$

Mathematica [A] time = 0.07, size = 70, normalized size = 0.74

$$-\frac{8\sqrt{2x+3}\left(270x^3-738x^2-8639x-24728\right)}{2835} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-8*Sqrt[3 + 2*x]*(-24728 - 8639*x - 738*x^2 + 270*x^3))/2835 + 12*ArcTanh[
Sqrt[3 + 2*x]] - (4250*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/81
```

IntegrateAlgebraic [A] time = 0.14, size = 91, normalized size = 0.97

$$-\frac{2\left(135(2x+3)^{7/2}-1953(2x+3)^{5/2}-9205(2x+3)^{3/2}-57365\sqrt{2x+3}\right)}{2835} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*(-57365*Sqrt[3 + 2*x] - 9205*(3 + 2*x)^(3/2) - 1953*(3 + 2*x)^(5/2) + 1
35*(3 + 2*x)^(7/2)))/2835 + 12*ArcTanh[Sqrt[3 + 2*x]] - (4250*Sqrt[5/3]*Arc
Tanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/81
```

fricas [A] time = 0.40, size = 86, normalized size = 0.91

$$\frac{2125}{243}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right) - \frac{8}{2835}\left(270x^3-738x^2-8639x-24728\right)\sqrt{2x+3} + 6\log\left(\sqrt{2x+3}+1\right) - 6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 2125/243*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*
x + 2)) - 8/2835*(270*x^3 - 738*x^2 - 8639*x - 24728)*sqrt(2*x + 3) + 6*log
(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

giac [A] time = 0.22, size = 101, normalized size = 1.07

$$-\frac{2}{21}(2x+3)^{\frac{7}{2}} + \frac{62}{45}(2x+3)^{\frac{5}{2}} + \frac{526}{81}(2x+3)^{\frac{3}{2}} + \frac{2125}{243}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) + \frac{3278}{81}\sqrt{2x+3} + 6\log\left(\sqrt{2x+3}+1\right) - 6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/21*(2*x + 3)^(7/2) + 62/45*(2*x + 3)^(5/2) + 526/81*(2*x + 3)^(3/2) + 21
25/243*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) + 3278/81*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(ab
s(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 80, normalized size = 0.85

$$-\frac{4250\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{243}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{2\,(2x+3)^{\frac{7}{2}}}{21}+\frac{62\,(2x+3)^{\frac{5}{2}}}{45}+\frac{526\,(2x+3)^{\frac{3}{2}}}{81}+\frac{3278\sqrt{2x+3}}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/21*(2*x+3)^(7/2)+62/45*(2*x+3)^(5/2)+526/81*(2*x+3)^(3/2)+3278/81*(2*x+3
)^(1/2)-4250/243*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^
(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.22, size = 97, normalized size = 1.03

$$-\frac{2}{21}\,(2\,x+3)^{\frac{7}{2}}+\frac{62}{45}\,(2\,x+3)^{\frac{5}{2}}+\frac{526}{81}\,(2\,x+3)^{\frac{3}{2}}+\frac{2125}{243}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{3278}{81}\,\sqrt{2\,x+3}+6\,\log\left(\sqrt{2\,x+3}+1\right)-6\,\log\left(\sqrt{2\,x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/21*(2*x + 3)^(7/2) + 62/45*(2*x + 3)^(5/2) + 526/81*(2*x + 3)^(3/2) + 21
25/243*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) + 3278/81*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x +
3) - 1)
```

mupad [B] time = 2.38, size = 71, normalized size = 0.76

$$\frac{3278\,\sqrt{2\,x+3}}{81}+\frac{526\,(2\,x+3)^{3/2}}{81}+\frac{62\,(2\,x+3)^{5/2}}{45}-\frac{2\,(2\,x+3)^{7/2}}{21}-\operatorname{atan}\left(\sqrt{2\,x+3}\,1\mathrm{i}\right)\,12\mathrm{i}+\frac{\sqrt{15}\,\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}\,1\mathrm{i}}{5}\right)\,4250\mathrm{i}}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*4250i)/243 - atan((2*x + 3)
^(1/2)*1i)*12i + (3278*(2*x + 3)^(1/2))/81 + (526*(2*x + 3)^(3/2))/81 + (62
*(2*x + 3)^(5/2))/45 - (2*(2*x + 3)^(7/2))/21
```

sympy [A] time = 113.48, size = 138, normalized size = 1.47

$$-\frac{2\,(2x+3)^{\frac{7}{2}}}{21}+\frac{62\,(2x+3)^{\frac{5}{2}}}{45}+\frac{526\,(2x+3)^{\frac{3}{2}}}{81}+\frac{3278\sqrt{2x+3}}{81}+\frac{21250\left(\begin{cases}-\frac{\sqrt{15}\operatorname{acoth}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for } 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for } 2x+3<\frac{5}{3}\end{cases}\right)}{81}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*(2*x + 3)**(7/2)/21 + 62*(2*x + 3)**(5/2)/45 + 526*(2*x + 3)**(3/2)/81 +
 3278*sqrt(2*x + 3)/81 + 21250*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x
 + 3)/5)/15, 2*x + 3 > 5/3), (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15,
 2*x + 3 < 5/3))/81 - 6*log(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1)
```

3.2310 $\int \frac{(5-x)(3+2x)^{5/2}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=81

$$-\frac{2}{15}(2x+3)^{5/2}+\frac{62}{27}(2x+3)^{3/2}+\frac{526}{27}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.08, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{15}(2x+3)^{5/2}+\frac{62}{27}(2x+3)^{3/2}+\frac{526}{27}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (526*Sqrt[3 + 2*x])/27 + (62*(3 + 2*x)^(3/2))/27 - (2*(3 + 2*x)^(5/2))/15 +
 12*ArcTanh[Sqrt[3 + 2*x]] - (850*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]
])/27
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{5/2}}{2+5x+3x^2}\,dx = -\frac{2}{15}(3+2x)^{5/2}+\frac{1}{3}\int \frac{(3+2x)^{3/2}(49+31x)}{2+5x+3x^2}\,dx$$
$$= \frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+\frac{1}{9}\int \frac{\sqrt{3+2x}\,(317+263x)}{2+5x+3x^2}\,dx$$
$$= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+\frac{1}{27}\int \frac{1801+1639x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx$$
$$= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+\frac{2}{27}\,\text{Subst}\left(\int \frac{-1315+1639x^2}{5-8x^2+3x^4}\,dx,\right.$$
$$= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}-36\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+\right.$$
$$= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\,\text{ta}$$

Mathematica [A] time = 0.07, size = 64, normalized size = 0.79

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2}{405}\left(3\sqrt{2x+3}\left(36x^2-202x-1699\right)+2125\sqrt{15}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (2*(3*Sqrt[3 + 2*x]*(-1699 - 202*x + 36*x^2) +
2125*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/405
```

IntegrateAlgebraic [A] time = 0.11, size = 73, normalized size = 0.90

$$-\frac{2}{135}\sqrt{2x+3}\left(9(2x+3)^2-155(2x+3)-1315\right)+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*(-1315 - 155*(3 + 2*x) + 9*(3 + 2*x)^2))/135 + 12*ArcTanh
[Sqrt[3 + 2*x]] - (850*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/27
```

fricas [A] time = 0.40, size = 81, normalized size = 1.00

$$\frac{425}{81}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)-\frac{2}{135}\left(36x^2-202x-1699\right)\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 425/81*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x
+ 2)) - 2/135*(36*x^2 - 202*x - 1699)*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) +
 1) - 6*log(sqrt(2*x + 3) - 1)
```

giac [A] time = 0.18, size = 92, normalized size = 1.14

$$-\frac{2}{15}(2x+3)^{\frac{5}{2}}+\frac{62}{27}(2x+3)^{\frac{3}{2}}+\frac{425}{81}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{526}{27}\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/15*(2*x + 3)^(5/2) + 62/27*(2*x + 3)^(3/2) + 425/81*sqrt(15)*log(1/2*abs
(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 526/27*sqrt
(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 71, normalized size = 0.88

$$-\frac{850\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{81}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{2\,(2x+3)^{\frac{5}{2}}}{15}+\frac{62\,(2x+3)^{\frac{3}{2}}}{27}+\frac{526\sqrt{2x+3}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/15*(2*x+3)^(5/2)+62/27*(2*x+3)^(3/2)+526/27*(2*x+3)^(1/2)-850/81*arctanh
(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)
^(1/2))
```

maxima [A] time = 1.13, size = 88, normalized size = 1.09

$$-\frac{2}{15}\,(2\,x+3)^{\frac{5}{2}}+\frac{62}{27}\,(2\,x+3)^{\frac{3}{2}}+\frac{425}{81}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{526}{27}\,\sqrt{2\,x+3}+6\,\log\left(\sqrt{2\,x+3}+1\right)-6\,\log\left(\sqrt{2\,x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/15*(2*x + 3)^(5/2) + 62/27*(2*x + 3)^(3/2) + 425/81*sqrt(15)*log(-(sqrt(
15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 526/27*sqrt(2*x + 3)
 + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.06, size = 62, normalized size = 0.77

$$\frac{526\,\sqrt{2\,x+3}}{27}+\frac{62\,{\left(2\,x+3\right)}^{3/2}}{27}-\frac{2\,{\left(2\,x+3\right)}^{5/2}}{15}-\mathrm{atan}\left(\sqrt{2\,x+3}\,1{}\mathrm{i}\right)\,12{}\mathrm{i}+\frac{\sqrt{15}\,\mathrm{atan}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}\,1{}\mathrm{i}}{5}\right)\,850{}\mathrm{i}}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*850i)/81 - atan((2*x + 3)^(
1/2)*1i)*12i + (526*(2*x + 3)^(1/2))/27 + (62*(2*x + 3)^(3/2))/27 - (2*(2*x
 + 3)^(5/2))/15
```

sympy [A] time = 83.33, size = 126, normalized size = 1.56

$$-\frac{2\,(2x+3)^{\frac{5}{2}}}{15}+\frac{62\,(2x+3)^{\frac{3}{2}}}{27}+\frac{526\sqrt{2x+3}}{27}+\frac{4250\left(\begin{cases}-\frac{\sqrt{15}\,\operatorname{acoth}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{27}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*(2*x + 3)**(5/2)/15 + 62*(2*x + 3)**(3/2)/27 + 526*sqrt(2*x + 3)/27 + 42
50*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3),
 (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/27 - 6*log(
sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1)
```

3.2311 $\int \frac{(5-x)(3+2x)^{3/2}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=68

$$-\frac{2}{9}(2x+3)^{3/2}+\frac{62}{9}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{9}(2x+3)^{3/2}+\frac{62}{9}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (62*Sqrt[3 + 2*x])/9 - (2*(3 + 2*x)^(3/2))/9 + 12*ArcTanh[Sqrt[3 + 2*x]] -
(170*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{3/2}}{2+5x+3x^2}\,dx = -\frac{2}{9}(3+2x)^{3/2}+\frac{1}{3}\int \frac{\sqrt{3+2x}\,(49+31x)}{2+5x+3x^2}\,dx$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}+\frac{1}{9}\int \frac{317+263x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}+\frac{2}{9}\,\text{Subst}\left(\int \frac{-155+263x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}-36\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)+\frac{850}{9}\,\text{Subst}\left(\int\right.$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)$$

Mathematica [A] time = 0.03, size = 56, normalized size = 0.82

$$-\frac{2}{27}\left(6\sqrt{2x+3}\,(x-14)-162\tanh^{-1}\left(\sqrt{2x+3}\right)+85\sqrt{15}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*(6*(-14 + x)*Sqrt[3 + 2*x] - 162*ArcTanh[Sqrt[3 + 2*x]] + 85*Sqrt[15]*A
rcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/27
```

IntegrateAlgebraic [A] time = 0.12, size = 60, normalized size = 0.88

$$-\frac{2}{9}\sqrt{2x+3}\,(2x-28)+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*(-28 + 2*x)*Sqrt[3 + 2*x])/9 + 12*ArcTanh[Sqrt[3 + 2*x]] - (170*Sqrt[5/
3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9
```

fricas [A] time = 0.41, size = 74, normalized size = 1.09

$$\frac{85}{27}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)-\frac{4}{9}\sqrt{2x+3}\,(x-14)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 85/27*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x +
 2)) - 4/9*sqrt(2*x + 3)*(x - 14) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2
*x + 3) - 1)
```

giac [A] time = 0.18, size = 83, normalized size = 1.22

$$-\frac{2}{9}(2x+3)^{\frac{3}{2}}+\frac{85}{27}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{62}{9}\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/9*(2*x + 3)^(3/2) + 85/27*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x
+ 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 62/9*sqrt(2*x + 3) + 6*log(sqrt(2*x +
 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 62, normalized size = 0.91

$$-\frac{170\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{27}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{2\,(2x+3)^{\frac{3}{2}}}{9}+\frac{62\sqrt{2x+3}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/9*(2*x+3)^(3/2)+62/9*(2*x+3)^(1/2)-170/27*arctanh(1/5*15^(1/2)*(2*x+3)^(
1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.20, size = 79, normalized size = 1.16

$$-\frac{2}{9}\,(2\,x+3)^{\frac{3}{2}}+\frac{85}{27}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{62}{9}\,\sqrt{2\,x+3}+6\,\log\left(\sqrt{2\,x+3}+1\right)-6\,\log\left(\sqrt{2\,x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/9*(2*x + 3)^(3/2) + 85/27*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sq
rt(15) + 3*sqrt(2*x + 3))) + 62/9*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1)
- 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 53, normalized size = 0.78

$$\frac{62\,\sqrt{2\,x+3}}{9}-\frac{2\,{(2\,x+3)}^{3/2}}{9}-\mathrm{atan}\left(\sqrt{2\,x+3}\,1{}\mathrm{i}\right)\,12{}\mathrm{i}+\frac{\sqrt{15}\,\mathrm{atan}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}\,1{}\mathrm{i}}{5}\right)\,170{}\mathrm{i}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*170i)/27 - atan((2*x + 3)^(
1/2)*1i)*12i + (62*(2*x + 3)^(1/2))/9 - (2*(2*x + 3)^(3/2))/9
```

sympy [A] time = 59.21, size = 114, normalized size = 1.68

$$-\frac{2\,(2x+3)^{\frac{3}{2}}}{9}+\frac{62\sqrt{2x+3}}{9}+\frac{850\left(\begin{cases}-\frac{\sqrt{15}\,\operatorname{acoth}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{9}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*(2*x + 3)**(3/2)/9 + 62*sqrt(2*x + 3)/9 + 850*Piecewise((-sqrt(15)*acoth
(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3), (-sqrt(15)*atanh(sqrt(15)*sq
rt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/9 - 6*log(sqrt(2*x + 3) - 1) + 6*log(sqr
t(2*x + 3) + 1)
```

3.2312 $\int \frac{(5-x)\sqrt{3+2x}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=55

$$-\frac{2}{3}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{3}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x])/3 + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[5/3]*ArcTanh[Sq
rt[3/5]*Sqrt[3 + 2*x]])/3
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{3+2x}}{2+5x+3x^2}\,dx = -\frac{2}{3}\sqrt{3+2x} + \frac{1}{3}\int \frac{49+31x}{\sqrt{3+2x}\,(2+5x+3x^2)}\,dx$$
$$= -\frac{2}{3}\sqrt{3+2x} + \frac{2}{3}\text{Subst}\left(\int \frac{5+31x^2}{5-8x^2+3x^4}\,dx, x, \sqrt{3+2x}\right)$$
$$= -\frac{2}{3}\sqrt{3+2x} - 36\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx, x, \sqrt{3+2x}\right) + \frac{170}{3}\text{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,\right.$$
$$= -\frac{2}{3}\sqrt{3+2x} + 12\tanh^{-1}\left(\sqrt{3+2x}\right) - \frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)$$

Mathematica [A] time = 0.02, size = 55, normalized size = 1.00

$$-\frac{2}{3}\sqrt{2x+3} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x])/3 + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[5/3]*ArcTanh[Sq
rt[3/5]*Sqrt[3 + 2*x]])/3
```

IntegrateAlgebraic [A] time = 0.12, size = 55, normalized size = 1.00

$$-\frac{2}{3}\sqrt{2x+3} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x])/3 + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[5/3]*ArcTanh[Sq
rt[3/5]*Sqrt[3 + 2*x]])/3
```

fricas [A] time = 0.41, size = 71, normalized size = 1.29

$$\frac{17}{9}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3} - 3x - 7}{3x+2}\right) - \frac{2}{3}\sqrt{2x+3} + 6\log\left(\sqrt{2x+3}+1\right) - 6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 17/9*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x +
2)) - 2/3*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) -
1)
```

giac [A] time = 0.17, size = 74, normalized size = 1.35

$$\frac{17}{9}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) - \frac{2}{3}\sqrt{2x+3} + 6\log\left(\sqrt{2x+3}+1\right) - 6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 17/9*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt
(2*x + 3))) - 2/3*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt
(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 53, normalized size = 0.96

$$-\frac{34\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{9}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}\ +1\right)-\frac{2\sqrt{2x+3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/3*(2*x+3)^(1/2)-34/9*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((
2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.30, size = 70, normalized size = 1.27

$$\frac{17}{9}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2}{3}\sqrt{2x+3}+6\log\left(\sqrt{2x+3}\ +1\right)-6\log\left(\sqrt{2x+3}\ -1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 17/9*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3)
)) - 2/3*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 0.07, size = 38, normalized size = 0.69

$$12\operatorname{atanh}\left(\sqrt{2x+3}\right)-\frac{34\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{9}-\frac{2\sqrt{2x+3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - (34*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5
))/9 - (2*(2*x + 3)^(1/2))/3
```

sympy [A] time = 8.20, size = 102, normalized size = 1.85

$$-\frac{2\sqrt{2x+3}}{3}+\frac{170\left(\begin{cases}-\frac{\sqrt{15}\operatorname{acoth}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{3}-6\log\left(\sqrt{2x+3}\ -1\right)+6\log\left(\sqrt{2x+3}\ +1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*sqrt(2*x + 3)/3 + 170*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/
5)/15, 2*x + 3 > 5/3), (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x +
 3 < 5/3))/3 - 6*log(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1)
```

3.2313 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=38

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {826, 1166, 207}

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (34*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{13-x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)\\ &= 34\,\text{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,x,\sqrt{3+2x}\right)-36\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+\right.\\ &= 12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)}{\sqrt{15}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 1.00

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (34*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

IntegrateAlgebraic [A] time = 0.14, size = 38, normalized size = 1.00

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (34*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

fricas [A] time = 0.40, size = 56, normalized size = 1.47

$$\frac{17}{15}\sqrt{15}\log\left(-\frac{\sqrt{15}\sqrt{2x+3}-3x-7}{3x+2}\right)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 17/15*sqrt(15)*log(-(sqrt(15)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 6*log(s
qrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

giac [B] time = 0.17, size = 65, normalized size = 1.71

$$\frac{17}{15}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] 17/15*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqr
t(2*x + 3))) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 44, normalized size = 1.16

$$-\frac{34\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)/(2*x+3)^(1/2),x)
```

```
[Out] -34/15*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)-6
*ln(-1+(2*x+3)^(1/2))
```

maxima [B] time = 1.18, size = 61, normalized size = 1.61

$$\frac{17}{15}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 17/15*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3
))) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.06, size = 29, normalized size = 0.76

$$12\,\mathrm{atanh}\left(\sqrt{2x+3}\right)-\frac{34\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - (34*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5
))/15
```

sympy [A] time = 82.71, size = 95, normalized size = 2.50

$$34\left(\begin{cases}-\frac{\sqrt{15}\,\mathrm{acoth}\left(\frac{\sqrt{15}}{3\sqrt{2x+3}}\right)}{15} & \text{for}\ \frac{1}{2x+3}>\frac{3}{5}\\ -\frac{\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}}{3\sqrt{2x+3}}\right)}{15} & \text{for}\ \frac{1}{2x+3}<\frac{3}{5}\end{cases}\right)-6\log\left(-1+\frac{1}{\sqrt{2x+3}}\right)+6\log\left(1+\frac{1}{\sqrt{2x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)/(3+2*x)**(1/2),x)
```

```
[Out] 34*Piecewise((-sqrt(15)*acoth(sqrt(15)/(3*sqrt(2*x + 3)))/15, 1/(2*x + 3) >
 3/5), (-sqrt(15)*atanh(sqrt(15)/(3*sqrt(2*x + 3)))/15, 1/(2*x + 3) < 3/5))
 - 6*log(-1 + 1/sqrt(2*x + 3)) + 6*log(1 + 1/sqrt(2*x + 3))
```

3.2314 $\int \frac{5-x}{(3+2x)^{3/2}(2+5x+3x^2)}\,dx$

Optimal. Leaf size=55

$$-\frac{26}{5\sqrt{2x+3}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {828, 826, 1166, 207}

$$-\frac{26}{5\sqrt{2x+3}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(5*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[3/5]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/5
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx = -\frac{26}{5\sqrt{3+2x}} + \frac{1}{5}\int \frac{-9-39x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx$$
$$= -\frac{26}{5\sqrt{3+2x}} + \frac{2}{5}\,\text{Subst}\left(\int \frac{99-39x^2}{5-8x^2+3x^4}\,dx, x, \sqrt{3+2x}\right)$$
$$= -\frac{26}{5\sqrt{3+2x}} + \frac{102}{5}\,\text{Subst}\left(\int \frac{1}{-5+3x^2}\,dx, x, \sqrt{3+2x}\right) - 36\,\text{Subst}\left(\int \frac{}{-3}\right.$$
$$= -\frac{26}{5\sqrt{3+2x}} + 12\tanh^{-1}\left(\sqrt{3+2x}\right) - \frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)$$

Mathematica [A] time = 0.04, size = 55, normalized size = 1.00

$$-\frac{26}{5\sqrt{2x+3}} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(5*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[3/5]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/5
```

IntegrateAlgebraic [A] time = 0.15, size = 55, normalized size = 1.00

$$-\frac{26}{5\sqrt{2x+3}} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(5*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[3/5]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/5
```

fricas [B] time = 0.41, size = 95, normalized size = 1.73

$$\frac{17\sqrt{5}\sqrt{3}(2x+3)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right) + 150(2x+3)\log\left(\sqrt{2x+3}+1\right) - 150(2x+3)\log\left(\sqrt{2x+3}-1\right) - 130\sqrt{2x+3}}{25(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/25*(17*sqrt(5)*sqrt(3)*(2*x + 3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*
x - 7)/(3*x + 2)) + 150*(2*x + 3)*log(sqrt(2*x + 3) + 1) - 150*(2*x + 3)*lo
g(sqrt(2*x + 3) - 1) - 130*sqrt(2*x + 3))/(2*x + 3)
```

giac [A] time = 0.18, size = 74, normalized size = 1.35

$$\frac{17}{25}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) - \frac{26}{5\sqrt{2x+3}} + 6\log\left(\sqrt{2x+3}+1\right) - 6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 17/25*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqr
t(2*x + 3))) - 26/5/sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sq
rt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 53, normalized size = 0.96

$$-\frac{34\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{25}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}\ +1\right)-\frac{26}{5\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2),x)
```

```
[Out] -26/5/(2*x+3)^(1/2)-34/25*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln
((2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.37, size = 70, normalized size = 1.27

$$\frac{17}{25}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{26}{5\sqrt{2x+3}}+6\log\left(\sqrt{2x+3}\ +1\right)-6\log\left(\sqrt{2x+3}\ -1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 17/25*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3
))) - 26/5/sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) -
 1)
```

mupad [B] time = 2.37, size = 38, normalized size = 0.69

$$12\operatorname{atanh}\left(\sqrt{2x+3}\right)-\frac{34\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{25}-\frac{26}{5\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - (34*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5
))/25 - 26/(5*(2*x + 3)^(1/2))
```

sympy [A] time = 76.67, size = 102, normalized size = 1.85

$$\frac{102\left(\begin{cases}-\frac{\sqrt{15}\ \operatorname{acoth}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{5}-6\log\left(\sqrt{2x+3}\ -1\right)+6\log\left(\sqrt{2x+3}\ +1\right)-\frac{26}{5\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2),x)
```

```
[Out] 102*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3)
, (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/5 - 6*log(
sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1) - 26/(5*sqrt(2*x + 3))
```

3.2315 $\int \frac{5-x}{(3+2x)^{5/2}(2+5x+3x^2)}\,dx$

Optimal. Leaf size=68

$$-\frac{198}{25\sqrt{2x+3}}-\frac{26}{15(2x+3)^{3/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {828, 826, 1166, 207}

$$-\frac{198}{25\sqrt{2x+3}}-\frac{26}{15(2x+3)^{3/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(15*(3 + 2*x)^(3/2)) - 198/(25*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x
]] - (102*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx &= -\frac{26}{15(3+2x)^{3/2}}+\frac{1}{5}\int \frac{-9-39x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+\frac{1}{25}\int \frac{-147-297x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+\frac{2}{25}\text{Subst}\left(\int \frac{597-297x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right) \\
&= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+\frac{306}{25}\text{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,x,\sqrt{3+2x}\right)-36 \\
&= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\right.
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 65, normalized size = 0.96

$$
12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2\left(2970x+153\sqrt{15}\,(2x+3)^{3/2}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)+4780\right)}{375(2x+3)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (2*(4780 + 2970*x + 153*Sqrt[15]*(3 + 2*x)^(3/2
)*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/(375*(3 + 2*x)^(3/2))
```

IntegrateAlgebraic [A] time = 0.17, size = 64, normalized size = 0.94

$$
-\frac{2(297(2x+3)+65)}{75(2x+3)^{3/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)
$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (-2*(65 + 297*(3 + 2*x)))/(75*(3 + 2*x)^(3/2)) + 12*ArcTanh[Sqrt[3 + 2*x]]
- (102*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

fricas [B] time = 0.42, size = 120, normalized size = 1.76

$$
\frac{153\sqrt{5}\sqrt{3}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+2250\left(4x^2+12x+9\right)\log\left(\sqrt{2x+3}+1\right)-2250\left(4x^2+12x+9\right)\log\left(\sqrt{2x+3}-1\right)-20(297x+478)\sqrt{2x+3}}{375\left(4x^2+12x+9\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/375*(153*sqrt(5)*sqrt(3)*(4*x^2 + 12*x + 9)*log(-(sqrt(5)*sqrt(3)*sqrt(2*
x + 3) - 3*x - 7)/(3*x + 2)) + 2250*(4*x^2 + 12*x + 9)*log(sqrt(2*x + 3) +
1) - 2250*(4*x^2 + 12*x + 9)*log(sqrt(2*x + 3) - 1) - 20*(297*x + 478)*sqrt
(2*x + 3))/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.17, size = 79, normalized size = 1.16

$$
\frac{51}{125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{4(297x+478)}{75(2x+3)^{\frac{3}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 51/125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) - 4/75*(297*x + 478)/(2*x + 3)^(3/2) + 6*log(sqrt(2*x + 3) +
1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 62, normalized size = 0.91

$$-\frac{102\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}\ +1\right)-\frac{26}{15\,(2x+3)^{\frac{3}{2}}}-\frac{198}{25\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2),x)
```

```
[Out] -102/125*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)
-26/15/(2*x+3)^(3/2)-198/25/(2*x+3)^(1/2)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.21, size = 75, normalized size = 1.10

$$\frac{51}{125}\sqrt{15}\ \log\left(-\frac{\sqrt{15}\ -3\sqrt{2\,x+3}}{\sqrt{15}\ +3\sqrt{2\,x+3}}\right)-\frac{4\,(297\,x+478)}{75\,(2\,x+3)^{\frac{3}{2}}}+6\ \log\left(\sqrt{2\,x+3}\ +1\right)-6\ \log\left(\sqrt{2\,x+3}\ -1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 51/125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) - 4/75*(297*x + 478)/(2*x + 3)^(3/2) + 6*log(sqrt(2*x + 3) + 1) - 6*lo
g(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 43, normalized size = 0.63

$$12\,\operatorname{atanh}\left(\sqrt{2\,x+3}\right)-\frac{\frac{396\,x}{25}+\frac{1912}{75}}{(2\,x+3)^{3/2}}-\frac{102\,\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2\,x+3}}{5}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - ((396*x)/25 + 1912/75)/(2*x + 3)^(3/2) - (102*1
5^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125
```

sympy [A] time = 105.82, size = 114, normalized size = 1.68

$$\frac{306\left(\begin{cases}-\frac{\sqrt{15}\ \operatorname{acoth}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{25}-6\log\left(\sqrt{2x+3}\ -1\right)+6\log\left(\sqrt{2x+3}\ +1\right)-\frac{198}{25\sqrt{2x+3}}-\frac{26}{15\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2),x)
```

```
[Out] 306*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3)
, (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/25 - 6*log
(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1) - 198/(25*sqrt(2*x + 3)) - 2
6/(15*(2*x + 3)**(3/2))
```

3.2316 $\int \frac{5-x}{(3+2x)^{7/2}(2+5x+3x^2)}\,dx$

Optimal. Leaf size=81

$$-\frac{1194}{125\sqrt{2x+3}}-\frac{66}{25(2x+3)^{3/2}}-\frac{26}{25(2x+3)^{5/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{306}{125}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.08, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {828, 826, 1166, 207}

$$-\frac{1194}{125\sqrt{2x+3}}-\frac{66}{25(2x+3)^{3/2}}-\frac{26}{25(2x+3)^{5/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{306}{125}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(25*(3 + 2*x)^(5/2)) - 66/(25*(3 + 2*x)^(3/2)) - 1194/(125*Sqrt[3 + 2*x
]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (306*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
2*x]])/125
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)}\,dx = -\frac{26}{25(3+2x)^{5/2}}+\frac{1}{5}\int \frac{-9-39x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx$$
$$= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}+\frac{1}{25}\int \frac{-147-297x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx$$
$$= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+\frac{1}{125}\int \frac{-1041-179}{\sqrt{3+2x}\,\left(2+5x\right.}$$
$$= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+\frac{2}{125}\,\mathrm{Subst}\left(\int \frac{3291-17}{5-8x^2+}\right.$$
$$= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+\frac{918}{125}\,\mathrm{Subst}\left(\int \frac{1}{-5+3x^2}\right.$$
$$= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{3}{1}$$

Mathematica [A] time = 0.09, size = 63, normalized size = 0.78

$$\frac{2}{625}\left(-\frac{5\left(2388x^2+7494x+5933\right)}{(2x+3)^{5/2}}+3750\tanh^{-1}\left(\sqrt{2x+3}\right)-153\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (2*((-5*(5933 + 7494*x + 2388*x^2))/(3 + 2*x)^(5/2) + 3750*ArcTanh[Sqrt[3 +
 2*x]] - 153*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/625
```

IntegrateAlgebraic [A] time = 0.14, size = 73, normalized size = 0.90

$$-\frac{2\left(597(2x+3)^2+165(2x+3)+65\right)}{125(2x+3)^{5/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{306}{125}\sqrt{\frac{3}{5}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (-2*(65 + 165*(3 + 2*x) + 597*(3 + 2*x)^2))/(125*(3 + 2*x)^(5/2)) + 12*ArcT
anh[Sqrt[3 + 2*x]] - (306*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/125
```

fricas [B] time = 0.40, size = 145, normalized size = 1.79

$$\frac{153\sqrt{5}\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+3750\left(8x^3+36x^2+54x+27\right)\log\left(\sqrt{2x+3}+1\right)-3750\left(8x^3+36x^2+54x+27\right)\log\left(\sqrt{2x+3}-1\right)-10\left(2388x^2+7494x+5933\right)\sqrt{2x+3}}{625\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/625*(153*sqrt(5)*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(sqrt(5)*sqrt(
3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 3750*(8*x^3 + 36*x^2 + 54*x + 27)*
log(sqrt(2*x + 3) + 1) - 3750*(8*x^3 + 36*x^2 + 54*x + 27)*log(sqrt(2*x + 3
) - 1) - 10*(2388*x^2 + 7494*x + 5933)*sqrt(2*x + 3))/(8*x^3 + 36*x^2 + 54*
x + 27)
```

giac [A] time = 0.17, size = 88, normalized size = 1.09

$$\frac{153}{625}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(597(2x+3)^2+330x+560\right)}{125(2x+3)^{\frac{5}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 153/625*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) - 2/125*(597*(2*x + 3)^2 + 330*x + 560)/(2*x + 3)^(5/2) + 6*
log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 71, normalized size = 0.88

$$-\frac{306\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{625}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}\ +1\right)-\frac{26}{25\,(2x+3)^{\frac{5}{2}}}-\frac{66}{25\,(2x+3)^{\frac{3}{2}}}-\frac{1194}{125\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2),x)
```

```
[Out] -306/625*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)
-26/25/(2*x+3)^(5/2)-66/25/(2*x+3)^(3/2)-1194/125/(2*x+3)^(1/2)-6*ln(-1+(2*
x+3)^(1/2))
```

maxima [A] time = 1.04, size = 84, normalized size = 1.04

$$\frac{153}{625}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(597\,(2x+3)^2+330\,x+560\right)}{125\,(2x+3)^{\frac{5}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 153/625*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) - 2/125*(597*(2*x + 3)^2 + 330*x + 560)/(2*x + 3)^(5/2) + 6*log(sqrt(
2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 52, normalized size = 0.64

$$12\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)-\frac{\frac{132\,x}{25}+\frac{1194\,{(2\,x+3)}^2}{125}+\frac{224}{25}}{{(2\,x+3)}^{5/2}}-\frac{306\,\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - ((132*x)/25 + (1194*(2*x + 3)^2)/125 + 224/25)/
(2*x + 3)^(5/2) - (306*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/625
```

sympy [A] time = 94.03, size = 126, normalized size = 1.56

$$\frac{918\left(\begin{cases}-\frac{\sqrt{15}\operatorname{acoth}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{125}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)-\frac{1194}{125\sqrt{2x+3}}-\frac{66}{25\,(2x+3)^{\frac{3}{2}}}-\frac{26}{25\,(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2),x)
```

```
[Out] 918*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3)
, (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/125 - 6*lo
g(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1) - 1194/(125*sqrt(2*x + 3))
- 66/(25*(2*x + 3)**(3/2)) - 26/(25*(2*x + 3)**(5/2))
```

3.2317 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^2}\,dx$

<u>**Optimal**</u>. Leaf size=98

$$-\frac{(139x+121)(2x+3)^{5/2}}{3\left(3x^2+5x+2\right)}+\frac{826}{27}(2x+3)^{3/2}+\frac{1358}{27}\sqrt{2x+3}-154\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{2800}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x}\right.$$

<u>**Rubi**</u> [A] time = 0.08, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 824, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{5/2}}{3\left(3x^2+5x+2\right)}+\frac{826}{27}(2x+3)^{3/2}+\frac{1358}{27}\sqrt{2x+3}-154\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{2800}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (1358*Sqrt[3 + 2*x])/27 + (826*(3 + 2*x)^(3/2))/27 - ((3 + 2*x)^(5/2)*(121
+ 139*x))/(3*(2 + 5*x + 3*x^2)) - 154*ArcTanh[Sqrt[3 + 2*x]] + (2800*Sqrt[5
/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/27
```

<u>Rule 207</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

<u>Rule 818</u>

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

<u>Rule 824</u>

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

<u>Rule 826</u>

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{3}\int \frac{(3+2x)^{3/2}(182+413x)}{2+5x+3x^2}\,dx\\
&= \frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{9}\int \frac{\sqrt{3+2x}\,(-14+679x)}{2+5x+3x^2}\,dx\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{27}\int \frac{-2842-763x}{\sqrt{3+2x}\,\left(2+5x+\right.}\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{2}{27}\mathrm{Subst}\left(\int \frac{-3395-76}{5-8x^2+}\right.\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+462\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\right.\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}-154\tanh^{-1}\left(\sqrt{3+2x}\right)+
\end{aligned}$$

Mathematica [A] time = 0.09, size = 81, normalized size = 0.83

$$\frac{1}{81}\left(2800\sqrt{15}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)-\frac{3\sqrt{2x+3}\left(48x^3-400x^2+1843x+2129\right)}{3x^2+5x+2}\right)-154\tanh^{-1}\left(\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -154*ArcTanh[Sqrt[3 + 2*x]] + ((-3*Sqrt[3 + 2*x]*(2129 + 1843*x - 400*x^2 +
 48*x^3))/(2 + 5*x + 3*x^2) + 2800*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]
])/81
```

IntegrateAlgebraic [A] time = 0.21, size = 111, normalized size = 1.13

$$-\frac{2\left(12(2x+3)^{7/2}-308(2x+3)^{5/2}+3367(2x+3)^{3/2}-3395\sqrt{2x+3}\right)}{27\left(3(2x+3)^2-8(2x+3)+5\right)}-154\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{2800}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-2*(-3395*Sqrt[3 + 2*x] + 3367*(3 + 2*x)^(3/2) - 308*(3 + 2*x)^(5/2) + 12*
(3 + 2*x)^(7/2)))/(27*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)) - 154*ArcTanh[Sqrt
[3 + 2*x]] + (2800*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/27
```

fricas [A] time = 0.40, size = 129, normalized size = 1.32

$$\frac{1400\sqrt{5}\sqrt{3}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-6237\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right)+6237\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}-1\right)-3\left(48x^3-400x^2+1843x+2129\right)\sqrt{2x+3}}{81\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/81*(1400*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x
+ 3) + 3*x + 7)/(3*x + 2)) - 6237*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1)
+ 6237*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - 3*(48*x^3 - 400*x^2 + 184
3*x + 2129)*sqrt(2*x + 3))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.18, size = 120, normalized size = 1.22

$$-\frac{8}{27}(2x+3)^{\frac{3}{2}} - \frac{1400}{81}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) + \frac{184}{27}\sqrt{2x+3} - \frac{2\left(2611(2x+3)^{\frac{3}{2}} - 2935\sqrt{2x+3}\right)}{27\left(3(2x+3)^2-16x-19\right)} - 77\log\left(\sqrt{2x+3}+1\right) + 77\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -8/27*(2*x + 3)^(3/2) - 1400/81*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2
*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 184/27*sqrt(2*x + 3) - 2/27*(2611*
(2*x + 3)^(3/2) - 2935*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19) - 77*log(
sqrt(2*x + 3) + 1) + 77*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.03, size = 104, normalized size = 1.06

$$\frac{2800\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{81} + 77\ln\left(-1+\sqrt{2x+3}\right) - 77\ln\left(\sqrt{2x+3}+1\right) - \frac{8(2x+3)^{\frac{3}{2}}}{27} + \frac{184\sqrt{2x+3}}{27} - \frac{4250\sqrt{2x+3}}{81\left(2x+\frac{4}{3}\right)} - \frac{6}{\sqrt{2x+3}+1} - \frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/27*(2*x+3)^(3/2)+184/27*(2*x+3)^(1/2)-4250/81*(2*x+3)^(1/2)/(4/3+2*x)+28
00/81*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-6/((2*x+3)^(1/2)+1)-77*l
n((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+77*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.23, size = 116, normalized size = 1.18

$$-\frac{8}{27}(2x+3)^{\frac{3}{2}} - \frac{1400}{81}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right) + \frac{184}{27}\sqrt{2x+3} - \frac{2\left(2611(2x+3)^{\frac{3}{2}} - 2935\sqrt{2x+3}\right)}{27\left(3(2x+3)^2-16x-19\right)} - 77\log\left(\sqrt{2x+3}+1\right) + 77\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -8/27*(2*x + 3)^(3/2) - 1400/81*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/
(sqrt(15) + 3*sqrt(2*x + 3))) + 184/27*sqrt(2*x + 3) - 2/27*(2611*(2*x + 3)
^(3/2) - 2935*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19) - 77*log(sqrt(2*x
+ 3) + 1) + 77*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.06, size = 90, normalized size = 0.92

$$\frac{184\sqrt{2x+3}}{27} - \frac{\frac{5870\sqrt{2x+3}}{81} - \frac{5222(2x+3)^{3/2}}{81}}{\frac{16x}{3} - (2x+3)^2 + \frac{19}{3}} - \frac{8(2x+3)^{3/2}}{27} + \operatorname{atan}\left(\sqrt{2x+3}\,1\mathrm{i}\right)154\mathrm{i} - \frac{\sqrt{15}\,\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2x+3}\,1\mathrm{i}}{5}\right)2800\mathrm{i}}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] atan((2*x + 3)^(1/2)*1i)*154i - ((5870*(2*x + 3)^(1/2))/81 - (5222*(2*x + 3
)^(3/2))/81)/((16*x)/3 - (2*x + 3)^2 + 19/3) - (15^(1/2)*atan((15^(1/2)*(2*
x + 3)^(1/2)*1i)/5)*2800i)/81 + (184*(2*x + 3)^(1/2))/27 - (8*(2*x + 3)^(3/
2))/27
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2318 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=81

$$-\frac{(139x+121)(2x+3)^{3/2}}{3\left(3x^2+5x+2\right)}+30\sqrt{2x+3}-130\tanh^{-1}\left(\sqrt{2x+3}\right)+100\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.07, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 824, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{3/2}}{3\left(3x^2+5x+2\right)}+30\sqrt{2x+3}-130\tanh^{-1}\left(\sqrt{2x+3}\right)+100\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] 30*Sqrt[3 + 2*x] - ((3 + 2*x)^(3/2)*(121 + 139*x))/(3*(2 + 5*x + 3*x^2)) -
130*ArcTanh[Sqrt[3 + 2*x]] + 100*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{3}\int \frac{\sqrt{3+2x}\,(-60+135x)}{2+5x+3x^2}\,dx\\
&= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{9}\int \frac{-1080-495x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx\\
&= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{2}{9}\,\mathrm{Subst}\left(\int \frac{-675-495x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)\\
&= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+390\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)-50\\
&= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}-130\tanh^{-1}\left(\sqrt{3+2x}\right)+100\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\right.
\end{aligned}$$

Mathematica [A] time = 0.05, size = 92, normalized size = 1.14

$$-\frac{\sqrt{2x+3}\left(8x^2+209x+183\right)+390\left(3x^2+5x+2\right)\tanh^{-1}\left(\sqrt{2x+3}\right)-100\sqrt{15}\left(3x^2+5x+2\right)\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{9x^2+15x+6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((Sqrt[3 + 2*x]*(183 + 209*x + 8*x^2) + 390*(2 + 5*x + 3*x^2)*ArcTanh[Sqrt
[3 + 2*x]] - 100*Sqrt[15]*(2 + 5*x + 3*x^2)*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]
])/(6 + 15*x + 9*x^2))
```

IntegrateAlgebraic [A] time = 0.22, size = 98, normalized size = 1.21

$$-\frac{2\left(4(2x+3)^{5/2}+185(2x+3)^{3/2}-225\sqrt{2x+3}\right)}{3\left(3(2x+3)^2-8(2x+3)+5\right)}-130\tanh^{-1}\left(\sqrt{2x+3}\right)+100\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-2*(-225*Sqrt[3 + 2*x] + 185*(3 + 2*x)^(3/2) + 4*(3 + 2*x)^(5/2)))/(3*(5 -
 8*(3 + 2*x) + 3*(3 + 2*x)^2)) - 130*ArcTanh[Sqrt[3 + 2*x]] + 100*Sqrt[5/3]
*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

fricas [A] time = 0.40, size = 124, normalized size = 1.53

$$\frac{50\sqrt{5}\sqrt{3}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-195\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right)+195\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}-1\right)-\left(8x^2+209x+183\right)\sqrt{2x+3}}{3\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/3*(50*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x + 3
) + 3*x + 7)/(3*x + 2)) - 195*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 19
5*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - (8*x^2 + 209*x + 183)*sqrt(2*x
 + 3))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.30, size = 111, normalized size = 1.37

$$-\frac{50}{3}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{8}{9}\sqrt{2x+3}-\frac{2\left(587(2x+3)^{\frac{3}{2}}-695\sqrt{2x+3}\right)}{9\left(3(2x+3)^2-16x-19\right)}-65\log\left(\sqrt{2x+3}+1\right)+65\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -50/3*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqr
t(2*x + 3))) - 8/9*sqrt(2*x + 3) - 2/9*(587*(2*x + 3)^(3/2) - 695*sqrt(2*x
+ 3))/(3*(2*x + 3)^2 - 16*x - 19) - 65*log(sqrt(2*x + 3) + 1) + 65*log(abs(
sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 95, normalized size = 1.17

$$\frac{100\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{3}+65\ln\left(-1+\sqrt{2x+3}\right)-65\ln\left(\sqrt{2x+3}+1\right)-\frac{8\sqrt{2x+3}}{9}-\frac{850\sqrt{2x+3}}{27\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/9*(2*x+3)^(1/2)-850/27*(2*x+3)^(1/2)/(2*x+4/3)+100/3*arctanh(1/5*15^(1/2
)*(2*x+3)^(1/2))*15^(1/2)-6/((2*x+3)^(1/2)+1)-65*ln((2*x+3)^(1/2)+1)-6/(-1+
(2*x+3)^(1/2))+65*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.39, size = 107, normalized size = 1.32

$$-\frac{50}{3}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{8}{9}\sqrt{2x+3}-\frac{2\left(587(2x+3)^{\frac{3}{2}}-695\sqrt{2x+3}\right)}{9\left(3(2x+3)^2-16x-19\right)}-65\log\left(\sqrt{2x+3}+1\right)+65\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -50/3*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3
))) - 8/9*sqrt(2*x + 3) - 2/9*(587*(2*x + 3)^(3/2) - 695*sqrt(2*x + 3))/(3*
(2*x + 3)^2 - 16*x - 19) - 65*log(sqrt(2*x + 3) + 1) + 65*log(sqrt(2*x + 3)
 - 1)
```

mupad [B] time = 0.08, size = 81, normalized size = 1.00

$$-\frac{\frac{1390\sqrt{2x+3}}{27}-\frac{1174(2x+3)^{3/2}}{27}}{\frac{16x}{3}-(2x+3)^2+\frac{19}{3}}-\frac{8\sqrt{2x+3}}{9}+\operatorname{atan}\left(\sqrt{2x+3}\,1i\right)130i-\frac{\sqrt{15}\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2x+3}\,1i}{5}\right)100i}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] atan((2*x + 3)^(1/2)*1i)*130i - ((1390*(2*x + 3)^(1/2))/27 - (1174*(2*x + 3
)^(3/2))/27)/((16*x)/3 - (2*x + 3)^2 + 19/3) - (15^(1/2)*atan((15^(1/2)*(2*
x + 3)^(1/2)*1i)/5)*100i)/3 - (8*(2*x + 3)^(1/2))/9
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2319 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2} dx$

Optimal. Leaf size=72

$$-\frac{\sqrt{2x+3}\,(139x+121)}{3\left(3x^2+5x+2\right)}-106\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(139x+121)}{3\left(3x^2+5x+2\right)}-106\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -(Sqrt[3 + 2*x]*(121 + 139*x))/(3*(2 + 5*x + 3*x^2)) - 106*ArcTanh[Sqrt[3 +
 2*x]] + (248*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2}\,dx = -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{3}\int \frac{-302-143x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx$$
$$= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{2}{3}\operatorname{Subst}\left(\int \frac{-175-143x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)$$
$$= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}+318\operatorname{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)-\frac{1240}{3}\operatorname{Subst}\left(\int \right.$$
$$= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}-106\tanh^{-1}\left(\sqrt{3+2x}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.97

$$\frac{1}{9}\left(-\frac{3\sqrt{2x+3}\,(139x+121)}{3x^2+5x+2}-954\tanh^{-1}\left(\sqrt{2x+3}\right)+248\sqrt{15}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] ((-3*Sqrt[3 + 2*x]*(121 + 139*x))/(2 + 5*x + 3*x^2) - 954*ArcTanh[Sqrt[3 +
2*x]] + 248*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9
```

IntegrateAlgebraic [A] time = 0.23, size = 89, normalized size = 1.24

$$-\frac{2\left(139(2x+3)^{3/2}-175\sqrt{2x+3}\right)}{3\left(3(2x+3)^2-8(2x+3)+5\right)}-106\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-2*(-175*Sqrt[3 + 2*x] + 139*(3 + 2*x)^(3/2)))/(3*(5 - 8*(3 + 2*x) + 3*(3
+ 2*x)^2)) - 106*ArcTanh[Sqrt[3 + 2*x]] + (248*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*
Sqrt[3 + 2*x]])/3
```

fricas [B] time = 0.41, size = 119, normalized size = 1.65

$$\frac{124\sqrt{5}\sqrt{3}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-477\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right)+477\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}-1\right)-3(139x+121)\sqrt{2x+3}}{9\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*(124*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x +
3) + 3*x + 7)/(3*x + 2)) - 477*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 4
77*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - 3*(139*x + 121)*sqrt(2*x + 3)
)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.18, size = 102, normalized size = 1.42

$$-\frac{124}{9}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(139(2x+3)^{\frac{3}{2}}-175\sqrt{2x+3}\right)}{3\left(3(2x+3)^2-16x-19\right)}-53\log\left(\sqrt{2x+3}+1\right)+53\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -124/9*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) - 2/3*(139*(2*x + 3)^(3/2) - 175*sqrt(2*x + 3))/(3*(2*x + 3)^
2 - 16*x - 19) - 53*log(sqrt(2*x + 3) + 1) + 53*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 86, normalized size = 1.19

$$\frac{248\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{9}+53\ln\left(-1+\sqrt{2x+3}\right)-53\ln\left(\sqrt{2x+3}+1\right)-\frac{170\sqrt{2x+3}}{9\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -170/9*(2*x+3)^(1/2)/(2*x+4/3)+248/9*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15
^(1/2)-6/((2*x+3)^(1/2)+1)-53*ln((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+53*l
n(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.37, size = 98, normalized size = 1.36

$$-\frac{124}{9}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(139\,(2x+3)^{\frac{3}{2}}-175\sqrt{2x+3}\right)}{3\left(3\,(2x+3)^2-16x-19\right)}-53\log\left(\sqrt{2x+3}+1\right)+53\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -124/9*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) - 2/3*(139*(2*x + 3)^(3/2) - 175*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x
- 19) - 53*log(sqrt(2*x + 3) + 1) + 53*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.41, size = 66, normalized size = 0.92

$$\frac{248\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{9}-\frac{\frac{350\sqrt{2x+3}}{9}-\frac{278\,(2x+3)^{3/2}}{9}}{\frac{16x}{3}-(2x+3)^2+\frac{19}{3}}-106\operatorname{atanh}\left(\sqrt{2x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (248*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/9 - ((350*(2*x + 3)^(1/2
))/9 - (278*(2*x + 3)^(3/2))/9)/((16*x)/3 - (2*x + 3)^2 + 19/3) - 106*atanh
((2*x + 3)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2320 $\int \frac{(5-x)\sqrt{3+2x}}{(2+5x+3x^2)^2}\,dx$

Optimal. Leaf size=66

$$-\frac{\sqrt{2x+3}\,(35x+29)}{3x^2+5x+2}-82\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Rubi [A] time = 0.04, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {820, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(35x+29)}{3x^2+5x+2}-82\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((Sqrt[3 + 2*x]*(29 + 35*x))/(2 + 5*x + 3*x^2)) - 82*ArcTanh[Sqrt[3 + 2*x]
] + (316*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^2}\,dx = -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2} - \int \frac{76+35x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx$$
$$= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2} - 2\,\mathrm{Subst}\left(\int \frac{47+35x^2}{5-8x^2+3x^4}\,dx, x, \sqrt{3+2x}\right)$$
$$= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2} + 246\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx, x, \sqrt{3+2x}\right) - 316\,\mathrm{Subst}\left(\int \frac{\ }{-5}\right.$$
$$= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2} - 82\tanh^{-1}\left(\sqrt{3+2x}\right) + \frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)}{\sqrt{15}}$$

Mathematica [A] time = 0.06, size = 66, normalized size = 1.00

$$-\frac{\sqrt{2x+3}\,(35x+29)}{3x^2+5x+2} - 82\tanh^{-1}\left(\sqrt{2x+3}\right) + \frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((Sqrt[3 + 2*x]*(29 + 35*x))/(2 + 5*x + 3*x^2)) - 82*ArcTanh[Sqrt[3 + 2*x]
] + (316*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

IntegrateAlgebraic [A] time = 0.19, size = 83, normalized size = 1.26

$$-\frac{2\left(35(2x+3)^{3/2} - 47\sqrt{2x+3}\right)}{3(2x+3)^2 - 8(2x+3) + 5} - 82\tanh^{-1}\left(\sqrt{2x+3}\right) + \frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-2*(-47*Sqrt[3 + 2*x] + 35*(3 + 2*x)^(3/2)))/(5 - 8*(3 + 2*x) + 3*(3 + 2*x
)^2) - 82*ArcTanh[Sqrt[3 + 2*x]] + (316*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/S
qrt[15]
```

fricas [B] time = 0.41, size = 113, normalized size = 1.71

$$\frac{158\sqrt{15}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{15}\sqrt{2x+3}+3x+7}{3x+2}\right) - 615\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right) + 615\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}-1\right) - 15(35x+29)\sqrt{2x+3}}{15\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/15*(158*sqrt(15)*(3*x^2 + 5*x + 2)*log((sqrt(15)*sqrt(2*x + 3) + 3*x + 7)
/(3*x + 2)) - 615*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 615*(3*x^2 + 5
*x + 2)*log(sqrt(2*x + 3) - 1) - 15*(35*x + 29)*sqrt(2*x + 3))/(3*x^2 + 5*x
 + 2)
```

giac [A] time = 0.18, size = 102, normalized size = 1.55

$$-\frac{158}{15}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) - \frac{2\left(35(2x+3)^{\frac{3}{2}} - 47\sqrt{2x+3}\right)}{3(2x+3)^2 - 16x - 19} - 41\log\left(\sqrt{2x+3}+1\right) + 41\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -158/15*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) - 2*(35*(2*x + 3)^(3/2) - 47*sqrt(2*x + 3))/(3*(2*x + 3)^2 -
 16*x - 19) - 41*log(sqrt(2*x + 3) + 1) + 41*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 86, normalized size = 1.30

$$\frac{316\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15}+41\ln\left(-1+\sqrt{2x+3}\right)-41\ln\left(\sqrt{2x+3}\ +1\right)-\frac{34\sqrt{2x+3}}{3\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}\ +1}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -34/3*(2*x+3)^(1/2)/(2*x+4/3)+316/15*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15
^(1/2)-6/((2*x+3)^(1/2)+1)-41*ln((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+41*l
n(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.12, size = 98, normalized size = 1.48

$$-\frac{158}{15}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(35\,(2x+3)^{\frac{3}{2}}-47\sqrt{2x+3}\right)}{3\,(2x+3)^{2}-16\,x-19}-41\log\left(\sqrt{2x+3}\ +1\right)+41\log\left(\sqrt{2x+3}\ -1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -158/15*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) - 2*(35*(2*x + 3)^(3/2) - 47*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 1
9) - 41*log(sqrt(2*x + 3) + 1) + 41*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.40, size = 66, normalized size = 1.00

$$\frac{316\sqrt{15}\ \mathrm{atanh}\left(\frac{\sqrt{15}\ \sqrt{2\,x+3}}{5}\right)}{15}-\frac{\frac{94\sqrt{2\,x+3}}{3}-\frac{70\,(2\,x+3)^{3/2}}{3}}{\frac{16\,x}{3}-(2\,x+3)^2+\frac{19}{3}}-82\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (316*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/15 - ((94*(2*x + 3)^(1/2
))/3 - (70*(2*x + 3)^(3/2))/3)/((16*x)/3 - (2*x + 3)^2 + 19/3) - 82*atanh((
2*x + 3)^(1/2))
```

sympy [A] time = 122.22, size = 212, normalized size = 3.21

$$340\left(\begin{cases}\frac{\sqrt{15}\left(-\frac{\log\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}-1\right)}{4}+\frac{\log\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}+1\right)}{4}-\frac{1}{4\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}+1\right)}-\frac{1}{4\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}-1\right)}\right)}{75} & \text{for}\ x\geq-\frac{3}{2}\wedge x<-\frac{2}{3}\end{cases}\right)-282\left(\begin{cases}-\frac{\sqrt{15}\ \operatorname{acoth}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)+41\log\left(\sqrt{2x+3}\ -1\right)-41\log\left(\sqrt{2x+3}\ +1\right)-\frac{6}{\sqrt{2x+3}\ +1}-\frac{6}{\sqrt{2x+3}\ -1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] 340*Piecewise((sqrt(15)*(-log(sqrt(15)*sqrt(2*x + 3)/5 - 1)/4 + log(sqrt(15
)*sqrt(2*x + 3)/5 + 1)/4 - 1/(4*(sqrt(15)*sqrt(2*x + 3)/5 + 1)) - 1/(4*(sqr
t(15)*sqrt(2*x + 3)/5 - 1)))/75, (x >= -3/2) & (x < -2/3))) - 282*Piecewise
((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3), (-sqrt(15)*
atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3)) + 41*log(sqrt(2*x + 3)
- 1) - 41*log(sqrt(2*x + 3) + 1) - 6/(sqrt(2*x + 3) + 1) - 6/(sqrt(2*x + 3)
 - 1)
```

3.2321 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=72

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{5\left(3x^2+5x+2\right)}-58\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 826, 1166, 207}

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{5\left(3x^2+5x+2\right)}-58\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-3*Sqrt[3 + 2*x]*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)) - 58*ArcTanh[Sqrt[3 +
2*x]] + (384*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2}\,dx = -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} - \frac{1}{5}\int \frac{286+141x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx$$
$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} - \frac{2}{5}\,\text{Subst}\left(\int \frac{149+141x^2}{5-8x^2+3x^4}\,dx, x, \sqrt{3+2x}\right)$$
$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} + 174\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx, x, \sqrt{3+2x}\right) - \frac{1152}{5}\,\text{Subs}$$
$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} - 58\tanh^{-1}\left(\sqrt{3+2x}\right) + \frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2}\right.$$

Mathematica [A] time = 0.06, size = 72, normalized size = 1.00

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{5\left(3x^2+5x+2\right)} - 58\tanh^{-1}\left(\sqrt{2x+3}\right) + \frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-3*Sqrt[3 + 2*x]*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)) - 58*ArcTanh[Sqrt[3 + 
2*x]] + (384*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

IntegrateAlgebraic [A] time = 0.19, size = 84, normalized size = 1.17

$$-\frac{6\sqrt{2x+3}\,(47(2x+3)-67)}{5\left(3(2x+3)^2-8(2x+3)+5\right)} - 58\tanh^{-1}\left(\sqrt{2x+3}\right) + \frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-6*Sqrt[3 + 2*x]*(-67 + 47*(3 + 2*x)))/(5*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2
)) - 58*ArcTanh[Sqrt[3 + 2*x]] + (384*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 
2*x]])/5
```

fricas [B] time = 0.40, size = 119, normalized size = 1.65

$$\frac{192\sqrt{5}\sqrt{3}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right) - 725\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right) + 725\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}-1\right) - 15(47x+37)\sqrt{2x+3}}{25\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/25*(192*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x +
 3) + 3*x + 7)/(3*x + 2)) - 725*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 
725*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - 15*(47*x + 37)*sqrt(2*x + 3)
)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.17, size = 102, normalized size = 1.42

$$-\frac{192}{25}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) - \frac{6\left(47(2x+3)^{\frac{3}{2}}-67\sqrt{2x+3}\right)}{5\left(3(2x+3)^2-16x-19\right)} - 29\log\left(\sqrt{2x+3}+1\right) + 29\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -192/25*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) - 6/5*(47*(2*x + 3)^(3/2) - 67*sqrt(2*x + 3))/(3*(2*x + 3)^2
 - 16*x - 19) - 29*log(sqrt(2*x + 3) + 1) + 29*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 86, normalized size = 1.19

$$\frac{384\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{25}+29\ln\left(-1+\sqrt{2x+3}\right)-29\ln\left(\sqrt{2x+3}+1\right)-\frac{34\sqrt{2x+3}}{5\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^2/(2*x+3)^(1/2),x)
```

```
[Out] -34/5*(2*x+3)^(1/2)/(2*x+4/3)+384/25*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15
^(1/2)-6/((2*x+3)^(1/2)+1)-29*ln((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+29*l
n(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.21, size = 98, normalized size = 1.36

$$-\frac{192}{25}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{6\left(47\,(2x+3)^{\frac{3}{2}}-67\sqrt{2x+3}\right)}{5\left(3\,(2x+3)^2-16x-19\right)}-29\log\left(\sqrt{2x+3}+1\right)+29\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -192/25*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) - 6/5*(47*(2*x + 3)^(3/2) - 67*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x -
 19) - 29*log(sqrt(2*x + 3) + 1) + 29*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 66, normalized size = 0.92

$$\frac{384\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{25}-\frac{\frac{134\sqrt{2x+3}}{5}-\frac{94\,(2x+3)^{3/2}}{5}}{\frac{16x}{3}-(2x+3)^2+\frac{19}{3}}-58\,\operatorname{atanh}\left(\sqrt{2x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (384*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/25 - ((134*(2*x + 3)^(1/
2))/5 - (94*(2*x + 3)^(3/2))/5)/((16*x)/3 - (2*x + 3)^2 + 19/3) - 58*atanh(
(2*x + 3)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**2/(3+2*x)**(1/2),x)
```

```
[Out] Timed out
```

3.2322 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=85

$$-\frac{3(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)}-\frac{506}{25\sqrt{2x+3}}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)}-\frac{506}{25\sqrt{2x+3}}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -506/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(5*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2
)) - 34*ArcTanh[Sqrt[3 + 2*x]] + (1356*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{508+423x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-\frac{1}{25}\int \frac{1184+759x}{\sqrt{3+2x}\left(2+5x+3x^2\right.}\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-\frac{2}{25}\,\mathrm{Subst}\left(\int \frac{91+759x^2}{5-8x^2+3x^4}\right.\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}+102\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx, x\right.\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-34\tanh^{-1}\left(\sqrt{3+2x}\right)+\frac{1356}{25}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 85, normalized size = 1.00

$$-\frac{3(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)}-\frac{506}{25\sqrt{2x+3}}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -506/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(5*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2
)) - 34*ArcTanh[Sqrt[3 + 2*x]] + (1356*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]])/25
```

IntegrateAlgebraic [A] time = 0.25, size = 93, normalized size = 1.09

$$-\frac{2\left(759(2x+3)^2-1319(2x+3)+260\right)}{25\sqrt{2x+3}\left(3(2x+3)^2-8(2x+3)+5\right)}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-2*(260 - 1319*(3 + 2*x) + 759*(3 + 2*x)^2))/(25*Sqrt[3 + 2*x]*(5 - 8*(3 +
 2*x) + 3*(3 + 2*x)^2)) - 34*ArcTanh[Sqrt[3 + 2*x]] + (1356*Sqrt[3/5]*ArcTa
nh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

fricas [B] time = 0.41, size = 144, normalized size = 1.69

$$\frac{678\sqrt{5}\sqrt{3}\left(6x^3+19x^2+19x+6\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-2125\left(6x^3+19x^2+19x+6\right)\log\left(\sqrt{2x+3}+1\right)+2125\left(6x^3+19x^2+19x+6\right)\log\left(\sqrt{2x+3}-1\right)-5\left(1518x^2+3235x+1567\right)\sqrt{2x+3}}{125\left(6x^3+19x^2+19x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/125*(678*sqrt(5)*sqrt(3)*(6*x^3 + 19*x^2 + 19*x + 6)*log((sqrt(5)*sqrt(3)
*sqrt(2*x + 3) + 3*x + 7)/(3*x + 2)) - 2125*(6*x^3 + 19*x^2 + 19*x + 6)*log
(sqrt(2*x + 3) + 1) + 2125*(6*x^3 + 19*x^2 + 19*x + 6)*log(sqrt(2*x + 3) -
1) - 5*(1518*x^2 + 3235*x + 1567)*sqrt(2*x + 3))/(6*x^3 + 19*x^2 + 19*x + 6
)
```

giac [A] time = 0.17, size = 111, normalized size = 1.31

$$-\frac{678}{125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(759(2x+3)^2-2638x-3697\right)}{25\left(3(2x+3)^{\frac{5}{2}}-8(2x+3)^{\frac{3}{2}}+5\sqrt{2x+3}\right)}-17\log\left(\sqrt{2x+3}+1\right)+17\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -678/125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*
sqrt(2*x + 3))) - 2/25*(759*(2*x + 3)^2 - 2638*x - 3697)/(3*(2*x + 3)^(5/2)
 - 8*(2*x + 3)^(3/2) + 5*sqrt(2*x + 3)) - 17*log(sqrt(2*x + 3) + 1) + 17*lo
g(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 95, normalized size = 1.12

$$\frac{1356\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}+17\ln\left(-1+\sqrt{2x+3}\right)-17\ln\left(\sqrt{2x+3}+1\right)-\frac{102\sqrt{2x+3}}{25\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{104}{25\sqrt{2x+3}}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -102/25*(2*x+3)^(1/2)/(2*x+4/3)+1356/125*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2)
)*15^(1/2)-6/((2*x+3)^(1/2)+1)-17*ln((2*x+3)^(1/2)+1)-104/25/(2*x+3)^(1/2)-
6/(-1+(2*x+3)^(1/2))+17*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.23, size = 107, normalized size = 1.26

$$-\frac{678}{125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(759(2x+3)^2-2638x-3697\right)}{25\left(3(2x+3)^{\frac{5}{2}}-8(2x+3)^{\frac{3}{2}}+5\sqrt{2x+3}\right)}-17\log\left(\sqrt{2x+3}+1\right)+17\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -678/125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
+ 3))) - 2/25*(759*(2*x + 3)^2 - 2638*x - 3697)/(3*(2*x + 3)^(5/2) - 8*(2*x
 + 3)^(3/2) + 5*sqrt(2*x + 3)) - 17*log(sqrt(2*x + 3) + 1) + 17*log(sqrt(2*
x + 3) - 1)
```

mupad [B] time = 0.07, size = 72, normalized size = 0.85

$$\frac{1356\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}-34\,\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{5276x}{75}-\frac{506(2x+3)^2}{25}+\frac{7394}{75}}{\frac{5\sqrt{2x+3}}{3}-\frac{8(2x+3)^{3/2}}{3}+(2x+3)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (1356*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125 - 34*atanh((2*x + 3
)^(1/2)) + ((5276*x)/75 - (506*(2*x + 3)^2)/25 + 7394/75)/((5*(2*x + 3)^(1/
2))/3 - (8*(2*x + 3)^(3/2))/3 + (2*x + 3)^(5/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2323 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=98

$$-\frac{3(47x+37)}{5(2x+3)^{3/2}\left(3x^2+5x+2\right)}-\frac{686}{25\sqrt{2x+3}}-\frac{262}{15(2x+3)^{3/2}}-10\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{936}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.08, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{5(2x+3)^{3/2}\left(3x^2+5x+2\right)}-\frac{686}{25\sqrt{2x+3}}-\frac{262}{15(2x+3)^{3/2}}-10\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{936}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -262/(15*(3 + 2*x)^(3/2)) - 686/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(5*(3
+ 2*x)^(3/2)*(2 + 5*x + 3*x^2)) - 10*ArcTanh[Sqrt[3 + 2*x]] + (936*Sqrt[3/5
]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{730+705x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{262}{15(3+2x)^{3/2}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{1}{25}\int \frac{2090+1965x}{(3+2x)^{3/2}\left(2+5x\right.} \\
&= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{1}{125}\int \frac{}{\sqrt{3}} \\
&= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{2}{125}\,\text{Subst}\Big(\\
&= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}+30\,\text{Subst}\Big(\\
&= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-10\tanh^{-1}\Big(
\end{aligned}$$

Mathematica [A] time = 0.11, size = 94, normalized size = 0.96

$$\frac{1}{75}\left(-\frac{45(47x+37)}{(2x+3)^{3/2}\left(3x^2+5x+2\right)}-\frac{2058}{\sqrt{2x+3}}-\frac{1310}{(2x+3)^{3/2}}-750\tanh^{-1}\left(\sqrt{2x+3}\right)+2808\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-1310/(3 + 2*x)^(3/2) - 2058/Sqrt[3 + 2*x] - (45*(37 + 47*x))/((3 + 2*x)^(
3/2)*(2 + 5*x + 3*x^2)) - 750*ArcTanh[Sqrt[3 + 2*x]] + 2808*Sqrt[3/5]*ArcTa
nh[Sqrt[3/5]*Sqrt[3 + 2*x]])/75
```

IntegrateAlgebraic [A] time = 0.21, size = 102, normalized size = 1.04

$$-\frac{2\left(3087(2x+3)^3-6267(2x+3)^2+2020(2x+3)+260\right)}{75(2x+3)^{3/2}\left(3(2x+3)^2-8(2x+3)+5\right)}-10\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{936}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-2*(260 + 2020*(3 + 2*x) - 6267*(3 + 2*x)^2 + 3087*(3 + 2*x)^3))/(75*(3 +
2*x)^(3/2)*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)) - 10*ArcTanh[Sqrt[3 + 2*x]] +
 (936*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

fricas [B] time = 0.40, size = 169, normalized size = 1.72

$$\frac{1404\sqrt{5}\sqrt{3}\left(12x^4+56x^3+95x^2+69x+18\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-1875\left(12x^4+56x^3+95x^2+69x+18\right)\log\left(\sqrt{2x+3}+1\right)+1875\left(12x^4+56x^3+95x^2+69x+18\right)\log\left(\sqrt{2x+3}-1\right)-5\left(12348x^3+43032x^2+47767x+16633\right)\sqrt{2x+3}}{375\left(12x^4+56x^3+95x^2+69x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/375*(1404*sqrt(5)*sqrt(3)*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log((sqr
t(5)*sqrt(3)*sqrt(2*x + 3) + 3*x + 7)/(3*x + 2)) - 1875*(12*x^4 + 56*x^3 +
95*x^2 + 69*x + 18)*log(sqrt(2*x + 3) + 1) + 1875*(12*x^4 + 56*x^3 + 95*x^2
 + 69*x + 18)*log(sqrt(2*x + 3) - 1) - 5*(12348*x^3 + 43032*x^2 + 47767*x +
 16633)*sqrt(2*x + 3))/(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)
```

giac [A] time = 0.18, size = 116, normalized size = 1.18

$$-\frac{468}{125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{6\left(903(2x+3)^{\frac{3}{2}}-1403\sqrt{2x+3}\right)}{125\left(3(2x+3)^2-16x-19\right)}-\frac{16(609x+946)}{375(2x+3)^{\frac{3}{2}}}-5\log\left(\sqrt{2x+3}+1\right)+5\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -468/125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*
sqrt(2*x + 3))) - 6/125*(903*(2*x + 3)^(3/2) - 1403*sqrt(2*x + 3))/(3*(2*x
+ 3)^2 - 16*x - 19) - 16/375*(609*x + 946)/(2*x + 3)^(3/2) - 5*log(sqrt(2*x
 + 3) + 1) + 5*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 104, normalized size = 1.06

$$\frac{936\sqrt{15}\ \mathrm{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}+5\ln\left(-1+\sqrt{2x+3}\right)-5\ln\left(\sqrt{2x+3}+1\right)-\frac{306\sqrt{2x+3}}{125\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{104}{75(2x+3)^{\frac{3}{2}}}-\frac{1624}{125\sqrt{2x+3}}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -306/125*(2*x+3)^(1/2)/(2*x+4/3)+936/125*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2)
)*15^(1/2)-6/((2*x+3)^(1/2)+1)-5*ln((2*x+3)^(1/2)+1)-104/75/(2*x+3)^(3/2)-1
624/125/(2*x+3)^(1/2)-6/(-1+(2*x+3)^(1/2))+5*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.17, size = 116, normalized size = 1.18

$$-\frac{468}{125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(3087(2x+3)^3-6267(2x+3)^2+4040x+6320\right)}{75\left(3(2x+3)^{\frac{7}{2}}-8(2x+3)^{\frac{5}{2}}+5(2x+3)^{\frac{3}{2}}\right)}-5\log\left(\sqrt{2x+3}+1\right)+5\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -468/125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
+ 3))) - 2/75*(3087*(2*x + 3)^3 - 6267*(2*x + 3)^2 + 4040*x + 6320)/(3*(2*x
 + 3)^(7/2) - 8*(2*x + 3)^(5/2) + 5*(2*x + 3)^(3/2)) - 5*log(sqrt(2*x + 3)
+ 1) + 5*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 82, normalized size = 0.84

$$\frac{936\sqrt{15}\ \mathrm{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}-10\,\mathrm{atanh}\left(\sqrt{2x+3}\right)-\frac{\frac{1616x}{45}-\frac{4178(2x+3)^2}{75}+\frac{686(2x+3)^3}{25}+\frac{2528}{45}}{\frac{5(2x+3)^{3/2}}{3}-\frac{8(2x+3)^{5/2}}{3}+(2x+3)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (936*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125 - 10*atanh((2*x + 3)
^(1/2)) - ((1616*x)/45 - (4178*(2*x + 3)^2)/75 + (686*(2*x + 3)^3)/25 + 252
8/45)/((5*(2*x + 3)^(3/2))/3 - (8*(2*x + 3)^(5/2))/3 + (2*x + 3)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2324 $\int \frac{5-x}{(3+2x)^{7/2}(2+5x+3x^2)^2}\,dx$

Optimal. Leaf size=111

$$-\frac{3(47x+37)}{5(2x+3)^{5/2}(3x^2+5x+2)}-\frac{24626}{625\sqrt{2x+3}}-\frac{7042}{375(2x+3)^{3/2}}-\frac{2114}{125(2x+3)^{5/2}}+14\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{15876}{625}\sqrt{\frac{3}{5}}\,\mathrm{t}$$

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{5(2x+3)^{5/2}(3x^2+5x+2)}-\frac{24626}{625\sqrt{2x+3}}-\frac{7042}{375(2x+3)^{3/2}}-\frac{2114}{125(2x+3)^{5/2}}+14\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{15876}{625}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -2114/(125*(3 + 2*x)^(5/2)) - 7042/(375*(3 + 2*x)^(3/2)) - 24626/(625*Sqrt[
3 + 2*x]) - (3*(37 + 47*x))/(5*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)) + 14*ArcT
anh[Sqrt[3 + 2*x]] + (15876*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/625
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^2}\,dx = -\frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)} - \frac{1}{5}\int \frac{952+987x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)}\,dx$$

$$= -\frac{2114}{125(3+2x)^{5/2}} - \frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)} - \frac{1}{25}\int \frac{2996+3171}{(3+2x)^{5/2}\left(2+5x\right.}$$

$$= -\frac{2114}{125(3+2x)^{5/2}} - \frac{7042}{375(3+2x)^{3/2}} - \frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)} - \frac{1}{125}\int$$

$$= -\frac{2114}{125(3+2x)^{5/2}} - \frac{7042}{375(3+2x)^{3/2}} - \frac{24626}{625\sqrt{3+2x}} - \frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+\right.}$$

$$= -\frac{2114}{125(3+2x)^{5/2}} - \frac{7042}{375(3+2x)^{3/2}} - \frac{24626}{625\sqrt{3+2x}} - \frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+\right.}$$

$$= -\frac{2114}{125(3+2x)^{5/2}} - \frac{7042}{375(3+2x)^{3/2}} - \frac{24626}{625\sqrt{3+2x}} - \frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+\right.}$$

$$= -\frac{2114}{125(3+2x)^{5/2}} - \frac{7042}{375(3+2x)^{3/2}} - \frac{24626}{625\sqrt{3+2x}} - \frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+\right.}$$

Mathematica [A] time = 0.20, size = 86, normalized size = 0.77

$$\frac{47628\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right) - \frac{5\left(886536x^4+4348428x^3+7782530x^2+5977997x+1646109\right)}{(2x+3)^{5/2}\left(3x^2+5x+2\right)}}{9375} + 14\tanh^{-1}\left(\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] 14*ArcTanh[Sqrt[3 + 2*x]] + ((-5*(1646109 + 5977997*x + 7782530*x^2 + 43484
28*x^3 + 886536*x^4))/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)) + 47628*Sqrt[15]*
ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9375
```

IntegrateAlgebraic [A] time = 0.20, size = 111, normalized size = 1.00

$$-\frac{2\left(110817(2x+3)^4-242697(2x+3)^3+91420(2x+3)^2+14060(2x+3)+3900\right)}{1875(2x+3)^{5/2}\left(3(2x+3)^2-8(2x+3)+5\right)} + 14\tanh^{-1}\left(\sqrt{2x+3}\right) + \frac{15876}{625}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-2*(3900 + 14060*(3 + 2*x) + 91420*(3 + 2*x)^2 - 242697*(3 + 2*x)^3 + 1108
17*(3 + 2*x)^4))/(1875*(3 + 2*x)^(5/2)*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)) +
 14*ArcTanh[Sqrt[3 + 2*x]] + (15876*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*
x]])/625
```

fricas [B] time = 0.41, size = 194, normalized size = 1.75

$$\frac{23814\sqrt{5}\sqrt{3}\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right) + 65625\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)\log\left(\sqrt{2x+3}+1\right) - 65625\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)\log\left(\sqrt{2x+3}-1\right) - 5\left(886536x^4+4348428x^3+7782530x^2+5977997x+1646109\right)\sqrt{2x+3}}{9375\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/9375*(23814*sqrt(5)*sqrt(3)*(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x
 + 54)*log((sqrt(5)*sqrt(3)*sqrt(2*x + 3) + 3*x + 7)/(3*x + 2)) + 65625*(24
*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)*log(sqrt(2*x + 3) + 1) - 6
5625*(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)*log(sqrt(2*x + 3)
- 1) - 5*(886536*x^4 + 4348428*x^3 + 7782530*x^2 + 5977997*x + 1646109)*sqr
t(2*x + 3))/(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)
```

giac [A] time = 0.20, size = 125, normalized size = 1.13

$$-\frac{7938}{3125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{6\left(4209(2x+3)^{\frac{3}{2}}-6709\sqrt{2x+3}\right)}{625\left(3(2x+3)^2-16x-19\right)}-\frac{16\left(3039(2x+3)^2+1015x+1620\right)}{1875(2x+3)^{\frac{5}{2}}}+7\log\left(\sqrt{2x+3}+1\right)-7\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -7938/3125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) +
3*sqrt(2*x + 3))) - 6/625*(4209*(2*x + 3)^(3/2) - 6709*sqrt(2*x + 3))/(3*(2
*x + 3)^2 - 16*x - 19) - 16/1875*(3039*(2*x + 3)^2 + 1015*x + 1620)/(2*x +
3)^(5/2) + 7*log(sqrt(2*x + 3) + 1) - 7*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 113, normalized size = 1.02

$$\frac{15876\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{3125}-7\ln\left(-1+\sqrt{2x+3}\right)+7\ln\left(\sqrt{2x+3}+1\right)-\frac{918\sqrt{2x+3}}{625\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{104}{125(2x+3)^{\frac{5}{2}}}-\frac{1624}{375(2x+3)^{\frac{3}{2}}}-\frac{16208}{625\sqrt{2x+3}}-\frac{6}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -918/625*(2*x+3)^(1/2)/(2*x+4/3)+15876/3125*arctanh(1/5*15^(1/2)*(2*x+3)^(1
/2))*15^(1/2)-6/((2*x+3)^(1/2)+1)+7*ln((2*x+3)^(1/2)+1)-104/125/(2*x+3)^(5/
2)-1624/375/(2*x+3)^(3/2)-16208/625/(2*x+3)^(1/2)-6/(-1+(2*x+3)^(1/2))-7*ln
(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.31, size = 125, normalized size = 1.13

$$-\frac{7938}{3125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(110817(2x+3)^4-242697(2x+3)^3+91420(2x+3)^2+28120x+46080\right)}{1875\left(3(2x+3)^{\frac{9}{2}}-8(2x+3)^{\frac{7}{2}}+5(2x+3)^{\frac{5}{2}}\right)}+7\log\left(\sqrt{2x+3}+1\right)-7\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -7938/3125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*
x + 3))) - 2/1875*(110817*(2*x + 3)^4 - 242697*(2*x + 3)^3 + 91420*(2*x + 3
)^2 + 28120*x + 46080)/(3*(2*x + 3)^(9/2) - 8*(2*x + 3)^(7/2) + 5*(2*x + 3)
^(5/2)) + 7*log(sqrt(2*x + 3) + 1) - 7*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 91, normalized size = 0.82

$$14\,\mathrm{atanh}\left(\sqrt{2x+3}\right)+\frac{15876\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{3125}-\frac{\frac{11248x}{1125}+\frac{36568(2x+3)^2}{1125}-\frac{161798(2x+3)^3}{1875}+\frac{24626(2x+3)^4}{625}+\frac{2048}{125}}{\frac{5(2x+3)^{5/2}}{3}-\frac{8(2x+3)^{7/2}}{3}+(2x+3)^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] 14*atanh((2*x + 3)^(1/2)) + (15876*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2)
)/5))/3125 - ((11248*x)/1125 + (36568*(2*x + 3)^2)/1125 - (161798*(2*x + 3)
^3)/1875 + (24626*(2*x + 3)^4)/625 + 2048/125)/((5*(2*x + 3)^(5/2))/3 - (8*
(2*x + 3)^(7/2))/3 + (2*x + 3)^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2325 $\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=115

$$-\frac{(139x+121)(2x+3)^{7/2}}{6\left(3x^2+5x+2\right)^2}+\frac{(12473x+10832)(2x+3)^{3/2}}{18\left(3x^2+5x+2\right)}-\frac{3983}{9}\sqrt{2x+3}+1962\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{13675}{9}\sqrt{\frac{5}{3}}\ \text{ta}$$

Rubi [A] time = 0.08, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 824, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{7/2}}{6\left(3x^2+5x+2\right)^2}+\frac{(12473x+10832)(2x+3)^{3/2}}{18\left(3x^2+5x+2\right)}-\frac{3983}{9}\sqrt{2x+3}+1962\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{13675}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-3983*Sqrt[3 + 2*x])/9 - ((3 + 2*x)^(7/2)*(121 + 139*x))/(6*(2 + 5*x + 3*x
^2)^2) + ((3 + 2*x)^(3/2)*(10832 + 12473*x))/(18*(2 + 5*x + 3*x^2)) + 1962*
ArcTanh[Sqrt[3 + 2*x]] - (13675*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])
/9
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
```

```
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^3}\,dx = -\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{(3+2x)^{5/2}(-416+131x)}{\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+\frac{1}{18}\int \frac{(5709-11949x)}{2+5x+3}$$

$$= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+\frac{1}{54}\int$$

$$= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+\frac{1}{27}\text{Su}$$

$$= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}-5886\,\text{S}$$

$$= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+1962\,\text{t}$$

Mathematica [A] time = 0.12, size = 86, normalized size = 0.75

$$\frac{1}{54}\left(-\frac{3\sqrt{2x+3}\left(192x^4-45083x^3-112467x^2-90465x-23327\right)}{\left(3x^2+5x+2\right)^2}-27350\sqrt{15}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)+1962\tanh^{-1}\left(\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] 1962*ArcTanh[Sqrt[3 + 2*x]] + ((-3*Sqrt[3 + 2*x]*(-23327 - 90465*x - 112467
*x^2 - 45083*x^3 + 192*x^4))/(2 + 5*x + 3*x^2)^2 - 27350*Sqrt[15]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/54
```

IntegrateAlgebraic [A] time = 0.29, size = 122, normalized size = 1.06

$$\frac{-96(2x+3)^{9/2}+46235(2x+3)^{7/2}-185997(2x+3)^{5/2}+239865(2x+3)^{3/2}-99575\sqrt{2x+3}}{9\left(3(2x+3)^2-8(2x+3)+5\right)^2}+1962\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{13675}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-99575*Sqrt[3 + 2*x] + 239865*(3 + 2*x)^(3/2) - 185997*(3 + 2*x)^(5/2) + 4
6235*(3 + 2*x)^(7/2) - 96*(3 + 2*x)^(9/2))/(9*(5 - 8*(3 + 2*x) + 3*(3 + 2*x
)^2)^2) + 1962*ArcTanh[Sqrt[3 + 2*x]] - (13675*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*
Sqrt[3 + 2*x]])/9
```

fricas [A] time = 0.41, size = 175, normalized size = 1.52

$$\frac{13675\sqrt{5}\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+52974\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}+1\right)-52974\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}-1\right)-3\left(192x^4-45083x^3-112467x^2-90465x-23327\right)\sqrt{2x+3}}{54\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/54*(13675*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt
(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 52974*(9*x^4 + 30*x^3 + 3
7*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 52974*(9*x^4 + 30*x^3 + 37*x^2 +
 20*x + 4)*log(sqrt(2*x + 3) - 1) - 3*(192*x^4 - 45083*x^3 - 112467*x^2 - 9
0465*x - 23327)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.20, size = 129, normalized size = 1.12

$$\frac{13675}{54}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{32}{27}\sqrt{2x+3}+\frac{137169(2x+3)^{\frac{7}{2}}-554983(2x+3)^{\frac{5}{2}}+717035(2x+3)^{\frac{3}{2}}-297925\sqrt{2x+3}}{27\left(3(2x+3)^2-16x-19\right)^2}+981\log\left(\sqrt{2x+3}+1\right)-981\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 13675/54*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*
sqrt(2*x + 3))) - 32/27*sqrt(2*x + 3) + 1/27*(137169*(2*x + 3)^(7/2) - 5549
83*(2*x + 3)^(5/2) + 717035*(2*x + 3)^(3/2) - 297925*sqrt(2*x + 3))/(3*(2*x
 + 3)^2 - 16*x - 19)^2 + 981*log(sqrt(2*x + 3) + 1) - 981*log(abs(sqrt(2*x
+ 3) - 1))
```

maple [A] time = 0.02, size = 133, normalized size = 1.16

$$-\frac{13675\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{27}-981\ln\left(-1+\sqrt{2x+3}\right)+981\ln\left(\sqrt{2x+3}+1\right)-\frac{32\sqrt{2x+3}}{27}+\frac{\frac{9625(2x+3)^{\frac{3}{2}}}{3}-\frac{165625\sqrt{2x+3}}{27}}{(6x+4)^2}-\frac{3}{\left(\sqrt{2x+3}+1\right)^2}+\frac{104}{\sqrt{2x+3}+1}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^2}+\frac{104}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(9/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -32/27*(2*x+3)^(1/2)+1250/3*(77/10*(2*x+3)^(3/2)-265/18*(2*x+3)^(1/2))/(6*x
+4)^2-13675/27*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2
)+1)^2+104/((2*x+3)^(1/2)+1)+981*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2
+104/(-1+(2*x+3)^(1/2))-981*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.38, size = 143, normalized size = 1.24

$$\frac{13675}{54}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{32}{27}\sqrt{2x+3}+\frac{137169(2x+3)^{\frac{7}{2}}-554983(2x+3)^{\frac{5}{2}}+717035(2x+3)^{\frac{3}{2}}-297925\sqrt{2x+3}}{27\left(9(2x+3)^4-48(2x+3)^3+94(2x+3)^2-160x-215\right)}+981\log\left(\sqrt{2x+3}+1\right)-981\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 13675/54*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
+ 3))) - 32/27*sqrt(2*x + 3) + 1/27*(137169*(2*x + 3)^(7/2) - 554983*(2*x +
 3)^(5/2) + 717035*(2*x + 3)^(3/2) - 297925*sqrt(2*x + 3))/(9*(2*x + 3)^4 -
 48*(2*x + 3)^3 + 94*(2*x + 3)^2 - 160*x - 215) + 981*log(sqrt(2*x + 3) + 1
) - 981*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.41, size = 116, normalized size = 1.01

$$\frac{\frac{297925\sqrt{2x+3}}{243}-\frac{717035(2x+3)^{3/2}}{243}+\frac{554983(2x+3)^{5/2}}{243}-\frac{15241(2x+3)^{7/2}}{27}}{\frac{160x}{9}-\frac{94(2x+3)^2}{9}+\frac{16(2x+3)^3}{3}-(2x+3)^4+\frac{215}{9}}-\frac{32\sqrt{2x+3}}{27}-\operatorname{atan}\left(\sqrt{2x+3}\,1\mathrm{i}\right)1962\mathrm{i}+\frac{\sqrt{15}\,\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2x+3}\,1\mathrm{i}}{5}\right)13675\mathrm{i}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(9/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((297925*(2*x + 3)^(1/2))/243 - (717035*(2*x + 3)^(3/2))/243 + (554983*(2*x
 + 3)^(5/2))/243 - (15241*(2*x + 3)^(7/2))/27)/((160*x)/9 - (94*(2*x + 3)^2
)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - atan((2*x + 3)^(1/2)*1i)*
1962i + (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*13675i)/27 - (32*(2
*x + 3)^(1/2))/27
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(9/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2326 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=100

$$-\frac{(139x+121)(2x+3)^{5/2}}{6\left(3x^2+5x+2\right)^2}+\frac{7(619x+546)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{5/2}}{6\left(3x^2+5x+2\right)^2}+\frac{7(619x+546)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -((3 + 2*x)^(5/2)*(121 + 139*x))/(6*(2 + 5*x + 3*x^2)^2) + (7*Sqrt[3 + 2*x]
*(546 + 619*x))/(6*(2 + 5*x + 3*x^2)) + 1582*ArcTanh[Sqrt[3 + 2*x]] - 1225*
Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{(-658-147x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}+\frac{1}{18}\int \frac{26649+12411x}{\sqrt{3+2x}\left(2+5x+3x\right.}\\ &= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}+\frac{1}{9}\,\text{Subst}\left(\int \frac{16065+12411x}{5-8x^2+3x^4}\right.\\ &= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}-4746\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,\right.\\ &= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}+1582\tanh^{-1}\left(\sqrt{3+2x}\right)-12\end{aligned}$$

Mathematica [A] time = 0.08, size = 80, normalized size = 0.80

$$\frac{\sqrt{2x+3}\left(12443x^3+30979x^2+25073x+6555\right)}{6\left(3x^2+5x+2\right)^2}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(6555 + 25073*x + 30979*x^2 + 12443*x^3))/(6*(2 + 5*x + 3*x^
2)^2) + 1582*ArcTanh[Sqrt[3 + 2*x]] - 1225*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt
[3 + 2*x]]
```

IntegrateAlgebraic [A] time = 0.28, size = 100, normalized size = 1.00

$$\frac{\sqrt{2x+3}\left(12443(2x+3)^3-50029(2x+3)^2+64505(2x+3)-26775\right)}{3\left(3(2x+3)^2-8(2x+3)+5\right)^2}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(-26775 + 64505*(3 + 2*x) - 50029*(3 + 2*x)^2 + 12443*(3 + 2
*x)^3))/(3*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2) + 1582*ArcTanh[Sqrt[3 + 2*x
]] - 1225*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

fricas [B] time = 0.40, size = 169, normalized size = 1.69

$$\frac{1225\sqrt{5}\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+4746\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}+1\right)-4746\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}-1\right)+\left(12443x^3+30979x^2+25073x+6555\right)\sqrt{2x+3}}{6\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(1225*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(5
)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 4746*(9*x^4 + 30*x^3 + 37*x
^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 4746*(9*x^4 + 30*x^3 + 37*x^2 + 20*
x + 4)*log(sqrt(2*x + 3) - 1) + (12443*x^3 + 30979*x^2 + 25073*x + 6555)*sq
rt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.19, size = 120, normalized size = 1.20

$$\frac{1225}{6}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{12443(2x+3)^{\frac{7}{2}}-50029(2x+3)^{\frac{5}{2}}+64505(2x+3)^{\frac{3}{2}}-26775\sqrt{2x+3}}{3\left(3(2x+3)^2-16x-19\right)^2}+791\log\left(\sqrt{2x+3}+1\right)-791\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1225/6*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) + 1/3*(12443*(2*x + 3)^(7/2) - 50029*(2*x + 3)^(5/2) + 64505*
(2*x + 3)^(3/2) - 26775*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 791*
log(sqrt(2*x + 3) + 1) - 791*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.24

$$-\frac{1225\sqrt{15}\operatorname{arctanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{3}-791\ln\left(-1+\sqrt{2x+3}\right)+791\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{7475(2x+3)^{\frac{3}{2}}}{3}-4625\sqrt{2x+3}}{(6x+4)^2}-\frac{3}{\left(\sqrt{2x+3}+1\right)^2}+\frac{92}{\sqrt{2x+3}+1}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^2}+\frac{92}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 450*(299/54*(2*x+3)^(3/2)-185/18*(2*x+3)^(1/2))/(6*x+4)^2-1225/3*arctanh(1/
5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+92/((2*x+3)^(1/2)+
1)+791*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+92/(-1+(2*x+3)^(1/2))-791
*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.29, size = 134, normalized size = 1.34

$$\frac{1225}{6}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{12443(2x+3)^{\frac{7}{2}}-50029(2x+3)^{\frac{5}{2}}+64505(2x+3)^{\frac{3}{2}}-26775\sqrt{2x+3}}{3\left(9(2x+3)^4-48(2x+3)^3+94(2x+3)^2-160x-215\right)}+791\log\left(\sqrt{2x+3}+1\right)-791\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1225/6*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) + 1/3*(12443*(2*x + 3)^(7/2) - 50029*(2*x + 3)^(5/2) + 64505*(2*x + 3)
^(3/2) - 26775*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3
)^2 - 160*x - 215) + 791*log(sqrt(2*x + 3) + 1) - 791*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 2.42, size = 101, normalized size = 1.01

$$1582\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{2975\sqrt{2x+3}}{3}-\frac{64505(2x+3)^{3/2}}{27}+\frac{50029(2x+3)^{5/2}}{27}-\frac{12443(2x+3)^{7/2}}{27}}{\frac{160x}{9}-\frac{94(2x+3)^2}{9}+\frac{16(2x+3)^3}{3}-(2x+3)^4+\frac{215}{9}}-\frac{1225\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 1582*atanh((2*x + 3)^(1/2)) + ((2975*(2*x + 3)^(1/2))/3 - (64505*(2*x + 3)^
(3/2))/27 + (50029*(2*x + 3)^(5/2))/27 - (12443*(2*x + 3)^(7/2))/27)/((160*
x)/9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (12
25*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2327 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{(139x+121)(2x+3)^{3/2}}{6\left(3x^2+5x+2\right)^2}+\frac{25(131x+112)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 820, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{3/2}}{6\left(3x^2+5x+2\right)^2}+\frac{25(131x+112)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -((3 + 2*x)^(3/2)*(121 + 139*x))/(6*(2 + 5*x + 3*x^2)^2) + (25*Sqrt[3 + 2*x
]*(112 + 131*x))/(6*(2 + 5*x + 3*x^2)) + 1250*ArcTanh[Sqrt[3 + 2*x]] - (290
5*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
```

```
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{(-900-425x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}-\frac{1}{6}\int \frac{-7025-3275x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,d\\ &= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}-\frac{1}{3}\,\mathrm{Subst}\left(\int \frac{-4225-3275x^2}{5-8x^2+3x^4}\,d\right.\\ &= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}-3750\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x\right.\\ &= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}+1250\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{2905}{3}\end{aligned}$$

Mathematica [A] time = 0.08, size = 82, normalized size = 0.80

$$\frac{\sqrt{2x+3}\left(9825x^3+24497x^2+19891x+5237\right)}{6\left(3x^2+5x+2\right)^2}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(5237 + 19891*x + 24497*x^2 + 9825*x^3))/(6*(2 + 5*x + 3*x^2
)^2) + 1250*ArcTanh[Sqrt[3 + 2*x]] - (2905*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt
[3 + 2*x]])/3
```

IntegrateAlgebraic [A] time = 0.29, size = 102, normalized size = 1.00

$$\frac{\sqrt{2x+3}\left(9825(2x+3)^3-39431(2x+3)^2+50875(2x+3)-21125\right)}{3\left(3(2x+3)^2-8(2x+3)+5\right)^2}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(-21125 + 50875*(3 + 2*x) - 39431*(3 + 2*x)^2 + 9825*(3 + 2*
x)^3))/(3*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2) + 1250*ArcTanh[Sqrt[3 + 2*x]
] - (2905*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3
```

fricas [B] time = 0.40, size = 170, normalized size = 1.67

$$\frac{2905\sqrt{5}\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+11250\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}+1\right)-11250\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}-1\right)+3\left(9825x^3+24497x^2+19891x+5237\right)\sqrt{2x+3}}{18\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/18*(2905*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(
5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 11250*(9*x^4 + 30*x^3 + 37
*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 11250*(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4)*log(sqrt(2*x + 3) - 1) + 3*(9825*x^3 + 24497*x^2 + 19891*x + 5237
)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.19, size = 120, normalized size = 1.18

$$\frac{2905}{18}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{9825\,(2x+3)^{\frac{7}{2}}-39431\,(2x+3)^{\frac{5}{2}}+50875\,(2x+3)^{\frac{3}{2}}-21125\sqrt{2x+3}}{3\left(3\,(2x+3)^{2}-16x-19\right)^{2}}+625\log\left(\sqrt{2x+3}+1\right)-625\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 2905/18*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) + 1/3*(9825*(2*x + 3)^(7/2) - 39431*(2*x + 3)^(5/2) + 50875*
(2*x + 3)^(3/2) - 21125*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 625*
log(sqrt(2*x + 3) + 1) - 625*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.22

$$-\frac{2905\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{9}-625\ln\left(-1+\sqrt{2x+3}\right)+625\ln\left(\sqrt{2x+3}+1\right)+\frac{1835\,(2x+3)^{\frac{3}{2}}-\frac{10025\sqrt{2x+3}}{3}}{(6x+4)^{2}}-\frac{3}{\left(\sqrt{2x+3}+1\right)^{2}}+\frac{80}{\sqrt{2x+3}+1}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^{2}}+\frac{80}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 90*(367/18*(2*x+3)^(3/2)-2005/54*(2*x+3)^(1/2))/(6*x+4)^2-2905/9*arctanh(1/
5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+80/((2*x+3)^(1/2)+
1)+625*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+80/(-1+(2*x+3)^(1/2))-625
*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.36, size = 134, normalized size = 1.31

$$\frac{2905}{18}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{9825\,(2x+3)^{\frac{7}{2}}-39431\,(2x+3)^{\frac{5}{2}}+50875\,(2x+3)^{\frac{3}{2}}-21125\sqrt{2x+3}}{3\left(9\,(2x+3)^{4}-48\,(2x+3)^{3}+94\,(2x+3)^{2}-160x-215\right)}+625\log\left(\sqrt{2x+3}+1\right)-625\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 2905/18*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) + 1/3*(9825*(2*x + 3)^(7/2) - 39431*(2*x + 3)^(5/2) + 50875*(2*x + 3)
^(3/2) - 21125*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3
)^2 - 160*x - 215) + 625*log(sqrt(2*x + 3) + 1) - 625*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 0.07, size = 101, normalized size = 0.99

$$1250\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{21125\sqrt{2x+3}}{27}-\frac{50875\,(2x+3)^{3/2}}{27}+\frac{39431\,(2x+3)^{5/2}}{27}-\frac{3275\,(2x+3)^{7/2}}{9}}{\frac{160x}{9}-\frac{94\,(2x+3)^{2}}{9}+\frac{16\,(2x+3)^{3}}{3}-(2x+3)^{4}+\frac{215}{9}}-\frac{2905\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 1250*atanh((2*x + 3)^(1/2)) + ((21125*(2*x + 3)^(1/2))/27 - (50875*(2*x + 3
)^(3/2))/27 + (39431*(2*x + 3)^(5/2))/27 - (3275*(2*x + 3)^(7/2))/9)/((160*
```

```
x)/9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (29
05*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/9
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2328 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=100

$$-\frac{\sqrt{2x+3}\,(139x+121)}{6\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(2529x+2090)}{6\left(3x^2+5x+2\right)}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.07, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 822, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(139x+121)}{6\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(2529x+2090)}{6\left(3x^2+5x+2\right)}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(Sqrt[3 + 2*x]*(121 + 139*x))/(6*(2 + 5*x + 3*x^2)^2) + (Sqrt[3 + 2*x]*(20
90 + 2529*x))/(6*(2 + 5*x + 3*x^2)) + 966*ArcTanh[Sqrt[3 + 2*x]] - 1247*Sqr
t[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^3}\,dx = -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{-1142-703x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}-\frac{1}{30}\int \frac{-27135-12645x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,d$$

$$= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}-\frac{1}{15}\,\mathrm{Subst}\left(\int \frac{-16335-12645x^2}{5-8x^2+3x^4}\right.$$

$$= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}-2898\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\right.$$

$$= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}+966\tanh^{-1}\left(\sqrt{3+2x}\right)-1247\sqrt{}$$

Mathematica [A] time = 0.08, size = 80, normalized size = 0.80

$$\frac{\sqrt{2x+3}\left(2529x^3+6305x^2+5123x+1353\right)}{2\left(3x^2+5x+2\right)^2}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(1353 + 5123*x + 6305*x^2 + 2529*x^3))/(2*(2 + 5*x + 3*x^2)^
2) + 966*ArcTanh[Sqrt[3 + 2*x]] - 1247*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]]
```

IntegrateAlgebraic [A] time = 0.30, size = 97, normalized size = 0.97

$$\frac{\sqrt{2x+3}\left(2529(2x+3)^3-10151(2x+3)^2+13115(2x+3)-5445\right)}{\left(3(2x+3)^2-8(2x+3)+5\right)^2}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(-5445 + 13115*(3 + 2*x) - 10151*(3 + 2*x)^2 + 2529*(3 + 2*x
)^3))/(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2 + 966*ArcTanh[Sqrt[3 + 2*x]] - 12
47*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

fricas [B] time = 0.40, size = 170, normalized size = 1.70

$$\frac{1247\,\sqrt{5}\,\sqrt{3}\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3\,x-7}{3\,x+2}\right)+4830\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)\log\left(\sqrt{2\,x+3}+1\right)-4830\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)\log\left(\sqrt{2\,x+3}-1\right)+5\left(2529\,x^{3}+6305\,x^{2}+5123\,x+1353\right)\sqrt{2\,x+3}}{10\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/10*(1247*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(
5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 4830*(9*x^4 + 30*x^3 + 37*
x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 4830*(9*x^4 + 30*x^3 + 37*x^2 + 20
*x + 4)*log(sqrt(2*x + 3) - 1) + 5*(2529*x^3 + 6305*x^2 + 5123*x + 1353)*sq
rt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.18, size = 119, normalized size = 1.19

$$\frac{1247}{10}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}+6\,\sqrt{2\,x+3}\right|}{2\left(\sqrt{15}+3\,\sqrt{2\,x+3}\right)}\right)+\frac{2529\,(2\,x+3)^{\frac{7}{2}}-10151\,(2\,x+3)^{\frac{5}{2}}+13115\,(2\,x+3)^{\frac{3}{2}}-5445\,\sqrt{2\,x+3}}{\left(3\,(2\,x+3)^{2}-16\,x-19\right)^{2}}+483\,\log\left(\sqrt{2\,x+3}+1\right)-483\,\log\left(\left|\sqrt{2\,x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1247/10*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) + (2529*(2*x + 3)^(7/2) - 10151*(2*x + 3)^(5/2) + 13115*(2*x
 + 3)^(3/2) - 5445*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 483*log(s
qrt(2*x + 3) + 1) - 483*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.24

$$-\frac{1247\sqrt{15}\;\operatorname{arctanh}\left(\frac{\sqrt{15}\;\sqrt{2x+3}}{5}\right)}{5}-483\ln\left(-1+\sqrt{2x+3}\right)+483\ln\left(\sqrt{2x+3}+1\right)+\frac{1305\,(2x+3)^{\frac{3}{2}}-2345\sqrt{2x+3}}{(6x+4)^{2}}-\frac{3}{\left(\sqrt{2x+3}+1\right)^{2}}+\frac{68}{\sqrt{2x+3}+1}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^{2}}+\frac{68}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 18*(145/2*(2*x+3)^(3/2)-2345/18*(2*x+3)^(1/2))/(6*x+4)^2-1247/5*arctanh(1/5
*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+68/((2*x+3)^(1/2)+1
)+483*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+68/(-1+(2*x+3)^(1/2))-483*
ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.31, size = 133, normalized size = 1.33

$$\frac{1247}{10}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{2529\,(2\,x+3)^{\frac{7}{2}}-10151\,(2\,x+3)^{\frac{5}{2}}+13115\,(2\,x+3)^{\frac{3}{2}}-5445\,\sqrt{2\,x+3}}{9\,(2\,x+3)^{4}-48\,(2\,x+3)^{3}+94\,(2\,x+3)^{2}-160\,x-215}+483\,\log\left(\sqrt{2\,x+3}+1\right)-483\,\log\left(\sqrt{2\,x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1247/10*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) + (2529*(2*x + 3)^(7/2) - 10151*(2*x + 3)^(5/2) + 13115*(2*x + 3)^(3/
2) - 5445*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3)^2 -
 160*x - 215) + 483*log(sqrt(2*x + 3) + 1) - 483*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 101, normalized size = 1.01

$$966\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)+\frac{605\,\sqrt{2\,x+3}-\frac{13115\,{(2\,x+3)}^{3/2}}{9}+\frac{10151\,{(2\,x+3)}^{5/2}}{9}-281\,{(2\,x+3)}^{7/2}}{\frac{160\,x}{9}-\frac{94\,{(2\,x+3)}^{2}}{9}+\frac{16\,{(2\,x+3)}^{3}}{3}-{(2\,x+3)}^{4}+\frac{215}{9}}-\frac{1247\,\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 966*atanh((2*x + 3)^(1/2)) + (605*(2*x + 3)^(1/2) - (13115*(2*x + 3)^(3/2))
/9 + (10151*(2*x + 3)^(5/2))/9 - 281*(2*x + 3)^(7/2))/((160*x)/9 - (94*(2*x
 + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (1247*15^(1/2)*ata
nh((15^(1/2)*(2*x + 3)^(1/2))/5))/5
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2329 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{\sqrt{2x+3}\,(35x+29)}{2\left(3x^2+5x+2\right)^2}+\frac{3\sqrt{2x+3}\,(1063x+878)}{10\left(3x^2+5x+2\right)}+730\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4713}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {820, 822, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(35x+29)}{2\left(3x^2+5x+2\right)^2}+\frac{3\sqrt{2x+3}\,(1063x+878)}{10\left(3x^2+5x+2\right)}+730\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4713}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(Sqrt[3 + 2*x]*(29 + 35*x))/(2*(2 + 5*x + 3*x^2)^2) + (3*Sqrt[3 + 2*x]*(87
8 + 1063*x))/(10*(2 + 5*x + 3*x^2)) + 730*ArcTanh[Sqrt[3 + 2*x]] - (4713*Sq
rt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{286+175x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}+\frac{1}{10}\int \frac{6839+3189x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}+\frac{1}{5}\operatorname{Subst}\left(\int \frac{4111+3189x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{\right.\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}-2190\operatorname{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3-\right.\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}+730\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{4713}{5}\sqrt{\frac{3}{5}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 81, normalized size = 0.79

$$\frac{1}{50}\left(\frac{5\sqrt{2x+3}\,\left(9567x^3+23847x^2+19373x+5123\right)}{\left(3x^2+5x+2\right)^2}-9426\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)+730\tanh^{-1}\left(\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] 730*ArcTanh[Sqrt[3 + 2*x]] + ((5*Sqrt[3 + 2*x]*(5123 + 19373*x + 23847*x^2
+ 9567*x^3))/(2 + 5*x + 3*x^2)^2 - 9426*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]])/50
```

IntegrateAlgebraic [A] time = 0.26, size = 102, normalized size = 1.00

$$\frac{\sqrt{2x+3}\,\left(9567(2x+3)^3-38409(2x+3)^2+49637(2x+3)-20555\right)}{5\left(3(2x+3)^2-8(2x+3)+5\right)^2}+730\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4713}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(-20555 + 49637*(3 + 2*x) - 38409*(3 + 2*x)^2 + 9567*(3 + 2*
x)^3))/(5*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2) + 730*ArcTanh[Sqrt[3 + 2*x]]
 - (4713*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

fricas [B] time = 0.42, size = 170, normalized size = 1.67

$$\frac{4713\sqrt{5}\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+18250\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}+1\right)-18250\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}-1\right)+5\left(9567x^3+23847x^2+19373x+5123\right)\sqrt{2x+3}}{50\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/50*(4713*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(
5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 18250*(9*x^4 + 30*x^3 + 37
*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 18250*(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4)*log(sqrt(2*x + 3) - 1) + 5*(9567*x^3 + 23847*x^2 + 19373*x + 5123
)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.19, size = 120, normalized size = 1.18

$$\frac{4713}{50}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{9567(2x+3)^{\frac{7}{2}}-38409(2x+3)^{\frac{5}{2}}+49637(2x+3)^{\frac{3}{2}}-20555\sqrt{2x+3}}{5\left(3(2x+3)^{2}-16x-19\right)^{2}}+365\log\left(\sqrt{2x+3}+1\right)-365\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 4713/50*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) + 1/5*(9567*(2*x + 3)^(7/2) - 38409*(2*x + 3)^(5/2) + 49637*
(2*x + 3)^(3/2) - 20555*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 365*
log(sqrt(2*x + 3) + 1) - 365*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.22

$$-\frac{4713\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{25}-365\ln\left(-1+\sqrt{2x+3}\right)+365\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{4527(2x+3)^{\frac{3}{2}}}{5}-1611\sqrt{2x+3}}{(6x+4)^{2}}-\frac{3}{\left(\sqrt{2x+3}+1\right)^{2}}+\frac{56}{\sqrt{2x+3}+1}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^{2}}+\frac{56}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 162*(503/90*(2*x+3)^(3/2)-179/18*(2*x+3)^(1/2))/(6*x+4)^2-4713/25*arctanh(1
/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+56/((2*x+3)^(1/2)
+1)+365*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+56/(-1+(2*x+3)^(1/2))-36
5*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.06, size = 134, normalized size = 1.31

$$\frac{4713}{50}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{9567(2x+3)^{\frac{7}{2}}-38409(2x+3)^{\frac{5}{2}}+49637(2x+3)^{\frac{3}{2}}-20555\sqrt{2x+3}}{5\left(9(2x+3)^{4}-48(2x+3)^{3}+94(2x+3)^{2}-160x-215\right)}+365\log\left(\sqrt{2x+3}+1\right)-365\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 4713/50*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) + 1/5*(9567*(2*x + 3)^(7/2) - 38409*(2*x + 3)^(5/2) + 49637*(2*x + 3)
^(3/2) - 20555*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3
)^2 - 160*x - 215) + 365*log(sqrt(2*x + 3) + 1) - 365*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 2.39, size = 101, normalized size = 0.99

$$730\,\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{4111\sqrt{2x+3}}{9}-\frac{49637(2x+3)^{3/2}}{45}+\frac{12803(2x+3)^{5/2}}{15}-\frac{1063(2x+3)^{7/2}}{5}}{\frac{160x}{9}-\frac{94(2x+3)^{2}}{9}+\frac{16(2x+3)^{3}}{3}-(2x+3)^{4}+\frac{215}{9}}-\frac{4713\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 730*atanh((2*x + 3)^(1/2)) + ((4111*(2*x + 3)^(1/2))/9 - (49637*(2*x + 3)^(
3/2))/45 + (12803*(2*x + 3)^(5/2))/15 - (1063*(2*x + 3)^(7/2))/5)/((160*x)/
```

```
9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (4713*
15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/25
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2330 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(11739x+9734)}{50\left(3x^2+5x+2\right)}+542\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{17463}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Rubi [A] time = 0.06, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 826, 1166, 207}

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(11739x+9734)}{50\left(3x^2+5x+2\right)}+542\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{17463}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-3*Sqrt[3 + 2*x]*(37 + 47*x))/(10*(2 + 5*x + 3*x^2)^2) + (Sqrt[3 + 2*x]*(9
734 + 11739*x))/(50*(2 + 5*x + 3*x^2)) + 542*ArcTanh[Sqrt[3 + 2*x]] - (1746
3*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^3}\,dx &= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1106+705x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{25289+1173}{\sqrt{3+2x}\left(2+5x\right.}\\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)}+\frac{1}{25}\,\text{Subst}\left(\int \frac{15361+1}{5-8x^2}\right.\\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)}-1626\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\right.\\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)}+542\tanh^{-1}\left(\sqrt{3+2x}\right)-\end{aligned}$$

Mathematica [A] time = 0.10, size = 81, normalized size = 0.79

$$\frac{1}{50}\left(\frac{\sqrt{2x+3}\left(35217x^3+87897x^2+71443x+18913\right)}{\left(3x^2+5x+2\right)^2}+27100\tanh^{-1}\left(\sqrt{2x+3}\right)-34926\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] ((Sqrt[3 + 2*x]*(18913 + 71443*x + 87897*x^2 + 35217*x^3))/(2 + 5*x + 3*x^2
)^2 + 27100*ArcTanh[Sqrt[3 + 2*x]] - 34926*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt
[3 + 2*x]])/50
```

IntegrateAlgebraic [A] time = 0.27, size = 102, normalized size = 1.00

$$\frac{\sqrt{2x+3}\left(35217(2x+3)^3-141159(2x+3)^2+181867(2x+3)-74725\right)}{25\left(3(2x+3)^2-8(2x+3)+5\right)^2}+542\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{17463}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (Sqrt[3 + 2*x]*(-74725 + 181867*(3 + 2*x) - 141159*(3 + 2*x)^2 + 35217*(3 +
 2*x)^3))/(25*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2) + 542*ArcTanh[Sqrt[3 + 2
*x]] - (17463*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

fricas [B] time = 0.41, size = 170, normalized size = 1.67

$$\frac{17463\sqrt{5}\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+67750\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}+1\right)-67750\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\sqrt{2x+3}-1\right)+5\left(35217x^3+87897x^2+71443x+18913\right)\sqrt{2x+3}}{250\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/250*(17463*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqr
t(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 67750*(9*x^4 + 30*x^3 +
37*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 67750*(9*x^4 + 30*x^3 + 37*x^2
+ 20*x + 4)*log(sqrt(2*x + 3) - 1) + 5*(35217*x^3 + 87897*x^2 + 71443*x + 1
8913)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.18, size = 120, normalized size = 1.18

$$\frac{17463}{250}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{35217\,(2x+3)^{\frac{7}{2}}-141159\,(2x+3)^{\frac{5}{2}}+181867\,(2x+3)^{\frac{3}{2}}-74725\sqrt{2x+3}}{25\left(3\,(2x+3)^2-16x-19\right)^2}+271\log\left(\sqrt{2x+3}+1\right)-271\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] 17463/250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3
*sqrt(2*x + 3))) + 1/25*(35217*(2*x + 3)^(7/2) - 141159*(2*x + 3)^(5/2) + 1
81867*(2*x + 3)^(3/2) - 74725*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2
+ 271*log(sqrt(2*x + 3) + 1) - 271*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.22

$$-\frac{17463\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{125}-271\ln\left(-1+\sqrt{2x+3}\right)+271\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{15417(2x+3)^{\frac{3}{2}}}{25}-1089\sqrt{2x+3}}{(6x+4)^2}-\frac{3}{\left(\sqrt{2x+3}+1\right)^2}+\frac{44}{\sqrt{2x+3}+1}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^2}+\frac{44}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^3/(2*x+3)^(1/2),x)
```

```
[Out] 486*(571/450*(2*x+3)^(3/2)-121/54*(2*x+3)^(1/2))/(6*x+4)^2-17463/125*arctan
h(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+44/((2*x+3)^(1
/2)+1)+271*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+44/(-1+(2*x+3)^(1/2))
-271*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.96, size = 134, normalized size = 1.31

$$\frac{17463}{250}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{35217\,(2x+3)^{\frac{7}{2}}-141159\,(2x+3)^{\frac{5}{2}}+181867\,(2x+3)^{\frac{3}{2}}-74725\sqrt{2x+3}}{25\left(9\,(2x+3)^4-48\,(2x+3)^3+94\,(2x+3)^2-160x-215\right)}+271\log\left(\sqrt{2x+3}+1\right)-271\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 17463/250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
 + 3))) + 1/25*(35217*(2*x + 3)^(7/2) - 141159*(2*x + 3)^(5/2) + 181867*(2*
x + 3)^(3/2) - 74725*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2
*x + 3)^2 - 160*x - 215) + 271*log(sqrt(2*x + 3) + 1) - 271*log(sqrt(2*x +
3) - 1)
```

mupad [B] time = 2.40, size = 101, normalized size = 0.99

$$542\,\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{2989\sqrt{2x+3}}{9}-\frac{181867\,(2x+3)^{3/2}}{225}+\frac{47053\,(2x+3)^{5/2}}{75}-\frac{3913\,(2x+3)^{7/2}}{25}}{\frac{160x}{9}-\frac{94\,(2x+3)^2}{9}+\frac{16\,(2x+3)^3}{3}-(2x+3)^4+\frac{215}{9}}-\frac{17463\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 542*atanh((2*x + 3)^(1/2)) + ((2989*(2*x + 3)^(1/2))/9 - (181867*(2*x + 3)^
(3/2))/225 + (47053*(2*x + 3)^(5/2))/75 - (3913*(2*x + 3)^(7/2))/25)/((160*
x)/9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (17
463*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**3/(3+2*x)**(1/2),x)
```

```
[Out] Timed out
```

3.2331 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=115

$$-\frac{3(47x+37)}{10\sqrt{2x+3}\left(3x^2+5x+2\right)^2}+\frac{2229x+1888}{10\sqrt{2x+3}\left(3x^2+5x+2\right)}+\frac{2667}{25\sqrt{2x+3}}+402\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{12717}{25}\sqrt{\frac{3}{5}}\tanh$$

Rubi [A] time = 0.08, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{10\sqrt{2x+3}\left(3x^2+5x+2\right)^2}+\frac{2229x+1888}{10\sqrt{2x+3}\left(3x^2+5x+2\right)}+\frac{2667}{25\sqrt{2x+3}}+402\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{12717}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 2667/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(10*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^
2)^2) + (1888 + 2229*x)/(10*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)) + 402*ArcTanh[
Sqrt[3 + 2*x]] - (12717*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^3}\,dx = -\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2} - \frac{1}{10}\int \frac{1328+987x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2} + \frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)} + \frac{1}{50}\int \frac{4}{(3+2}$$

$$= \frac{2667}{25\sqrt{3+2x}} - \frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2} + \frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)} +$$

$$= \frac{2667}{25\sqrt{3+2x}} - \frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2} + \frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)} +$$

$$= \frac{2667}{25\sqrt{3+2x}} - \frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2} + \frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)} -$$

$$= \frac{2667}{25\sqrt{3+2x}} - \frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2} + \frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)} +$$

Mathematica [A] time = 0.14, size = 86, normalized size = 0.75

$$\frac{1}{50}\left(\frac{48006x^4+193455x^3+281403x^2+175465x+39661}{\sqrt{2x+3}\left(3x^2+5x+2\right)^2}+20100\tanh^{-1}\left(\sqrt{2x+3}\right)-25434\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] ((39661 + 175465*x + 281403*x^2 + 193455*x^3 + 48006*x^4)/(Sqrt[3 + 2*x]*(2
 + 5*x + 3*x^2)^2) + 20100*ArcTanh[Sqrt[3 + 2*x]] - 25434*Sqrt[3/5]*ArcTanh
[Sqrt[3/5]*Sqrt[3 + 2*x]])/50
```

IntegrateAlgebraic [A] time = 0.31, size = 111, normalized size = 0.97

$$\frac{24003(2x+3)^4-94581(2x+3)^3+117873(2x+3)^2-44015(2x+3)-2080}{25\sqrt{2x+3}\left(3(2x+3)^2-8(2x+3)+5\right)^2}+402\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{12717}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-2080 - 44015*(3 + 2*x) + 117873*(3 + 2*x)^2 - 94581*(3 + 2*x)^3 + 24003*(
3 + 2*x)^4)/(25*Sqrt[3 + 2*x]*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2) + 402*Ar
cTanh[Sqrt[3 + 2*x]] - (12717*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/2
5
```

fricas [B] time = 0.41, size = 195, normalized size = 1.70

$$\frac{12717\sqrt{5}\sqrt{3}\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+50250\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)\log\left(\sqrt{2x+3}+1\right)-50250\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)\log\left(\sqrt{2x+3}-1\right)+5\left(48006x^4+193455x^3+281403x^2+175465x+39661\right)\sqrt{2x+3}}{250\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/250*(12717*sqrt(5)*sqrt(3)*(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x +
12)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 50250*(18*x
^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)*log(sqrt(2*x + 3) + 1) - 50250
*(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)*log(sqrt(2*x + 3) - 1) +
 5*(48006*x^4 + 193455*x^3 + 281403*x^2 + 175465*x + 39661)*sqrt(2*x + 3))/
(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)
```

giac [A] time = 0.18, size = 129, normalized size = 1.12

$$\frac{12717}{250}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{416}{125\sqrt{2x+3}}+\frac{123759\,(2x+3)^{\frac{7}{2}}-492873\,(2x+3)^{\frac{5}{2}}+628469\,(2x+3)^{\frac{3}{2}}-253355\sqrt{2x+3}}{125\left(3\,(2x+3)^2-16x-19\right)^2}+201\log\left(\sqrt{2x+3}+1\right)-201\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 12717/250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3
*sqrt(2*x + 3))) - 416/125/sqrt(2*x + 3) + 1/125*(123759*(2*x + 3)^(7/2) -
492873*(2*x + 3)^(5/2) + 628469*(2*x + 3)^(3/2) - 253355*sqrt(2*x + 3))/(3*
(2*x + 3)^2 - 16*x - 19)^2 + 201*log(sqrt(2*x + 3) + 1) - 201*log(abs(sqrt(
2*x + 3) - 1))
```

maple [A] time = 0.02, size = 133, normalized size = 1.16

$$-\frac{12717\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}-201\ln\left(-1+\sqrt{2x+3}\right)+201\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{51759(2x+3)^{\frac{3}{2}}}{125}-\frac{18171\sqrt{2x+3}}{25}}{(6x+4)^2}+\frac{32}{\sqrt{2x+3}+1}-\frac{3}{\left(\sqrt{2x+3}+1\right)^2}-\frac{416}{125\sqrt{2x+3}}+\frac{32}{-1+\sqrt{2x+3}}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 486/125*(213/2*(2*x+3)^(3/2)-3365/18*(2*x+3)^(1/2))/(6*x+4)^2-12717/125*arc
tanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+32/((2*x+3)^(1/2)+1)-3/((2*x+3)^(
1/2)+1)^2+201*ln((2*x+3)^(1/2)+1)-416/125/(2*x+3)^(1/2)+32/(-1+(2*x+3)^(1/2
))+3/(-1+(2*x+3)^(1/2))^2-201*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.99, size = 143, normalized size = 1.24

$$\frac{12717}{250}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{24003\,(2x+3)^4-94581\,(2x+3)^3+117873\,(2x+3)^2-88030x-134125}{25\left(9\,(2x+3)^{\frac{9}{2}}-48\,(2x+3)^{\frac{7}{2}}+94\,(2x+3)^{\frac{5}{2}}-80\,(2x+3)^{\frac{3}{2}}+25\sqrt{2x+3}\right)}+201\log\left(\sqrt{2x+3}+1\right)-201\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 12717/250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
 + 3))) + 1/25*(24003*(2*x + 3)^4 - 94581*(2*x + 3)^3 + 117873*(2*x + 3)^2
- 88030*x - 134125)/(9*(2*x + 3)^(9/2) - 48*(2*x + 3)^(7/2) + 94*(2*x + 3)^
(5/2) - 80*(2*x + 3)^(3/2) + 25*sqrt(2*x + 3)) + 201*log(sqrt(2*x + 3) + 1)
 - 201*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.40, size = 109, normalized size = 0.95

$$402\,\mathrm{atanh}\left(\sqrt{2x+3}\right)-\frac{12717\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}-\frac{\frac{17606x}{45}-\frac{13097\,(2x+3)^2}{25}+\frac{10509\,(2x+3)^3}{25}-\frac{2667\,(2x+3)^4}{25}+\frac{5365}{9}}{\frac{25\sqrt{2x+3}}{9}-\frac{80\,(2x+3)^{3/2}}{9}+\frac{94\,(2x+3)^{5/2}}{9}-\frac{16\,(2x+3)^{7/2}}{3}+(2x+3)^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 402*atanh((2*x + 3)^(1/2)) - (12717*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2
))/5))/125 - ((17606*x)/45 - (13097*(2*x + 3)^2)/25 + (10509*(2*x + 3)^3)/2
5 - (2667*(2*x + 3)^4)/25 + 5365/9)/((25*(2*x + 3)^(1/2))/9 - (80*(2*x + 3)
^(3/2))/9 + (94*(2*x + 3)^(5/2))/9 - (16*(2*x + 3)^(7/2))/3 + (2*x + 3)^(9/
2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2332 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^3} \, dx$

Optimal. Leaf size=128

$$-\frac{3(47x+37)}{10(2x+3)^{3/2}\left(3x^2+5x+2\right)^2}+\frac{10551x+9146}{50(2x+3)^{3/2}\left(3x^2+5x+2\right)}+\frac{6853}{125\sqrt{2x+3}}+\frac{7451}{75(2x+3)^{3/2}}+310\tanh^{-1}\left(\sqrt{2x+\right.$$

Rubi [A] time = 0.10, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{10(2x+3)^{3/2}\left(3x^2+5x+2\right)^2}+\frac{10551x+9146}{50(2x+3)^{3/2}\left(3x^2+5x+2\right)}+\frac{6853}{125\sqrt{2x+3}}+\frac{7451}{75(2x+3)^{3/2}}+310\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{45603}{125}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 7451/(75*(3 + 2*x)^(3/2)) + 6853/(125*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(10*
(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2) + (9146 + 10551*x)/(50*(3 + 2*x)^(3/2)
*(2 + 5*x + 3*x^2)) + 310*ArcTanh[Sqrt[3 + 2*x]] - (45603*Sqrt[3/5]*ArcTanh
[Sqrt[3/5]*Sqrt[3 + 2*x]])/125
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
```

```
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^3}\,dx = -\frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} - \frac{1}{10}\int \frac{1550+1269x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146+10551x}{50(3+2x)^{3/2}\left(2+5x+3x^2\right)} + \frac{1}{50}\int$$

$$= \frac{7451}{75(3+2x)^{3/2}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146+10551x}{50(3+2x)^{3/2}\left(2+5x+3\right.}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{91}{50(3+2}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{91}{50(3+2}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{91}{50(3+2}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{91}{50(3+2}$$

Mathematica [A] time = 0.29, size = 91, normalized size = 0.71

$$\frac{\frac{5\left(740124x^5+4247856x^4+9453447x^3+10168583x^2+5278129x+1057511\right)}{(2x+3)^{3/2}\left(3x^2+5x+2\right)^2} - 273618\sqrt{15}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{3750} + 310\tanh^{-1}\left(\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 310*ArcTanh[Sqrt[3 + 2*x]] + ((5*(1057511 + 5278129*x + 10168583*x^2 + 9453
447*x^3 + 4247856*x^4 + 740124*x^5))/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2)
- 273618*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3750
```

IntegrateAlgebraic [A] time = 0.30, size = 120, normalized size = 0.94

$$\frac{185031(2x+3)^5 - 651537(2x+3)^4 + 619101(2x+3)^3 - 10115(2x+3)^2 - 114080(2x+3) - 10400}{375(2x+3)^{3/2}\left(3(2x+3)^2 - 8(2x+3) + 5\right)^2} + 310\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{45603}{125}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-10400 - 114080*(3 + 2*x) - 10115*(3 + 2*x)^2 + 619101*(3 + 2*x)^3 - 65153
7*(3 + 2*x)^4 + 185031*(3 + 2*x)^5)/(375*(3 + 2*x)^(3/2)*(5 - 8*(3 + 2*x) +
```

```
3*(3 + 2*x)^2)^2) + 310*ArcTanh[Sqrt[3 + 2*x]] - (45603*Sqrt[3/5]*ArcTanh[
Sqrt[3/5]*Sqrt[3 + 2*x]])/125
```

fricas [B] time = 0.43, size = 220, normalized size = 1.72

$$\frac{136809\sqrt{5}\sqrt{3}\left(36x^6+228x^5+589x^4+794x^3+589x^2+228x+36\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+581250\left(36x^6+228x^5+589x^4+794x^3+589x^2+228x+36\right)\log\left(\sqrt{2x+3}+1\right)-581250\left(36x^6+228x^5+589x^4+794x^3+589x^2+228x+36\right)\log\left(\sqrt{2x+3}-1\right)+5\left(740124x^5+4247856x^4+9453447x^3+10168583x^2+5278129x+1057511\right)\sqrt{2x+3}}{3750\left(36x^6+228x^5+589x^4+794x^3+589x^2+228x+36\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/3750*(136809*sqrt(5)*sqrt(3)*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*
x^2 + 228*x + 36)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2))
 + 581250*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)*log
(sqrt(2*x + 3) + 1) - 581250*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^
2 + 228*x + 36)*log(sqrt(2*x + 3) - 1) + 5*(740124*x^5 + 4247856*x^4 + 9453
447*x^3 + 10168583*x^2 + 5278129*x + 1057511)*sqrt(2*x + 3))/(36*x^6 + 228*
x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)
```

giac [A] time = 0.18, size = 134, normalized size = 1.05

$$\frac{45603}{1250}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{64\,(921x+1414)}{1875\,(2x+3)^{\frac{3}{2}}}+\frac{396801\,(2x+3)^{\frac{7}{2}}-1551207\,(2x+3)^{\frac{5}{2}}+1922011\,(2x+3)^{\frac{3}{2}}-737605\sqrt{2x+3}}{625\left(3\,(2x+3)^2-16x-19\right)^2}+155\log\left(\sqrt{2x+3}+1\right)-155\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 45603/1250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) +
3*sqrt(2*x + 3))) - 64/1875*(921*x + 1414)/(2*x + 3)^(3/2) + 1/625*(396801*
(2*x + 3)^(7/2) - 1551207*(2*x + 3)^(5/2) + 1922011*(2*x + 3)^(3/2) - 73760
5*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 155*log(sqrt(2*x + 3) + 1)
 - 155*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 142, normalized size = 1.11

$$-\frac{45603\sqrt{15}\,\mathrm{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{625}-155\ln\left(-1+\sqrt{2x+3}\right)+155\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{171801(2x+3)^{\frac{3}{2}}}{625}-\frac{60021\sqrt{2x+3}}{125}}{(6x+4)^2}-\frac{3}{\left(\sqrt{2x+3}+1\right)^2}+\frac{20}{\sqrt{2x+3}+1}-\frac{416}{375\,(2x+3)^{\frac{3}{2}}}-\frac{9824}{625\sqrt{2x+3}}+\frac{3}{\left(-1+\sqrt{2x+3}\right)^2}+\frac{20}{-1+\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 4374/625*(707/18*(2*x+3)^(3/2)-1235/18*(2*x+3)^(1/2))/(6*x+4)^2-45603/625*a
rctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+20/((2*x+
3)^(1/2)+1)+155*ln((2*x+3)^(1/2)+1)-416/375/(2*x+3)^(3/2)-9824/625/(2*x+3)^
(1/2)+3/(-1+(2*x+3)^(1/2))^2+20/(-1+(2*x+3)^(1/2))-155*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.98, size = 152, normalized size = 1.19

$$\frac{45603}{1250}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{185031\,(2x+3)^5-651537\,(2x+3)^4+619101\,(2x+3)^3-10115\,(2x+3)^2-228160x-352640}{375\left(9\,(2x+3)^{\frac{11}{2}}-48\,(2x+3)^{\frac{9}{2}}+94\,(2x+3)^{\frac{7}{2}}-80\,(2x+3)^{\frac{5}{2}}+25\,(2x+3)^{\frac{3}{2}}\right)}+155\log\left(\sqrt{2x+3}+1\right)-155\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 45603/1250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*
x + 3))) + 1/375*(185031*(2*x + 3)^5 - 651537*(2*x + 3)^4 + 619101*(2*x + 3
)^3 - 10115*(2*x + 3)^2 - 228160*x - 352640)/(9*(2*x + 3)^(11/2) - 48*(2*x
+ 3)^(9/2) + 94*(2*x + 3)^(7/2) - 80*(2*x + 3)^(5/2) + 25*(2*x + 3)^(3/2))
+ 155*log(sqrt(2*x + 3) + 1) - 155*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.08, size = 118, normalized size = 0.92

$$310\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)-\frac{45603\,\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{625}-\frac{\frac{45632\,x}{675}+\frac{2023\,{\left(2\,x+3\right)}^2}{675}-\frac{68789\,{\left(2\,x+3\right)}^3}{375}+\frac{24131\,{\left(2\,x+3\right)}^4}{125}-\frac{6853\,{\left(2\,x+3\right)}^5}{125}+\frac{70528}{675}}{\frac{25\,{\left(2\,x+3\right)}^{3/2}}{9}-\frac{80\,{\left(2\,x+3\right)}^{5/2}}{9}+\frac{94\,{\left(2\,x+3\right)}^{7/2}}{9}-\frac{16\,{\left(2\,x+3\right)}^{9/2}}{3}+{\left(2\,x+3\right)}^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 310*atanh((2*x + 3)^(1/2)) - (45603*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2
))/5))/625 - ((45632*x)/675 + (2023*(2*x + 3)^2)/675 - (68789*(2*x + 3)^3)/
375 + (24131*(2*x + 3)^4)/125 - (6853*(2*x + 3)^5)/125 + 70528/675)/((25*(2
*x + 3)^(3/2))/9 - (80*(2*x + 3)^(5/2))/9 + (94*(2*x + 3)^(7/2))/9 - (16*(2
*x + 3)^(9/2))/3 + (2*x + 3)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2333 $\int \frac{5-x}{(3+2x)^{7/2}(2+5x+3x^2)^3}\,dx$

Optimal. Leaf size=141

$$-\frac{3(47x+37)}{10(2x+3)^{5/2}(3x^2+5x+2)^2}+\frac{9957x+8852}{50(2x+3)^{5/2}(3x^2+5x+2)}-\frac{24409}{3125\sqrt{2x+3}}+\frac{102697}{1875(2x+3)^{3/2}}+\frac{56399}{625(2x+3)^{5/2}}+$$

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{10(2x+3)^{5/2}(3x^2+5x+2)^2}+\frac{9957x+8852}{50(2x+3)^{5/2}(3x^2+5x+2)}-\frac{24409}{3125\sqrt{2x+3}}+\frac{102697}{1875(2x+3)^{3/2}}+\frac{56399}{625(2x+3)^{5/2}}+266\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{806841\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{3125}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 56399/(625*(3 + 2*x)^(5/2)) + 102697/(1875*(3 + 2*x)^(3/2)) - 24409/(3125*S
qrt[3 + 2*x]) - (3*(37 + 47*x))/(10*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2) +
(8852 + 9957*x)/(50*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)) + 266*ArcTanh[Sqrt[3
 + 2*x]] - (806841*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3125
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
```

```
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^3}\,dx = -\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2} - \frac{1}{10}\int \frac{1772+1551x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2} + \frac{8852+9957x}{50(3+2x)^{5/2}\left(2+5x+3x^2\right)} + \frac{1}{50}\int$$

$$= \frac{56399}{625(3+2x)^{5/2}} - \frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2} + \frac{8852+9957x}{50(3+2x)^{5/2}\left(2+5x+\right.}$$

$$= \frac{56399}{625(3+2x)^{5/2}} + \frac{102697}{1875(3+2x)^{3/2}} - \frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2} + \frac{}{50(3}$$

$$= \frac{56399}{625(3+2x)^{5/2}} + \frac{102697}{1875(3+2x)^{3/2}} - \frac{24409}{3125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x\right.}$$

$$= \frac{56399}{625(3+2x)^{5/2}} + \frac{102697}{1875(3+2x)^{3/2}} - \frac{24409}{3125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x\right.}$$

$$= \frac{56399}{625(3+2x)^{5/2}} + \frac{102697}{1875(3+2x)^{3/2}} - \frac{24409}{3125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x\right.}$$

$$= \frac{56399}{625(3+2x)^{5/2}} + \frac{102697}{1875(3+2x)^{3/2}} - \frac{24409}{3125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x\right.}$$

Mathematica [A] time = 0.18, size = 121, normalized size = 0.86

$$\frac{-\frac{28125(47x+37)}{\left(3x^2+5x+2\right)^2} + \frac{1875(9957x+8852)}{3x^2+5x+2} + 2(2x+3)\left(21(2x+3)\left(593750\sqrt{2x+3}\tanh^{-1}\left(\sqrt{2x+3}\right) - 115263\sqrt{30x+45}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right) - 17435\right) + 2567425\right) + 8459850}{93750(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (8459850 - (28125*(37 + 47*x))/(2 + 5*x + 3*x^2)^2 + (1875*(8852 + 9957*x))
/(2 + 5*x + 3*x^2) + 2*(3 + 2*x)*(2567425 + 21*(3 + 2*x)*(-17435 + 593750*S
qrt[3 + 2*x]*ArcTanh[Sqrt[3 + 2*x]] - 115263*Sqrt[45 + 30*x]*ArcTanh[Sqrt[3
/5]*Sqrt[3 + 2*x]])))/(93750*(3 + 2*x)^(5/2))
```

IntegrateAlgebraic [A] time = 0.30, size = 129, normalized size = 0.91

$$\frac{-659043(2x+3)^6 + 8136261(2x+3)^5 - 23916753(2x+3)^4 + 24720095(2x+3)^3 - 6945760(2x+3)^2 - 728800(2x+3) - 156000}{9375(2x+3)^{5/2}\left(3(2x+3)^2 - 8(2x+3) + 5\right)^2} + 266\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{806841\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{3125}$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-156000 - 728800*(3 + 2*x) - 6945760*(3 + 2*x)^2 + 24720095*(3 + 2*x)^3 -
23916753*(3 + 2*x)^4 + 8136261*(3 + 2*x)^5 - 659043*(3 + 2*x)^6)/(9375*(3 +
 2*x)^(5/2)*(5 - 8*(3 + 2*x) + 3*(3 + 2*x)^2)^2) + 266*ArcTanh[Sqrt[3 + 2*x
]] - (806841*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3125
```

fricas [B] time = 0.40, size = 245, normalized size = 1.74

$$\frac{2420523 \sqrt{5} \sqrt{3} \left(72 x^{7} + 564 x^{6} + 1862 x^{5} + 3355 x^{4} + 3560 x^{3} + 2223 x^{2} + 756 x + 108\right) \log\left(-\frac{\sqrt{5} \sqrt{3} \sqrt{2 x+3} - 3 x - 7}{3 x + 2}\right) + 12468750 \left(72 x^{7} + 564 x^{6} + 1862 x^{5} + 3355 x^{4} + 3560 x^{3} + 2223 x^{2} + 756 x + 108\right) \log\left(\sqrt{2 x + 3} + 1\right) - 12468750 \left(72 x^{7} + 564 x^{6} + 1862 x^{5} + 3355 x^{4} + 3560 x^{3} + 2223 x^{2} + 756 x + 108\right) \log\left(\sqrt{2 x + 3} - 1\right) - 5 \left(5272344 x^{6} + 14906052 x^{5} - 18312714 x^{4} - 114099329 x^{3} - 160041829 x^{2} - 94082723 x - 20250051\right) \sqrt{2 x + 3}}{93750 \left(72 x^{7} + 564 x^{6} + 1862 x^{5} + 3355 x^{4} + 3560 x^{3} + 2223 x^{2} + 756 x + 108\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/93750*(2420523*sqrt(5)*sqrt(3)*(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 +
3560*x^3 + 2223*x^2 + 756*x + 108)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*
x - 7)/(3*x + 2)) + 12468750*(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 + 3560
*x^3 + 2223*x^2 + 756*x + 108)*log(sqrt(2*x + 3) + 1) - 12468750*(72*x^7 +
564*x^6 + 1862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 + 756*x + 108)*log(sqrt
(2*x + 3) - 1) - 5*(5272344*x^6 + 14906052*x^5 - 18312714*x^4 - 114099329*x
^3 - 160041829*x^2 - 94082723*x - 20250051)*sqrt(2*x + 3))/(72*x^7 + 564*x^
6 + 1862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 + 756*x + 108)
```

giac [A] time = 0.19, size = 143, normalized size = 1.01

$$\frac{806841}{31250} \sqrt{15} \log\left(\frac{\left|-2 \sqrt{15} + 6 \sqrt{2 x + 3}\right|}{2 \left(\sqrt{15} + 3 \sqrt{2 x + 3}\right)}\right) + \frac{202995 (2 x + 3)^{\frac{7}{2}} - 745077 (2 x + 3)^{\frac{5}{2}} + 831169 (2 x + 3)^{\frac{3}{2}} - 259087 \sqrt{2 x + 3}}{625 \left(3 (2 x + 3)^{2} - 16 x - 19\right)^{2}} - \frac{32 \left(12861 (2 x + 3)^{2} + 3070 x + 4800\right)}{9375 (2 x + 3)^{\frac{5}{2}}} + 133 \log\left(\sqrt{2 x + 3} + 1\right) - 133 \log\left(\left|\sqrt{2 x + 3} - 1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 806841/31250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15)
+ 3*sqrt(2*x + 3))) + 1/625*(202995*(2*x + 3)^(7/2) - 745077*(2*x + 3)^(5/2
) + 831169*(2*x + 3)^(3/2) - 259087*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x -
19)^2 - 32/9375*(12861*(2*x + 3)^2 + 3070*x + 4800)/(2*x + 3)^(5/2) + 133*l
og(sqrt(2*x + 3) + 1) - 133*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.03, size = 151, normalized size = 1.07

$$-\frac{806841 \sqrt{15}\, \operatorname{arctanh}\left(\frac{\sqrt{15}\, \sqrt{2x+3}}{5}\right)}{15625} - 133 \ln\left(-1 + \sqrt{2x + 3}\right) + 133 \ln\left(\sqrt{2x + 3} + 1\right) + \frac{\frac{22599 (2x+3)^{\frac{3}{2}}}{125} - \frac{196587 \sqrt{2x+3}}{625}}{(6x + 4)^{2}} - \frac{3}{\left(\sqrt{2x + 3} + 1\right)^{2}} + \frac{8}{\sqrt{2x + 3} + 1} - \frac{416}{625 (2x + 3)^{\frac{5}{2}}} - \frac{9824}{1875 (2x + 3)^{\frac{3}{2}}} - \frac{137184}{3125 \sqrt{2x + 3}} + \frac{3}{\left(-1 + \sqrt{2x + 3}\right)^{2}} + \frac{8}{-1 + \sqrt{2x + 3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 13122/3125*(775/18*(2*x+3)^(3/2)-4045/54*(2*x+3)^(1/2))/(6*x+4)^2-806841/15
625*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+8/((
2*x+3)^(1/2)+1)+133*ln((2*x+3)^(1/2)+1)-416/625/(2*x+3)^(5/2)-9824/1875/(2*
x+3)^(3/2)-137184/3125/(2*x+3)^(1/2)+3/(-1+(2*x+3)^(1/2))^2+8/(-1+(2*x+3)^(
1/2))-133*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.98, size = 161, normalized size = 1.14

$$\frac{806841}{31250} \sqrt{15} \log\left(-\frac{\sqrt{15} - 3 \sqrt{2 x + 3}}{\sqrt{15} + 3 \sqrt{2 x + 3}}\right) - \frac{659043 (2 x + 3)^{6} - 8136261 (2 x + 3)^{5} + 23916753 (2 x + 3)^{4} - 24720095 (2 x + 3)^{3} + 6945760 (2 x + 3)^{2} + 1457600 x + 2342400}{9375 \left(9 (2 x + 3)^{\frac{13}{2}} - 48 (2 x + 3)^{\frac{11}{2}} + 94 (2 x + 3)^{\frac{9}{2}} - 80 (2 x + 3)^{\frac{7}{2}} + 25 (2 x + 3)^{\frac{5}{2}}\right)} + 133 \log\left(\sqrt{2 x + 3} + 1\right) - 133 \log\left(\sqrt{2 x + 3} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 806841/31250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(
2*x + 3))) - 1/9375*(659043*(2*x + 3)^6 - 8136261*(2*x + 3)^5 + 23916753*(2
*x + 3)^4 - 24720095*(2*x + 3)^3 + 6945760*(2*x + 3)^2 + 1457600*x + 234240
0)/(9*(2*x + 3)^(13/2) - 48*(2*x + 3)^(11/2) + 94*(2*x + 3)^(9/2) - 80*(2*x
 + 3)^(7/2) + 25*(2*x + 3)^(5/2)) + 133*log(sqrt(2*x + 3) + 1) - 133*log(sq
rt(2*x + 3) - 1)
```

mupad [B] time = 0.08, size = 127, normalized size = 0.90

$$266\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)-\frac{806841\,\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{15625}-\frac{\frac{58304\,x}{3375}+\frac{1389152\,{\left(2\,x+3\right)}^2}{16875}-\frac{4944019\,{\left(2\,x+3\right)}^3}{16875}+\frac{2657417\,{\left(2\,x+3\right)}^4}{9375}-\frac{301343\,{\left(2\,x+3\right)}^5}{3125}+\frac{24409\,{\left(2\,x+3\right)}^6}{3125}+\frac{31232}{1125}}{\frac{25\,{\left(2\,x+3\right)}^{5/2}}{9}-\frac{80\,{\left(2\,x+3\right)}^{7/2}}{9}+\frac{94\,{\left(2\,x+3\right)}^{9/2}}{9}-\frac{16\,{\left(2\,x+3\right)}^{11/2}}{3}+{\left(2\,x+3\right)}^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 266*atanh((2*x + 3)^(1/2)) - (806841*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/
2))/5))/15625 - ((58304*x)/3375 + (1389152*(2*x + 3)^2)/16875 - (4944019*(2
*x + 3)^3)/16875 + (2657417*(2*x + 3)^4)/9375 - (301343*(2*x + 3)^5)/3125 +
 (24409*(2*x + 3)^6)/3125 + 31232/1125)/((25*(2*x + 3)^(5/2))/9 - (80*(2*x
+ 3)^(7/2))/9 + (94*(2*x + 3)^(9/2))/9 - (16*(2*x + 3)^(11/2))/3 + (2*x + 3
)^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2334 $\int \frac{5+\sqrt{35}+10x}{\sqrt{1+2x}\left(2+3x+5x^2\right)}\,dx$

Optimal. Leaf size=105

$$2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{\sqrt{20x+10}+\sqrt{2+\sqrt{35}}}{\sqrt{\sqrt{35}-2}}\right)-2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{\sqrt{2+\sqrt{35}}-\sqrt{20x+10}}{\sqrt{\sqrt{35}-2}}\right)$$

Rubi [A] time = 0.24, antiderivative size = 115, normalized size of antiderivative = 1.10, number of steps used = 6, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {826, 1161, 618, 204}

$$2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{10\sqrt{2x+1}+\sqrt{10\left(2+\sqrt{35}\right)}}{\sqrt{10\left(\sqrt{35}-2\right)}}\right)-2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{\sqrt{10\left(2+\sqrt{35}\right)}-10\sqrt{2x+1}}{\sqrt{10\left(\sqrt{35}-2\right)}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 + Sqrt[35] + 10*x)/(Sqrt[1 + 2*x]*(2 + 3*x + 5*x^2)),x]
```

```
[Out] -2*Sqrt[10/(-2 + Sqrt[35])]*ArcTan[(Sqrt[10*(2 + Sqrt[35])] - 10*Sqrt[1 + 2
*x])/Sqrt[10*(-2 + Sqrt[35])]] + 2*Sqrt[10/(-2 + Sqrt[35])]*ArcTan[(Sqrt[10
*(2 + Sqrt[35])] + 10*Sqrt[1 + 2*x])/Sqrt[10*(-2 + Sqrt[35])]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\int \frac{5+\sqrt{35}+10x}{\sqrt{1+2x}\left(2+3x+5x^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{-10+2\left(5+\sqrt{35}\right)+10x^2}{7-4x^2+5x^4}\,dx, x, \sqrt{1+2x}\right)$$

$$= 2\,\text{Subst}\left(\int \frac{1}{\sqrt{\frac{7}{5}}-\sqrt{\frac{2}{5}\left(2+\sqrt{35}\right)}\,x+x^2}\,dx, x, \sqrt{1+2x}\right) + 2\,\text{Subst}\left(\int \frac{}{\sqrt{\frac{7}{5}}}\right.$$

$$= -\left(4\,\text{Subst}\left(\int \frac{1}{\frac{2}{5}\left(2-\sqrt{35}\right)-x^2}\,dx, x, -\sqrt{\frac{2}{5}\left(2+\sqrt{35}\right)}+2\sqrt{1+2x}\right)\right) - 4\,\text{S}$$

$$= -2\sqrt{\frac{10}{-2+\sqrt{35}}}\tan^{-1}\left(\sqrt{\frac{5}{2\left(-2+\sqrt{35}\right)}}\left(\sqrt{\frac{2}{5}\left(2+\sqrt{35}\right)}-2\sqrt{1+2x}\right)\right) + 2$$

Mathematica [C] time = 0.27, size = 141, normalized size = 1.34

$$\frac{2}{217}\left(\sqrt{2-i\sqrt{31}}\left(31\sqrt{7}-7i\sqrt{155}-2i\sqrt{217}\right)\tanh^{-1}\left(\frac{\sqrt{10x+5}}{\sqrt{2-i\sqrt{31}}}\right)+\sqrt{2+i\sqrt{31}}\left(31\sqrt{7}+7i\sqrt{155}+2i\sqrt{217}\right)\tanh^{-1}\left(\frac{\sqrt{10x+5}}{\sqrt{2+i\sqrt{31}}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 + Sqrt[35] + 10*x)/(Sqrt[1 + 2*x]*(2 + 3*x + 5*x^2)),x]
```

```
[Out] (2*(Sqrt[2 - I*Sqrt[31]]*(31*Sqrt[7] - (7*I)*Sqrt[155] - (2*I)*Sqrt[217])*A
rcTanh[Sqrt[5 + 10*x]/Sqrt[2 - I*Sqrt[31]]] + Sqrt[2 + I*Sqrt[31]]*(31*Sqrt
[7] + (7*I)*Sqrt[155] + (2*I)*Sqrt[217])*ArcTanh[Sqrt[5 + 10*x]/Sqrt[2 + I*
Sqrt[31]]]))/217
```

IntegrateAlgebraic [A] time = 1.38, size = 73, normalized size = 0.70

$$2\sqrt{\frac{1}{31}\left(20+10\sqrt{35}\right)}\tan^{-1}\left(\frac{\sqrt{\frac{1}{434}\left(70+35\sqrt{35}\right)}(2x+1)-\sqrt{\frac{1}{62}\left(14+7\sqrt{35}\right)}}{\sqrt{2x+1}}\right)$$

Antiderivative was successfully verified.

```
[In] IntegrateAlgebraic[(5 + Sqrt[35] + 10*x)/(Sqrt[1 + 2*x]*(2 + 3*x + 5*x^2)),
x]
```

```
[Out] 2*Sqrt[(20 + 10*Sqrt[35])/31]*ArcTan[(-Sqrt[(14 + 7*Sqrt[35])/62] + Sqrt[(7
0 + 35*Sqrt[35])/434]*(1 + 2*x))/Sqrt[1 + 2*x]]
```

fricas [A] time = 0.42, size = 52, normalized size = 0.50

$$-\frac{2}{31}\sqrt{31}\sqrt{10\sqrt{35}+20}\arctan\left(-\frac{\left(5\sqrt{31}(2x+1)-\sqrt{35}\sqrt{31}\right)\sqrt{10\sqrt{35}+20}}{310\sqrt{2x+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x, algorithm="frica
s")
```

```
[Out] -2/31*sqrt(31)*sqrt(10*sqrt(35) + 20)*arctan(-1/310*(5*sqrt(31)*(2*x + 1) -
 sqrt(35)*sqrt(31))*sqrt(10*sqrt(35) + 20)/sqrt(2*x + 1))
```

giac [B] time = 1.01, size = 313, normalized size = 2.98

[illegible]

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x, algorithm="giac"
)
```

```
[Out] 1/7443100*sqrt(31)*(210*sqrt(31)*(7/5)^(3/4)*(2*sqrt(35) + 35)*sqrt(-140*sq
rt(35) + 2450) - sqrt(31)*(7/5)^(3/4)*(-140*sqrt(35) + 2450)^(3/2) + 2*(7/5
)^(3/4)*(140*sqrt(35) + 2450)^(3/2) + 420*(7/5)^(3/4)*sqrt(140*sqrt(35) + 2
450)*(2*sqrt(35) - 35) + 980*sqrt(35)*sqrt(31)*(7/5)^(1/4)*sqrt(-140*sqrt(3
5) + 2450) + 1960*sqrt(35)*(7/5)^(1/4)*sqrt(140*sqrt(35) + 2450))*arctan(5/
7*(7/5)^(3/4)*((7/5)^(1/4)*sqrt(1/35*sqrt(35) + 1/2) + sqrt(2*x + 1))/sqrt(
-1/35*sqrt(35) + 1/2)) + 1/7443100*sqrt(31)*(210*sqrt(31)*(7/5)^(3/4)*(2*sq
rt(35) + 35)*sqrt(-140*sqrt(35) + 2450) - sqrt(31)*(7/5)^(3/4)*(-140*sqrt(3
5) + 2450)^(3/2) + 2*(7/5)^(3/4)*(140*sqrt(35) + 2450)^(3/2) + 420*(7/5)^(3
/4)*sqrt(140*sqrt(35) + 2450)*(2*sqrt(35) - 35) + 980*sqrt(35)*sqrt(31)*(7/
5)^(1/4)*sqrt(-140*sqrt(35) + 2450) + 1960*sqrt(35)*(7/5)^(1/4)*sqrt(140*sq
rt(35) + 2450))*arctan(-5/7*(7/5)^(3/4)*((7/5)^(1/4)*sqrt(1/35*sqrt(35) + 1
/2) - sqrt(2*x + 1))/sqrt(-1/35*sqrt(35) + 1/2))
```

maple [A] time = 0.33, size = 111, normalized size = 1.06

$$\frac{20\arctan\left(\frac{10\sqrt{2x+1}-\sqrt{5}\,\sqrt{2\sqrt{5}\,\sqrt{7}+4}}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}\right)}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}+\frac{20\arctan\left(\frac{10\sqrt{2x+1}+\sqrt{5}\,\sqrt{2\sqrt{5}\,\sqrt{7}+4}}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}\right)}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x)
```

```
[Out] 20/(10*5^(1/2)*7^(1/2)-20)^(1/2)*arctan((10*(1+2*x)^(1/2)-5^(1/2)*(2*5^(1/2
)*7^(1/2)+4)^(1/2))/(10*5^(1/2)*7^(1/2)-20)^(1/2))+20/(10*5^(1/2)*7^(1/2)-2
0)^(1/2)*arctan((10*(1+2*x)^(1/2)+5^(1/2)*(2*5^(1/2)*7^(1/2)+4)^(1/2))/(10*
5^(1/2)*7^(1/2)-20)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{10\,x+\sqrt{35}+5}{\left(5\,x^2+3\,x+2\right)\sqrt{2\,x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate((10*x + sqrt(35) + 5)/((5*x^2 + 3*x + 2)*sqrt(2*x + 1)), x)
```

mupad [B] time = 3.27, size = 143, normalized size = 1.36

$$2\sqrt{\frac{10\sqrt{35}}{31}+\frac{20}{31}}\left(\mathrm{atan}\left(\frac{\sqrt{434}\,\left(39\sqrt{35}+140\right)\sqrt{2\,x+1}\,\left(\sqrt{35}-2\right)^2\sqrt{\sqrt{35}+2}}{417074}\right)+\mathrm{atan}\left(\frac{31\sqrt{2\,x+1}\left(\frac{\sqrt{\frac{10\sqrt{35}}{31}+\frac{20}{31}}\,\left(10000\sqrt{35}+20000\right)}{39\sqrt{35}+140}-\frac{\sqrt{434}\,\left(\frac{390000\sqrt{35}}{31}+\frac{1400000}{31}\right)\left(\sqrt{35}-2\right)^2\sqrt{\sqrt{35}+2}}{417074}\right)}{10000}+\frac{\sqrt{434}\,\left(\frac{200000\sqrt{35}}{31}+\frac{1950000}{31}\right)\,(2\,x+1)^{3/2}\left(\sqrt{35}-2\right)^2\sqrt{\sqrt{35}+2}}{134540000}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((10*x + 35^(1/2) + 5)/((2*x + 1)^(1/2)*(3*x + 5*x^2 + 2)),x)
```

```
[Out] 2*((10*35^(1/2))/31 + 20/31)^(1/2)*(atan((434^(1/2)*(39*35^(1/2) + 140)*(2*
x + 1)^(1/2)*(35^(1/2) - 2)^2*(35^(1/2) + 2)^(1/2))/417074) + atan((31*(2*x
 + 1)^(1/2)*((((10*35^(1/2))/31 + 20/31)^(1/2)*(10000*35^(1/2) + 20000))/(3
9*35^(1/2) + 140) - (434^(1/2)*((390000*35^(1/2))/31 + 1400000/31)*(35^(1/2
) - 2)^2*(35^(1/2) + 2)^(1/2))/417074))/10000 + (434^(1/2)*((200000*35^(1/2
```

```
))/31 + 1950000/31)*(2*x + 1)^(3/2)*(35^(1/2) - 2)^2*(35^(1/2) + 2)^(1/2))/
134540000))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{10x + 5 + \sqrt{35}}{\sqrt{2x + 1}\,(5x^2 + 3x + 2)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35**(1/2))/(5*x**2+3*x+2)/(1+2*x)**(1/2),x)
```

```
[Out] Integral((10*x + 5 + sqrt(35))/(sqrt(2*x + 1)*(5*x**2 + 3*x + 2)), x)
```

3.2335 $\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=594

$$-\frac{(d+ex)^{m+4}\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{e^8(m+4)}$$

Rubi [A] time = 0.69, antiderivative size = 591, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(1 + m))/(e^8*(1 + m)))
+ ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d
- b*e))*(d + e*x)^(2 + m))/(e^8*(2 + m)) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7
*c^2*d^3 - c*d*e*(8*b*d - 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 +
b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*x)^(3 + m))/(e^8*(3 + m)) - ((A*e*(2*c
*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 -
b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2
- 8*a*b*d*e + a^2*e^2)))*(d + e*x)^(4 + m))/(e^8*(4 + m)) - ((B*(35*c^3*d^3
 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3*b*d - a*e)) - 3*A*c*
e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*x)^(5 + m))/(e^8*(5 + m
)) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*d - a*e)
))*(d + e*x)^(6 + m))/(e^8*(6 + m)) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d +
 e*x)^(7 + m))/(e^8*(7 + m)) + (B*c^3*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^m}{e^7} + \frac{\left(cd^2-bde+ae^2\right)^2 (7B\ldots}{\ldots}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^{1+m}}{e^8(1+m)} + \frac{\left(cd^2-bde+ae^2\right)^2 (7Bc\ldots}{\ldots}$$

Mathematica [B] time = 6.70, size = 4291, normalized size = 7.22

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(B*(7*c*d - 3*b*e)) + A*c*e*(8 + m) + B*c*e*(7 + m)*x)
*(a + b*x + c*x^2)^3)/(c*e^2*(7 + m)*(8 + m)) - (3*(((d + e*x)^(1 + m)*(c*e
```

```
*(6 + m)*(-(b*B*d*(7*c*d - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2
*c*d*m - b*e*(1 + m))) - (5*c*d - 2*b*e)*(A*c*e*(2*c*d - b*e)*(8 + m) - B*(
14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 - m) - 2*a*e*(7 + m)))) + c*e*(5
 + m)*(A*c*e*(2*c*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*
(b*d*(6 - m) - 2*a*e*(7 + m))))*x)*(a + b*x + c*x^2)^2)/(c*e^2*(5 + m)*(6 +
 m)) - (2*(((d + e*x)^(1 + m)*(c*e*(4 + m)*(c*e*(b*d - 2*a*e)*(6 + m)*(-(b*
B*d*(7*c*d - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2*c*d*m - b*e*(
1 + m))) + (b*d*(-5*c*d + 2*b*e) + a*e*(b*e - 2*c*d*m + b*e*m))*(A*c*e*(2*c
*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 - m) - 2*
a*e*(7 + m))))) - (3*c*d - b*e)*(c*e*(2*c*d - b*e)*(6 + m)*(-(b*B*d*(7*c*d
 - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2*c*d*m - b*e*(1 + m))) +
(-10*c^2*d^2 + b^2*e^2*(3 + m) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(A*c*e
*(2*c*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 - m)
 - 2*a*e*(7 + m))))) + c*e*(3 + m)*(c*e*(2*c*d - b*e)*(6 + m)*(-(b*B*d*(7*c
*d - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2*c*d*m - b*e*(1 + m)))
 + (-10*c^2*d^2 + b^2*e^2*(3 + m) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(A*
c*e*(2*c*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 -
 m) - 2*a*e*(7 + m)))))*x)*(a + b*x + c*x^2))/(c*e^2*(3 + m)*(4 + m)) - (((
840*B*c^6*d^7 - 2460*b*B*c^5*d^6*e - 960*A*c^6*d^6*e + 2340*b^2*B*c^4*d^5*e
^2 + 2880*A*b*c^5*d^5*e^2 + 2520*a*B*c^5*d^5*e^2 - 684*b^3*B*c^3*d^4*e^3 -
2832*A*b^2*c^4*d^4*e^3 - 4764*a*b*B*c^4*d^4*e^3 - 3072*a*A*c^5*d^4*e^3 - 12
*b^4*B*c^2*d^3*e^4 + 864*A*b^3*c^3*d^3*e^4 + 1968*a*b^2*B*c^3*d^3*e^4 + 614
4*a*A*b*c^4*d^3*e^4 + 2520*a^2*B*c^4*d^3*e^4 - 12*b^5*B*c*d^2*e^5 + 24*A*b^
4*c^2*d^2*e^5 + 132*a*b^3*B*c^2*d^2*e^5 - 2784*a*A*b^2*c^3*d^2*e^5 - 1956*a
^2*b*B*c^3*d^2*e^5 - 3648*a^2*A*c^4*d^2*e^5 - 12*b^6*B*d*e^6 + 24*A*b^5*c*d
*e^6 + 144*a*b^4*B*c*d*e^6 - 288*a*A*b^3*c^2*d*e^6 - 564*a^2*b^2*B*c^2*d*e^
6 + 3648*a^2*A*b*c^3*d*e^6 + 840*a^3*B*c^3*d*e^6 + 12*a*b^5*B*e^7 - 24*a*A*
b^4*c*e^7 - 120*a^2*b^3*B*c*e^7 + 240*a^2*A*b^2*c^2*e^7 + 348*a^3*b*B*c^2*e
^7 - 1536*a^3*A*c^3*e^7 + 60*b*B*c^5*d^6*e*m - 120*A*c^6*d^6*e*m - 160*b^2*
B*c^4*d^5*e^2*m + 360*A*b*c^5*d^5*e^2*m - 80*a*B*c^5*d^5*e^2*m + 111*b^3*B*
c^3*d^4*e^3*m - 322*A*b^2*c^4*d^4*e^3*m + 456*a*b*B*c^4*d^4*e^3*m - 512*a*A
*c^5*d^4*e^3*m + 15*b^4*B*c^2*d^3*e^4*m + 44*A*b^3*c^3*d^3*e^4*m - 608*a*b^
2*B*c^3*d^3*e^4*m + 1024*a*A*b*c^4*d^3*e^4*m - 208*a^2*B*c^4*d^3*e^4*m - 7*
b^5*B*c*d^2*e^5*m + 3*A*b^4*c^2*d^2*e^5*m + 22*a*b^3*B*c^2*d^2*e^5*m - 156*
a*A*b^2*c^3*d^2*e^5*m + 924*a^2*b*B*c^3*d^2*e^5*m - 1224*a^2*A*c^4*d^2*e^5*
m - 19*b^6*B*d*e^6*m + 35*A*b^5*c*d*e^6*m + 207*a*b^4*B*c*d*e^6*m - 356*a*A
*b^3*c^2*d*e^6*m - 672*a^2*b^2*B*c^2*d*e^6*m + 1224*a^2*A*b*c^3*d*e^6*m - 1
28*a^3*B*c^3*d*e^6*m + 19*a*b^5*B*e^7*m - 35*a*A*b^4*c*e^7*m - 181*a^2*b^3*
B*c*e^7*m + 318*a^2*A*b^2*c^2*e^7*m + 480*a^3*b*B*c^2*e^7*m - 832*a^3*A*c^3
*e^7*m + 20*b^2*B*c^4*d^5*e^2*m^2 - 80*a*B*c^5*d^5*e^2*m^2 - 44*b^3*B*c^3*d
^4*e^3*m^2 - 12*A*b^2*c^4*d^4*e^3*m^2 + 176*a*b*B*c^4*d^4*e^3*m^2 + 48*a*A*
c^5*d^4*e^3*m^2 + 24*b^4*B*c^2*d^3*e^4*m^2 + 24*A*b^3*c^3*d^3*e^4*m^2 - 40*
a*b^2*B*c^3*d^3*e^4*m^2 - 96*a*A*b*c^4*d^3*e^4*m^2 - 224*a^2*B*c^4*d^3*e^4*
m^2 + 8*b^5*B*c*d^2*e^5*m^2 - 24*A*b^4*c^2*d^2*e^5*m^2 - 128*a*b^3*B*c^2*d^
2*e^5*m^2 + 120*a*A*b^2*c^3*d^2*e^5*m^2 + 384*a^2*b*B*c^3*d^2*e^5*m^2 - 96*
a^2*A*c^4*d^2*e^5*m^2 - 8*b^6*B*d*e^6*m^2 + 12*A*b^5*c*d*e^6*m^2 + 68*a*b^4
*B*c*d*e^6*m^2 - 72*a*A*b^3*c^2*d*e^6*m^2 - 108*a^2*b^2*B*c^2*d*e^6*m^2 + 9
6*a^2*A*b*c^3*d*e^6*m^2 - 144*a^3*B*c^3*d*e^6*m^2 + 8*a*b^5*B*e^7*m^2 - 12*
a*A*b^4*c*e^7*m^2 - 68*a^2*b^3*B*c*e^7*m^2 + 84*a^2*A*b^2*c^2*e^7*m^2 + 144
*a^3*b*B*c^2*e^7*m^2 - 144*a^3*A*c^3*e^7*m^2 + b^3*B*c^3*d^4*e^3*m^3 - 2*A*
b^2*c^4*d^4*e^3*m^3 - 4*a*b*B*c^4*d^4*e^3*m^3 + 8*a*A*c^5*d^4*e^3*m^3 - 3*b
^4*B*c^2*d^3*e^4*m^3 + 4*A*b^3*c^3*d^3*e^4*m^3 + 16*a*b^2*B*c^3*d^3*e^4*m^3
 - 16*a*A*b*c^4*d^3*e^4*m^3 - 16*a^2*B*c^4*d^3*e^4*m^3 + 3*b^5*B*c*d^2*e^5*
m^3 - 3*A*b^4*c^2*d^2*e^5*m^3 - 18*a*b^3*B*c^2*d^2*e^5*m^3 + 12*a*A*b^2*c^3
*d^2*e^5*m^3 + 24*a^2*b*B*c^3*d^2*e^5*m^3 - b^6*B*d*e^6*m^3 + A*b^5*c*d*e^6
*m^3 + 5*a*b^4*B*c*d*e^6*m^3 - 4*a*A*b^3*c^2*d*e^6*m^3 - 16*a^3*B*c^3*d*e^6
*m^3 + a*b^5*B*e^7*m^3 - a*A*b^4*c*e^7*m^3 - 7*a^2*b^3*B*c*e^7*m^3 + 6*a^2*
A*b^2*c^2*e^7*m^3 + 12*a^3*b*B*c^2*e^7*m^3 - 8*a^3*A*c^3*e^7*m^3)*(d + e*x)
^(1 + m))/(e^2*(1 + m)) + ((-840*B*c^6*d^6 + 2040*b*B*c^5*d^5*e + 960*A*c^6
```

```
*d^5*e - 1320*b^2*B*c^4*d^4*e^2 - 2400*A*b*c^5*d^4*e^2 - 2520*a*B*c^5*d^4*e
^2 + 24*b^3*B*c^3*d^3*e^3 + 1632*A*b^2*c^4*d^3*e^3 + 3504*a*b*B*c^4*d^3*e^3
 + 3072*a*A*c^5*d^3*e^3 + 24*b^4*B*c^2*d^2*e^4 - 48*A*b^3*c^3*d^2*e^4 - 216
*a*b^2*B*c^3*d^2*e^4 - 4608*a*A*b*c^4*d^2*e^4 - 2520*a^2*B*c^4*d^2*e^4 + 24
*b^5*B*c*d*e^5 - 48*A*b^4*c^2*d*e^5 - 240*a*b^3*B*c^2*d*e^5 + 480*a*A*b^2*c
^3*d*e^5 + 696*a^2*b*B*c^3*d*e^5 + 3648*a^2*A*c^4*d*e^5 + 24*b^6*B*e^6 - 48
*A*b^5*c*e^6 - 264*a*b^4*B*c*e^6 + 528*a*A*b^3*c^2*e^6 + 912*a^2*b^2*B*c^2*
e^6 - 1824*a^2*A*b*c^3*e^6 - 840*a^3*B*c^3*e^6 - 60*b*B*c^5*d^5*e*m + 120*A
*c^6*d^5*e*m + 200*b^2*B*c^4*d^4*e^2*m - 300*A*b*c^5*d^4*e^2*m - 200*a*B*c^
5*d^4*e^2*m - 146*b^3*B*c^3*d^3*e^3*m + 92*A*b^2*c^4*d^3*e^3*m - 16*a*b*B*c
^4*d^3*e^3*m + 832*a*A*c^5*d^3*e^3*m - 42*b^4*B*c^2*d^2*e^4*m + 162*A*b^3*c
^3*d^2*e^4*m + 612*a*b^2*B*c^3*d^2*e^4*m - 1248*a*A*b*c^4*d^2*e^4*m - 576*a
^2*B*c^4*d^2*e^4*m + 2*b^5*B*c*d*e^5*m + 18*A*b^4*c^2*d*e^5*m + 46*a*b^3*B*
c^2*d*e^5*m - 468*a*A*b^2*c^3*d*e^5*m - 516*a^2*b*B*c^3*d*e^5*m + 2184*a^2*
A*c^4*d*e^5*m + 26*b^6*B*e^6*m - 46*A*b^5*c*e^6*m - 268*a*b^4*B*c*e^6*m + 4
42*a*A*b^3*c^2*e^6*m + 828*a^2*b^2*B*c^2*e^6*m - 1092*a^2*A*b*c^3*e^6*m - 5
68*a^3*B*c^3*e^6*m - 20*b^2*B*c^4*d^4*e^2*m^2 + 80*a*B*c^5*d^4*e^2*m^2 + 39
*b^3*B*c^3*d^3*e^3*m^2 + 2*A*b^2*c^4*d^3*e^3*m^2 - 156*a*b*B*c^4*d^3*e^3*m^
2 - 8*a*A*c^5*d^3*e^3*m^2 - 21*b^4*B*c^2*d^2*e^4*m^2 - 3*A*b^3*c^3*d^2*e^4*
m^2 + 54*a*b^2*B*c^3*d^2*e^4*m^2 + 12*a*A*b*c^4*d^2*e^4*m^2 + 120*a^2*B*c^4
*d^2*e^4*m^2 - 11*b^5*B*c*d*e^5*m^2 + 27*A*b^4*c^2*d*e^5*m^2 + 125*a*b^3*B*
c^2*d*e^5*m^2 - 210*a*A*b^2*c^3*d*e^5*m^2 - 324*a^2*b*B*c^3*d*e^5*m^2 + 408
*a^2*A*c^4*d*e^5*m^2 + 9*b^6*B*e^6*m^2 - 13*A*b^5*c*e^6*m^2 - 84*a*b^4*B*c*
e^6*m^2 + 103*a*A*b^3*c^2*e^6*m^2 + 222*a^2*b^2*B*c^2*e^6*m^2 - 204*a^2*A*b
*c^3*e^6*m^2 - 120*a^3*B*c^3*e^6*m^2 - b^3*B*c^3*d^3*e^3*m^3 + 2*A*b^2*c^4*
d^3*e^3*m^3 + 4*a*b*B*c^4*d^3*e^3*m^3 - 8*a*A*c^5*d^3*e^3*m^3 + 3*b^4*B*c^2
*d^2*e^4*m^3 - 3*A*b^3*c^3*d^2*e^4*m^3 - 18*a*b^2*B*c^3*d^2*e^4*m^3 + 12*a*
A*b*c^4*d^2*e^4*m^3 + 24*a^2*B*c^4*d^2*e^4*m^3 - 3*b^5*B*c*d*e^5*m^3 + 3*A*
b^4*c^2*d*e^5*m^3 + 21*a*b^3*B*c^2*d*e^5*m^3 - 18*a*A*b^2*c^3*d*e^5*m^3 - 3
6*a^2*b*B*c^3*d*e^5*m^3 + 24*a^2*A*c^4*d*e^5*m^3 + b^6*B*e^6*m^3 - A*b^5*c*
e^6*m^3 - 8*a*b^4*B*c*e^6*m^3 + 7*a*A*b^3*c^2*e^6*m^3 + 18*a^2*b^2*B*c^2*e^
6*m^3 - 12*a^2*A*b*c^3*e^6*m^3 - 8*a^3*B*c^3*e^6*m^3)*(d + e*x)^(2 + m))/(e
^2*(2 + m)))/(c*e^2*(3 + m)*(4 + m))))/(c*e^2*(5 + m)*(6 + m))))/(c*e^2*(7
+ m)*(8 + m))
```

IntegrateAlgebraic [F] time = 0.63, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3, x]
```

fricas [B] time = 0.54, size = 5919, normalized size = 9.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] (A*a^3*d*e^7*m^7 - 5040*B*c^3*d^8 + 40320*A*a^3*d*e^7 + 5760*(3*B*b*c^2 + A
*c^3)*d^7*e - 20160*(B*b^2*c + (B*a + A*b)*c^2)*d^6*e^2 + 8064*(B*b^3 + 3*A
*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^5*e^3 - 10080*(3*B*a*b^2 + A*b^3 + 3*(B*a
^2 + 2*A*a*b)*c)*d^4*e^4 + 40320*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 20
160*(B*a^3 + 3*A*a^2*b)*d^2*e^6 + (B*c^3*e^8*m^7 + 28*B*c^3*e^8*m^6 + 322*B
*c^3*e^8*m^5 + 1960*B*c^3*e^8*m^4 + 6769*B*c^3*e^8*m^3 + 13132*B*c^3*e^8*m^
2 + 13068*B*c^3*e^8*m + 5040*B*c^3*e^8)*x^8 + (5760*(3*B*b*c^2 + A*c^3)*e^8
 + (B*c^3*d*e^7 + (3*B*b*c^2 + A*c^3)*e^8)*m^7 + (21*B*c^3*d*e^7 + 29*(3*B*
b*c^2 + A*c^3)*e^8)*m^6 + 7*(25*B*c^3*d*e^7 + 49*(3*B*b*c^2 + A*c^3)*e^8)*m
```

^5 + 35*(21*B*c^3*d*e^7 + 61*(3*B*b*c^2 + A*c^3)*e^8)*m^4 + 56*(29*B*c^3*d*
e^7 + 134*(3*B*b*c^2 + A*c^3)*e^8)*m^3 + 28*(63*B*c^3*d*e^7 + 527*(3*B*b*c^
2 + A*c^3)*e^8)*m^2 + 144*(5*B*c^3*d*e^7 + 103*(3*B*b*c^2 + A*c^3)*e^8)*m)*
x^7 + (35*A*a^3*d*e^7 - (B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^6 + (20160*(B*b^2*c
+ (B*a + A*b)*c^2)*e^8 + ((3*B*b*c^2 + A*c^3)*d*e^7 + 3*(B*b^2*c + (B*a + A
*b)*c^2)*e^8)*m^7 - (7*B*c^3*d^2*e^6 - 23*(3*B*b*c^2 + A*c^3)*d*e^7 - 90*(B
*b^2*c + (B*a + A*b)*c^2)*e^8)*m^6 - (105*B*c^3*d^2*e^6 - 205*(3*B*b*c^2 +
A*c^3)*d*e^7 - 1098*(B*b^2*c + (B*a + A*b)*c^2)*e^8)*m^5 - 5*(119*B*c^3*d^2
e^6 - 181(3*B*b*c^2 + A*c^3)*d*e^7 - 1404*(B*b^2*c + (B*a + A*b)*c^2)*e^8
)*m^4 - (1575*B*c^3*d^2*e^6 - 2074*(3*B*b*c^2 + A*c^3)*d*e^7 - 25227*(B*b^2
*c + (B*a + A*b)*c^2)*e^8)*m^3 - 2*(959*B*c^3*d^2*e^6 - 1156*(3*B*b*c^2 + A
*c^3)*d*e^7 - 25245*(B*b^2*c + (B*a + A*b)*c^2)*e^8)*m^2 - 24*(35*B*c^3*d^2
e^6 - 40(3*B*b*c^2 + A*c^3)*d*e^7 - 2143*(B*b^2*c + (B*a + A*b)*c^2)*e^8)
*m)*x^6 + (511*A*a^3*d*e^7 + 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 33*(
B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^5 + (8064*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*e^8 + (3*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + (B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*e^8)*m^7 - (6*(3*B*b*c^2 + A*c^3)*d^2*e^6 - 75*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^7 - 31*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*e^8)*m^6 + (42*B*c^3*d^3*e^5 - 108*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 723*(B*
b^2*c + (B*a + A*b)*c^2)*d*e^7 + 391*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*e^8)*m^5 + (420*B*c^3*d^3*e^5 - 690*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 340
5*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 2581*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
+ A*b^2)*c)*e^8)*m^4 + 2*(735*B*c^3*d^3*e^5 - 990*(3*B*b*c^2 + A*c^3)*d^2*e
^6 + 4101*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 4772*(B*b^3 + 3*A*a*c^2 + 3*(
2*B*a*b + A*b^2)*c)*e^8)*m^3 + 4*(525*B*c^3*d^3*e^5 - 636*(3*B*b*c^2 + A*c^
3)*d^2*e^6 + 2370*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 4891*(B*b^3 + 3*A*a*c
^2 + 3*(2*B*a*b + A*b^2)*c)*e^8)*m^2 + 144*(7*B*c^3*d^3*e^5 - 8*(3*B*b*c^2
+ A*c^3)*d^2*e^6 + 28*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 141*(B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^8)*m)*x^5 + (4025*A*a^3*d*e^7 - 6*(3*B*a*b
^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 180*(B*a^2*b + A*a*b^2 + A*a^
2*c)*d^3*e^5 - 445*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^4 + (10080*(3*B*a*b^2 + A
b^3 + 3(B*a^2 + 2*A*a*b)*c)*e^8 + ((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d*e^7 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m^7 - (15*(B
*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 27*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d*e^7 - 32*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m^6 + (
30*(3*B*b*c^2 + A*c^3)*d^3*e^5 - 315*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 +
283*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^7 + 418*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m^5 - (210*B*c^3*d^4*e^4 - 420*(3*B*b*c^2
+ A*c^3)*d^3*e^5 + 2355*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 1449*(B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^7 - 2864*(3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*e^8)*m^4 - (1260*B*c^3*d^4*e^4 - 1770*(3*B*b*c^2 + A*c^3
)*d^3*e^5 + 7605*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 3748*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^7 - 10993*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
2*A*a*b)*c)*e^8)*m^3 - 2*(1155*B*c^3*d^4*e^4 - 1410*(3*B*b*c^2 + A*c^3)*d^3
e^5 + 5295(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 2286*(B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*d*e^7 - 11656*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*e^8)*m^2 - 36*(35*B*c^3*d^4*e^4 - 40*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 1
40*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
+ A*b^2)*c)*d*e^7 - 691*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m
)*x^4 + (18424*A*a^3*d*e^7 + 24*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*d^5*e^3 - 156*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 2130*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 3135*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^
3 + (40320*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8 + ((3*B*a*b^2 + A*b^3 + 3*(B*a
^2 + 2*A*a*b)*c)*d*e^7 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^7 - (4*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 - 29*(3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*d*e^7 - 99*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^6 + (
60*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 - 96*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
+ A*b^2)*c)*d^2*e^6 + 331*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^
7 + 1341*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^5 - (120*(3*B*b*c^2 + A*c^3)*

d^4*e^4 - 1080*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 + 844*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 - 1871*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^7 - 9585*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^4 + 4*(210*B*c^3*d^5*e^3 - 330*(3*B*b*c^2 + A*c^3)*d^4*e^4 + 1545*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 - 816*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 + 1345*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^7 + 9648*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^3 + 4*(630*B*c^3*d^5*e^3 - 780*(3*B*b*c^2 + A*c^3)*d^4*e^4 + 2970*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 - 1300*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 + 1793*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^7 + 21519*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^2 + 48*(35*B*c^3*d^5*e^3 - 40*(3*B*b*c^2 + A*c^3)*d^4*e^4 + 140*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 + 70*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^7 + 2003*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m)*x^3 + 2*(24430*A*a^3*d*e^7 - 180*(B*b^2*c + (B*a + A*b)*c^2)*d^6*e^2 + 252*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^5*e^3 - 753*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 6210*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 6077*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^2 + (20160*(B*a^3 + 3*A*a^2*b)*e^8 + (3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 + (B*a^3 + 3*A*a^2*b)*e^8)*m^7 - (3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 - 93*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 34*(B*a^3 + 3*A*a^2*b)*e^8)*m^6 + (12*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 - 81*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 + 1155*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 + 478*(B*a^3 + 3*A*a^2*b)*e^8)*m^5 - (180*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 - 264*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 + 831*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 - 7275*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 3580*(B*a^3 + 3*A*a^2*b)*e^8)*m^4 + (360*(3*B*b*c^2 + A*c^3)*d^5*e^3 - 2880*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 + 2004*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 - 3951*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 + 24042*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 + 15289*(B*a^3 + 3*A*a^2*b)*e^8)*m^3 - 2*(1260*B*c^3*d^6*e^2 - 1620*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 6390*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 - 2892*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 + 4119*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 - 18996*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 18353*(B*a^3 + 3*A*a^2*b)*e^8)*m^2 - 72*(35*B*c^3*d^6*e^2 - 40*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 140*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 + 70*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 - 280*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 621*(B*a^3 + 3*A*a^2*b)*e^8)*m)*x^2 + 12*(5772*A*a^3*d*e^7 + 60*(3*B*b*c^2 + A*c^3)*d^7*e - 450*(B*b^2*c + (B*a + A*b)*c^2)*d^6*e^2 + 292*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^5*e^3 - 533*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 2972*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 2046*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m + (40320*A*a^3*e^8 + (A*a^3*e^8 + (B*a^3 + 3*A*a^2*b)*d*e^7)*m^7 + (35*A*a^3*e^8 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 33*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^6 + (511*A*a^3*e^8 + 6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 180*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 445*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^5 + (4025*A*a^3*e^8 - 24*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 156*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 2130*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 3135*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^4 + 2*(9212*A*a^3*e^8 + 180*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^3 - 252*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 753*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 6210*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 6077*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^3 + 4*(12215*A*a^3*e^8 - 180*(3*B*b*c^2 + A*c^3)*d^6*e^2 + 1350*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^3 - 876*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 1599*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 8916*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 6138*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^2 + 144*(35*B*c^3*d^7*e + 481*A*a^3*e^8 - 40*(3*B*b*c^2 + A*c^3)*d^6*e^2 + 140*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^3 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 70*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 280*(B*a^2*b +

```
A*a*b^2 + A*a^2*c)*d^2*e^6 + 140*(B*a^3 + 3*A*a^2*b)*d*e^7)*m)*x)*(e*x + d
)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*e^8*m^5 + 22449*e^8*m^4 + 67
284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 40320*e^8)
```

giac [B] time = 0.82, size = 14376, normalized size = 24.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^3*m^7*x^8*e^8 + (x*e + d)^m*B*c^3*d*m^7*x^7*e^7 + 3*(x*e +
 d)^m*B*b*c^2*m^7*x^7*e^8 + (x*e + d)^m*A*c^3*m^7*x^7*e^8 + 28*(x*e + d)^m*
B*c^3*m^6*x^8*e^8 + 3*(x*e + d)^m*B*b*c^2*d*m^7*x^6*e^7 + (x*e + d)^m*A*c^3
*d*m^7*x^6*e^7 + 21*(x*e + d)^m*B*c^3*d*m^6*x^7*e^7 - 7*(x*e + d)^m*B*c^3*d
^2*m^6*x^6*e^6 + 3*(x*e + d)^m*B*b^2*c*m^7*x^6*e^8 + 3*(x*e + d)^m*B*a*c^2*
m^7*x^6*e^8 + 3*(x*e + d)^m*A*b*c^2*m^7*x^6*e^8 + 87*(x*e + d)^m*B*b*c^2*m^
6*x^7*e^8 + 29*(x*e + d)^m*A*c^3*m^6*x^7*e^8 + 322*(x*e + d)^m*B*c^3*m^5*x^
8*e^8 + 3*(x*e + d)^m*B*b^2*c*d*m^7*x^5*e^7 + 3*(x*e + d)^m*B*a*c^2*d*m^7*x
^5*e^7 + 3*(x*e + d)^m*A*b*c^2*d*m^7*x^5*e^7 + 69*(x*e + d)^m*B*b*c^2*d*m^6
*x^6*e^7 + 23*(x*e + d)^m*A*c^3*d*m^6*x^6*e^7 + 175*(x*e + d)^m*B*c^3*d*m^5
*x^7*e^7 - 18*(x*e + d)^m*B*b*c^2*d^2*m^6*x^5*e^6 - 6*(x*e + d)^m*A*c^3*d^2
*m^6*x^5*e^6 - 105*(x*e + d)^m*B*c^3*d^2*m^5*x^6*e^6 + 42*(x*e + d)^m*B*c^3
*d^3*m^5*x^5*e^5 + (x*e + d)^m*B*b^3*m^7*x^5*e^8 + 6*(x*e + d)^m*B*a*b*c*m^
7*x^5*e^8 + 3*(x*e + d)^m*A*b^2*c*m^7*x^5*e^8 + 3*(x*e + d)^m*A*a*c^2*m^7*x
^5*e^8 + 90*(x*e + d)^m*B*b^2*c*m^6*x^6*e^8 + 90*(x*e + d)^m*B*a*c^2*m^6*x^
6*e^8 + 90*(x*e + d)^m*A*b*c^2*m^6*x^6*e^8 + 1029*(x*e + d)^m*B*b*c^2*m^5*x
^7*e^8 + 343*(x*e + d)^m*A*c^3*m^5*x^7*e^8 + 1960*(x*e + d)^m*B*c^3*m^4*x^8
*e^8 + (x*e + d)^m*B*b^3*d*m^7*x^4*e^7 + 6*(x*e + d)^m*B*a*b*c*d*m^7*x^4*e^
7 + 3*(x*e + d)^m*A*b^2*c*d*m^7*x^4*e^7 + 3*(x*e + d)^m*A*a*c^2*d*m^7*x^4*e
^7 + 75*(x*e + d)^m*B*b^2*c*d*m^6*x^5*e^7 + 75*(x*e + d)^m*B*a*c^2*d*m^6*x^
5*e^7 + 75*(x*e + d)^m*A*b*c^2*d*m^6*x^5*e^7 + 615*(x*e + d)^m*B*b*c^2*d*m^
5*x^6*e^7 + 205*(x*e + d)^m*A*c^3*d*m^5*x^6*e^7 + 735*(x*e + d)^m*B*c^3*d*m
^4*x^7*e^7 - 15*(x*e + d)^m*B*b^2*c*d^2*m^6*x^4*e^6 - 15*(x*e + d)^m*B*a*c^
2*d^2*m^6*x^4*e^6 - 15*(x*e + d)^m*A*b*c^2*d^2*m^6*x^4*e^6 - 324*(x*e + d)^
m*B*b*c^2*d^2*m^5*x^5*e^6 - 108*(x*e + d)^m*A*c^3*d^2*m^5*x^5*e^6 - 595*(x*
e + d)^m*B*c^3*d^2*m^4*x^6*e^6 + 90*(x*e + d)^m*B*b*c^2*d^3*m^5*x^4*e^5 + 3
0*(x*e + d)^m*A*c^3*d^3*m^5*x^4*e^5 + 420*(x*e + d)^m*B*c^3*d^3*m^4*x^5*e^5
 - 210*(x*e + d)^m*B*c^3*d^4*m^4*x^4*e^4 + 3*(x*e + d)^m*B*a*b^2*m^7*x^4*e^
8 + (x*e + d)^m*A*b^3*m^7*x^4*e^8 + 3*(x*e + d)^m*B*a^2*c*m^7*x^4*e^8 + 6*(
x*e + d)^m*A*a*b*c*m^7*x^4*e^8 + 31*(x*e + d)^m*B*b^3*m^6*x^5*e^8 + 186*(x*
e + d)^m*B*a*b*c*m^6*x^5*e^8 + 93*(x*e + d)^m*A*b^2*c*m^6*x^5*e^8 + 93*(x*e
 + d)^m*A*a*c^2*m^6*x^5*e^8 + 1098*(x*e + d)^m*B*b^2*c*m^5*x^6*e^8 + 1098*(
x*e + d)^m*B*a*c^2*m^5*x^6*e^8 + 1098*(x*e + d)^m*A*b*c^2*m^5*x^6*e^8 + 640
5*(x*e + d)^m*B*b*c^2*m^4*x^7*e^8 + 2135*(x*e + d)^m*A*c^3*m^4*x^7*e^8 + 67
69*(x*e + d)^m*B*c^3*m^3*x^8*e^8 + 3*(x*e + d)^m*B*a*b^2*d*m^7*x^3*e^7 + (x
*e + d)^m*A*b^3*d*m^7*x^3*e^7 + 3*(x*e + d)^m*B*a^2*c*d*m^7*x^3*e^7 + 6*(x*
e + d)^m*A*a*b*c*d*m^7*x^3*e^7 + 27*(x*e + d)^m*B*b^3*d*m^6*x^4*e^7 + 162*(
x*e + d)^m*B*a*b*c*d*m^6*x^4*e^7 + 81*(x*e + d)^m*A*b^2*c*d*m^6*x^4*e^7 + 8
1*(x*e + d)^m*A*a*c^2*d*m^6*x^4*e^7 + 723*(x*e + d)^m*B*b^2*c*d*m^5*x^5*e^7
 + 723*(x*e + d)^m*B*a*c^2*d*m^5*x^5*e^7 + 723*(x*e + d)^m*A*b*c^2*d*m^5*x^
5*e^7 + 2715*(x*e + d)^m*B*b*c^2*d*m^4*x^6*e^7 + 905*(x*e + d)^m*A*c^3*d*m^
4*x^6*e^7 + 1624*(x*e + d)^m*B*c^3*d*m^3*x^7*e^7 - 4*(x*e + d)^m*B*b^3*d^2*
m^6*x^3*e^6 - 24*(x*e + d)^m*B*a*b*c*d^2*m^6*x^3*e^6 - 12*(x*e + d)^m*A*b^2
*c*d^2*m^6*x^3*e^6 - 12*(x*e + d)^m*A*a*c^2*d^2*m^6*x^3*e^6 - 315*(x*e + d)
^m*B*b^2*c*d^2*m^5*x^4*e^6 - 315*(x*e + d)^m*B*a*c^2*d^2*m^5*x^4*e^6 - 315*
(x*e + d)^m*A*b*c^2*d^2*m^5*x^4*e^6 - 2070*(x*e + d)^m*B*b*c^2*d^2*m^4*x^5*
e^6 - 690*(x*e + d)^m*A*c^3*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*B*c^3*d^2*m^
3*x^6*e^6 + 60*(x*e + d)^m*B*b^2*c*d^3*m^5*x^3*e^5 + 60*(x*e + d)^m*B*a*c^2
*d^3*m^5*x^3*e^5 + 60*(x*e + d)^m*A*b*c^2*d^3*m^5*x^3*e^5 + 1260*(x*e + d)^
```

m*B*b*c^2*d^3*m^4*x^4*e^5 + 420*(x*e + d)^m*A*c^3*d^3*m^4*x^4*e^5 + 1470*(x*e + d)^m*B*c^3*d^3*m^3*x^5*e^5 - 360*(x*e + d)^m*B*b*c^2*d^4*m^4*x^3*e^4 - 120*(x*e + d)^m*A*c^3*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m^3*x^4*e^4 + 840*(x*e + d)^m*B*c^3*d^5*m^3*x^3*e^3 + 3*(x*e + d)^m*B*a^2*b*m^7*x^3*e^8 + 3*(x*e + d)^m*A*a*b^2*m^7*x^3*e^8 + 3*(x*e + d)^m*A*a^2*c*m^7*x^3*e^8 + 96*(x*e + d)^m*B*a*b^2*m^6*x^4*e^8 + 32*(x*e + d)^m*A*b^3*m^6*x^4*e^8 + 96*(x*e + d)^m*B*a^2*c*m^6*x^4*e^8 + 192*(x*e + d)^m*A*a*b*c*m^6*x^4*e^8 + 391*(x*e + d)^m*B*b^3*m^5*x^5*e^8 + 2346*(x*e + d)^m*B*a*b*c*m^5*x^5*e^8 + 1173*(x*e + d)^m*A*b^2*c*m^5*x^5*e^8 + 1173*(x*e + d)^m*A*a*c^2*m^5*x^5*e^8 + 7020*(x*e + d)^m*B*b^2*c*m^4*x^6*e^8 + 7020*(x*e + d)^m*B*a*c^2*m^4*x^6*e^8 + 7020*(x*e + d)^m*A*b*c^2*m^4*x^6*e^8 + 22512*(x*e + d)^m*B*b*c^2*m^3*x^7*e^8 + 7504*(x*e + d)^m*A*c^3*m^3*x^7*e^8 + 13132*(x*e + d)^m*B*c^3*m^2*x^8*e^8 + 3*(x*e + d)^m*B*a^2*b*d*m^7*x^2*e^7 + 3*(x*e + d)^m*A*a*b^2*d*m^7*x^2*e^7 + 3*(x*e + d)^m*A*a^2*c*d*m^7*x^2*e^7 + 87*(x*e + d)^m*B*a*b^2*d*m^6*x^3*e^7 + 29*(x*e + d)^m*A*b^3*d*m^6*x^3*e^7 + 87*(x*e + d)^m*B*a^2*c*d*m^6*x^3*e^7 + 174*(x*e + d)^m*A*a*b*c*d*m^6*x^3*e^7 + 283*(x*e + d)^m*B*b^3*d*m^5*x^4*e^7 + 1698*(x*e + d)^m*B*a*b*c*d*m^5*x^4*e^7 + 849*(x*e + d)^m*A*b^2*c*d*m^5*x^4*e^7 + 849*(x*e + d)^m*A*a*c^2*d*m^5*x^4*e^7 + 3405*(x*e + d)^m*B*b^2*c*d*m^4*x^5*e^7 + 3405*(x*e + d)^m*B*a*c^2*d*m^4*x^5*e^7 + 3405*(x*e + d)^m*A*b*c^2*d*m^4*x^5*e^7 + 6222*(x*e + d)^m*B*b*c^2*d*m^3*x^6*e^7 + 2074*(x*e + d)^m*A*c^3*d*m^3*x^6*e^7 + 1764*(x*e + d)^m*B*c^3*d*m^2*x^7*e^7 - 9*(x*e + d)^m*B*a*b^2*d^2*m^6*x^2*e^6 - 3*(x*e + d)^m*A*b^3*d^2*m^6*x^2*e^6 - 9*(x*e + d)^m*B*a^2*c*d^2*m^6*x^2*e^6 - 18*(x*e + d)^m*A*a*b*c*d^2*m^6*x^2*e^6 - 96*(x*e + d)^m*B*b^3*d^2*m^5*x^3*e^6 - 576*(x*e + d)^m*B*a*b*c*d^2*m^5*x^3*e^6 - 288*(x*e + d)^m*A*b^2*c*d^2*m^5*x^3*e^6 - 288*(x*e + d)^m*A*a*c^2*d^2*m^5*x^3*e^6 - 2355*(x*e + d)^m*B*b^2*c*d^2*m^4*x^4*e^6 - 2355*(x*e + d)^m*B*a*c^2*d^2*m^4*x^4*e^6 - 2355*(x*e + d)^m*A*b*c^2*d^2*m^4*x^4*e^6 - 5940*(x*e + d)^m*B*b*c^2*d^2*m^3*x^5*e^6 - 1980*(x*e + d)^m*A*c^3*d^2*m^3*x^5*e^6 - 1918*(x*e + d)^m*B*c^3*d^2*m^2*x^6*e^6 + 12*(x*e + d)^m*B*b^3*d^3*m^5*x^2*e^5 + 72*(x*e + d)^m*B*a*b*c*d^3*m^5*x^2*e^5 + 36*(x*e + d)^m*A*b^2*c*d^3*m^5*x^2*e^5 + 36*(x*e + d)^m*A*a*c^2*d^3*m^5*x^2*e^5 + 1080*(x*e + d)^m*B*b^2*c*d^3*m^4*x^3*e^5 + 1080*(x*e + d)^m*B*a*c^2*d^3*m^4*x^3*e^5 + 1080*(x*e + d)^m*A*b*c^2*d^3*m^4*x^3*e^5 + 5310*(x*e + d)^m*B*b*c^2*d^3*m^3*x^4*e^5 + 1770*(x*e + d)^m*A*c^3*d^3*m^3*x^4*e^5 + 2100*(x*e + d)^m*B*c^3*d^3*m^2*x^5*e^5 - 180*(x*e + d)^m*B*b^2*c*d^4*m^4*x^2*e^4 - 180*(x*e + d)^m*B*a*c^2*d^4*m^4*x^2*e^4 - 180*(x*e + d)^m*A*b*c^2*d^4*m^4*x^2*e^4 - 3960*(x*e + d)^m*B*b*c^2*d^4*m^3*x^3*e^4 - 1320*(x*e + d)^m*A*c^3*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*B*c^3*d^4*m^2*x^4*e^4 + 1080*(x*e + d)^m*B*b*c^2*d^5*m^3*x^2*e^3 + 360*(x*e + d)^m*A*c^3*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*B*c^3*d^5*m^2*x^3*e^3 - 2520*(x*e + d)^m*B*c^3*d^6*m^2*x^2*e^2 + (x*e + d)^m*B*a^3*m^7*x^2*e^8 + 3*(x*e + d)^m*A*a^2*b*m^7*x^2*e^8 + 99*(x*e + d)^m*B*a^2*b*m^6*x^3*e^8 + 99*(x*e + d)^m*A*a*b^2*m^6*x^3*e^8 + 99*(x*e + d)^m*A*a^2*c*m^6*x^3*e^8 + 1254*(x*e + d)^m*B*a*b^2*m^5*x^4*e^8 + 418*(x*e + d)^m*A*b^3*m^5*x^4*e^8 + 1254*(x*e + d)^m*B*a^2*c*m^5*x^4*e^8 + 2508*(x*e + d)^m*A*a*b*c*m^5*x^4*e^8 + 2581*(x*e + d)^m*B*b^3*m^4*x^5*e^8 + 15486*(x*e + d)^m*B*a*b*c*m^4*x^5*e^8 + 7743*(x*e + d)^m*A*b^2*c*m^4*x^5*e^8 + 7743*(x*e + d)^m*A*a*c^2*m^4*x^5*e^8 + 25227*(x*e + d)^m*B*b^2*c*m^3*x^6*e^8 + 25227*(x*e + d)^m*B*a*c^2*m^3*x^6*e^8 + 25227*(x*e + d)^m*A*b*c^2*m^3*x^6*e^8 + 44268*(x*e + d)^m*B*b*c^2*m^2*x^7*e^8 + 14756*(x*e + d)^m*A*c^3*m^2*x^7*e^8 + 13068*(x*e + d)^m*B*c^3*m*x^8*e^8 + (x*e + d)^m*B*a^3*d*m^7*x*e^7 + 3*(x*e + d)^m*A*a^2*b*d*m^7*x*e^7 + 93*(x*e + d)^m*B*a^2*b*d*m^6*x^2*e^7 + 93*(x*e + d)^m*A*a*b^2*d*m^6*x^2*e^7 + 93*(x*e + d)^m*A*a^2*c*d*m^6*x^2*e^7 + 993*(x*e + d)^m*B*a*b^2*d*m^5*x^3*e^7 + 331*(x*e + d)^m*A*b^3*d*m^5*x^3*e^7 + 993*(x*e + d)^m*B*a^2*c*d*m^5*x^3*e^7 + 1986*(x*e + d)^m*A*a*b*c*d*m^5*x^3*e^7 + 1449*(x*e + d)^m*B*b^3*d*m^4*x^4*e^7 + 8694*(x*e + d)^m*B*a*b*c*d*m^4*x^4*e^7 + 4347*(x*e + d)^m*A*b^2*c*d*m^4*x^4*e^7 + 4347*(x*e + d)^m*A*a*c^2*d*m^4*x^4*e^7 + 8202*(x*e + d)^m*B*b^2*c*d*m^3*x^5*e^7 + 8202*(x*e + d)^m*B*a*c^2*d*m^3*x^5*e^7 + 8202*(x*e + d)^m*A*b*c^2*d*m^3*x^5*e^7 + 6936*(x*e + d)^m*B*b*c^2*d*m^2*x^6*e^7 + 2312*(x*e + d)^m*A*c^3*d*m^2*x^6*e^7 + 720

*(x*e + d)^m*B*c^3*d*m*x^7*e^7 - 6*(x*e + d)^m*B*a^2*b*d^2*m^6*x*e^6 - 6*(x
*e + d)^m*A*a*b^2*d^2*m^6*x*e^6 - 6*(x*e + d)^m*A*a^2*c*d^2*m^6*x*e^6 - 243
*(x*e + d)^m*B*a*b^2*d^2*m^5*x^2*e^6 - 81*(x*e + d)^m*A*b^3*d^2*m^5*x^2*e^6
 - 243*(x*e + d)^m*B*a^2*c*d^2*m^5*x^2*e^6 - 486*(x*e + d)^m*A*a*b*c*d^2*m^
5*x^2*e^6 - 844*(x*e + d)^m*B*b^3*d^2*m^4*x^3*e^6 - 5064*(x*e + d)^m*B*a*b*
c*d^2*m^4*x^3*e^6 - 2532*(x*e + d)^m*A*b^2*c*d^2*m^4*x^3*e^6 - 2532*(x*e +
d)^m*A*a*c^2*d^2*m^4*x^3*e^6 - 7605*(x*e + d)^m*B*b^2*c*d^2*m^3*x^4*e^6 - 7
605*(x*e + d)^m*B*a*c^2*d^2*m^3*x^4*e^6 - 7605*(x*e + d)^m*A*b*c^2*d^2*m^3*
x^4*e^6 - 7632*(x*e + d)^m*B*b*c^2*d^2*m^2*x^5*e^6 - 2544*(x*e + d)^m*A*c^3
*d^2*m^2*x^5*e^6 - 840*(x*e + d)^m*B*c^3*d^2*m*x^6*e^6 + 18*(x*e + d)^m*B*a
*b^2*d^3*m^5*x*e^5 + 6*(x*e + d)^m*A*b^3*d^3*m^5*x*e^5 + 18*(x*e + d)^m*B*a
^2*c*d^3*m^5*x*e^5 + 36*(x*e + d)^m*A*a*b*c*d^3*m^5*x*e^5 + 264*(x*e + d)^m
*B*b^3*d^3*m^4*x^2*e^5 + 1584*(x*e + d)^m*B*a*b*c*d^3*m^4*x^2*e^5 + 792*(x*
e + d)^m*A*b^2*c*d^3*m^4*x^2*e^5 + 792*(x*e + d)^m*A*a*c^2*d^3*m^4*x^2*e^5
+ 6180*(x*e + d)^m*B*b^2*c*d^3*m^3*x^3*e^5 + 6180*(x*e + d)^m*B*a*c^2*d^3*m
^3*x^3*e^5 + 6180*(x*e + d)^m*A*b*c^2*d^3*m^3*x^3*e^5 + 8460*(x*e + d)^m*B*
b*c^2*d^3*m^2*x^4*e^5 + 2820*(x*e + d)^m*A*c^3*d^3*m^2*x^4*e^5 + 1008*(x*e
+ d)^m*B*c^3*d^3*m*x^5*e^5 - 24*(x*e + d)^m*B*b^3*d^4*m^4*x*e^4 - 144*(x*e
+ d)^m*B*a*b*c*d^4*m^4*x*e^4 - 72*(x*e + d)^m*A*b^2*c*d^4*m^4*x*e^4 - 72*(x
*e + d)^m*A*a*c^2*d^4*m^4*x*e^4 - 2880*(x*e + d)^m*B*b^2*c*d^4*m^3*x^2*e^4
- 2880*(x*e + d)^m*B*a*c^2*d^4*m^3*x^2*e^4 - 2880*(x*e + d)^m*A*b*c^2*d^4*m
^3*x^2*e^4 - 9360*(x*e + d)^m*B*b*c^2*d^4*m^2*x^3*e^4 - 3120*(x*e + d)^m*A*
c^3*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m*x^4*e^4 + 360*(x*e + d)^
m*B*b^2*c*d^5*m^3*x*e^3 + 360*(x*e + d)^m*B*a*c^2*d^5*m^3*x*e^3 + 360*(x*e
+ d)^m*A*b*c^2*d^5*m^3*x*e^3 + 9720*(x*e + d)^m*B*b*c^2*d^5*m^2*x^2*e^3 + 3
240*(x*e + d)^m*A*c^3*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*B*c^3*d^5*m*x^3*e^
3 - 2160*(x*e + d)^m*B*b*c^2*d^6*m^2*x*e^2 - 720*(x*e + d)^m*A*c^3*d^6*m^2*
x*e^2 - 2520*(x*e + d)^m*B*c^3*d^6*m*x^2*e^2 + 5040*(x*e + d)^m*B*c^3*d^7*m
*x*e + (x*e + d)^m*A*a^3*m^7*x*e^8 + 34*(x*e + d)^m*B*a^3*m^6*x^2*e^8 + 102
*(x*e + d)^m*A*a^2*b*m^6*x^2*e^8 + 1341*(x*e + d)^m*B*a^2*b*m^5*x^3*e^8 + 1
341*(x*e + d)^m*A*a*b^2*m^5*x^3*e^8 + 1341*(x*e + d)^m*A*a^2*c*m^5*x^3*e^8
+ 8592*(x*e + d)^m*B*a*b^2*m^4*x^4*e^8 + 2864*(x*e + d)^m*A*b^3*m^4*x^4*e^8
 + 8592*(x*e + d)^m*B*a^2*c*m^4*x^4*e^8 + 17184*(x*e + d)^m*A*a*b*c*m^4*x^4
e^8 + 9544(x*e + d)^m*B*b^3*m^3*x^5*e^8 + 57264*(x*e + d)^m*B*a*b*c*m^3*x
^5*e^8 + 28632*(x*e + d)^m*A*b^2*c*m^3*x^5*e^8 + 28632*(x*e + d)^m*A*a*c^2*
m^3*x^5*e^8 + 50490*(x*e + d)^m*B*b^2*c*m^2*x^6*e^8 + 50490*(x*e + d)^m*B*a
*c^2*m^2*x^6*e^8 + 50490*(x*e + d)^m*A*b*c^2*m^2*x^6*e^8 + 44496*(x*e + d)^
m*B*b*c^2*m*x^7*e^8 + 14832*(x*e + d)^m*A*c^3*m*x^7*e^8 + 5040*(x*e + d)^m*
B*c^3*x^8*e^8 + (x*e + d)^m*A*a^3*d*m^7*e^7 + 33*(x*e + d)^m*B*a^3*d*m^6*x*
e^7 + 99*(x*e + d)^m*A*a^2*b*d*m^6*x*e^7 + 1155*(x*e + d)^m*B*a^2*b*d*m^5*x
^2*e^7 + 1155*(x*e + d)^m*A*a*b^2*d*m^5*x^2*e^7 + 1155*(x*e + d)^m*A*a^2*c*
d*m^5*x^2*e^7 + 5613*(x*e + d)^m*B*a*b^2*d*m^4*x^3*e^7 + 1871*(x*e + d)^m*A
*b^3*d*m^4*x^3*e^7 + 5613*(x*e + d)^m*B*a^2*c*d*m^4*x^3*e^7 + 11226*(x*e +
d)^m*A*a*b*c*d*m^4*x^3*e^7 + 3748*(x*e + d)^m*B*b^3*d*m^3*x^4*e^7 + 22488*(
x*e + d)^m*B*a*b*c*d*m^3*x^4*e^7 + 11244*(x*e + d)^m*A*b^2*c*d*m^3*x^4*e^7
+ 11244*(x*e + d)^m*A*a*c^2*d*m^3*x^4*e^7 + 9480*(x*e + d)^m*B*b^2*c*d*m^2*
x^5*e^7 + 9480*(x*e + d)^m*B*a*c^2*d*m^2*x^5*e^7 + 9480*(x*e + d)^m*A*b*c^2
*d*m^2*x^5*e^7 + 2880*(x*e + d)^m*B*b*c^2*d*m*x^6*e^7 + 960*(x*e + d)^m*A*c
^3*d*m*x^6*e^7 - (x*e + d)^m*B*a^3*d^2*m^6*e^6 - 3*(x*e + d)^m*A*a^2*b*d^2*
m^6*e^6 - 180*(x*e + d)^m*B*a^2*b*d^2*m^5*x*e^6 - 180*(x*e + d)^m*A*a*b^2*d
^2*m^5*x*e^6 - 180*(x*e + d)^m*A*a^2*c*d^2*m^5*x*e^6 - 2493*(x*e + d)^m*B*a
*b^2*d^2*m^4*x^2*e^6 - 831*(x*e + d)^m*A*b^3*d^2*m^4*x^2*e^6 - 2493*(x*e +
d)^m*B*a^2*c*d^2*m^4*x^2*e^6 - 4986*(x*e + d)^m*A*a*b*c*d^2*m^4*x^2*e^6 - 3
264*(x*e + d)^m*B*b^3*d^2*m^3*x^3*e^6 - 19584*(x*e + d)^m*B*a*b*c*d^2*m^3*x
^3*e^6 - 9792*(x*e + d)^m*A*b^2*c*d^2*m^3*x^3*e^6 - 9792*(x*e + d)^m*A*a*c^
2*d^2*m^3*x^3*e^6 - 10590*(x*e + d)^m*B*b^2*c*d^2*m^2*x^4*e^6 - 10590*(x*e
+ d)^m*B*a*c^2*d^2*m^2*x^4*e^6 - 10590*(x*e + d)^m*A*b*c^2*d^2*m^2*x^4*e^6
- 3456*(x*e + d)^m*B*b*c^2*d^2*m*x^5*e^6 - 1152*(x*e + d)^m*A*c^3*d^2*m*x^5
e^6 + 6(x*e + d)^m*B*a^2*b*d^3*m^5*e^5 + 6*(x*e + d)^m*A*a*b^2*d^3*m^5*e^

5 + 6*(x*e + d)^m*A*a^2*c*d^3*m^5*e^5 + 468*(x*e + d)^m*B*a*b^2*d^3*m^4*x*e
^5 + 156*(x*e + d)^m*A*b^3*d^3*m^4*x*e^5 + 468*(x*e + d)^m*B*a^2*c*d^3*m^4*
x*e^5 + 936*(x*e + d)^m*A*a*b*c*d^3*m^4*x*e^5 + 2004*(x*e + d)^m*B*b^3*d^3*
m^3*x^2*e^5 + 12024*(x*e + d)^m*B*a*b*c*d^3*m^3*x^2*e^5 + 6012*(x*e + d)^m*
A*b^2*c*d^3*m^3*x^2*e^5 + 6012*(x*e + d)^m*A*a*c^2*d^3*m^3*x^2*e^5 + 11880*
(x*e + d)^m*B*b^2*c*d^3*m^2*x^3*e^5 + 11880*(x*e + d)^m*B*a*c^2*d^3*m^2*x^3
e^5 + 11880(x*e + d)^m*A*b*c^2*d^3*m^2*x^3*e^5 + 4320*(x*e + d)^m*B*b*c^2
*d^3*m*x^4*e^5 + 1440*(x*e + d)^m*A*c^3*d^3*m*x^4*e^5 - 18*(x*e + d)^m*B*a*
b^2*d^4*m^4*e^4 - 6*(x*e + d)^m*A*b^3*d^4*m^4*e^4 - 18*(x*e + d)^m*B*a^2*c*
d^4*m^4*e^4 - 36*(x*e + d)^m*A*a*b*c*d^4*m^4*e^4 - 504*(x*e + d)^m*B*b^3*d^
4*m^3*x*e^4 - 3024*(x*e + d)^m*B*a*b*c*d^4*m^3*x*e^4 - 1512*(x*e + d)^m*A*b
^2*c*d^4*m^3*x*e^4 - 1512*(x*e + d)^m*A*a*c^2*d^4*m^3*x*e^4 - 12780*(x*e +
d)^m*B*b^2*c*d^4*m^2*x^2*e^4 - 12780*(x*e + d)^m*B*a*c^2*d^4*m^2*x^2*e^4 -
12780*(x*e + d)^m*A*b*c^2*d^4*m^2*x^2*e^4 - 5760*(x*e + d)^m*B*b*c^2*d^4*m*
x^3*e^4 - 1920*(x*e + d)^m*A*c^3*d^4*m*x^3*e^4 + 24*(x*e + d)^m*B*b^3*d^5*m
^3*e^3 + 144*(x*e + d)^m*B*a*b*c*d^5*m^3*e^3 + 72*(x*e + d)^m*A*b^2*c*d^5*m
^3*e^3 + 72*(x*e + d)^m*A*a*c^2*d^5*m^3*e^3 + 5400*(x*e + d)^m*B*b^2*c*d^5*
m^2*x*e^3 + 5400*(x*e + d)^m*B*a*c^2*d^5*m^2*x*e^3 + 5400*(x*e + d)^m*A*b*c
^2*d^5*m^2*x*e^3 + 8640*(x*e + d)^m*B*b*c^2*d^5*m*x^2*e^3 + 2880*(x*e + d)^
m*A*c^3*d^5*m*x^2*e^3 - 360*(x*e + d)^m*B*b^2*c*d^6*m^2*e^2 - 360*(x*e + d)
^m*B*a*c^2*d^6*m^2*e^2 - 360*(x*e + d)^m*A*b*c^2*d^6*m^2*e^2 - 17280*(x*e +
d)^m*B*b*c^2*d^6*m*x*e^2 - 5760*(x*e + d)^m*A*c^3*d^6*m*x*e^2 + 2160*(x*e
+ d)^m*B*b*c^2*d^7*m*e + 720*(x*e + d)^m*A*c^3*d^7*m*e - 5040*(x*e + d)^m*B
*c^3*d^8 + 35*(x*e + d)^m*A*a^3*m^6*x*e^8 + 478*(x*e + d)^m*B*a^3*m^5*x^2*e
^8 + 1434*(x*e + d)^m*A*a^2*b*m^5*x^2*e^8 + 9585*(x*e + d)^m*B*a^2*b*m^4*x^
3*e^8 + 9585*(x*e + d)^m*A*a*b^2*m^4*x^3*e^8 + 9585*(x*e + d)^m*A*a^2*c*m^4
*x^3*e^8 + 32979*(x*e + d)^m*B*a*b^2*m^3*x^4*e^8 + 10993*(x*e + d)^m*A*b^3*
m^3*x^4*e^8 + 32979*(x*e + d)^m*B*a^2*c*m^3*x^4*e^8 + 65958*(x*e + d)^m*A*a
*b*c*m^3*x^4*e^8 + 19564*(x*e + d)^m*B*b^3*m^2*x^5*e^8 + 117384*(x*e + d)^m
*B*a*b*c*m^2*x^5*e^8 + 58692*(x*e + d)^m*A*b^2*c*m^2*x^5*e^8 + 58692*(x*e +
d)^m*A*a*c^2*m^2*x^5*e^8 + 51432*(x*e + d)^m*B*b^2*c*m*x^6*e^8 + 51432*(x*
e + d)^m*B*a*c^2*m*x^6*e^8 + 51432*(x*e + d)^m*A*b*c^2*m*x^6*e^8 + 17280*(x
*e + d)^m*B*b*c^2*x^7*e^8 + 5760*(x*e + d)^m*A*c^3*x^7*e^8 + 35*(x*e + d)^m
*A*a^3*d*m^6*e^7 + 445*(x*e + d)^m*B*a^3*d*m^5*x*e^7 + 1335*(x*e + d)^m*A*a
^2*b*d*m^5*x*e^7 + 7275*(x*e + d)^m*B*a^2*b*d*m^4*x^2*e^7 + 7275*(x*e + d)^
m*A*a*b^2*d*m^4*x^2*e^7 + 7275*(x*e + d)^m*A*a^2*c*d*m^4*x^2*e^7 + 16140*(x
*e + d)^m*B*a*b^2*d*m^3*x^3*e^7 + 5380*(x*e + d)^m*A*b^3*d*m^3*x^3*e^7 + 16
140*(x*e + d)^m*B*a^2*c*d*m^3*x^3*e^7 + 32280*(x*e + d)^m*A*a*b*c*d*m^3*x^3
e^7 + 4572(x*e + d)^m*B*b^3*d*m^2*x^4*e^7 + 27432*(x*e + d)^m*B*a*b*c*d*m
^2*x^4*e^7 + 13716*(x*e + d)^m*A*b^2*c*d*m^2*x^4*e^7 + 13716*(x*e + d)^m*A*
a*c^2*d*m^2*x^4*e^7 + 4032*(x*e + d)^m*B*b^2*c*d*m*x^5*e^7 + 4032*(x*e + d)
^m*B*a*c^2*d*m*x^5*e^7 + 4032*(x*e + d)^m*A*b*c^2*d*m*x^5*e^7 - 33*(x*e + d
)^m*B*a^3*d^2*m^5*e^6 - 99*(x*e + d)^m*A*a^2*b*d^2*m^5*e^6 - 2130*(x*e + d)
^m*B*a^2*b*d^2*m^4*x*e^6 - 2130*(x*e + d)^m*A*a*b^2*d^2*m^4*x*e^6 - 2130*(x
*e + d)^m*A*a^2*c*d^2*m^4*x*e^6 - 11853*(x*e + d)^m*B*a*b^2*d^2*m^3*x^2*e^6
 - 3951*(x*e + d)^m*A*b^3*d^2*m^3*x^2*e^6 - 11853*(x*e + d)^m*B*a^2*c*d^2*m
^3*x^2*e^6 - 23706*(x*e + d)^m*A*a*b*c*d^2*m^3*x^2*e^6 - 5200*(x*e + d)^m*B
*b^3*d^2*m^2*x^3*e^6 - 31200*(x*e + d)^m*B*a*b*c*d^2*m^2*x^3*e^6 - 15600*(x
*e + d)^m*A*b^2*c*d^2*m^2*x^3*e^6 - 15600*(x*e + d)^m*A*a*c^2*d^2*m^2*x^3*e
^6 - 5040*(x*e + d)^m*B*b^2*c*d^2*m*x^4*e^6 - 5040*(x*e + d)^m*B*a*c^2*d^2*
m*x^4*e^6 - 5040*(x*e + d)^m*A*b*c^2*d^2*m*x^4*e^6 + 180*(x*e + d)^m*B*a^2*
b*d^3*m^4*e^5 + 180*(x*e + d)^m*A*a*b^2*d^3*m^4*e^5 + 180*(x*e + d)^m*A*a^2
*c*d^3*m^4*e^5 + 4518*(x*e + d)^m*B*a*b^2*d^3*m^3*x*e^5 + 1506*(x*e + d)^m*
A*b^3*d^3*m^3*x*e^5 + 4518*(x*e + d)^m*B*a^2*c*d^3*m^3*x*e^5 + 9036*(x*e +
d)^m*A*a*b*c*d^3*m^3*x*e^5 + 5784*(x*e + d)^m*B*b^3*d^3*m^2*x^2*e^5 + 34704
*(x*e + d)^m*B*a*b*c*d^3*m^2*x^2*e^5 + 17352*(x*e + d)^m*A*b^2*c*d^3*m^2*x^
2*e^5 + 17352*(x*e + d)^m*A*a*c^2*d^3*m^2*x^2*e^5 + 6720*(x*e + d)^m*B*b^2*
c*d^3*m*x^3*e^5 + 6720*(x*e + d)^m*B*a*c^2*d^3*m*x^3*e^5 + 6720*(x*e + d)^m
*A*b*c^2*d^3*m*x^3*e^5 - 468*(x*e + d)^m*B*a*b^2*d^4*m^3*e^4 - 156*(x*e + d

)^m*A*b^3*d^4*m^3*e^4 - 468*(x*e + d)^m*B*a^2*c*d^4*m^3*e^4 - 936*(x*e + d)
^m*A*a*b*c*d^4*m^3*e^4 - 3504*(x*e + d)^m*B*b^3*d^4*m^2*x*e^4 - 21024*(x*e
+ d)^m*B*a*b*c*d^4*m^2*x*e^4 - 10512*(x*e + d)^m*A*b^2*c*d^4*m^2*x*e^4 - 10
512*(x*e + d)^m*A*a*c^2*d^4*m^2*x*e^4 - 10080*(x*e + d)^m*B*b^2*c*d^4*m*x^2
e^4 - 10080(x*e + d)^m*B*a*c^2*d^4*m*x^2*e^4 - 10080*(x*e + d)^m*A*b*c^2*
d^4*m*x^2*e^4 + 504*(x*e + d)^m*B*b^3*d^5*m^2*e^3 + 3024*(x*e + d)^m*B*a*b*
c*d^5*m^2*e^3 + 1512*(x*e + d)^m*A*b^2*c*d^5*m^2*e^3 + 1512*(x*e + d)^m*A*a
*c^2*d^5*m^2*e^3 + 20160*(x*e + d)^m*B*b^2*c*d^5*m*x*e^3 + 20160*(x*e + d)^
m*B*a*c^2*d^5*m*x*e^3 + 20160*(x*e + d)^m*A*b*c^2*d^5*m*x*e^3 - 5400*(x*e +
d)^m*B*b^2*c*d^6*m*e^2 - 5400*(x*e + d)^m*B*a*c^2*d^6*m*e^2 - 5400*(x*e +
d)^m*A*b*c^2*d^6*m*e^2 + 17280*(x*e + d)^m*B*b*c^2*d^7*e + 5760*(x*e + d)^m
*A*c^3*d^7*e + 511*(x*e + d)^m*A*a^3*m^5*x*e^8 + 3580*(x*e + d)^m*B*a^3*m^4
*x^2*e^8 + 10740*(x*e + d)^m*A*a^2*b*m^4*x^2*e^8 + 38592*(x*e + d)^m*B*a^2*
b*m^3*x^3*e^8 + 38592*(x*e + d)^m*A*a*b^2*m^3*x^3*e^8 + 38592*(x*e + d)^m*A
*a^2*c*m^3*x^3*e^8 + 69936*(x*e + d)^m*B*a*b^2*m^2*x^4*e^8 + 23312*(x*e + d
)^m*A*b^3*m^2*x^4*e^8 + 69936*(x*e + d)^m*B*a^2*c*m^2*x^4*e^8 + 139872*(x*e
+ d)^m*A*a*b*c*m^2*x^4*e^8 + 20304*(x*e + d)^m*B*b^3*m*x^5*e^8 + 121824*(x
*e + d)^m*B*a*b*c*m*x^5*e^8 + 60912*(x*e + d)^m*A*b^2*c*m*x^5*e^8 + 60912*(
x*e + d)^m*A*a*c^2*m*x^5*e^8 + 20160*(x*e + d)^m*B*b^2*c*x^6*e^8 + 20160*(x
*e + d)^m*B*a*c^2*x^6*e^8 + 20160*(x*e + d)^m*A*b*c^2*x^6*e^8 + 511*(x*e +
d)^m*A*a^3*d*m^5*e^7 + 3135*(x*e + d)^m*B*a^3*d*m^4*x*e^7 + 9405*(x*e + d)^
m*A*a^2*b*d*m^4*x*e^7 + 24042*(x*e + d)^m*B*a^2*b*d*m^3*x^2*e^7 + 24042*(x*
e + d)^m*A*a*b^2*d*m^3*x^2*e^7 + 24042*(x*e + d)^m*A*a^2*c*d*m^3*x^2*e^7 +
21516*(x*e + d)^m*B*a*b^2*d*m^2*x^3*e^7 + 7172*(x*e + d)^m*A*b^3*d*m^2*x^3*
e^7 + 21516*(x*e + d)^m*B*a^2*c*d*m^2*x^3*e^7 + 43032*(x*e + d)^m*A*a*b*c*d
*m^2*x^3*e^7 + 2016*(x*e + d)^m*B*b^3*d*m*x^4*e^7 + 12096*(x*e + d)^m*B*a*b
*c*d*m*x^4*e^7 + 6048*(x*e + d)^m*A*b^2*c*d*m*x^4*e^7 + 6048*(x*e + d)^m*A*
a*c^2*d*m*x^4*e^7 - 445*(x*e + d)^m*B*a^3*d^2*m^4*e^6 - 1335*(x*e + d)^m*A*
a^2*b*d^2*m^4*e^6 - 12420*(x*e + d)^m*B*a^2*b*d^2*m^3*x*e^6 - 12420*(x*e +
d)^m*A*a*b^2*d^2*m^3*x*e^6 - 12420*(x*e + d)^m*A*a^2*c*d^2*m^3*x*e^6 - 2471
4*(x*e + d)^m*B*a*b^2*d^2*m^2*x^2*e^6 - 8238*(x*e + d)^m*A*b^3*d^2*m^2*x^2*
e^6 - 24714*(x*e + d)^m*B*a^2*c*d^2*m^2*x^2*e^6 - 49428*(x*e + d)^m*A*a*b*c
*d^2*m^2*x^2*e^6 - 2688*(x*e + d)^m*B*b^3*d^2*m*x^3*e^6 - 16128*(x*e + d)^m
*B*a*b*c*d^2*m*x^3*e^6 - 8064*(x*e + d)^m*A*b^2*c*d^2*m*x^3*e^6 - 8064*(x*e
+ d)^m*A*a*c^2*d^2*m*x^3*e^6 + 2130*(x*e + d)^m*B*a^2*b*d^3*m^3*e^5 + 2130
*(x*e + d)^m*A*a*b^2*d^3*m^3*e^5 + 2130*(x*e + d)^m*A*a^2*c*d^3*m^3*e^5 + 1
9188*(x*e + d)^m*B*a*b^2*d^3*m^2*x*e^5 + 6396*(x*e + d)^m*A*b^3*d^3*m^2*x*e
^5 + 19188*(x*e + d)^m*B*a^2*c*d^3*m^2*x*e^5 + 38376*(x*e + d)^m*A*a*b*c*d^
3*m^2*x*e^5 + 4032*(x*e + d)^m*B*b^3*d^3*m*x^2*e^5 + 24192*(x*e + d)^m*B*a*
b*c*d^3*m*x^2*e^5 + 12096*(x*e + d)^m*A*b^2*c*d^3*m*x^2*e^5 + 12096*(x*e +
d)^m*A*a*c^2*d^3*m*x^2*e^5 - 4518*(x*e + d)^m*B*a*b^2*d^4*m^2*e^4 - 1506*(x
*e + d)^m*A*b^3*d^4*m^2*e^4 - 4518*(x*e + d)^m*B*a^2*c*d^4*m^2*e^4 - 9036*(
x*e + d)^m*A*a*b*c*d^4*m^2*e^4 - 8064*(x*e + d)^m*B*b^3*d^4*m*x*e^4 - 48384
*(x*e + d)^m*B*a*b*c*d^4*m*x*e^4 - 24192*(x*e + d)^m*A*b^2*c*d^4*m*x*e^4 -
24192*(x*e + d)^m*A*a*c^2*d^4*m*x*e^4 + 3504*(x*e + d)^m*B*b^3*d^5*m*e^3 +
21024*(x*e + d)^m*B*a*b*c*d^5*m*e^3 + 10512*(x*e + d)^m*A*b^2*c*d^5*m*e^3 +
10512*(x*e + d)^m*A*a*c^2*d^5*m*e^3 - 20160*(x*e + d)^m*B*b^2*c*d^6*e^2 -
20160*(x*e + d)^m*B*a*c^2*d^6*e^2 - 20160*(x*e + d)^m*A*b*c^2*d^6*e^2 + 402
5*(x*e + d)^m*A*a^3*m^4*x*e^8 + 15289*(x*e + d)^m*B*a^3*m^3*x^2*e^8 + 45867
*(x*e + d)^m*A*a^2*b*m^3*x^2*e^8 + 86076*(x*e + d)^m*B*a^2*b*m^2*x^3*e^8 +
86076*(x*e + d)^m*A*a*b^2*m^2*x^3*e^8 + 86076*(x*e + d)^m*A*a^2*c*m^2*x^3*e
^8 + 74628*(x*e + d)^m*B*a*b^2*m*x^4*e^8 + 24876*(x*e + d)^m*A*b^3*m*x^4*e^
8 + 74628*(x*e + d)^m*B*a^2*c*m*x^4*e^8 + 149256*(x*e + d)^m*A*a*b*c*m*x^4*
e^8 + 8064*(x*e + d)^m*B*b^3*x^5*e^8 + 48384*(x*e + d)^m*B*a*b*c*x^5*e^8 +
24192*(x*e + d)^m*A*b^2*c*x^5*e^8 + 24192*(x*e + d)^m*A*a*c^2*x^5*e^8 + 402
5*(x*e + d)^m*A*a^3*d*m^4*e^7 + 12154*(x*e + d)^m*B*a^3*d*m^3*x*e^7 + 36462
*(x*e + d)^m*A*a^2*b*d*m^3*x*e^7 + 37992*(x*e + d)^m*B*a^2*b*d*m^2*x^2*e^7
+ 37992*(x*e + d)^m*A*a*b^2*d*m^2*x^2*e^7 + 37992*(x*e + d)^m*A*a^2*c*d*m^2
*x^2*e^7 + 10080*(x*e + d)^m*B*a*b^2*d*m*x^3*e^7 + 3360*(x*e + d)^m*A*b^3*d

```
*m*x^3*e^7 + 10080*(x*e + d)^m*B*a^2*c*d*m*x^3*e^7 + 20160*(x*e + d)^m*A*a*
b*c*d*m*x^3*e^7 - 3135*(x*e + d)^m*B*a^3*d^2*m^3*e^6 - 9405*(x*e + d)^m*A*a
^2*b*d^2*m^3*e^6 - 35664*(x*e + d)^m*B*a^2*b*d^2*m^2*x*e^6 - 35664*(x*e + d
)^m*A*a*b^2*d^2*m^2*x*e^6 - 35664*(x*e + d)^m*A*a^2*c*d^2*m^2*x*e^6 - 15120
*(x*e + d)^m*B*a*b^2*d^2*m*x^2*e^6 - 5040*(x*e + d)^m*A*b^3*d^2*m*x^2*e^6 -
 15120*(x*e + d)^m*B*a^2*c*d^2*m*x^2*e^6 - 30240*(x*e + d)^m*A*a*b*c*d^2*m*
x^2*e^6 + 12420*(x*e + d)^m*B*a^2*b*d^3*m^2*e^5 + 12420*(x*e + d)^m*A*a*b^2
*d^3*m^2*e^5 + 12420*(x*e + d)^m*A*a^2*c*d^3*m^2*e^5 + 30240*(x*e + d)^m*B*
a*b^2*d^3*m*x*e^5 + 10080*(x*e + d)^m*A*b^3*d^3*m*x*e^5 + 30240*(x*e + d)^m
*B*a^2*c*d^3*m*x*e^5 + 60480*(x*e + d)^m*A*a*b*c*d^3*m*x*e^5 - 19188*(x*e +
 d)^m*B*a*b^2*d^4*m*e^4 - 6396*(x*e + d)^m*A*b^3*d^4*m*e^4 - 19188*(x*e + d
)^m*B*a^2*c*d^4*m*e^4 - 38376*(x*e + d)^m*A*a*b*c*d^4*m*e^4 + 8064*(x*e + d
)^m*B*b^3*d^5*e^3 + 48384*(x*e + d)^m*B*a*b*c*d^5*e^3 + 24192*(x*e + d)^m*A
*b^2*c*d^5*e^3 + 24192*(x*e + d)^m*A*a*c^2*d^5*e^3 + 18424*(x*e + d)^m*A*a^
3*m^3*x*e^8 + 36706*(x*e + d)^m*B*a^3*m^2*x^2*e^8 + 110118*(x*e + d)^m*A*a^
2*b*m^2*x^2*e^8 + 96144*(x*e + d)^m*B*a^2*b*m*x^3*e^8 + 96144*(x*e + d)^m*A
*a*b^2*m*x^3*e^8 + 96144*(x*e + d)^m*A*a^2*c*m*x^3*e^8 + 30240*(x*e + d)^m*
B*a*b^2*x^4*e^8 + 10080*(x*e + d)^m*A*b^3*x^4*e^8 + 30240*(x*e + d)^m*B*a^2
*c*x^4*e^8 + 60480*(x*e + d)^m*A*a*b*c*x^4*e^8 + 18424*(x*e + d)^m*A*a^3*d*
m^3*e^7 + 24552*(x*e + d)^m*B*a^3*d*m^2*x*e^7 + 73656*(x*e + d)^m*A*a^2*b*d
*m^2*x*e^7 + 20160*(x*e + d)^m*B*a^2*b*d*m*x^2*e^7 + 20160*(x*e + d)^m*A*a*
b^2*d*m*x^2*e^7 + 20160*(x*e + d)^m*A*a^2*c*d*m*x^2*e^7 - 12154*(x*e + d)^m
*B*a^3*d^2*m^2*e^6 - 36462*(x*e + d)^m*A*a^2*b*d^2*m^2*e^6 - 40320*(x*e + d
)^m*B*a^2*b*d^2*m*x*e^6 - 40320*(x*e + d)^m*A*a*b^2*d^2*m*x*e^6 - 40320*(x*
e + d)^m*A*a^2*c*d^2*m*x*e^6 + 35664*(x*e + d)^m*B*a^2*b*d^3*m*e^5 + 35664*
(x*e + d)^m*A*a*b^2*d^3*m*e^5 + 35664*(x*e + d)^m*A*a^2*c*d^3*m*e^5 - 30240
*(x*e + d)^m*B*a*b^2*d^4*e^4 - 10080*(x*e + d)^m*A*b^3*d^4*e^4 - 30240*(x*e
 + d)^m*B*a^2*c*d^4*e^4 - 60480*(x*e + d)^m*A*a*b*c*d^4*e^4 + 48860*(x*e +
d)^m*A*a^3*m^2*x*e^8 + 44712*(x*e + d)^m*B*a^3*m*x^2*e^8 + 134136*(x*e + d)
^m*A*a^2*b*m*x^2*e^8 + 40320*(x*e + d)^m*B*a^2*b*x^3*e^8 + 40320*(x*e + d)^
m*A*a*b^2*x^3*e^8 + 40320*(x*e + d)^m*A*a^2*c*x^3*e^8 + 48860*(x*e + d)^m*A
*a^3*d*m^2*e^7 + 20160*(x*e + d)^m*B*a^3*d*m*x*e^7 + 60480*(x*e + d)^m*A*a^
2*b*d*m*x*e^7 - 24552*(x*e + d)^m*B*a^3*d^2*m*e^6 - 73656*(x*e + d)^m*A*a^2
*b*d^2*m*e^6 + 40320*(x*e + d)^m*B*a^2*b*d^3*e^5 + 40320*(x*e + d)^m*A*a*b^
2*d^3*e^5 + 40320*(x*e + d)^m*A*a^2*c*d^3*e^5 + 69264*(x*e + d)^m*A*a^3*m*x
*e^8 + 20160*(x*e + d)^m*B*a^3*x^2*e^8 + 60480*(x*e + d)^m*A*a^2*b*x^2*e^8
+ 69264*(x*e + d)^m*A*a^3*d*m*e^7 - 20160*(x*e + d)^m*B*a^3*d^2*e^6 - 60480
*(x*e + d)^m*A*a^2*b*d^2*e^6 + 40320*(x*e + d)^m*A*a^3*x*e^8 + 40320*(x*e +
 d)^m*A*a^3*d*e^7)/(m^8*e^8 + 36*m^7*e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 224
49*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.05, size = 8232, normalized size = 13.86

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [B] time = 0.90, size = 2662, normalized size = 4.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^3/((m^2 + 3*m + 2)*e^2) +
 3*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a^2*b/((m^2 + 3*m + 2)*e
^2) + (e*x + d)^(m + 1)*A*a^3/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m
```

```
^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a^2*b/((m^3 + 6*m^2
+ 11*m + 6)*e^3) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2
*e*m*x + 2*d^3)*(e*x + d)^m*A*a*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 3*((m^
2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)
^m*A*a^2*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 3*((m^3 + 6*m^2 + 11*m + 6)*e^4
*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*
x - 6*d^4)*(e*x + d)^m*B*a*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) +
((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2
+ m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b^3/((m^4 + 10*m^3 +
35*m^2 + 50*m + 24)*e^4) + 3*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m
^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x +
 d)^m*B*a^2*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 6*((m^3 + 6*m^2 +
 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^
2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*a*b*c/((m^4 + 10*m^3 + 35*m^2 + 50*m
 + 24)*e^4) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 +
 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)
*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*B*b^3/((m^5 + 15*m^4 + 85
*m^3 + 225*m^2 + 274*m + 120)*e^5) + 6*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d
^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*
B*a*b*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*((m^4 + 1
0*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^
4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e
*m*x + 24*d^5)*(e*x + d)^m*A*b^2*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*
m + 120)*e^5) + 3*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m
^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2
+ m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*A*a*c^2/((m^5 + 15*m^
4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*
m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*
x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d
^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^
m*B*b^2*c/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6
) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*
m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^
2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 +
 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*a*c^2/((m^6 + 21*m^5 + 175*m^4 + 73
5*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2
 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5
 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*
e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*A
*b*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) +
 3*((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 +
(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10
*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m
)*d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2
*x^2 - 720*d^6*e*m*x + 720*d^7)*(e*x + d)^m*B*b*c^2/((m^7 + 28*m^6 + 322*m^
5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^6 + 21*m^5
 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 8
5*m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 5
0*m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 1
20*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*
m*x + 720*d^7)*(e*x + d)^m*A*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769
*m^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m
^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m
^5 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 8
5*m^4 + 225*m^3 + 274*m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3
+ 50*m^2 + 24*m)*d^3*e^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4
 + 840*(m^3 + 3*m^2 + 2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*
d^7*e*m*x - 5040*d^8)*(e*x + d)^m*B*c^3/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5
```

```
 + 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 5.85, size = 6425, normalized size = 10.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^m*(40320*A*a^3*d*e^7 - 5040*B*c^3*d^8 + 5760*A*c^3*d^7*e - 10080
*A*b^3*d^4*e^4 - 20160*B*a^3*d^2*e^6 + 8064*B*b^3*d^5*e^3 + 40320*A*a*b^2*d
^3*e^5 - 60480*A*a^2*b*d^2*e^6 + 24192*A*a*c^2*d^5*e^3 + 40320*A*a^2*c*d^3*
e^5 - 30240*B*a*b^2*d^4*e^4 + 40320*B*a^2*b*d^3*e^5 - 20160*A*b*c^2*d^6*e^2
 + 24192*A*b^2*c*d^5*e^3 - 20160*B*a*c^2*d^6*e^2 - 30240*B*a^2*c*d^4*e^4 -
20160*B*b^2*c*d^6*e^2 + 48860*A*a^3*d*e^7*m^2 + 18424*A*a^3*d*e^7*m^3 + 402
5*A*a^3*d*e^7*m^4 + 511*A*a^3*d*e^7*m^5 + 35*A*a^3*d*e^7*m^6 + A*a^3*d*e^7*
m^7 - 6396*A*b^3*d^4*e^4*m - 24552*B*a^3*d^2*e^6*m + 3504*B*b^3*d^5*e^3*m -
 1506*A*b^3*d^4*e^4*m^2 - 12154*B*a^3*d^2*e^6*m^2 - 156*A*b^3*d^4*e^4*m^3 -
 3135*B*a^3*d^2*e^6*m^3 - 6*A*b^3*d^4*e^4*m^4 - 445*B*a^3*d^2*e^6*m^4 - 33*
B*a^3*d^2*e^6*m^5 - B*a^3*d^2*e^6*m^6 + 504*B*b^3*d^5*e^3*m^2 + 24*B*b^3*d^
5*e^3*m^3 + 17280*B*b*c^2*d^7*e + 69264*A*a^3*d*e^7*m + 720*A*c^3*d^7*e*m +
 12420*A*a*b^2*d^3*e^5*m^2 - 36462*A*a^2*b*d^2*e^6*m^2 + 2130*A*a*b^2*d^3*e
^5*m^3 - 9405*A*a^2*b*d^2*e^6*m^3 + 180*A*a*b^2*d^3*e^5*m^4 - 1335*A*a^2*b*
d^2*e^6*m^4 + 6*A*a*b^2*d^3*e^5*m^5 - 99*A*a^2*b*d^2*e^6*m^5 - 3*A*a^2*b*d^
2*e^6*m^6 + 1512*A*a*c^2*d^5*e^3*m^2 + 12420*A*a^2*c*d^3*e^5*m^2 - 4518*B*a
*b^2*d^4*e^4*m^2 + 12420*B*a^2*b*d^3*e^5*m^2 + 72*A*a*c^2*d^5*e^3*m^3 + 213
0*A*a^2*c*d^3*e^5*m^3 - 468*B*a*b^2*d^4*e^4*m^3 + 2130*B*a^2*b*d^3*e^5*m^3
+ 180*A*a^2*c*d^3*e^5*m^4 - 18*B*a*b^2*d^4*e^4*m^4 + 180*B*a^2*b*d^3*e^5*m^
4 + 6*A*a^2*c*d^3*e^5*m^5 + 6*B*a^2*b*d^3*e^5*m^5 - 360*A*b*c^2*d^6*e^2*m^2
 + 1512*A*b^2*c*d^5*e^3*m^2 - 360*B*a*c^2*d^6*e^2*m^2 - 4518*B*a^2*c*d^4*e^
4*m^2 + 72*A*b^2*c*d^5*e^3*m^3 - 468*B*a^2*c*d^4*e^4*m^3 - 18*B*a^2*c*d^4*e
^4*m^4 - 360*B*b^2*c*d^6*e^2*m^2 - 60480*A*a*b*c*d^4*e^4 + 48384*B*a*b*c*d^
5*e^3 + 2160*B*b*c^2*d^7*e*m + 35664*A*a*b^2*d^3*e^5*m - 73656*A*a^2*b*d^2*
e^6*m + 10512*A*a*c^2*d^5*e^3*m + 35664*A*a^2*c*d^3*e^5*m - 19188*B*a*b^2*d
^4*e^4*m + 35664*B*a^2*b*d^3*e^5*m - 5400*A*b*c^2*d^6*e^2*m + 10512*A*b^2*c
*d^5*e^3*m - 5400*B*a*c^2*d^6*e^2*m - 19188*B*a^2*c*d^4*e^4*m - 5400*B*b^2*
c*d^6*e^2*m - 9036*A*a*b*c*d^4*e^4*m^2 - 936*A*a*b*c*d^4*e^4*m^3 - 36*A*a*b
*c*d^4*e^4*m^4 + 3024*B*a*b*c*d^5*e^3*m^2 + 144*B*a*b*c*d^5*e^3*m^3 - 38376
*A*a*b*c*d^4*e^4*m + 21024*B*a*b*c*d^5*e^3*m))/(e^8*(109584*m + 118124*m^2
+ 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x*
(d + e*x)^m*(40320*A*a^3*e^8 + 69264*A*a^3*e^8*m + 48860*A*a^3*e^8*m^2 + 18
424*A*a^3*e^8*m^3 + 4025*A*a^3*e^8*m^4 + 511*A*a^3*e^8*m^5 + 35*A*a^3*e^8*m
^6 + A*a^3*e^8*m^7 + 10080*A*b^3*d^3*e^5*m + 24552*B*a^3*d*e^7*m^2 + 12154*
B*a^3*d*e^7*m^3 + 3135*B*a^3*d*e^7*m^4 + 445*B*a^3*d*e^7*m^5 + 33*B*a^3*d*e
^7*m^6 + B*a^3*d*e^7*m^7 - 5760*A*c^3*d^6*e^2*m - 8064*B*b^3*d^4*e^4*m + 63
96*A*b^3*d^3*e^5*m^2 + 1506*A*b^3*d^3*e^5*m^3 + 156*A*b^3*d^3*e^5*m^4 + 6*A
*b^3*d^3*e^5*m^5 - 720*A*c^3*d^6*e^2*m^2 - 3504*B*b^3*d^4*e^4*m^2 - 504*B*b
^3*d^4*e^4*m^3 - 24*B*b^3*d^4*e^4*m^4 + 20160*B*a^3*d*e^7*m + 5040*B*c^3*d^
7*e*m - 35664*A*a*b^2*d^2*e^6*m^2 - 12420*A*a*b^2*d^2*e^6*m^3 - 2130*A*a*b^
2*d^2*e^6*m^4 - 180*A*a*b^2*d^2*e^6*m^5 - 6*A*a*b^2*d^2*e^6*m^6 - 10512*A*a
*c^2*d^4*e^4*m^2 - 35664*A*a^2*c*d^2*e^6*m^2 + 19188*B*a*b^2*d^3*e^5*m^2 -
35664*B*a^2*b*d^2*e^6*m^2 - 1512*A*a*c^2*d^4*e^4*m^3 - 12420*A*a^2*c*d^2*e^
6*m^3 + 4518*B*a*b^2*d^3*e^5*m^3 - 12420*B*a^2*b*d^2*e^6*m^3 - 72*A*a*c^2*d
^4*e^4*m^4 - 2130*A*a^2*c*d^2*e^6*m^4 + 468*B*a*b^2*d^3*e^5*m^4 - 2130*B*a^
2*b*d^2*e^6*m^4 - 180*A*a^2*c*d^2*e^6*m^5 + 18*B*a*b^2*d^3*e^5*m^5 - 180*B*
a^2*b*d^2*e^6*m^5 - 6*A*a^2*c*d^2*e^6*m^6 - 6*B*a^2*b*d^2*e^6*m^6 + 5400*A*
b*c^2*d^5*e^3*m^2 - 10512*A*b^2*c*d^4*e^4*m^2 + 5400*B*a*c^2*d^5*e^3*m^2 +
19188*B*a^2*c*d^3*e^5*m^2 + 360*A*b*c^2*d^5*e^3*m^3 - 1512*A*b^2*c*d^4*e^4*
m^3 + 360*B*a*c^2*d^5*e^3*m^3 + 4518*B*a^2*c*d^3*e^5*m^3 - 72*A*b^2*c*d^4*e
^4*m^4 + 468*B*a^2*c*d^3*e^5*m^4 + 18*B*a^2*c*d^3*e^5*m^5 - 2160*B*b*c^2*d^
```

6*e^2*m^2 + 5400*B*b^2*c*d^5*e^3*m^2 + 360*B*b^2*c*d^5*e^3*m^3 + 60480*A*a^2*b*d*e^7*m - 40320*A*a*b^2*d^2*e^6*m + 73656*A*a^2*b*d*e^7*m^2 + 36462*A*a^2*b*d*e^7*m^3 + 9405*A*a^2*b*d*e^7*m^4 + 1335*A*a^2*b*d*e^7*m^5 + 99*A*a^2*b*d*e^7*m^6 + 3*A*a^2*b*d*e^7*m^7 - 24192*A*a*c^2*d^4*e^4*m - 40320*A*a^2*c*d^2*e^6*m + 30240*B*a*b^2*d^3*e^5*m - 40320*B*a^2*b*d^2*e^6*m + 20160*A*b*c^2*d^5*e^3*m - 24192*A*b^2*c*d^4*e^4*m + 20160*B*a*c^2*d^5*e^3*m + 30240*B*a^2*c*d^3*e^5*m - 17280*B*b*c^2*d^6*e^2*m + 20160*B*b^2*c*d^5*e^3*m + 38376*A*a*b*c*d^3*e^5*m^2 + 9036*A*a*b*c*d^3*e^5*m^3 + 936*A*a*b*c*d^3*e^5*m^4 + 36*A*a*b*c*d^3*e^5*m^5 - 21024*B*a*b*c*d^4*e^4*m^2 - 3024*B*a*b*c*d^4*e^4*m^3 - 144*B*a*b*c*d^4*e^4*m^4 + 60480*A*a*b*c*d^3*e^5*m - 48384*B*a*b*c*d^4*e^4*m))/(e^8*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(1680*A*b^3*e^4 + 5040*B*a*b^2*e^4 + 5040*B*a^2*c*e^4 + 1066*A*b^3*e^4*m - 210*B*c^3*d^4*m + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 753*B*a*b^2*e^4*m^2 + 78*B*a*b^2*e^4*m^3 + 3*B*a*b^2*e^4*m^4 + 753*B*a^2*c*e^4*m^2 + 78*B*a^2*c*e^4*m^3 + 3*B*a^2*c*e^4*m^4 + 30*A*c^3*d^3*e*m^2 + 146*B*b^3*d*e^3*m^2 + 21*B*b^3*d*e^3*m^3 + B*b^3*d*e^3*m^4 + 10080*A*a*b*c*e^4 + 3198*B*a*b^2*e^4*m + 3198*B*a^2*c*e^4*m + 240*A*c^3*d^3*e*m + 336*B*b^3*d*e^3*m - 225*A*b*c^2*d^2*e^2*m^2 - 225*B*a*c^2*d^2*e^2*m^2 - 15*A*b*c^2*d^2*e^2*m^3 - 15*B*a*c^2*d^2*e^2*m^3 - 225*B*b^2*c*d^2*e^2*m^2 - 15*B*b^2*c*d^2*e^2*m^3 + 1506*A*a*b*c*e^4*m^2 + 156*A*a*b*c*e^4*m^3 + 6*A*a*b*c*e^4*m^4 + 1008*A*a*c^2*d*e^3*m + 1008*A*b^2*c*d*e^3*m + 720*B*b*c^2*d^3*e*m + 438*A*a*c^2*d*e^3*m^2 + 63*A*a*c^2*d*e^3*m^3 + 3*A*a*c^2*d*e^3*m^4 - 840*A*b*c^2*d^2*e^2*m - 840*B*a*c^2*d^2*e^2*m + 438*A*b^2*c*d*e^3*m^2 + 63*A*b^2*c*d*e^3*m^3 + 3*A*b^2*c*d*e^3*m^4 - 840*B*b^2*c*d^2*e^2*m + 90*B*b*c^2*d^3*e*m^2 + 6396*A*a*b*c*e^4*m + 2016*B*a*b*c*d*e^3*m + 876*B*a*b*c*d*e^3*m^2 + 126*B*a*b*c*d*e^3*m^3 + 6*B*a*b*c*d*e^3*m^4))/(e^4*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (B*c^3*x^8*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(20160*A*a*b^2*e^5 + 20160*A*a^2*c*e^5 + 20160*B*a^2*b*e^5 + 840*B*c^3*d^5*m + 6210*A*a*b^2*e^5*m^2 + 1065*A*a*b^2*e^5*m^3 + 90*A*a*b^2*e^5*m^4 + 3*A*a*b^2*e^5*m^5 + 6210*A*a^2*c*e^5*m^2 + 6210*B*a^2*b*e^5*m^2 + 1065*A*a^2*c*e^5*m^3 + 1065*B*a^2*b*e^5*m^3 + 90*A*a^2*c*e^5*m^4 + 90*B*a^2*b*e^5*m^4 + 3*A*a^2*c*e^5*m^5 + 3*B*a^2*b*e^5*m^5 + 1066*A*b^3*d*e^4*m^2 + 251*A*b^3*d*e^4*m^3 + 26*A*b^3*d*e^4*m^4 + A*b^3*d*e^4*m^5 - 1344*B*b^3*d^2*e^3*m - 120*A*c^3*d^4*e*m^2 - 584*B*b^3*d^2*e^3*m^2 - 84*B*b^3*d^2*e^3*m^3 - 4*B*b^3*d^2*e^3*m^4 + 17832*A*a*b^2*e^5*m + 17832*A*a^2*c*e^5*m + 17832*B*a^2*b*e^5*m + 1680*A*b^3*d*e^4*m - 960*A*c^3*d^4*e*m - 1752*A*a*c^2*d^2*e^3*m^2 - 252*A*a*c^2*d^2*e^3*m^3 - 12*A*a*c^2*d^2*e^3*m^4 + 900*A*b*c^2*d^3*e^2*m^2 - 1752*A*b^2*c*d^2*e^3*m^2 + 900*B*a*c^2*d^3*e^2*m^2 + 60*A*b*c^2*d^3*e^2*m^3 - 252*A*b^2*c*d^2*e^3*m^3 + 60*B*a*c^2*d^3*e^2*m^3 - 12*A*b^2*c*d^2*e^3*m^4 + 900*B*b^2*c*d^3*e^2*m^2 + 60*B*b^2*c*d^3*e^2*m^3 + 5040*B*a*b^2*d*e^4*m + 5040*B*a^2*c*d*e^4*m - 2880*B*b*c^2*d^4*e*m - 4032*A*a*c^2*d^2*e^3*m + 3198*B*a*b^2*d*e^4*m^2 + 753*B*a*b^2*d*e^4*m^3 + 78*B*a*b^2*d*e^4*m^4 + 3*B*a*b^2*d*e^4*m^5 + 3360*A*b*c^2*d^3*e^2*m - 4032*A*b^2*c*d^2*e^3*m + 3360*B*a*c^2*d^3*e^2*m + 3198*B*a^2*c*d*e^4*m^2 + 753*B*a^2*c*d*e^4*m^3 + 78*B*a^2*c*d*e^4*m^4 + 3*B*a^2*c*d*e^4*m^5 + 3360*B*b^2*c*d^3*e^2*m - 360*B*b*c^2*d^4*e*m^2 - 3504*B*a*b*c*d^2*e^3*m^2 - 504*B*a*b*c*d^2*e^3*m^3 - 24*B*a*b*c*d^2*e^3*m^4 + 10080*A*a*b*c*d*e^4*m + 6396*A*a*b*c*d*e^4*m^2 + 1506*A*a*b*c*d*e^4*m^3 + 156*A*a*b*c*d*e^4*m^4 + 6*A*a*b*c*d*e^4*m^5 - 8064*B*a*b*c*d^2*e^3*m))/(e^5*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(336*B*b^3*e^3 + 1008*A*a*c^2*e^3 + 1008*A*b^2*c*e^3 + 146*B*b^3*e^3*m + 42*B*c^3*d^3*m + 21*B*b^3*e^3*m^2 + B*b^3*e^3*m^3 + 63*A*a*c^2*e^3*m^2 + 3*A*a*c^2*e^3*m^3 + 63*A*b^2*c*e^3*m^2 + 3*A*b^2*c*e^3*m^3 - 6*A*c^3*d^2*e*m^2 + 2016*B*a*b*c*e^3 + 438*A*a*c^2*e^3*m + 438*A*b^2*c*e^3*m - 48*A*c^3*d^2*e*m + 126*B*a*b*c*e^3*m^2 + 6*B*a*b*c*e^3*m^3 + 168*A*b*c^2*d*e^2*m +

```
 168*B*a*c^2*d*e^2*m - 144*B*b*c^2*d^2*e*m + 168*B*b^2*c*d*e^2*m + 45*A*b*c
^2*d*e^2*m^2 + 45*B*a*c^2*d*e^2*m^2 + 3*A*b*c^2*d*e^2*m^3 + 3*B*a*c^2*d*e^2
*m^3 - 18*B*b*c^2*d^2*e*m^2 + 45*B*b^2*c*d*e^2*m^2 + 3*B*b^2*c*d*e^2*m^3 +
876*B*a*b*c*e^3*m))/(e^3*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4
536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^2*(m + 1)*(d + e*x)^m*(2016
0*B*a^3*e^6 + 60480*A*a^2*b*e^6 + 24552*B*a^3*e^6*m - 2520*B*c^3*d^6*m + 12
154*B*a^3*e^6*m^2 + 3135*B*a^3*e^6*m^3 + 445*B*a^3*e^6*m^4 + 33*B*a^3*e^6*m
^5 + B*a^3*e^6*m^6 + 36462*A*a^2*b*e^6*m^2 + 9405*A*a^2*b*e^6*m^3 + 1335*A*
a^2*b*e^6*m^4 + 99*A*a^2*b*e^6*m^5 + 3*A*a^2*b*e^6*m^6 - 5040*A*b^3*d^2*e^4
*m + 4032*B*b^3*d^3*e^3*m + 360*A*c^3*d^5*e*m^2 - 3198*A*b^3*d^2*e^4*m^2 -
753*A*b^3*d^2*e^4*m^3 - 78*A*b^3*d^2*e^4*m^4 - 3*A*b^3*d^2*e^4*m^5 + 1752*B
*b^3*d^3*e^3*m^2 + 252*B*b^3*d^3*e^3*m^3 + 12*B*b^3*d^3*e^3*m^4 + 73656*A*a
^2*b*e^6*m + 2880*A*c^3*d^5*e*m + 5256*A*a*c^2*d^3*e^3*m^2 - 9594*B*a*b^2*d
^2*e^4*m^2 + 756*A*a*c^2*d^3*e^3*m^3 - 2259*B*a*b^2*d^2*e^4*m^3 + 36*A*a*c^
2*d^3*e^3*m^4 - 234*B*a*b^2*d^2*e^4*m^4 - 9*B*a*b^2*d^2*e^4*m^5 - 2700*A*b*
c^2*d^4*e^2*m^2 + 5256*A*b^2*c*d^3*e^3*m^2 - 2700*B*a*c^2*d^4*e^2*m^2 - 959
4*B*a^2*c*d^2*e^4*m^2 - 180*A*b*c^2*d^4*e^2*m^3 + 756*A*b^2*c*d^3*e^3*m^3 -
 180*B*a*c^2*d^4*e^2*m^3 - 2259*B*a^2*c*d^2*e^4*m^3 + 36*A*b^2*c*d^3*e^3*m^
4 - 234*B*a^2*c*d^2*e^4*m^4 - 9*B*a^2*c*d^2*e^4*m^5 - 2700*B*b^2*c*d^4*e^2*
m^2 - 180*B*b^2*c*d^4*e^2*m^3 + 20160*A*a*b^2*d*e^5*m + 20160*A*a^2*c*d*e^5
*m + 20160*B*a^2*b*d*e^5*m + 8640*B*b*c^2*d^5*e*m + 17832*A*a*b^2*d*e^5*m^2
 + 6210*A*a*b^2*d*e^5*m^3 + 1065*A*a*b^2*d*e^5*m^4 + 90*A*a*b^2*d*e^5*m^5 +
 3*A*a*b^2*d*e^5*m^6 + 12096*A*a*c^2*d^3*e^3*m - 15120*B*a*b^2*d^2*e^4*m +
17832*A*a^2*c*d*e^5*m^2 + 17832*B*a^2*b*d*e^5*m^2 + 6210*A*a^2*c*d*e^5*m^3
+ 6210*B*a^2*b*d*e^5*m^3 + 1065*A*a^2*c*d*e^5*m^4 + 1065*B*a^2*b*d*e^5*m^4
+ 90*A*a^2*c*d*e^5*m^5 + 90*B*a^2*b*d*e^5*m^5 + 3*A*a^2*c*d*e^5*m^6 + 3*B*a
^2*b*d*e^5*m^6 - 10080*A*b*c^2*d^4*e^2*m + 12096*A*b^2*c*d^3*e^3*m - 10080*
B*a*c^2*d^4*e^2*m - 15120*B*a^2*c*d^2*e^4*m - 10080*B*b^2*c*d^4*e^2*m + 108
0*B*b*c^2*d^5*e*m^2 - 19188*A*a*b*c*d^2*e^4*m^2 - 4518*A*a*b*c*d^2*e^4*m^3
- 468*A*a*b*c*d^2*e^4*m^4 - 18*A*a*b*c*d^2*e^4*m^5 + 10512*B*a*b*c*d^3*e^3*
m^2 + 1512*B*a*b*c*d^3*e^3*m^3 + 72*B*a*b*c*d^3*e^3*m^4 - 30240*A*a*b*c*d^2
*e^4*m + 24192*B*a*b*c*d^3*e^3*m))/(e^6*(109584*m + 118124*m^2 + 67284*m^3
+ 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c*x^6*(d + e*x
)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(168*B*b^2*e^2 + 168*A*
b*c*e^2 + 168*B*a*c*e^2 + 45*B*b^2*e^2*m - 7*B*c^2*d^2*m + 3*B*b^2*e^2*m^2
+ 45*A*b*c*e^2*m + 45*B*a*c*e^2*m + 8*A*c^2*d*e*m + 3*A*b*c*e^2*m^2 + 3*B*a
*c*e^2*m^2 + A*c^2*d*e*m^2 + 24*B*b*c*d*e*m + 3*B*b*c*d*e*m^2))/(e^2*(10958
4*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^
8 + 40320)) + (c^2*x^7*(d + e*x)^m*(8*A*c*e + 24*B*b*e + A*c*e*m + 3*B*b*e*
m + B*c*d*m)*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/
(e*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36
*m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2336 $\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=333

$$-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{e^6(m+4)}-\frac{(d+ex)^{m+3}\left(B\left(-6cde(2bd-ae)+be^2(3\cdots\right.\right.}{}$$

Rubi [A] time = 0.35, antiderivative size = 330, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^{m+3}\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^6(m+3)}-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{e^6(m+4)}-\frac{(Bd-Ae)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)^2}{e^6(m+1)}+\frac{(d+ex)^{m+2}\left(ae^2-bde+cd^2\right)\left(-Be(3bd-ae)-2Ae(2cd-be)+5Bcd^2\right)}{e^6(m+2)}-\frac{c(d+ex)^{m+5}(-Ace-2bBe+5Bcd)}{e^6(m+5)}+\frac{Bc^2(d+ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(1 + m))/(e^6*(1 + m)))
+ ((c*d^2 - b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d -
b*e))*(d + e*x)^(2 + m))/(e^6*(2 + m)) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2
*a*e) - 6*c*d*e*(2*b*d - a*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d -
a*e)))*(d + e*x)^(3 + m))/(e^6*(3 + m)) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c
^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))*(d + e*x)^(4 + m))/(e^6*(4 + m)) -
 (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (B*c^2*(
d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^m}{e^5}+\frac{\left(cd^2-bde+ae^2\right)(5\cdots}{}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^{1+m}}{e^6(1+m)}+\frac{\left(cd^2-bde+ae^2\right)(5B\cdots}{}$$

Mathematica [A] time = 1.45, size = 633, normalized size = 1.90

[illegible]

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*((B*(-5*c*d + 2*b*e) + A*c*e*(6 + m) + B*c*e*(5 + m)*x)*
(a + x*(b + c*x))^2 + (2*(((c*d^2 + e*(-(b*d) + a*e))*(A*c*e*(6 + m)*(12*c^
2*d^2 - b^2*e^2*(1 + m) + 4*c*e*(-3*b*d + a*e*(4 + m))) + B*(-60*c^3*d^3 +
b^3*e^3*(3 + 4*m + m^2) - b*c*e^2*(1 + m)*(b*d*(-6 + m) + 2*a*e*(9 + 2*m))
+ 2*c^2*d*e*(-3*b*d*(-9 + m) + 2*a*e*(-15 + m + m^2)))))/(e^2*(1 + m)) + ((
-(A*c*e*(2*c*d - b*e)*(6 + m)*(6*c^2*d^2 - b^2*e^2*(2 + m) + 2*c*e*(-3*b*d
+ a*e*(7 + 2*m)))) + B*(60*c^4*d^4 + b^4*e^4*(6 + 5*m + m^2) - b^2*c*e^3*(2
```

```
 + m)*(b*d*(-3 + 2*m) + a*e*(21 + 5*m)) + 2*c^3*d^2*e*(3*b*d*(-14 + m) - 2*
a*e*(-30 - 4*m + m^2)) + c^2*e^2*(b^2*d^2*(6 - 13*m + m^2) + 4*a^2*e^2*(15
+ 8*m + m^2) + 2*a*b*d*e*(-18 + 11*m + 4*m^2))))*(d + e*x))/(e^2*(2 + m)) -
 (c*e*(4 + m)*(b*B*d*(-5*c*d + 2*b*e) - 2*a*B*c*d*e*m + a*b*B*e^2*(1 + m) +
 A*c*e*(b*d - 2*a*e)*(6 + m)) - (3*c*d - b*e)*(A*c*e*(2*c*d - b*e)*(6 + m)
+ B*(-10*c^2*d^2 + b^2*e^2*(3 + m) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))) +
 c*e*(3 + m)*(A*c*e*(2*c*d - b*e)*(6 + m) + B*(-10*c^2*d^2 + b^2*e^2*(3 + m
) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m))))*x)*(a + x*(b + c*x))))/(c*e^2*(3 +
 m)*(4 + m))))/(c*e^2*(5 + m)*(6 + m))
```

IntegrateAlgebraic [F] time = 0.16, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^2 dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2, x]
```

fricas [B] time = 0.45, size = 2156, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] (A*a^2*d*e^5*m^5 - 120*B*c^2*d^6 + 720*A*a^2*d*e^5 + 144*(2*B*b*c + A*c^2)*
d^5*e - 180*(B*b^2 + 2*(B*a + A*b)*c)*d^4*e^2 + 240*(2*B*a*b + A*b^2 + 2*A*
a*c)*d^3*e^3 - 360*(B*a^2 + 2*A*a*b)*d^2*e^4 + (B*c^2*e^6*m^5 + 15*B*c^2*e^
6*m^4 + 85*B*c^2*e^6*m^3 + 225*B*c^2*e^6*m^2 + 274*B*c^2*e^6*m + 120*B*c^2*
e^6)*x^6 + (144*(2*B*b*c + A*c^2)*e^6 + (B*c^2*d*e^5 + (2*B*b*c + A*c^2)*e^
6)*m^5 + 2*(5*B*c^2*d*e^5 + 8*(2*B*b*c + A*c^2)*e^6)*m^4 + 5*(7*B*c^2*d*e^5
 + 19*(2*B*b*c + A*c^2)*e^6)*m^3 + 10*(5*B*c^2*d*e^5 + 26*(2*B*b*c + A*c^2)
*e^6)*m^2 + 12*(2*B*c^2*d*e^5 + 27*(2*B*b*c + A*c^2)*e^6)*m)*x^5 + (20*A*a^
2*d*e^5 - (B*a^2 + 2*A*a*b)*d^2*e^4)*m^4 + (180*(B*b^2 + 2*(B*a + A*b)*c)*e
^6 + ((2*B*b*c + A*c^2)*d*e^5 + (B*b^2 + 2*(B*a + A*b)*c)*e^6)*m^5 - (5*B*c
^2*d^2*e^4 - 12*(2*B*b*c + A*c^2)*d*e^5 - 17*(B*b^2 + 2*(B*a + A*b)*c)*e^6)
*m^4 - (30*B*c^2*d^2*e^4 - 47*(2*B*b*c + A*c^2)*d*e^5 - 107*(B*b^2 + 2*(B*a
 + A*b)*c)*e^6)*m^3 - (55*B*c^2*d^2*e^4 - 72*(2*B*b*c + A*c^2)*d*e^5 - 307*
(B*b^2 + 2*(B*a + A*b)*c)*e^6)*m^2 - 6*(5*B*c^2*d^2*e^4 - 6*(2*B*b*c + A*c^
2)*d*e^5 - 66*(B*b^2 + 2*(B*a + A*b)*c)*e^6)*m)*x^4 + (155*A*a^2*d*e^5 + 2*
(2*B*a*b + A*b^2 + 2*A*a*c)*d^3*e^3 - 18*(B*a^2 + 2*A*a*b)*d^2*e^4)*m^3 + (
240*(2*B*a*b + A*b^2 + 2*A*a*c)*e^6 + ((B*b^2 + 2*(B*a + A*b)*c)*d*e^5 + (2
*B*a*b + A*b^2 + 2*A*a*c)*e^6)*m^5 - 2*(2*(2*B*b*c + A*c^2)*d^2*e^4 - 7*(B*
b^2 + 2*(B*a + A*b)*c)*d*e^5 - 9*(2*B*a*b + A*b^2 + 2*A*a*c)*e^6)*m^4 + (20
*B*c^2*d^3*e^3 - 36*(2*B*b*c + A*c^2)*d^2*e^4 + 65*(B*b^2 + 2*(B*a + A*b)*c
)*d*e^5 + 121*(2*B*a*b + A*b^2 + 2*A*a*c)*e^6)*m^3 + 4*(15*B*c^2*d^3*e^3 -
20*(2*B*b*c + A*c^2)*d^2*e^4 + 28*(B*b^2 + 2*(B*a + A*b)*c)*d*e^5 + 93*(2*B
*a*b + A*b^2 + 2*A*a*c)*e^6)*m^2 + 4*(10*B*c^2*d^3*e^3 - 12*(2*B*b*c + A*c^
2)*d^2*e^4 + 15*(B*b^2 + 2*(B*a + A*b)*c)*d*e^5 + 127*(2*B*a*b + A*b^2 + 2*
A*a*c)*e^6)*m)*x^3 + (580*A*a^2*d*e^5 - 6*(B*b^2 + 2*(B*a + A*b)*c)*d^4*e^2
 + 30*(2*B*a*b + A*b^2 + 2*A*a*c)*d^3*e^3 - 119*(B*a^2 + 2*A*a*b)*d^2*e^4)*
m^2 + (360*(B*a^2 + 2*A*a*b)*e^6 + ((2*B*a*b + A*b^2 + 2*A*a*c)*d*e^5 + (B*
a^2 + 2*A*a*b)*e^6)*m^5 - (3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^4 - 16*(2*B*a*
b + A*b^2 + 2*A*a*c)*d*e^5 - 19*(B*a^2 + 2*A*a*b)*e^6)*m^4 + (12*(2*B*b*c +
 A*c^2)*d^3*e^3 - 36*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^4 + 89*(2*B*a*b + A*b^
2 + 2*A*a*c)*d*e^5 + 137*(B*a^2 + 2*A*a*b)*e^6)*m^3 - (60*B*c^2*d^4*e^2 - 8
4*(2*B*b*c + A*c^2)*d^3*e^3 + 123*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^4 - 194*(
2*B*a*b + A*b^2 + 2*A*a*c)*d*e^5 - 461*(B*a^2 + 2*A*a*b)*e^6)*m^2 - 6*(10*B
*c^2*d^4*e^2 - 12*(2*B*b*c + A*c^2)*d^3*e^3 + 15*(B*b^2 + 2*(B*a + A*b)*c)*
```

```
d^2*e^4 - 20*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^5 - 117*(B*a^2 + 2*A*a*b)*e^6)
*m)*x^2 + 2*(522*A*a^2*d*e^5 + 12*(2*B*b*c + A*c^2)*d^5*e - 33*(B*b^2 + 2*(
B*a + A*b)*c)*d^4*e^2 + 74*(2*B*a*b + A*b^2 + 2*A*a*c)*d^3*e^3 - 171*(B*a^2
 + 2*A*a*b)*d^2*e^4)*m + (720*A*a^2*e^6 + (A*a^2*e^6 + (B*a^2 + 2*A*a*b)*d*
e^5)*m^5 + 2*(10*A*a^2*e^6 - (2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^4 + 9*(B*a^2
 + 2*A*a*b)*d*e^5)*m^4 + (155*A*a^2*e^6 + 6*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e
^3 - 30*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^4 + 119*(B*a^2 + 2*A*a*b)*d*e^5)*
m^3 + 2*(290*A*a^2*e^6 - 12*(2*B*b*c + A*c^2)*d^4*e^2 + 33*(B*b^2 + 2*(B*a
+ A*b)*c)*d^3*e^3 - 74*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^4 + 171*(B*a^2 + 2
*A*a*b)*d*e^5)*m^2 + 12*(10*B*c^2*d^5*e + 87*A*a^2*e^6 - 12*(2*B*b*c + A*c^
2)*d^4*e^2 + 15*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^3 - 20*(2*B*a*b + A*b^2 + 2
*A*a*c)*d^2*e^4 + 30*(B*a^2 + 2*A*a*b)*d*e^5)*m)*x)*(e*x + d)^m/(e^6*m^6 +
21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m + 720*e^
6)
```

giac [B] time = 0.34, size = 4940, normalized size = 14.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^2*m^5*x^6*e^6 + (x*e + d)^m*B*c^2*d*m^5*x^5*e^5 + 2*(x*e +
 d)^m*B*b*c*m^5*x^5*e^6 + (x*e + d)^m*A*c^2*m^5*x^5*e^6 + 15*(x*e + d)^m*B*
c^2*m^4*x^6*e^6 + 2*(x*e + d)^m*B*b*c*d*m^5*x^4*e^5 + (x*e + d)^m*A*c^2*d*m
^5*x^4*e^5 + 10*(x*e + d)^m*B*c^2*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*c^2*d^2*m
^4*x^4*e^4 + (x*e + d)^m*B*b^2*m^5*x^4*e^6 + 2*(x*e + d)^m*B*a*c*m^5*x^4*e^
6 + 2*(x*e + d)^m*A*b*c*m^5*x^4*e^6 + 32*(x*e + d)^m*B*b*c*m^4*x^5*e^6 + 16
*(x*e + d)^m*A*c^2*m^4*x^5*e^6 + 85*(x*e + d)^m*B*c^2*m^3*x^6*e^6 + (x*e +
d)^m*B*b^2*d*m^5*x^3*e^5 + 2*(x*e + d)^m*B*a*c*d*m^5*x^3*e^5 + 2*(x*e + d)^
m*A*b*c*d*m^5*x^3*e^5 + 24*(x*e + d)^m*B*b*c*d*m^4*x^4*e^5 + 12*(x*e + d)^m
*A*c^2*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*c^2*d*m^3*x^5*e^5 - 8*(x*e + d)^m*B
*b*c*d^2*m^4*x^3*e^4 - 4*(x*e + d)^m*A*c^2*d^2*m^4*x^3*e^4 - 30*(x*e + d)^m
*B*c^2*d^2*m^3*x^4*e^4 + 20*(x*e + d)^m*B*c^2*d^3*m^3*x^3*e^3 + 2*(x*e + d)
^m*B*a*b*m^5*x^3*e^6 + (x*e + d)^m*A*b^2*m^5*x^3*e^6 + 2*(x*e + d)^m*A*a*c*
m^5*x^3*e^6 + 17*(x*e + d)^m*B*b^2*m^4*x^4*e^6 + 34*(x*e + d)^m*B*a*c*m^4*x
^4*e^6 + 34*(x*e + d)^m*A*b*c*m^4*x^4*e^6 + 190*(x*e + d)^m*B*b*c*m^3*x^5*e
^6 + 95*(x*e + d)^m*A*c^2*m^3*x^5*e^6 + 225*(x*e + d)^m*B*c^2*m^2*x^6*e^6 +
 2*(x*e + d)^m*B*a*b*d*m^5*x^2*e^5 + (x*e + d)^m*A*b^2*d*m^5*x^2*e^5 + 2*(x
*e + d)^m*A*a*c*d*m^5*x^2*e^5 + 14*(x*e + d)^m*B*b^2*d*m^4*x^3*e^5 + 28*(x*
e + d)^m*B*a*c*d*m^4*x^3*e^5 + 28*(x*e + d)^m*A*b*c*d*m^4*x^3*e^5 + 94*(x*e
 + d)^m*B*b*c*d*m^3*x^4*e^5 + 47*(x*e + d)^m*A*c^2*d*m^3*x^4*e^5 + 50*(x*e
+ d)^m*B*c^2*d*m^2*x^5*e^5 - 3*(x*e + d)^m*B*b^2*d^2*m^4*x^2*e^4 - 6*(x*e +
 d)^m*B*a*c*d^2*m^4*x^2*e^4 - 6*(x*e + d)^m*A*b*c*d^2*m^4*x^2*e^4 - 72*(x*e
 + d)^m*B*b*c*d^2*m^3*x^3*e^4 - 36*(x*e + d)^m*A*c^2*d^2*m^3*x^3*e^4 - 55*(
x*e + d)^m*B*c^2*d^2*m^2*x^4*e^4 + 24*(x*e + d)^m*B*b*c*d^3*m^3*x^2*e^3 + 1
2*(x*e + d)^m*A*c^2*d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*B*c^2*d^3*m^2*x^3*e^3
- 60*(x*e + d)^m*B*c^2*d^4*m^2*x^2*e^2 + (x*e + d)^m*B*a^2*m^5*x^2*e^6 + 2*
(x*e + d)^m*A*a*b*m^5*x^2*e^6 + 36*(x*e + d)^m*B*a*b*m^4*x^3*e^6 + 18*(x*e
+ d)^m*A*b^2*m^4*x^3*e^6 + 36*(x*e + d)^m*A*a*c*m^4*x^3*e^6 + 107*(x*e + d)
^m*B*b^2*m^3*x^4*e^6 + 214*(x*e + d)^m*B*a*c*m^3*x^4*e^6 + 214*(x*e + d)^m*
A*b*c*m^3*x^4*e^6 + 520*(x*e + d)^m*B*b*c*m^2*x^5*e^6 + 260*(x*e + d)^m*A*c
^2*m^2*x^5*e^6 + 274*(x*e + d)^m*B*c^2*m*x^6*e^6 + (x*e + d)^m*B*a^2*d*m^5*
x*e^5 + 2*(x*e + d)^m*A*a*b*d*m^5*x*e^5 + 32*(x*e + d)^m*B*a*b*d*m^4*x^2*e^
5 + 16*(x*e + d)^m*A*b^2*d*m^4*x^2*e^5 + 32*(x*e + d)^m*A*a*c*d*m^4*x^2*e^5
 + 65*(x*e + d)^m*B*b^2*d*m^3*x^3*e^5 + 130*(x*e + d)^m*B*a*c*d*m^3*x^3*e^5
 + 130*(x*e + d)^m*A*b*c*d*m^3*x^3*e^5 + 144*(x*e + d)^m*B*b*c*d*m^2*x^4*e^
5 + 72*(x*e + d)^m*A*c^2*d*m^2*x^4*e^5 + 24*(x*e + d)^m*B*c^2*d*m*x^5*e^5 -
 4*(x*e + d)^m*B*a*b*d^2*m^4*x*e^4 - 2*(x*e + d)^m*A*b^2*d^2*m^4*x*e^4 - 4*
(x*e + d)^m*A*a*c*d^2*m^4*x*e^4 - 36*(x*e + d)^m*B*b^2*d^2*m^3*x^2*e^4 - 72
```

*(x*e + d)^m*B*a*c*d^2*m^3*x^2*e^4 - 72*(x*e + d)^m*A*b*c*d^2*m^3*x^2*e^4 - 160*(x*e + d)^m*B*b*c*d^2*m^2*x^3*e^4 - 80*(x*e + d)^m*A*c^2*d^2*m^2*x^3*e ^4 - 30*(x*e + d)^m*B*c^2*d^2*m*x^4*e^4 + 6*(x*e + d)^m*B*b^2*d^3*m^3*x*e^3 + 12*(x*e + d)^m*B*a*c*d^3*m^3*x*e^3 + 12*(x*e + d)^m*A*b*c*d^3*m^3*x*e^3 + 168*(x*e + d)^m*B*b*c*d^3*m^2*x^2*e^3 + 84*(x*e + d)^m*A*c^2*d^3*m^2*x^2* e^3 + 40*(x*e + d)^m*B*c^2*d^3*m*x^3*e^3 - 48*(x*e + d)^m*B*b*c*d^4*m^2*x*e ^2 - 24*(x*e + d)^m*A*c^2*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*c^2*d^4*m*x^2*e^ 2 + 120*(x*e + d)^m*B*c^2*d^5*m*x*e + (x*e + d)^m*A*a^2*m^5*x*e^6 + 19*(x*e + d)^m*B*a^2*m^4*x^2*e^6 + 38*(x*e + d)^m*A*a*b*m^4*x^2*e^6 + 242*(x*e + d)^m*B*a*b*m^3*x^3*e^6 + 121*(x*e + d)^m*A*b^2*m^3*x^3*e^6 + 242*(x*e + d)^m *A*a*c*m^3*x^3*e^6 + 307*(x*e + d)^m*B*b^2*m^2*x^4*e^6 + 614*(x*e + d)^m*B* a*c*m^2*x^4*e^6 + 614*(x*e + d)^m*A*b*c*m^2*x^4*e^6 + 648*(x*e + d)^m*B*b*c *m*x^5*e^6 + 324*(x*e + d)^m*A*c^2*m*x^5*e^6 + 120*(x*e + d)^m*B*c^2*x^6*e^ 6 + (x*e + d)^m*A*a^2*d*m^5*e^5 + 18*(x*e + d)^m*B*a^2*d*m^4*x*e^5 + 36*(x* e + d)^m*A*a*b*d*m^4*x*e^5 + 178*(x*e + d)^m*B*a*b*d*m^3*x^2*e^5 + 89*(x*e + d)^m*A*b^2*d*m^3*x^2*e^5 + 178*(x*e + d)^m*A*a*c*d*m^3*x^2*e^5 + 112*(x*e + d)^m*B*b^2*d*m^2*x^3*e^5 + 224*(x*e + d)^m*B*a*c*d*m^2*x^3*e^5 + 224*(x* e + d)^m*A*b*c*d*m^2*x^3*e^5 + 72*(x*e + d)^m*B*b*c*d*m*x^4*e^5 + 36*(x*e + d)^m*A*c^2*d*m*x^4*e^5 - (x*e + d)^m*B*a^2*d^2*m^4*e^4 - 2*(x*e + d)^m*A*a *b*d^2*m^4*e^4 - 60*(x*e + d)^m*B*a*b*d^2*m^3*x*e^4 - 30*(x*e + d)^m*A*b^2* d^2*m^3*x*e^4 - 60*(x*e + d)^m*A*a*c*d^2*m^3*x*e^4 - 123*(x*e + d)^m*B*b^2* d^2*m^2*x^2*e^4 - 246*(x*e + d)^m*B*a*c*d^2*m^2*x^2*e^4 - 246*(x*e + d)^m*A *b*c*d^2*m^2*x^2*e^4 - 96*(x*e + d)^m*B*b*c*d^2*m*x^3*e^4 - 48*(x*e + d)^m* A*c^2*d^2*m*x^3*e^4 + 4*(x*e + d)^m*B*a*b*d^3*m^3*e^3 + 2*(x*e + d)^m*A*b^2 *d^3*m^3*e^3 + 4*(x*e + d)^m*A*a*c*d^3*m^3*e^3 + 66*(x*e + d)^m*B*b^2*d^3*m ^2*x*e^3 + 132*(x*e + d)^m*B*a*c*d^3*m^2*x*e^3 + 132*(x*e + d)^m*A*b*c*d^3* m^2*x*e^3 + 144*(x*e + d)^m*B*b*c*d^3*m*x^2*e^3 + 72*(x*e + d)^m*A*c^2*d^3* m*x^2*e^3 - 6*(x*e + d)^m*B*b^2*d^4*m^2*e^2 - 12*(x*e + d)^m*B*a*c*d^4*m^2* e^2 - 12*(x*e + d)^m*A*b*c*d^4*m^2*e^2 - 288*(x*e + d)^m*B*b*c*d^4*m*x*e^2 - 144*(x*e + d)^m*A*c^2*d^4*m*x*e^2 + 48*(x*e + d)^m*B*b*c*d^5*m*e + 24*(x* e + d)^m*A*c^2*d^5*m*e - 120*(x*e + d)^m*B*c^2*d^6 + 20*(x*e + d)^m*A*a^2*m ^4*x*e^6 + 137*(x*e + d)^m*B*a^2*m^3*x^2*e^6 + 274*(x*e + d)^m*A*a*b*m^3*x^ 2*e^6 + 744*(x*e + d)^m*B*a*b*m^2*x^3*e^6 + 372*(x*e + d)^m*A*b^2*m^2*x^3*e ^6 + 744*(x*e + d)^m*A*a*c*m^2*x^3*e^6 + 396*(x*e + d)^m*B*b^2*m*x^4*e^6 + 792*(x*e + d)^m*B*a*c*m*x^4*e^6 + 792*(x*e + d)^m*A*b*c*m*x^4*e^6 + 288*(x* e + d)^m*B*b*c*x^5*e^6 + 144*(x*e + d)^m*A*c^2*x^5*e^6 + 20*(x*e + d)^m*A*a ^2*d*m^4*e^5 + 119*(x*e + d)^m*B*a^2*d*m^3*x*e^5 + 238*(x*e + d)^m*A*a*b*d* m^3*x*e^5 + 388*(x*e + d)^m*B*a*b*d*m^2*x^2*e^5 + 194*(x*e + d)^m*A*b^2*d*m ^2*x^2*e^5 + 388*(x*e + d)^m*A*a*c*d*m^2*x^2*e^5 + 60*(x*e + d)^m*B*b^2*d*m *x^3*e^5 + 120*(x*e + d)^m*B*a*c*d*m*x^3*e^5 + 120*(x*e + d)^m*A*b*c*d*m*x^ 3*e^5 - 18*(x*e + d)^m*B*a^2*d^2*m^3*e^4 - 36*(x*e + d)^m*A*a*b*d^2*m^3*e^4 - 296*(x*e + d)^m*B*a*b*d^2*m^2*x*e^4 - 148*(x*e + d)^m*A*b^2*d^2*m^2*x*e^ 4 - 296*(x*e + d)^m*A*a*c*d^2*m^2*x*e^4 - 90*(x*e + d)^m*B*b^2*d^2*m*x^2*e^ 4 - 180*(x*e + d)^m*B*a*c*d^2*m*x^2*e^4 - 180*(x*e + d)^m*A*b*c*d^2*m*x^2*e ^4 + 60*(x*e + d)^m*B*a*b*d^3*m^2*e^3 + 30*(x*e + d)^m*A*b^2*d^3*m^2*e^3 + 60*(x*e + d)^m*A*a*c*d^3*m^2*e^3 + 180*(x*e + d)^m*B*b^2*d^3*m*x*e^3 + 360* (x*e + d)^m*B*a*c*d^3*m*x*e^3 + 360*(x*e + d)^m*A*b*c*d^3*m*x*e^3 - 66*(x*e + d)^m*B*b^2*d^4*m*e^2 - 132*(x*e + d)^m*B*a*c*d^4*m*e^2 - 132*(x*e + d)^m *A*b*c*d^4*m*e^2 + 288*(x*e + d)^m*B*b*c*d^5*e + 144*(x*e + d)^m*A*c^2*d^5* e + 155*(x*e + d)^m*A*a^2*m^3*x*e^6 + 461*(x*e + d)^m*B*a^2*m^2*x^2*e^6 + 9 22*(x*e + d)^m*A*a*b*m^2*x^2*e^6 + 1016*(x*e + d)^m*B*a*b*m*x^3*e^6 + 508*(x*e + d)^m*A*b^2*m*x^3*e^6 + 1016*(x*e + d)^m*A*a*c*m*x^3*e^6 + 180*(x*e + d)^m*B*b^2*x^4*e^6 + 360*(x*e + d)^m*B*a*c*x^4*e^6 + 360*(x*e + d)^m*A*b*c* x^4*e^6 + 155*(x*e + d)^m*A*a^2*d*m^3*e^5 + 342*(x*e + d)^m*B*a^2*d*m^2*x*e ^5 + 684*(x*e + d)^m*A*a*b*d*m^2*x*e^5 + 240*(x*e + d)^m*B*a*b*d*m*x^2*e^5 + 120*(x*e + d)^m*A*b^2*d*m*x^2*e^5 + 240*(x*e + d)^m*A*a*c*d*m*x^2*e^5 - 1 19*(x*e + d)^m*B*a^2*d^2*m^2*e^4 - 238*(x*e + d)^m*A*a*b*d^2*m^2*e^4 - 480* (x*e + d)^m*B*a*b*d^2*m*x*e^4 - 240*(x*e + d)^m*A*b^2*d^2*m*x*e^4 - 480*(x* e + d)^m*A*a*c*d^2*m*x*e^4 + 296*(x*e + d)^m*B*a*b*d^3*m*e^3 + 148*(x*e + d

```
)^m*A*b^2*d^3*m*e^3 + 296*(x*e + d)^m*A*a*c*d^3*m*e^3 - 180*(x*e + d)^m*B*b
^2*d^4*e^2 - 360*(x*e + d)^m*B*a*c*d^4*e^2 - 360*(x*e + d)^m*A*b*c*d^4*e^2
+ 580*(x*e + d)^m*A*a^2*m^2*x*e^6 + 702*(x*e + d)^m*B*a^2*m*x^2*e^6 + 1404*
(x*e + d)^m*A*a*b*m*x^2*e^6 + 480*(x*e + d)^m*B*a*b*x^3*e^6 + 240*(x*e + d)
^m*A*b^2*x^3*e^6 + 480*(x*e + d)^m*A*a*c*x^3*e^6 + 580*(x*e + d)^m*A*a^2*d*
m^2*e^5 + 360*(x*e + d)^m*B*a^2*d*m*x*e^5 + 720*(x*e + d)^m*A*a*b*d*m*x*e^5
 - 342*(x*e + d)^m*B*a^2*d^2*m*e^4 - 684*(x*e + d)^m*A*a*b*d^2*m*e^4 + 480*
(x*e + d)^m*B*a*b*d^3*e^3 + 240*(x*e + d)^m*A*b^2*d^3*e^3 + 480*(x*e + d)^m
*A*a*c*d^3*e^3 + 1044*(x*e + d)^m*A*a^2*m*x*e^6 + 360*(x*e + d)^m*B*a^2*x^2
*e^6 + 720*(x*e + d)^m*A*a*b*x^2*e^6 + 1044*(x*e + d)^m*A*a^2*d*m*e^5 - 360
*(x*e + d)^m*B*a^2*d^2*e^4 - 720*(x*e + d)^m*A*a*b*d^2*e^4 + 720*(x*e + d)^
m*A*a^2*x*e^6 + 720*(x*e + d)^m*A*a^2*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^
4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.02, size = 2557, normalized size = 7.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x)
```

```
[Out] (e*x+d)^(1+m)*(B*c^2*e^5*m^5*x^5+A*c^2*e^5*m^5*x^4+2*B*b*c*e^5*m^5*x^4+15*B
*c^2*e^5*m^4*x^5+2*A*b*c*e^5*m^5*x^3+16*A*c^2*e^5*m^4*x^4+2*B*a*c*e^5*m^5*x
^3+B*b^2*e^5*m^5*x^3+32*B*b*c*e^5*m^4*x^4-5*B*c^2*d*e^4*m^4*x^4+85*B*c^2*e^
5*m^3*x^5+2*A*a*c*e^5*m^5*x^2+A*b^2*e^5*m^5*x^2+34*A*b*c*e^5*m^4*x^3-4*A*c^
2*d*e^4*m^4*x^3+95*A*c^2*e^5*m^3*x^4+2*B*a*b*e^5*m^5*x^2+34*B*a*c*e^5*m^4*x
^3+17*B*b^2*e^5*m^4*x^3-8*B*b*c*d*e^4*m^4*x^3+190*B*b*c*e^5*m^3*x^4-50*B*c^
2*d*e^4*m^3*x^4+225*B*c^2*e^5*m^2*x^5+2*A*a*b*e^5*m^5*x+36*A*a*c*e^5*m^4*x^
2+18*A*b^2*e^5*m^4*x^2-6*A*b*c*d*e^4*m^4*x^2+214*A*b*c*e^5*m^3*x^3-48*A*c^2
*d*e^4*m^3*x^3+260*A*c^2*e^5*m^2*x^4+B*a^2*e^5*m^5*x+36*B*a*b*e^5*m^4*x^2-6
*B*a*c*d*e^4*m^4*x^2+214*B*a*c*e^5*m^3*x^3-3*B*b^2*d*e^4*m^4*x^2+107*B*b^2*
e^5*m^3*x^3-96*B*b*c*d*e^4*m^3*x^3+520*B*b*c*e^5*m^2*x^4+20*B*c^2*d^2*e^3*m
^3*x^3-175*B*c^2*d*e^4*m^2*x^4+274*B*c^2*e^5*m*x^5+A*a^2*e^5*m^5+38*A*a*b*e
^5*m^4*x-4*A*a*c*d*e^4*m^4*x+242*A*a*c*e^5*m^3*x^2-2*A*b^2*d*e^4*m^4*x+121*
A*b^2*e^5*m^3*x^2-84*A*b*c*d*e^4*m^3*x^2+614*A*b*c*e^5*m^2*x^3+12*A*c^2*d^2
*e^3*m^3*x^2-188*A*c^2*d*e^4*m^2*x^3+324*A*c^2*e^5*m*x^4+19*B*a^2*e^5*m^4*x
-4*B*a*b*d*e^4*m^4*x+242*B*a*b*e^5*m^3*x^2-84*B*a*c*d*e^4*m^3*x^2+614*B*a*c
*e^5*m^2*x^3-42*B*b^2*d*e^4*m^3*x^2+307*B*b^2*e^5*m^2*x^3+24*B*b*c*d^2*e^3*
m^3*x^2-376*B*b*c*d*e^4*m^2*x^3+648*B*b*c*e^5*m*x^4+120*B*c^2*d^2*e^3*m^2*x
^3-250*B*c^2*d*e^4*m*x^4+120*B*c^2*e^5*x^5+20*A*a^2*e^5*m^4-2*A*a*b*d*e^4*m
^4+274*A*a*b*e^5*m^3*x-64*A*a*c*d*e^4*m^3*x+744*A*a*c*e^5*m^2*x^2-32*A*b^2*
d*e^4*m^3*x+372*A*b^2*e^5*m^2*x^2+12*A*b*c*d^2*e^3*m^3*x-390*A*b*c*d*e^4*m^
2*x^2+792*A*b*c*e^5*m*x^3+108*A*c^2*d^2*e^3*m^2*x^2-288*A*c^2*d*e^4*m*x^3+1
44*A*c^2*e^5*x^4-B*a^2*d*e^4*m^4+137*B*a^2*e^5*m^3*x-64*B*a*b*d*e^4*m^3*x+7
44*B*a*b*e^5*m^2*x^2+12*B*a*c*d^2*e^3*m^3*x-390*B*a*c*d*e^4*m^2*x^2+792*B*a
*c*e^5*m*x^3+6*B*b^2*d^2*e^3*m^3*x-195*B*b^2*d*e^4*m^2*x^2+396*B*b^2*e^5*m*
x^3+216*B*b*c*d^2*e^3*m^2*x^2-576*B*b*c*d*e^4*m*x^3+288*B*b*c*e^5*x^4-60*B*
c^2*d^3*e^2*m^2*x^2+220*B*c^2*d^2*e^3*m*x^3-120*B*c^2*d*e^4*x^4+155*A*a^2*e
^5*m^3-36*A*a*b*d*e^4*m^3+922*A*a*b*e^5*m^2*x+4*A*a*c*d^2*e^3*m^3-356*A*a*c
*d*e^4*m^2*x+1016*A*a*c*e^5*m*x^2+2*A*b^2*d^2*e^3*m^3-178*A*b^2*d*e^4*m^2*x
+508*A*b^2*e^5*m*x^2+144*A*b*c*d^2*e^3*m^2*x-672*A*b*c*d*e^4*m*x^2+360*A*b*
c*e^5*x^3-24*A*c^2*d^3*e^2*m^2*x+240*A*c^2*d^2*e^3*m*x^2-144*A*c^2*d*e^4*x^
3-18*B*a^2*d*e^4*m^3+461*B*a^2*e^5*m^2*x+4*B*a*b*d^2*e^3*m^3-356*B*a*b*d*e^
4*m^2*x+1016*B*a*b*e^5*m*x^2+144*B*a*c*d^2*e^3*m^2*x-672*B*a*c*d*e^4*m*x^2+
360*B*a*c*e^5*x^3+72*B*b^2*d^2*e^3*m^2*x-336*B*b^2*d*e^4*m*x^2+180*B*b^2*e^
5*x^3-48*B*b*c*d^3*e^2*m^2*x+480*B*b*c*d^2*e^3*m*x^2-288*B*b*c*d*e^4*x^3-18
0*B*c^2*d^3*e^2*m*x^2+120*B*c^2*d^2*e^3*x^3+580*A*a^2*e^5*m^2-238*A*a*b*d*e
^4*m^2+1404*A*a*b*e^5*m*x+60*A*a*c*d^2*e^3*m^2-776*A*a*c*d*e^4*m*x+480*A*a*
c*e^5*x^2+30*A*b^2*d^2*e^3*m^2-388*A*b^2*d*e^4*m*x+240*A*b^2*e^5*x^2-12*A*b
*c*d^3*e^2*m^2+492*A*b*c*d^2*e^3*m*x-360*A*b*c*d*e^4*x^2-168*A*c^2*d^3*e^2*
```

```
m*x+144*A*c^2*d^2*e^3*x^2-119*B*a^2*d*e^4*m^2+702*B*a^2*e^5*m*x+60*B*a*b*d^
2*e^3*m^2-776*B*a*b*d*e^4*m*x+480*B*a*b*e^5*x^2-12*B*a*c*d^3*e^2*m^2+492*B*
a*c*d^2*e^3*m*x-360*B*a*c*d*e^4*x^2-6*B*b^2*d^3*e^2*m^2+246*B*b^2*d^2*e^3*m
*x-180*B*b^2*d*e^4*x^2-336*B*b*c*d^3*e^2*m*x+288*B*b*c*d^2*e^3*x^2+120*B*c^
2*d^4*e*m*x-120*B*c^2*d^3*e^2*x^2+1044*A*a^2*e^5*m-684*A*a*b*d*e^4*m+720*A*
a*b*e^5*x+296*A*a*c*d^2*e^3*m-480*A*a*c*d*e^4*x+148*A*b^2*d^2*e^3*m-240*A*b
^2*d*e^4*x-132*A*b*c*d^3*e^2*m+360*A*b*c*d^2*e^3*x+24*A*c^2*d^4*e*m-144*A*c
^2*d^3*e^2*x-342*B*a^2*d*e^4*m+360*B*a^2*e^5*x+296*B*a*b*d^2*e^3*m-480*B*a*
b*d*e^4*x-132*B*a*c*d^3*e^2*m+360*B*a*c*d^2*e^3*x-66*B*b^2*d^3*e^2*m+180*B*
b^2*d^2*e^3*x+48*B*b*c*d^4*e*m-288*B*b*c*d^3*e^2*x+120*B*c^2*d^4*e*x+720*A*
a^2*e^5-720*A*a*b*d*e^4+480*A*a*c*d^2*e^3+240*A*b^2*d^2*e^3-360*A*b*c*d^3*e
^2+144*A*c^2*d^4*e-360*B*a^2*d*e^4+480*B*a*b*d^2*e^3-360*B*a*c*d^3*e^2-180*
B*b^2*d^3*e^2+288*B*b*c*d^4*e-120*B*c^2*d^5)/e^6/(m^6+21*m^5+175*m^4+735*m^
3+1624*m^2+1764*m+720)
```

maxima [B] time = 0.66, size = 1118, normalized size = 3.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^2/((m^2 + 3*m + 2)*e^2) +
 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a*b/((m^2 + 3*m + 2)*e^2
) + (e*x + d)^(m + 1)*A*a^2/(e*(m + 1)) + 2*((m^2 + 3*m + 2)*e^3*x^3 + (m^2
 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a*b/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x
 + 2*d^3)*(e*x + d)^m*A*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 2*((m^2 + 3*m
+ 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*a*c
/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3
+ 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(
e*x + d)^m*B*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 2*((m^3 + 6*m^
2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2
*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a*c/((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^4) + 2*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*
e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b*c/
((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 2*((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 +
 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x
+ d)^m*B*b*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^4
+ 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4
*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^
4*e*m*x + 24*d^5)*(e*x + d)^m*A*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274
*m + 120)*e^5) + ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 +
 (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^
2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^
4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*c^2/((m^6 + 21*m^5 + 175
*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 3.80, size = 2307, normalized size = 6.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^m*(720*A*a^2*d*e^5 - 120*B*c^2*d^6 + 144*A*c^2*d^5*e + 240*A*b^2
*d^3*e^3 - 360*B*a^2*d^2*e^4 - 180*B*b^2*d^4*e^2 + 580*A*a^2*d*e^5*m^2 + 15
5*A*a^2*d*e^5*m^3 + 20*A*a^2*d*e^5*m^4 + A*a^2*d*e^5*m^5 + 148*A*b^2*d^3*e^
3*m - 342*B*a^2*d^2*e^4*m - 66*B*b^2*d^4*e^2*m + 288*B*b*c*d^5*e + 30*A*b^2
*d^3*e^3*m^2 - 119*B*a^2*d^2*e^4*m^2 + 2*A*b^2*d^3*e^3*m^3 - 18*B*a^2*d^2*e
```

```
^4*m^3 - B*a^2*d^2*e^4*m^4 - 6*B*b^2*d^4*e^2*m^2 - 720*A*a*b*d^2*e^4 + 480*
A*a*c*d^3*e^3 + 480*B*a*b*d^3*e^3 - 360*A*b*c*d^4*e^2 - 360*B*a*c*d^4*e^2 +
 1044*A*a^2*d*e^5*m + 24*A*c^2*d^5*e*m - 684*A*a*b*d^2*e^4*m + 296*A*a*c*d^
3*e^3*m + 296*B*a*b*d^3*e^3*m - 132*A*b*c*d^4*e^2*m - 132*B*a*c*d^4*e^2*m -
 238*A*a*b*d^2*e^4*m^2 - 36*A*a*b*d^2*e^4*m^3 - 2*A*a*b*d^2*e^4*m^4 + 60*A*
a*c*d^3*e^3*m^2 + 60*B*a*b*d^3*e^3*m^2 + 4*A*a*c*d^3*e^3*m^3 + 4*B*a*b*d^3*
e^3*m^3 - 12*A*b*c*d^4*e^2*m^2 - 12*B*a*c*d^4*e^2*m^2 + 48*B*b*c*d^5*e*m))/
(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x*(d
+ e*x)^m*(720*A*a^2*e^6 + 1044*A*a^2*e^6*m + 580*A*a^2*e^6*m^2 + 155*A*a^2*
e^6*m^3 + 20*A*a^2*e^6*m^4 + A*a^2*e^6*m^5 - 240*A*b^2*d^2*e^4*m + 342*B*a^
2*d*e^5*m^2 + 119*B*a^2*d*e^5*m^3 + 18*B*a^2*d*e^5*m^4 + B*a^2*d*e^5*m^5 -
144*A*c^2*d^4*e^2*m + 180*B*b^2*d^3*e^3*m - 148*A*b^2*d^2*e^4*m^2 - 30*A*b^
2*d^2*e^4*m^3 - 2*A*b^2*d^2*e^4*m^4 - 24*A*c^2*d^4*e^2*m^2 + 66*B*b^2*d^3*e
^3*m^2 + 6*B*b^2*d^3*e^3*m^3 + 360*B*a^2*d*e^5*m + 120*B*c^2*d^5*e*m + 684*
A*a*b*d*e^5*m^2 + 238*A*a*b*d*e^5*m^3 + 36*A*a*b*d*e^5*m^4 + 2*A*a*b*d*e^5*
m^5 - 480*A*a*c*d^2*e^4*m - 480*B*a*b*d^2*e^4*m + 360*A*b*c*d^3*e^3*m + 360
*B*a*c*d^3*e^3*m - 288*B*b*c*d^4*e^2*m - 296*A*a*c*d^2*e^4*m^2 - 296*B*a*b*
d^2*e^4*m^2 - 60*A*a*c*d^2*e^4*m^3 - 60*B*a*b*d^2*e^4*m^3 - 4*A*a*c*d^2*e^4
*m^4 - 4*B*a*b*d^2*e^4*m^4 + 132*A*b*c*d^3*e^3*m^2 + 132*B*a*c*d^3*e^3*m^2
+ 12*A*b*c*d^3*e^3*m^3 + 12*B*a*c*d^3*e^3*m^3 - 48*B*b*c*d^4*e^2*m^2 + 720*
A*a*b*d*e^5*m))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6
+ 720)) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(30*B*b^2*e^2 + 60*A*b*
c*e^2 + 60*B*a*c*e^2 + 11*B*b^2*e^2*m - 5*B*c^2*d^2*m + B*b^2*e^2*m^2 + 22*
A*b*c*e^2*m + 22*B*a*c*e^2*m + 6*A*c^2*d*e*m + 2*A*b*c*e^2*m^2 + 2*B*a*c*e^
2*m^2 + A*c^2*d*e*m^2 + 12*B*b*c*d*e*m + 2*B*b*c*d*e*m^2))/(e^2*(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^3*(d + e*x)^m*(3*m
+ m^2 + 2)*(120*A*b^2*e^3 + 240*A*a*c*e^3 + 240*B*a*b*e^3 + 74*A*b^2*e^3*m
+ 20*B*c^2*d^3*m + 15*A*b^2*e^3*m^2 + A*b^2*e^3*m^3 - 4*A*c^2*d^2*e*m^2 + 1
1*B*b^2*d*e^2*m^2 + B*b^2*d*e^2*m^3 + 148*A*a*c*e^3*m + 148*B*a*b*e^3*m + 3
0*A*a*c*e^3*m^2 + 30*B*a*b*e^3*m^2 + 2*A*a*c*e^3*m^3 + 2*B*a*b*e^3*m^3 - 24
*A*c^2*d^2*e*m + 30*B*b^2*d*e^2*m + 22*A*b*c*d*e^2*m^2 + 22*B*a*c*d*e^2*m^2
 + 2*A*b*c*d*e^2*m^3 + 2*B*a*c*d*e^2*m^3 - 8*B*b*c*d^2*e*m^2 + 60*A*b*c*d*e
^2*m + 60*B*a*c*d*e^2*m - 48*B*b*c*d^2*e*m))/(e^3*(1764*m + 1624*m^2 + 735*
m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (B*c^2*x^6*(d + e*x)^m*(274*m + 225*
m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4
+ 21*m^5 + m^6 + 720) + (x^2*(m + 1)*(d + e*x)^m*(360*B*a^2*e^4 + 720*A*a*b
*e^4 + 342*B*a^2*e^4*m - 60*B*c^2*d^4*m + 119*B*a^2*e^4*m^2 + 18*B*a^2*e^4*
m^3 + B*a^2*e^4*m^4 + 74*A*b^2*d*e^3*m^2 + 15*A*b^2*d*e^3*m^3 + A*b^2*d*e^3
*m^4 - 90*B*b^2*d^2*e^2*m + 12*A*c^2*d^3*e*m^2 + 684*A*a*b*e^4*m - 33*B*b^2
*d^2*e^2*m^2 - 3*B*b^2*d^2*e^2*m^3 + 238*A*a*b*e^4*m^2 + 36*A*a*b*e^4*m^3 +
 2*A*a*b*e^4*m^4 + 120*A*b^2*d*e^3*m + 72*A*c^2*d^3*e*m + 148*A*a*c*d*e^3*m
^2 + 148*B*a*b*d*e^3*m^2 + 30*A*a*c*d*e^3*m^3 + 30*B*a*b*d*e^3*m^3 + 2*A*a*
c*d*e^3*m^4 + 2*B*a*b*d*e^3*m^4 - 180*A*b*c*d^2*e^2*m - 180*B*a*c*d^2*e^2*m
 + 24*B*b*c*d^3*e*m^2 - 66*A*b*c*d^2*e^2*m^2 - 66*B*a*c*d^2*e^2*m^2 - 6*A*b
*c*d^2*e^2*m^3 - 6*B*a*c*d^2*e^2*m^3 + 240*A*a*c*d*e^3*m + 240*B*a*b*d*e^3*
m + 144*B*b*c*d^3*e*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^
5 + m^6 + 720)) + (c*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(6
*A*c*e + 12*B*b*e + A*c*e*m + 2*B*b*e*m + B*c*d*m))/(e*(1764*m + 1624*m^2 +
 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.2337 $\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=153

$$-\frac{(d+ex)^{m+2}\left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{e^4(m+2)}-\frac{(Bd-Ae)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{(d+ex)^{m+3}(-Ac}{e^4(m}$$

Rubi [A] time = 0.11, antiderivative size = 151, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{(Bd-Ae)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{e^4(m+2)}-\frac{(d+ex)^{m+3}(-Ace-bBe+3Bcd)}{e^4(m+3)}+\frac{Bc(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m))) +
((3*B*c*d^2 - B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))/(e^
4*(2 + m)) - ((3*B*c*d - b*B*e - A*c*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) +
(B*c*(d + e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right) dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)-\right.}{}\right.$$
$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(3Bcd^2-Be(2bd-ae)-A\right.}{e^4(2+}$$

Mathematica [A] time = 0.34, size = 181, normalized size = 1.18

$$\frac{(d+ex)^{m+1}\left(\frac{(d+ex)\left(B\left(ce(2ae(m+3)+bd(m-2))-b^2e^2(m+2)+6c^2d^2\right)-Ace(m+4)(2cd-be)\right)}{e^2(m+2)}-\frac{\left(e(ae-bd)+cd^2\right)(-2Ace(m+4)+bBe(m+1)+6Bcd)}{e^2(m+1)}+(a+x(b+cx))(Ace(m+4)+B(be-3cd)+Bce(m+3)x)\right)}{ce^2(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((c*d^2 + e*(-(b*d) + a*e))*(6*B*c*d + b*B*e*(1 + m)
- 2*A*c*e*(4 + m)))/(e^2*(1 + m))) + ((-(A*c*e*(2*c*d - b*e)*(4 + m)) + B*(
6*c^2*d^2 - b^2*e^2*(2 + m) + c*e*(b*d*(-2 + m) + 2*a*e*(3 + m))))*(d + e*x
))/(e^2*(2 + m)) + (B*(-3*c*d + b*e) + A*c*e*(4 + m) + B*c*e*(3 + m)*x)*(a
+ x*(b + c*x))))/(c*e^2*(3 + m)*(4 + m))
```

IntegrateAlgebraic [F] time = 0.09, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right) dx$$

Verification is not applicable to the result.

```
[In] IntegrateAlgebraic[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] Defer[IntegrateAlgebraic][(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2), x]
```

fricas [B] time = 0.41, size = 538, normalized size = 3.52

$$\frac{\left(Aade^3m^3 - 6\,Bcd^4 + 24\,Aade^3 + 8\,(Bb + Ac)d^3e - 12\,(Ba + Ab)d^2e^2 + \left(Bce^4m^3 + 6\,Bce^4m^2 + 11\,Bce^4m + 6\,Bce^4\right)x^4 + \left(8\,(Bb + Ac)e^4 + \left(Bcde^3 + (Bb + Ac)e^4\right)m^3 + \left(3\,Bcde^3 + 7\,(Bb + Ac)e^4\right)m^2 + 2\,\left(Bcde^3 + 7\,(Bb + Ac)e^4\right)m\right)x^3 + \left(9\,Aade^3 - (Ba + Ab)d^2e^2\right)m^2 + \left(12\,(Ba + Ab)e^4 + \left((Bb + Ac)de^3 + (Ba + Ab)e^4\right)m^3 - \left(3\,Bcd^2e^2 - 5\,(Bb + Ac)de^3 - 8\,(Ba + Ab)e^4\right)m^2 - \left(3\,Bcd^2e^2 - 4\,(Bb + Ac)de^3 - 19\,(Ba + Ab)e^4\right)m\right)x^2 + \left(26\,Aade^3 + 2\,(Bb + Ac)d^3e - 7\,(Ba + Ab)d^2e^2\right)m + \left(24\,Aae^4 + \left(Aae^4 + (Ba + Ab)de^3\right)m^3 + \left(9\,Aae^4 - 2\,(Bb + Ac)d^2e^2 + 7\,(Ba + Ab)de^3\right)m^2 + 2\,\left(3\,Bcd^3e + 13\,Aae^4 - 4\,(Bb + Ac)d^2e^2 + 6\,(Ba + Ab)de^3\right)m\right)x\right)(ex + d)^m}{e^4m^4 + 10\,e^4m^3 + 35\,e^4m^2 + 50\,e^4m + 24\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] (A*a*d*e^3*m^3 - 6*B*c*d^4 + 24*A*a*d*e^3 + 8*(B*b + A*c)*d^3*e - 12*(B*a +
 A*b)*d^2*e^2 + (B*c*e^4*m^3 + 6*B*c*e^4*m^2 + 11*B*c*e^4*m + 6*B*c*e^4)*x^
4 + (8*(B*b + A*c)*e^4 + (B*c*d*e^3 + (B*b + A*c)*e^4)*m^3 + (3*B*c*d*e^3 +
 7*(B*b + A*c)*e^4)*m^2 + 2*(B*c*d*e^3 + 7*(B*b + A*c)*e^4)*m)*x^3 + (9*A*a
*d*e^3 - (B*a + A*b)*d^2*e^2)*m^2 + (12*(B*a + A*b)*e^4 + ((B*b + A*c)*d*e^
3 + (B*a + A*b)*e^4)*m^3 - (3*B*c*d^2*e^2 - 5*(B*b + A*c)*d*e^3 - 8*(B*a +
A*b)*e^4)*m^2 - (3*B*c*d^2*e^2 - 4*(B*b + A*c)*d*e^3 - 19*(B*a + A*b)*e^4)*
m)*x^2 + (26*A*a*d*e^3 + 2*(B*b + A*c)*d^3*e - 7*(B*a + A*b)*d^2*e^2)*m + (
24*A*a*e^4 + (A*a*e^4 + (B*a + A*b)*d*e^3)*m^3 + (9*A*a*e^4 - 2*(B*b + A*c)
*d^2*e^2 + 7*(B*a + A*b)*d*e^3)*m^2 + 2*(3*B*c*d^3*e + 13*A*a*e^4 - 4*(B*b
+ A*c)*d^2*e^2 + 6*(B*a + A*b)*d*e^3)*m)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m
^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.22, size = 1162, normalized size = 7.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c*m^3*x^4*e^4 + (x*e + d)^m*B*c*d*m^3*x^3*e^3 + (x*e + d)^m*
B*b*m^3*x^3*e^4 + (x*e + d)^m*A*c*m^3*x^3*e^4 + 6*(x*e + d)^m*B*c*m^2*x^4*e
^4 + (x*e + d)^m*B*b*d*m^3*x^2*e^3 + (x*e + d)^m*A*c*d*m^3*x^2*e^3 + 3*(x*e
 + d)^m*B*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*c*d^2*m^2*x^2*e^2 + (x*e + d)^m
*B*a*m^3*x^2*e^4 + (x*e + d)^m*A*b*m^3*x^2*e^4 + 7*(x*e + d)^m*B*b*m^2*x^3*
e^4 + 7*(x*e + d)^m*A*c*m^2*x^3*e^4 + 11*(x*e + d)^m*B*c*m*x^4*e^4 + (x*e +
 d)^m*B*a*d*m^3*x*e^3 + (x*e + d)^m*A*b*d*m^3*x*e^3 + 5*(x*e + d)^m*B*b*d*m
^2*x^2*e^3 + 5*(x*e + d)^m*A*c*d*m^2*x^2*e^3 + 2*(x*e + d)^m*B*c*d*m*x^3*e^
3 - 2*(x*e + d)^m*B*b*d^2*m^2*x*e^2 - 2*(x*e + d)^m*A*c*d^2*m^2*x*e^2 - 3*(
x*e + d)^m*B*c*d^2*m*x^2*e^2 + 6*(x*e + d)^m*B*c*d^3*m*x*e + (x*e + d)^m*A*
a*m^3*x*e^4 + 8*(x*e + d)^m*B*a*m^2*x^2*e^4 + 8*(x*e + d)^m*A*b*m^2*x^2*e^4
 + 14*(x*e + d)^m*B*b*m*x^3*e^4 + 14*(x*e + d)^m*A*c*m*x^3*e^4 + 6*(x*e + d
)^m*B*c*x^4*e^4 + (x*e + d)^m*A*a*d*m^3*e^3 + 7*(x*e + d)^m*B*a*d*m^2*x*e^3
 + 7*(x*e + d)^m*A*b*d*m^2*x*e^3 + 4*(x*e + d)^m*B*b*d*m*x^2*e^3 + 4*(x*e +
 d)^m*A*c*d*m*x^2*e^3 - (x*e + d)^m*B*a*d^2*m^2*e^2 - (x*e + d)^m*A*b*d^2*m
^2*e^2 - 8*(x*e + d)^m*B*b*d^2*m*x*e^2 - 8*(x*e + d)^m*A*c*d^2*m*x*e^2 + 2*
(x*e + d)^m*B*b*d^3*m*e + 2*(x*e + d)^m*A*c*d^3*m*e - 6*(x*e + d)^m*B*c*d^4
 + 9*(x*e + d)^m*A*a*m^2*x*e^4 + 19*(x*e + d)^m*B*a*m*x^2*e^4 + 19*(x*e + d
)^m*A*b*m*x^2*e^4 + 8*(x*e + d)^m*B*b*x^3*e^4 + 8*(x*e + d)^m*A*c*x^3*e^4 +
 9*(x*e + d)^m*A*a*d*m^2*e^3 + 12*(x*e + d)^m*B*a*d*m*x*e^3 + 12*(x*e + d)^
m*A*b*d*m*x*e^3 - 7*(x*e + d)^m*B*a*d^2*m*e^2 - 7*(x*e + d)^m*A*b*d^2*m*e^2
 + 8*(x*e + d)^m*B*b*d^3*e + 8*(x*e + d)^m*A*c*d^3*e + 26*(x*e + d)^m*A*a*m
*x*e^4 + 12*(x*e + d)^m*B*a*x^2*e^4 + 12*(x*e + d)^m*A*b*x^2*e^4 + 26*(x*e
+ d)^m*A*a*d*m*e^3 - 12*(x*e + d)^m*B*a*d^2*e^2 - 12*(x*e + d)^m*A*b*d^2*e^
2 + 24*(x*e + d)^m*A*a*x*e^4 + 24*(x*e + d)^m*A*a*d*e^3)/(m^4*e^4 + 10*m^3*
e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.01, size = 498, normalized size = 3.25

$$\frac{\left(Bc\,e^3m^3x^3 + Ac\,e^3m^3x^2 + Bb\,e^3m^3x^2 + 6Bc\,e^3m^2x^3 + Ab\,e^3m^3x + 7Ac\,e^3m^2x^2 + Ba\,e^3m^3x + 7Bb\,e^3m^2x^2 - 3Bcd\,e^2m^2x^2 + 11Bc\,e^3m\,x^3 + Aa\,e^3m^3 + 8Ab\,e^3m^2x - 2Acd\,e^2m^2x + 14Ac\,e^3m\,x^2 + 8Ba\,e^3m^2x - 2Bbd\,e^2m^2x + 14Bb\,e^3m\,x^2 - 9Bcd\,e^2m\,x^2 + 6Bc\,x^3e^3 + 9Aa\,e^3m^2 - Abd\,e^2m^2 + 19Ab\,e^3mx - 10Acd\,e^2mx + 8Ac\,e^3x^2 - Bad\,e^2m^2 + 19Ba\,e^3mx - 10Bbd\,e^2mx + 8Bb\,e^3x^2 + 6Bc\,d^2emx - 6Bcd\,e^2x^2 + 26Aa\,e^3m - 7Abd\,e^2m + 12Ab\,e^3x + 2Ac\,d^2em - 8Acd\,e^2x - 7Bad\,e^2m + 12Ba\,e^3x + 2Bb\,d^2em - 8Bbd\,e^2x + 6Bc\,d^2ex + 24aA\,e^3 - 12Abd\,e^2 + 8Ac\,d^2e - 12aBd\,e^2 + 8Bb\,d^2e - 6Bc\,d^3\right)(ex + d)^{m+1}}{\left(m^4 + 10m^3 + 35m^2 + 50m + 24\right)e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x)
```

```
[Out] (e*x+d)^(m+1)*(B*c*e^3*m^3*x^3+A*c*e^3*m^3*x^2+B*b*e^3*m^3*x^2+6*B*c*e^3*m^
2*x^3+A*b*e^3*m^3*x+7*A*c*e^3*m^2*x^2+B*a*e^3*m^3*x+7*B*b*e^3*m^2*x^2-3*B*c
*d*e^2*m^2*x^2+11*B*c*e^3*m*x^3+A*a*e^3*m^3+8*A*b*e^3*m^2*x-2*A*c*d*e^2*m^2
*x+14*A*c*e^3*m*x^2+8*B*a*e^3*m^2*x-2*B*b*d*e^2*m^2*x+14*B*b*e^3*m*x^2-9*B*
c*d*e^2*m*x^2+6*B*c*e^3*x^3+9*A*a*e^3*m^2-A*b*d*e^2*m^2+19*A*b*e^3*m*x-10*A
*c*d*e^2*m*x+8*A*c*e^3*x^2-B*a*d*e^2*m^2+19*B*a*e^3*m*x-10*B*b*d*e^2*m*x+8*
B*b*e^3*x^2+6*B*c*d^2*e*m*x-6*B*c*d*e^2*x^2+26*A*a*e^3*m-7*A*b*d*e^2*m+12*A
*b*e^3*x+2*A*c*d^2*e*m-8*A*c*d*e^2*x-7*B*a*d*e^2*m+12*B*a*e^3*x+2*B*b*d^2*e
*m-8*B*b*d*e^2*x+6*B*c*d^2*e*x+24*A*a*e^3-12*A*b*d*e^2+8*A*c*d^2*e-12*B*a*d
*e^2+8*B*b*d^2*e-6*B*c*d^3)/e^4/(m^4+10*m^3+35*m^2+50*m+24)
```

maxima [B] time = 0.53, size = 352, normalized size = 2.30

$$\frac{\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}Ba}{\left(m^{2}+3m+2\right)e^{2}}+\frac{\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}Ab}{\left(m^{2}+3m+2\right)e^{2}}+\frac{(ex+d)^{m+1}Aa}{e(m+1)}+\frac{\left(\left(m^{2}+3m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2d^{2}emx+2d^{3}\right)(ex+d)^{m}Bb}{\left(m^{3}+6m^{2}+11m+6\right)e^{3}}+\frac{\left(\left(m^{2}+3m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2d^{2}emx+2d^{3}\right)(ex+d)^{m}Ac}{\left(m^{3}+6m^{2}+11m+6\right)e^{3}}+\frac{\left(\left(m^{3}+6m^{2}+11m+6\right)e^{4}x^{4}+\left(m^{3}+3m^{2}+2m\right)de^{3}x^{3}-3\left(m^{2}+m\right)d^{2}e^{2}x^{2}+6d^{3}emx-6d^{4}\right)(ex+d)^{m}Bc}{\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a/((m^2 + 3*m + 2)*e^2) + (
e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*b/((m^2 + 3*m + 2)*e^2) + (e
*x + d)^(m + 1)*A*a/(e*(m + 1)) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^
2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*b/((m^3 + 6*m^2 + 11*m + 6)*e^3)
 + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e
*x + d)^m*A*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^
4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m
*x - 6*d^4)*(e*x + d)^m*B*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.97, size = 602, normalized size = 3.93

$$\frac{(d+ex)^{m}\left(24Aade^{3}-6Bcd^{4}+8Acd^{3}e+8Bbd^{3}e-12Abd^{2}e^{2}-12Bad^{2}e^{2}-Abd^{2}e^{2}m^{2}-Bad^{2}e^{2}m^{2}+26Aade^{3}m+2Acd^{3}em+2Bbd^{3}em+9Aade^{3}m^{2}+Aade^{3}m^{3}-7Abd^{2}e^{2}m-7Bad^{2}e^{2}m\right)}{e^{4}\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)}+\frac{x(d+ex)^{m}\left(24Aae^{4}+26Aae^{4}m+9Aae^{4}m^{2}+Aae^{4}m^{3}-2Acd^{2}e^{2}m^{2}-2Bbd^{2}e^{2}m^{2}+12Abde^{3}m+12Bade^{3}m+6Bcd^{3}em+7Abde^{3}m^{2}+7Bade^{3}m^{2}+Abde^{3}m^{3}+Bade^{3}m^{3}-8Acd^{2}e^{2}m-8Bbd^{2}e^{2}m\right)}{e^{4}\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)}+\frac{x^{3}(d+ex)^{m}\left(m^{2}+3m+2\right)(4Ace+4Bbe+Acem+Bbem+Bcdm)}{e\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)}+\frac{Bcx^{4}(d+ex)^{m}\left(m^{3}+6m^{2}+11m+6\right)}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{x^{2}(m+1)(d+ex)^{m}\left(12Abe^{2}+12Bae^{2}+7Abe^{2}m+7Bae^{2}m-3Bcd^{2}m+Abe^{2}m^{2}+Bae^{2}m^{2}+4Acdem+4Bbdem+Acdem^{2}+Bbdem^{2}\right)}{e^{2}\left(m^{4}+10m^{3}+35m^{2}+50m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x)
```

```
[Out] ((d + e*x)^m*(24*A*a*d*e^3 - 6*B*c*d^4 + 8*A*c*d^3*e + 8*B*b*d^3*e - 12*A*b
*d^2*e^2 - 12*B*a*d^2*e^2 - A*b*d^2*e^2*m^2 - B*a*d^2*e^2*m^2 + 26*A*a*d*e^
3*m + 2*A*c*d^3*e*m + 2*B*b*d^3*e*m + 9*A*a*d*e^3*m^2 + A*a*d*e^3*m^3 - 7*A
*b*d^2*e^2*m - 7*B*a*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
 + (x*(d + e*x)^m*(24*A*a*e^4 + 26*A*a*e^4*m + 9*A*a*e^4*m^2 + A*a*e^4*m^3 -
 2*A*c*d^2*e^2*m^2 - 2*B*b*d^2*e^2*m^2 + 12*A*b*d*e^3*m + 12*B*a*d*e^3*m +
6*B*c*d^3*e*m + 7*A*b*d*e^3*m^2 + 7*B*a*d*e^3*m^2 + A*b*d*e^3*m^3 + B*a*d*e
^3*m^3 - 8*A*c*d^2*e^2*m - 8*B*b*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 +
 m^4 + 24)) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(4*A*c*e + 4*B*b*e + A*c*e*m
 + B*b*e*m + B*c*d*m))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (B*c*x^4*(
d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24) +
(x^2*(m + 1)*(d + e*x)^m*(12*A*b*e^2 + 12*B*a*e^2 + 7*A*b*e^2*m + 7*B*a*e^2
*m - 3*B*c*d^2*m + A*b*e^2*m^2 + B*a*e^2*m^2 + 4*A*c*d*e*m + 4*B*b*d*e*m +
A*c*d*e*m^2 + B*b*d*e*m^2))/(e^2*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 5.25, size = 5930, normalized size = 38.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((d**m*(A*a*x + A*b*x**2/2 + A*c*x**3/3 + B*a*x**2/2 + B*b*x**3/3
+ B*c*x**4/4), Eq(e, 0)), (-2*A*a*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) - A*b*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) - 3*A*b*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18
*d*e**6*x**2 + 6*e**7*x**3) - 2*A*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x +
18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*
x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*
e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - B*a*d*e**2/(6*d**3*e**4 + 18*d**2*
e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 3*B*a*e**3*x/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*B*b*d**2*e/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*B*b*d*e**2*x/(6*d**3*e**4 +
18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*B*b*e**3*x**2/(6*d**3*e*
*4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*B*c*d**3*log(d/e +
x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*B*c*d
**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*
d**2*e*x*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e*
*7*x**3) + 27*B*c*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
 6*e**7*x**3) + 18*B*c*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5
*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d*e**2*x**2/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*B*c*e**3*x**3*log(d/e + x)/(
6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (
-A*a*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - A*b*d*e**2/(2*d**2*e**
4 + 4*d*e**5*x + 2*e**6*x**2) - 2*A*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 2*A*c*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x
**2) + 3*A*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2
*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2*x/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*c*e**3*x**2*log(d/e + x)/(2*d
**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - B*a*d*e**2/(2*d**2*e**4 + 4*d*e**5*x
 + 2*e**6*x**2) - 2*B*a*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2
*B*b*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 3*B*b*d
**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*B*b*d*e**2*x*log(d/e + x
)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*B*b*d*e**2*x/(2*d**2*e**4 +
4*d*e**5*x + 2*e**6*x**2) + 2*B*b*e**3*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d
*e**5*x + 2*e**6*x**2) - 6*B*c*d**3*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) - 9*B*c*d**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B
*c*d**2*e*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*
d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*B*c*d*e**2*x**2*log(d
/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*B*c*e**3*x**3/(2*d**2*
e**4 + 4*d*e**5*x + 2*e**6*x**2), Eq(m, -3)), (-2*A*a*e**3/(2*d*e**4 + 2*e*
*5*x) + 2*A*b*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*b*d*e**2/(2*d
*e**4 + 2*e**5*x) + 2*A*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c
*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e/(2*d*e**4 + 2*e**
5*x) - 4*A*c*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*c*e**3*x**2/
(2*d*e**4 + 2*e**5*x) + 2*B*a*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2
*B*a*d*e**2/(2*d*e**4 + 2*e**5*x) + 2*B*a*e**3*x*log(d/e + x)/(2*d*e**4 + 2
*e**5*x) - 4*B*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*B*b*d**2*e/(
2*d*e**4 + 2*e**5*x) - 4*B*b*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) +
2*B*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3*log(d/e + x)/(2*d*e**4 +
 2*e**5*x) + 6*B*c*d**3/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**2*e*x*log(d/e + x)
/(2*d*e**4 + 2*e**5*x) - 3*B*c*d*e**2*x**2/(2*d*e**4 + 2*e**5*x) + B*c*e**3
*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (A*a*log(d/e + x)/e - A*b*d*log(d/
e + x)/e**2 + A*b*x/e + A*c*d**2*log(d/e + x)/e**3 - A*c*d*x/e**2 + A*c*x**
2/(2*e) - B*a*d*log(d/e + x)/e**2 + B*a*x/e + B*b*d**2*log(d/e + x)/e**3 -
B*b*d*x/e**2 + B*b*x**2/(2*e) - B*c*d**3*log(d/e + x)/e**4 + B*c*d**2*x/e**
3 - B*c*d*x**2/(2*e**2) + B*c*x**3/(3*e), Eq(m, -1)), (A*a*d*e**3*m**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
9*A*a*d*e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 26*A*a*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*d*e**3*(d + e*x)**m/(e**4*
```

m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*a*e**4*m**3*x
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4) + 9*A*a*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 26*A*a*e**4*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*e**4*x*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - A*b*d**2*e
2*m2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) - 7*A*b*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*
e**4*m**2 + 50*e**4*m + 24*e**4) - 12*A*b*d**2*e**2*(d + e*x)**m/(e**4*m**4
+ 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*b*d*e**3*m**3*x*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 7*A*b*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 12*A*b*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e
4*m3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*b*e**4*m**3*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*A
*b*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 19*A*b*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*A*b*e**4*x**2*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*A*c*d**
3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4) + 8*A*c*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) - 2*A*c*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 +
10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*A*c*d**2*e**2*m*x*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ A*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m*
*2 + 50*e**4*m + 24*e**4) + 5*A*c*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4
+ 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*A*c*d*e**3*m*x**2*
(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4
) + A*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 7*A*c*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*c*e**4*m*x**3*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
8*A*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) - B*a*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*B*a*d**2*e**2*m*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*B*a*d**
2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + B*a*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e*
*4*m**2 + 50*e**4*m + 24*e**4) + 7*B*a*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*B*a*d*e**3*m*x*
(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4
) + B*a*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 8*B*a*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 19*B*a*e**4*m*x**2*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
12*B*a*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4) + 2*B*b*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*b*d**3*e*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*B*b*d**2*e**2*m*
*2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) - 8*B*b*d**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e*
*4*m**2 + 50*e**4*m + 24*e**4) + B*b*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m*
*4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 5*B*b*d*e**3*m**2
*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4) + 4*B*b*d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
4*m2 + 50*e**4*m + 24*e**4) + B*b*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*B*b*e**4*m**2*x*
3(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
4) + 14*B*b*e4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*

```
m**2 + 50*e**4*m + 24*e**4) + 8*B*b*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*B*c*d**4*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*d**3
*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) - 3*B*c*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d**2*e**2*m*x**2*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*d*e
**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 3*B*c*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*c*d*e**3*m*x**3*(d + e*x)*
*m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*e*
*4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 6*B*c*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*B*c*e**4*m*x**4*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*e**4
*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4), True))
```

Chapter 4

Appendix

Local contents

4.1 Download section

The following zip files contain the raw integrals used in this test.

This is a subset of Rubi test suite thanks to Albert Rich, which includes only the algebraic integrals with elementray optimal antiderivatives. It also includes a subset of a test file provided thanks to Sam Blake.

Mathematica format Mathematica_syntax_CAS_integration_elementary_version.zip

Maple and Mupad format Maple_syntax_CAS_integration_elementary_version.zip

Sympy format SYMPY_syntax_CAS_integration_elementary_version.zip

Sage math format SAGE_syntax_CAS_integration_elementary_version.zip

4.2 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.2.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
```

```
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
```

```
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.2.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do
   not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
```

```
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
```

```
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.2.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]

def is_atom(expn):
```

```
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
   )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
   type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
   ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
```

```
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.2.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
```

```
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
   sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','
   hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
   sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
   sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
```

```
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
    :
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
    )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
    expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
    .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
```

```
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
    well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```